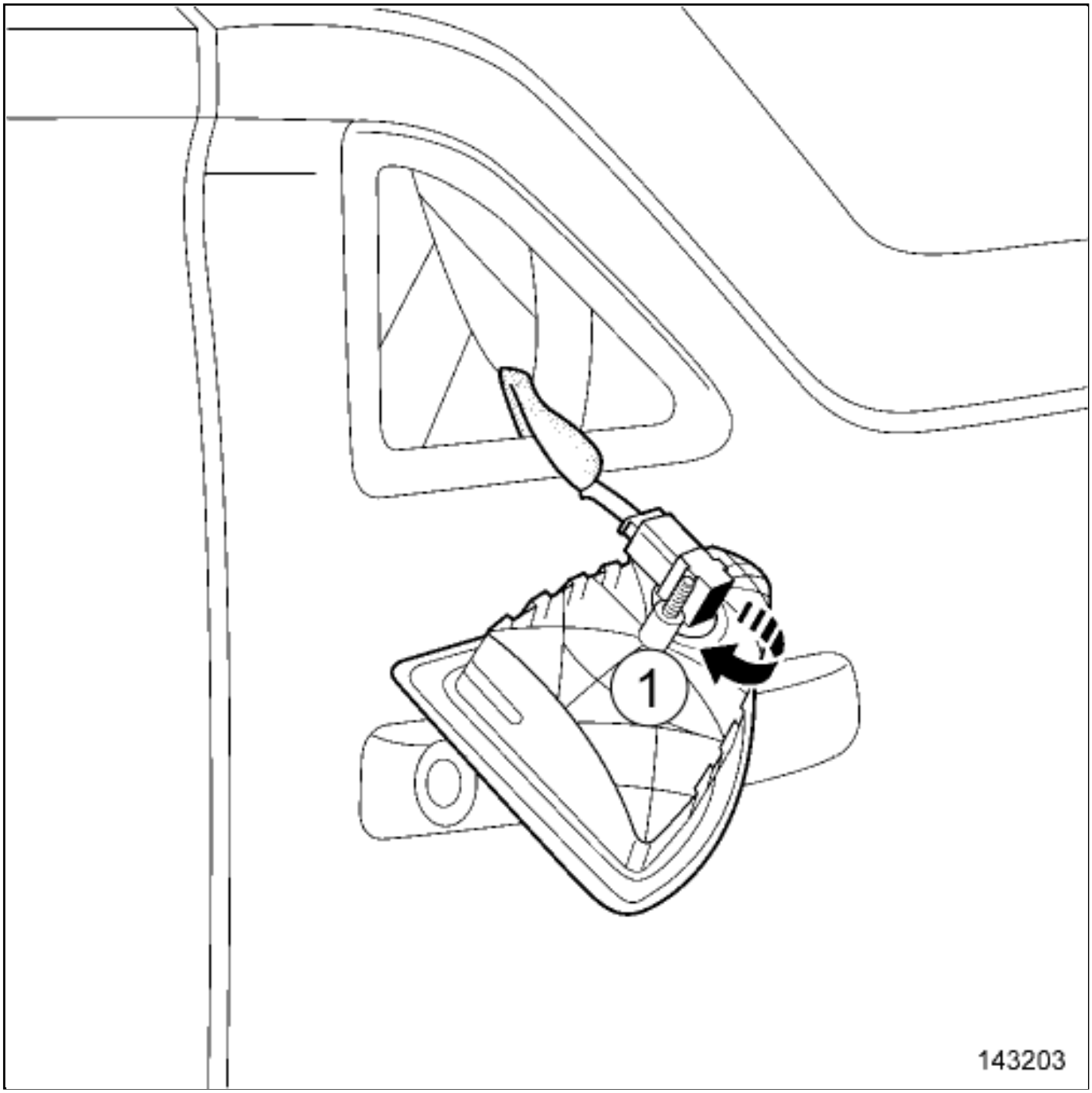


- Remove the 3rd brake light by turning the bulb holder a quarter of a turn clockwise(1) .

REFITTING

- Proceed in the reverse order to removal.

ACCELERATOR PEDAL: REMOVAL - REFITTING

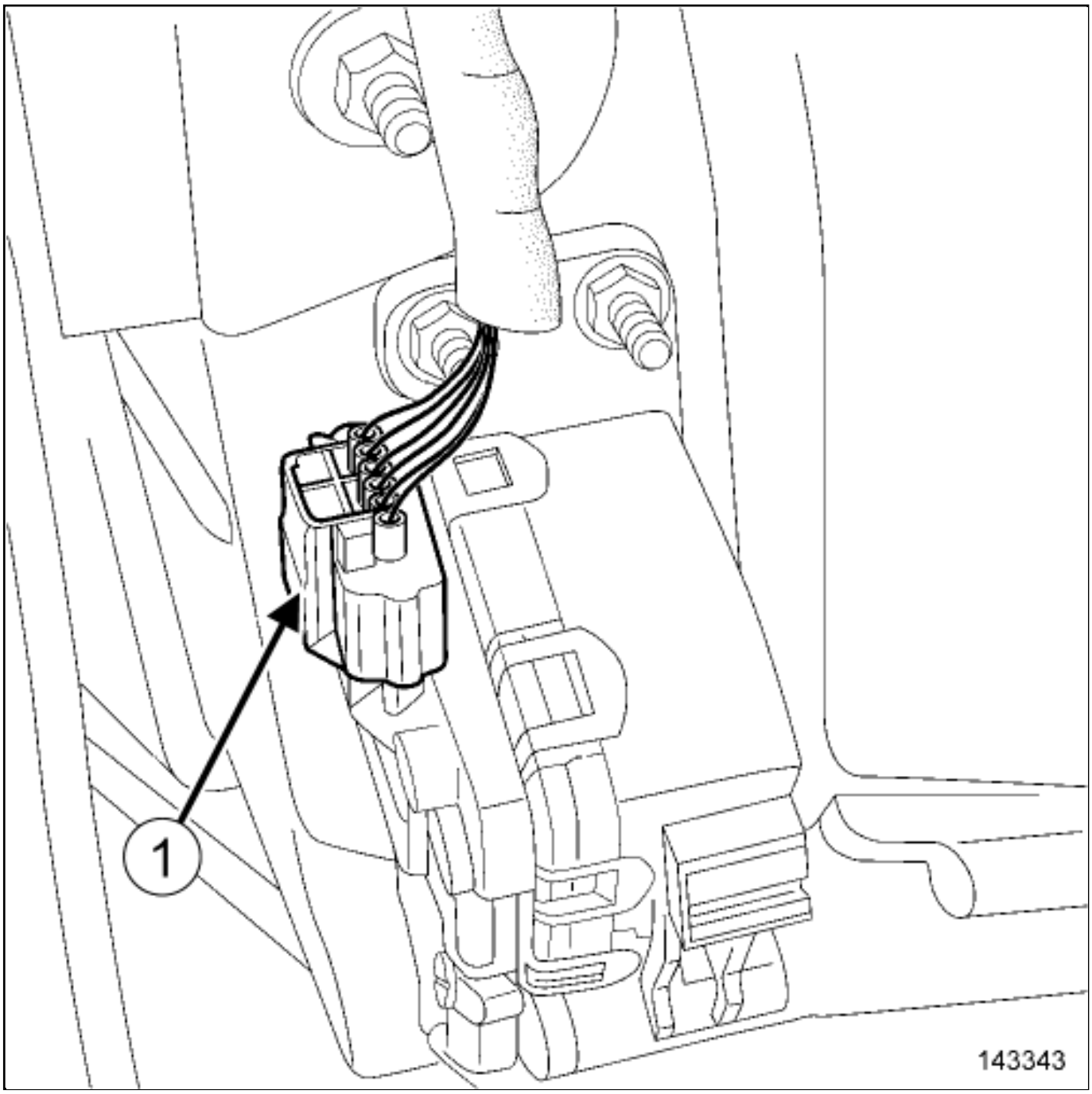
Location and specifications (tightening torques, parts always to be replaced, etc.)(see 37A, Mechanical component controls, Pedal assembly: Exploded view) .

REMOVAL

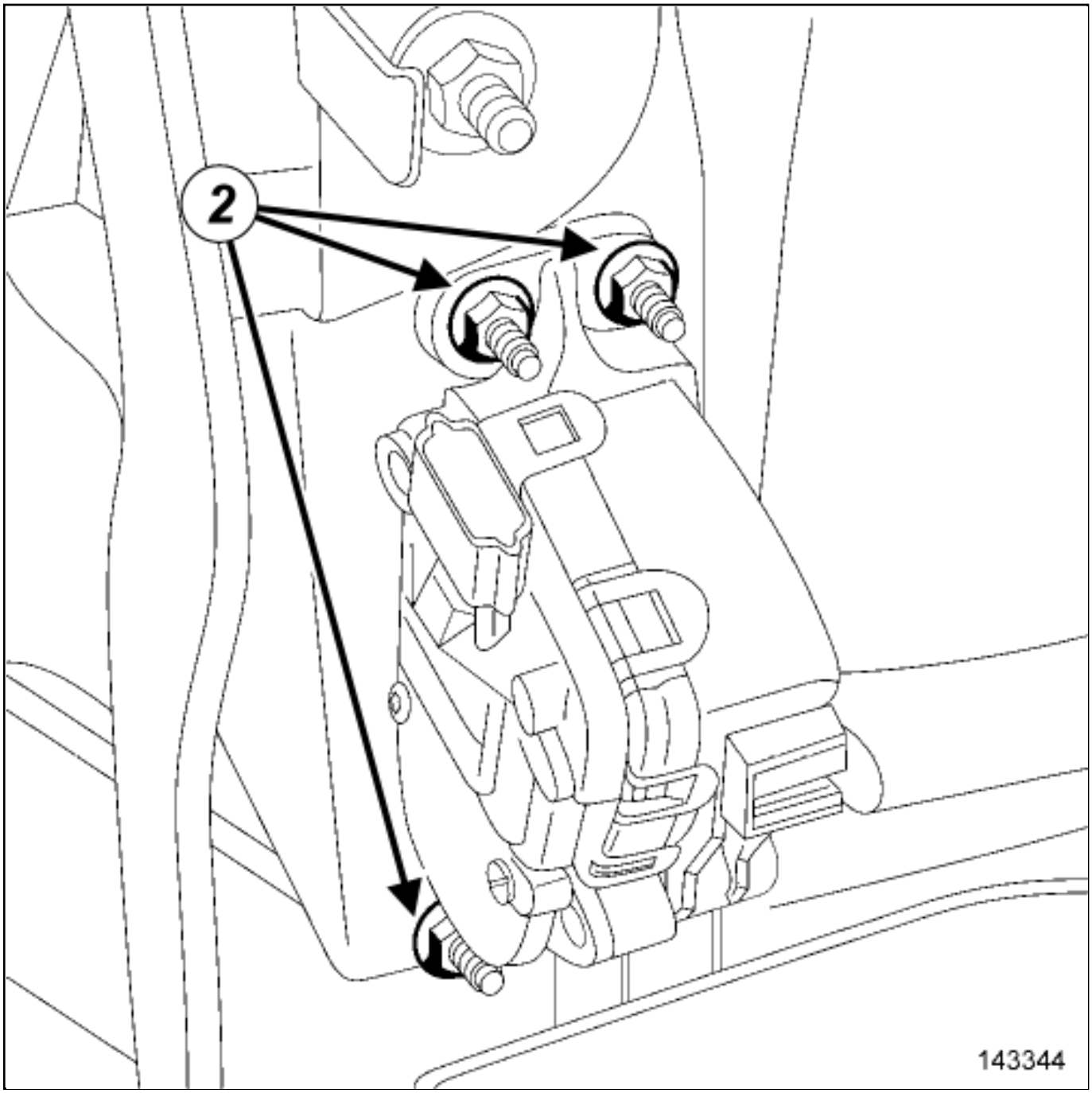
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

2. REMOVAL OPERATION



- Disconnect the accelerator pedal connector(1) .



Remove:

- the accelerator pedal nuts(**2**) ,
- the accelerator pedal.

REFITTING

Proceed in the reverse order to removal.

ACCELERATOR PEDAL: REMOVAL - REFITTING

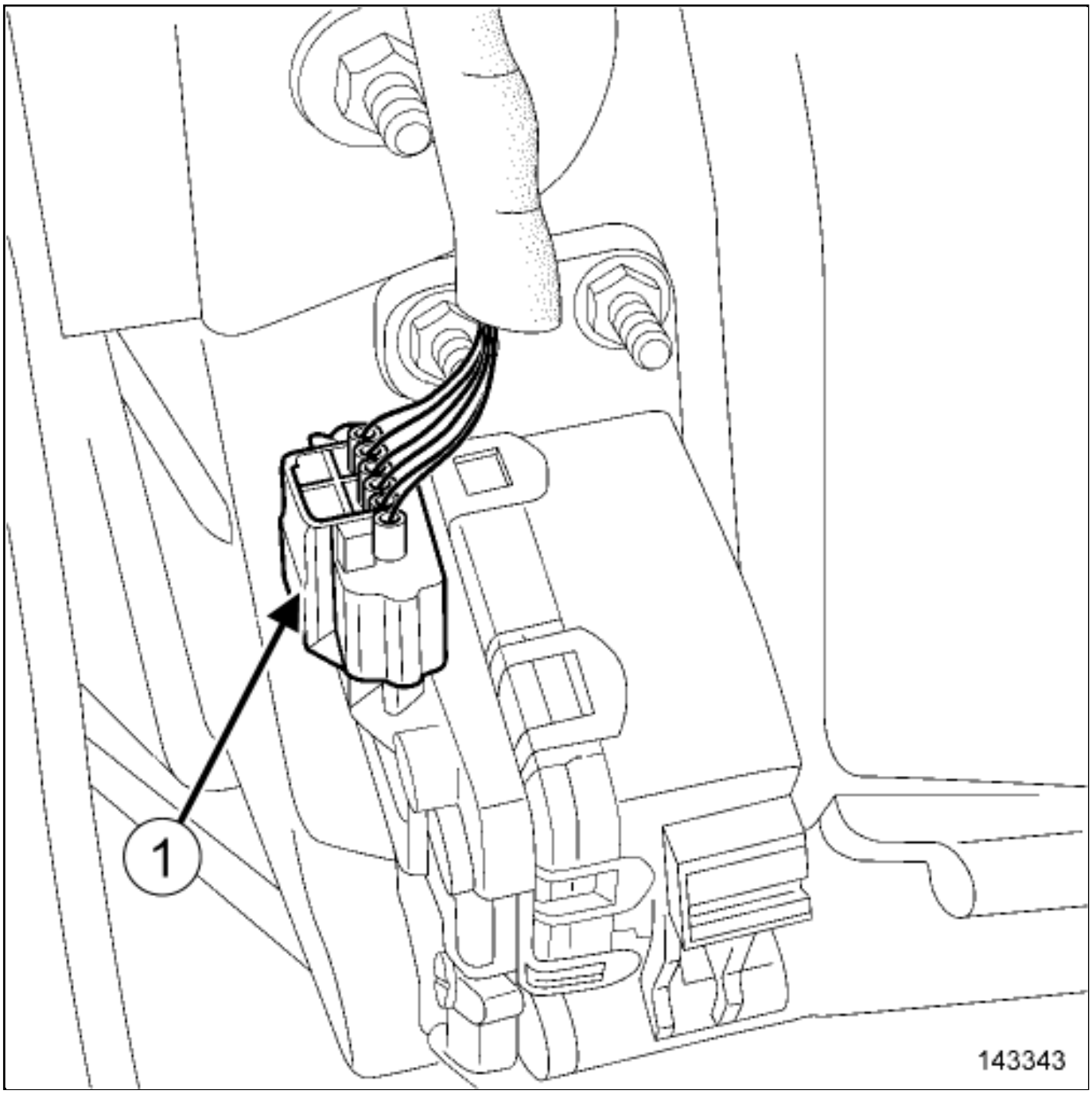
Location and specifications (tightening torques, parts always to be replaced, etc.)(see 37A, Mechanical component controls, Pedal assembly: Exploded view) .

REMOVAL

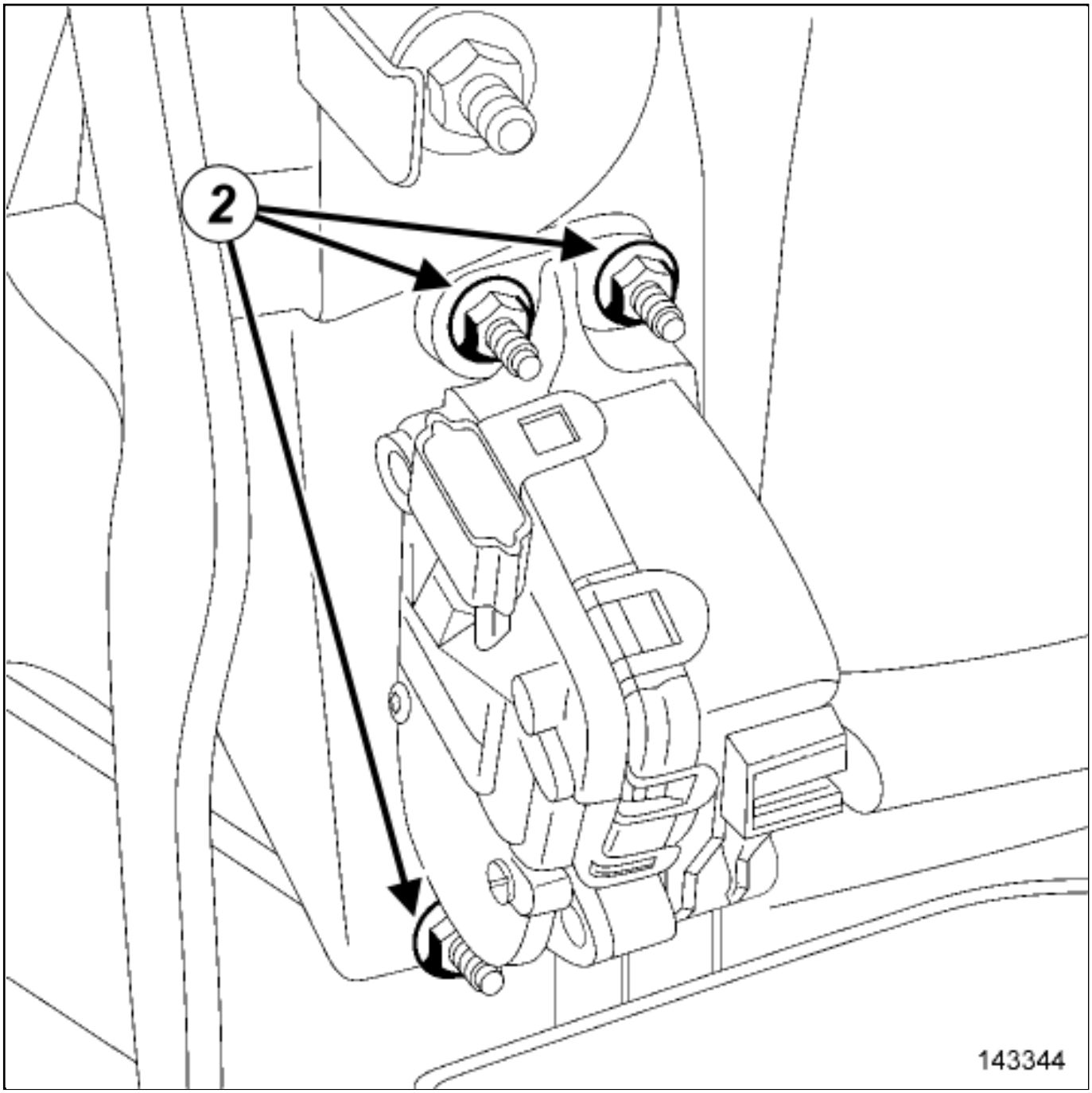
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

2. REMOVAL OPERATION



- Disconnect the accelerator pedal connector(1) .



Remove:

- the accelerator pedal nuts(**2**) ,
- the accelerator pedal.

REFITTING

Proceed in the reverse order to removal.

ACCESSORIES BELT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:
Accessories belt tensioning roller
Accessories fixed roller

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

WARNING

Wear cut-resistant gloves during the operation.

CAUTION

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 11A, Top and front of engine, Engine accessories assembly: Exploded view)** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .
- Disconnect the battery**Battery: Removal - Refitting** .

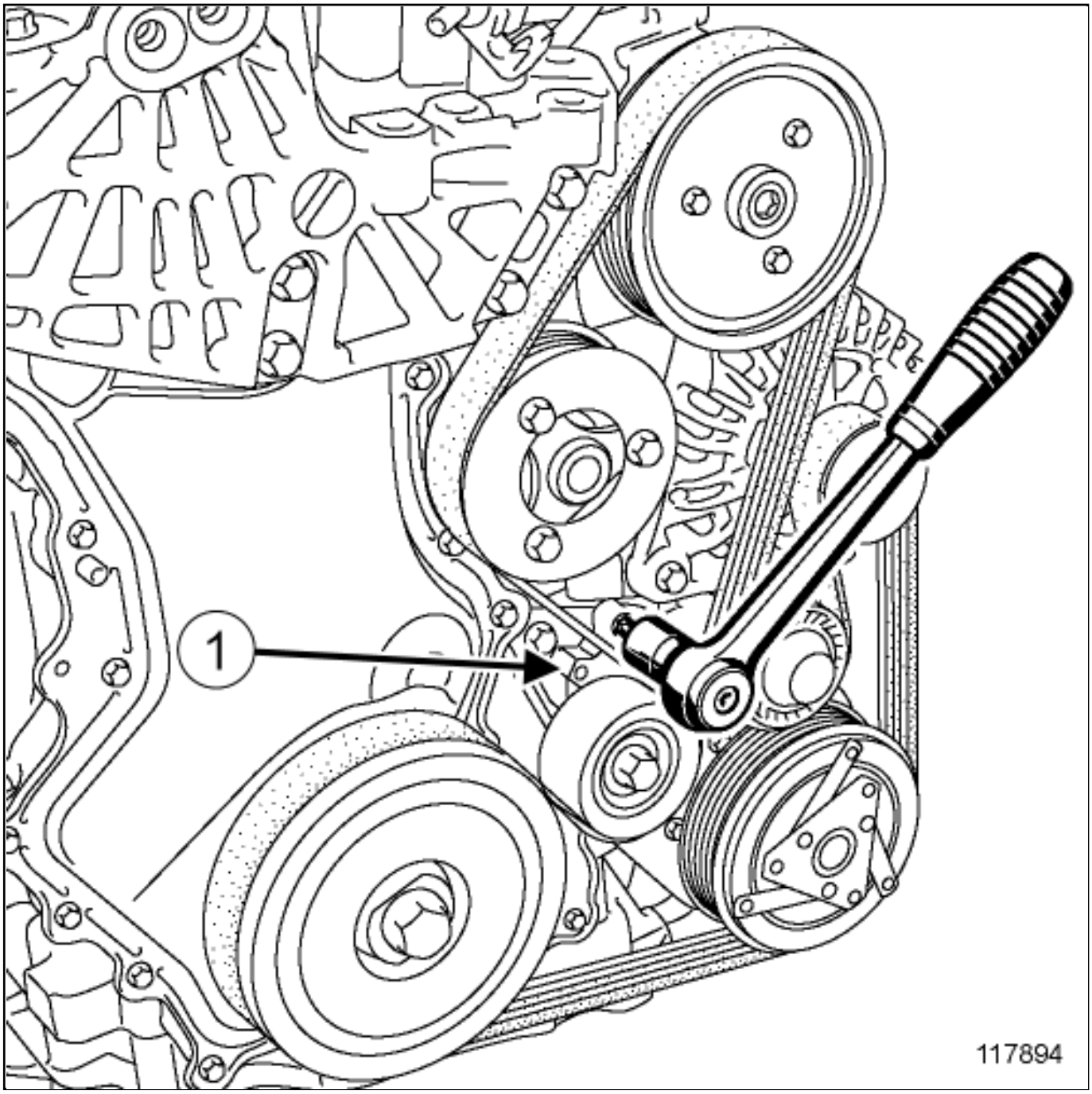
Remove:

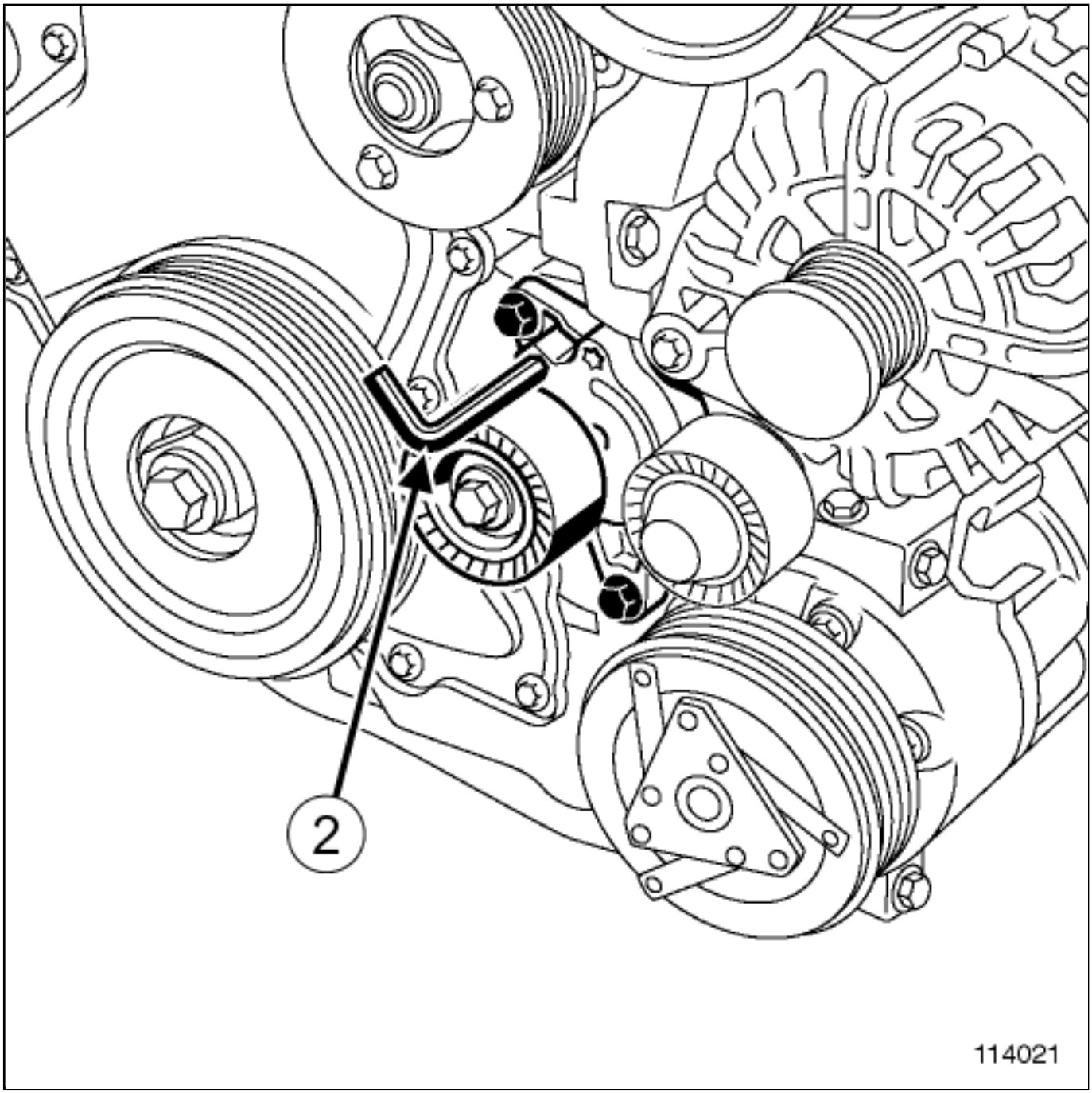
- the engine undertray,
- the intercooler air outlet pipe.

M9T, 700(700)

Remove the engine cooling fan propellerEngine cooling fan assembly: Removal - Refitting .

2. REMOVAL OPERATION





- Position a 3 mmAllen key in the accessories belt tensioning roller hole(1) .

- Rotate the accessories belt tensioning roller clockwise and push on the Allen key(2) at the same time until the accessories belt tensioning roller locks.

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

Remove (see 11A, Top and front of engine, Engine accessories assembly: Exploded view) :

- the accessories belt by passing it between the fan and the diffuser,
- the accessories belt tensioning roller,
- the accessories belt fixed roller protector,
- the accessories belt fixed roller.

M9T, 700(700)

Remove :

- the accessories belt,
- the accessories belt tensionning roller bolts,
- the accessories belt tensionning roller,
- the accessories belt fixed roller protector,
- the accessories belt fixed roller bolt,
- the accessories belt fixed roller.

REFITTING

1. REFITTING PREPARATION OPERATION

In case of reuse, clean the crankshaft accessories pulley V-grooves to get rid of any deposits.

parts always to be replaced: Accessories belt tensioning roller

parts always to be replaced: Accessories fixed roller

CAUTION

Only use brushes with plastic or non-corrosive metal (brass) bristles.

CAUTION

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

Note:

The belt must be replaced with a new one if it has been removed.

Note:

When replacing the accessories belt, always replace the accessories belt tensioning roller and fixed roller.

2. REFITTING OPERATION

Refit (see 11A, Top and front of engine, Engine accessories assembly: Exploded view) :

- the accessories belt tensionning roller,
- the accessories belt tensionning roller bolt,
- the accessories belt fixed roller,
- the accessories belt fixed roller bolt.

Torque tighten:

- the accessories belt tensionning roller bolt 25 N.m,
- the accessories belt fixed roller bolt 44 N.m.

Refit the accessories belt fixed roller protector (see 11A, Top and front of engine, Engine accessories assembly: Exploded view) .

Recover the locking pin of the accessories belt tensioning roller and gradually release the accessories belt tensioning roller using a spanner.

Turn the crankshaft two revolutions clockwise to position the accessories belt correctly.

3. FINAL OPERATION

Proceed in the reverse order to removal.

ACCESSORIES BELT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:
Accessories belt tensioning roller
Accessories fixed roller

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

WARNING

Wear cut-resistant gloves during the operation.

CAUTION

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 11A, Top and front of engine, Engine accessories assembly: Exploded view)** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .
- Disconnect the battery**Battery: Removal - Refitting** .

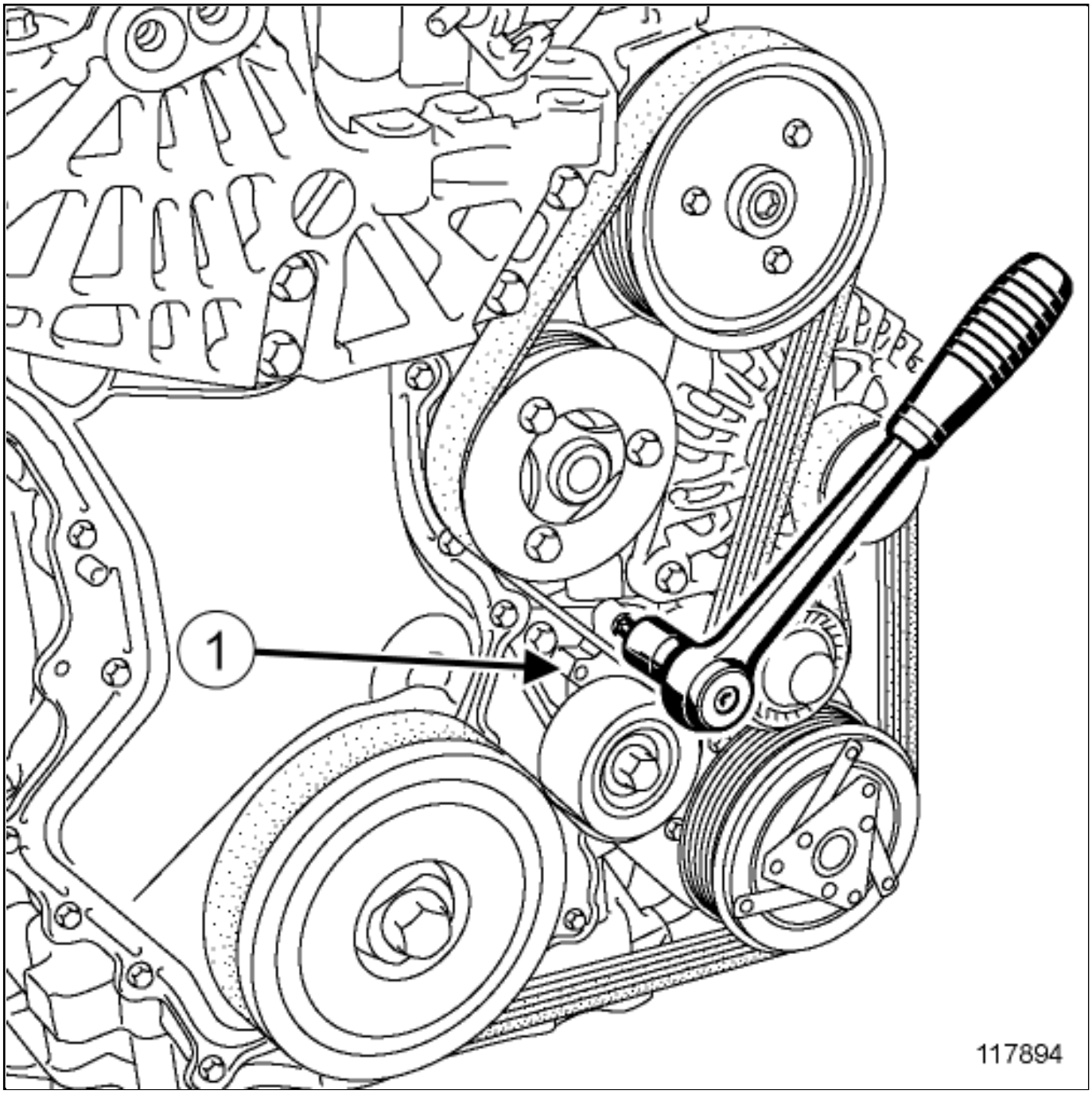
Remove:

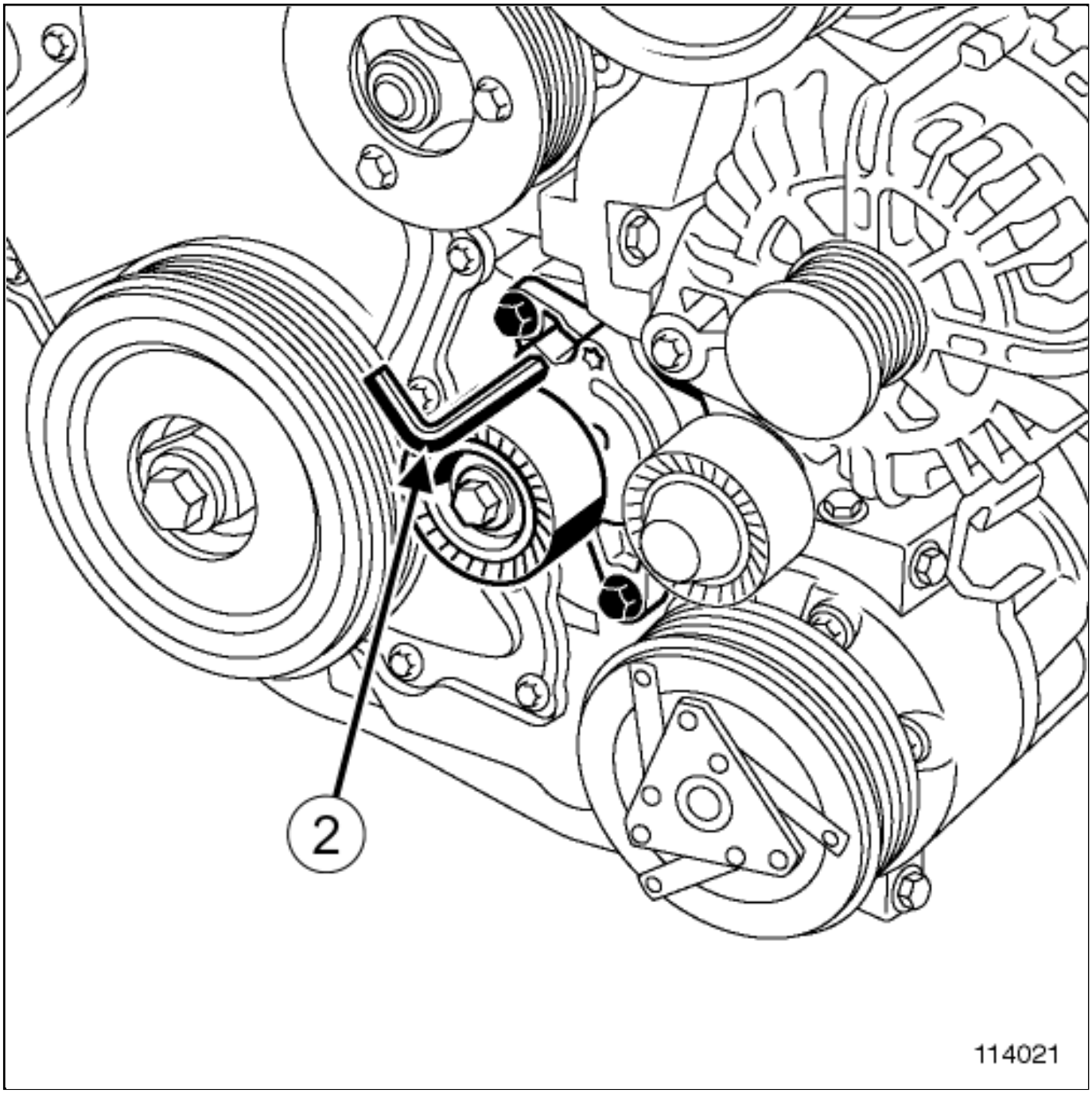
- the engine undertray,
- the intercooler air outlet pipe.

M9T, 700(700)

Remove the engine cooling fan propellerEngine cooling fan assembly: Removal - Refitting .

2. REMOVAL OPERATION





- Position a 3 mmAllen key in the accessories belt tensioning roller hole(1) .

- Rotate the accessories belt tensioning roller clockwise and push on the Allen key(2) at the same time until the accessories belt tensioning roller locks.

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

Remove (see 11A, Top and front of engine, Engine accessories assembly: Exploded view) :

- the accessories belt by passing it between the fan and the diffuser,
- the accessories belt tensioning roller,
- the accessories belt fixed roller protector,
- the accessories belt fixed roller.

M9T, 700(700)

Remove :

- the accessories belt,
- the accessories belt tensionning roller bolts,
- the accessories belt tensionning roller,
- the accessories belt fixed roller protector,
- the accessories belt fixed roller bolt,
- the accessories belt fixed roller.

REFITTING

1. REFITTING PREPARATION OPERATION

In case of reuse, clean the crankshaft accessories pulley V-grooves to get rid of any deposits.

parts always to be replaced: Accessories belt tensioning roller

parts always to be replaced: Accessories fixed roller

CAUTION

Only use brushes with plastic or non-corrosive metal (brass) bristles.

CAUTION

Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

Note:

The belt must be replaced with a new one if it has been removed.

Note:

When replacing the accessories belt, always replace the accessories belt tensioning roller and fixed roller.

2. REFITTING OPERATION

- Refit (see 11A, Top and front of engine, Engine accessories assembly: Exploded view) :
  - the accessories belt tensionning roller,
  - the accessories belt tensionning roller bolt,
  - the accessories belt fixed roller,
  - the accessories belt fixed roller bolt.

- Torque tighten:
  - the accessories belt tensionning roller bolt 25 N.m,
  - the accessories belt fixed roller bolt 44 N.m.

- Refit the accessories belt fixed roller protector (see 11A, Top and front of engine, Engine accessories assembly: Exploded view) .

- Recover the locking pin of the accessories belt tensioning roller and gradually release the accessories belt tensioning roller using a spanner.

- Turn the crankshaft two revolutions clockwise to position the accessories belt correctly.

3. FINAL OPERATION

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

ADDITIONAL RADIATOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

- The criteria to be met are:
  - protection down to -25°C ± 2for cold and temperate countries,
  - protection down to -40°C ± 2for "extreme cold" countries.

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .

- Disconnect the battery(see **Battery: Removal - Refitting**) .

M9T, 678 680 694 698 700 702(678 OR 680 OR 694 OR 698 OR 700 OR 702)

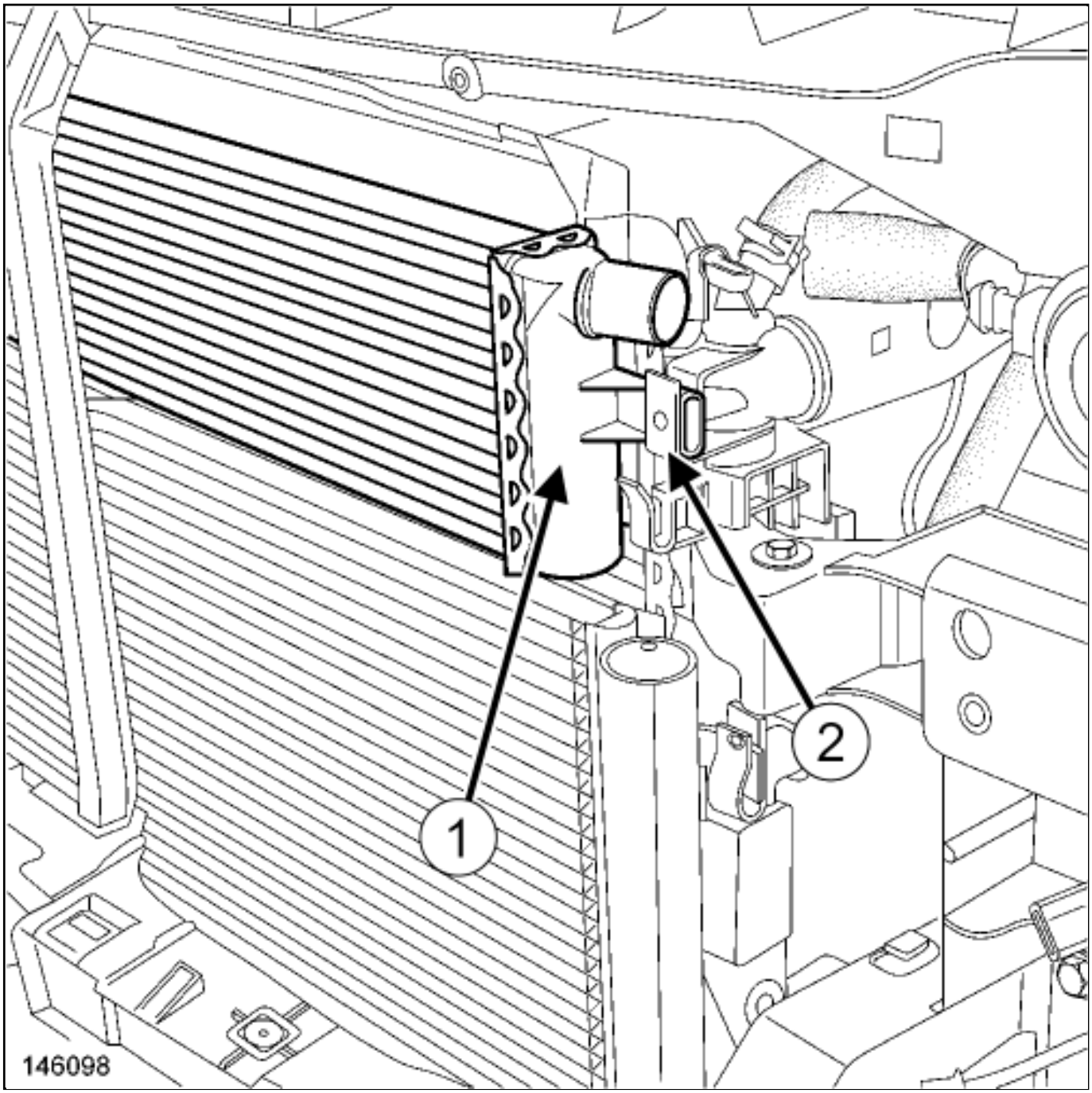
- Remove:
  - the engine undertray,
  - the radiator grille(see **Radiator grille: Removal - Refitting**) ,
  - the headlights(see **Headlight: Removal - Refitting**) ,
  - the front bumper(see **Front bumper: Removal - Refitting**) .

- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

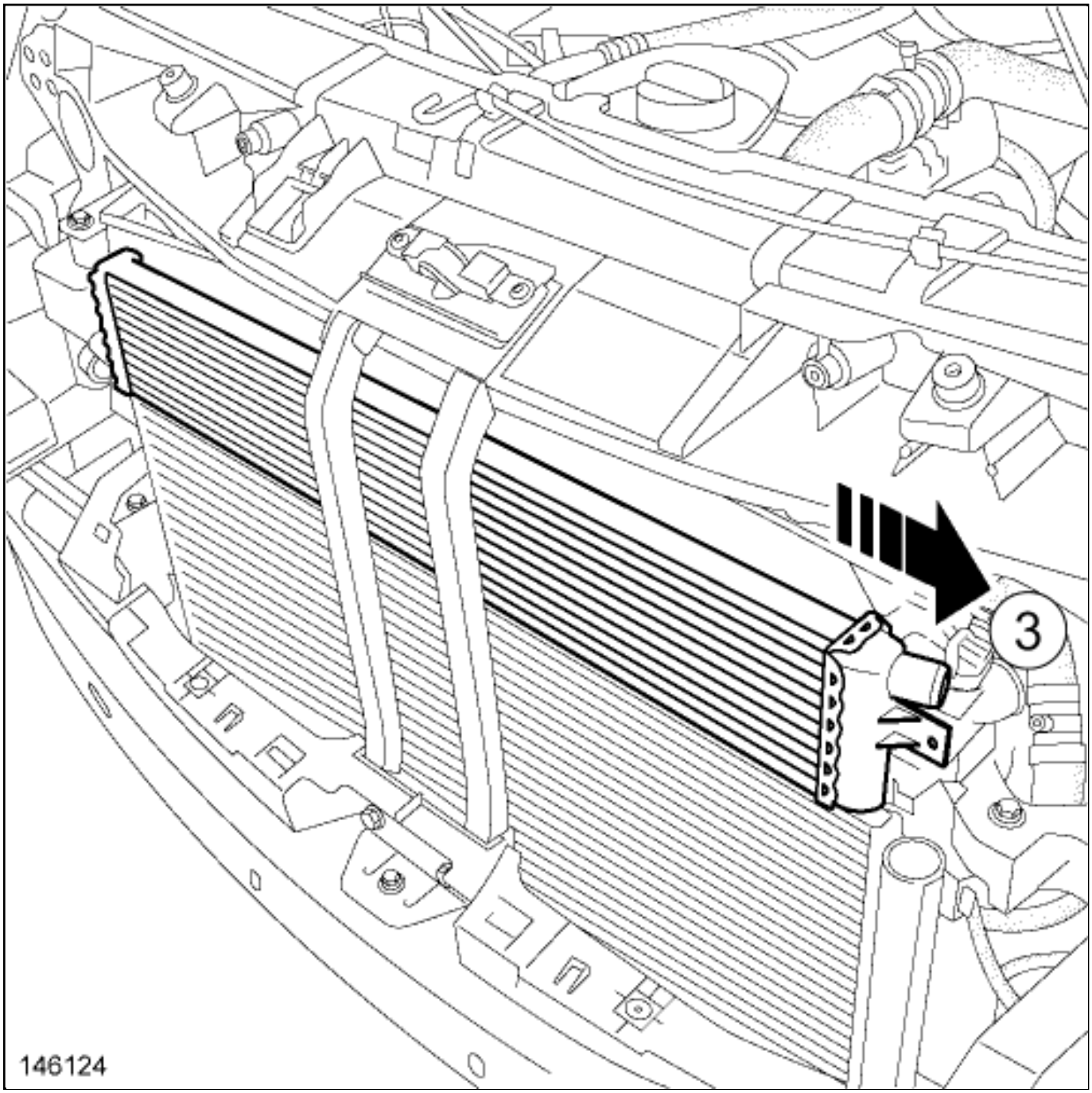
2. REMOVAL OPERATION

- Move aside using the toolRemote operation pliers for hose clips.(Mot. 1448) (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the clip of the pipe between the cooling radiator and the additional cooling radiator,
  - the additional cooling radiator outlet pipe clip.

- Disconnect from the additional cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the pipe between the cooling radiator and the additional cooling radiator,
  - the additional cooling radiator outlet pipe.



- Unclip the additional cooling radiator(1) by pressing on the tabs(2) .



- Remove the additional cooling radiator by sliding it to the right(3) .

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Fill and bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

XSL version : 3.02 du 22/07/11

AIR CONDITIONING: CHECK

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

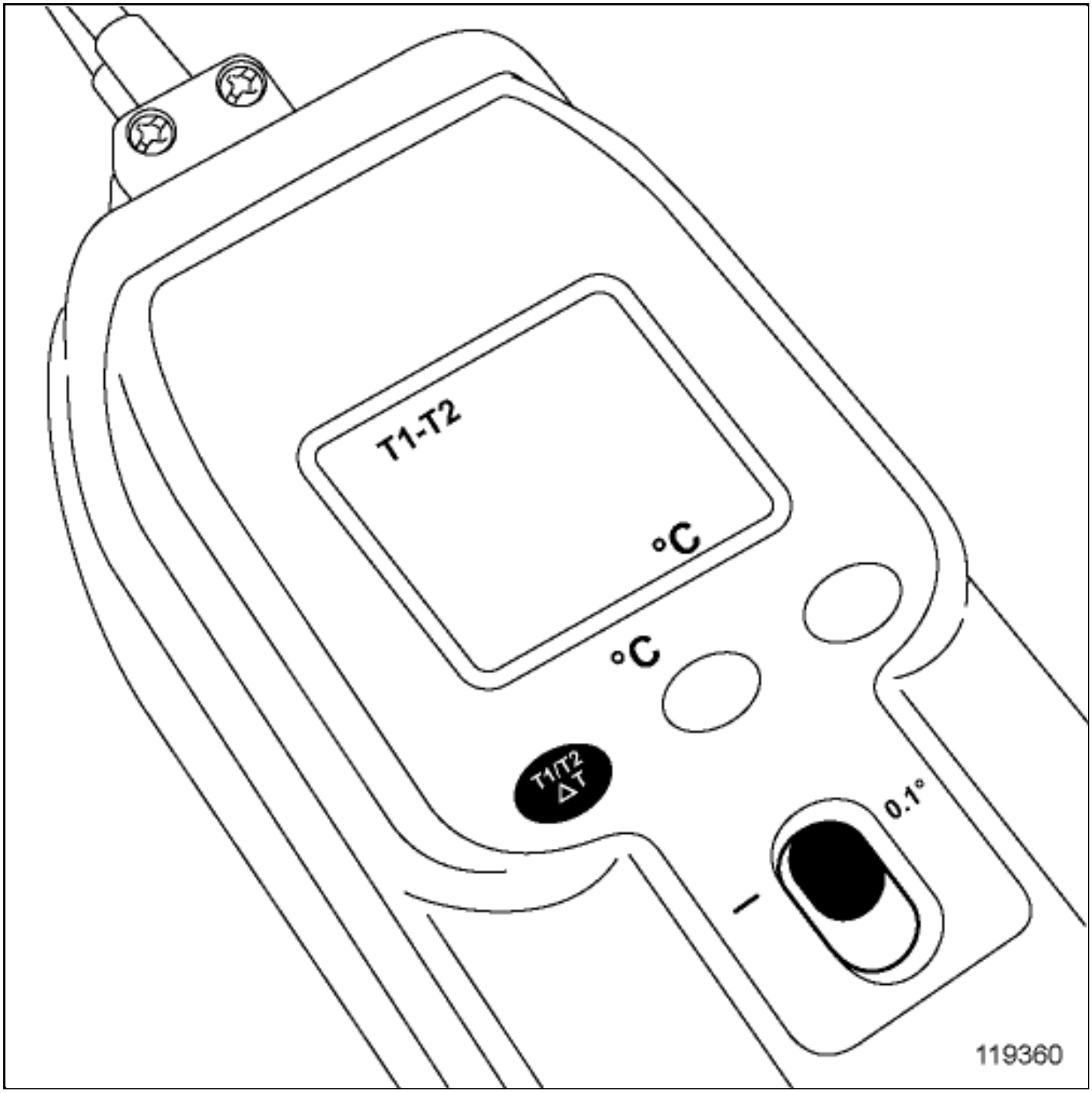
Equipment required
Dual-sensor temperature measuring device

Note:

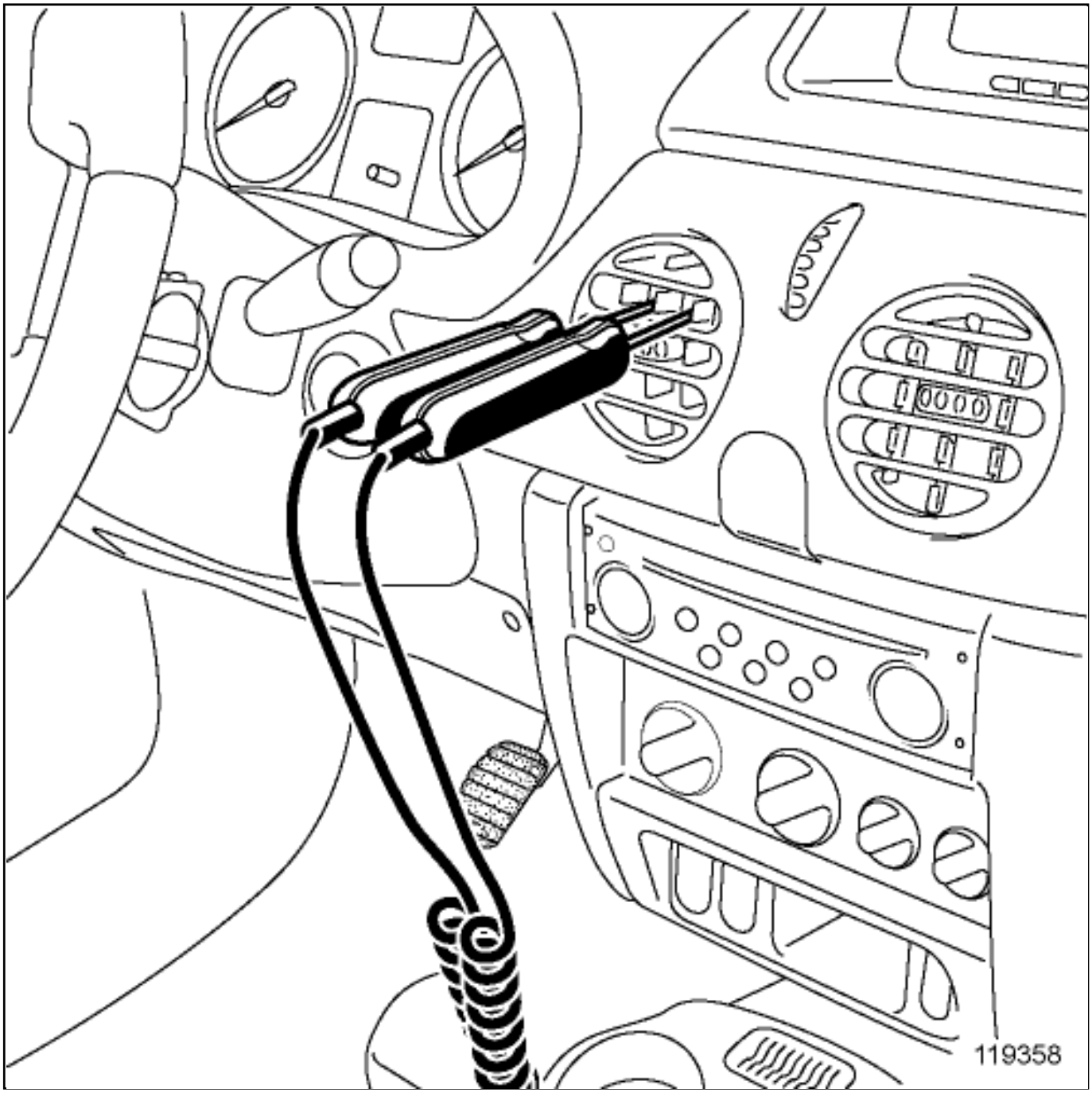
When performing RENAULT maintenance, check the air conditioning system at the end of the vehicle's maintenance program so that the engine will be cold.

1. PREPARATION OPERATION FOR THE MEASUREMENT DEVICE

- Check that the measurement device functions properly (see the device's instruction manual).
- Set units to ˚C.
- Set the device's sensitivity to 0.1˚C.



- Set the reading mode to (ΔT) = (T1 - T2)



Check the two sensors T1 and T2 in order to calculate the correction (Δ) to be applied to the measurement (T1 - T2). the two sensors must indicate the same measurement under the same conditions. Check the sensors by:

- bringing the ends of the 2 sensors together until they touch,
- placing the sensors in the air flow of an air vent,
- setting the passenger compartment fan assembly to top speed.
- waiting for the value to become stable.
- recording the correction value (Δ).

Note:

It is not necessary to start the vehicle. The device display is in mode (ΔT) = (T1 - T2).

CAUTION

Note the difference and sign as soon as the temperature becomes stable.

Calculate the correction (Δ) = - (T1 - T2) to be applied to the measurement (ΔT).

Examples:

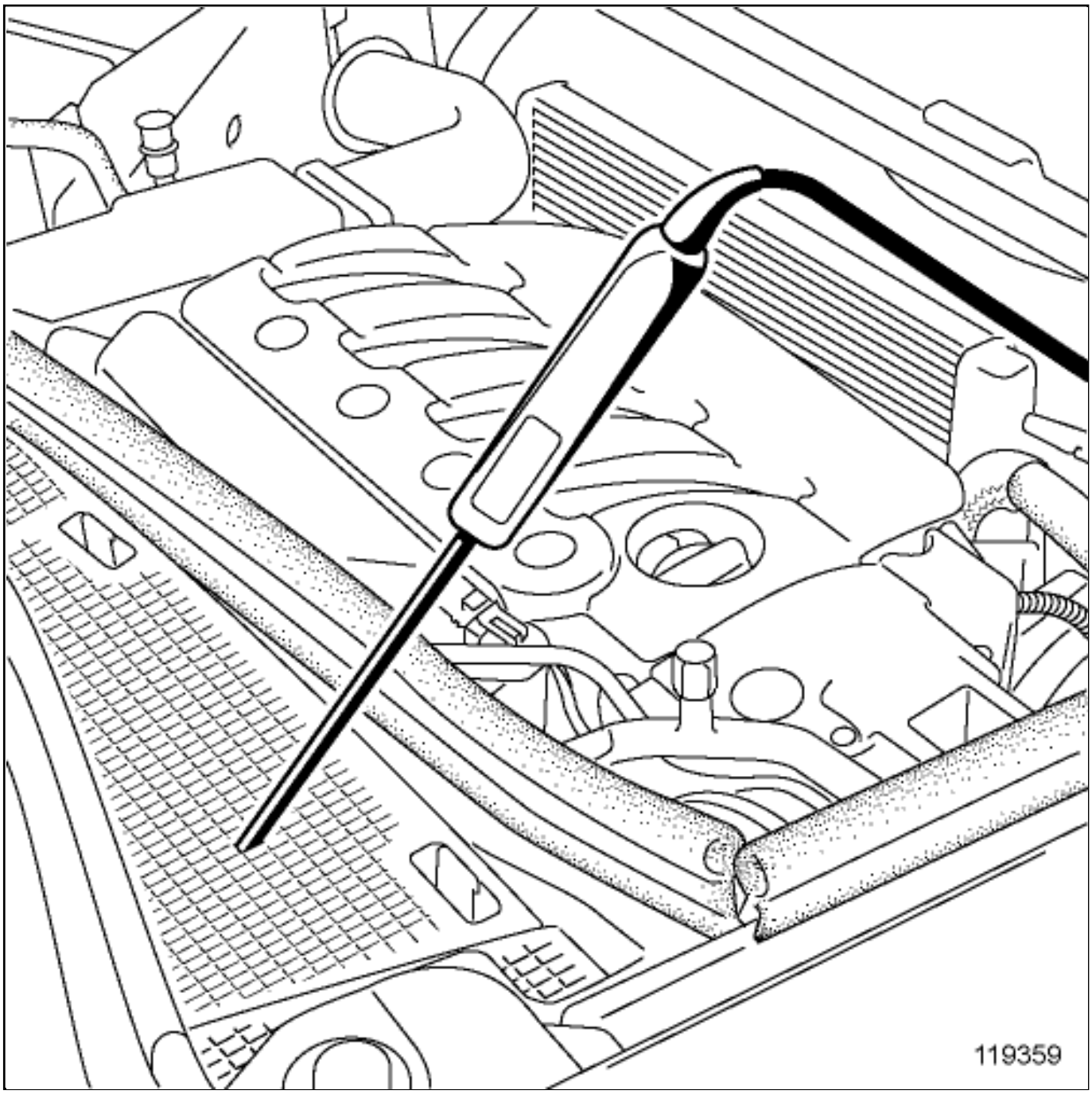
If (T1 - T2) = - 0.3˚C, correct the measurement (ΔT) by (Δ) = + 0.3˚C

If (T1 - T2) = + 0.3˚C, correct the measurement (ΔT) by (Δ) = - 0.3˚C

2. VEHICLE PREPARATION OPERATION

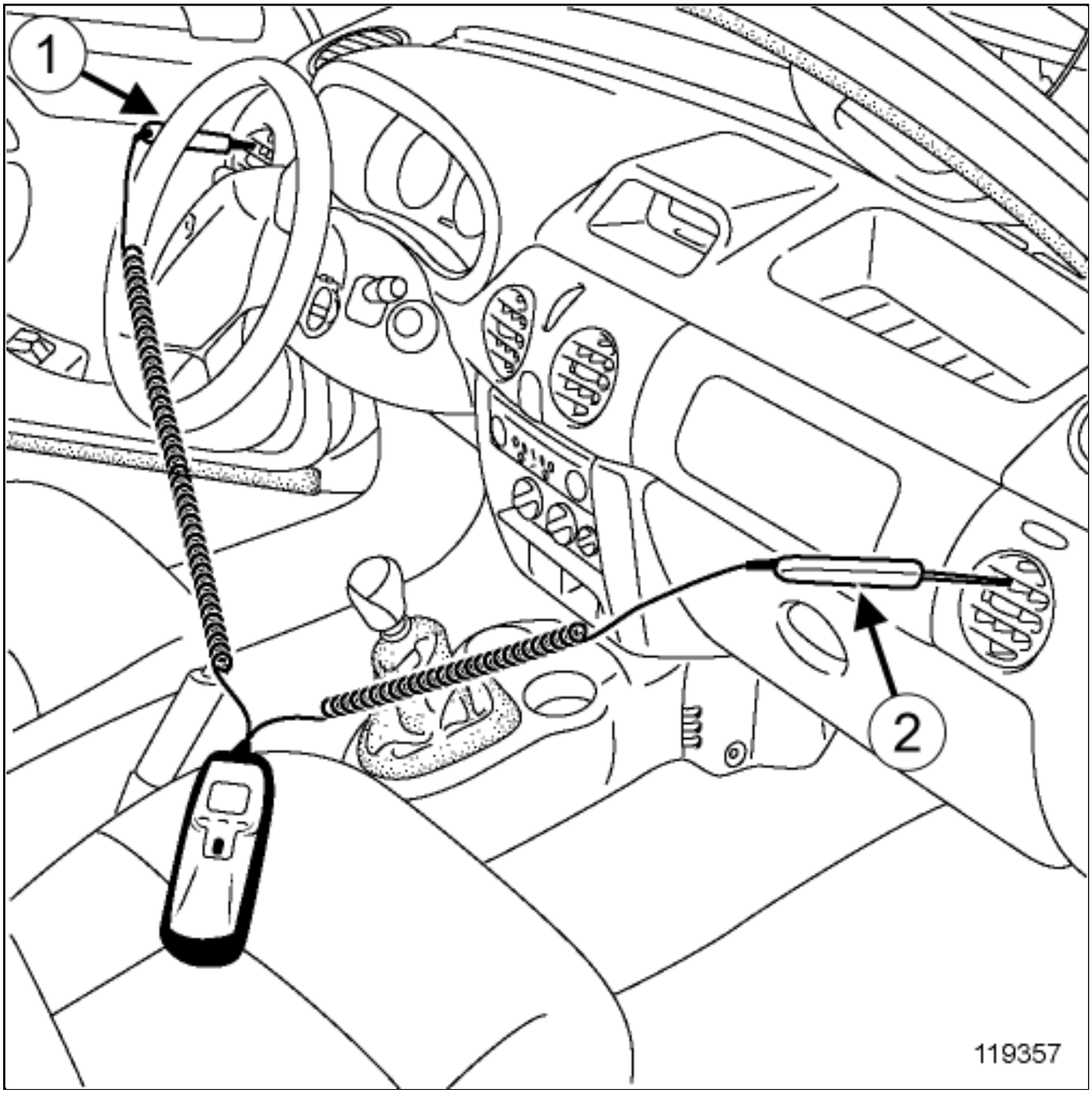
- Put the vehicle in the shade, where the temperature is greater than or equal to 15˚Cminimum.
- Close the bonnet.
- Open the front windows.
- Start the engine and let it idle.
- Set the air conditioning controls with:
  - recirculation mode in the external position,
  - the ventilation distribution in "face" mode,
  - the temperature control to coldest temperature setting in front (and at the back, if it exists),
  - the speed of the passenger compartment fan assembly set to maximum (switch off the rear control if it exists),
  - the front side and centre air vents open with the vanes in a neutral position,
  - the air conditioning system must be turned on (indicator light illuminated).
- Wait 5 minutes with the engine idling before taking any measurements.

3. MEASUREMENTS



Record the air temperature at the scuttle panel grille (T3).

- open the bonnet, depending on the vehicle, to access the scuttle panel grille.
- place the sensor where air is drawn through the scuttle panel grille.
- wait for the value to become stable.
- record the T3 temperature value.
- close the bonnet if it was opened.



- Record the air temperature at the left air vent (T1), and at the right air vent (T2).
  - fit sensor T1 in the left air vent(**1**) .
  - fit sensor T2 in the right air vent(**2**) .

- Record the differences in temperature once the (ΔT) value has stabilised:
  - between T3 and the higher of values T1 or T2, (T3 - highest value).
  - record this difference in temperature.
  - between T1 and T2 (read the (ΔT) value (T1-T2) display mode).
  - record the difference in temperature (ΔT) according to the correction (Δ) to be applied to the measurement.

- If the (ΔT)=(T1-T2) measurement is unstable, follow the procedure below:

Note:

Depending on the vehicle's air conditioning system programming, this check method may not be applicable because the engine cooling fan assembly has been activated. Its operation renders the (ΔT) value between T1 and T2 unstable. To eliminate this error, the fan assembly must be activated for the entire period over which temperature T1 and T2 measurements are recorded.

- Activate the engine cooling fan assembly operation by modifying the engine speed.
  - stabilise the engine speed at 2000 rpm while T1 and T2 temperature measurements are being recorded.
  - check that the engine cooling fan assembly operating.
  - record the temperatures by following the instructions given in the paragraph MEASUREMENTS.

4. FAULT FINDING PROCEDURE

- The following two following conditions must be met:
  - the difference between T3 and the higher of the two values T1 or T2, must be greater than or equal to 5°C,
  - the difference between T1 and T2 must be less than or equal to 2°C.

Note:

If one of these two conditions is not met, then the air conditioning system is not working properly. Should this be the case, refer to the fault finding procedure for the air conditioning system for the vehicle concerned.

AIR CUSHION: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

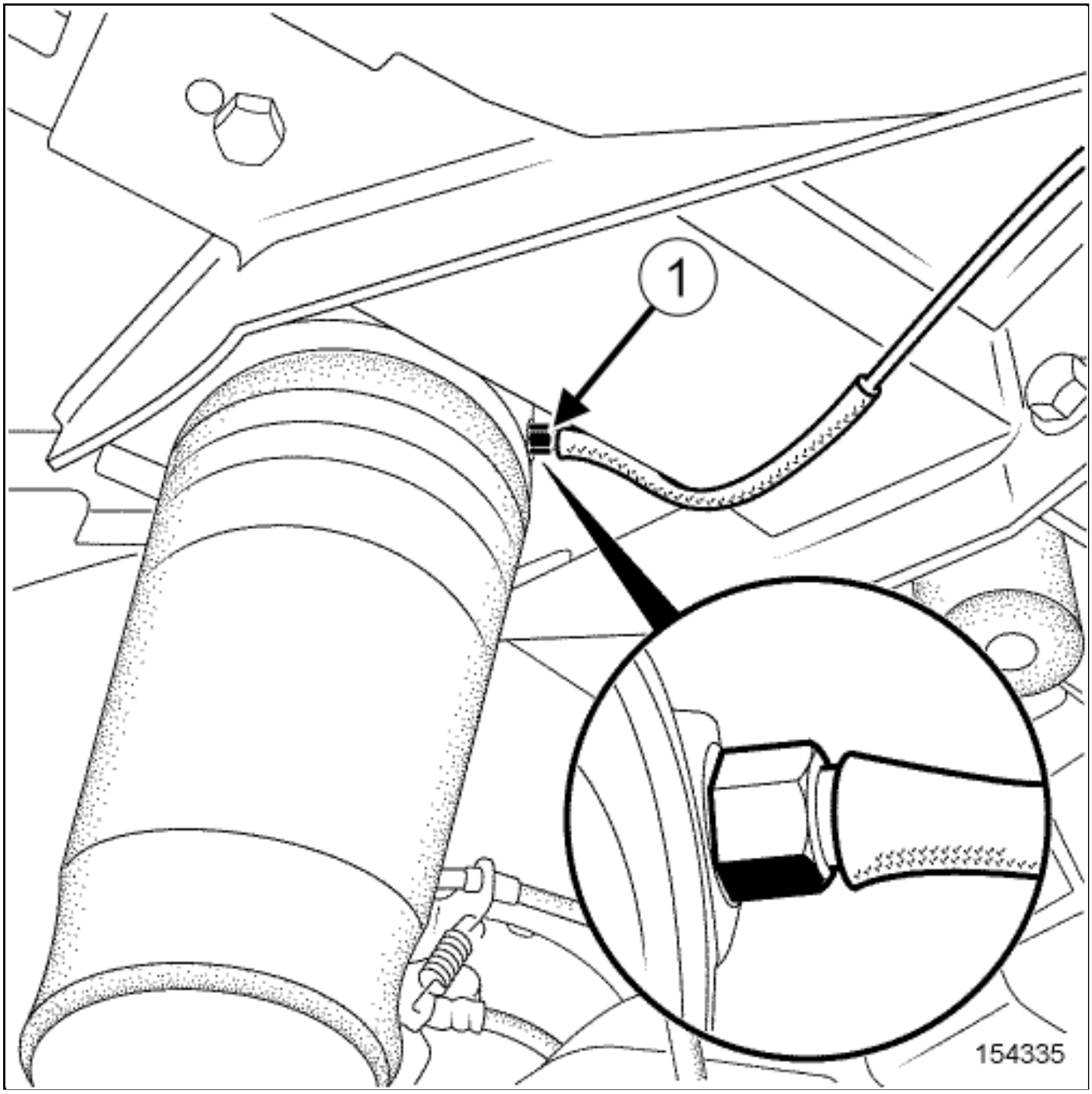
REMOVAL

1. REMOVAL PREPARATION OPERATION

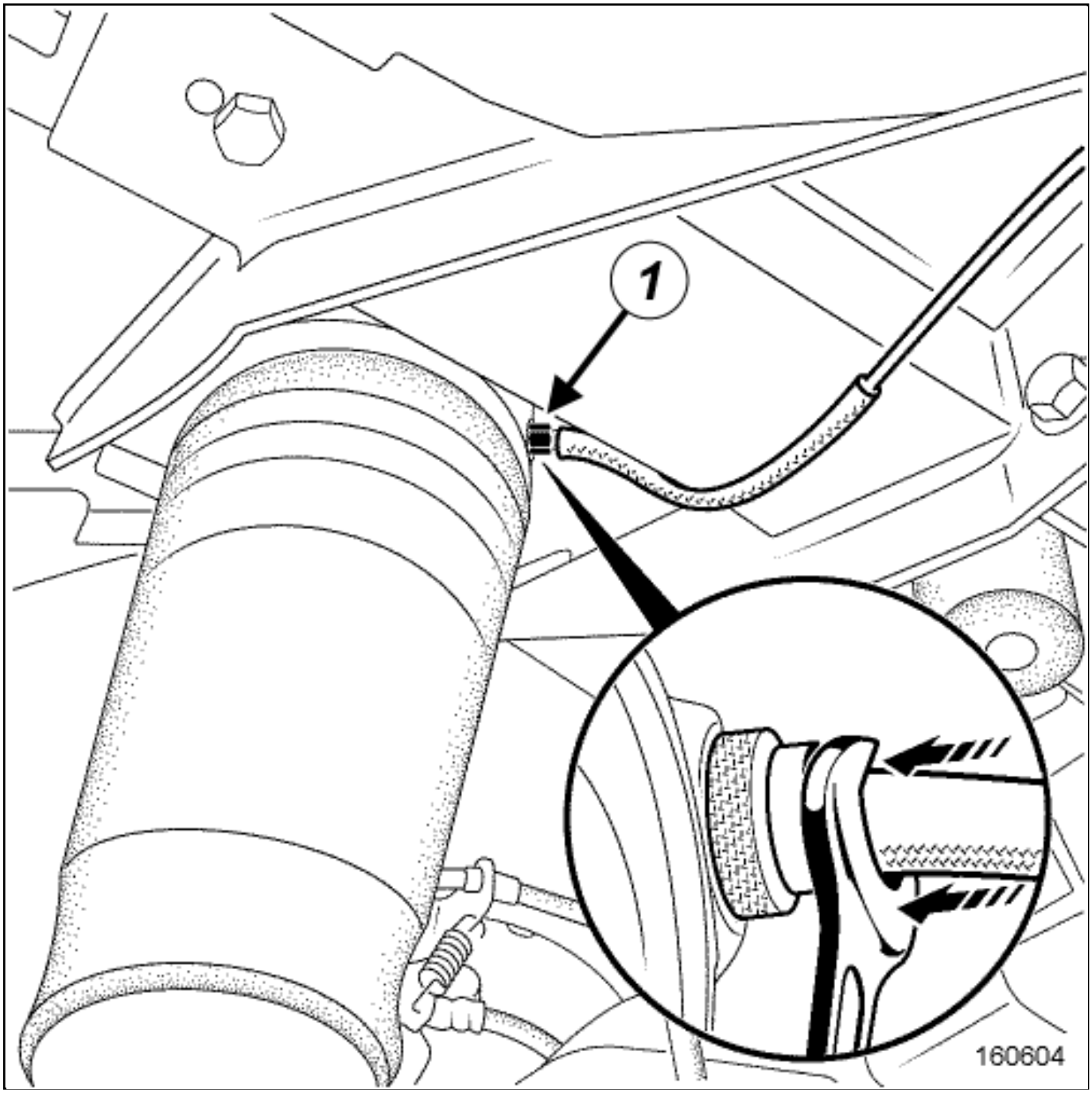
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .
- Disconnect the battery(see **Battery: Removal - Refitting**) .

2. REMOVAL OPERATION

RENAULT TECH MOUNTING



DRIVE RITE MOUNTING

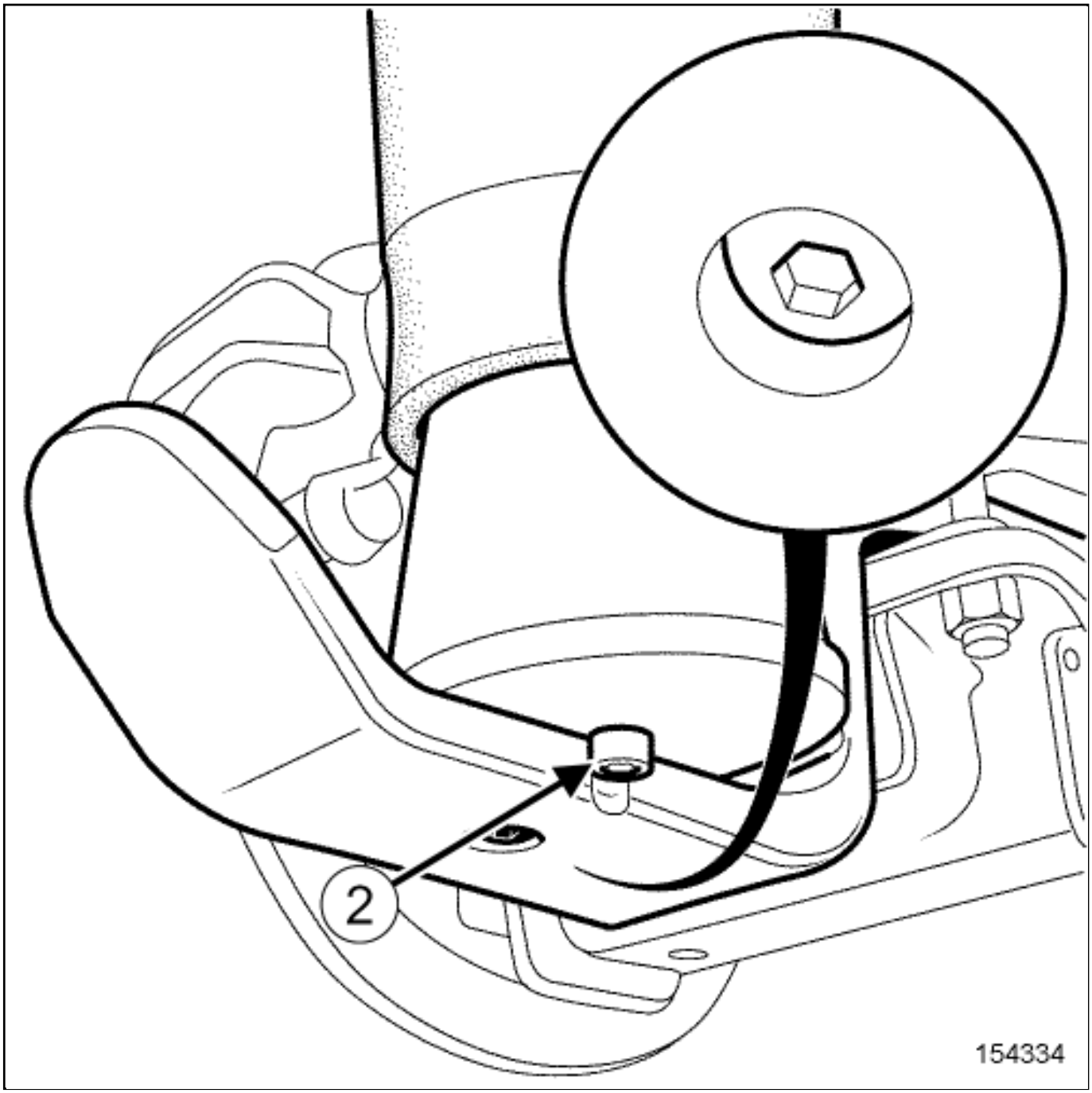


Remove the air supply pipe(1) :

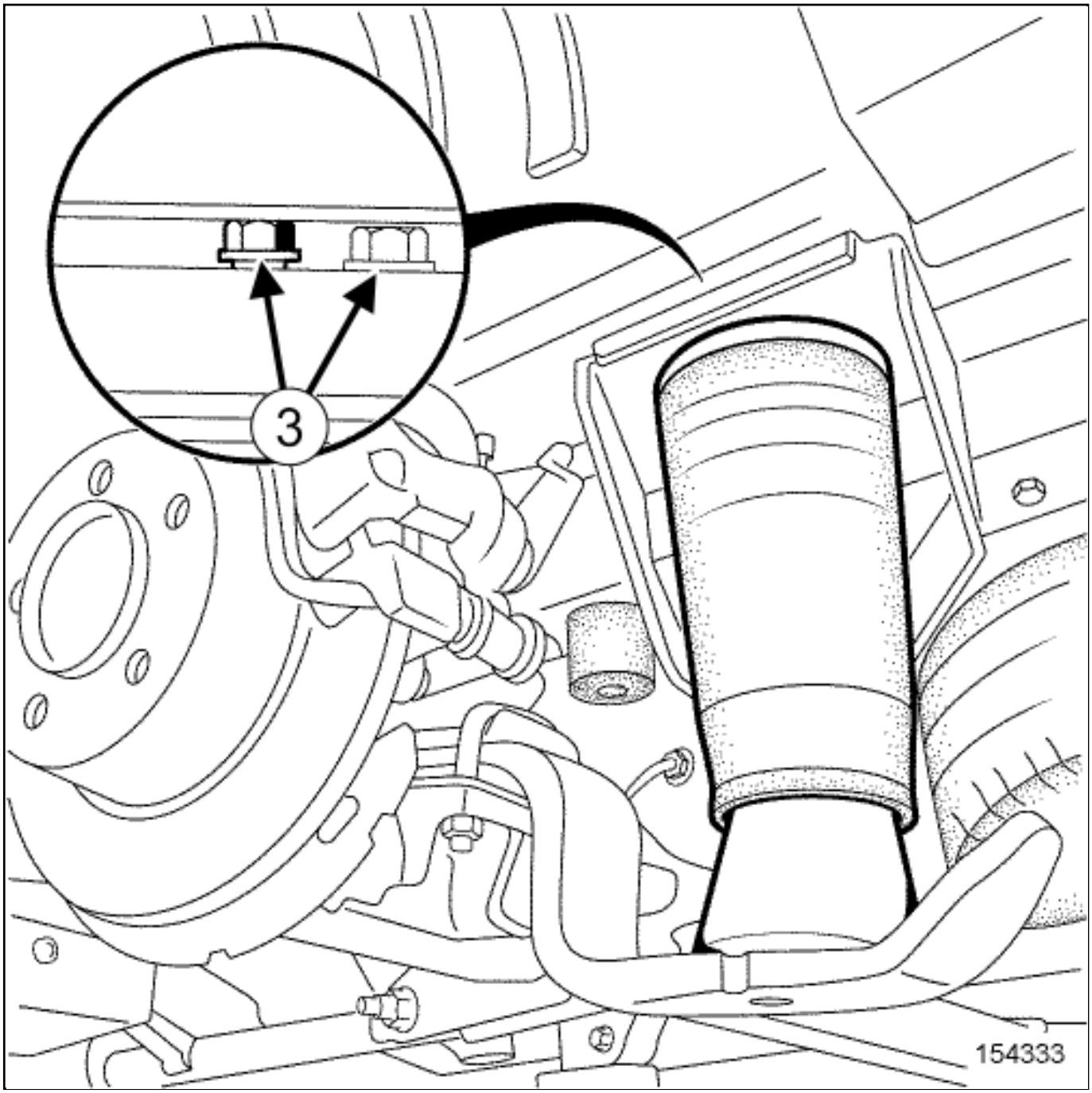
- Unscrew the supply pipe union for the Renault Tech Mounting,
- Push and pull the supply pipe union for the Drive Rite Mounting.

CAUTION

The pressure in the air cushions is between 1 to 7 bardepending to the load.



- Remove the air cushion lower bolt(2) .



- Remove :
  - the air cushion upper bolts(3) ,
  - the air cushion.

REFITTING

1. REFITTING PREPARATION OPERATION

- Apply teflon adhesive roll Vehicle: Parts and consumables for the repair on the air pipe union.

CAUTION

Be sure to connect the air supply pipes correctly.

Do not inflate the air cuhion if is not secured to the vehicle.

2. REFITTING OPERATION

Refit:

- the air cushion,
- the air cushion upper bolts,
- the air cushion lower bolt,
- the air supply pipe of the air cushion.

1- RENAULT TECH MOUNTING

Torque tighten the air supply pipe of the air cushion12 N.m.

3. FINAL OPERATION

Proceed in the reverse order to removal.

AIR DISTRIBUTION CIRCUIT ASSEMBLY: EXPLODED VIEW

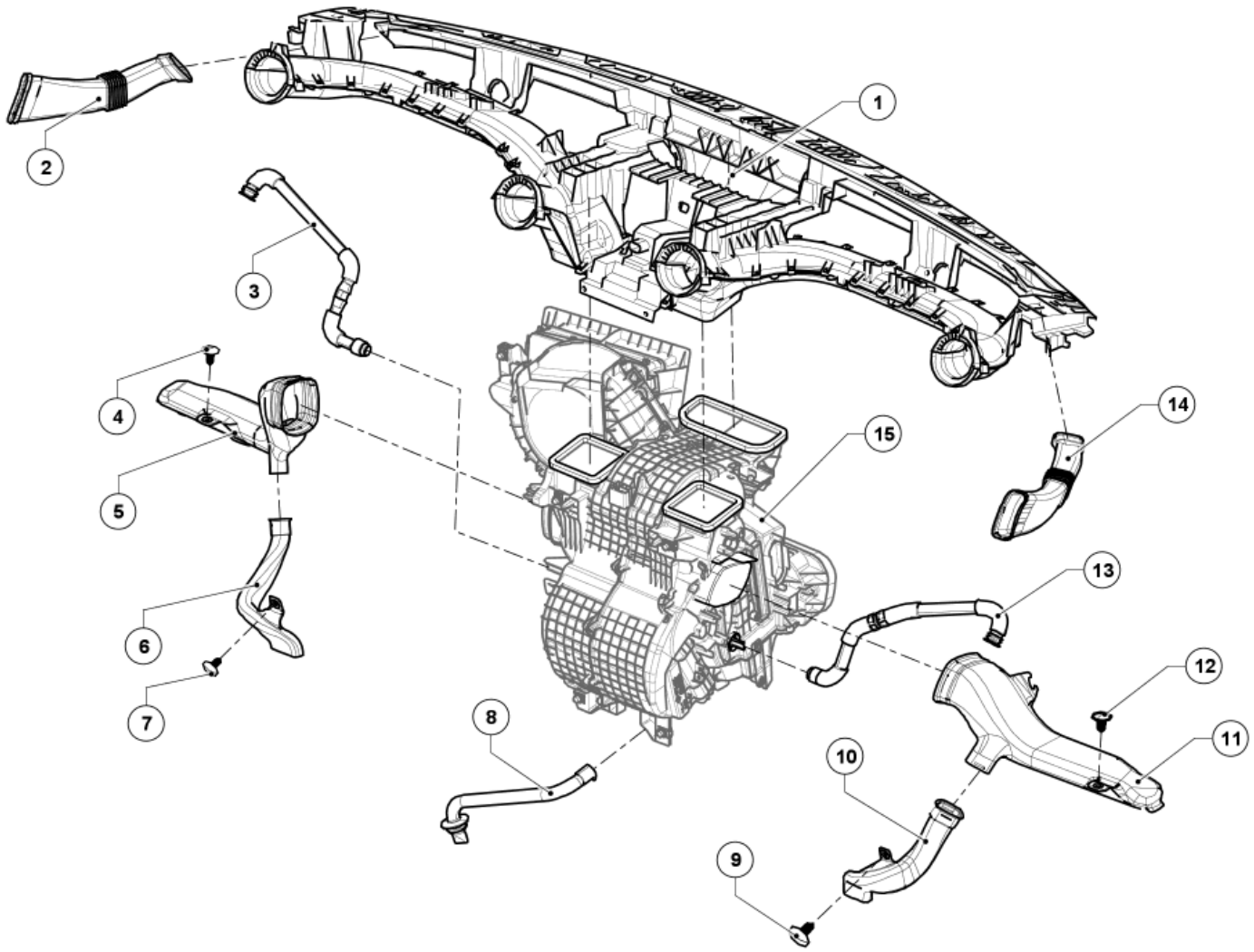


Illustration key: Description Key.

Mark	Description	Information
1	Centre air distribution duct	Dashboard: Removal - Refitting (57A, Interior equipment)
2	Front side air distribution duct	(see 61A, Heating, Front side air distribution duct: Removal - Refitting)
4	Front footwell air distribution duct clip	(see 61A, Heating, Front footwell air distribution duct: Removal - Refitting)
5	Front footwell left-hand upper air distribution duct	(see 61A, Heating, Front footwell air distribution duct: Removal - Refitting)
8	Condensation drain pipe	
11	Front footwell right-hand upper air distribution duct	(see 61A, Heating, Front footwell air distribution duct: Removal - Refitting)
12	Front footwell air distribution duct clip	(see 61A, Heating, Front footwell air distribution duct: Removal - Refitting)
14	Front side air distribution duct	(see 61A, Heating, Front side air distribution duct: Removal - Refitting)
15	Distribution unit	(see 61A, Heating, Distribution unit: Removal - Refitting)

Mark	Description	Information
3	Glovebox cooling duct	
6	Front footwell left-hand lower air distribution duct	(see 61A, Heating, Front footwell air distribution duct: Removal - Refitting)
7	Front footwell left-hand lower air distribution duct clip	(see 61A, Heating, Front footwell air distribution duct: Removal - Refitting)

AIR INLET ASSEMBLY: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

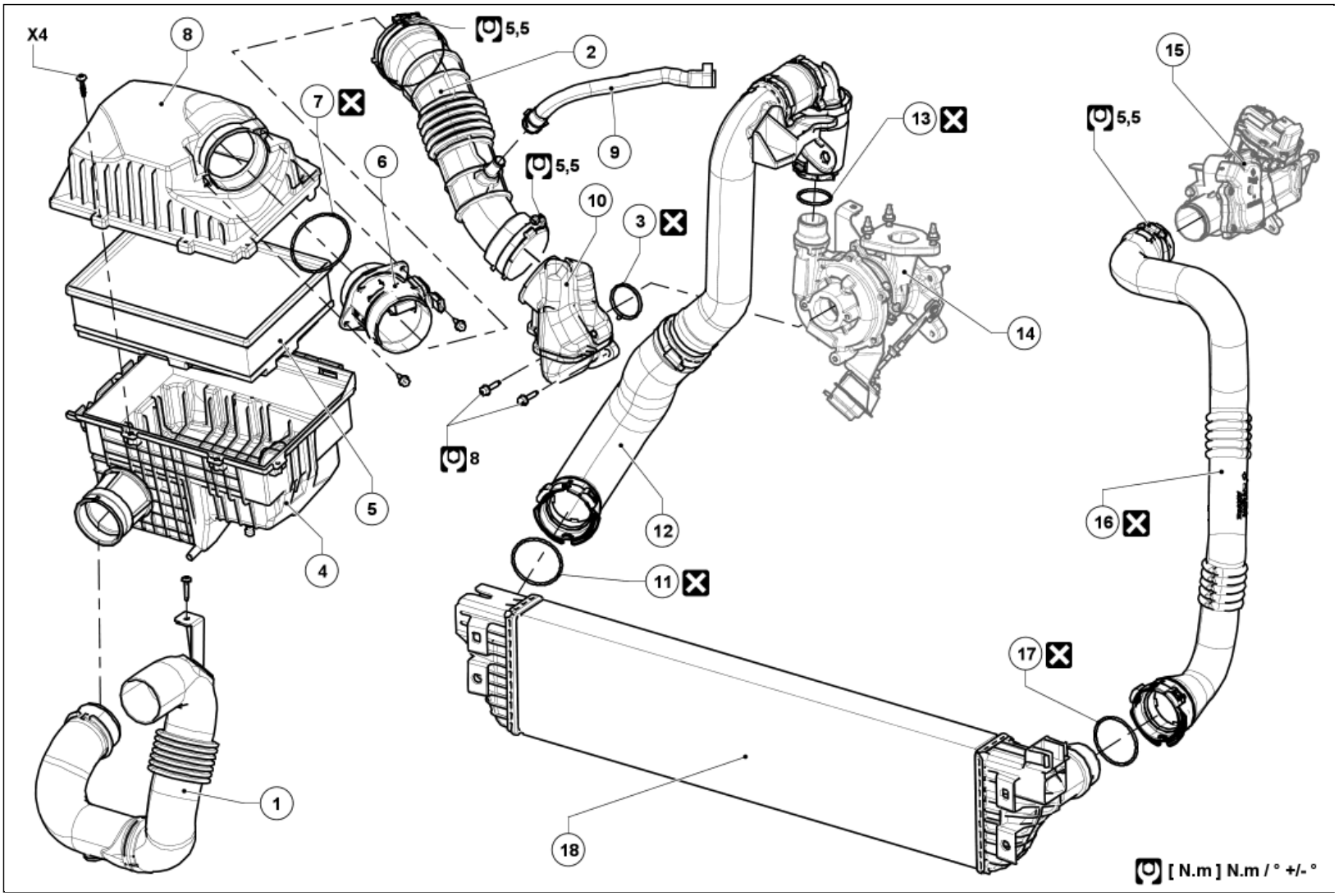


Illustration key: Description Key.

Mark	Description	Information
1	Air filter unit air inlet pipe	
2	Air filter unit air outlet pipe	
3	Turbocharger air inlet pipe seal	
4	Air filter unit	
5	Air filter	
6	Air flowmeter	
7	Air flowmeter seal	
8	Air filter cover	
9	Oil vapour rebreathing pipe	
10	Turbocharger air inlet pipe	
11	Intercooler air inlet pipe seal, intercooler end	Intercooler air inlet pipe: Removal - Refitting
12	Intercooler air inlet pipe	Intercooler air inlet pipe: Removal - Refitting
13	Intercooler air inlet pipe seal, turbocharger end	Intercooler air inlet pipe: Removal - Refitting
14	Turbocharger	Exhaust assembly in engine compartment: Exploded view
15	Inlet distributor assembly	
16	Intercooler air outlet pipe	Intercooler air outlet pipe: Removal - Refitting
17	Intercooler air outlet pipe seal, intercooler end	Intercooler air outlet pipe: Removal - Refitting
18	Intercooler	Intercooler : Removal - Refitting

AIR INLET ASSEMBLY: EXPLODED VIEW

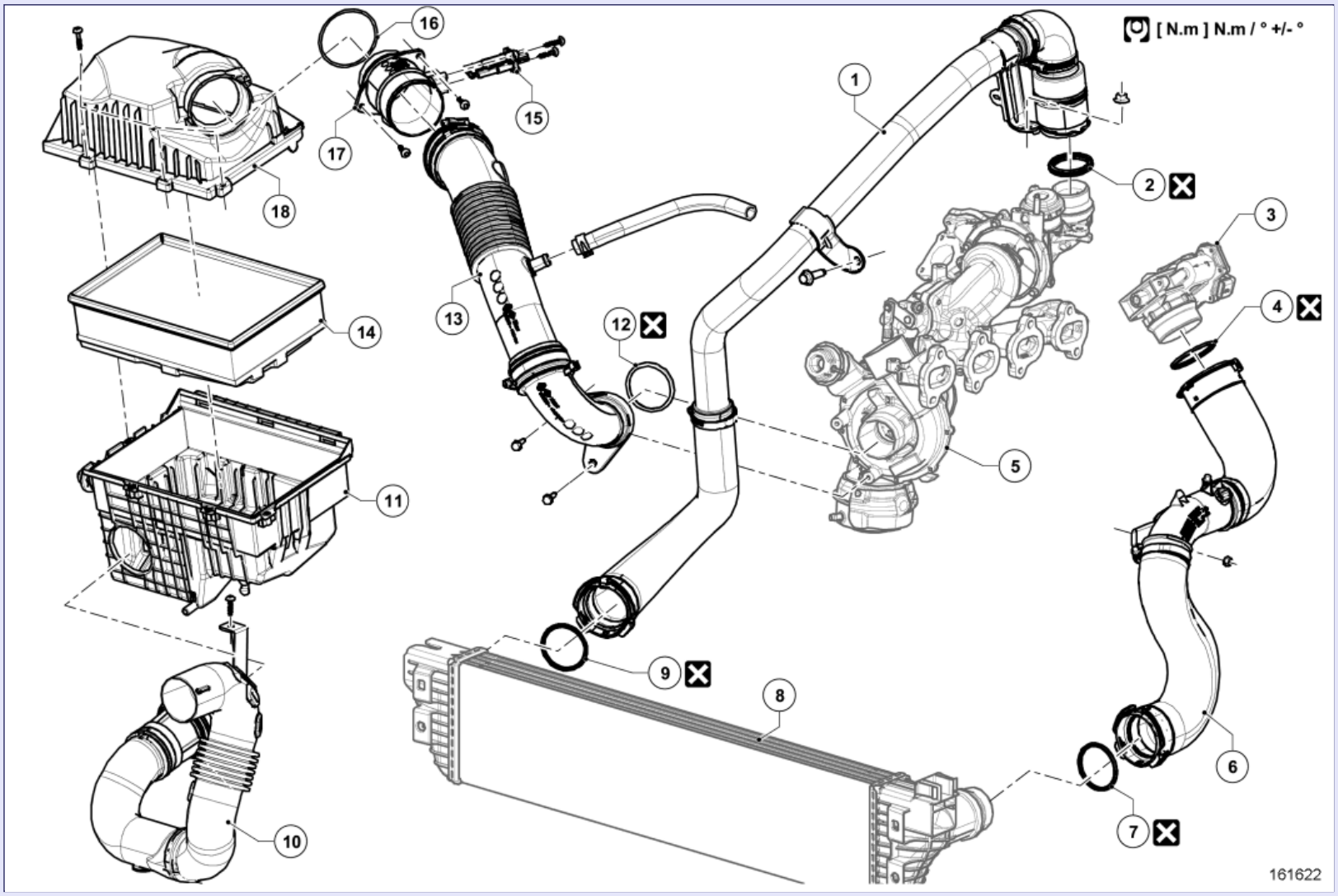


Illustration key: Description .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques Tightening torques: General information .

Marks	Designations	Informations
1	Intercooler air inlet pipe	Intercooler air inlet pipe: Removal - Refitting
2	Intercooler air inlet pipe seal, turbocharger end	
3	Damper valve	
4	Seal	
5	Turbocharger	Exhaust assembly in engine compartment: Exploded view
6	Intercooler air outlet pipe	Intercooler air outlet pipe: Removal - Refitting
7	Intercooler air outlet pipe seal, intercooler end	
8	Intercooler	Intercooler : Removal - Refitting
9	Intercooler air inlet pipe seal, intercooler end	Intercooler air inlet pipe: Removal - Refitting
10	Air filter unit air inlet pipe	

11	Air filter unit	
12	Turbocharger air inlet pipe seal	
13	Turbocharger air inlet pipe	
14	Air filter	
15	Air flowmeter	
16	Air flowmeter seal	
17	Duct	
18	Air filter unit cover	

M9T, 702(702)

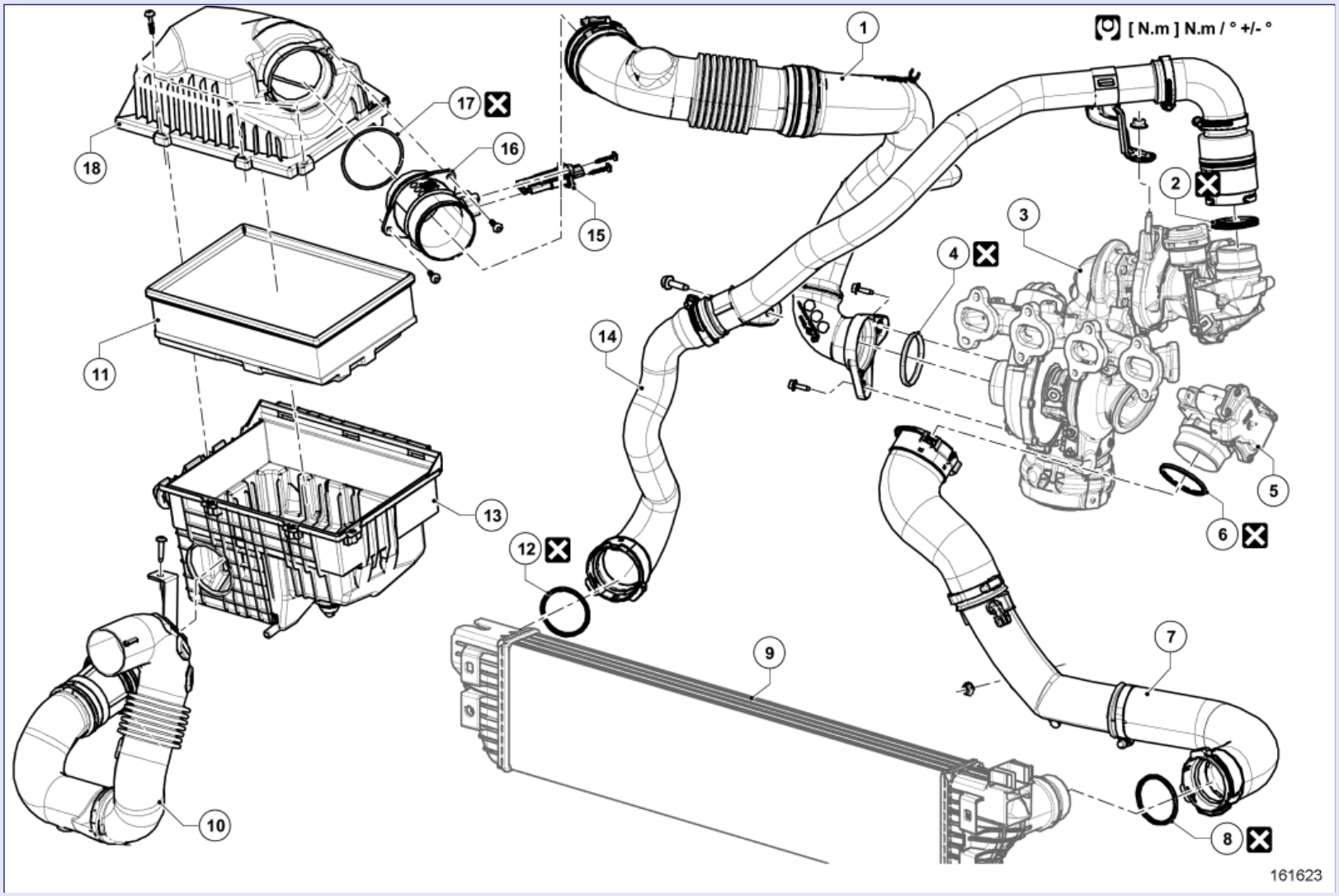


Illustration key: Description .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques Tightening torques: General information .

Marks	Designations	Informations
1	Turbocharger air inlet pipe	
2	Intercooler air inlet pipe seal, turbocharger end	

3	Turbocharger	Exhaust assembly in engine compartment: Exploded view
4	Turbocharger air inlet pipe seal	
5	Damper valve	
6	Seal	
7	Intercooler air outlet pipe	Intercooler air outlet pipe: Removal - Refitting
8	Intercooler air outlet pipe seal, intercooler end	
9	Intercooler	Intercooler : Removal - Refitting
10	Air filter unit air inlet pipe	
11	Air filter	
12	Intercooler air inlet pipe seal, intercooler end	Intercooler air inlet pipe: Removal - Refitting
13	Air filter unit	
14	Intercooler air inlet pipe	Intercooler air inlet pipe: Removal - Refitting
15	Air flowmeter	
16	Duct	
17	Air flowmeter seal	
18	Air filter unit cover	

AIR RESERVOIR: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting .
- Disconnect the battery Battery: Removal - Refitting .
- Remove the compressor unit (see 38F, Pneumatic suspension , Compressor assembly: Removal - Refitting) .

2. REMOVAL OPERATION

- Remove:
  - the air pipe from the air reservoir,
  - the air reservoir bolts from the compressor unit,
  - the air reservoir.

REFITTING

1. REFITTING PREPARATION OPERATION

- Apply teflon adhesive roll Vehicle: Parts and consumables for the repair on the air pipe union.

2. REFITTING OPERATION

- Refit:
  - the air reservoir,
  - the air reservoir bolts on the compressor unit,
  - the air pipe on the air reservoir.
- Torque tighten the air pipe 12 N.m.

3. FINAL OPERATION

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

AIRBAG AND PRETENSIONERS: LIST AND LOCATION OF COMPONENTS

Location and specifications (tightening torque, parts always to be replaced, etc.)(see **Front seat: Exploded view**) (75A, Front seat frames and mechanisms).

Note:

If the vehicle is equipped with a passenger frontal airbag, the passenger side seat belt and the front bench seat belt are equipped with a pyrotechnic system.

If the vehicle is not equipped with a passenger frontal airbag, the passenger side seat belt and the front bench seat belt are equipped with a mechanical inertia reel.

1. LIST OF COMPONENTS

1- THE "AIRBAGS AND PRETENSIONERS" EQUIPMENT CONSISTS OF:

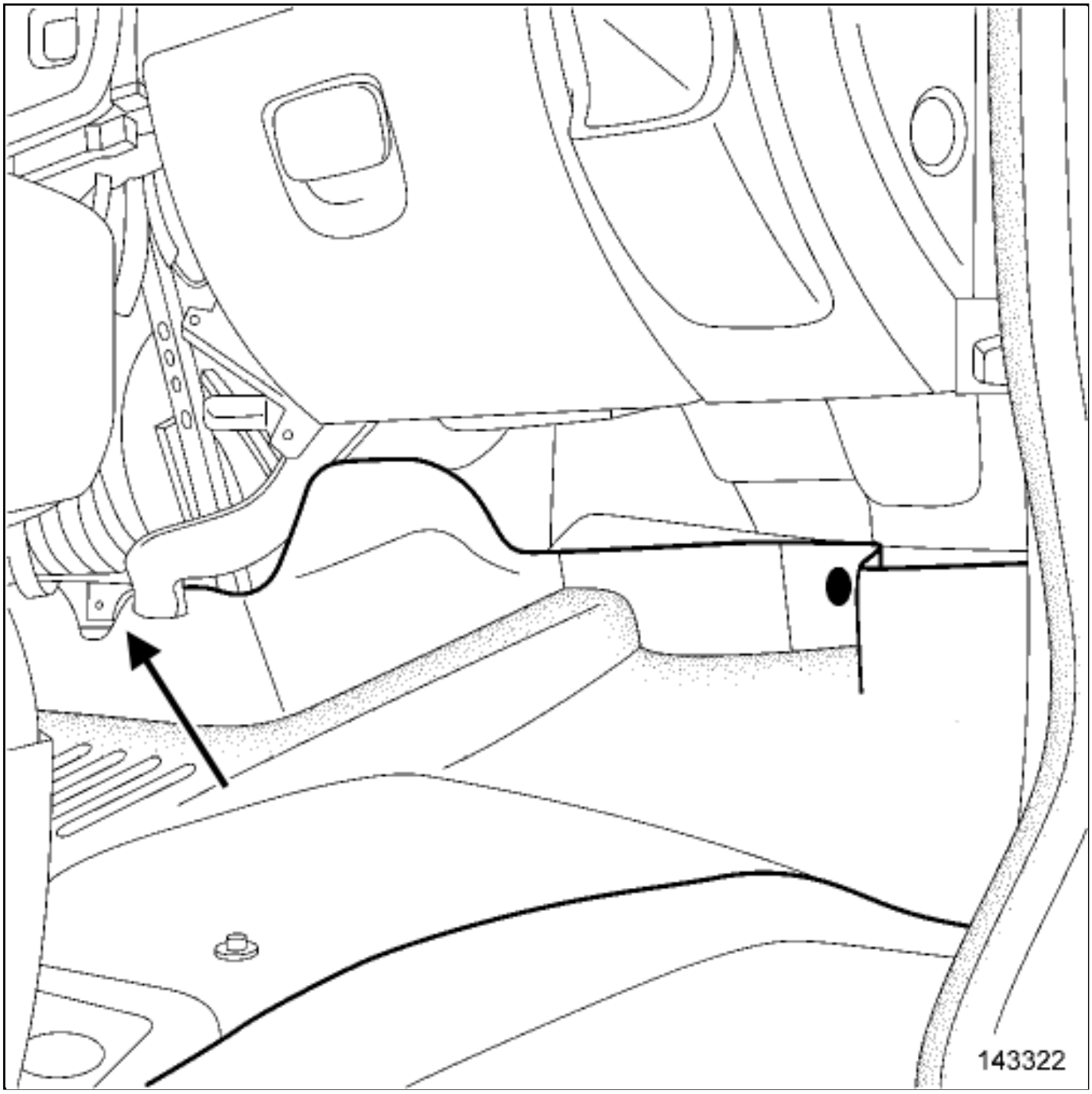
- an airbag computer(see 88C, Airbags and pretensioners, Airbag computer: Removal - Refitting)
- a driver's frontal airbag(see 88C, Airbags and pretensioners, Driver's frontal airbag: Removal - Refitting)
- front side seat belts(see 88C, Airbags and pretensioners, Front side seat belt: Removal - Refitting)
- front side seat belt buckles(see **Front seat: Exploded view**)

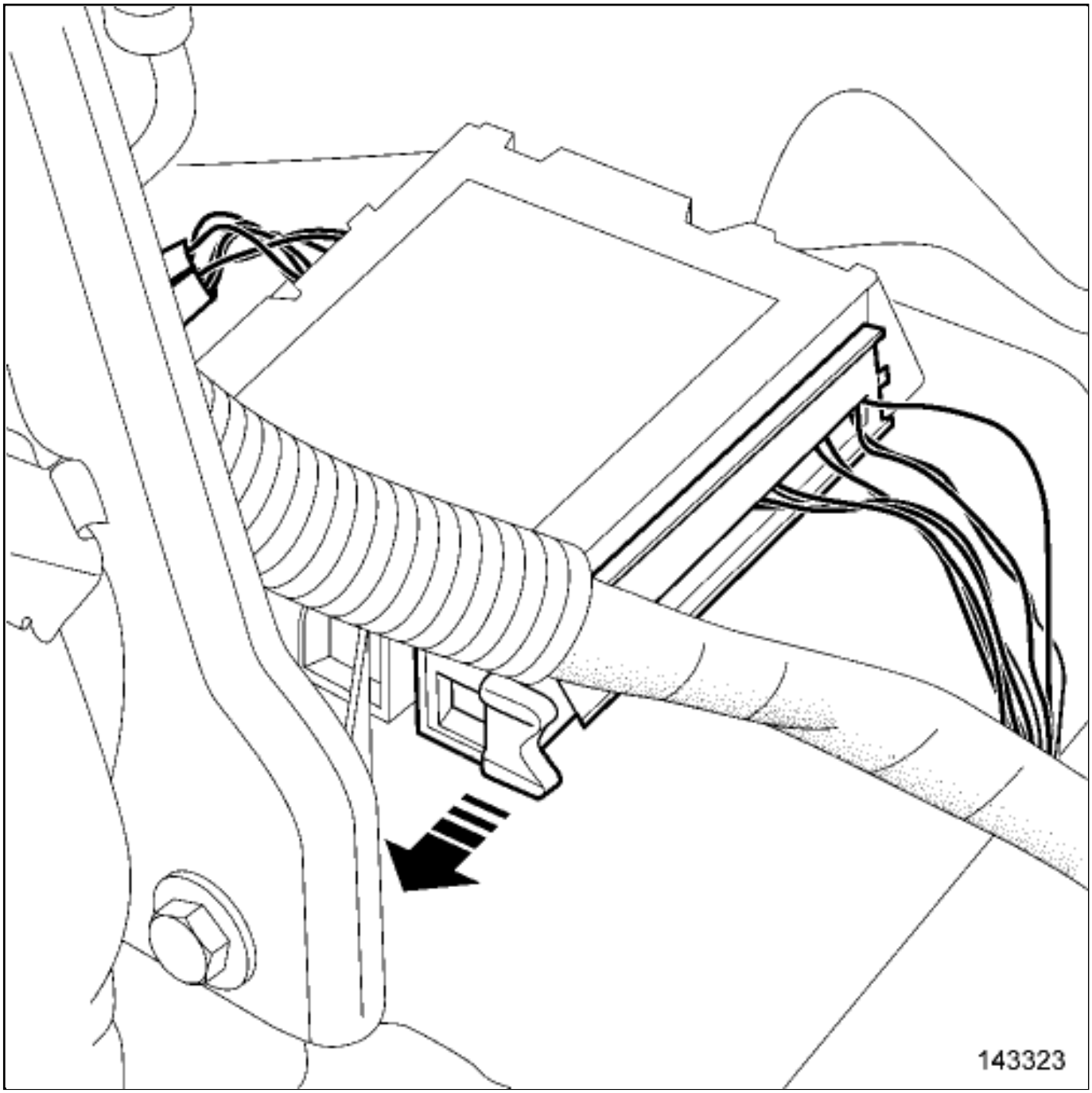
- a front centre seat belt(see 88C, Airbags and pretensioners, Front centre seat belt: Removal - Refitting)

- side impact sensors(see 88C, Airbags and pretensioners, Side impact sensor: Removal - Refitting)
- front side (chest-level) airbags(see **Front seat: Exploded view**)

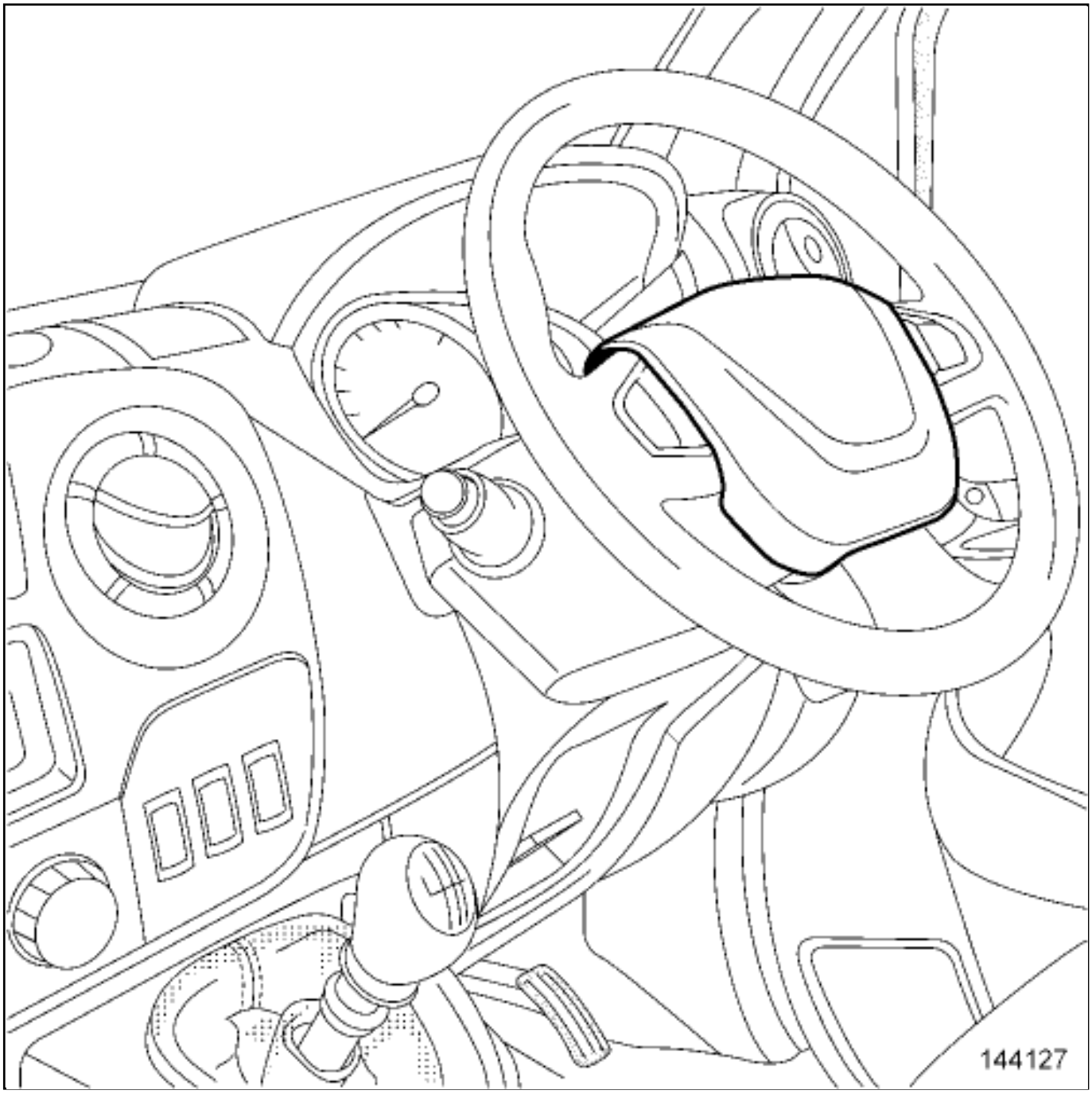
2. LOCATION OF COMPONENTS

AIRBAG COMPUTER

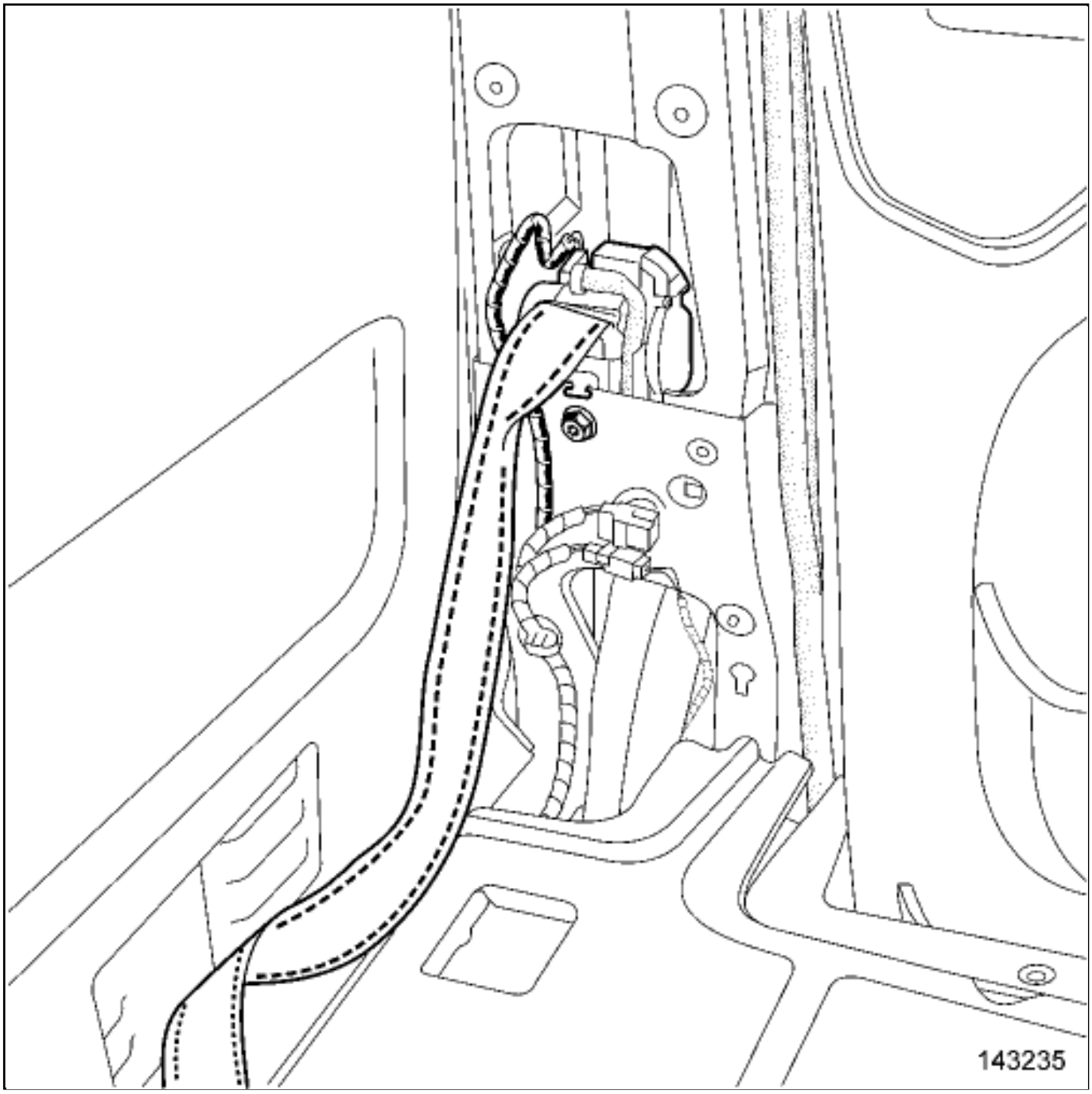

143322



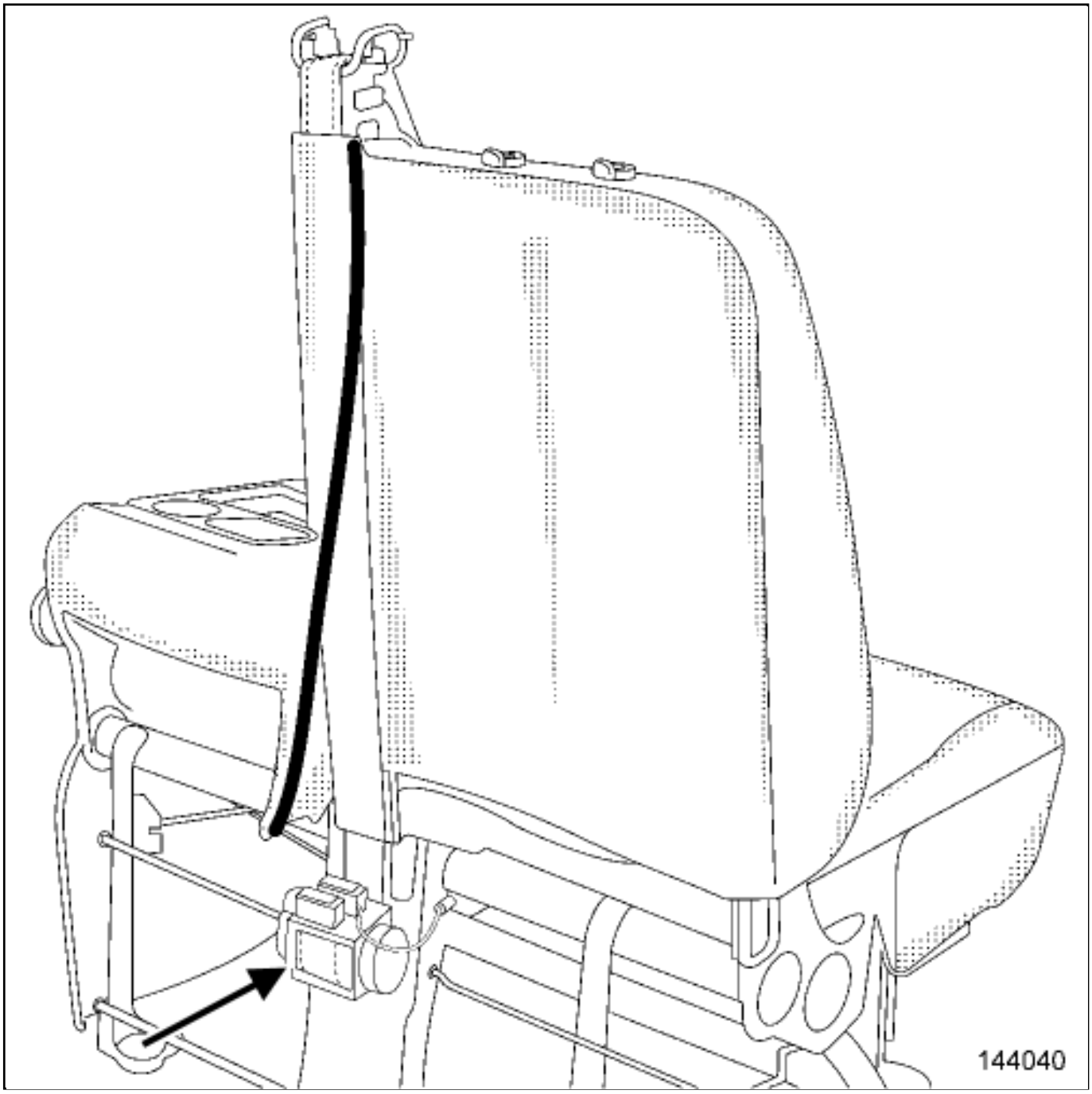
DRIVER'S FRONTAL AIRBAG



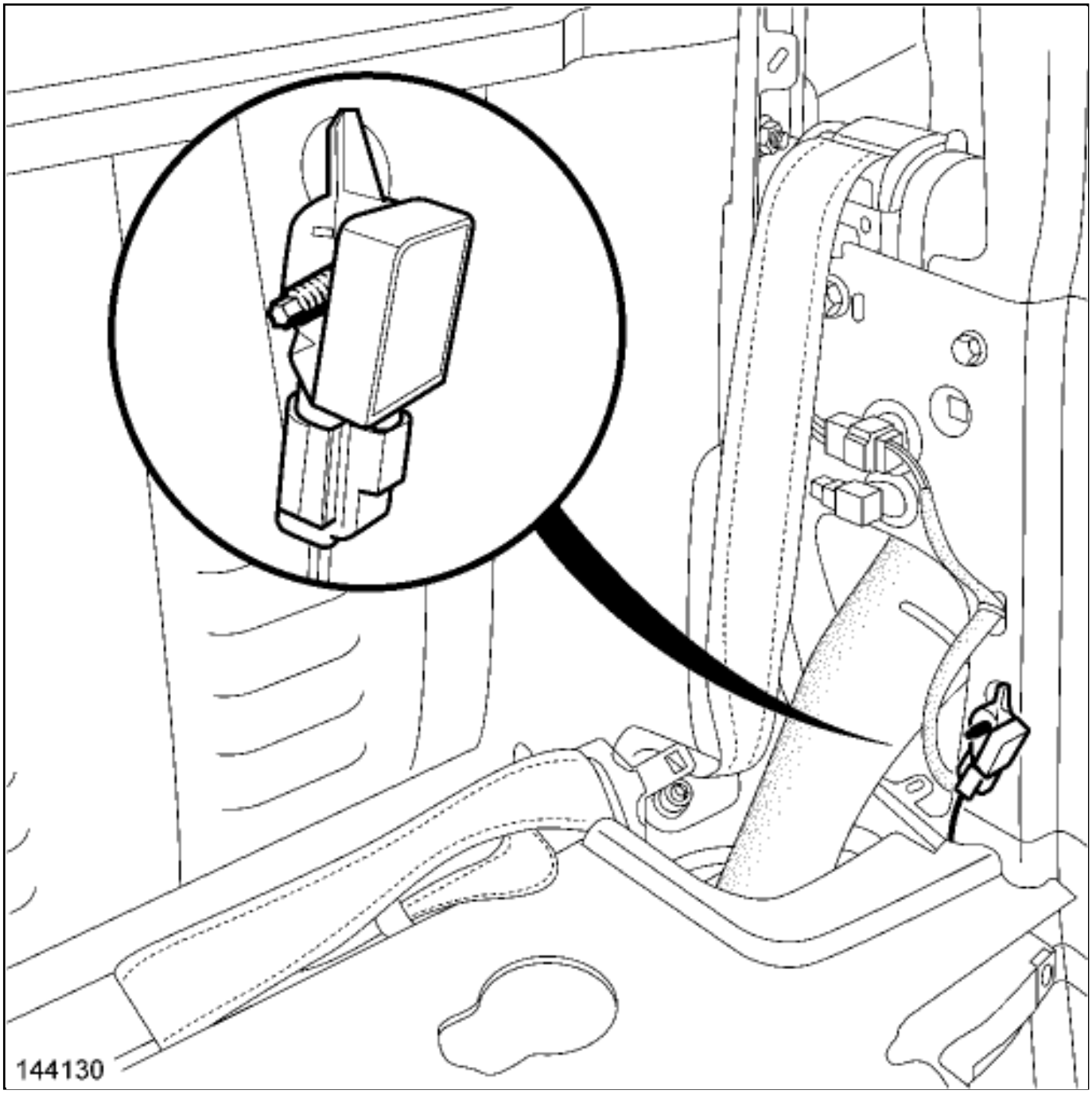
FRONT SIDE SEAT BELT



FRONT CENTRE SEAT BELT



SIDE IMPACT SENSORS


144130

AIRBAG COMPUTER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

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 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

WARNING

To avoid any risk of triggering when working on or near a pyrotechnic component (airbags or pretensioners), lock the airbag computer using the diagnostic tool.

When this function is activated, all the trigger lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

Lock the airbag computer by applying the "Before repair procedure" using the Diagnostic tool:

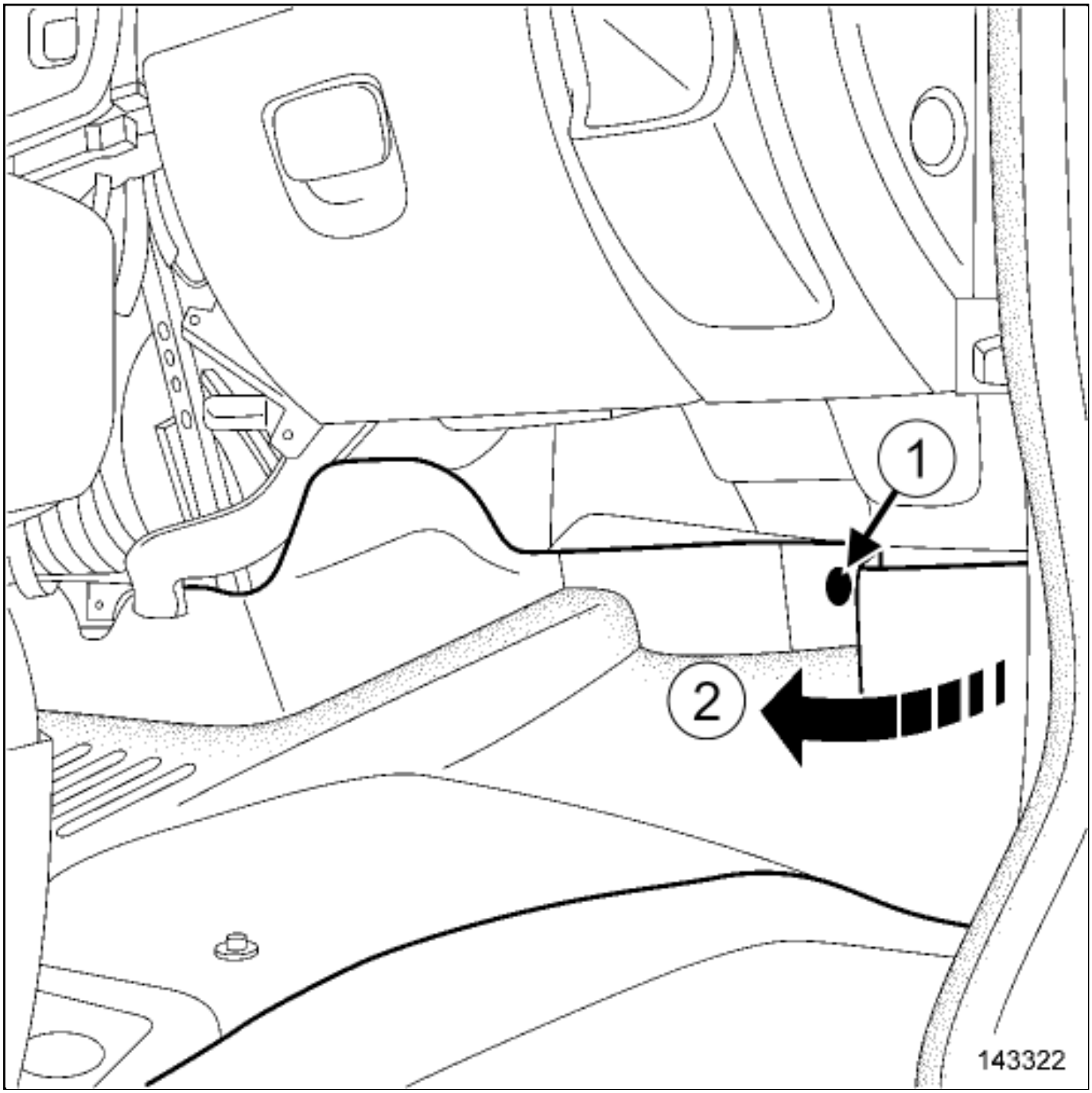
- connect the Diagnostic tool,
- select "Airbag computer" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- carry out the operations described in the "Before repair procedure" section.

Switch off the ignition.

Disconnect the battery Battery: Removal - Refitting .

Remove:

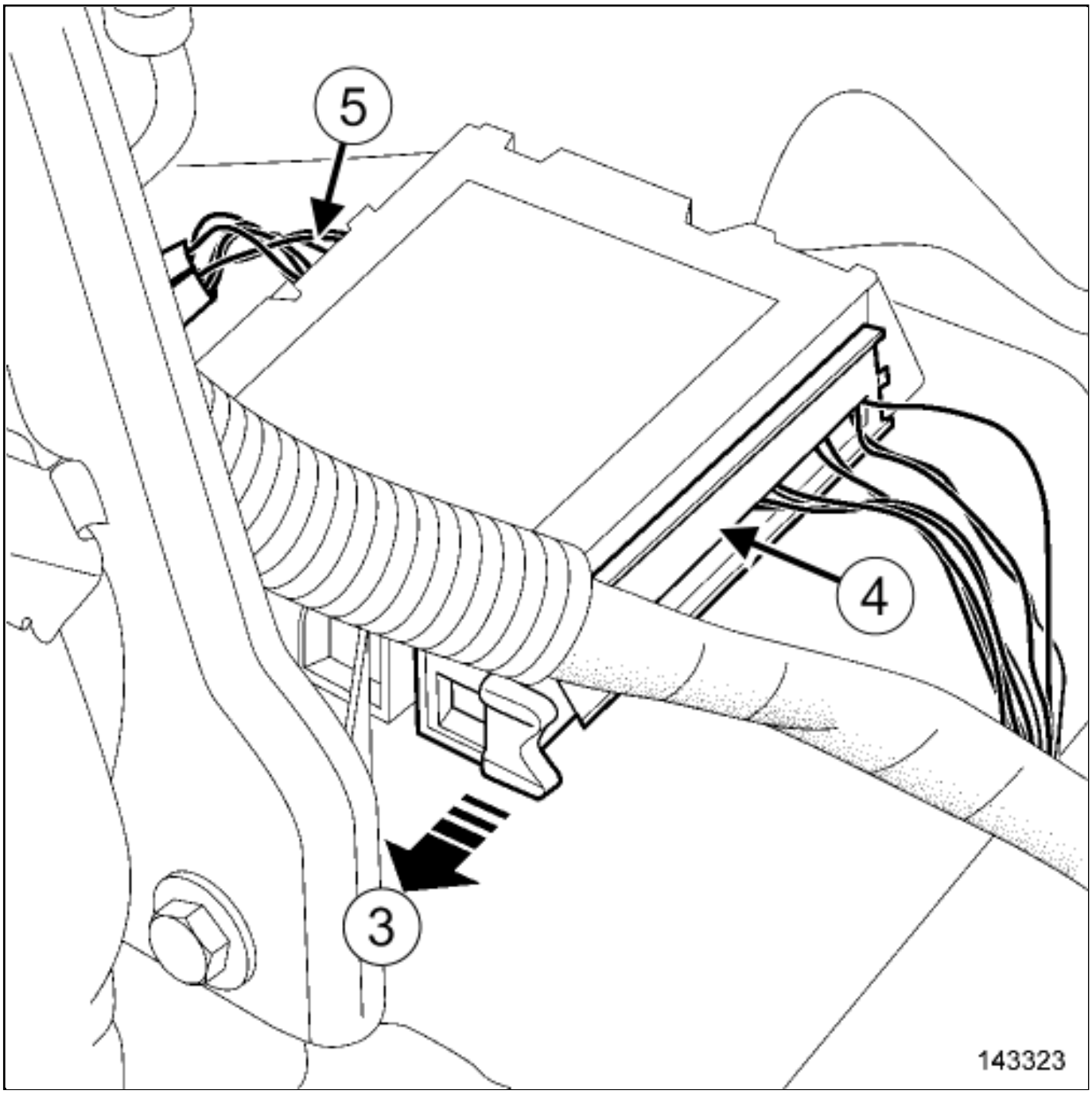
- the right-hand door sill Door sill: Removal - Refitting (71A, Body internal trim),
- the front right-hand door sill trim Front door sill lining: Removal - Refitting (71A, Body internal trim).



Remove:

- the floor carpet clip(1) ,
- the floor carpet partially by(2) .

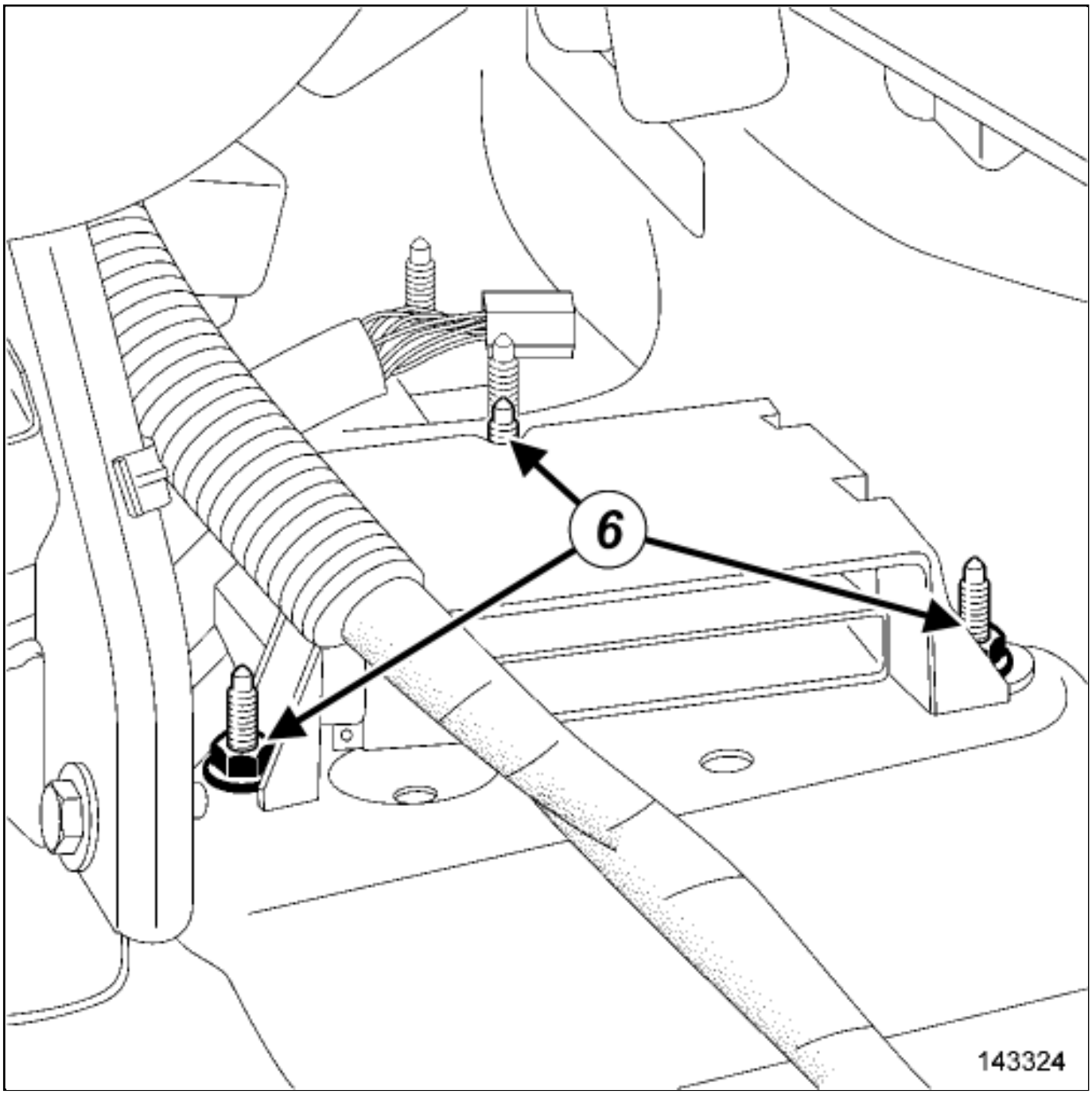
2. REMOVAL OPERATION



CAUTION

To prevent any risk of noise, premature wear, short circuits, etc. after the refitting operation, mark the wiring routing and how to connect the connectors.

- Mark the wiring routing.
- Unlock the connector(3) of the airbag computer at(4) .
- Disconnect the airbag computer connectors(4) and (5) .



Remove:

- the airbag computer nuts(**6**) ,
- the airbag computer.

REFITTING

1. REFITTING PREPARATION OPERATION

Always replace the airbag computer mounting nuts.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

CAUTION

To guarantee a good electrical connection, make sure that the wiring does not place any stress on the connectors or the surrounding components.

- Torque tighten the airbag computer nuts8 N.m.
- Refit the wiring in the position marked during removal.
- Connect the airbag computer connectors.
- Lock the airbag computer connector(4) .

3. FINAL OPERATION

- Connect the batteryBattery: Removal - Refitting .
- Unlock the airbag computer by applying the "After repair procedure" using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Airbag computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - carry out the operations described in the "After repair procedure" section.

XSL version : 3.02 du 22/07/11

ALTERNATOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:
Accessories belt tensioning roller
Accessories fixed roller

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.) **Engine accessories assembly: Exploded view** .

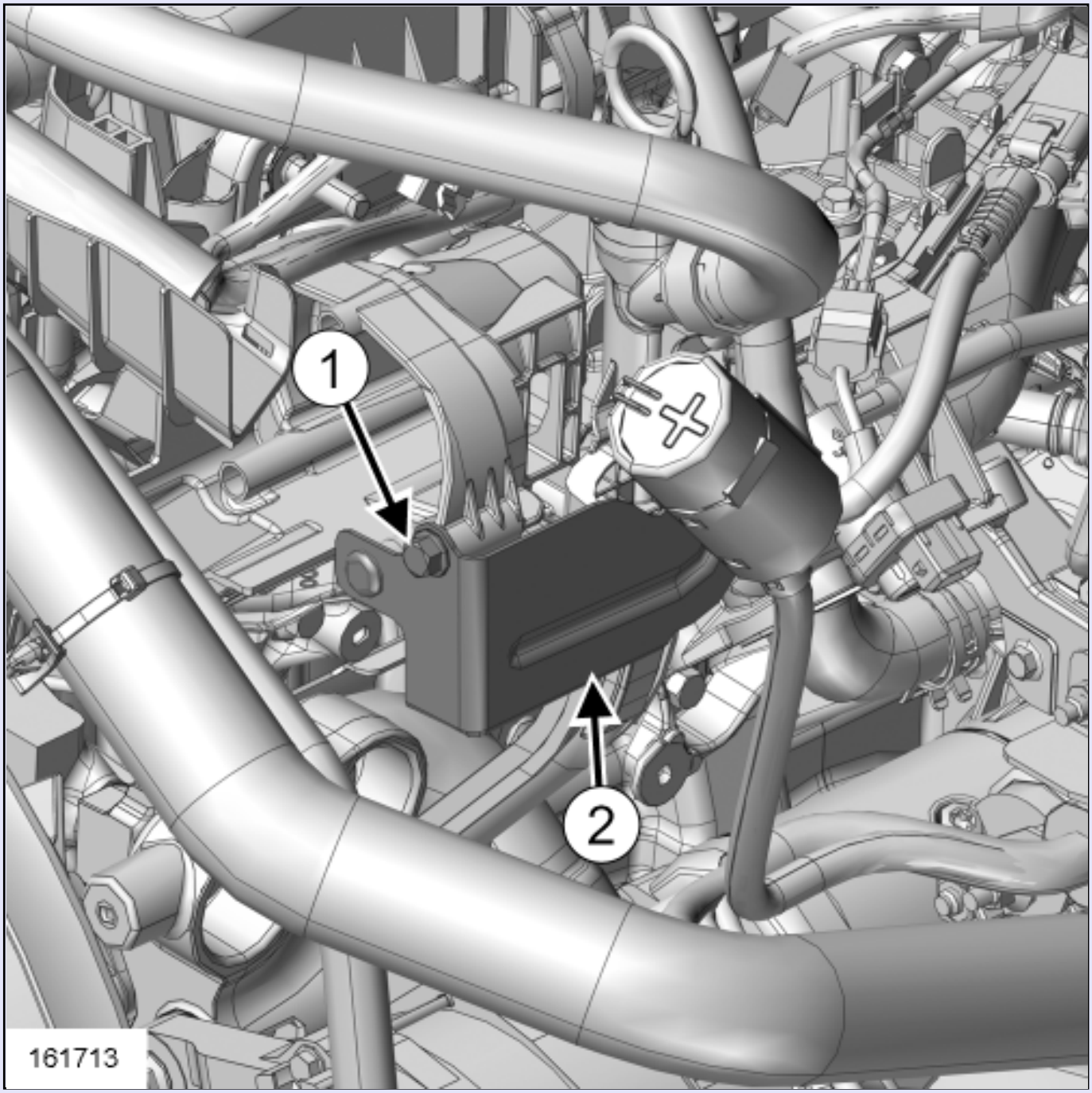
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift **Vehicle: Towing and lifting** .
- Disconnect the battery **Battery: Removal - Refitting** .
- Remove:
  - the engine undertray,
  - the intercooler air outlet pipe.

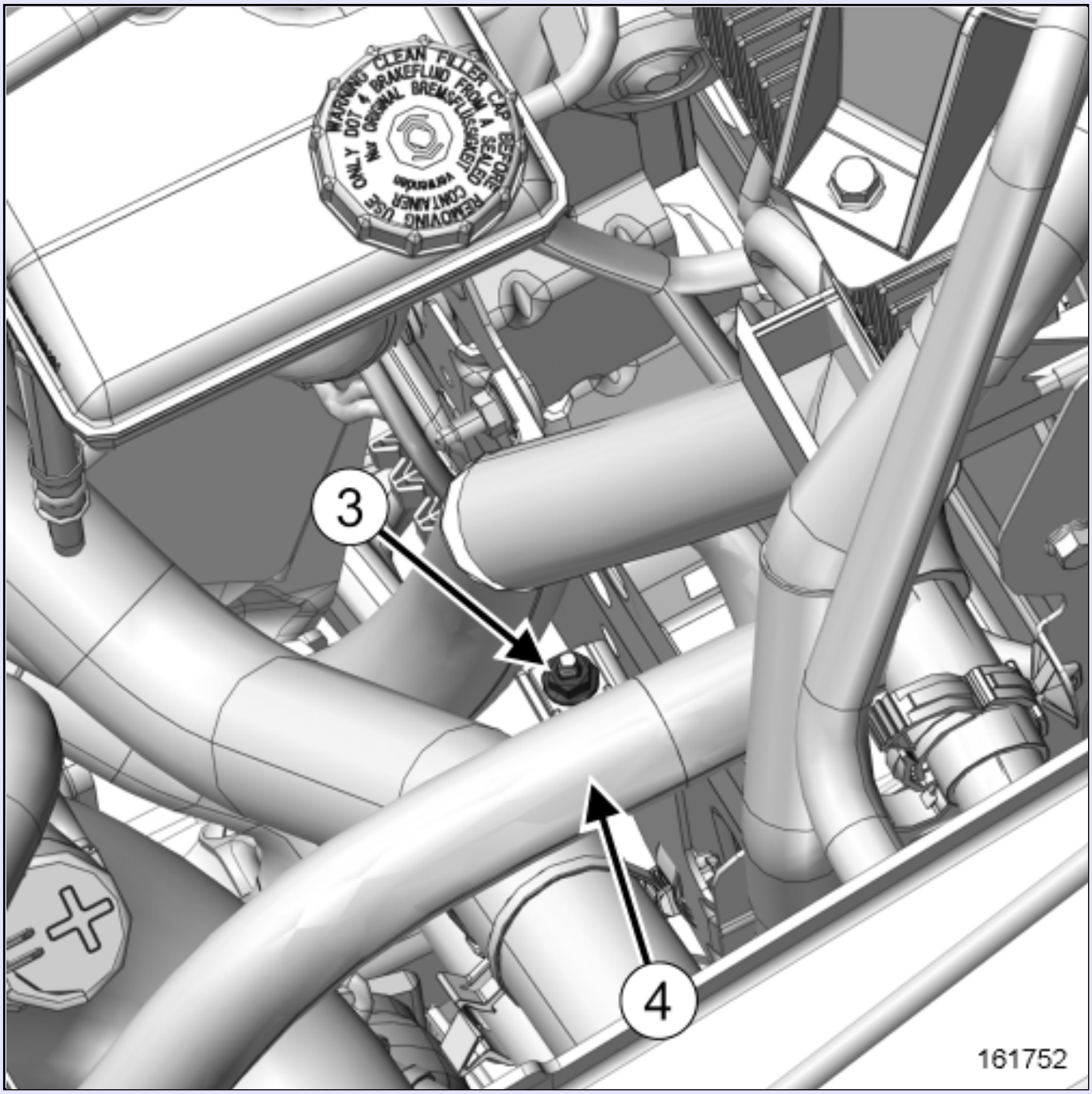
- Remove the engine cooling fan propellerEngine cooling fan assembly: Removal - Refitting .

- Remove :
  - the accessories belt,
  - the accessories belt tensionning roller bolts,
  - the accessories belt tensionning roller,
  - the accessories belt fixed roller protector,
  - the accessories belt fixed roller bolt,
  - the accessories belt fixed roller.



- Remove the bolt(1) of the remote battery plug bracket.

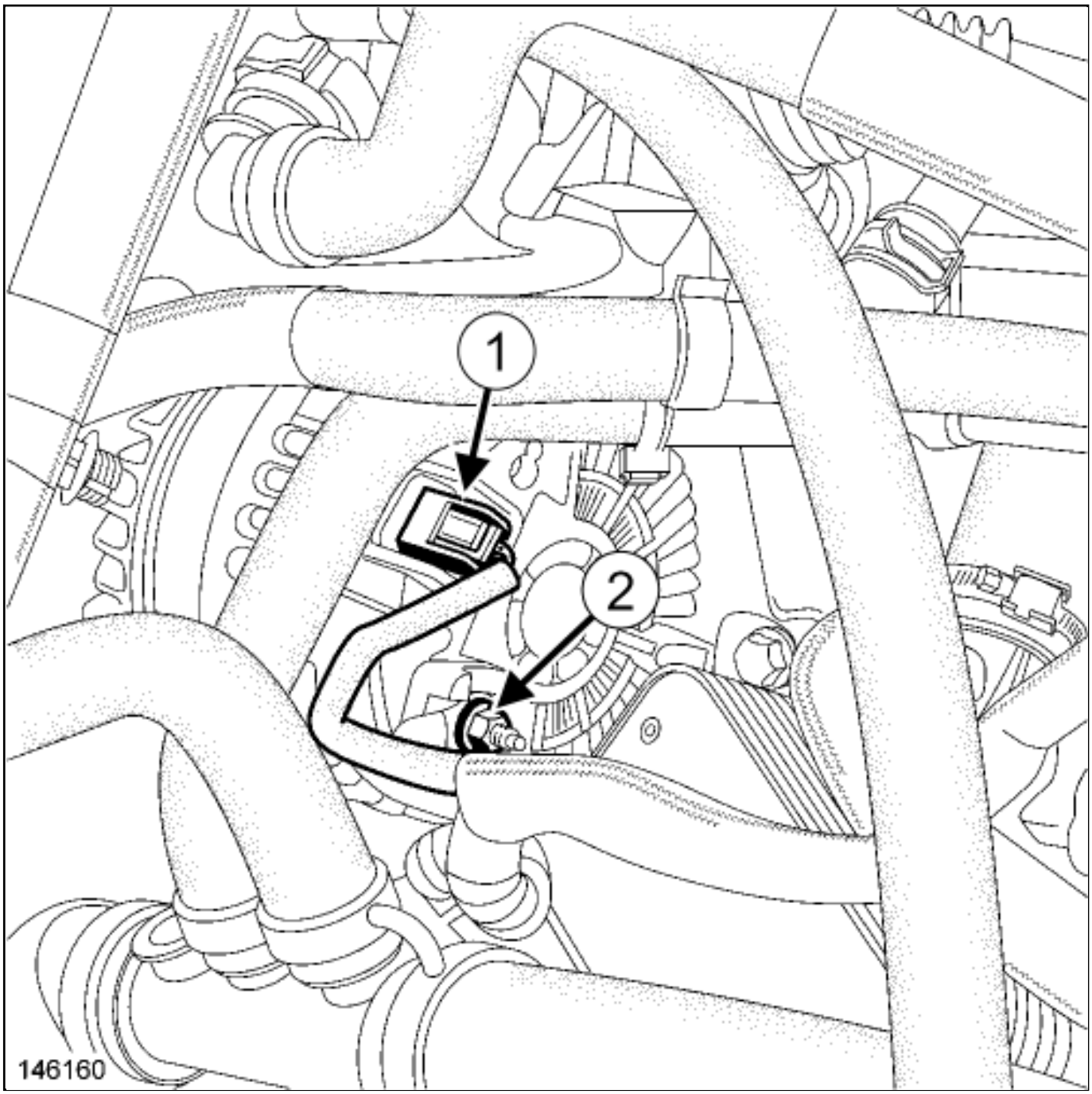
- Move aside the remote battery plug with its bracket(2) .



- Remove the nut(3) of the engine wiring bracket.

- Move aside the engine wiring channel(4) .

2. REMOVAL OPERATION



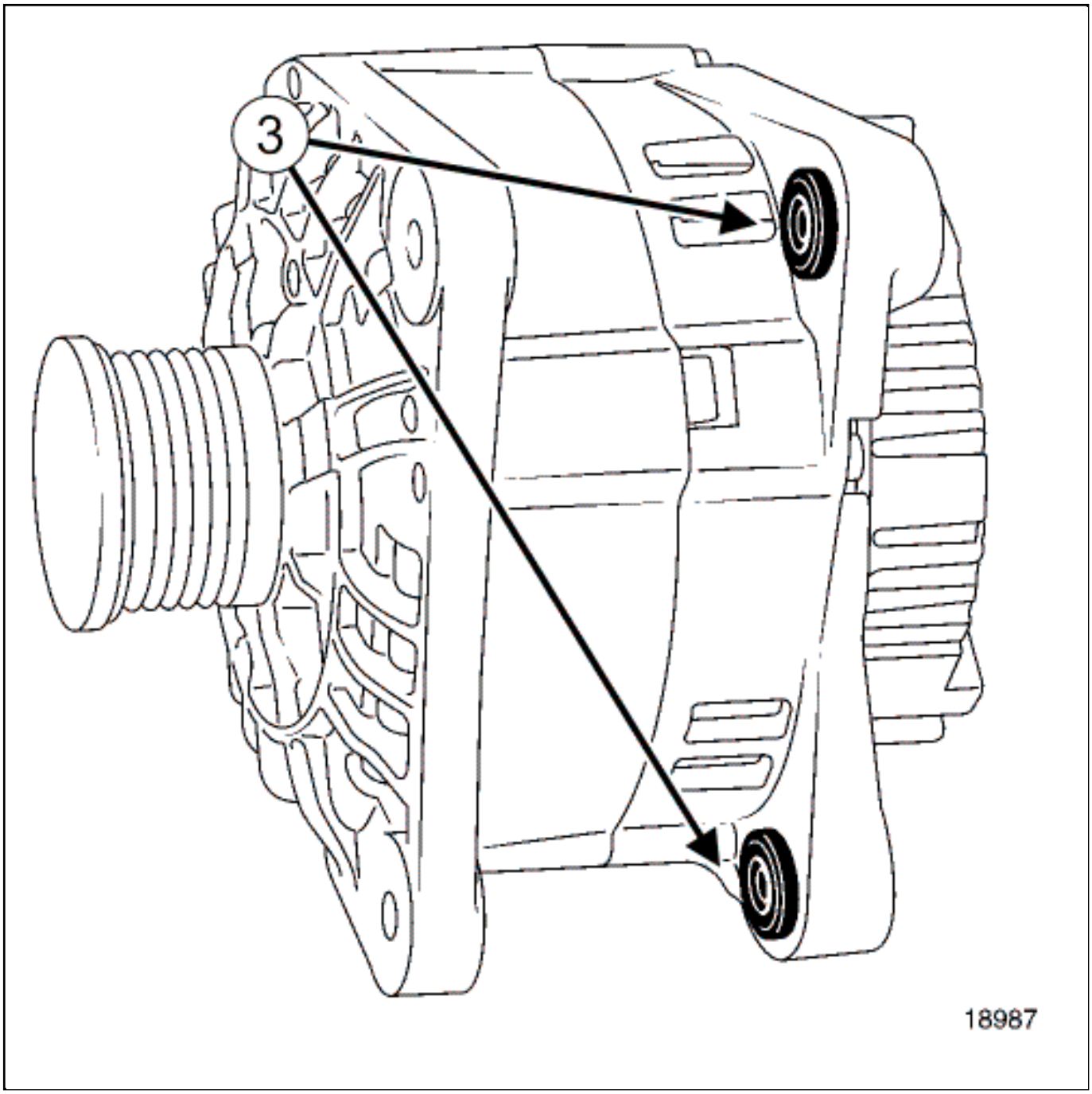
- Disconnect the connector(1) from the alternator regulator.
- Remove the nut(2) from the alternator positive terminal.
- Move aside the alternator wiring.
- Remove :
  - the alternator bolts,
  - the alternator,

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: Accessories belt tensioning roller

parts always to be replaced: Accessories fixed roller



Push in the alternator rings(3) using a vice to facilitate fitting.

2. REFITTING OPERATION

Refit :

- the alternator,
- the alternator bolts,

Torque tighten the alternator bolts.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Repair-32x02x01-01x37-1-161-1.xml

XSL version : 3.02 du 22/07/11

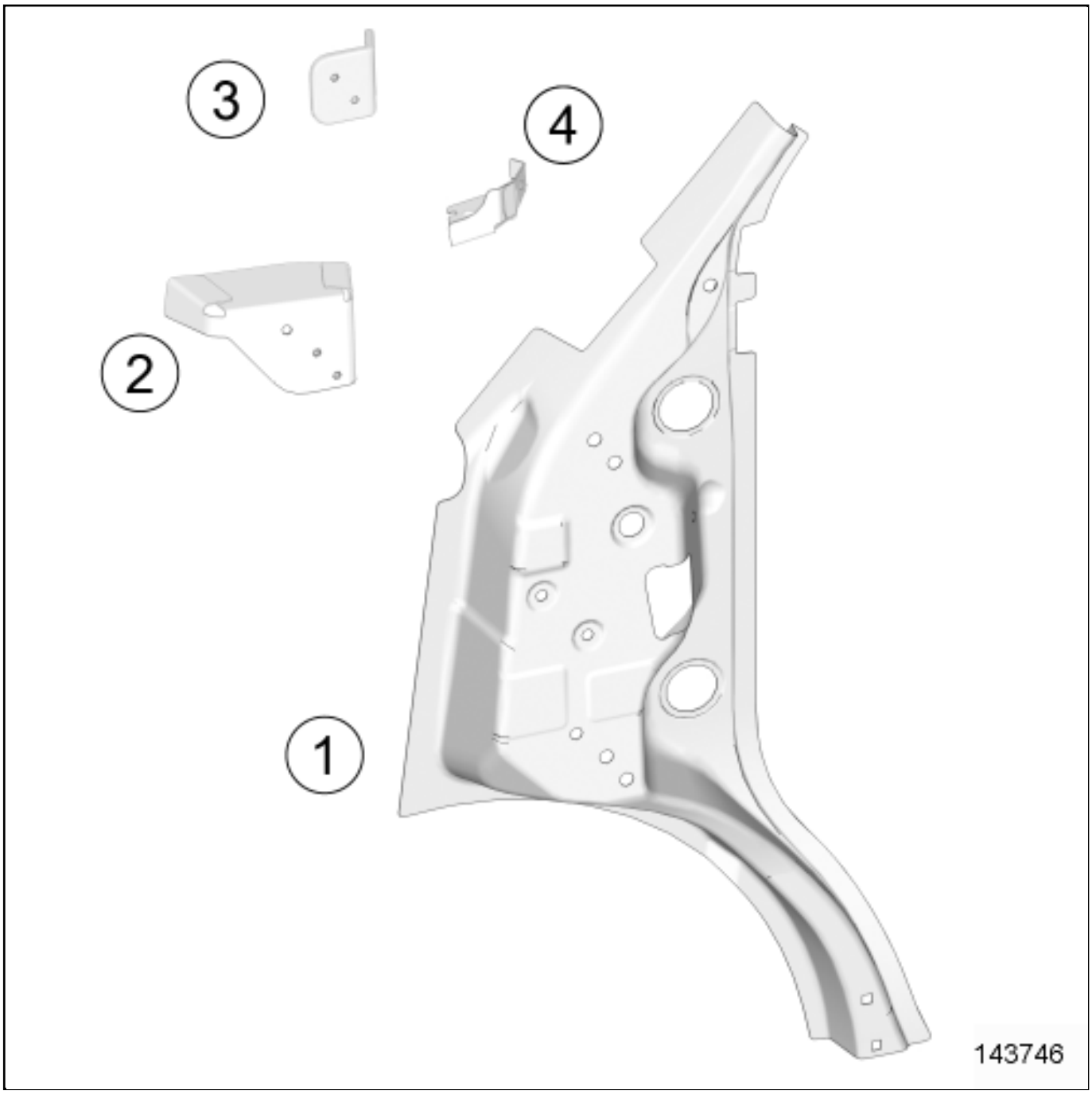
A-PILLARREINFORCEMENT:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART

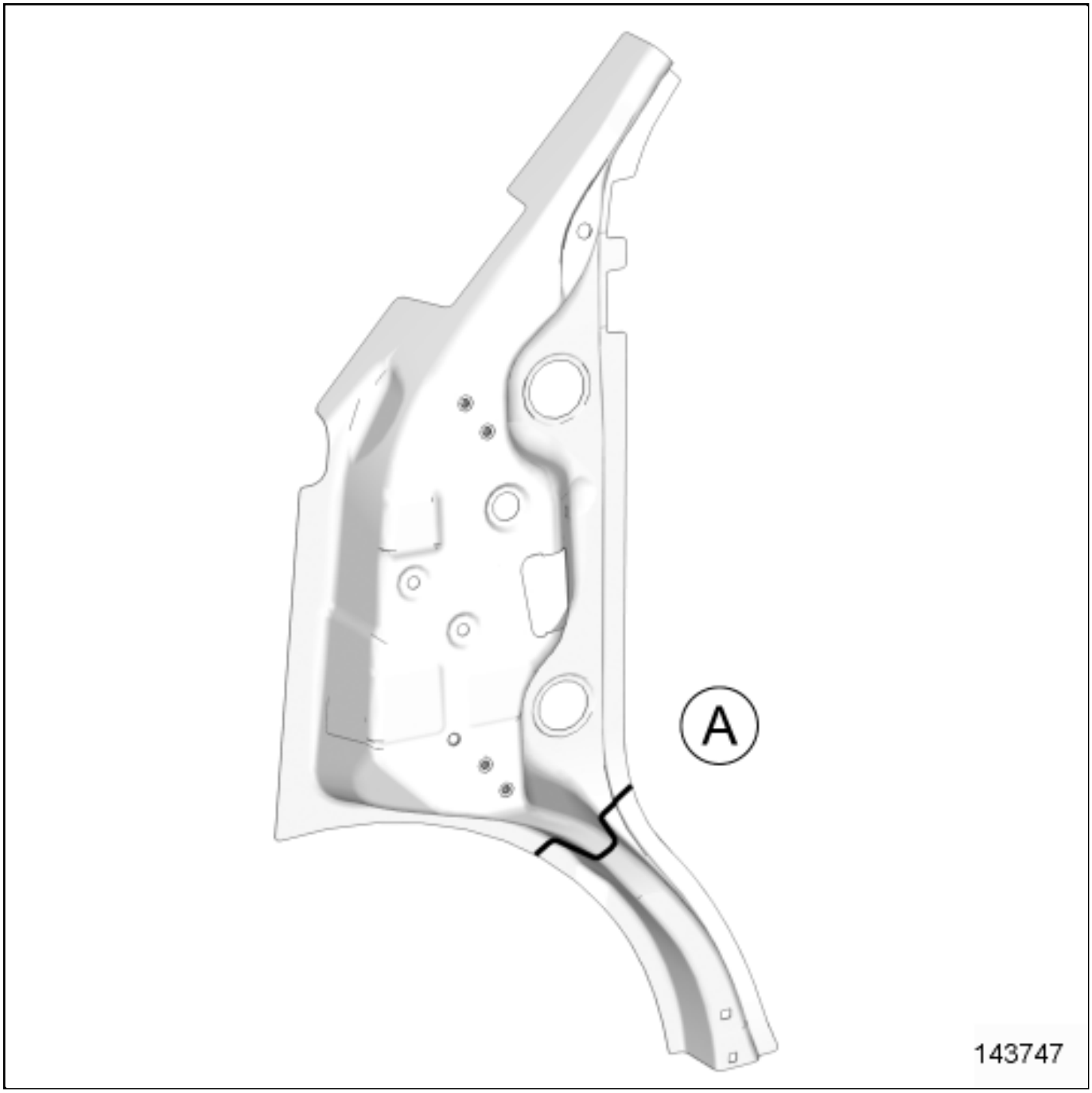

3
4
2
1
143746

No.	Description	Type	Thickness (mm)
(1)	A-pillar reinforcement	Mild steel	0.9
(2)	A-pillar upper hinge reinforcement	THLE	2
(3)	A-pillar lower hinge reinforcement	THLE	1.8
(4)	Front door stop reinforcement	THLE	2

2. IN THE EVENT OF REPLACEMENT

The options for replacing this part are as follows:

- Complete replacement
- partial replacement along cut A.



CAUTION

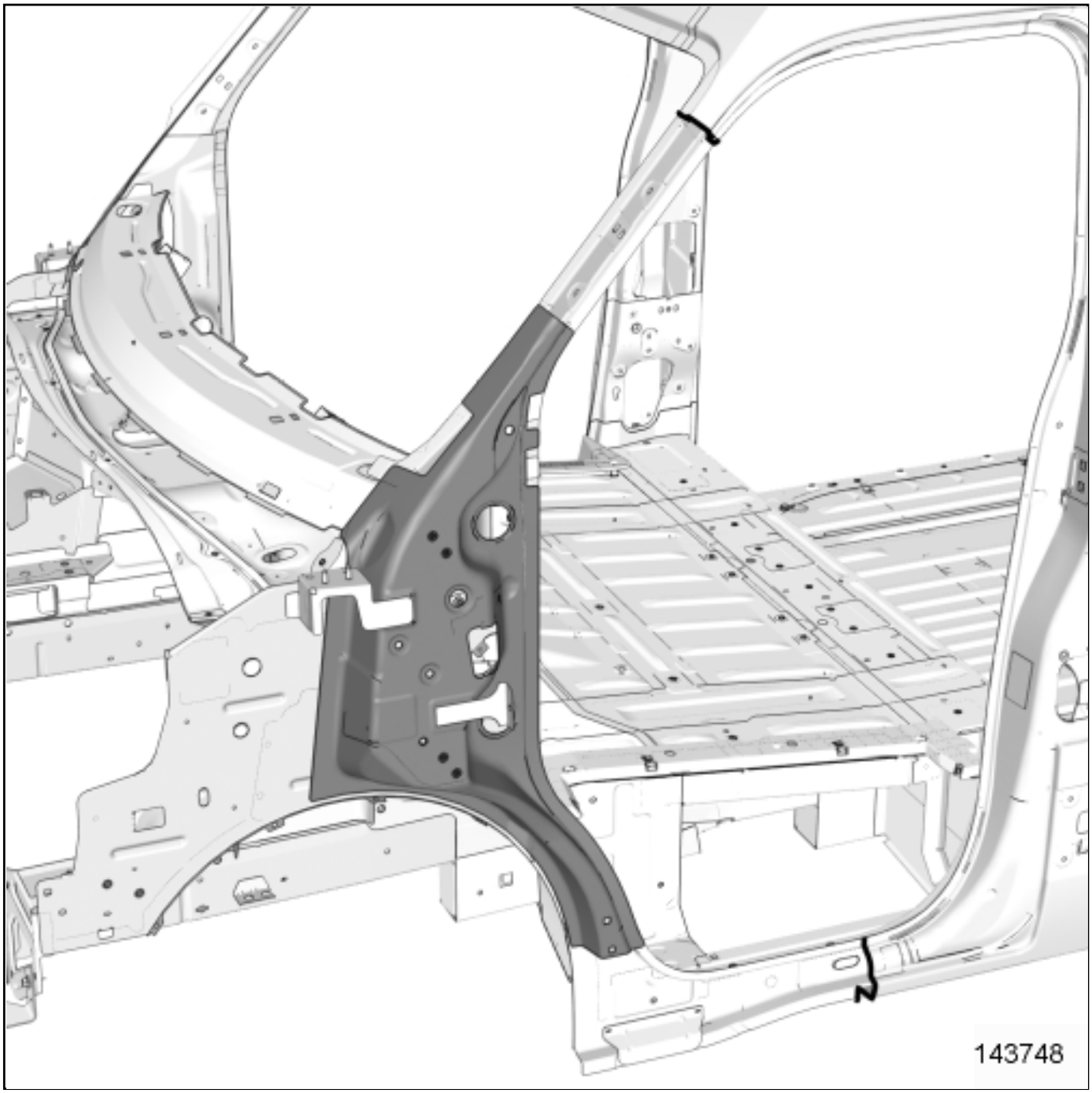
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



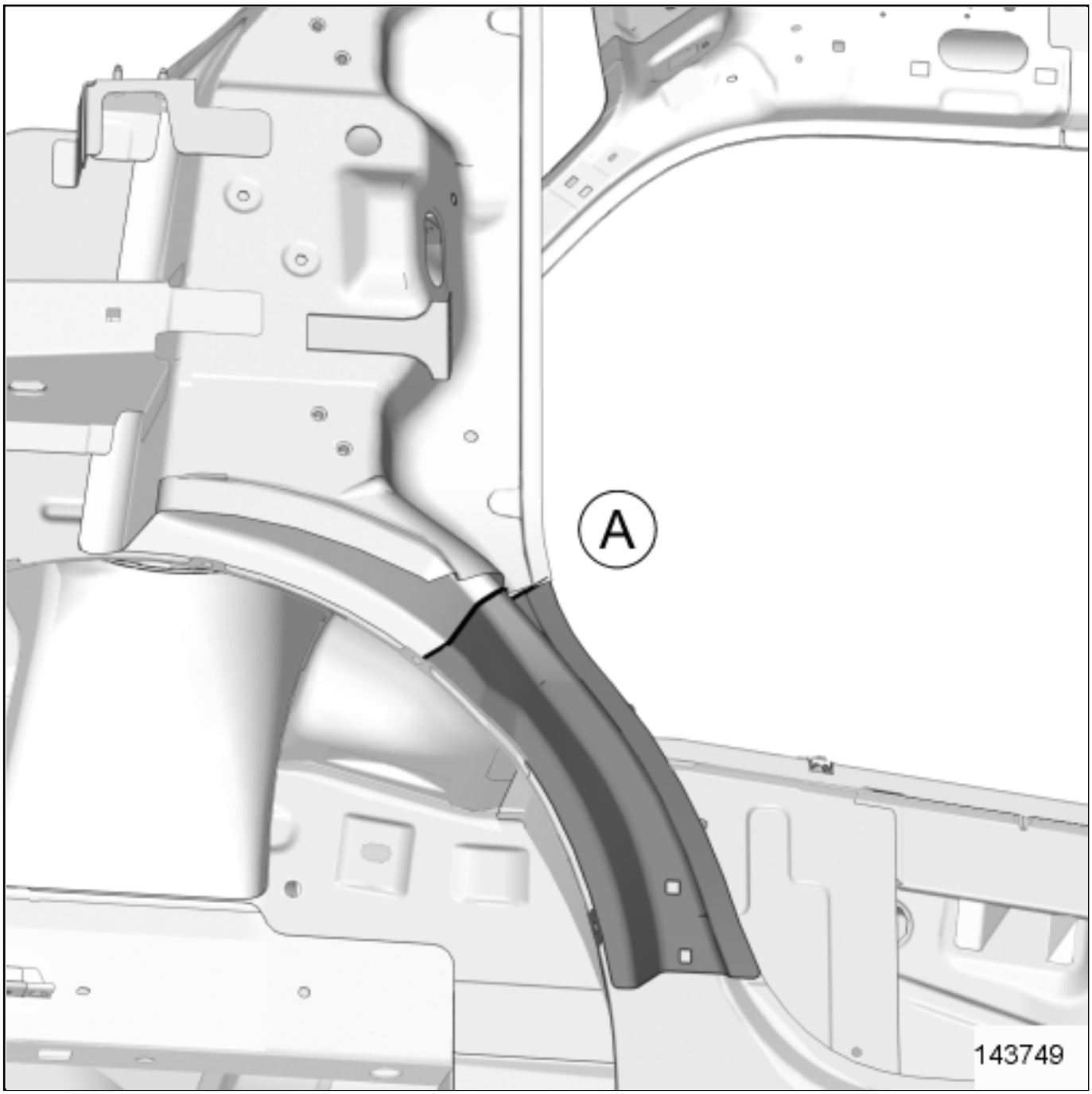
2)SPECIAL NOTES ON MATING

CAUTION

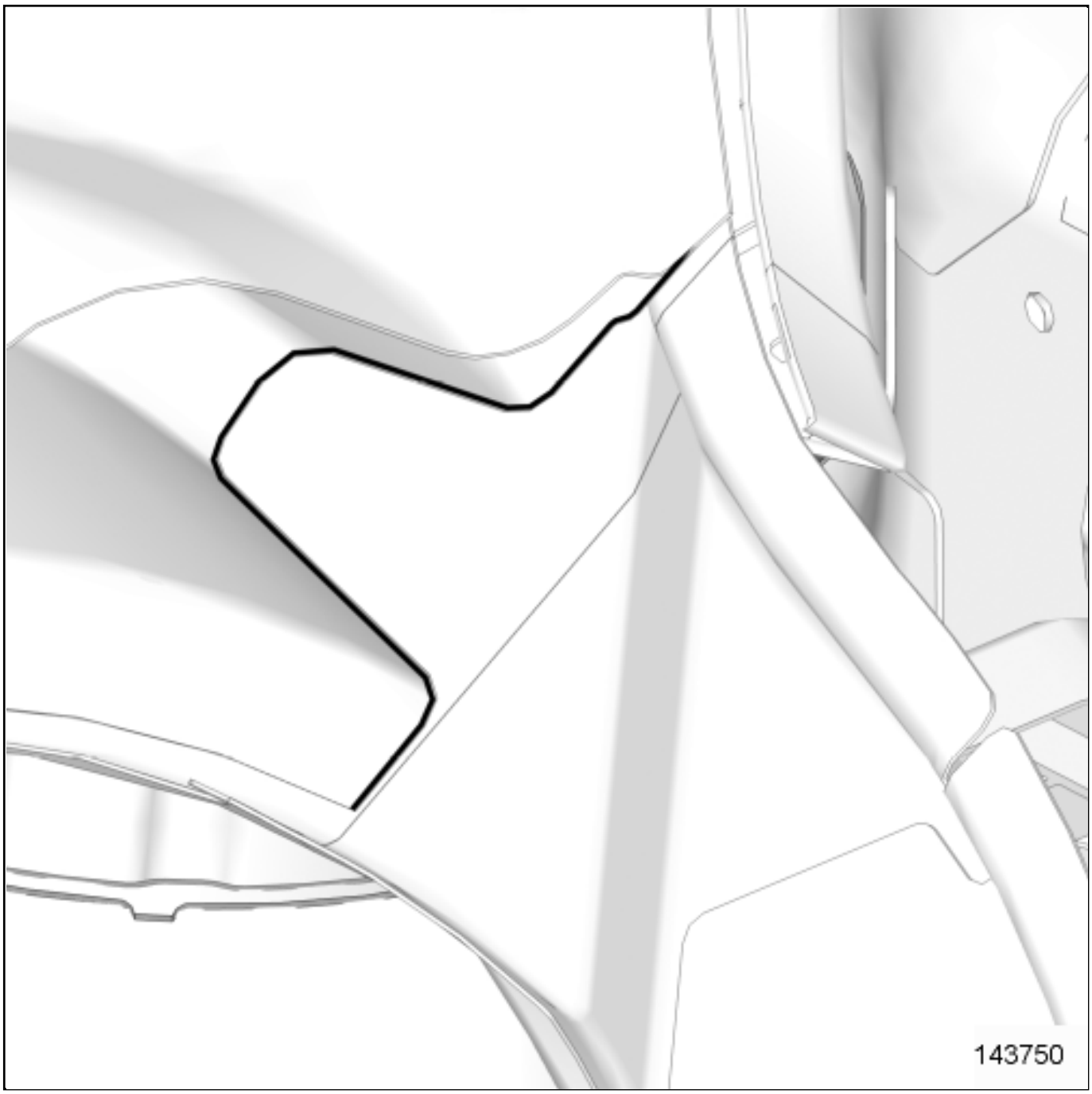
If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

2- PARTIAL REPLACEMENT ALONG CUT A

1)PART IN POSITION



DETAILED VIEW A



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

AXIAL BALL JOINT LINKAGE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Tool for removal - refitting of rack axial ball joint	Dir. 1923
Steering rack locking tool	Dir. 1926

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 36A, Steering assembly, Steering assembly: Exploded view) .

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 36A, Steering assembly , Steering: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

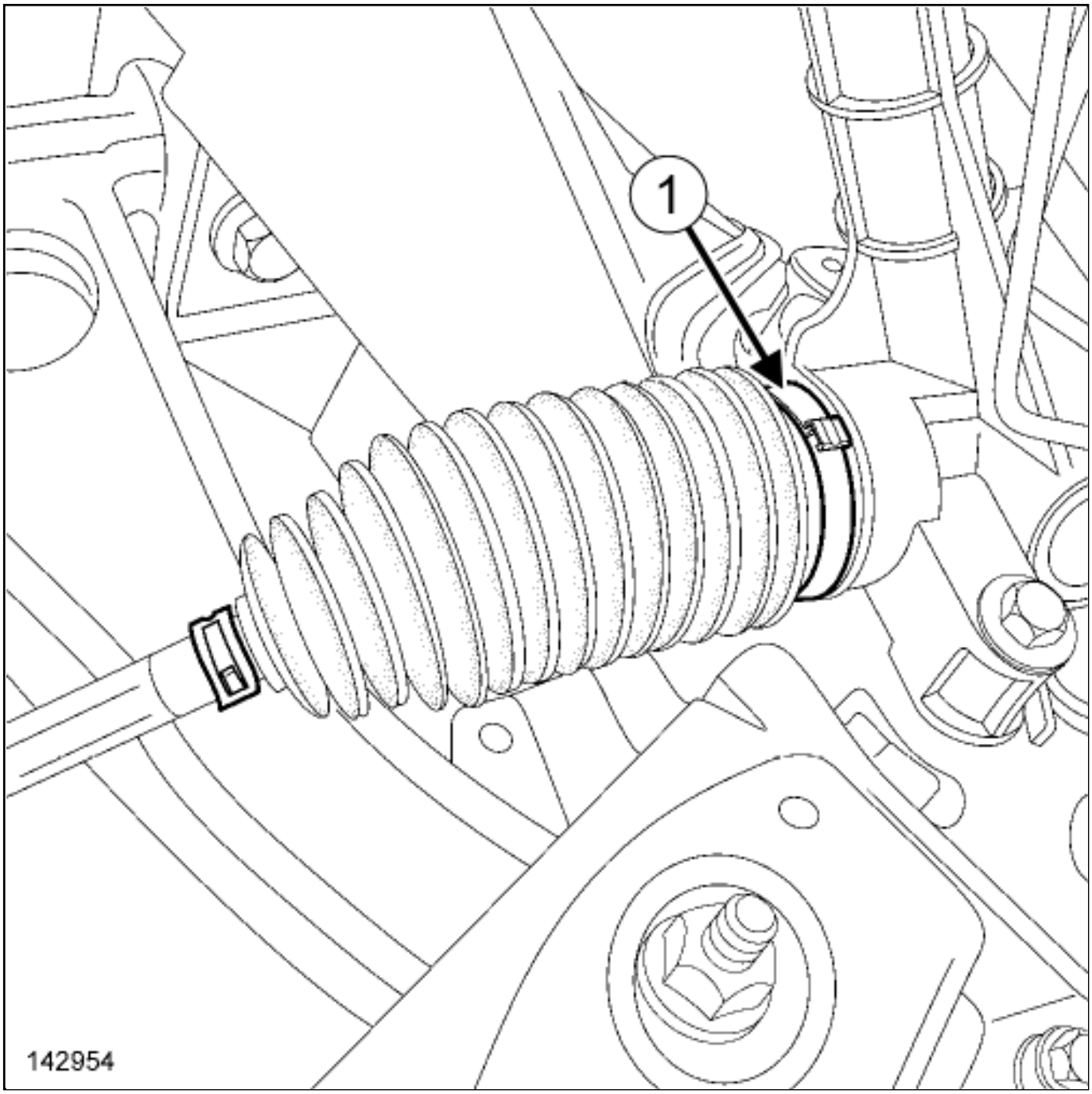
Remove:

- the front wheelWheel: Removal - Refitting ,
- the track rod(see 36A, Steering assembly , Steering assembly: Exploded view) .

1- STEERING COLUMN SIDE

Remove the steering box gaiter(see 36A, Steering assembly , Steering assembly: Exploded view) .

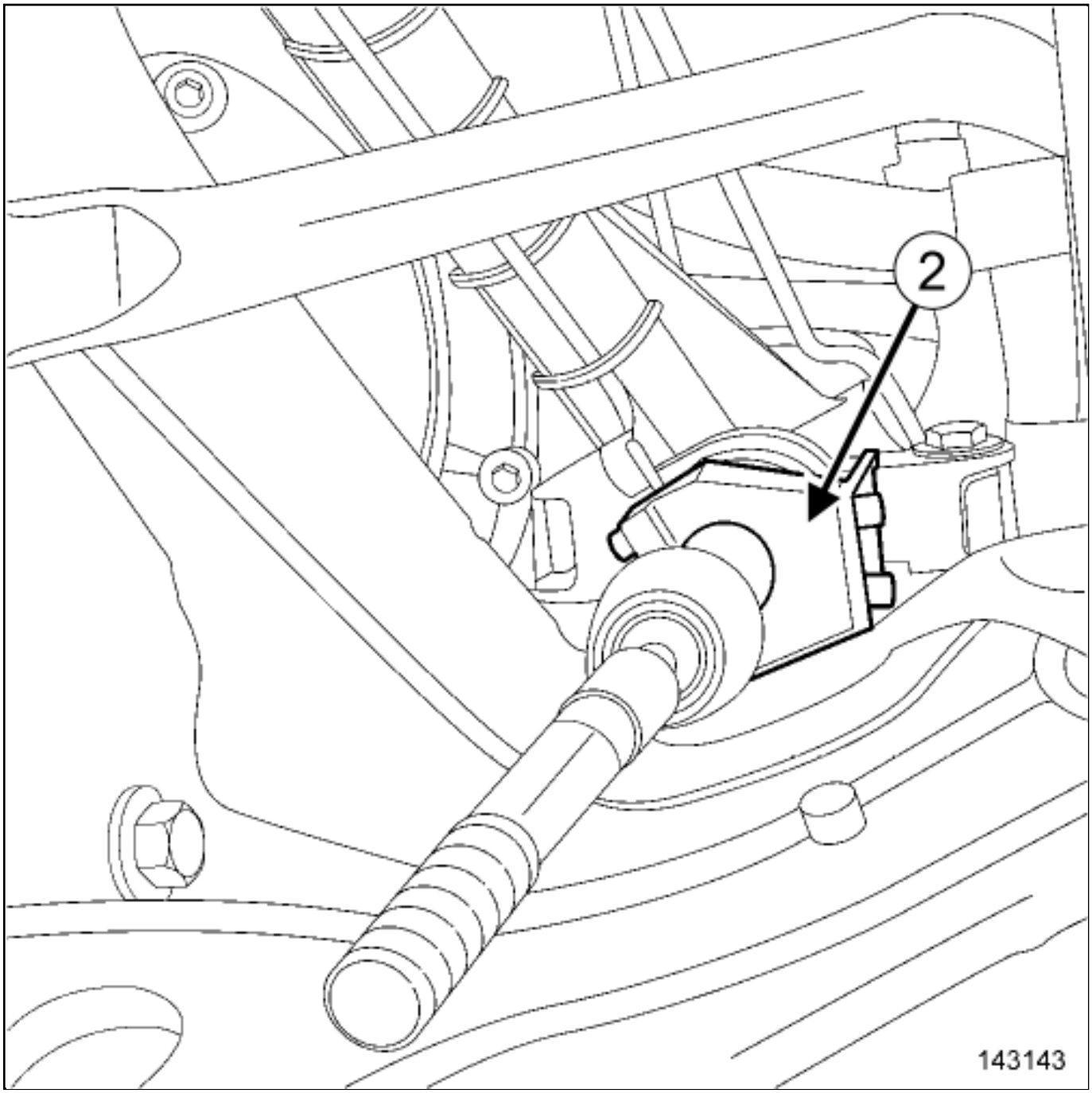
2- PASSENGER SIDE



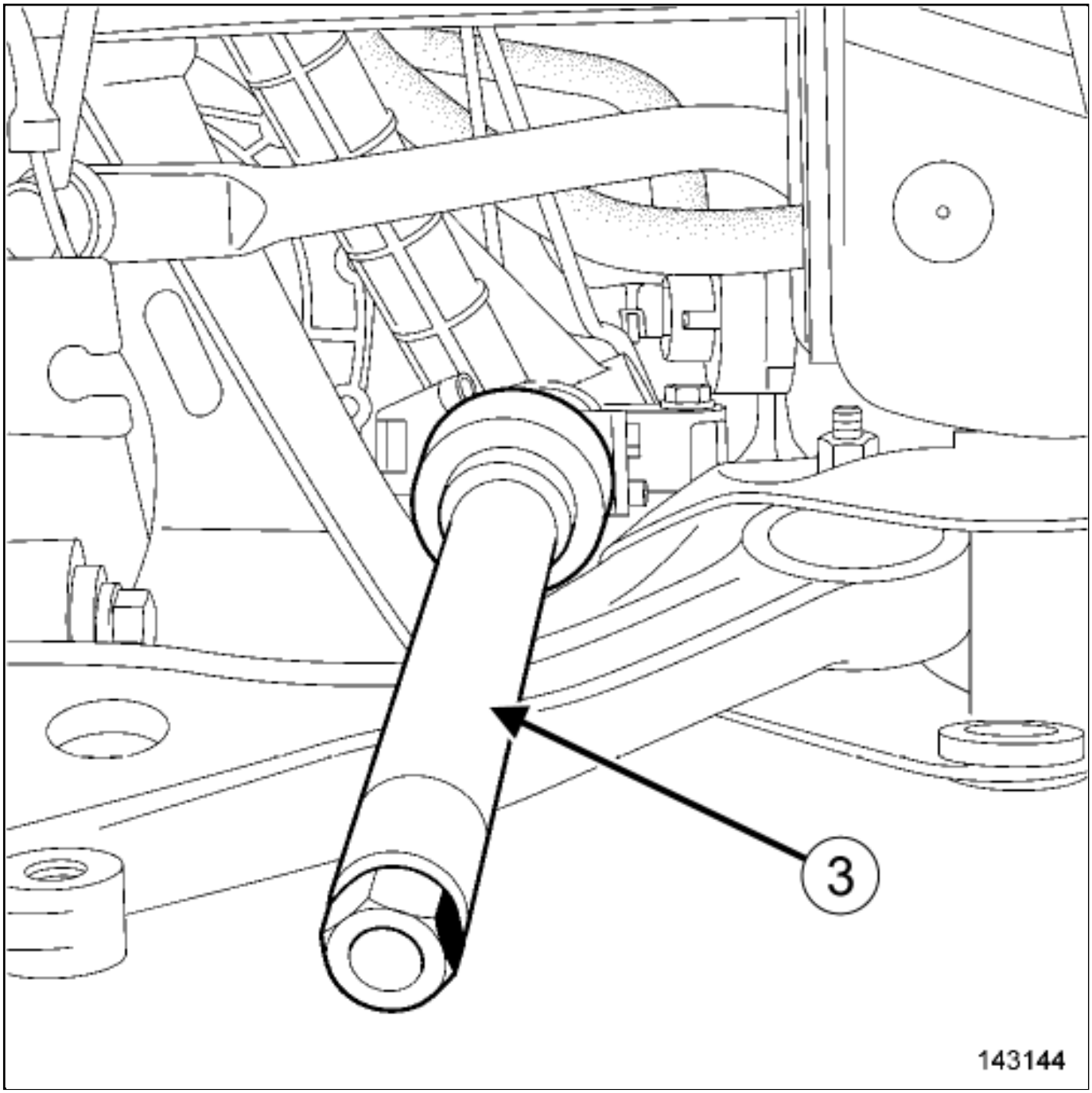
- Cut the large clip(1) of the steering box gaiter on the steering column side.
- Move aside the steering box gaiter on the steering column side.
- Remove the steering box gaiter on the passenger side(see 36A, Steering assembly , Steering assembly: Exploded view) .

2. REMOVAL OPERATION

- Lock the wheels to disengage the rack teeth at the pinion end.



- Fit the toolSteering rack locking tool(Dir. 1926) (2) on the steering rack at the pinion end.



- Unlock the axial ball joint linkage using the toolTool for removal - refitting of rack axial ball joint(Dir. 1923) (3) .

- Remove the axial ball joint linkage(see 36A, Steering assembly , Steering assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

- Adjust the front axle **Front axle system: Adjustment** .

AXLE ASSEMBLIES: CHECK

- Lock the slip plates of the lift.
- Position the vehicle on a lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Check the condition of the following components:
  - track rods,
  - axial ball joint linkages,
  - subframe,
  - lower arm rubber bushes,
  - lower arm ball joints Front driveshaft lower arm ball joint: Check ,
  - shock absorbers,
  - tyres,
- Check:
  - the tyre size Tyres: Identification ,
  - the tyre inflation pressure (see **Tyre pressure: Identification**) .
- Refer to the user manual for the geometry tester.
- Check the geometry using the geometry tester.
- Measure the underbody heights (see 30A, General information, Underbody heights: Adjustment value) .
- Consult:
  - the front axle geometry values (see 30A, General information, Front axle assembly: Adjustment values) ,
  - the rear axle geometry values (see 30A, General information, Rear axle assembly: Adjustment values) .

Note:

The green-and-red graphs on the geometry bench are only valid when checking a VODM (vehicle in working condition). For a loaded vehicle, use the calculator values as a reference.

- If there is an inconsistency between the manufacturer's values and the measured values:
  - adjust the front axle (see 30A, General information, Front axle system: Adjustment) .

BATTERY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
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:

- (see 80A, Battery, Battery: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Switch off the ignition.

CAUTION

Before disconnecting the battery:

- wait for the motor-driven fan assembly to stop,
- wait for the computer to finish saving (1 minute).

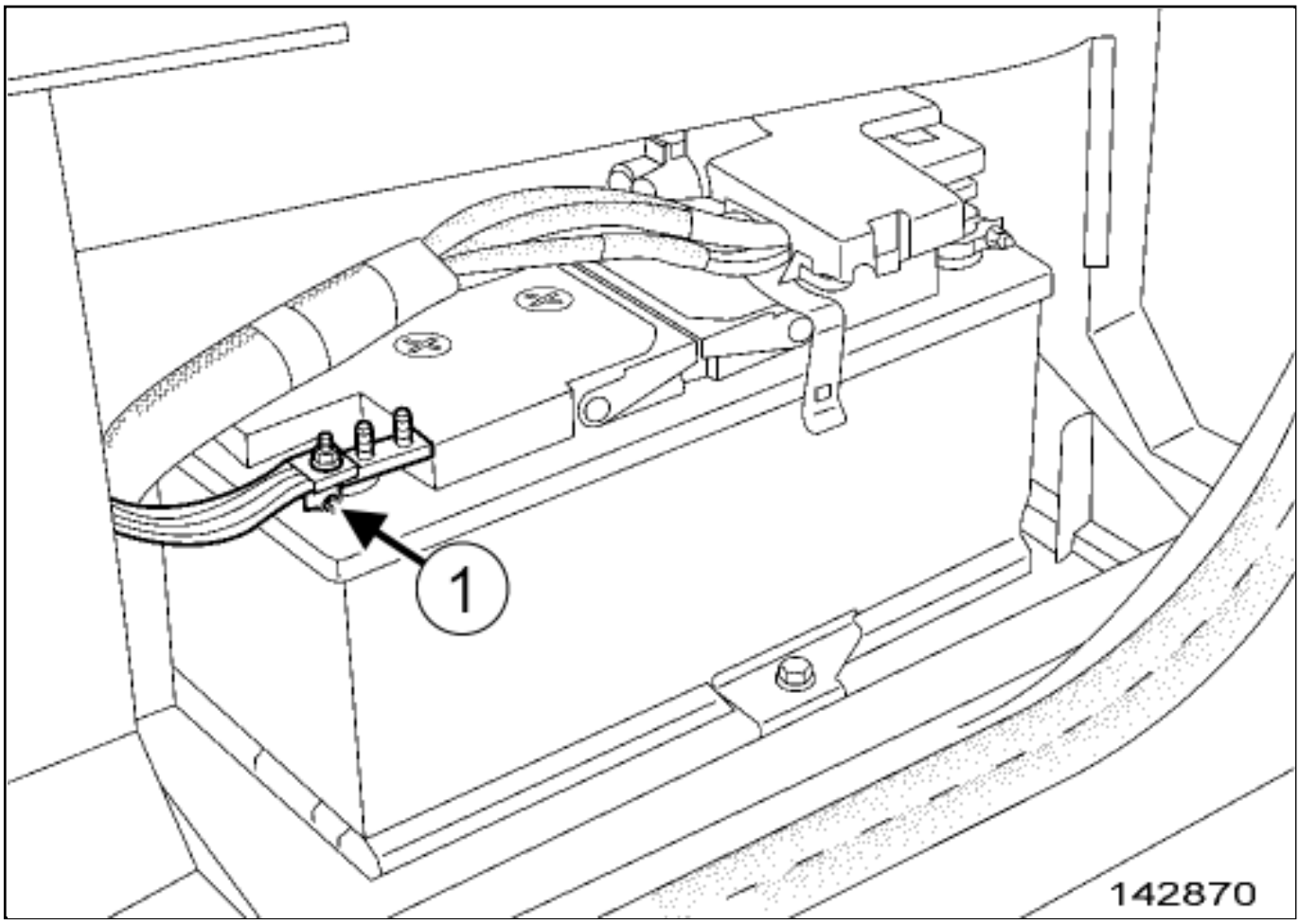
CAUTION

The visual indicator cannot be considered reliable in After-Sales; do not use it to determine the state of the battery.

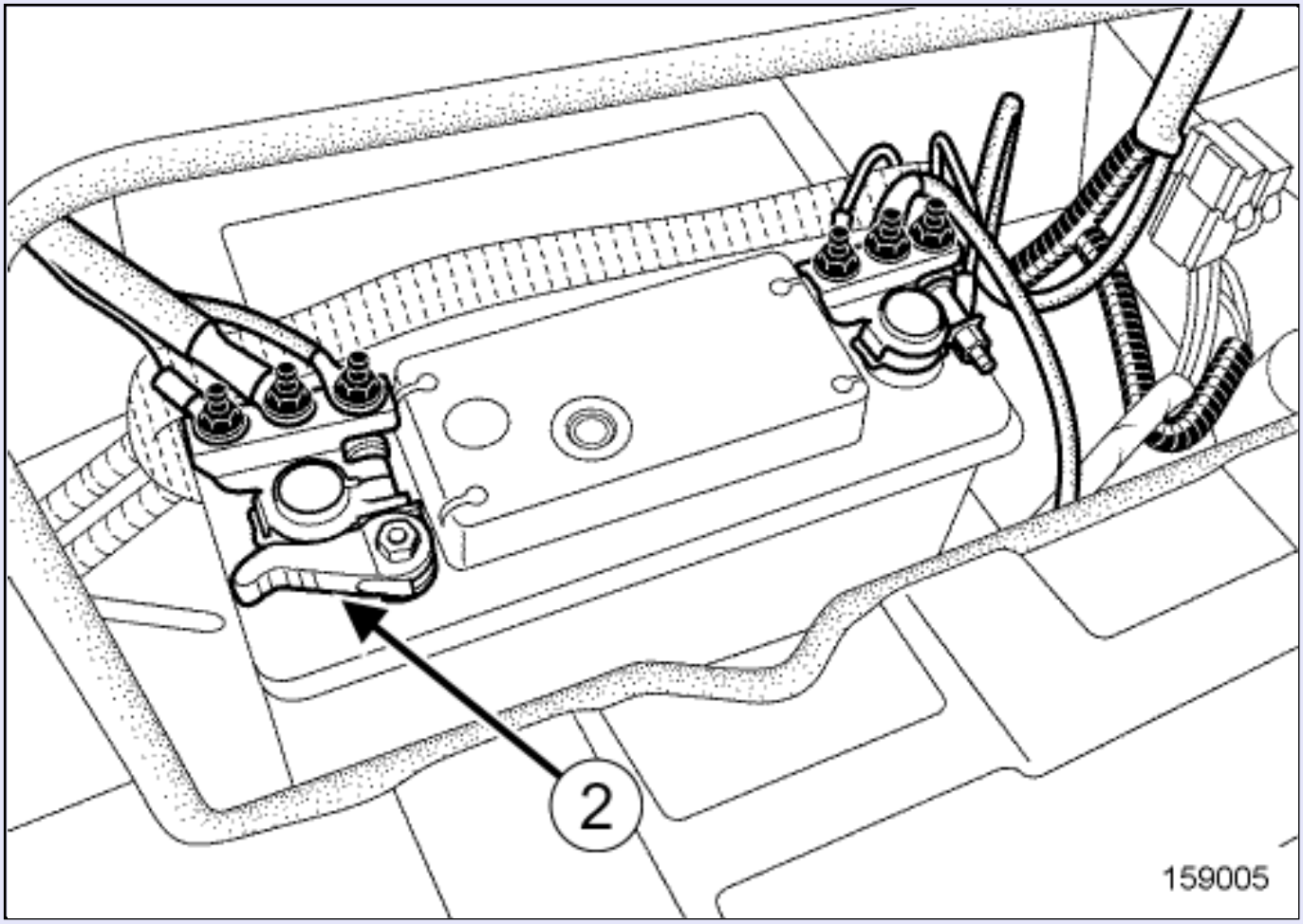
Remove the door sill Door sill: Removal - Refitting (71A, Body internal trim).

2. REMOVAL OPERATION

1- DISCONNECTION

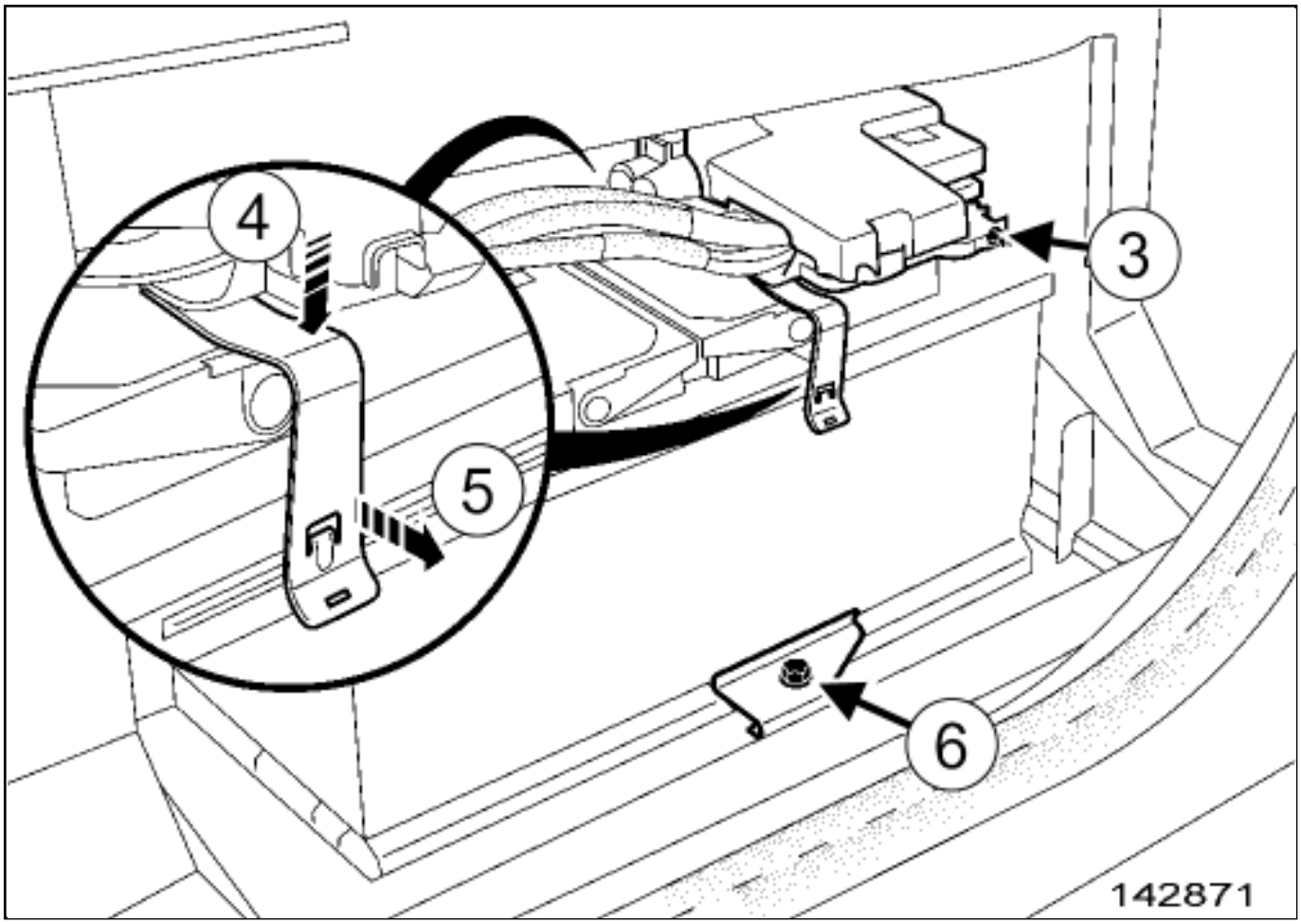


- Undo the nut(1) of the negative battery terminal.
- Remove the negative battery terminal.
- Move the earth strap to one side.

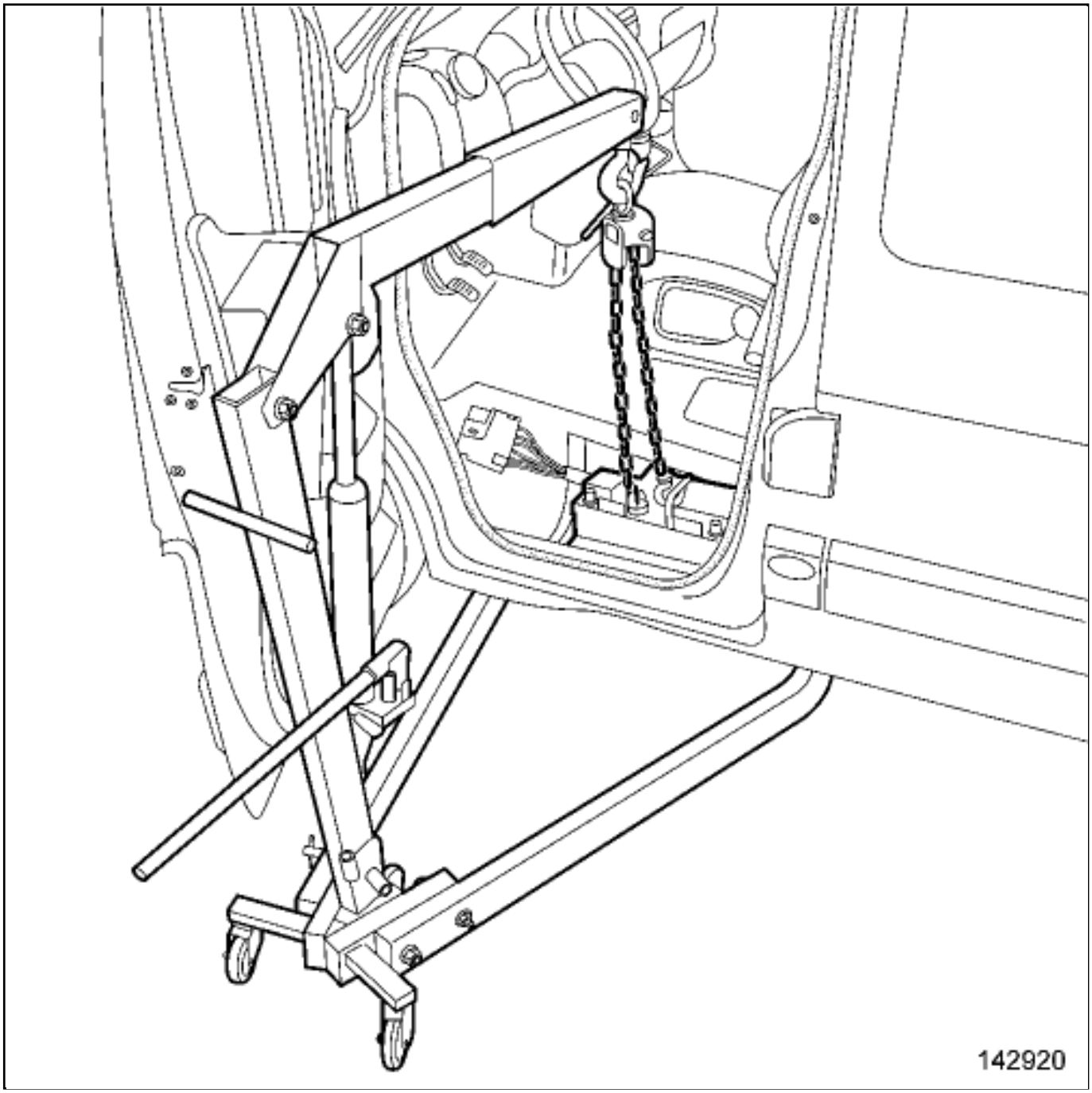


- Unclip the brakets(2) of the negative auxiliary battery terminal.
- Remove the negative auxiliary battery terminal.

2- REMOVAL

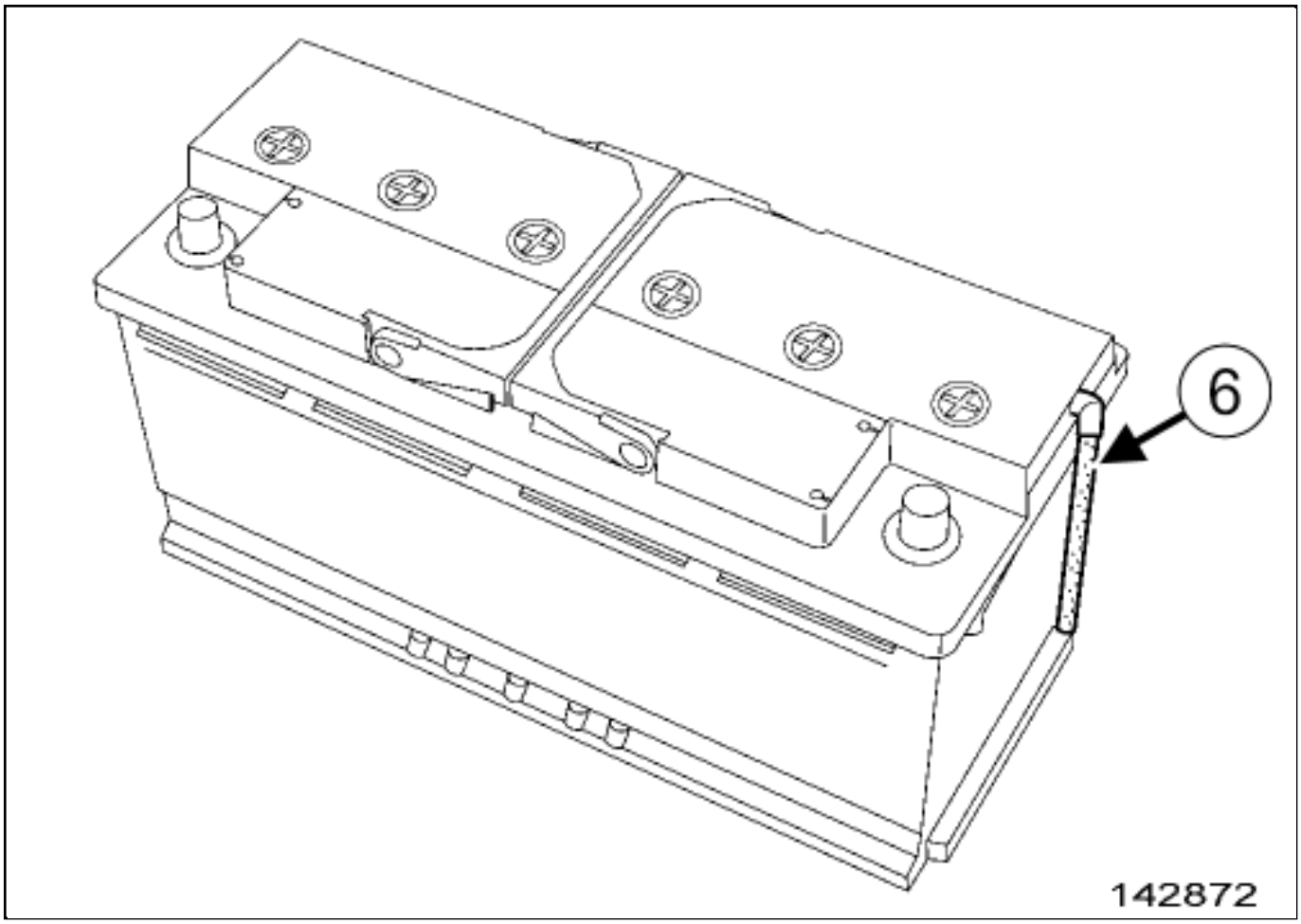


- Undo the nut(3) of the positive battery terminal.
- Unclip the brackets of the battery protective fuse holder by(4) then (5) .
- Remove:
  - the "positive battery terminal - protective fuse holder" assembly,
  - the battery bracket bolt(6) ,
  - the battery bracket.
- Remove the wiring from the battery's positive terminal.



- Remove the battery from the vehicle using a workshop hoist.

3- REPLACEMENT



- Unclip the degassing pipe from the battery(6) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Check the battery (see Battery: Check) (Technical Note 6002A, 80A, Battery).

2. REFITTING OPERATION

1- REPLACEMENT

- Clip the degassing pipe onto the battery.

2- REFITTING

- Refit:
  - the battery using a workshop hoist,
  - the battery bracket.

- Push the positive battery terminal fully onto the terminal post.

- Clip the protective fuse holder onto the battery.

CAUTION

Incorrect tightening could cause heating of contacts, starting or charging faults, sparking, or could cause the battery to explode (see Battery: Precautions for repair).

- Torque tighten the nut of the positive battery terminal8 N.m.

3- CONNECTION

- Push the negative battery terminal fully onto the terminal post.

CAUTION

Incorrect tightening could cause heating of contacts, starting or charging faults, sparking, or could cause the battery to explode (see Battery: Precautions for repair).

- Torque tighten the nut of the negative battery terminal8 N.m.

3. FINAL OPERATION

- Refit the door sillDoor sill: Removal - Refitting (71A, Body internal trim).

-

When refitting the battery or each time it is disconnected, carry out a certain number of operations, without using the diagnostic tool, so that the vehicle can operate correctly (see Battery: Initialisation) (80A, Battery).

XSL version : 3.02 du 22/07/11

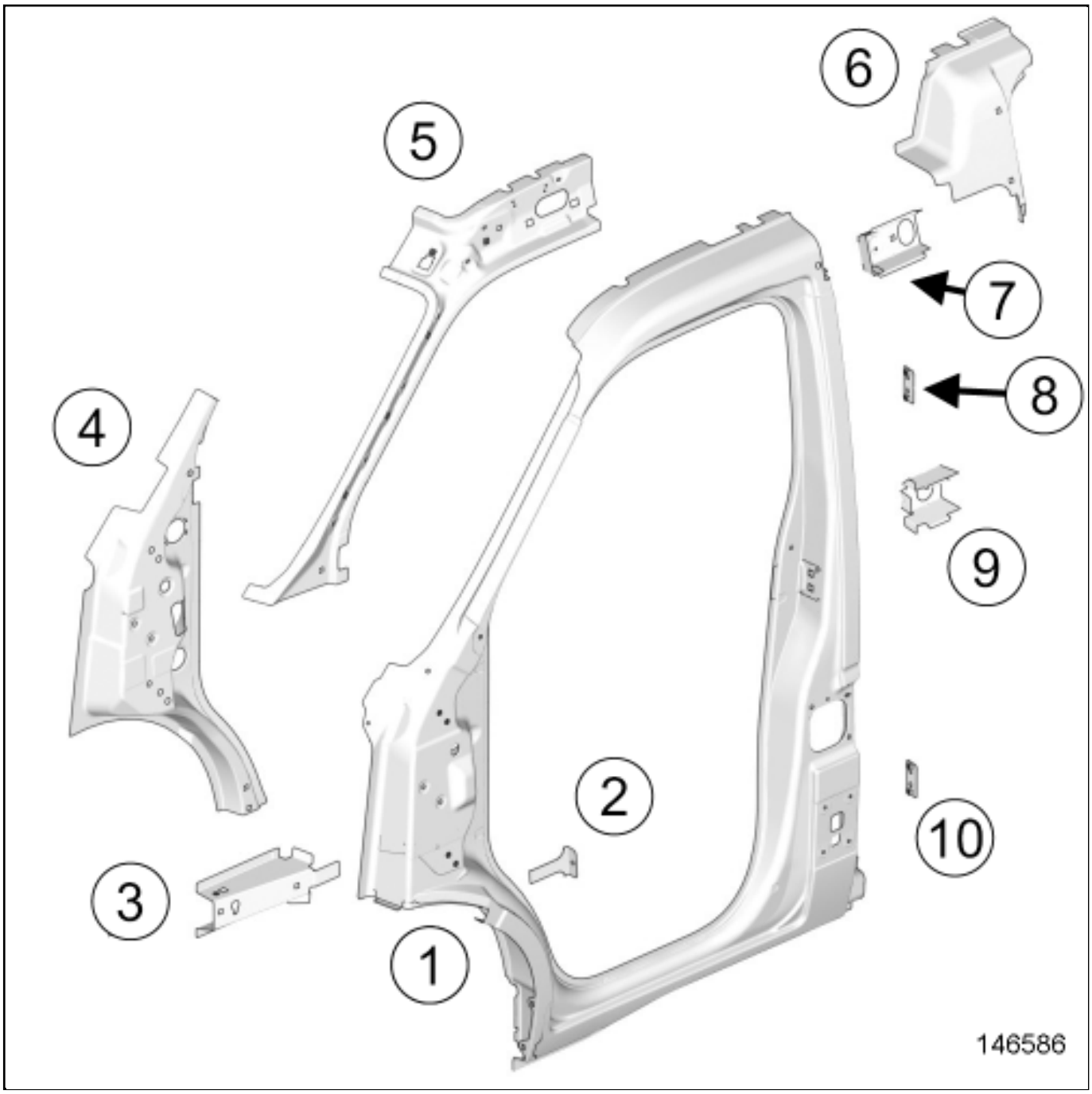
BODYSIDE:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART

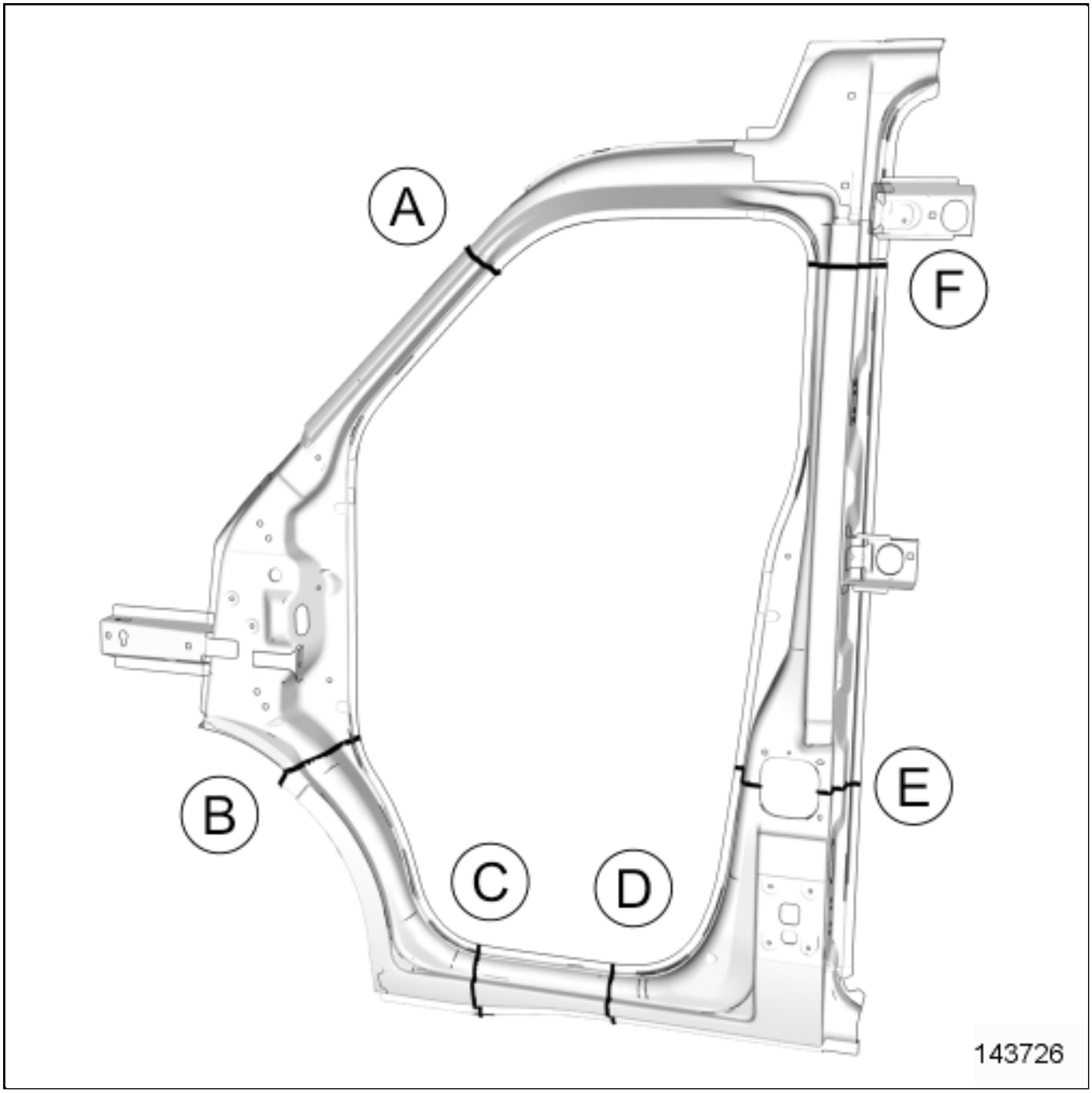

6
5
7
8
4
9
2
10
3
1
146586

No.	Description	Type	Thickness (mm)
(1)	Body side	Mild steel	0.75
(2)	Front wing mounting bracket	Mild steel	1
(3)	A-pillar lining reinforcement	Mild steel	0.8
(4)	Front outer wheel arch	Mild steel	0.75
(5)	Windscreen pillar lining	HLE	1.2
(6)	B-pillar extension	Mild steel	0.9
(7)	B-pillar stiffener upper mounting	Mild steel	0.7
(8)	Upper centring device mounting reinforcement	Mild steel	1.5
(9)	B-pillar striker panel reinforcement	Mild steel	1.2
(10)	B-pillar stiffener lower mounting	Mild steel	0.7

2. IN THE EVENT OF REPLACEMENT

The options for replacing this part are as follows:

- partial replacement section A-D,
- partial replacement section B-E,
- partial replacement section B-D,
- partial replacement section C-E,
- partial replacement section D-F.



CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

1- POSITION OF ELECTRIC EARTHS

CAUTION

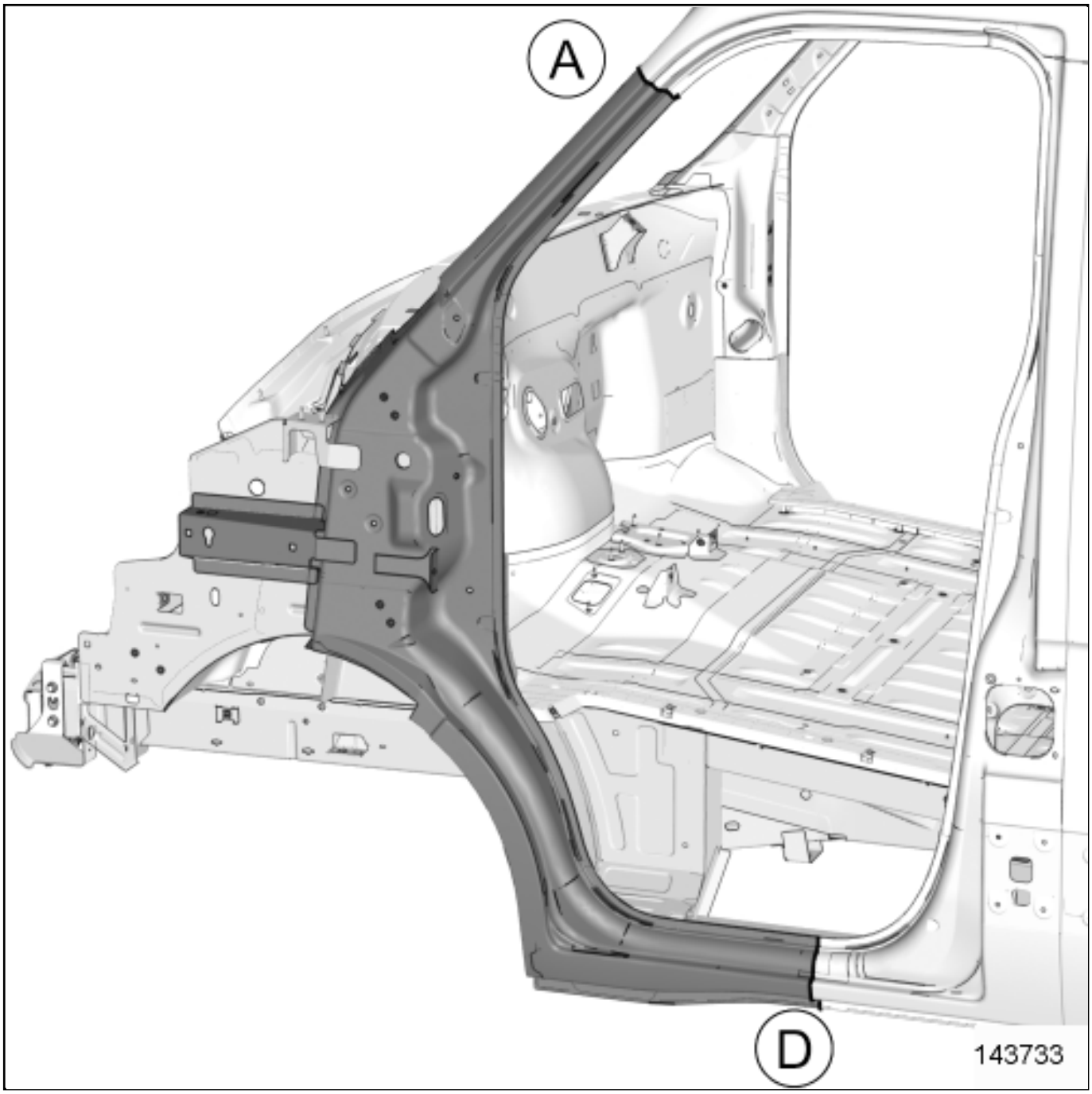
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

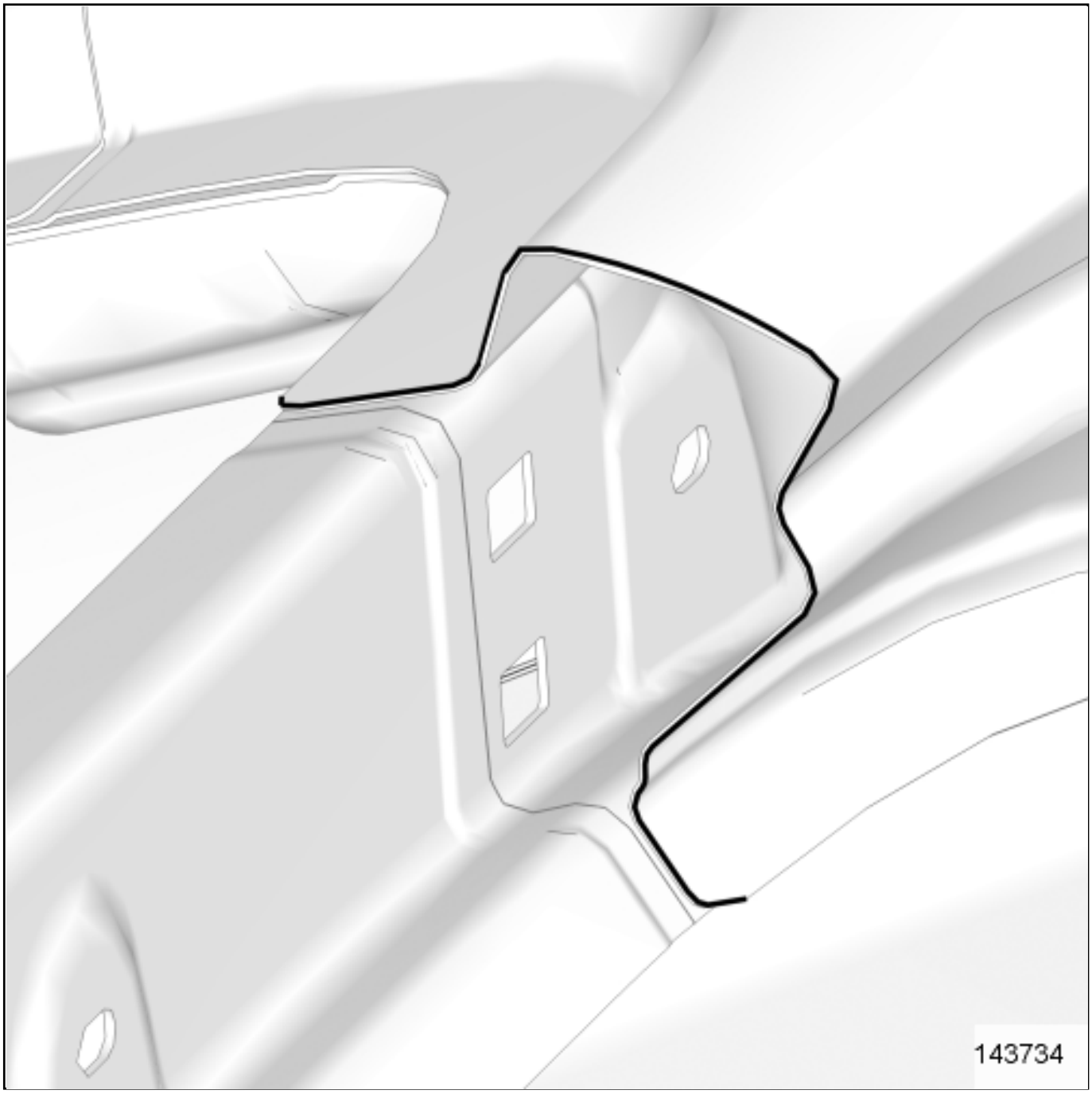
Locate the earths located near to the weld area**Earths on body: List and location of components** .

2- PARTIAL REPLACEMENT SECTION A-D,

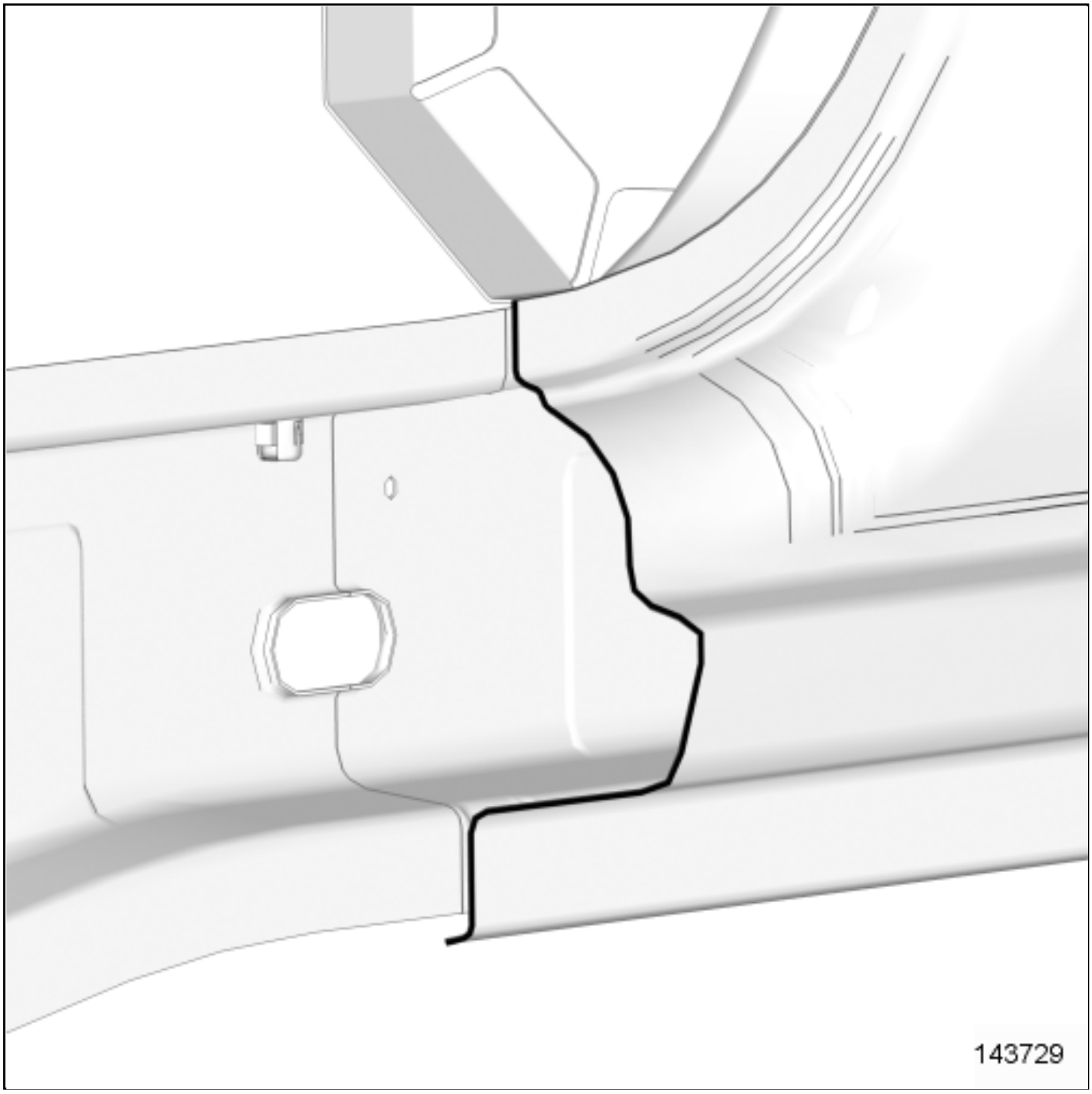
1)PART IN POSITION



DETAILED VIEW A

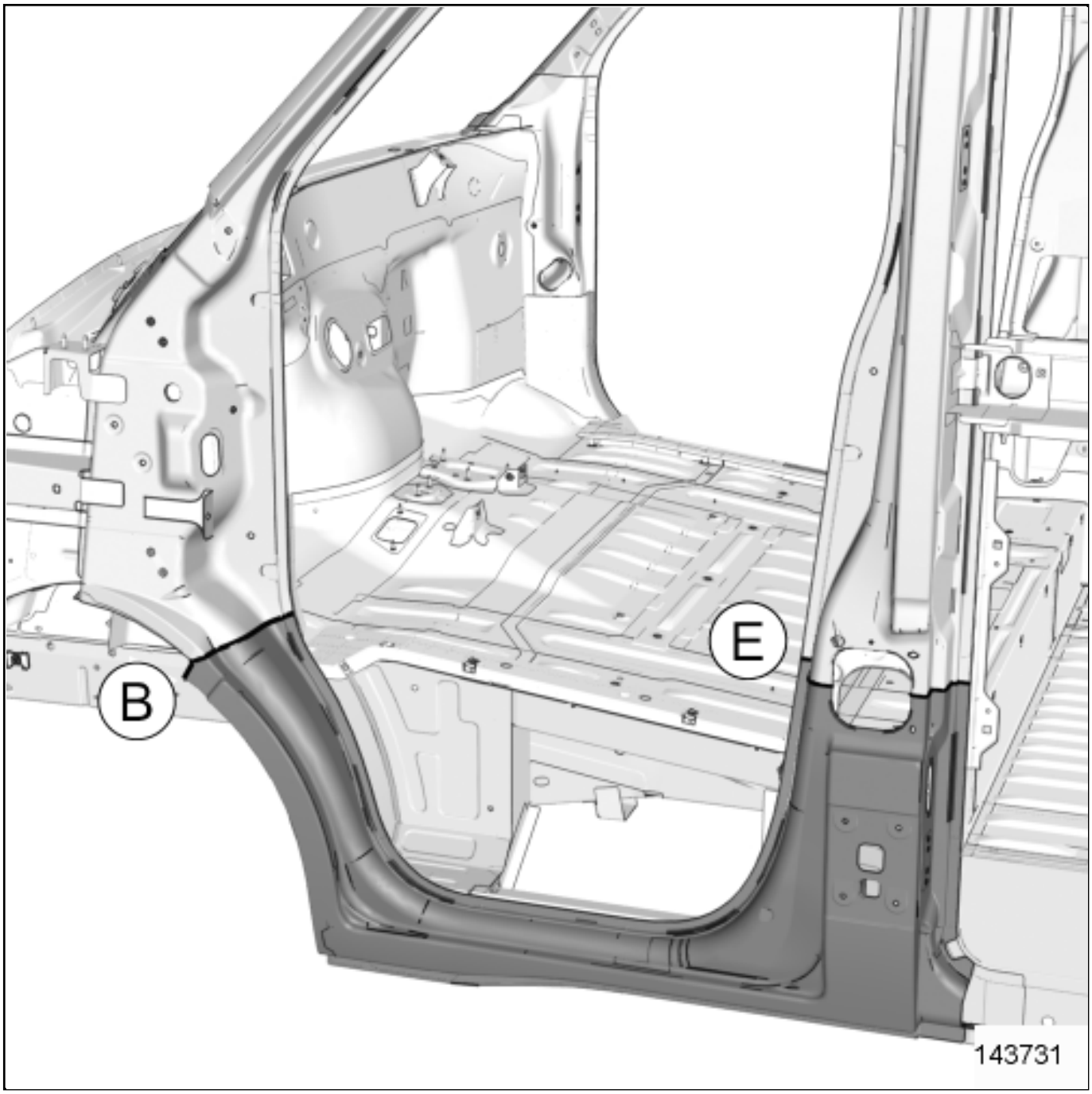


DETAILED VIEW D

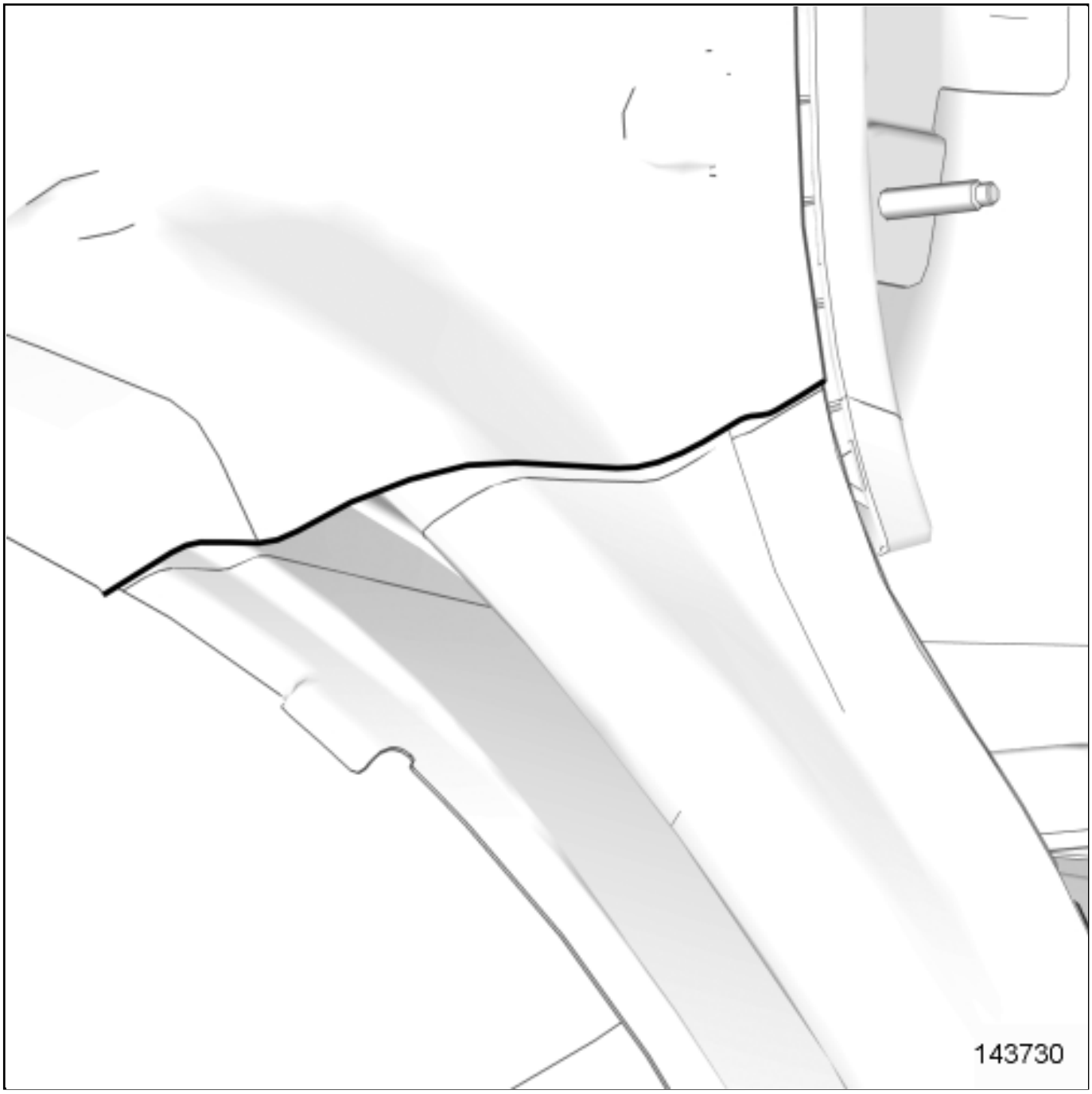


3- PARTIAL REPLACEMENT SECTION B-E

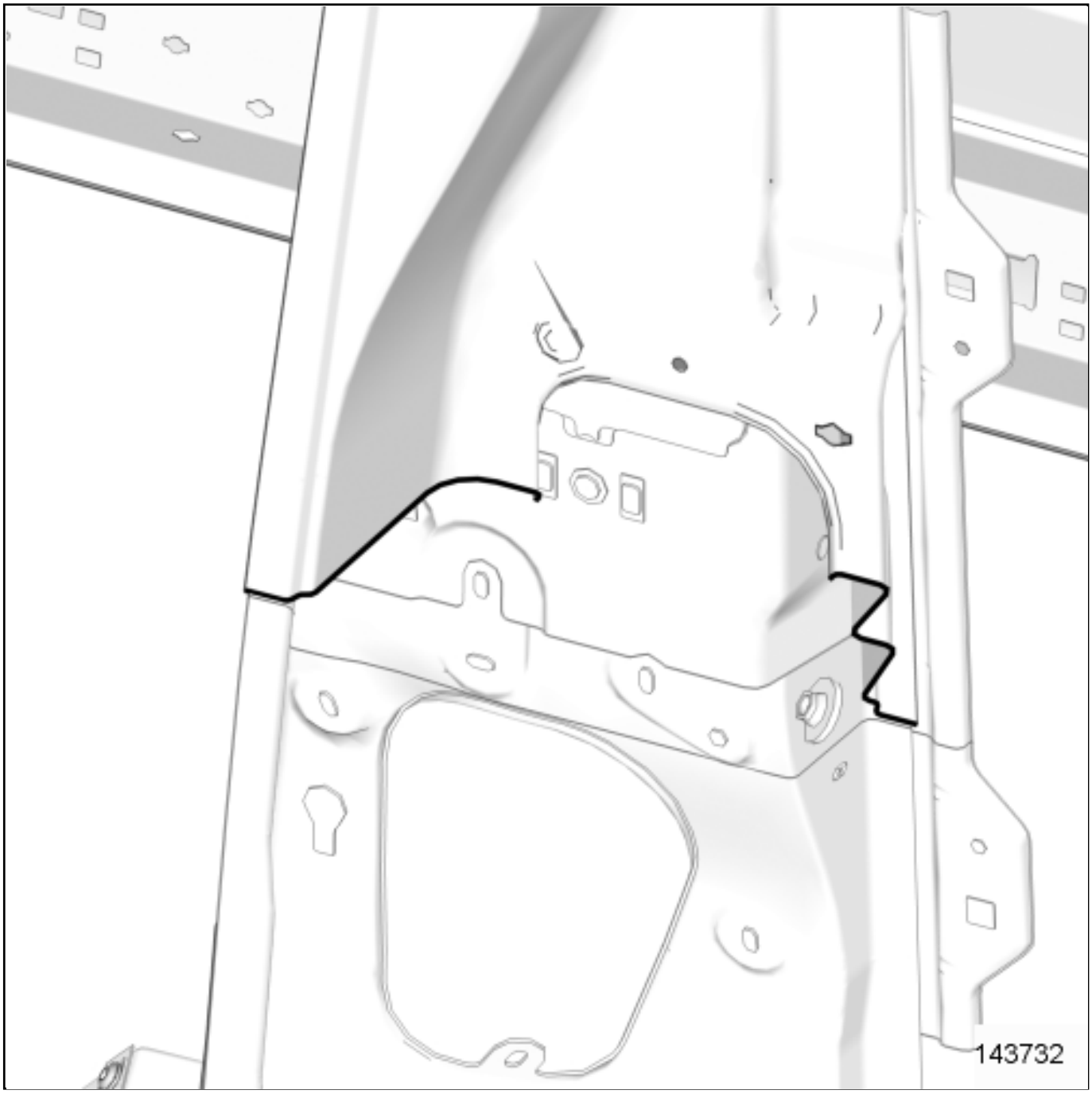
1)PART IN POSITION



DETAILED VIEW B

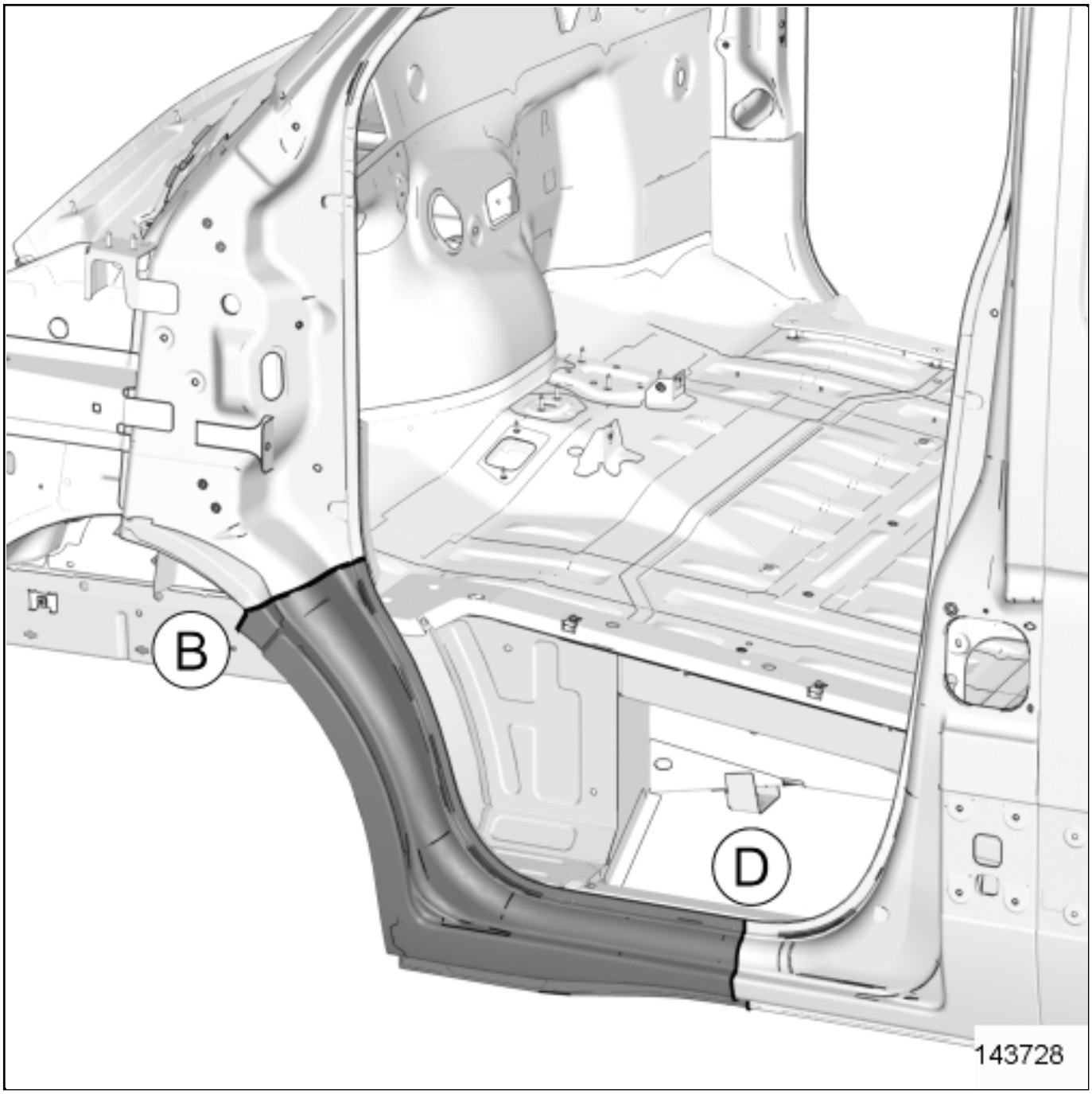


DETAILED VIEW E

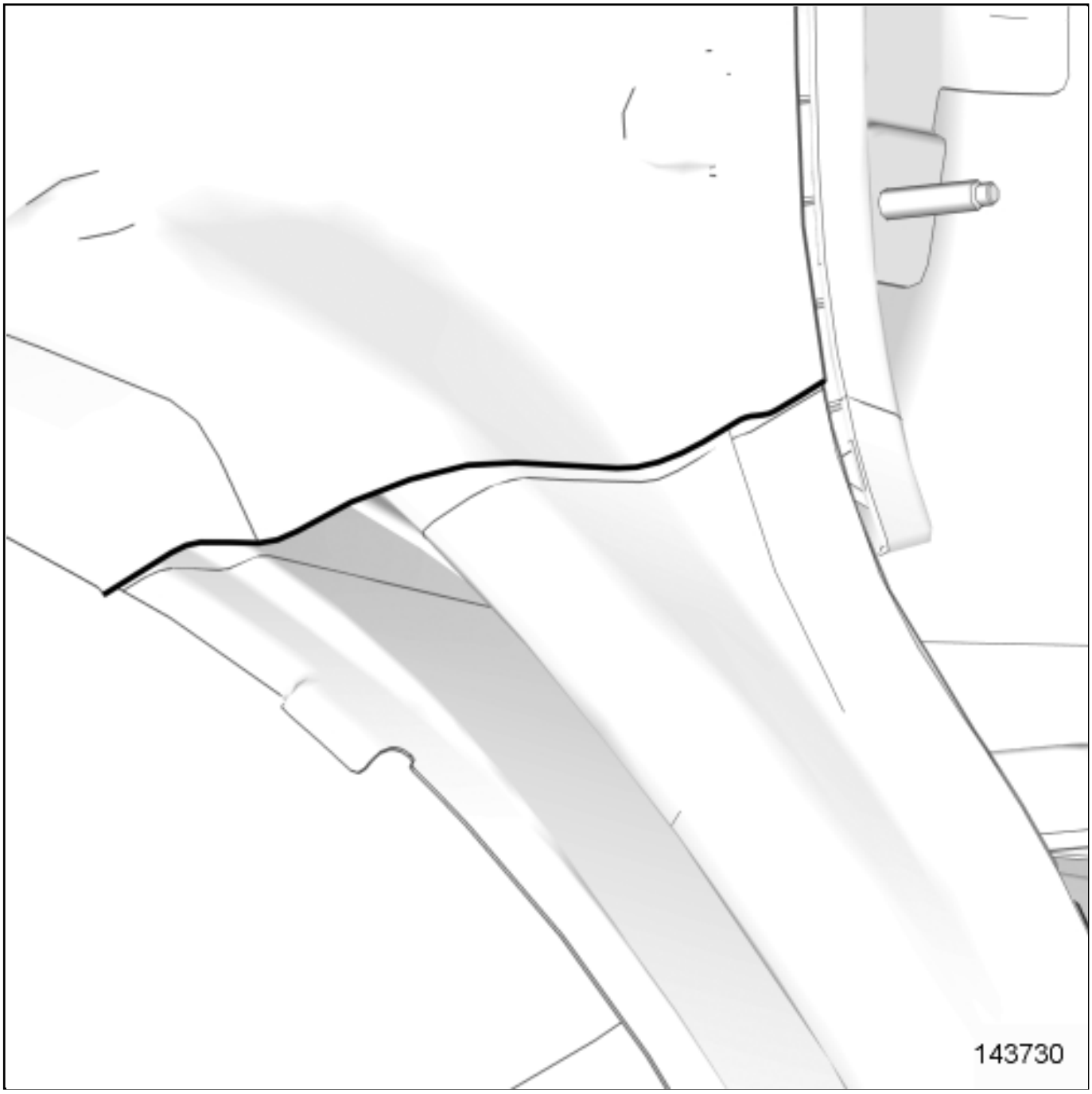


4- PARTIAL REPLACEMENT SECTION B-D

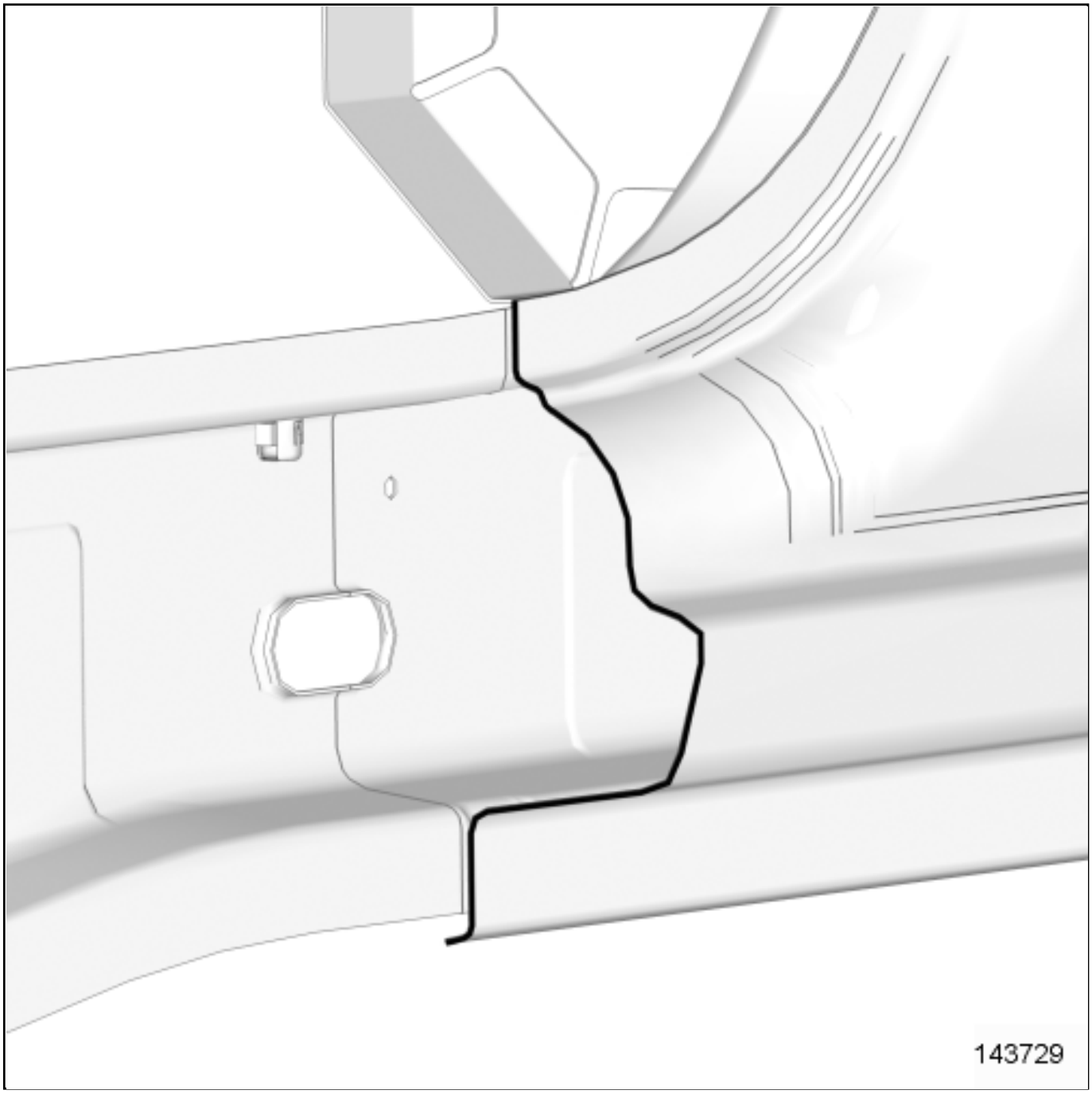
1)PART IN POSITION



DETAILED VIEW B

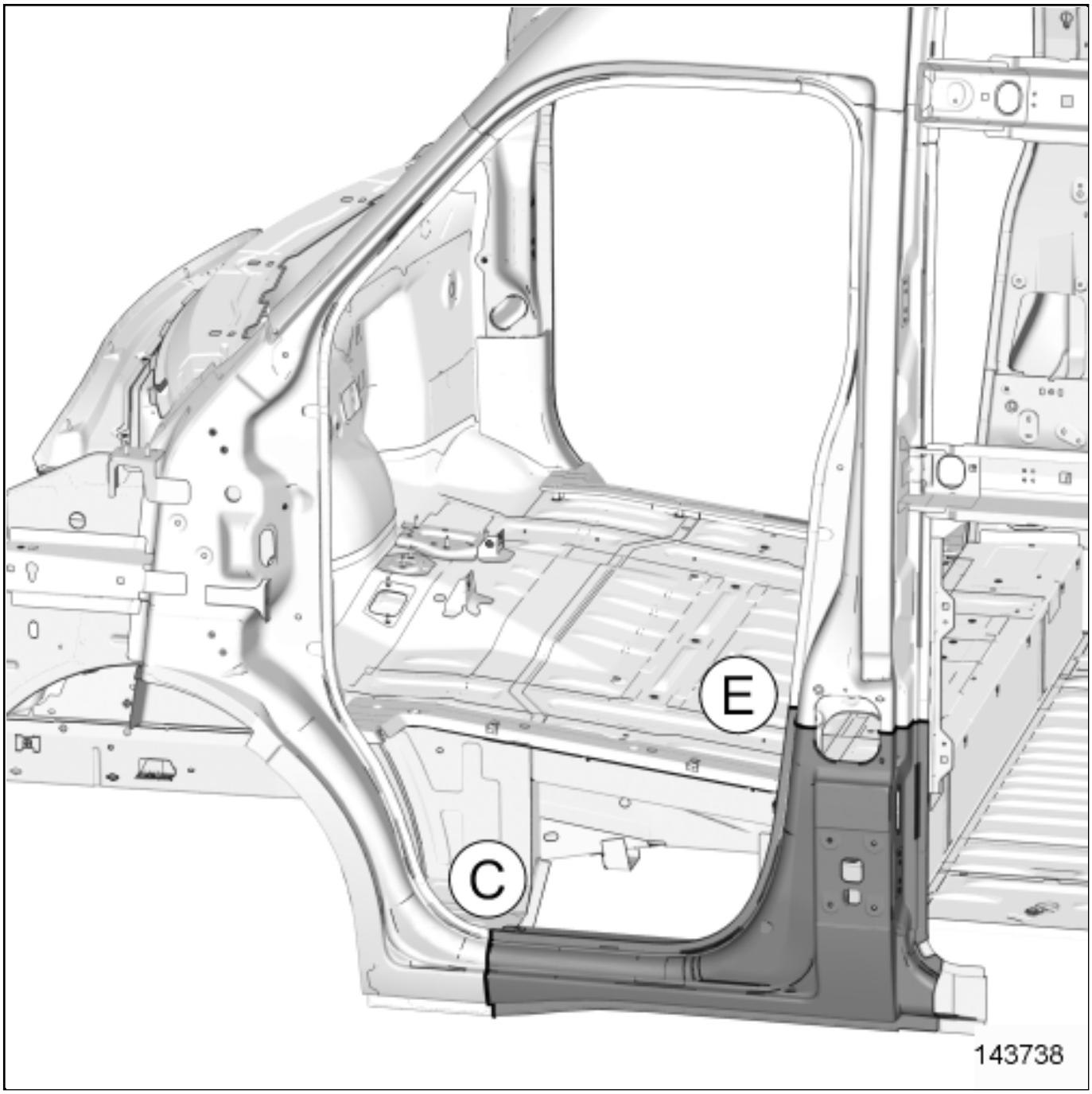


DETAILED VIEW D

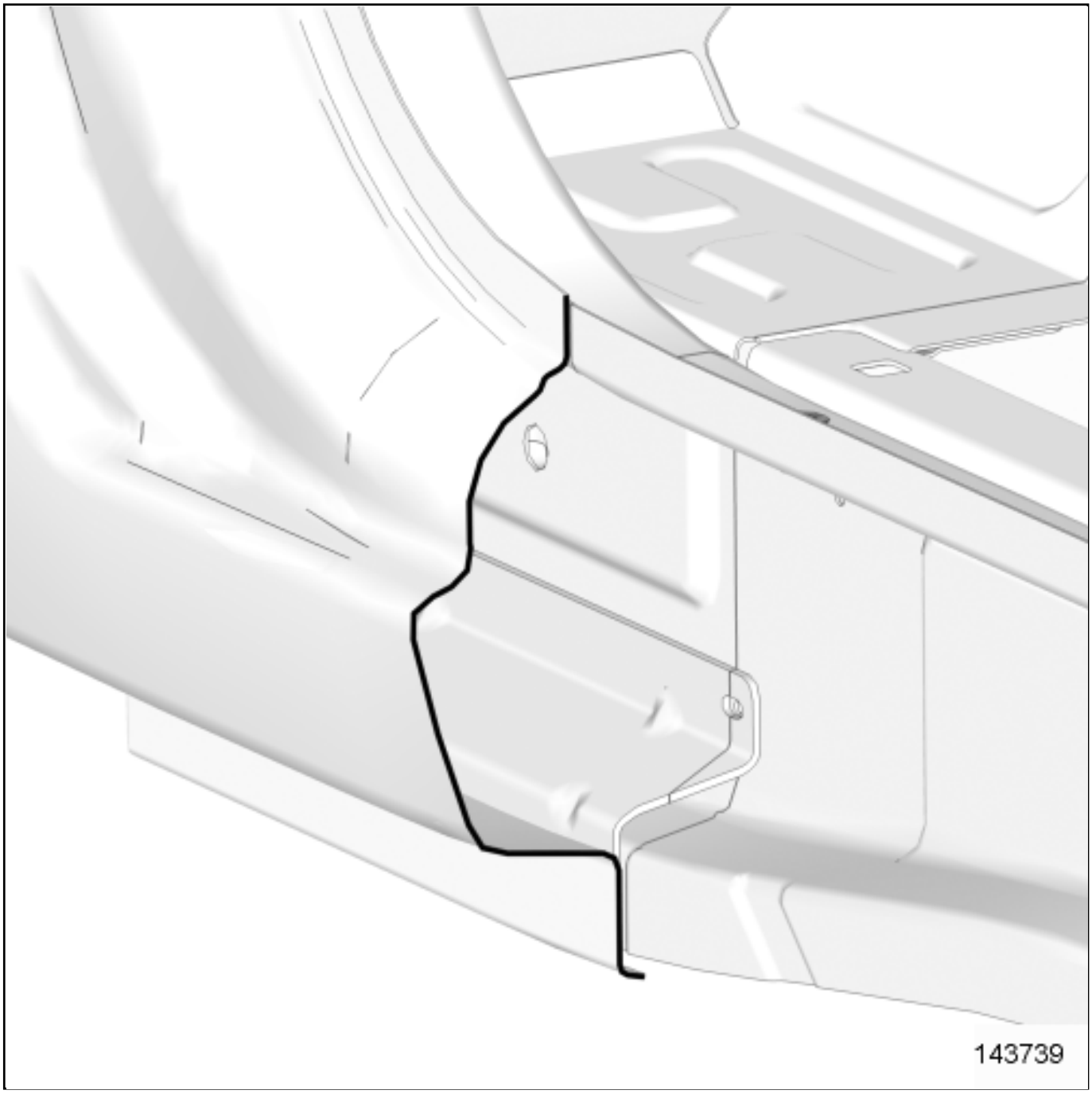


5- PARTIAL REPLACEMENT SECTION C-E

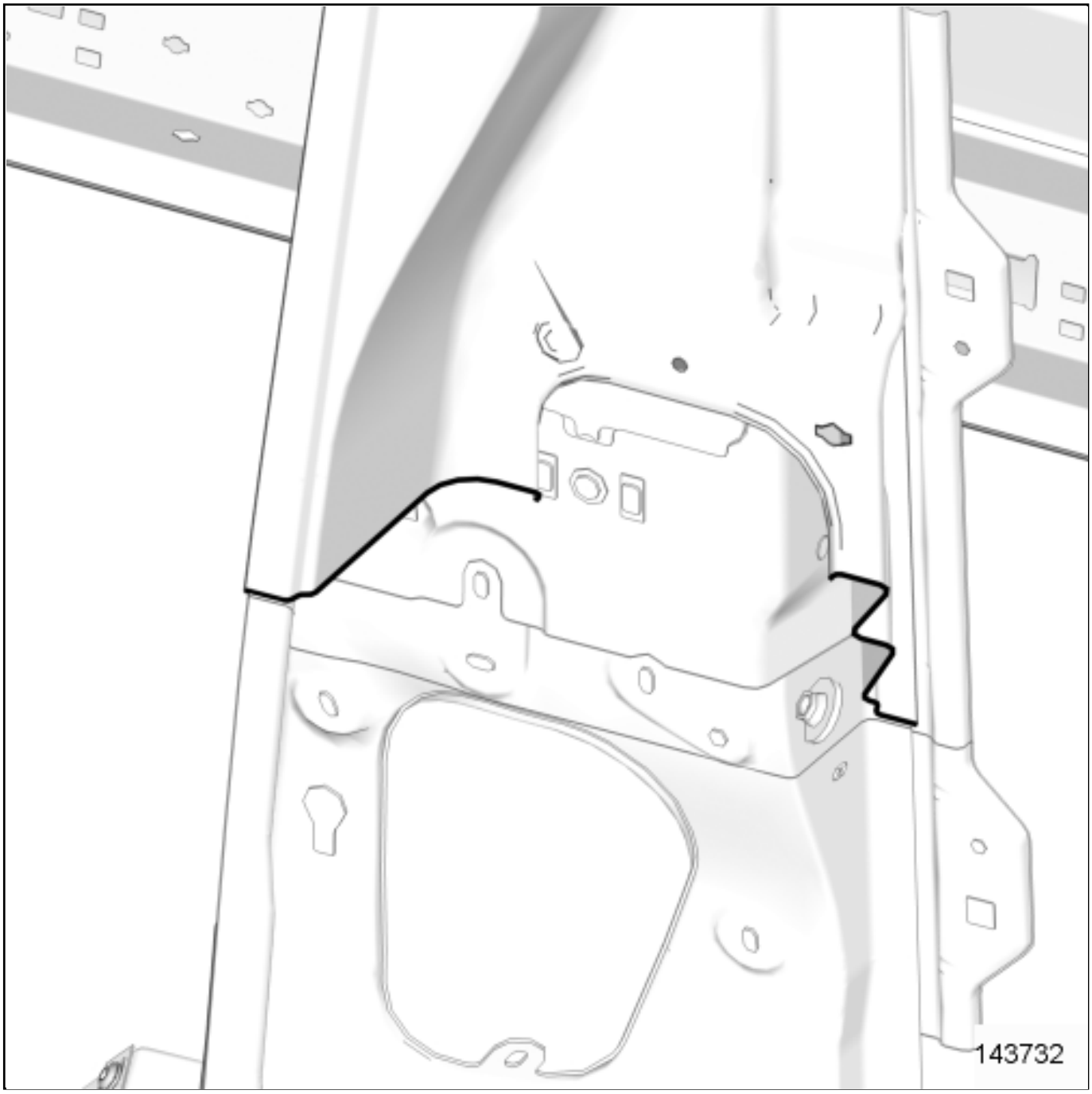
1)PART IN POSITION



DETAILED VIEW C

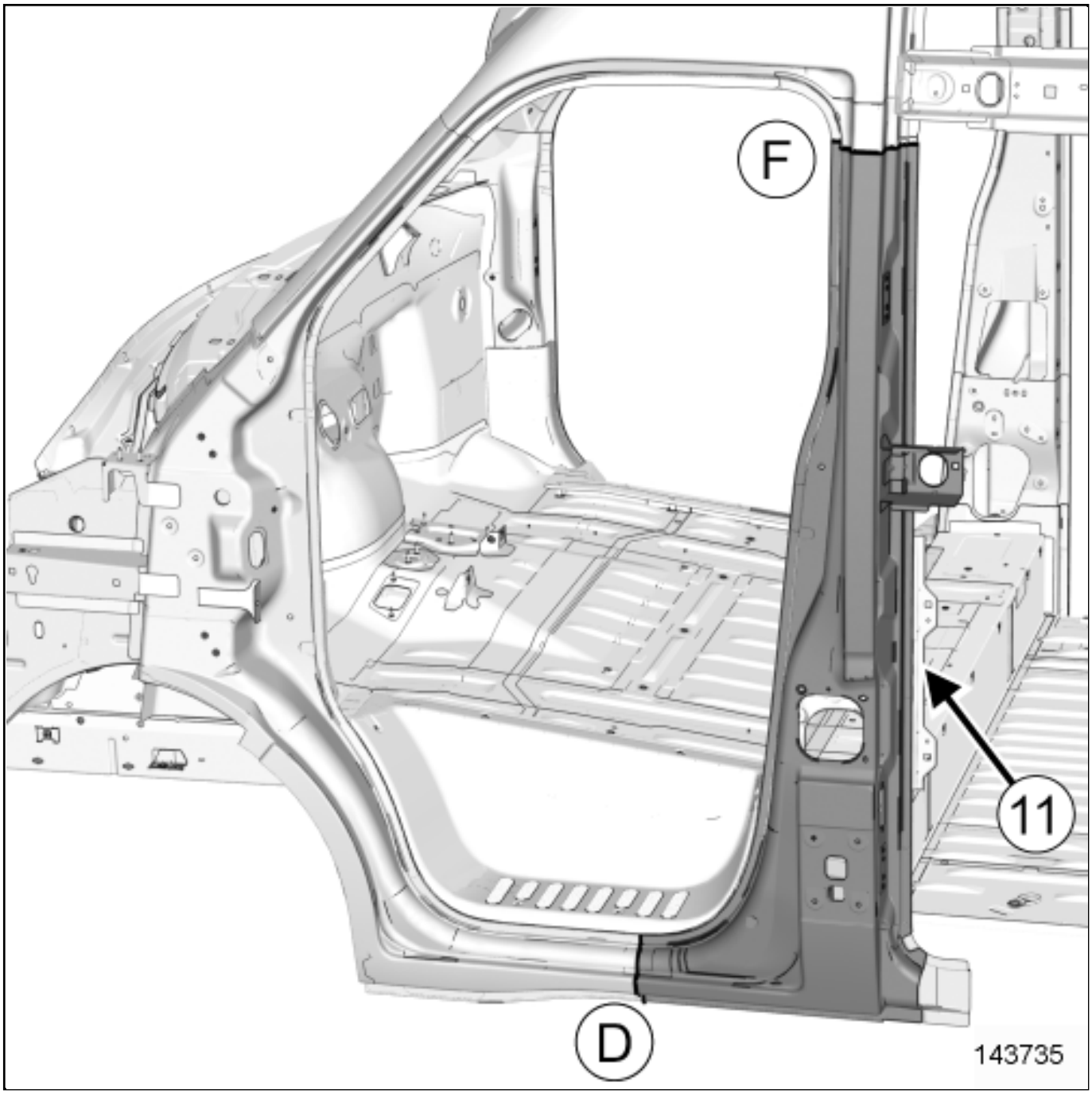


DETAILED VIEW E

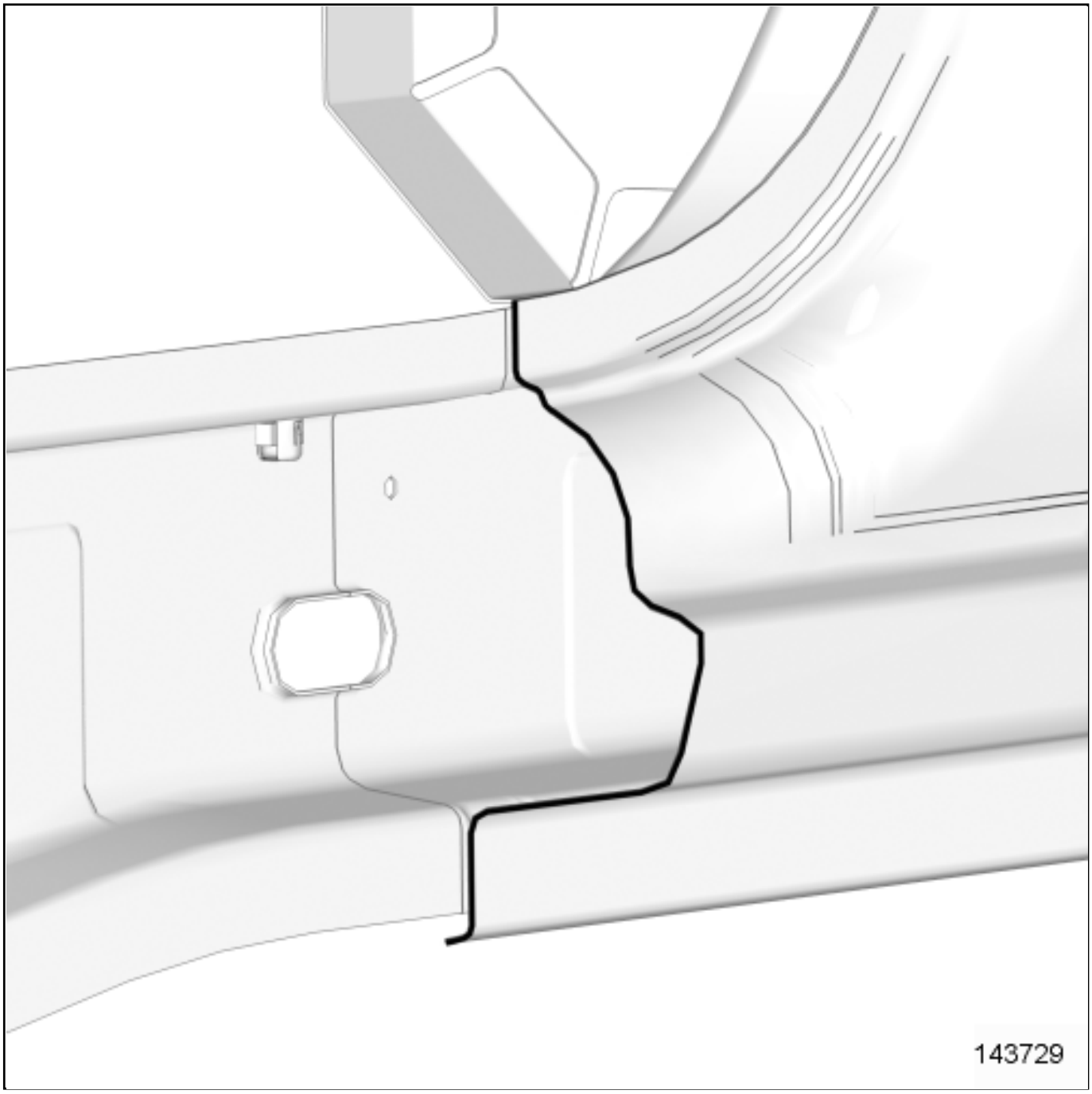


6- PARTIAL REPLACEMENT SECTION D-F

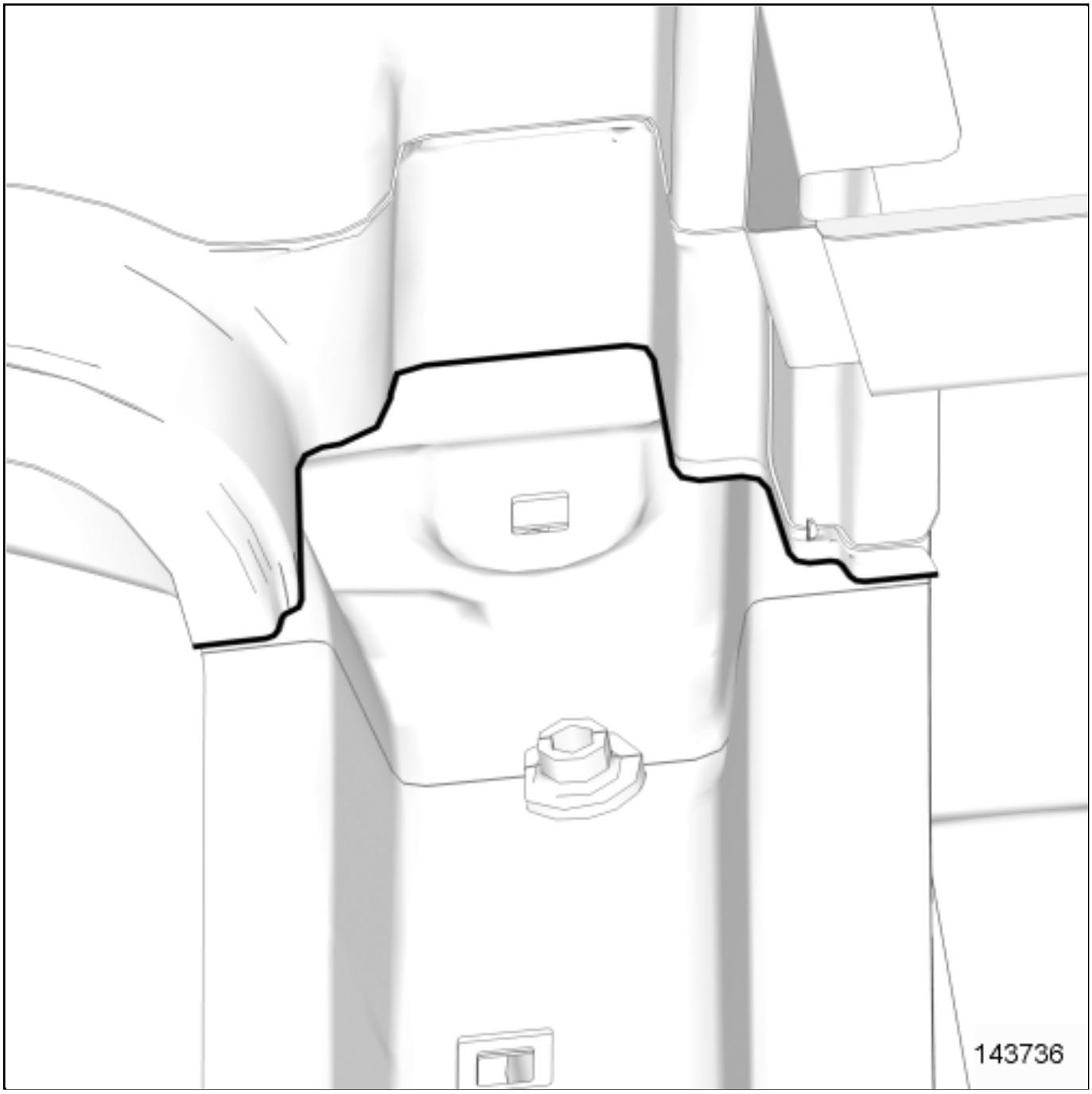
1)PART IN POSITION



DETAILED VIEW D



DETAILED VIEW F



2)PARTS ALWAYS TO BE REPLACED

For the partial replacement of section D-F on versions without a sliding side door, it is also necessary to order the trim mounting front support(11) .

BONNET:ADJUSTMENT

Note, one or more warnings are present in this procedure

WARNING

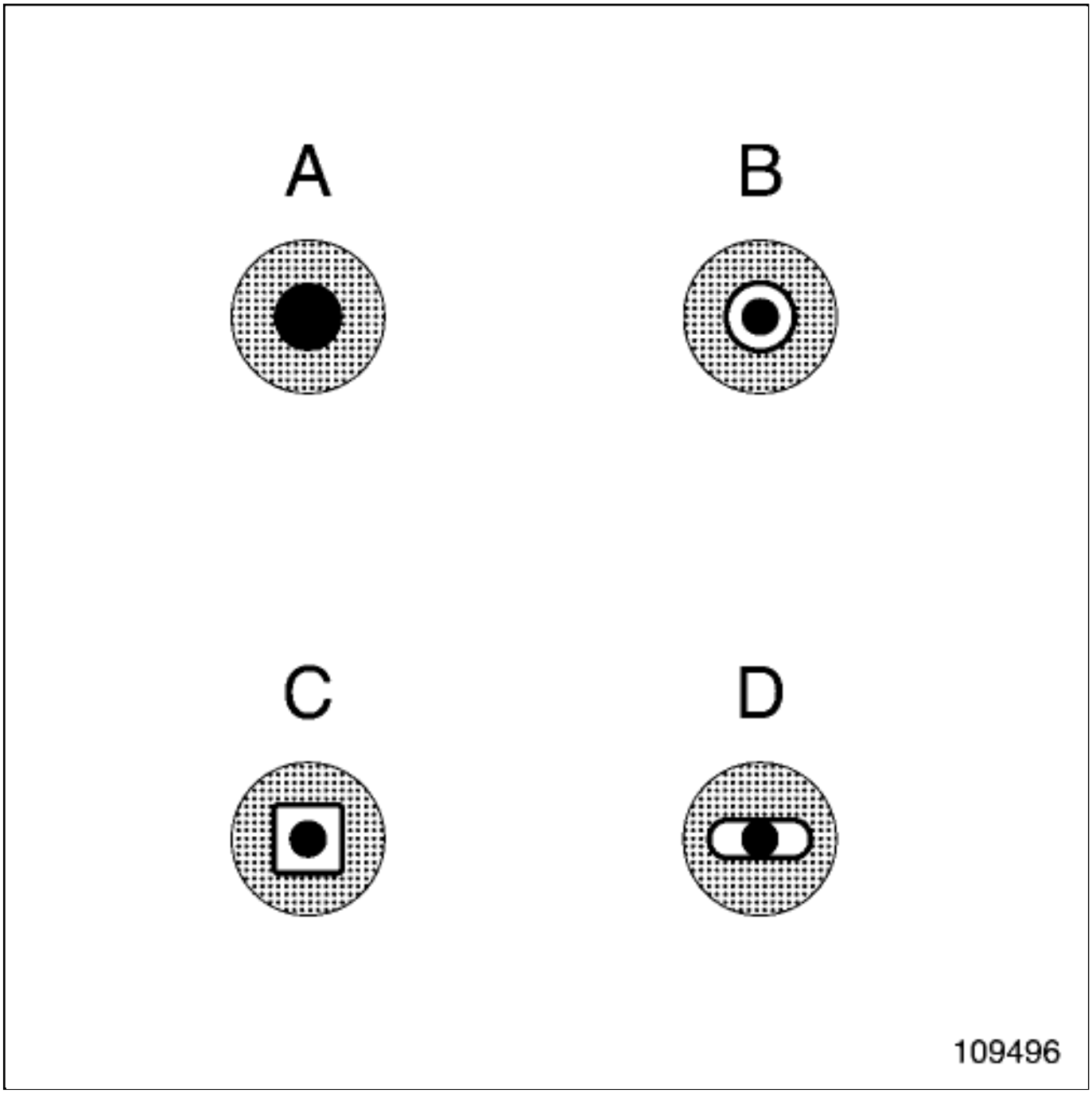
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

ADJUSTMENT VALUES

For information on the adjustment values for the bonnet**Vehicle panel gaps: Adjustment value** (01C, Vehicle bodywork specifications).

ADJUSTMENT

Observe the correct adjustment order for the bonnet**Non-side opening elements: Adjustment** (MR 400, 48A, Non-side opening elements).



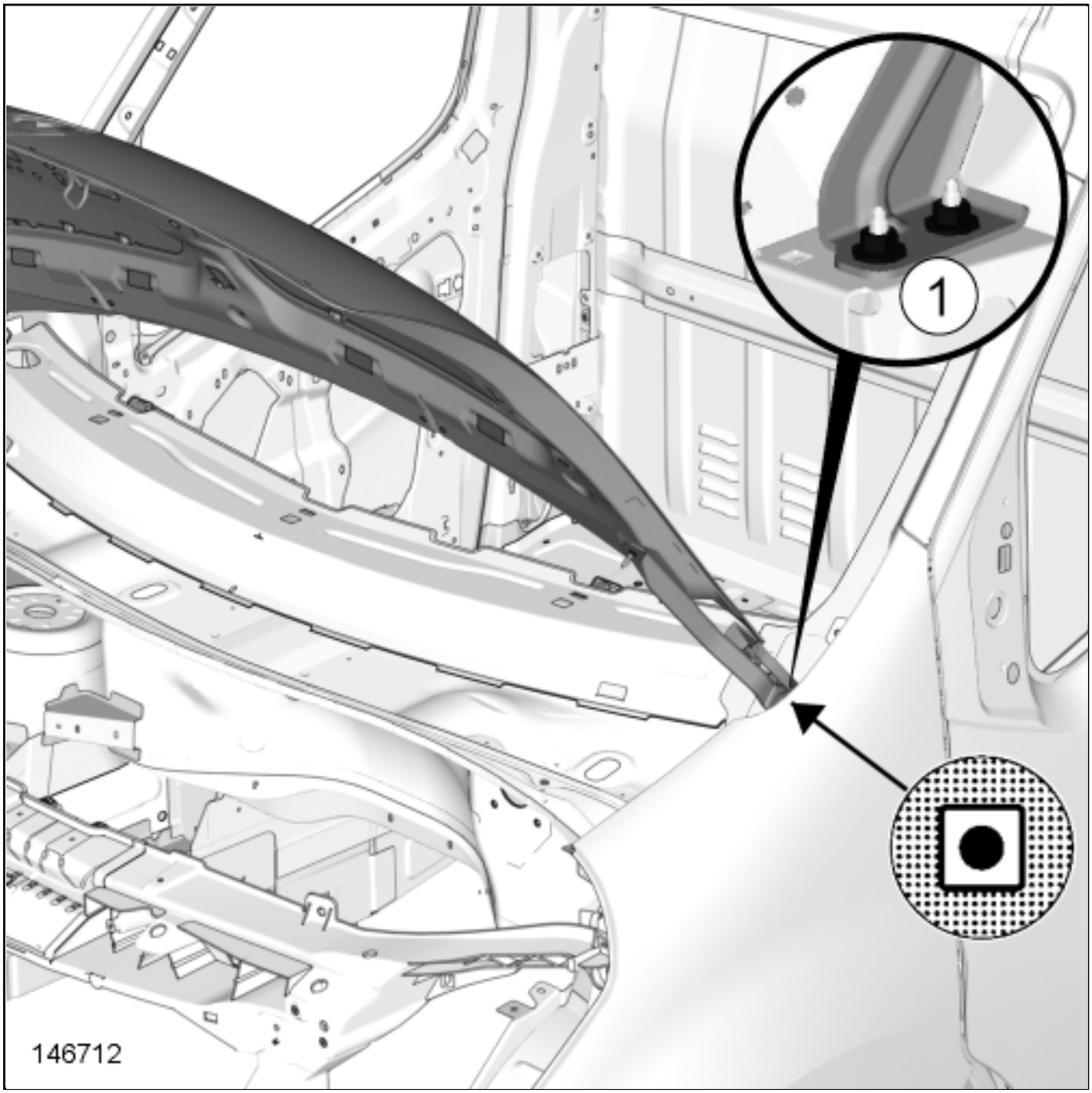
Symbols A, B, C and D show the adjustment options.

The black dot in the centre represents the body of the bolt.

The grey section represents the component to be adjusted.

The white section represents the adjustment area.

1. ADJUSTMENT USING THE BONNET HINGE NUTS



- Undo the nuts(1) .

- Adjust the bonnet panel gaps.

BONNET HINGE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

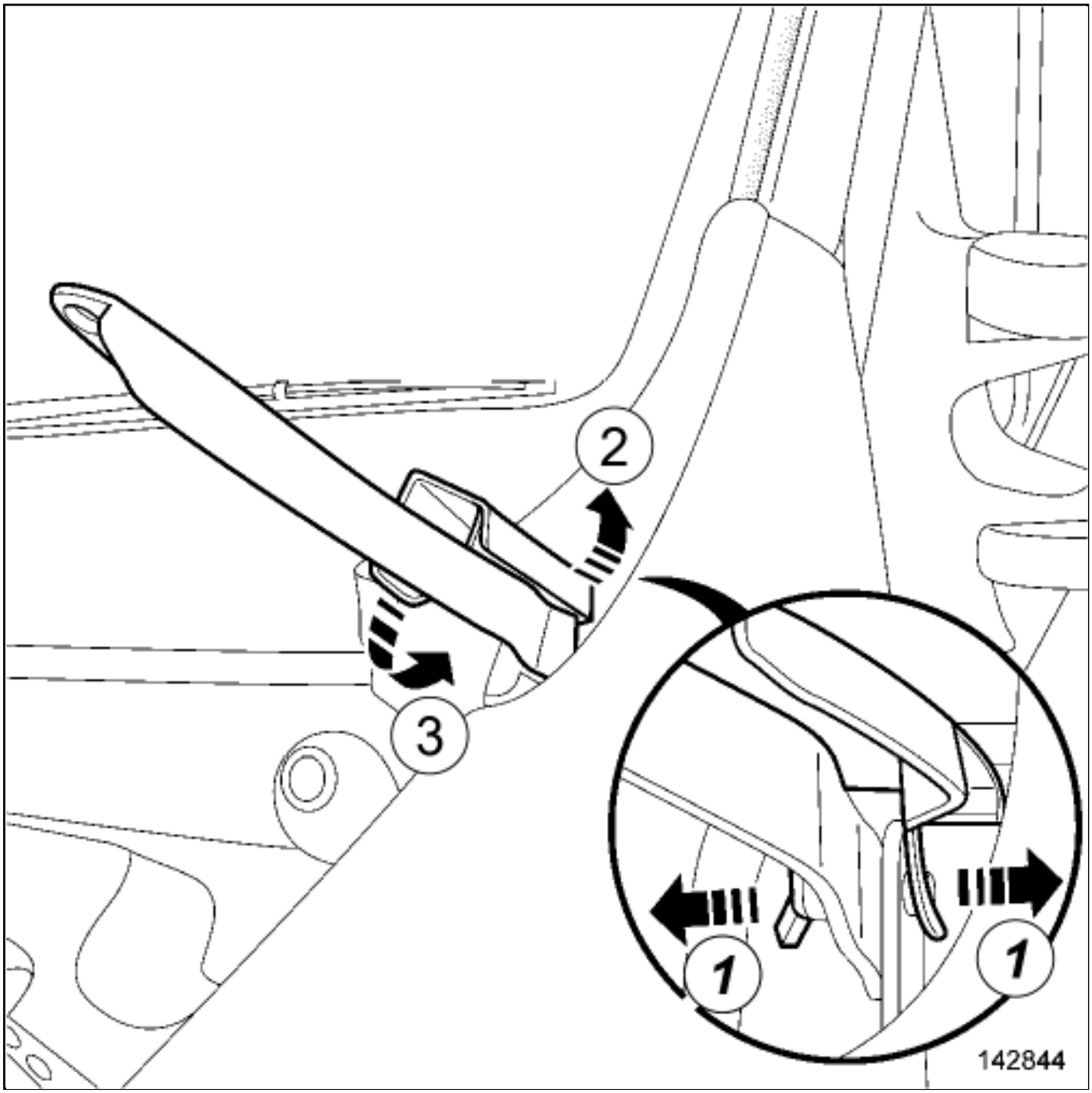
WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

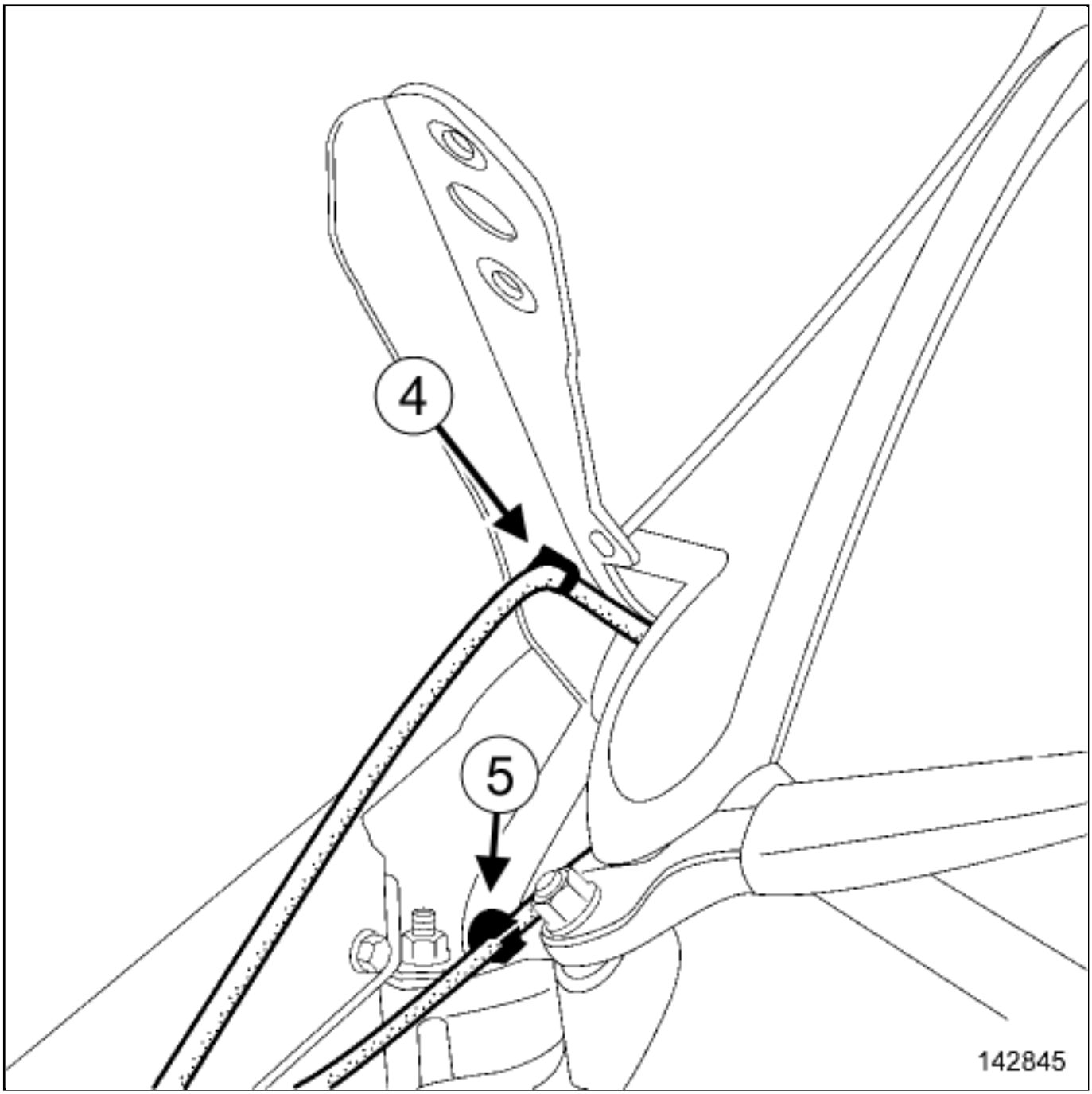
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the bonnet**Bonnet: Removal - Refitting** (48A, Non-side opening elements).

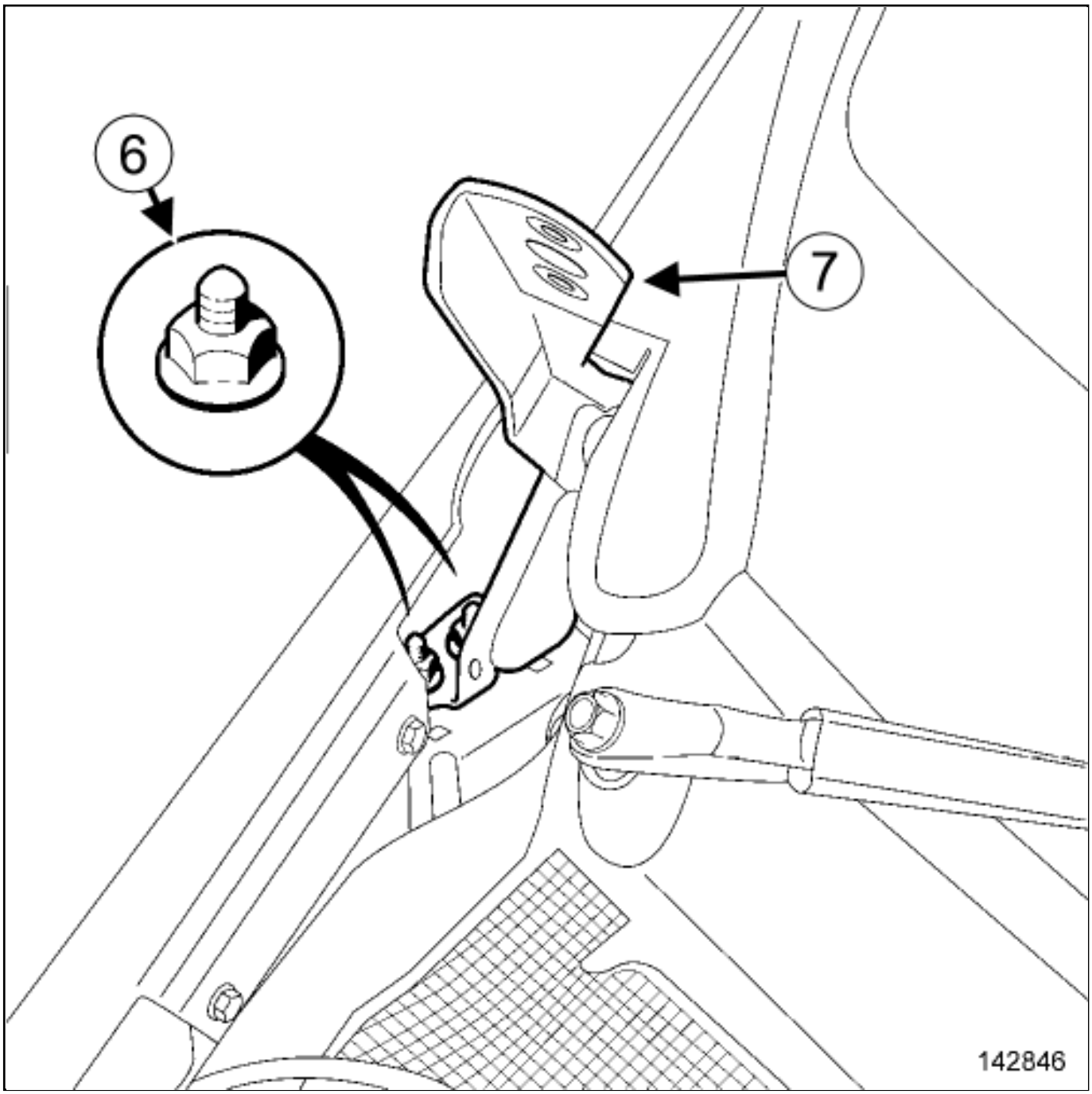


- Unclip the bonnet hinge trim by(1) .
- Remove the trim by(2) and by (3) .



- Unclip the windscreen washer pipe from the bonnet right-hand hinge at(4) and at (5) .

2. REMOVAL OPERATION



Remove:

- the nuts(6) ,
- the bonnet hinge(7) .

REFITTING

Proceed in the reverse order to removal.

Repair-50x03x02x06-01x37-1-1-1.xml

XSL version : 3.02 du 22/07/11

BONNET LOCK: REMOVAL - REFITTING

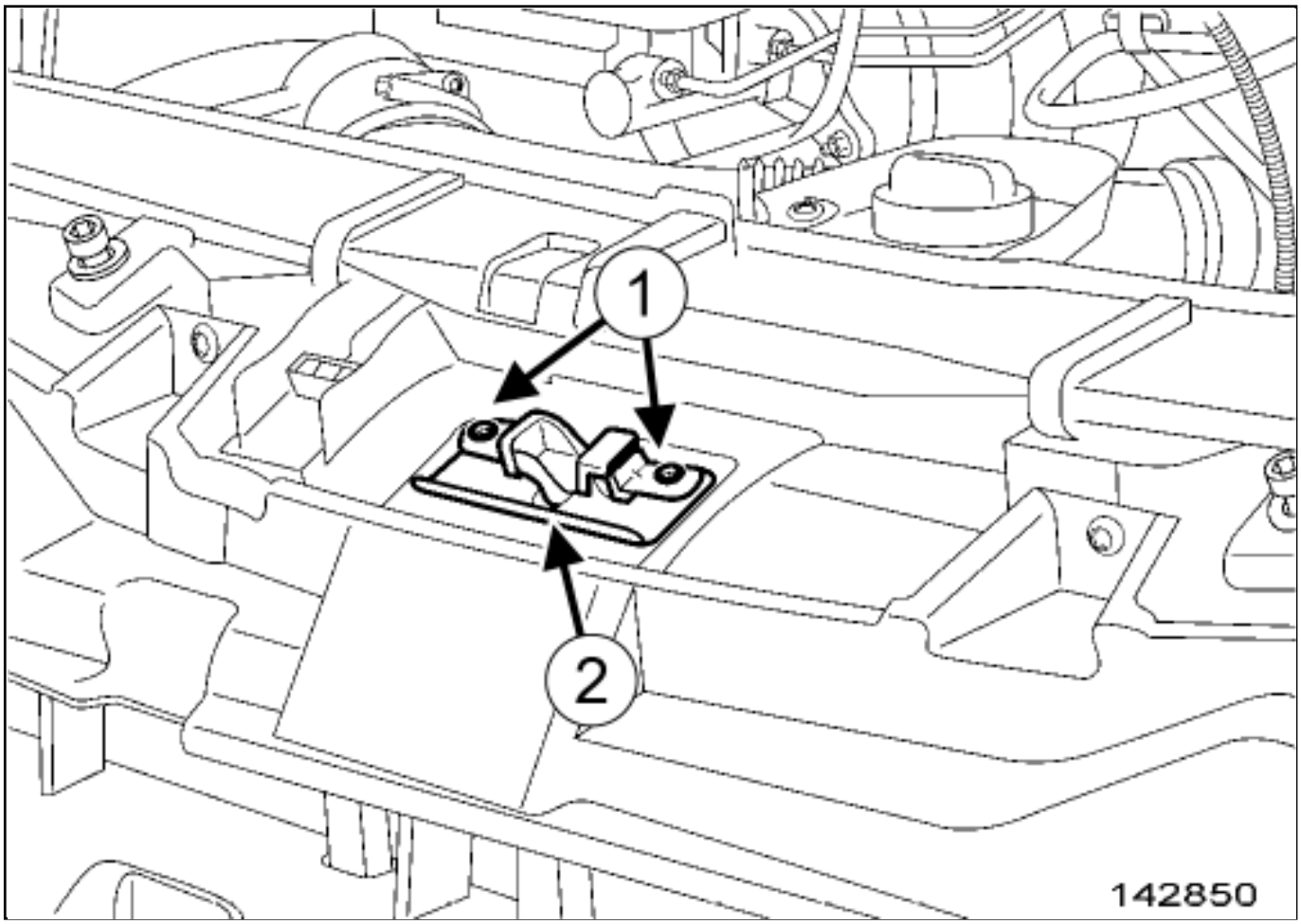
Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

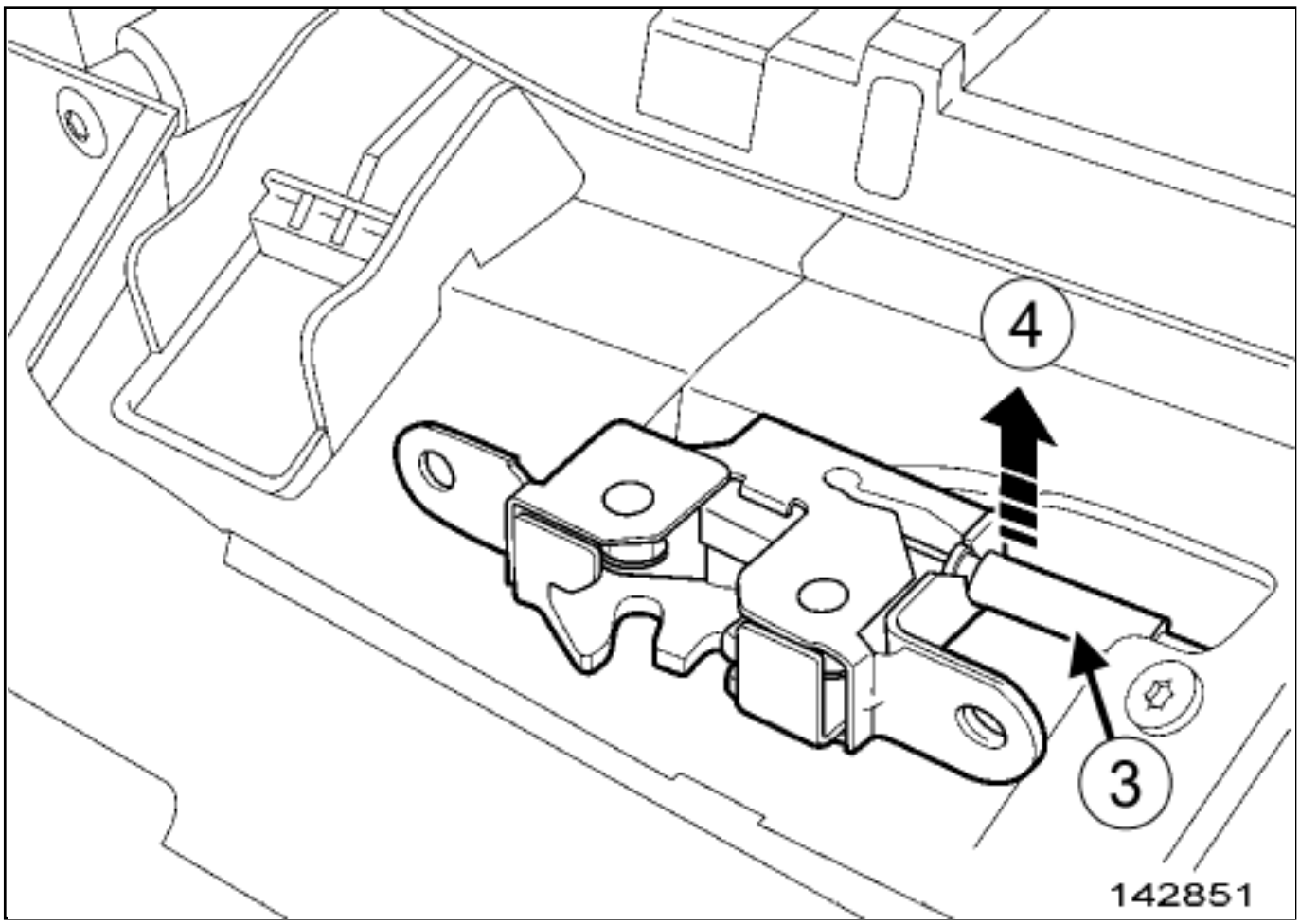
REMOVAL

1. REMOVAL OPERATION



Remove:

- the bonnet catch bolts(1) ,
- the permanent shim(2) .



Unclip the bonnet release cable(3) by (4) .

Remove the bonnet catch.

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

Carry out a function test.

Torque tighten the bonnet catch bolts8 N.m.

BONNET RELEASE CABLE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

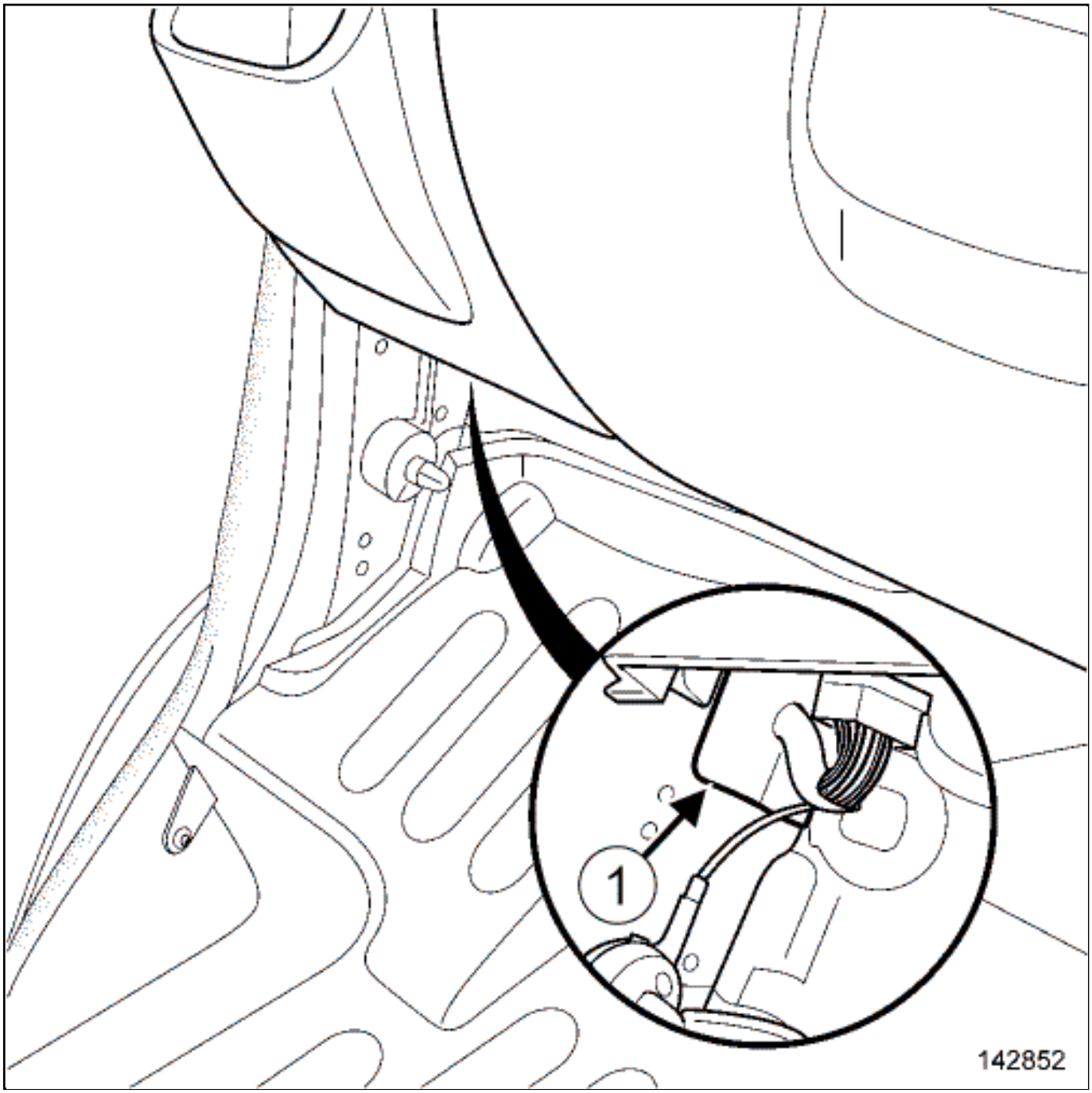
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

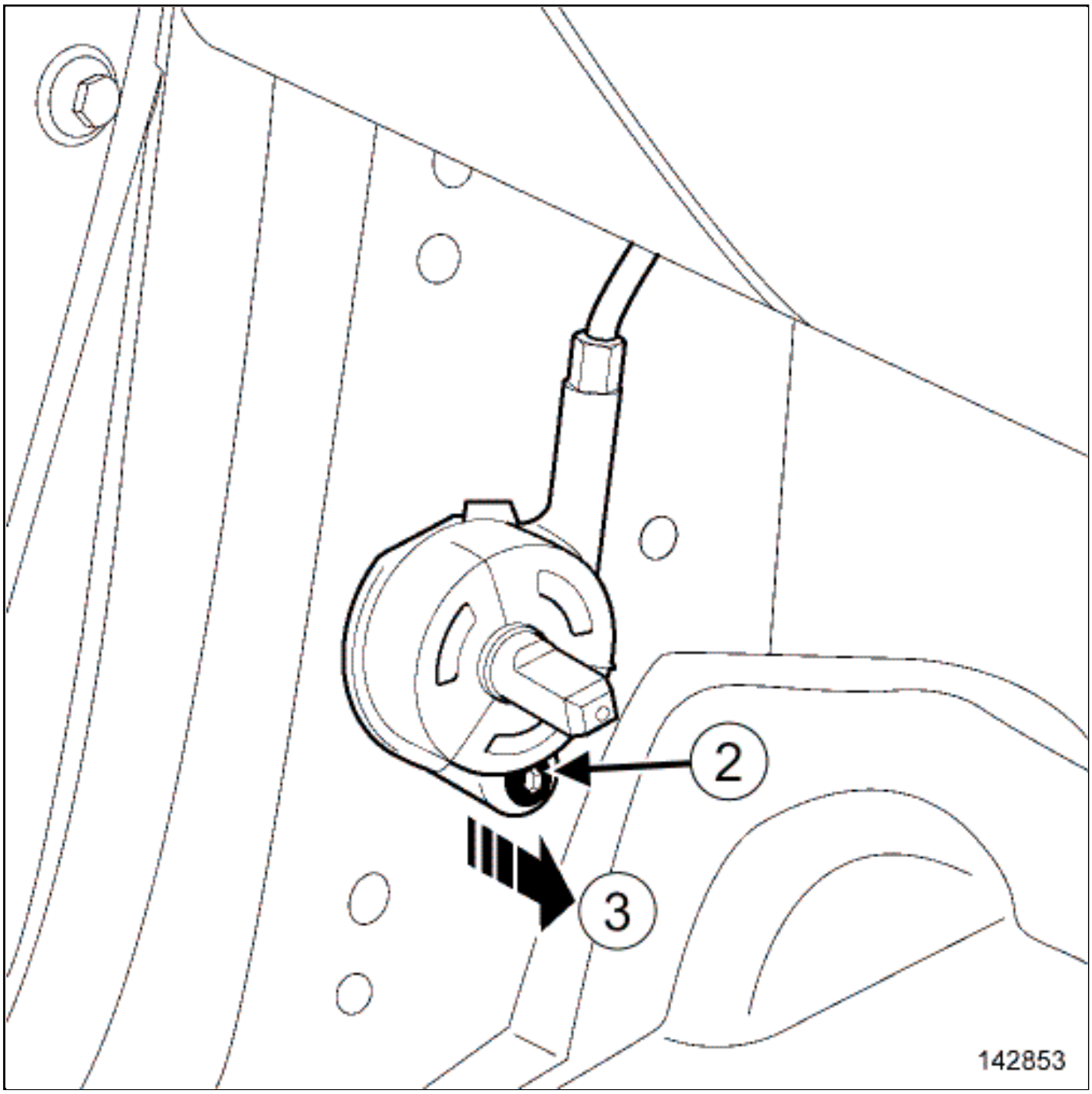
Remove:

- the bonnet release catch**(see 52A, Non-side opening element mechanisms, Bonnet release control: Removal - Refitting)** ,
- the bonnet catch**(see 52A, Non-side opening element mechanisms, Bonnet lock: Removal - Refitting)** ,
- the front sill panel trim**Front door sill lining: Removal - Refitting** (71A, Body internal trim).



- Remove the soundproofing pad(1) .

2. REMOVAL OPERATION



- Remove:
  - the bolt(2) ,
  - the bonnet opening mechanism by(3) .

- Note the route of the bonnet release cable.

- Remove the bonnet release cable.

REFITTING

- Proceed in the reverse order to removal.

BONNET RELEASE CONTROL: REMOVAL - REFITTING

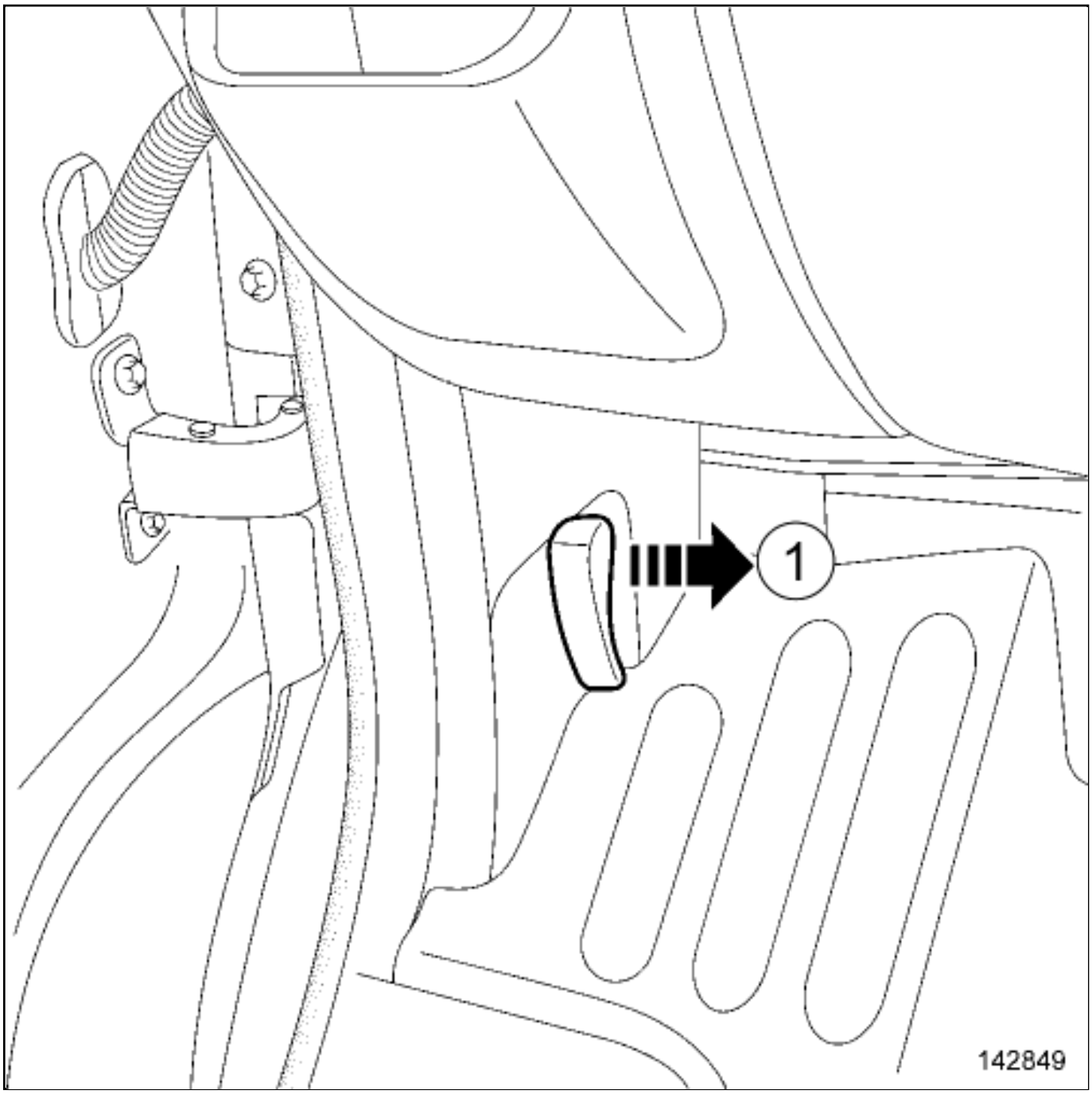
Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL OPERATION



Remove the bonnet release control by(1) .

REFITTING

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

BONNET STRIKER PANEL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

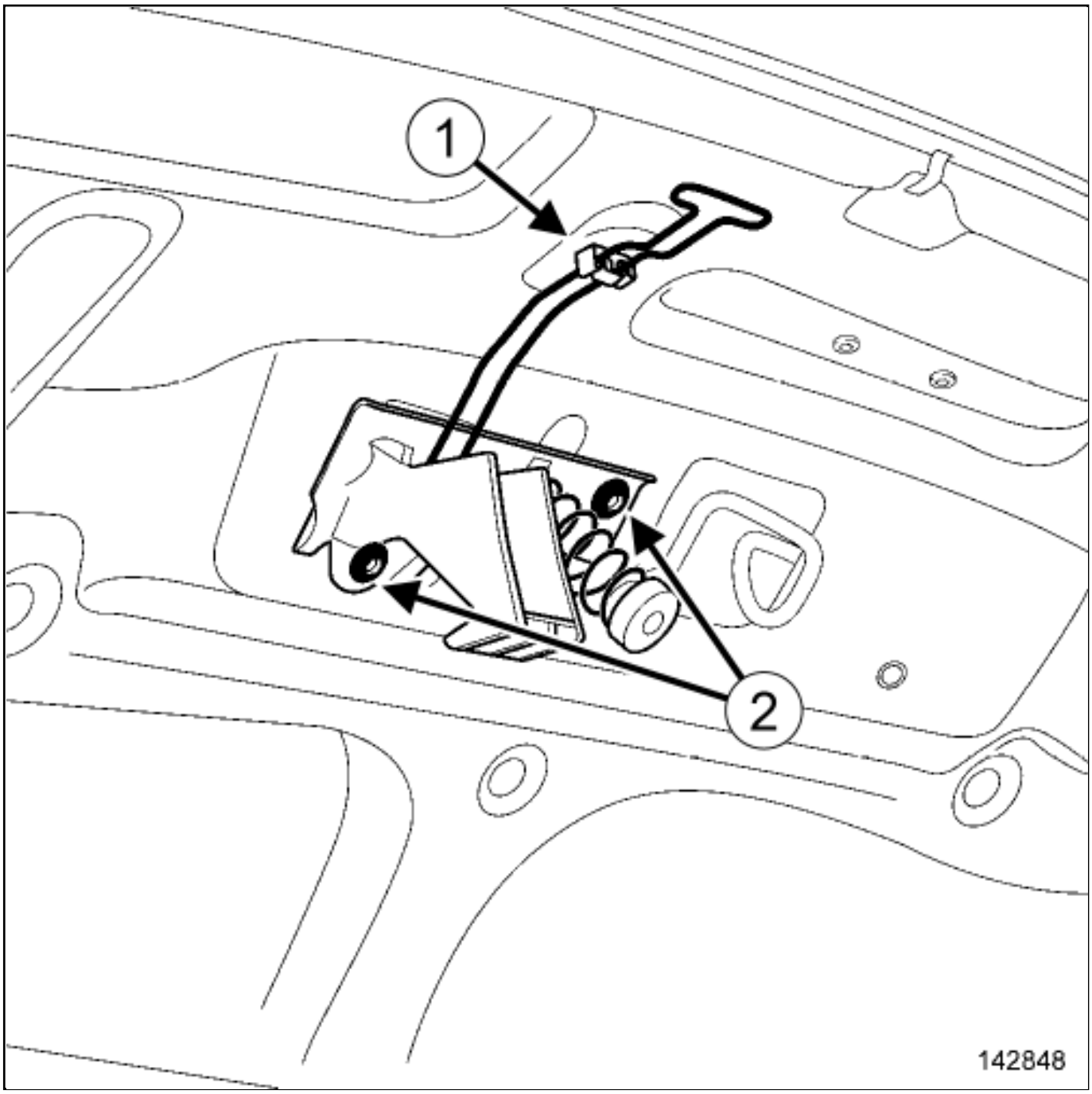
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Open the bonnet.

2. REMOVAL OPERATION



Unclip the striker panel opening control at(1) .

Remove:

- the bolts(2) ,
- the bonnet striker panel.

REFITTING

Proceed in the reverse order to removal.

Repair-50x03x02x08-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

BONNET: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

This operation can be carried out in two ways:

- removal without the hinges: allows the initial adjustments to be kept.

- removal with the hinges: prevents the original paintwork from coming off between the hinges and the bonnet lining.

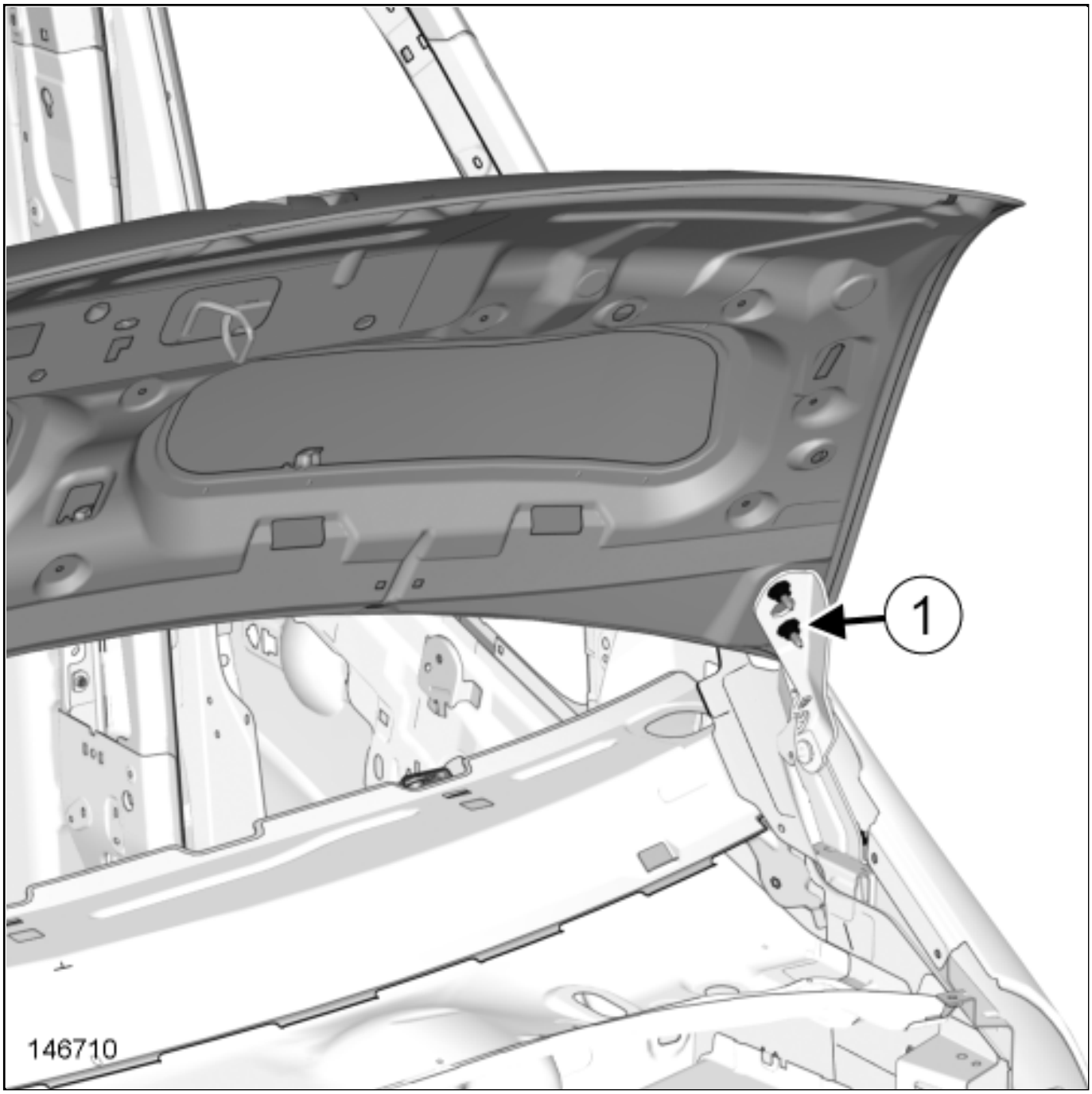
REMOVAL

1. REMOVAL WITHOUT THE BONNET HINGES

1- REMOVAL PREPARATION OPERATION

- Remove the bonnet soundproofing.
- Disconnect the screen washer pipes.
- Unclip the screen washer pipes.

2- REMOVAL OPERATION



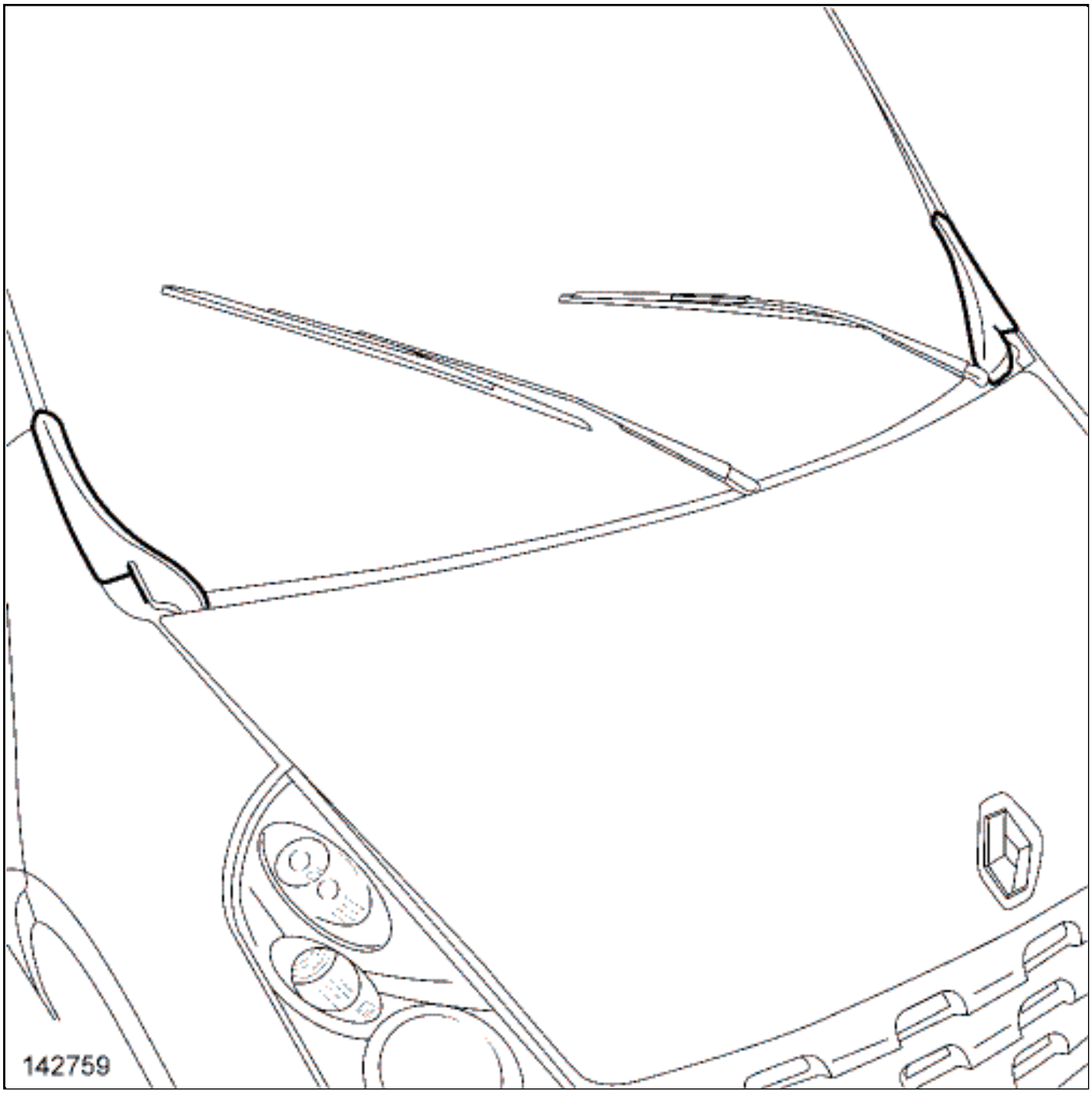
Remove:

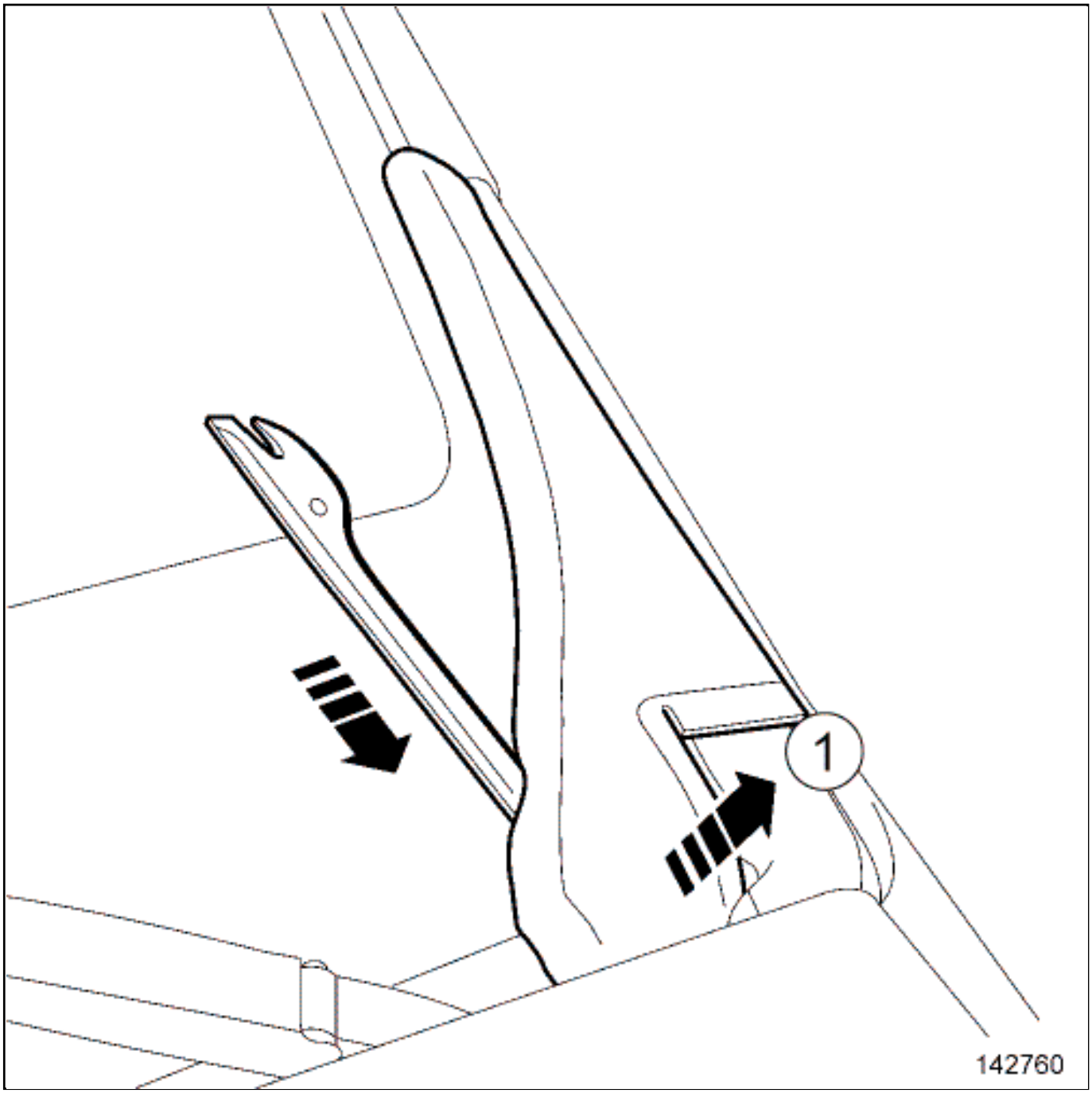
- the nuts(1) ,
- the bonnet (this operation requires two people).

2. REFITTING WITHOUT THE BONNET HINGES

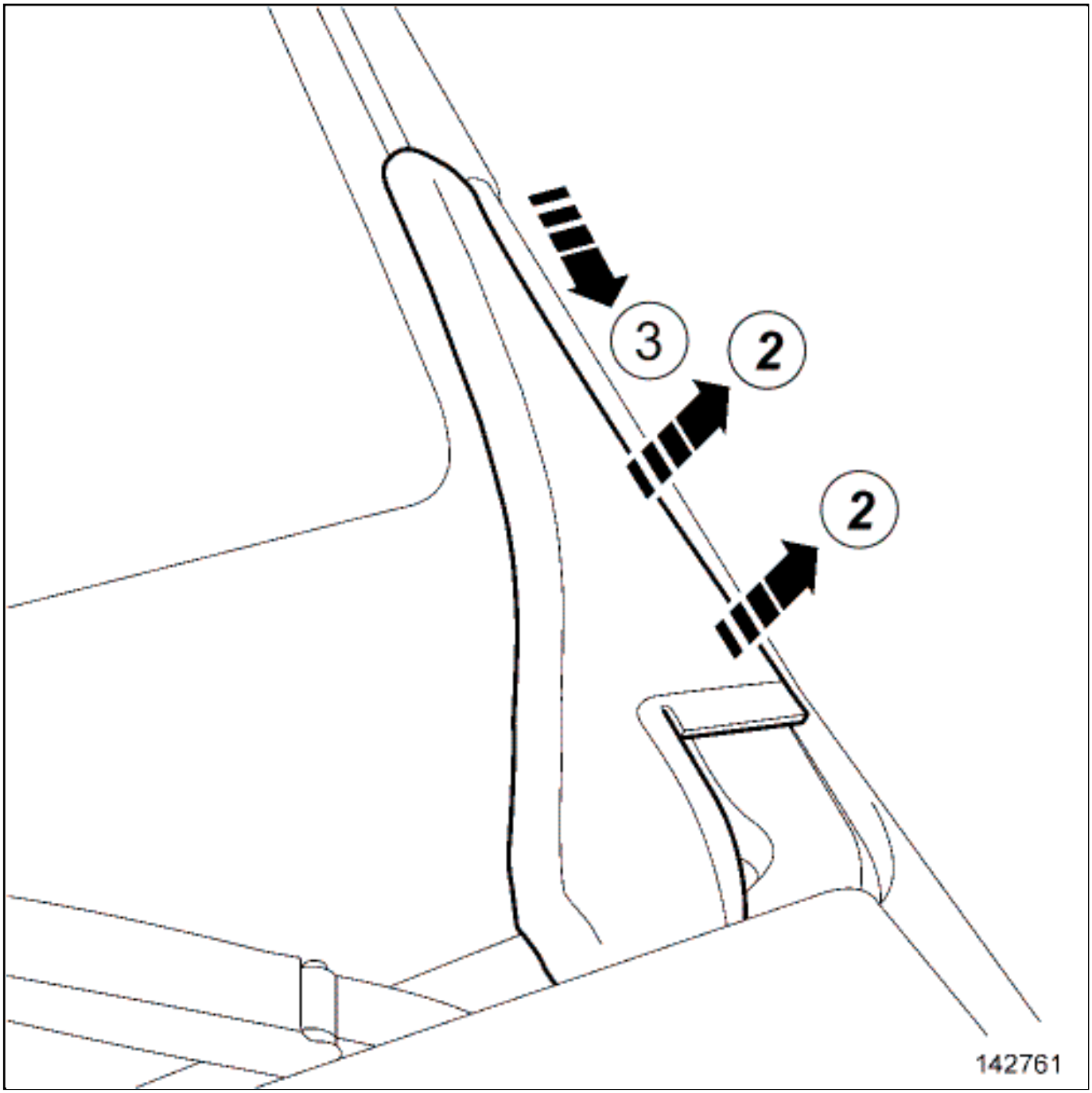
Proceed in the reverse order to removal.

3. REMOVAL WITH THE BONNET HINGES

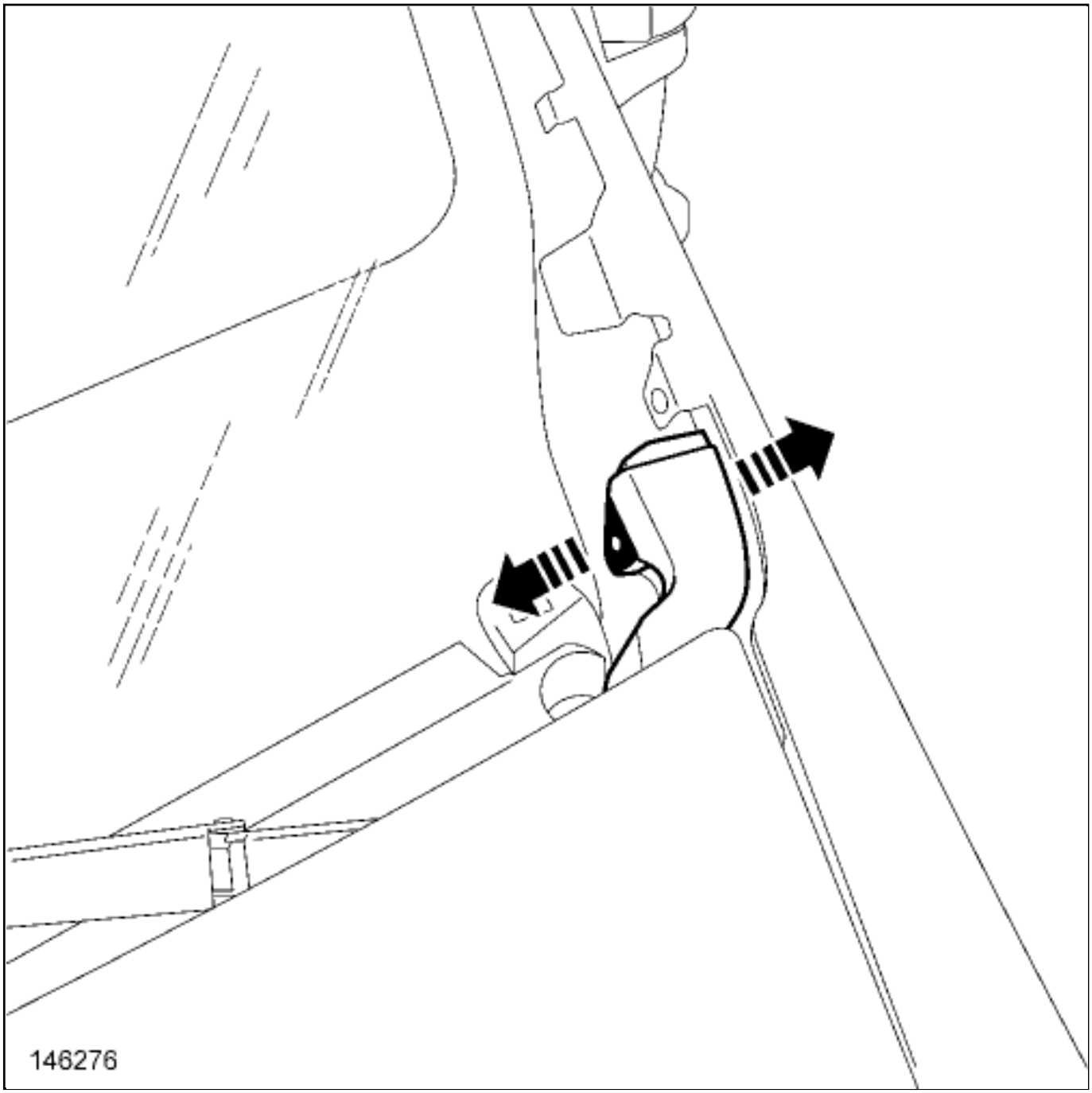

142759

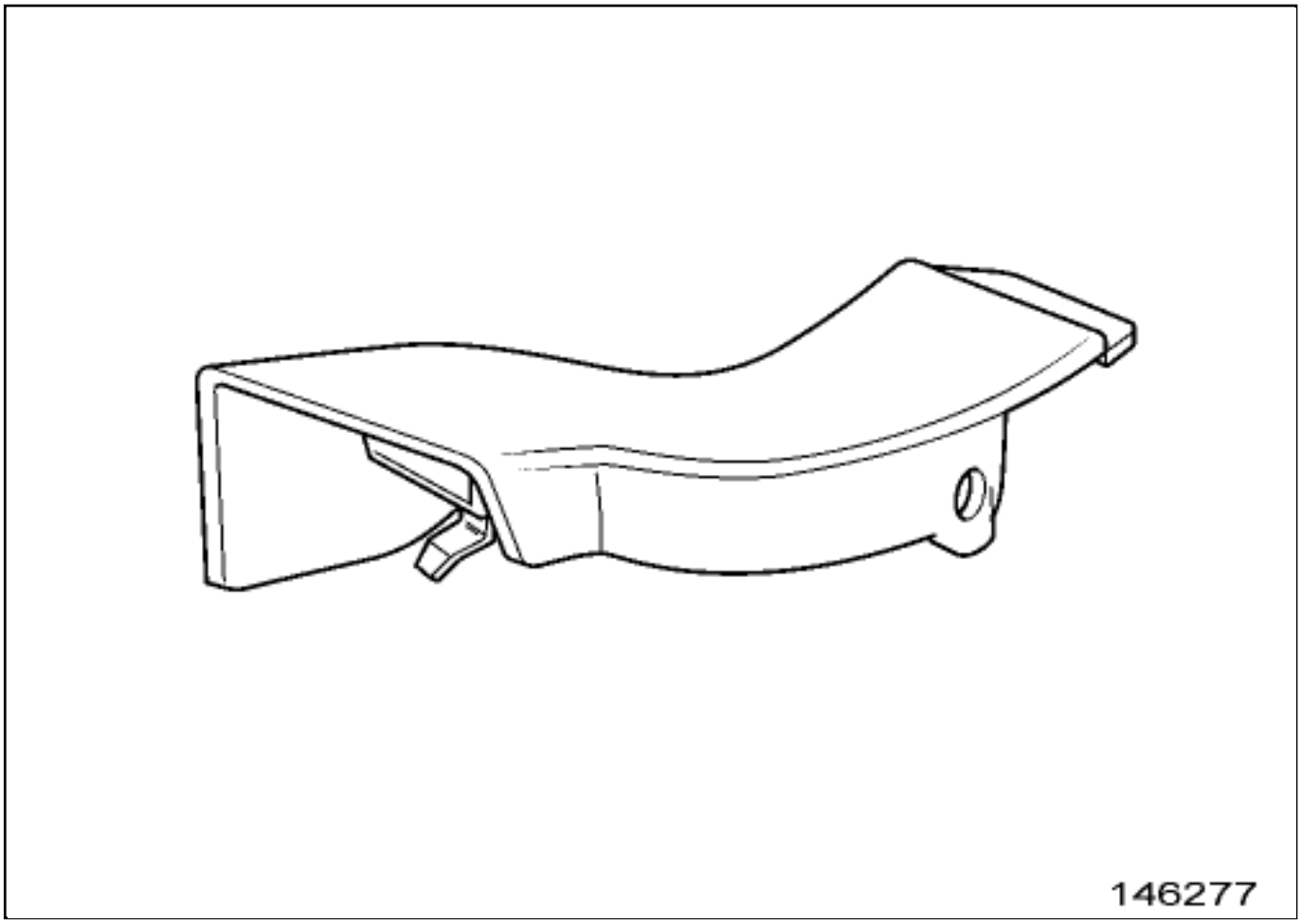


Unclip the scuttle panel grille side trims in the direction(1) using the toolSet of trim removal levers. (Car. 1363) .



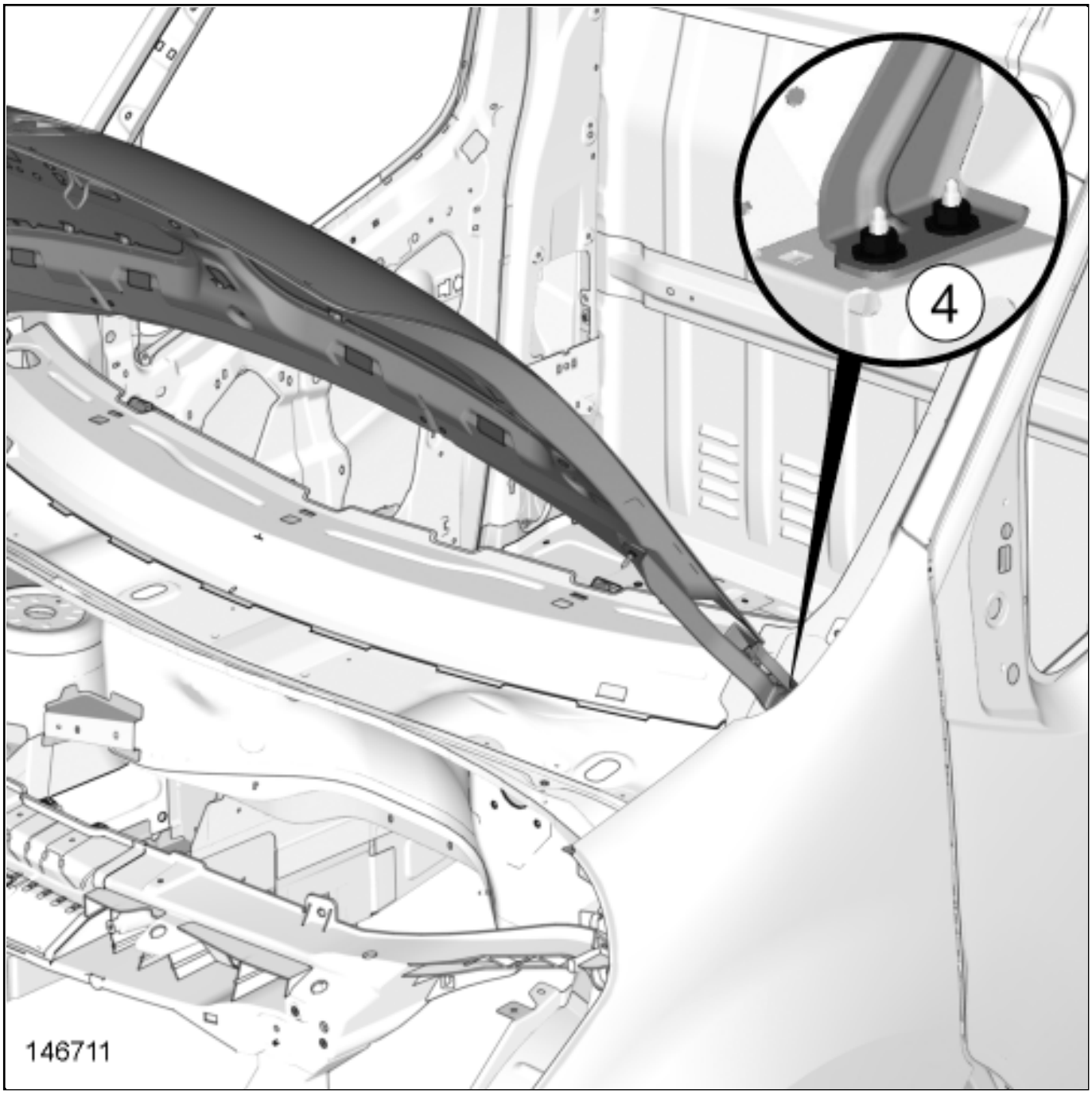
Then unclip the scuttle panel grille side trims in the directions(2) and (3) .


146276



- Unclip the bonnet trims.
- Remove the bonnet soundproofing.
- Disconnect the screen washer pipes.
- Unclip the screen washer pipes.

2- REMOVAL OPERATION



Remove:

- the nuts(4) ,
- the bonnet (this operation requires two people).

4. REFITTING WITH THE BONNET HINGES

Proceed in the reverse order to removal.

Adjust the opening clearances and flush fitting(see 48A, Non-side opening elements, Bonnet: Adjustment) .

B-PILLAR LOWER TRIM: REMOVAL - REFITTING

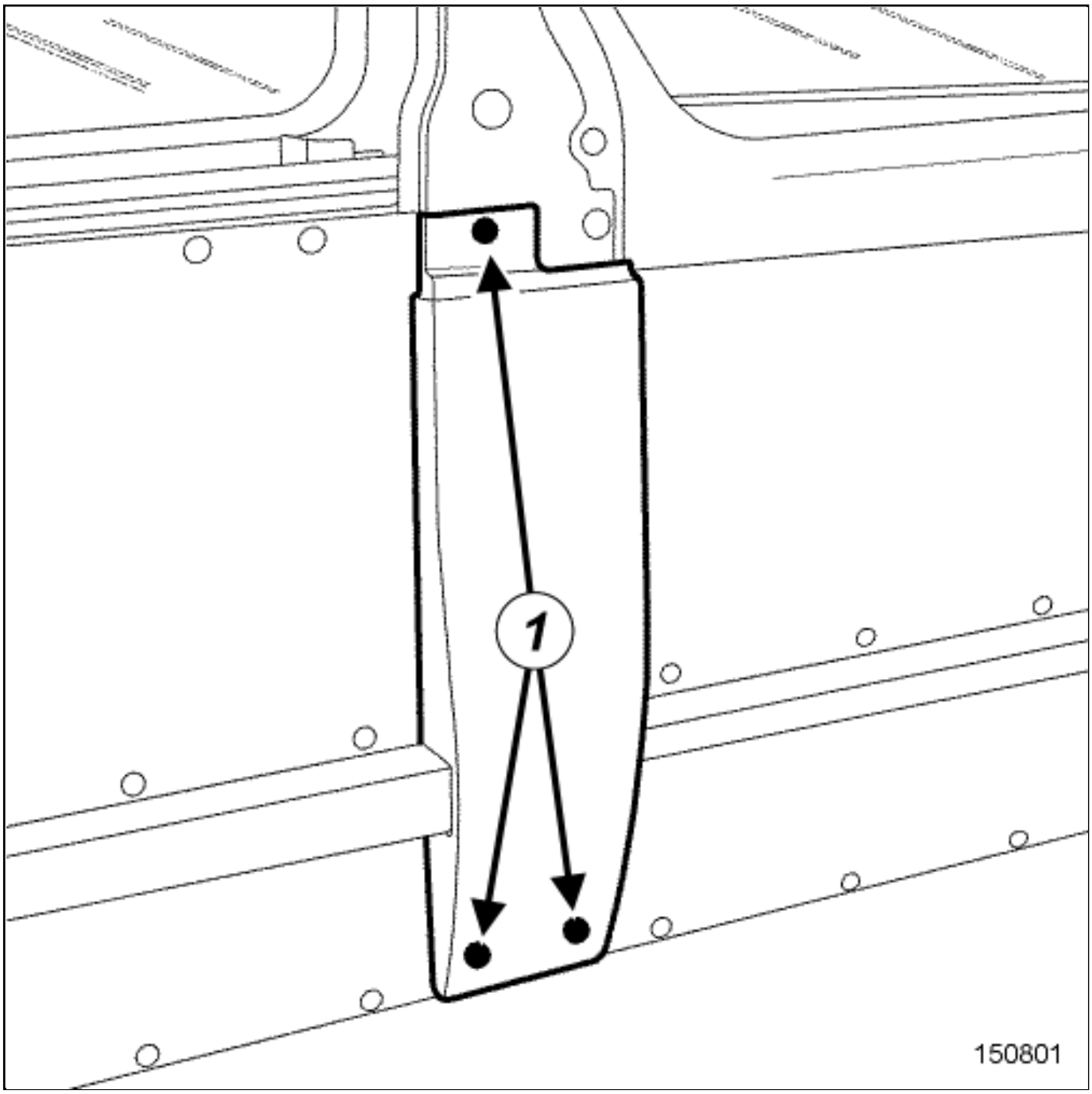
REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove:

- the complete rear seator the complete rear bench seat,
- the upper body rear trim(see 71A, Body internal trim, Upper body trim: Removal - Refitting) .

2. REMOVAL OPERATION



- Remove the clips(1) .
- Unclip the B-pillar lower trim.

REFITTING

- Proceed in the reverse order to removal.

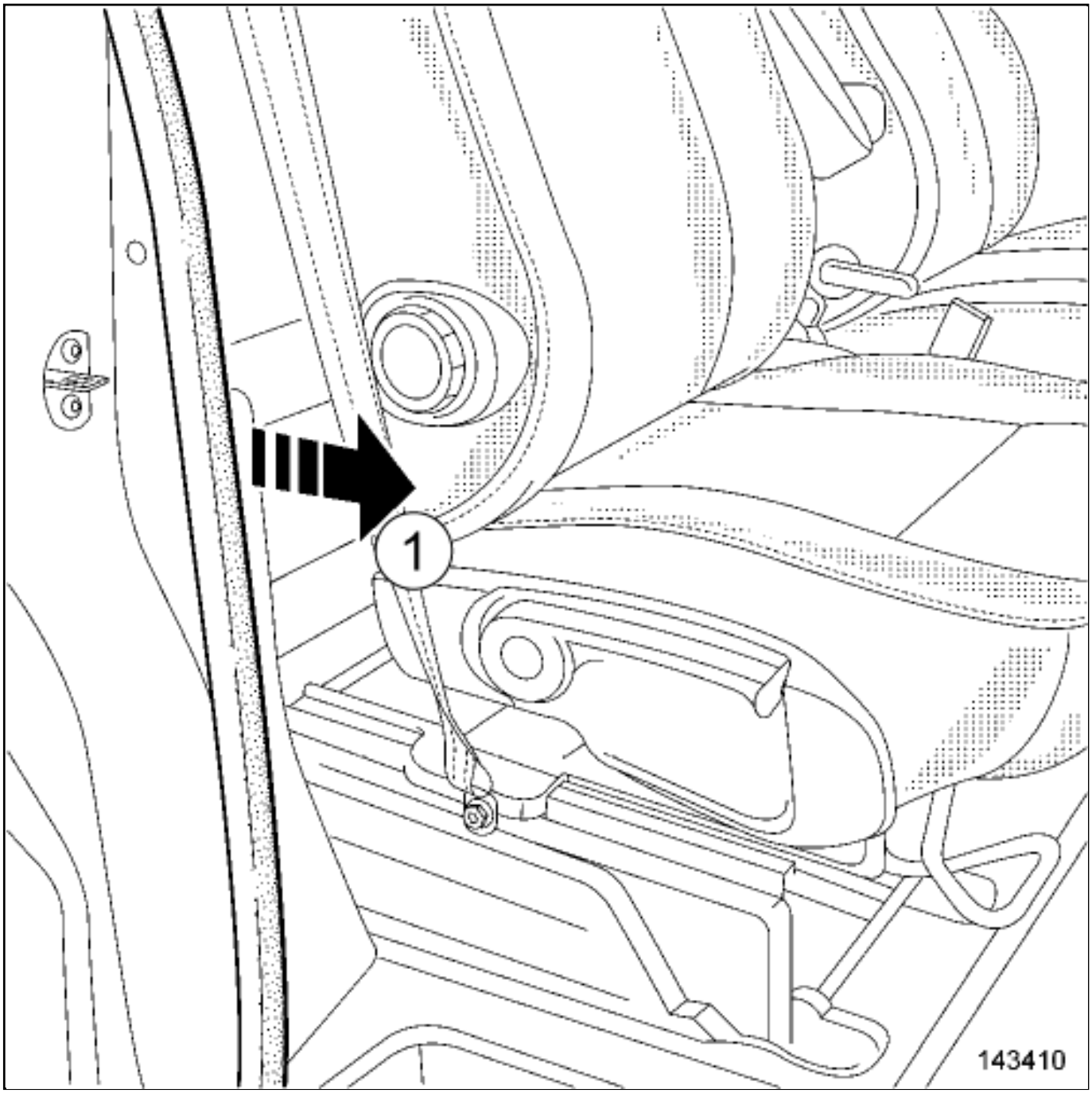
B-PILLAR TRIM: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

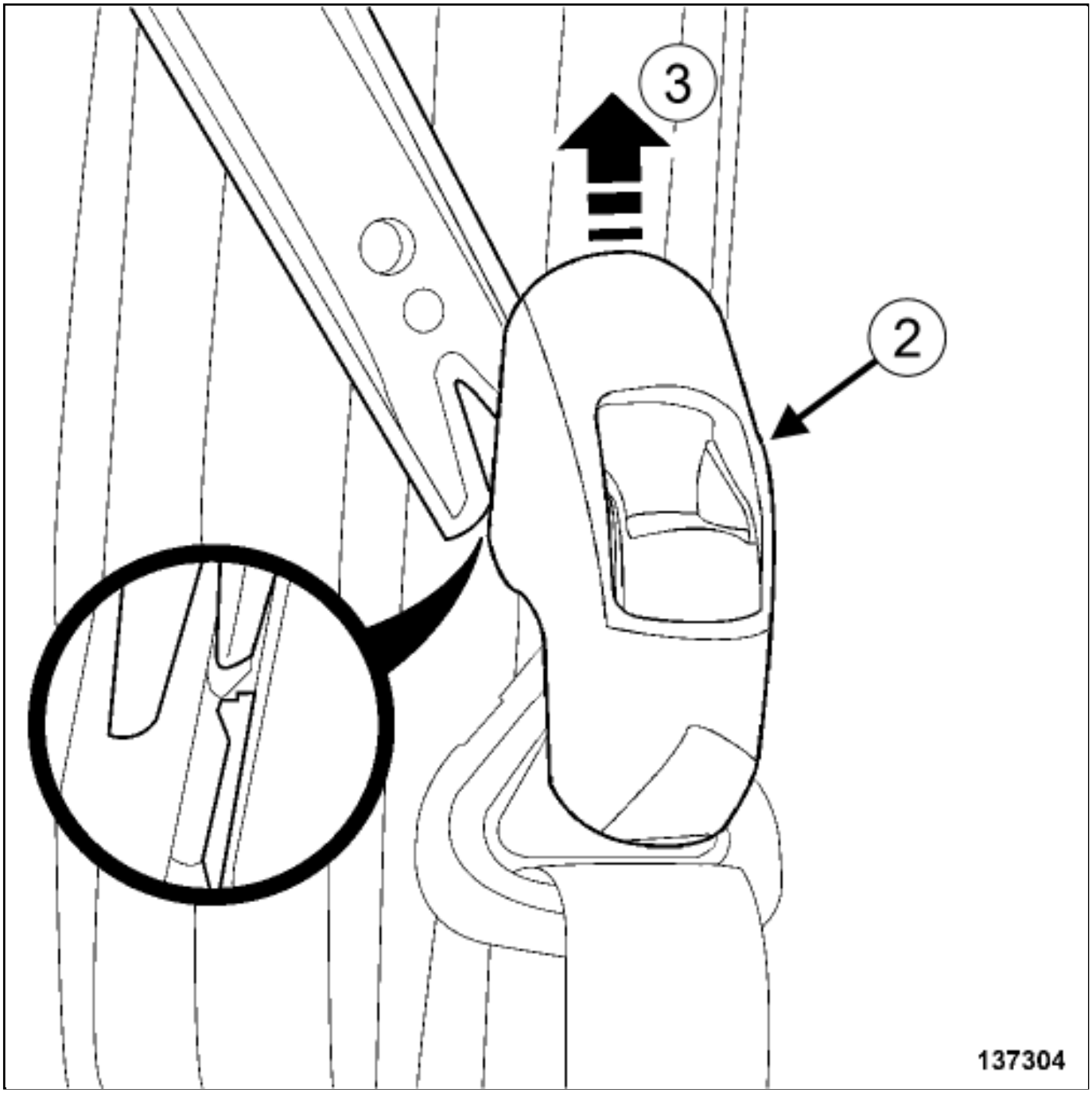
REMOVAL

1. REMOVAL PREPARATION OPERATION

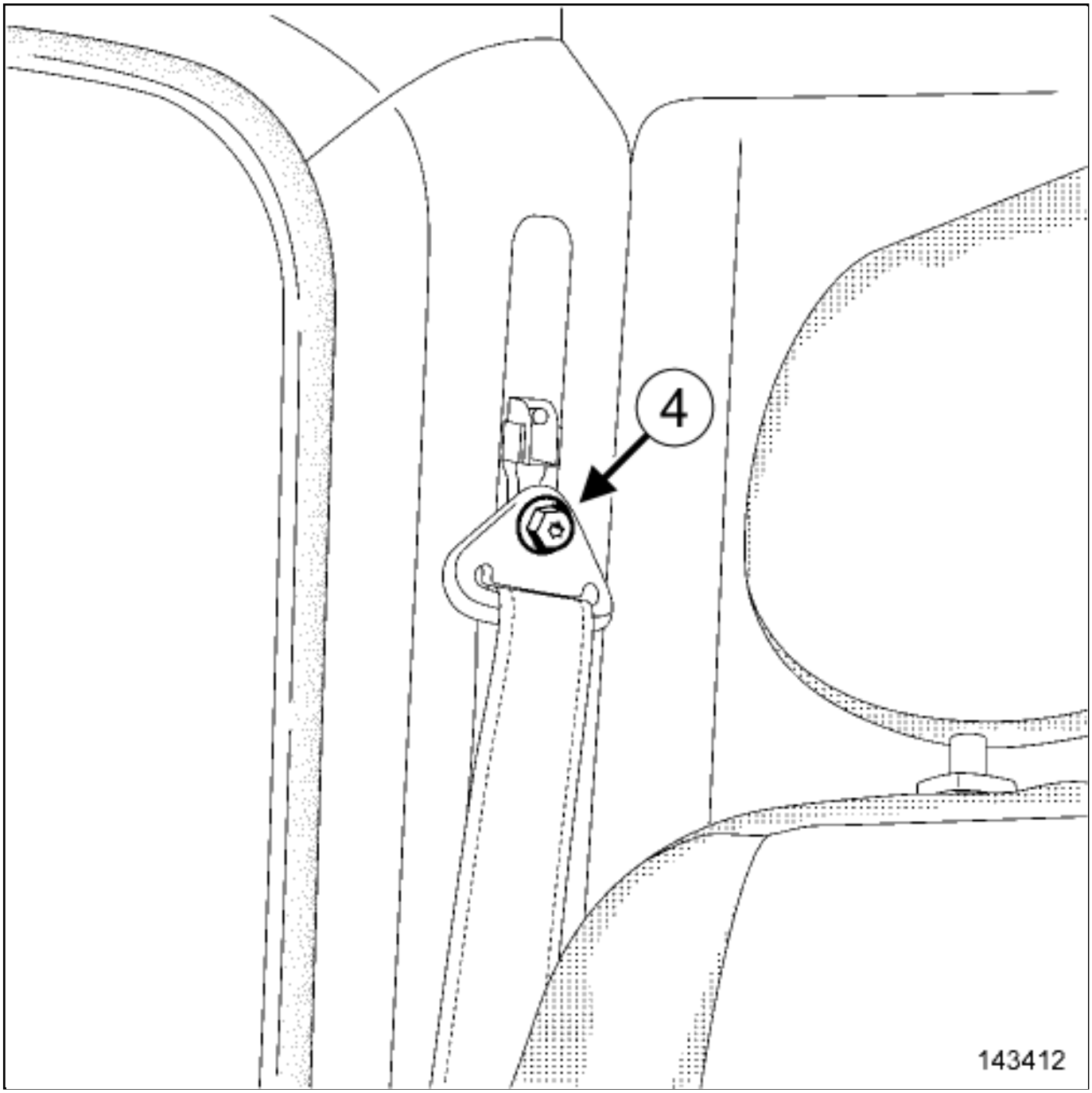
- Remove the bolt of the front seatbelt(see **Front seat: Exploded view**) .



- Partially remove the seal at(1) .

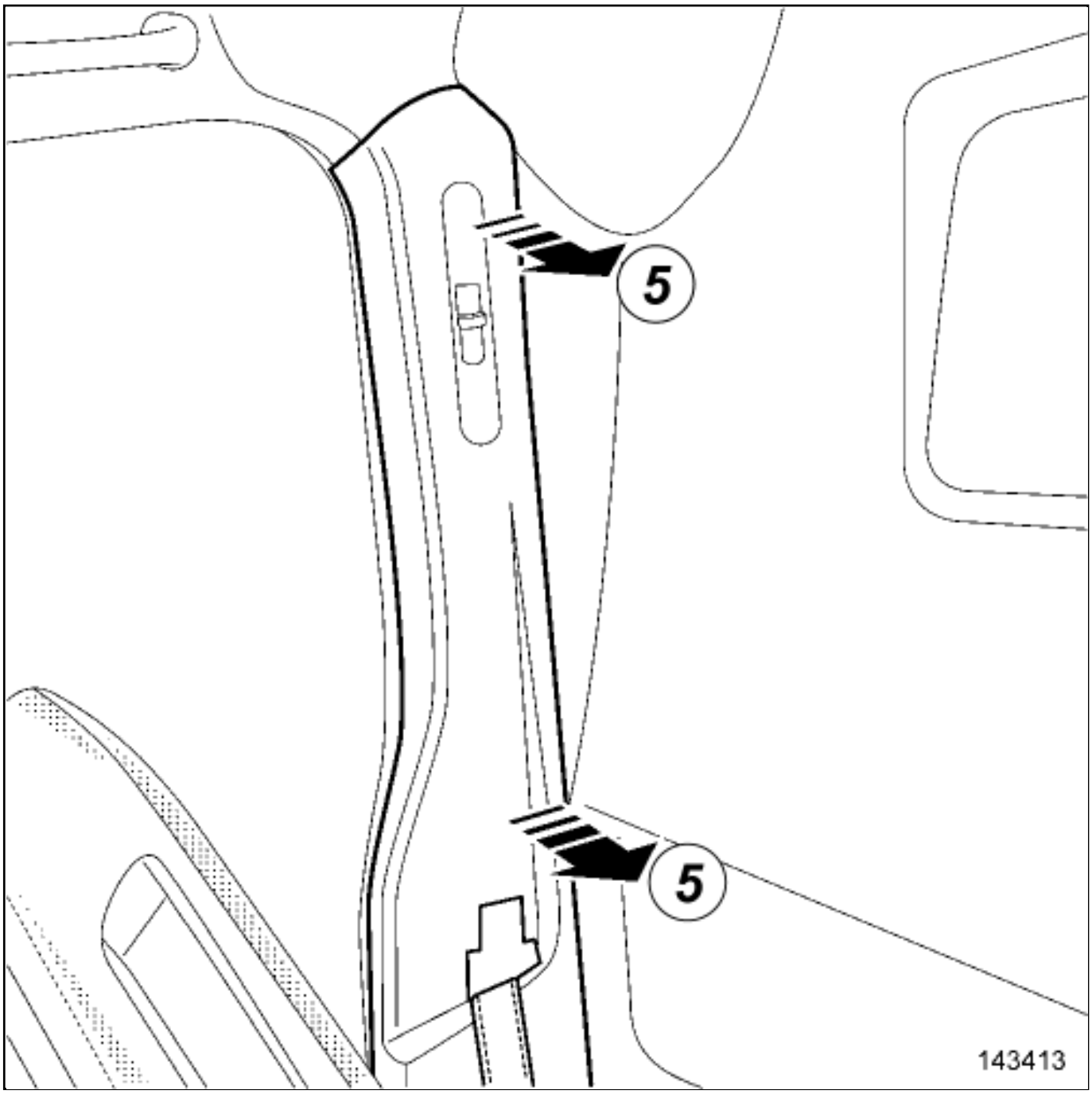


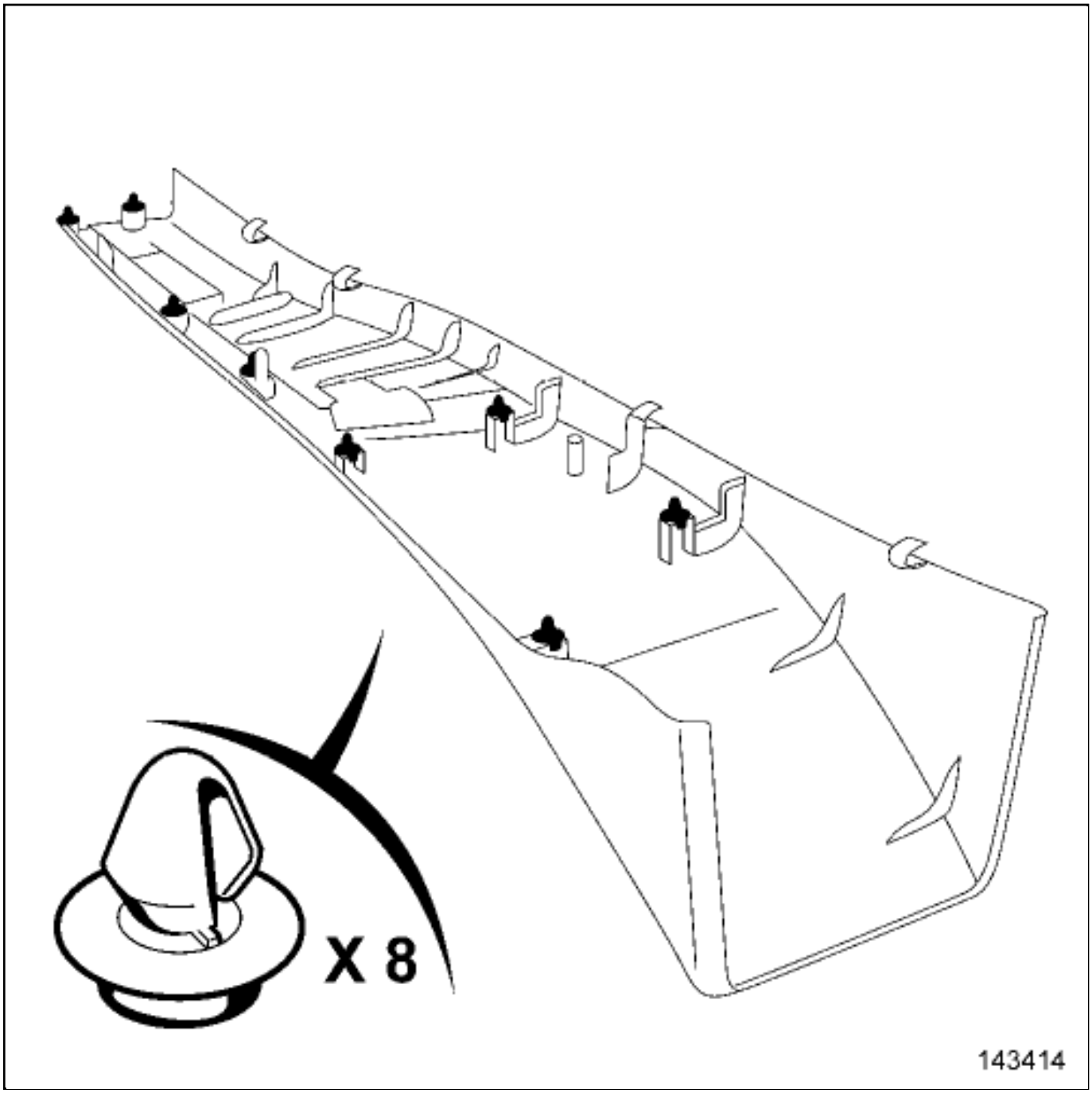
- Unclip the seatbelt height adjustment control(2) at (3) using the toolSet of trim removal levers.(Car. 1363) .



- Remove the bolt of the front side seat belt return mechanism(4) .

2. REMOVAL OPERATION


5
5
143413



Unclip the B-pillar trim at(5) .

Remove the B-pillar trim.

REFITTING

Proceed in the reverse order to removal.

Torque tighten the front side seat belt return mechanism bolt30 N.m.

BRAKEFLUID:SPECIFICATIONS

1. BRAKE FLUID REPLACEMENT INTERVAL

Our braking technology, and in particular the disc brakes (hollow pistons which conduct little heat, have a low volume of fluid in the cylinder, sliding callipers avoiding the need for a fluid reserve in the least cooled area of the wheel), has allowed us to prevent the risk of "vapour lock" as far as possible, even with heavy braking (mountainous area). However, current brake fluids are subject to minor deterioration during the first months of use due to slight humidity intake. This is why it is recommended that you change the brake fluid: see maintenance booklet for the vehicle.

1- TOPPING UP THE LEVEL

Wear of the brake pads will result in a gradual drop in the fluid level in the reservoir.

Do not top up the fluid, as the level will rise again when the pads are next changed. The brake fluid level must not fall below the minimum mark.

2- APPROVED BRAKE FLUID

- Using a mixture of two incompatible brake fluids in the brake circuit may give rise to:
  - significant risk of leaks mainly due deterioration of the cups,
  - impaired operation of the ESP system.

To avoid such risks, it is essential to only use RENAULT standard approved brake fluids**Vehicle: Parts and consumables for the repair** .

BRAKE MECHANISM: PRECAUTIONS FOR THE REPAIR

Note, one or more warnings are present in this procedure

1. SAFETY

1- ADVICE TO BE FOLLOWED BEFORE ANY OPERATION

For an operation requiring the use of a lift, follow the safety advice(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

2- INSTRUCTIONS TO BE FOLLOWED DURING THE OPERATION

- Using a mixture of two incompatible brake fluids in the brake circuit may give rise to:
  - serious risk of leakage due mainly to deterioration of the cups,
  - degradation of the ESP system.

To avoid such risks, only ever use brake fluids which comply with the RENAULT standard(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

CAUTION

Switch off the vehicle ignition so as not to activate the hydraulic unit solenoid valves when bleeding the brake circuit.

- Reminder:
  - The pipes between the master cylinder, the callipers, and the hydraulic unit are connected using threaded unions with a metric thread.
  - Therefore, only parts specified in the Parts Catalogue for this vehicle should be used.

WARNING

To ensure that the ABS and ESP systems operate correctly, check that the underbody brake pipes are clipped in place and are not crossed.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

If, during work on the brake system, any damage on any part is observed, it must be repaired before driving the vehicle again.

2. CLEANLINESS

1- ADVICE TO BE FOLLOWED BEFORE ANY OPERATION

Protect any bodywork components that risk being damaged by brake fluid with a cover.

2- INSTRUCTIONS TO BE FOLLOWED DURING THE OPERATION

To avoid contaminating the brake circuit, do not allow the brake circuit components to drop on the ground.

Clean around the braking system with brake cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

3. GENERAL RECOMMENDATIONS

1- MASTER CYLINDER - BRAKE SERVO

Always replace the master cylinder seals.

Check that the brake servo seal is in place. Replace the seal if it is damaged.

Always replace the master cylinder - brake servo assembly when the master cylinder leaks into the brake servo. The brake servo becomes unusable when the rubber diaphragm is contaminated with brake fluid.

WARNING

To avoid breaking the connection between the brake servo pushrod and the brake pedal, check that the safety clevis pin is locked onto the brake servo pushrod by tilting it from the top downwards.

2- BRAKE HOSE

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

BRAKE PEDAL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:

Connecting shaft between the brake pedal and the brake servo pushrod

WARNING

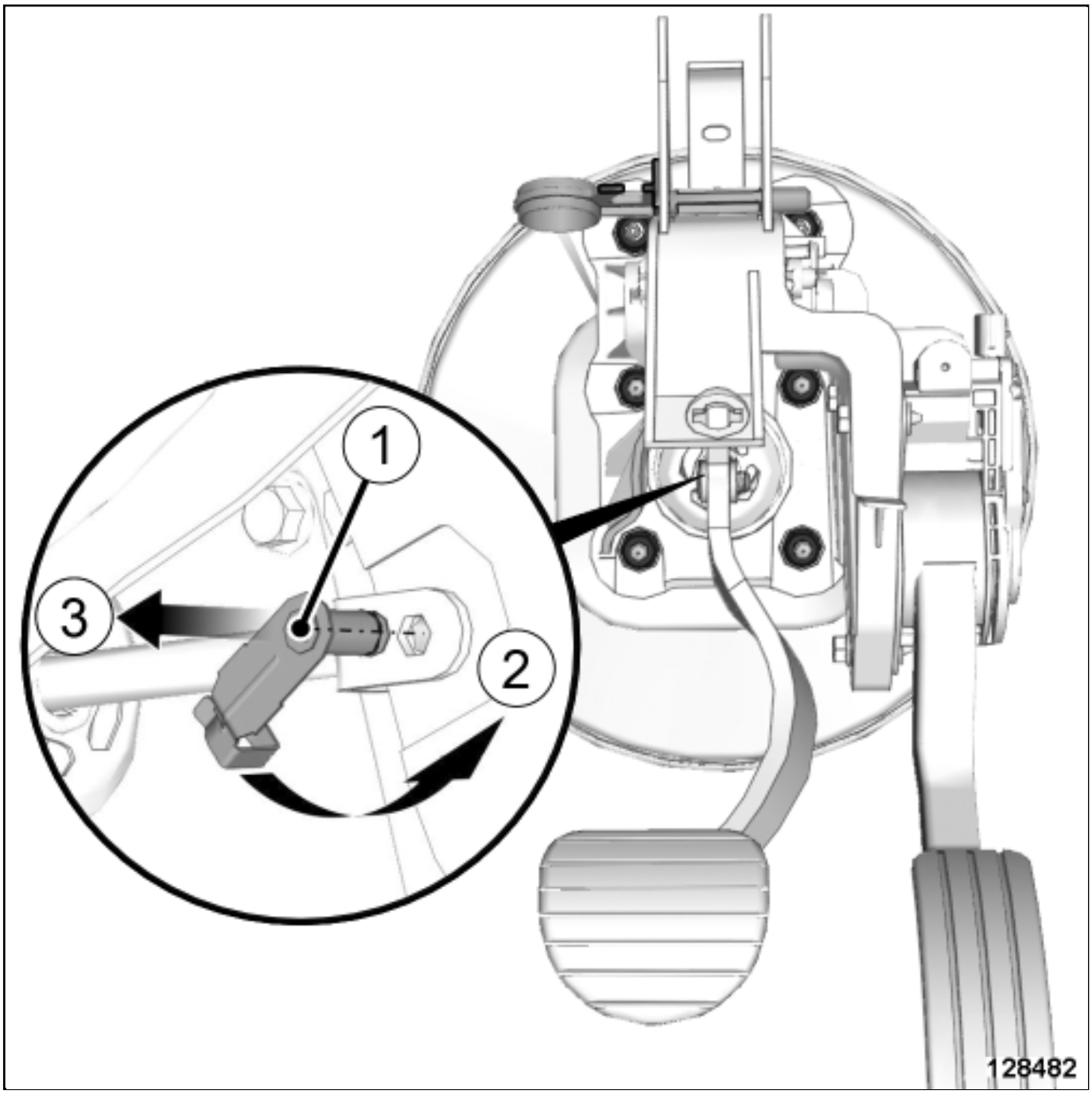
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

REMOVAL

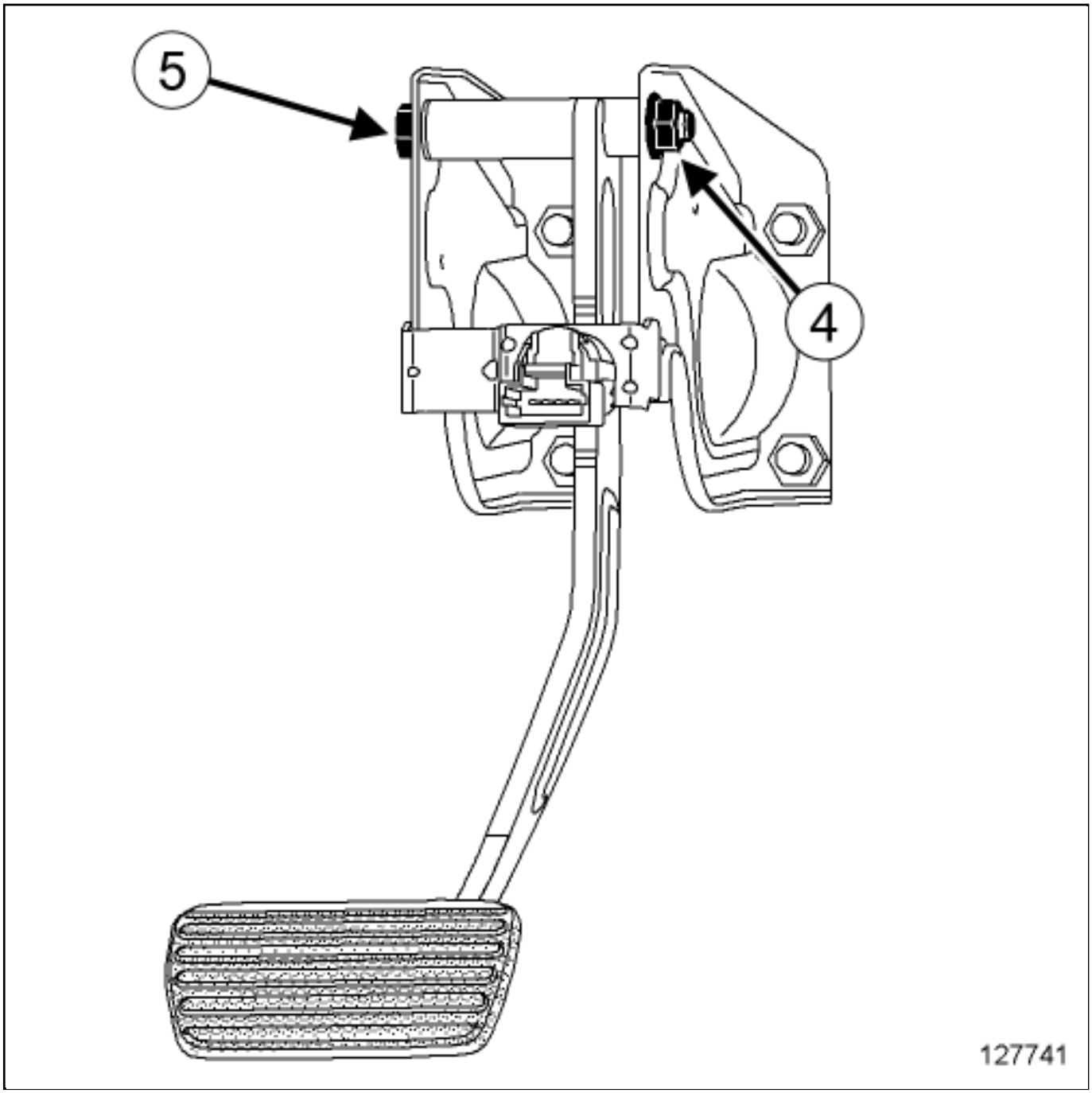
1. REMOVAL PREPARATION OPERATION

- Remove the lower trim under the steering wheel.
- Remove the lower right-hand air duct.
- Remove the brake pedal brake light switch.

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the connecting shaft(1) between the brake pedal and the brake servo pushrod:
  - unlock the shaft in accordance with(2) ,
  - extract the shaft in accordance with(3) .



- Remove the nut(4) from the brake pedal shaft.
- Remove the shaft(5) to release the brake pedal.
- Remove the brake pedal.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: **Connecting shaft between the brake pedal and the brake servo pushrod**.

Coat the shaft with MOLYKOTE 33Mgrease(see **Vehicle: Parts and consumables for the repair**) **.**

2. REFITTING OPERATION FOR PART CONCERNED

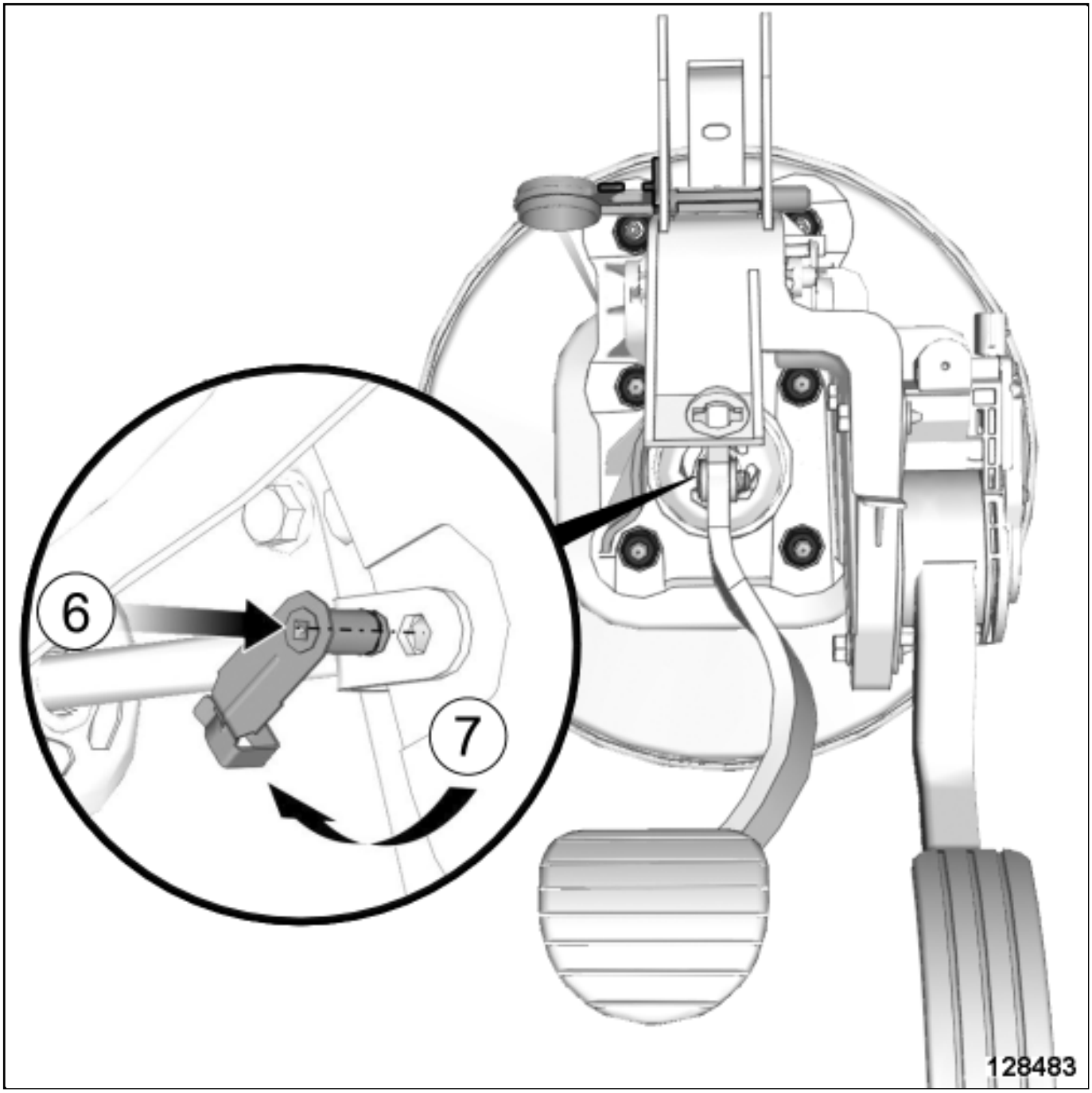
Note:

Do not hit the shaft with a hammer to get it to go back into place.

Refit:

- the brake pedal,
- the brake pedal shaft.

Torque tighten the brake pedal shaft nut17 N.m.



- Refit a new connecting shaft between the brake pedal and the brake servo pushrod:
  - insert the shaft in accordance with(6) ,
  - lock the shaft in accordance with(7) .

3. FINAL OPERATION

- Refit and adjust the brake switch(see 37A, Mechanical component controls, Pedal switches: Adjustment) .
- Refit the lower right-hand air duct.
- Refit the lower trim under the steering wheel.

- Check that the entire braking system operates correctly.

BRAKE SERVO NON-RETURN VALVE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

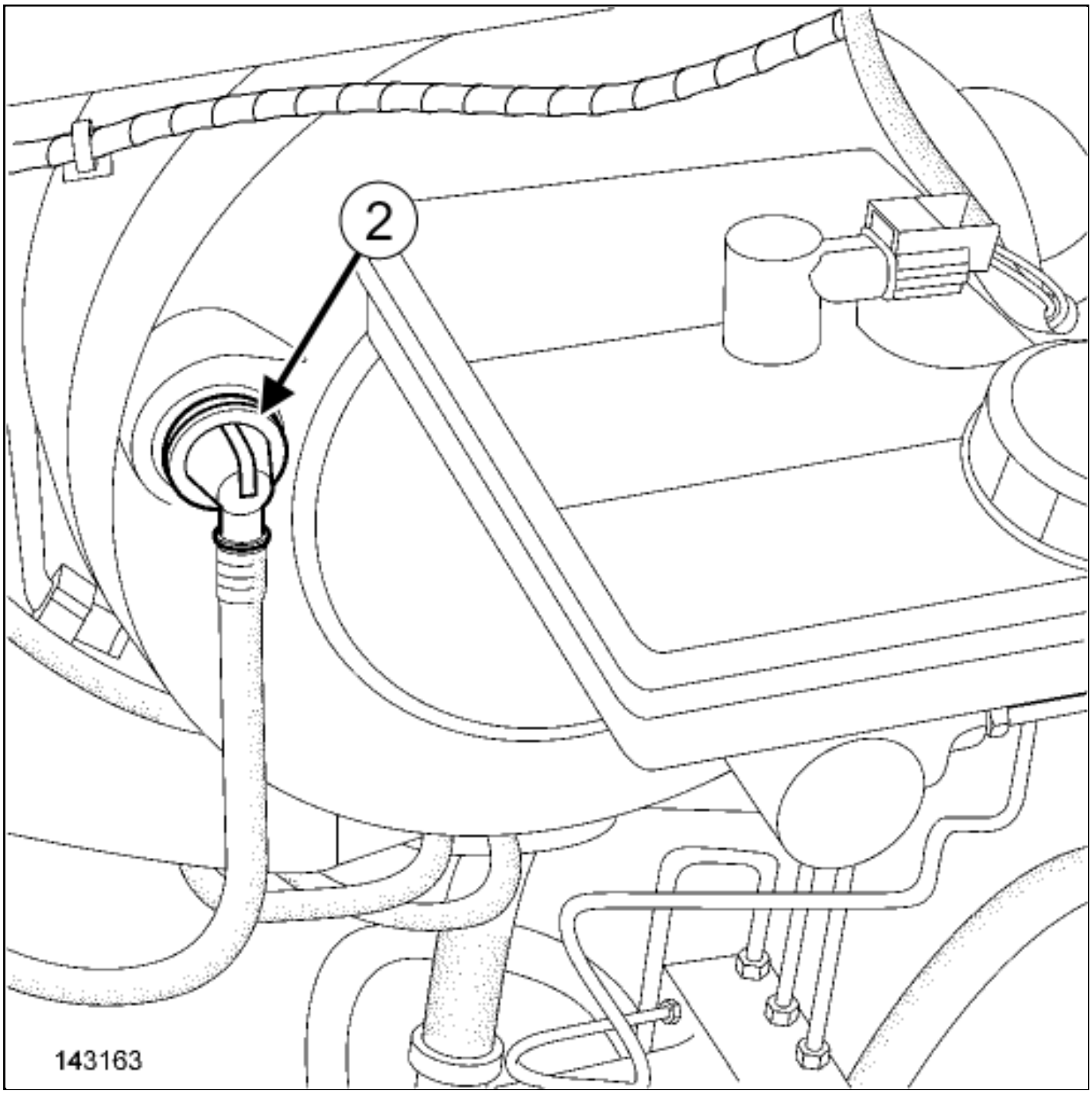
WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 37A, Mechanical component controls, Braking control assembly: Exploded view)** .

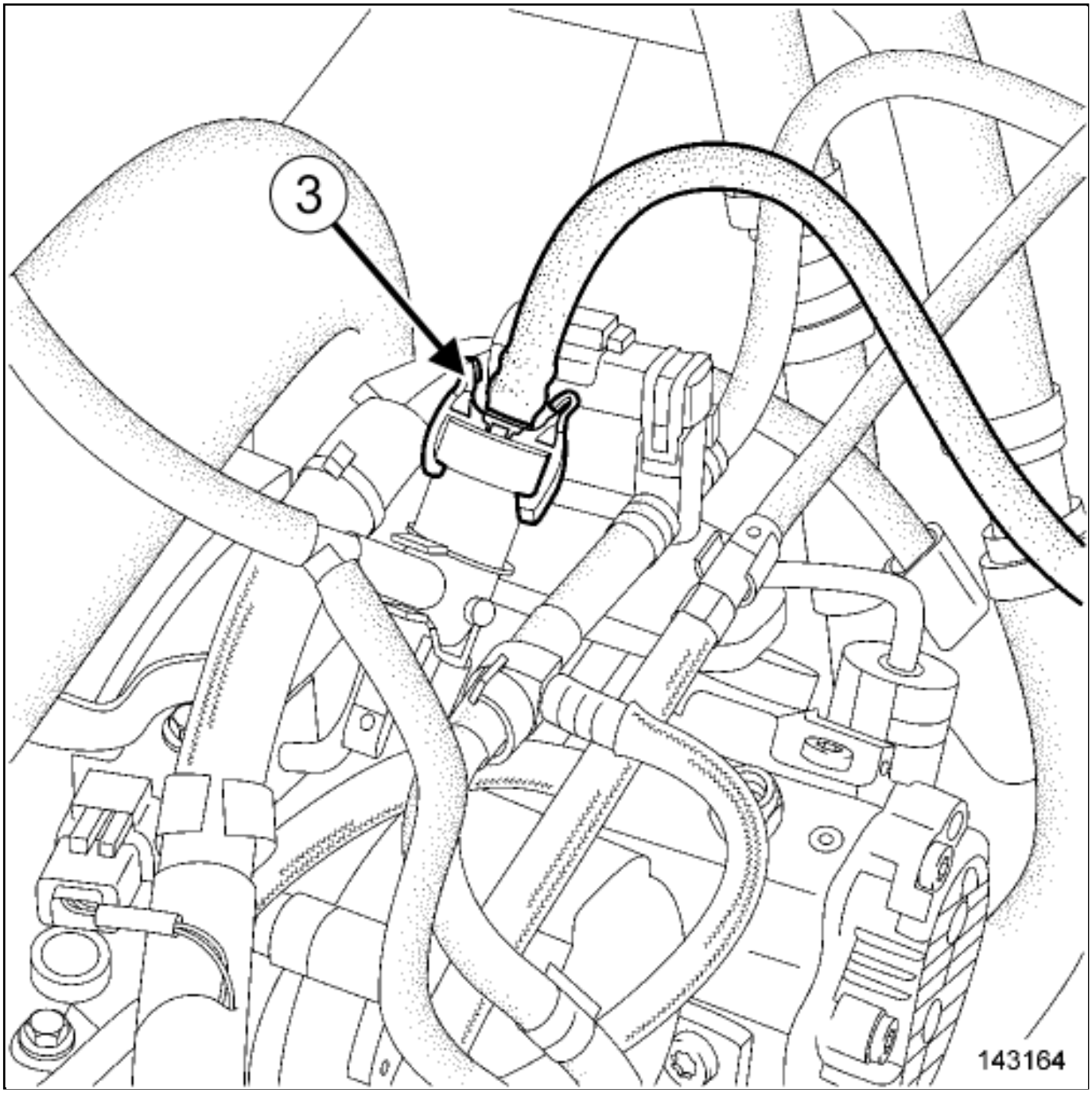
REMOVAL

1. REMOVAL OPERATION



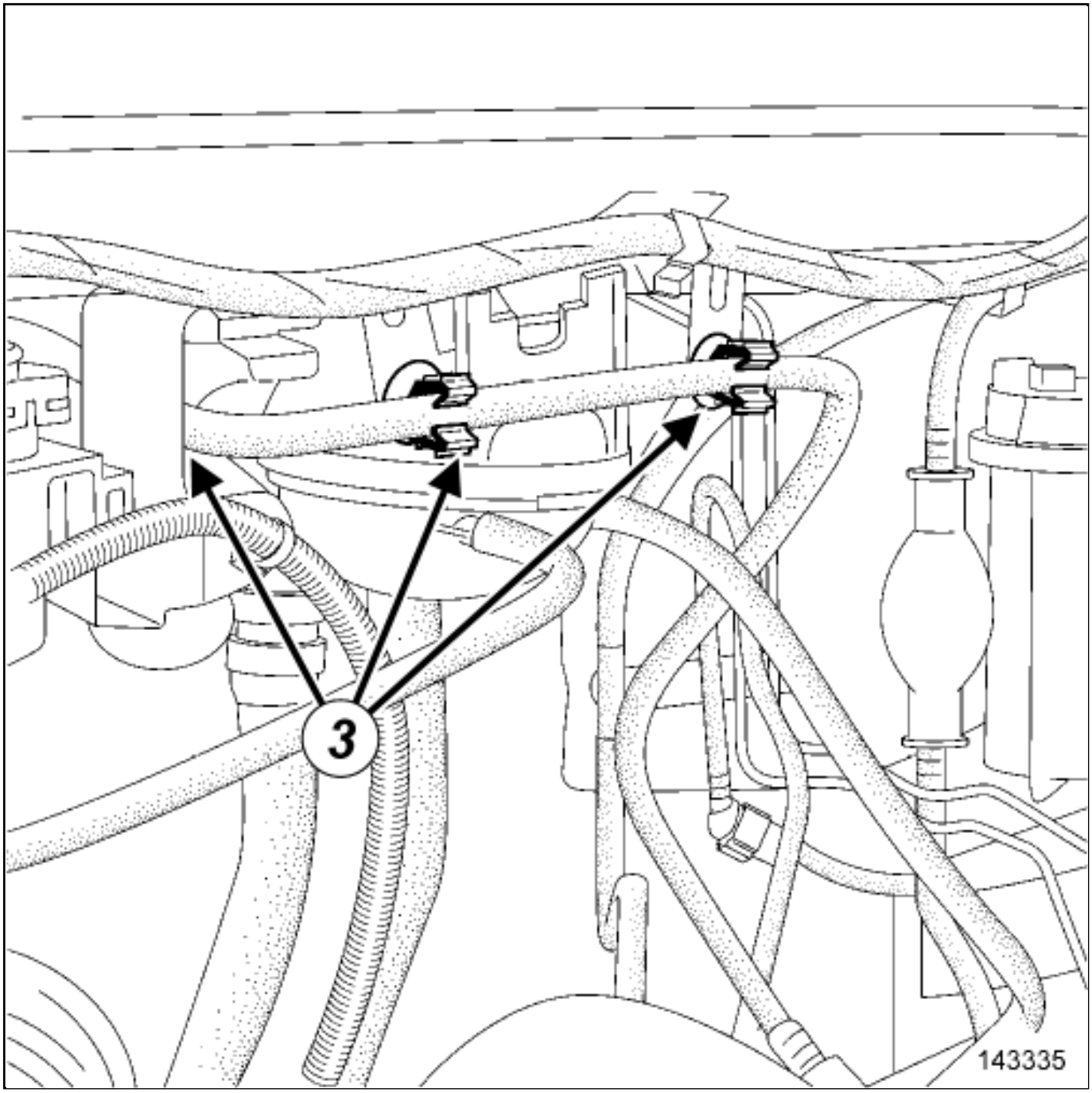
- Remove the brake servo non-return valve(1) .

- Fit blanking plugs into openings.



- Unclip the non-return valve pipe(2) from the vacuum pump.

- Fit blanking plugs into openings.



- Unclip the brake servo non-return valve from the body at(3) .

- Remove the brake servo non-return valve.

REFITTING

1. REFITTING PREPARATION OPERATION

- Check the condition of the brake servo non-return valve(see 37A, Mechanical component controls, Braking

assistance circuit: Check) .

- Replace any faulty parts.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

-

Lubricate the end piece of the non-return valve pipe.

Note:

Check that the non-return valve pipe is correctly clipped onto the vacuum pump and onto the brake servo.

Insert the connector until the locking click sound is heard (risk of poor connection).

BRAKE SERVO: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 37A, Mechanical component controls, Pedal assembly: Exploded view)** .

Note:

Never handle the brake servo by the control rod. This could damage the control system.

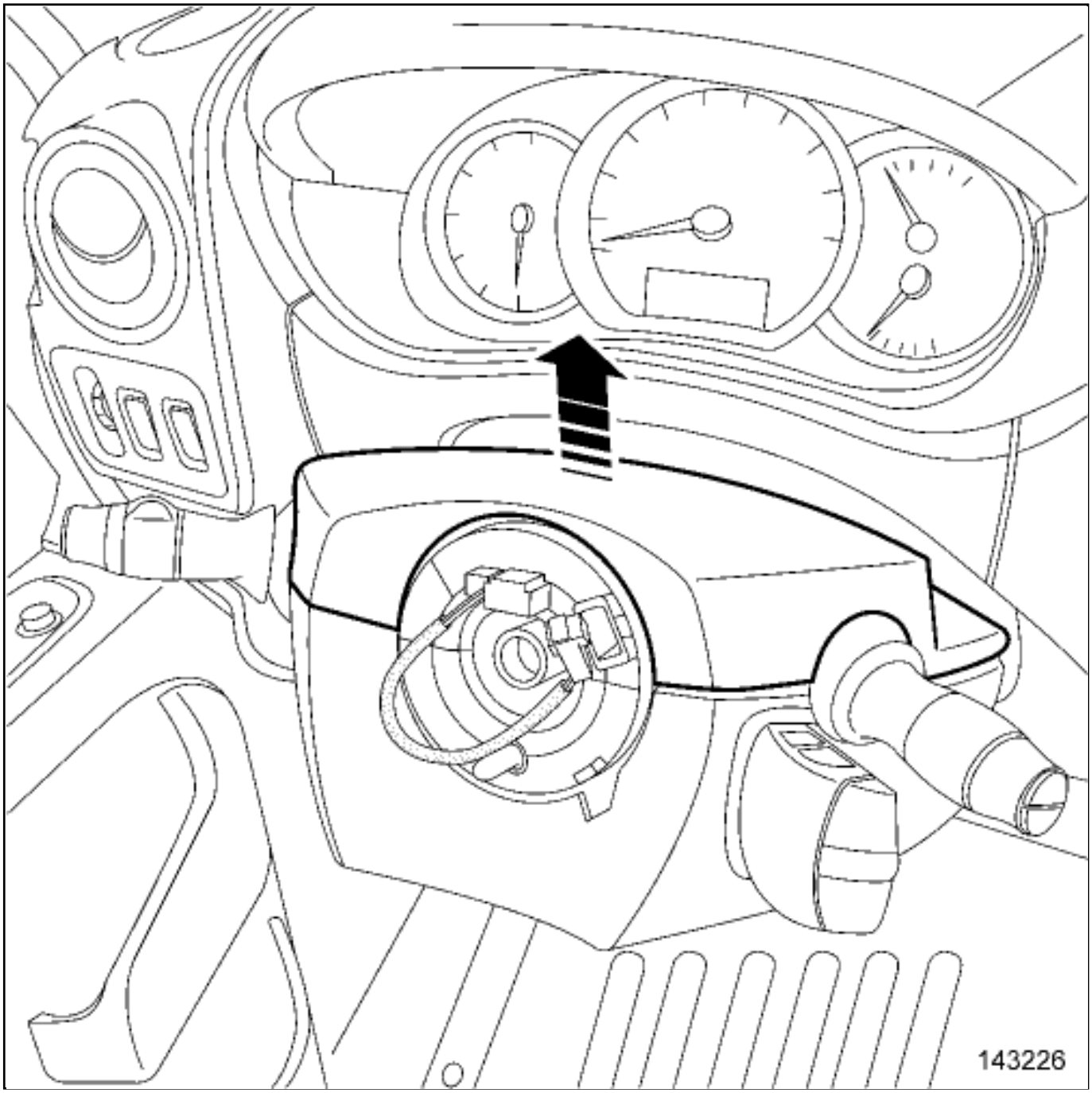
REMOVAL

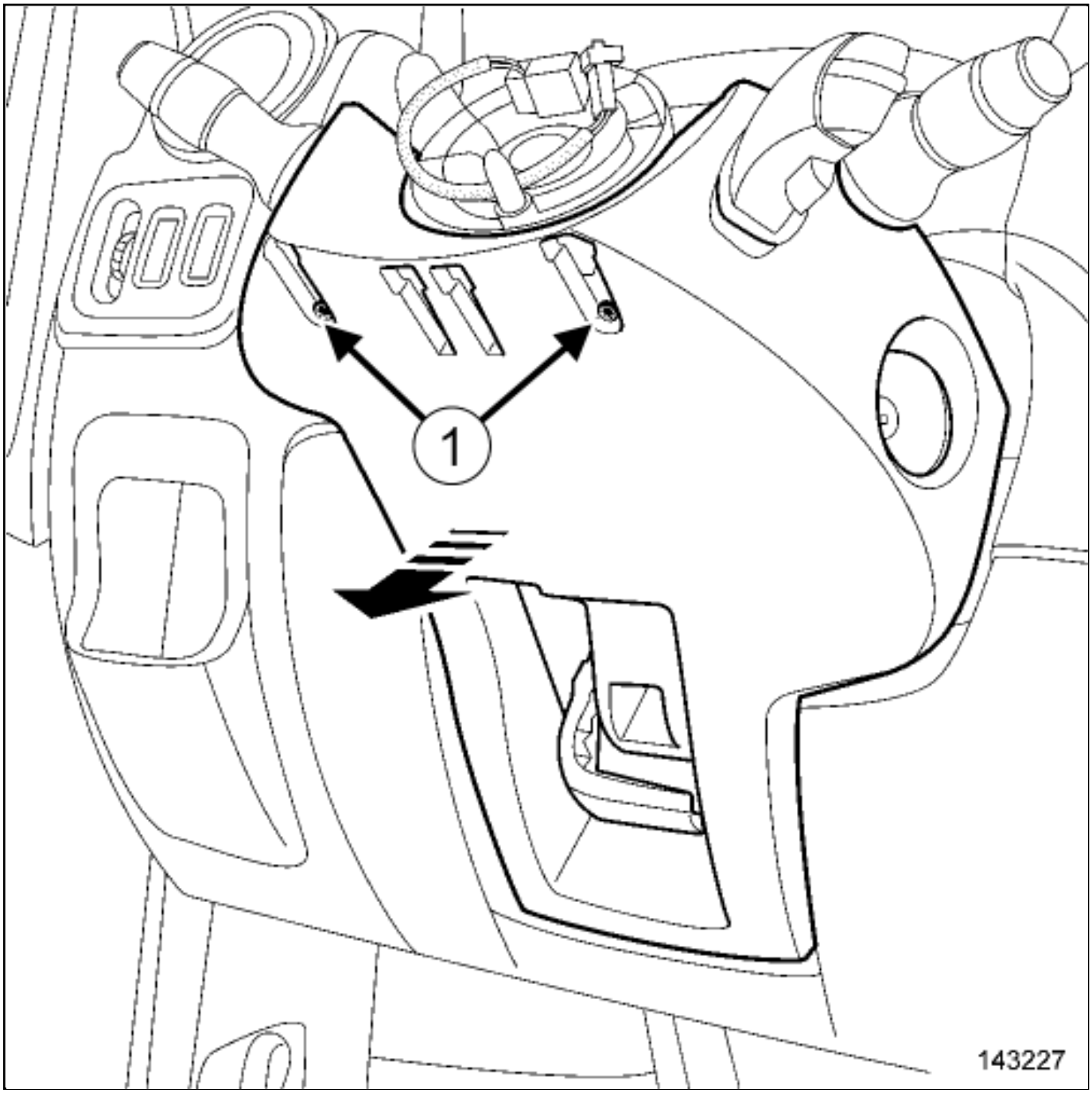
1. REMOVAL PREPARATION OPERATION

- Remove **(see 37A, Mechanical component controls, Braking control assembly: Exploded view)** :
  - the master cylinder,
  - the brake servo non-return valve.

- Move aside the air filter unit air outlet pipeAND (M9T) AND (PA0 OR PF6) M9T, PA0 PF6(12A, Fuel mixture).

- Remove the A-pillar air distribution duct(see **Air distribution circuit assembly: Exploded view**) (61A, Heating).

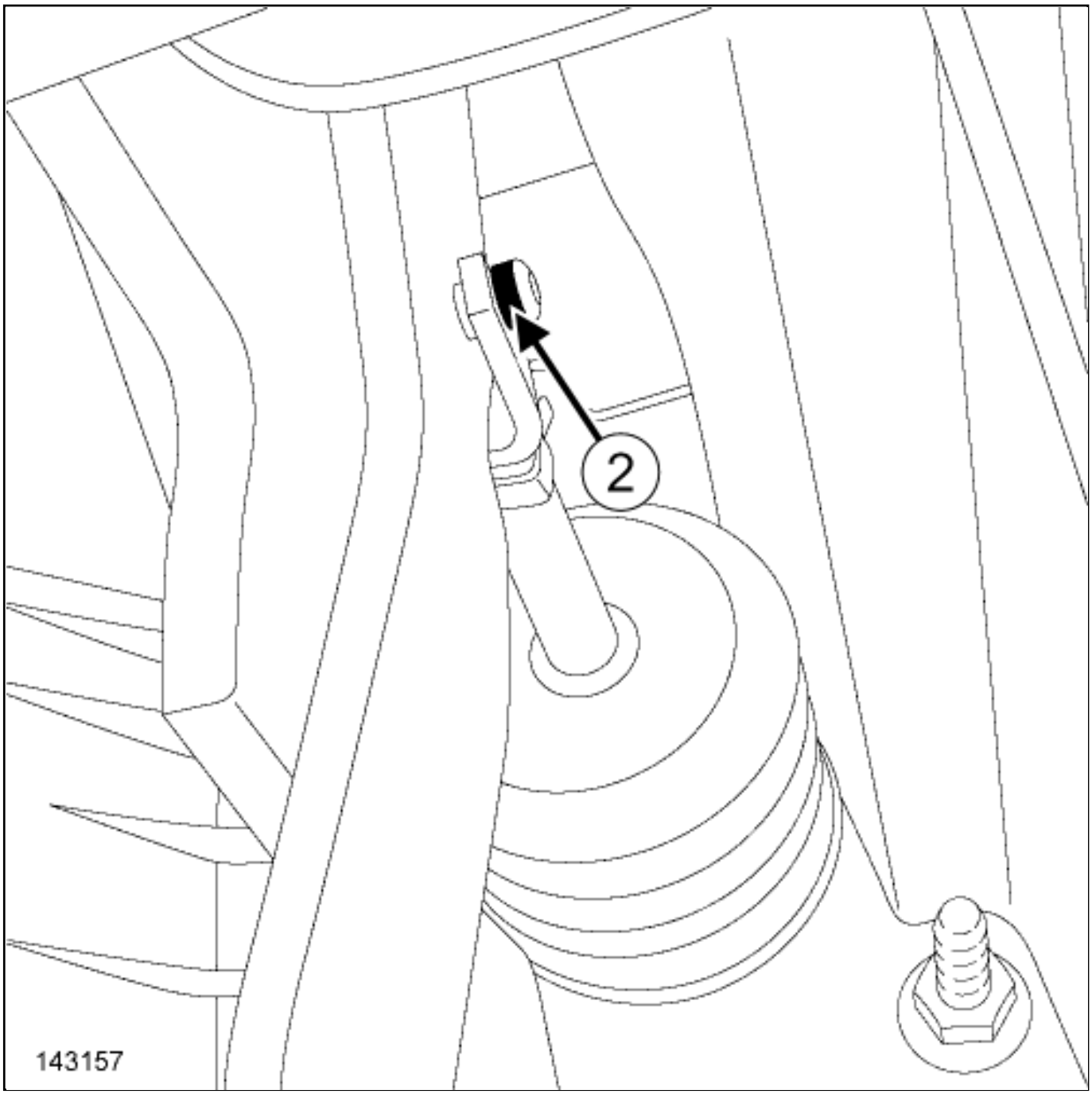

143226



Remove:

- the bolts(1) of the cowlings under the steering wheel,
- the cowlings under the steering wheel.

2. REMOVAL OPERATION



Remove:

- the rubber ring(2) from the dual safety connecting shaft,
- the dual safety connecting shaft.

Remove (see 37A, Mechanical component controls, Pedal assembly: Exploded view) :

- the brake servo nuts,
- the brake servo.

REFITTING

1. REFITTING PREPARATION OPERATION

Use SURFACE CLEANER(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the bearing face of the brake servo on the bulkhead.

Remove the adhesive film of the brake servo on the bulkhead.

Always replace the dual connecting shaft.

2. REFITTING OPERATION

Fit the brake servo flat against the bulkhead.

Proceed in the reverse order to removal.

BRAKE SERVO: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 37A, Mechanical component controls, Pedal assembly: Exploded view)** .

Note:

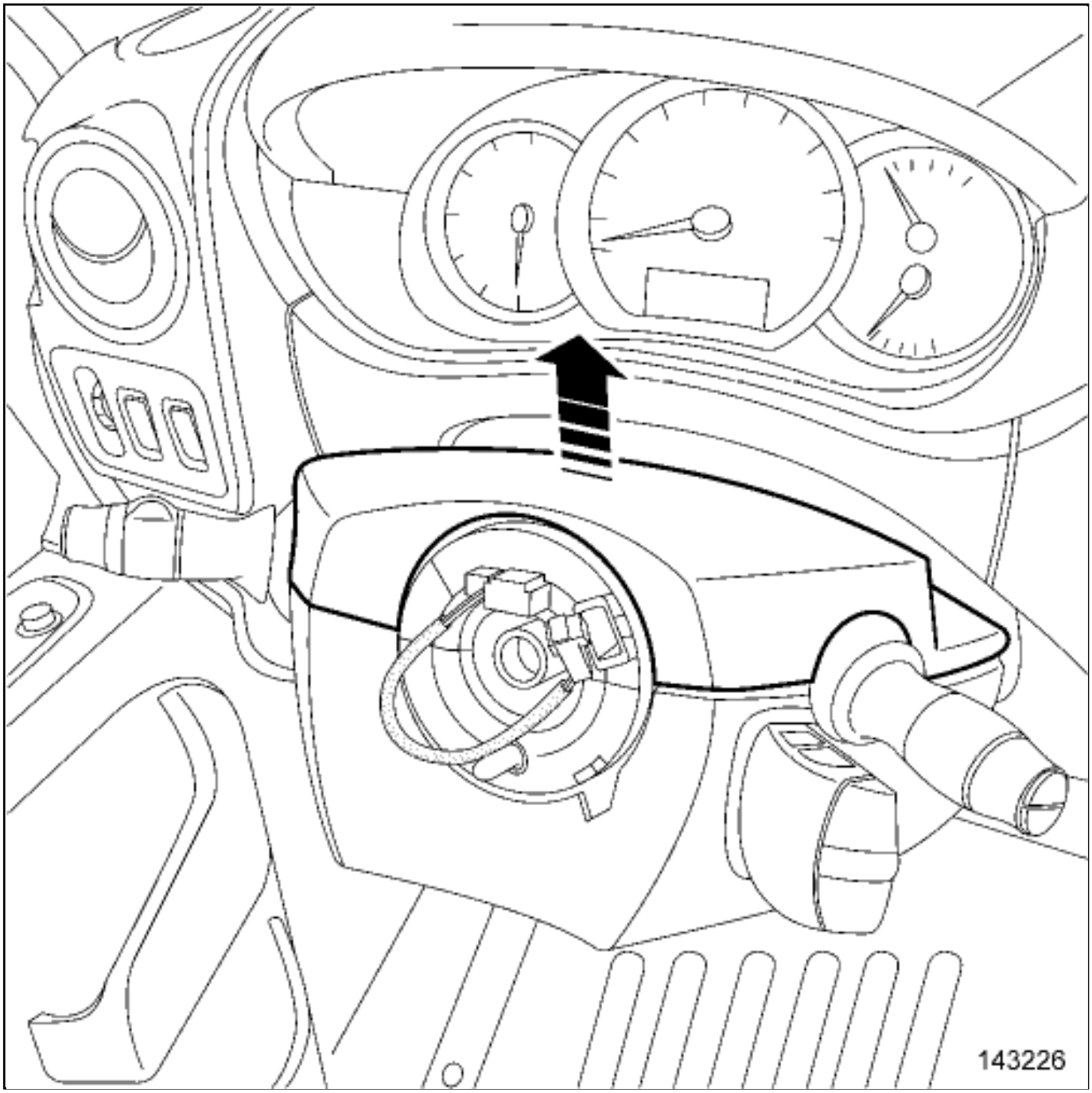
Never handle the brake servo by the control rod. This could damage the control system.

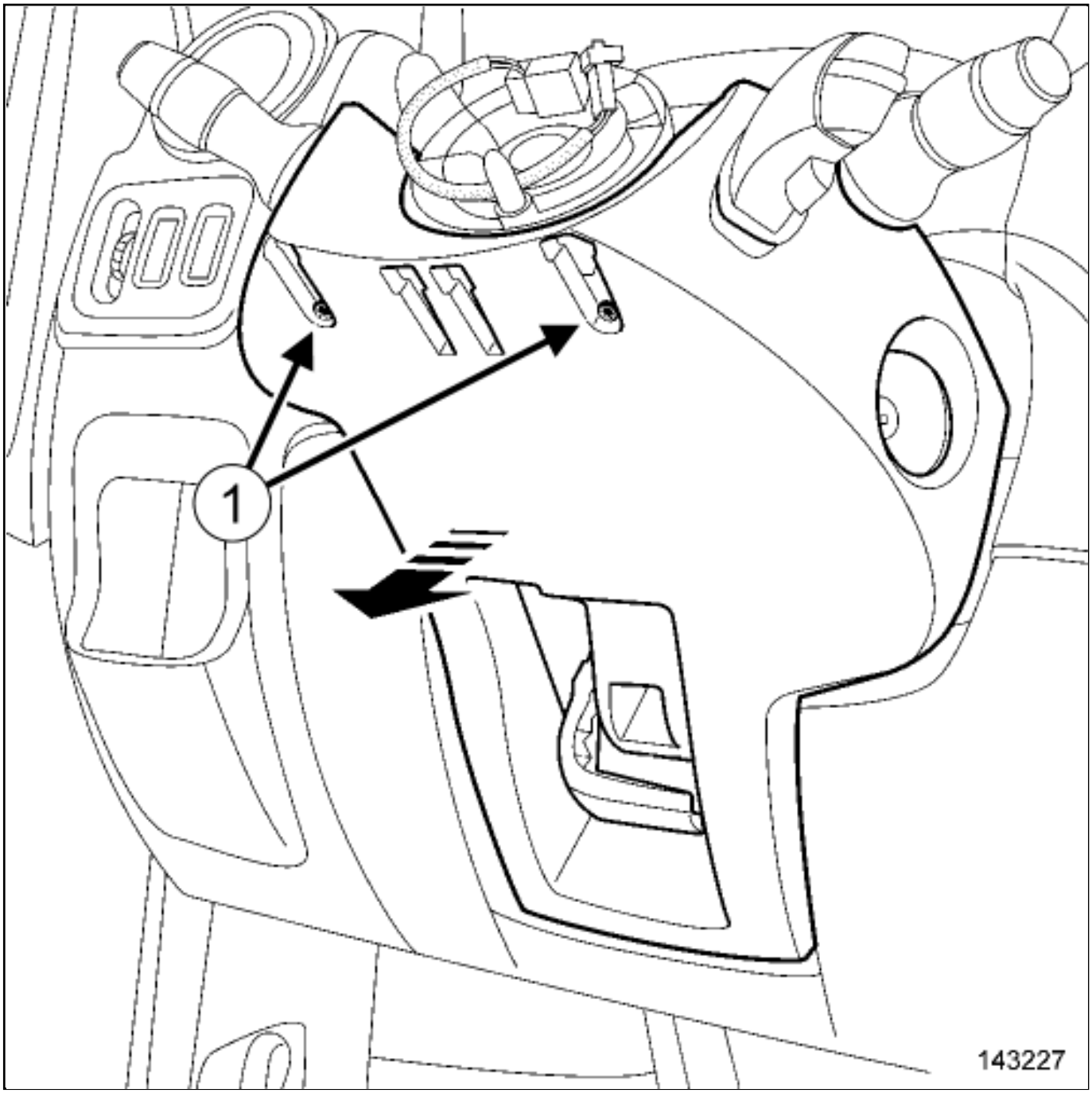
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove **(see 37A, Mechanical component controls, Braking control assembly: Exploded view)** :
  - the master cylinder,
  - the brake servo non-return valve.

- Remove the A-pillar air duct(see **Air distribution circuit assembly: Exploded view**) (61A, Heating).

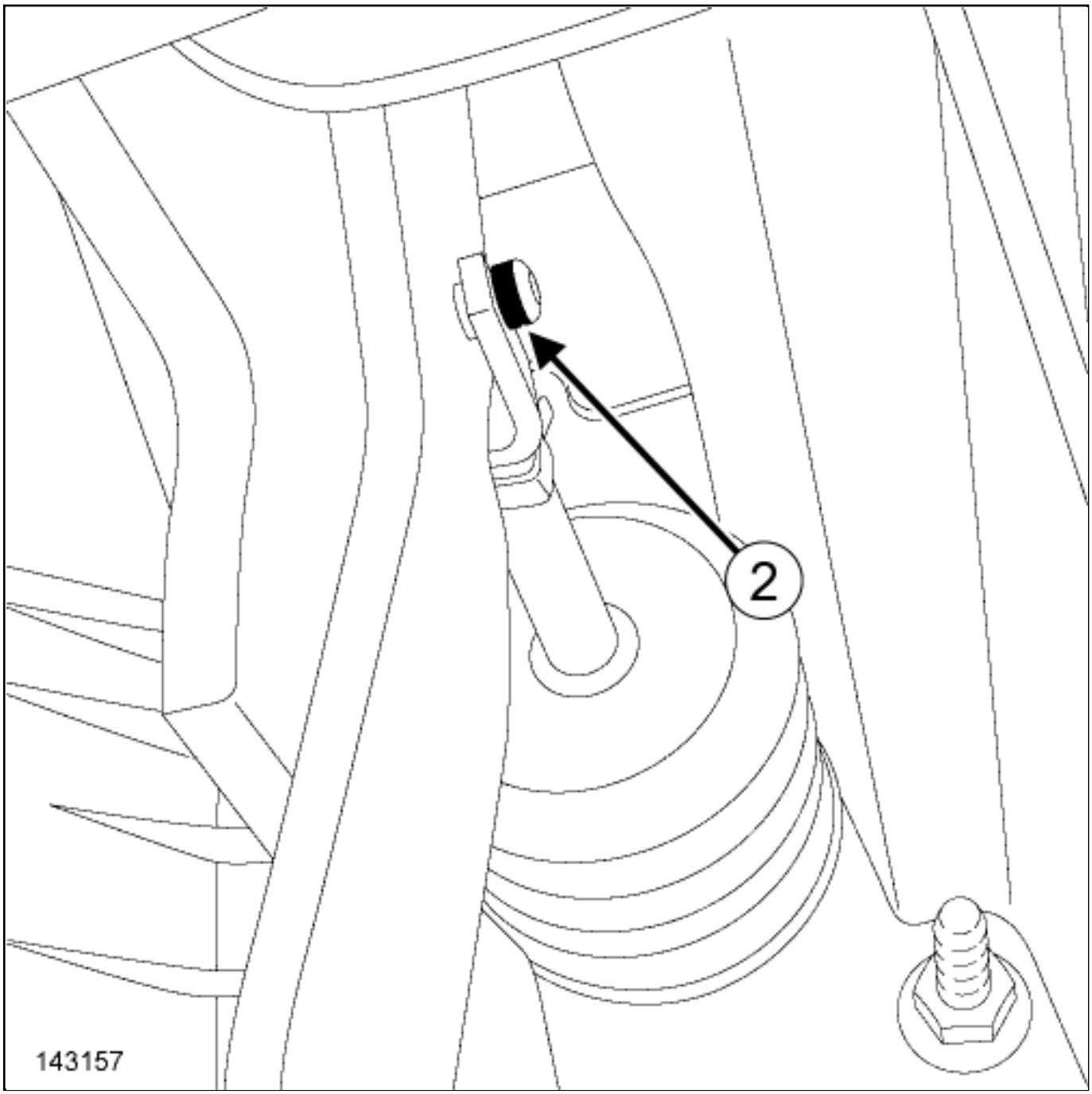

143226



Remove:

- the bolts(1) of the cowlings under the steering wheel,
- the cowlings under the steering wheel.

2. REMOVAL OPERATION



- Remove (see 37A, Mechanical component controls, Pedal assembly: Exploded view) :
  - the rubber ring(2) from the dual safety connecting shaft,
  - the dual safety connecting shaft,
  - the brake servo.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to

clean the bearing face of the brake servo on the bulkhead.

- Remove the adhesive film of the brake servo on the bulkhead.

2. REFITTING OPERATION

- Fit the brake servo flat against the bulkhead.

- Proceed in the reverse order to removal.

BRAKES SPECIFICATIONS

1.

Front brakes (mm)	
Disc diameter	302
Disc thickness	28
Minimum disc thickness (1)	24.5
Piston diameter	48 (2 pistons)
Maximum disc run-out	0.096
Brake lining thickness (including backplate)	18.2
Minimum brake pad thickness (including backplate)	9.1

(1) the brake discs cannot be reground. If the brake discs are excessively worn or scratched they must be replaced.

Rear brakes (mm)		
Type of rear wheel drive	Single wheel rear wheel drive	Twin wheel rear wheel drive
Disc diameter	305	302
Disc thickness	12	18
Minimum disc thickness (1)	10	15
Piston diameter	48	48
Maximum disc run-out	0.08	0.08
Brake lining thickness (including backplate)	18.2	18.2
Minimum brake pad thickness (including backplate)	9.1	9.2

(1) the brake discs cannot be reground. If the brake discs are excessively worn or scratched they must be replaced.

BRAKING CIRCUIT: BLEED

Note, one or more warnings are present in this procedure

Equipment required
brake circuit bleeding device
pedal press

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 30A, General information, Brake circuit: Precautions for the repair)** .

CAUTION

To avoid residual air being present in the brake circuit, the parking brake must be released before starting the bleeding process.

This procedure must be applied after one of the following components has been removed or replaced:

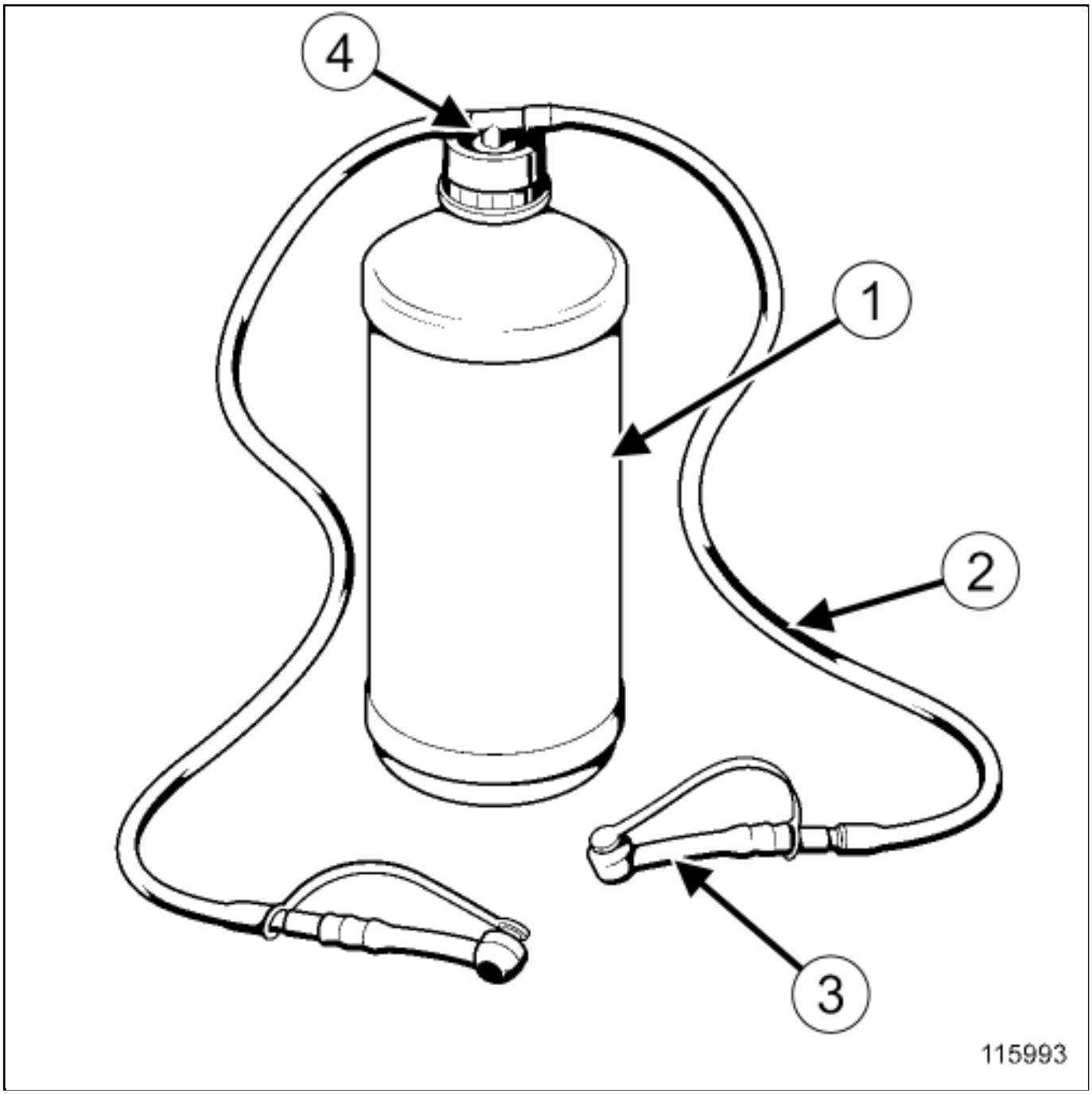
- the master cylinder,
- the brake fluid,
- the hydraulic unit,
- a rigid pipe,
- a hose,
- the reservoir,
- a calliper.

CAUTION

Switch off the vehicle ignition so as not to activate the hydraulic unit solenoid valves when bleeding the brake circuit.

CAUTION

The level must be between the "MIN" and "MAX" markings on the reservoir.



- Use locally produced containers to collect the used brake fluid.

- Front and rear callipers:
  - 2 washer fluid containers(1) (1 litre),
  - 4 mmdiameter transparent pipes(2) ,
  - 4 pipettes(3) ,

- 2 T-unions(4) .

Note:

The new hydraulic unit is pre-filled.

When working on one of the following components, position a pedal pressto limit the outflow of brake fluid and prevent any air from entering the master cylinder and the circuits downstream of the master cylinder:

- hydraulic unit,
- pipes between the hydraulic unit and brake callipers,
- brake hoses,
- brake calliper.

Remove the pedal pressbefore carrying out the braking system bleeding procedure.

Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .

Switch off the vehicle ignition.

Connect the brake circuit bleeding device(after having received Renault approval) to the master cylinder reservoir (see the instructions for the equipment).

Pressurise the brake circuit.

Adjust the pressure to between 1.5 bar< P < 2 barfor 3 minutesto stabilise it in the braking circuit.

Close the circuit between the bleed screw and brake fluid reservoir without dumping the pressure.

Note:

The circuit between the bleed screw and brake fluid reservoir is closed in different ways depending on the type of equipment used:

- valve,
- switch.

Fit the bleed containers to the six bleed screws of the callipers.

Note:

Some callipers are equipped with several bleed screws. In this case, turn the bolts one after another to perform the brake circuit bleed.

- Undo the calliper bleed screws:
  - front left-hand,
  - front right-hand,
  - rear left-hand,
  - rear right-hand.

- Open the circuit between the bleed screw and brake fluid reservoir and allow the liquid to run until all the air bubbles have been released.

- Tighten the bleed screws in the following order:
  - front left-hand,
  - front right-hand,
  - rear left-hand,
  - rear right-hand.

- Undo the calliper bleed screw:
  - front left-hand,
  - allow the fluid to run until all the air bubbles have been released,
  - tighten the bleed screw on the calliper.

- Carry out the previous operation on the callipers:
  - front right-hand,
  - rear left-hand,
  - rear right-hand.

- Close the bleed screw to dump the pressure in the brake circuit.

- Remove the brake circuit bleeding devicefrom the master cylinder reservoir.

- Check pedal travel and resistance. If it is not correct, finish bleeding the brake circuit with the help of a second operator. Start the bleed operation by bleeding the calliper that is the furthest away from the master cylinder:
  - hold down the brake pedal,
  - open the circuit bleed screw to release the air from the brake circuit,
  - close the circuit bleed screw,
  - release the brake pedal.

- Top up the brake fluid level in the reservoir, if necessary. Check the sealing of the front and rear bleed screws and ensure that the sealing covers are in placeFront brake calliper assembly: Exploded view .

During a road test, trigger braking regulation to confirm that the brake pedal travel is correct.

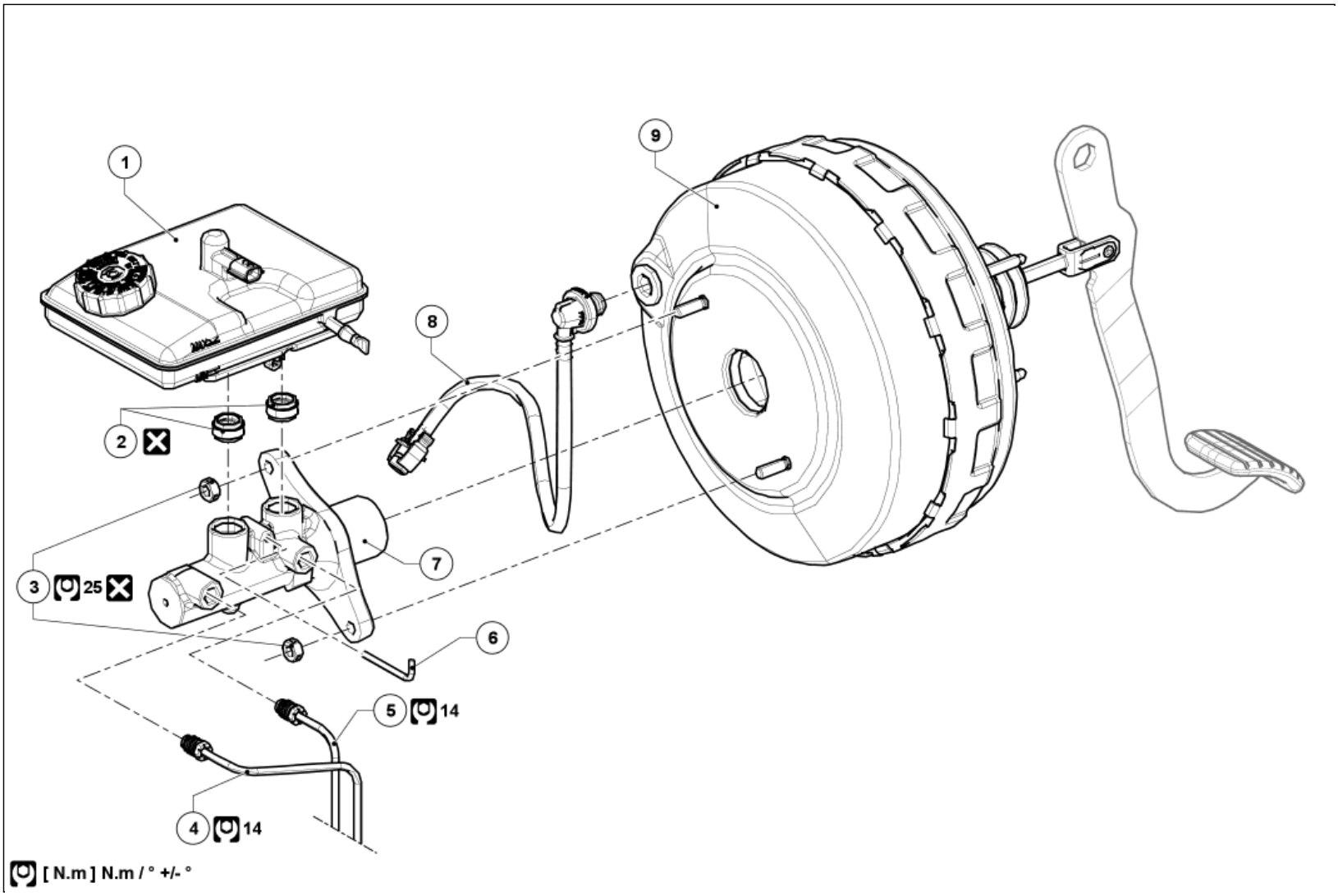
Clean off any traces of brake fluid on the vehicle using brake cleaning product**Vehicle: Parts and consumables for the repair** .

1. BLEEDING THE BRAKING ASSISTANCE CIRCUIT

Repair-13x03x01-01x76-1-29-1.xml

XSL version : 3.02 du 22/07/11

BRAKING CONTROL ASSEMBLY: EXPLODED VIEW



(see **Illustration key: Description**) Key.

Mark	Description	Information
1	Brake fluid reservoir	
2	Master cylinder seal on brake fluid reservoir side	
3	Master cylinder nut	
4	Brake pipe between master cylinder and hydraulic unit	
5	Brake pipe between master cylinder and hydraulic unit	
6	Brake fluid reservoir pin	
7	Master cylinder	(see 37A, Mechanical component controls, Master cylinder: Removal - Refitting)
8	Brake servo non-return valve	(see 37A, Mechanical component controls, Brake servo non-return valve: Removal - Refitting)
9	Brake servo	(see 37A, Mechanical component controls, Brake servo: Removal - Refitting)

XSL version : 3.02 du 22/07/11

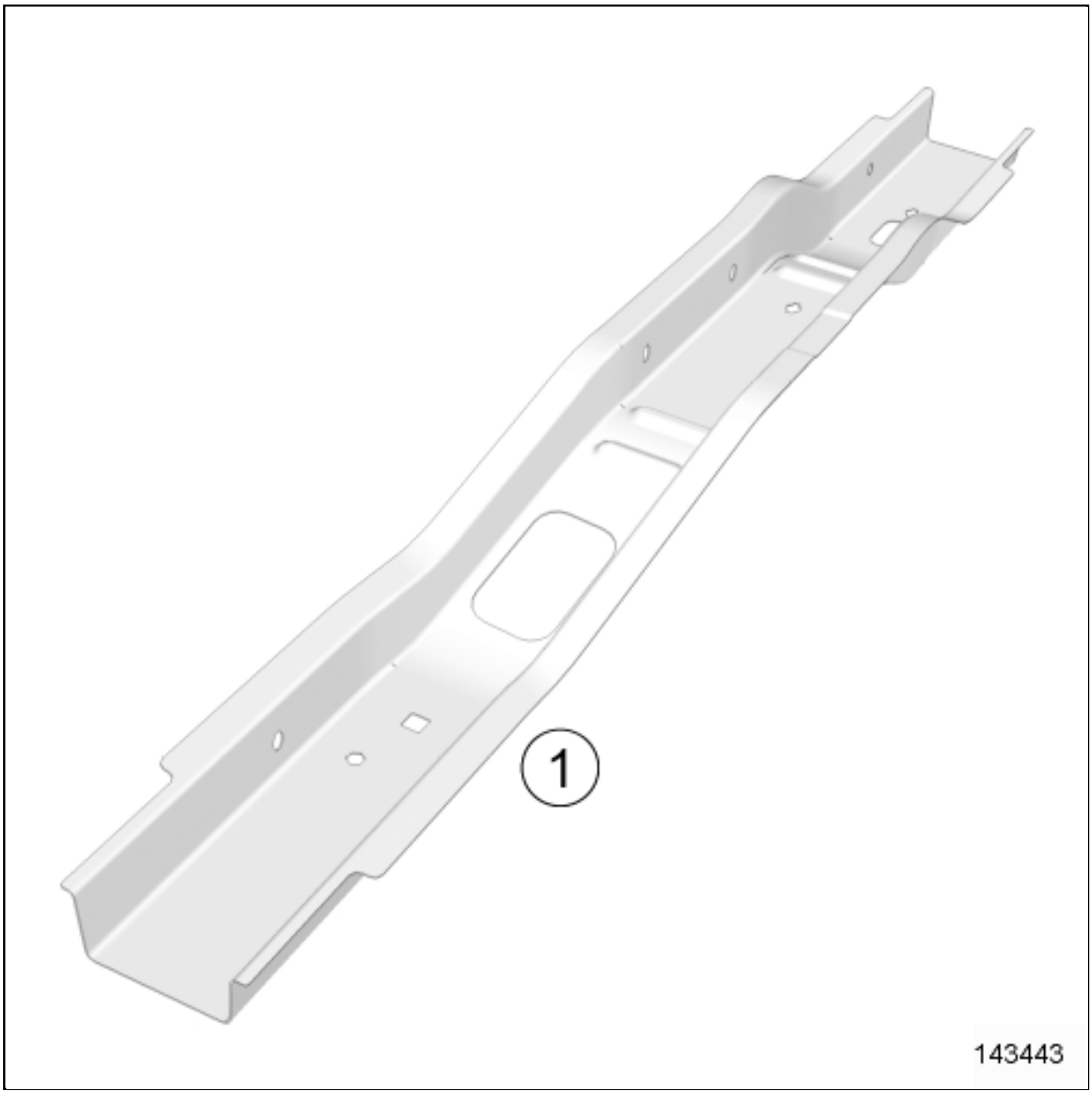
BULKHEAD LOWER CROSS MEMBER: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Bulkhead lower cross member	HLE	0.9

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

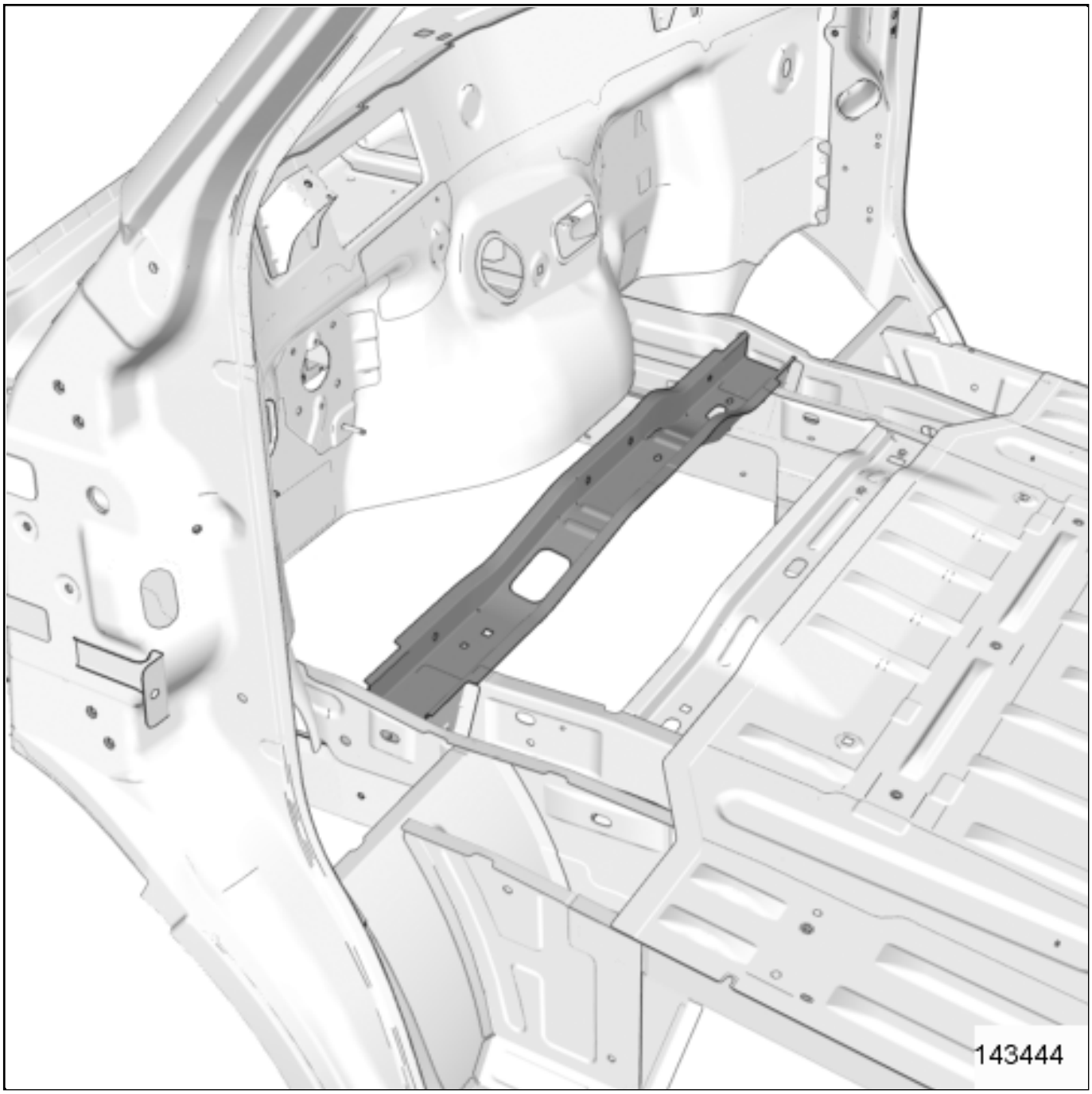
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

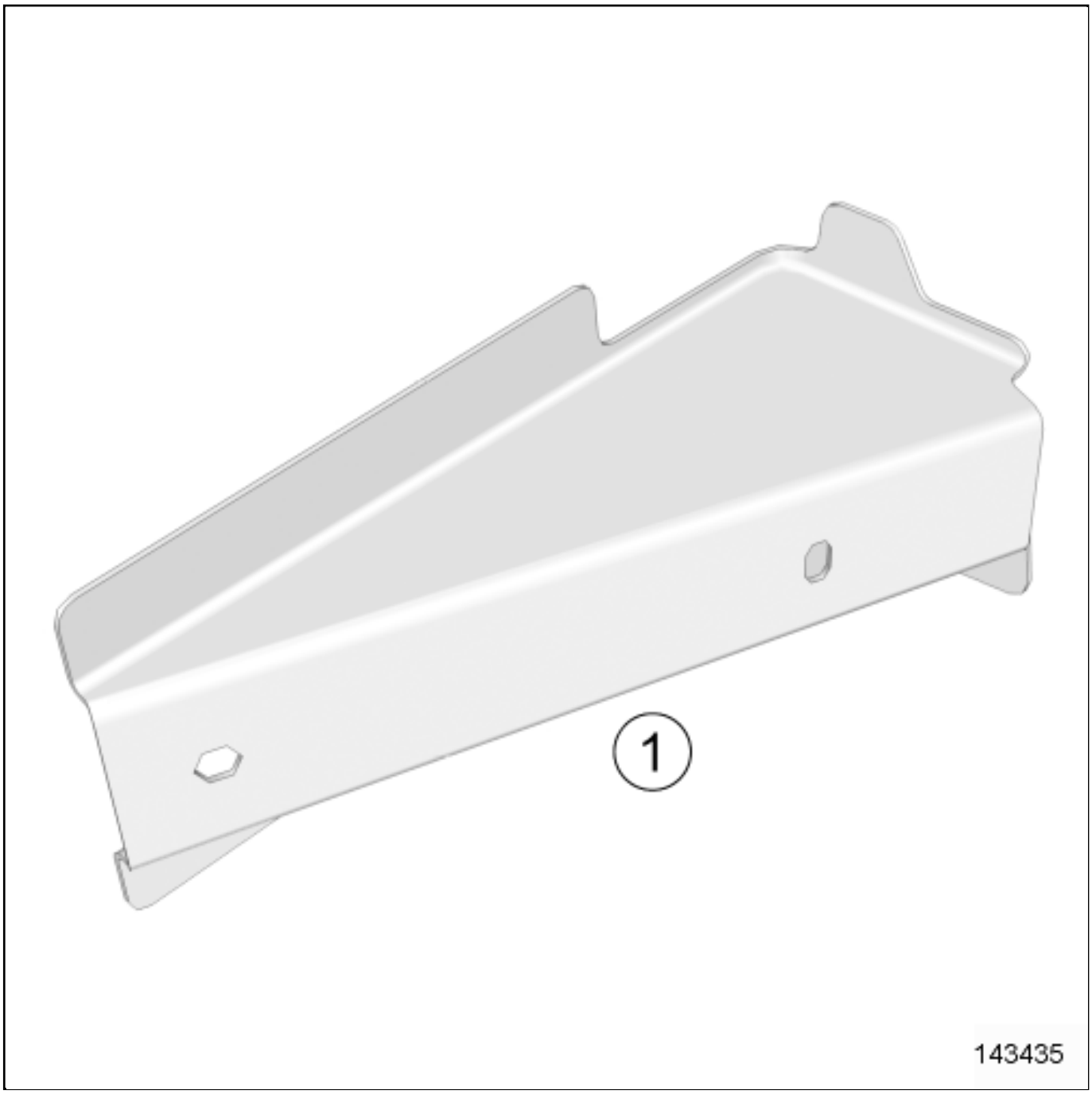
BULKHEADSIDEREINFORCEMENT:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Bulkhead side reinforcement	Mild steel	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

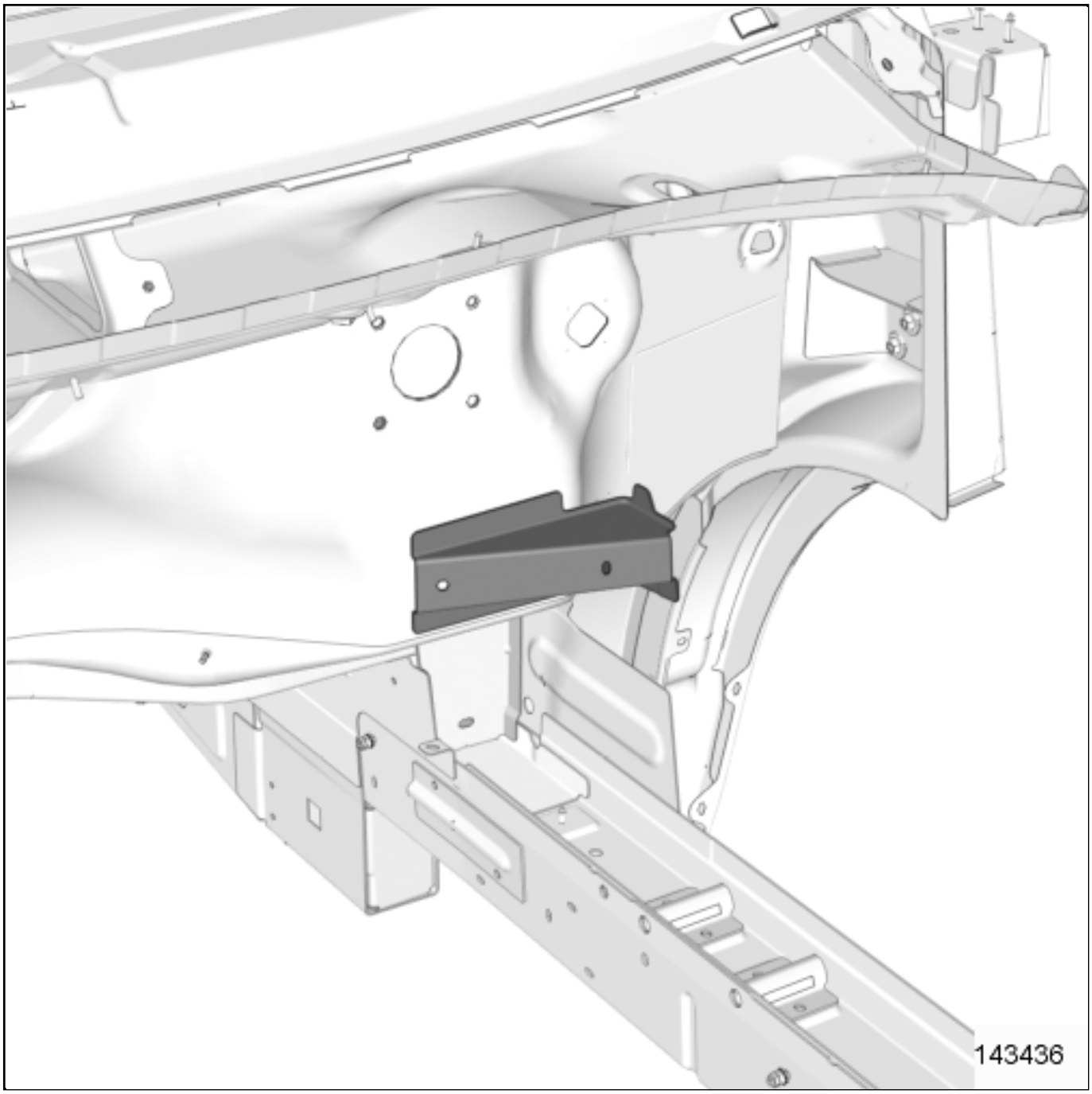
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

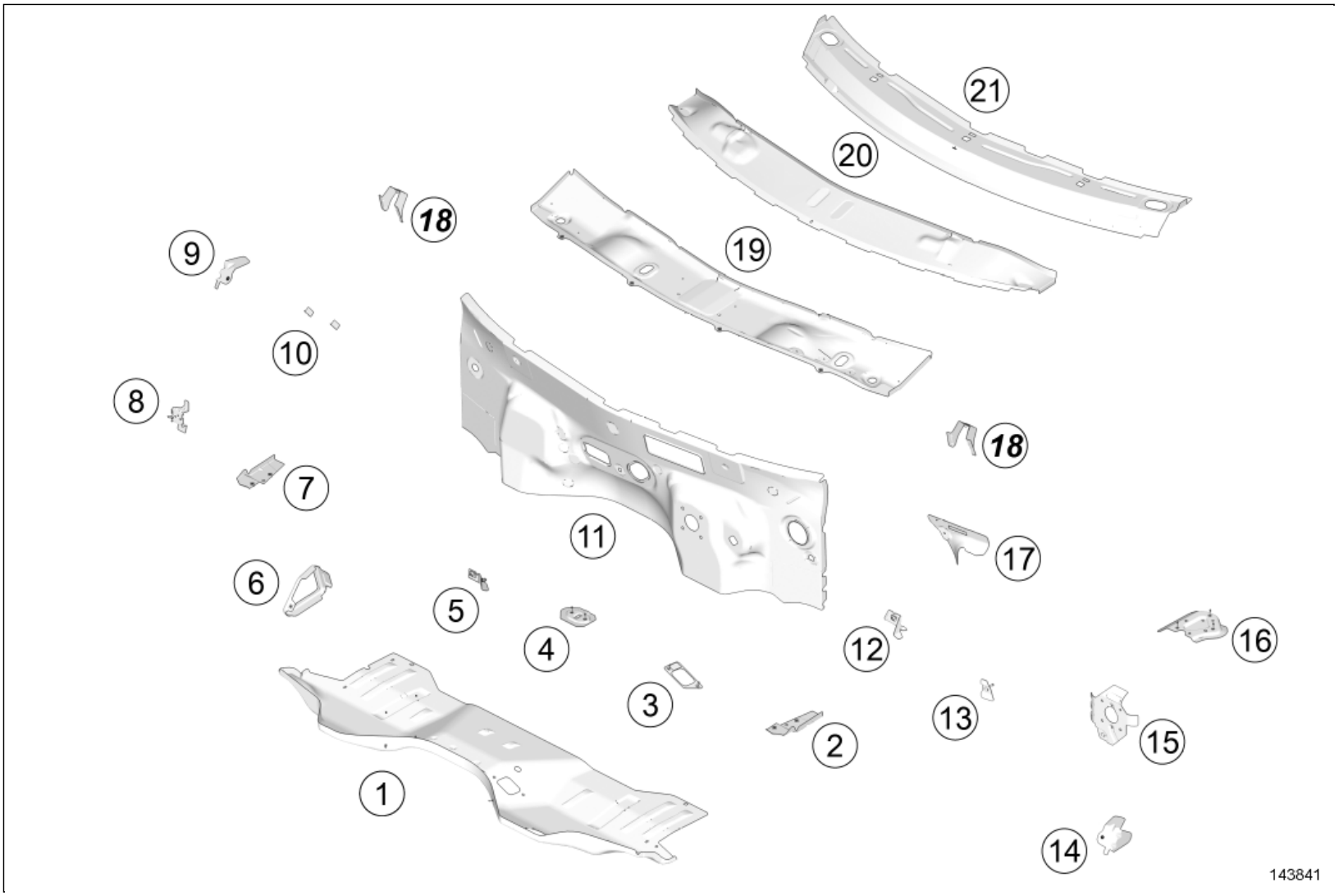
BULKHEAD: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Centre floor front extension	Mild steel	0.9
(2)	Dashboard mounting reinforcement	Mild steel	1.5
(3)	Gearbox control mounting reinforcement	Mild steel	1.2
(4)	ESP computer support	Mild steel	1.5
(5)	Dashboard frame support	Mild steel	1.5
(6)	Left-hand drive heater bulkhead	Mild steel	1.2
(7)	Diesel filter support	Mild steel	1.17
(8)	Right-hand water chamber evacuation channel	Mild steel	0.8
(9)	Right-hand heater bulkhead	Mild steel	1.2
(10)	Windscreen shim support	Mild steel	1.2
(11)	Bulkhead	Mild steel	1.2
(12)	Left-hand water chamber evacuation channel	Mild steel	0.8
(13)	Pedal support mounting bridge piece	Mild steel	2.0
(14)	Airbag computer support	HLE	1.5
(15)	Left-hand pedal plate reinforcement	HLE	1.8
(16)	Left-hand heater bulkhead	Mild steel	1.2
(17)	Bulkhead reinforcement	Mild steel	0.8
(18)	Dashboard frame mounting support	Mild steel	1.2
(19)	Scuttle panel rain channel	Mild steel	0.85
(20)	Bulkhead upper reinforcement	Mild steel	0.8
(21)	Windscreen aperture lower cross member	Mild steel	0.8

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

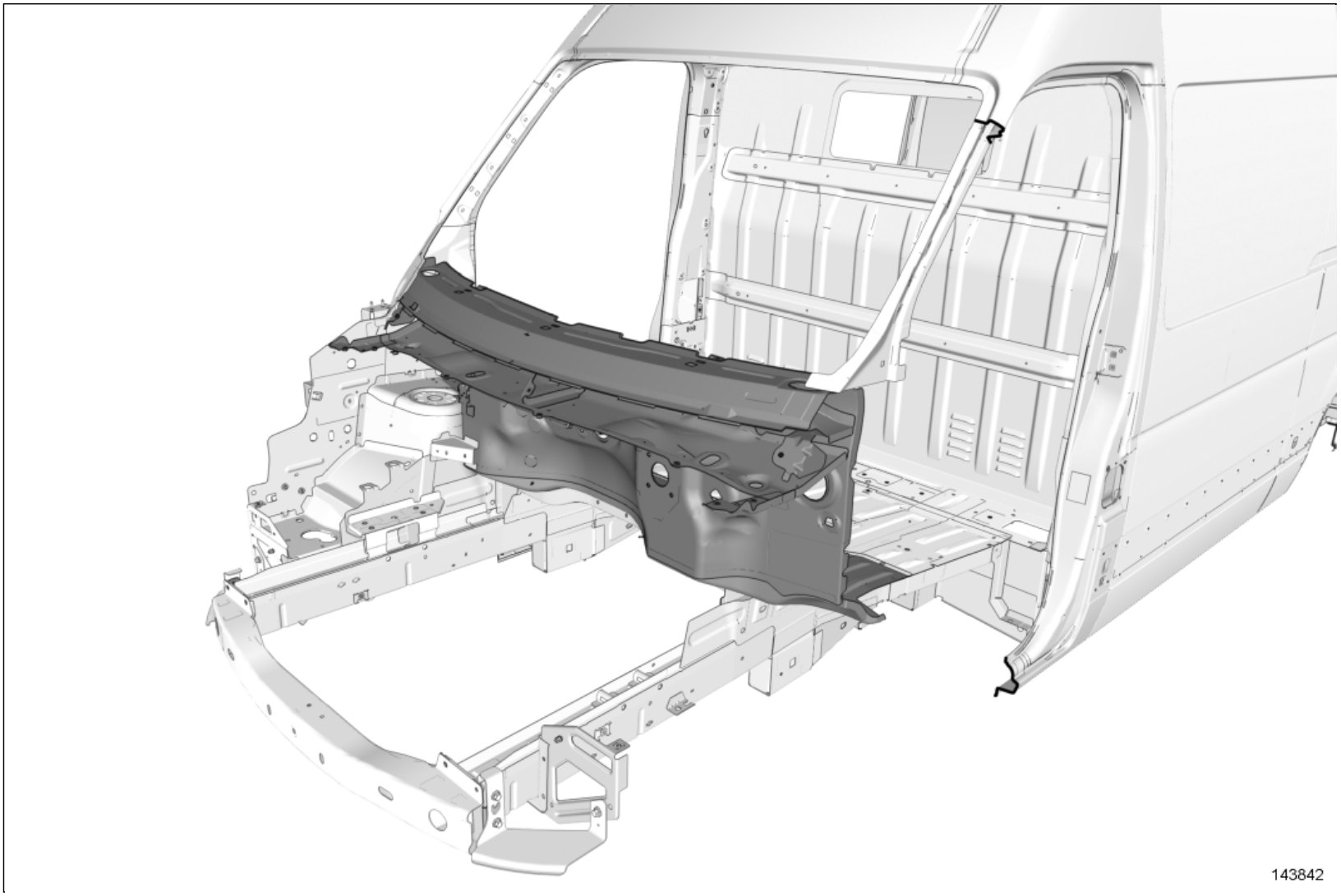
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



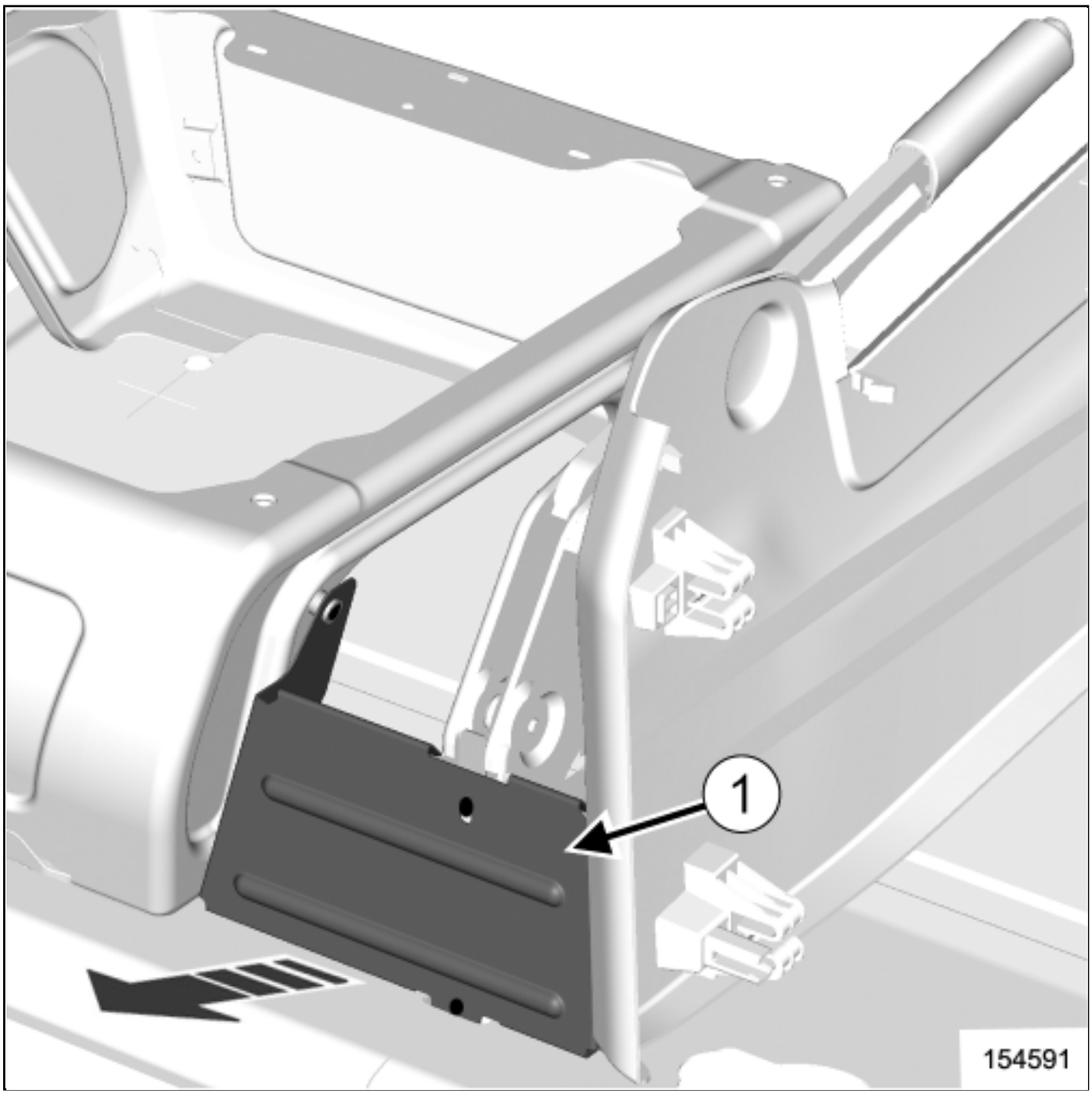
2)SPECIAL NOTES ON MATING

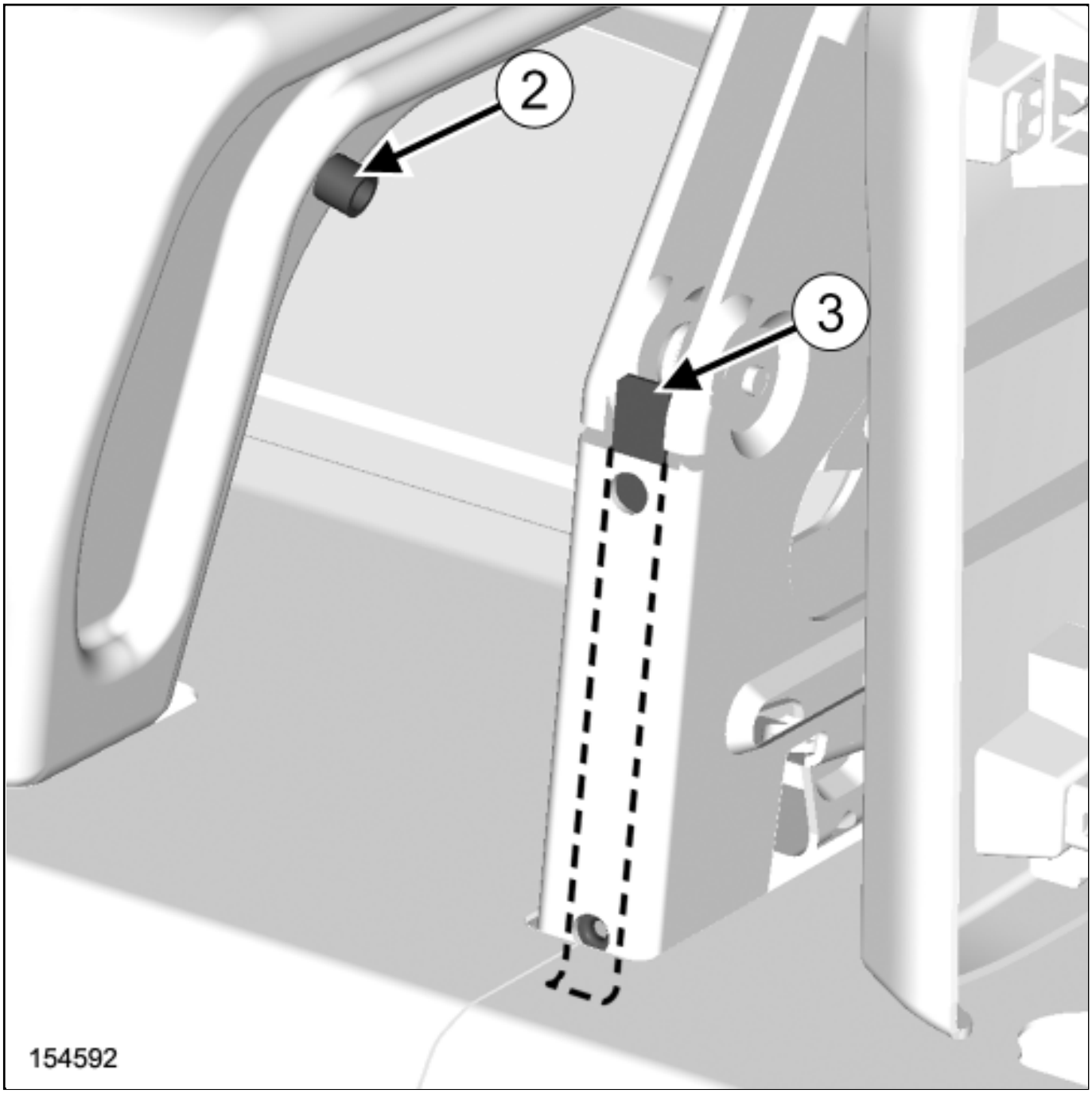
CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

CAB FLOOR: REPLACEMENT

1. COMPOSITION OF THE SPARE PART




2
3
154592

No.	Description	Type	Thickness (mm)
(1)	Handbrake lever protector plate	HLE	1.2
(2)	Spacer	Nylon	4
(3)	Reinforcement bar	HLE	1.2

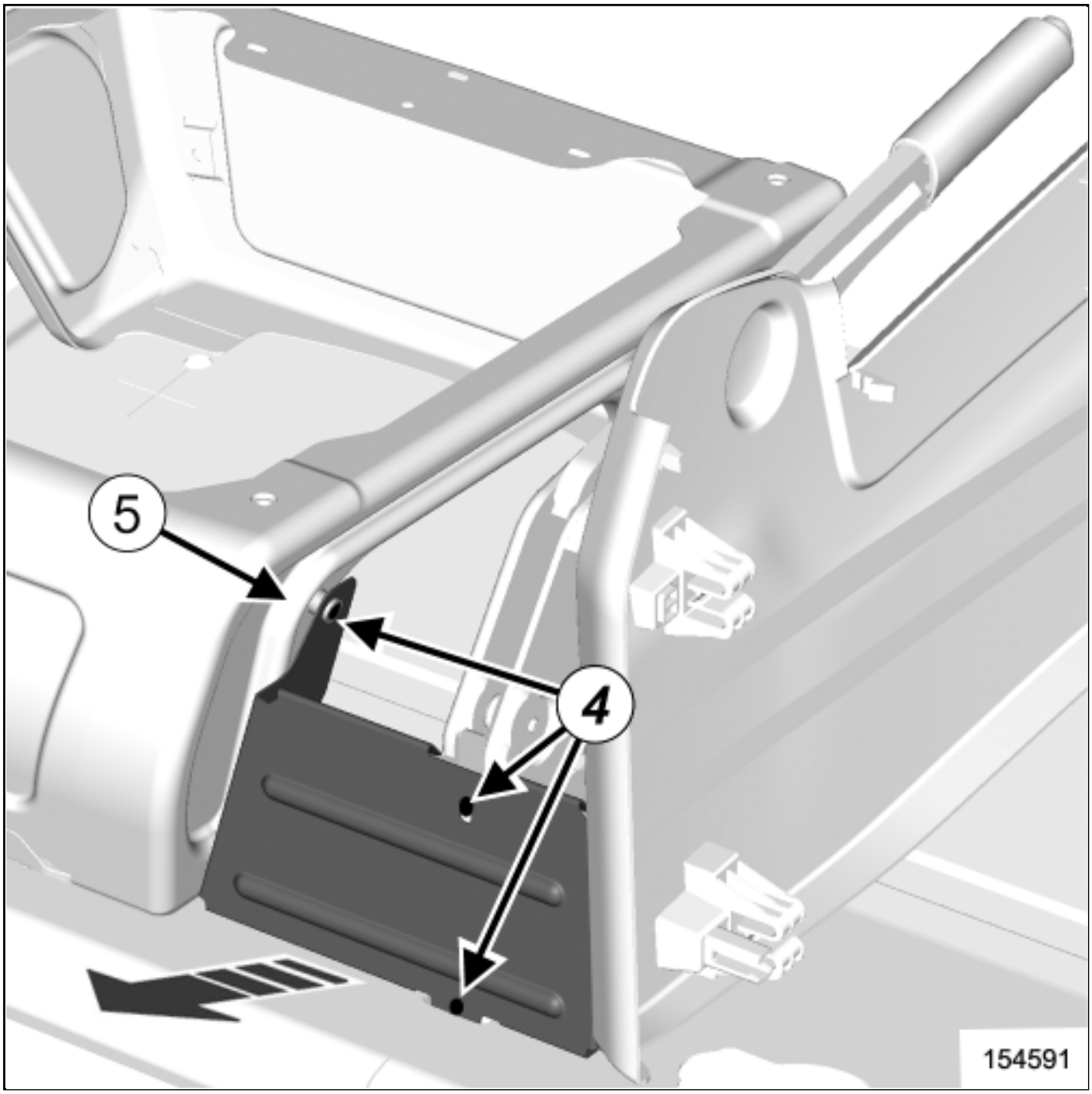
2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

1- COMPLETE REPLACEMENT

1)PART IN POSITION



Position the handbrake lever protector plate with:

- one spacer(2) ,
- one reinforcement bar(3) ,
- three bolts(4) ,
- one nut(5) .

2)SPECIAL NOTES FOR REMOVAL

Note:

Remove the handbrake lever protector plate following the direction of the arrow.

CABIN FILTER: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove:

- the dashboard lower trimDashboard lower trim: Removal - Refitting (57A, Interior equipment),
- the right-hand A-pillar air duct(see 61A, Heating, Air distribution circuit assembly: Exploded view) .

2. REMOVAL OPERATION

Remove (see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) :

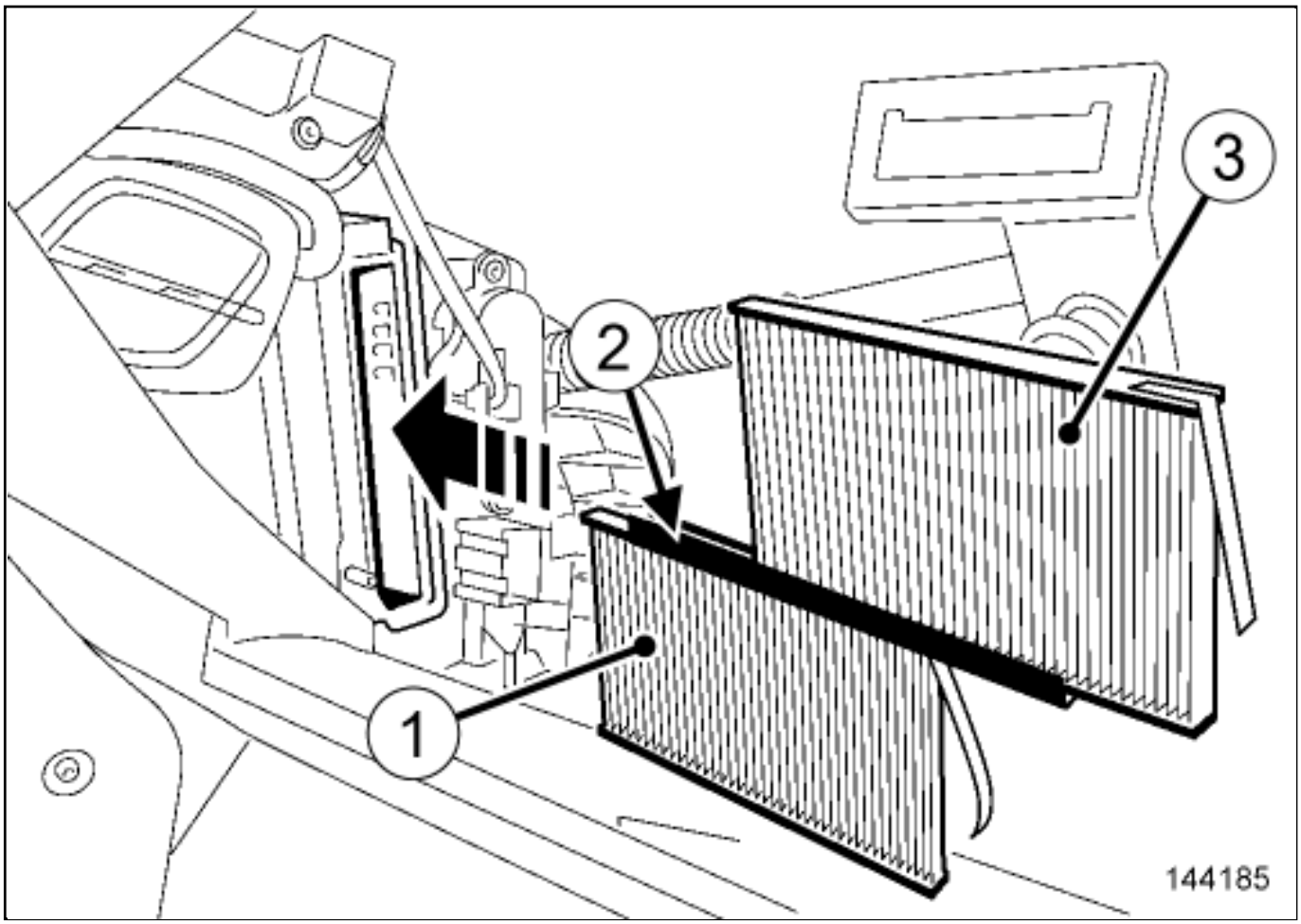
- the cabin filter access flap,
- the cabin filter.

REFITTING

1. REFITTING PREPARATION OPERATION

Check there are no foreign bodies in the passenger compartment filter housing and clean thoroughly if necessary.

2. REFITTING OPERATION



- Fit the first half of the cabin filter(1) in its housing.
- Position the adjusting strip(2) on the first half of the cabin filter.
- Fit the second half of the cabin filter(3) in its housing.

- Proceed in the reverse order to removal.

CAMSHAFT: CHECK

Note, one or more warnings are present in this procedure

Special tooling required	
Cylinder block liner clamps.	Mot. 588

Equipment required
component support
Dial gauge
dial gauge support
external micrometer
radial play measuring tape
compressed air nozzle

1. PREPARATION OPERATION FOR CHECK

CAUTION

It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump will irreparably damage the engine by:

- blocking the strainer,
- raising the oil level above maximum, with a risk of engine racing.

Note:

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair(see 10A, Engine and cylinder block assembly, Engine: Precautions for the repair) .

Remove the engine - gearbox assembly.

Position the engine on the component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

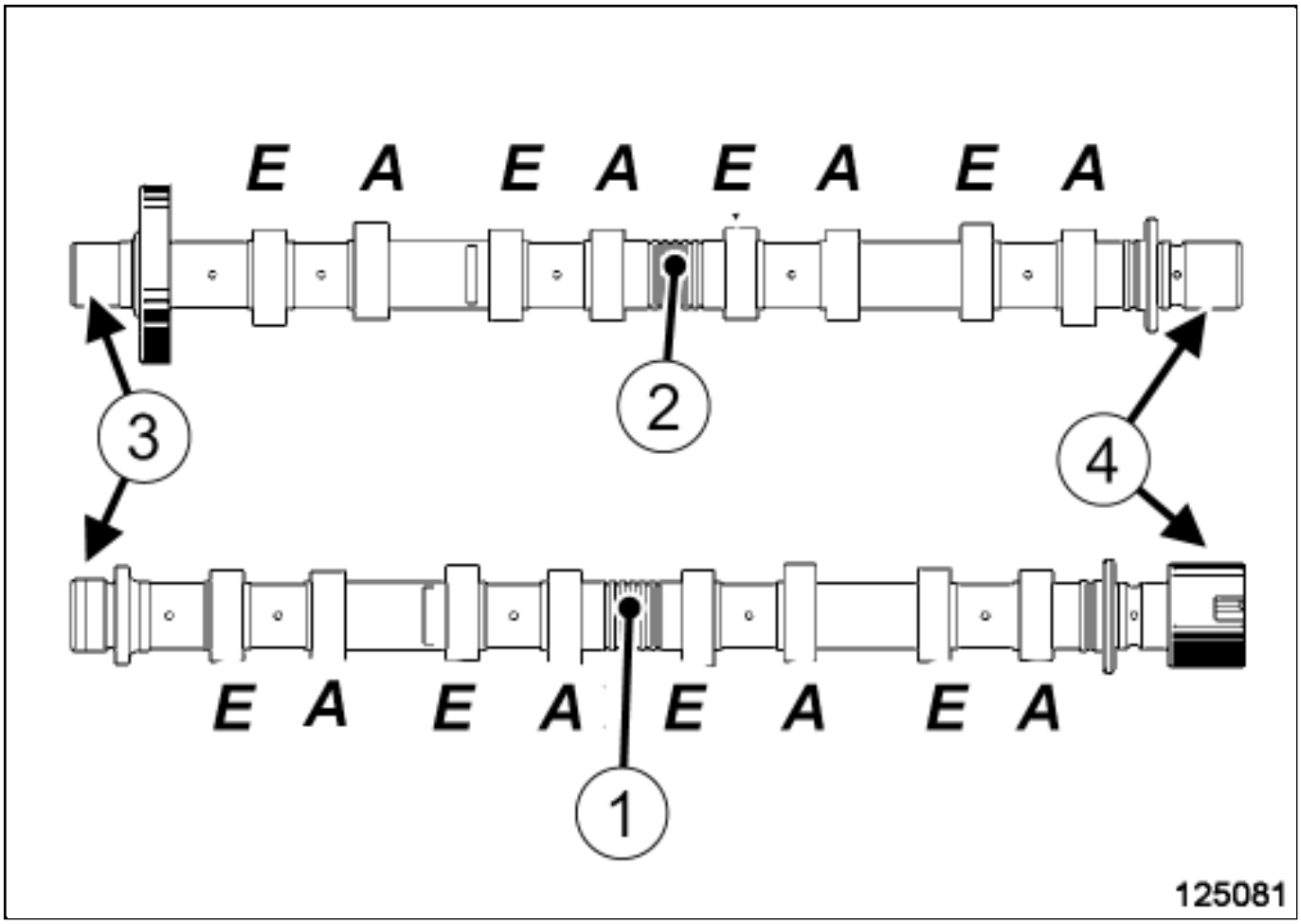
Remove the camshafts(see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) (see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) .

Before any checks:

- clean the camshafts with surface cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) and dry them using a compressed air nozzle,
- check that the camshafts are not scratched and do not show signs of impact or abnormal wear (replace the camshaft if necessary).

2. CHECKING THE CAMSHAFT

1- IDENTIFICATION OF THE CAMSHAFTS



(1) : inlet camshaft.

(2) : exhaust camshaft

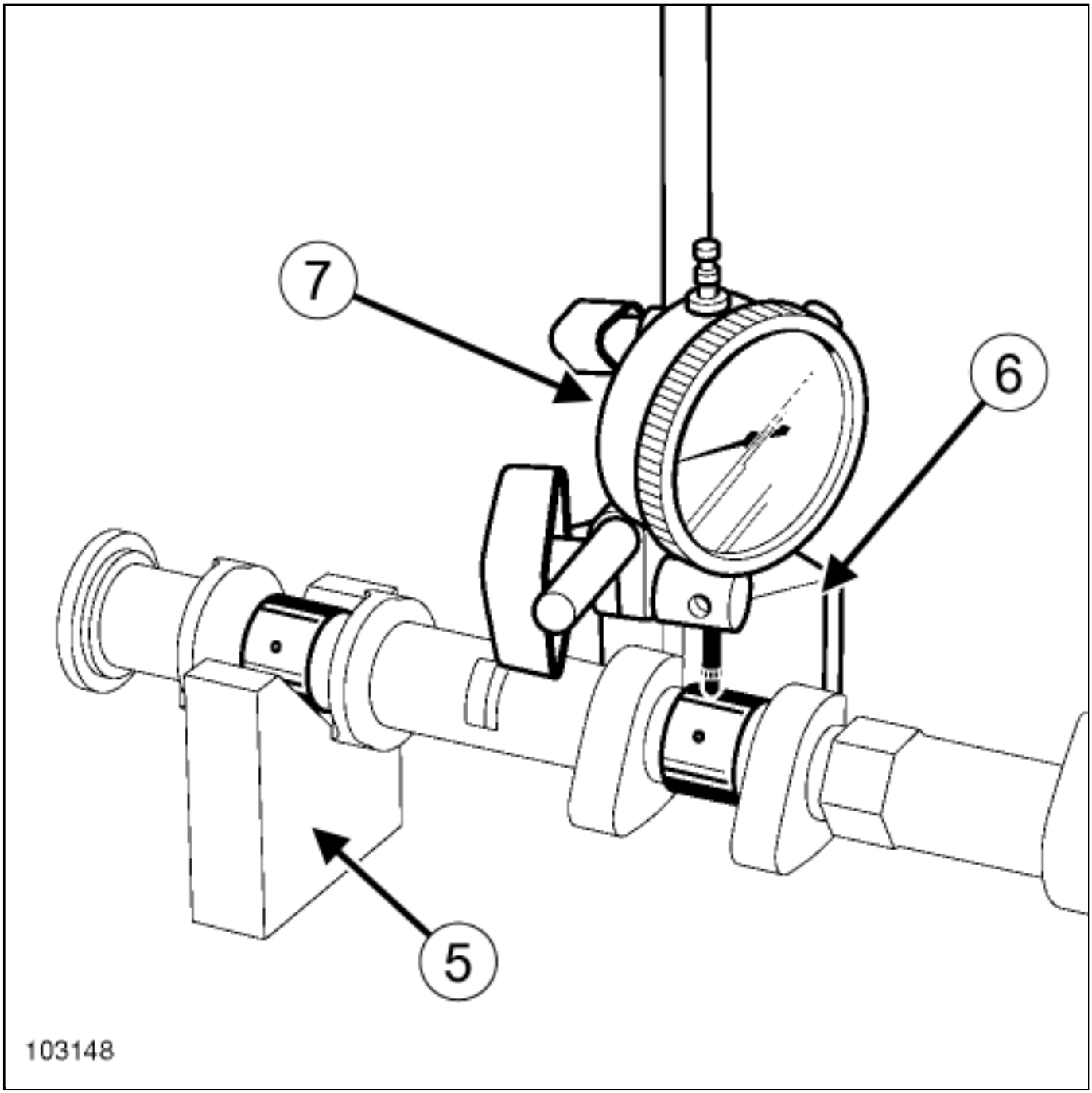
(3) : timing end

(4) : flywheel end

(A) : inlet spacer

(E) : exhaust spacer

2- CHECKING THE CONCENTRICITY OF THE CAMSHAFT JOURNALS



Place the camshaft on two slightly oiled v-blocks(5) .

Fit:

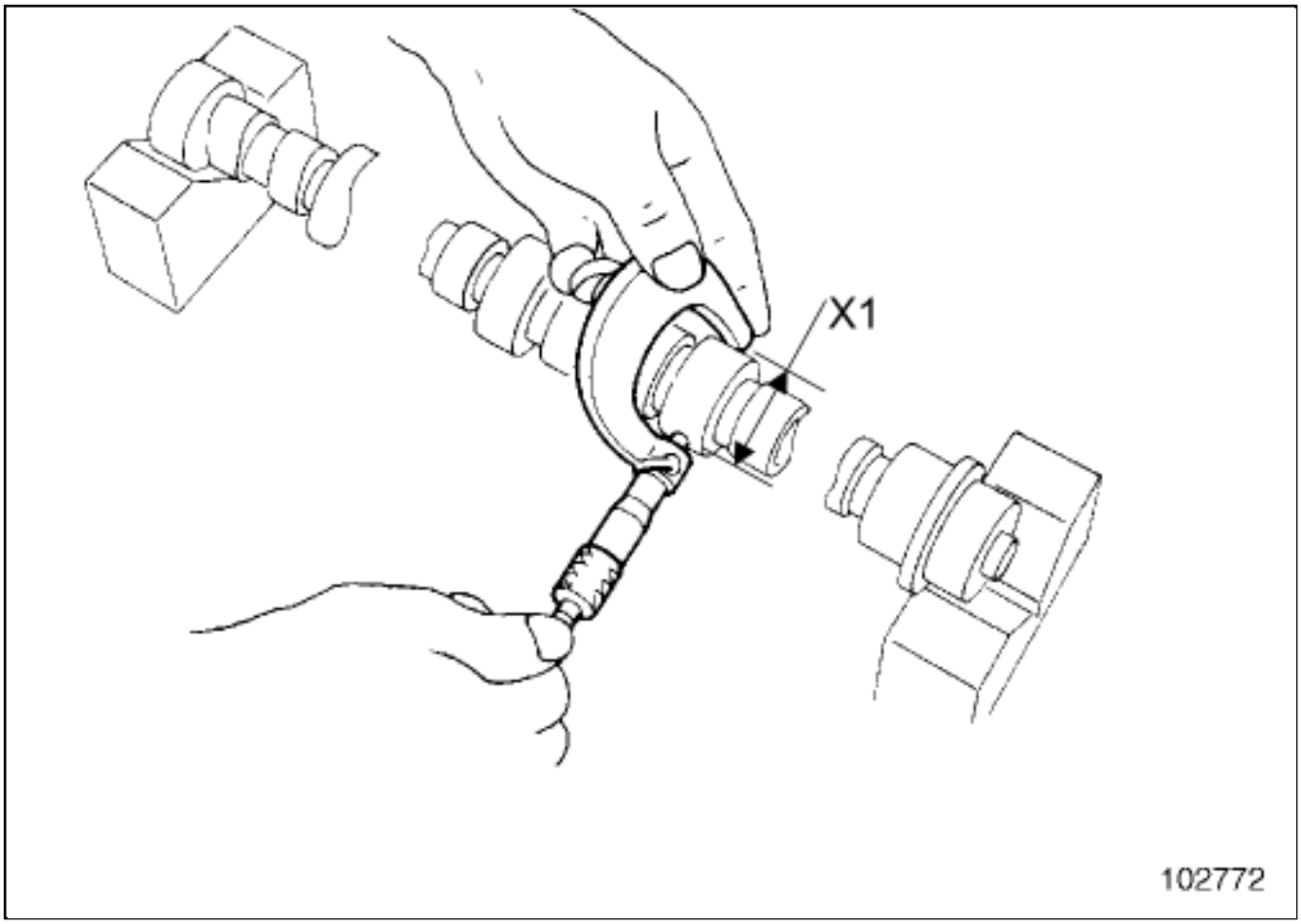
- the dial gauge support(6) ,
- the Dial gauge(7) .

Position the dial gauge sensor against the centre of the mating face of the camshaft journals.

Calibrate the dial gauge to zero.

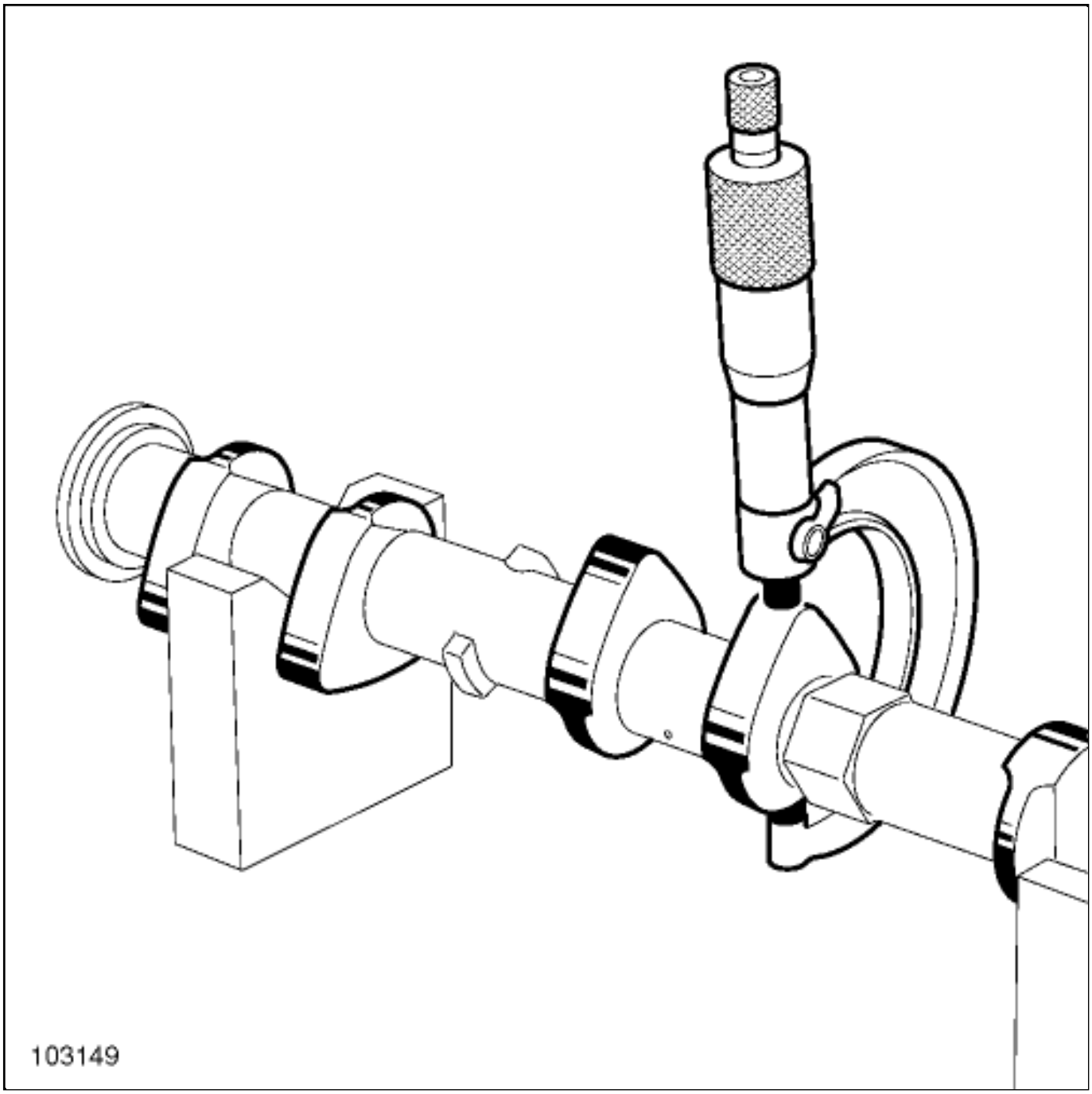
Rotate the camshaft while avoiding the lubrication holes to check the journal concentricity, which must be less than 0.05 mm.

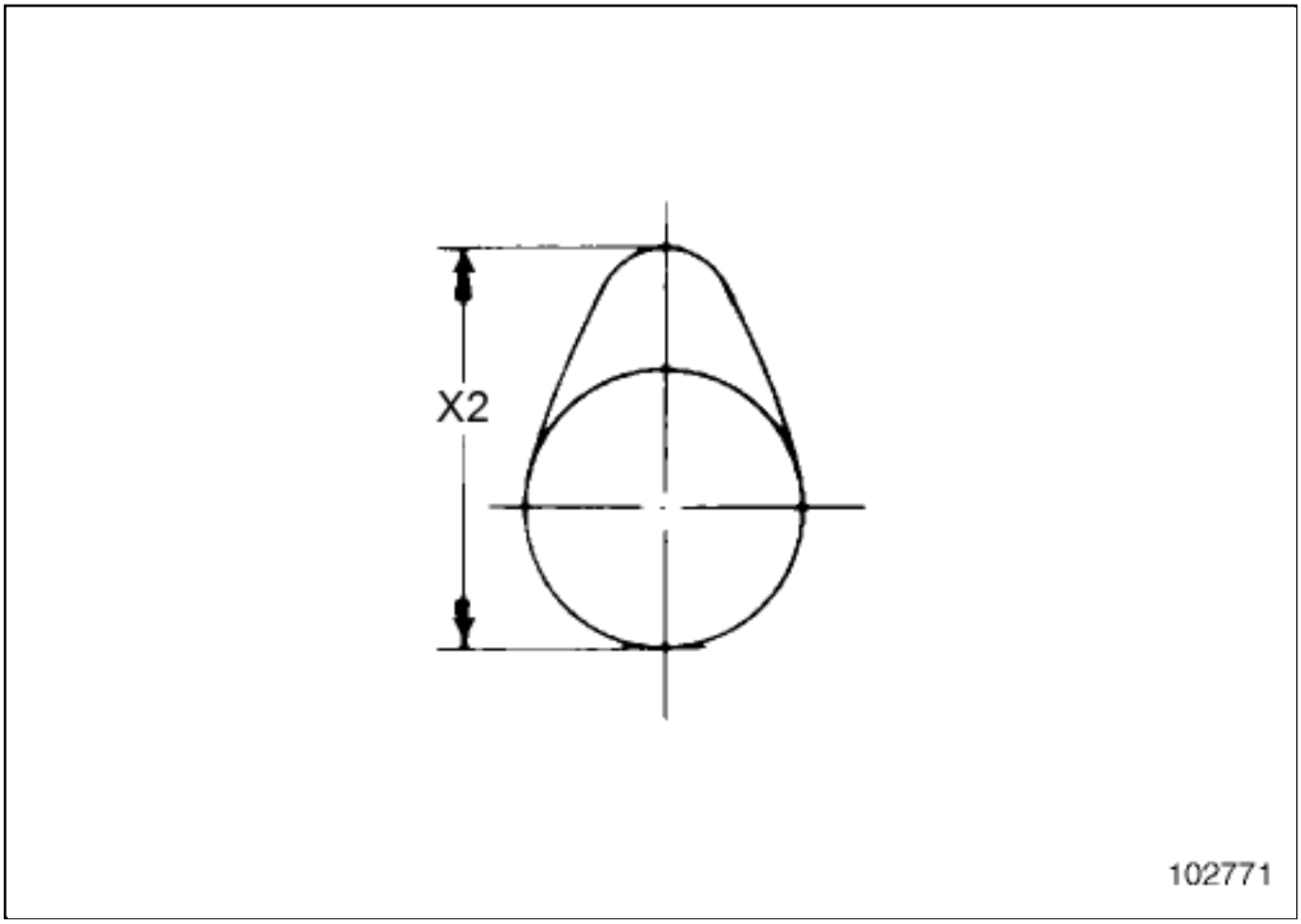
3- CHECKING THE CAMSHAFT JOURNAL DIAMETERS



Use a external micrometerto measure the diameter(X1) of the camshaft journal, which must be between 24.98 and 25 mm.

4- CHECKING THE HEIGHT OF THE CAM LOBES

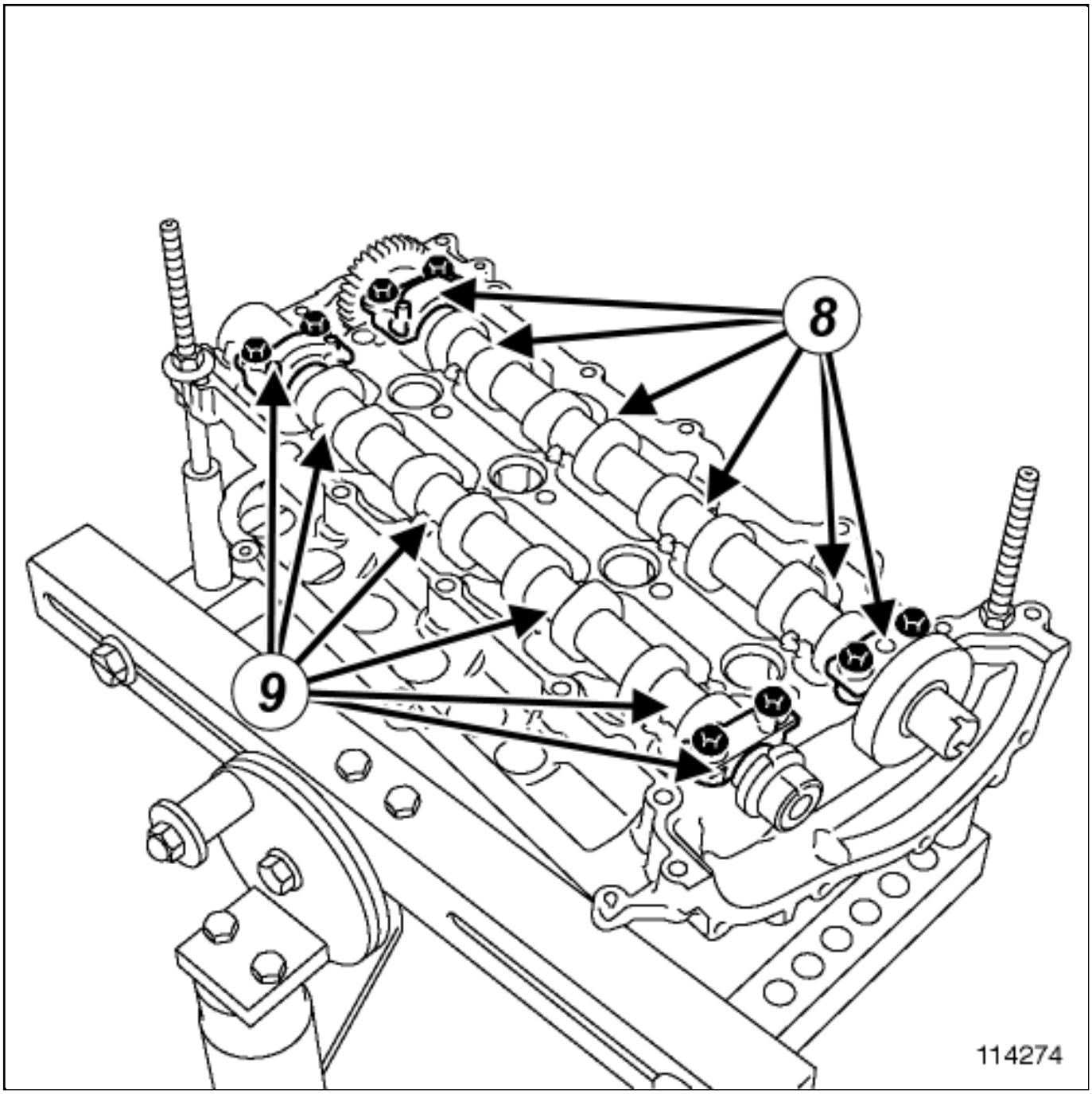

103149



Place the camshaft on two slightly oiled v-blocks.

Measure using a external micrometerthe height of the cam(X2) , which must be between 39.03 and 39.13 mm .

5- CHECKING THE CAMSHAFT RADIAL PLAY



Cut 12 pieces of radial play measuring tapethe width of the camshaft journal mating face.

Place each piece of wire on the rocker cover camshaft journal mating faces in line with the camshaft at (8) and (9) .

Note:

Do not allow the camshaft to rotate during the operation in order to avoid distorting the measurement.

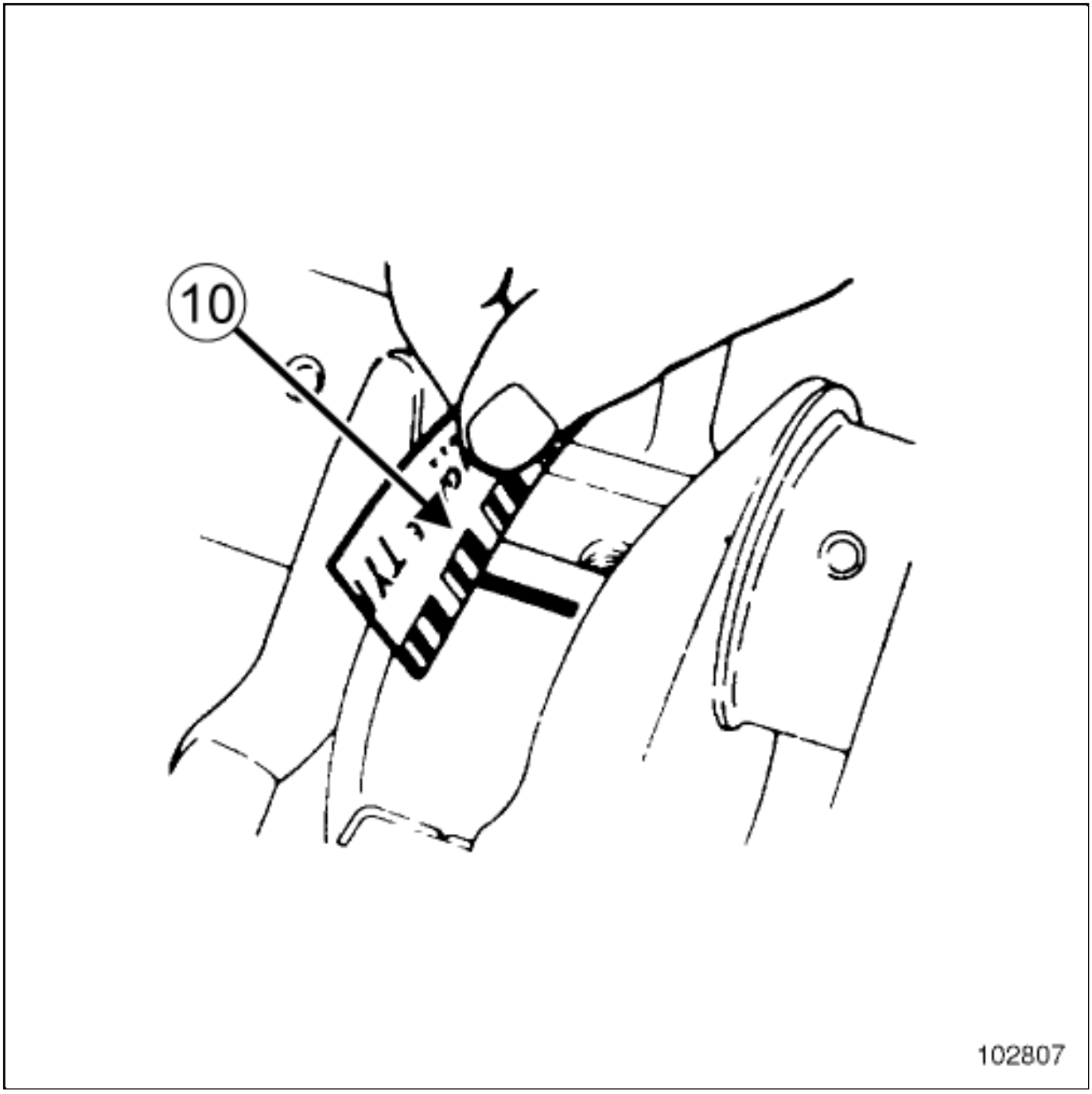
Refit (see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) (see 10A,Engine and cylinder block

assembly , Camshaft: Removal - Refitting) :

- the camshafts,
- the camshaft bearing caps,
- the rocker cover (without seals).

Remove:

- the rocker cover bolts,
- the rocker cover,
- the camshaft bearing cap bolts,
- the camshaft bearing caps,
- the camshafts.



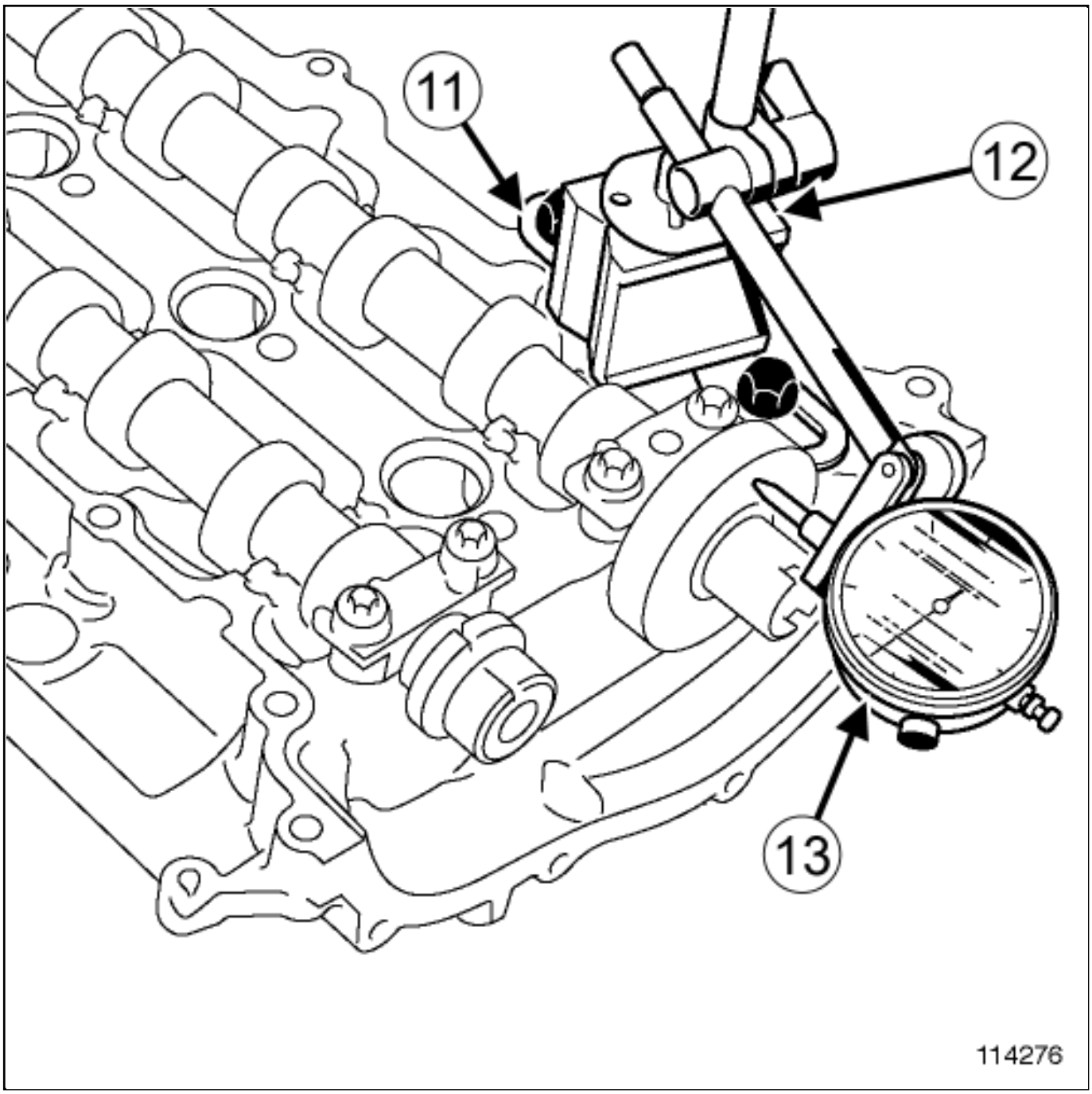
Measure the flattening of the clearance measuring tape, which must be between 0.04 and 0.08 mm,

using the gauge(10) printed on the measuring tape packaging paper.

Clean any traces of measuring tape off the camshaft and the camshaft bearing caps.

6- CHECKING THE CAMSHAFT LONGITUDINAL PLAY

Refit the camshafts on the rocker cover(see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) (see 10A,Engine and cylinder block assembly, Camshaft: Removal - Refitting) .



Fit:

- a metal plate(11) on the rocker cover (e.g.: toolCylinder block liner clamps.(Mot. 588)),
- the dial gauge support(12) on the metal plate,

- the Dial gauge(13) on the mounting.

Position the dial gauge sensor against the end of the camshaft.

Move the camshaft towards the dial gauge until it hits a stop.

Calibrate the dial gauge to zero.

Move the camshaft towards the side opposite the dial gauge until it hits the other stop.

Check that the longitudinal play is between 0.08 and 0.18 mm.

Remove the rocker cover camshafts(see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) (see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) .

3. FINAL OPERATION

Refit the camshafts(see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) (see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) .

Remove the engine from component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

Refit the engine - gearbox assembly.

CAMSHAFT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Cylinder head support	Mot. 1573

parts always to be replaced:
camshaft timing sprocket bolt

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the engine - gearbox assembly.

- Remove:
  - the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) ,
  - the timing sprockets (see 10A, Engine and cylinder block assembly, Timing sprocket: Removal - Refitting) .

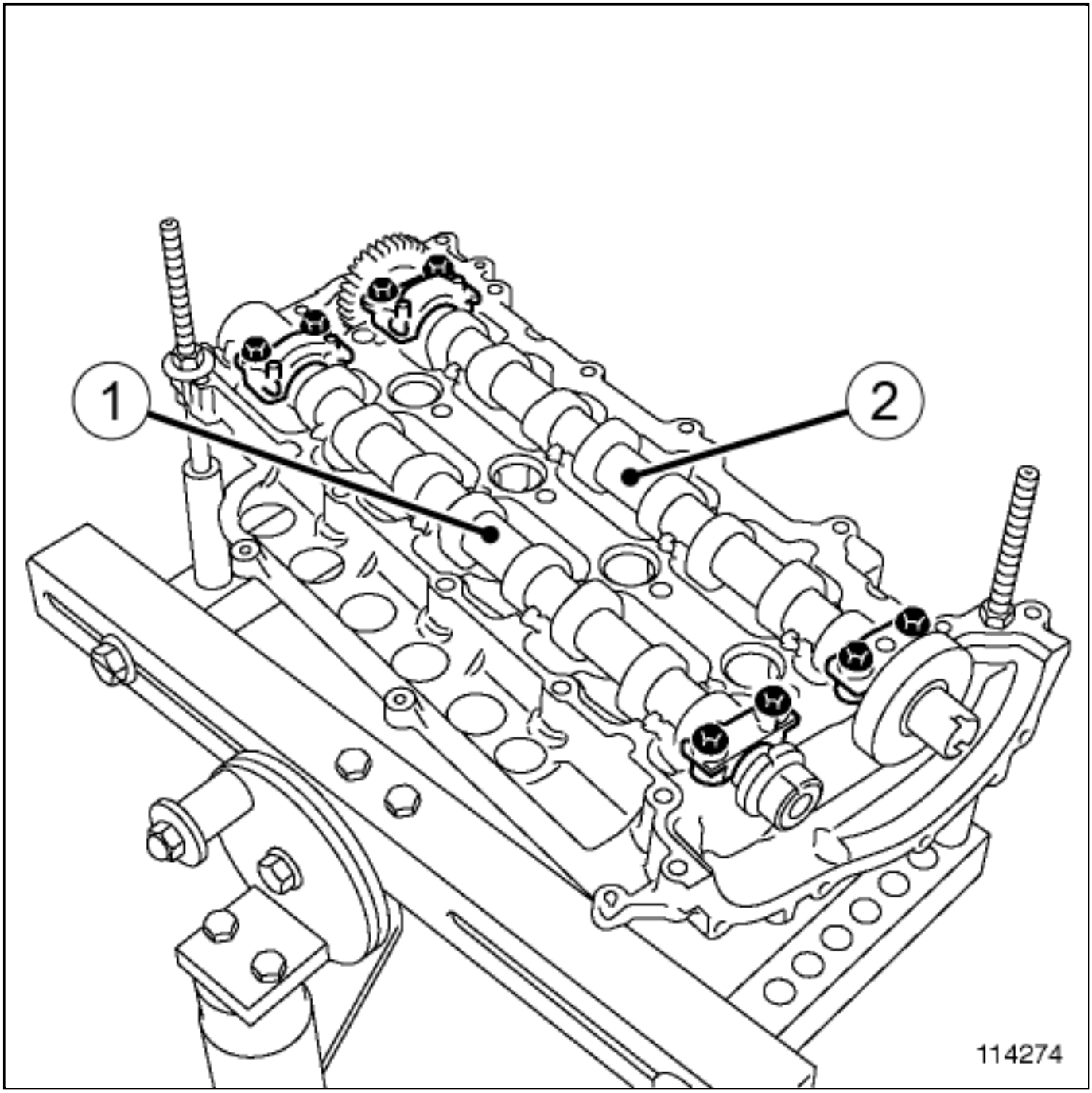
X74, M9R, 760(760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 845 OR 849 OR 858) AND (E05A-Euro 05 with OBD)

- Remove the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

- Remove:
  - the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls),
  - the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
  - the oil decanter Oil decanter: Removal - Refitting ,

- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel injectors Diesel injector: Removal - Refitting ,
- the rocker cover (see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) .

2. CAMSHAFT REMOVAL OPERATION



Fit the rocker cover on the Cylinder head support (Mot. 1573) .

Remove:

- the camshaft bearing cap bolts,
- the camshaft bearing caps,

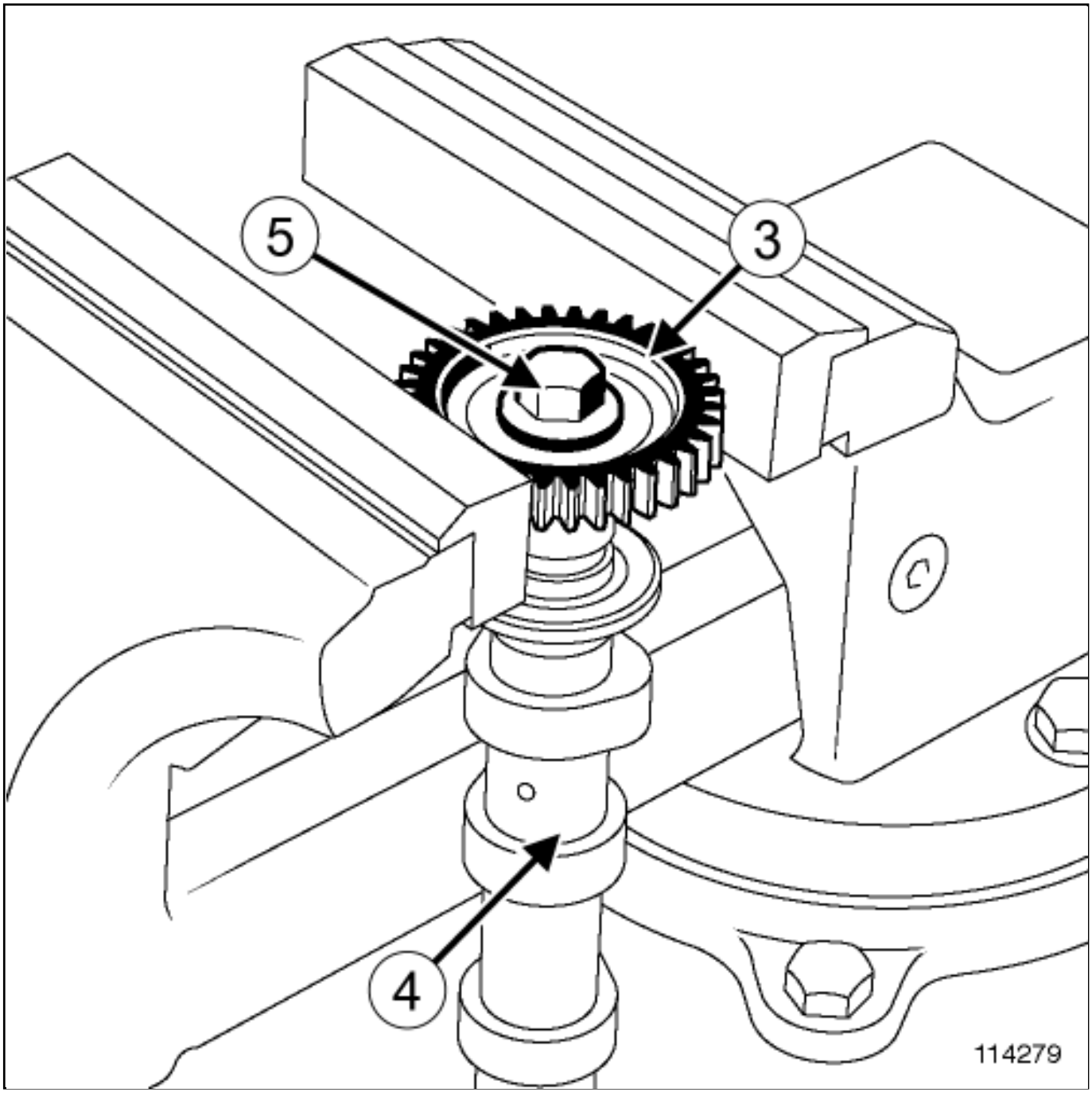
- the camshaft(1) on the inlet side,
- the camshaft(2) on the exhaust side.

Note:

The bearing caps are marked at the factory.

1- REMOVAL OF THE HIGH PRESSURE PUMP DRIVE PINION

Carry out this operation only when replacing the exhaust side camshaft or the high pressure pump drive pinion.



- Immobilise the high pressure pump drive pinion(3) using a vice with jaws.

- Remove the bolt(5) from the pinion, holding the camshaft(4) steady by hand.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:
  - the camshafts,
  - the camshaft bearing caps,
  - the bearings on the rocker cover.

- Check that the teeth of the high pressure pump drive pinion are not chipped, flaked, or scratched.

- parts always to be replaced: camshaft timing sprocket bolt

1- REFITTING THE HIGH PRESSURE PUMP PINION

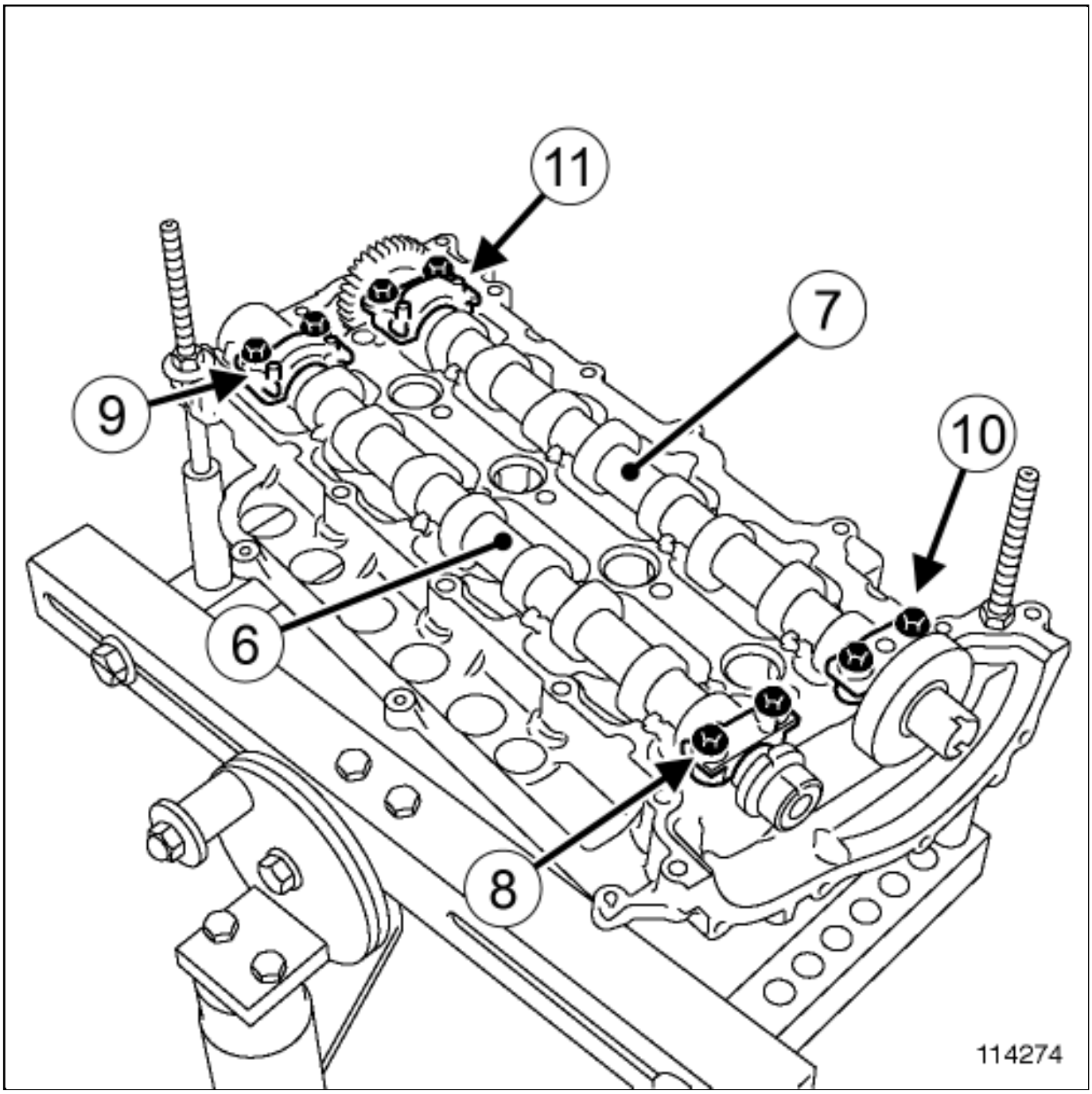
- Carry out this operation only when replacing the exhaust side camshaft or the high pressure pump drive pinion.

- Immobilise the high pressure pump drive pinion in a vice with jaws.

- Without tightening, fit the new bolt of the pinion whilst holding the camshaft (exhaust side).

- Torque and angle tighten the high pressure pump drive pinion bolt40 N.m + 34° ± 6°.

2. CAMSHAFT REFITTING OPERATION



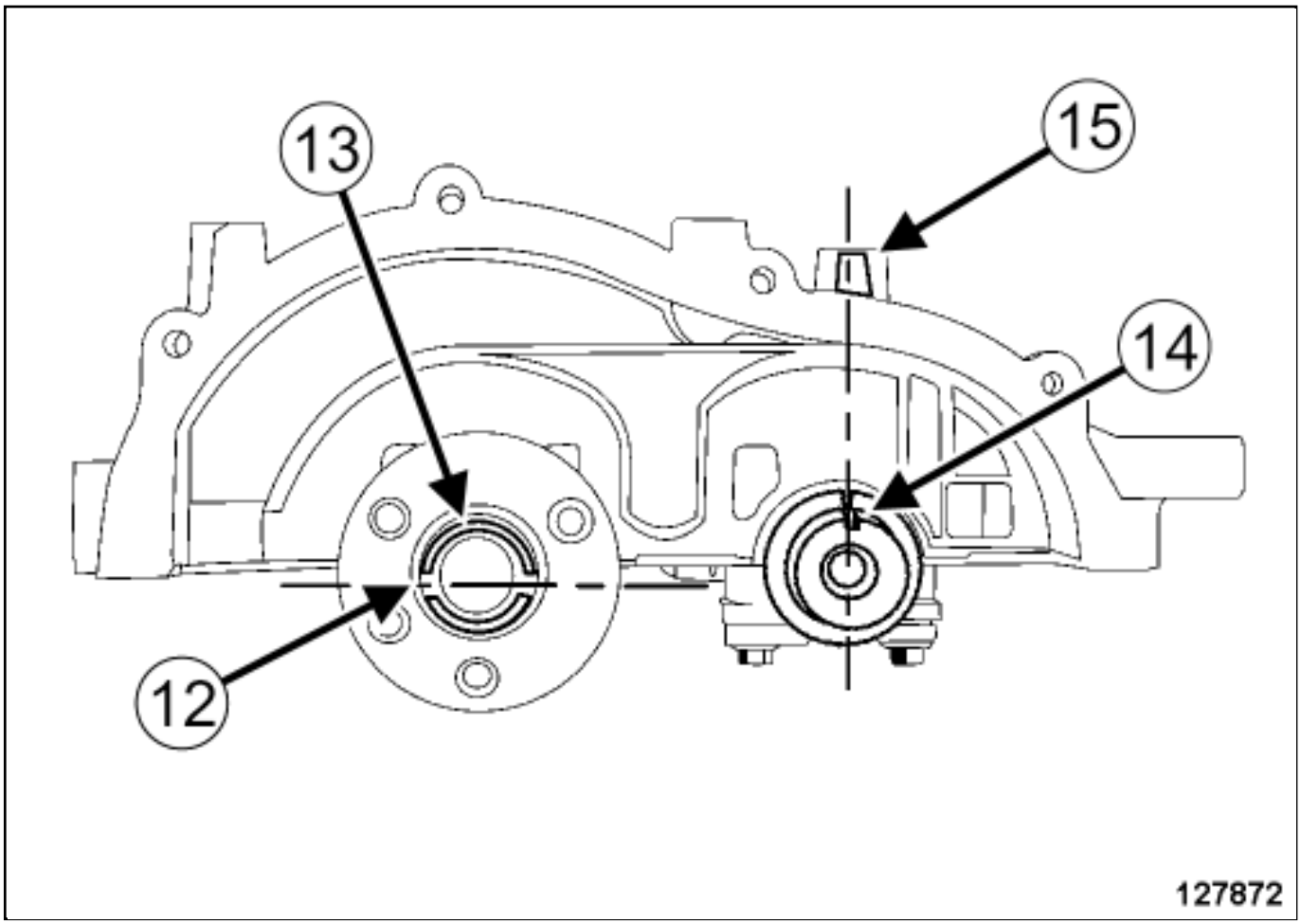
- Fit the rocker cover on theCylinder head support(Mot. 1573) .
- Lubricate the camshaft bearings on the rocker cover with engine oil.
- Refit:
  - the camshaft, inlet side(6) ,
  - the camshaft, exhaust side(7) .
- Lubricate the camshafts around the bearing caps with engine oil.
- Refit:
  - the camshaft bearing cap(8) (part marking: ADM1),
  - the camshaft bearing cap(9) (part marking: ADM2),
  - the camshaft bearing cap(10) (part marking: ECH1),

- the camshaft bearing cap(11) (part marking: ECH2).

Note:

Check that the camshaft bearing caps are in contact with the rocker cover before refitting the bolts.

- Fit the camshaft bearing cap bolts, without tightening them.
- Torque tighten the camshaft bearing cap bolts10 N.m.
- Remove the rocker cover from theCylinder head support(Mot. 1573) .



- Position:
  - the groove(12) on the exhaust side camshaft horizontally (large segment(13) facing upwards),
  - the groove on the inlet side of the camshaft(14) facing towards the rocker cover boss(15) .

3. FINAL OPERATION

Refit:

- the rocker cover (see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the diesel injectors Diesel injector: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the oil decanter Oil decanter: Removal - Refitting ,
- the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls).

X74, M9R, 760(760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 845 OR 849 OR 858) AND (E05A-Euro 05 with OBD)

Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

Refit:

- the timing sprockets (see 10A, Engine and cylinder block assembly, Timing sprocket: Removal - Refitting) ,
- the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

Refit the engine and gearbox assembly.

CAMSHAFT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Cylinder head support	Mot. 1573

parts always to be replaced:
camshaft timing sprocket bolt

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the engine - gearbox assembly.

- Remove:
  - the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) ,
  - the timing sprockets (see 10A, Engine and cylinder block assembly, Timing sprocket: Removal - Refitting) .

X74, M9R, 760(760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 845 OR 849 OR 858) AND (E05A-Euro 05 with OBD)

- Remove the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

- Remove:
  - the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls),
  - the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
  - the oil decanter Oil decanter: Removal - Refitting ,

- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel injectors Diesel injector: Removal - Refitting ,

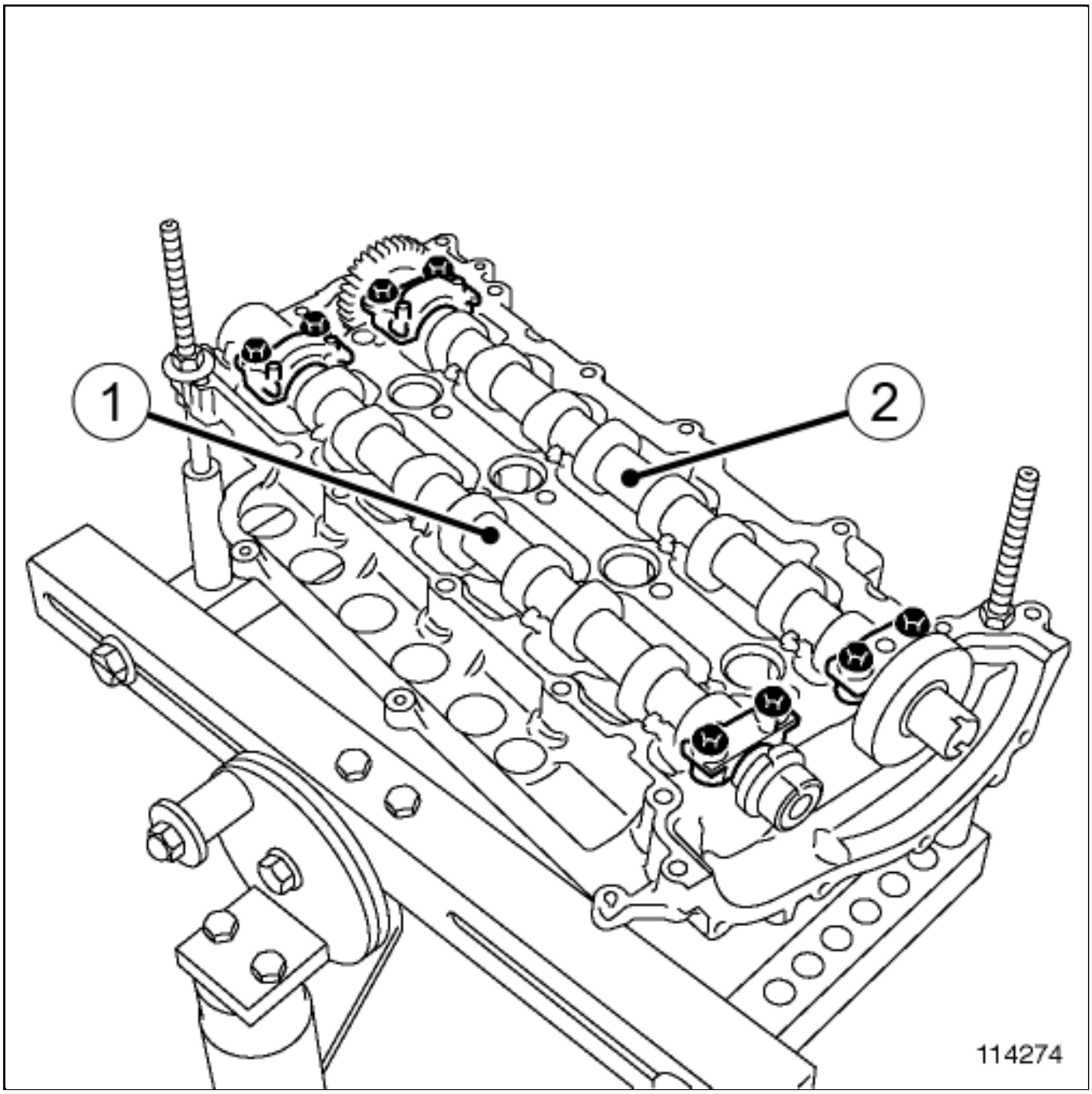
X62, M9T, 700 702(700 OR 702)

Remove:

- the turbocharger strut Exhaust assembly in engine compartment: Exploded view ,
- the exhaust gas pressure sensor Exhaust assembly in engine compartment: Exploded view ,
- the engine lifting eyes .

The rocker cover (see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) .

2. CAMSHAFT REMOVAL OPERATION



- Fit the rocker cover on theCylinder head support(Mot. 1573) .

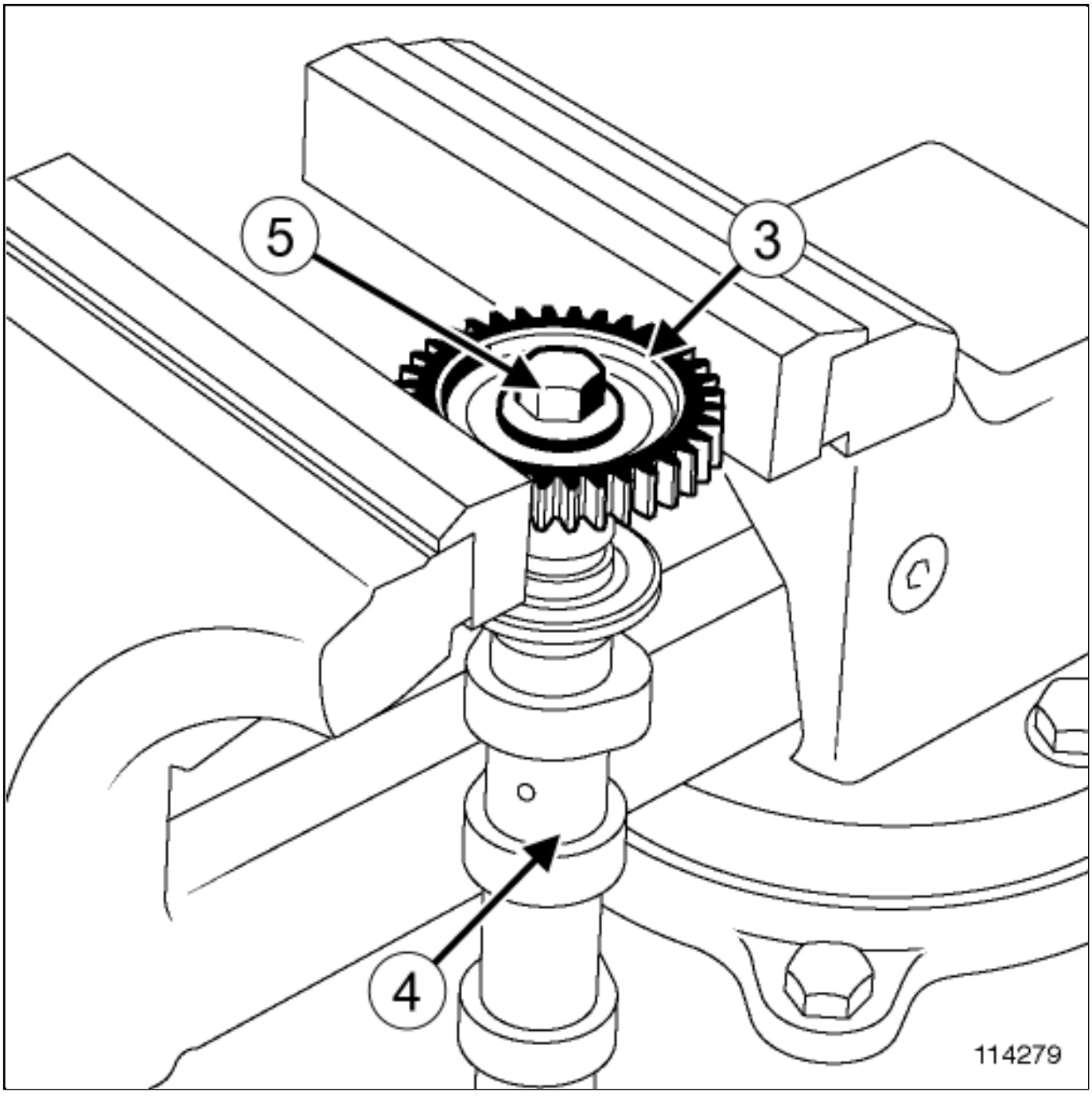
- Remove:
  - the camshaft bearing cap bolts,
  - the camshaft bearing caps,
  - the camshaft(1) on the inlet side,
  - the camshaft(2) on the exhaust side.

Note:

The bearing caps are marked at the factory.

1- REMOVAL OF THE HIGH PRESSURE PUMP DRIVE PINION

- Carry out this operation only when replacing the exhaust side camshaft or the high pressure pump drive pinion.



- Immobilise the high pressure pump drive pinion(3) using a vice with jaws.
- Remove the bolt(5) from the pinion, holding the camshaft(4) steady by hand.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:
  - the camshafts,
  - the camshaft bearing caps,
  - the bearings on the rocker cover.

- Check that the teeth of the high pressure pump drive pinion are not chipped, flaked, or scratched.

- parts always to be replaced: camshaft timing sprocket bolt

1- REFITTING THE HIGH PRESSURE PUMP PINION

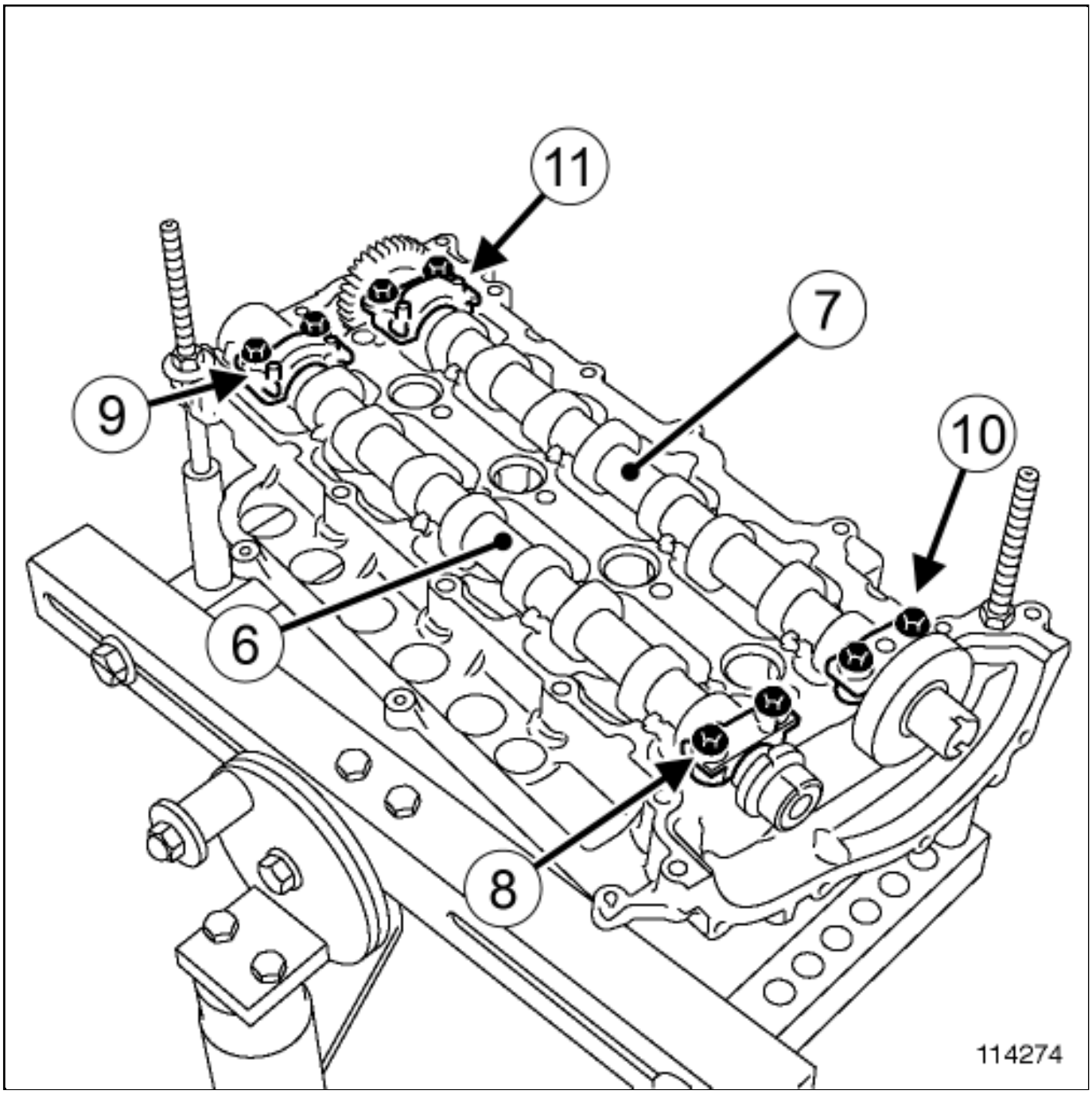
- Carry out this operation only when replacing the exhaust side camshaft or the high pressure pump drive pinion.

- Immobilise the high pressure pump drive pinion in a vice with jaws.

- Without tightening, fit the new bolt of the pinion whilst holding the camshaft (exhaust side).

- Torque and angle tighten the high pressure pump drive pinion bolt 40 N.m + 34° ± 6°.

2. CAMSHAFT REFITTING OPERATION



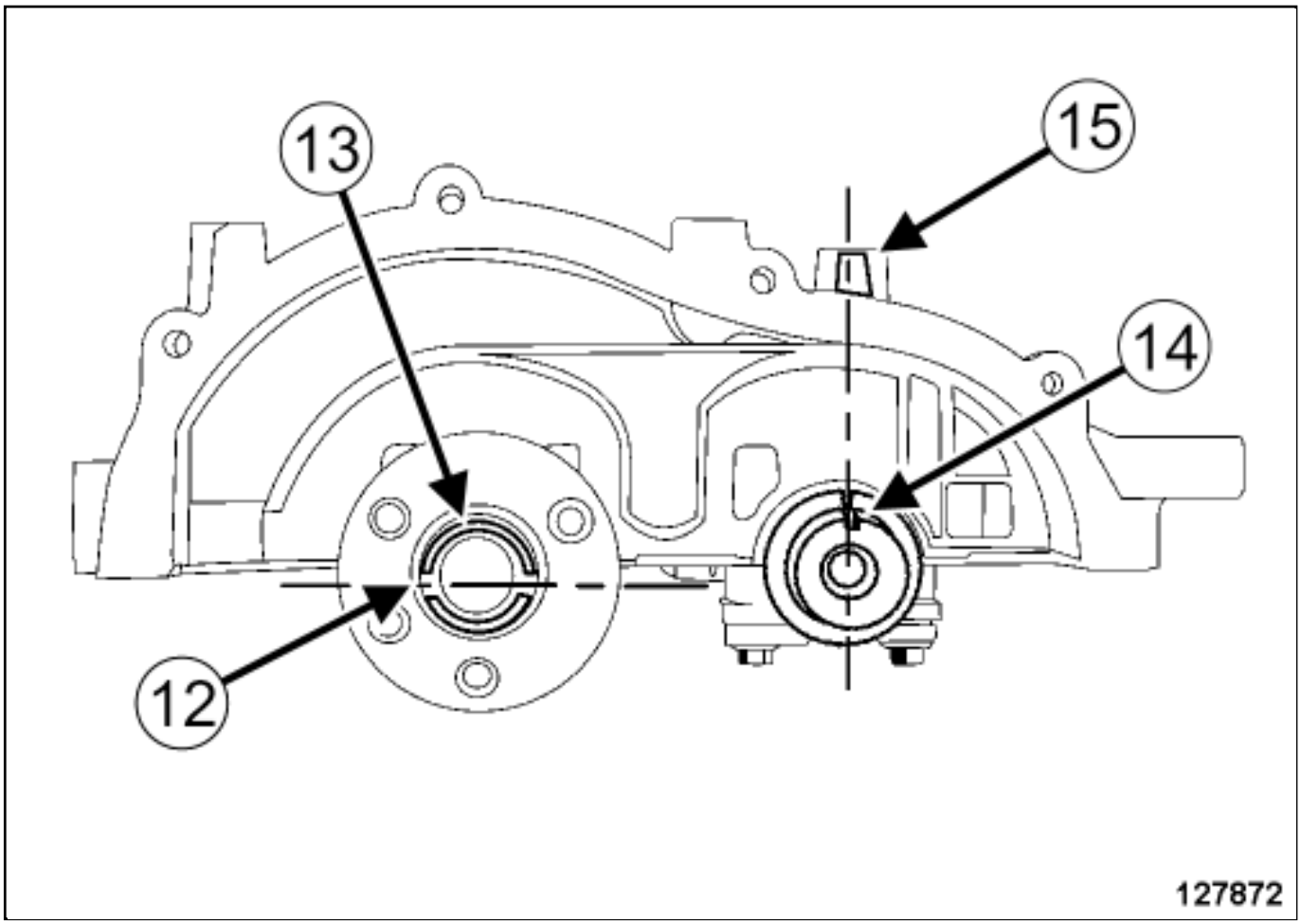
- Fit the rocker cover on theCylinder head support(Mot. 1573) .
- Lubricate the camshaft bearings on the rocker cover with engine oil.
- Refit:
  - the camshaft, inlet side(6) ,
  - the camshaft, exhaust side(7) .
- Lubricate the camshafts around the bearing caps with engine oil.
- Refit:
  - the camshaft bearing cap(8) (part marking: ADM1),
  - the camshaft bearing cap(9) (part marking: ADM2),
  - the camshaft bearing cap(10) (part marking: ECH1),

- the camshaft bearing cap(11) (part marking: ECH2).

Note:

Check that the camshaft bearing caps are in contact with the rocker cover before refitting the bolts.

- Fit the camshaft bearing cap bolts, without tightening them.
- Torque tighten the camshaft bearing cap bolts10 N.m.
- Remove the rocker cover from theCylinder head support(Mot. 1573) .



- Position:
  - the groove(12) on the exhaust side camshaft horizontally (large segment(13) facing upwards),
  - the groove on the inlet side of the camshaft(14) facing towards the rocker cover boss(15) .

3. FINAL OPERATION

Refit:

- the rocker cover (see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the diesel injectors Diesel injector: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the oil decanter Oil decanter: Removal - Refitting ,
- the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls).

X74, M9R, 760(760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 845 OR 849 OR 858) AND (E05A-Euro 05 with OBD)

Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

Refit:

- the timing sprockets (see 10A, Engine and cylinder block assembly, Timing sprocket: Removal - Refitting) ,
- the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

Refit the engine and gearbox assembly.

CATALYTIC CONVERTER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pliers for removing exhaust pipe rubber mounting bushes	Mot. 1857

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.) **(see 19B, Exhaust, Exhaust assembly under body: Exploded view)** .

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 19B, Exhaust, Exhaust: Precautions for the repair)** ,
- **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

CAUTION

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

WARNING

Wear heat protective gloves during the operation.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Remove the engine undertray.

2. REMOVAL OPERATION

- Remove (see 19B, Exhaust, Exhaust assembly under body: Exploded view) :
  - the catalytic converter exhaust clip,
  - the catalytic converter bracket nuts,
  - the catalytic converter bracket seal,
  - the catalytic converter from the rubber mounting bushes of the front axle subframe,
  - the catalytic converter.

Note:

In case of difficulty removing the rubber mounting bushes, use the toolPliers for removing exhaust pipe rubber mounting bushes(Mot. 1857) .

- If necessary, spray brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products):
  - inside the catalytic converter mounts,
  - on the welded threads of the catalytic converter.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean and degrease the bearing faces between the exhaust flange and the catalytic converter.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.
- Start the engine.

- Check that there are no leaks and deal with them if necessary.

- Refit the engine undertray.

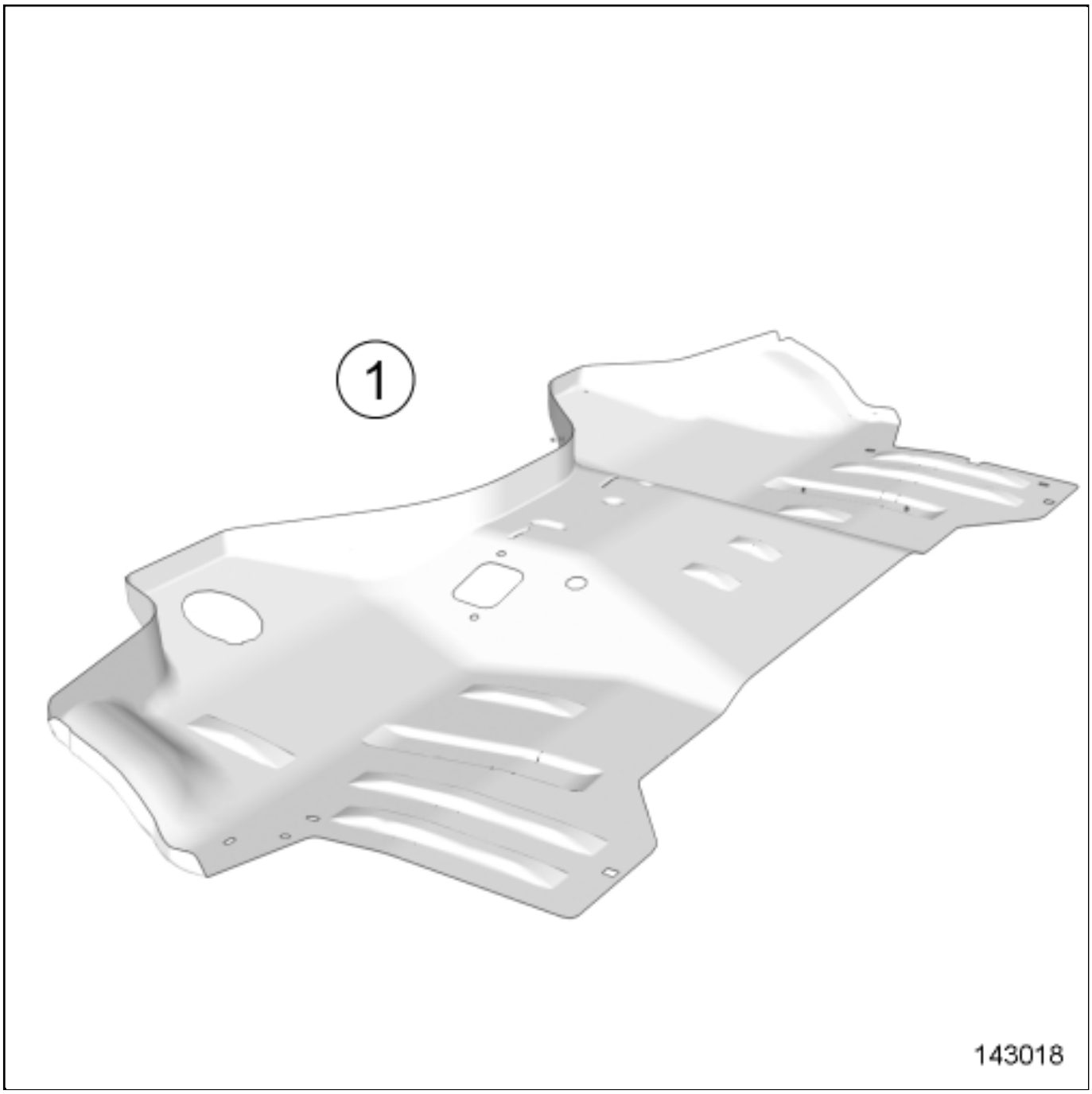
CENTRAL FLOOR FRONT EXTENSION: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART

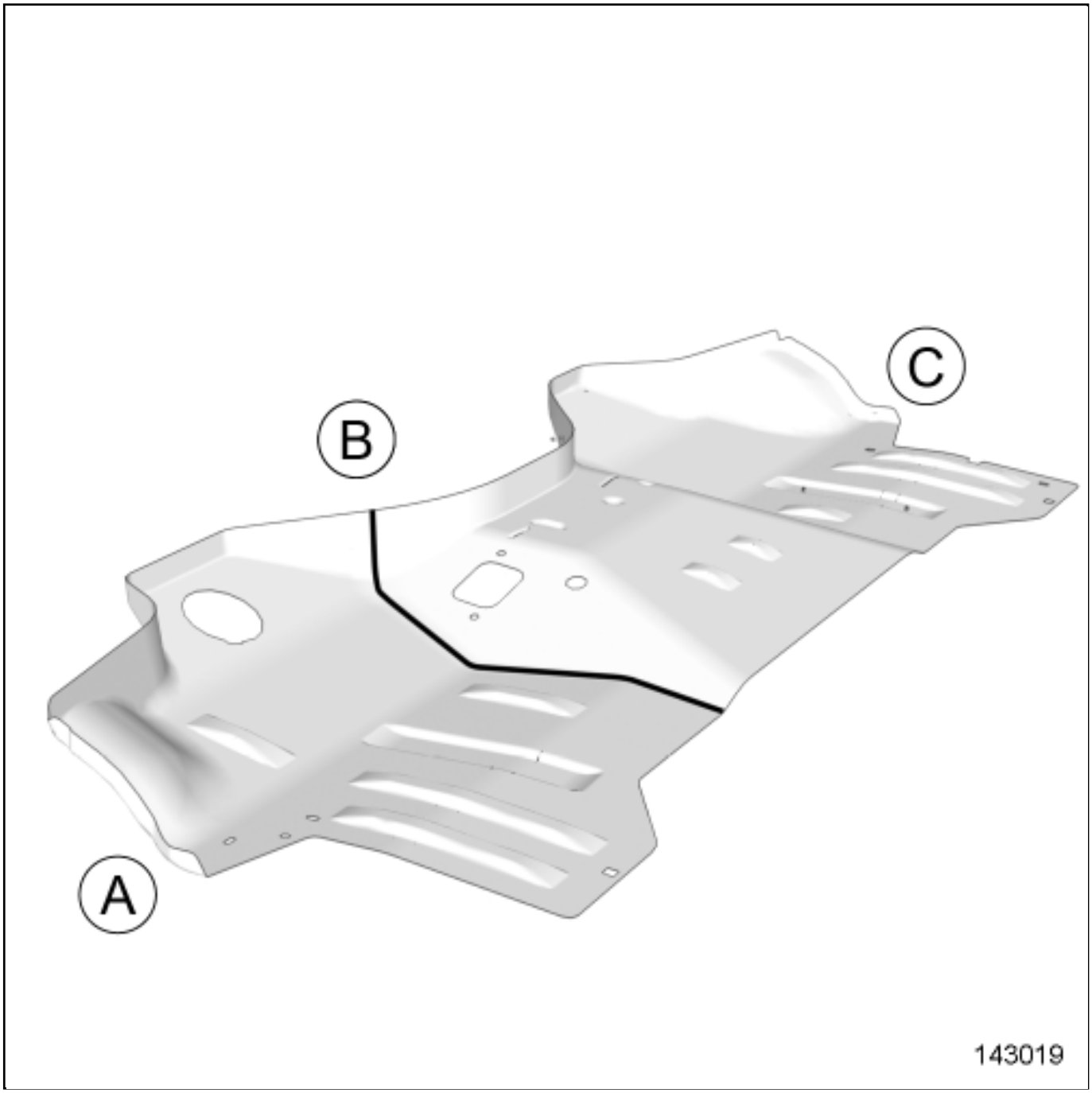


No.	Description	Type	Thickness (mm)
(1)	Centre floor front extension	Mild steel	0.9

2. IN THE EVENT OF REPLACEMENT

The options for replacing this part are as follows:

- complete replacement A-C,
- side partial replacement A-B.



CAUTION

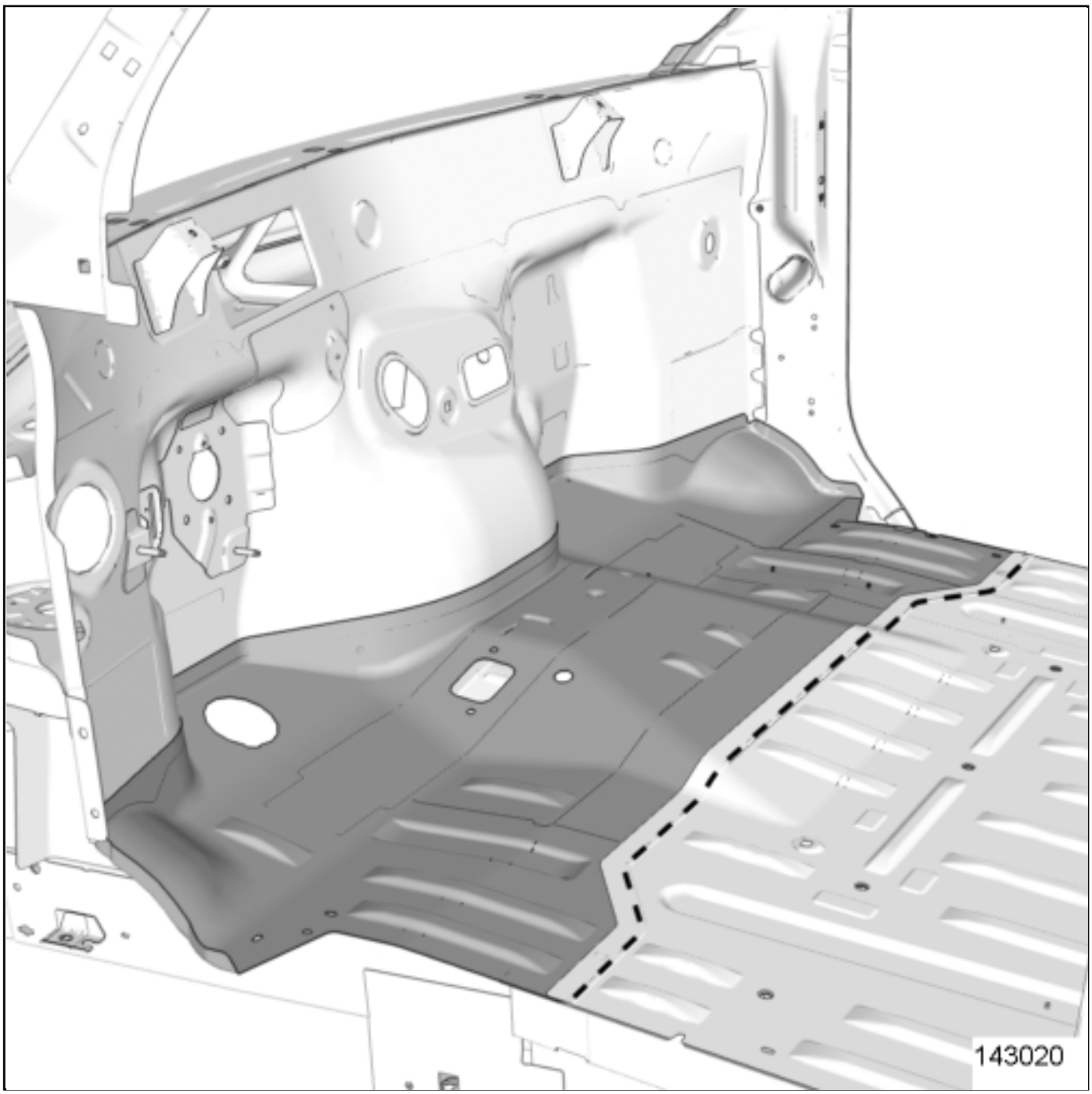
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT A-C

1)PART IN POSITION



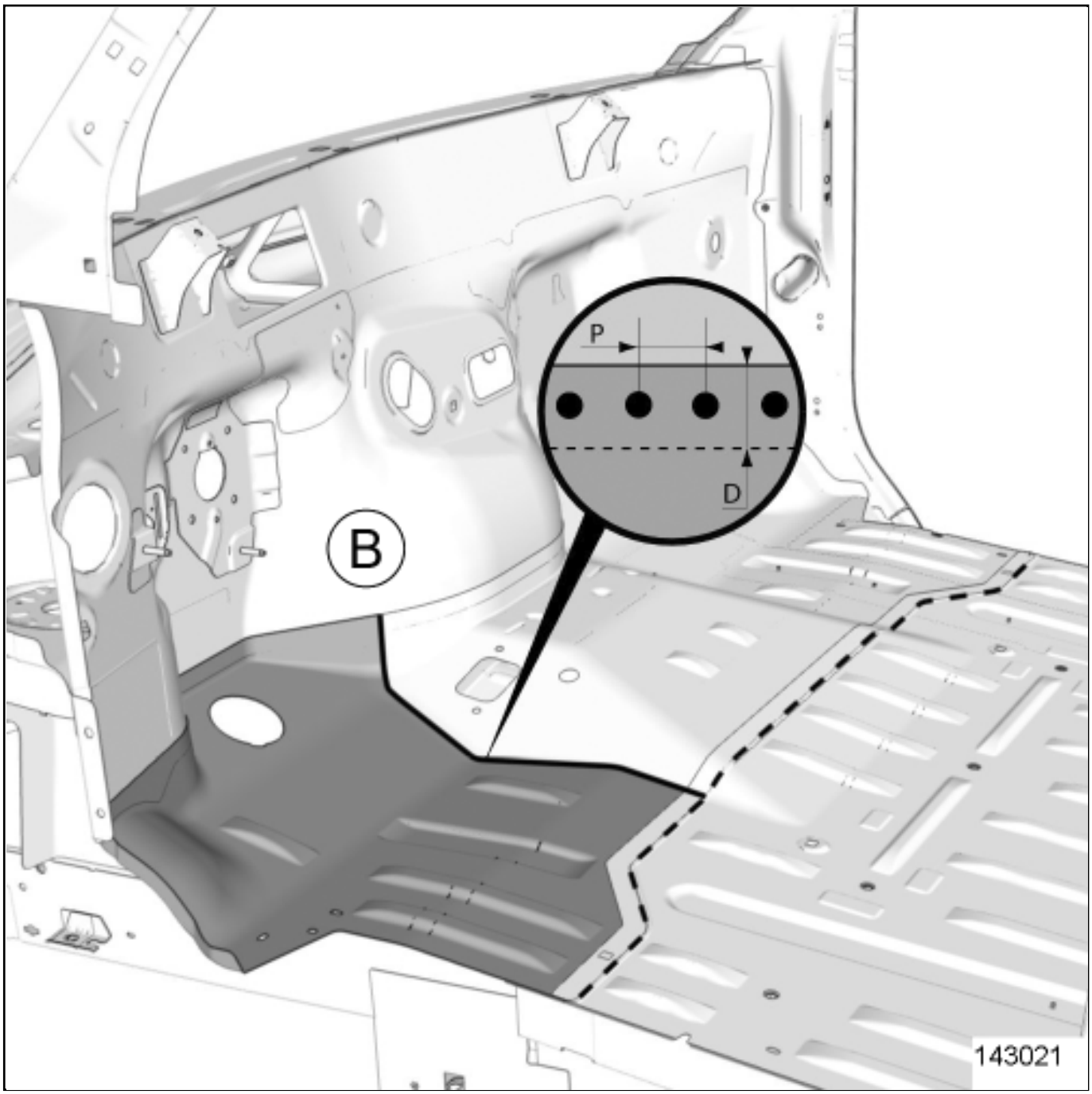
2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

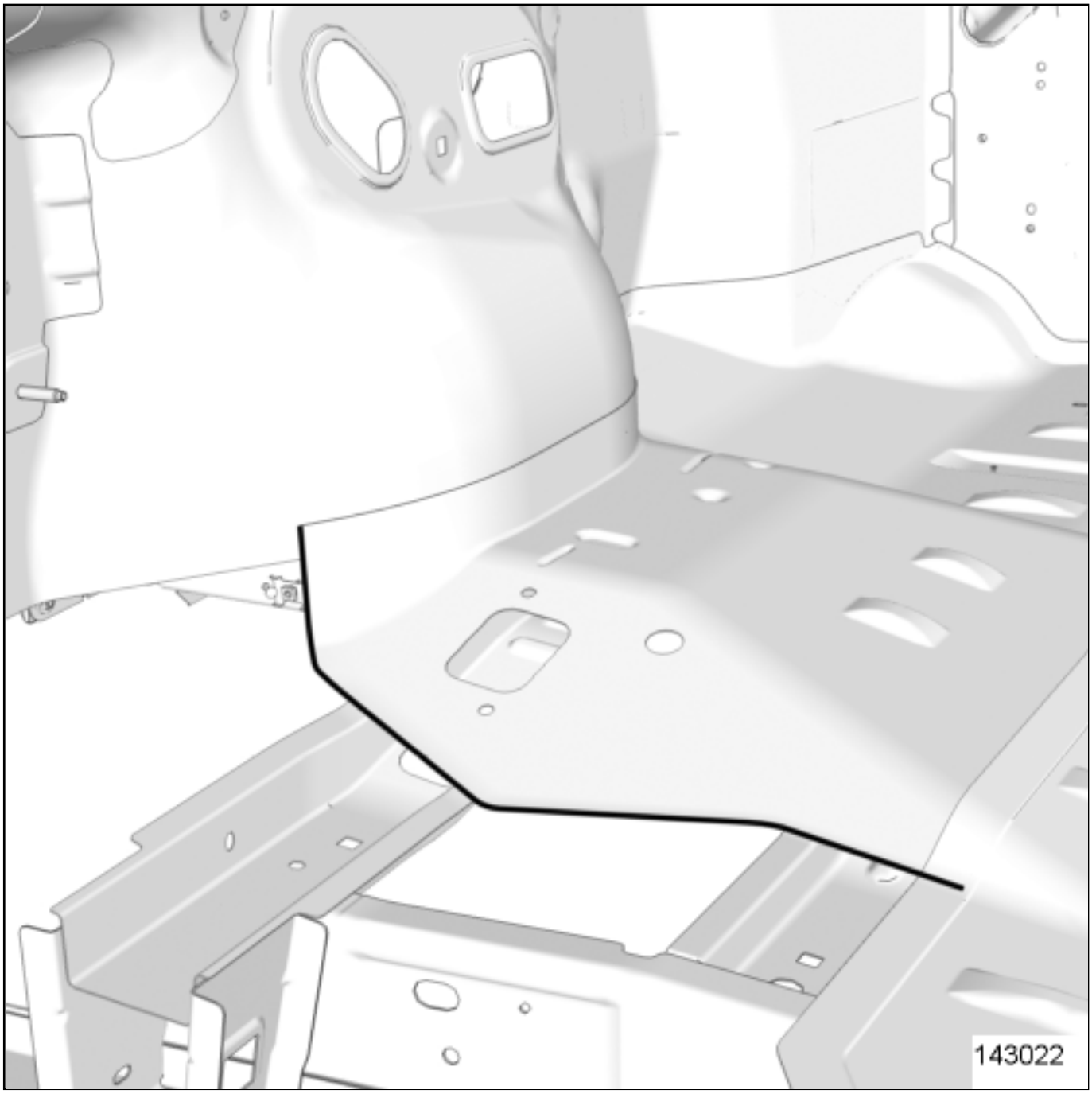
2- SIDE PARTIAL REPLACEMENT A-B

1)PART IN POSITION



Make a superimposed connection (at B) Partial replacement connections by overlapping: Description (MR400, 40E, Partial replacement connections).

DETAILED VIEW B



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

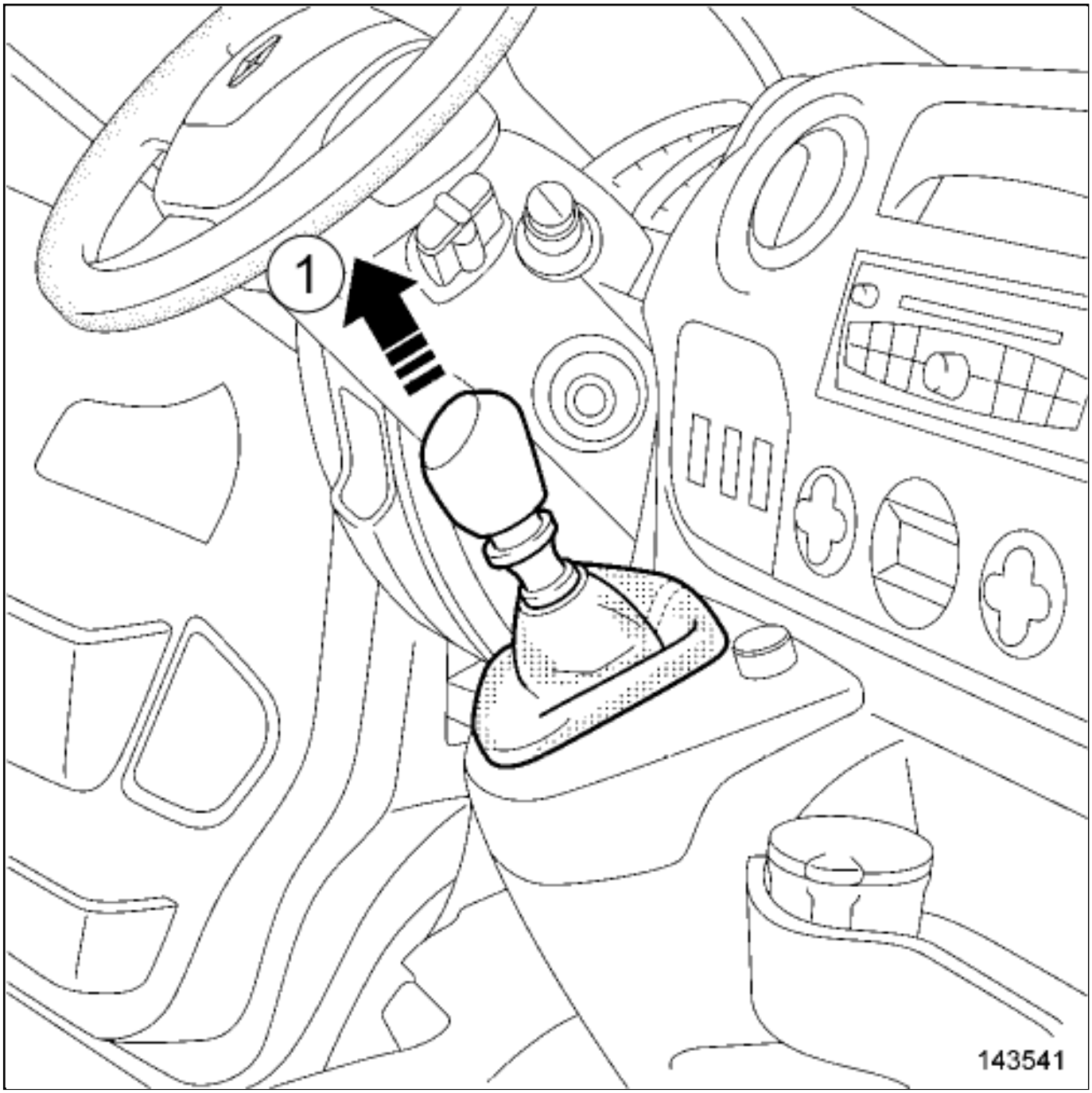
Repair-40x03x02x07-02x49-1-1-1.xml

XSL version : 3.02 du 22/07/11

CENTRE CONSOLE: REMOVAL - REFITTING

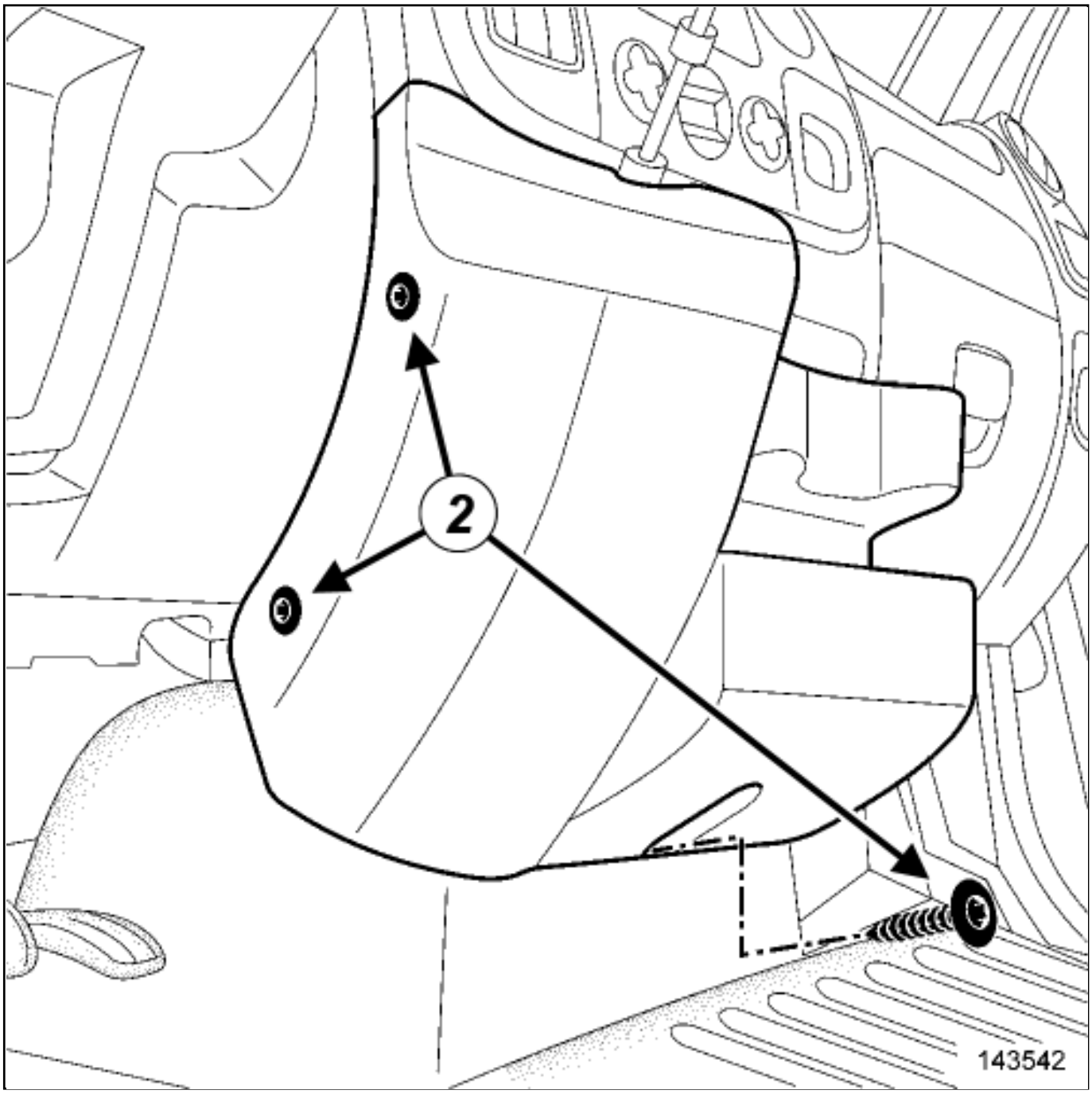
REMOVAL

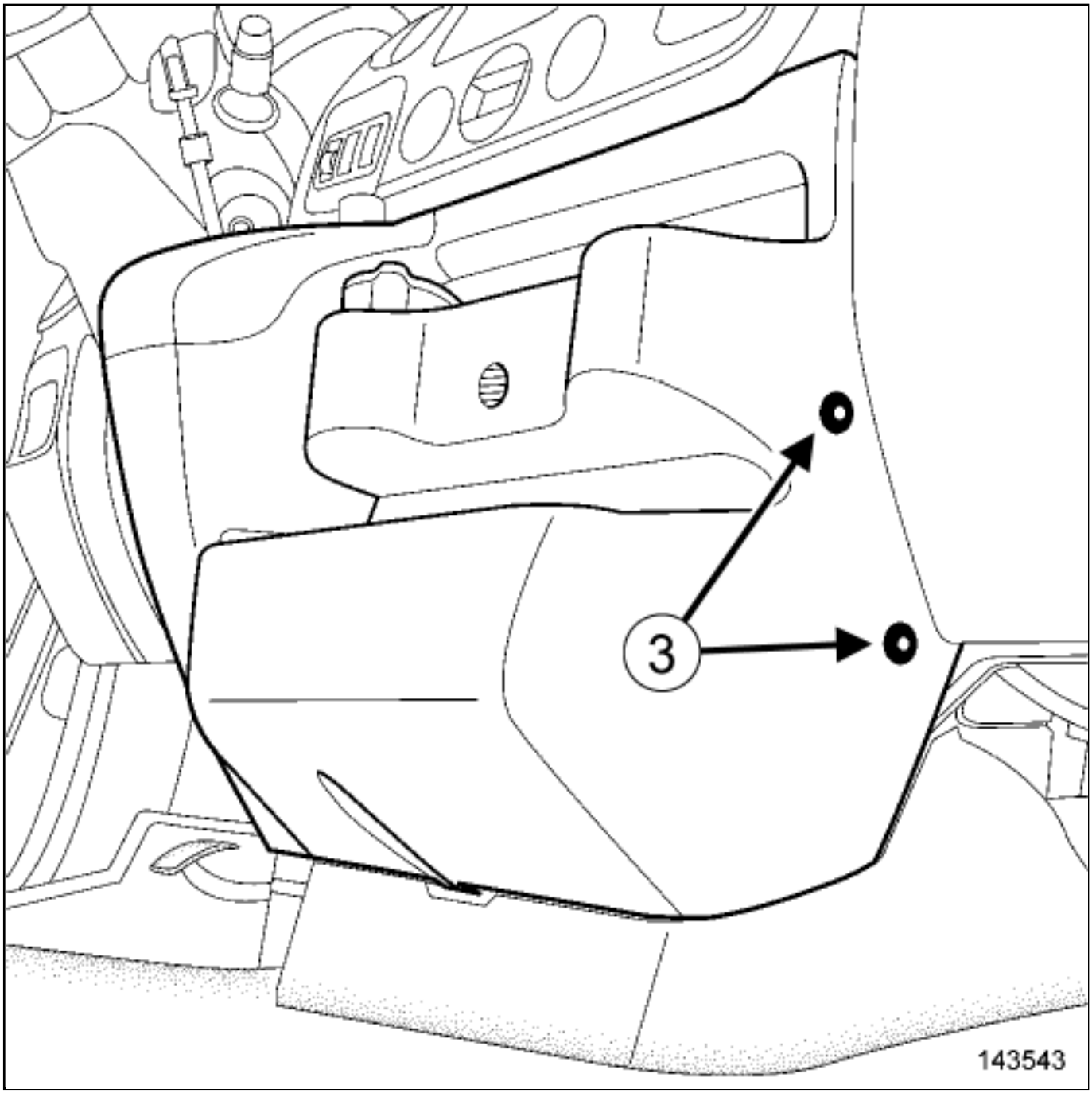
1. REMOVAL PREPARATION OPERATION



- Remove the gear knob - gear control lever gaiter assembly by(1) .

2. REMOVAL OPERATION





- Remove bolts (2) and (3) .
- Unclip the centre console.
- Disconnect the connector.
- Remove the centre console.

REFITTING

- Proceed in the reverse order to removal.

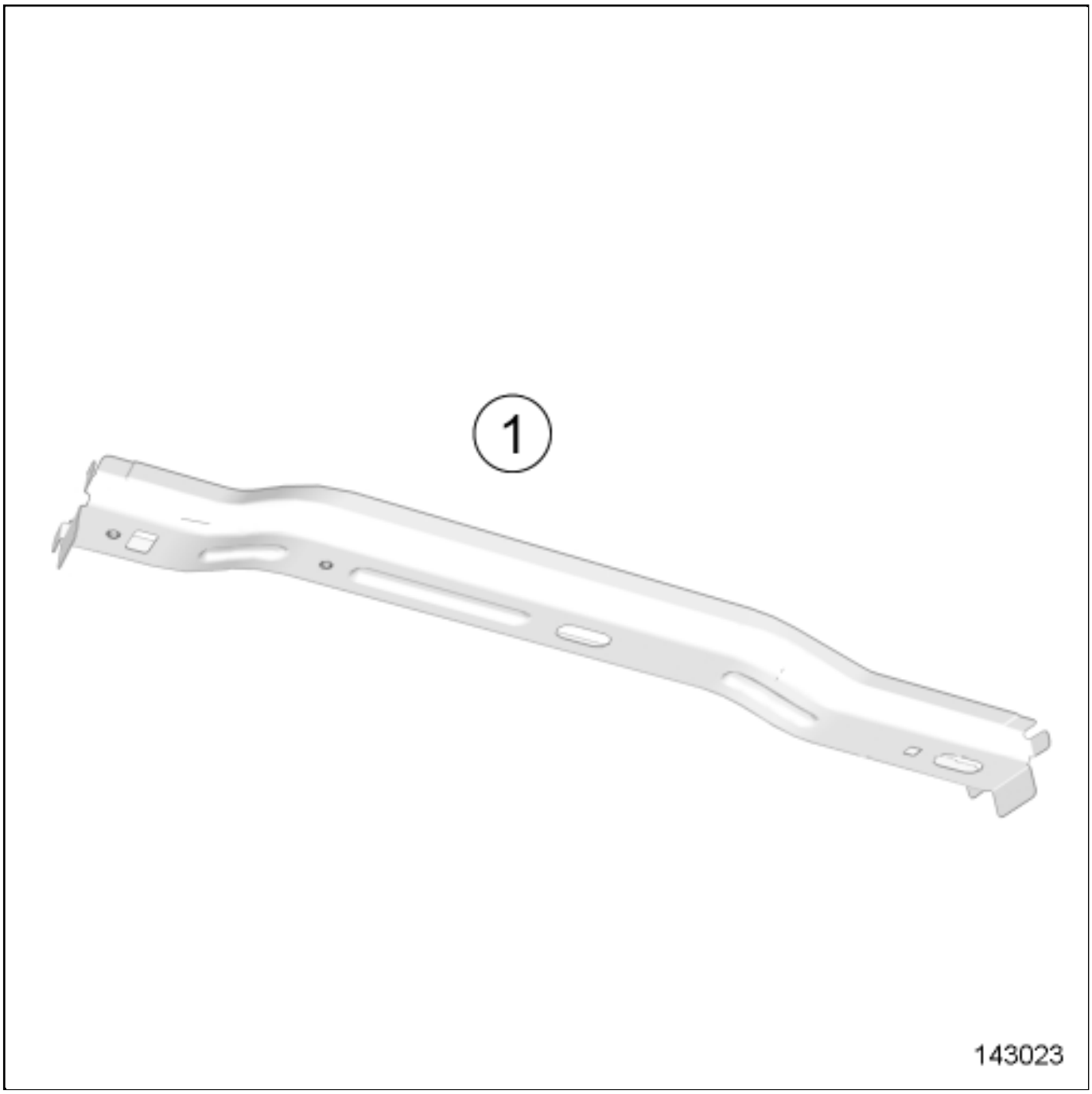
CENTRE FLOOR FRONT CROSS MEMBER: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Central floor front cross member	HLE	0.75

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

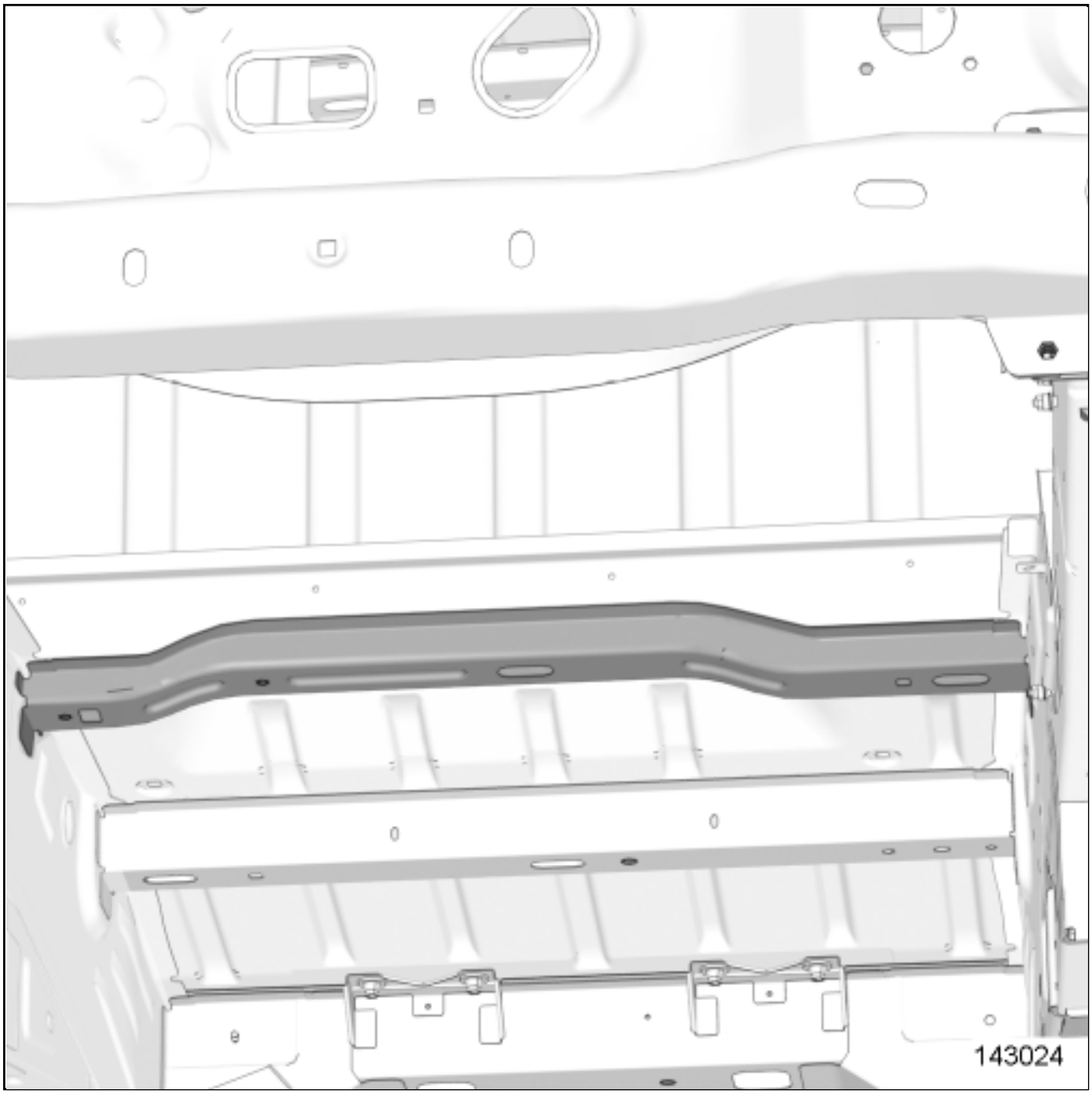
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

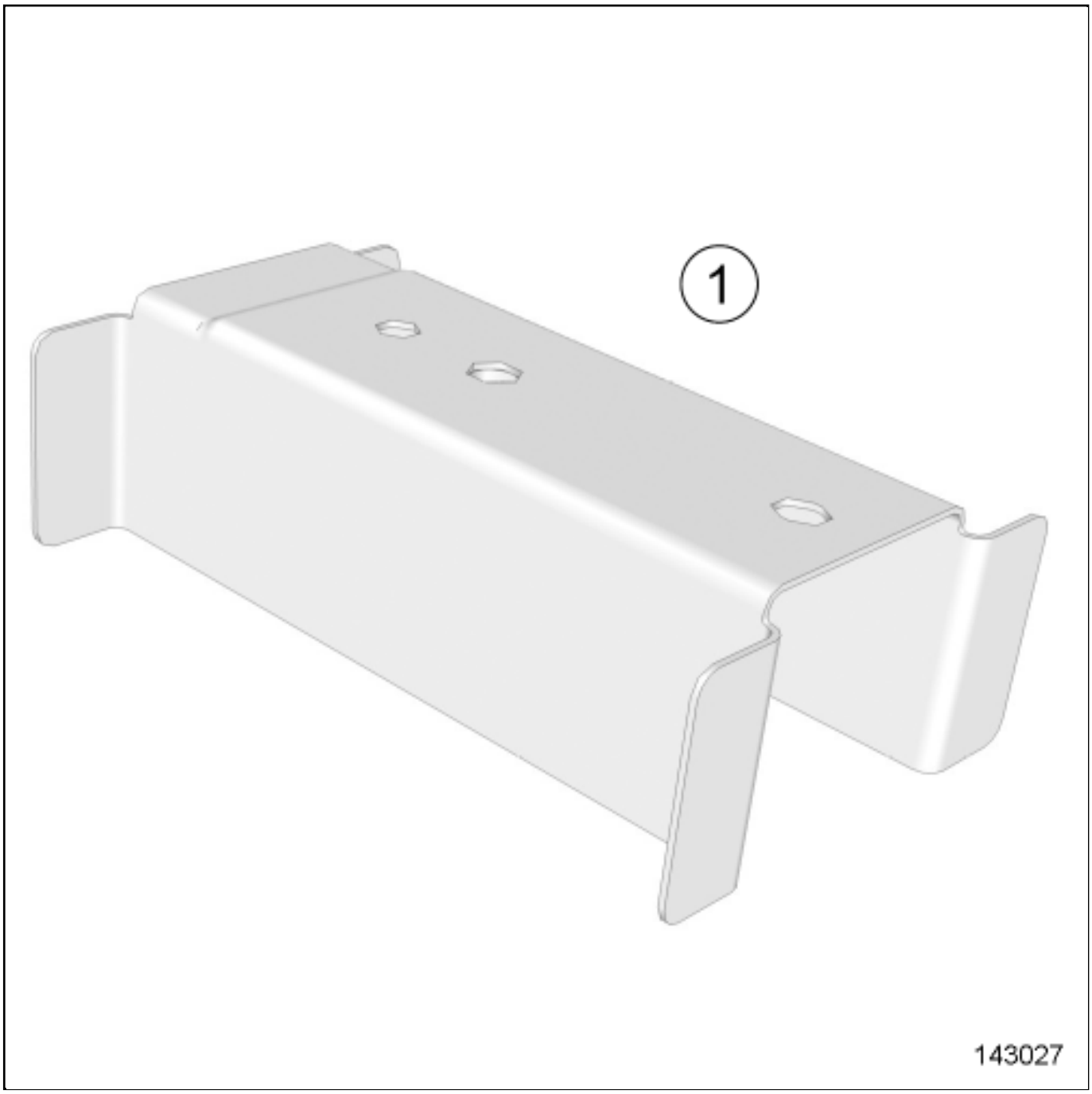
CENTRE FLOOR FRONT SIDE CROSS MEMBER: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Centre floor front side cross member	HLE	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

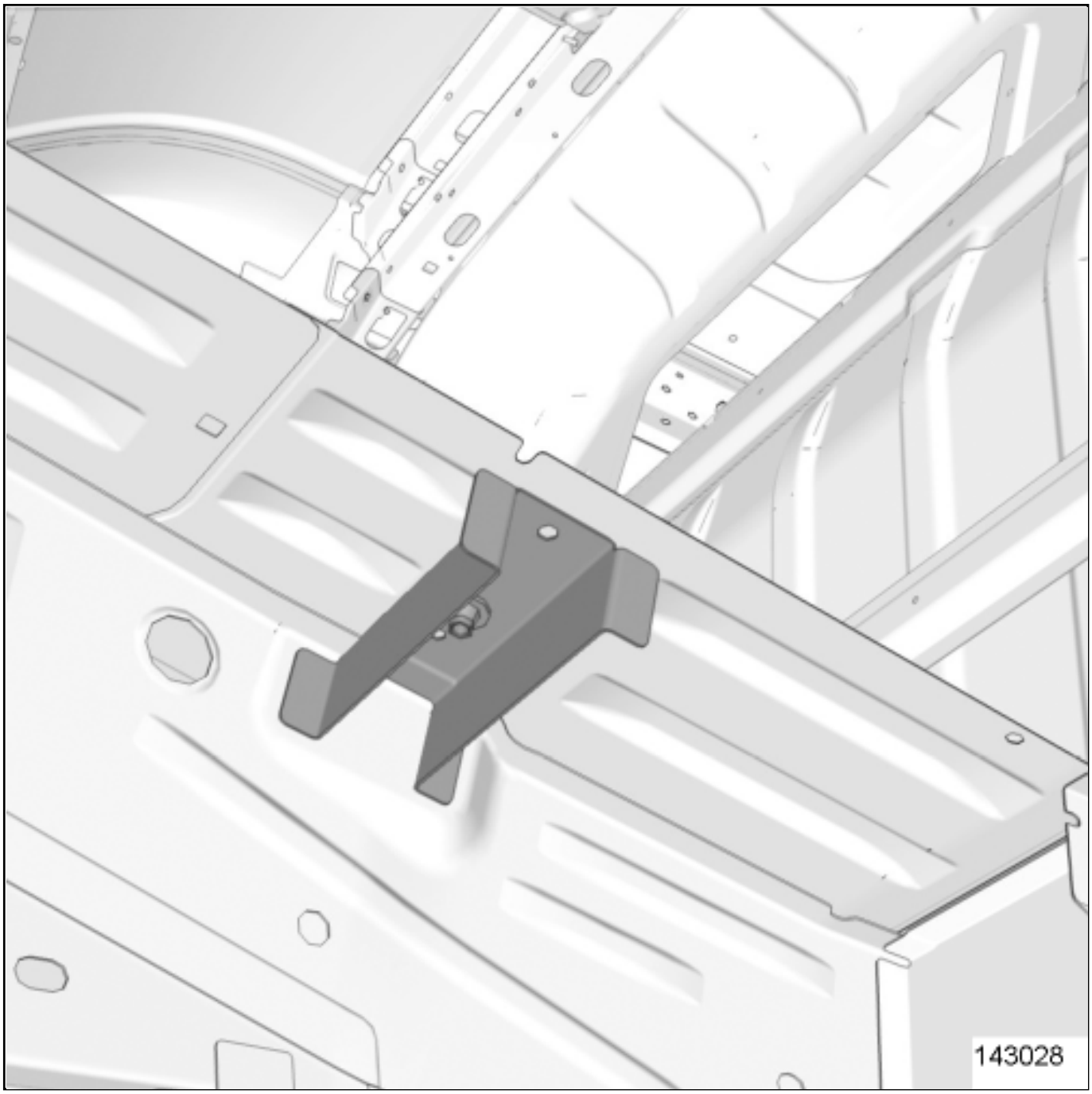
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

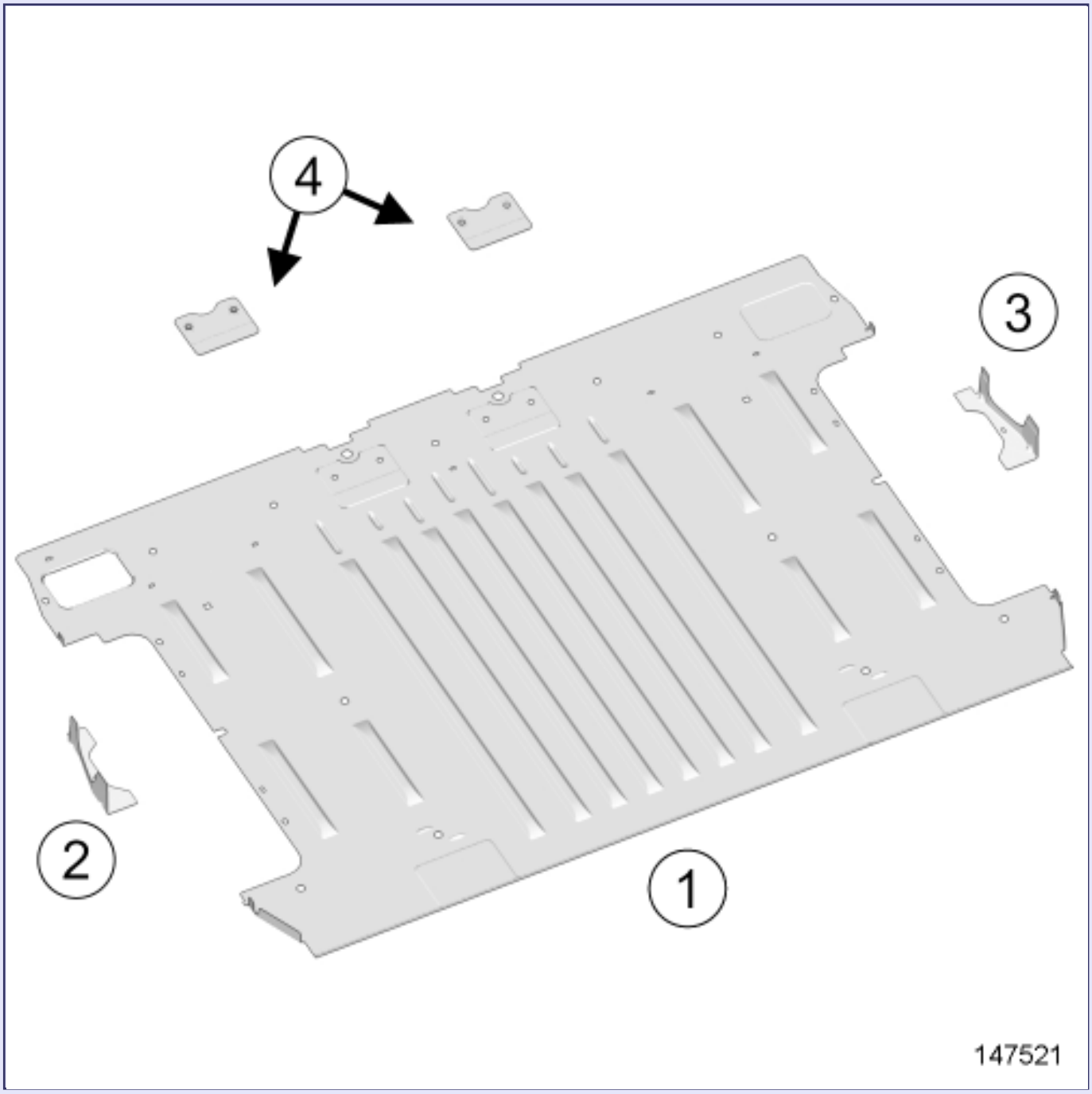
CENTRE FLOOR REAR SECTION: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

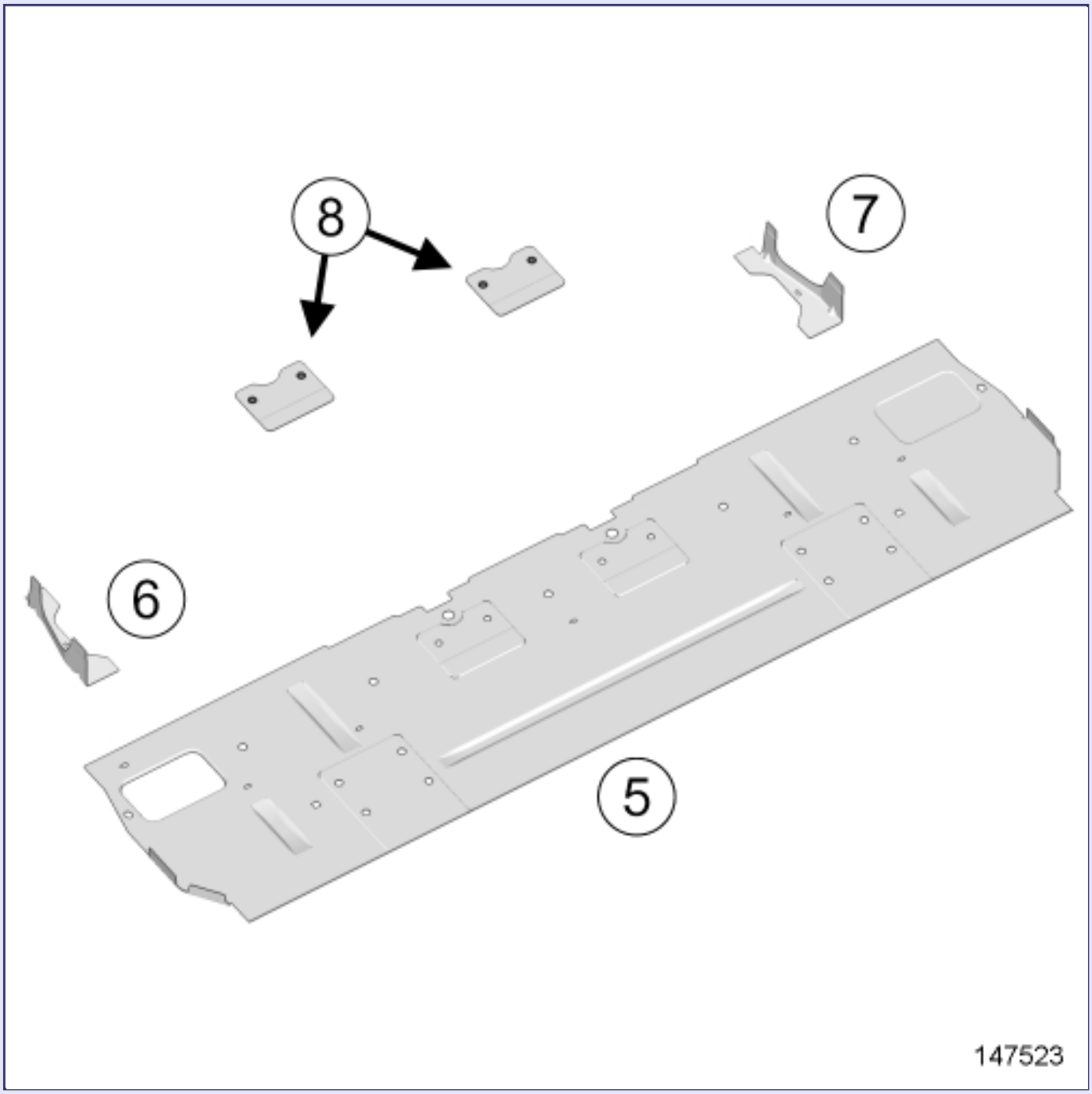
1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Centre floor rear section	HLE	1.2
(2)	Left-hand cross member upper reinforcement	HLE	1.5

(3)	Right-hand cross member upper reinforcement	HLE	1.5
(4)	Parking brake mounting reinforcement	HLE	1.5

U62(U62)



No.	Description	Type	Thickness (mm)

(5)	Centre floor rear section	HLE	1.2
(6)	Left-hand cross member upper reinforcement	HLE	1.5
(7)	Right-hand cross member upper reinforcement	HLE	1.5
(8)	Parking brake mounting reinforcement	HLE	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area**Earth screw connection: Description** (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area(see **Earths on body: List and location of components**) .

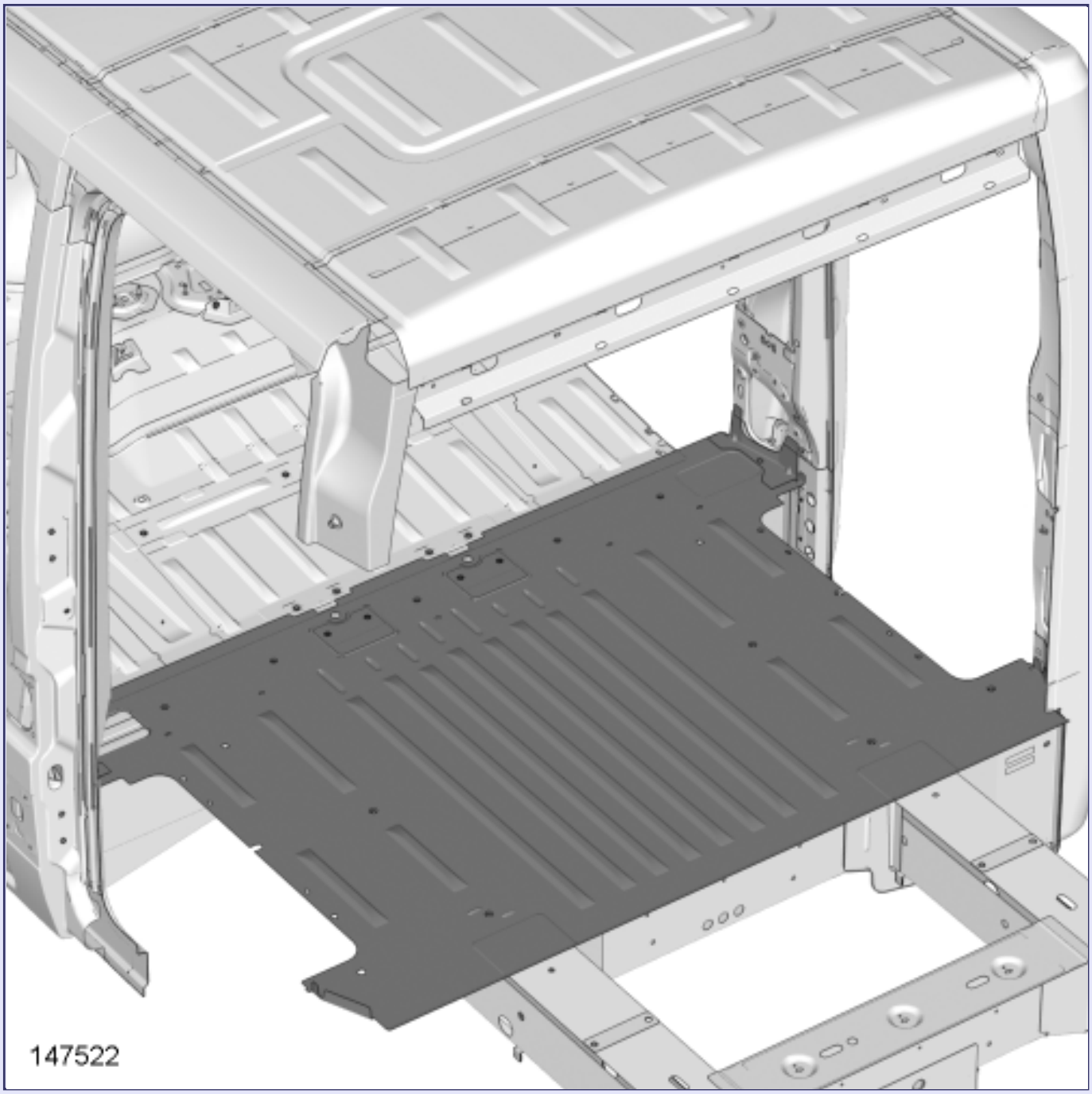
CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Electrical resistance spot welding connection with indirect access: Description** (MR 400, 40B, Electrical resistance welded connections).

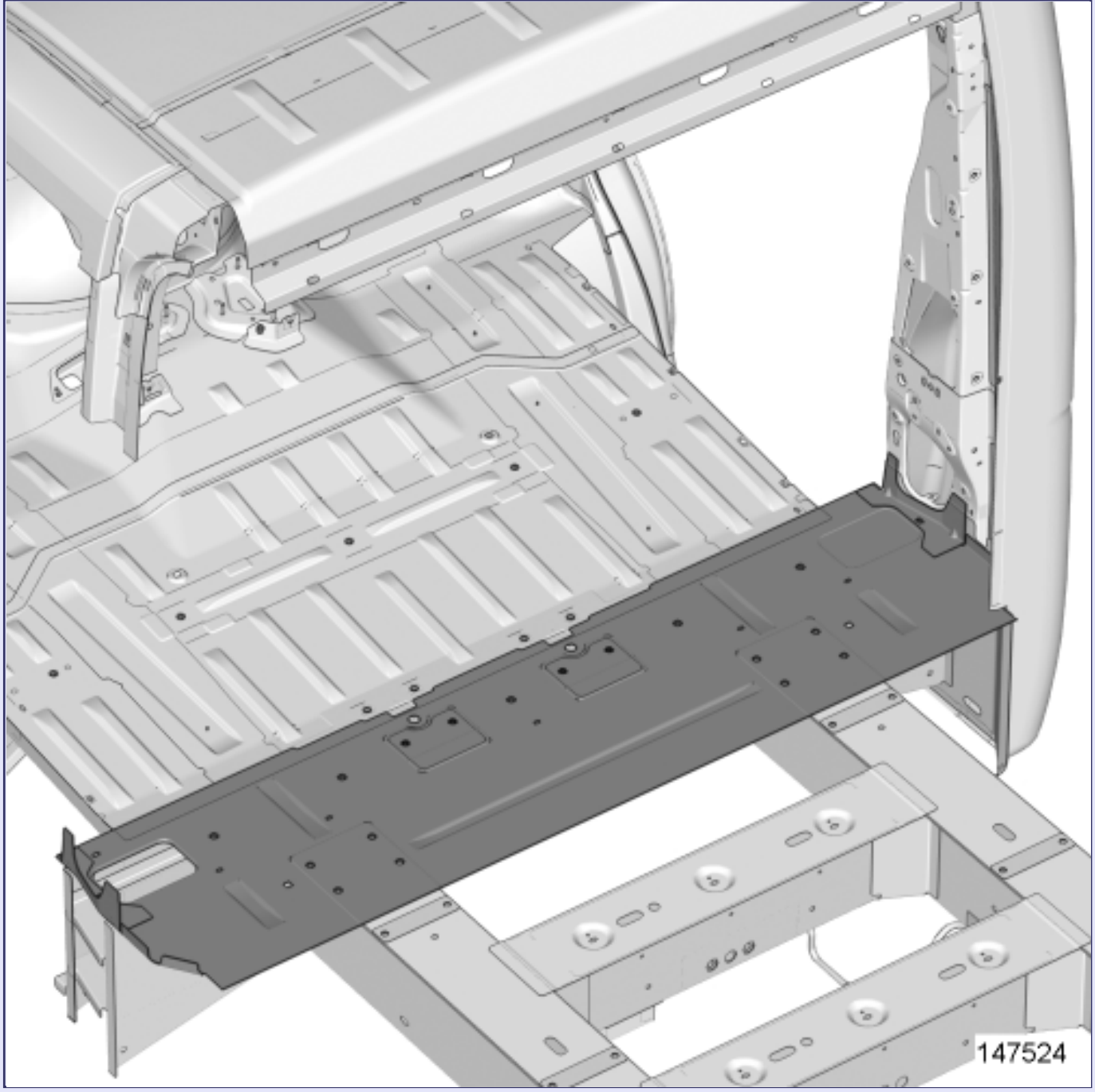
1- COMPLETE REPLACEMENT

1)PART IN POSITION

H62(H62)



U62(U62)


147524

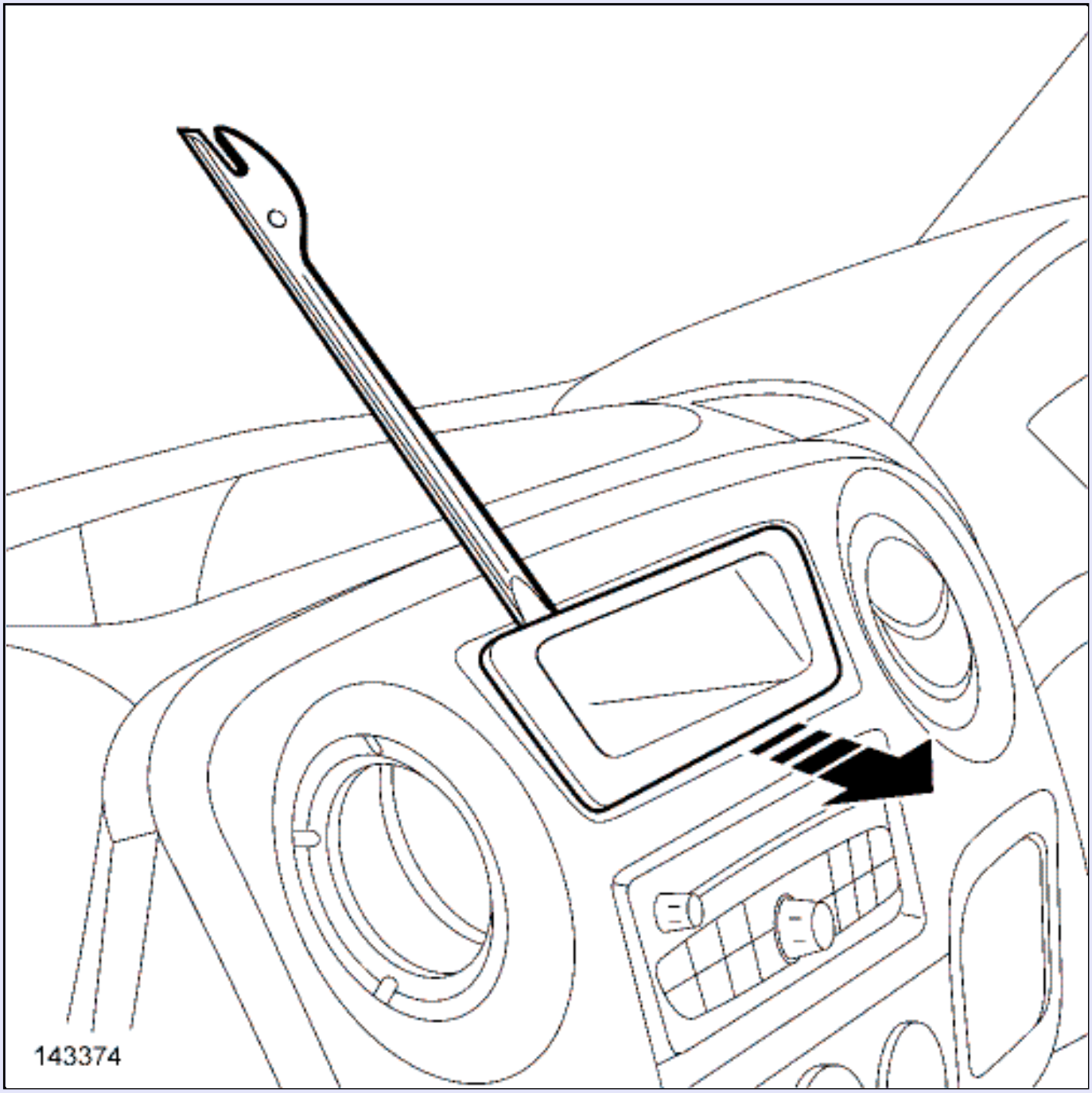
CENTRE FRONT PANEL: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

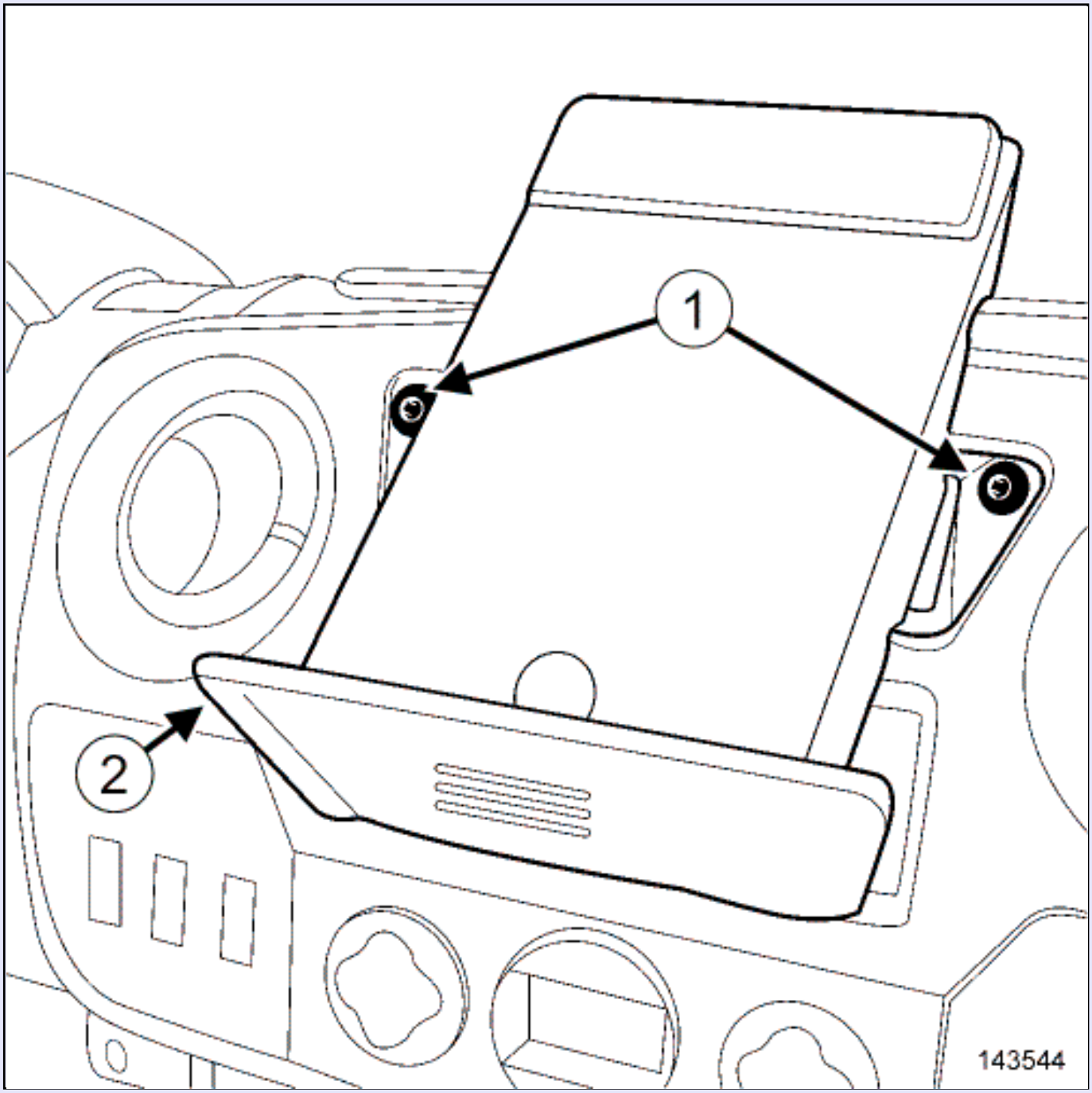
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the centre console(see 57A, Interior equipment, Centre console: Removal - Refitting) .



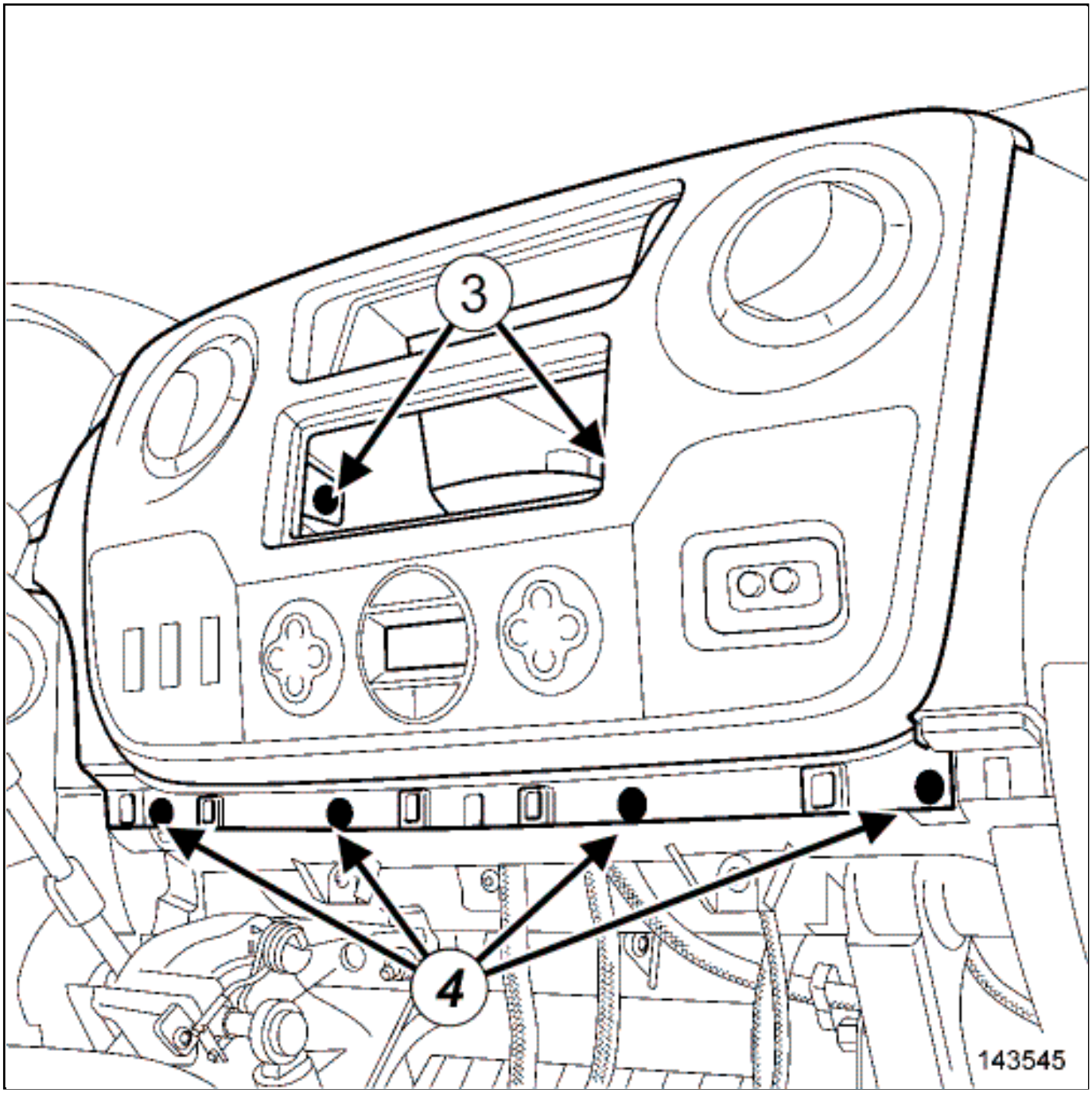
- Unclip the storage compartment using the toolSet of trim removal levers.(Car. 1363) .



- Remove:
  - the bolts(1) ,
  - the removable table(2) .

- Remove the radio Radio: Removal - Refitting (86A, Radio).

2. REMOVAL OPERATION



- Remove bolts (3) and (4) .
- Unclip the centre front panel.
- Disconnect the connectors (depending on equipment level).
- Remove the centre front panel.

REFITTING

- Proceed in the reverse order to removal.

Repair-50x08x02x17-01x37-1-13-1.xml

XSL version : 3.02 du 22/07/11

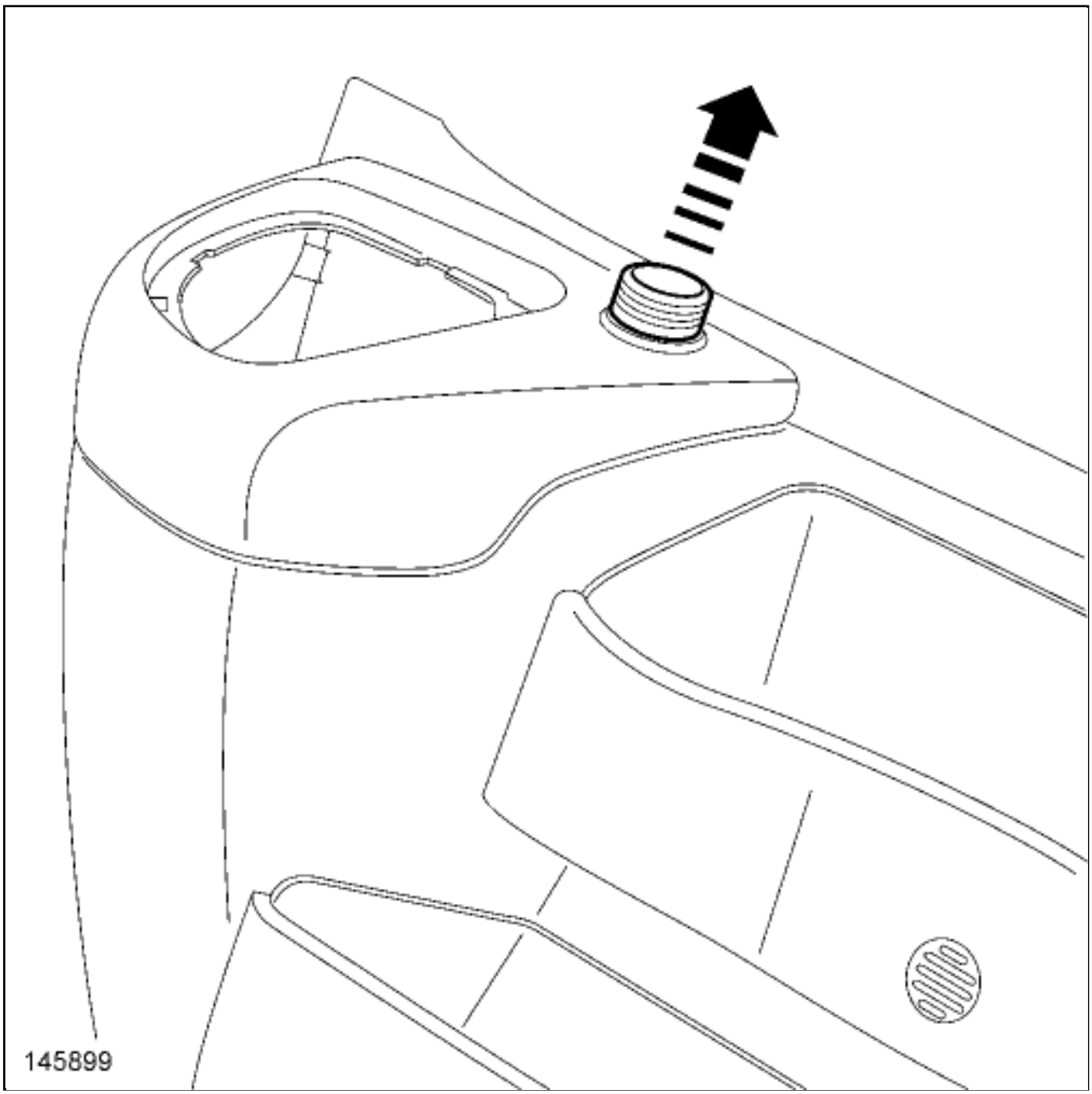
CIGARETTE LIGHTER: REMOVAL - REFITTING

REMOVAL

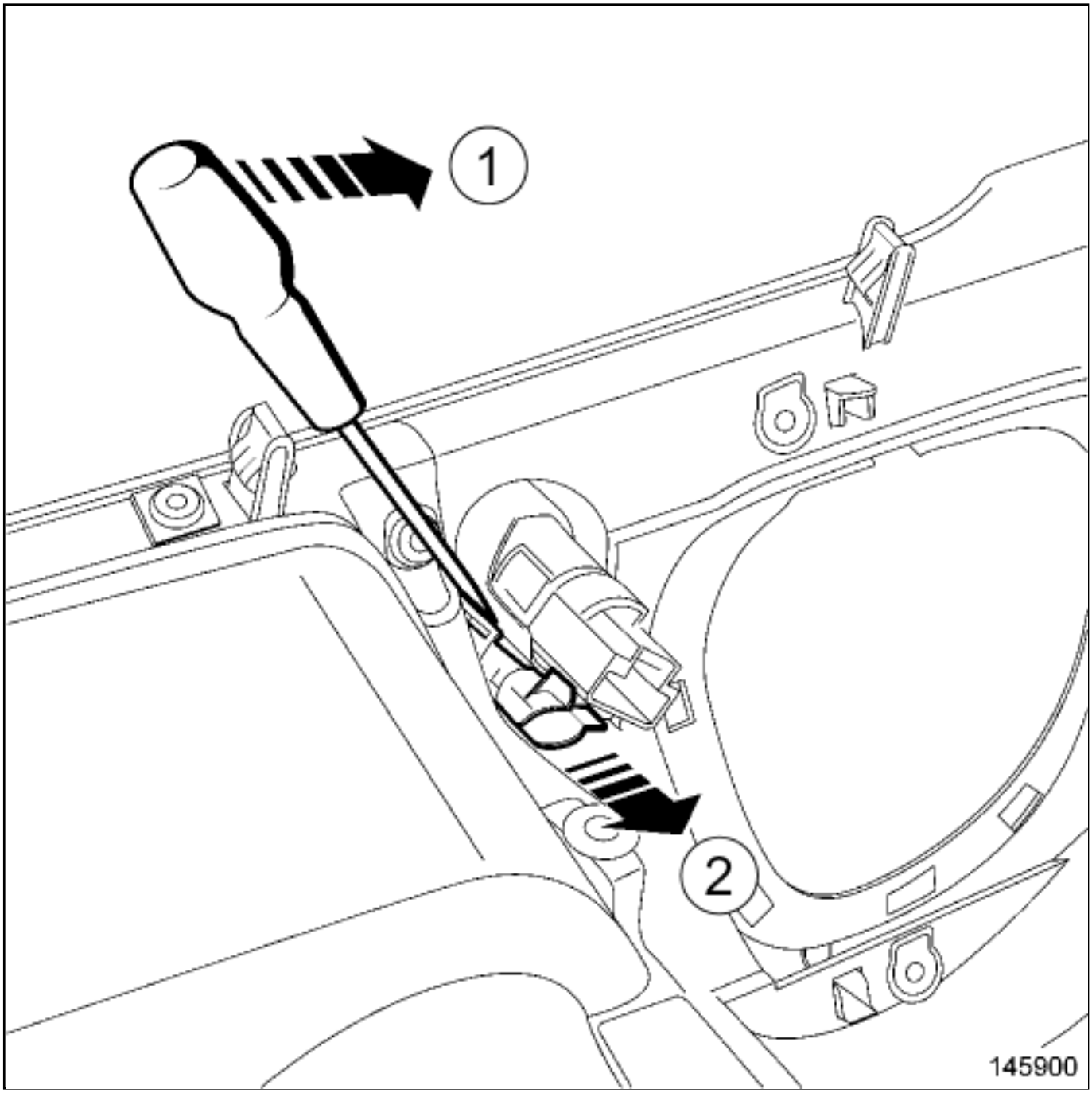
1. REMOVAL PREPARATION OPERATION

- Remove the centre console Centre console: Removal - Refitting (57A, Interior equipment).

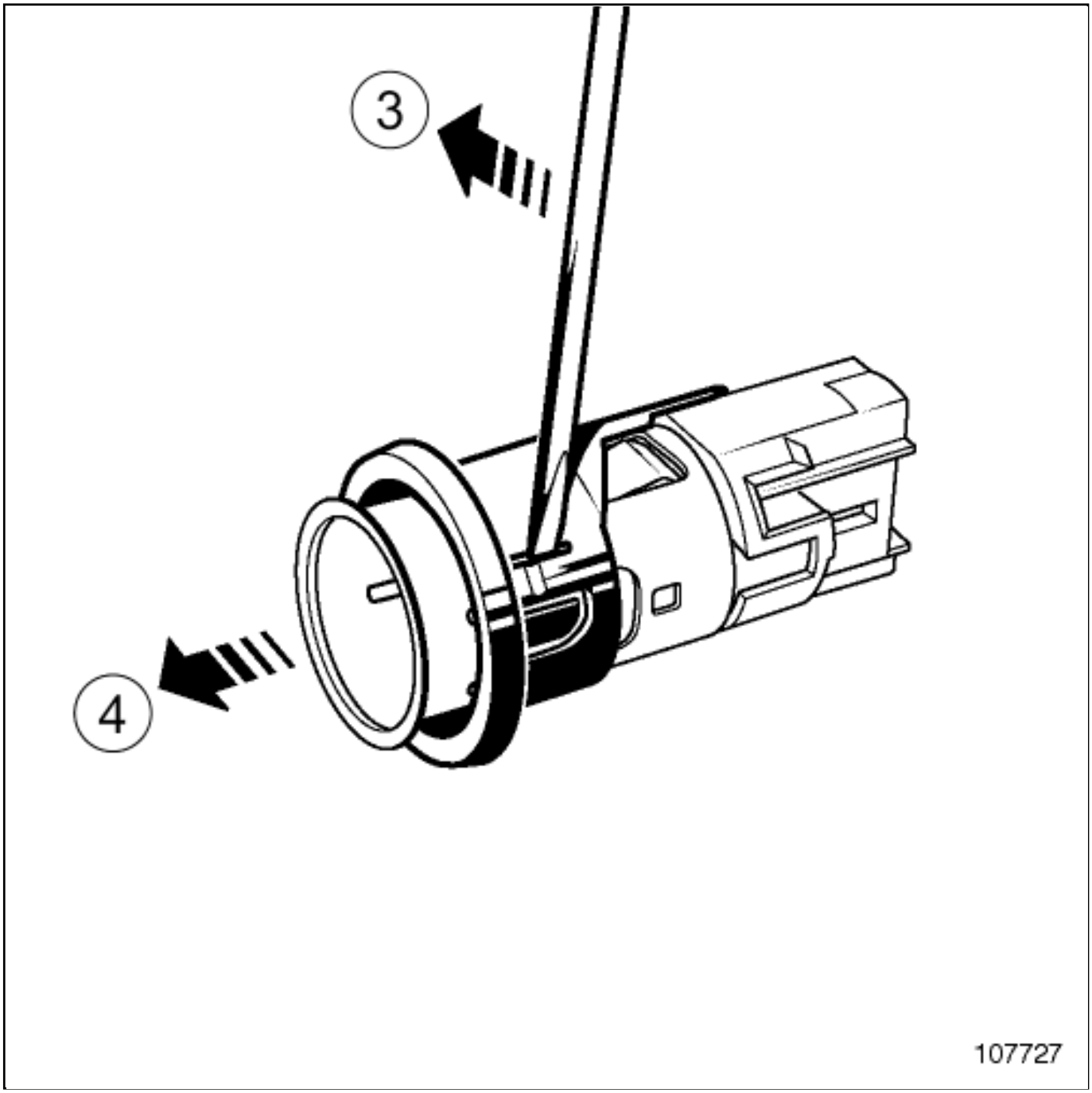
2. REMOVAL OPERATION



- Remove the cigarette lighter.



- Unclip the bulb mounting from the cigarette lighter using a flat-blade screwdriver at(1) and (2) .



- Keep the plastic support unlocked at(3) .
- Pull the cigarette lighter support at(4) .
- Unclip the plastic support from the centre console.

REFITTING

- Proceed in the reverse order to removal.

CLUTCH ASSEMBLY: EXPLODED VIEW

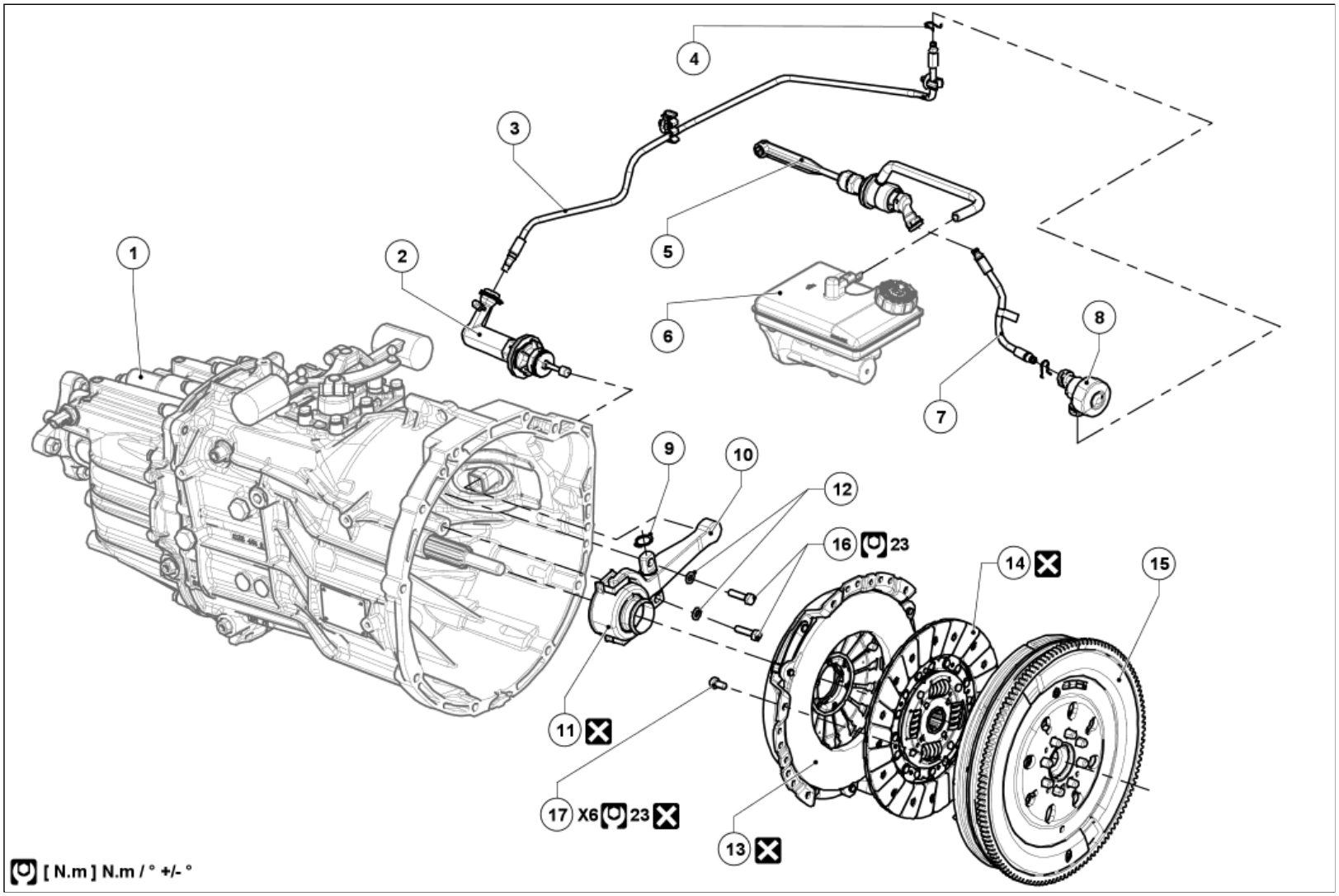


Illustration key: Description

Repair-12x03x01-02x50-1-2-1.xml

XSL version : 3.02 du 22/07/11

CLUTCH ASSEMBLY: EXPLODED VIEW

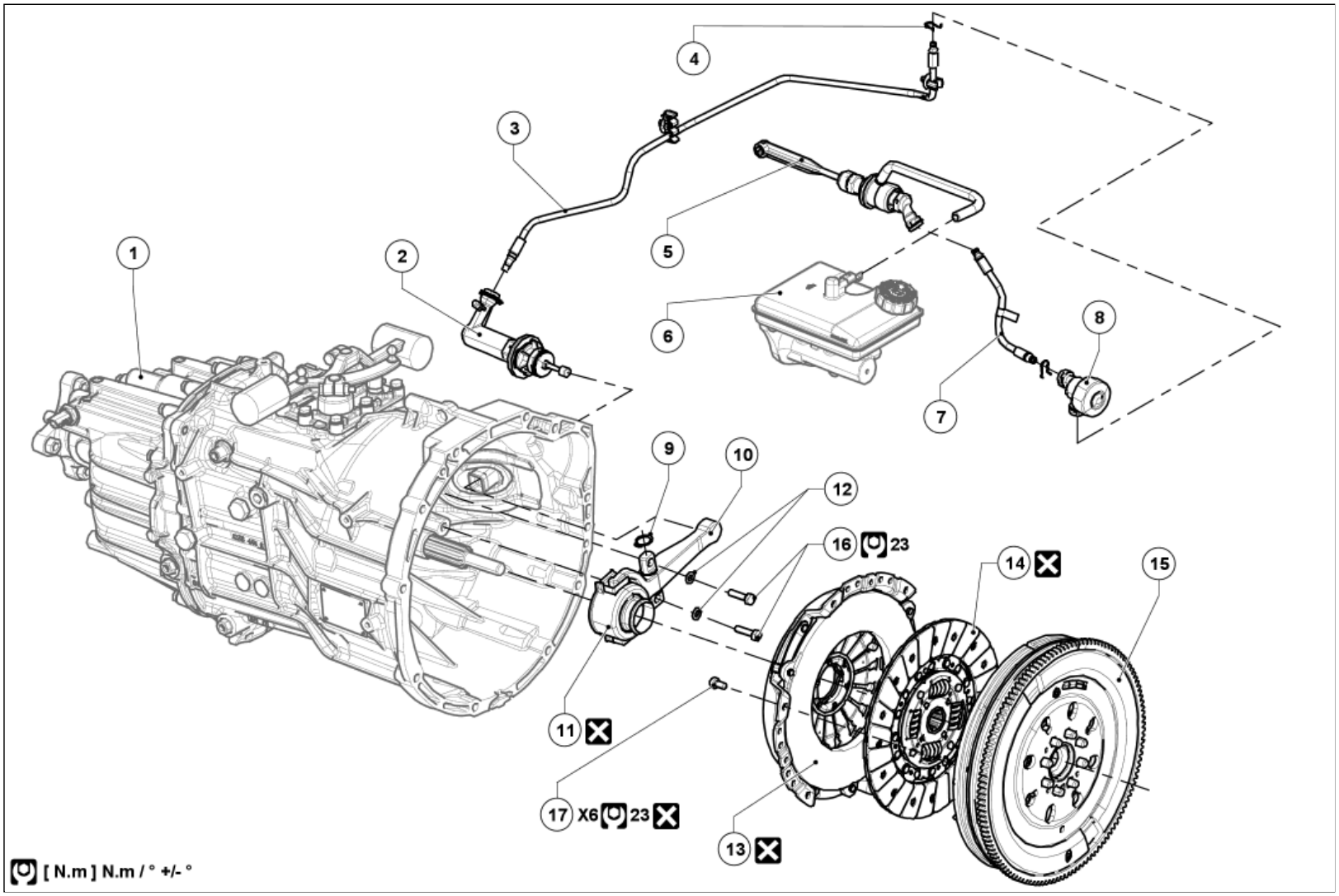


Illustration key: Description

Repair-12x03x01-02x50-1-2-1.xml

XSL version : 3.02 du 22/07/11

CLUTCH CIRCUIT: BLEED

Note, one or more warnings are present in this procedure

Equipment required
brake circuit bleeding device
hydraulic circuit bleed syringe

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

- Bleed in the event of:
  - dead travel,
  - pedal at mid-travel,
  - pedal to the floor,
  - poor gear changing.

1. PRECAUTIONS DURING REPAIR

1- RISKS RELATING TO CONTAMINATION

- The hydraulic clutch circuit is highly sensitive to contamination. The risks caused by contamination are:
  - impossible to change gears,
  - damage to or destruction of the clutch system,
  - leaks on the hydraulic circuit.

All the operations on the clutch hydraulic circuit system must be carried out under very clean conditions. This ensures that no impurities enter the hydraulic circuit during the operation.

The cleanliness principles apply to all components of the hydraulic clutch circuit.

- Items causing contamination are:
  - metal or plastic swarf,

-fibres:

■cardboard,■brushes,■paper,■clothing,■cloth,■dust and particles in the air,■etc.

1- CLEANING CLOTHS

- Use lint-free cleaning cloths(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

Each cloth must only be used once.

1- THERE ARE TWO TYPES OF EQUIPMENT USED TO BLEED THE CLUTCH CIRCUIT:

- ARC50 via the brake fluid reservoir.
- Syringe via the bleed hole located on the clutch slave cylinder.

1- THERE ARE TWO PROCEDURES USED TO BLEED THE CLUTCH CIRCUIT:

- If parts of the hydraulic clutch circuit are removed:
  - Carry out the bleed operation using the ARC50 via the brake fluid reservoir or using a new syringe via the bleed hole located on the clutch slave cylinder.
- If no parts of the clutch hydraulic circuit are removed:
  - Only carry out the bleed operation using a new syringe by injecting the brake fluid via the bleed hole on the clutch slave cylinder.

Note:

- Even the tiniest air bubble in the circuit can cause faulty operation (pedal failing to return properly, crunching sound when changing gear, etc.).
- Incorrect bleeding can lead to incorrect detection of faults and unnecessary part replacements.

1- CONSUMABLES FOR THE REPAIR:

- Bleed the clutch circuit using approved brake fluid(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

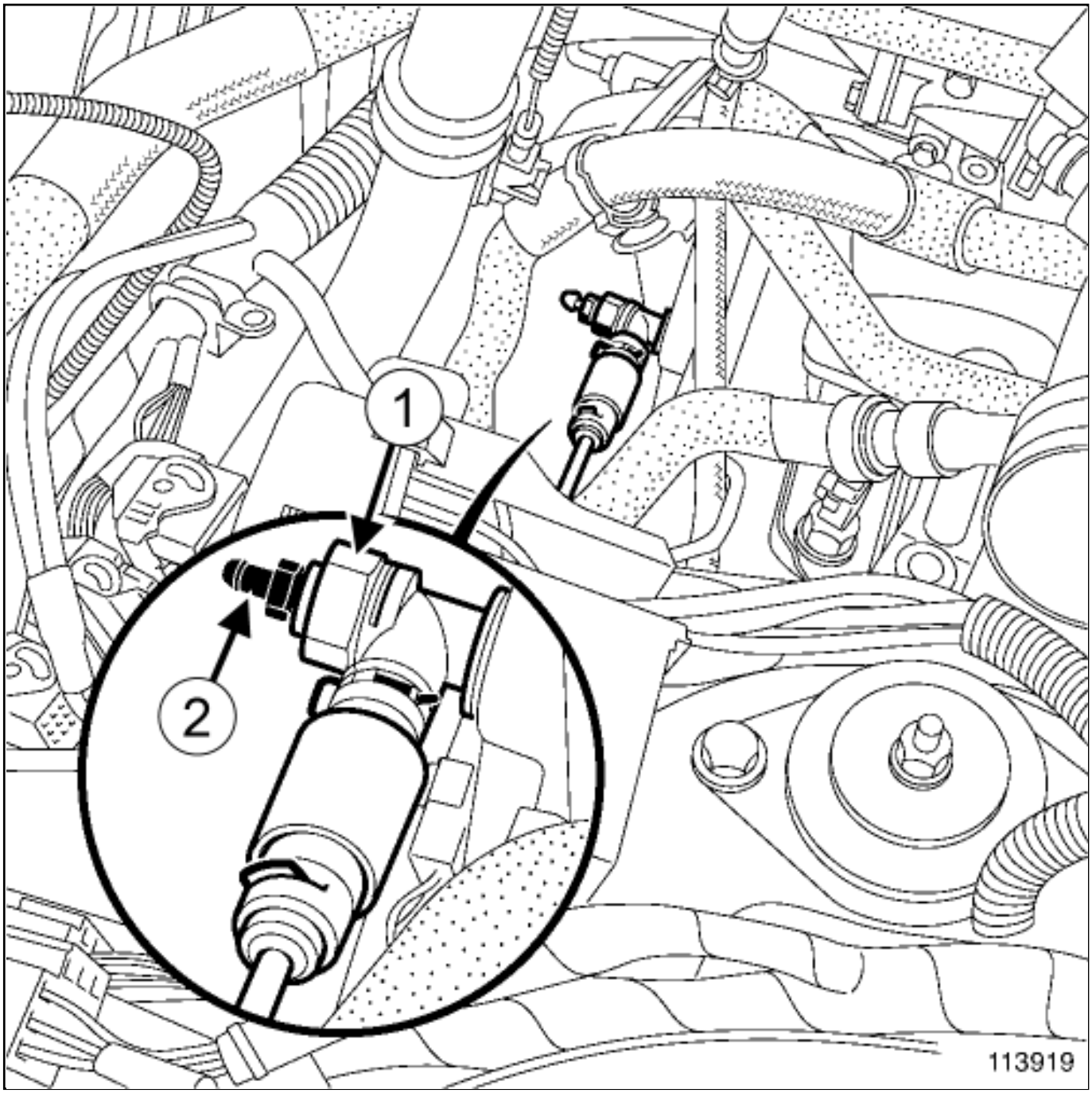
2. PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove the engine undertray.

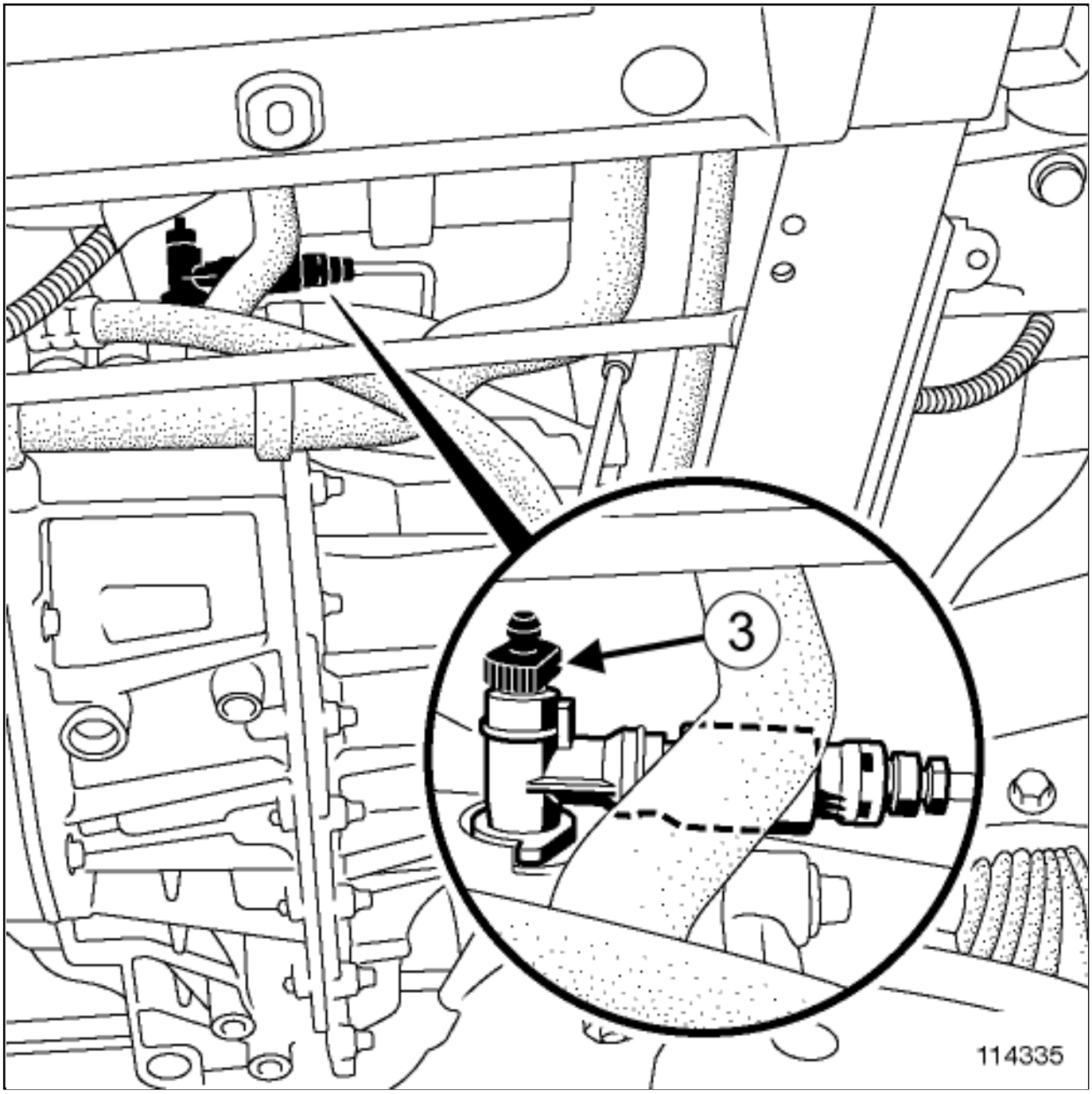
1- THERE ARE SEVERAL VERSIONS OF BLEED SCREW:

SCREW TYPE BLEED SCREW



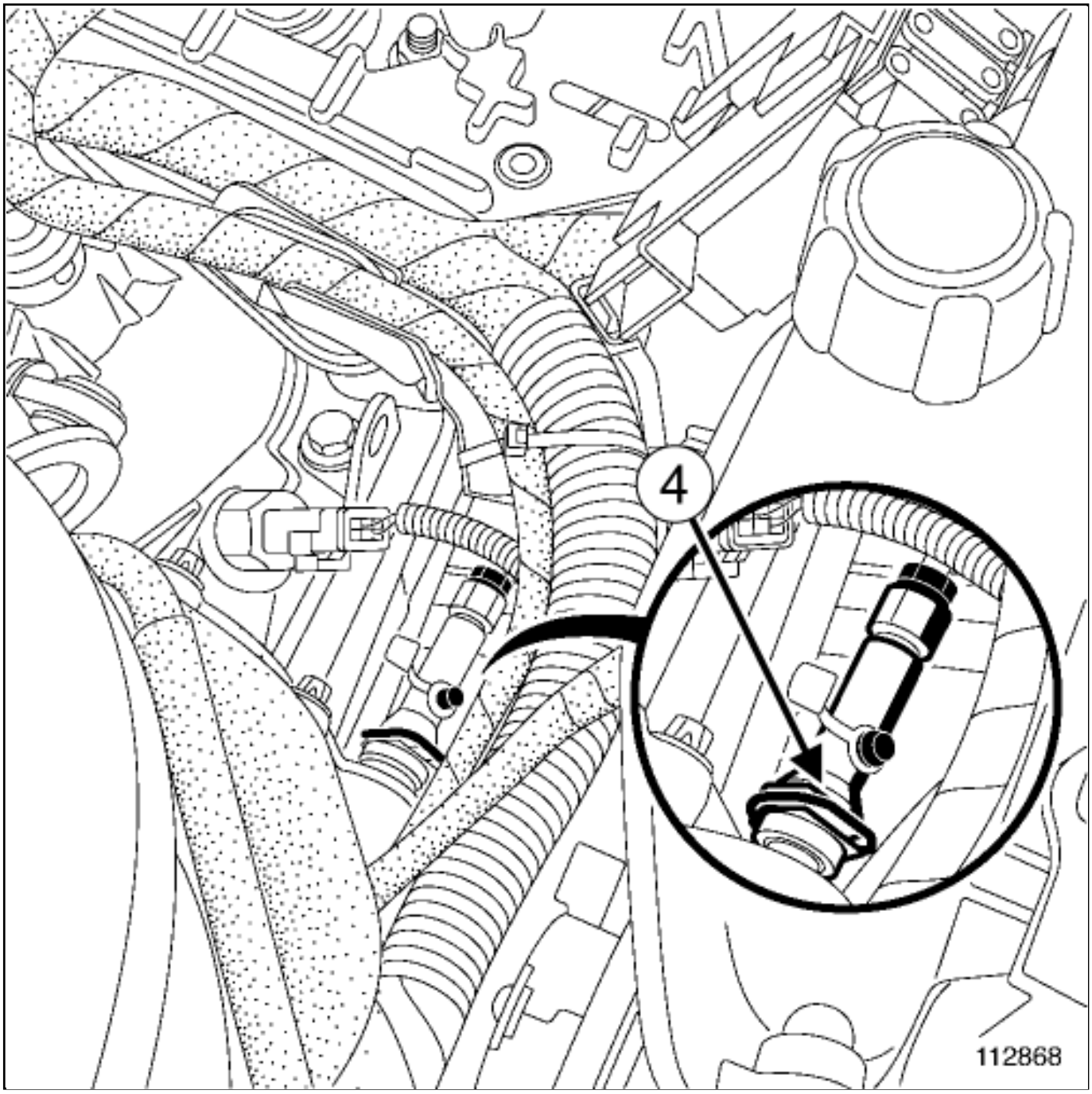
- To open the bleed screw, hold the plastic union(1) using a ring spanner and undo the bleed screw(2) .

HALF-TURN BLEED SCREW



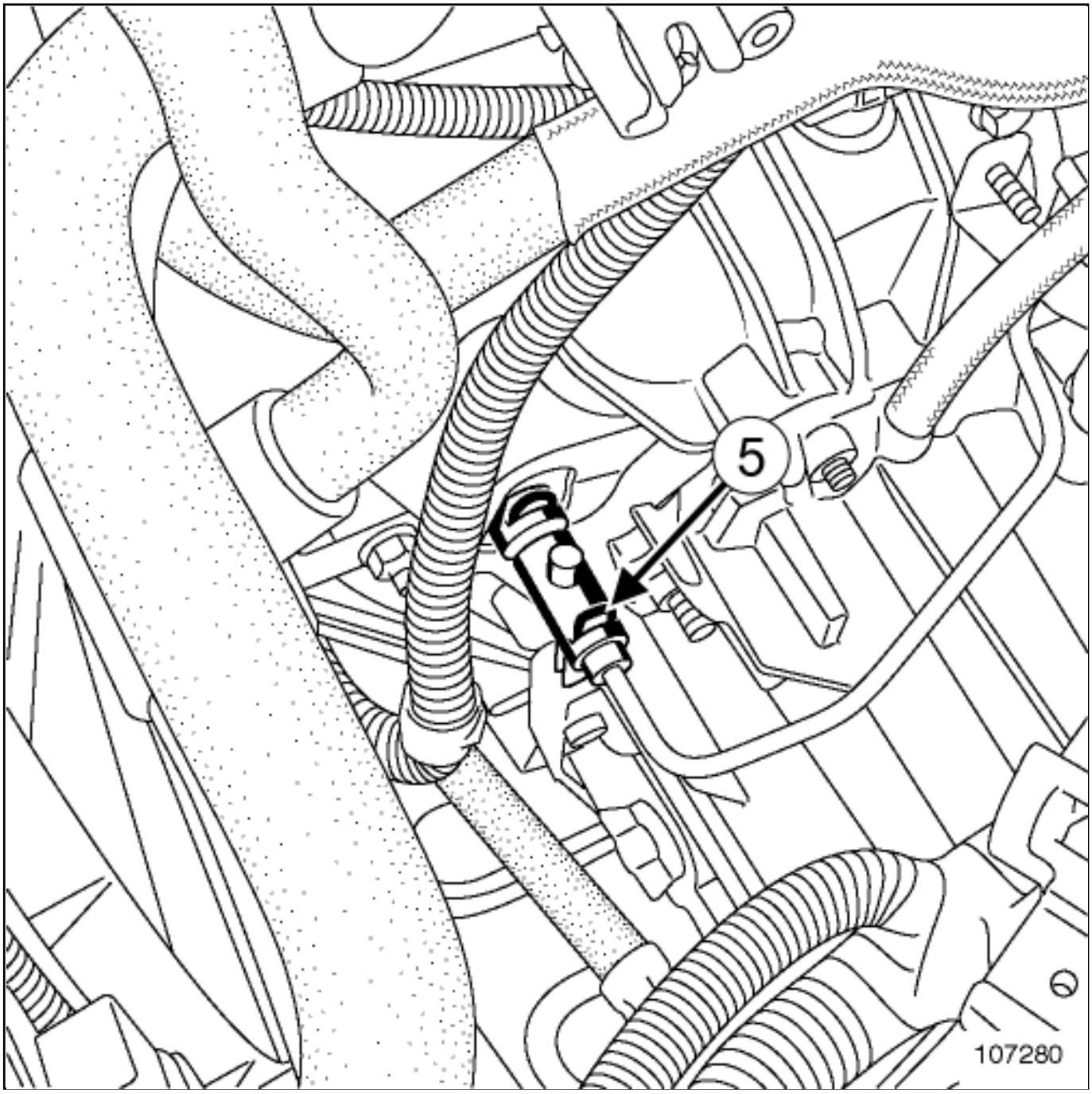
- To open the bleed screw, fully turn the bleed screw(3) by hand.

BLEED SCREW WITH A CLIP



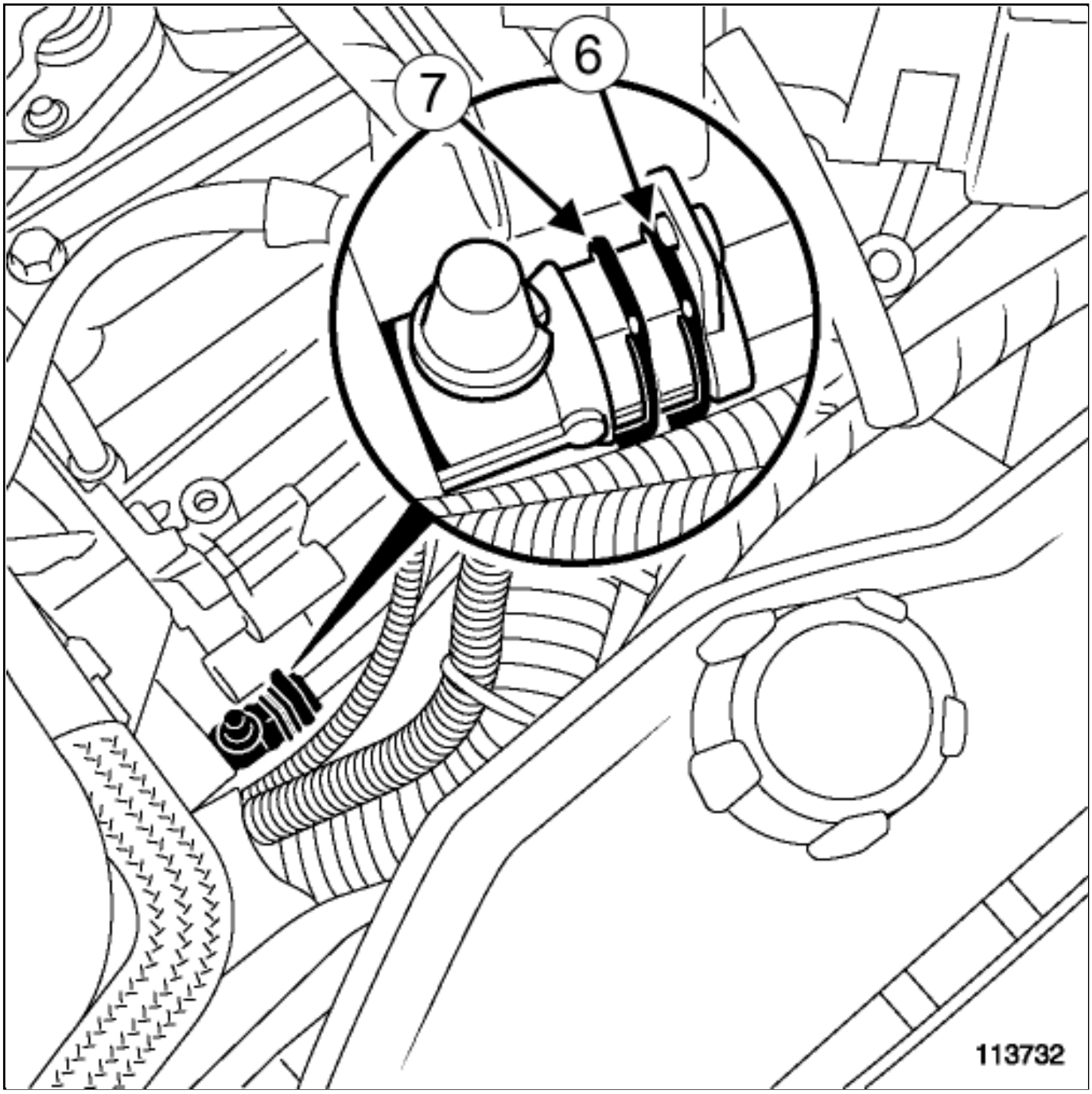
- To open the bleed screw, press and hold the clip(4) while pulling by one notch.

BLEED SCREW WITH A CLIP



- To open the bleed screw, lift the clip(5) while pulling by one notch.

BLEED SCREW WITH TWO CLIPS



- To open the bleed screw, lower the clip(6) and lift the clip(7) while pulling by one notch.

3. BLEED PROCEDURE IF NO PARTS OF THE HYDRAULIC CIRCUIT ARE REMOVED

1- BLEED USING THE ARC50

- Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- Connect the brake circuit bleeding device(after having received Renault approval) to the master cylinder reservoir (see the instructions for the equipment).
- Remove the bleed plug from the clutch slave cylinder.
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.
- Open:
  - the bleed screw,
  - the circuit between the bleeding device and the brake fluid reservoir.
- Let the brake fluid run until all air bubbles have been released.
- Stop the bleeding device to dump the pressure in the clutch circuit.
- Close the bleed screw.
- Remove the transparent pipe from the bleed hole.
- Refit the bleed plug.
- Top up the brake fluid level in the master cylinder reservoir after disconnecting the bleed device.
- Disengage and engage the clutch quickly around twenty times.
- Check that the clutch system is operating correctly.
- Repeat the bleed operation if necessary.
- Check the adjustment of the clutch pedal switch(see 37A, Mechanical component controls, Pedal switches: Adjustment) .

2- BLEED USING A NEW SYRINGE

- Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- Remove the bleed plug from the clutch slave cylinder.
- Connect a transparent pipe of sufficient length to the bleed hole (at least thirty centimetres) in order to place it at the same height as the reservoir.
- Open the bleed screw.
- Fill the brake fluid master cylinder reservoir until brake fluid flows out of the bleed screw.

Note:

The transparent pipe must remain at the same height as the master cylinder reservoir to prevent air from entering inside the clutch circuit.

- Connect a new hydraulic circuit bleed syringeto the end of the transparent pipe filled with 60 mlof approved brake fluid.
- Slowly inject the entire contents of the syringe into the hydraulic clutch circuit without injecting any of the air from the top section of the syringe.
- Close the bleed screw.
- Remove the transparent pipe from the bleed hole.
- Refit the bleed plug.
- Top up the brake fluid level in the master cylinder reservoir.
- Disengage and engage the clutch quickly around twenty times.
- Check that the clutch system is operating correctly.
- Repeat the bleed operation if necessary.
- Check the adjustment of the clutch pedal switch(see 37A, Mechanical component controls, Pedal switches: Adjustment) .

4. BLEED PREPARATION PROCEDURE IF PARTS OF THE HYDRAULIC CIRCUIT ARE REMOVED

CAUTION

Prepare for the flow of fluid and protect the surrounding components.

Note:

The master cylinder pipe must be disconnected from its take-off point on the brake fluid reservoir, to avoid any foreign matter penetrating inside the hydraulic brake circuit.

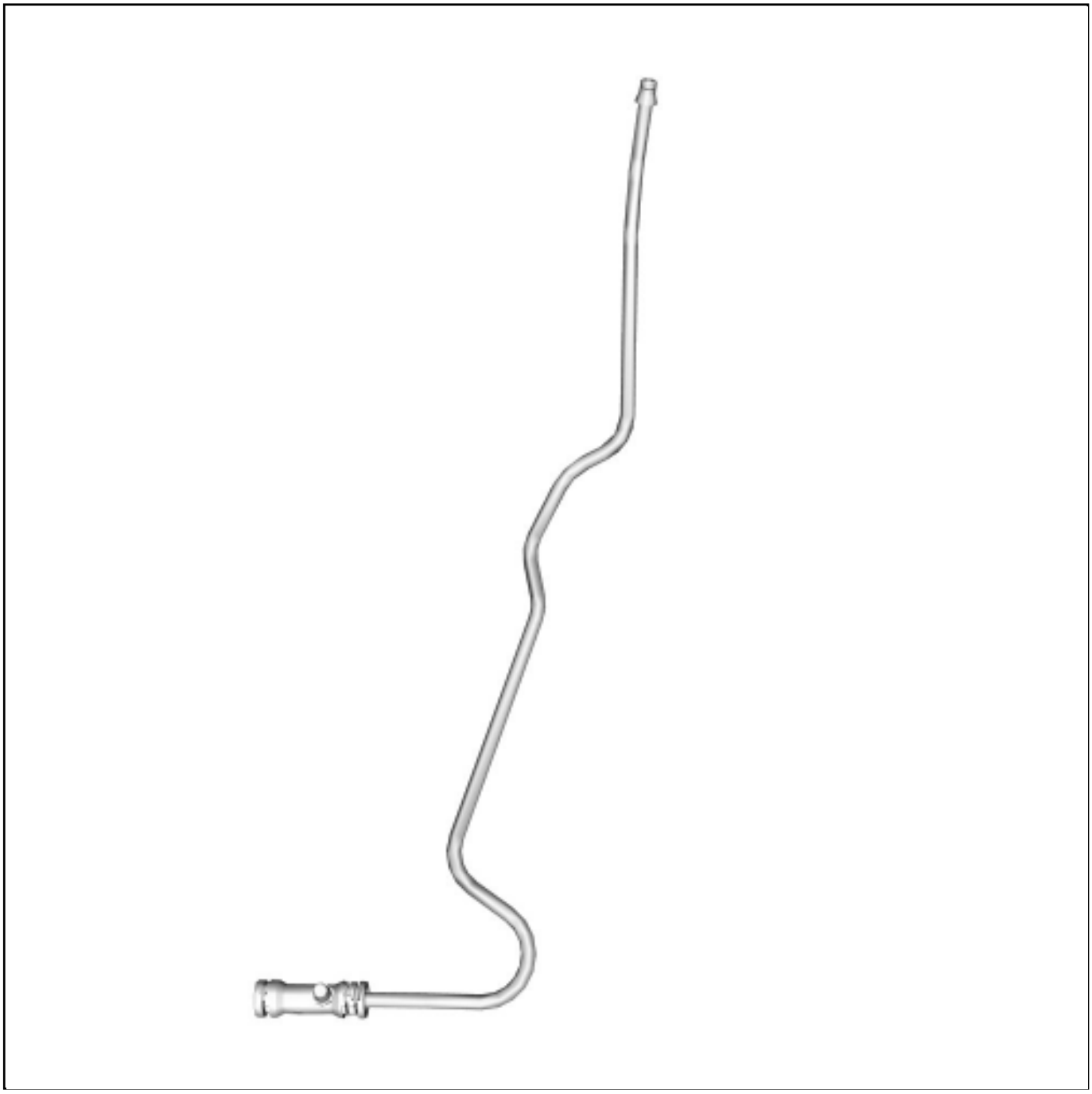
Note:

Prefill the hydraulic circuit pipe equipped with a filter.

Position the filter head facing downwards to ensure that it fills.

1- THERE ARE SEVERAL VERSIONS OF PIPE WITH AND WITHOUT A FILTER:

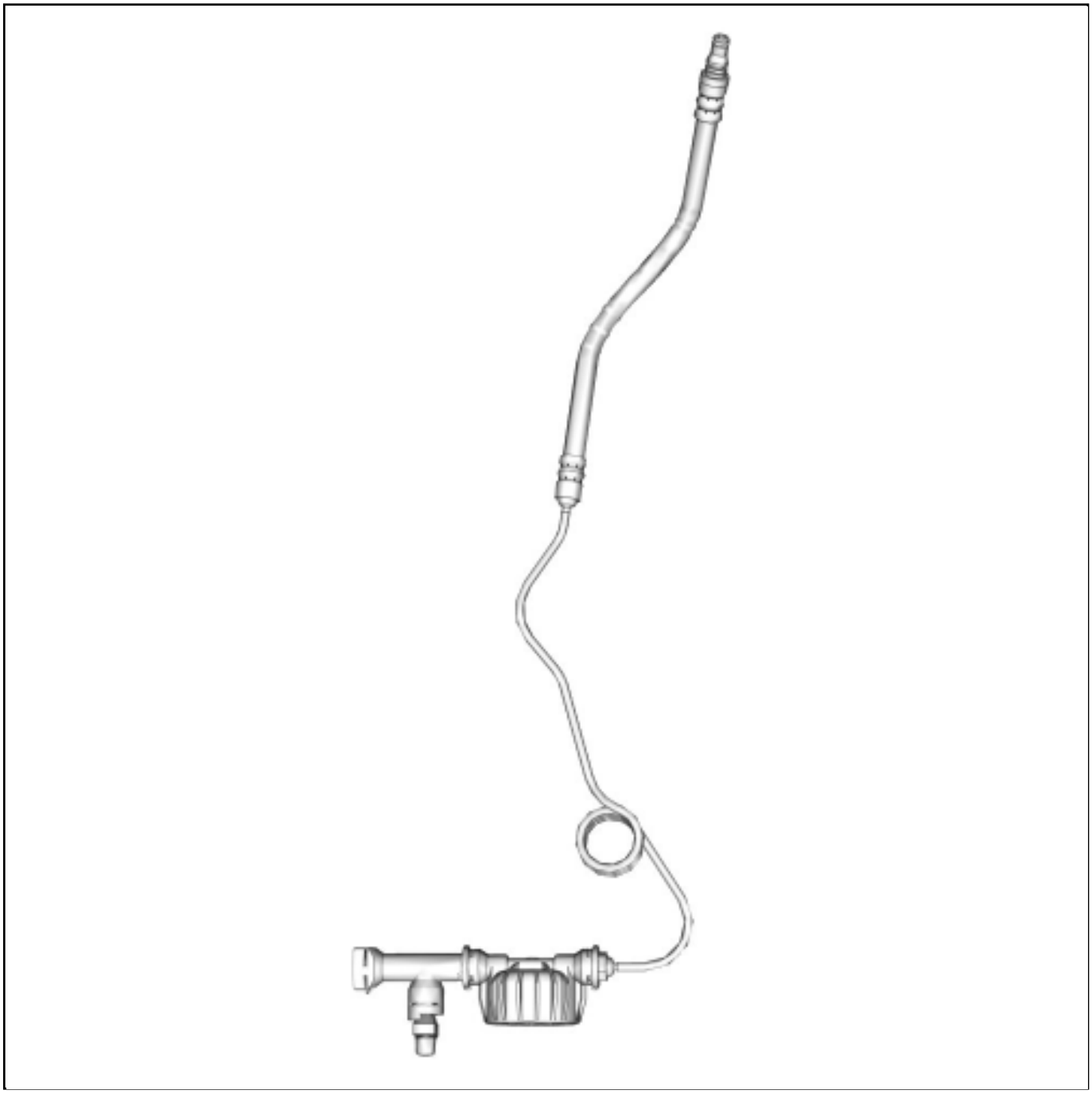
PIPE WITHOUT FILTER



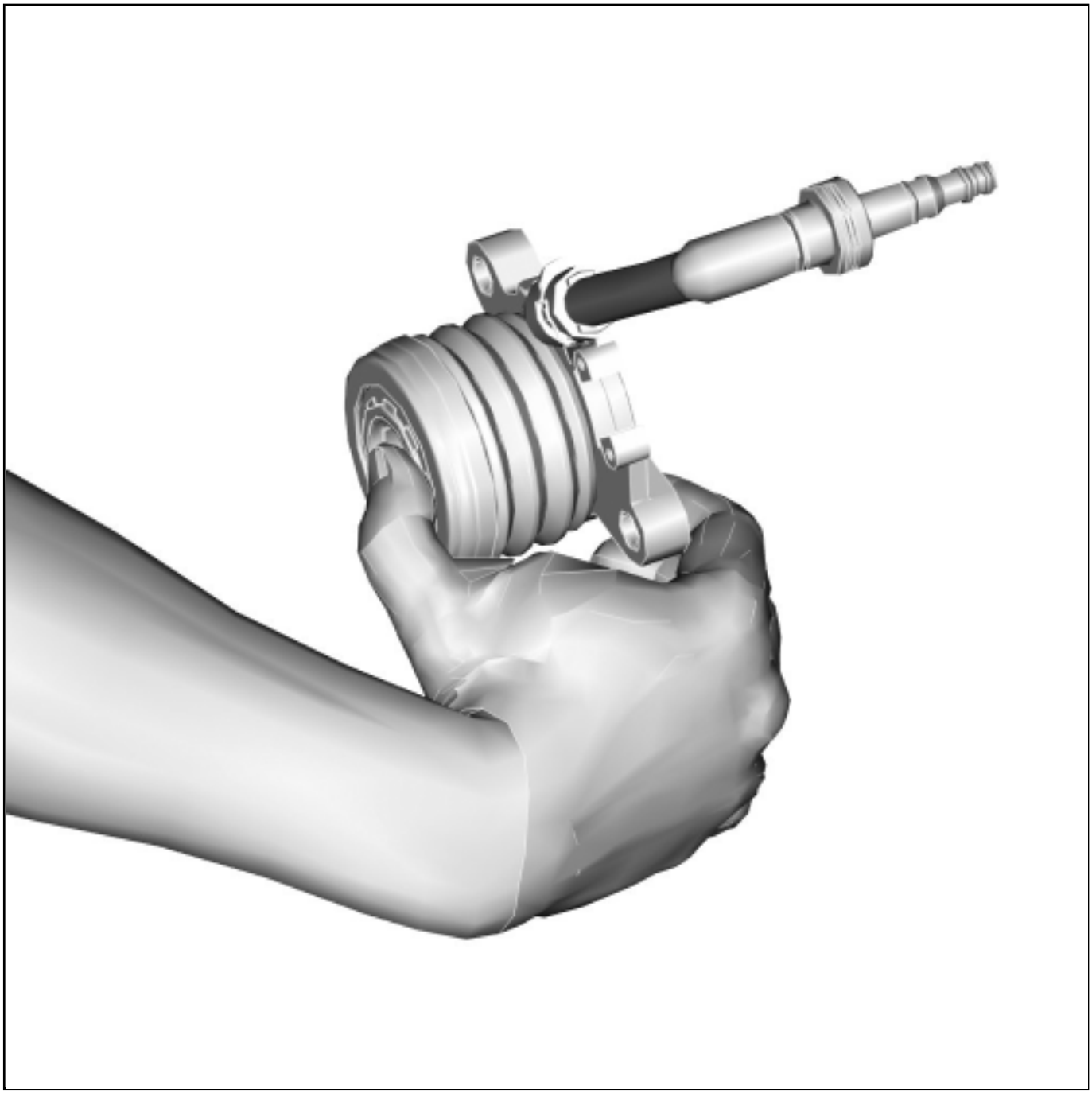
FILLING POSITION FOR PIPE WITH FILTER

FILLING POSITION FOR PIPE WITH FILTER

FILLING POSITION FOR PIPE WITH FILTER



- Prefill the clutch pipe using the syringe.
- Plug the prefilled pipe on the master cylinder end to stop any brake fluid from escaping.



- Prefill the hydraulic tappet by gravity using the syringe.

- Refit the part(s) concerned.

5. BLEED OPERATION AFTER REMOVING A HYDRAULIC CIRCUIT PART

- Keep the clutch pedal in the upper position using a strap attached to the steering wheel to ensure continuity of the hydraulic circuit during the bleed operation.

Note:

Take care not to disrupt the adjustment of the clutch start of travel switch.

- Remove the bleed plug from the clutch slave cylinder.
- Connect a transparent pipe of sufficient length to the bleed hole (at least thirty centimetres) in order to place it at the same height as the reservoir.
- Open the bleed screw.
- Fill the brake fluid master cylinder reservoir until brake fluid flows out of the bleed screw.

Note:

The transparent pipe must remain at the same height as the master cylinder reservoir to prevent air from entering inside the clutch circuit.

- Connect a new syringe to the end of the transparent pipe filled with 60 ml of approved brake fluid.
- Slowly inject the entire contents of the syringe into the hydraulic clutch circuit without injecting any of the air from the top section of the syringe.
- Close the bleed screw.
- Remove the transparent pipe from the bleed hole.
- Refit the bleed plug.
- Top up the brake fluid level in the master cylinder reservoir.

Disengage and engage the clutch quickly around twenty times.

Check that the clutch system is operating correctly.

Repeat the bleed operation if necessary.

Check the adjustment of the clutch pedal switch(see 37A, Mechanical component controls, Pedal switches: Adjustment) .

6. FINAL OPERATION

Refit the engine undertray.

CLUTCH CIRCUIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Clutch assembly: Exploded view**) .

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

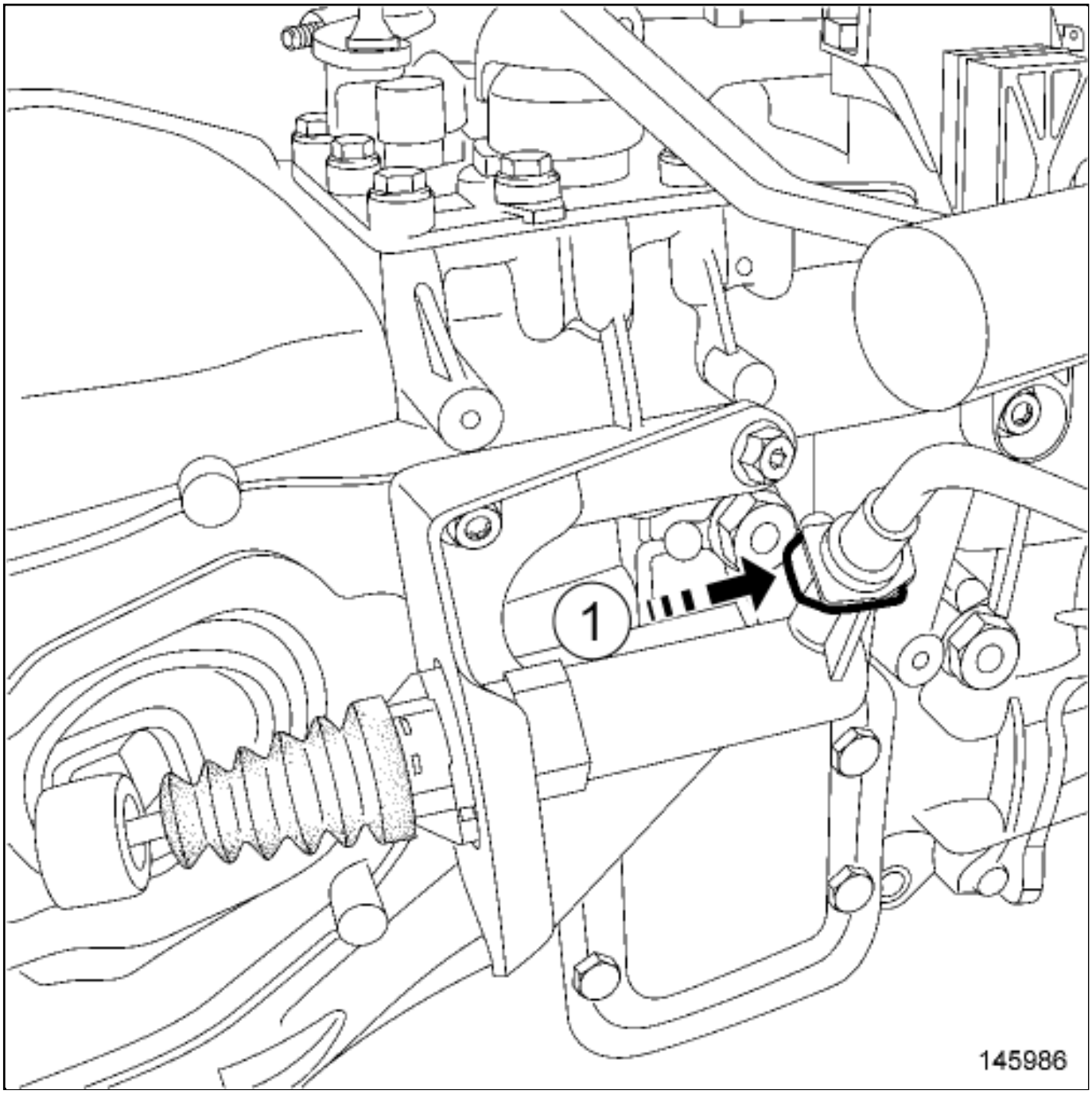
REMOVAL

1. REMOVAL PREPARATION OPERATION

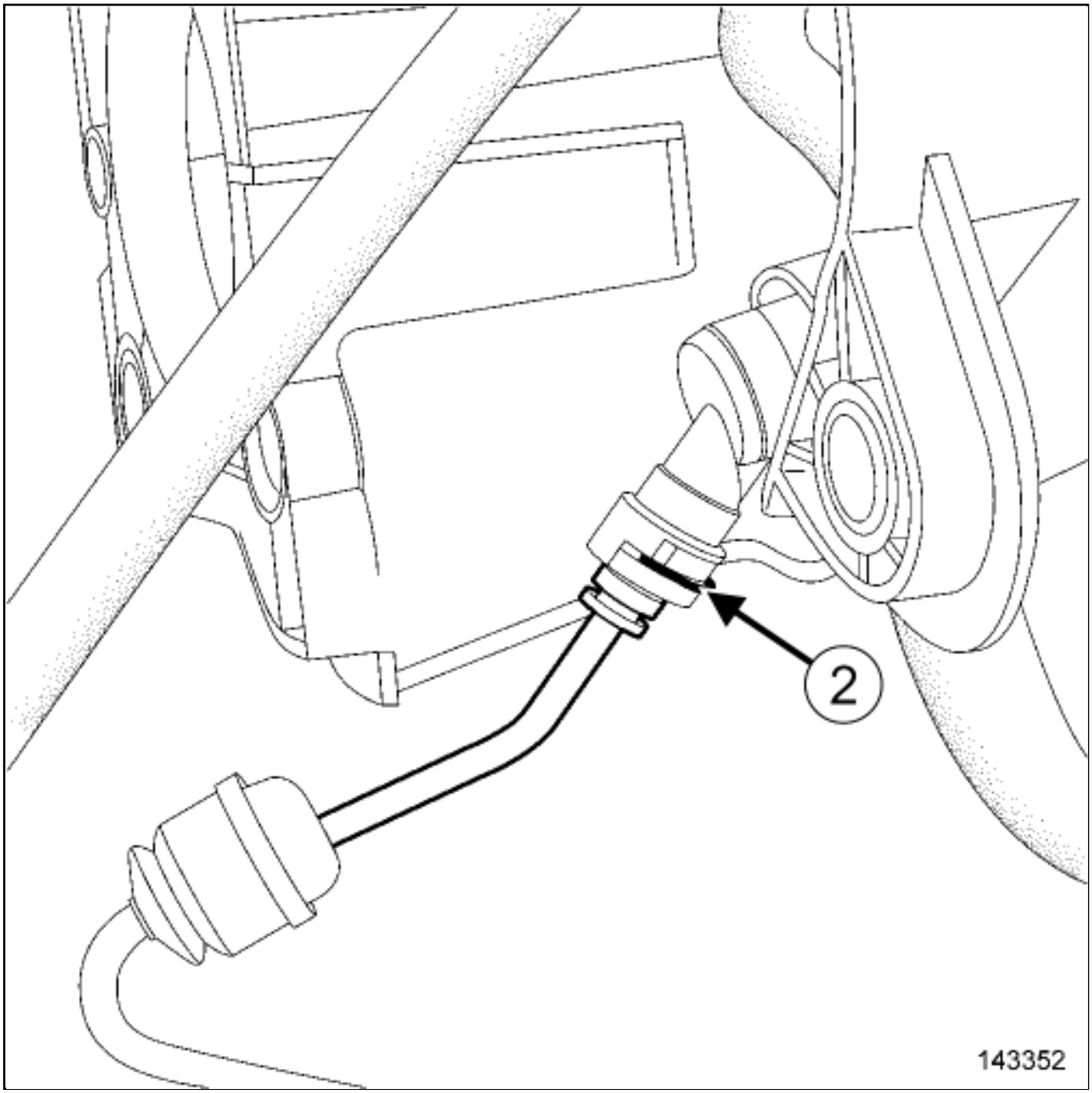
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the engine undertray.

2. REMOVAL OPERATION

- Remove the bleed plug from the clutch circuit.
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.



- Press the clip(1) of the clutch slave cylinder, then pull the circuit pipe out one notch.
- Depress the clutch pedal by hand to empty the clutch circuit.
- Disconnect the transparent pipe and the container from the bleed hole of the clutch slave cylinder.
- Press the clutch slave cylinder clip.
- Disconnect the hydraulic clutch control pipe from the clutch slave cylinder.
- Fit blanking plugs into all openings.



- Pull the clip(2) of the clutch master cylinder.
- Disconnect the hydraulic clutch control pipe from the clutch master cylinder.
- Fit blanking plugs into all openings.
- Unclip the hydraulic clutch control pipe.

Note:

Carefully unclip the hydraulic clutch control pipe, taking care to correctly follow the routing.

- Remove the hydraulic clutch control pipe.

REFITTING

1. REFITTING PREPARATION OPERATION

- Check the condition of the seals of the hydraulic clutch control pipe.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Bleed the clutch circuit (see 37A, Mechanical component controls, Clutch circuit: Bleed) .

CLUTCH FORK: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 20A, Clutch, Clutch assembly: Exploded view)** .

WARNING

To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the manual gearbox**Gearbox assembly: Exploded view** .

2. REMOVAL OPERATION

-

Remove the clutch fork**(see 20A, Clutch, Clutch assembly: Exploded view)** .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

CLUTCH HOUSING BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
ZF4 gearbox internal renovation kit	Bvi. 1950

Equipment required
component support

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 21A, Manual gearbox , Manual gearbox: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove the manual gearboxGearbox assembly: Exploded view .

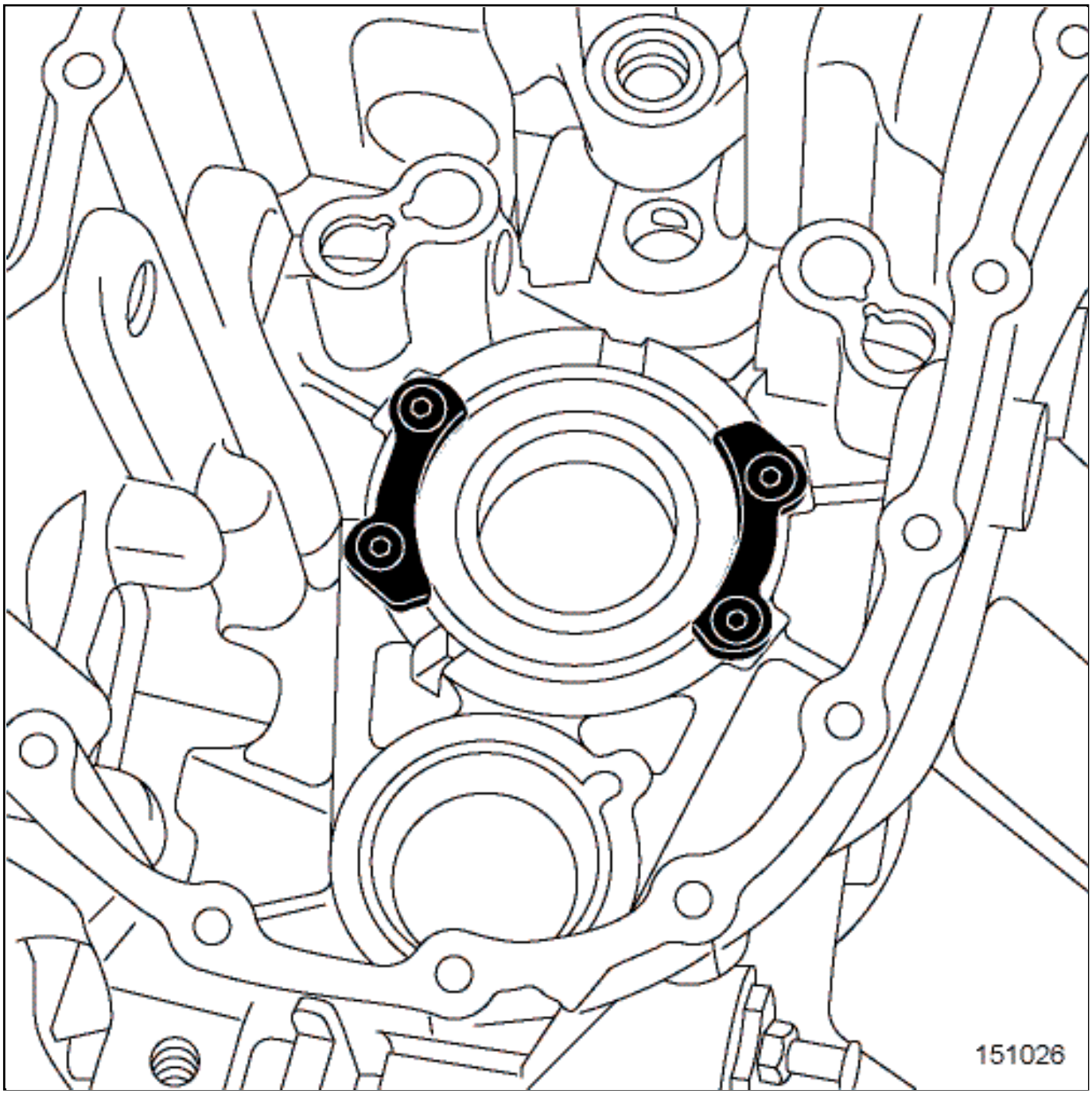
Position the gearbox on the component support(see 21A, Manual gearbox , Gearbox support equipment: Use) .

Remove:

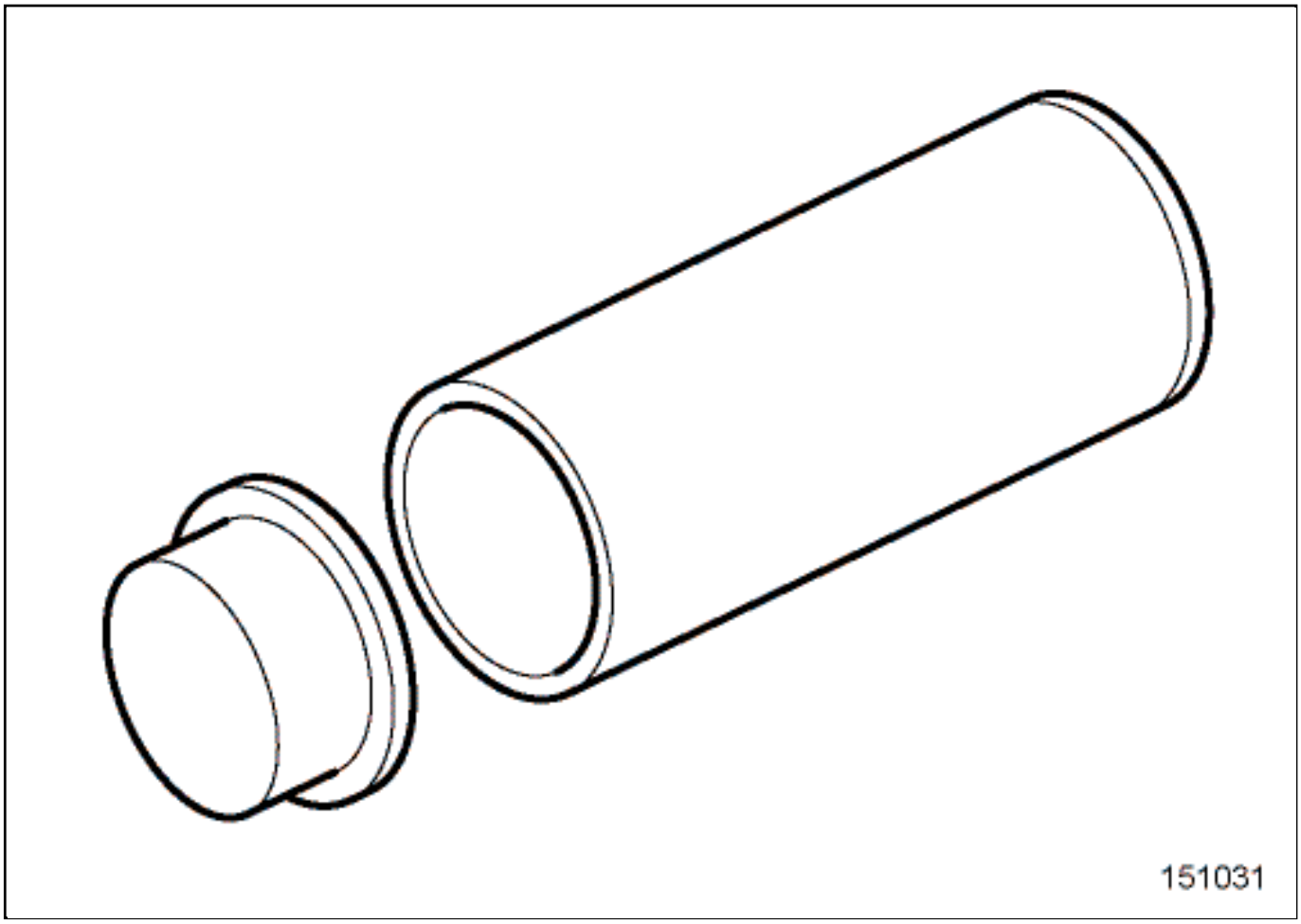
- the gearshift plate(see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) ,
- the reverse gear switchGearbox assembly: Exploded view .

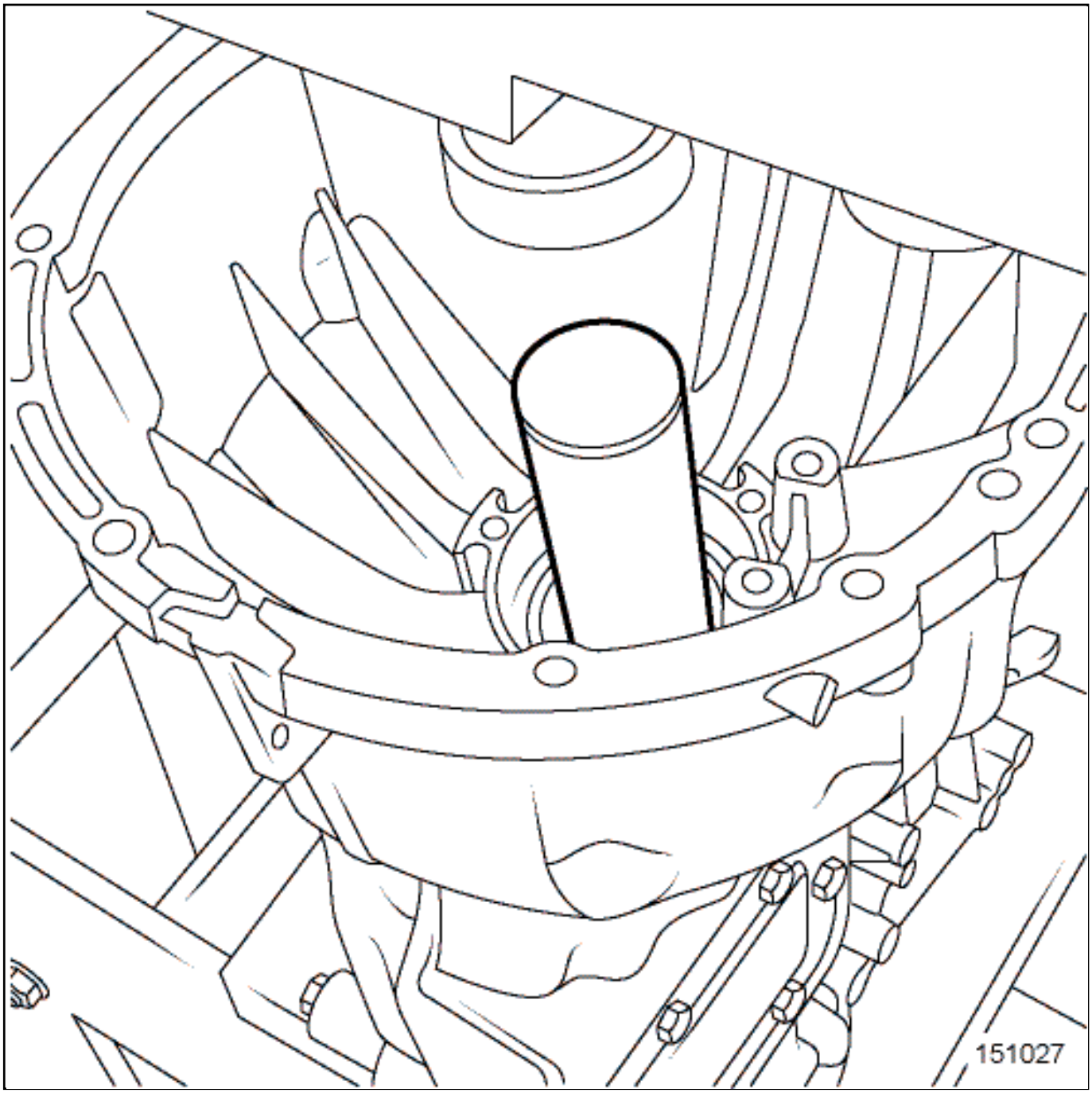
- Remove the clutch housing Gearbox assembly: Exploded view .

2. REMOVAL OPERATION

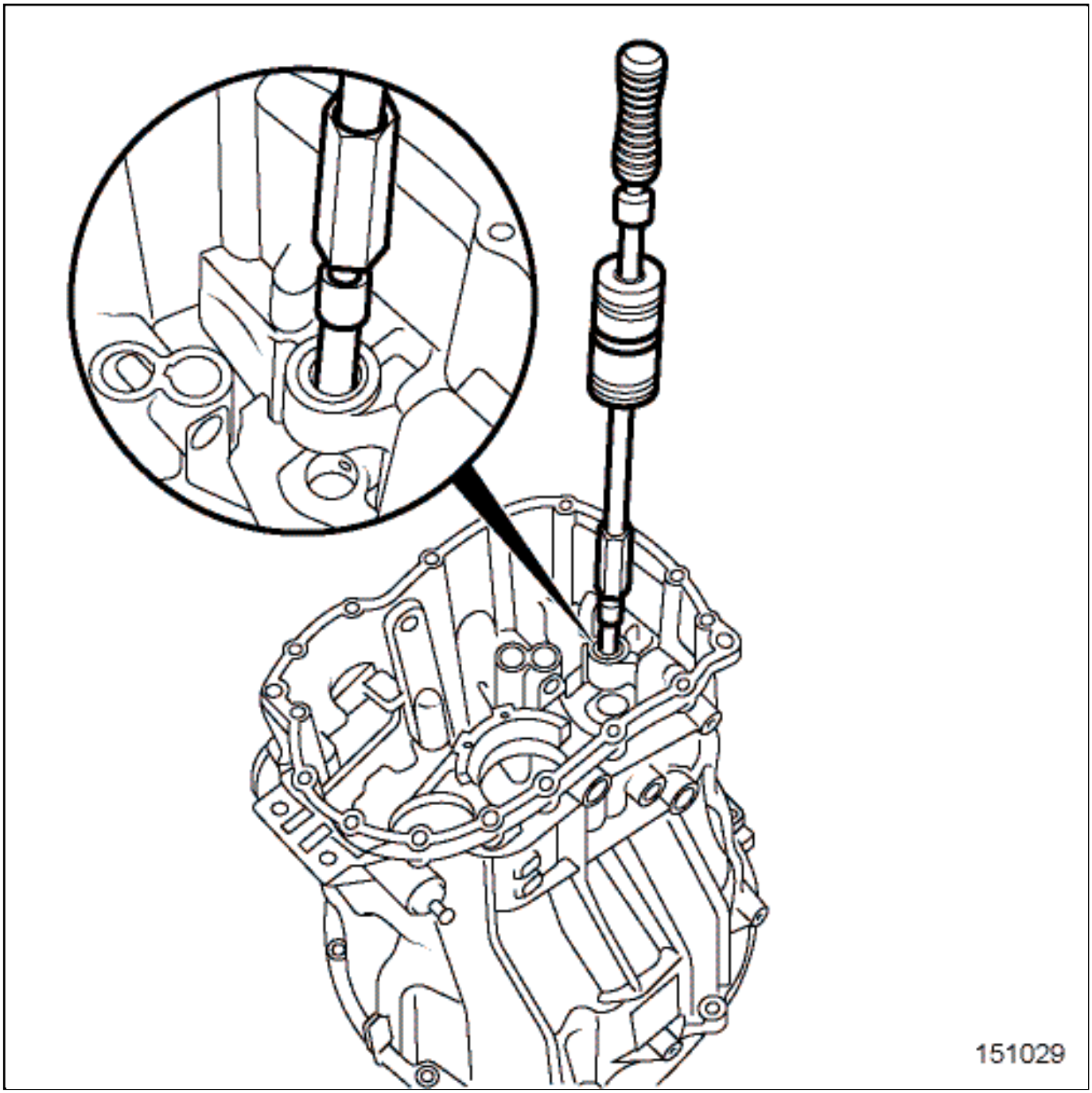


- Remove the stops(1) Gearbox assembly: Exploded view .


151031

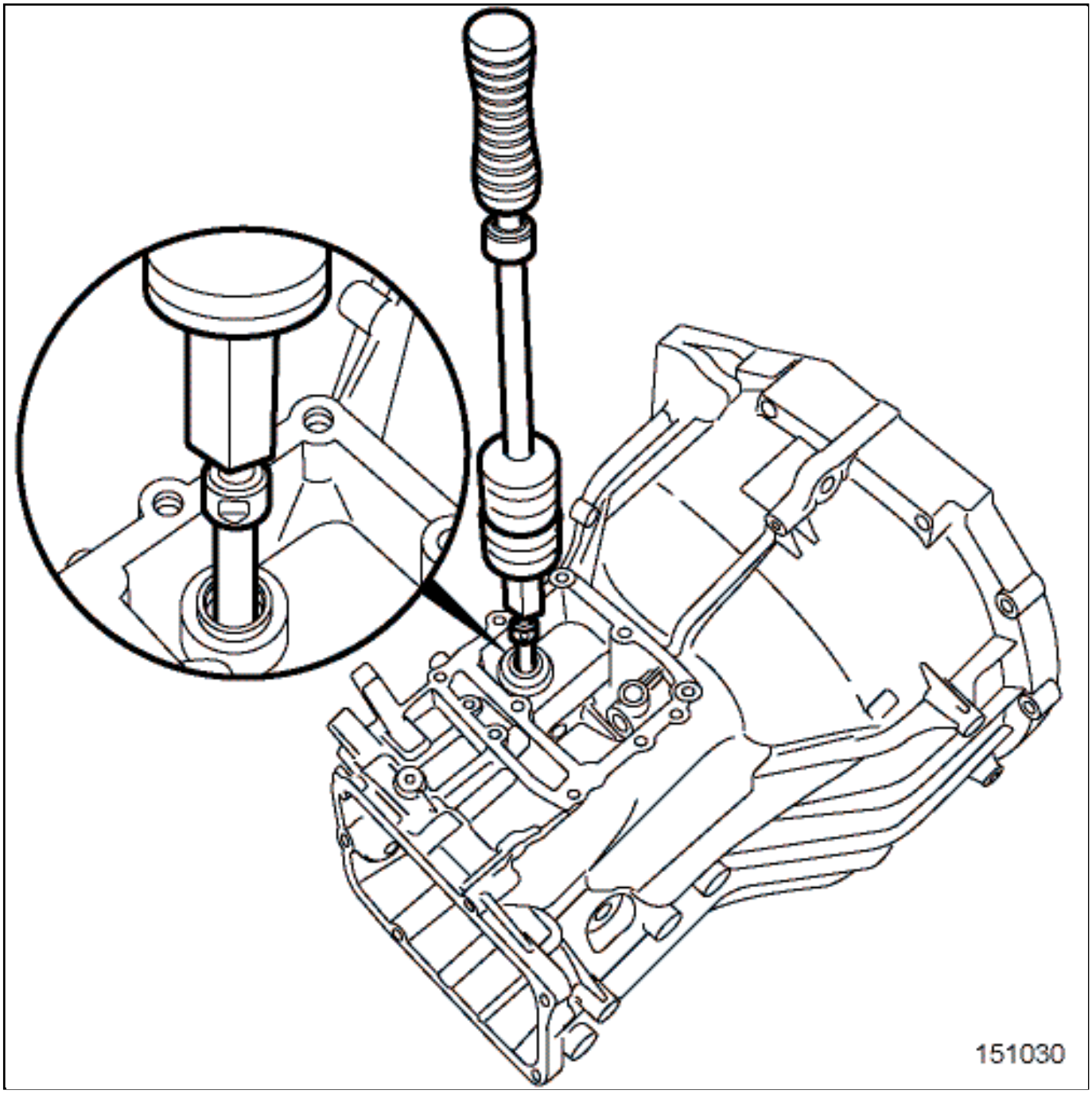


Remove the input shaft bearing on the clutch housing using toolZF4 gearbox internal renovation kit (Bvi. 1950) (D) + (C) (2) Gearbox assembly: Exploded view .

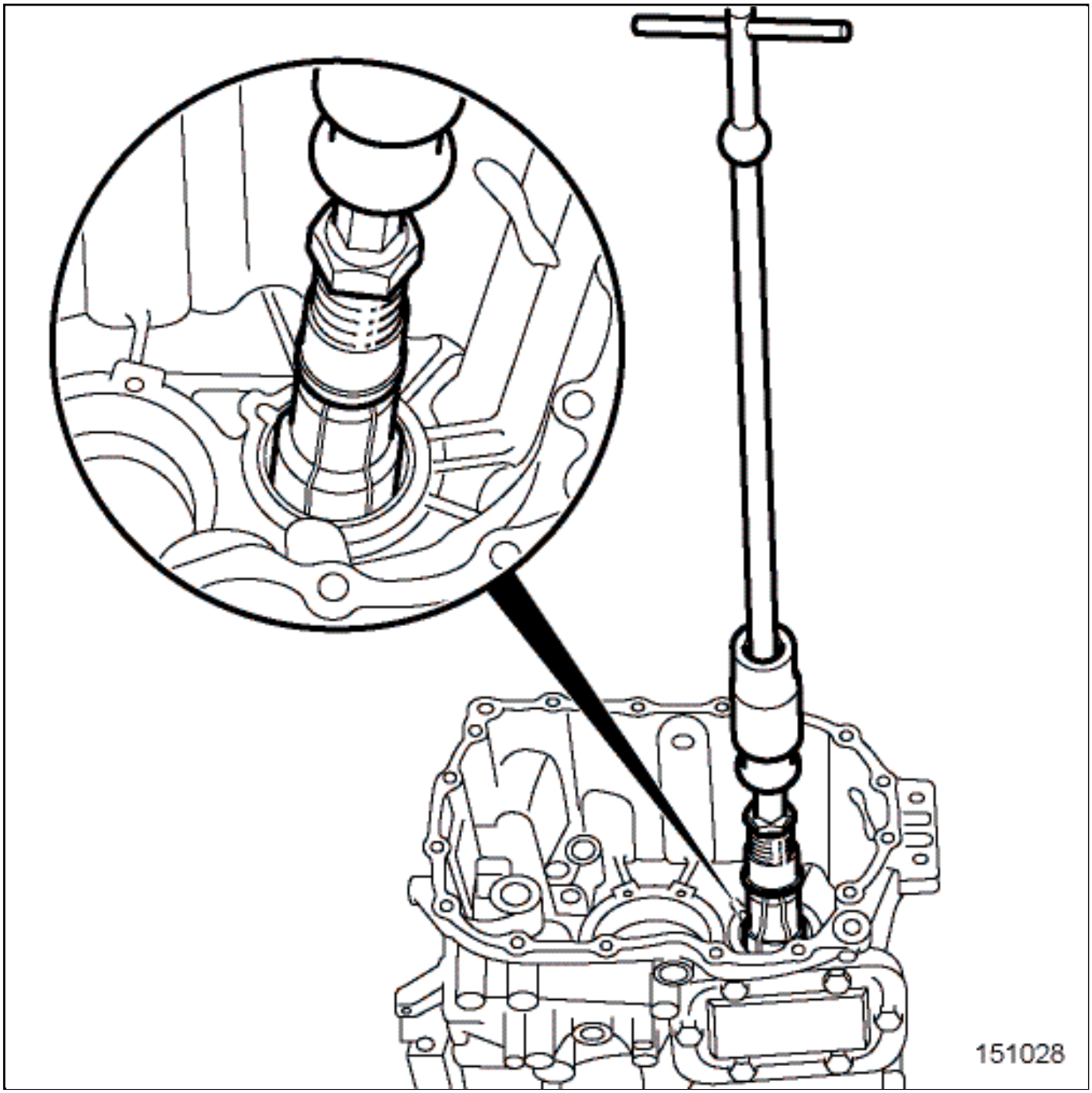


- Remove the ball bearings(3) Gearbox assembly: Exploded view .

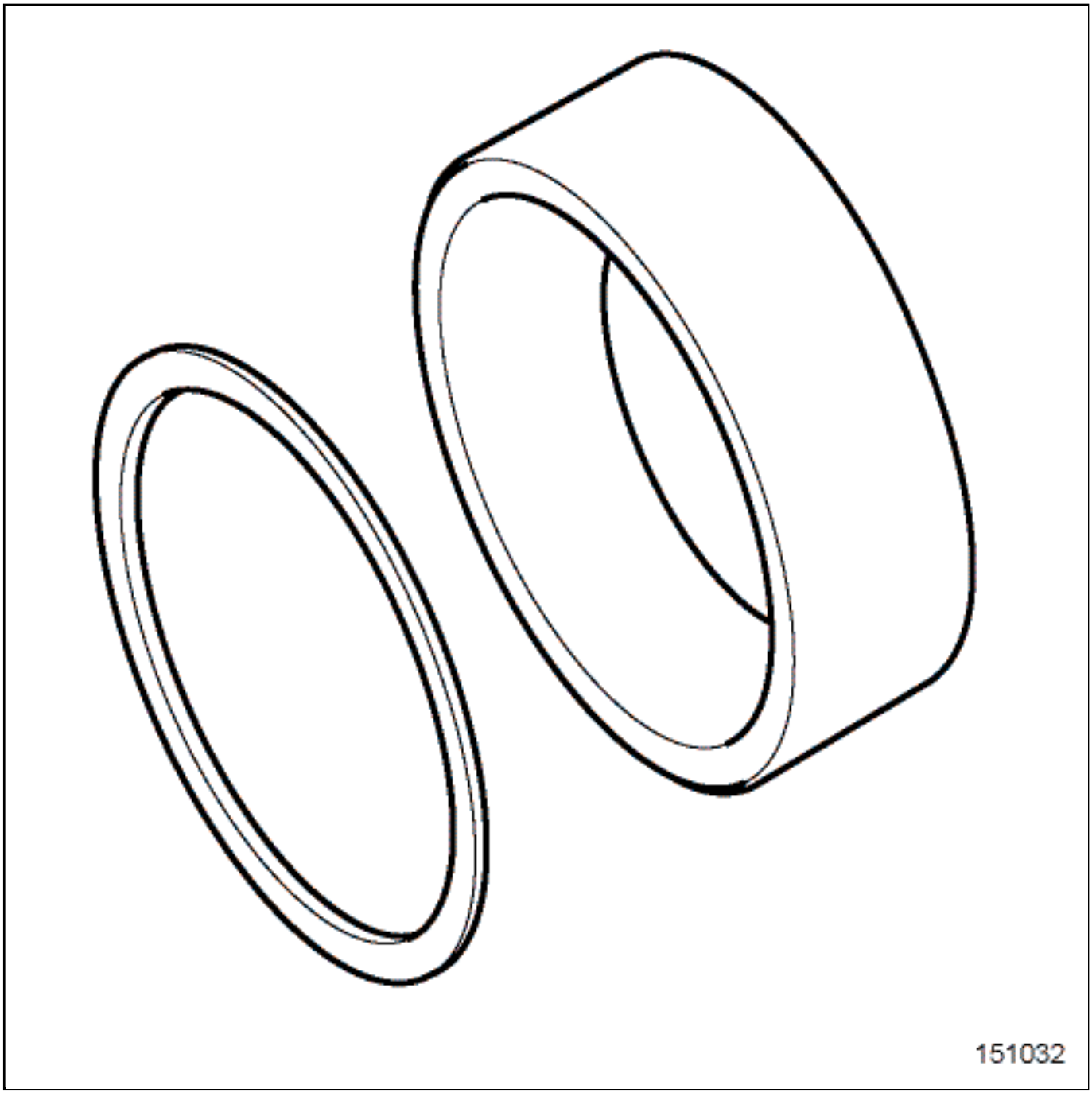
IF NECESSARY



- Remove the needle bearings(4) Gearbox assembly: Exploded view .



Remove the outer bush of the output shaft bearing on the clutch housing(5) Gearbox assembly: Exploded view .



Remove the compensating washer(6) Gearbox assembly: Exploded view .

REFITTING

1. REFITTING PREPARATION OPERATION

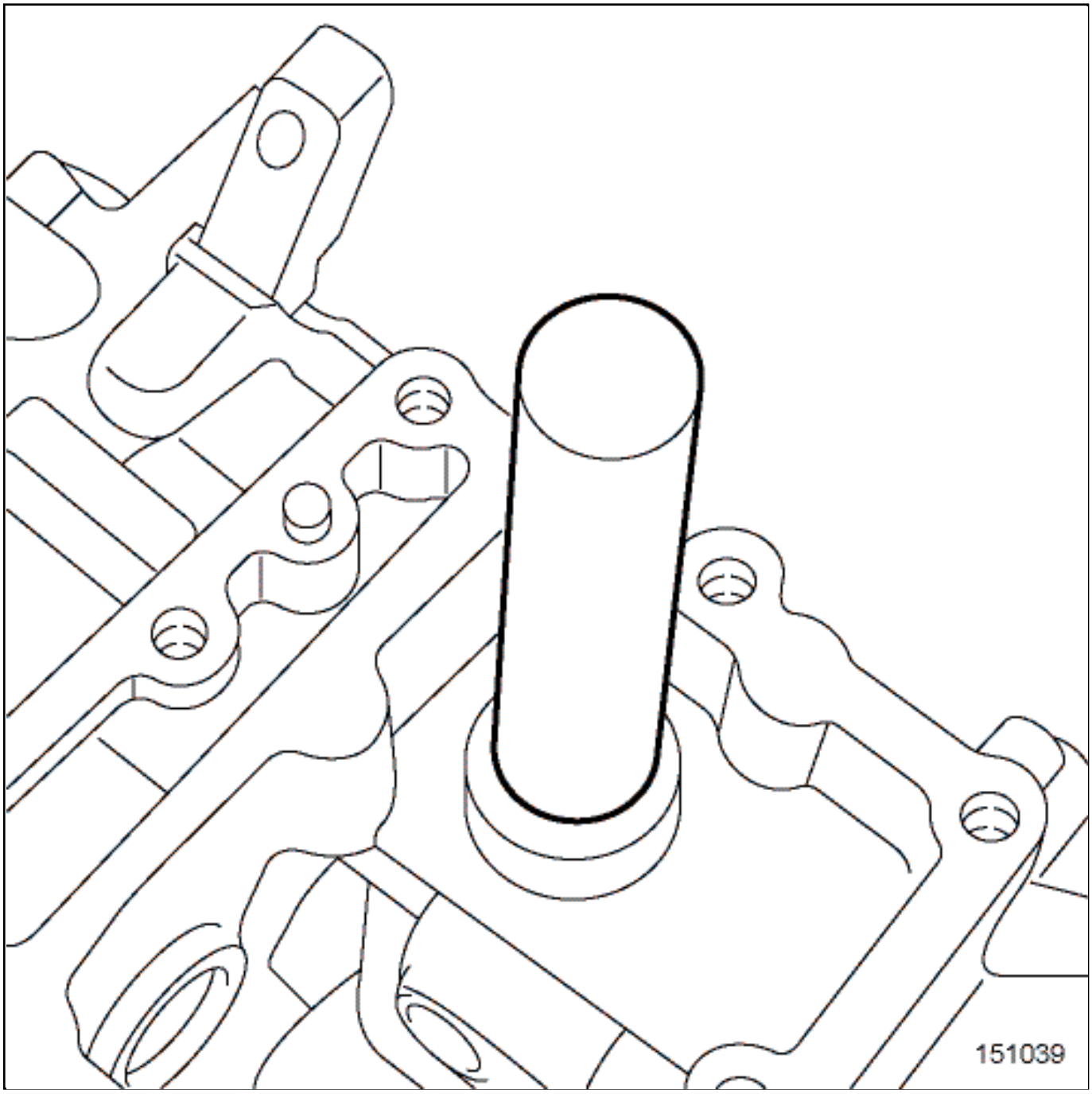
Clean all the removed parts**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

Always replace:

- the stops bolts,
- the needle bearings,
- the ball bearings.

2. REFITTING OPERATION

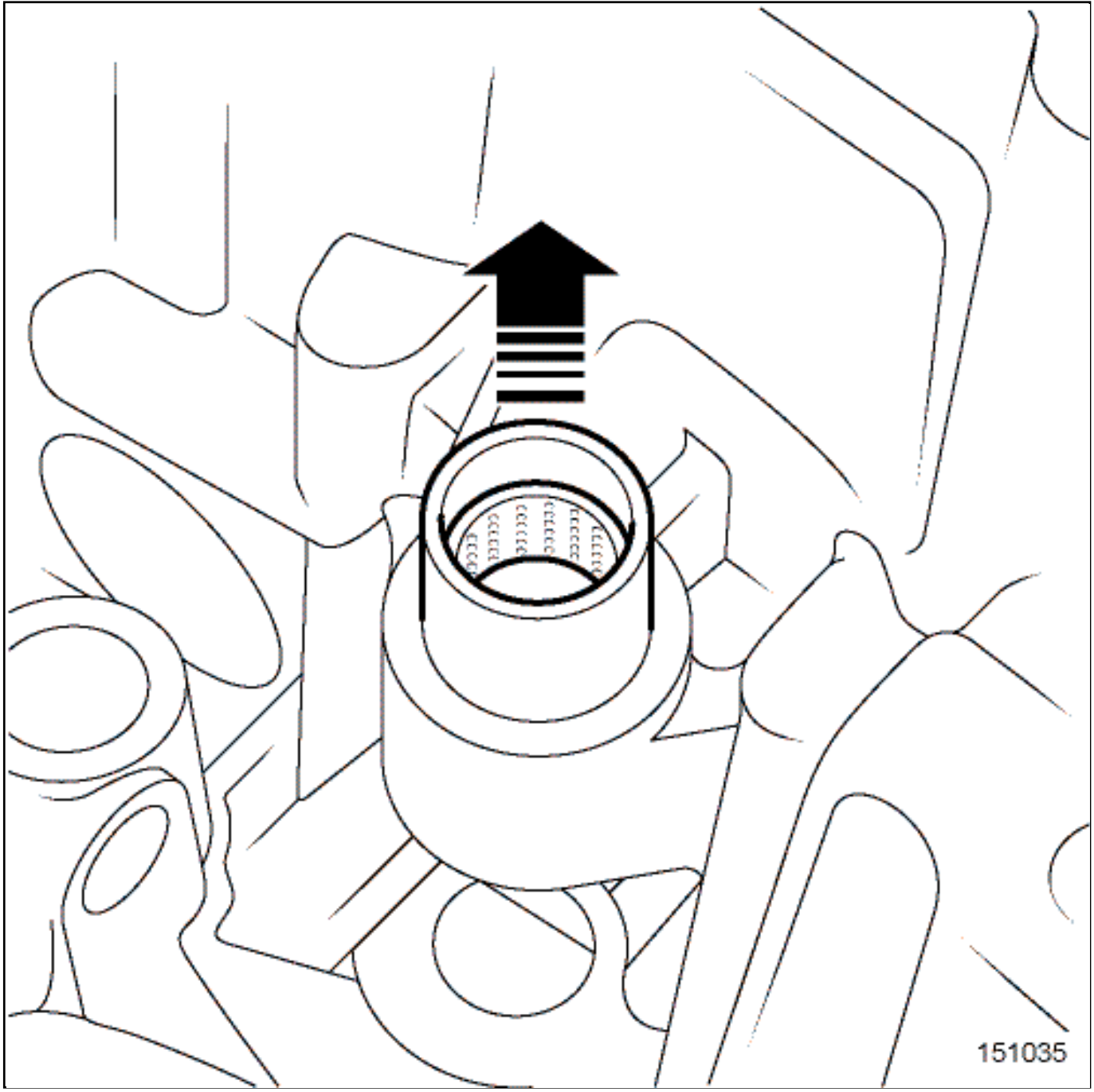
IF REPLACING THE CLUTCH HOUSING

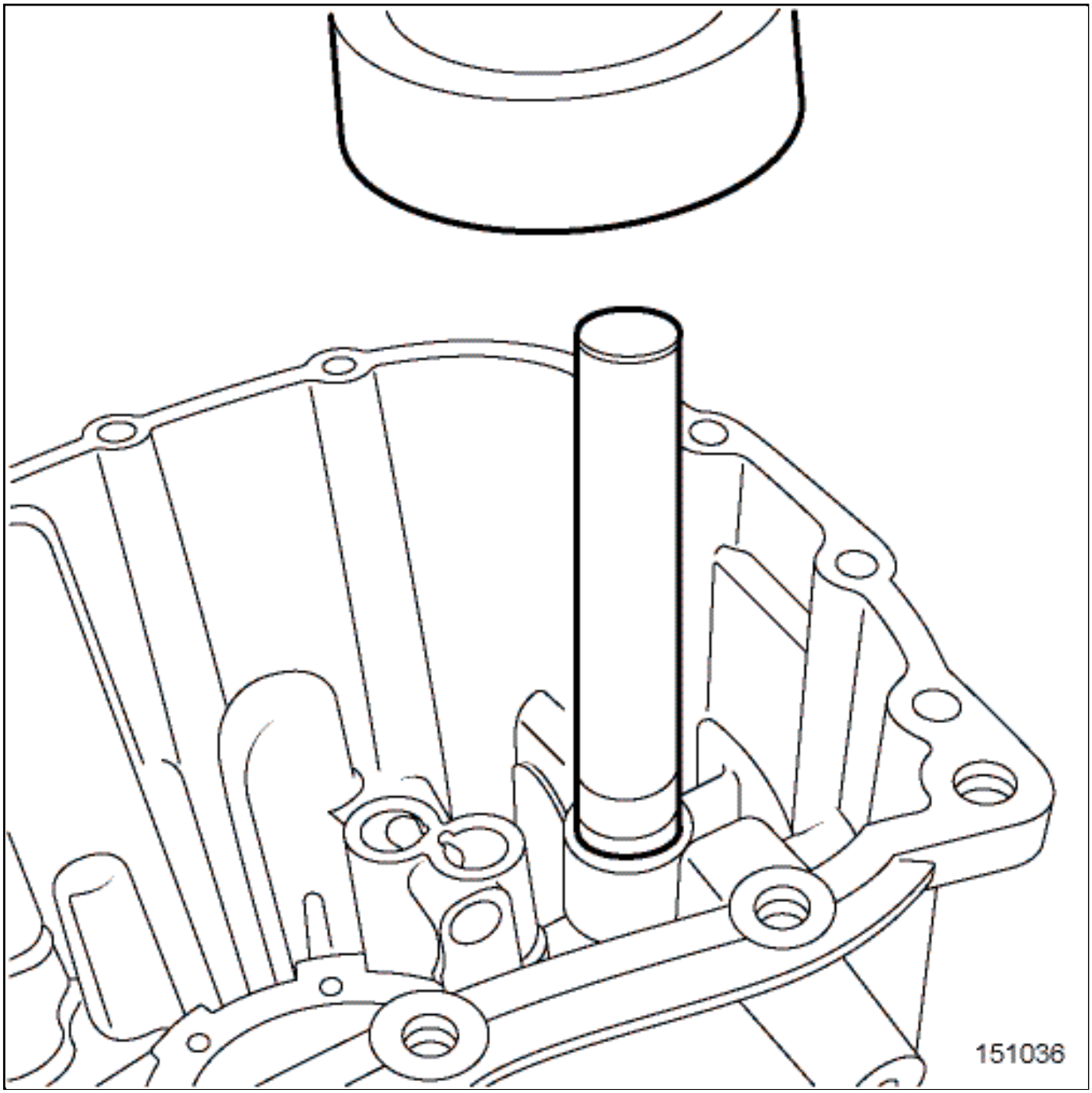


Fit the needle bearings using toolZF4 gearbox internal renovation kit(Bvi. 1950) F (7) Gearbox assembly: Exploded view .

Note:

The faces of the needle bearing respectively, with the writing on them, must be facing the push rod.

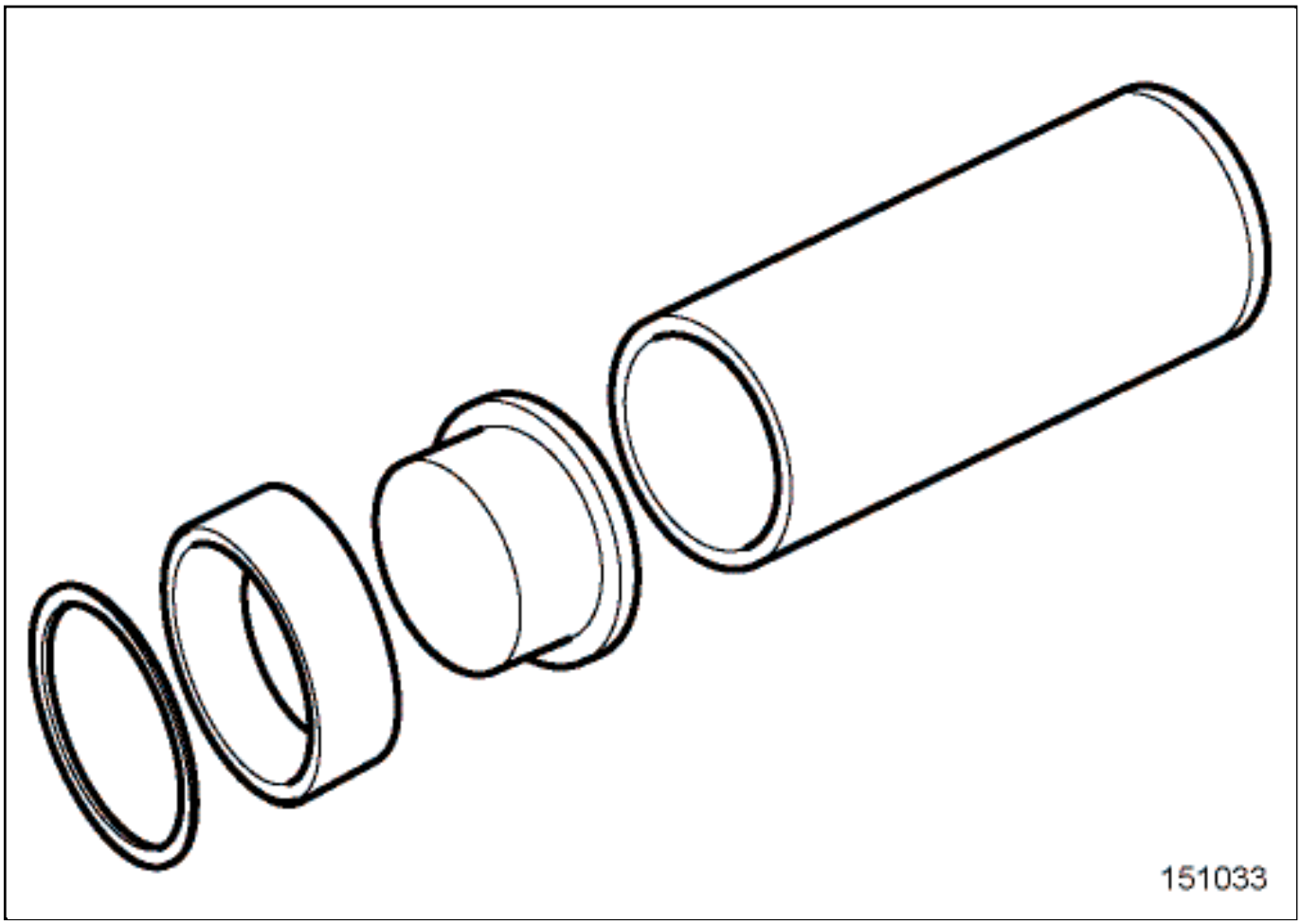

151035

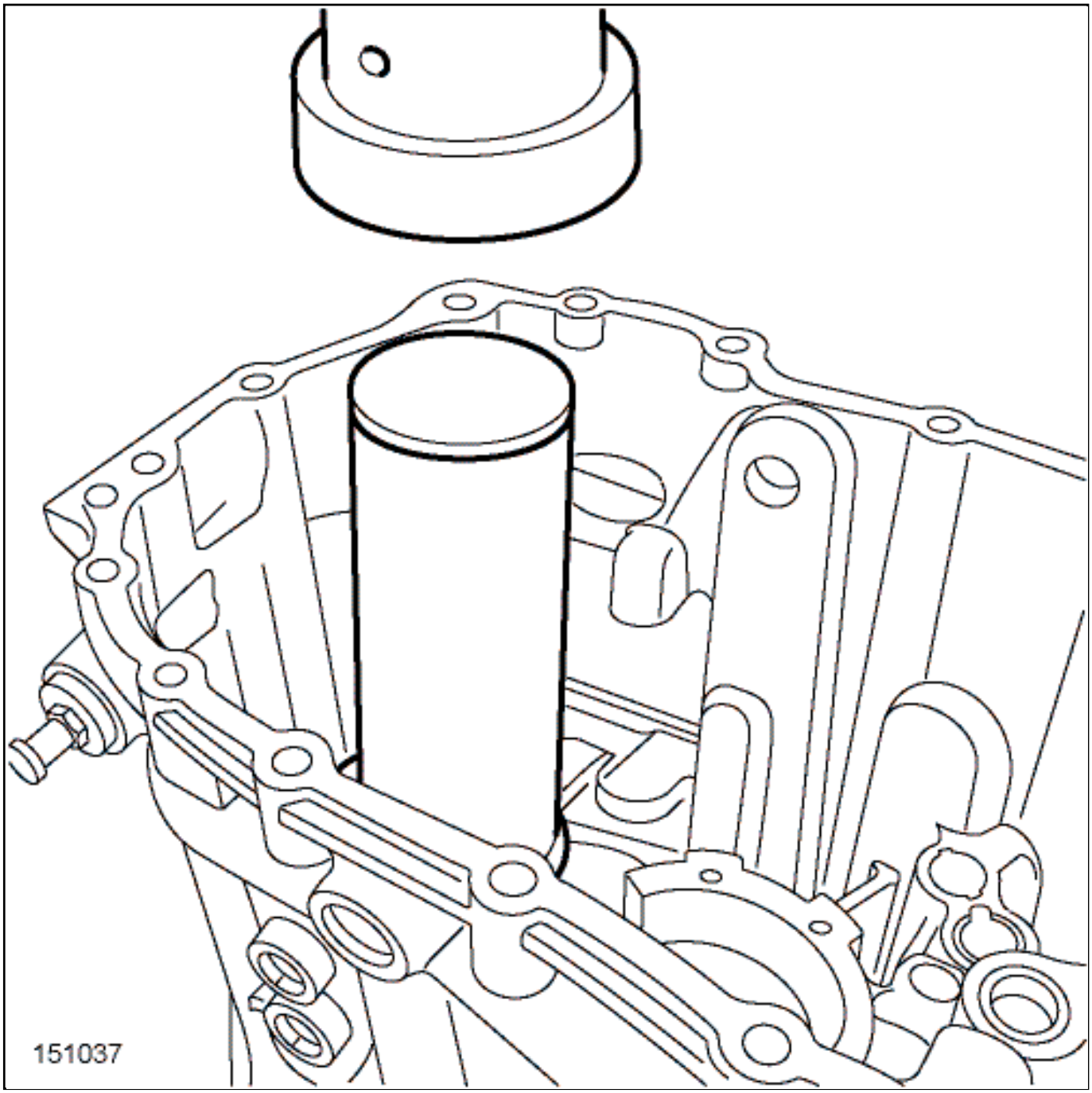


Fit the ball bearings using toolZF4 gearbox internal renovation kit(Bvi. 1950) F (9) Gearbox assembly: Exploded view .

Note:

The faces of the ball bearing respectively, with the writing on them, must be facing the push rod (8) .


151033

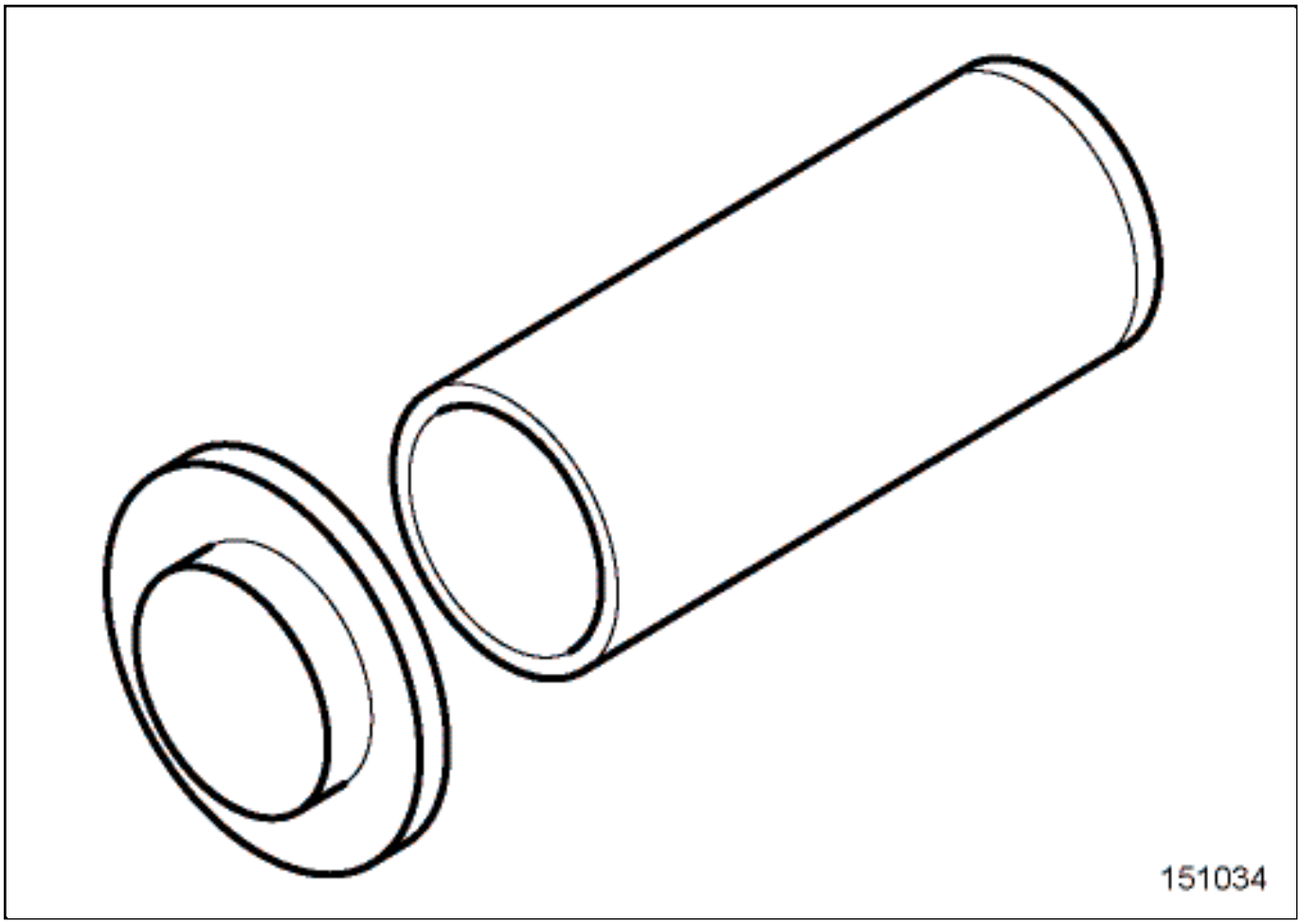


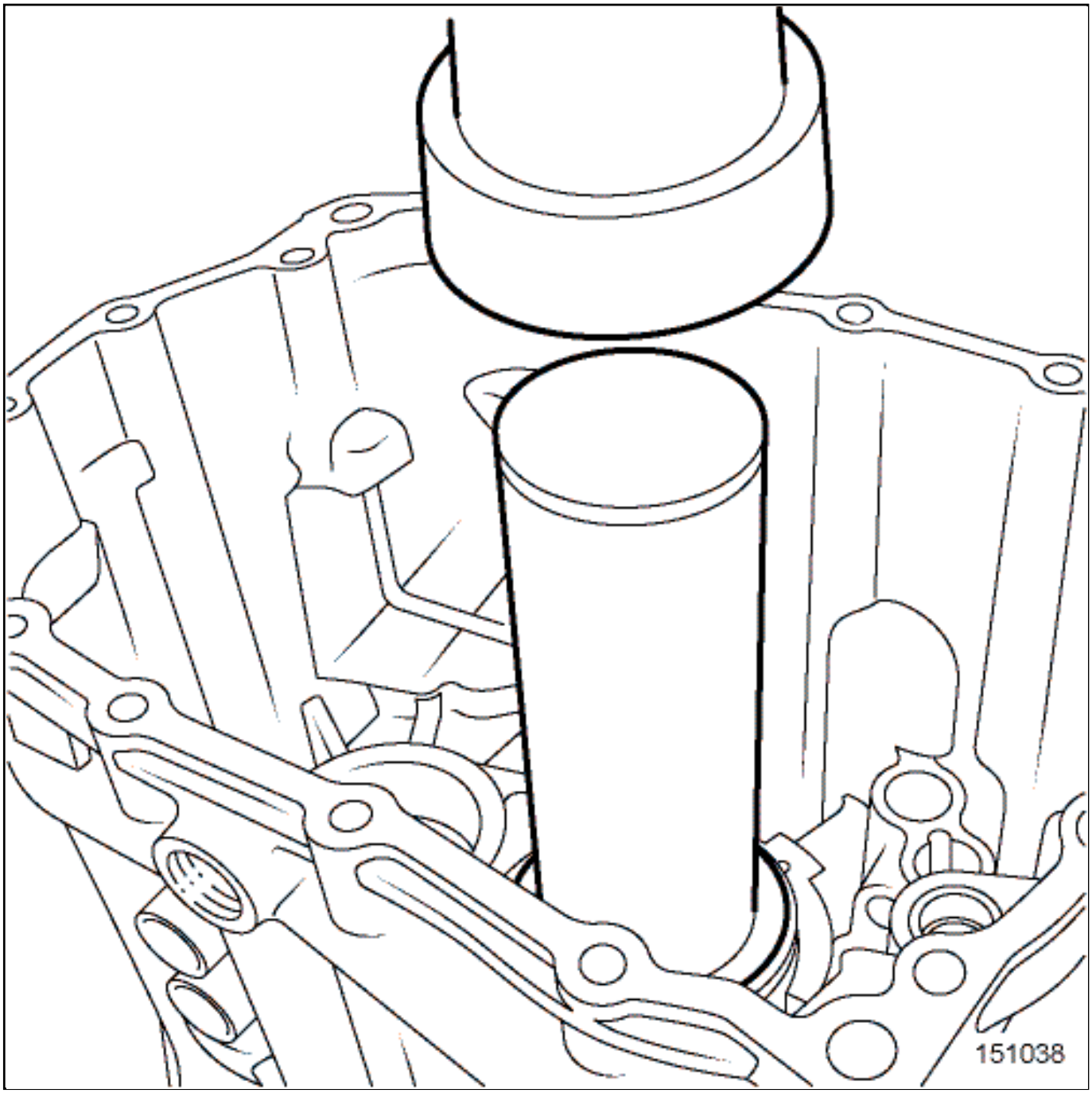
Refit **Gearbox assembly: Exploded view** :

- the compensating washer,
- the outer bush of the output shaft bearing on the clutch housing using toolZF4 gearbox internal renovation kit (**Bvi. 1950**) (**D**) + (**C**) (**10**) .

Note:

Determine the thickness of the compensating washer(see **Shafts and synchronisers: Adjustment**) .





Refit Gearbox assembly: Exploded view :

- the ball bearing using toolZF4 gearbox internal renovation kit(Bvi. 1950) (D) + (B) (11) ,
- the stops with new bolts.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Repair-12x01x04x14-01x37-1-21-1.xml

XSL version : 3.02 du 22/07/11

CLUTCH HOUSING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Inertia seal extractor	Bvi. 1948
Tool for fitting the ZF4 primary shaft seal	Bvi. 1947
Washer of compensation for installation primary shaft seal.	Bvi. 1985

Equipment required
component support

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 21A, Manual gearbox , Manual gearbox: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove the manual gearboxGearbox assembly: Exploded view .

Position the gearbox on the component support(see 21A, Manual gearbox , Gearbox support equipment: Use) .

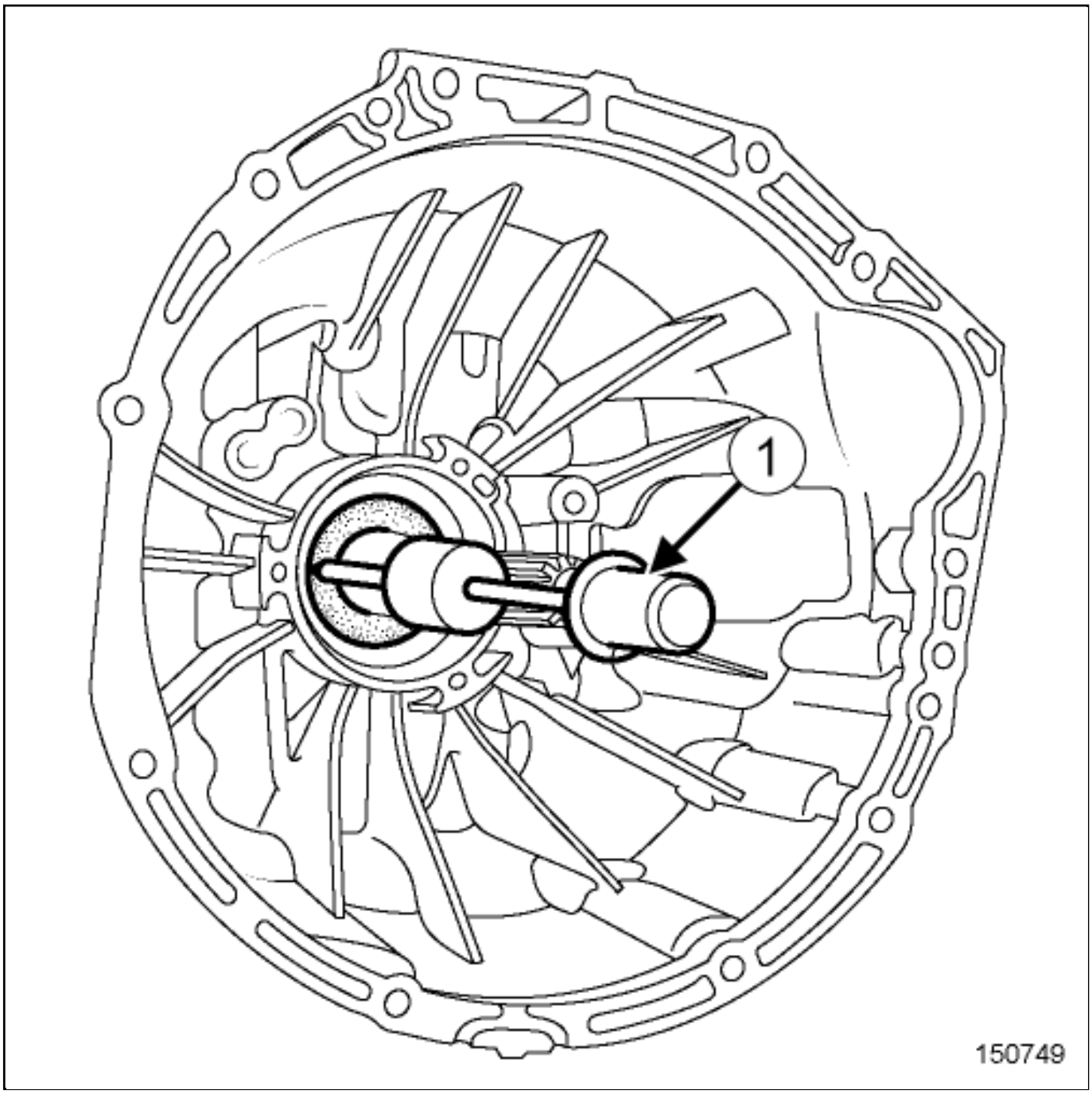
Remove:

- the gearshift plate (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) ,
- the reverse gear switch Gearbox assembly: Exploded view .

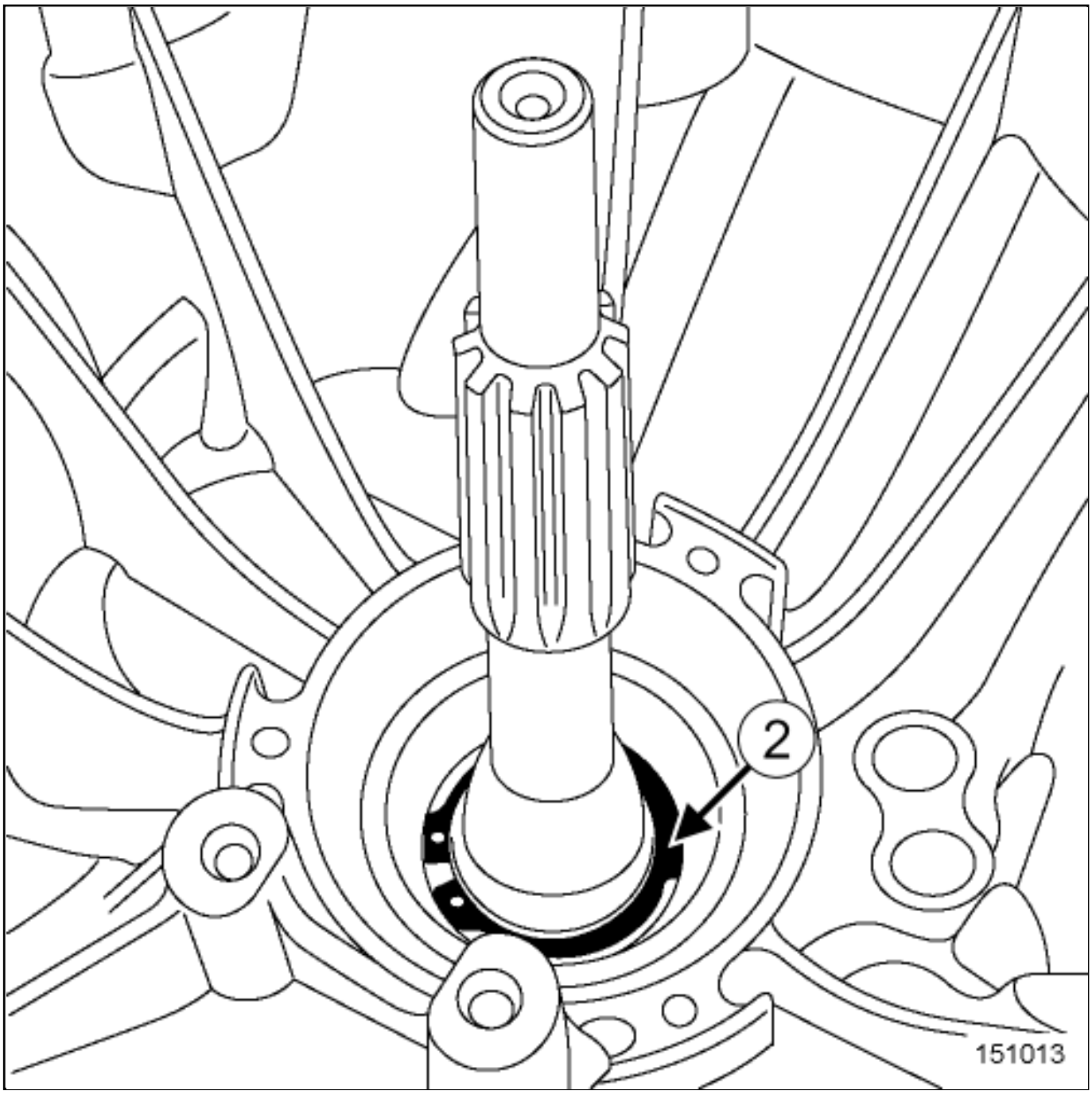
2. REMOVAL OPERATION

Remove:

- the clutch fork Clutch assembly: Exploded view ,
- the clutch thrust bearing Clutch assembly: Exploded view ,
- the clutch thrust bearing guide Gearbox assembly: Exploded view .

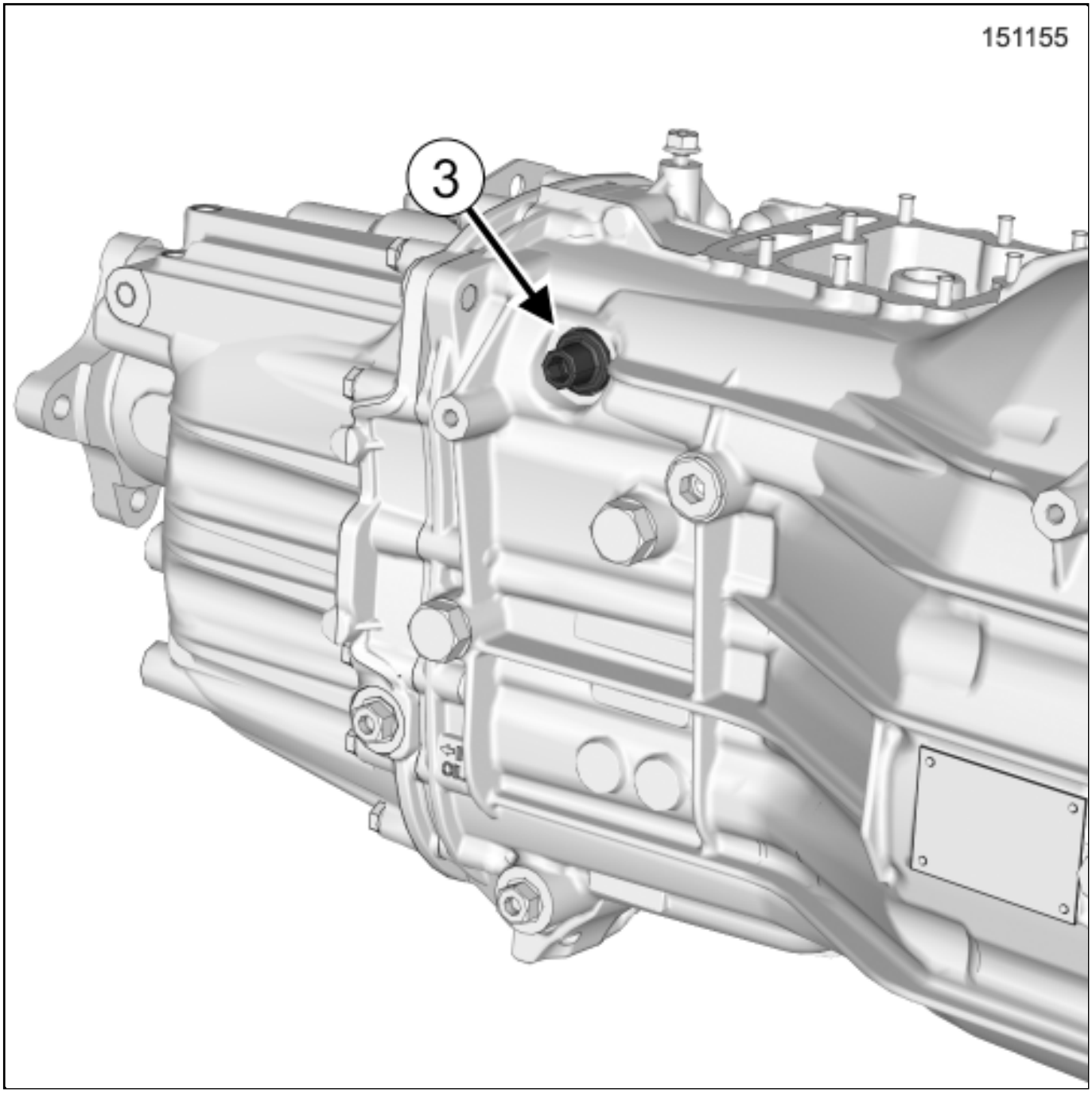


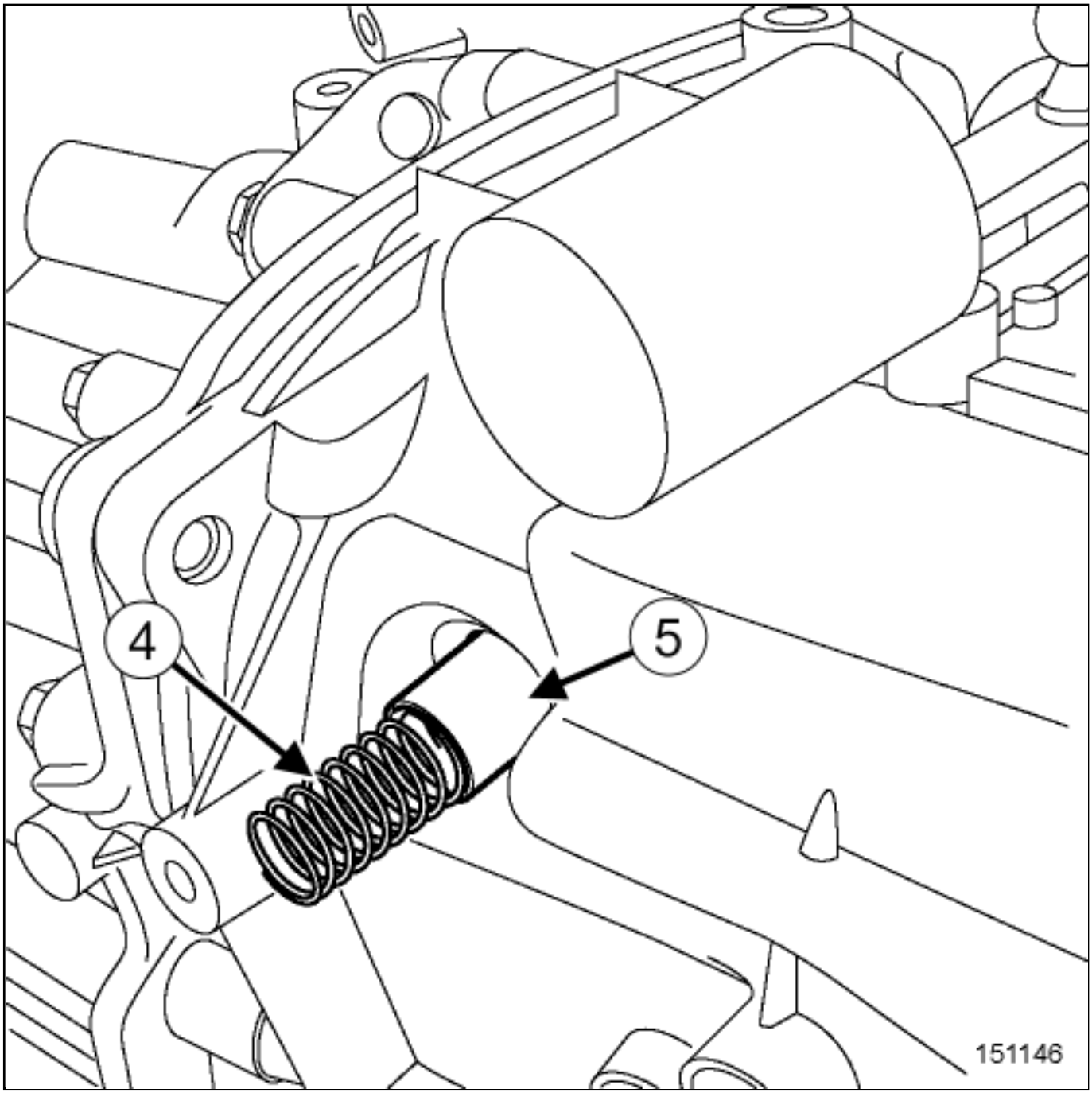
Remove the input shaft lip seal using the tool Inertia seal extractor (Bvi. 1948) (1) .



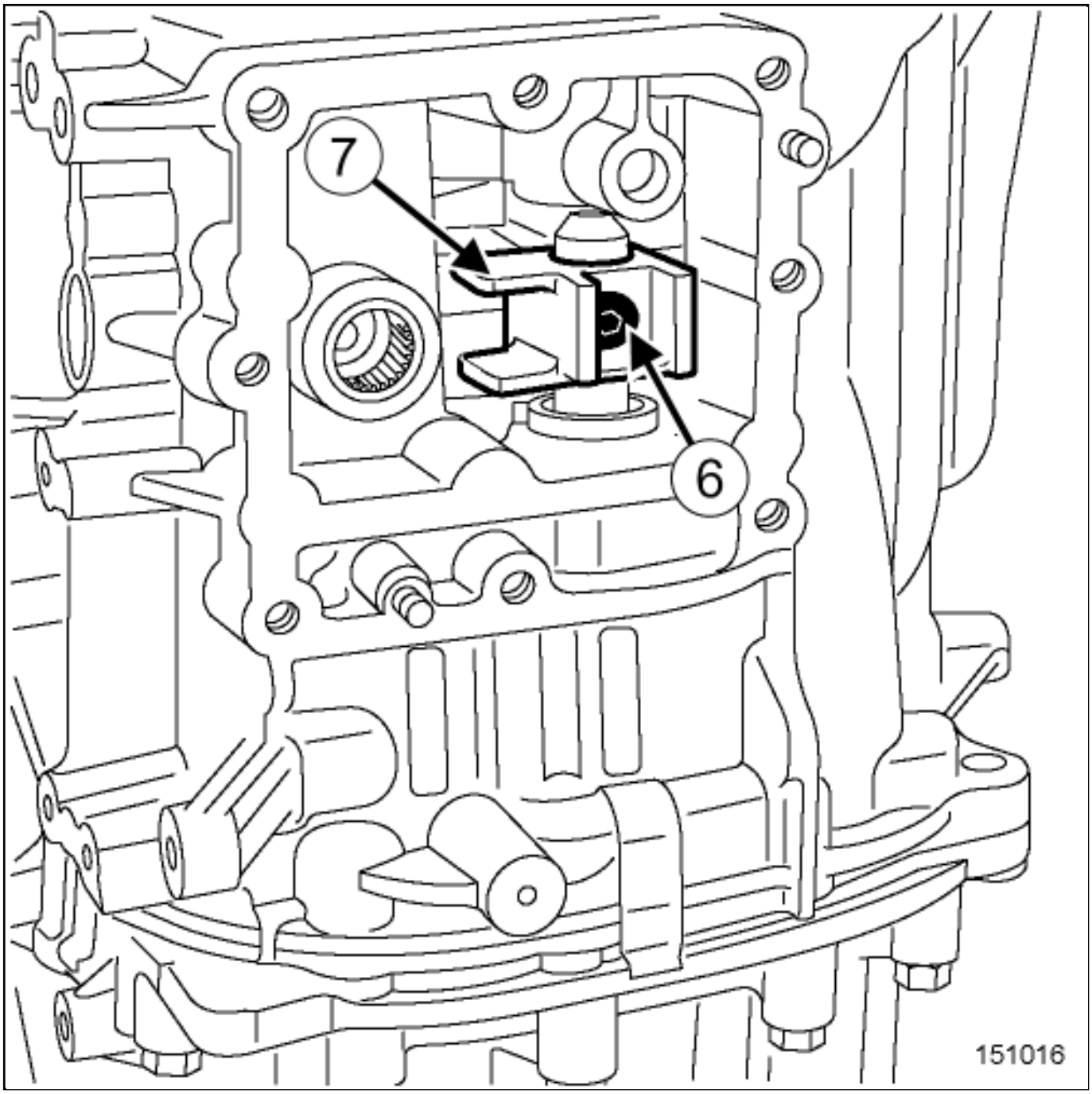
- Remove the clutch shaft stop ring(see 21A, Manual gearbox , Input shaft assembly: Exploded view) (2) .

- Put the gear control in neutral.


151155
3

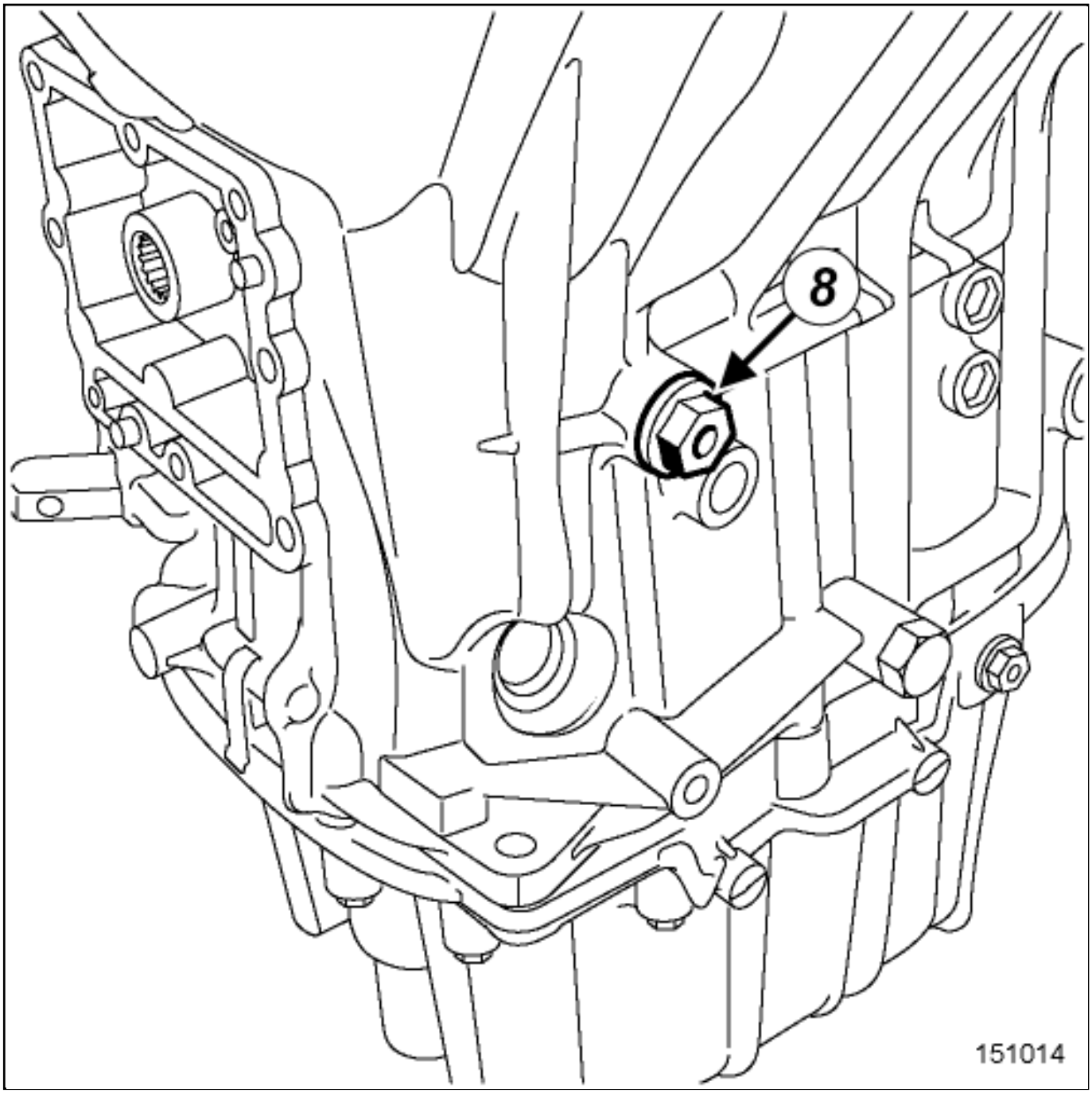


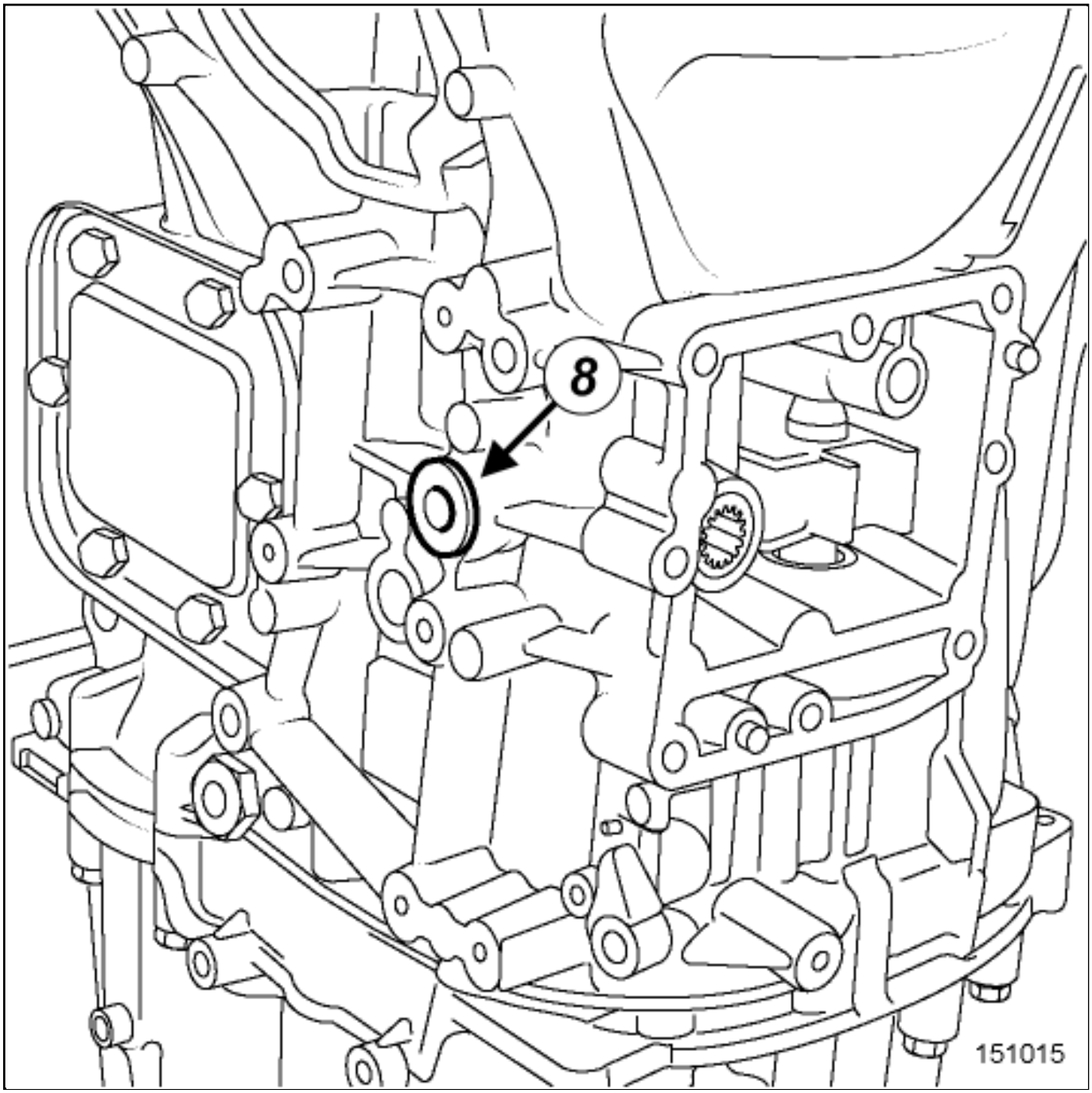
- Remove (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :
  - the control shaft locking plug(3) ,
  - the control shaft locking spring(4) ,
  - the control shaft locking finger(5) .



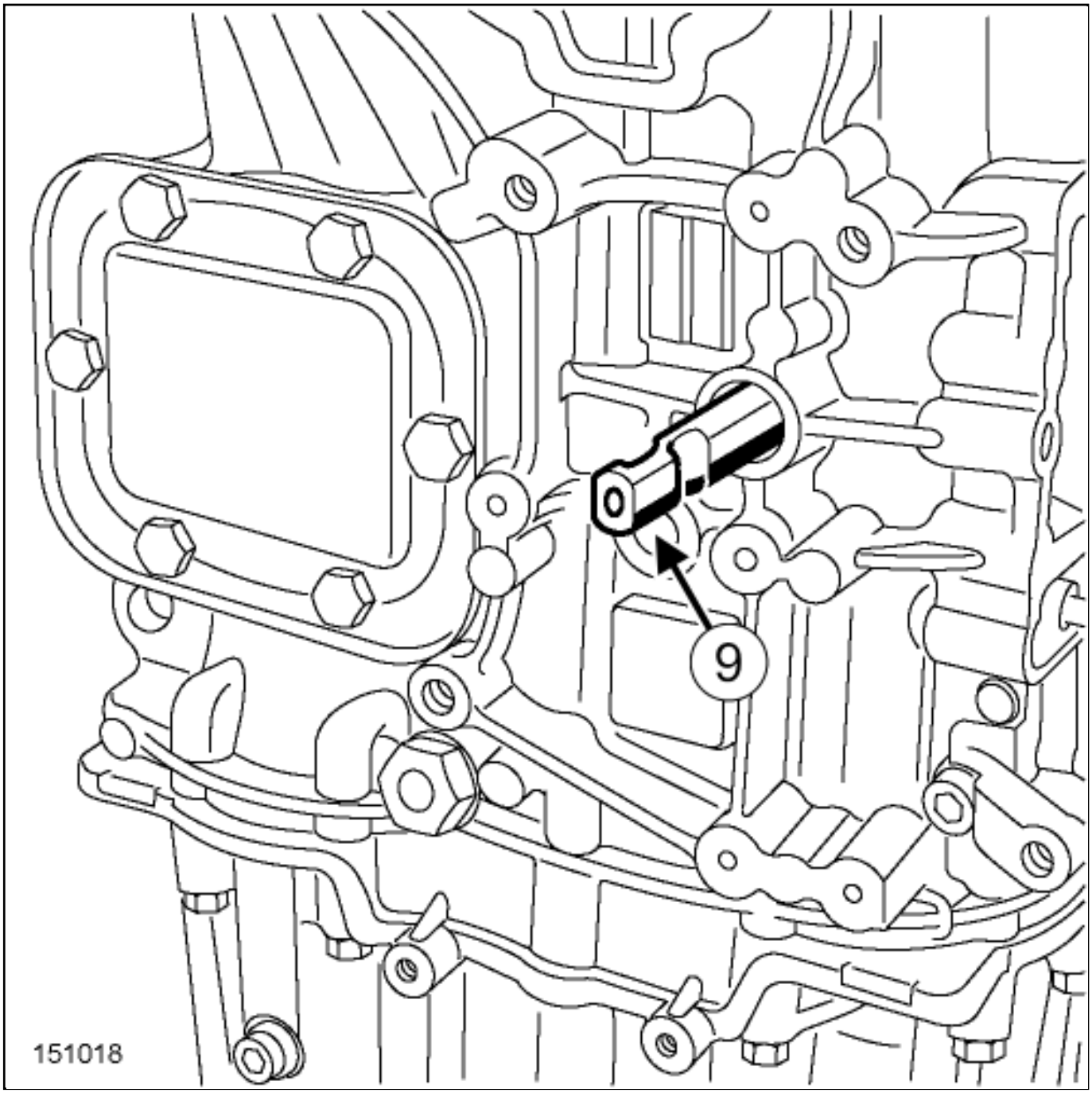
Remove (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :

- the control selector bolt(6) ,
- the control selector(7) .


8
151014



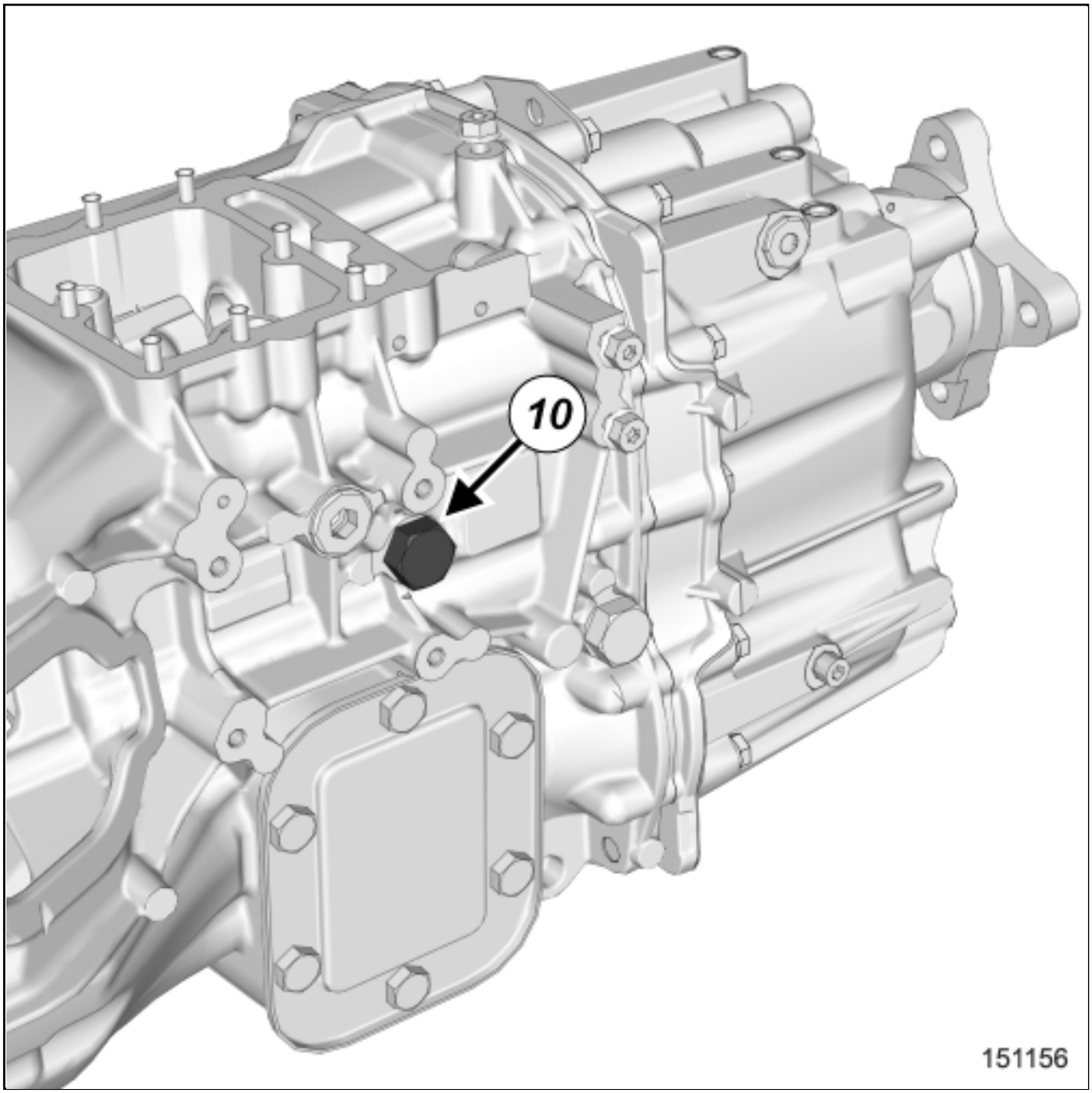
Remove the locking rod plugs(8) .

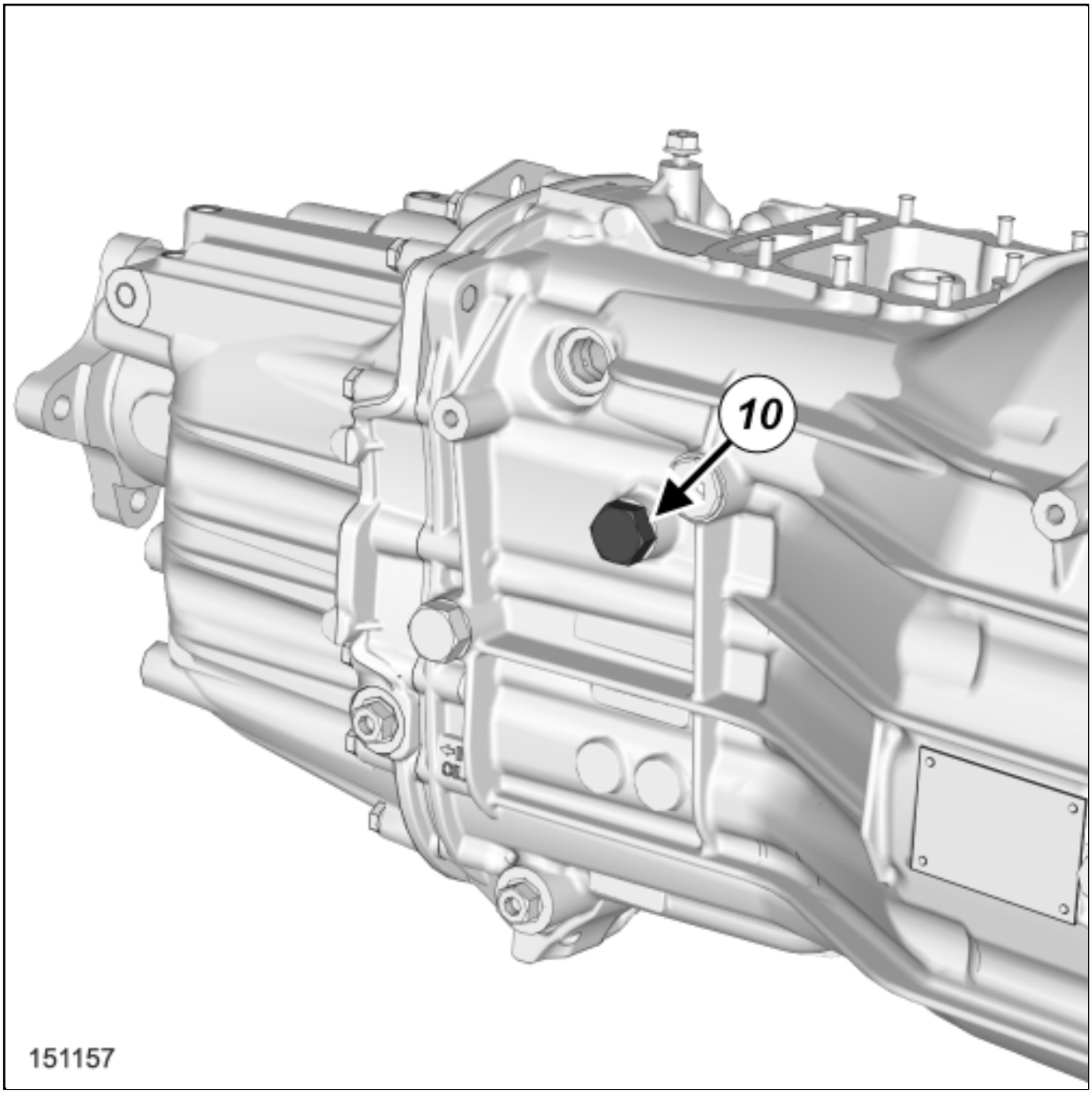


Remove the locking rod(9) .

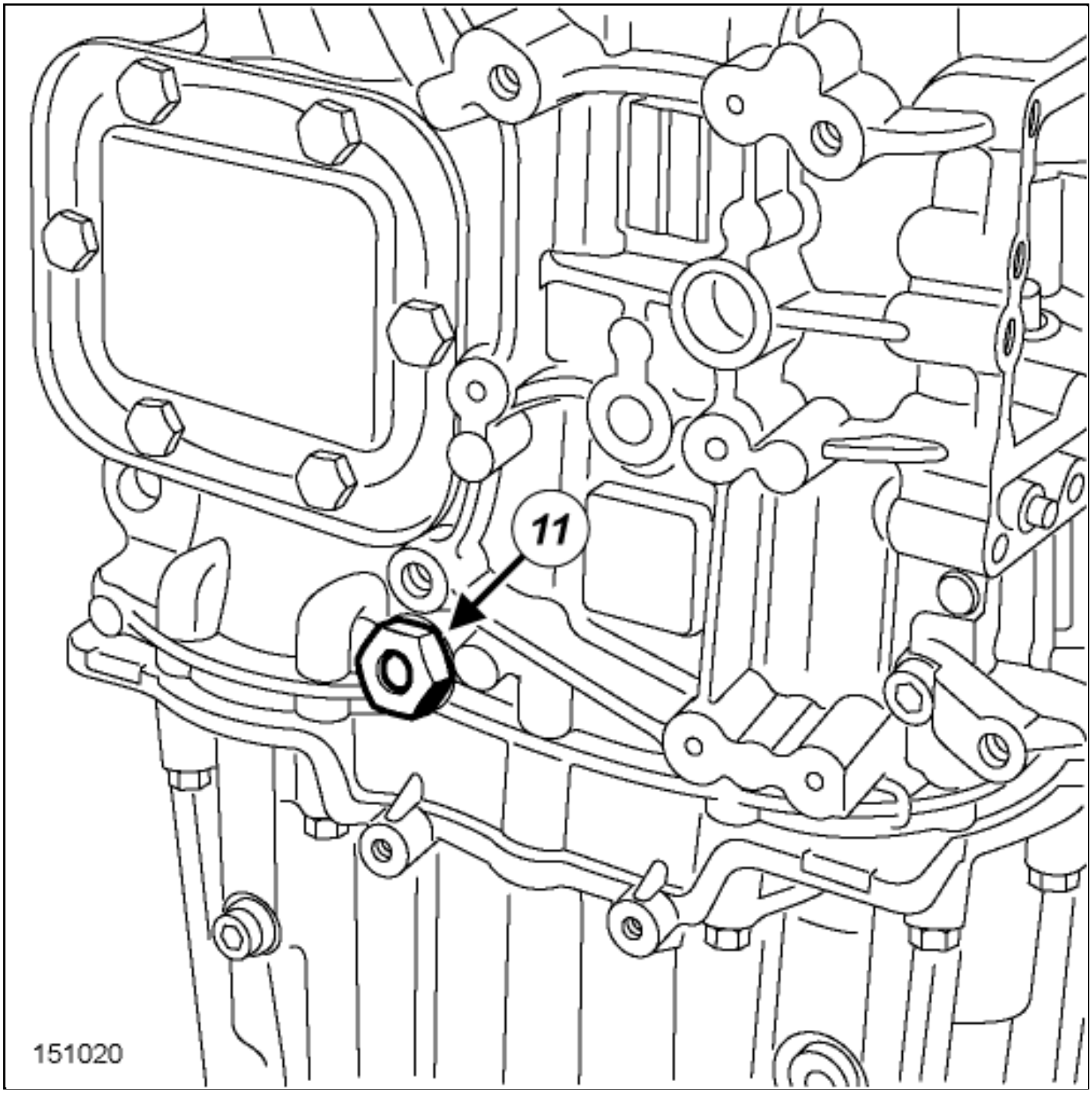
Note:

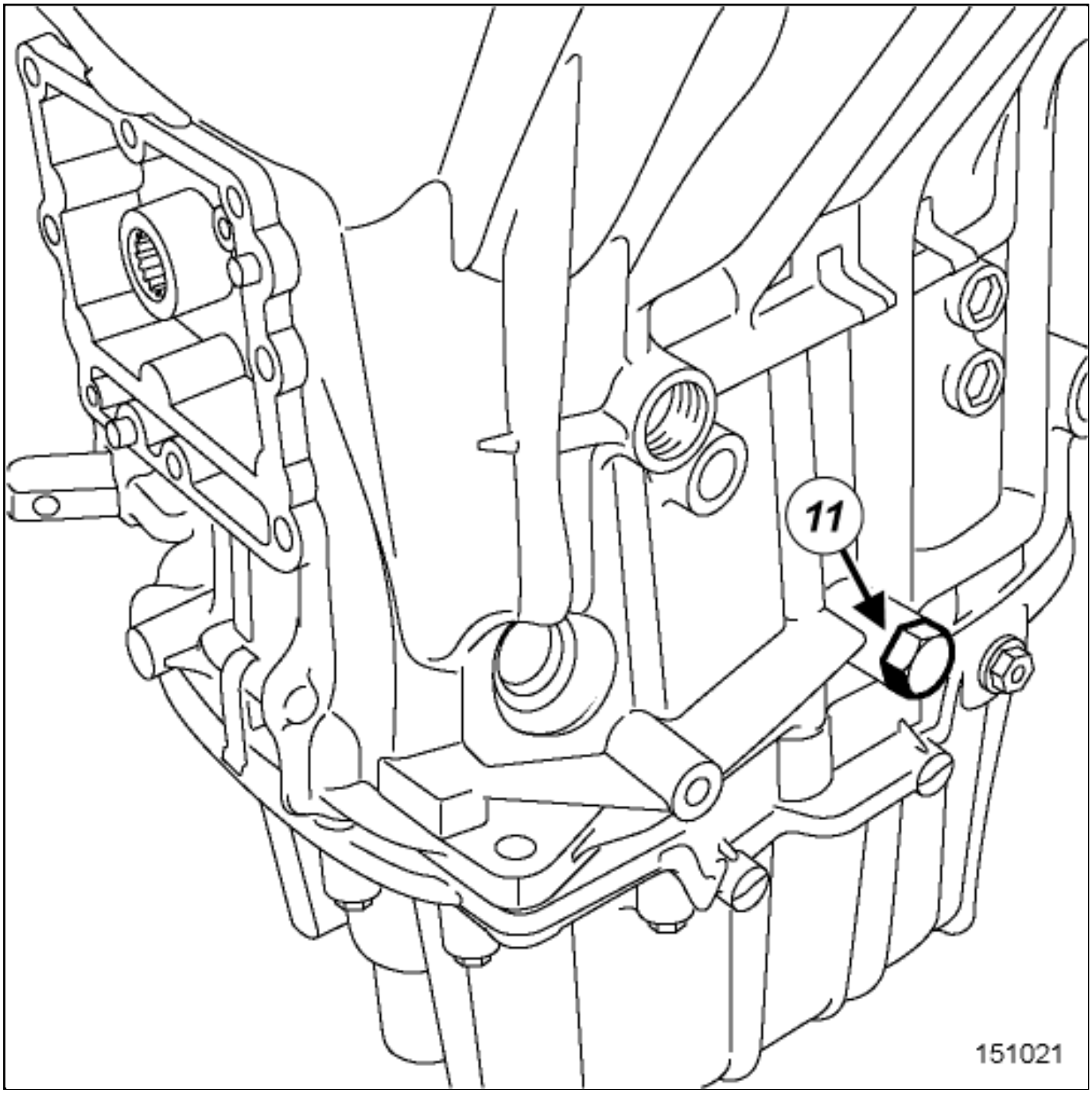
Mark the direction of fitting of the locking rod.


10
151156



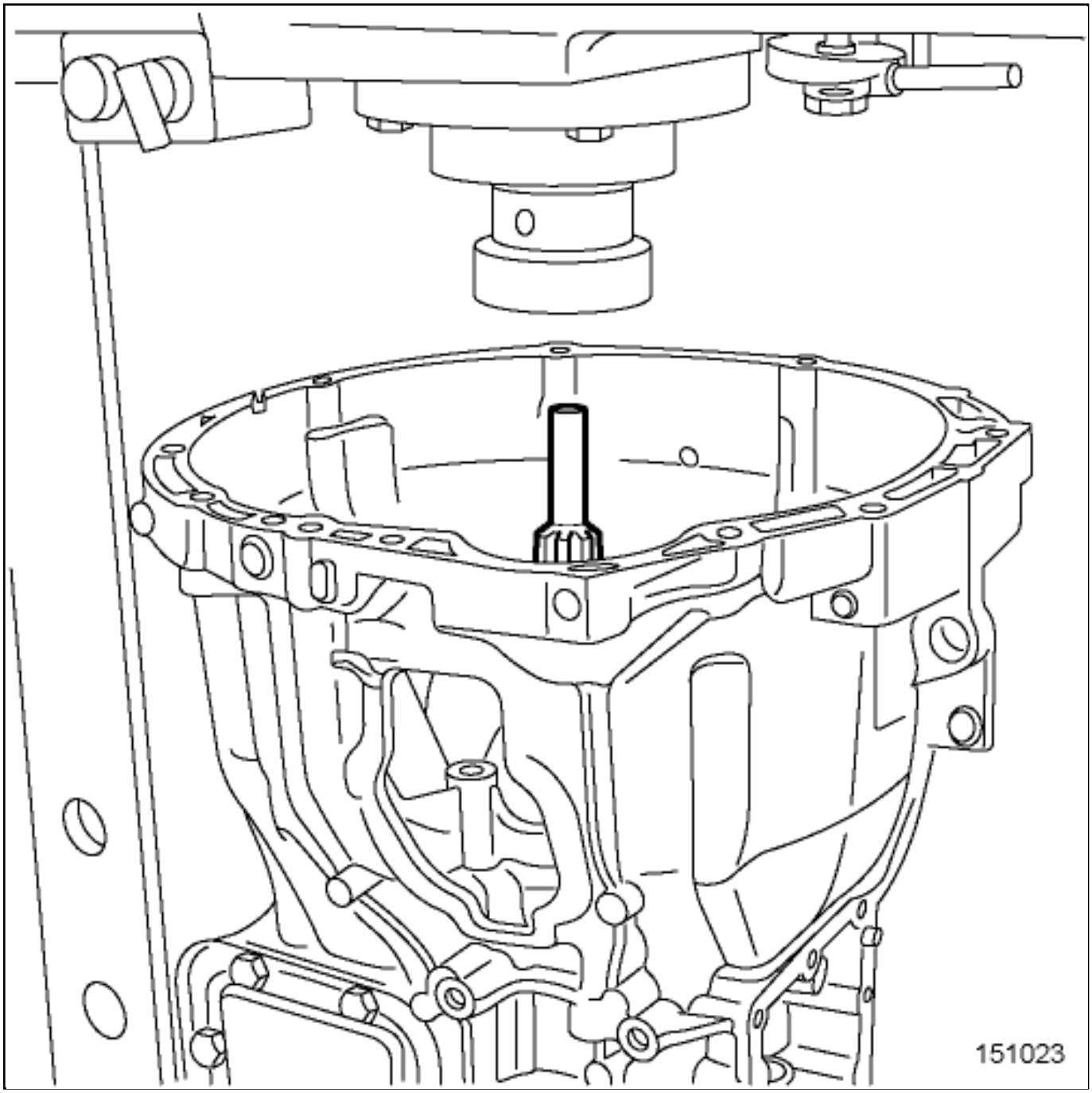
Remove the 5th and 6th fork retaining bolts(10) (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) .


11
151020



Remove the 3rd and 4th fork retaining bolts(11) (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) .

Remove Gearbox assembly: Exploded view the clutch housing.



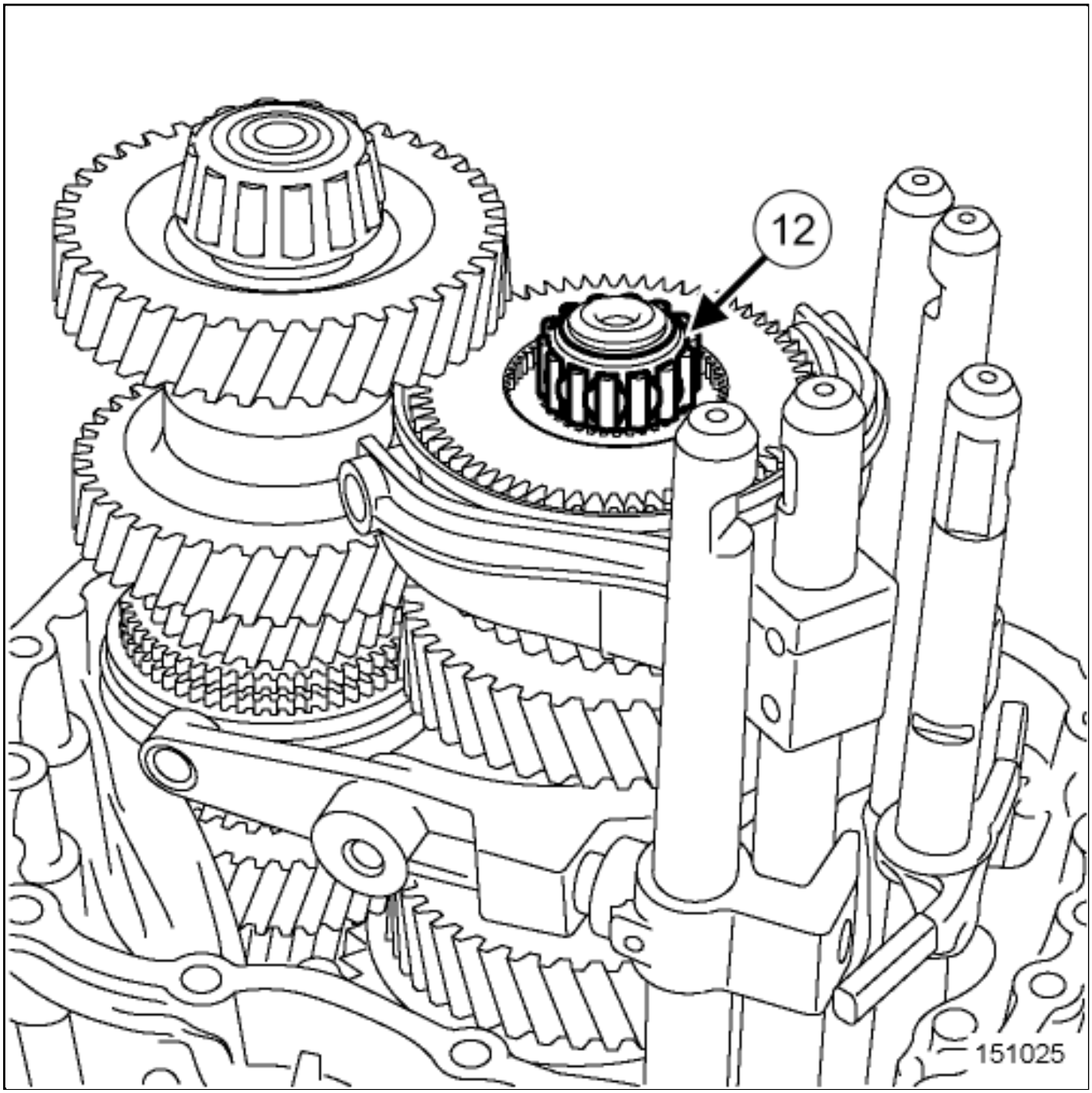
Remove the clutch shaft(see 21A, Manual gearbox , Input shaft assembly: Exploded view) using a hydraulic press.

REFITTING

1. REFITTING PREPARATION OPERATION

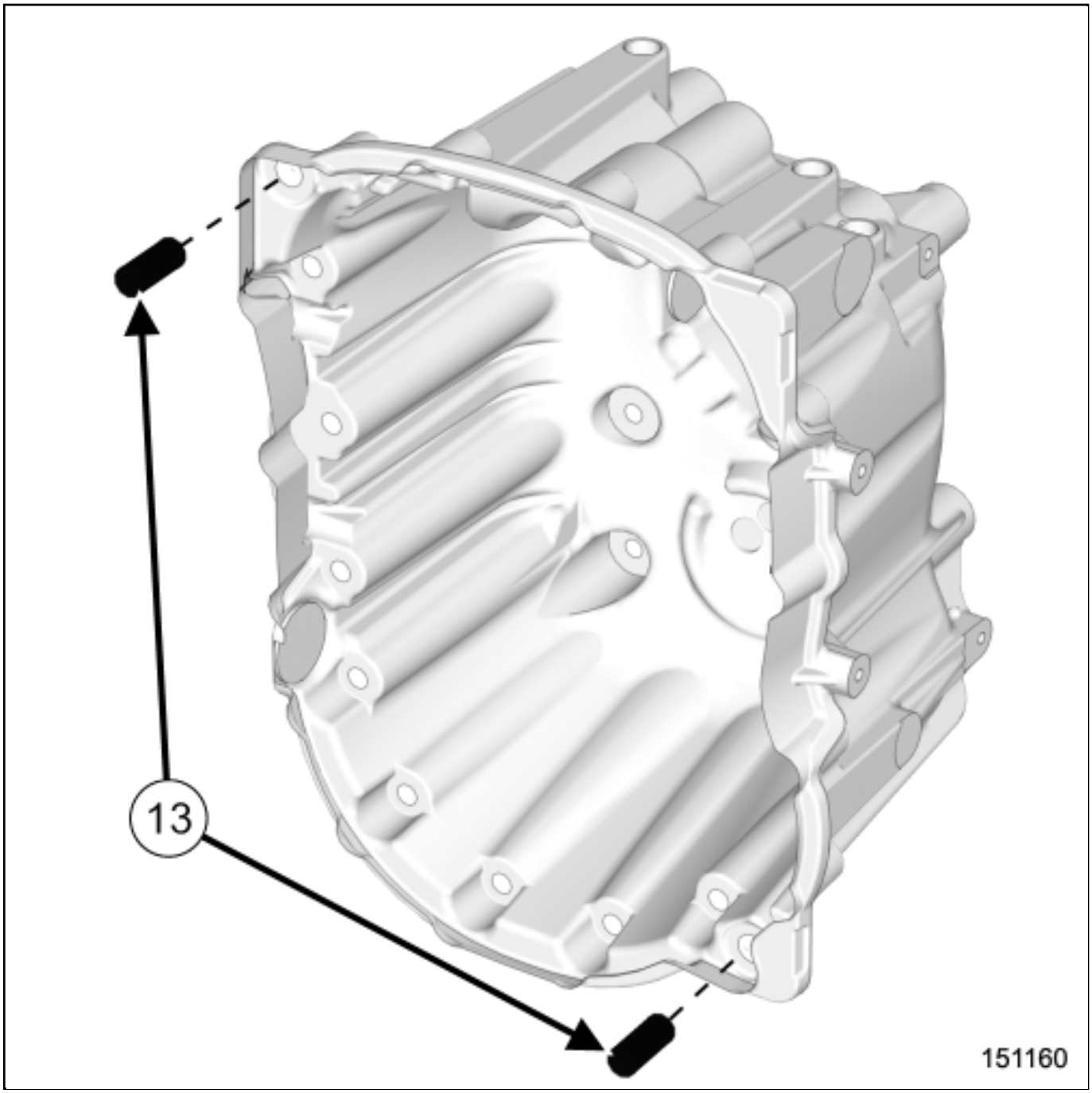
Clean all the removed parts[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products).

2. REFITTING OPERATION

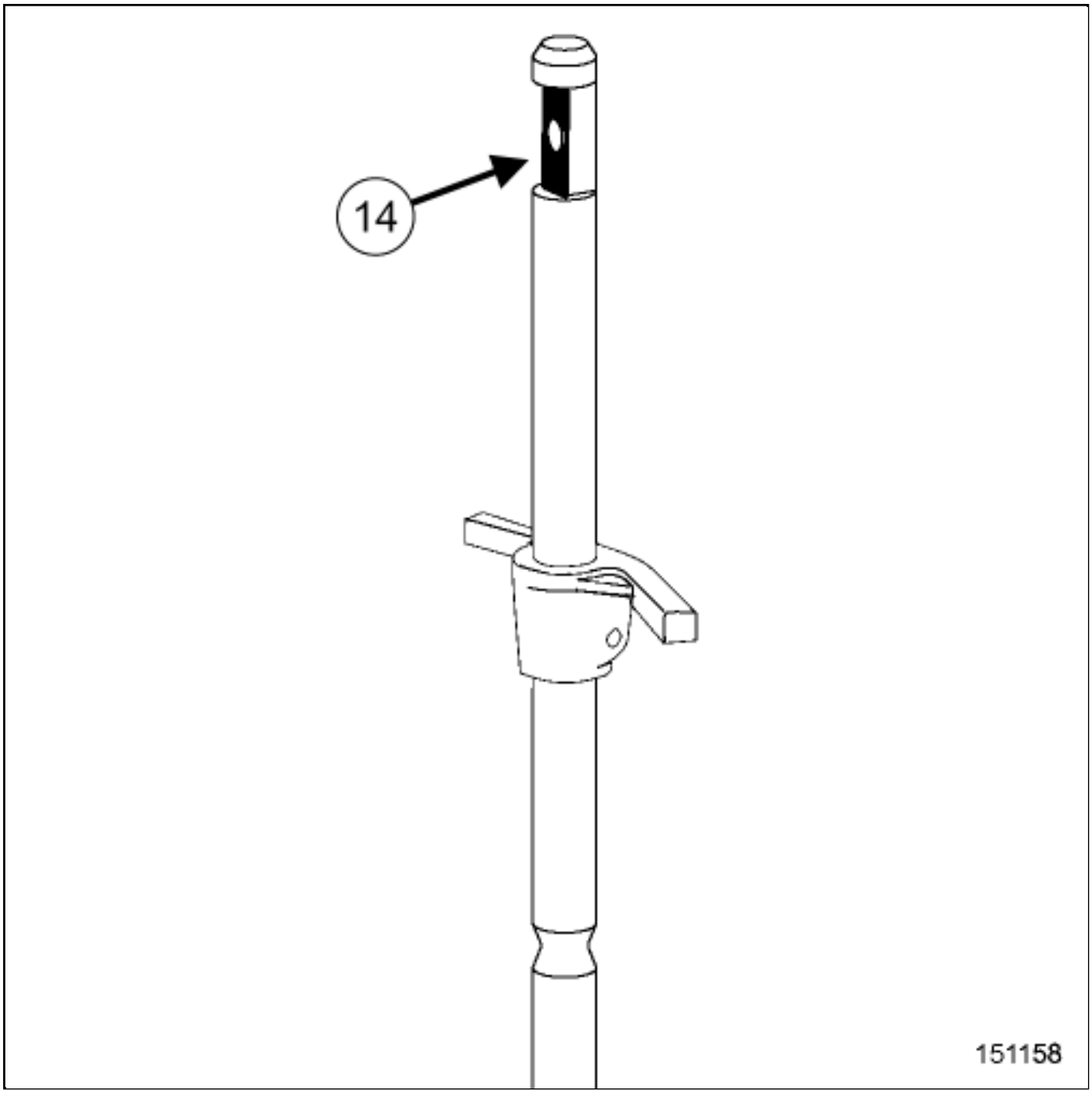


Note:

To facilitate the fitting of the clutch housing, grease the rollers of the cylindrical bearing roller (12) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) to fit them inside the cylindrical roller bearing.



Check that the centring dowelsare in place(13) .

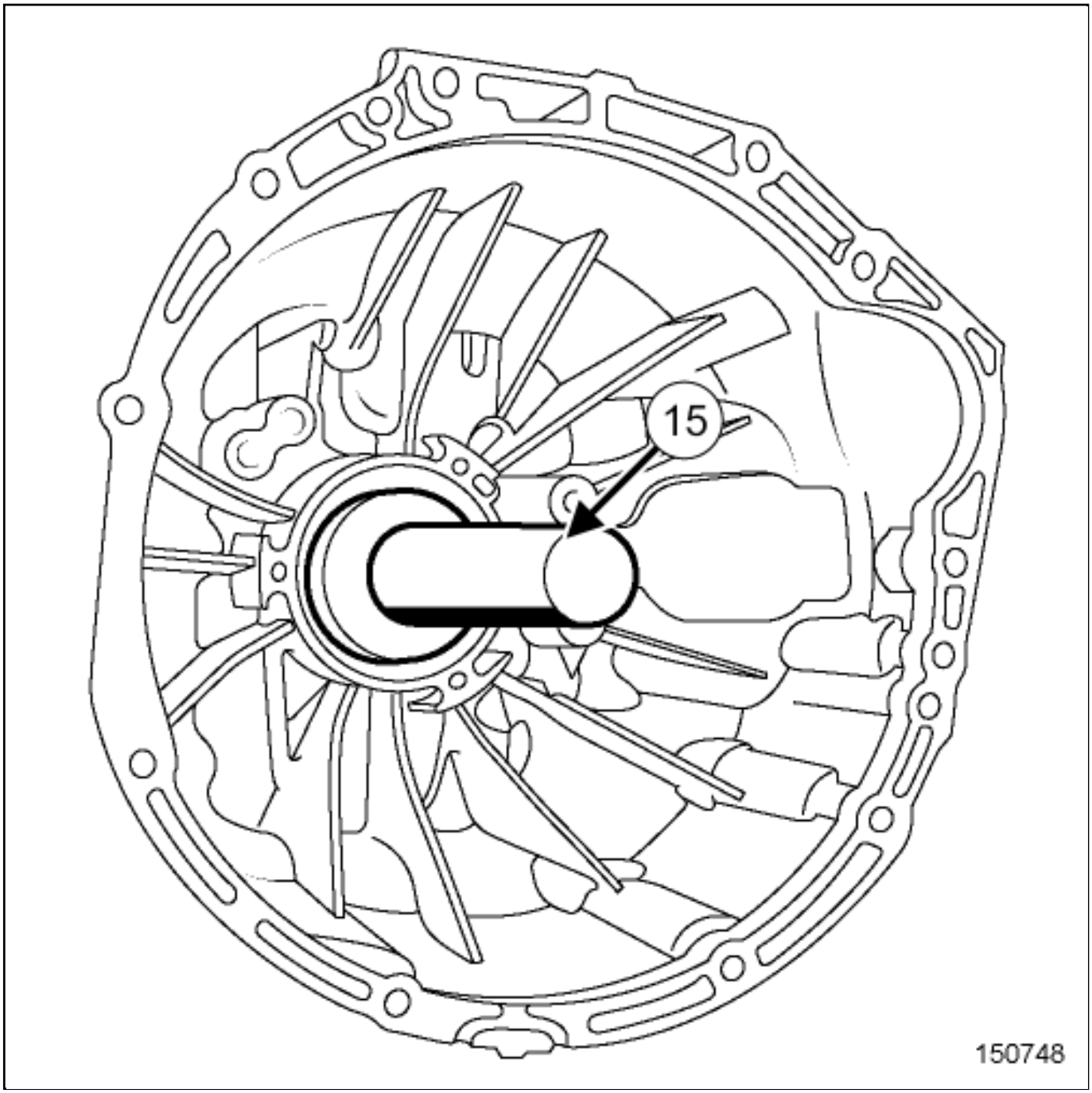


Check that the gear control shaft is refitted the right way round, the flat surface(14) towards the external gearbox side.

Refit the clutch housing Gearbox assembly: Exploded view .

3. FINAL OPERATION

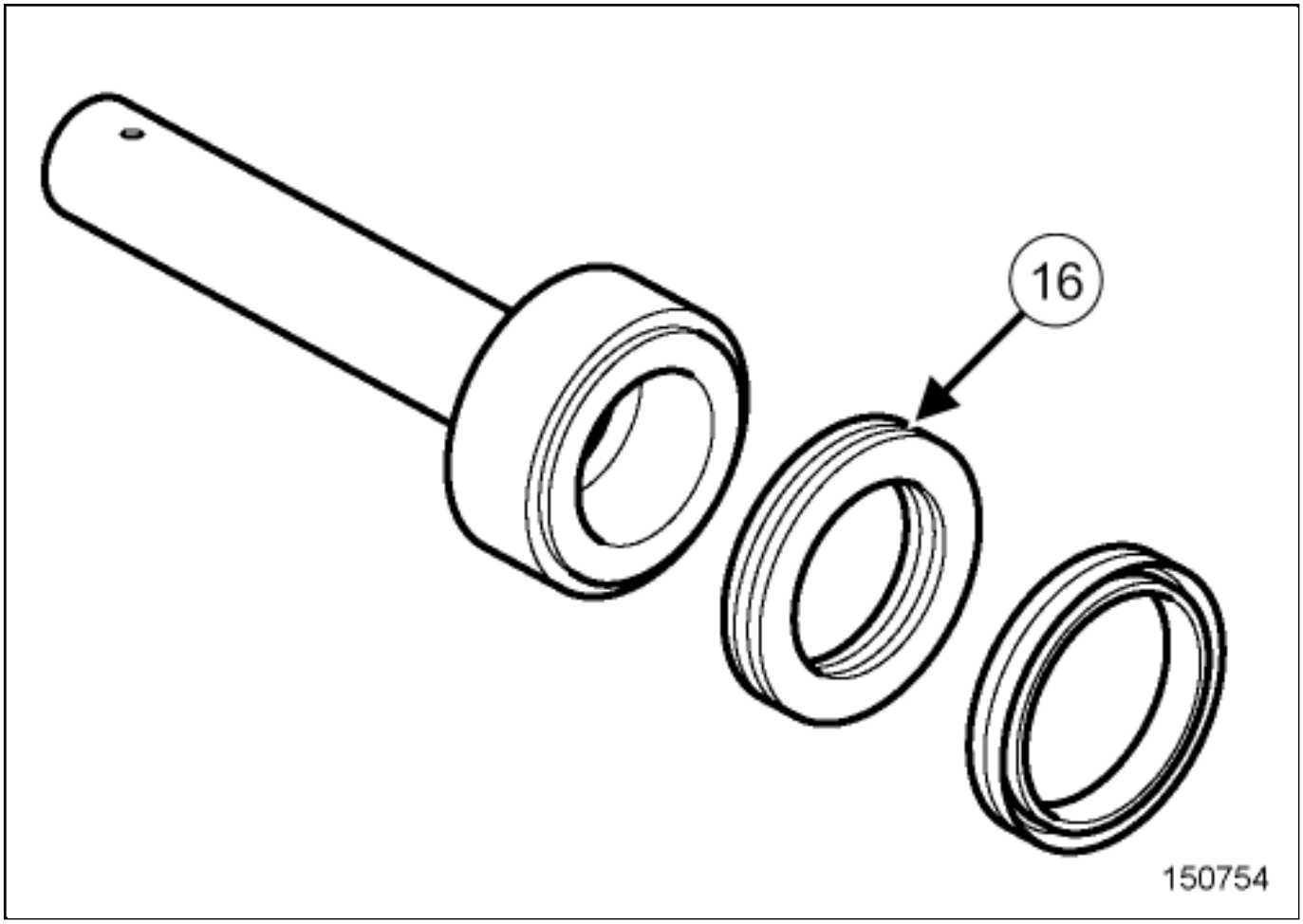
Proceed in the reverse order to removal.



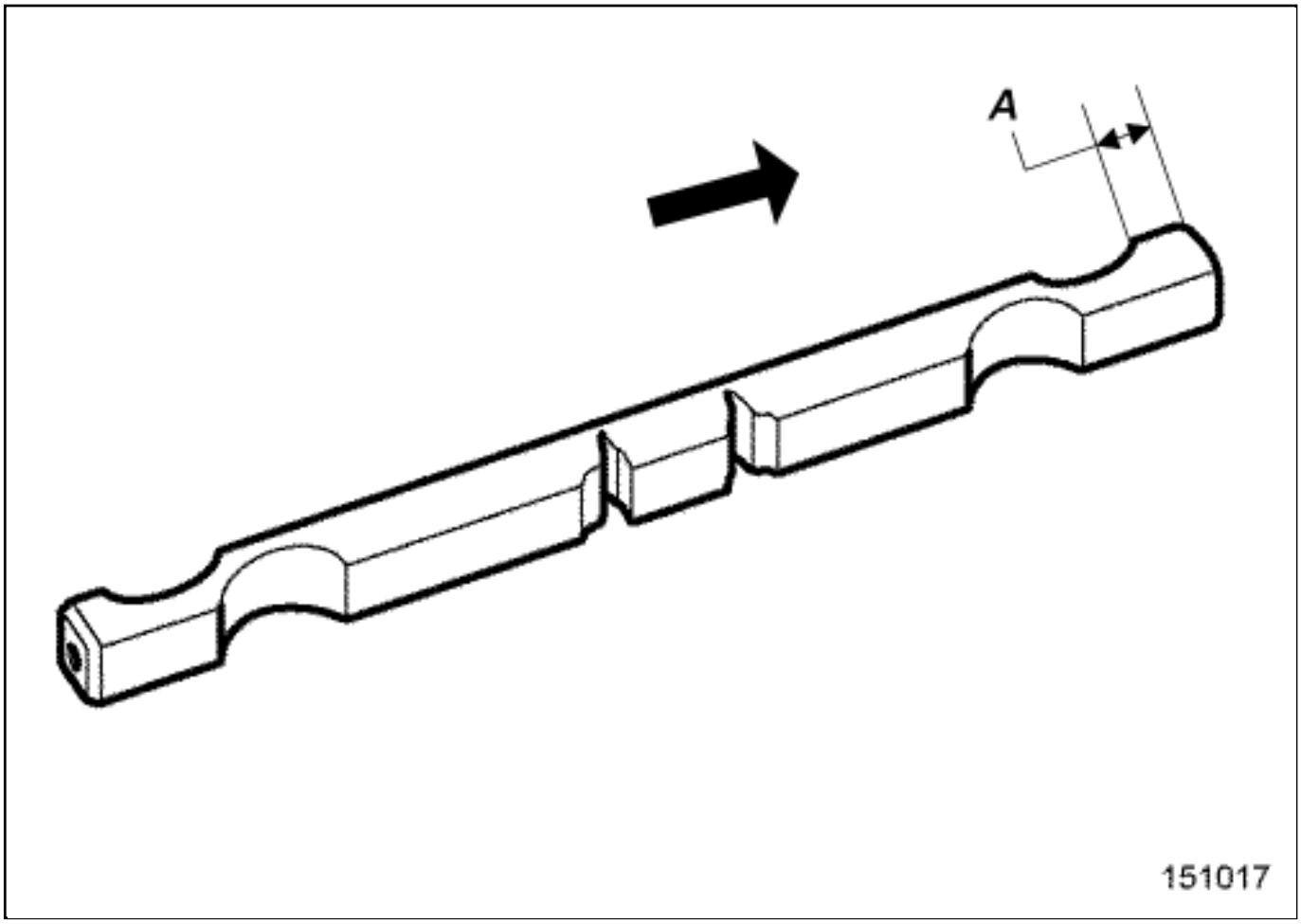
Fit a new seal using the toolTool for fitting the ZF4 primary shaft seal(Bvi. 1947) (15) .

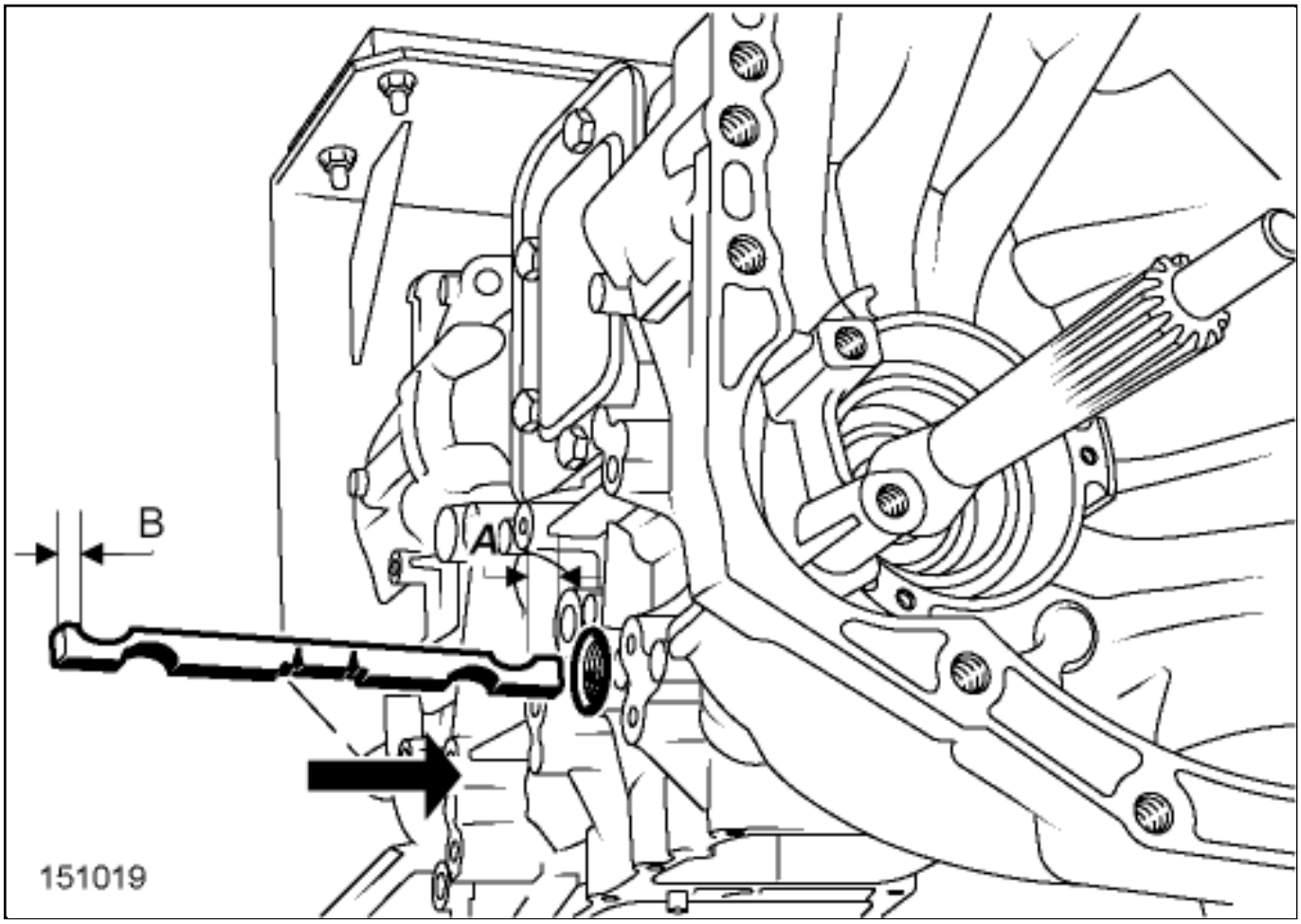
Note:

For a good installation, use the additional toolWasher of compensation for installation primary shaft seal.(Bvi. 1985) .



Refit a new seal using the toolsTool for fitting the ZF4 primary shaft seal(Bvi. 1947) and Washer of compensation for installation primary shaft seal.(Bvi. 1985) (16) .


A
151017



Fit the biggest off set of the locking rod(A) on the gearbox right-hand side.

CAUTION

Observe the direction of fitting of the locking rod.

CLUTCH MASTER CYLINDER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Clutch assembly: Exploded view**) .

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

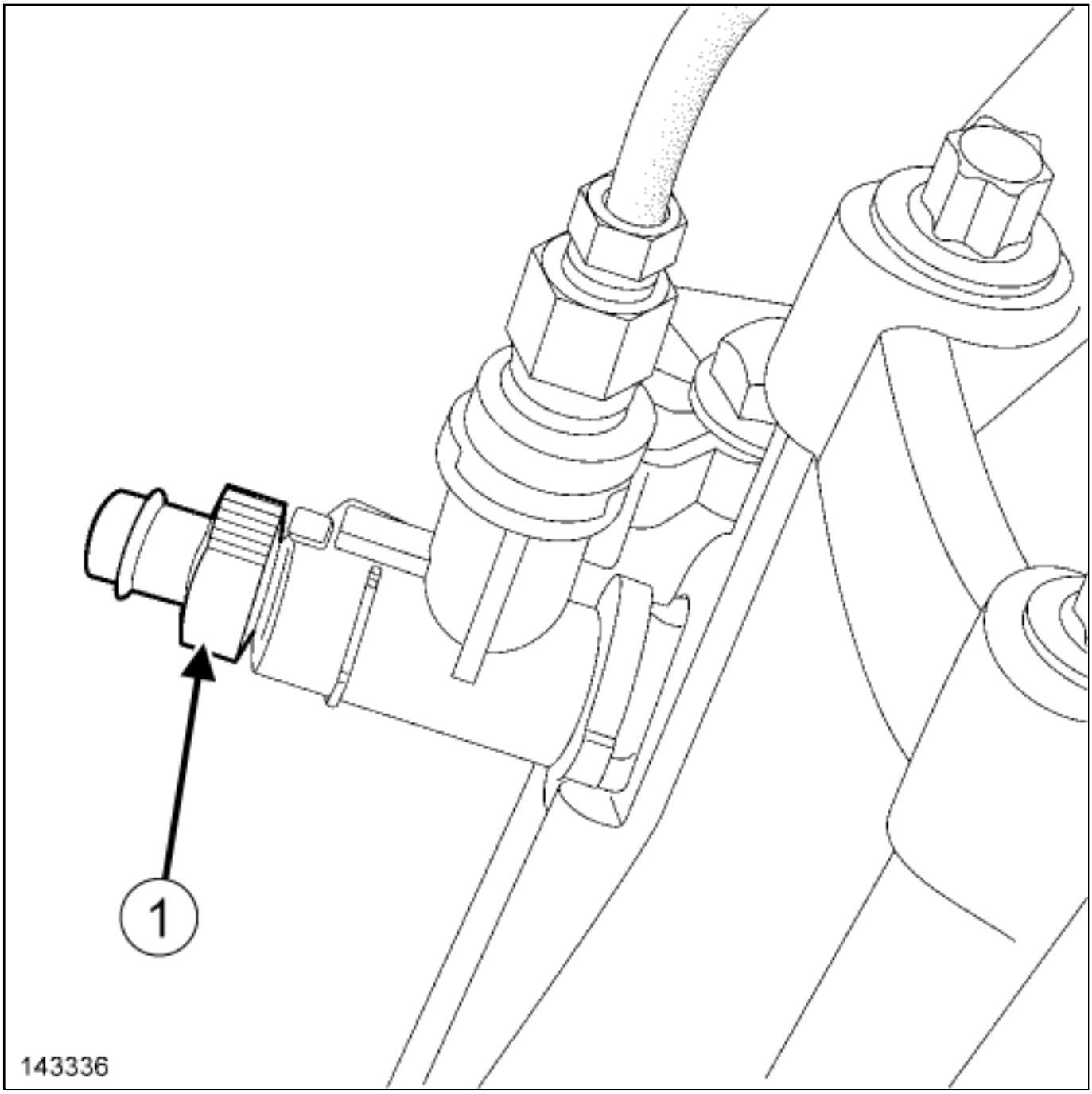
REMOVAL

1. REMOVAL PREPARATION OPERATION

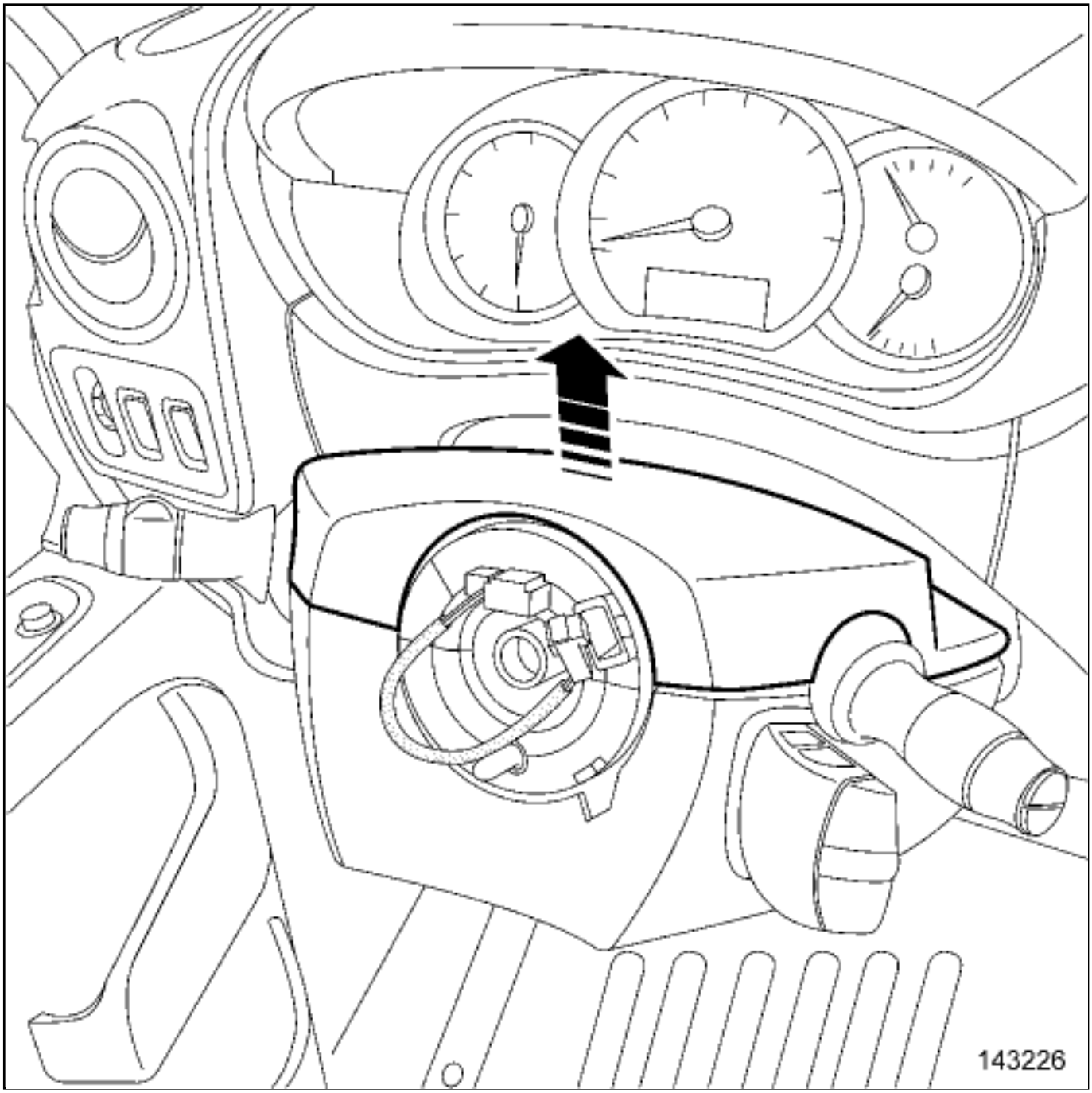
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

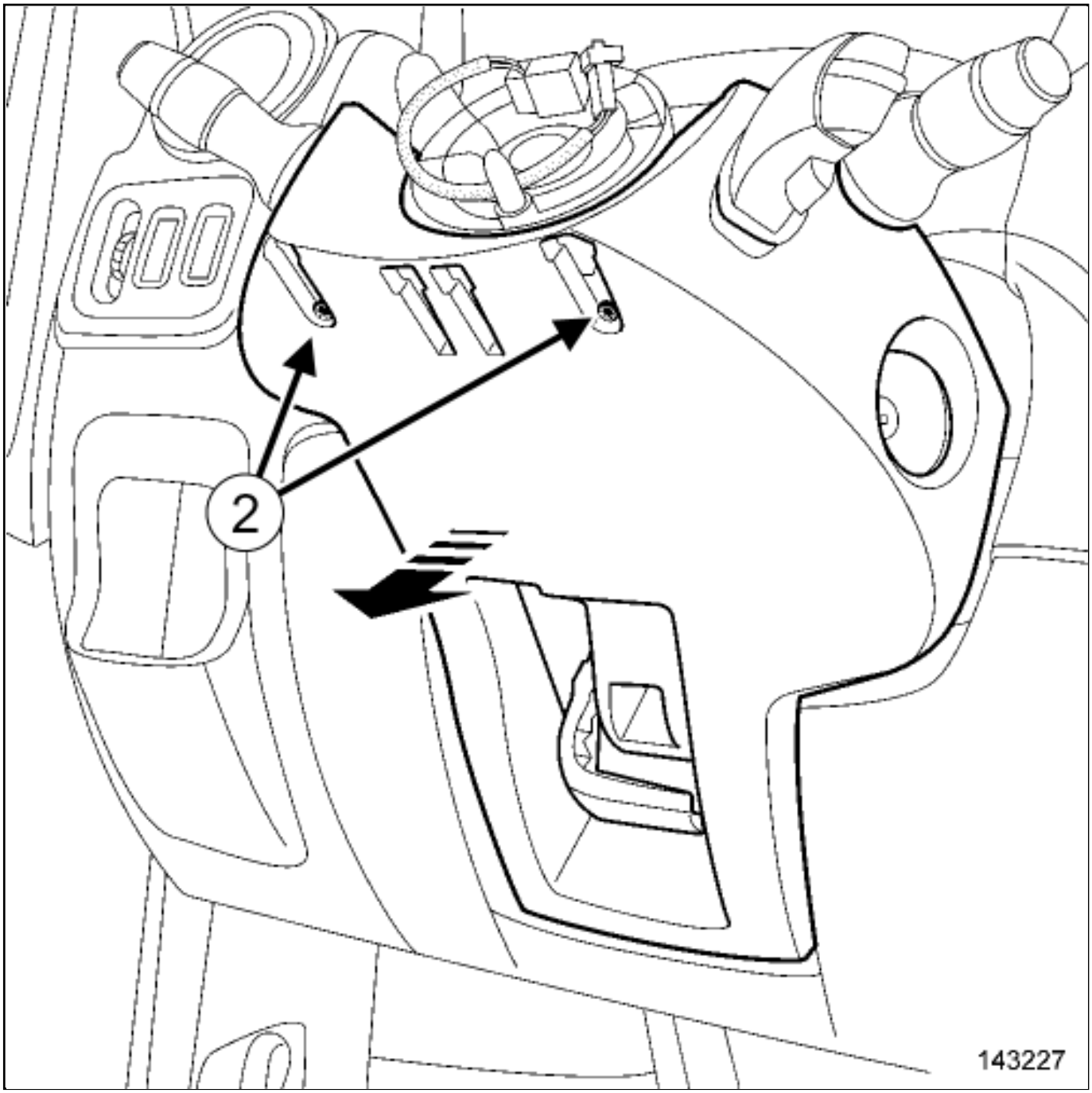
- Remove:
  - the engine undertray,
  - the clutch circuit bleed plug.

- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.



- Turn the clutch slave cylinder bleed tap(1) one turn anti-clockwise.
- Depress the clutch pedal by hand to empty the clutch circuit.
- Disconnect the transparent pipe and the container from the bleed hole of the clutch slave cylinder.

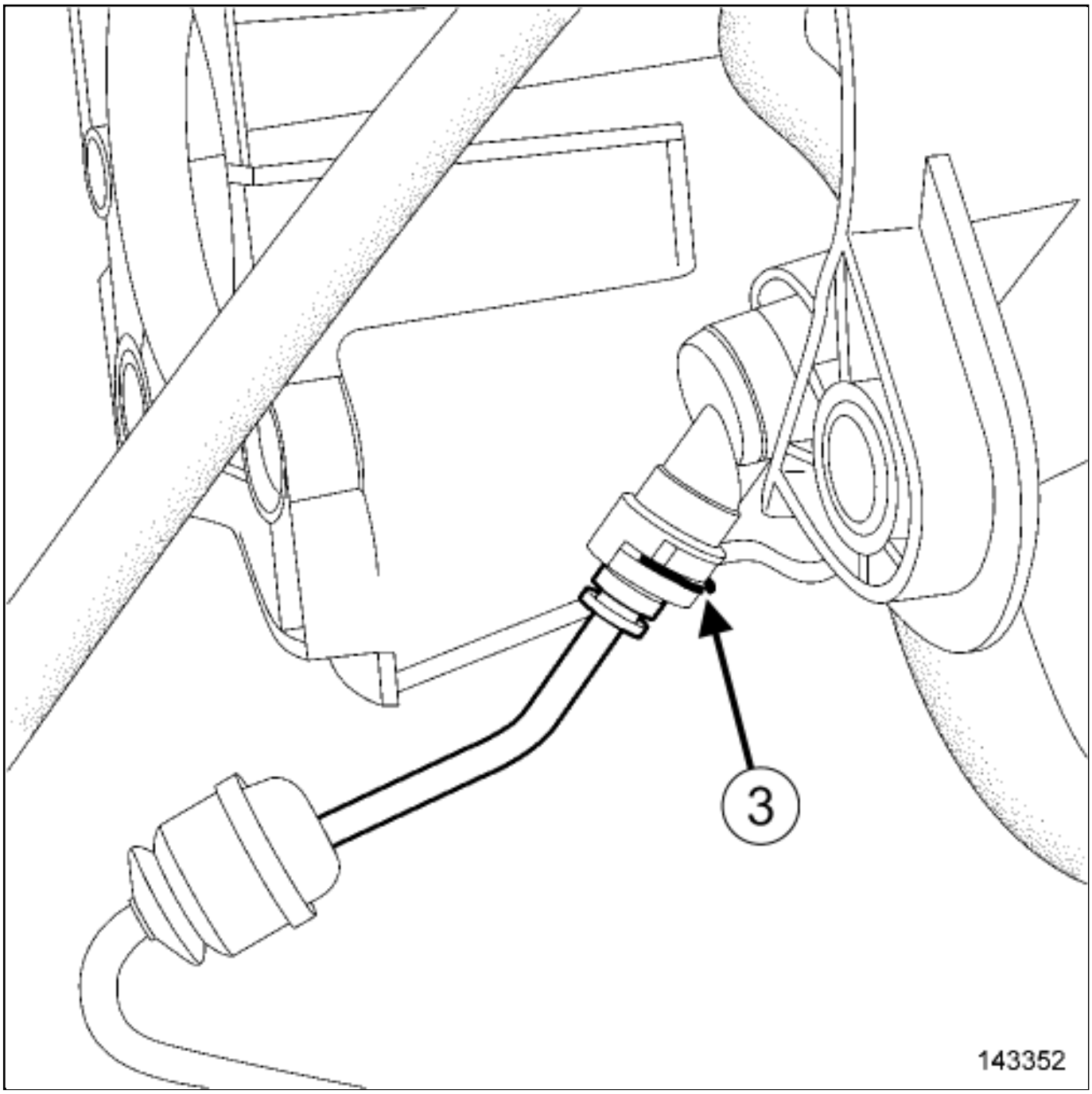

143226



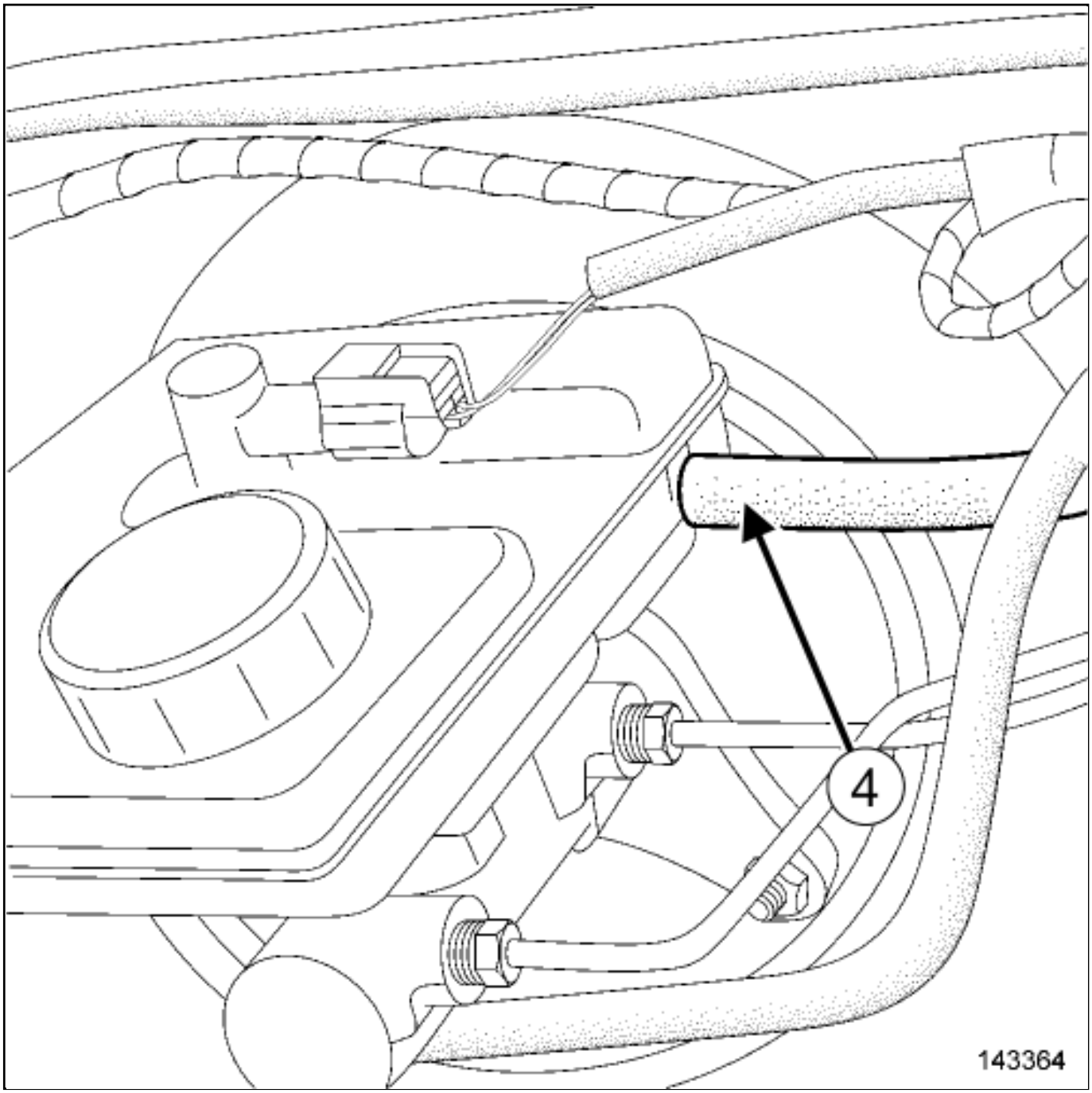
Remove:

- the bolts(**2**) of the cowlings under the steering wheel,
- the cowlings under the steering wheel,
- the A-pillar air duct(see **Air distribution circuit assembly: Exploded view**) (61A, Heating).

2. REMOVAL OPERATION

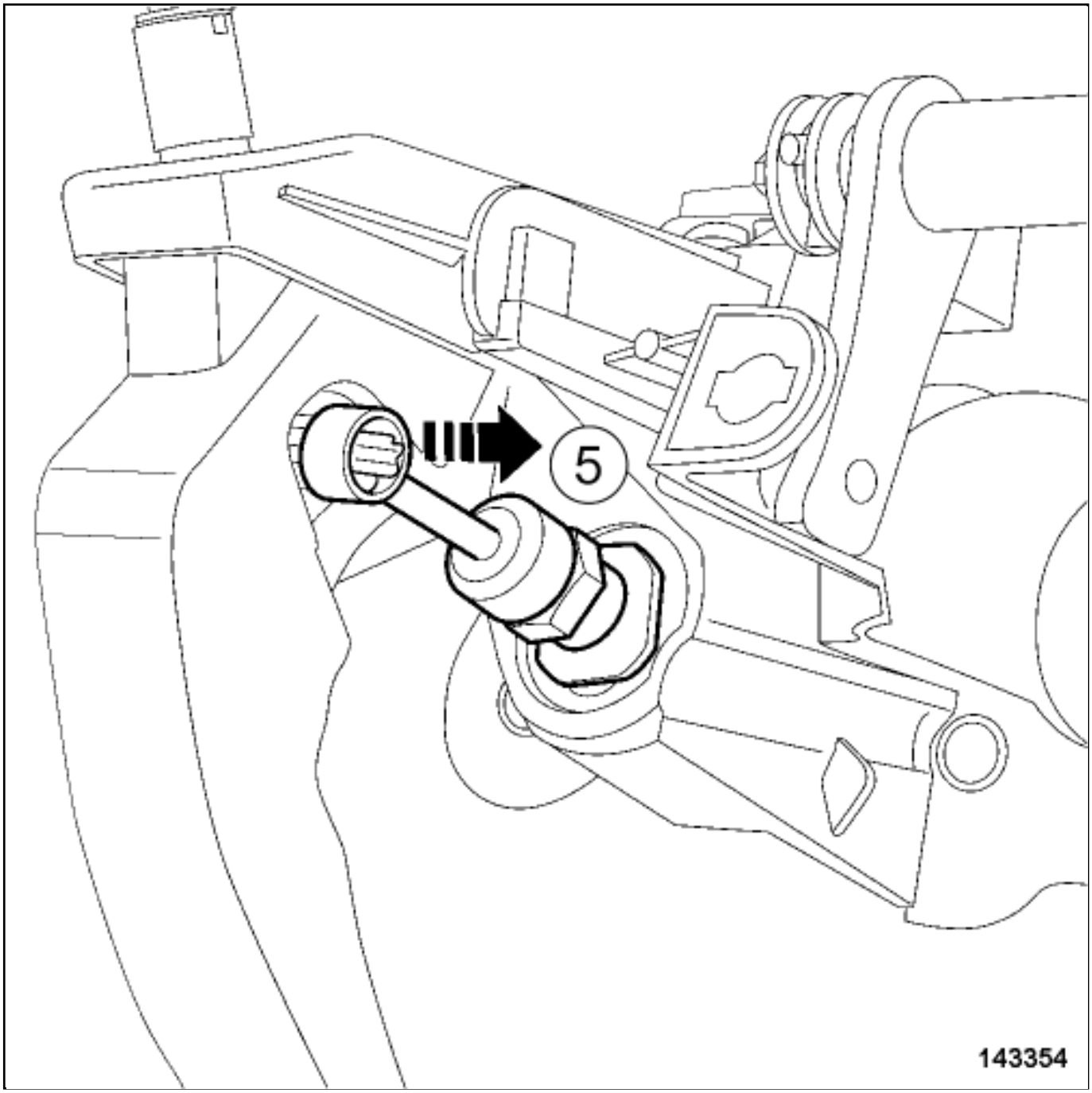


- Pull the clip(3) of the clutch master cylinder.
- Disconnect the hydraulic clutch control pipe from the clutch master cylinder.
- Fit blanking plugs into all openings.

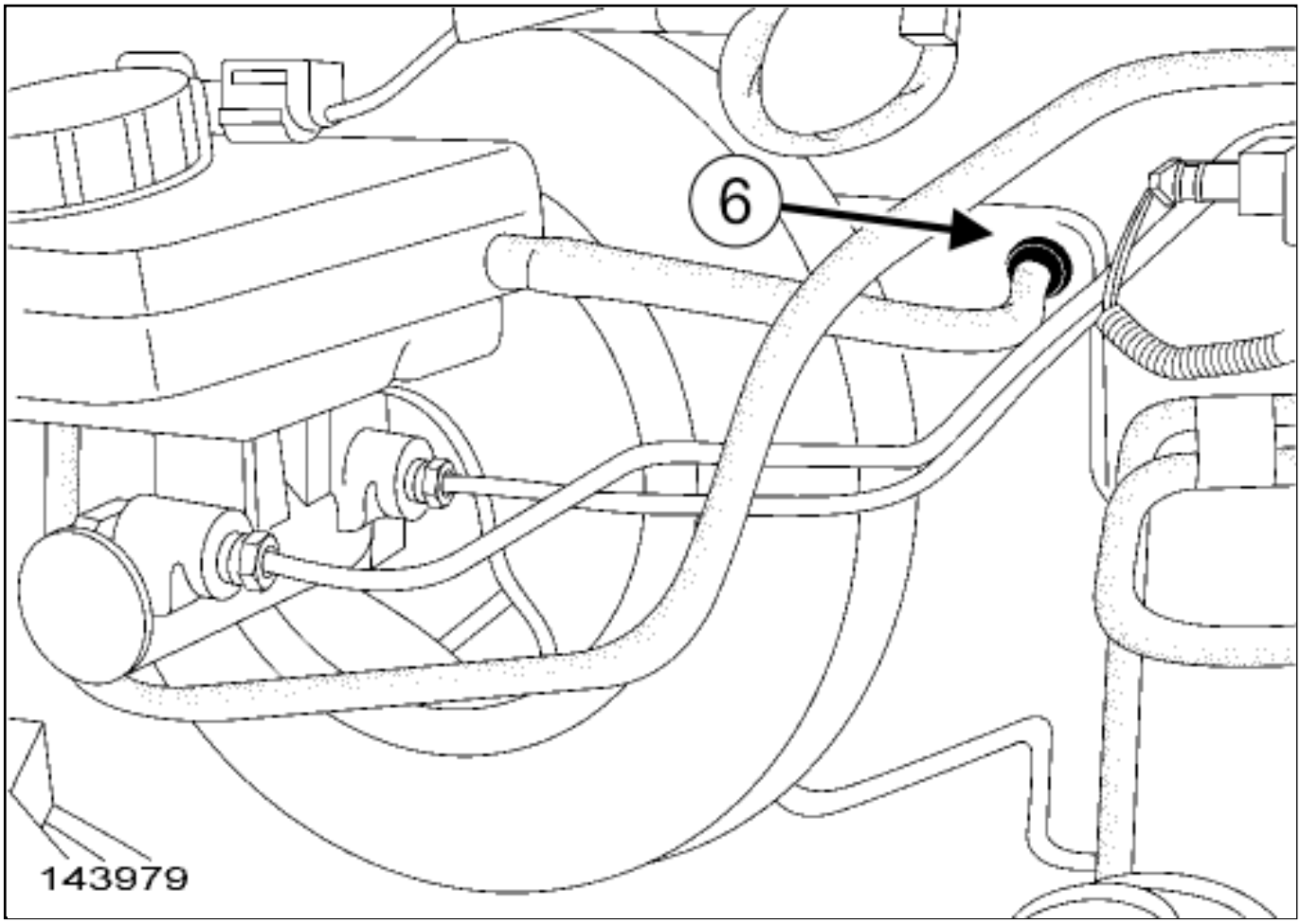


Disconnect the clutch master cylinder supply pipe(4) from the brake fluid reservoir.

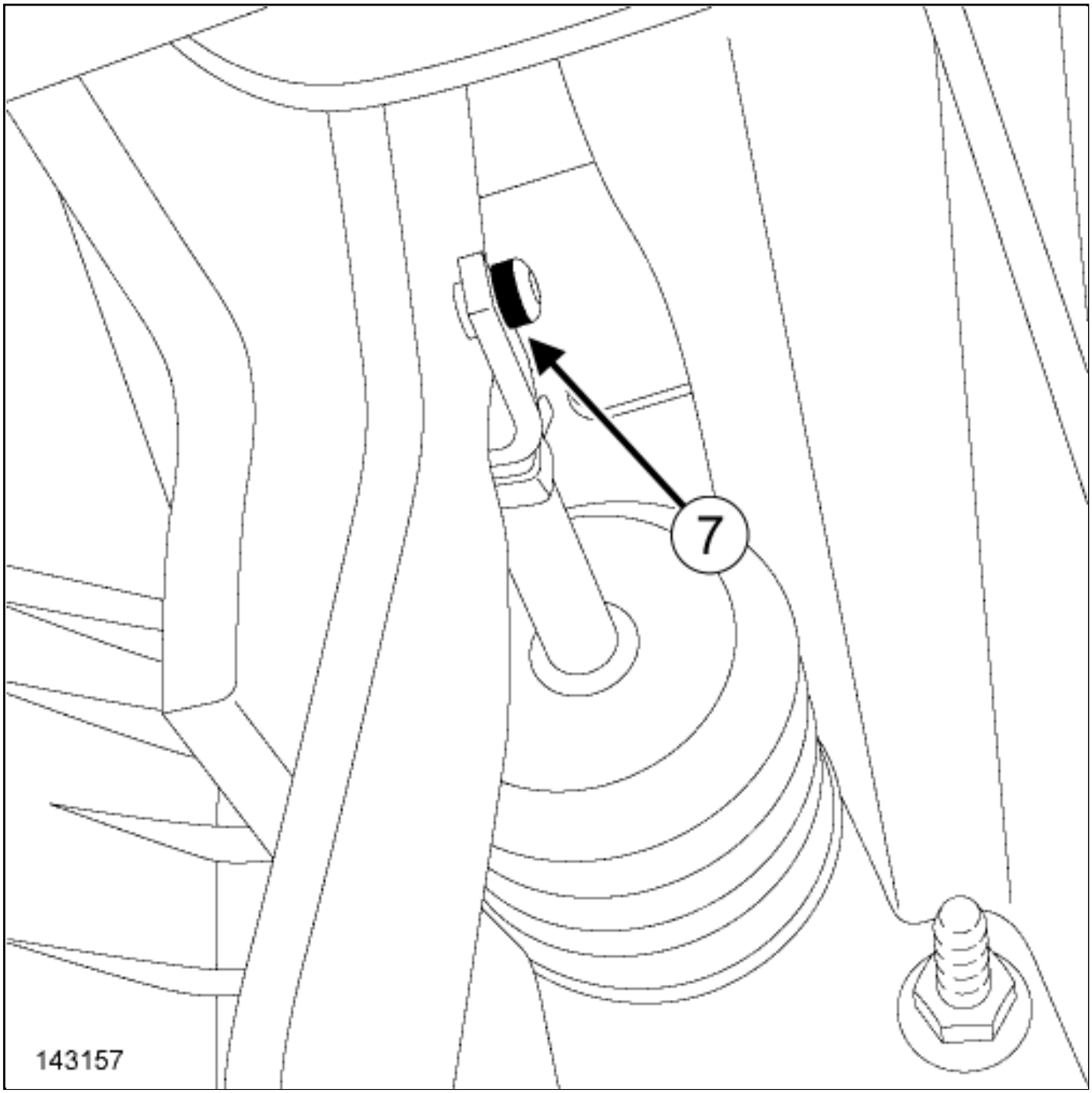
Insert the blanking plugs.



Unclip the clutch master cylinder rod by pressing on the clips(5) .

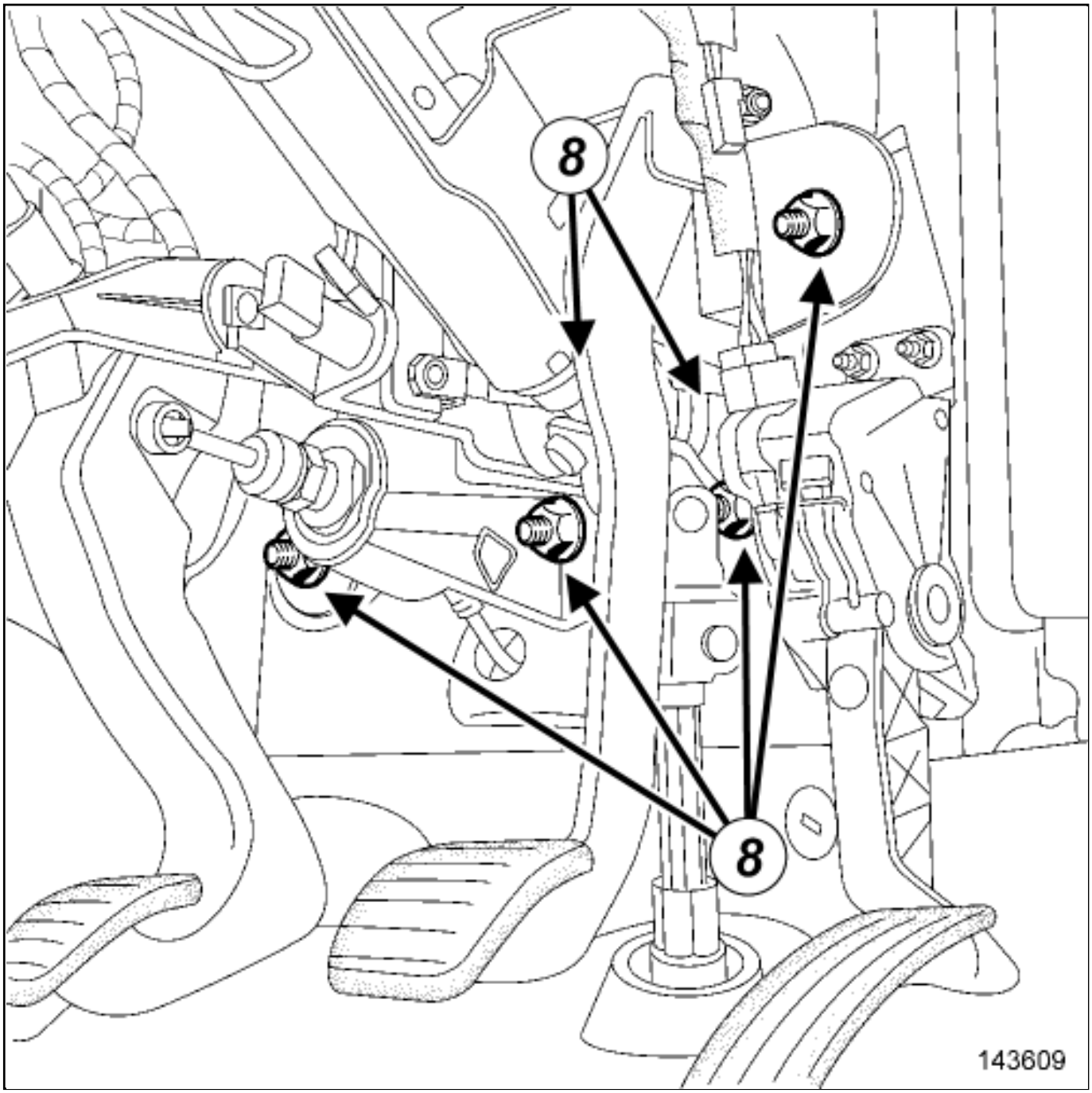


Unclip the clutch master cylinder supply pipe from the bulkhead at(6) .



Remove from the brake pedal(see 37A, Mechanical component controls, Pedal assembly: Exploded view) :

- the rubber ring(7) from the dual safety connecting shaft,
- the dual safety connecting shaft.



Loosen the nuts(8) of the pedal yoke.

Move the pedal yoke slightly aside.

Remove the clutch master cylinder by turning it a quarter of a turn clockwise using a 24 mm open-jawed spanner.

REFITTING

1. REFITTING PREPARATION OPERATION

- Check the condition of the seals.

Note:

Dismantling the components of the master cylinder is prohibited.

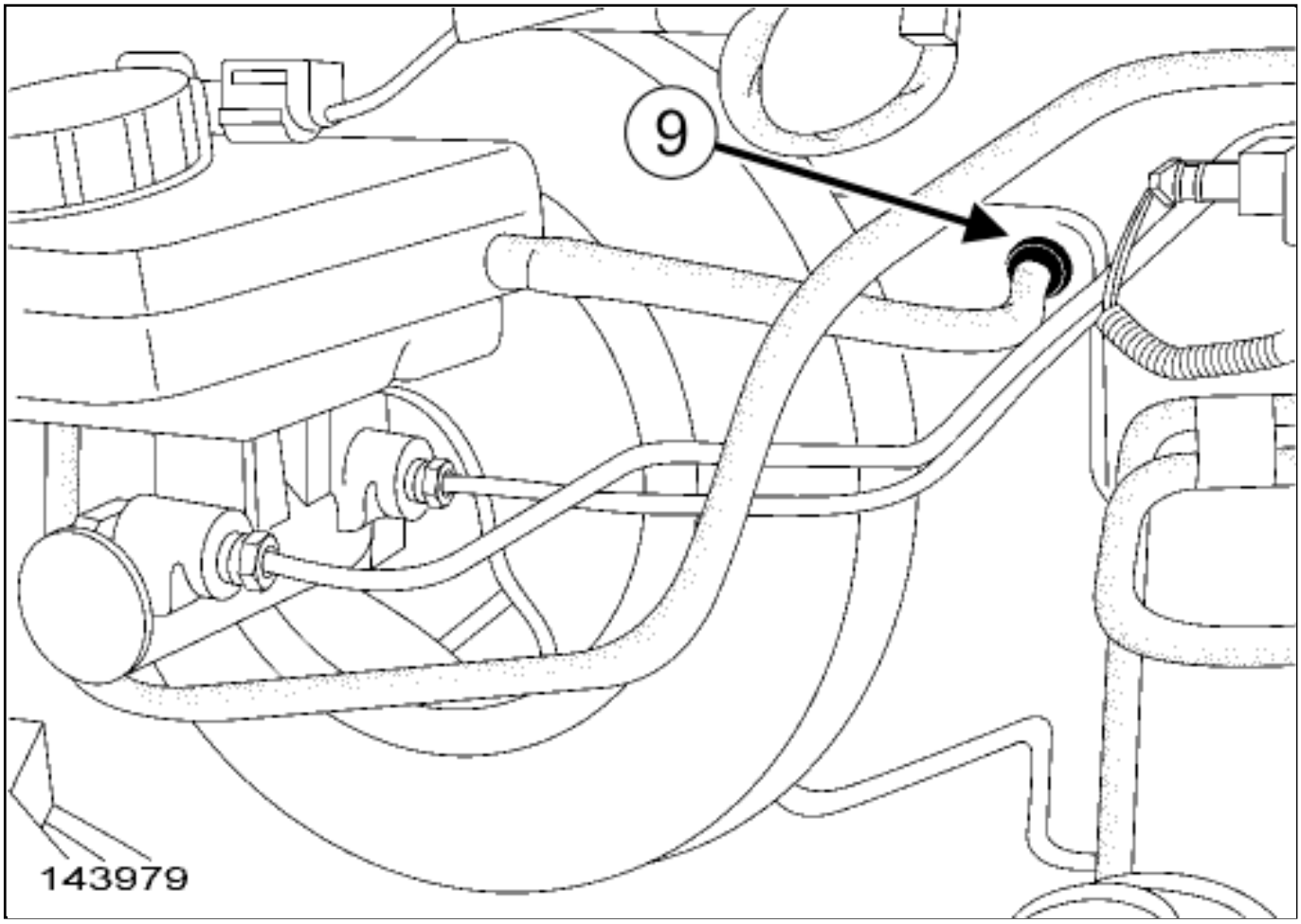
2. REFITTING OPERATION

- Proceed in the reverse order to removal.

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.



Correctly position the seal of the clutch master cylinder supply pipe on the bulkhead at(9) .

Bleed the clutch circuit(see 37A, Mechanical component controls, Clutch circuit: Bleed) .

CLUTCH PEDAL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

IMPORTANT

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

- Pedal assembly mechanism: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

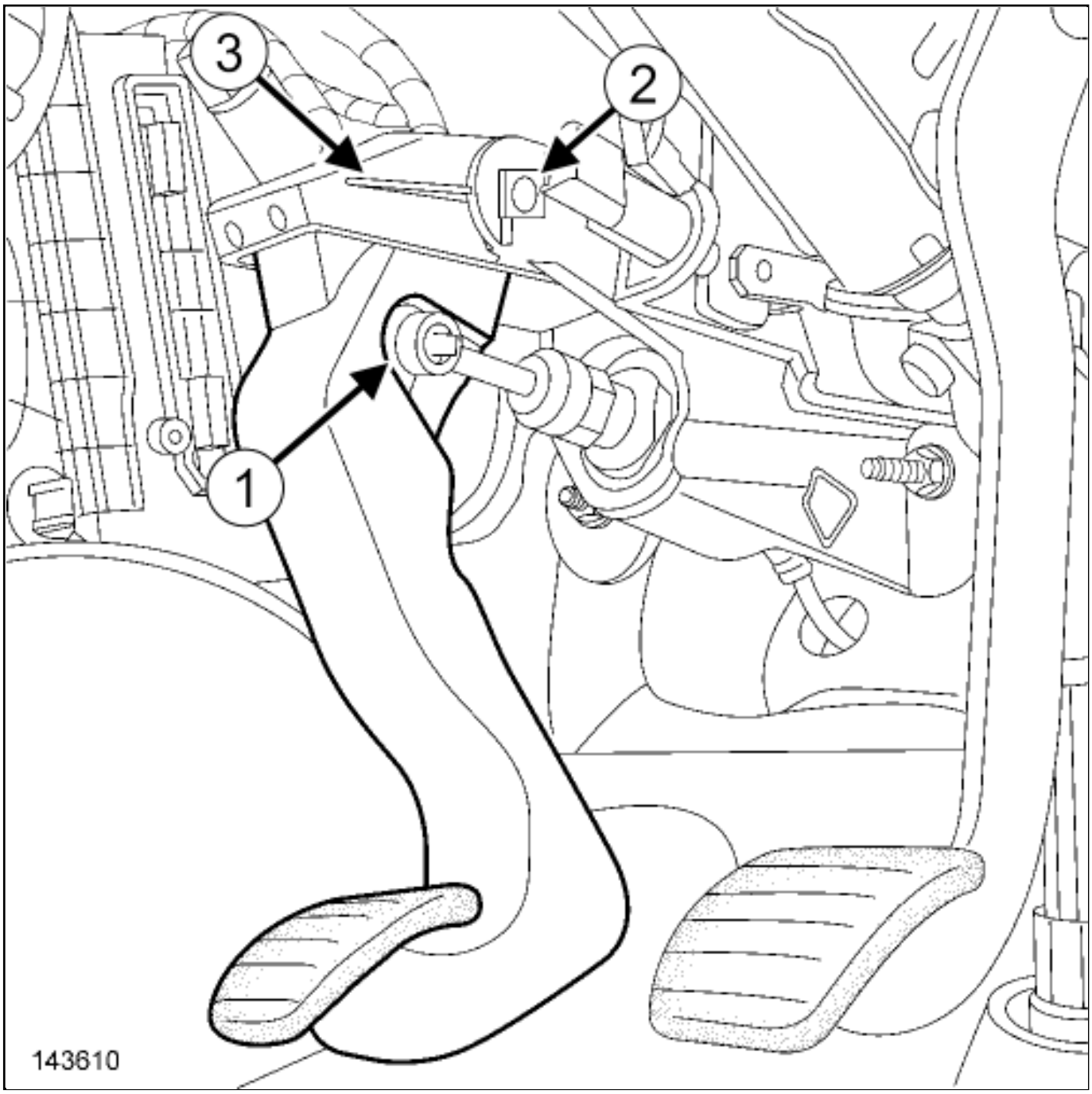
1. REMOVAL PREPARATION OPERATION

Remove:

- the lower trim under the steering wheel,
- the lower right-hand air duct.

Remove the clutch pedal switch by turning it a quarter of a turn anti-clockwise.

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Unclip the clutch master cylinder(1) from the pedal.
- Remove the pedal shaft nut(3) .
- Remove the shaft(2) to release the clutch pedal.
- Extract the spring from its housing on the clutch pedal support.
- Remove the clutch pedal.

REFITTING

1. REFITTING PREPARATION OPERATION

- Coat the shaft with Molykote 33Mgrease Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

2. REFITTING OPERATION FOR PART CONCERNED

- Place the clutch pedal in position with its spring.

Note:

Do not hit the shaft with a hammer to get it to go back into place.

- Refit:
  - the clutch pedal shaft,
  - the clutch pedal shaft nut.
- Torque tighten the clutch pedal shaft nut17 N.m.
- Clip the clutch master cylinder back onto the pedal.

3. FINAL OPERATION

- Refit the clutch pedal switch by turning it a quarter of a turn clockwise.
- Adjust the clutch pedal switch Pedal switches: Adjustment .
- Refit:
  - the lower right-hand air duct,
  - the lower trim under the steering wheel.
- Check that the whole clutch system operates correctly.

CLUTCH THRUST BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 20A, Clutch, Clutch assembly: Exploded view)** .

WARNING

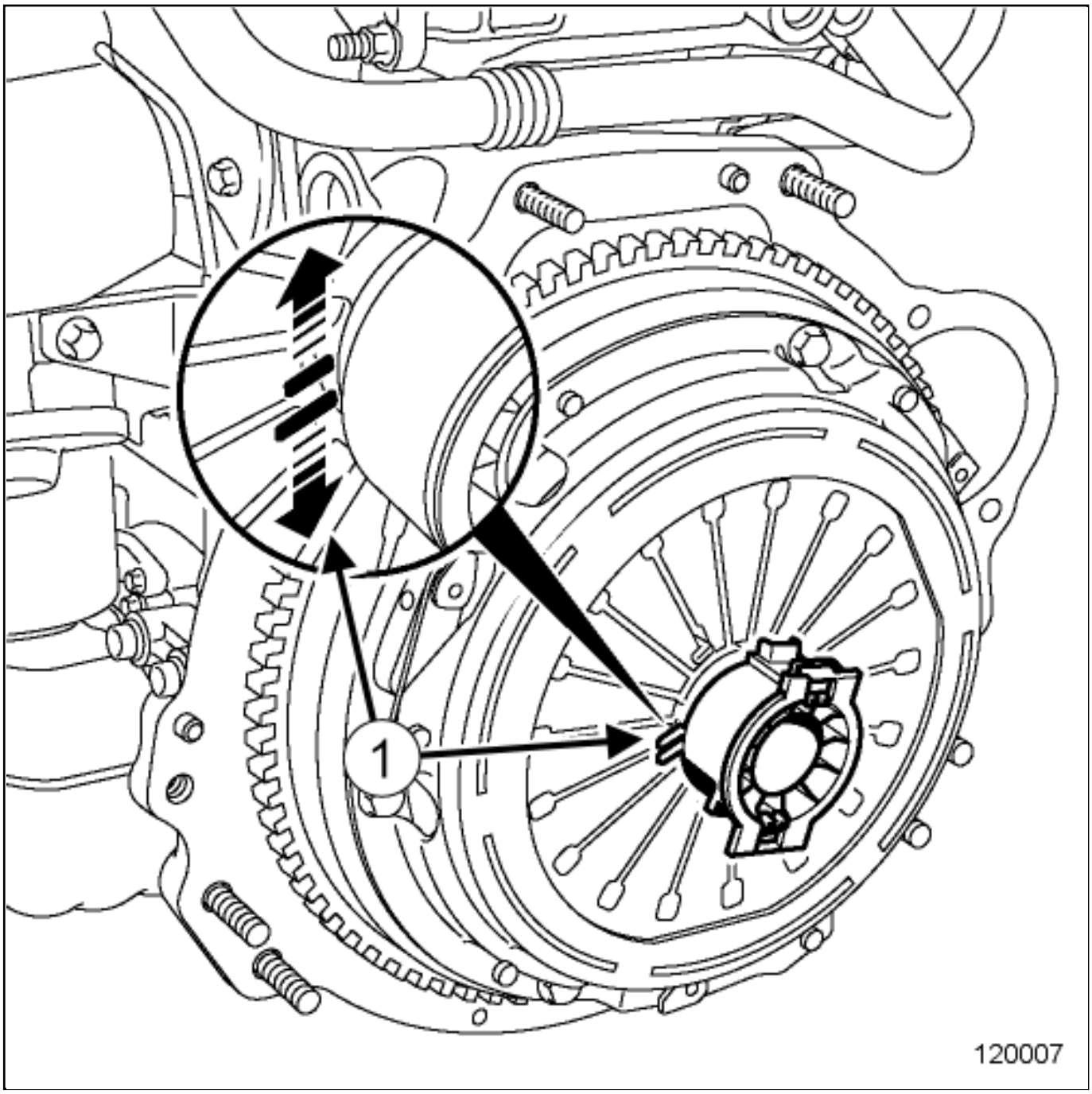
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the manual gearbox**Gearbox assembly: Exploded view** .

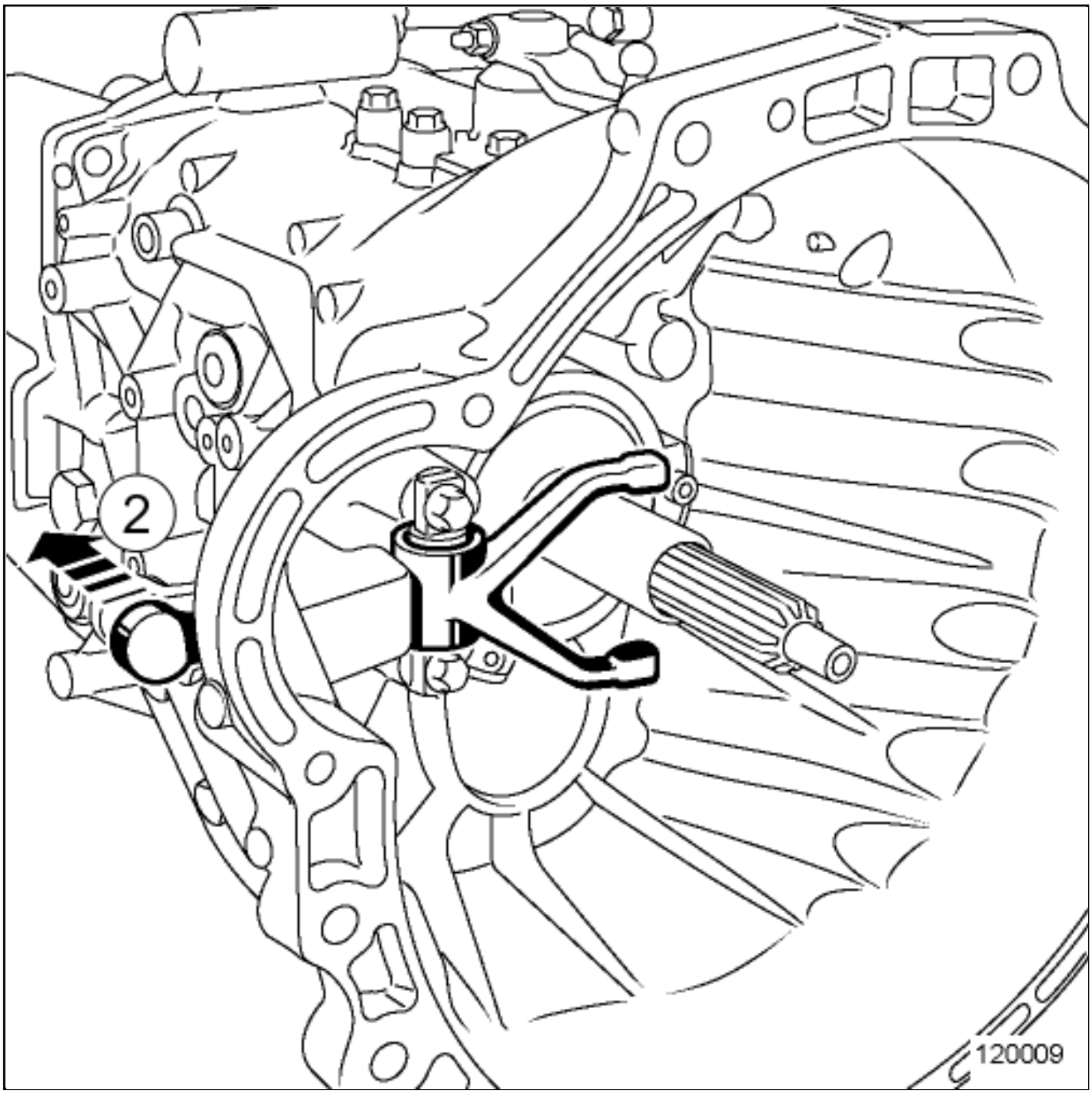
2. REMOVAL OPERATION

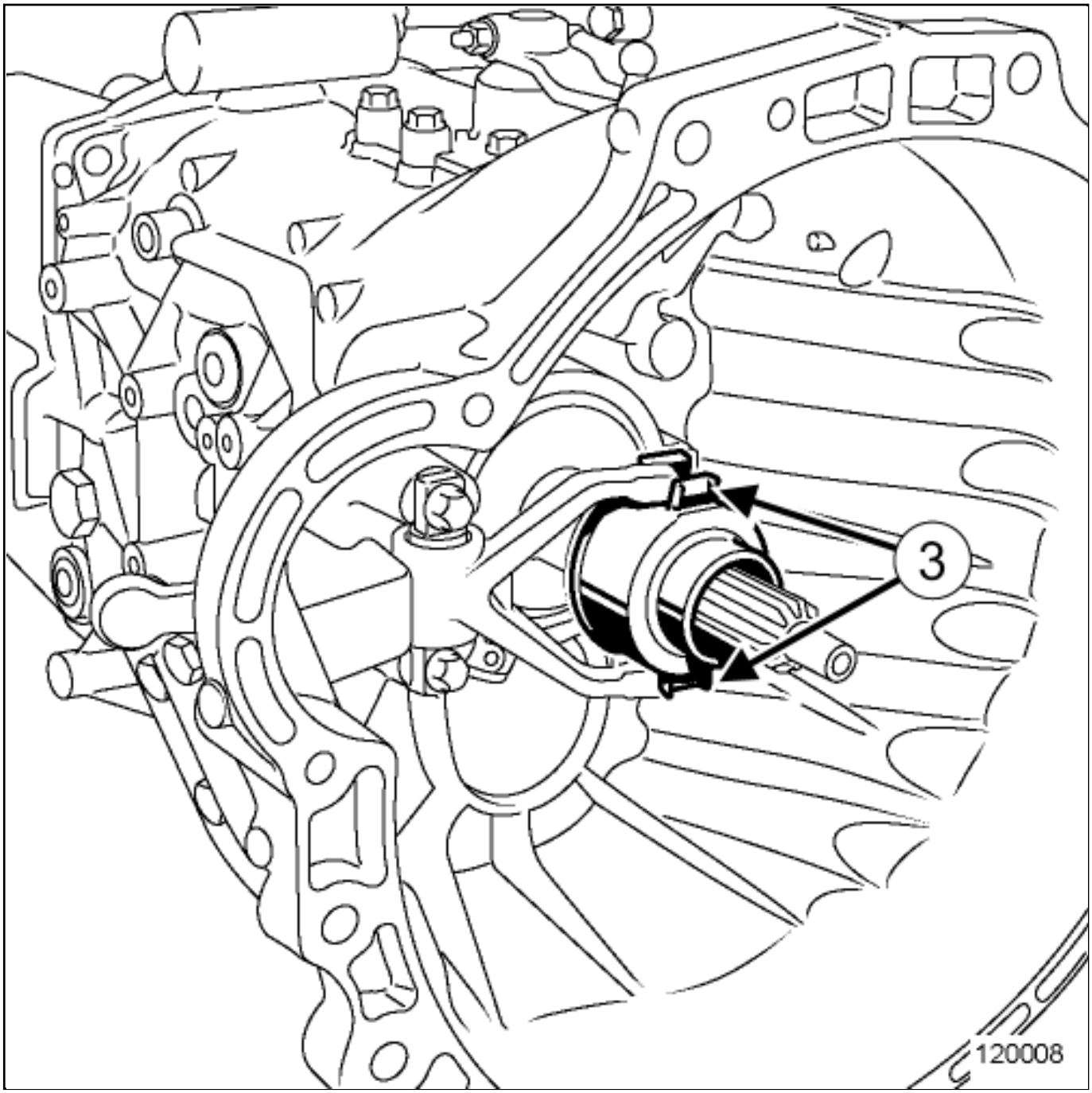


- Remove the clutch thrust bearing by moving aside the clip(1) .

REFITTING

1. REFITTING OPERATION


2
120009



- Fit the clutch thrust bearing to the gearbox:
  - move aside the clutch fork as much as possible(2) ,
  - fit the clutch fork into the lugs on the clutch thrust bearing(3) .

Note:

Carefully check by hand that the clutch thrust bearing slides properly into the clutch thrust bearing guide before refitting the gearbox.

2. FINAL OPERATION

Proceed in the reverse order to removal.

Repair-12x03x01x04-01x37-1-44-1.xml

XSL version : 3.02 du 22/07/11

COMPLETE FRONT BENCH SEAT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front bench seat: Exploded view**) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the bolt from the seat belt of the front bench seat(see **Front bench seat: Exploded view**) .

2. REMOVAL OPERATION

- Remove (see **Front bench seat: Exploded view**)
  - the bolts of the front bench seat on the body,
  - the front bench seat (this operation requires two people).

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

COMPLETE FRONT SEAT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) .

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 Airbag and pretensioners: Precautions for repair) (88C, Airbags and pretensioners),
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

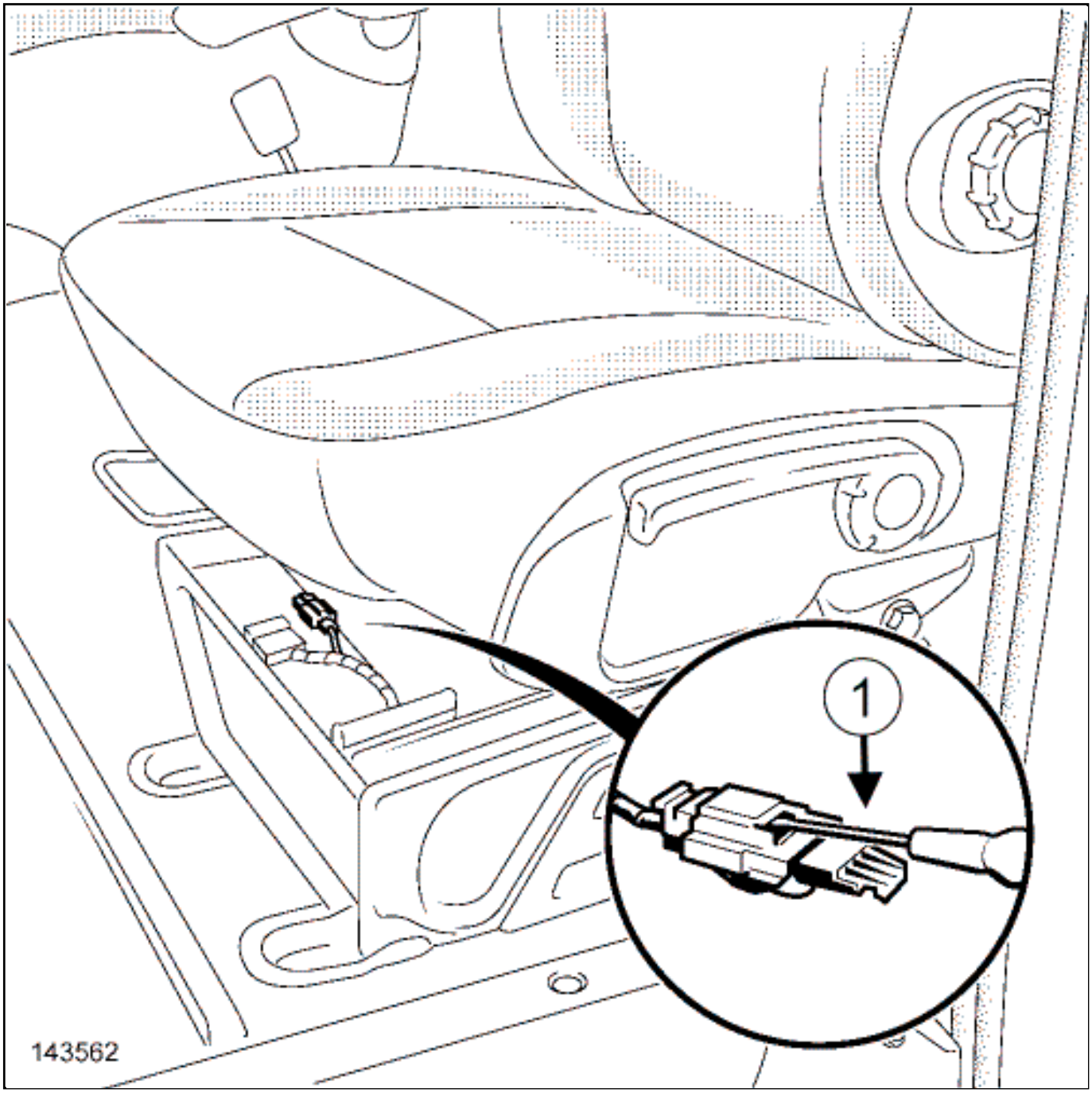
Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

REMOVAL

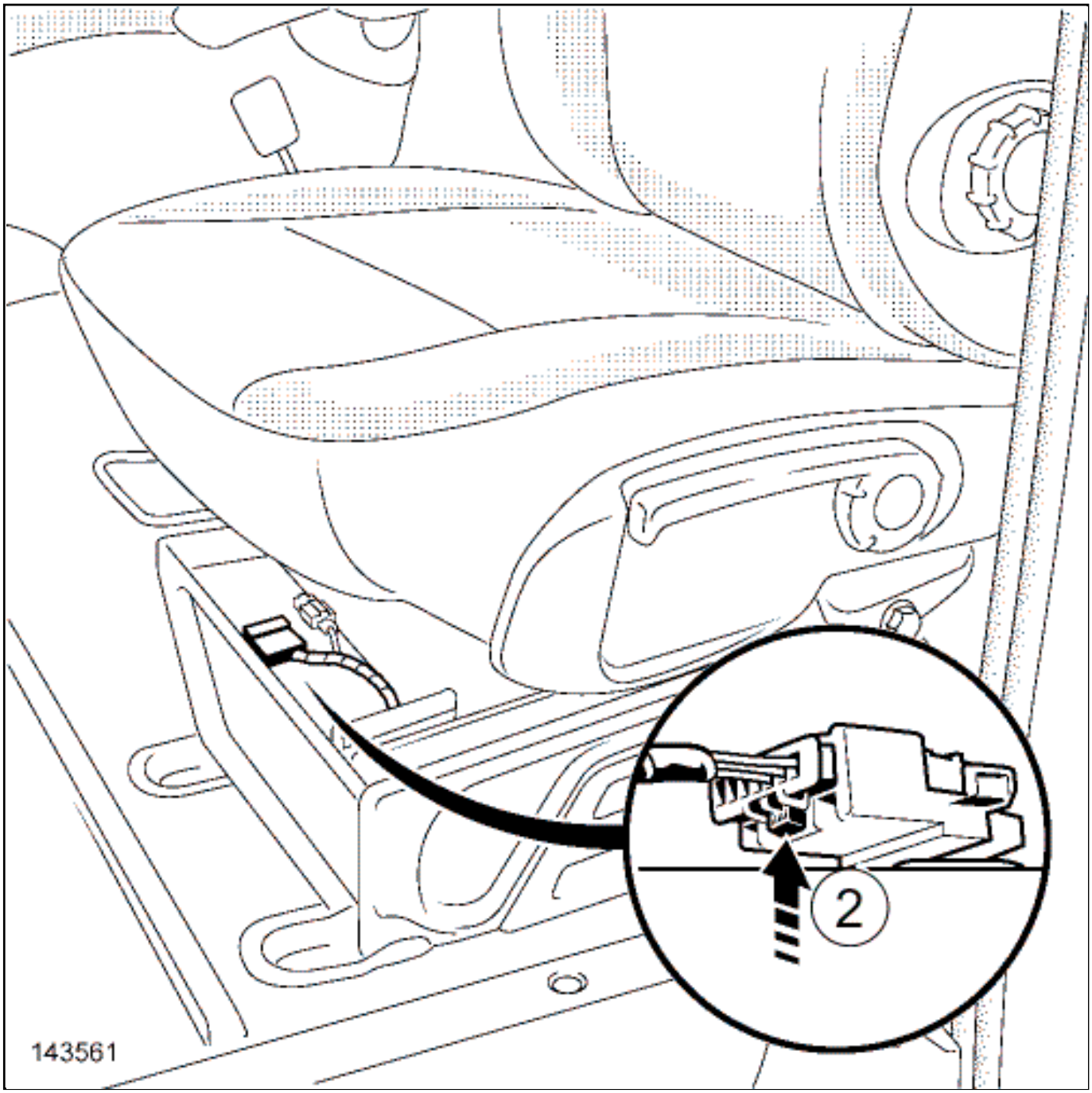
1. REMOVAL PREPARATION OPERATION

- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).

- Remove the bolt from the front seat belt(see **Front seat: Exploded view**) .



- Disconnect the connector using a flat-blade screwdriver(1) .



- Disconnect the connector at(2) .
- Unclip the connector .
- Protect the front door sill lining.

2. REMOVAL OPERATION

- Remove (see **Front seat: Exploded view**) :
  - the front seat bolts on the height adjuster,
  - the front seat.

REFITTING

- Proceed in the reverse order to removal.

Repair-70x06x02-01x37-1-31-1.xml

XSL version : 3.02 du 22/07/11

COMPLETE REAR AXLE SYSTEM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Support plate for pushing back the brake calliper piston	Fre. 1939

Equipment required
component jack
safety strap(s)
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

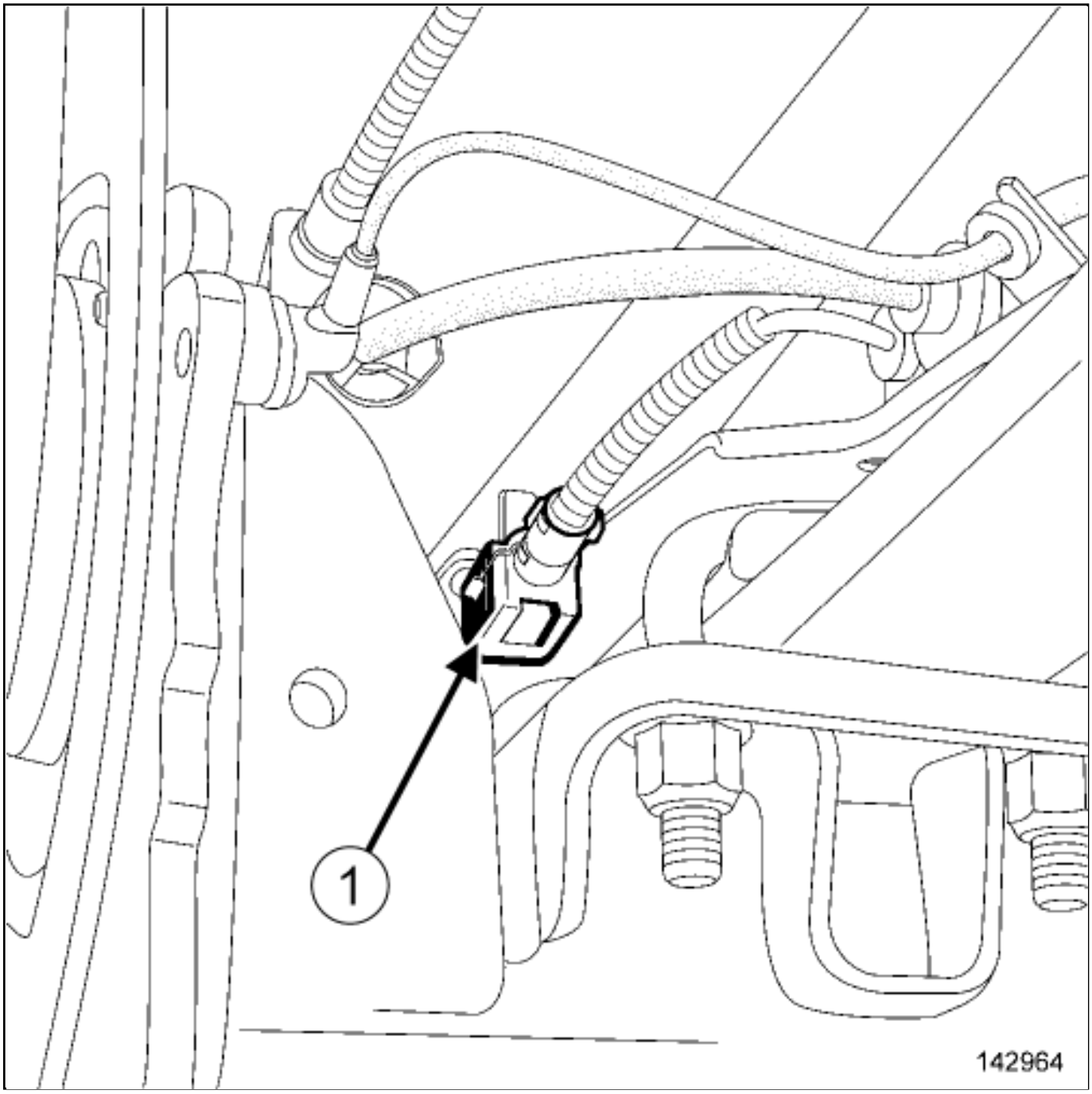
REMOVAL

1. REMOVAL PREPARATION OPERATION

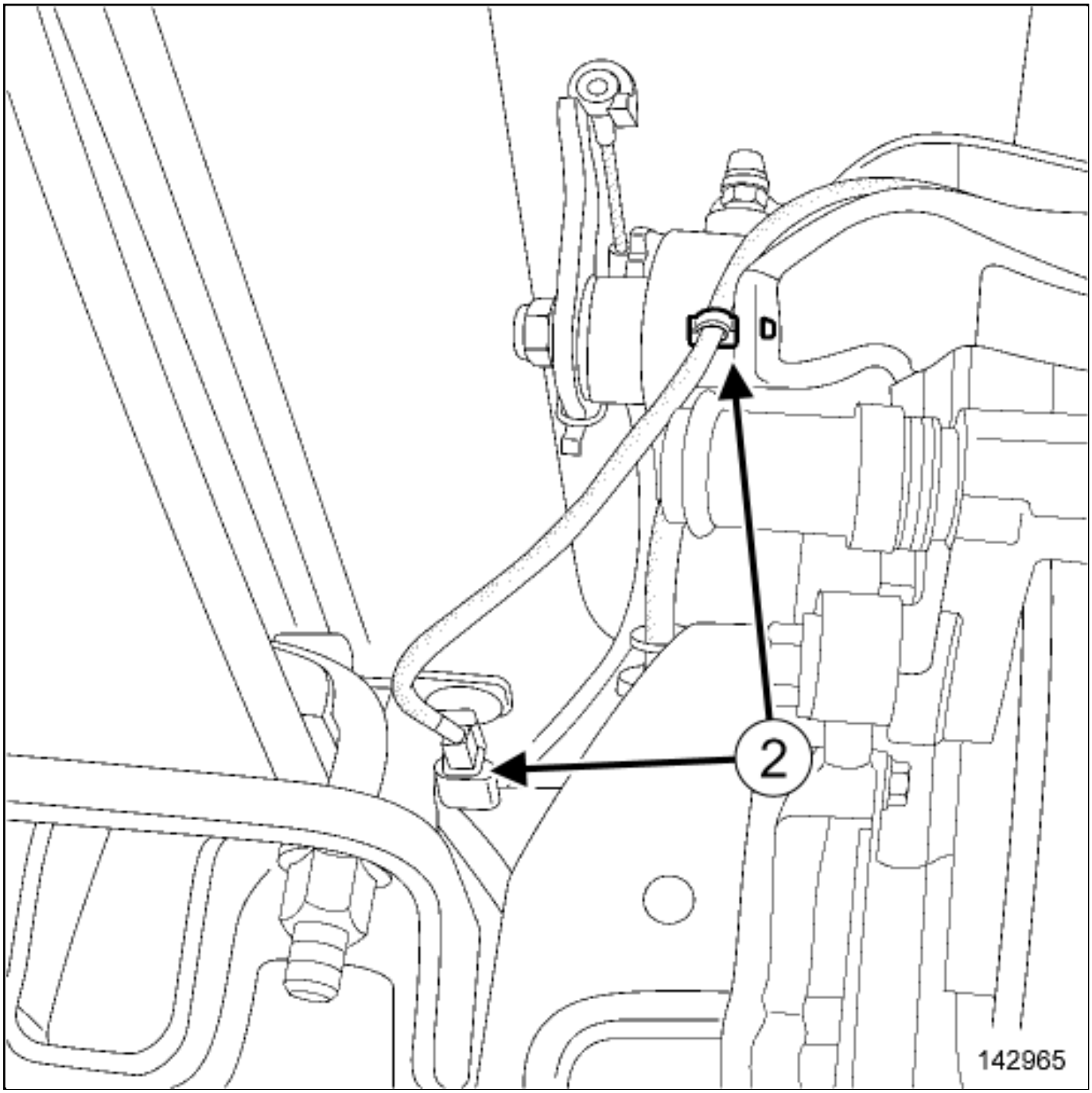
Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

Remove the rear wheelsWheel: Removal - Refitting .

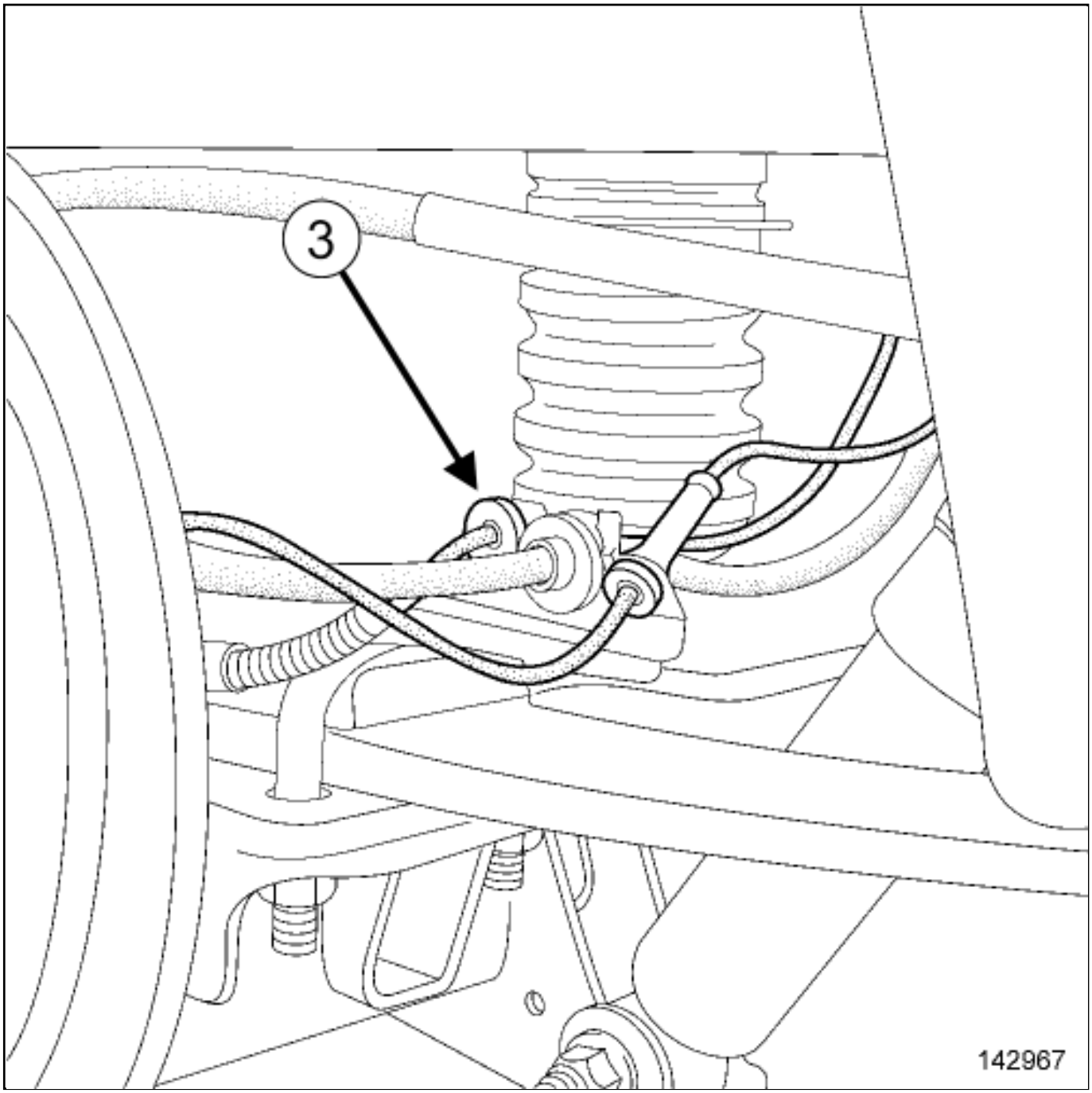
SPECIAL FEATURES OF THE RIGHT-HAND SIDE



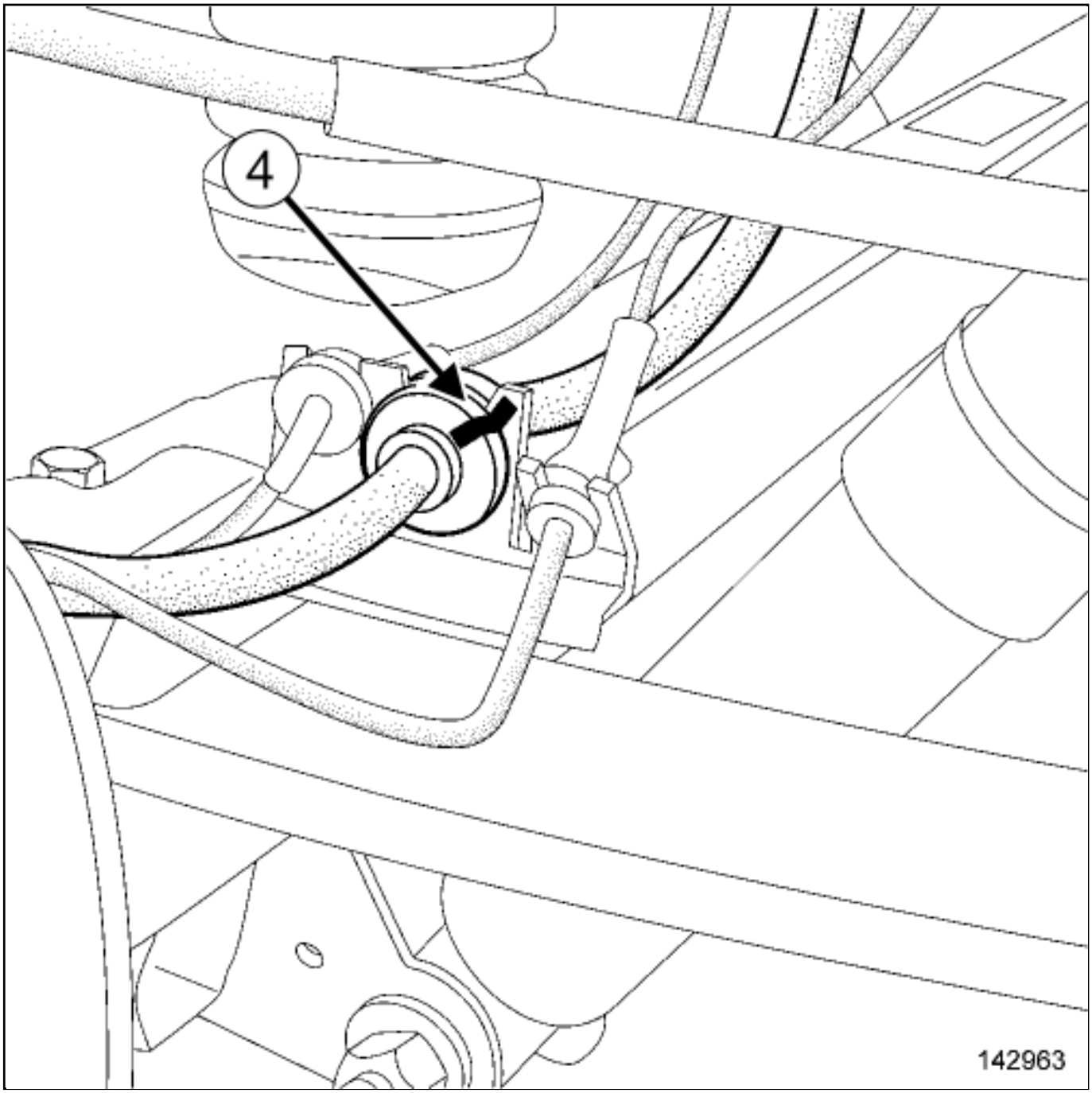
- Disconnect the connector(1) from the rear brake pad wear warning light.



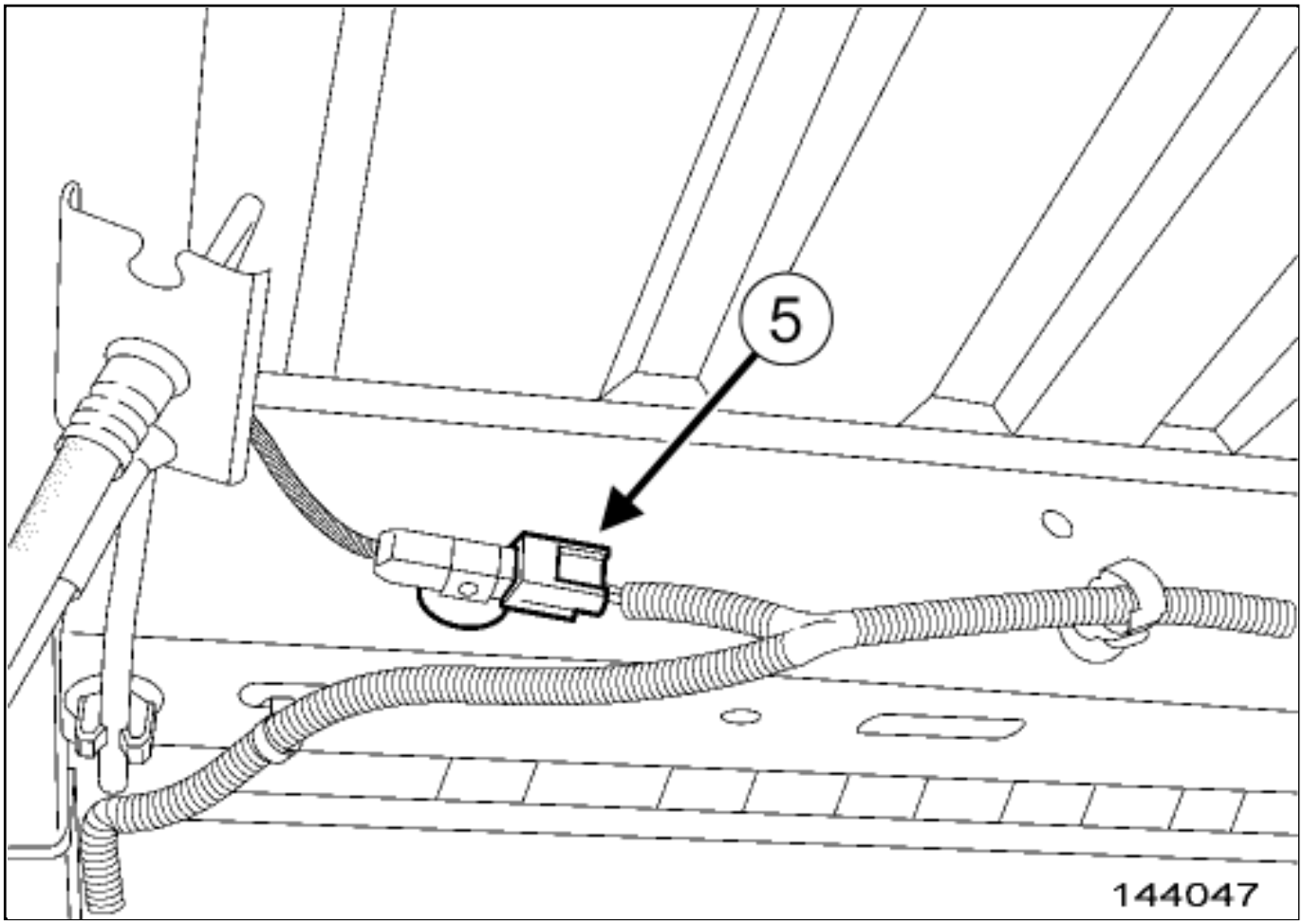
- Unclip the wiring of the rear brake pad wear warning light from the rear brake calliper at(2) .



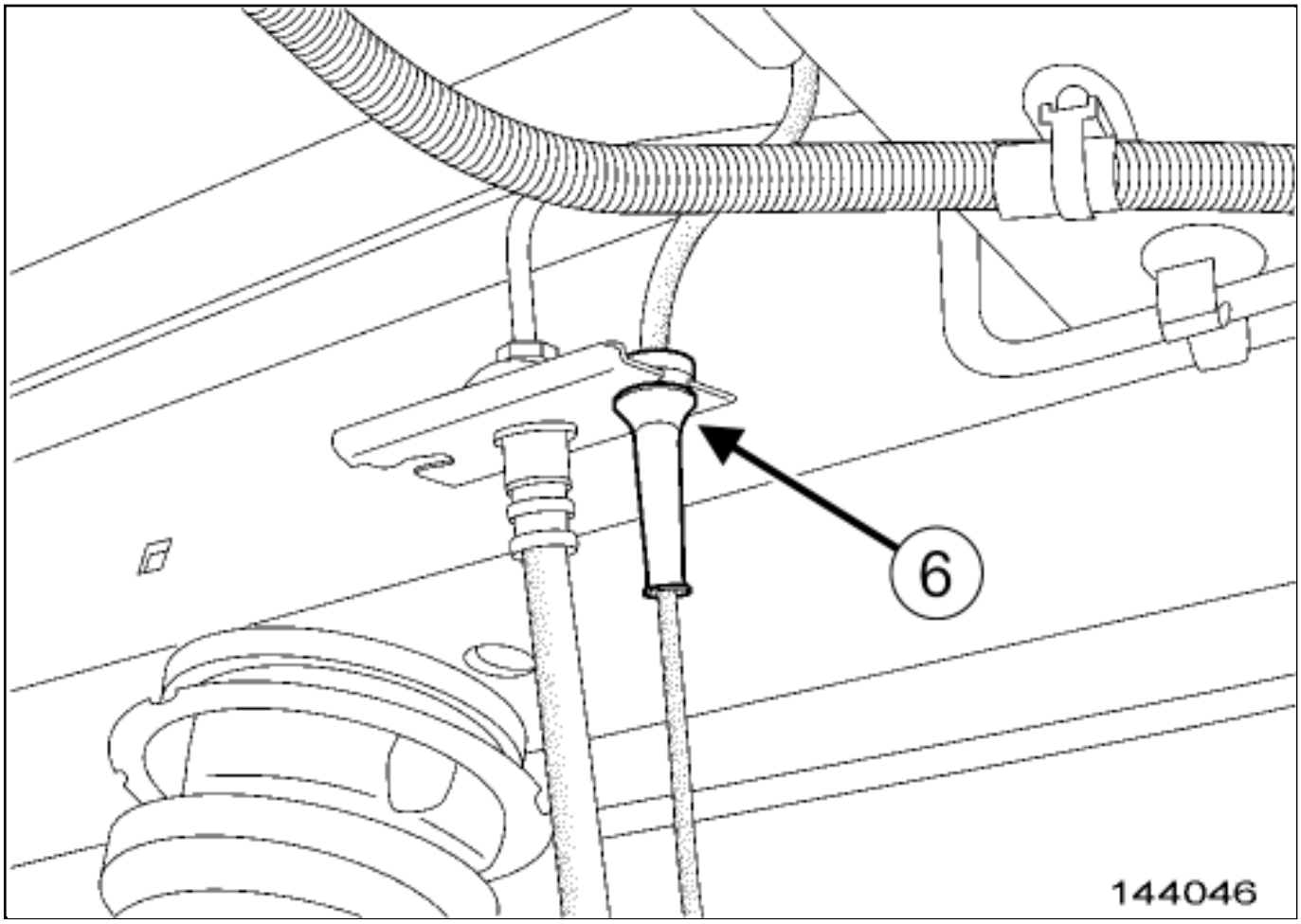
- Unclip the wiring of the rear brake pad wear warning light from the rear axle at(3) .



- Mark the position of the rear brake hose cap(4) on the rear axle using an indelible pencil.
- Unclip the rear brake hose cap(4) from the rear axle.
- Remove the bolts of the rear brake calliper mountings(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .
- Move aside the "calliper mounting - brake calliper" assembly.
- Attach the "calliper mounting - brake calliper" assembly to the body.

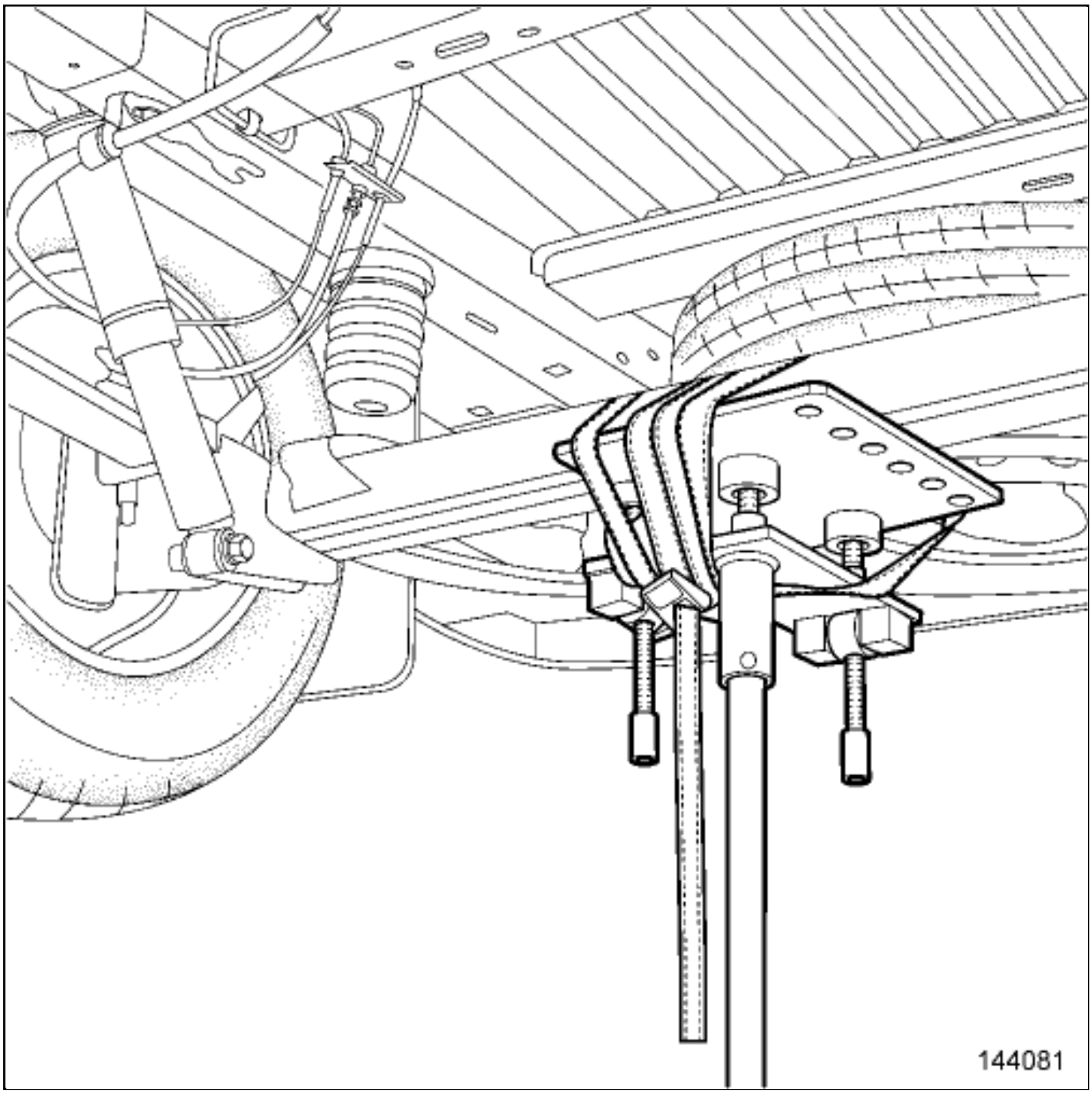


- Disconnect the rear wheel speed sensor connectors(5) .



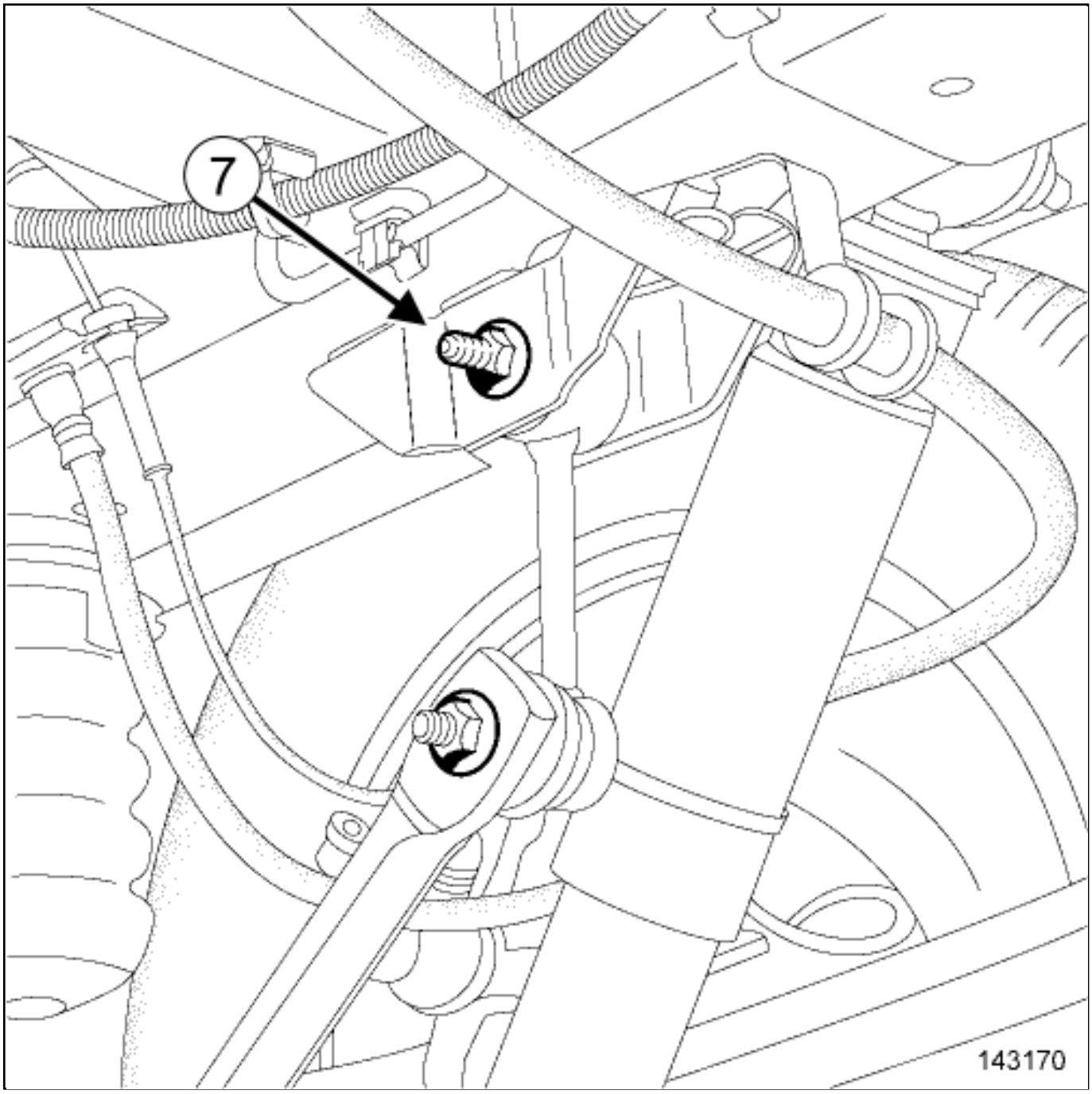
- Unclip the wiring of the rear wheel speed sensors from the body at(6) .

2. REMOVAL OPERATION



- Fit a component jackunder the rear axle.

IF EQUIPPED WITH A REAR ANTI-ROLL BAR



Remove:

- the bolts(7) of the rear anti-roll bar tie rods from the body,
- the bolts of the rear shock absorbers from the rear axle(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

Attach the rear axle to the component jackusing a safety strap(s).

Remove (see 33A, Rear axle components, Rear axle assembly: Exploded view) :

- the nuts of the leaf spring U-bolts from the rear axle,
- the leaf spring U-bolts,
- the leaf spring clamps,
- the rear axle.

In the event of replacement, remove:

- the rear anti-roll bar(see 33A, Rear axle components, Rear axle assembly: Exploded view) ,
- the rear brake discs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear wheel sensors(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear brake disc protectors(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear wheel hub cover plugs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear wheel hubs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

REFITTING

1. REFITTING OPERATION

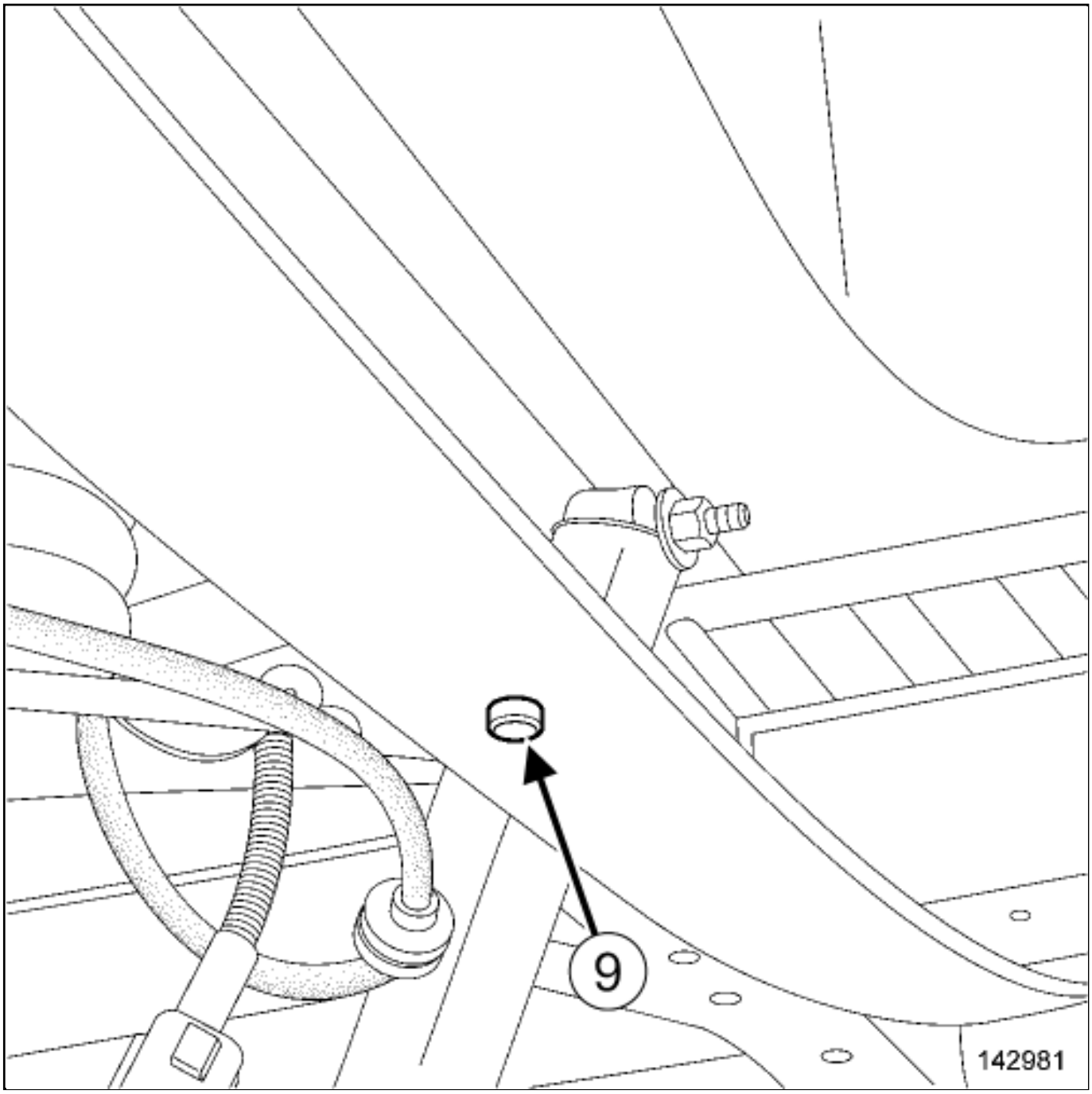
In the event of replacement, refit:

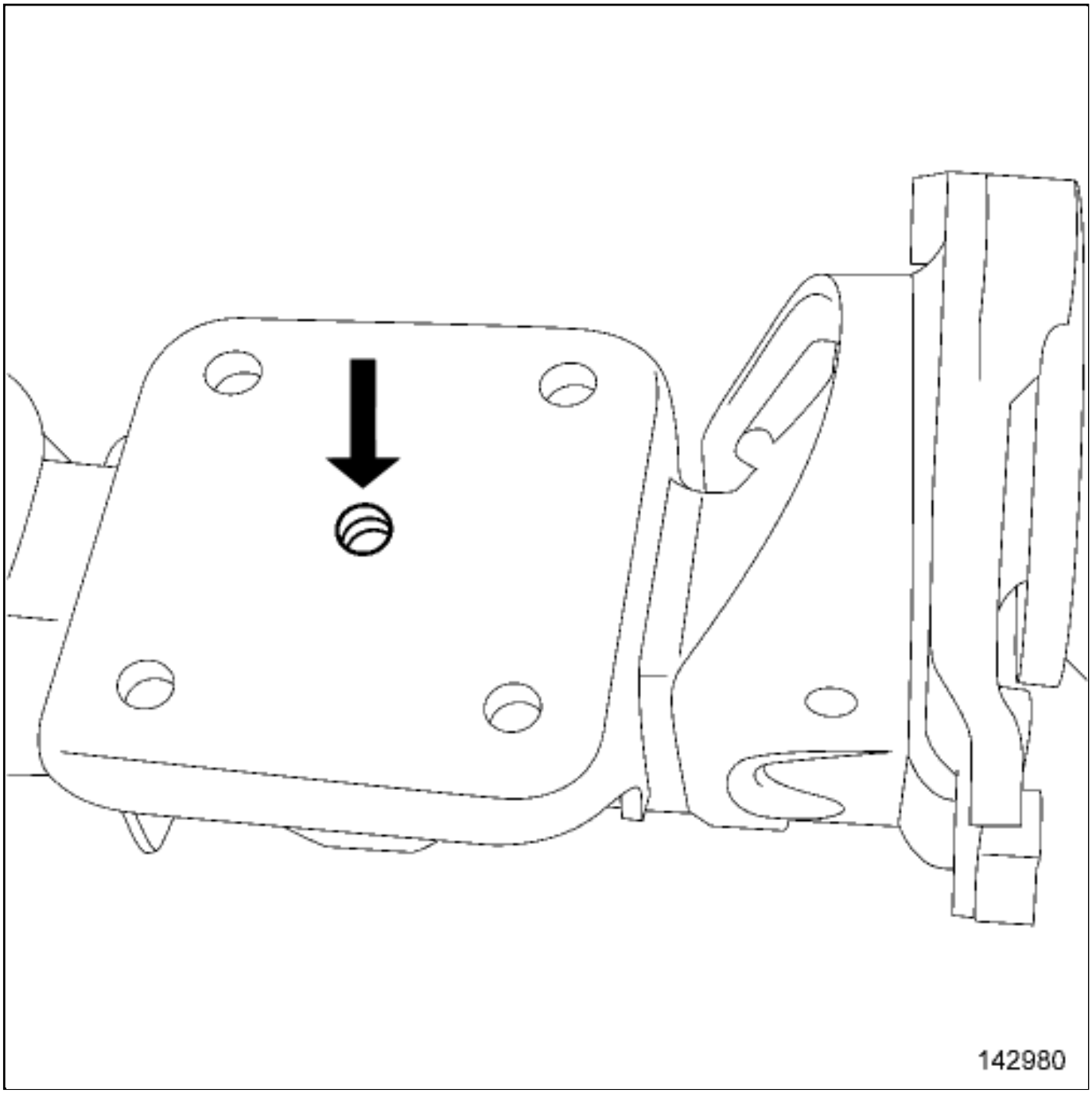
- the rear wheel hubs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear wheel hub cover plugs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded

view) ,

- the rear brake disc protectors (see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear wheel sensors (see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear brake discs (see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) ,
- the rear anti-roll bar (see 33A, Rear axle components, Rear axle assembly: Exploded view) .

Proceed in the reverse order to removal.


9
142981



Note:

Correctly position the rear axle on the centring pin(9) of the suspension spring.

Torque tighten the nuts of the calliper leaf springs on the rear axle(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

Refit the leaf spring clamp plates in the position marked during removal.

Push the rear brake calliper pistons to the end of their housings using the toolSupport plate for pushing back the brake calliper piston(Fre. 1939) .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Check the axle geometryAxle assemblies: Check .

Adjust the front axle, if necessaryFront axle system: Adjustment

Repair-13x02x05x06-01x37-1-29-1.xml

XSL version : 3.02 du 22/07/11

COMPRESSOR ASSEMBLY: REMOVAL - REFITTING

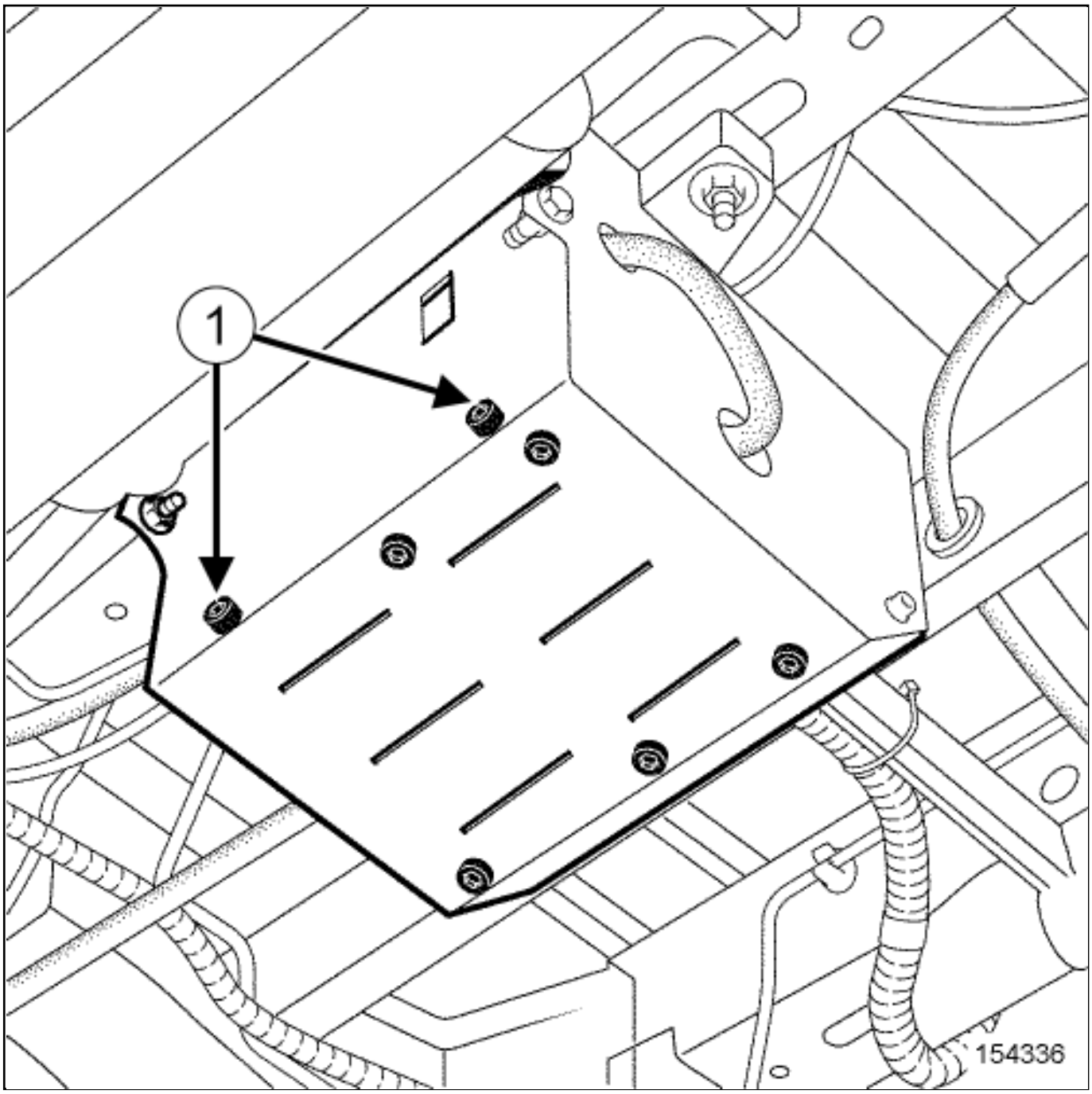
Equipment required
component jack

REMOVAL

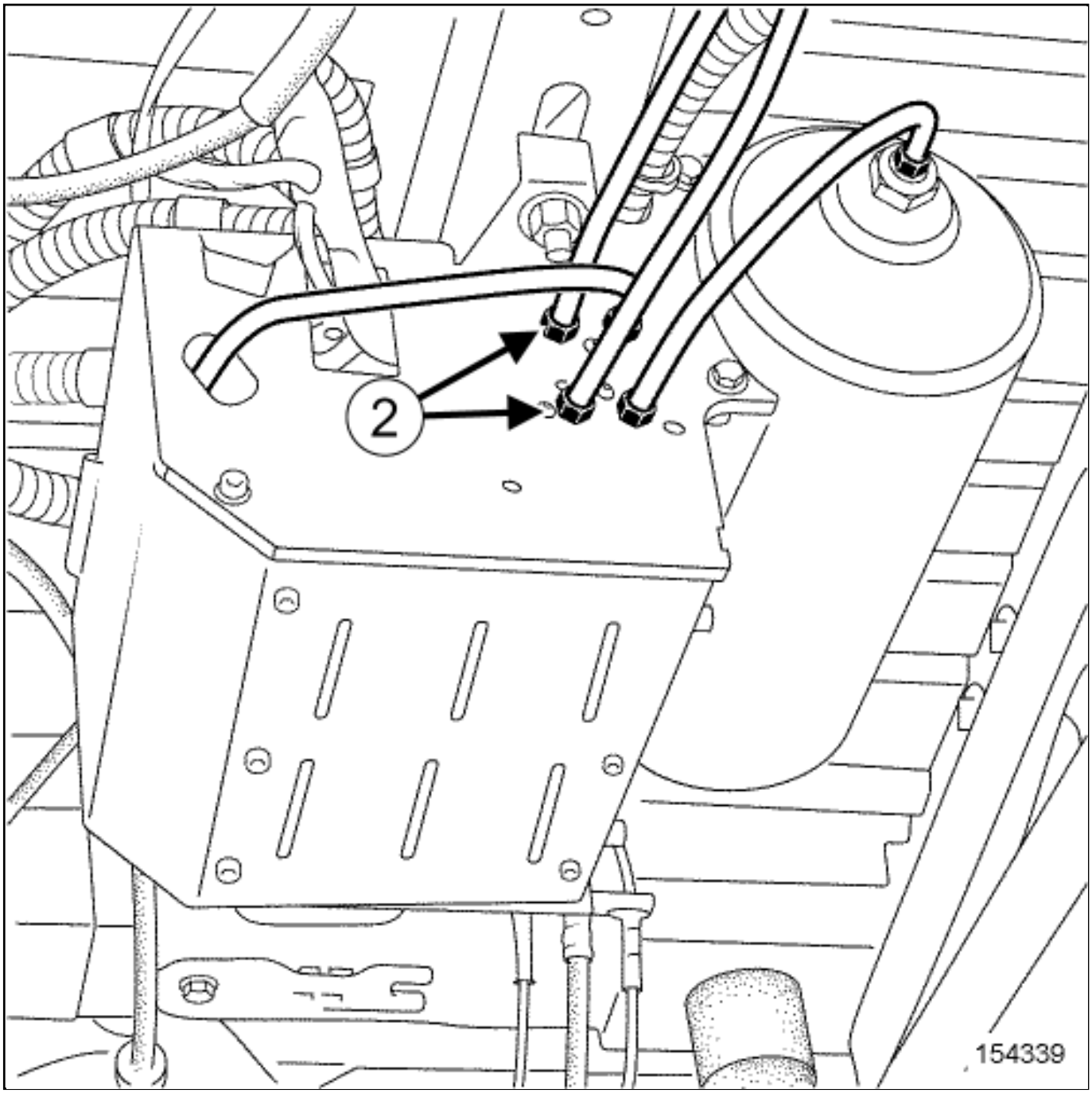
1. REMOVAL PREPARATION OPERATION

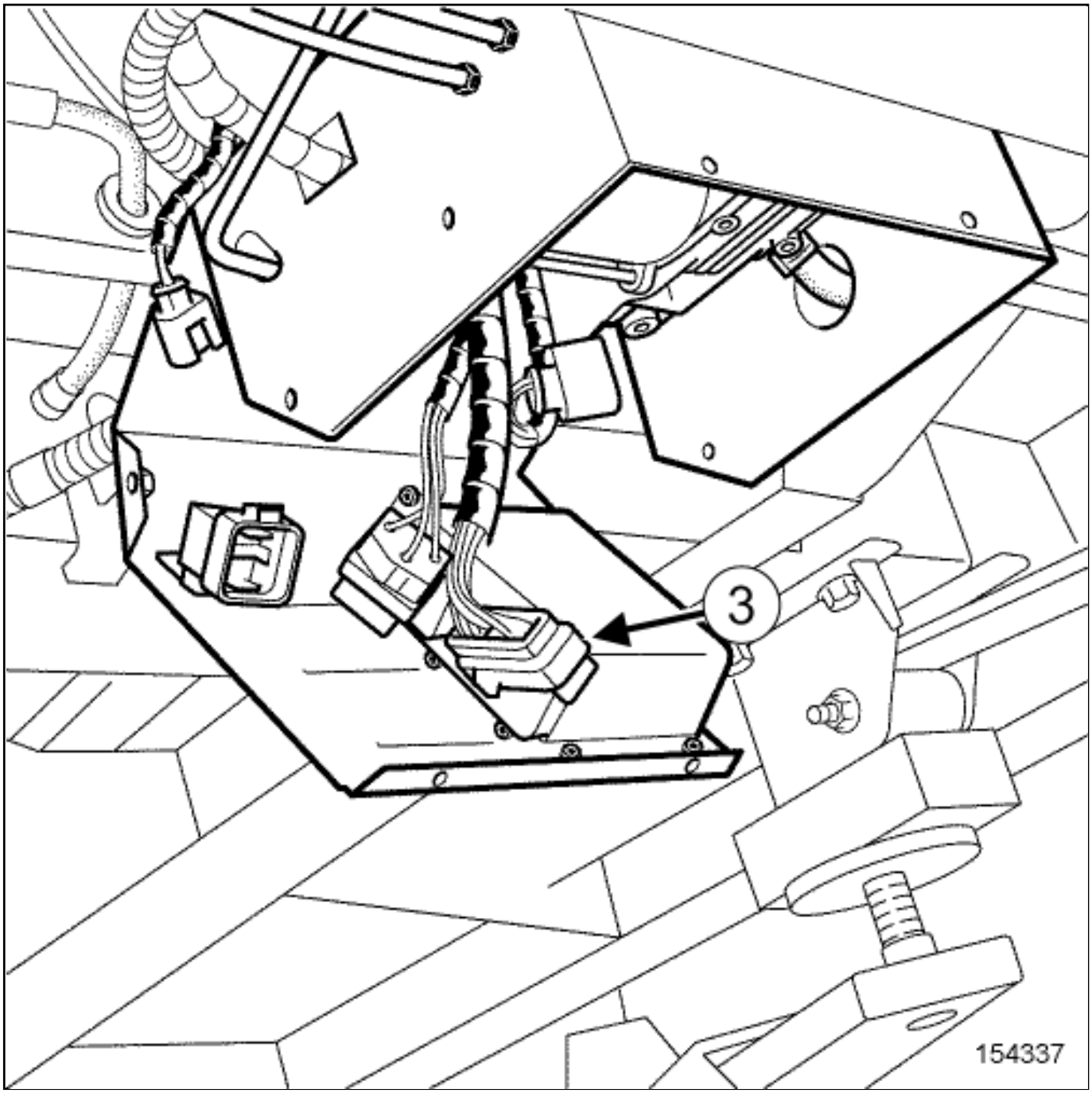
- Position the vehicle on a two-post lift Vehicle: Towing and lifting .
- Disconnect the battery Battery: Removal - Refitting .

2. REMOVAL OPERATION



- Remove the compressor unit protective cover bolts(1) .


2
154339



Open the compressor unit protective cover.

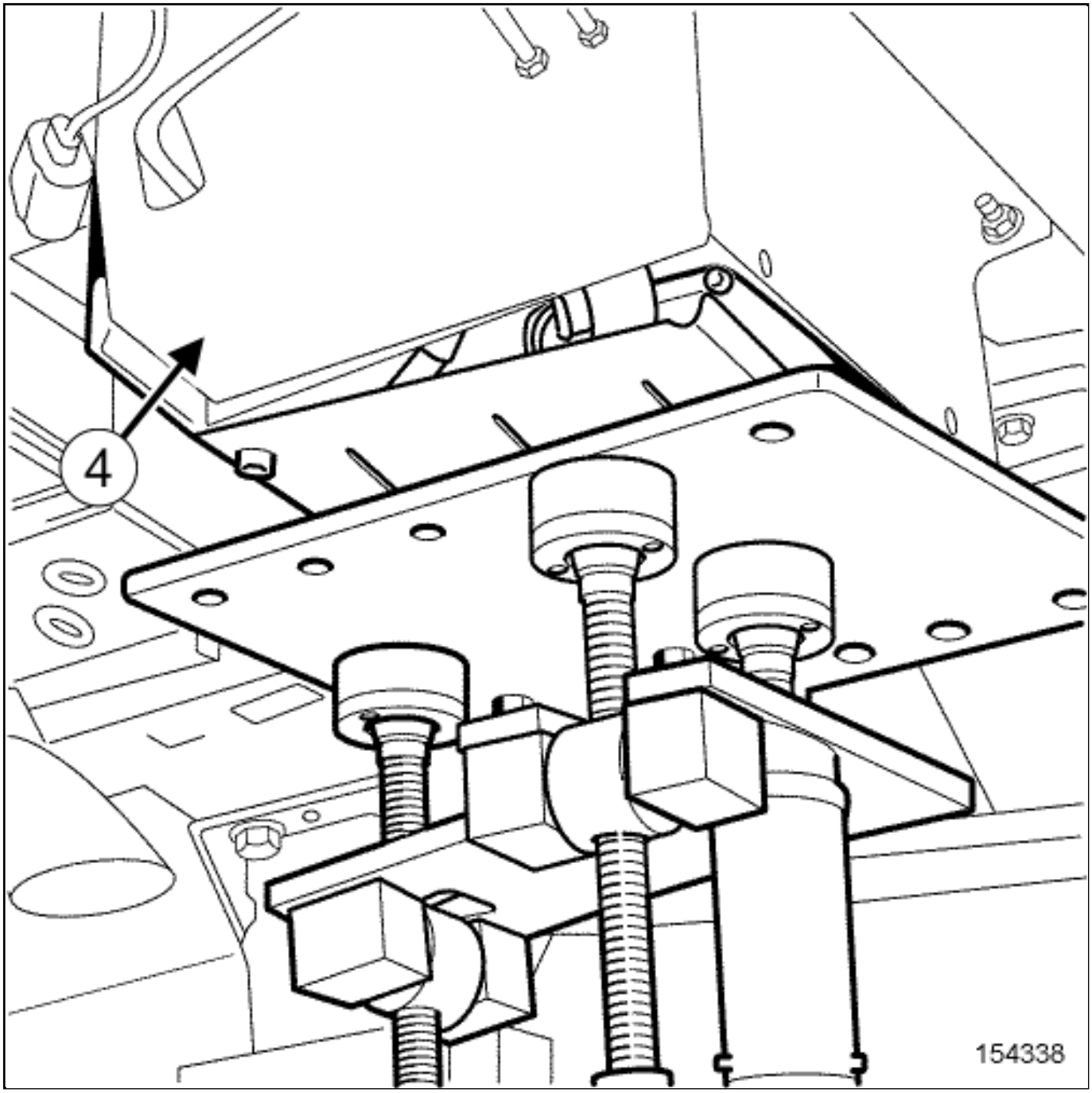
Note:

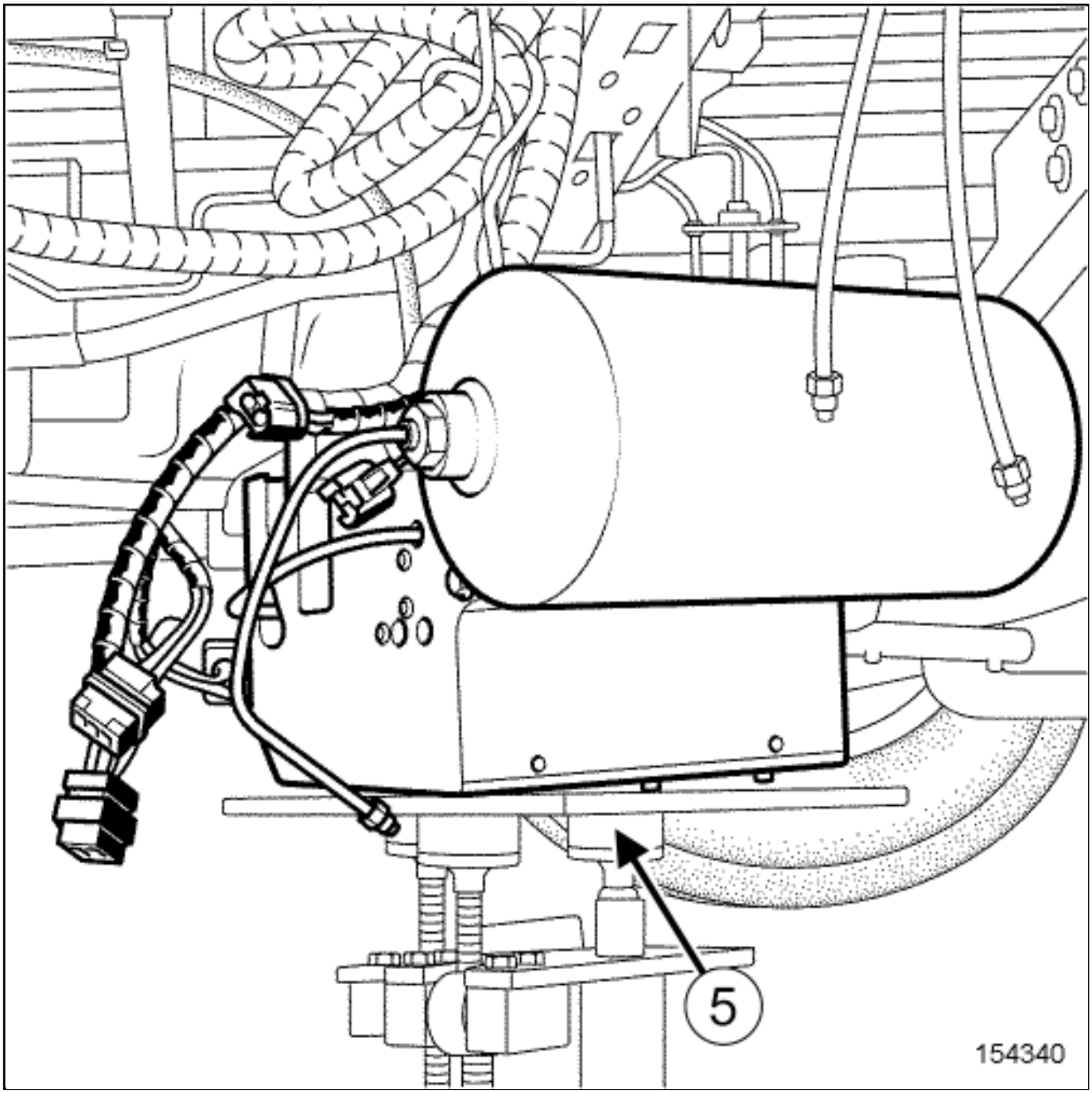
Note the positioning of the pipes for refitting.

Disconnect:

- the air outlet pipes(2) from the compressor unit,
- the computer connector,
- the solenoid valves connector,
- the compressor connector(3) .

- Move aside the wiring.





- Fit the component jack under the "compressor unit - air reservoir" assembly (4)
- Cut the wiring clamp.
- Remove the "compressor unit - air reservoir" assembly nuts.
- Move down the "compressor unit - air reservoir" assembly using the component jack (5) .

Remove the "compressor unit - air reservoir" assembly.

1- IN CASE OF REPLACEMENT

Remove the air reservoir(see 38F, Pneumatic suspension , Air reservoir: Removal - Refitting) .

REFITTING

1. REFITTING PREPARATION OPERATION

Apply teflon adhesive rollVehicle: Parts and consumables for the repair on the air pipes unions.

1- IN CASE OF REPLACEMENT

Refit the air reservoir(see 38F, Pneumatic suspension , Air reservoir: Removal - Refitting) .

2. REFITTING OPERATION

Refit:

- the "compressor unit - air reservoir" assembly,
- the "compressor unit - air reservoir" assembly nuts.

Torque tighten the "compressor unit - air reservoir" assembly nuts60 N.m.

Connect the pipes in the position noted during removal.

Torque tighten the air pipes12 N.m.

Ensure that the following connectors are correctly connected:

- of the computer,
- of the compressor,
- of the solenoid valves.

Proceed in the reverse order to removal.

COMPRESSOR ASSEMBLY: REMOVAL - REFITTING

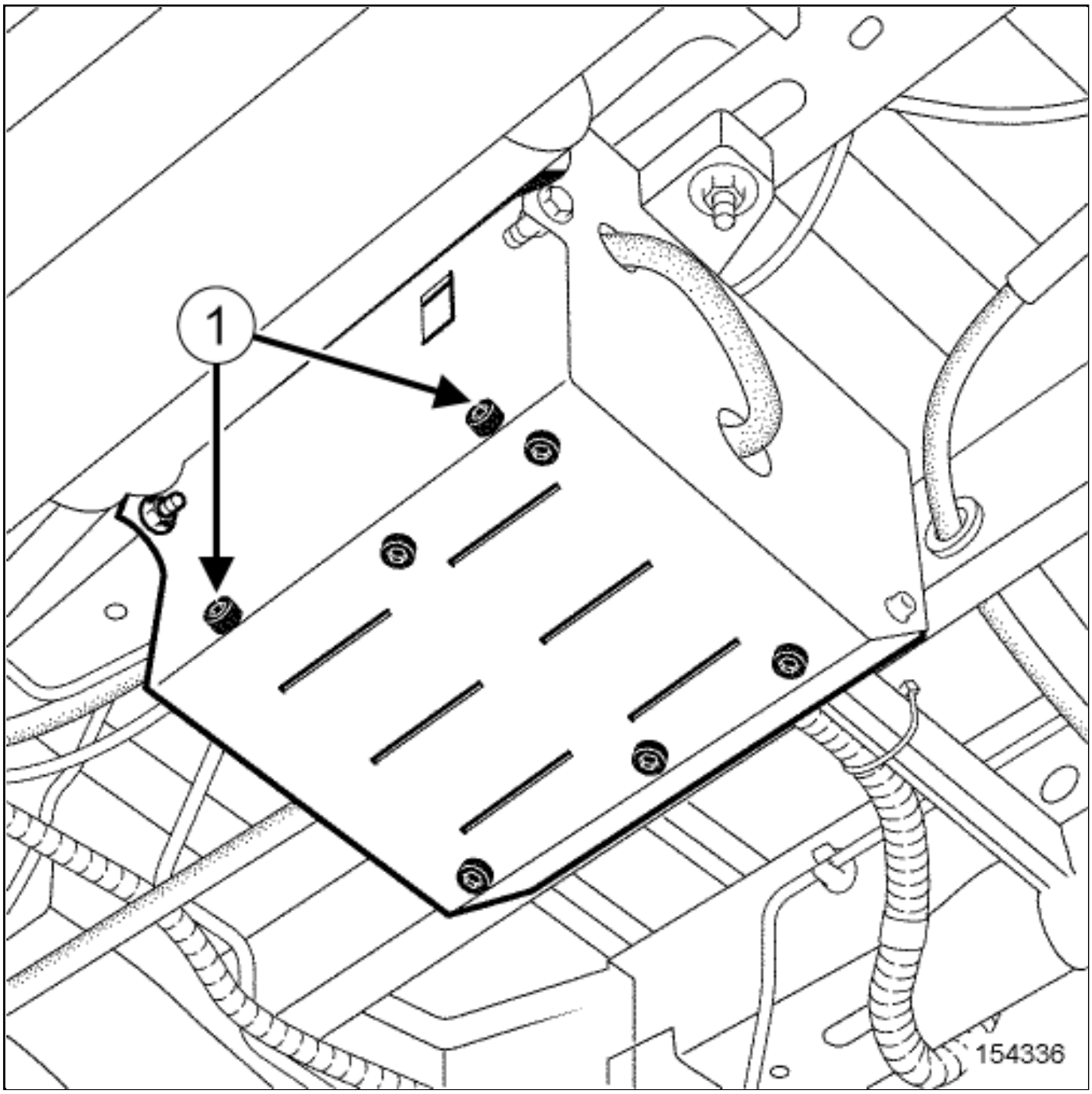
Equipment required
component jack

REMOVAL

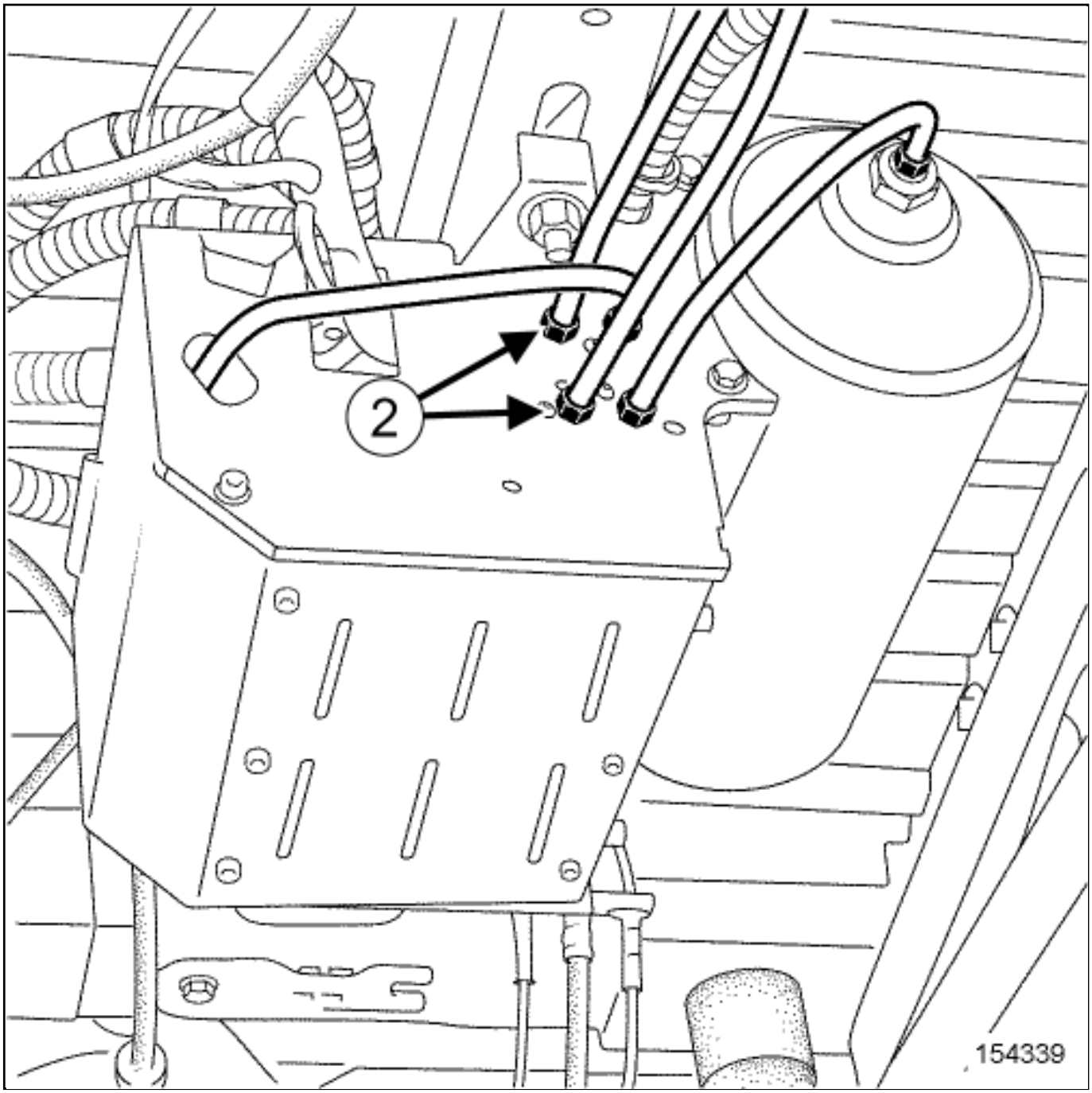
1. REMOVAL PREPARATION OPERATION

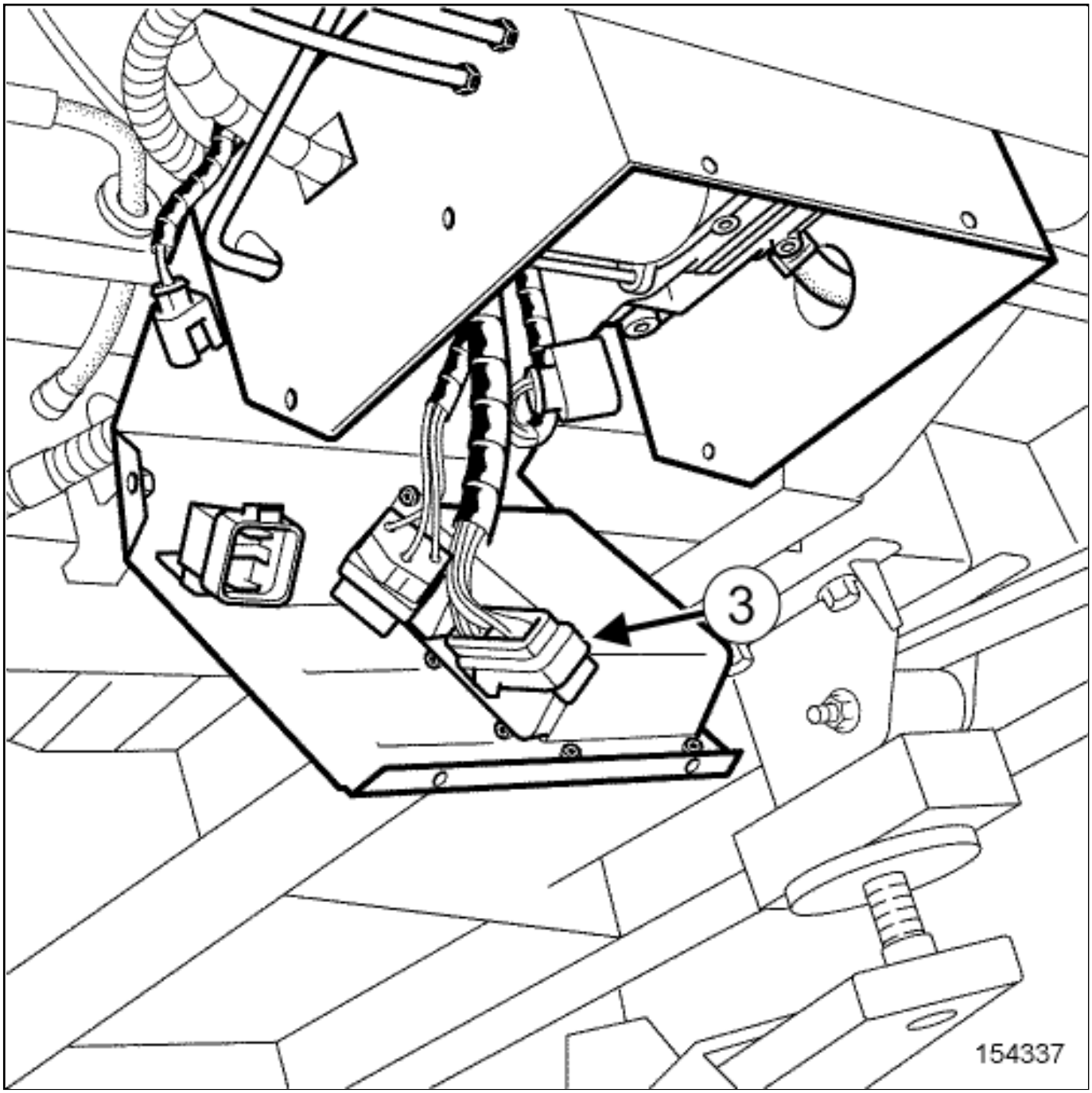
- Position the vehicle on a two-post lift Vehicle: Towing and lifting .
- Disconnect the battery Battery: Removal - Refitting .

2. REMOVAL OPERATION



- Remove the compressor unit protective cover bolts(1) .


2
154339



Open the compressor unit protective cover.

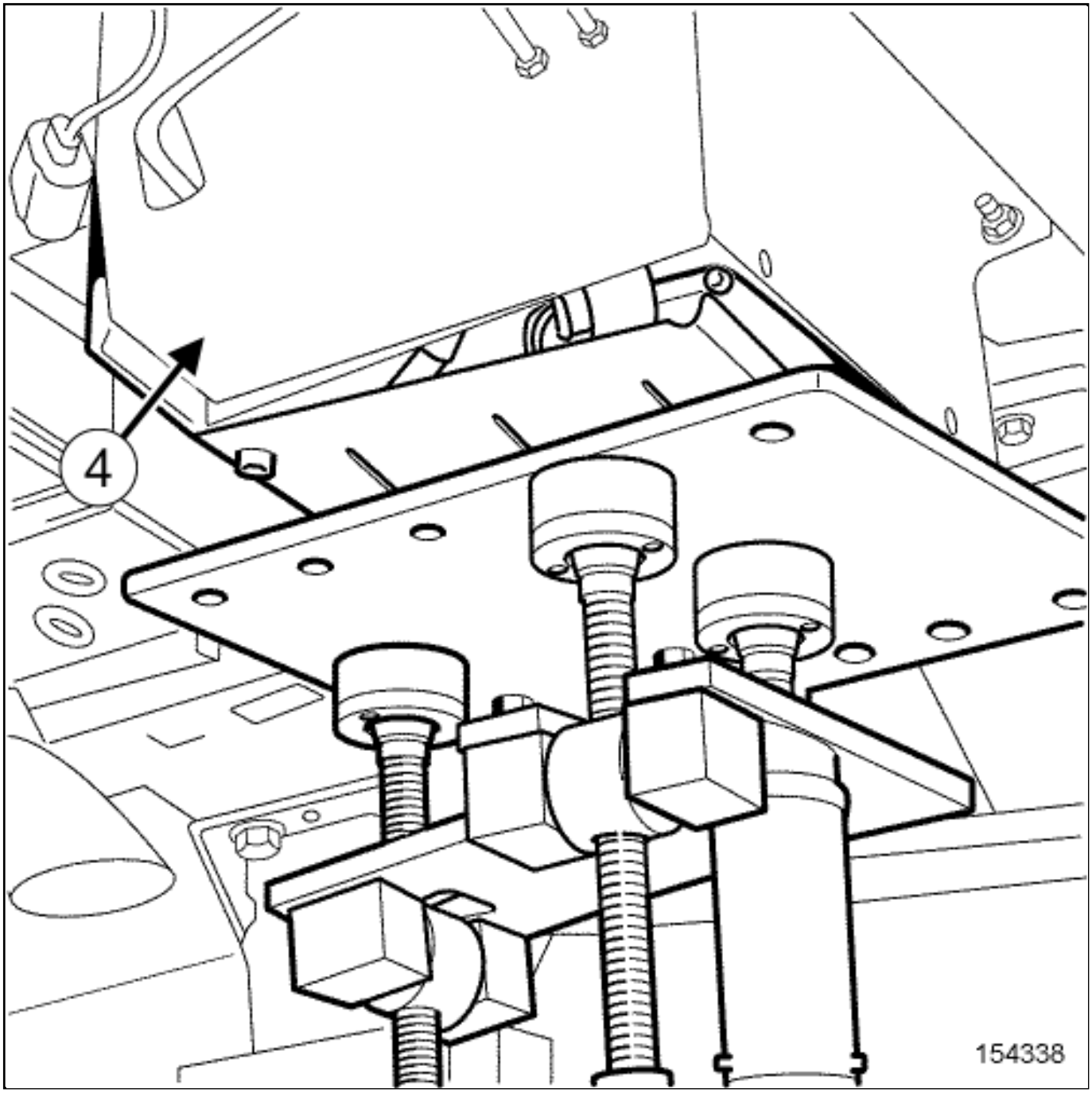
Note:

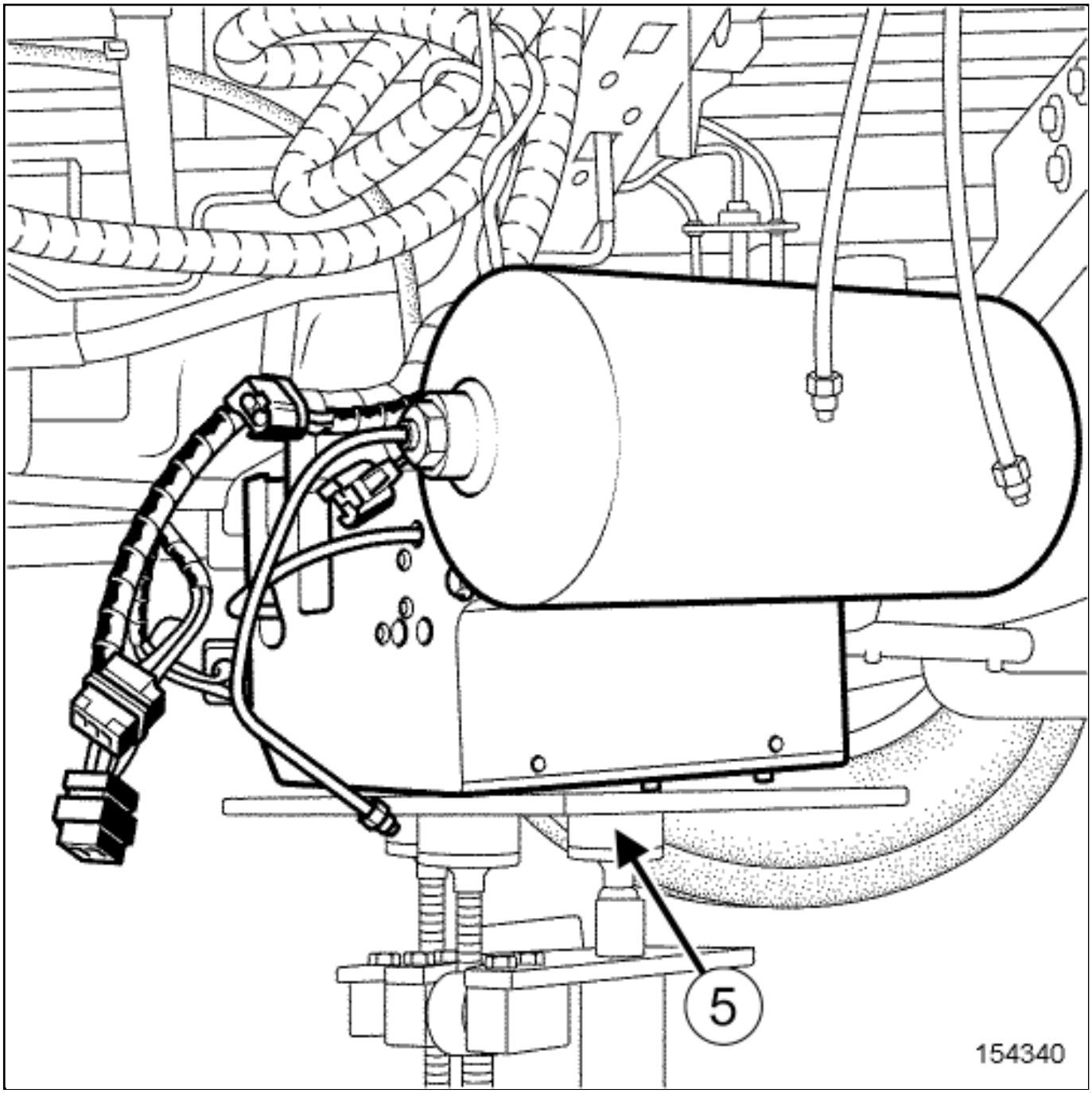
Note the positioning of the pipes for refitting.

Disconnect:

- the air outlet pipes(2) from the compressor unit,
- the computer connector,
- the solenoid valves connector,
- the compressor connector(3) .

- Move aside the wiring.





- Fit the component jack under the "compressor unit - air reservoir" assembly(4)
- Cut the wiring clamp.
- Remove the "compressor unit - air reservoir" assembly nuts.
- Move down the "compressor unit - air reservoir" assembly using the component jack(5) .
-

Remove the "compressor unit - air reservoir" assembly.

1- IN CASE OF REPLACEMENT

- Remove the air reservoir (see 38F, Pneumatic suspension , Air reservoir: Removal - Refitting) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Apply teflon adhesive roll Vehicle: Parts and consumables for the repair on the air pipes unions.

1- IN CASE OF REPLACEMENT

- Refit the air reservoir (see 38F, Pneumatic suspension , Air reservoir: Removal - Refitting) .

2. REFITTING OPERATION

- Refit:
  - the "compressor unit - air reservoir" assembly,
  - the "compressor unit - air reservoir" assembly nuts.
- Torque tighten the "compressor unit - air reservoir" assembly nuts 60 N.m.
- Connect the pipes in the position noted during removal.
- Torque tighten the air pipes 12 N.m.
- Ensure that the following connectors are correctly connected:

- of the computer,
- of the compressor,
- of the solenoid valves.

Proceed in the reverse order to removal.

RENAULT

Technical Note 6515A

All types

Subsection concerned: 01B

COMPUTER AUTOMATIC CONFIGURATION PROCEDURE

This Technical Note concerns the on-board computer Automatic Configuration operations using a RENAULT.NET connection or the Reprogramming CD (part no.: **77 11 298 859**).

Edition 1 - XXX 2007 **Edition Anglaise**

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All rights reserved by RENAULT.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of RENAULT.

© RENAULT S.A.S

Contents

Page

01B VEHICLE FAULT FINDING SPECIFICATIONS

Computer automatic configuration 01B-1

GENERAL INFORMATION

Automatic configuration consists of automatically adapting a new computer to the vehicle to which it is fitted.
It is done by **the diagnostic tool** RENAULT CLIP using either RENAULT.NET, or the Reprogramming-Configuration CD part no **77 11 298 859**.

When to automatically configure a computer:
This operation is a step in the procedure to apply after repairing the computer. If it must be carried out, it will be present in the procedure to apply after repairing the computer. This procedure is detailed in the after repair documents of this computer.

The reprogramming data available via RENAULT.NET is always more up to date than that available on the CD (Part No. 77 11 298 859).

The CD is edited and distributed every month in the same way as the **diagnostic tools** update.
Each CD cancels and replaces the previous one.

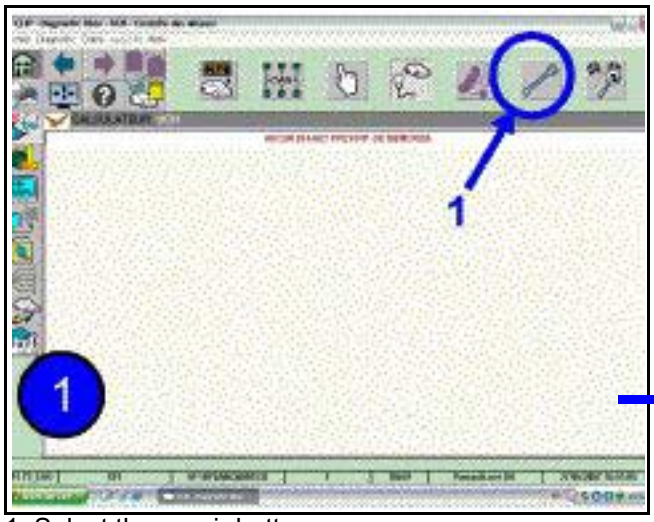
Tooling required
- CLIP with the most recent update.
- 1 connection to RENAULT.NET (requires a CLIP with a radiofrequency kit and a RENAULT.NET certificate)
  or
  1 reprogramming CD, Part No.**77 11 298 859** for the current month.

OPERATIONAL PROCEDURE

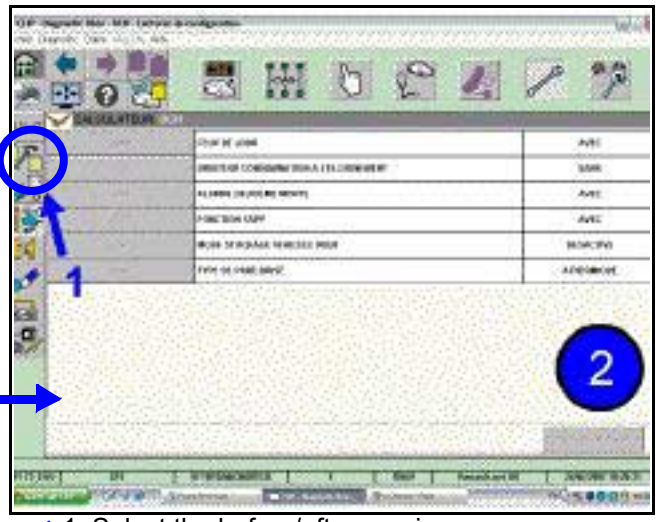
The automatic configuration operation is accessible only from the "after repair" documentation of the computer.

CLIP displays for access to "after repair" documentation

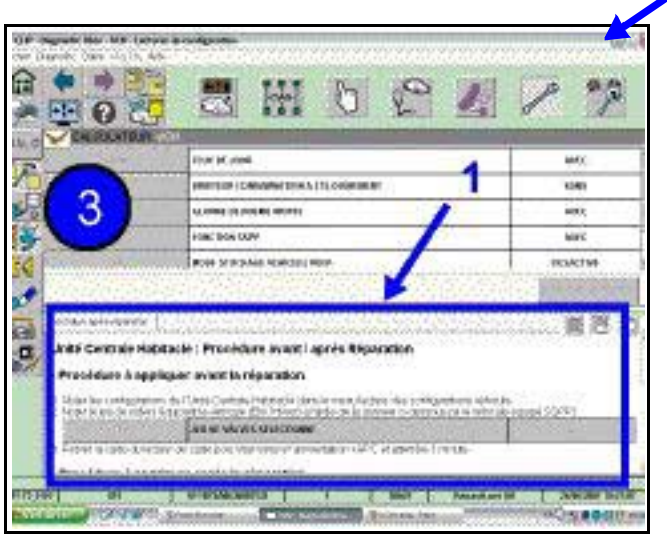
Screen	Step	Notes
1	Fault finding	Fault finding of the vehicle is complete. Repairs can begin. Select the button depicting an open-jawed spanner
2	Repair	Select the button depicting 2 books. CLIP displays the before/after repair documentation.
3	Before/after repair documentation	Browse through the documentation using the mouse to display the "after repair" procedure



1: Select the repair button



1: Select the before/after repair documentation button



1: Browse through the documentation using the mouse to display the "after repair" procedure

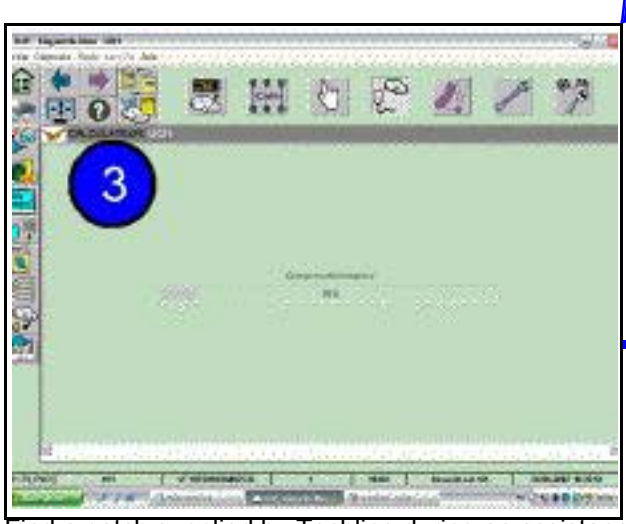
CLIP screens of the automatic configuration for each stage

Screen	Step	Notes
1	Procedure to follow after repair	Follow the procedure to be implemented after repair. Click on "**AUTOMATIC CONFIGURATION**" when this step is reached.
2	Confirmation of procedure to apply after the repair followed	If the procedure is followed, select "**Continue**". Otherwise, select "**Cancel**"
3	Finding a configuration file patch	If a patch, supplied by Techline, is found, screen 9 is displayed. Otherwise, screen 4 is displayed.
4	Searching for the configuration file on Renault.Net	If CLIP is configured in disconnected mode, screen 8 is displayed. Otherwise, CLIP will start the interface to communicate with Renault Net.
5	Interrogating Renault.Net	CLIP interrogates Renault.Net to receive the configuration file
6	Interrogation of Renault.Net complete	CLIP has received a reply from Renault Net
7	Closing the communication interface	Select "**OK**" to close the interface. If the file is recovered, screen 9 will appear. Otherwise, screen 8 will appear.
8	Finding the configuration file on CD/DVD	Insert the latest updated CD/DVD.
9	Configuration file recovered	Select "**YES**" to initiate the automatic configuration of the computer. Select "**NO**" to stop. Clip moves on to screen 13.
10	Preparing computer data	CLIP prepares the data to be sent to the computer.
11	Sending the data to the computer	CLIP sends the data to the computer.
12	Transmission complete	CLIP has sent all data to the computer The automatic configuration is successful if the message "**completed successfully**" appears and if the two numbers displayed are identical.
13	Opening the documentation	CLIP displays the documentation window again. If the configuration proceeded correctly, begin the after repair procedure.

If the configuration did not proceed correctly contact Techline (see **ASSISTANCE PROCESS**).

1-Follow the procedure to be implemented after repair. Click on "**AUTOMATIC CONFIGURATION**" when this step is reached

1- Select "**Continue**"



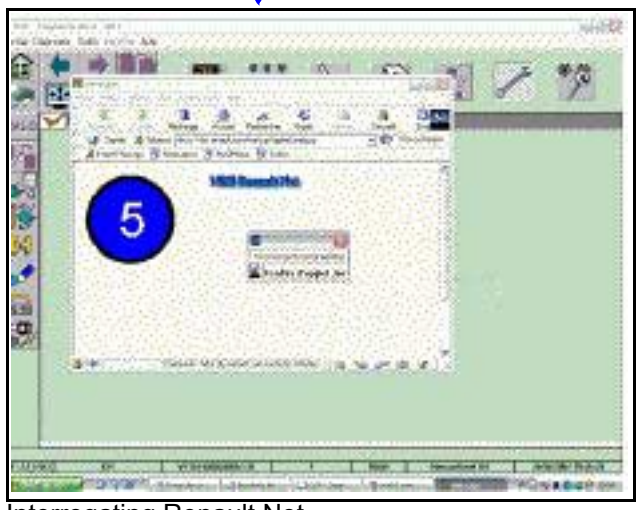
Find a patch supplied by Techline during an assistance procedure.

No patch

Searching for the configuration file on Renault Net

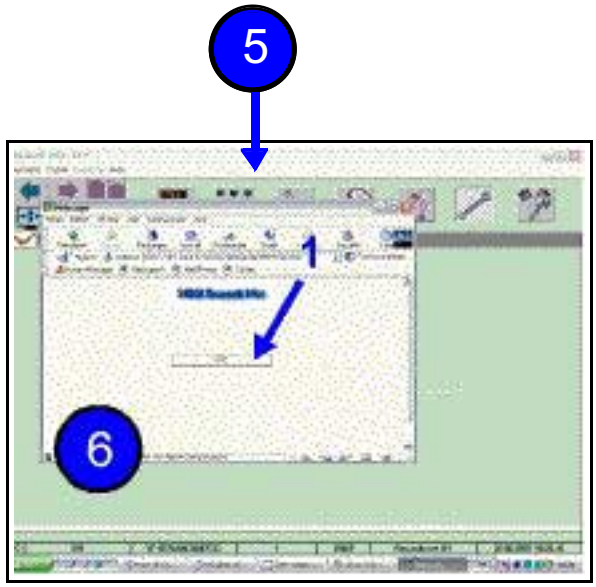
Patch found

9

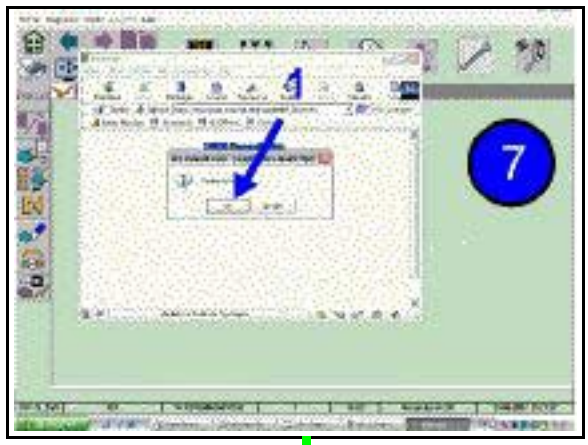


Interrogating Renault.Net

6



Interrogation of Renault.Net complete
1: Select "OK"



File found on Renault Net

1- Select "OK"

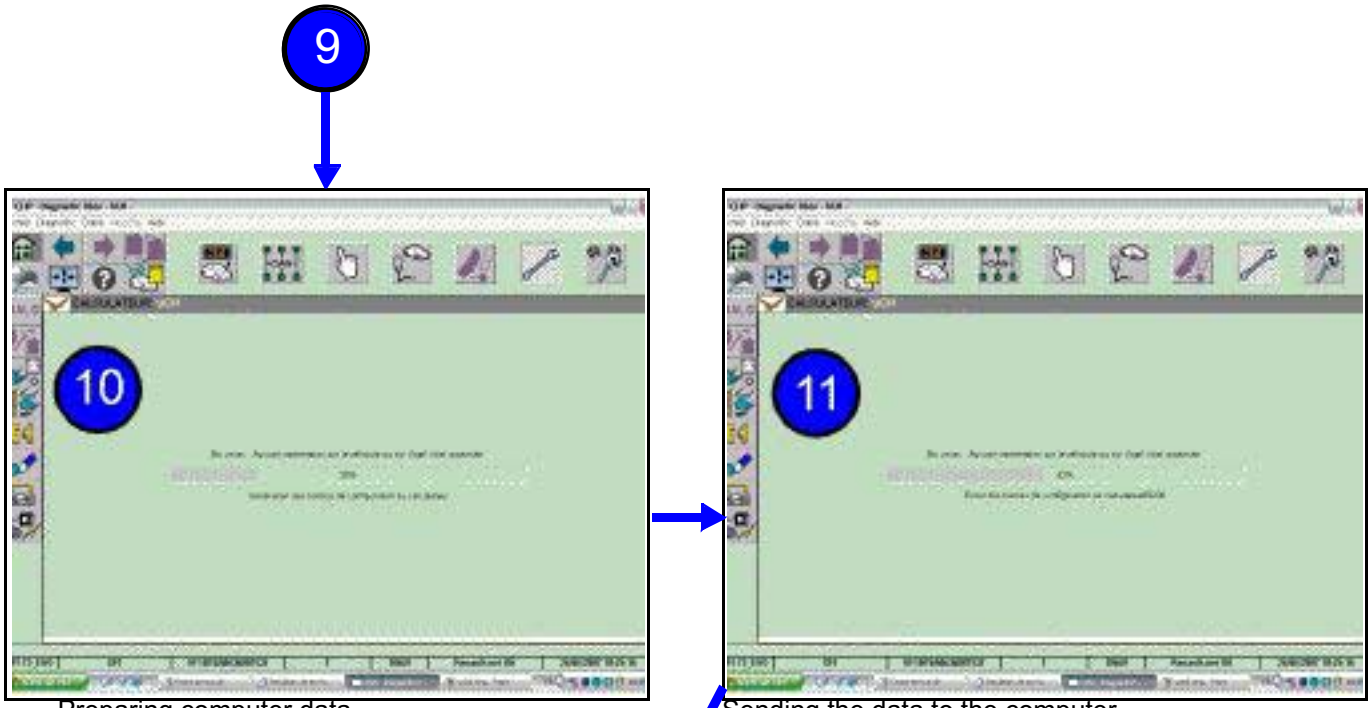
File not found

File found on CD

Select "YES" to initiate the automatic configuration of the computer.
Select "NO" to stop

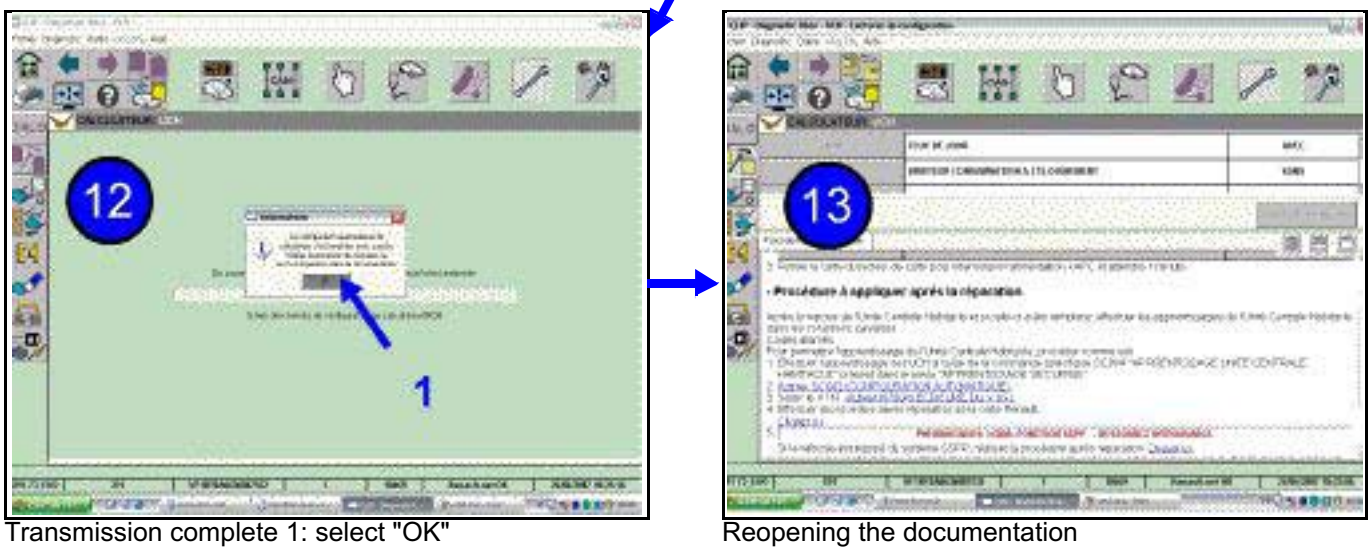
1: Insert the latest updated CD/DVD
2: Select "Continue"

"Yes" button selected



Preparing computer data

Sending the data to the computer



Transmission complete 1: select "OK"

Reopening the documentation

ASSISTANCE PROCEDURE

The ASSISTANCE PROCEDURE must be applied in the event that automatic configuration is interrupted, i.e. if screen 12 is not displayed.

The ASSISTANCE PROCEDURE consists of ACTIS completing a CUSTOMER INCIDENT REPORT (CIR) to be sent to Techline, stating the following details:

- The VIN of the vehicle.
- The fabrication number of the vehicle.
- The code or error message given in the CLIP message.
- The computer (UCH, AIR CONDITIONING, etc.).

The speed and relevance of the solution provided by Techline will depend on the accuracy with which this information is entered into the customer fault log.

Following analysis of the fault by Techline, a patch will be sent to you to enable automatic configuration of the computer.

RENAULT

Technical Note 3585A

ALL TYPES

Subsection concerned: 01B

COMPUTER REPROGRAMMING AND CALIBRATION PROCEDURE

This Technical Note relates to onboard computer Reprogramming and Calibration operations using a RENAULT.NET connection or a Reprogramming CD (Part No.: 77 11 298 859).

77 11 338 820 **Edition 4 - OCTOBER 2007** **EDITION ANGLAISE**

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All copyrights reserved by Renault.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of Renault.

© Renault s.a.s. 2007

CONTENTS

Page

GENERAL INFORMATION 1

Tooling required 1
Calibration 2
Reprogramming 2

OPERATING PROCEDURE (Programming and reprogramming a computer) 3

Preparing the RENAULT CLIP diagnostic tool 3
Preparing the vehicle 3
Programming phase - reprogramming 4
Returning the vehicle 4
CLIP screens depending on programming - reprogramming step 5
Linking the screens 6

CODE SERVER PROCEDURE (in CD mode only) 15

CONSULTING THE COMPUTER IDENTIFICATION FRAME 17

CONSULTING THE COMPUTER'S HISTORY 17

CONSULTING THE DIAGNOSTIC TOOL LOG 18

TRACE FILE (upon the request of Techline) 19

Creating the trace file 19
Recovering the trace file after programming - reprogramming 19

GENERAL INFORMATION

Two types of operation can be carried out in after-sales, either *programming or reprogramming* of the computer. These operations apply to all vehicles and all types of (re)programmable computer (e.g: Injection, Gearbox, Air conditioning, Instrument panel, Parking brake, UCH).

The two types of operation are carried out with the RENAULT CLIP diagnostic tool using either RENAULT.NET, or the Calibration - Reprogramming CD Part No. 77 11 298 859.

The reprogramming data available via RENAULT.NET is always more up to date than that available on the CD (Part no. 77 11 298 859).

The CD is edited and distributed every month in the same way as the diagnostic tools update.
Each CD cancels and replaces the previous one.

Tooling required:
- CLIP with the most recent update.
- 1 connection to RENAULT.NET (requires a CLIP with a RF kit and a RENAULT.NET certificate)
  or
  1 reprogramming CD, Part No. 77 11 298 859 from the current month.
- 1 RENAULT approved battery charger.
- The FAULT FINDING REPAIR MANUAL relevant to the vehicle and the system to be (re)programmed.
- 1 RENAULT.NET connection to the NRE reprogramming codes server for each calibration - reprogramming with a reprogramming CD (See **CODE SERVER PROCEDURE**).

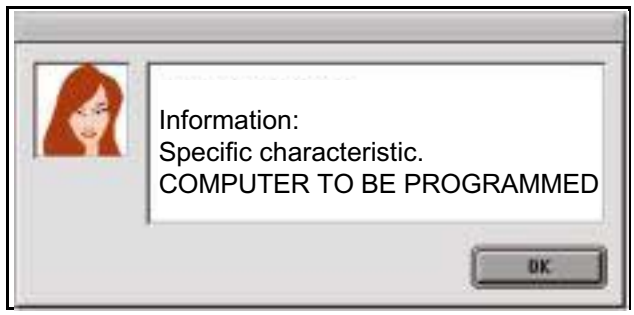
Computer
The operation consists of downloading the calibration using the RENAULT CLIP **diagnostic tool**.

It affects computers supplied as *non operational* (also known as blank) by the Parts Department for all vehicles in the RENAULT range, but only for certain types of computer.

The types of computers which are delivered blank and to be calibrated are, to date, engine management (Petrol, Diesel and GPL injection), automatic and sequential gearboxes and ABS/ESP computers.

When To Program:

The operation is carried out as part of a computer replacement operation.
The *non operational* status of the computer, as delivered by the Parts Department, is specified in DIALOGYS by the message:



Reprogramming
The operation consists of exchanging the software and/or calibration for the most recent version using the RENAULT CLIP diagnostic tool.

This relates to computers already fitted to the vehicle as well as computers supplied as *operational* (also called "full". E.g: Air conditioning) by the Parts Department, for the entire RENAULT range.

It enables systematic replacement of the computer to be avoided.

After having entered the VIN in the main menu, the types of (re)programmable computer are displayed in the RENAULT CLIP diagnostic tool REPROGRAMMING menu.

When To Reprogram:

The operation is carried out within the framework of:

- an OTS or a Technical Note arising from a fault resulting from an After-Sales problem, or a functional improvement.
- RENAULT Technical Directives or following a request from the Techline.

OPERATING PROCEDURE (Programming and reprogramming a computer)

The operating procedure for Calibration and Reprogramming operations is strictly identical.

The operation is carried out using the RENAULT CLIP diagnostic tool, either connected to RENAULT.NETor with the reprogramming CD.

WARNING
To prevent any computer malfunctioning or locking, the following operations **must be carried out** before (re)programming.

Preparing the RENAULT CLIP diagnostic tool
- Always use the latest available version of the CLIP update.
- Always use the RENAULT.NET connection if available, in preference to the CD.

The reprogramming data available via RENAULT.NET is always more up to date than that available on the CD.

- Whenever the CD mode is being used for calibration - reprogramming, always use the latest available version of the CD.

- **Connect CLIP to the mains.**

- Set the Windows screen saver time for the RENAULT CLIP diagnostic tool to NONE or 60 minutes minimum.

  Setting the RENAULT CLIP diagnostic tool Windows monitor screen locking delay:
  In the RENAULT CLIP diagnostic tool Windows system:
  - Right click on the mouse and select **Properties**.
  - In the new **Display Properties window**, select the **Screen Saver tab**.
    Then set the screen saver to **(None)** or set the **Wait** time delay to a minimum of 60 minutes.
  - Confirm and close the display windows.

Preparing the vehicle

- **Connect an approved battery charger** to the vehicle.

- Switch off all the vehicle's electrical consumers (Lights, Interior lighting, Air conditioning, CD Radio, etc).

- Switch on the ignition (+ forced + after ignition, See Procedure).

Programming - reprogramming phase

- **Enter the exact VIN of the vehicle** in the RENAULT CLIP **diagnostic tool** main menu.

WARNING
Using a VIN which is not allocated to the vehicle risks compromising the correct running of the programming - reprogramming operation, as well as the conformity of the vehicle

Apply the correct pre-reprogramming Procedure for the vehicle and for the system to be reprogrammed.
- For example, in the case of a diesel injection: Backup the computer data if the command is available.
- For example, in the case of an Automatic Transmission: Put the gear lever in the P position.

- Find the Parts Department reference number for the computer to be reprogrammed (see **CONSULTING THE COMPUTER IDENTIFICATION FRAME**), which is necessary in the event of an **EMERGENCY PROCEDURE**.

- During any calibration and reprogramming:

WARNING
DO NOT WORK ON THE VEHICLE OR OPERATE THE DIAGNOSTIC TOOL.

In the CD mode only, enter a reprogramming code: see **CODE SERVER PROCEDURE**.

- At the end of calibration and reprogramming, observe the following instructions:
- Proceed to the WARRANTY SCREEN by pressing the NEXT button.

Apply the pre-reprogramming procedure to the vehicle and to the system to be reprogrammed.
- For example, in the case of a diesel injection: Write the saved computer data if the command is available.
- **Enter the VIN** into the computer.

Always deal with faults in all computers (when a computer is being reprogrammed, it cannot transmit data to the multiplex network. As a result, faults will be generated in other computers connected to the multiplex network).

Note the CODECAL and the SUPPLIER CODE and transfer them to the Repair Order.
If the CODECAL and the SUPPLIER CODE are lost, they can be recovered: see **CONSULTING THE TOOL LOG**.

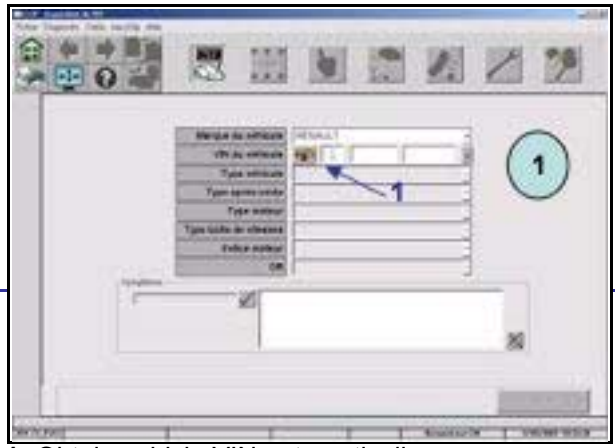
Returning the vehicle
- Test all the computers and **deal with any faults present**.

- Check that all the vehicle's current systems are correctly configured.

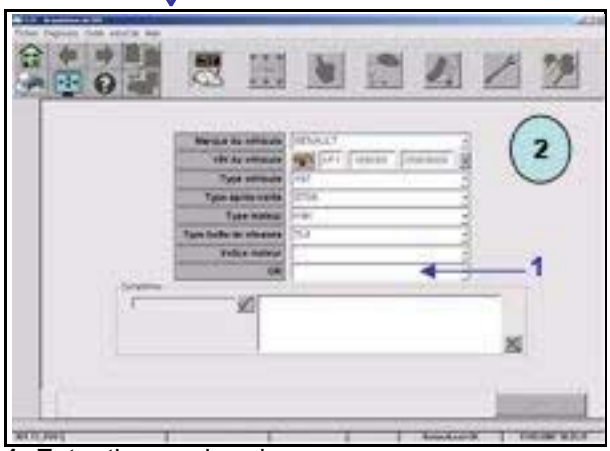
CLIP screens depending on programming – reprogramming step

Screen	Step		Commentary
02 **12**	CLIP home		CLIP determines, via the VIN, the Technical Specification of the vehicle. **Warning:** To ensure that reprogramming is carried out effectively, enter the correct VIN for the vehicle (17 characters).
02 **12**	Reprog home		Select REPROGRAMMING and the system to (re)program.
15	Choice of computer		
16	Connecting		CLIP identifies the computer concerned and recovers the technical data necessary for the (re)programming operation.
17	Entering and confirming repair order/ Entering Vehicle Technical Specification		Enter the After-Sales information necessary for the warranty. **Note:** Enter the repair order if it has not been written in the main menu. The "*Vehicle Technical Specification*" field is to be filled in at the request of Techline or if required in a reprogramming Technical Note.
18	Pre-reprogramming Message		Description of the environment to be set up before any reprogramming. **Warning:** Follow the instructions which can differ from one computer and vehicle to the next.
19	Checking battery voltage		CLIP automatically checks the voltage level necessary for the correct running of the re-programming operation.
20	Select the reprogramming mode		Choose the technical resource: either RENAULT.NET or CD.
21	Finding the file(s)	**RENAULT.NET**	CLIP finds the technical data to download to the computer. In RENAULT.NET mode, a password is needed for authentication.
22		**CD**	
23	File selection		Confirm the operation by selecting the *Software reference* to be downloaded.
24	Enter the reprogramming code in CD mode. See **CODES SERVER PROCEDURE**		**In CD mode only:** • CLIP provides a *reprogramming code*. • Provide the code management server with the *reprogramming code* and the VIN. • The server issues an "*After-Sales reprogramming code*". • Enter this code in CLIP.
25	File downloading		CLIP downloads the technical data to the computer.
26	Post-reprogramming Message		Description of the actions to carry out to finish the reprogramming operation and return the conforming vehicle. **Warning:** Follow the instructions which can differ from one computer and vehicle to the next.
27	Warranty screen		CLIP provides the warranty screen describing the operation performed and the CODECAL necessary for the Warranty procedure.

Order of the screens

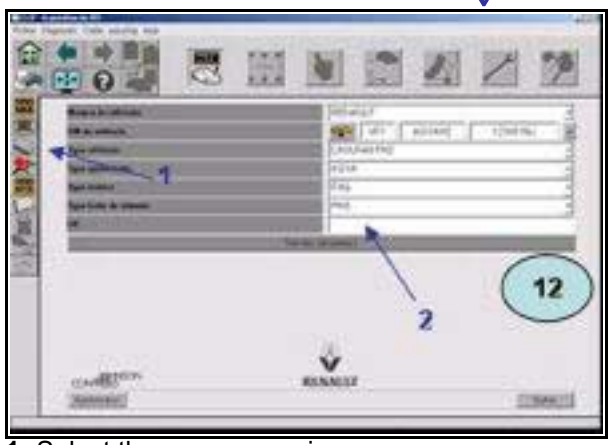


1: Obtain vehicle VIN automatically.



1: Enter the repair order.

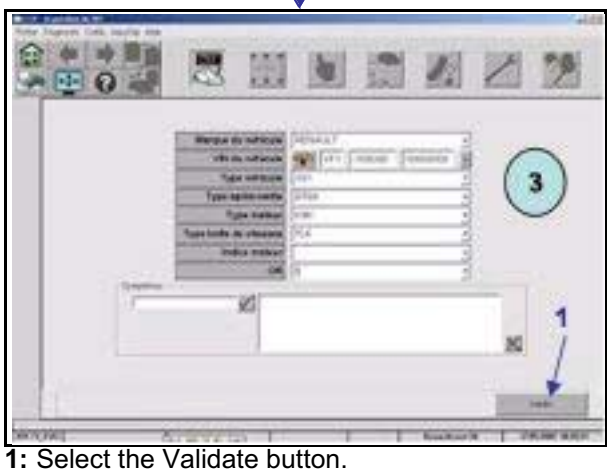
See New Interface



1: Select the reprogramming page.
2: Enter the repair order.

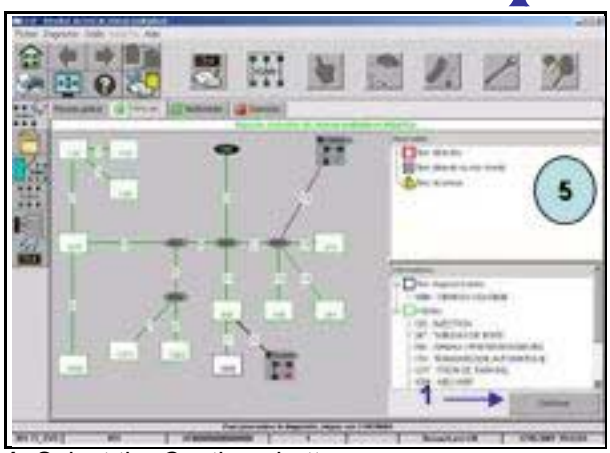
See Interface 2

New Interface (2)



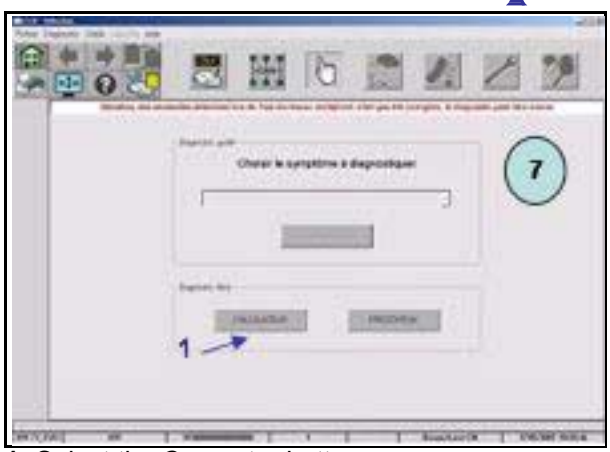
1: Select the Validate button.

Multiplex network test.

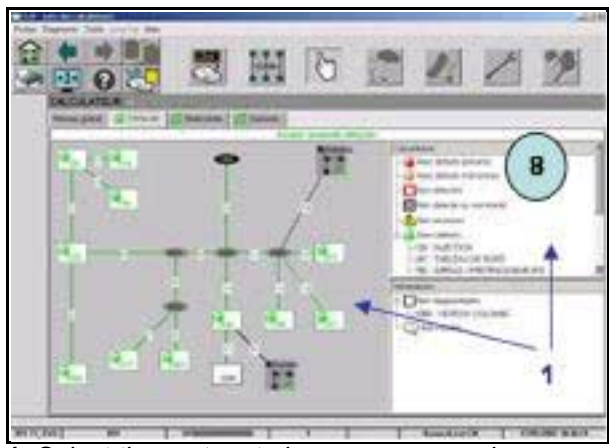


1: Select the Continue button.

Analyse data and Read faults.



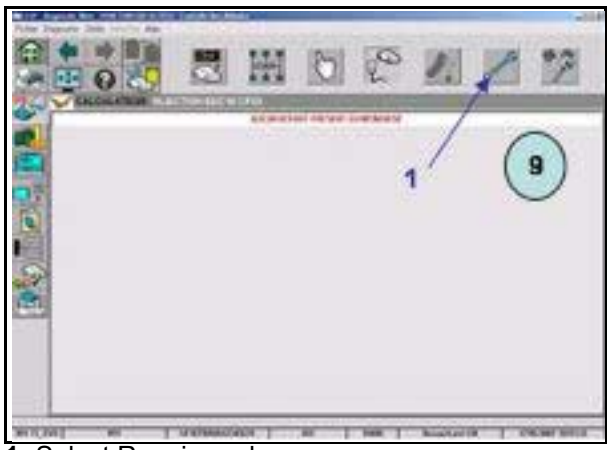
1: Select the Computer button.



1: Select the system to be reprogrammed.

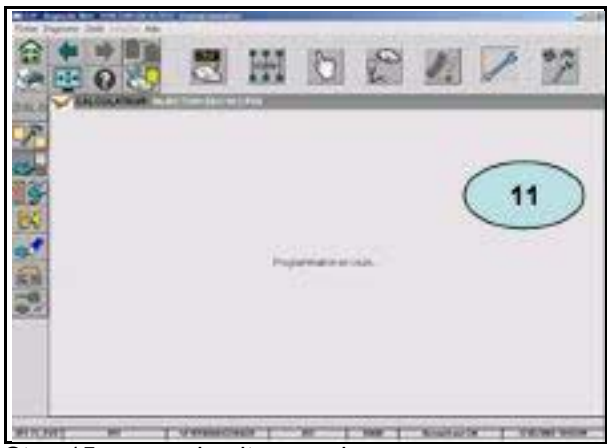
(9)

8

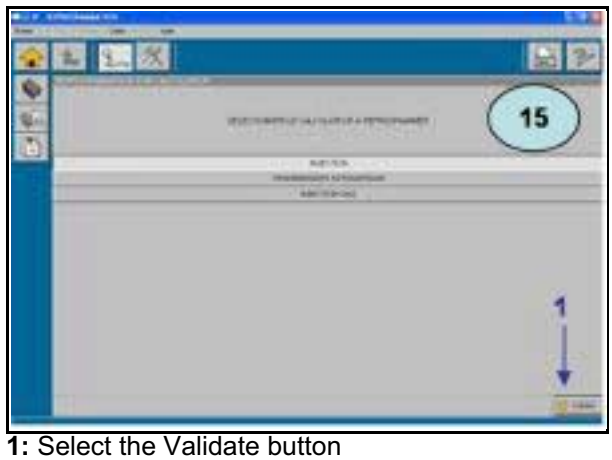


1: Select Repair mode.

1: Select the Reprogramming page.



Step 15 opens simultaneously.



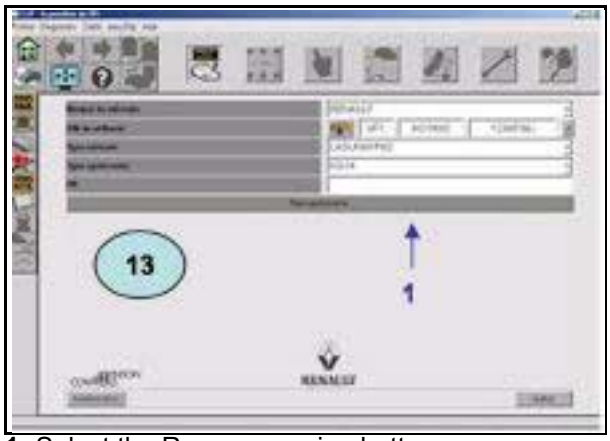
1: Select the Validate button

16

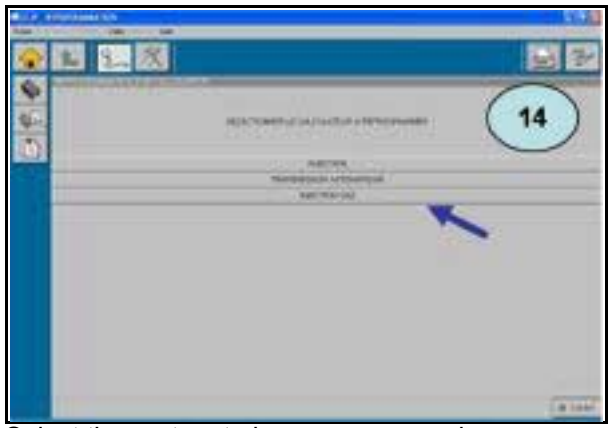
See reprogramming interface

Interface 2

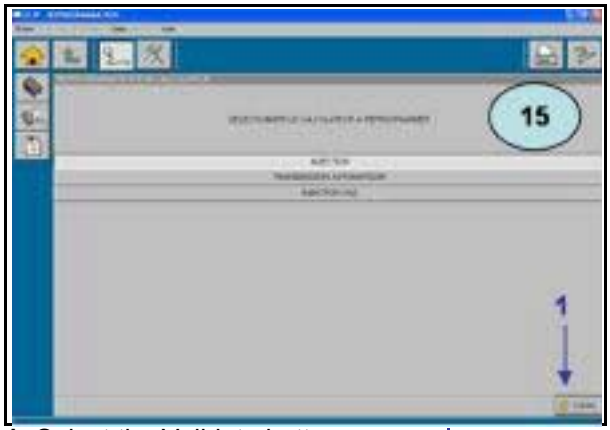
12



1: Select the Reprogramming button.



Select the system to be reprogrammed.



1: Select the Validate button.

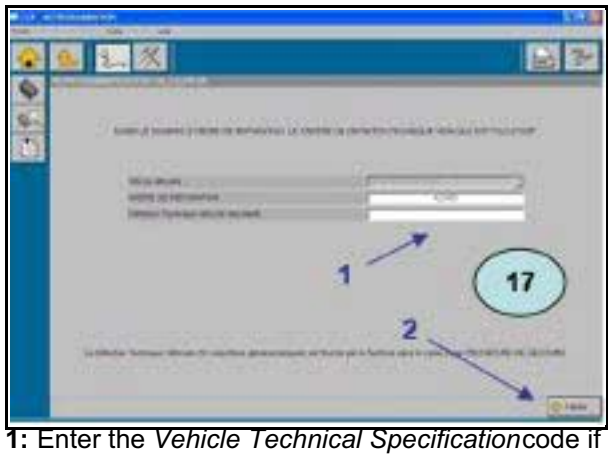
16

See reprogramming interface

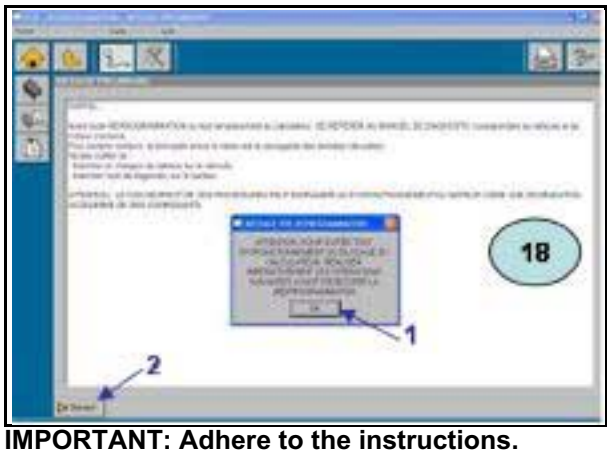
Interface Reprogramming

15

Identification of computer data.



1: Enter the *Vehicle Technical Specification*code if requested.
2: Select the Validate button.



IMPORTANT: Adhere to the instructions.
1: Select the OK button.
2: Select the next button.

Automatic battery voltage check.

Select the reprogramming mode.

RENAULT.NET

Enter the Renault.Net password.

CD-ROM

22

RENAULT.NET

23

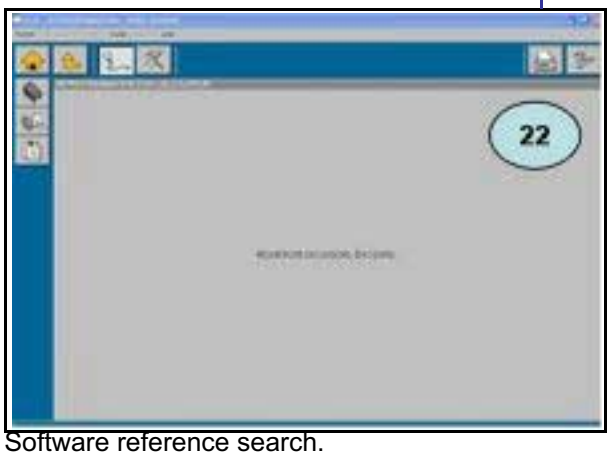
20

CD-ROM

CD-ROM

21

RENAULT.NET



Software reference search.

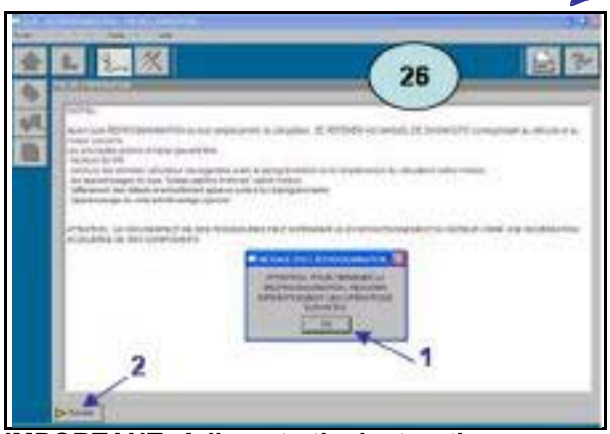
1: Select the software reference.
2: Select the Validate button.

CD-ROM

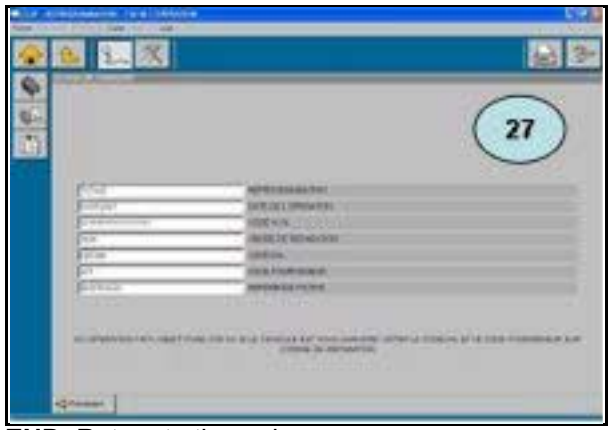
RENAULT.NET

1: Enter the reprogramming code.

Downloading of the file. **(CODE SERVER PROCEDURE)**
2: Select the Validate button



IMPORTANT: Adhere to the instructions.
1: Select the OK button.
2: Select the next button.



END. Return to the welcome screen.

CLIP SCREEN ERROR MESSAGES AND PROCEDURE TO FOLLOW

SCREE	CLIP ERROR MESSAGE	ORIGIN	PROCEDURE TO FOLLOW
01	**THE VEHICLE CANNOT BE IDENTIFIED WITH THIS VIN…**	After the VIN has been entered into the main menu	• Re-enter the VIN. *Note:* the VIN does not contain: – the letter O as it can be confused with the number 0. – the letter I as it can be confused with the number 1.
01	**The AUTOMATIC IDENTIFICATION HAS FAILED…**	After the VIN automatic search button has been pressed	• Check the sensor/PC and vehicle/sensor connections. *Note:* Ensure that the 4 green and red sensor LEDs are illuminated. • If the fault is still present, contact the CLIP After-Sales service.
15	**CLIP INTEGRITY PROBLEM…**	After the reprogramming button has been pressed	• Reinstall CLIP with the latest available version. • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
15	**THIS VEHICLE HAS NO REPROGRAMMABLE COMPUTERS**	After the reprogramming button has been pressed	• CLIP integrity error: Reinstall CLIP with the latest available version. • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
16	**CANNOT COMMUNICATE WITH THE COMPUTER…**	Following selection of the computer to reprogram	• Check the connections. • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
16	**OPERATION INTERRUPTED: CANNOT ACQUIRE NECESSARY DATA…**	Following selection of the computer to reprogram	• Restart operation. • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
16	**IMPORTANT: THE VIN READ IN THE COMPUTER TO BE REPROGRAMMED DOES NOT CORRESPOND…**	Following selection of the computer to reprogram	• As a default, use the VIN of the computer (not that from the main menu).
17	**THE REPAIR ORDER NUMBER MUST NOT EXCEED 6 CHARACTERS**	After a repair order number has been entered	• Check that the order number entered is correct (6 alphanumerical characters).
17	**THE TECHNICAL SPECIFICATION CRITERION MUST BE COMPOSED OF 10 CHARACTERS**	After the Vehicle Technical Specification has been entered at the request of Techline or as described in a Technical Note.	• Check that the Vehicle Technical Specification contains 10 alphanumerical characters. E.g: 0000CR347B • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
19	**BATTERY VOLTAGE TOO LOW or TOO HIGH**	At any point in the reprogramming procedure	• Connect an approved battery charger to the vehicle.
20	**TO CARRY OUT REPROGRAMMING VIA RENAULT.NET …**	After the battery voltage has been checked	• Check that the wireless connection device is working. • If the fault is still present, contact the CLIP After-Sales service, • or use the latest version of the reprogramming CD.

SCREE	CLIP ERROR MESSAGE	ORIGIN	PROCEDURE TO FOLLOW
20	**NO CD-ROM IN THE READER…**	When the reprogramming mode is being selected	• Insert the latest available version of the reprogramming CD. • If the fault is still present, contact the CLIP After-Sales service.
20	**THE REPROGRAMMING CD-ROM IN USE IS TOO OLD…**	When the reprogramming mode is being selected	• Insert the latest available version of the reprogramming CD. • If the fault is still present, contact the CLIP After-Sales service.
20	**THE CD-ROM TO INSERT IS THE REPROGRAMMING CD-ROM**	When the reprogramming mode is being selected	• Check that the CD being used is a reprogramming CD. • If the fault is still present, contact Techline or the CLIP After-Sales Service.
20	**THE CD-ROM READER IS NOT FUNCTIONING CORRECTLY…**	When the reprogramming mode is being selected	• Follow the on-screen instructions. • If the fault is still present, contact the CLIP After-Sales service.
	After-Sales Service ERROR 650 **After-Sales Service ERROR 651**	After having selected the Renault. Net mode	• CLIP integrity error in RENAULT.NET mode. • Restart the reprogramming procedure. • If the fault is still present, contact your IT representative or the CLIP After-Sales Service.
	After-Sales Service ERROR 652 **After-Sales Service ERROR 653** **After-Sales Service ERROR 654** **After-Sales Service ERROR 655** **After-Sales Service ERROR 656**	After selecting the reprogramming method	• CLIP integrity error (in RENAULT.NET mode) or reprogramming CD error (in CD mode). • In mode RENAULT.NET mode, reinstall CLIP • In CD mode, restart with another reprogramming CD (previous version if necessary). • If the fault is still present, contact the After-Sales Service or carry out the **EMERGENCY PROCEDURE**.
21	**TRANSMISSION PROBLEM…**	During authentication on Renault. Net	• Check the Renault.Net connection. • If the fault is still present, contact your IT representative or the CLIP After-Sales Service.
21	**TRANSMISSION PROBLEM…**	Whilst searching Renault. Net for the file to download	• Restart the reprogramming procedure. • If the fault is still present, contact your IT representative or the CLIP After-Sales Service.
22	**DEFECTIVE DATABASE, …**	Whilst finding the file to download	• Check faults linked to the CD (operation, presence or version of the CD). • Try with another CD (same or previous version). • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
22	**VEHICLE TECHNICAL SPECIFICATION NOT RECOGNISED IN RENAULT DATABASE…**	Whilst finding the file to download	• Enter the Vehicle Technical Specification, checking it is correct (10 alphanumerical characters). E.g: 0000CD347B • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
22	**ERROR 10X: … (X = 1 to 9), EMERGENCY PROCEDURE**	Whilst finding a file	• Carry out the **EMERGENCY PROCEDURE**.

SCREE	CLIP ERROR MESSAGE	ORIGIN	PROCEDURE TO FOLLOW
22	**COMPUTER ALREADY REPROGRAMMED, CANNOT PERFORM OPERATION…**	Whilst finding a file	• RENAULT.NET mode: the computer does not need to be reprogrammed. • CD mode: Restart the operation using the latest available version of the CD. If the message remains, the computer does not need to be reprogrammed.
22	**VIN NOT RECOGNISED IN RENAULT DATABASE…**	Whilst finding a file	• Restart the reprogramming procedure, checking that the VIN corresponds to that of the vehicle. • If the fault is still present, carry out the **EMERGENCY PROCEDURE**. • *Note:* In CD mode, it is possible that CLIP will not recognise the VIN if the vehicle has been recently manufactured.
24	**THE AFTER-SALES REPROGRAMMING KEY ENTERED IS INCORRECT**	After the After-Sales reprogramming code has been entered	• Re-enter the reprogramming code. • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
25	**CANNOT COMMUNICATE WITH THE COMPUTER…**	Whilst downloading a file	• Follow the on-screen instructions.
25	**COMPUTER FAULT: CANNOT UNLOCK…**	Whilst downloading a file	• Check that the pre-reprogramming instructions have been followed: see [01B-4]. • Restart the programming - reprogramming operation. • If the fault is still present, print the computer identification screen and the history and carry out the **EMERGENCY PROCEDURE**.
25	**COMPUTER FAULT: CANNOT DELETE…**	Whilst downloading a file	• Check that the pre-reprogramming instructions have been followed: see [01B-4]. • Restart the programming - reprogramming operation. • If the fault is still present, print the computer identification screen and the history and carry out the **EMERGENCY PROCEDURE**.
25	**COMPUTER FAULT: DOWNLOAD INTERRUPTED…**	Whilst downloading a file	• Check the connections and the battery voltage and restart the operation. • If the fault is still present, carry out the **EMERGENCY PROCEDURE**.
25	**NON LOCKING ERROR OCCURRED DURING WRITING…**	At the end of downloading a file	• The computer's history is full. This is not a critical error and it will not affect the reprogramming of the vehicle.
25	**THE COMPUTER HAS NOT RESPONDED TO THE LAST REQUEST…**	At the end of downloading a file	• Try to re-establish dialogue with the computer. • If the vehicle no longer starts, carry out the **EMERGENCY PROCEDURE**.

CODE SERVER PROCEDURE (in CD mode only)

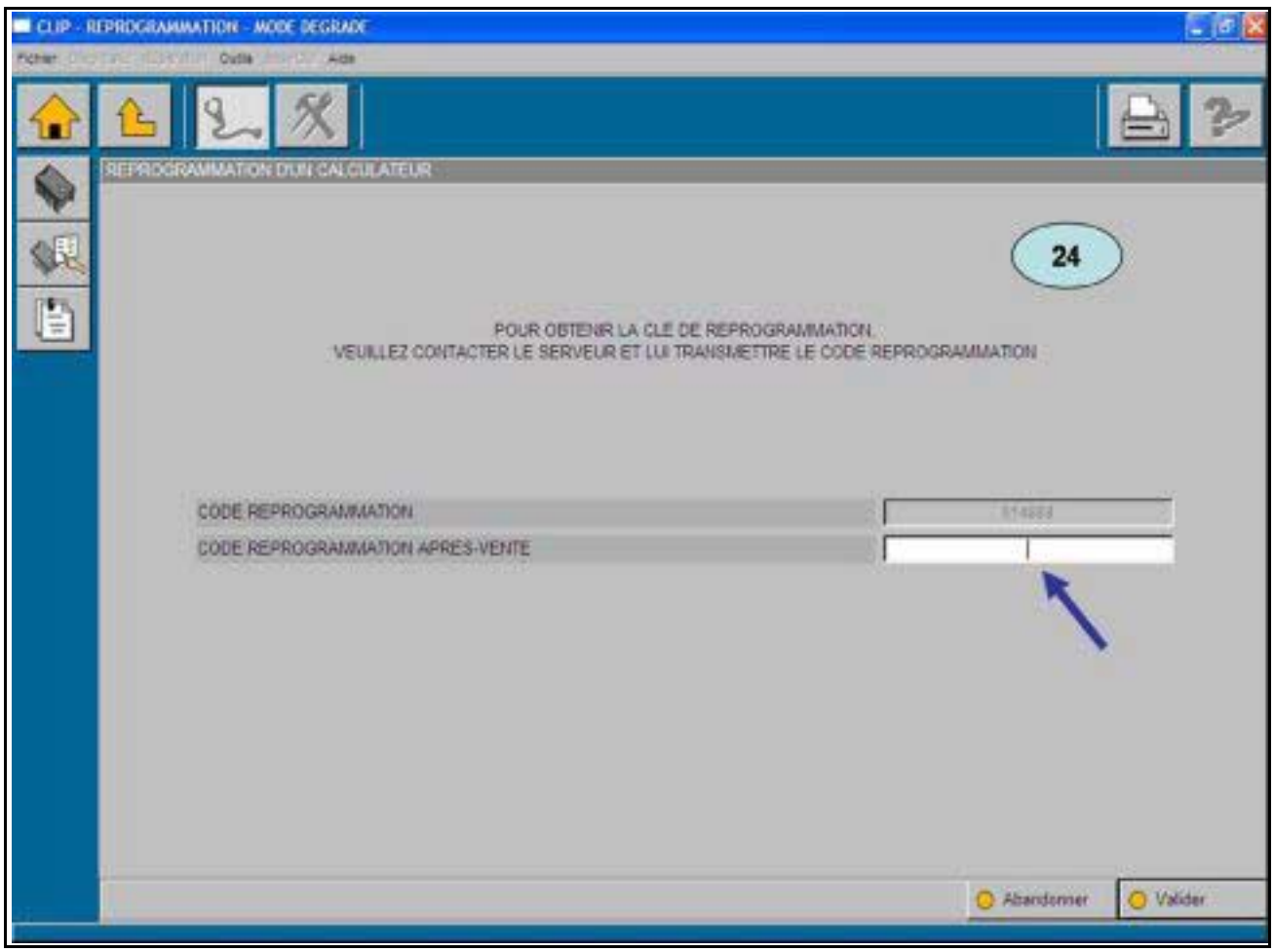
When Calibrating - reprogramming with the reprogramming CD Part No. **77 11 298 859**, enter an *After-Sales reprogramming code* to be able to carry out the operation.

This code is provided by the code management server on RENAULT.NETafter having entered the VIN and the reprogramming code displayed on screen **24** of the RENAULT CLIP diagnostic tool.

Refer to the **Technical Note CODE DELIVERY PROCEDURE**,section **Tool reprogramming key** for more details.

Steps:

1. CLIP provides a *reprogramming code*.
2. Provide the code management server with the *reprogramming code* and the VIN of the vehicle.
3. The server issues an *After-Sales reprogramming code*.
4. Enter this code in CLIP.



EMERGENCY PROCEDURE

The EMERGENCY PROCEDURE must be carried out when Calibration - reprogramming is interrupted by a message advising you to contact Techline.

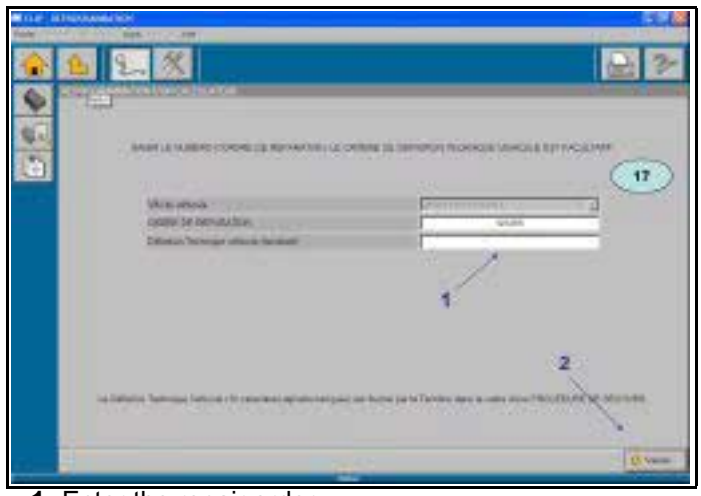
Example: **ERROR 10X** (X = 1 to 9)
EMERGENCY PROCEDURE, PLEASE CONTACT YOUR TECHLINE

The EMERGENCY PROCEDURE consists of using ACTIS or a Fax to produce a customer fault log, to be sent to Techline, containing the following information:

- The VIN of the vehicle.
- The fabrication number of the vehicle.
- The code or error message specified in CLIP (e.g: ERROR 105).
- The type of computer (INJECTION, AIR CONDITIONING, etc).
- The Parts Department reference number for the computer read using the tool in the COMPUTER identification fault finding screen: see **CONSULTING THE IDENTIFICATION FRAME**.
- The Hardware Part No. for the computer read using the tool in the COMPUTER identification fault finding screen: see **CONSULTING THE IDENTIFICATION FRAME**

The speed and relevance of the solution provided by Techline will depend on the accuracy with which this information is entered into the customer fault log.

Following Techline's analysis of the fault, a **10 character code** (e.g: 0000CD347B) should be sent back to you. Repeat the Calibration - reprogramming procedure and enter the *Vehicle Technical Definition* code in screen **17** of the RENAULT CLIP diagnostic tool.



1: Enter the repair order.
2: Enter the *Vehicle Technical Definition*code.

If necessary, an unconventional error could lead Techline to demand:
- the computer IDENTIFICATION FRAME: see **CONSULTING THE IDENTIFICATION FRAME**
- the HISTORY: see **CONSULTING THE HISTORY**
- the consultation of the TOOL LOG: see **CONSULTING THE TOOL LOG**
- the creation of a trace file: see **TRACE FILE**

CONSULTING THE COMPUTER IDENTIFICATION FRAME

Consulting the computer identification frame can help a problem to be better understood during an **EMERGENCY PROCEDURE**.

It allows the current (dummy) component Part No. of the computer to be consulted and to confirm that the (re)programming has been correctly carried out.

On the request of Techline, print this information screen and send it to Techline:

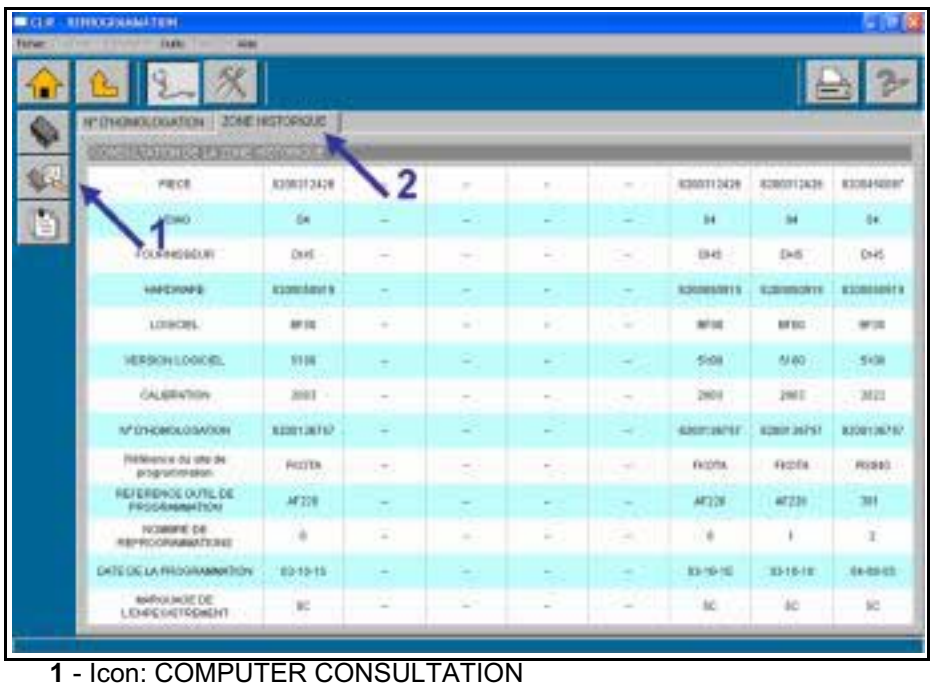
- Access the identification frame screen:
  MULTIPLEX NETWORK TEST/COMPUTER FAULT FINDING/IDENTIFICATION FRAME
- Press the button Print screen Syst on the top right of the keypad of the RENAULT CLIP diagnostic tool.
- Open WORDPAD(**Start → Programs→Accessories→WordPad**),
  in the **Edit** menu, **Paste** the print screen,
  then: print the document to send by fax to Techline,
  or copy it onto a disk to send by mail to Techline,
  or register the document to add it as an attachment in ACTIS.

CONSULTING THE COMPUTER HISTORY

Consulting the computer's history can help a problem to be better understood during an **EMERGENCY PROCEDURE**.

It allows the last 8 reprogramming operations stored in the computer to be consulted and displays, among others, the different (dummy) component part numbers of the computer by (re)programming date.

On the request of Techline, print this screen of information and fax it to them.
See **CONSULTING THE COMPUTER IDENTIFICATION FRAME** for how to print a screen.



1 - Icon: COMPUTER CONSULTATION
2 - Tab: HISTORY

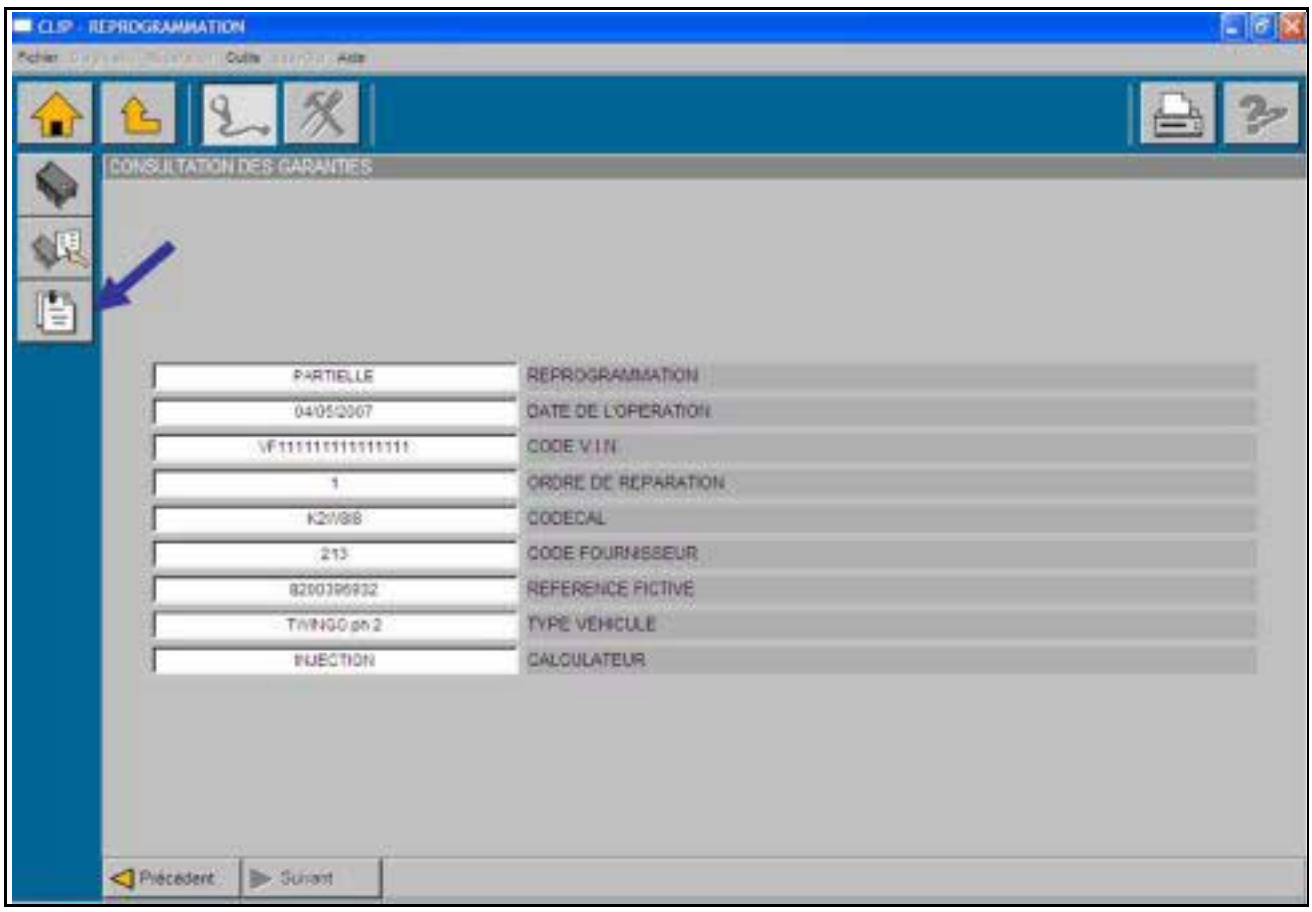
CONSULTING THE DIAGNOSTIC TOOL LOG

Consulting the RENAULT CLIP diagnostic tool log can aid:
- understanding of a fault during an **EMERGENCY PROCEDURE**.
- the recovery of CODECAL from the last reprogramming operations carried out.

This log enables the last 50 reprogramming operations stored in the RENAULT CLIP diagnostic tool to be consulted, displayed in chronological order with the most recent first.

This screen will provide, amongst other information:
- The vehicle's VIN.
- The Repair Order.
- The programming - reprogramming CODECAL.
- The new (dummy) Part No. for the computer in addition to that read in the **CONSULTING THE COMPUTER IDENTIFICATION FRAME**.

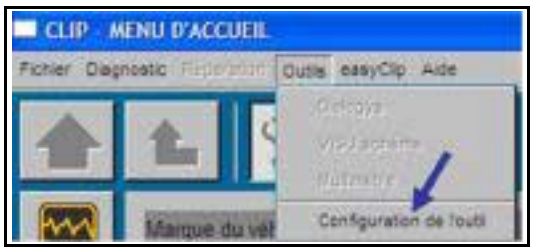
Upon the request of Techline, print the screen containing this information and fax it to them.
See **CONSULTING THE COMPUTER IDENTIFICATION FRAME** for how to print a screen.

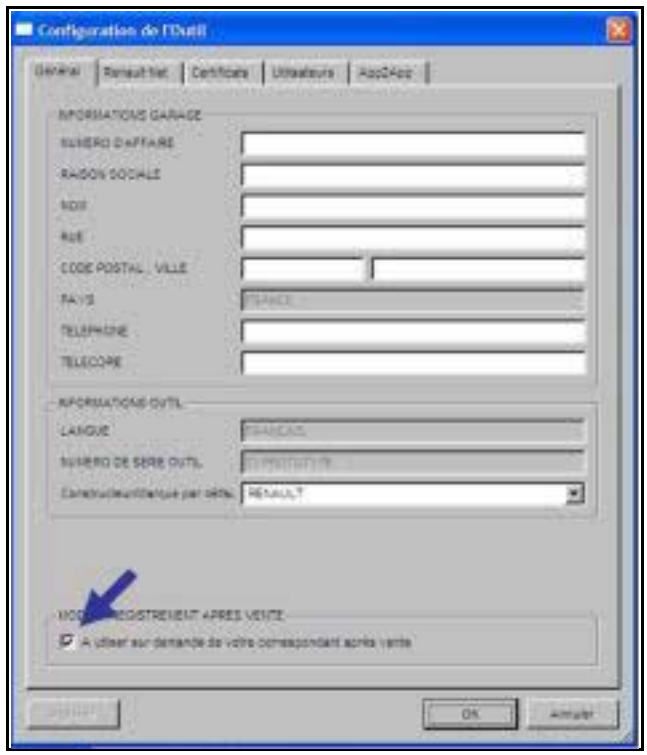


TRACE FILE (upon the request of Techline)

Creating the trace file

- After starting up the **CLIP** software, click on the **Tools** tab, then on **Tool configuration**.





- In the **Tool configuration** window.

  Tick the **AFTER-SALES SAVE MODE** box, then confirm with **OK**.

- Carry out the Calibration - reprogramming until the error message is displayed.

Recovering the trace file after programming - reprogramming

- Close the CLIP application (Return to the CLIP home page then EXIT).
- In the Windows **Start** menu (bottom left-hand corner of the Windows screen), select **My Computer**.
  Then select (double left click) the following: **Local disc (C:) / CLIP / DATA/ USER / LOGS**.

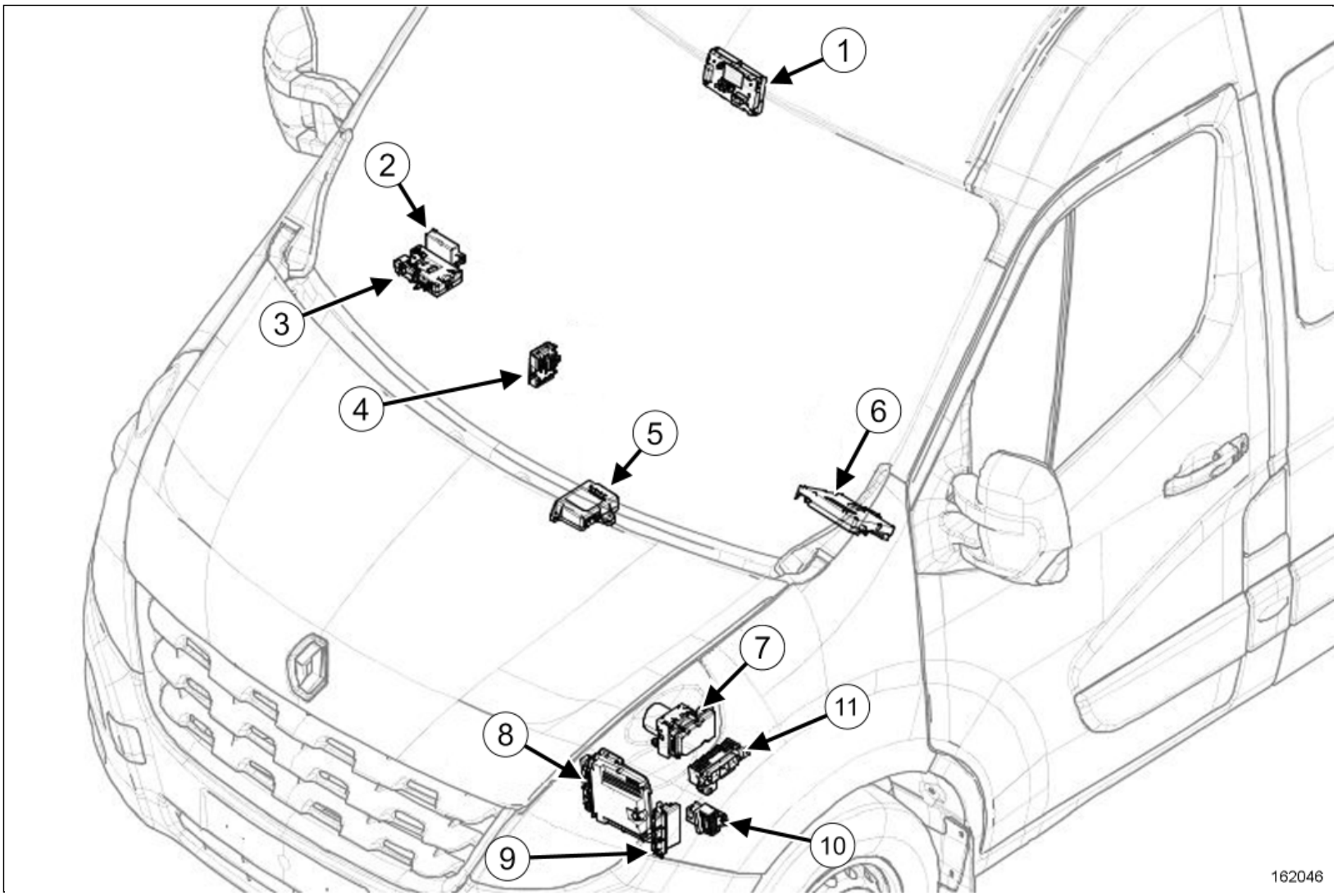
Send this file to your Techline by e-mail.

Note:
For all RENAULT CLIP diagnostic tools under **Windows XP**, compress the file "clip.log":

- Select the **clip.log** trace file.
- Right click the on the **clip.log** file, and select **Properties**.
- Then **send_to Compressed (zipped) folder**.

COMPUTERS: LIST AND LOCATION OF COMPONENTS

1. LIST AND LOCATION OF COMPONENTS

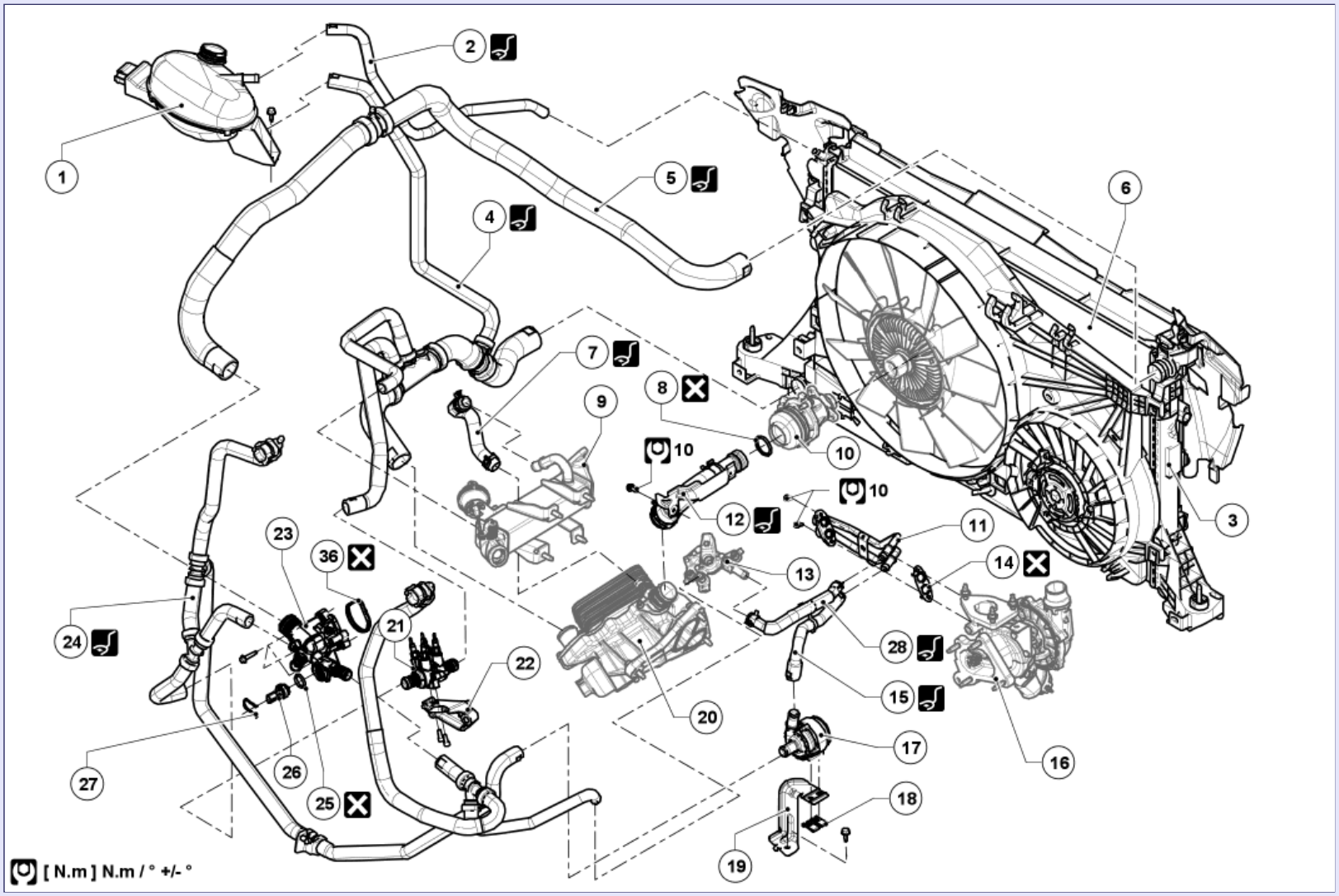


List of vehicle computers:

- ECU-Navigation(1)
- Telematic box(2)
- C-box(3)
- interface display(4)
- airbag computer(5)
- UCH(6)
- ABS-ESP computer(7)
- injection computer(8)
- Additional cornering lights computer(9)
- pre-postheating unit(10)
- air conditioning computer(11)

COOLANT CIRCUIT ASSEMBLY: EXPLODED VIEW

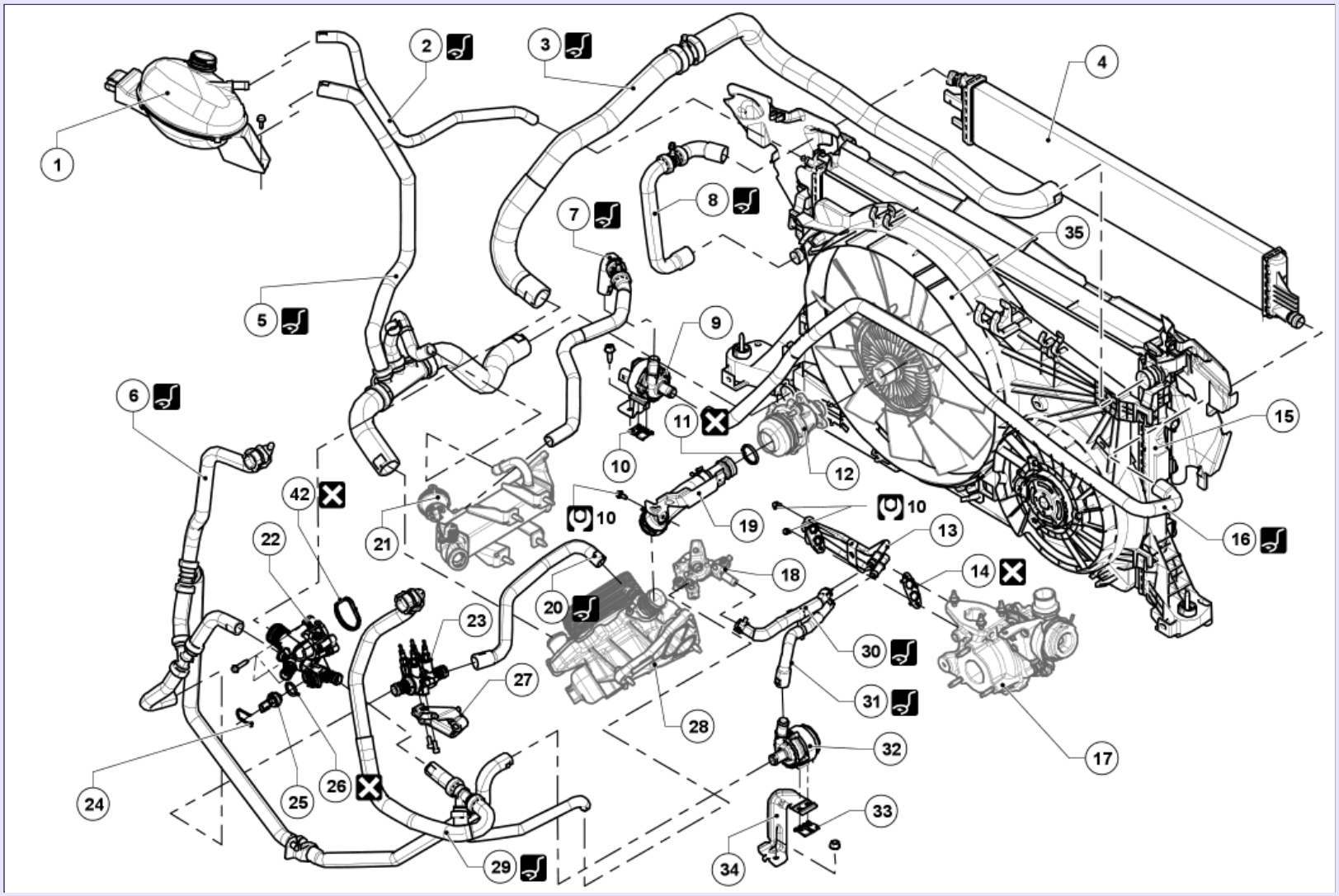
Special tooling required	
Clip pliers for hose clips (large size).	Mot. 1202-01
Clip pliers for hose clips (small size)	Mot. 1202-02
Remote operation pliers for hose clips.	Mot. 1448



(see Illustration key: Description) Key.

Mark	Description	Information
1	Expansion bottle	(see 19A, Cooling, Expansion bottle: Removal - Refitting)
2	Cooling radiator degassing pipe	(Mot.1202, Mot.1448)
3	Cooling radiator	(see 19A, Cooling, Cooling radiator: Removal - Refitting)
4	Cooling radiator outlet pipe	(Mot.1202, Mot.1448)
5	Cooling radiator inlet pipe	(Mot.1202, Mot.1448)
6	Engine cooling fan assembly	(see 19A, Cooling, Engine cooling fan assembly: Removal - Refitting)
7	Exhaust gas cooler coolant outlet pipe	(Mot.1202, Mot.1448)
8	Coolant pump inlet pipe seal	(see 19A, Cooling, Coolant pump inlet pipe: Removal - Refitting)
9	Exhaust gas cooler	Exhaust gas recirculation circuit assembly: Exploded view
10	Water pump	(see Cylinder block assembly: Exploded view)
11	Turbocharger coolant pipe	(see Turbocharger coolant pipe: Removal - Refitting)

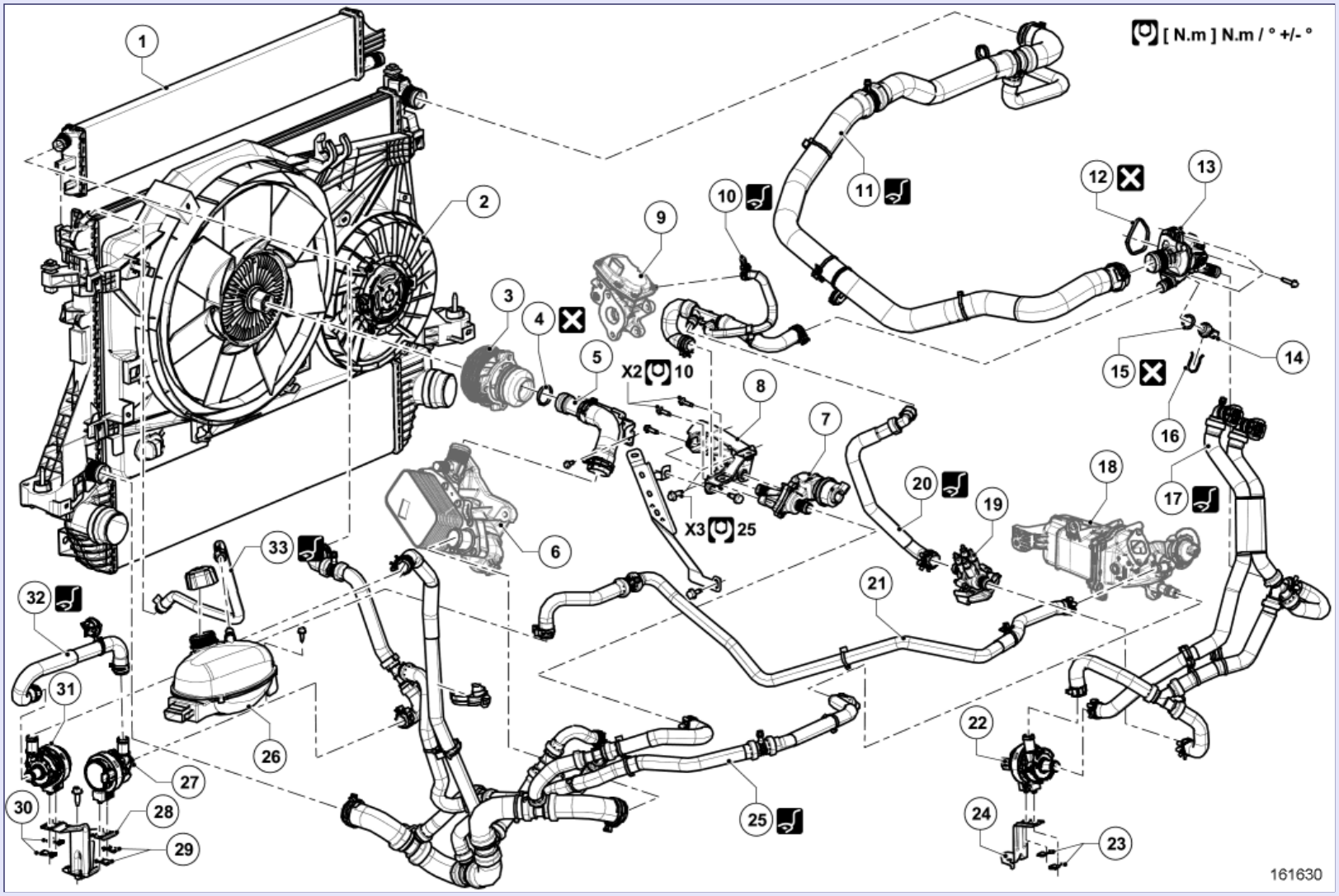
12	Coolant pump inlet pipe	(see 19A, Cooling, Coolant pump inlet pipe: Removal - Refitting) (Mot.1202, Mot.1448)
13	Exhaust fuel injector cooler	(see Exhaust assembly in engine compartment: Exploded view)
14	Turbocharger coolant pipe seal	(see Turbocharger coolant pipe: Removal - Refitting)
15	Coolant pipe between electric coolant pump and turbocharger coolant pipe	(Mot.1202, Mot.1448)
16	Turbocharger	(see Exhaust assembly in engine compartment: Exploded view)
17	Electric coolant pump at turbocharger outlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
18	Clip of electric coolant pump at turbocharger outlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
19	Support of electric coolant pump at turbocharger outlet	
20	Oil filter unit	(see Engine oil circuit assembly: Exploded view)
21	Thermoplunger unit	(see 19A, Cooling, Thermoplunger unit: Removal - Refitting)
22	Thermoplunger unit support	
23	Water chamber	(see 19A, Cooling, Cooling unit : Removal - Refitting)
24	Heater matrix coolant pipe	(Mot.1202, Mot.1448)
25	Coolant temperature sensor seal	(see 19A, Cooling, Coolant temperature sensor: Removal - Refitting)
26	Coolant temperature sensor	(see 19A, Cooling, Coolant temperature sensor: Removal - Refitting)
27	Coolant temperature sensor clip	(see 19A, Cooling, Coolant temperature sensor: Removal - Refitting)
28	Coolant pipe between exhaust fuel injector cooler and turbocharger coolant pipe	(Mot.1202, Mot.1448)
36	Water chamber seal	(see 19A, Cooling, Cooling unit : Removal - Refitting)



(see Illustration key: Description) Key.

Mark	Description	Information
1	Expansion bottle	(see 19A, Cooling, Expansion bottle: Removal - Refitting)
2	Cooling radiator degassing pipe	(Mot.1202, Mot.1448)
3	Cooling radiator inlet pipe	(Mot.1202, Mot.1448)
4	Additional radiator	(see 19A, Cooling, Additional radiator: Removal - Refitting)
5	Cooling radiator outlet pipe	(Mot.1202, Mot.1448)
6	Heater matrix coolant outlet pipe	(Mot.1202, Mot.1448)
7	Exhaust gas cooler inlet pipe	(Mot.1202, Mot.1448)
8	Pipe between cooling radiator and additional cooling radiator	(Mot.1202, Mot.1448)
9	Electric coolant pump at exhaust gas cooler inlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
10	Clip of electric coolant pump at exhaust gas cooler inlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)

11	Coolant pump inlet pipe seal	(see 19A, Cooling, Coolant pump inlet pipe: Removal - Refitting)
12	Water pump	(see Cylinder block assembly: Exploded view)
13	Turbocharger coolant pipe	(see Turbocharger coolant pipe: Removal - Refitting)
14	Turbocharger coolant pipe seal	(see Turbocharger coolant pipe: Removal - Refitting)
15	Cooling radiator	(see 19A, Cooling, Cooling radiator: Removal - Refitting)
16	Additional cooling radiator coolant outlet pipe	(Mot.1202, Mot.1448)
17	Turbocharger	(see Exhaust assembly in engine compartment: Exploded view)
18	Exhaust fuel injector cooler	(see Exhaust assembly in engine compartment: Exploded view)
19	Coolant pump inlet pipe	(see 19A, Cooling, Coolant pump inlet pipe: Removal - Refitting)
20	Thermoplunger unit outlet pipe	(Mot.1202, Mot.1448)
21	Exhaust gas cooler	Exhaust gas recirculation circuit assembly: Exploded view
22	Water chamber	(see 19A, Cooling, Cooling unit : Removal - Refitting)
23	Thermoplunger unit	(see 19A, Cooling, Thermoplunger unit: Removal - Refitting)
24	Coolant temperature sensor clip	(see 19A, Cooling, Coolant temperature sensor: Removal - Refitting)
25	Coolant temperature sensor	(see 19A, Cooling, Coolant temperature sensor: Removal - Refitting)
26	Coolant temperature sensor seal	(see 19A, Cooling, Coolant temperature sensor: Removal - Refitting)
27	Thermoplunger unit support	
28	Oil filter unit	(see Engine oil circuit assembly: Exploded view)
29	Heater matrix coolant inlet pipe	(Mot.1202, Mot.1448)
30	Coolant pipe between exhaust fuel injector cooler and turbocharger coolant pipe	(Mot.1202, Mot.1448)
31	Coolant pipe between electric coolant pump and turbocharger coolant pipe	(Mot.1202, Mot.1448)
32	Electric coolant pump at turbocharger outlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
33	Clip of electric coolant pump at turbocharger outlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
34	Support of electric coolant pump at turbocharger outlet	
35	Engine cooling fan assembly	(see 19A, Cooling, Engine cooling fan assembly: Removal - Refitting)
42	Water chamber seal	(see 19A, Cooling, Cooling unit : Removal - Refitting)



(see Illustration key: Description) Key.

Mark	Description	Information
1	Additional radiator	(see 19A, Cooling, Additional radiator: Removal - Refitting)
2	Engine cooling fan assembly	(see Cylinder block assembly: Exploded view)
3	Water pump	(see Cylinder block assembly: Exploded view)
4	Coolant pump inlet pipe seal	
5	Coolant pump inlet pipe	(see 19A, Cooling, Coolant pump inlet pipe: Removal - Refitting)
6	Oil filter unit	
7	Coolant circuit switchover valve	(see 19A, Cooling, Coolant circuit switchover valve : Removal - Refitting)
8	Coolant circuit switchover valve mounting	
9	EGR valve	

10	water chamber coolant hose outlet	Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)
11	Cooling radiator inlet pipe	Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)
12	Water chamber seal	
13	Water chamber	(see 19A, Cooling, Cooling unit : Removal - Refitting)
14	Coolant temperature sensor	(see 19A, Cooling, Coolant circuit assembly: Exploded view)
15	Coolant temperature sensor seal	
16	Coolant temperature sensor clip	
17	Heater matrix coolant pipe	Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)
18	Exhaust gas cooler	
19	Thermoplunger unit	(see 19A, Cooling, Thermoplunger unit: Removal - Refitting)
20	Thermoplunger unit outlet pipe	Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)
21	Exhaust gas cooler inlet pipe	Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)
22	Electric coolant pump at turbocharger outlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
23	Clip of electric coolant pump at turbocharger outlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
24	Support of electric coolant pump at turbocharger outlet	
25	Cooling radiator outlet pipe	Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)
26	Expansion bottle	(see 19A, Cooling, Expansion bottle: Removal - Refitting)
27	Electric coolant pump at exhaust gas cooler inlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)
28	Support of electric coolant pump at exhaust gas cooler inlet	
29	Clip of electric coolant pump at exhaust gas cooler inlet	
30	Clip of electric coolant pump at exhaust gas cooler inlet	
31	Electric coolant pump at exhaust gas cooler inlet	(see 19A, Cooling, Electric coolant pump: Removal - Refitting)

32	Left-hand elecric coolant pump	(see 19A, Cooling, Electric coolant pump: Removal - Refitting) Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)
33	Expansion bottle degassing pipe	Remote operation pliers for hose clips.(Mot. 1448) Clip pliers for hose clips (small size)(Mot. 1202-02) Clip pliers for hose clips (large size).(Mot. 1202-01)

COOLANT CIRCUIT SWITCHOVER VALVE : REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .
- Disconnect the battery(see **Battery: Removal - Refitting**) .
- Remove the engine undertray.
- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

- Remove the intercooler air outlet pipeAND (ZA4 OR ZF4) ZA4 ZF4.

- Remove :
  - the damper valve,
  - the exhaust gas recirculation rigide pipe at the exhaust gas cooler outlet,
  - the exhaust gas recirculation solenoid valve,
  - the exhaust gas circuit temperature sensor,
  - the inlet distributor.

2. REMOVAL OPERATION

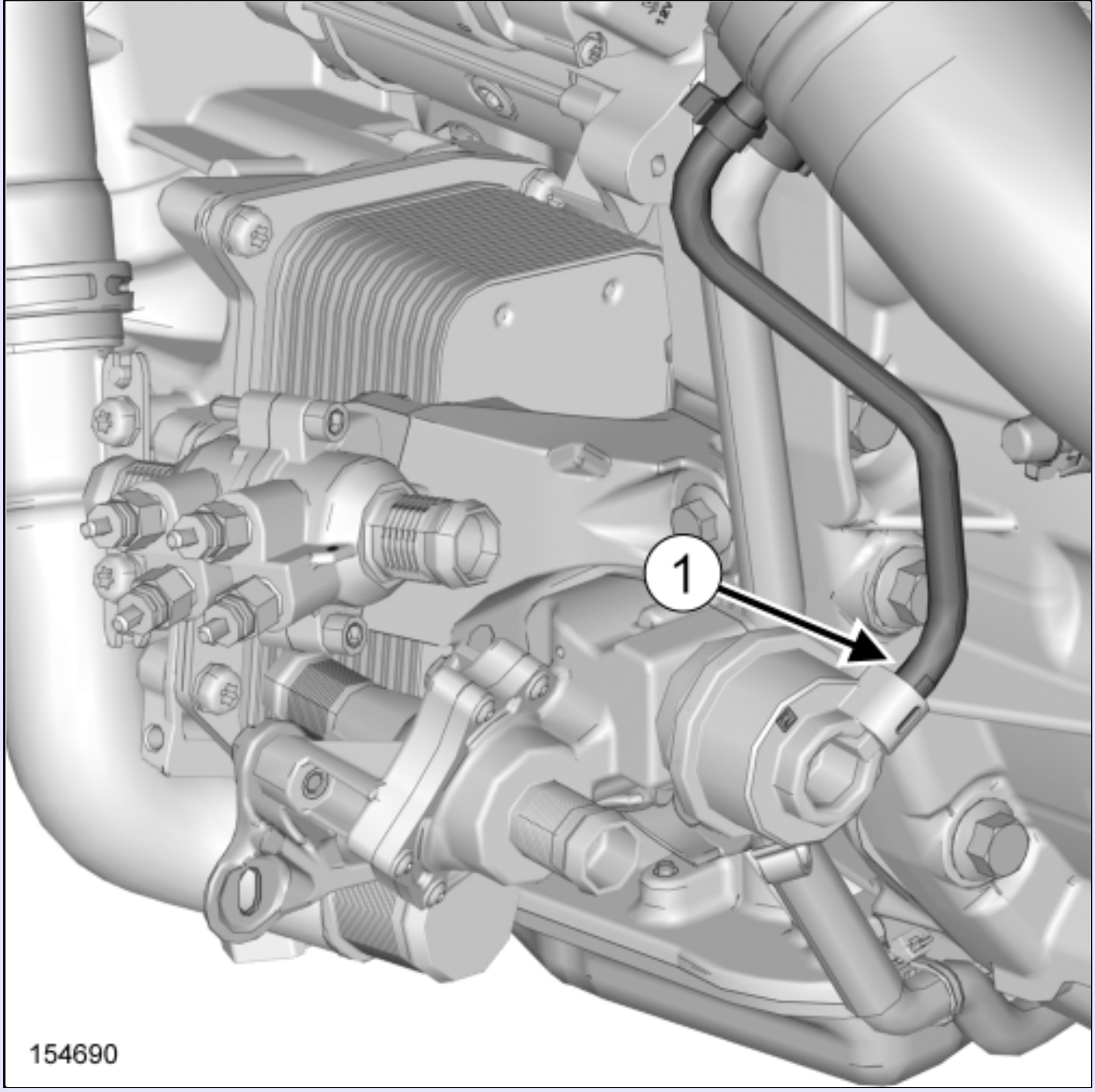
- Remove the nuts on the thermoplunger unit wiring.

- Move the thermoplunger unit wiring to one side.

- Separate the following from the thermoplunger unit using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :
  - the clip of the thermoplunger unit inlet cooling pipe,
  - the clip of the thermoplunger unit outlet cooling pipe.

- Disconnect the following from the thermoplunger unit:
  - the thermoplunger unit inlet cooling pipe,
  - the thermoplunger unit outlet cooling pipe.

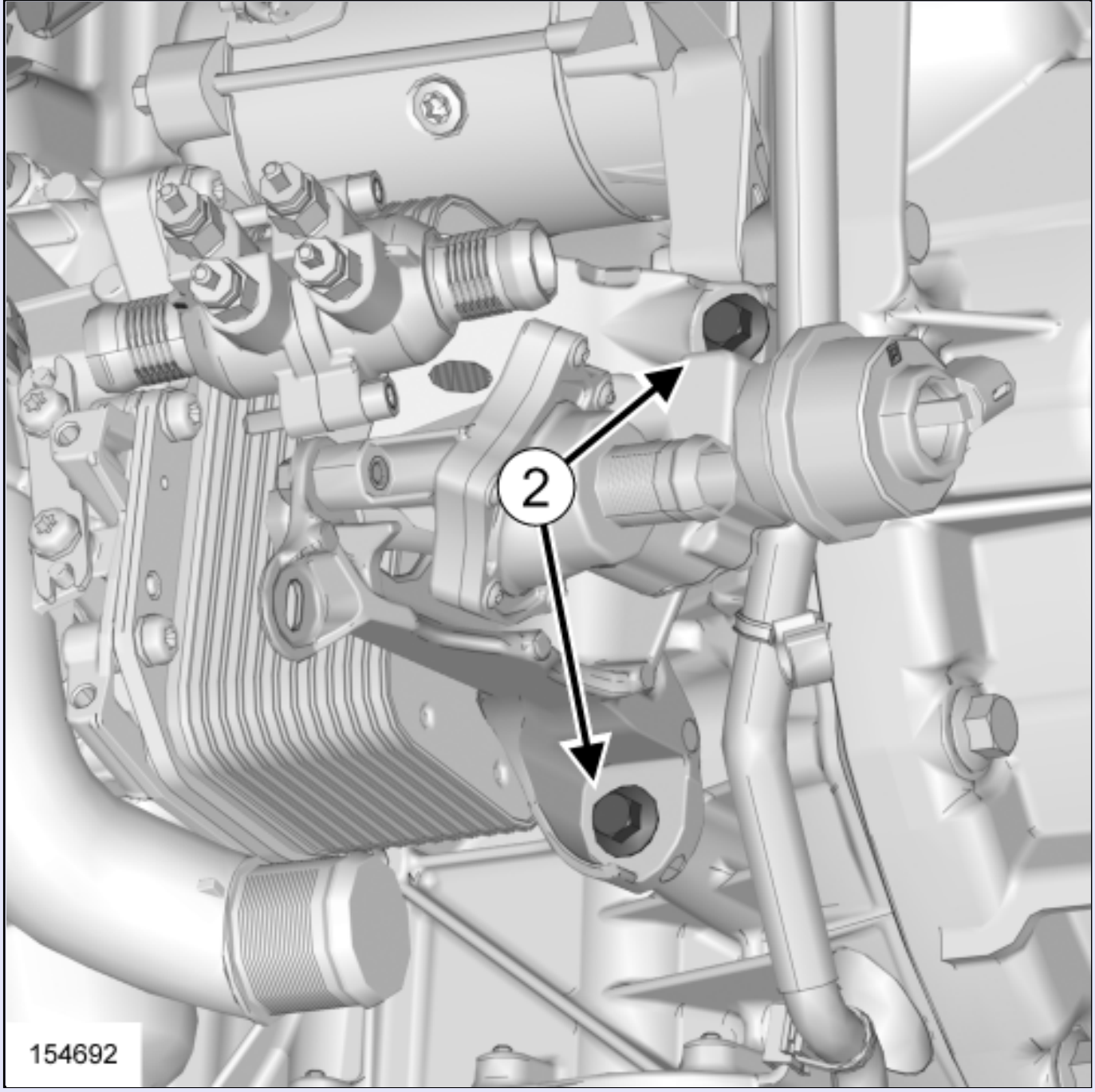
- Separate the following from the coolant circuit switchover valve using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe.



- Disconnect the following from the coolant circuit switchover valve:
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe,
  - the control pipe from the coolant circuit switchover valve(1) .

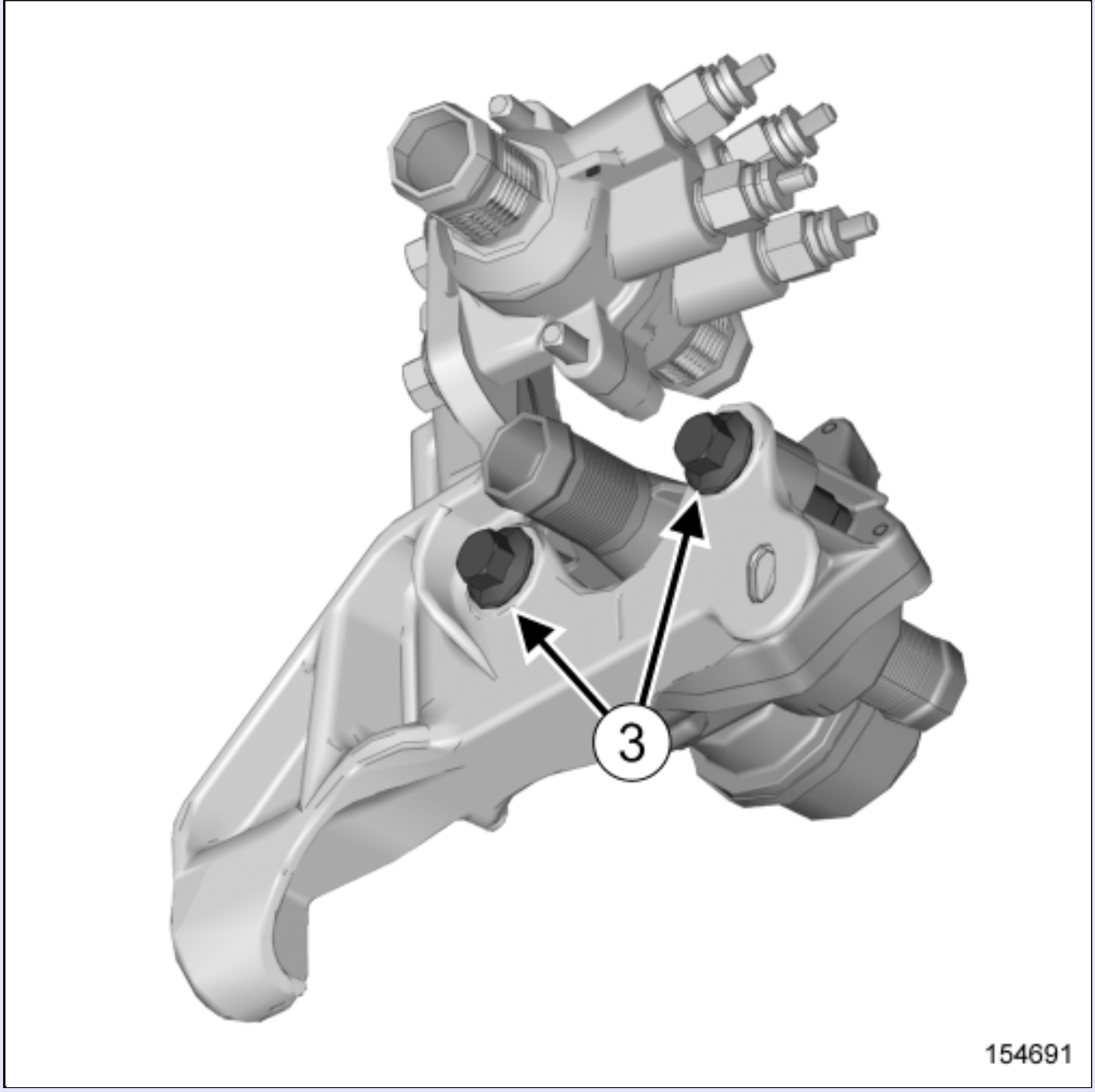
- Remove the retaining bolt of the hydraulic pipe.

- Move the hydraulic pipe.



Remove:

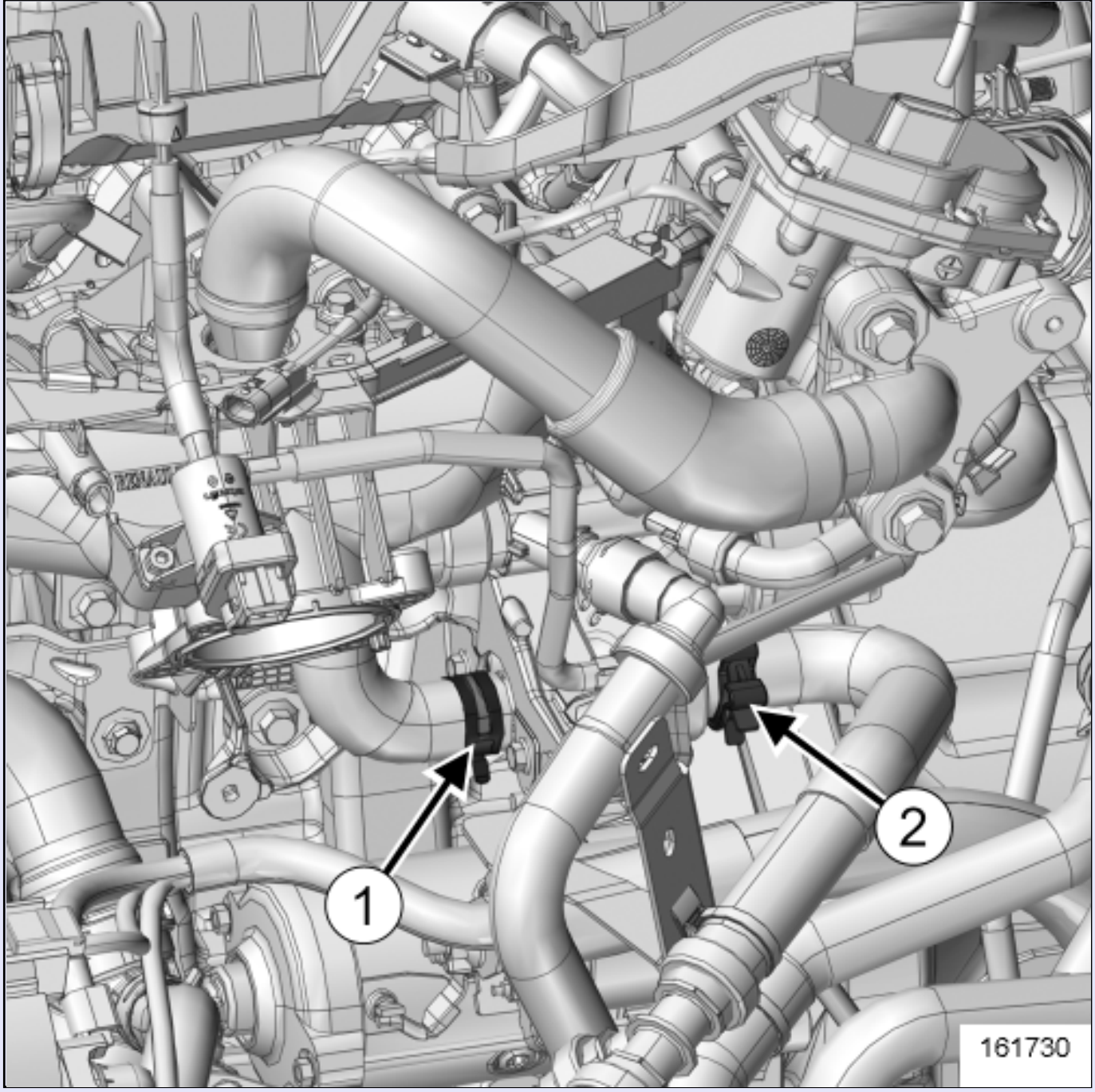
- the "coolant circuit switchover valve - thermoplunger unit" assembly bolts(2) ,
- the "coolant circuit switchover valve - thermoplunger unit" assembly.



Remove:

- the coolant circuit switchover valve bolts(3) ,
- the coolant circuit switchover valve.

M9T, 700 702(700 OR 702)



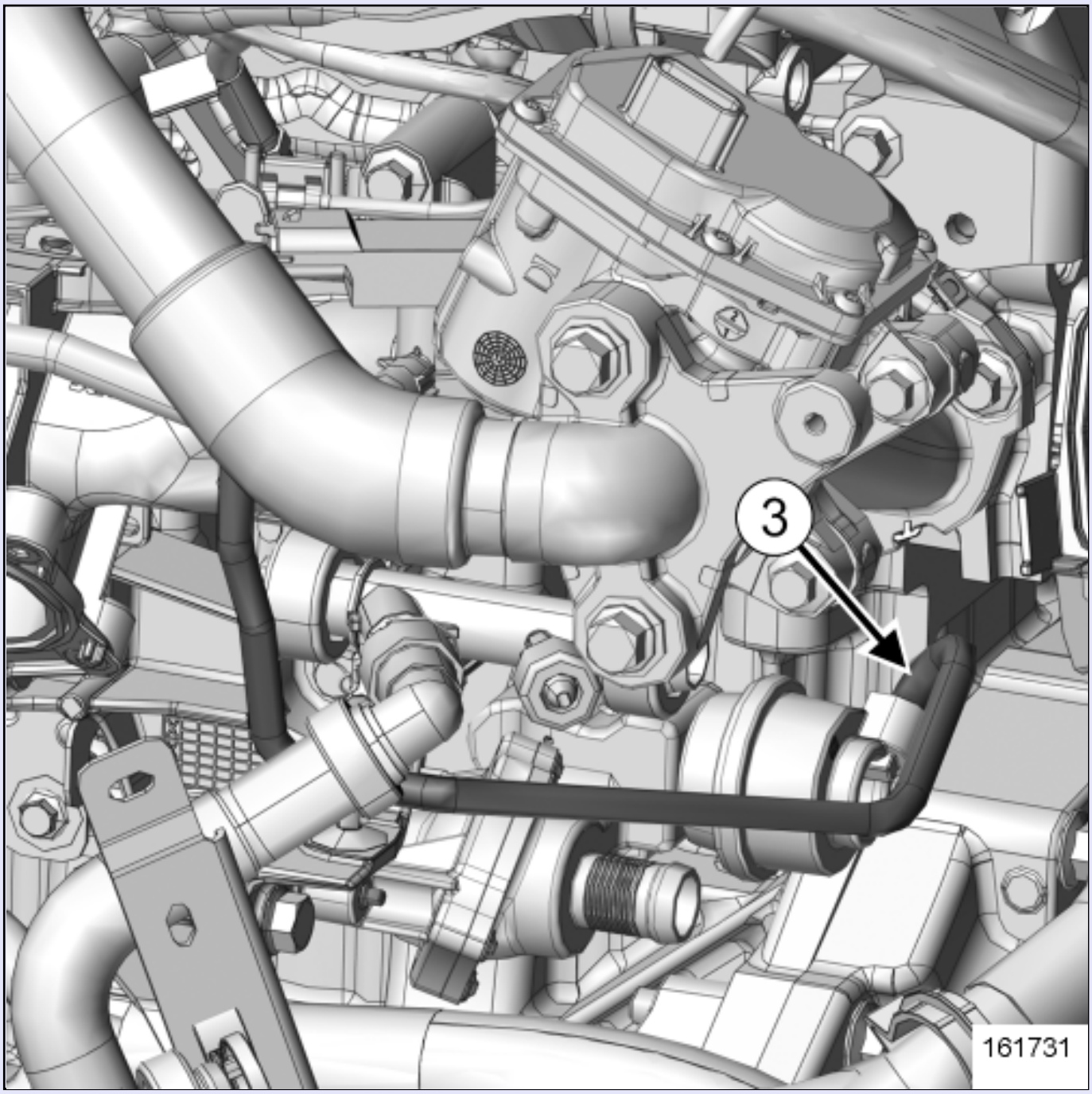
Move aside using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :

- the coolant circuit switchover valve inlet cooling pipe clip(**2**) ,
- the coolant circuit switchover valve outlet cooling pipe clip(**1**) .

Disconnect:

- the coolant circuit switchover valve inlet cooling pipe,

the coolant circuit switchover valve outlet cooling pipe.



Disconnect the coolant circuit switchover valve control pipe(3) .

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the coolant circuit switchover valve bolts,

the coolant circuit switchover valve.

REFITTING

M9T, 700 702(M9T) AND (700 OR 702)

1. REFITTING OPERATION

- Refit (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the coolant circuit switchover valve,
  - the coolant circuit switchover valve bolts.
- Torque tighten the coolant circuit switchover valve bolts(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

2. FINAL OPERATION

- Proceed in the reverse order to removal.
- Perform the following operations:
  - top up the coolant level,
  - bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

Proceed in the reverse order to removal.

Torque tighten the thermoplunger unit wiring nuts4 N.m

Perform the following operations:

- top up the coolant level,
- bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

COOLANT CIRCUIT SWITCHOVER VALVE : REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .
- Disconnect the battery(see **Battery: Removal - Refitting**) .
- Remove the engine undertray.
- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

- Remove the intercooler air outlet pipeAND (ZA4 OR ZF4) ZA4 ZF4.

- Remove :
  - the damper valve,
  - the exhaust gas recirculation rigide pipe at the exhaust gas cooler outlet,
  - the exhaust gas recirculation solenoid valve,
  - the exhaust gas circuit temperature sensor,
  - the inlet distributor.

2. REMOVAL OPERATION

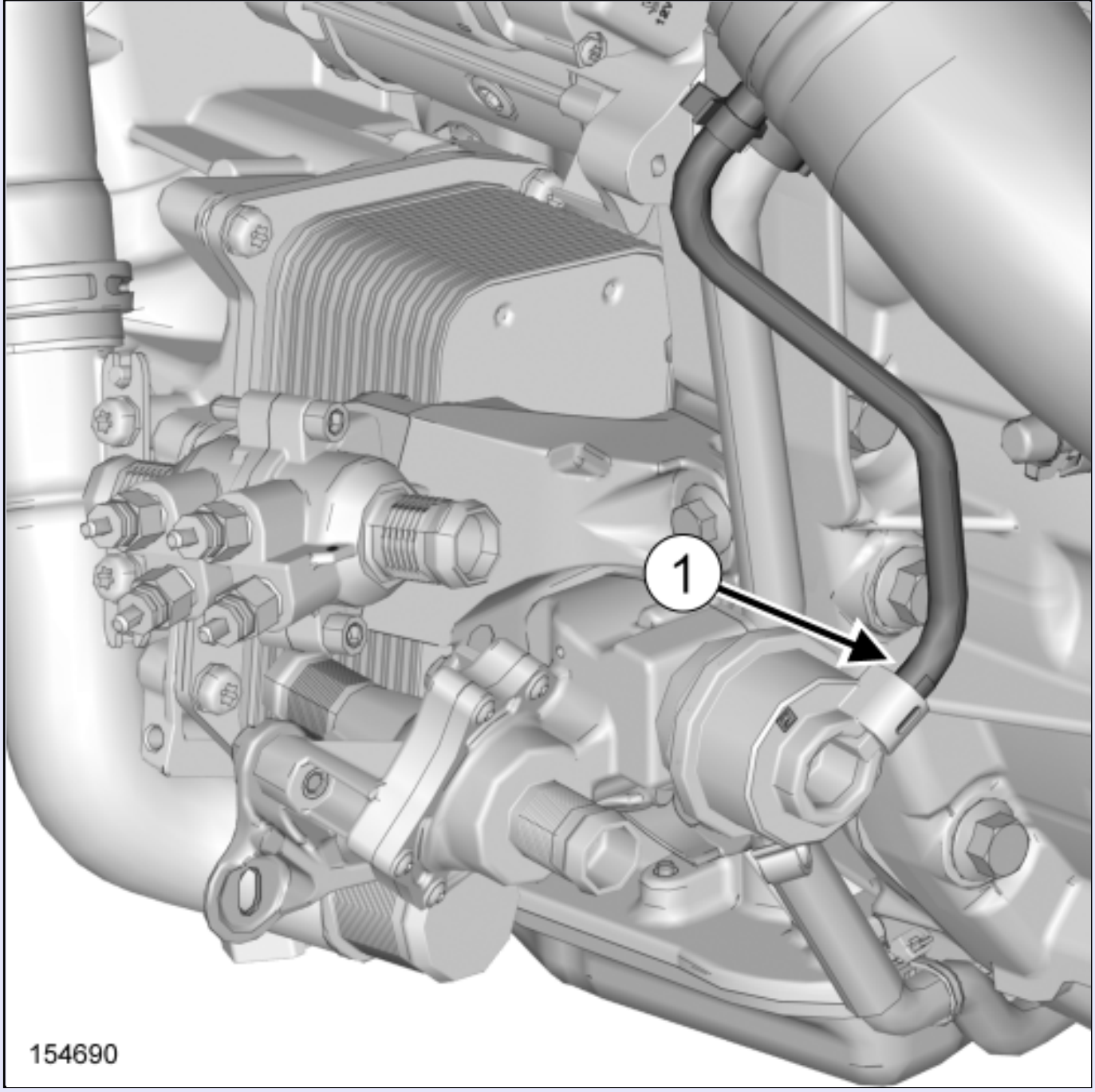
- Remove the nuts on the thermoplunger unit wiring.

- Move the thermoplunger unit wiring to one side.

- Separate the following from the thermoplunger unit using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :
  - the clip of the thermoplunger unit inlet cooling pipe,
  - the clip of the thermoplunger unit outlet cooling pipe.

- Disconnect the following from the thermoplunger unit:
  - the thermoplunger unit inlet cooling pipe,
  - the thermoplunger unit outlet cooling pipe.

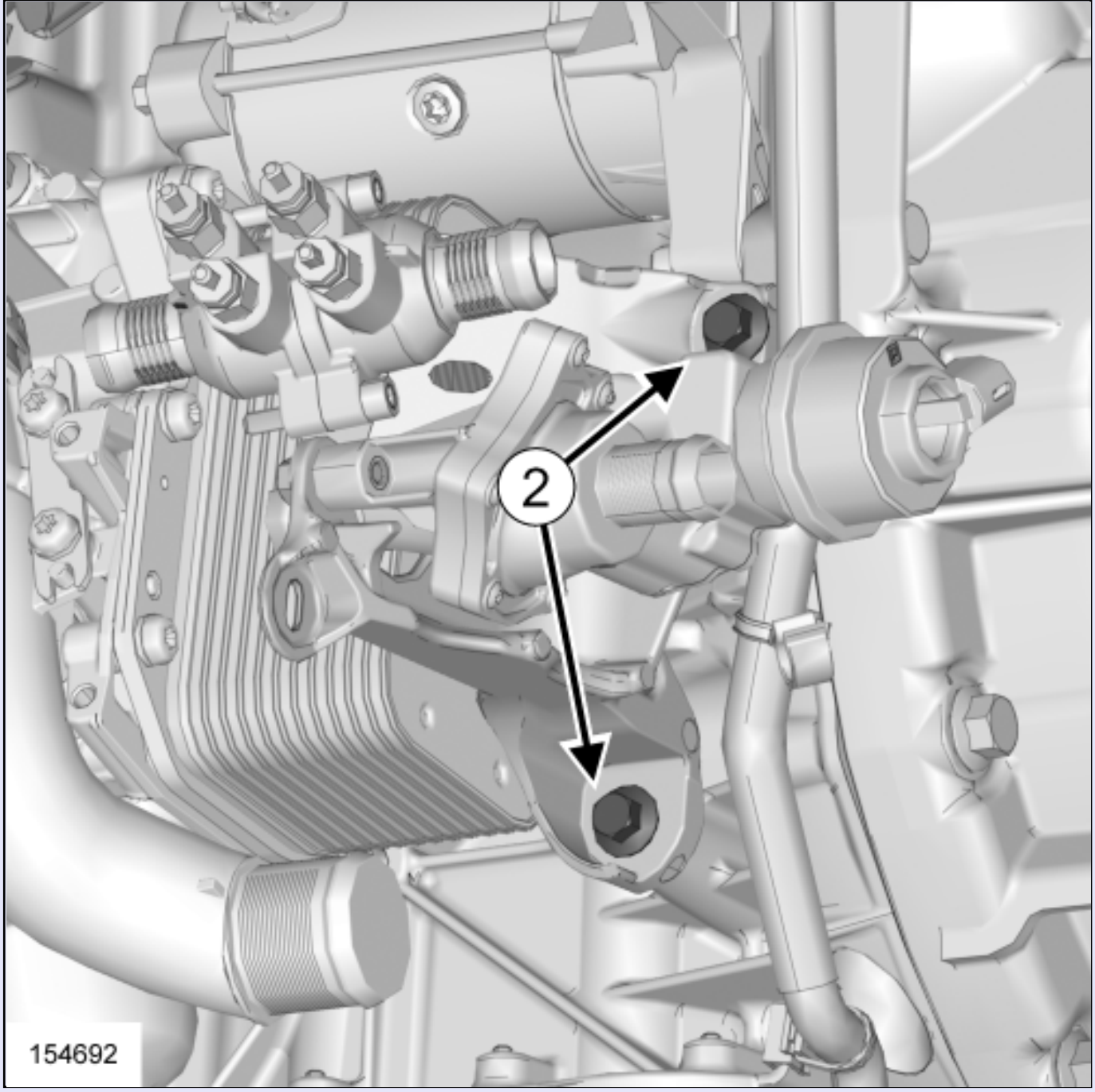
- Separate the following from the coolant circuit switchover valve using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe.



- Disconnect the following from the coolant circuit switchover valve:
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe,
  - the control pipe from the coolant circuit switchover valve(1) .

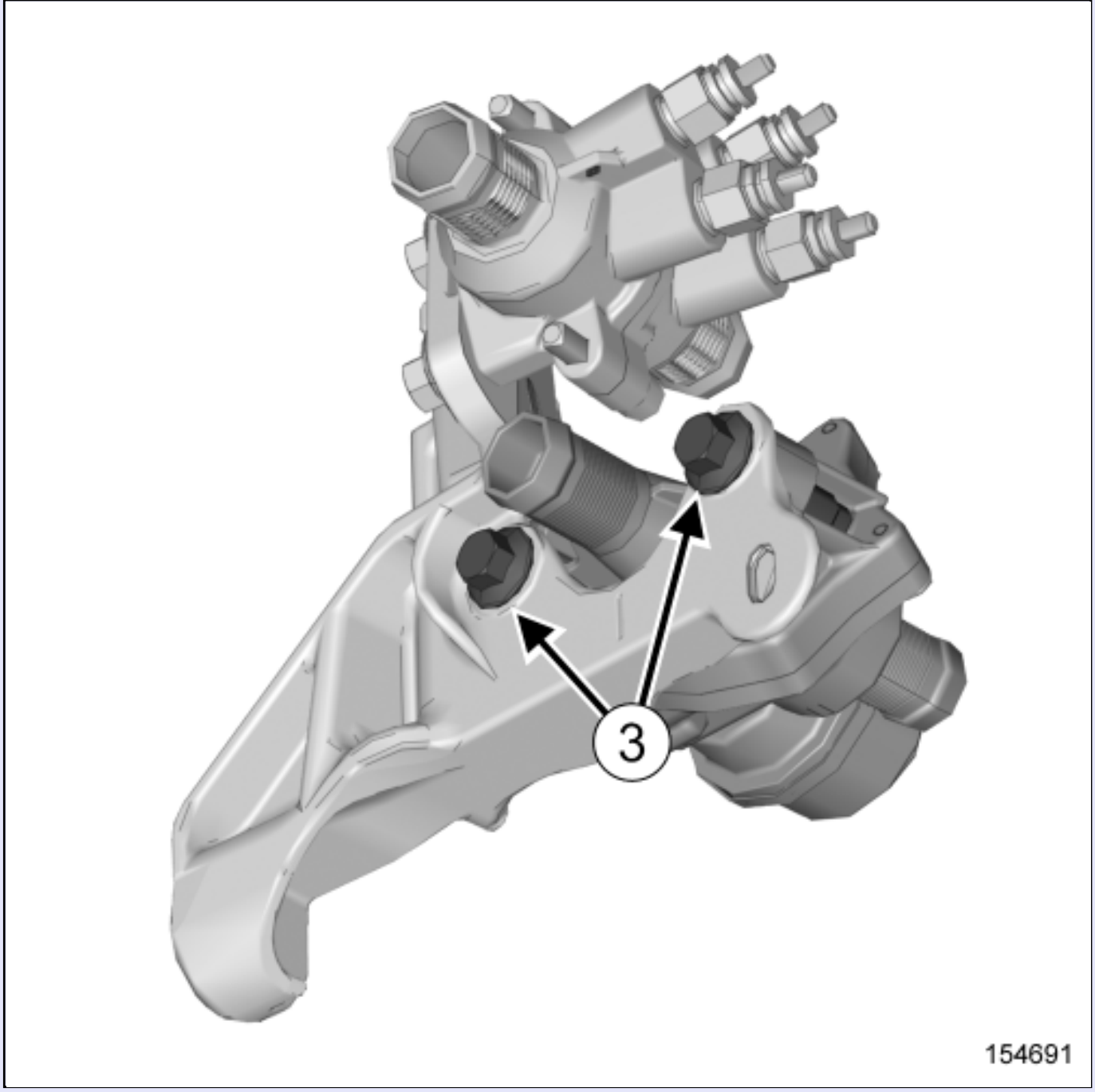
- Remove the retaining bolt of the hydraulic pipe.

- Move the hydraulic pipe.



Remove:

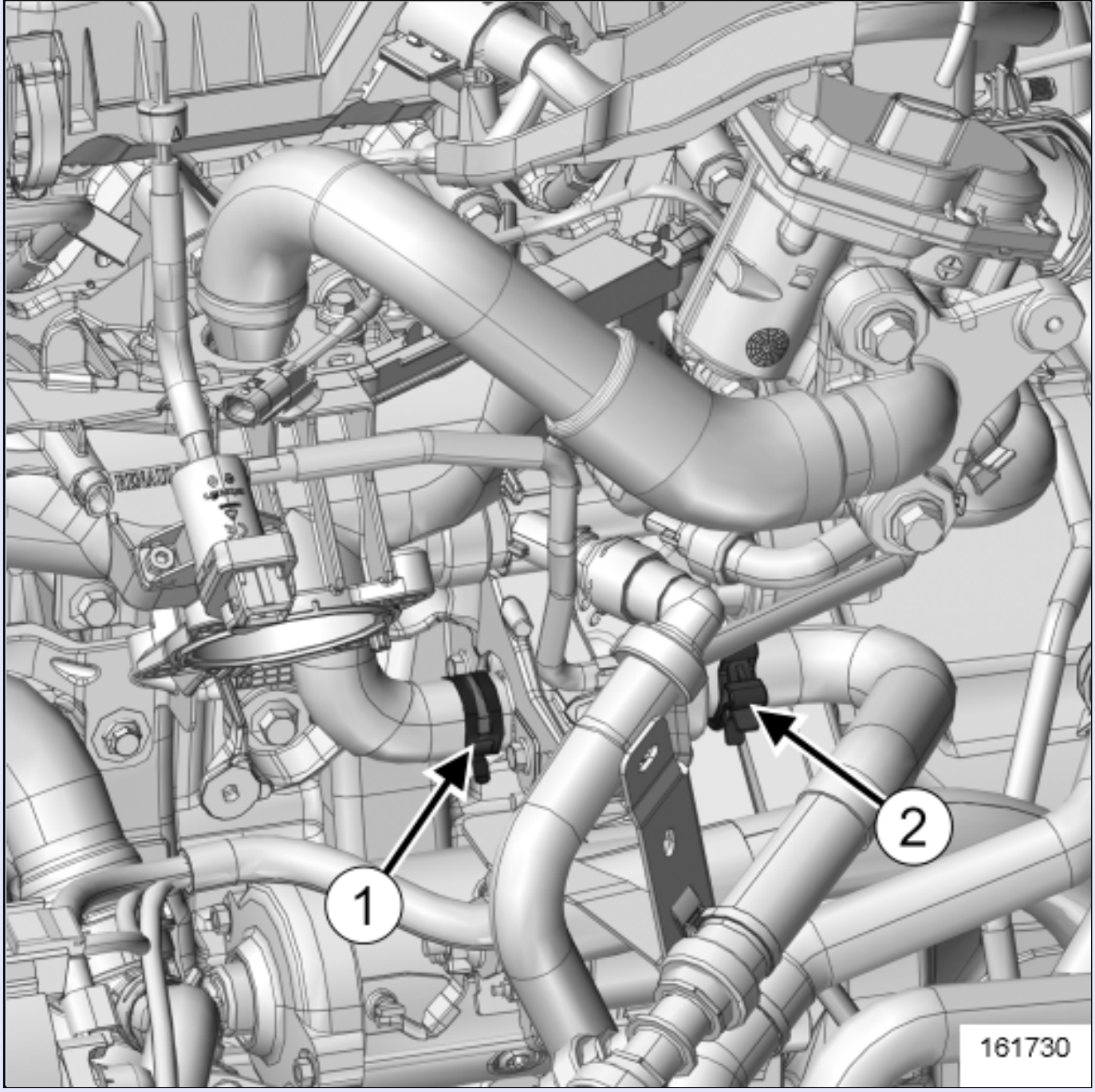
- the "coolant circuit switchover valve - thermoplunger unit" assembly bolts(2) ,
- the "coolant circuit switchover valve - thermoplunger unit" assembly.



Remove:

- the coolant circuit switchover valve bolts(3) ,
- the coolant circuit switchover valve.

M9T, 700 702(700 OR 702)



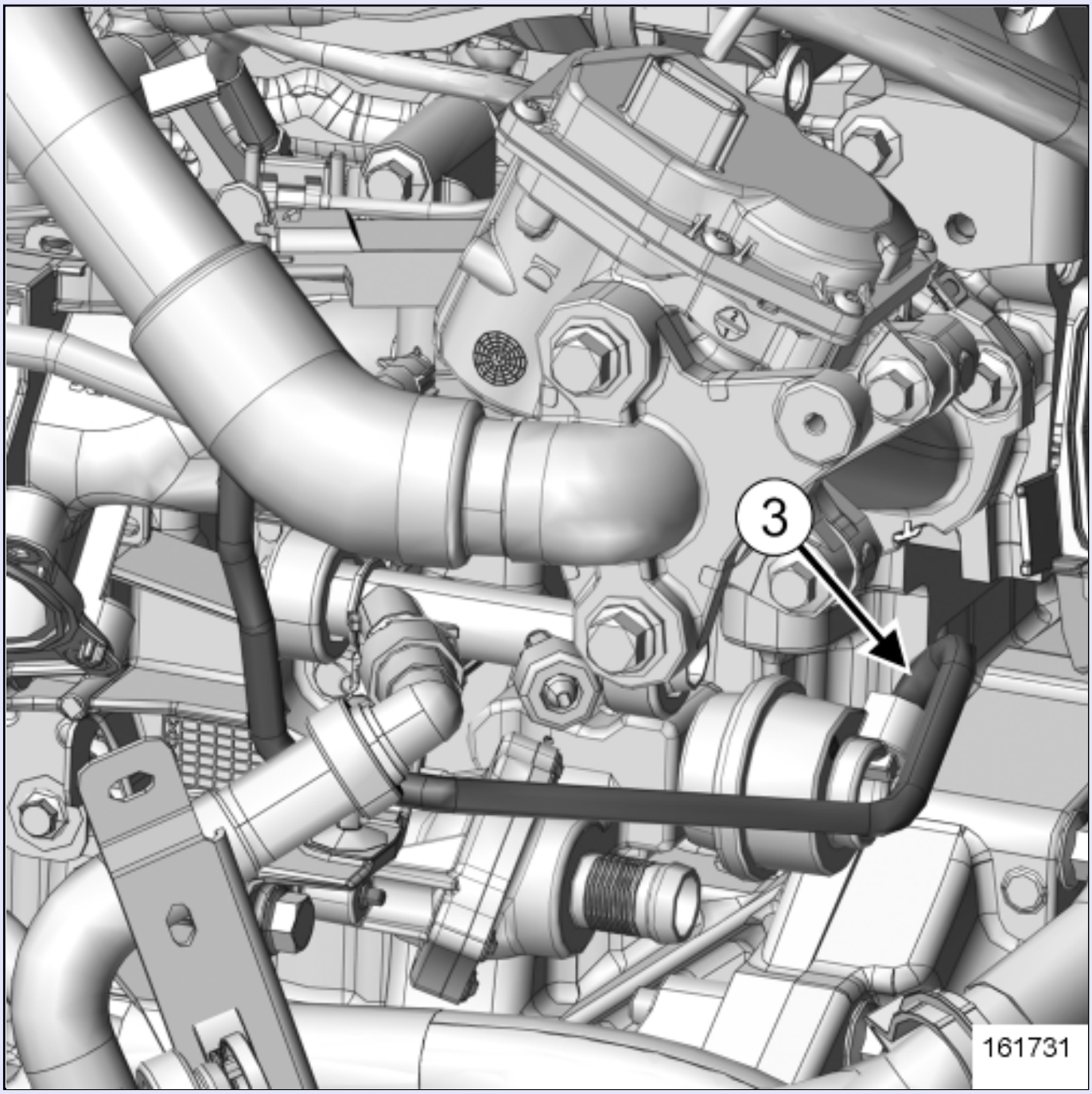
Move aside using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :

- the coolant circuit switchover valve inlet cooling pipe clip(**2**) ,
- the coolant circuit switchover valve outlet cooling pipe clip(**1**) .

Disconnect:

- the coolant circuit switchover valve inlet cooling pipe,

the coolant circuit switchover valve outlet cooling pipe.



Disconnect the coolant circuit switchover valve control pipe(3) .

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the coolant circuit switchover valve bolts,

the coolant circuit switchover valve.

REFITTING

M9T, 700 702(M9T) AND (700 OR 702)

1. REFITTING OPERATION

- Refit (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the coolant circuit switchover valve,
  - the coolant circuit switchover valve bolts.
- Torque tighten the coolant circuit switchover valve bolts(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

2. FINAL OPERATION

- Proceed in the reverse order to removal.
- Perform the following operations:
  - top up the coolant level,
  - bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

Proceed in the reverse order to removal.

Torque tighten the thermoplunger unit wiring nuts4 N.m

Perform the following operations:

- top up the coolant level,
- bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

COOLANT CIRCUIT SWITCHOVER VALVE : REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .
- Disconnect the battery(see **Battery: Removal - Refitting**) .
- Remove the engine undertray.
- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

- Remove the intercooler air outlet pipeAND (PA0 OR PF6) PA0 PF6.

- Remove **Exhaust gas recirculation circuit assembly: Exploded view** :
  - the damper valve,
  - the exhaust gas recirculation rigide pipe at the exhaust gas cooler outlet,
  - the exhaust gas recirculation solenoid valve,
  - the exhaust gas circuit temperature sensor,
  - the inlet distributor.

2. REMOVAL OPERATION

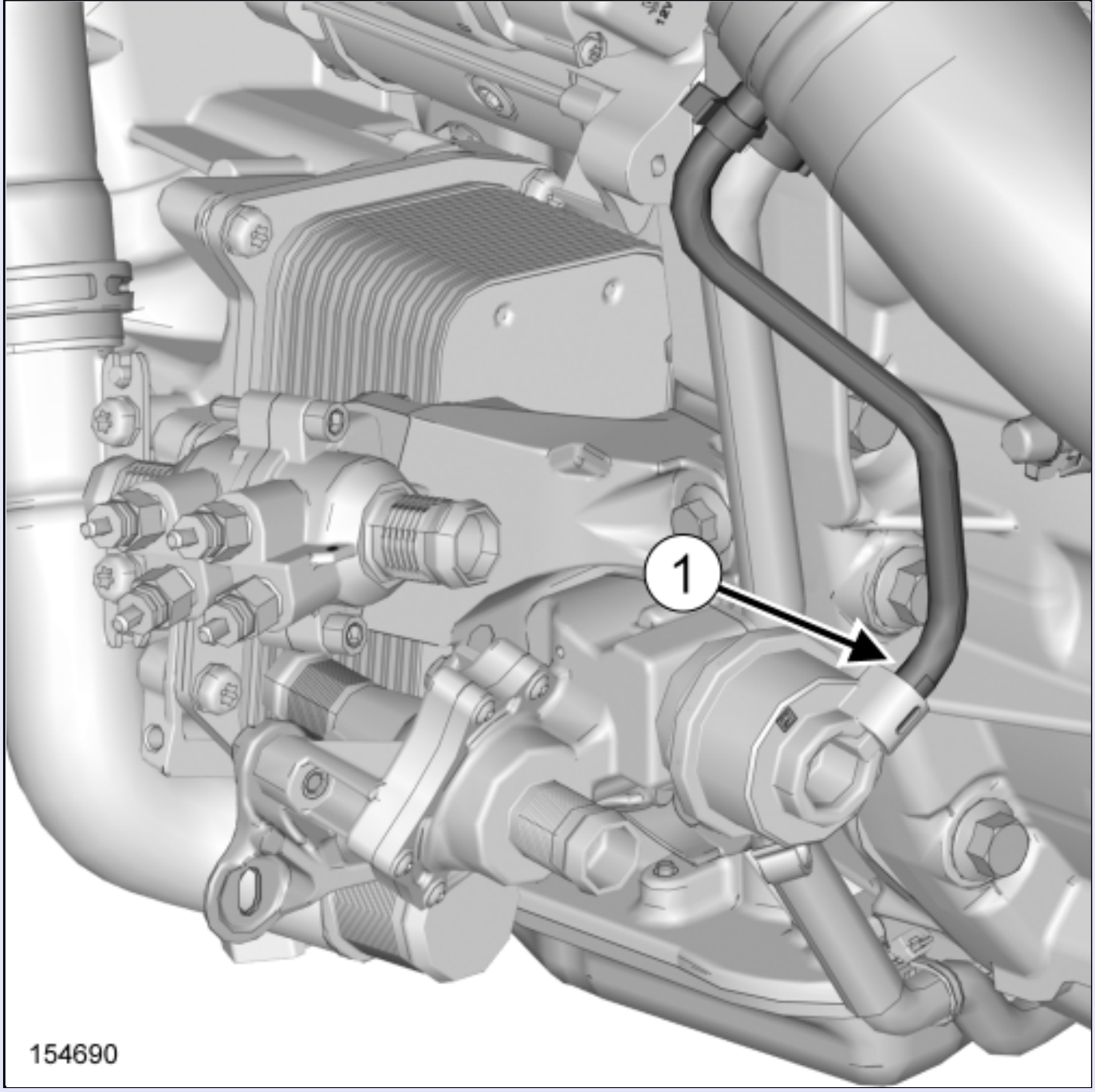
- Remove the nuts on the thermoplunger unit wiring.

- Move the thermoplunger unit wiring to one side.

- Separate the following from the thermoplunger unit using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :
  - the clip of the thermoplunger unit inlet cooling pipe,
  - the clip of the thermoplunger unit outlet cooling pipe.

- Disconnect the following from the thermoplunger unit:
  - the thermoplunger unit inlet cooling pipe,
  - the thermoplunger unit outlet cooling pipe.

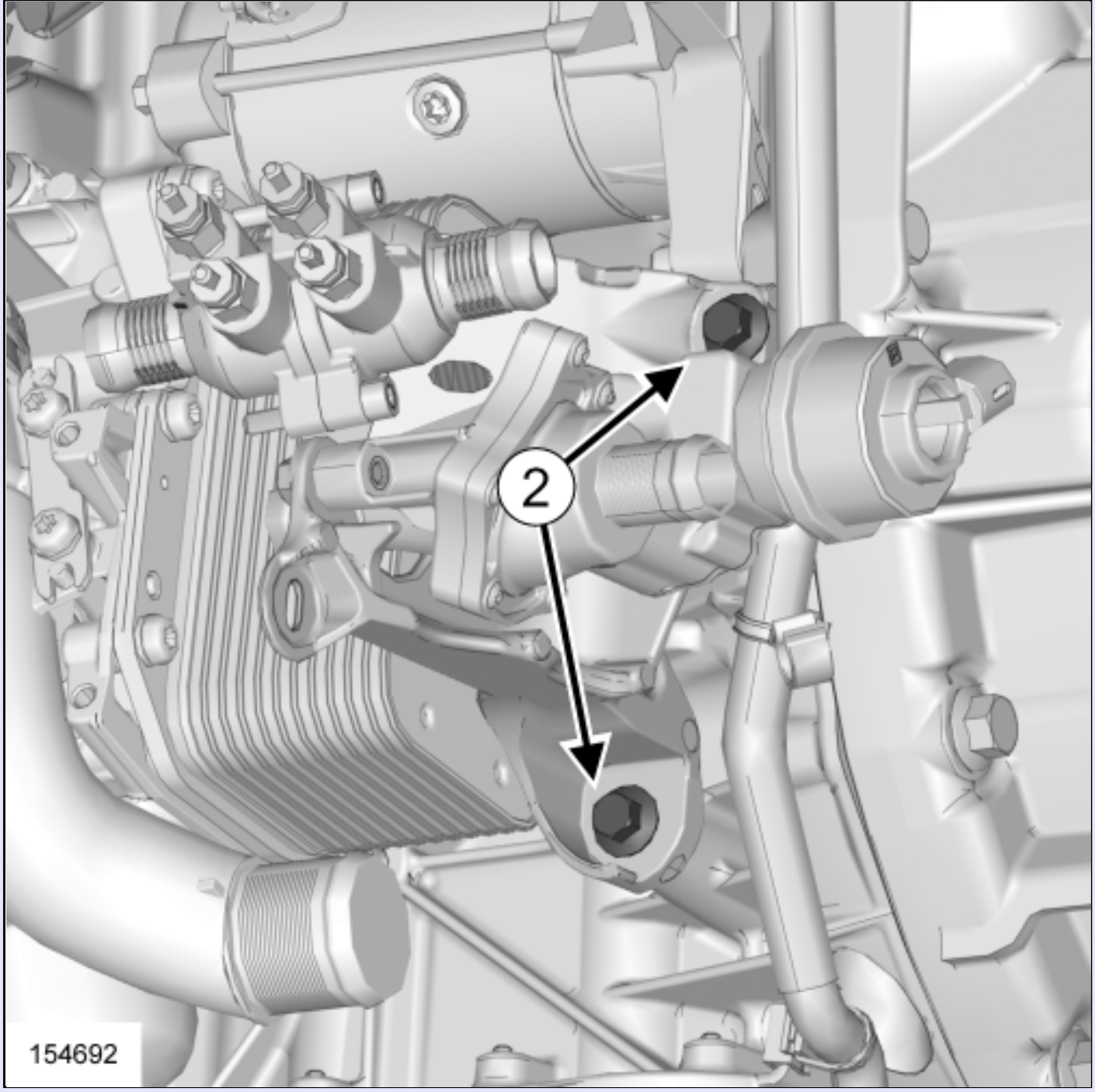
- Separate the following from the coolant circuit switchover valve using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe.



- Disconnect the following from the coolant circuit switchover valve:
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe,
  - the control pipe from the coolant circuit switchover valve(1) .

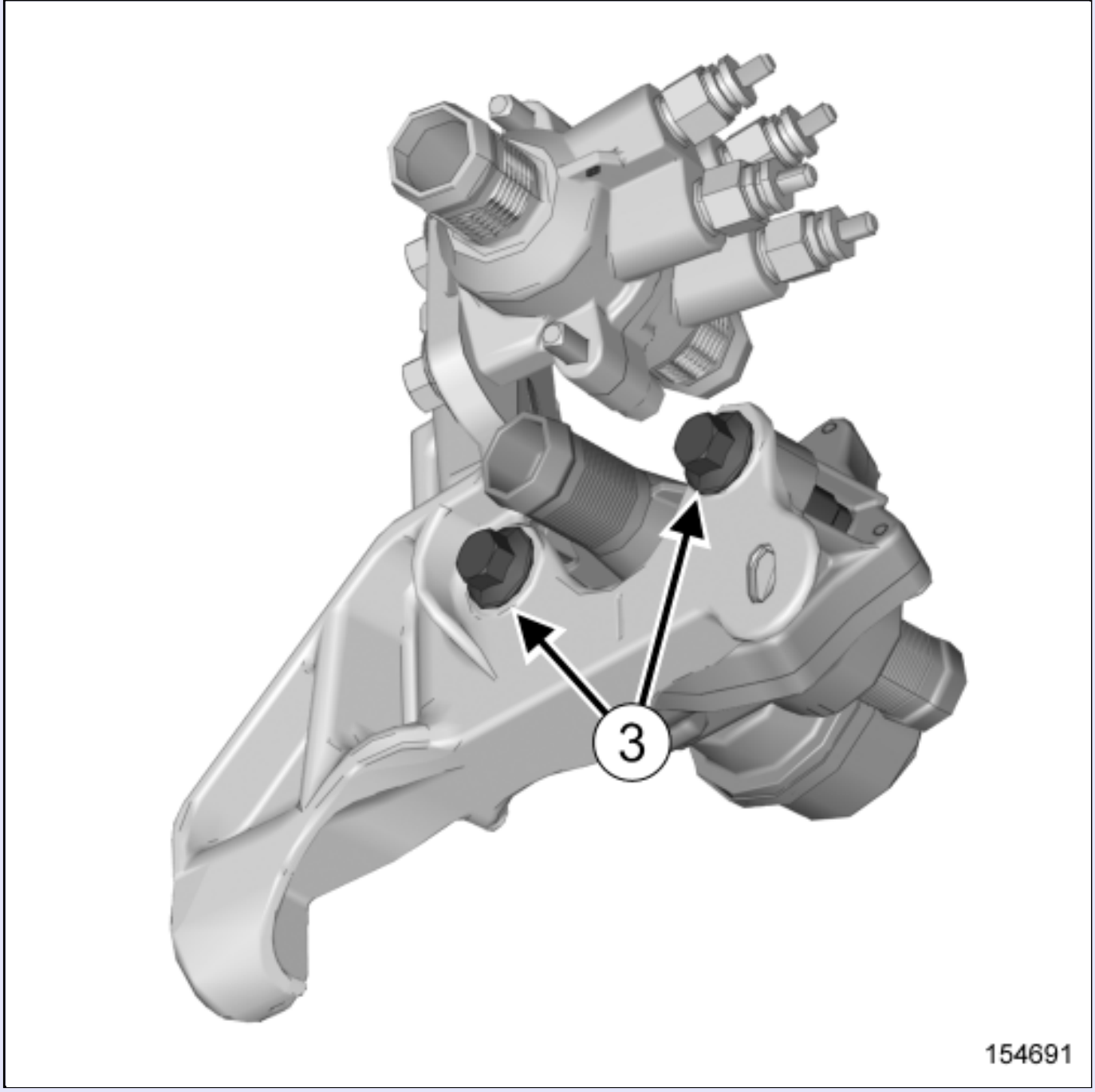
- Remove the retaining bolt of the hydraulic pipe.

- Move the hydraulic pipe.



Remove:

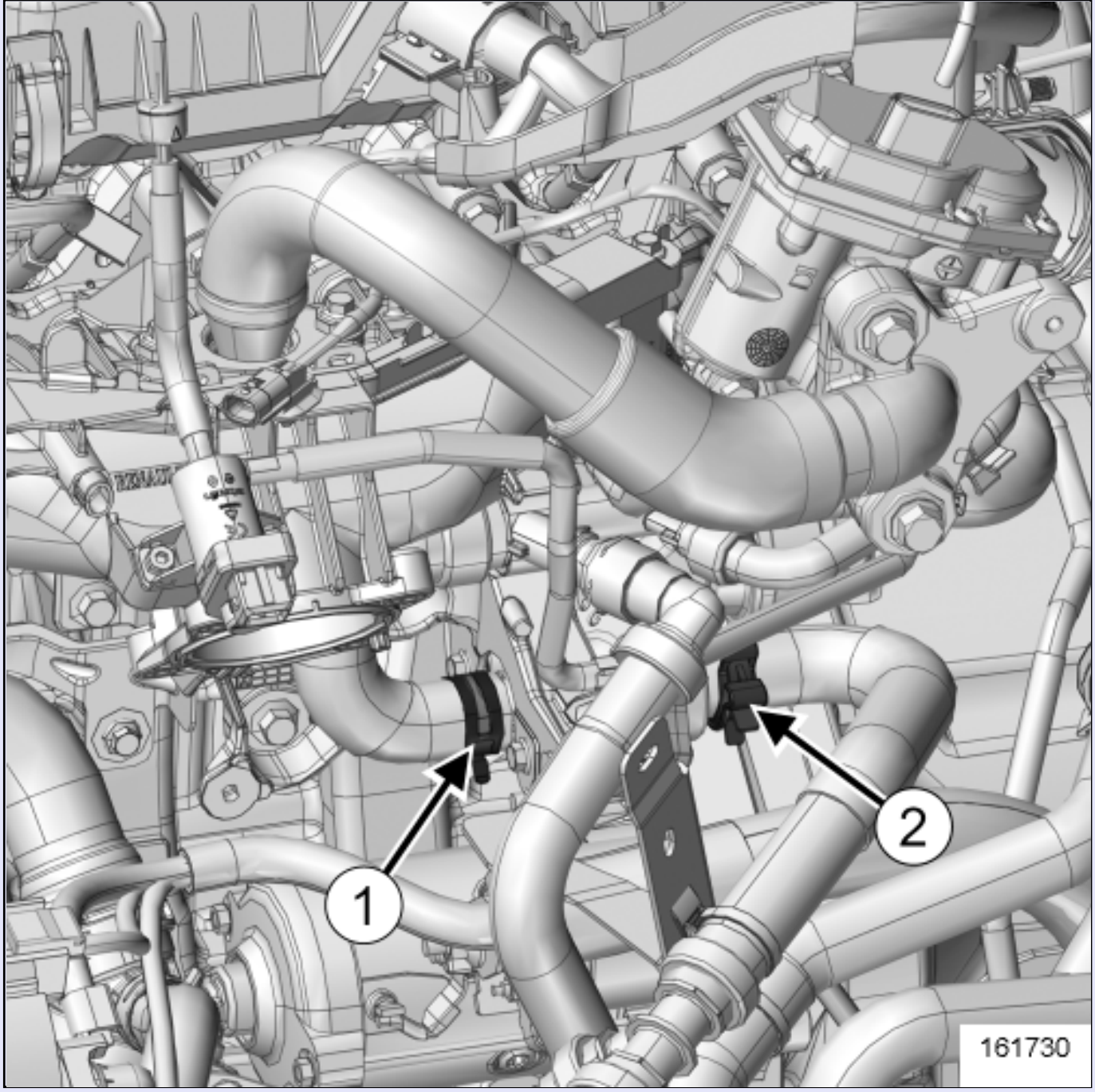
- the "coolant circuit switchover valve - thermoplunger unit" assembly bolts(2) ,
- the "coolant circuit switchover valve - thermoplunger unit" assembly.



Remove:

- the coolant circuit switchover valve bolts(3) ,
- the coolant circuit switchover valve.

M9T, 700 702(700 OR 702)



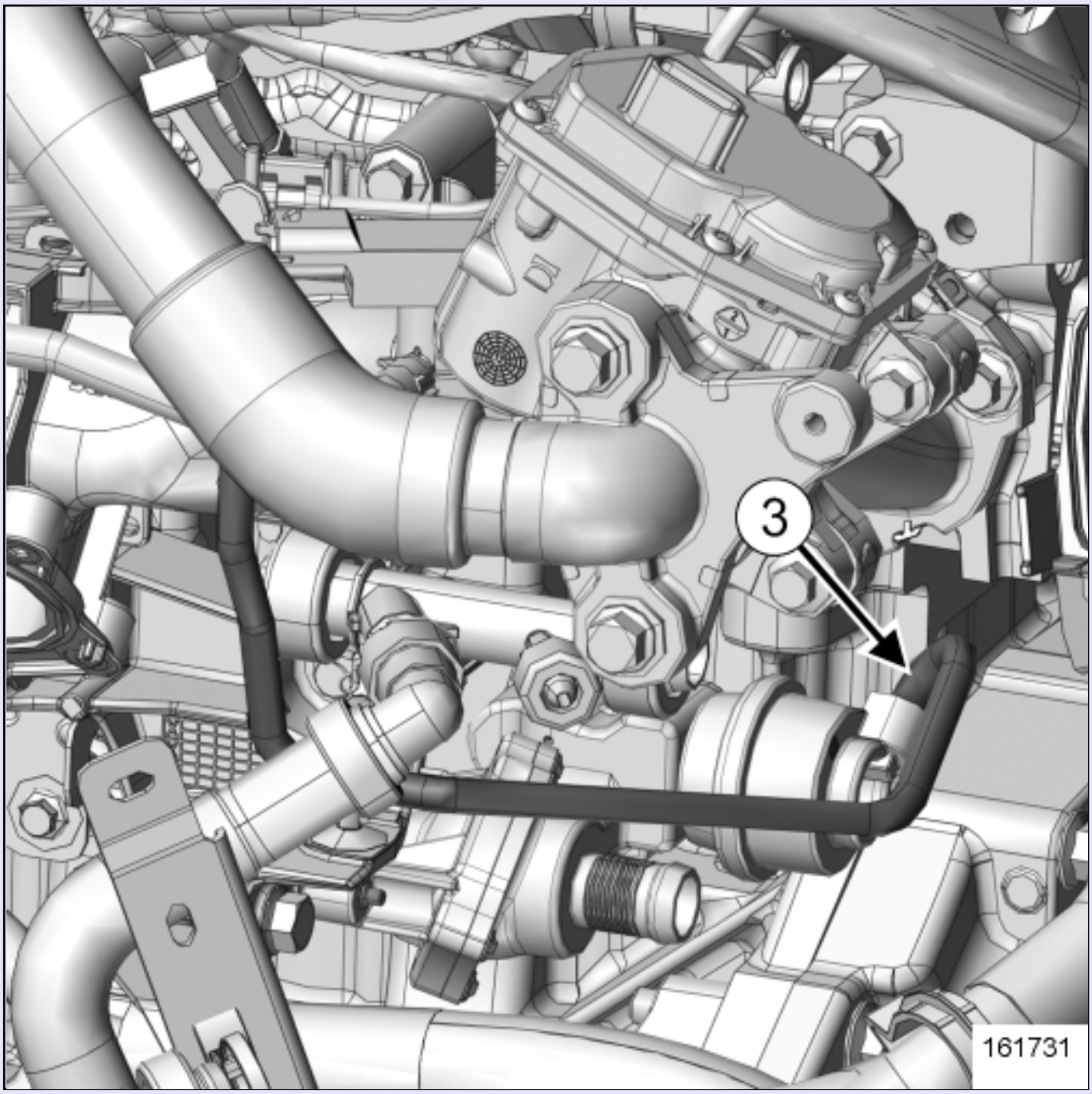
Move aside using the toolRemote operation pliers for hose clips.(**Mot. 1448**) :

- the coolant circuit switchover valve inlet cooling pipe clip(**2**) ,
- the coolant circuit switchover valve outlet cooling pipe clip(**1**) .

Disconnect:

- the coolant circuit switchover valve inlet cooling pipe,

the coolant circuit switchover valve outlet cooling pipe.



Disconnect the coolant circuit switchover valve control pipe(3) .

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the coolant circuit switchover valve bolts,

the coolant circuit switchover valve.

REFITTING

M9T, 700 702(M9T) AND (700 OR 702)

1. REFITTING OPERATION

- Refit (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the coolant circuit switchover valve,
  - the coolant circuit switchover valve bolts.
- Torque tighten the coolant circuit switchover valve bolts(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

2. FINAL OPERATION

- Proceed in the reverse order to removal.
- Perform the following operations:
  - top up the coolant level,
  - bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

Proceed in the reverse order to removal.

Torque tighten the thermoplunger unit wiring nuts4 N.m

Perform the following operations:

- top up the coolant level,
- bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

COOLANT PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pin wrench..	Mot. 1729

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Cylinder block assembly: Exploded view**) .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

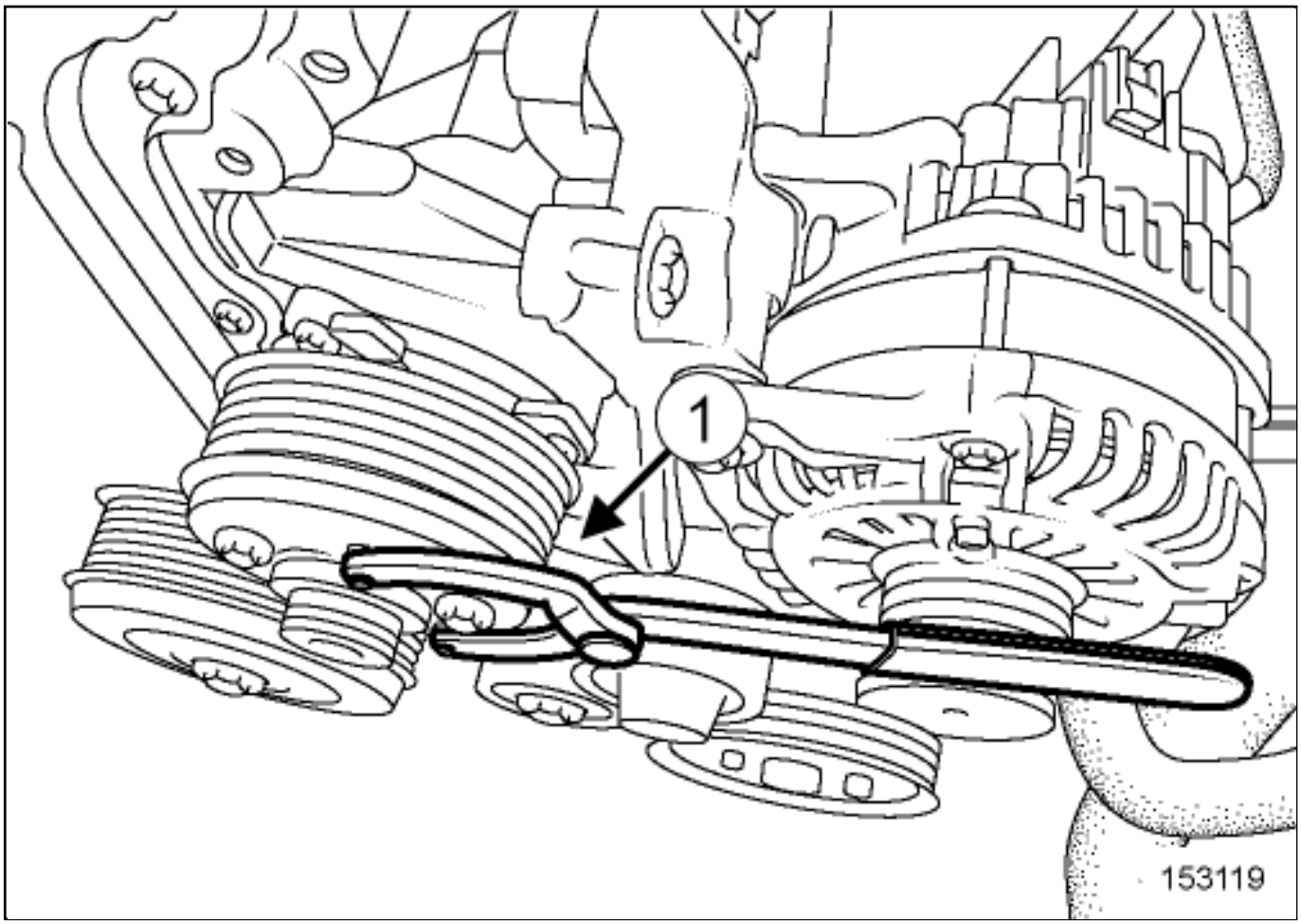
- The criteria to be met are:
  - protection down to -25°C ± 2for cold and temperate countries,
  - protection down to -40°C ± 2for "extreme cold" countries.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
  - the engine undertray,
  - the engine cooling fan propeller(see **Cylinder block assembly: Exploded view**) .
- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .
- Remove the accessories beltAND (M9T) AND (700 OR 702) M9T, 700 702.

2. REMOVAL OPERATION



- Lock the coolant pump pulley using the toolPin wrench..(Mot. 1729) (1) .

- Remove (see **Cylinder block assembly: Exploded view**) :
  - the water pump pulley,
  - the coolant pump,
  - the coolant pump seal.

REFITTING

1. REFITTING PREPARATION OPERATION

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

WARNING

Wear goggles with side protectors for this operation.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

Clean the joint faces using surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- of the coolant pump if it is to be re-used,
- the cylinder block.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Fill and bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

COOLANT PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pin wrench..	Mot. 1729

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Cylinder block assembly: Exploded view**) .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

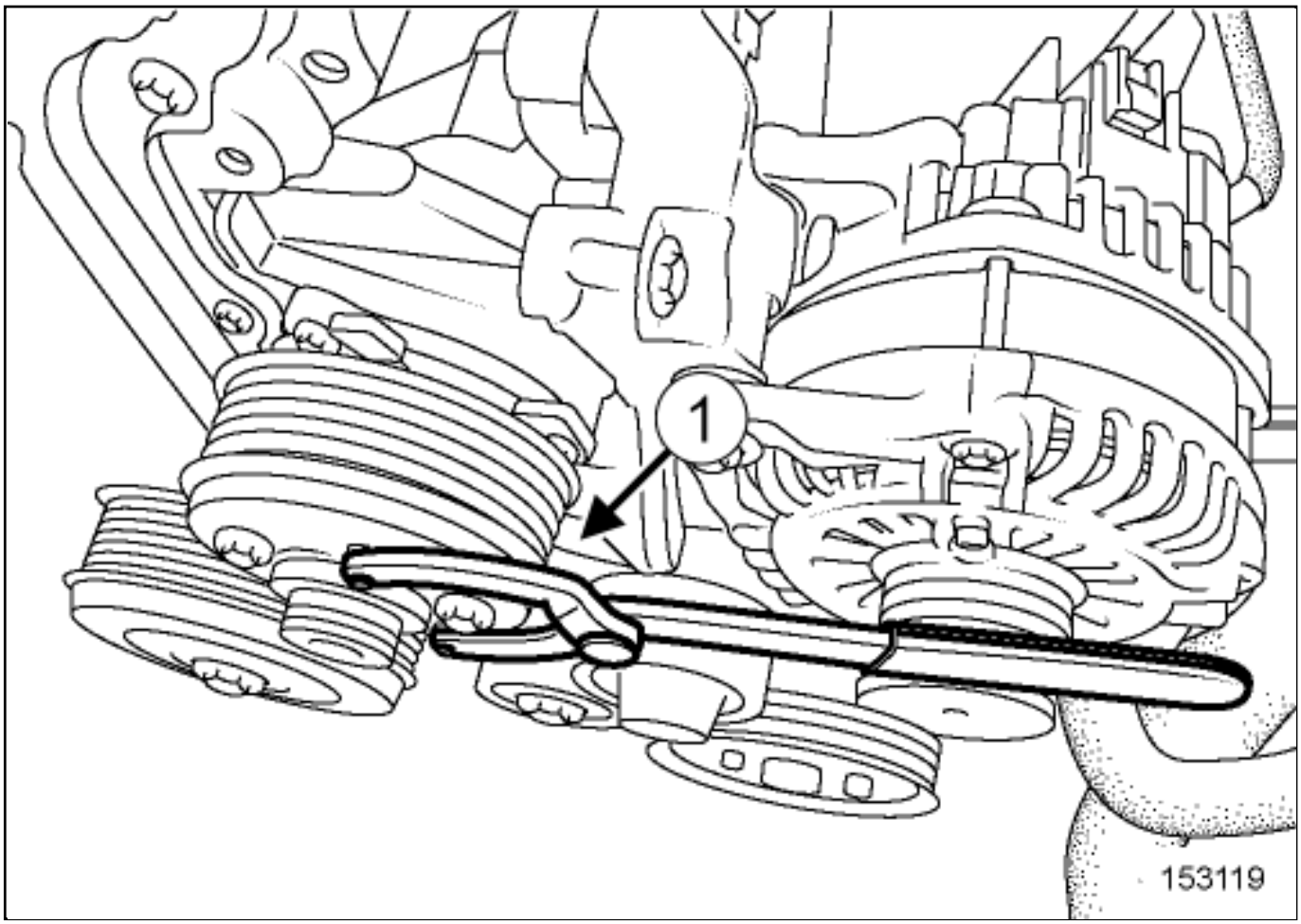
- The criteria to be met are:
  - protection down to -25°C ± 2for cold and temperate countries,
  - protection down to -40°C ± 2for "extreme cold" countries.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
  - the engine undertray,
  - the engine cooling fan propeller(see **Cylinder block assembly: Exploded view**) .
- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .
- Remove the accessories beltAND (M9T) AND (700 OR 702) M9T, 700 702.

2. REMOVAL OPERATION



- Lock the coolant pump pulley using the toolPin wrench..(Mot. 1729) (1) .

- Remove (see **Cylinder block assembly: Exploded view**) :
  - the water pump pulley,
  - the coolant pump,
  - the coolant pump seal.

REFITTING

1. REFITTING PREPARATION OPERATION

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

WARNING

Wear goggles with side protectors for this operation.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

Clean the joint faces using surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- of the coolant pump if it is to be re-used,
- the cylinder block.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Fill and bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

COOLANT TEMPERATURE SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:

coolant temperature sensor seal

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

WARNING

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

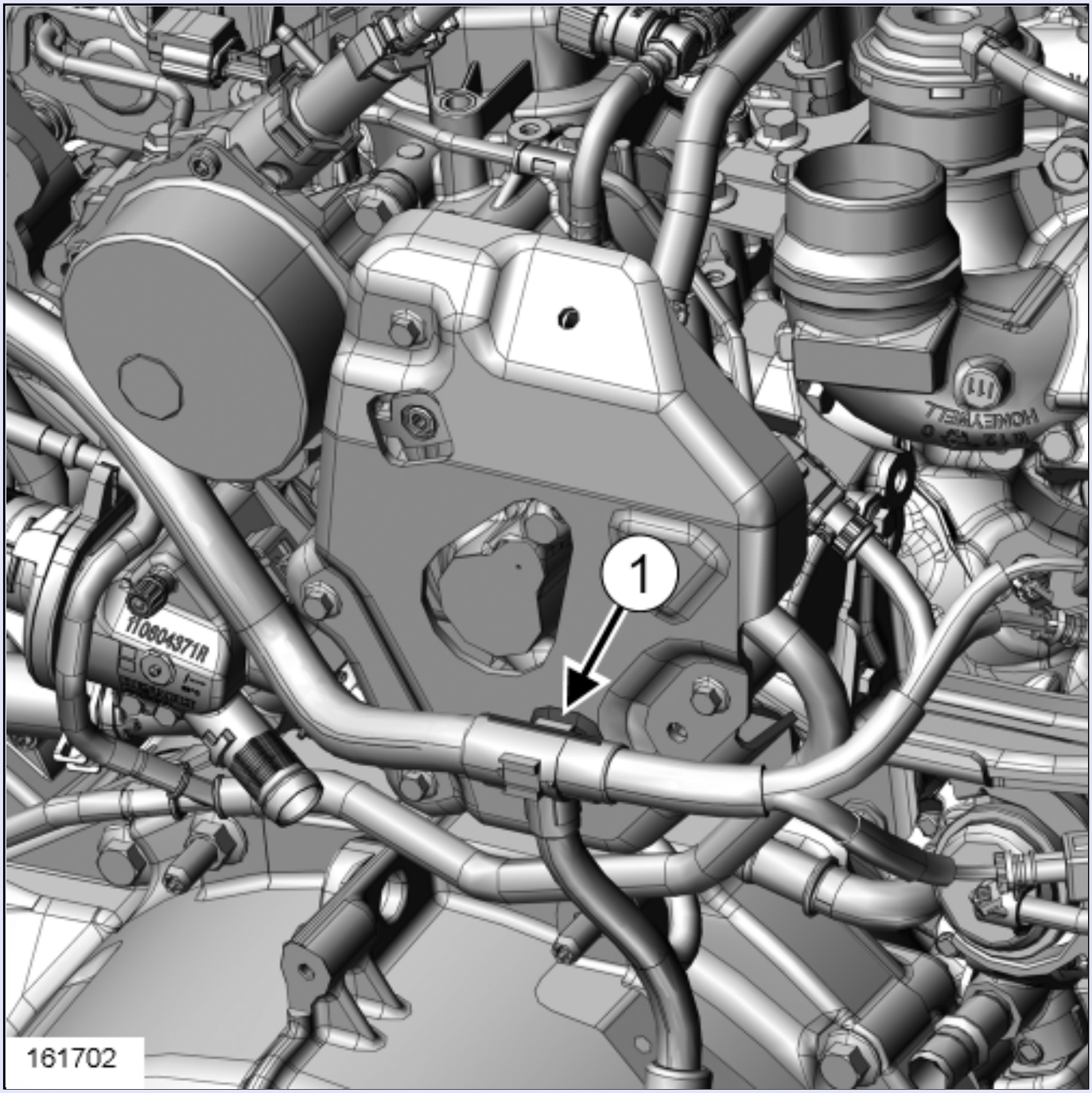
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .
- Remove the engine undertray.
- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

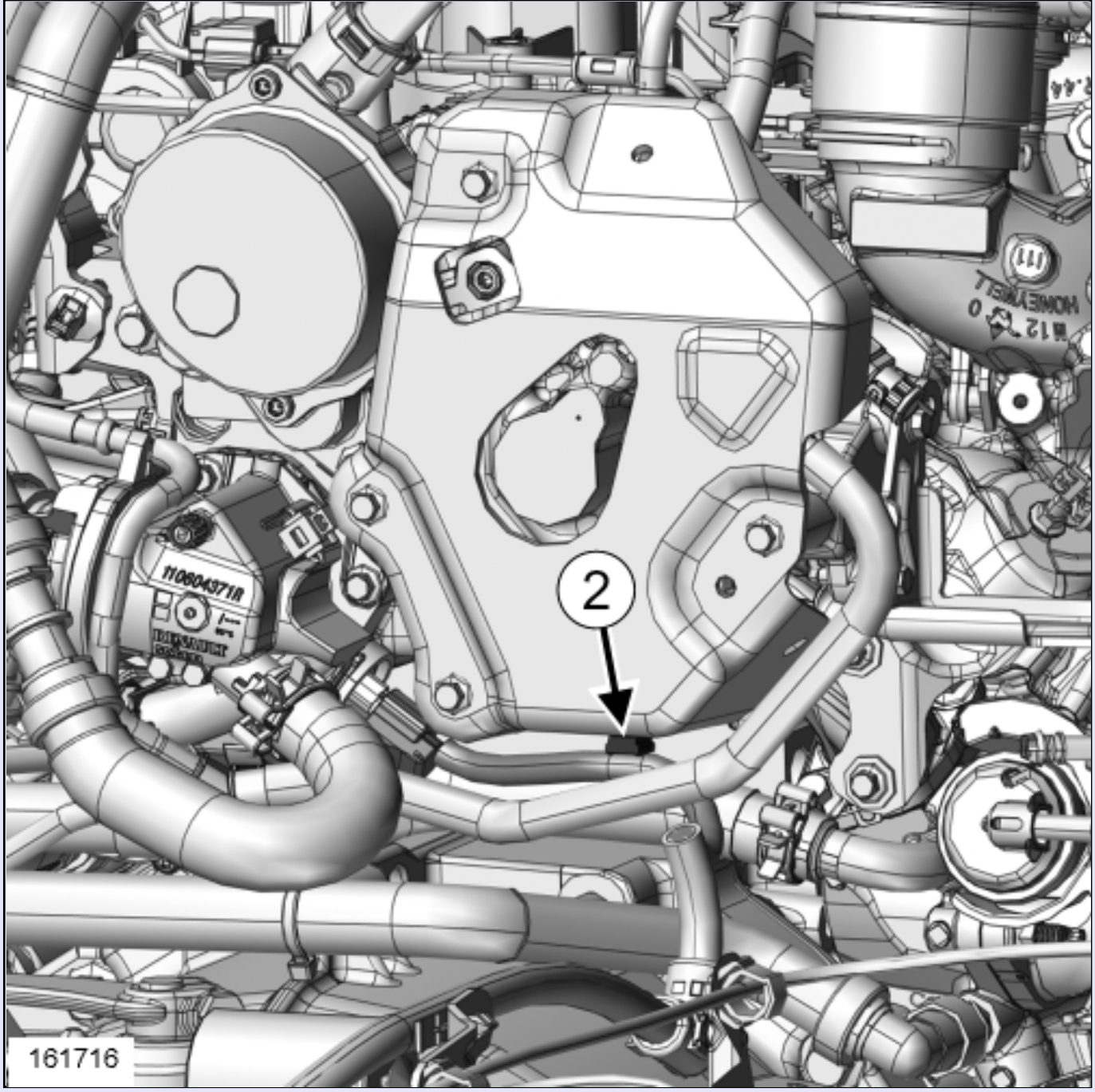
M9T, 690 696 698 700 890 896 898(690 OR 696 OR 698 OR 700 OR 890 OR 896 OR 898)

- Remove the particle filter(see **Exhaust assembly under body: Exploded view**) .

M9T, 686 692 694(686 OR 692 OR 694)

- Remove the catalytic converter(see **Exhaust assembly under body: Exploded view**) .

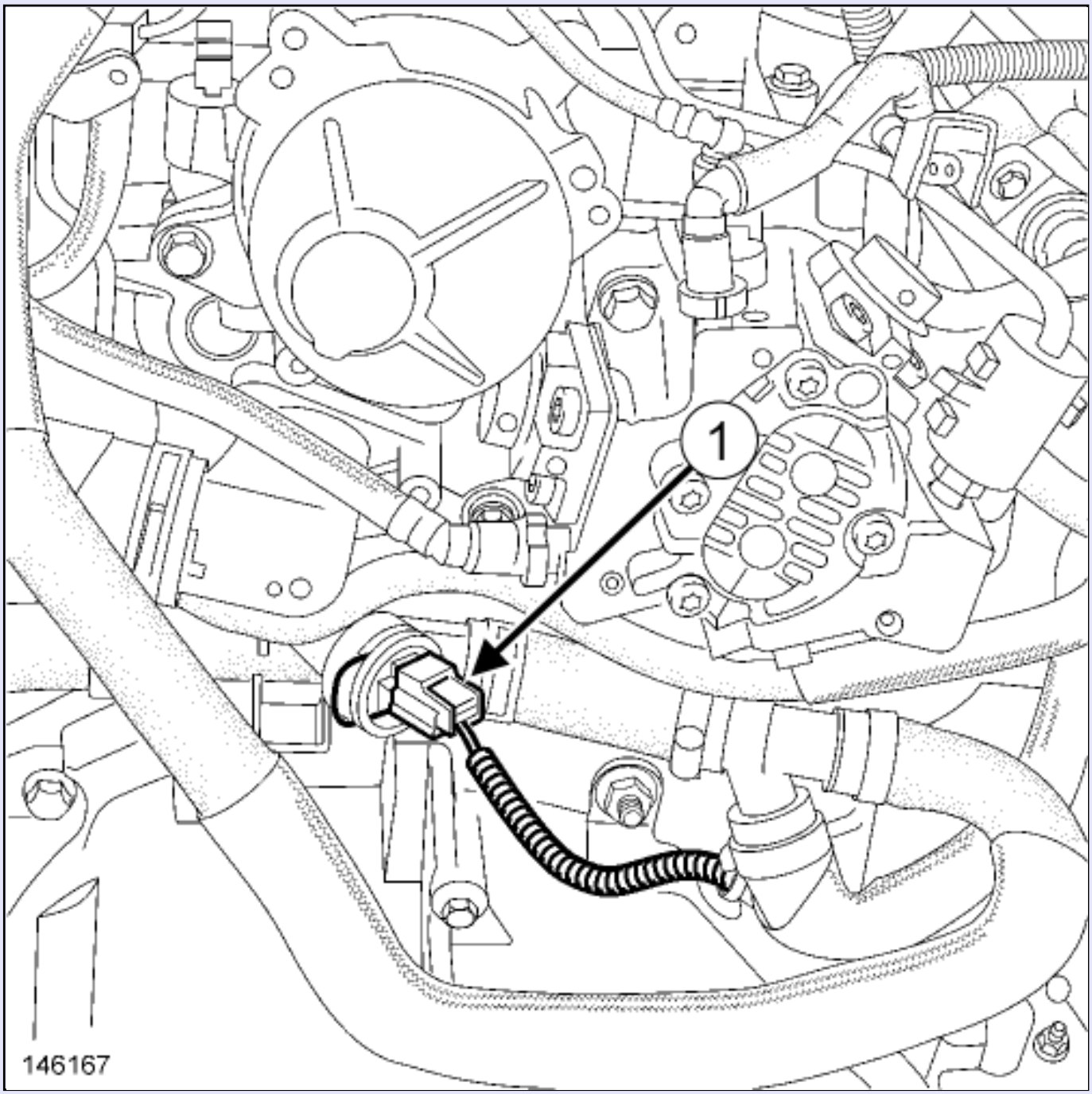

1
161702



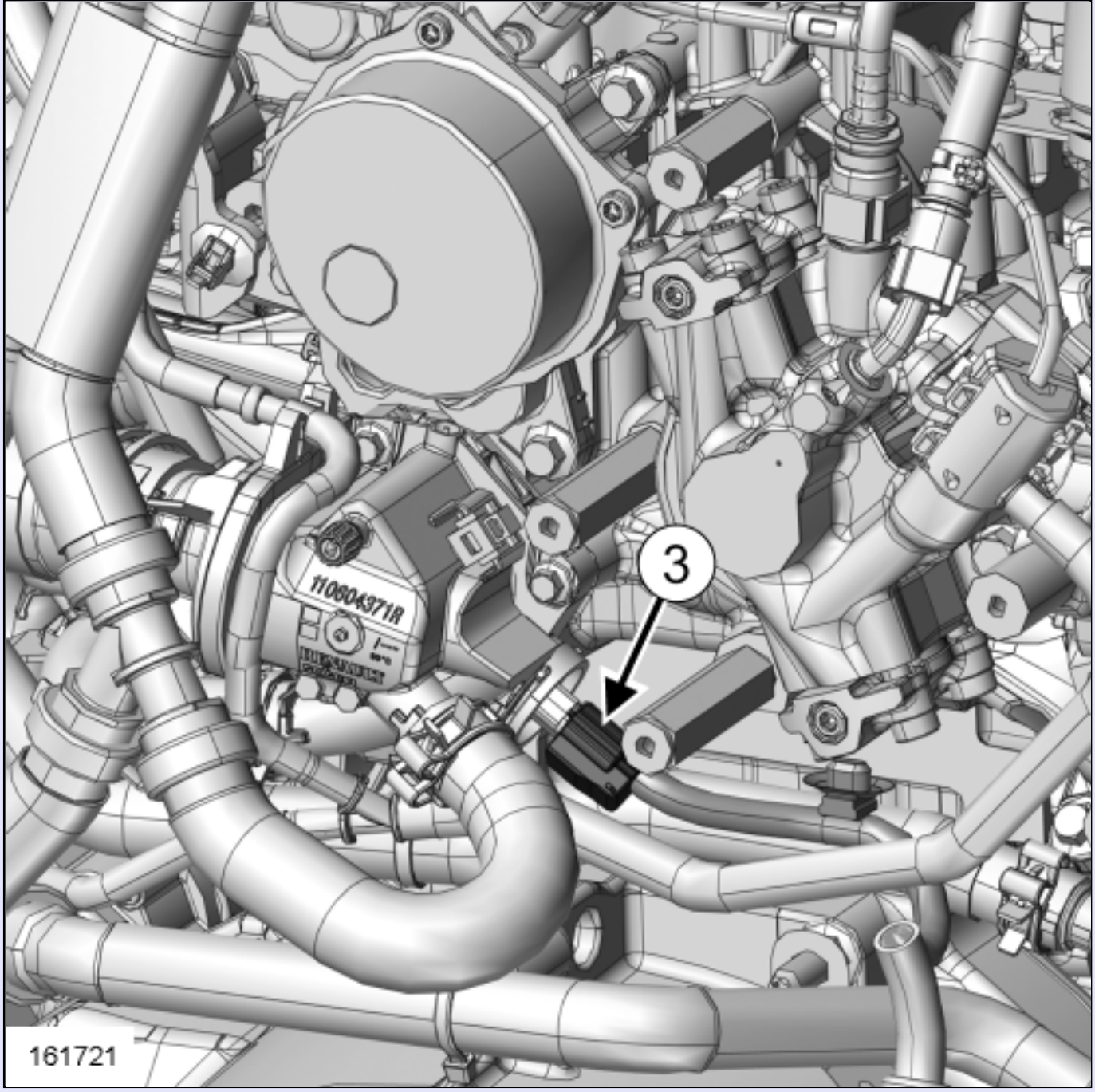
- Unclip from the high-pressure pump protector:
  - the fuel collector pipe clip(1) .
  - the coolant temperature sensor wiring clip(2)

- Remove :
  - the high pressure pump protector bolts,
  - the high pressure pump protector.

2. REMOVAL OPERATION



- Disconnect the coolant temperature sensor connector(1) .



Disconnect the coolant temperature sensor connector(3) .

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the coolant temperature sensor clip,
- the coolant temperature sensor,

the coolant temperature sensor seal.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: coolant temperature sensor seal

2. REFITTING OPERATION

Refit (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the coolant temperature sensor seal.
- the coolant temperature sensor,
- the coolant temperature sensor clip,

3. FINAL OPERATION

Proceed in the reverse order to removal.

Fill and bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

COOLING RADIATOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

Equipment required
safety strap(s)

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19A, Cooling, Coolant circuit assembly: Exploded view)** .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

- The criteria to be met are:
  - protection down to -25°C ± 2for cold and temperate countries,
  - protection down to -40°C ± 2for "extreme cold" countries.

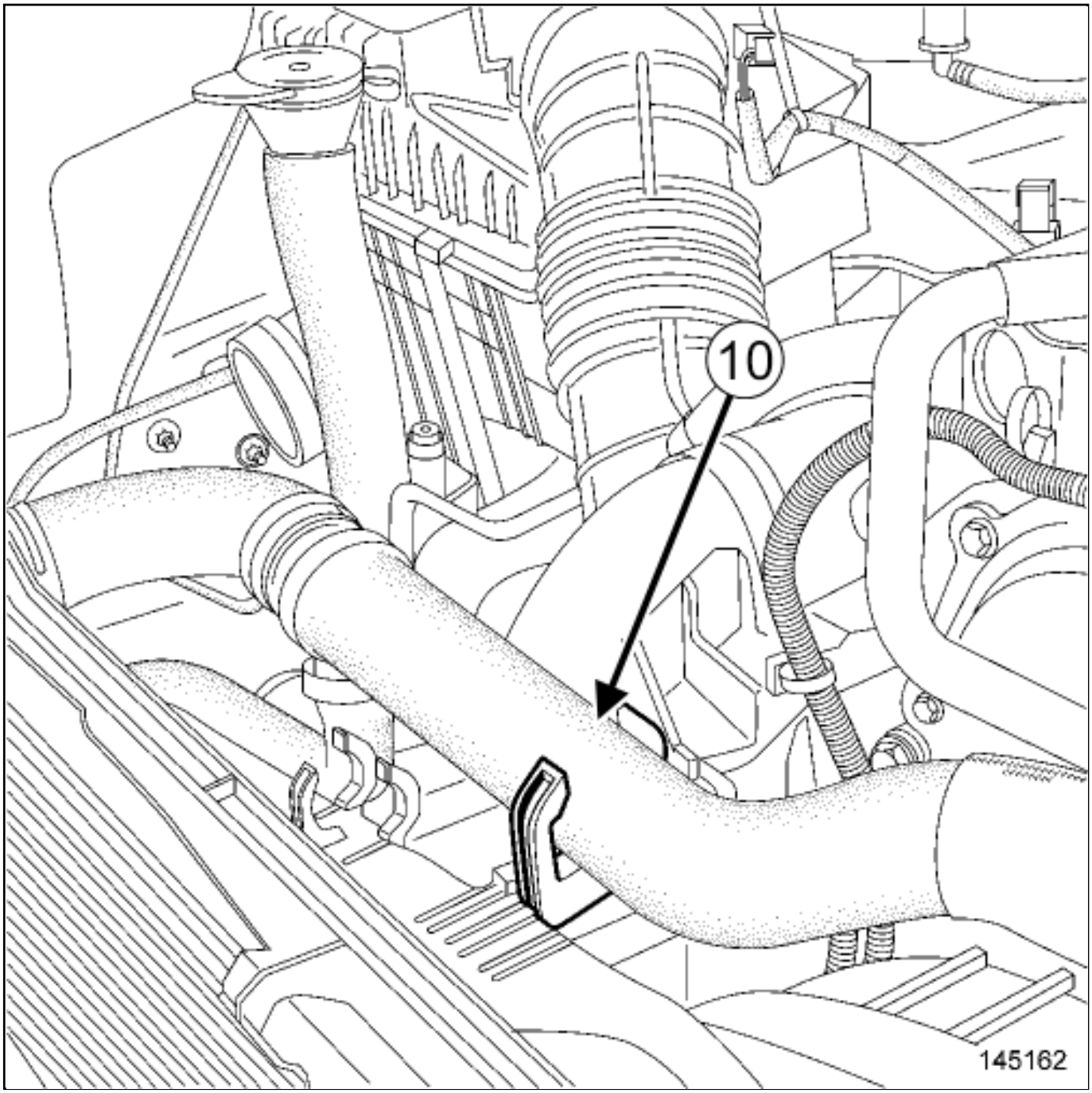
REMOVAL

1. REMOVAL PREPARATION OPERATION

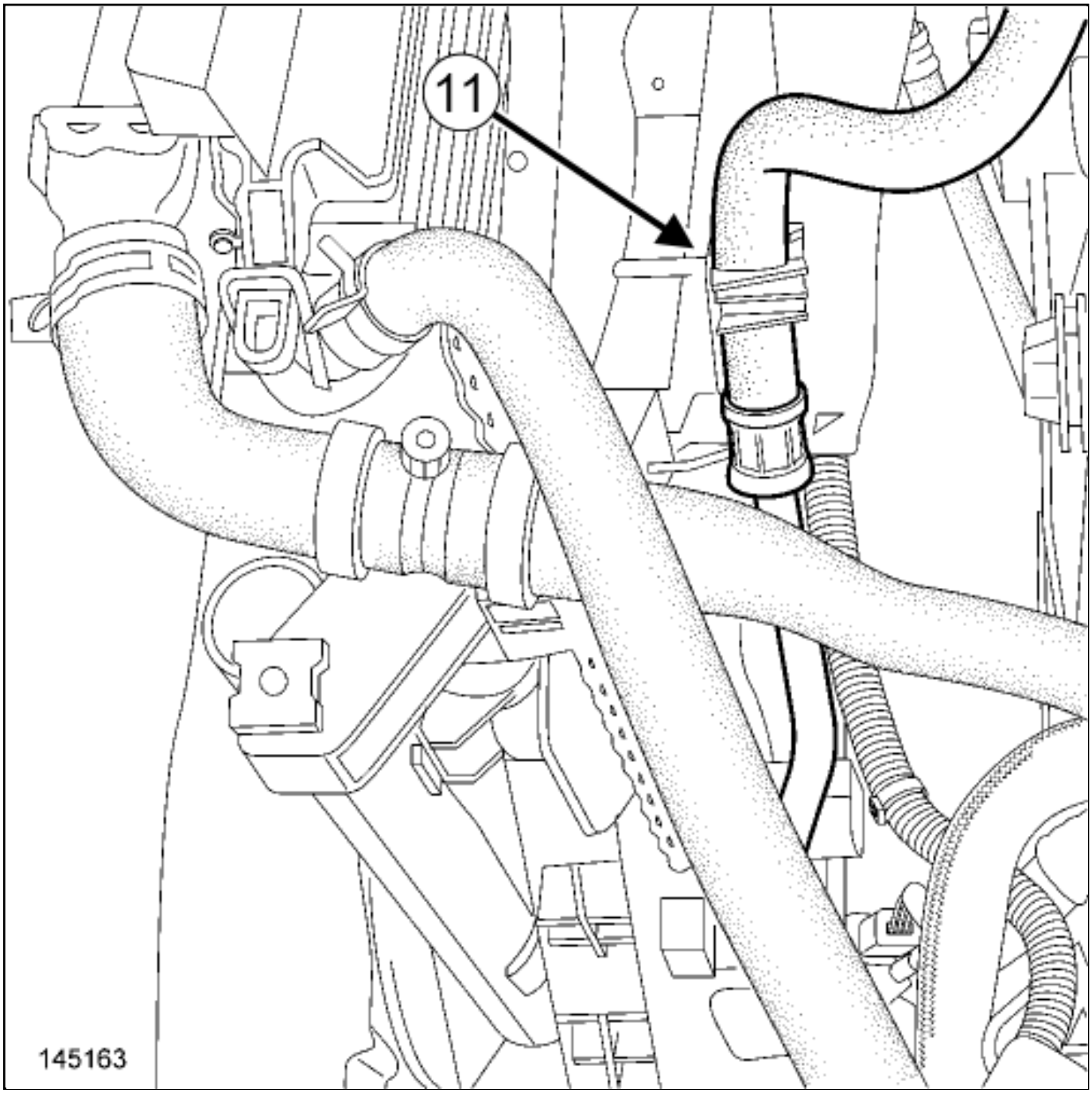
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
  - the engine undertray,
  - the radiator grille(see **Radiator grille: Removal - Refitting**) (56A, Exterior equipment),
  - the headlights(see **Headlight: Removal - Refitting**) (80B, Headlights),
  - the front bumper(see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
  - the intercoolerAND (ZA4 OR ZF4) ZA4 ZF4AND (M9T) AND (700 OR 702) M9T, 700 702.
- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .
- Remove the engine cooling fan propeller(see **Cylinder block assembly: Exploded view**) .

M9T, 694 696 698(694 OR 696 OR 698)

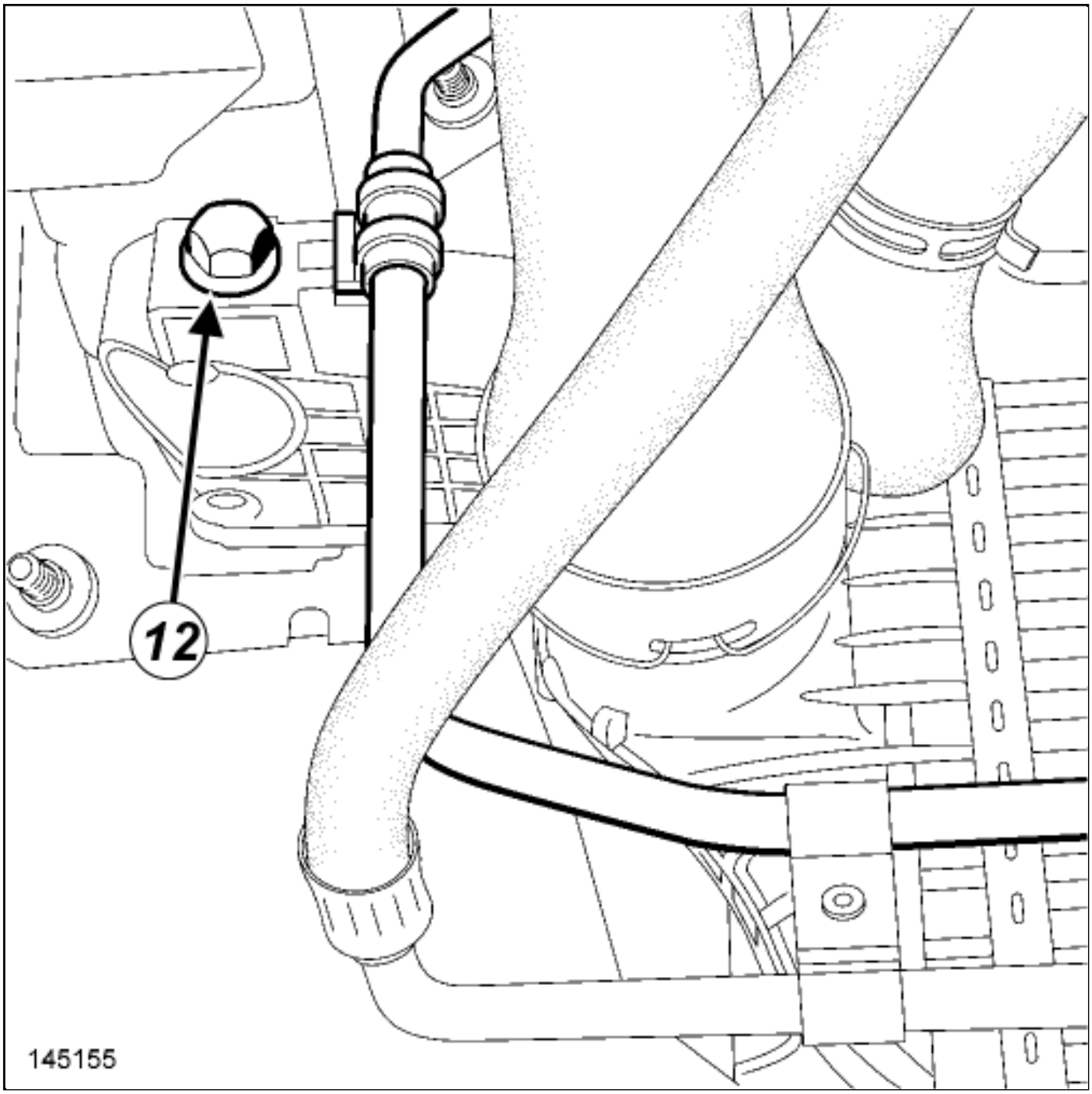
- Remove the additional cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) .
- Unclip the engine cooling fan assembly wiring.

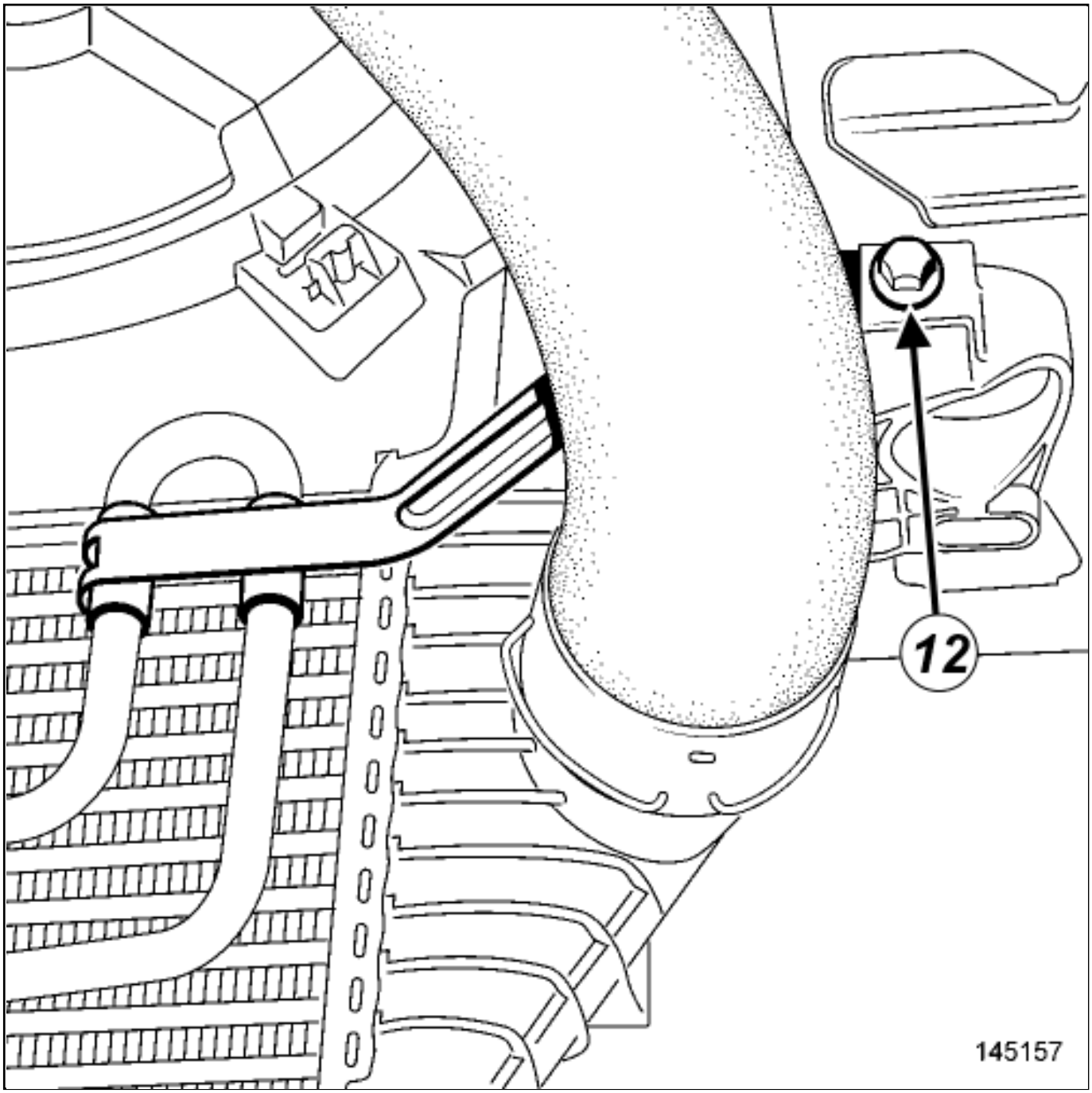


- Unclip the cooling pipe(10) from the engine cooling fan assembly.

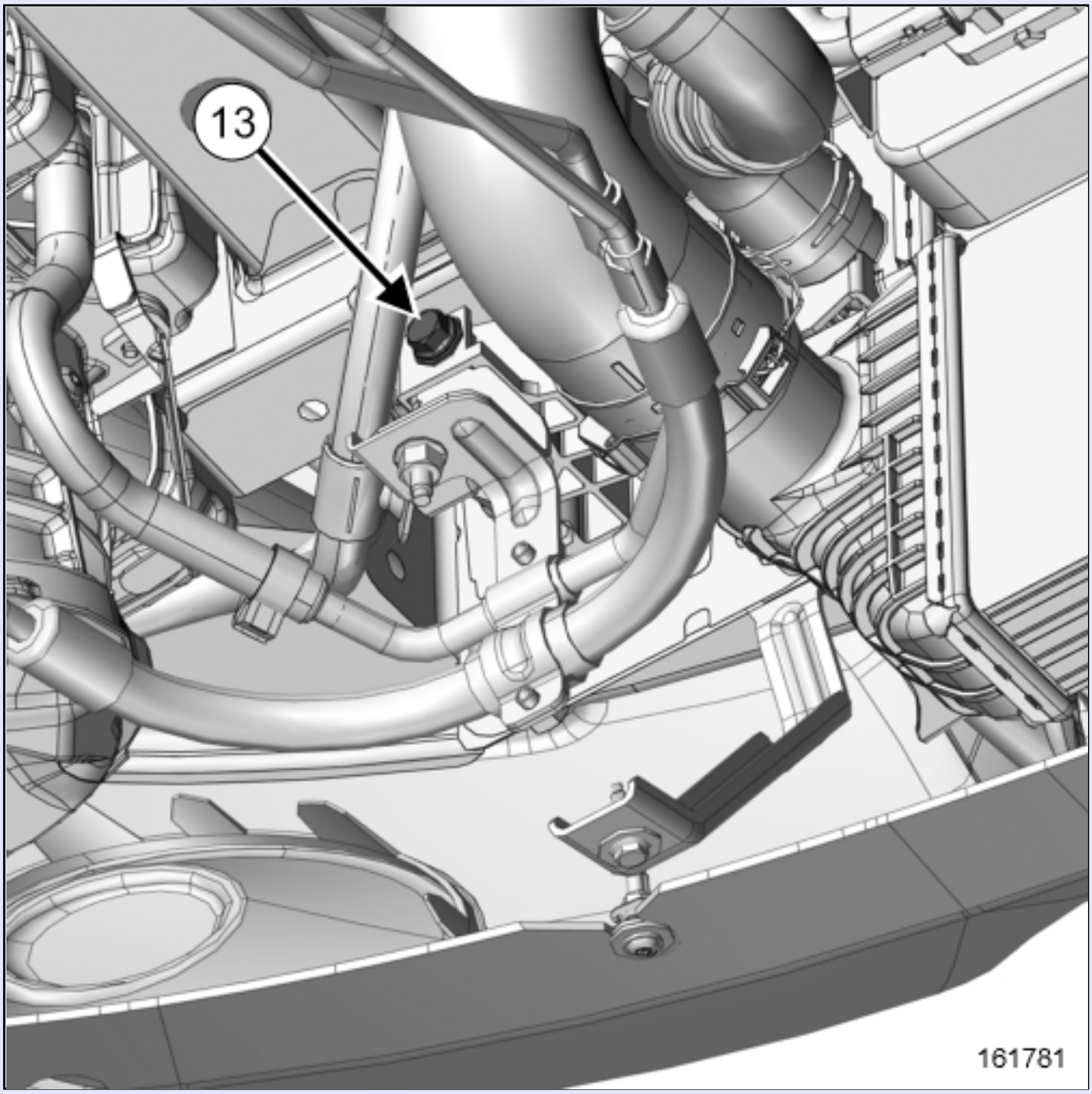


- Unclip the power-assisted steering pipe from the engine cooling fan assembly(11) .


12
145155



- Remove the bolts(12) from the power-assisted steering pipe.



- Remove the bolt(13) from the power-assisted steering pipes.

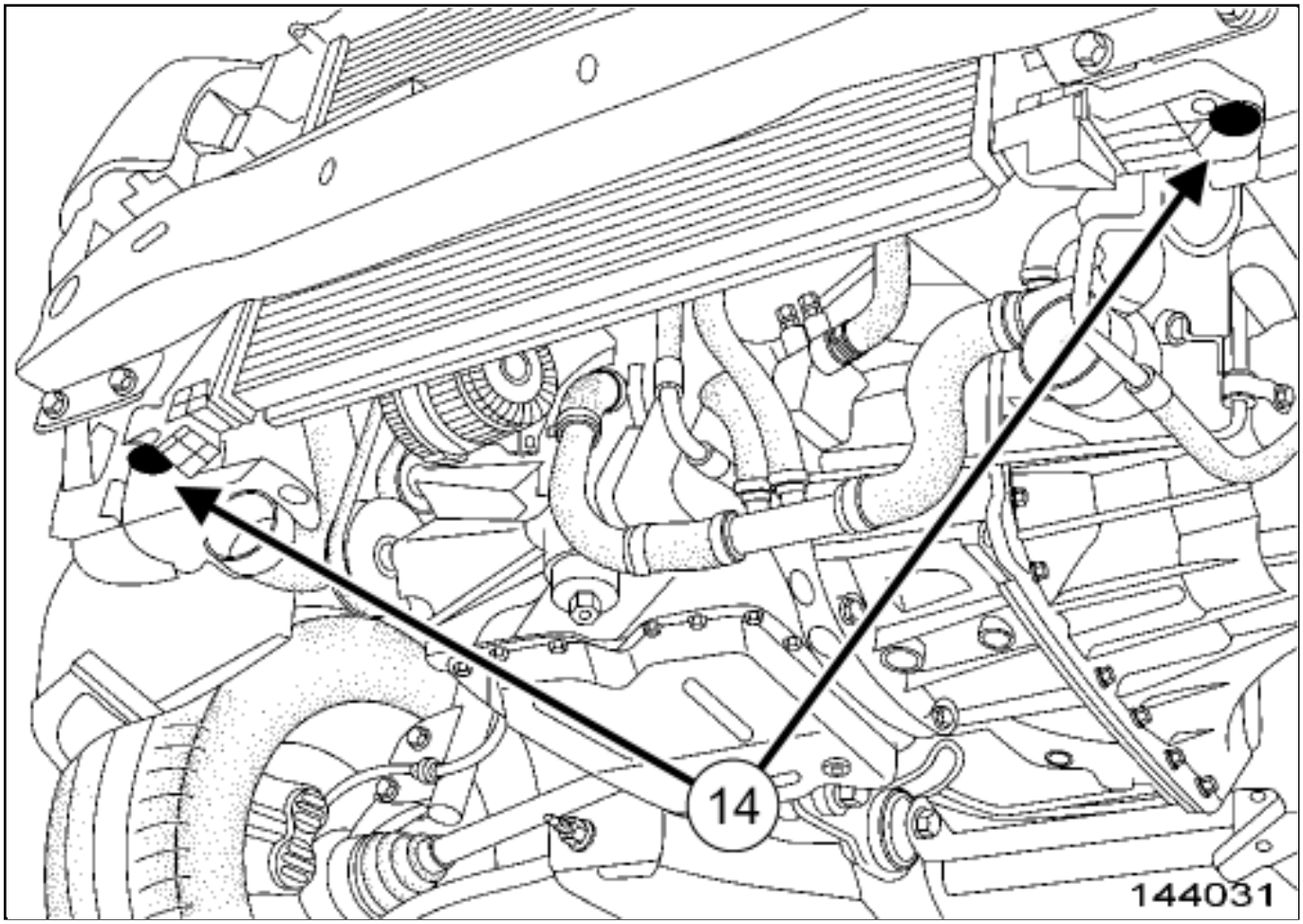
2. REMOVAL OPERATION

- Using the toolRemote operation pliers for hose clips.(Mot. 1448), separate the following from the cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view):
  - the cooling radiator outlet pipe clip,
  - the cooling radiator inlet pipe clip,
  - the cooling radiator degassing pipe clip.

Disconnect the following from the cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the cooling radiator outlet pipe,
- the cooling radiator inlet pipe,
- the cooling radiator degassing pipe.

Remove the bolt of the bracket of the power-assisted steering pipe on the cooling radiator(see **Power-assisted steering assembly: Exploded view**) (36B, Power-assisted steering).



Remove:

- the cooling radiator bolts(14) ,
- the cooling radiator.

1- IF REPLACING THE COOLING RADIATOR

Remove the engine cooling fan assembly from the cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Fill and bleed the cooling system (see 19A, Cooling, Cooling system: Draining - Refilling) .

Repair-10x06x01x05-01x37-1-107-1.xml

XSL version : 3.02 du 22/07/11

COOLING RADIATOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

Equipment required
safety strap(s)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

IMPORTANT

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

WARNING

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

- The criteria to be met are:
  - protection down to -25°C ± 2for cold and temperate countries,
  - protection down to -40°C ± 2for "extreme cold" countries.

REMOVAL

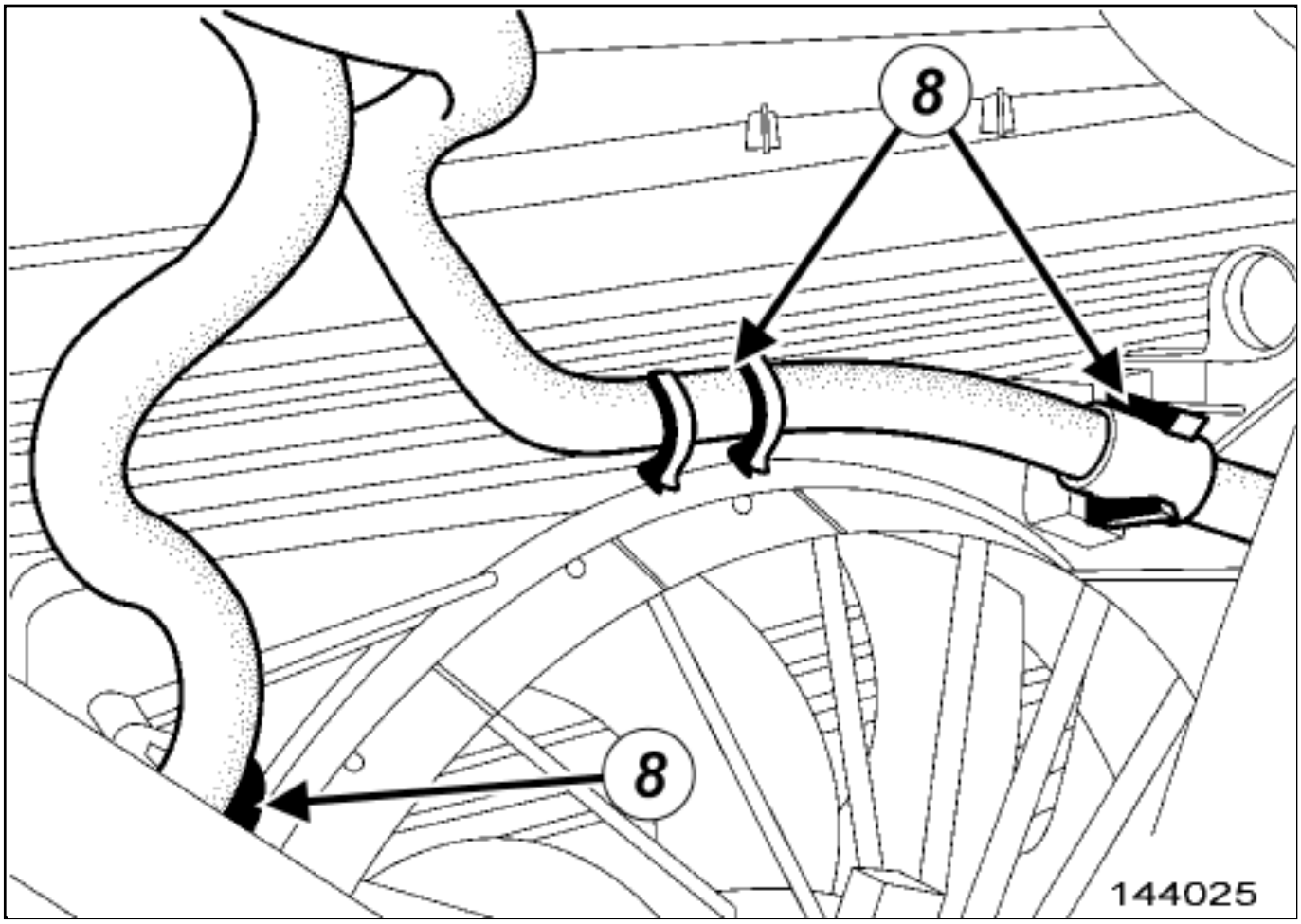
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Remove:
  - the engine undertray,
  - the radiator grille Radiator grille: Removal - Refitting (56A, Exterior equipment),
  - the headlights Headlight: Removal - Refitting (80B, Headlights),
  - the front bumper Front bumper: Removal - Refitting (55A, Exterior protection),
  - the intercooler (see 12A, Fuel mixture, Air inlet assembly: Exploded view) .
- Drain the cooling system (see 19A, Cooling, Cooling system: Draining - Refilling) .

M9T, 694 696 698(694 OR 696 OR 698)

- Remove the additional cooling radiator (see 19A, Cooling, Coolant circuit assembly: Exploded view) .

- Unclip the engine cooling fan assembly wiring.



Unclip the power-assisted steering pipes from the engine cooling fan assembly at(8) .

1-

2. REMOVAL OPERATION

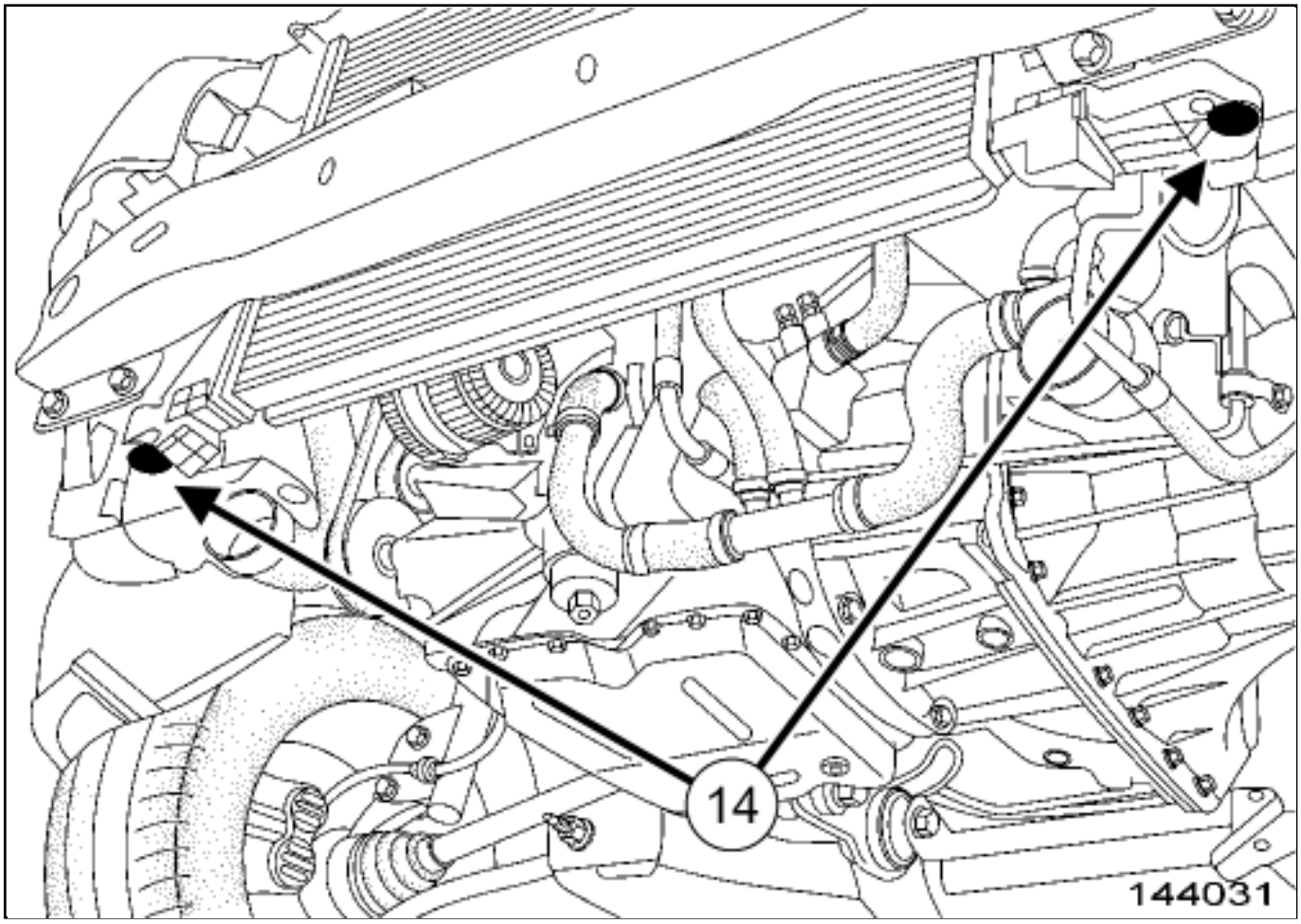
Using the toolRemote operation pliers for hose clips.(Mot. 1448) , separate the following from the cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the cooling radiator outlet pipe clip,
- the cooling radiator inlet pipe clip,
- the cooling radiator degassing pipe clip.

Disconnect the following from the cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the cooling radiator outlet pipe,
- the cooling radiator inlet pipe,
- the cooling radiator degassing pipe.

Remove the bolt of the bracket of the power-assisted steering pipe on the cooling radiatorPower-assisted steering assembly: Exploded view (36B, Power-assisted steering).



- Remove:
  - the cooling radiator bolts(**13**) ,
  - the cooling radiator.

1- IF REPLACING THE COOLING RADIATOR

- Remove the engine cooling fan assembly from the cooling radiator**(see 19A, Cooling, Coolant circuit assembly: Exploded view)** .

REFITTING

- Proceed in the reverse order to removal.

- Fill and bleed the cooling system**(see 19A, Cooling, Cooling system: Draining - Refilling)** .

COOLING SYSTEM: DRAINING - REFILLING

Note, one or more warnings are present in this procedure

Special tooling required	
Instrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06	Ms. 554-07
Fault finding and filling - bleeding the cooling circuit.	Mot. 1700

Equipment required
pedal press
compressed air nozzle
coolant recovery tray

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19A, Cooling, Coolant circuit assembly: Exploded view)** .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

The coolant helps to keep the engine running properly (heat exchange).

The system does not operate using pure water.

CAUTION

If the coolant is leaking from the expansion bottle cap, replace the valve.

DRAINING

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove:
  - the expansion bottle cap,
  - the engine undertray.

- Position an coolant recovery trayunder the vehicle.

- Disconnect the cooling radiator outlet pipe from the cooling radiator(**see 19A, Cooling, Coolant circuit assembly: Exploded view**) .

- Use a compressed air nozzleto blow air into the system through the expansion bottle opening to remove as much coolant as possible.

- Connect the cooling radiator outlet pipe to the cooling radiator(**see 19A, Cooling, Coolant circuit assembly: Exploded view**) .

FILLING

Note:

There are two procedures for filling the cooling system.

- the procedure using the toolFault finding and filling - bleeding the cooling circuit. (Mot. 1700) recommended by Renault. It saves a considerable amount of time because it does not require the cooling system bleed screws to be opened.

- the procedure without the special tool.

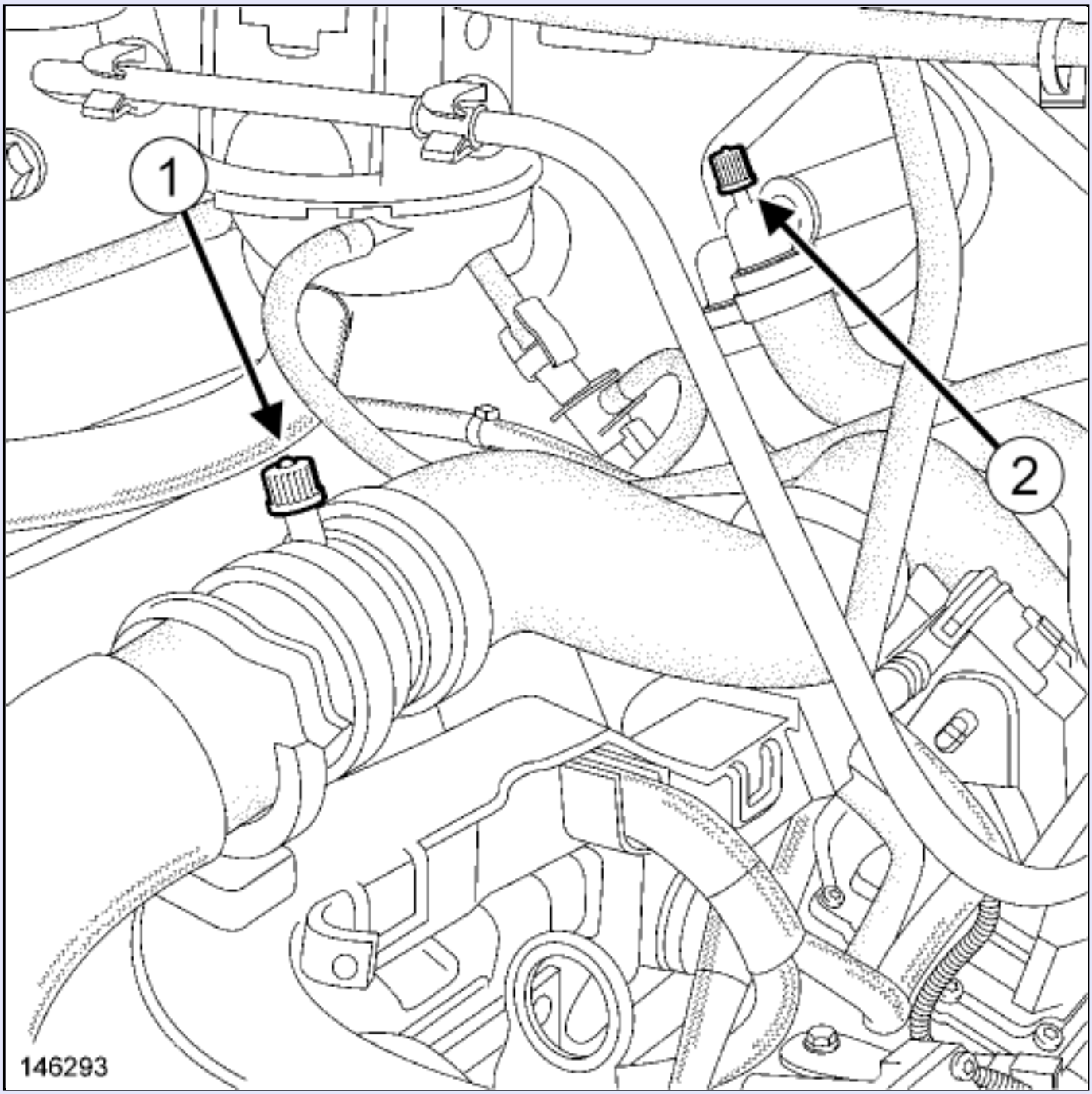
1. FILLING PROCEDURE WITH THE SPECIAL TOOL

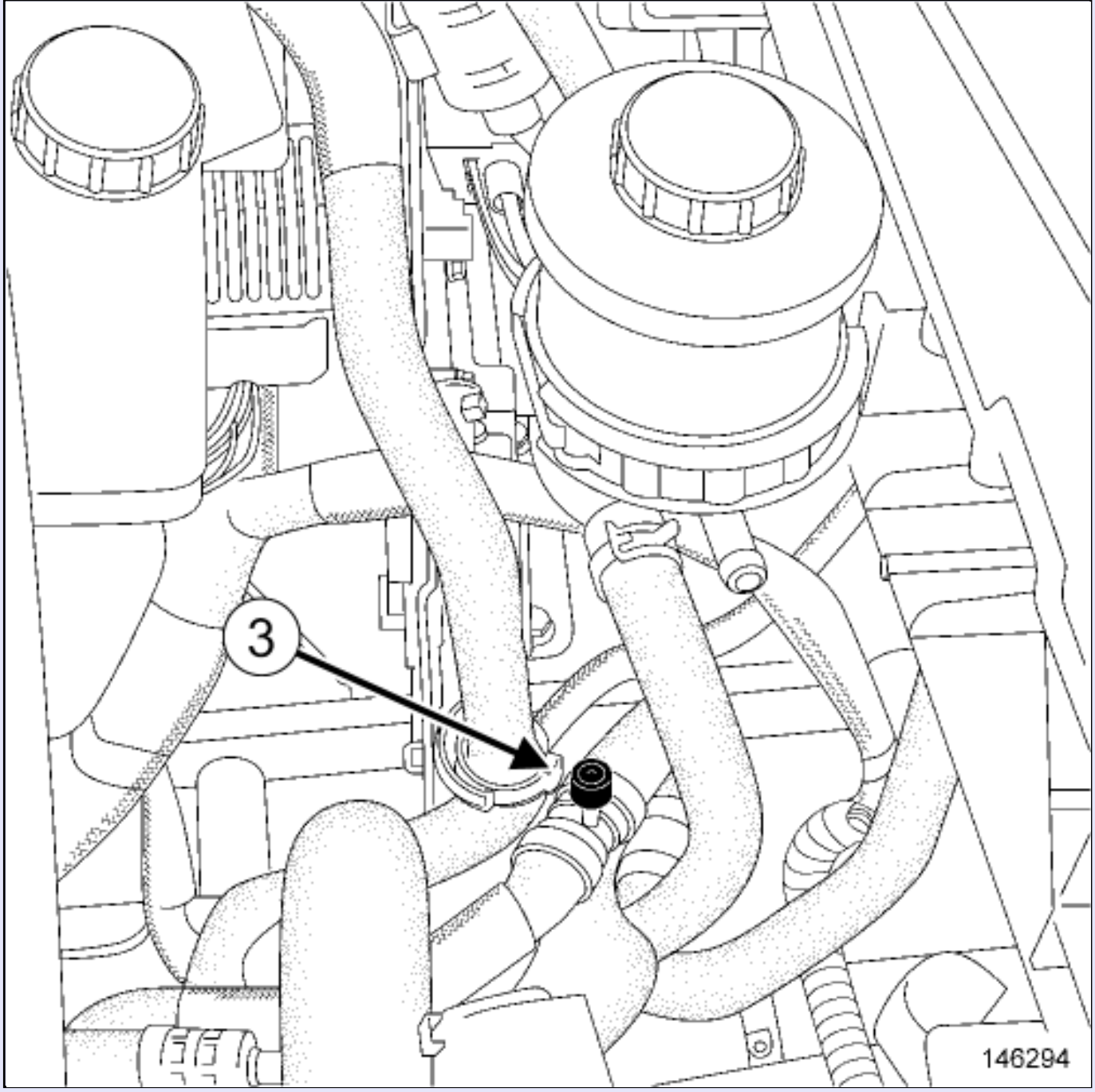
Fill the cooling system with coolant recommended by the manufacturer(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) using the toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) . Consult the procedure for using this tool (see Cooling system filling and diagnostic tool: Use) (Technical Note 3857A, 19A, Cooling).

2. FILLING PROCEDURE WITHOUT THE SPECIAL TOOL

CAUTION

It is essential to open all of the bleed screws to remove as much as air as possible in the cooling system. Failure to perform this procedure may prevent the cooling system from filling properly and may damage the engine.

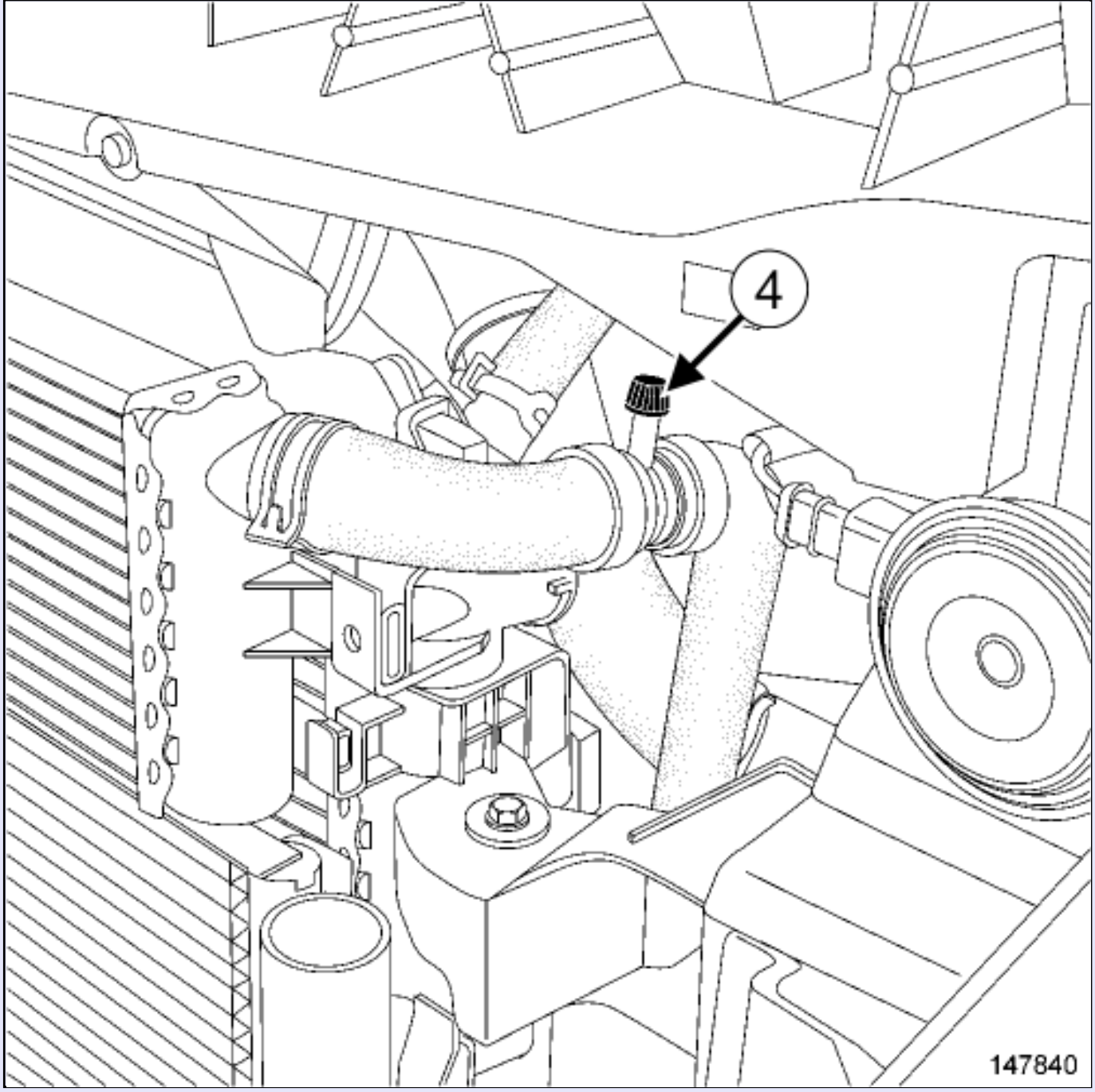

1
2
146293



Remove:

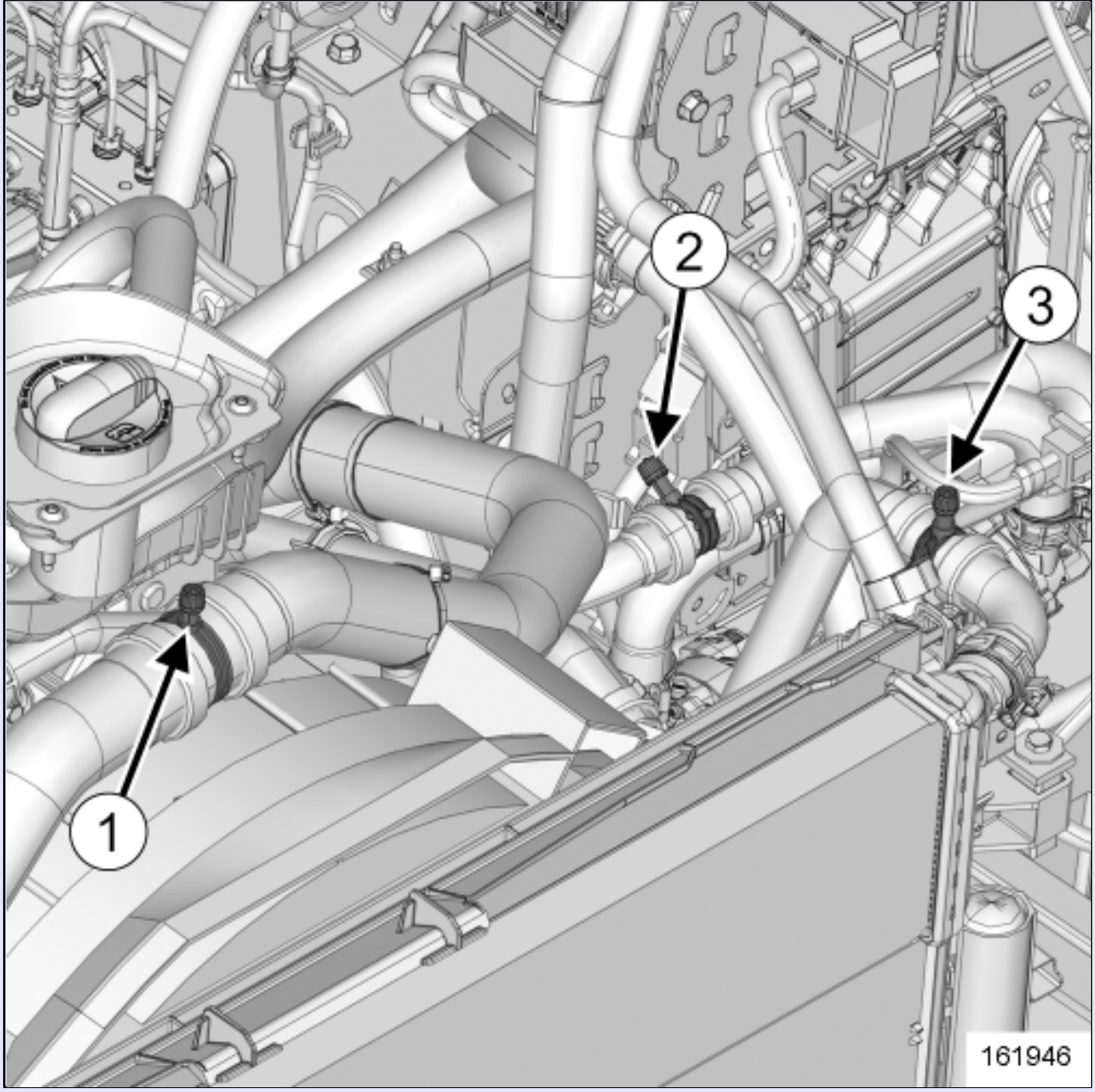
- the bleed screw of the cooling radiator inlet pipe(1) ,
- the bleed screw of the heater matrix coolant outlet pipe(2) ,
- the bleed screw of the exhaust gas cooler inlet pipe(3) .

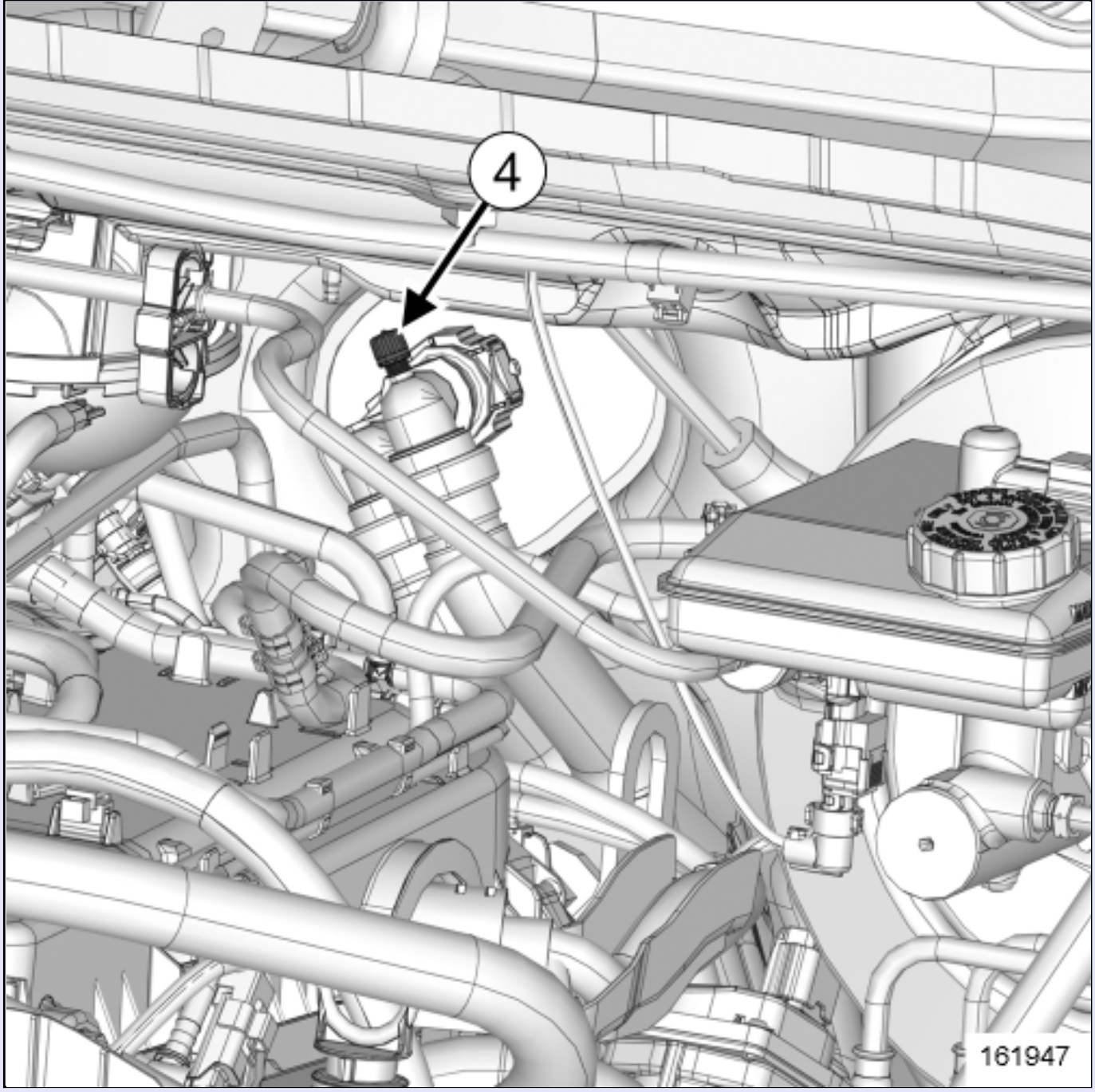
M9T, 694 696 698(694 OR 696 OR 698)



- Remove the bleed screw from the additional radiator(4) .

M9T, 700(700)


2
3
1
161946



- Remove:
  - the bleed screw of the cooling radiator inlet pipe(1) ,
  - the bleed screw of the heater matrix coolant outlet pipe(4) ,
  - the bleed screw of the exhaust gas cooler inlet pipe(2) ,
  - the bleed screw from the additional radiator(3) .

- Fill the cooling system with engine coolant recommended by the manufacturer(see 19A, Cooling, Engine cooling system: Specifications) and(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) via the expansion bottle until it overflows.

- Close all the bleed screws as soon as the coolant starts to flow in a continuous stream.

- Pressurise the system using theInstrument for testing the cooling circuit and the expansion bottle

valve. Contains caps 554-01, 554-04, 554-06(Ms. 554-07) to check that there are no leaks(see 19A, Cooling, Engine cooling system: Check) .

- Fill the expansion bottle until it overflows.
- Refit the expansion bottle cap.
- Clean any surfaces soiled by the coolant.

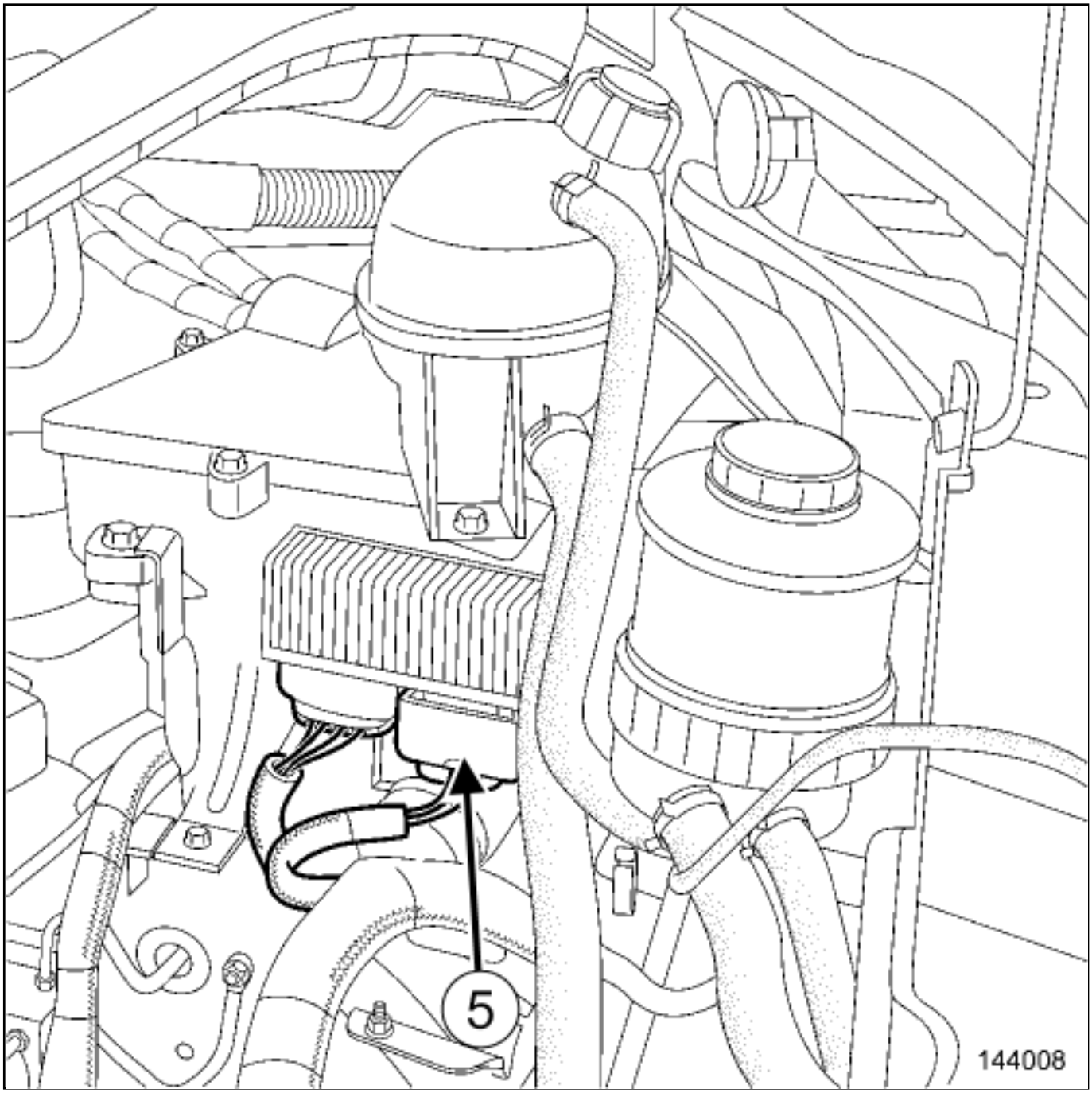
BLEEDING

CAUTION

Do not open the bleed screw whilst the engine is running; this would damage the engine.

CAUTION

Before bleeding the cooling system, it is essential to deactivate the thermoplungers to avoid irreparably damaging them.



- Disconnect the connector(5) from the thermoplunger unit.

- Deactivate the air conditioning system so that the engine cooling fan assembly is not operating from the start of the operation.

- Start the engine.

Note:

- To check that the coolant pump has been correctly primed:
  - after 5 minutesat 2500 rpm, check that the temperature indicated on the instrument panel begins to increase,
  - each time the engine cooling fan assembly is activated, check that there is a return flow into the expansion bottle through the cooling radiator degassing pipe.

- Maintain the engine speed at 2500 rpmusing a pedal press, until the engine cooling fan assembly is activated for the second time.
- Check that the heating is operating correctly.
- Allow the engine to cool until the coolant temperature is less than 50˚C.
- Make sure the coolant fluid level is at the "Maximum" mark.
- Refit the expansion bottle cap.
- Connect the thermoplunger unit connectors.

REFITTING

1.

- Remove the coolant recovery tray.
- Refit the engine undertray.

COOLING SYSTEM: DRAINING - REFILLING

Note, one or more warnings are present in this procedure

Special tooling required	
Instrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06	Ms. 554-07
Fault finding and filling - bleeding the cooling circuit.	Mot. 1700

Equipment required
pedal press
compressed air nozzle
coolant recovery tray

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19A, Cooling, Coolant circuit assembly: Exploded view)** .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

The coolant helps to keep the engine running properly (heat exchange).

The system does not operate using pure water.

CAUTION

If the coolant is leaking from the expansion bottle cap, replace the valve.

DRAINING

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove:
  - the expansion bottle cap,
  - the engine undertray.

- Position an coolant recovery trayunder the vehicle.

- Disconnect the cooling radiator outlet pipe from the cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

- Use a compressed air nozzleto blow air into the system through the expansion bottle opening to remove as much coolant as possible.

- Connect the cooling radiator outlet pipe to the cooling radiator(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

FILLING

Note:

There are two procedures for filling the cooling system.

- the procedure using the toolFault finding and filling - bleeding the cooling circuit. (Mot. 1700) recommended by Renault. It saves a considerable amount of time because it does not require the cooling system bleed screws to be opened.

- the procedure without the special tool.

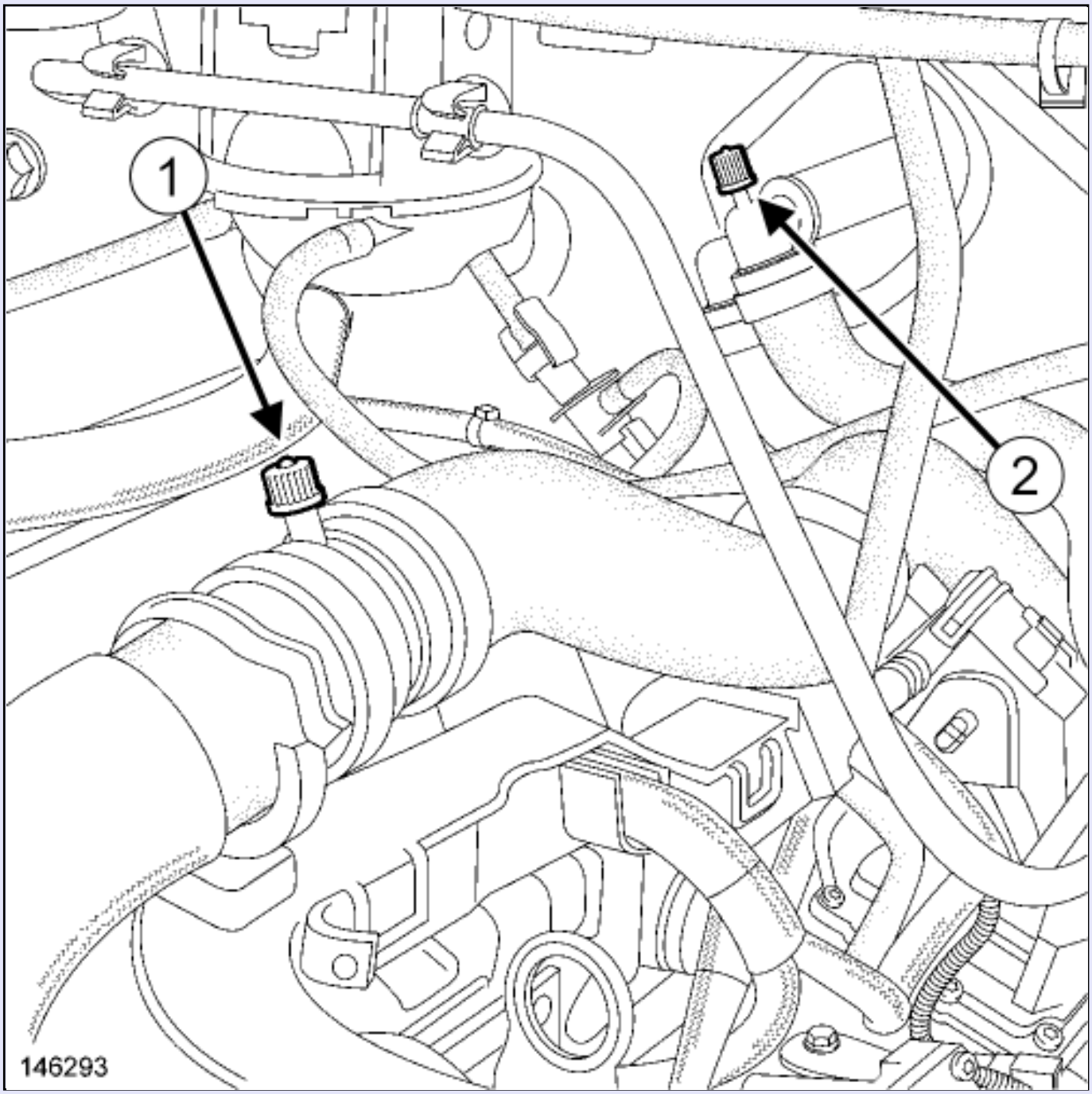
1. FILLING PROCEDURE WITH THE SPECIAL TOOL

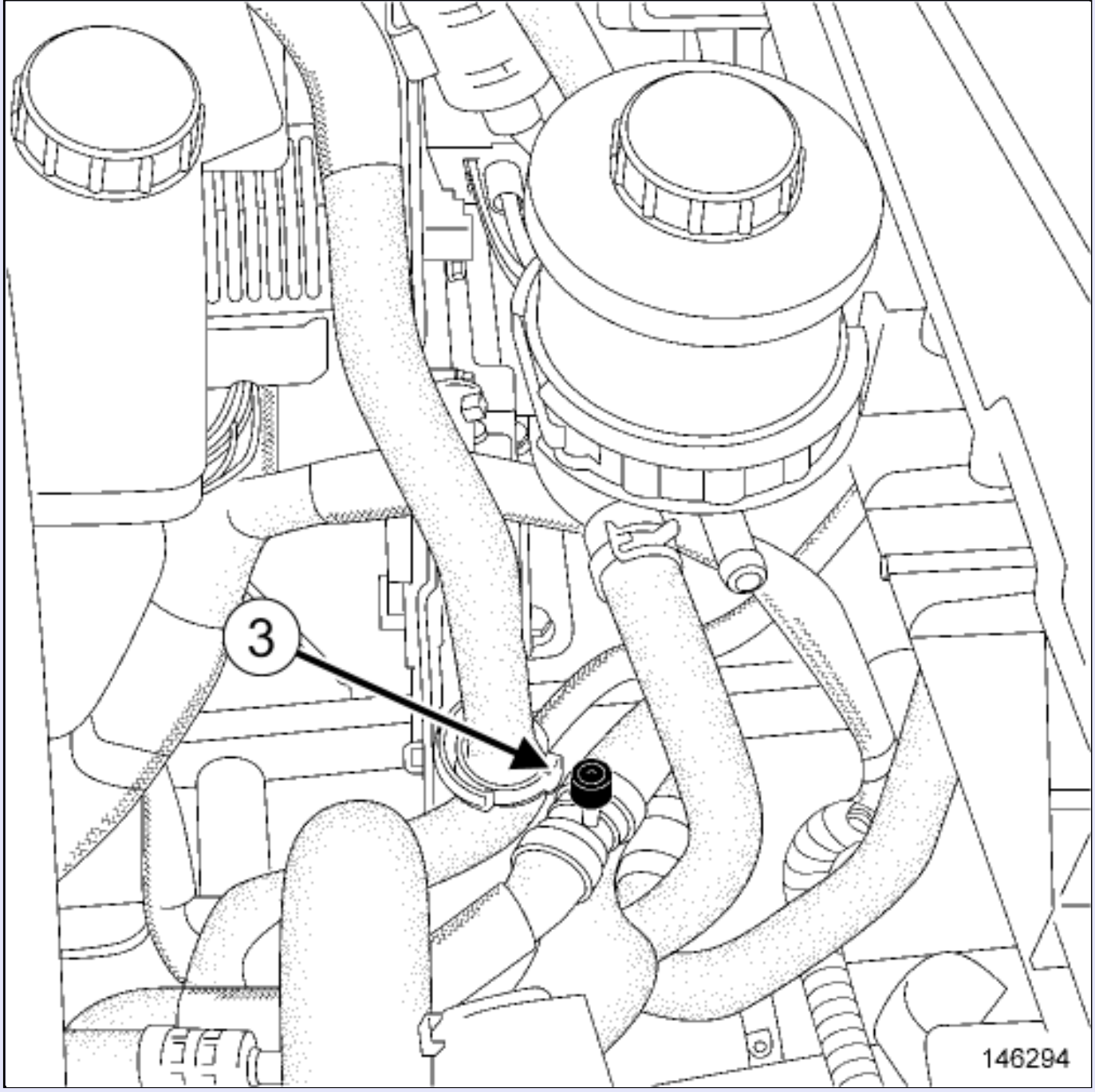
Fill the cooling system with coolant recommended by the manufacturer(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) using the toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) . Consult the procedure for using this tool (see Cooling system filling and diagnostic tool: Use) (Technical Note 3857A, 19A, Cooling).

2. FILLING PROCEDURE WITHOUT THE SPECIAL TOOL

CAUTION

It is essential to open all of the bleed screws to remove as much as air as possible in the cooling system. Failure to perform this procedure may prevent the cooling system from filling properly and may damage the engine.

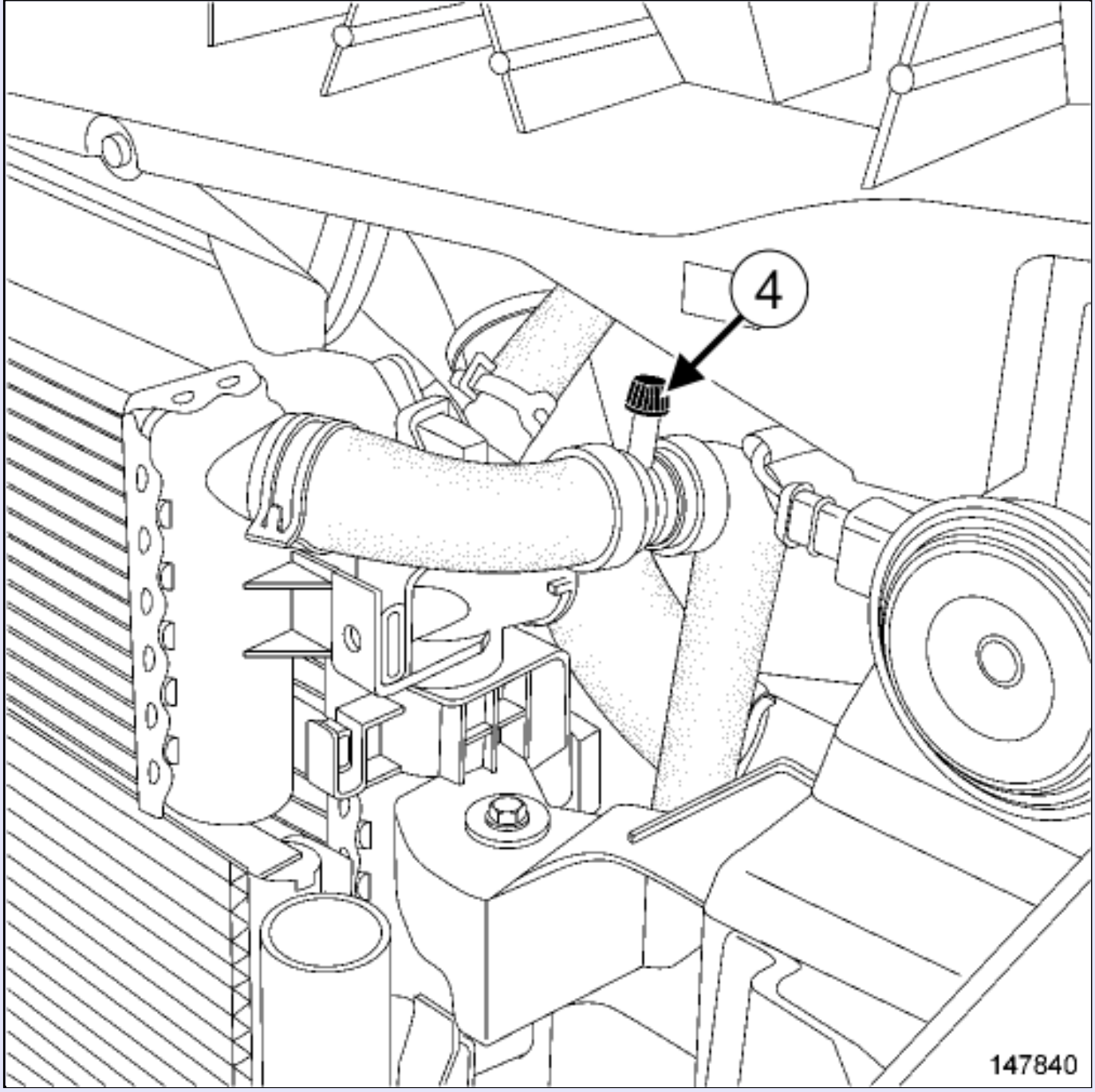

1
2
146293



Remove:

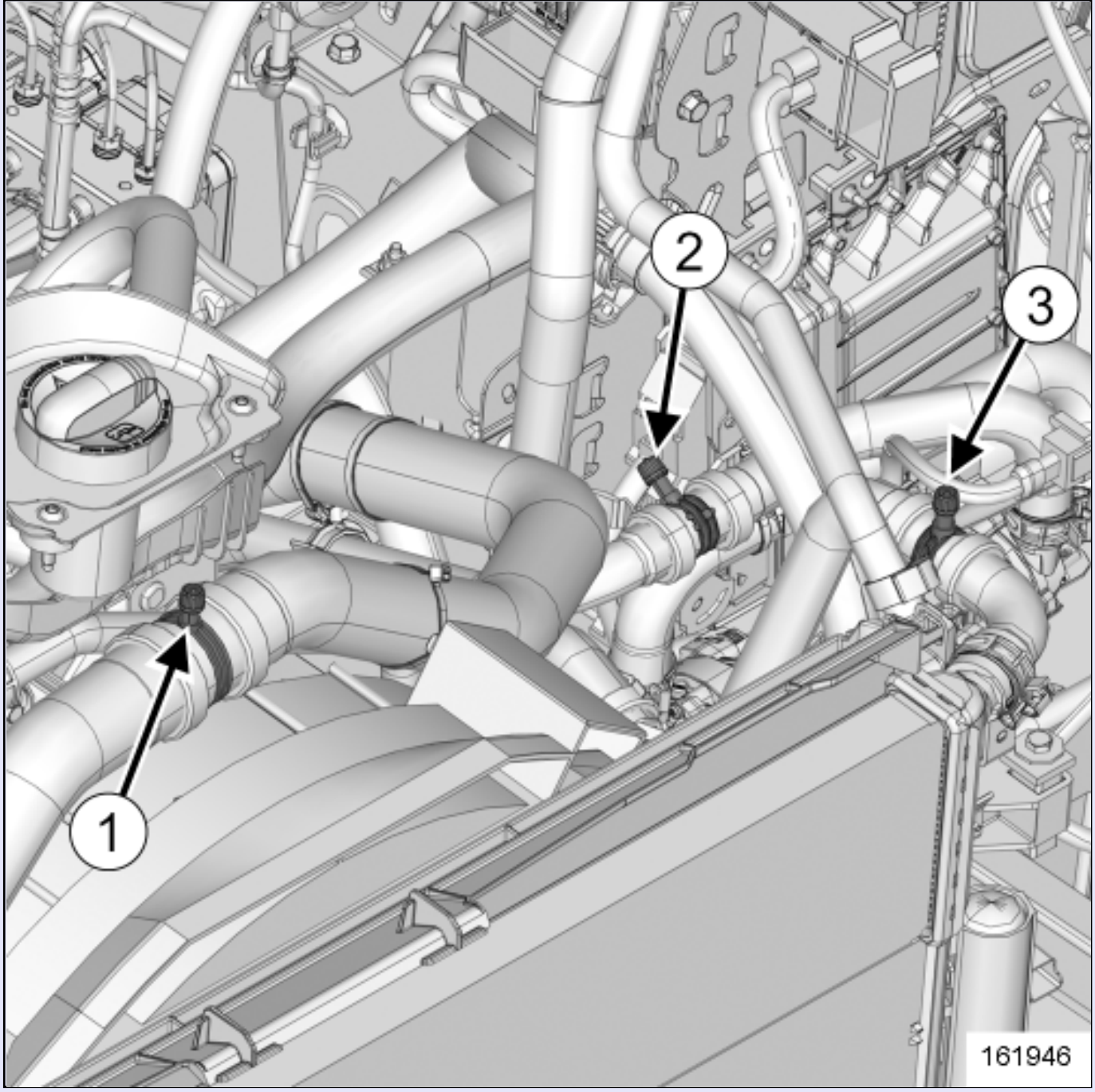
- the bleed screw of the cooling radiator inlet pipe(1) ,
- the bleed screw of the heater matrix coolant outlet pipe(2) ,
- the bleed screw of the exhaust gas cooler inlet pipe(3) .

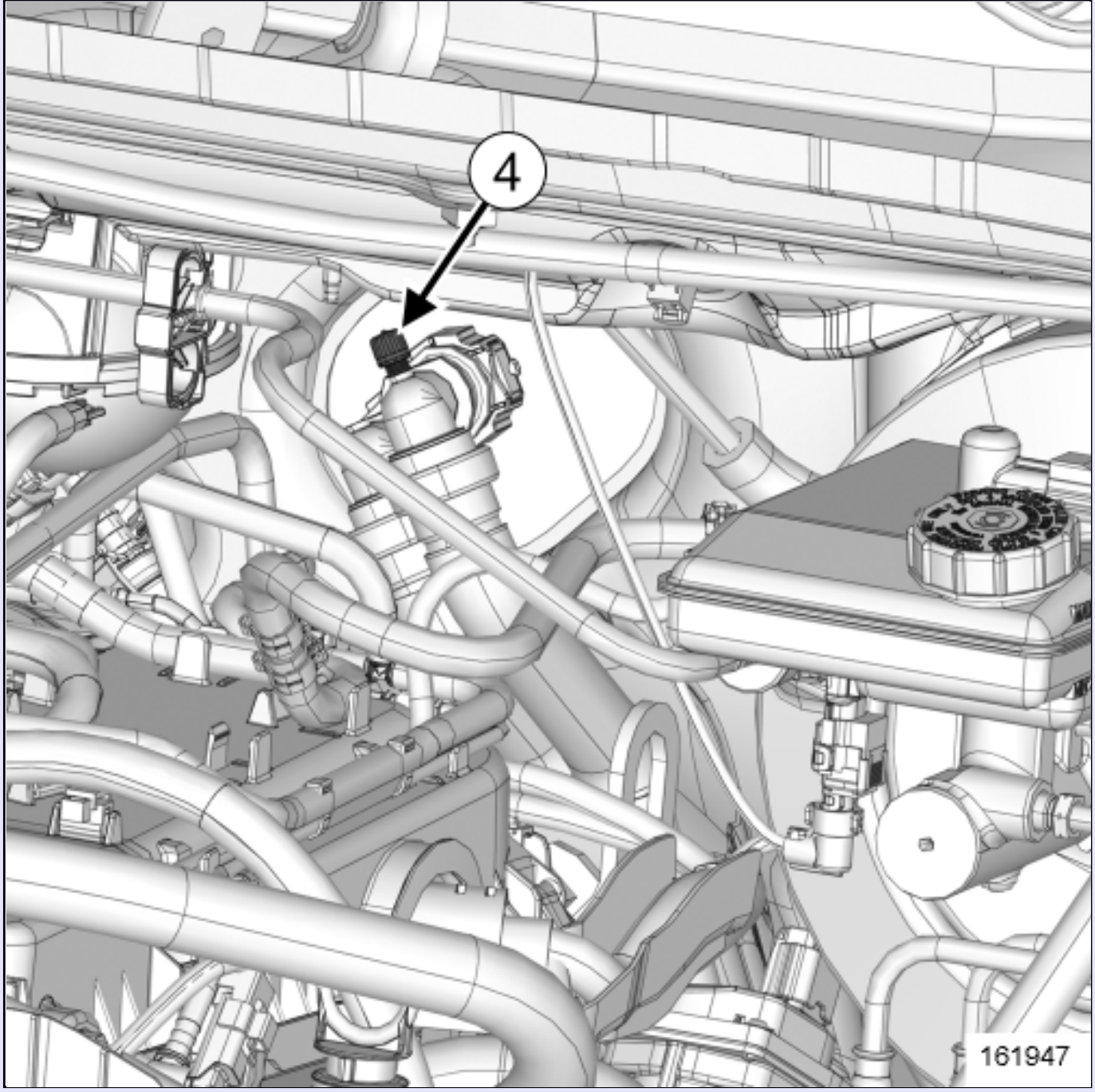
M9T, 694 696 698(694 OR 696 OR 698)



- Remove the bleed screw from the additional radiator(4) .

M9T, 700(700)


2
3
1
161946



- Remove:
  - the bleed screw of the cooling radiator inlet pipe(1) ,
  - the bleed screw of the heater matrix coolant outlet pipe(4) ,
  - the bleed screw of the exhaust gas cooler inlet pipe(2) ,
  - the bleed screw from the additional radiator(3) .

- Fill the cooling system with engine coolant recommended by the manufacturer(see 19A, Cooling, Engine cooling system: Specifications) and(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) via the expansion bottle until it overflows.

- Close all the bleed screws as soon as the coolant starts to flow in a continuous stream.

- Pressurise the system using theInstrument for testing the cooling circuit and the expansion bottle

valve. Contains caps 554-01, 554-04, 554-06(Ms. 554-07) to check that there are no leaks(see 19A, Cooling, Engine cooling system: Check) .

- Fill the expansion bottle until it overflows.
- Refit the expansion bottle cap.
- Clean any surfaces soiled by the coolant.

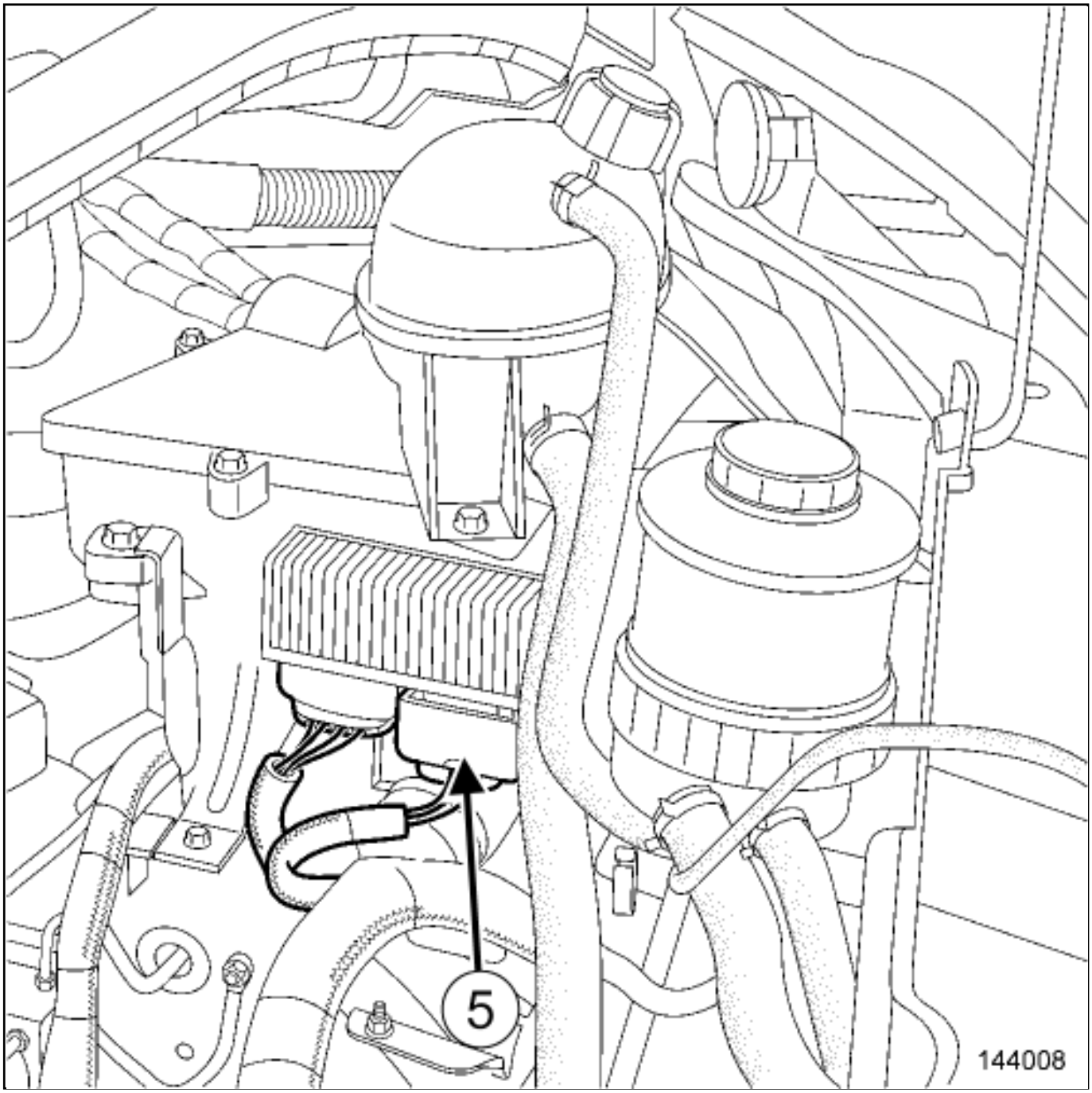
BLEEDING

CAUTION

Do not open the bleed screw whilst the engine is running; this would damage the engine.

CAUTION

Before bleeding the cooling system, it is essential to deactivate the thermoplungers to avoid irreparably damaging them.



- Disconnect the connector(5) from the thermoplunger unit.

- Deactivate the air conditioning system so that the engine cooling fan assembly is not operating from the start of the operation.

- Start the engine.

Note:

- To check that the coolant pump has been correctly primed:
  - after 5 minutesat 2500 rpm, check that the temperature indicated on the instrument panel begins to increase,
  - each time the engine cooling fan assembly is activated, check that there is a return flow into the expansion bottle through the cooling radiator degassing pipe.

- Maintain the engine speed at 2500 rpmusing a pedal press, until the engine cooling fan assembly is activated for the second time.
- Check that the heating is operating correctly.
- Allow the engine to cool until the coolant temperature is less than 50˚C.
- Make sure the coolant fluid level is at the "Maximum" mark.
- Refit the expansion bottle cap.
- Connect the thermoplunger unit connectors.

REFITTING

1.

- Remove the coolant recovery tray.
- Refit the engine undertray.

COOLING SYSTEM FILLING AND DIAGNOSTIC TOOL: USE

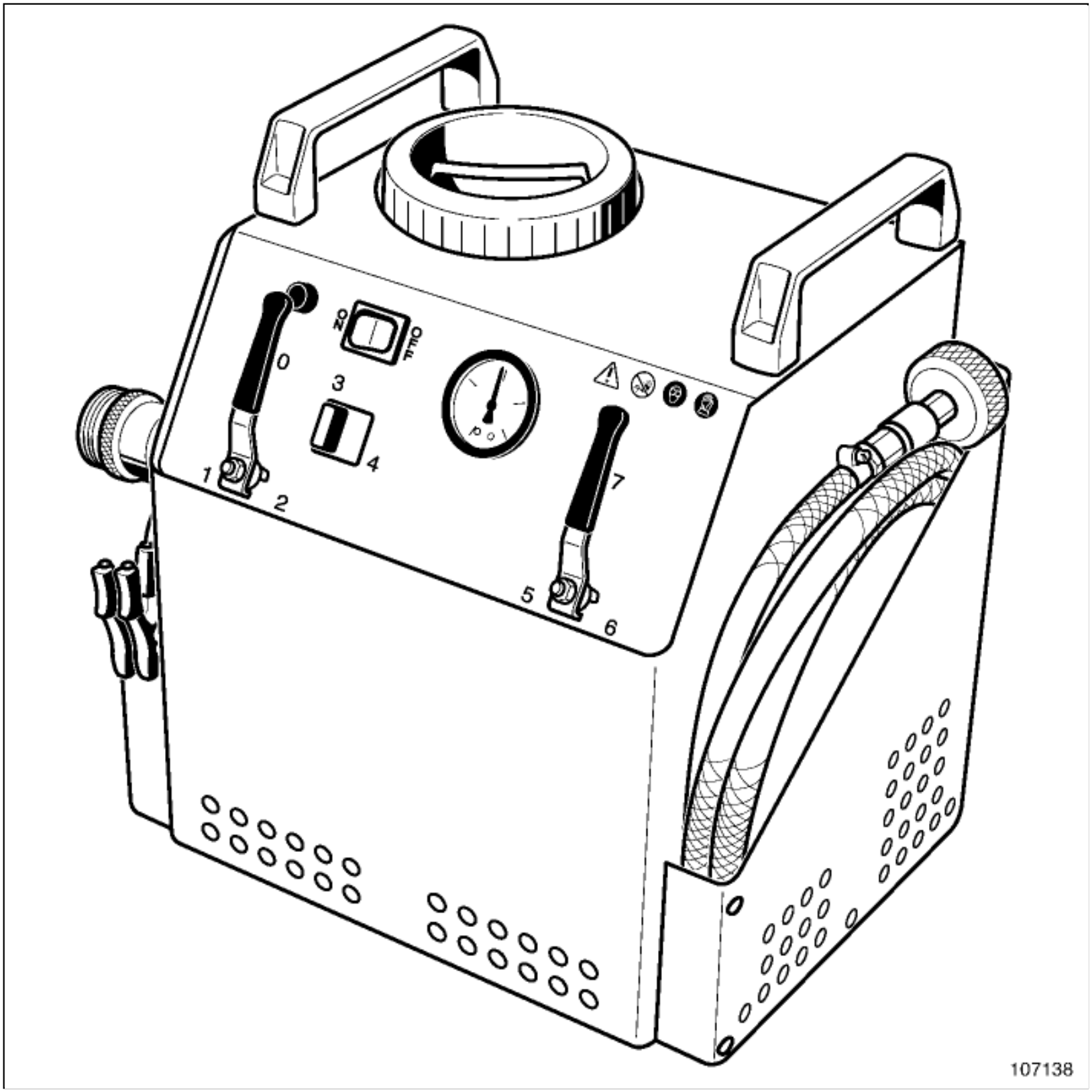
Note, one or more warnings are present in this procedure

Special tooling required	
Fault finding and filling - bleeding the cooling circuit.	Mot. 1700

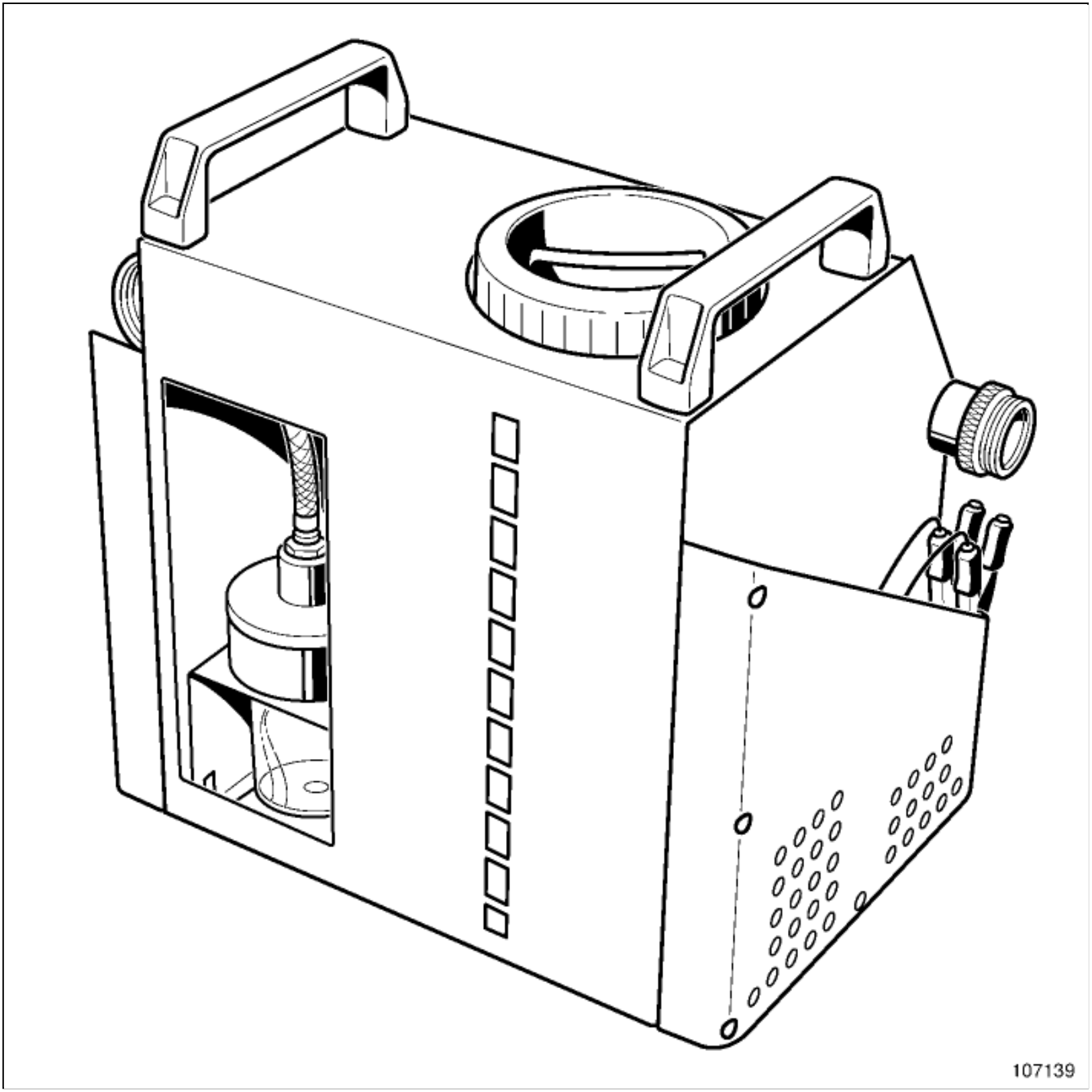
WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions (see **Vehicle: Precautions for the repair**)

DESCRIPTION OF THE TOOL MOT. 1700


ON
OFF
0
1
2
3
4
5
6
7
107138

(1)	Connection control between the vehicle's cooling system and tool Mot. 1700
(2)	Pressure gauge
(3)	Electric pump air inlet and outlet selection control
(4)	Vacuum or pressure creation selection control
(5)	Electric supply
(6)	Socket for expansion bottle cap
(7)	Electric pump protection fuse
(8)	Electric pump stop/start switch
(9)	Connecting pipe between the vehicle's cooling system and tool Mot. 1700


107139

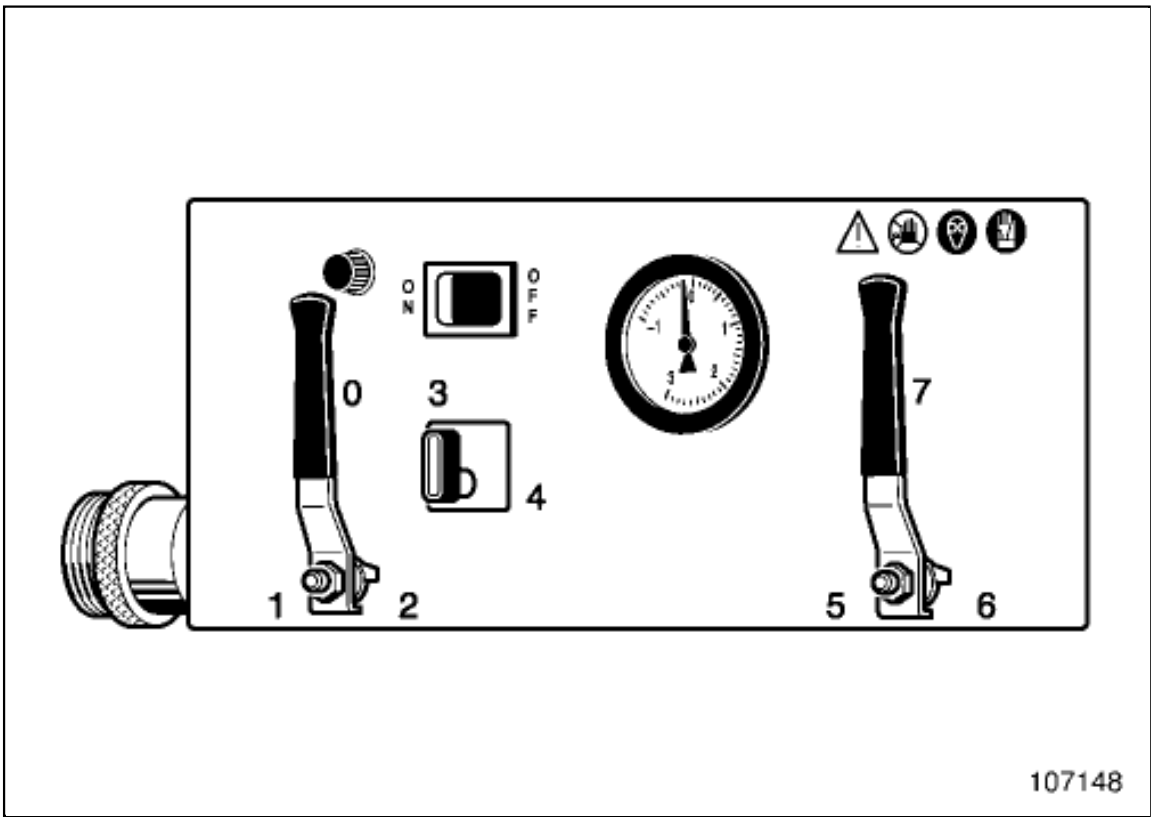
(10)	Decanting bottle
(11)	Indicator for reading the coolant level in the reservoir
(12)	Reservoir filling opening

1. FAULT FINDING PROCEDURE FOR THE ENGINE COOLING SYSTEM

CAUTION

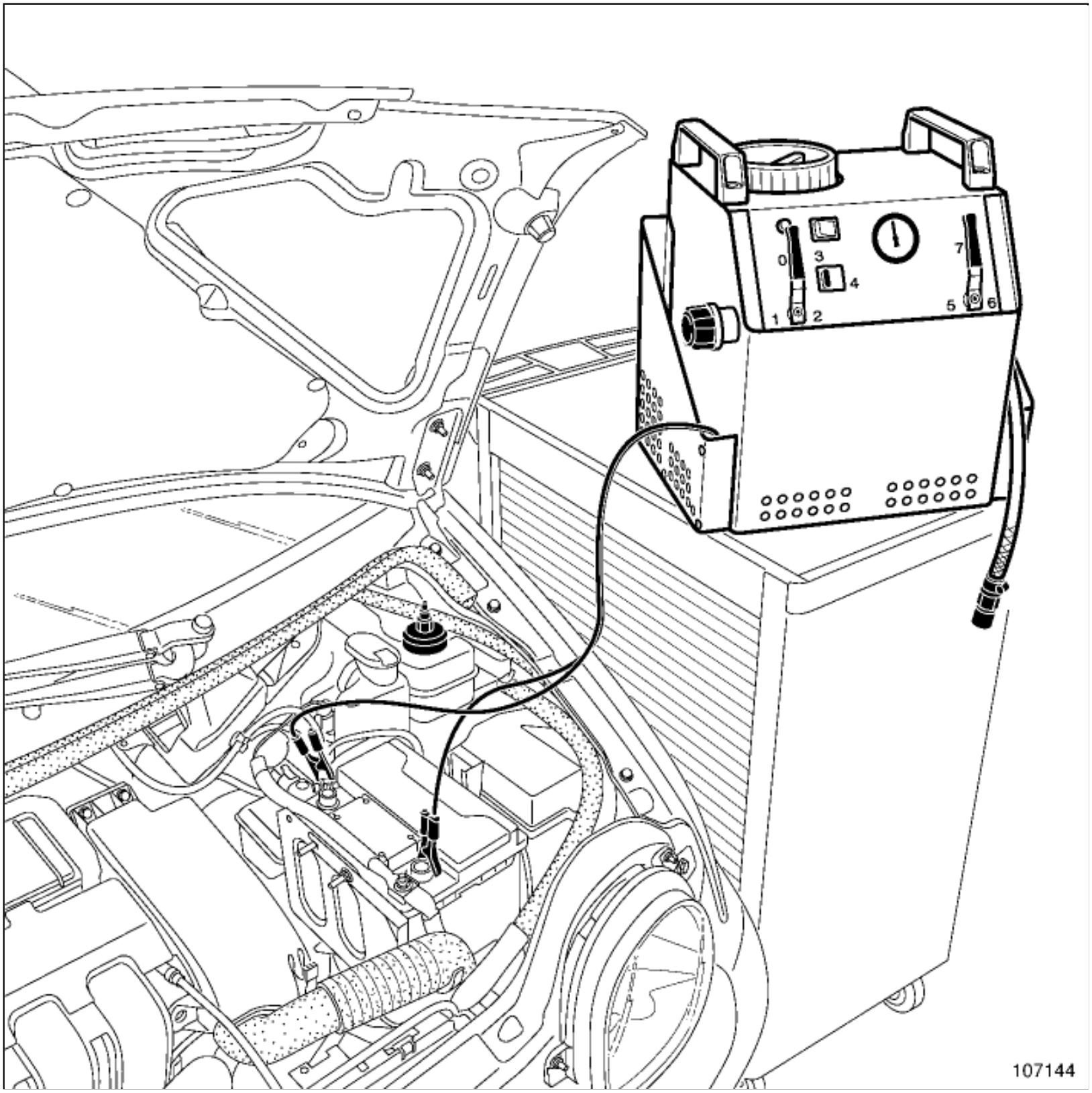
Failure to observe the following procedure can lead to the destruction of the engine.

1- FAULT FINDING PROCEDURE FOR THE EXPANSION BOTTLE CAP



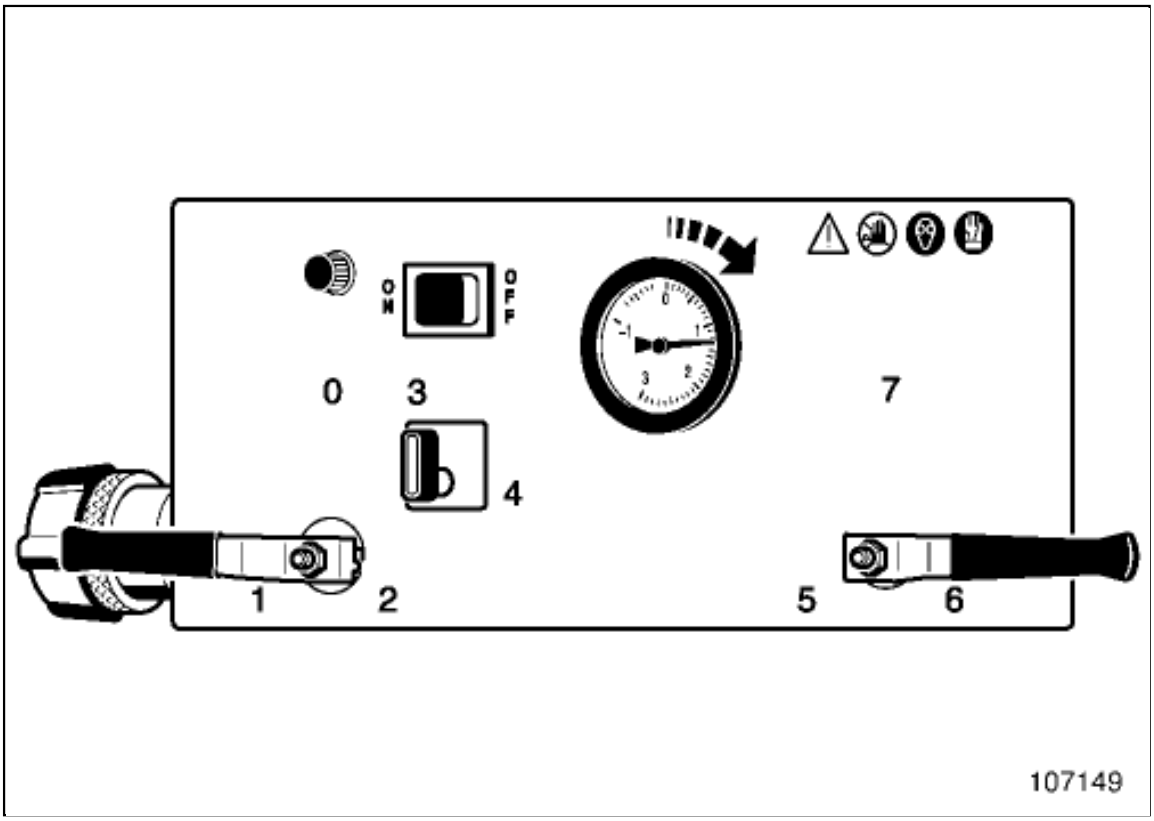
Position:

- Control(1) to "0" ,
- Control(2) to "3" ,
- Control(3) to "7" ,
- The on/off switch(4) to "OFF" .



- Screw on:
  - The expansion bottle cap at(5) on the toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) ,
  - The adapter plug(6) (without the pipe) to the vehicle expansion bottle.

- Connect the wires to the battery, observing the correct polarity.



- Position:
  - Control(1) to "1" ,
  - Control(3) to "6" ,
  - The on/off switch(4) to "ON" .

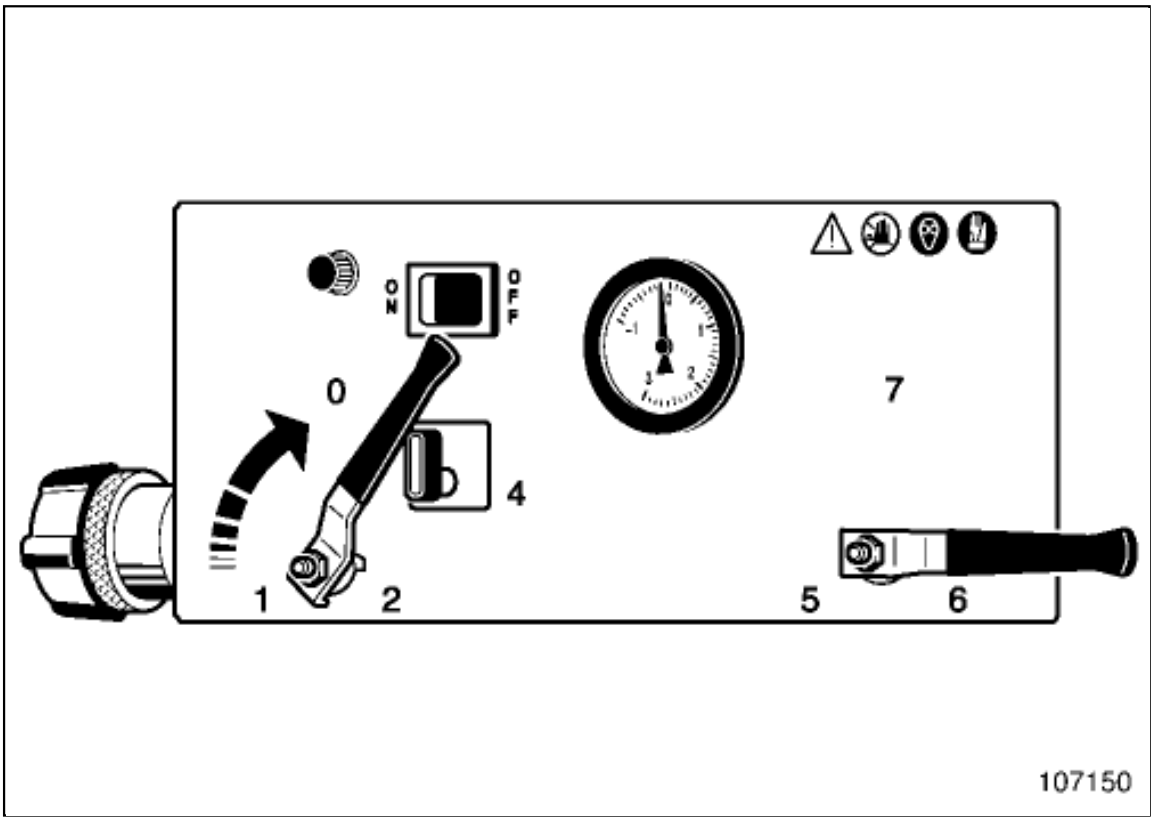
Note:

The pressure gauge needle should point to a pressure value and should settle at the expansion bottle valve cap valve rating. If the needle does not indicate the rating or exceeds 2 bar, replace the expansion bottle cap because the rating is incorrect.

- Set the on/off switch(4) to "OFF" .

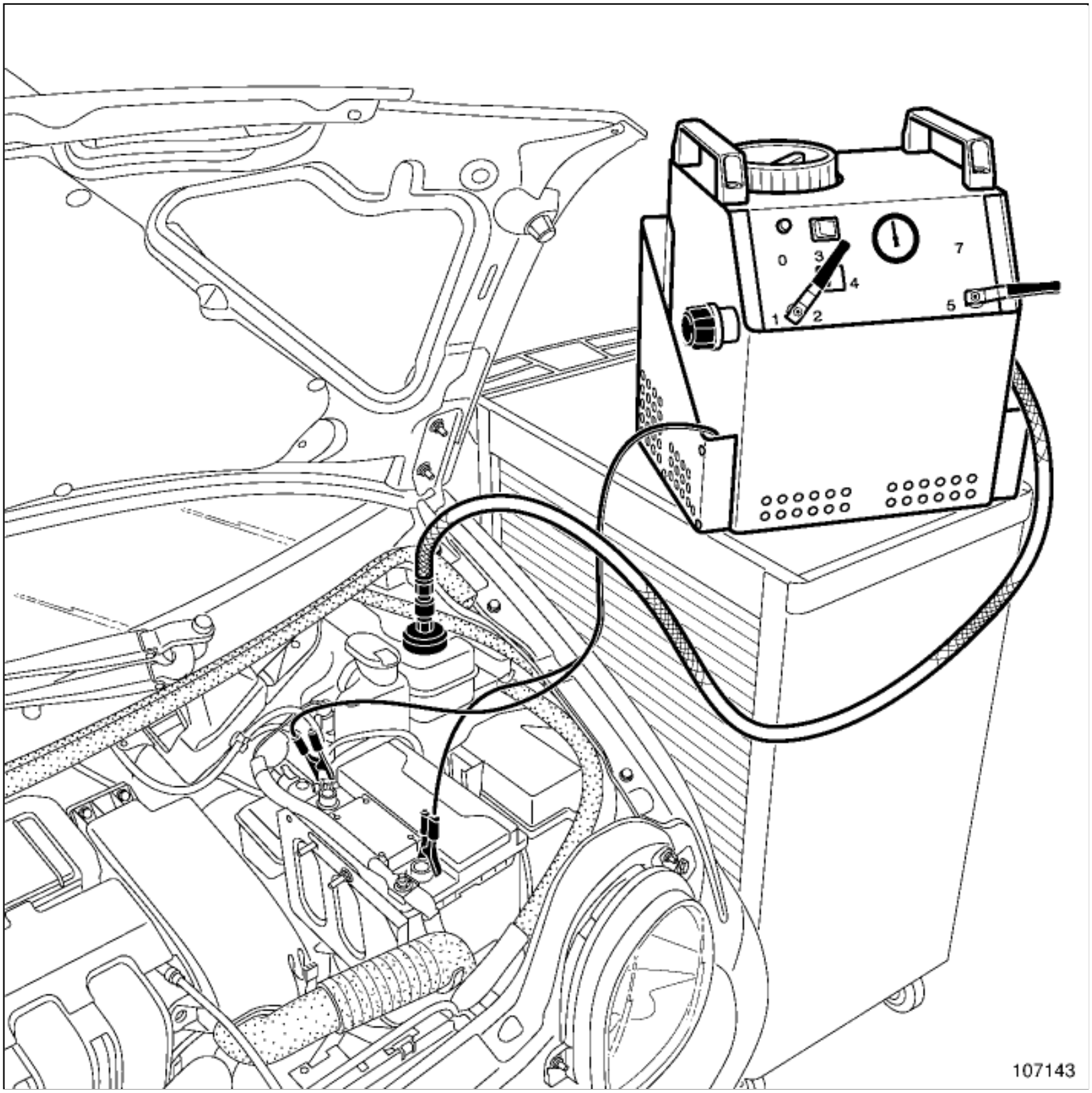
Note:

The needle of the pressure gauge must remain at the expansion bottle cap valve rating. If the needle drops back down, replace the expansion bottle cap as it is leaking.

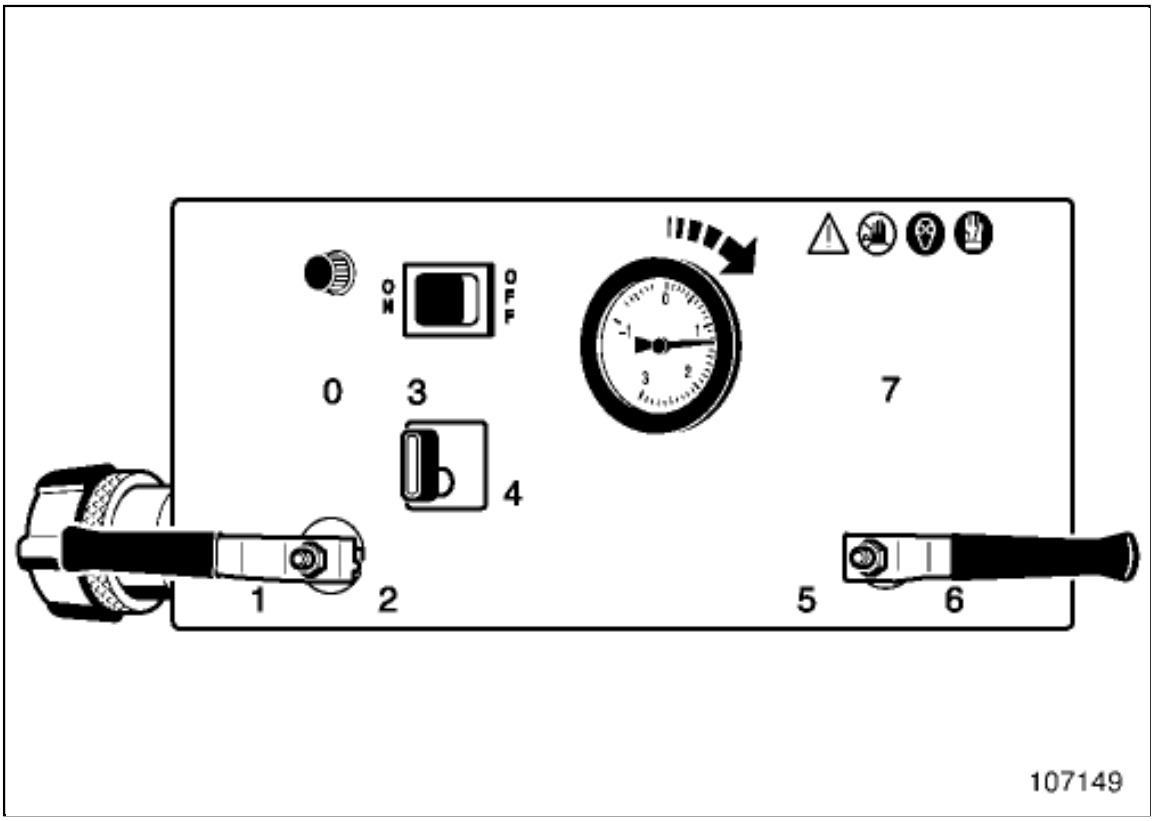


- Dump the pressure by turning the control(1) in the direction shown by the arrow.

2- FAULT FINDING PROCEDURE FOR THE ENGINE COOLING SYSTEM



- Connect the pipe of the toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) to the adapter plug.

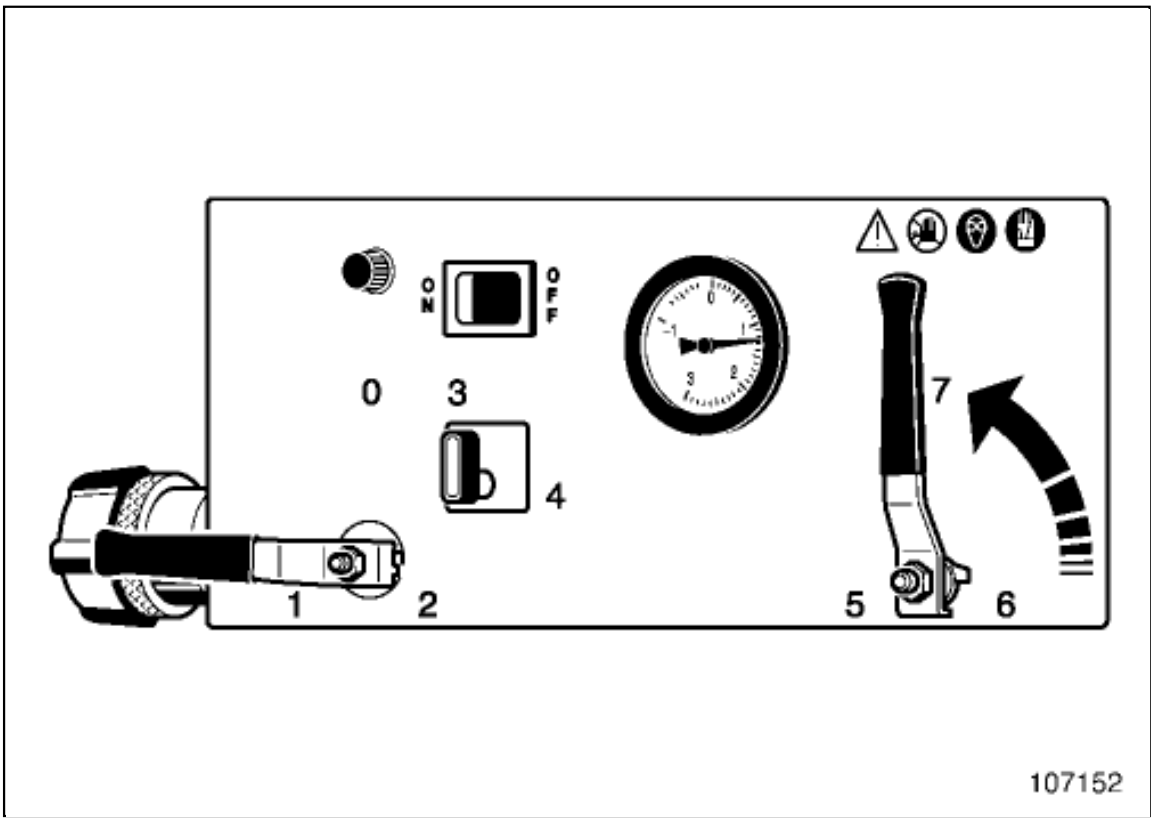


- Position:
  - Control(1) to "1" ,
  - Control(3) to "6" ,
  - The on/off switch(4) to "ON" .

Note:

The pressure gauge needle should point to a pressure value and should settle at the expansion bottle valve cap valve rating.

- Set the on/off switch(4) to "OFF" .

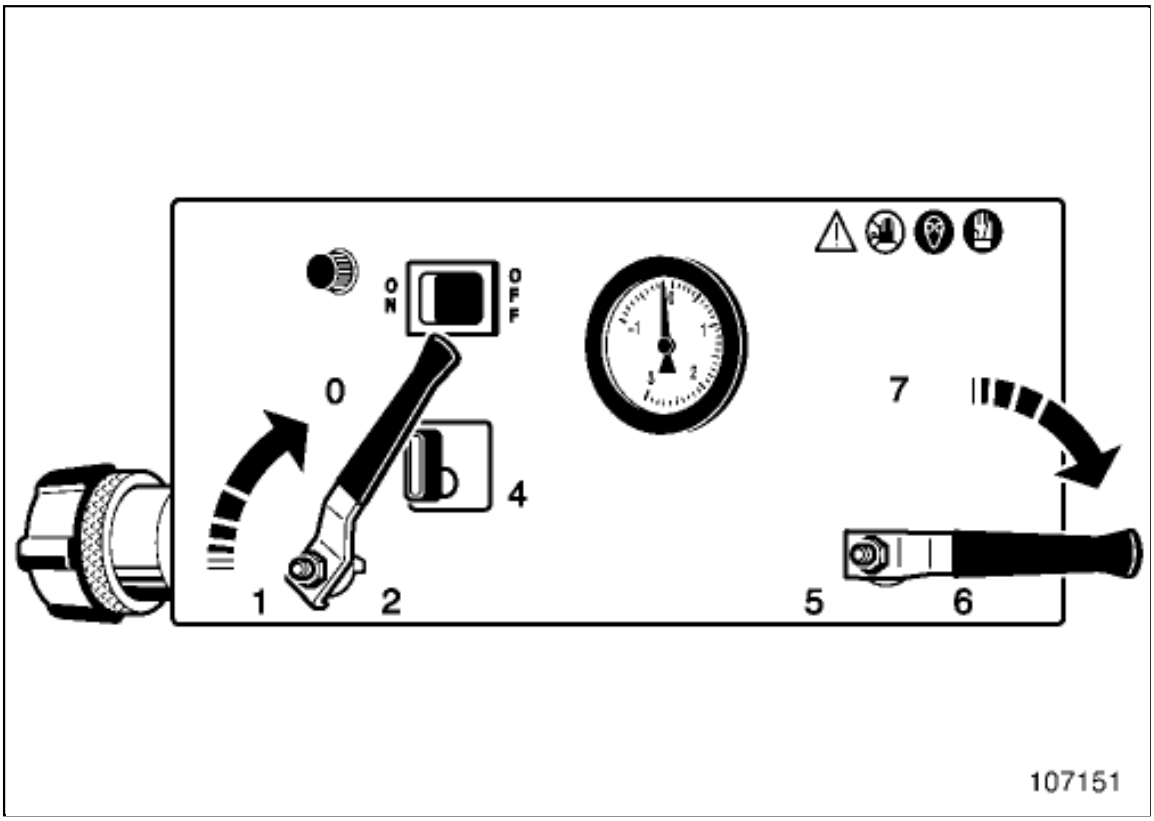


- Set the control(3) to "7" .

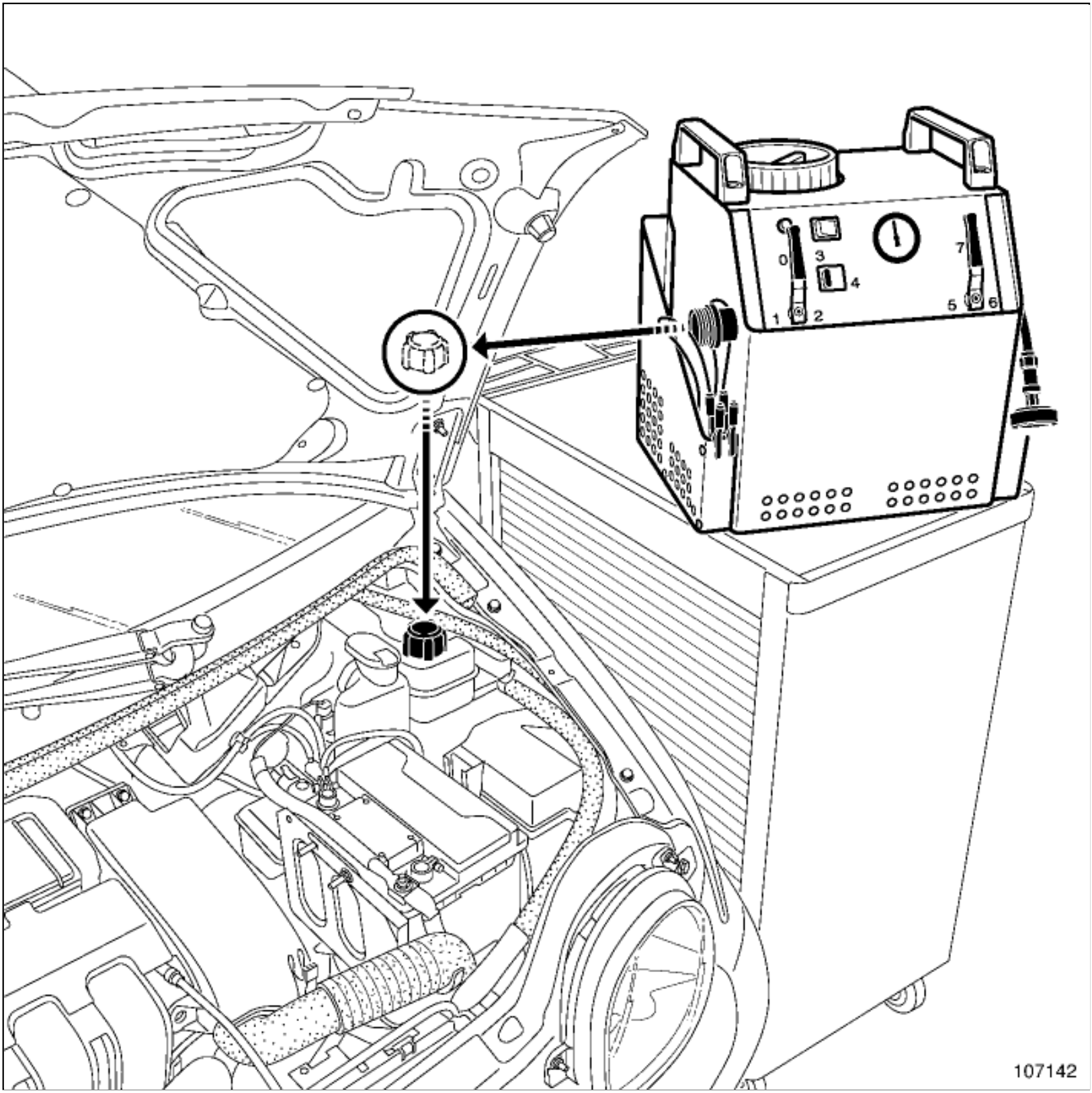
Note:

The pressure gauge needle should not move. If it does not, find and repair any leaks on the cooling system.

After repair, repressurise the cooling circuit (by restarting the previous operations).



- Set the control(3) to "6" .
- Gradually dump the pressure by turning the control(1) in the direction shown by the arrow.



- Disconnect the tool Fault finding and filling - bleeding the cooling circuit.(Mot. 1700) from the vehicle.
- Refit the expansion bottle cap.

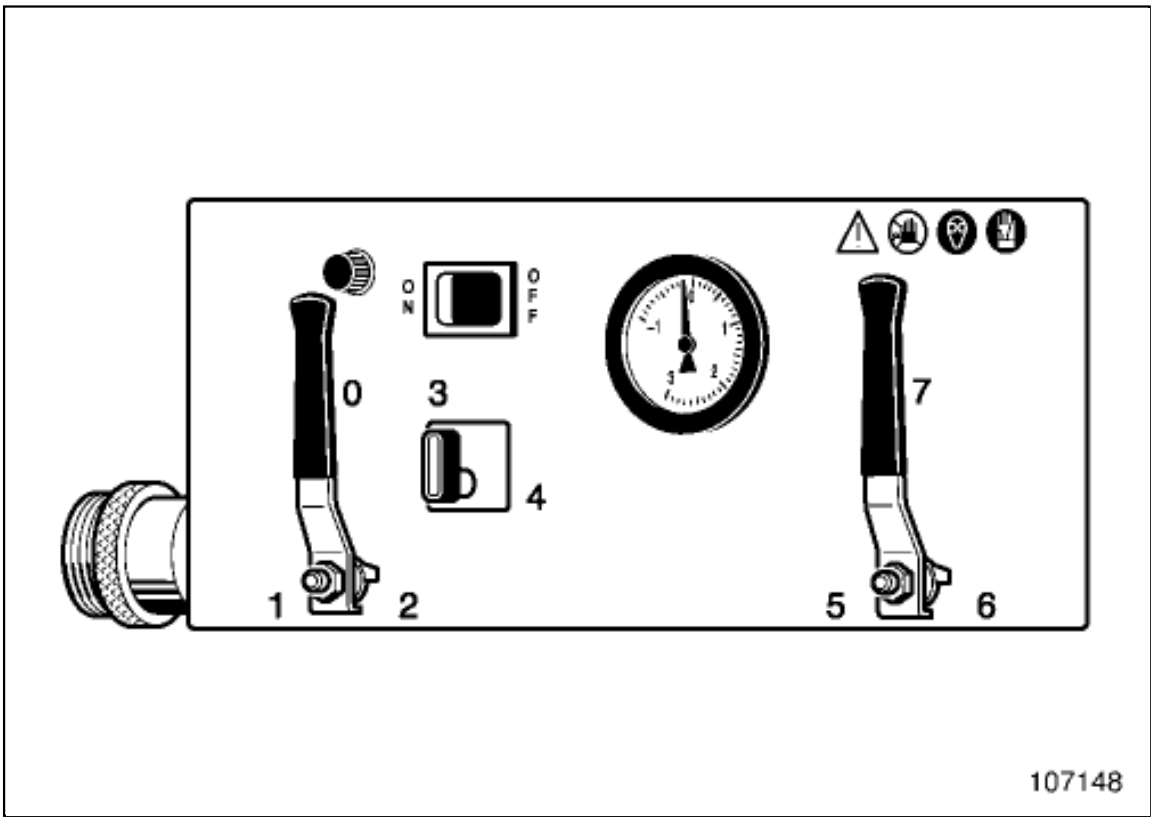
2. FILLING THE COOLING CIRCUIT

This filling operation can be carried out after the cooling circuit has been totally or partially drained, and does not need the bleed screws to be open. The cooling circuit is filled by vacuum.

CAUTION

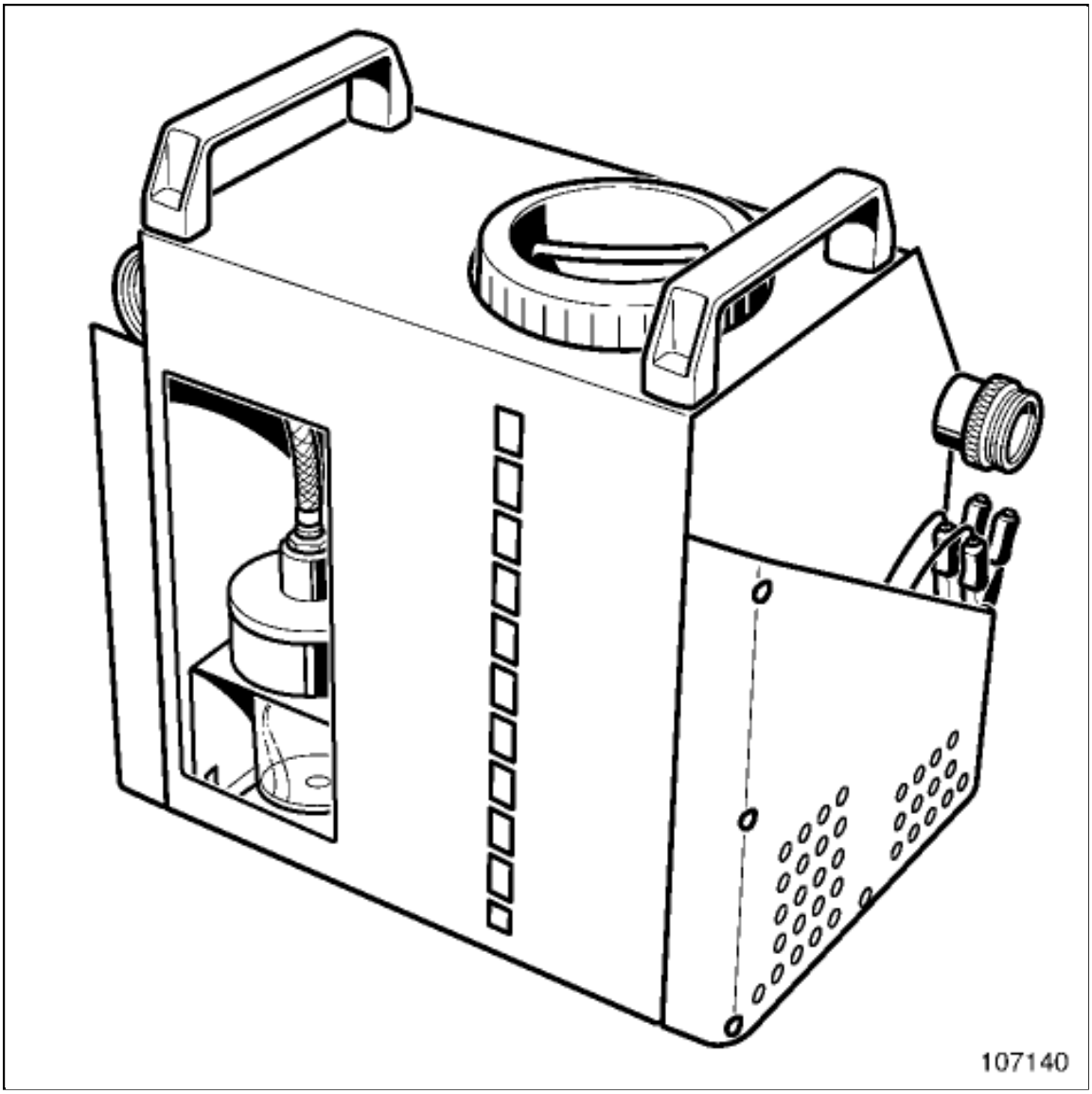
Failure to observe the following procedure can lead to the destruction of the engine

1- CREATING A VACUUM IN THE ENGINE COOLING SYSTEM



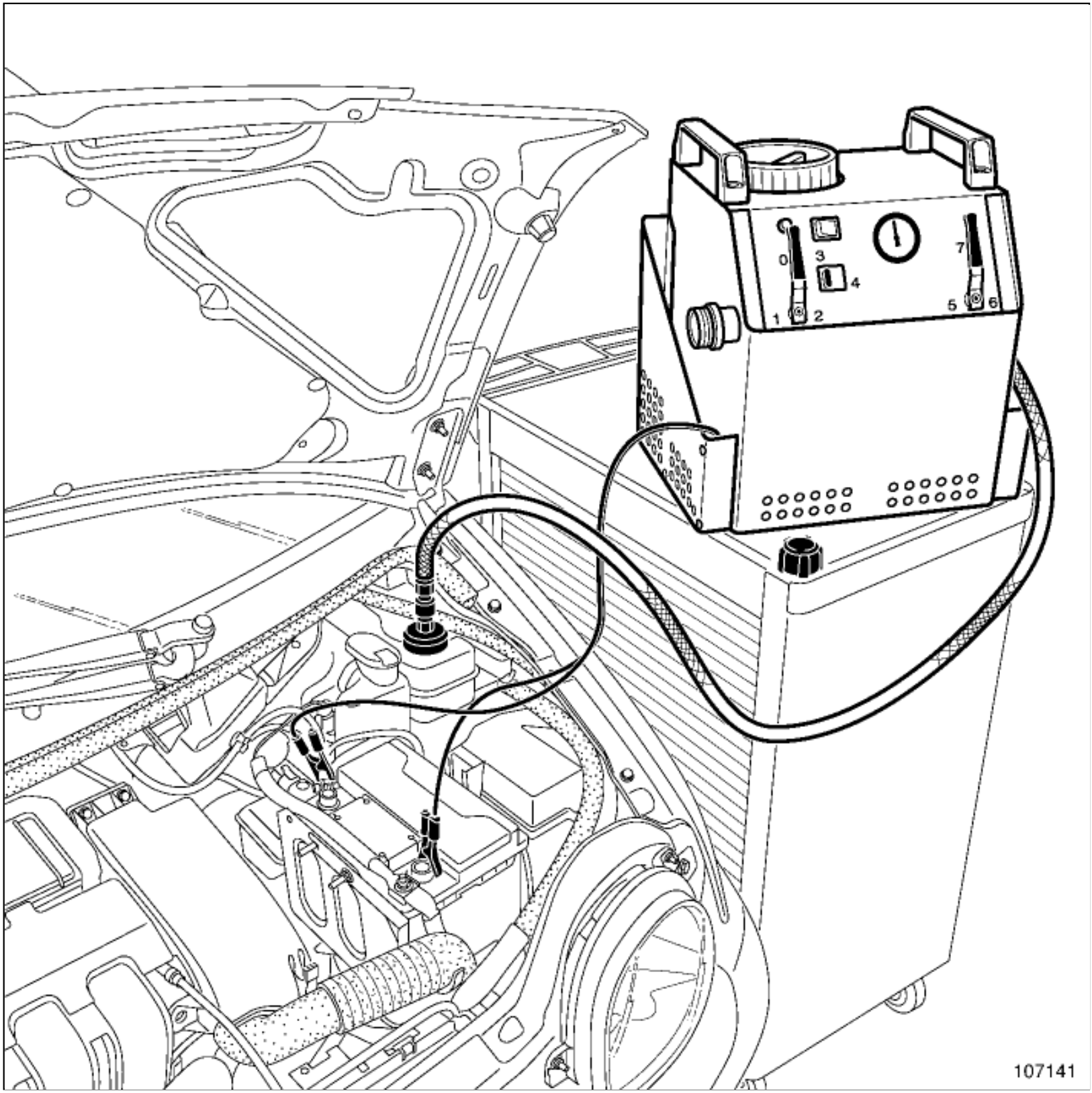
Position:

- Control(1) to "0" ,
- Control(2) to "3" ,
- Control(3) to "7" ,
- The on/off switch(4) to "OFF" .



Check that:

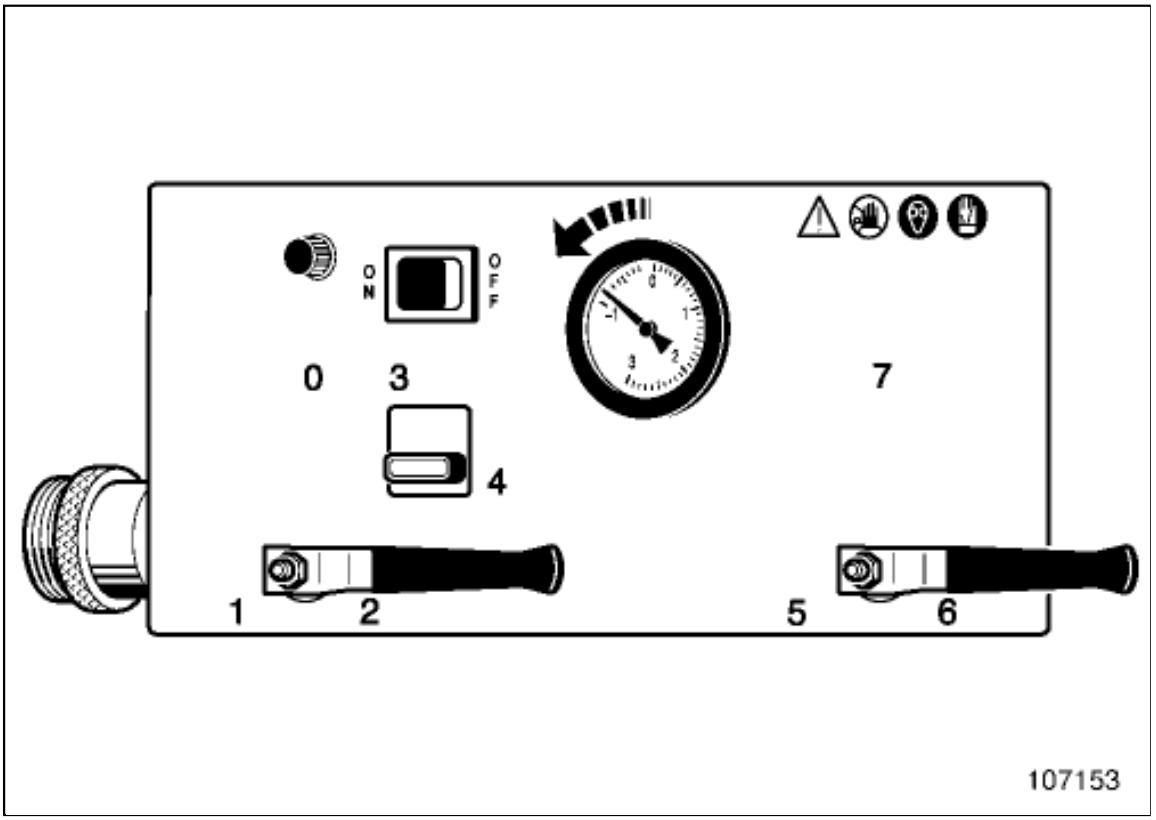
- The decanting bottle(**5**) is empty,
- There is enough coolant in the reservoir of the toolFault finding and filling - bleeding the cooling circuit.(**Mot. 1700**) .



- Fit the adapter plug to the vehicle's expansion bottle.
- Connect the pipe of the toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) to the adapter plug.
- Connect the wires to the battery, observing the correct polarity.

Note:

During the operation, do not fit the expansion bottle cap on tool Mot. 1700

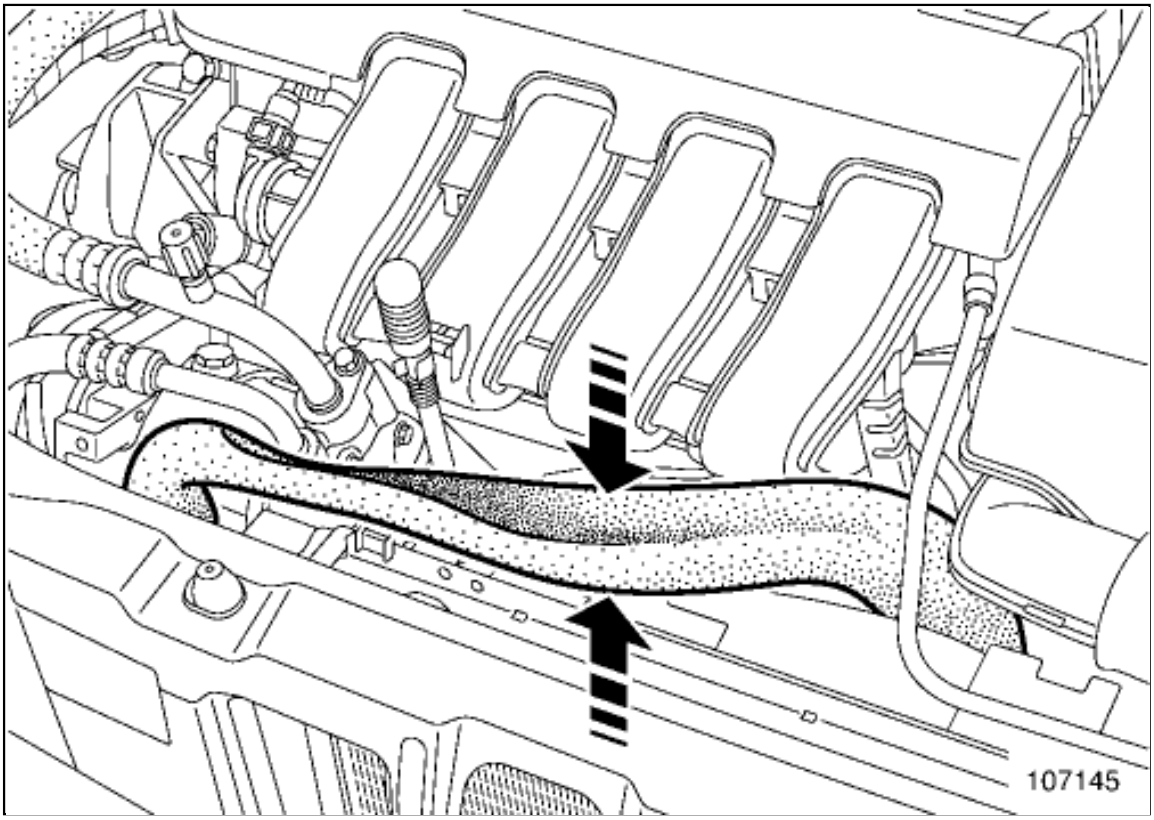


Position:

- Control(1) to "2" ,
- Control(2) to "4" ,
- Control(3) to "6" ,
- The on/off switch(4) to "ON" .

Note:

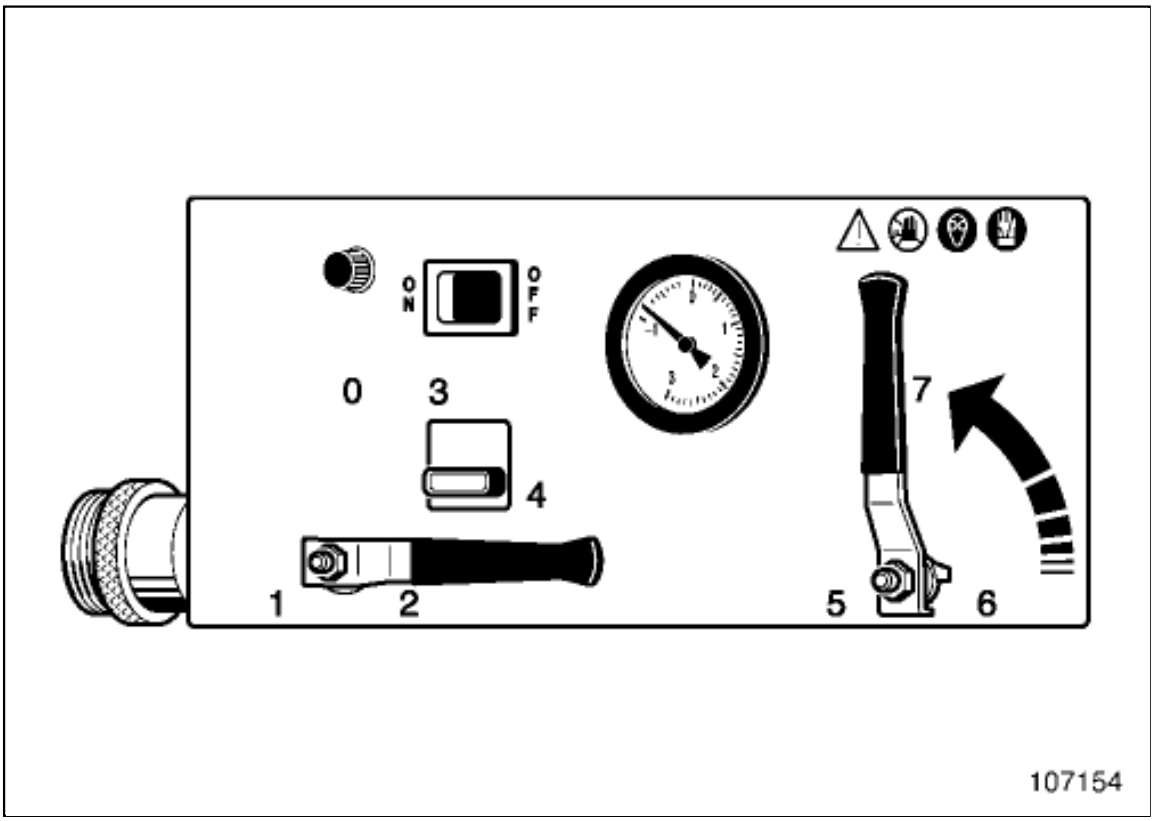
The pressure gauge needle should show a vacuum.



- The cooling system hoses flatten.

Note:

If replacing a part which not does require the cooling system to be completely drained, it is essential to position the switch (4) to "OFF" and the control (3) to "7" when the coolant starts to rise in the connecting pipe between the expansion bottle and Mot. 1700.



When the pressure gauge needle shows a vacuum of between 0.85and 0.95bar (depending on the vehicle), position:

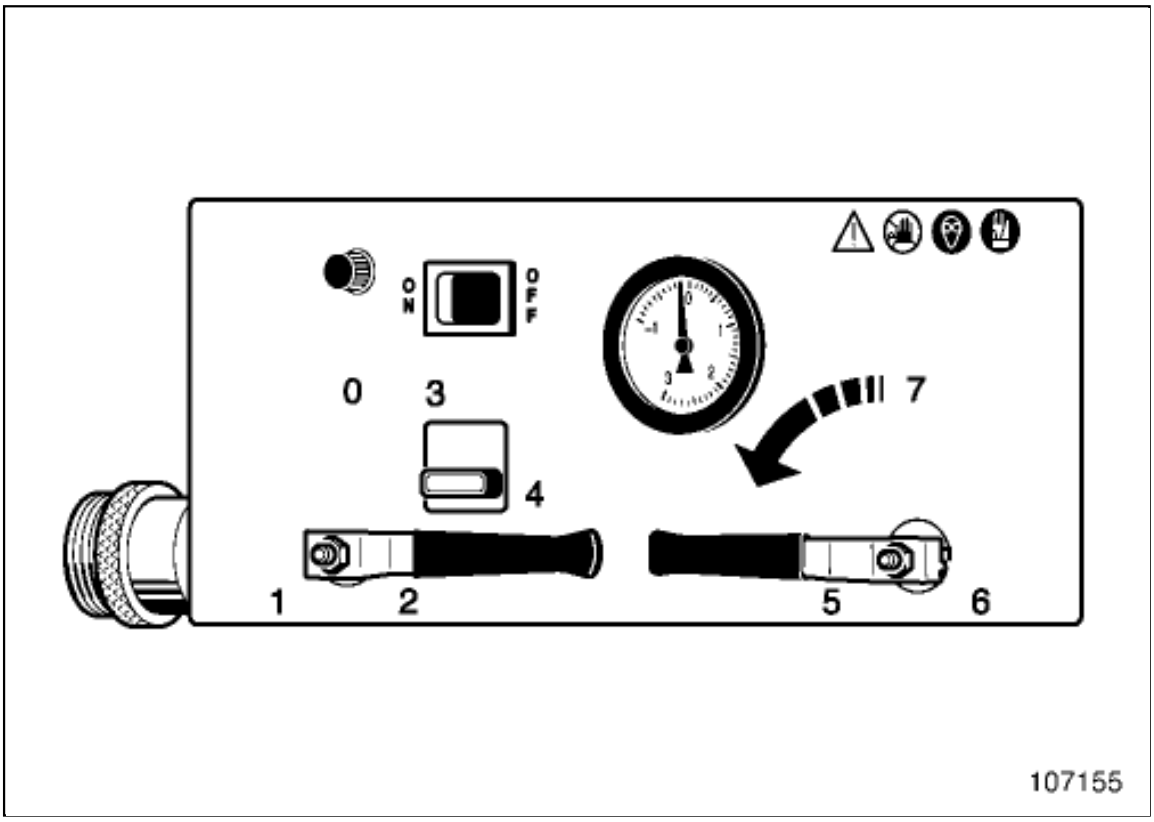
- The on/off switch(4) to "OFF" ,
- Control(3) to "7" .

Note:

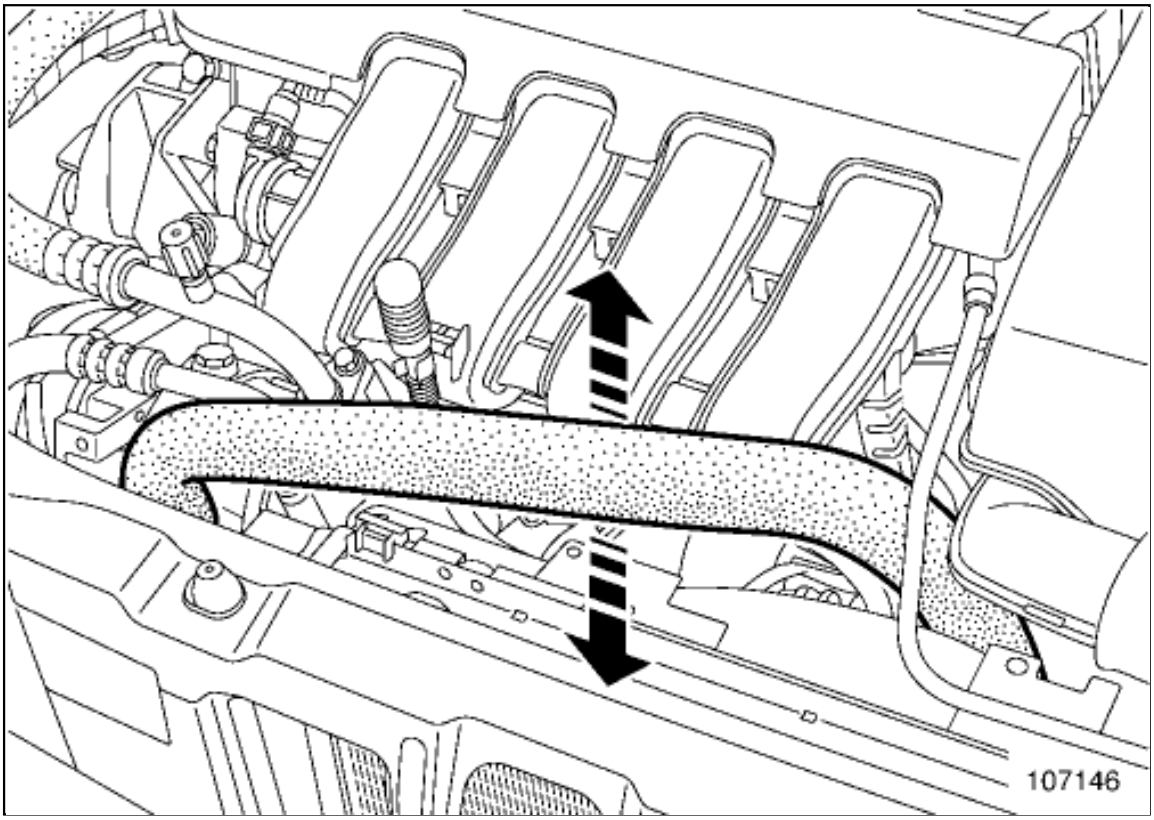
The pressure gauge needle should not move. If it does not, find and repair any leaks on the cooling system.

After repair, create a vacuum in the cooling circuit (by restarting the previous operations).

2- FILLING THE COOLING CIRCUIT



Set the control(3) to "5" .



The hoses return to their original form.

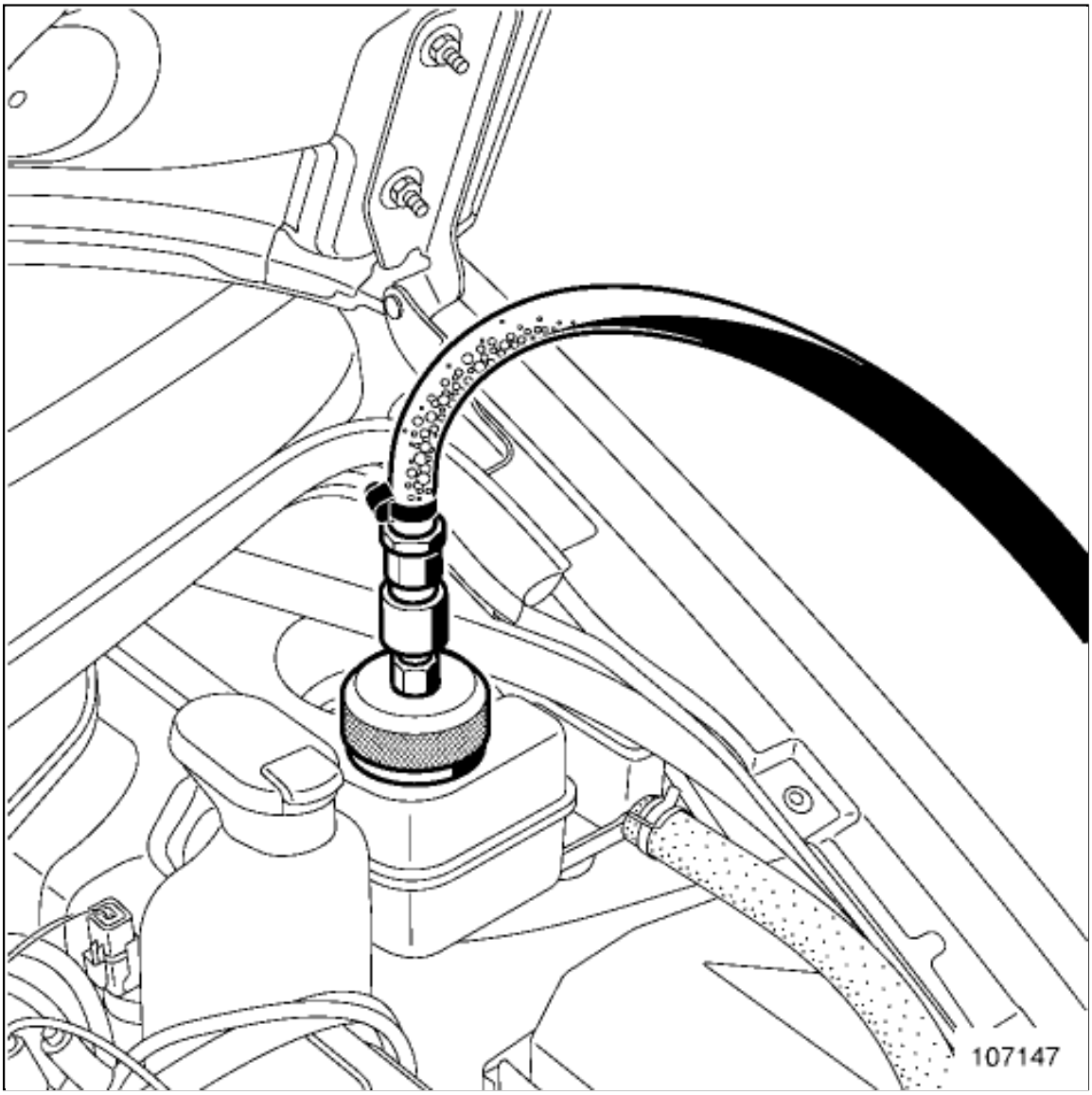
The pressure gauge needle returns to zero.

Note:

For cooling systems with a coolant capacity greater than 10 litres, stop filling the cooling system before the reservoir is empty.

To carry out this operation:

- Position the control (3) to "7" ,
- Readjust the coolant level in the reservoir.
- Set the control (3) to "5" to fill the cooling system again.



The cooling system is full once bubbles appear in the connecting pipe(7) between the expansion bottle and toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) .

Set the control(2) to "3" .

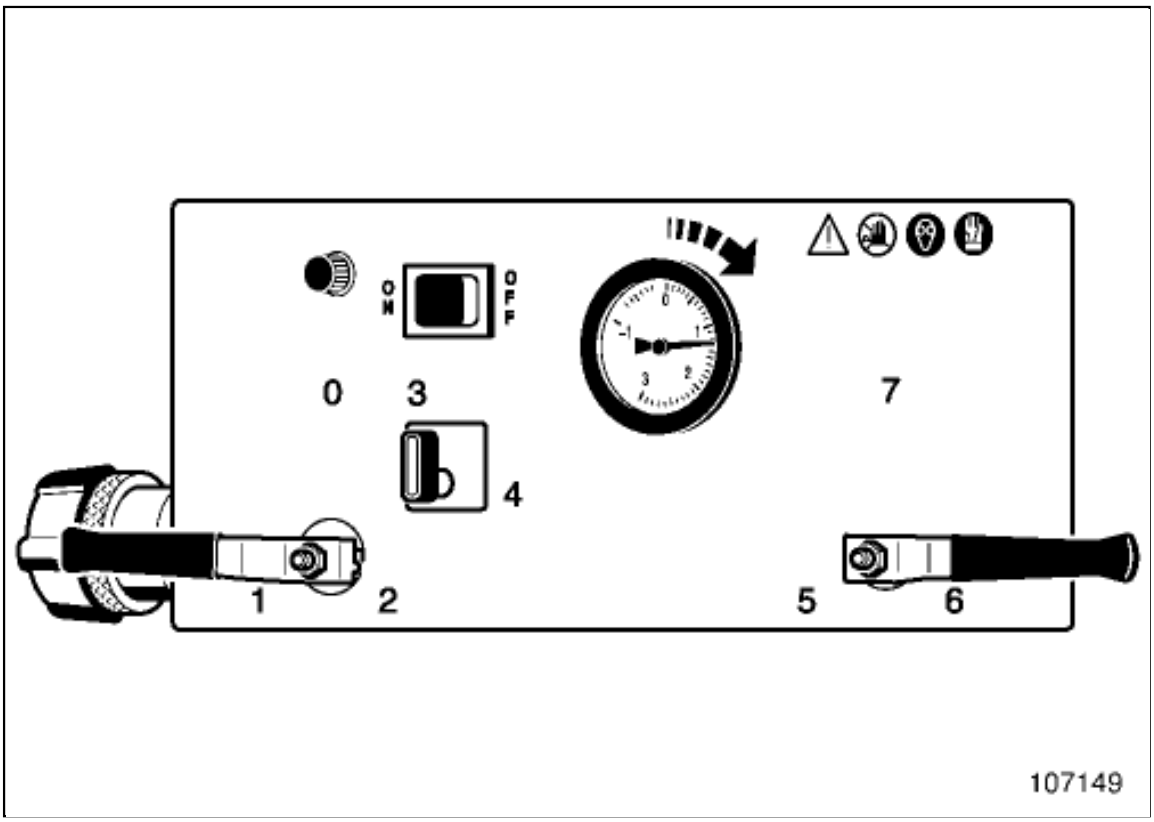
Disconnect the pipe (7) from the adapter plug.

Remove the adapter plug(6) .

Connect the adapter plug to the pipe to empty the remaining liquid in the pipe into the reservoir of the toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) .

3- PRESSURIZING THE COOLING SYSTEM

Refit the adapter plug and the pipe to the vehicle's expansion bottle in order to pressurise the cooling circuit to check the cooling circuit sealing.



Refit the expansion bottle cap(8) on the toolFault finding and filling - bleeding the cooling circuit.(Mot. 1700) .

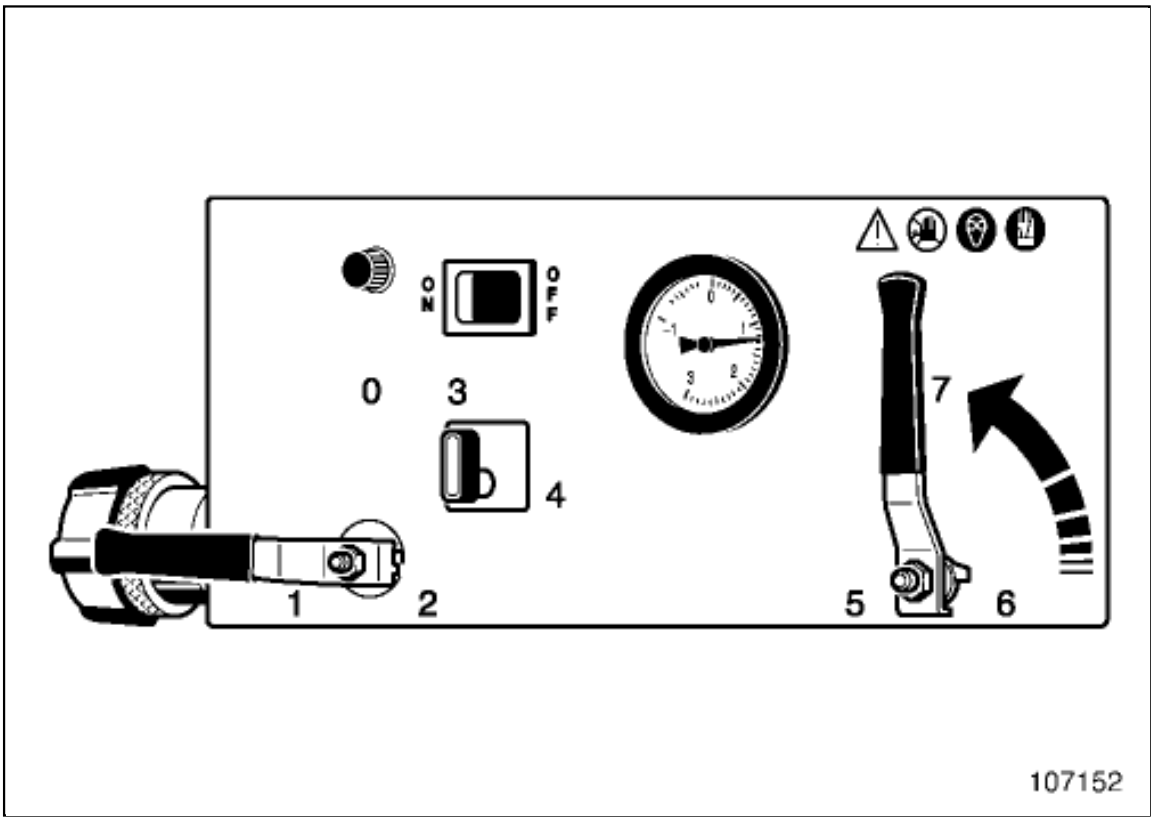
Position:

- Control(1) to "1" ,
- Control(2) to "3" ,
- Control(3) to "6" ,
- The on/off switch(4) to "ON" .

Note:

The pressure gauge needle should point to a pressure value and should settle at the expansion bottle valve cap valve rating.

Set the on/off switch(4) to "OFF" .

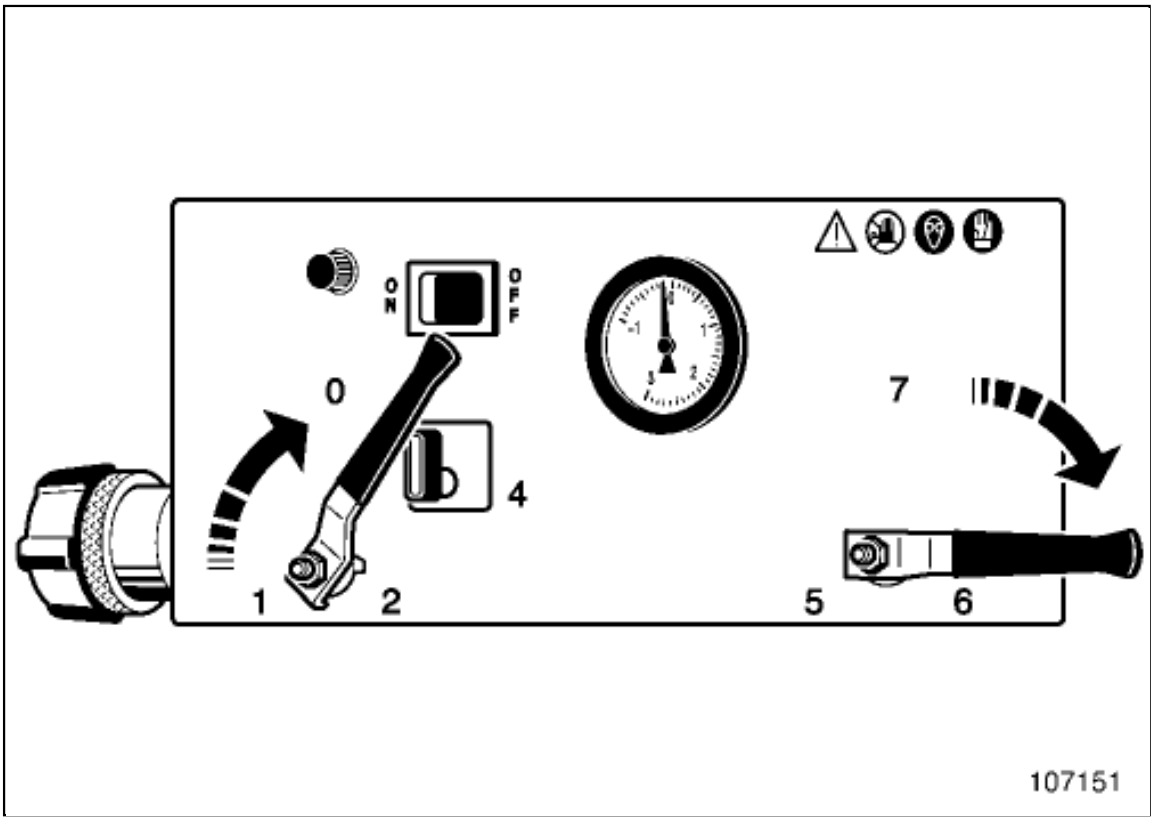


Set the control(3) to "7" .

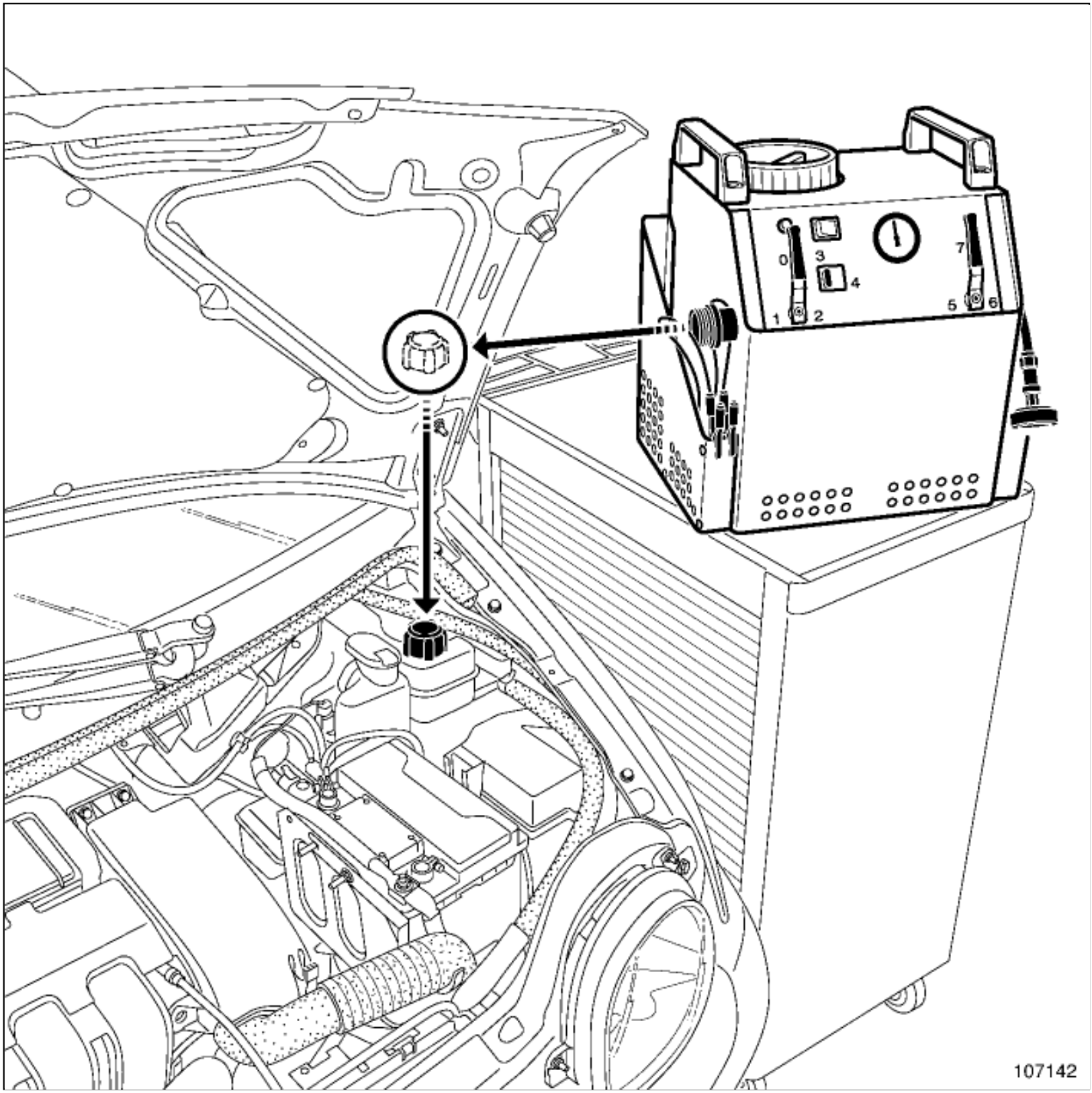
Note:

The pressure gauge needle should not move. If it does not, find and repair any leaks on the cooling system.

After repair, repressurise the cooling circuit (by restarting the previous operations).



- Set the control(3) to "6" .
- Gradually dump the pressure by turning the control(1) in the direction shown by the arrow.
- Disconnect the tool Fault finding and filling - bleeding the cooling circuit.(Mot. 1700) from the vehicle.
- Fill the expansion bottle to overflow (only after a total draining of the cooling system).



- Refit the expansion bottle cap.

- Bleed the engine cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

XSL version : 3.02 du 22/07/11

COOLING UNIT : REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

- The criteria to be met are:
  - protection down to -25°C ± 2for cold and temperate countries,
  - protection down to -40°C ± 2for "extreme cold" countries.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the bolts of the high pressure pump protector.

- Move aside the high pressure pump protector.

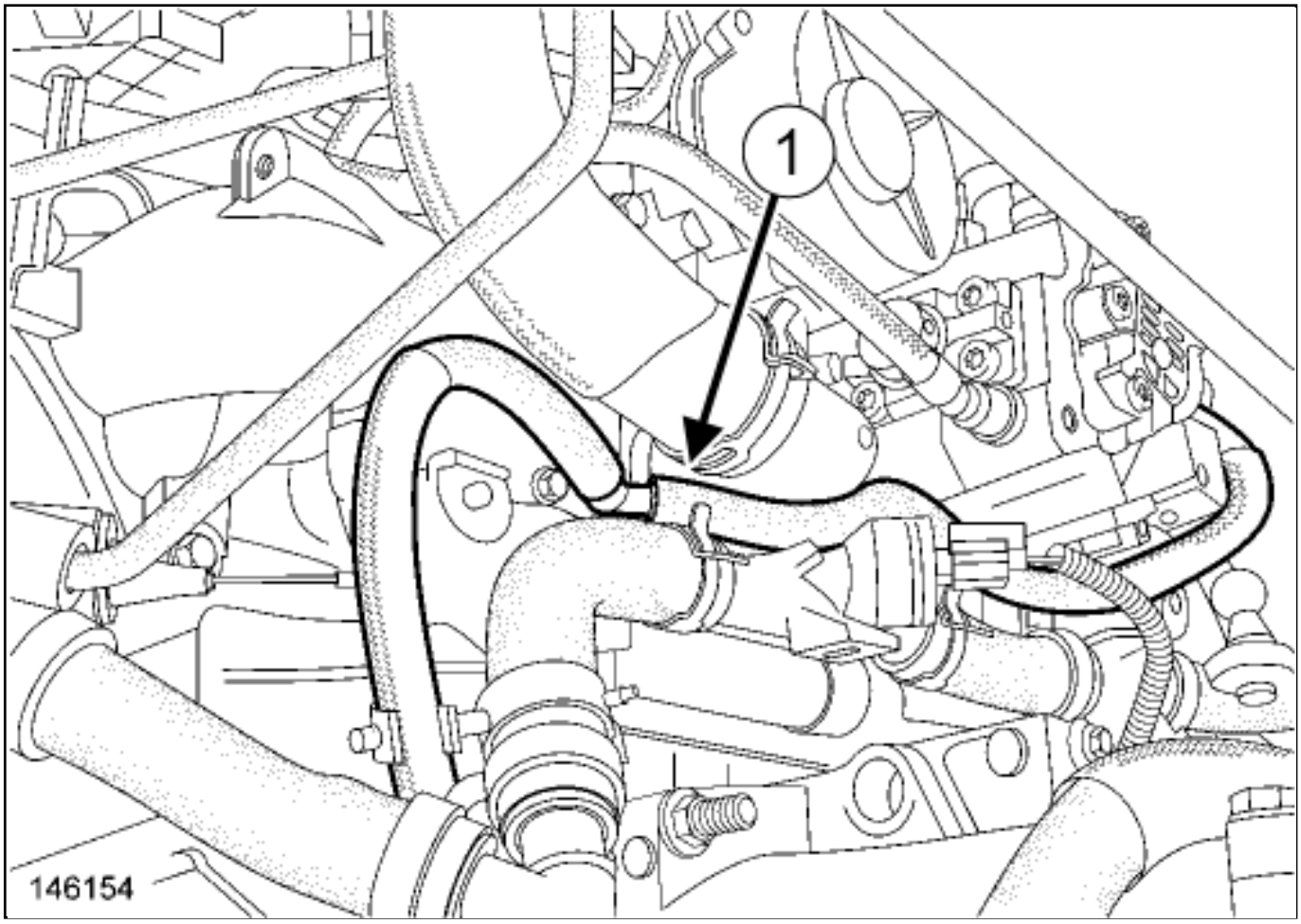
M9T, 690 696 698 896(690 OR 696 OR 698 OR 896)

- Remove the particle filter(see **Exhaust assembly under body: Exploded view**) .

M9T, 686 692 694(686 OR 692 OR 694)

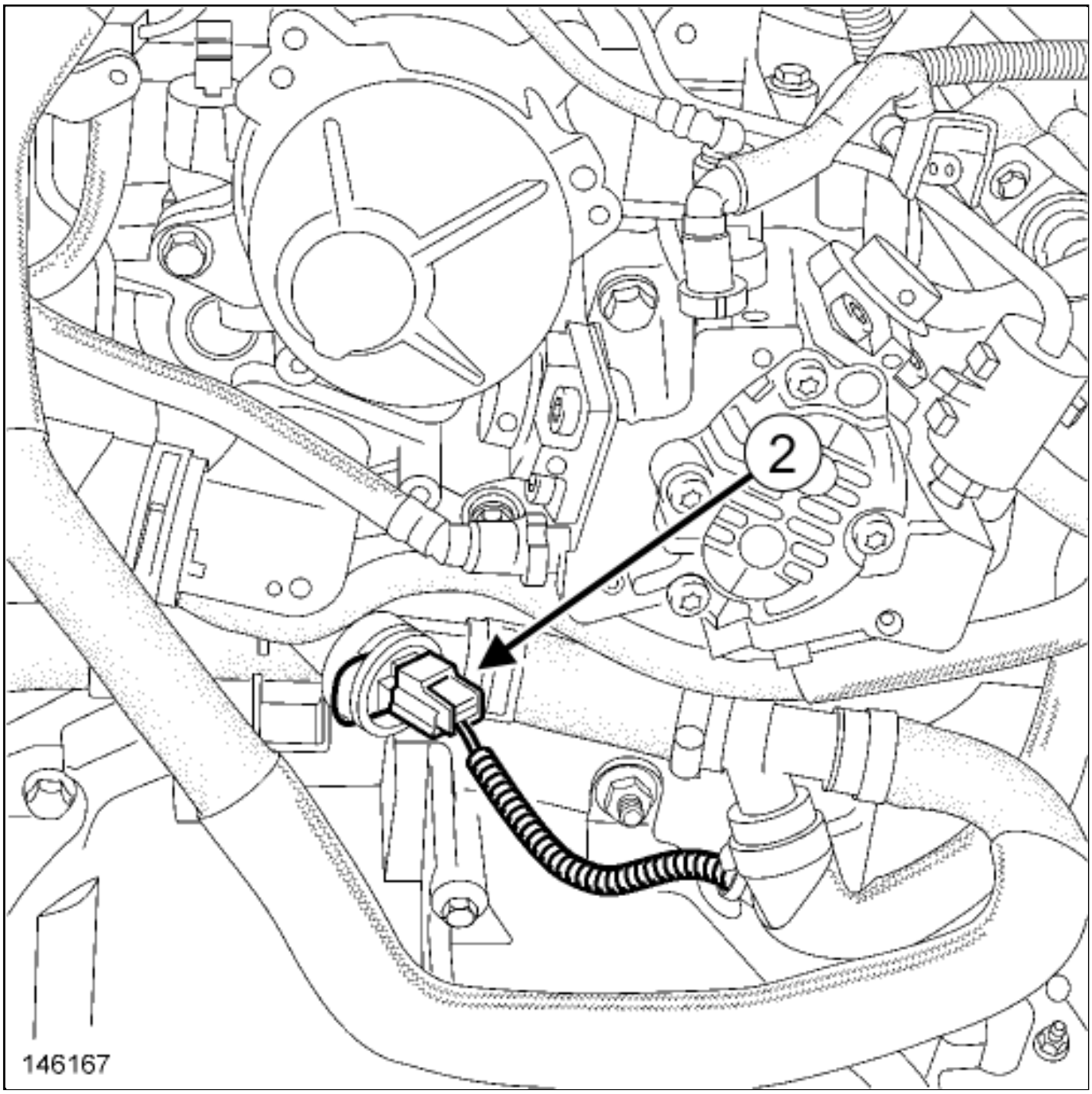
- Remove the catalytic converter(see **Exhaust assembly under body: Exploded view**) .

- Drain the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .



- Unclip the fuel collector pipe from the water chamber.
- Move the fuel collector pipe aside.

2. REMOVAL OPERATION



- Disconnect the coolant temperature sensor connector(2) .

- Separate the clips of the cooling pipes on the water chamber using the toolRemote operation pliers for hose clips.(Mot. 1448) (see 19A, Cooling, Coolant circuit assembly: Exploded view) .

- Disconnect the cooling pipes from the water chamber(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

- Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the water chamber,
  - the water chamber seal.

REFITTING

1. REFITTING PREPARATION OPERATION

Use surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the cylinder head joint face,
- the water chamber seal housing if it is to be reused.

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Fill and bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

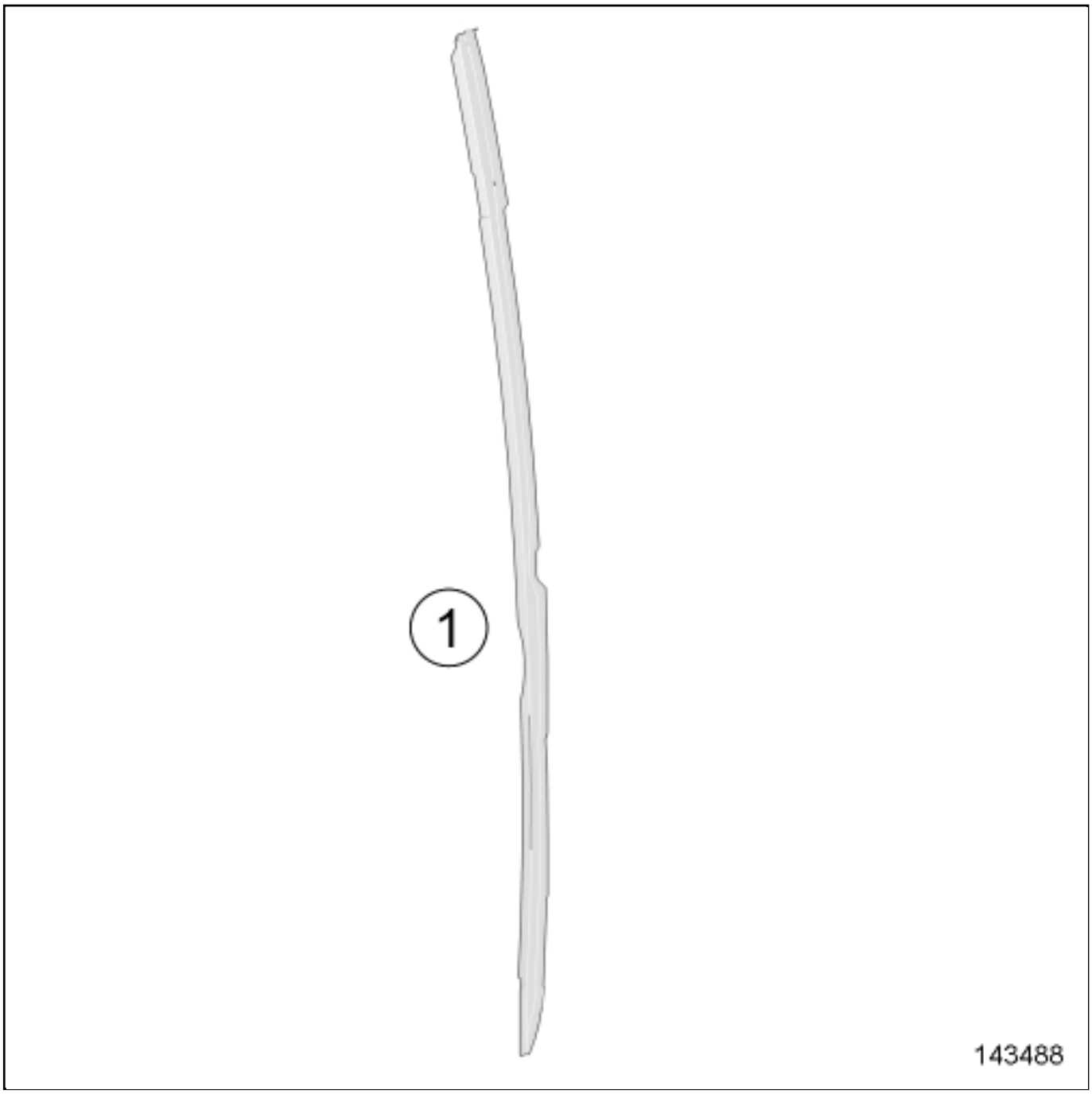
C-PILLARCLOSUREPANEL:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	C-pillar closure panel	Mild steel	0.8

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

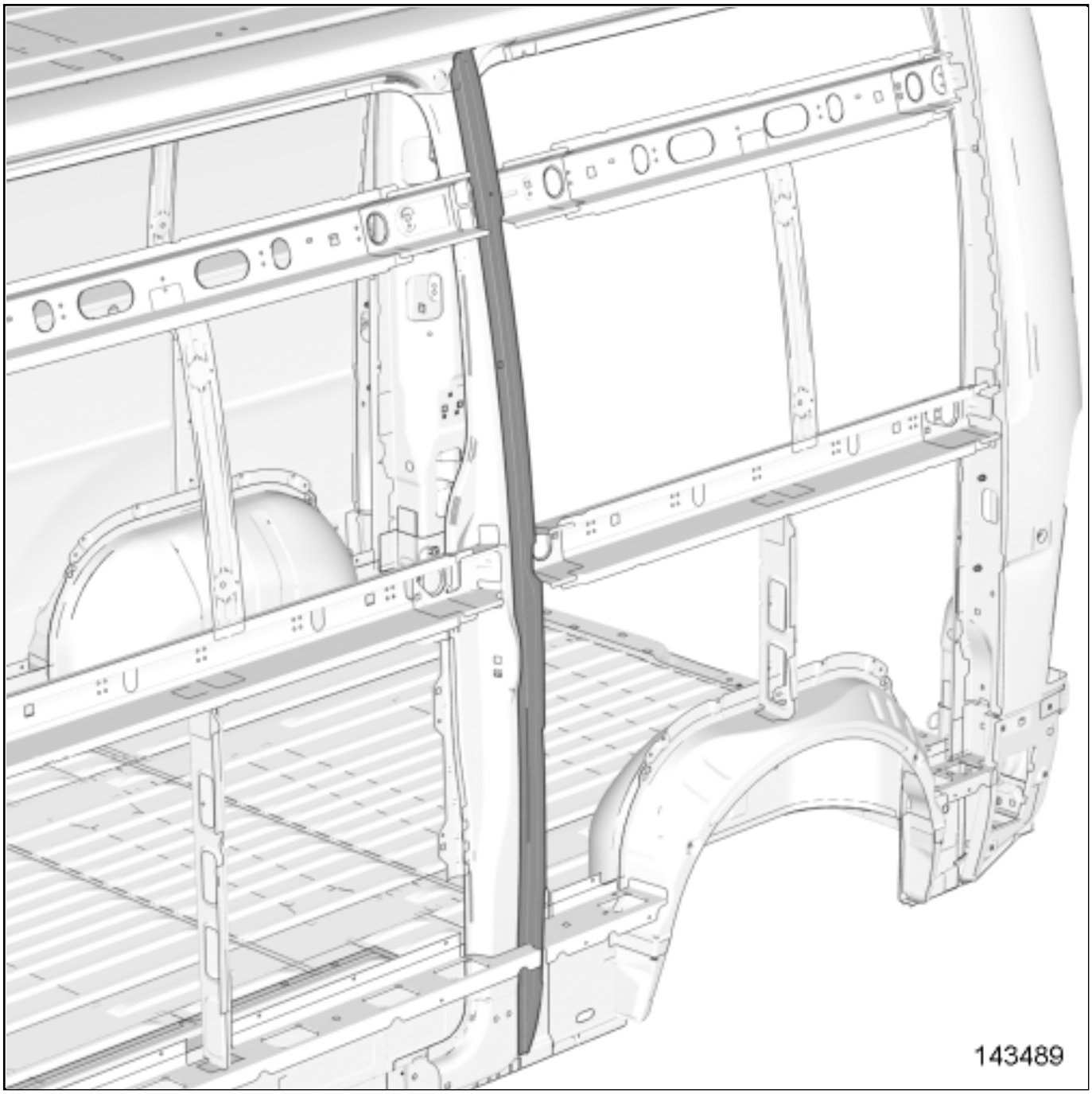
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area(see **Earths on body: List and location of components**) .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

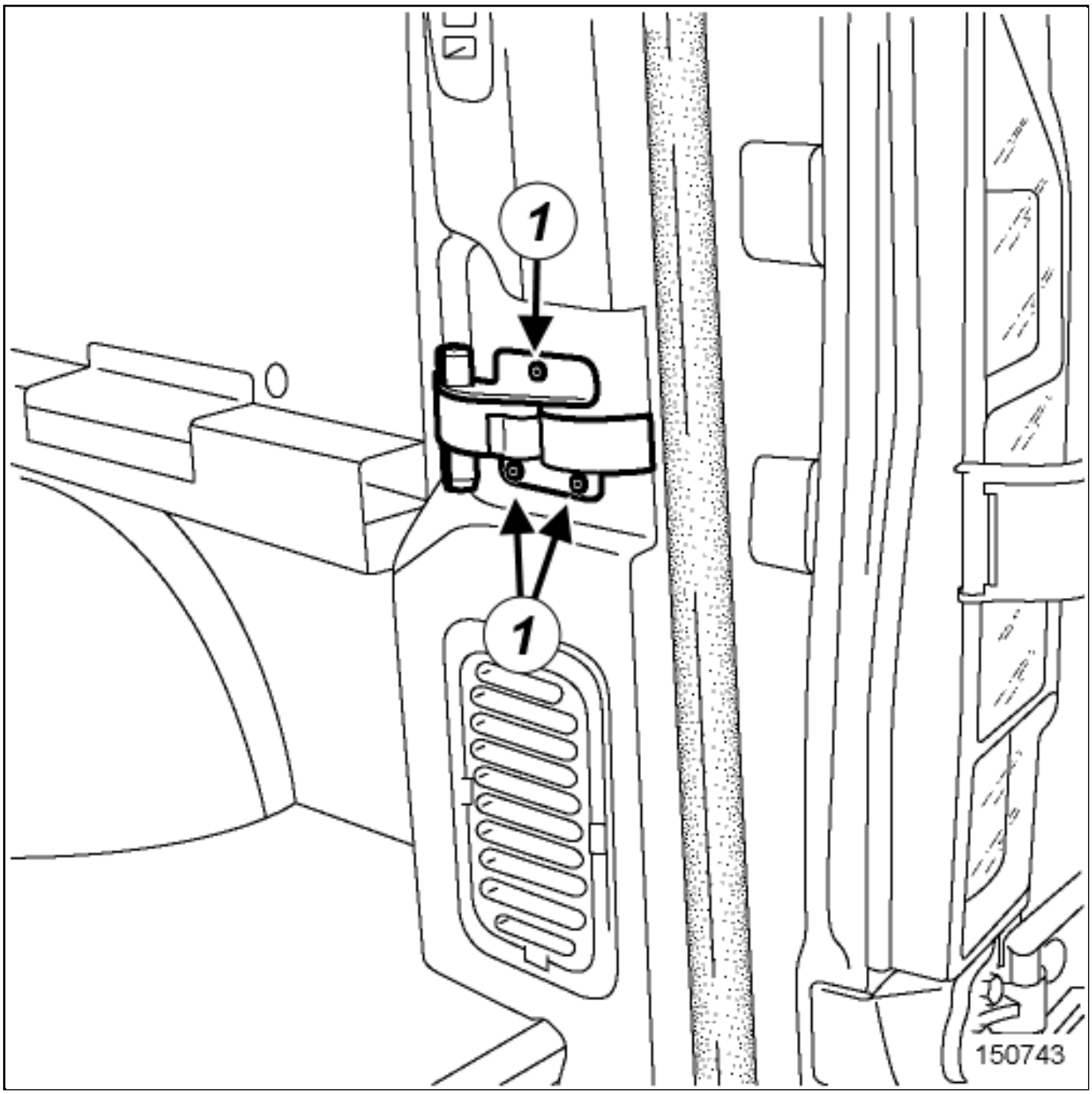
C-PILLAR LOWER TRIM: REMOVAL - REFITTING

REMOVAL

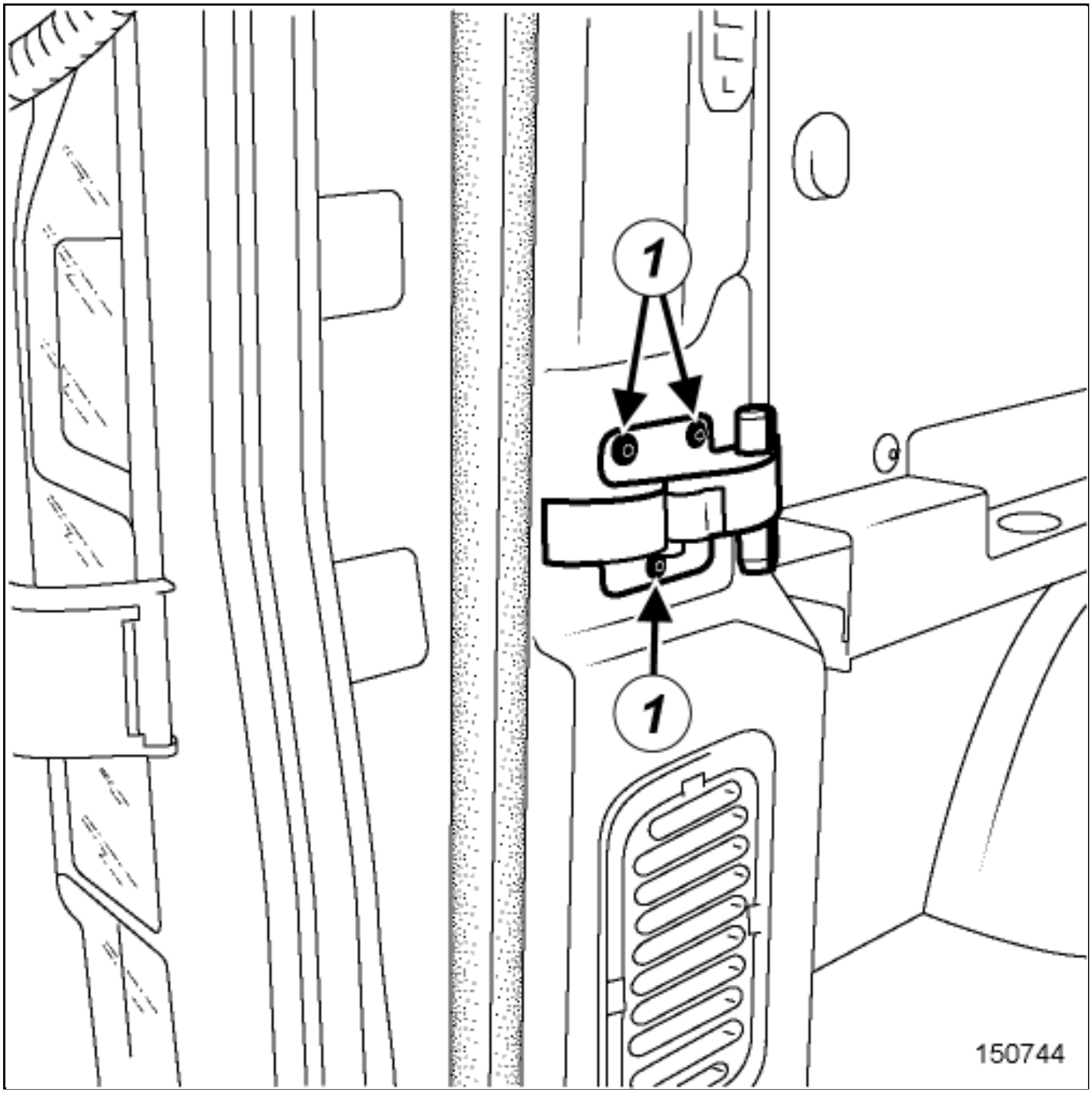
1. REMOVAL PREPARATION OPERATION

- Remove the complete rear seator the complete rear bench seat.

RIGHT-HAND SIDE



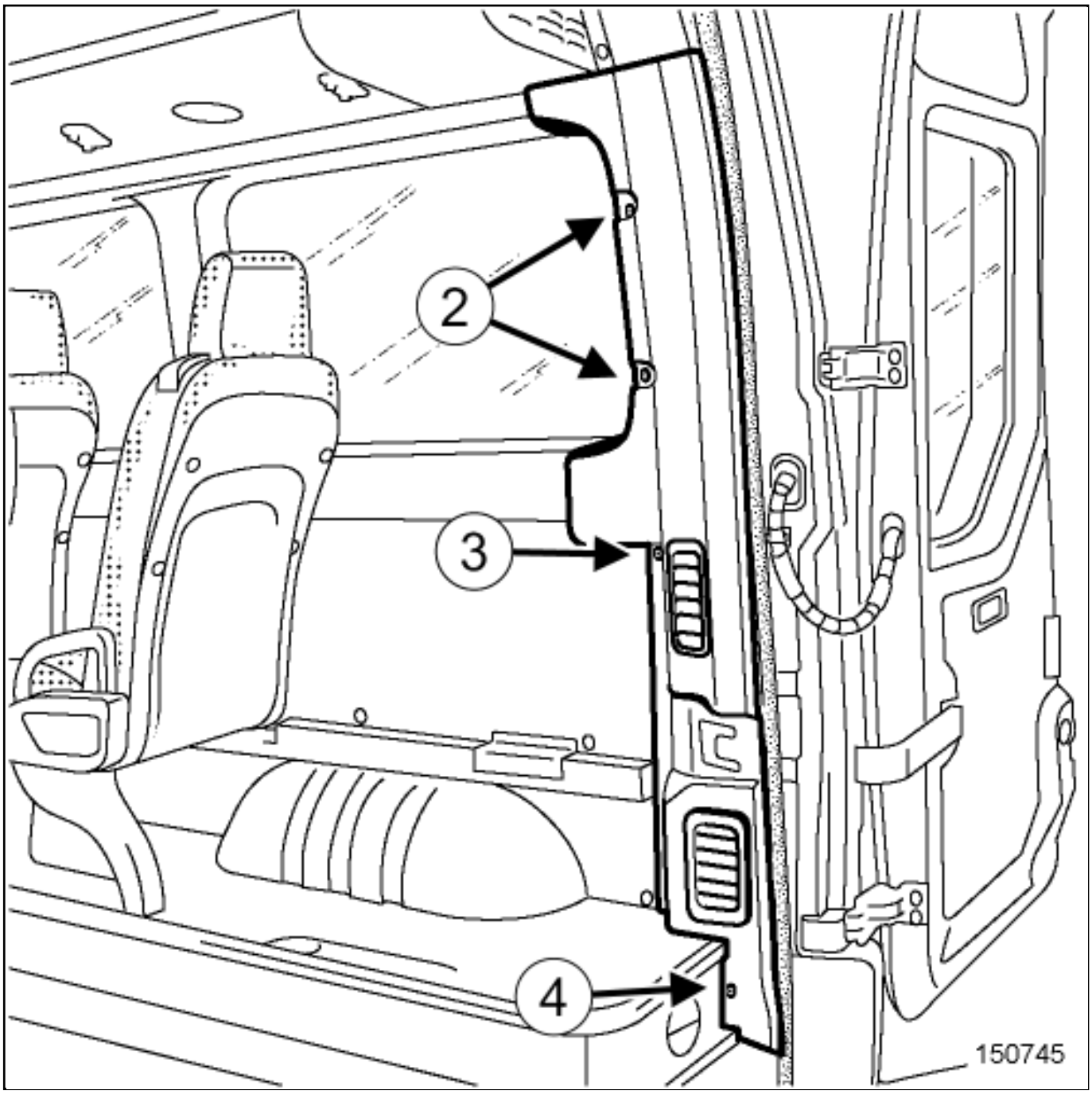
LEFT-HAND SIDE



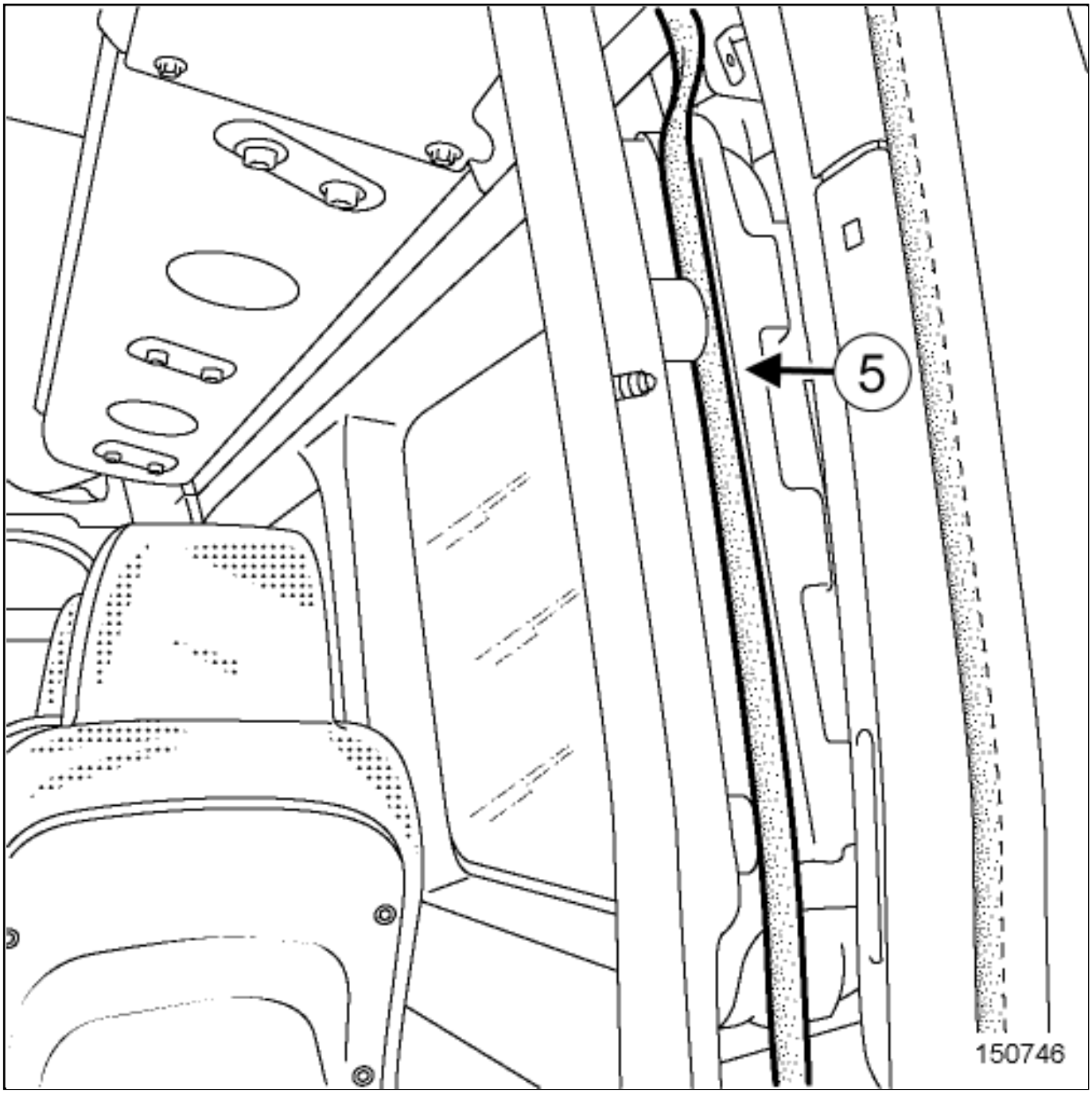
Remove:

- the bolts(1) ,
- the rear loading door stop cam.

2. REMOVAL OPERATION



- Turn the clips(2) .
- Remove:
  - the clips(3) ,
  - the bolt(4) .
- Unclip the C-pillar lower trim partially.

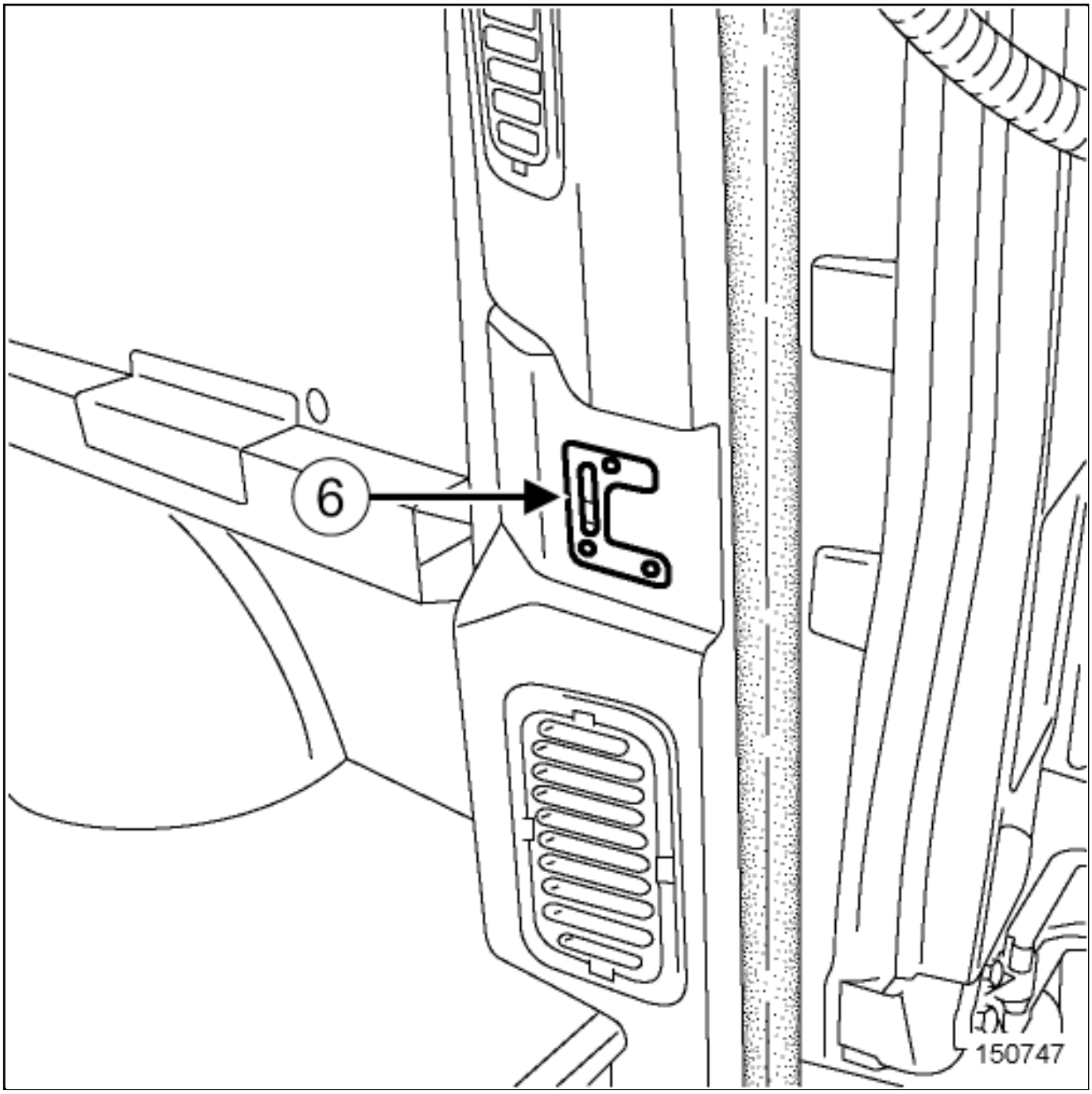


- Move the drain pipe(5) .

- Remove the C-pillar lower trim.

REFITTING

1. REFITTING PREPARATION OPERATION



Check the fitting in place.

Fit the drain pipe.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Repair-70x02x06x11-01x37-1-7-1.xml

XSL version : 3.02 du 22/07/11

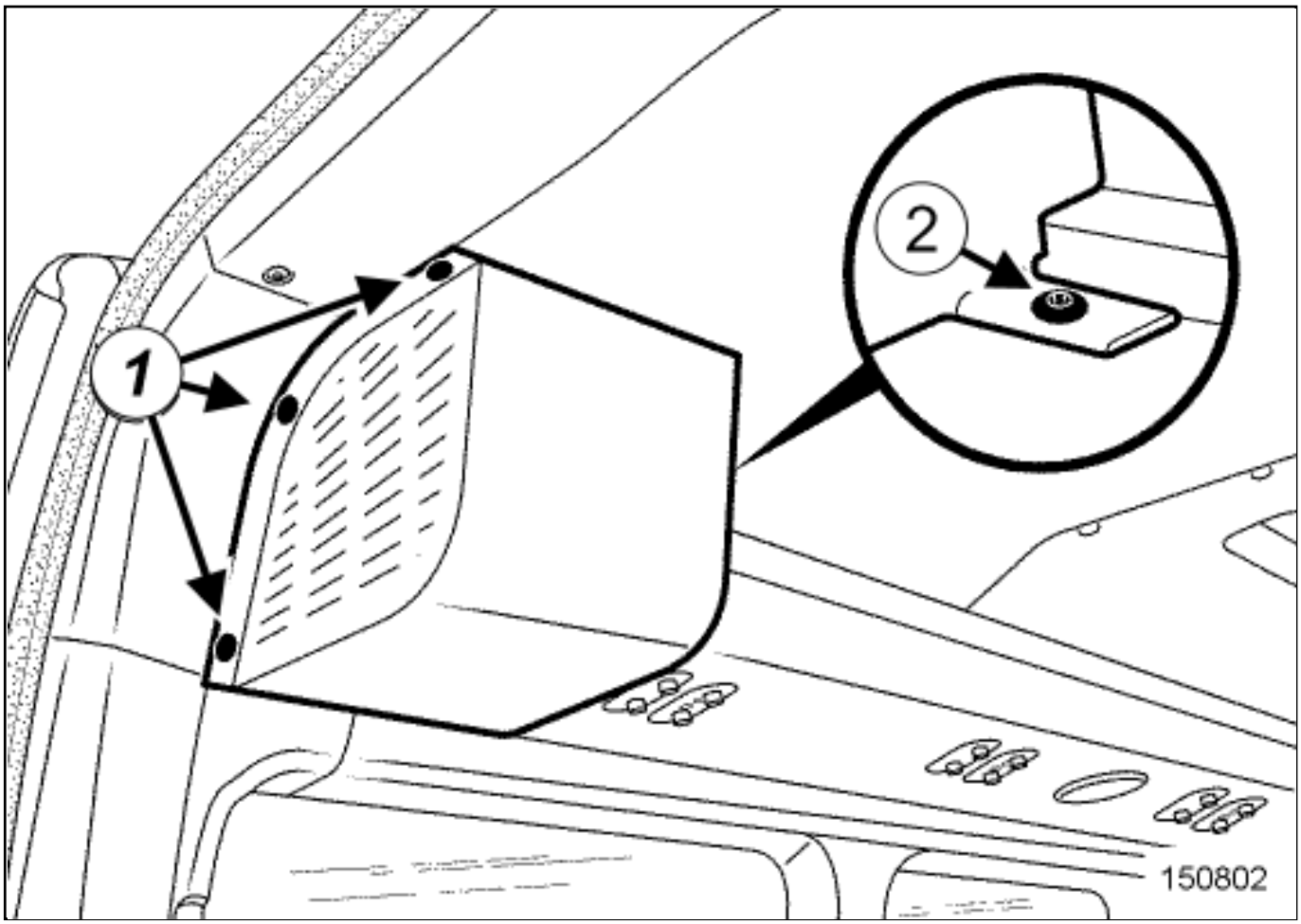
C-PILLAR UPPER TRIM: REMOVAL - REFITTING

The upper trim center section can be removed separately of side section.

REMOVAL

1. REMOVAL PREPARATION OPERATION

1- C-PILLAR UPPER TRIM CENTER SECTION



Remove:

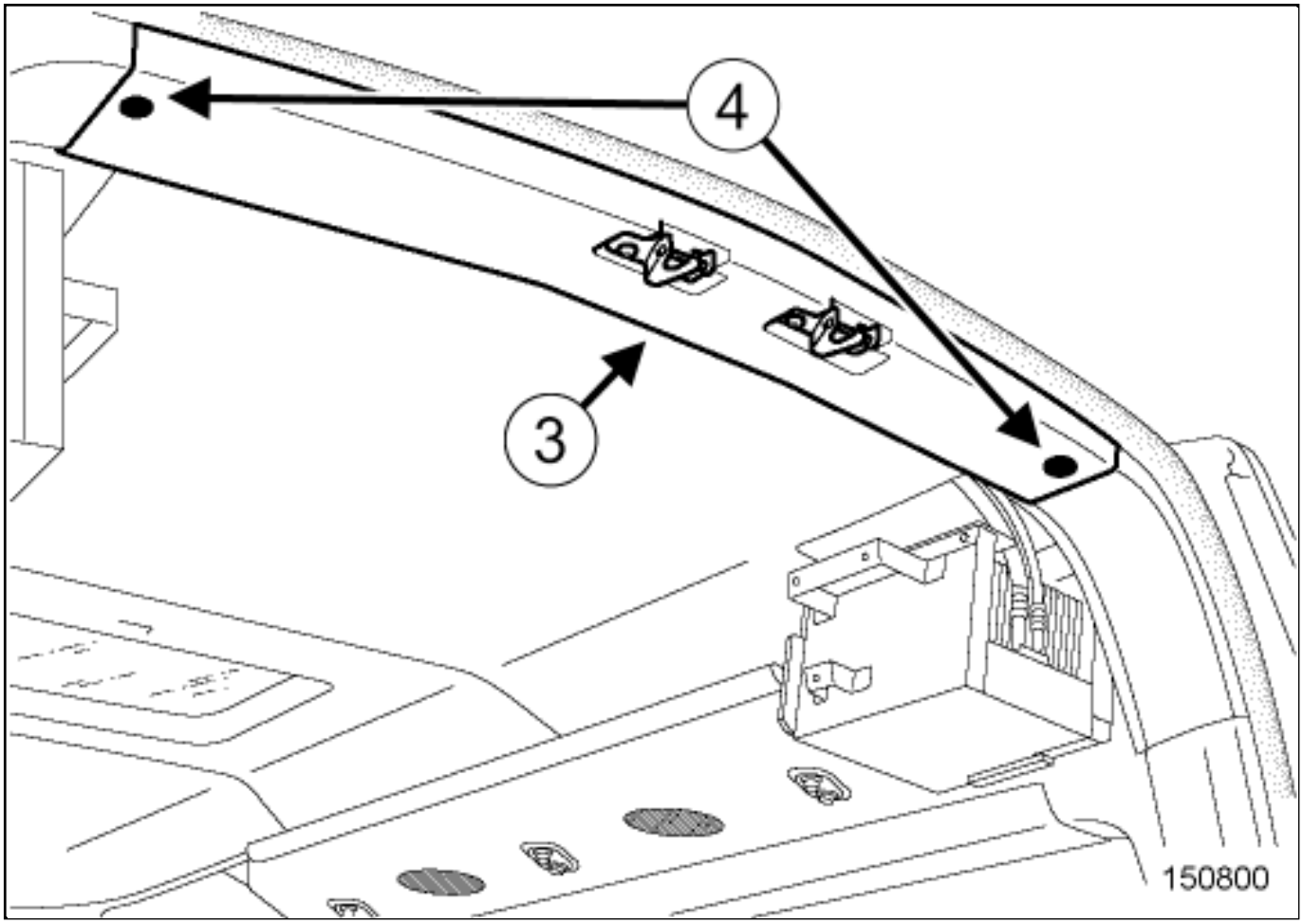
- the clips(1) ,
- the bolts(2) ,
- the trims,
- the rear courtesy lightHeadlining light: Removal - Refitting (81B, Interior lighting).

2- C-PILLAR UPPER TRIM SIDE SECTION

Remove the C-pillar lower trim(see 71A, Body internal trim, C-pillar lower trim: Removal - Refitting) .

2. REMOVAL OPERATION

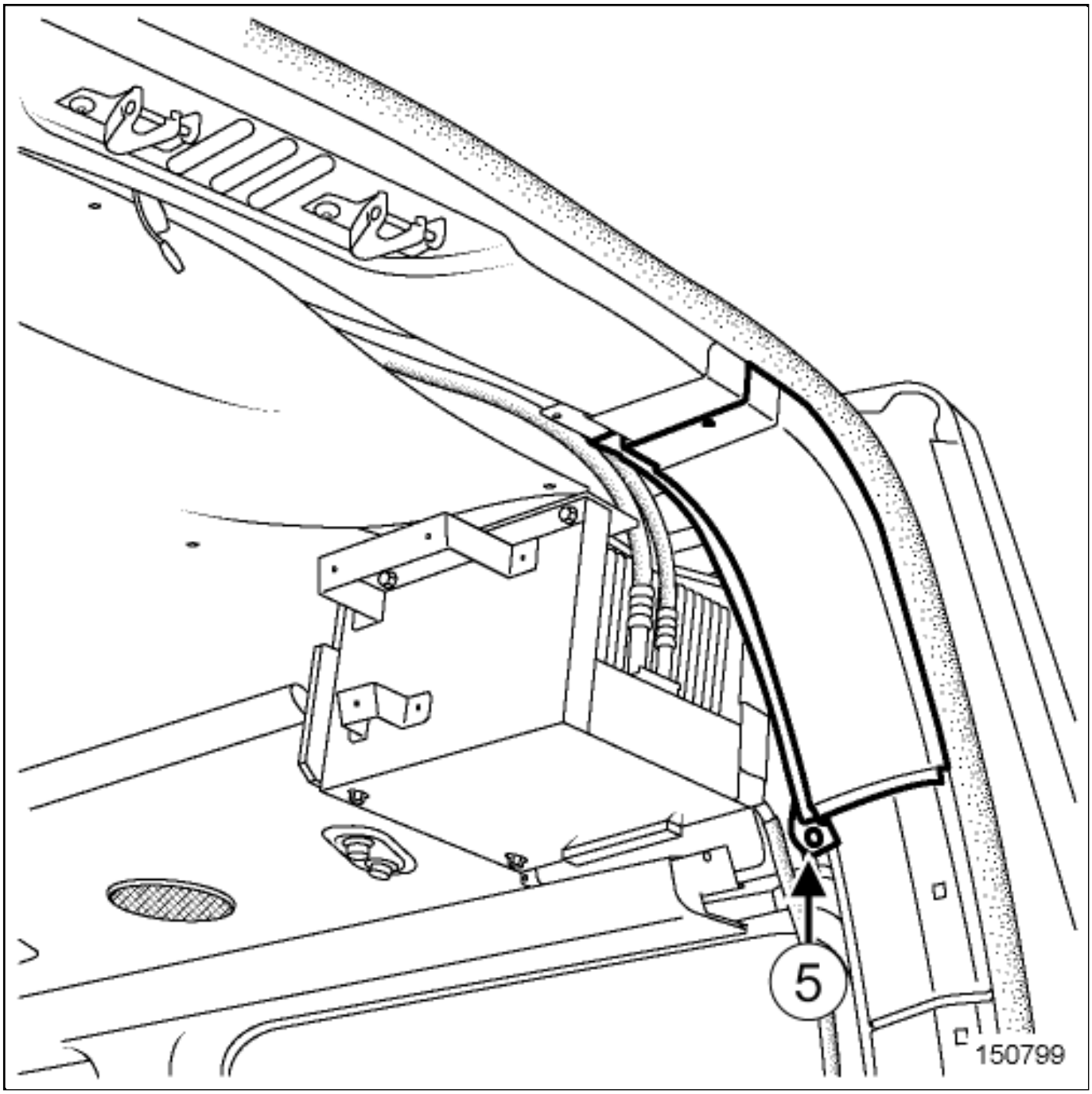
1- C-PILLAR UPPER TRIM CENTER SECTION



Remove:

- the clips(3) ,
- the bolts(4) ,
- the C-pillar upper trim center section.

2- C-PILLAR UPPER TRIM SIDE SECTION



- Remove:
  - the clips(**5**) ,
  - the C-pillar upper trim side section.

REFITTING

- Proceed in the reverse order to removal.

CRANKSHAFT ACCESSORIES PULLEY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Crankshaft pulley locking tool.	Mot. 1770
Crankshaft pulley locking tool	Mot. 1878

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 11A, Top and front of engine, Engine accessories assembly: Exploded view)** .

REMOVAL

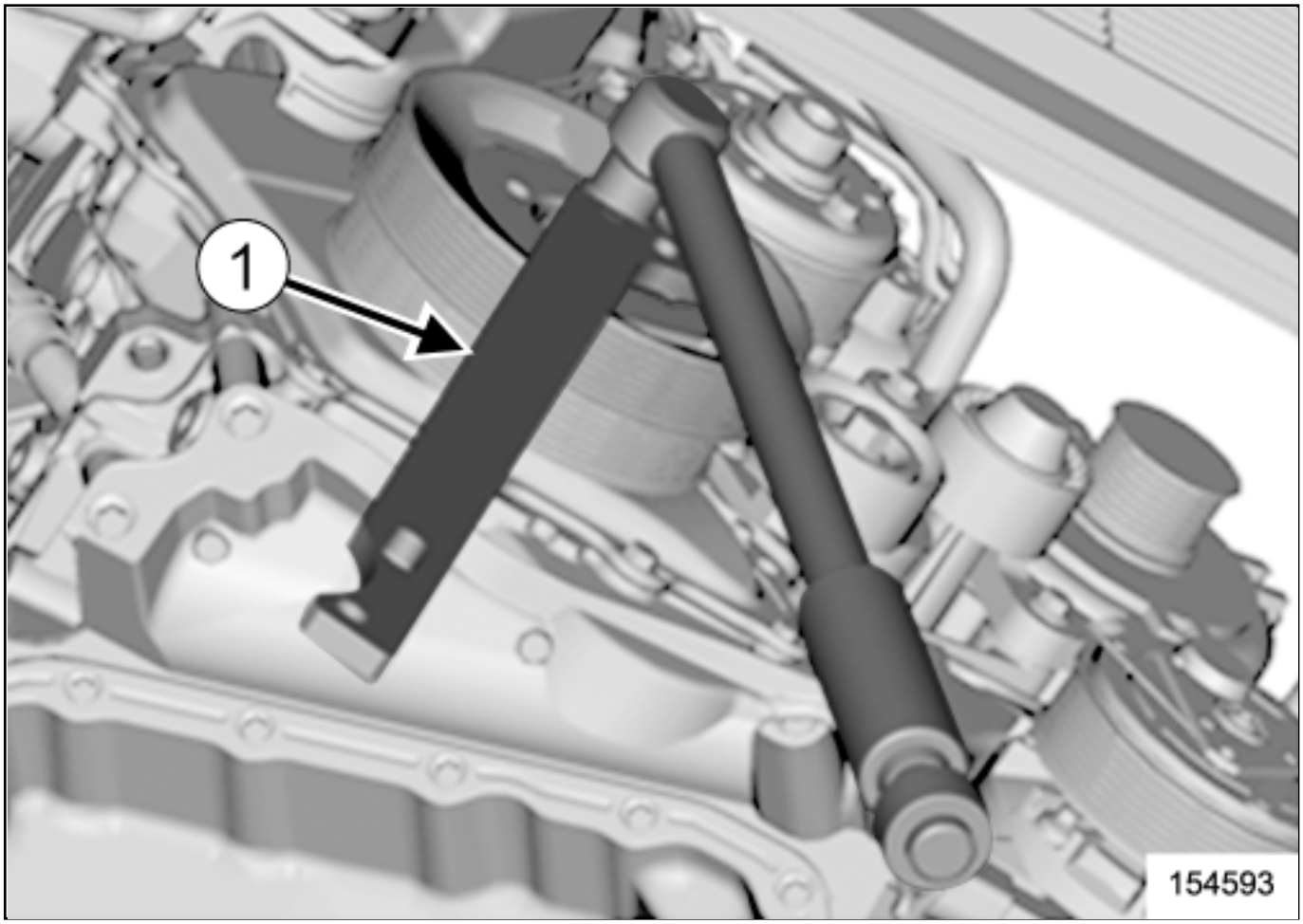
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .

- Remove:
  - the engine undertray,
  - the radiator grille**Radiator grille: Removal - Refitting** ,
  - the headlights**Headlight: Removal - Refitting** ,
  - the front bumper**Front bumper: Removal - Refitting** ,
  - the engine cooling fan propeller**Cylinder block assembly: Exploded view** ,
  - the intercooler**Intercooler : Removal - Refitting** ,
  - the engine cooling fan assembly**Coolant circuit assembly: Exploded view** ,
  - the accessories belt**(see 11A, Top and front of engine, Engine accessories assembly: Exploded view)** .

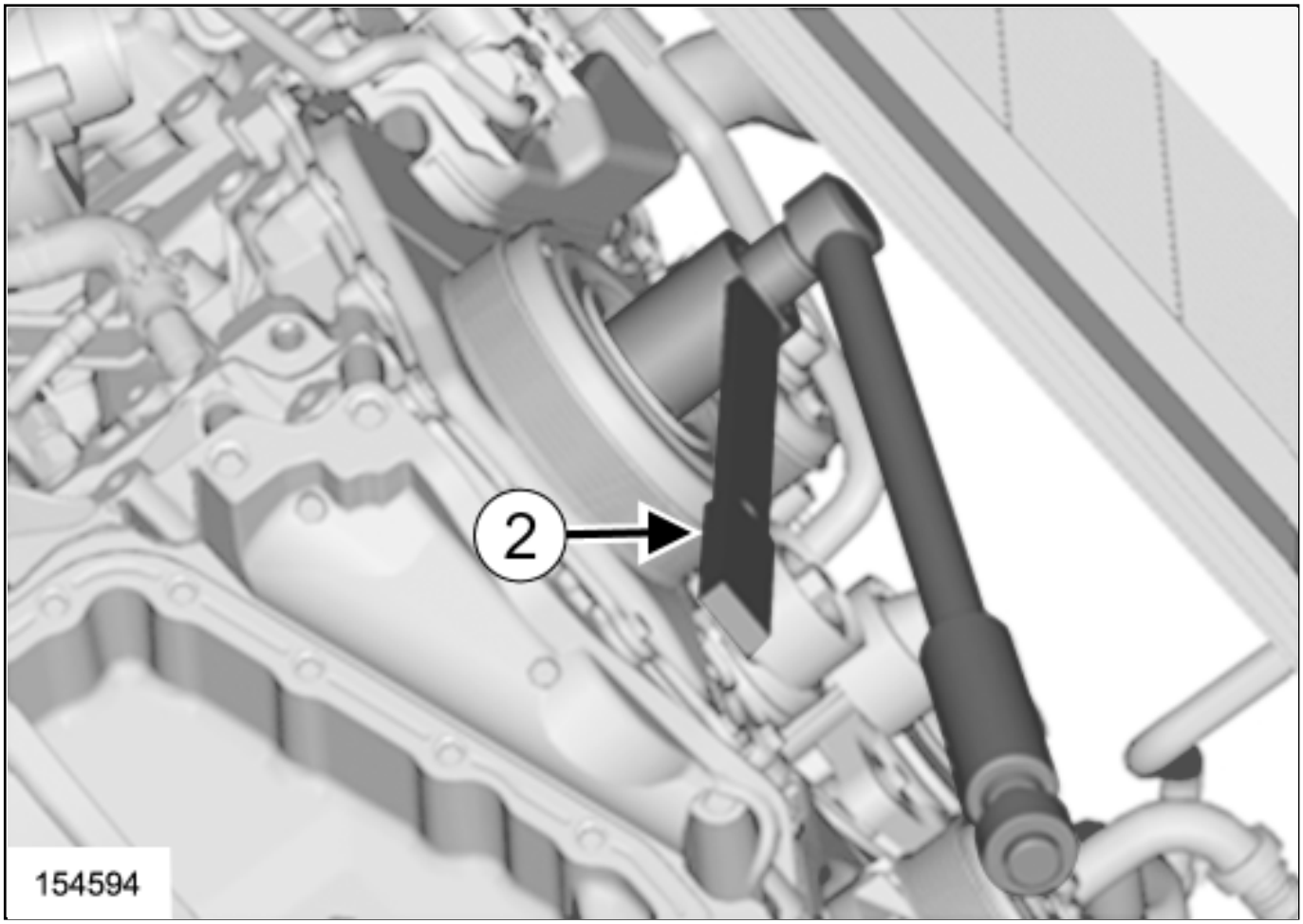
2. REMOVAL OPERATION

CRANKSHAFT ACCESSORIES PULLEY FITTED WITH AN ADDITIONAL PULLEY



- Loosen the crankshaft accessories pulley bolt by locking the additional pulley using the tool Crankshaft pulley locking tool(Mot. 1878) (1) .

CRANKSHAFT ACCESSORIES PULLEY



- Loosen the crankshaft accessories pulley bolt by locking the crankshaft accessories pulley using the tool Crankshaft pulley locking tool.(Mot. 1770) (2) .

- Remove the crankshaft accessories pulley(see 11A, Top and front of engine, Engine accessories assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- In case of reuse, clean the crankshaft accessories V-pulley using a brush to get rid of any deposit.

CAUTION

Only use brushes with plastic or non-corrosive metal (brass) bristles.

CAUTION

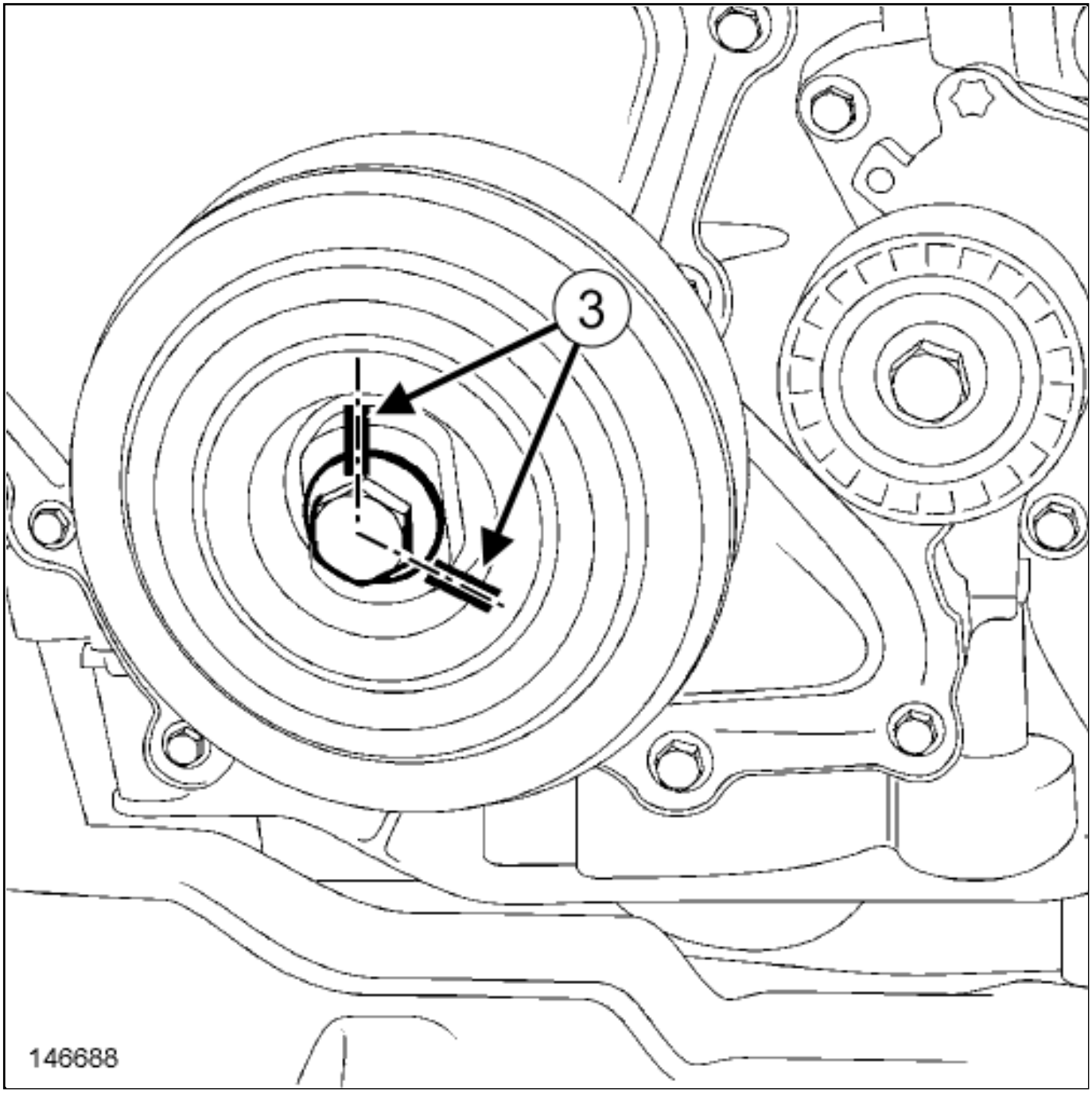
Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

2. REFITTING OPERATION

- Refit the crankshaft accessories pulley(see 11A, Top and front of engine, Engine accessories assembly: Exploded view) .

- Lock the crankshaft accessories pulley using the toolCrankshaft pulley locking tool.(Mot. 1770) or Crankshaft pulley locking tool(Mot. 1878) .

- Torque tighten the crankshaft accessories pulley bolt50 N.m.



- Make two marks at 120˚(3) .
- Tighten the bolt of the crankshaft accessories pulley120˚ .
- Proceed in the reverse order to removal.

CRANKSHAFT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Tightening torques	
turbocharger strut lower bolts	25 N.m
turbocharger strut upper bolt	25 N.m

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Dial gauge support.	Mot. 251-01
Flywheel locking tool.	Mot. 1431

Equipment required
component support
puller (from inside)
depth gauge
indelible pencil
compressed air nozzle
set of feeler gauges

parts always to be replaced:
crankshaft bearing bolt

REMOVAL

1. REMOVAL PREPARATION OPERATION

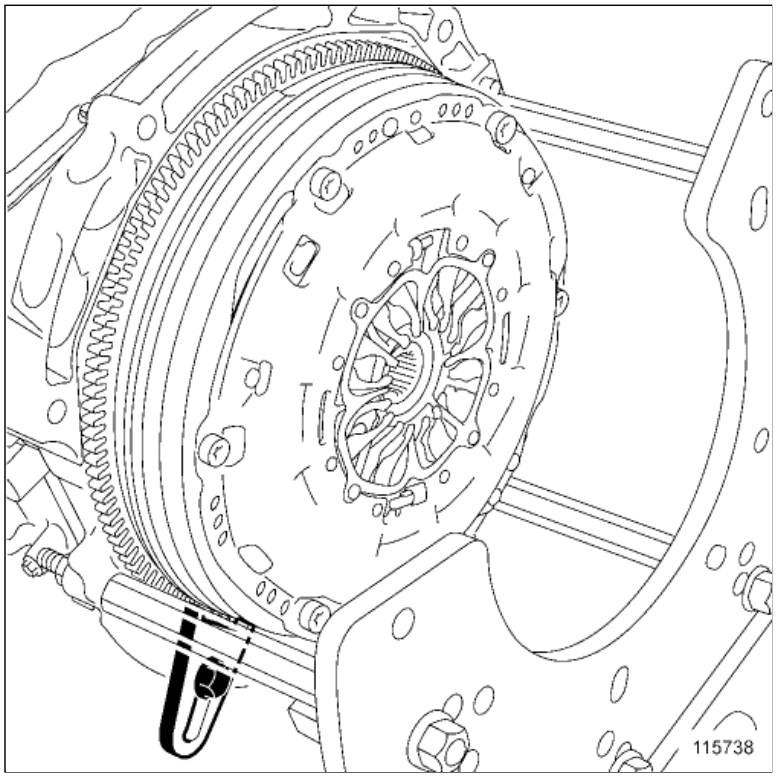
CAUTION

- It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump will irreparably damage the engine by:
  - blocking the strainer,
  - raising the oil level above maximum, with a risk of engine racing.

Note:

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 10A, Engine and cylinder block assembly, Engine: Precautions for the repair) .

- Remove the engine - gearbox assembly.
- Position the engine on the component support (see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .
- Drain the engine Engine oil: Draining - Refilling .
- Remove:
  - the accessories belt Accessories belt: Removal - Refitting ,
  - the coolant pump Coolant pump: Removal - Refitting .



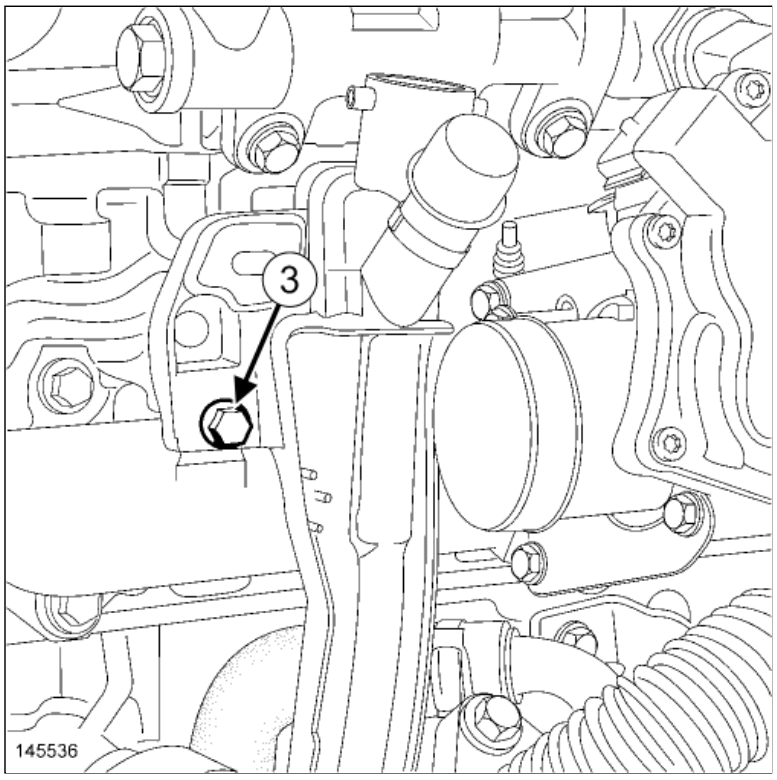
- Immobilise the flywheel or the drive plate while fitting theFlywheel locking tool.(Mot. 1431) on the cylinder block.

- Remove:
  - the crankshaft accessories pulleyCrankshaft accessories pulley: Removal - Refitting ,
  - the crankshaft seal on the timing sideCrankshaft seal on timing end: Removal - Refitting .

- Remove the timing chain(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

X43, M9R, 804 811 817 824 839 844 846(804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (678 OR 680 OR 696 OR 880 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (630 OR 692) AND (721 OR 722 OR 724) AND (754 OR 800 OR 802 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

- Remove the exhaust gas pressure sensorExhaust gas pressure sensor: Removal - Refitting .

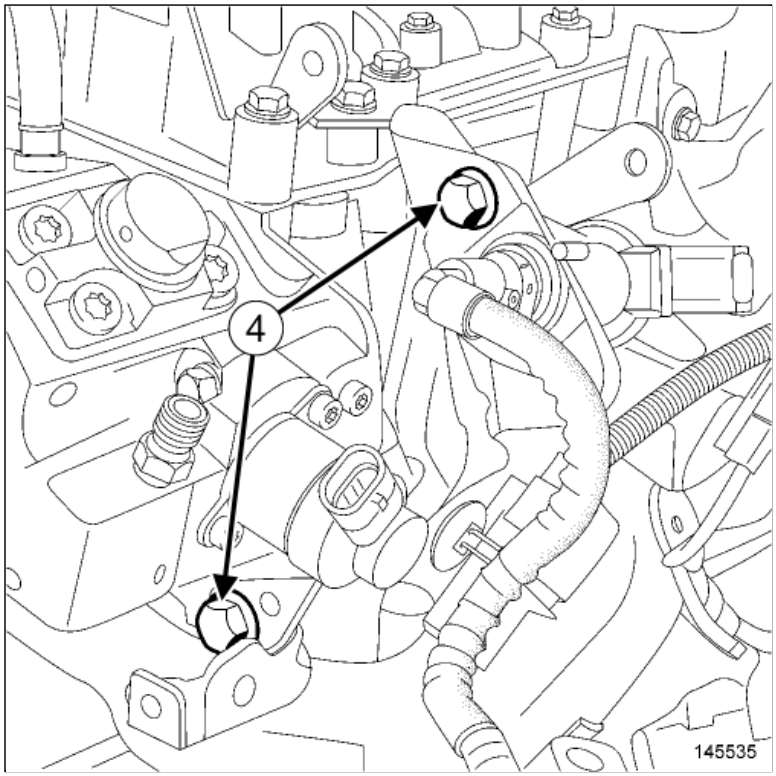


Remove:

- the dipstick guide bolt(3) ,
- the dipstick guide.

Remove:

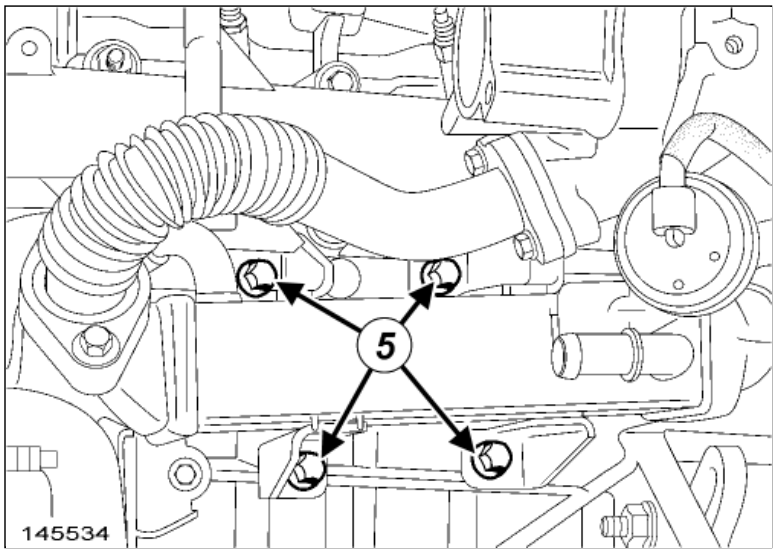
- the damper valve,
- depending on version, the turbocharger outlet catalytic pre-converter or catalytic converterCatalytic pre-converter: Removal - Refitting orCatalytic converter: Removal - Refitting ,
- the turbocharger oil pipesTurbocharger oil pipe: Removal - Refitting ,
- the vacuum pumpVacuum pump: Removal - Refitting (37A, Mechanical component controls),
- the high pressure pipe between the pump and the railHigh pressure pipe between pump and rail: Removal - Refitting ,
- the oil decanterOil decanter: Removal - Refitting ,
- the diesel return railDiesel injector fuel return rail: Removal - Refitting ,
- the high pressure pipes between the rail and the injectorsHigh pressure pipe between rail and injector: Removal - Refitting ,
- the diesel injectorsDiesel injector: Removal - Refitting .



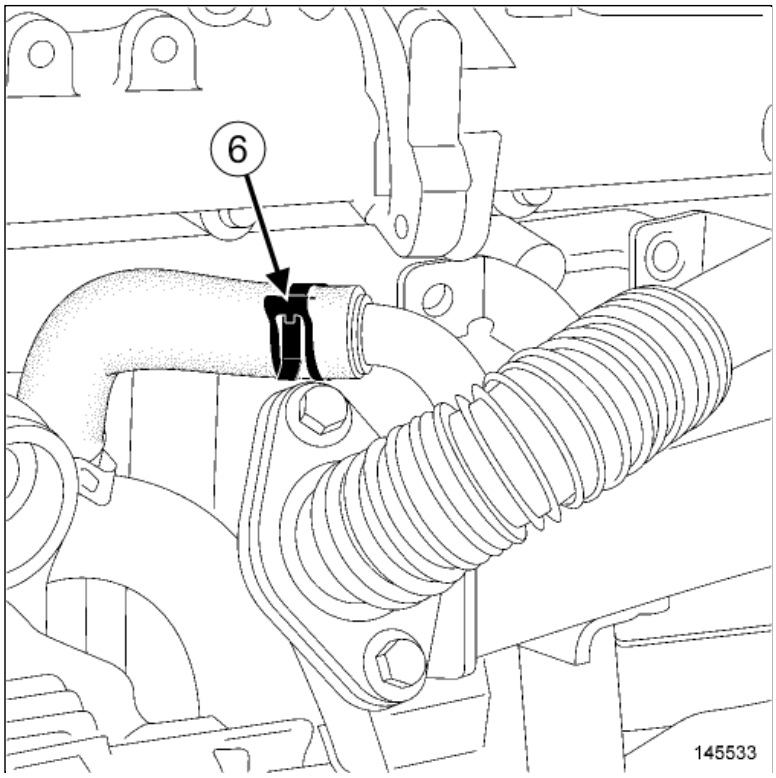
Remove the bolts(4) from the control solenoid valve support of the 5th injector.

Move the support of the control solenoid valve away from the 5th injector.

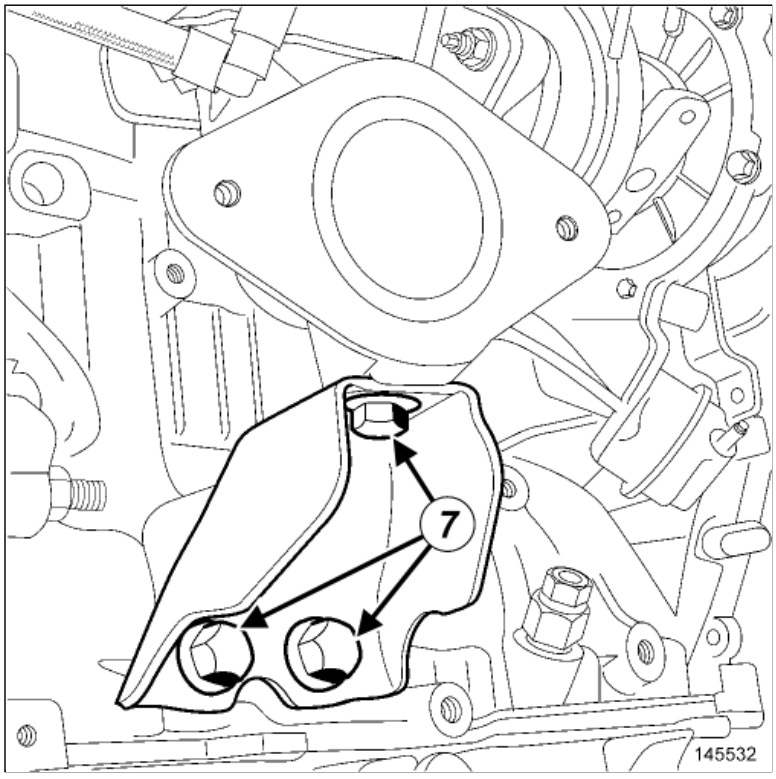
Remove the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) .



- Remove the bolts(5) from the exhaust gas cooler.



- Separate the clip (6) on the coolant hose at the inlet of the exhaust gas cooler using the toolRemote operation pliers for hose clips.(Mot. 1448) .
- Disconnect the coolant hose at the inlet of the exhaust gas cooler.



- Remove:
  - the bolts(7) from the turbocharger strut,
  - the turbocharger strut.

- Remove:
  - the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
  - the oil filter unitOil filter unit: Removal - Refitting .

Remove:

- the gearbox side crankshaft seal Crankshaft seal, gearbox end: Removal - Refitting ,
- the sump Lower cover: Removal - Refitting ,
- the cylinder block base plate (see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) .

X62, M9T, 700 702(700 OR 702)

Remove:

- the cylinder head (see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the clutch Pressure plate - Disc: Removal - Refitting ,
- the flywheel Flywheel: Removal - Refitting ,
- the gearbox side crankshaft seal Crankshaft seal, gearbox end: Removal - Refitting ,
- the sump Cylinder block assembly: Exploded view ,
- the cylinder block base plate Cylinder block assembly: Exploded view ,

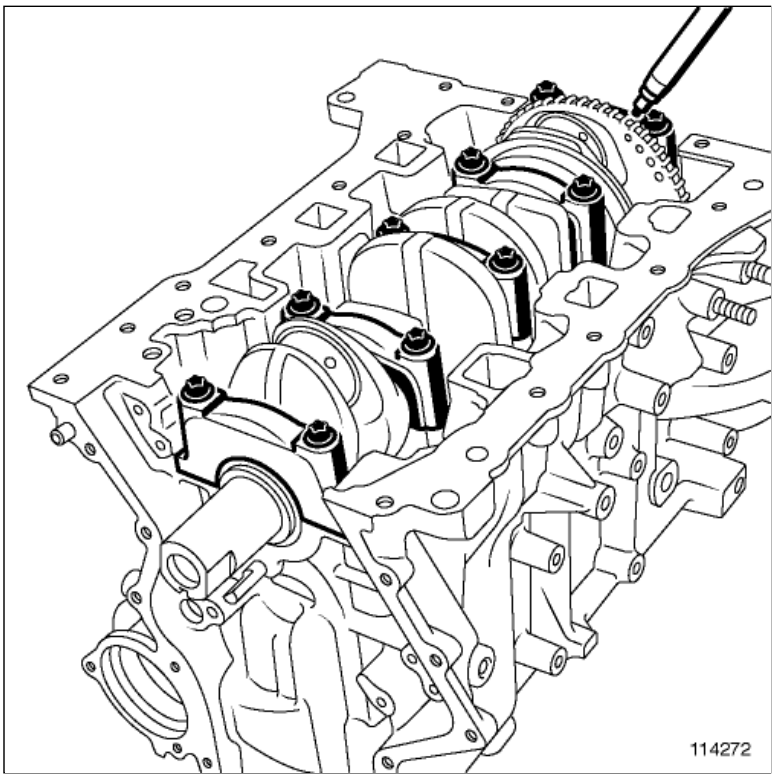
Remove:

- the oil level sensor Oil level sensor: Removal - Refitting ,
- the oil splash plate bolt,
- the oil splash plate,
- the oil pump (see **Oil pump: Removal - Refitting**) .

Remove the con rod - piston assemblies from each cylinder (see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

2. CRANKSHAFT REMOVAL OPERATION

1- REMOVING THE CRANKSHAFT



Check that the ink marking numbers from the factory on the crankshaft bearing caps are legible (bearing 1 timing end).

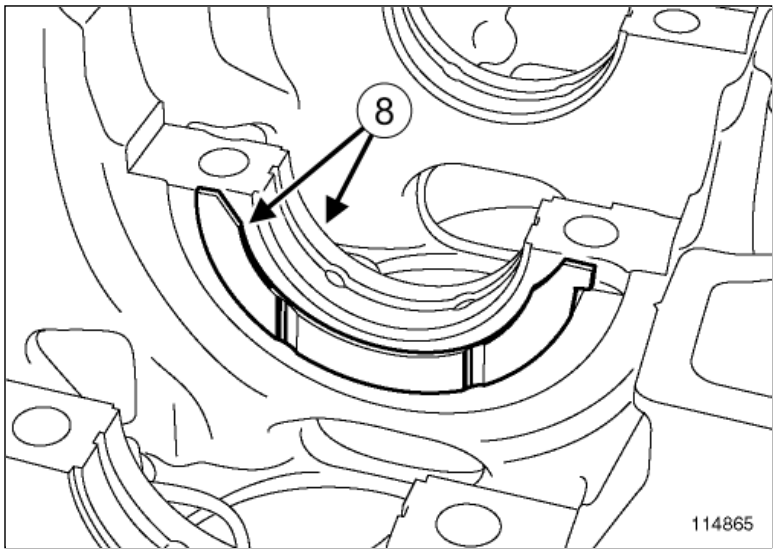
Mark the crankshaft bearing caps using a indelible pencil, if necessary.

Note:

Always mark the position of each crankshaft bearing shell using an indelible marker pen, in relation to the crankshaft bearing number.

Remove:

- the crankshaft bearing bolts,
- the crankshaft bearing caps,
- the crankshaft,
- the crankshaft bearing shells.



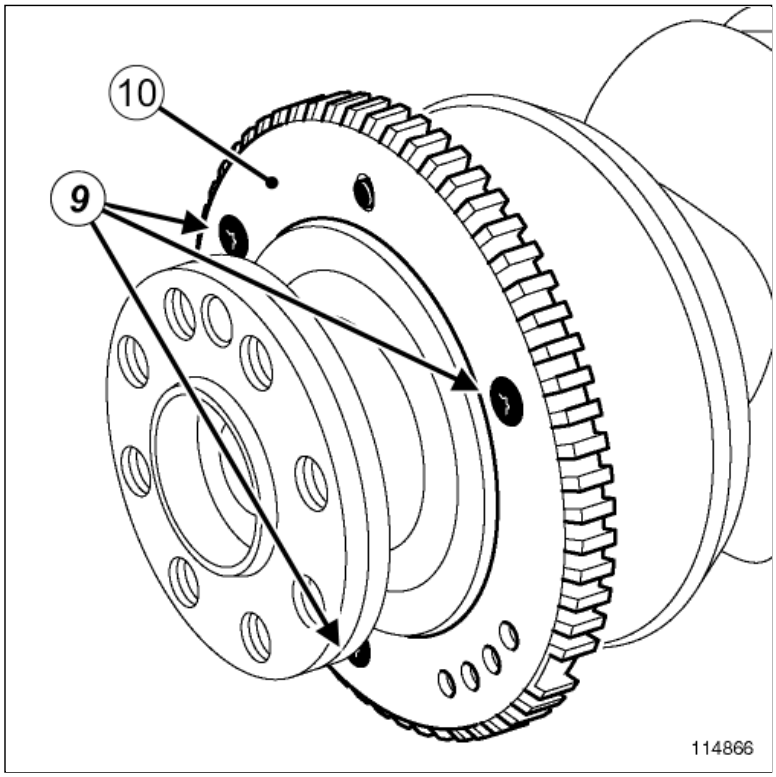
Note:

Always mark the position of each thrust washer using an indelible marker pen, in relation to the cylinder block.

- Remove the crankshaft thrust washers(8) .

2- REMOVE THE CRANKSHAFT POSITION SENSOR TARGET

- Operation only to be carried out when replacing the crankshaft or the crankshaft position sensor target.



- Remove:
  - the bolts(9) from the crankshaft position sensor target,
  - the target(10) from the crankshaft position sensor.

3- REMOVING THE CRANKSHAFT BEARING

- Operation only to be carried out when replacing the crankshaft or crankshaft bearing.

- Remove the bearing using the puller (from inside) for bearing 17 mm inner diameter.

REFITTING

1. REFITTING PREPARATION OPERATION

-

parts always to be replaced: crankshaft bearing bolt.

1- CLEANING PARTS

Note:

Avoid any impact or pressure to:

-the mating faces of the seal and bearing of the crankshaft or cylinder block,

-the mating faces of the crankshaft bearing caps.

- Use Surface Cleaner (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:
  - the crankshaft,
  - the crankshaft bearing caps,
  - the mating faces of the crankshaft journal bearing caps on the cylinder block,
  - the mating faces of the crankshaft bearing caps on the cylinder block.

WARNING

Wear goggles with side protectors for this operation.

- Dry the parts using a compressed air nozzle.

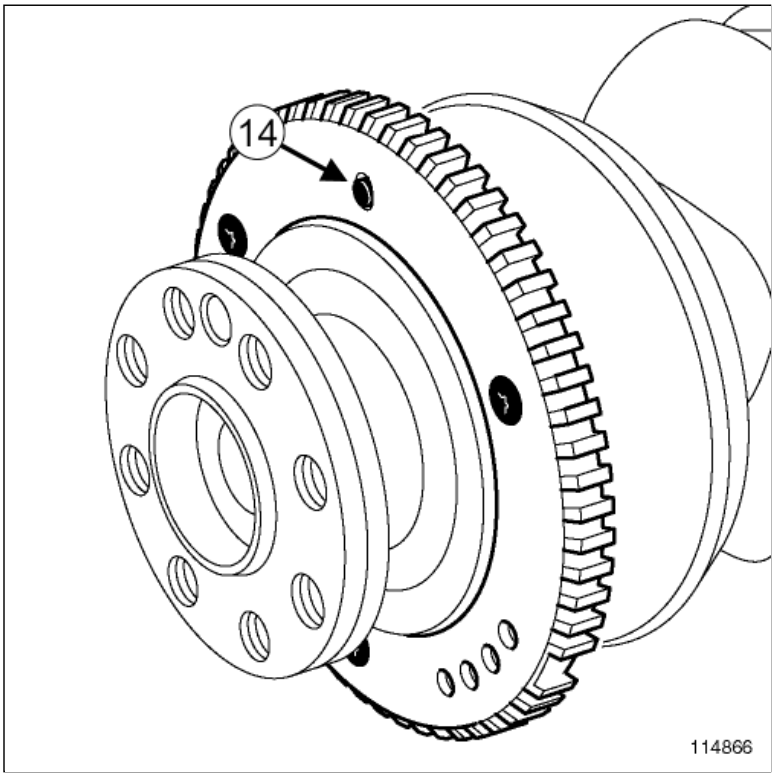
2- PREPARATION FOR REFITTING IF REPLACING THE CRANKSHAFT

- Operation only to be carried out when replacing the crankshaft or the crankshaft position sensor target.

- When replacing the crankshaft or crankshaft bearing shells, always identify the bearing shell thickness class to refit on each crankshaft bearing to ensure the journal clearances remain within the tolerances, before refitting the crankshaft (see **Crankshaft: Check**).

Note:

Any clearances of the crankshaft journal outside the tolerances can cause engine damage.



- Refit:
  - the crankshaft position sensor target by aligning the crankshaft centring pin(14) with the target hole,
  - the bolts from the crankshaft position sensor target.
- Pretighten to torque the crankshaft position sensor target bolts3 N.m.
- Torque tighten the crankshaft position sensor target bolts20 N.m.

2. CRANKSHAFT REFITTING OPERATION

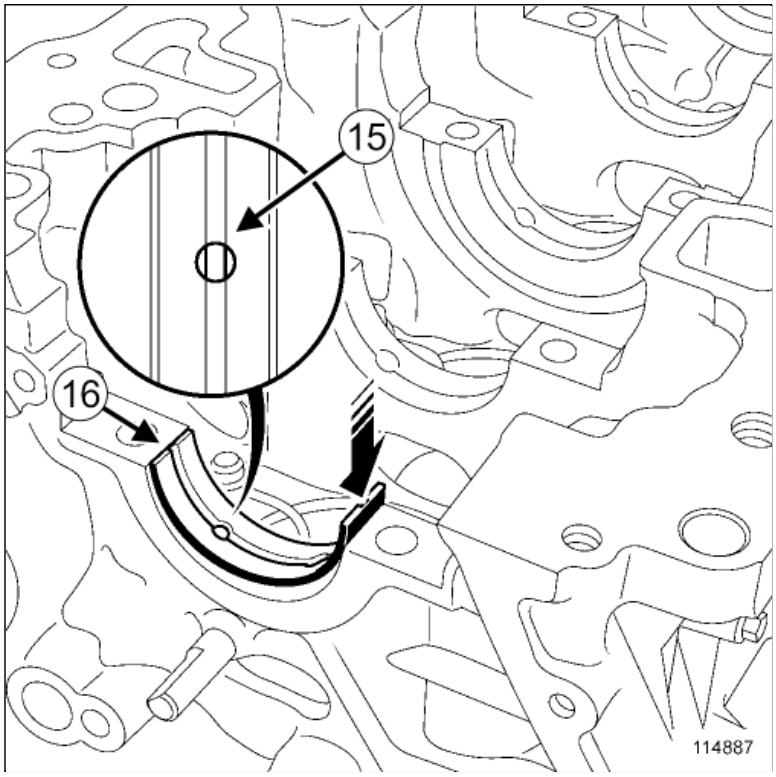
Note:

If not being replaced, refit following the marks made at the time of the removal:

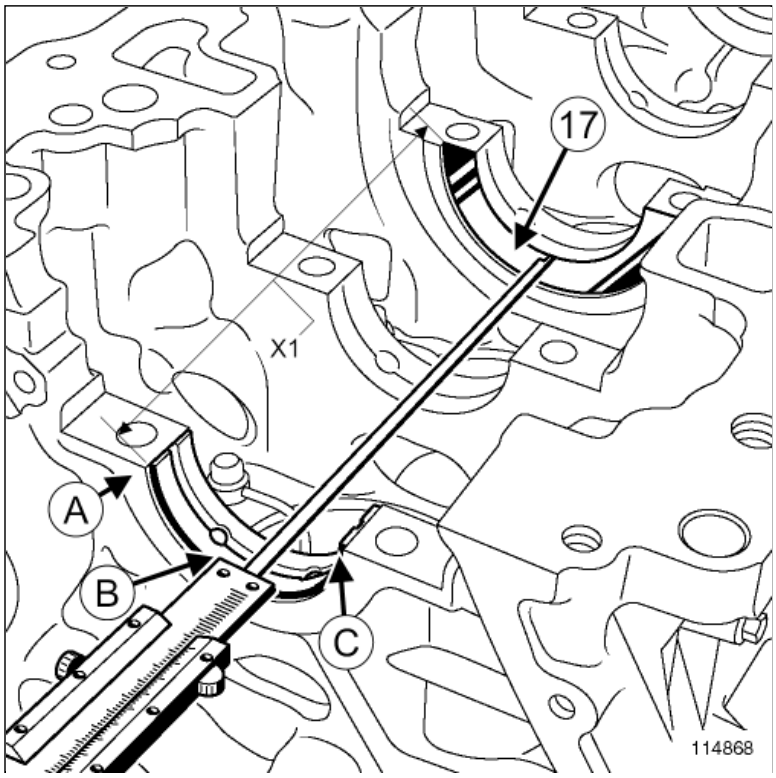
-the crankshaft bearing shells,

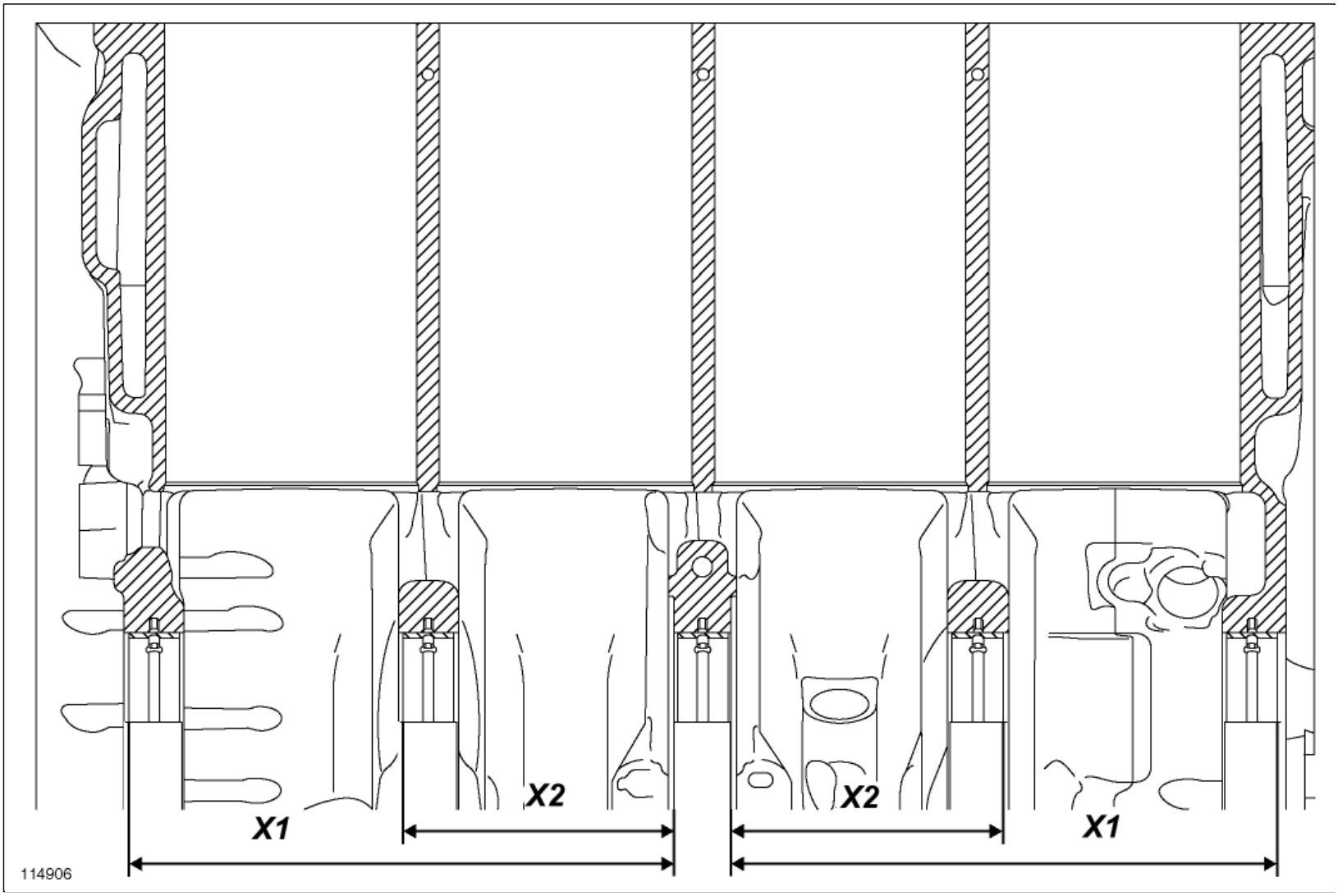
-the crankshaft thrust washers,

-the crankshaft bearing caps.

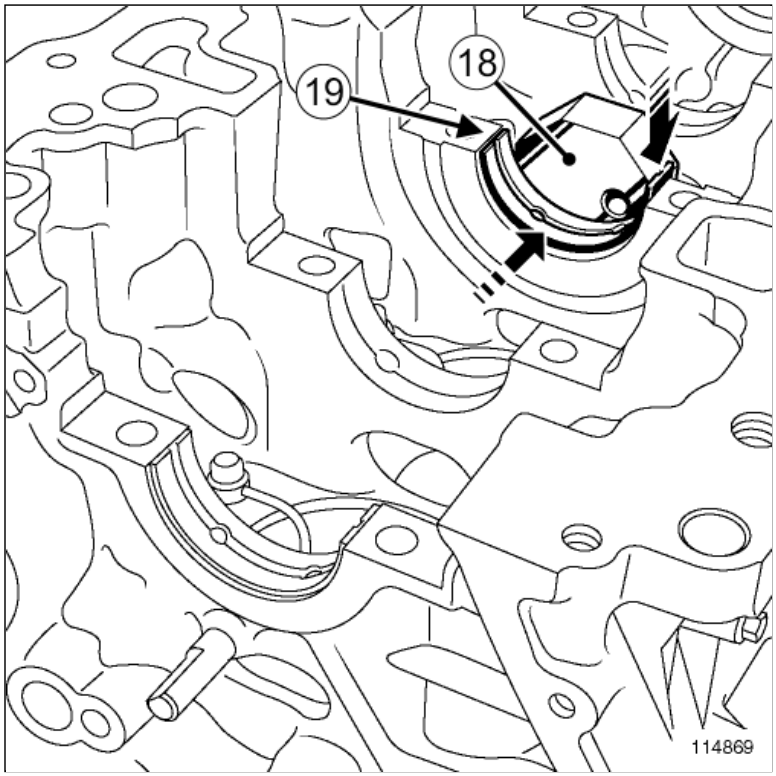


- Centre the grooved bearing shellon bearing No. 1 of the cylinder block while aligning the groove of the bearing shell with the groove of the bearing(15) .
- Secure the flush bearing shell at(16) and push from the opposite side to position the bearing shell flush with the bearing.

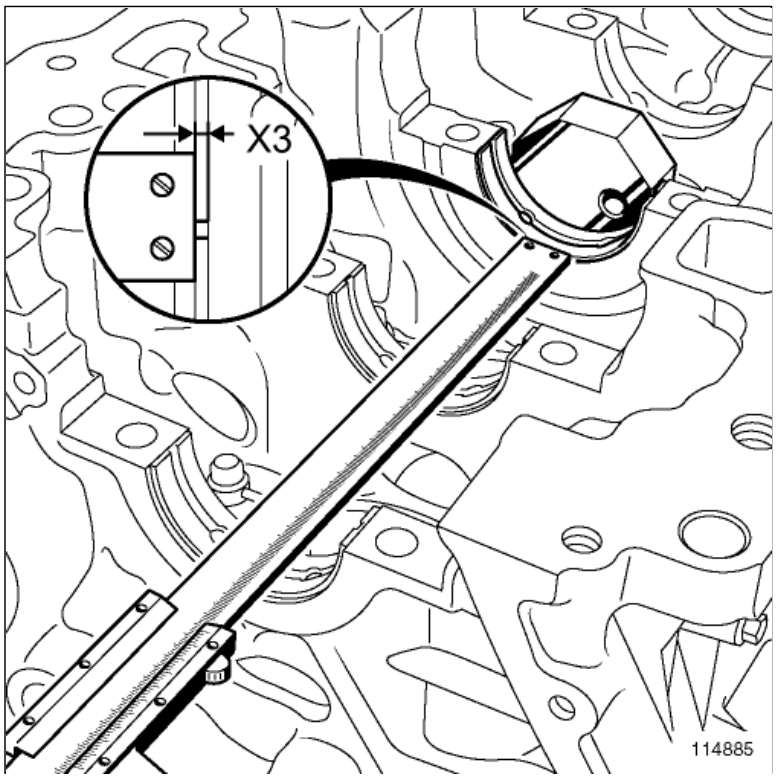




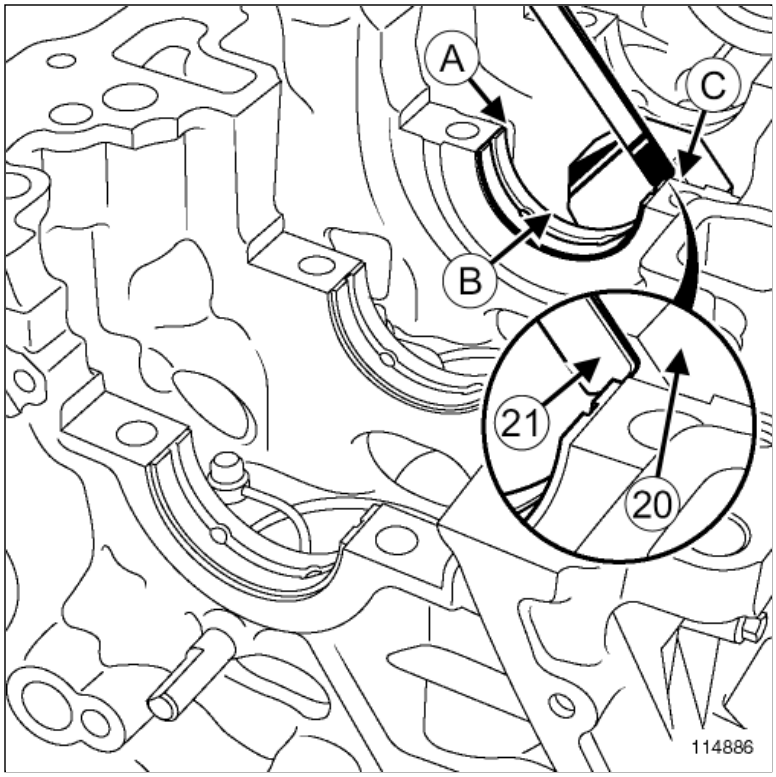
- Measure the distance(X1) between the bearing face(17) and the edge of the bearing shell at points(A) , (B) and (C) using a depth gauge.
- If necessary, adjust the position of the bearing shell to the value(X1) = 182.71 ± 0.1 mm.
- Repeat the previous operations for the bearing shells of bearings No. 2, 4 and 5.
- If necessary, adjust the position of the bearing shells:
  - of bearings No. 2 and 4 to the value(X2) = 90.71 ± 0.1 mm,
  - of bearing No. 5 to the value(X1) = 182.71 ± 0.1 mm.



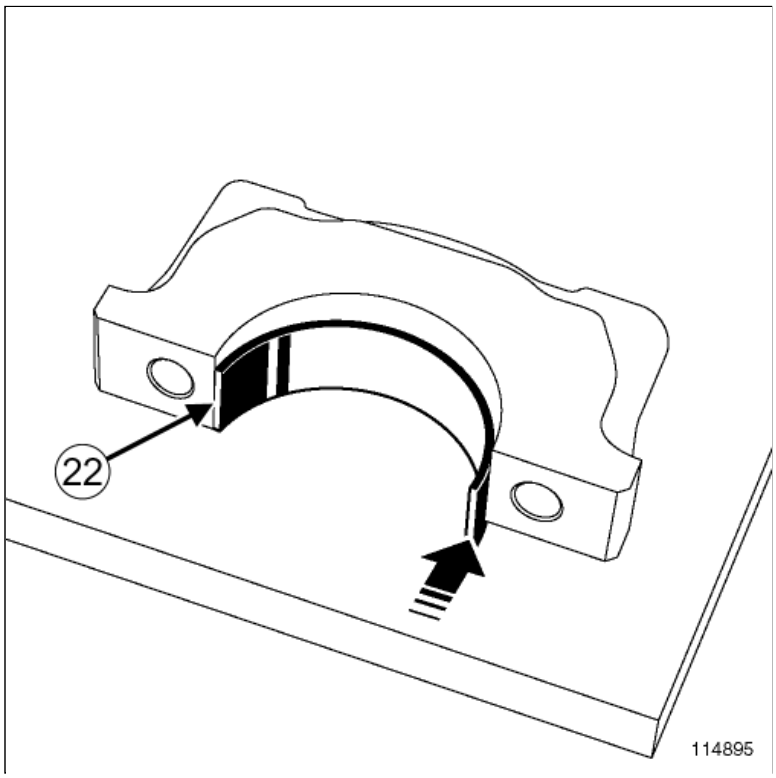
- Place:
  - a rectified shim(18) against the mating face of the crankshaft thrust washer on bearing No. 3 (e.g.: the toolDial gauge support.(Mot. 251-01)),
  - the grooved bearingshell against the rectified shim.
- Secure the flush bearing shell at(19) and push from the opposite side to position the bearing shell flush with the bearing.



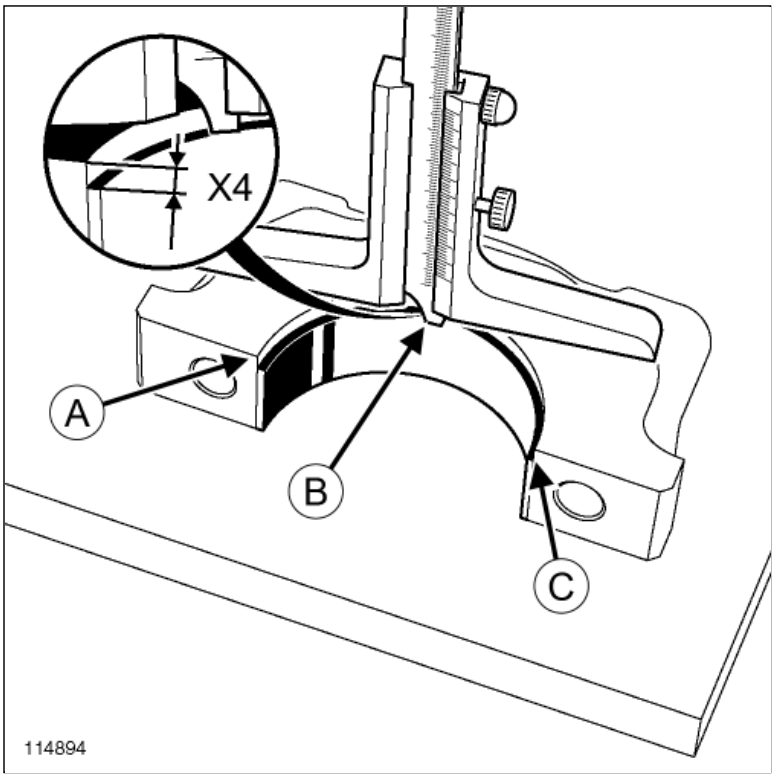
- Measure the distance(X3) between the bearing face of the thrust washer and the bearing shell edge using a depth gauge.



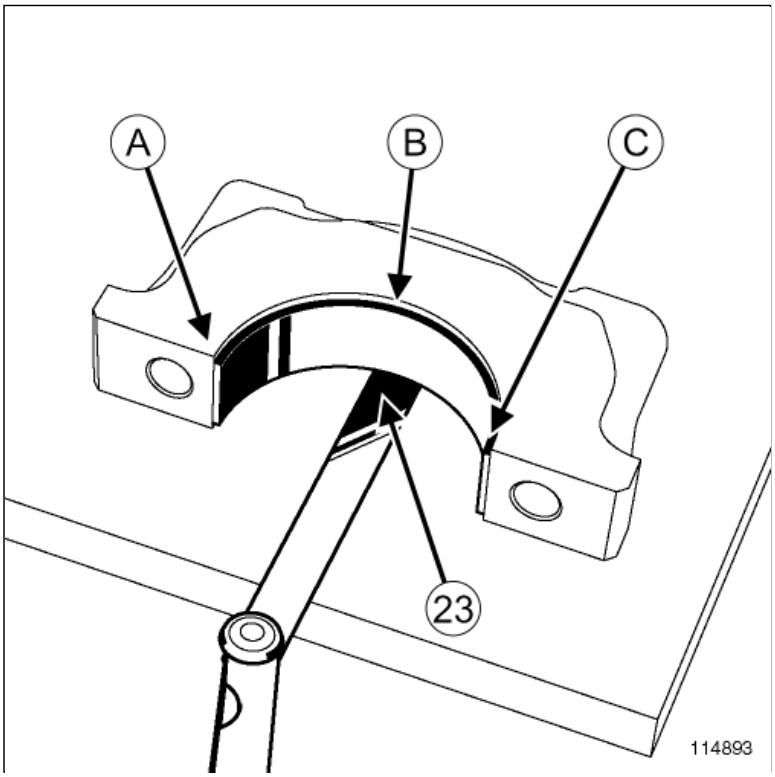
- Centre the grooved bearing shell on the bearing, aligning the bearing shell with the bearing groove.
- Adjust the position of the bearing shell at points(A) , (B) and (C) using the rectified shim(20) and a set of feeler gauges(thickness of the shim(21) = X3: 2 ± 0.1mm).



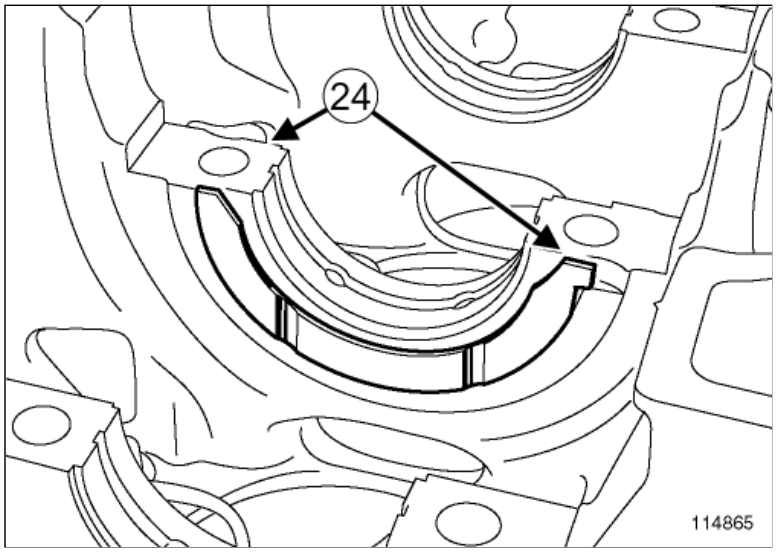
- Place:
  - the bearing cap on a bench,
  - the non-groovedbearing shell on the bench.
- Secure the flush bearing shell with the bearing cap at(22) and push from the opposite side to bring the bearing shell flush with the bearing cap.



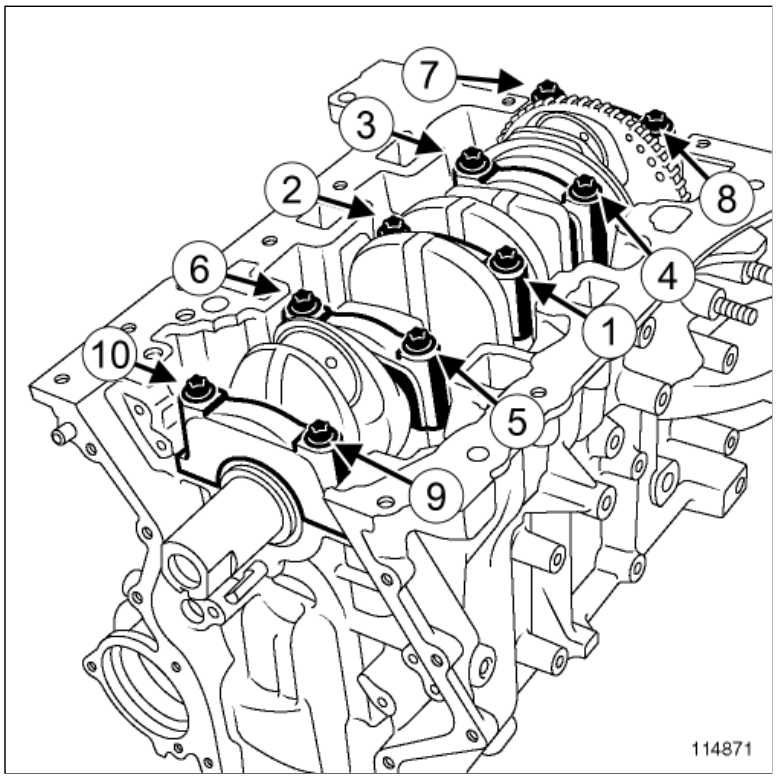
- Measure the distance(X4) between the edge of the bearing shell and the wall of the bearing cap at points(A) , (B) and (C) using a depth gauge.



- Adjust the position of the bearing shell at points(A) , (B) and (C) using a set of feeler gauges(thickness of the shim(23) = X4: 2 ± 0.1 mm).
- Repeat the previous operations for the other bearing caps.



- Position the crankshaft thrust washers on the cylinder block (washer lug(24) in the cylinder block notch).
- Use engine oil to lubricate the crankshaft journal bearing shells and thrust washers (only the face making contact with the crankshaft).



Note:

Ensure the bearing shells and the thrust washers do not move when refitting the crankshaft and bearing caps.

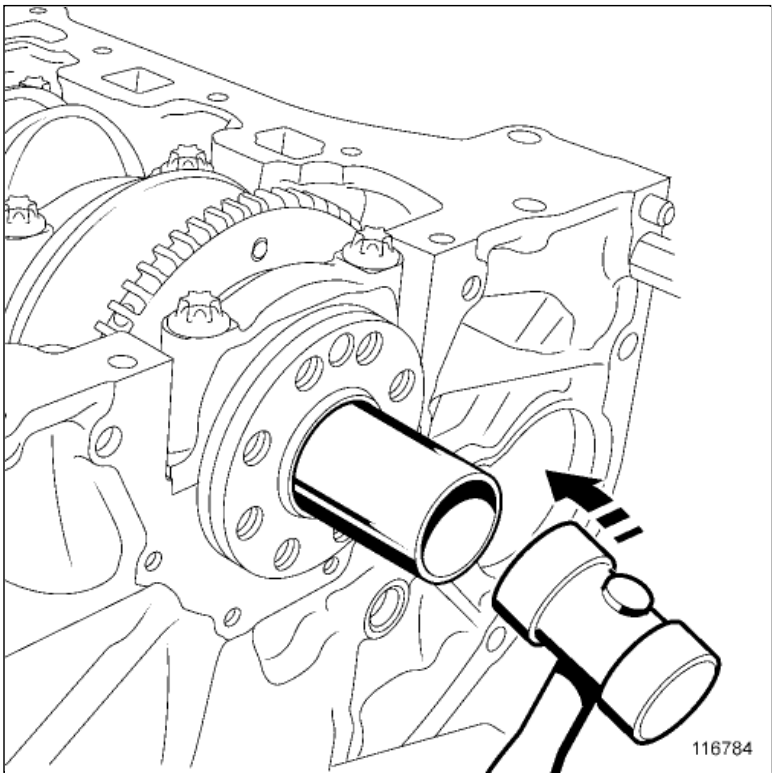
- Refit:
  - the crankshaft,
  - the bearing caps,
  - the new crankshaft bearing bolts.

Note:

Check that the bearing caps are in contact with the cylinder block before tightening the bearing cap bolts.

- Tighten to torque, to angle and in order the crankshaft bearing bolts20 N.m + 70˚ ± 6˚.

Check that the crankshaft turns freely, with no resistance.



Operation only to be carried out when replacing the crankshaft or crankshaft bearing.

Fit the new crankshaft bearing using a spacer of diameter 39 mm.

3. FINAL OPERATION

If replacing the crankshaft, always identify the piston height category to refit in each cylinder to guarantee that the piston protrusion in relation to the cylinder block remains within the tolerances, before refitting the con rod - piston assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

Refit the con rod - piston assemblies onto each cylinder(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

If replacing the crankshaft, always check that the piston protrusion in relation to the cylinder block remains within the tolerances after refitting the con rod - piston assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

Refit:

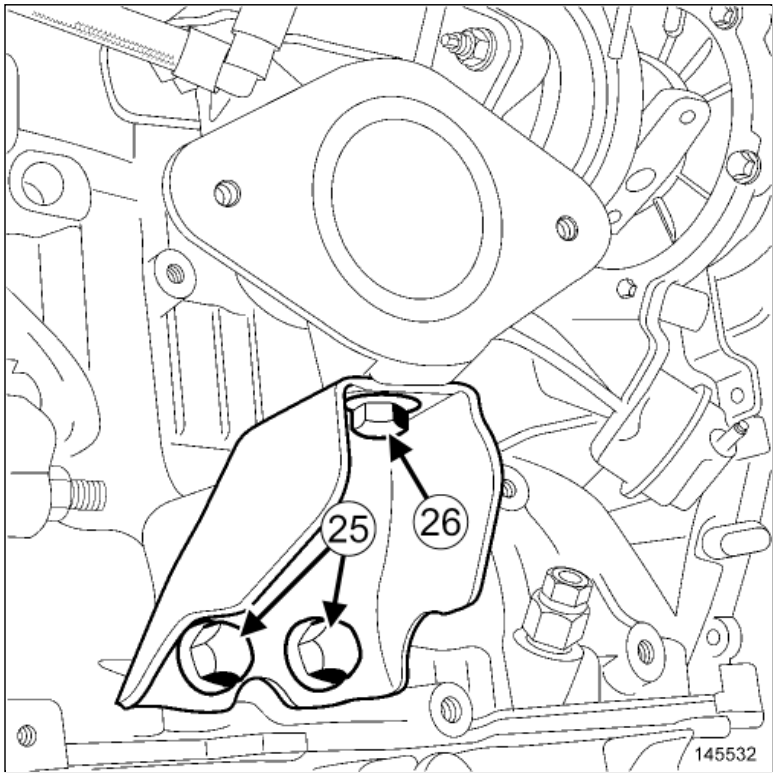
- the oil pump(see **Oil pump: Removal - Refitting**) ,
- the oil splash plate,
- the oil level sensorOil level sensor: Removal - Refitting .

Refit:

- the cylinder block base plate(see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) ,
- the sumpLower cover: Removal - Refitting ,
- a newcrankshaft seal on the gearbox sideCrankshaft seal, gearbox end: Removal - Refitting .

Refit:

- the oil filter unitOil filter unit: Removal - Refitting ,
- the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) .



Refit the turbocharger strut.

Fit without tightening:

- the turbocharger strut lower bolts(25) ,
- the turbocharger strut upper bolt(26) .

Torque tighten:

- the turbocharger strut lower bolts25 N.m,
- the turbocharger strut upper bolt25 N.m.

Connect the coolant hose at the inlet of the exhaust gas cooler.

Fit the clip on the coolant hose at the inlet of the exhaust gas cooler using the toolRemote operation pliers for hose clips.(Mot. 1448) .

Refit the exhaust gas cooler bolts.

Refit the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) .

Fit the control solenoid valve support for the 5th injector.

Refit the bolts to the control solenoid valve support of the 5th injector.

Refit:

- the diesel injectorsDiesel injector: Removal - Refitting ,
- the newhigh pressure pipes between the injector rail and the injectorsHigh pressure pipe between rail and injector: Removal - Refitting ,
- the diesel return railDiesel injector fuel return rail: Removal - Refitting ,
- the oil decanterOil decanter: Removal - Refitting ,
- a newhigh pressure pipe between the pump and the railHigh pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pumpVacuum pump: Removal - Refitting (37A, Mechanical component controls),
- new turbocharger oil pipes Turbocharger oil pipe: Removal - Refitting ,
- depending on version, the turbocharger outlet catalytic pre-converter or catalytic converterCatalytic pre-converter: Removal - Refitting orCatalytic converter: Removal - Refitting ,
- the damper valve.

Refit the dipstick guide.

X43, M9R, 804 811 817 824 839 844 846(804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (678 OR 680 OR 696 OR 880 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (630 OR 692) AND (721 OR 722 OR 724) AND (754 OR 800 OR 802 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

- Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

- Refit the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

- Refit a new crankshaft seal at the timing end Crankshaft seal on timing end: Removal - Refitting .

- Immobilise the flywheel or the drive plate while fitting the Flywheel locking tool. (Mot. 1431) on the cylinder block.

- Refit:
  - the crankshaft accessories pulley Crankshaft accessories pulley: Removal - Refitting ,
  - the coolant pump Coolant pump: Removal - Refitting ,
  - a new accessories belt Accessories belt: Removal - Refitting .

- Remove:
  - the tool Flywheel locking tool. (Mot. 1431) ,
  - the engine from the component support (see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

- Refit the engine - gearbox assembly.

- Top up the engine oil Engine oil: Draining - Refilling .

CRANKSHAFT SEAL ON TIMING END: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**Timing assembly: Exploded view** .

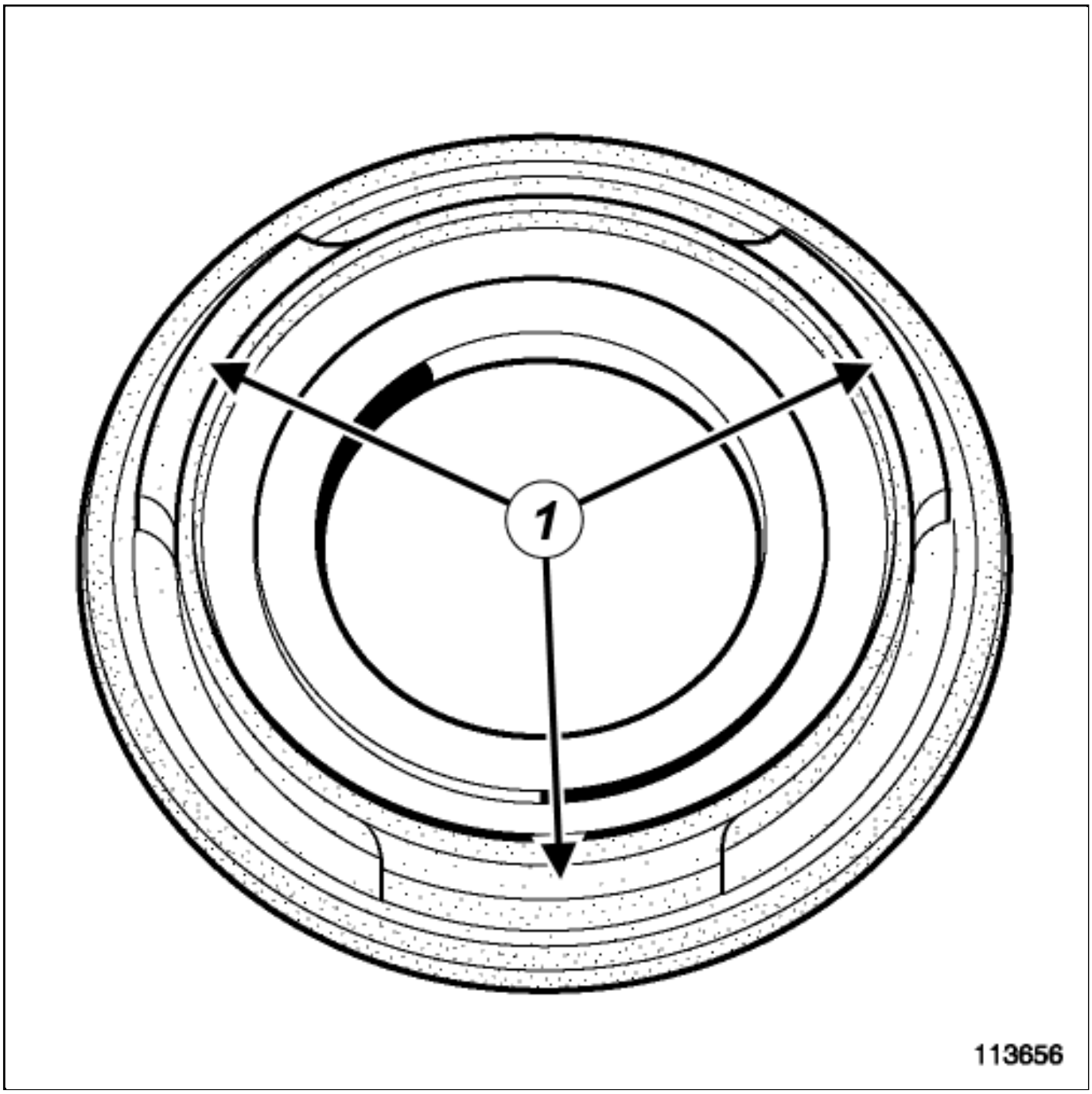
REMOVAL

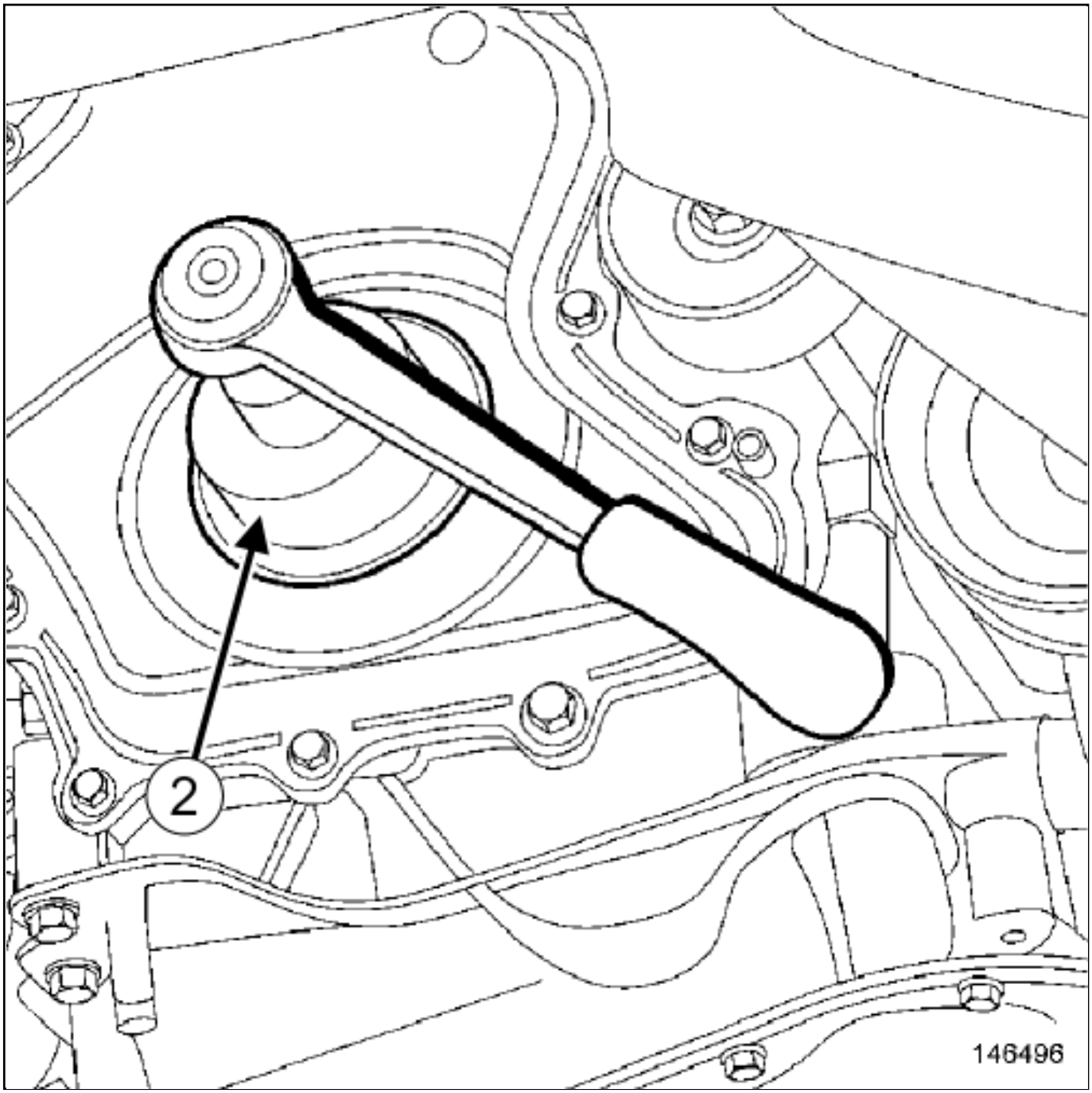
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the accessories belt,
  - the crankshaft accessories pulley.

2. REMOVAL OPERATION


1
113656



- Fit the lugs of the(2) into the crankshaft seal notches(1) .

Note:

The tool(2) is included in the spare parts kit of the new seal.

- Remove the crankshaft seal.

REFITTING

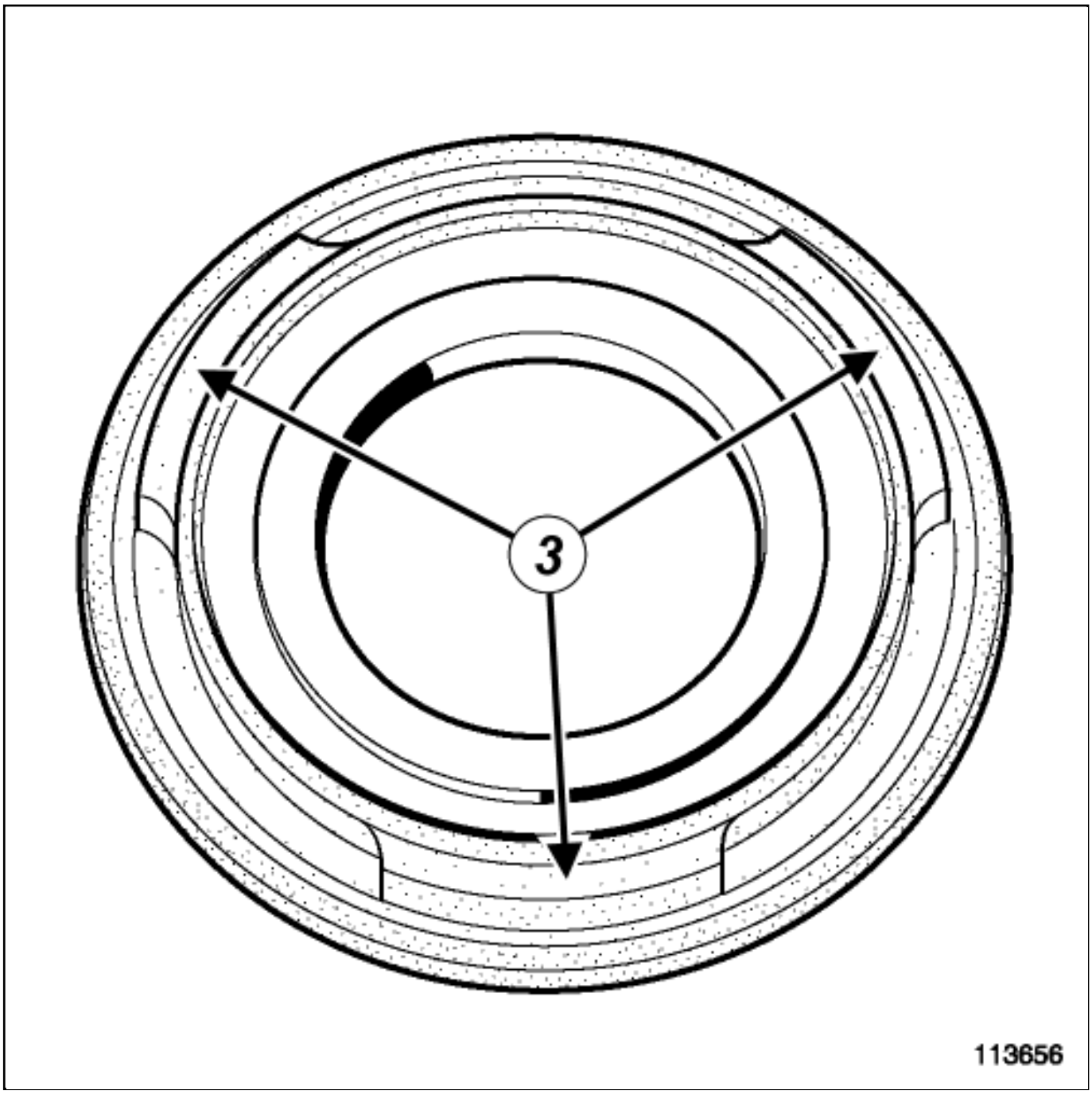
1. REFITTING PREPARATION OPERATION

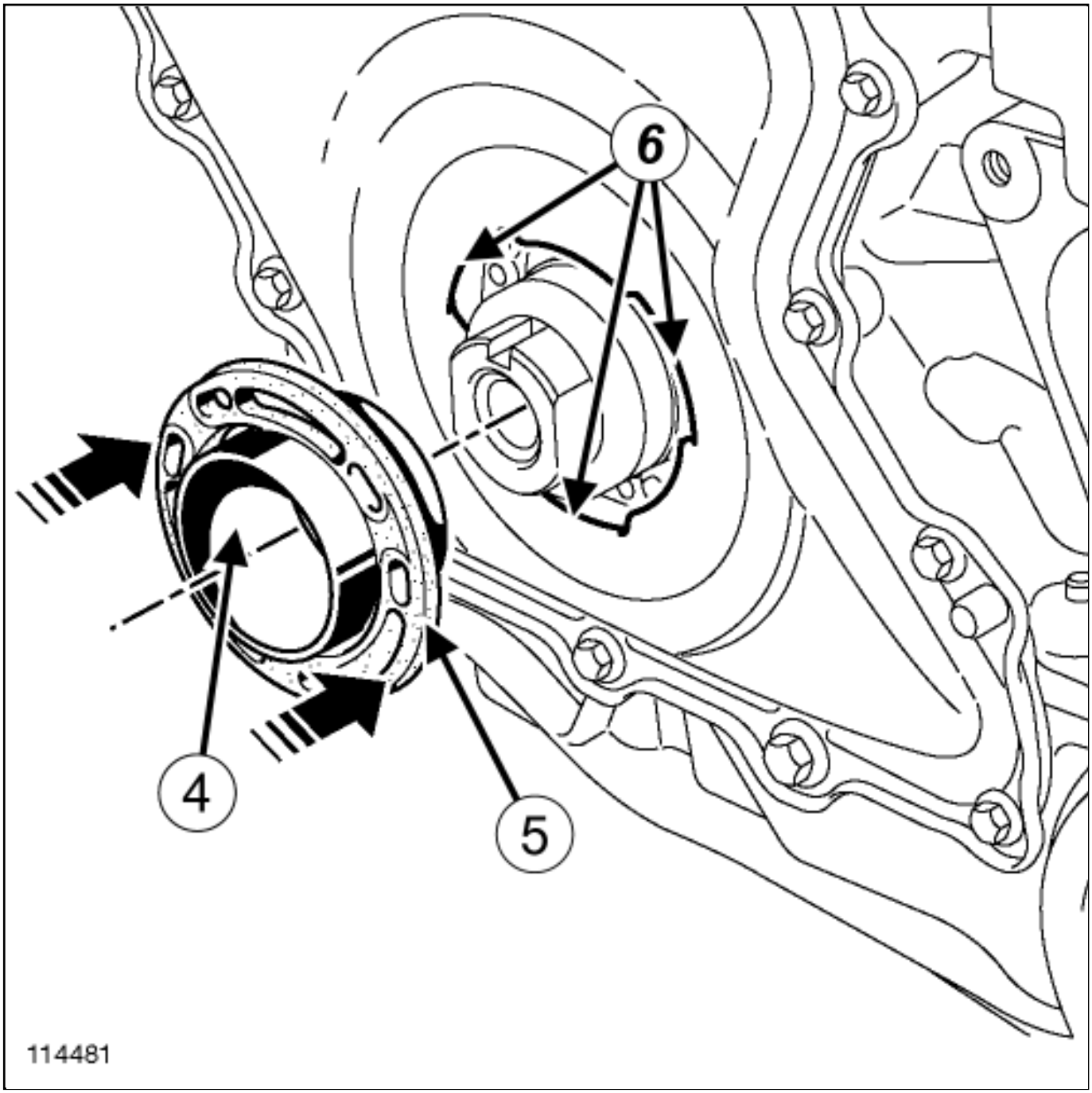
- Clean and degrease the mating face of the crankshaft seal using surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

2. REFITTING OPERATION


3
113656

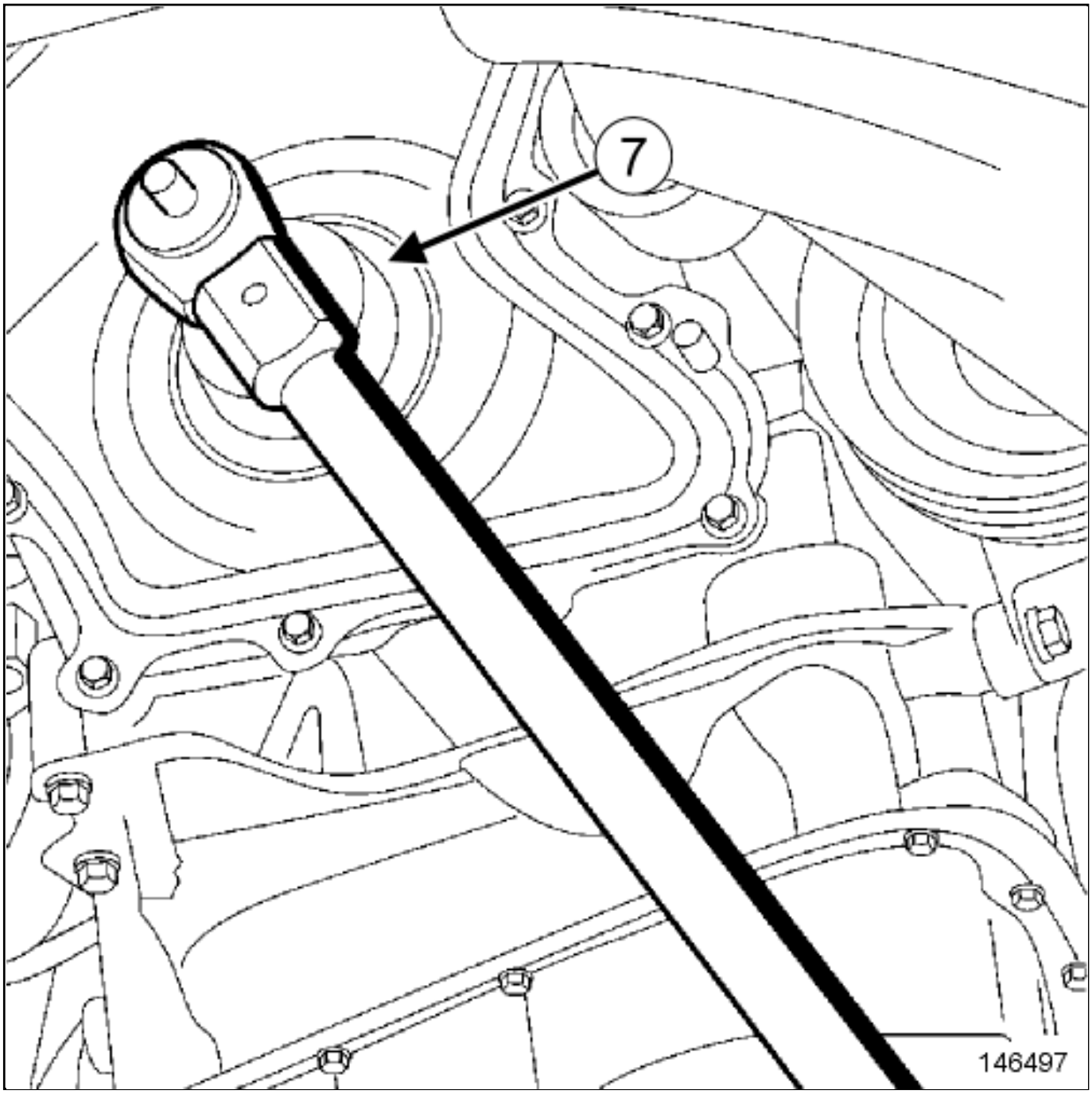


- Place the new “fitting protector(4) - crankshaft seal(5) ” assembly on the crankshaft.

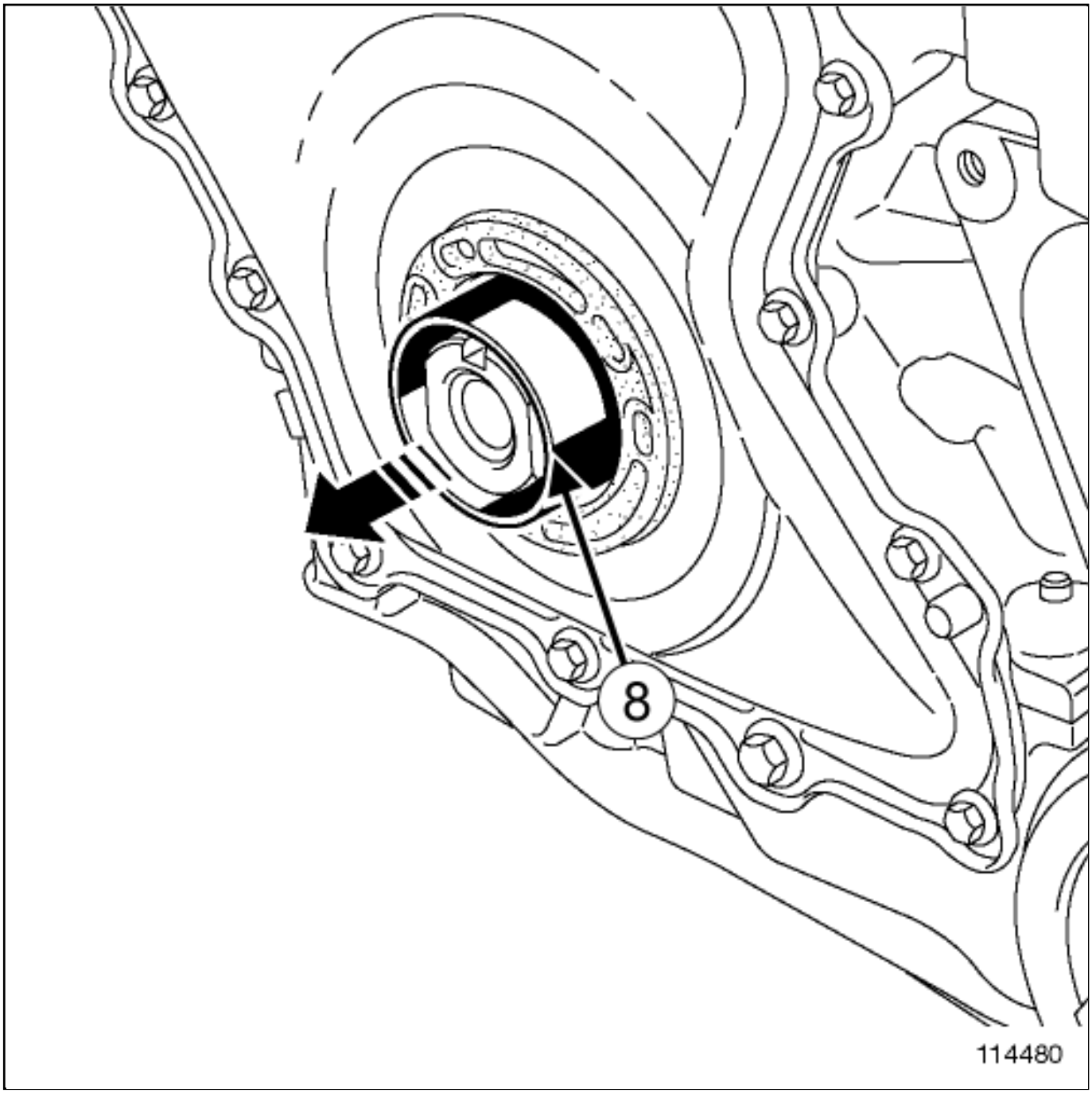
Note:

Touching the lip of the crankshaft seal is strictly forbidden. Any contact with it will result in the lip being permanently damaged, which will cause an oil leak.

- Align the notches(3) on the crankshaft seal with the timing cover notches(6) .



- Tighten using the tool(7) included in the spare parts kit of the new crankshaft seal.



- Remove the crankshaft seal fitting protector(8) .

3. FINAL OPERATION

- Proceed in the reverse order to removal.

CRANKSHAFT SEAL, GEARBOX END: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).
- Remove:
  - the gearbox**Gearbox assembly: Exploded view** ,
  - the clutch pressure plate**Clutch assembly: Exploded view** ,
  - the flywheel**(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)** .

2. REMOVAL OPERATION

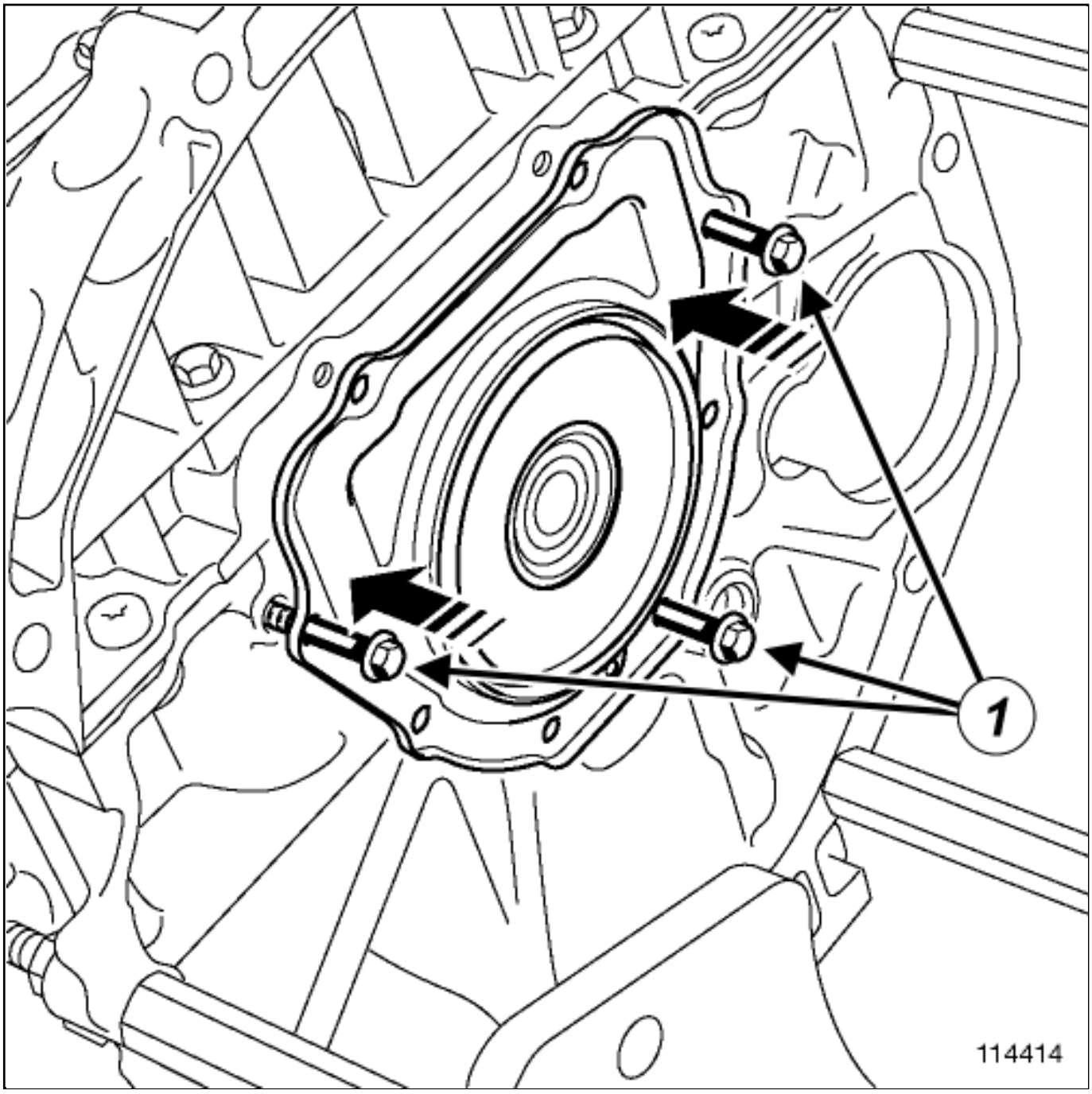
- Remove the crankshaft seal on the gearbox end**(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)** .

REFITTING

1. REFITTING PREPARATION OPERATION

- Degrease and clean the following using surface cleaner**Vehicle: Parts and consumables for the repair** :
  - the crankshaft seal face on the cylinder block at the gearbox end,
  - the mating face of the crankshaft seal on the crankshaft at the gearbox end.

2. REFITTING OPERATION



Note:

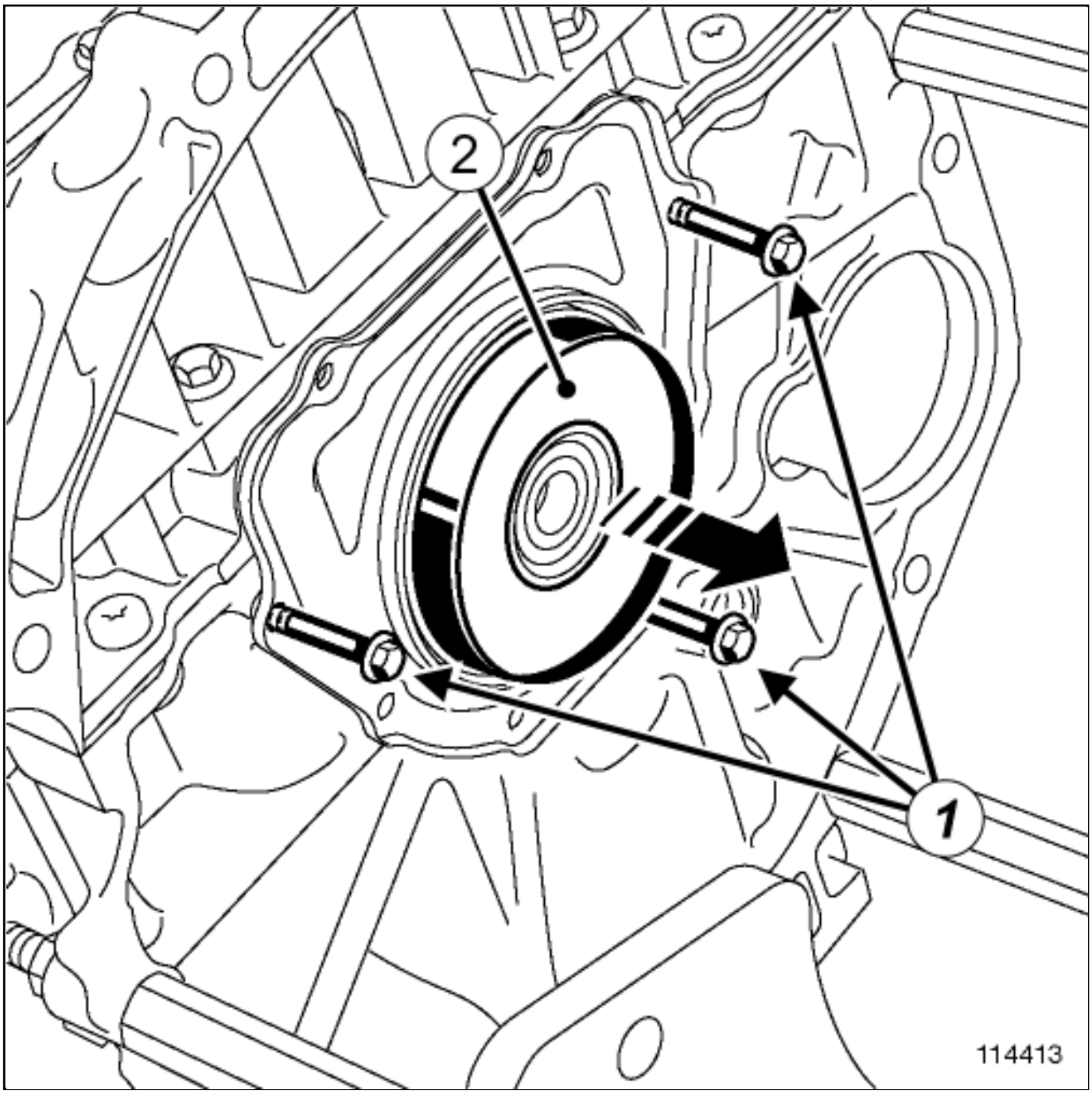
Touching the lip of the seal is strictly forbidden. Any contact with it will result in the lip being permanently damaged, which will cause an oil leak.

Refit:

- the "seal protector - new crankshaft seal on gearbox end" assembly on the crankshaft nose,

- the guide bolts(1) (M6 - 90 mm long) of the crankshaft seal on the gearbox end.

Finger tighten uniformly by hand the crankshaft seal on the gearbox end until it makes contact with the cylinder block.



Remove:

- the crankshaft seal protector on the gearbox end,
- the guide bolts(1) .

Fit without tightening until contact, the bolts of the crankshaft seal on the gearbox end.

- Tighten the crankshaft seal on the gearbox end(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) .

3. FINAL OPERATION

- Proceed in the reverse order to removal.

CRANKSHAFT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Tightening torques	
turbocharger strut lower bolts	25 N.m
turbocharger strut upper bolt	25 N.m

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Dial gauge support.	Mot. 251-01
Flywheel locking tool.	Mot. 1431

Equipment required
component support
puller (from inside)
depth gauge
indelible pencil
compressed air nozzle
set of feeler gauges

parts always to be replaced:
crankshaft bearing bolt

REMOVAL

1. REMOVAL PREPARATION OPERATION

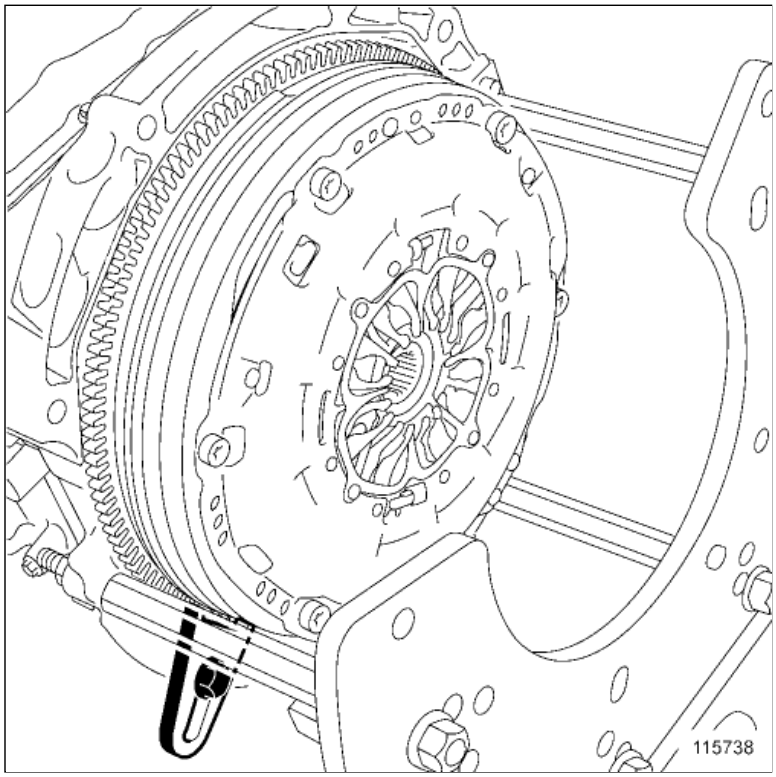
CAUTION

- It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump will irreparably damage the engine by:
  - blocking the strainer,
  - raising the oil level above maximum, with a risk of engine racing.

Note:

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see 10A, Engine and cylinder block assembly, Engine: Precautions for the repair) .

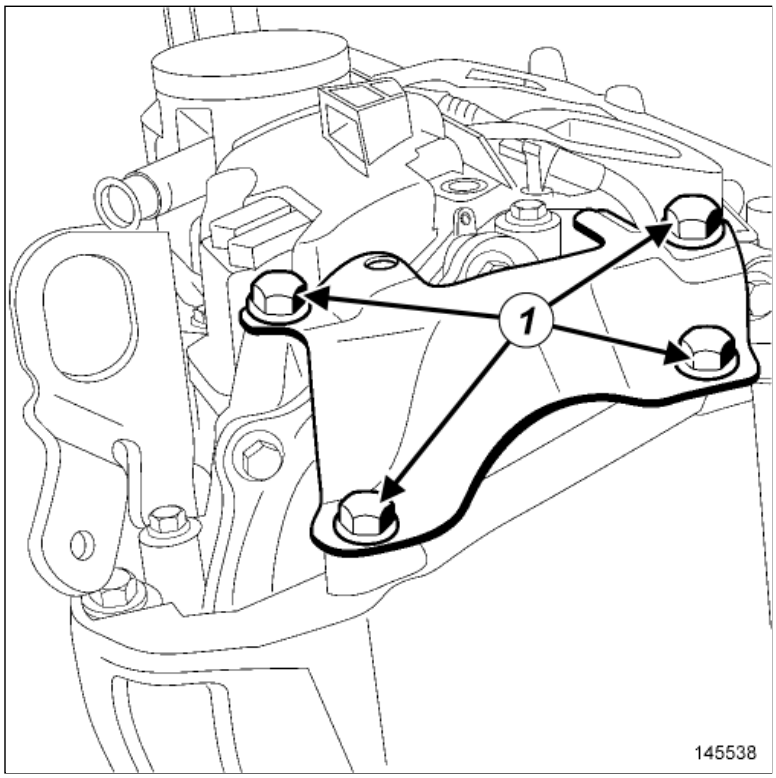
- Remove the engine - gearbox assembly.
- Position the engine on the component support (see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .
- Drain the engine Engine oil: Draining - Refilling .
- Remove:
  - the accessories belt Accessories belt: Removal - Refitting ,
  - the coolant pump Coolant pump: Removal - Refitting .



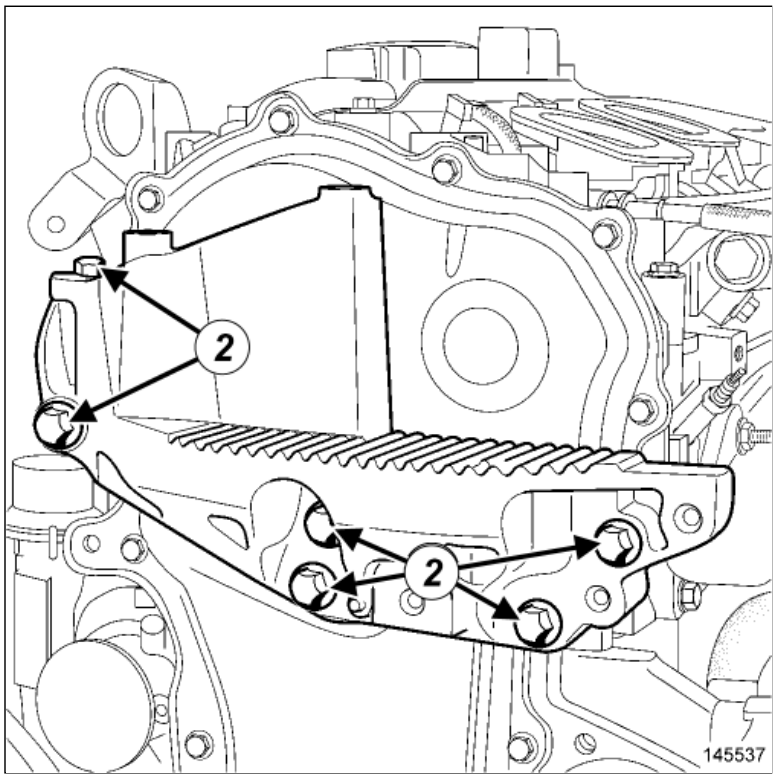
- Immobilise the flywheel or the drive plate while fitting theFlywheel locking tool.(Mot. 1431) on the cylinder block.

- Remove:
  - the crankshaft accessories pulleyCrankshaft accessories pulley: Removal - Refitting ,
  - the crankshaft seal on the timing sideCrankshaft seal on timing end: Removal - Refitting .

- Remove the engine lifting eye at the timing endLifting eyes: Removal - Refitting .



- Remove:
  - the bolts(1) of the engine mounting strut,
  - the engine mounting strut.

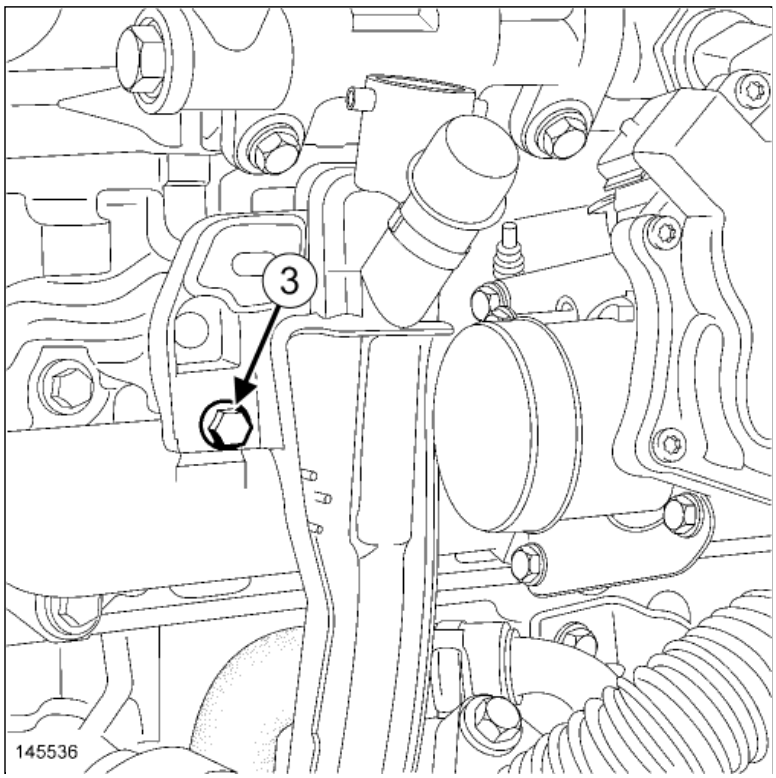


- Remove:
  - the bolts(2) from the cylinder head suspended mounting,
  - the cylinder head suspended mounting.

- Remove the timing chain(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

X43, M9R, 804 811 817 824 839 844 846(804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (678 OR 680 OR 696 OR 880 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (630 OR 692) AND (721 OR 722 OR 724) AND (754 OR 800 OR 802 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

- Remove the exhaust gas pressure sensorExhaust gas pressure sensor: Removal - Refitting .

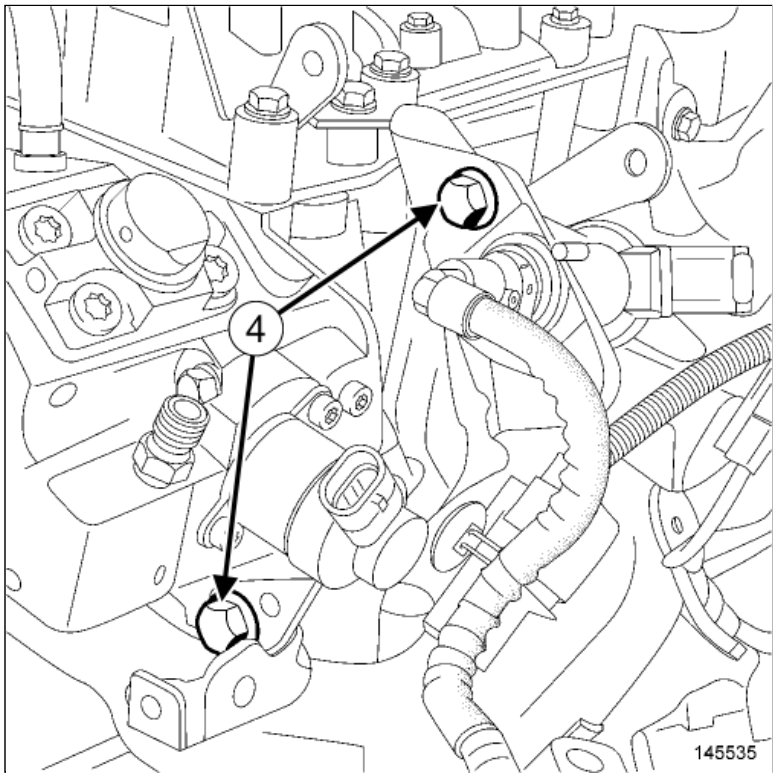


- Remove:

- the dipstick guide bolt(3) ,
- the dipstick guide.

Remove:

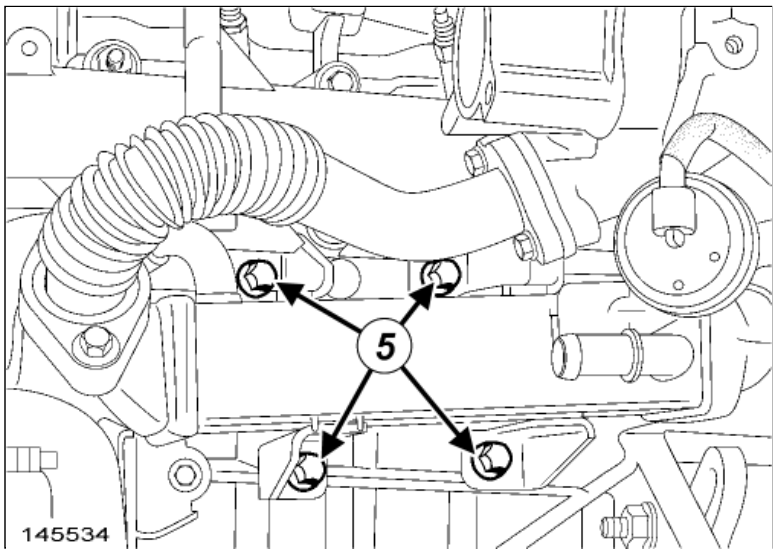
- the damper valve,
- depending on version, the turbocharger outlet catalytic pre-converter or catalytic converterCatalytic pre-converter: Removal - Refitting orCatalytic converter: Removal - Refitting ,
- the turbocharger oil pipesTurbocharger oil pipe: Removal - Refitting ,
- the vacuum pumpVacuum pump: Removal - Refitting (37A, Mechanical component controls),
- the high pressure pipe between the pump and the railHigh pressure pipe between pump and rail: Removal - Refitting ,
- the oil decanterOil decanter: Removal - Refitting ,
- the diesel return railDiesel injector fuel return rail: Removal - Refitting ,
- the high pressure pipes between the rail and the injectorsHigh pressure pipe between rail and injector: Removal - Refitting ,
- the diesel injectorsDiesel injector: Removal - Refitting .



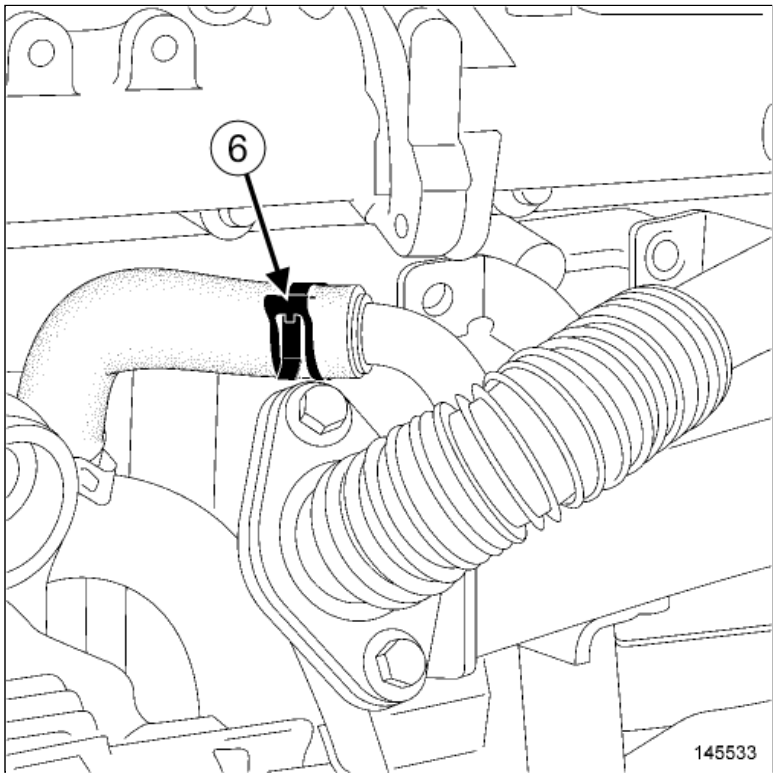
Remove the bolts(4) from the control solenoid valve support of the 5th injector.

Move the support of the control solenoid valve away from the 5th injector.

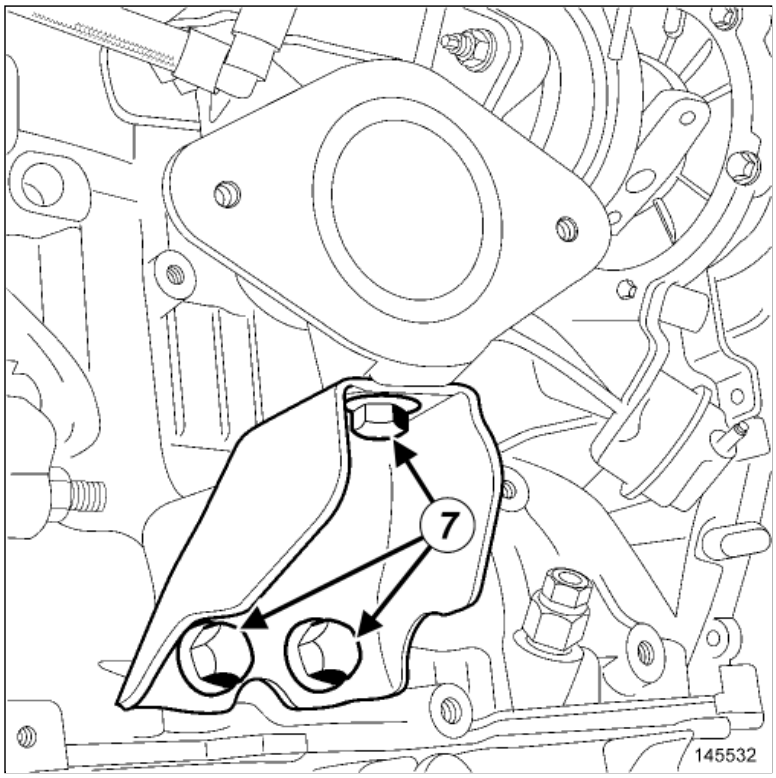
Remove the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) .



- Remove the bolts(5) from the exhaust gas cooler.



- Separate the clip (6) on the coolant hose at the inlet of the exhaust gas cooler using the toolRemote operation pliers for hose clips.(Mot. 1448) .
- Disconnect the coolant hose at the inlet of the exhaust gas cooler.



- Remove:
  - the bolts(7) from the turbocharger strut,
  - the turbocharger strut.

- Remove:
  - the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
  - the oil filter unitOil filter unit: Removal - Refitting .

Remove:

- the gearbox side crankshaft seal Crankshaft seal, gearbox end: Removal - Refitting ,
- the sump Lower cover: Removal - Refitting ,
- the cylinder block base plate (see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) .

X62, M9T, 700 702(700 OR 702)

Remove:

- the cylinder head (see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the clutch Pressure plate - Disc: Removal - Refitting ,
- the flywheel Flywheel: Removal - Refitting ,
- the gearbox side crankshaft seal Crankshaft seal, gearbox end: Removal - Refitting ,
- the sump Cylinder block assembly: Exploded view ,
- the cylinder block base plate Cylinder block assembly: Exploded view ,

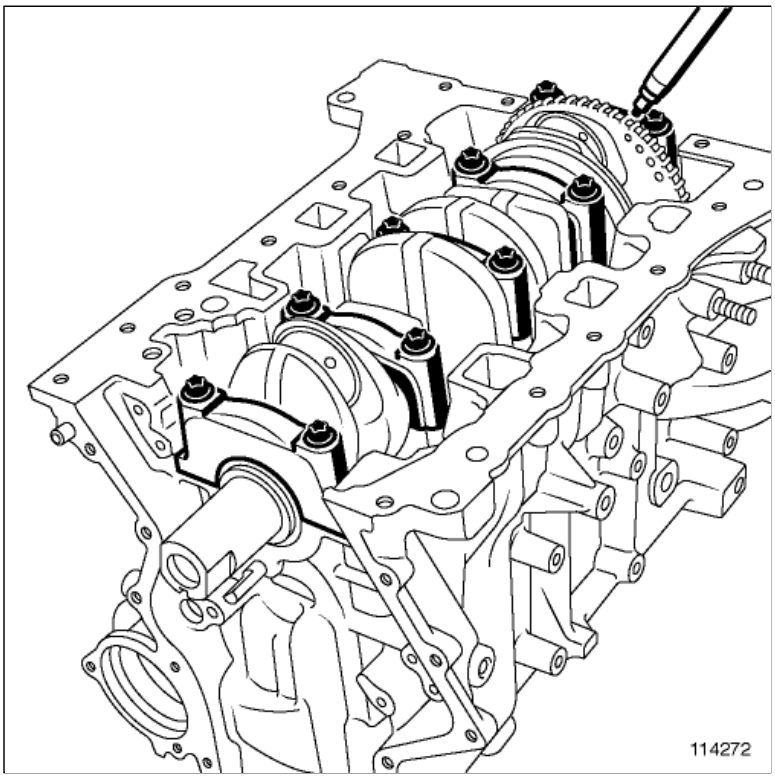
Remove:

- the oil level sensor Oil level sensor: Removal - Refitting ,
- the oil splash plate bolt,
- the oil splash plate,
- the oil pump (see **Oil pump: Removal - Refitting**) .

Remove the con rod - piston assemblies from each cylinder (see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

2. CRANKSHAFT REMOVAL OPERATION

1- REMOVING THE CRANKSHAFT



Check that the ink marking numbers from the factory on the crankshaft bearing caps are legible (bearing 1 timing end).

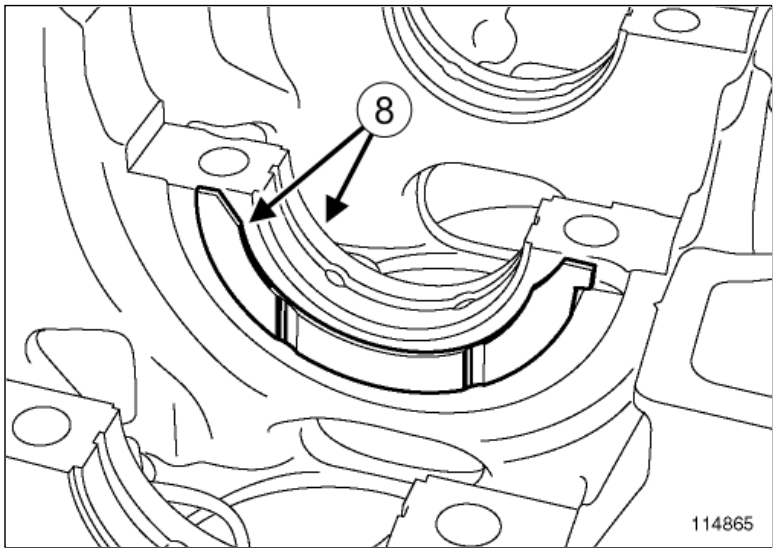
Mark the crankshaft bearing caps using a indelible pencil, if necessary.

Note:

Always mark the position of each crankshaft bearing shell using an indelible marker pen, in relation to the crankshaft bearing number.

Remove:

- the crankshaft bearing bolts,
- the crankshaft bearing caps,
- the crankshaft,
- the crankshaft bearing shells.



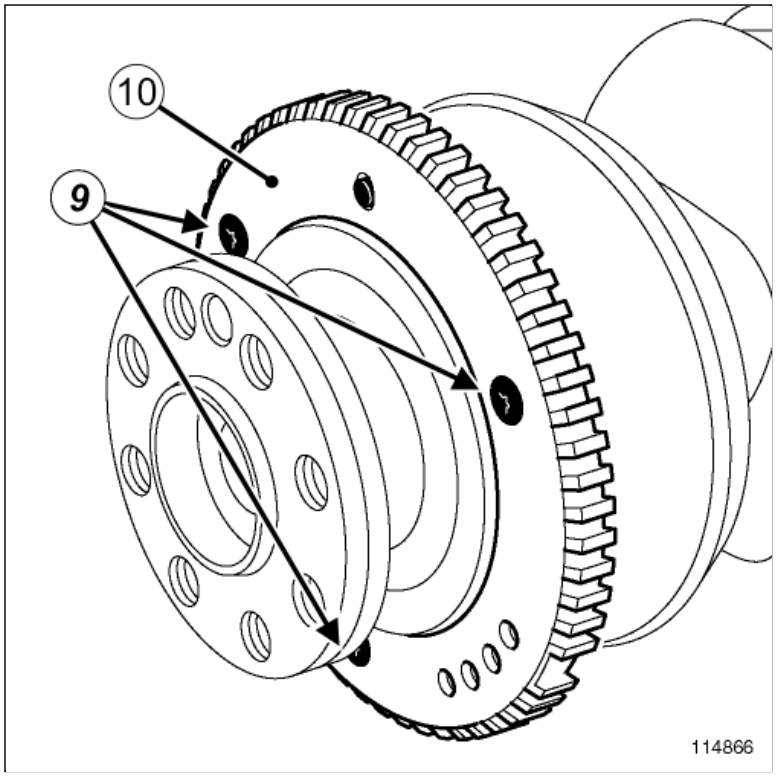
Note:

Always mark the position of each thrust washer using an indelible marker pen, in relation to the cylinder block.

- Remove the crankshaft thrust washers(8) .

2- REMOVE THE CRANKSHAFT POSITION SENSOR TARGET

- Operation only to be carried out when replacing the crankshaft or the crankshaft position sensor target.



- Remove:
  - the bolts(9) from the crankshaft position sensor target,
  - the target(10) from the crankshaft position sensor.

3- REMOVING THE CRANKSHAFT BEARING

- Operation only to be carried out when replacing the crankshaft or crankshaft bearing.

- Remove the bearing using the puller (from inside) for bearing 17 mm inner diameter.

REFITTING

1. REFITTING PREPARATION OPERATION

-

parts always to be replaced: crankshaft bearing bolt.

1- CLEANING PARTS

Note:

Avoid any impact or pressure to:

-the mating faces of the seal and bearing of the crankshaft or cylinder block,

-the mating faces of the crankshaft bearing caps.

- Use Surface Cleaner (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:
  - the crankshaft,
  - the crankshaft bearing caps,
  - the mating faces of the crankshaft journal bearing caps on the cylinder block,
  - the mating faces of the crankshaft bearing caps on the cylinder block.

WARNING

Wear goggles with side protectors for this operation.

- Dry the parts using a compressed air nozzle.

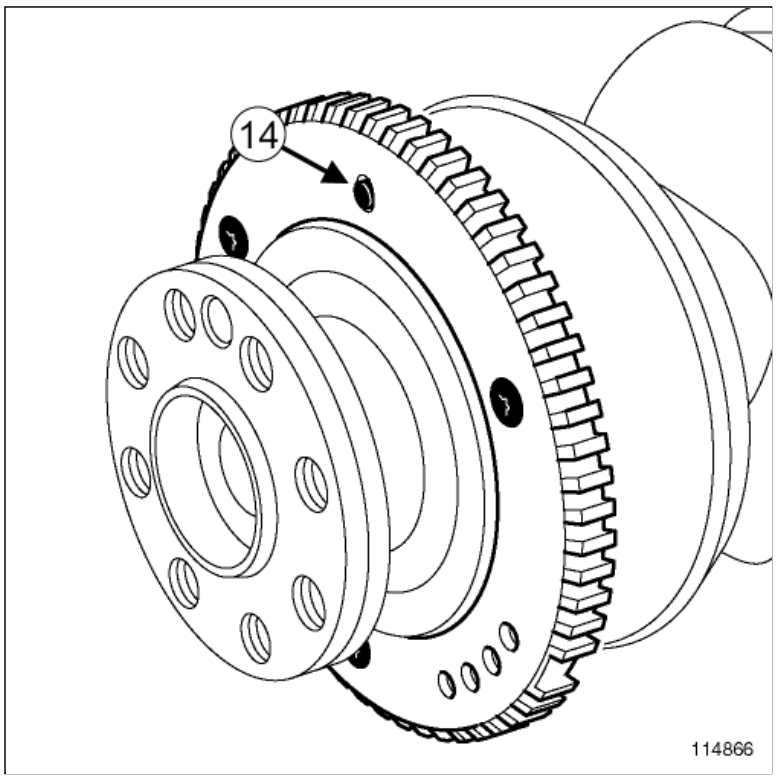
2- PREPARATION FOR REFITTING IF REPLACING THE CRANKSHAFT

- Operation only to be carried out when replacing the crankshaft or the crankshaft position sensor target.

- When replacing the crankshaft or crankshaft bearing shells, always identify the bearing shell thickness class to refit on each crankshaft bearing to ensure the journal clearances remain within the tolerances, before refitting the crankshaft (see **Crankshaft: Check**) .

Note:

Any clearances of the crankshaft journal outside the tolerances can cause engine damage.



- Refit:
  - the crankshaft position sensor target by aligning the crankshaft centring pin(14) with the target hole,
  - the bolts from the crankshaft position sensor target.
- Pretighten to torque the crankshaft position sensor target bolts3 N.m.
- Torque tighten the crankshaft position sensor target bolts20 N.m.

2. CRANKSHAFT REFITTING OPERATION

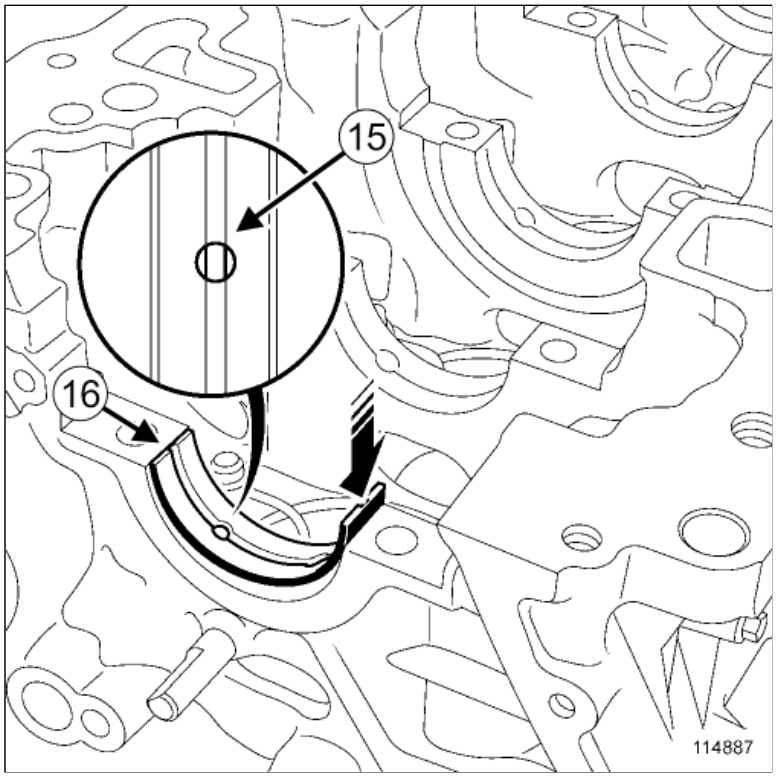
Note:

If not being replaced, refit following the marks made at the time of the removal:

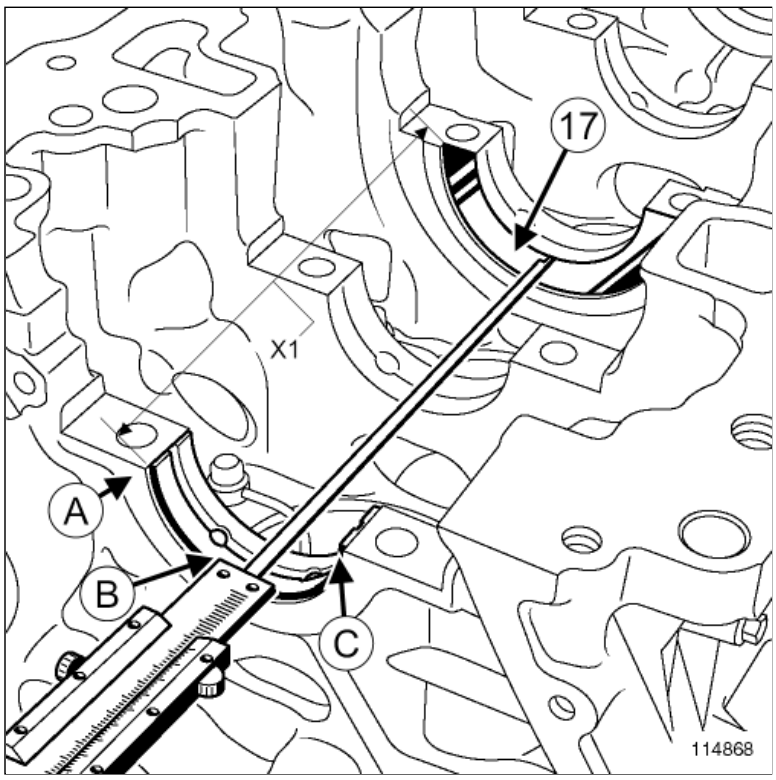
-the crankshaft bearing shells,

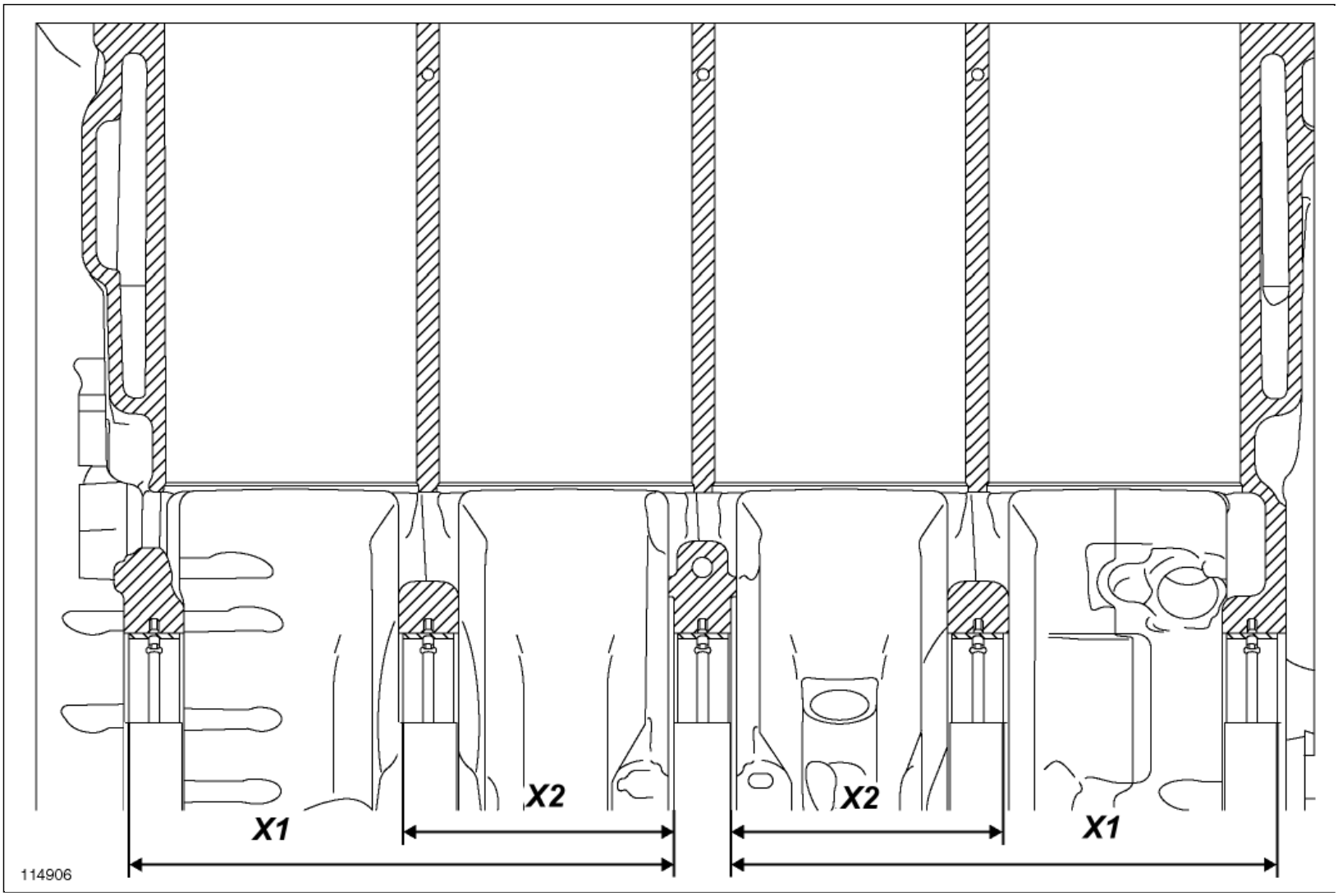
-the crankshaft thrust washers,

-the crankshaft bearing caps.

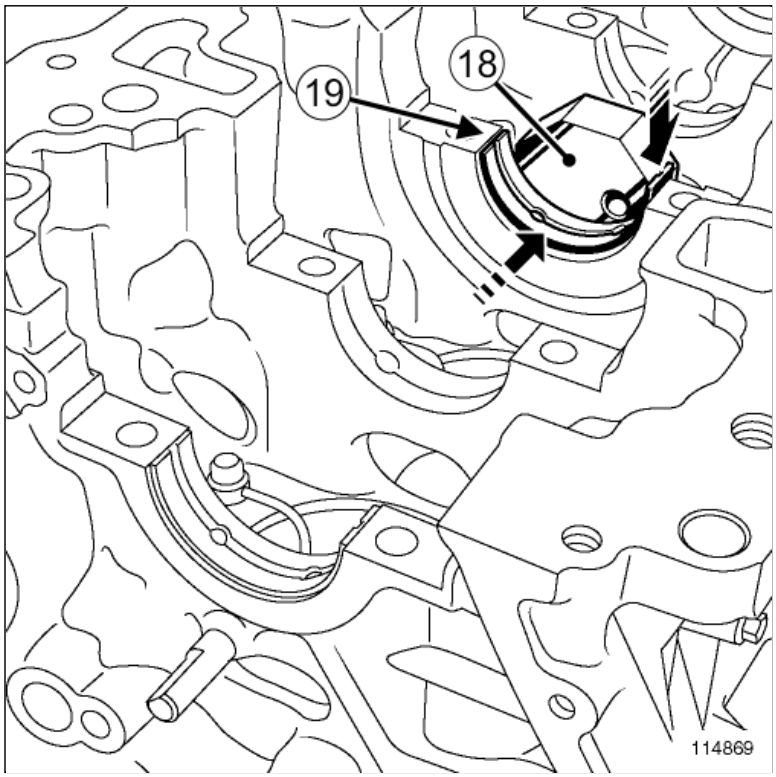


- Centre the grooved bearing shellon bearing No. 1 of the cylinder block while aligning the groove of the bearing shell with the groove of the bearing(15) .
- Secure the flush bearing shell at(16) and push from the opposite side to position the bearing shell flush with the bearing.

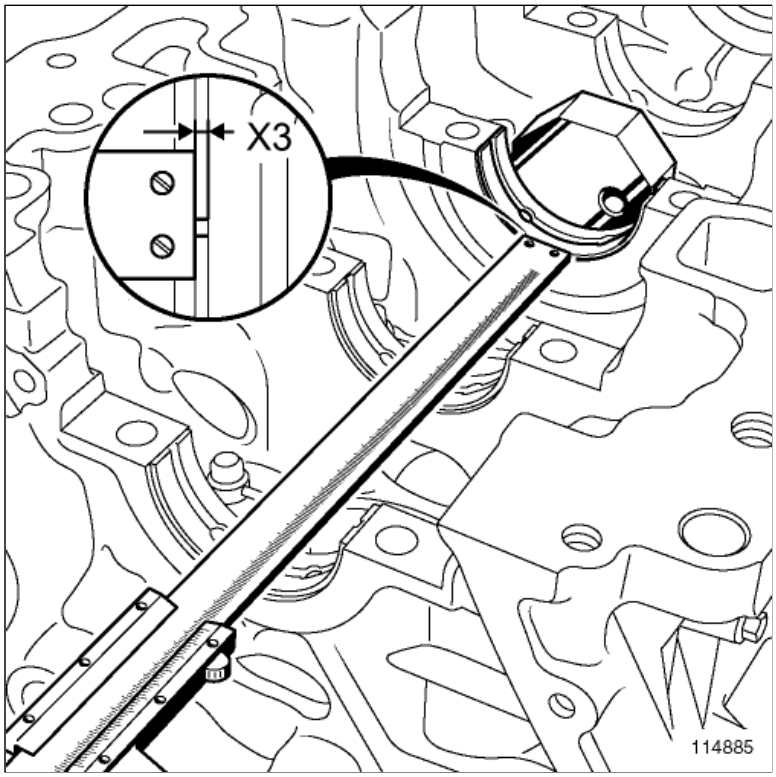




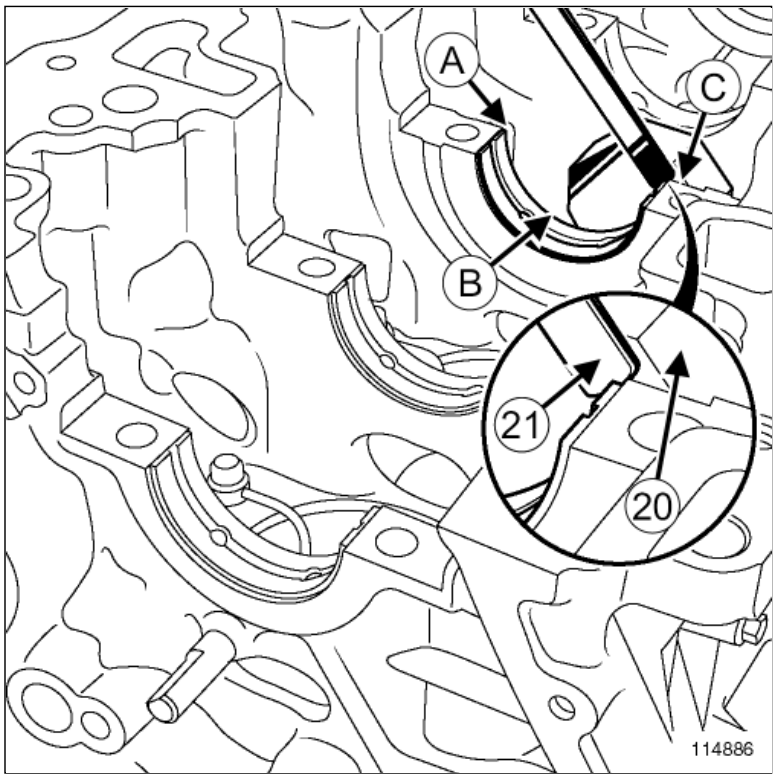
- Measure the distance(X1) between the bearing face(17) and the edge of the bearing shell at points(A) , (B) and (C) using a depth gauge.
- If necessary, adjust the position of the bearing shell to the value(X1) = 182.71 ± 0.1 mm.
- Repeat the previous operations for the bearing shells of bearings No. 2, 4 and 5.
- If necessary, adjust the position of the bearing shells:
  - of bearings No. 2 and 4 to the value(X2) = 90.71 ± 0.1 mm,
  - of bearing No. 5 to the value(X1) = 182.71 ± 0.1 mm.



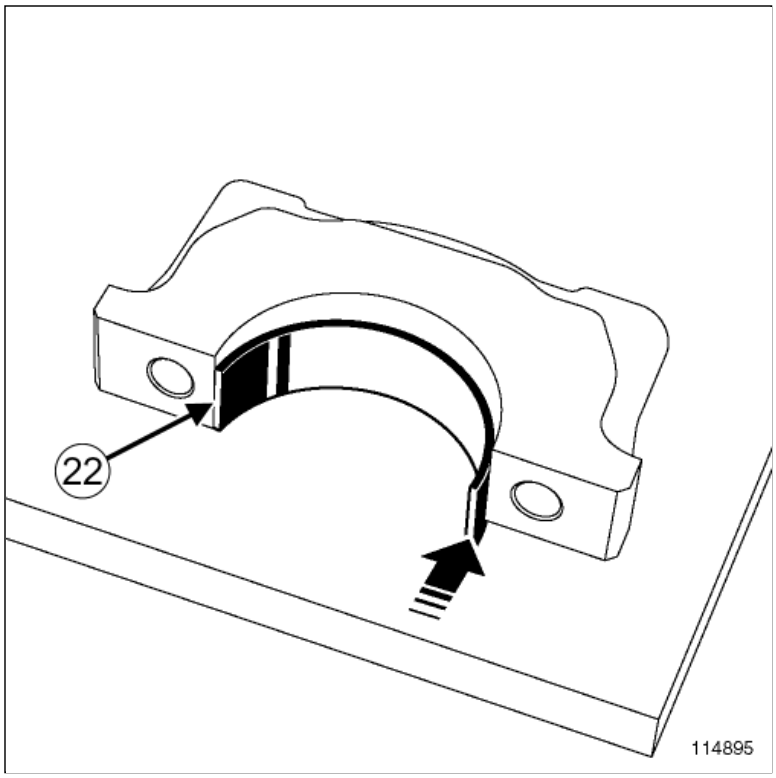
- Place:
  - a rectified shim(18) against the mating face of the crankshaft thrust washer on bearing No. 3 (e.g.: the toolDial gauge support.(Mot. 251-01)),
  - the grooved bearingshell against the rectified shim.
- Secure the flush bearing shell at(19) and push from the opposite side to position the bearing shell flush with the bearing.



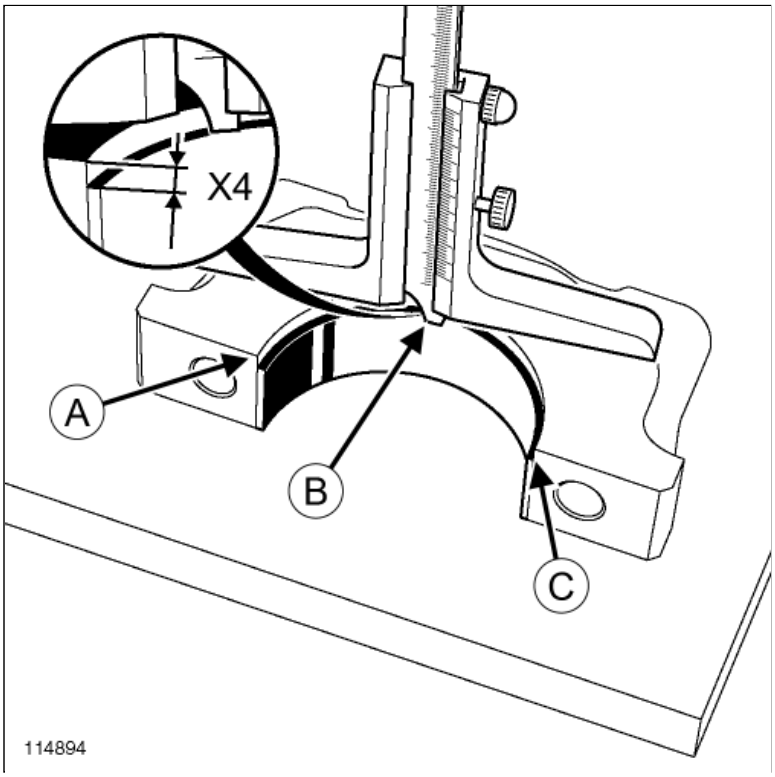
- Measure the distance(X3) between the bearing face of the thrust washer and the bearing shell edge using a depth gauge.



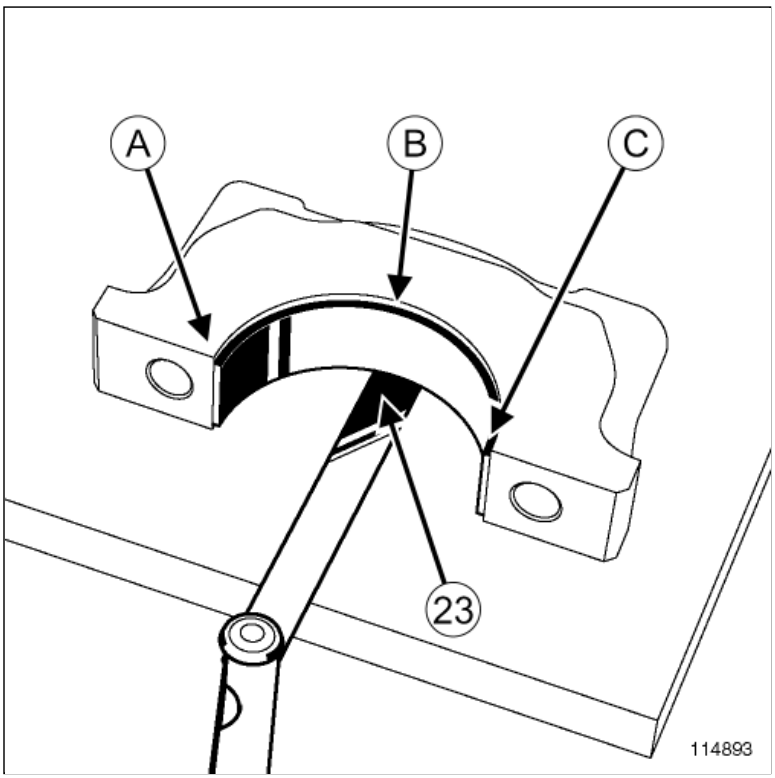
- Centre the grooved bearing shell on the bearing, aligning the bearing shell with the bearing groove.
- Adjust the position of the bearing shell at points(A) , (B) and (C) using the rectified shim(20) and a set of feeler gauges(thickness of the shim(21) = X3: 2 ± 0.1mm).



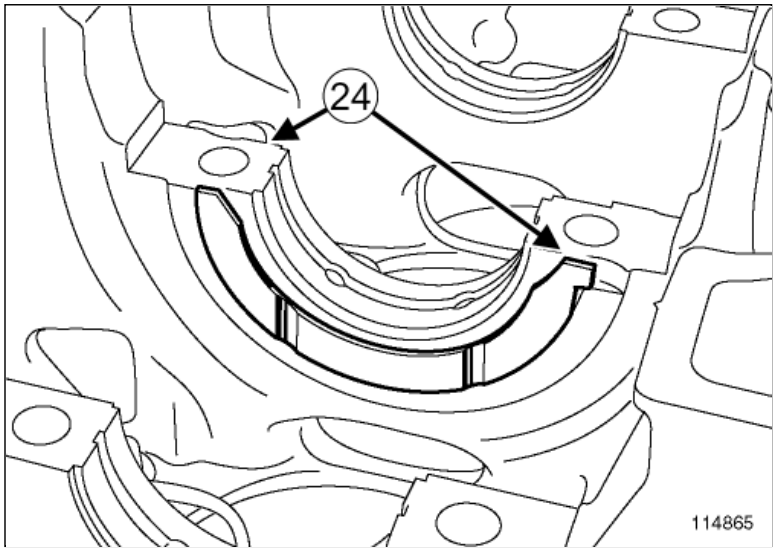
- Place:
  - the bearing cap on a bench,
  - the non-groovedbearing shell on the bench.
- Secure the flush bearing shell with the bearing cap at(22) and push from the opposite side to bring the bearing shell flush with the bearing cap.



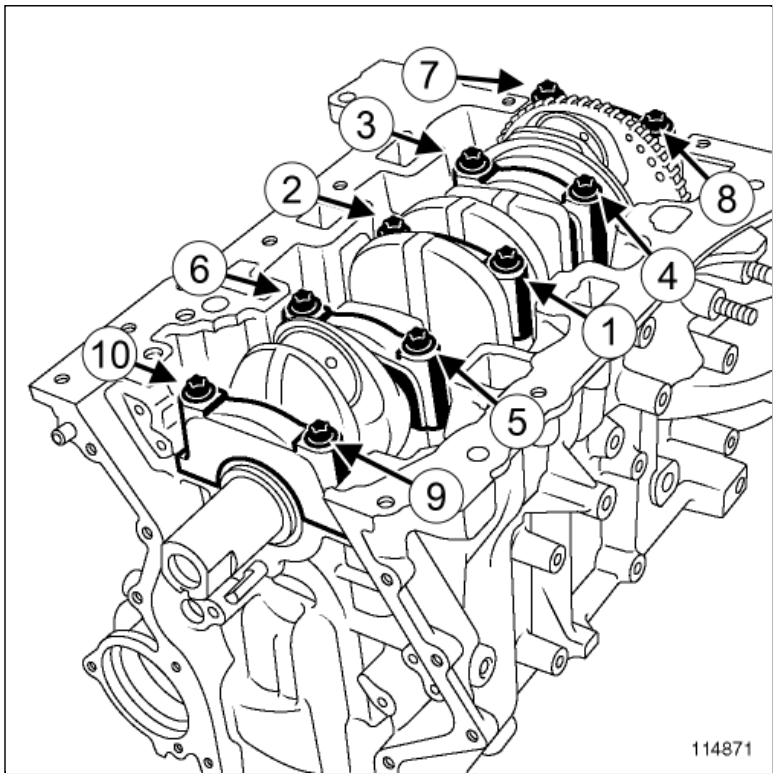
- Measure the distance(X4) between the edge of the bearing shell and the wall of the bearing cap at points(A) , (B) and (C) using a depth gauge.



- Adjust the position of the bearing shell at points(A) , (B) and (C) using a set of feeler gauges(thickness of the shim(23) = X4: 2 ± 0.1 mm).
- Repeat the previous operations for the other bearing caps.



- Position the crankshaft thrust washers on the cylinder block (washer lug(24) in the cylinder block notch).
- Use engine oil to lubricate the crankshaft journal bearing shells and thrust washers (only the face making contact with the crankshaft).



Note:

Ensure the bearing shells and the thrust washers do not move when refitting the crankshaft and bearing caps.

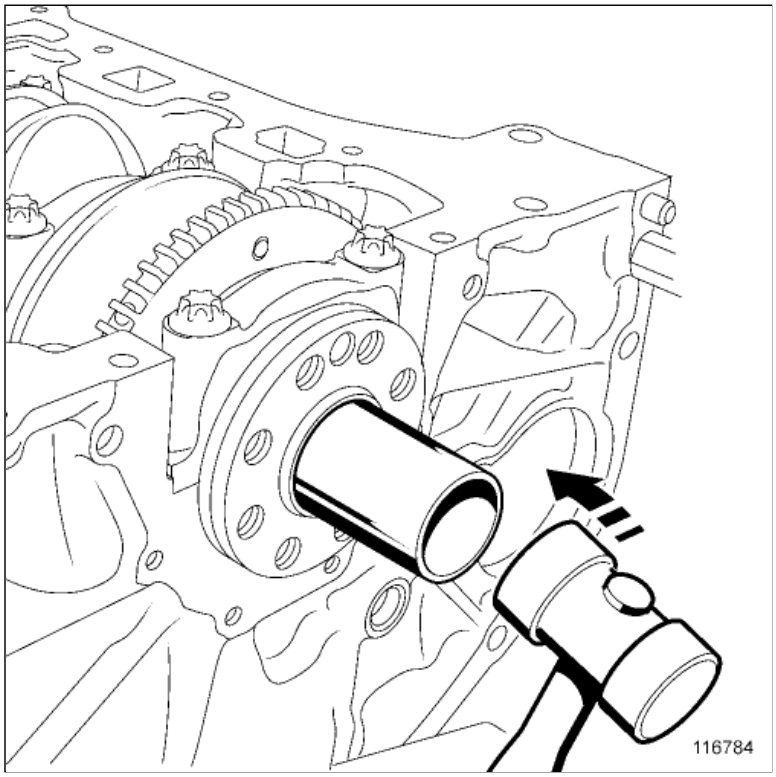
- Refit:
  - the crankshaft,
  - the bearing caps,
  - the new crankshaft bearing bolts.

Note:

Check that the bearing caps are in contact with the cylinder block before tightening the bearing cap bolts.

- Tighten to torque, to angle and in order the crankshaft bearing bolts20 N.m + 70˚ ± 6˚.

- Check that the crankshaft turns freely, with no resistance.



- Operation only to be carried out when replacing the crankshaft or crankshaft bearing.
- Fit the new crankshaft bearing using a spacer of diameter 39 mm.

3. FINAL OPERATION

- If replacing the crankshaft, always identify the piston height category to refit in each cylinder to guarantee that the piston protrusion in relation to the cylinder block remains within the tolerances, before refitting the con rod - piston assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

- Refit the con rod - piston assemblies onto each cylinder(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .
- If replacing the crankshaft, always check that the piston protrusion in relation to the cylinder block remains within the tolerances after refitting the con rod - piston assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

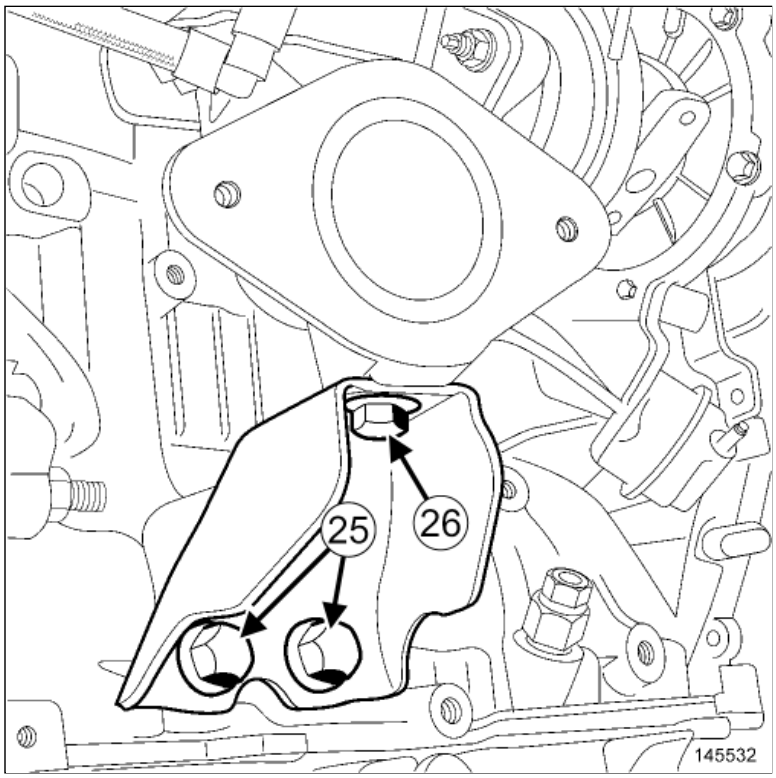
- Refit:
  - the oil pump(see **Oil pump: Removal - Refitting**) ,
  - the oil splash plate,
  - the oil level sensorOil level sensor: Removal - Refitting .

Refit:

- the cylinder block base plate (see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) ,
- the sump Lower cover: Removal - Refitting ,
- a newcrankshaft seal on the gearbox side Crankshaft seal, gearbox end: Removal - Refitting .

Refit:

- the oil filter unit Oil filter unit: Removal - Refitting ,
- the cylinder head (see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) .



Refit the turbocharger strut.

Fit without tightening:

- the turbocharger strut lower bolts (25) ,
- the turbocharger strut upper bolt (26) .

Torque tighten:

- the turbocharger strut lower bolts 25 N.m,
- the turbocharger strut upper bolt 25 N.m.

Connect the coolant hose at the inlet of the exhaust gas cooler.

Fit the clip on the coolant hose at the inlet of the exhaust gas cooler using the tool Remote operation pliers for hose clips. (Mot. 1448) .

Refit the exhaust gas cooler bolts.

Refit the rocker cover (see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) .

Fit the control solenoid valve support for the 5th injector.

Refit the bolts to the control solenoid valve support of the 5th injector.

Refit:

- the diesel injectors Diesel injector: Removal - Refitting ,
- the newhigh pressure pipes between the injector rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the oil decanter Oil decanter: Removal - Refitting ,
- a newhigh pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls),
- new turbocharger oil pipes Turbocharger oil pipe: Removal - Refitting ,
- depending on version, the turbocharger outlet catalytic pre-converter or catalytic converter Catalytic pre-converter: Removal - Refitting or Catalytic converter: Removal - Refitting ,
- the damper valve.

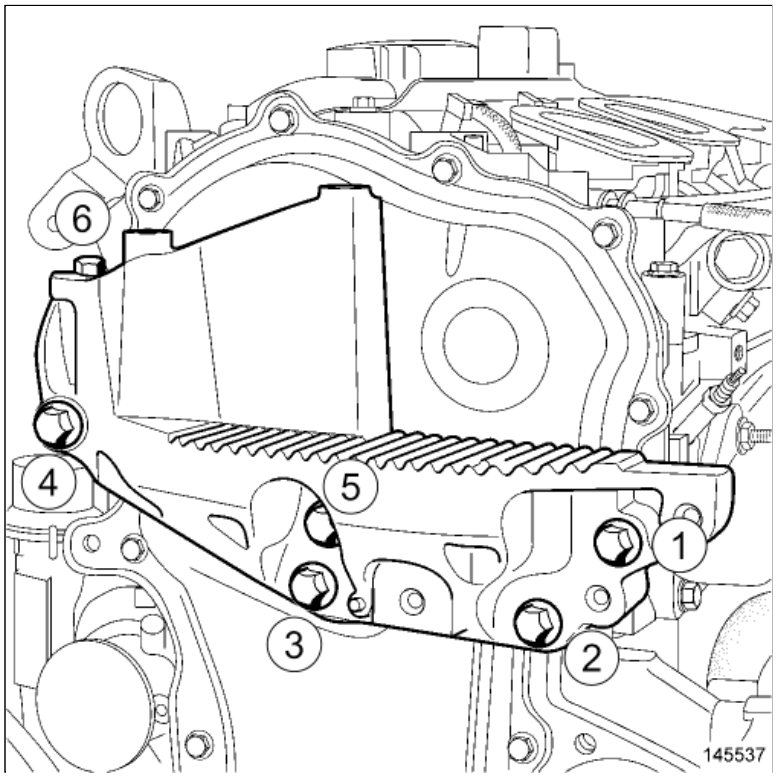
Refit the dipstick guide.

X43, M9R, 804 811 817 824 839 844 846(804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (678 OR 680 OR 696 OR 880 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (630 OR 692) AND (721 OR 722 OR 724) AND (754 OR 800 OR 802 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

- Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

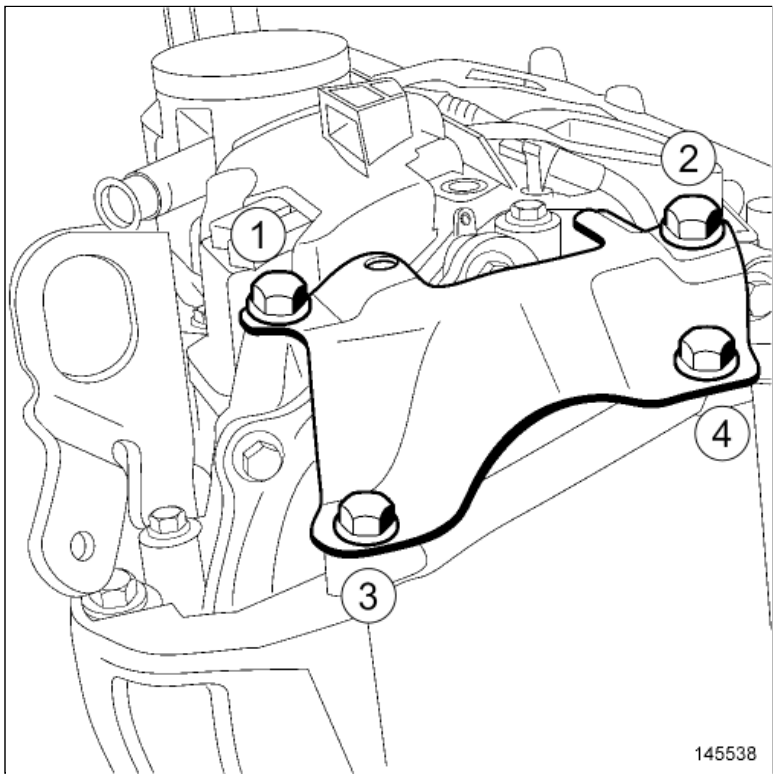
- Refit the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

- Refit the cylinder head suspended mounting .



- Screw in the cylinder head suspended mounting bolts, without tightening them.

- Tighten in order the cylinder head suspended mounting bolts.



- Refit the engine mounting strut.
- Fit the engine mounting bolts without tightening them.
- Tighten the engine mounting bolts in order.
- Refit the engine lifting eye at the timing end **Lifting eyes: Removal - Refitting** .
- Refit a new crankshaft seal at the timing end **Crankshaft seal on timing end: Removal - Refitting** .
- Immobilise the flywheel or the drive plate while fitting the Flywheel locking tool. (**Mot. 1431**) on the cylinder block.
- Refit:
  - the crankshaft accessories pulley **Crankshaft accessories pulley: Removal - Refitting** ,
  - the coolant pump **Coolant pump: Removal - Refitting** ,
  - a new accessories belt **Accessories belt: Removal - Refitting** .
- Remove:
  - the tool Flywheel locking tool. (**Mot. 1431**) ,
  - the engine from the component support **(see 10A, Engine and cylinder block assembly, Engine support equipment: Use)** .
- Refit the engine - gearbox assembly.
- Top up the engine oil **Engine oil: Draining - Refilling** .

CREW CAB PARTITION: REMOVAL - REFITTING

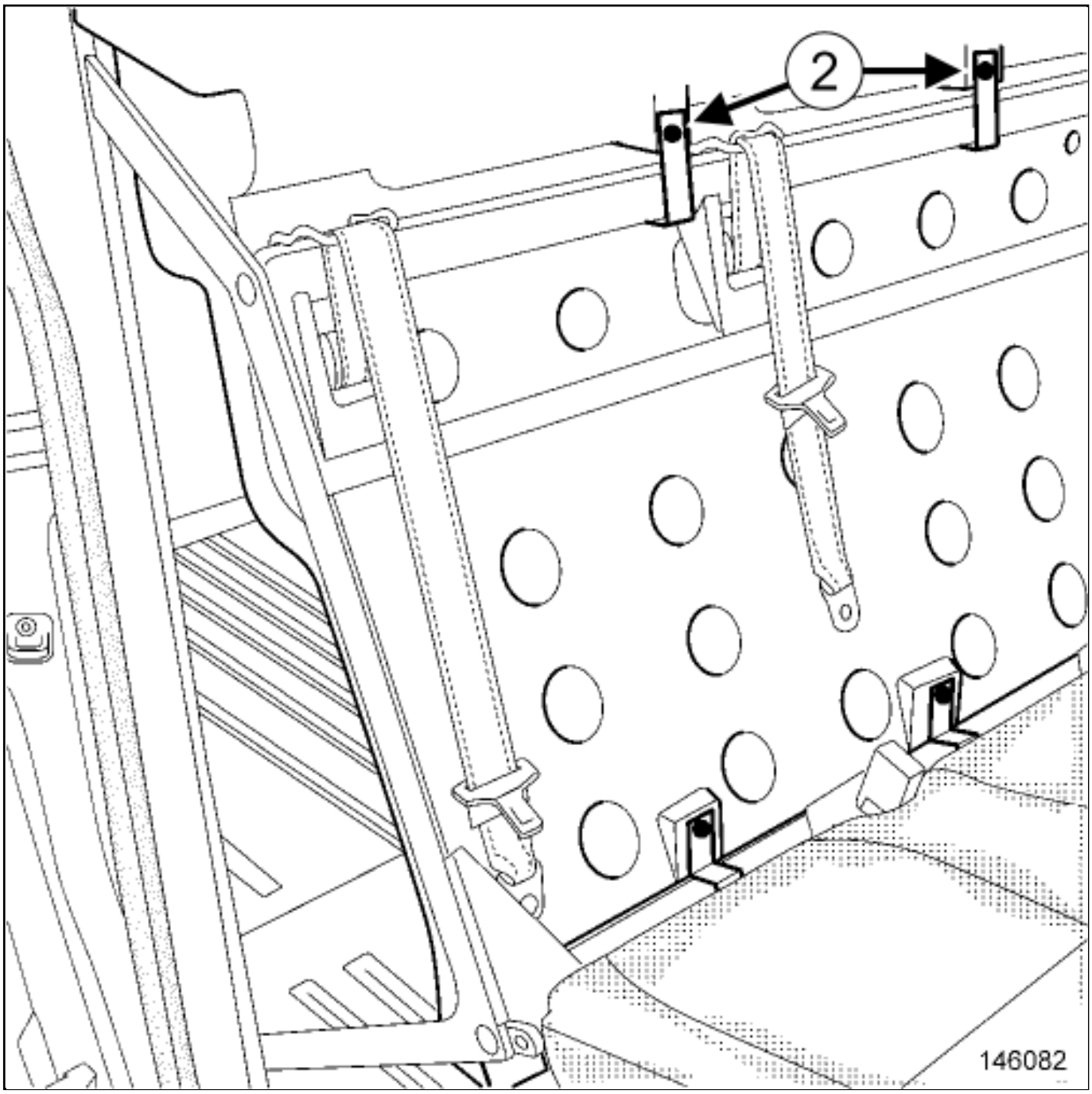
REMOVAL

1. REMOVAL PREPARATION OPERATION

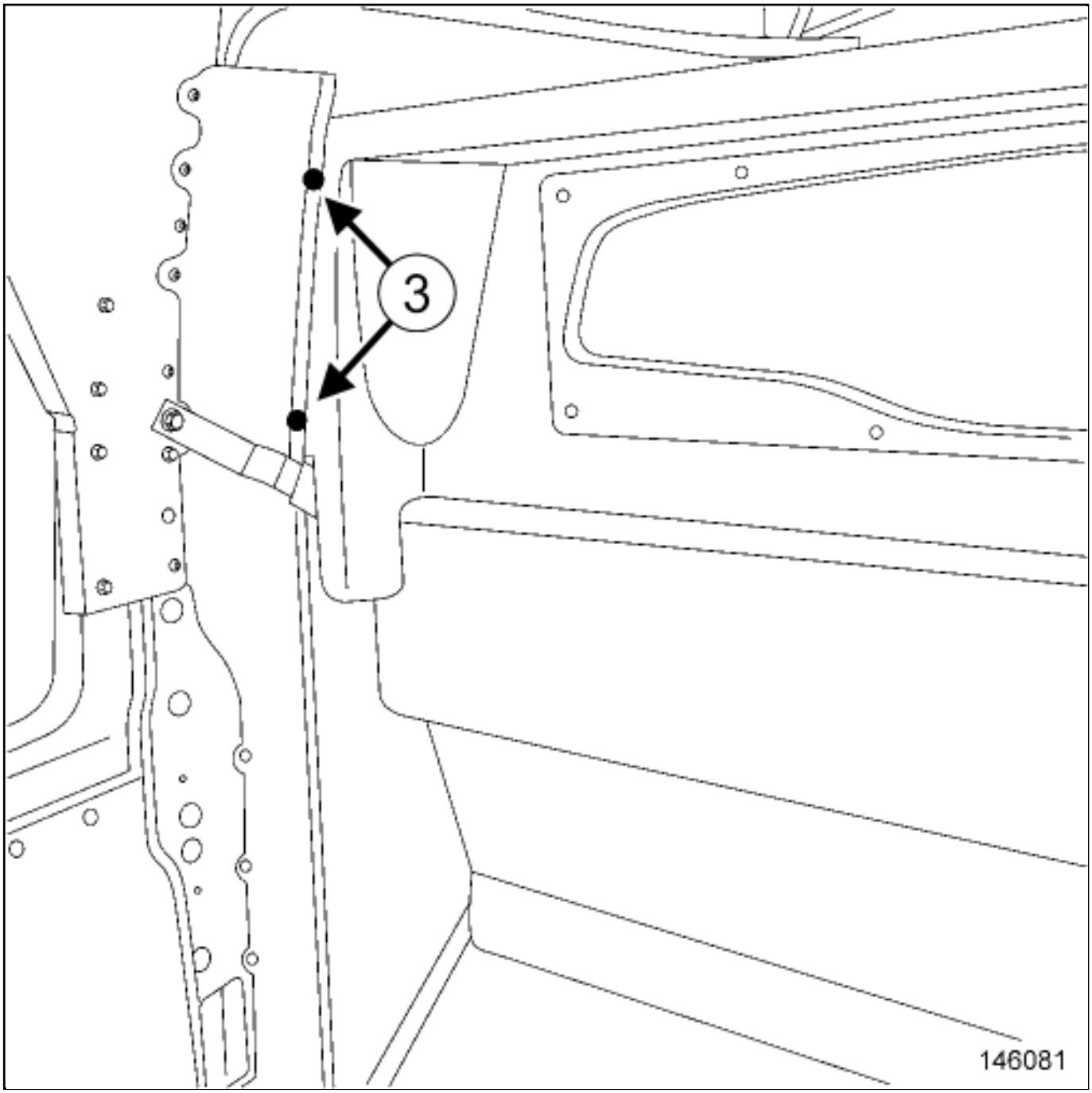
Remove:

- the trims of the single unit rear bench seatback Single unit rear bench seatback trim: Removal - Refitting (78A, Rear seat trim),
- the side trims of the passenger compartment partition (71A, Body interior trim).

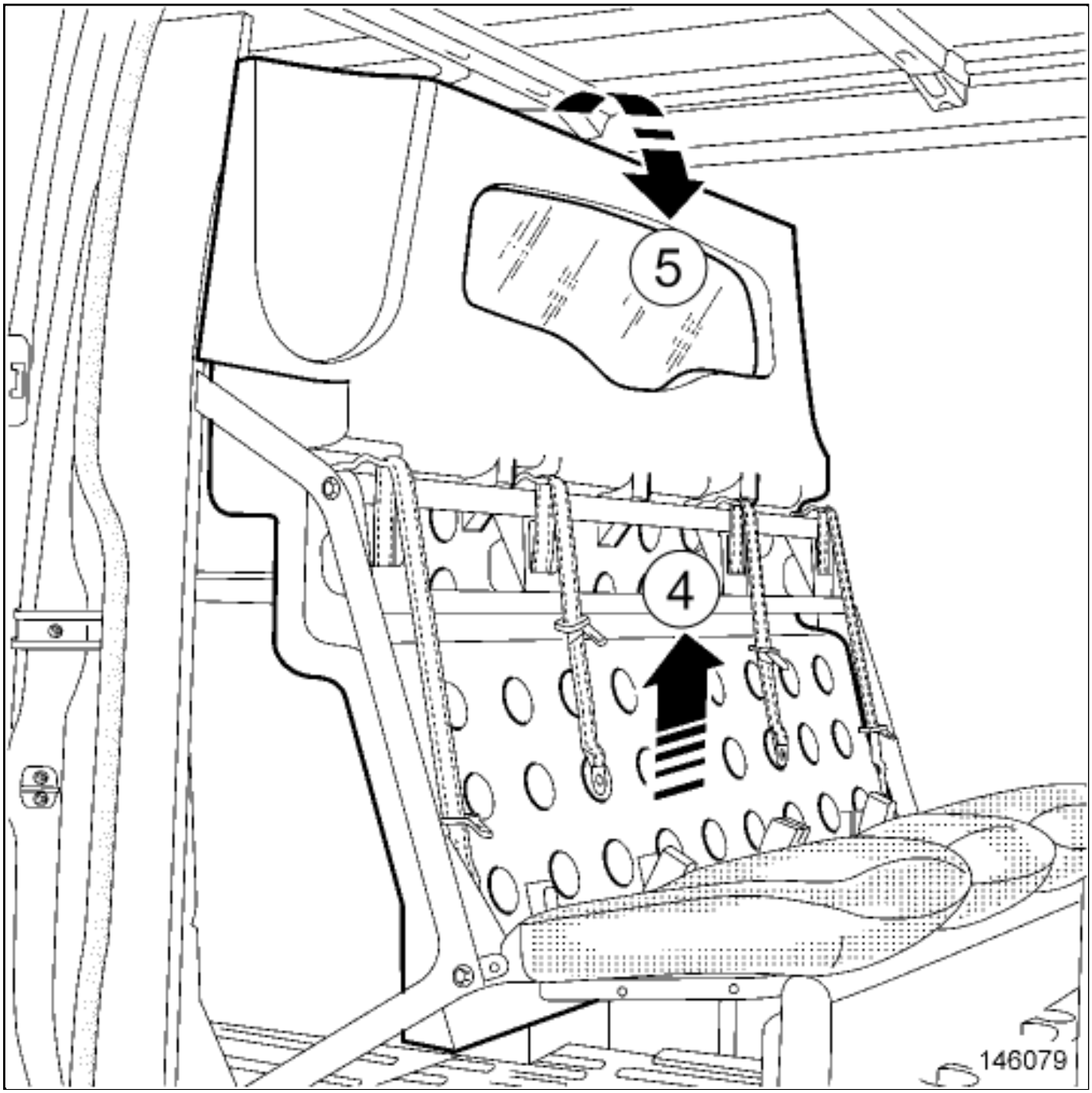
2. REMOVAL OPERATION



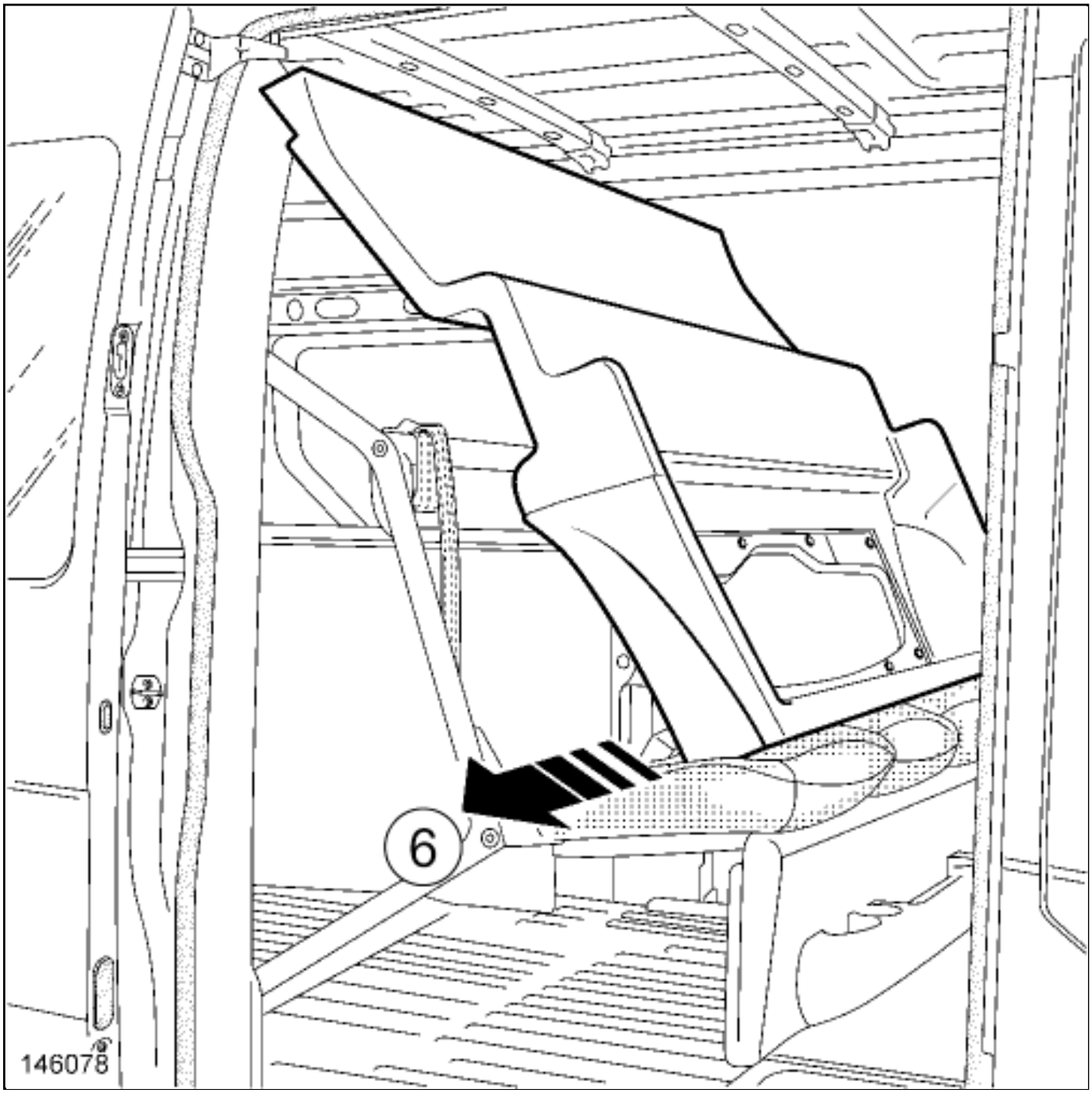
- Remove the upper bolts(2) on the passenger compartment side.



- Remove the bolts(3) on the luggage compartment side.



- Lift the crew cab partition(4) .
- Tilt the crew cab partition(5) (this operation requires two people).



Remove the crew cab partition by(6) (this operation requires two people).

REFITTING

Proceed in the reverse order to removal.

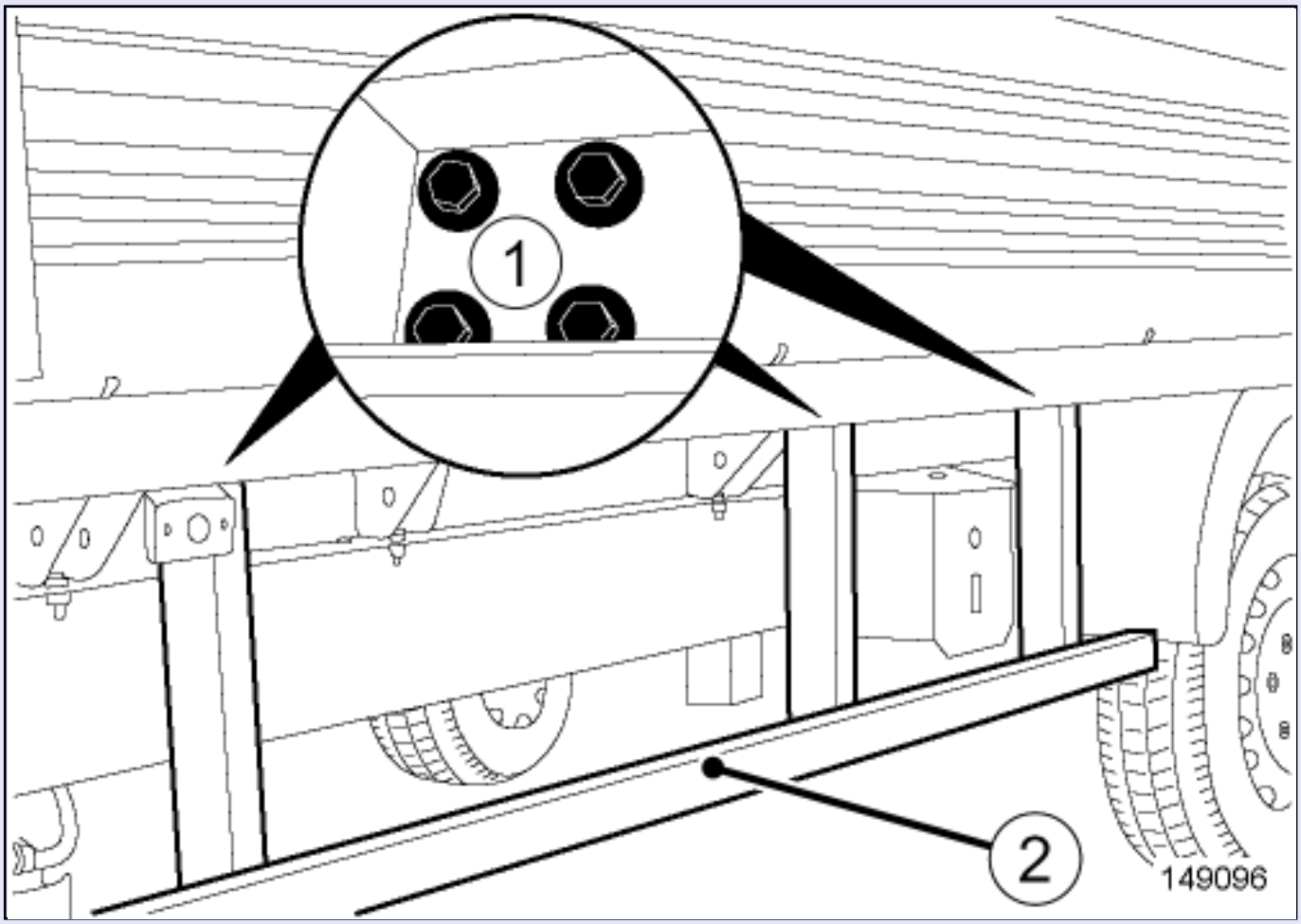
XSL version : 3.02 du 22/07/11

CYCLIST PROTECTION BAR: REMOVAL - REFITTING

REMOVAL

1. REMOVAL OPERATION

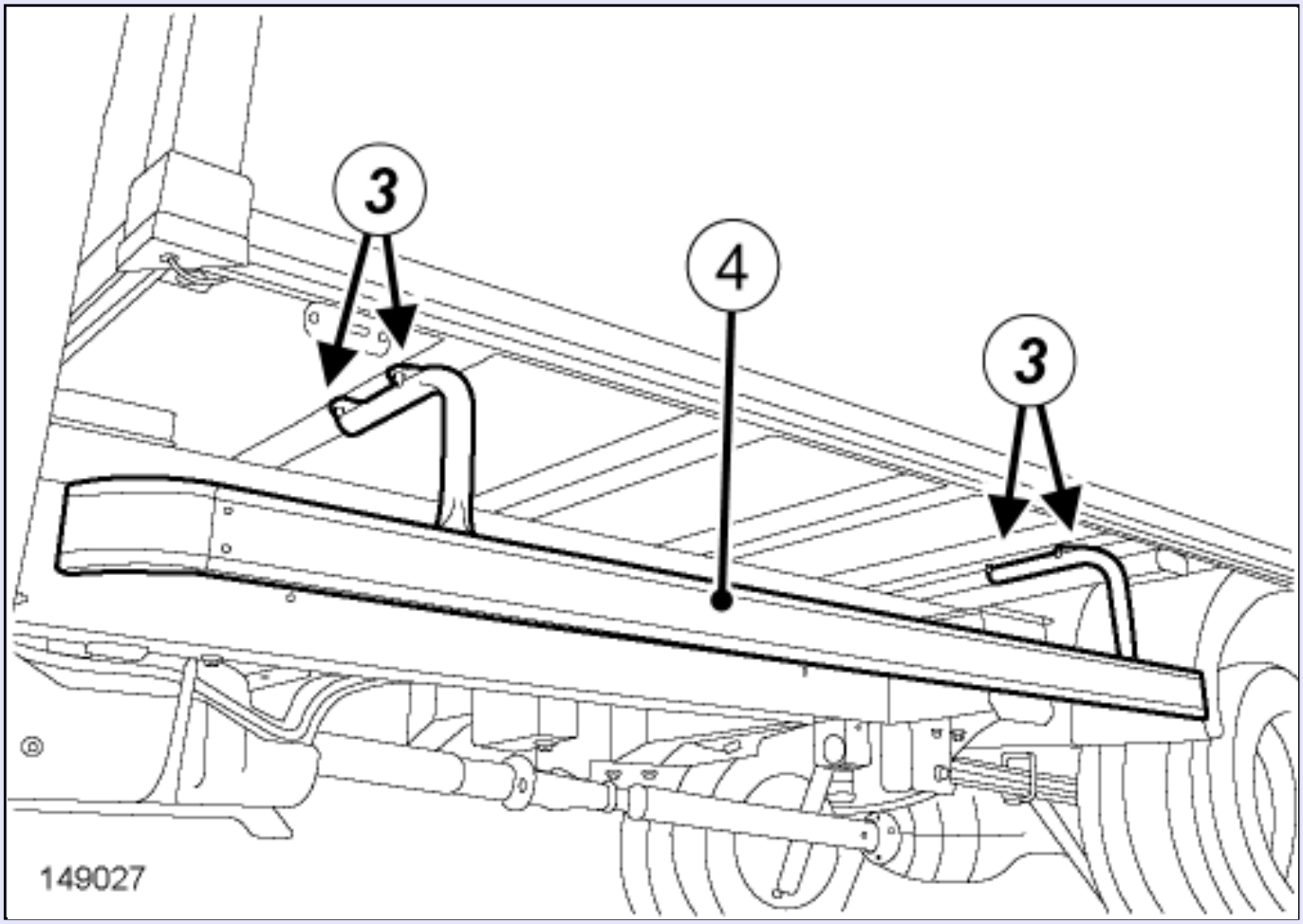
STAKEBED(PLTRID)



Remove:

- the bolts of the cyclist protection bar(**1**) ,
- (**2**) the cyclist protection bar.

LARGE VOLUME: 18 M3 or LARGE VOLUME: 20 M3(GRDV1 OR GRDV2)



Remove:

- the bolts of the cyclist protection bar(3) ,
- the cyclist protection bar(4) .

REFITTING

Proceed in the reverse order to removal.

CYLINDER BLOCK ASSEMBLY: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

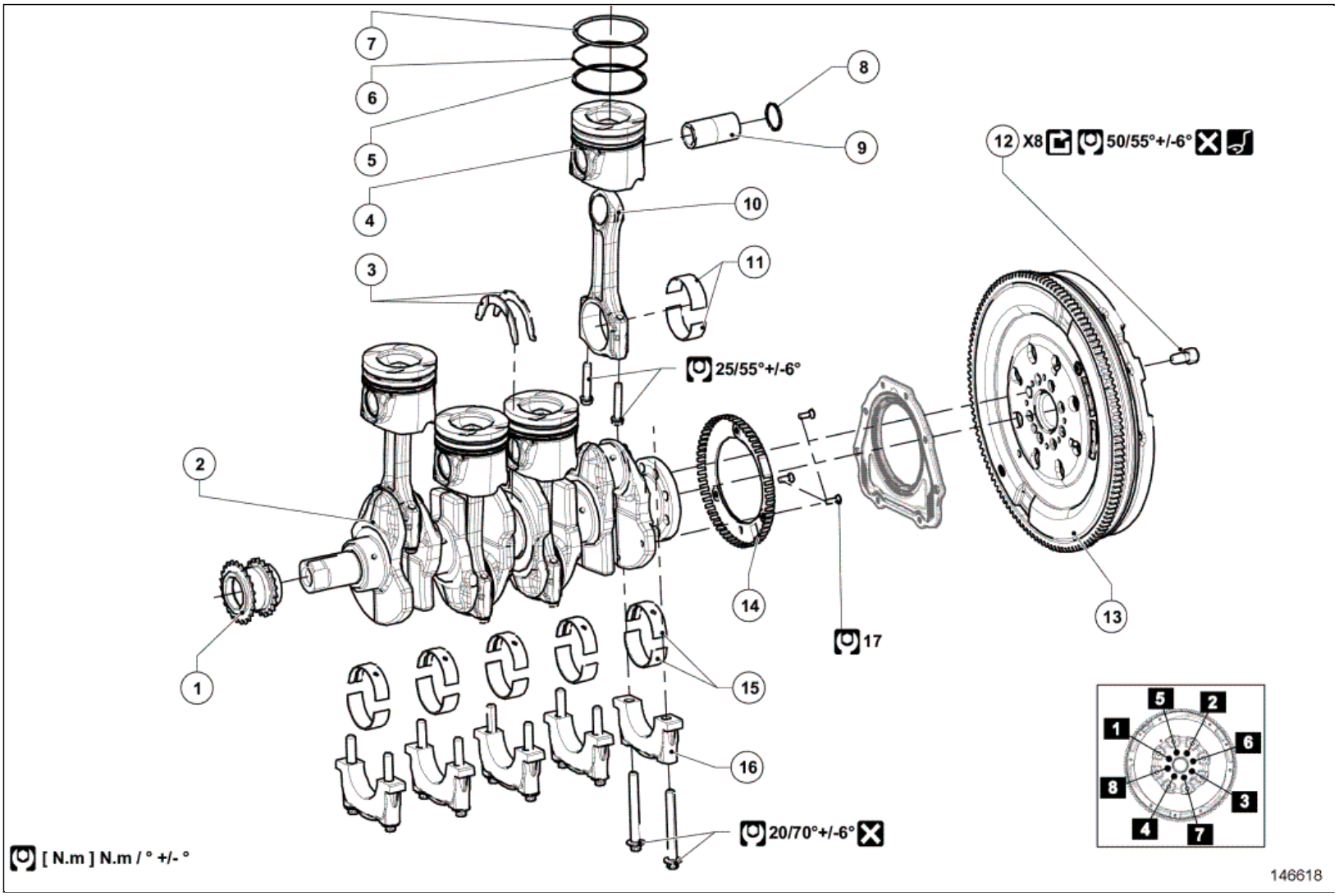


Illustration key: Description Key.

Mark	Description	Information
1	Timing sprocket	Timing chain: Removal - Refitting
2	Crankshaft	Crankshaft: Removal - Refitting
3	Crankshaft thrust washer	
4	Piston	Piston - Con rod: Removal - Refitting
5	Scraper ring	
6	Sealing ring	
7	Compression ring	
8	Gudgeon pin locking spring ring	
9	Piston pin	
10	Con rod	
11	Con rod bearing shell	
12	Flywheel bolts	(see 10A, Engine and cylinder block assembly, Flywheel: Removal - Refitting)
13	Engine flywheel	
14	Crankshaft position target	Crankshaft: Removal - Refitting
15	Crankshaft bearing shell	
16	Crankshaft bearing cap	

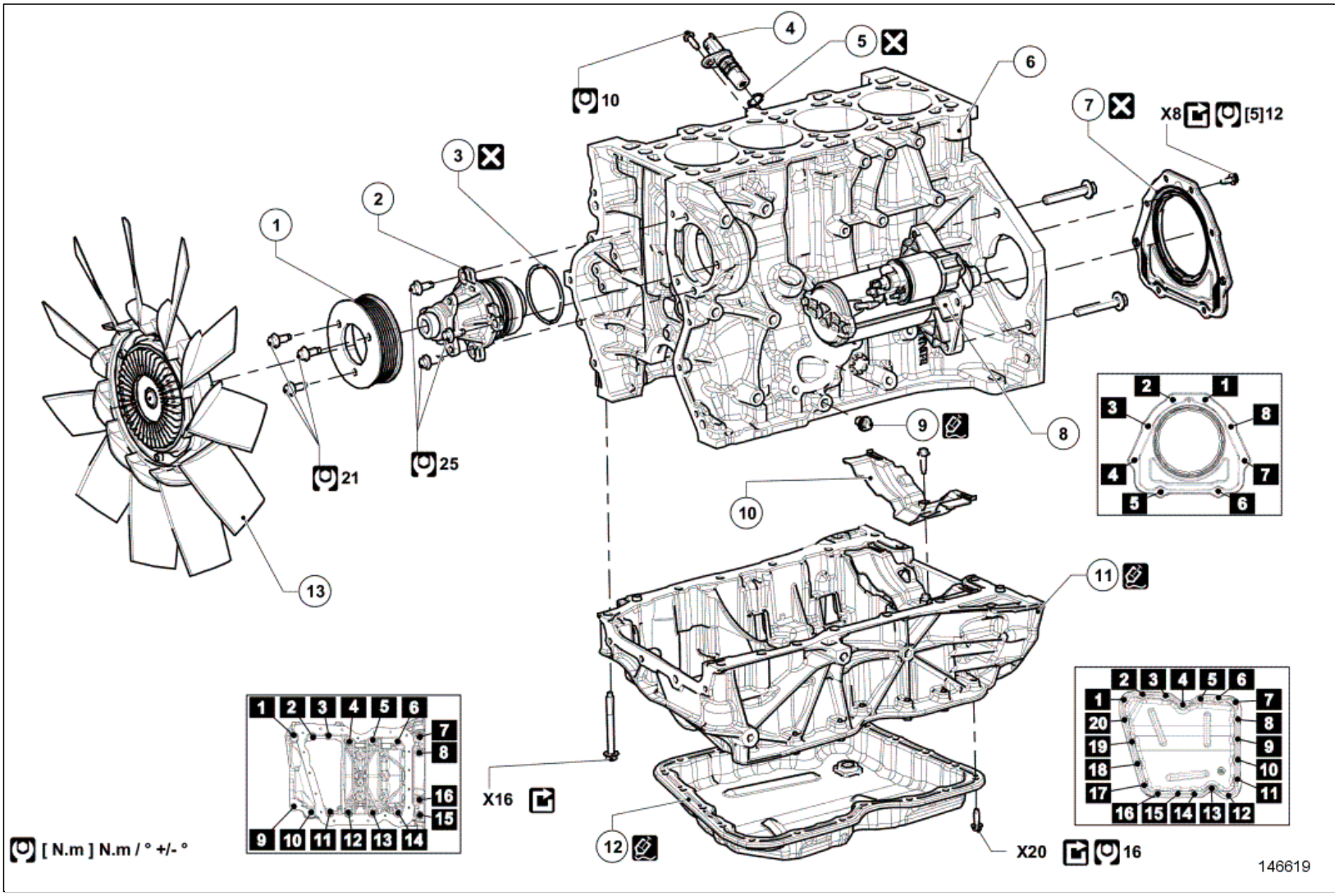


Illustration key: Description Key.

Mark	Description	Information
1	Water pump pulley	Coolant pump: Removal - Refitting
2	Water pump	Coolant pump: Removal - Refitting
3	Coolant pump O-ring	Coolant pump: Removal - Refitting
4	Crankshaft position sensor	
5	Crankshaft position sensor seal	
6	Cylinder block	Cylinder block: Removal - Refitting
7	Crankshaft seal on gearbox end	Crankshaft seal, gearbox end: Removal - Refitting
8	Starter	Starter: Removal - Refitting
9	TDC setting hole plug	Timing chain: Removal - Refitting
10	Oil splash plate	
11	Cylinder block base plate	Cylinder block base plate: Removal - Refitting
12	Sump	Lower cover: Removal - Refitting
13	Engine cooling fan propeller	Engine cooling fan assembly: Removal - Refitting

CYLINDER BLOCK ASSEMBLY: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

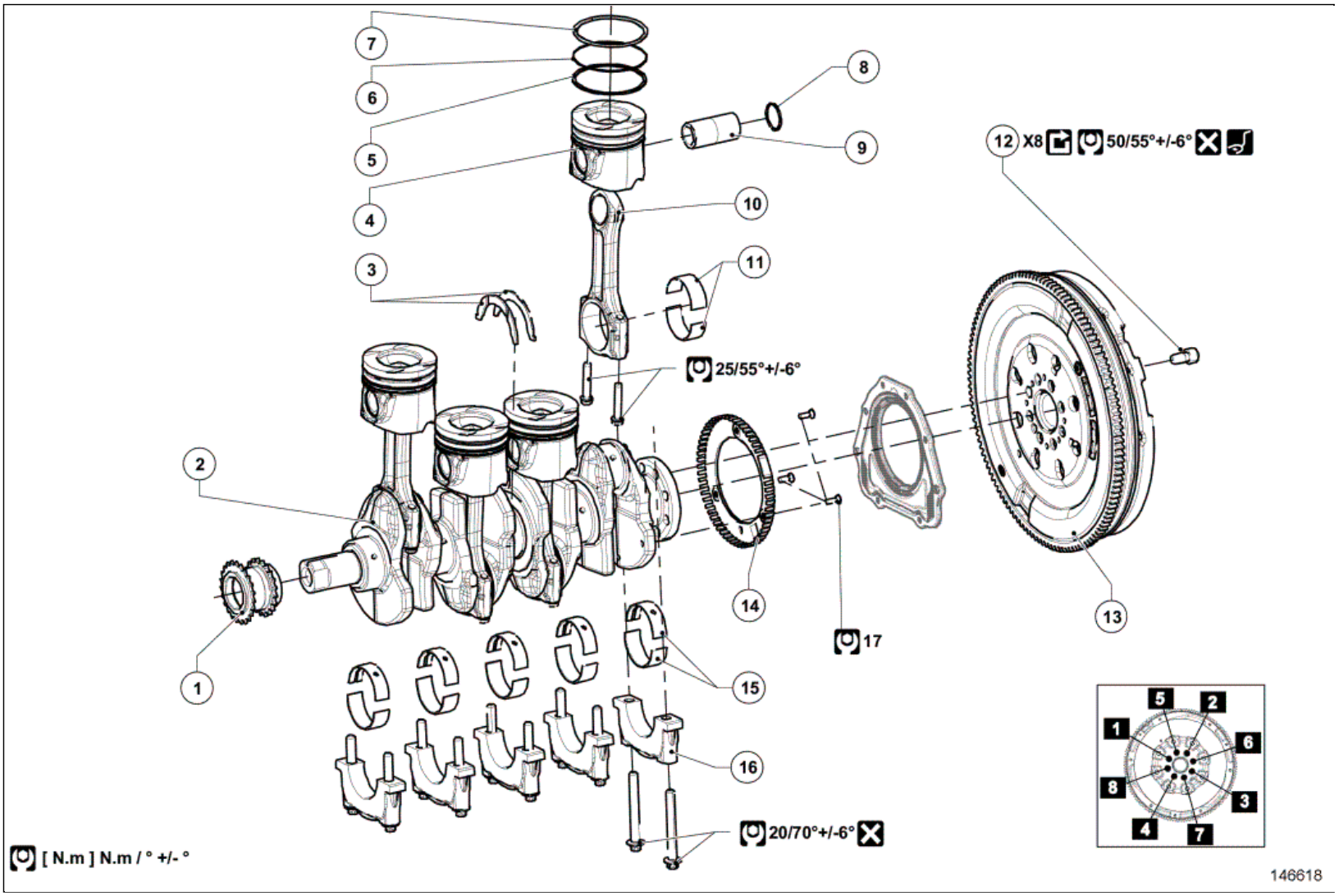


Illustration key: Description Key.

Mark	Description	Information
1	Timing sprocket	Timing chain: Removal - Refitting
2	Crankshaft	Crankshaft: Removal - Refitting
3	Crankshaft thrust washer	
4	Piston	Piston - Con rod: Removal - Refitting
5	Scraper ring	
6	Sealing ring	
7	Compression ring	
8	Gudgeon pin locking spring ring	
9	Piston pin	
10	Con rod	
11	Con rod bearing shell	
12	Flywheel bolts	(see 10A, Engine and cylinder block assembly, Flywheel: Removal - Refitting)
13	Engine flywheel	
14	Crankshaft position target	Crankshaft: Removal - Refitting
15	Crankshaft bearing shell	
16	Crankshaft bearing cap	

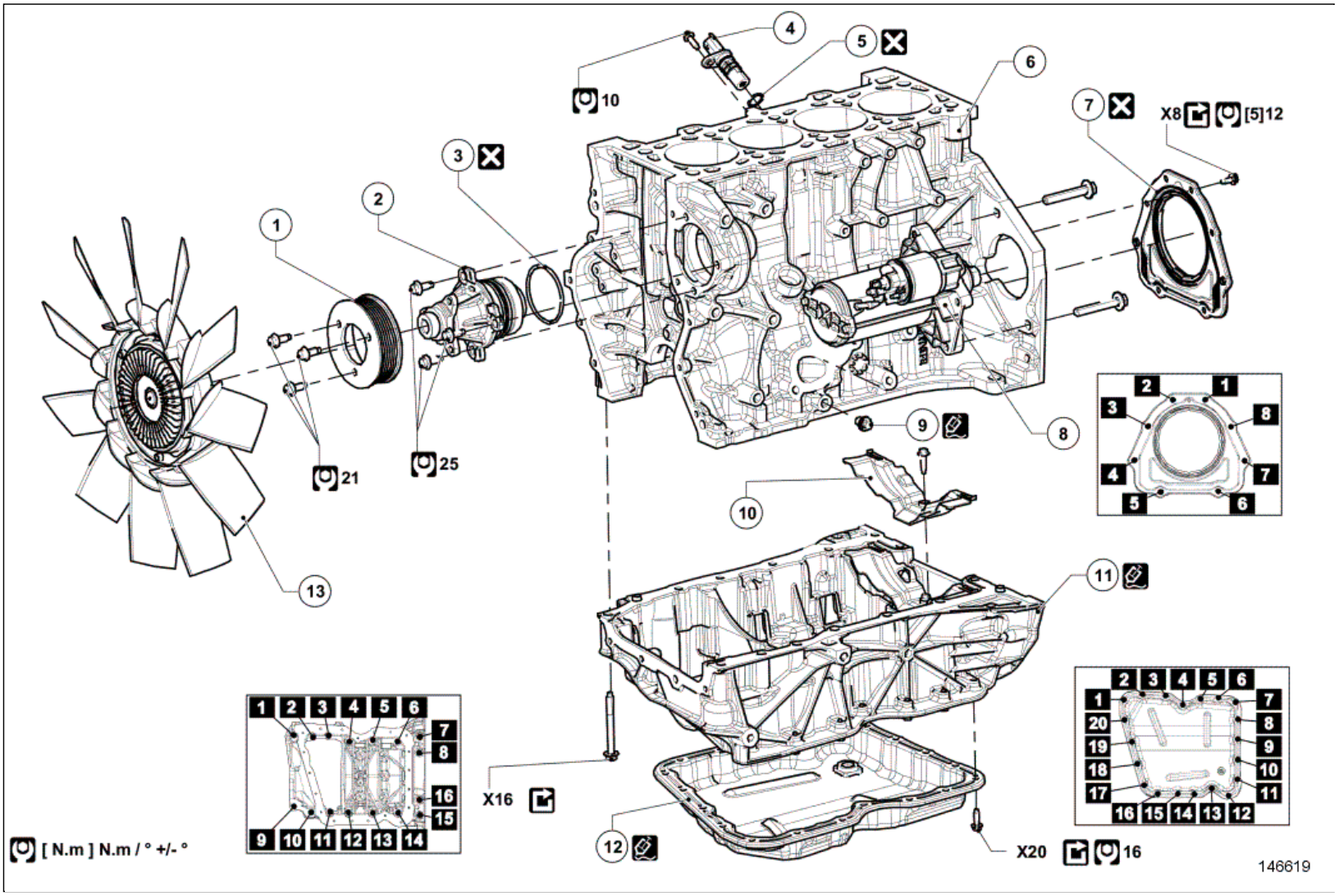


Illustration key: Description Key.

Mark	Description	Information
1	Water pump pulley	Coolant pump: Removal - Refitting
2	Water pump	Coolant pump: Removal - Refitting
3	Coolant pump O-ring	Coolant pump: Removal - Refitting
4	Crankshaft position sensor	
5	Crankshaft position sensor seal	
6	Cylinder block	Cylinder block: Removal - Refitting
7	Crankshaft seal on gearbox end	(see 10A, Engine and cylinder block assembly, Crankshaft seal, gearbox end: Removal - Refitting)
8	Starter	Starter: Removal - Refitting
9	TDC setting hole plug	Timing chain: Removal - Refitting
10	Oil splash plate	
11	Cylinder block base plate	Cylinder block base plate: Removal - Refitting
12	Sump	(see 10A, Engine and cylinder block assembly, Lower cover: Removal - Refitting)
13	Engine cooling fan propeller	Engine cooling fan assembly: Removal - Refitting

CYLINDER BLOCK BASE PLATE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Flywheel locking tool.	Mot. 1431

REMOVAL-REFITTING

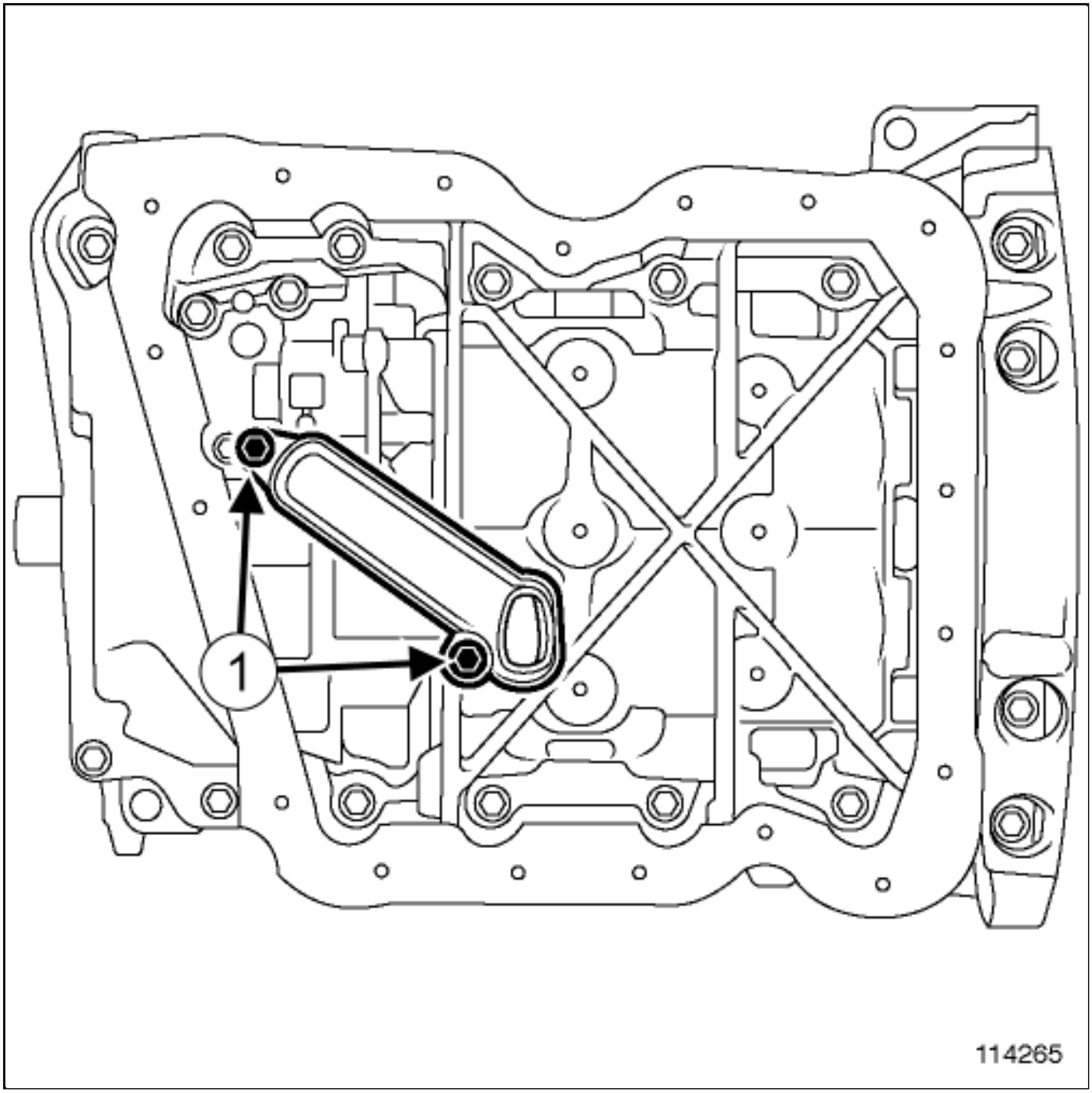
1. REMOVAL PREPARATION OPERATION

- Remove the engine - gearbox assembly.

- Remove the timing cover(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

- Remove:
  - the clutch plate and pressure platePressure plate - Disc: Removal - Refitting ,
  - the flywheelFlywheel: Removal - Refitting ,
  - the flywheel locking toolFlywheel locking tool.(Mot. 1431) .

- Remove:
  - the gearbox side crankshaft sealCrankshaft seal, gearbox end: Removal - Refitting ,
  - the engine oil sumpLower cover: Removal - Refitting .

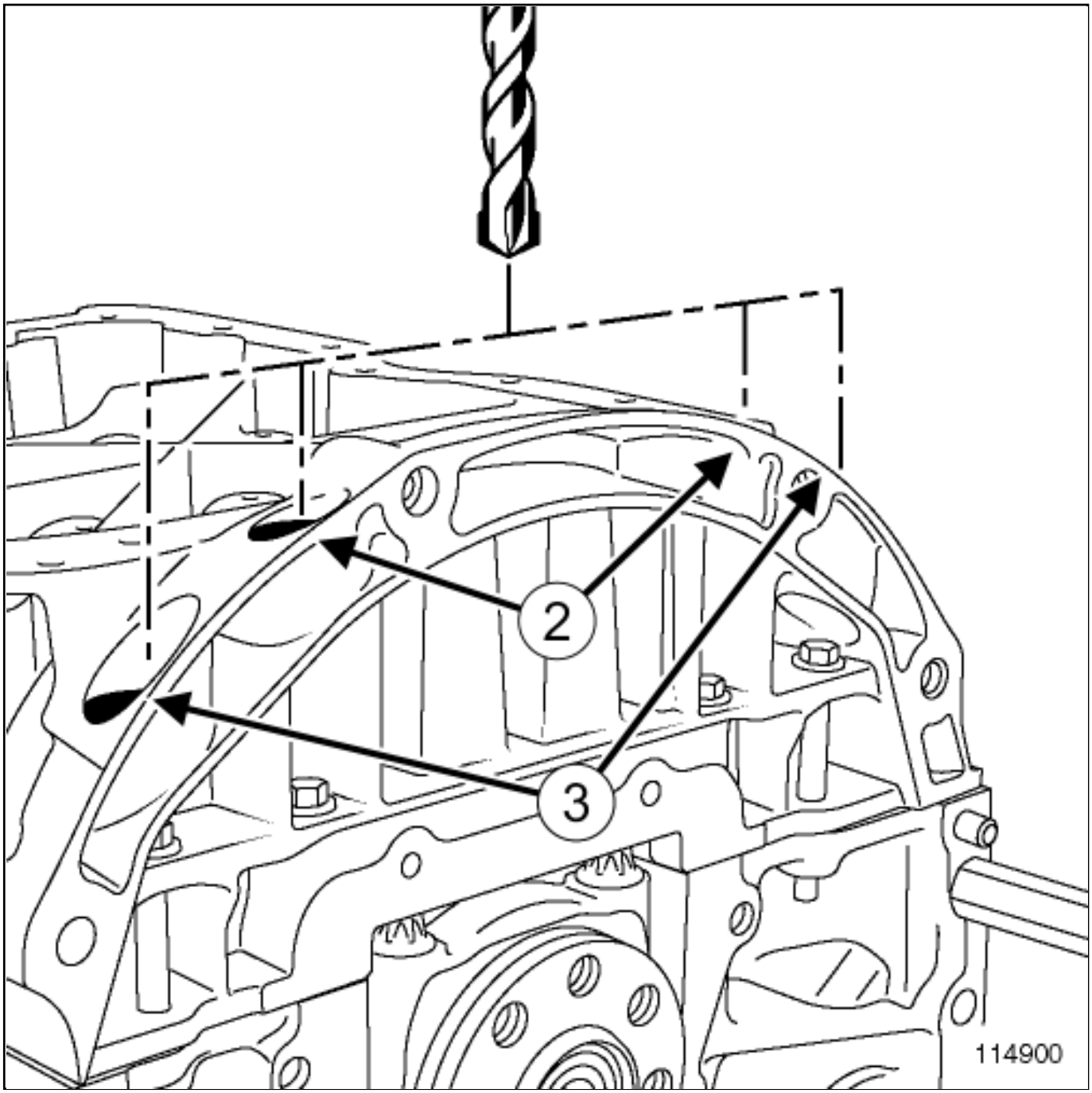


- Undo the oil pump strainer bolts(1) .
- Remove the "bolt - oil pump strainer" assembly.

2. CYLINDER BLOCK BASE PLATE REMOVAL OPERATION

1- REMOVAL OF THE CYLINDER BLOCK BASE PLATE BLANKING COVERS (IF FITTED)

- Perform the following operations if the cylinder block base plate is fitted with blanking covers to seal the flywheel compartment.



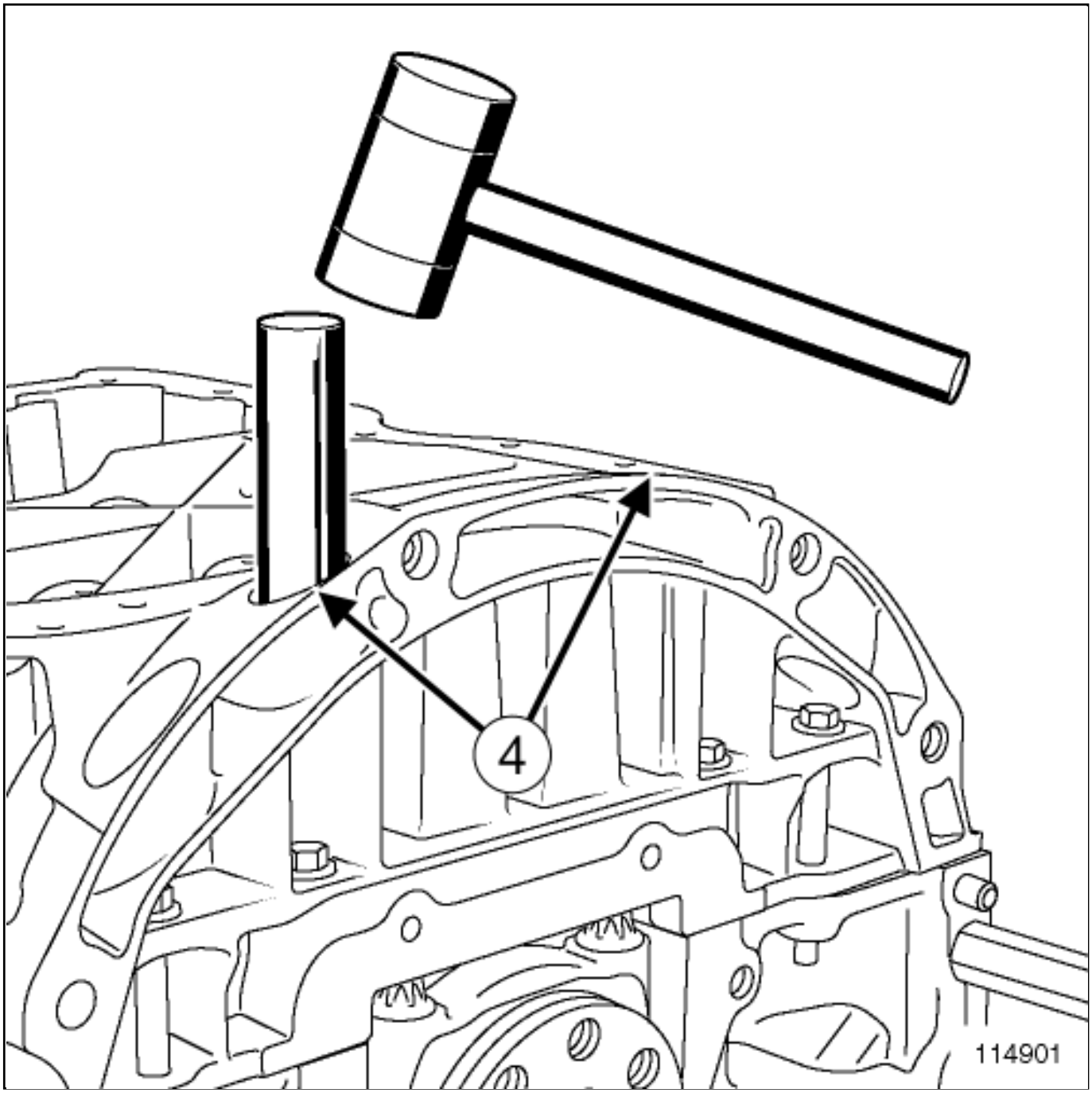
- Drill the blanking covers lodged in the holes(2) and (3) of the cylinder block base plate using a 13 mm drill bit.

- Cut the blanking covers(3) with a very flat chisel.

Note:

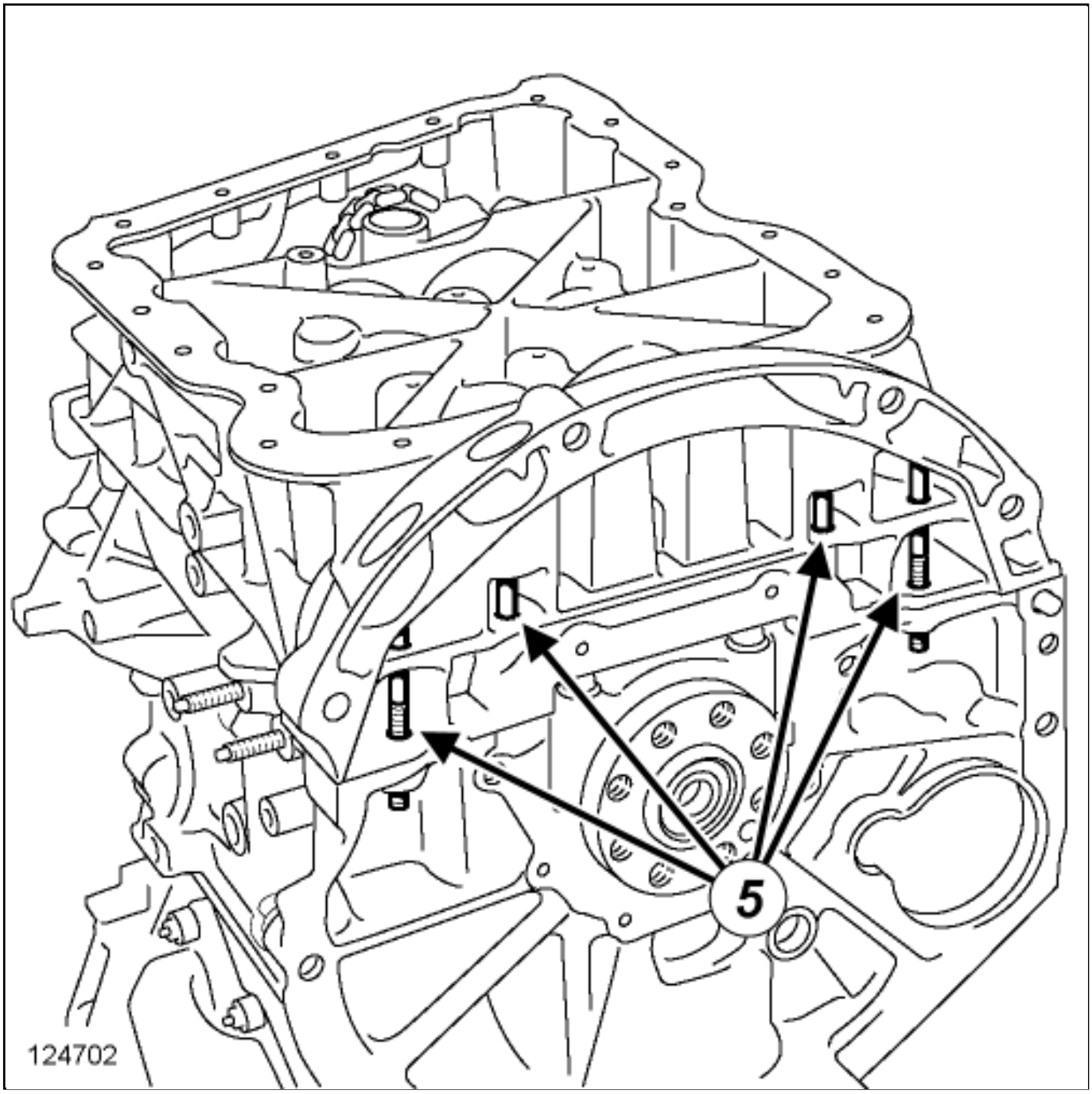
Take care not to mark the base plate and its bolts.

- Remove the blanking covers(3) .



- Remove the blanking covers(4) using a copper hammer.

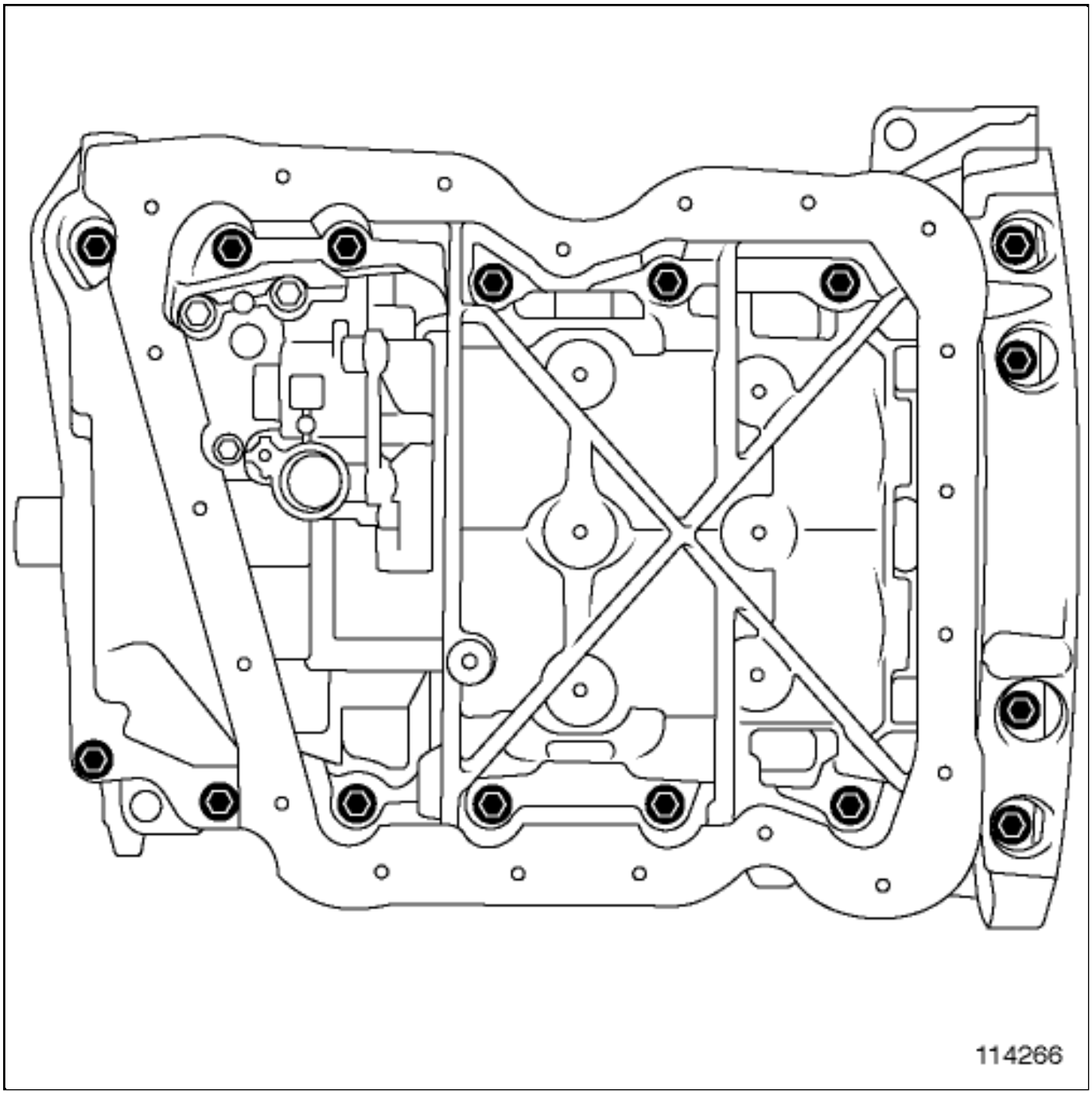
FITTING WITHOUT BLANKING COVERS



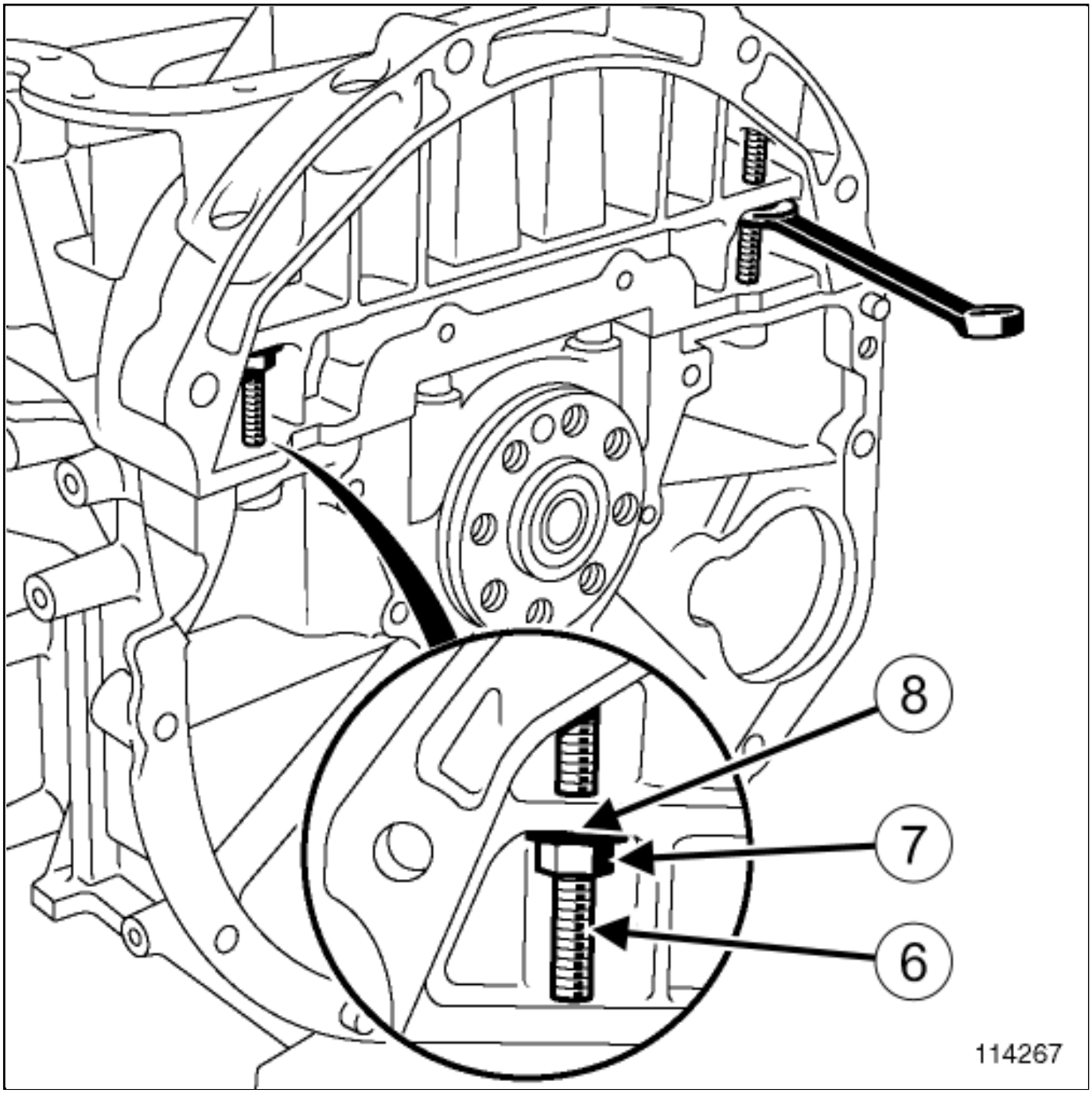
Note:

On cylinder block bases with long bolts(5) , the engine compartment is sealed without blanking covers.

2- REMOVAL OF THE CYLINDER BLOCK BASE PLATE BOLTS



- Remove the cylinder block base plate bolts.



- Fit two studs(6) (M8threaded rod - 90 mmlong), two nuts (M8) (7) and two flat washers(8) (8 mm inner diameter - 14 mmouter diameter) in place of the cylinder block base plate bolts.

- Tighten the nuts(7) until contact with the flat washers(8) and cylinder block base plate rib.

- Detach the base plate from the cylinder block by gradually tightening the nuts(7) .

- Remove:
  - the studs(6) ,
  - the nuts(7) ,
  - the washers(8) .

1. REFITTING PREPARATION OPERATION

- Always replace:
  - the cylinder block base plate blanking covers (if fitted),
  - the oil pump strainer seal.

- Clean using Super cleaning agent for joint facesVehicle: Parts and consumables for the repair the gasket surfaces:
  - of the cylinder block base plate,
  - of the cylinder block,
  - of the timing cover.

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

- Remove the residue using a plastic spatula.

- Finish cleaning the joint faces using a grey abrasive pad.

- Clean, using surface cleanerVehicle: Parts and consumables for the repair :
  - the gasket surface of the cylinder block base plate on the cylinder block,
  - the gasket surfaces of the timing cover on the cylinder head and the cylinder block,
  - the cylinder block base plate,
  - the timing cover.

CAUTION

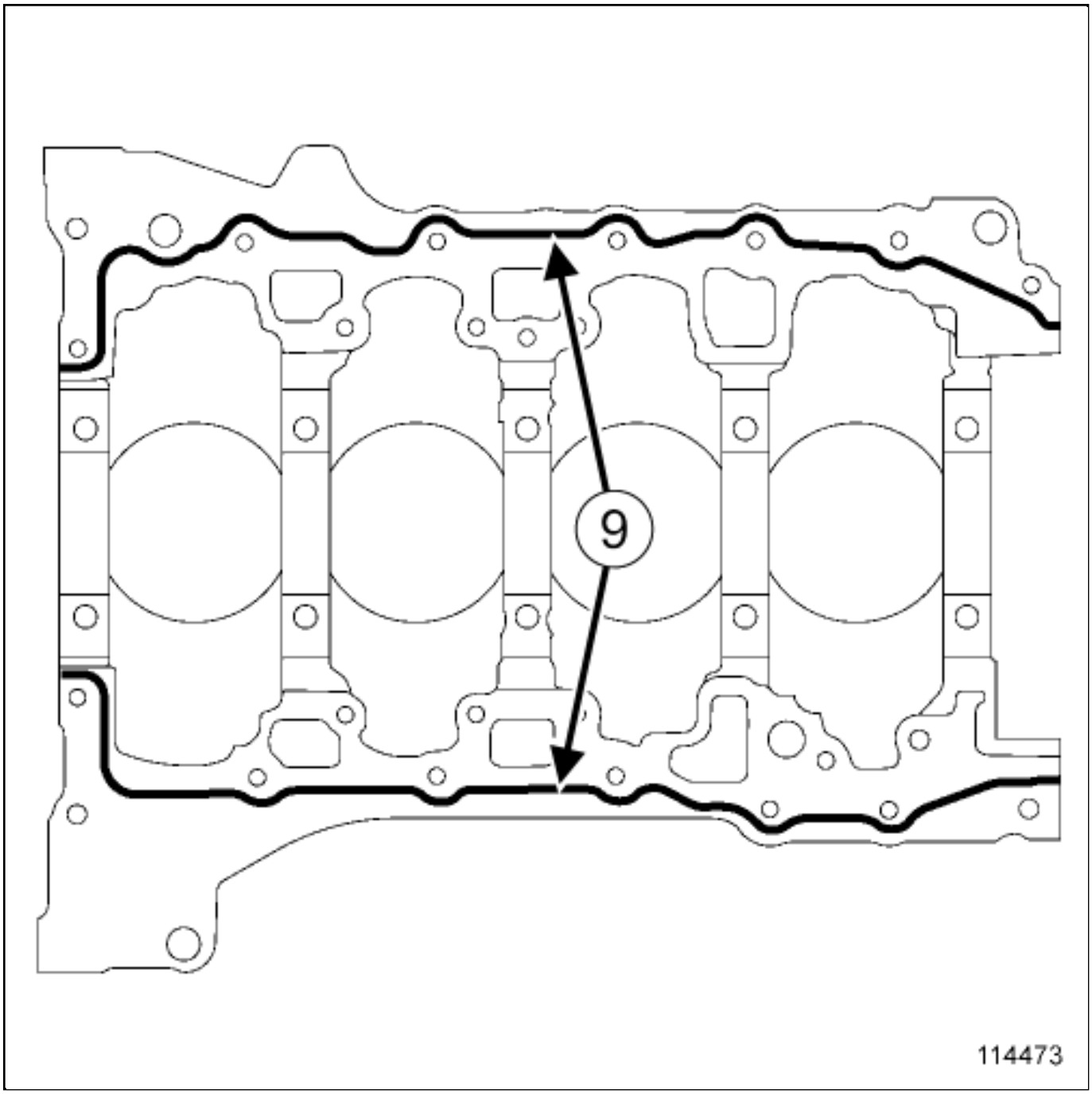
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

CAUTION

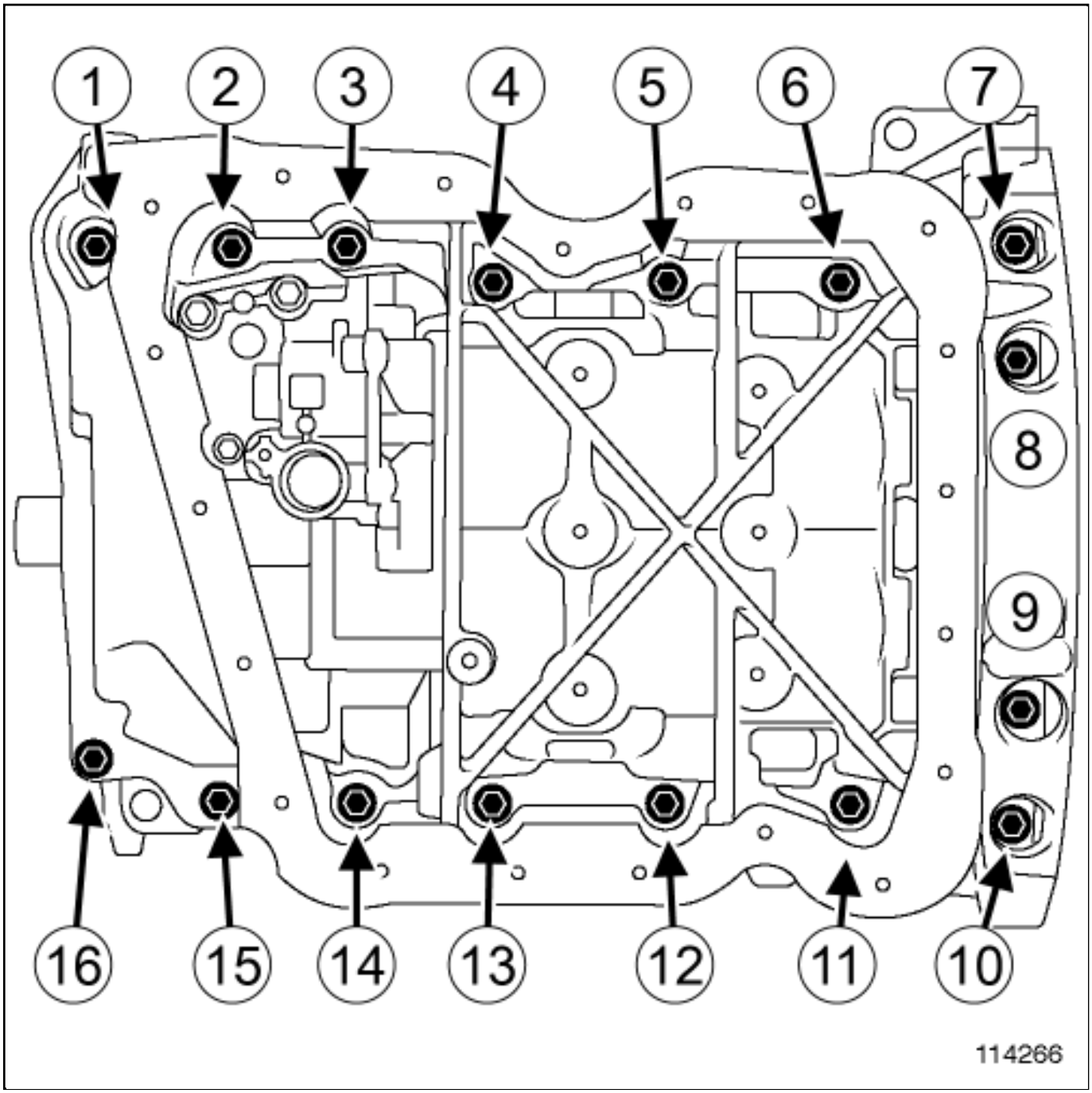
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

2. REFITTING OPERATION OF THE CYLINDER BLOCK BASE PLATE

1- REFIT THE CYLINDER BLOCK BASE PLATE (ALL TYPES)



Apply a bead(9) of Silicone Adhesive Sealantwith a diameter of 5 ± 2 mmto the cylinder block.



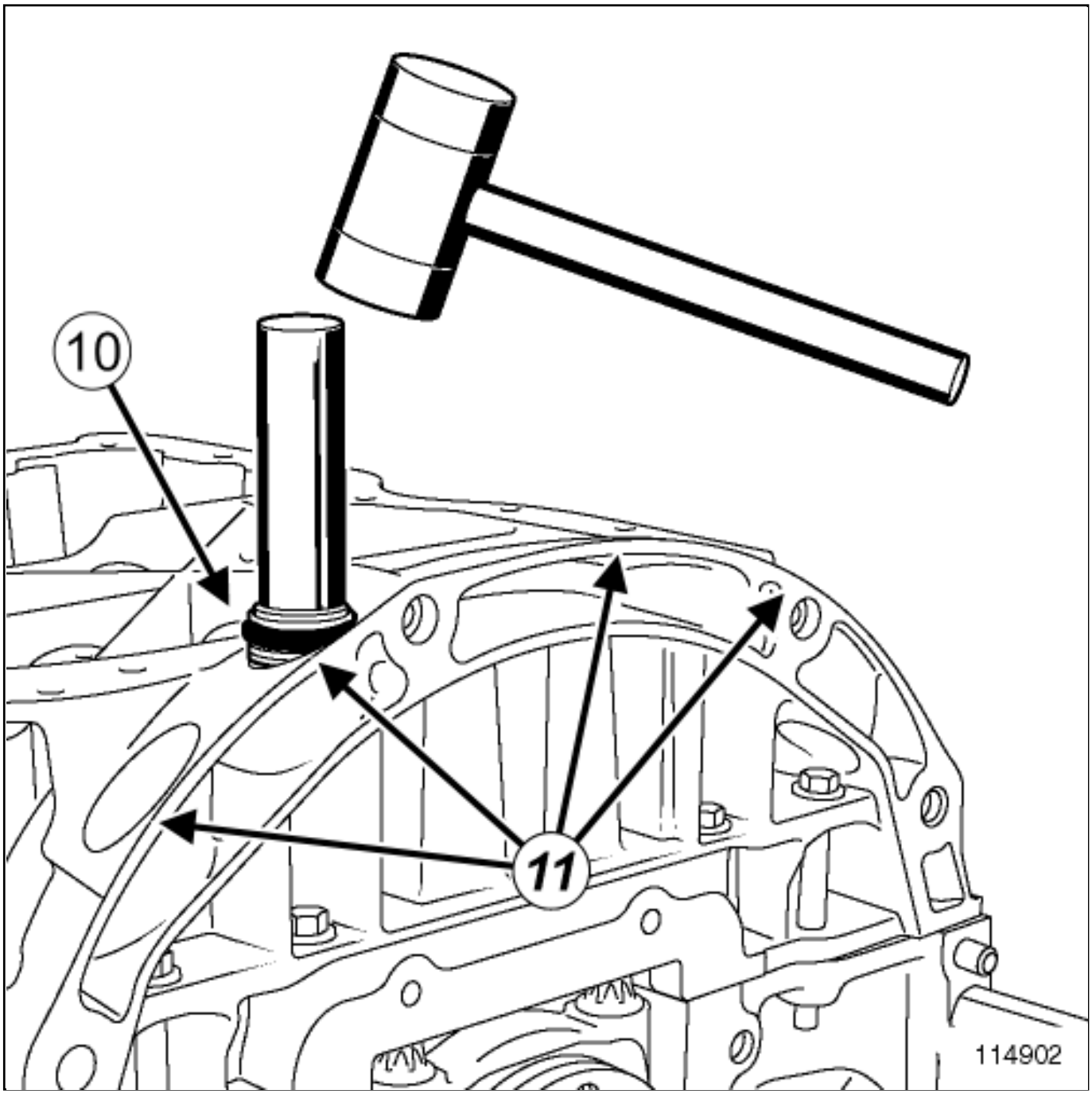
Refit:

- the cylinder block base plate.
- the cylinder block base plate bolts.

Tighten the cylinder block base plate bolts in the correct order.

Clean the excess Silicone Adhesive Sealanton the coupling and timing faces using a plastic spatula.

2- REFIT THE CYLINDER BLOCK BASE PLATE BLANKING COVERS (IF FITTED)

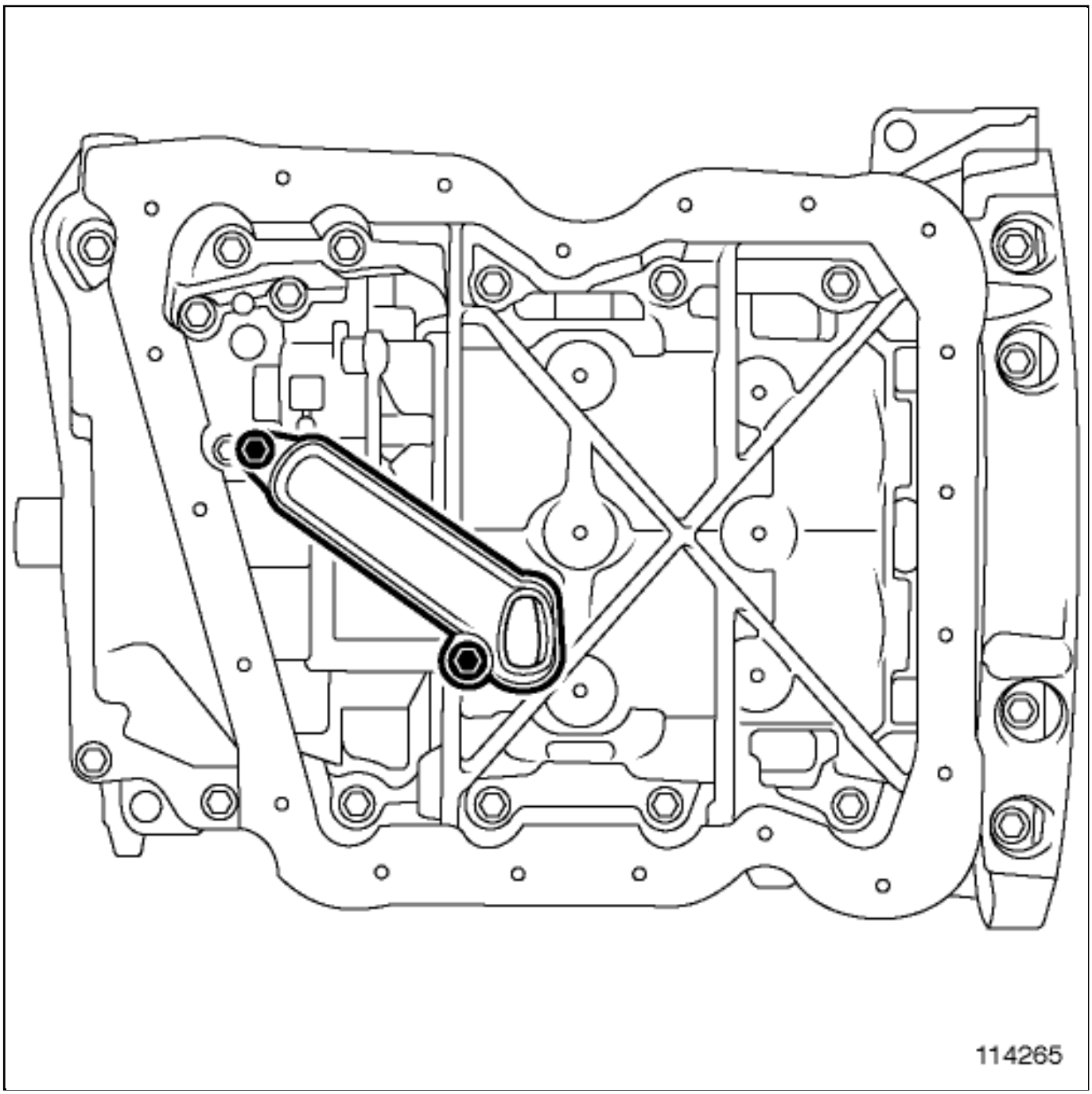


Apply a bead(10) of Silicone adhesive sealantwith a diameter of 5 ± 2 mmto the newcylinder block base plate blanking covers.

Push the blanking covers into the holes(11) on the cylinder block base plate using a copper hammer (3 mmfrom the lower edge of the holes).

Clean any excess Silicone adhesive sealantfrom the base plate of the cylinder block.

3. FINAL OPERATION



Fit a newseal on the oil pump strainer.

Lubricate the seal with engine oil.

Refit the "oil pump strainer-bolt" assembly.

Tighten the oil pump strainer bolts.

Refit:

- the sump Lower cover: Removal - Refitting ,
- the newcrankshaft seal on the gearbox side Crankshaft seal, gearbox end: Removal - Refitting .

Refit:

- the flywheel Flywheel: Removal - Refitting ,
- the clutch plate and pressure plate Pressure plate - Disc: Removal - Refitting .

Note:

Do not remove the Mot. 1431flywheel locking tool.

Refit the timing cover (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

Refit the engine - gearbox assembly.

CYLINDER BLOCK: CHECK

Note, one or more warnings are present in this procedure

Equipment required
component support
Dial gauge
cylinder head rule
internal micrometer
set of feeler gauges

1. PREPARATION OPERATION FOR CHECK

CAUTION

- It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump will irreparably damage the engine by:
  - blocking the strainer,
  - raising the oil level above maximum, with a risk of engine racing.

Note:

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair(see 10A, Engine and cylinder block assembly, Engine: Precautions for the repair) .

Remove the engine - gearbox assembly.

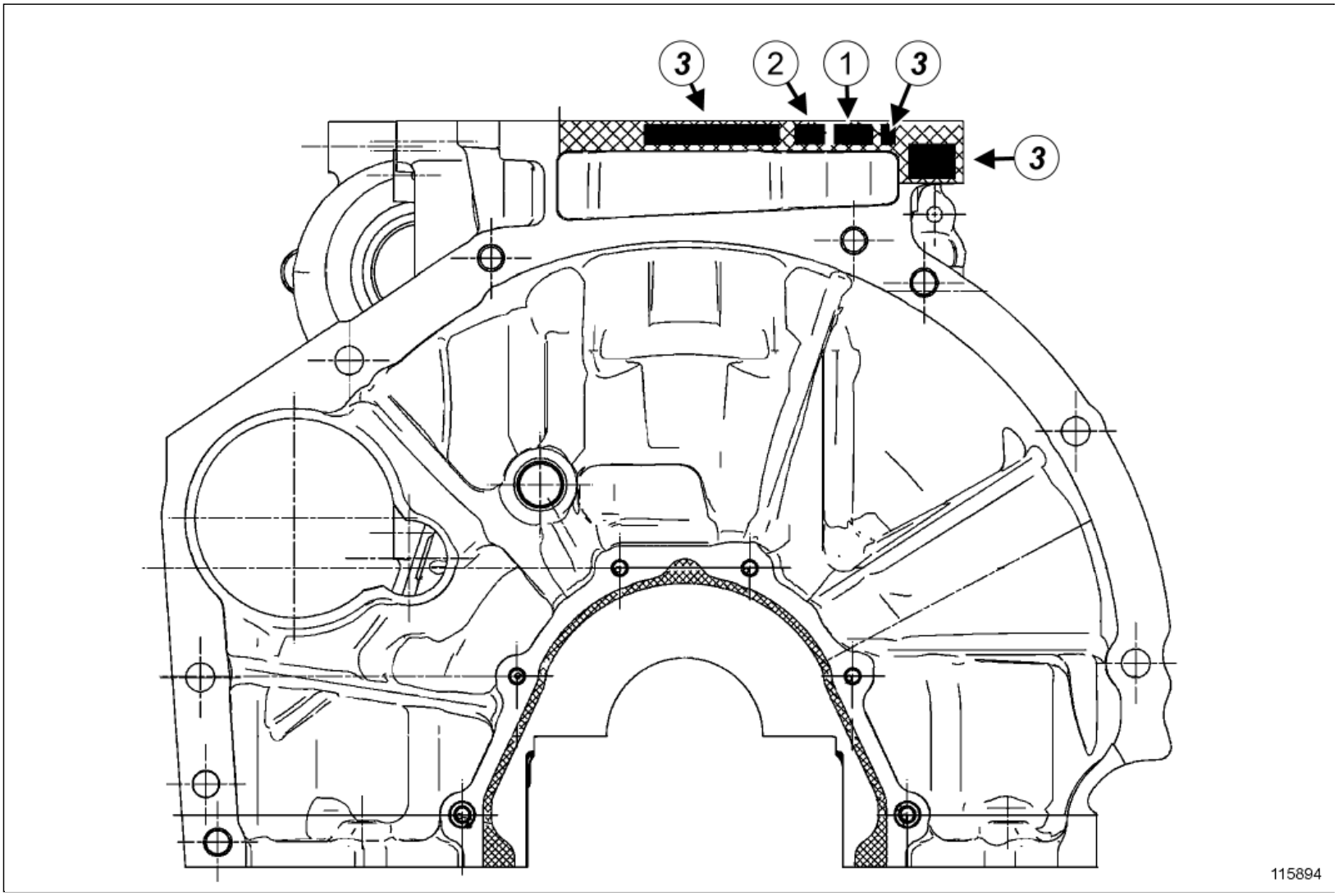
Position the engine on the component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

Remove the cylinder block(see 10A, Engine and cylinder block assembly, Cylinder block: Removal - Refitting) .

- Before any checks:
  - clean the cylinder block(see 10A, Engine and cylinder block assembly, Cylinder block: Cleaning) ,
  - Check that the cylinder block does not have any scratches, any trace of impact or abnormal wear on the cylinders, the gasket faces and the mating faces of the crankshaft bearing shell (if necessary, replace the cylinder block).

2. CHECKING THE CYLINDER BLOCK

1- IDENTIFICATION OF THE CYLINDER BLOCK



(1) : cylinder block bearing diameter category:

- identification by letter of the crankshaft bearing diameter (see correspondence table of the crankshaft bearing diameter categories),
- the order of the marking letters goes from the bearing on the timing end to the bearing on the flywheel end.

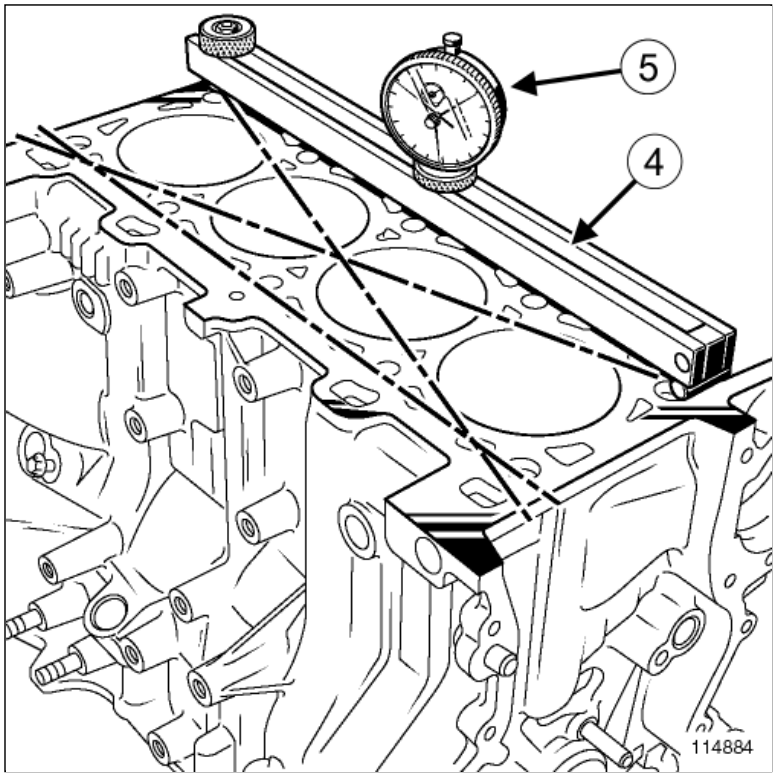
(2) : cylinder diameter category.

(3) : marking only for factory use.

1)CRANKSHAFT BEARING DIAMETER CLASSES

Letter indicating the category (1) on the cylinder block	Cylinder block bearing diameter (mm)
A	≥ 63.9975 to < 63.9985
B	≥ 63.9985 to < 63.9995
C	≥ 63.9995 to < 64.0005
E	≥ 64.0005 to < 64.0015
H	≥ 64.0015 to < 64.0025
J	≥ 64.0025 to < 64.0035
K	≥ 64.0035 to < 64.0045
L	≥ 64.0045 to < 64.0055
M	≥ 64.0055 to < 64.0065
P	≥ 64.0065 to < 64.0075
S	≥ 64.0075 to < 64.0085
T	≥ 64.0085 to < 64.0095
U	≥ 64.0095 to < 64.0105
Z	≥ 64.0105 to < 64.0115

2- CHECKING THE FLATNESS OF THE GASKET SURFACES OF THE CYLINDER BLOCK

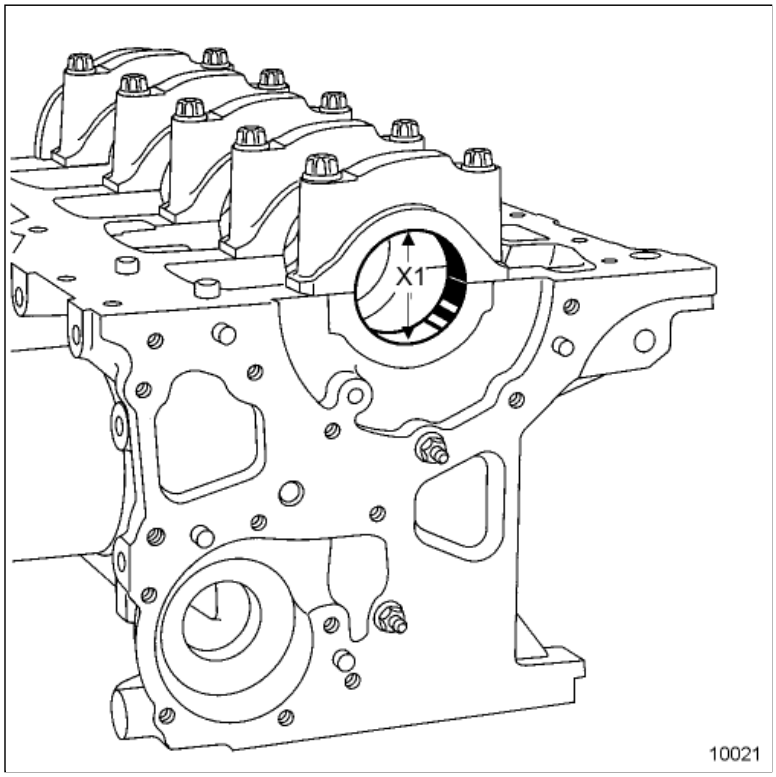


Check using a ruler(4) and a dial gauge - support assembly(5) or a cylinder head ruleand a set of feeler gaugesthe flatness of the gasket surfaces of the cylinder block:

- Maximum deformation cylinder head side: 0.05 mm,

- Maximum deformation base plate side: 0.05 mm.

3- CHECKING THE DIAMETER OF THE CRANKSHAFT BEARINGS

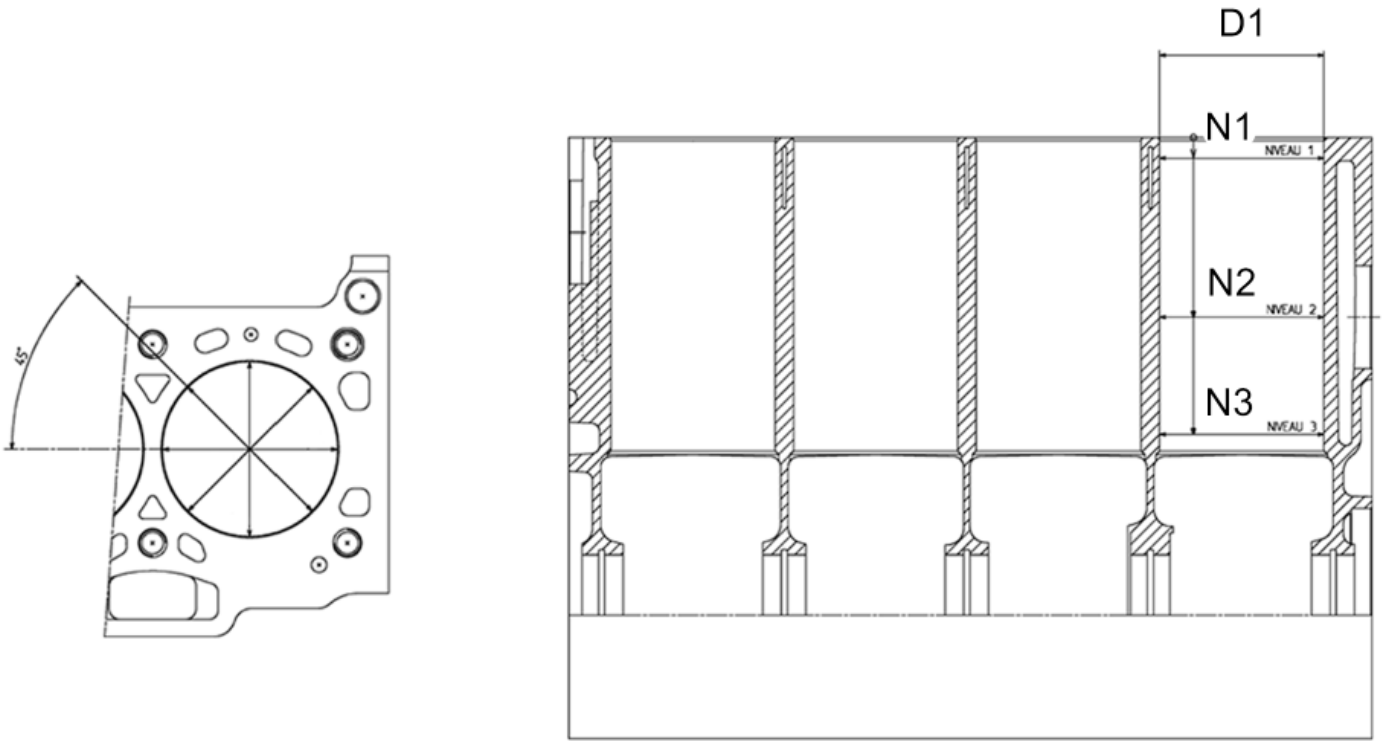


Using a internal micrometer, measure the crankshaft bearing diameter(X1) .

The diameter of the crankshaft bearings, which must be between 63.998 and 64.012 mm.

Compare the value measured with the diameter class marked on the cylinder block (see Class of crankshaft bearing diameterstable).

4- CHECKING THE DIAMETER, OUT-OF-ROUNDNESS AND TAPER OF BARRELS



125295

Using an Dial gauge, measure the internal diameter(D1) of the cylinder block barrels at intervals of 45°(4 diagonals) at 3 levels ((N1) , (N2) and (N3)): at 17 mm, 99 mmand 151 mmdepth from the cylinder head joint face and note these 12diameter values for each cylinder.

Check that these 48diameter measurements are all within the barrel diameter tolerance.

The diameter(D1) of the barrels should be between 85.00and 85.02 mm.

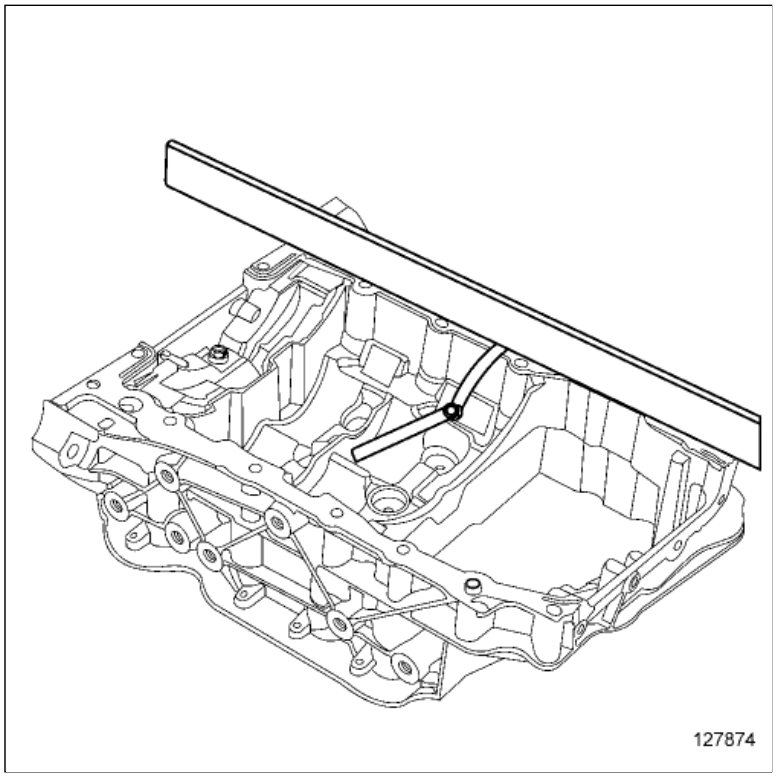
Check that the difference between the largest and smallest diameters at each depth level in each cylinder is within the out-of-roundness tolerance.

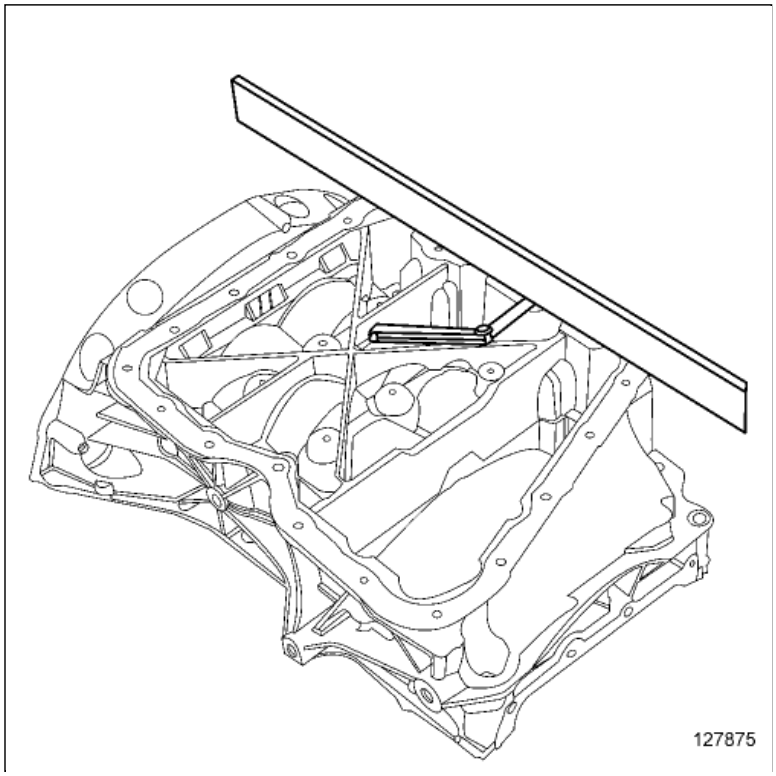
The maximum out-of-roundness permitted is 0.01 mm.

Check that the difference between the largest and smallest diameters in the same vertical plane of each diameter of each cylinder barrel is within the taper tolerance.

The maximum taper permitted is 0.01 mm.

3. CHECKING THE CYLINDER BLOCK BASE PLATE BOLT





Check using a ruler and a dial gauge - support assembly or a cylinder head ruleand a set of feeler gaugesthe flatness of the cylinder block base plate gasket surfaces.

Maximum deformation cylinder block side and sump side: 0.4 mm.

4. FINAL OPERATION

Refit the cylinder block(see 10A, Engine and cylinder block assembly, Cylinder block: Removal - Refitting) .

Remove the engine from component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

Refit the engine - gearbox assembly.

XSL version : 3.02 du 22/07/11

CYLINDERBLOCK:CLEANING

Note, one or more warnings are present in this procedure

Equipment required
component support

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

WARNING

Wear goggles with side protectors for this operation.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

Do not allow this product to drip onto the paintwork.

Clean the cylinder head carefully to avoid any foreign bodies entering the oil return and supply pipes.

Failure to follow this advice could lead to the blocking of the various oil inlet galleries, which would quickly result in engine damage.

1. CLEANING PREPARATION OPERATION

- Remove the engine - gearbox assembly.

- Separate the manual gearbox from the engine Manual gearbox: Removal - Refitting

- Place the engine on the component support (see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

- Remove the cylinder block (see 10A, Engine and cylinder block assembly, Cylinder block: Removal - Refitting) .

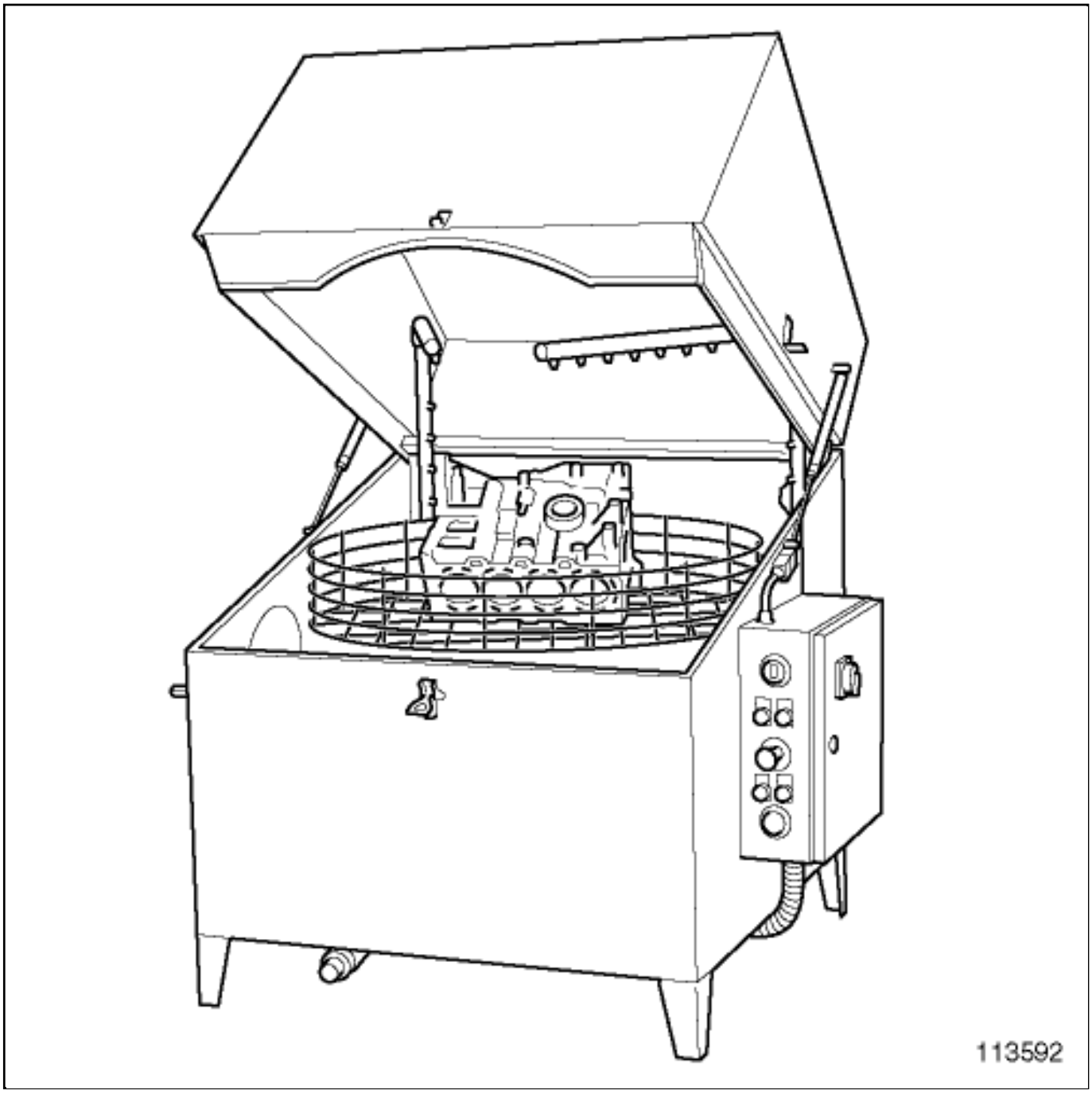
2. CLEANING THE ENGINE PERIPHERALS

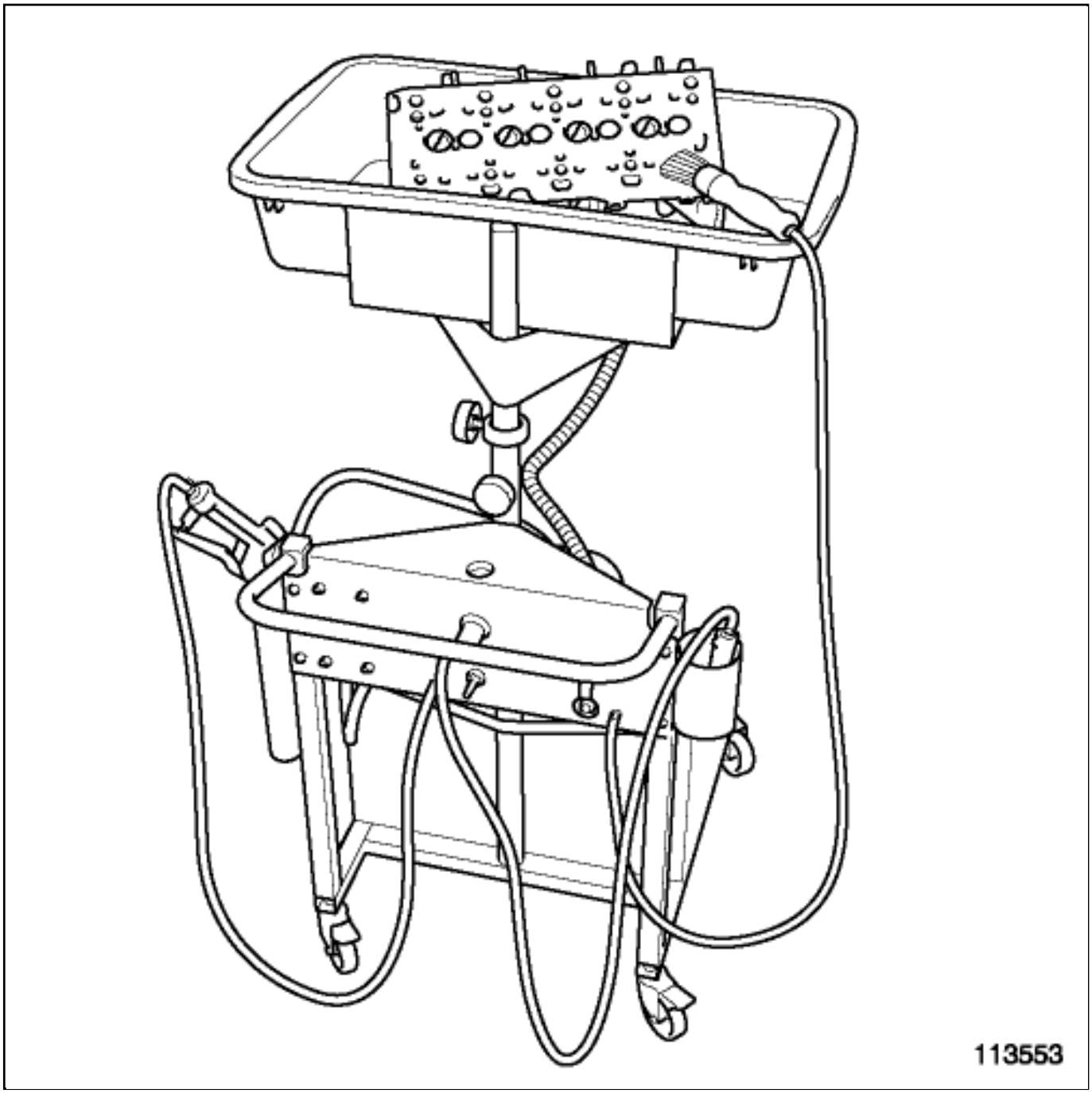
- Clean the gasket surfaces of the cylinder block with Super cleaning agent for joint faces Vehicle: Parts and consumables for the repair .

- Remove the residue using a wooden spatula

- Finish cleaning the parts using a grey abrasive pad, part number 77 01 405 943.

- Remove the cylinder block from the component support.


113592



Wash the cylinder block using a cleaning fountain or a heated cleaning bath.

3. FINAL OPERATION.

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

CYLINDER BLOCK: REMOVAL - REFITTING

Tightening torques	
bolts of the accessories belt fixed roller	25 N.m

Special tooling required	
Seal extractor tool	Mot. 587
Engine lifting ring.	Mot. 923
Flywheel locking tool.	Mot. 1431

Equipment required
workshop hoist

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the engine - gearbox assembly.

- Remove the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

X43, M9R, 804 817 824 839 844 846(804 OR 817 OR 824 OR 839 OR 844 OR 846) AND (670 OR 678 OR 680 OR 690 OR 696 OR 698 OR 880 OR 896 OR 898) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858)

- Remove the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

- Remove:
  - the damper valve,
  - the EGR pipe at the EGR cooler inlet,
  - depending on the version, the catalytic pre-converter or the catalytic converter at the turbocharger outlet Catalytic pre-converter: Removal - Refitting or Catalytic converter: Removal - Refitting ,
  - the turbocharger oil pipes Turbocharger oil pipe: Removal - Refitting ,
  - the vacuum pump Vacuum pump: Removal - Refitting ,
  - the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
  - the oil decanter Oil decanter: Removal - Refitting ,
  - the injector fuel return rail Diesel injector fuel return rail: Removal - Refitting ,
  - the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal

- Refitting ,
- the diesel injectorsDiesel injector: Removal - Refitting ,
- the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the oil filter unitOil filter unit: Removal - Refitting .

Remove:

- the clutch plate and pressure platePressure plate - Disc: Removal - Refitting ,
- the flywheelFlywheel: Removal - Refitting ,
- the flywheel locking toolFlywheel locking tool.(Mot. 1431) .

Remove:

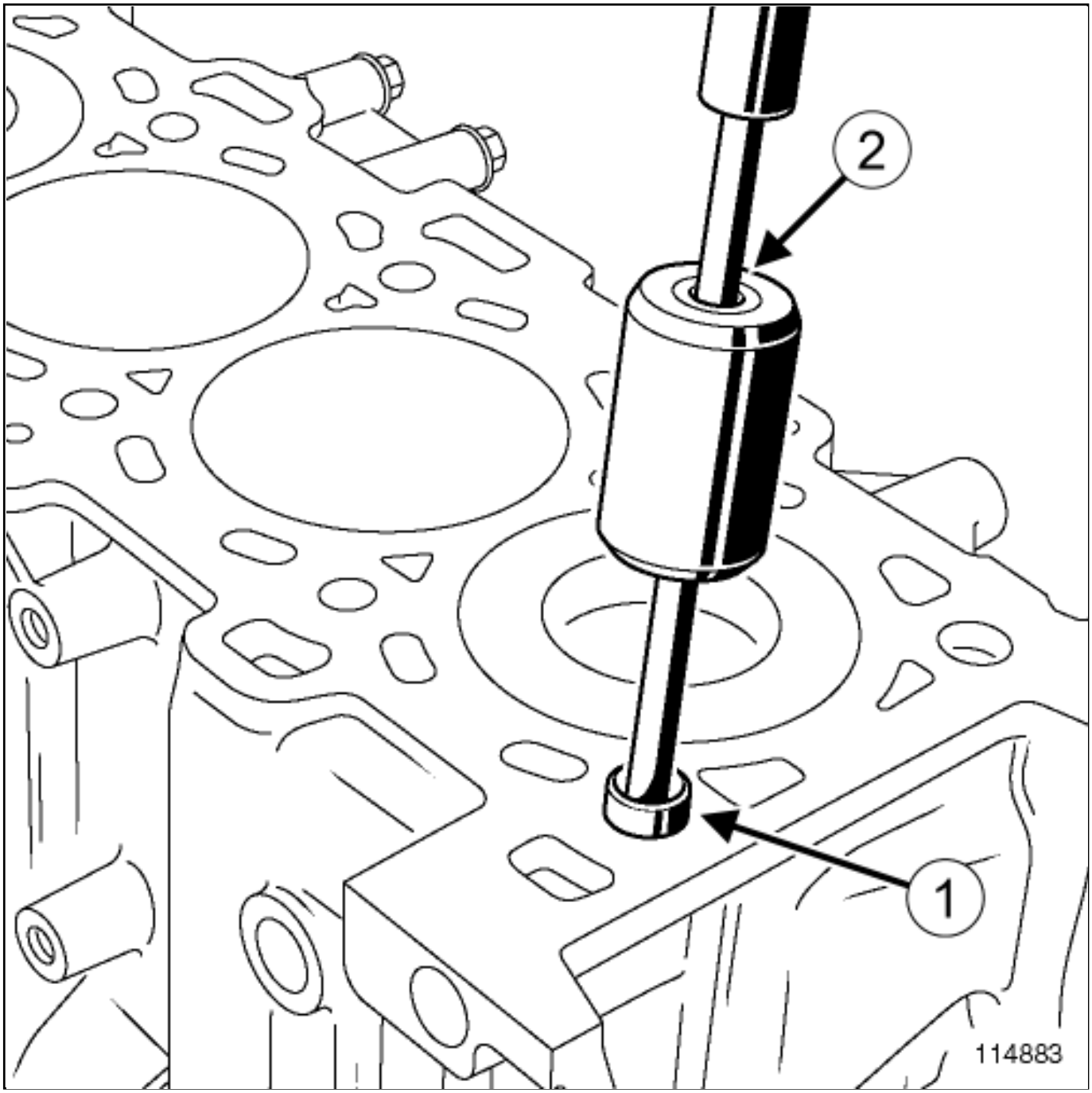
- the gearbox side crankshaft sealCrankshaft seal, gearbox end: Removal - Refitting ,
- the sumpLower cover: Removal - Refitting ,
- the cylinder block base plate(see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) .

Remove:

- the con rod - piston assemblies from each cylinder(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) ,
- the crankshaft(see 10A, Engine and cylinder block assembly, Crankshaft: Removal - Refitting) .

2. CYLINDER BLOCK REMOVAL OPERATION

Operation only to be carried out when replacing or cleaning the cylinder block.

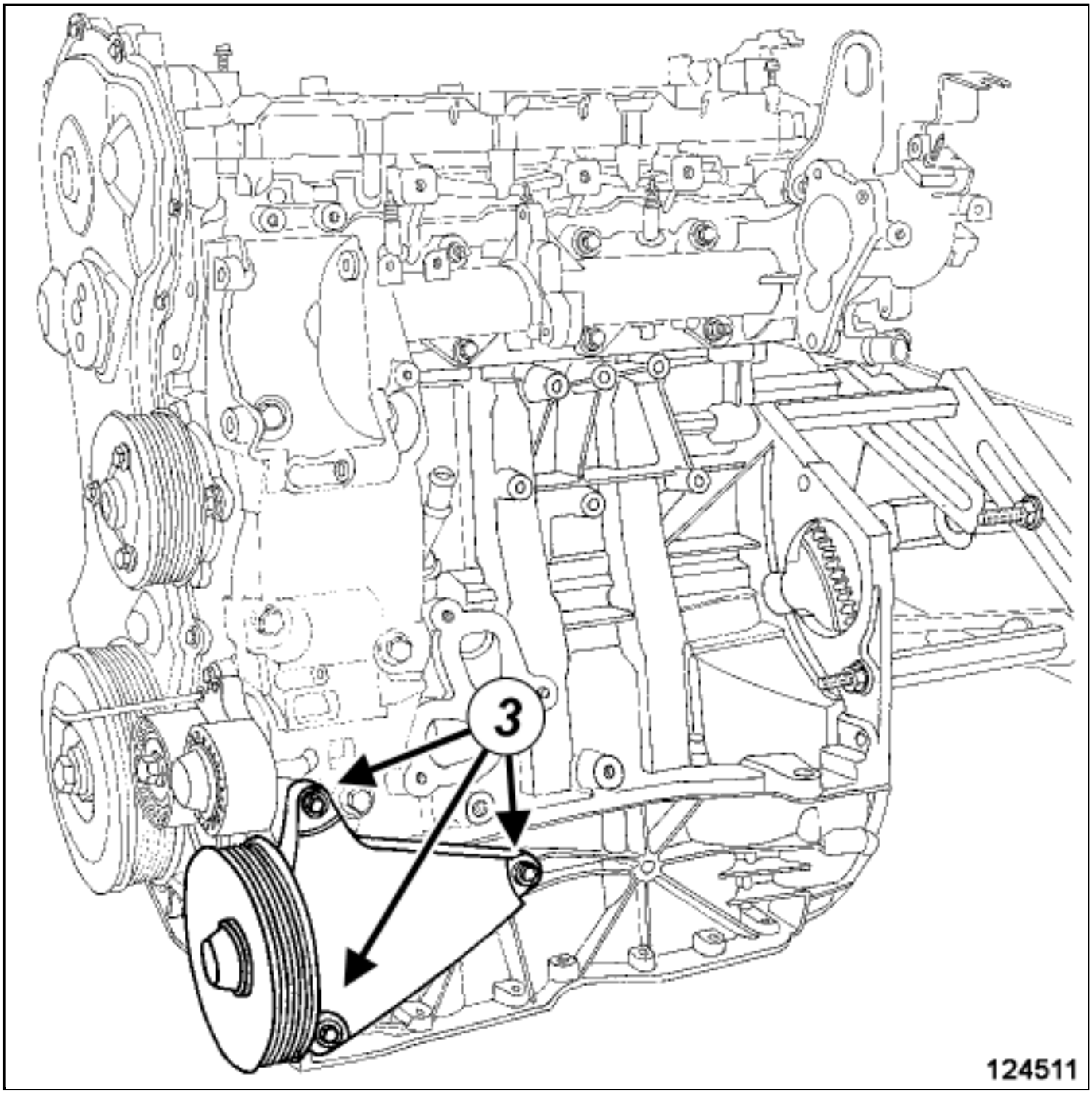


Remove the centring dowels(1) from the cylinder head using theSeal extractor tool(Mot. 587) (2) or a slide hammer.

Remove:

- the crankshaft position sensorCrankshaft position sensor: Removal - Refitting ,
- the oil level sensorOil level sensor: Removal - Refitting ,
- the EGR cooler,
- the coolant pump inlet pipeCoolant pump inlet pipe: Removal - Refitting .

Remove the power assisted steering pumpPower-assisted steering pump: Removal - Refitting .



Remove:

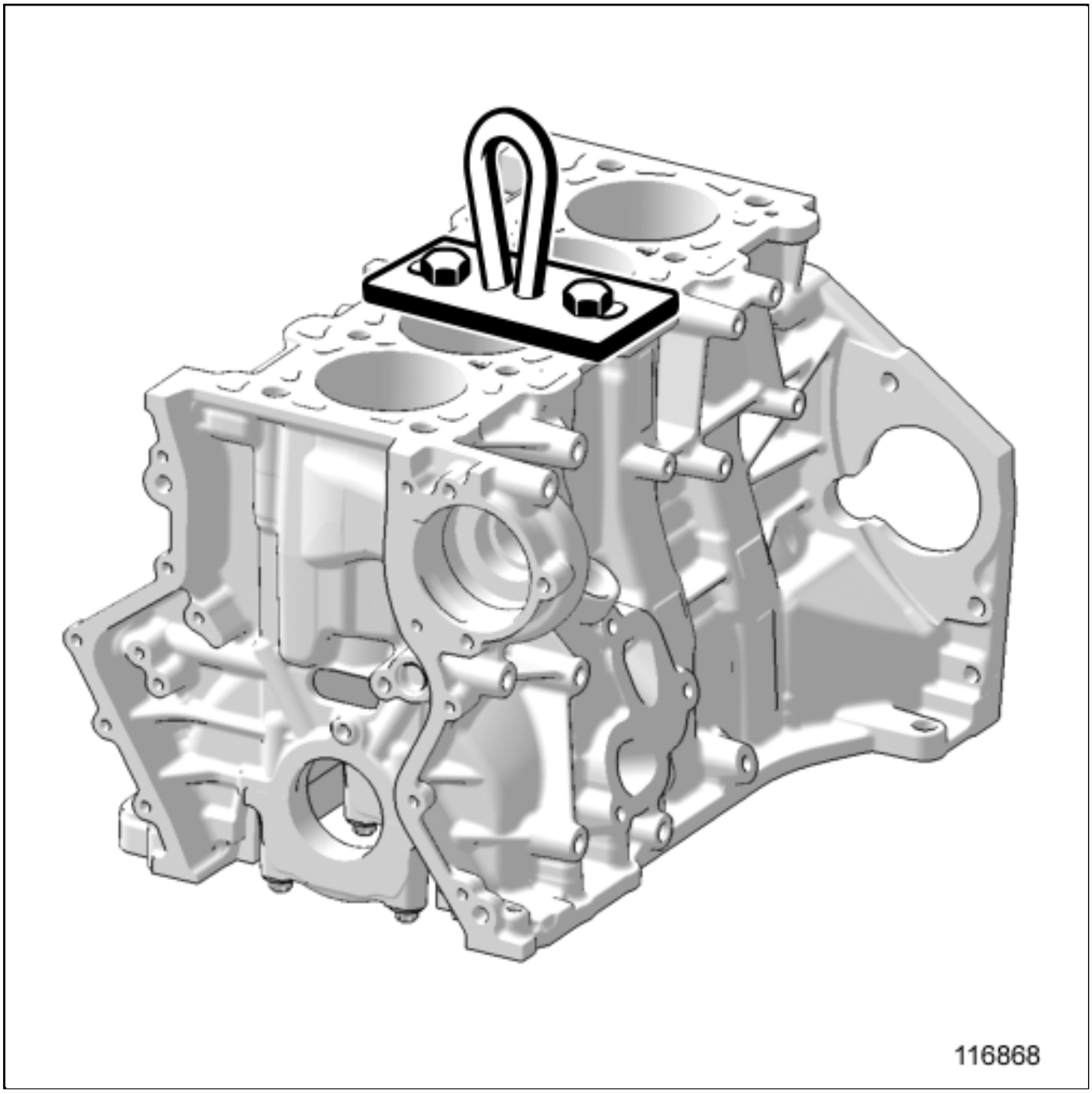
- the bolts(3) from the accessories belt fixed roller,
- the accessories belt fixed roller.

Remove:

- the alternator Alternator: Removal - Refitting ,
- the multifunction support Multifunction support: Removal - Refitting .

REFITTING

1. REFITTING PREPARATION OPERATION



- Position the Engine lifting ring.(Mot. 923) on the cylinder block.

- Remove the cylinder block from the component support using a workshop hoist(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

- Clean the cylinder block(see 10A, Engine and cylinder block assembly, Cylinder block: Cleaning) .

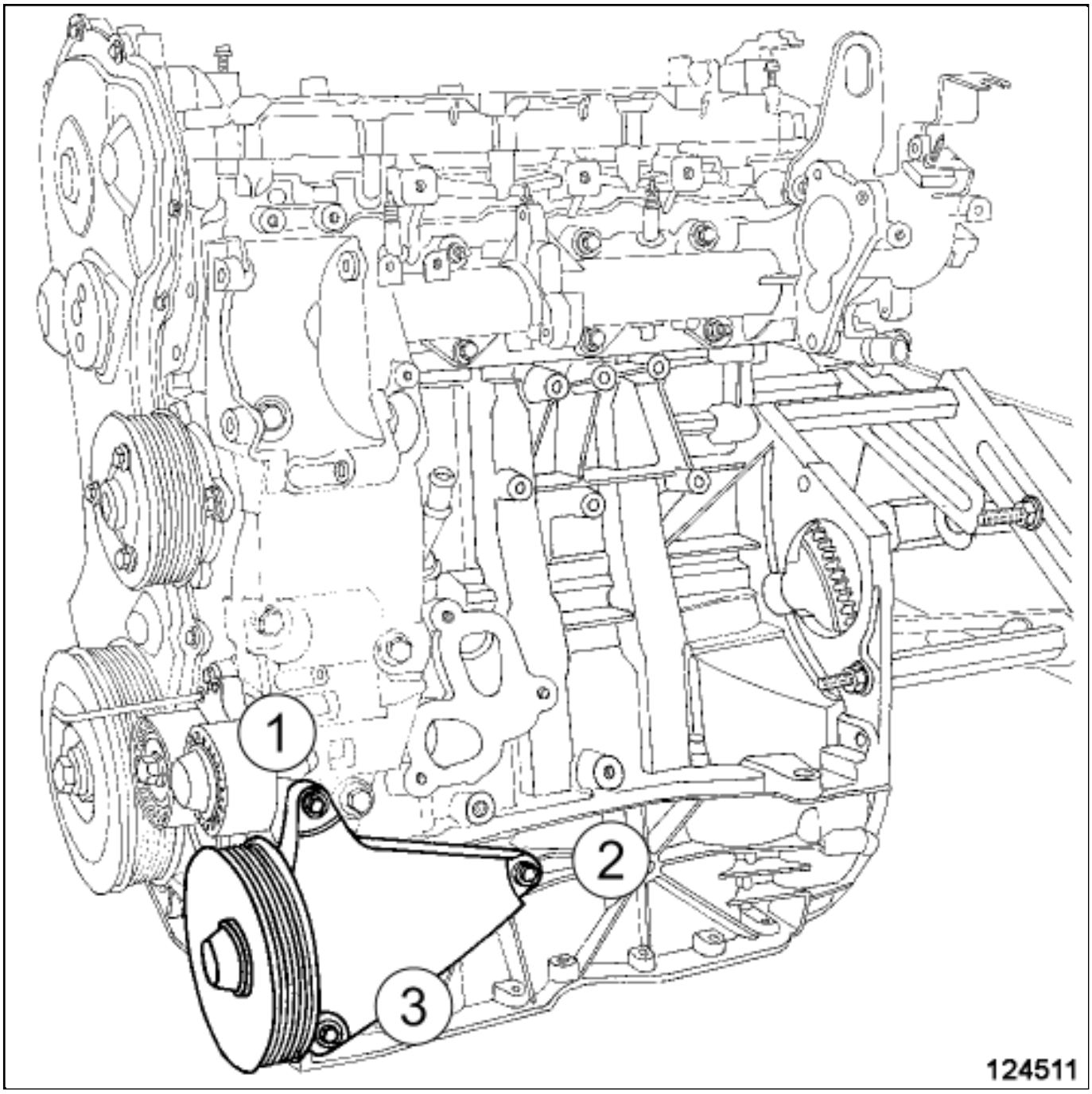
- Refit the cylinder block on the component support using a workshop hoist(see 10A, Engine and cylinder

block assembly, Engine support equipment: Use) .

2. CYLINDER BLOCK REFITTING OPERATION

Refit:

- the multifunction supportMultifunction support: Removal - Refitting ,
- the alternatorAlternator: Removal - Refitting .



Refit:

- the accessories belt fixed roller,
- the accessories belt fixed roller bolts.

- Torque tighten in order the bolts of the accessories belt fixed roller25 N.m.

- Refit the power assisted steering pump Power-assisted steering pump: Removal - Refitting .

- Refit:
  - the crankshaft position sensor Crankshaft position sensor: Removal - Refitting ,
  - the oil level sensor Oil level sensor: Removal - Refitting ,
  - the EGR cooler,
  - the coolant pump inlet pipe Coolant pump inlet pipe: Removal - Refitting ,
  - the cylinder head centring dowels.

3. FINAL OPERATION

- When replacing the cylinder block, always identify the crankshaft bearing shell thickness classes to refit on each bearing to guarantee any journal clearances remain within the tolerances, before refitting the crankshaft (see 10A, Engine and cylinder block assembly, Crankshaft: Check) .

Note:

Any clearances exceeding the tolerances of the crankshaft journals can cause engine damage.

- Refit the crankshaft (see 10A, Engine and cylinder block assembly, Crankshaft: Removal - Refitting) .

- If replacing the cylinder block, always identify the piston height category to refit in each cylinder to guarantee the piston protrusion in relation to the cylinder block remains within the tolerances, before refitting the conrod - piston assemblies (see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

Refit the con rod - piston assemblies onto each cylinder(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

If replacing the cylinder block, always check that the piston protrusion in relation to the cylinder block remains within the tolerances after refitting the conrod - piston assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

Refit:

- the cylinder block base plate(see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) ,
- the sumpLower cover: Removal - Refitting ,
- the newcrankshaft seal on the gearbox sideCrankshaft seal, gearbox end: Removal - Refitting .

Refit:

- the flywheelFlywheel: Removal - Refitting ,
- the clutch plate and pressure platePressure plate - Disc: Removal - Refitting .

Refit:

- the oil filter unitOil filter unit: Removal - Refitting ,
- the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the diesel injectorsDiesel injector: Removal - Refitting ,
- the newhigh pressure pipes between the injector rail and the injectorsHigh pressure pipe between rail and injector: Removal - Refitting .
- the injector fuel return railDiesel injector fuel return rail: Removal - Refitting ,
- the oil decanterOil decanter: Removal - Refitting ,
- the newhigh pressure pipe between the pump and the railHigh pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pumpVacuum pump: Removal - Refitting ,
- the newoil pipes of the turbochargerTurbocharger oil pipe: Removal - Refitting ,
- depending on the version, the catalytic pre-converter or the catalytic converter at the turbocharger outletCatalytic pre-converter: Removal - Refitting orCatalytic converter: Removal - Refitting ,
- the damper valve.

X43, M9R, 804 817 824 839 844 846(804 OR 817 OR 824 OR 839 OR 844 OR 846) AND (670 OR 678 OR 680 OR 690 OR 696 OR 698 OR 880 OR 896 OR 898) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858)

- Refit the exhaust gas pressure sensor**Exhaust gas pressure sensor: Removal - Refitting** .

- Refit the timing chain**(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting)** .

- Refit the engine - gearbox assembly.

CYLINDER HEAD ASSEMBLY: EXPLODED VIEW

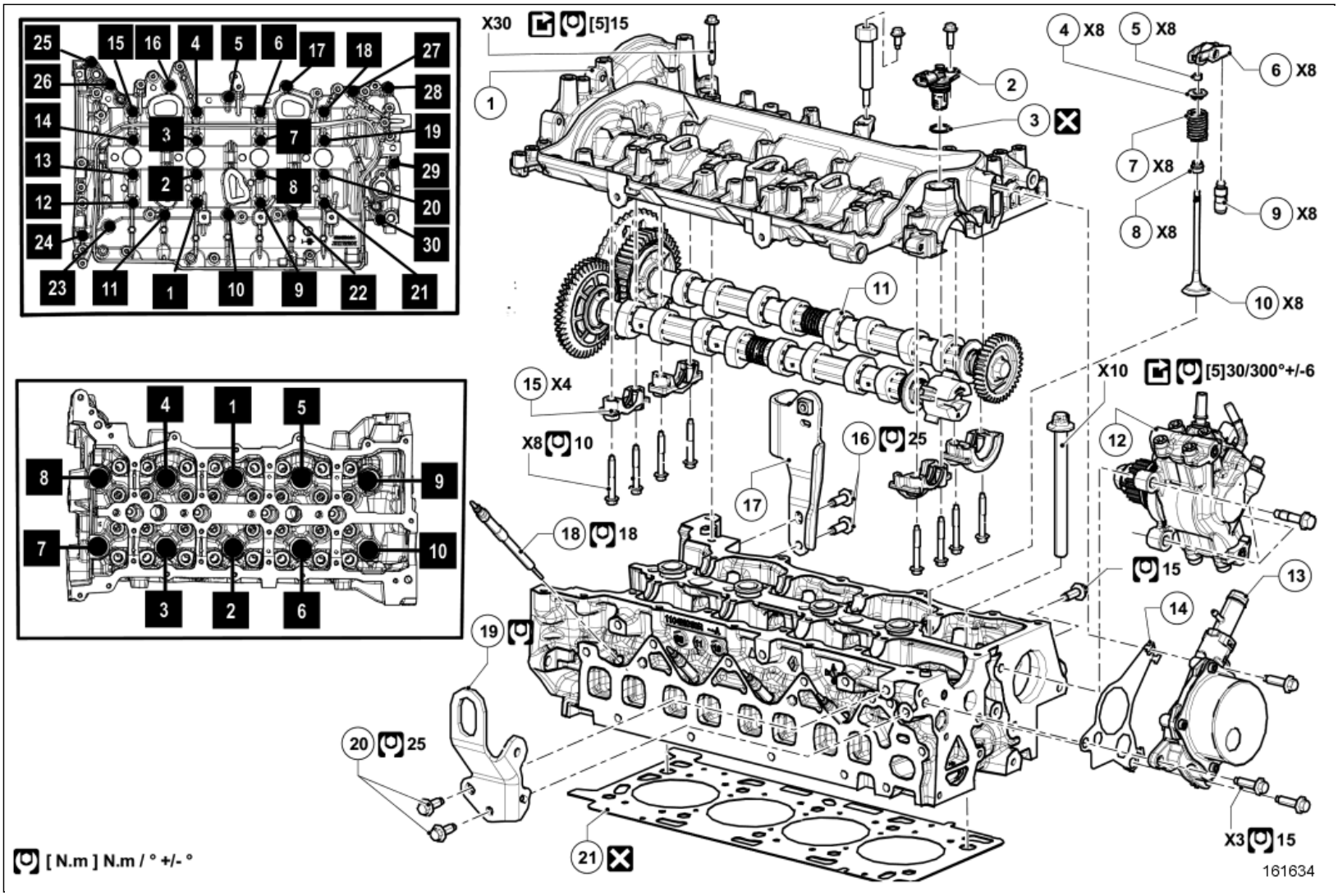


Illustration key: Description .

For fastenings with no specified tightening torque values, refer to the Table of Standard TorquesTightening torques: General information .

Marks	Designations	Informations
1	Cylinder head cover	(see 11A, Top and front of engine, Rocker cover: Removal - Refitting)
2	Camshaft position sensor	(see **Camshaft position sensor: Removal - Refitting**)
3	Camshaft position sensor seal	
4	Valve spring cup	Valve: Removal - Refitting
5	Valve stem collet	Valve: Removal - Refitting
6	Valve rocker	(see 11A, Top and front of engine, Cylinder head: Removal - Refitting)
7	Valve spring	
8	Valve stem seal	
9	Valve rocker hydraulic tappet	(see 11A, Top and front of engine, Cylinder head: Removal - Refitting)
10	Valve	Valve: Removal - Refitting
11	Exhaust camshaft	(see 11A, Top and front of engine, Camshaft: Removal - Refitting) (see 11A,Top and front of engine, Camshaft: Removal - Refitting)
12	High pressure pump	
13	Vacuum pump	Vacuum pump: Removal - Refitting
14	Vacuum pump seal	
15	Camshaft bearing cap	(see 11A, Top and front of engine, Camshaft: Removal - Refitting) (see 11A,Top and front of engine, Camshaft: Removal - Refitting)
16	Lifting eye support bolts	
17	Lifting eye support	
18	Heater plug	
19	Gearbox side lifting eye	(see 11A, Top and front of engine, Lifting eyes: Removal - Refitting)
20	Gearbox side lifting eye bolts	
21	Cylinder head gasket	(see 11A, Top and front of engine, Cylinder head: Removal - Refitting)

CYLINDER HEAD ASSEMBLY: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

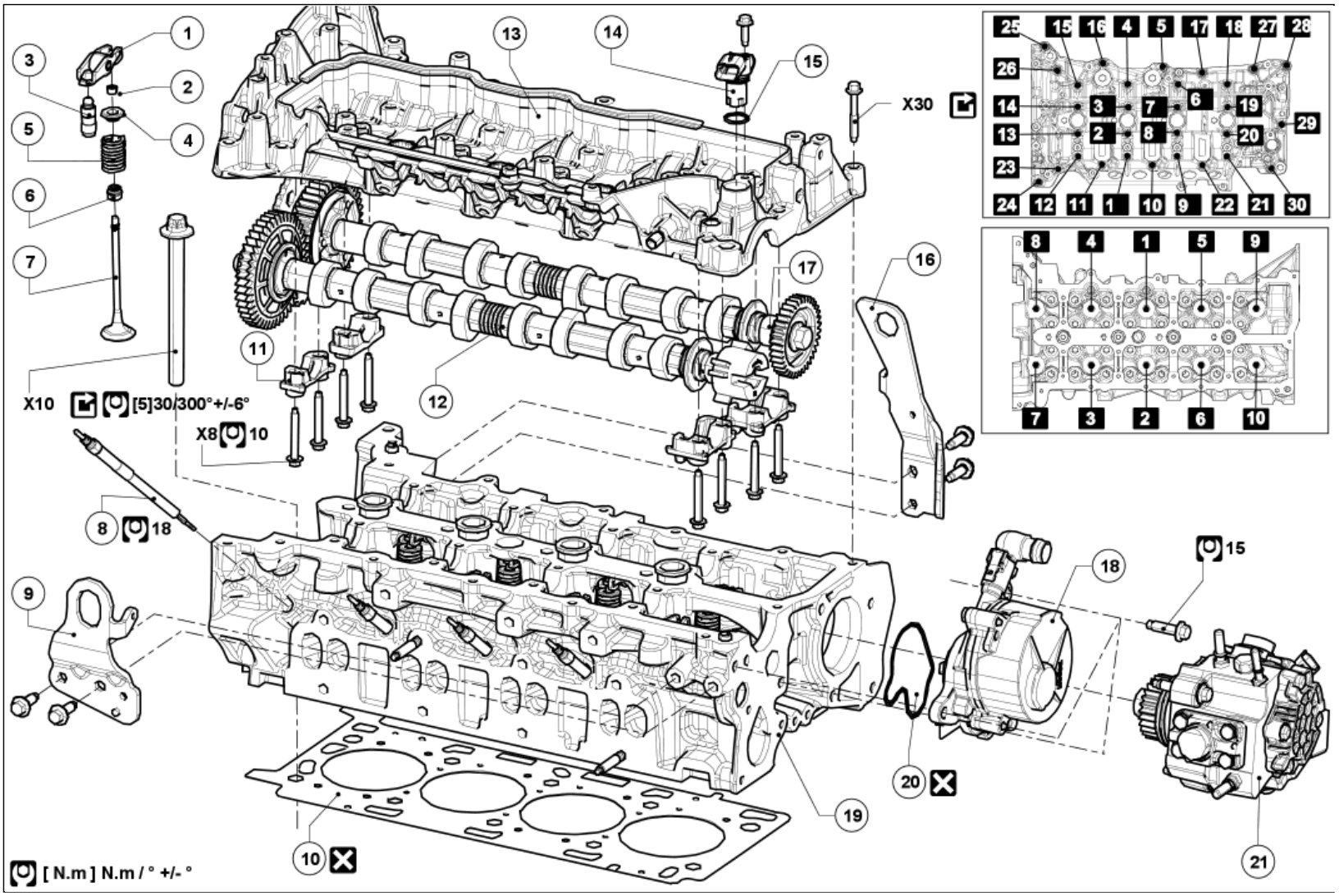


Illustration key: Description Key.

No.	Description	Information
1	Valve rocker	(see 11A, Top and front of engine, Cylinder head: Removal - Refitting)
2	Valve stem collet	Valve: Removal - Refitting
3	Valve rocker hydraulic tappet	(see 11A, Top and front of engine, Cylinder head: Removal - Refitting)
4	Valve spring cup	Valve: Removal - Refitting
5	Valve spring	
6	Valve stem seal	
7	Valve	
8	Heater plug	
9	Timing end lifting eye	Cylinder head: Stripping - Rebuilding
10	Cylinder head gasket	(see 11A, Top and front of engine, Cylinder head: Removal - Refitting)
11	Camshaft bearing cap	(see 11A, Top and front of engine, Camshaft: Removal - Refitting) (see 11A,Top and front of engine, Camshaft: Removal - Refitting)
12	Inlet camshaft	
13	Cylinder head cover	(see 11A, Top and front of engine, Rocker cover: Removal - Refitting)
14	Camshaft position sensor	
15	Camshaft position sensor seal	
16	Gearbox side lifting eye	Cylinder head: Stripping - Rebuilding
17	Exhaust camshaft	(see 11A, Top and front of engine, Camshaft: Removal - Refitting) (see 11A,Top and front of engine, Camshaft: Removal - Refitting)
18	Vacuum pump	Vacuum pump: Removal - Refitting
19	Cylinder head	(see 11A, Top and front of engine, Cylinder head: Removal - Refitting)
20	Vacuum pump seal	Vacuum pump: Removal - Refitting
21	High pressure pump	

CYLINDER HEAD ASSEMBLY: EXPLODED VIEW

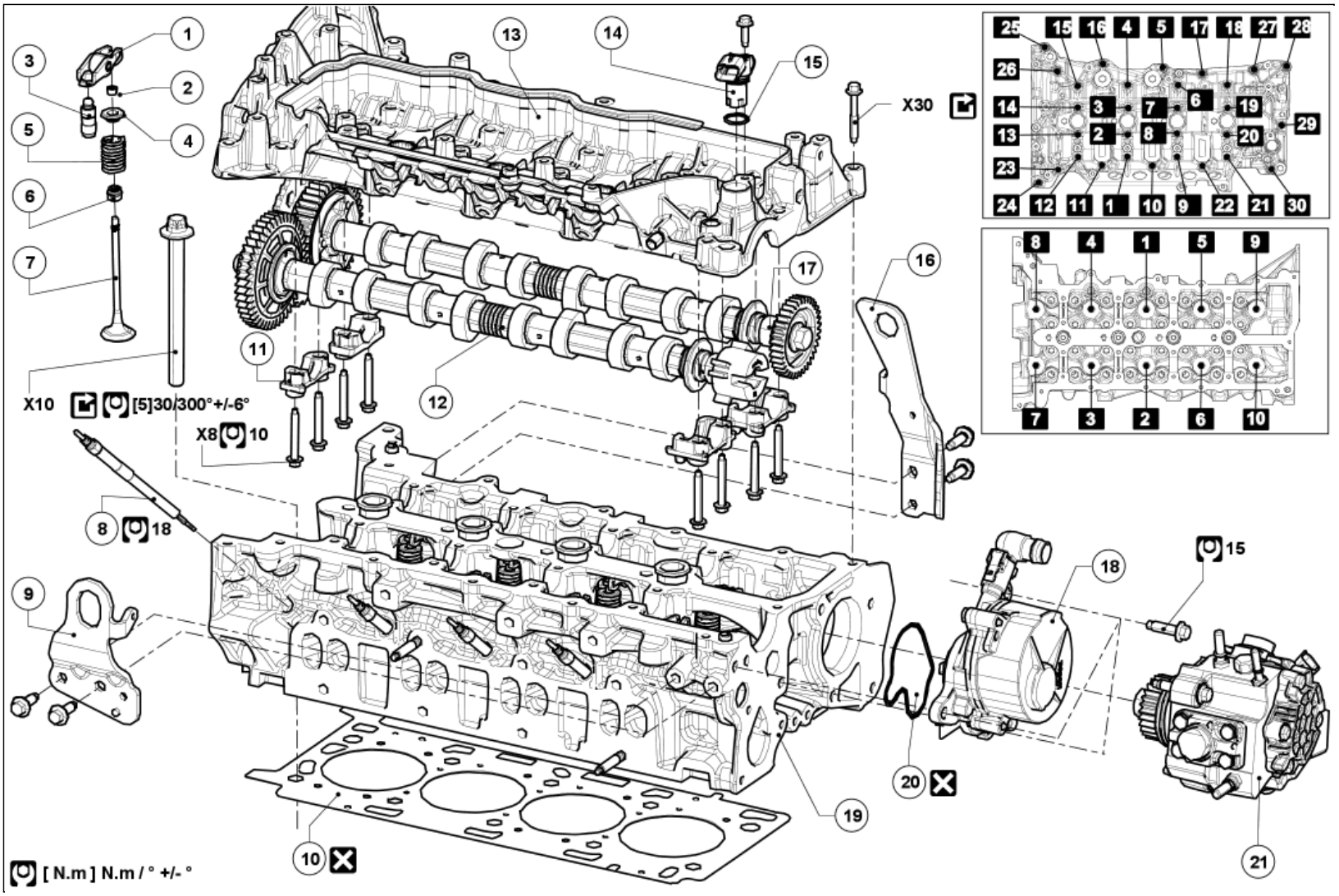


Illustration key: Description Key.

No.	Description	Information
1	Valve rocker	Cylinder head: Removal - Refitting
2	Valve stem collet	Valve: Removal - Refitting
3	Valve rocker hydraulic tappet	Cylinder head: Removal - Refitting
4	Valve spring cup	Valve: Removal - Refitting
5	Valve spring	
6	Valve stem seal	
7	Valve	
8	Heater plug	
9	Timing end lifting eye	Cylinder head: Stripping - Rebuilding
10	Cylinder head gasket	Cylinder head: Removal - Refitting
11	Camshaft bearing cap	Camshaft: Removal - Refitting
12	Inlet camshaft	
13	Cylinder head cover	Rocker cover: Removal - Refitting
14	Camshaft position sensor	
15	Camshaft position sensor seal	
16	Gearbox side lifting eye	Cylinder head: Stripping - Rebuilding
17	Exhaust camshaft	Camshaft: Removal - Refitting
18	Vacuum pump	Vacuum pump: Removal - Refitting
19	Cylinder head	Cylinder head: Removal - Refitting
20	Vacuum pump seal	Vacuum pump: Removal - Refitting
21	High pressure pump	(see 13B, Diesel injection, Injection assembly: Exploded view)

DAMPER VALVE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

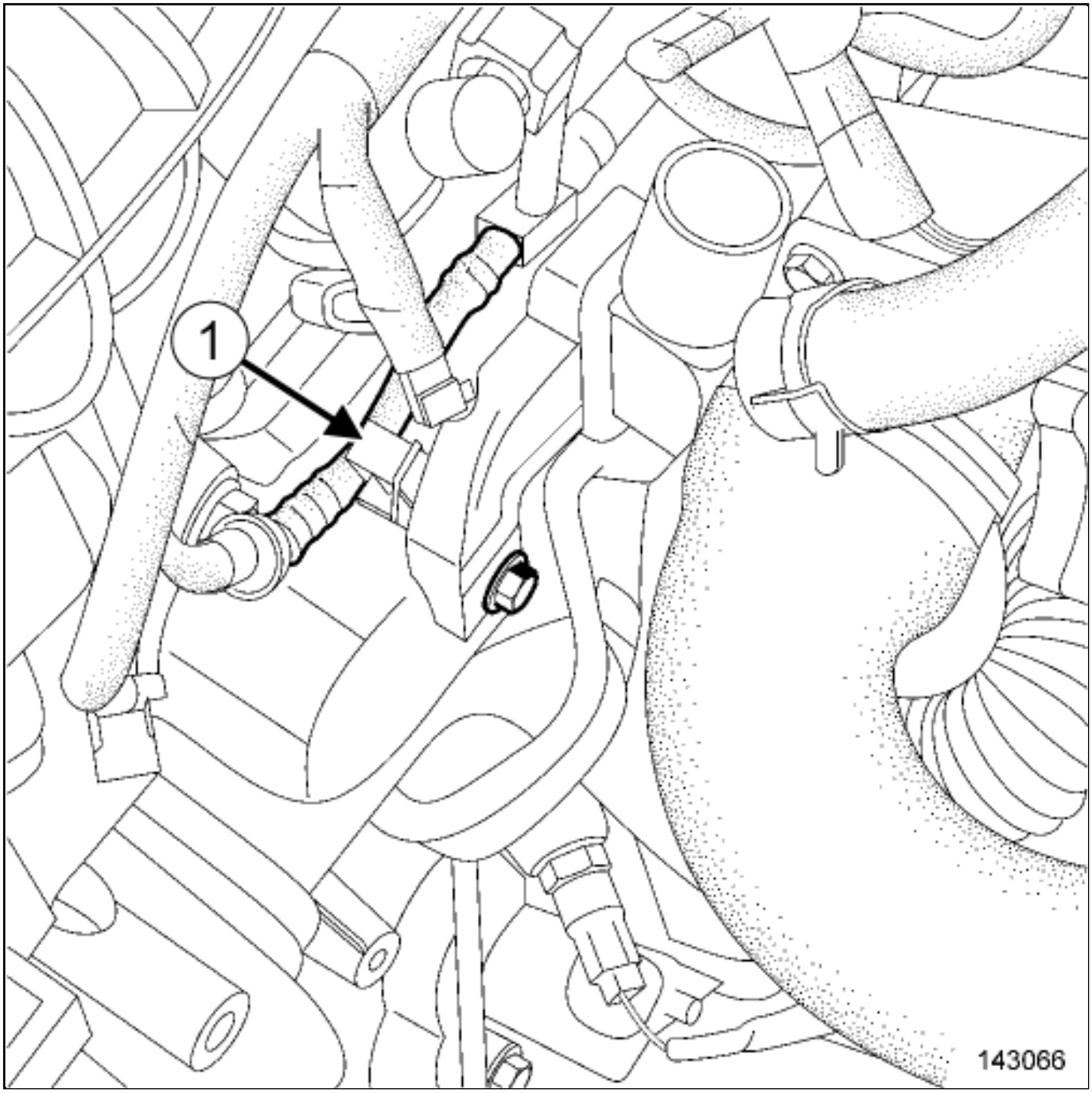
Location and specifications (tightening torques, parts always to be replaced, etc.)**Exhaust gas recirculation circuit assembly: Exploded view** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

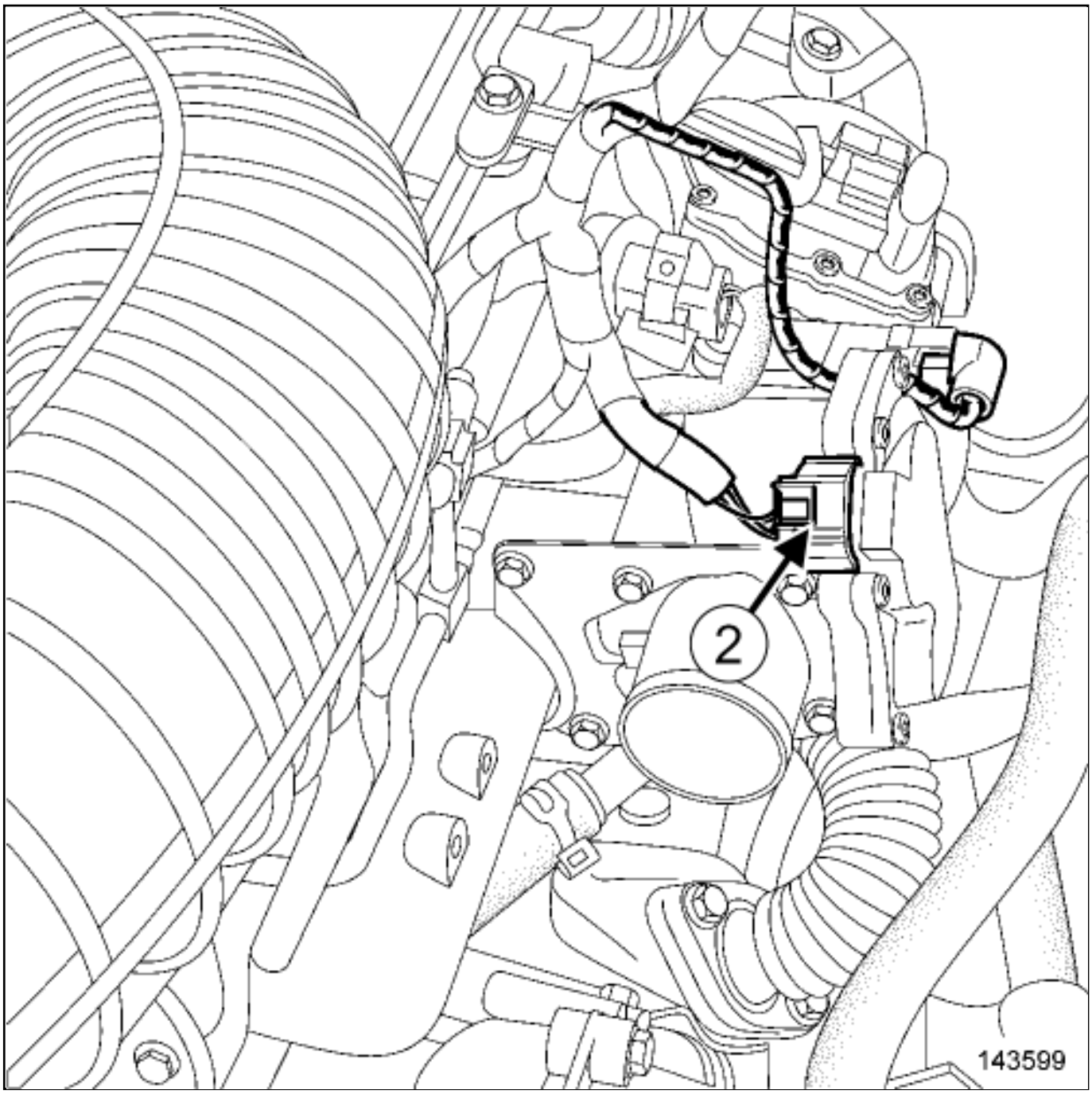
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the intercooler air outlet pipe**(see 12A, Fuel mixture, Air inlet assembly: Exploded view) (see 12A,Fuel mixture, Air inlet assembly: Exploded view)** ,
  - the dipstick.



- Unclip the fuel return pipe(1) from the engine oil dipstick guide.
- Remove the engine oil dipstick guide.

2. REMOVAL OPERATION



- Disconnect the connector(2) from the damper valve.

- Remove :
  - the damper valve strut,
  - the damper valve,
  - the damper valve seal.

- Move aside the air inlet spacer.

- Remove the air inlet spacer seal.

REFITTING

1. REFITTING PREPARATION OPERATION

Using surface cleaner**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products), clean and degrease the bearing faces between:

- the damper valve and the air inlet spacer,
- the air inlet spacer and the exhaust gas recirculation solenoid valve.

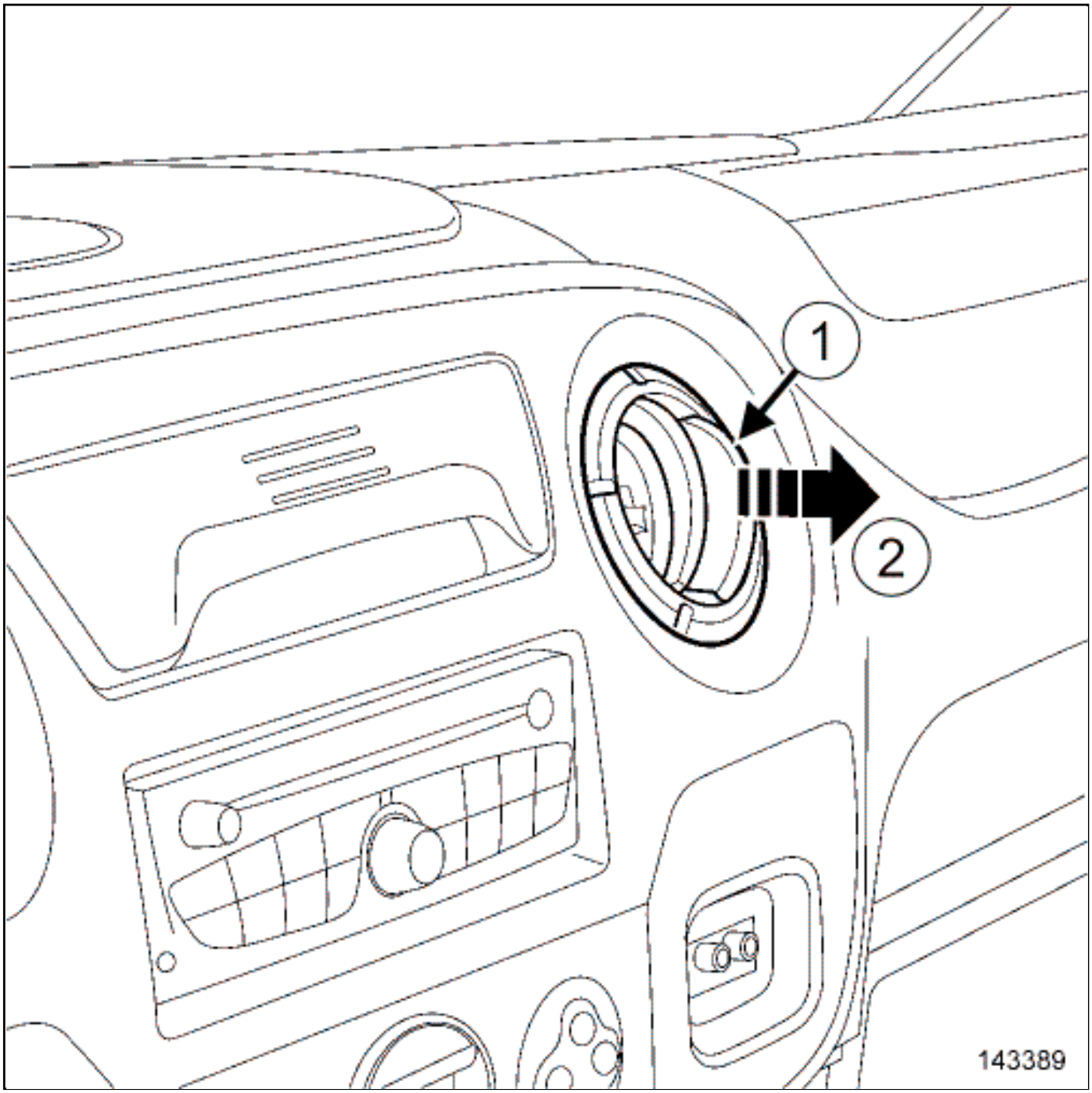
2. REFITTING OPERATION

Proceed in the reverse order to removal.

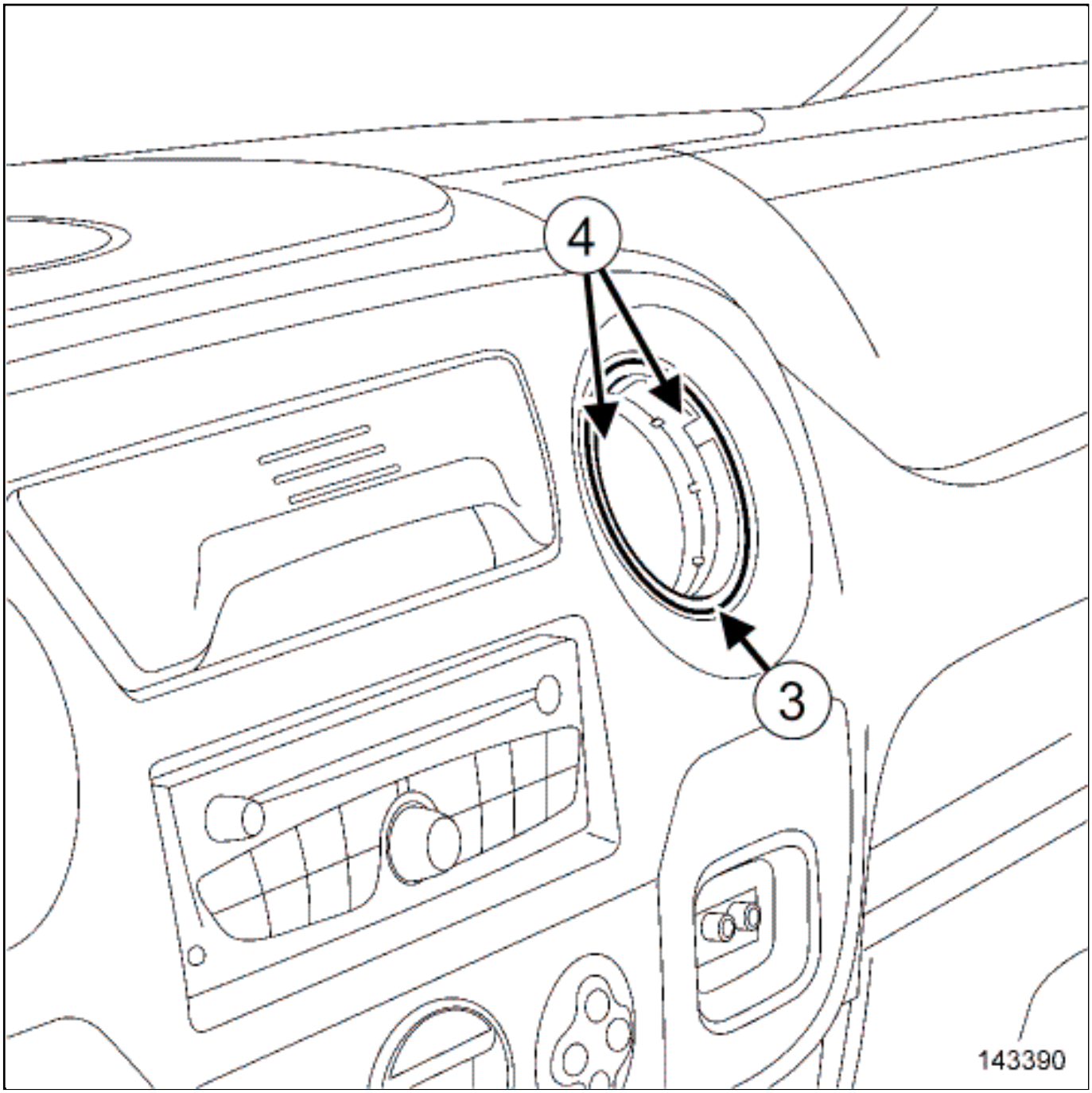
DASHBOARD AIR VENT: REMOVAL - REFITTING

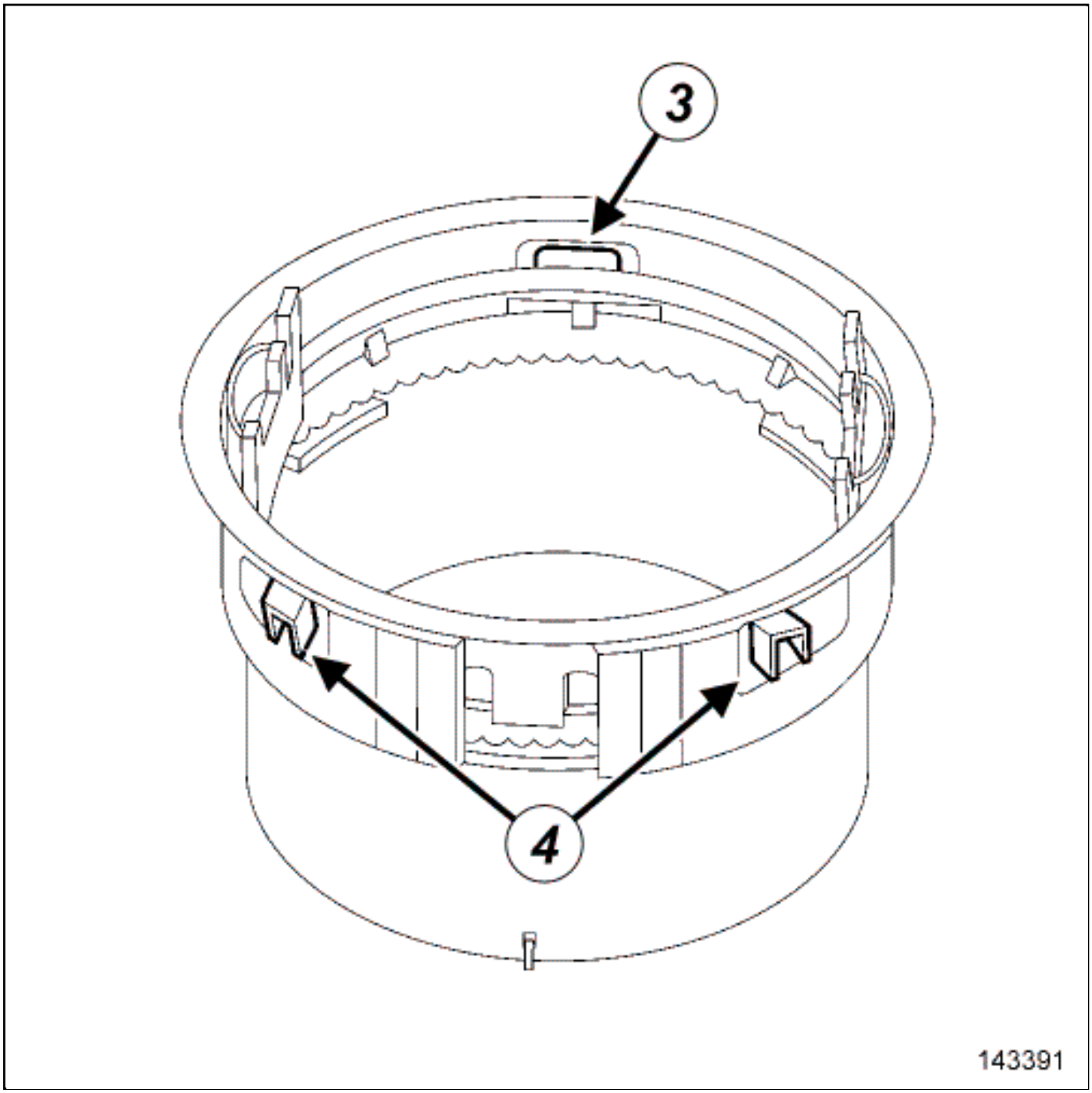
REMOVAL

1. REMOVAL OPERATION



- Unclip the dashboard air vent flaps(1) by (2) .


4
3
143390



- Unclip the dashboard air vent at(3) and (4) .
- Remove the dashboard air vent.

REFITTING

- Proceed in the reverse order to removal.

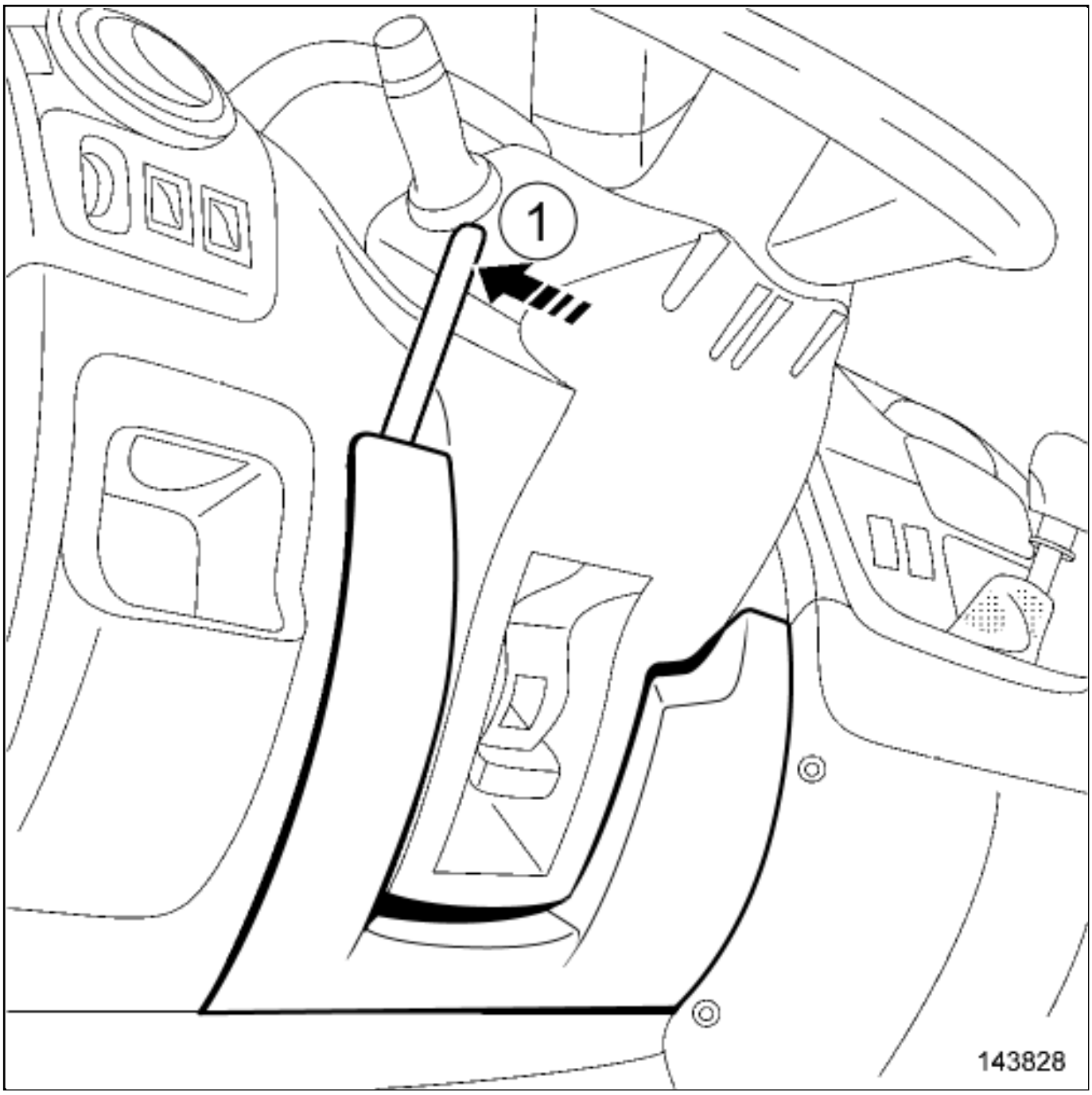
XSL version : 3.02 du 22/07/11

DASHBOARD LOWER TRIM: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL OPERATION



- Unclip the dashboard lower trim by(1) using the toolSet of trim removal levers.(Car. 1363) .

- Remove the dashboard lower trim.

REFITTING

- Proceed in the reverse order to removal.

DASHBOARD: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

WARNING

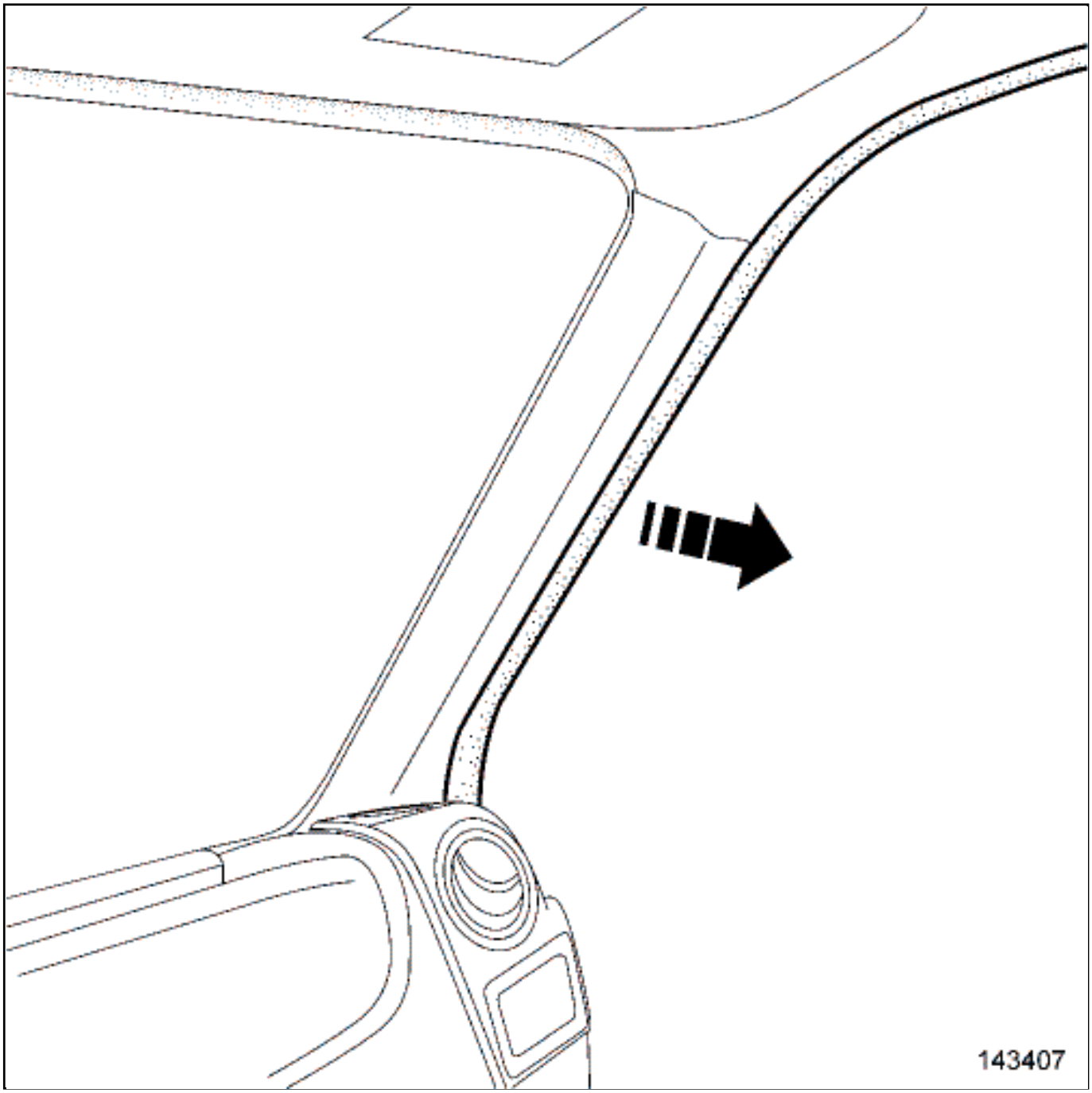
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

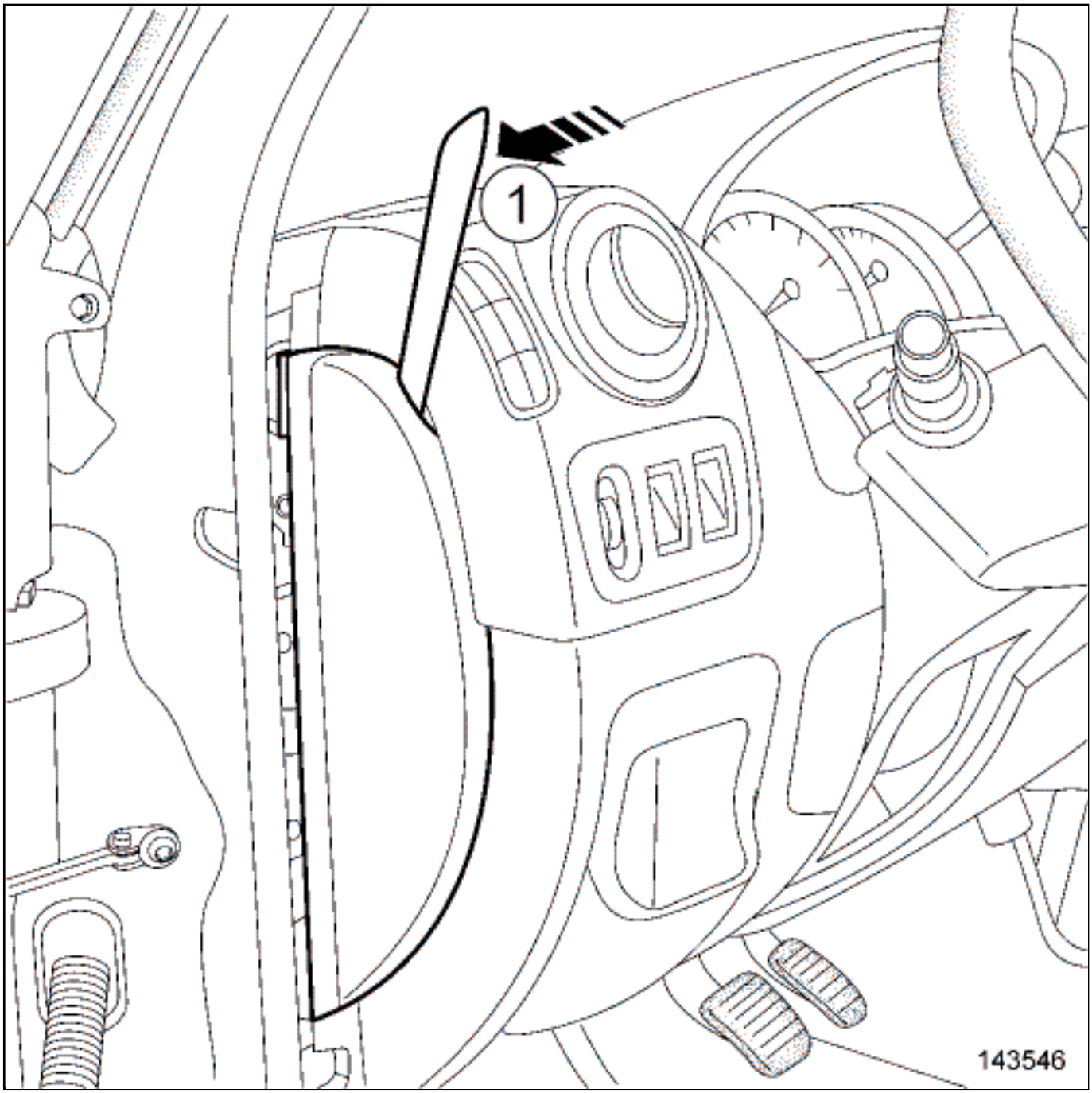
1. REMOVAL PREPARATION OPERATION

- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).

- Remove the radioRadio: Removal - Refitting (86A, Radio).



- Partially remove the front side door seals.



Remove:

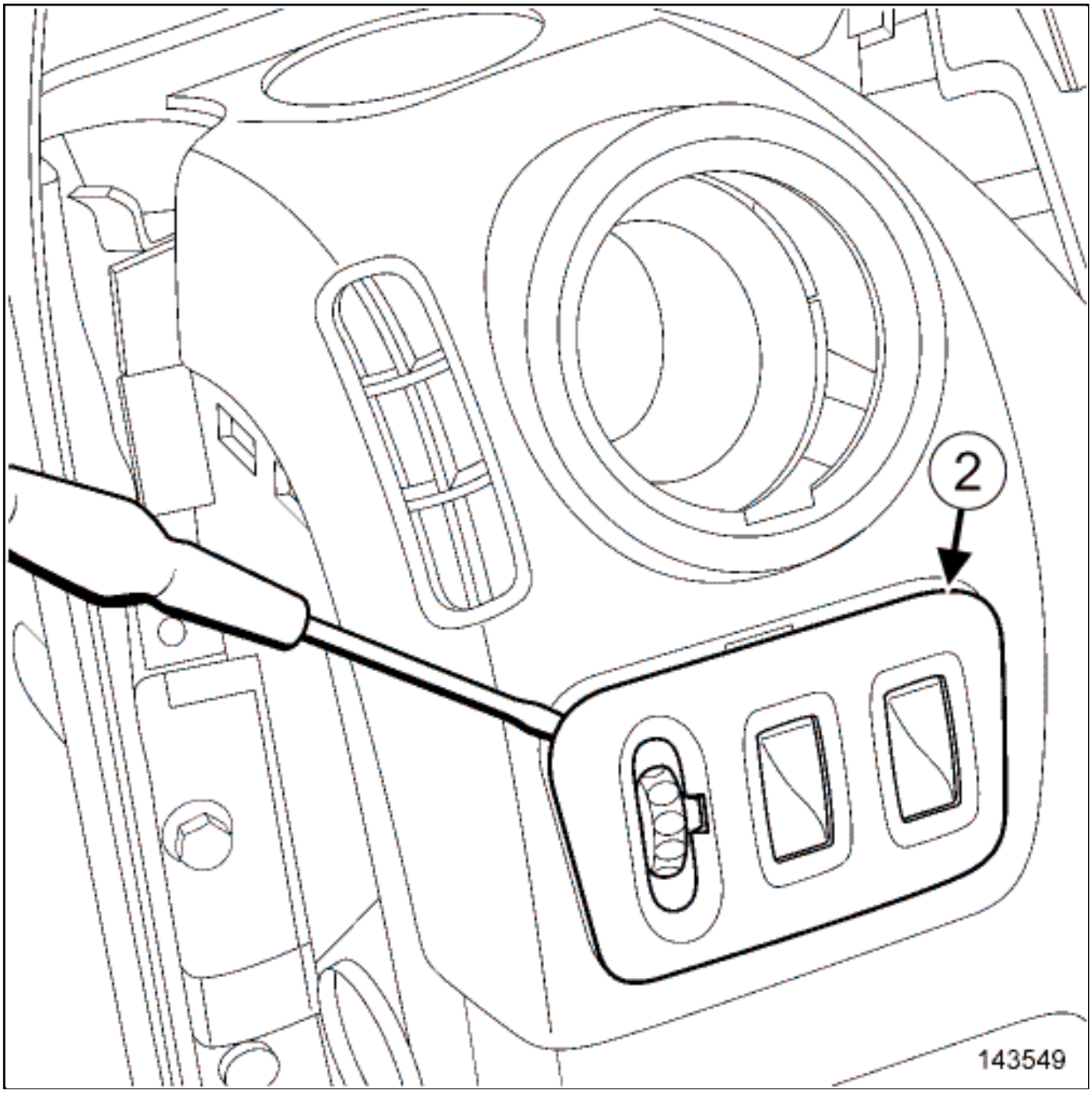
- the left-hand side panel by(1) using the toolSet of trim removal levers.(Car. 1363) .
- the windscreen pillar trimsWindscreen pillar trim: Removal - Refitting (71A, Body internal trim),
- the driver's front airbagDriver's frontal airbag: Removal - Refitting (88C, Airbags and pretensioners),
- the steering wheelSteering wheel: Removal - Refitting (36A, Steering assembly),
- the instrument panelInstrument panel: Removal - Refitting (83A, Instrument panel),
- the glovebox(see 57A, Interior equipment, Glovebox: Removal - Refitting) .

Remove the electrical accessories socket(88D, Driver's position).

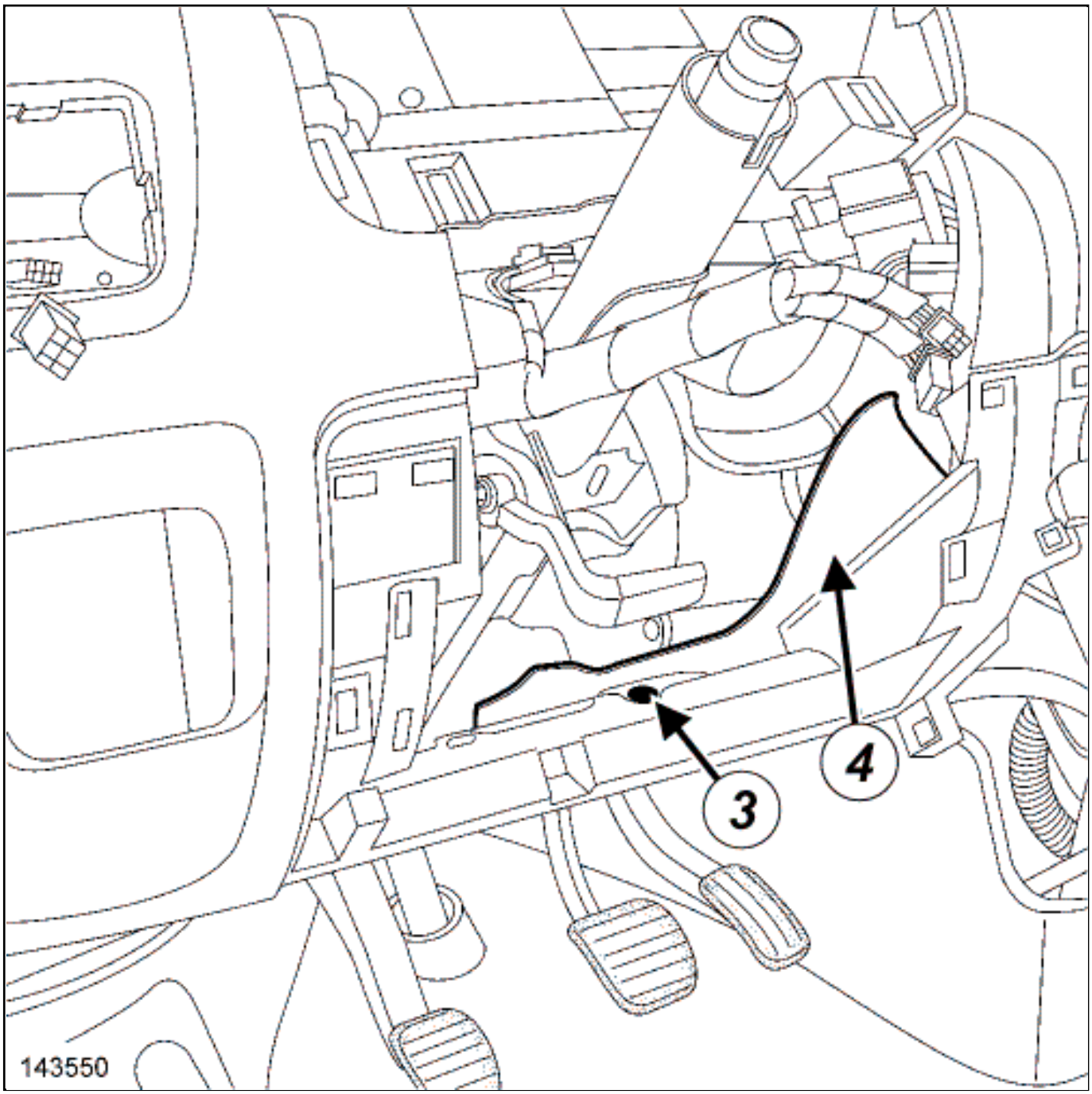
Remove the passenger front airbag Passenger's frontal airbag: Removal - Refitting (88C, Airbags and pretensioners).

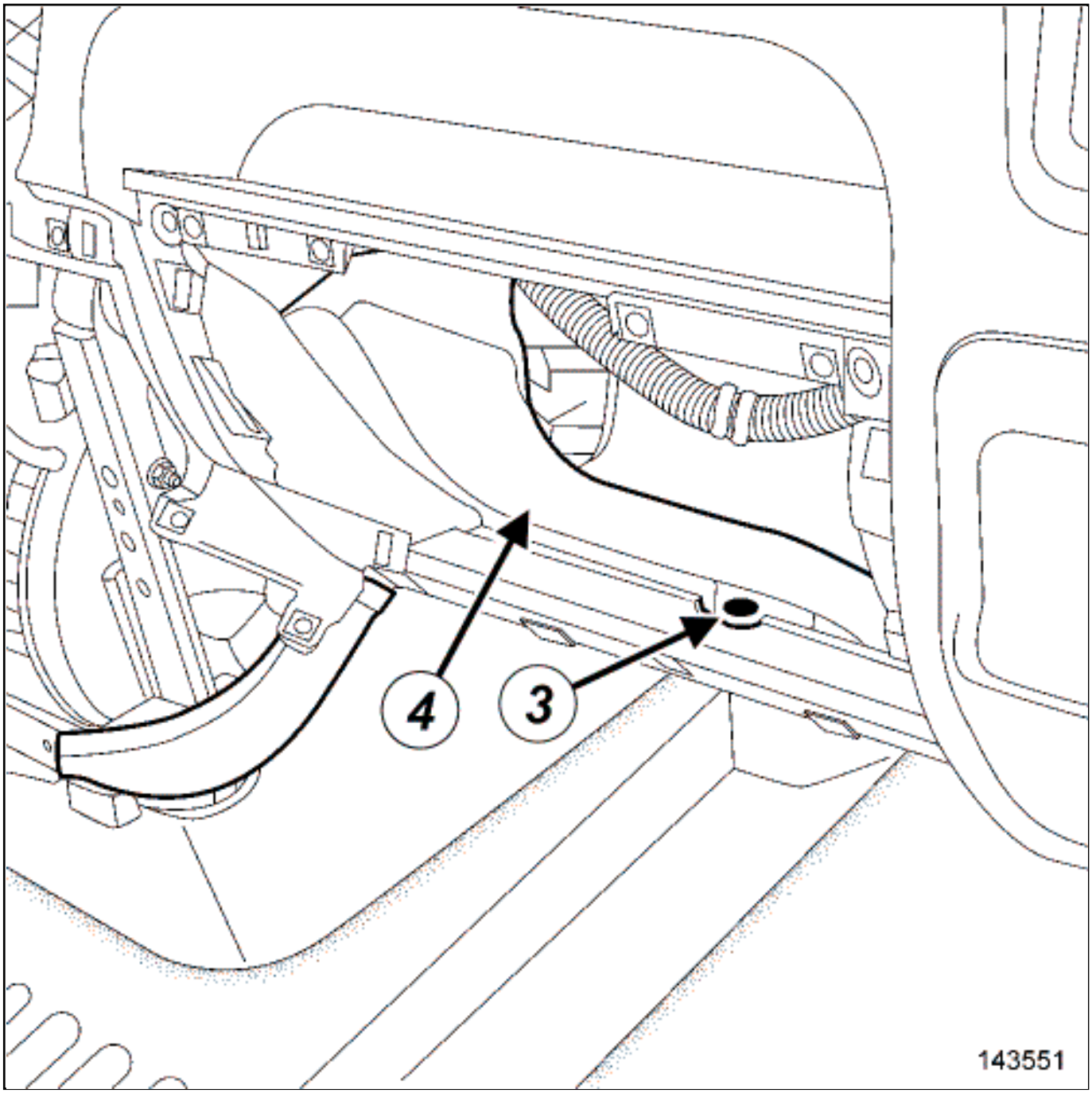
Remove:

- the steering column switch assembly Steering column switch assembly: Removal - Refitting (84A, Controls - Signalling),
- the inhibitor switch Inhibitor switch: Removal - Refitting (88C, Airbags and pretensioners),
- the dashboard lower trim (see 57A, Interior equipment, Dashboard lower trim: Removal - Refitting) (71A, Body internal trim),
- the centre console (see 57A, Interior equipment, Centre console: Removal - Refitting) ,
- the centre front panel (see 57A, Interior equipment, Centre front panel: Removal - Refitting) ,



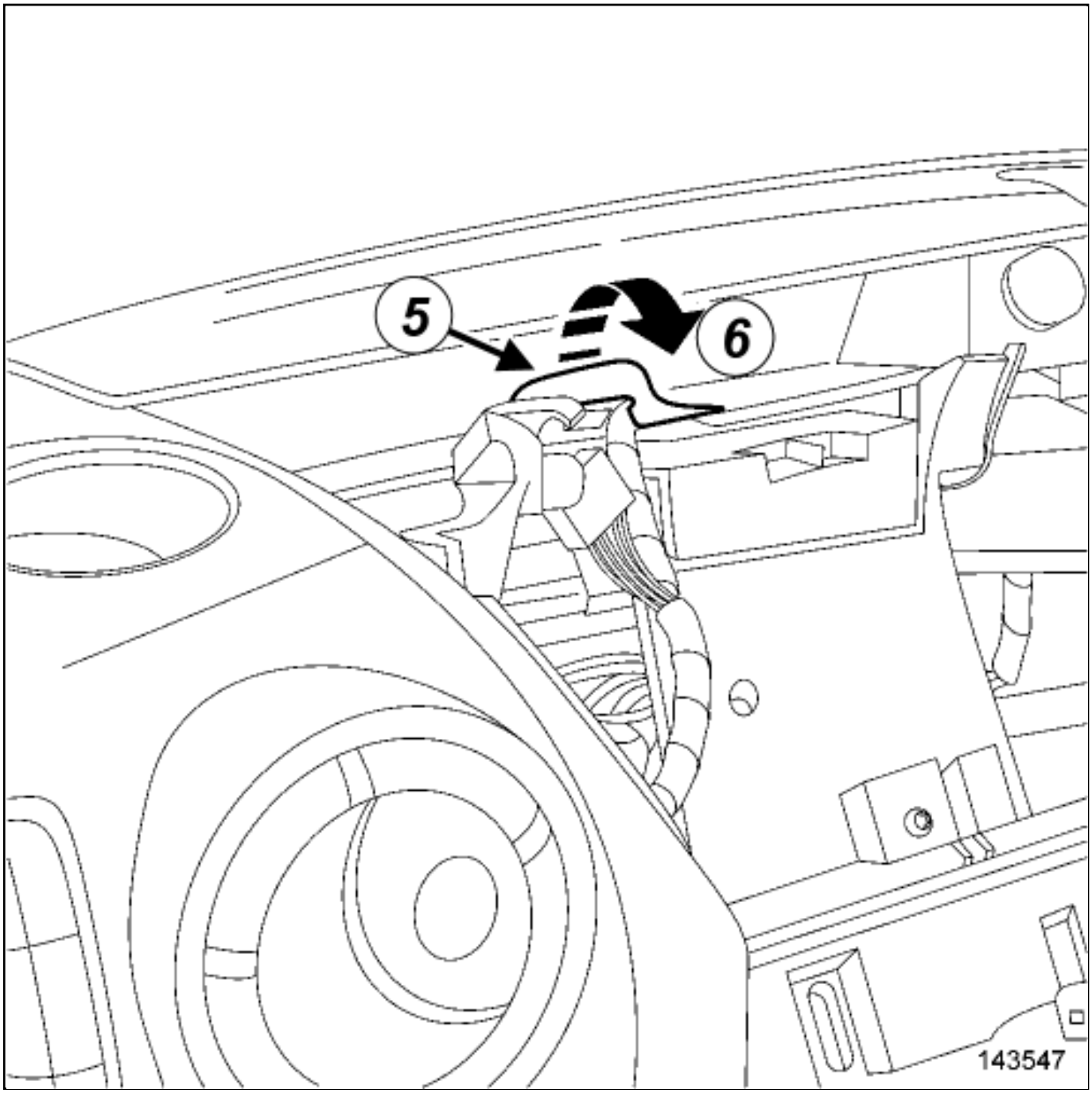
- Remove the control board(2) .
- Disconnect the connectors.

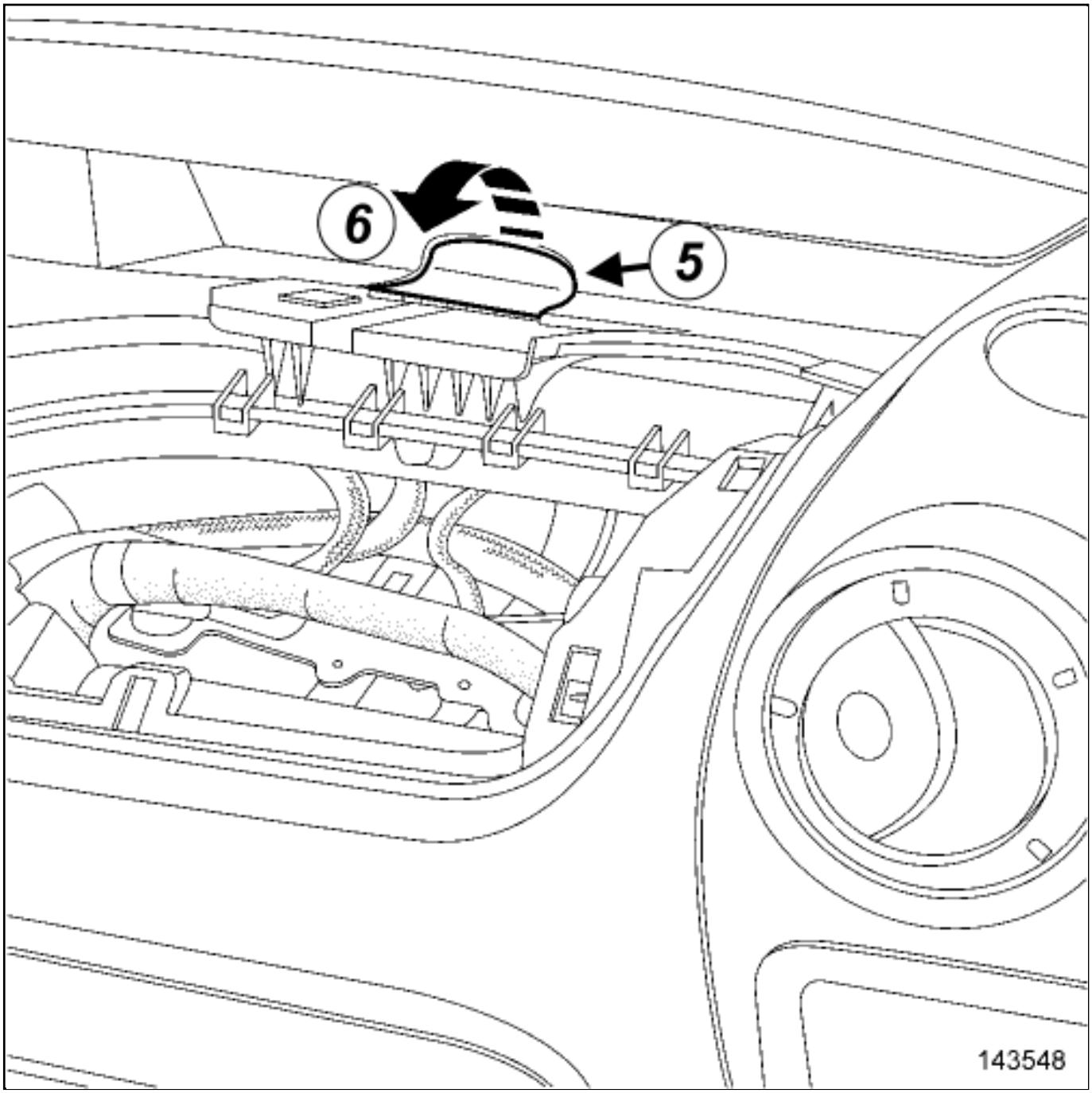




Remove:

- the christmas tree clips(3) ,
- the heating ducts(4) .


5
6
143547

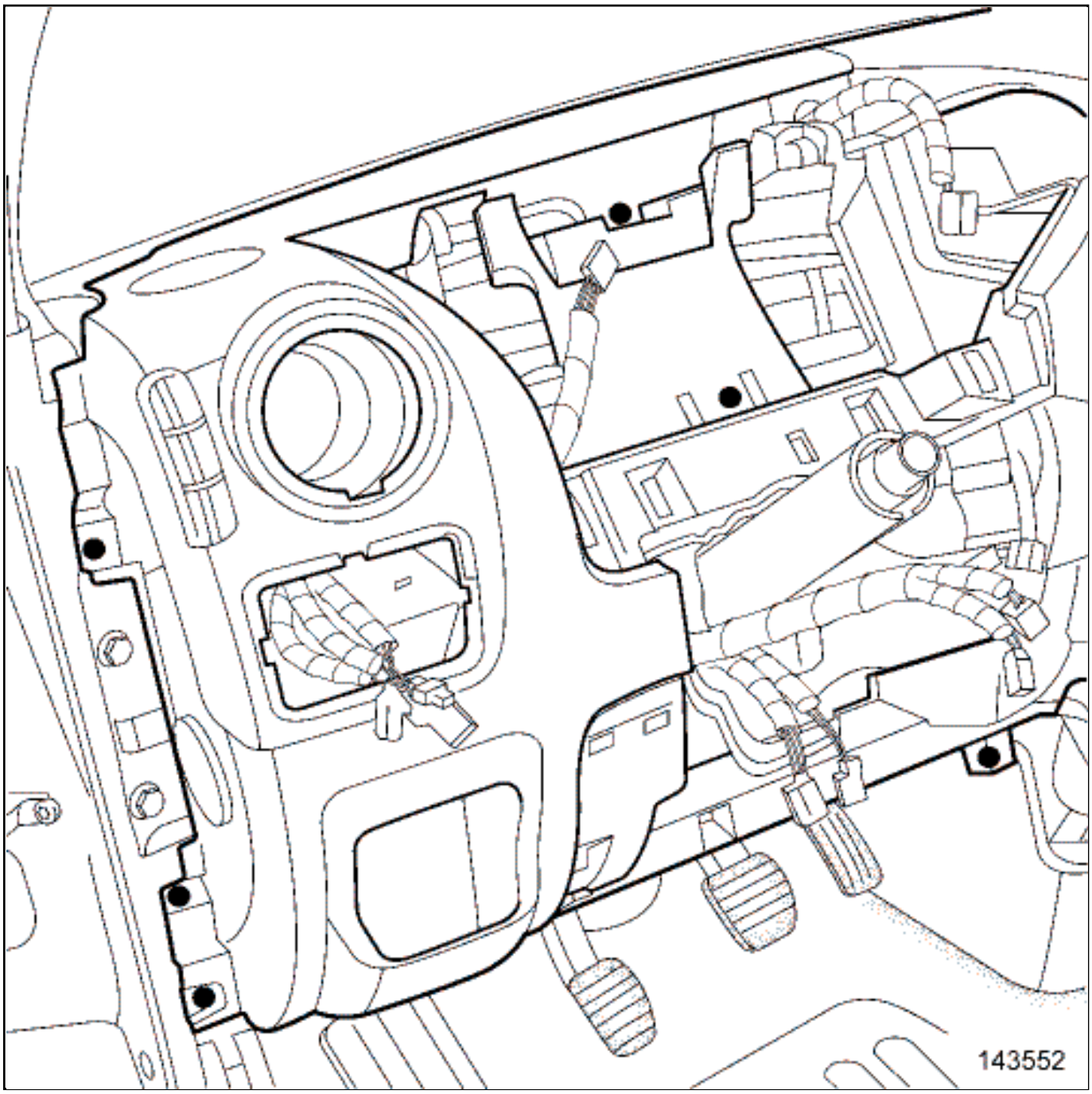


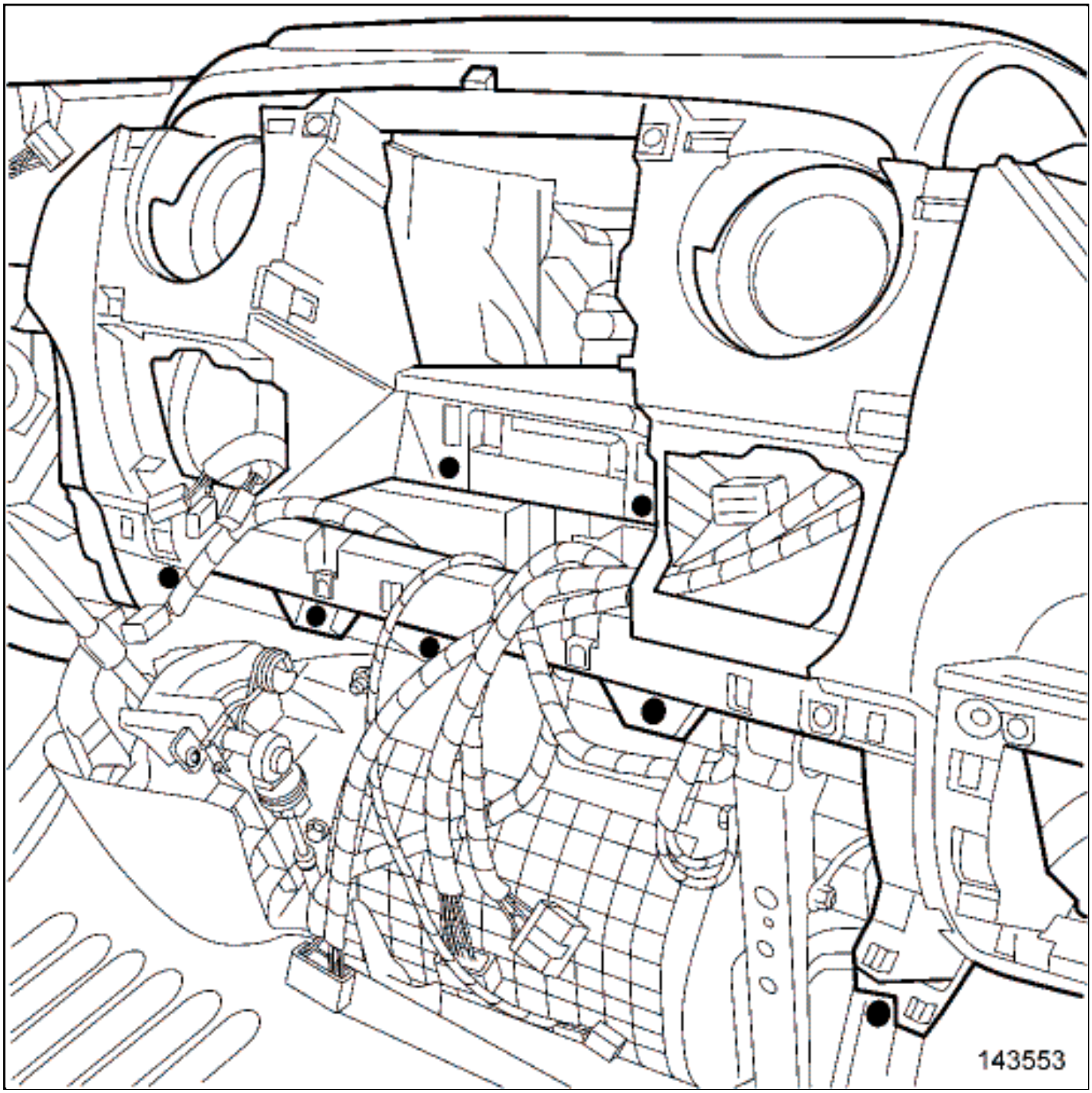
Remove the blanking covers(5) by (6) .

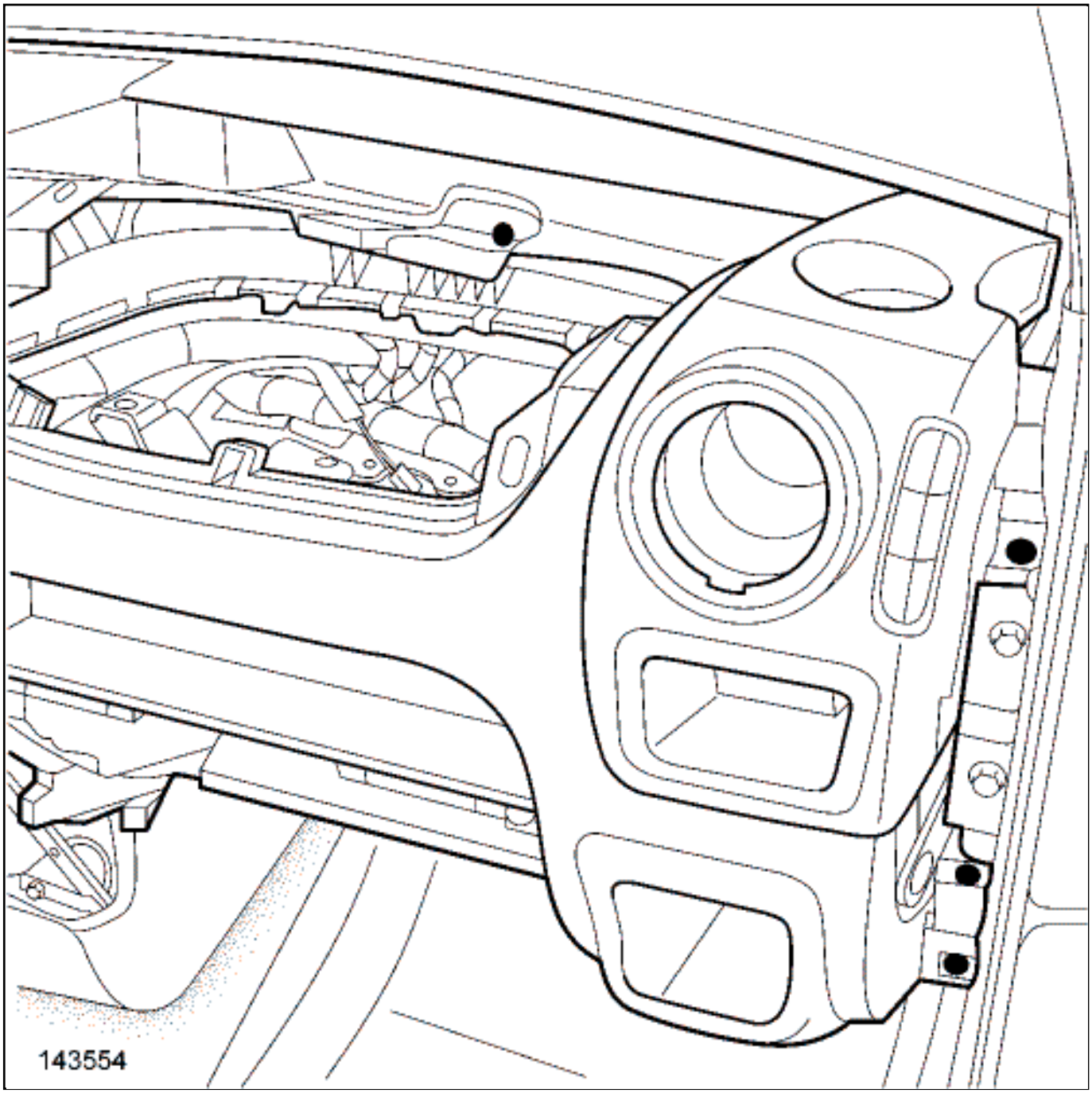
2. REMOVAL OPERATION

Note:

Mark the position of the various wiring before removing the dashboard.


143552


143553



Remove the bolts.

Remove the dashboard (this operation requires two people).

REFITTING

CAUTION

To prevent damage to the wiring harness when refitting, observe the original routing.

CAUTION

To guarantee a good electrical connection, make sure that the wiring does not place any stress on the connectors or the surrounding components.

- Proceed in the reverse order to removal.

- Carry out a function test on all functions.

DIESEL INJECTION COMPUTER: REMOVAL - REFITTING

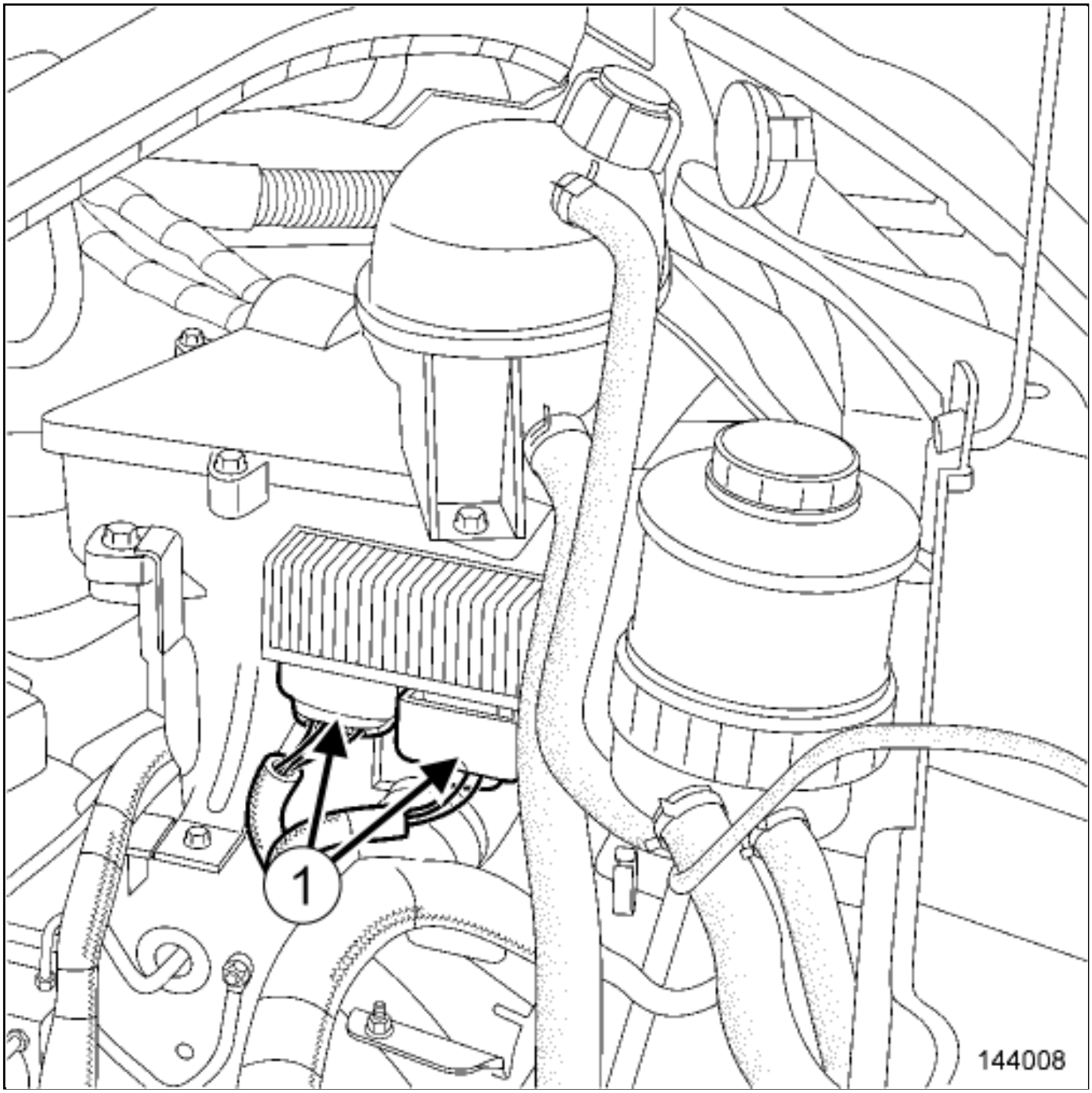
Equipment required
Diagnostic tool

REMOVAL

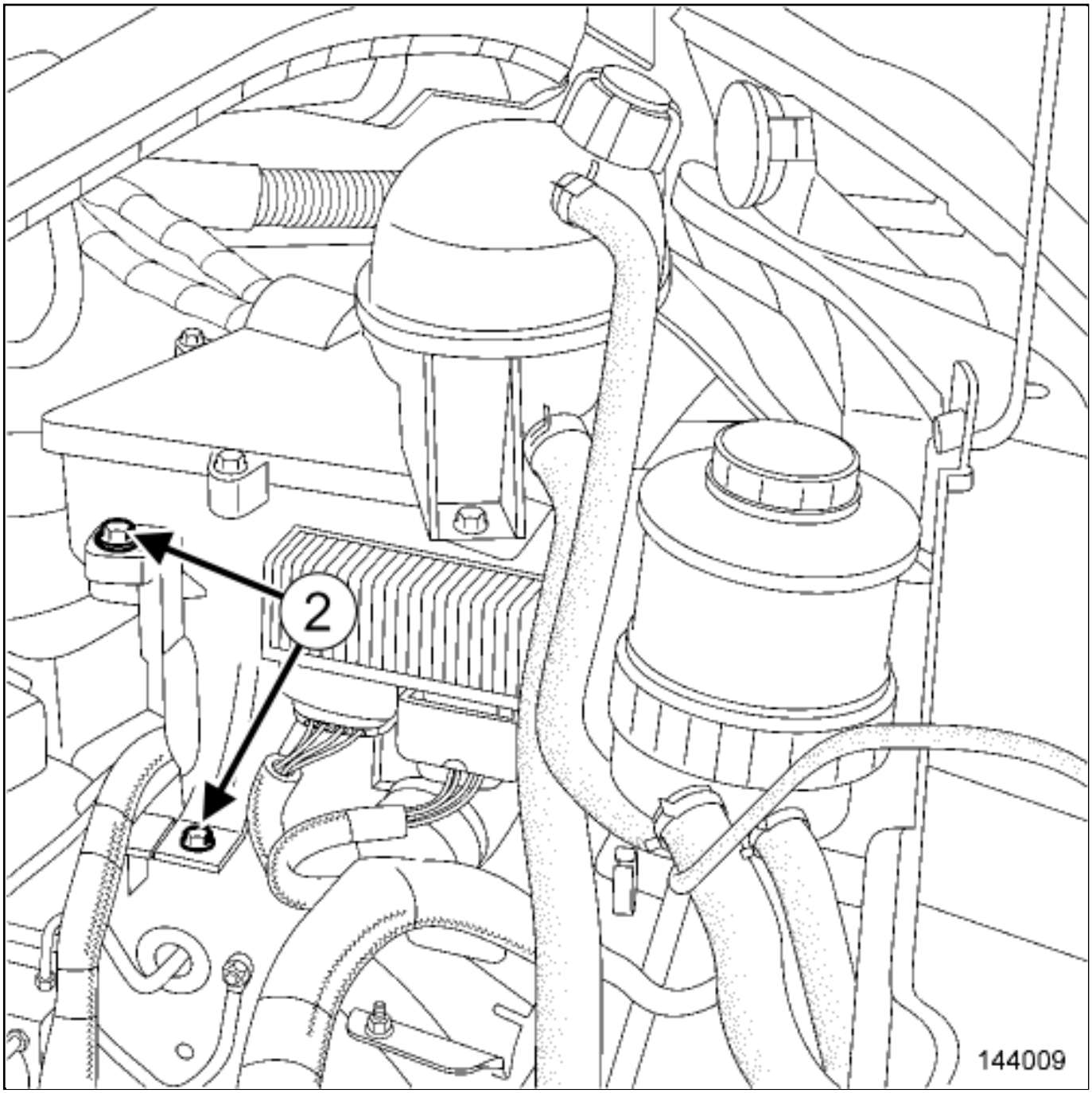
1. REMOVAL PREPARATION OPERATION

- Apply the before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select the "Diesel injection computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - carry out the operations described in the "Before repair procedure" section.

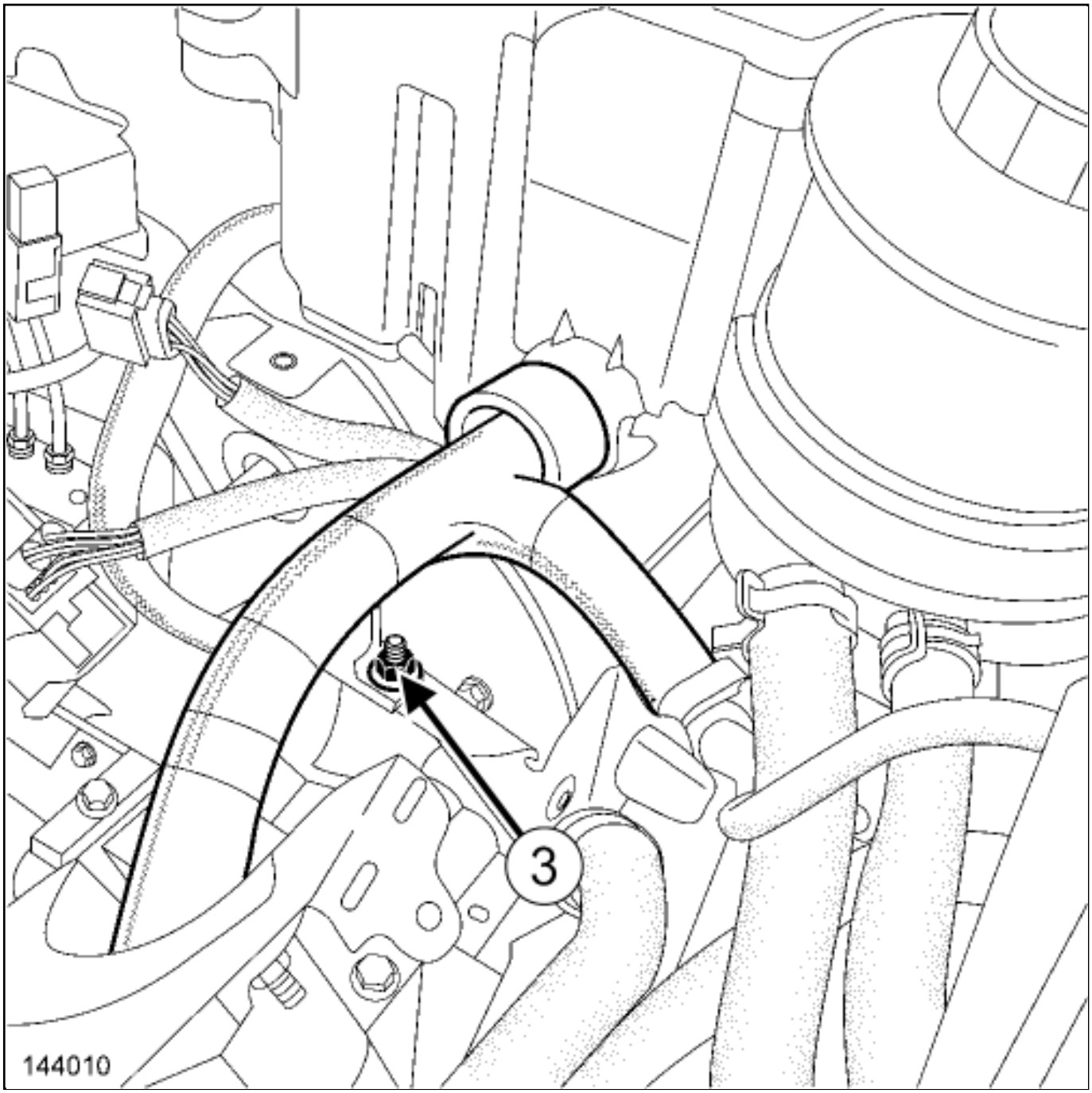
- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).



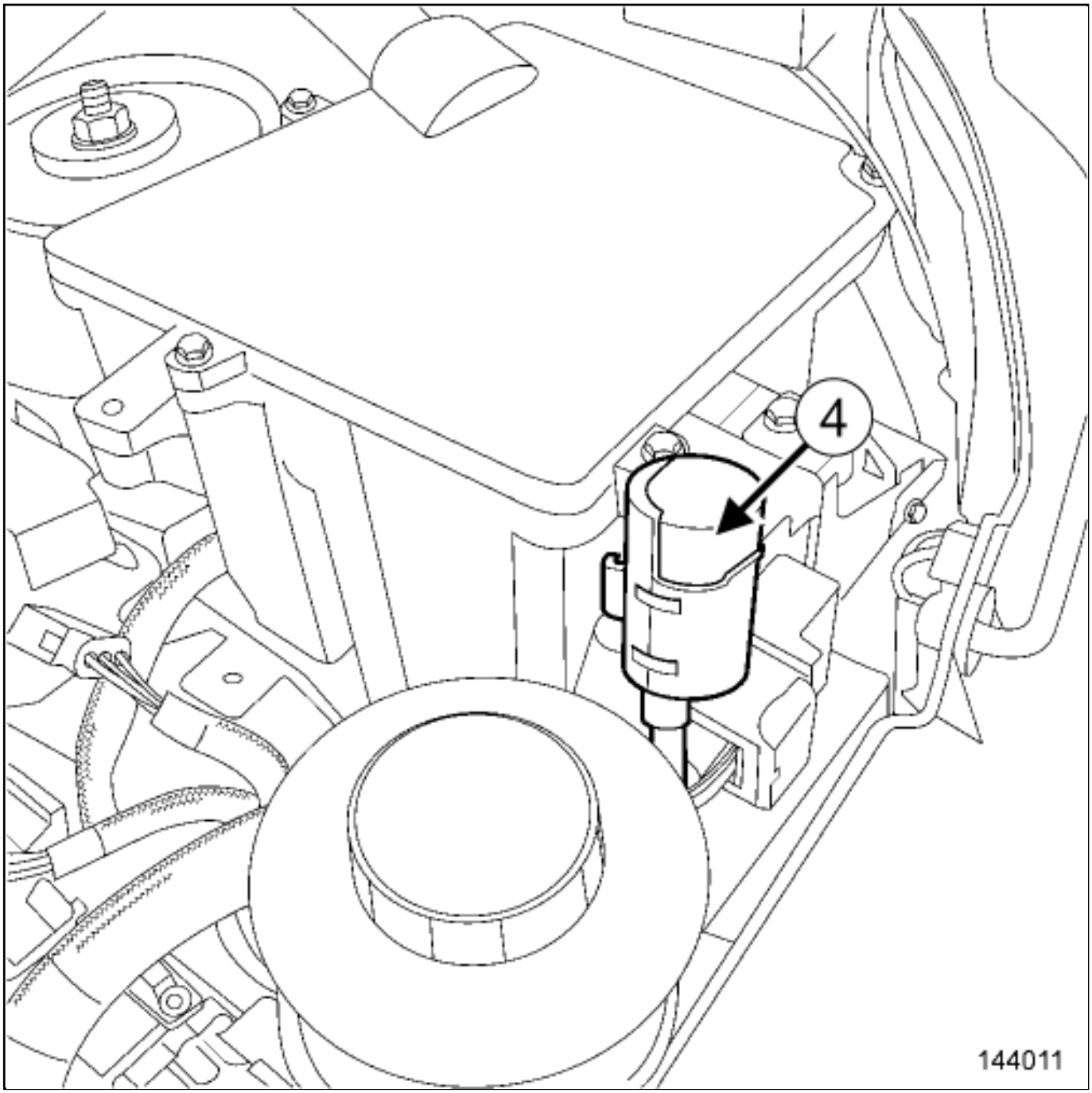
- Disconnect the thermoplunger unit connectors(1) .



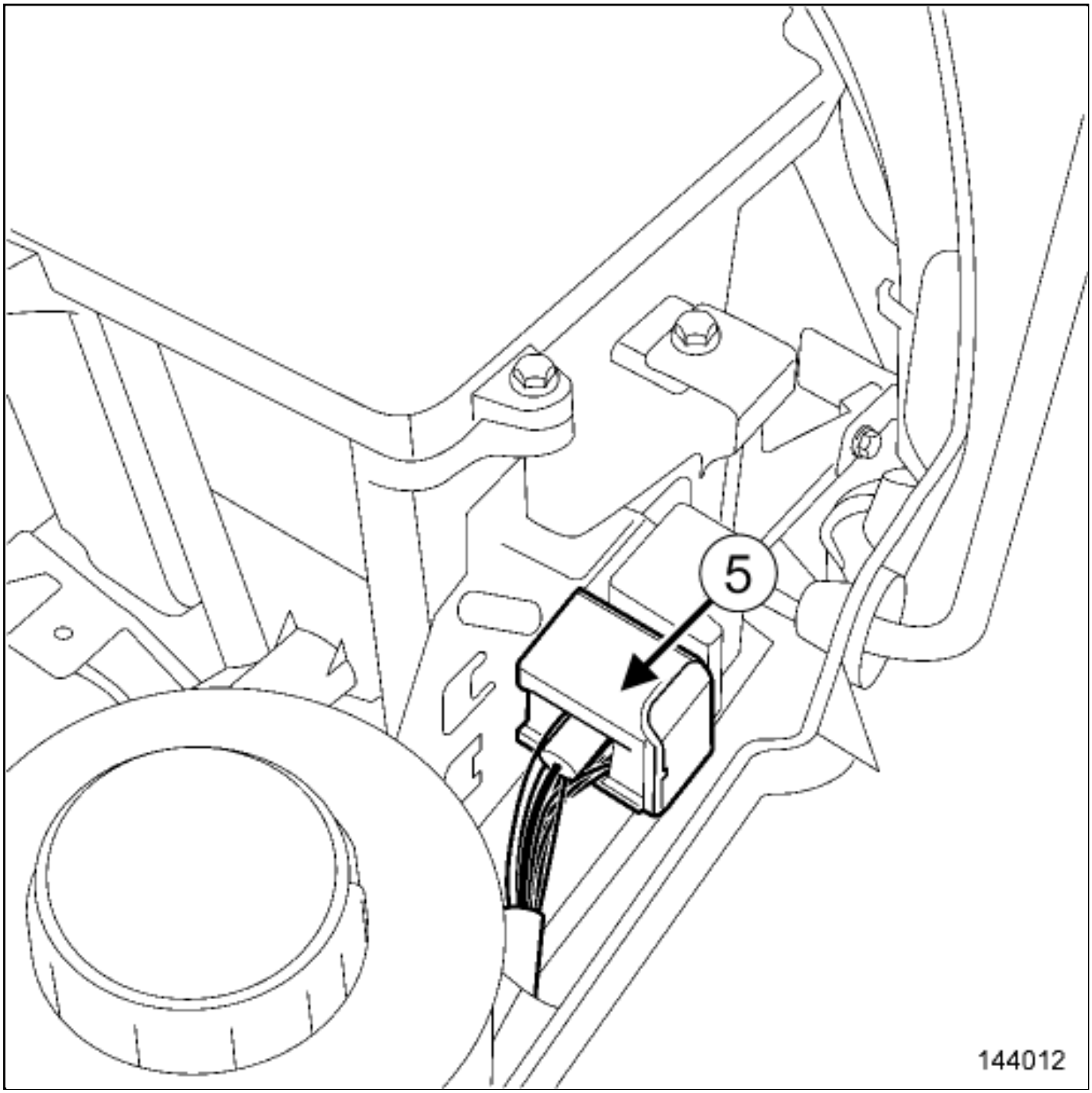
- Remove the bolts(2) from the thermoplunger unit support.
- Move the heating element unitto one side.



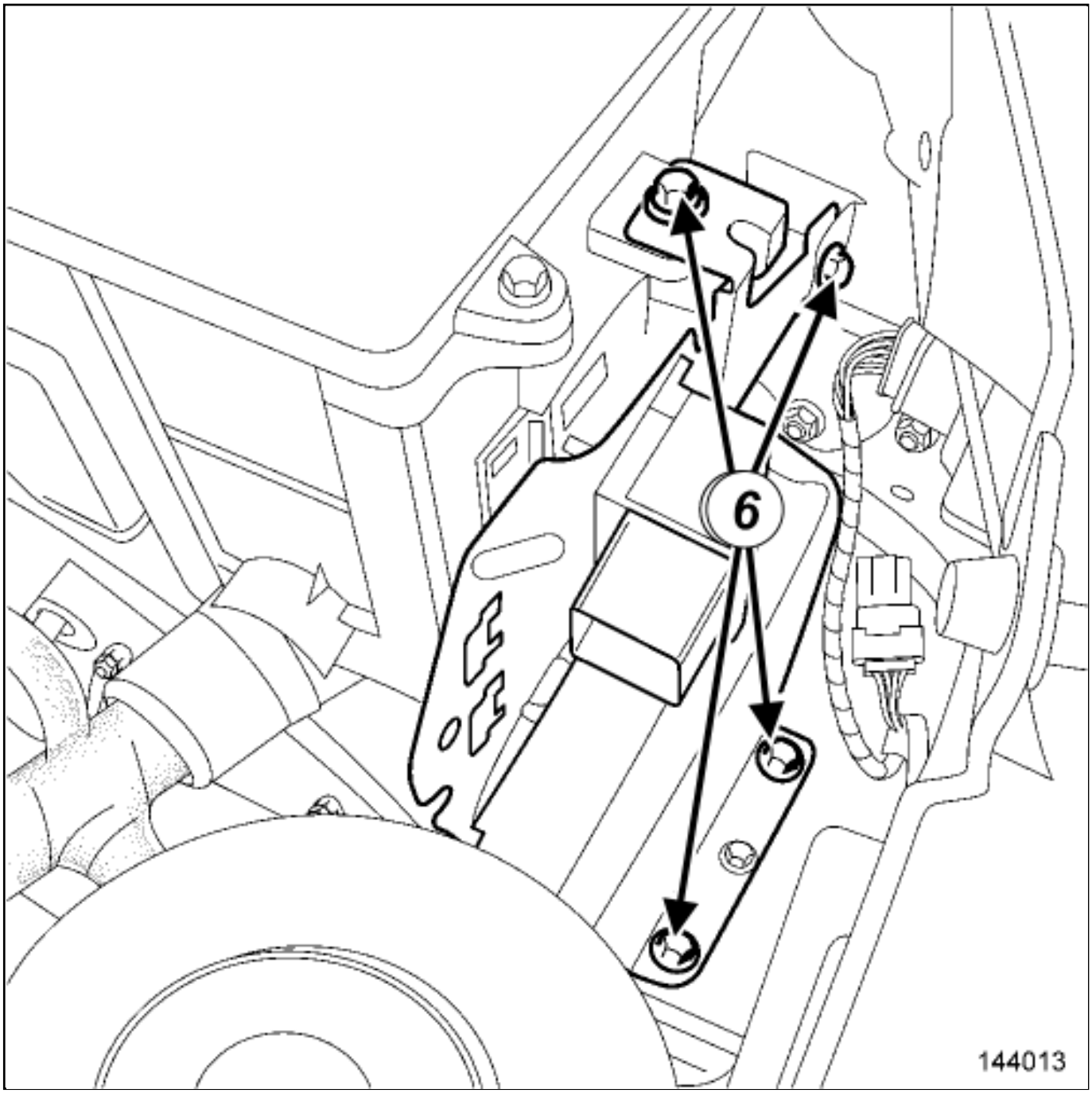
- Remove the nut(3) from the engine wiring channel.
- Move aside the engine wiring channel.
- Unclip the cooling pipe from the diesel injection computer mounting.



Unclip the offset positive terminal(4) from the diesel injection computer mounting.

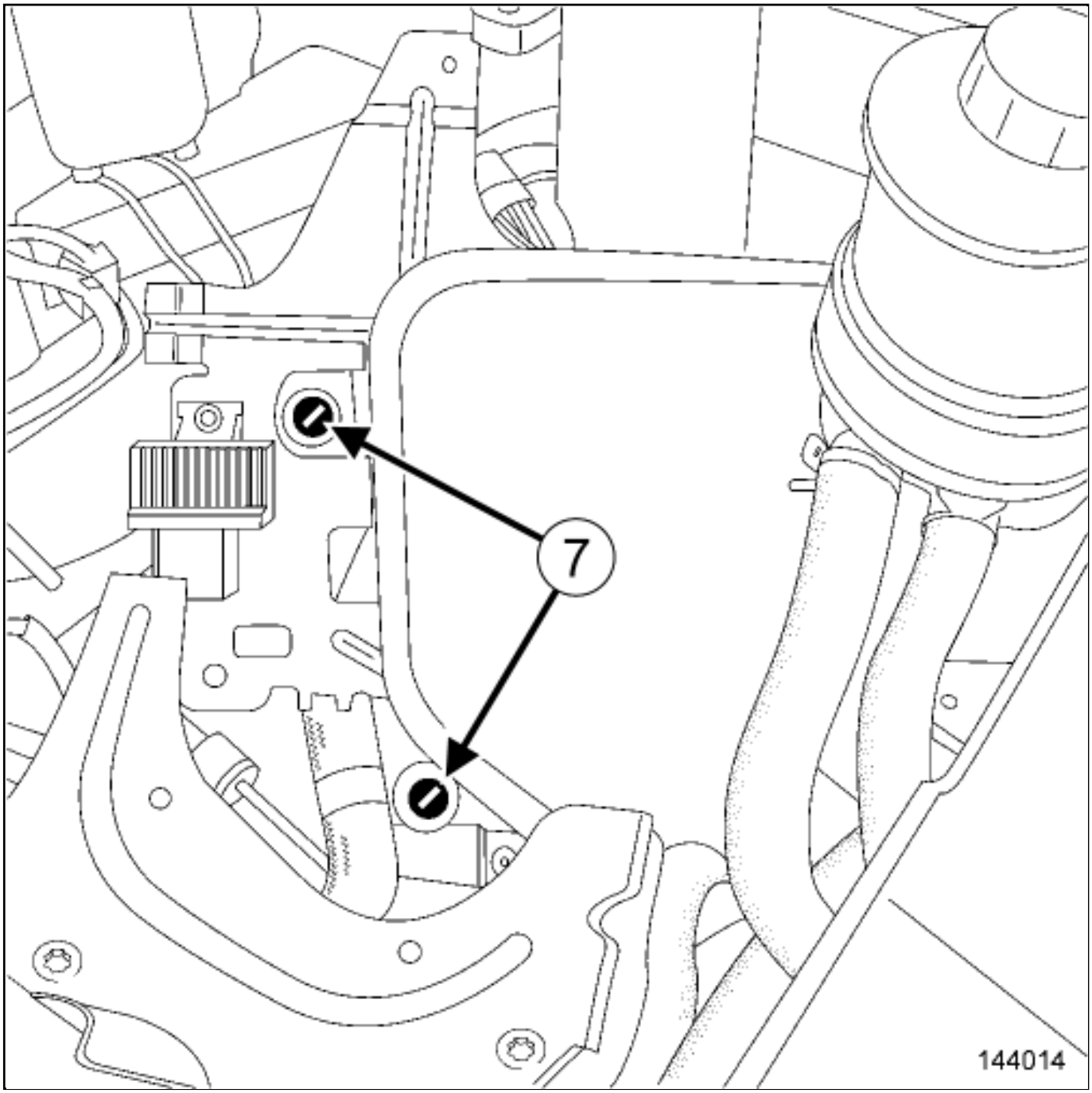


Disconnect the pre-postheating unit connector(5) .

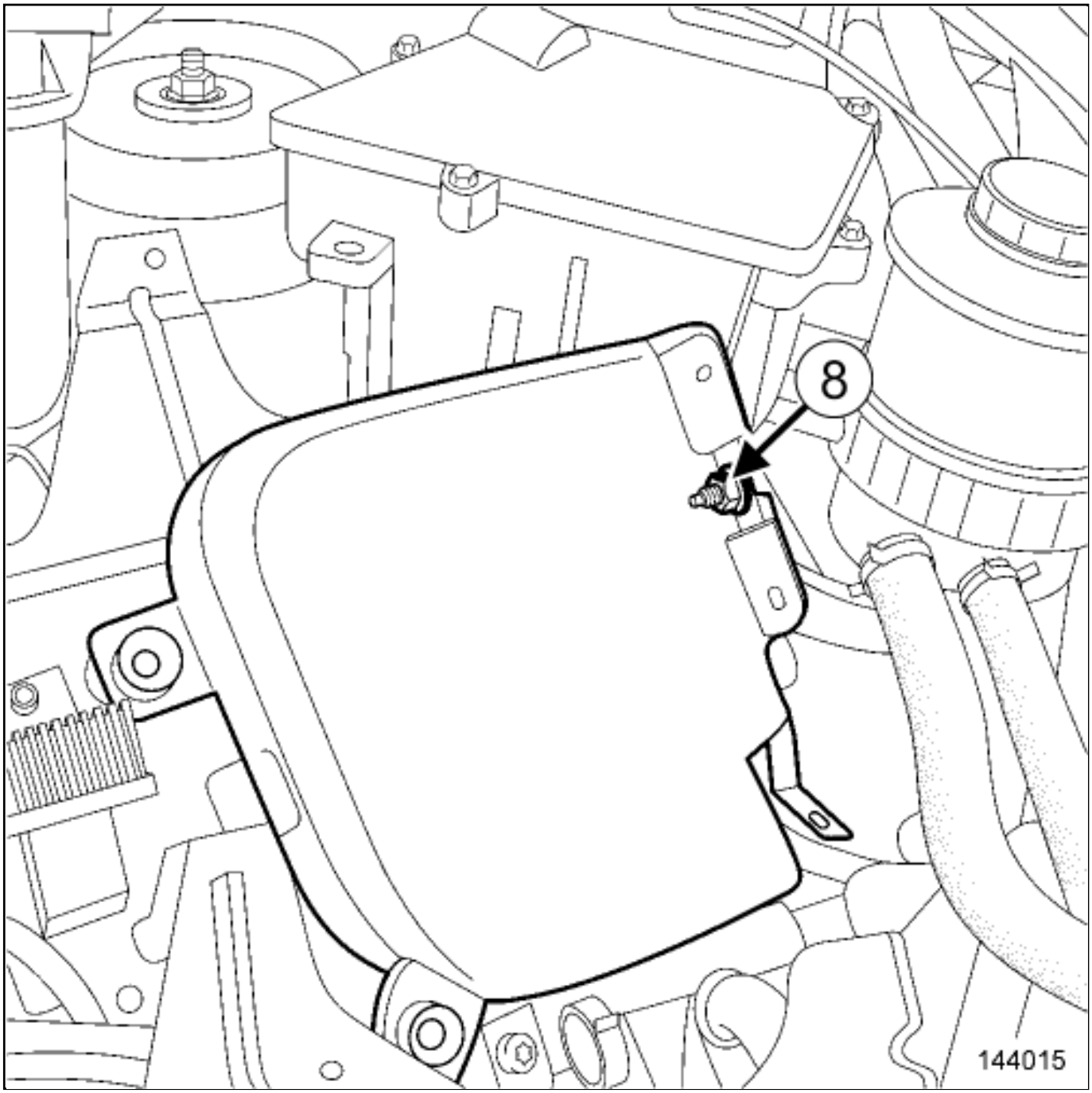


Remove the bolts(6) from the diesel injection computer mounting.

Move aside the mounting of the diesel injection computer.



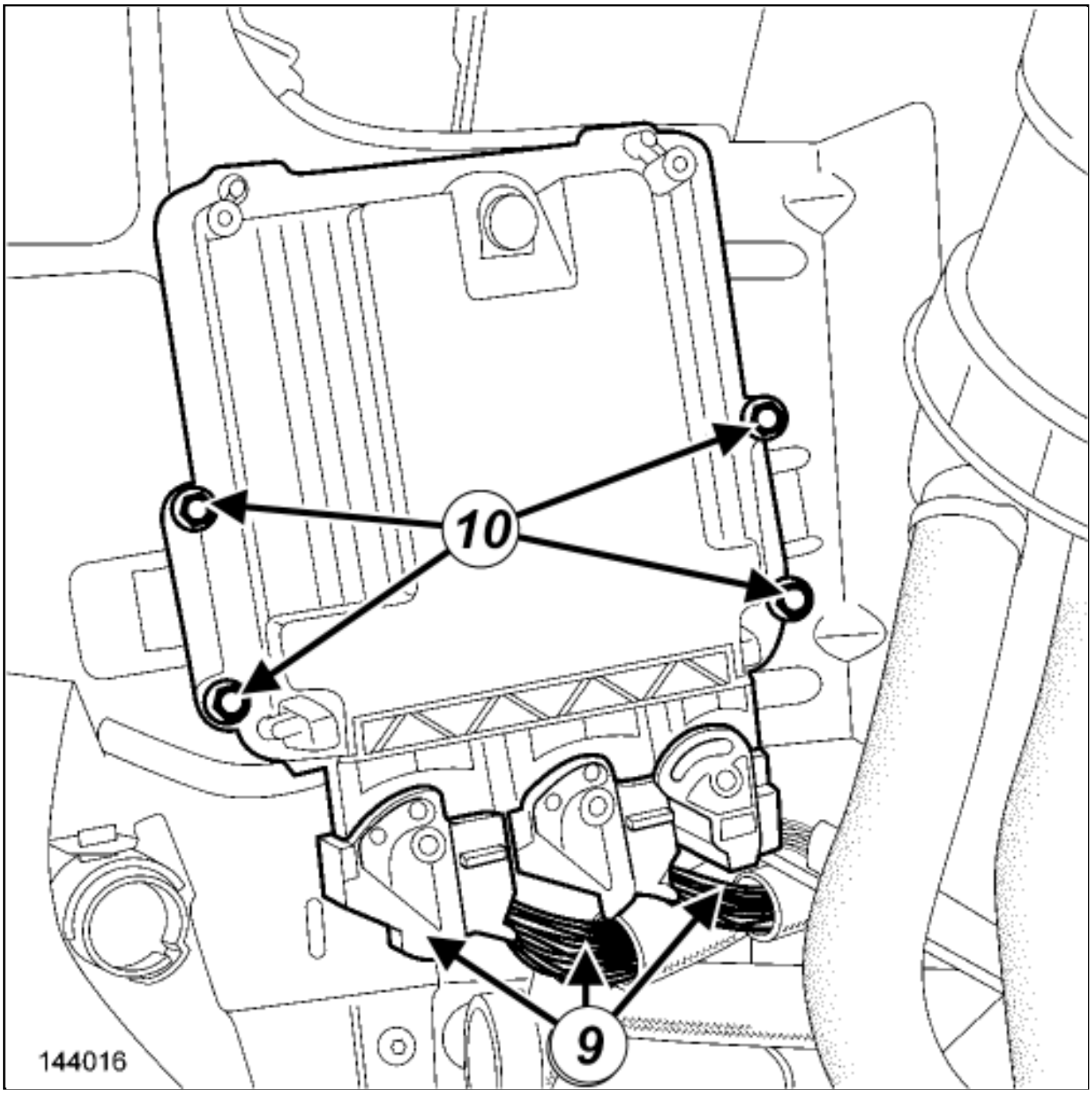
Remove the tamperproof bolts(7) from the diesel injection computer mounting cover.



Remove:

- the nut(**8**) of the diesel injection computer mounting cover,
- the diesel injection computer mounting cover.

2. REMOVAL OPERATION



Disconnect the connectors(9) from the diesel injection computer.

Remove:

- the diesel injection computer nuts(10) ,
- the diesel injection computer.

REFITTING

Proceed in the reverse order to removal.

Apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select the "Diesel injection computer" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- carry out the operations described in the "After repair procedure" section.

DIESEL INJECTOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Injector well cleaning kit	Mot. 1817
M9R/M9T injector extractor	Mot. 1966

Equipment required
Diagnostic tool
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 13B, Diesel injection, Injection assembly: Exploded view) .

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair:

- Diesel injection: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

IMPORTANT

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

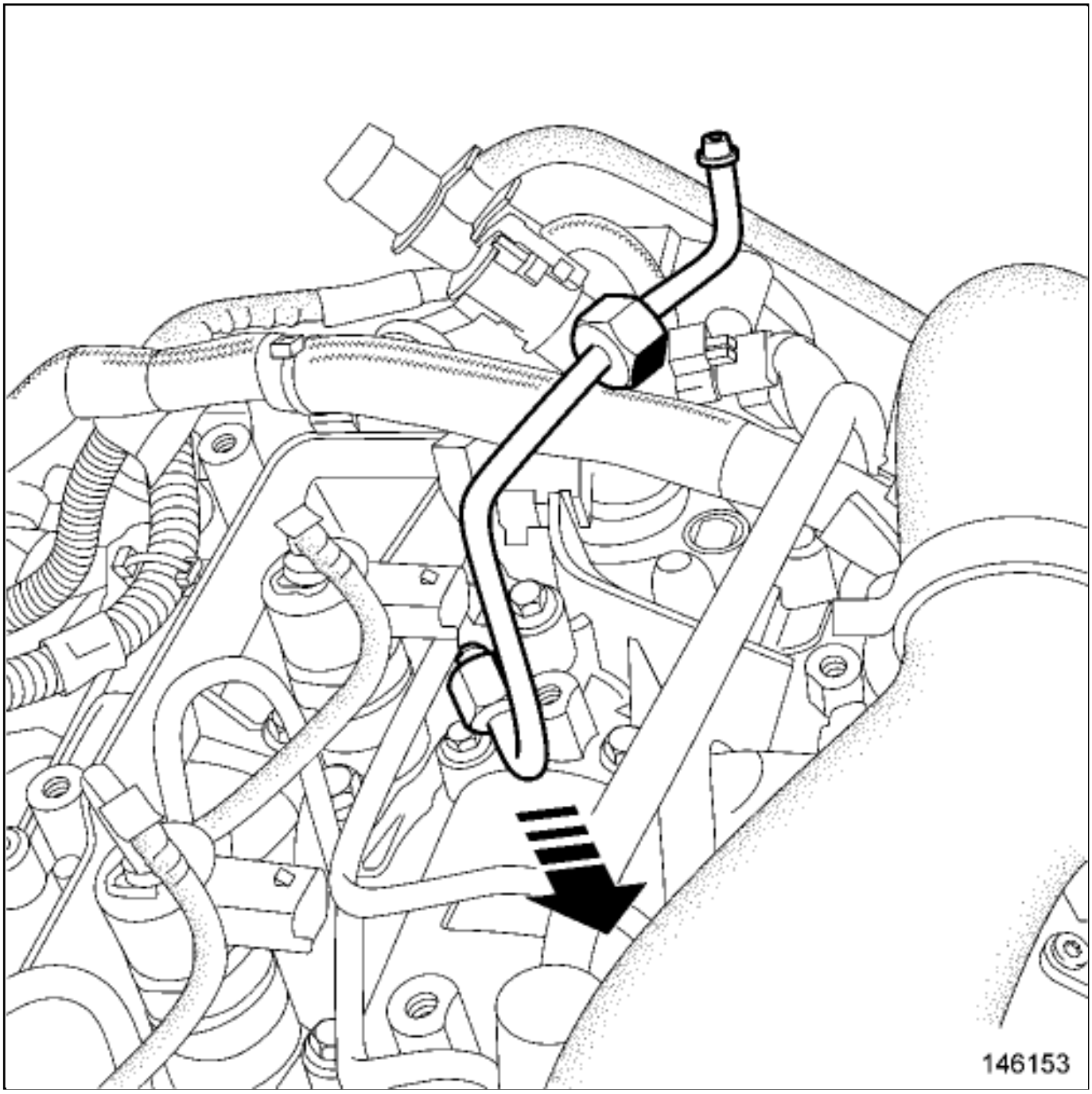
Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Remove the air outlet pipe from the air filter box (see 12A, Fuel mixture, Air inlet assembly: Exploded view) .
- Remove:
  - the injector rail protector (see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the oil decanter Engine oil circuit assembly: Exploded view ,
  - the diesel injector fuel return rail (see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the nuts of the high pressure pipes between the rail and the injectors from the injector rail (see 13B, Diesel injection , Injection assembly: Exploded view) ,
  - the nuts of the high pressure pipes between the rail and the injectors from the diesel injectors (see 13B, Diesel injection , Injection assembly: Exploded view) .

REMOVING THE HIGH PRESSURE PIPE OF INJECTOR 1



- Remove the high pressure pipes between the rail and the injectors(see 13B, Diesel injection, Injection assembly: Exploded view) .

- Insert the blanking plugs.

WARNING

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

2. REMOVAL OPERATION

- Mark the injectors in relation to the cylinders using a indelible pencil.

Note:

Cylinder number 1 is located on the timing end.

- Remove (see 13B, Diesel injection, Injection assembly: Exploded view) :
  - the injector clamps,
  - the injectors one by one,
  - the compression washers.

Note:

If it sticks, remove the injector using the toolM9R/M9T injector extractor(Mot. 1966) Injector extraction tool: Use .

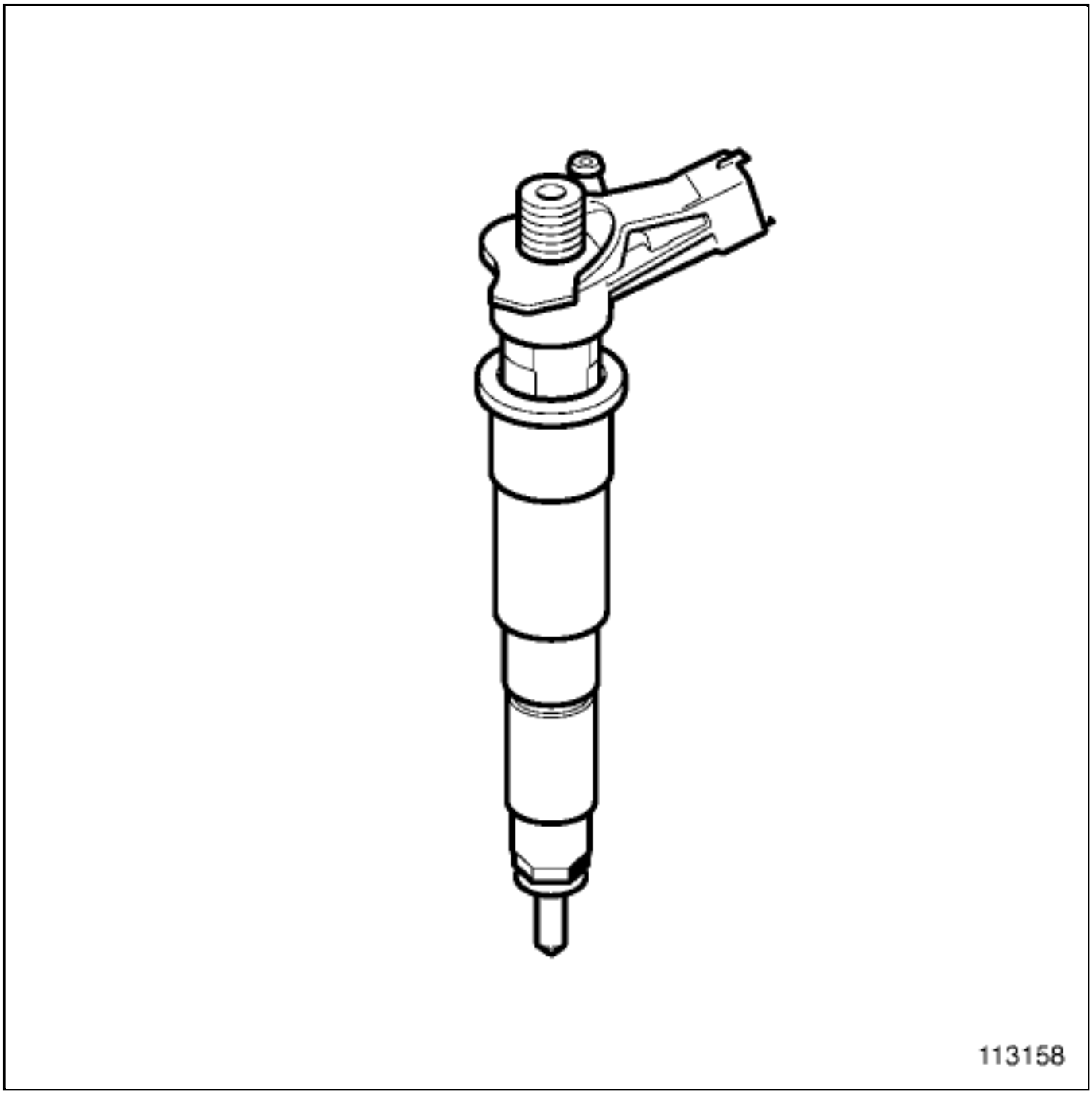
Note:

If the compression washer is stuck at the bottom of the well, use the toolInjector well cleaning kit (Mot. 1817) Injector well cleaning tool: Use (Technical Note 6040A, 13B, Diesel injection).

REFITTING

1. REFITTING PREPARATION OPERATION

1- CLEANING PARTS



WARNING

- It is strictly forbidden to clean the injectors with:
  - a wire brush,
  - an emery cloth,
  - an ultrasonic cleaner.

- Always clean the well of the removed injector[Injector well cleaning tool: Use](#) (Technical Note 6040, 13B, Diesel injection).

If reusing the removed injector:

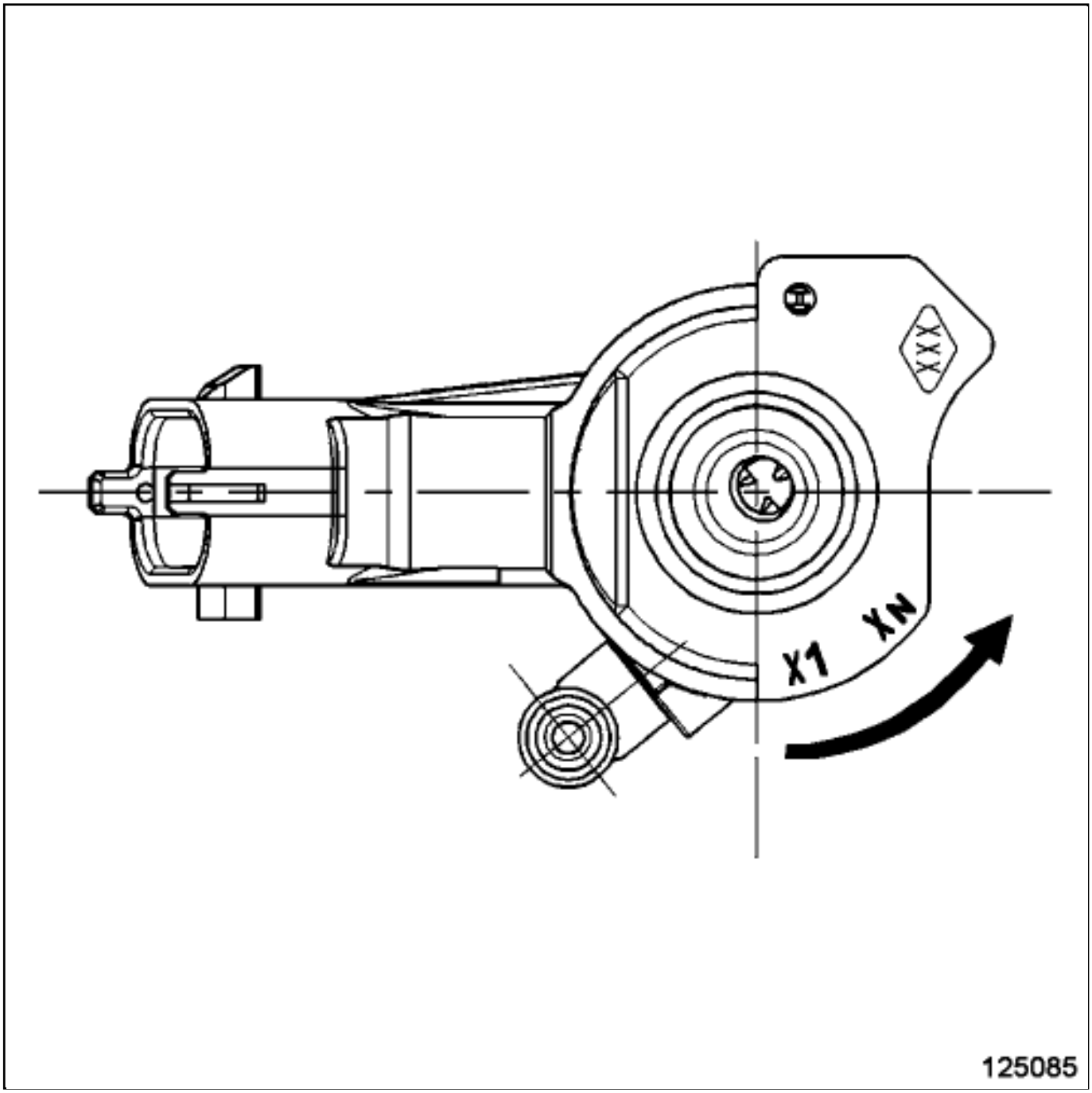
- clean the injector using a cloth soaked in injector cleaneror brake cleaner,
- if necessary, leave the injector nozzle to soak in injector cleaner,
- wipe the injector with a new wipe,
- Vehicle: Parts and consumables for the repair (04B, Consumables - Products) andDiesel injection: Precautions for the repair .

2. REFITTING OPERATION

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.



- If an injector is replaced, note the injector IMA code and the corresponding cylinder number.

Note:

IMA codes are from X1 to XN.

After connecting the battery, program the injectors using the Diagnostic tool.

- Proceed in the reverse order to removal.

Prime the diesel circuit using the manual priming pump.

Apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select the "Diesel injection computer" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- select "injectors" in the "List of components controlled by this computer" section,
- carry out the operations described in the "After repair procedure" section.

Repair-11x05x06-01x37-1-96-1.xml

XSL version : 3.02 du 22/07/11

DISPLAY: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

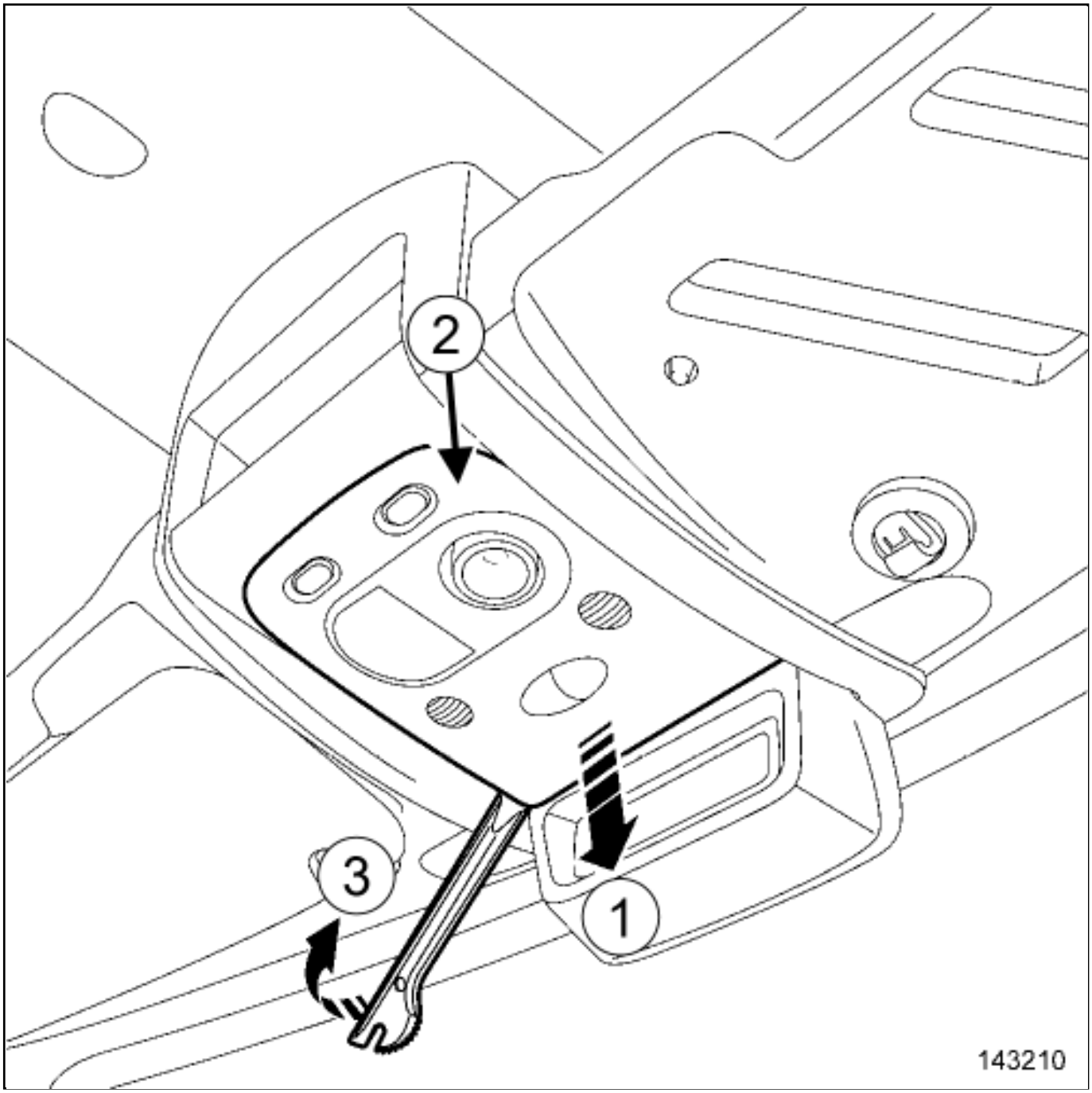
Equipment required
Diagnostic tool

REMOVAL

1. REMOVAL PREPARATION OPERATION

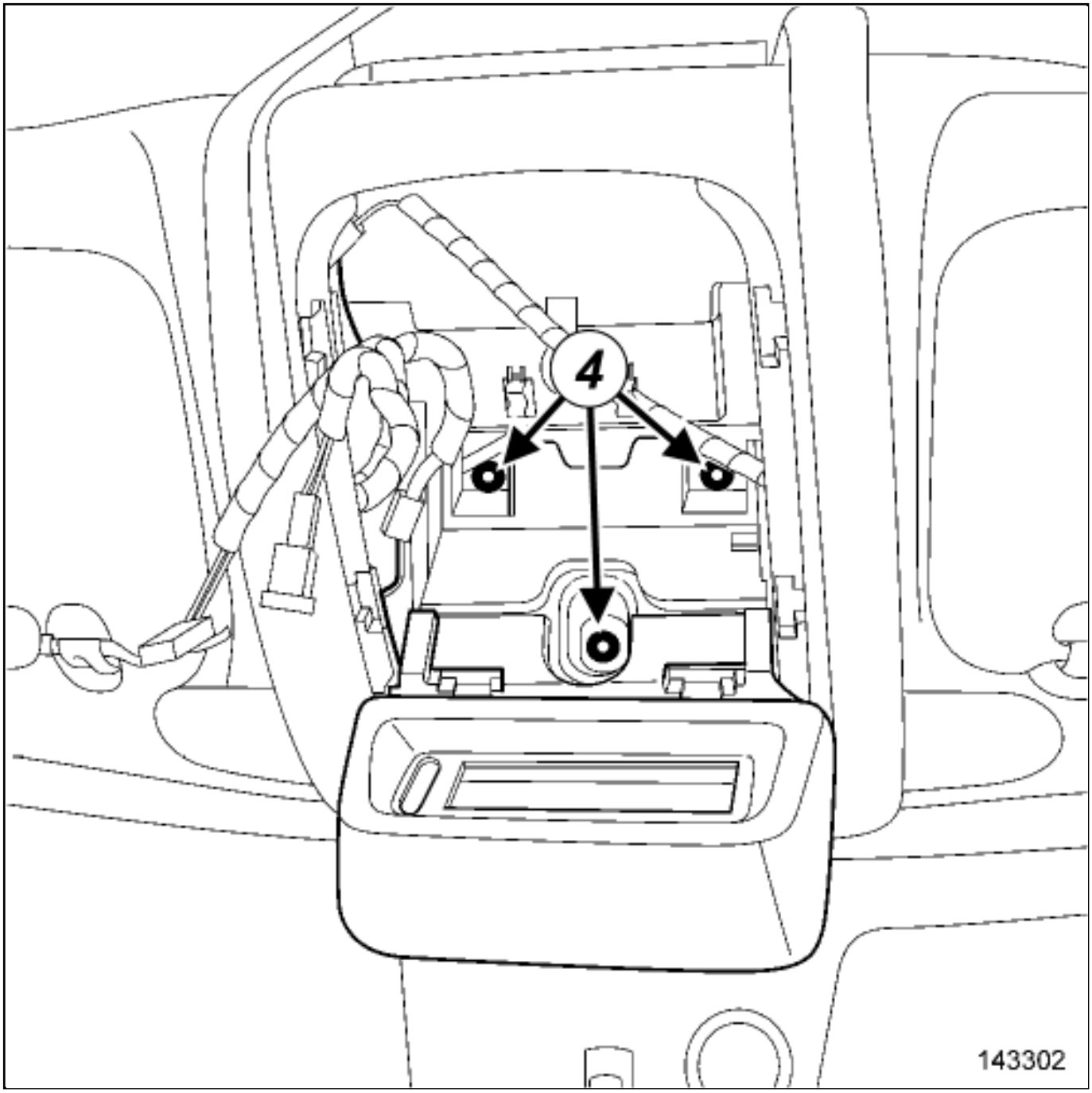
- In the event of replacement, apply the Before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Radio display",
  - go to repair mode,
  - display "Before/After repair procedure" in the selected computer,
  - select "Radio display" in the "List of components controlled by this computer" section,
  - carry out the operations described in the "Before repair procedure" section.

- Switch off the ignition.

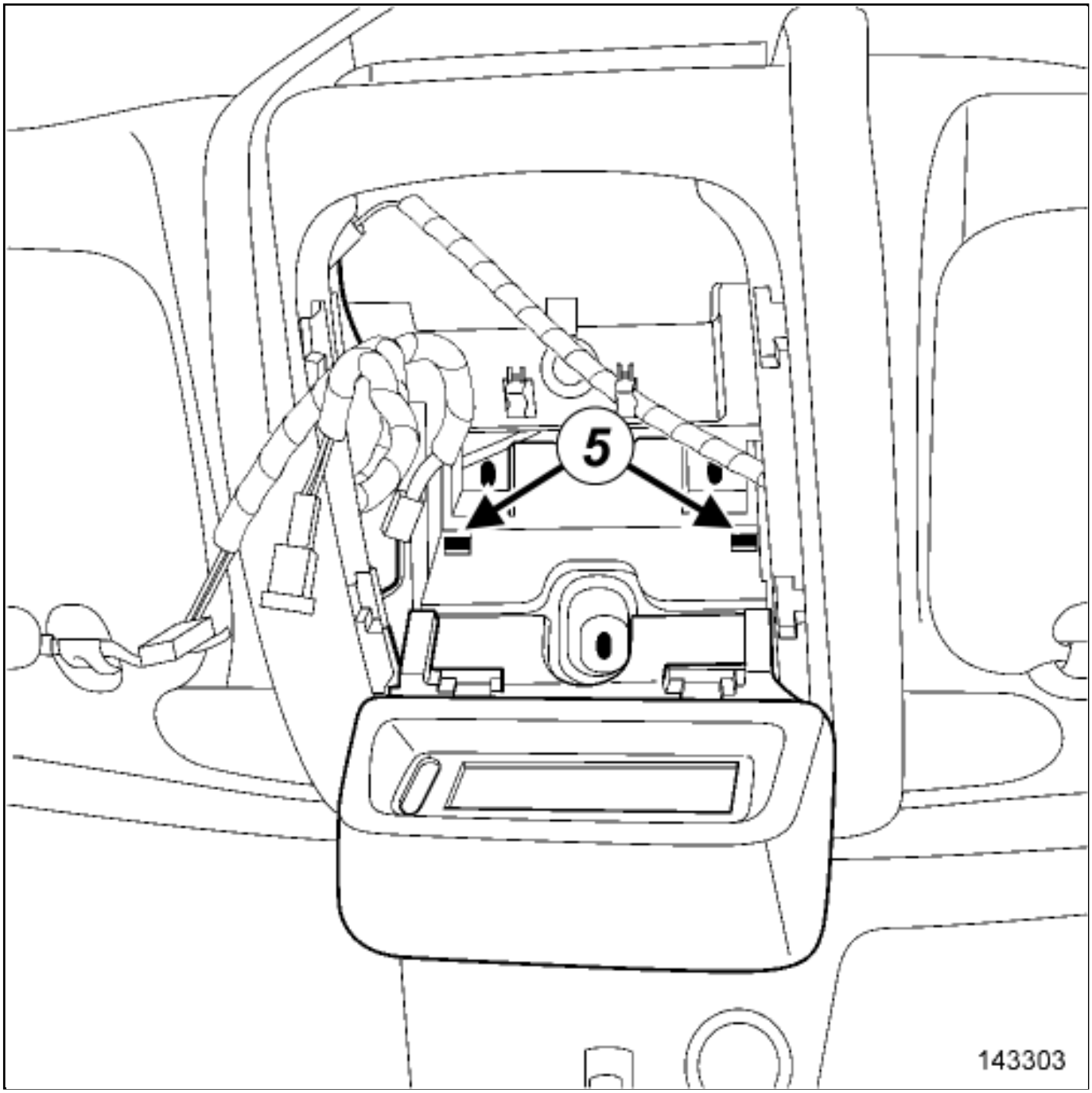


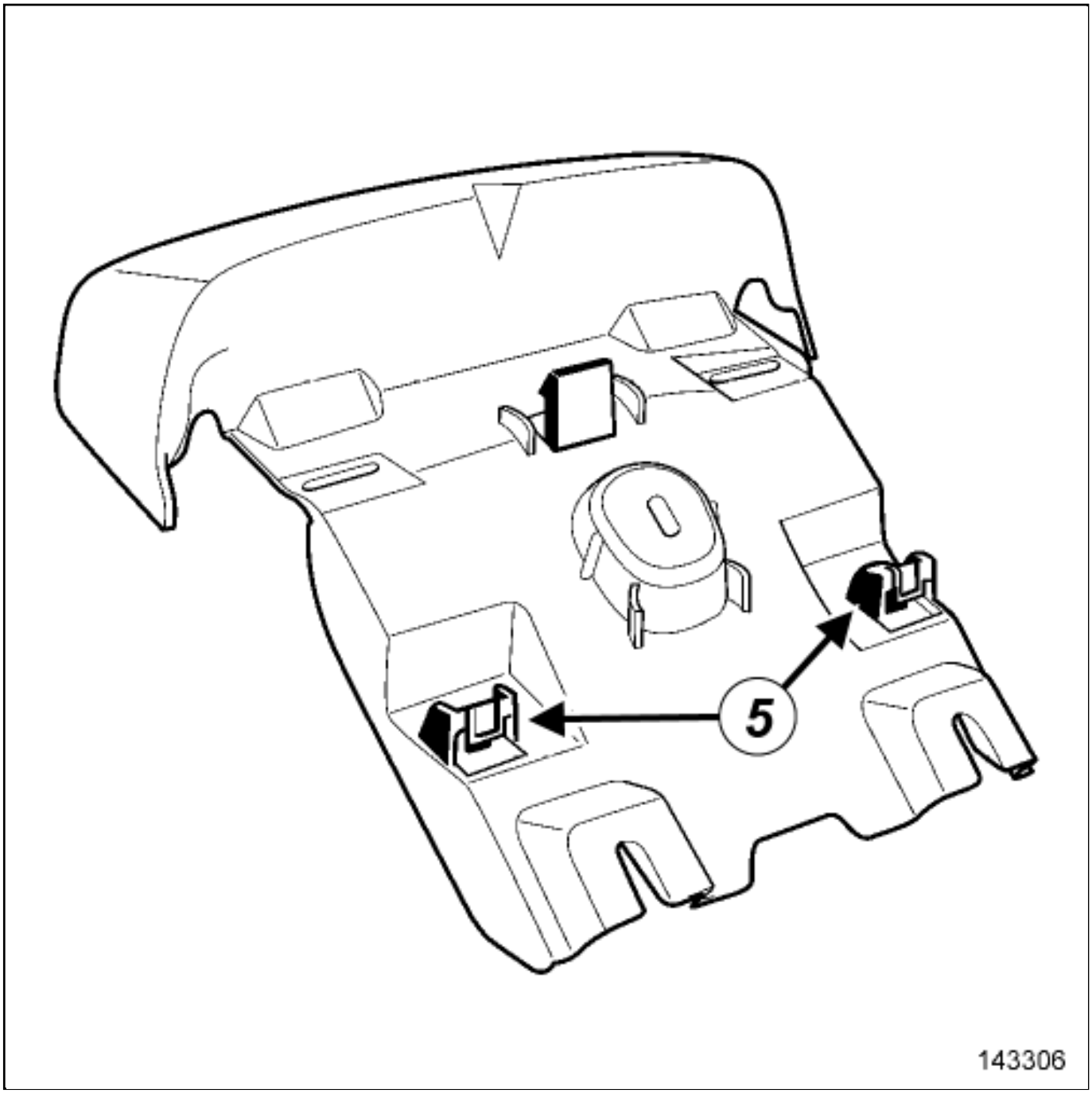
- Unclip (1) the interior light trim(2) using the toolSet of trim removal levers.(Car. 1363) by (3) .

- Disconnect:
  - the interior lighting connector,
  - the connector of the hazard warning light and central door locking switch.

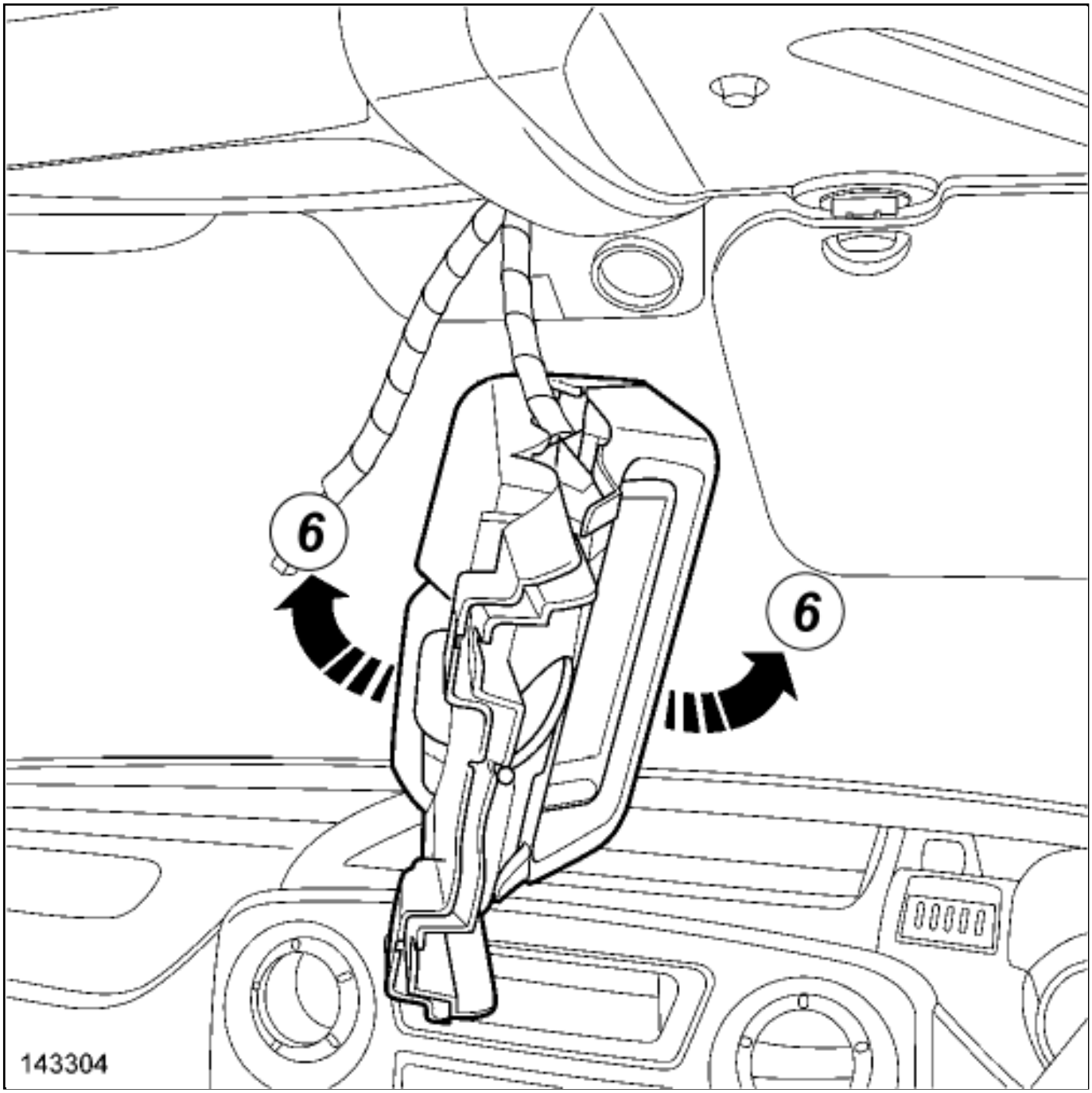


- Remove the display mounting bolts(4) .


5
143303



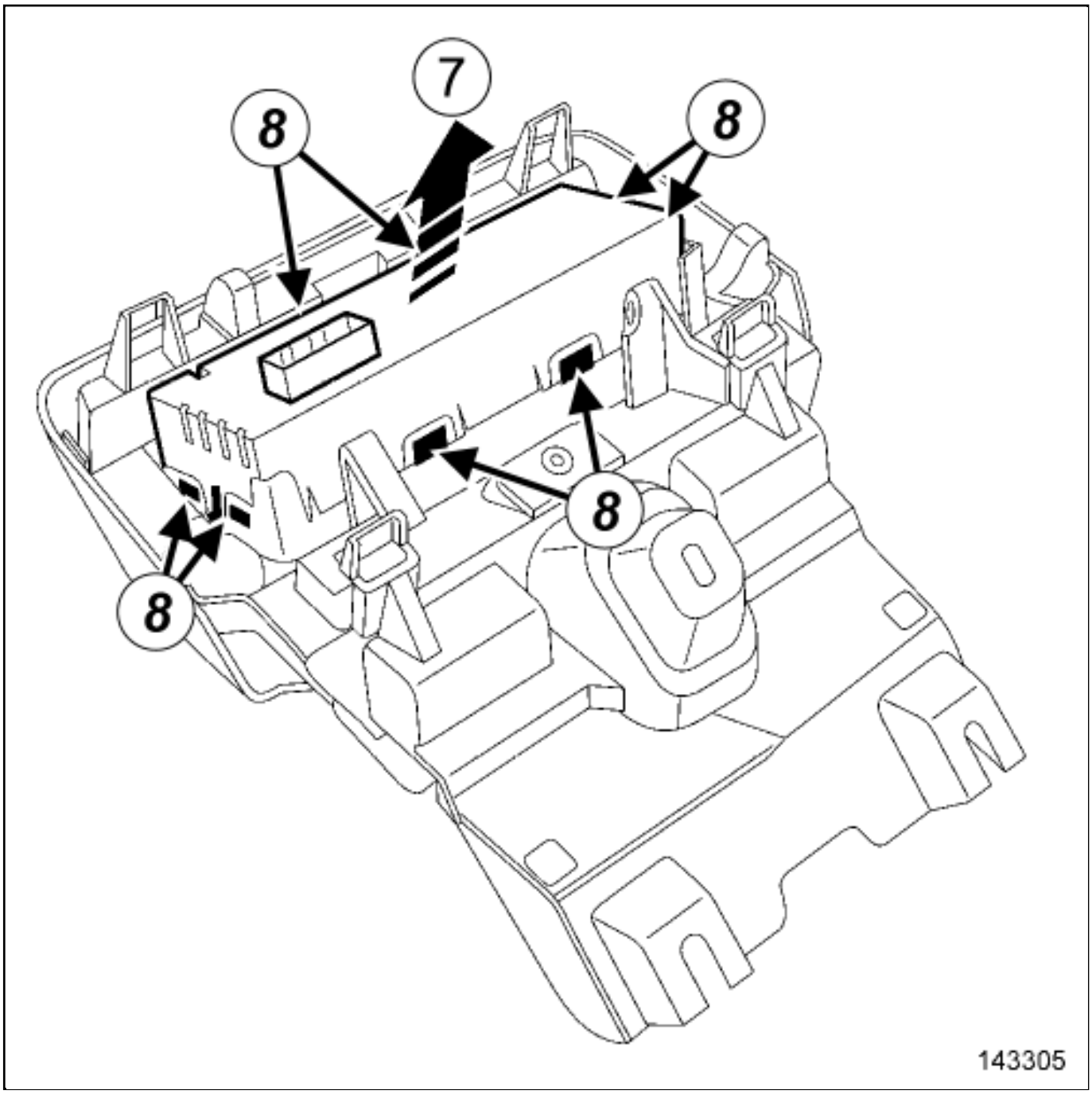
Partially remove the display mounting from the roof console by pressing the clips(5) .



Unclip the lower section of the display mounting from the upper section by(6) .

Disconnect the display connector.

2. REMOVAL OPERATION



Remove (7) the display from its mounting by pressing the clips(8) .

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

2. FINAL OPERATION

Switch on the ignition.

In the event of a replacement, apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Radio display",
- go to repair mode,
- display "Before/After repair procedure" in the selected computer,
- select "Radio display" in the "List of components controlled by this computer" section,

carry out the operations described in the "After repair procedure" section.

DISTRIBUTION MOTOR: REMOVAL - REFITTING

Equipment required
Diagnostic tool

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove:
  - the dashboard lower trimDashboard lower trim: Removal - Refitting (57A, Interior equipment),
  - the front air distribution duct(see 61A, Heating, Air distribution circuit assembly: Exploded view) .

2. REMOVAL OPERATION

- Disconnect the distribution motor connector.

- Remove the distribution motor(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

- Apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Climate control computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - select "front air distribution flap actuator" in the "List of components controlled by this computer" section,
  - carry out the operations described in the "After repair procedure" section.

XSL version : 3.02 du 22/07/11

DISTRIBUTION UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pipe clamps.	Ms. 583

Equipment required
refrigerant charging station
compressed air nozzle

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

WARNING

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

- Air conditioning: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

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

Note:

Use blanking plugs for the fuel circuits with part numbers 77 01 208 229or 77 01476 857to plug any openings exposed to the open air. They must be clean. Do not use any which have already been used to plug a fuel circuit.

REMOVAL

1. REMOVAL PREPARATION OPERATION

CAUTION

Consult the device's operating manual to avoid incorrect use.

- Drain the refrigerant circuit using the refrigerant charging stationRefrigerant circuit: Draining - Filling .
- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).
- Remove Passenger compartment cooling assembly: Exploded view :
  - the "condenser - expansion valve" connecting pipe from the expansion valve,
  - the "expansion valve - expansion valve outlet intermediate pipe" connecting pipe from the expansion valve.
- Insert the blanking plugs.
- Fit the toolPipe clamps.(Ms. 583) on the heater matrix hoses on the engine side.
- Disconnect the heater matrix hoses on the engine side.
- Remove:
  - the dashboardDashboard: Removal - Refitting (57A, Interior equipment),
  - the dashboard cross member(see **Dashboard cross member: Removal - Refitting**) (42A, Upper front structure).

2. REMOVAL OPERATION

- Remove the distribution unit(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

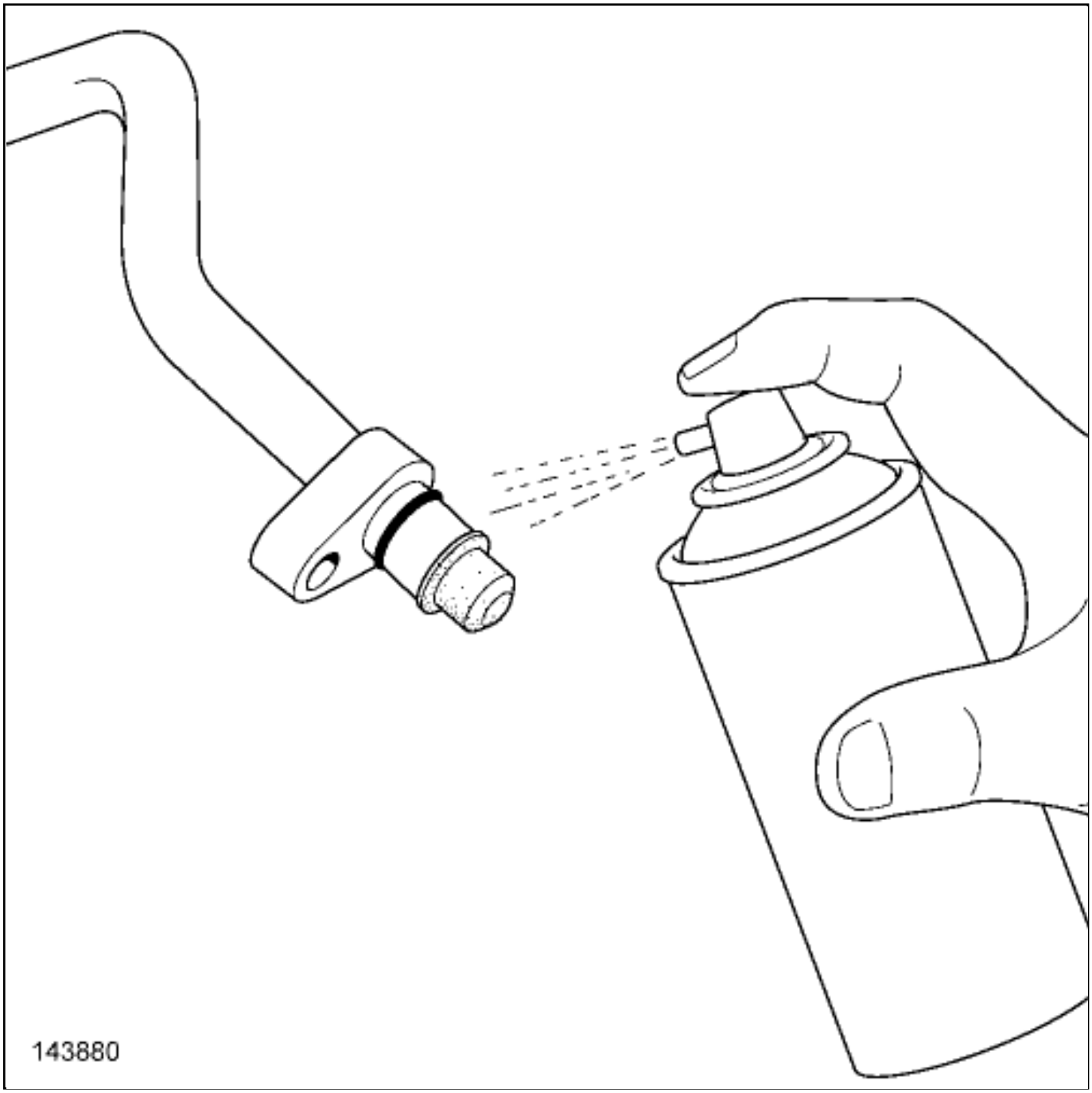
REFITTING

1. REFITTING PREPARATION OPERATION

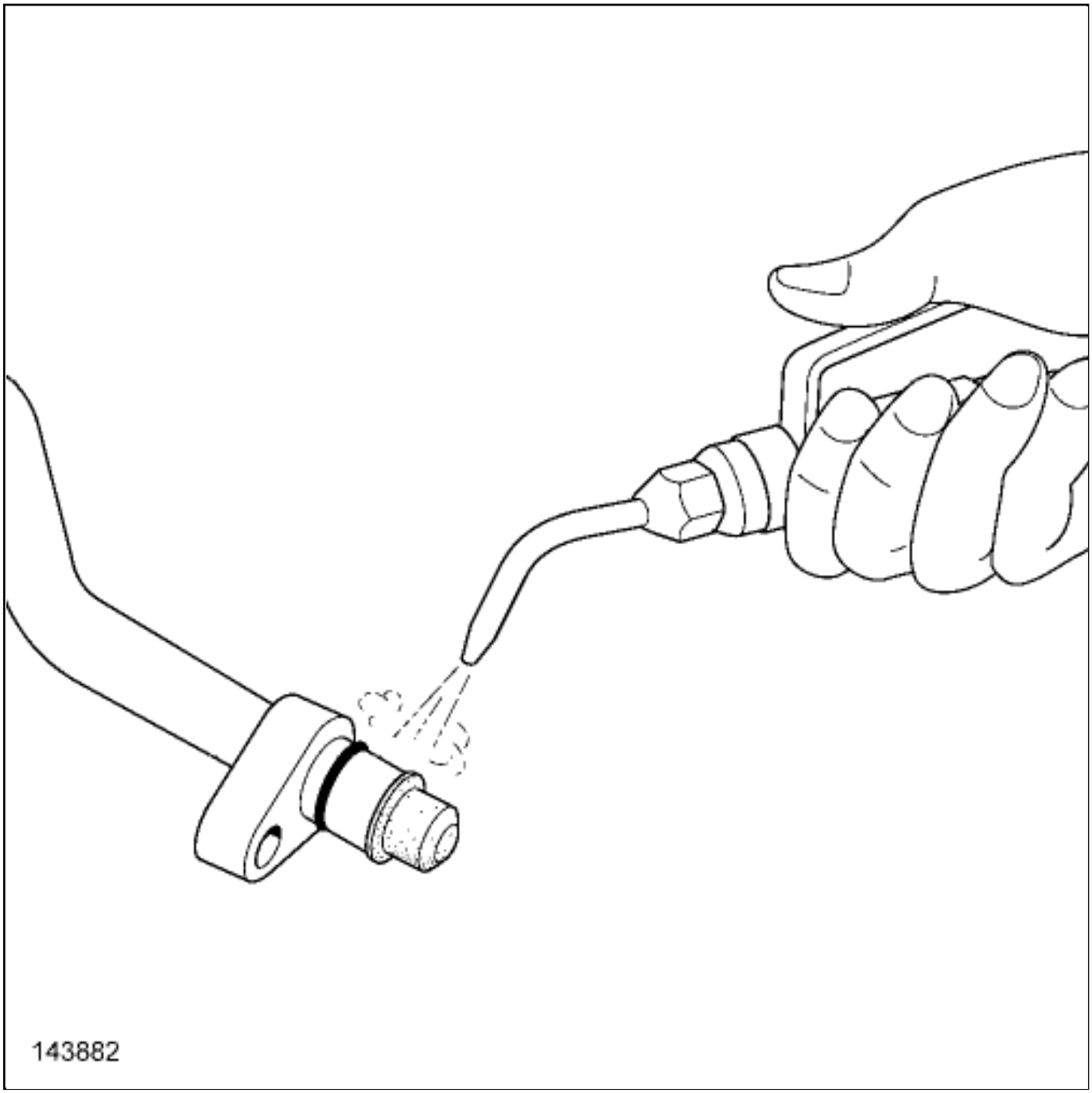
CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.



- Clean the surface and seal of the pipe using engine cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).



- Use a compressed air nozzle to blow on the surface and the seal of the connecting pipe.

- Lubricate the surface of the connecting pipe and the seal with air conditioning oil Air conditioning: Parts and consumables for the repair .

- Remove the blanking plugs.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Fill and bleed the cooling circuit Cooling system: Draining - Refilling (19A, Cooling).

Note:

A summary table gives the quantities of refrigerant in the system according to the engine types Air conditioning: Parts and consumables for the repair .

- Perform the following operations:
  - fill the refrigerant circuit using the refrigerant charging station Refrigerant circuit: Draining - Filling ,
  - check for leaks Refrigerant circuit: Check .

- Check that the air conditioning system is operating correctly Air conditioning: Check .

DOOR MIRROR GLASS: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

Location and specifications (tightening torques, parts always to be replaced, etc.)Exterior front side opening element assembly: Exploded view .

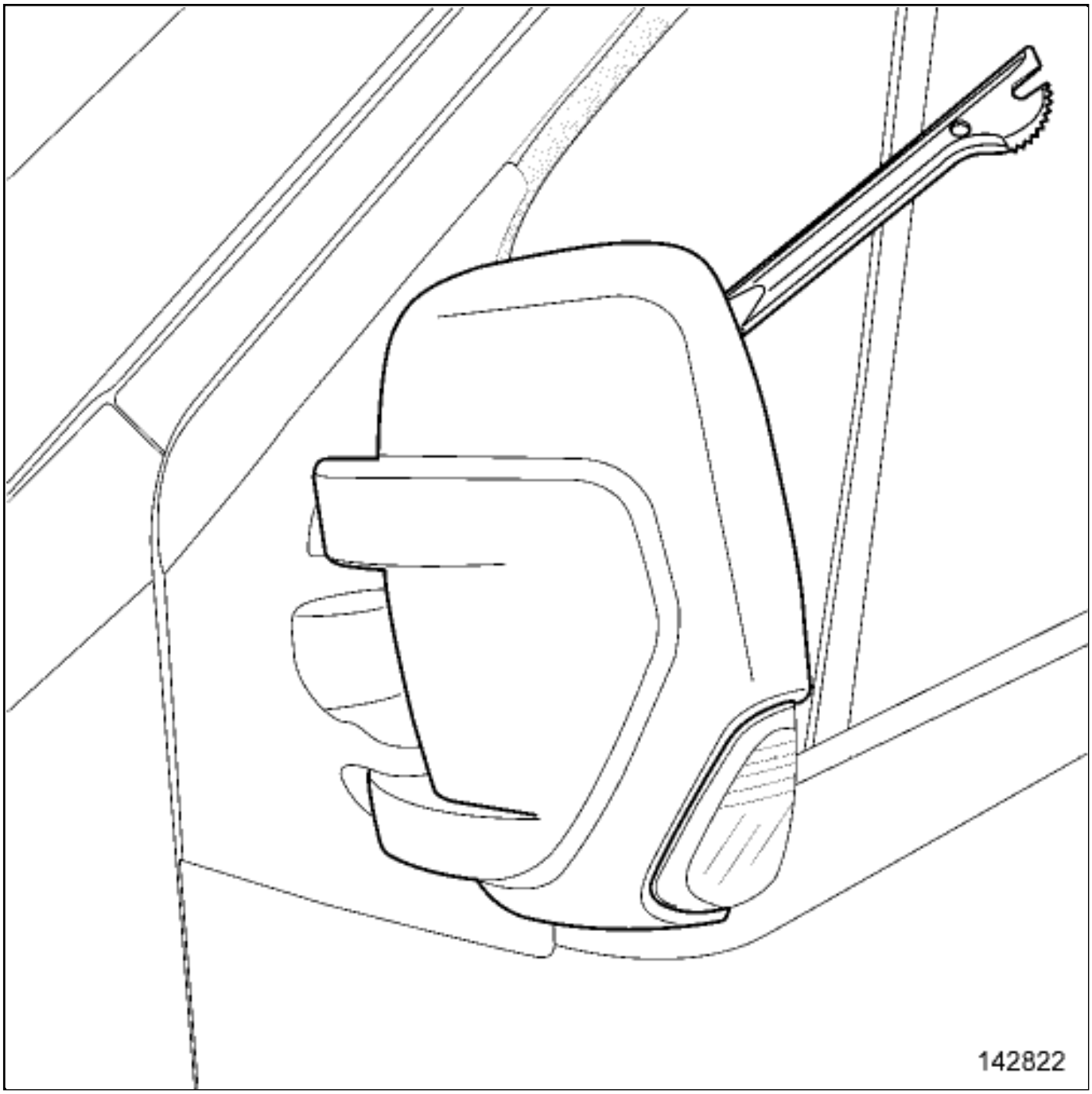
Note:

The lower and upper mirror glasses can be removed independently.

REMOVAL

1. REMOVAL PREPARATION OPERATION

1- LOWER MIRROR GLASS



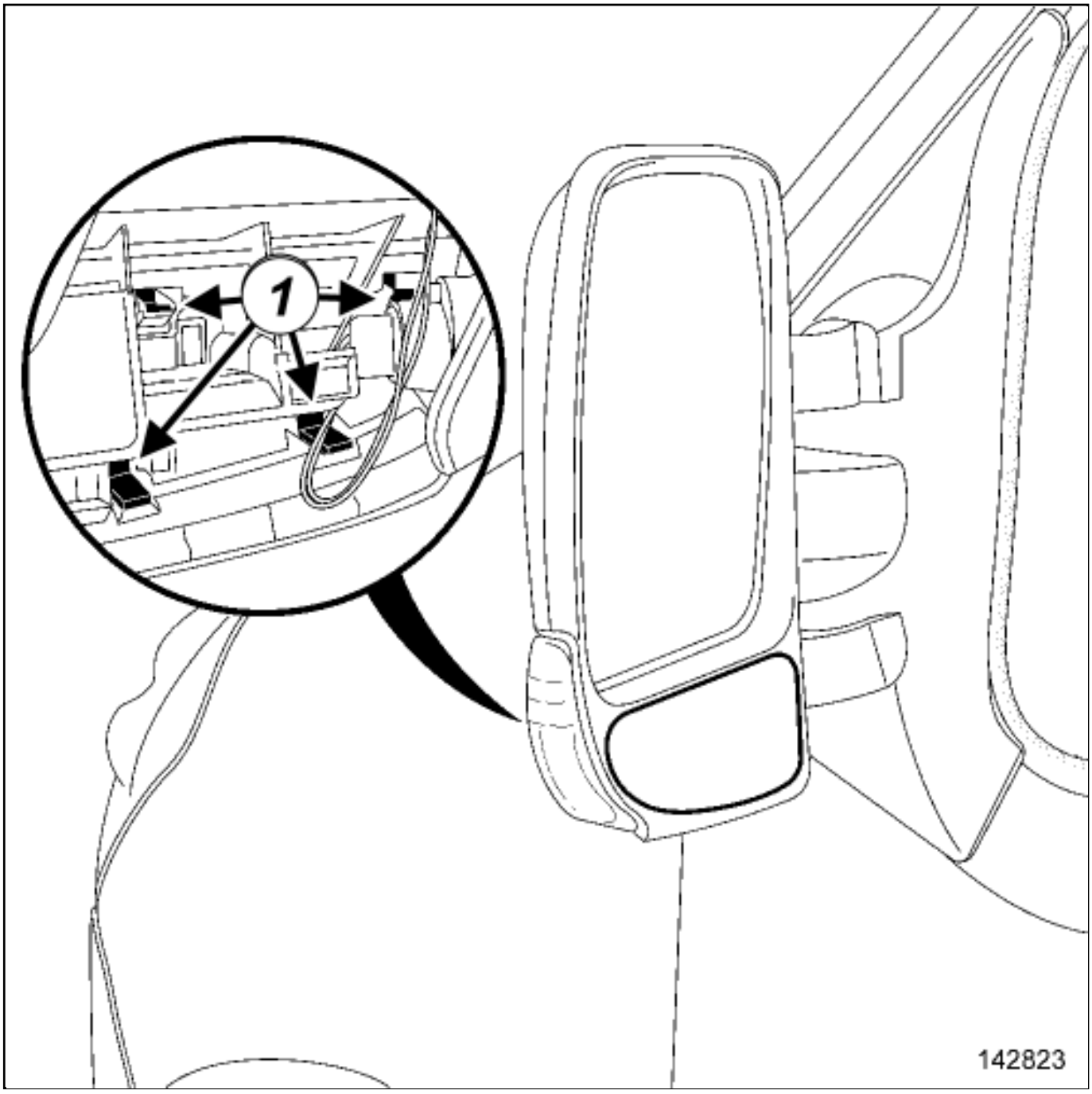
- Unclip the door mirror casing using the toolSet of trim removal levers.(Car. 1363) .

2. REMOVAL OPERATION

1- UPPER MIRROR GLASS

- Unclip the door mirror upper glassExterior front side opening element assembly: Exploded view .

2- LOWER MIRROR GLASS



- Unclip the door mirror lower glass by pressing the clips(1) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

DOOR MIRROR: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)Exterior front side opening element assembly: Exploded view .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Unclip the door mirror coverFront side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).
- Unclip the door mirror connector.
- Disconnect the door mirror connector.

2. REMOVAL OPERATION

- Remove the door mirrorExterior front side opening element assembly: Exploded view .

REFITTING

- Proceed in the reverse order to removal.

DOOR SEALING FILM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim):

- the front side door interior handle,
- the front side door trim.

1. REMOVAL OPERATION

Carefully remove the mastic bead from the door box section around the edges of the door sealing film Front side opening element assembly on the passenger compartment side: Exploded view (72A, Body internal trim).

REFITTING

1. REFITTING PREPARATION OPERATION

Note:

Remove the adhesive residue from the door box section by applying wide masking tape over the bonding area. Pull gently on the masking tape to remove any adhesive residue.

Clean the door box section using a lint-free clothsoaked in heptane(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

CAUTION

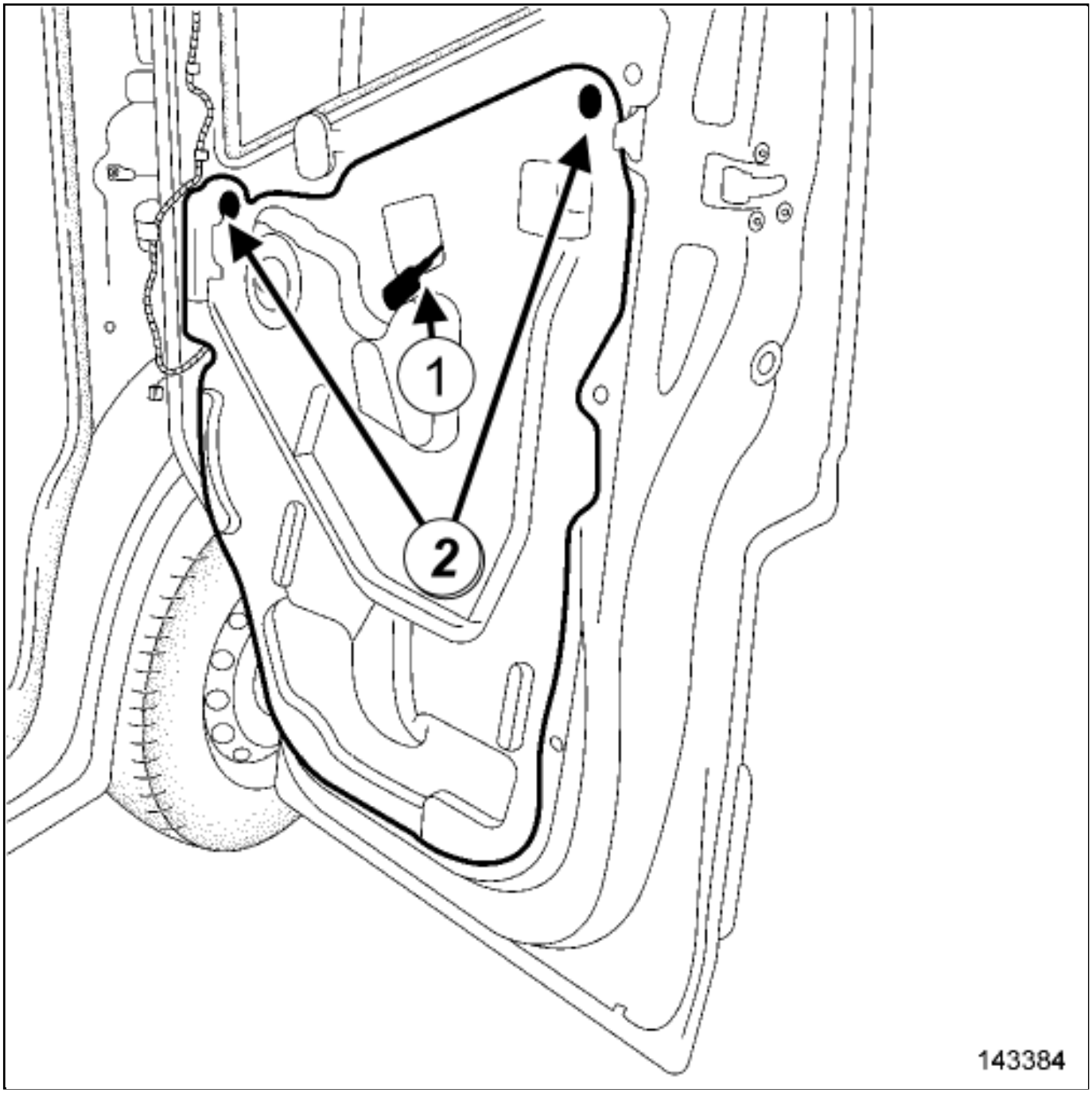
- To ensure the sealing film adheres correctly:
  - The door must be clean (free of dust, grease and anti-adhesive products), with no trace of impurities and no condensation,
  - The area of the door box section where the film is to be applied must be painted completely,
  - There must be a minimum temperature of 15°C on the surfaces which are to be bonded.

1. REFITTING OPERATION

- Remove the paper protecting the door sealing film mastic bead.

Note:

Do not touch the mastic bead.



- Pass the interior opening release cable of the front door(1) through the slit in the door sealing film.
- Index the marks of the door sealing film(2) on the front door box section.
- Position the door sealing film correctly around the outside edge without applying any pressure.
- Firmly attach the door sealing film around its entire edge.
- Carry out a sealing test (see Technical Note 0653A).

2. FINAL OPERATION

- Proceed in the reverse order to removal.

DRIVER'S FRONTAL AIRBAG: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

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

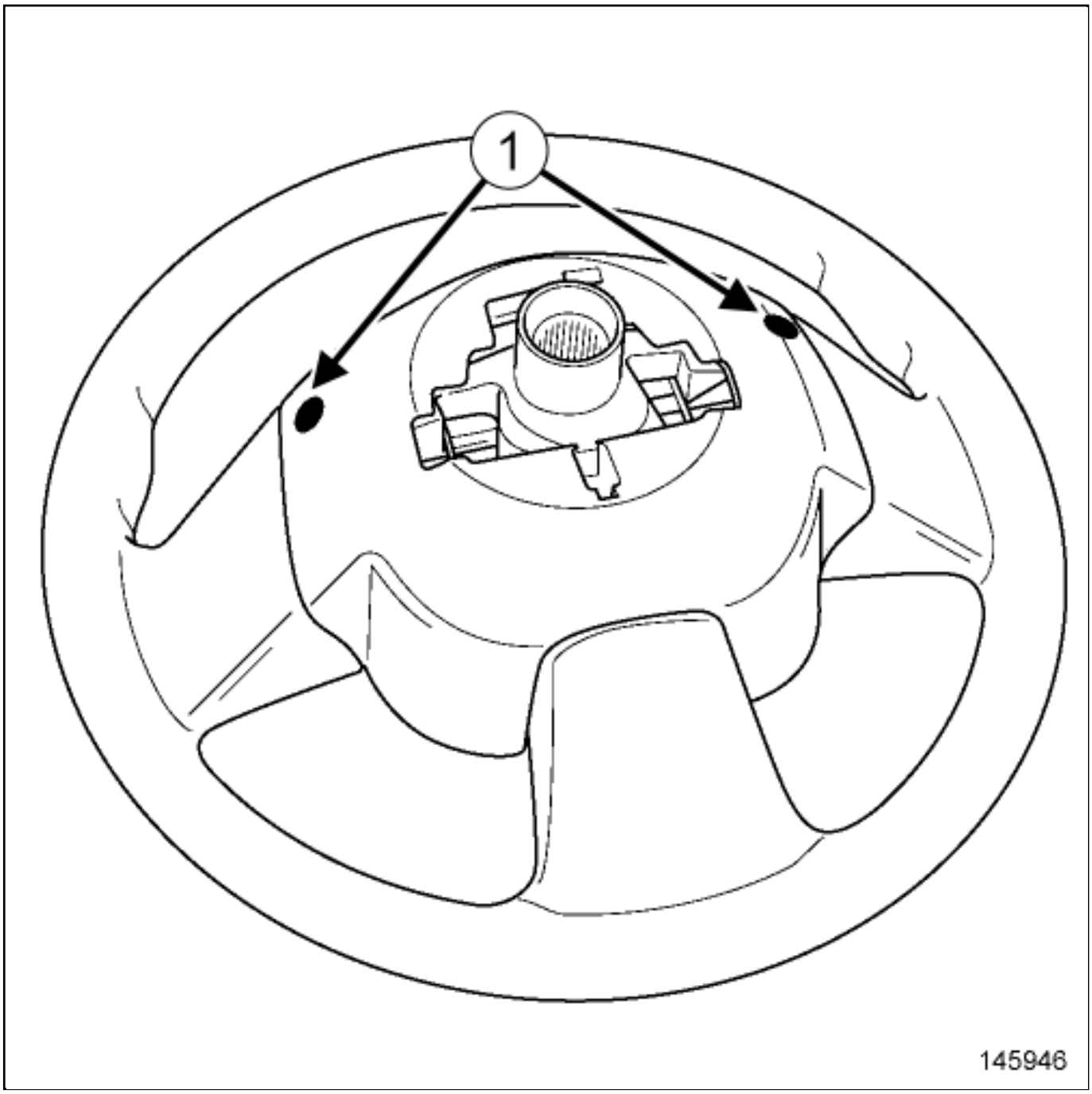
- (see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) ,
- Vehicle: Precautions for the repair .

REMOVAL

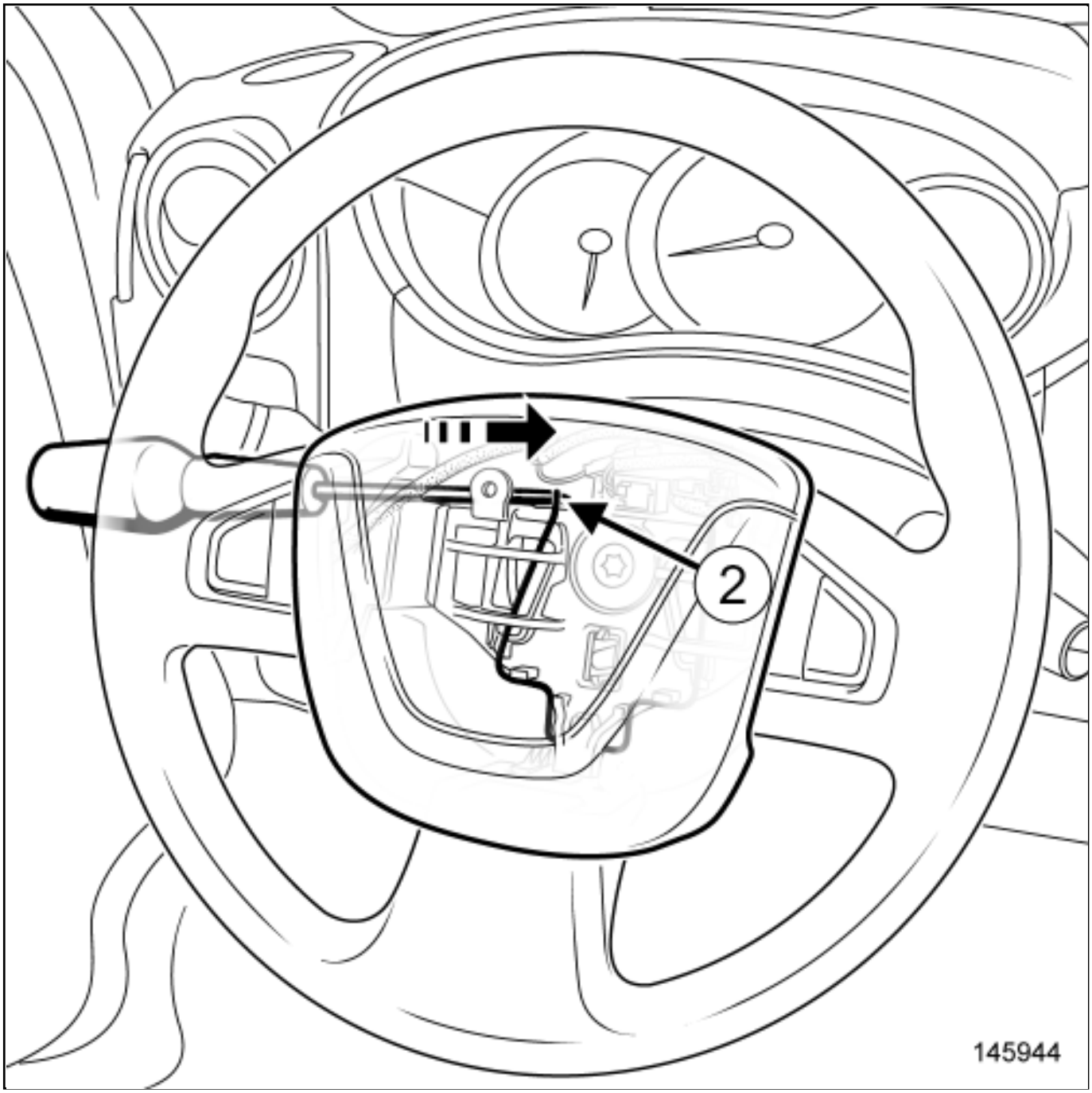
1. REMOVAL PREPARATION OPERATION

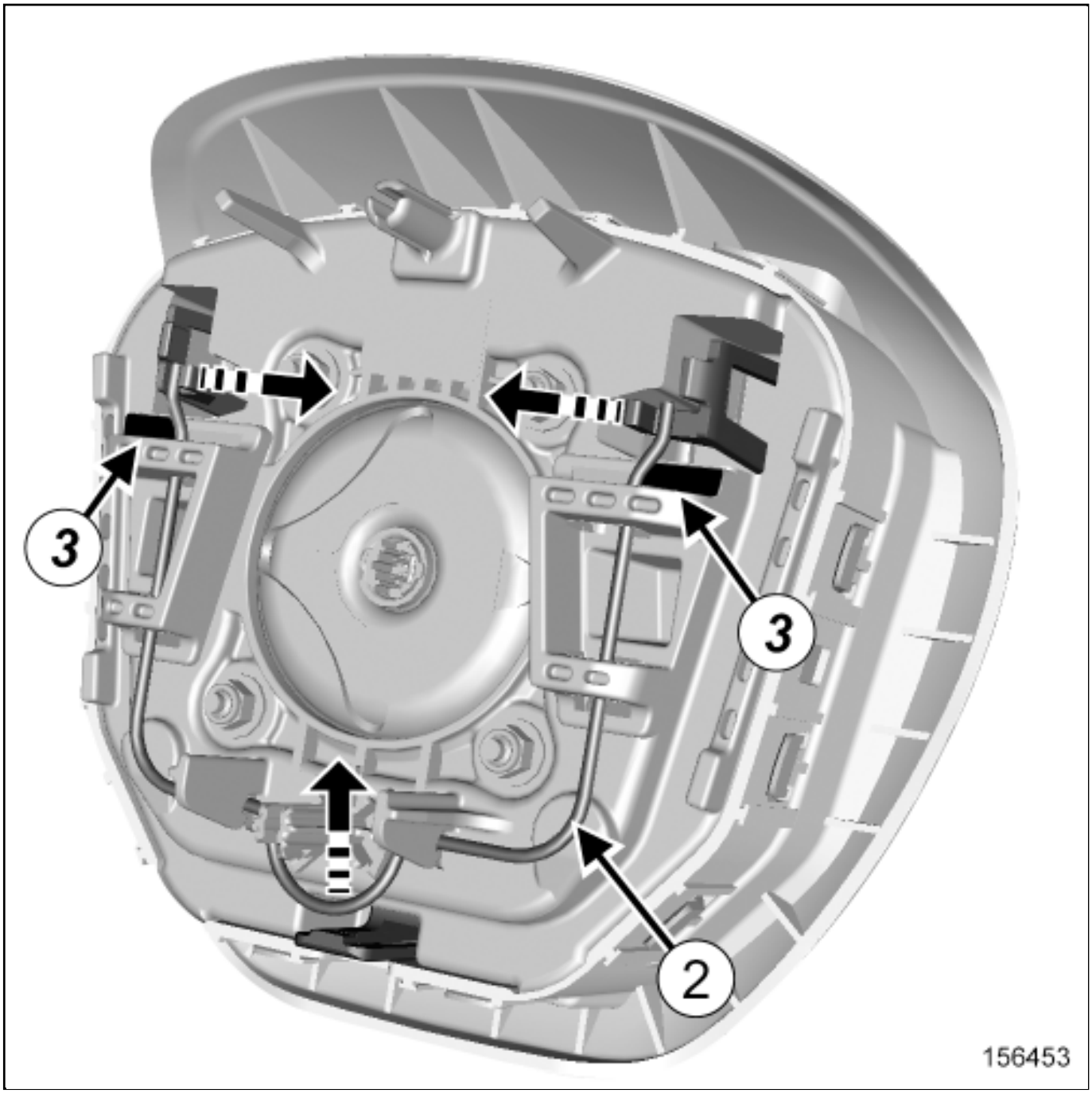
Apply the procedure for deactivating the safety systems(see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) .

2. REMOVAL OPERATION



- Insert a flat-blade screwdriver into one of the openings(1) .


2
145944



- Unclip the clip(2) by pushing the screwdriver on the area(3) , while pulling on the driver's frontal airbag.

- Proceed in the same manner to unclip the other side of the airbag.

- Unlock the connector(s) of the driver's frontal airbag.

- Disconnect the connector(s).

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

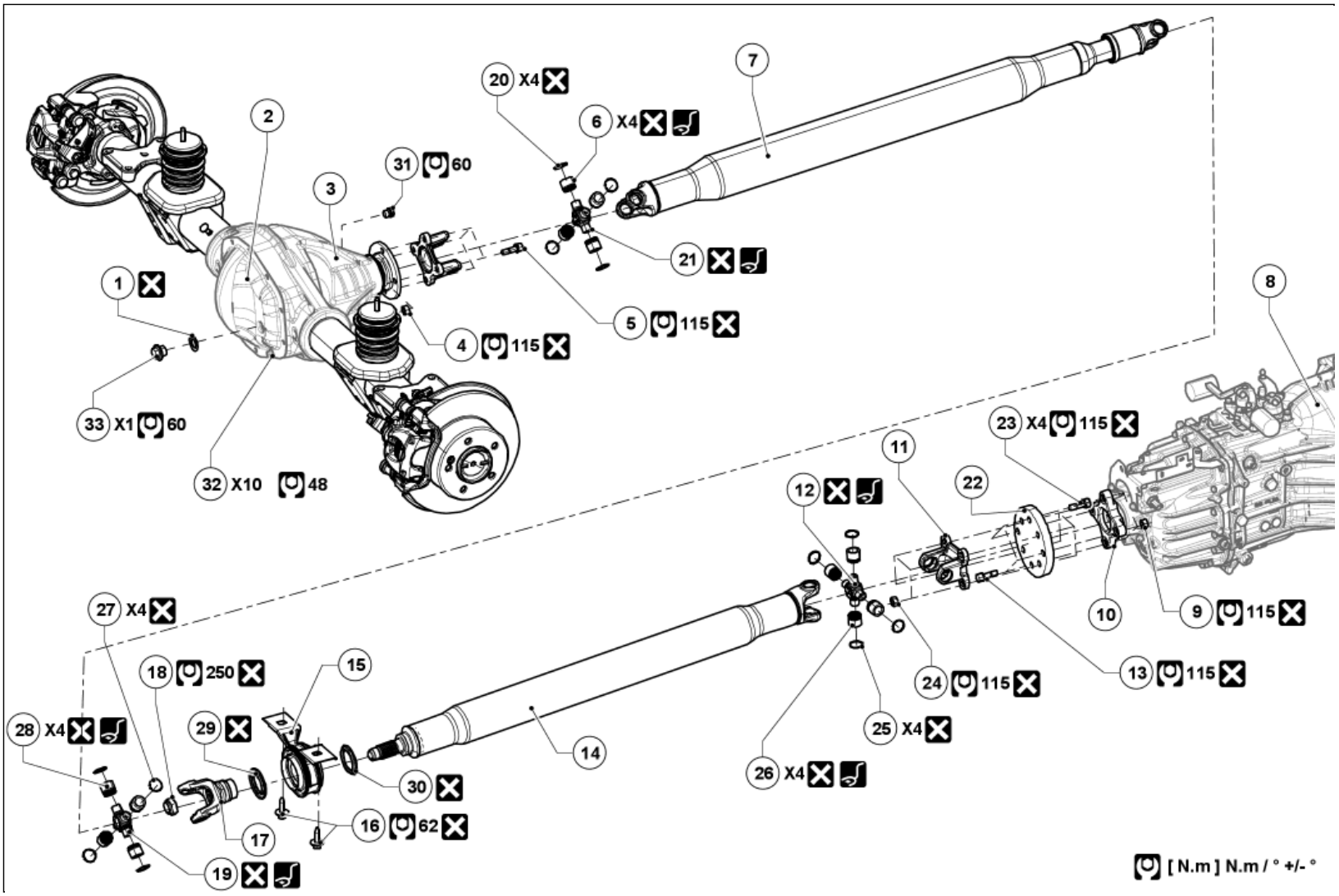
2. FINAL OPERATION

- Apply the procedure for activating the safety systems(see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) .

3. CHECKING AFTER REPAIR

- Switch on the ignition.
- Check that there are no faults on the instrument panel.

DRIVESHAFT ASSEMBLY: EXPLODED VIEW

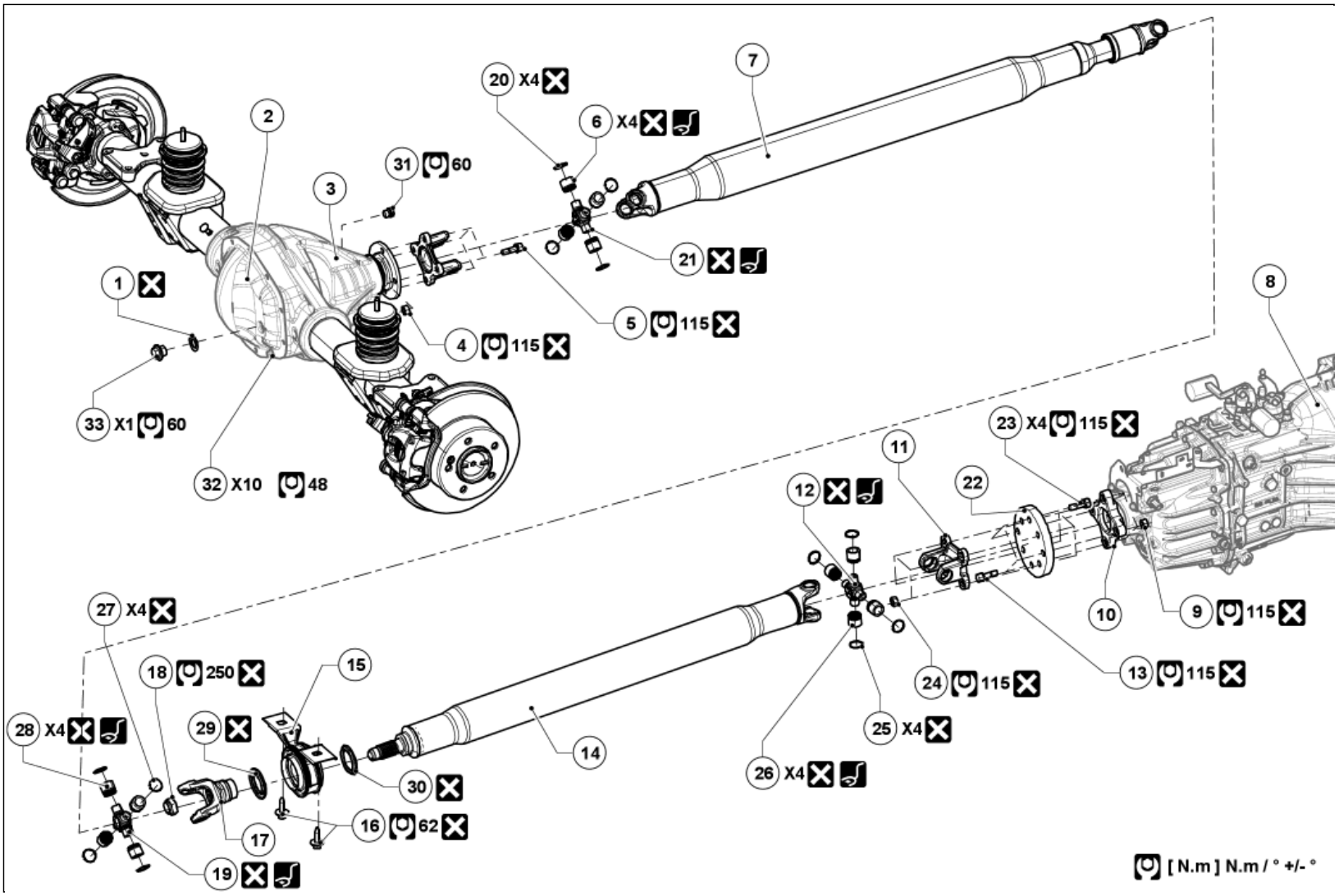


(see **Illustration key: Description**) .

Marks	Designations	Informations
1	Final drive oil filler cap seal	
2	Rear final drive closure housing	
3	Rear final drive	AND (Propulsion) PROPULSION TRANSMISSION
4	Universal joint nuts rear final drive side	
5	Universal joint bolts rear final drive side	
6	Needle bearings	(BVi 1945)
7	Longitudinal driveshaft	
8	Manual gearbox	(see **Gearbox assembly: Exploded view**)
9	Universal joint nuts gearbox side	
10	Bracket	
11	Universal joint yoke	
12	Universal joint cross piece	(BVi 1945)
13	Universal joint bolts gearbox side	
14	Longitudinal driveshaft	
15	Relay bearing	
16	Relay bearing bolts	
17	Universal joint yoke	
18	Yoke nut	
19	Universal joint cross piece	(BVi 1945)
20	Circlip	
21	Universal joint cross piece	(BVi 1945)
22	Flector	
23	Universal joint bolts gearbox side	
24	Universal joint nuts gearbox side	
25	Circlip	
26	Needle bearings	(BVi 1945)
27	Circlip	
28	Needle bearings	(BVi 1945)
29	Dust seal	
30	Dust seal	

31	Rear final drive drain plug	
32	Rear final drive closure housing bolts	
33	Rear final drive filler cap	

DRIVESHAFT ASSEMBLY: EXPLODED VIEW



(see **Illustration key: Description**) .

Marks	Designations	Informations
1	Final drive oil filler cap seal	
2	Rear final drive closure housing	
3	Rear final drive	AND (Propulsion) PROPULSION TRANSMISSION
4	Universal joint nuts rear final drive side	
5	Universal joint bolts rear final drive side	
6	Needle bearings	(BVi 1945)
7	Longitudinal driveshaft	
8	Manual gearbox	(see **Gearbox assembly: Exploded view**)
9	Universal joint nuts gearbox side	
10	Bracket	
11	Universal joint yoke	
12	Universal joint cross piece	(BVi 1945)
13	Universal joint bolts gearbox side	
14	Longitudinal driveshaft	
15	Relay bearing	
16	Relay bearing bolts	
17	Universal joint yoke	
18	Yoke nut	
19	Universal joint cross piece	(BVi 1945)
20	Circlip	
21	Universal joint cross piece	(BVi 1945)
22	Flector	
23	Universal joint bolts gearbox side	
24	Universal joint nuts gearbox side	
25	Circlip	
26	Needle bearings	(BVi 1945)
27	Circlip	
28	Needle bearings	(BVi 1945)
29	Dust seal	
30	Dust seal	

31	Rear final drive drain plug	
32	Rear final drive closure housing bolts	
33	Rear final drive filler cap	

DUCT BETWEEN TURBOCHARGERS : REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Wear cut-resistant gloves during the operation.

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

Location and specifications (tightening torques, parts always replaced, etc.)Exhaust assembly in engine compartment: Exploded view .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Open the bonnet.

2. REMOVAL OPERATION

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the bolts of the duct between turbochargers,
  - the duct between turbochargers,
  - the seal of the duct between turbochargers.

REFITTING

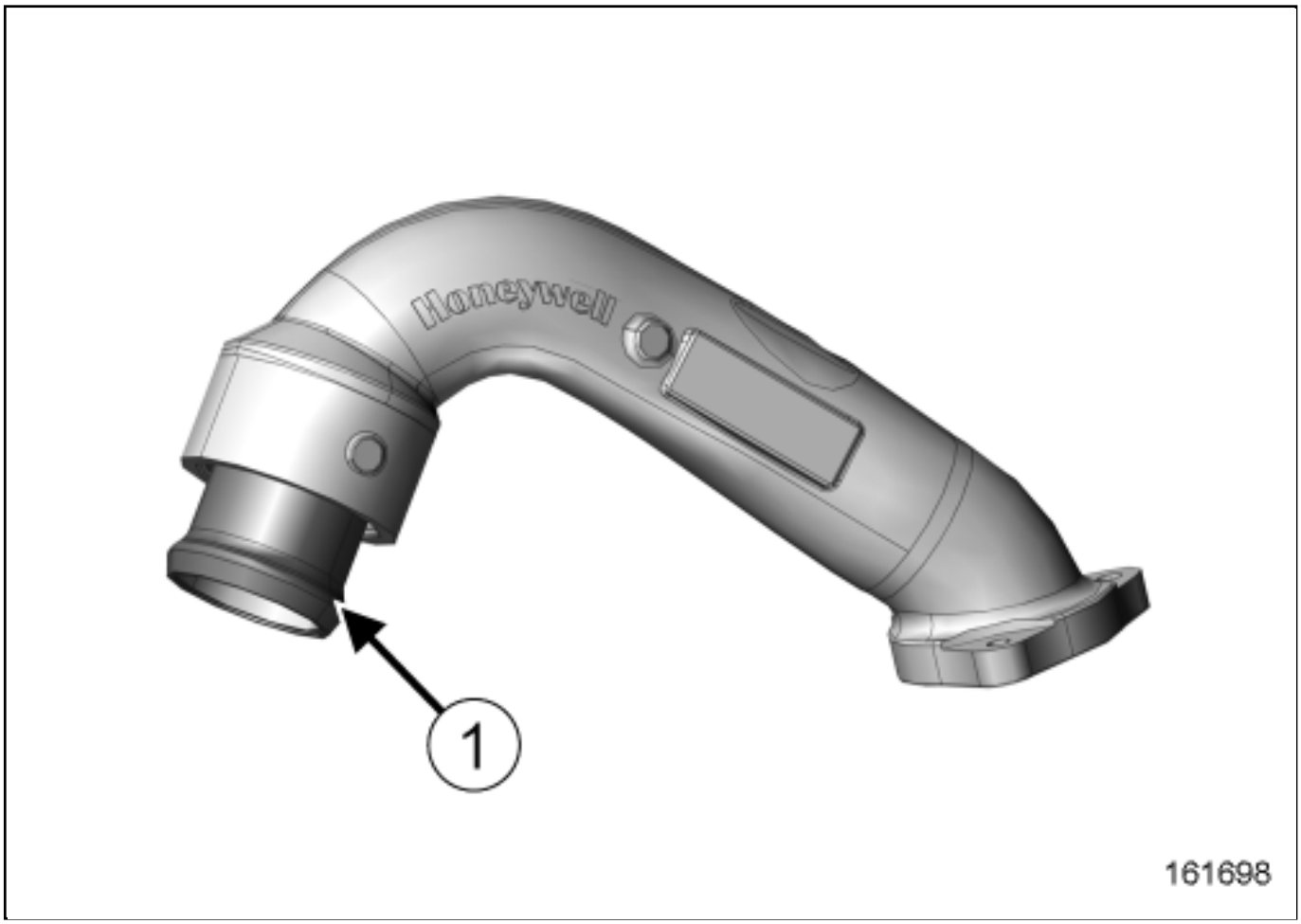
1. REFITTING PREPARATION OPERATION

Parts always to be replaced: seal of the duct between turbochargers Exhaust assembly in engine compartment: Exploded view .

2. REFITTING OPERATION

Clean using surface cleaner Vehicle: Parts and consumables for the repair :

- the flange of the duct between turbochargers,
- the flange of the integrated turbo-manifold.



Check the good condition of the elastomer seal(1) (absence of cracks).

Coat using clean oil the elastomer seal(1) of the duct between turbochargers.

Refit Exhaust assembly in engine compartment: Exploded view :

- the new seal of the duct between turbochargers,
- the duct between turbochargers,
- the bolts of the duct between turbochargers.

Torque tighten the bolts of the duct between turbochargers Exhaust assembly in engine compartment:

Exploded view .

3. FINAL OPERATION

- Proceed in the reverse order to removal.

ELECTRIC COOLANT PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19A, Cooling, Coolant circuit assembly: Exploded view)** .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

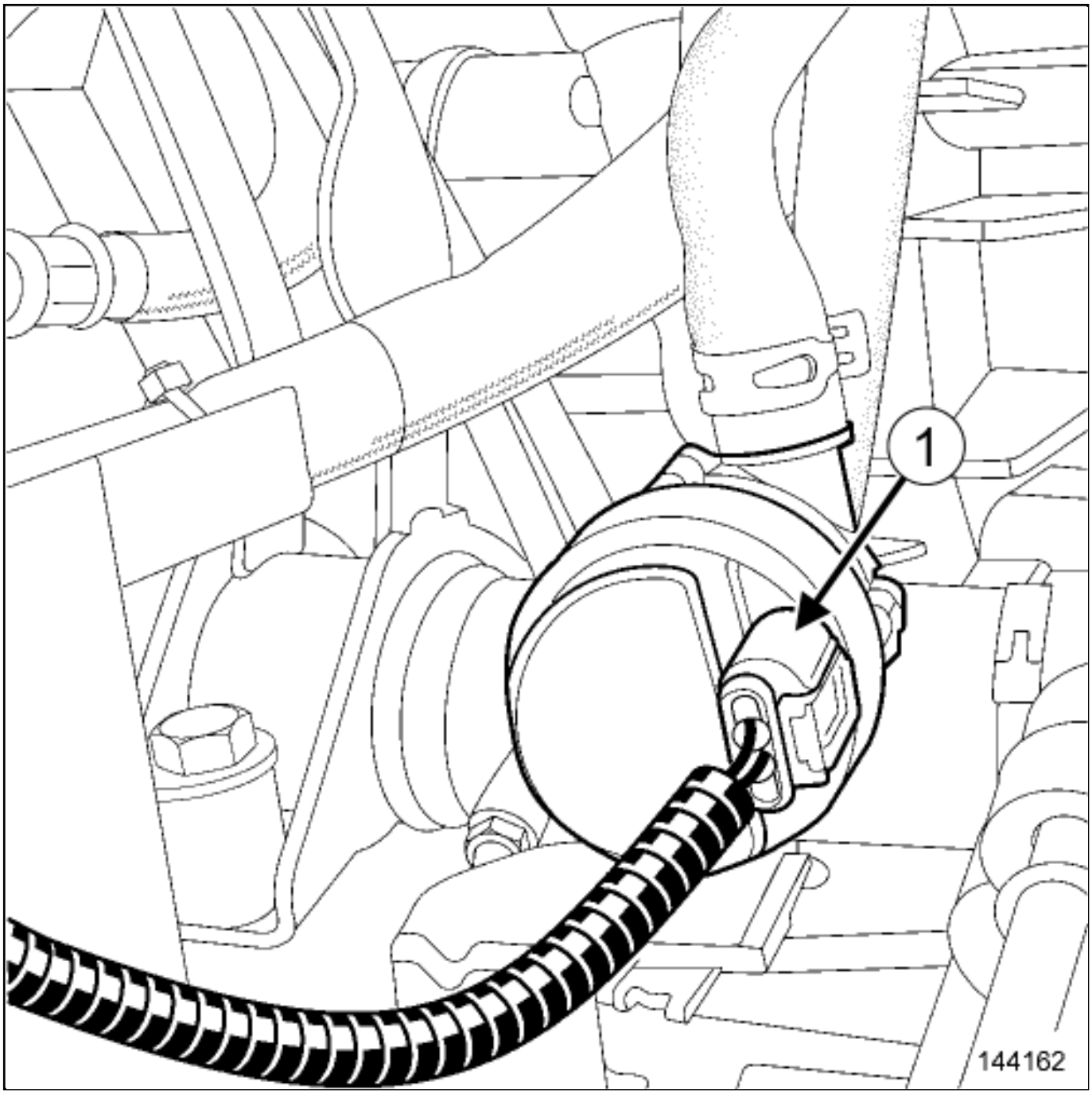
CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

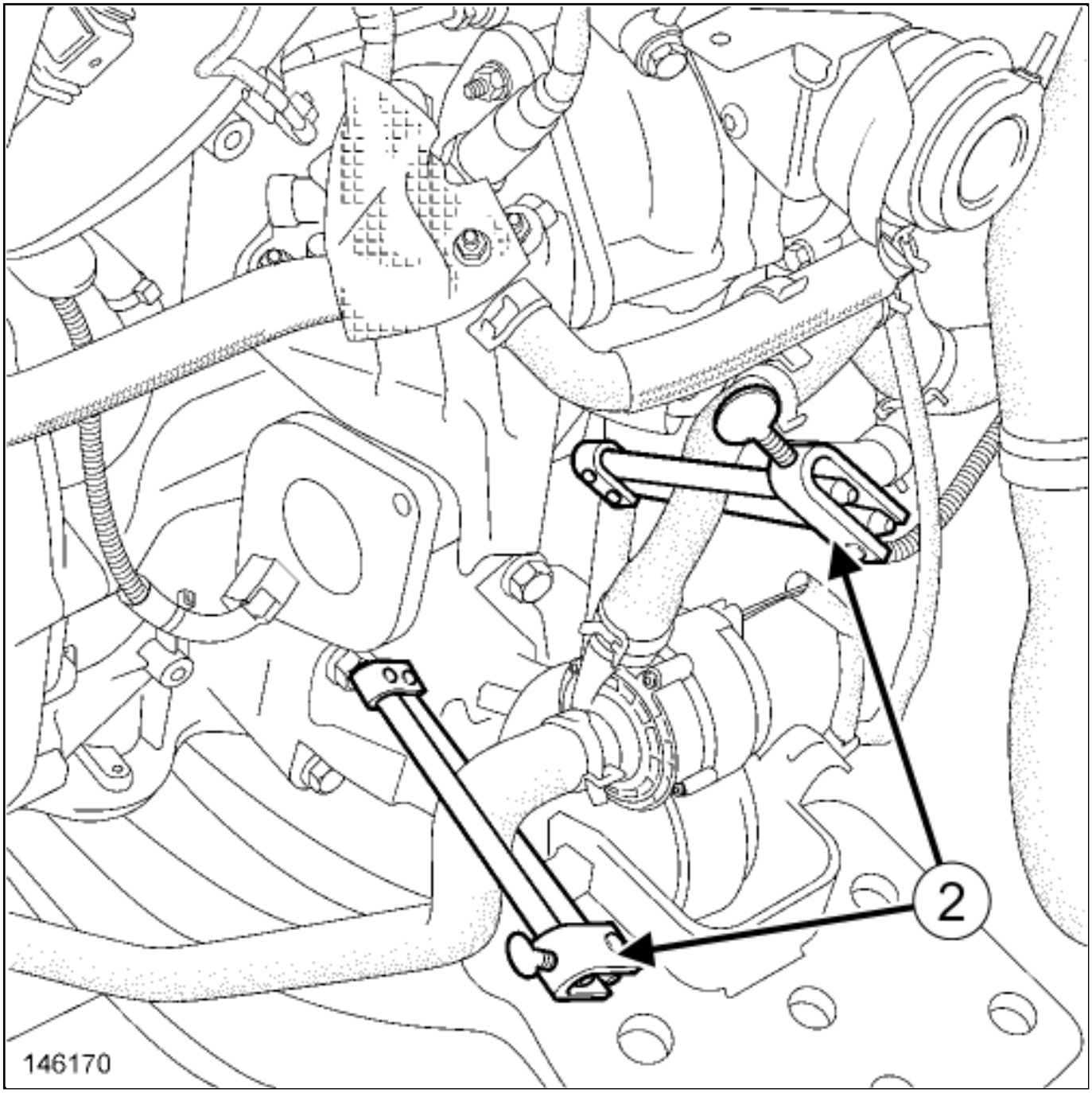
2. REMOVAL OPERATION



- Disconnect the connector(1) from the electric coolant pump.

M9T, 870(870)

- Remove the clips from the electric coolant pump.
- Move aside the electric coolant pump.



- Position tools Pipe clamps.(Ms. 583) (2) on the electric coolant pump cooling pipes.

- Separate the clips from the cooling pipes of the electric coolant pump using the toolRemote operation pliers for hose clips.(Mot. 1448) .

- Disconnect the cooling pipes from the electric coolant pump.

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the electric coolant pump clips,
- the electric coolant pump.

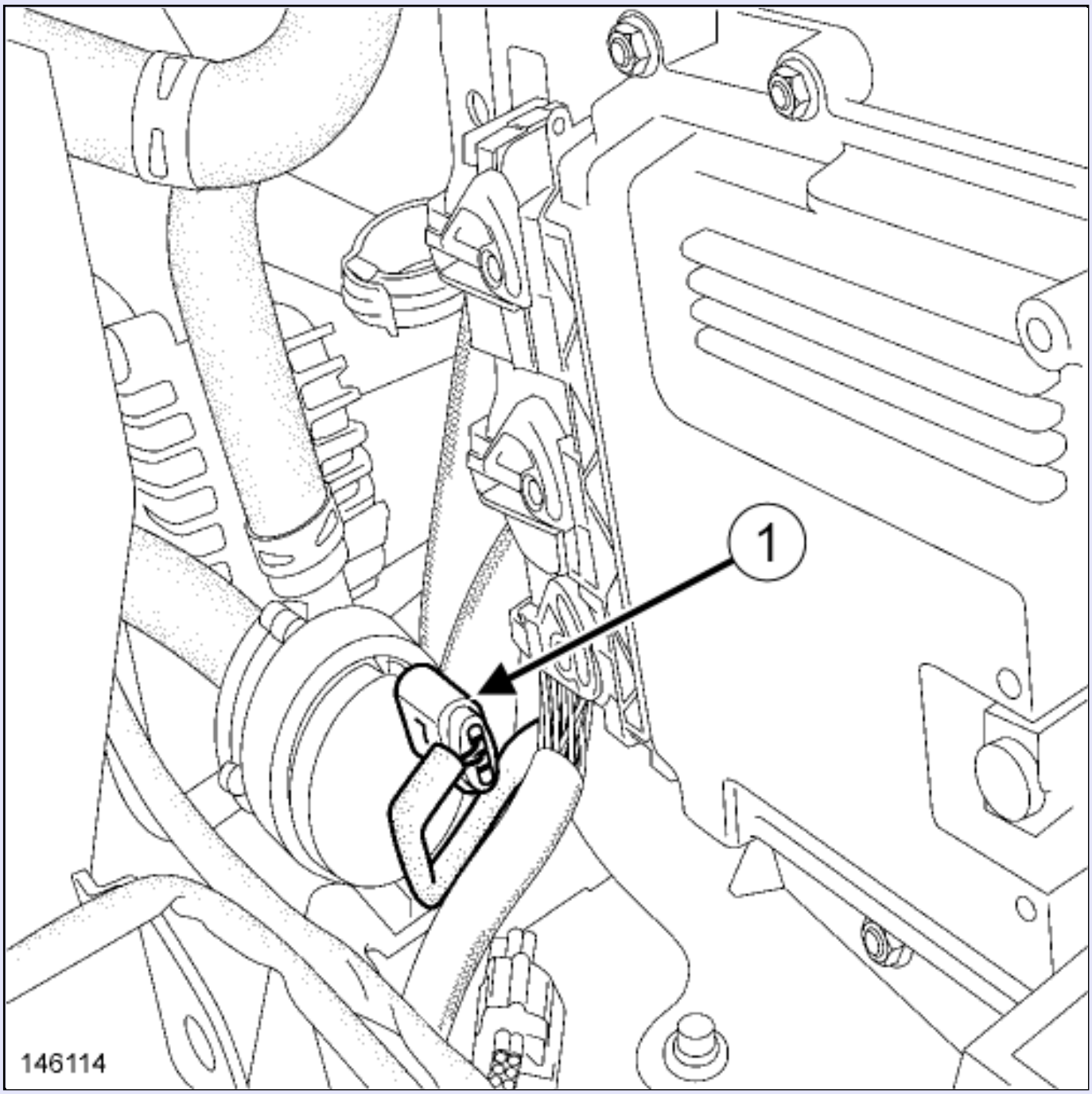
REFITTING

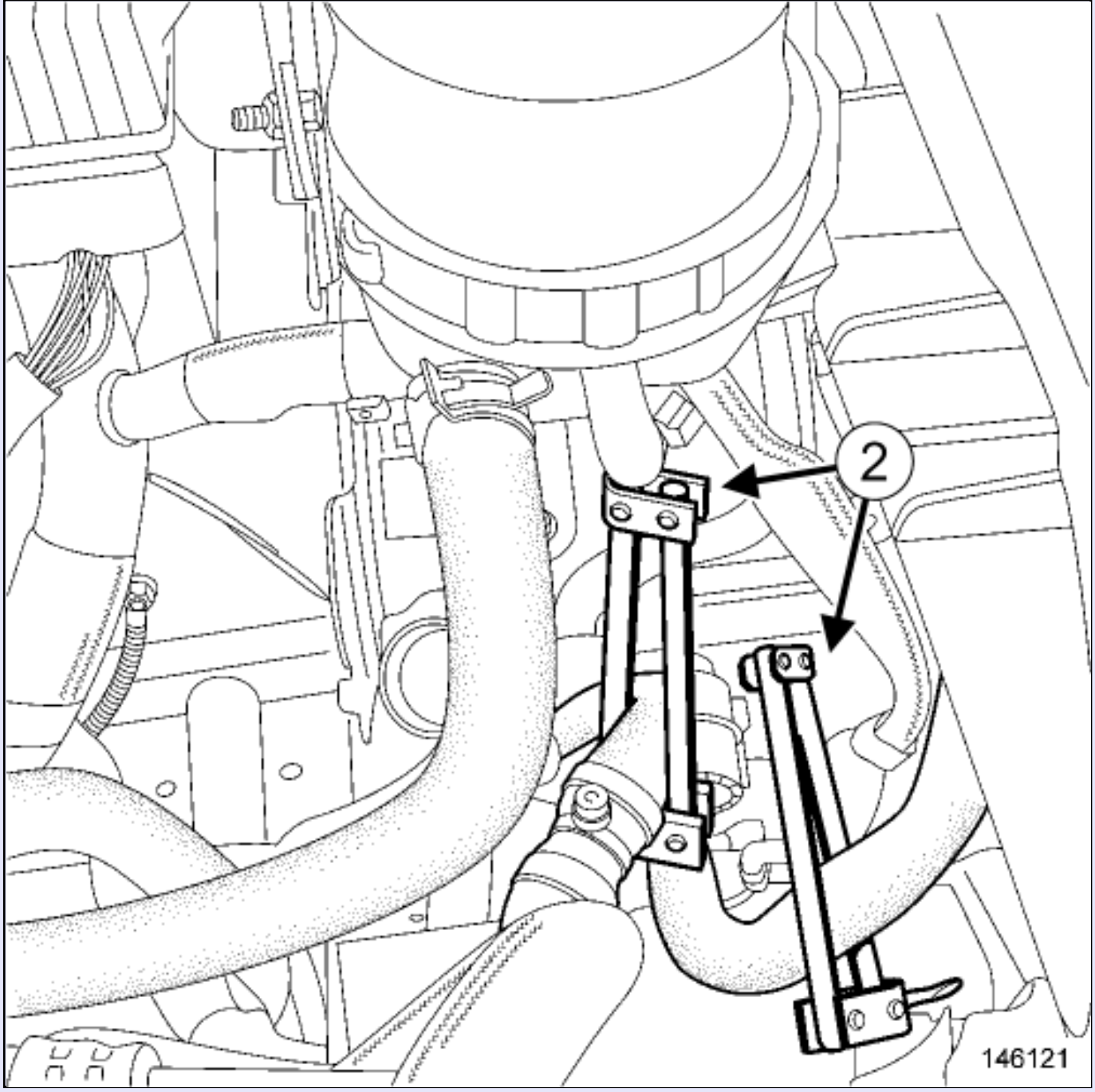
Proceed in the reverse order to removal.

Perform the following operations:

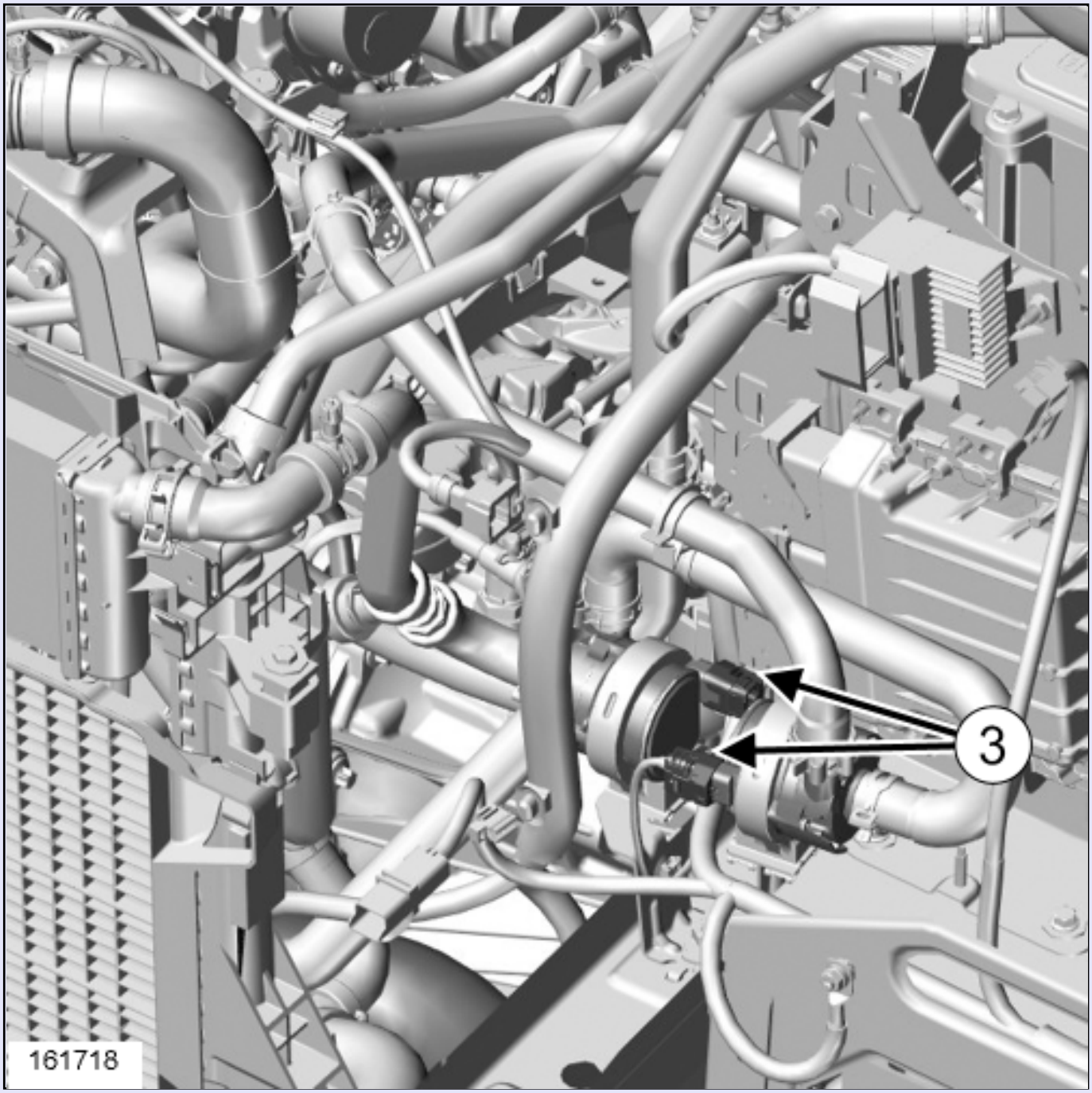
- top up the coolant level,
- bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

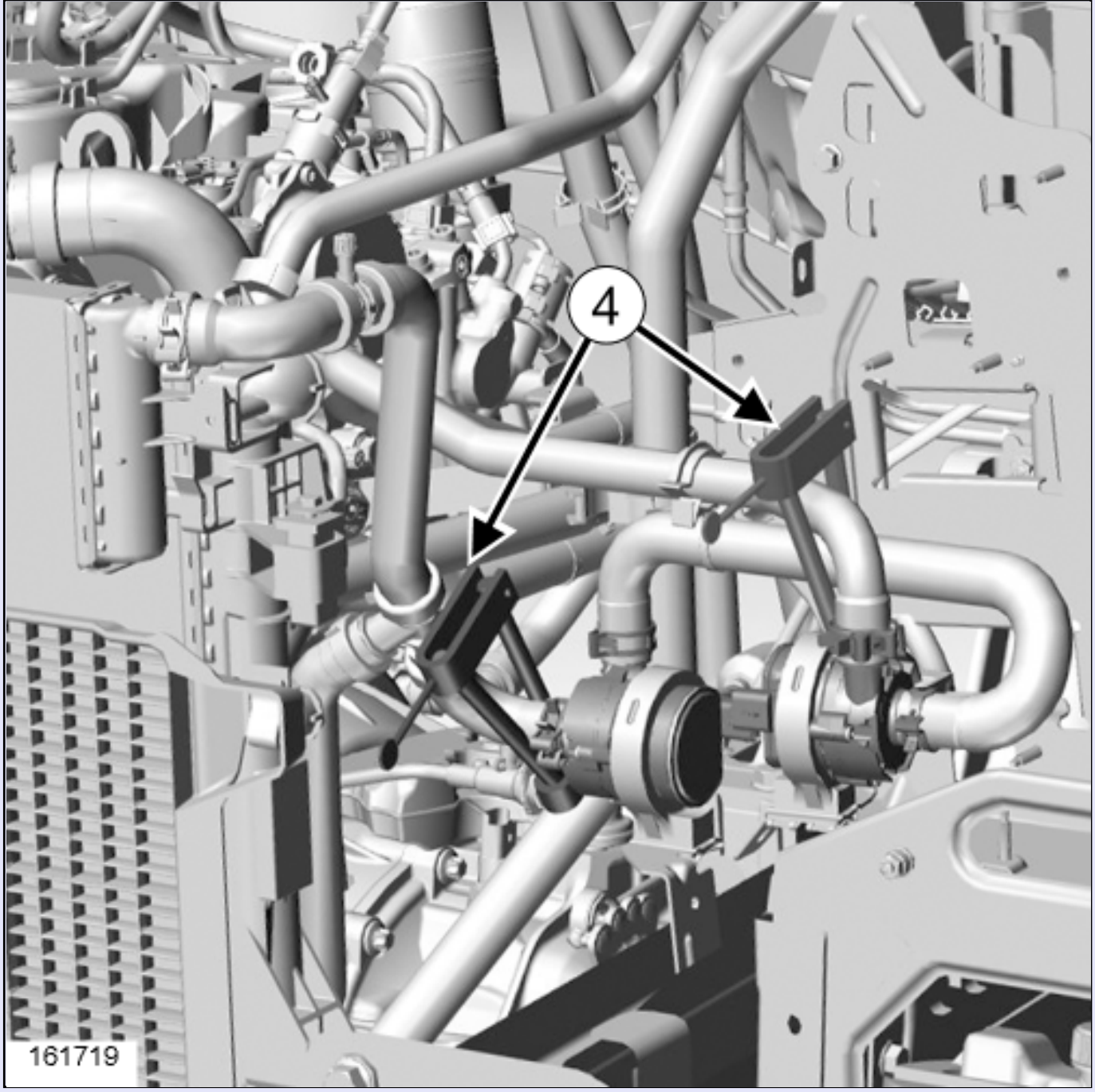
REMOVAL


1
146114



- Disconnect the connector(1) from the electric coolant pump.
- Position tools Pipe clamps.(Ms. 583) (2) on the electric coolant pump cooling pipes.


3
161718



- Disconnect the connectors(3) from the electric coolant pumps.

- Position tools Pipe clamps.(Ms. 583) (4) on the electric coolant pumps cooling pipes.

M9T, 678 680 694 696 698(678 OR 680 OR 694 OR 696 OR 698)

- Separate the clips(see 19A, Cooling, Coolant circuit assembly: Exploded view) on the cooling pipes of the electric coolant pump using the toolRemote operation pliers for hose clips.(Mot. 1448) .

M9T, 870(870)

Separate the clips from the cooling pipes of the electric coolant pump using the toolRemote operation pliers for hose clips.(Mot. 1448) .

Disconnect the cooling pipes from the electric coolant pump.

M9T, 678 680 694 696 698(678 OR 680 OR 694 OR 696 OR 698)

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the electric coolant pump clips,
- the electric coolant pump.

M9T, 870(870)

Remove:

- the electric coolant pump clips,
- the electric coolant pump.

REFITTING

Proceed in the reverse order to removal.

Perform the following operations:

- top up the coolant level,
- bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

XSL version : 3.02 du 22/07/11

ELECTRIC COOLANT PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

IMPORTANT

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

WARNING

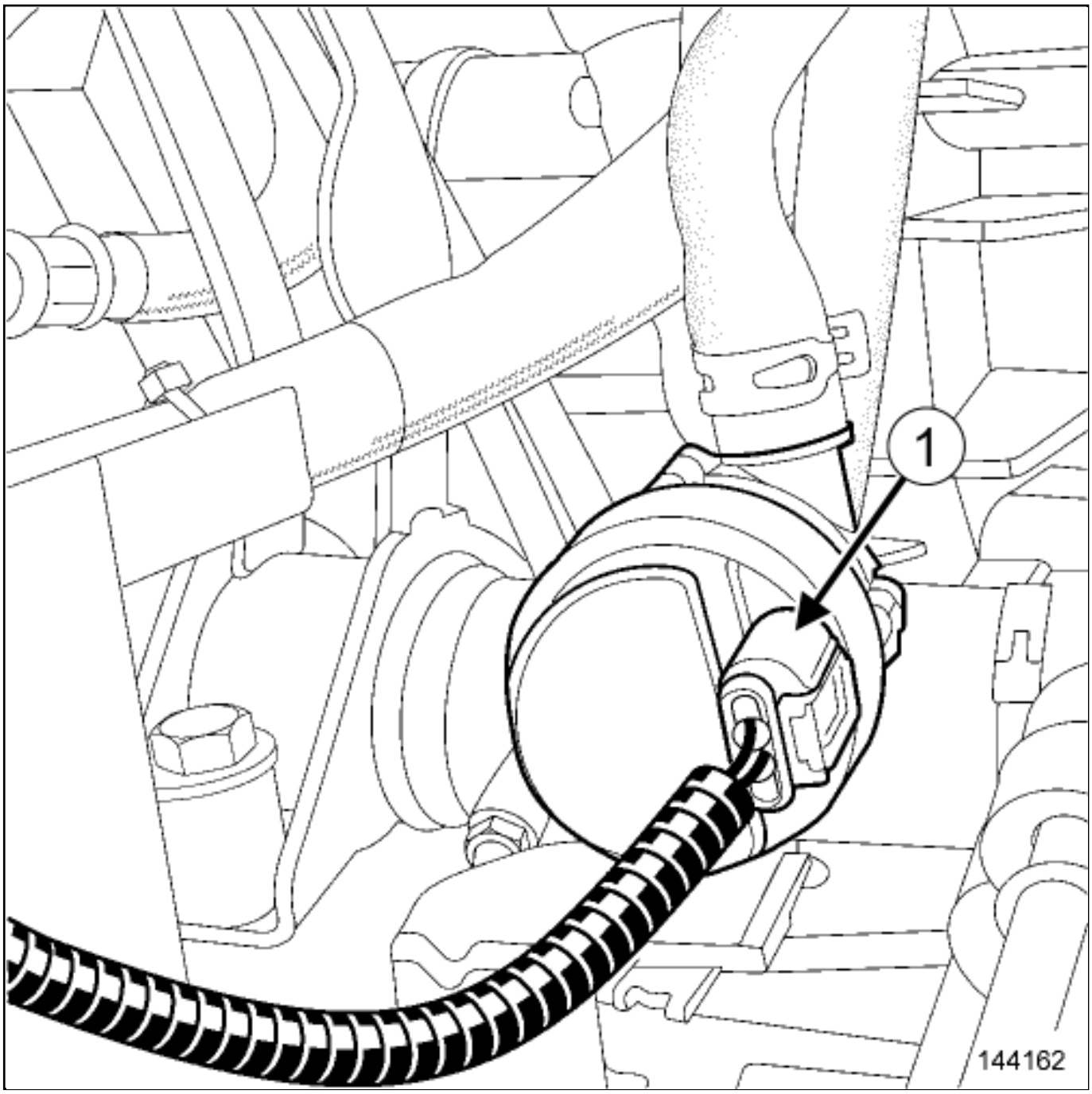
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

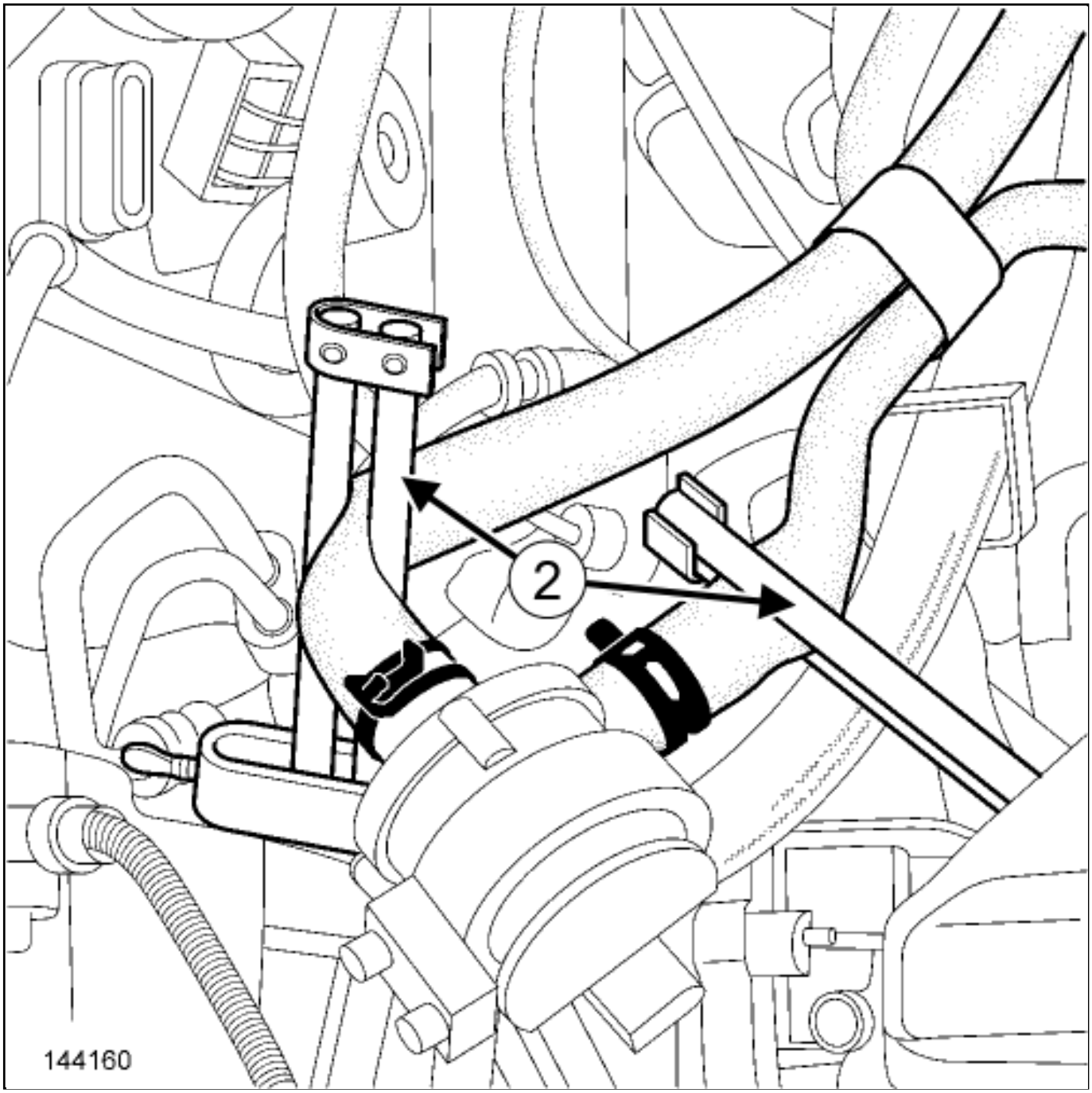
2. REMOVAL OPERATION



- Disconnect the connector(1) from the electric coolant pump.

- Remove the clips from the electric coolant pump(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

- Move aside the electric coolant pump(see 19A, Cooling, Coolant circuit assembly: Exploded view) .



- Position tools Pipe clamps.(Ms. 583) (2) on the electric coolant pump cooling pipes.

- Separate the clips(see 19A, Cooling, Coolant circuit assembly: Exploded view) on the cooling pipes of the electric coolant pump using the toolRemote operation pliers for hose clips.(Mot. 1448) .

- Disconnect the cooling pipes from the electric coolant pump.

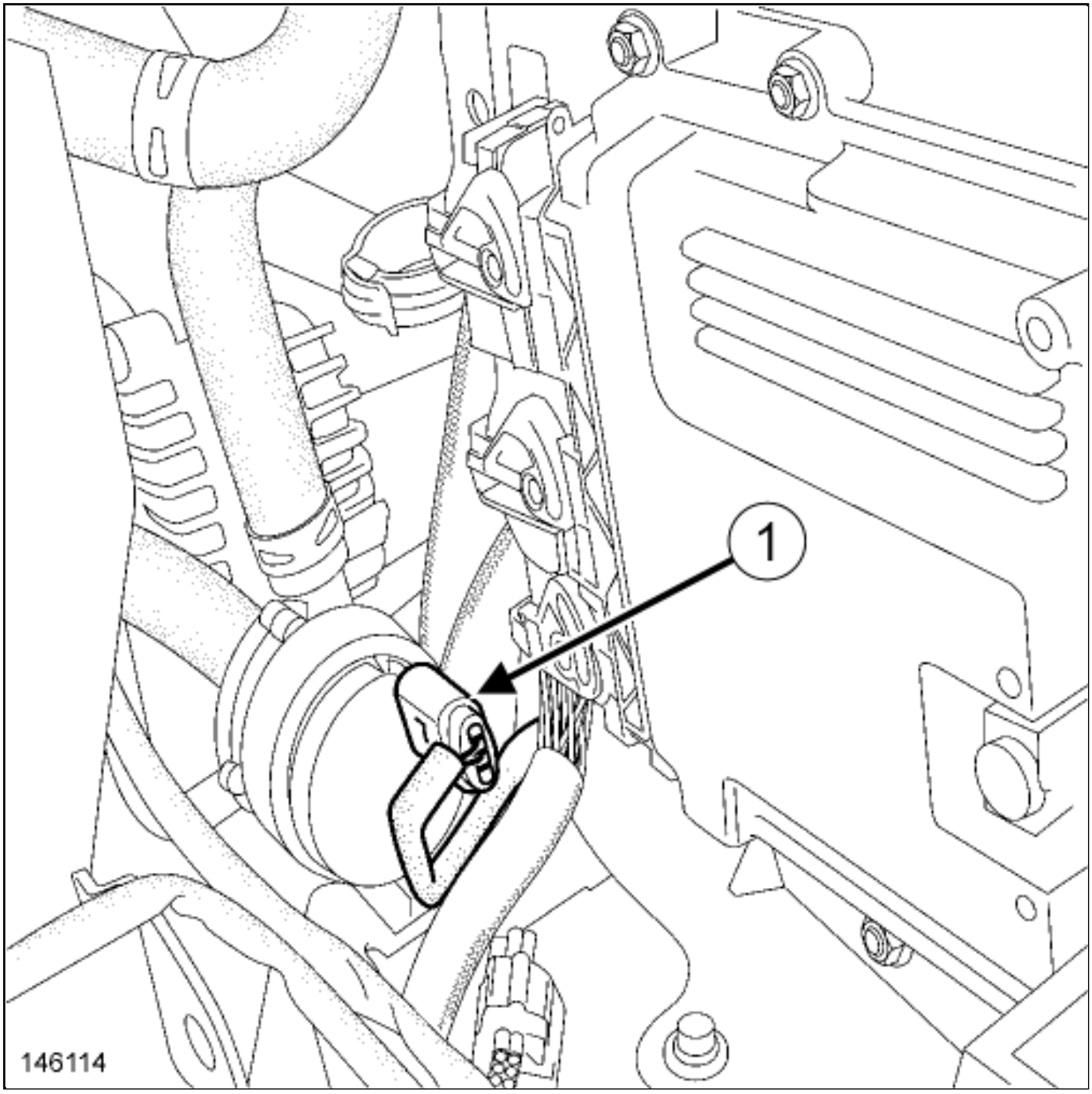
- Remove the electric coolant pump.

REFITTING

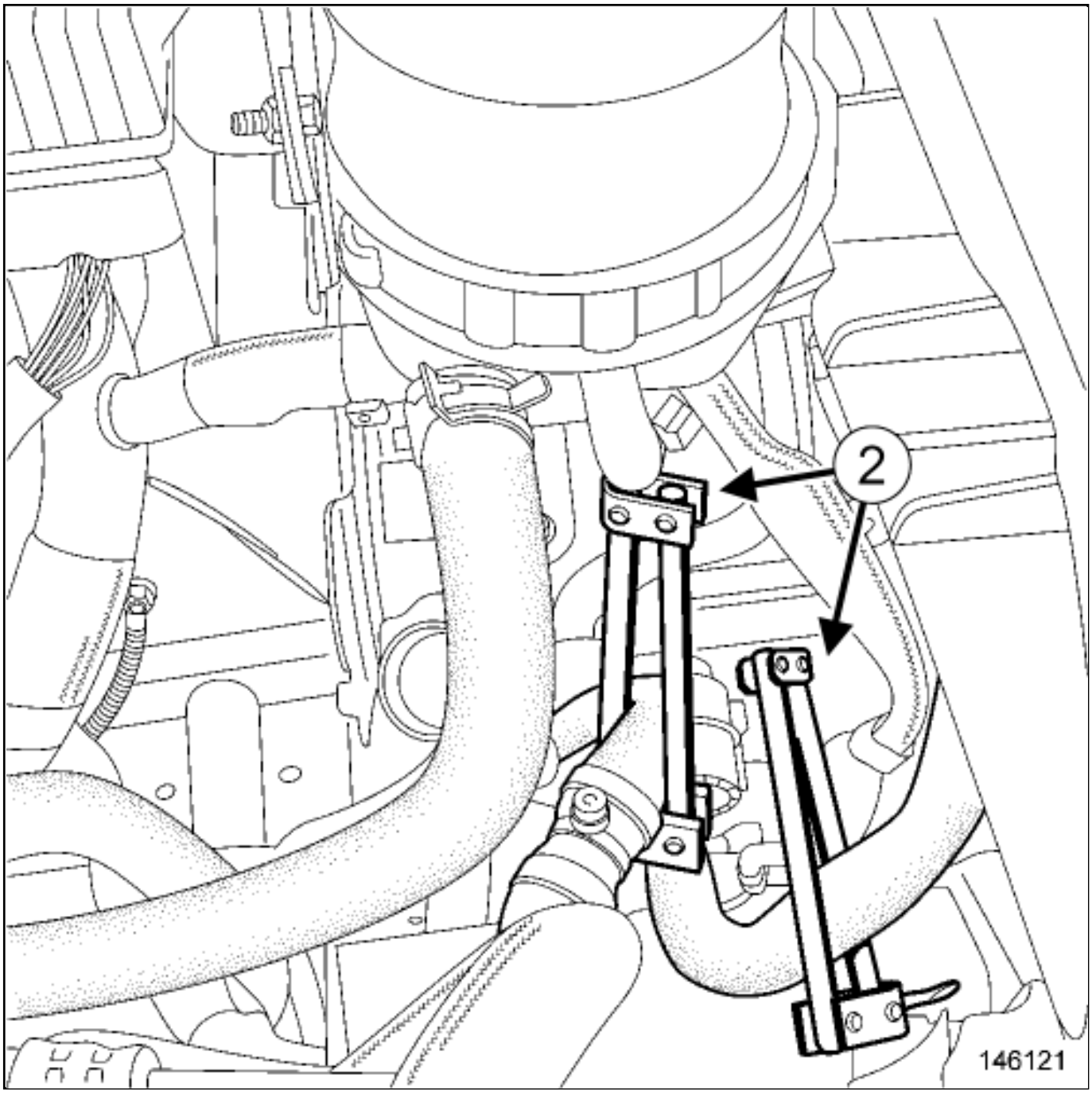
- Proceed in the reverse order to removal.

- Perform the following operations:
  - top up the coolant level,
  - bleed the cooling system (see 19A, Cooling, Cooling system: Draining - Refilling) .

REMOVAL



- Disconnect the connector(1) from the electric coolant pump.



Position tools Pipe clamps.(Ms. 583) (2) on the electric coolant pump cooling pipes.

Separate the clips(see 19A, Cooling, Coolant circuit assembly: Exploded view) on the cooling pipes of the electric coolant pump using the toolRemote operation pliers for hose clips.(Mot. 1448) .

Disconnect the cooling pipes from the electric coolant pump.

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the electric coolant pump clips,
- the electric coolant pump.

REFITTING

Proceed in the reverse order to removal.

Perform the following operations:

- top up the coolant level,
- bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

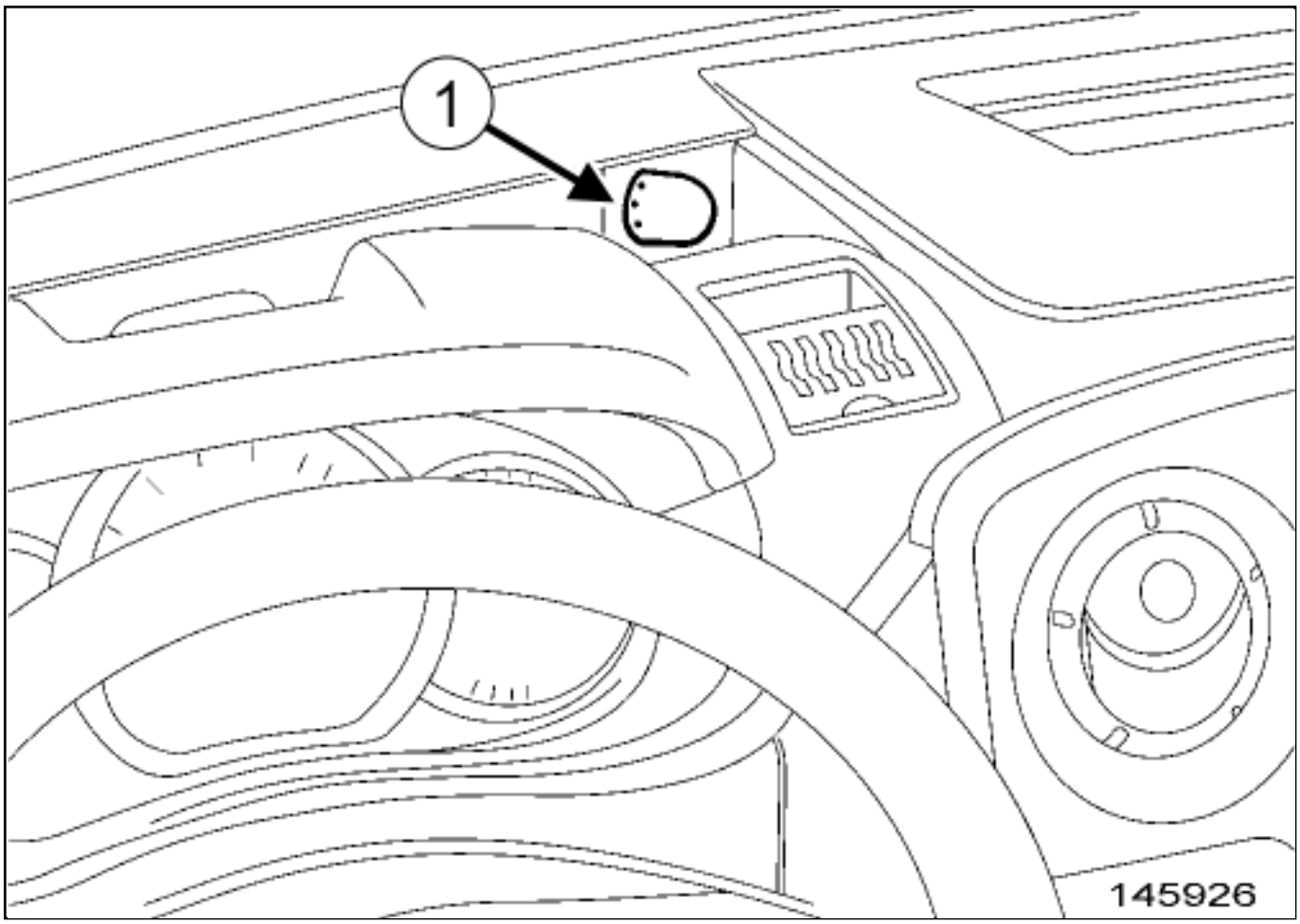
ELECTRICAL ACCESSORIES SOCKET: REMOVAL - REFITTING

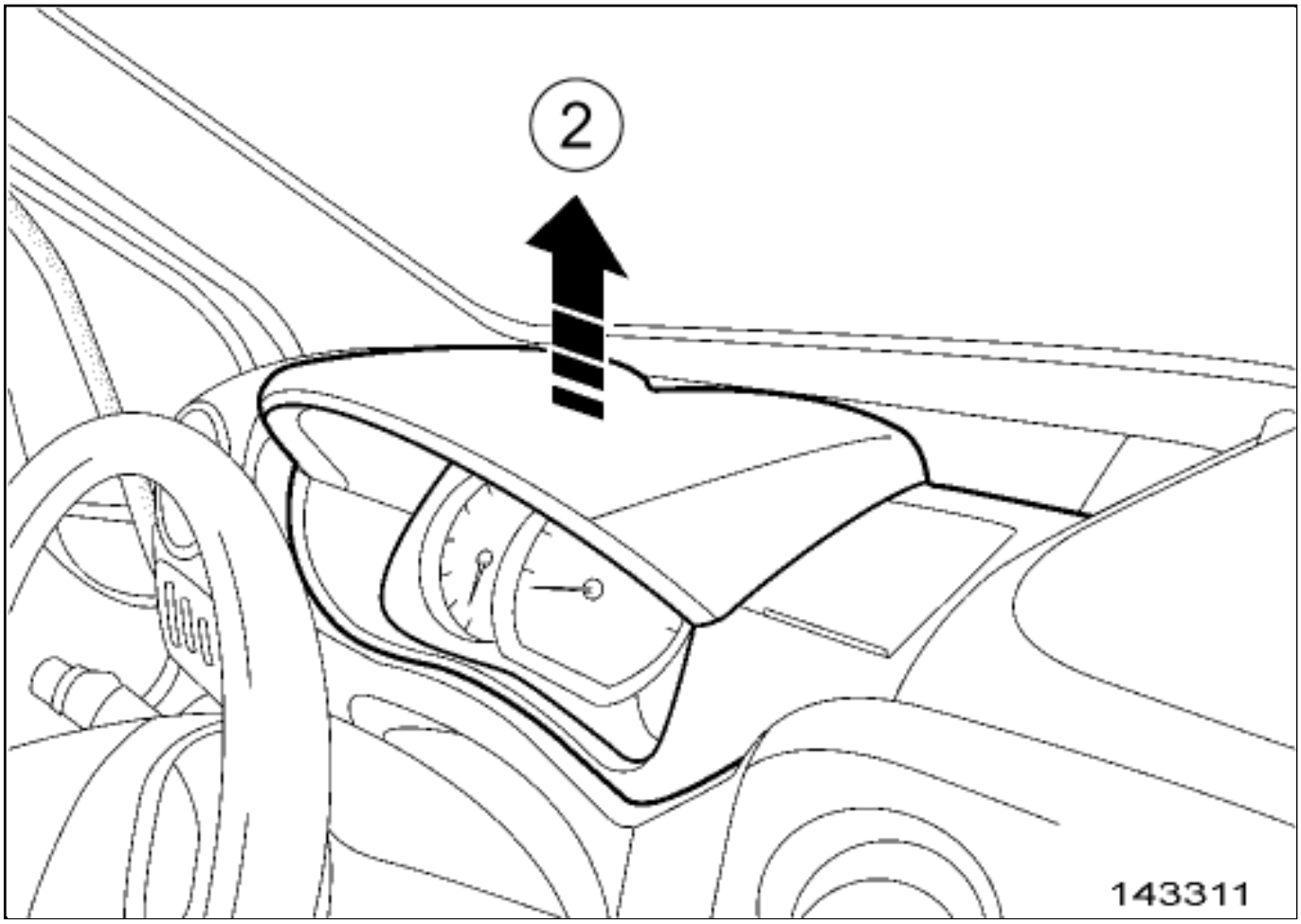
Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL PREPARATION OPERATION

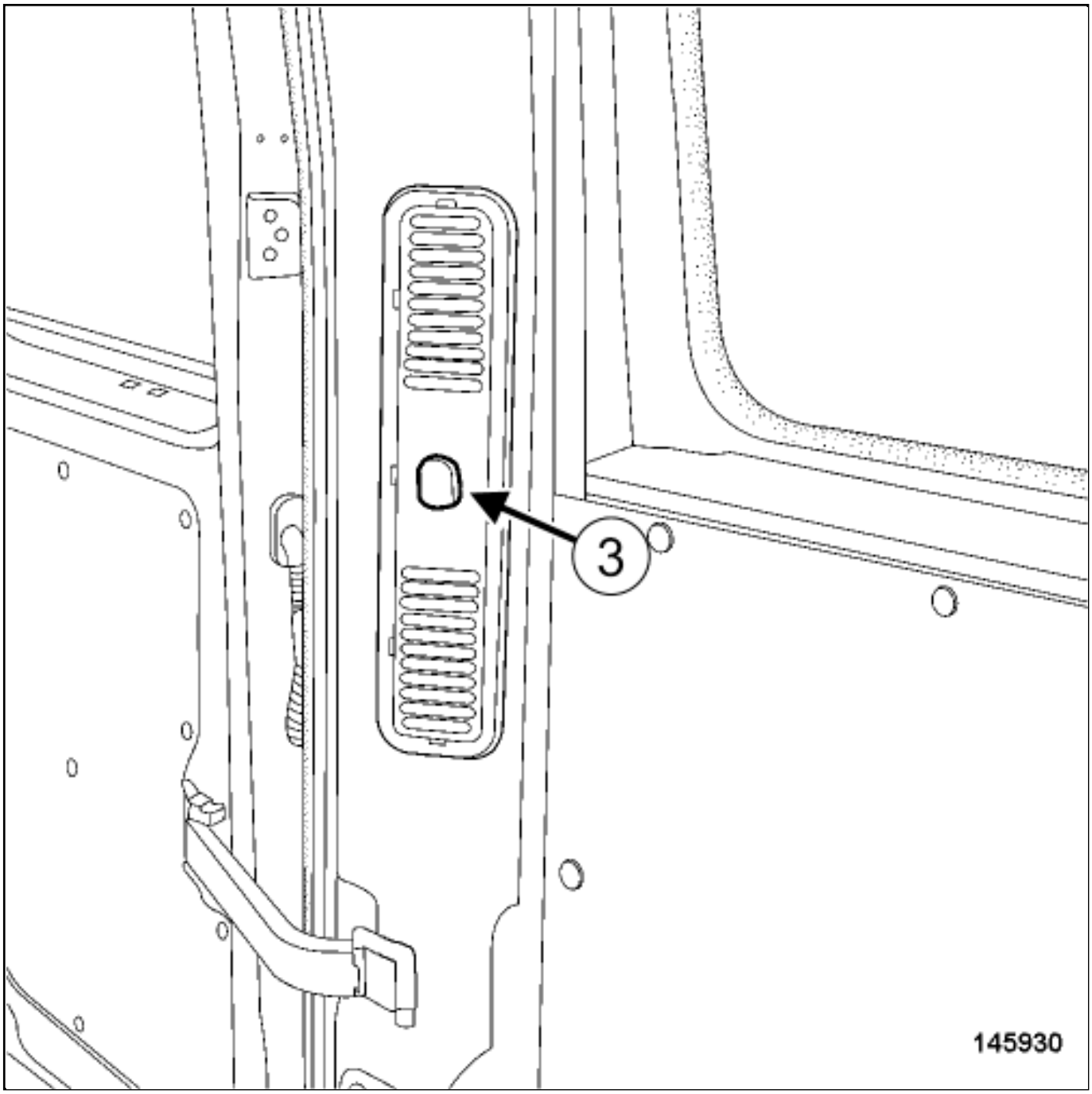
1- ELECTRICAL ACCESSORIES SOCKET ON DASHBOARD





- The electrical accessories socket(1) is located on the dashboard behind the instrument panel visor.
- Remove the instrument panel visor(2) .
- Open the cover of the electrical accessories socket.

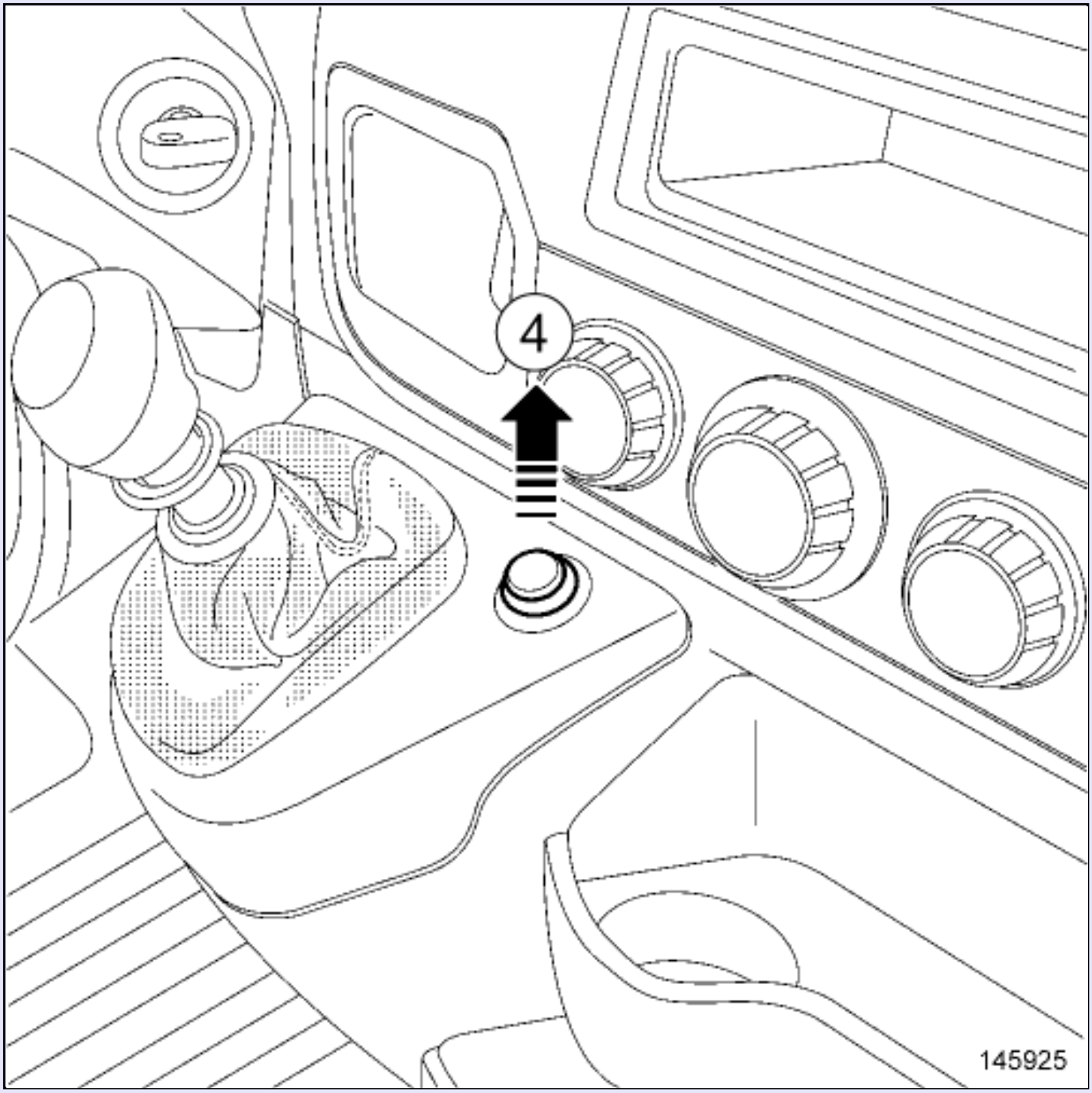
2- REAR ELECTRICAL ACCESSORIES SOCKET



- The electrical accessories socket(3) is located on the upper access grille of the rear wing light.
- Open the cover of the electrical accessories socket.

WITHOUT SMOKER ACCESSORIES(SANACF-No)

3 - ELECTRICAL ACCESSORIES SOCKET ON CENTRE CONSOLE

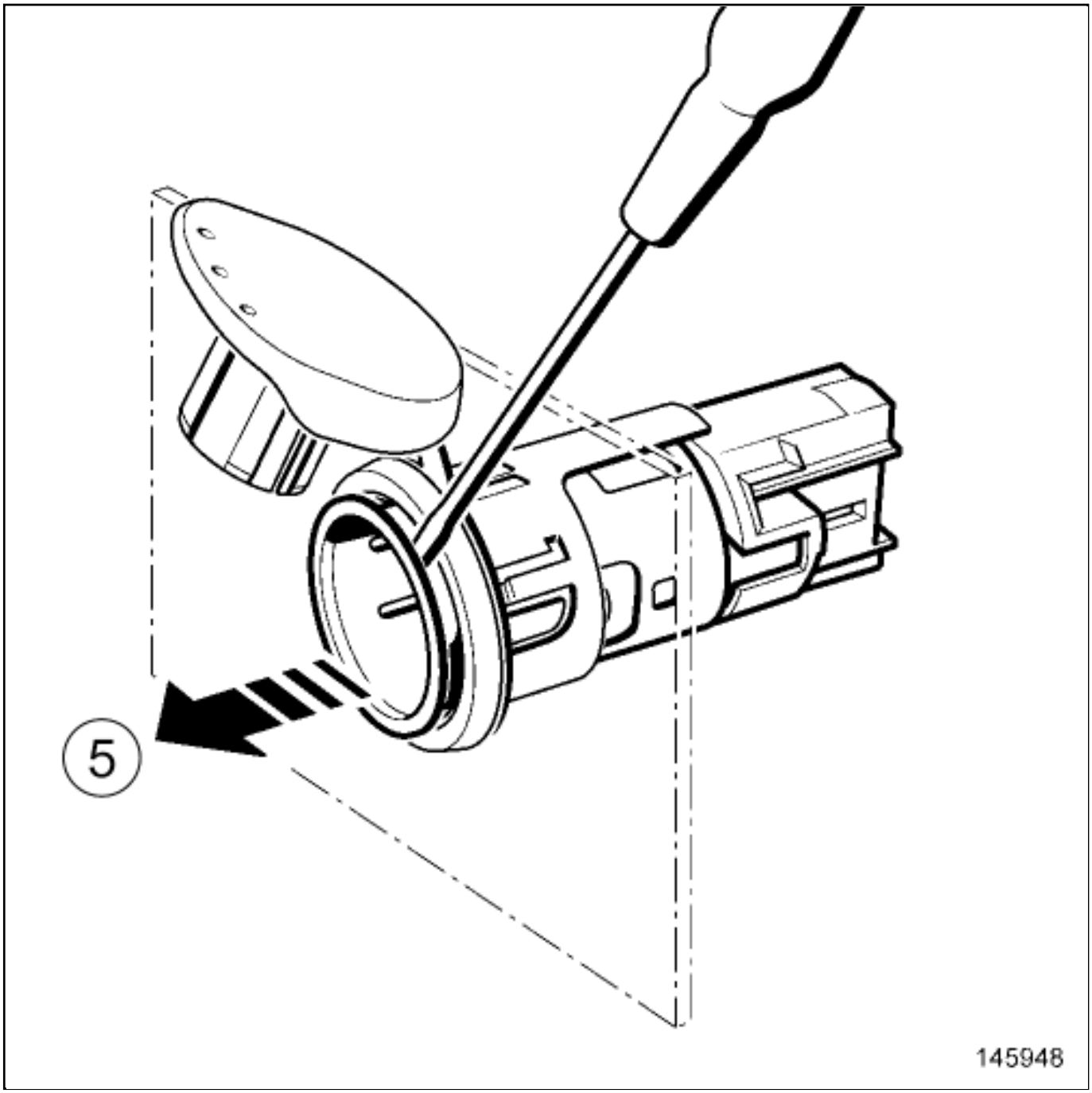


Note:

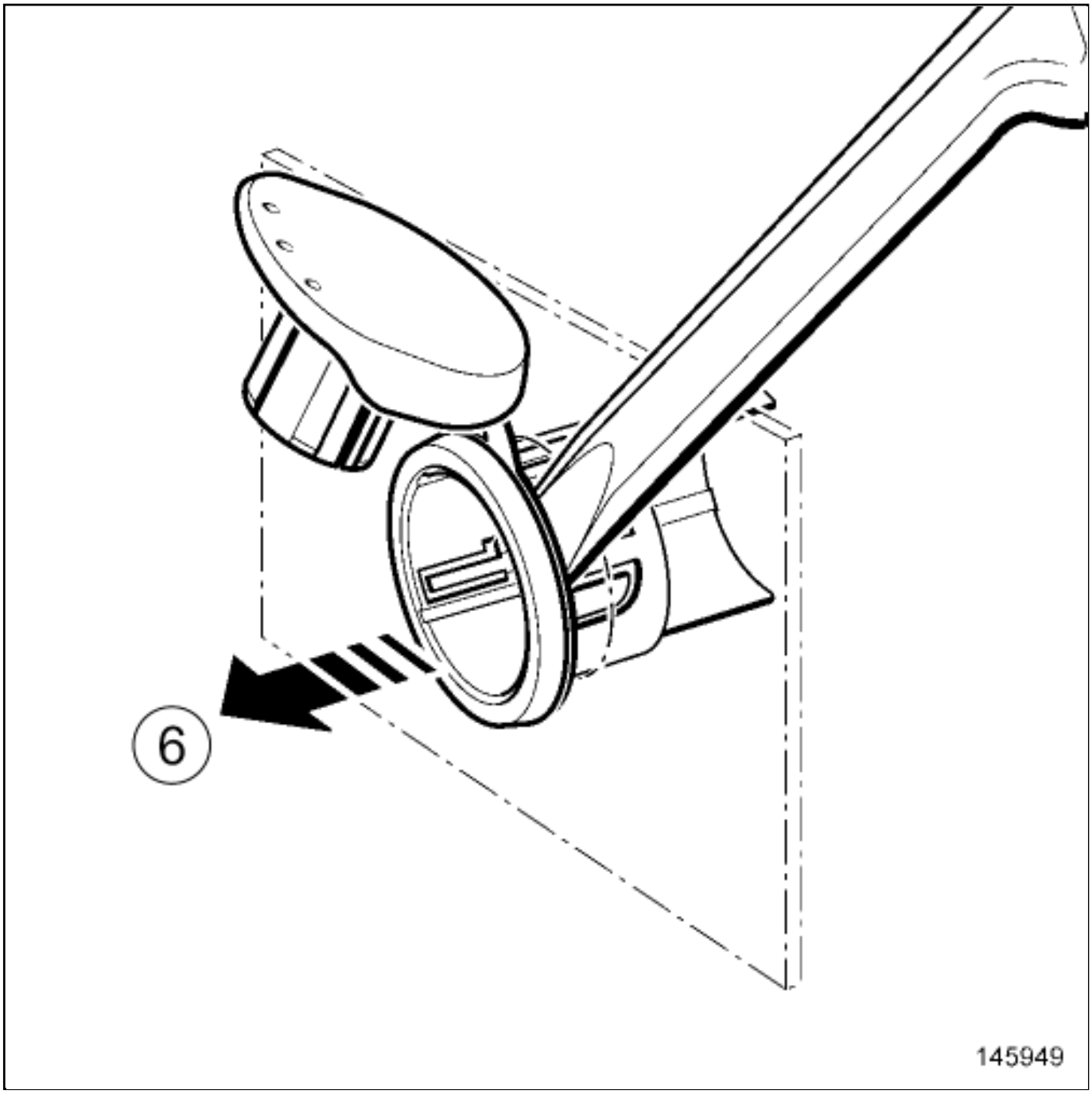
The electrical accessories socket on the centre console replaces the cigarette lighter socket when there are no accessories for smokers in the vehicle.

- Remove the electrical accessories socket(4) .

2. REMOVAL OPERATION



- Removethe internal part of the electrical accessories socket(5) using a flat-blade screwdriver.
- Disconnect the electrical accessories socket connector.



Remove the plastic support of the electrical accessories socket(6) using the toolSet of trim removal levers.(Car. 1363) .

REFITTING

Proceed in the reverse order to removal.

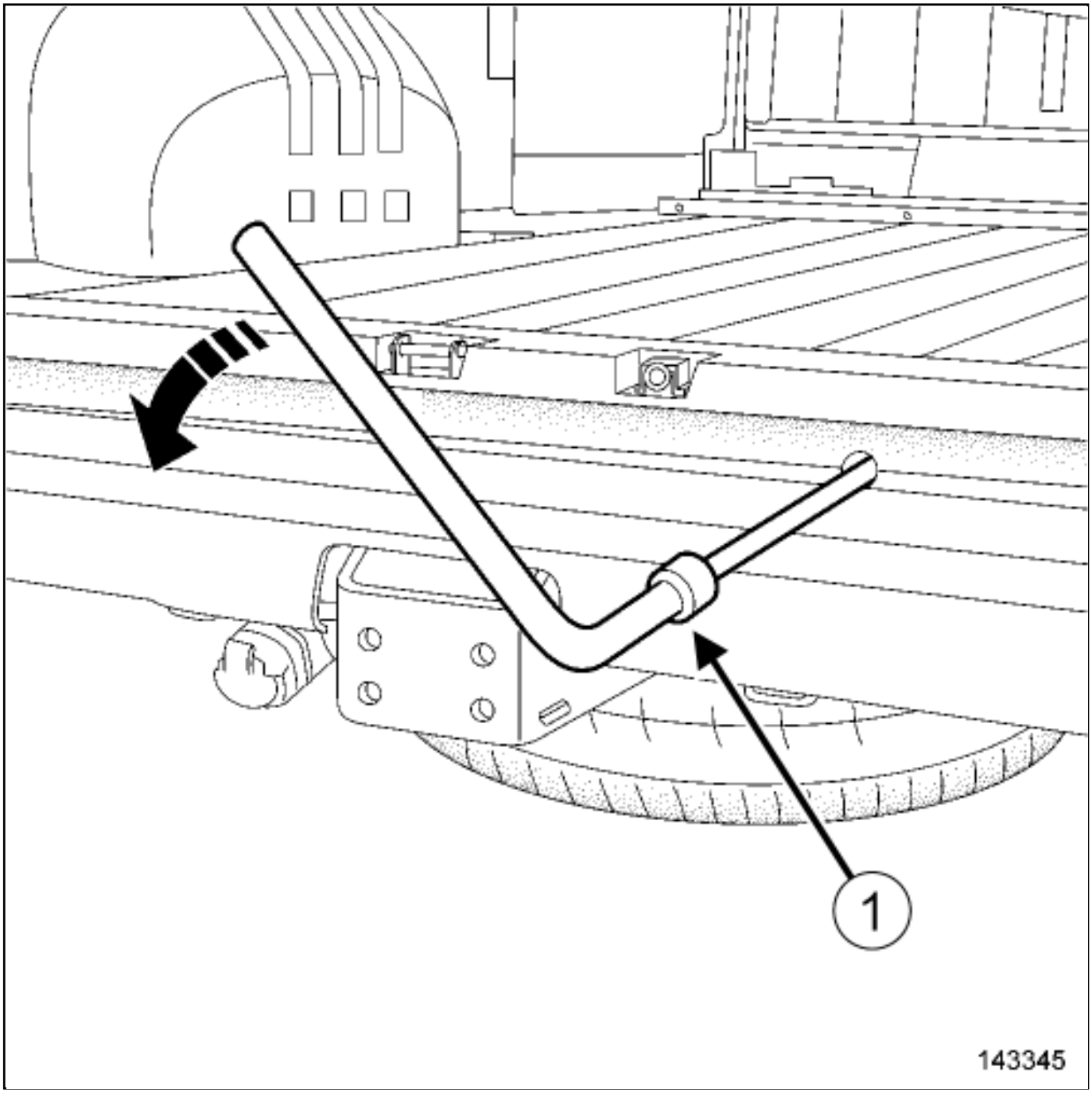
XSL version : 3.02 du 22/07/11

EMERGENCY SPARE WHEEL WINCH: REMOVAL - REFITTING

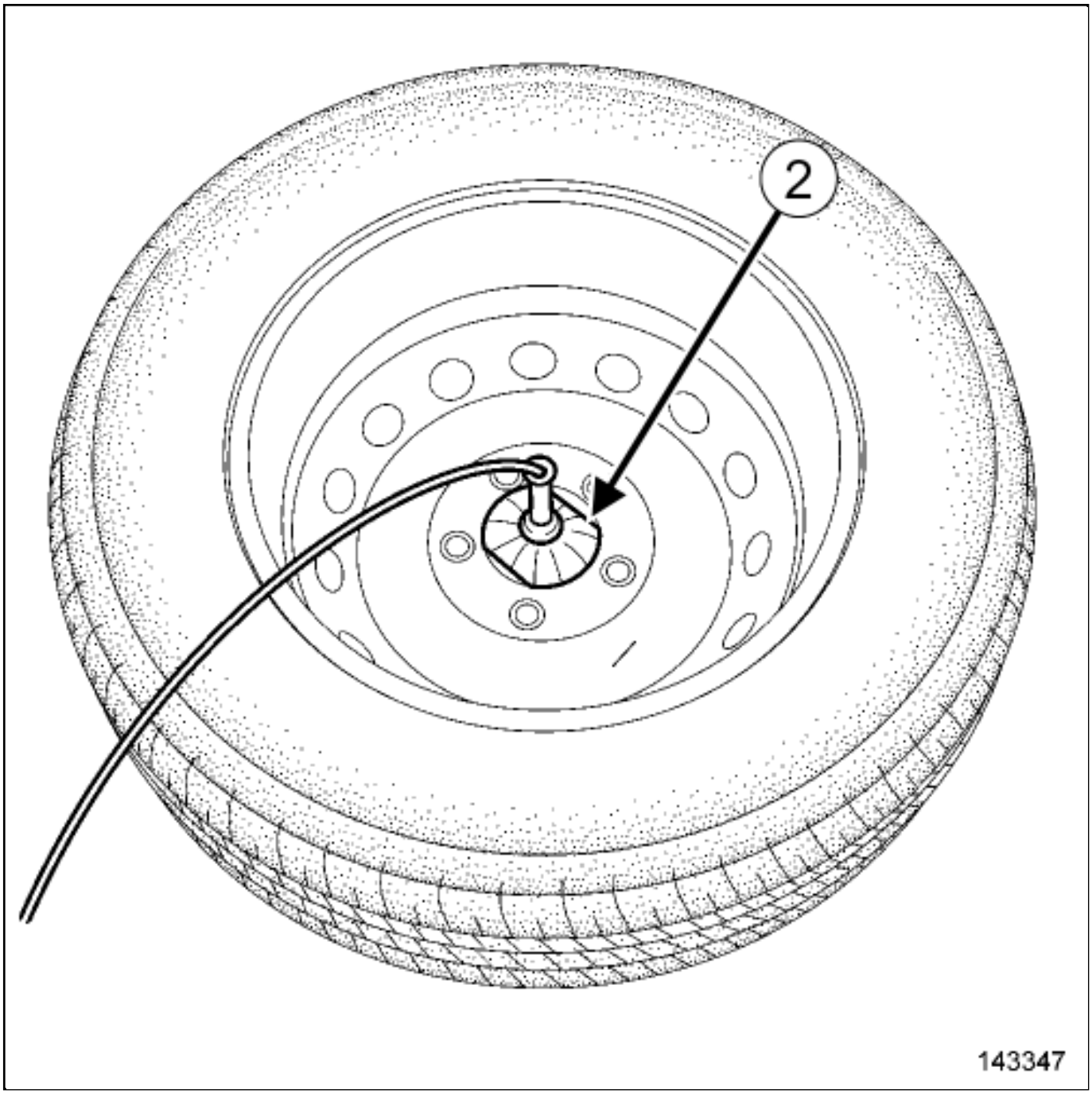
Note, one or more warnings are present in this procedure

REMOVAL

1. REMOVAL PREPARATION OPERATION



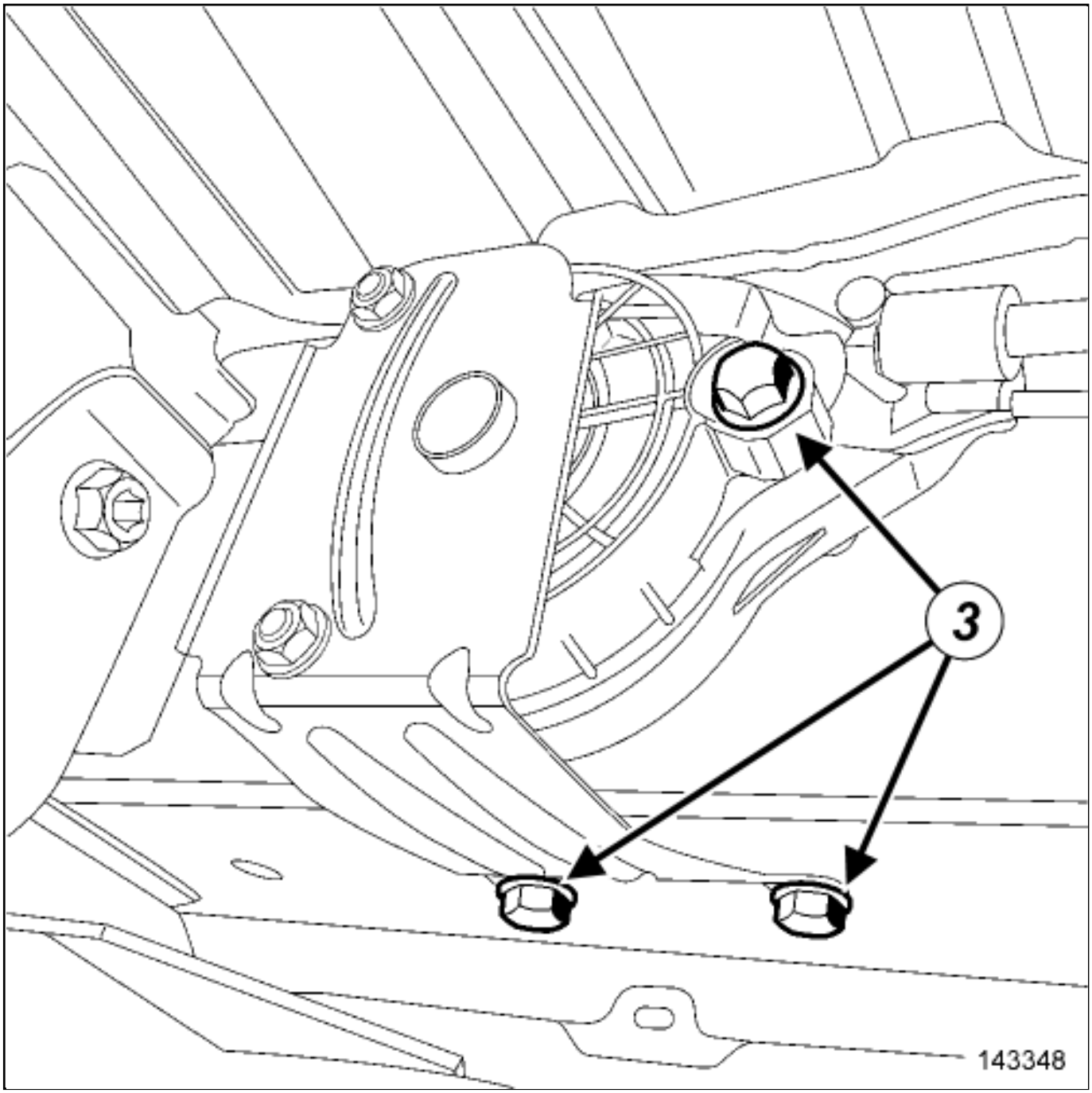
- Fit the tool(1) in the winder of the emergency spare wheel winch.
- Turn the tool anticlockwise to lower the emergency spare wheel.



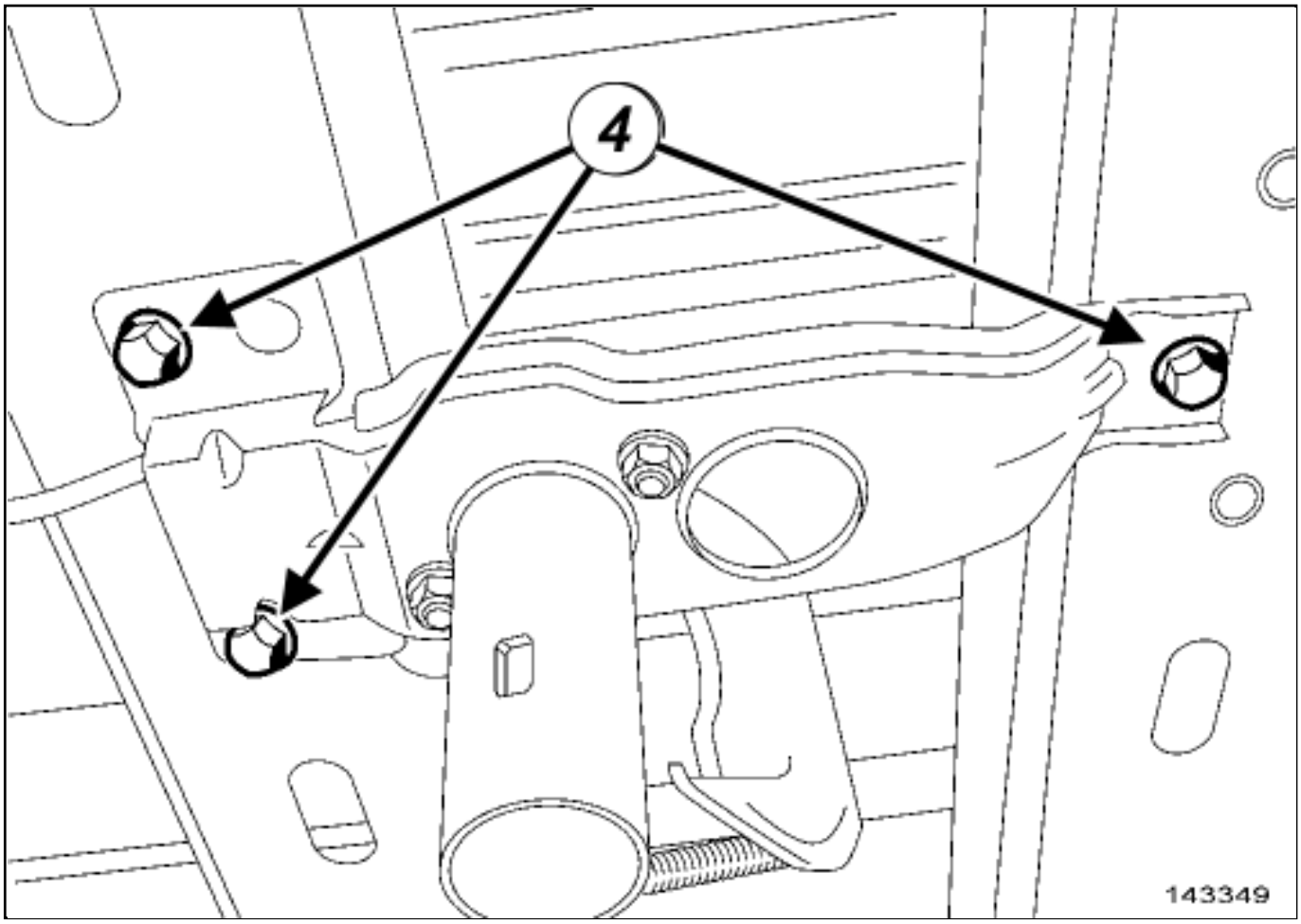
- Remove the emergency spare wheel by tilting the stop of the emergency spare wheel winch(2) .

2. REMOVAL OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).



- Remove the bolts(3) of the winder of the emergency spare wheel winch.



Remove:

- the bolts(4) of the emergency spare wheel winch,
- the emergency spare wheel winch.

REFITTING

CAUTION

Do not use a pneumatic tool

Proceed in the reverse order to removal.

Torque tighten:

- the bolts of the emergency spare wheel winch 21 N.m,
- the bolts of the winder of the emergency spare wheel winch 21 N.m.

ENGINE - GEARBOX 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
Adapter for engine support tool Mot.1390.	Mot. 1709

Equipment required
refrigerant charging station
safety strap(s)
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:

- Diesel injection: Precautions for the repair
- Vehicle: Precautions for the repair

WARNING

To avoid any risk of injury, wear leaktight gloves (Nitrile type) for this operation.

CAUTION

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

CAUTION

Keep the pipe unions away from contaminated areas.

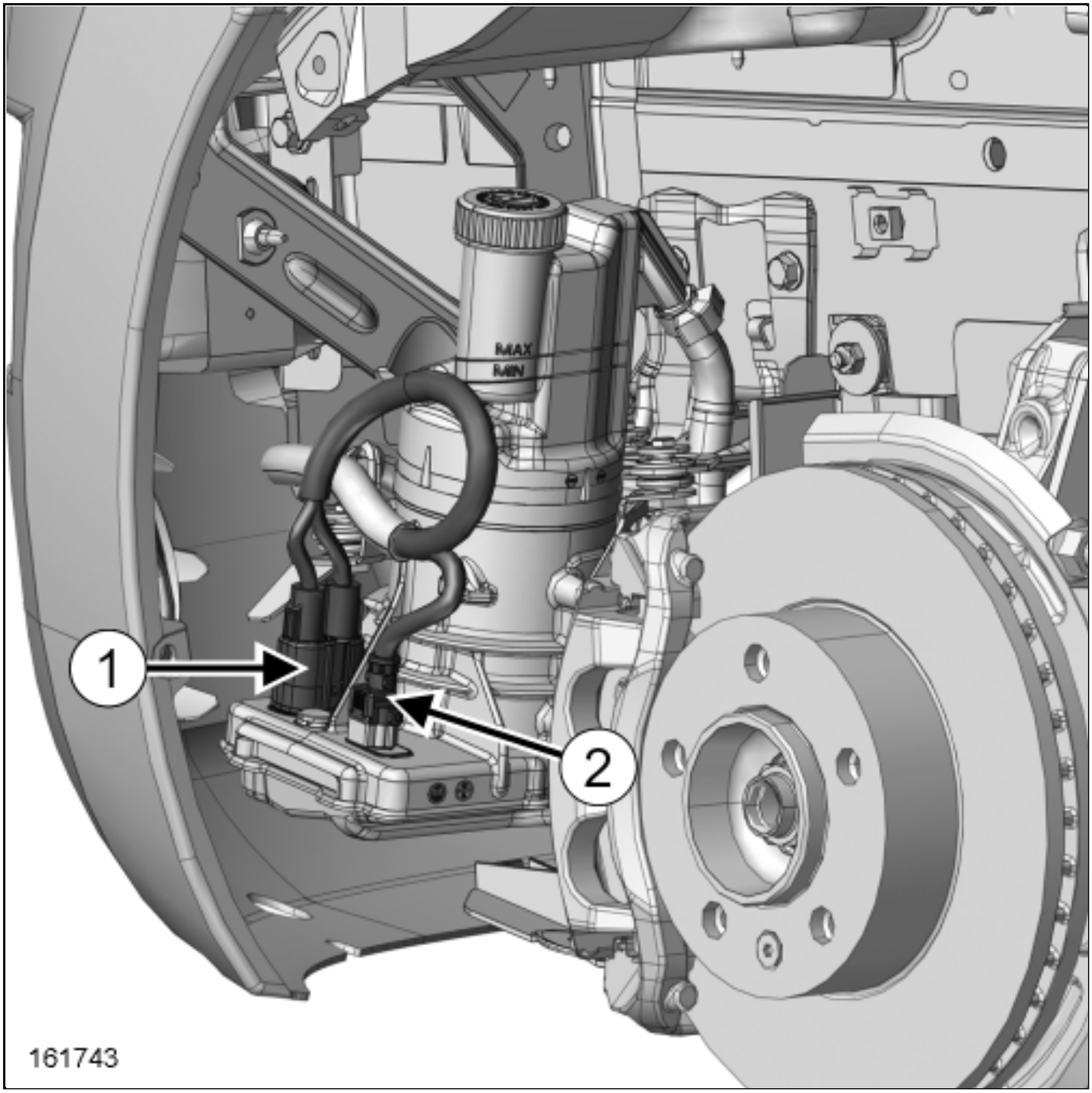
CAUTION

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

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle in the two-post lift Vehicle: Towing and lifting .
- Open the bonnet.
- Drain the cooling system Cooling system: Draining - Refilling .
- Remove:
  - the battery Battery: Removal - Refitting ,
  - the engine undertray.
- Strap the vehicle on the two-post lift.
- Remove:
  - the turbocharger air inlet pipe,
  - the particle filter Exhaust assembly under body: Exploded view ,
  - the front left-hand wheel arch liner Front wheel arch liner: Removal - Refitting ,
  - the intercooler air inlet pipe,
  - the intercooler air outlet pipe,
  - the air flowmeter,
  - the radiator grille Radiator grille: Removal - Refitting ,
  - the longitudinal driveshafts Driveshaft assembly: Exploded view ,
- Extract Steering assembly: Exploded view :
  - the left-hand track rod end,
  - the right-hand track rod end.



- Disconnect:
  - the power-assisted steering pump power connector(1) ,
  - the power-assisted steering pump signal connector(2) .

- Remove Power-assisted steering assembly: Exploded view :
  - the power-assisted steering high-pressure pipe bolt,
  - the power-assisted steering pump assembly bolts.

- Strap the gearbox on the body.

- Remove the upper nuts of the anti-roll bar tie-rodsFront axle assembly: Exploded view .

- Move aside the anti-roll bar tie-rodsFront axle assembly: Exploded view .

- Tilt the anti-roll barFront axle assembly: Exploded view .

- Remove Front axle assembly: Exploded view :
  - the nuts from the ball joints of the front driveshaft lower arm,
  - the ball joints of the front driveshaft lower arm using a ball joint extractor.

- Fit a component jack under the subframe.

- Strap the subframe to the component jack.

- Remove:
  - the gearbox support boltEngine-gearbox unit support assembly: Exploded view ,
  - the subframe boltsFront axle assembly: Exploded view ,
  - the "subframe and power assisted steering pump" assemblyFront axle assembly: Exploded view .

- Disconnect Coolant circuit assembly: Exploded view :
  - the heater matrix cooling pipe,
  - the cooling radiator inlet pipe,
  - the cooling radiator outlet pipe,
  - the additional cooling radiator outlet pipe,
  - the expansion bottle pipe,
  - the exhaust gas cooler outlet pipe.

- Unclip Manual gearbox control cable: Removal - Refitting :
  - the gearbox control cables on the gearbox,
  - the control cables on the sleeve stops.

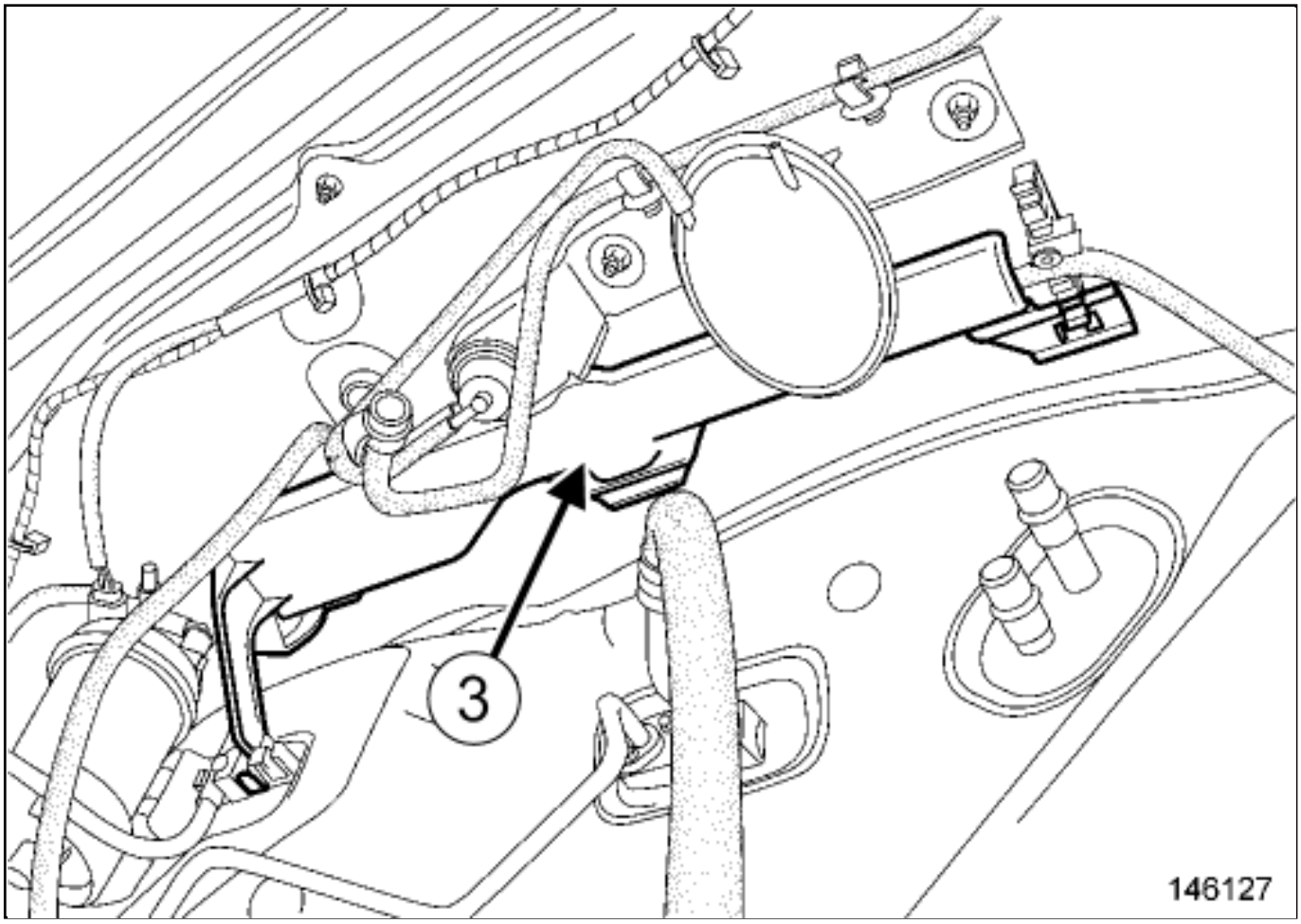
- Move aside the gearbox control cables.

- Remove the clutch slave cylinder mounting boltsGearbox assembly: Exploded view .

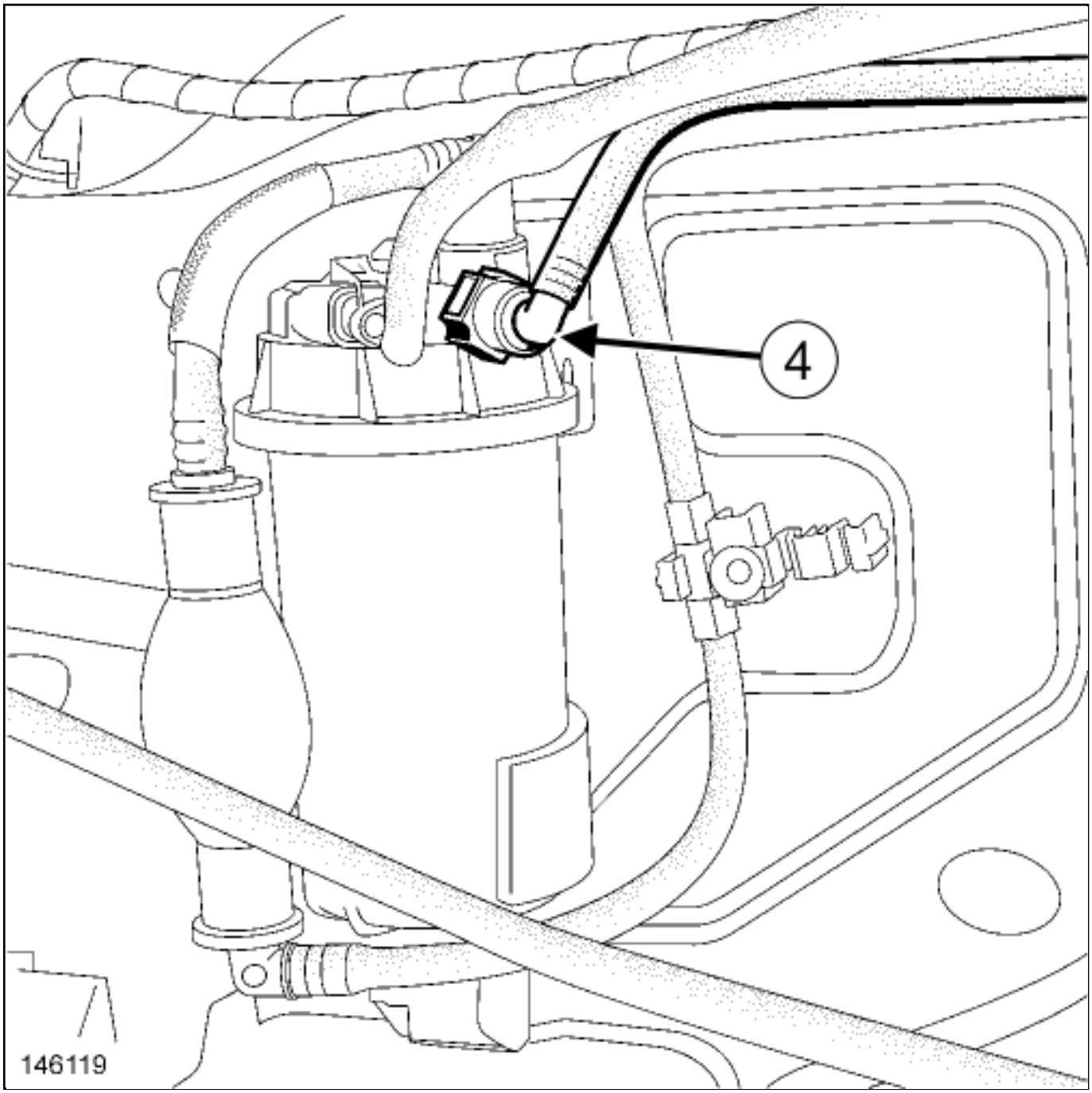
- Move aside the clutch slave cylinder mountingGearbox assembly: Exploded view .

- Move aside the engine oil filler neck pipe clip .

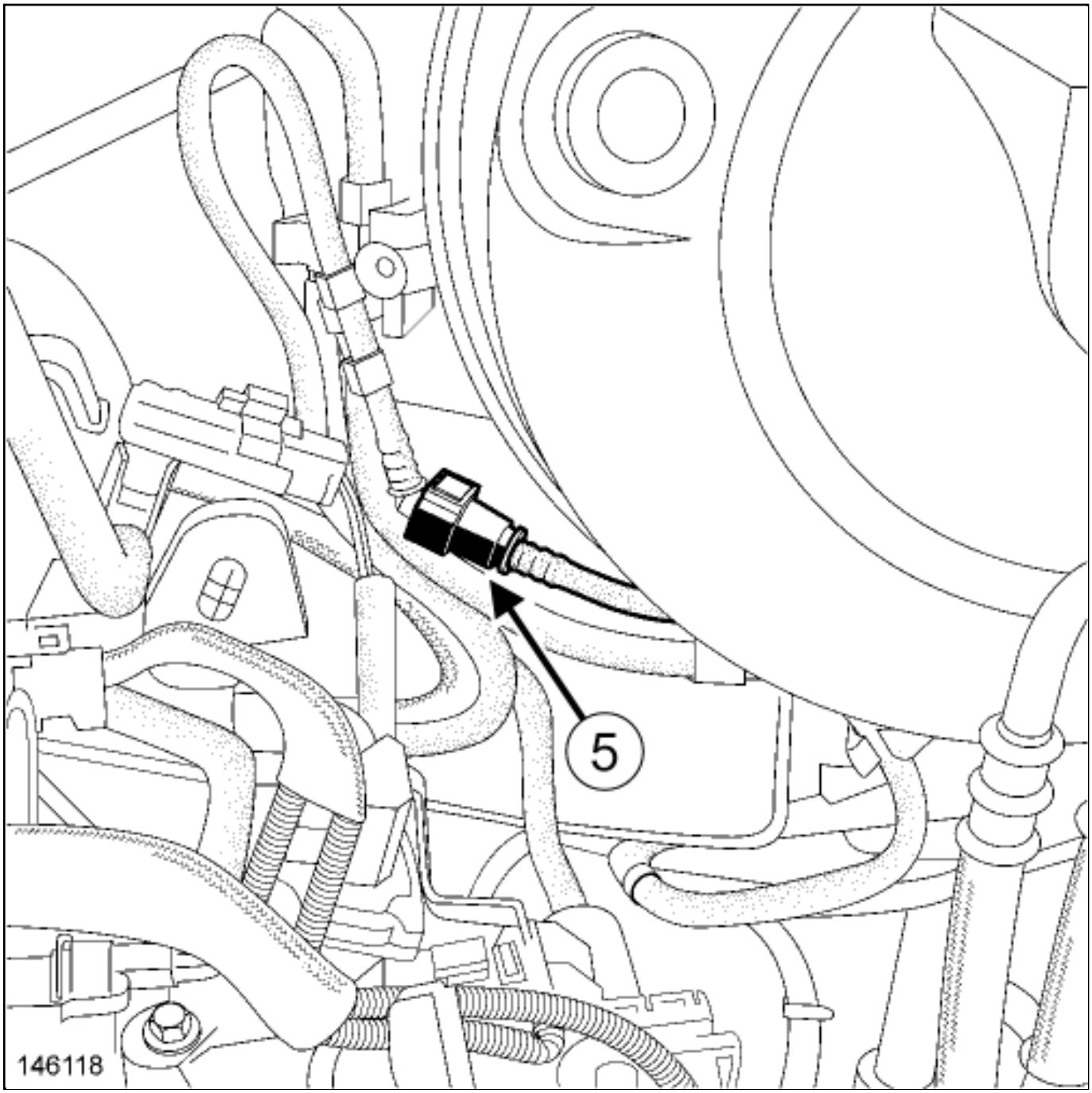
- disconnect the engine oil filler neck pipe .



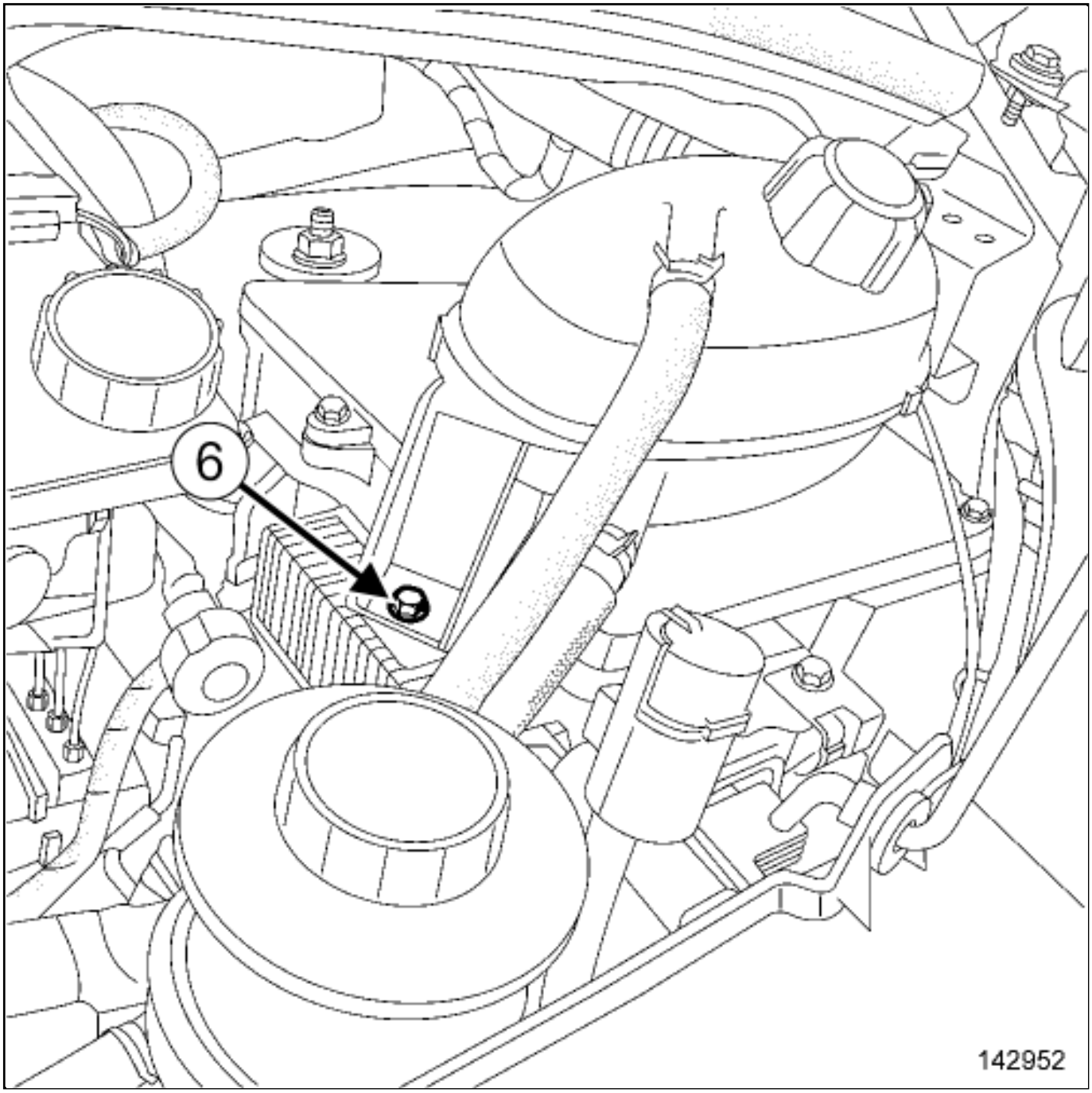
- Remove the fuel pipe protector(3) .



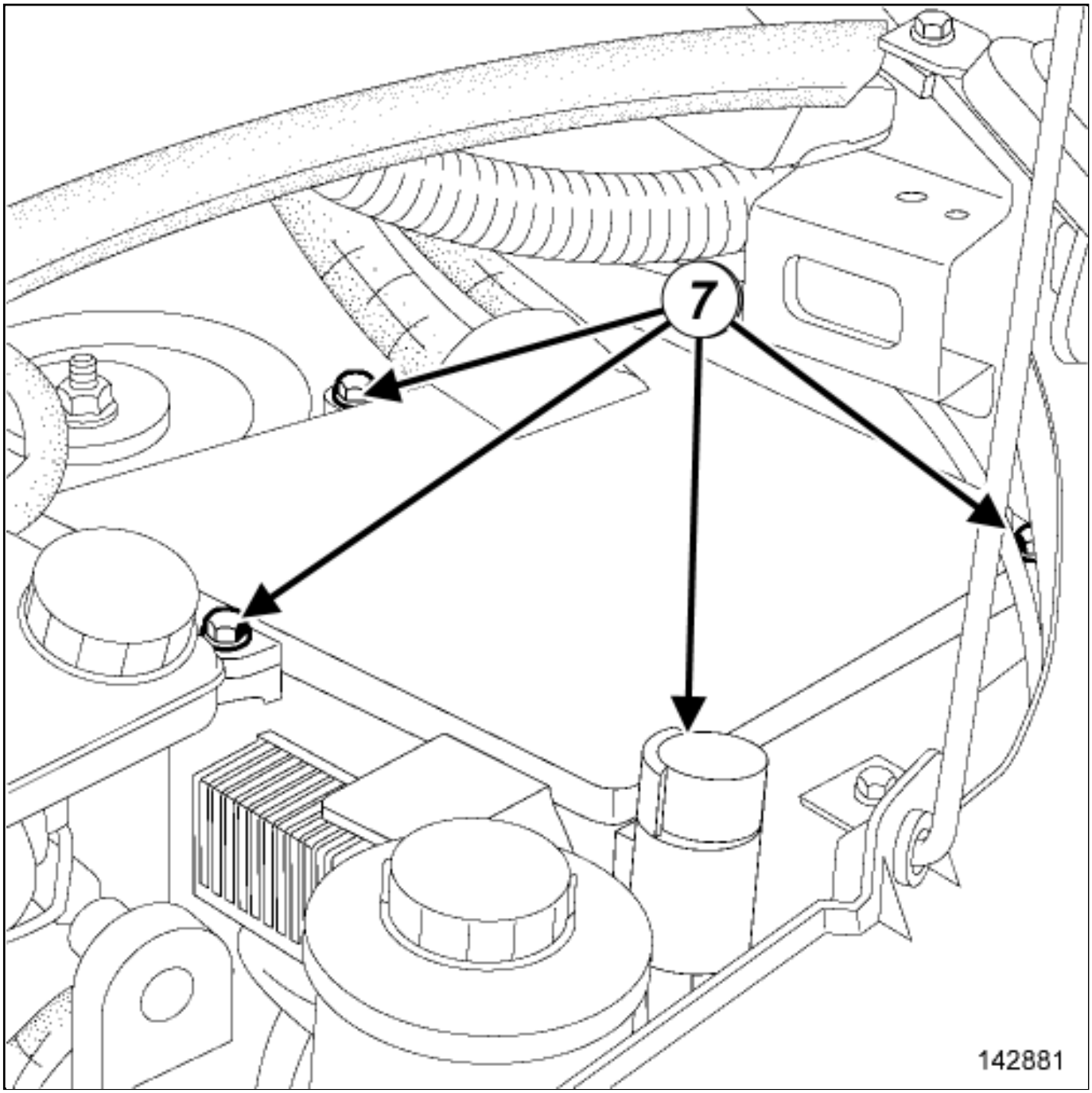
- Disconnect the fuel supply pipe(4) from the fuel filter.
- Unclip the fuel supply pipe.



- Disconnect the fuel return pipe from the fuel return pipe union(5) .
- Unclip the fuel return pipe.
- disconnect:
  - the vacuum hose from the vaccum tank,
  - the vaccum hose from the vaccum pump.

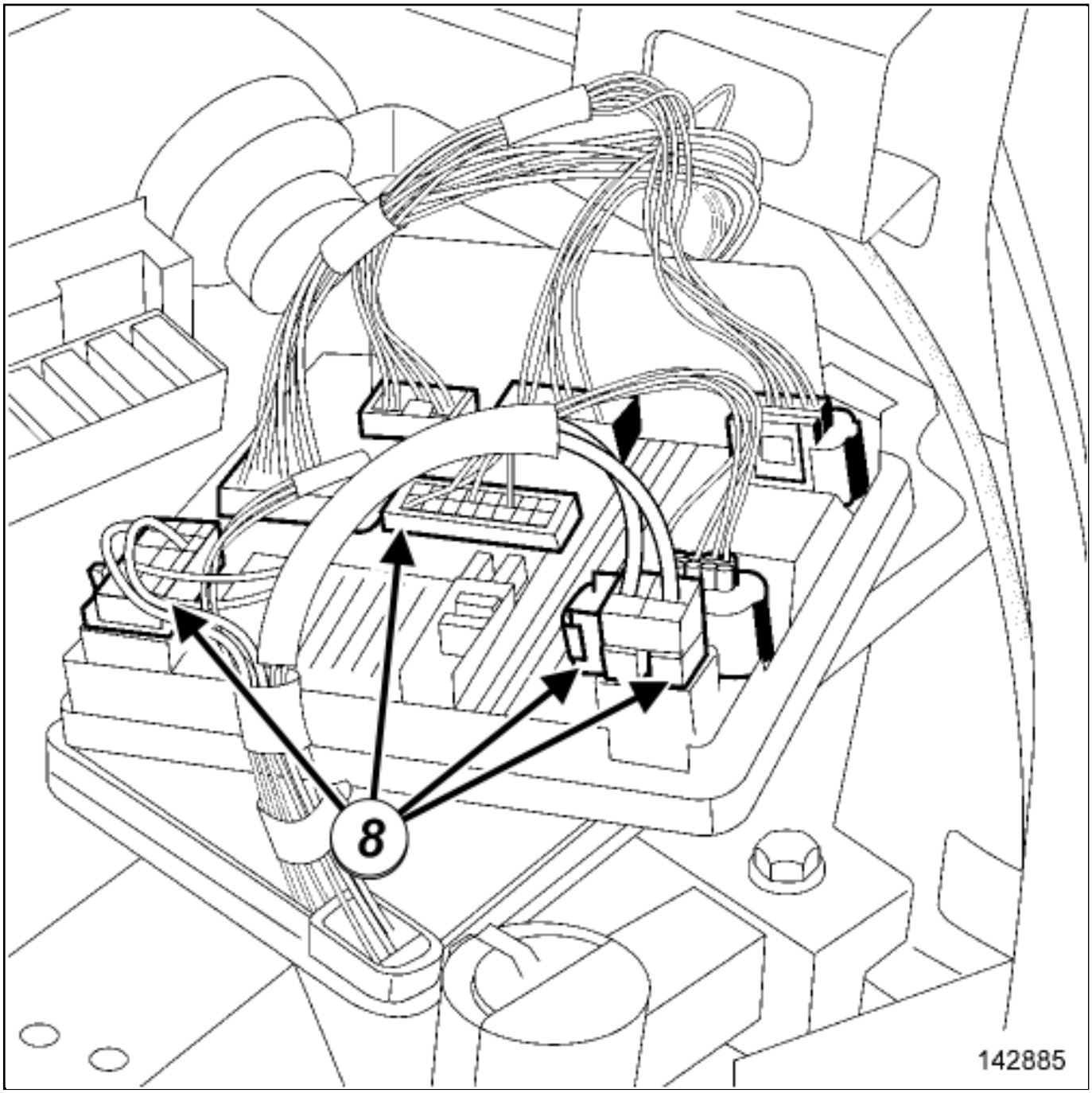


- Remove the bolt(6) from the expansion bottle.
- Move aside the expansion bottle.

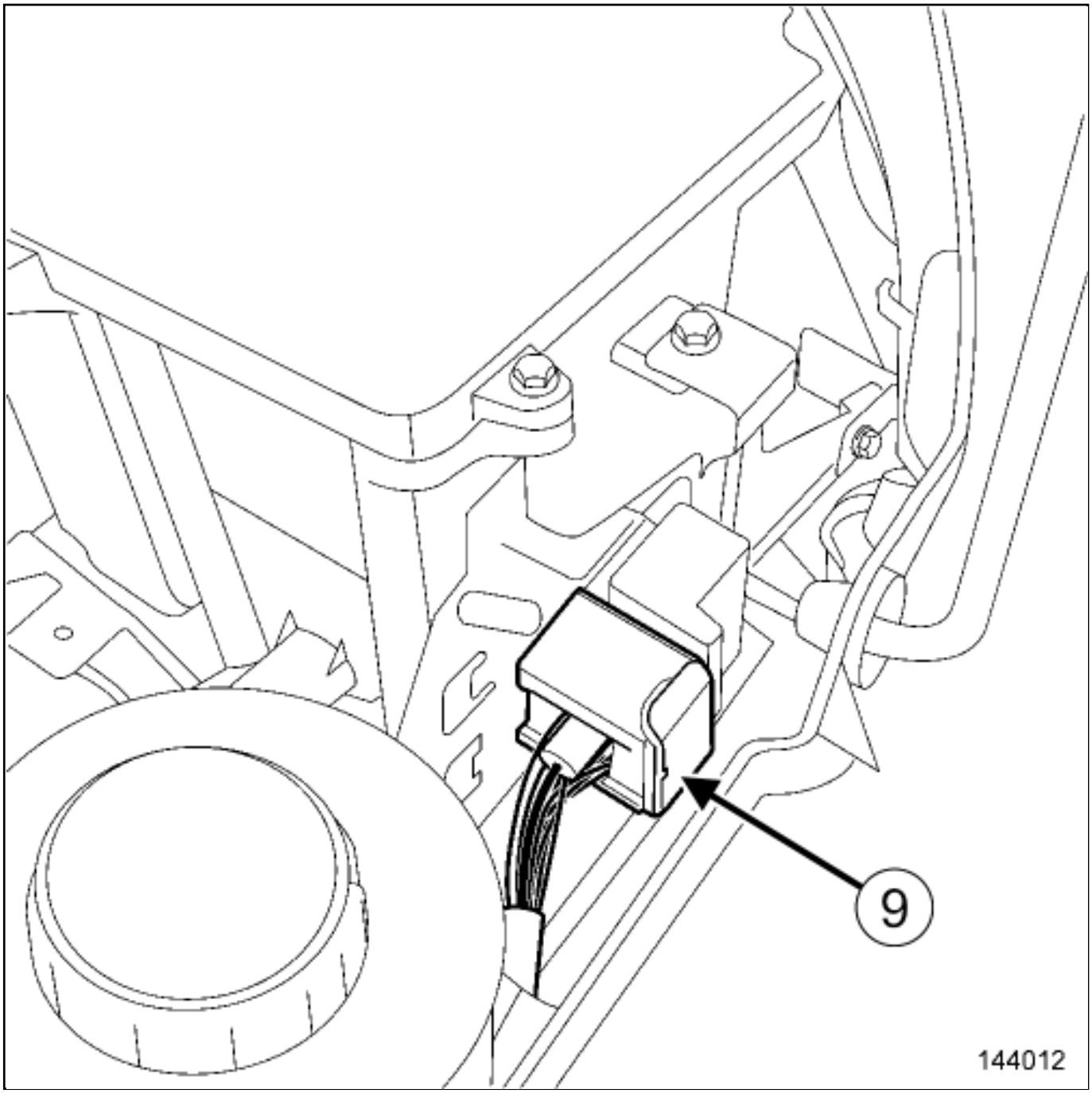


Remove:

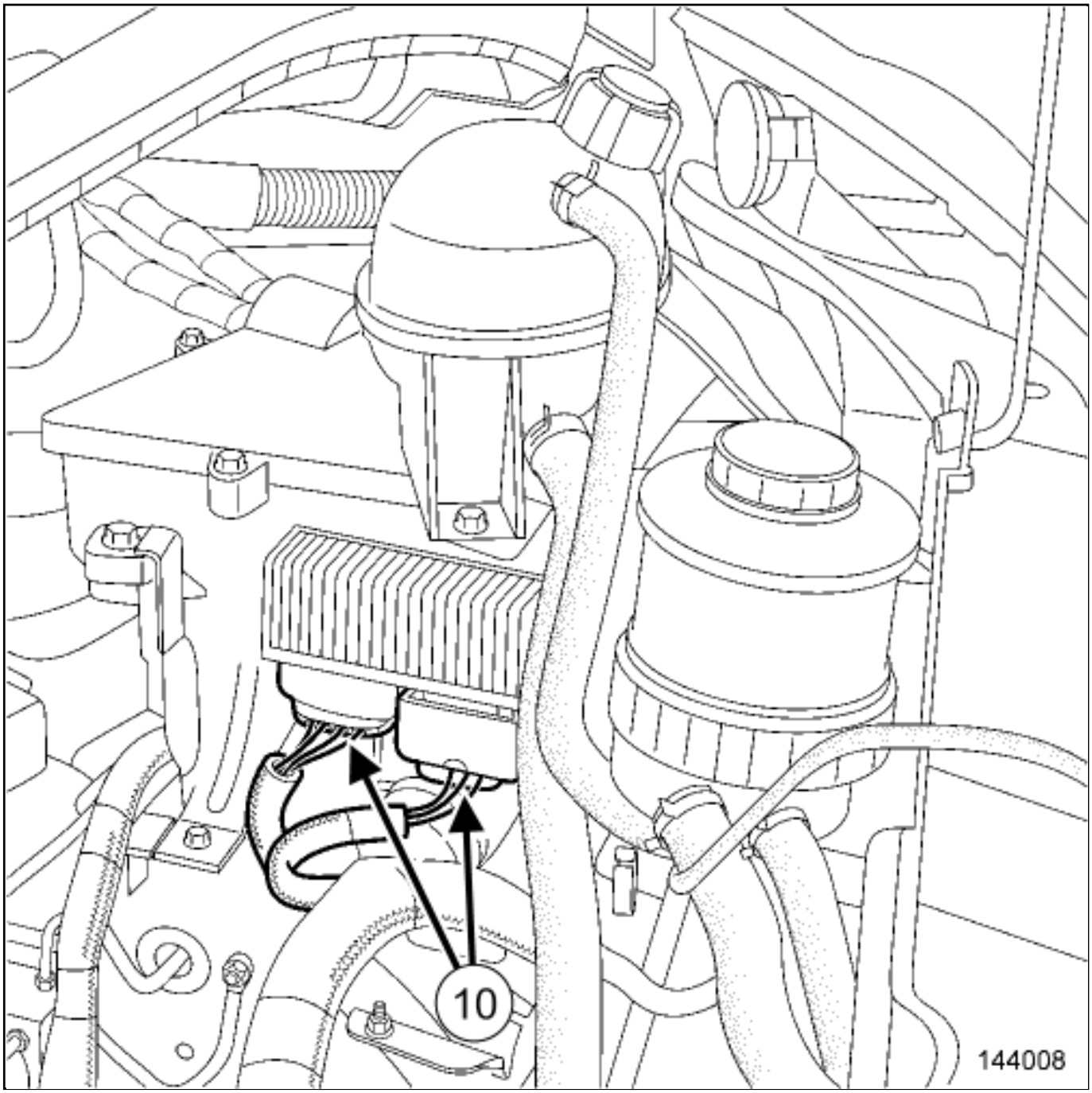
- the bolts(7) from the Protection and Switching Unit cover,
- the Protection and Switching Unit cover.



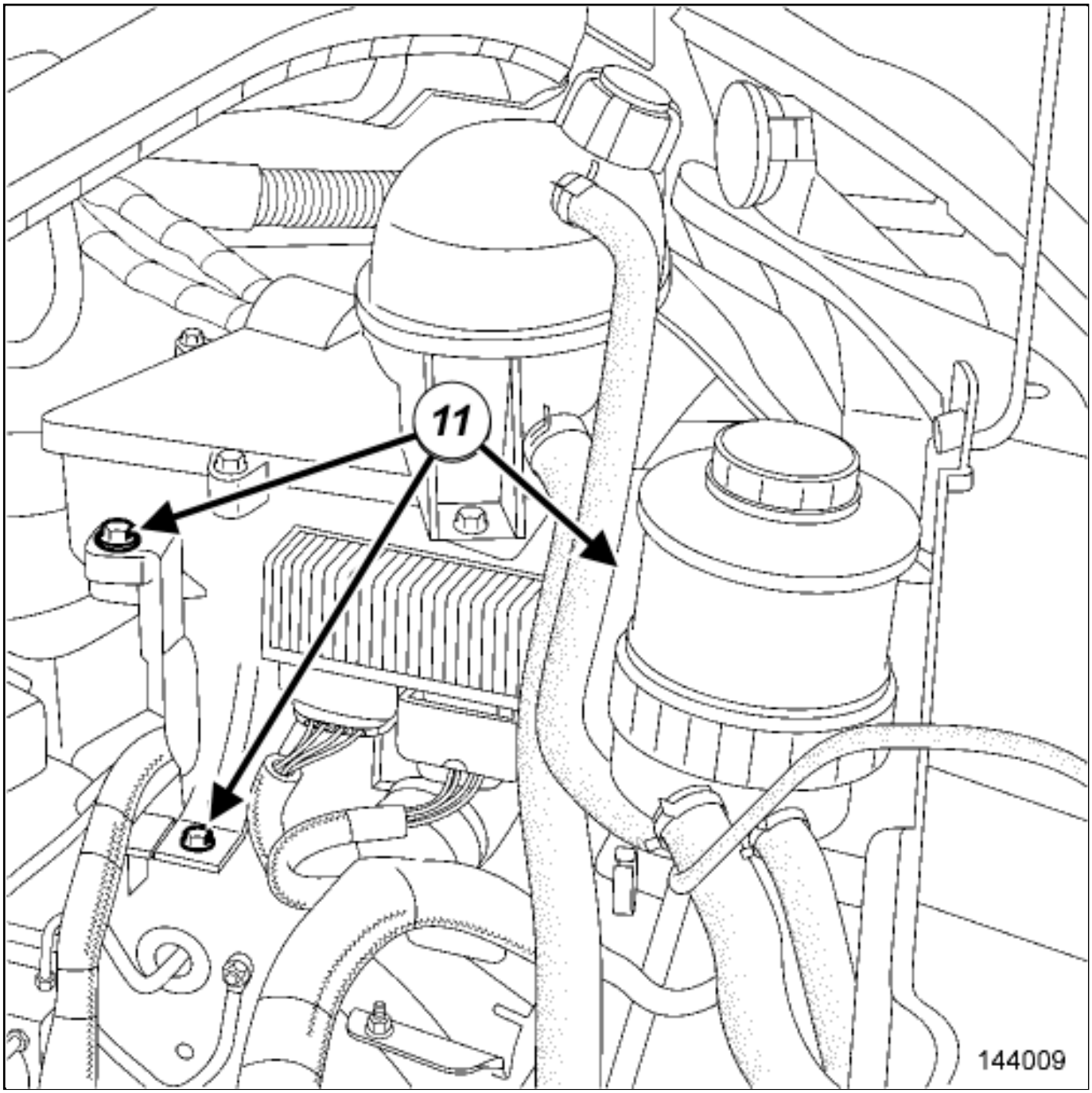
- Disconnect the connectors(8) from the Protection and Switching Unit.



Disconnect the pre-postheating unit connector(9) .

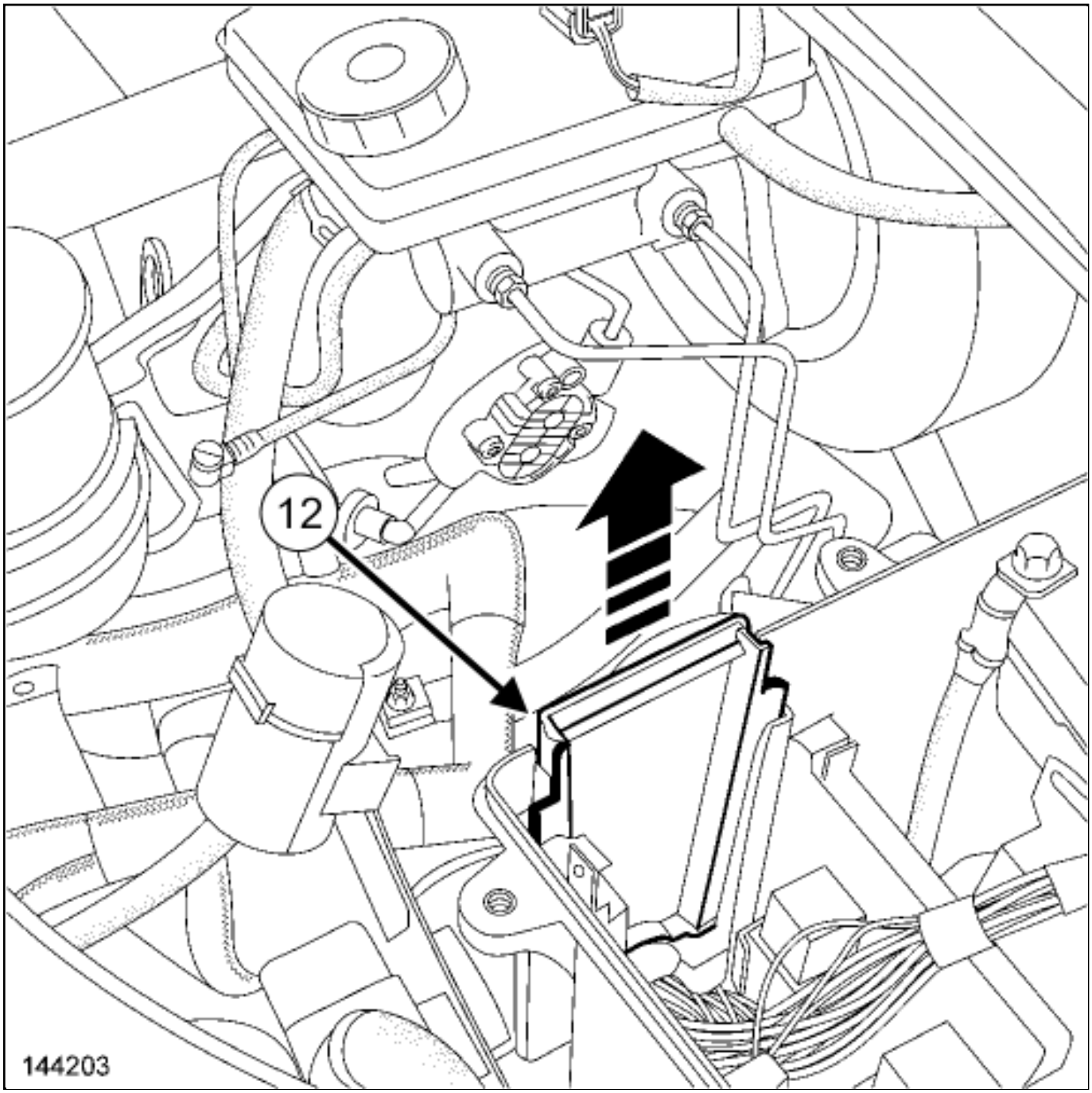


Disconnect the thermoplunger unit connectors(10) .

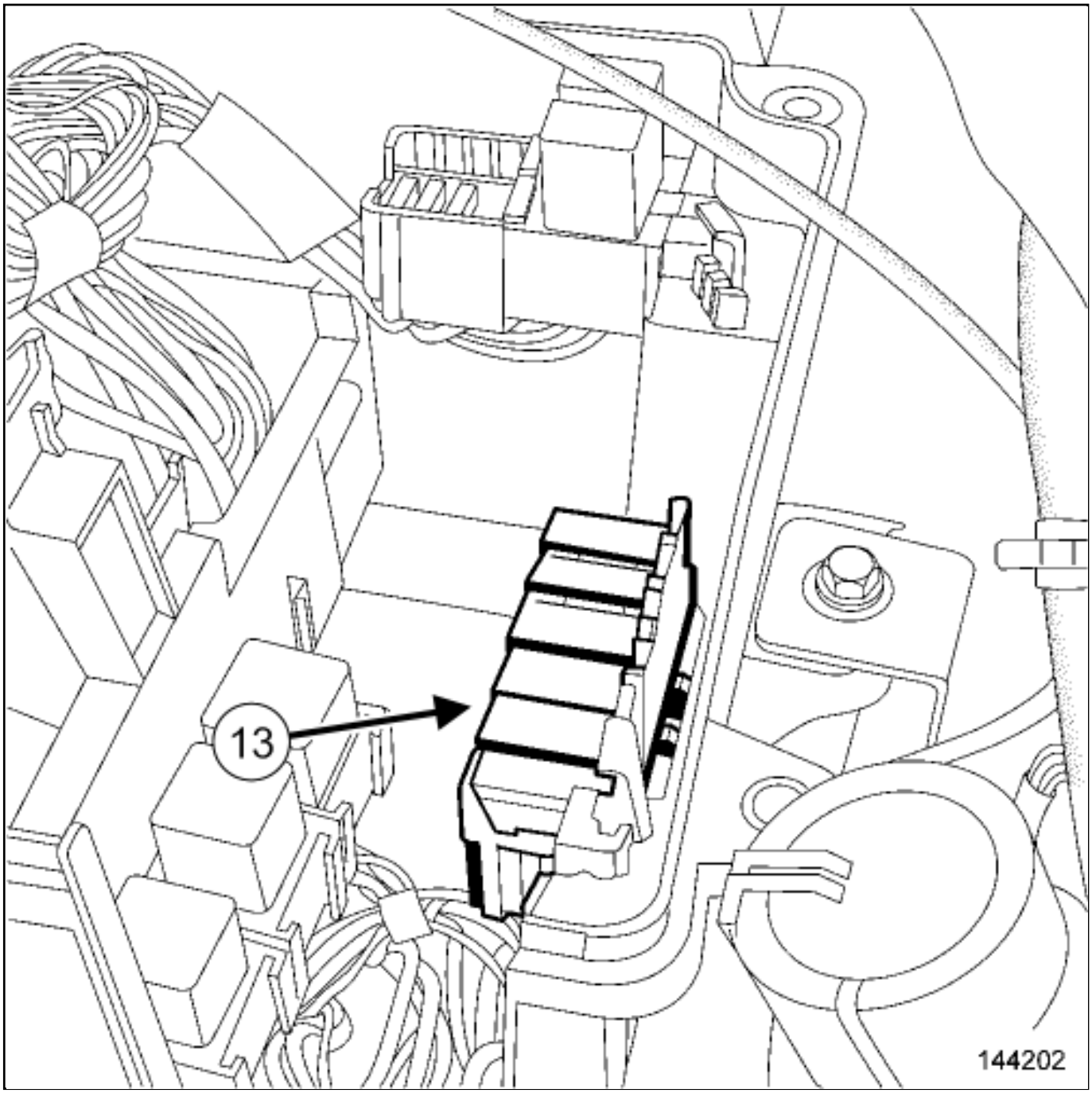


Remove:

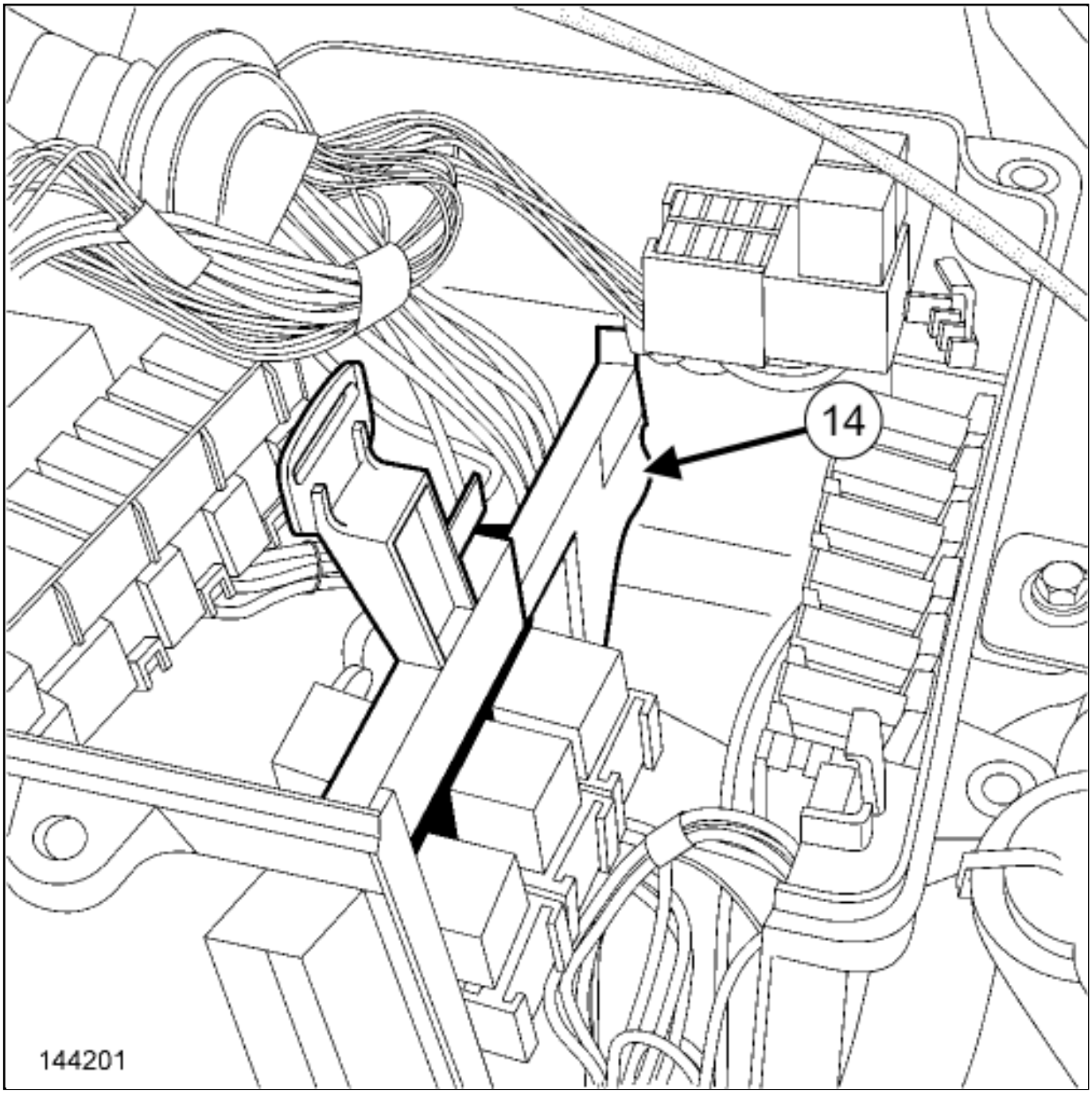
- the bolts(11) of the thermoplunger unit mounting,
- the thermoplunger unit mounting.



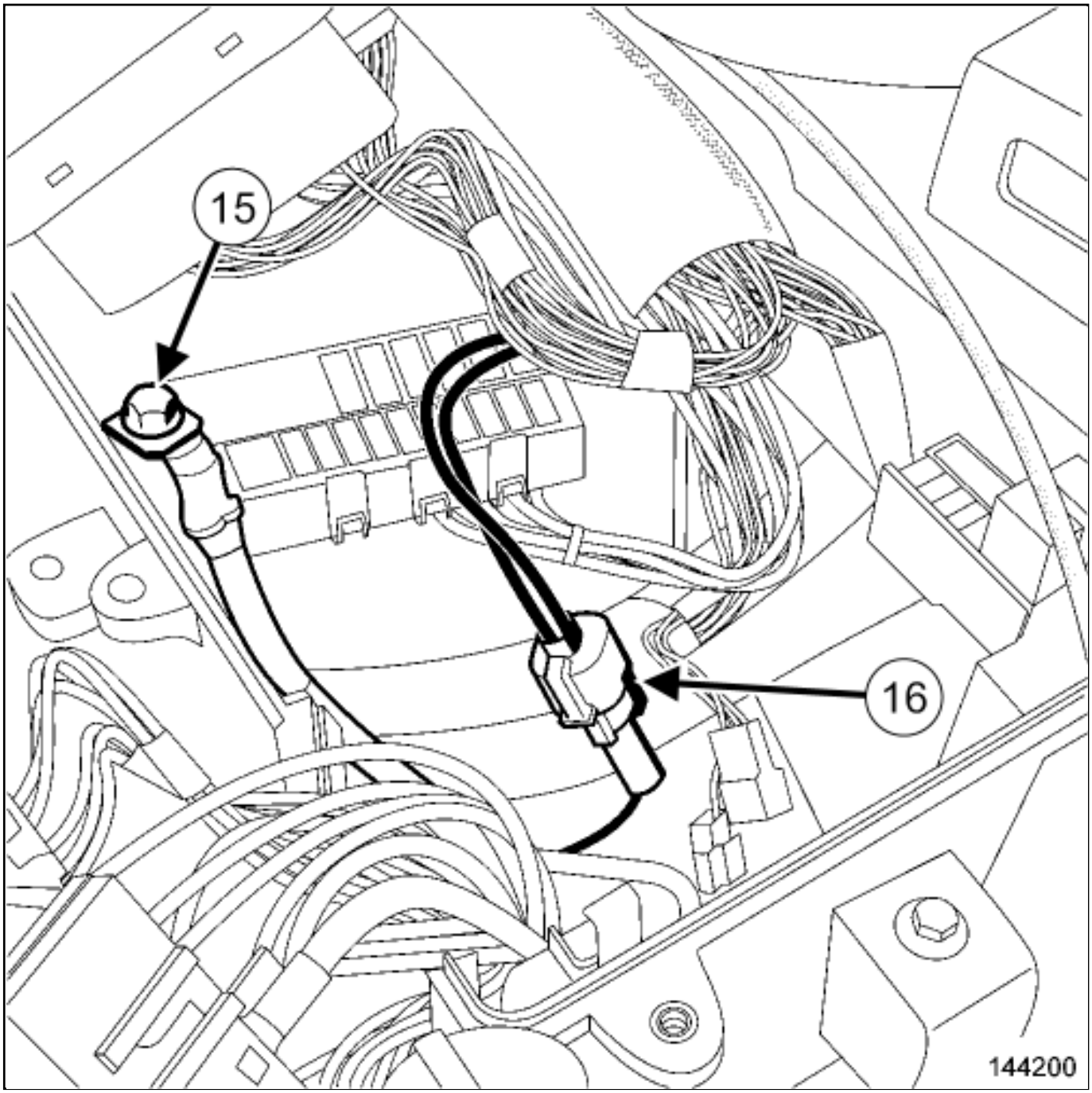
Remove the engine wiring flap(12) .



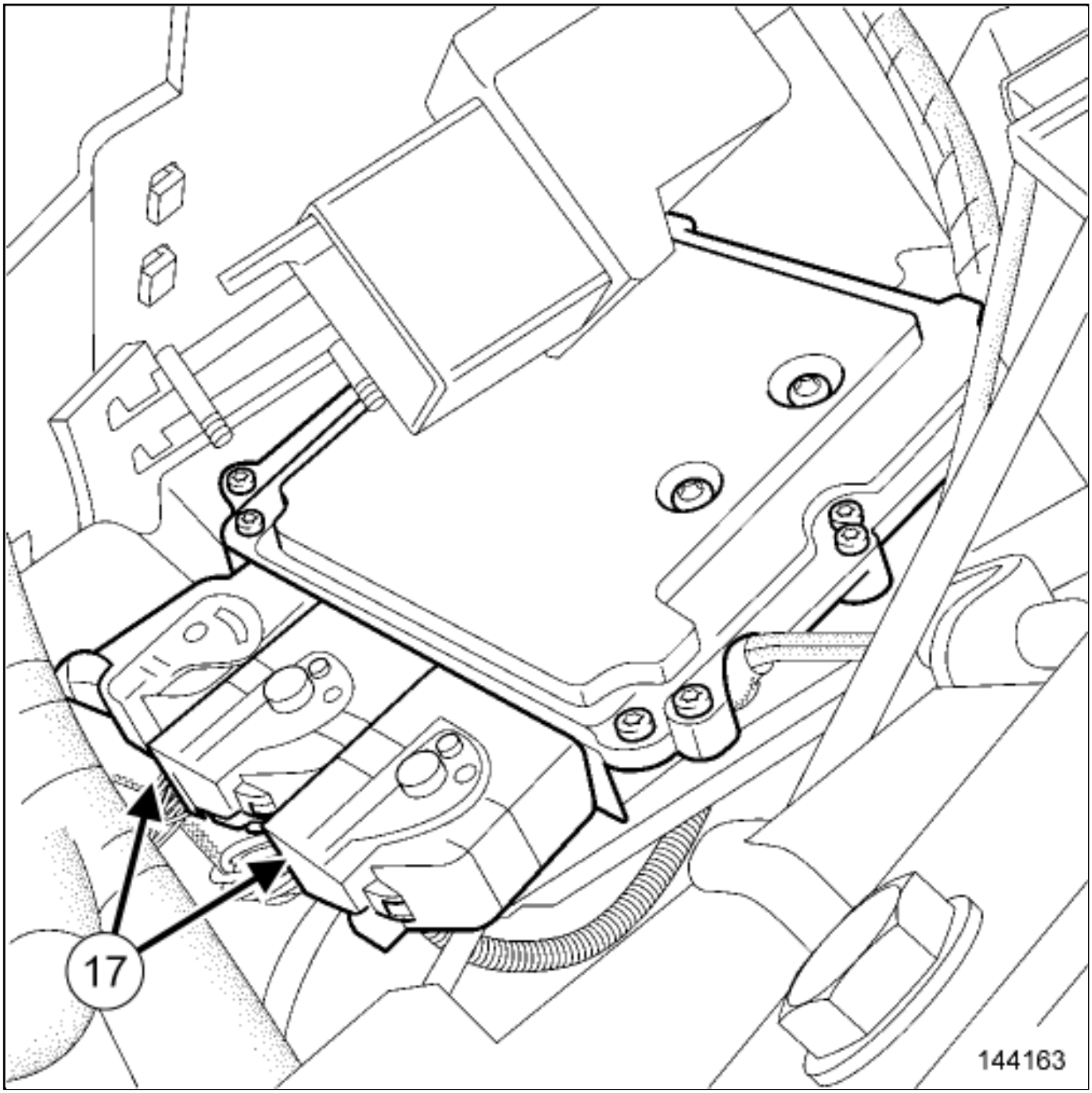
Unclip the fuse holder partition(13) from the Protection and Switching Unit.



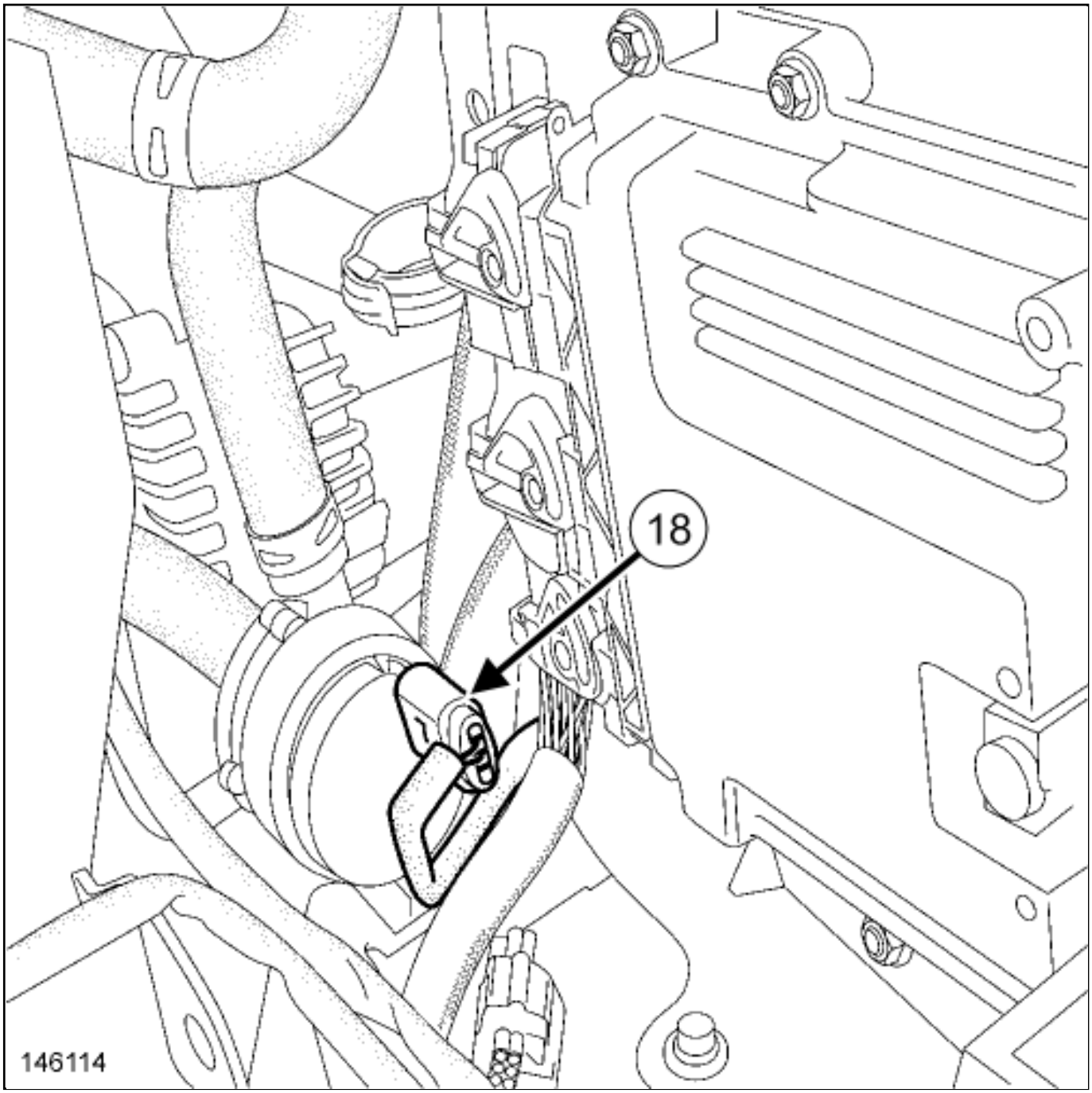
Unclip the relay holder partition(14) from the Protection and Switching Unit.



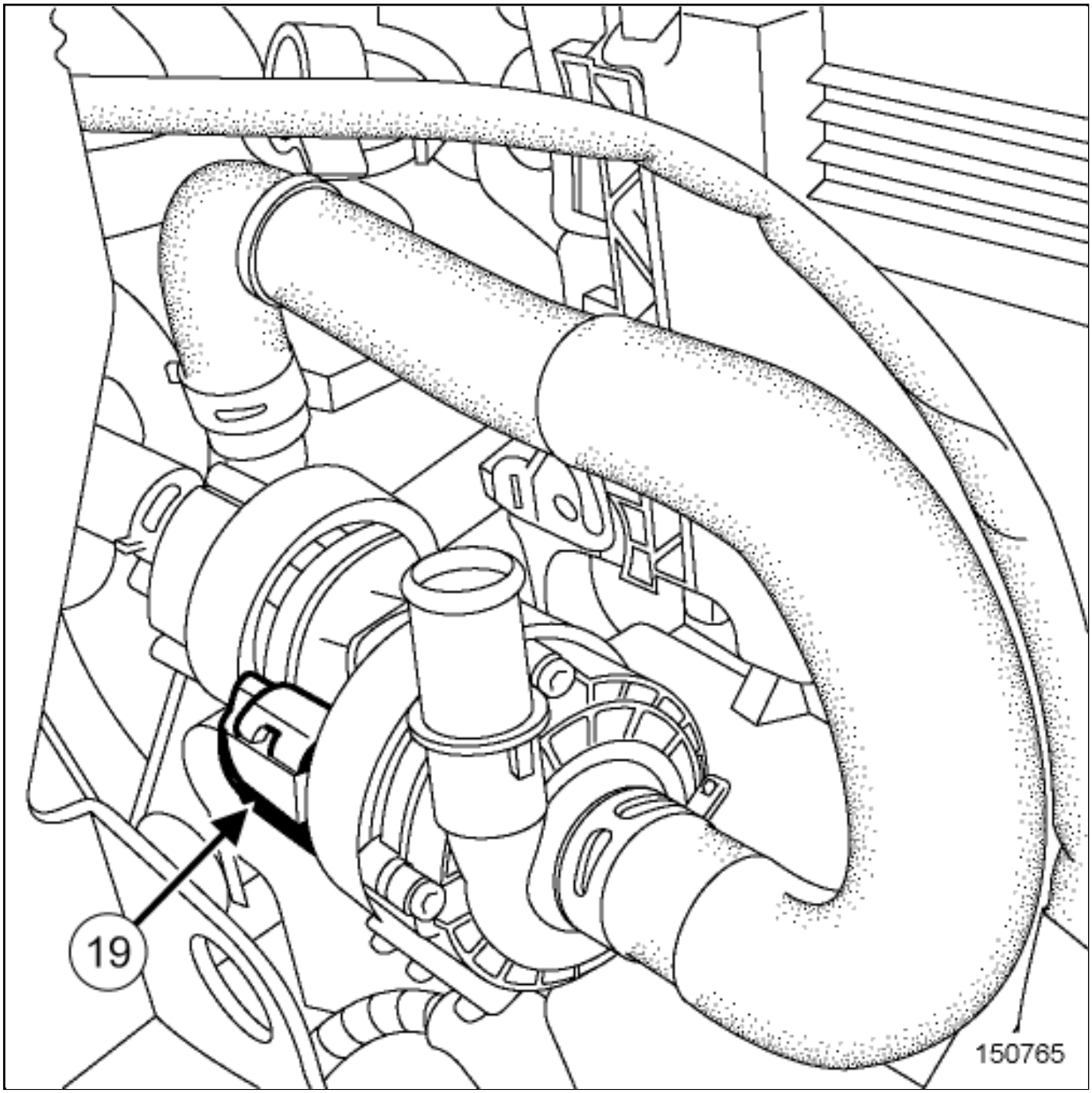
- Remove the nut(15) of the supply cables.
- Move aside the supply cables.
- Disconnect the connector(16) of the supply cables.



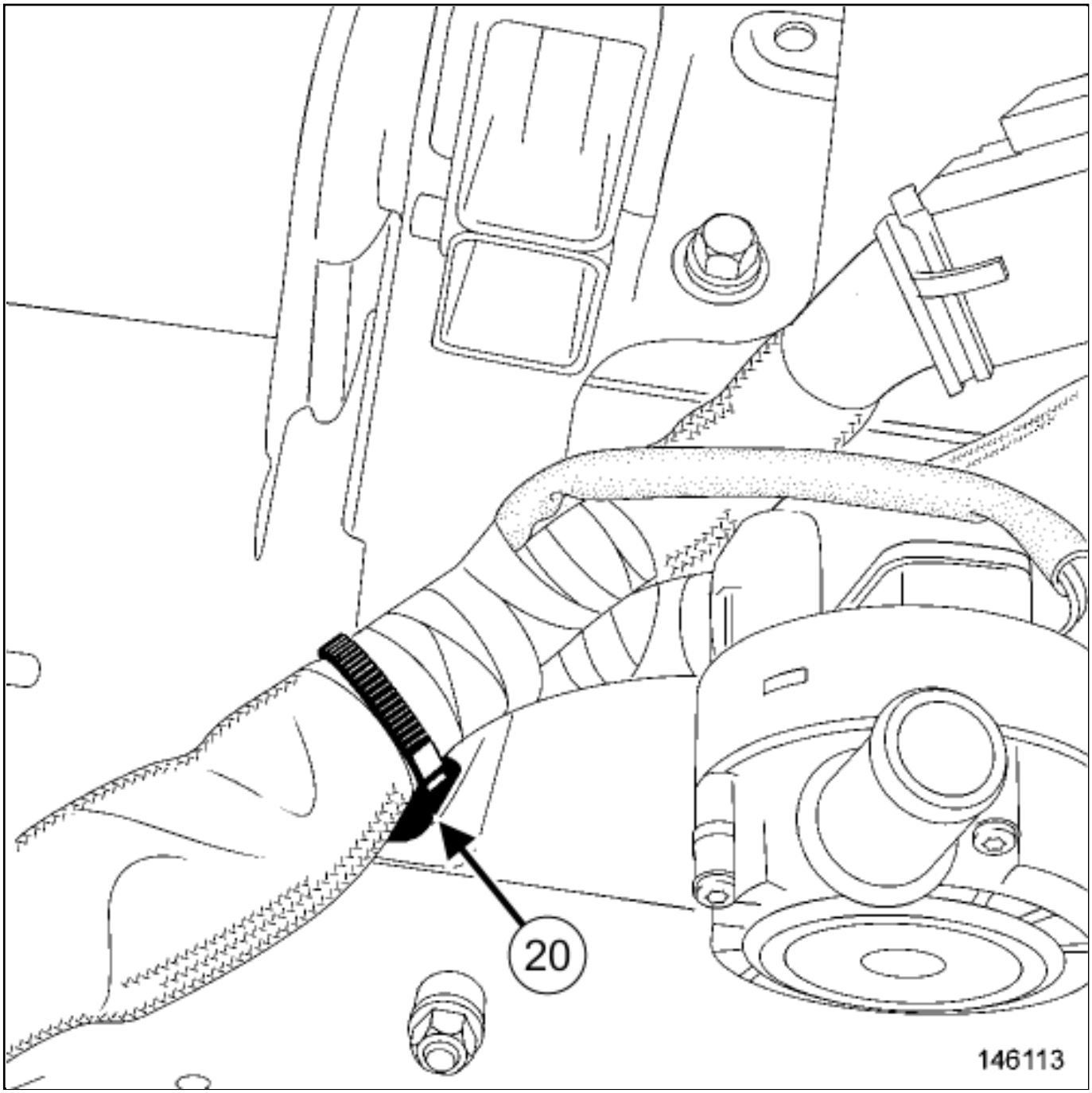
Disconnect the injection computer connectors(17) .



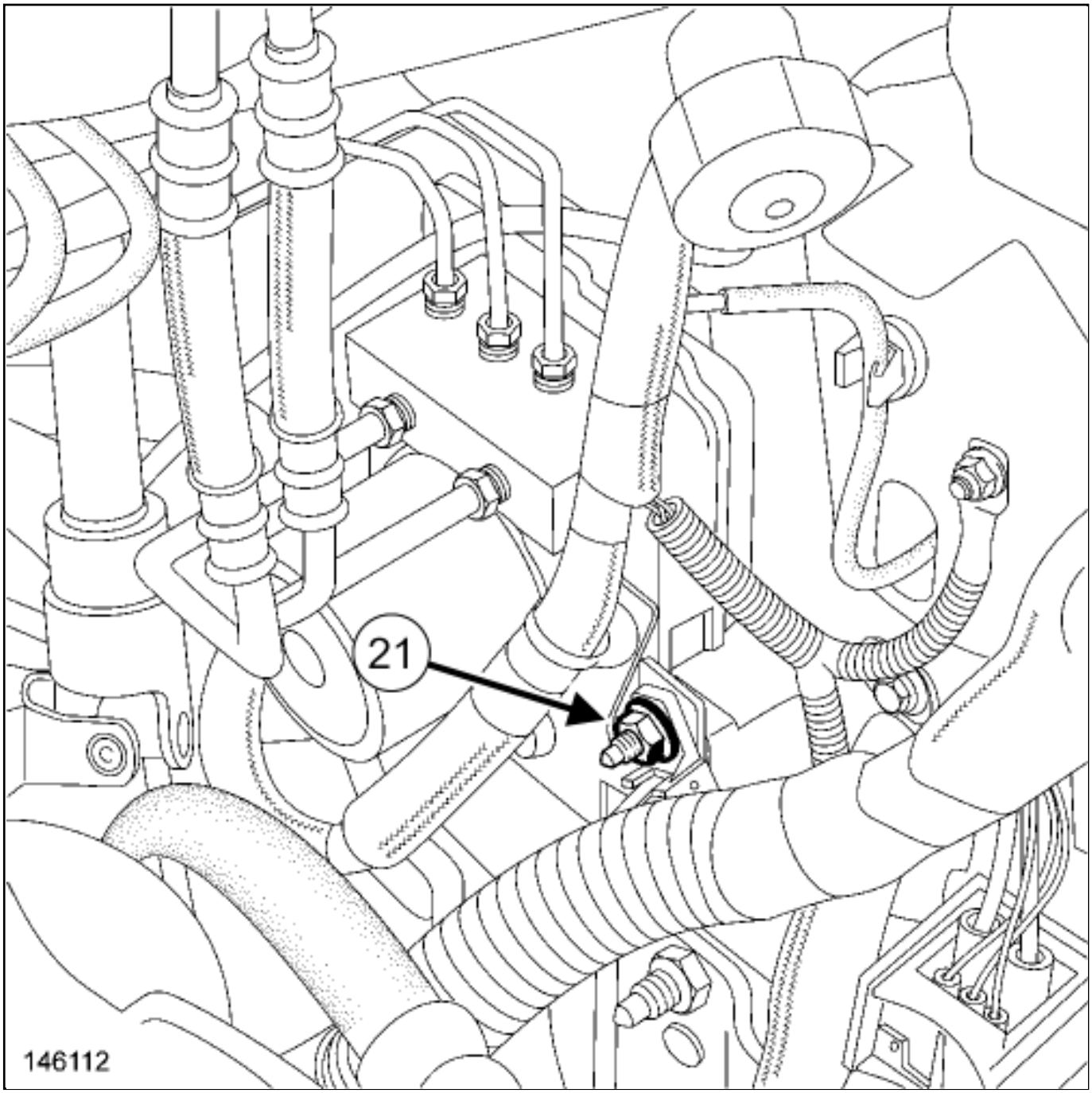
Disconnect the connector(18) of the electric coolant pump.



Disconnect the connector(19) of the additional electric coolant pump.



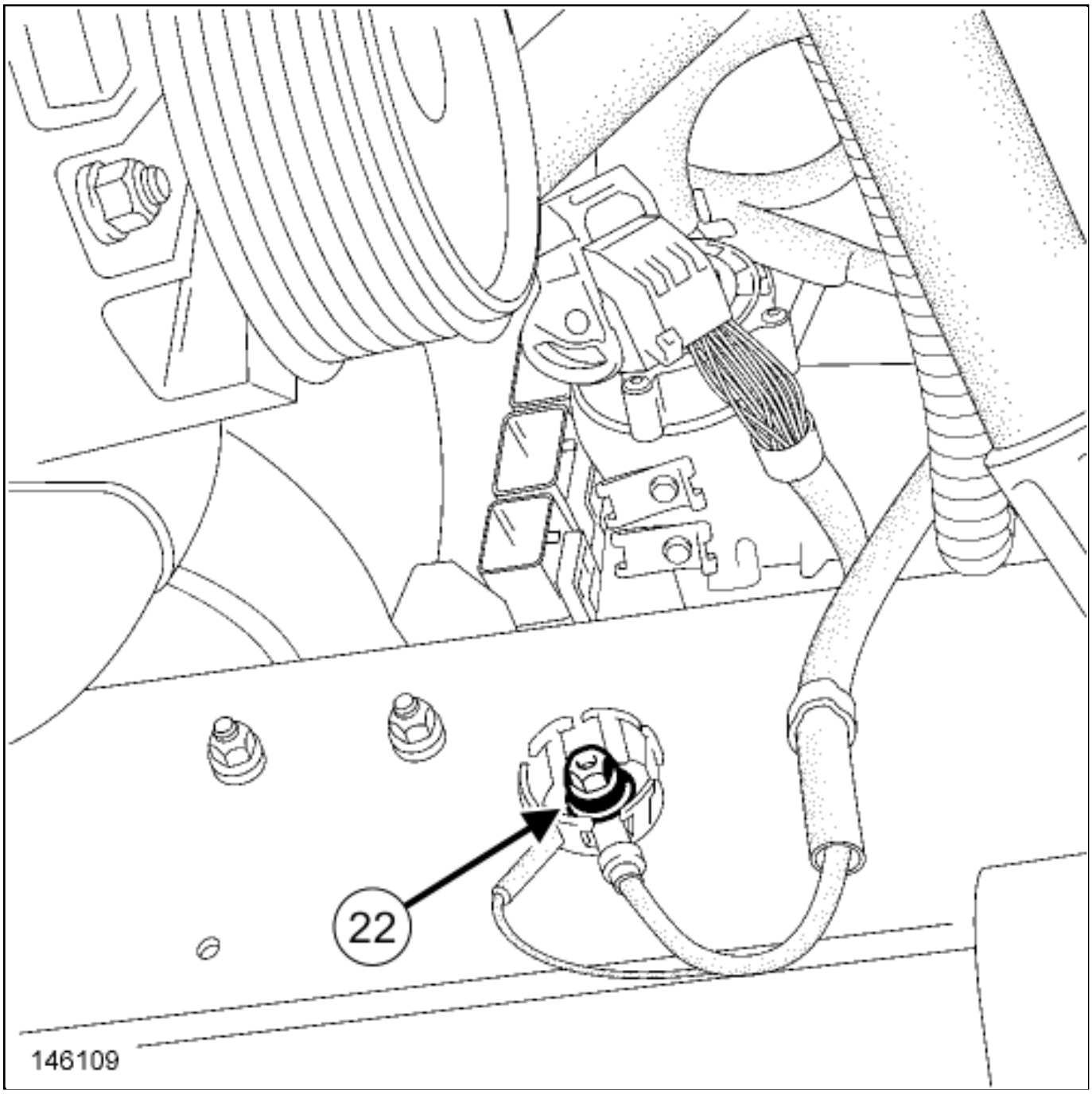
Unclip the engine wiring from the injection computer support(20) .



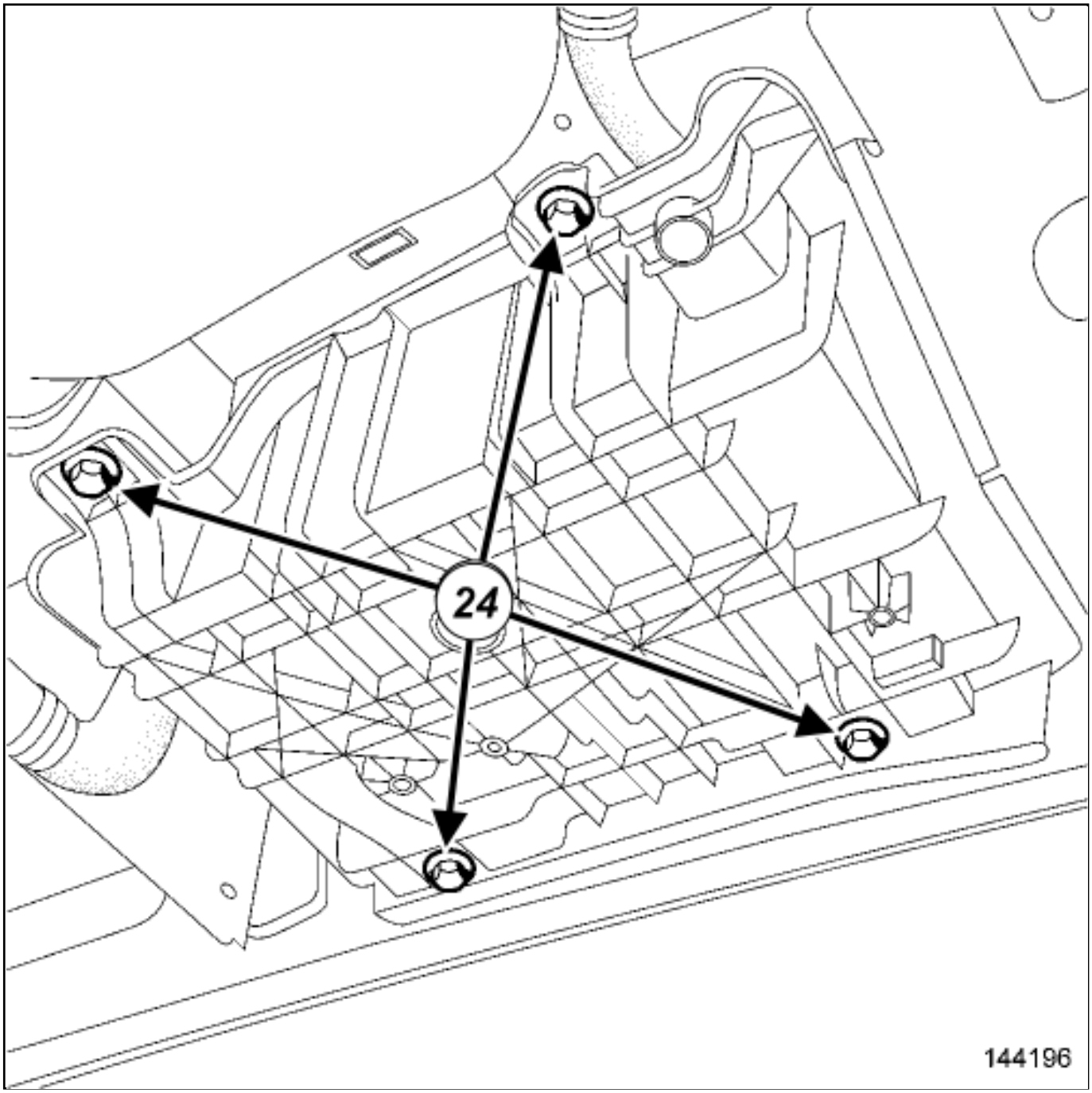
- Remove the engine wiring nut(21) on the hydraulic brake unit support.

- Move aside the engine wiring.

- Remove the engine cooling fan propeller(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) .



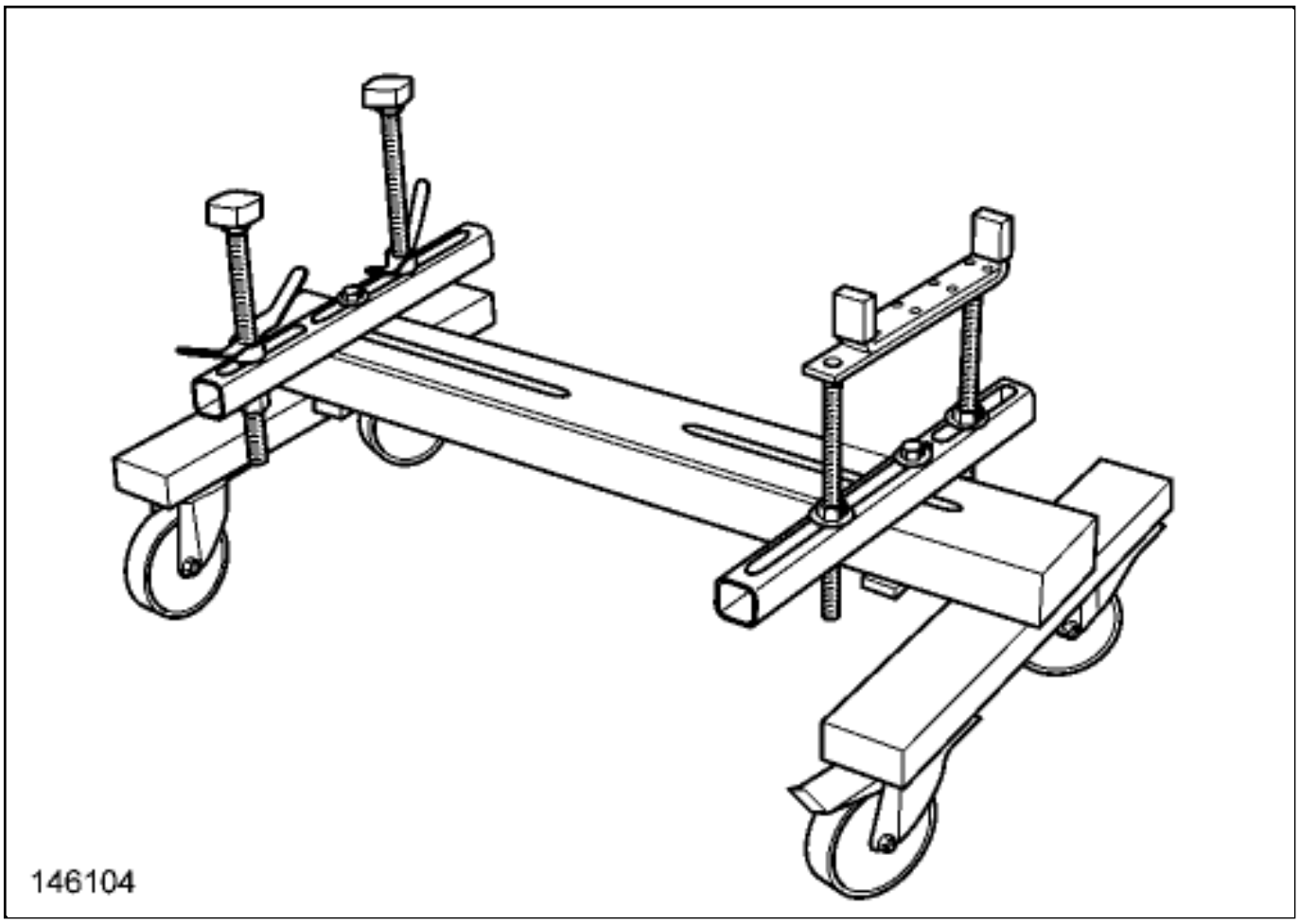
Remove the earth wiring nut(22) from the body.



Remove:

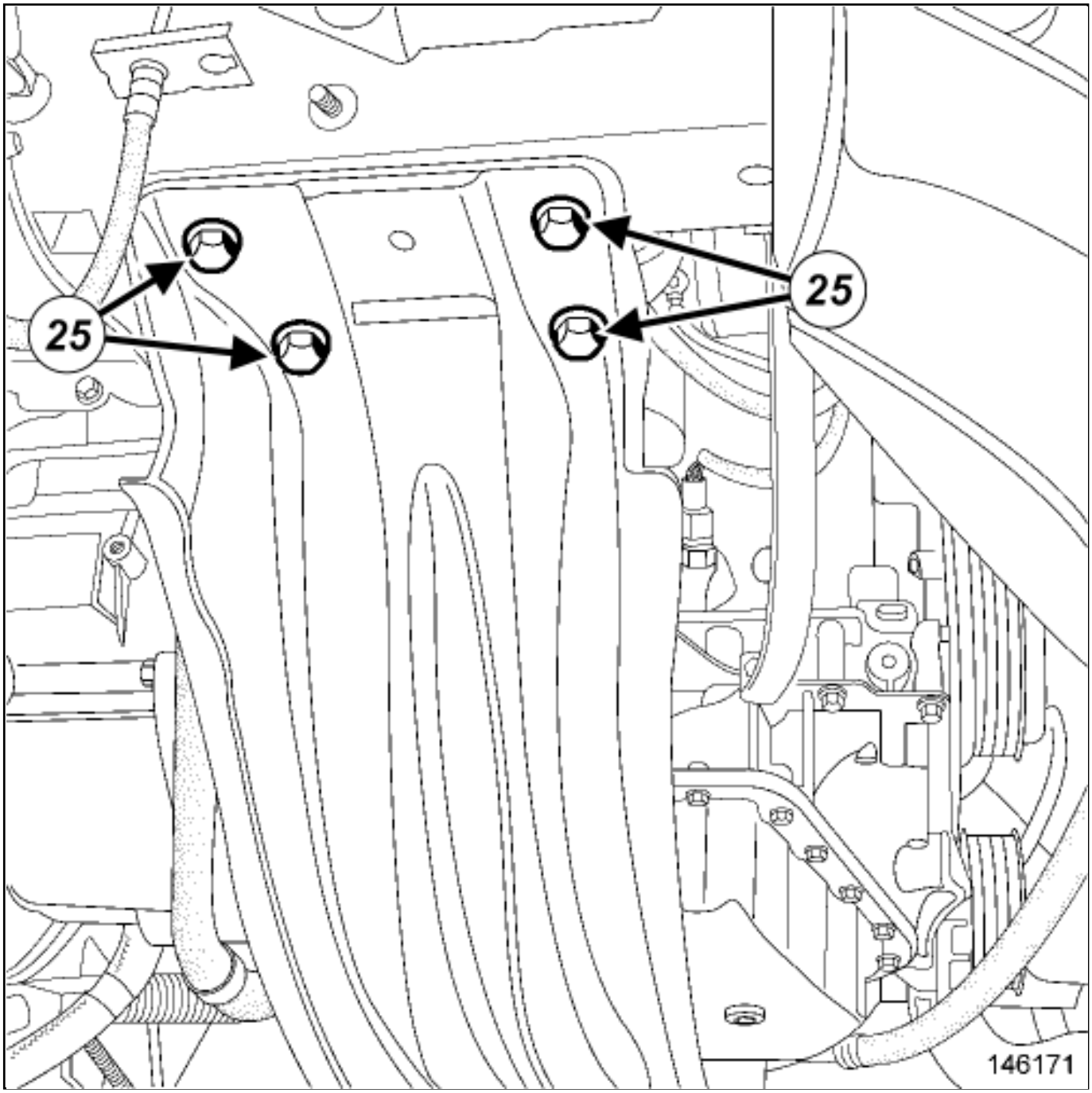
- the battery tray bolts(24) ,
- the battery tray.

2. REMOVAL OPERATION



Fit the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) under the engine.

Remove the safety strap(s) from the manual gearbox.



Remove:

- the engine mounting bolts(**25**) ,
- the "engine and gearbox" assembly.

Strap the "engine and gearbox" assembly to the toolSupport for removal - refitting of engine - gearbox assembly(**Mot. 1390**) using a safety strap(s).

1- IN THE EVENT OF REPLACEMENT

Use a workshop hoist Engine-gearbox unit support assembly: Exploded view to remove:

- the bolt of the front left-hand rubber pad from the engine mounting,
- the bolt of the front righ-hand rubber pad from the engine mounting,
- the engine mounting,
- the front righ-hand rubber pad,
- the front left-hand rubber pad.

REFITTING

1. REFITTING PREPARATION OPERATION

Use grey abrasive pads Vehicle: Parts and consumables for the repair to degrease:

- the gasket face of the connecting hose,
- the gasket face of the exhaust gas outlet duct.

Use surface cleaner Vehicle: Parts and consumables for the repair to clean:

- the gasket face of the connecting hose,
- the gasket face of the exhaust gas outlet duct.

1- IN THE EVENT OF REPLACEMENT

Refit Engine-gearbox unit support assembly: Exploded view :

- the front left-hand rubber pad,
- the front right-hand rubber pad,
- the engine mounting,
- the bolt of the front righ-hand rubber pad on the engine mounting,

  the bolt of the front left-hand rubber pad on the engine mounting.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Torque tighten the engine mounting bolts**Engine-gearbox unit support assembly: Exploded view** .

Fill and bleed the cooling circuit**Cooling system: Draining - Refilling** .

ENGINE - GEARBOX ASSEMBLY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Ball joint extractor.	Tav. 476
Remote operation pliers for hose clips.	Mot. 1448
Support for removal - refitting of engine - gearbox assembly	Mot. 1390
Pipe clamps.	Ms. 583
Adapter for engine support tool Mot.1390.	Mot. 1709

Equipment required
refrigerant charging station
safety strap(s)
workshop hoist
oil recovery tray

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

WARNING

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

- Diesel injection: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

CAUTION

Keep the pipe unions away from contaminated areas.

CAUTION

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

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

- Remove:
  - the battery Battery: Removal - Refitting (80A, Battery),
  - the engine undertray.

- Drain the cooling system Cooling system: Draining - Refilling .

- Remove:
  - the front wheels Wheel: Removal - Refitting (35A, Wheels and tyres),
  - the longitudinal driveshaft Propshaft: Removal - Refitting (29A, Driveshafts),
  - the exhaust silencer.

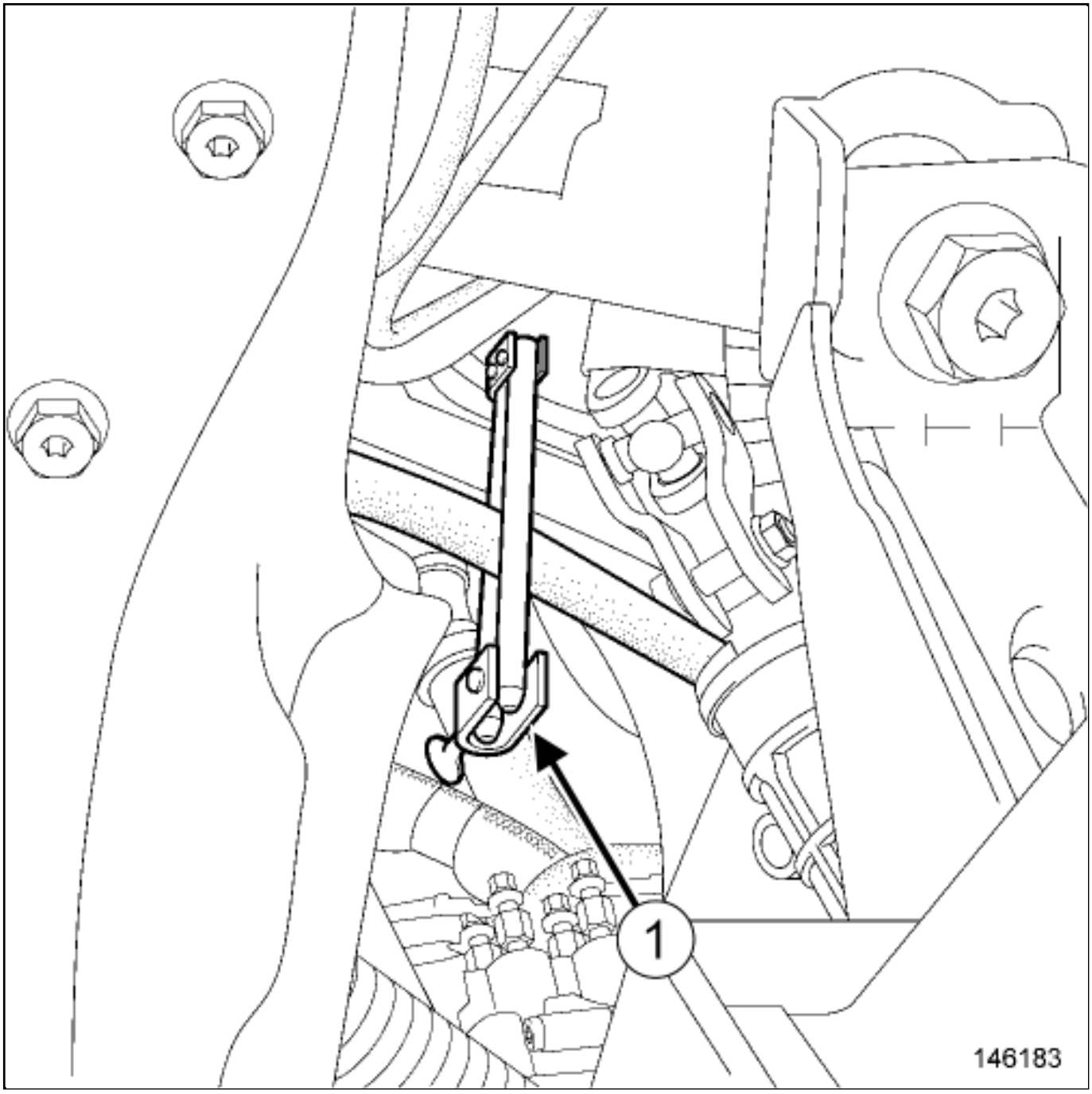
M9T, 690 696 698 896 898(690 OR 696 OR 698 OR 896 OR 898)

- Remove the particle filter Exhaust assembly under body: Exploded view .

- Remove the catalytic converter Exhaust assembly under body: Exploded view .

- Remove the subframe Front axle subframe: Removal - Refitting (31A, Front axle components).

- Fit an oil recovery tray under the power-assisted steering pipes of the steering box.

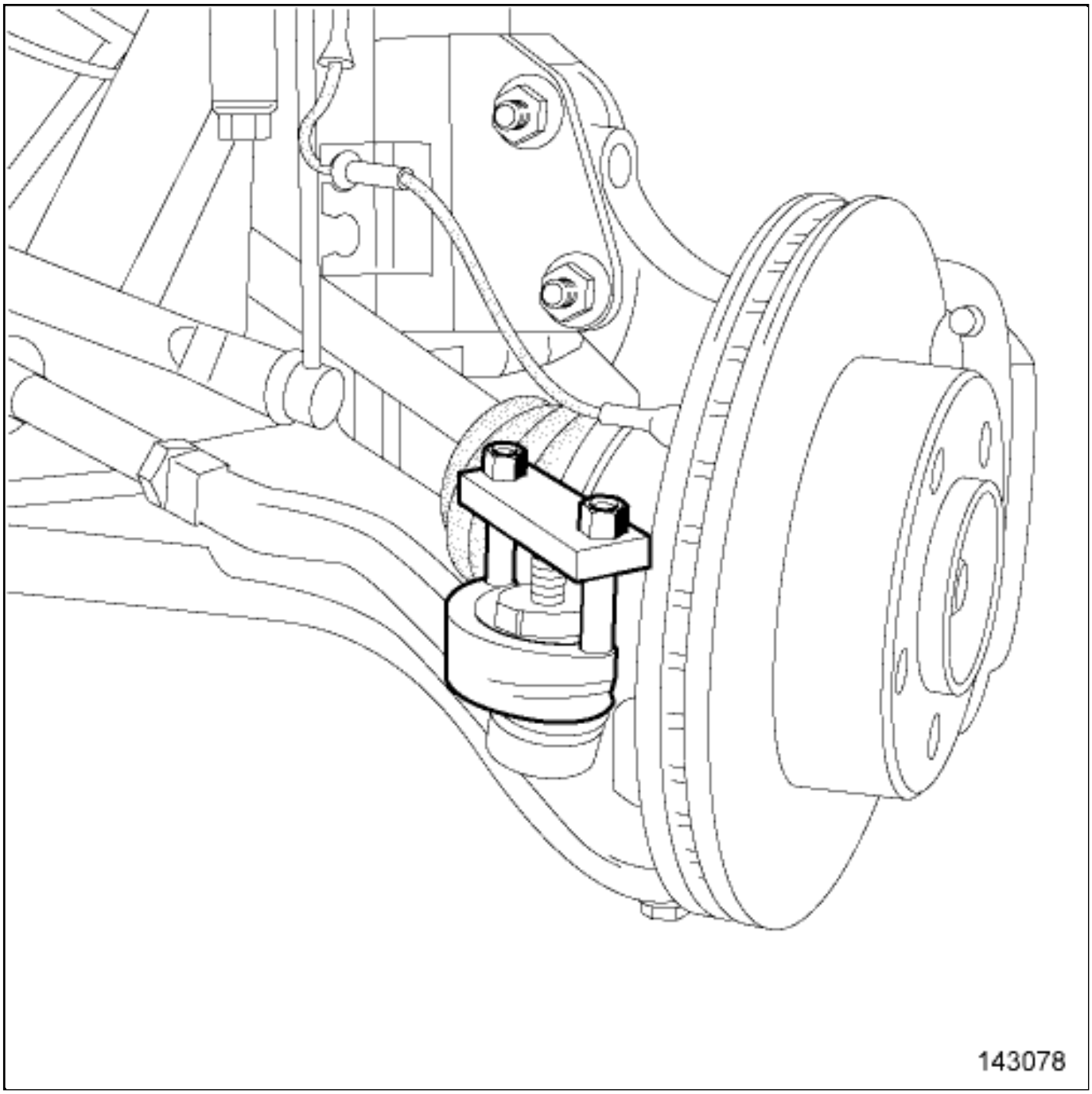


- Fit an Pipe clamps.(Ms. 583) (1) on the low pressure pipe of the power-assisted steering circuit.

- Remove the bolt of the power-assisted steering pipe bracket on the steering box. Power-assisted steering

assembly: Exploded view (36B, Power-assisted steering).

- Disconnect the power-assisted steering pipes.
- Fit blanking plugs.
- Remove the universal joint boltPower-assisted steering assembly: Exploded view (36B, Power-assisted steering).
- Remove the nuts of the track rod endsSteering assembly: Exploded view (36B, Power-assisted steering).

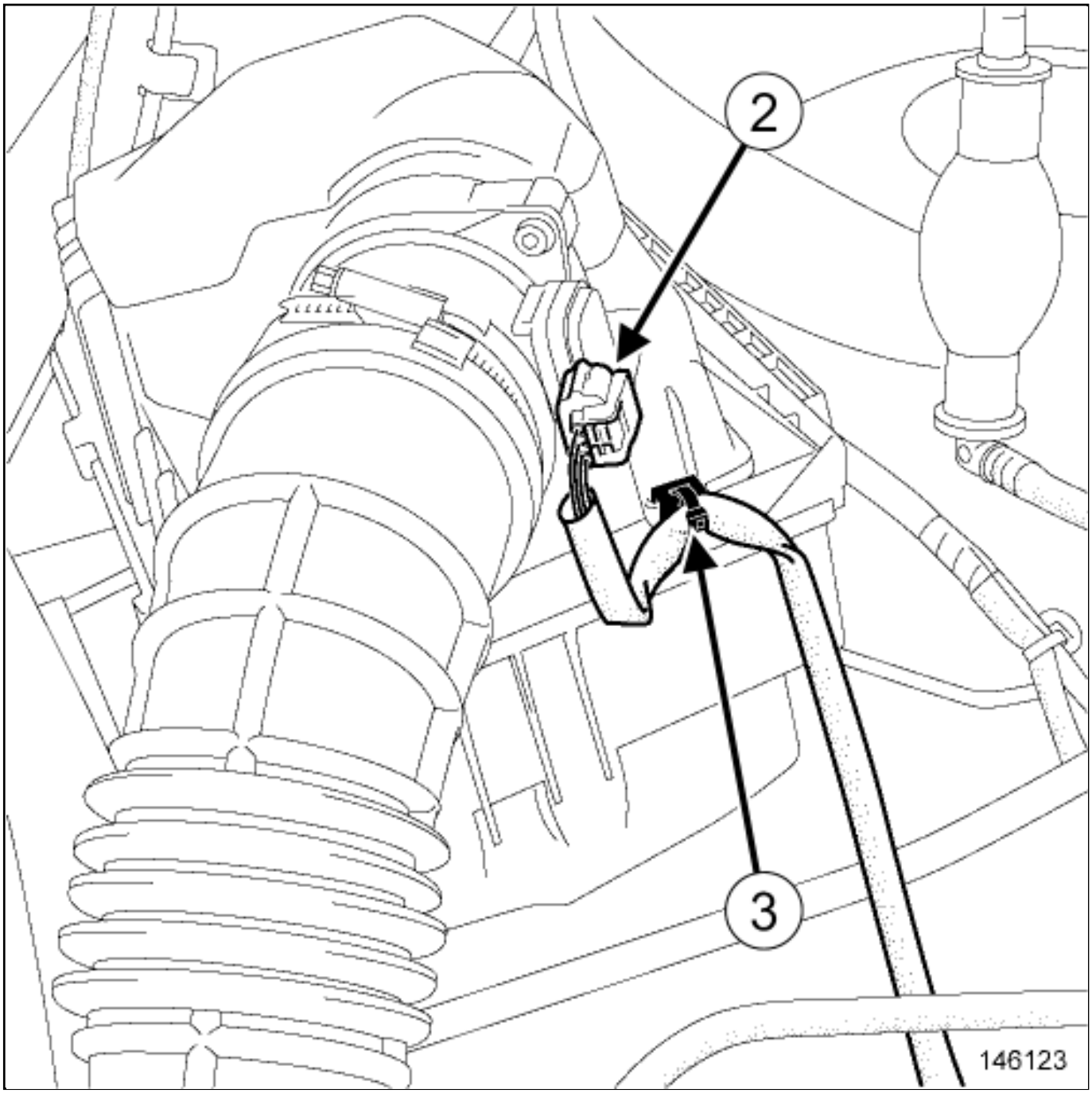


- Extract the track rod ends using the toolBall joint extractor.(Tav. 476).

- Remove:
  - the safety strap(s)from the steering box,
  - the steering box.

- Loosen the clip of the air filter unit air outlet pipe from the air filter unit.

- Disconnect the air filter unit air outlet pipe from the air filter unit.

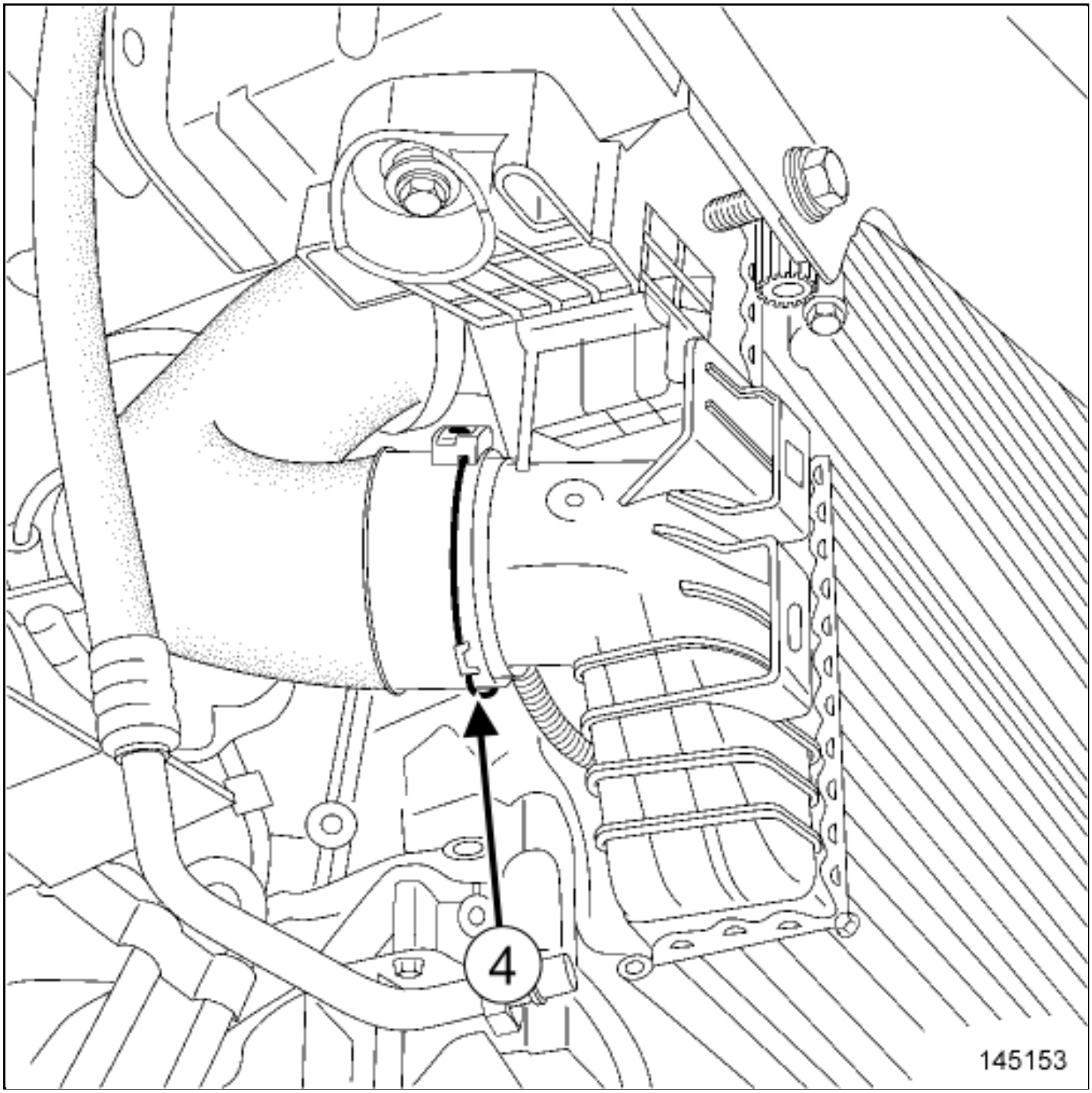


- Disconnect the air flowmeter connector(2) .

- Unclip the air flowmeter wiring at(3) .

Remove:

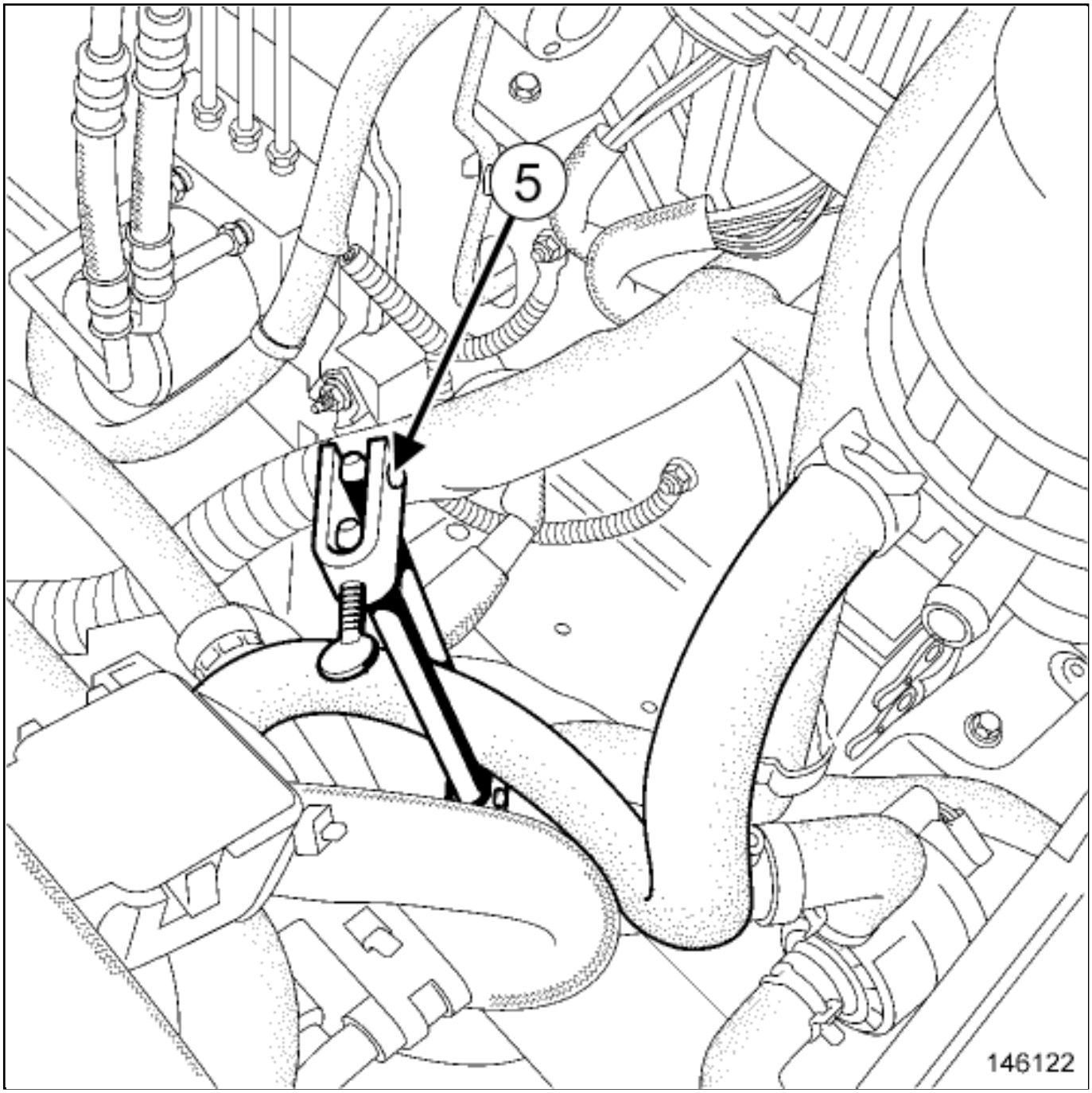
- the radiator grille **Radiator grille: Removal - Refitting** (56A, Exterior equipment),
- the headlights **Headlight: Removal - Refitting** (80B, Headlights),
- the front bumper **Front bumper: Removal - Refitting** (55A, Exterior protection),
- the intercooler air outlet pipe,
- the intercooler air outlet pipe seal.



Pull the clip(4) of the intercooler air inlet pipe.

Disconnect the intercooler air inlet pipe.

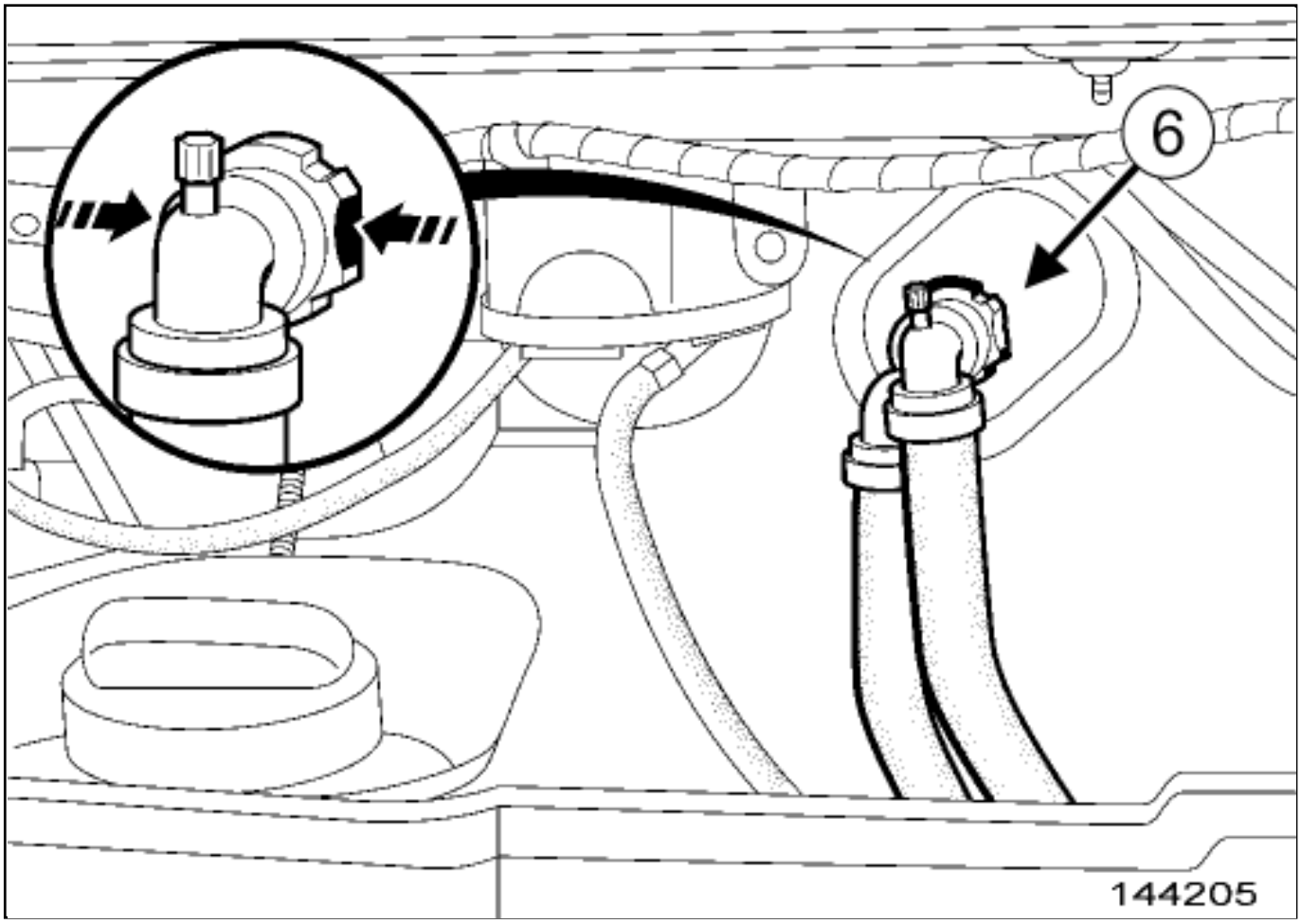
Remove the intercooler air inlet pipe seal.



- Fit a toolPipe clamps.(Ms. 583) (5) on the low pressure pipe of the power-assisted steering circuit.

- Separate the low pressure pipe clip of the power-assisted steering circuit on the power-assisted steering pump Power-assisted steering assembly: Exploded view (36B, Power-assisted steering).

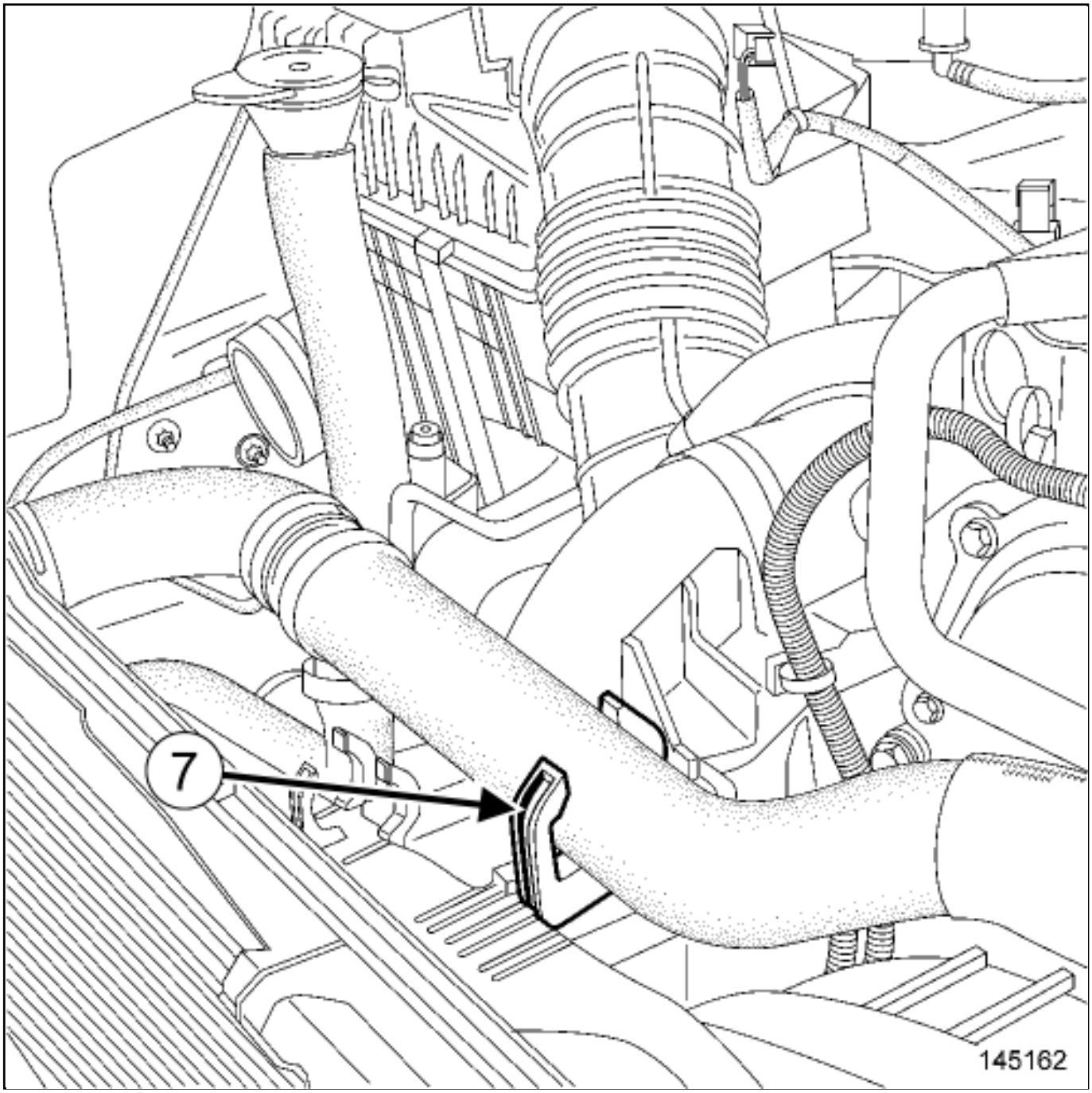
- Disconnect the low pressure pipe from the power-assisted steering circuit.



- Unclip the coolant pipes from the heater matrix(6) .

- Separate the clip of the cooling radiator inlet pipe on the cooling radiator using aRemote operation pliers for hose clips.(Mot. 1448) Coolant circuit assembly: Exploded view .

- Disconnect the cooling radiator inlet pipe from the cooling radiator.



- Unclip the cooling radiator inlet pipe from the front end panel at(7) .

- Separate the clip of the expansion bottle lower coolant pipe on the expansion bottle using aRemote operation pliers for hose clips.(Mot. 1448) Coolant circuit assembly: Exploded view .

- Disconnect the expansion bottle lower coolant pipe from the expansion bottle.

- Separate the clip of the cooling radiator outlet pipe on the cooling radiator using aRemote operation pliers for hose clips.(Mot. 1448) Coolant circuit assembly: Exploded view .

- Disconnect the cooling radiator outlet pipe from the cooling radiator.

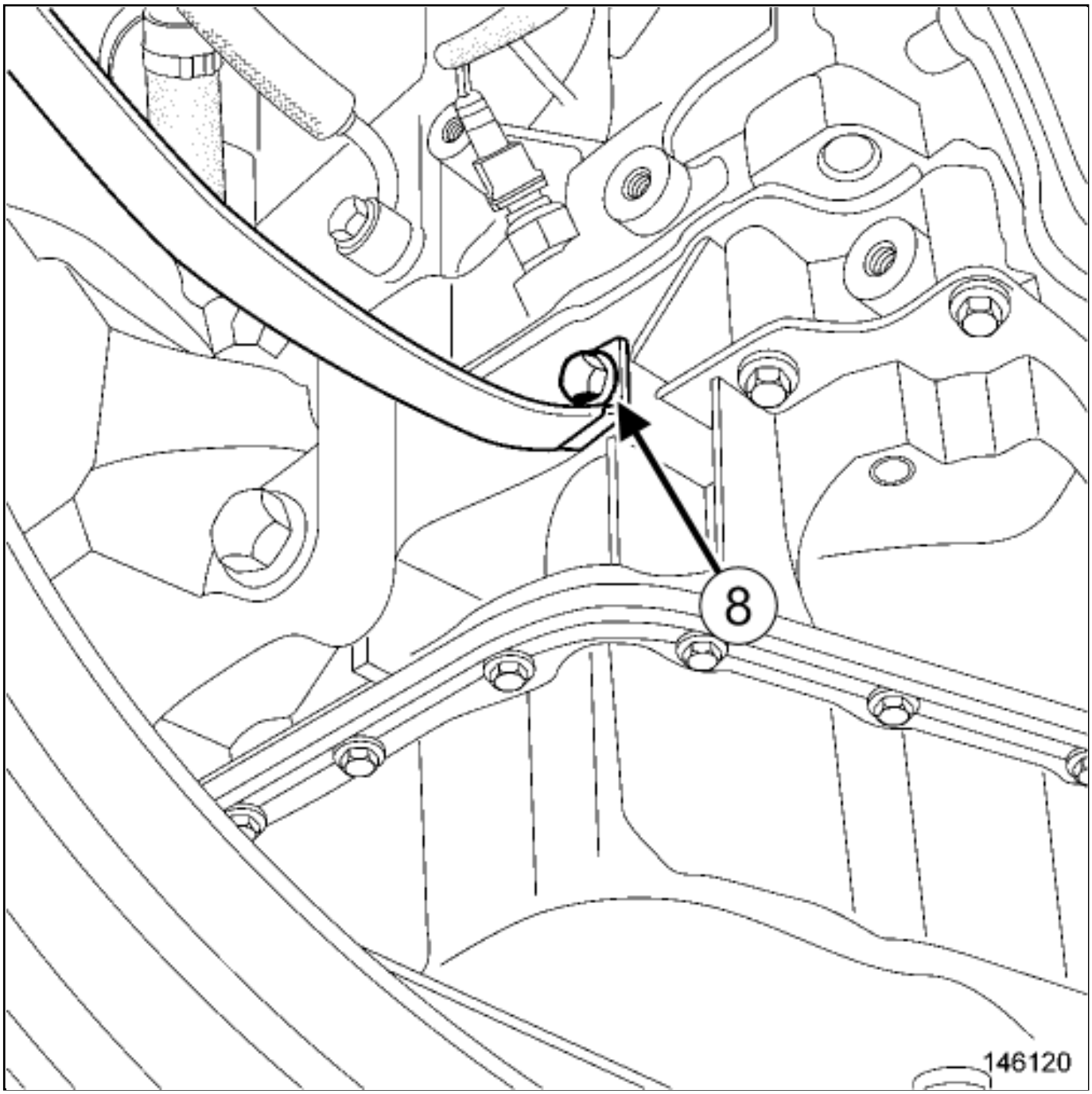
❑ Separate the clip of the additional cooling radiator outlet pipe on the additional cooling radiator using a Remote operation pliers for hose clips.(Mot. 1448) Coolant circuit assembly: Exploded view .

❑ Disconnect the additional cooling radiator outlet pipe from the additional cooling radiator.

❑ Separate the clip of the exhaust gas cooler inlet pipe on the exhaust gas cooler inlet electric coolant pump using aRemote operation pliers for hose clips.(Mot. 1448) Coolant circuit assembly: Exploded view .

❑ Disconnect the exhaust gas cooler inlet pipe from the exhaust gas cooler inlet electric coolant pump.

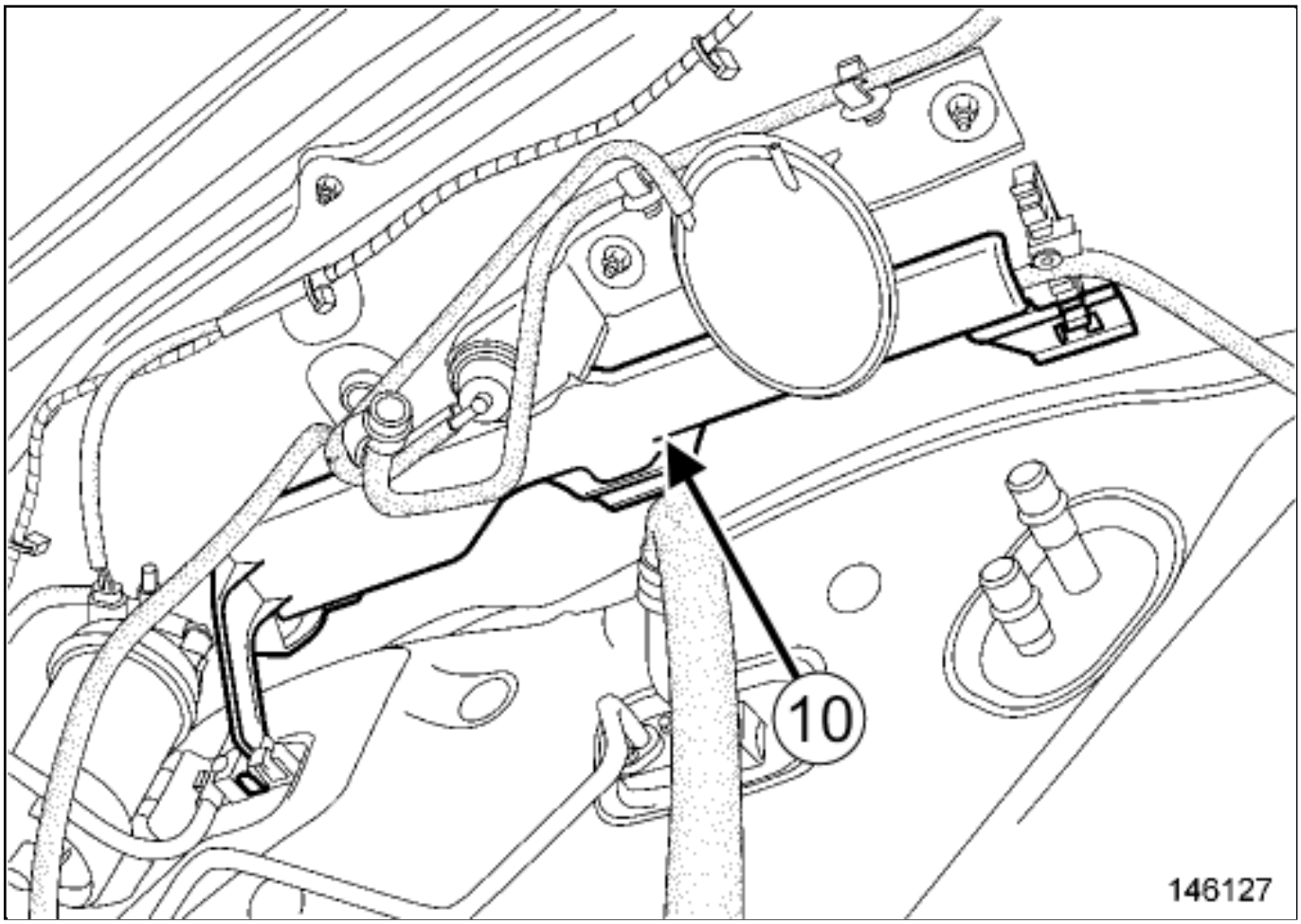
❑ Remove the bolt of power-assisted steering return pipe bracket from the front left-hand rubber pad Power-assisted steering assembly: Exploded view (36B, Power-assisted steering).



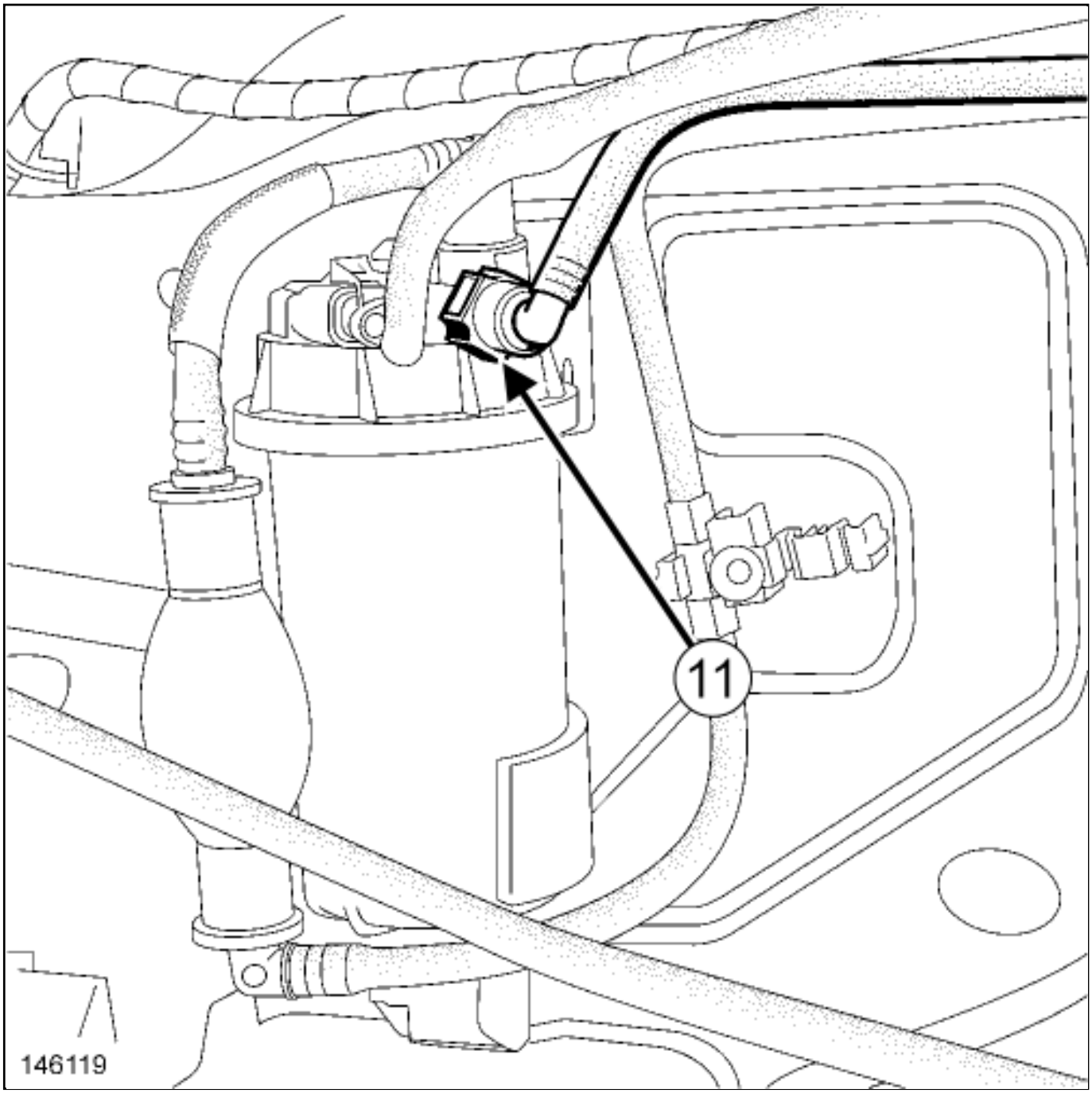
- Remove the earth strap bolt(8) .

- Separate the clip of the oil filler neck pipe on the oil filler neck using aRemote operation pliers for hose clips.(Mot. 1448) **(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view)** **(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view)** .

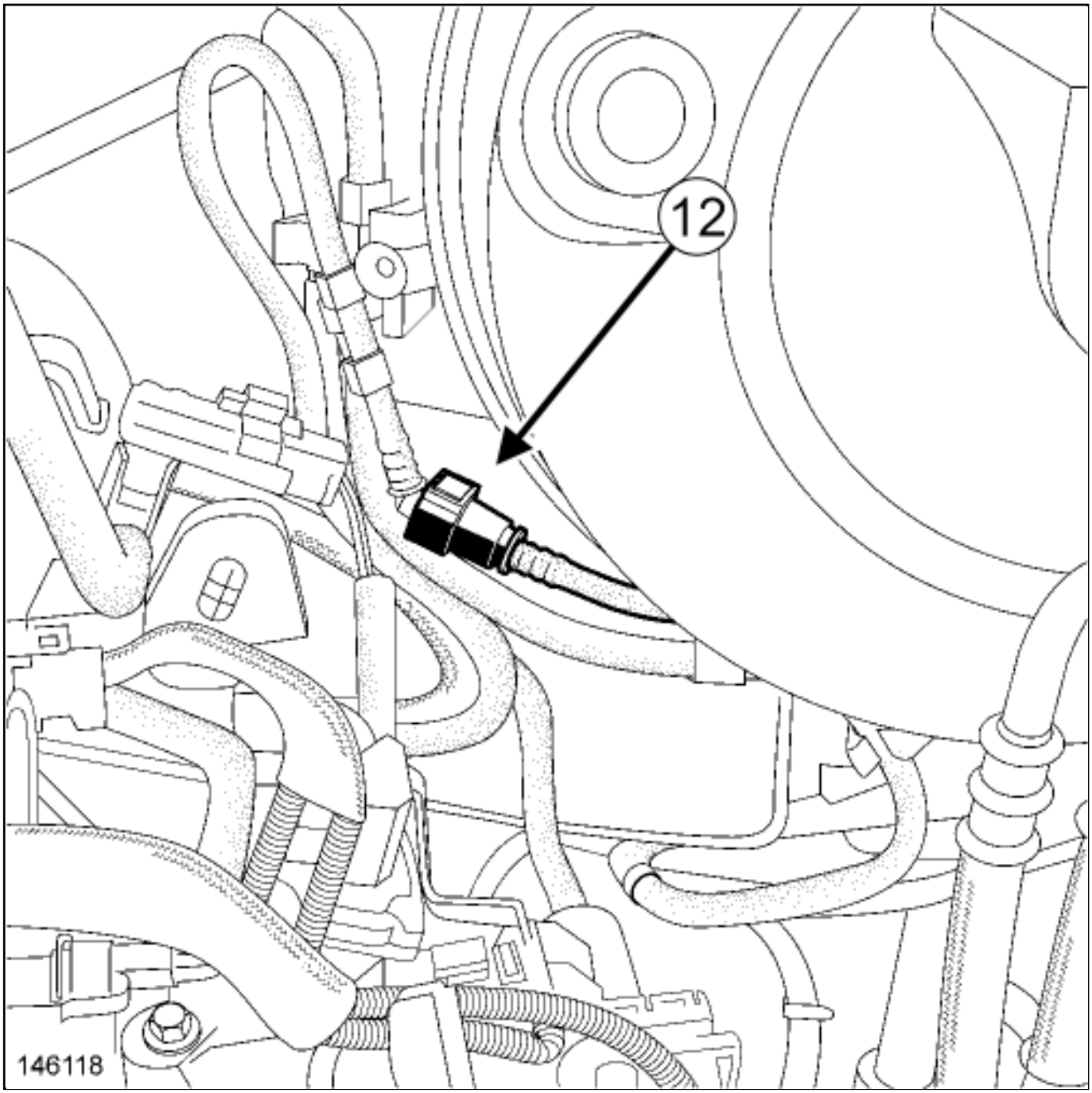
- Disconnect the clip of the oil filler neck pipe from the oil filler neck.



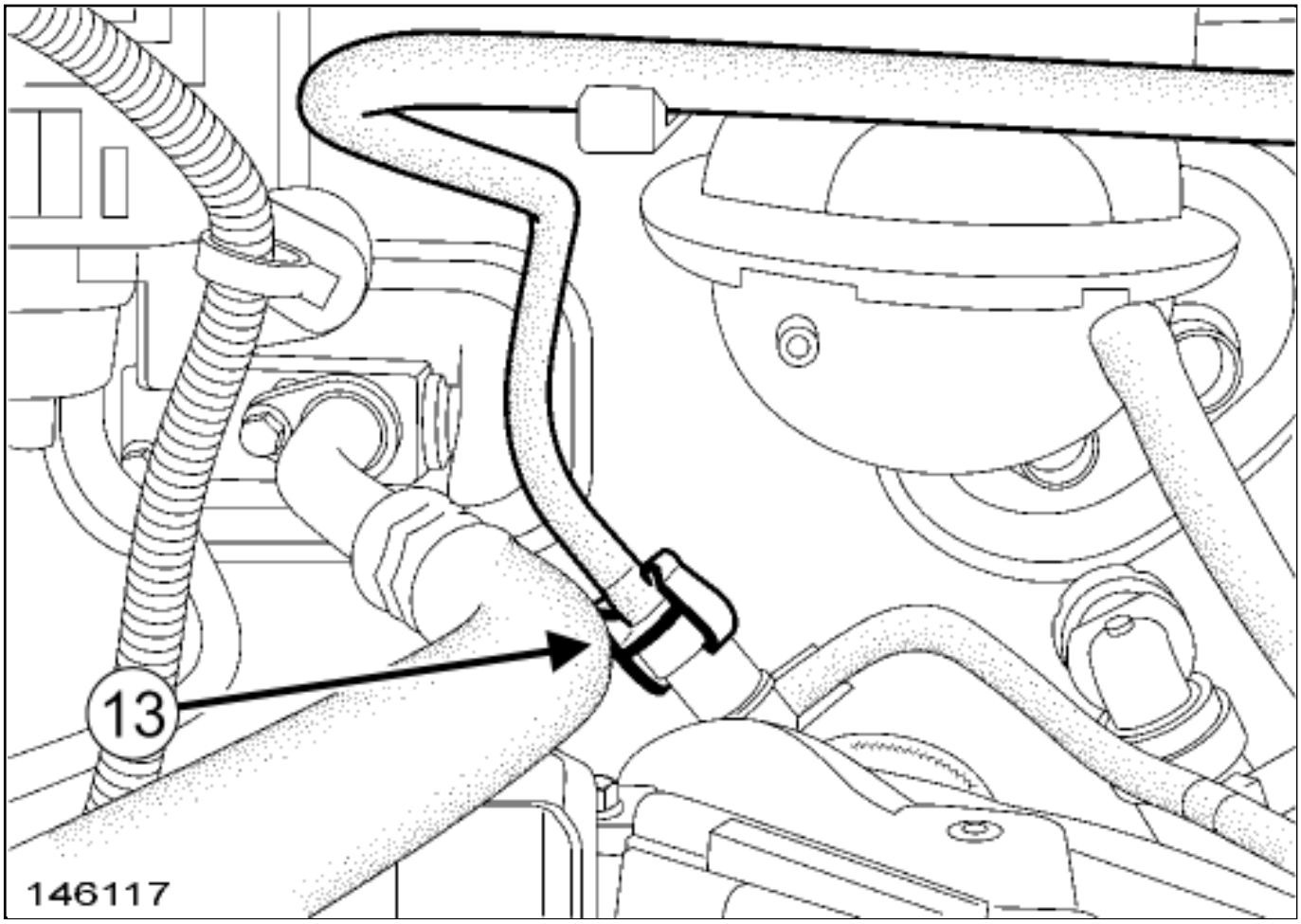
- Remove the fuel pipe protector(10) .



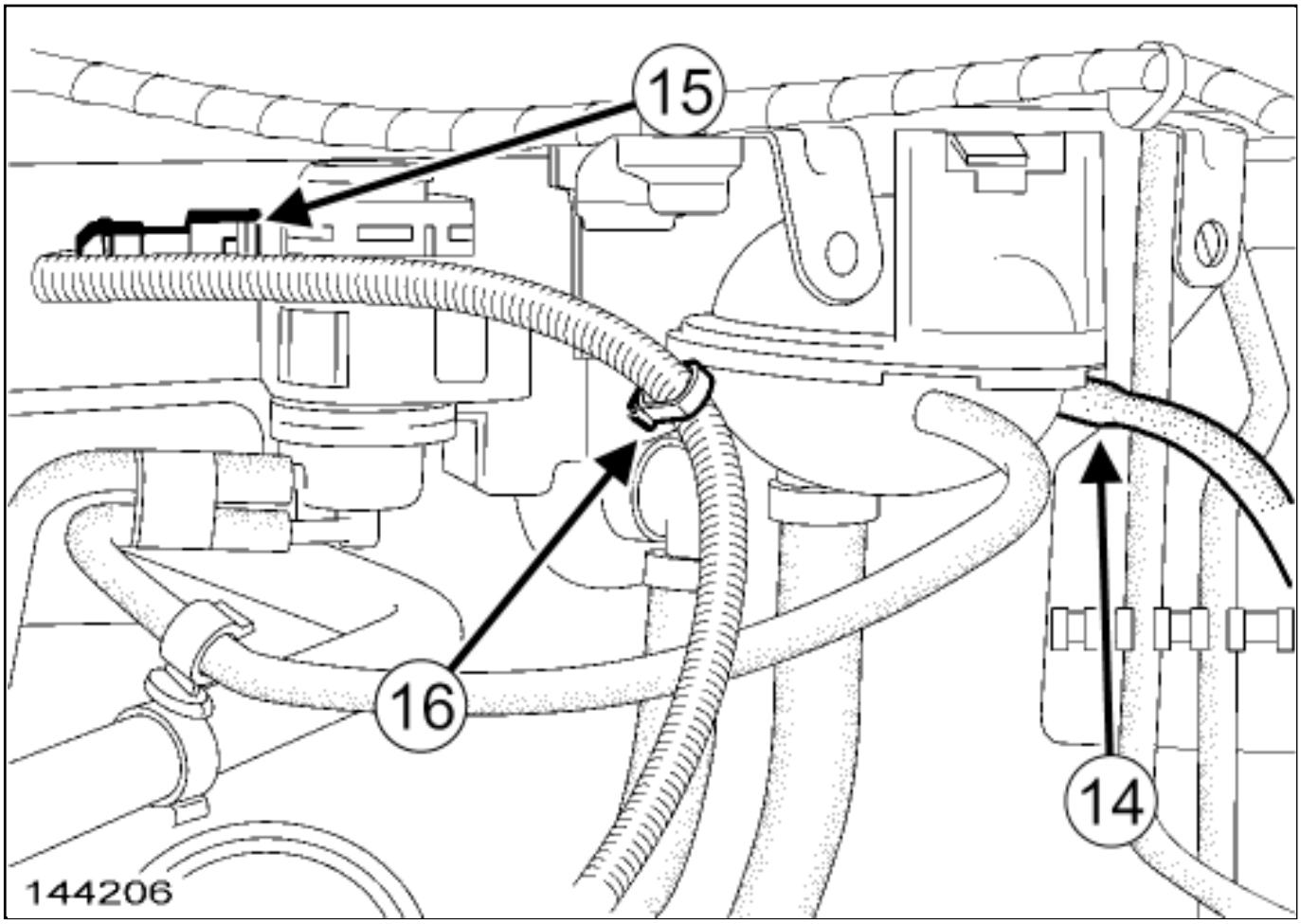
- Disconnect the fuel supply pipe(11) from the fuel filter.
- Unclip the fuel supply pipe.



- Disconnect the fuel return pipe from the fuel return pipe union(12) .
- Unclip the fuel return pipe.



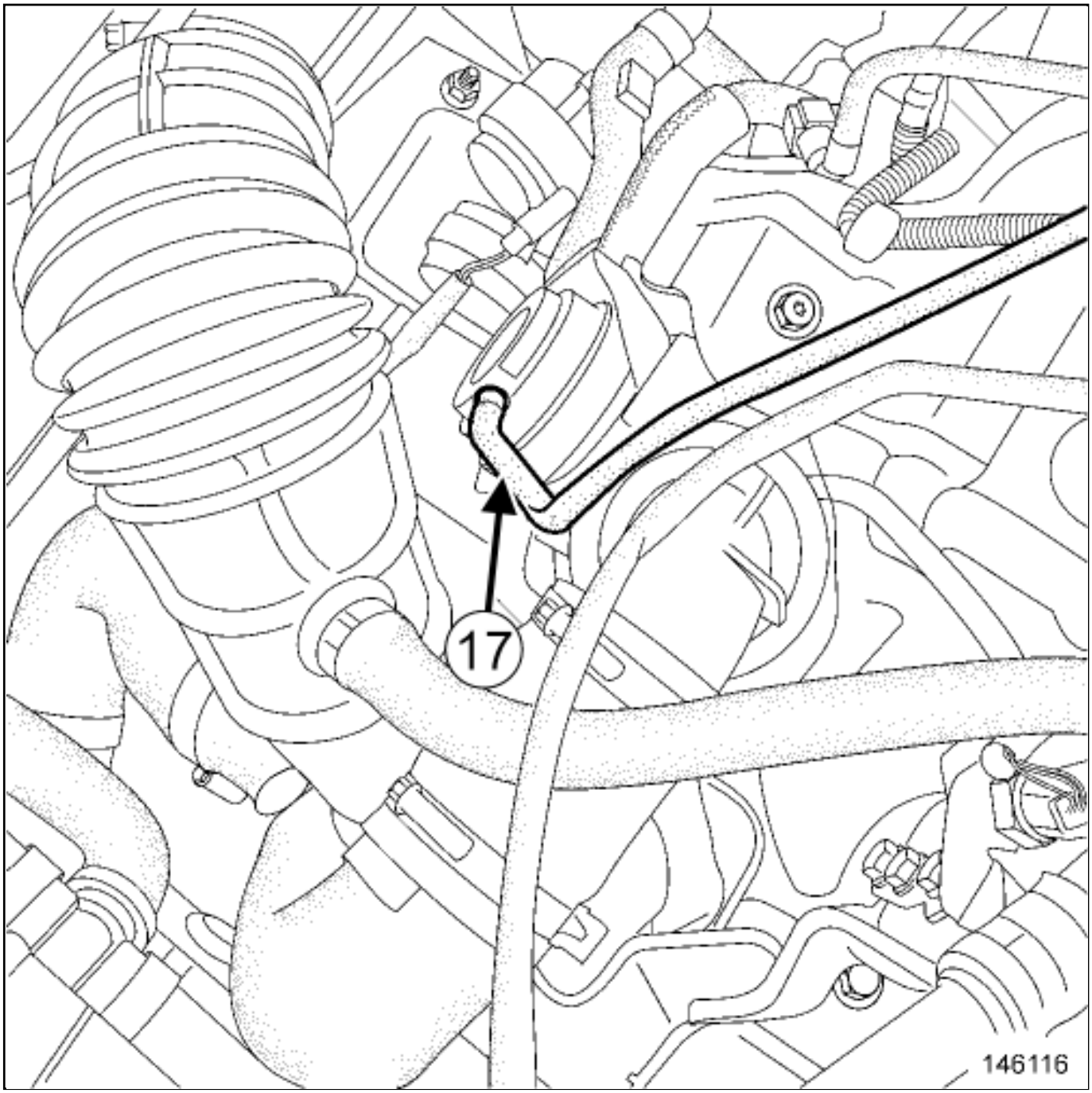
- Disconnect the brake servo non-return valve(13) from the vacuum pump.



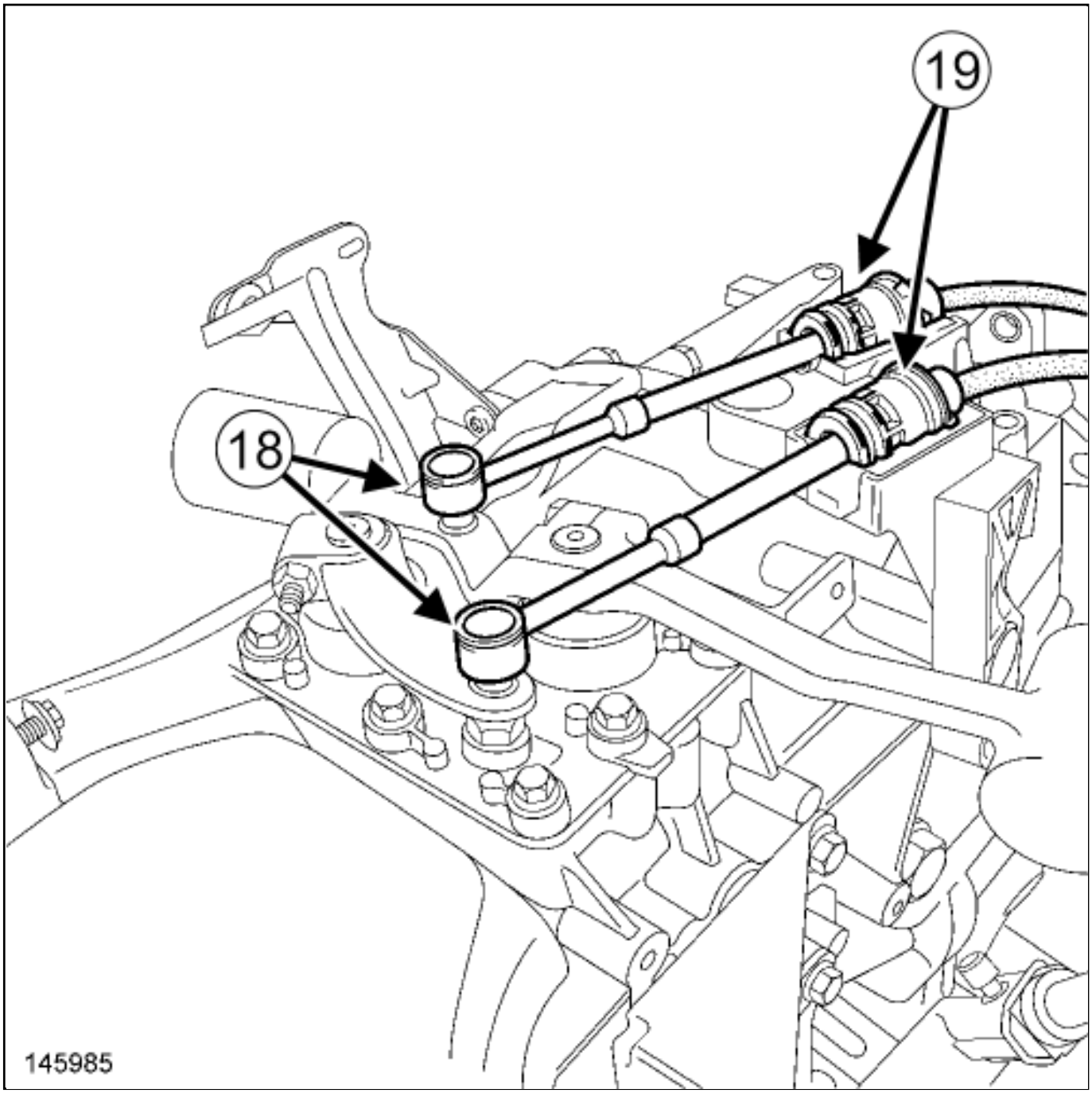
Disconnect:

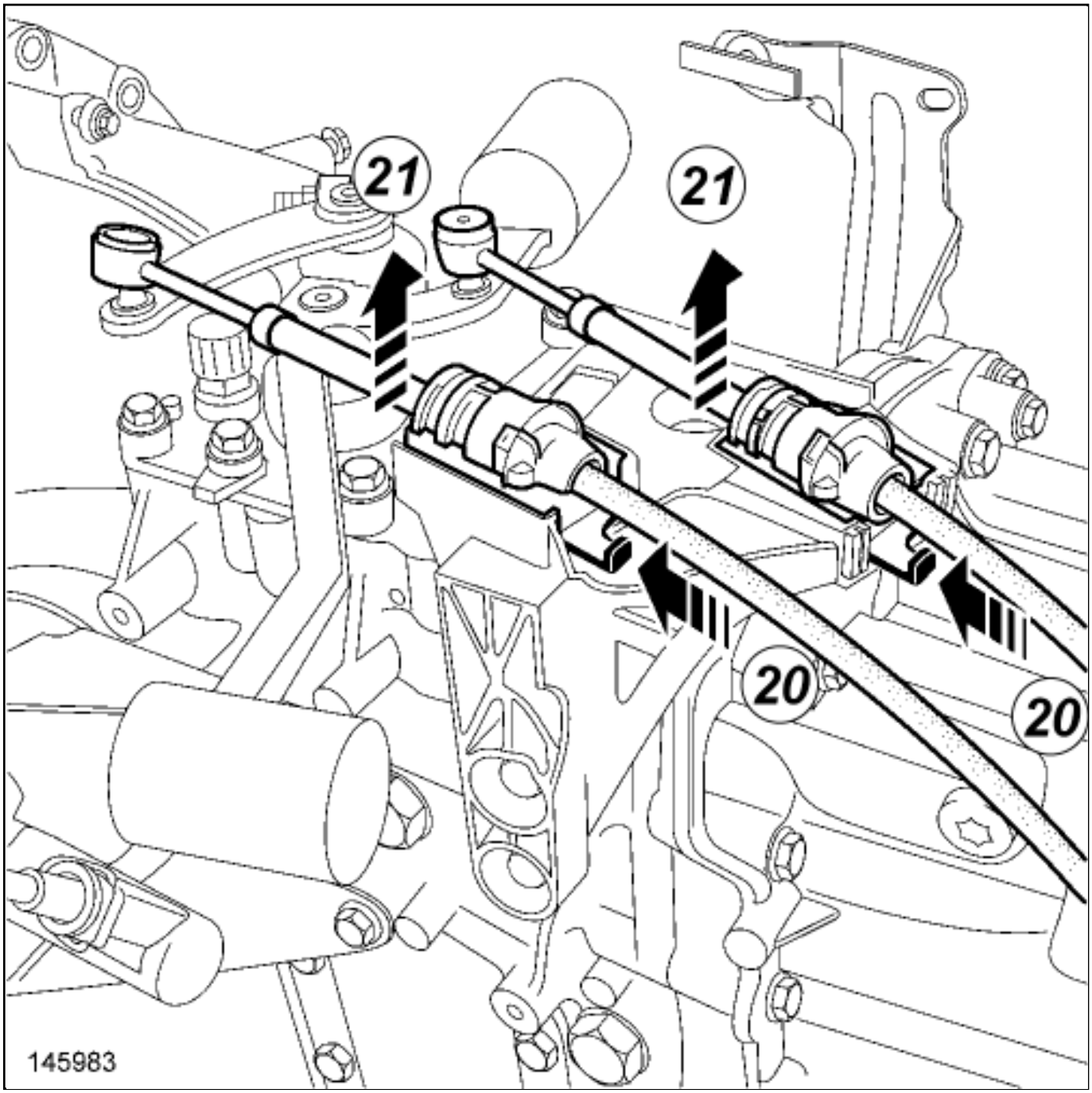
- the vacuum hose from the vacuum tank(14) ,
- the connector(15) of the turbocharging pressure regulation solenoid valve.

Unclip the turbocharging pressure regulation solenoid valve wiring from the vacuum tank support(16) .



Disconnect the vacuum hose from the turbocharger(17) .


19
18
145985

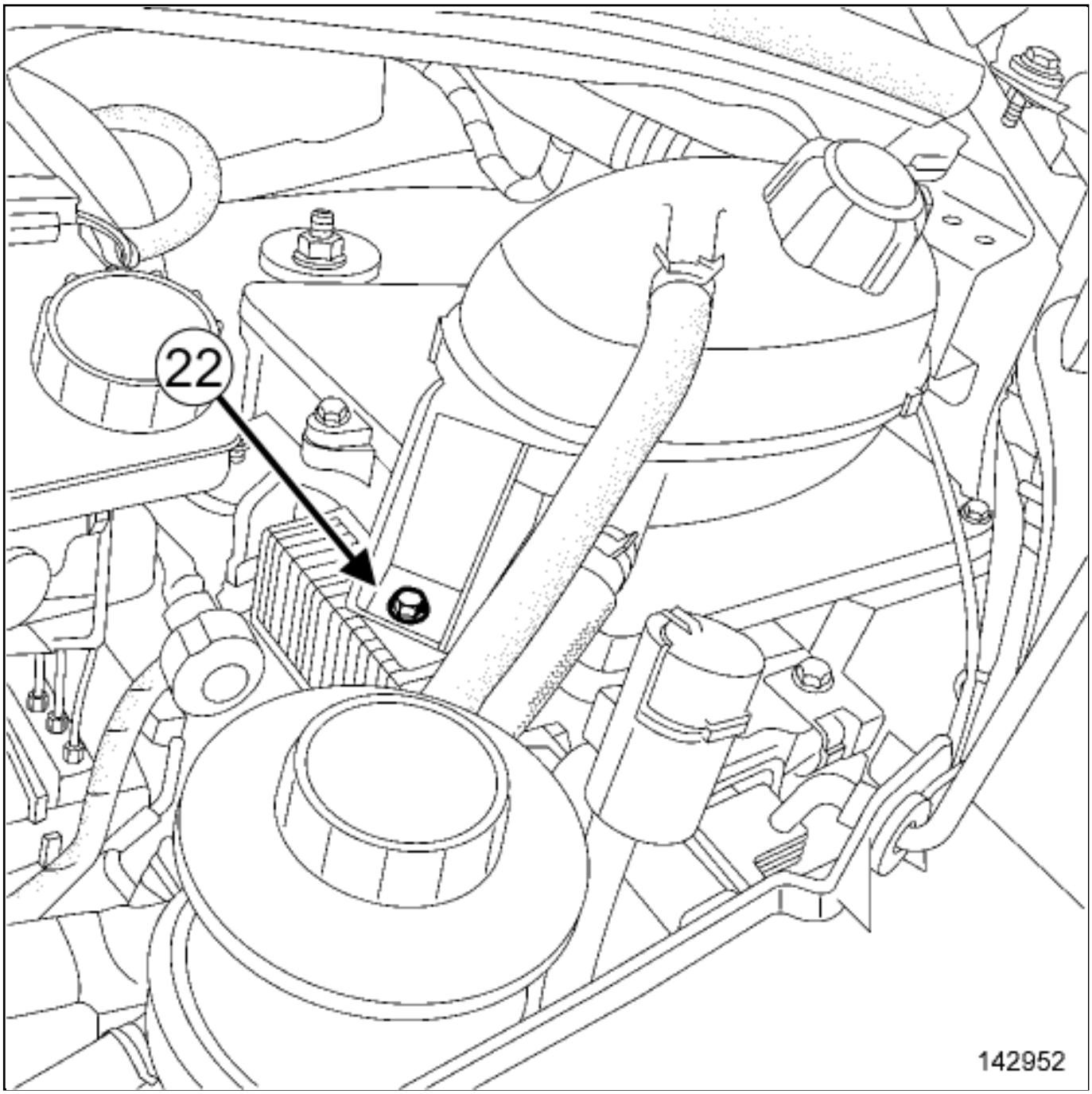


Unclip the anchoring ball joints(18) using an open-jawed spanner.

Unclip the sheath stops from the gear control cables(19) :

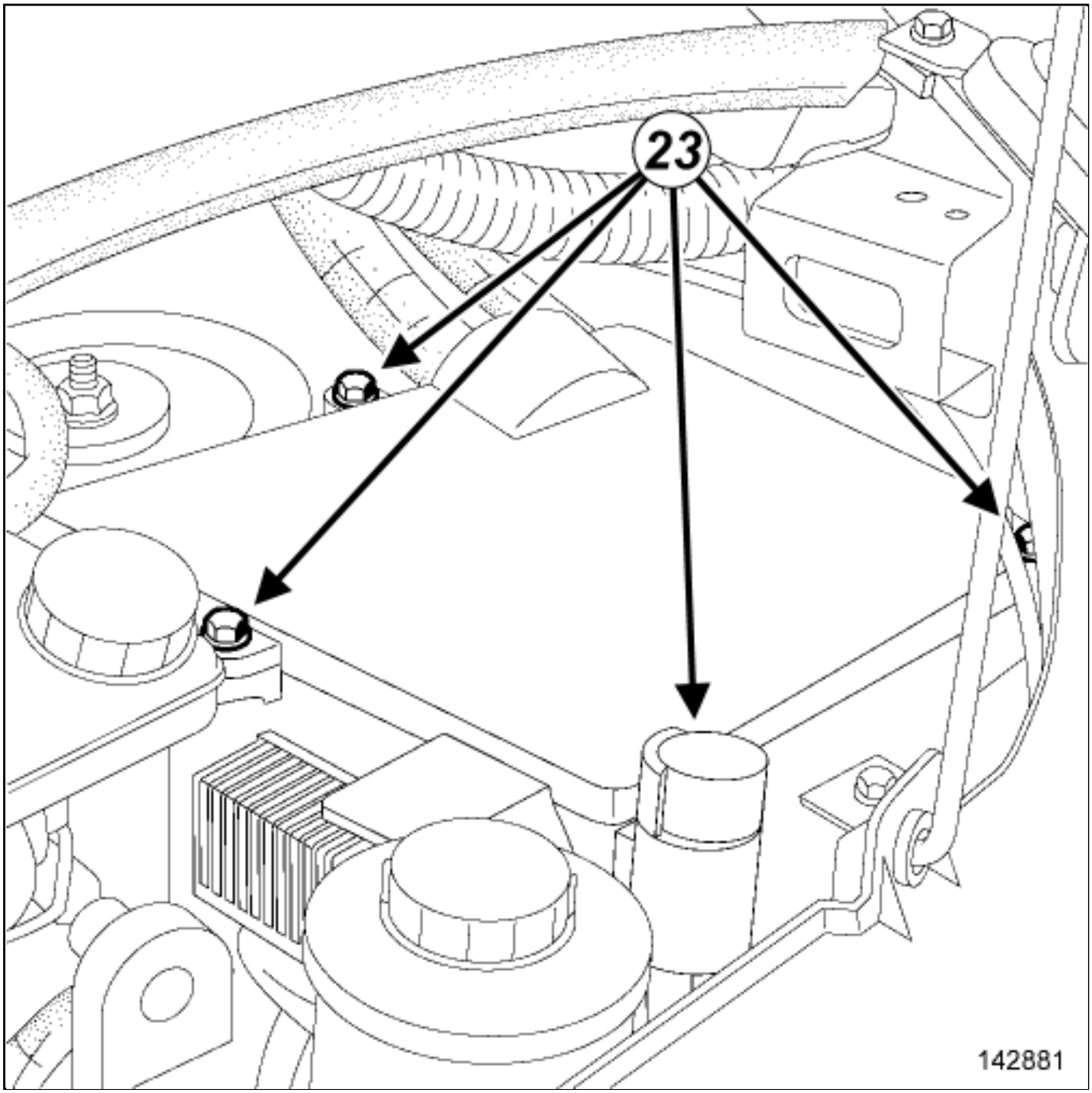
- by pressing the tab(20) ,
- by pulling the gear control cables(21) .

Move aside the clutch slave cylinder support Gearbox assembly: Exploded view (21A, Manual gearbox).



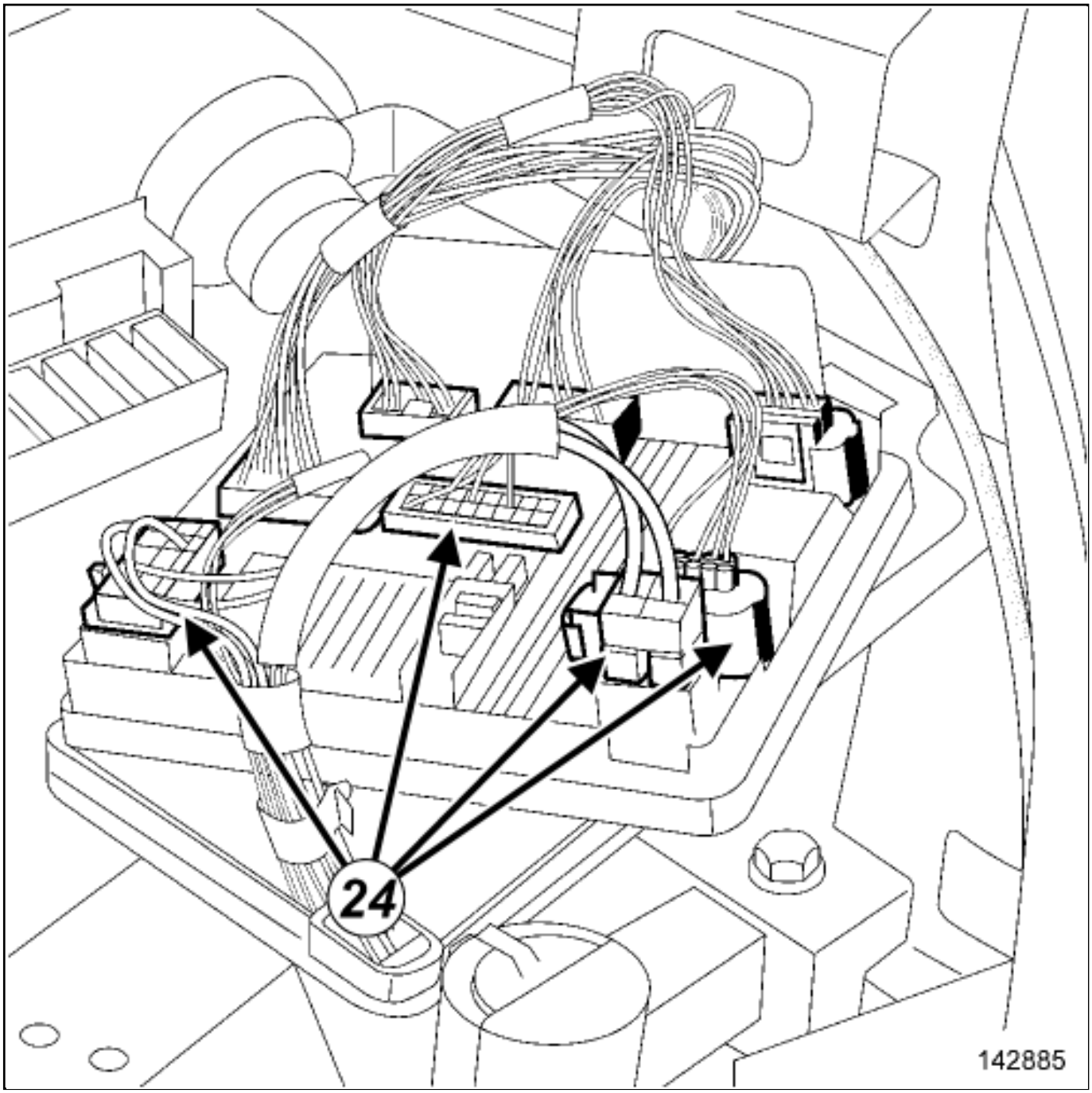
Remove the bolt(22) from the expansion bottle.

Remove the expansion bottle.

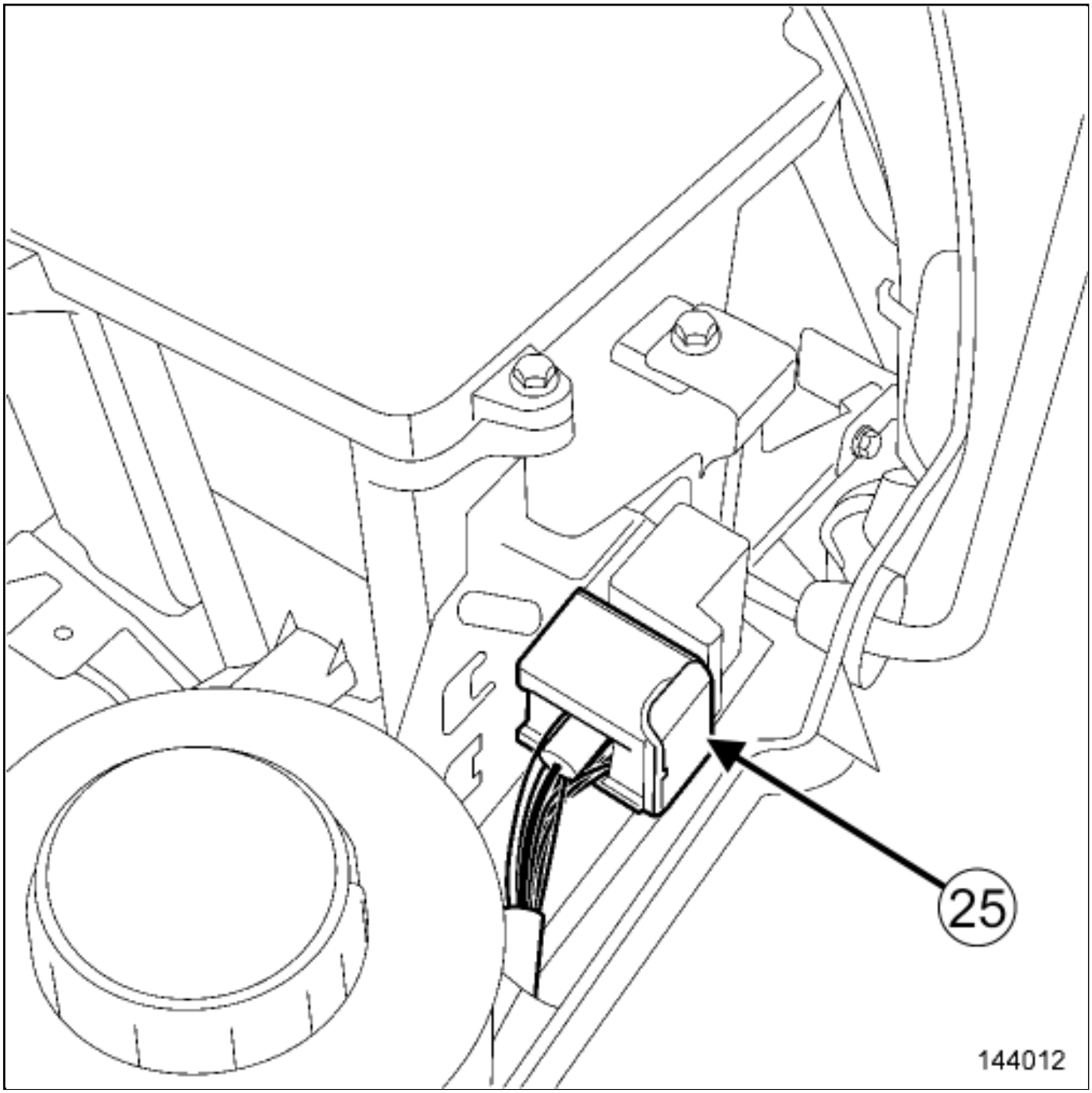


Remove:

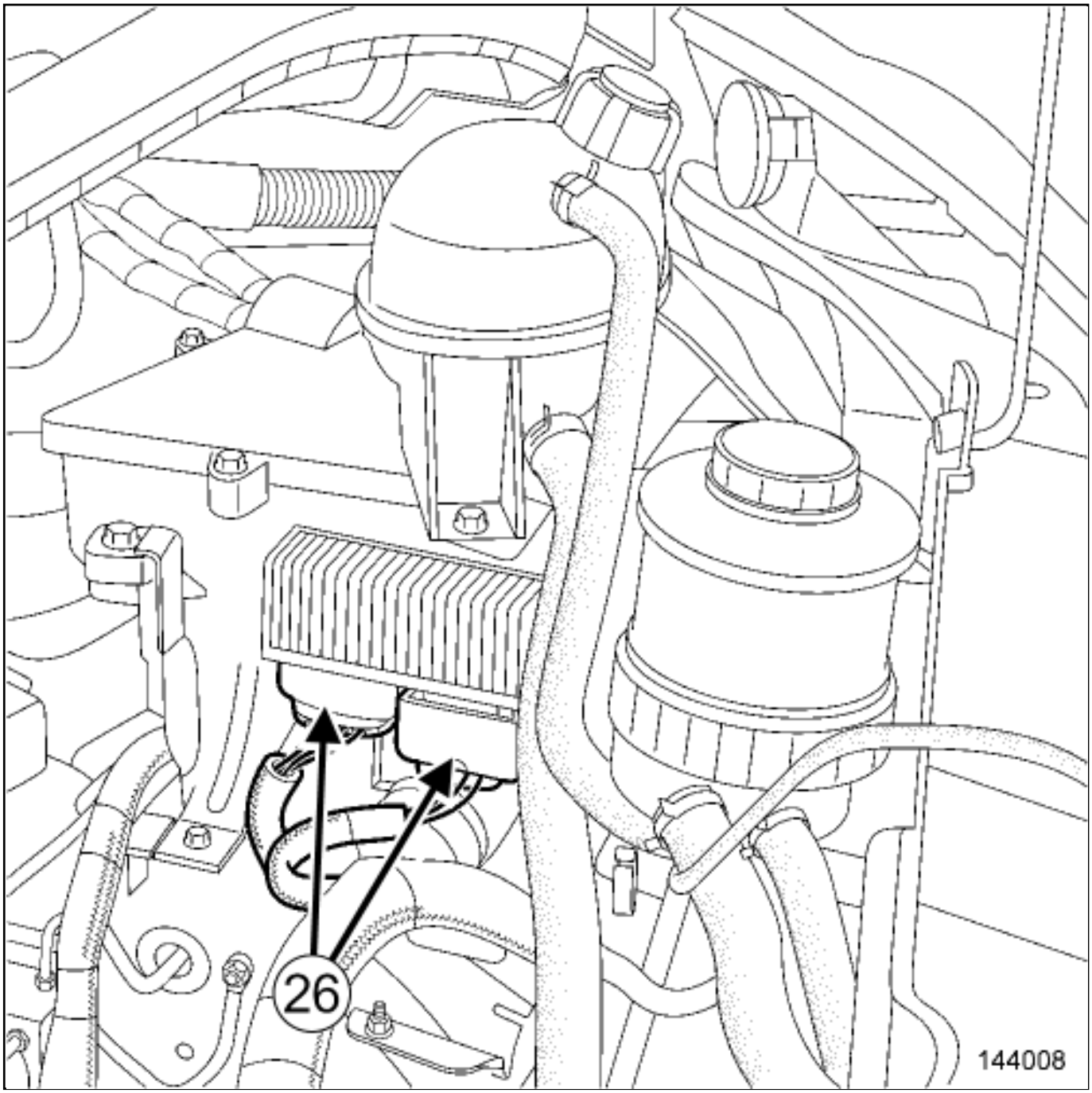
- the bolts(**23**) from the Protection and Switching Unit cover,
- the Protection and Switching Unit cover.



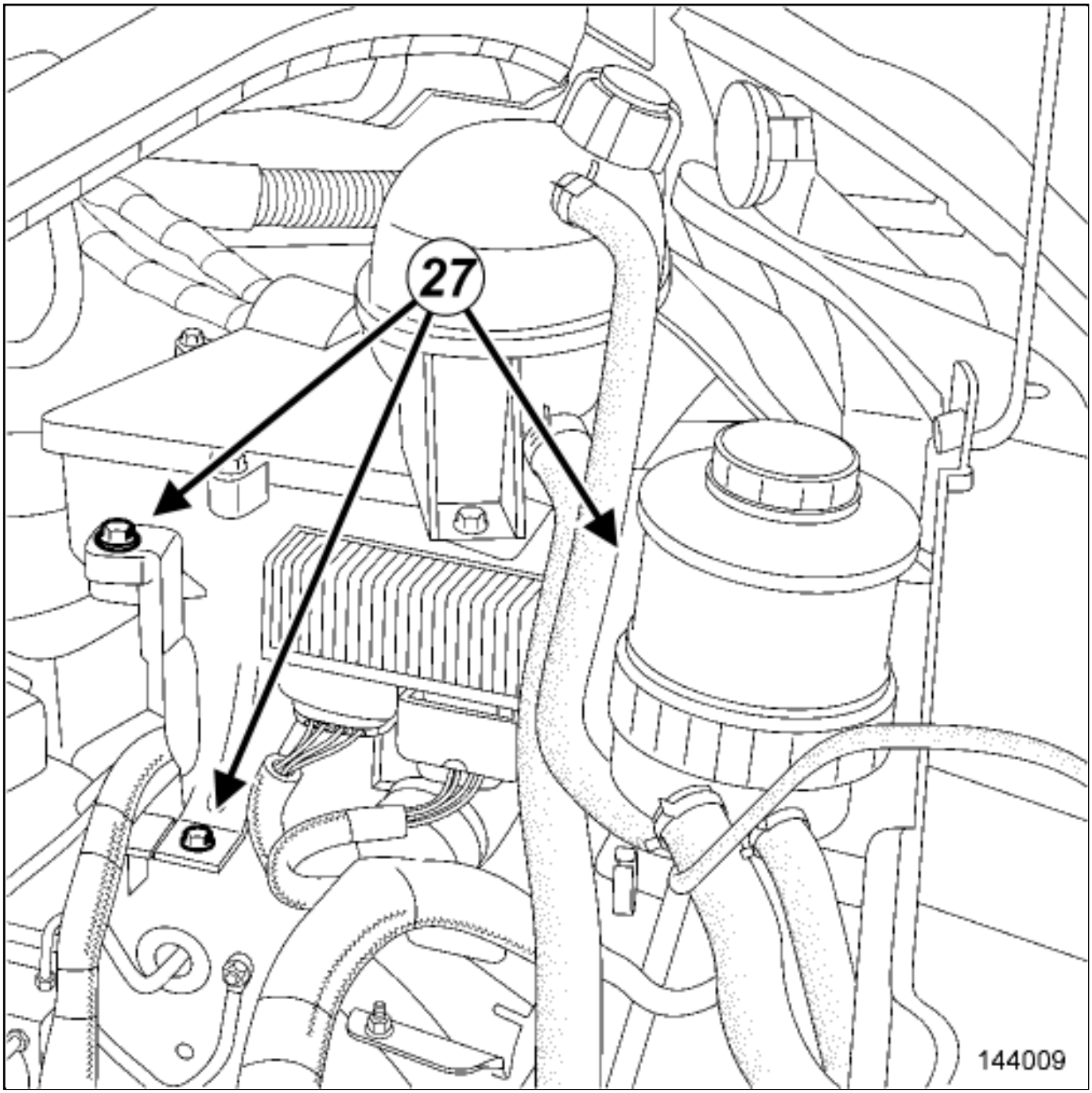
Disconnect the connectors(24) from the Protection and Switching Unit.



Disconnect the pre-postheating unit connector(25) .

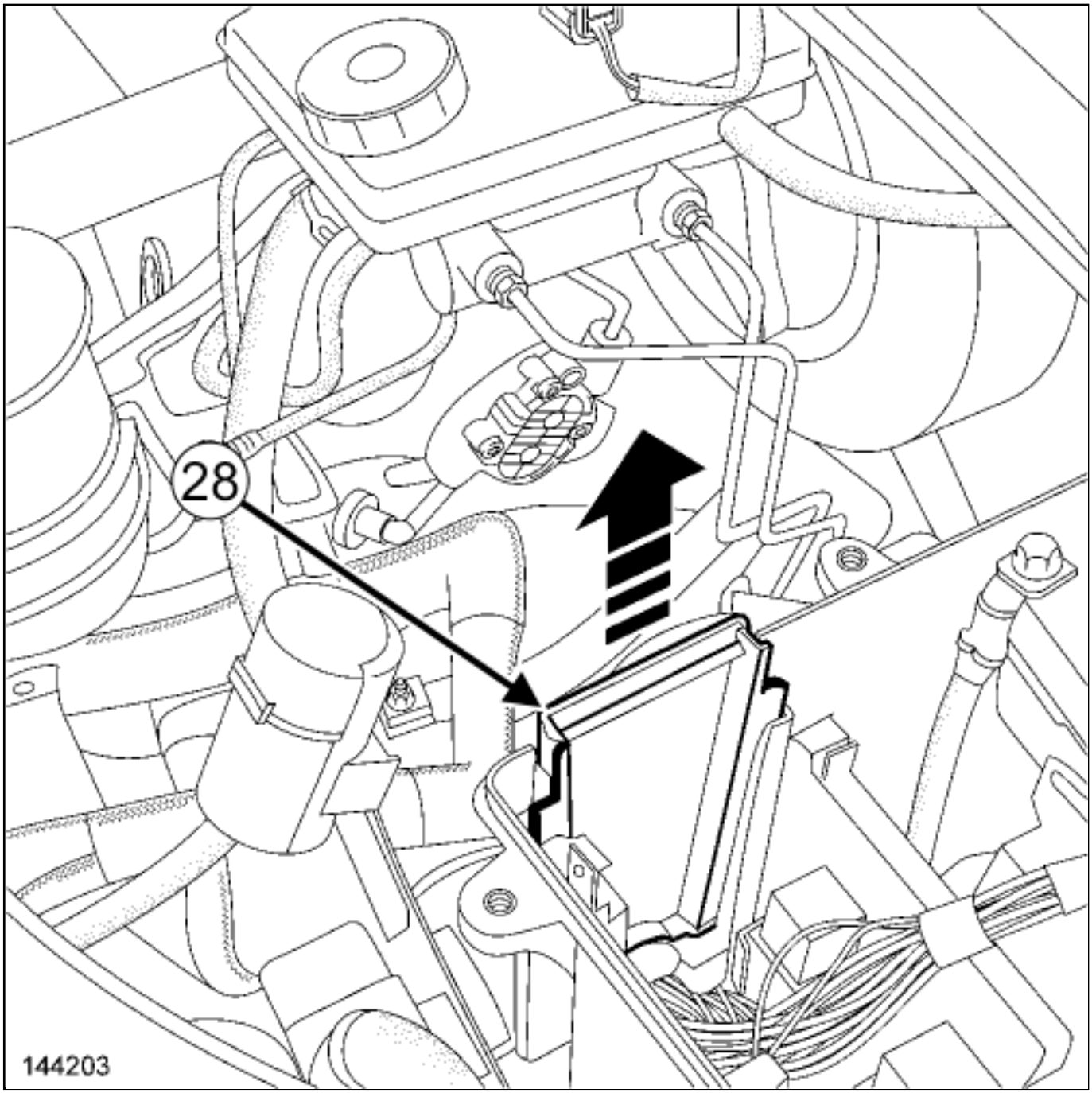


Disconnect the thermoplunger unit connectors(26) .

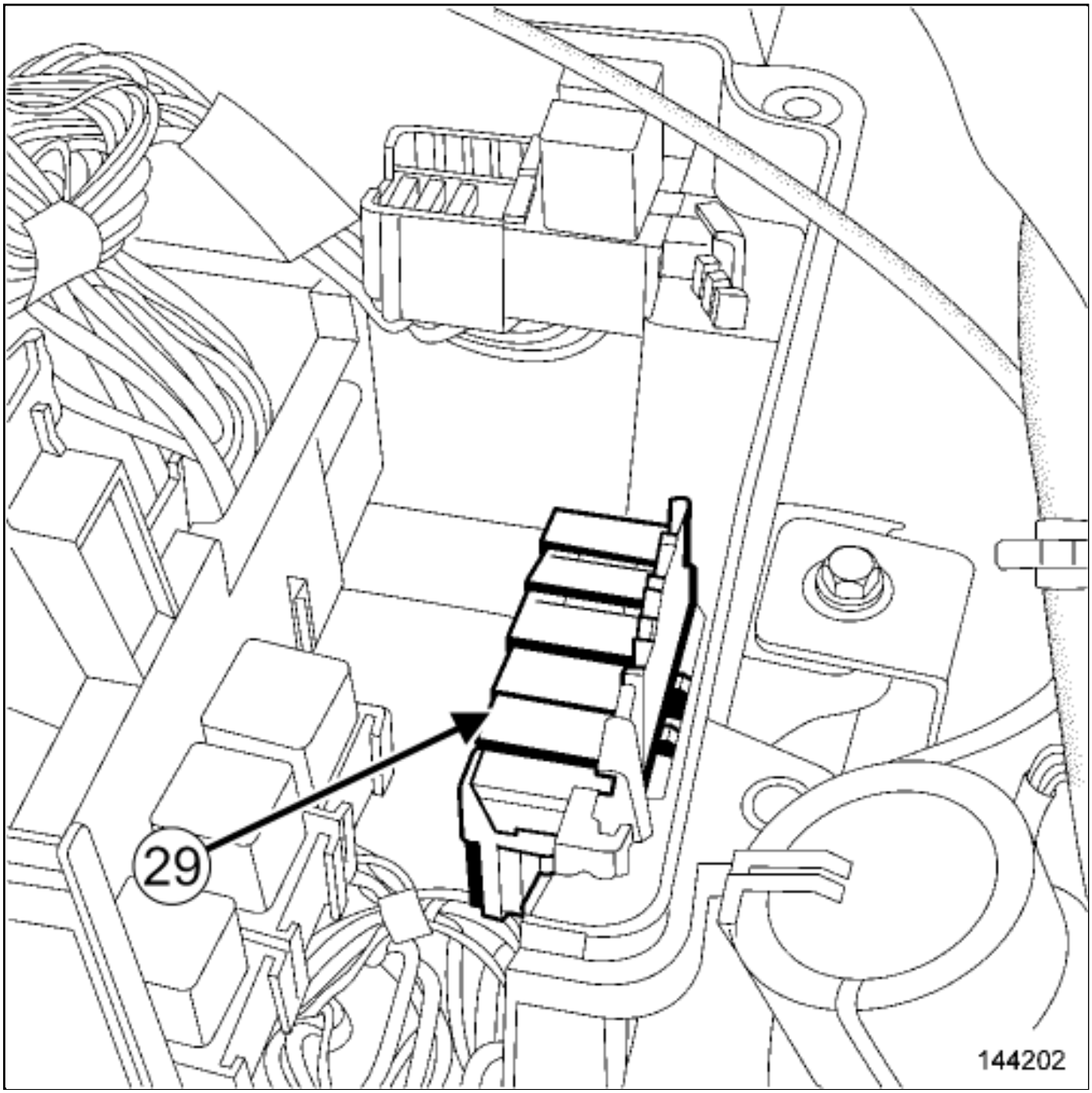


Remove:

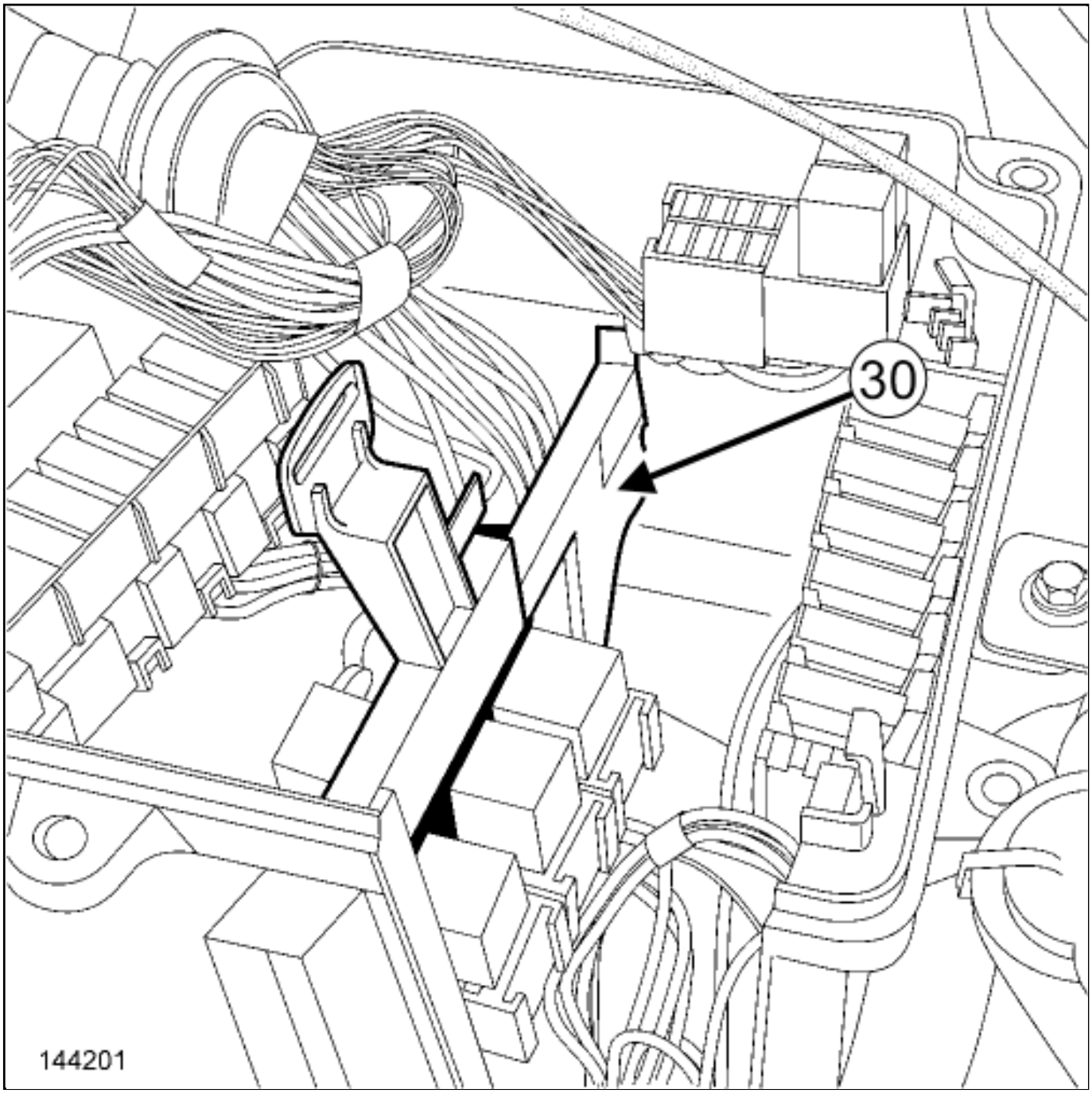
- the bolt(27) of the thermoplunger unit mounting,
- the thermoplunger unit mounting.



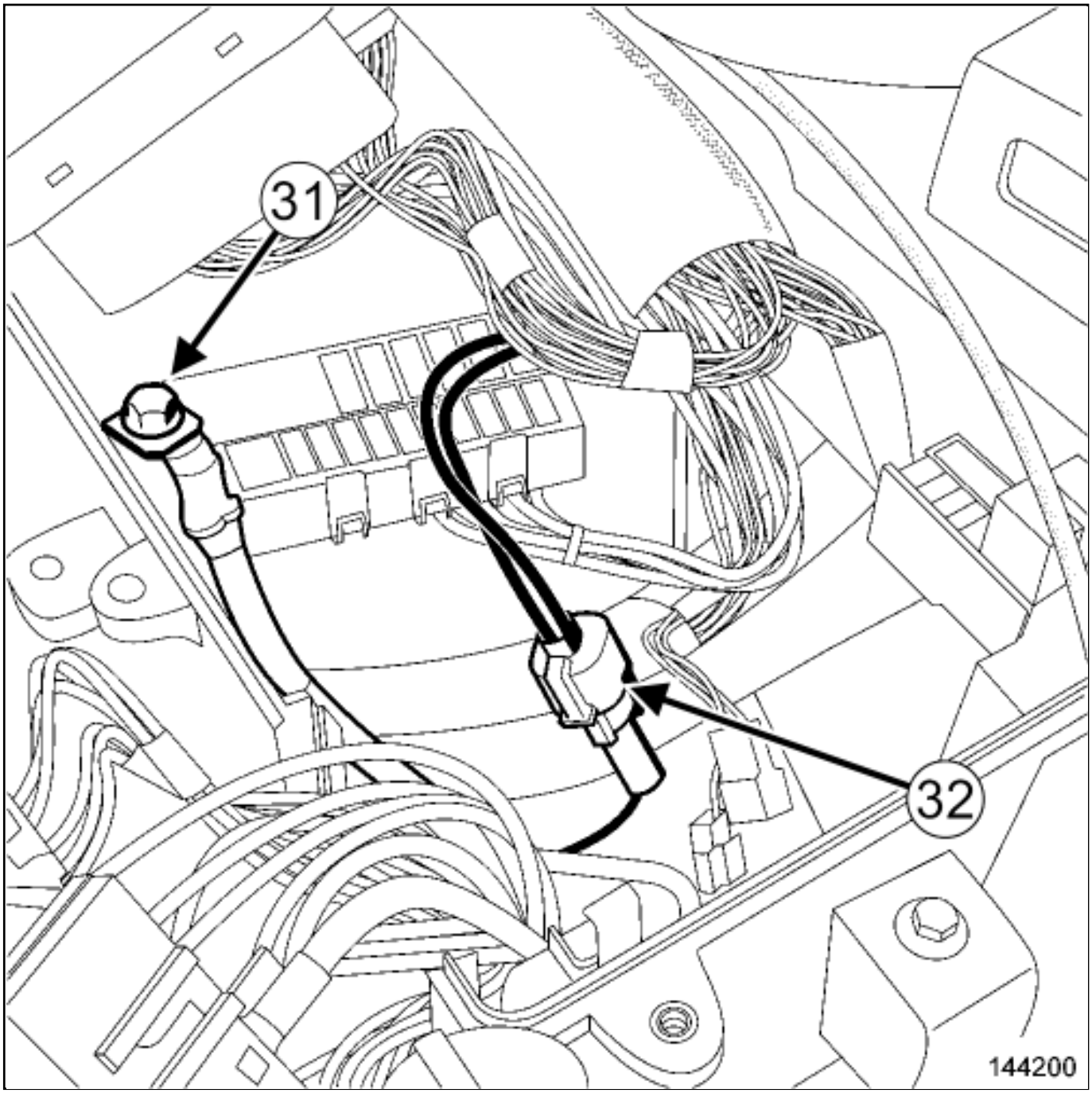
Remove the engine wiring flap(28) .



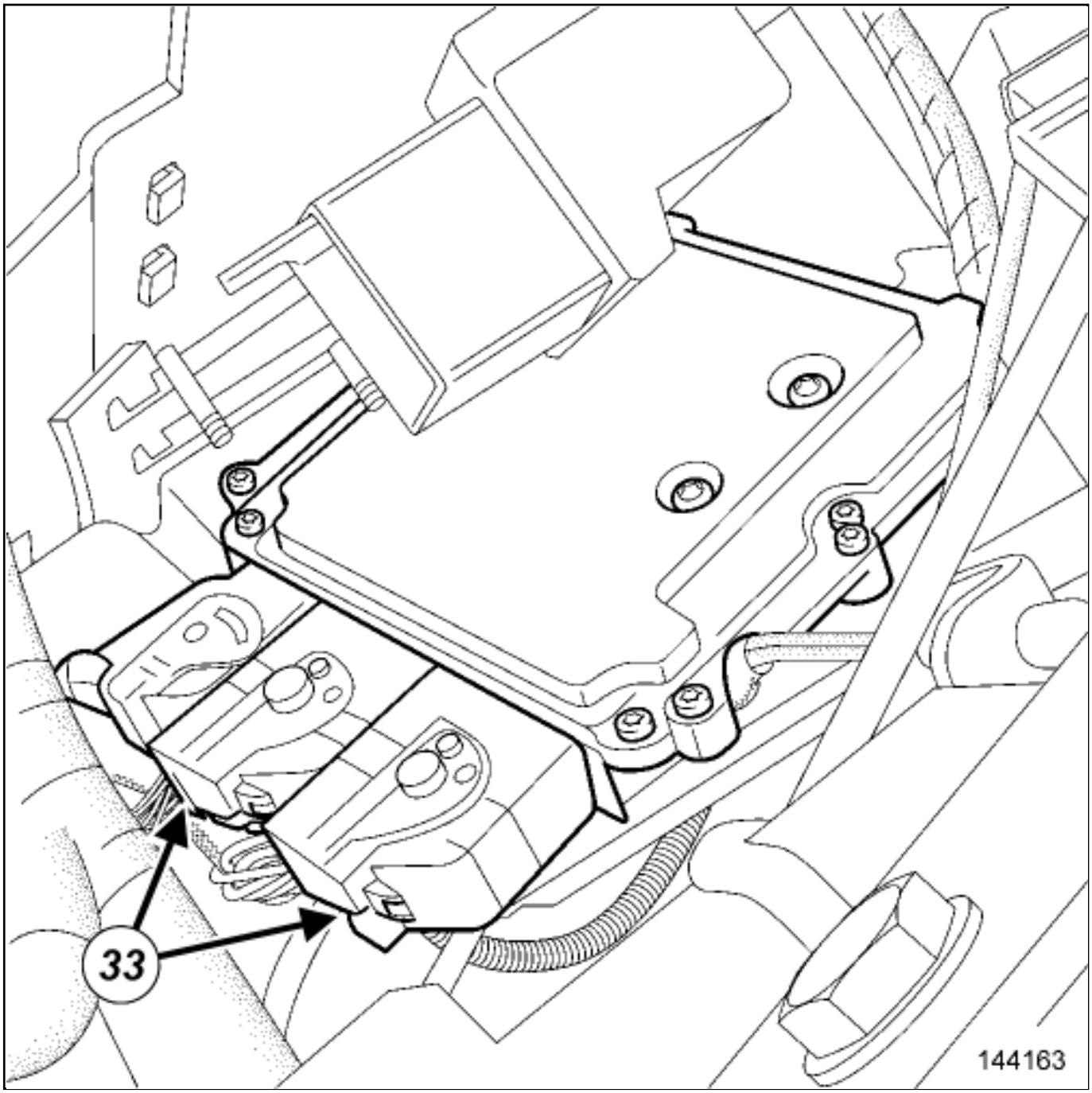
Unclip the fuse holder partition(29) from the Protection and Switching Unit.



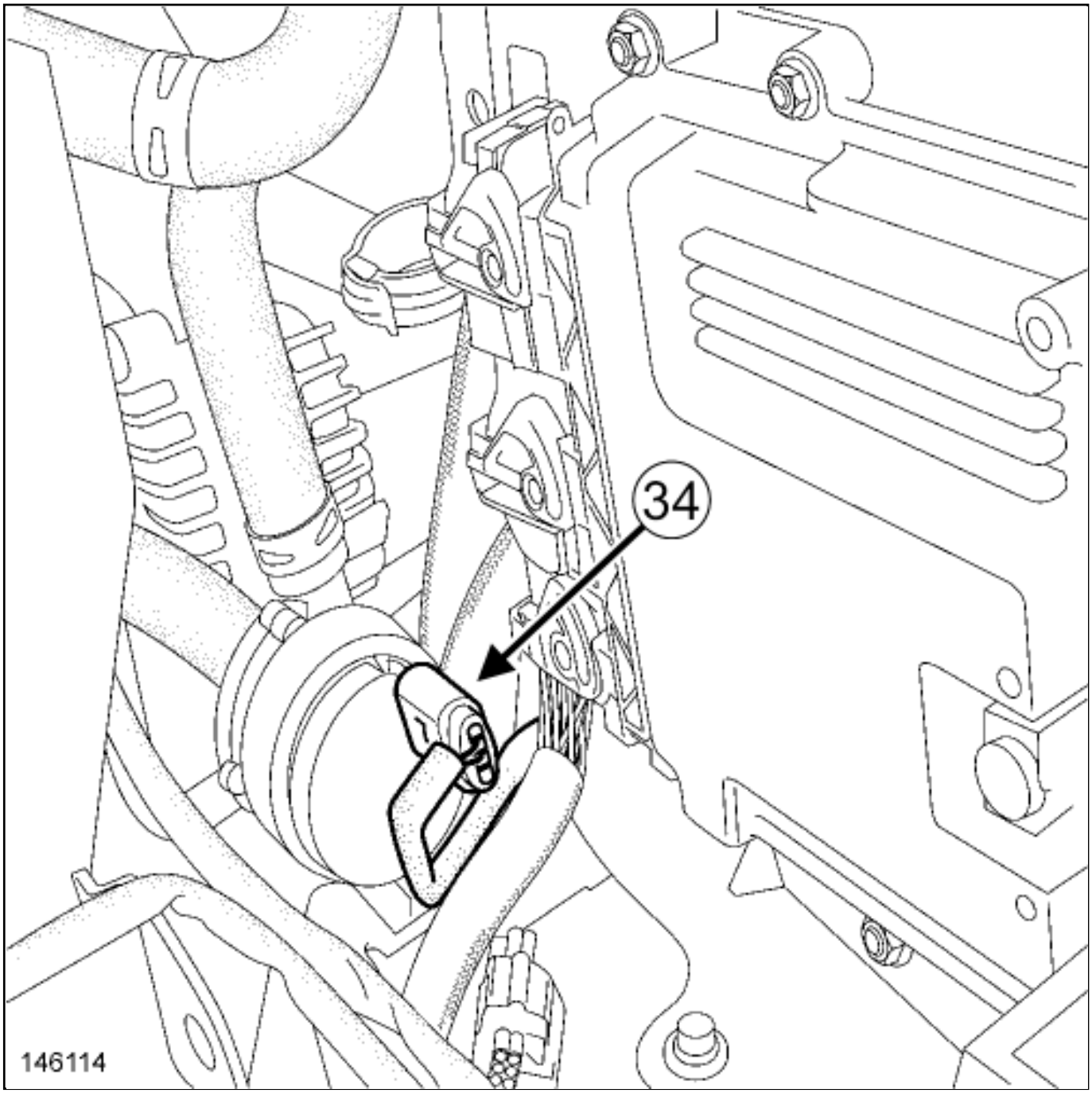
Unclip the relay holder partition(30) from the Protection and Switching Unit.



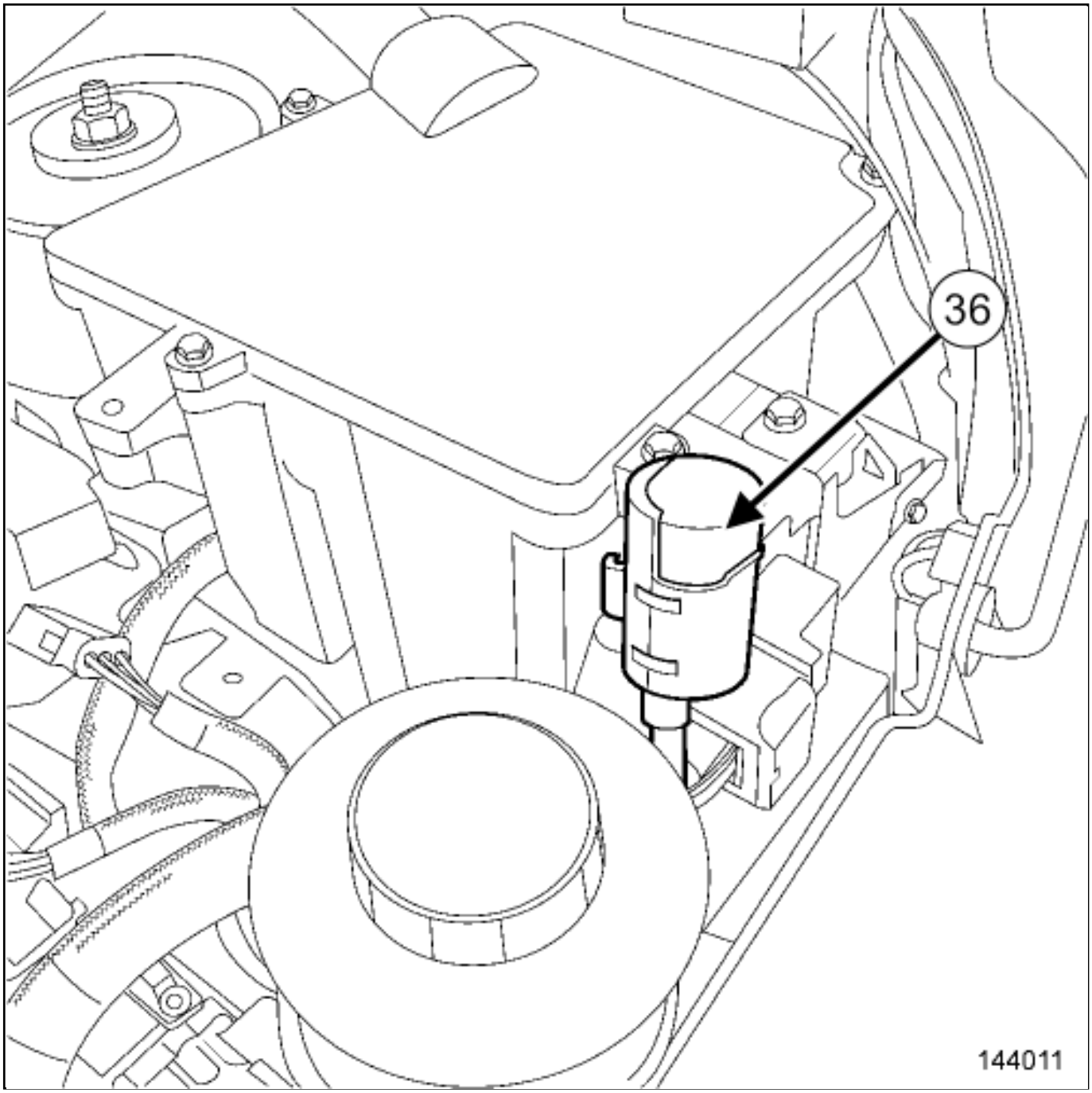
- Remove the nut(31) of the supply cables.
- Move aside the supply cables.
- Disconnect the connector(32) of the supply cables.



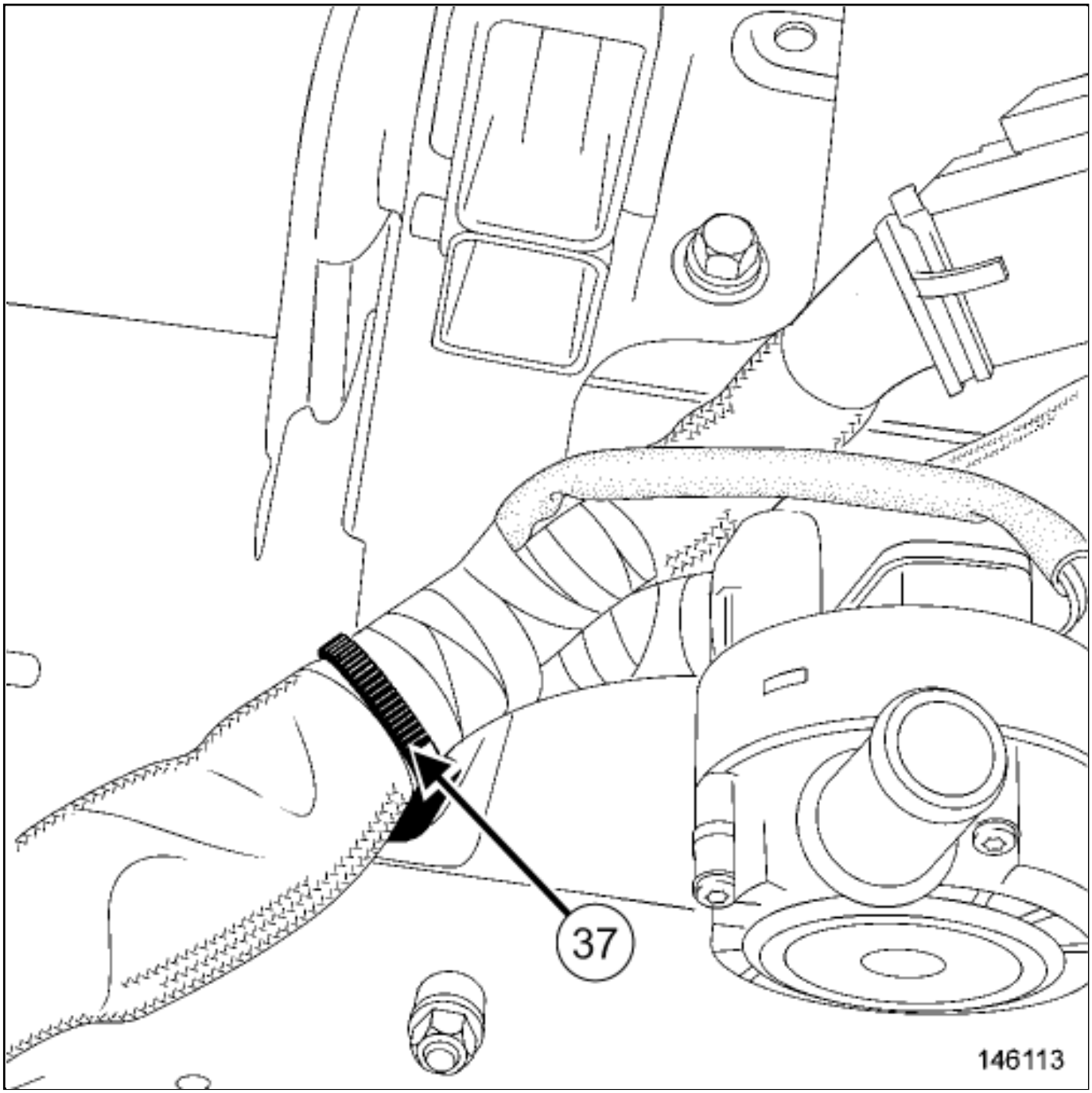
Disconnect the injection computer connectors(33) .



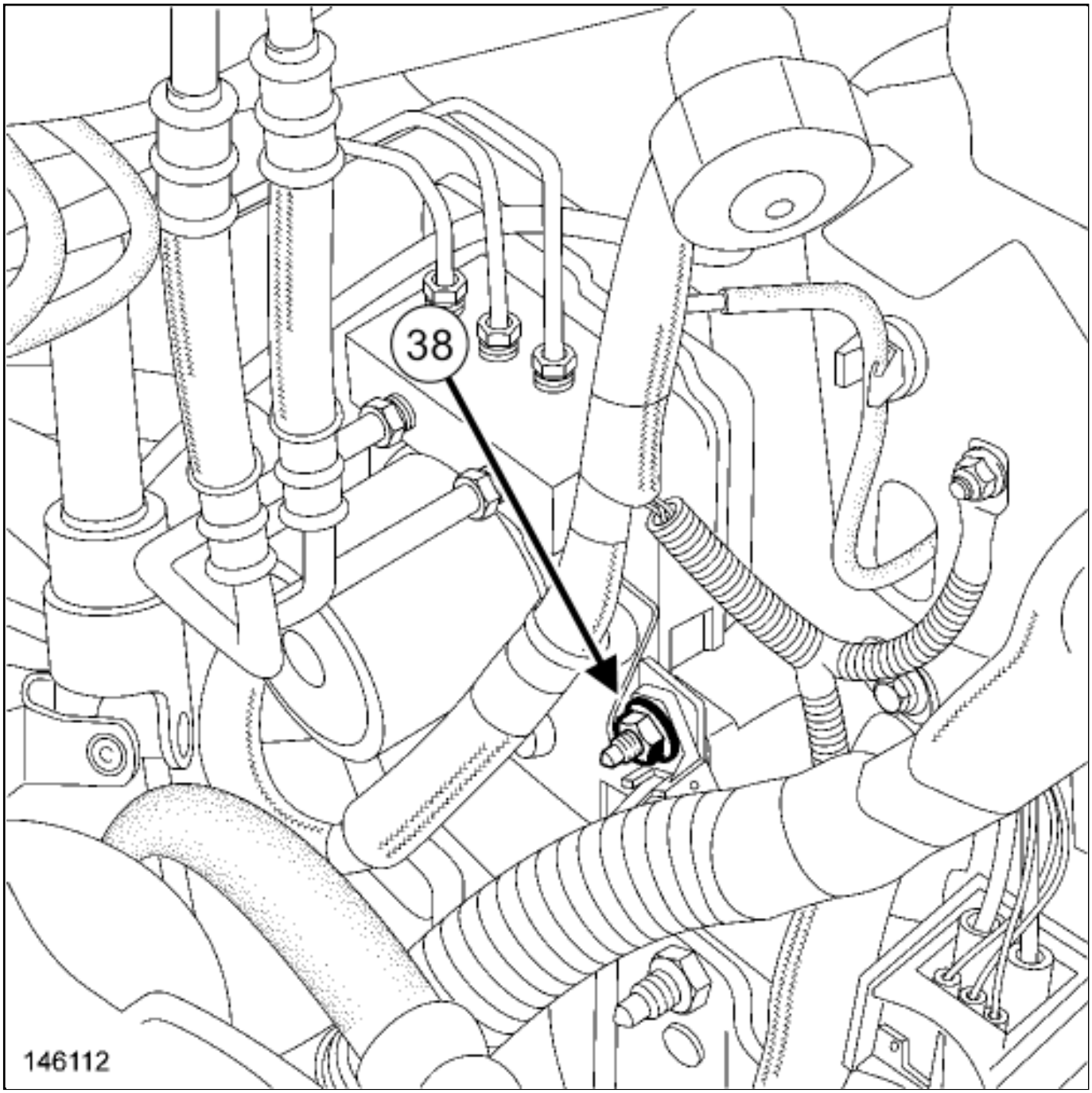
Disconnect the connector(34) of the exhaust gas cooler inlet electric coolant pump.



Unclip the offset positive terminal(36) .



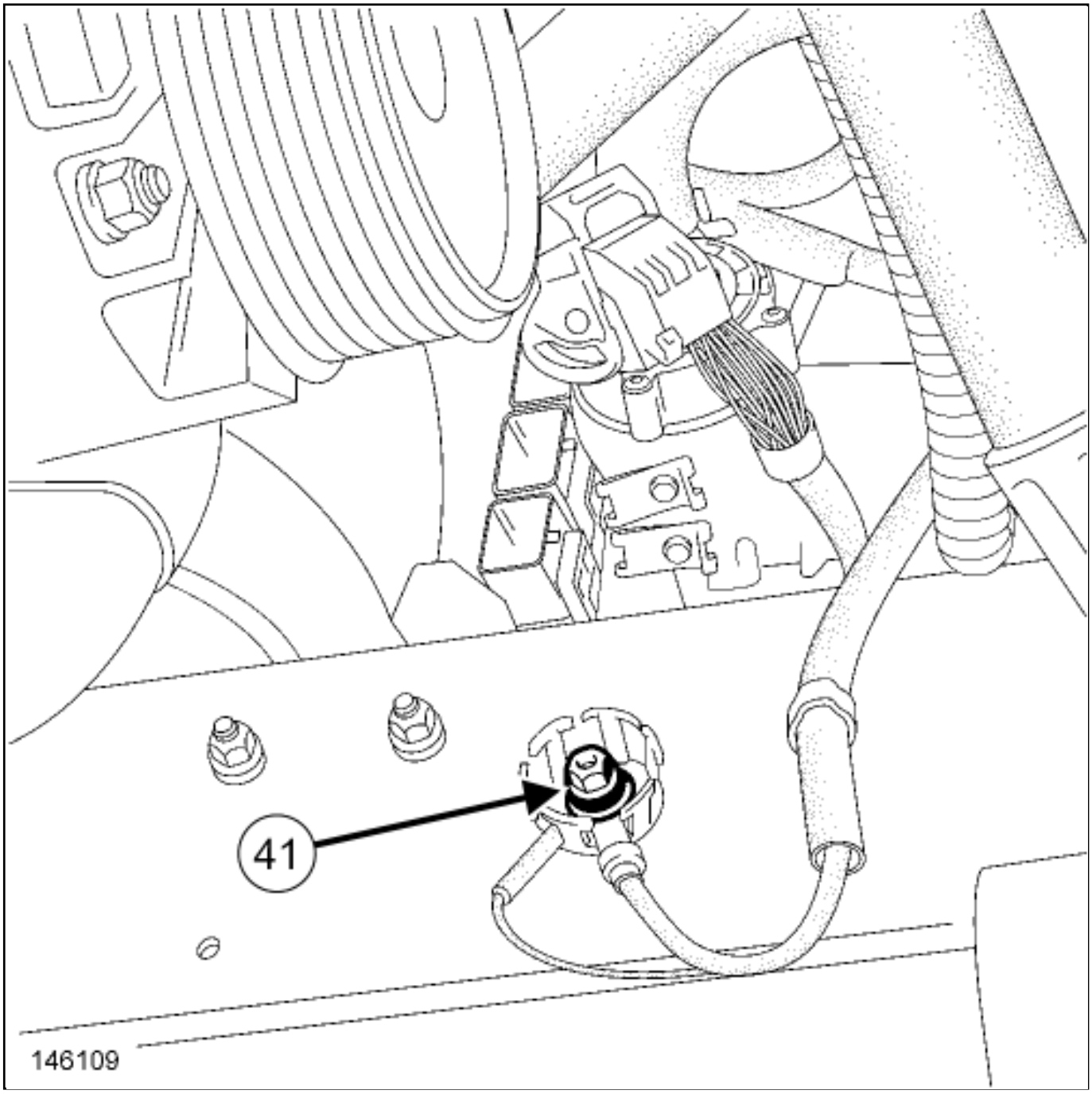
Unclip the engine wiring from the injection computer support(37) .



- Remove the engine wiring nut(38) on the hydraulic brake unit support.

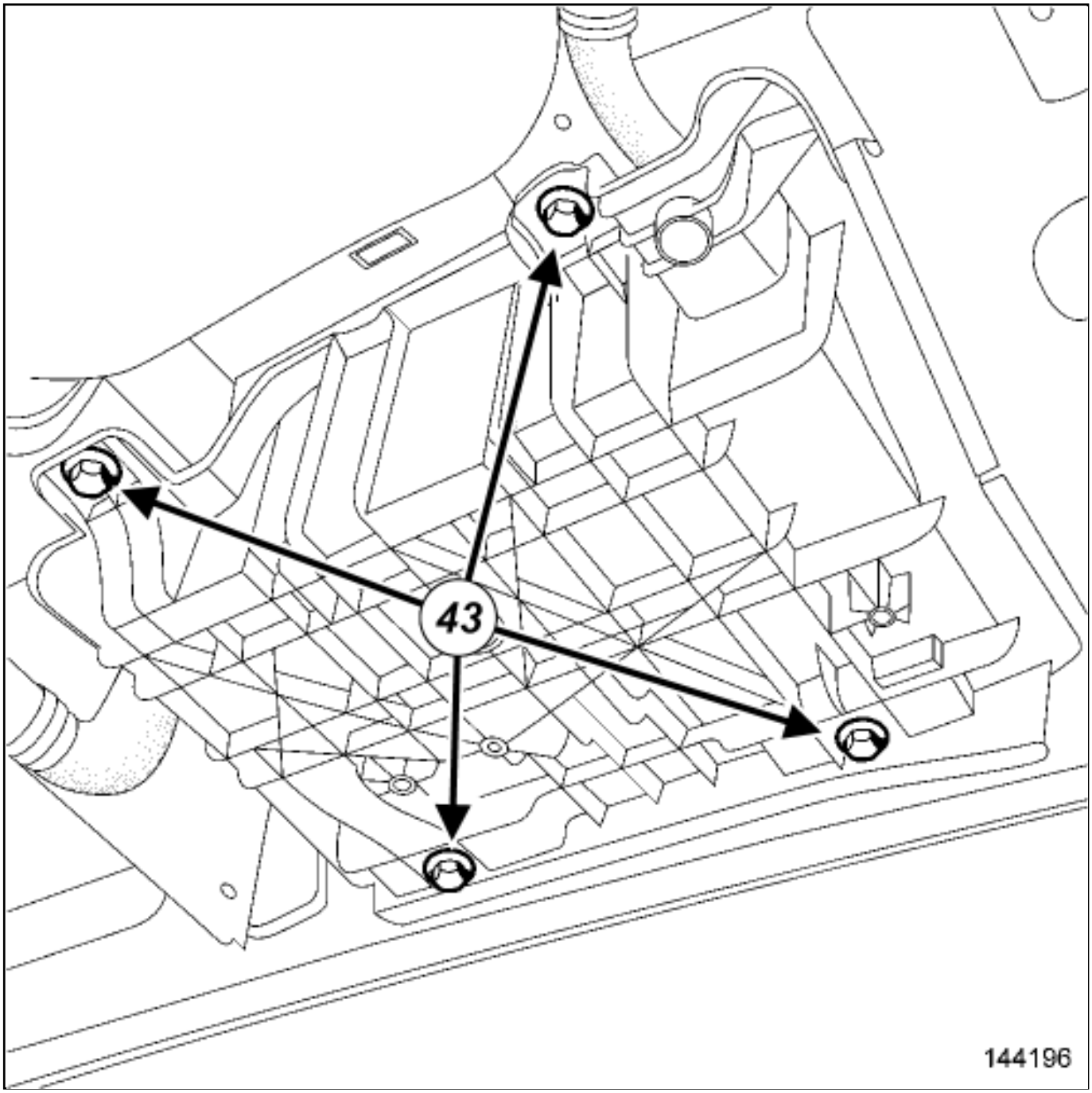
- Move aside the engine wiring.

- Remove the engine cooling fan propeller(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) .



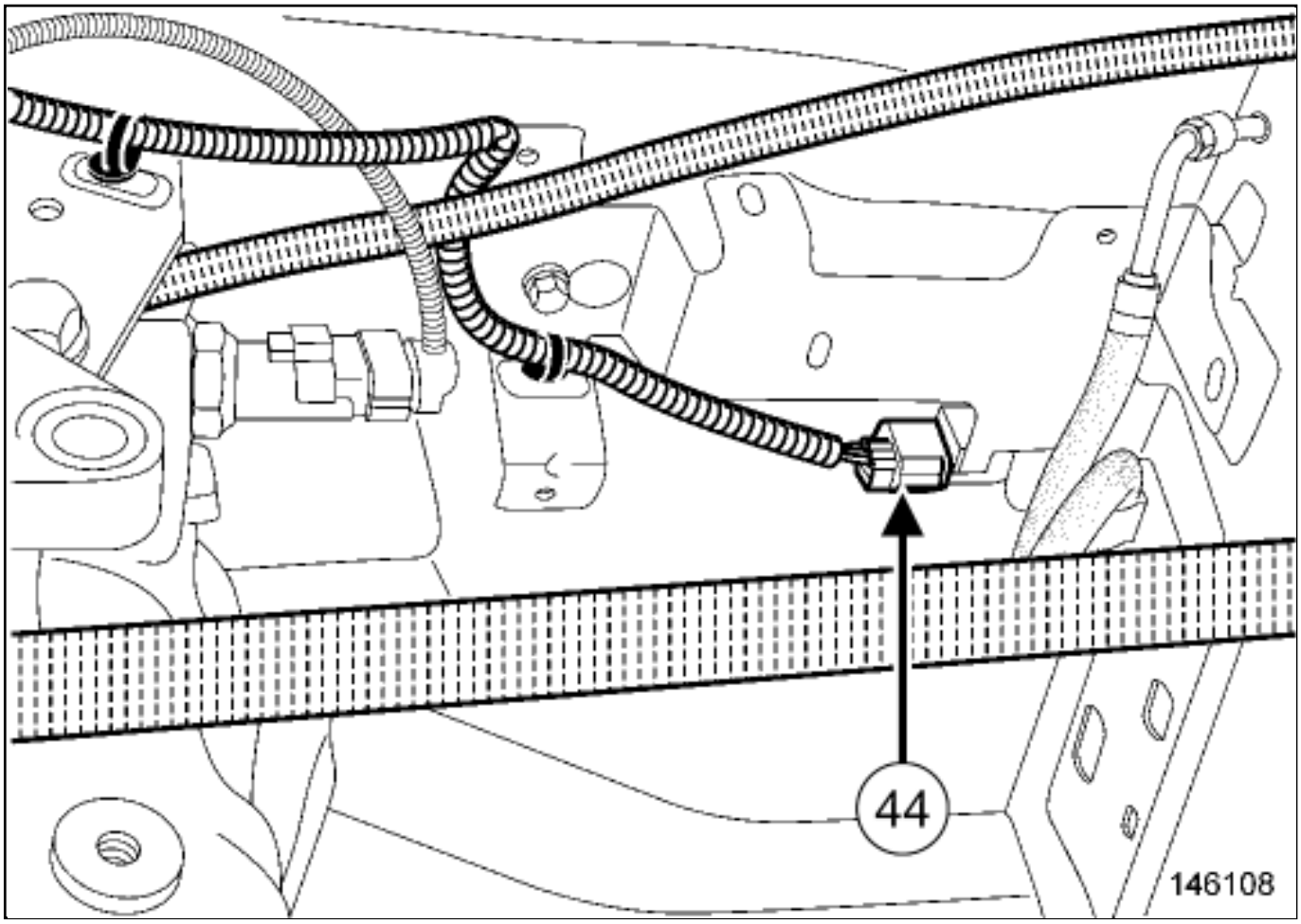
Remove the earth wiring nut(41) from the body.

Move the earth wiring to one side.



Remove:

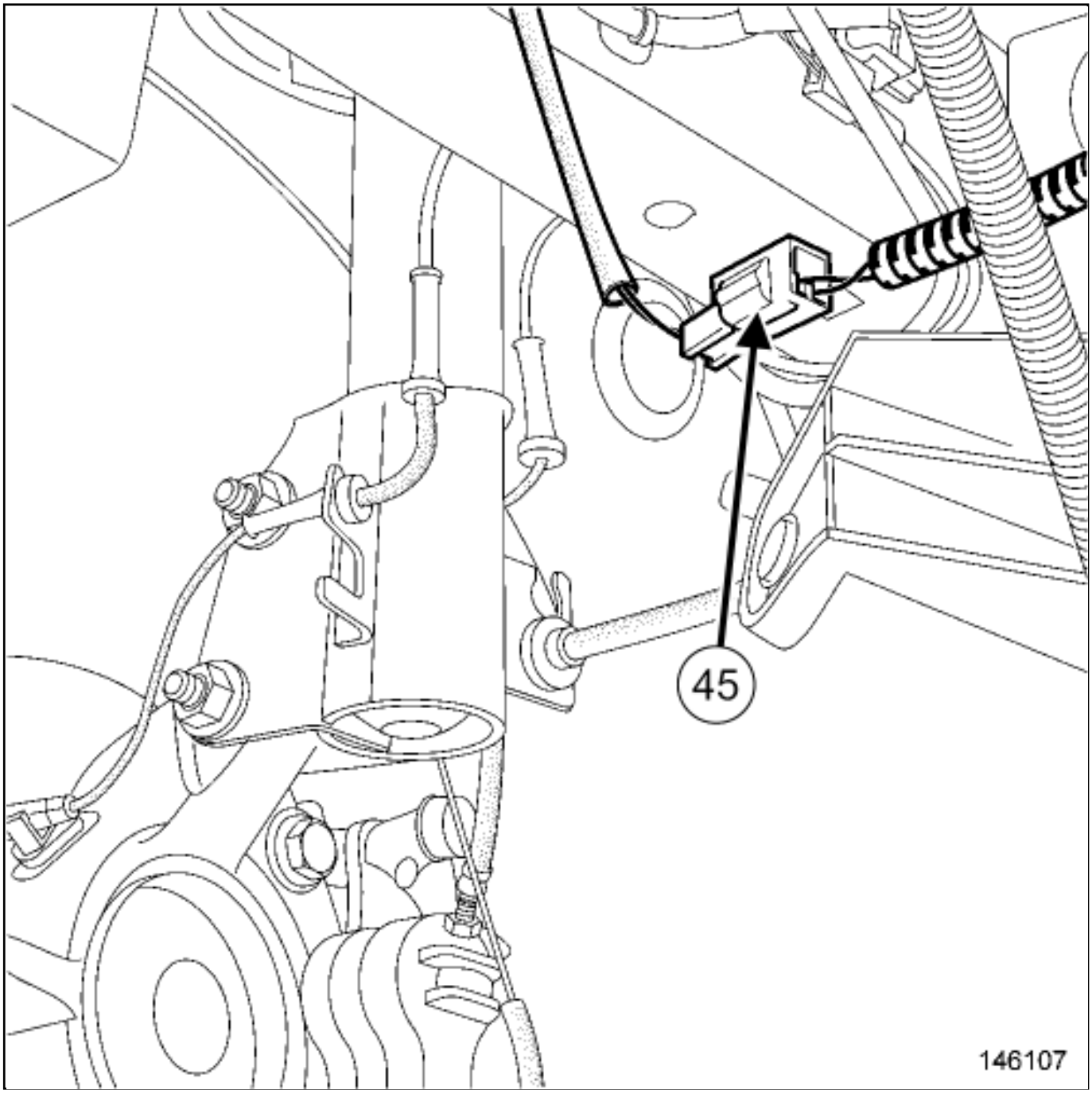
- the battery tray bolts(43) ,
- the battery tray.



Disconnect the particle filter pressure sensor connector(44) .

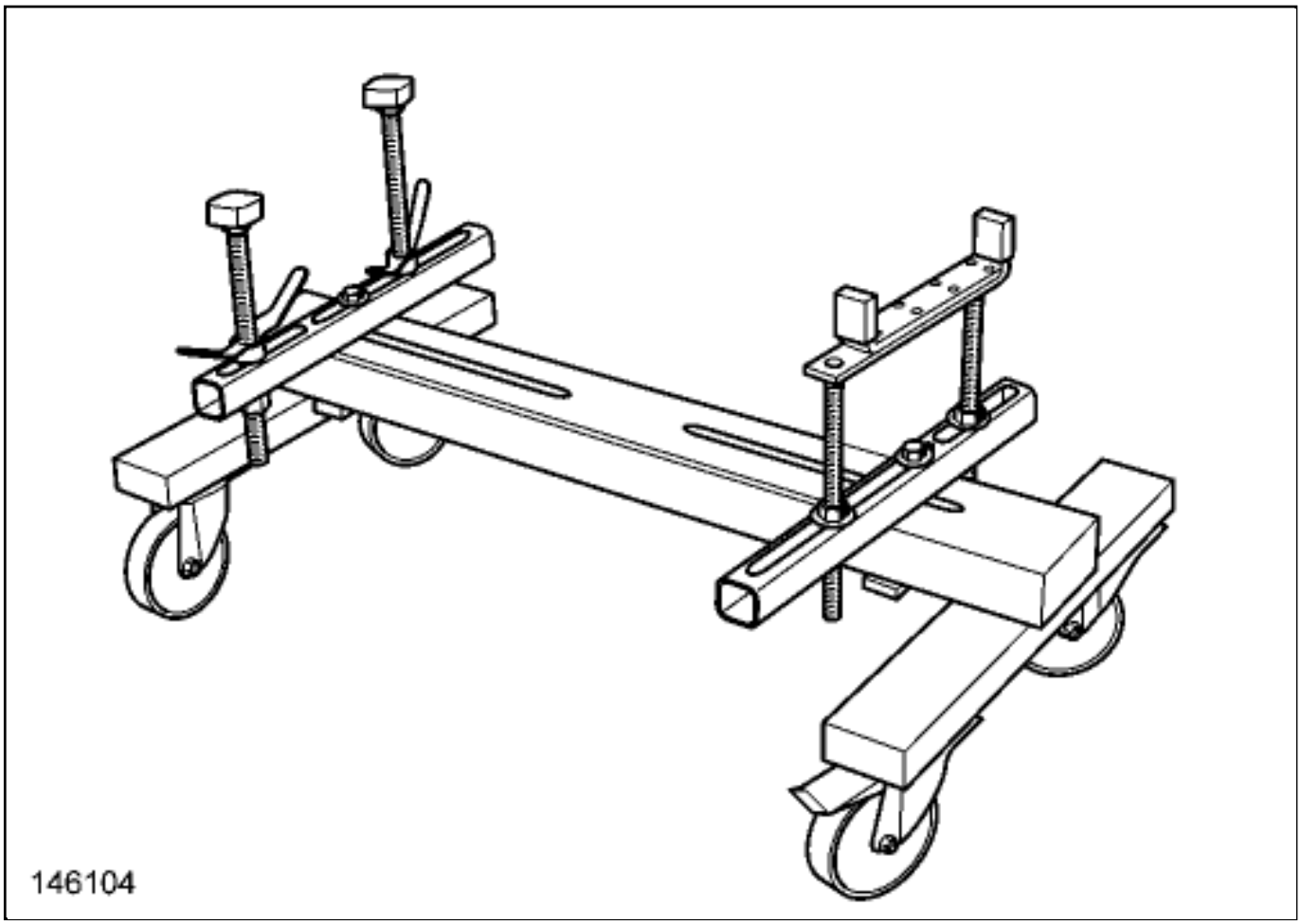
Unclip the particle filter pressure sensor wiring.

IF FITTED



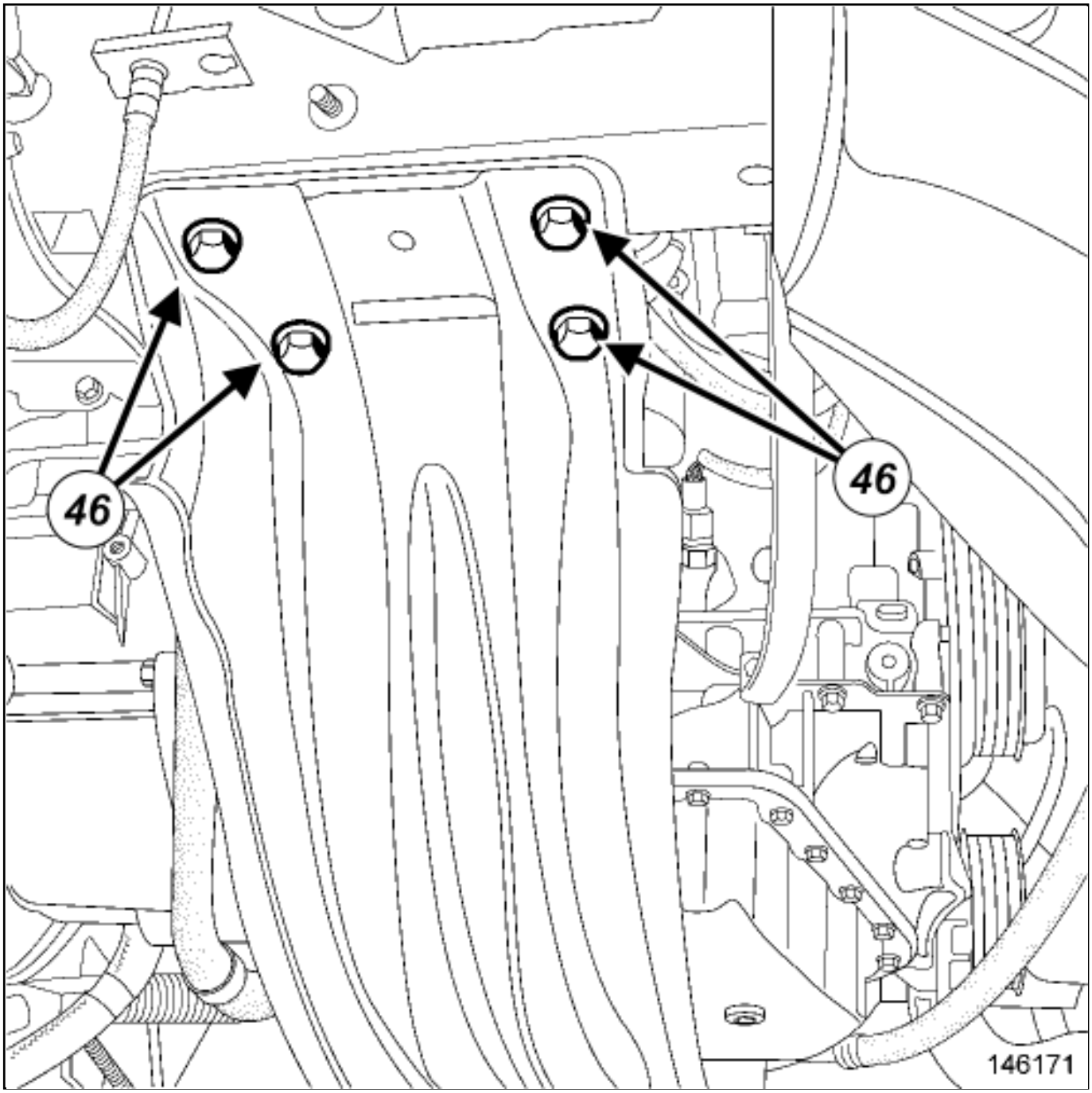
Disconnect the connector(45) of the speed sensor wiring.

2. REMOVAL OPERATION



Fit the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) under the engine.

Remove the safety strap(s) from the manual gearbox.



Remove:

- the engine mounting bolts(46) ,
- the "engine and gearbox" assembly.

Strap the "engine - gearbox" assembly to the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) using a safety strap(s).

1- IN THE EVENT OF REPLACEMENT

Use a workshop hoist Engine-gearbox unit support assembly: Exploded view to remove:

- the bolt of the front left-hand rubber pad from the engine mounting,
- the bolt of the front right-hand rubber pad from the engine mounting,
- the engine mounting,
- the front right-hand rubber pad,
- the front left-hand rubber pad.

REFITTING

1. REFITTING PREPARATION OPERATION

Use grey abrasive pads Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:

- the gasket face of the connecting hose,
- the gasket face of the exhaust gas outlet duct.

Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to degrease:

- the gasket face of the connecting hose,
- the gasket face of the exhaust gas outlet duct.

1- IN THE EVENT OF REPLACEMENT

Refit Engine-gearbox unit support assembly: Exploded view :

- the front left-hand rubber pad,
- the front right-hand rubber pad,
- the engine mounting,
- the bolt of the front right-hand rubber pad on the engine mounting,
- the bolt of the front left-hand rubber pad on the engine mounting.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Torque tighten the engine mounting bolts62 N.m.

Refill:

- the cooling circuit**Cooling system: Draining - Refilling** ,
- and bleed the power-assisted steering circuit**Power-assisted steering circuit: Bleeding** (36A, Steering assembly).

ENGINE ACCESSORIES ASSEMBLY: EXPLODED VIEW

Special tooling required	
Crankshaft pulley locking tool.	Mot. 1770
Crankshaft pulley locking tool	Mot. 1878

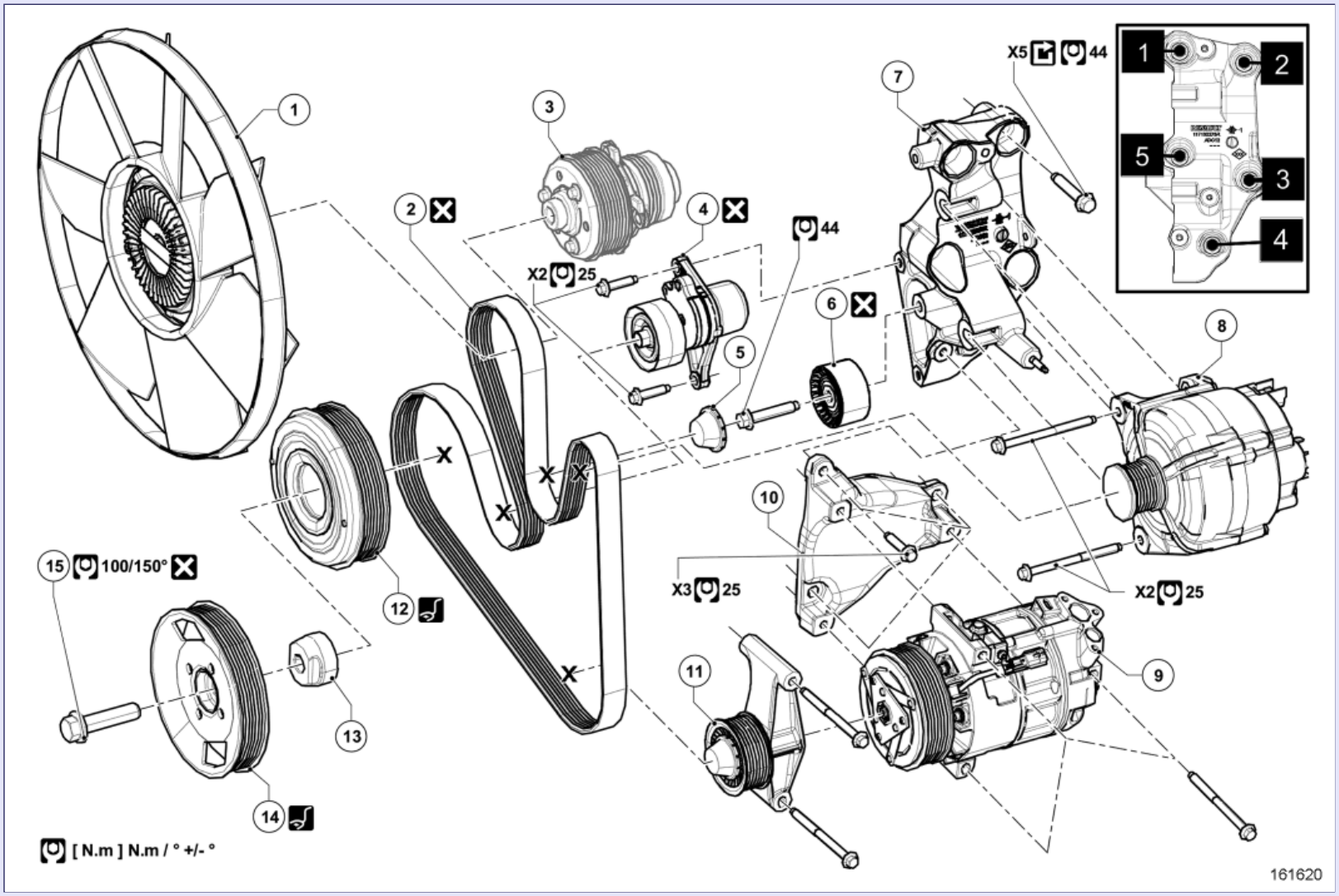


Illustration key: Description .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques Tightening torques: General information .

Marks	Designations	Informations
1	Engine cooling fan assembly	Cylinder block assembly: Exploded view
2	Accessories belt	(see 11A, Top and front of engine, Accessories belt: Removal - Refitting)
3	Water pump	Cylinder block assembly: Exploded view
4	Accessories belt tensioning roller	
5	Accessories belt fixed roller protector	
6	Accessories fixed roller	
7	Multifunction support	Multifunction support: Removal - Refitting
8	Alternator	Alternator: Removal - Refitting
9	Air conditioning compressor	Compressor: Removal - Refitting
10	Air conditioning compressor mounting	

11	Accessories dummy pulley	
12	Crankshaft accessories pulley	(see 11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting) Crankshaft pulley locking tool.(Mot. 1770)
13	Crankshaft accessories pulley spacer	
14	Crankshaft accessories pulley	(see 11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting) Crankshaft pulley locking tool(Mot. 1878)
15	Crankshaft accessories pulley bolt	

M9T, 702(702)

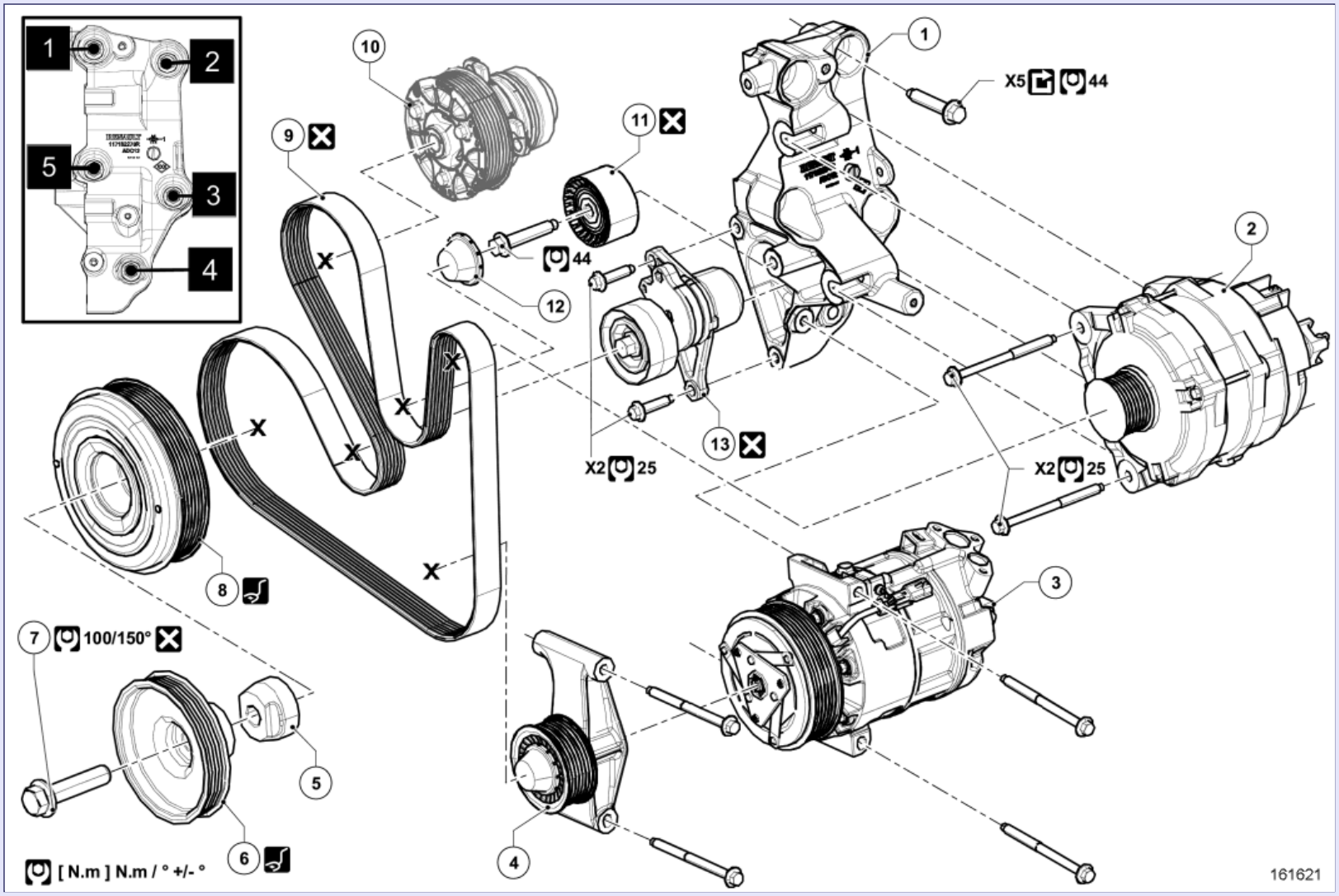


Illustration key: Description .

For fastenings with no specified tightening torque values, refer to the Table of Standard TorquesTightening torques: General information .

Marks	Designations	Informations
1	Multifunction support	Multifunction support: Removal - Refitting
2	Alternator	Alternator: Removal - Refitting
3	Air conditioning compressor	Compressor: Removal - Refitting
4	Accessories dummy pulley	

5	Crankshaft accessories pulley spacer	
6	Crankshaft accessories pulley	(see 11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting) Crankshaft pulley locking tool(Mot. 1878)
7	Crankshaft accessories pulley bolt	
8	Crankshaft accessories pulley	(see 11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting) Crankshaft pulley locking tool.(Mot. 1770)
9	Accessories belt	(see 11A, Top and front of engine, Accessories belt: Removal - Refitting)
10	Water pump	Cylinder block assembly: Exploded view
11	Accessories fixed roller	
12	Accessories belt fixed roller protector	
13	Accessories belt tensioning roller	

ENGINE AND TRANSMISSION ASSEMBLY SENSORS: LIST AND LOCATION OF COMPONENTS

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructionsVehicle: Precautions for the repair

1. SENSORS ON THE FRONT FACE OF THE ENGINE

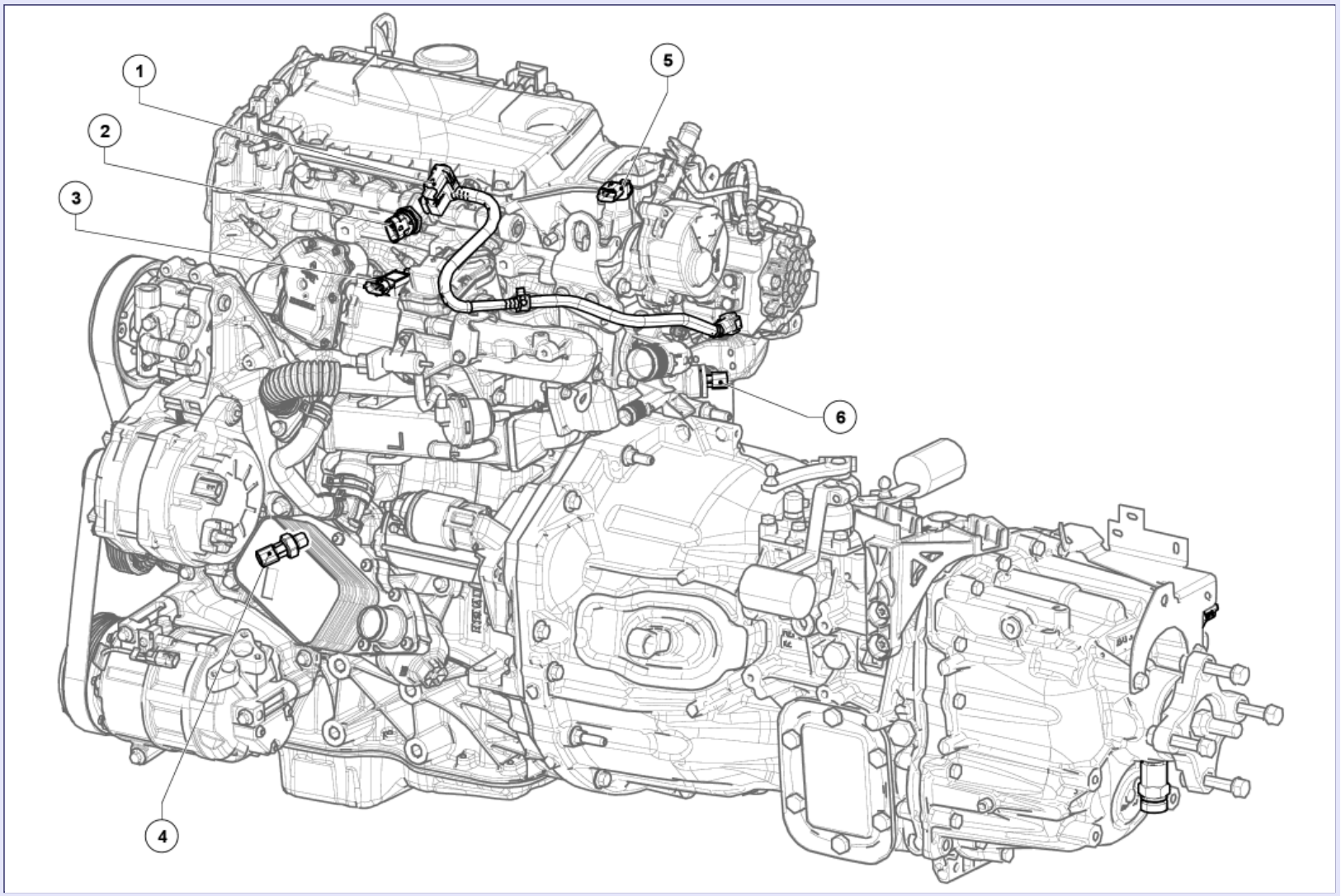


Illustration key: Description **Key.**

Mark	Description	Information
1	Fuel temperature sensor	Sensor cannot be separated from the fuel supply pipeFuel supply assembly in engine compartment: Exploded view
2	Rail pressure sensor	The rail pressure sensor is not sold separately by the Parts Department
3	Air inlet pressure sensor	Exhaust gas recirculation circuit assembly: Exploded view
4	Oil pressure sensor	(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view)
5	Camshaft position sensor	Cylinder head assembly: Exploded view
6	Coolant temperature sensor	Coolant circuit assembly: Exploded view

M9T, 700(700)

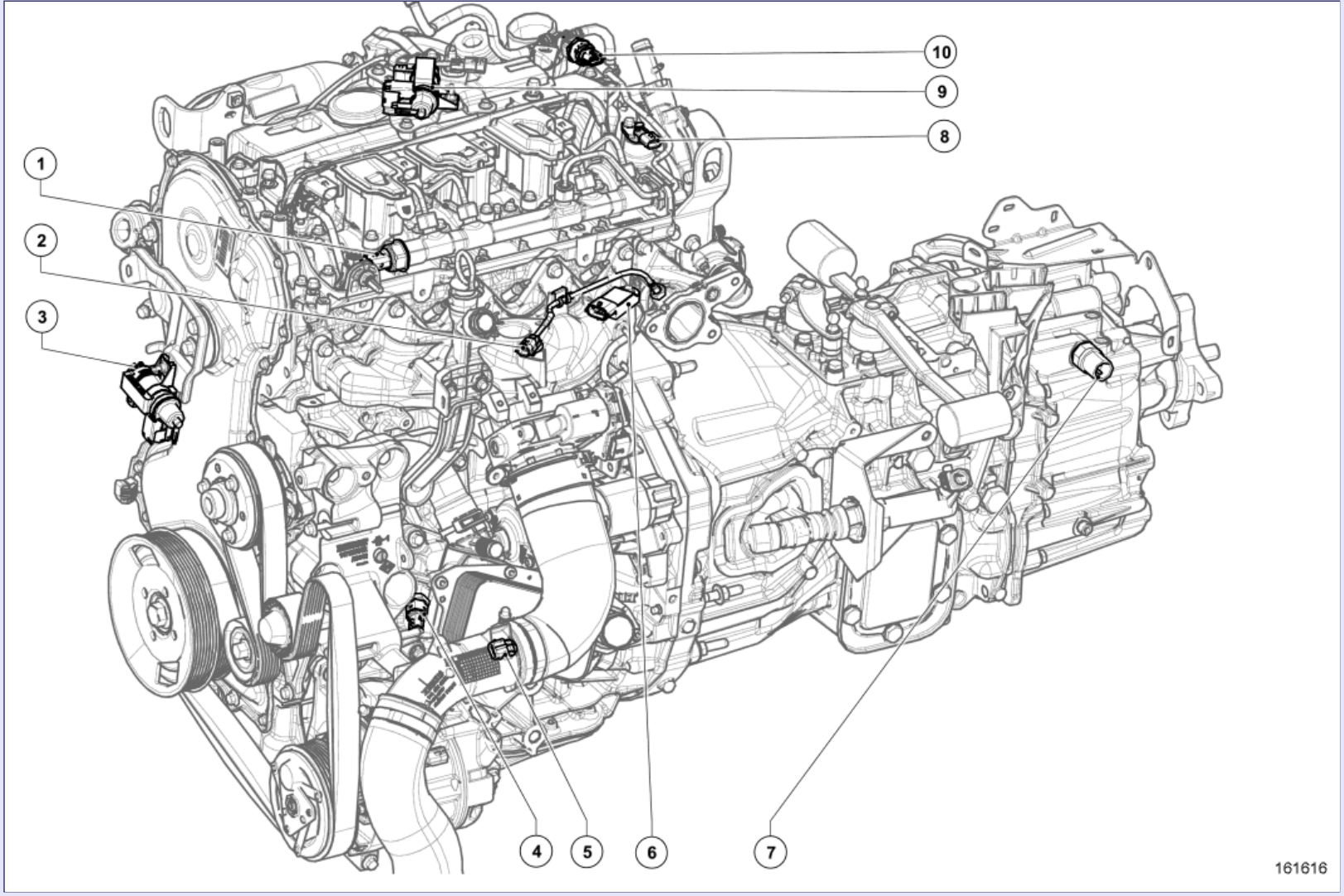


Illustration key: Description **Key.**

Mark	Description	Information
1	Rail pressure sensor	
2	Exhaust gas temperature sensor	Exhaust assembly in engine compartment: Exploded view
3	Turbocharger control solenoid valve	
4	Oil pressure sensor	
5	Air inlet temperature sensor	
6	Air inlet pressure sensor	
7	Speed sensor	(see Speed sensor: Removal - Refitting)
8	Camshaft position sensor	
9	Turbocharger control solenoid valve	
10	Fuel supply pressure sensor	

2. SENSORS ON THE REAR FACE OF THE ENGINE

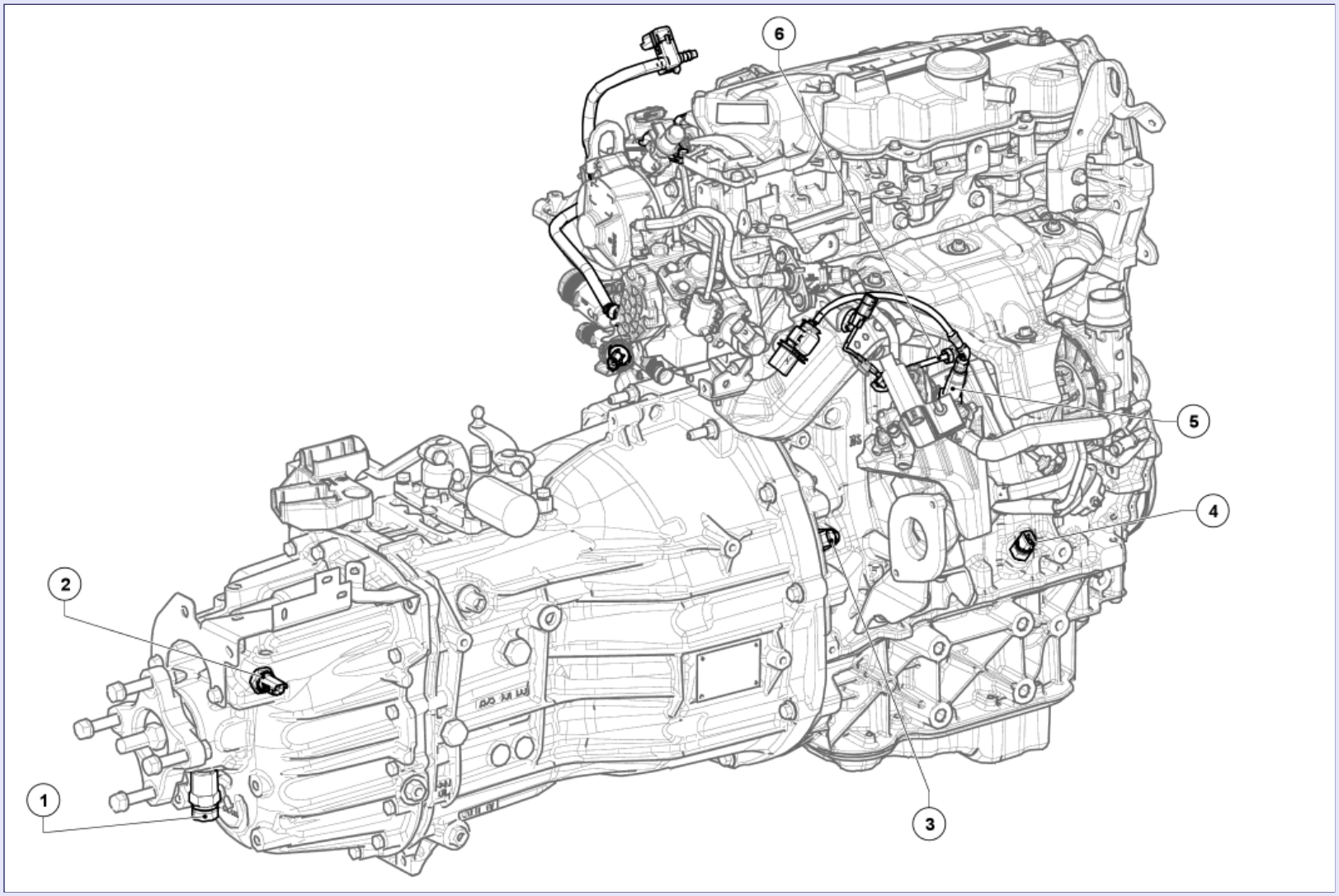


Illustration key: Description Key.

Mark	Description	Information
1	Speed sensor	
2	Reverse gear switch	
3	Crankshaft position sensor	(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)
4	Oil level sensor	(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view)
5	Oxygen sensor	Exhaust assembly in engine compartment: Exploded view
6	Exhaust gas temperature sensor	Exhaust assembly in engine compartment: Exploded view

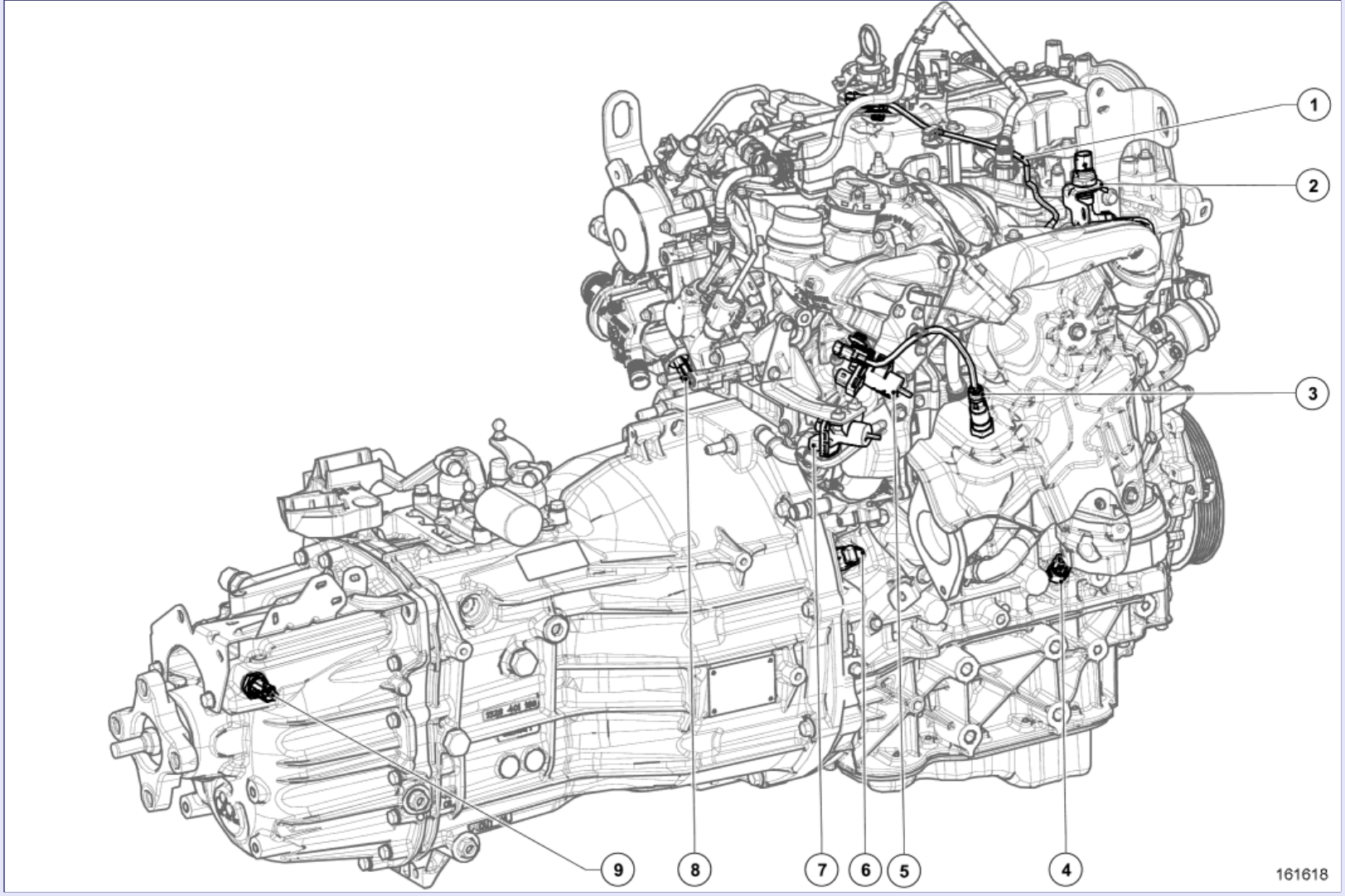


Illustration key: Description **Key.**

Mark	Description	Information
1	Exhaust gas temperature sensor	
2	Exhaust gas pressure sensor, if equipped	
3	Oxygen sensor	Oxygen sensor: Removal - Refitting
4	Oil level sensor	
5	Variable air inlet solenoid valve	
6	Crankshaft position sensor	(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)
7	Variable air inlet solenoid valve	
8	Coolant temperature sensor	Coolant circuit assembly: Exploded view
9	Reverse gear switch	Gearbox assembly: Exploded view

ENGINE COOLING FAN ASSEMBLY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pin wrench..	Mot. 1729

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

CAUTION

When carrying out a repair that requires a complete change, it is essential to flush the circuit with clean water, blast compressed air through the circuit to drive out the water, fill and bleed the circuit and then measure the effective protection.

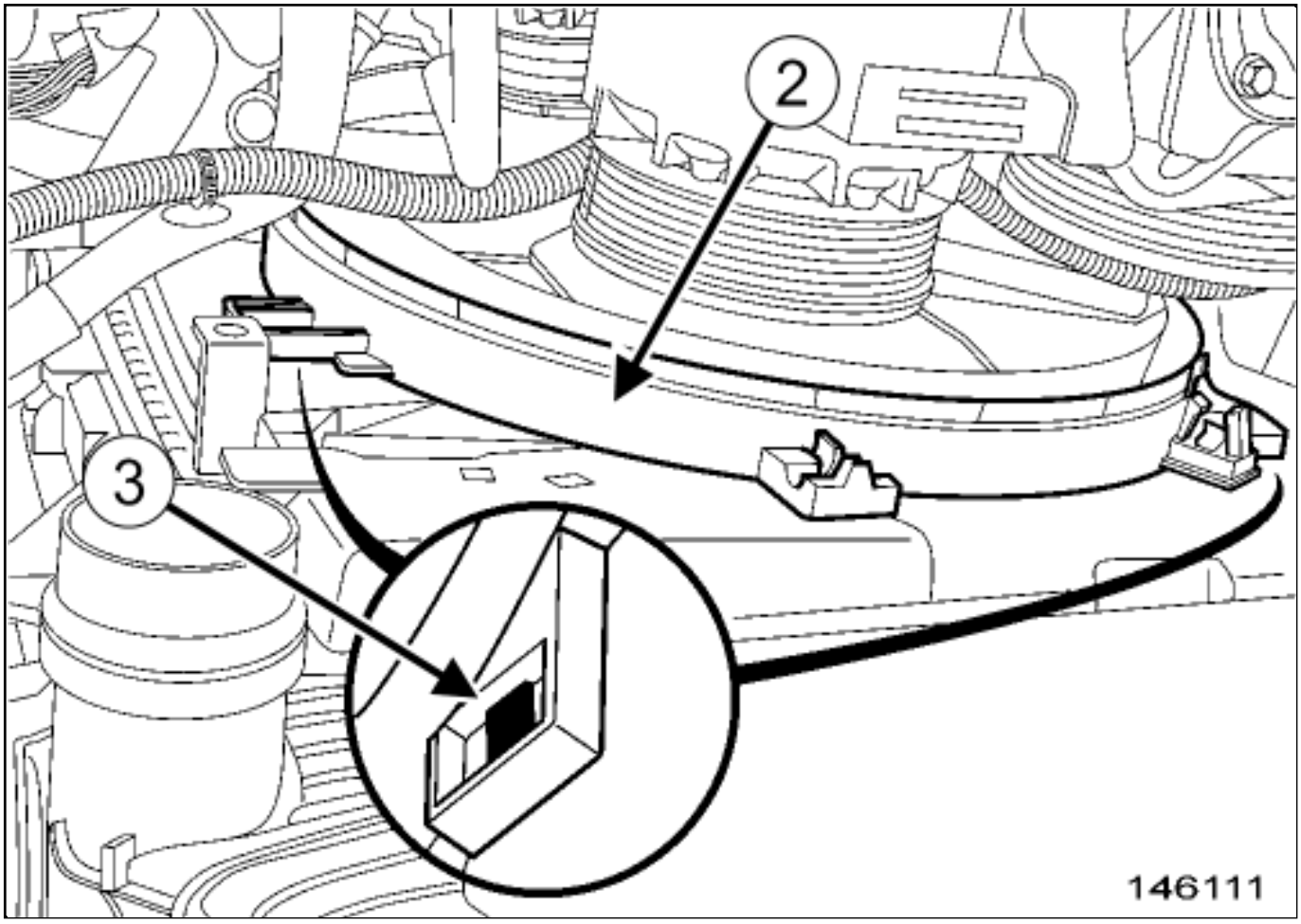
- The criteria to be met are:
  - protection down to -25°C ± 2for cold and temperate countries,
  - protection down to -40°C ± 2for "extreme cold" countries.

REMOVAL

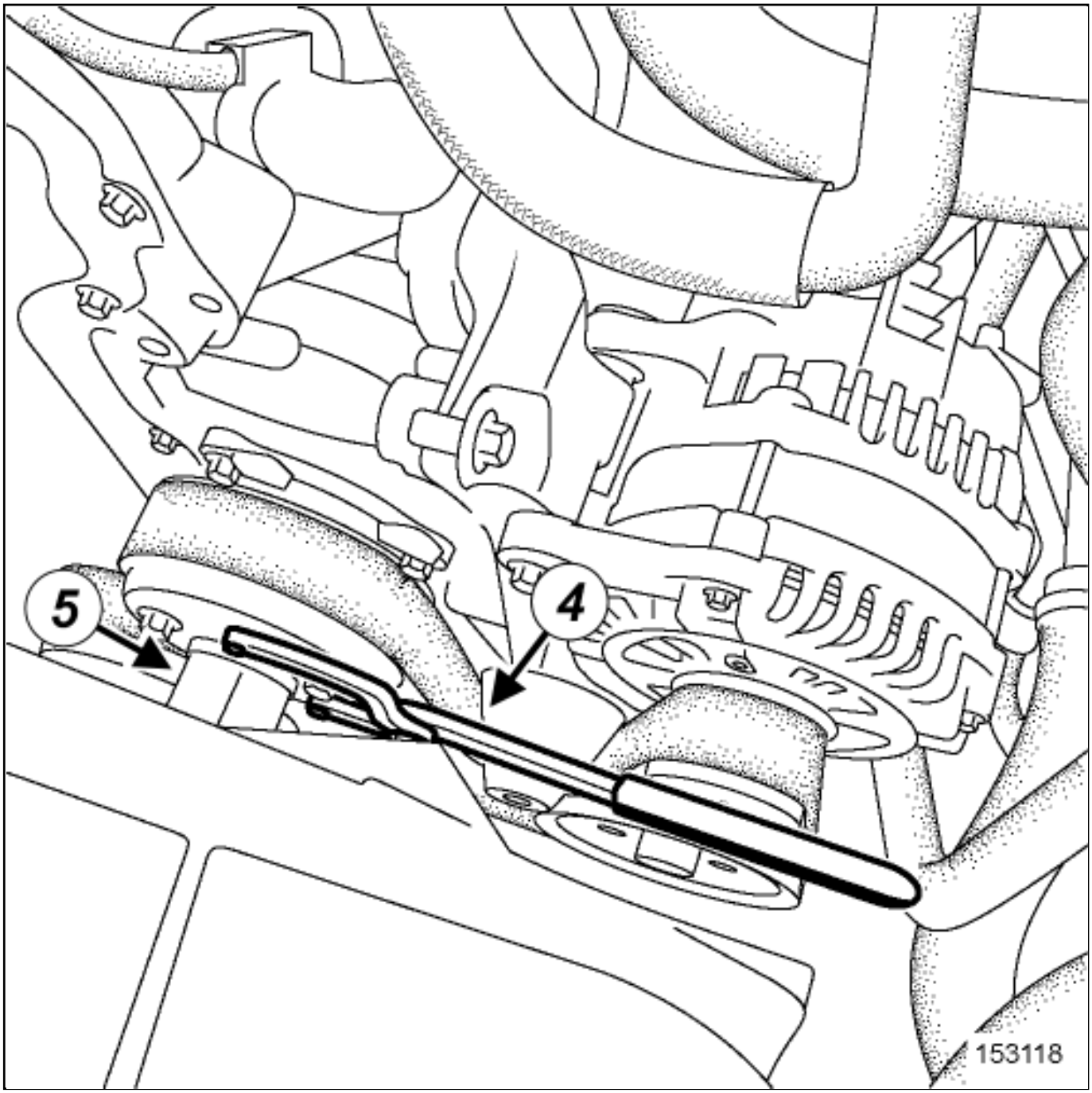
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the engine undertray.

2. REMOVAL OPERATION



- Remove the lower section of the air deflector(2) by pressing the tab(3) .



- Lock the coolant pump pulley using the toolPin wrench..(Mot. 1729) (4) .
- Loosen the nut(5) of the engine cooling fan propeller clockwise.
- Remove the engine cooling fan propeller(see **Cylinder block assembly: Exploded view**) .

REFITTING

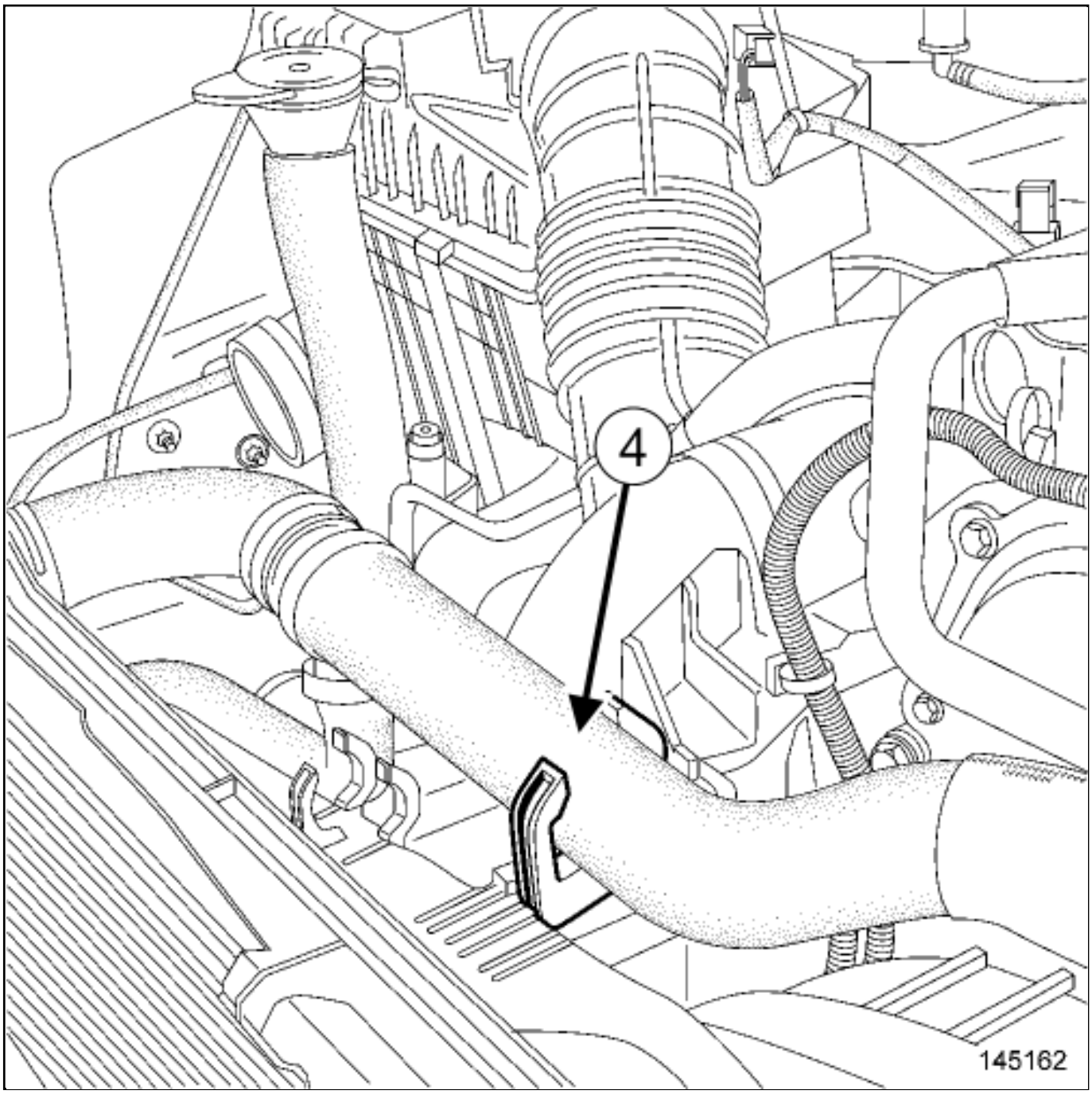
- Proceed in the reverse order to removal.

REMOVAL

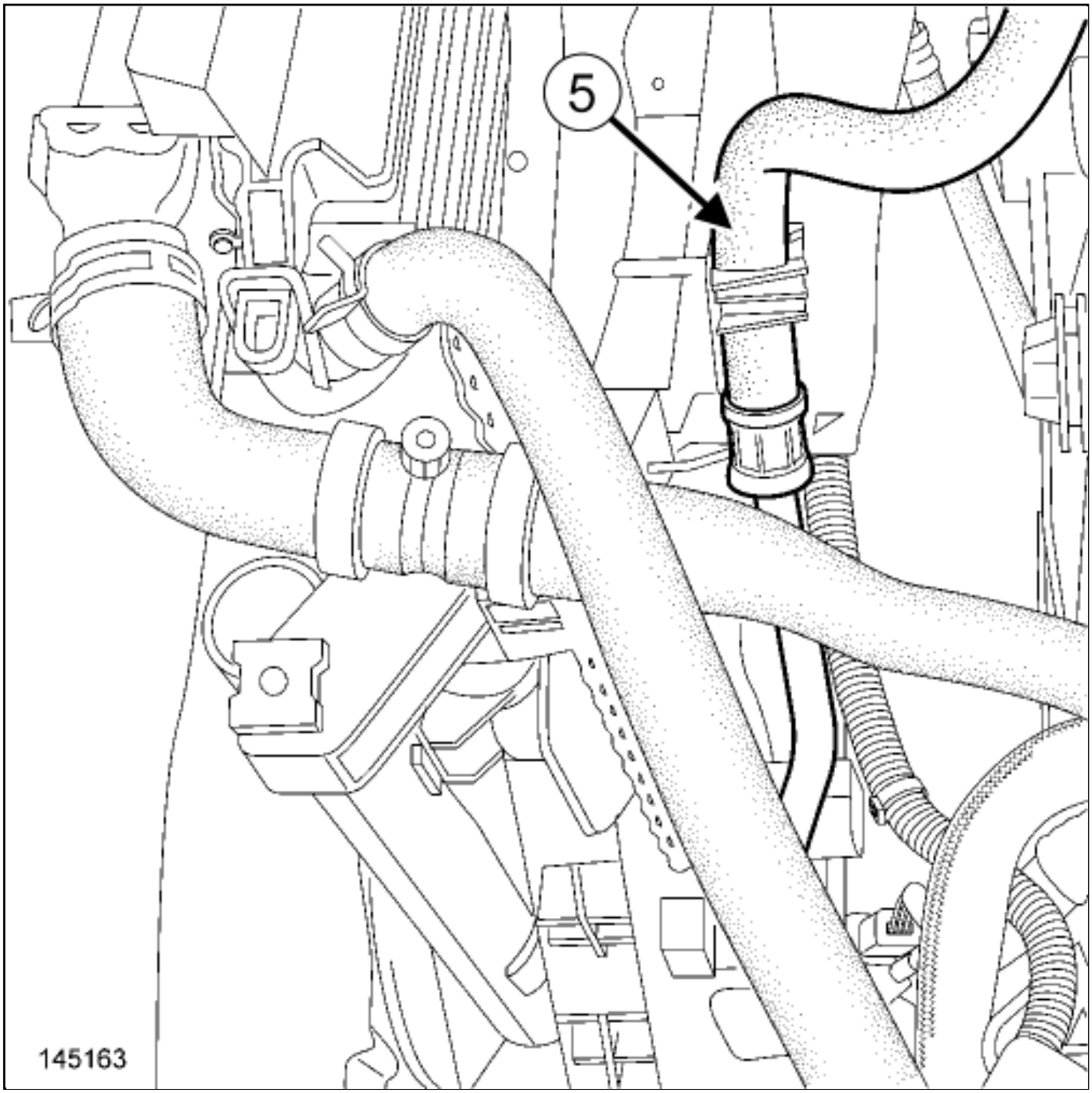
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
  - the engine undertray,
  - the radiator grille(see **Radiator grille: Removal - Refitting**) (56A, Exterior equipment),
  - the headlights(see **Headlight: Removal - Refitting**) (80B, Headlights),
  - the front bumper(see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
  - the engine cooling fan propeller(see **Cylinder block assembly: Exploded view**) ,
  - the intercoolerAND (M9T) AND (700 OR 702) M9T, 700 702.

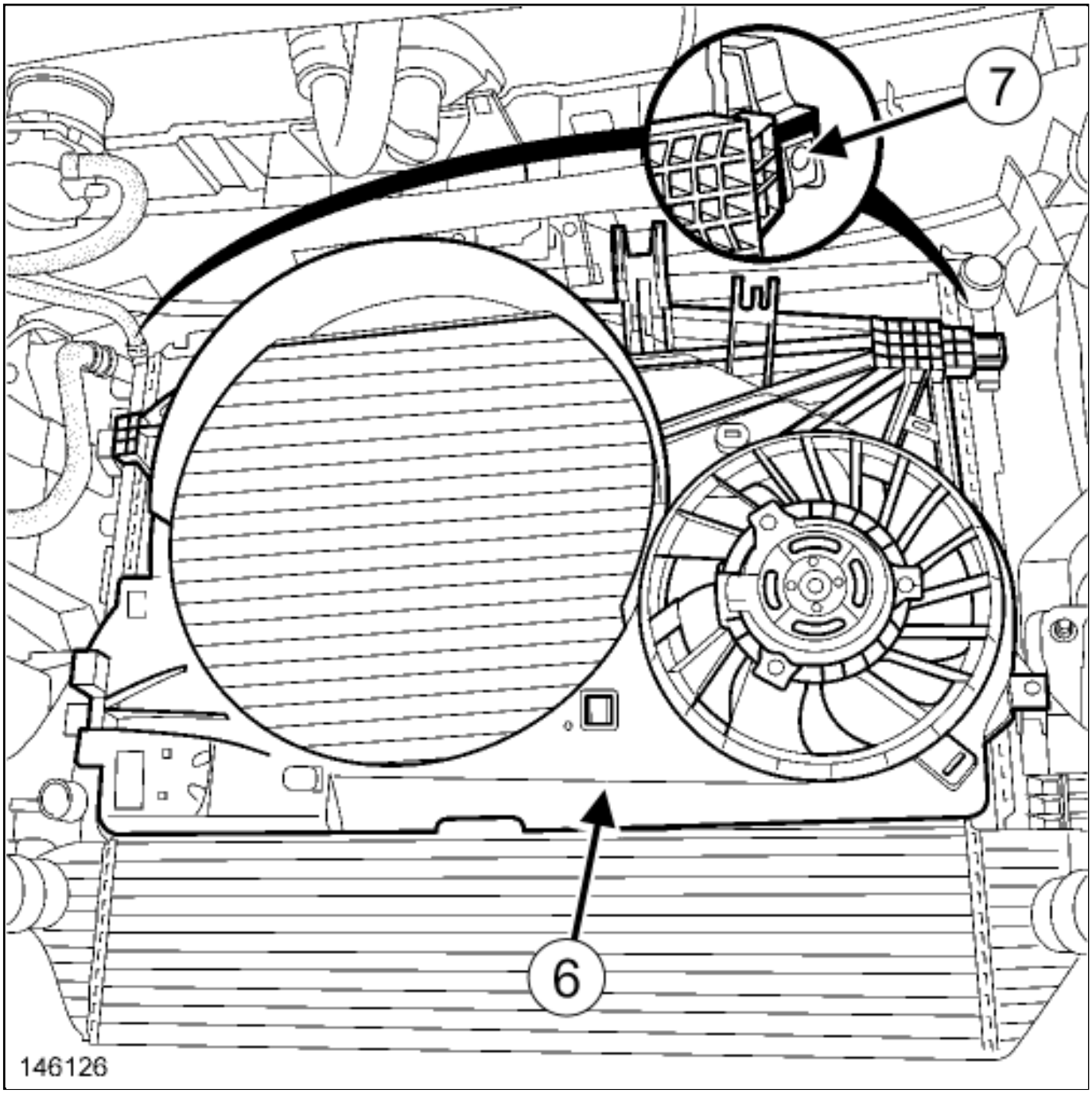
2. REMOVAL OPERATION



- Unclip the cooling pipe(4) from the engine cooling fan assembly.



- Unclip the power-assisted steering pipe from the engine cooling fan assembly(5) .



- Unclip the engine cooling fan assembly(6) from the cooling radiator by moving aside the tab(7) .
- Remove the engine cooling fan assembly.

REFITTING

- Proceed in the reverse order to removal.
- Fill and bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

XSL version : 3.02 du 22/07/11

ENGINE COOLING SYSTEM: CHECK

Note, one or more warnings are present in this procedure

Special tooling required	
Instrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06	Ms. 554-07
Fault finding and filling - bleeding the cooling circuit.	Mot. 1700

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**) .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

Note:

- There are two procedures for checking the cooling system:
  - the procedure using theFault finding and filling - bleeding the cooling circuit.(**Mot. 1700**) ,
  - the procedure using theInstrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06(**Ms. 554-07**) .

EXPANSION BOTTLE CAP VALVE RATING:

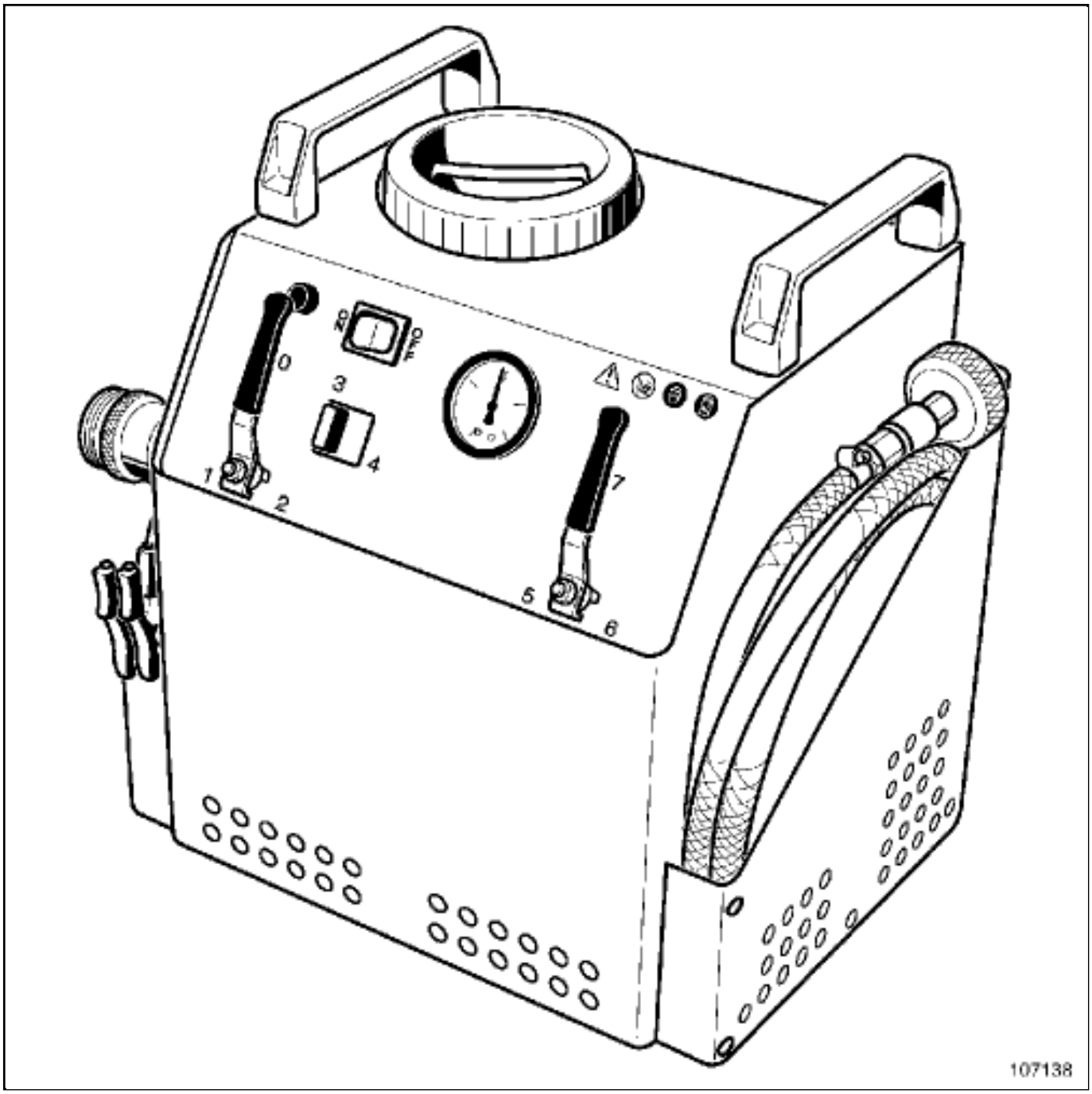
Expansion bottle cap with ...	Valve rating
... a brown circle	1.2 bar
... a yellow marking	1.4 bar
... a white marking	1.6 bar
... a grey marking	1.8 bar

1. CHECKING THE COOLING SYSTEM USING THE TOOL (MOT. 1700)

CAUTION

If the coolant is leaking from the expansion bottle cap, replace the valve.

1- CHECKING THE EXPANSION BOTTLE CAP VALVE



Use the cooling system filling and diagnostic toolFault finding and filling - bleeding the cooling circuit. (Mot. 1700) . Consult the user's manual for this tool(see 19A, Cooling, Cooling system filling and diagnostic tool: Use) (Technical Note 3857A, 19A, Cooling).

2- CHECKING THE SEALING OF THE COOLING CIRCUIT

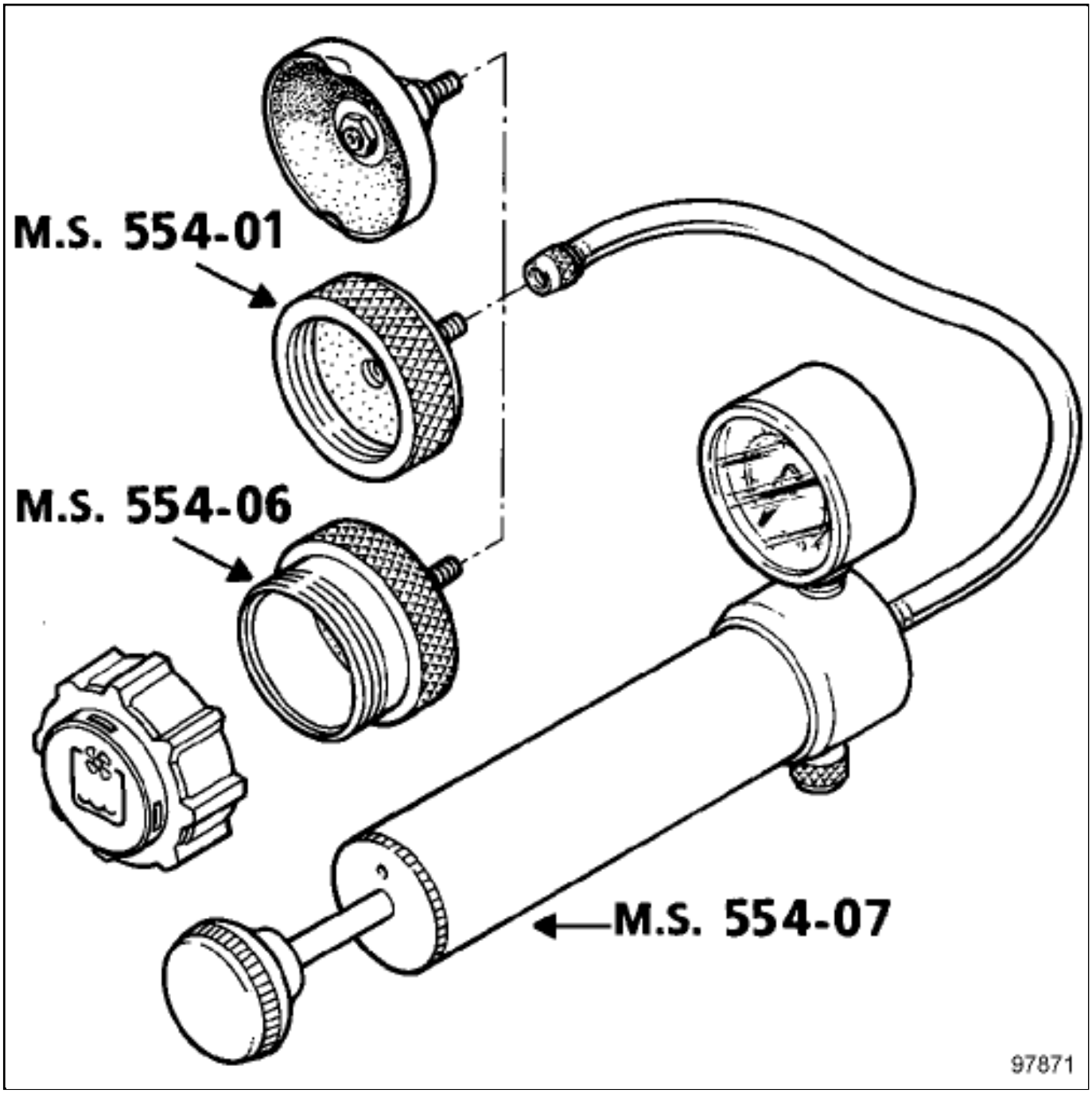
Use the cooling system filling and diagnostic toolFault finding and filling - bleeding the cooling circuit. (Mot. 1700) . Consult the user's manual for this tool(see 19A, Cooling, Cooling system filling and diagnostic tool: Use) (Technical Note 3857A, 19A, Cooling).

2. CHECKING THE COOLING SYSTEM USING THE TOOL (MS. 554-07)

CAUTION

If the coolant is leaking from the expansion bottle cap, replace the valve.

1- CHECKING THE EXPANSION BOTTLE CAP VALVE



Fit onto the testerInstrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06(Ms. 554-07) , the adapter (Ms. 554-06).

- Fit the expansion bottle cap to the adapter (Ms. 554-06).

Note:

The pressure should not drop; if it does, look for the leak.

- Pump with theInstrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06(**Ms. 554-07**) , the pressure should stabilise at the expansion bottle cap valve rating with a test tolerance of ± 0.1 bar.

2- CHECKING THE SEALING OF THE COOLING CIRCUIT

- Replace the expansion bottle cap with the adapter (Ms. 554-01).

- Connect on the adapter (Ms. 554-01)the toolInstrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06(**Ms. 554-07**) .

- Pump with theInstrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06(**Ms. 554-07**) to put the cooling circuit under pressure.

- Stop pumping at 0.1 barbelow the valve rating for the expansion bottle cap valve.

Note:

The pressure should not drop; if it does, look for the leak.

- Gradually unscrew the union of theInstrument for testing the cooling circuit and the expansion bottle valve. Contains caps 554-01, 554-04, 554-06(**Ms. 554-07**) to decompress the cooling system then remove the adapter (Ms. 554-01)and refit the expansion bottle cap.

ENGINE: NEW REPLACEMENT

Note, one or more warnings are present in this procedure

1. NEW ENGINE REPLACEMENT

1- PARTS TO BE CHECKED

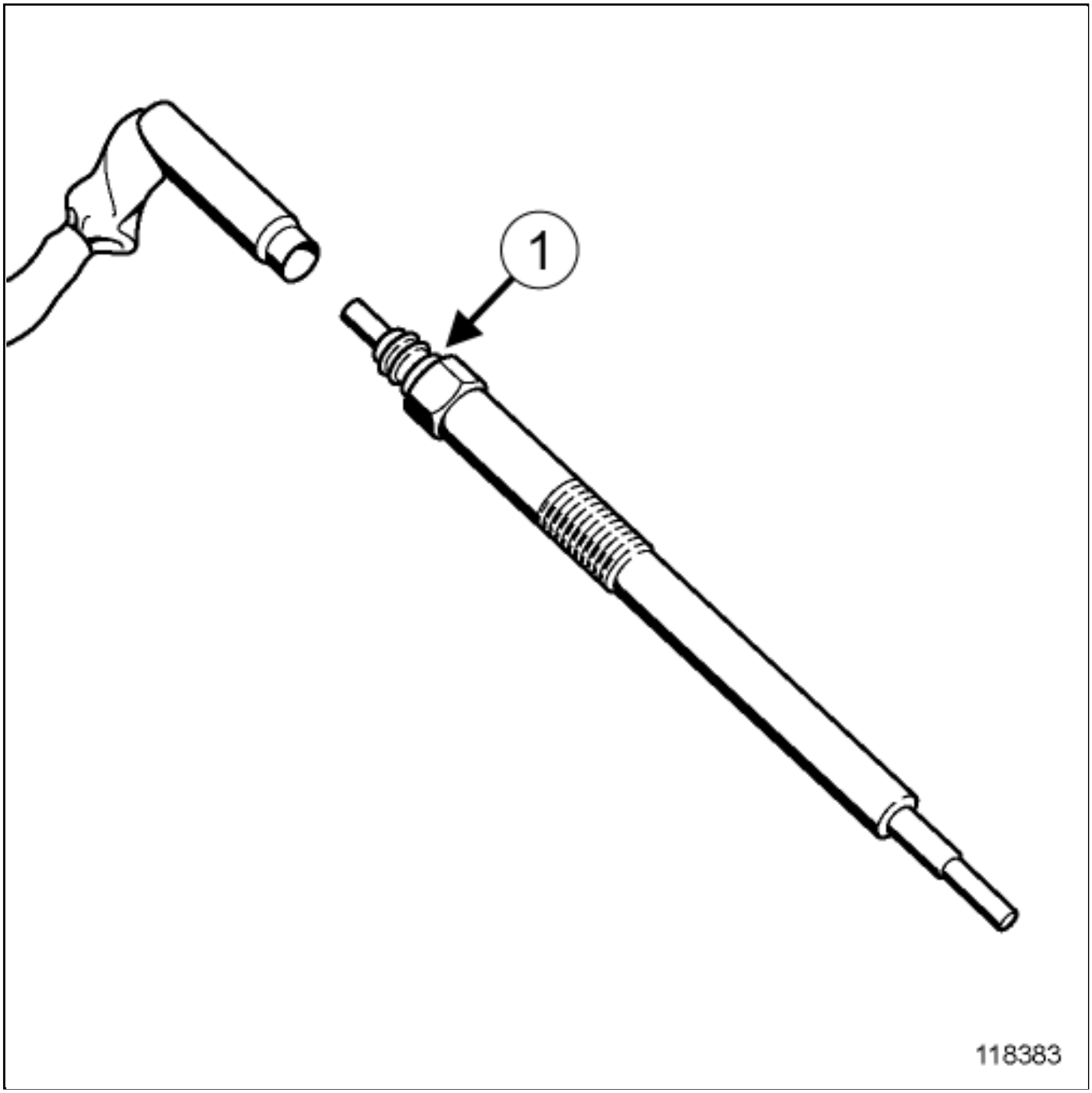
1)CHECKING THE HEATER PLUGS ON THE OLD ENGINE.

CAUTION

Failure to observe the following procedure can lead to the destruction of the heater plugs.

Note:

The Parts Department only supplies engines equipped with heater plugs that have a WHITE or YELLOW ring.



Operations to perform:

■ Check the colour of the ring(1) on the heater plugs of the old engine,

-If the ring is BLACK, when refitting the new engine, and before connecting the heater plug connectors:

■Reprogram the injection computer (see MR DIAG, Section 13B, Fault Finding or Replacement of components, Replacing or Reprogramming the computer),■Reconfigure the type of heater plugs to "rapid" type (see MR DIAG, Section 13B, Fault Finding or Replacement of components, Replacement of heater plugs).

2- PREPARING THE OLD ENGINE TO BE RETURNED TO THE ENGINE RENOVATION PLANT

Clean the engine.

Drain the oil and coolant from the used engine.

Secure the old engine to the stand and under the same conditions as for new engine replacement:

- fit the plastic plug welds and covers,
- fit the cardboard cover over the whole assembly.

3- PARTS TO LEAVE ON THE OLD ENGINE OR TO INCLUDE IN THE RETURN BOX:

Parts to leave on the old engine or to include in the return box:

- the dipstick,
- the oil filter,
- the oil filter unit,
- the coolant - oil heat exchanger,
- the cylinder head,
- the coolant pump,
- the vacuum pump,
- the high pressure pump,
- the high-pressure rail,
- the injectors,
- the heater plugs,
- the crankshaft accessories pulley,
- the lifting rings,
- the cylinder head suspended mounting.

4- PARTS TO BE REMOVED FROM THE OLD ENGINE AND FITTED ON THE NEW ENGINE

Remove the following parts from the old engine:

- all the coolant circuit pipes,
- the coolant pump inlet pipe,
- the cylinder head water chamber,
- the inlet distributor,
- the exhaust manifold,
- the turbocharger,
- the exhaust gas recirculation solenoid valve,
- the damper valve,
- the exhaust gas recirculation rigid pipe heat shield at the exhaust manifold outlet,
- the exhaust gas cooler,
- the exhaust gas recirculation solenoid valve rigid pipe downstream of the intercooler,
- the catalytic converter,
- the multifunction support,
- the oil pressure sensor,
- the oil level sensor,
- the camshaft position sensor,
- the crankshaft position sensor,
- the fuel temperature sensor,
- the coolant temperature sensor,
- the intercooler control solenoid valve.

-the accessories (depending on the version):

■the alternator,■the air conditioning compressor ,■the power-assisted steering pump (if fitted),■the dummy pulley.

- Do not forget to remove the exhaust gas temperature sensor from the old engine.

X43, M9R, 804 811 817 824 839 844 846(804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (670 OR 678 OR 680 OR 690 OR 696 OR 698) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858)

- Do not forget to remove the exhaust gas pressure sensor from the old engine.

- Do not forget to remove the "air inlet spacer - inlet air pressure sensor" assembly from the old engine.

- Parts to remember to remove from the old engine (cont.):
  - the clutch,
  - the flywheel.

5- PARTS ALWAYS TO BE REPLACED

- Parts always to be replaced:
  - the catalytic converter half-clamps,
  - the catalytic converter mounting half-clamps,
  - the turbocharger strut.
  - the turbocharger strut bolt,
  - the turbocharger studs,
  - the turbocharger nuts,
  - the inlet distributor studs,
  - the exhaust manifold studs,
  - the exhaust manifold nuts,
  - the accessories belt,
  - the accessories belt tensioning roller,
  - the accessories belt fixed roller,
  - the exhaust gas recirculation solenoid valve seal,
  - the damper valve seal,
  - the dipstick guide tube seal,
  - the water chamber seal,
  - the turbocharger seal,
  - the catalytic converter seal,
  - the inlet distributor seal,
  - the exhaust manifold gasket,
  - the crankshaft position sensor seal,
  - the camshaft position sensor seal,
  - the coolant temperature sensor seal.

- Always replace the turbocharger oil "return pipe - supply pipe" assembly.

- Always replace the EGR solenoid valve rigid pipe at the exhaust manifold outlet.

- Refit the parts removed from the old engine on the new engine.

ENGINE OIL CIRCUIT ASSEMBLY: EXPLODED VIEW

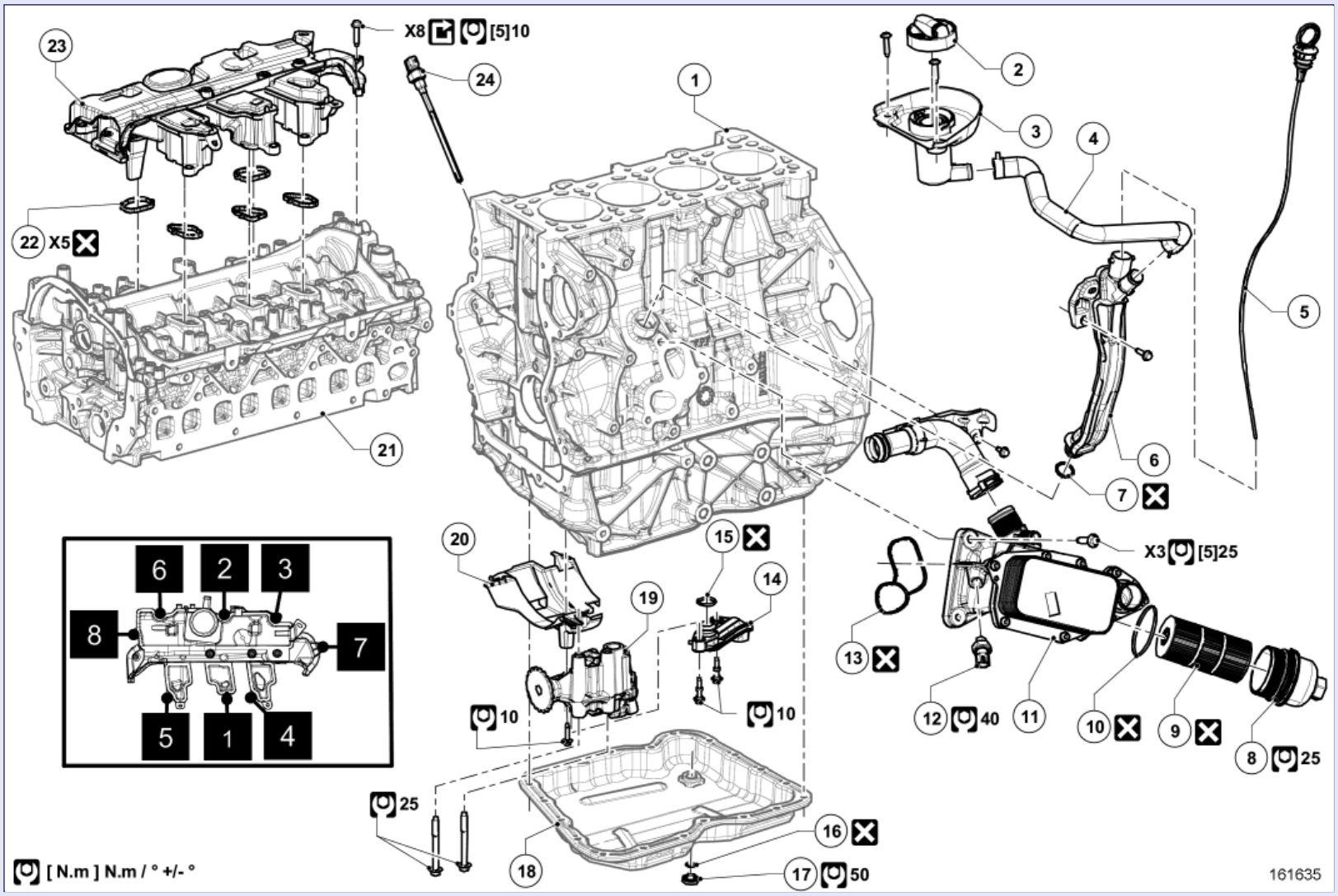


Illustration key: Description .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques Tightening torques: General information .

Marks	Designations	Informations
1	Cylinder block	Cylinder block: Removal - Refitting
2	Engine oil filler cap	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
3	Oil filler neck	
4	Oil filler neck pipe	
5	Engine oil dipstick	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
6	Engine oil dipstick guide	
7	Engine oil dipstick guide seal	
8	Oil filter cover	
9	Oil filter	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
10	Oil filter cover seal	

11	Oil filter unit	(see 10A, Engine and cylinder block assembly, Oil filter unit: Removal - Refitting)
12	Oil level sensor	(see 10A, Engine and cylinder block assembly, Oil level sensor: Removal - Refitting)
13	Oil filter unit seal	(see 10A, Engine and cylinder block assembly, Oil filter unit: Removal - Refitting)
14	Oil pump strainer	
15	Oil pump strainer seal	
16	Drain plug seal	
17	Drain plug	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
18	Lower cover	(see 10A, Engine and cylinder block assembly, Lower cover: Removal - Refitting)
19	Oil pump	(see Oil pump: Removal - Refitting)
20	Oil splash plate	
21	Cylinder head	
22	Oil decanter seal	
23	Oil decanter	Oil decanter: Removal - Refitting
24	Oil level sensor	(see 10A, Engine and cylinder block assembly, Oil level sensor: Removal - Refitting)

M9T, 702(702)

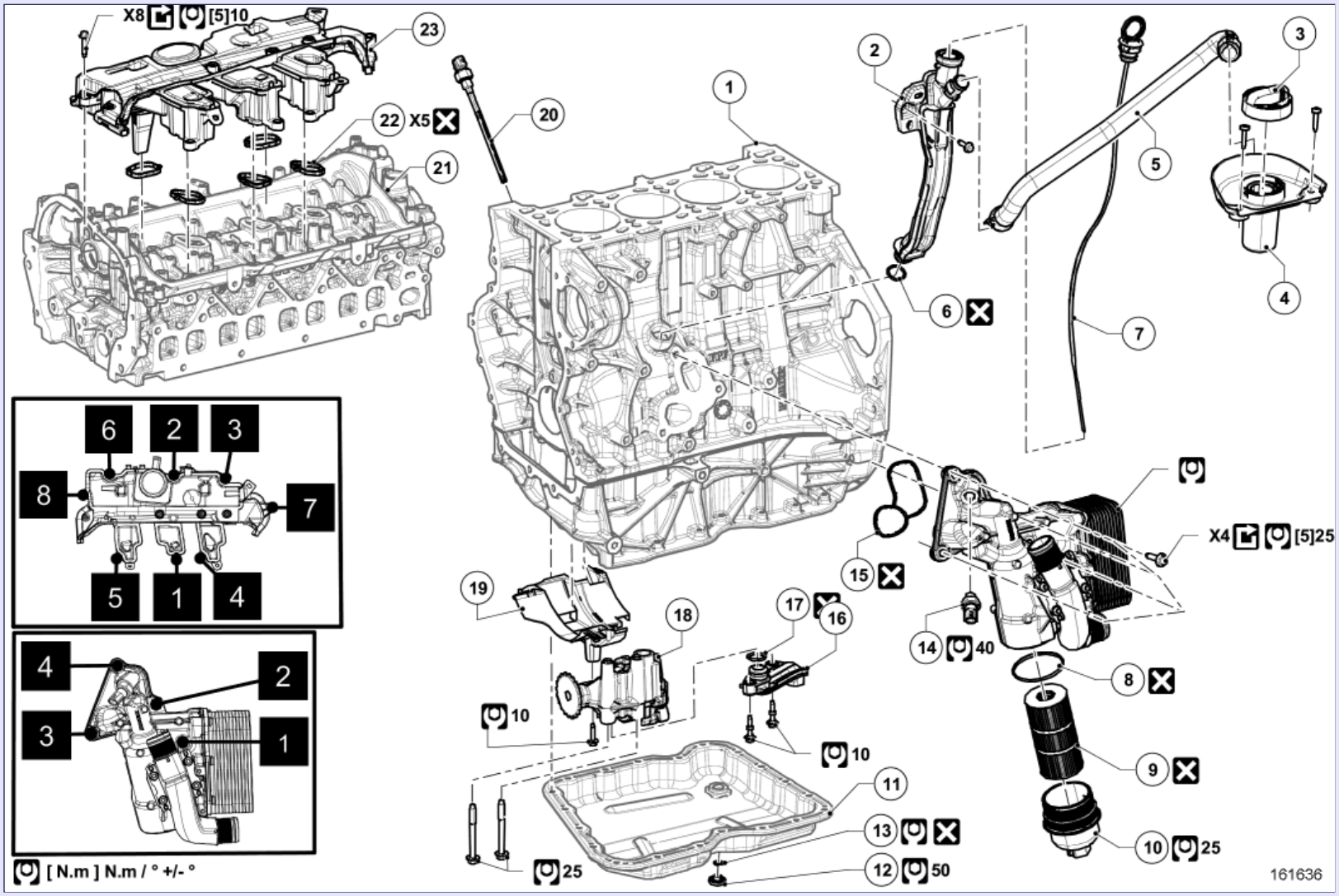


Illustration key: Description .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques Tightening torques: General information .

Marks	Designations	Informations
1	Cylinder block	Cylinder block: Removal - Refitting
2	Engine oil dipstick guide	
3	Engine oil filler cap	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
4	Oil filler neck	
5	Oil filler neck pipe	
6	Engine oil dipstick guide seal	
7	Engine oil dipstick	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
8	Oil filter cover seal	
9	Oil filter	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
10	Oil filter cover	
11	Lower cover	(see 10A, Engine and cylinder block assembly, Lower cover: Removal - Refitting)
12	Drain plug	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
13	Drain plug seal	
14	Oil pressure sensor	(see 10A, Engine and cylinder block assembly, Oil level sensor: Removal - Refitting, page)
15	Oil filter unit seal	
16	Oil pump strainer	
17	Oil pump strainer seal	
18	Oil pump	(see Oil pump: Removal - Refitting)
19	Oil splash plate	
20	Oil level sensor	(see 10A, Engine and cylinder block assembly, Oil level sensor: Removal - Refitting, page)
21	Cylinder head	Cylinder head: Removal - Refitting
22	Oil decanter seal	
23	Oil decanter	Oil decanter: Removal - Refitting

ENGINE OIL CIRCUIT ASSEMBLY: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

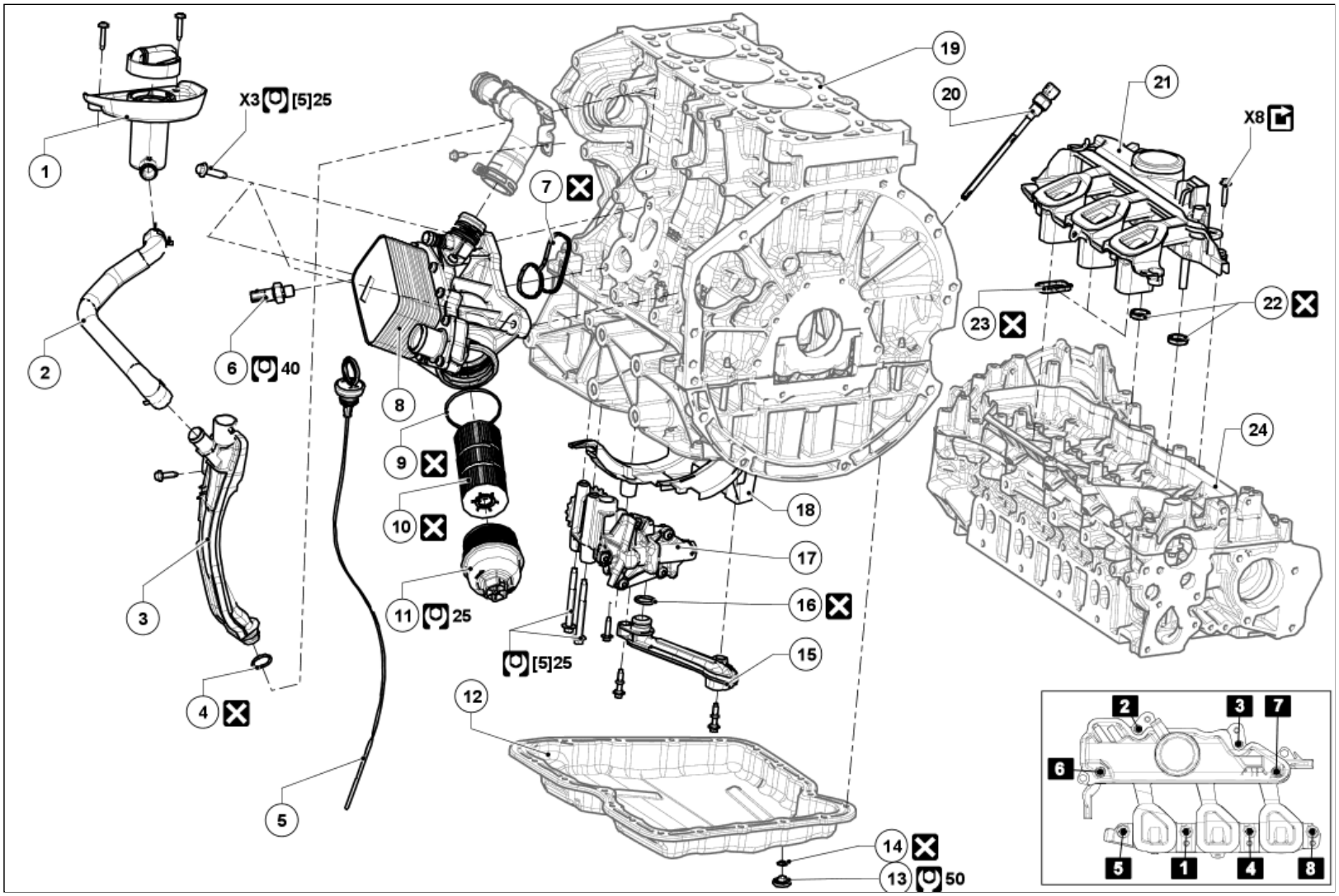


Illustration key: Description Key.

Mark	Description	Information
1	Oil filler neck	
2	Filler neck pipe	
3	Engine oil dipstick guide	
4	Engine oil dipstick guide seal	
5	Engine oil dipstick	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
6	Oil pressure sensor	(see 10A, Engine and cylinder block assembly, Oil pressure sensor: Removal - Refitting)
7	Oil filter unit seal	(see 10A, Engine and cylinder block assembly, Oil filter unit: Removal - Refitting)
8	Oil filter unit	(see 10A, Engine and cylinder block assembly, Oil filter unit: Removal - Refitting)
9	Oil filter cover seal	
10	Oil filter	
11	Oil filter cover	
12	Sump	(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)
13	Drain plug	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
14	Drain plug seal	(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)
15	Oil pump strainer	
16	Oil pump strainer seal	
17	Oil pump	
18	Oil splash plate	
19	Cylinder block	(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)
20	Oil level sensor	
21	Oil decanter	Oil decanter: Removal - Refitting
22	Oil decanter seal	Oil decanter: Removal - Refitting
23	Oil decanter seal	Oil decanter: Removal - Refitting
24	Cylinder head	

ENGINE: PRECAUTIONS FOR THE REPAIR

Note, one or more warnings are present in this procedure

1. SAFETY

1- GENERAL INFORMATION

All information contained in these manuals is intended exclusively for automotive industry professionals.

The documentation is intended to cover all vehicles in theRENAULTrange throughout the world, but may not cover equipment designed for use in specific countries.

The procedures and fault finding procedures recommended and described in this manual have been designed by automotive industry repair professionals.

1)GENERAL RECOMMENDATIONS

Observe basic principles of vehicle repair.

The quality of repair depends first and foremost on the care exercised by the person in carrying it out.

- To ensure good repair:
  - use recommended professional products and original parts,
  - observe the tightening torques,
  - observe the recommendations for parts that should always be replaced after removal, refitting or replacement operations,
  - clean and degrease the sections to be bonded, to ensure they bond correctly.

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

The design quality of the vehicles demands that nothing be left to chance during repair. Consequently, parts or components must be refitted in their original positions (for example: heat shields, wiring routing, pipe routing).

Use professional products and apply them with care. For example, do not apply too much sealant to joint faces, in order to avoid plugging engine oil or coolant pipes.

CAUTION

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

2)SPECIAL TOOLING - EASE OF USE

The repair procedures have been designed using special tools; they must therefore be carried out using these tools to ensure a high degree of working safety and quality of repair.

The equipment we have approved has undergone careful research and testing, and must be used and maintained with care.

3)SAFETY

Certain devices and parts must be handled with particular attention to safety and cleanliness and, above all, with due care.

The safety symbol used in this manual indicates that special attention must be paid to the procedure or the tightening torque values.

- Working safely:
  - use suitable tools which are in good condition (use of "multi-purpose" tools, such as adjustable pliers, etc., should be avoided wherever possible),
  - use supports and adopt a correct posture when performing heavy work or raising loads,
  - check that the working area is clean and tidy during the operation,
  - use personal protection (gloves, goggles, work shoes, masks, skin protection, etc.),
  - always follow the safety instructions associated with the operation to be performed,
  - do not smoke when working on vehicles,
  - do not use harmful products in unventilated rooms,
  - do not ingest any chemicals (brake fluid, coolant, etc.).

- Respecting the environment:
  - sort waste according to its particular qualities,
  - do not burn discarded products (tyres, etc.).

4)CONCLUSION

The procedures contained in this document merit your attention. Please read them carefully in order to reduce the risk of injury, and avoid using incorrect procedures that could damage the vehicle or make it dangerous in use.

Following the recommended procedures will help you to provide a quality of service which will ensure the vehicles achieve the highest levels of performance and reliability.

Maintenance and repair operations must be carried out under the proper conditions to ensure that our vehicles run safely and reliably.

2. CLEANLINESS

1- RISKS RELATING TO CONTAMINATION

1)PROTECTIVE BAGS

Use hermetically-resealable plastic bags, using adhesive tape, for example, to store components which will be refitted and reused. Stored parts will therefore be less subject to the risk of contamination.

These are single-use bags: after use they must be discarded.

ENGINE: REPAIR

Note, one or more warnings are present in this procedure

Special tooling required	
Flywheel locking tool.	Mot. 1431

parts always to be replaced:
balance shaft bolt
Flywheel bolts
Drive plate bolt

REMOVAL

1. UPPER ENGINE REMOVAL OPERATION

Remove:

- the engine - gearbox assembly,
- the timing chain(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) ,
- the timing sprockets(see 10A, Engine and cylinder block assembly, Timing sprocket: Removal - Refitting) .

X43, M9R, 804 817 824 839 844 846(804 OR 817 OR 824 OR 839 OR 844 OR 846) AND (670 OR 678 OR 680 OR 690 OR 696 OR 698) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858)

Remove the exhaust gas pressure sensorExhaust gas pressure sensor: Removal - Refitting .

Remove:

- the vacuum pumpVacuum pump: Removal - Refitting ,
- the high pressure pipe between the pump and the railHigh pressure pipe between pump and rail: Removal - Refitting ,
- the oil decanterOil decanter: Removal - Refitting ,
- the injector fuel return railDiesel injector fuel return rail: Removal - Refitting ,
- the high pressure pipes between the rail and the injectorsHigh pressure pipe between rail and injector: Removal - Refitting ,
- the injectorsDiesel injector: Removal - Refitting ,
- the damper valve,
- the EGR pipe at the EGR cooler inlet,
- the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,

- the camshafts(see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) (see 10A,Engine and cylinder block assembly, Camshaft: Removal - Refitting) ,
- depending on version, the catalytic pre-converterCatalytic pre-converter: Removal - Refitting or the catalytic converter at the turbocharger outletCatalytic converter: Removal - Refitting ,
- the turbocharger oil pipesTurbocharger oil pipe: Removal - Refitting ,
- the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the turbocharger,
- the exhaust manifold,
- the EGR solenoid valve,
- the inlet distributor,
- the valves(see 10A, Engine and cylinder block assembly, Valve: Removal - Refitting) ,
- the injector rail,
- coolant outlet unitCooling unit : Removal - Refitting ,
- the heater plugsHeater plugs: Removal - Refitting .

2. UPPER ENGINE REPAIR OPERATION

Clean the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Cleaning) .

Check:

- the cylinder head and the rocker cover(see 10A, Engine and cylinder block assembly, Cylinder head: Check) ,
- the camshafts(see 10A, Engine and cylinder block assembly, Camshaft: Check) ,
- the valves and the valve springs(see 10A, Engine and cylinder block assembly, Valve: Check) .

Note:

Replace the parts whose values are outside the permitted tolerance values.

3. LOWER ENGINE REMOVAL OPERATION

Remove the oil filter unitOil filter unit: Removal - Refitting .

Immobilise the flywheel while fitting theFlywheel locking tool.(Mot. 1431) on the cylinder block.

Remove:

- the clutch plate and pressure platePressure plate - Disc: Removal - Refitting ,
- the flywheelFlywheel: Removal - Refitting ,
- the flywheel locking toolFlywheel locking tool.(Mot. 1431) .

Remove:

- the gearbox side crankshaft sealCrankshaft seal, gearbox end: Removal - Refitting ,
- the sumpLower cover: Removal - Refitting ,
- the cylinder block base plate(see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) .

Remove:

- the con rod - piston assemblies from each cylinder(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) ,
- the crankshaft(see 10A, Engine and cylinder block assembly, Crankshaft: Removal - Refitting) ,
- the crankshaft position sensorCrankshaft position sensor: Removal - Refitting ,
- the oil level sensorOil level sensor: Removal - Refitting ,
- the EGR cooler,
- the coolant pump inlet pipeCoolant pump inlet pipe: Removal - Refitting .

Remove the power assisted steering pumpPower-assisted steering pump: Removal - Refitting .

Remove the air conditioning compressorCompressor: Removal - Refitting .

Remove the cylinder block(see 10A, Engine and cylinder block assembly, Cylinder block: Removal - Refitting) .

4. LOWER ENGINE REPAIR OPERATION

Clean the cylinder block(see 10A, Engine and cylinder block assembly, Cylinder block: Cleaning) .

Check :

- the cylinder block and the cylinder block base plate(see 10A, Engine and cylinder block assembly, Cylinder block: Check) ,
- the piston - con rod assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) ,
- the crankshaft(see 10A, Engine and cylinder block assembly, Crankshaft: Check) .

Note:

Replace the parts whose values are outside the permitted tolerance values.

REFITTING

1. REFITTING PREPARATION OPERATION

Parts always to be replaced:

- Accessories belt,
- Accessories belt fixed roller,
- Accessories belt tensioning roller,
- Crankshaft seal, timing end,

- Coolant pump seal,
- Timing chain,
- Crankshaft timing sprocket,
- Timing sprocket (driven by the chain) on the camshaft, exhaust side,
- Timing sprocket bolt on the camshaft, exhaust side,
- Timing sprocket washer on the camshaft, exhaust side,
- Timing hydraulic tensioner,
- Timing chain guide,
- Timing chain guide bolt,
- Timing chain tensioner guide,
- Timing chain tensioner guide bolt,
- Damper valve seal,
- Catalytic converter or catalytic pre-converter seal,
- Catalytic converter or catalytic pre-converter half-clips,
- Catalytic converter or catalytic pre-converter mounting half-clips,
- Catalytic converter or catalytic pre-converter nuts,
- High-pressure pipe between the pump and the rail,
- High-pressure pipes between the rail and the injectors,
- Injector seals,
- High-pressure pump seal,
- High-pressure pump pre-greased bolt,
- Oil separator seals,
- Cylinder head gasket,
- Cylinder head bolts,
- Vacuum pump seal,
- Valve stem seals,
- Inlet distributor seal,
- EGR solenoid valve seal,
- Water chamber seal,
- Exhaust manifold gasket,
- Turbocharger seal,
- Turbocharger strut bolt,
- Inlet distributor studs (if removed),
- Exhaust manifold studs (if removed),
- Exhaust manifold nuts,
- Turbocharger nuts,
- High-pressure pump drive sprocket bolt (if removed),
- Turbocharger strut,
- Con rod cap bolts,
- Crankshaft bearing cap bolts,
- Cylinder block base plate blanking covers (if fitted),
- Oil pump strainer seal,
- Engine drain plug seal,
- Gearbox end crankshaft seal,
- Oil filter unit seal,
- Oil filter cover seal,
- Oil filter,
- Coolant pump inlet pipe seal,
- Crankshaft position sensor seal.

Always replace the turbocharger oil pipes.

- Parts always to be replaced:
  - Seals on the EGR pipe at the EGR cooler inlet,
  - Bolts on the EGR pipe at the EGR cooler inlet,
  - Seals on the EGR pipe at the EGR cooler outlet,
  - Bolts on the EGR pipe at the EGR cooler outlet,
  - Dipstick guide tube seal.

- parts always to be replaced: Flywheel bolts

CAUTION

The gasket faces must be clean, dry and free from grease (avoid finger marks)

CAUTION

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

2. LOWER ENGINE REFITTING OPERATION

- Refit the cylinder block (see 10A, Engine and cylinder block assembly, Cylinder block: Removal - Refitting) .

- Refit the air conditioning compressor Compressor: Removal - Refitting .

- Refit the power assisted steering pump Power-assisted steering pump: Removal - Refitting .

- Refit:

- the coolant pump inlet pipe **Coolant pump inlet pipe: Removal - Refitting** ,
- the EGR cooler,
- the oil level sensor **Oil level sensor: Removal - Refitting** ,
- the crankshaft position sensor **Crankshaft position sensor: Removal - Refitting** .

When replacing the cylinder block, crankshaft or crankshaft bearing shells, always determine the thickness class for each bearing shell that will be fitted on each crankshaft bearing, to ensure that journal clearance is within tolerances **(see 10A, Engine and cylinder block assembly, Crankshaft: Check)** .

Note:

Any clearances of the crankshaft journal outside the tolerances can cause engine damage.

Refit the crankshaft **(see 10A, Engine and cylinder block assembly, Crankshaft: Removal - Refitting)** .

When replacing the cylinder block, crankshaft, con rods or pistons, always determine the piston pin height class for each piston that will be fitted on each cylinder to ensure that piston protrusion from the cylinder block is within tolerances **(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check)** .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-engine malfunction (poor starting, pollution, poor performance).

-engine damage (due to piston contact with the cylinder head or the valves).

Refit the con rod - piston assemblies onto each cylinder **(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting)** .

When replacing the cylinder block, crankshaft, con rods or pistons, always check that the piston protrusion in relation to the cylinder block be within tolerances, after refitting the piston - con rod assemblies **(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check)** .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performances).

- engine damage (piston in contact with the cylinder head or valves).

Refit:

- the cylinder block base plate(see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) ,
- the sumpLower cover: Removal - Refitting ,
- the gearbox side crankshaft sealCrankshaft seal, gearbox end: Removal - Refitting .

Refit:

- the clutch plate and pressure platePressure plate - Disc: Removal - Refitting ,
- the flywheelFlywheel: Removal - Refitting ,
- the flywheel locking toolFlywheel locking tool.(Mot. 1431) .

Refit the oil filter unitOil filter unit: Removal - Refitting .

3. UPPER ENGINE REFITTING OPERATION

Refit:

- the heater plugsHeater plugs: Removal - Refitting ,
- coolant outlet unitCooling unit : Removal - Refitting ,
- the injector rail,
- the valves(see 10A, Engine and cylinder block assembly, Valve: Removal - Refitting) .

When replacing valves, always check that the position of the valve in relation to the cylinder head joint face is within tolerances(see 10A, Engine and cylinder block assembly, Valve: Check) .

Note:

A valve position that is outside the permitted tolerance values in relation to cylinder head joint face may damage the engine.

Refit:

- the inlet distributor,

- the EGR solenoid valve,
- the exhaust manifold,
- the turbocharger.

Check that the cylinder head seal matches the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Check) .

Refit:

- the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the turbocharger oil pipesTurbocharger oil pipe: Removal - Refitting ,
- depending on version, the catalytic pre-converterCatalytic pre-converter: Removal - Refitting or the catalytic converter at the turbocharger outletCatalytic converter: Removal - Refitting ,
- the camshafts(see 10A, Engine and cylinder block assembly, Camshaft: Removal - Refitting) (see 10A,Engine and cylinder block assembly, Camshaft: Removal - Refitting) ,
- the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the injectorsDiesel injector: Removal - Refitting ,
- the high pressure pipes between the rail and the injectorsHigh pressure pipe between rail and injector: Removal - Refitting ,
- the injector fuel return railDiesel injector fuel return rail: Removal - Refitting ,
- the oil decanterOil decanter: Removal - Refitting ,
- the high pressure pipe between the pump and the railHigh pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pumpVacuum pump: Removal - Refitting ,
- the EGR pipe at the EGR cooler inlet,
- the damper valve.

X43, M9R, 804 817 824 839 844 846(804 OR 817 OR 824 OR 839 OR 844 OR 846) AND (670 OR 678 OR 680 OR 690 OR 696 OR 698) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858)

Refit the exhaust gas pressure sensorExhaust gas pressure sensor: Removal - Refitting .

Refit:

- the timing sprockets(see 10A, Engine and cylinder block assembly, Timing sprocket: Removal - Refitting) ,
- the timing chain(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) ,
- the engine - gearbox assembly.

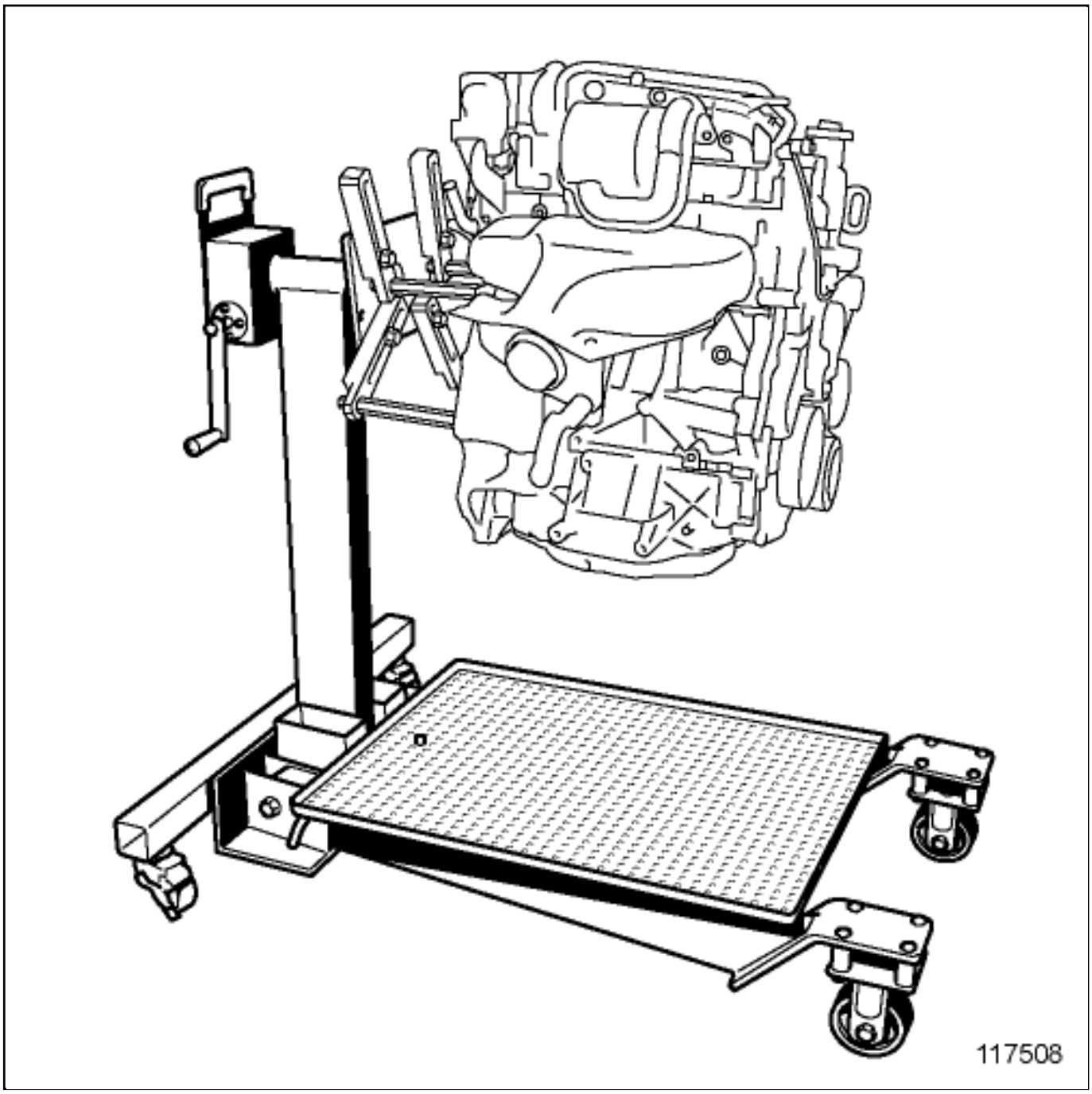
ENGINE SUPPORT EQUIPMENT: USE

Note, one or more warnings are present in this procedure

Special tooling required	
Engine support, can be adapted for Desvil stand.	Mot. 1723

Equipment required
component support
workshop hoist

1. PREPARING TO INSTALL THE ENGINE ON THE COMPONENT SUPPORT



WARNING

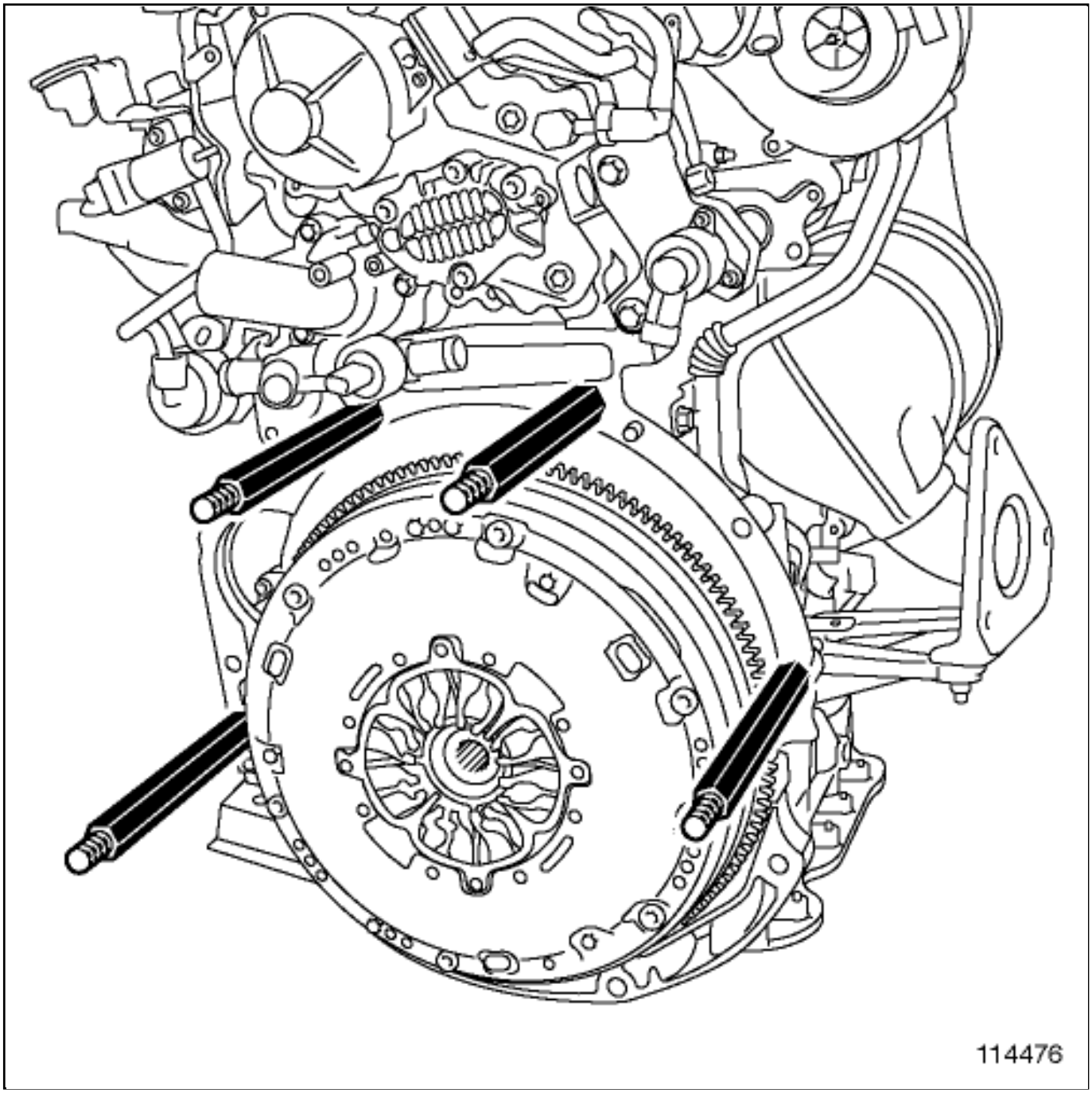
To work on the engine in complete safety, it is essential to use a component support.

CAUTION

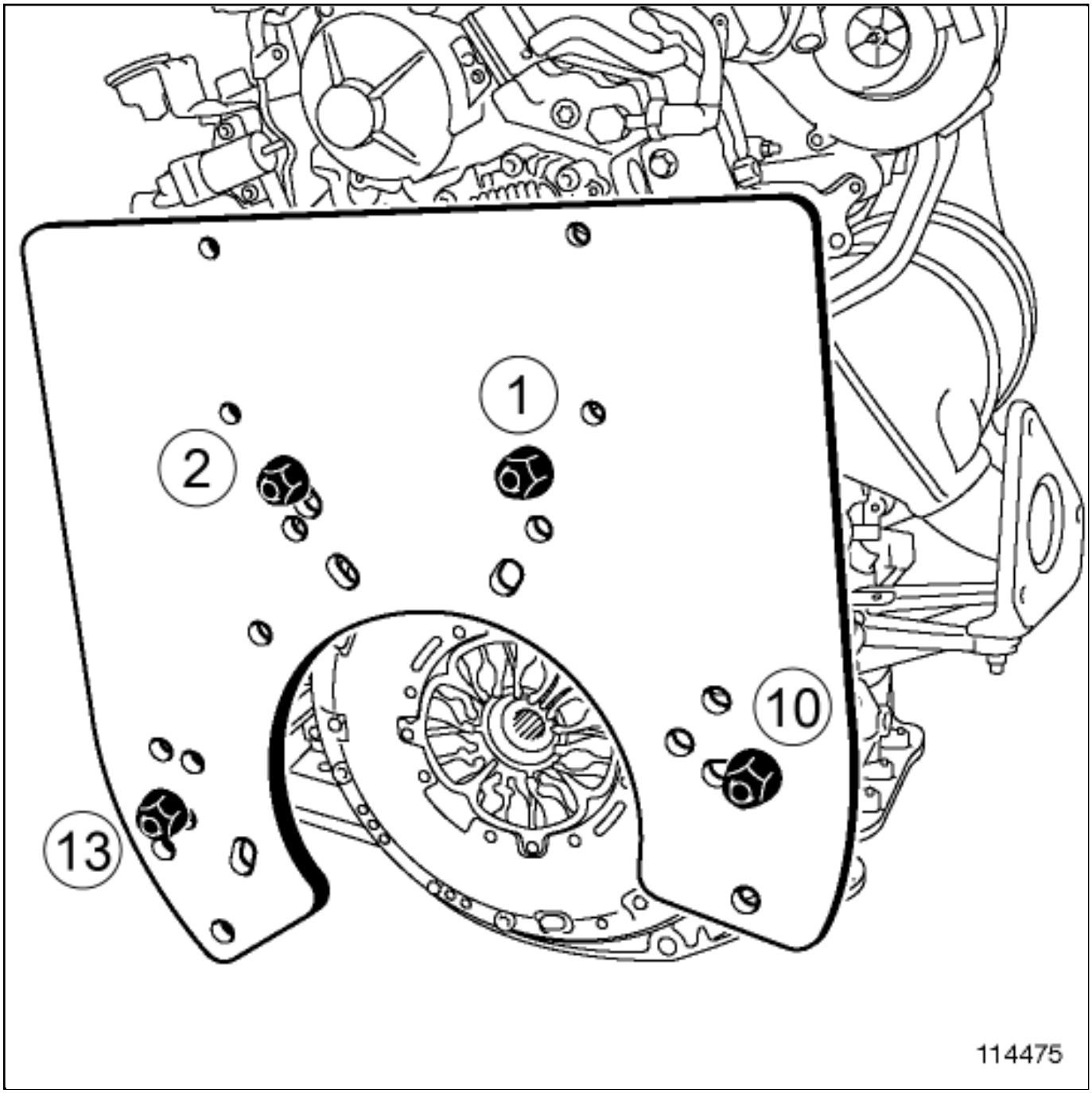
- It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump may also damage the engine by:
  - blocking the strainer,
  - raising the oil level above maximum, with a risk of engine racing.

- Remove the engine - gearbox assembly

- Disconnect the gearbox from the engine **Manual gearbox: Removal - Refitting**

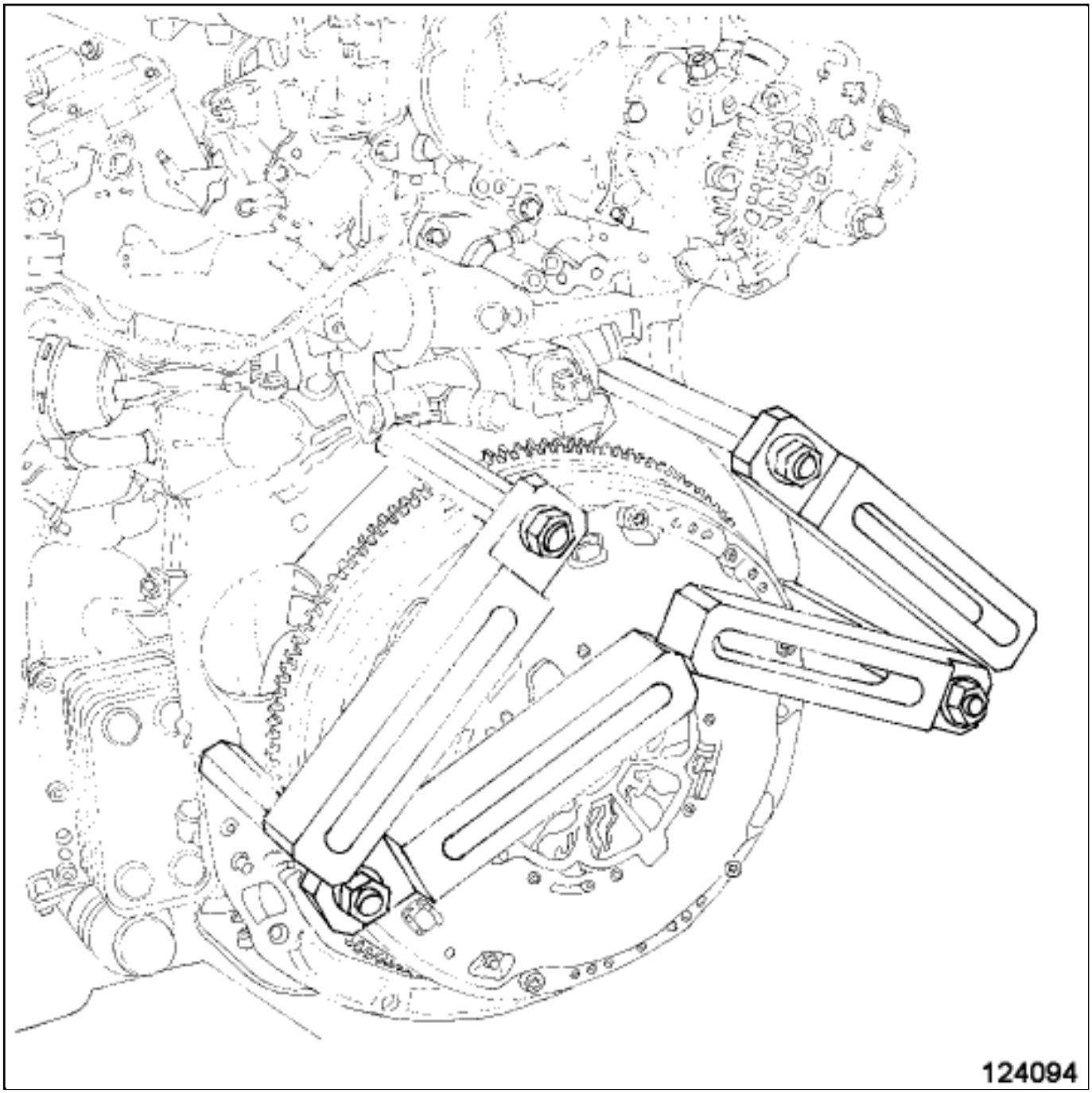


- Fit the pins of the toolEngine support, can be adapted for Desvil stand.(Mot. 1723) on the cylinder block on the flywheel end.



- Position the mounting plate of theEngine support, can be adapted for Desvil stand.(Mot. 1723) on the support studs (holes(1) , (2) , (10) and (13)).

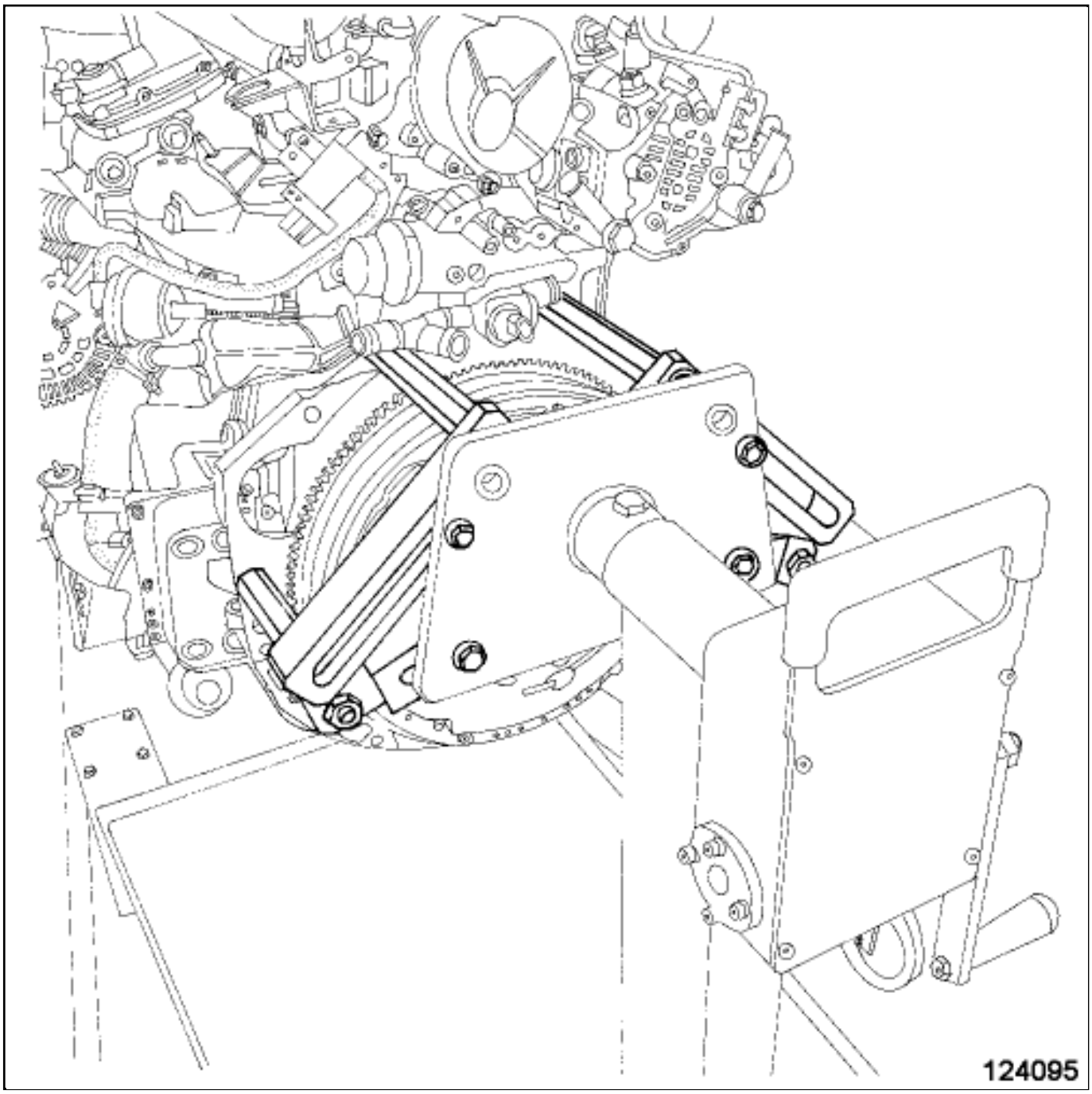
- Tighten the support stud nuts on the stand plate.



Or:

- fit the support bars component supporton the pins,
- fit the support bar nuts, without tightening them.

2. FITTING THE ENGINE ON THE COMPONENT SUPPORT



- Position the "engine - pins - mounting plate" assembly or the "engine - pins - support bar" assembly on the component stand using the workshop hoistand a load positioner.

- Tighten the stand plate studs or the support bars on the component stand.

- Remove the load positioner.

3. REMOVING THE ENGINE FROM THE COMPONENT SUPPORT

Maintain the "engine - pins - mounting plate" assembly or the "engine - pins - support bar" assembly on the component stand using the workshop hoist and load positioner.

Remove the mounting plate studs or the retaining bars from the component support.

Separate the "engine - pins - mounting plate" assembly or the "engine - pins - support bar" assembly from the component stand using the workshop hoist and load positioner.

4. FINAL OPERATION

Remove:

- the pin nuts from the stand plate,
- the mounting plate.

Or remove:

- the support bar nuts,
- the retaining struts.

Remove the pins of theEngine support, can be adapted for Desvil stand.(**Mot. 1723**) .

Reconnect the gearbox on the engine**Manual gearbox: Removal - Refitting**

Refit the engine - gearbox assembly.

XSL version : 3.02 du 22/07/11

ENGINE-GEARBOX UNIT SUPPORT ASSEMBLY: EXPLODED VIEW

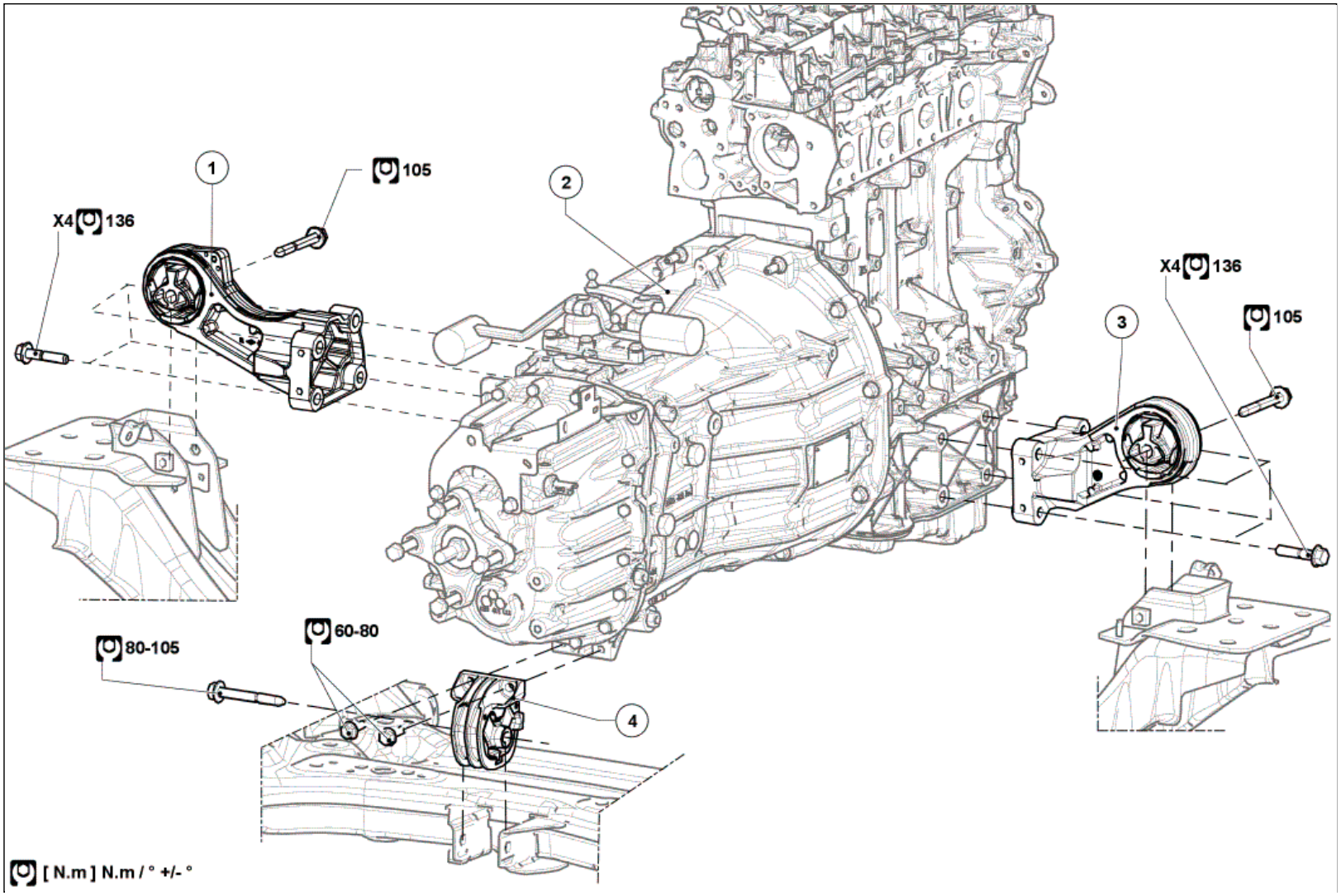


Illustration key: Description Key.

Mark	Description	Information
1	Front left-hand rubber pad	(see 19D, Engine mounting, Left-hand suspended engine mounting: Removal - Refitting)
2	Manual gearbox	Gearbox assembly: Exploded view
3	Front right-hand rubber pad	(see 19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting)
4	Rear rubber pad	(see 19D, Engine mounting, Lower engine tie-bar: Removal - Refitting)

ENGINE-GEARBOX UNIT SUPPORT ASSEMBLY: EXPLODED VIEW

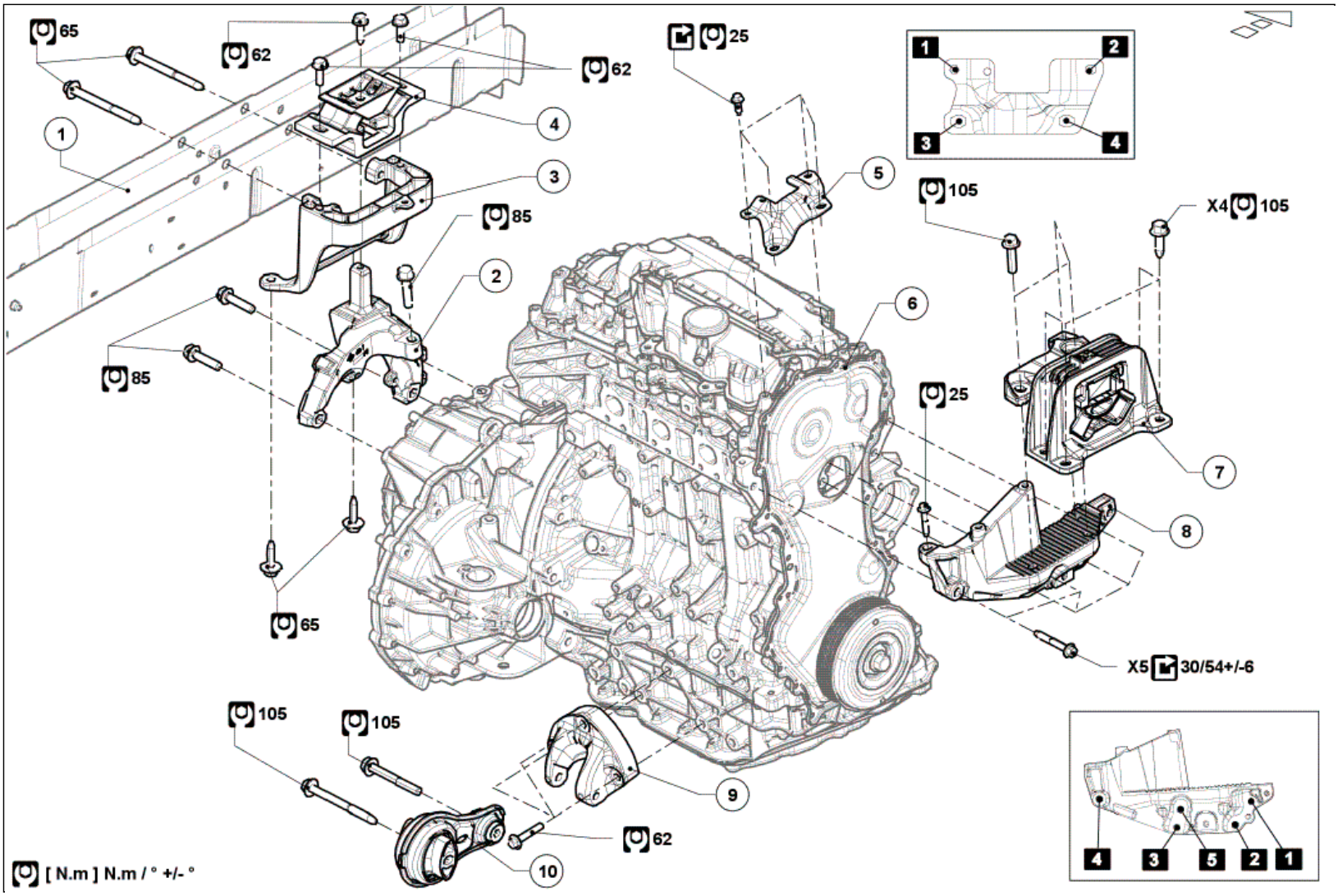


Illustration key: Description Key.

Mark	Description	Information
1	Front side member	
2	Gearbox support	(see 19D, Engine mounting, Left-hand suspended engine mounting: Removal - Refitting)
3	Gearbox rubber pad mounting on the body	
4	Rubber pad	
5	Engine mounting strut	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
6	Engine - gearbox assembly	(see 10A, Engine and cylinder block assembly, Engine - gearbox assembly: Removal - Refitting)
7	Rubber pad	(see 19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting)
8	Cylinder head suspended mounting	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
9	Engine tie-bar mounting	(see 19D, Engine mounting, Lower engine tie-bar: Removal - Refitting)
10	Engine tie-bar	

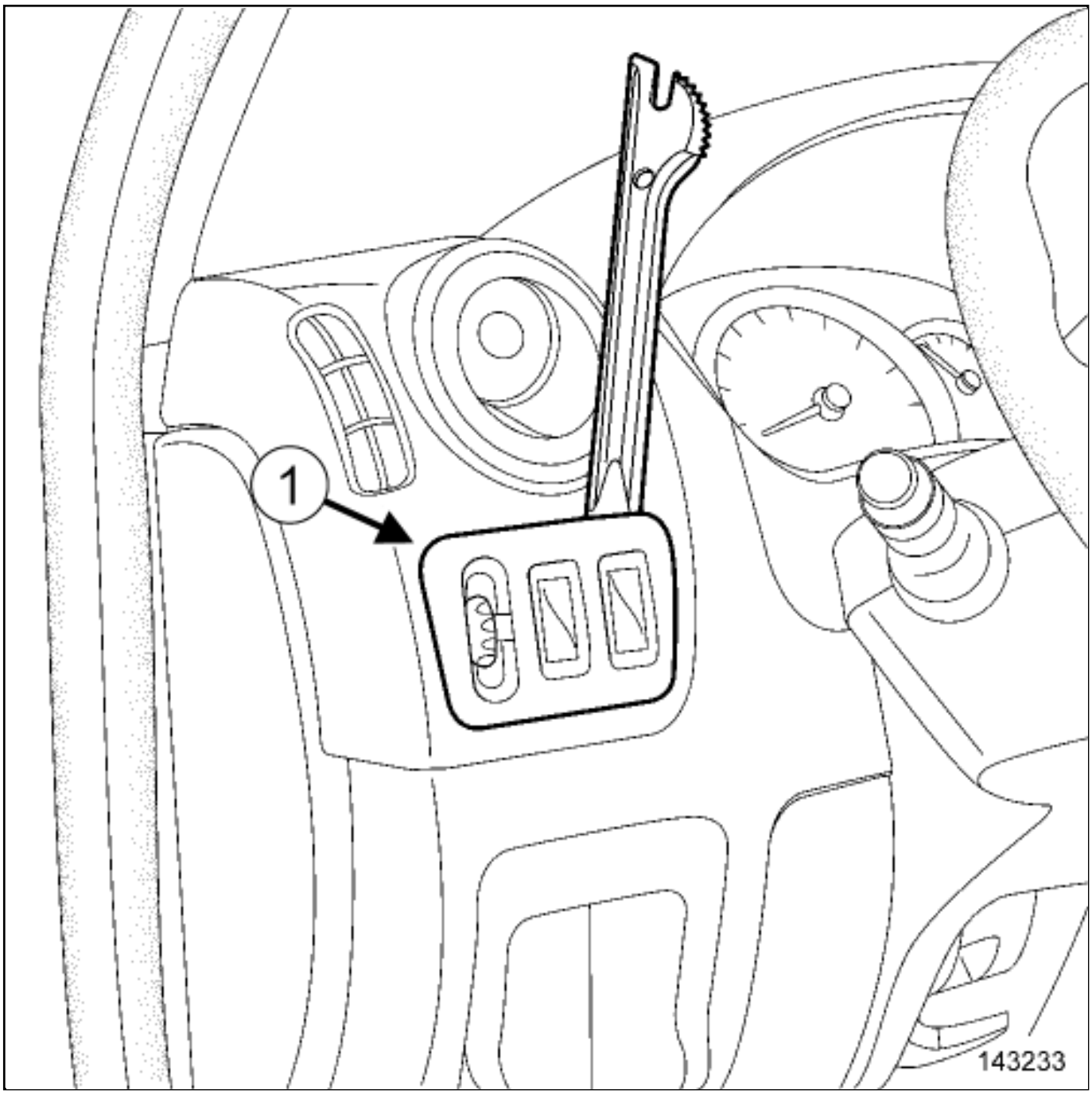
ESP INHIBITOR SWITCH: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

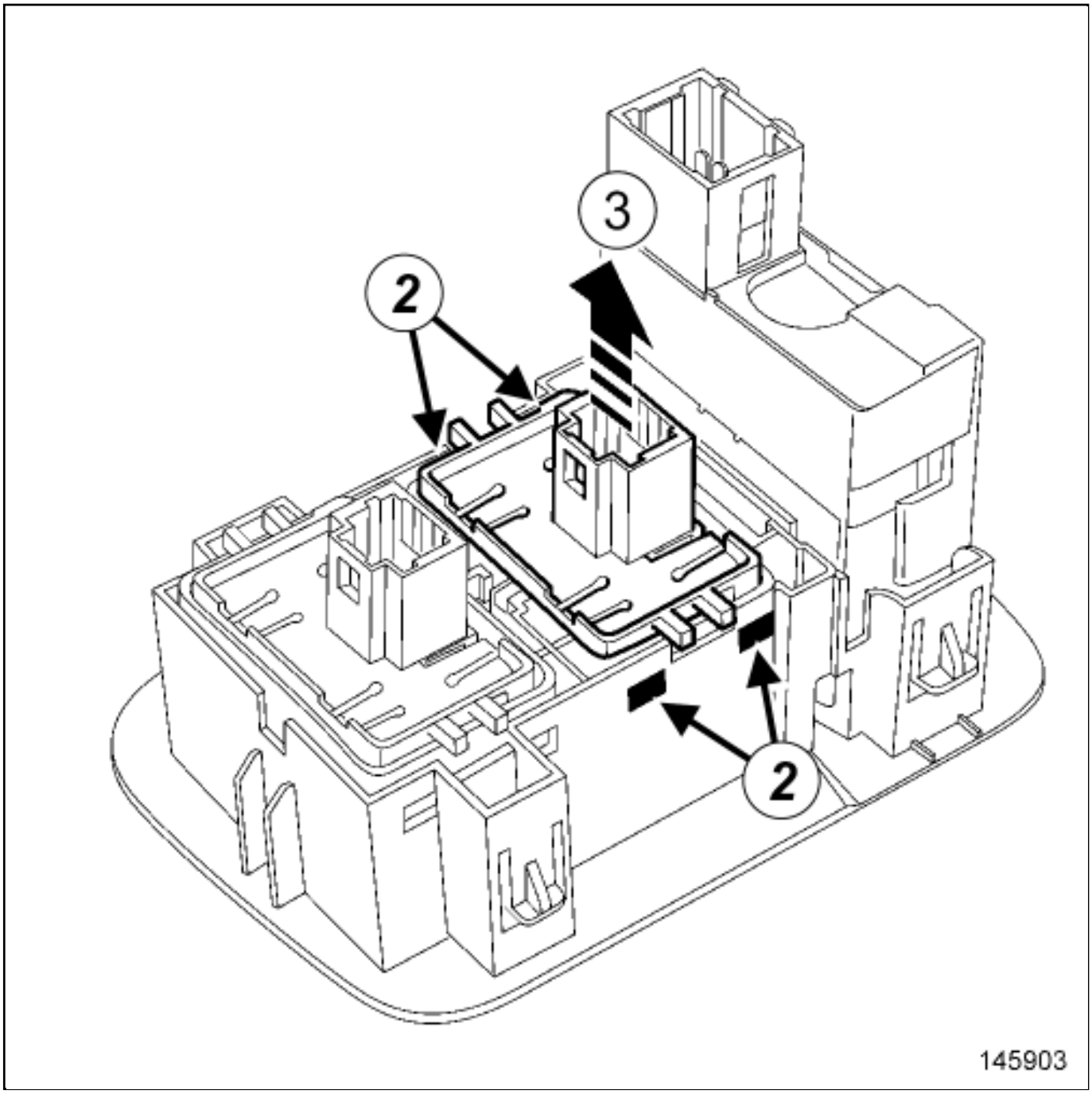
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.



- Unclip the plate(1) using the toolSet of trim removal levers.(Car. 1363) .
- Disconnect the connectors from the plate.

2. REMOVAL OPERATION



- Remove the ESP inhibitor switch(3) by pressing on the clips(2) .

REFITTING

- Proceed in the reverse order to removal.

Repair-30x04x03x36-01x37-1-10-1.xml

XSL version : 3.02 du 22/07/11

EXHAUST ASSEMBLY IN ENGINE COMPARTMENT: EXPLODED VIEW

Special tooling required	
22 mm socket for removal - refitting of oxygen sensors.	Mot. 1495-01
Spanner for tightening the exhaust gas temperature sensor	Mot. 1807

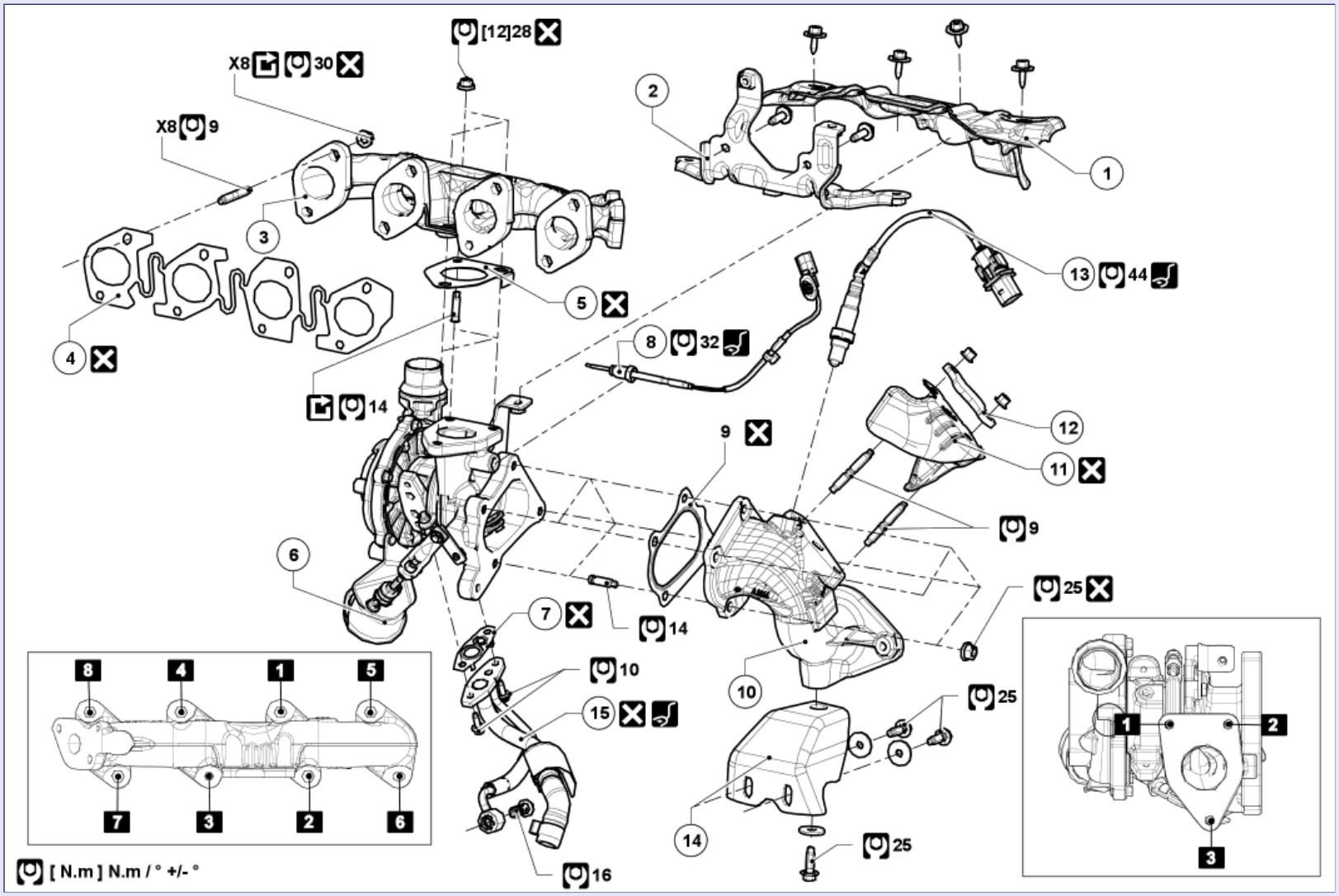


Illustration key: Description Key.

Mark	Description	Information
1	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
2	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
3	Exhaust manifold	Exhaust manifold: Removal - Refitting
4	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
5	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
6	Turbocharger	Turbocharger: Removal - Refitting
7	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting

8	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) (Mot. 1807)
9	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
10	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
11	Blanking cover seal of turbocharger outlet exhaust gas duct	
12	Blanking cover of turbocharger outlet exhaust gas duct	
13	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot. 1495-01)
14	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
15	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting (Mot. 1448)

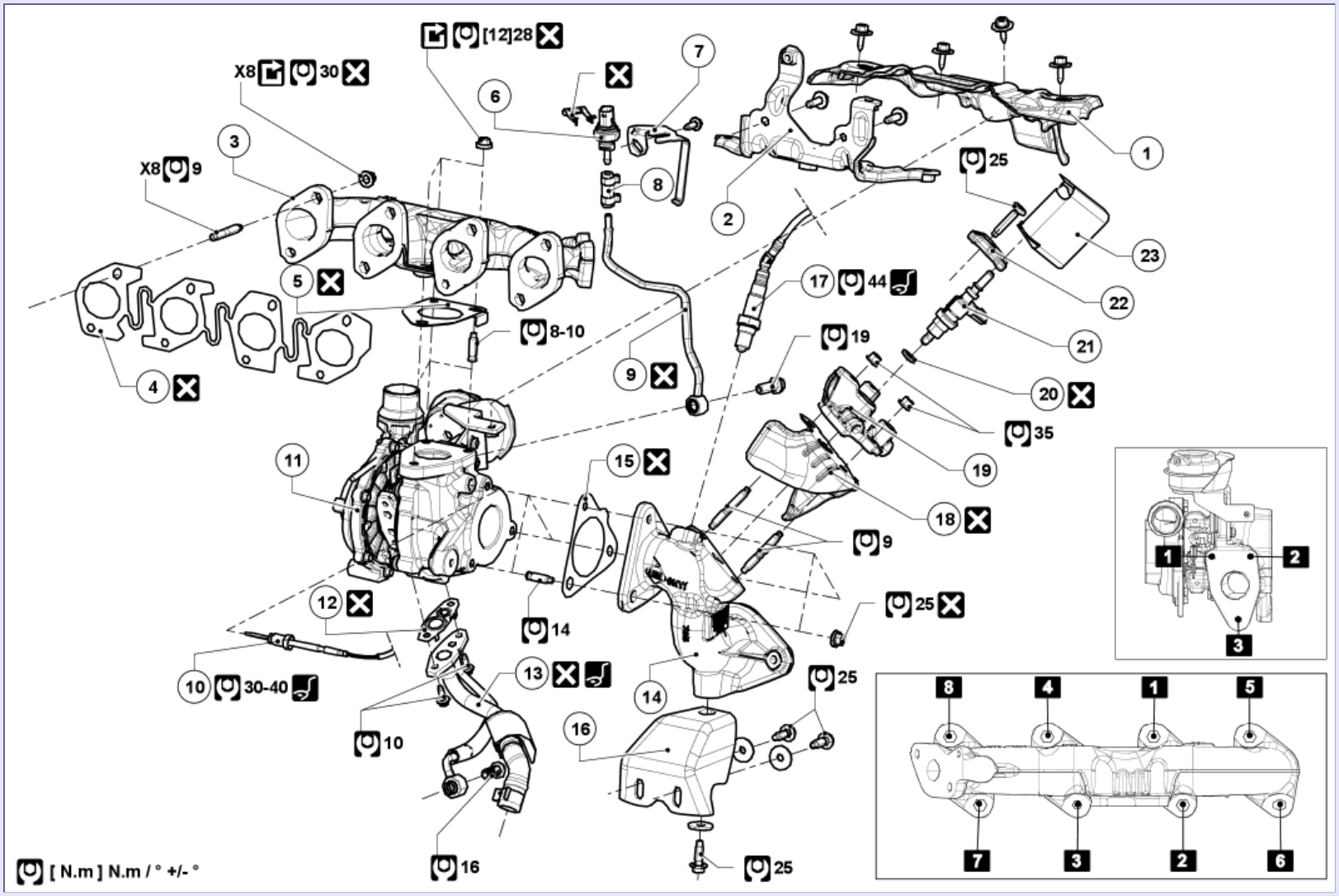


Illustration key: Description **Key.**

Mark	Description	Information
1	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
2	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
3	Exhaust manifold	Exhaust manifold: Removal - Refitting
4	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
5	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
6	Exhaust gas pressure sensor	(see 19B, Exhaust, Exhaust gas pressure sensor: Removal - Refitting)
7	Exhaust gas pressure sensor support	
8	Exhaust gas pressure sensor pipe	
9	Exhaust gas pressure take-off pipe	
10	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) **(Mot. 1807)**
11	Turbocharger	Turbocharger: Removal - Refitting

12	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting
13	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting (Mot. 1448)
14	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
15	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
16	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
17	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot.1495-01)
18	Exhaust fuel injector cooler seal	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
19	Exhaust fuel injector cooler	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
20	Exhaust fuel injector seal	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
21	Exhaust fuel injector	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
22	Exhaust fuel injector bracket	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
23	Exhaust fuel injector protective shield	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)

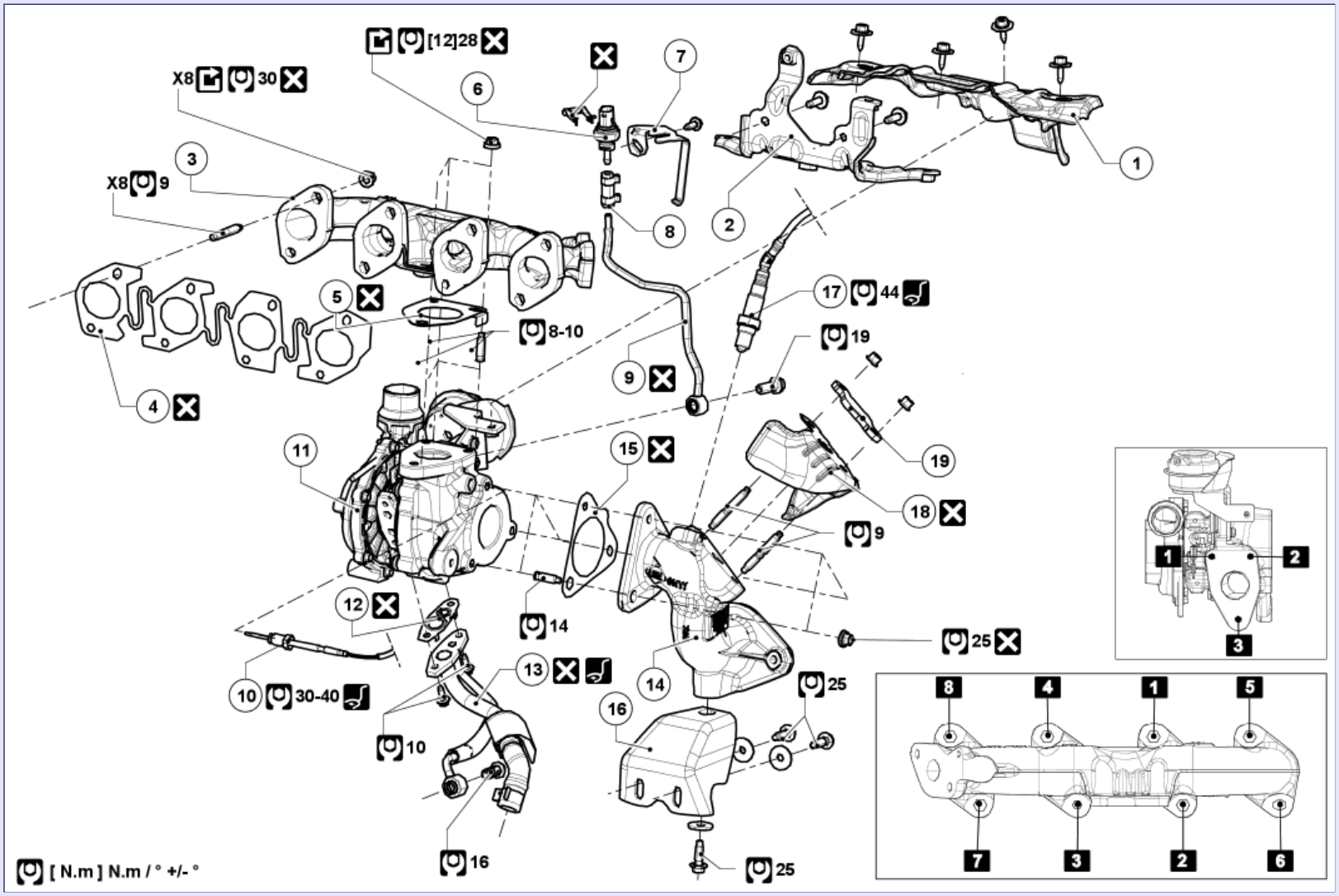


Illustration key: Description Key.

Mark	Description	Information
1	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
2	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
3	Exhaust manifold	Exhaust manifold: Removal - Refitting
4	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
5	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
6	Exhaust gas pressure sensor	(see 19B, Exhaust, Exhaust gas pressure sensor: Removal - Refitting, page)
7	Exhaust gas pressure sensor support	
8	Exhaust gas pressure sensor pipe	
9	Exhaust gas pressure take-off pipe	
10	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) (Mot. 1807)
11	Turbocharger	Turbocharger: Removal - Refitting

12	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting
13	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting (Mot. 1448)
14	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
15	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
16	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
17	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot.1495-01)
18	Blanking cover seal of turbocharger outlet exhaust gas duct	
19	Blanking cover of turbocharger outlet exhaust gas duct	

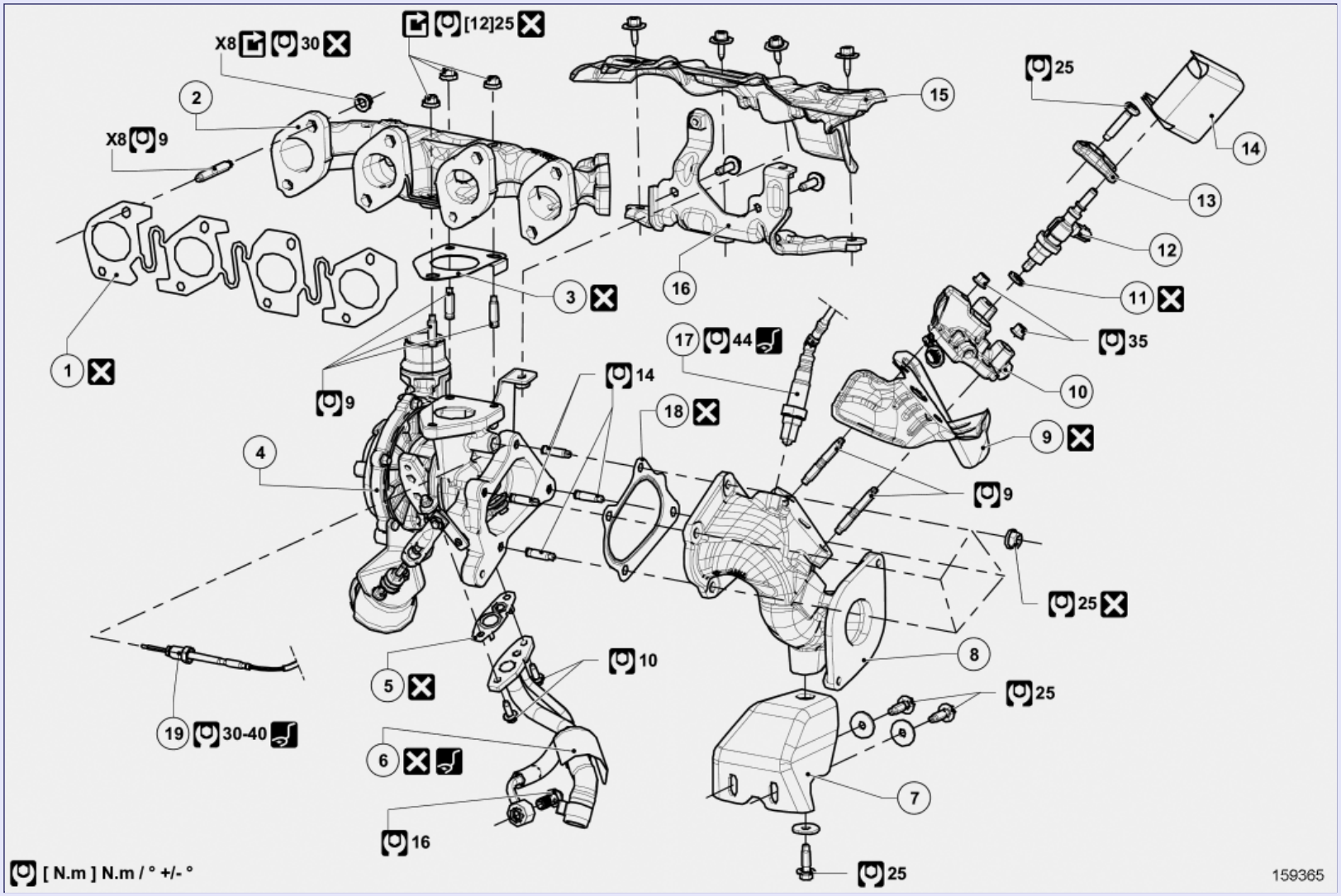


Illustration key: Description **Key.**

Mark	Description	Information
1	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
2	Exhaust manifold	Exhaust manifold: Removal - Refitting
3	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
4	Turbocharger	Turbocharger: Removal - Refitting
5	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting
6	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting **(Mot. 1448)**
7	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
8	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
9	Exhaust fuel injector cooler seal	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
10	Exhaust fuel injector cooler	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
11	Exhaust fuel injector seal	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)

12	Exhaust fuel injector	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
13	Exhaust fuel injector bracket	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
14	Exhaust fuel injector protective shield	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
15	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
16	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
17	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot.1495-01)
18	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
19	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) (Mot. 1807)

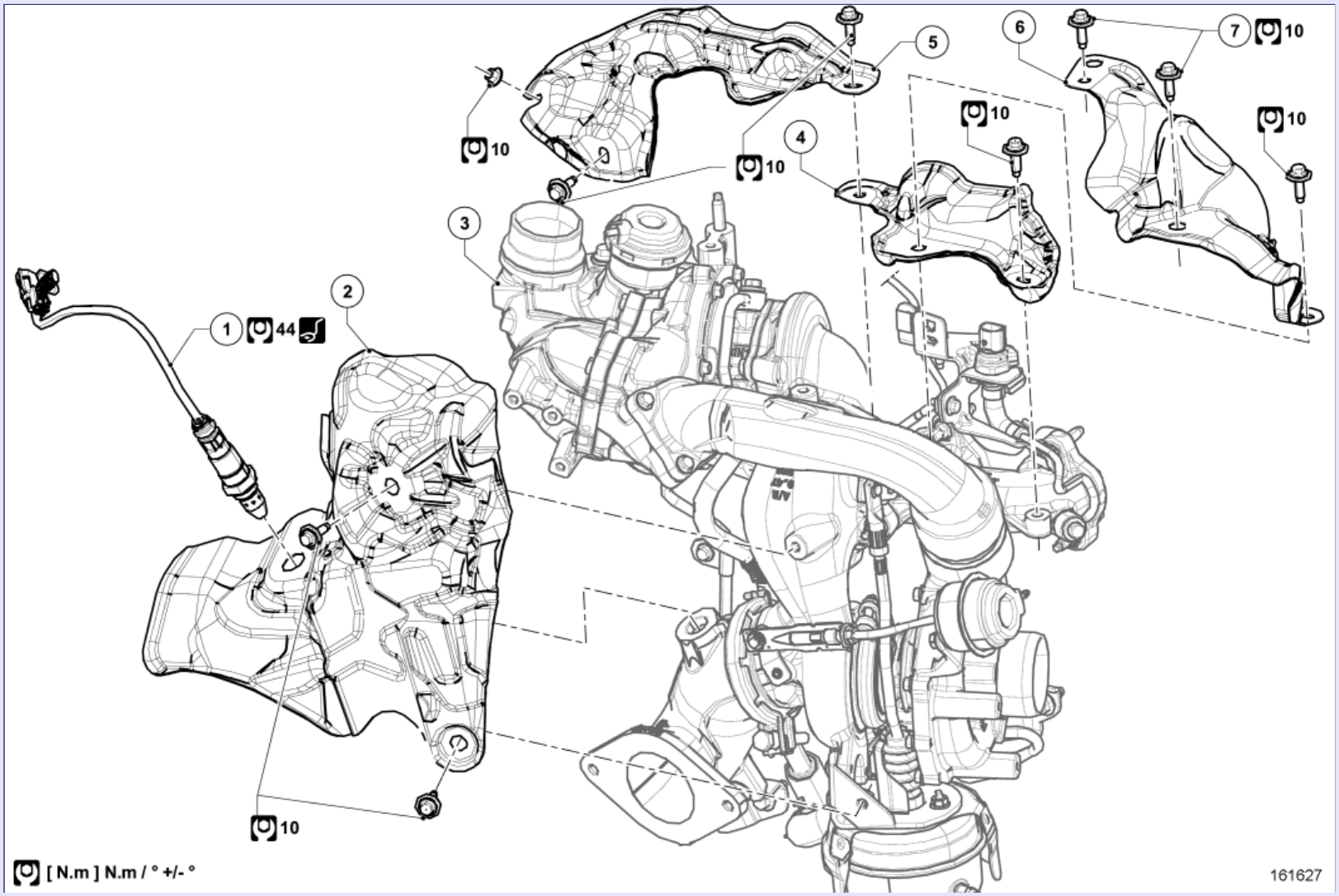


Illustration key: Description **Key.**

Mark	Description	Information
1	Oxygen sensor	(see Oxygen sensors: Removal - Refitting) 22 mm socket for removal - refitting of oxygen sensors.(Mot. 1495-01)
2	Turbocharger heat shield	
3	Turbocharger	.
4	Exhaust manifold heat shield	.
5	Exhaust manifold heat shield	.
6	Exhaust manifold heat shield	.
7	Exhaust manifold heat shield bolts	

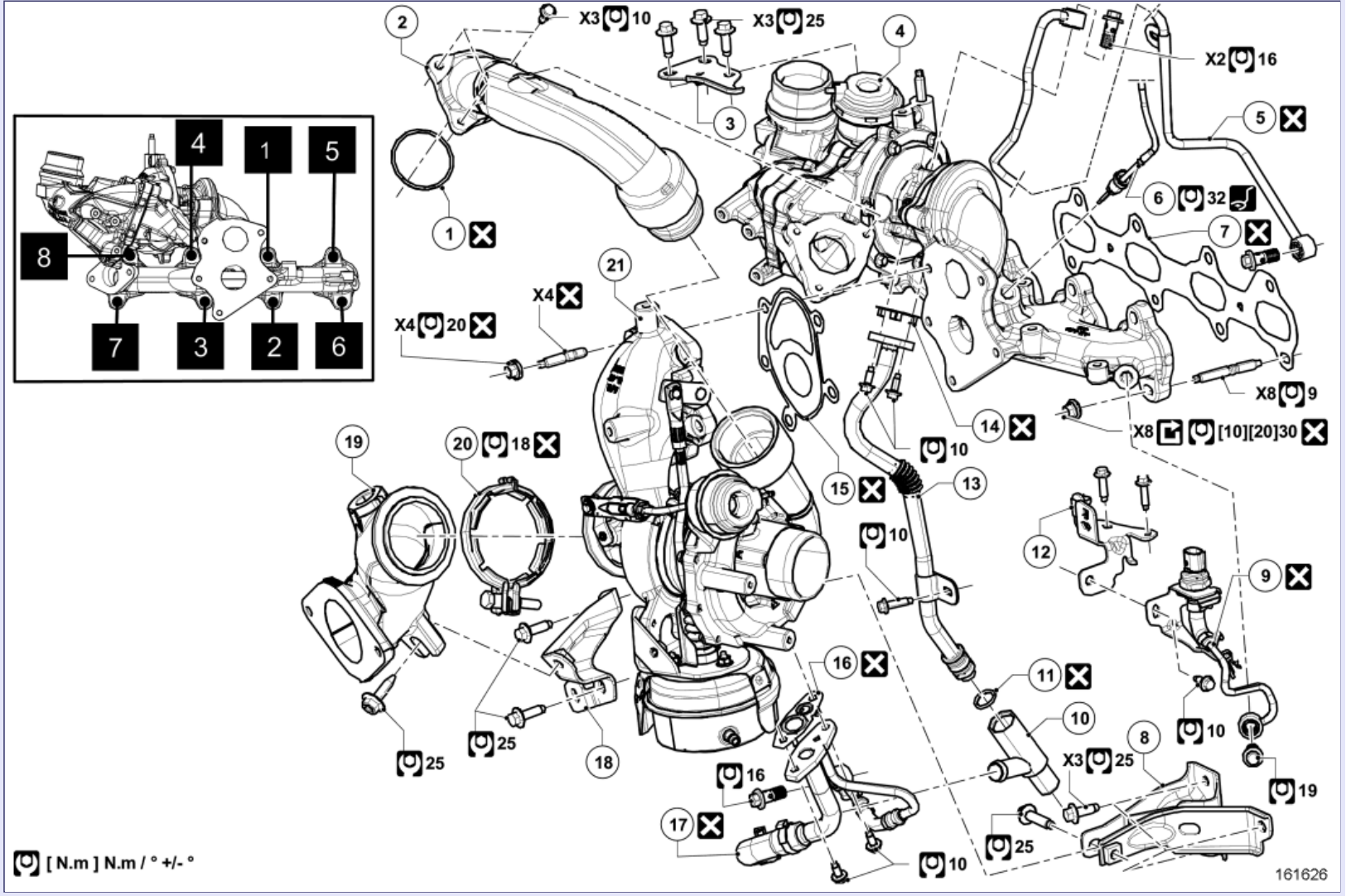


Illustration key: Description Key.

Mark	Description	Information
1	Seal	
2	Duct between turbochargers	Duct between turbochargers : Removal - Refitting
3	Turbocharger strut	
4	Integrated manifold turbocharger	
5	Oil supply pipe	Turbocharger oil pipe: Removal - Refitting
6	Exhaust gas temperature sensor	Spanner for tightening the exhaust gas temperature sensor(Mot. 1807)
7	Exhaust manifold seal	
8	Turbocharger strut	

9	Exhaust gas pressure take-off pipe	
10	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting
11	Seal	
12	Exhaust gas pressure sensor support	
13	Oil return pipe	Turbocharger oil pipe: Removal - Refitting
14	Turbocharger oil pipe seal at turbocharger end	
15	Turbocharger seal on exhaust manifold side	
16	Turbocharger oil pipe seal at turbocharger end	
17	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting
18	Bracket of turbocharger outlet exhaust gas duct	
19	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
20	Jubilee clip	
21	Turbocharger	

EXHAUST ASSEMBLY IN ENGINE COMPARTMENT: EXPLODED VIEW

Special tooling required	
22 mm socket for removal - refitting of oxygen sensors.	Mot. 1495-01
Spanner for tightening the exhaust gas temperature sensor	Mot. 1807

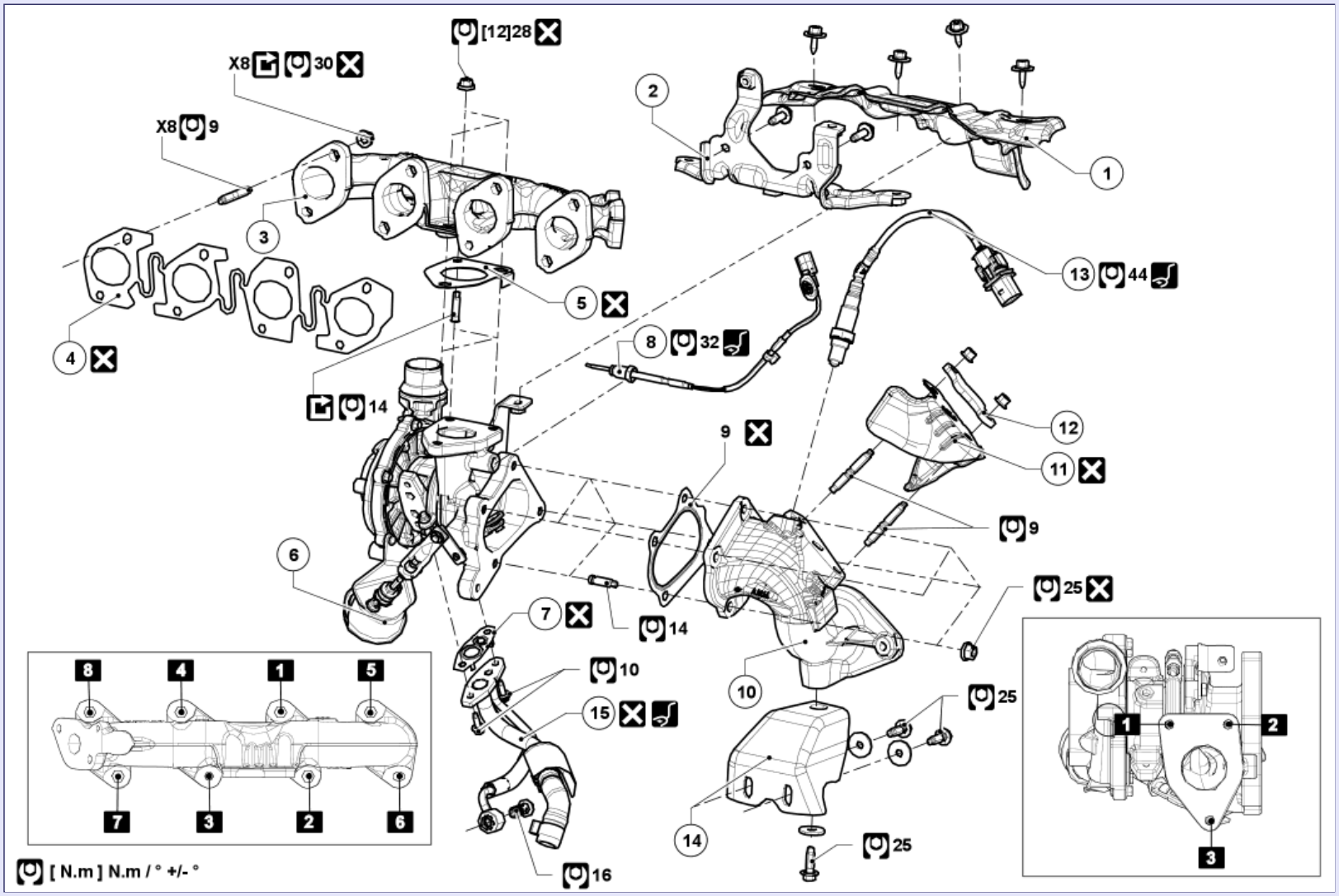


Illustration key: Description Key.

Mark	Description	Information
1	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
2	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
3	Exhaust manifold	Exhaust manifold: Removal - Refitting
4	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
5	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
6	Turbocharger	Turbocharger: Removal - Refitting
7	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting

8	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) (Mot. 1807)
9	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
10	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
11	Blanking cover seal of turbocharger outlet exhaust gas duct	
12	Blanking cover of turbocharger outlet exhaust gas duct	
13	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot. 1495-01)
14	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
15	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting (Mot. 1448)

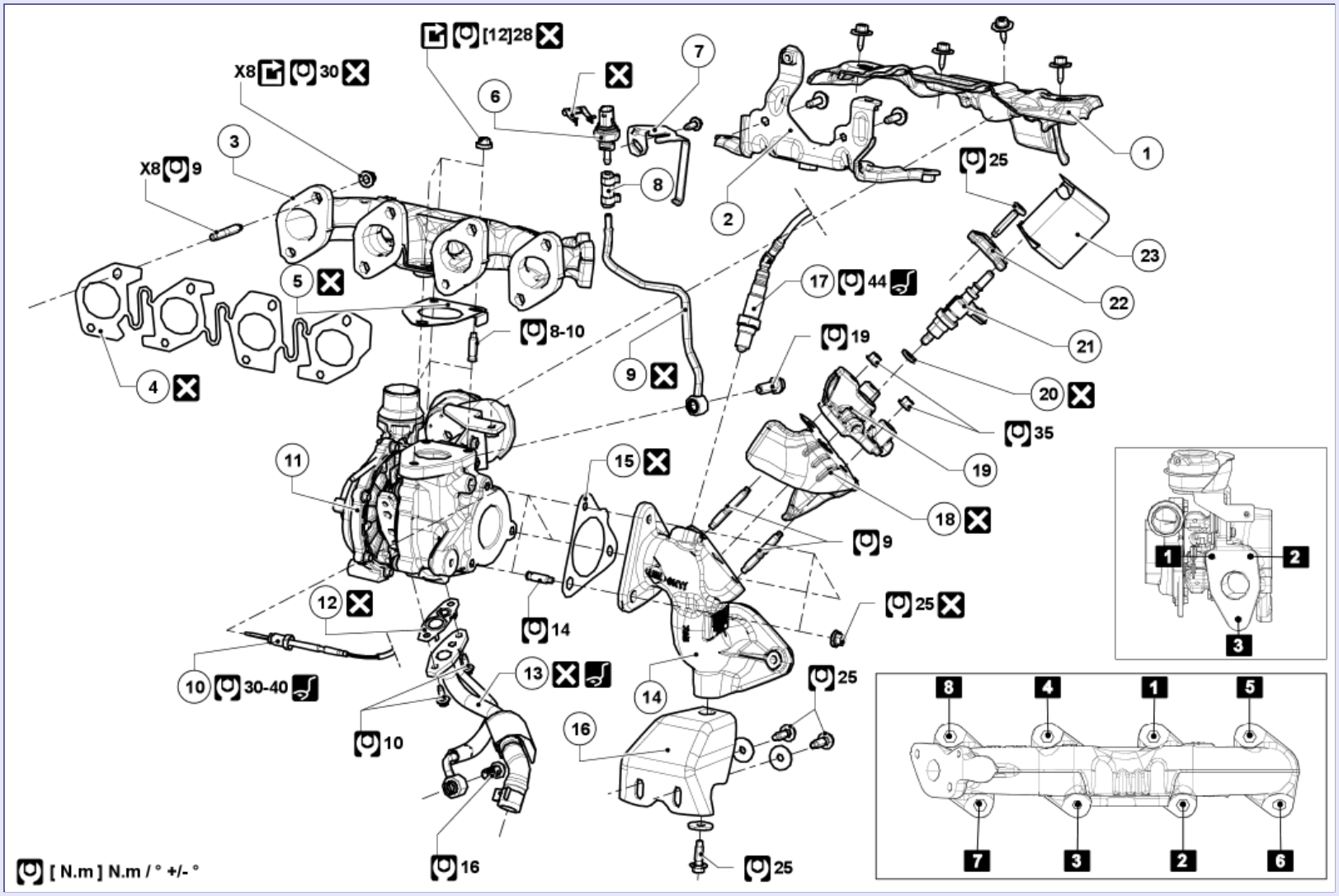


Illustration key: Description **Key.**

Mark	Description	Information
1	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
2	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
3	Exhaust manifold	Exhaust manifold: Removal - Refitting
4	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
5	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
6	Exhaust gas pressure sensor	(see 19B, Exhaust, Exhaust gas pressure sensor: Removal - Refitting)
7	Exhaust gas pressure sensor support	
8	Exhaust gas pressure sensor pipe	
9	Exhaust gas pressure take-off pipe	
10	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) **(Mot. 1807)**
11	Turbocharger	Turbocharger: Removal - Refitting

12	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting
13	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting (Mot. 1448)
14	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
15	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
16	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
17	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot.1495-01)
18	Exhaust fuel injector cooler seal	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
19	Exhaust fuel injector cooler	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
20	Exhaust fuel injector seal	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
21	Exhaust fuel injector	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
22	Exhaust fuel injector bracket	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
23	Exhaust fuel injector protective shield	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)

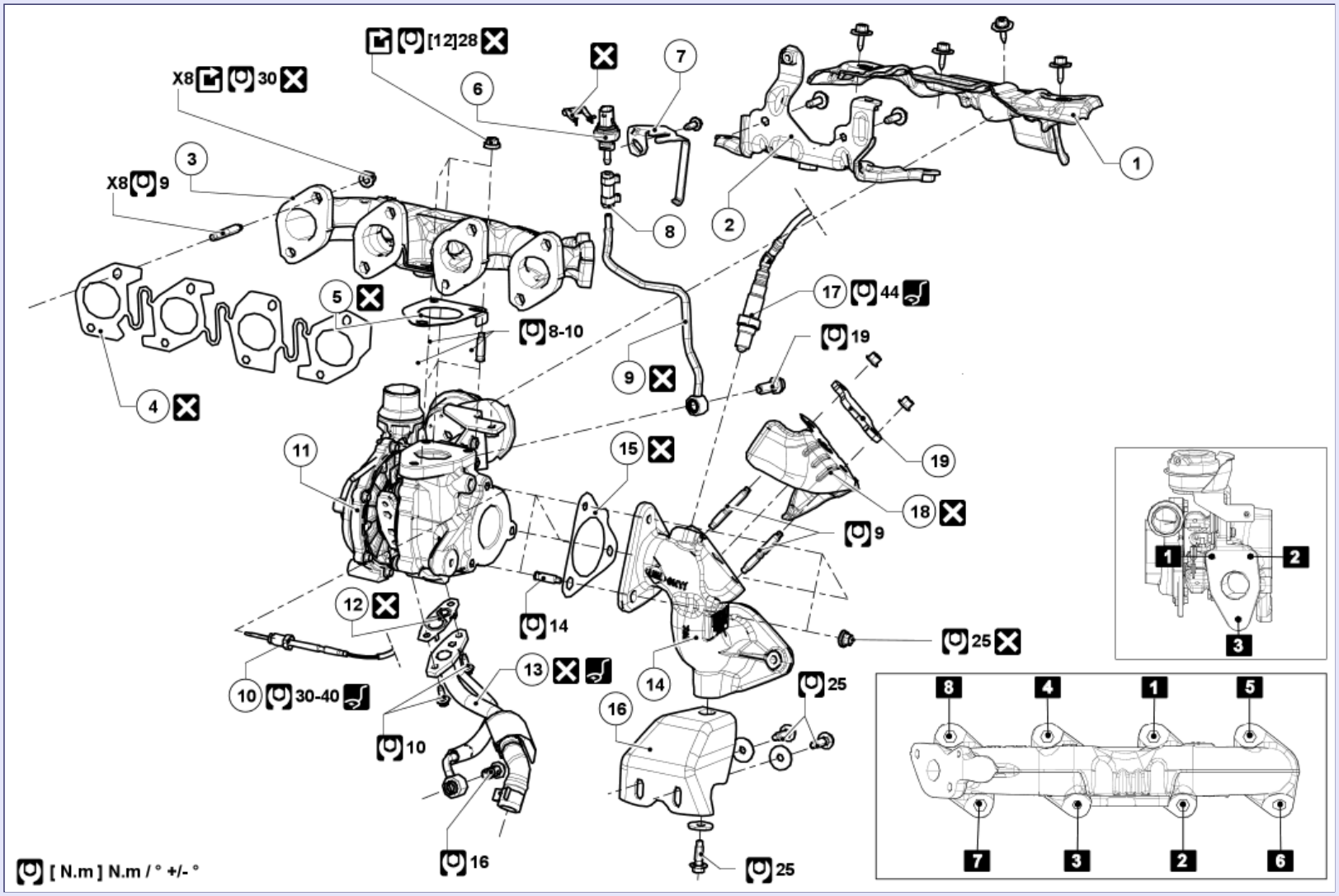


Illustration key: Description Key.

Mark	Description	Information
1	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
2	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
3	Exhaust manifold	Exhaust manifold: Removal - Refitting
4	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
5	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
6	Exhaust gas pressure sensor	(see 19B, Exhaust, Exhaust gas pressure sensor: Removal - Refitting, page)
7	Exhaust gas pressure sensor support	
8	Exhaust gas pressure sensor pipe	
9	Exhaust gas pressure take-off pipe	
10	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) (Mot. 1807)
11	Turbocharger	Turbocharger: Removal - Refitting

12	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting
13	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting (Mot. 1448)
14	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
15	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
16	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
17	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot.1495-01)
18	Blanking cover seal of turbocharger outlet exhaust gas duct	
19	Blanking cover of turbocharger outlet exhaust gas duct	

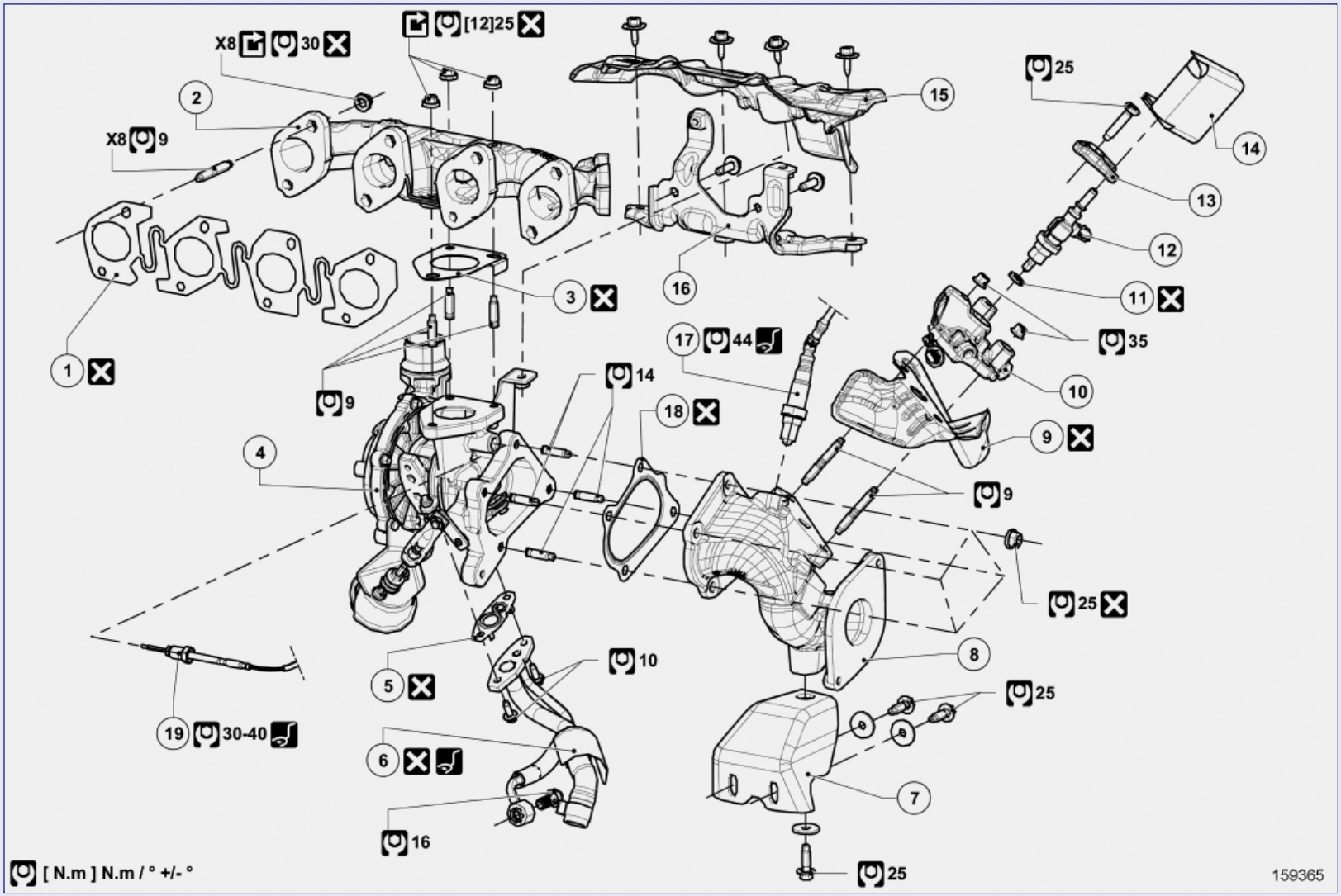


Illustration key: Description **Key.**

Mark	Description	Information
1	Exhaust manifold seal	Exhaust manifold: Removal - Refitting
2	Exhaust manifold	Exhaust manifold: Removal - Refitting
3	Turbocharger seal on exhaust manifold side	Turbocharger: Removal - Refitting
4	Turbocharger	Turbocharger: Removal - Refitting
5	Turbocharger oil pipe seal at turbocharger end	Turbocharger oil pipe: Removal - Refitting
6	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting **(Mot. 1448)**
7	Bracket of turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
8	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
9	Exhaust fuel injector cooler seal	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
10	Exhaust fuel injector cooler	(see 19B, Exhaust, Exhaust fuel injector cooler: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector cooler: Removal - Refitting)
11	Exhaust fuel injector seal	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)

12	Exhaust fuel injector	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
13	Exhaust fuel injector bracket	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
14	Exhaust fuel injector protective shield	(see 19B, Exhaust, Exhaust fuel injector: Removal - Refitting) (see 19B,Exhaust, Exhaust fuel injector: Removal - Refitting)
15	Exhaust manifold heat shield	Exhaust manifold: Removal - Refitting
16	Exhaust manifold heat shield support	Exhaust manifold: Removal - Refitting
17	Oxygen sensor	Oxygen sensor: Removal - Refitting (Mot.1495-01)
18	Seal on turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
19	Exhaust gas temperature sensor	(see 19B, Exhaust, Exhaust gas temperature sensor: Removal - Refitting) (Mot. 1807)

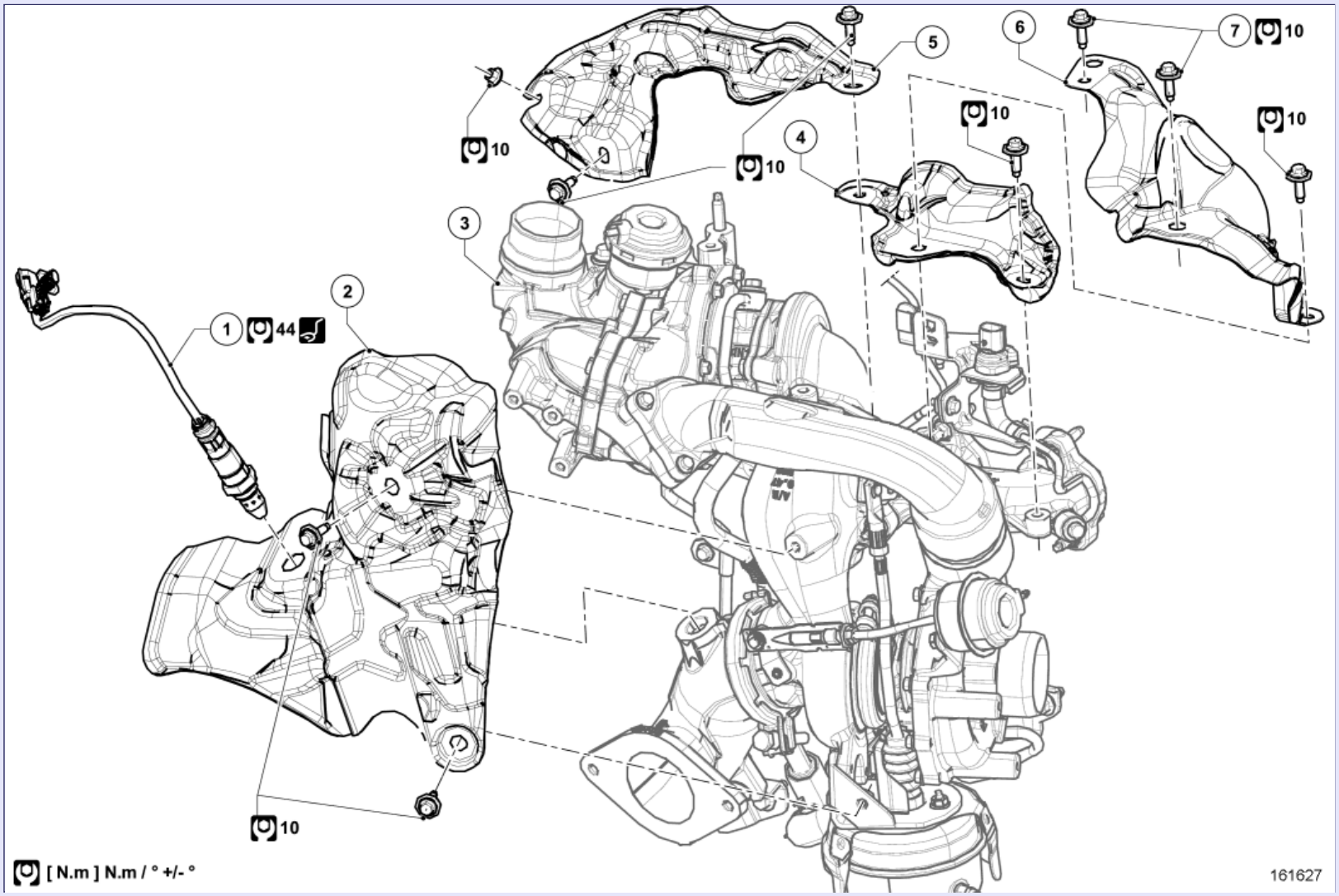


Illustration key: Description **Key.**

Mark	Description	Information
1	Oxygen sensor	(see Oxygen sensors: Removal - Refitting) 22 mm socket for removal - refitting of oxygen sensors.(Mot. 1495-01)
2	Turbocharger heat shield	
3	Turbocharger	.
4	Exhaust manifold heat shield	.
5	Exhaust manifold heat shield	.
6	Exhaust manifold heat shield	.
7	Exhaust manifold heat shield bolts	

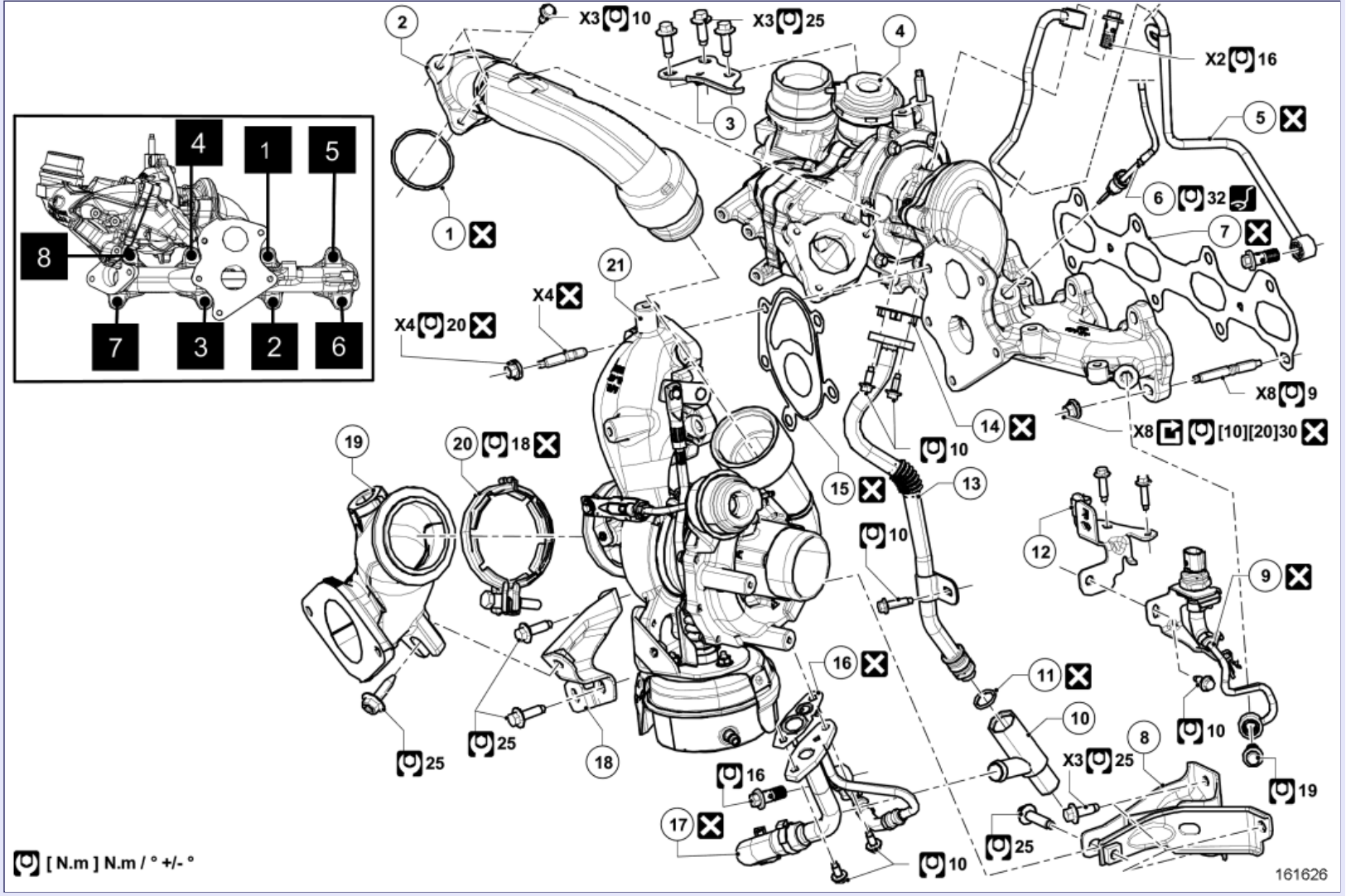


Illustration key: Description Key.

Mark	Description	Information
1	Seal	
2	Duct between turbochargers	Duct between turbochargers : Removal - Refitting
3	Turbocharger strut	
4	Integrated manifold turbocharger	
5	Oil supply pipe	Turbocharger oil pipe: Removal - Refitting
6	Exhaust gas temperature sensor	Spanner for tightening the exhaust gas temperature sensor(Mot. 1807)
7	Exhaust manifold seal	
8	Turbocharger strut	

9	Exhaust gas pressure take-off pipe	
10	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting
11	Seal	
12	Exhaust gas pressure sensor support	
13	Oil return pipe	Turbocharger oil pipe: Removal - Refitting
14	Turbocharger oil pipe seal at turbocharger end	
15	Turbocharger seal on exhaust manifold side	
16	Turbocharger oil pipe seal at turbocharger end	
17	Turbocharger oil pipe	Turbocharger oil pipe: Removal - Refitting
18	Bracket of turbocharger outlet exhaust gas duct	
19	Turbocharger outlet exhaust gas duct	Turbocharger outlet exhaust gas duct: Removal - Refitting
20	Jubilee clip	
21	Turbocharger	

EXHAUST ASSEMBLY UNDER BODY: EXPLODED VIEW

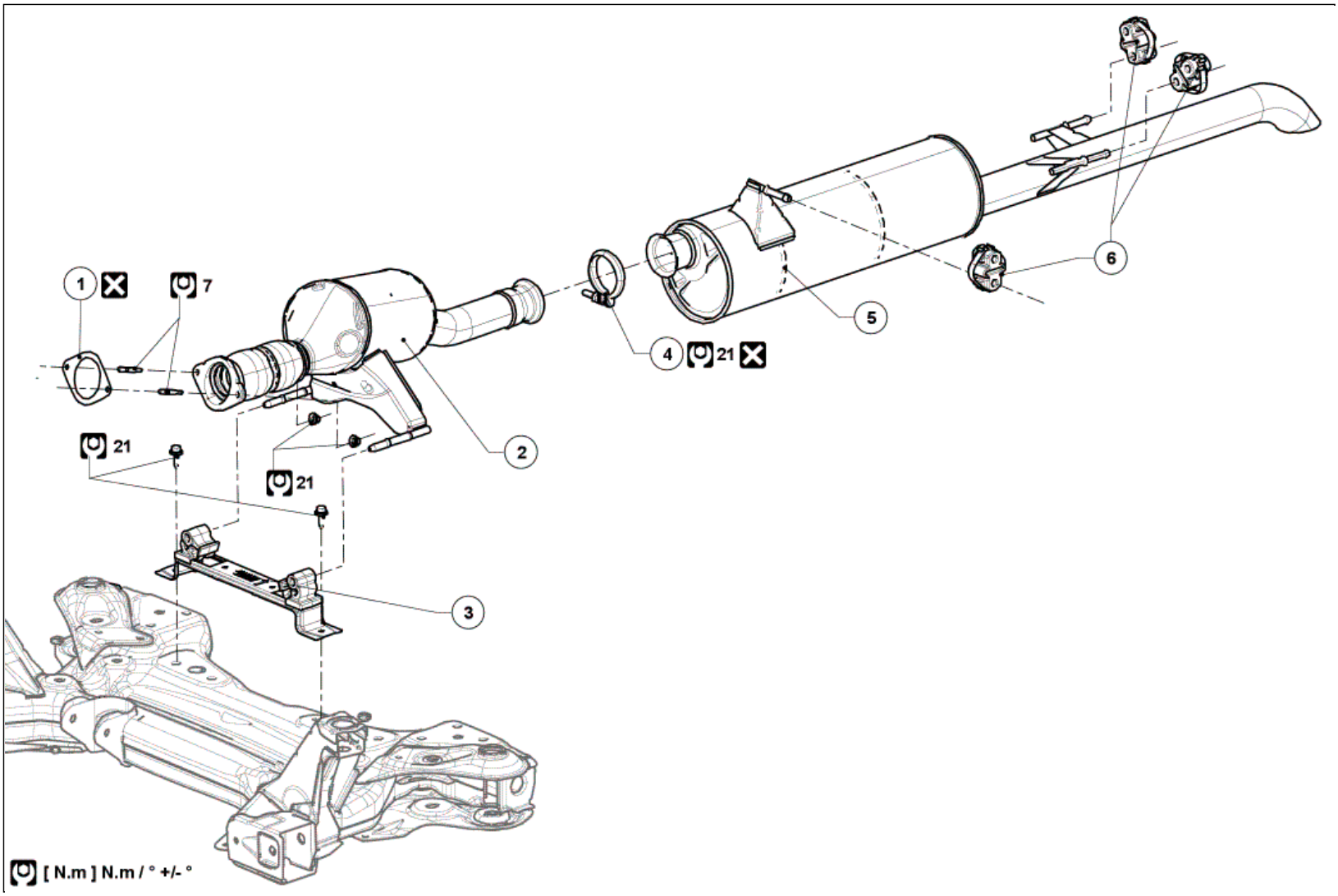


Illustration key: Description Key.

Mark	Description	Information
1	Outlet seal of turbocharger outlet exhaust gas duct	-
2	Catalytic converter	(see 19B, Exhaust, Catalytic converter: Removal - Refitting)
3	Catalytic converter suspension mount on the front axle assembly subframe	-
4	Catalytic converter outlet clip	-
5	Silencer	(see 19B, Exhaust, Silencer: Removal - Refitting)
6	Rubber mounting bush of silencer	-

Repair-10x08x09-02x50-1-2-1.xml

XSL version : 3.02 du 22/07/11

EXHAUST ASSEMBLY UNDER BODY: EXPLODED VIEW

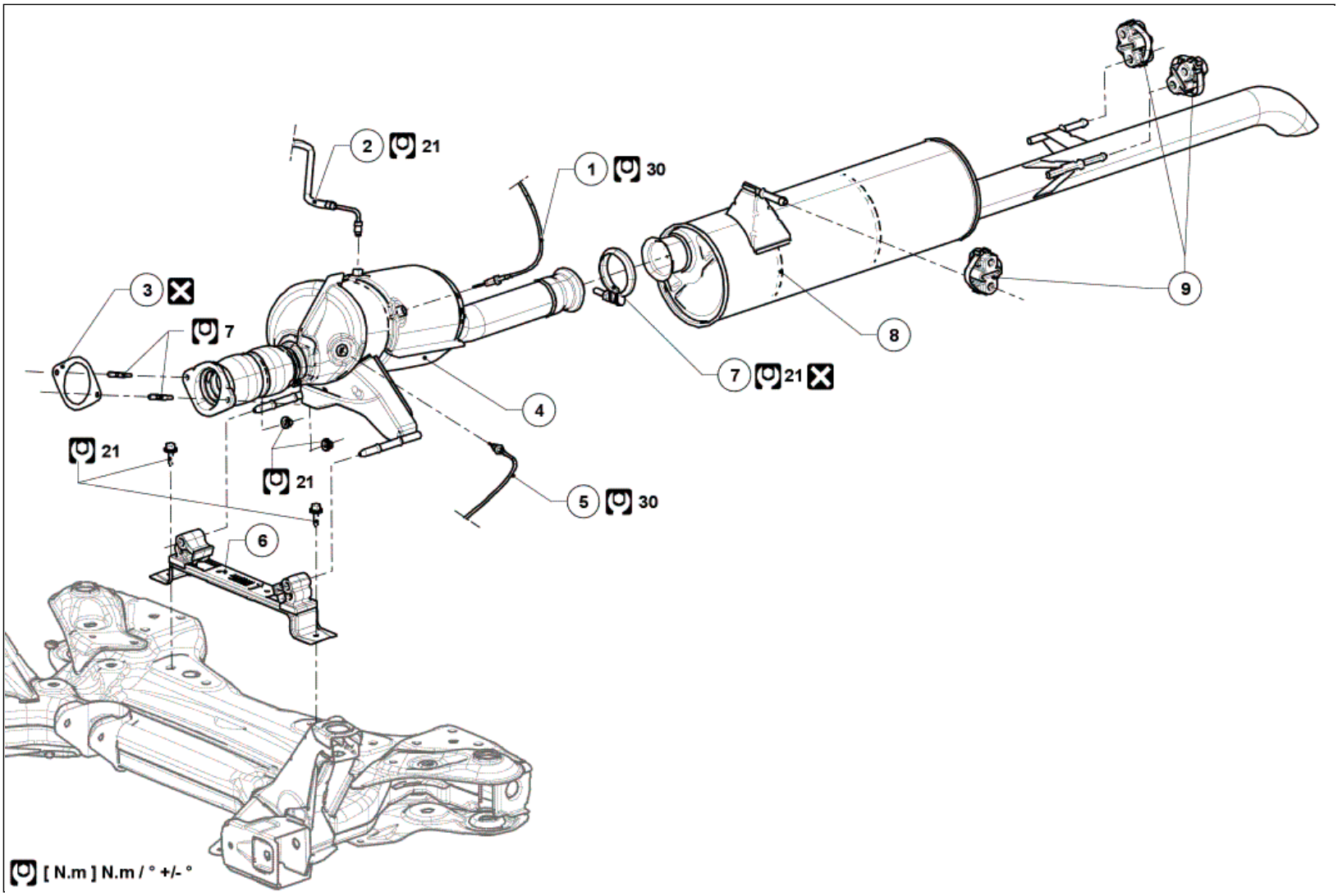


Illustration key: Description Key.

Mark	Description	Information
1	Particle filter temperature sensor	(see 19B, Exhaust, Particle filter temperature sensors: Removal - Refitting) (see 19B,Exhaust, Particle filter temperature sensors: Removal - Refitting)
2	Particle filter pressure sensor	(see 19B, Exhaust, Particle filter pressure sensor: Removal - Refitting)
3	Outlet seal of turbocharger outlet exhaust gas duct	-
4	Particle filter	(see 19B, Exhaust, Particle filter: Removal - Refitting) (see 19B,Exhaust, Particle filter: Removal - Refitting)
5	Catalytic converter temperature sensor	(see 19B, Exhaust, Particle filter temperature sensors: Removal - Refitting) (see 19B,Exhaust, Particle filter temperature sensors: Removal - Refitting)
6	Particle filter suspension mount on the front axle assembly subframe	-
7	Catalytic converter outlet clip	-

Mark	Description	Information
8	Silencer	(see 19B, Exhaust, Silencer: Removal - Refitting)
9	Rubber mounting bush of silencer	-

EXHAUST FUEL INJECTOR SOLENOID VALVE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view)** .

WARNING

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

- Diesel injection: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

During this operation, it is essential to:

- refrain from smoking or bringing hot objects close to the working area,
- beware of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

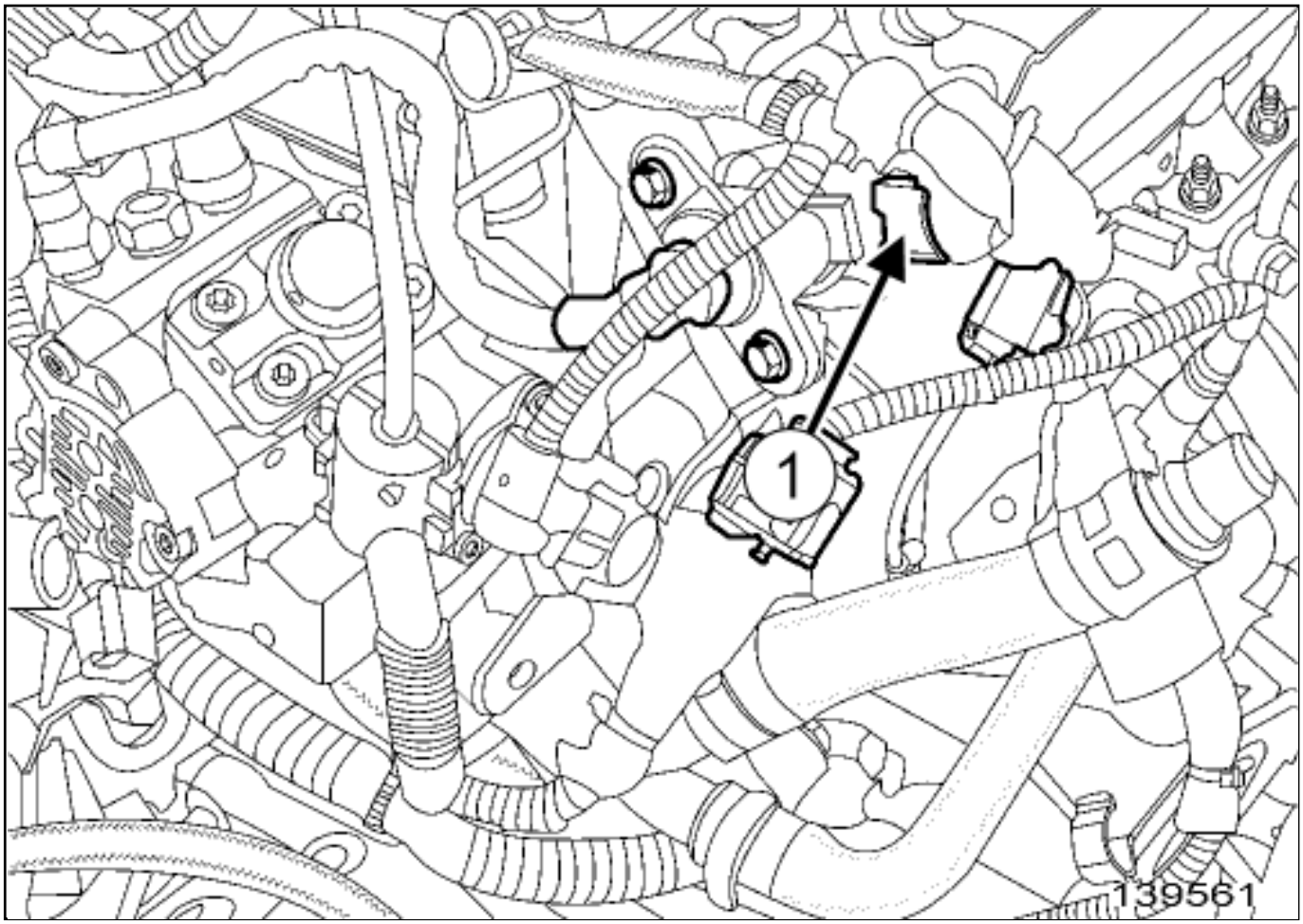
REMOVAL

1. REMOVAL PREPARATION OPERATION

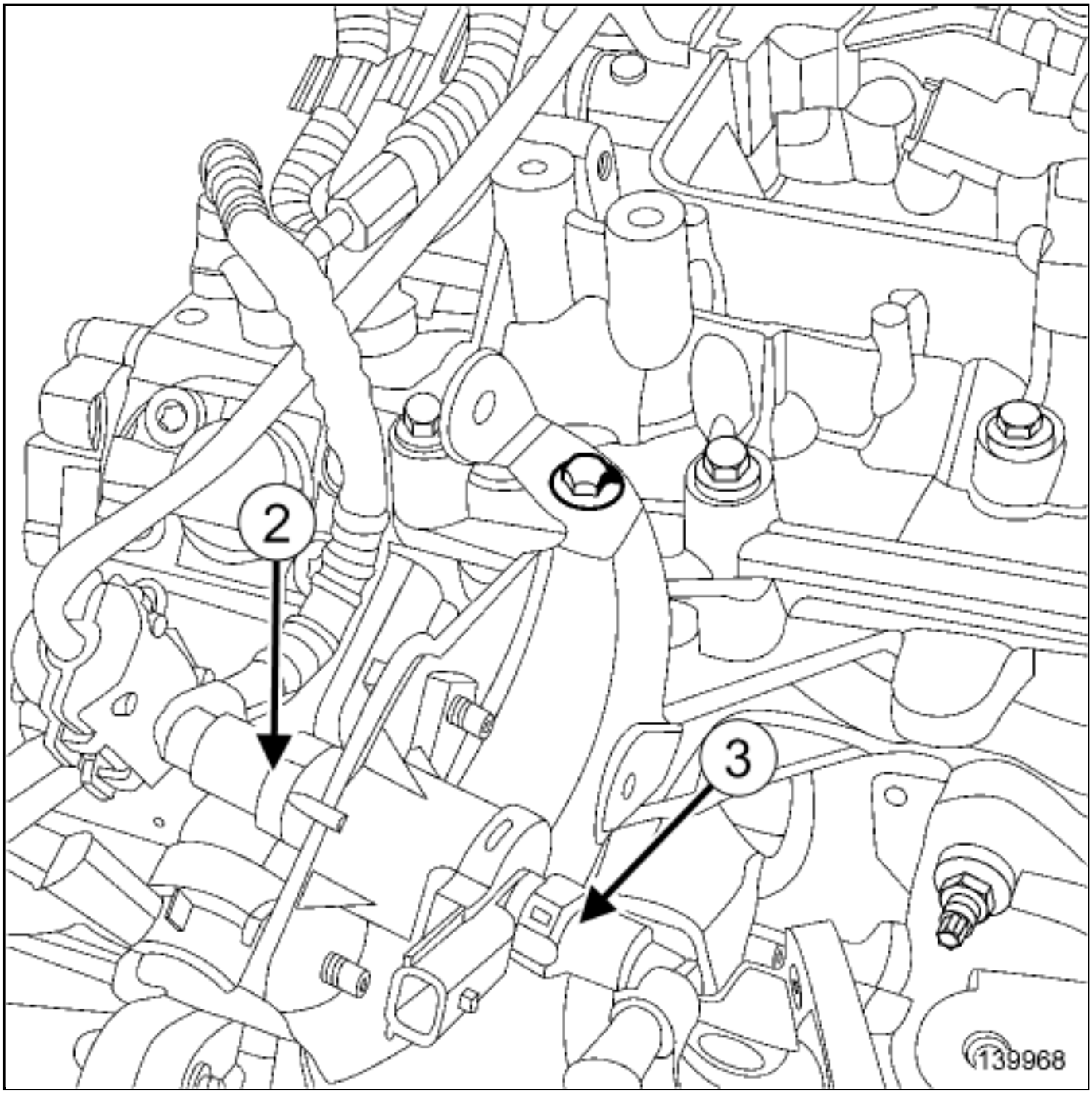
- Apply the before repair procedure to discharge the pressure in the system using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Injection computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - select "Exhaust fuel injection system" in the "List of components controlled by this computer" section,
  - carry out the operations described in the "Before repair procedure" section.

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

2. REMOVAL OPERATION



Disconnect the connector(1) of the exhaust fuel injector solenoid valve.



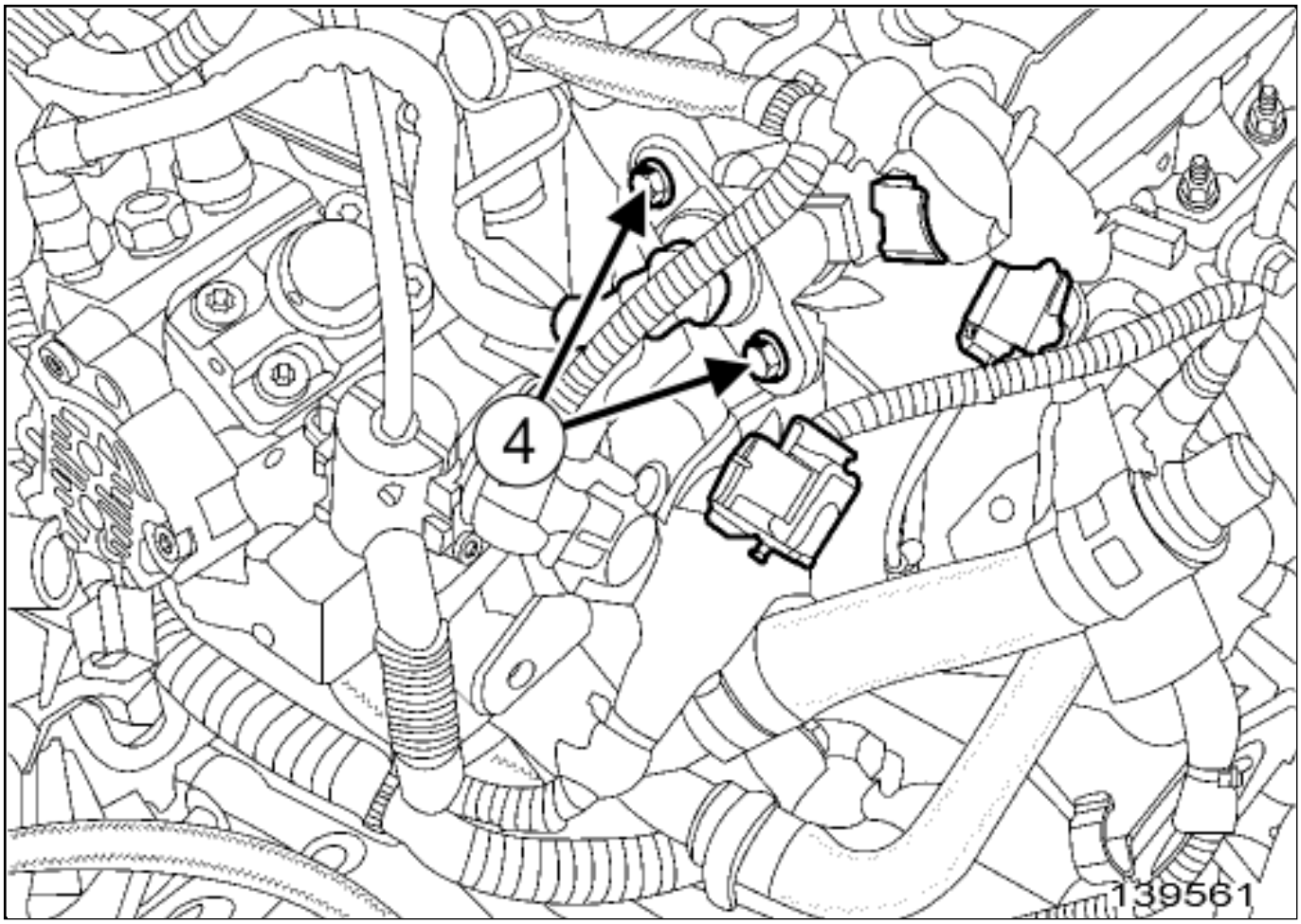
Disconnect:

- the fuel pipe(2) between the exhaust fuel injector solenoid valve and the high pressure pump,
- the fuel pipe(3) between the exhaust fuel injector solenoid valve and the exhaust fuel injector.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

- Fit blanking plugs on the fuel pipes.



-

Remove:

- the bolts(4) from the exhaust fuel injector solenoid valve,
- the exhaust fuel injector solenoid valve.

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

Apply the after repair procedure to check system sealing using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Injection computer" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- select "Exhaust fuel injection system" in the "List of components controlled by this computer" section,

carry out the operations described in the "After repair procedure" section.

EXHAUST FUEL INJECTOR SOLENOID VALVE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view)** .

WARNING

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

- Diesel injection: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

During this operation, it is essential to:

- refrain from smoking or bringing hot objects close to the working area,
- beware of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

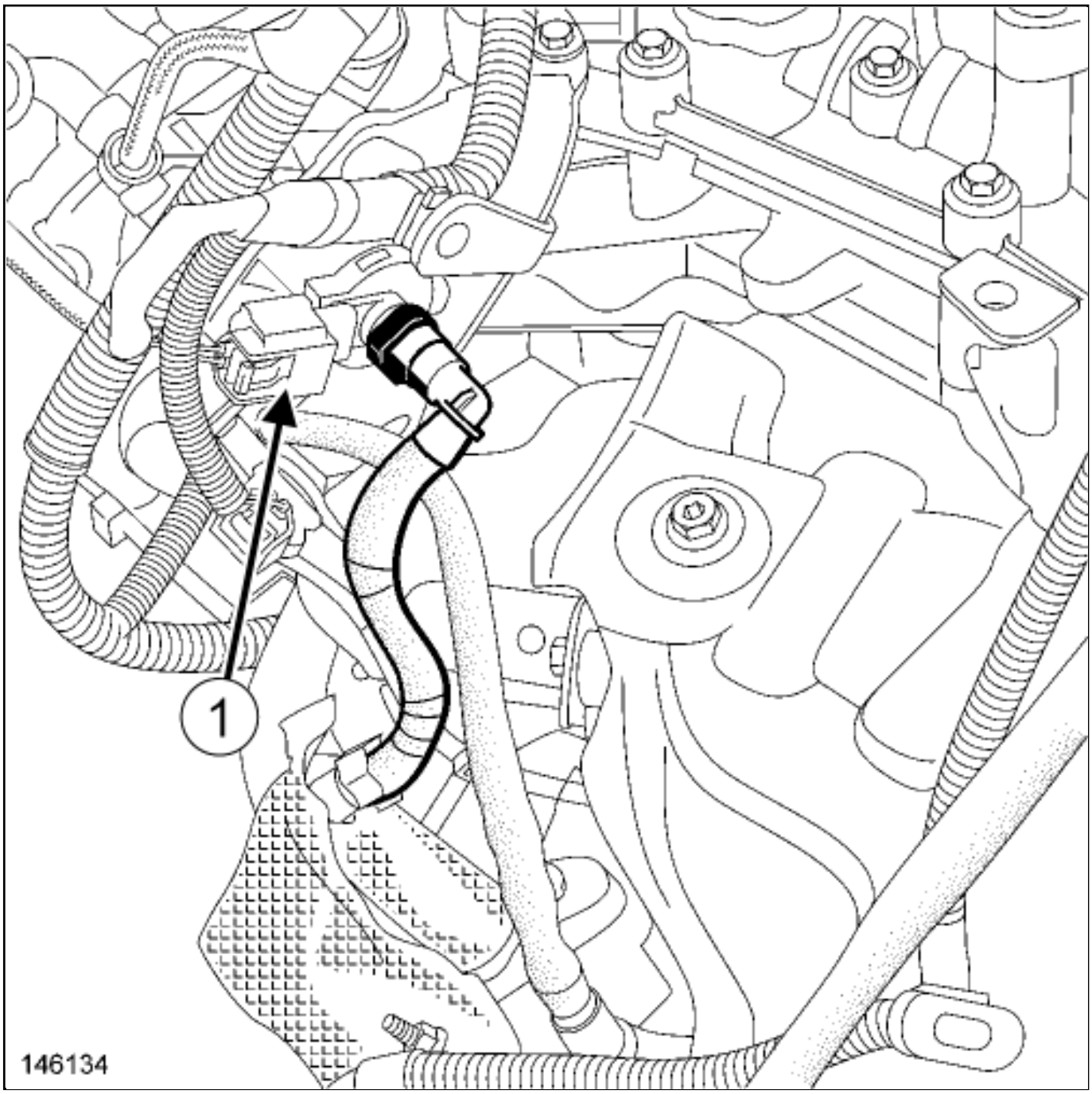
REMOVAL

1. REMOVAL PREPARATION OPERATION

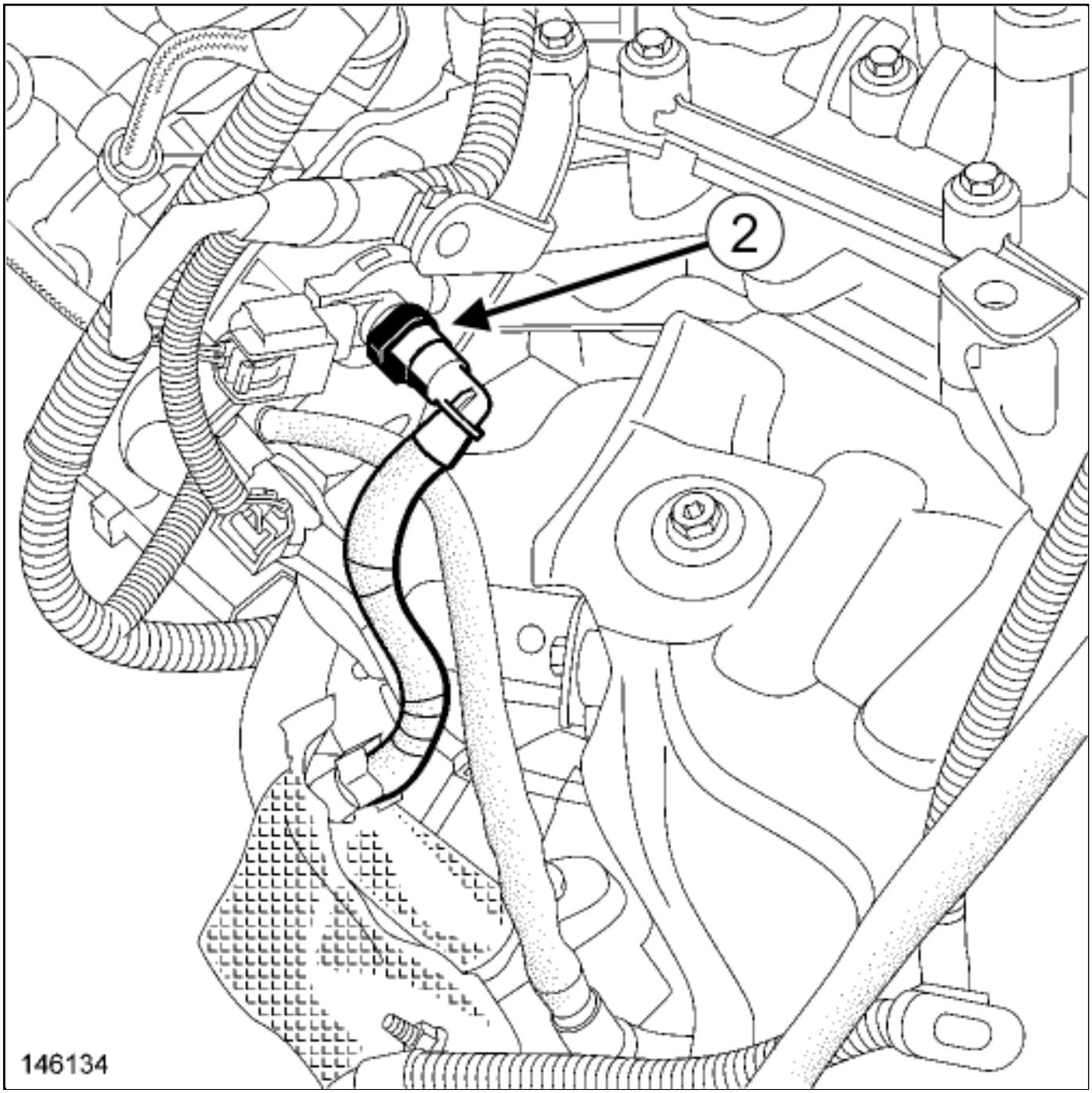
Apply the before repair procedure to discharge the pressure in the system using the Diagnostic tool:

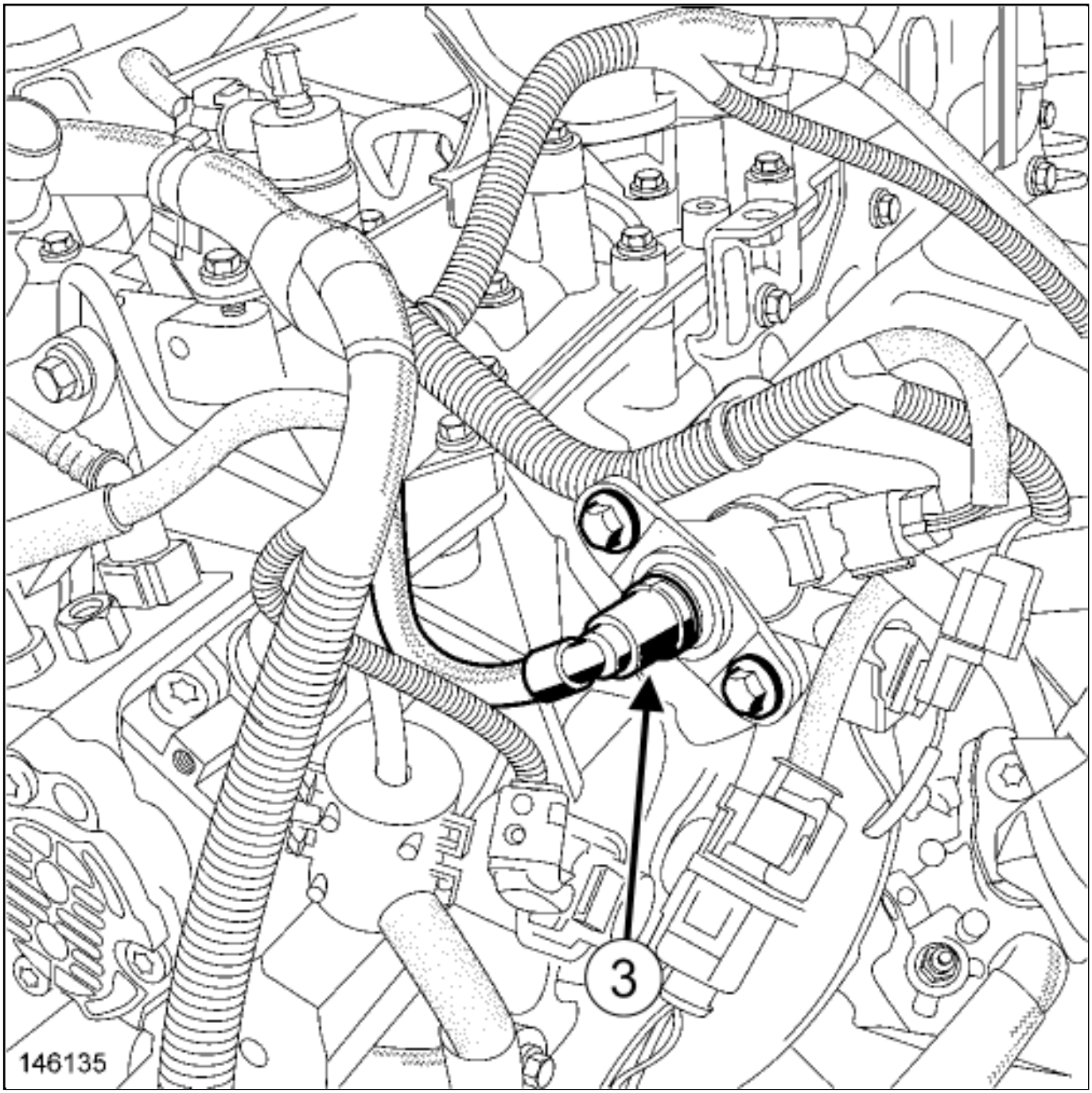
- connect the Diagnostic tool,
- select "Injection computer" ,
- go to repair mode,
- display the "Before repair procedure" for the computer selected,
- select "Exhaust fuel injection system" in the "List of components controlled by this computer" section,
- carry out the operations described in the "Before repair procedure" section.

2. REMOVAL OPERATION



- Disconnect the connector(1) of the exhaust fuel injector solenoid valve.


2
146134

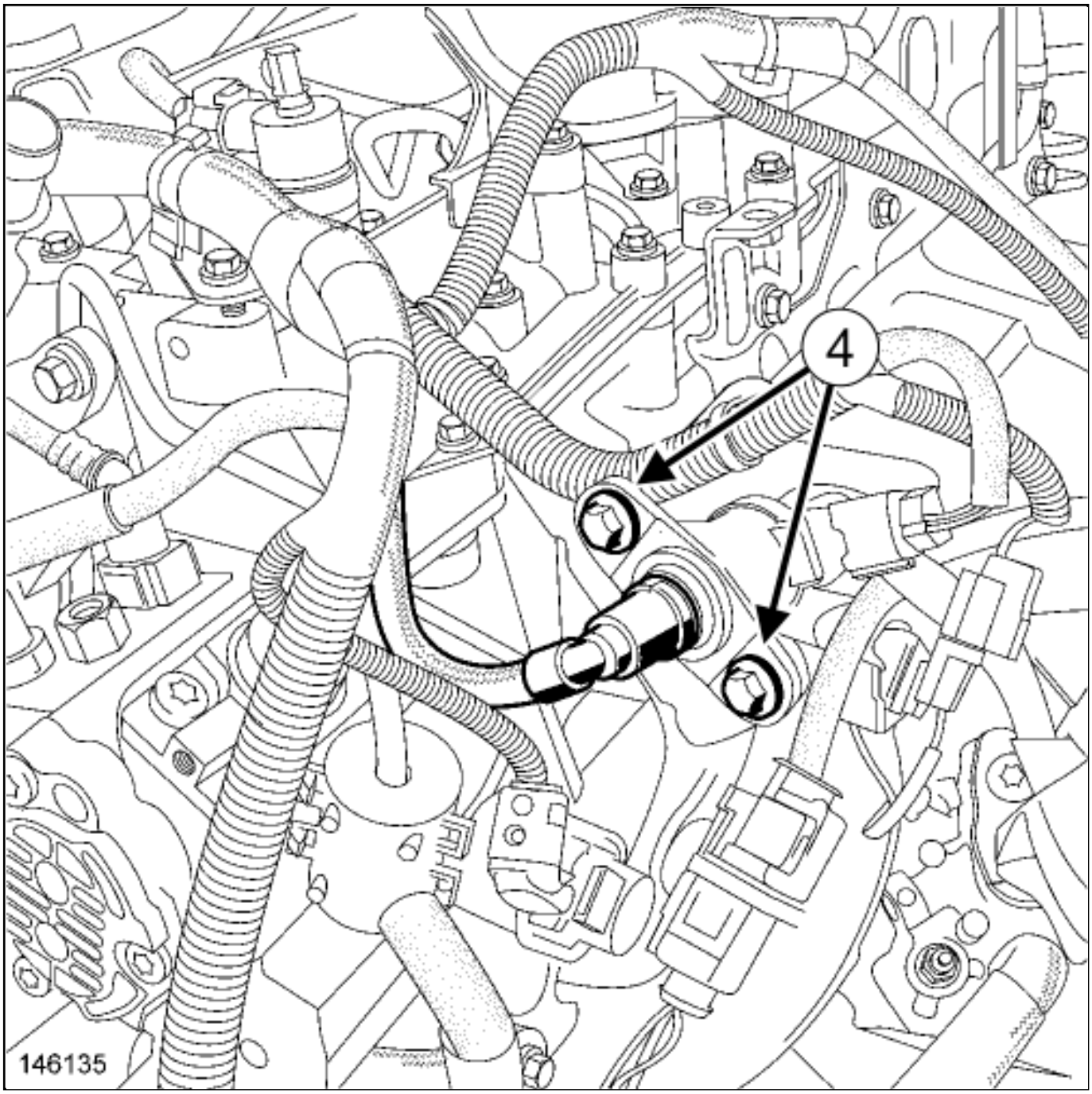


- Disconnect:
  - the fuel pipe(2) between the exhaust fuel injector solenoid valve and the high pressure pump,
  - the fuel pipe(3) between the exhaust fuel injector solenoid valve and the exhaust fuel injector.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Fit blanking plugs on the fuel pipes.



Remove:

- the bolts(4) from the exhaust fuel injector solenoid valve,
- the exhaust fuel injector solenoid valve.

REFITTING

Proceed in the reverse order to removal.

Apply the after repair procedure to check system sealing using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Injection computer" ,
- go to repair mode,
- display the "After repair procedure" for the computer selected,
- select "Exhaust fuel injection system" in the "List of components controlled by this computer" section,

carry out the operations described in the "After repair procedure" section.

Repair-10x08x02x23-01x37-1-8-1.xml

XSL version : 3.02 du 22/07/11

EXHAUST GAS COOLER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

WARNING

Wear cut-resistant gloves during the operation.

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) .

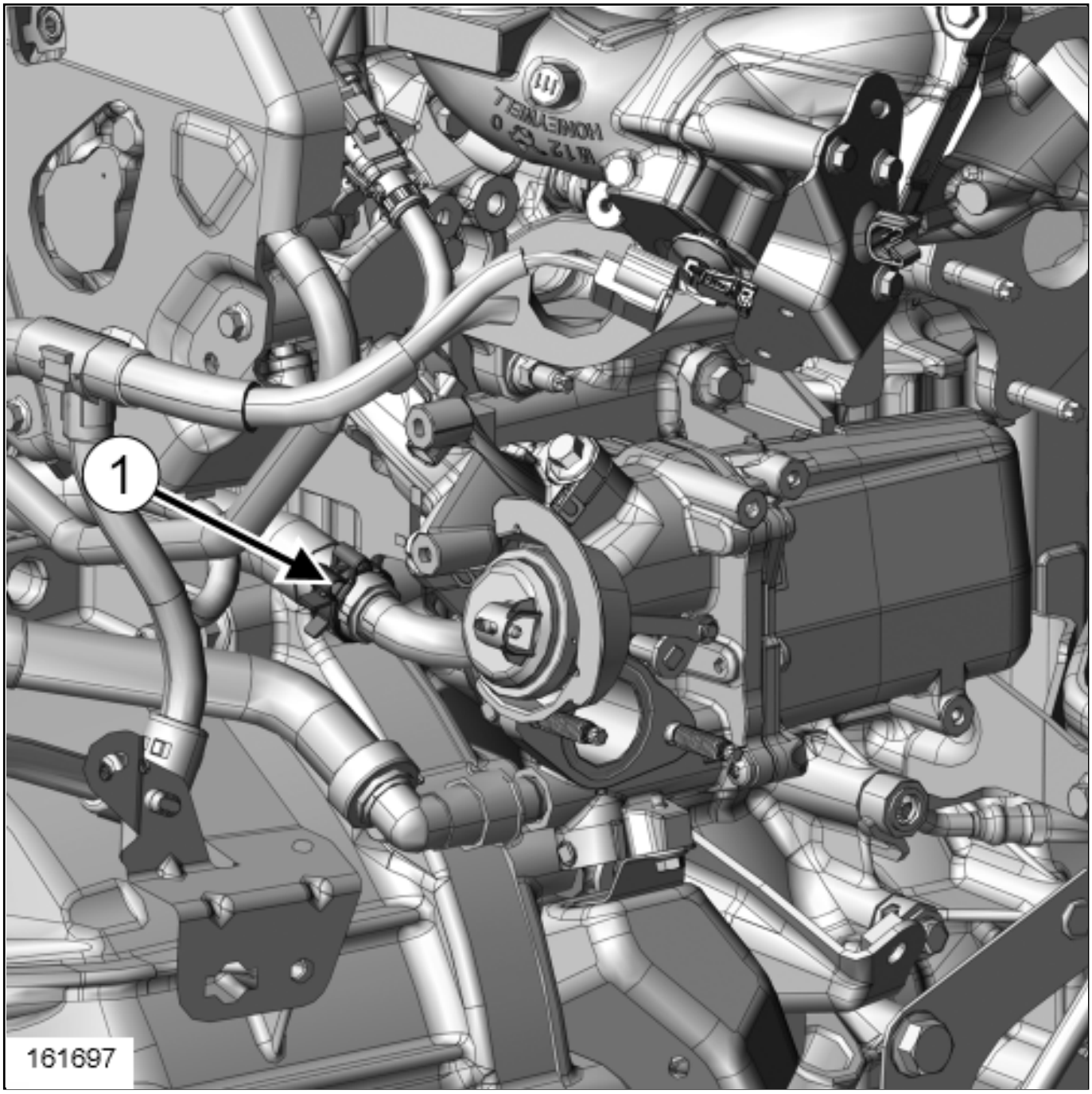
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .

- Remove (see **Exhaust assembly in engine compartment: Exploded view**) :
  - the engine undertray,
  - the turbocharger,
  - the turbo-manifold oil pipes.

- Remove the exhaust recirculation rigid pipe .



- Clamp the exhaust gas cooler cooling pipes using the toolPipe clamps.(Ms. 583) .

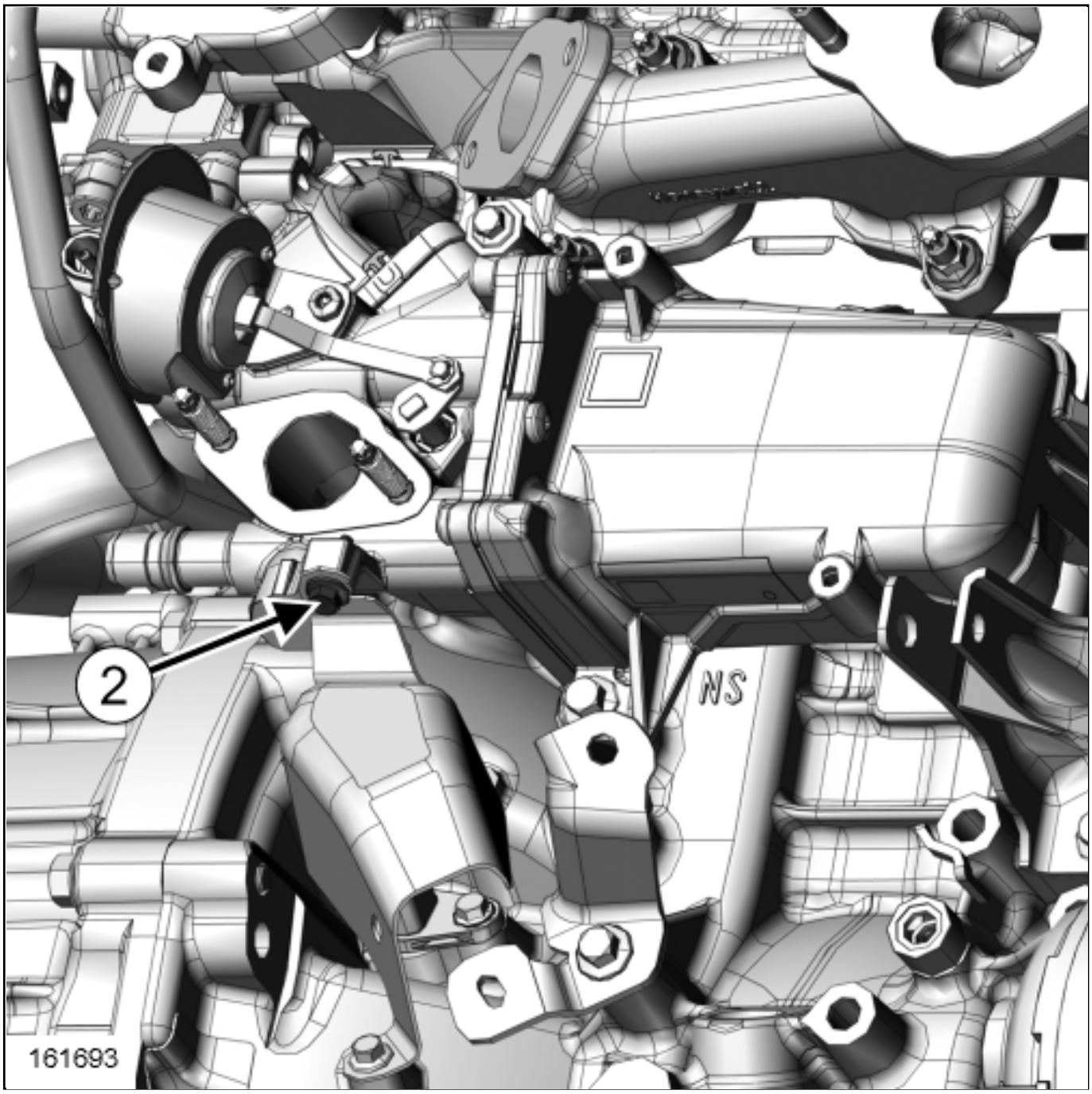
- Move aside:
  - the clip(1) of the exhaust gas cooler coolant inlet pipe using the toolRemote operation pliers for hose clips.(Mot. 1448) ,
  - the clip of the exhaust gas cooler coolant outlet pipe.

- Disconnect the exhaust gas cooler cooling pipes.

2. REMOVAL OPERATION

Remove :

- the exhaust gas cooler outlet pipe bolts,
- the exhaust gas cooler outlet pipe,
- the exhaust gas cooler outlet pipe seals.



Remove the bolt(2) of the crankshaft position sensor shield.

Remove :

- the exhaust gas cooler bolts,
- the exhaust gas cooler,
- the EGR bypass solenoid valve outlet pipe seal.

REFITTING

1. REFITTING PREPARATION OPERATION

Parts always to be replaced :

- exhaust gas cooler outlet pipe seal on the exhaust gas cooler side,
- exhaust gas cooler outlet pipe seal on the cylinder block side.

2. REFITTING OPERATION

Refit :

- the exhaust gas cooler,
- the exhaust gas cooler bolts,
- the new exhaust gas cooler outlet pipe seals,
- the exhaust gas cooler outlet pipe,
- the exhaust gas cooler outlet pipe bolts.

Torque tighten :

- the exhaust gas cooler bolts,
- the exhaust gas cooler outlet pipe bolts.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Fil and bleed the cooling systemCooling system: Draining - Refilling .

EXHAUST GAS PRESSURE SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

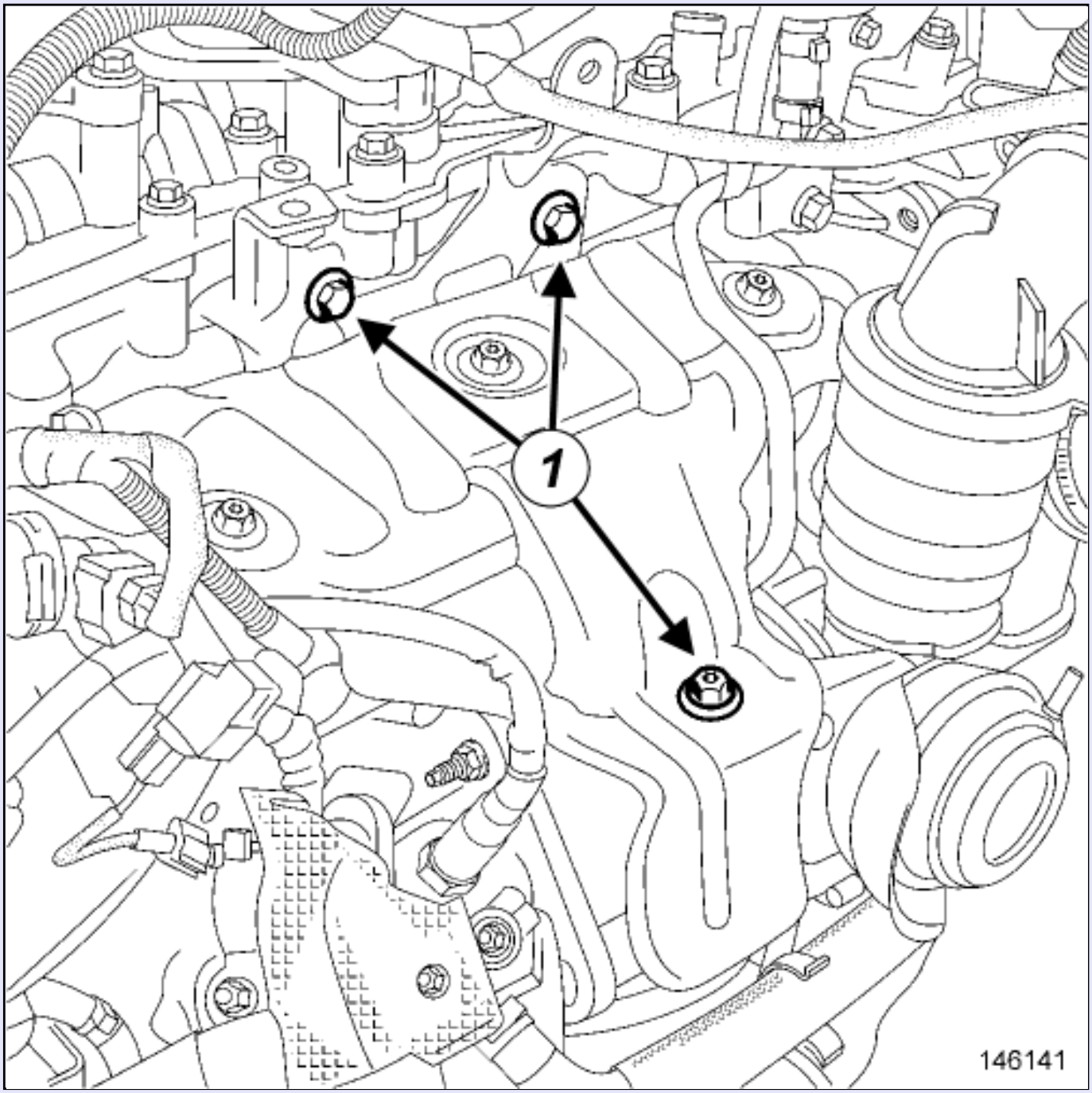
Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view)** .

WARNING

Wear cut-resistant gloves during the operation.

REMOVAL

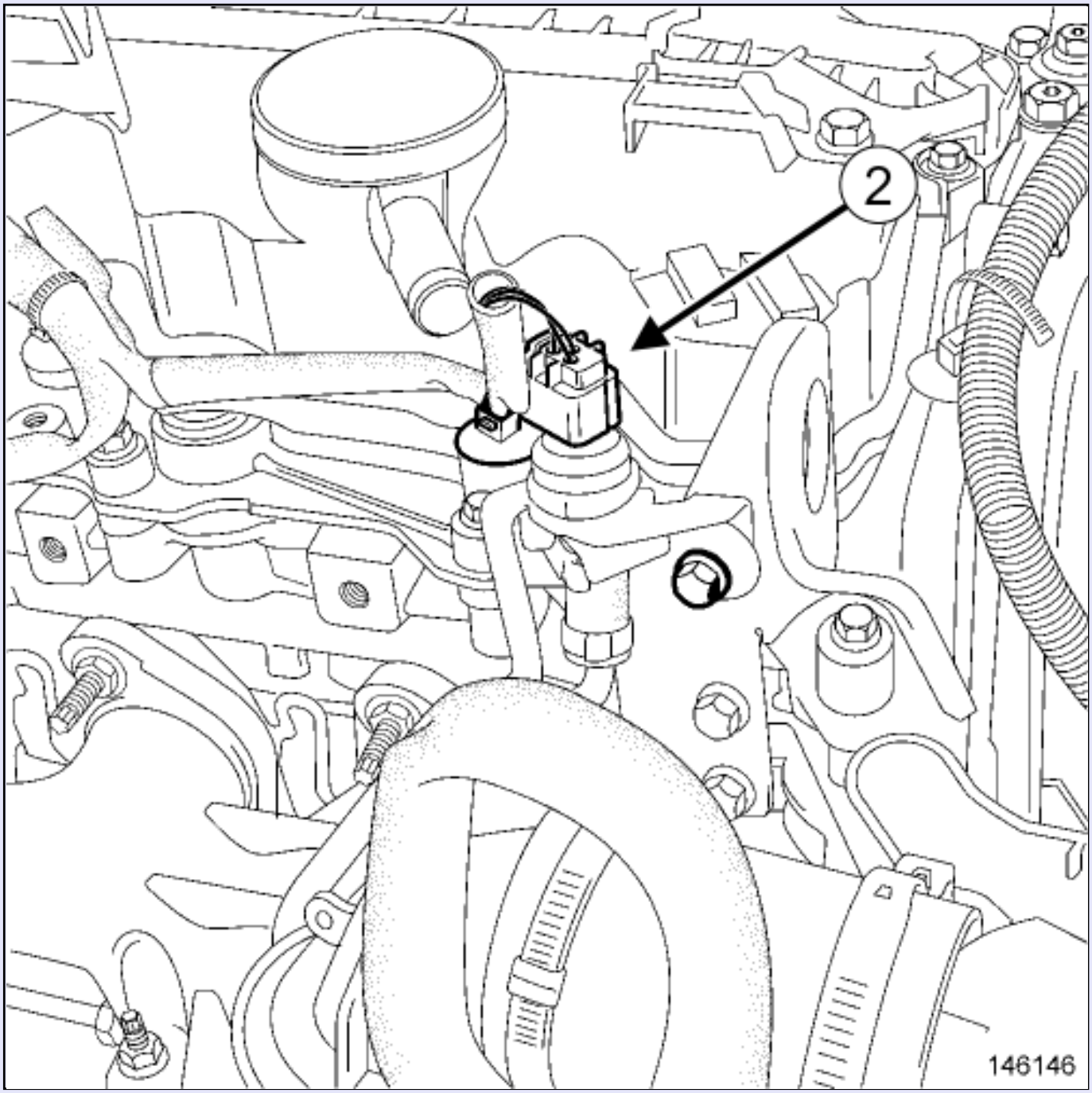
1. REMOVAL PREPARATION OPERATION



Remove:

- the bolts(1) from the exhaust manifold heat shield,
- the "exhaust manifold heat shield - exhaust manifold heat shield support" assembly.

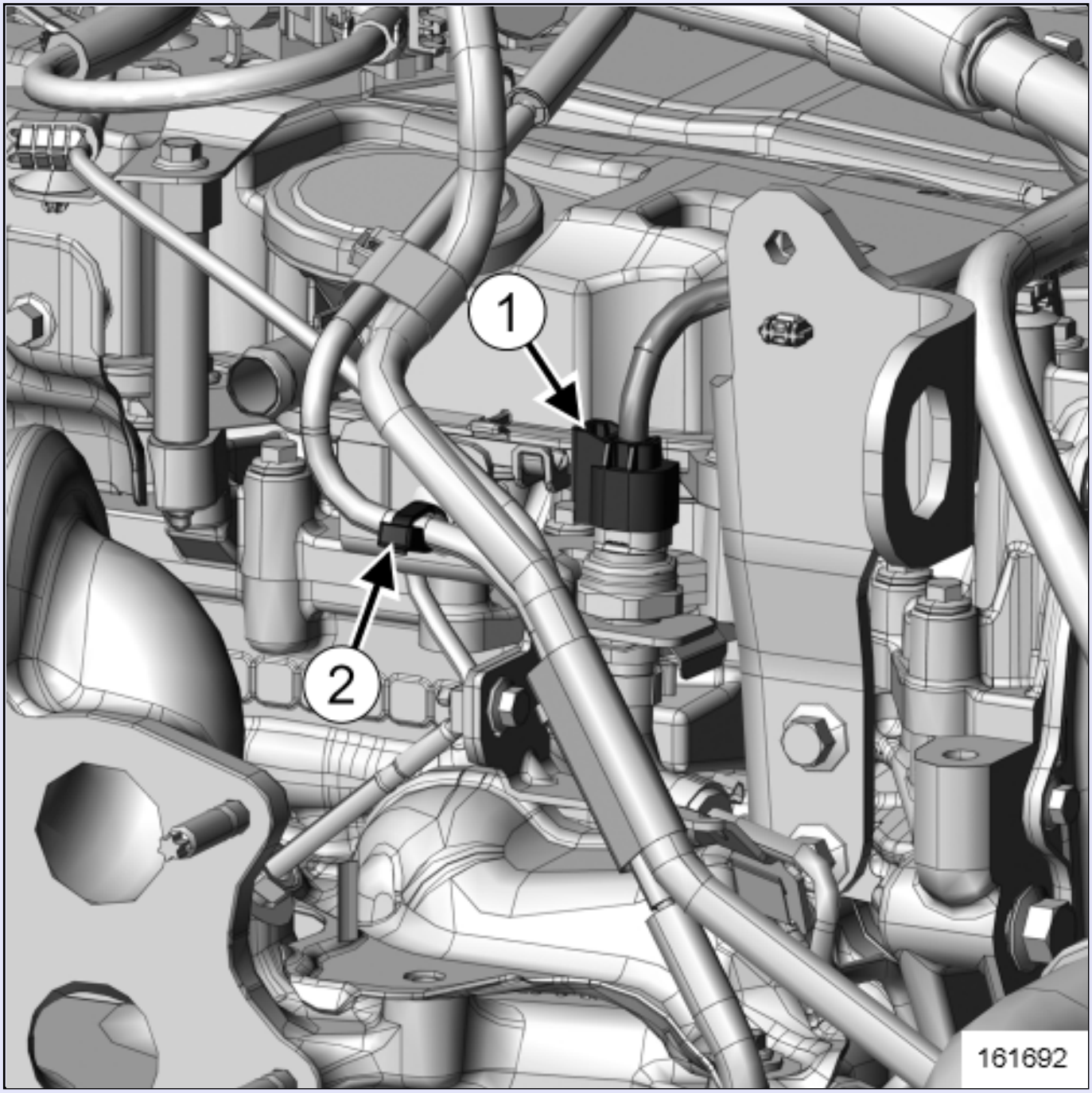
2. REMOVAL OPERATION



- Disconnect the exhaust gas pressure sensor connector(2) .

- Remove (see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view) :
  - the bolt of the exhaust gas pressure sensor from the exhaust manifold on the exhaust manifold side,
  - the bolt of the exhaust gas pressure sensor support on the exhaust manifold side,
  - the exhaust gas pressure sensor on the exhaust manifold side with its support.

- In the event of replacement, remove(see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view) :
  - the clip of the exhaust gas pressure sensor on the exhaust manifold side,
  - the support of the exhaust gas pressure sensor on the exhaust manifold side.



- Disconnect the exhaust gas pressure sensor connector(1) .
- Unclip the pipe clip(2) from the exhaust gas pressure sensor bracket.
- Remove (see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view) :
  - the hollow bolt of the exhaust gas pressure take-off pipe,
  - the exhaust gas pressure sensor bolt,
  - the "exhaust gas pressure sensor - exhaust gas pressure take-off pipe" assembly.

REFITTING

1. REFITTING OPERATION

Refit (see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view) :

- the "exhaust gas pressure sensor - exhaust gas pressure take-off pipe" assembly,
- the exhaust gas pressure sensor bolt,
- the hollow bolt of the exhaust gas pressure take-off pipe.

Torque tighten(see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view) :

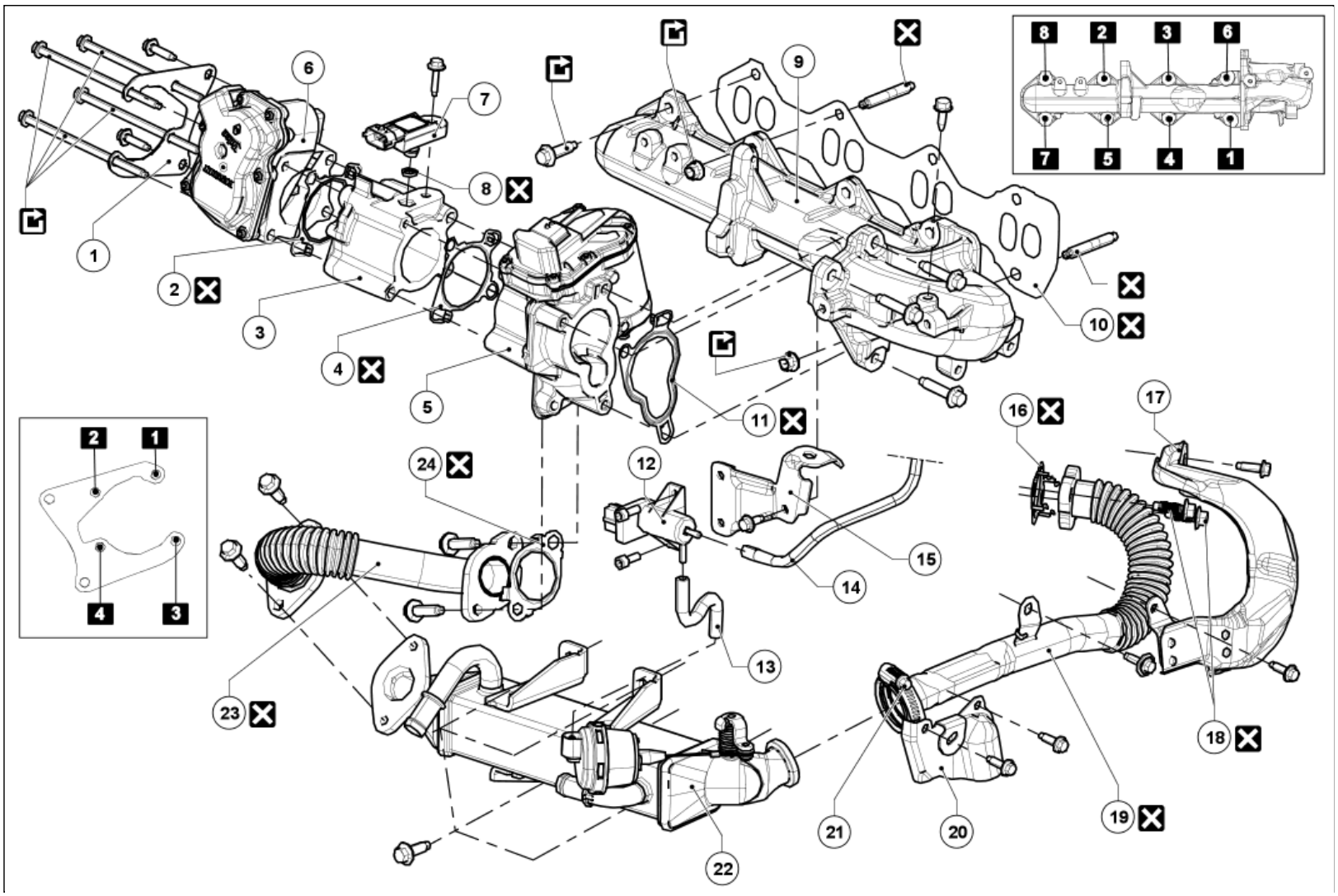
- the exhaust gas pressure sensor,
-

the hollow bolt of the exhaust gas pressure take-off pipe.

2. FINAL OPERATION

Proceed in the reverse order to removal.

EXHAUST GAS RECIRCULATION CIRCUIT ASSEMBLY: EXPLODED VIEW

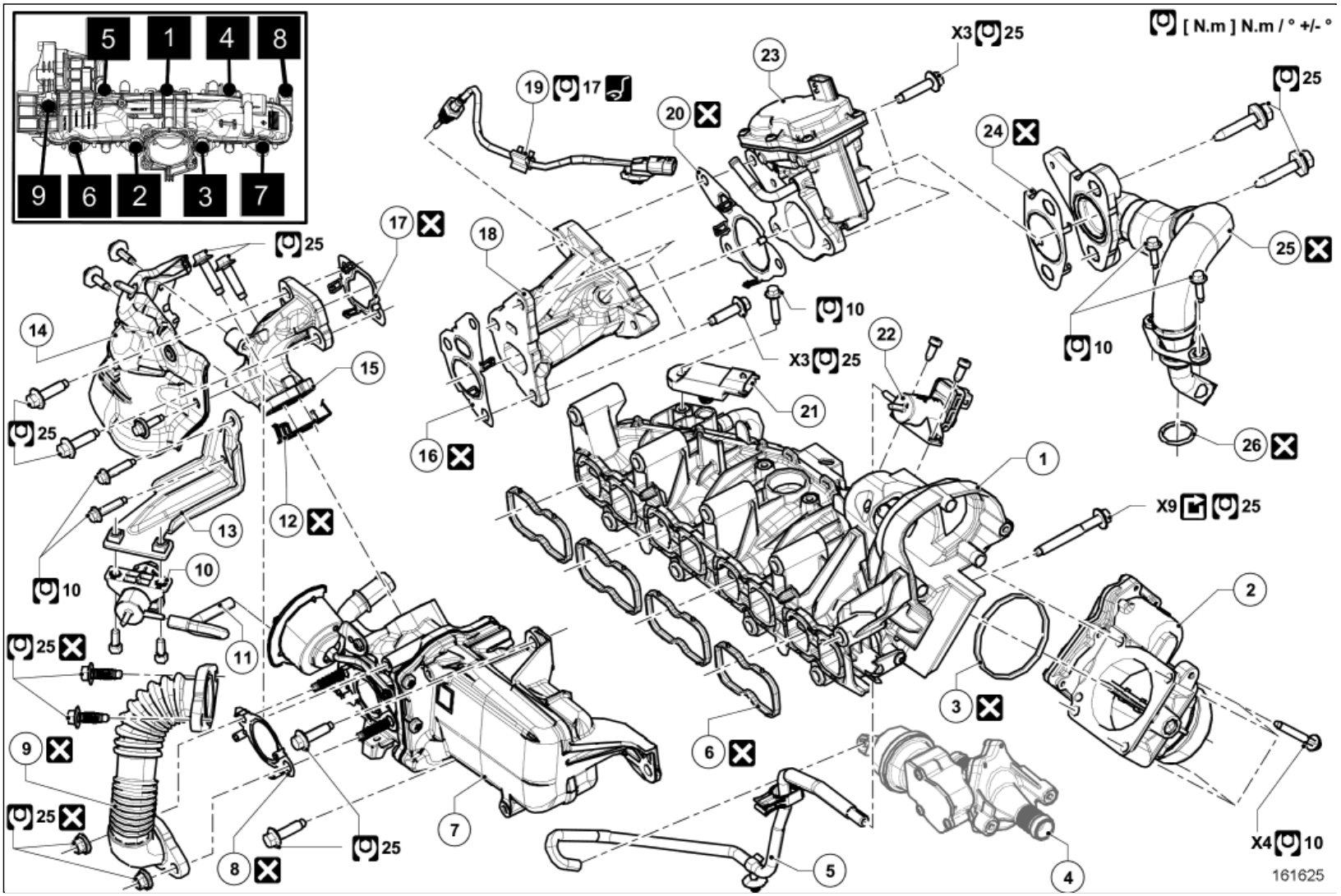


(see **Illustration key: Description**) Key.

Mark	Description	Information
1	Damper valve strut	AND (M9T) AND (700 OR 702) M9T, 700 702
2	Damper valve seal	AND (M9T) AND (700 OR 702) M9T, 700 702
3	Air inlet spacer	
4	Air inlet spacer seal	
5	Exhaust gas recirculation solenoid valve	(see 14A, Antipollution, Exhaust gas recirculation solenoid valve: Removal - Refitting)
6	Damper valve	AND (M9T) AND (700 OR 702) M9T, 700 702
7	Air inlet pressure sensor	
8	Air inlet pressure sensor seal	
9	Inlet distributor	AND (M9T) AND (700 OR 702) M9T, 700 702
10	Inlet distributor seal	AND (M9T) AND (700 OR 702) M9T, 700 702
11	Exhaust gas recirculation solenoid valve seal	(see 14A, Antipollution, Exhaust gas recirculation solenoid valve: Removal - Refitting)
12	EGR bypass solenoid valve	
13	EGR bypass solenoid valve outlet pipe	
14	EGR bypass solenoid valve inlet pipe	
15	EGR bypass solenoid valve support	
16	Seal of exhaust gas recirculation pipe on the exhaust manifold side	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
17	Exhaust gas recirculation rigid pipe heat shield at the exhaust gas cooler inlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
18	Bolt of exhaust gas recirculation rigid pipe on the exhaust manifold side	
19	Exhaust gas recirculation rigid pipe at the exhaust gas cooler inlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
20	Exhaust gas cooler inlet heat shield	
21	Clip on the exhaust gas recirculation rigid pipe at the exhaust gas cooler inlet	
22	Exhaust gas cooler	(see 14A, Antipollution, Exhaust gas cooler: Removal - Refitting)
23	Exhaust gas recirculation rigid pipe at the exhaust gas cooler outlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
24	Exhaust gas recirculation rigid pipe seal at the exhaust gas cooler outlet	

EXHAUST GAS RECIRCULATION CIRCUIT ASSEMBLY: EXPLODED VIEW

Special tooling required	
Set of high pressure pipe removal wrenches (diameter 14,17,19)	Mot. 2022



(see **Illustration key: Description**) .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques(see **Tightening torques: General information**) .

Marks	Designations	Informations
1	Inlet distributor	AND (M9T) AND (ZA4 OR ZF4) M9T, ZA4 ZF4AND (M9T) AND (700 OR 702) M9T, 700 702
2	Damper valve	AND (M9T) M9TAND (M9T) AND (700 OR 702) M9T, 700 702
3	Damper valve seal	
4	Water circulation valve	
5	Vacuum pipe	
6	Inlet distributor seal	
7	Exhaust gas cooler	(see 14A, Antipollution, Exhaust gas cooler: Removal - Refitting) (see 14A,Antipollution, Exhaust gas cooler: Removal - Refitting)
8	Exhaust gas recirculation rigid pipe seal at the exhaust gas cooler outlet	
9	Exhaust gas recirculation rigid pipe at the exhaust gas coolet inlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting) (see 14A,Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
10	EGR bypass solenoid valve	
11	Vacuum pipe	
12	Seal	
13	Support	
14	Exhaust gas recirculation rigid pipe heat shield at the exhaust gas cooler inlet	
15	EGR bypass solenoid valve outlet pipe	
16	Seal	
17	Seal	
18	Duct	
19	EGR circuit gas temperature sensor	AND (M9T) M9TAND (M9T) AND (700 OR 702) M9T, 700 702 Set of high pressure pipe removal wrenches (diameter 14,17,19)(Mot. 2022)
20	Exhaust gas recirculation solenoid valve seal	(see 14A, Antipollution, Exhaust gas recirculation solenoid valve: Removal - Refitting) (see 14A,Antipollution, Exhaust gas recirculation solenoid valve: Removal - Refitting)
21	Air inlet pressure sensor	
22	Solenoid valve	
23	Exhaust gas recirculation solenoid valve	(see 14A, Antipollution, Exhaust gas recirculation solenoid valve: Removal - Refitting) (see 14A,Antipollution, Exhaust gas recirculation solenoid valve: Removal - Refitting)
24	Exhaust gas recirculation rigid pipe seal at EGR solenoid valve outlet	
25	Exhaust gas recirculation rigid pipe at the EGR solenoid valve outlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting) (see 14A,Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)

26	Exhaust gas recirculation rigid pipe seal at the inlet distributor inlet	

EXHAUST GAS RECIRCULATION CIRCUIT ASSEMBLY: EXPLODED VIEW

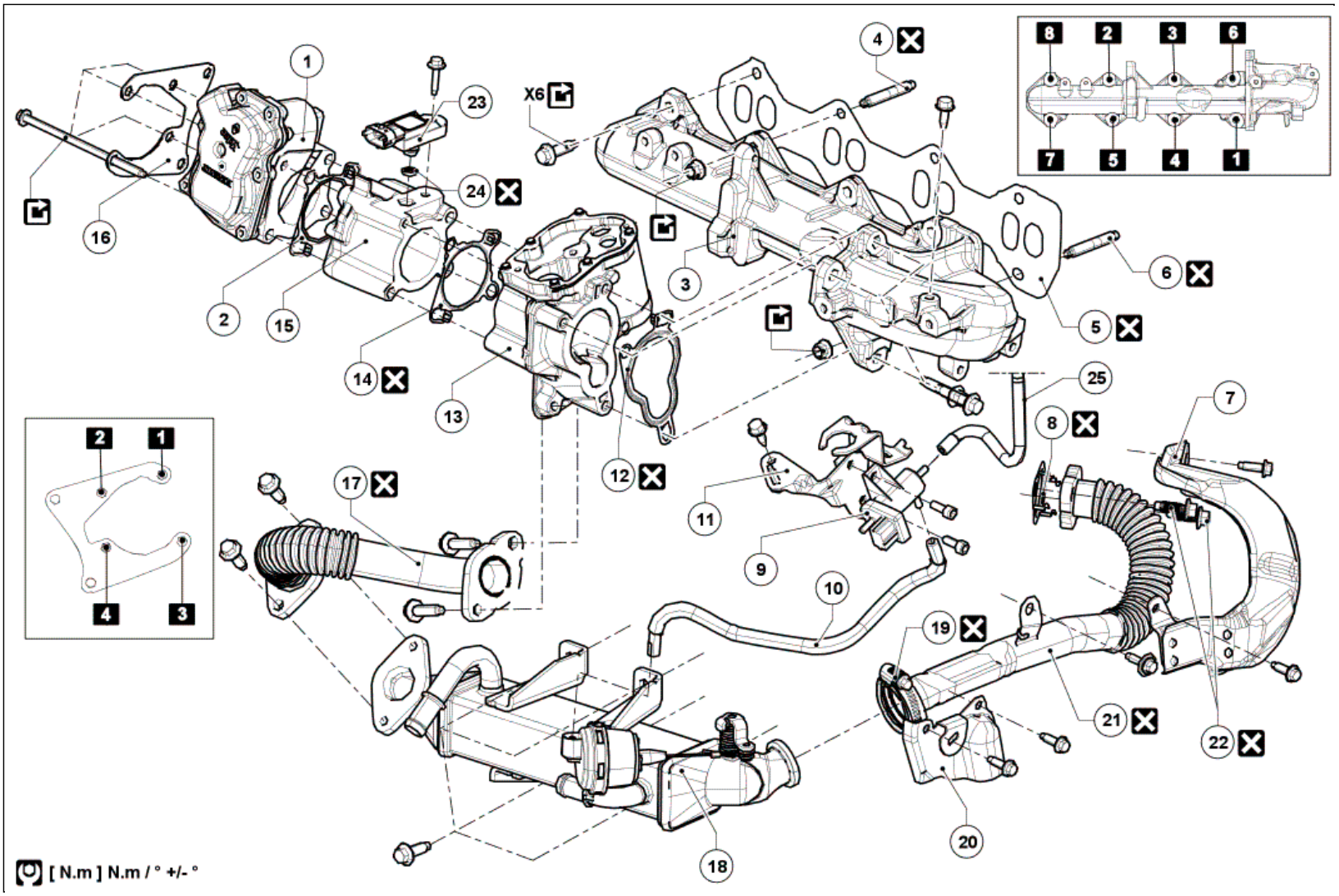


Illustration key: Description Key.

No.	Description	Information
1	Damper valve	Damper valve: Removal - Refitting
2	Damper valve seal	
3	Inlet distributor	(see **Inlet distributor: Removal - Refitting**)
4	Inlet distributor stud	
5	Inlet distributor seal	
6	Inlet distributor stud	
7	Exhaust gas recirculation rigid pipe heat shield at the exhaust gas cooler inlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
8	Seal of exhaust gas recirculation pipe on the exhaust manifold side	
9	EGR bypass solenoid valve	
10	EGR bypass solenoid valve outlet pipe	
11	Engine cover support	
12	Exhaust gas recirculation solenoid valve seal	(see 14A, Antipollution, Exhaust gas recirculation solenoid valve: Removal - Refitting)
13	Exhaust gas recirculation solenoid valve	
14	Air inlet spacer seal	
15	Air inlet spacer	
16	Damper valve strut	Damper valve: Removal - Refitting
17	Exhaust gas recirculation rigid pipe at the exhaust gas cooler outlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
18	Exhaust gas cooler	(see 14A, Antipollution, Exhaust gas cooler: Removal - Refitting)
19	Clip on the exhaust gas recirculation rigid pipe at the exhaust gas cooler inlet	
20	Exhaust gas cooler inlet heat shield	
21	Exhaust gas recirculation rigid pipe at the exhaust gas cooler inlet	(see 14A, Antipollution, Exhaust gas recirculation rigid pipe: Removal - Refitting)
22	Bolt of exhaust gas recirculation rigid pipe on the exhaust manifold side	
23	Air inlet pressure sensor	
24	Air inlet pressure sensor seal	
25	EGR bypass solenoid valve inlet pipe	

EXHAUST GAS RECIRCULATION SOLENOID VALVE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

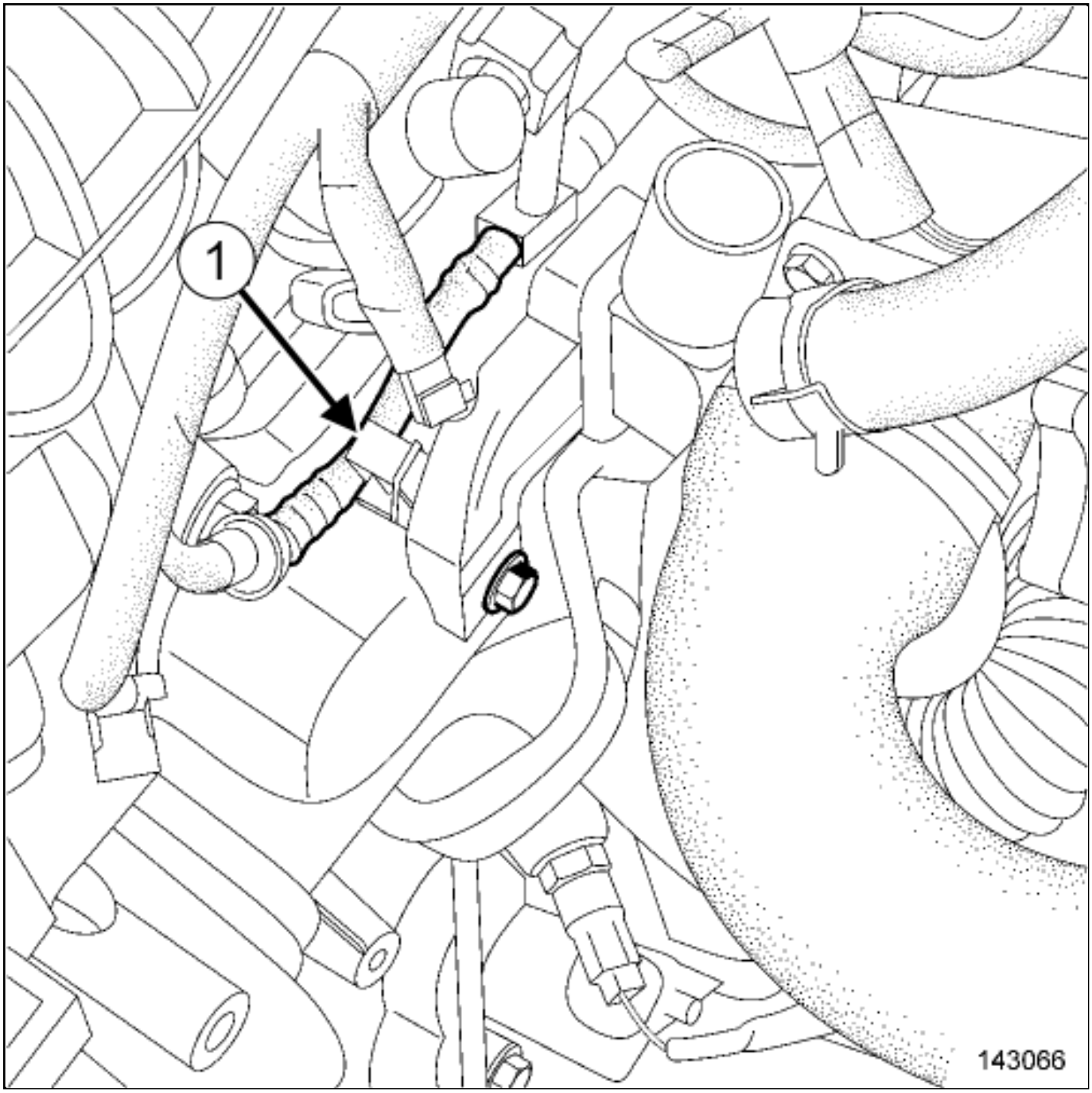
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view)** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .
- Disconnect the battery(see **Battery: Removal - Refitting**) .
- Remove:
  - the engine undertray,
  - the intercooler air outlet pipeAND (ZA4 OR ZF4) ZA4 ZF4AND (M9T) AND (700 OR 702) M9T, 700 702,
  - the engine oil dipstickAND (M9T) AND (700 OR 702) M9T, 700 702.



- Unclip the fuel return pipe(1) from the engine oil dipstick guide.

- Remove the engine oil dipstick guideAND (M9T) M9TAND (M9T) AND (700 OR 702) M9T, 700 702.

- Remove (see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) (see 14A,Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) :
  - the damper valve,
  - the exhaust gas recirculation rigid pipe at the exhaust gas cooler outlet.

- Remove the support from the EGR bypass solenoid valve(see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) .

2. REMOVAL OPERATION

Disconnect the exhaust gas recirculation solenoid valve connector(see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) .

Remove (see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) :

- the exhaust gas recirculation solenoid valve,
- the exhaust gas recirculation solenoid valve seal.

REFITTING

1. REFITTING PREPARATION OPERATION

Clean and degrease using surface cleaner(see **Vehicle: Parts and consumables for the repair**) the joint faces of:

- the exhaust gas recirculation solenoid valve,
- the inlet distributor.

2. REFITTING OPERATION

Refit (see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) :

- the exhaust gas recirculation solenoid valve seal.
- the exhaust gas recirculation solenoid valve,

3. FINAL OPERATION

Proceed in the reverse order to removal.

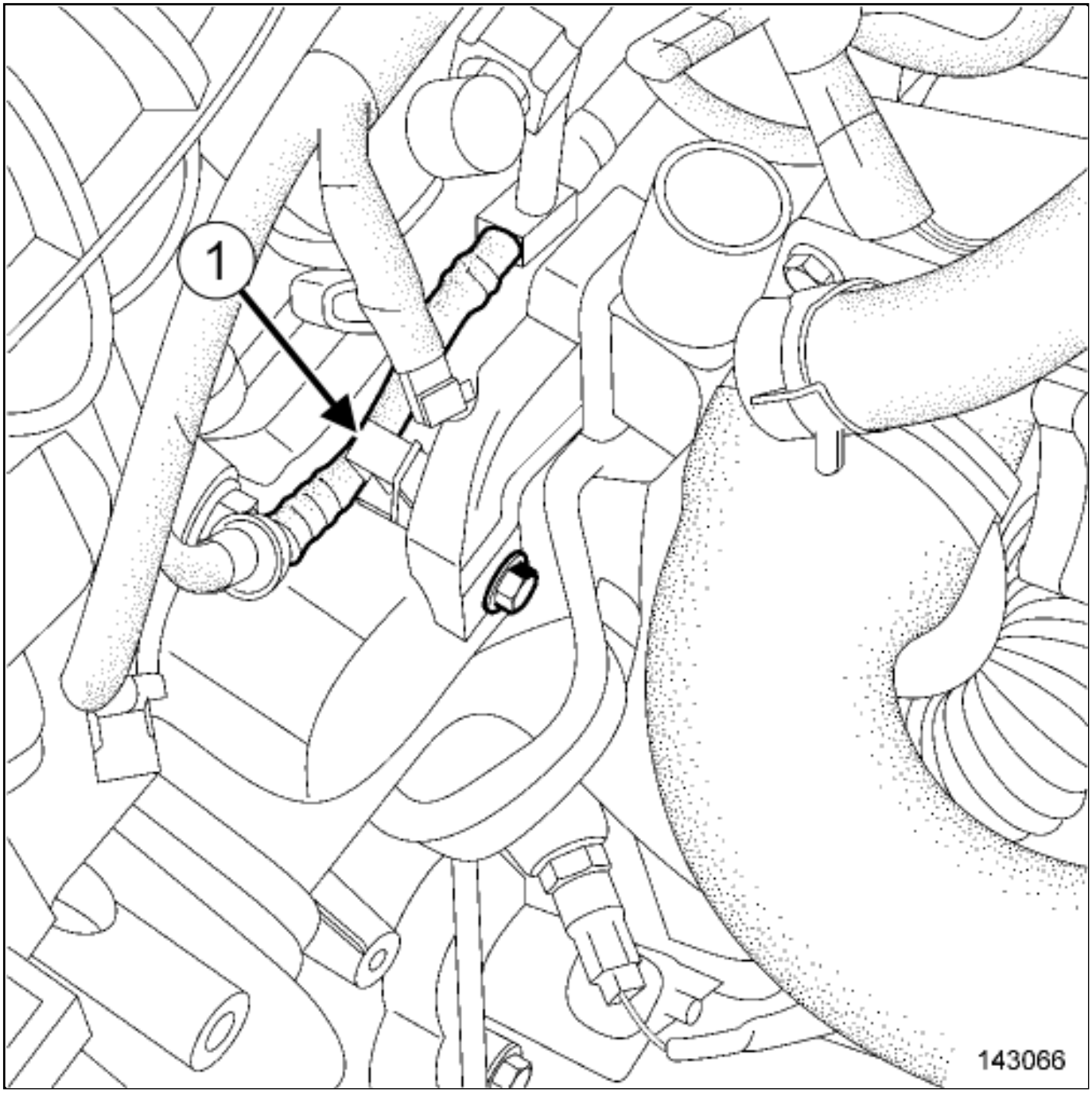
EXHAUST GAS RECIRCULATION SOLENOID VALVE: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).
- Remove:
  - the engine undertray,
  - the intercooler air outlet pipe(see 12A, Fuel mixture, Air inlet assembly: Exploded view) ,
  - the engine oil dipstickEngine oil circuit assembly: Exploded view .



- Unclip the fuel return pipe(1) from the engine oil dipstick guide.

- Remove the engine oil dipstick guide**Engine oil circuit assembly: Exploded view** .

- Remove **(see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view)** :
  - the damper valve,
  - the exhaust gas recirculation rigid pipe at the exhaust gas cooler outlet.

- Remove the bolt from the intercooler air inlet pipe on the inlet distributor**(see 12A, Fuel mixture, Air inlet assembly: Exploded view)** .

- Move aside the intercooler air inlet pipe**(see 12A, Fuel mixture, Air inlet assembly: Exploded view)** .

2. REMOVAL OPERATION

Disconnect the exhaust gas recirculation solenoid valve connector(see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) .

Remove (see 14A, Antipollution, Exhaust gas recirculation circuit assembly: Exploded view) :

- the exhaust gas recirculation solenoid valve,
- the exhaust gas recirculation solenoid valve seal.

REFITTING

1. REFITTING PREPARATION OPERATION

Use a surface cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean and degrease the sealing surfaces:

- the exhaust gas recirculation solenoid valve,
- of the inlet distributor.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

EXHAUST GAS TEMPERATURE SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Spanner for tightening the exhaust gas temperature sensor	Mot. 1807
Set of high pressure pipe removal wrenches (diameter 14,17,19)	Mot. 2022

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

WARNING

Wear heat protective gloves during the operation.

CAUTION

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view)** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

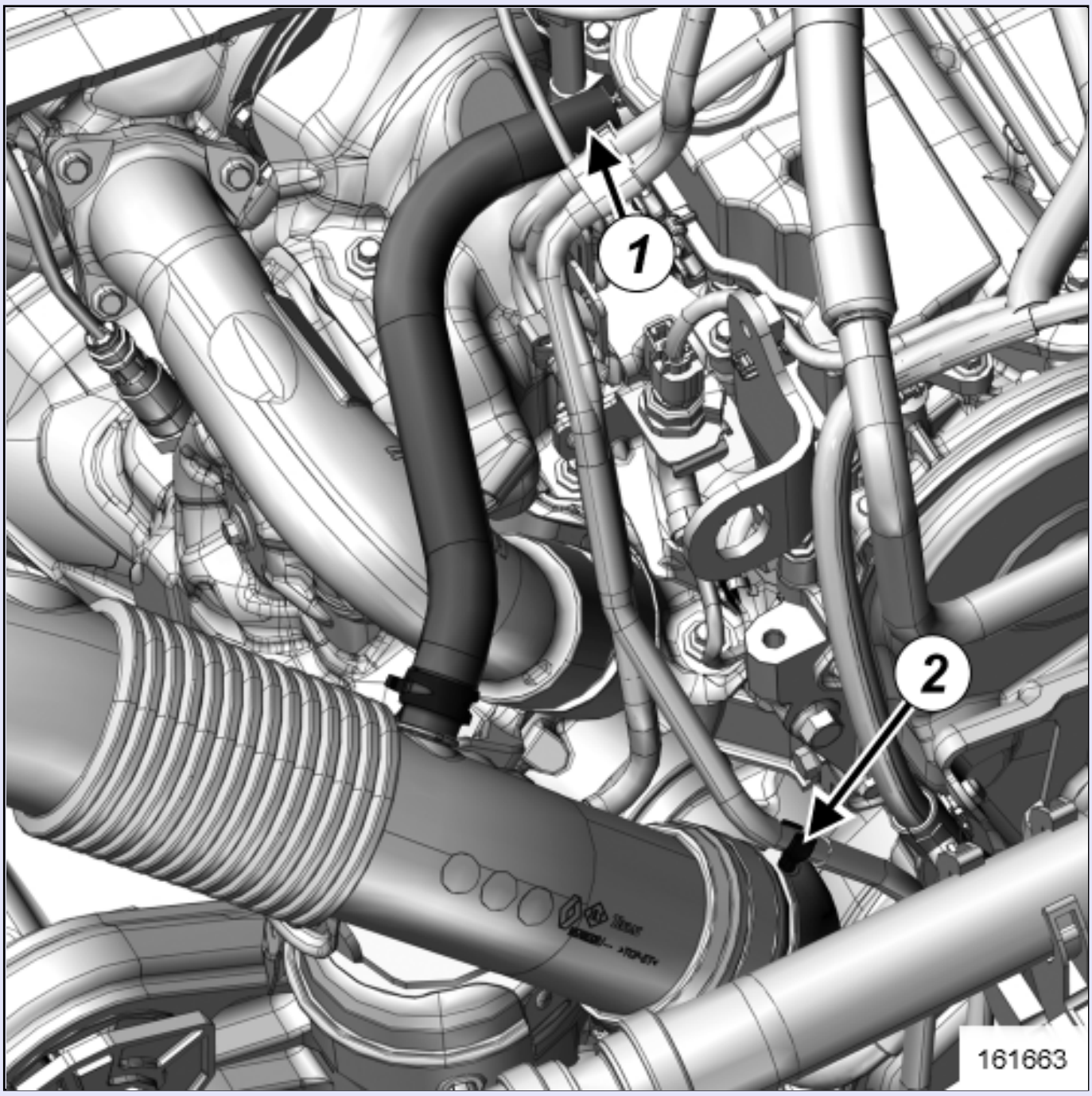
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .

M9T, 670 680 690 696 698 700 702 870 880 882 890 896 898(670 OR 680 OR 690 OR 696 OR 698 OR 700 OR 702 OR 870 OR 880 OR 882 OR 890 OR 896 OR 898)

- Remove (see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view) :
  - the exhaust manifold heat shield,
  - the exhaust gas duct at the turbocharger outlet.

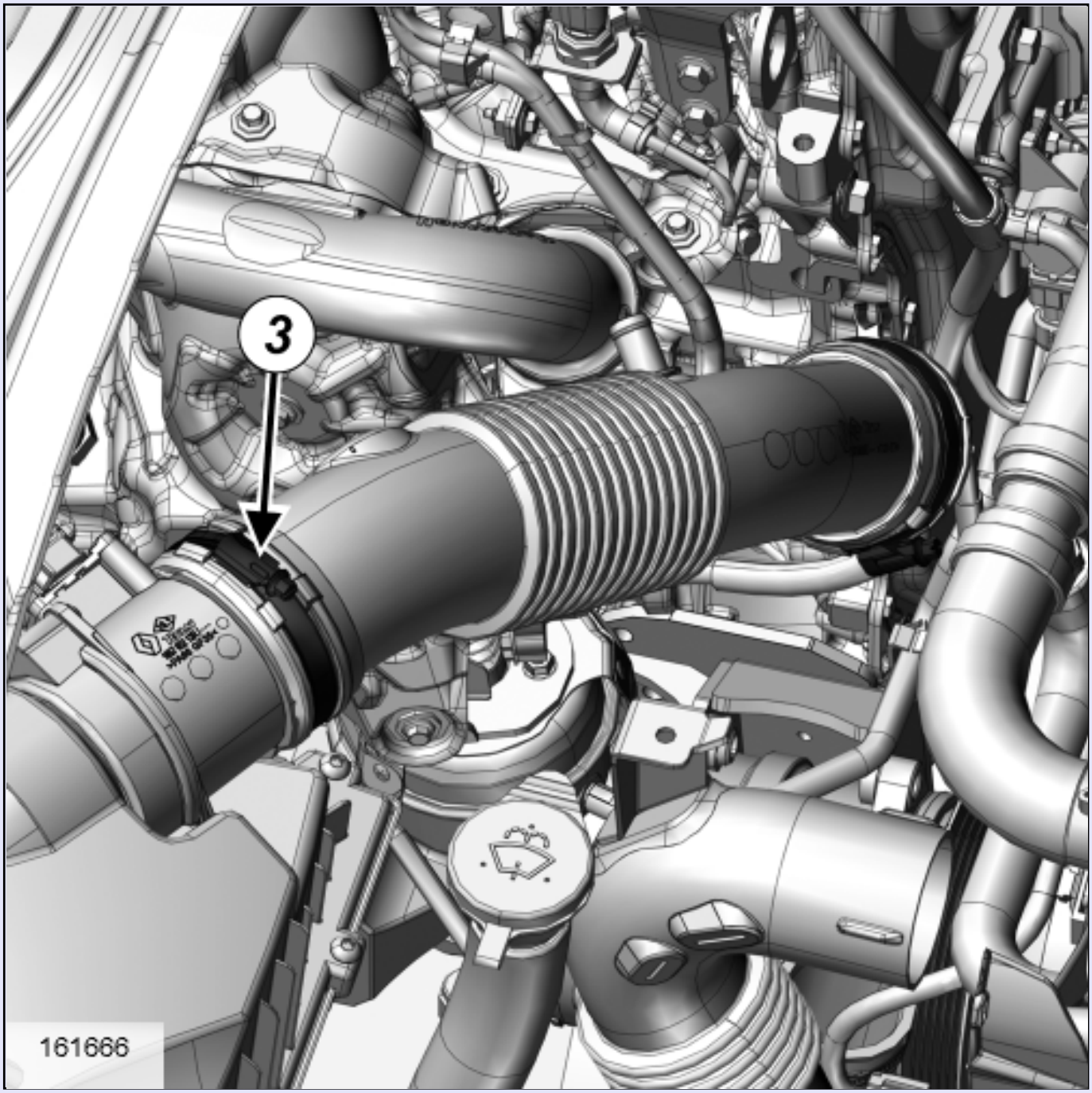
M9T, 700 702(700 OR 702)

- Remove the underbody protector.



- Disconnect the oil vapour pipe(1) on the cylinder head side.

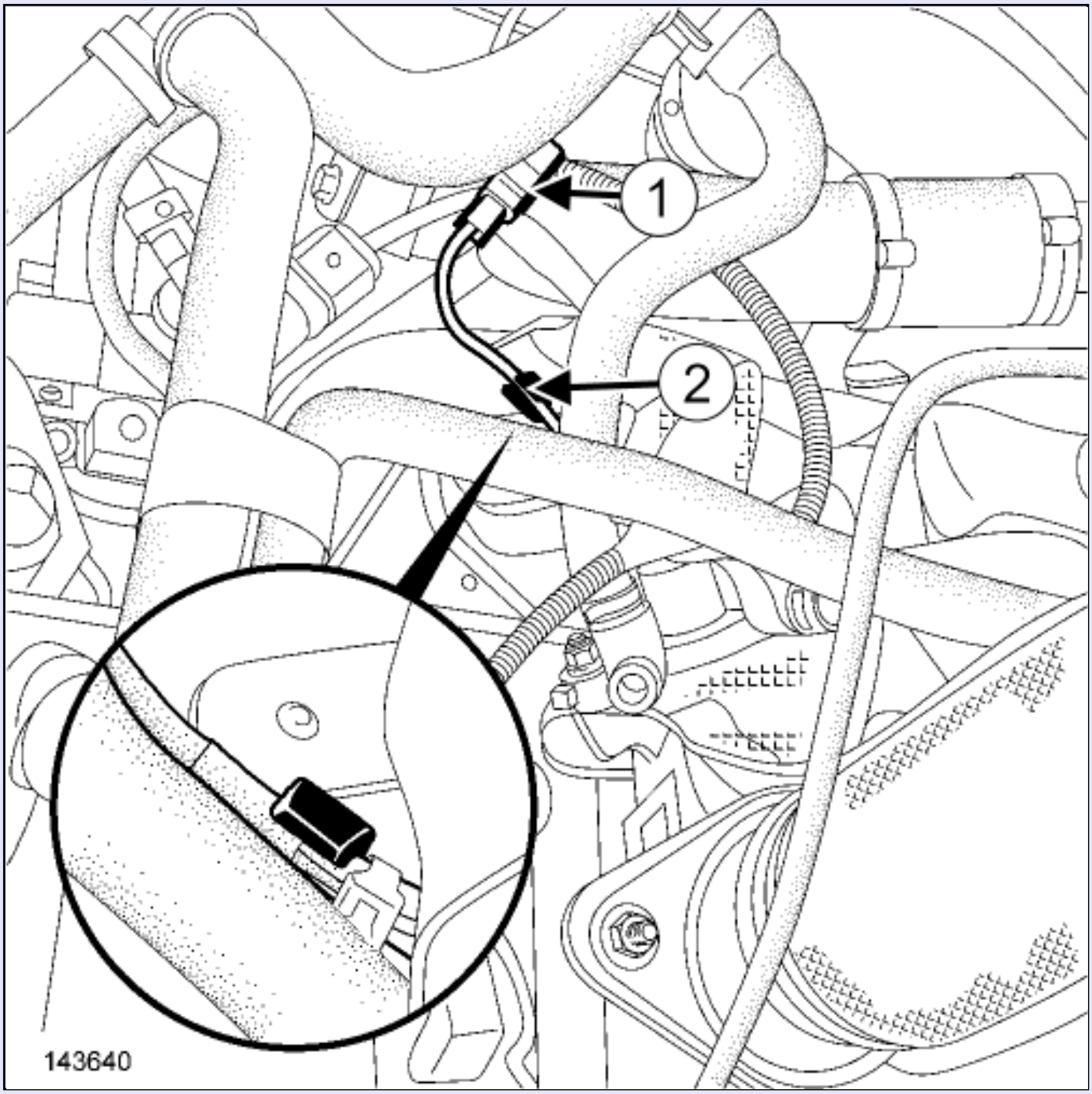
- Unclip the engine wiring(2) from the turbocharger air inlet pipe.



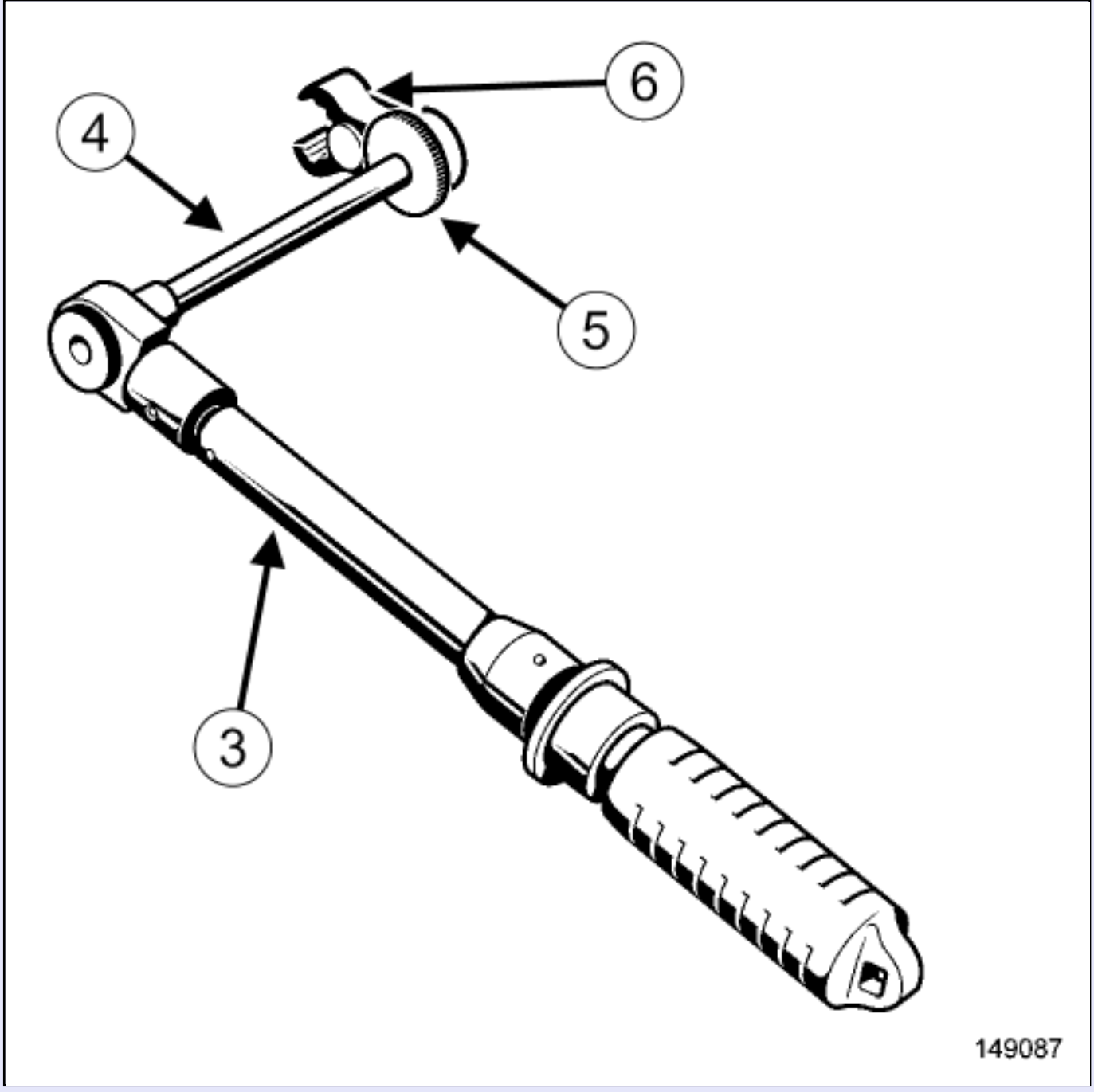
- Loosen the clip(3) of the turbocharger air inlet pipe on the air flowmeter side.
- Disconnect the turbocharger air inlet pipe from the air flowmeter.
- Remove :
  - the turbocharger air inlet pipe bolts on the turbocharger side,
  - the turbocharger air inlet pipe,
  - the seal of the turbocharger air inlet pipe.
- Remove the intercooler air inlet pipe.
- Remove (see 19B, Exhaust, Exhaust assembly in engine compartment: Exploded view) :
  - the duct between the turbochargers,

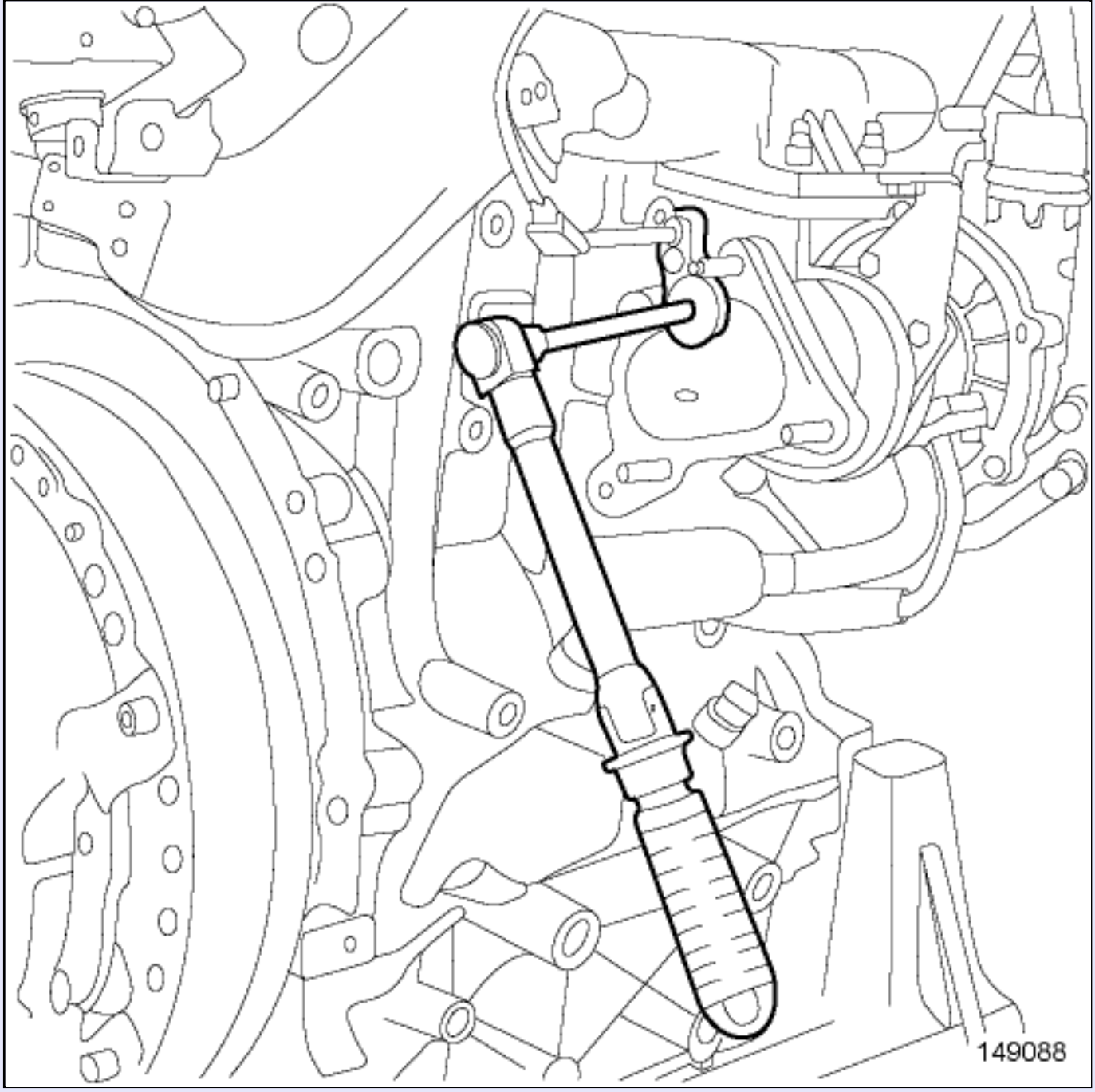
- the oxygen sensor,
- the turbocharger heat shield bolts,
- the turbocharger heat shield,
- the turbo-manifold upper heat shield bolts,
- the turbo-manifold upper heat shield.

2. REMOVAL OPERATION



- Disconnect the exhaust gas temperature sensor connector(1) .
- Unclip the exhaust gas temperature sensor connector from its mounting.
- Unclip the wiring harness from the exhaust gas temperature sensor at(2) .


6
4
5
3
149087

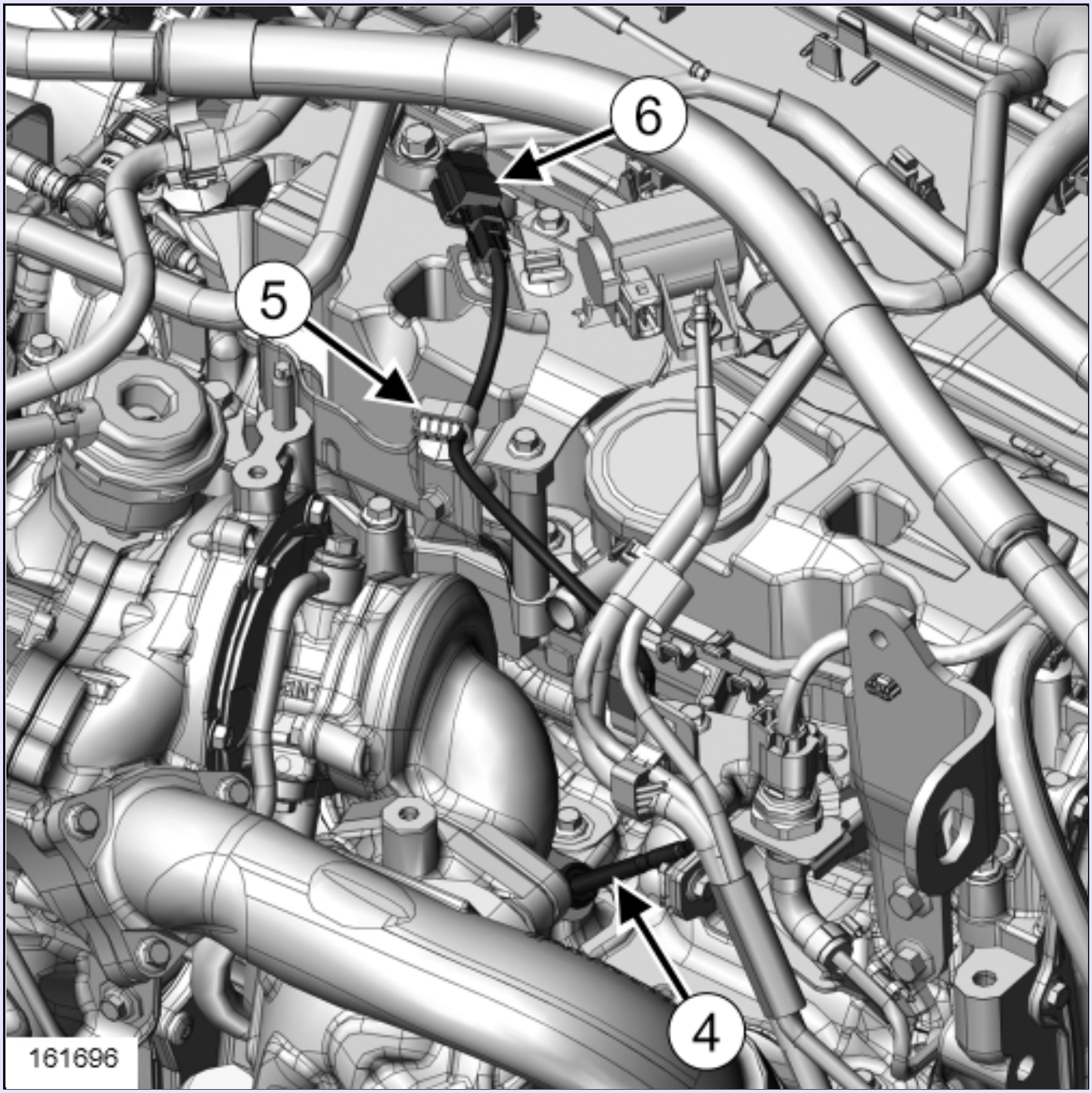


Loosen the union nut of the exhaust gas temperature sensor using:

- a torque wrench(3) ,
- an extension(4) ,
- a 1/4 to 3/8 adapter(5) ,
- the toolSpanner for tightening the exhaust gas temperature sensor(Mot. 1807) (6) .

Remove the exhaust gas temperature sensor(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .

M9T, 700 702(700 OR 702)



Disconnect the exhaust gas temperature sensor connector(6) .

Unclip:

- the exhaust gas temperature sensor connector(6) ,
- the exhaust gas temperature sensor cable at(5)

Remove the exhaust gas temperature sensor(4) using the toolSet of high pressure pipe removal wrenches (diameter 14,17,19)(Mot. 2022) .

REFITTING

1. REFITTING PREPARATION OPERATION

M9T, 670 680 690 696 698 700 702 870 880 882 890 896 898(670 OR 680 OR 690 OR 696 OR 698 OR 700 OR 702 OR 870 OR 880 OR 882 OR 890 OR 896 OR 898)

Coat the exhaust gas temperature sensor with COPPER-ALUMINIUM LUBRICANTVehicle: Parts and consumables for the repair (04B, Consumables - Products).

2. REFITTING OPERATION

Refit the exhaust temperature sensor.

M9T, 700 702(700 OR 702)

Torque tighten the exhaust temperature sensor using the toolSet of high pressure pipe removal wrenches (diameter 14,17,19)(Mot. 2022) .

M9T, 670 680 690 696 698 700 702 870 880 882 890 896 898(670 OR 680 OR 690 OR 696 OR 698 OR 700 OR 702 OR 870 OR 880 OR 882 OR 890 OR 896 OR 898)

Torque tighten the union nut of the exhaust gas temperature sensor using the toolSpanner for tightening the exhaust gas temperature sensor(Mot. 1807) .

3. FINAL OPERATION

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

EXHAUST GAS TEMPERATURE SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Spanner for tightening the exhaust gas temperature sensor	Mot. 1807

Location and specifications (tightening torques, parts always to be replaced, etc.)Exhaust assembly in engine compartment: Exploded view .

WARNING

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

IMPORTANT

Wear heat protective gloves during the operation.

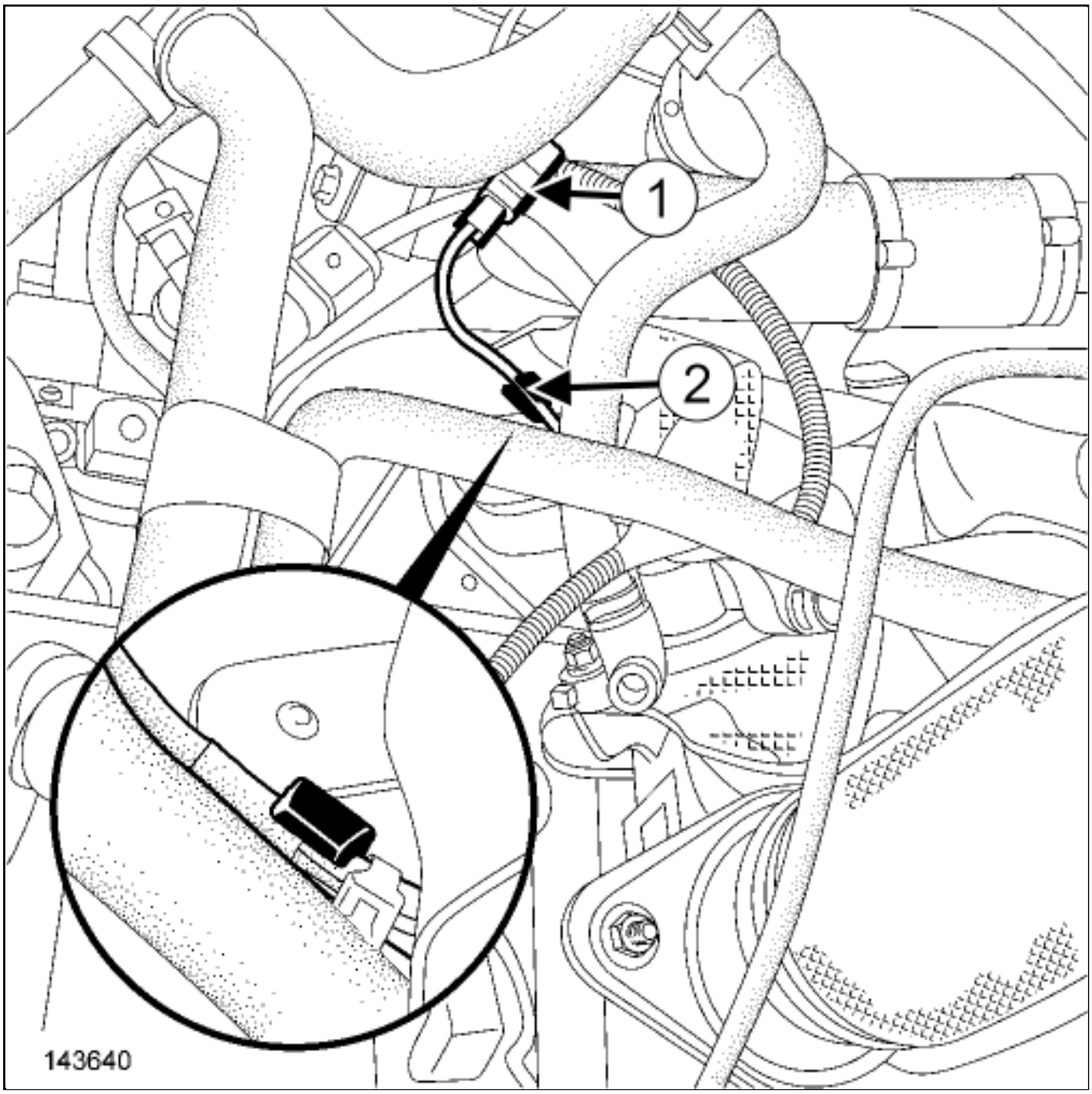
REMOVAL

1. REMOVAL PREPARATION OPERATION

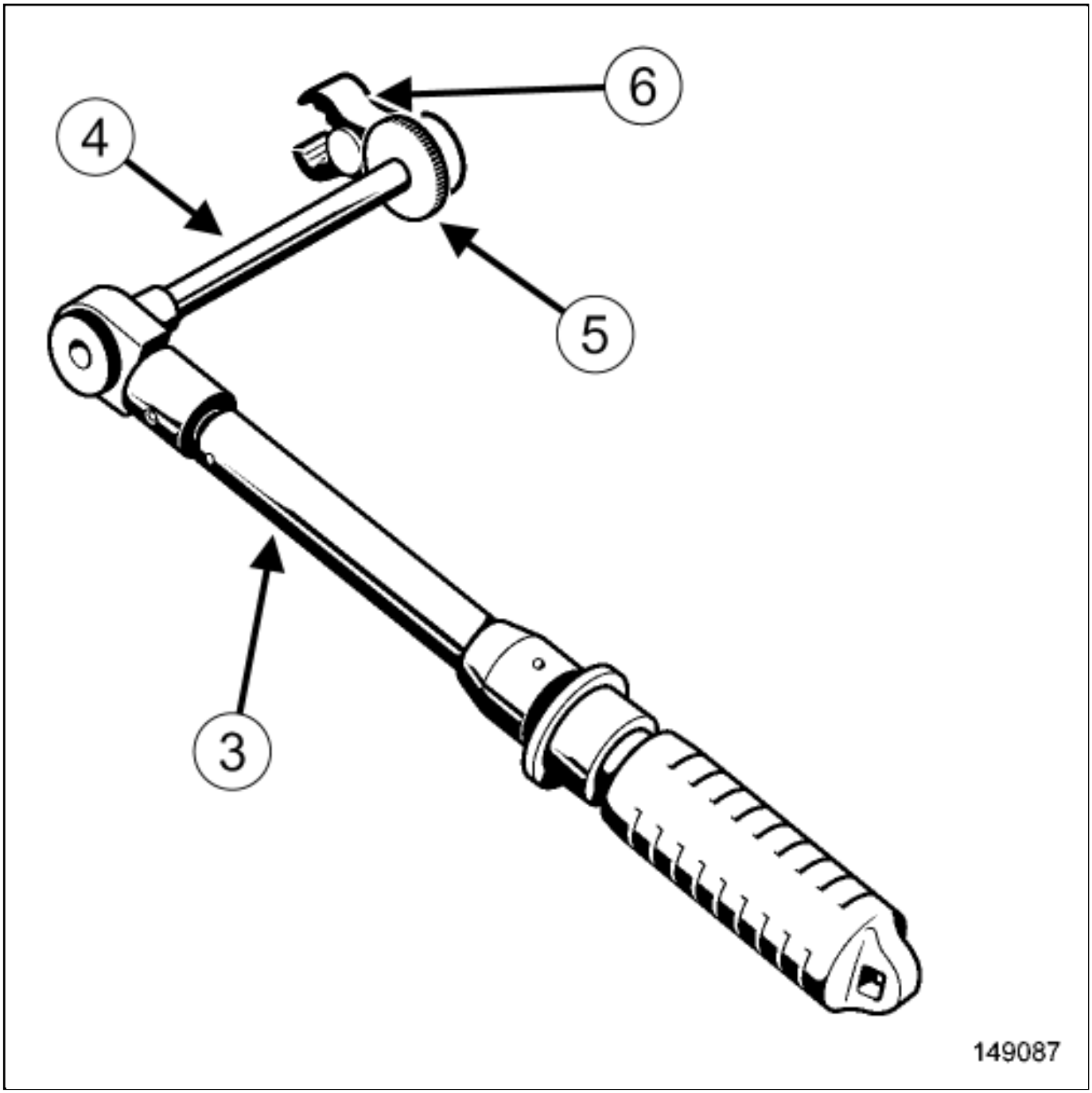
- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

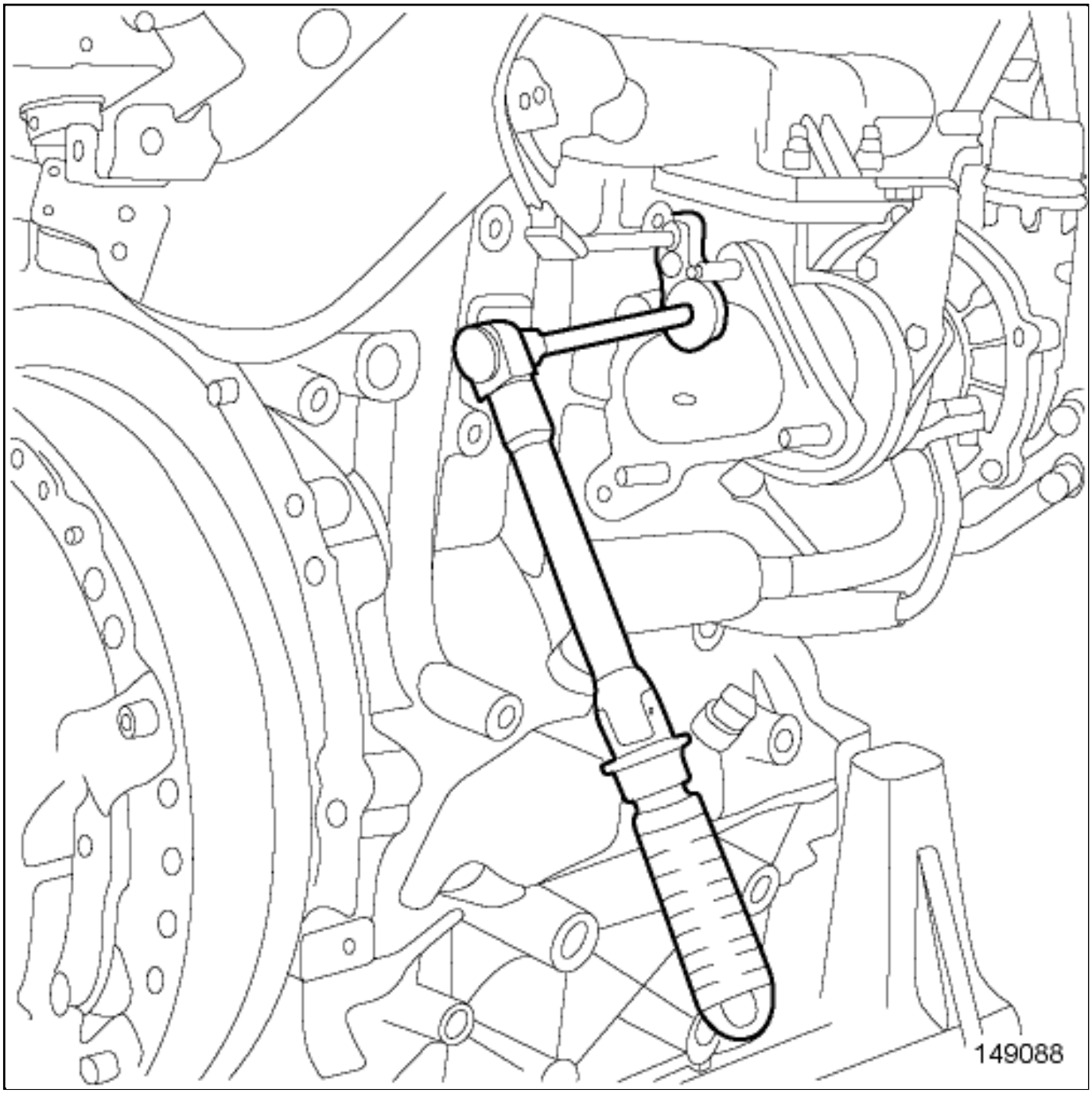
- Remove Exhaust assembly in engine compartment: Exploded view :
  - the exhaust manifold heat shield,
  - the exhaust gas duct at the turbocharger outlet.

2. REMOVAL OPERATION



- Disconnect the exhaust gas temperature sensor connector(1) .
- Unclip the exhaust gas temperature sensor connector from its mounting.
- Unclip the wiring harness from the exhaust gas temperature sensor at(2) .


6
4
5
3
149087



- Loosen the union nut of the exhaust gas temperature sensor using:
  - a torque wrench(**3**) ,
  - an extension(**4**) ,
  - a 1/4 to 3/8 adapter(**5**) ,
  - theSpanner for tightening the exhaust gas temperature sensor(**Mot. 1807**) (**6**) .

- Remove the exhaust gas temperature sensor.

REFITTING

1. REFITTING PREPARATION OPERATION

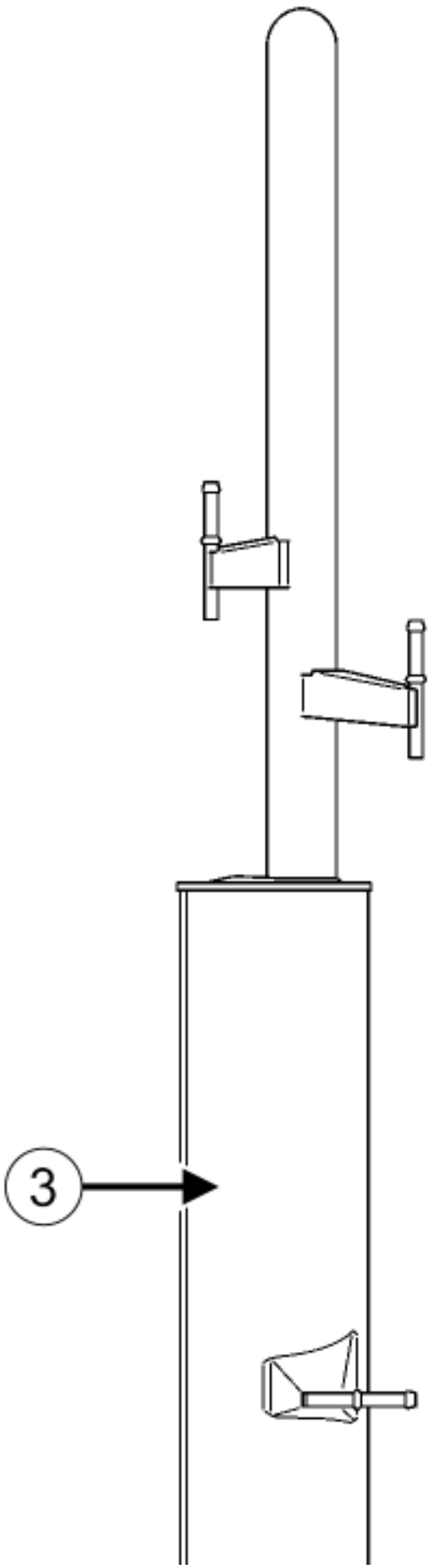
Coat the exhaust gas temperature sensor with COPPER-ALUMINIUM LUBRICANT**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

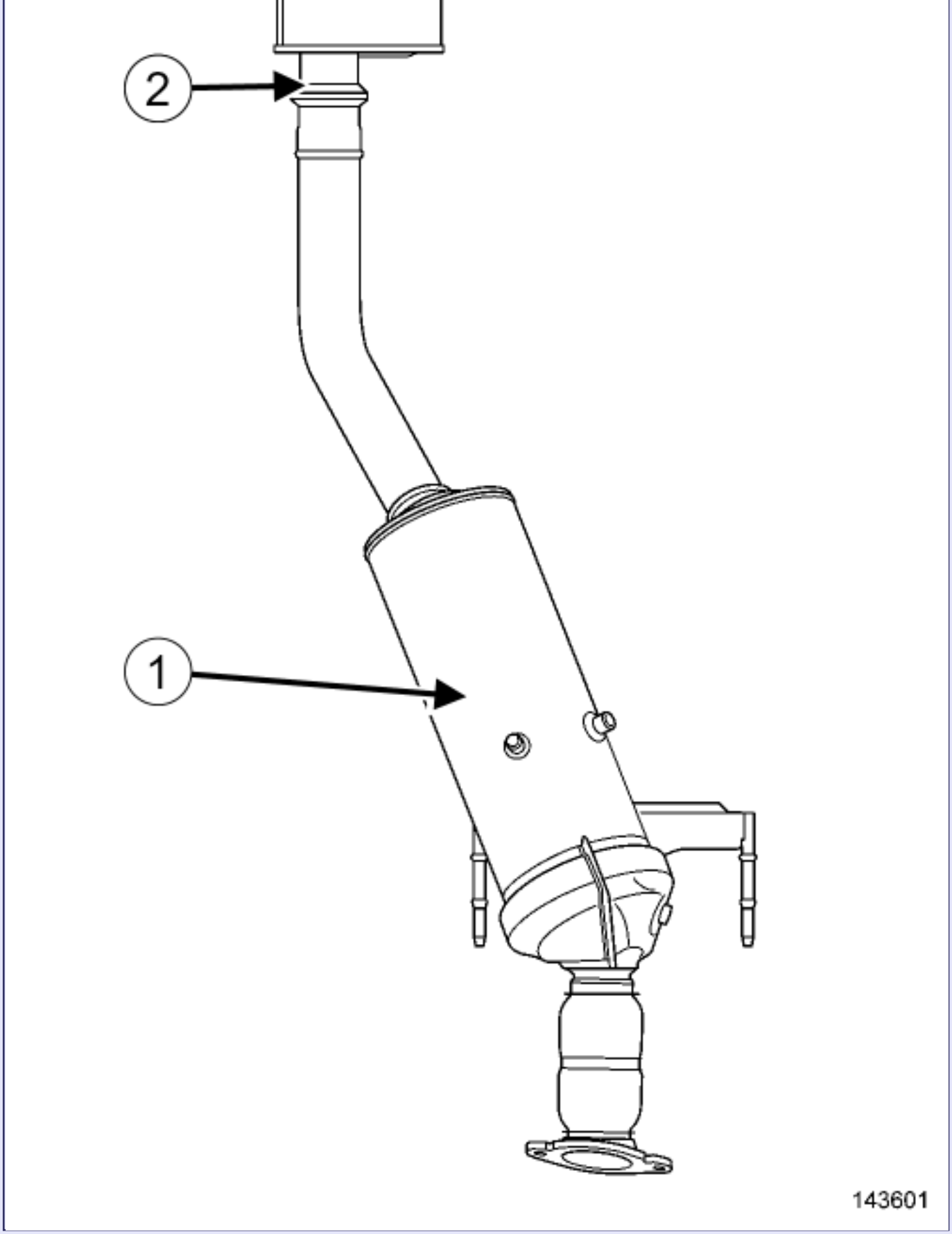
2. REFITTING OPERATION

Proceed in the reverse order to removal.

EXHAUST: LIST AND LOCATION OF COMPONENTS

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .

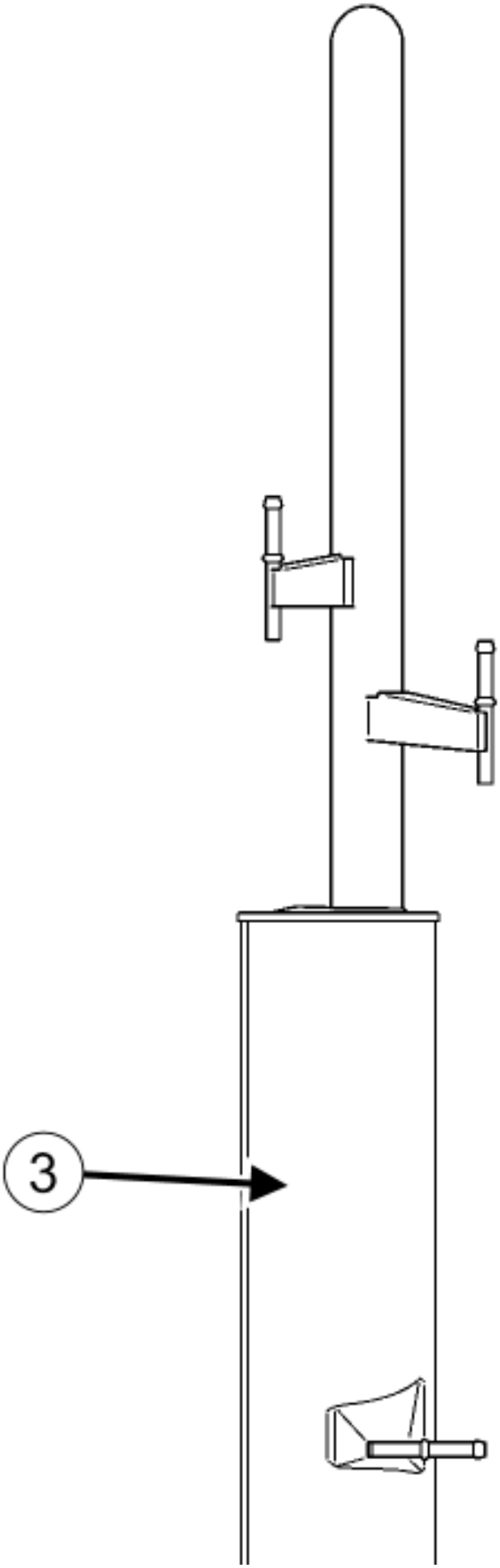

3

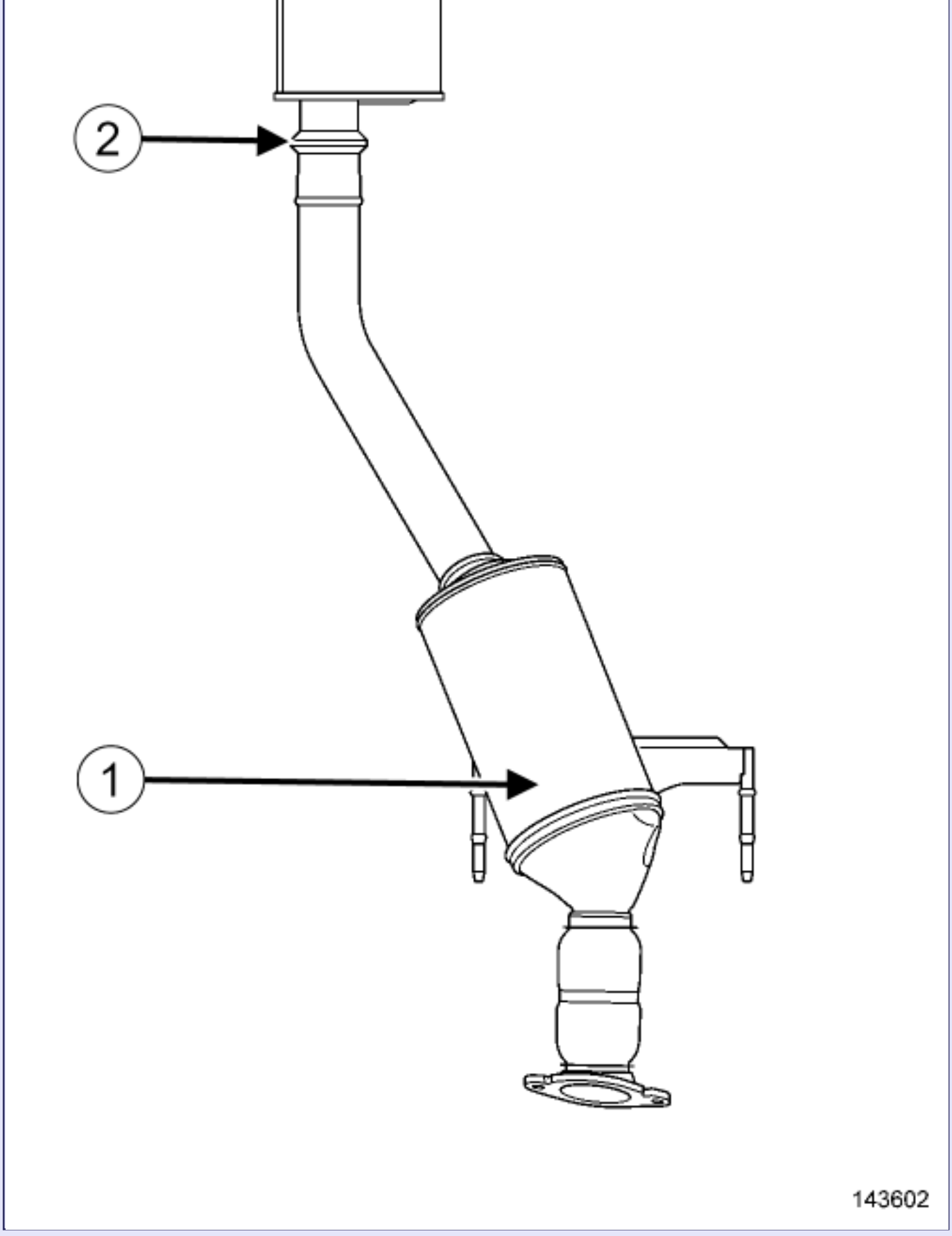


(1) Particle filter

(2) Clip

(3) Silencer

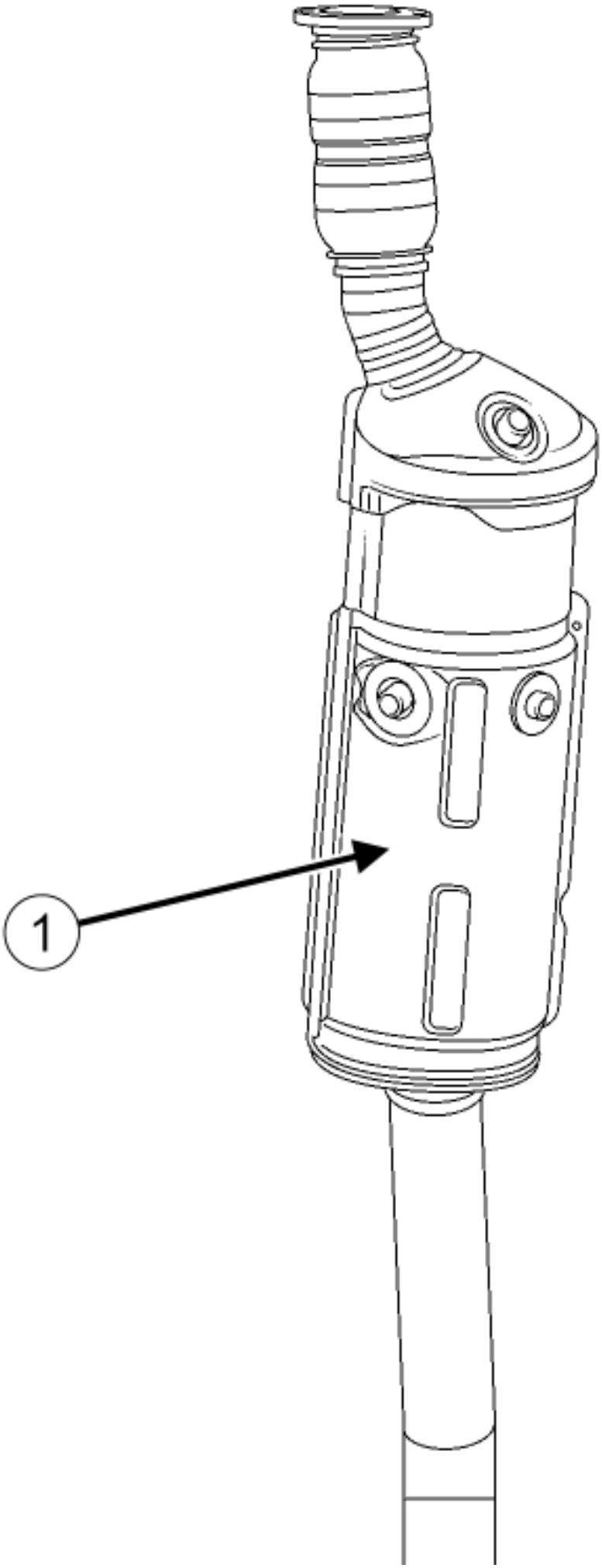

3

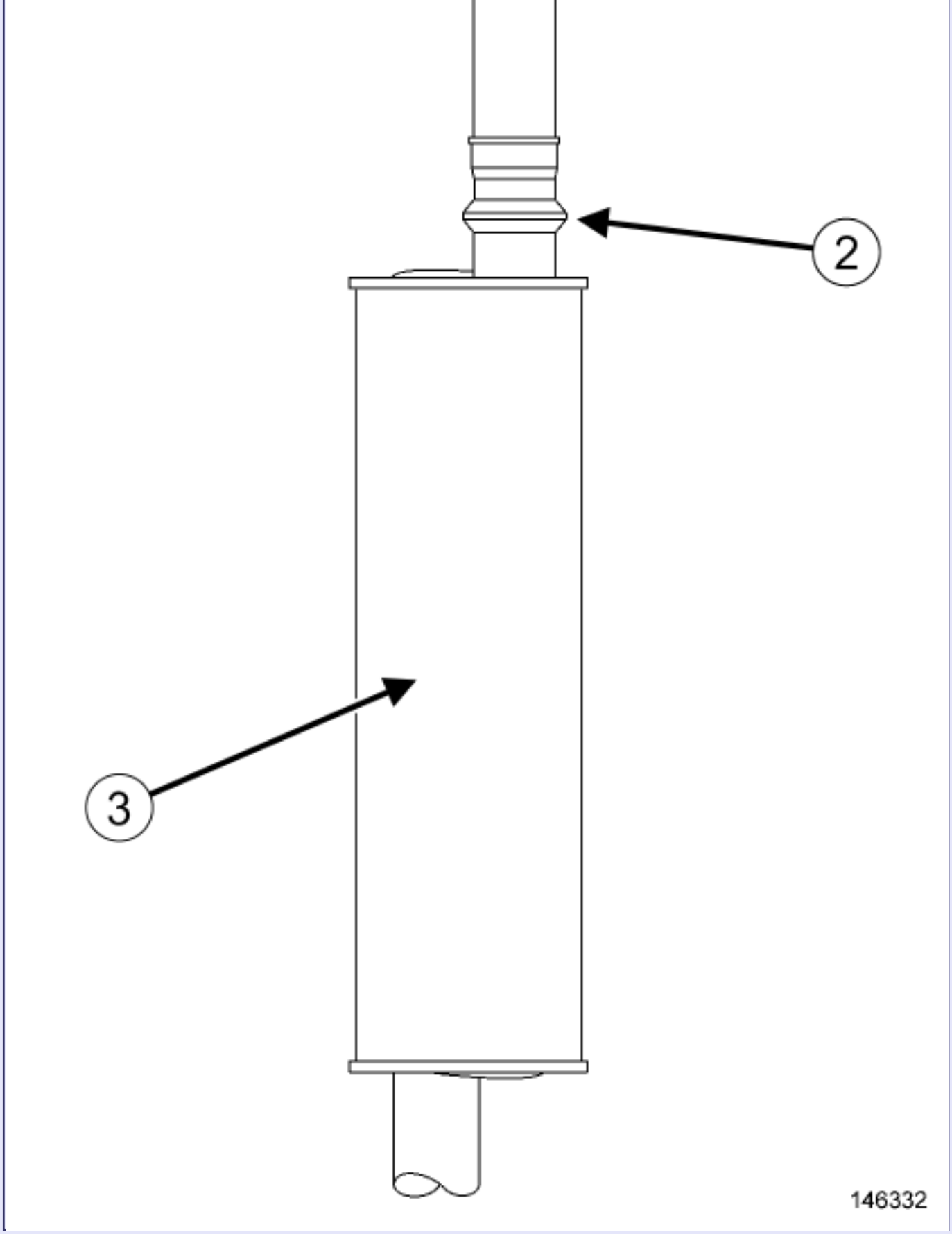


(1) Catalytic converter

(2) Clip

(3) Silencer

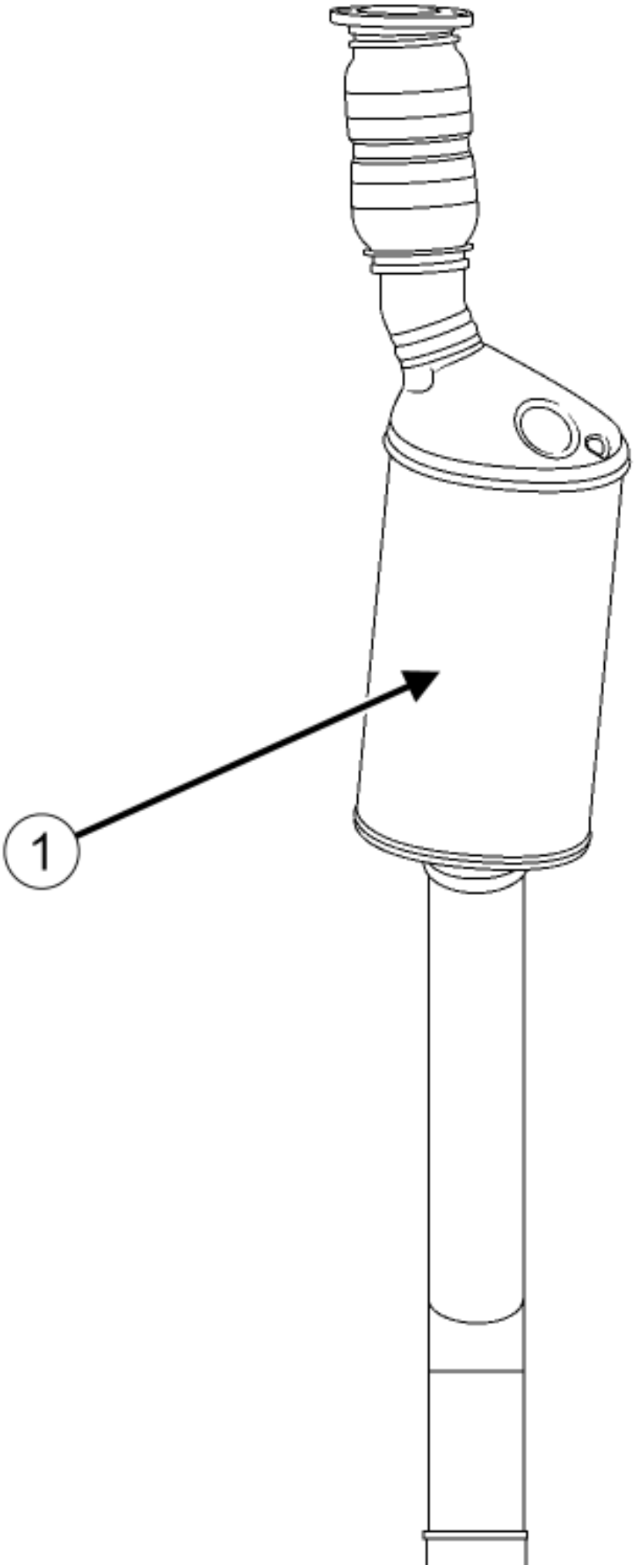

1

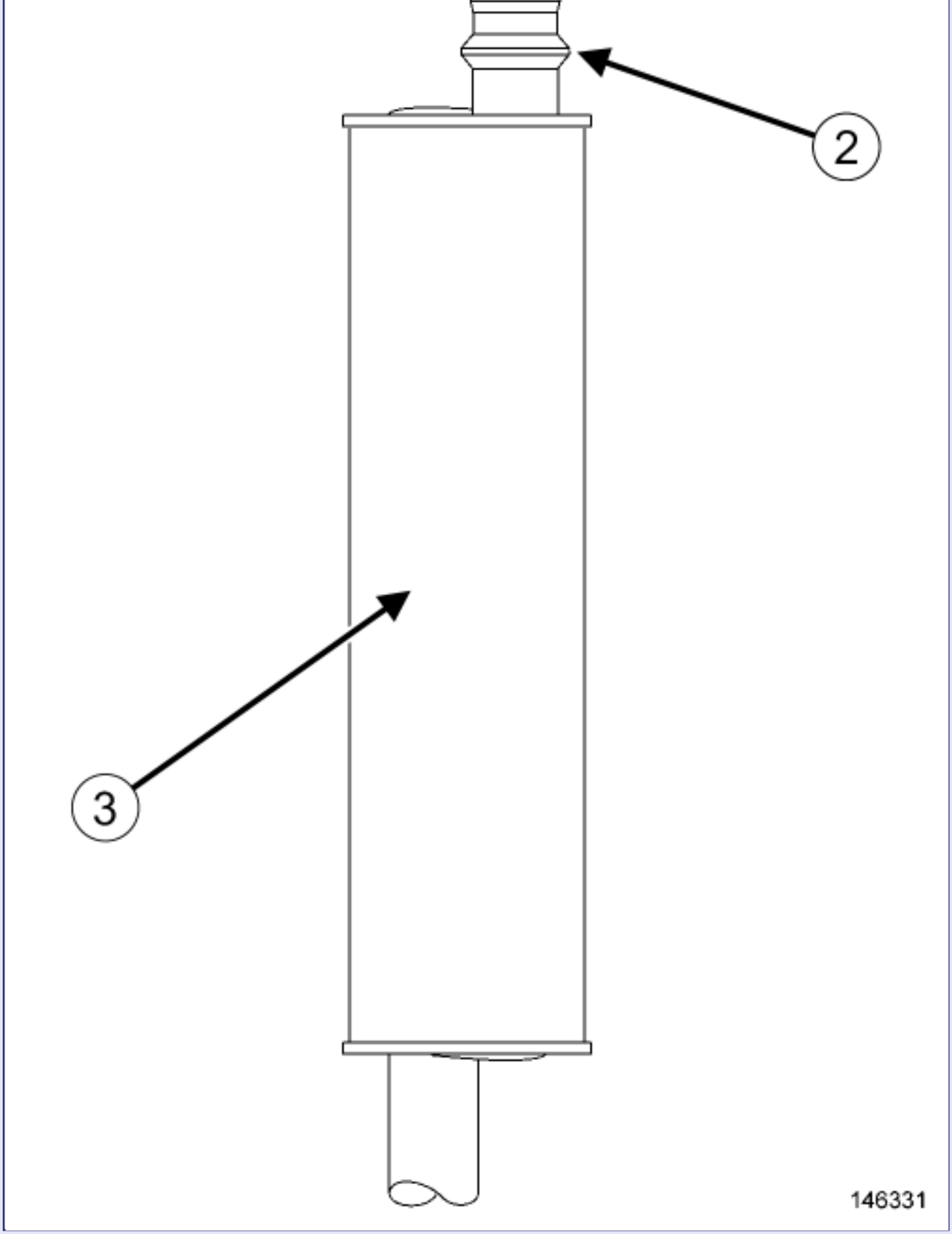


(1) Particle filter

(2) Clip

(3) Silencer


1



(1) Catalytic converter

(2) Clip

(3) Silencer

XSL version : 3.02 du 22/07/11

EXHAUST MANIFOLD: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:

exhaust manifold seal

WARNING

Consult the safety and cleanliness advice and operation recommendations before carrying out any operation **Vehicle: Precautions for the repair** .

Note:

- This engine is equipped with two turbochargers:
  - low-pressure turbocharger,
  - high-pressure integrated turbo-manifold.

This document concerns the high-pressure integrated turbo-manifold.

Locations and specifications (tightening torques, parts always to be replaced) : **Exhaust assembly in engine compartment: Exploded view**

REMOVAL

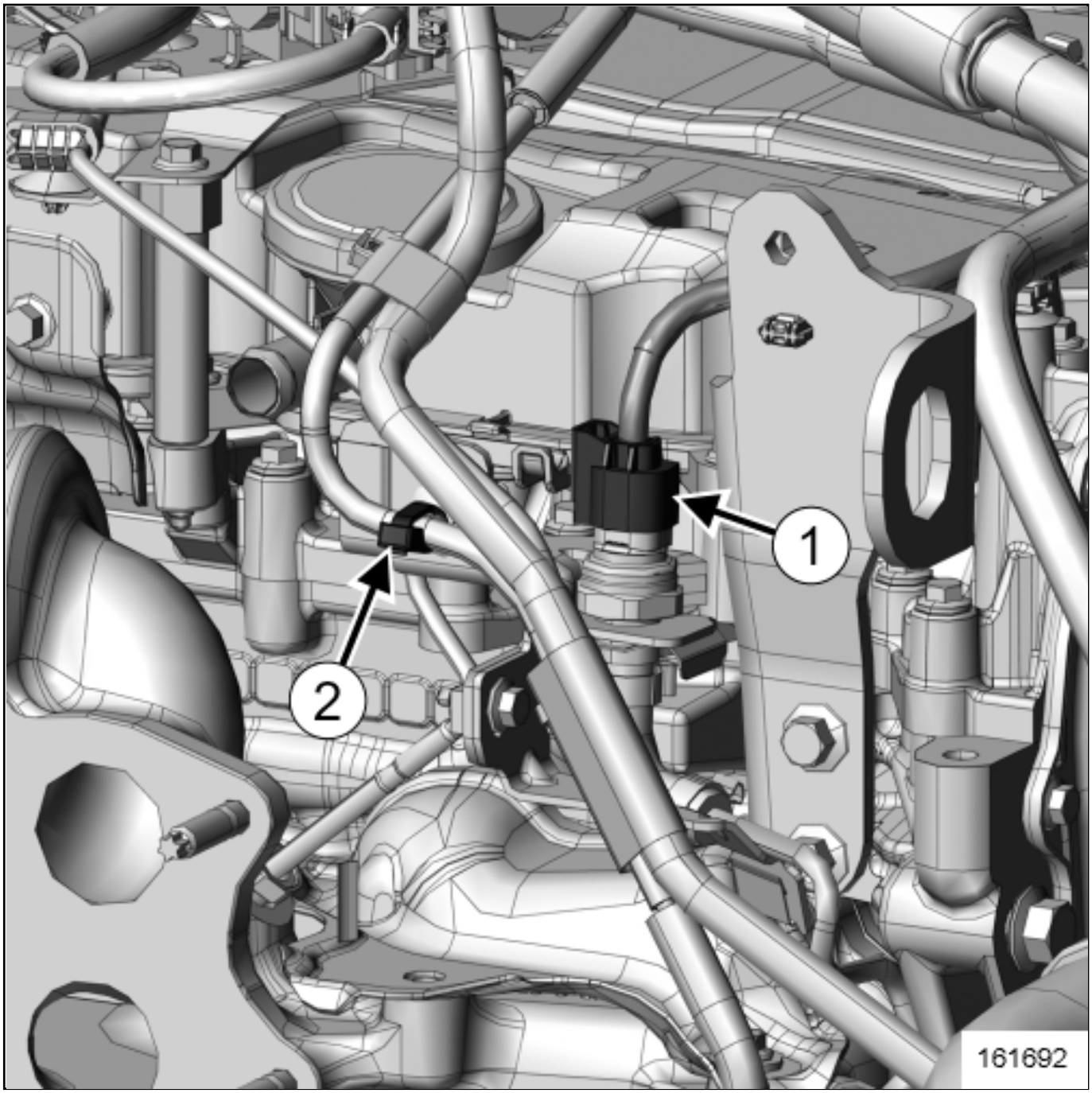
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift **Vehicle: Towing and lifting** .
- Disconnect the battery **Battery: Removal - Refitting** .
- Remove:
  - the engine undertray,
  - the intercooler air inlet pipe **(see 12A, Fuel mixture, Air inlet assembly: Exploded view)** ,
- Remove **Exhaust assembly in engine compartment: Exploded view** :

- the duct between the low pressure turbocharger and the turbo-manifold,
- the low-pressure turbocharger,
- the exhaust gas temperature sensor,
- the turbo-manifold oil supply pipe,
- the turbo-manifold oil return pipe.

Remove the EGR rigid pipe at the exhaust gas cooler inlet .

2. REMOVAL OPERATION



Disconnect the exhaust gas pressure sensor connector(1) .

Unclip the pipe clip(2) from the exhaust gas pressure sensor bracket.

Remove Exhaust assembly in engine compartment: Exploded view :

- the hollow bolt of the exhaust gas pressure take-off pipe,
- the exhaust gas pressure sensor bolt,
- the exhaust gas pressure sensor.

Remove Exhaust assembly in engine compartment: Exploded view :

- the turbo-manifold heat shields bolts,
- the turbo-manifold heat shields.

Remove Exhaust assembly in engine compartment: Exploded view :

- the turbo-manifold bracket bolts,
- the turbo-manifold bracket,
- the turbo-manifold nuts,
- the turbo-manifold,
- the turbo-manifold seal.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: exhaust manifold seal

2. REFITTING OPERATION

Refit Exhaust assembly in engine compartment: Exploded view :

- the turbo-manifold new seal,
- the turbo-manifold,
- the turbo-manifold new nuts,
- the turbo-manifold bracket,
- the turbo-manifold bracket bolts,

Torque tighten:

- the turbo-manifold nuts in orderExhaust assembly in engine compartment: Exploded view ,
- the turbo-manifold bracket boltsExhaust assembly in engine compartment: Exploded view .

3. FINAL OPERATION

Proceed in the reverse order to removal.

EXHAUST: PRECAUTIONS FOR THE REPAIR

Note, one or more warnings are present in this procedure

Equipment required
particle filter kit

1. PARTS AND CONSUMABLES FOR THE REPAIR WORK

1- PARTS ALWAYS TO BE REPLACED:

- the seal or sealing ring on the connection between the catalytic converter or catalytic pre-converter and the remainder of the exhaust pipe,

- the exhaust pipe clamp(s) (if fitted).

2- CONSUMABLES (SEE PART NO. IN TECHNICAL NOTE 5068, 04B, CONSUMABLES - PRODUCTS):

- surface cleaner

- abrasive pads

2. ADVICE TO RESPECT

WARNING

Do not park and run the engine in a place where combustible substances and materials such as grass or leaves can come into contact with the hot exhaust system.

1 - The catalytic converter or catalytic pre-converter must not be subjected to mechanical shocks during removal or refitting as this could damage them.

2 - The entire exhaust pipe is made of stainless steel.

3 - After working on the bracket between the catalytic converter or catalytic pre-converter and the remainder of the exhaust pipe, ensure that the connection is perfectly sealed.

To do this:

- clean the pressure faces on the connection with abrasive pads,
- degrease the pressure faces on the connection with surface cleanerand clean cloths,
- always replace the connection seal or sealing ring.

For versions fitted with a particle filter, also have a particle filter kit(high temperature) (see the catalogue).

EXPANSION BOTTLE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19A, Cooling, Coolant circuit assembly: Exploded view)** .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the expansion bottle cap (see 19A, Cooling, Coolant circuit assembly: Exploded view) .

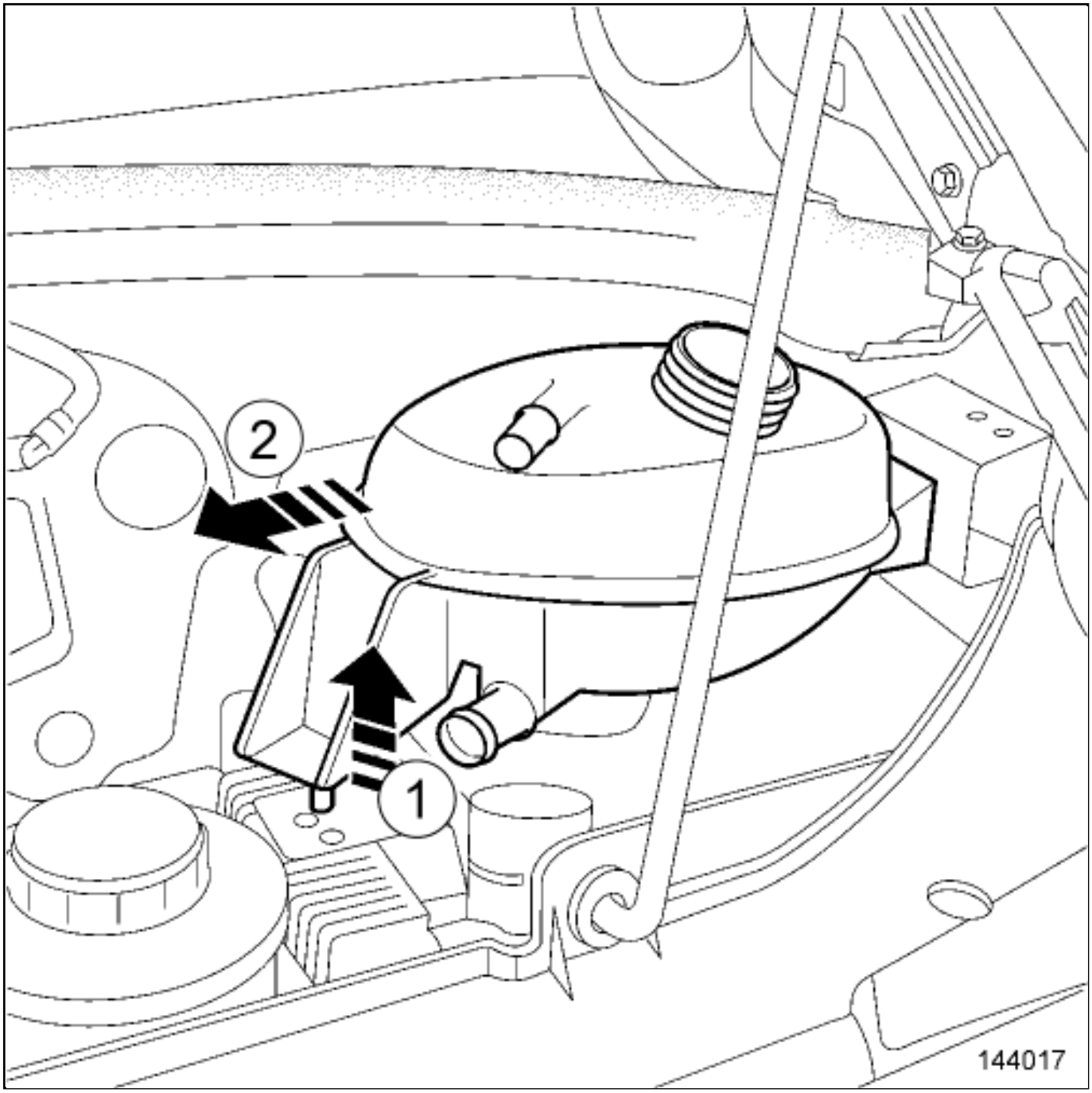
- Empty the expansion bottle using a syringe.

2. REMOVAL OPERATION

- Fit the toolPipe clamps.(Ms. 583) on (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the cooling radiator degassing pipe,
  - the expansion bottle lower pipe.

- Using the toolRemote operation pliers for hose clips.(Mot. 1448) , separate the clip (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - of the cooling radiator degassing pipe,
  - of the expansion bottle lower pipe.

- Disconnect the following from the expansion bottle (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the cooling radiator degassing pipe,
  - the expansion bottle lower pipe.



Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the expansion bottle bolt,
- the expansion bottle in order, as shown by the directional arrows.

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

Perform the following operations:

- top up the coolant level,
- fill and bleed the coolant circuit **(see 19A, Cooling, Cooling system: Draining - Refilling)** .

EXTERIOR FRONT SIDE OPENING ELEMENT ASSEMBLY: EXPLODED VIEW

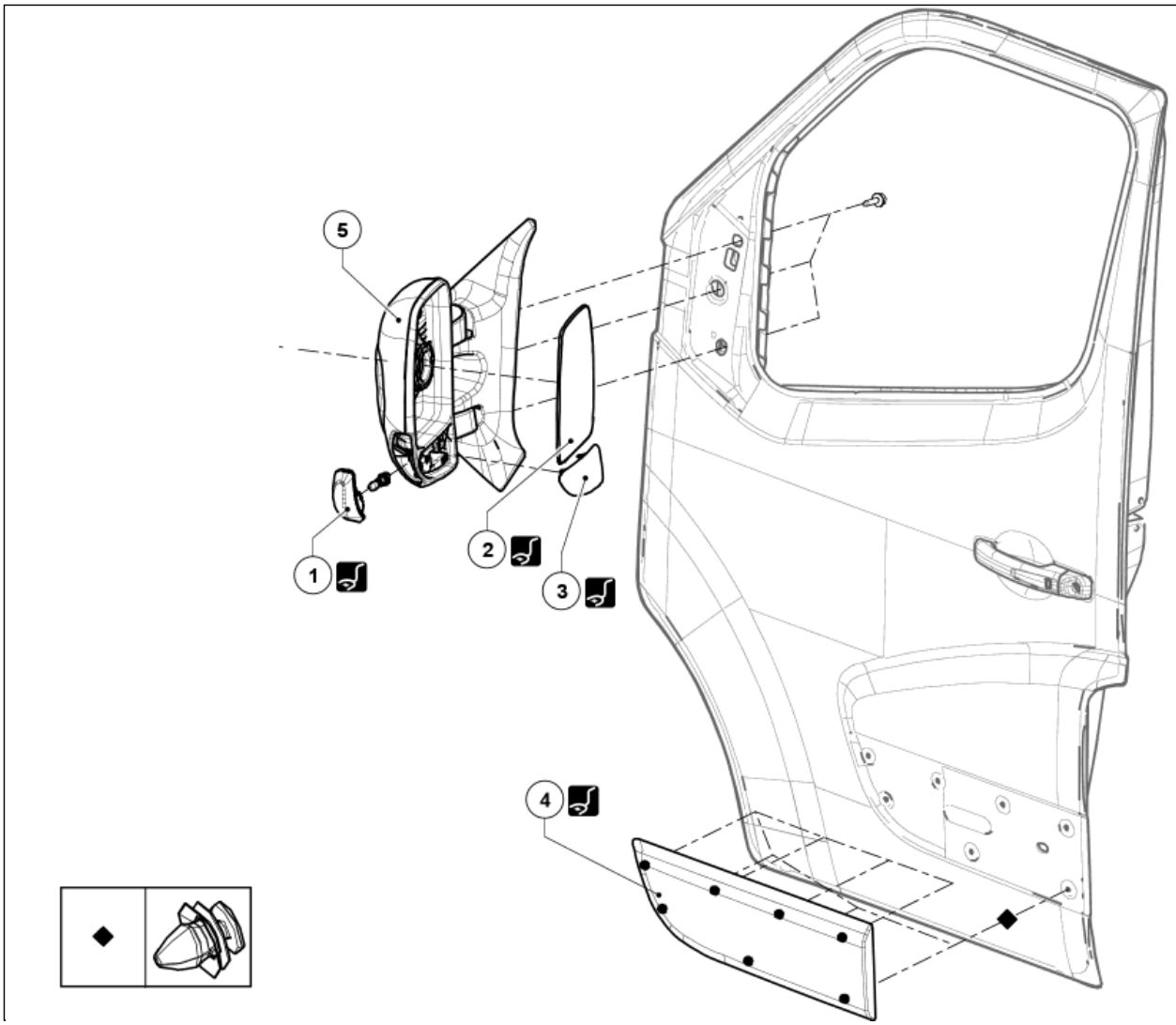


Illustration key: Description

Mark	Description	Information
1	Side indicator	Side indicator: Removal - Refitting
2	Door mirror glass	Door mirror glass: Removal - Refitting
3	Door mirror blind spot glass	Door mirror glass: Removal - Refitting
4	Front side door strip	Front side door strip: Removal - Refitting
5	Door mirror	Door mirror: Removal - Refitting

EXTERIOR REAR OPENING ELEMENT ASSEMBLY: EXPLODED VIEW

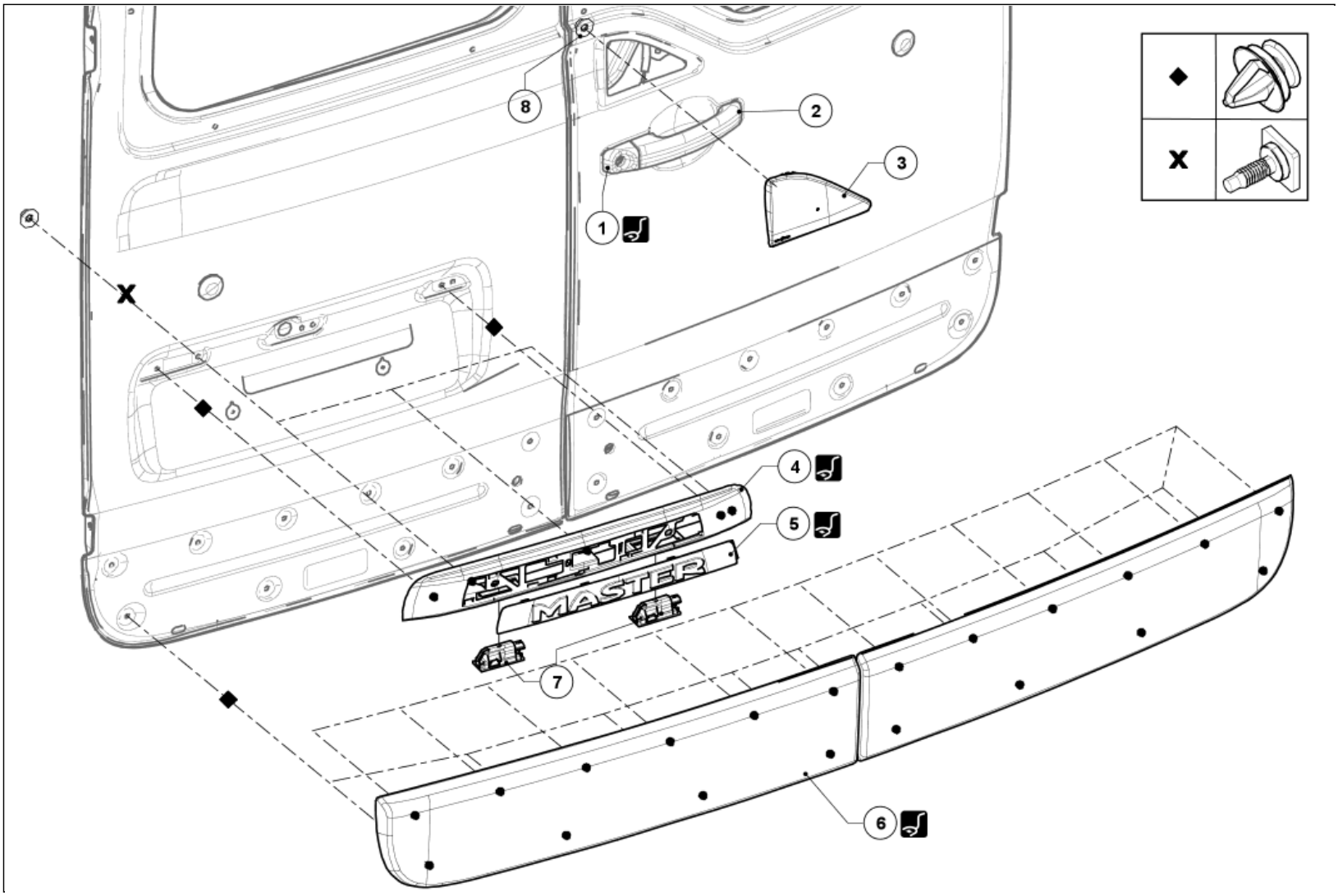


Illustration key: Description

Mark	Description	Information
1	Trim of rear loading door lock barrel	(Car. 1363)
2	Rear loading door exterior handle	(see **Rear loading door exterior handle: Removal - Refitting**)
3	3rd brake light	3rd brake light: Removal - Refitting
4	Rear loading door strip	Rear badges: Removal - Refitting
5	Badge	Rear badges: Removal - Refitting
6	Rear loading door protection strip	Rear loading door strip: Removal - Refitting
7	Number plate light	
8	3rd brake light nut	

EXTERIOR REAR SIDE OPENING ELEMENT ASSEMBLY: EXPLODED VIEW

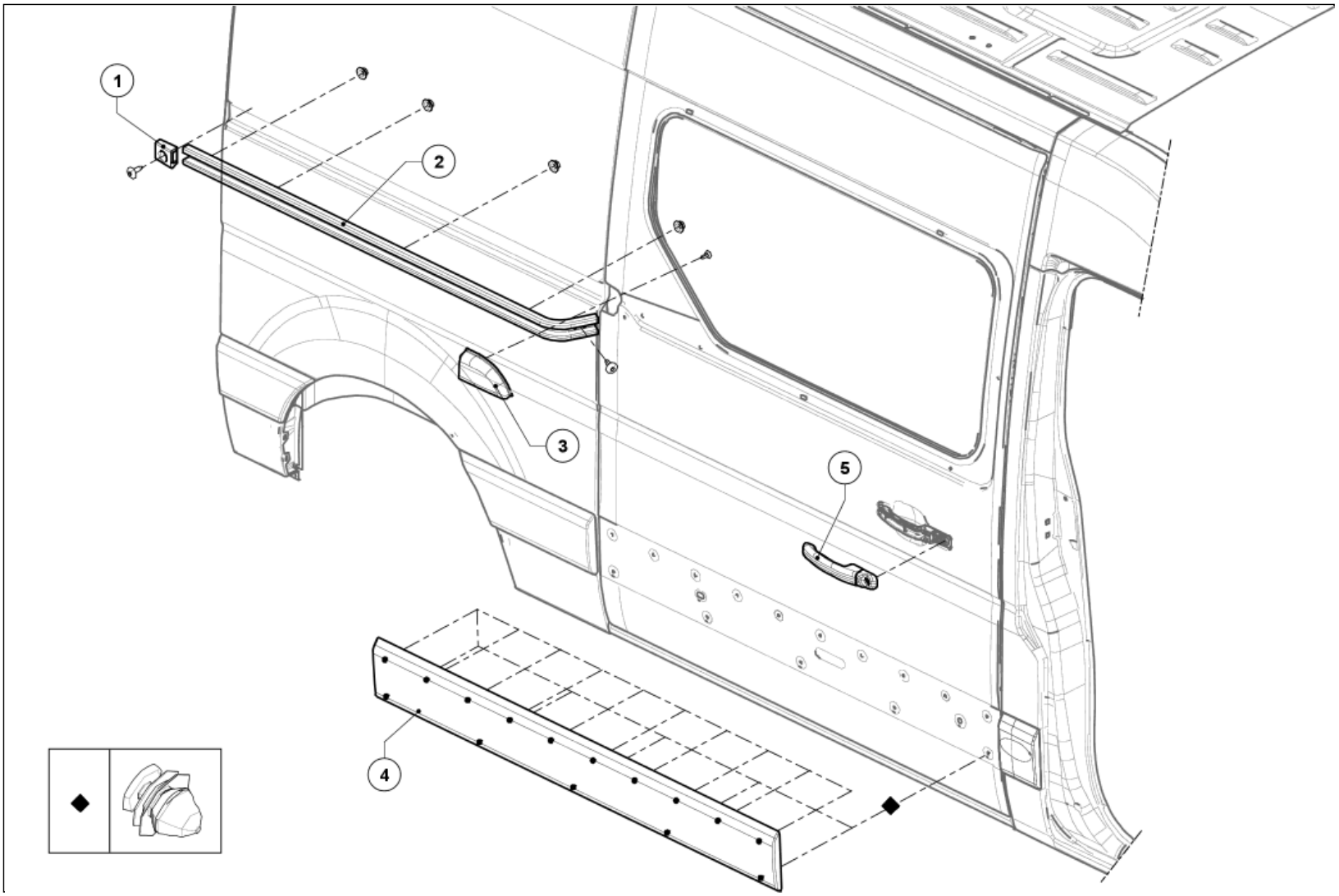


Illustration key: Description

Mark	Description	Information
1	End piece of sliding side door centre runner	
2	Sliding side door centre runner	(see 51A, Side opening element mechanisms, Sliding side door runners: Removal - Refitting)
3	Trim of sliding side door centre runner	
4	Sliding side door strip	
5	Sliding side door exterior handle	(see 51A, Side opening element mechanisms, Sliding side door opening controls: Removal - Refitting)

EXTERIOR REAR VIEW MIRROR CONTROL SWITCH: REMOVAL - REFITTING

Location and specifications (tightening torque, parts always to be replaced, etc.)Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

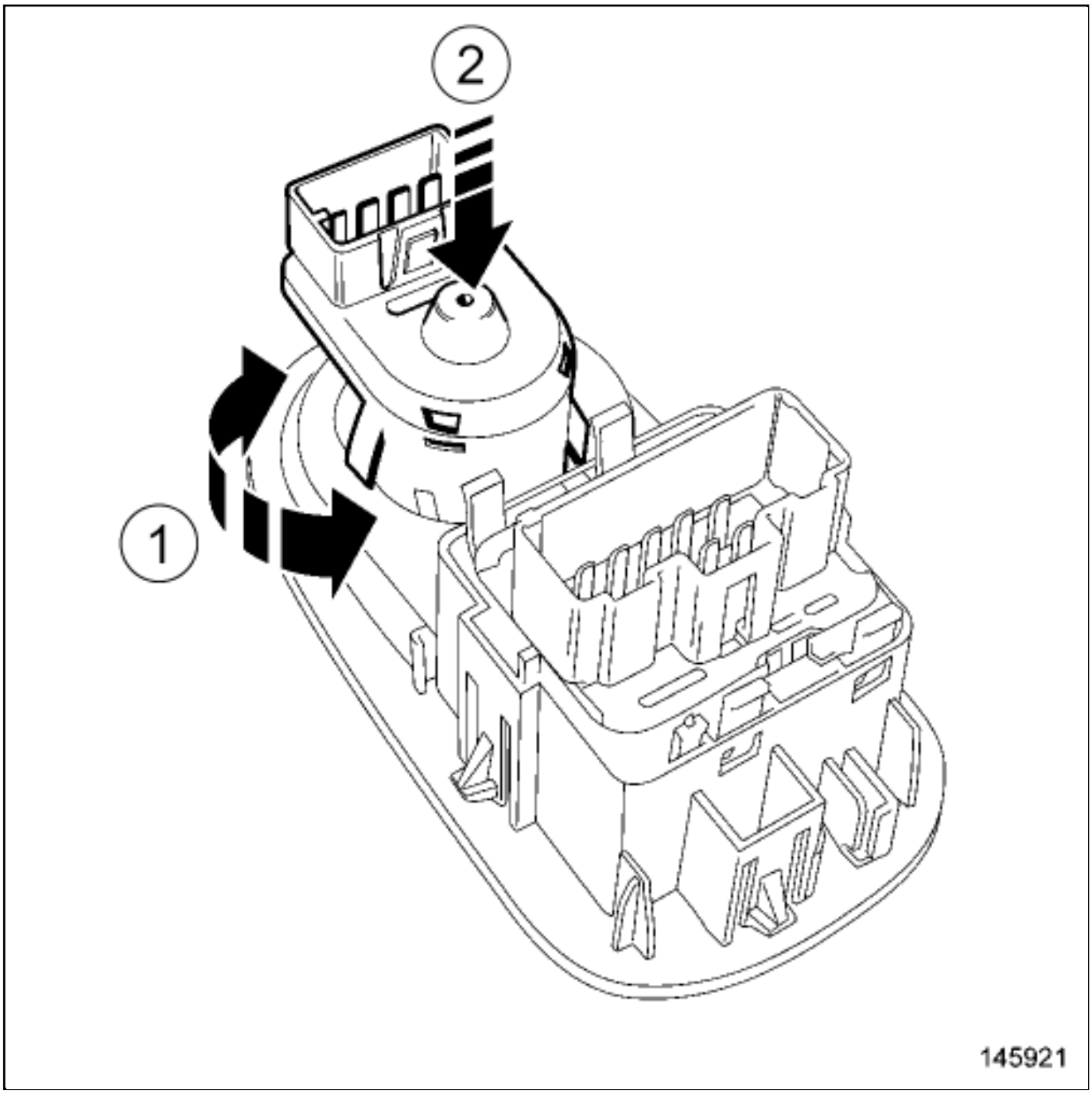
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

- Remove the switch plateFront side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

2. REMOVAL OPERATION



- Remove the exterior rear view mirror control switch(2) by turning it half a turn(2) .

REFITTING

- Proceed in the reverse order to removal.

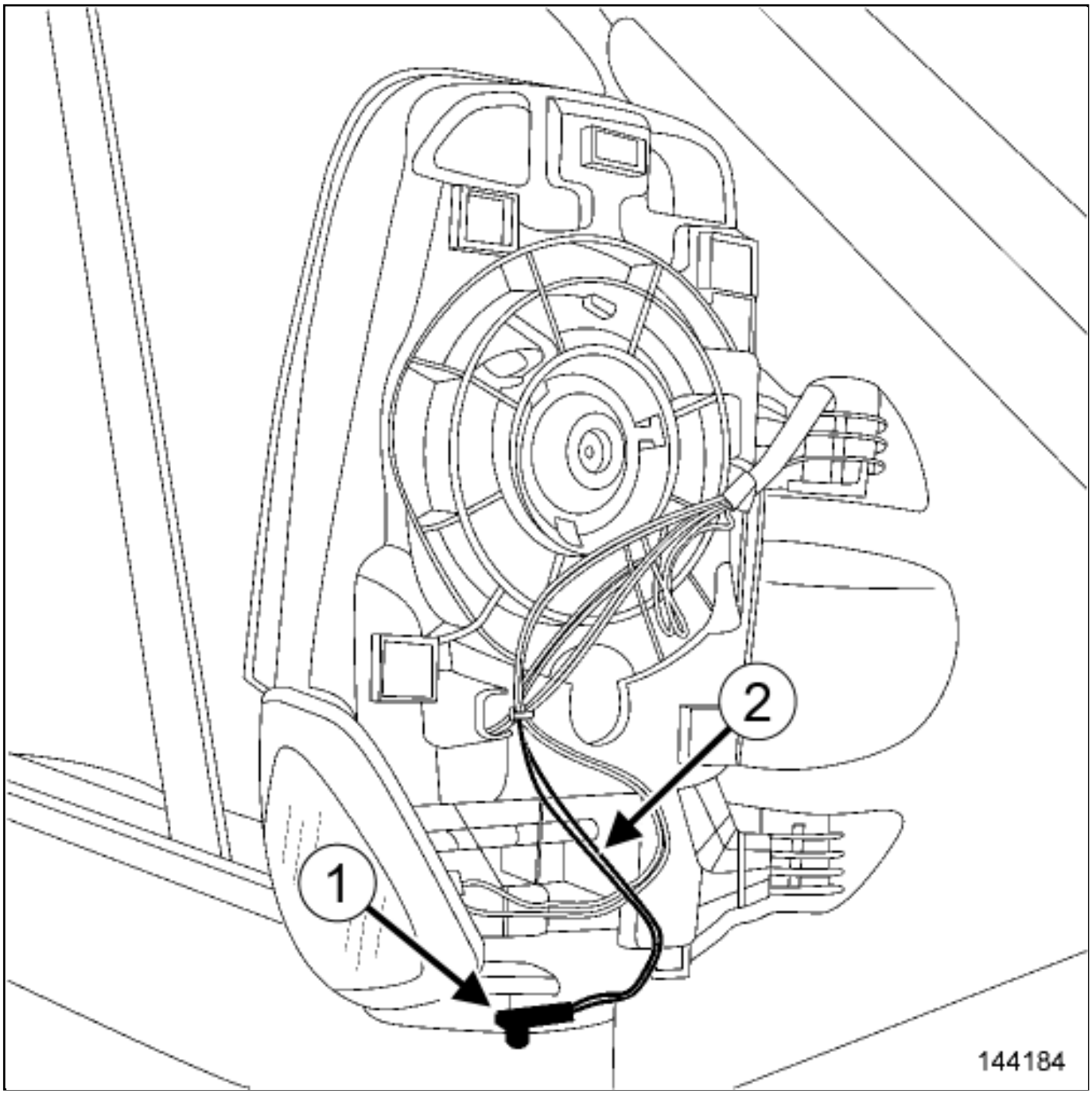
EXTERIOR TEMPERATURE SENSOR: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Unclip the door mirror coverExterior front side opening element assembly: Exploded view (51A, Side opening element mechanisms).

2. REMOVAL OPERATION



- Remove the exterior air temperature sensor(1) from its housing.

- Cut the wires(2) of the exterior air temperature sensor (see Wiring: Repair) (Technical Note 6015A, 88A, Wiring).

REFITTING

- Proceed in the reverse order to removal.

FAN ASSEMBLY: REMOVAL - REFITTING

Equipment required
Diagnostic tool

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REMOVAL

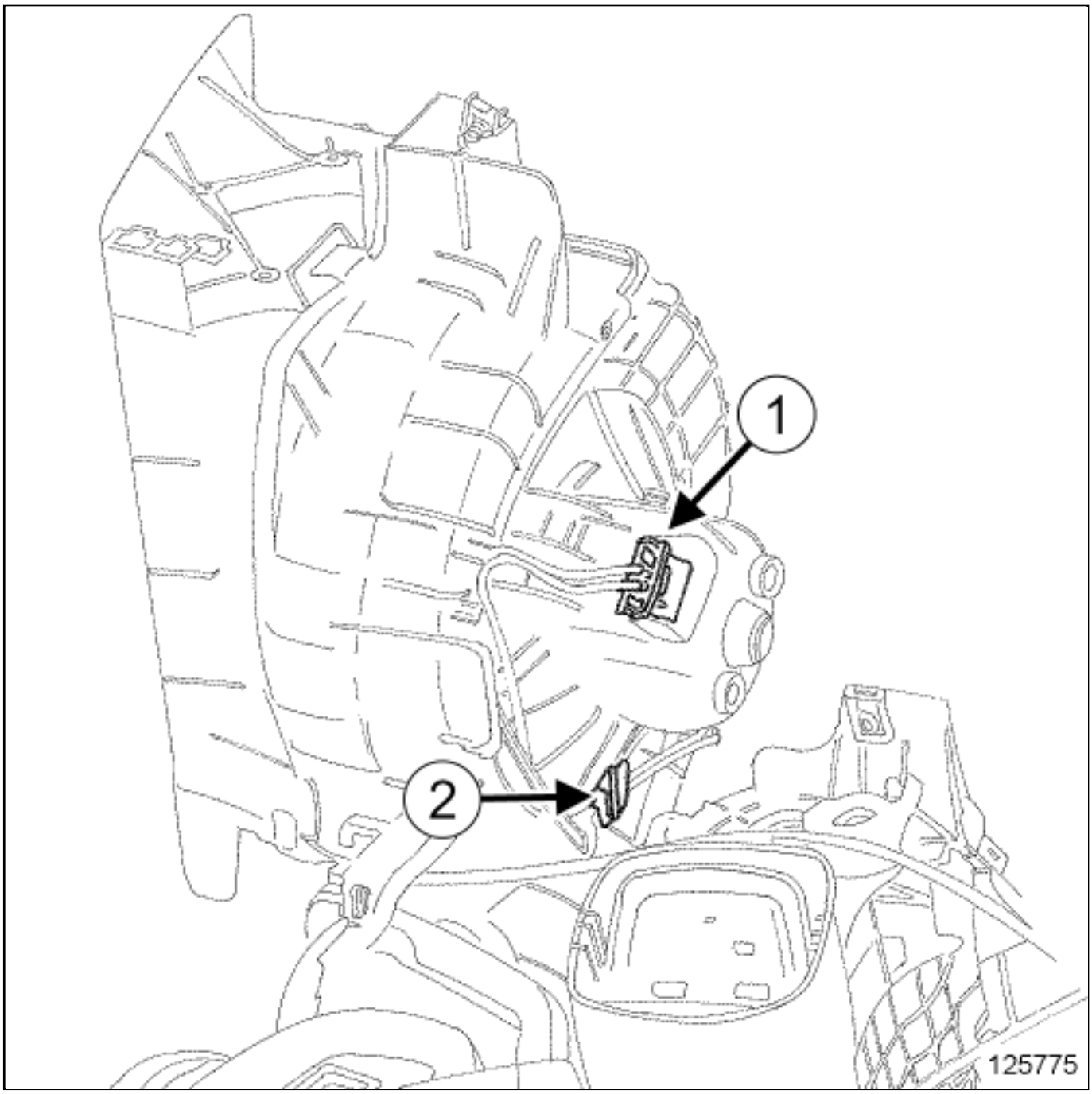
1. REMOVAL PREPARATION OPERATION

- Lock the airbag computer using the Diagnostic tool(see Fault finding - Replacement of components) (88C, Airbags and pretensioners).

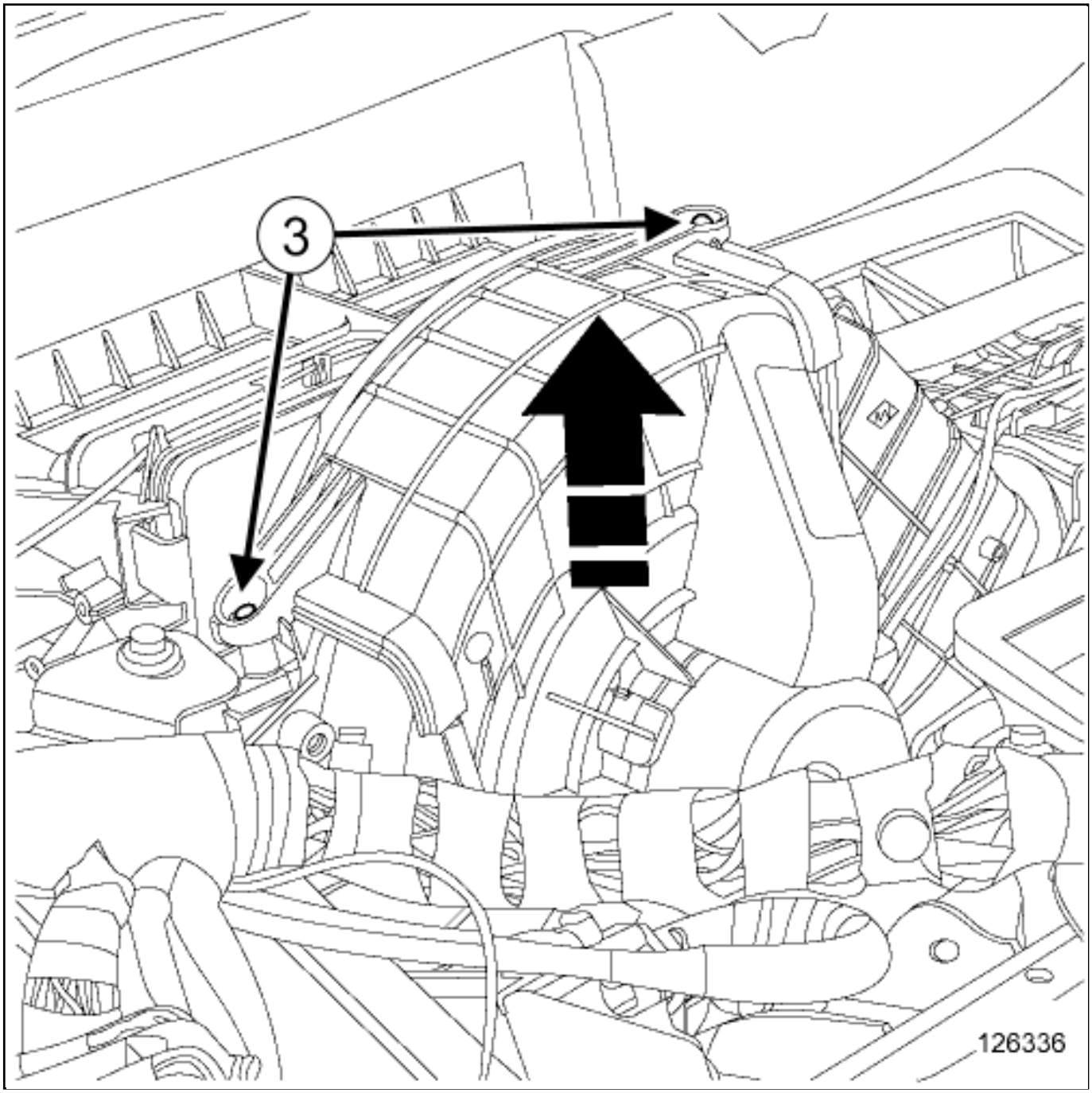
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).

- Remove the dashboardDashboard: Removal - Refitting (57A, Interior equipment),

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Disconnect the fan assembly connector(1) .
- Unclip the blower unit wiring(2) .



Remove:

- the bolts(3) from the fan assembly,
- the blower unit in accordance with the direction of the arrow.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

Refit the fan assembly.

- Clip the fan assembly wiring.
- Connect the fan assembly connector.

2. FINAL OPERATION

- Proceed in the reverse order to removal.

FILTER UNIT ASSEMBLY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 31A, Front axle components, Front axle assembly: Exploded view)** .

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 31A, Front axle components, Front axle components: Precautions for the repair)** ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove:
  - the front wheel**Wheel: Removal - Refitting** ,
  - the shock absorber**(see 31A, Front axle components, Front axle assembly: Exploded view)** .

2. REMOVAL OPERATION

- Separate the various components of the "spring - shock absorber" assembly**(see 31A, Front axle components, Front axle assembly: Exploded view)** .

- Visually check the condition of the component parts of the filter unit.

- All faulty components must always be replaced.

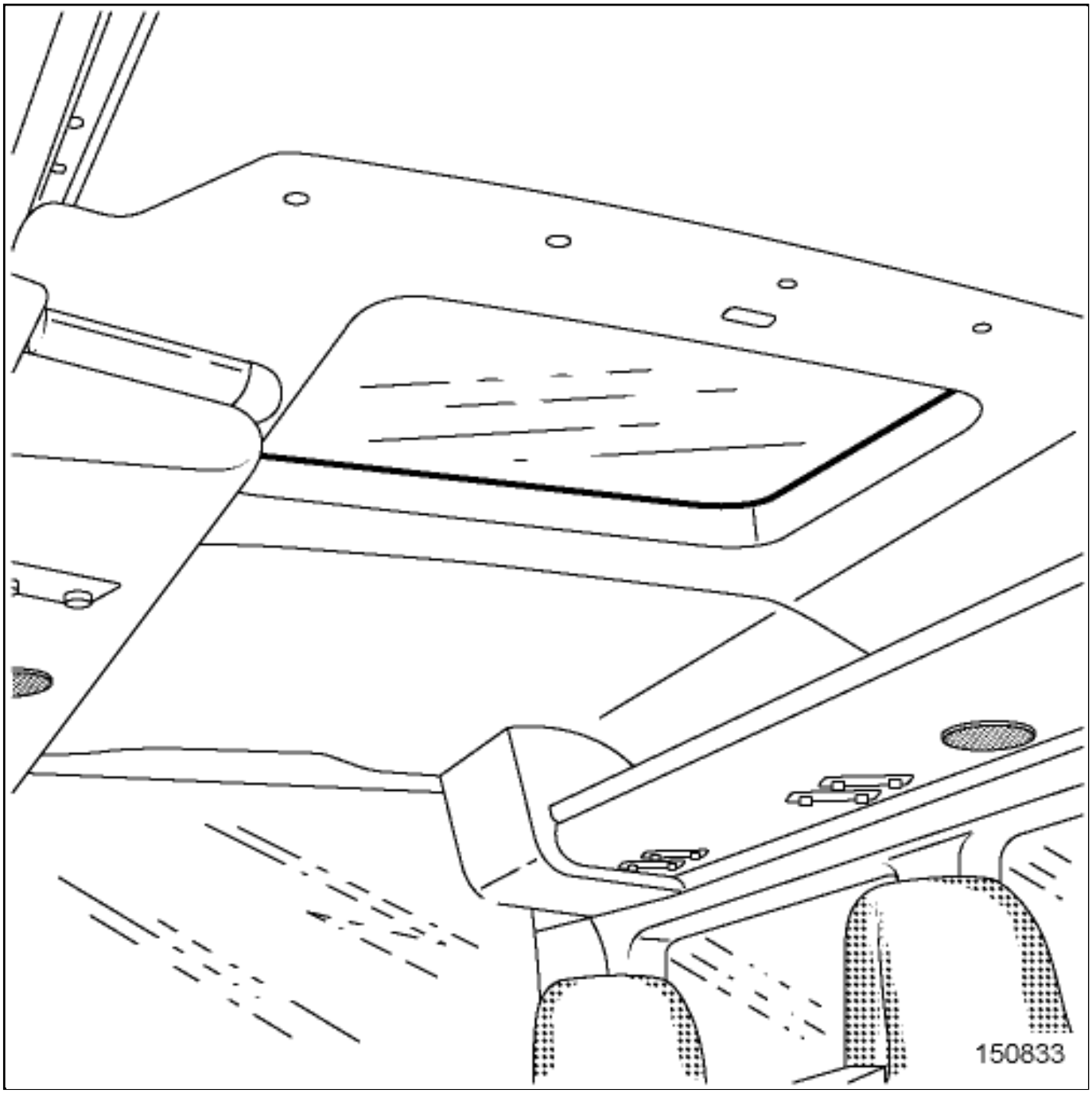
REFITTING

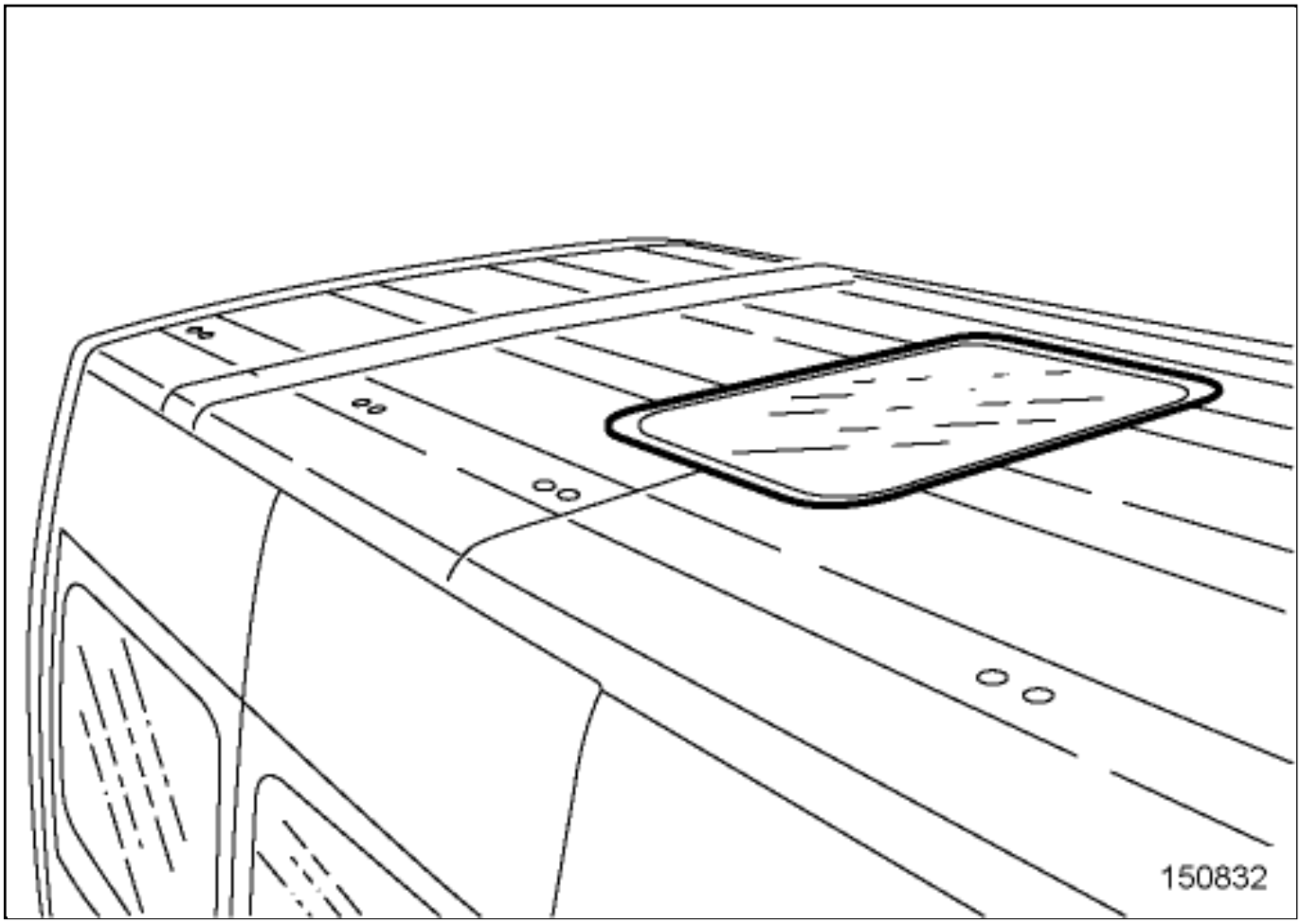
- Proceed in the reverse order to removal.

FIXED ROOF GLASS: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION





- Protect the periphery of the roof fixed window.

2. REMOVAL OPERATION

- Cut the cement bead Window detachment: Description (Technical Note 0560A, 54A, Windows) (this operation requires two people).

- Remove the fixed roof glass.

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the thickness shims.

- For preparation and the bonding Window bonding: Description (Technical Note 0560A, 54A, Windows).

2. REFITTING OPERATION

- Bond the fixed roof glass.

3. FINAL OPERATION

- Remove the masking tape.

FLAP: REMOVAL - REFITTING

REMOVAL

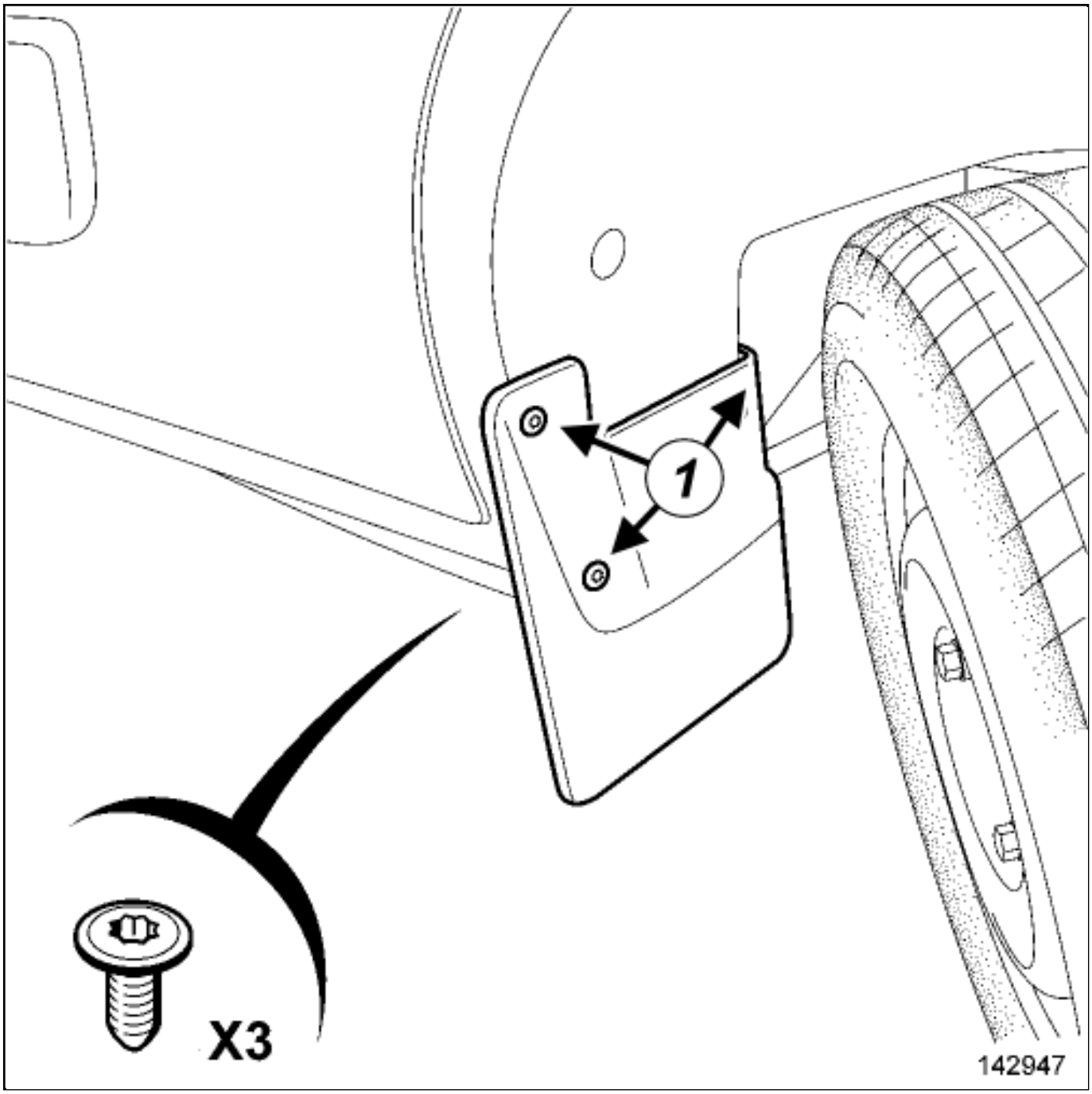
1. REMOVAL PREPARATION OPERATION

1- REAR FLAP

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheel Wheel: Removal - Refitting (35A, Wheels and tyres).

2. REMOVAL OPERATION

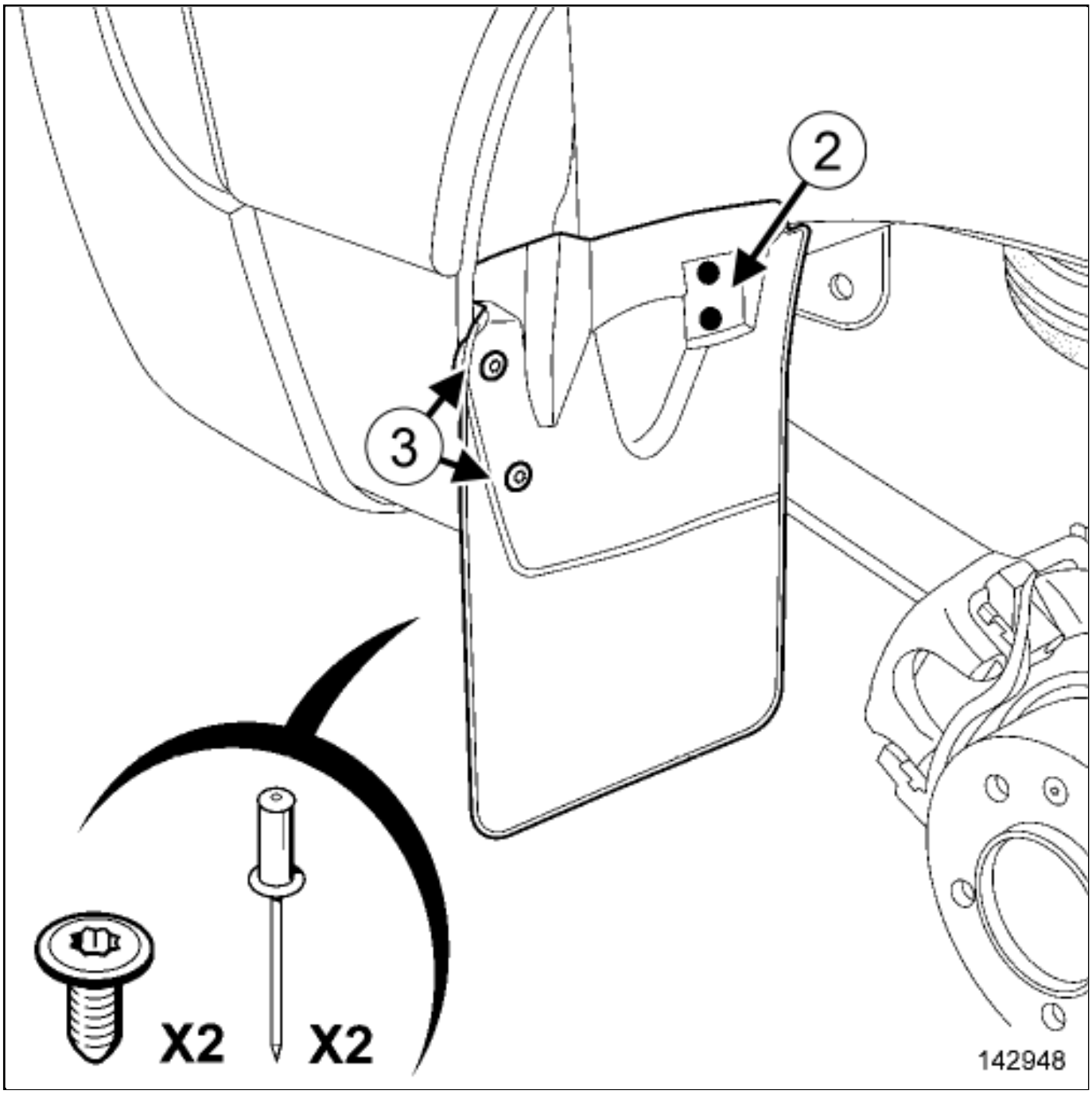
1- FRONT FLAP



Remove:

- the bolts(1) ,
- the front flap.

2- REAR FLAP



- Drill out the rivets(2) .

- Remove:
  - the bolts(3) ,
  - the rear flap.

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the rivets of the flaps.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

FLOOR CARPET: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

1- FRONT SECTION FLOOR CARPET

- Disconnect the battery Battery: Removal - Refitting (80A, Battery).

- Remove:
  - the front seat(see **Front seat: Exploded view**) ,
  - the front bench seat(see **Front bench seat: Exploded view**) ,
  - the central console Centre console: Removal - Refitting (57A, Interior equipment),
  - the B-pillar linings (see 71A, Body internal trim, B-pillar trim: Removal - Refitting) ,
  - the door sills (see 71A, Body internal trim, Door sill: Removal - Refitting) ,
  - the bonnet release control Bonnet release control: Removal - Refitting (51A, Non-side opening element mechanisms),
  - the front door sill linings (see 71A, Body internal trim, Front door sill lining: Removal - Refitting) .

Note:

Set the wheels straight and centre the steering wheel, then lock the ignition switch.

- Remove the universal joint bolt Steering assembly: Exploded view (36A, Steering assembly).

- Slide the steering column rod.

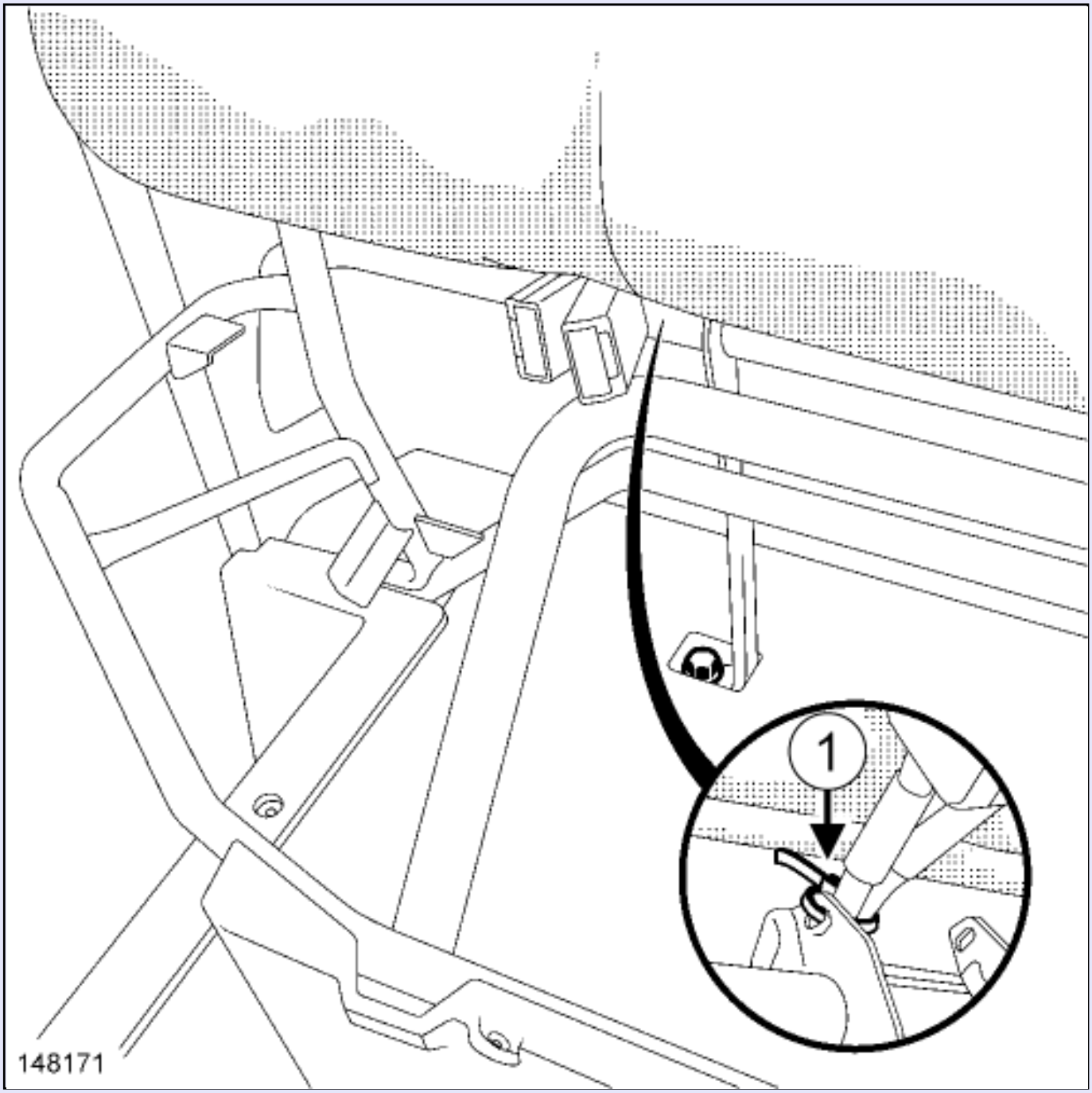
1- REAR SECTION FLOOR CARPET

Remove:

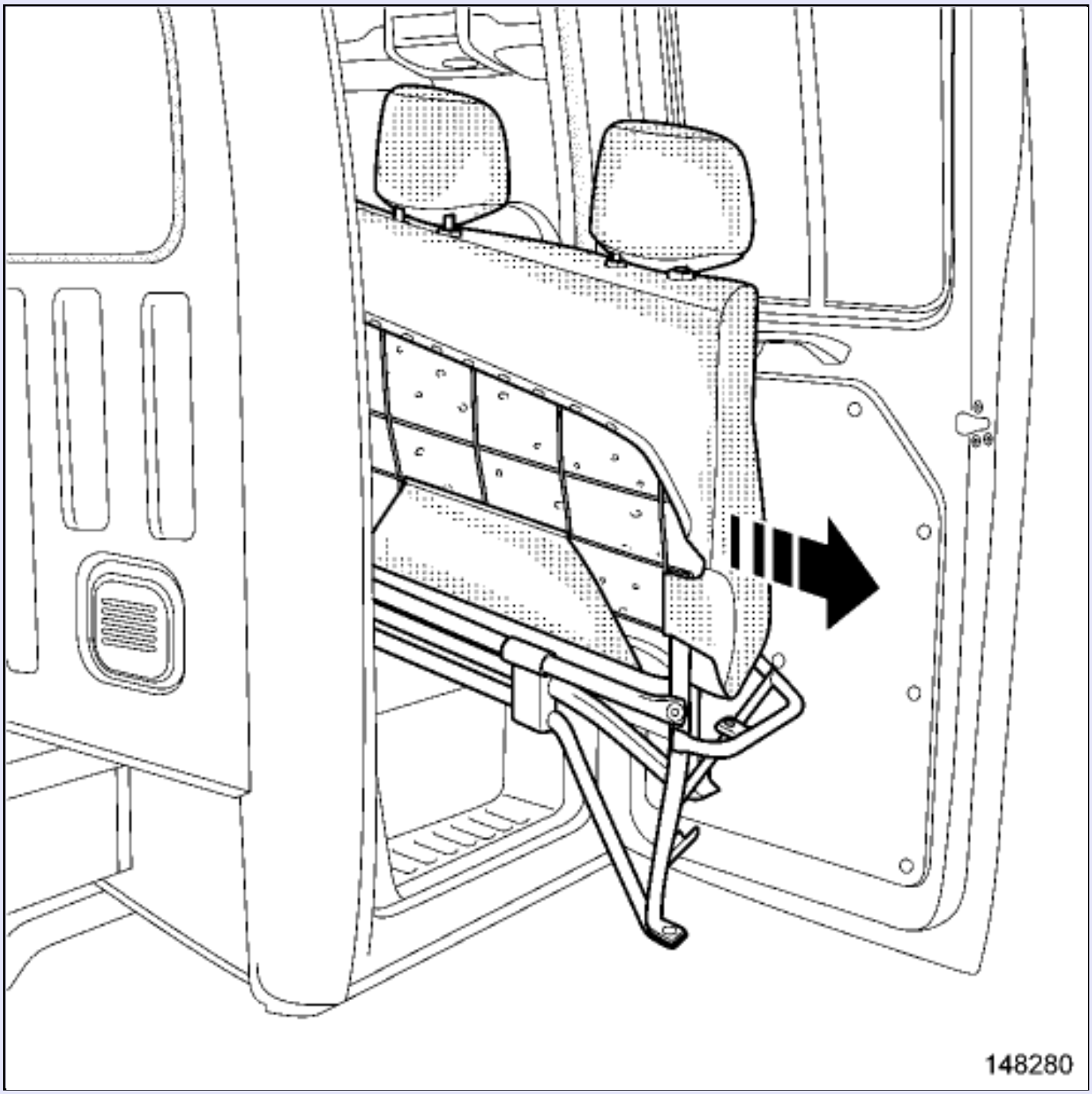
- the B-pillar linings (see 71A, Body internal trim, B-pillar trim: Removal - Refitting) ,
- the rear side door sills (see 71A, Body internal trim, Rear side door sill: Removal - Refitting) .

Remove Rear bench seat assembly: Exploded view :

- the bolts from the side casings of the rear bench seat base,
- the side casings of the rear bench seat base.

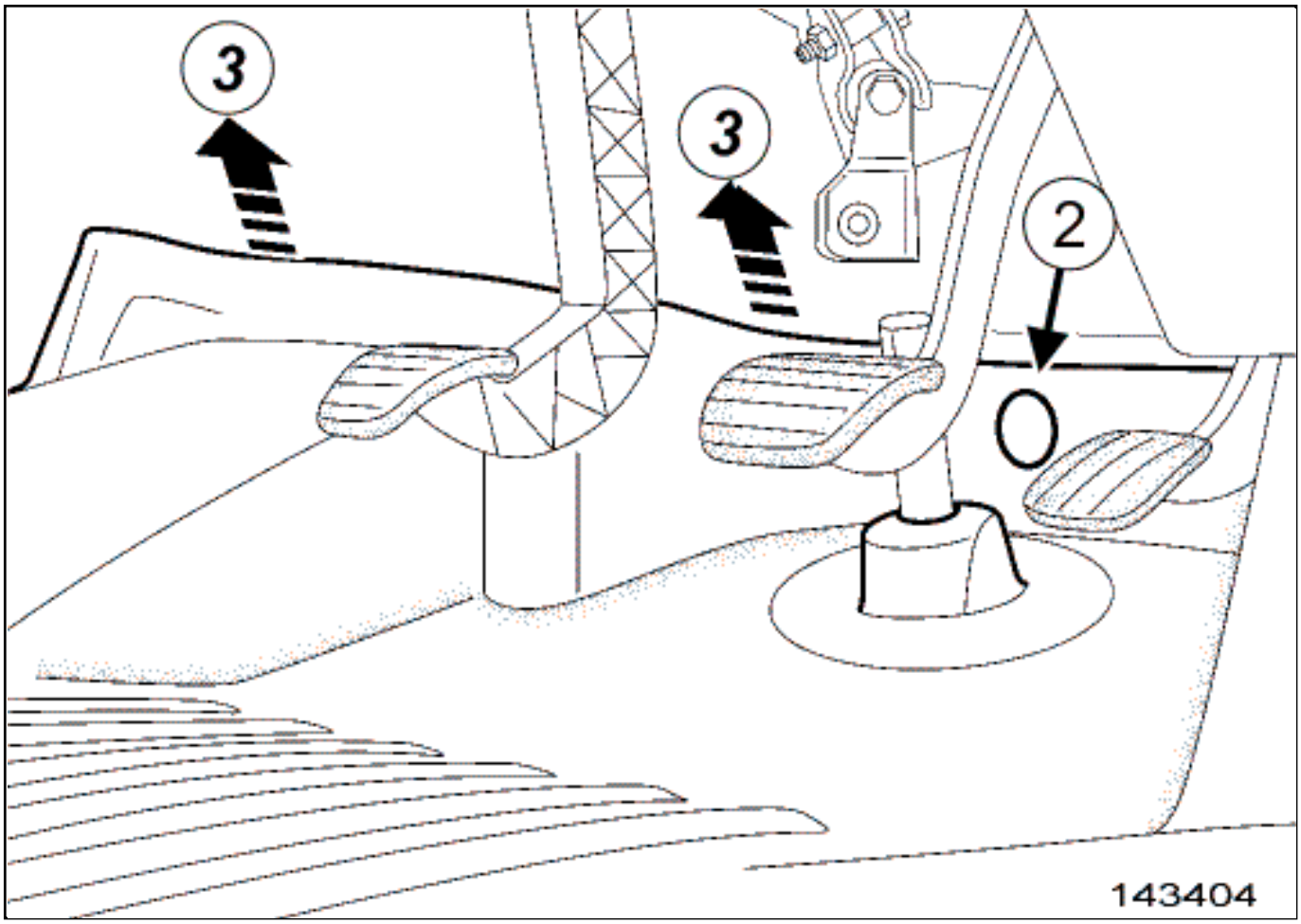


- Cut the retaining clips(1) of the rear seat belt buckles.
- Extract the rear seat belt buckles of the rear bench seat.
- Remove the bolts from the rear bench seat frame Rear bench seat assembly: Exploded view .



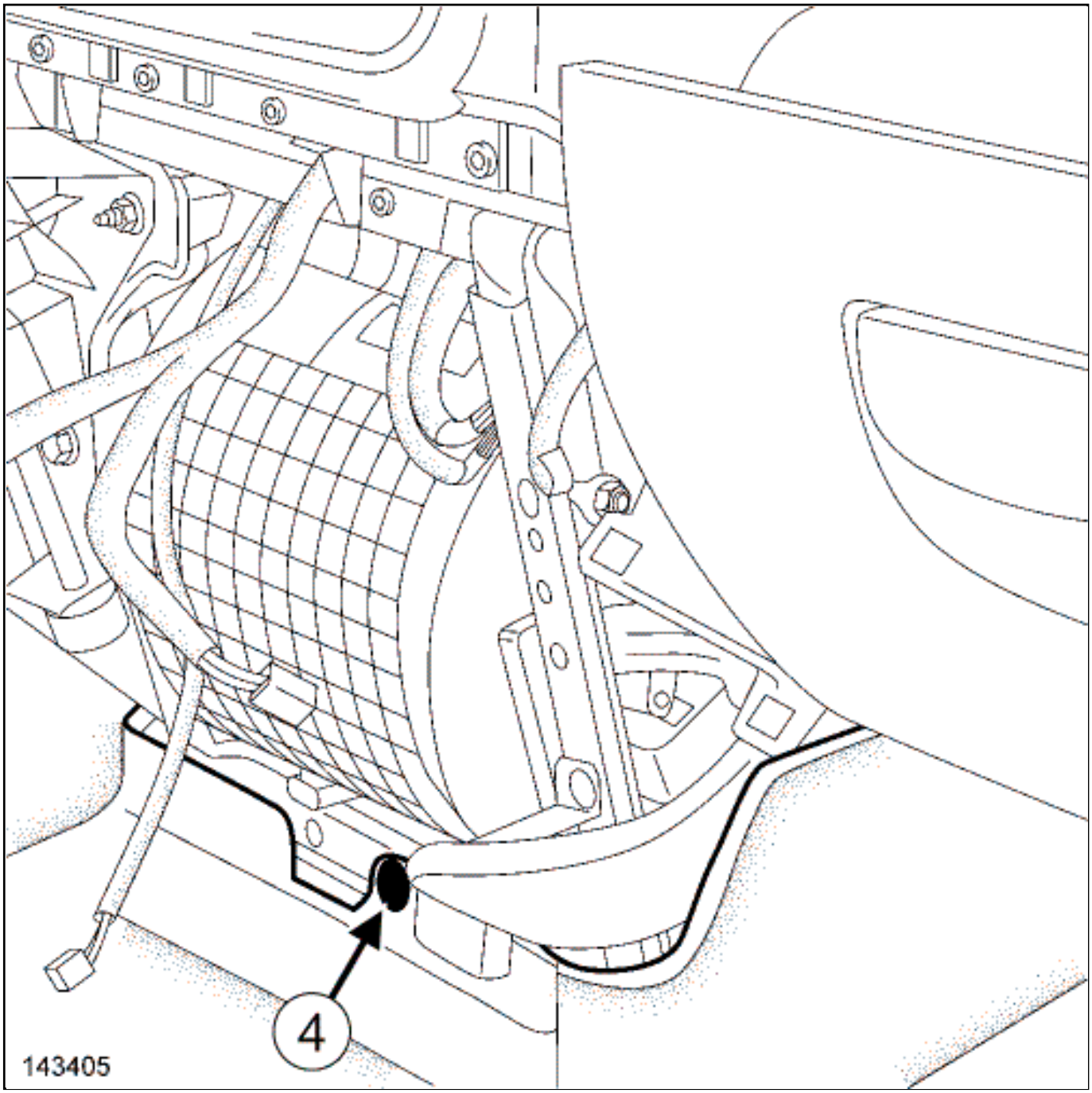
- Remove the rear bench seat.

2. REMOVAL OPERATION



Remove:

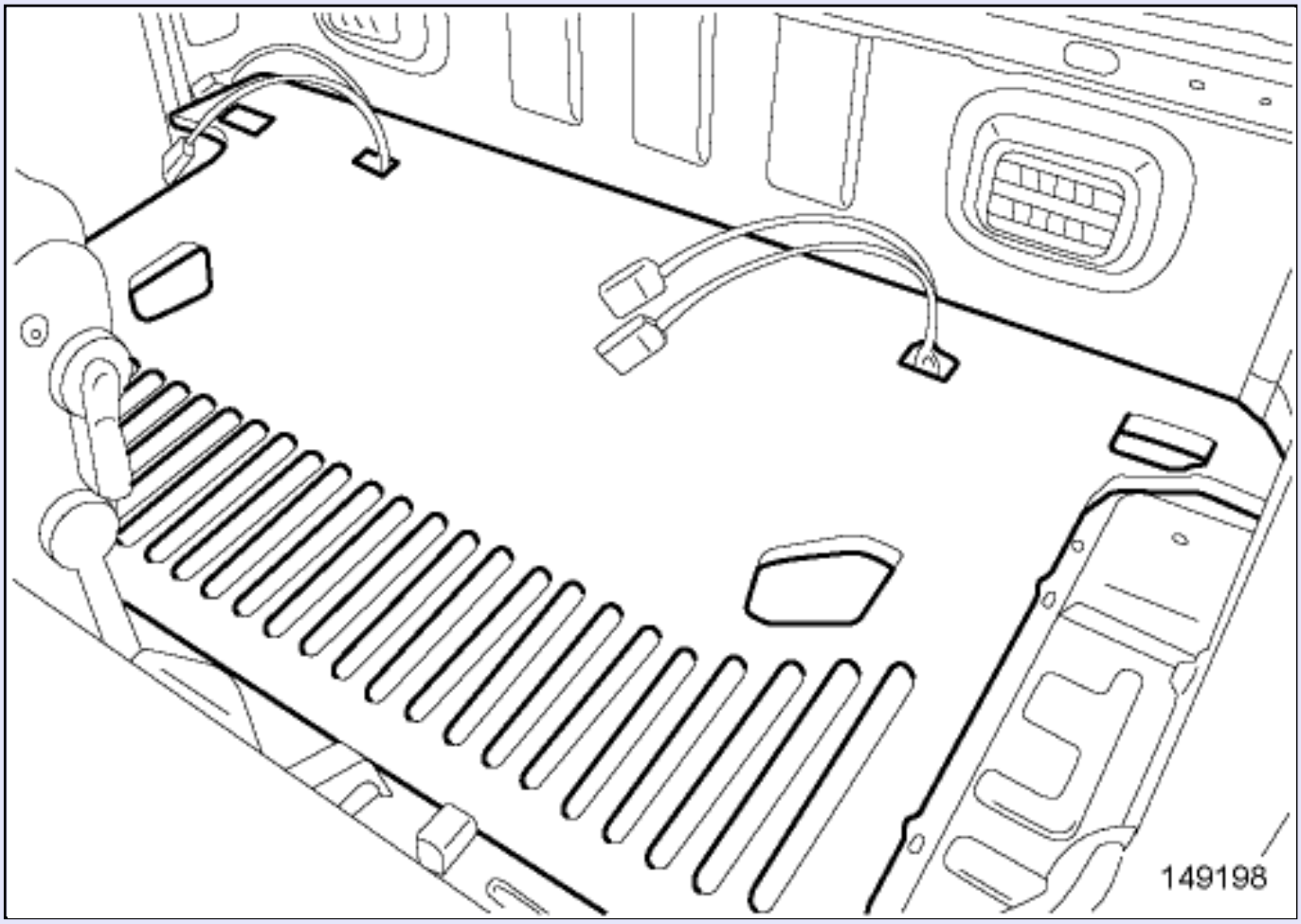
- the clip(2) using a pair of unclipping pliers,
- the front section floor carpet partially at(3) .



Remove:

- the clip(4) using a pair of unclipping pliers,
- the front section floor carpet.

1- REAR SECTION FLOOR CARPET



Remove the rear section of the floor carpet.

REFITTING

Proceed in the reverse order to removal.

FLYWHEEL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Flywheel locking tool.	Mot. 1431
Torx male TP 55	Mot. 2013

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)** .

WARNING

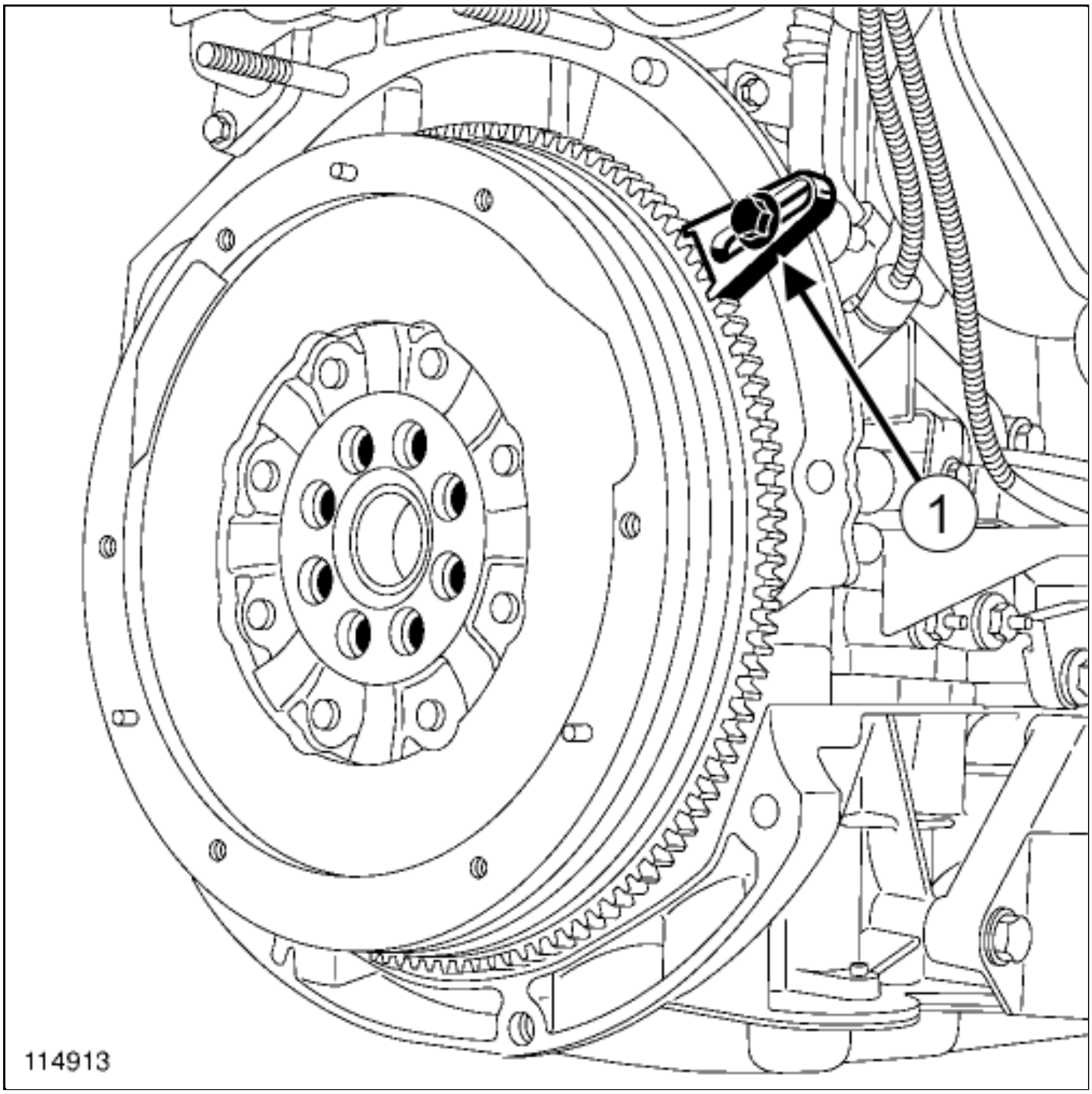
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).
- Remove:
  - the manual gearbox**Gearbox assembly: Exploded view** (21A, Manual gearbox).
  - the clutch pressure plate**Clutch assembly: Exploded view** (20A, Clutch).

2. REMOVAL OPERATION



- Position the Flywheel locking tool.(Mot. 1431) (1) .

- Remove:
  - the flywheel(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) using the tool, Torx male TP 55(Mot. 2013)
  - theFlywheel locking tool.(Mot. 1431) (1) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the threading of the flywheel bolts on the crankshaft using surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Degrease the flywheel bearing face on the crankshaft with surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Check the condition of the flywheel.

2. REFITTING OPERATION

- Coat the new flywheel bolts with FRENETANCH Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Position the Flywheel locking tool.(Mot. 1431) .

- Refit the flywheel (see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) using the toolTorx male TP 55(Mot. 2013) .

- Remove the toolFlywheel locking tool.(Mot. 1431) .

- Proceed in the reverse order to removal.

FLYWHEEL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Flywheel locking tool.	Mot. 1431
Torx male TP 55	Mot. 2013

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)** .

WARNING

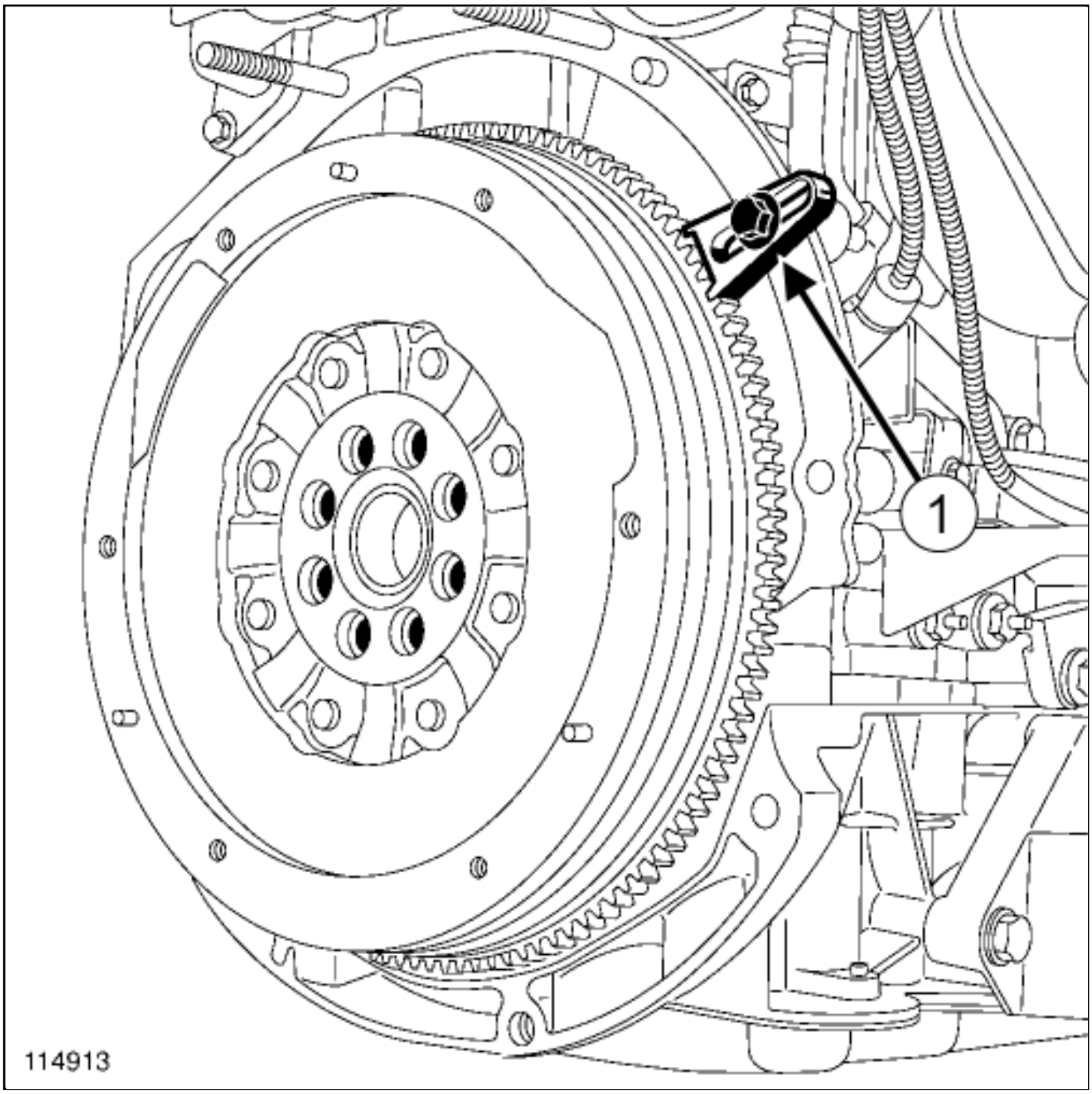
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).
- Remove:
  - the manual gearbox**Gearbox assembly: Exploded view** (21A, Manual gearbox).
  - the clutch pressure plate**Clutch assembly: Exploded view** (20A, Clutch).

2. REMOVAL OPERATION



- Position the Flywheel locking tool.(Mot. 1431) (1) .

- Remove:
  - the flywheel(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) using the tool, Torx male TP 55(Mot. 2013)
  - theFlywheel locking tool.(Mot. 1431) (1) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the threading of the flywheel bolts on the crankshaft using surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Degrease the flywheel bearing face on the crankshaft with surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Check the condition of the flywheel.

2. REFITTING OPERATION

- Coat the new flywheel bolts with FRENETANCH Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Position the Flywheel locking tool.(Mot. 1431) .

- Refit the flywheel (see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) using the toolTorx male TP 55(Mot. 2013) .

- Remove the toolFlywheel locking tool.(Mot. 1431) .

- Proceed in the reverse order to removal.

FLYWHEEL : CHECK

Note, one or more warnings are present in this procedure

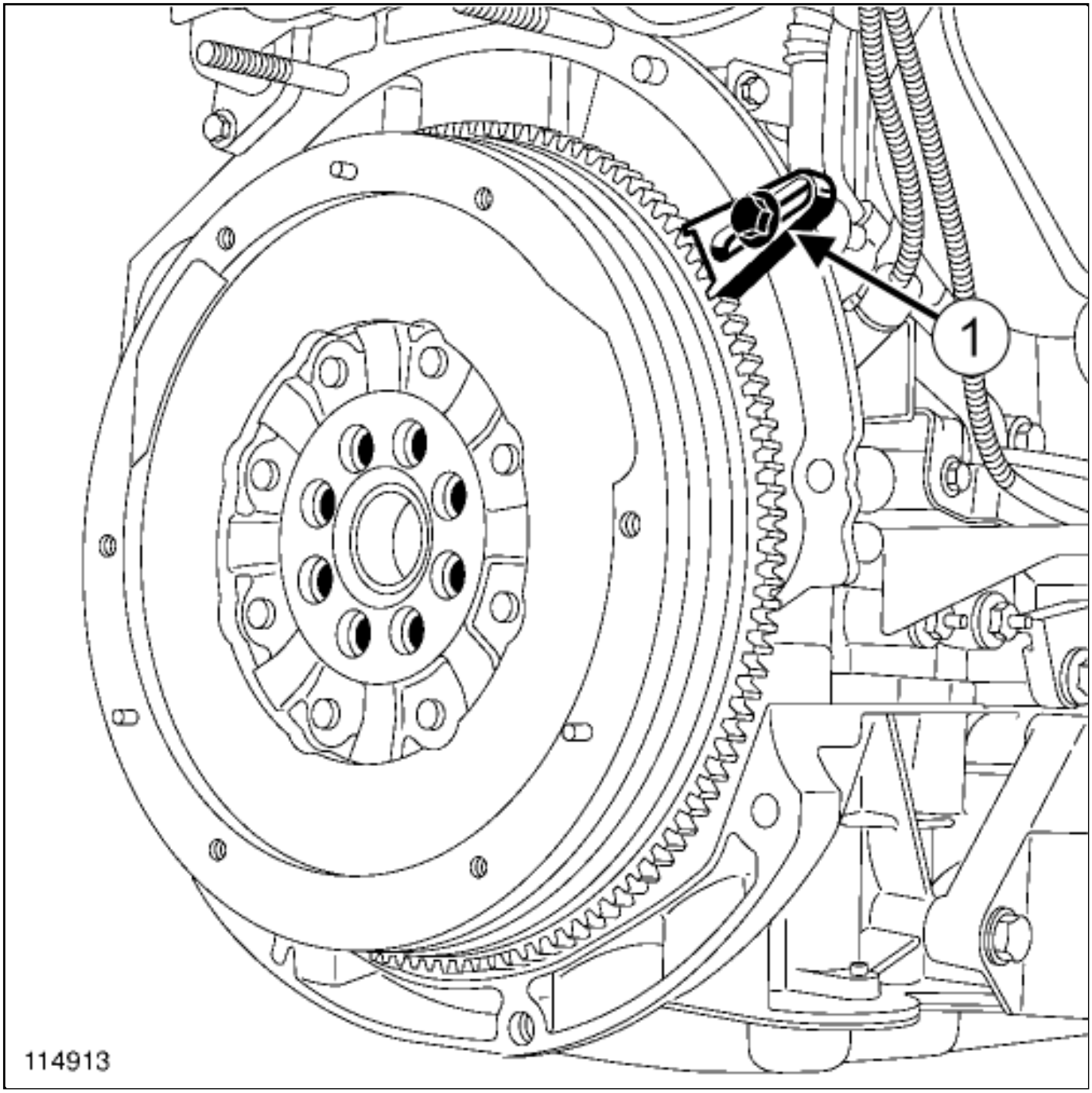
Special tooling required	
Flywheel locking tool.	Mot. 1431
Torx male TP 55	Mot. 2013

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) .

CHECK

1. PREPARATION OPERATION FOR CHECK

- Position the vehicle on a two-post liftVehicle: Towing and lifting .
- Disconnect the battery(see **Battery: Removal - Refitting**) .
- Remove:
  - the manual gearboxGearbox assembly: Exploded view .
  - the clutch pressure plateClutch assembly: Exploded view .



- Position the tool Flywheel locking tool.(Mot. 1431) (1) .

- Remove:
  - the flywheel using the toolTorx male TP 55(Mot. 2013) (see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) ,
  - the toolFlywheel locking tool.(Mot. 1431) .

2. CHECK

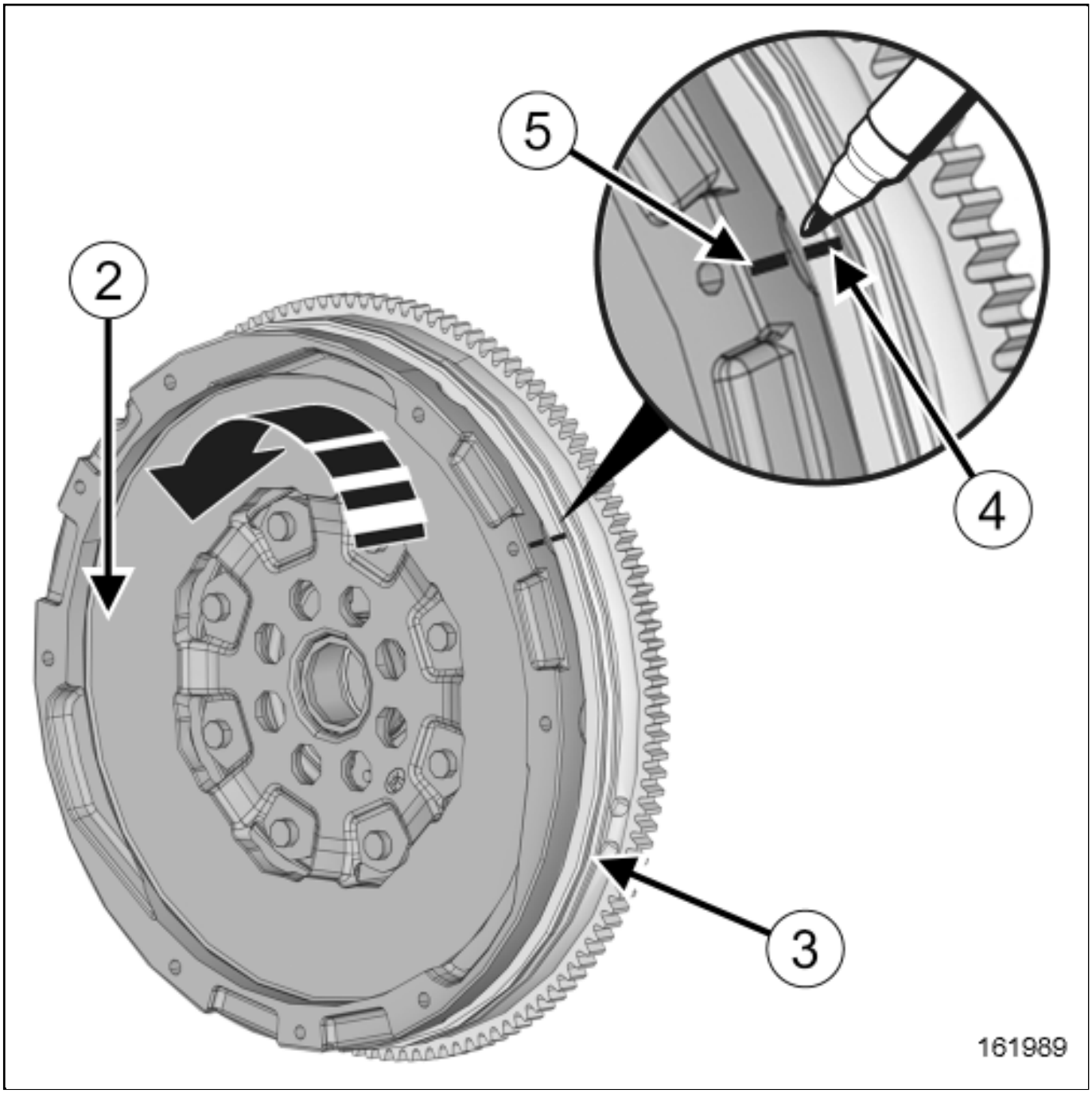
1- ANGULAR CLEARANCE OF THE FLYWHEEL

- Put the flywheel on a workbench.

- Rotate the flywheel using both hands and check that there are no hard point between stops.

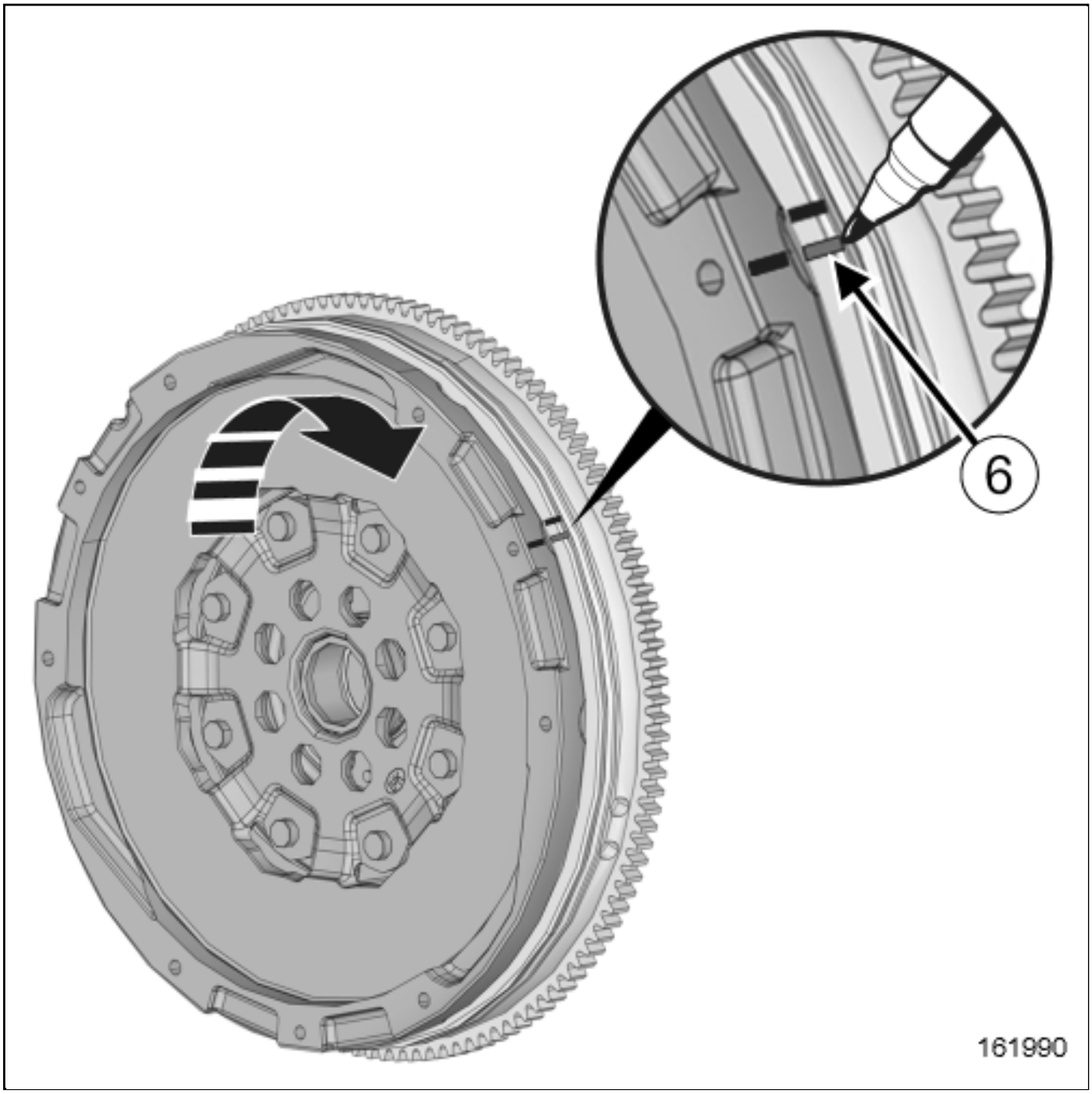
Note:

if there is one or more hard point, replace the flywheel.



- Draw a mark(5) using indelible pencil on the secondary flywheel(2) .
- Rotate the secondary flywheel(2) using a finger in a direction and release.

- Draw a mark(4) on the primary flywheel(3) aligned with the secondary flywheel mark(5) .



- Rotate the secondary flywheel using a finger in the opposite direction and release.

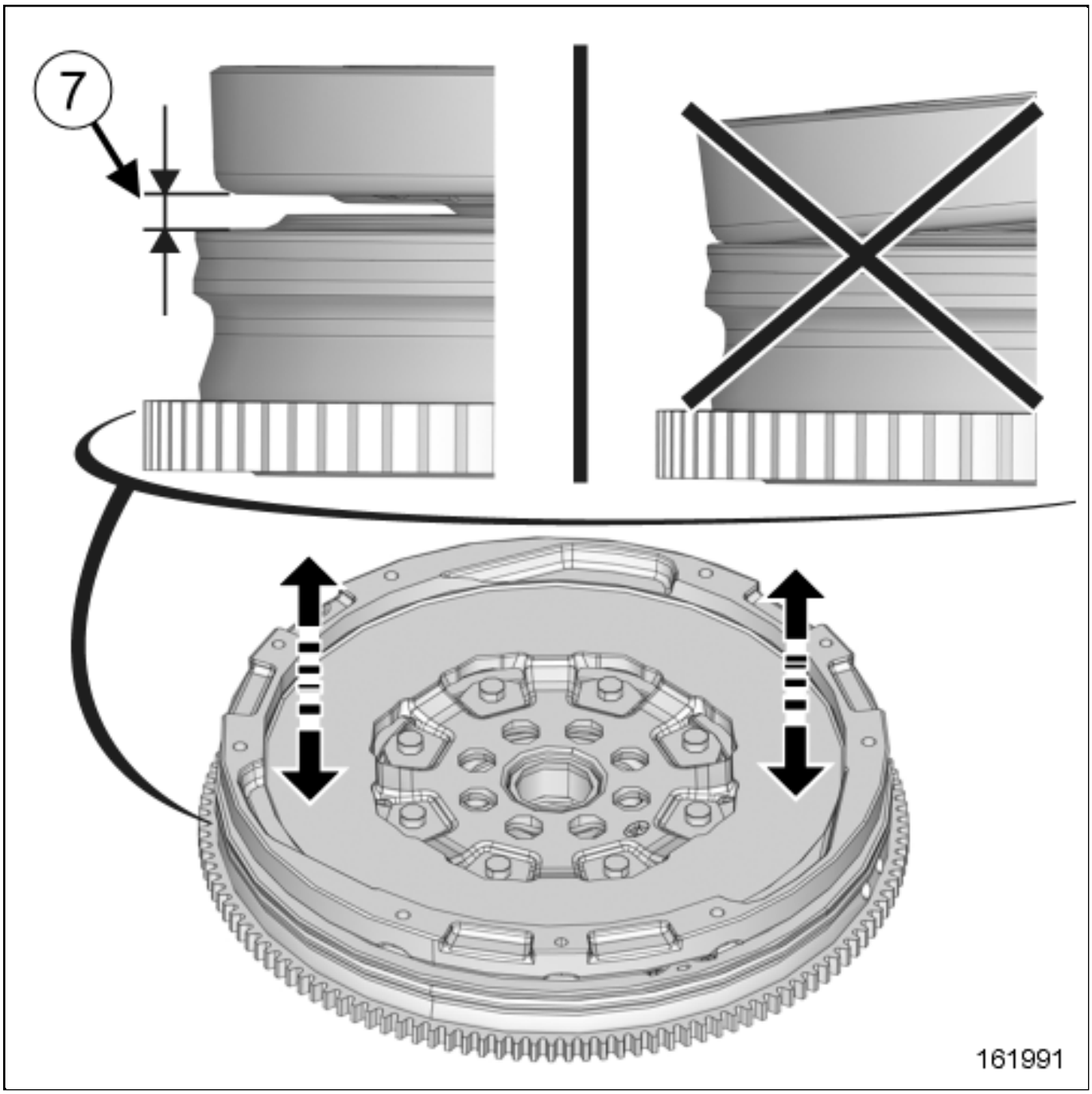
- Draw a second mark(6) using indelible pencil on the primary flywheel aligned with the secondary flywheel mark.

- Measure between both marks of the primary flywheel.

CAUTION

Measurement must be between 4,5mm and 36mm.

2- LATERAL CLEARANCE OF THE FLYWHEEL (TEST FEASIBLE ON VEHICLE)



Move the secondary flywheel in relation to the primary flywheel by pressing either side to the secondary flywheel.

CAUTION

Primary and secondary flywheels must not touch

Note:

the running clearance(7) must be between 1,5mm and 3mm.

3. FINAL OPERATION

Proceed in the reverse order to removal.

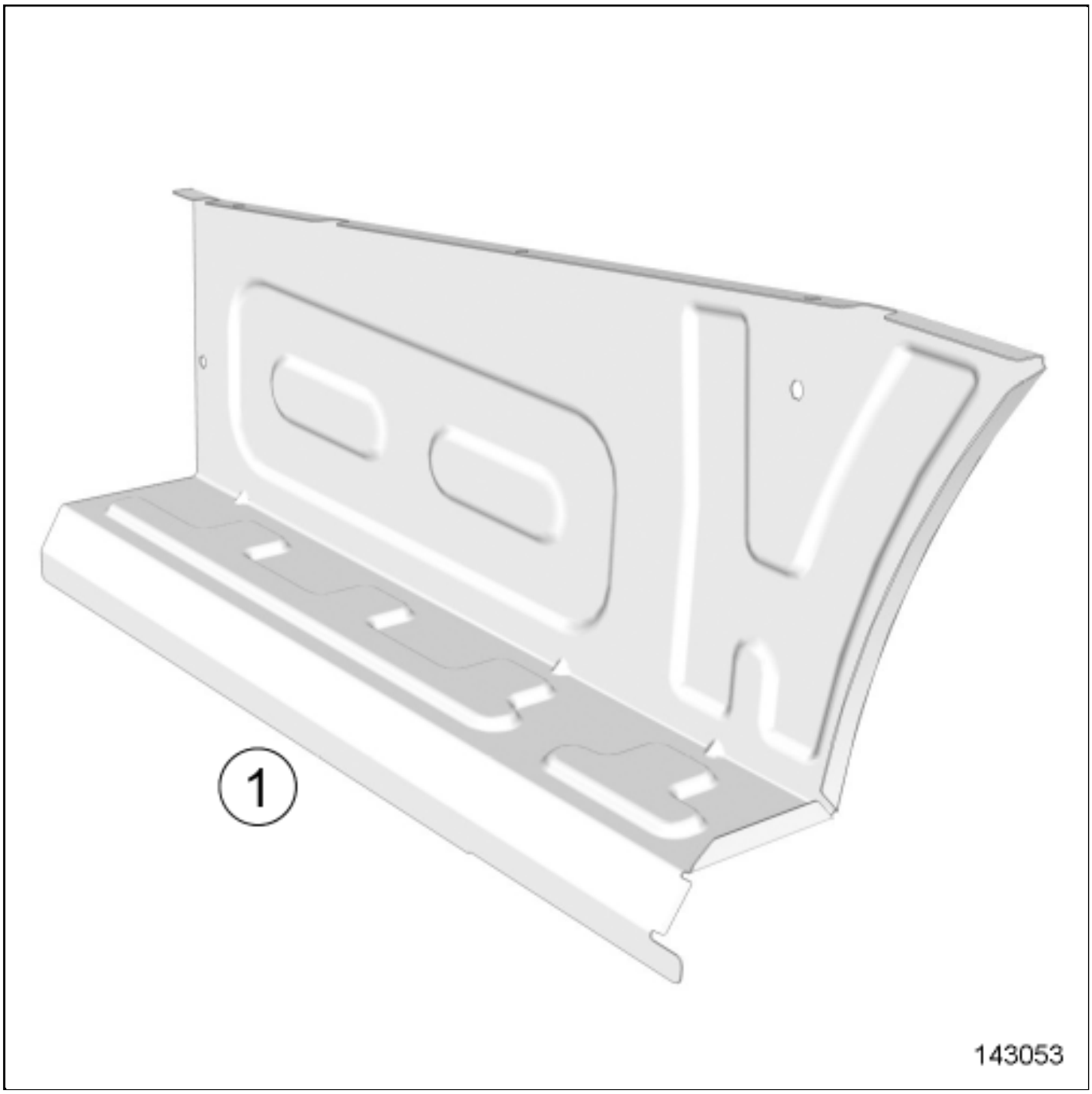
FOOTPANEL:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Foot panel	Mild steel	0.95

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

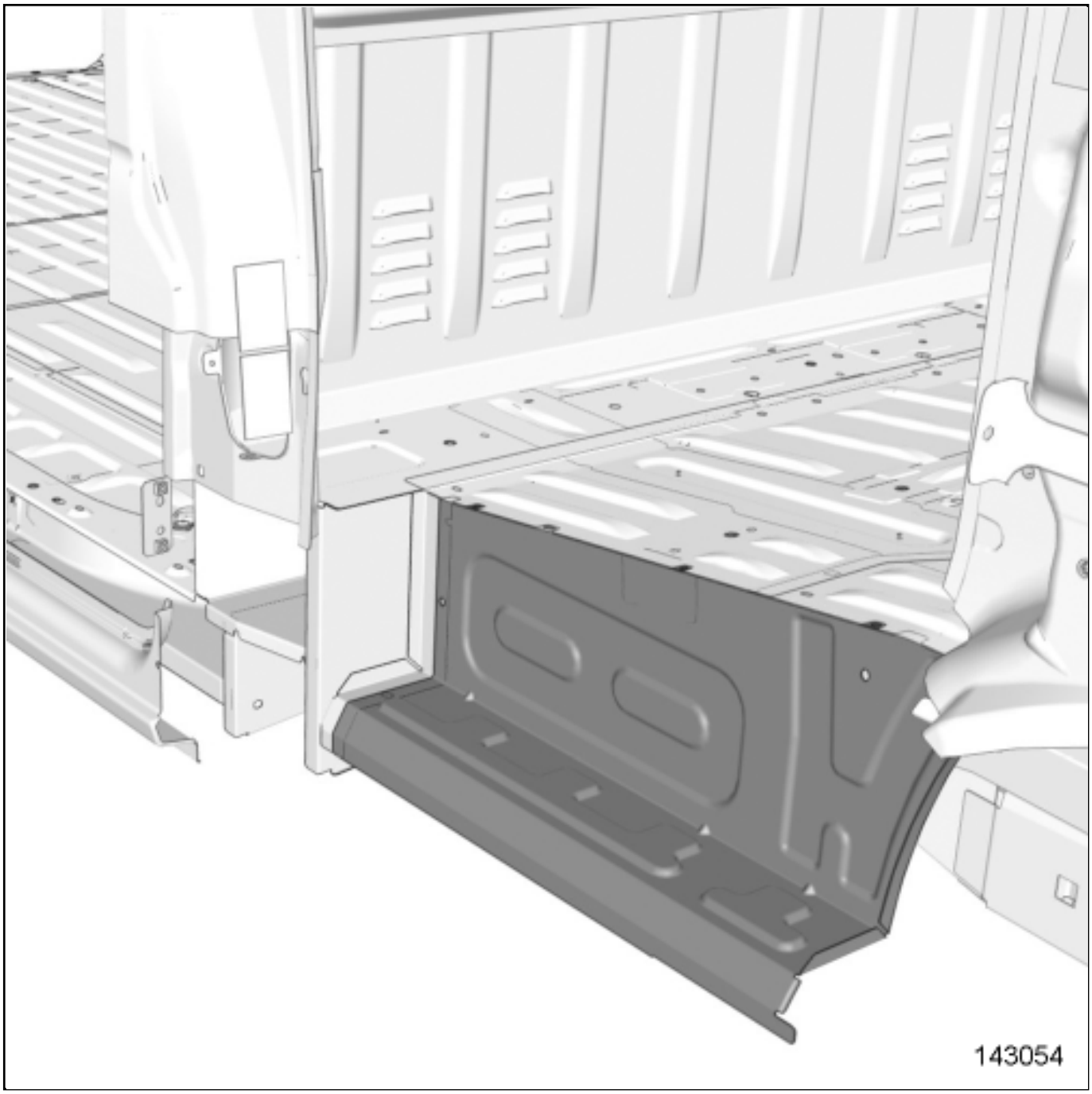
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FORK SHAFT BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
ZF4 gearbox internal renovation kit	Bvi. 1950

Equipment required
component support
indelible pencil

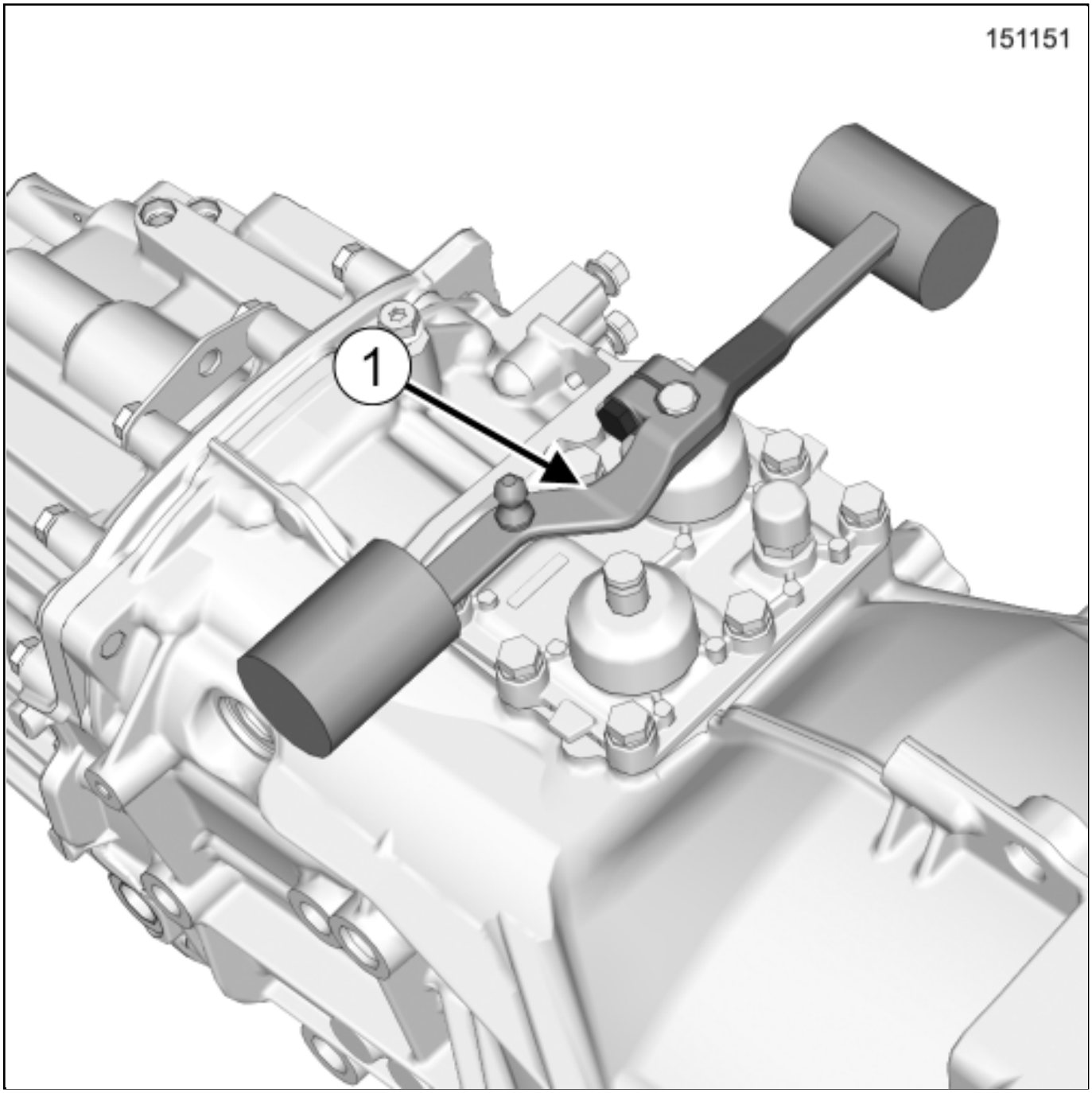
WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

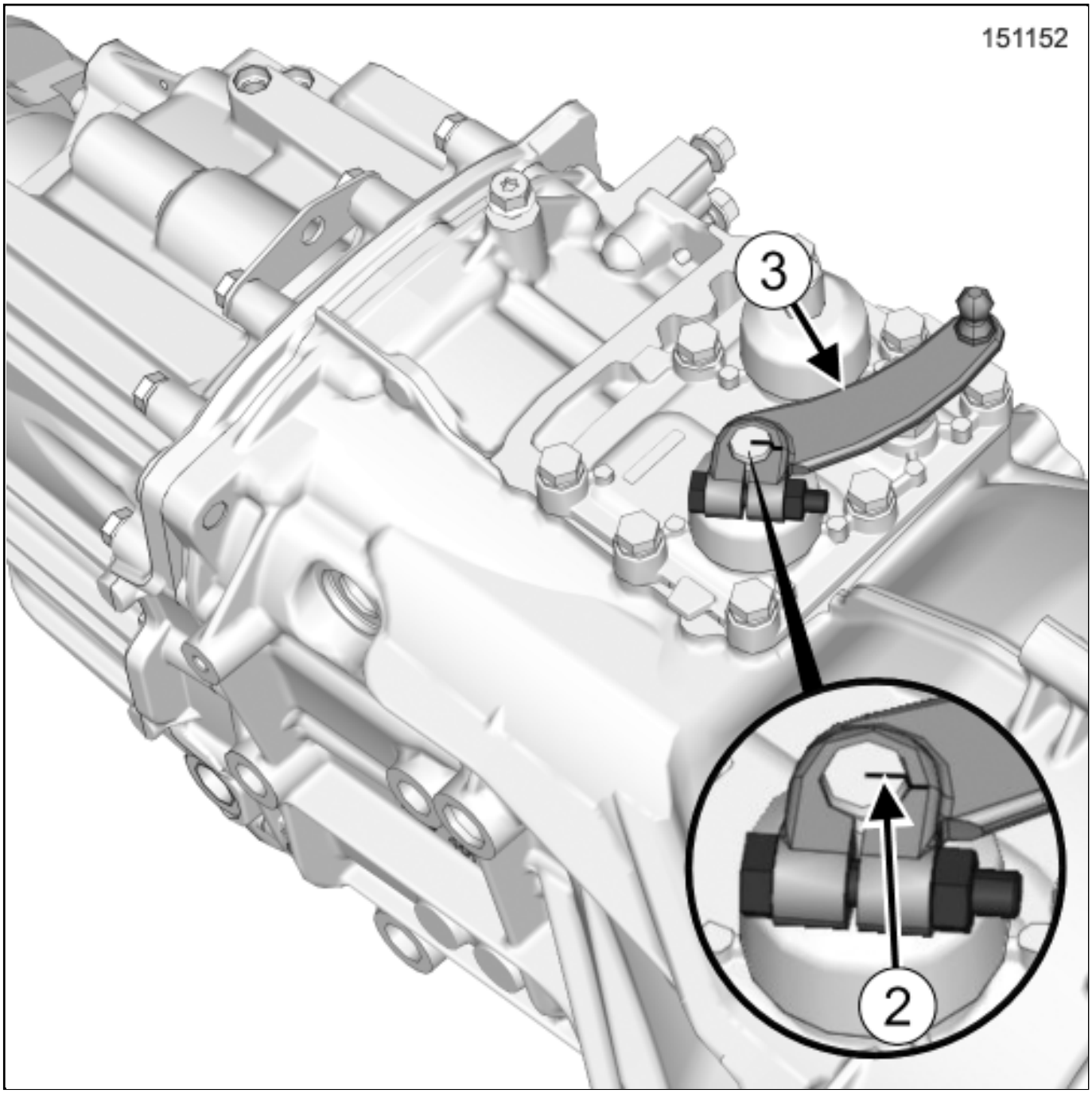
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the manual gearbox**Gearbox assembly: Exploded view** .
- Position the gearbox on the component support**(see 21A, Manual gearbox , Gearbox support equipment: Use)** .

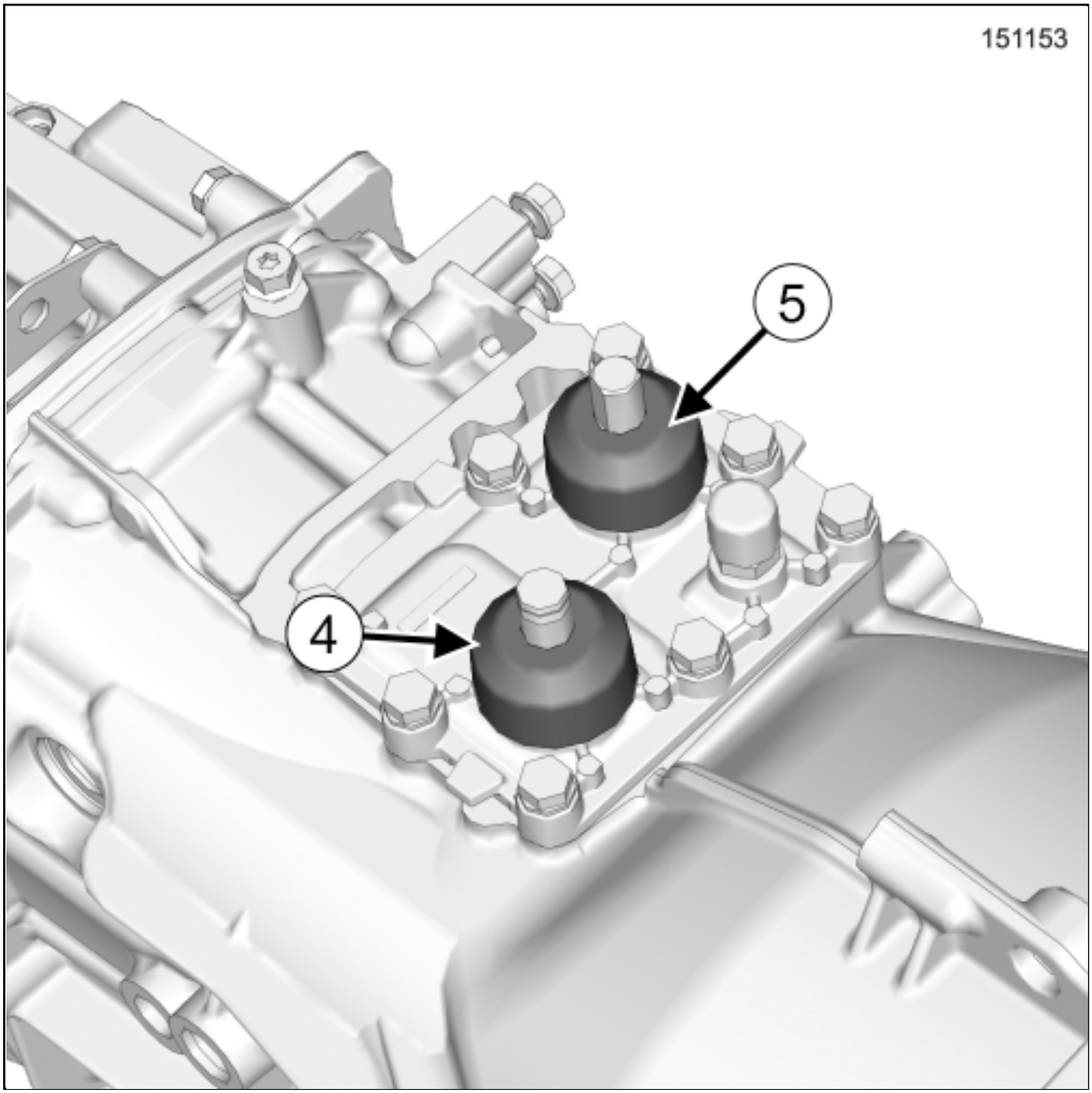


- Remove the gearshift lever(1) (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) .



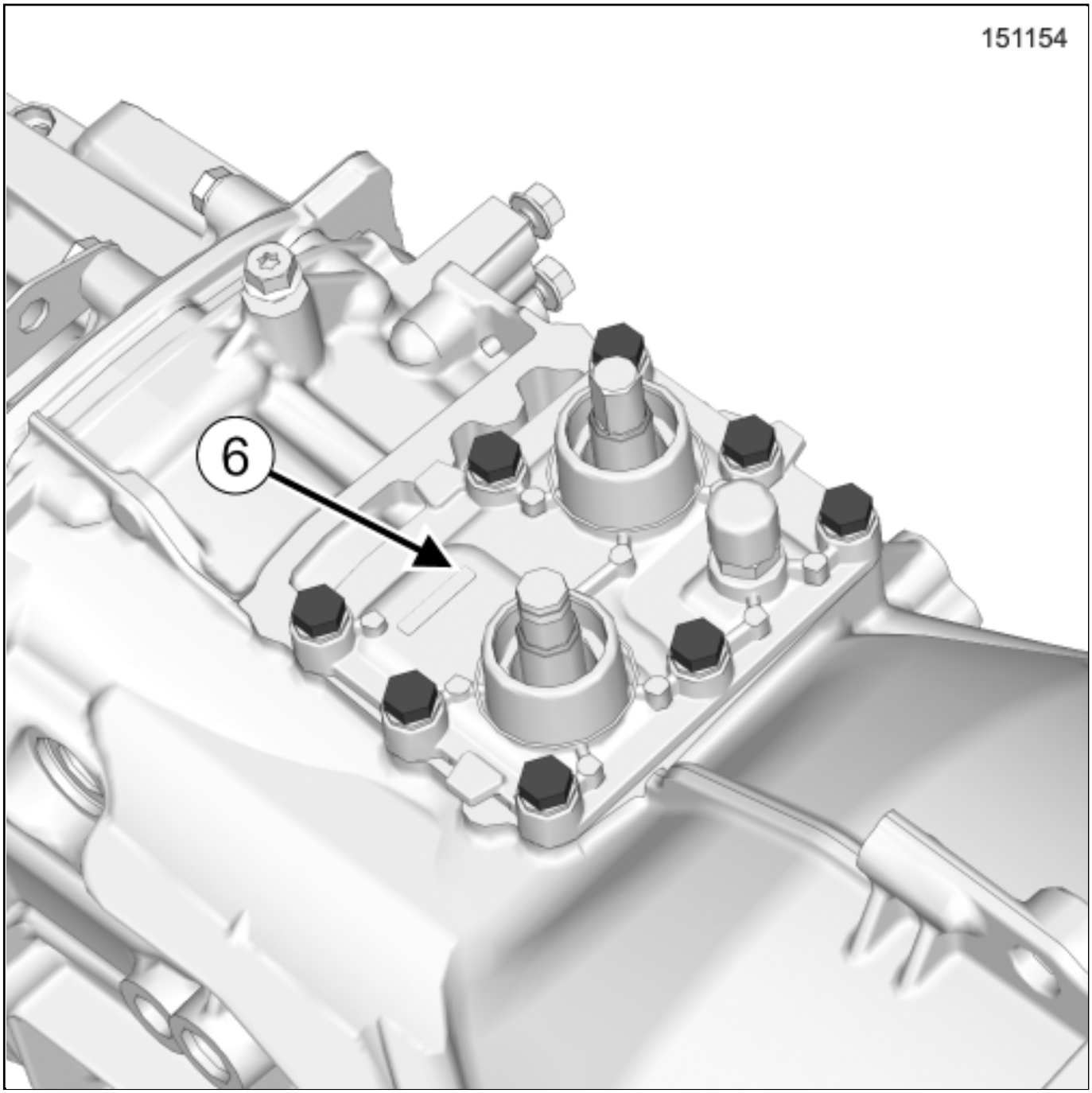
- Mark the position of the selector lever using a indelible pencil(2) .

- Remove the selector lever(3) (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) .

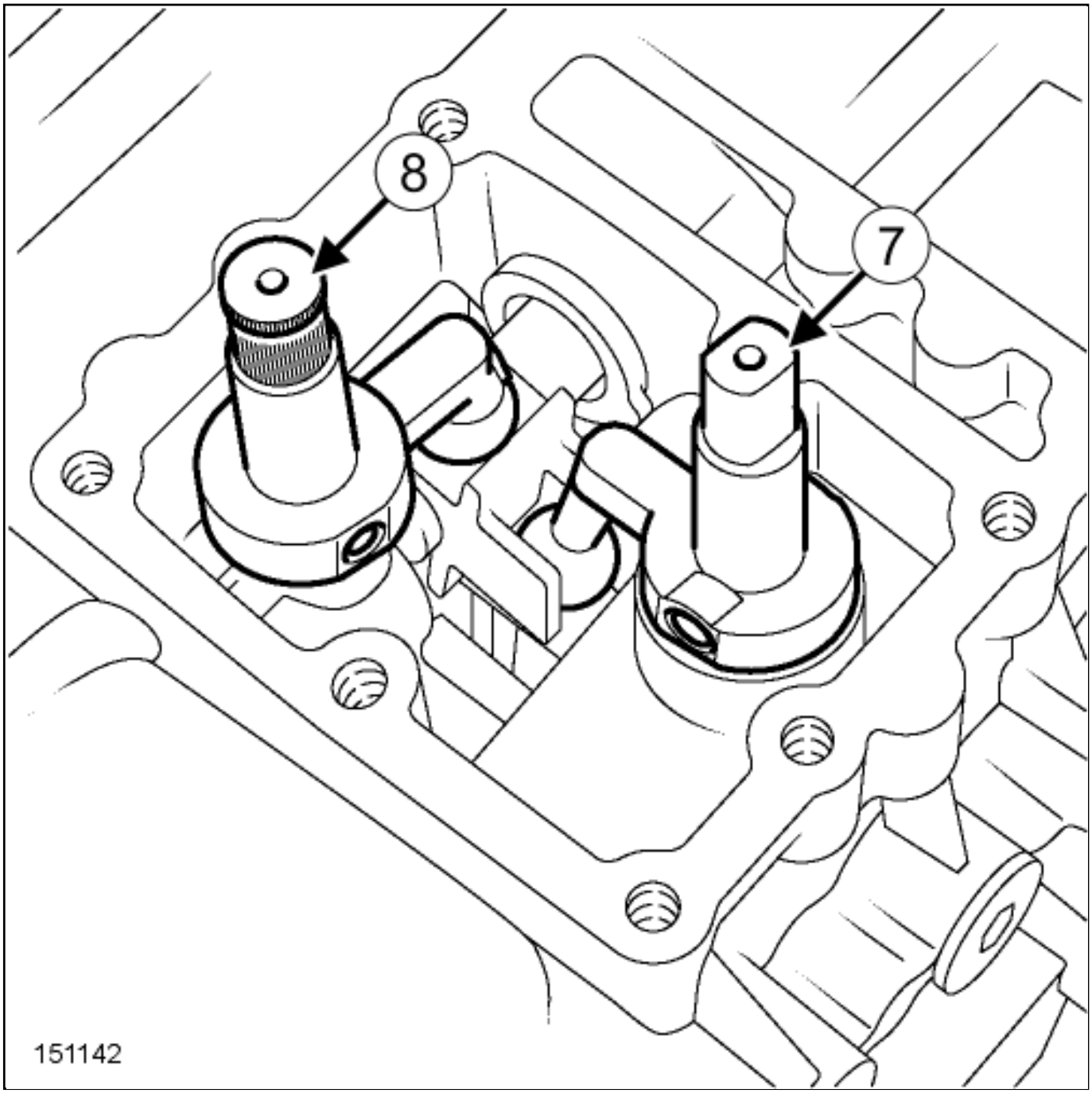


Remove (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :

- the selector shaft protective cap(4) ,
- the gearshift shaft protective cap(5) .

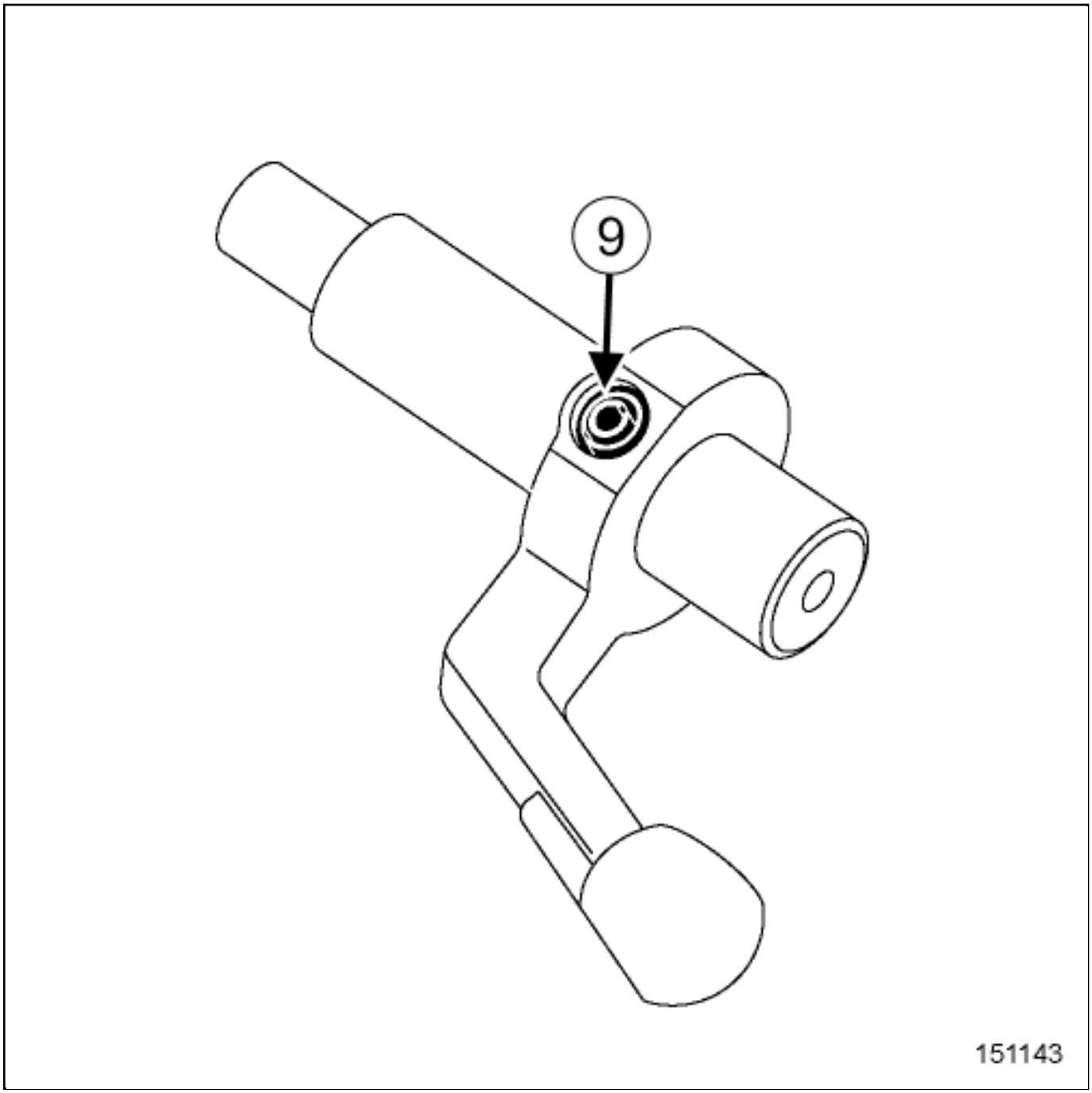


Remove the gearshift plate(6) (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) .



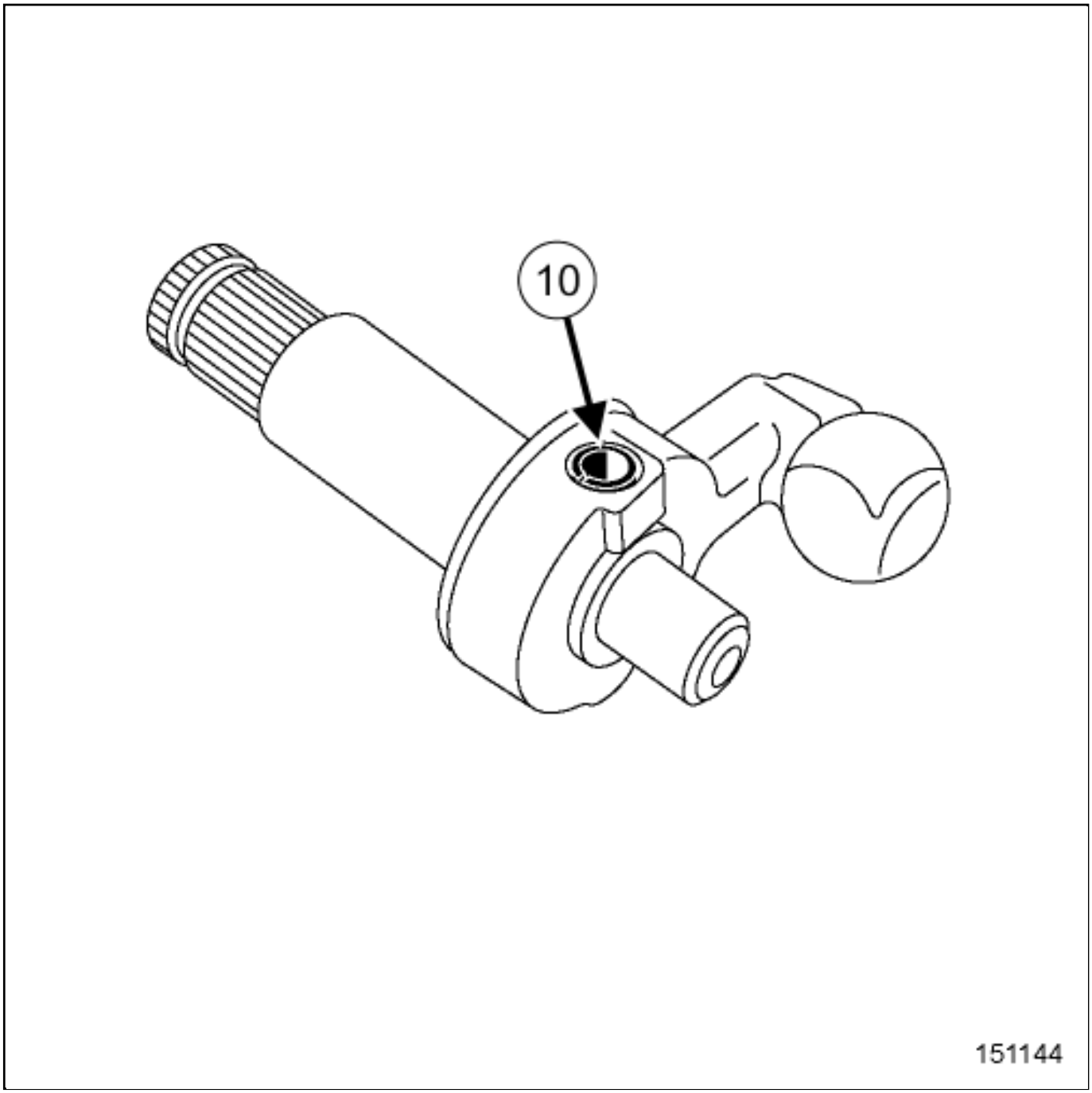
Remove (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :

- the gearshift shaft(7) ,
- the selector shaft(8) .



Remove (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :

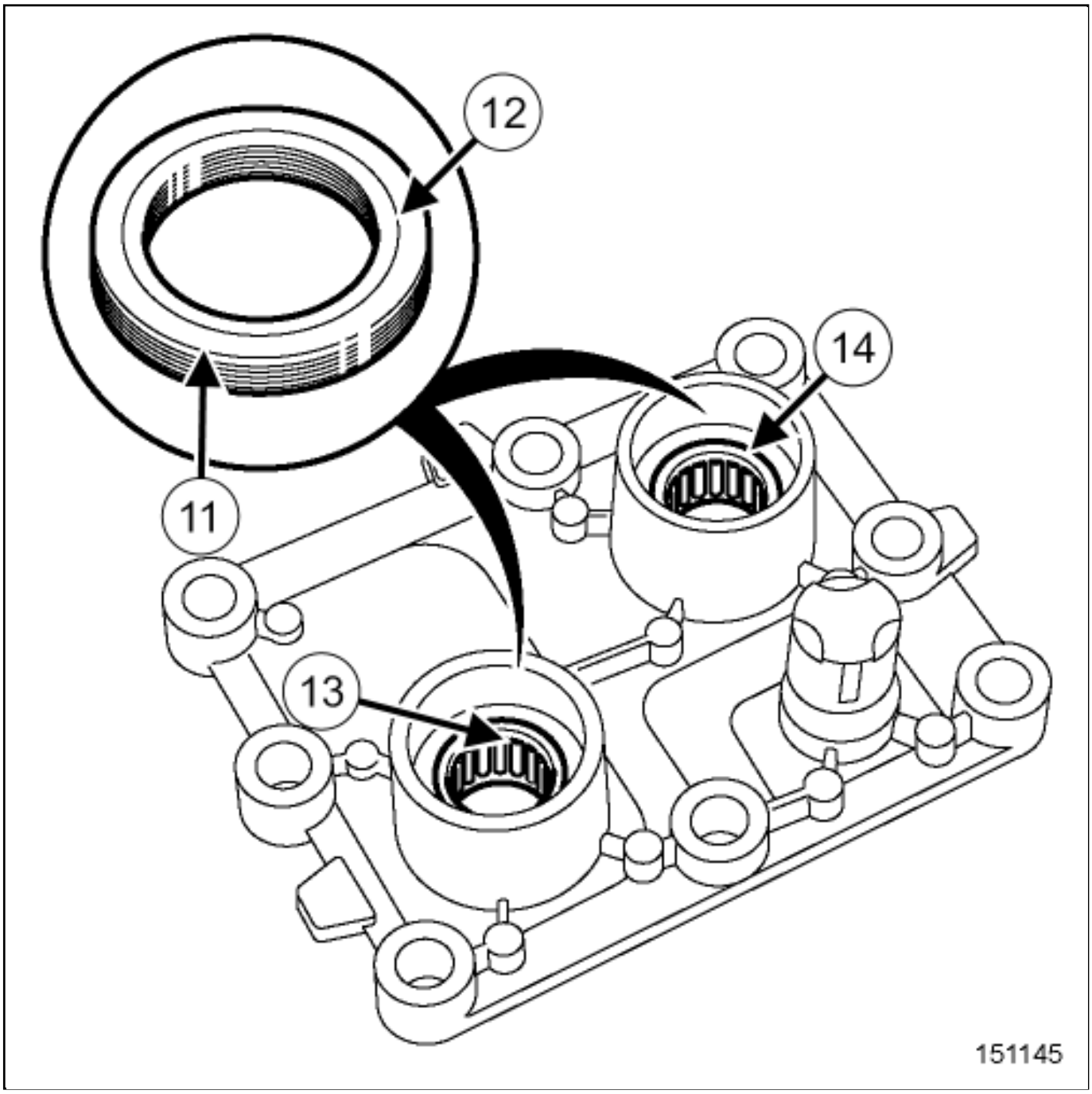
- the gearshift shaft roll pin(9) ,
- the gearshift arm.



Remove (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :

- the selector shaft roll pin(10) ,
- the selector arm.

2. REMOVAL OPERATION

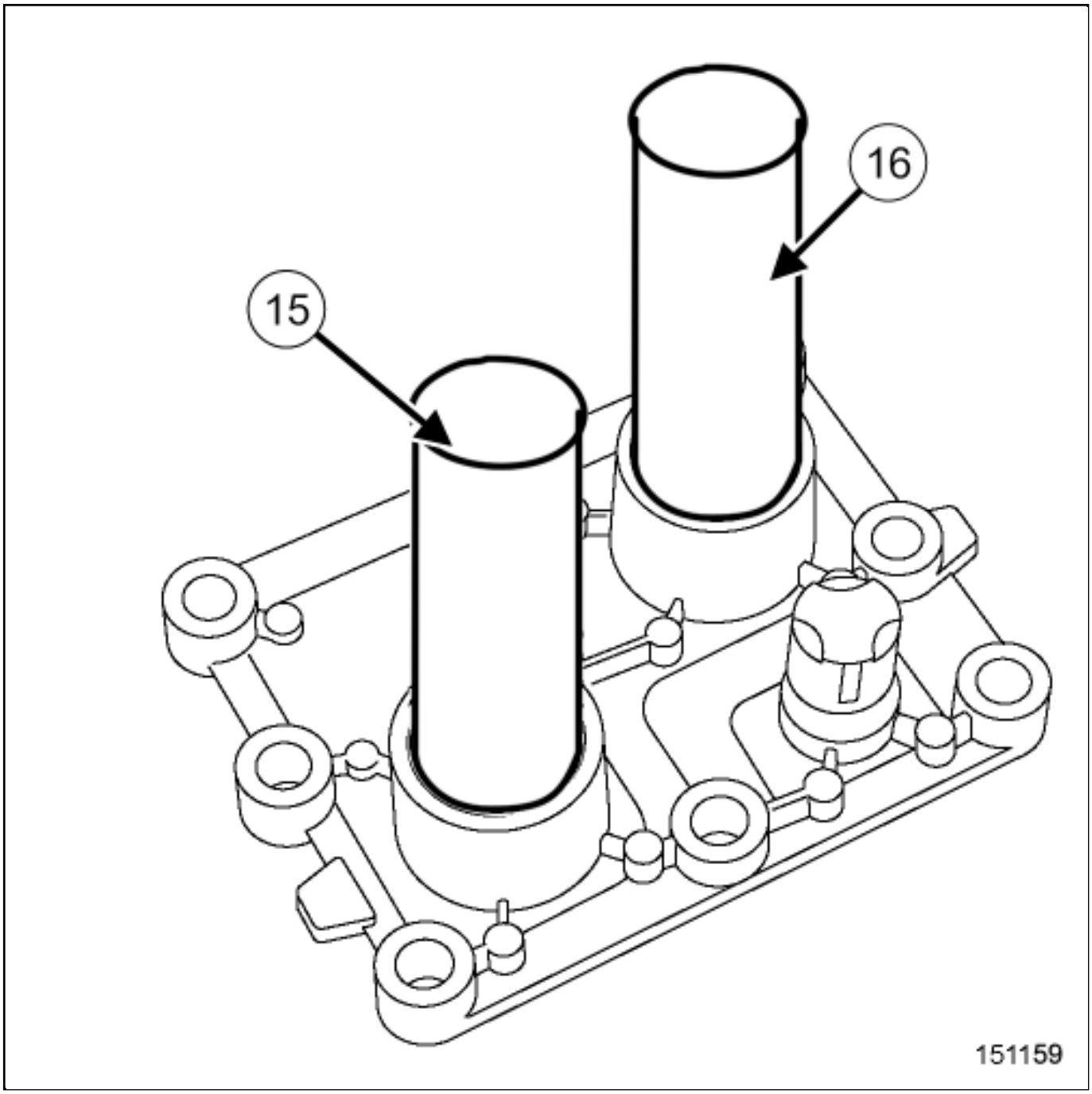


Remove from the gearshift plate(see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :

- the selector shaft sealing ring(11) ,
- the gearshift shaft sealing ring(12) ,
- the selector shaft needle bearing(13) ,
- the gearshift shaft needle bearing(14) .

REFITTING

1. REFITTING OPERATION



Refit on the gearshift plate(see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) :

- the selector shaft needle bearing using toolZF4 gearbox internal renovation kit(Bvi. 1950) F (15) ,

the gearshift shaft needle bearing using toolZF4 gearbox internal renovation kit(**Bvi. 1950**) F (**16**) .

Refit on the gearshift**(see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view)** :

- the gearshift shaft sealing ring,
- the selector shaft sealing ring.

2. FINAL OPERATION

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

RENAULT

Technical Note 3175A

Fault finding
Cooling circuit

Vehicles concerned: see list on the following page

Subsections concerned: 19A

Fault finding procedures for various faults affecting the cooling system and water pumps

77 11 293 182 **Edition 3 - OCTOBER 2005** **EDITION ANGLAISE**

"The repair procedures given by the Manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All rights reserved by RENAULT s.a.s.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is prohibited without the prior written authority of RENAULT s.a.s.

© RENAULT s.a.s. 2005

Vehicle	Type
Twingo	X06X
Renault 4	
Renault 5	X40X
Express	F40X
Kangoo	XCXX
Kangoo phase II	XCXX
Clio I	X57X
Clio II	XBXX
Clio II phase II	XBXX
Clio V6	CB1A
Clio V6 phase II	CB1A
Clio Internationale	XB1R
Clio III	XRXX
Renault 19	X53X
Renault 21	X48X
Modus	XPXX
Logan	LS0X
Mégane	XAXX
Mégane II	XMXX
Scénic	JAXX
Scénic II	JM0X
Laguna	X56X
Laguna II	XGXX
Laguna II phase II	XGXX
Renault 25	X29X
Safrane	X54X
Vel Satis	XJXX
Vel Satis phase II	XJXX
Avantime	DE0X
Espace	J11X
Espace II	J63X
Espace III	JE0X
Espace IV	JK0X
Espace IV phase II	JK0X
Trafic	T/PVXX
Trafic II	XL0X
Master propulsion	XHXX
Master propulsion phase II	XHXX
Master	FB/FC
Master	Q/Rxxx
Master II	XDXX
Master II phase II	XDXX
Spider	EF0H
AIpine	D50X

Contents

Page

19A COOLING

Cooling circuit: operation	19A-1
Cooling circuit: operating diagram	19A-2
Water pump: operation	19A-3
Water pump: operating diagram	19A-4
Precautions for fault finding	19A-5
Cooling system: tools and equipment	19A-6
Cooling system: customer complaints	19A-7
Cooling system: fault finding charts	19A-9

All combustion engines in operation produce energy which is divided up as follows:
– part of this energy is mechanical and drives the engine,
– part is heat energy in the form of exhaust gas which is removed in the form of heated coolant which is partly used to heat the passenger compartment. But the heat from the coolant must be removed to maintain the correct operating temperature of the engine.

This is achieved by using a liquid cooling system.

Coolant circulates in (or around) the components to be cooled. This liquid, which has been heated following contact with the hot engine components, is transferred quickly by a pump into a radiator where it cools down and returns to the engine.

The cooling circuit, which must be completely sealed for it to operate properly, is principally composed of:
– an engine block and cylinder head,
– a radiator and engine cooling fan,
– temperature sensors (thermostat, temperature switch),
– a coolant pump,
– an expansion bottle,
– hoses,
– a bleed screw (if fitted to the vehicle),
– a heater matrix,
– coolant,
– and various other components depending on the vehicle model.

A centralised coolant temperature management system has been developed following the development of engine computers. This system uses information provided by a single temperature sensor located on the engine block. This sensor operates the fan unit either at high or low speed via an injection computer. It also operates the coolant temperature warning light located on the instrument panel. When dealing with a vehicle displaying a fault, it is advisable to establish whether the vehicle is fitted with this system or not. This is established by checking whether the temperature switch is at the bottom of the radiator. If a temperature switch is found, there is no centralised coolant temperature management system.

The cooling circuit is fitted with a valve which protects the system from overpressure. The colour of this valve indicates its rating (in bars):

Note:
Reminder of the ratings for the expansion bottle valve:

Expansion bottle valve with:

– a brown spot	1.2 bars
– a blue spot	1.4 bars
– a yellow hand	1.4 bars
– a white hand	1.6 bars
– a grey hand	1.8 bars

Operating diagram: See MR for the vehicle concerned.

Water pump - Description

The water pump's function is to create sufficient flow to dissipate some of the heat generated by combustion, exhaust gases and friction.
Its operating principle involves the conversion of mechanical energy generated by the engine into hydraulic energy to circulate the coolant.
The pump operates as a generator. The flow rate depends on the pressure differential created by the pump and the ease with which water can pass through the cooling system.

General description of a water pump

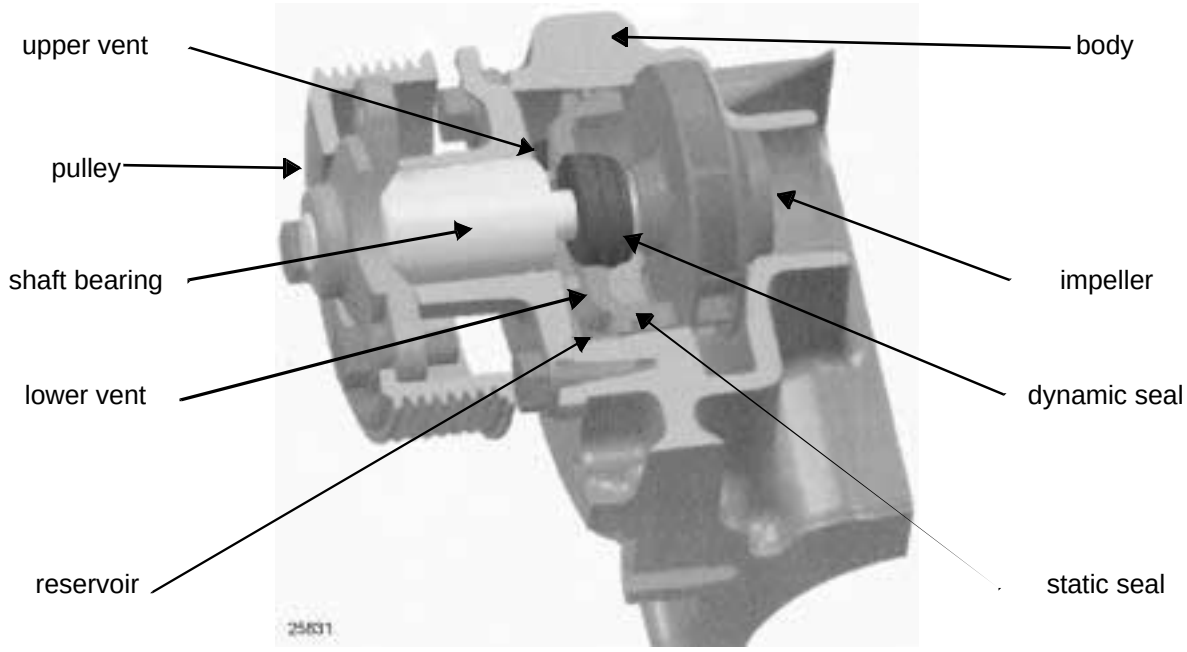
The operating principle of a centrifugal pump consists of converting mechanical energy into hydraulic energy.

The conversion takes place in two stages:
- the first consists of the conversion of mechanical energy into kinetic energy by the vanes of the impeller;
- the second step is the conversion of the kinetic energy into pressure energy by the spiral form of the pump body (shell + impeller).

The mechanical energy required to rotate the impeller is provided by the pulley via the bearing spindle. By reaction, the vanes of the impeller transfer a certain amount of motion to the fluid. The fluid is then thrown out by the impeller and collected by an arrangement called a volute. The junction between the volute and the cylinder block water inlet also affects the pump performance.

The role of the dynamic seal is to provide a seal between the ambient air under the bonnet and the cooling system during engine operation or when the engine is stopped.

To avoid damage in operation, there is a film of coolant between sealing ring and counterface. The purpose of this film is to provide lubrication and cooling of these two components. However, a very small amount of liquid can work its way to the outside of the pump. This liquid is discharged via the lower vent hole and is known as a "cosmetic leak". This leakage is normal and necessary for correct operation of the dynamic seal.


upper vent
body
pulley
shaft bearing
impeller
lower vent
dynamic seal
reservoir
static seal
25631

IMPORTANT
– Be aware of high temperatures when dealing with circuits that have been designed to be under pressure (risk of severe burns).
– Never remove the expansion bottle valve when the engine is hot.
– When working under the bonnet, be aware that the radiator ventilation fan(s) may operate unexpectedly.
– Do not undo the bleed screw(s) with the engine running.

Preliminary test:

When a vehicle displaying a fault arrives, before carrying out fault finding, check:

– the coolant fluid level in the tank (marked by a line) and colour,

– the condition and tension of the coolant pump drive belt,

– that the engine cooling fan, radiator and radiator grille are not blocked by any object that could disrupt air movement,

– that there is no signs of coolant leakage in the engine compartment.

Special tooling required	
Mot. 1700	Cooling circuit diagnostic and filling tool

Equipment required
Cylinder head testing tool

- **TRACES OF LIQUID**
  - ON THE GROUND — ALP 1
  - IN THE ENGINE COMPARTMENT — ALP 1
  - IN THE PASSENGER COMPARTMENT — ALP 2
- **SMOKE EMISSION**
  - FROM THE EXHAUST (WHITE SMOKE FROM WARM ENGINE) — ALP 3
  - IN THE ENGINE COMPARTMENT — ALP 1
  - IN THE PASSENGER COMPARTMENT — ALP 2
- **TEMPERATURE OR WARNING INDICATOR**
  - TEMPERATURE WARNING LIGHT:
    - WARNING LIGHT LIT WHEN DRIVING — ALP 4
    - THE WARNING LIGHT LIGHTS UP INTERMITTENTLY WHEN THE VEHICLE IS IN MOTION — ALP 5
  - WATER TEMPERATURE NEEDLE:
    - THE NEEDLE MOVES UP INTO THE RED AREA WHEN DRIVING — ALP 4
    - THE NEEDLE INDICATES OVERHEATING JUST AFTER STARTING OFF — ALP 5
    - THE NEEDLE POSITION FLUCTUATES WHEN DRIVING — ALP 5

OTHERS:

THERE IS A BUBBLING NOISE UNDER THE DASHBOARD	ALP 6
FLUID LEVEL IN THE TANK DECREASES	ALP 1
LIQUID IN THE TANK HAS CHANGED COLOUR	Technical Note 2675 A
THERE IS NO HEATING IN THE VEHICLE	ALP 7
HEAVY CONDENSATION ON THE WINDSCREEN (INTERIOR)	ALP 2
WATER PUMP CHECK	ALP 8

ALP 1	**– Traces of liquid on the ground** **– Traces of liquid in the engine compartment** **– Smoke emission in the engine compartment** **– Fluid level in the tank decreases**

NOTES	– Check that it is definitely coolant. – Ask the customer if they have topped up the coolant fluid level before contacting the RENAULT network.

Cold engine.
Check the coolant fluid level in the tank.

Are there any signs of fluid leaks?

yes

Locate the leak. Repair the leak or replace the defective part.

no

Leak-test the reservoir and its cap using tool Mot. 1700.

yes

Pressurise the system to its rated pressure with tool Mot. 1700.

Does the pressure drop?

yes

Are there any signs of fluid leaks?

yes

Locate the leak. Repair the leak or replace the defective part.

no

no

Smoke is most likely to be caused by the release of coolant. This can be the result of:
– a blocked fan unit:
  ● run the fan unit command on vehicles fitted with centralised coolant temperature management,
  ● if the vehicle is not fitted with centralised coolant temperature management, short circuit the temperature switch to force the fan unit to start.
  If the fan unit does not start, replace the fan unit motor.
– faulty temperature control. Apply the T2 test procedure.
– a faulty coolant pump. Check that it is operating correctly (ALP 8).

ALP 2	**– Traces of liquid in the passenger compartment** **– Smoke emission in the passenger compartment** **– Heavy condensation on the windscreen (interior)**

NOTES	– Check that it is definitely coolant. – Ask the customer if they have topped up the coolant fluid level before contacting the RENAULT network.

Check the coolant fluid level in the tank.
Check that the heating in the passenger compartment is not switched on. Run a warm engine at idle speed for **1 minute**.
Turn the heating on in the passenger compartment.

Is there an odour in the passenger compartment?

yes → Replace the heater matrix because it is leaking.

no → Check that the cooling system is not leaking in the engine compartment using tool Mot. 1700.

Are there any signs of fluid leaking in the engine compartment?

yes → Locate the leak.
Repair the leak or replace the defective part.

no → Replace the heater matrix.

ALP 3	– Smoke emission from the exhaust (white smoke, warm engine)

NOTES	Ask the customer if they have topped up the coolant fluid level before contacting the RENAULT network.

Cold engine.
Check the coolant fluid level in the tank.
Pressurise the system to its rated pressure with tool Mot. 1700.

Does the pressure drop?

yes

The cooling circuit is not sealed. Look for a leak in the passenger compartment (ALP 2), or a leak in the engine compartment (ALP 1) or an internal engine leak (T1 test).

no

Start the engine.
Depress the accelerator pedal quickly a few times until the fan unit has started.
The warning light must remain off.

Does the fan unit start and the warning light remain off?

yes

Remove the cylinder head
Check the level of the cylinder head. Test the cylinder head.

Is the cylinder head sealed?

no

Replace the cylinder head.

yes

The smoke fault may be the result of an internal engine leak.

no

There is a temperature control fault.
Apply the T2 test procedure.

ALP 4	**– The warning light remains lit when driving** **– The needle moves up into the red area when driving**

NOTES	Ask the customer about the conditions when the fault appears.

Start the engine when it is cold.
Maintain an idling speed.

What is the temperature of the heater and radiator hoses?

Cold heater matrix input hose,
Cold radiator input hose.

Check the circuit coolant level.
There is no engine coolant circulation.
Check that the coolant pump is operating correctly (ALP 8) and check the belt drive.

Hot heater matrix input hose,
Cold radiator input hose.

The temperature of the heater input hose and radiator input hose must increase. If this does not occur, check that the coolant pump and thermostat are operating correctly (ALP 8) and check the coolant fluid level in the reservoir.

Is the temperature warning light on?

yes

Apply the T2 test procedure.
If the test is not successful, the fault is not due to the actual cooling circuit itself:
– perform fault finding on the centralised coolant temperature management (depending on version),
– check the warning light wiring.

no

Accelerate to start the fan unit.

Has the fan unit started?

yes

Does the warning light come on?

no

Depress the accelerator pedal quickly a few times and check that the warning light does not light up.

yes

B

no

A

ALP 4 CONTINUED	

A

- For vehicles not fitted with centralised coolant temperature management:
  – Disconnect the temperature switch and short circuit it to activate the two fan unit speeds (high and low).
- For vehicles fitted with centralised coolant temperature management:
  – Run the command mode of the two speeds (high and low) of the fan unit using the diagnostic tool.

In both cases, the two speeds of the fan unit must be activated.
If this is does not occur:
– check the fan unit wiring if one of the two speeds is not obtained,
– replace the fan unit if it does not operate correctly.

the fan unit operates normally.

- For vehicles not fitted with centralised coolant temperature management:
  – replace the temperature switch.
- For vehicles fitted with centralised coolant temperature management:
  – check the temperature sensor,
  – perform fault finding on the injection computer.

B

- For vehicles not fitted with centralised coolant temperature management:
  – Disconnect the temperature switch and short circuit it to trigger fan unit high-speed operation.
- For vehicles fitted with centralised coolant temperature management:
  – Activate the high-speed command mode using a diagnostic tool.

In both cases, the fan unit high-speed operation must be activated.
If this does not occur, check that the radiator, engine cooling fan and radiator grille are not blocked by an object which could disrupt air movement. Check the fan unit wiring.
If the wiring is correct, carry out a temperature control test.

If the test is successful, the coolant temperature warning light fault is not due to the cooling system.
– Check the instrument panel wiring.
– Perform a centralised coolant temperature management test.

ALP 5	**– The warning light lights up intermittently when the vehicle is in motion** **– The needle indicates overheating just after starting** **– The needle position fluctuates when driving**

Carry out a preliminary check on the cooling system using tool Mot. 1700.

Is the cooling circuit functioning?

yes

The fault is not due to the cooling circuit.
Check by:
– running the coolant temperature warning light command (depending on version),
– carrying out fault finding on the instrument panel.

no

Replace the parts necessary for the circuit to function properly.

If the source of the fault is the water pump, follow the procedure on ALP 8.

ALP 6	There is a bubbling noise under the dashboard.

NOTES	Ask the customer if they have topped up the coolant fluid level before contacting the RENAULT network.

Cold engine.
Check the coolant fluid level.

Is the coolant fluid at maximum level?

no → Add some coolant and bleed the circuit using Mot. 1700.

yes → Bleed the coolant circuit using Mot. 1700.

Start the engine and depress the accelerator pedal quickly a few times.

Is there still a bubbling noise?

yes

What has happened to the coolant fluid level?

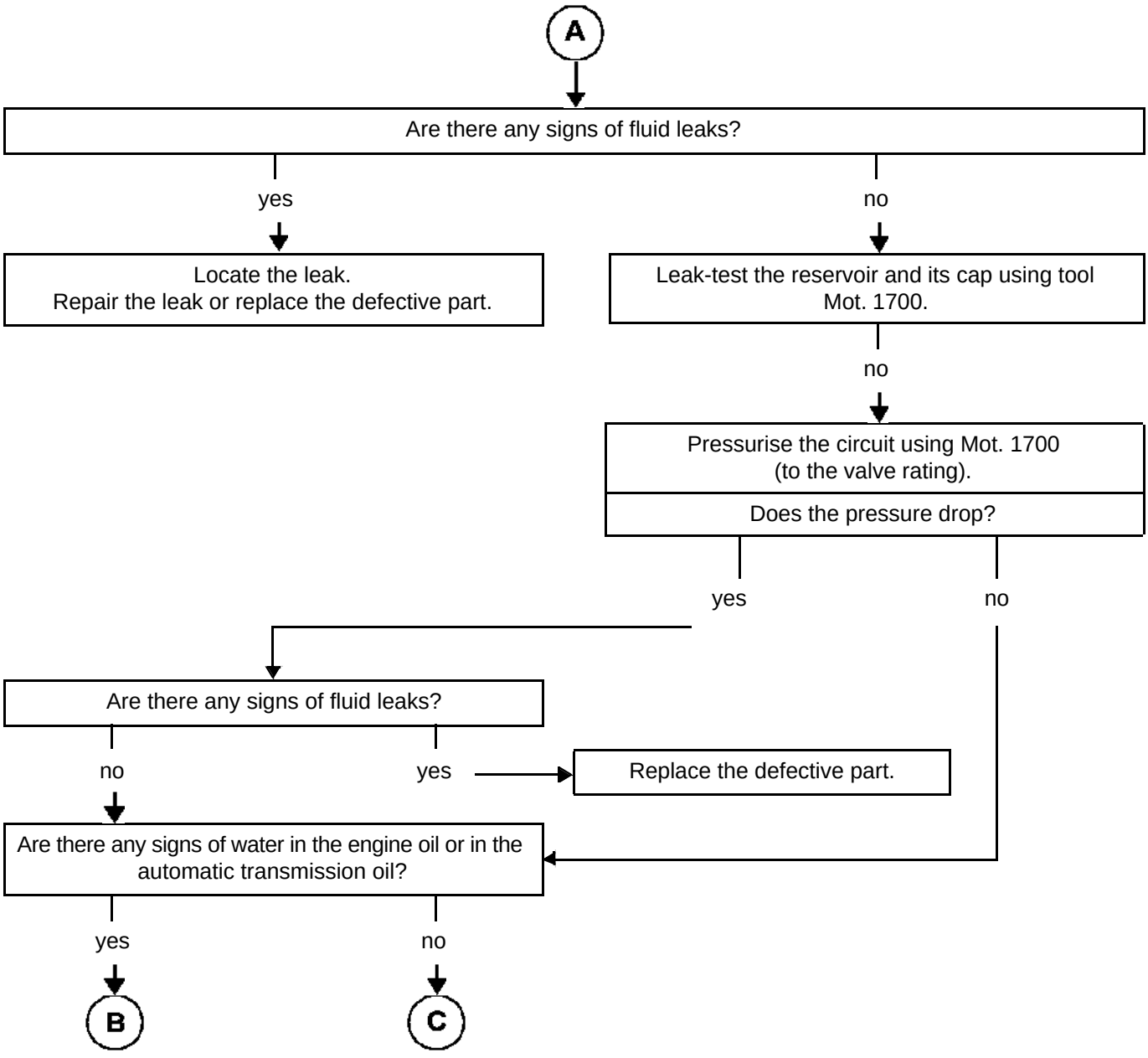
It has risen

It has not moved → C

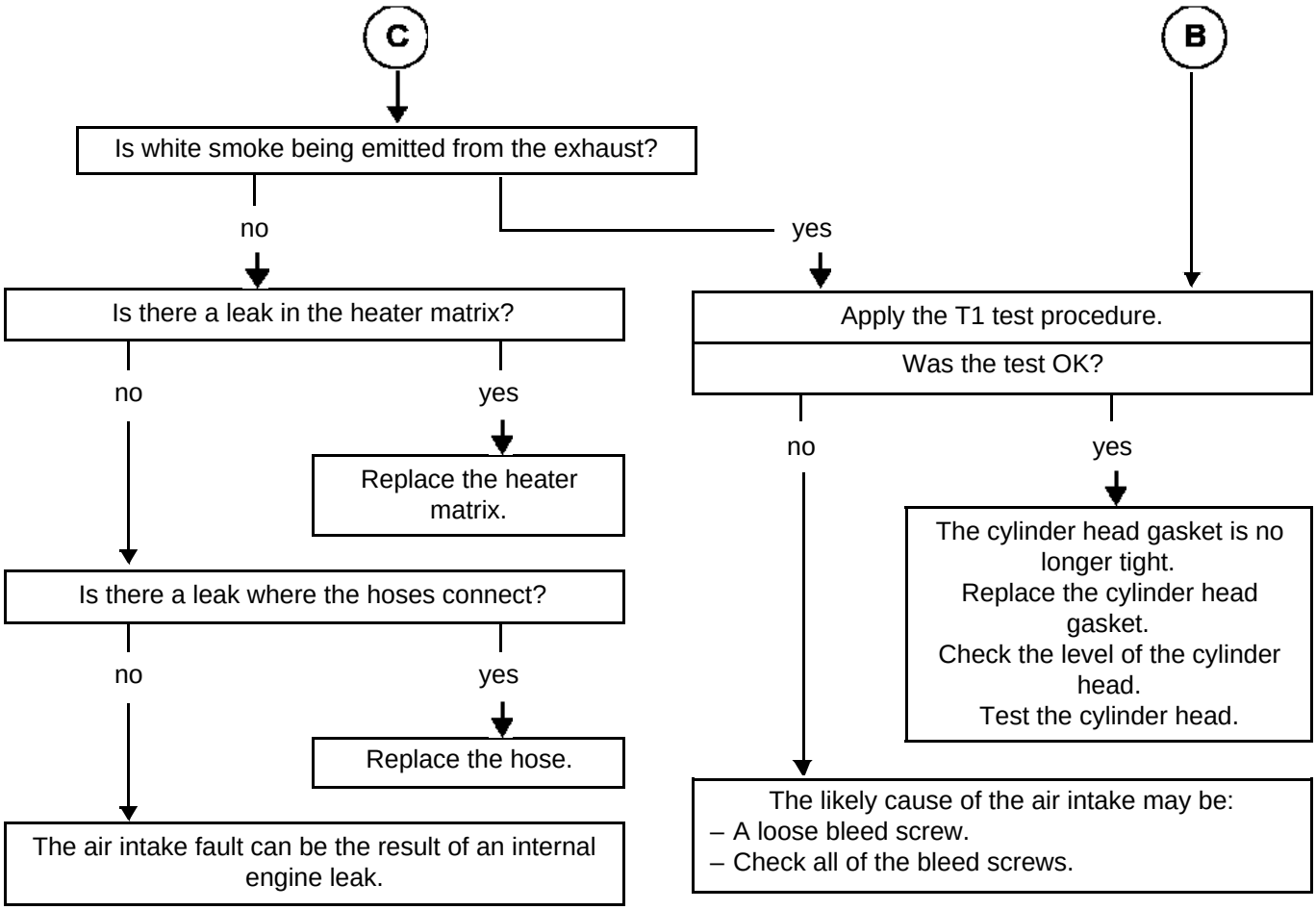
It has dropped → A

For vehicles fitted with a hot tank, fit a **Ø 3** nozzle in the radiator tank output hose towards the expansion bottle (secure it near the output unit with a clip). If the fault is still present or for vehicles fitted with a cold tank, check the thermostat and replace the parts necessary for it to operate properly.

ALP 6 CONTINUED 1	



ALP 6
CONTINUED 2



ALP 7	There is no heating in the vehicle

NOTES	Ask the customer if they have topped up the coolant fluid level before contacting the RENAULT network. Check the operation of the fan unit heating and air flow circuit.

Check the coolant fluid level in the tank.
Start the engine.

Is the coolant pump driven correctly by the engine?

yes

Cold engine. Maintain an idling speed.

The heater matrix input hose must be hot and the radiator input hose must be cold. Is this correct?

yes

Clean the cooling circuit and replace the coolant using Mot. 1700.

no

The two hoses are hot: replace the thermostat.
The two hoses are cold: replace the coolant pump.

no

Check the condition of the belt and replace it if necessary.
Check that the belt has the correct tension.

ALP 8	Water pump check

NOTES	● Never start the engine without the timing cover. ● Always disconnect tool Mot. 1700 before removing any cooling system component.

● When the engine is cold, top up the coolant in the expansion bottle to the maximum level.
● Carry out fault finding on the cooling system using tool Mot. 1700 (see Technical Note 3857A, page 19A-5).

Wait 3 minutes. Does the pressure in the cooling system drop?

no → A

yes → Carry out a visual inspection of the cylinder block below the water pump.

Are there signs of leakage, drips, seepage or beads of moisture?

no → The fault is not caused by the water pump. Locate the leak (ALP 1). Repair the leak or replace the defective part.

yes → If the water pump is driven by the timing belt, remove the timing cover.

Is the leak coming from the seal between the water pump and the cylinder block?

no → The leak is coming from the water pump. Change the water pump.

yes → Change the seal and repeat the test from the beginning.

ALP 8

CONTINUED

A

- Disconnect tool Mot. 1700 and refit the cap on the expansion bottle.
- Start the engine and hold the engine speed at 2500 rpm.
- Accelerate several times with no load, every 2 or 3 minutes, until the fan switches on.
- Switch off the ignition.
  - If the water pump is driven by the timing belt, wait 15 minutes before removing the timing cover.
- Carry out a visual inspection of the water pump.

Is there leakage from the water pump, drips, seepage or beads of moisture?

no

It is normal to find a build-up of crystalline material at the dynamic seal of the water pump.

Is there an abnormal amount* of play in the water pump pulley when you try to move it?

no

The fault is not caused by the water pump. Locate the leak (ALP 1). Repair the leak or replace the defective part.

yes

Change the water pump.

yes

Change the water pump.

** The repairer will be allowed to make his own judgement on this point*

TEST 1	Test to detect CO_2 in the cooling circuit

NOTES	Engine stopped for at least 5 hours.

Examine the radiator input hose.

Is the hose hard?

yes

This is an indication that CO_2 may be present. Replace the hose.

no

Take a sample of coolant and test it with a CO_2 liquid reagent.

Does the reagent change colour?

no

The test for the presence of CO_2 is negative. There is no internal engine leak.

yes

The test for the presence of CO_2 is positive. Exhaust gas is leaking into the cooling circuit.

TEST 2	Temperature control test

Cold engine. Start the engine.
Idling speed for **5 minutes**, with short bursts of acceleration.

What is the temperature of the heater hoses and radiator hoses?

Cold heater matrix input hose,
Cold radiator output hose.

There is no engine coolant circulation. Check that the coolant pump is operating correctly (ALP 8) and check the belt drive. Check the circuit coolant level.

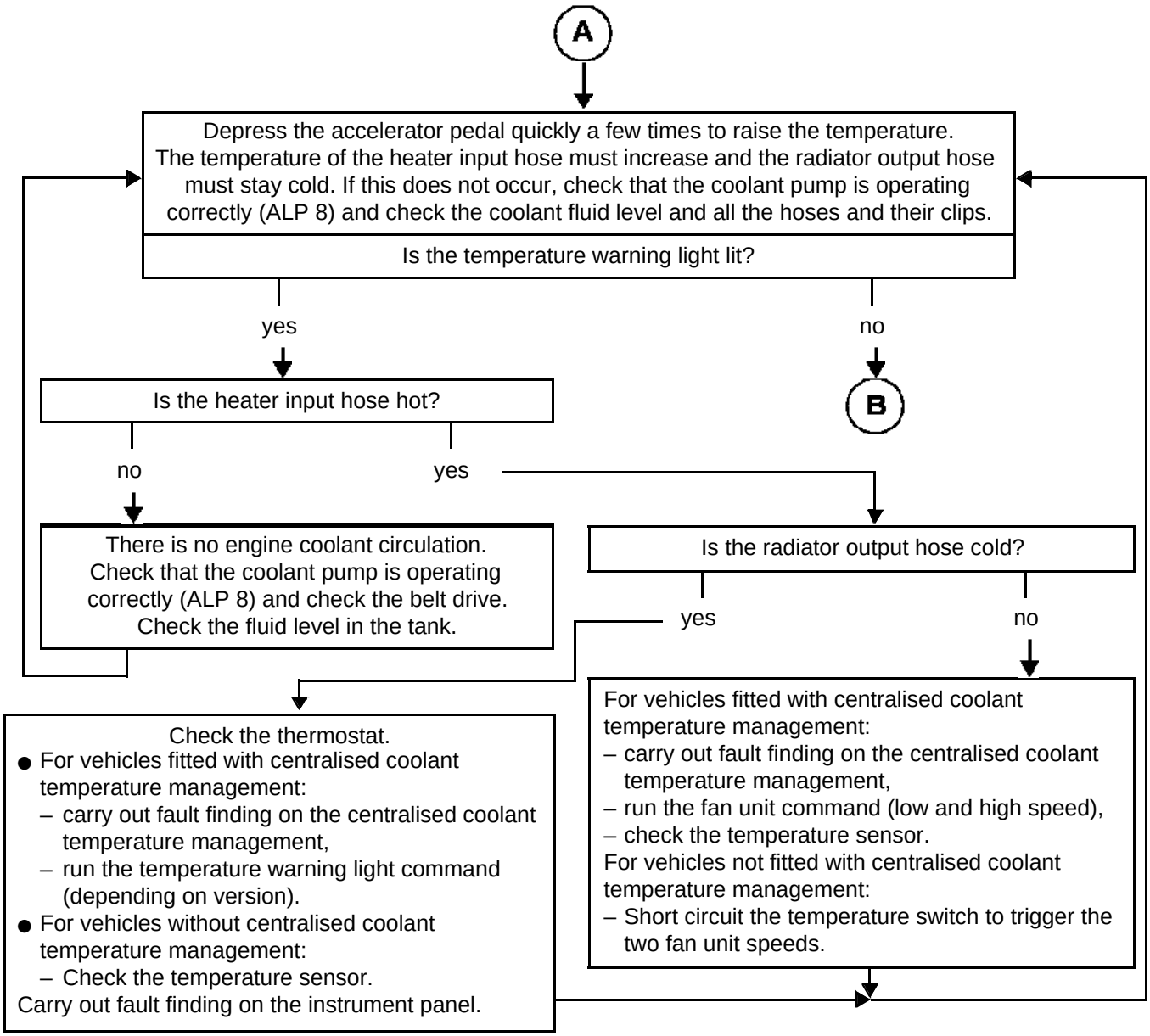
Hot heater matrix input hose,
Cold radiator output hose.

A

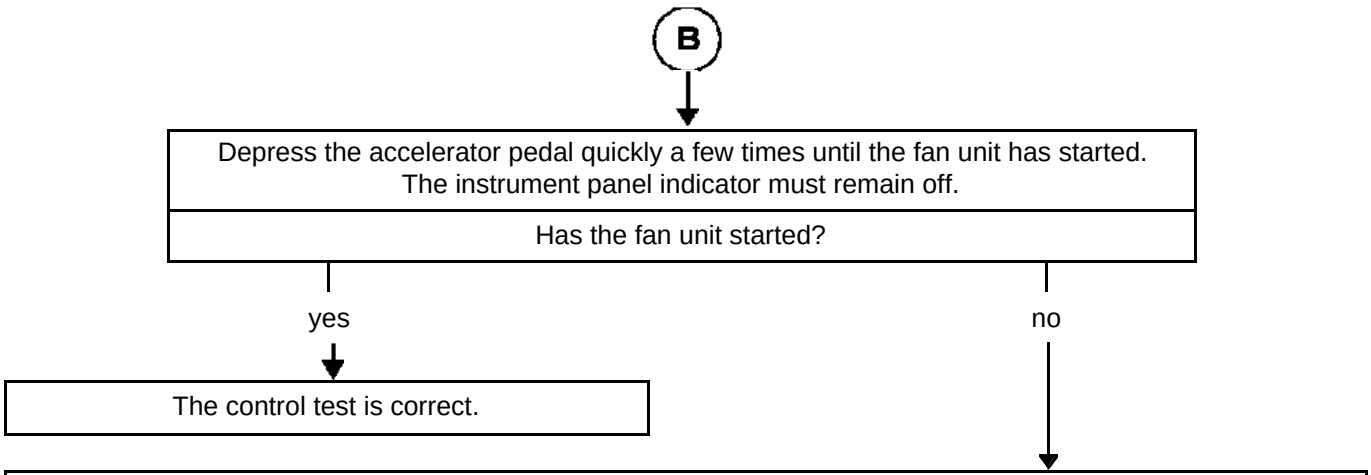
Warm heater matrix input hose,
Warm radiator output hose.

The thermostat is not sealed. Replace the thermostat.

TEST 2
CONTINUED 1



TEST 2 CONTINUED 2	



- For vehicles without centralised coolant temperature management:
  – Disconnect the temperature switch and short circuit it to activate the two fan unit speeds (high and low).
- For vehicles fitted with centralised coolant temperature management:
  – Run the command mode of the two speeds (high and low) of the fan unit using the diagnostic tool.

In both cases, the two speeds of the fan unit must be activated.
If this is does not occur:
– check the fan unit wiring if one of the two speeds is not obtained,
– replace the fan unit if it does not operate correctly.

RENAULT

Technical Note 3700A
XXXX

FAULT FINDING LOG

Content: Fault Finding Log

Edition 12 - February 2010 **EDITION ANGLAISE**

"The repair procedures given by the manufacturer in this document are based on the technical specifications current
when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which its vehicles are constructed".

All copyrights reserved by Renault.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is prohibited without the prior written authority of RENAULT.

© Renault s.a.s. 2010

IMPORTANT!

WARNING
All problems involving a system must be subject to thorough diagnostics with the appropriate tools.
The FAULT FINDING LOG is an aid in the fault finding process. It allows you to have and keep a record of the fault finding carried out, and is an essential aspect in communication with the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT, AND FROM THE START OF THE OPERATION.

This log may be requested:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- which must be attached to monitored parts for which reimbursement is requested. It is therefore used to decide whether a reimbursement will be made under warranty and leads to improved analysis of the removed parts.

FAULT FINDING PROCEDURE

Repair Order:

CUSTOMER COMPLAINT	
IDENTIFICATION	

I C M	(Technical and administrative edition)					
Message for the vehicle: ❑ Yes ❑ No				Vehicle under warranty or service contract: ❑ Yes ❑ No		
History relating to the customer complaint: ❑ Yes❑ No				OTS to be carried out:❑ Yes❑ No		
Code	Symptom	Actis fault code	RC	Warnings: Actis solution, Guided fault finding, Recurrence	Normal operation	Context

1. CUSTOMER COMPLAINT CONFIRMED	❑ Yes ❑ No Symptom code confirmed ❑ Yes ❑ No

2. PRIOR TO FAULT FINDING (Visual and audible inspection, battery voltage, fuel level, determine what operates and what does not operate, etc.)	

3. ACTIS CONSULTATION AND CONSULTATION OF TECHLINE INFORMATION BEGIN BY RECORDING THE FAULTS IN THE COMPUTERS IF THE FUNCTION HAS FAULT FINDING.

– If a fault is stored in a computer: apply the occurrence conditions described in the technical documentation. On the CLIP tool, also consult the fault occurrence context and the fault occurrence counter.

Computer number	DEF	Fault designation	STATUS	Present	Stored

OBSERVE THE SAFETY INSTRUCTIONS DESCRIBED IN DIALOGYS FOR THE OPERATIONS YOU ARE PERFORMING.

4. APPLY THE ACTIS SOLUTION OR THE OTS (If an operation concerns the fault)

5. Fault finding without CLIP with Dialogys (*1)	**5. Visu Schéma fault finding (*2)**	**5. Clip Bornéo 2 / ASDE** (See following page)	**5. Bornéo 3 fault finding** (See following page)

(*1): Consult Dialogys, except with Bornéo 3. Examples: Technical Note 6511A for manual gearboxes, Technical Note 3701A for radios, Technical Note 5164A for noises, etc.
(*2): Except with Bornéo 3, for systems not having any fault finding procedure, perform a fault search using Visu Schéma. Examples: the instrument panel lighting dimmer, beam adjustment of headlights other than discharge bulb types, etc.

Workshop Repair Manual		Fault Finding Manual		Technical Notes		Wiring Diagram Note	
Clip Version		Vdiag		Program No.		Software version	

5. BORNEO 2 / ASDE (Without guided fault finding)	
INTERPRETATION OF FAULTS (If no fault, carry out a conformity check)	
CONFORMITY CHECK (Statuses / parameters / command modes)	
SEARCH BY CUSTOMER COMPLAINT	

5. BORNEO 3 (With guided fault finding) If the fault is not resolved after dealing with the symptom code, carry out fault finding by dealing with the other DTCs present.	
SYMPTOM CODES USED	
FAULT FINDING ASSOCIATED WITH THE FAULT	
UNGUIDED FAULT FINDING ❑	**FAULT FINDING BY FUNCTION ❑**

IF THE FAULT FINDING LASTS 2 HOURS, PLEASE SEND A CIR TO THE TECHLINE.

6. IDENTIFY THE ORIGIN OF THE FAULT (Check everything that could have generated the fault. Example: An oxidised terminal causes an electric malfunction, but the oxidation is due to moisture, which must be eliminated.)

7. BEFORE REPAIR (With guided fault finding: Apply the before repair procedure / Without guided fault finding: consult the repair procedures to determine the computer configurations to record, the measurements to be made on the part before dismantling, etc.)
8. REPAIR (Perform the repairs, applying the manufacturer's procedures, the tightening torques. etc.)
9. AFTER REPAIR (With guided fault finding: Apply the after repair procedure / without guided fault finding: Configure the computers, carry out system programming procedures, etc.)

10. CONFIRM THE REPAIR	❑ The system is working properly	❑ No warning light illuminated
❑ No fault in the computers	❑ Radio operational	❑ Windows and sunroof initialised
❑ Customer notified	❑ Test certificate completed	❑ 'Alert CIR' for fault investigation or for the improvement of fault finding procedures

WARRANTY (information to be submitted)		
❑ Describe the cause of the fault	❑ Associated symptom code	❑ Approval granted
❑ Approval of fault search time		

Notes:

FRONT ANTI-ROLL BAR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 31A, Front axle components, Front axle assembly: Exploded view)** .

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 31A, Front axle components, Front axle components: Precautions for the repair)** ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

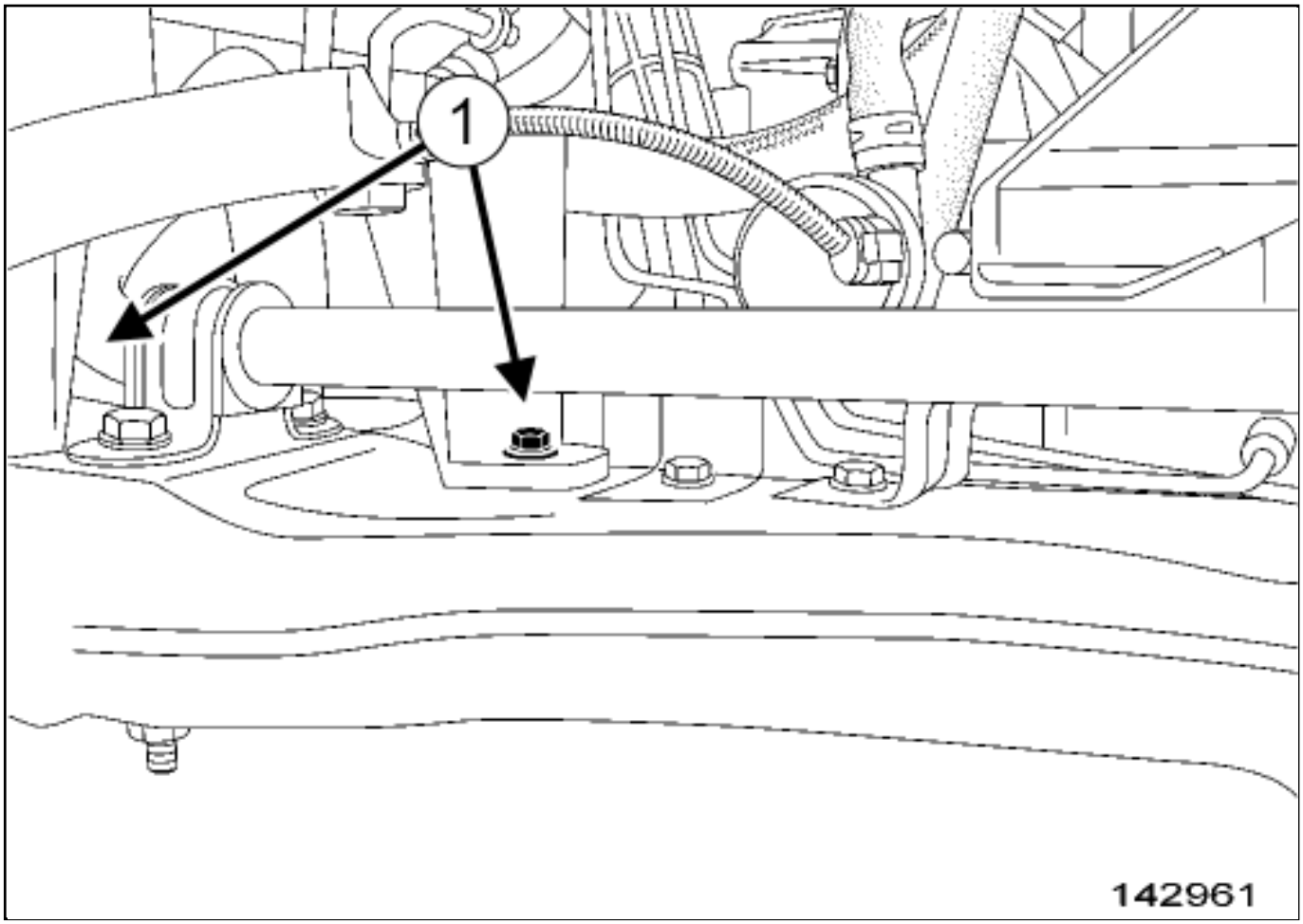
REMOVAL

1. REMOVAL PREPARATION OPERATION

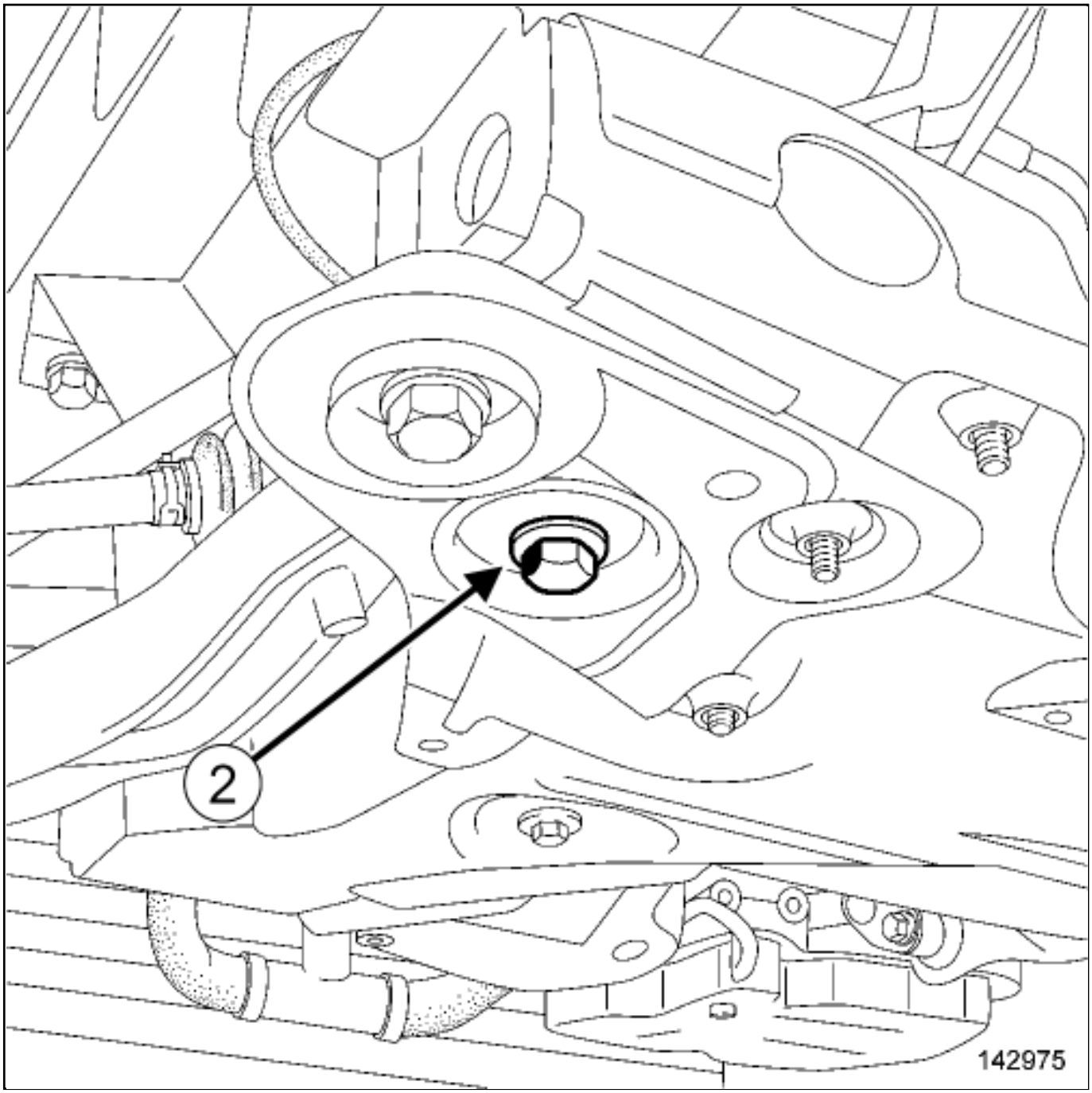
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove:
  - the front wheels**Wheel: Removal - Refitting** ,
  - the engine undertray,
  - the lower nuts from the front anti-roll bar tie rods(see **Vehicle: Towing and lifting**) .

- Move aside the anti-roll bar tie rods.



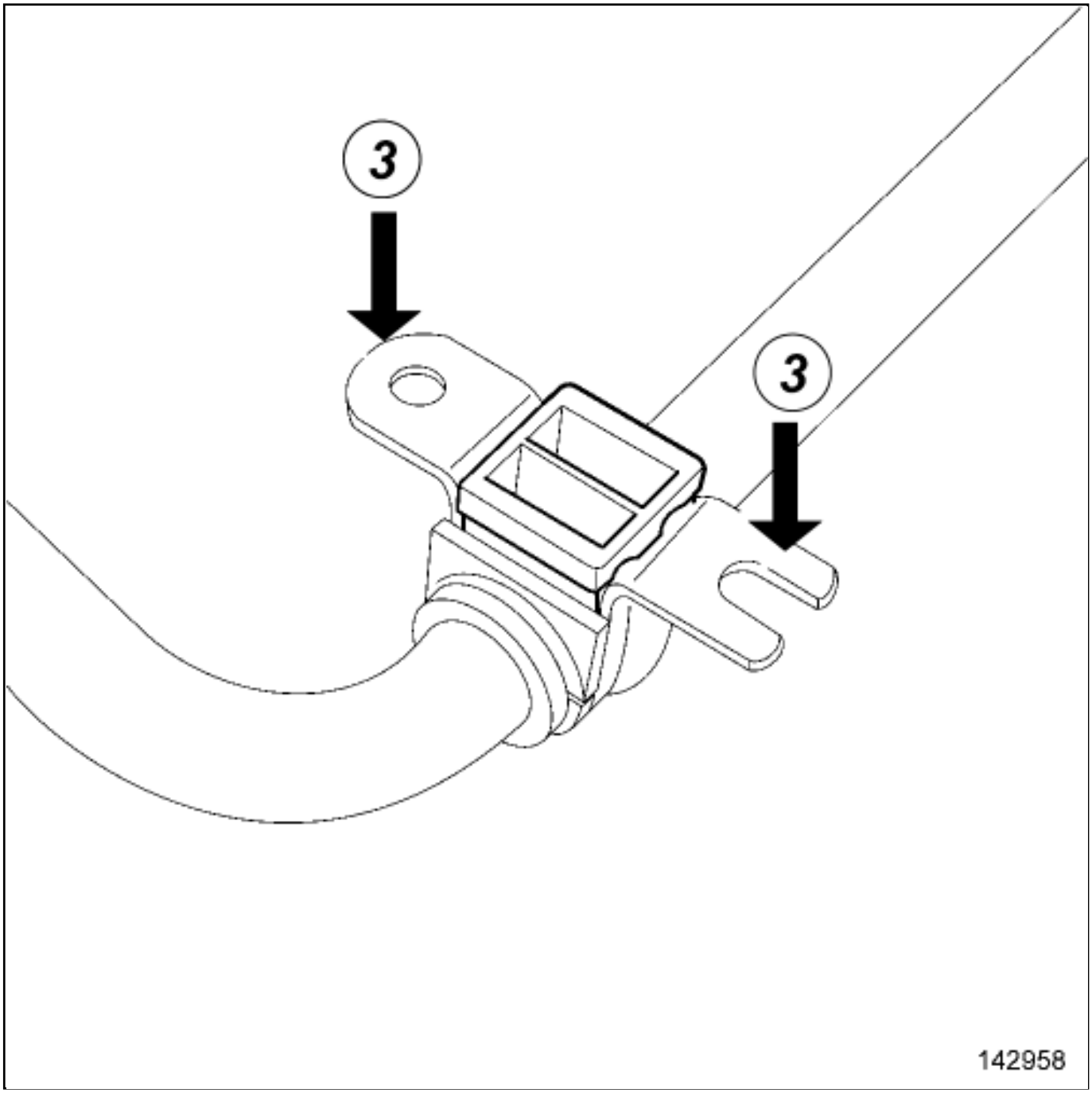
- Remove the wiring channel bolts(1) on the battery.
- Move aside the battery wiring channel.



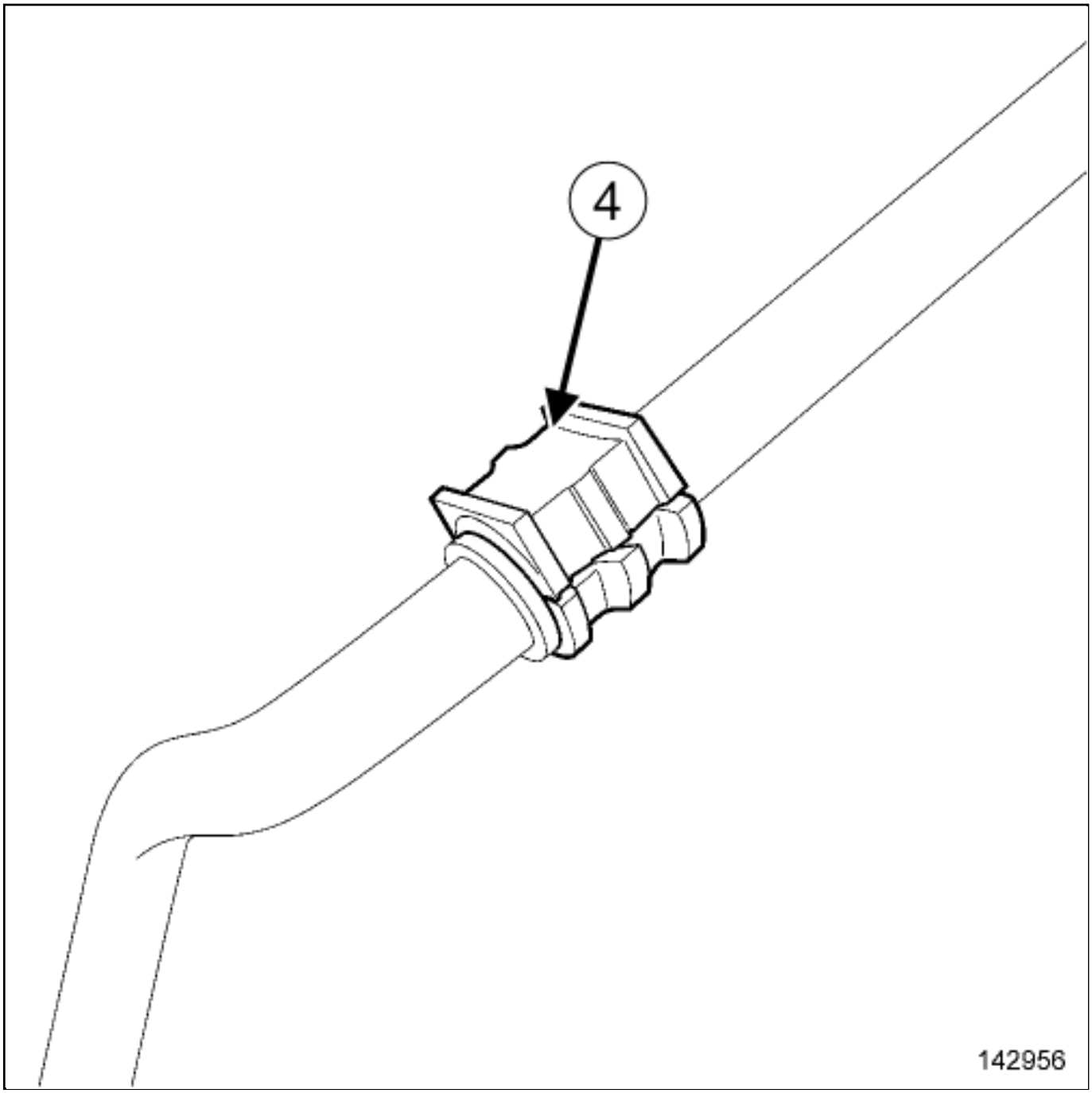
- Loosen the rear bolt(2) on the front left-hand driveshaft lower arm.

2. REMOVAL OPERATION

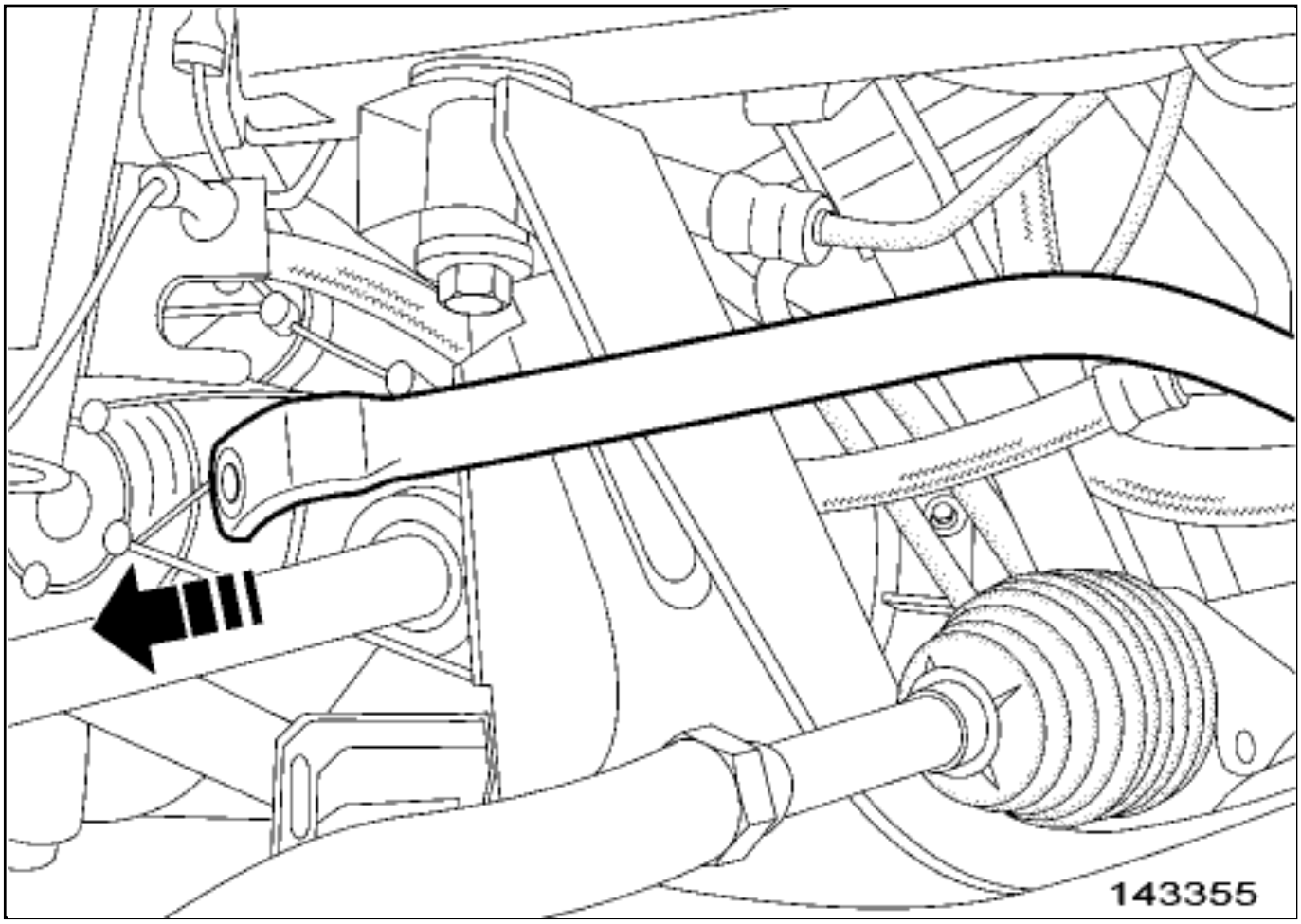
- Remove the bolts from the front anti-roll bar bearings(see 31A, Front axle components, Front axle assembly: Exploded view) .



- Remove the bearings from the anti-roll bar by pressing at(3) .



Remove the rubber pads of the anti-roll bar(4) .



Remove the anti-roll bar over the left-hand driveshaft.

REFITTING

1. REFITTING PREPARATION OPERATION

Use surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the surfaces of the subframe in contact with the anti-roll bar bearings.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

FRONT ARMREST: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

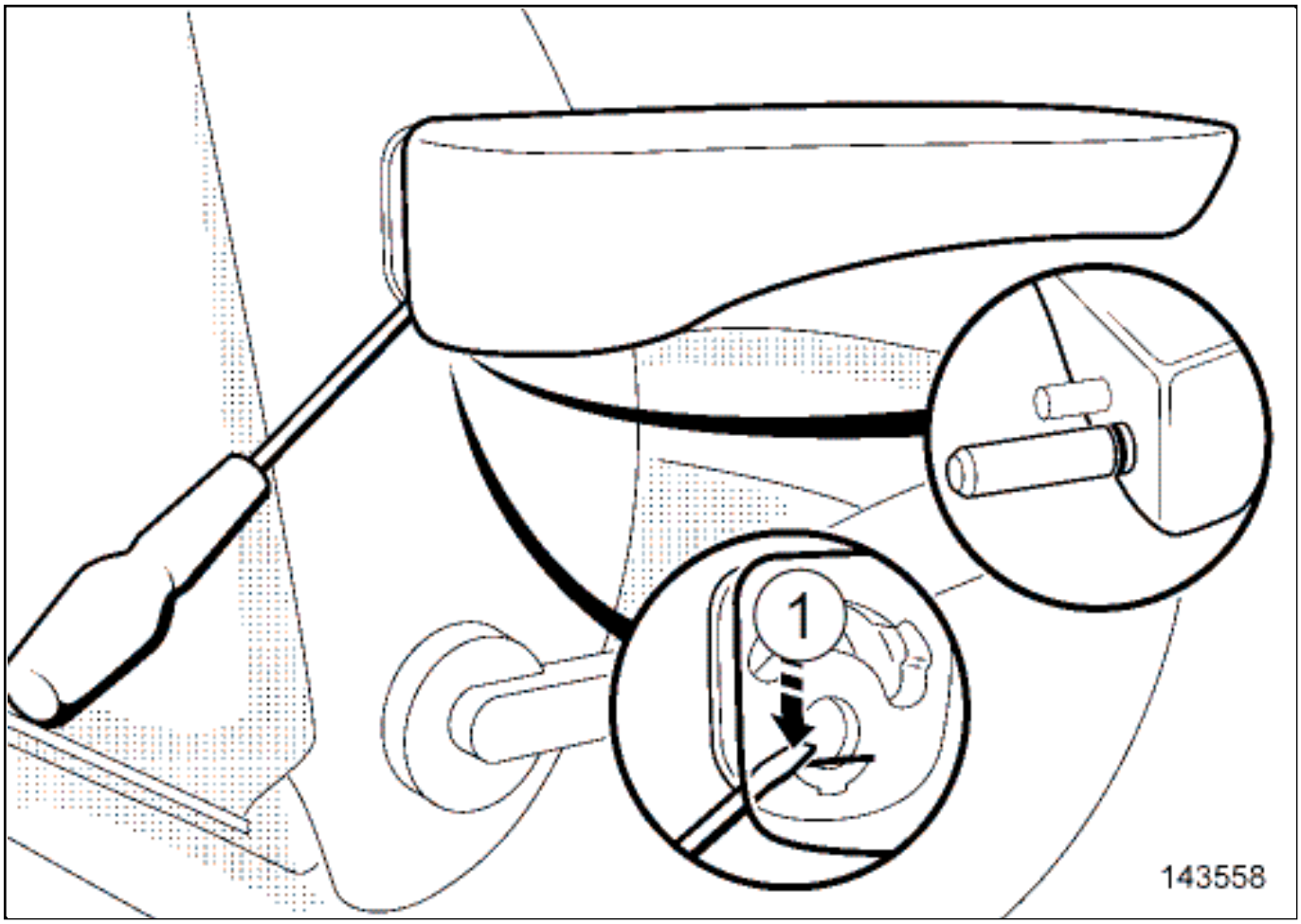
1- FRONT SEAT ARMREST SUPPORT

- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).

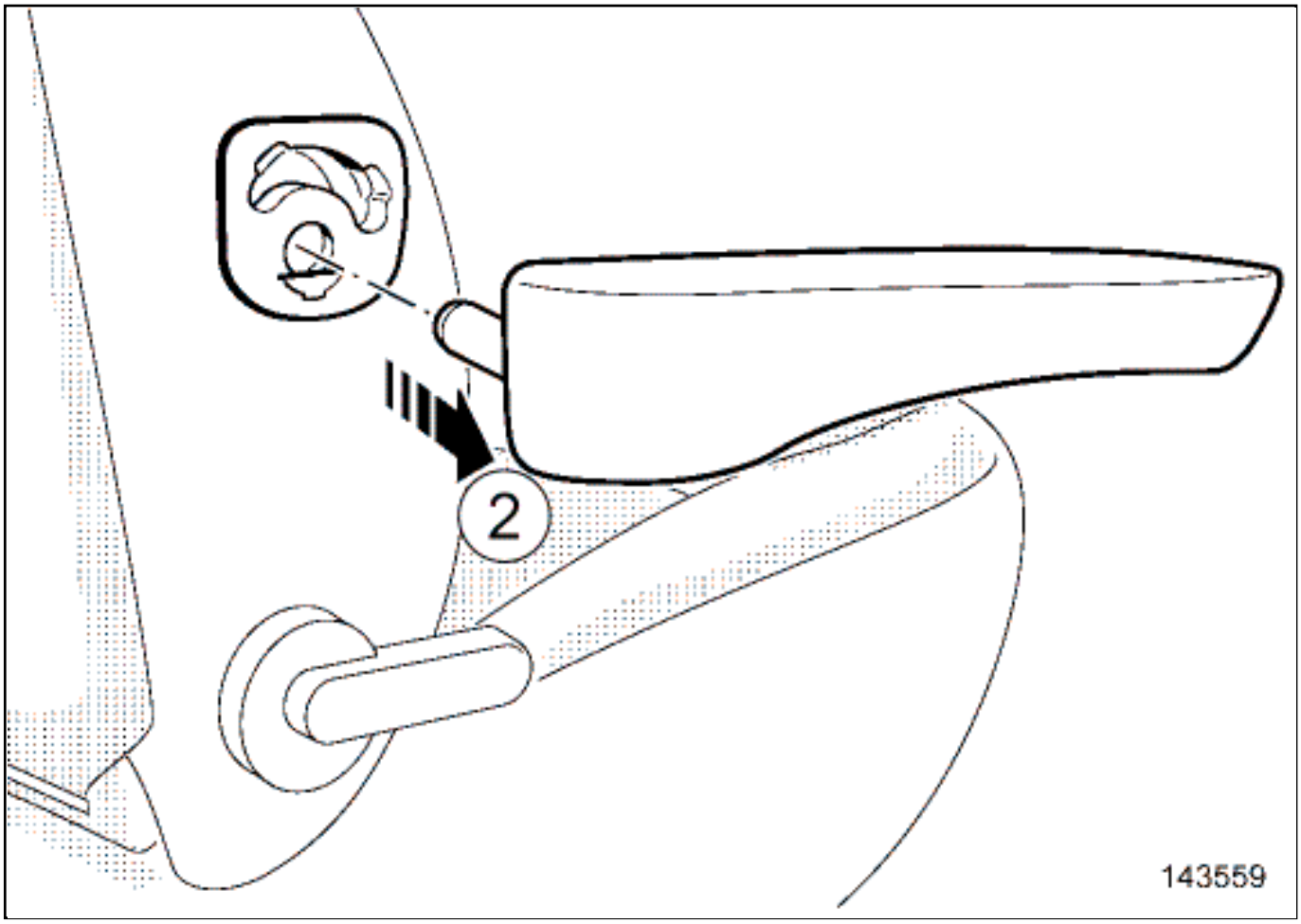
- Remove: (see **Front seat: Exploded view**)
  - the front seat,
  - the front seatback "foam - cover" assembly,

2. REMOVAL OPERATION

1- FRONT SEAT ARMREST

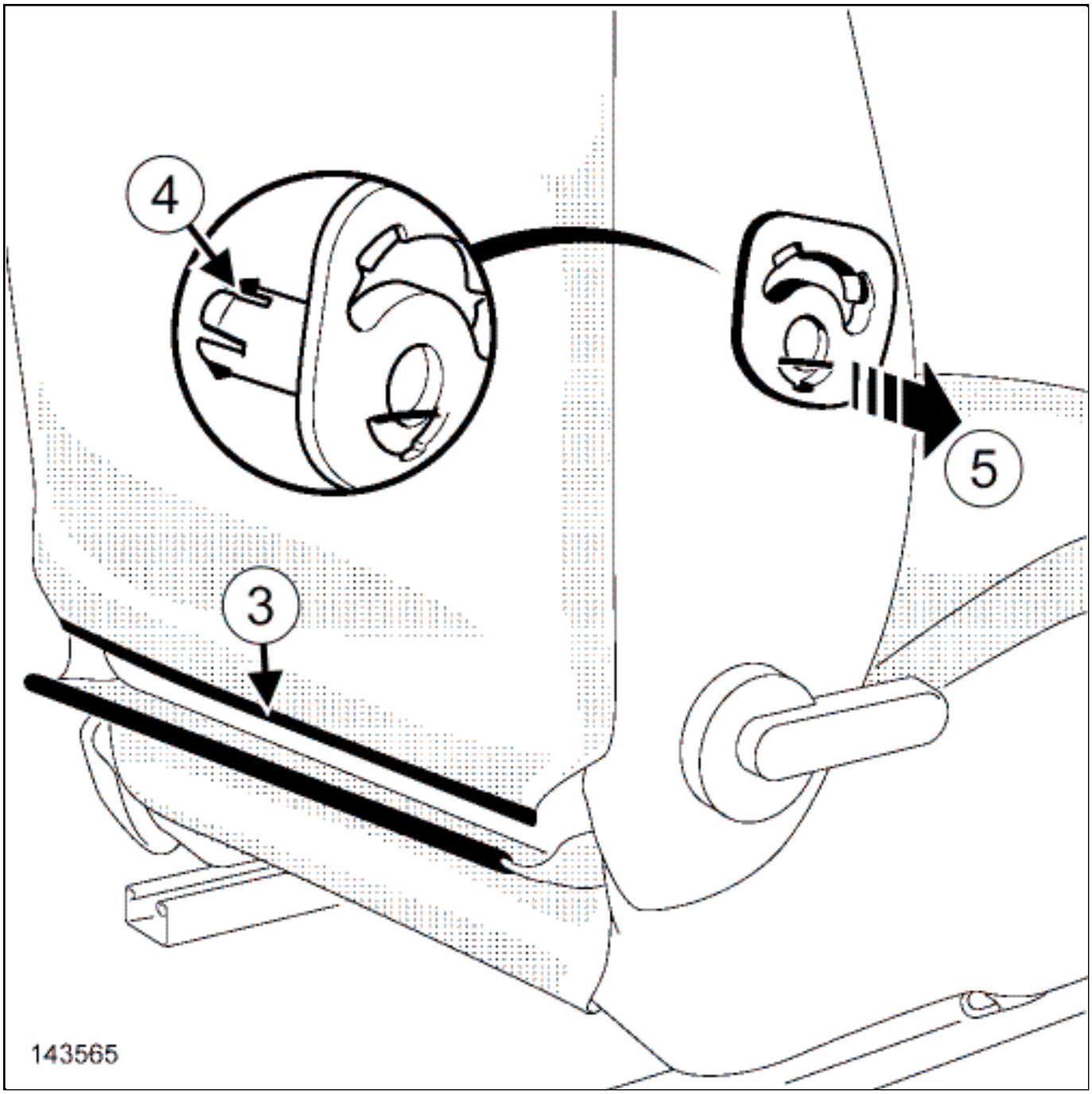


- Put the front seat armrest in the horizontal position as indicated in the illustration.
- Separate the locking spring of the front seat armrest using a flat-blade screwdriver at(1) .



- Keep the locking spring to one side, then pull the front seat armrest at(2) .

2- FRONT SEAT ARMREST TRIM



- Unclip the lower retaining section of the front seatback cover(3) .
- Unclip the trim of the front seat armrest by pressing the locking clips(4) .
- Remove the trim of the front seat armrest at(5) .

3- FRONT SEAT ARMREST SUPPORT

- Remove (see **Front seat: Exploded view**) :
  - the rivets of the front seat armrest support,
  - the front seat armrest support.

REFITTING

- Proceed in the reverse order to removal.

- Carry out a function test.

FRONT AXLE ASSEMBLY: EXPLODED VIEW

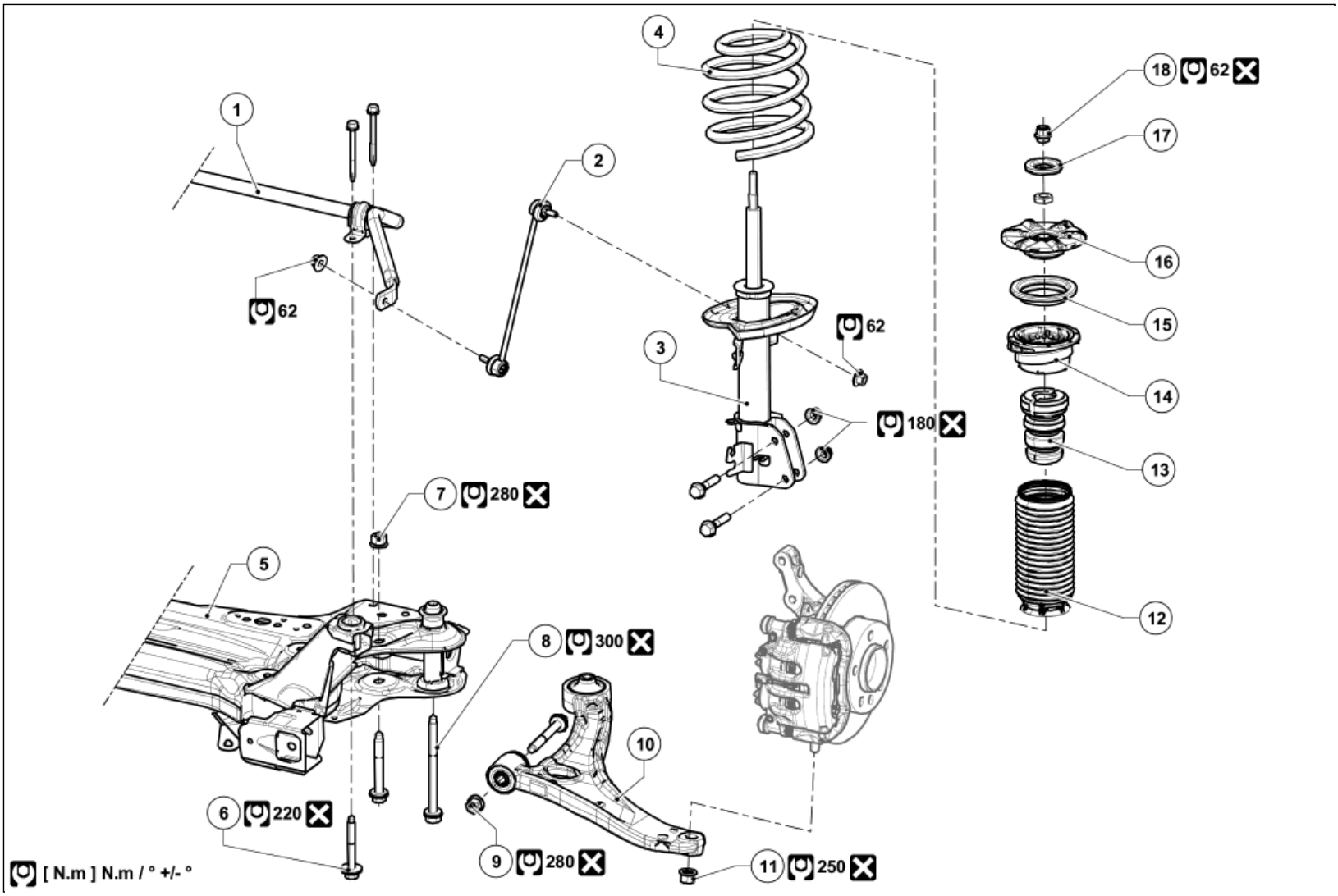


Illustration key: Description

Mark	Description	Information
1	Front anti-roll bar	Front anti-roll bar: Removal - Refitting
2	Front anti-roll bar tie rod	Front anti-roll bar: Removal - Refitting
3	Front shock absorber	Front shock absorber and spring: Removal - Refitting
4	Shock absorber spring	Front shock absorber and spring: Removal - Refitting
5	Front axle subframe	(see **Front axle subframe: Removal - Refitting**)
6	Front axle subframe bolts	
7	Front driveshaft lower arm nut	
8	Front axle subframe bolts	
9	Front driveshaft lower arm nut	
10	Front driveshaft lower arm	Front driveshaft lower arm: Removal - Refitting
11	Front driveshaft lower arm ball joint nut	
12	Shock absorber gaiter	Front shock absorber and spring: Removal - Refitting
13	Impact stop	Front shock absorber and spring: Removal - Refitting
14	Upper spring support	Front shock absorber and spring: Removal - Refitting
15	Rotating stop	Front shock absorber and spring: Removal - Refitting
16	Filter unit	Front shock absorber and spring: Removal - Refitting
17	Support cap	Front shock absorber and spring: Removal - Refitting
18	Front shock absorber rod nut	Front shock absorber and spring: Removal - Refitting

FRONT AXLE SUBFRAME: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
component jack
safety strap(s)

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front axle assembly: Exploded view) .

WARNING

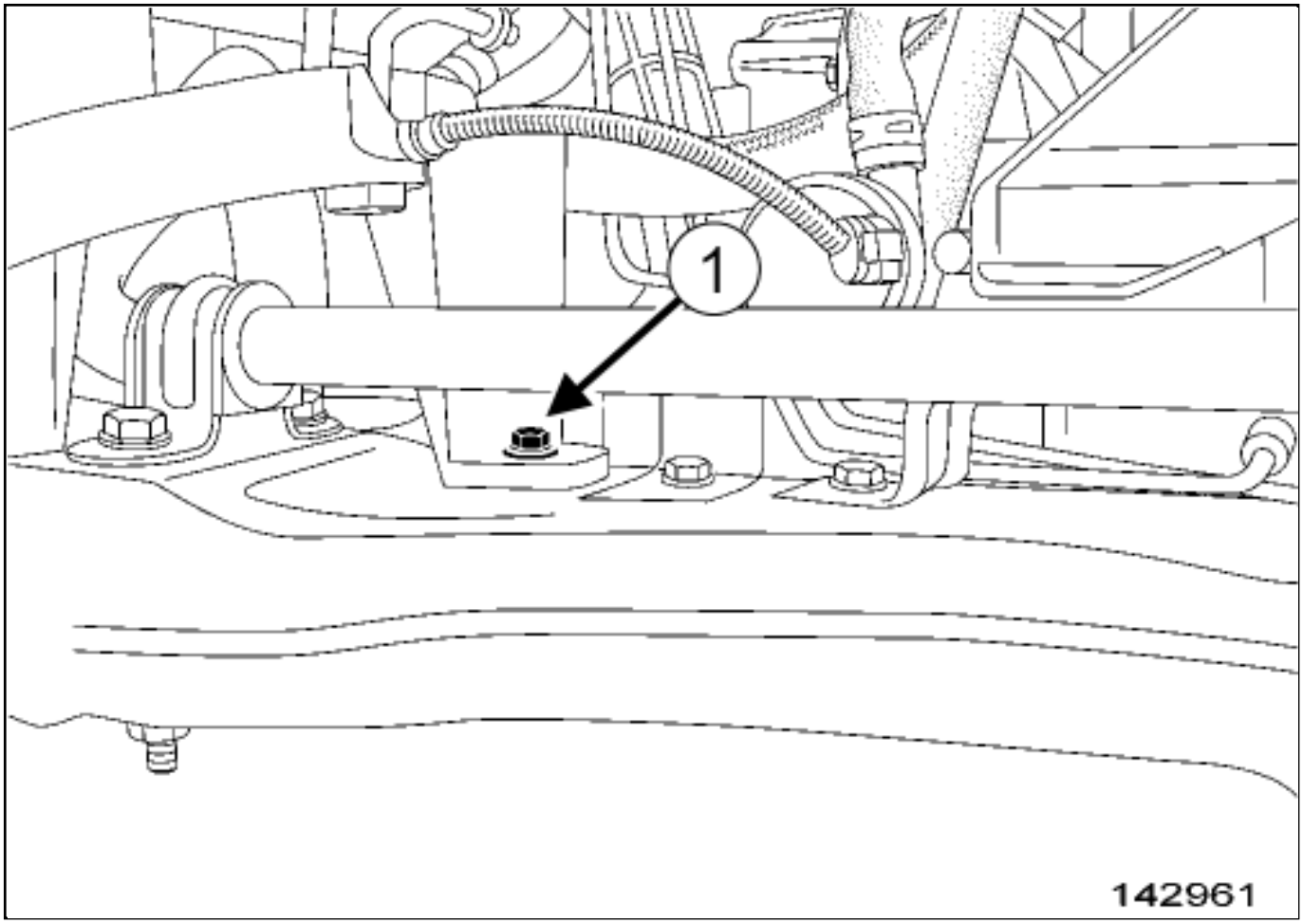
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

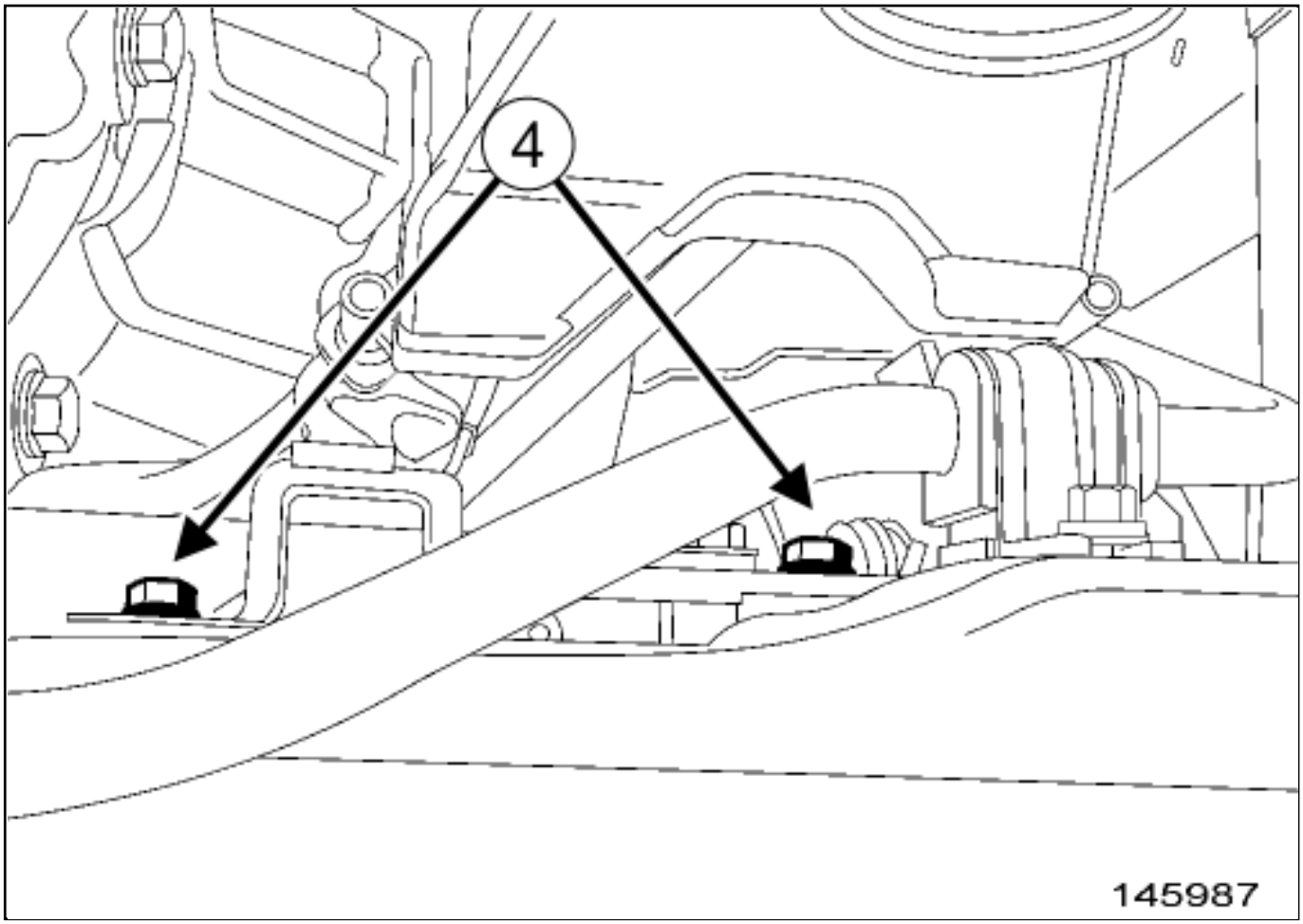
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove:
  - the front wheelsWheel: Removal - Refitting ,
  - the engine undertray.



- Remove the wiring channel bolts(1) on the battery.
- Move aside the battery wiring channel.
- Unclip the battery wiring from the front axle subframe.

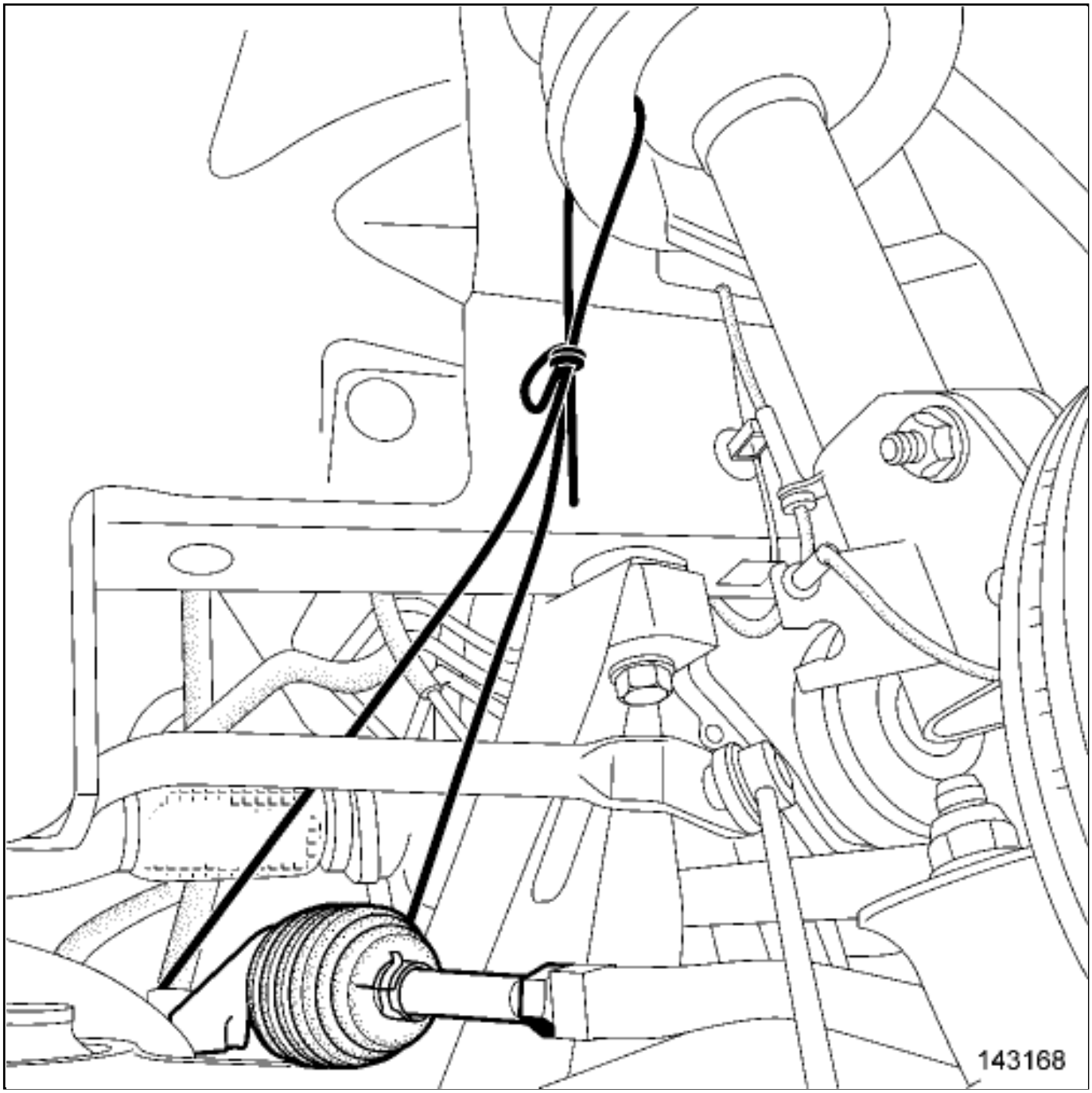


- Remove the bolts(4) of the catalytic converter bracket.

- Remove the nuts from the upper ball joints of the anti-roll bar(see 31A, Front axle components, Front axle assembly: Exploded view) .

- Tilt the anti-roll bar towards the rear of the vehicle.

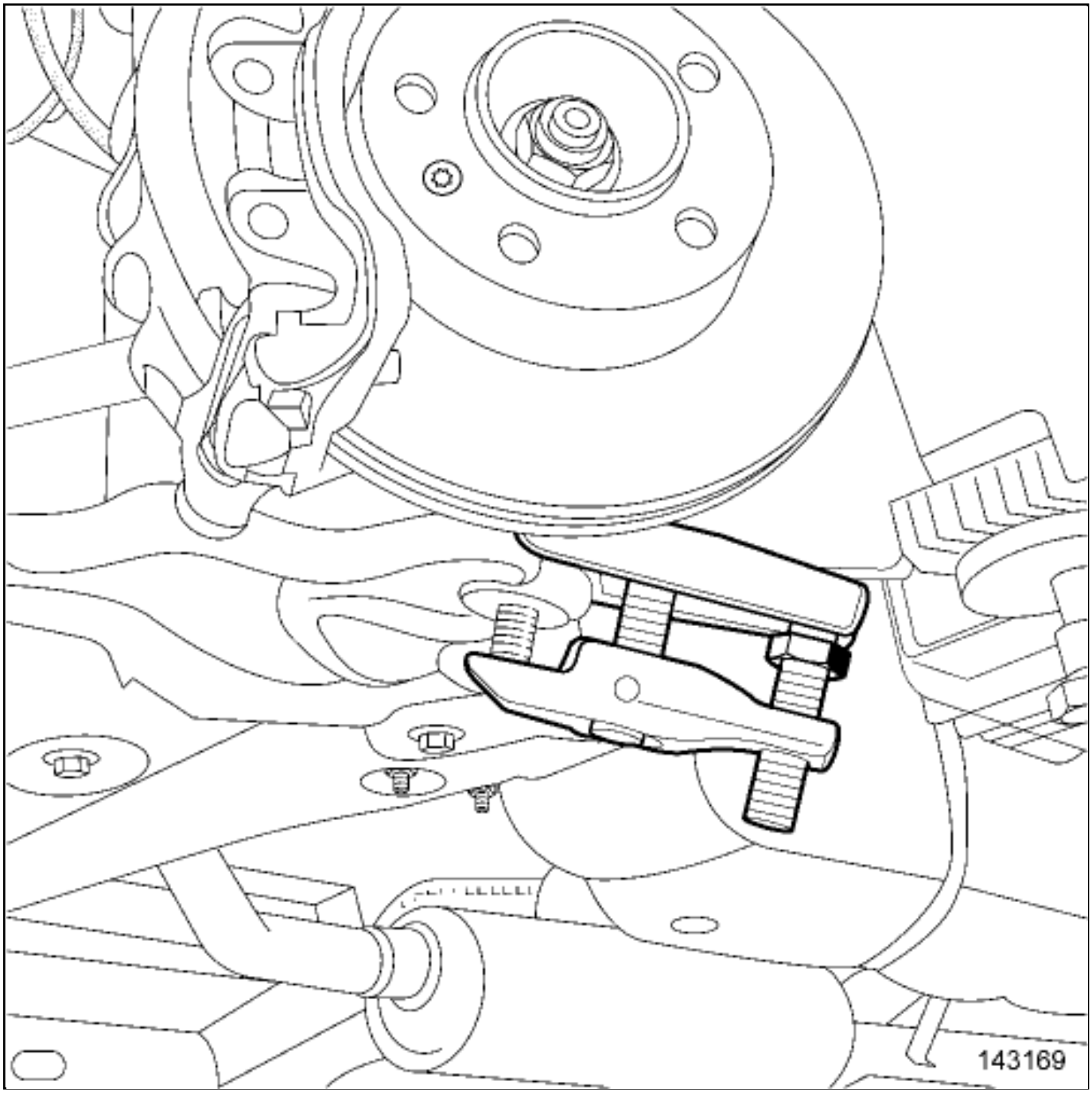
- Remove the steering box bolts(see **Steering assembly: Exploded view**) .



- Attach the steering box to the front right-hand shock absorber.

2. REMOVAL OPERATION

- Remove the nuts from the ball joints of the front driveshaft lower arm(see 31A, Front axle components, Front axle assembly: Exploded view) .



- Remove the ball joints of the front driveshaft lower arm using a ball joint extractor.
- Strap the gearbox to the vehicle chassis using a safety strap(s).
- Remove the gearbox supportAND (M9T) M9T.
- Fit a component jackunder the front axle subframe.

- Strap the front axle subframe to the component jack using a safety strap(s).

- Remove the front axle subframe (see 31A, Front axle components, Front axle assembly: Exploded view) .

- In the event of replacement, remove (see 31A, Front axle components, Front axle assembly: Exploded view) :
  - the anti-roll bar,
  - the lower arms from the front driveshaft.

REFITTING

1. REFITTING PREPARATION OPERATION

- Degrease the surfaces of the body in contact with the front axle subframe using surface cleaner (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Check the axle geometry (see **Axle assemblies: Check**) .

- Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .

FRONT AXLE SYSTEM: ADJUSTMENT

Equipment required
Diagnostic tool
flywheel immobiliser

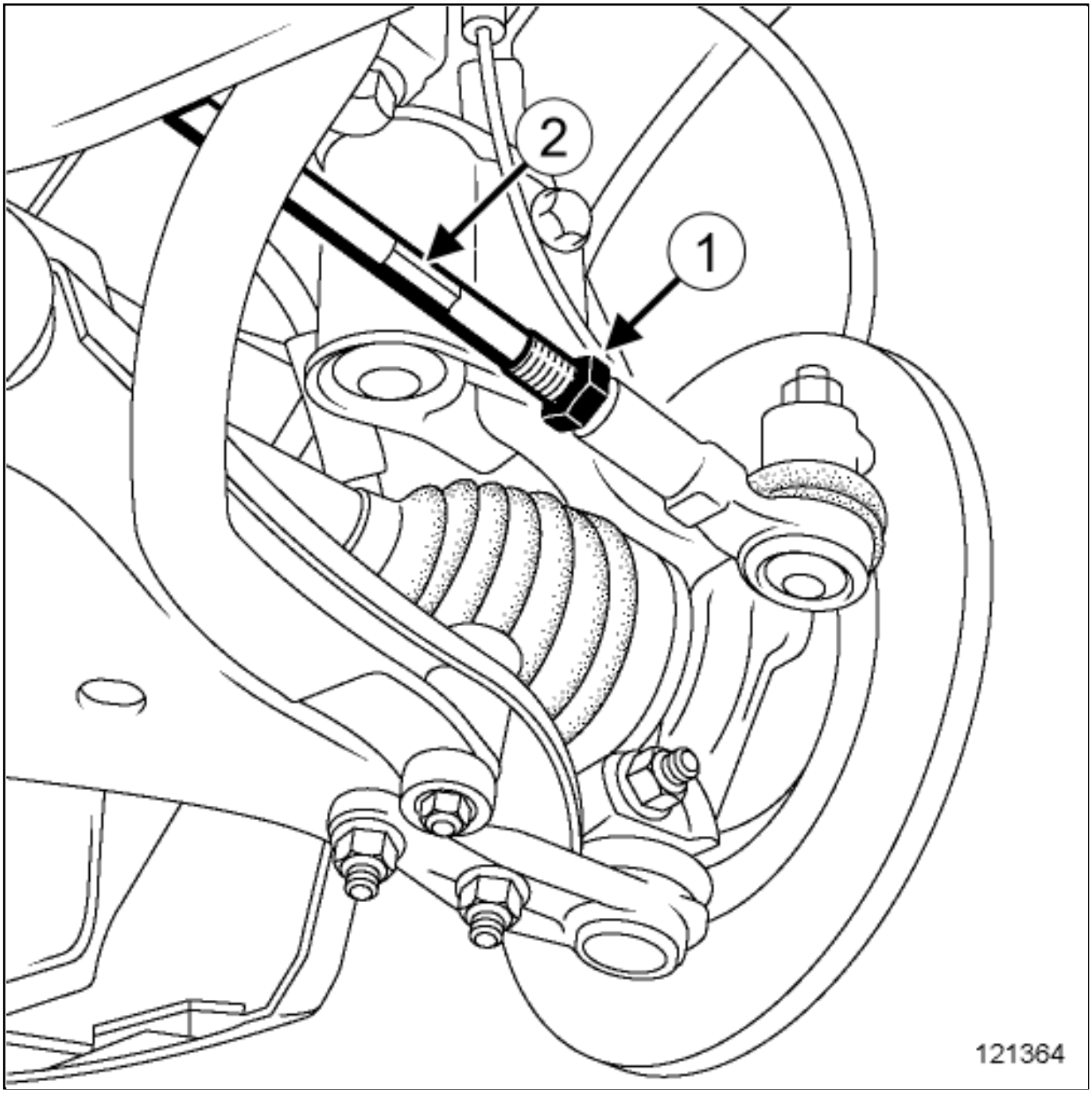
1. PREPARATION FOR ADJUSTMENT

- Check the geometry (see 30A, General information, Axle assemblies: Check) .

2. ADJUSTMENT OPERATION

1- WHEEL ALIGNMENT

- Set the wheels straight ahead.
- Lock the steering wheel using a flywheel immobiliser.



- Loosen the wheel alignment adjustment lock nut(1) .
- Turn the track rod sleeve(2) to the required value.
- After adjustment, torque tighten the wheel alignment adjustment lock nuts Steering assembly: Exploded view .

2- CASTOR ANGLE

- Not adjustable.

3- CAMBER

- Not adjustable.

4- PIVOT

- Not adjustable.

- Calibrate the steering wheel angle sensor.

- Apply the after repair procedure:
  - connect the Diagnostic tool,
  - select "Braking computer",
  - go to repair mode,
  - display the "Before/after repair procedure" for the computer selected,
  - select "Steering wheel angle sensor" in the "List of components controlled by this computer" section,
  - carry out the operations described in the "After repair procedure" section.

FRONT AXLE

Note, one or more warnings are present in this procedure

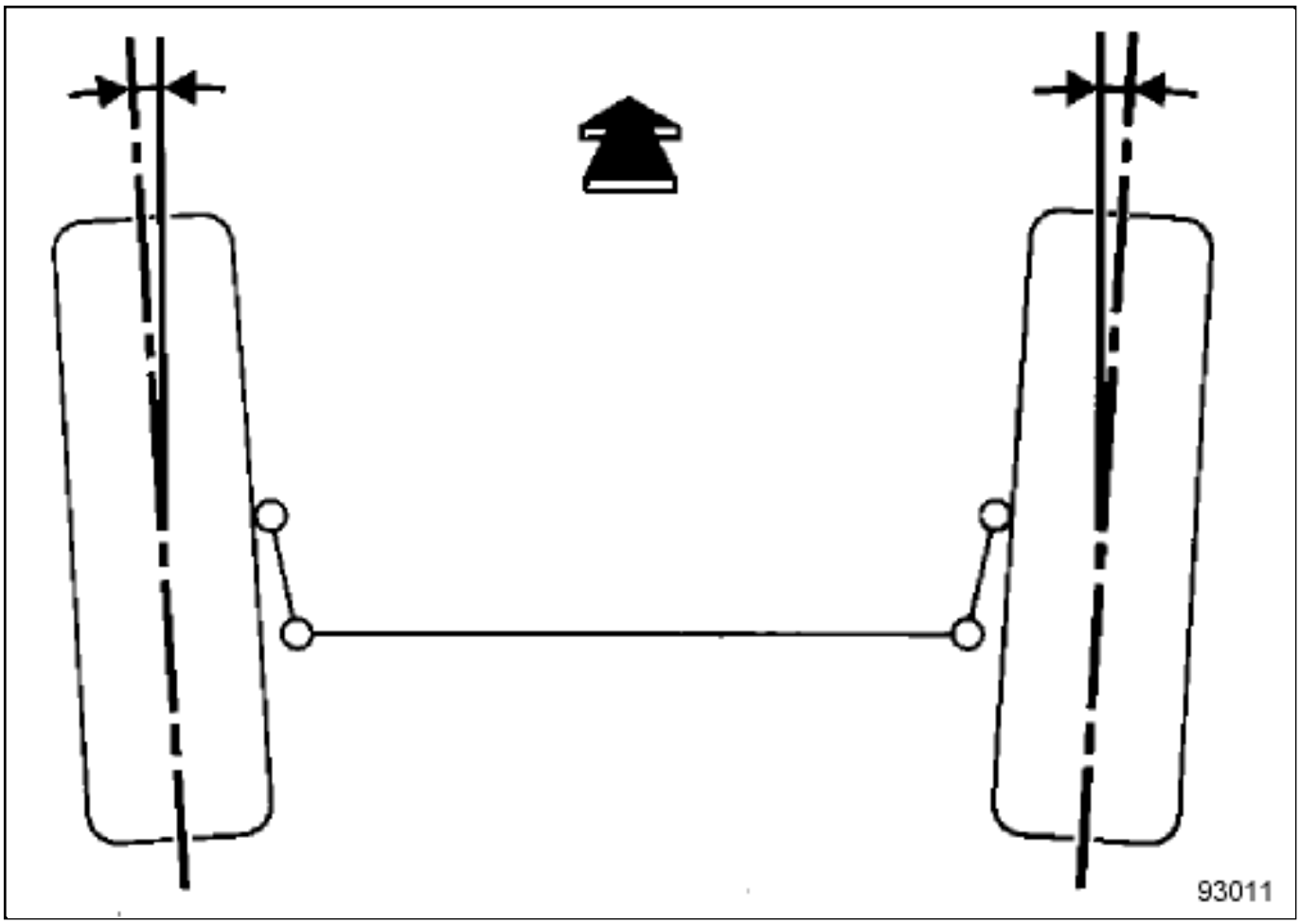
The geometry values for commercial vehicles are now available via a calculator. This new calculator can obtain geometry values for a loaded vehicle.

The use of this calculator eliminates:

- VODM (vehicle in working order) trim-setting (unloading the vehicle, filling the tank),
- loosening the suspension.

1. WHEEL ALIGNMENT SYMBOL MEANINGS

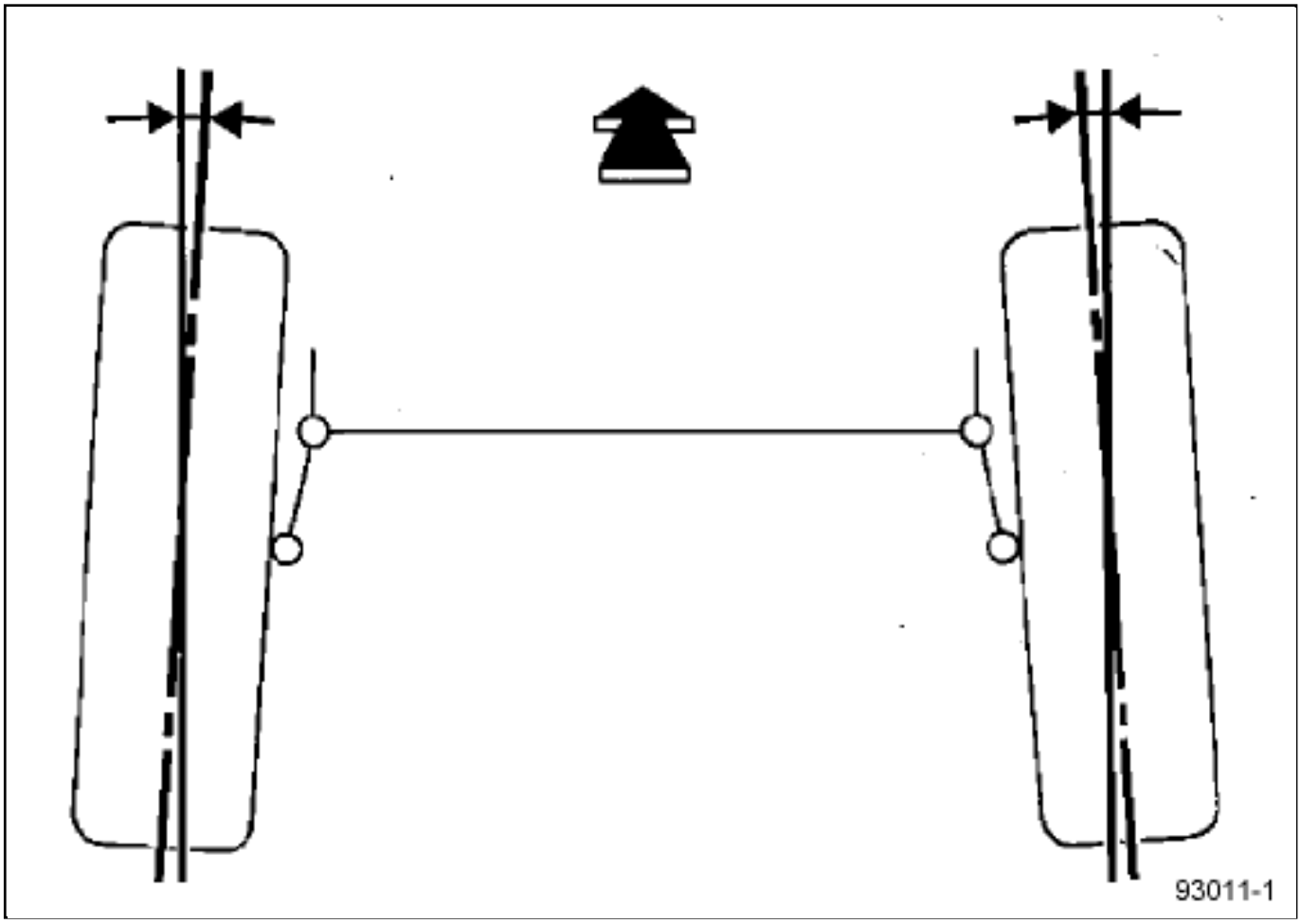
TOE-OUT: MINUS SIGN



CAUTION

- Symbols used by RENAULT:
  - toe-out: -
  - toe-in: +

TOE-IN: PLUS SIGN



CAUTION

- Symbols used by RENAULT:
  - toe-out: -
  - toe-in: +

2. ACCESS TO VALUES VIA THE CALCULATOR

- To consult the geometry values:

- connect to the "INFOTECH" site,
- select the "DOCUMENTATION" tab,
- choose the vehicle,
- select "Axle adjustment values".

Enter the following in the calculator:

- the vehicle,
- the vehicle variant (use ICM if necessary),
- the 8 right-hand and left-hand measurements R1, R2, W1, W2.

Click on "CALCULATE" to obtain the geometry values for the vehicle.*

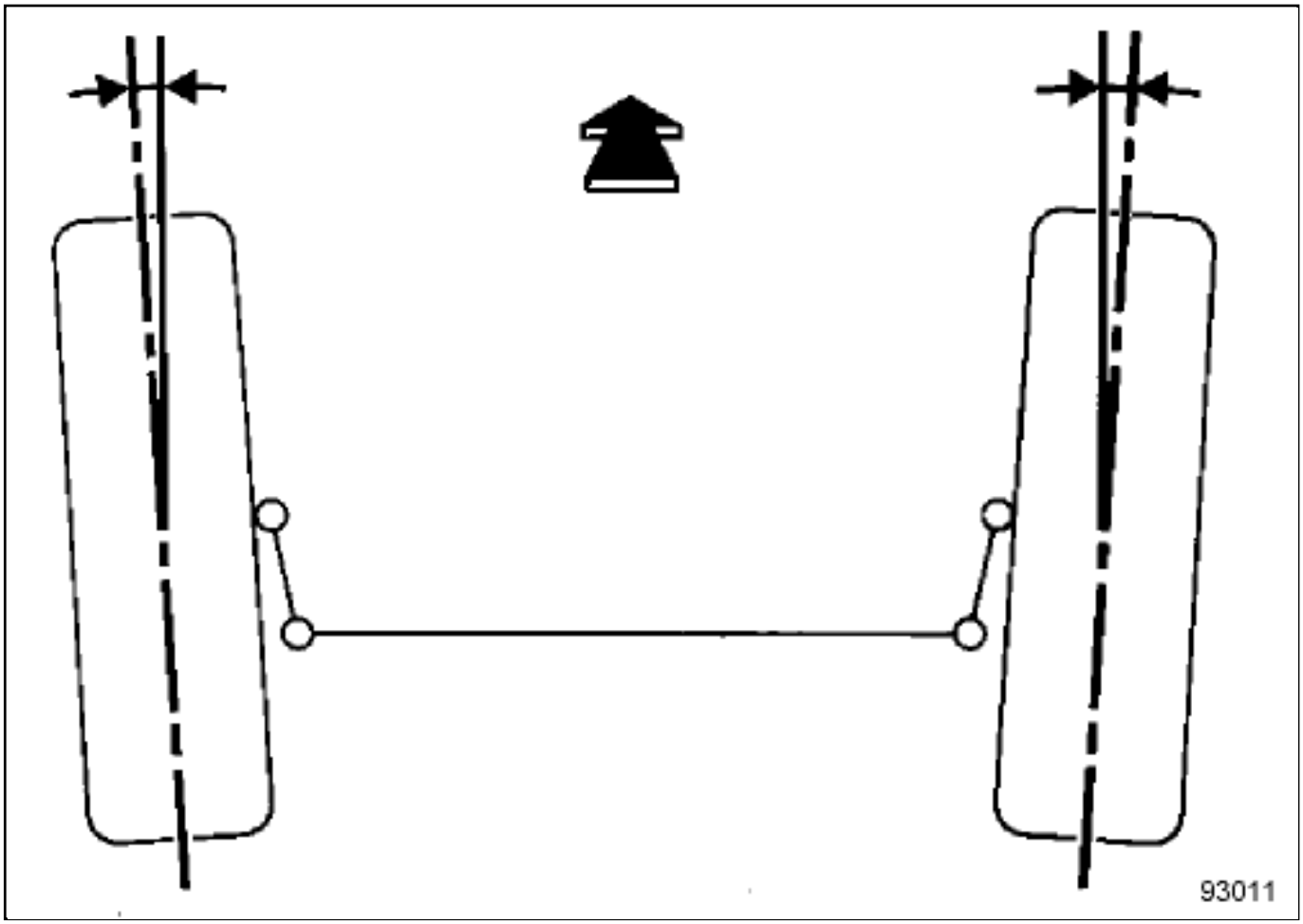
*: The values obtained take into account the vehicle load status (front/back & left/right).

If INFOTECH cannot be accessed, use the following values calculated with VODM. This method involves ensuring the vehicle conforms to VODM (Vehicle in working order):

- Vehicle empty,
- Fuel tank full.

3. VALUES CALCULATED WITH VODM

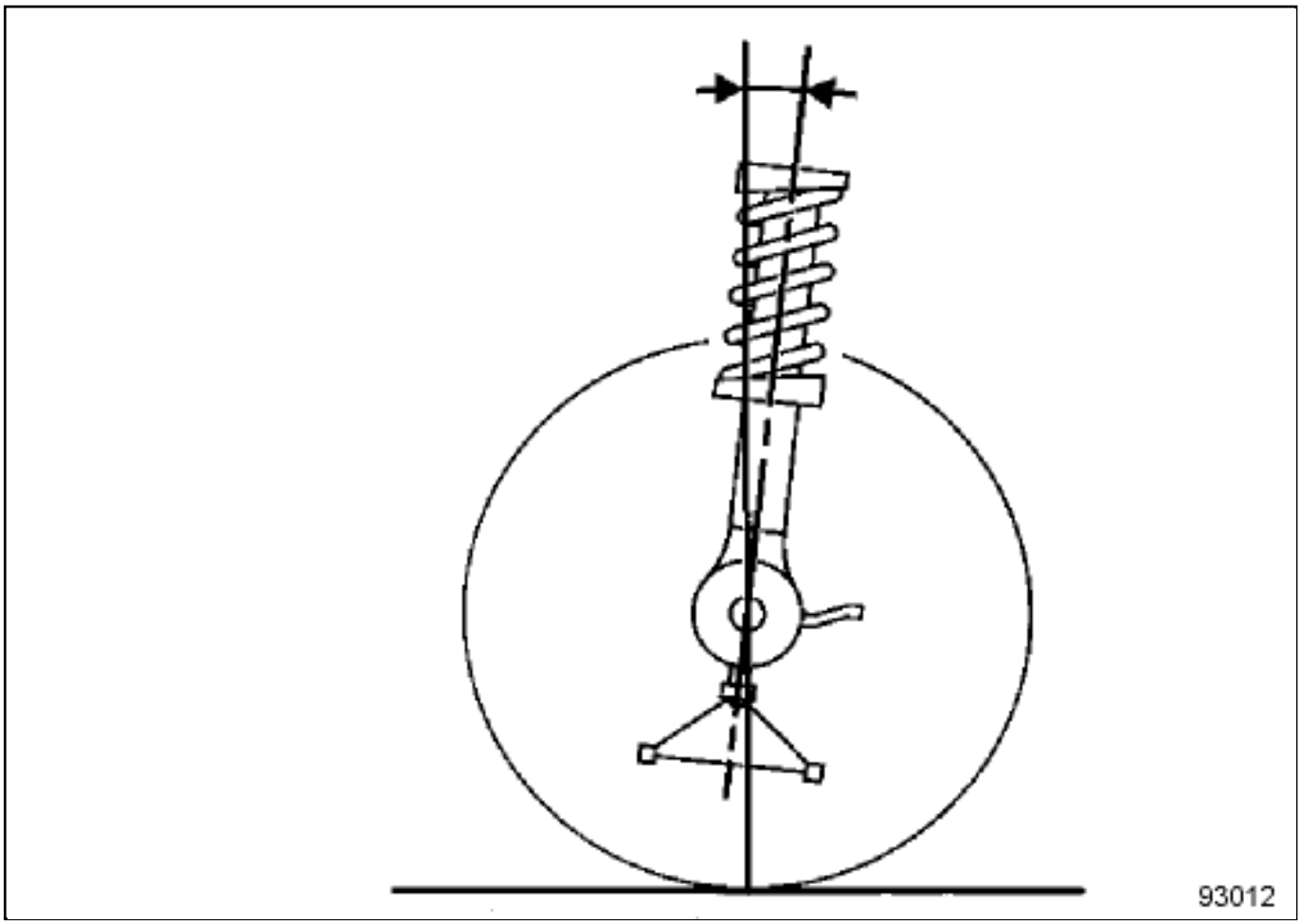
1- WHEEL ALIGNMENT



Value	Tolerance	Position of vehicle
+0˚10'	+11'	Vehicle in running order
	-11'	

2- CASTOR ANGLE

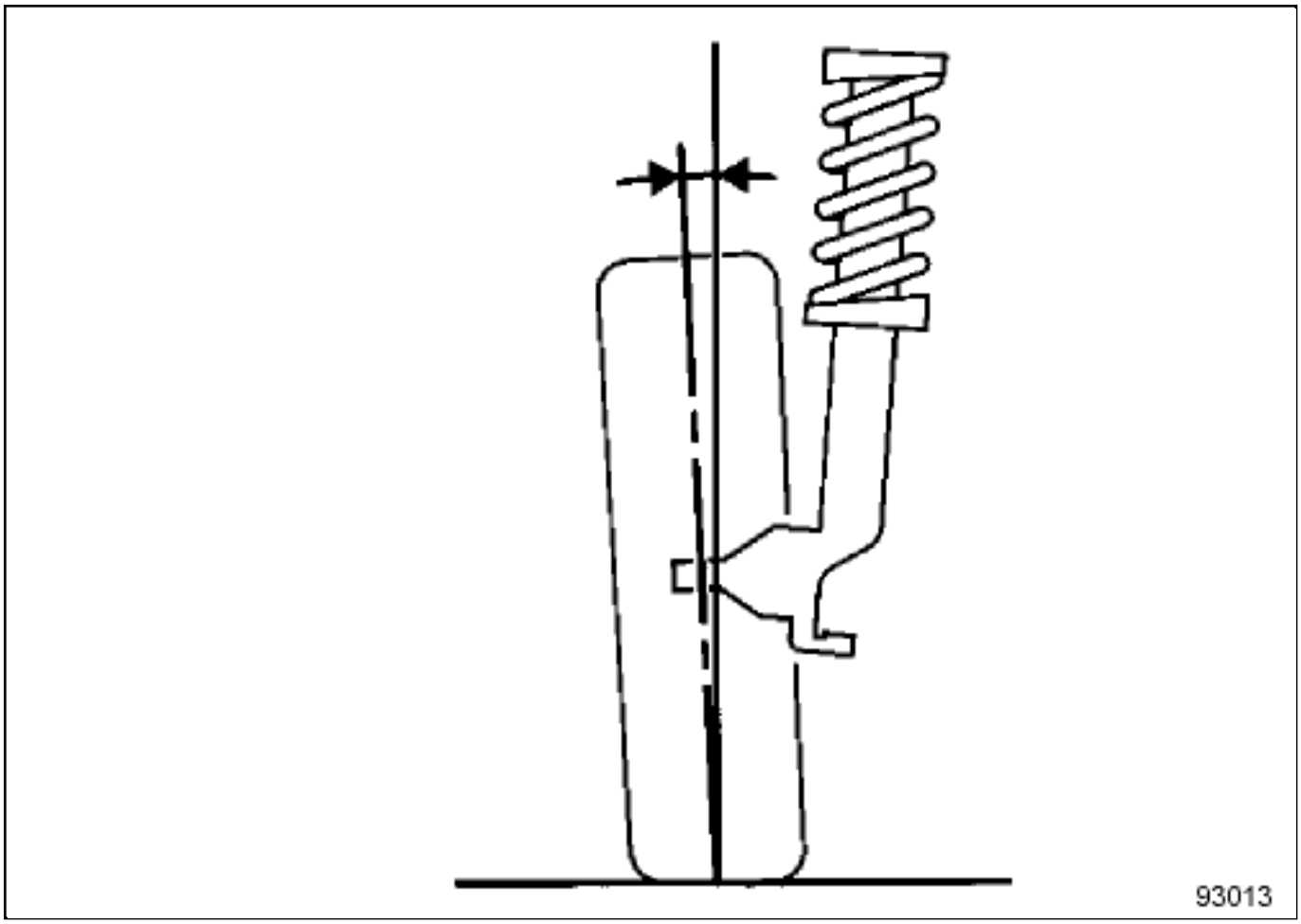
Not adjustable.



Value	Tolerance	Position of vehicle
+4º14'	+45'	Vehicle in running order
	-45'	

3- CAMBER

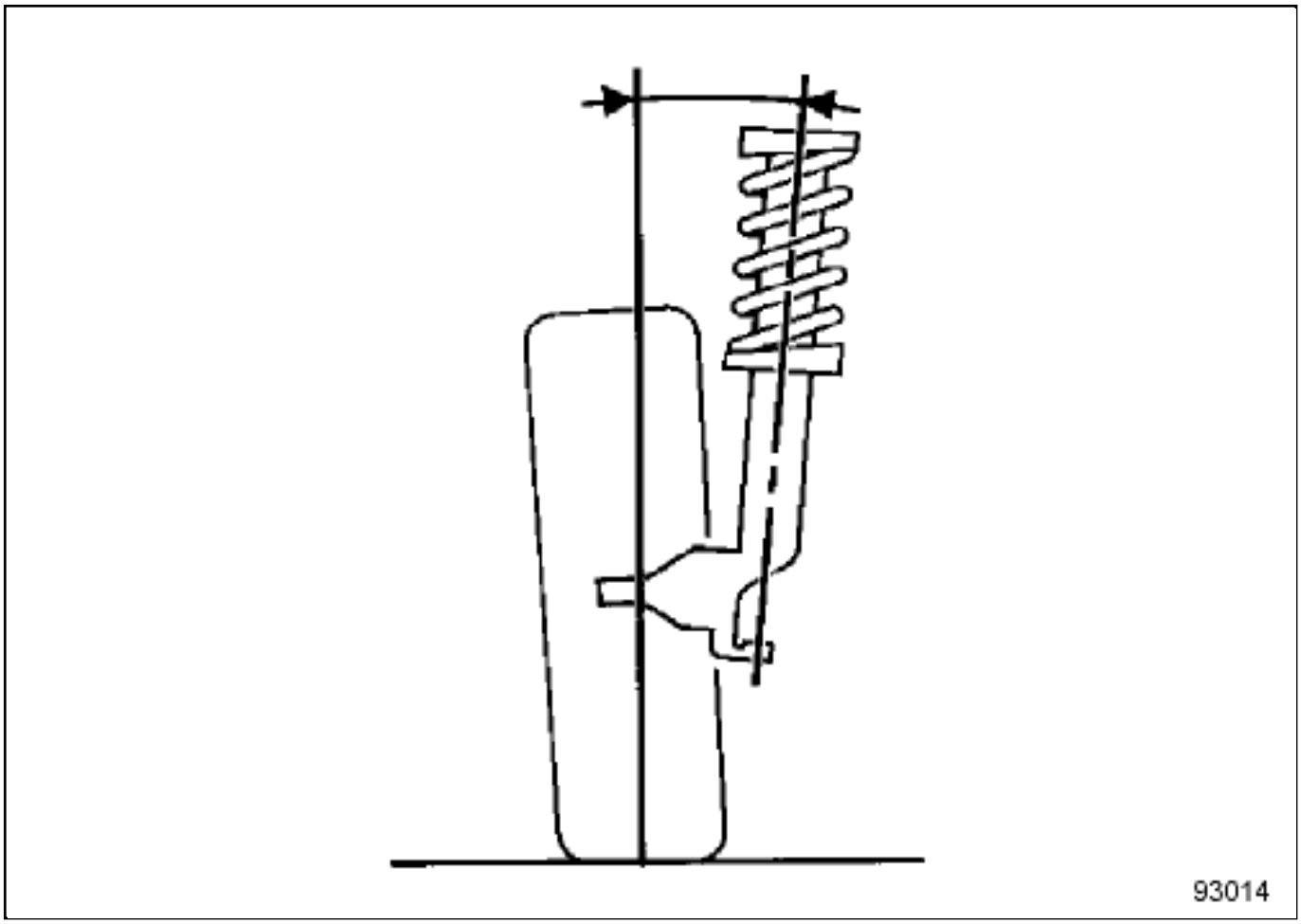
Not adjustable.



Value	Tolerance	Position of vehicle
-0º14'	+35'	Vehicle in running order
	-35'	

4- PIVOT

Not adjustable.



Value	Tolerance	Position of vehicle
+11º7'	+35'	Vehicle in running order
	-35'	

FRONT BENCH SEAT BASE TRIM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

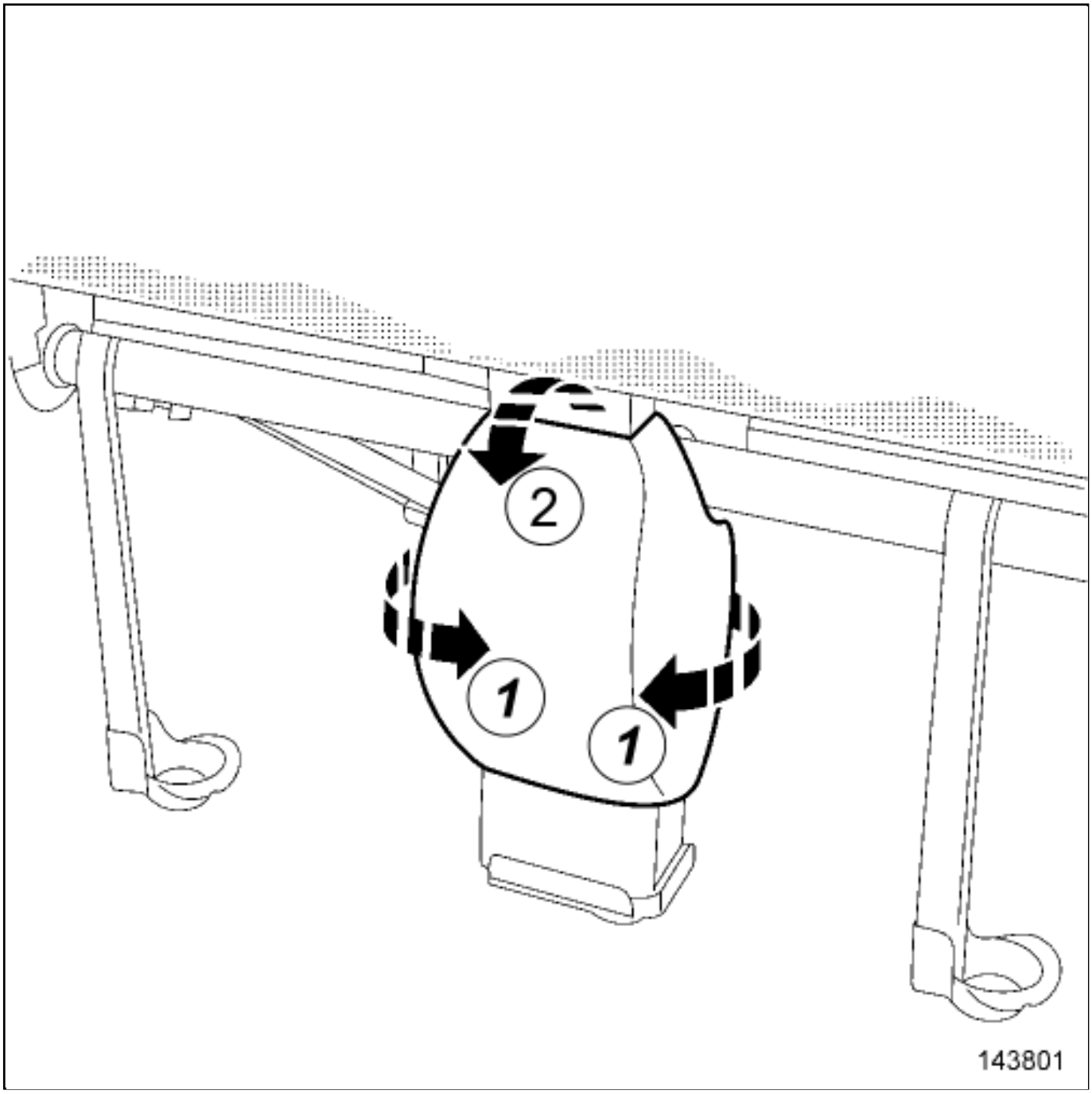
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front bench seat: Exploded view**) .

REMOVAL

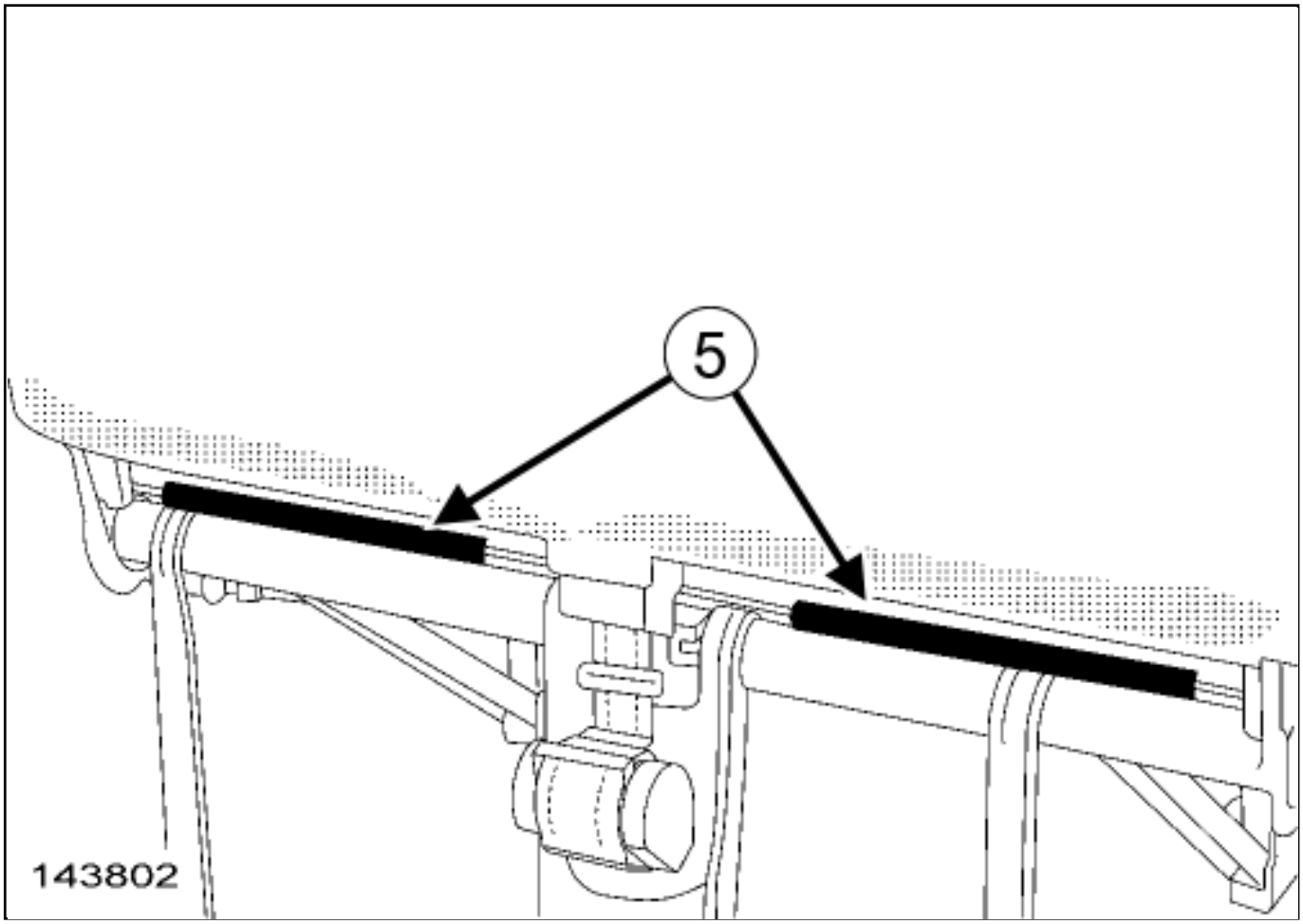
1. REMOVAL PREPARATION OPERATION

- Remove the front bench seat(see **Front bench seat: Exploded view**) .

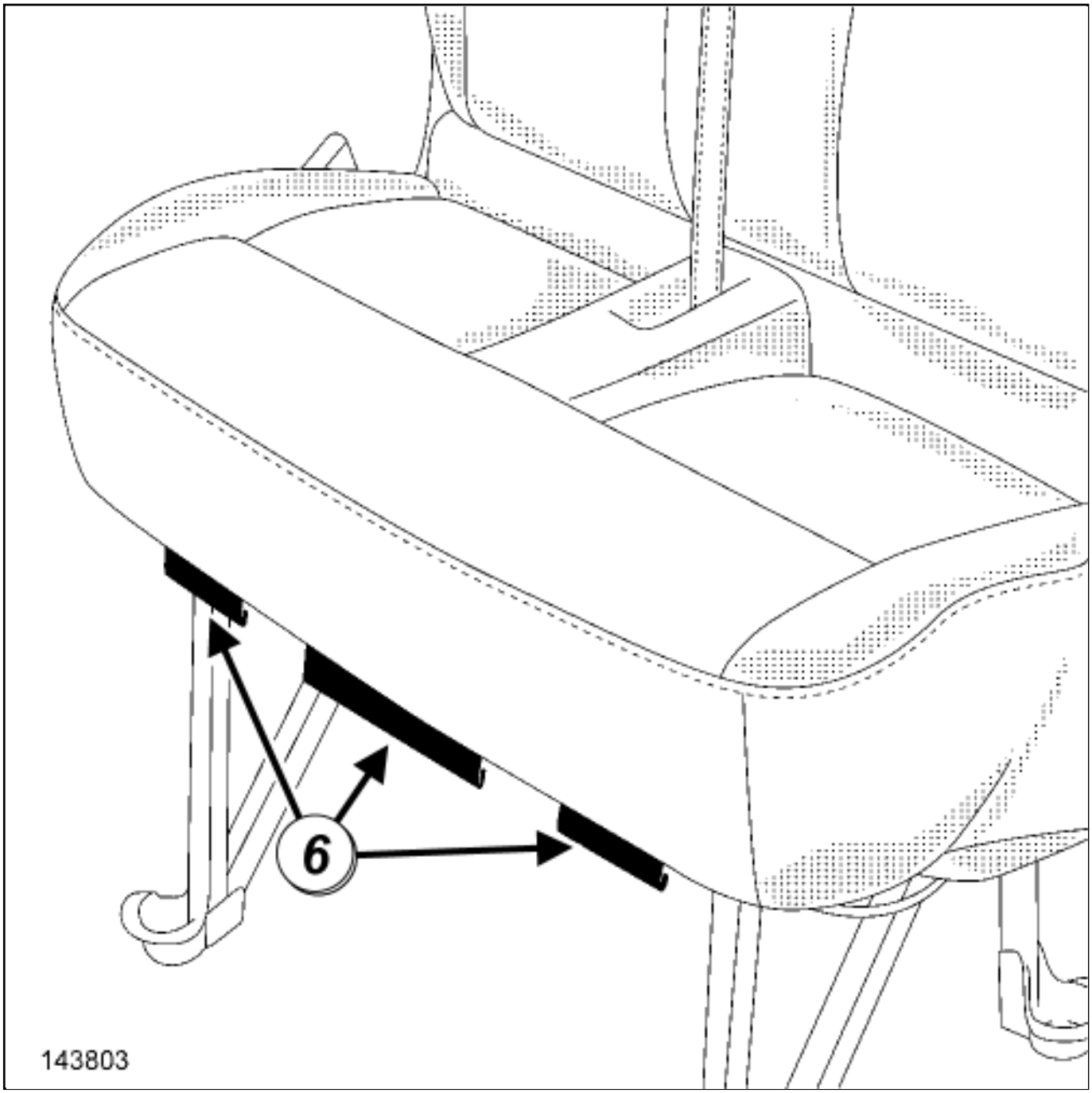


- Remove the seat belt inertia reel housing of the front bench seat at(1) and (2) .

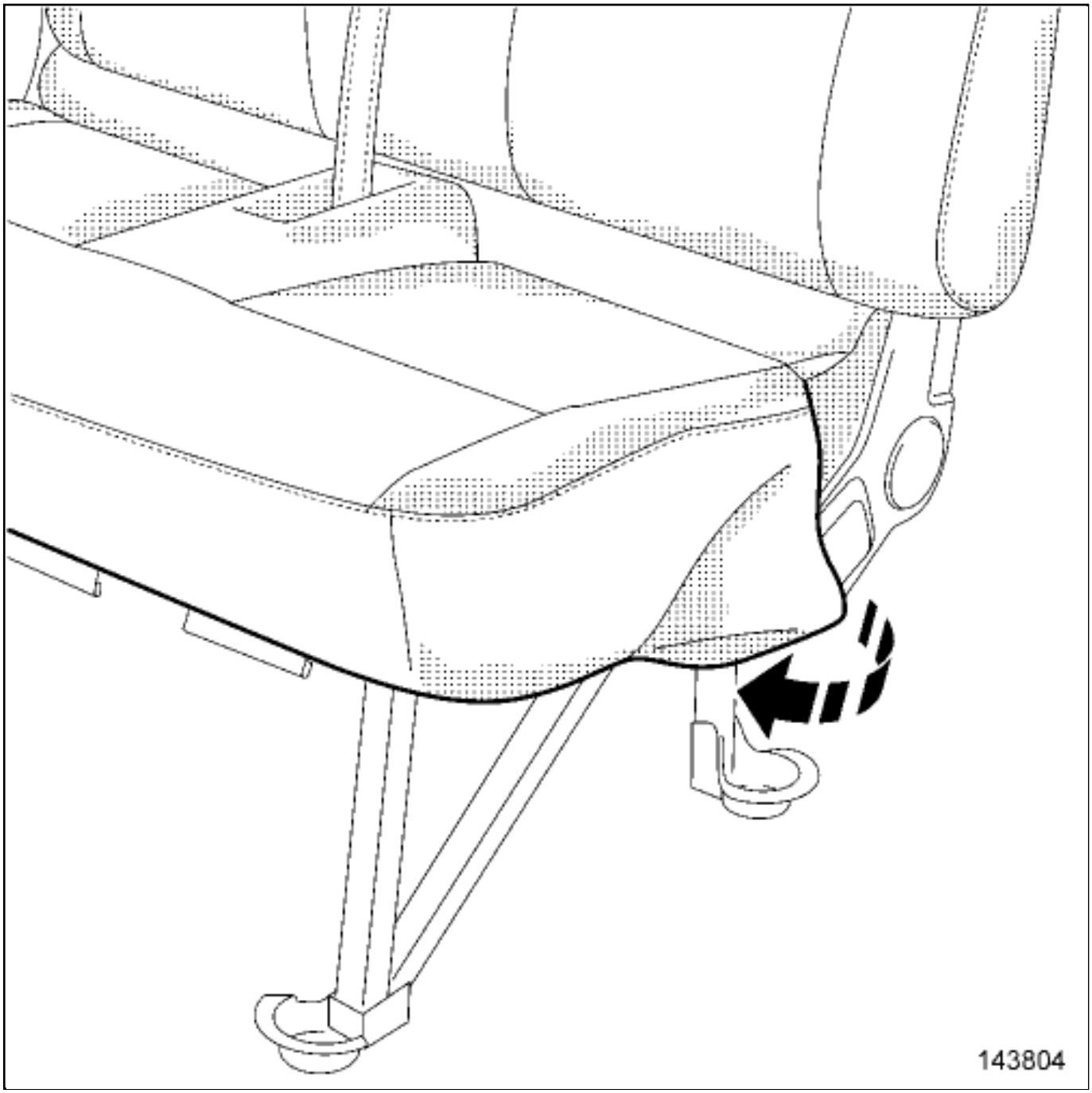
2. REMOVAL OPERATION



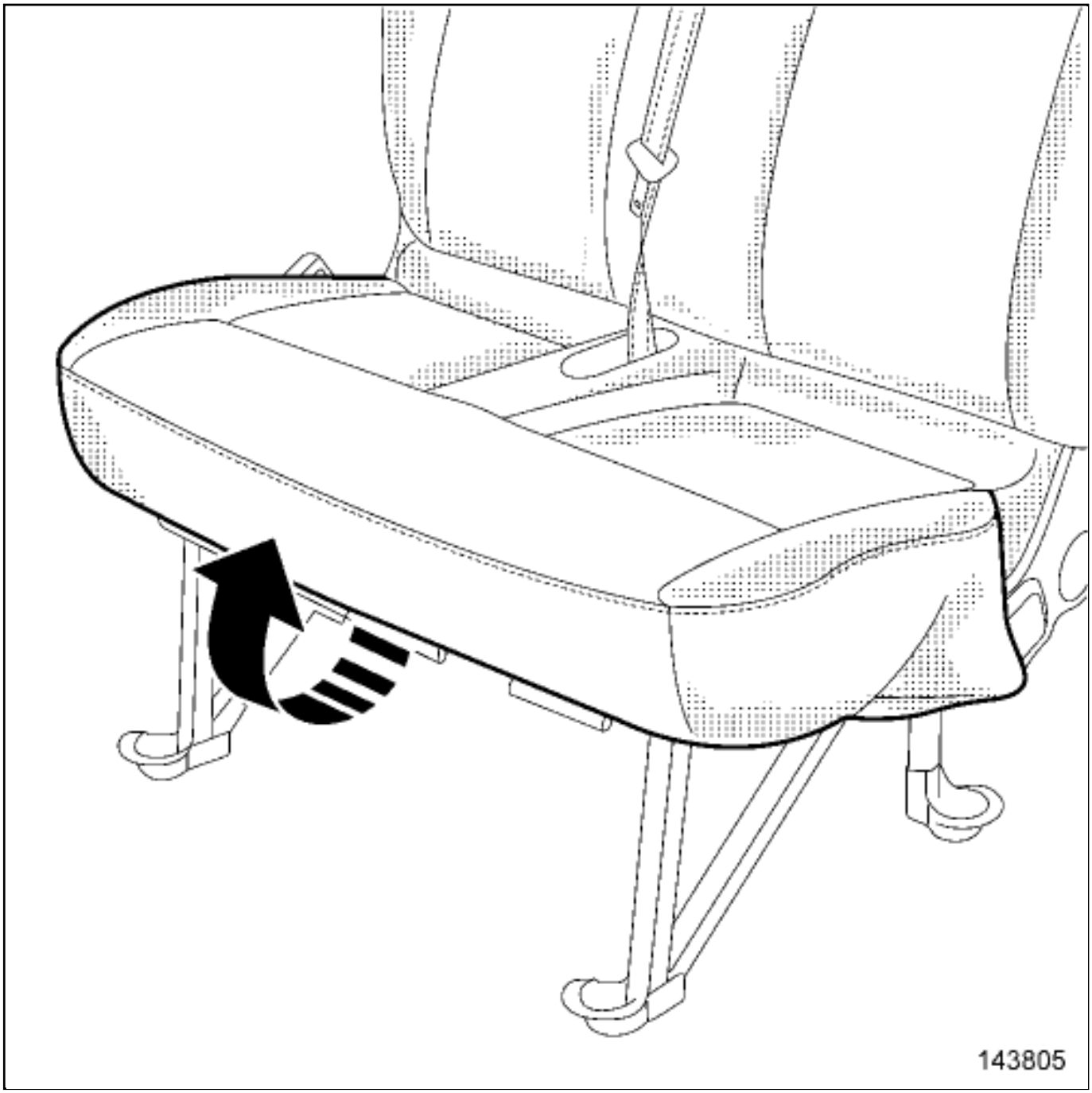
- Unclip the rear retaining sections(5) .



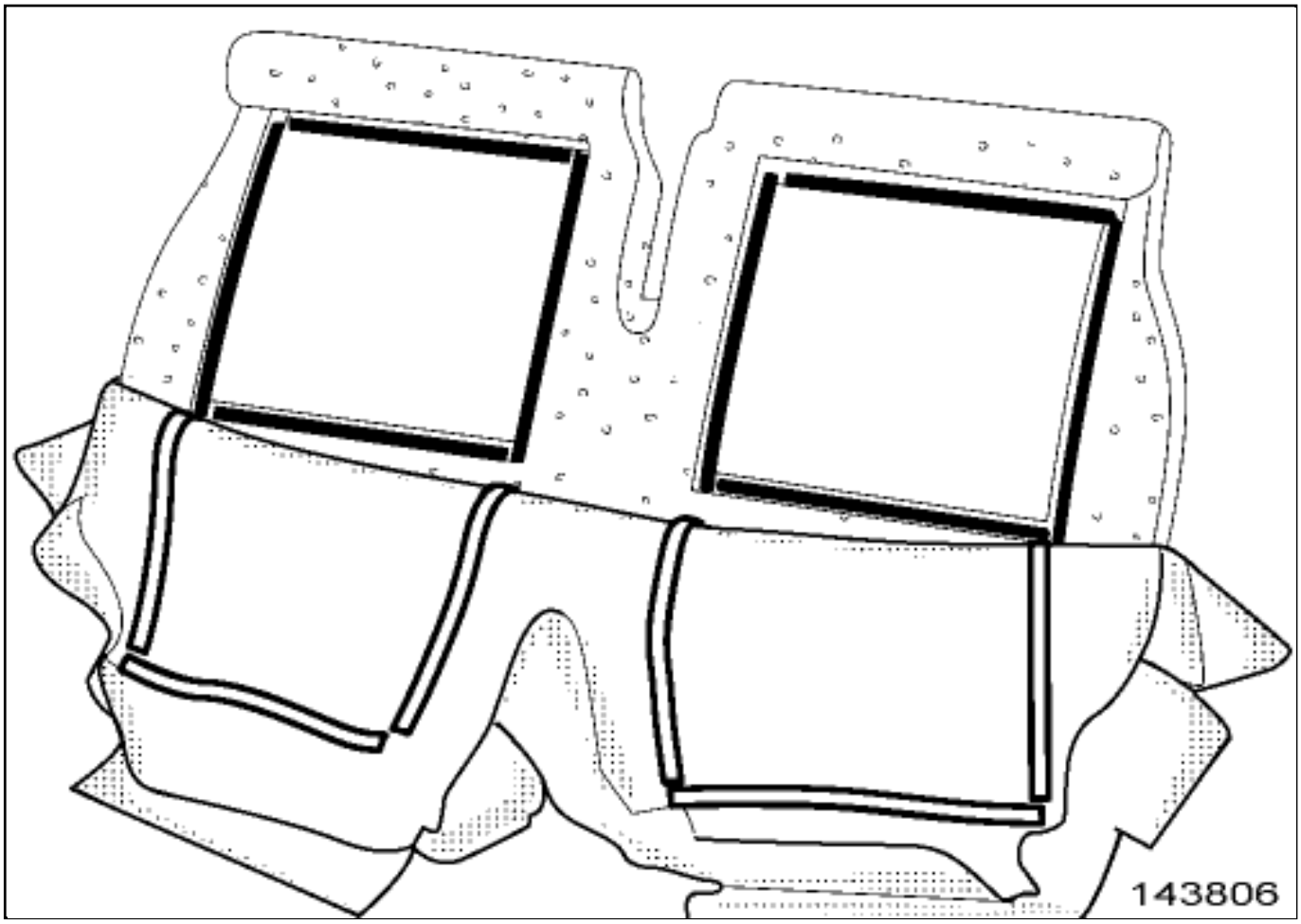
- Unclip the front retaining sections(6) .



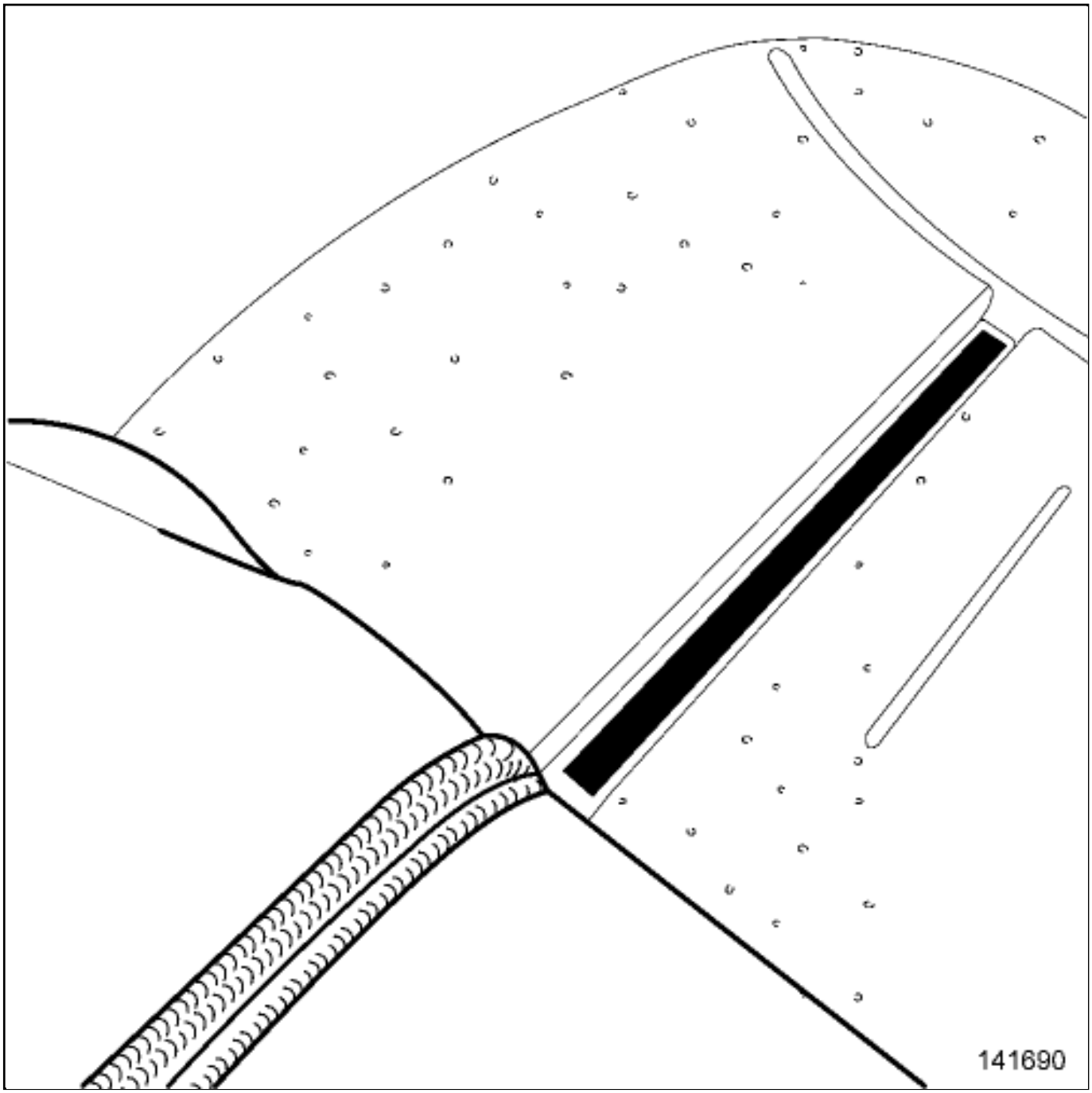
Partially unclip the cover of the front bench seat base.



Remove the "foam - cover" assembly from the front bench seat base.



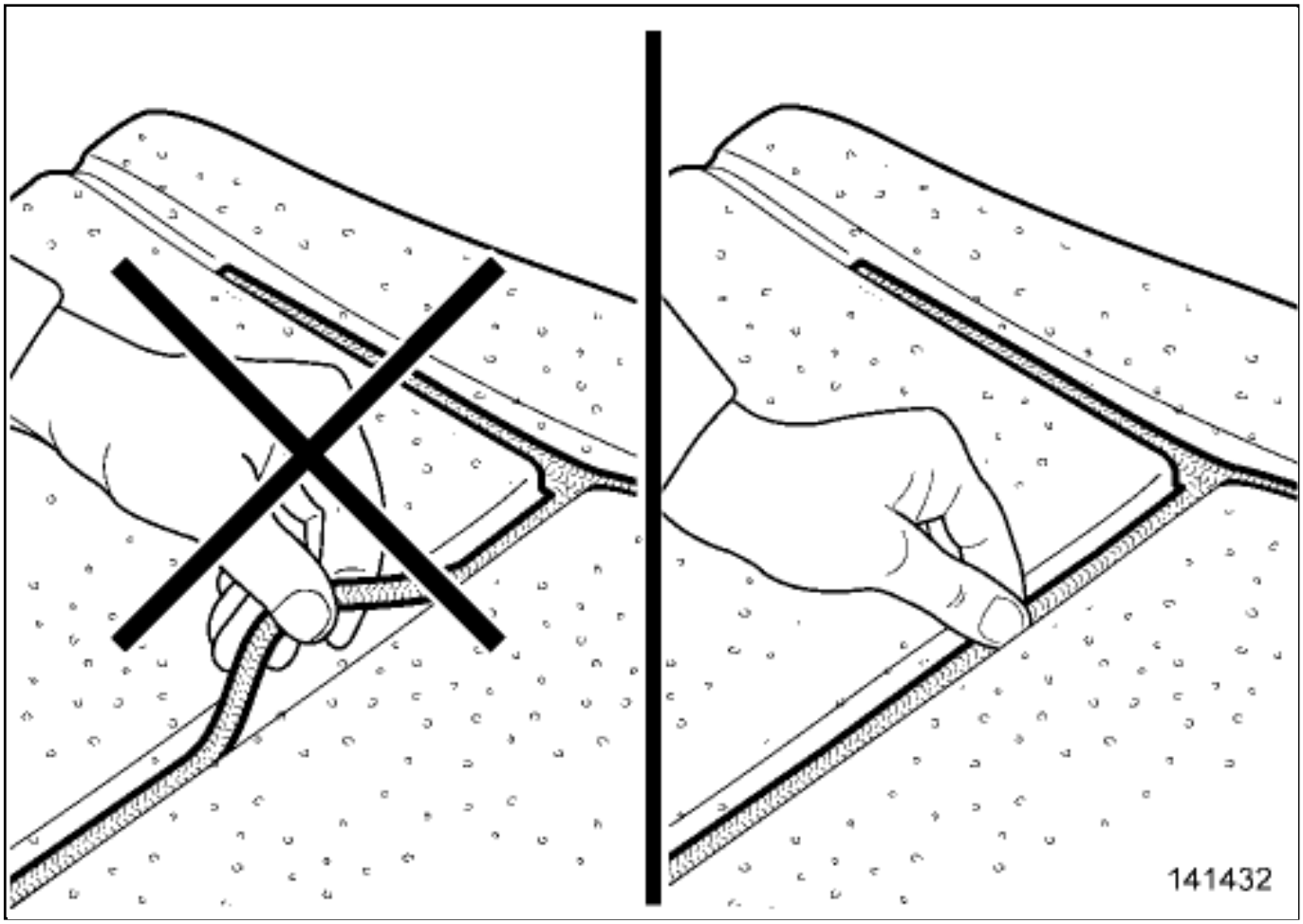
Remove the cover of the front bench seat base.



CAUTION

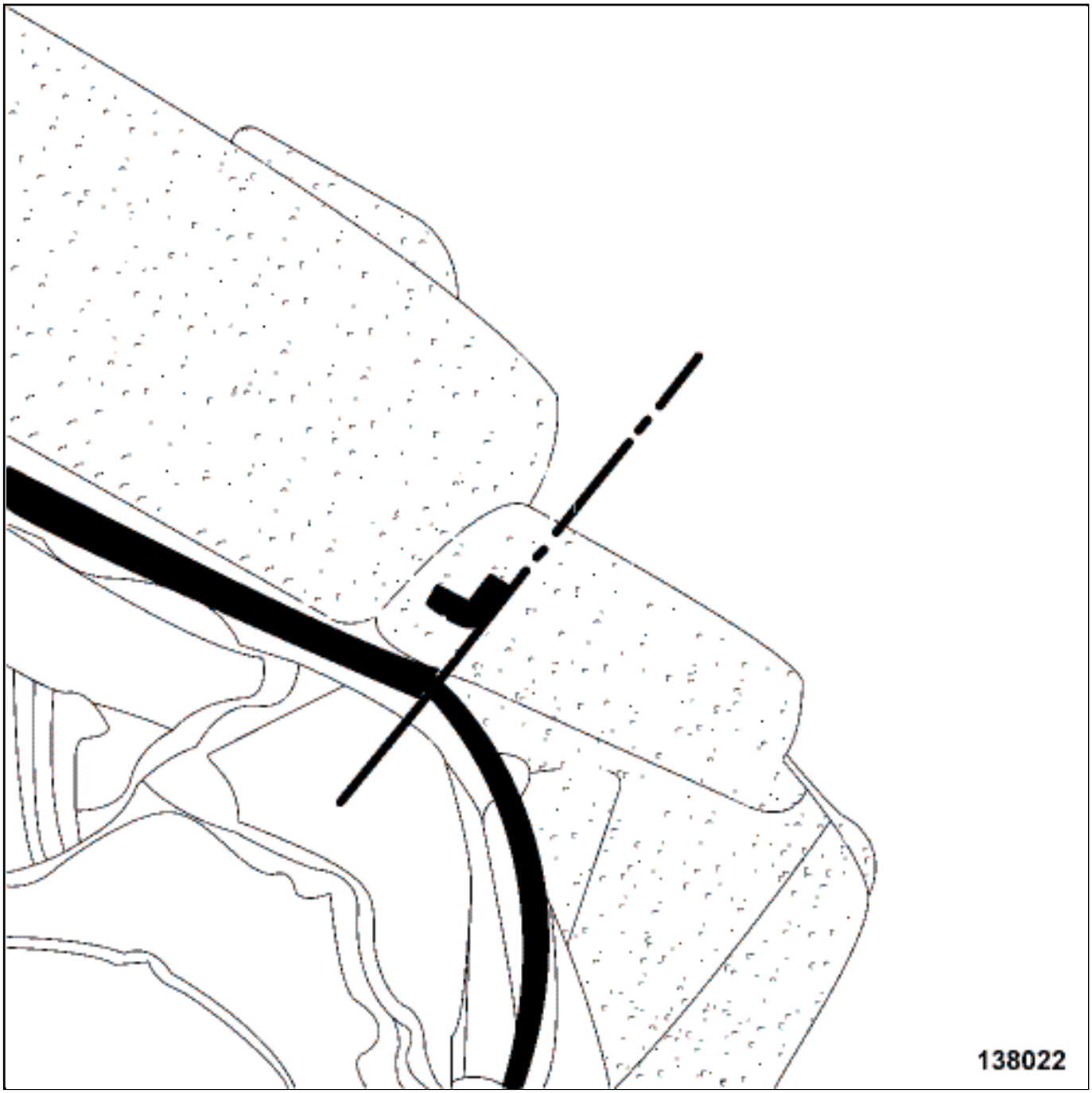
To avoid any risk of damaging the foam, separate the cover from the foam by holding the velcro strips.

REFITTING



CAUTION

To avoid any risk of detaching or creating folds in the cover, check that the velcro strips are secured correctly on the foam. If the velcro strips tear, replace the foam.



Align the velcro strips with the marks.

Note:

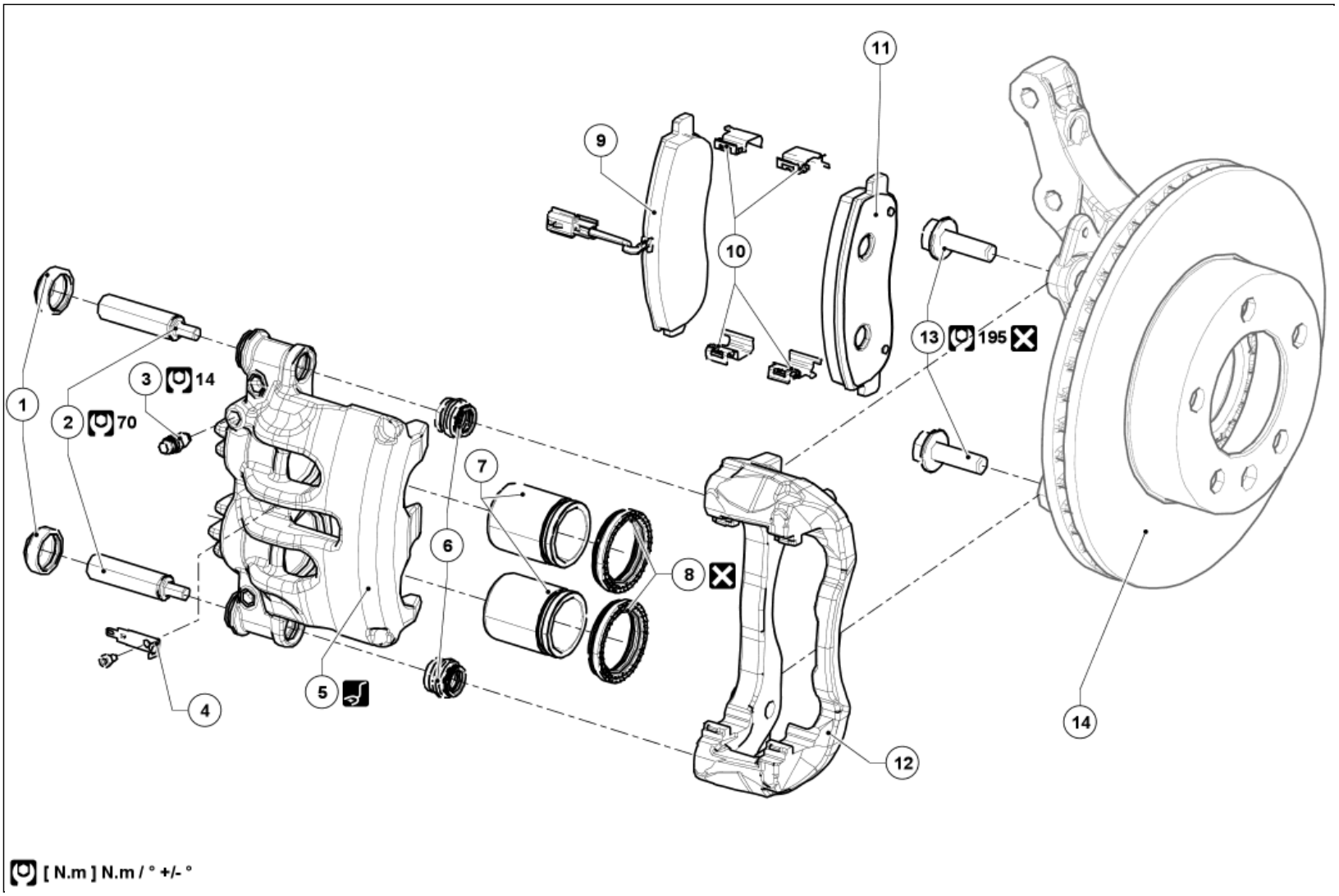
The pre-markings on the foam are a guide for positioning the ends of the velcro strips.

Proceed in the reverse order to removal.

Repair-70x11x02x02-01x37-1-4-1.xml

XSL version : 3.02 du 22/07/11

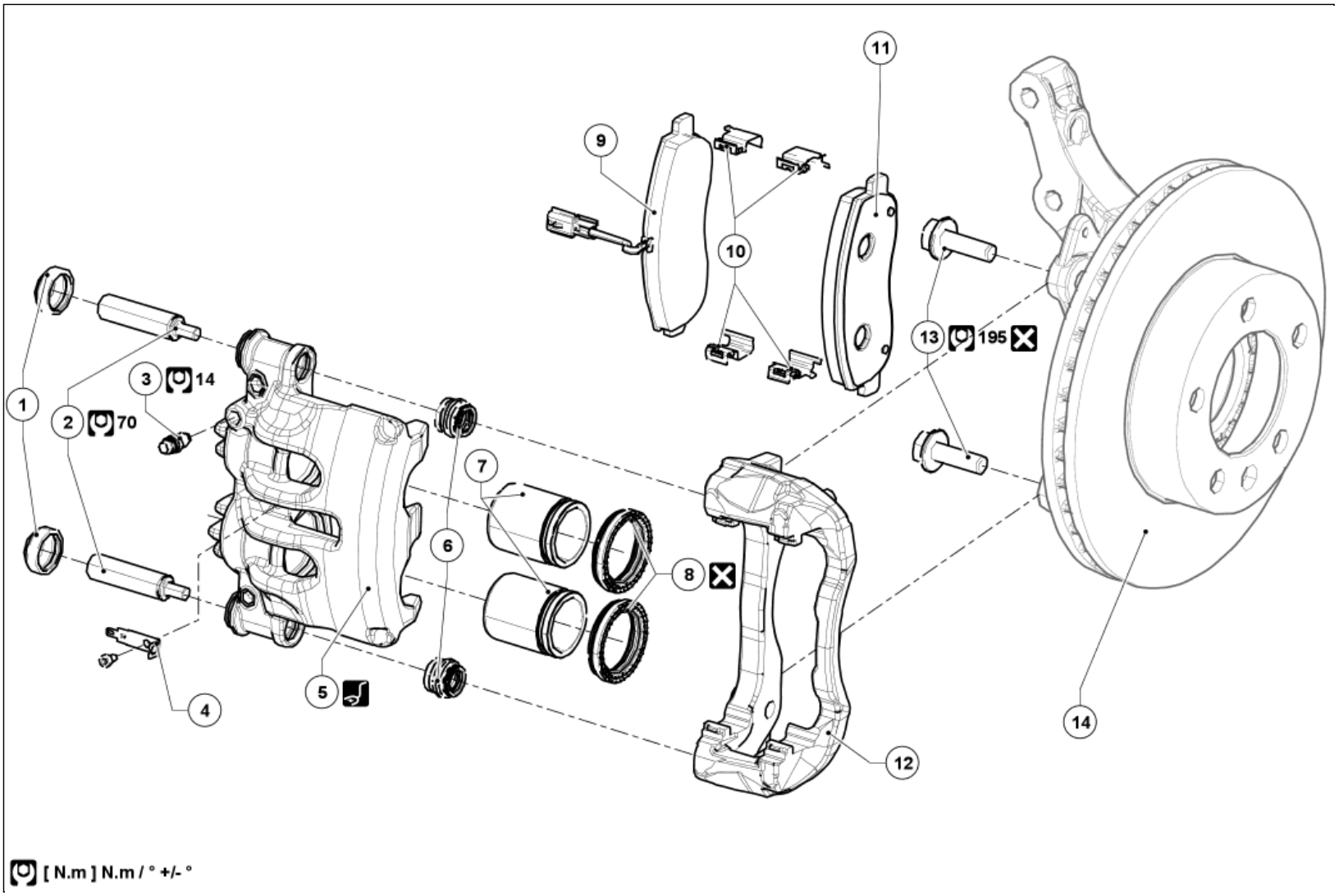
FRONT BRAKE CALLIPER ASSEMBLY: EXPLODED VIEW



(see **Illustration key: Description**) Key.

Mark	Description	Information
1	Brake calliper guide pin cap	
2	Brake calliper guide pin	
3	Brake calliper bleed screw	
4	Brake pad wear warning light tab	
5	Brake calliper	(FRE1190-01) (see 31A, Front axle components, Front brake calliper: Removal - Refitting) (see 31A, Front axle components, Front brake calliper: Repair)
6	Brake calliper guide pin gaiter	
7	Brake calliper piston	
8	Dust seal of brake calliper piston	
9	Brake pad	(see 31A, Front axle components, Front brake pads: Removal - Refitting)
10	Brake pad tab	
11	Brake pad	(see 31A, Front axle components, Front brake pads: Removal - Refitting)
12	Brake calliper mounting	(see 31A, Front axle components, Front brake calliper mounting: Removal - Refitting)
13	Brake calliper mounting bolt	
14	Brake disc	(see 31A, Front axle components, Front brake disc: Removal - Refitting) (see 31A, Front axle components, Front brake disc: Description)

FRONT BRAKE CALLIPER ASSEMBLY: EXPLODED VIEW



(see **Illustration key: Description**) Key.

Mark	Description	Information
1	Brake calliper guide pin cap	
2	Brake calliper guide pin	
3	Brake calliper bleed screw	
4	Brake pad wear warning light tab	
5	Brake calliper	(FRE1190-01) (see 31A, Front axle components, Front brake calliper: Removal - Refitting) (see 31A, Front axle components, Front brake calliper: Repair)
6	Brake calliper guide pin gaiter	
7	Brake calliper piston	
8	Dust seal of brake calliper piston	
9	Brake pad	(see 31A, Front axle components, Front brake pads: Removal - Refitting)
10	Brake pad tab	
11	Brake pad	(see 31A, Front axle components, Front brake pads: Removal - Refitting)
12	Brake calliper mounting	(see 31A, Front axle components, Front brake calliper mounting: Removal - Refitting)
13	Brake calliper mounting bolt	
14	Brake disc	(see 31A, Front axle components, Front brake disc: Removal - Refitting) (see 31A, Front axle components, Front brake disc: Description)

FRONT BRAKE CALLIPER MOUNTING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheelsWheel: Removal - Refitting .
- Remove (see 31A, Front axle components, Front brake calliper assembly: Exploded view) :
  - the front brake pads,
  - the upper guide pin bolt cap,
  - the upper guide pin bolt.
- Attach the rear brake calliper to the suspension spring.

2. REMOVAL OPERATION

Remove the front brake calliper mounting(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

Clean using a wire brush and brake cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the front brake calliper mounting,
- the front brake calliper,
- the front hub carrier.

2. REFITTING OPERATION

Refit the front brake calliper mounting(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT BRAKE CALLIPER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Brake calliper piston return tool.	Fre. 1190-01

Equipment required
pedal press
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

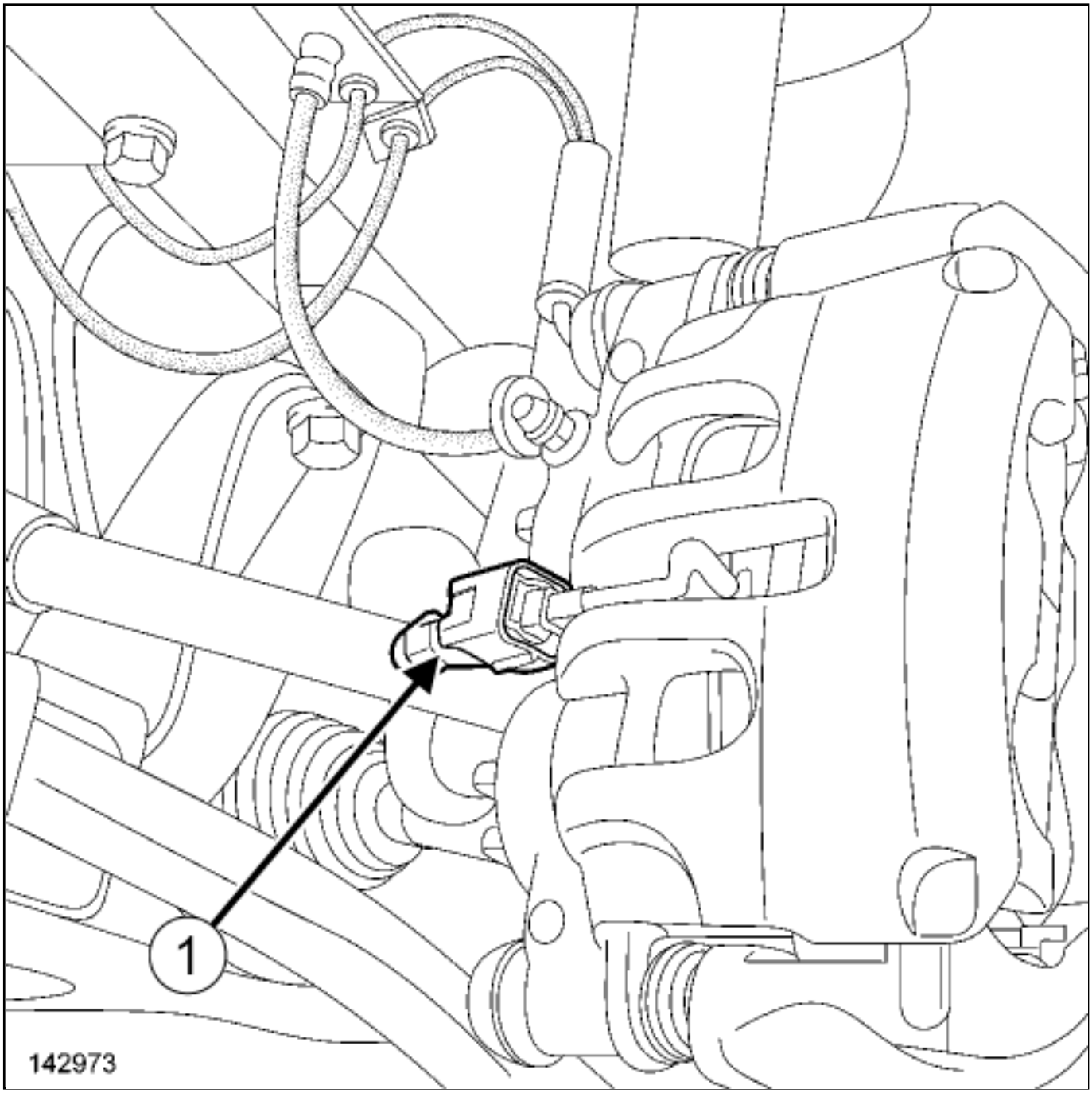
CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

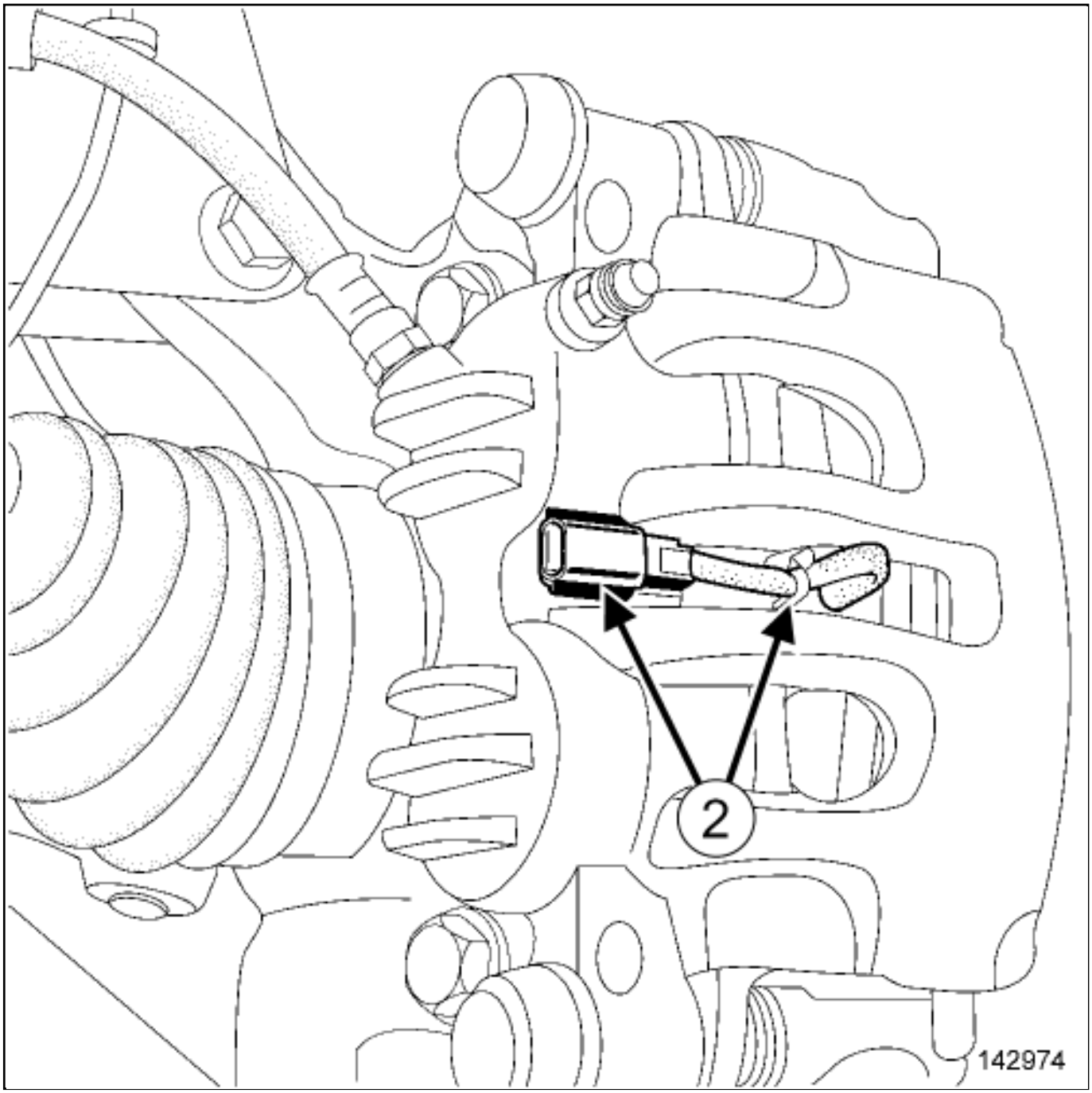
REMOVAL

1. REMOVAL PREPARATION OPERATION

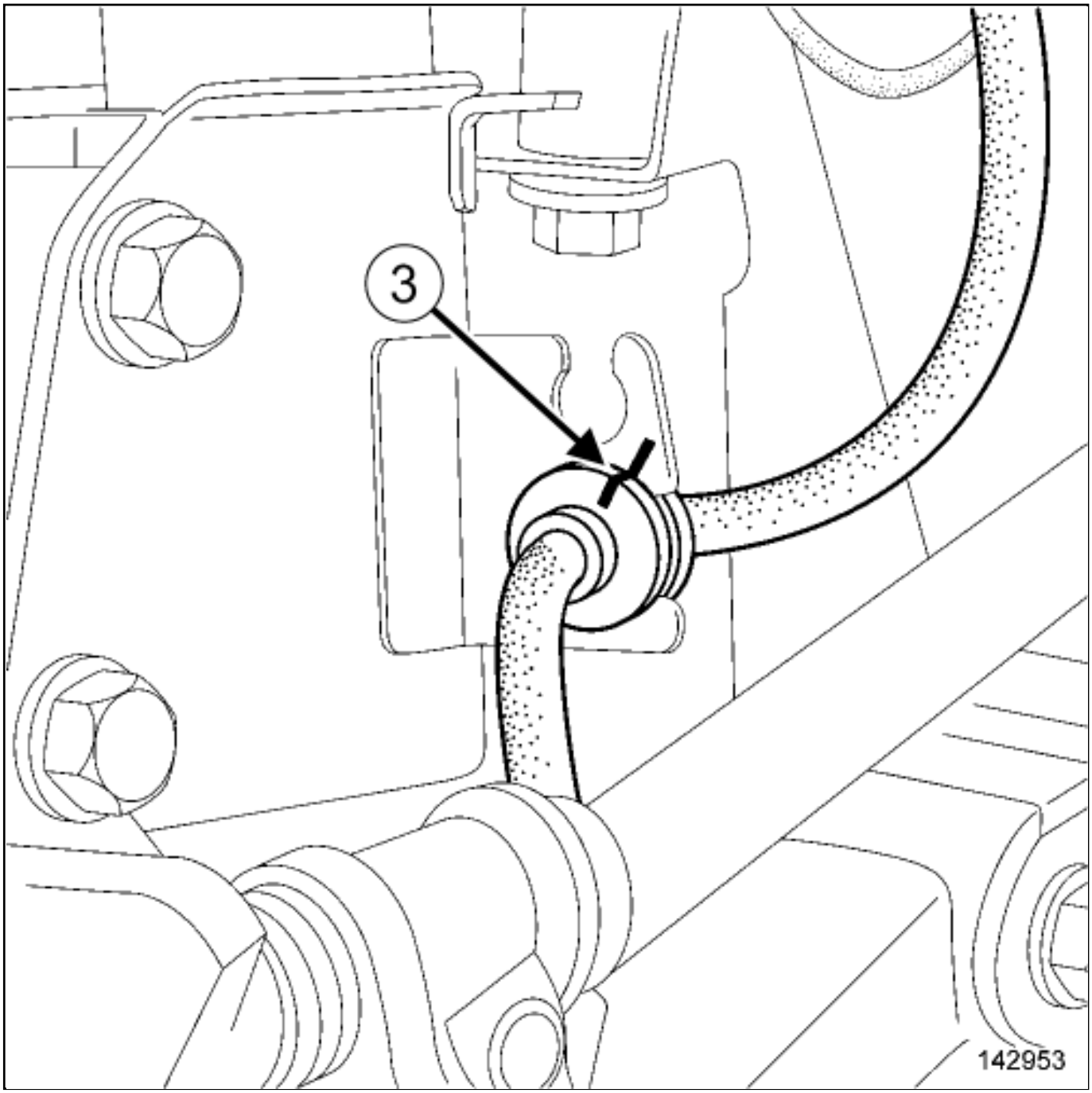
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Position a pedal presson the brake pedal to limit the outflow of brake fluid.
- Remove the front wheelsWheel: Removal - Refitting .



- Disconnect the connector(1) from the front brake pad wear warning light.

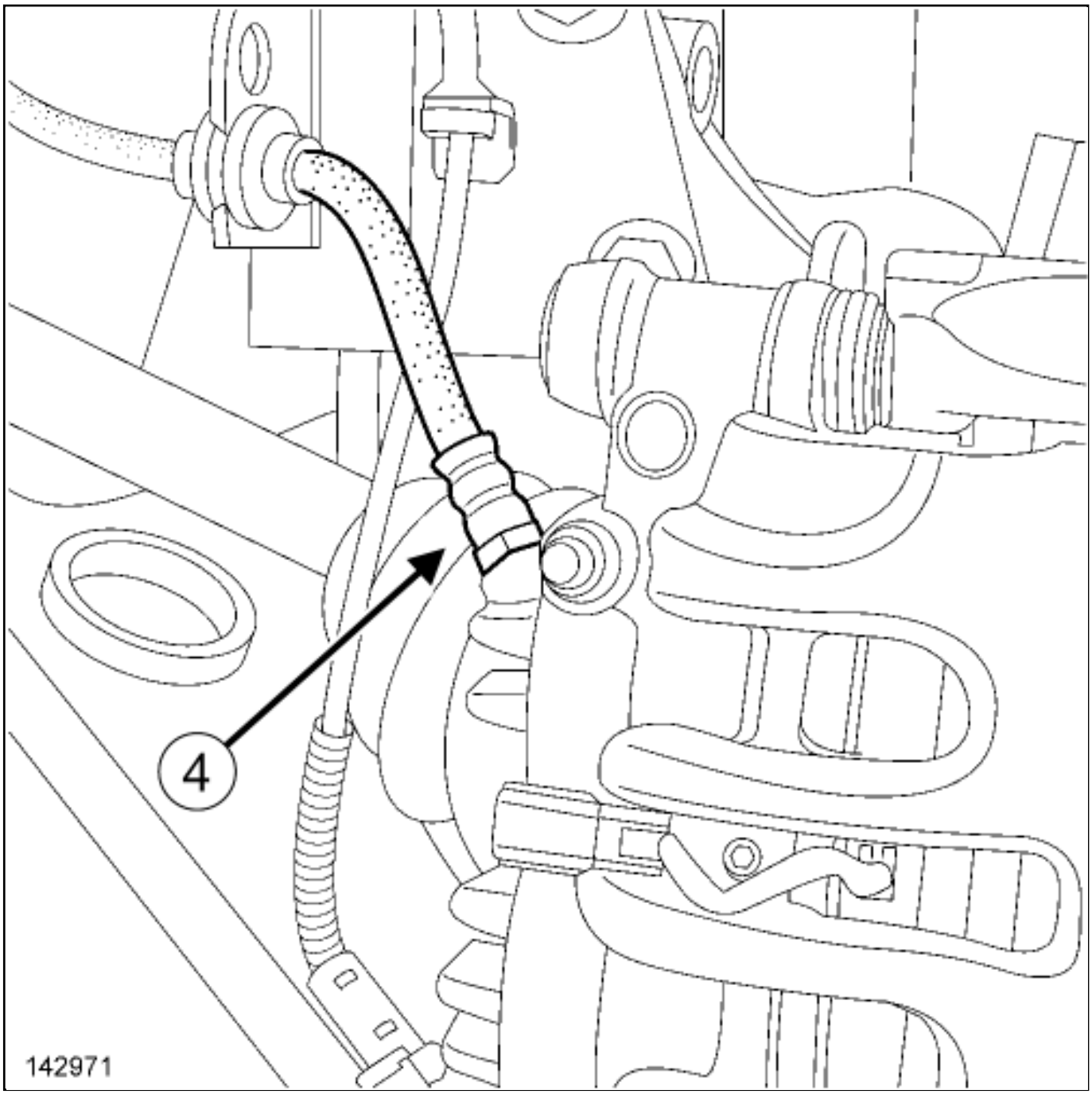


- Unclip the wiring of the front brake pad wear warning light from the brake calliper at(2) .



- Set the wheels straight ahead.
- Mark the position of the front brake hose cap(3) on the shock absorber base using an indelible pencil.
- Unclip the front brake hose cap(3) from the shock absorber base.

2. REMOVAL OPERATION



- Undo the front brake hose union(4) on the front brake calliper.

- Remove (see 31A, Front axle components, Front brake calliper assembly: Exploded view) :
  - the guide pin bolt caps of the front brake calliper,
  - the guide pin bolts of the front brake calliper,
  - the front brake calliper from the front brake calliper mounting,
  - the front brake hose union from the front brake calliper,
  - the front brake calliper.

REFITTING

1. REFITTING PREPARATION OPERATION

Check:

- the condition of the calliper gaiter,
- the condition of the calliper if it has any deep scratches or cracks.

Replace any faulty parts(see 31A, Front axle components, Front brake calliper: Repair) .

Clean using a wire brush and brake cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the front brake calliper,
- the front brake calliper mounting.

2. REFITTING OPERATION

Push back the front brake calliper pistons to the bottom of their housings using the toolBrake calliper piston return tool.(Fre. 1190-01) .

Proceed in the reverse order to removal.

Torque tighten the front brake hose union on the front brake calliper17 N.m.

Set the wheels straight ahead.

Clip the front brake hose cap on to the base of the shock absorber, aligning the marks made using a indelible pencil .

Bleed the braking circuit(see **Braking circuit: Bleed**) .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT BRAKE CALLIPER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Brake calliper piston return tool.	Fre. 1190-01

Equipment required
pedal press
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

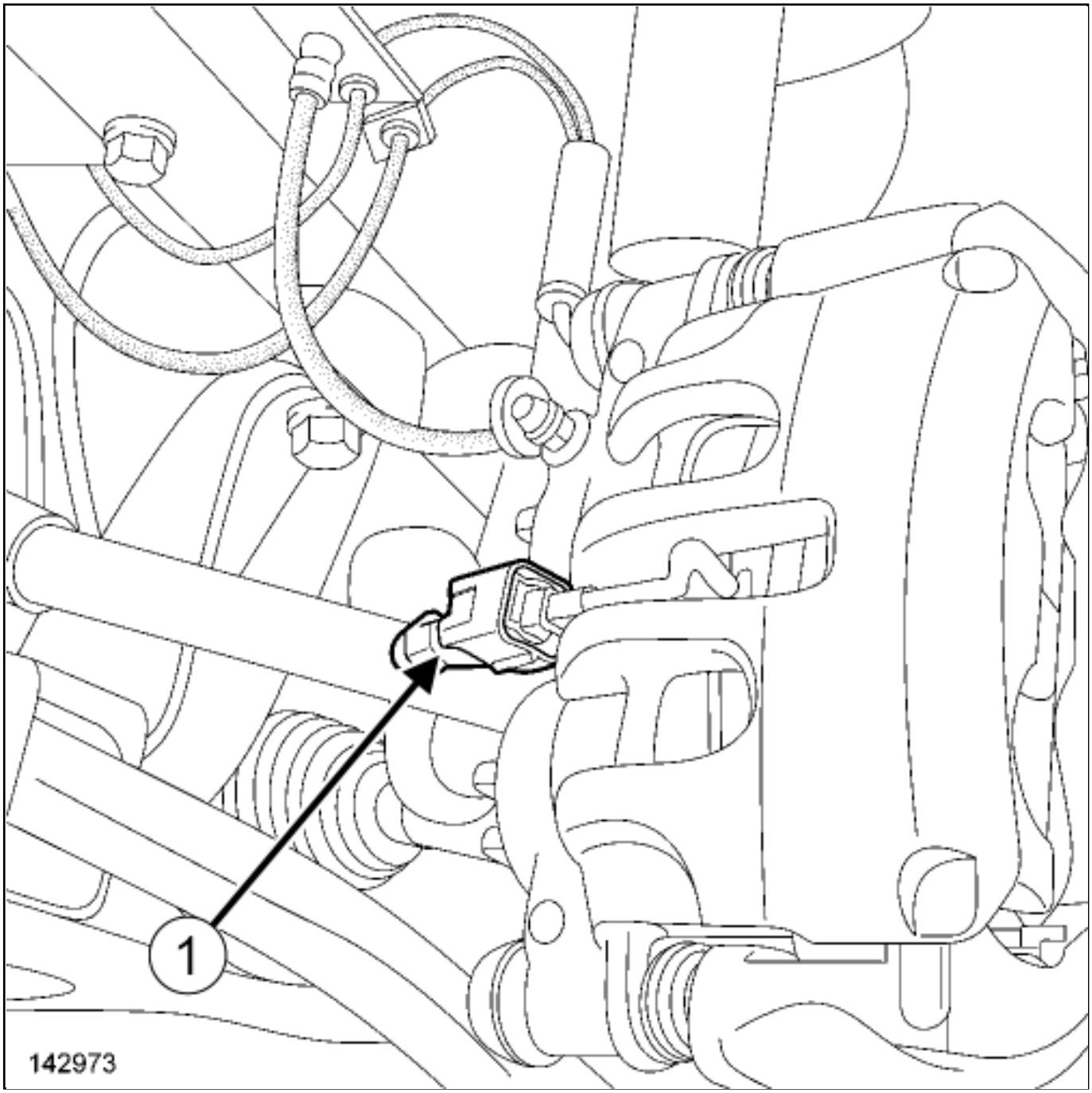
CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

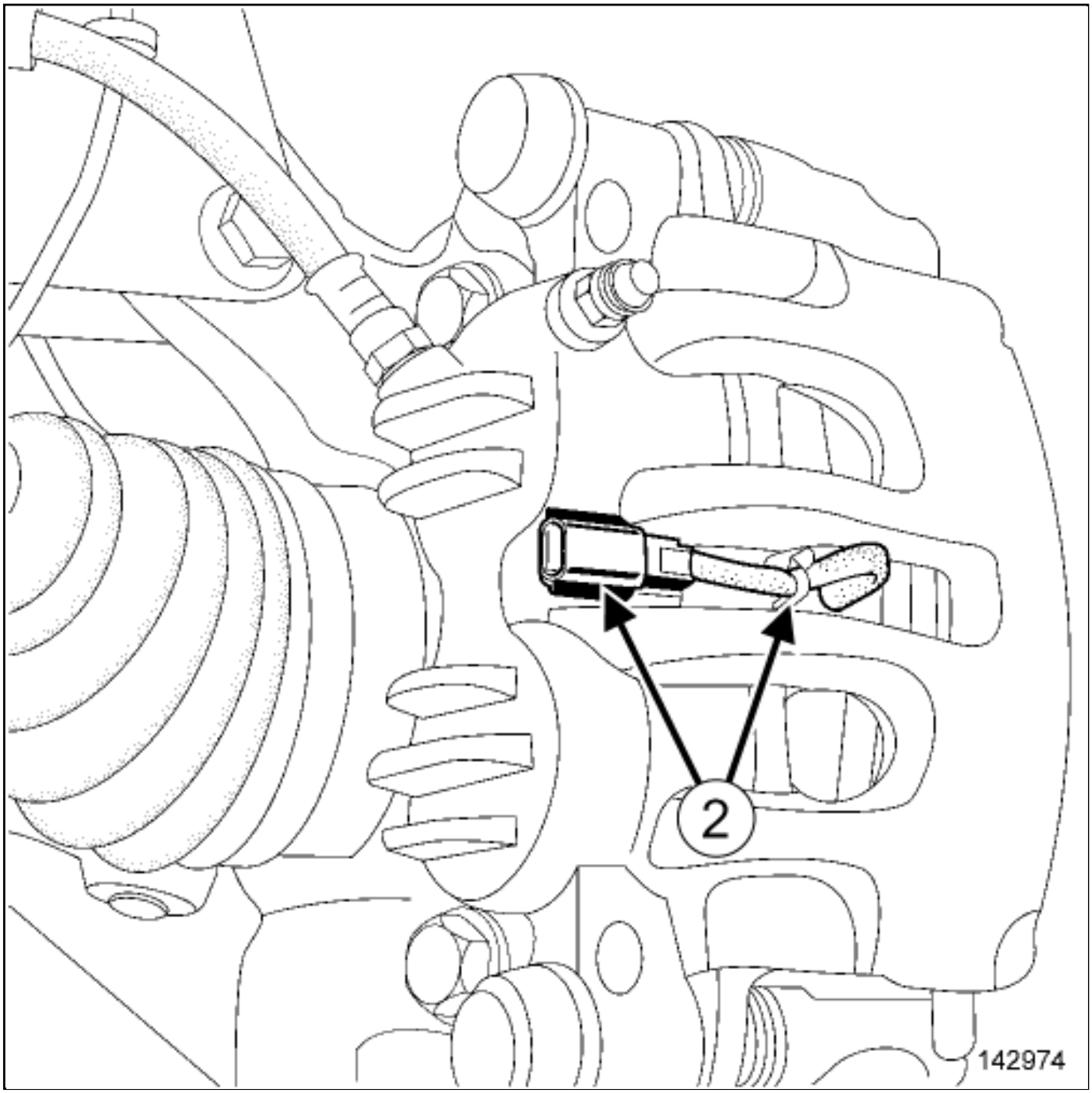
REMOVAL

1. REMOVAL PREPARATION OPERATION

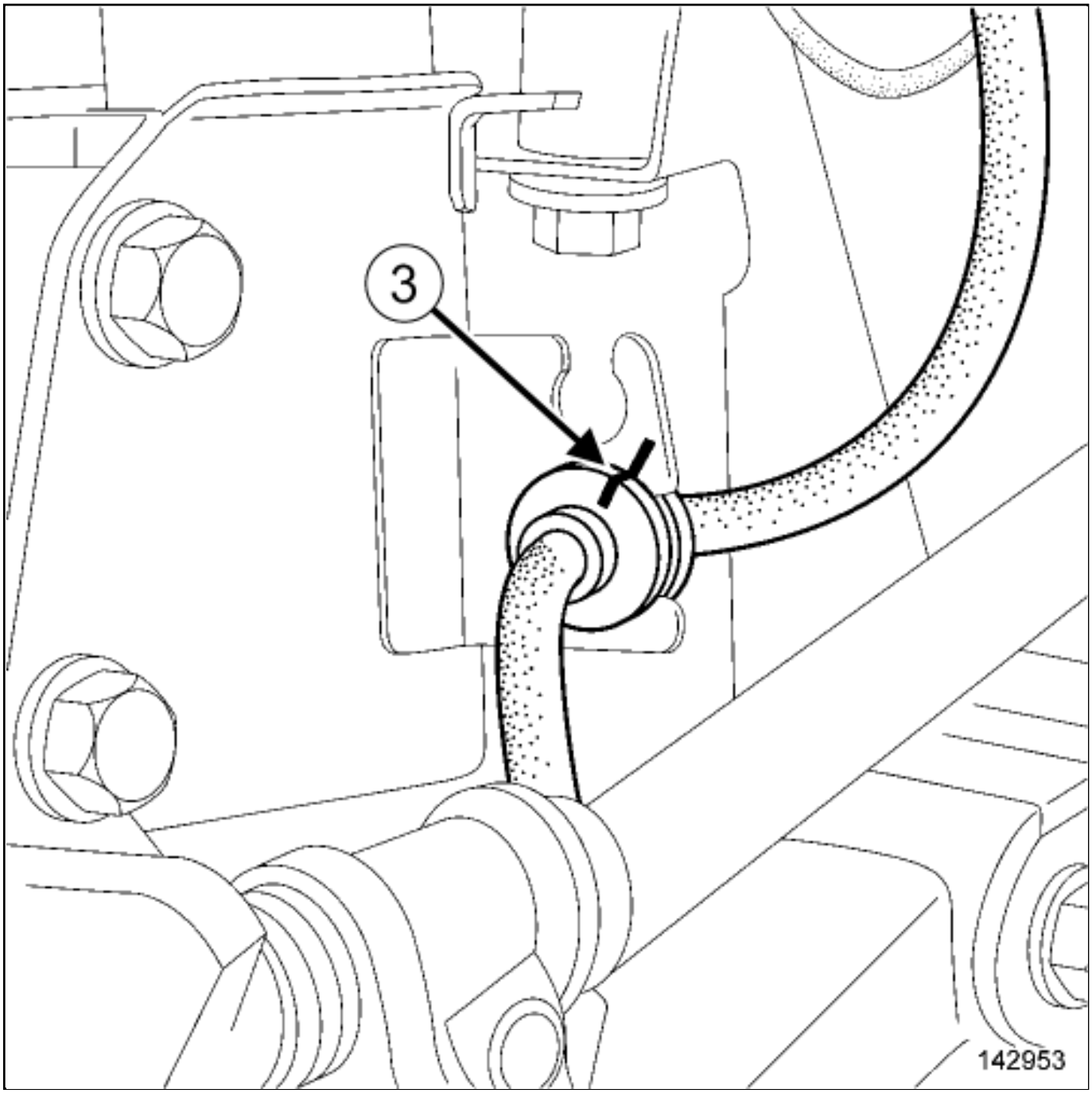
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Position a pedal presson the brake pedal to limit the outflow of brake fluid.
- Remove the front wheelsWheel: Removal - Refitting .



- Disconnect the connector(1) from the front brake pad wear warning light.

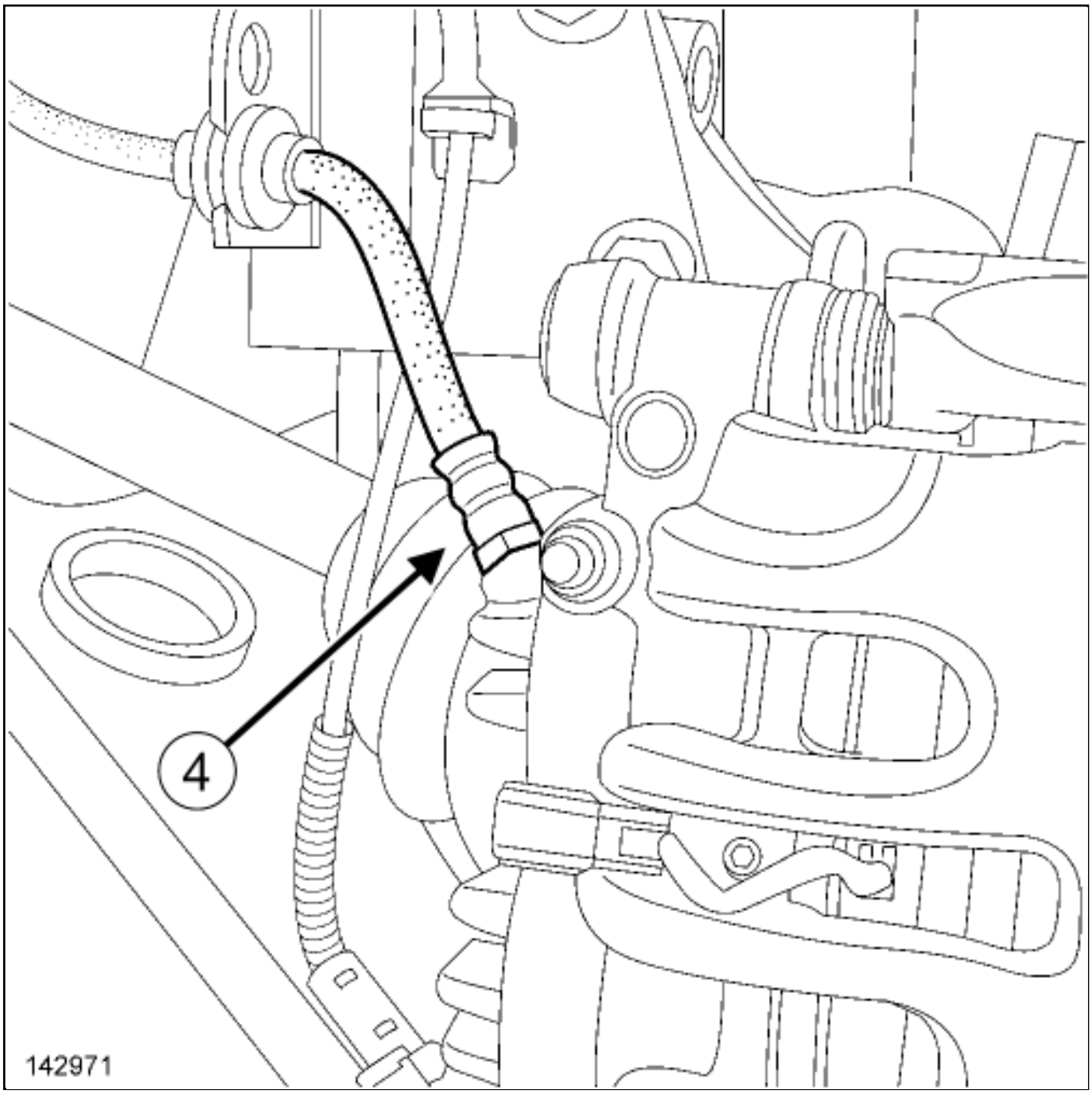


- Unclip the wiring of the front brake pad wear warning light from the brake calliper at(2) .



- Set the wheels straight ahead.
- Mark the position of the front brake hose cap(3) on the shock absorber base using an indelible pencil.
- Unclip the front brake hose cap(3) from the shock absorber base.

2. REMOVAL OPERATION



Undo the front brake hose union(4) on the front brake calliper.

Remove (see 31A, Front axle components, Front brake calliper assembly: Exploded view) :

- the guide pin bolt caps of the front brake calliper,
- the guide pin bolts of the front brake calliper,

- the front brake calliper from the front brake calliper mounting,
- the front brake hose union from the front brake calliper,
- the front brake calliper.

REFITTING

1. REFITTING PREPARATION OPERATION

Check:

- the condition of the calliper gaiter,
- the condition of the calliper if it has any deep scratches or cracks.

Replace any faulty parts(see 31A, Front axle components, Front brake calliper: Repair) .

Clean using a wire brush and brake cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the front brake calliper,
- the front brake calliper mounting.

2. REFITTING OPERATION

Push back the front brake calliper pistons to the bottom of their housings using the toolBrake calliper piston return tool.(Fre. 1190-01) .

Proceed in the reverse order to removal.

Torque tighten the front brake hose union on the front brake calliper17 N.m.

Set the wheels straight ahead.

Clip the front brake hose cap on to the base of the shock absorber, aligning the marks made using a indelible pencil.

Bleed the braking circuit(see **Braking circuit: Bleed**) .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT BRAKE CALLIPER: REPAIR

Note, one or more warnings are present in this procedure

Equipment required
pedal press

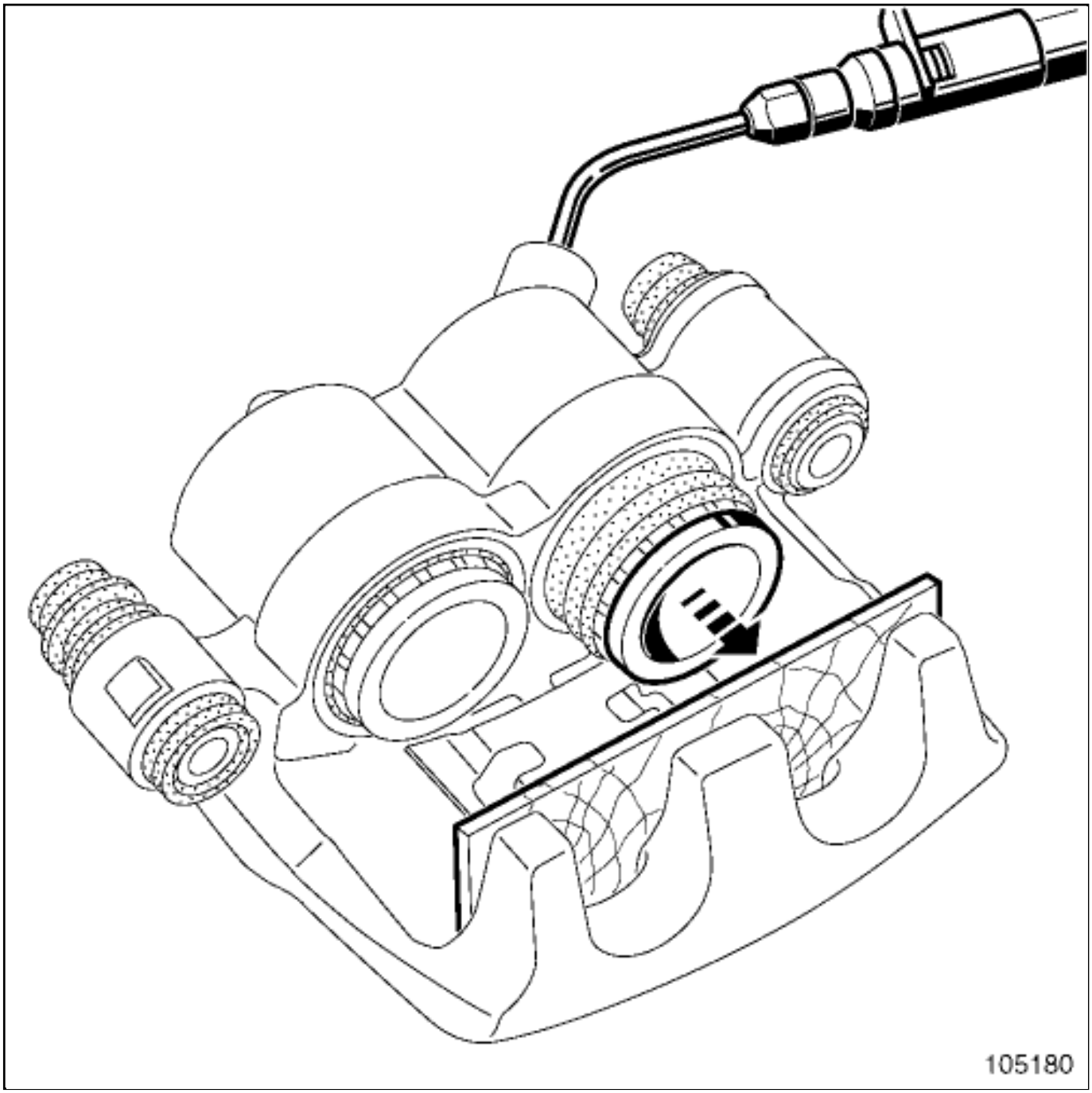
Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

CAUTION

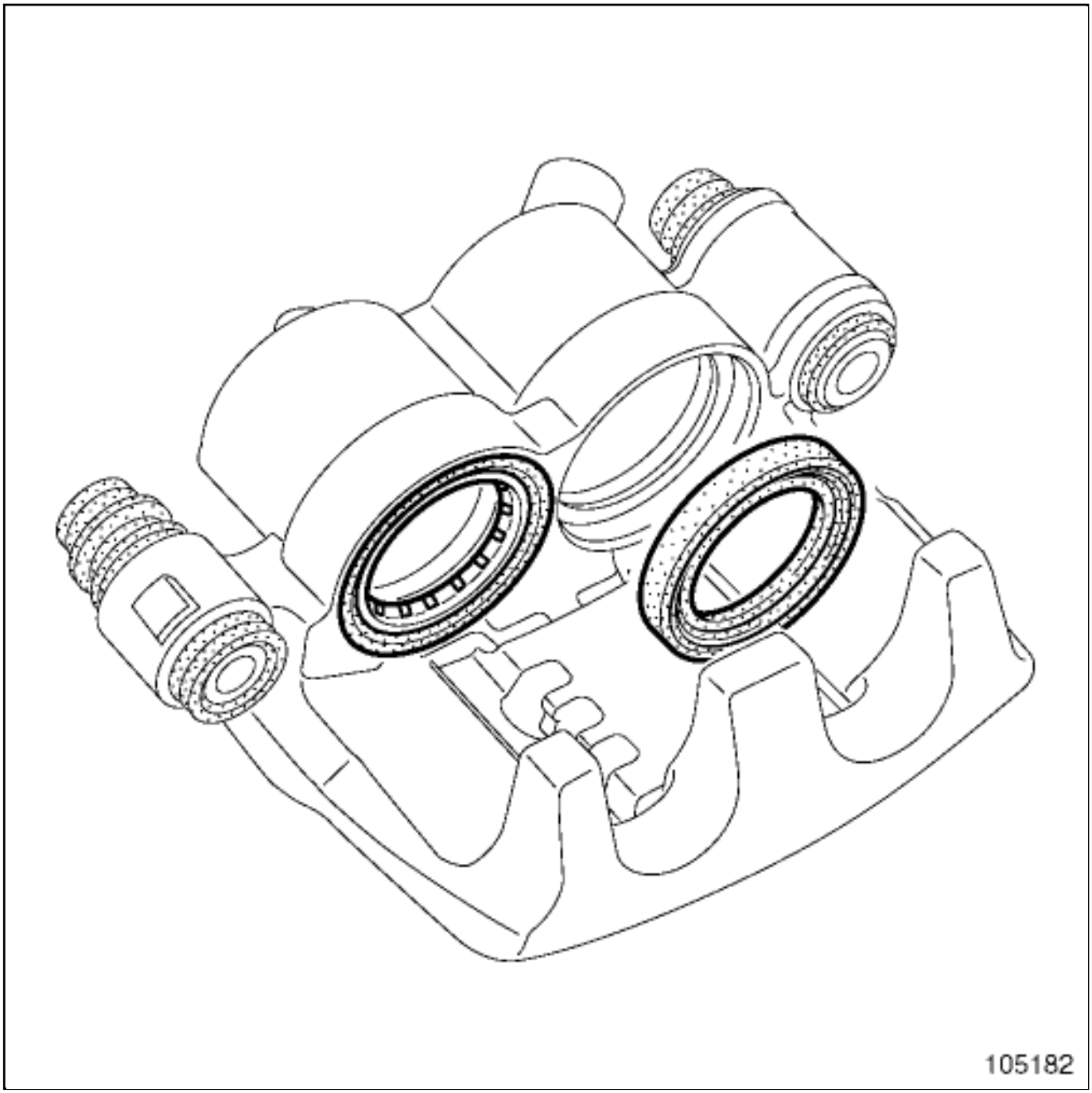
Prepare for brake fluid outflow to prevent damage to the mechanical parts and bodywork around the braking system.

REMOVAL

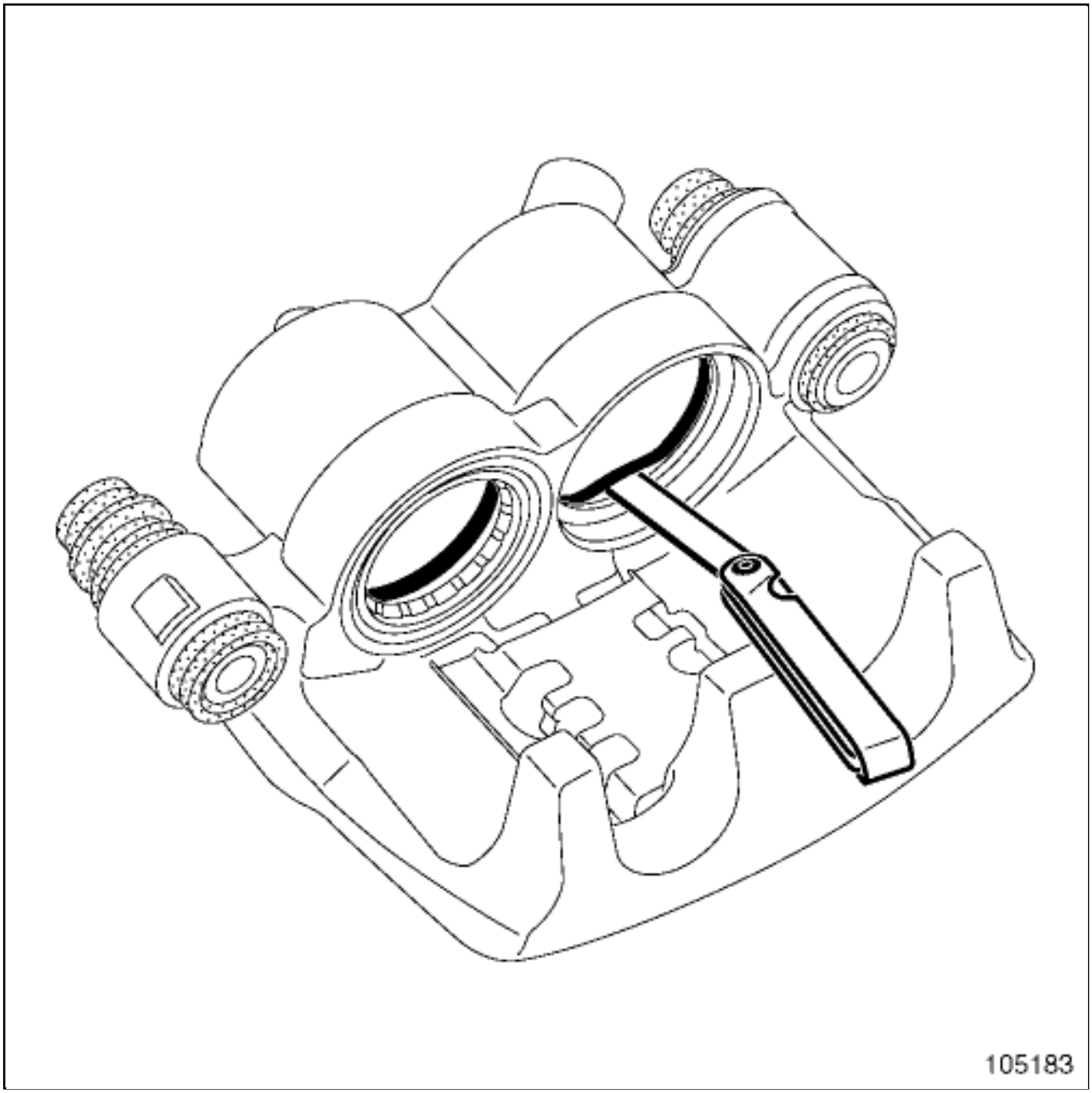
- Fit the pedal press to the brake pedal to limit the outflow of brake fluid.
- Remove the front wheel Wheel: Removal - Refitting .
- Remove the brake calliper (see 31A, Front axle components, Front brake calliper assembly: Exploded view) .



- Remove the piston using compressed air, making sure to insert a wooden block between the calliper and the piston to prevent damage. Any trace of impact on the end panel will render it unusable.



- Remove the dust seal.



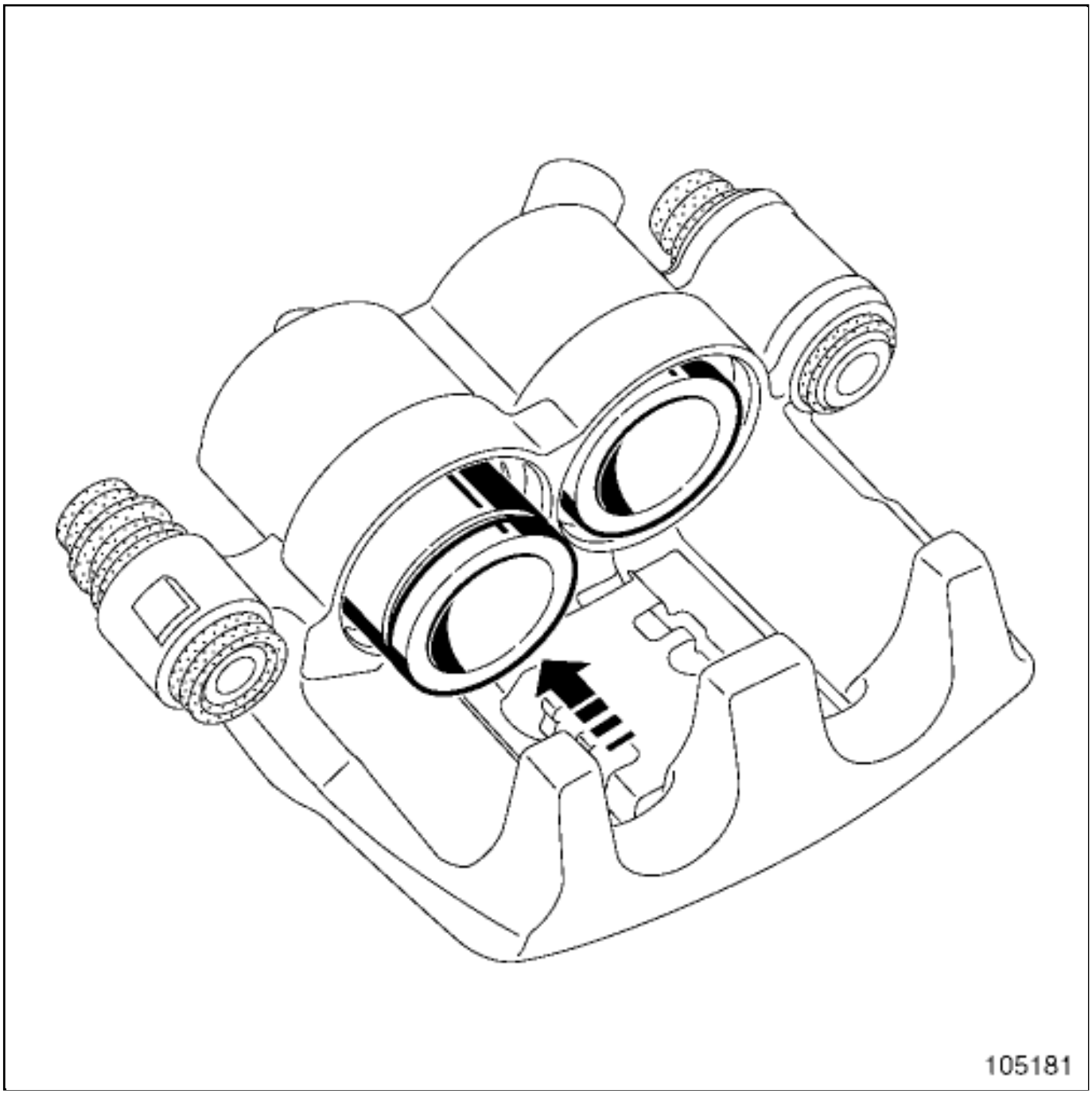
- Remove the rectangular section seal from the calliper groove with a round edged spring blade (feeler gauge).

CAUTION

The whole calliper must systematically be replaced if there are any scratches in the calliper bore.

- Clean the parts using methylated spirit.

REFITTING



- Refit:
  - the rectangular section seal in the calliper groove,
  - the piston after coating it with brake fluid,
  - the dust seal.

- Refit the brake calliper(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

- Refit the front wheel Wheel: Removal - Refitting .

CAUTION

Replace all faulty parts with new original parts.

- Bleed the brake circuit (see **Braking circuit: Bleed**) .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT BRAKE DISC: DESCRIPTION

1. PREPARATION OPERATION FOR CHECK

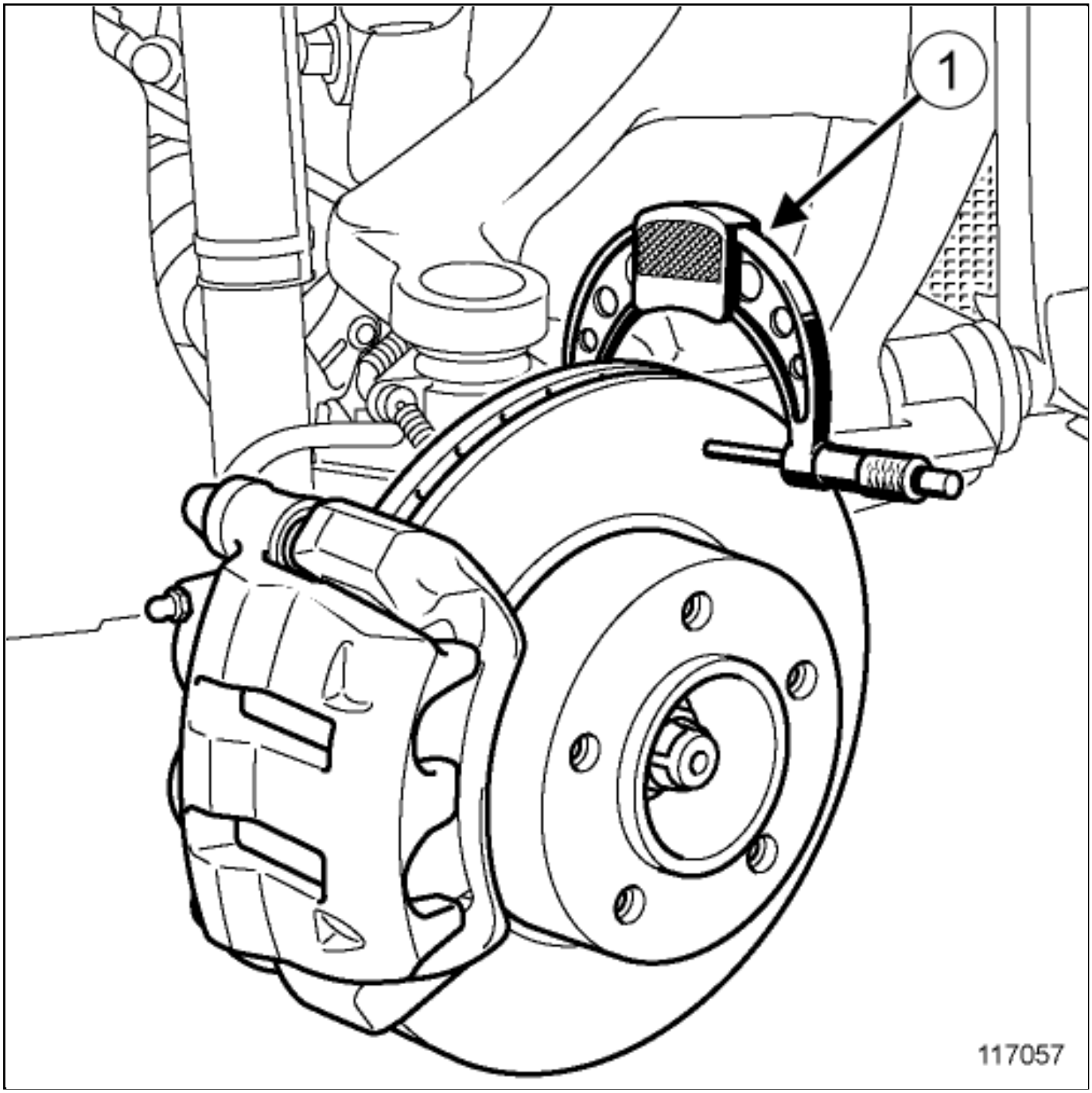
Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .

Remove the wheel in question**Wheel: Removal - Refitting** .

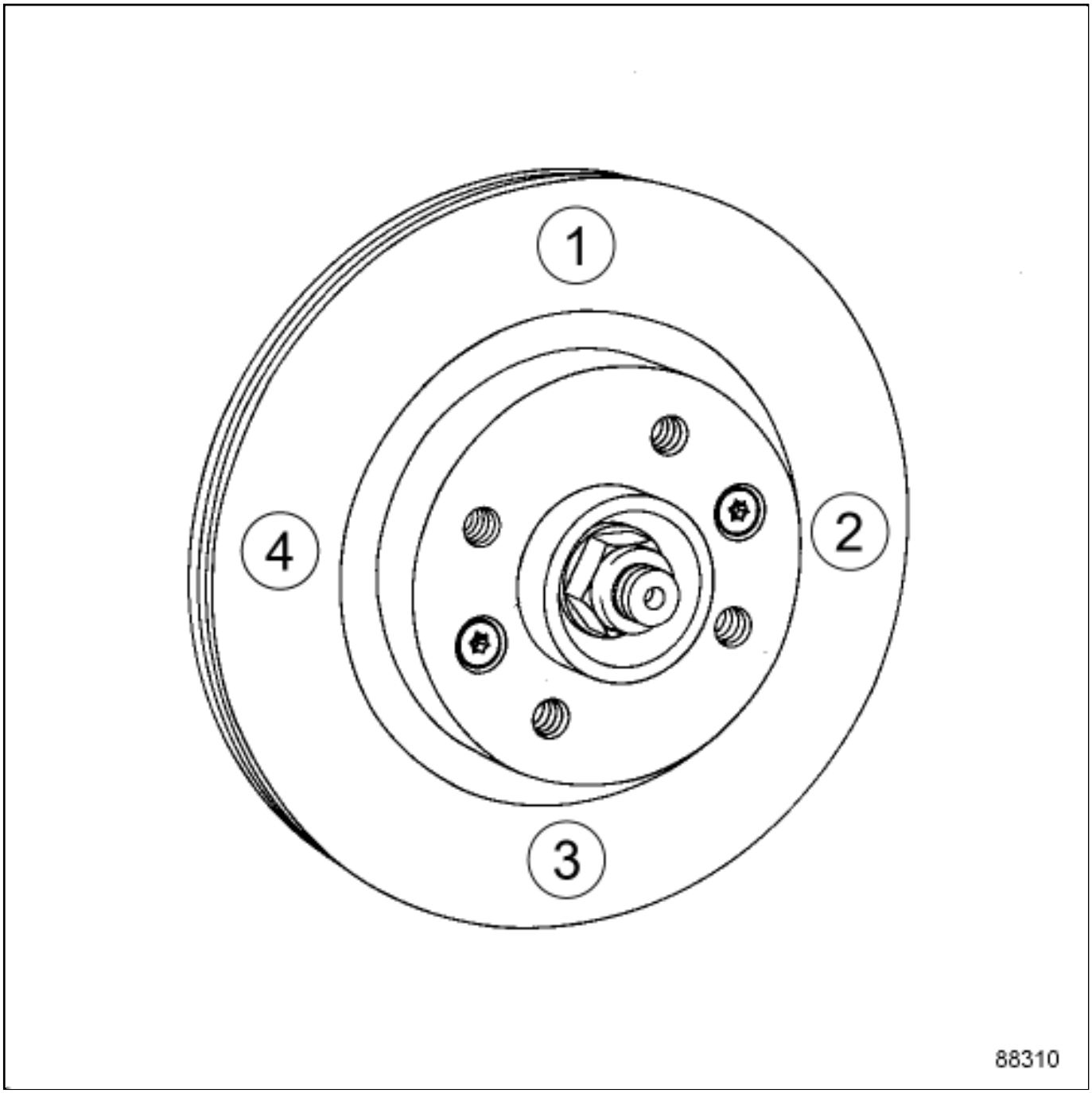
2. CHECKING OPERATION FOR PART CONCERNED

Note:

Use a Palmer type tool to check the thickness of the disc.



Position the Palmer tool(1) to measure the disc thickness.



Measure the thickness of the disc at 4 points in order (90˚ apart).

Compare the values with those recommended by the manufacturer(see **Brake: Specifications**) .

3. FINAL OPERATION

Replace the discs if necessary**(see 31A, Front axle components, Front brake disc: Removal - Refitting)** .

Refit the wheel in question**Wheel: Removal - Refitting** .

FRONT BRAKE DISC: DESCRIPTION

1. PREPARATION OPERATION FOR CHECK

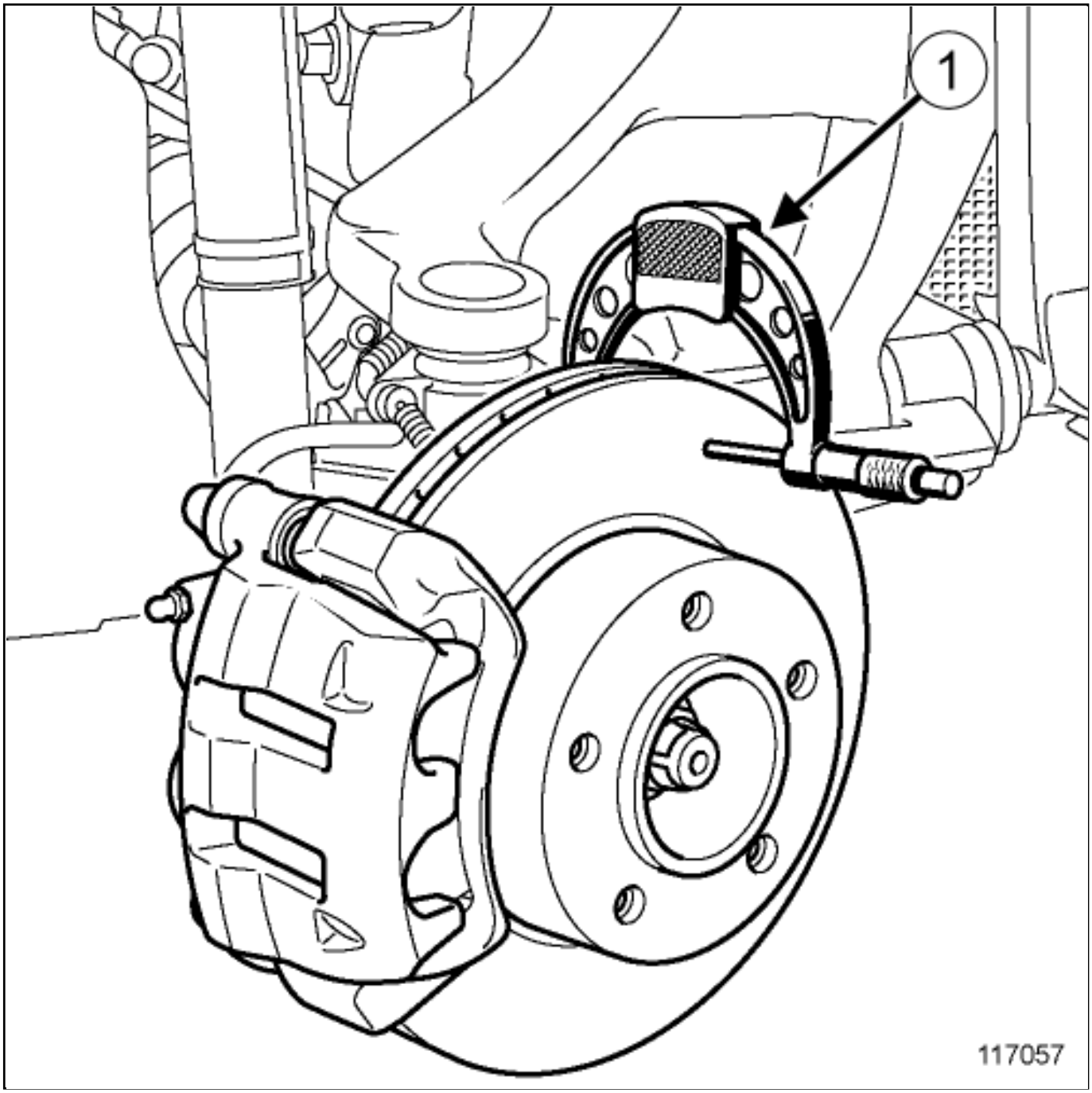
Position the vehicle on a two-post lift Vehicle: Towing and lifting .

Remove the wheel in question Wheel: Removal - Refitting .

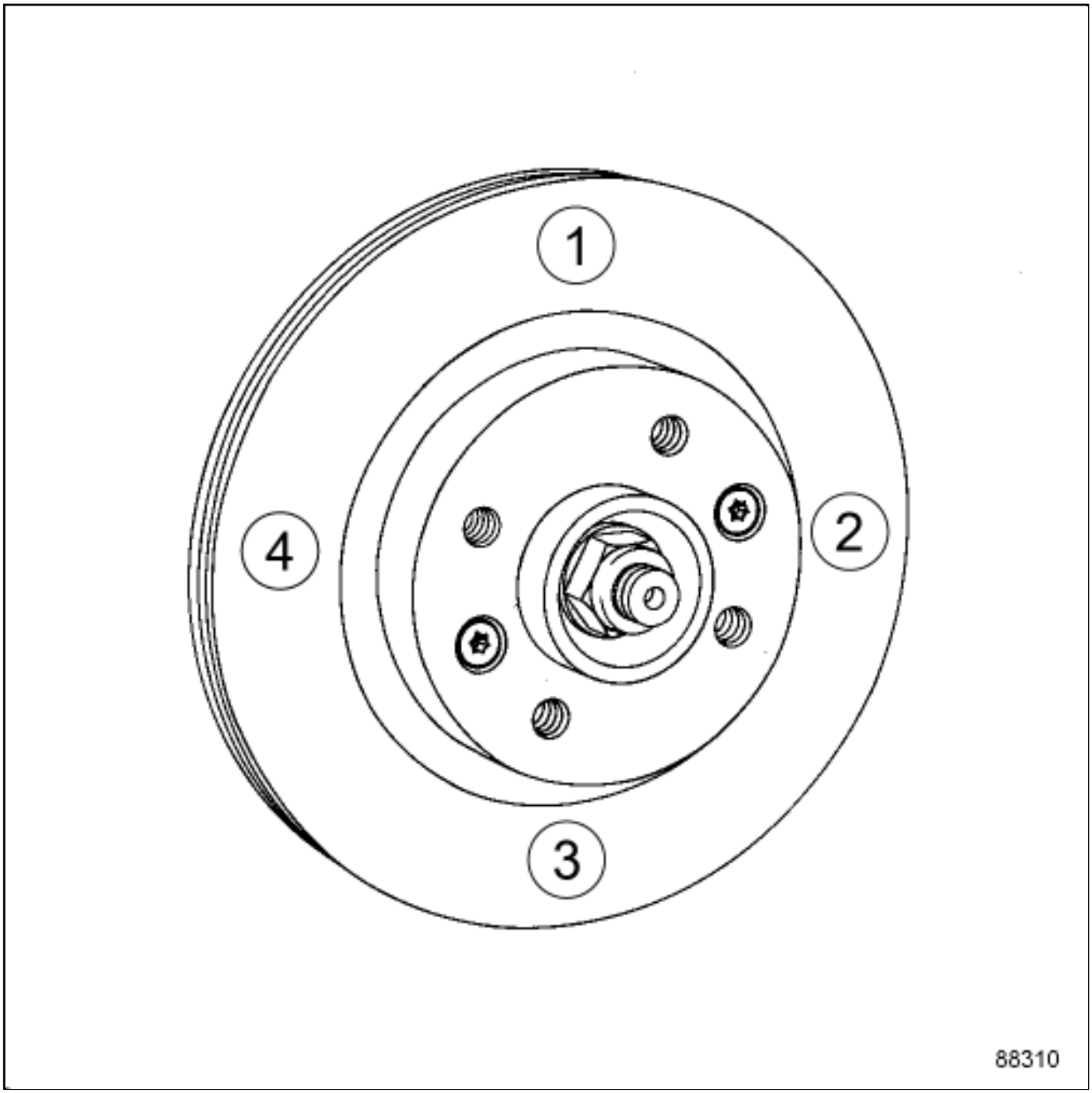
2. CHECKING OPERATION FOR PART CONCERNED

Note:

Use a Palmer type tool to check the thickness of the disc.



Position the Palmer tool(1) to measure the disc thickness.



Measure the thickness of the disc at 4 points in order (90˚ apart).

Compare the values with those recommended by the manufacturer**Brake: Specifications** .

3. FINAL OPERATION

Replace the discs if necessary**(see 31A, Front axle components, Front brake disc: Removal - Refitting)** .

Refit the wheel in question**Wheel: Removal - Refitting** .

Repair-13x03x03x03-02x21-1-25-1.xml

XSL version : 3.02 du 22/07/11

FRONT BRAKE DISC: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Brake discs cannot be reground. If there is excessive wear or scoring, the brake discs must be replaced (see **Brake: Specifications**) .

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheelsWheel: Removal - Refitting .
- Remove (see 31A, Front axle components, Front brake calliper assembly: Exploded view) :
  - the front brake pads,
  - the front brake calliper mounting.

2. REMOVAL OPERATION

- Remove the brake disc(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the discs using brake cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables -

Products).

- Dry the surface of the discs.

- Clean the mating faces of the disc on the hub using a wire brush and brake cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

2. REFITTING OPERATION

- Refit the brake disc with a new bolt(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

- Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT BRAKE DISC: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Brake discs cannot be reground. If there is excessive wear or scoring, the brake discs must be replaced Brake: Specifications .

Location and specifications (tightening torques, parts always to be replaced, etc.)Front hub carrier assembly: Exploded view .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the front wheelsWheel: Removal - Refitting .
- Remove Front brake calliper assembly: Exploded view :
  - the front brake pads,
  - the front brake calliper mounting.

2. REMOVAL OPERATION

- Remove the brake discFront hub carrier assembly: Exploded view .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the discs using brake cleanerVehicle: Parts and consumables for the repair (04B, Consumables -

Products).

- Dry the surface of the discs.

- Clean the mating faces of the disc on the hub using a wire brush and brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

2. REFITTING OPERATION

- Refit the brake disc with a new bolt Front hub carrier assembly: Exploded view .

- Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT BRAKE HOSE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
pedal press

WARNING

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair**(see 31A, Front axle components, Front axle components: Precautions for the repair)** .

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

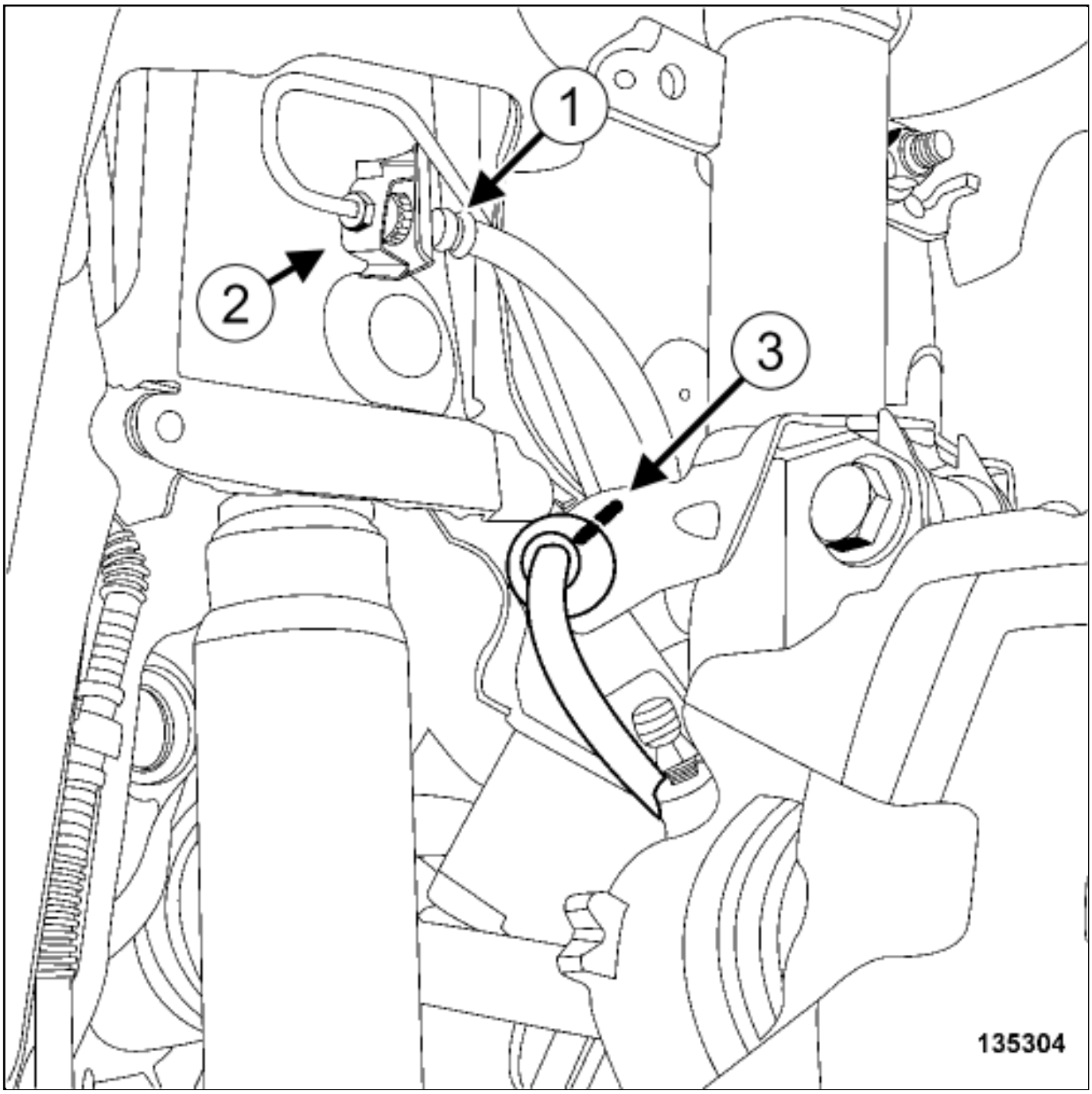
1. REMOVAL PREPARATION OPERATION

Place:

- the vehicle on a two-post lift**Vehicle: Towing and lifting** ,
- the wheels straight-ahead,
- a pedal presson the brake pedal to limit the outflow of brake fluid.

Remove the front wheel**Wheel: Removal - Refitting** .

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Loosen the hose union(1) on the rigid pipe union.
- Remove the retaining(2) fork from the hose.
- To avoid the premature damage of the brake hose by friction, observe the following procedure before unclipping the hose:
- Set the wheels straight ahead.
- If the vehicle is equipped:
  - mark the position of the cap on the base of the shock absorber using a permanent marker,
  - unclip the brake hose cap(3) from the shock absorber base.

- Loosen the hose union on the brake calliper.
- Remove the brake hose.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

- Set the wheels straight ahead.
- Refit the brake hose at the calliper end.
- Torque tighten the brake hose union on the calliper Brake circuit: Tightening torque .
- Clip the brake hose cap onto the base of the shock absorber by aligning the marks made with the indelible marker pen (if the vehicle is equipped).
- Refit:
  - the brake hose on the rigid pipe union,
  - the hose retaining fork.
- Torque tighten the brake hose union on the rigid pipe union Brake circuit: Tightening torque .

2. FINAL OPERATION

- Refit the front wheel Wheel: Removal - Refitting .
- Remove the pedal press from the brake pedal.
- Bleed the brake circuit Braking circuit: Bleed .

XSL version : 3.02 du 22/07/11

FRONT BRAKE PADS: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Brake calliper piston return tool.	Fre. 1190-01

Equipment required
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

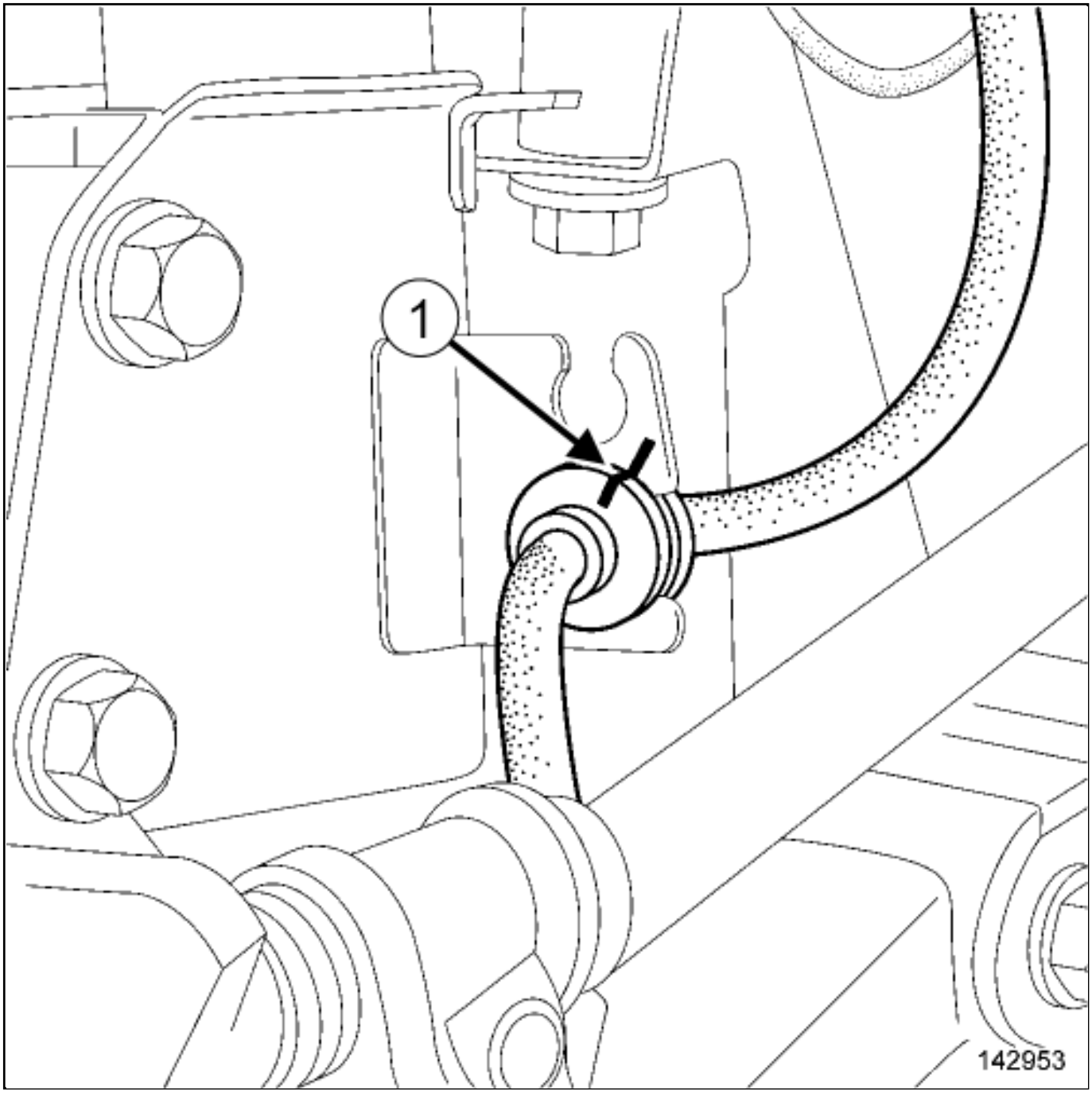
REMOVAL

1. REMOVAL PREPARATION OPERATION

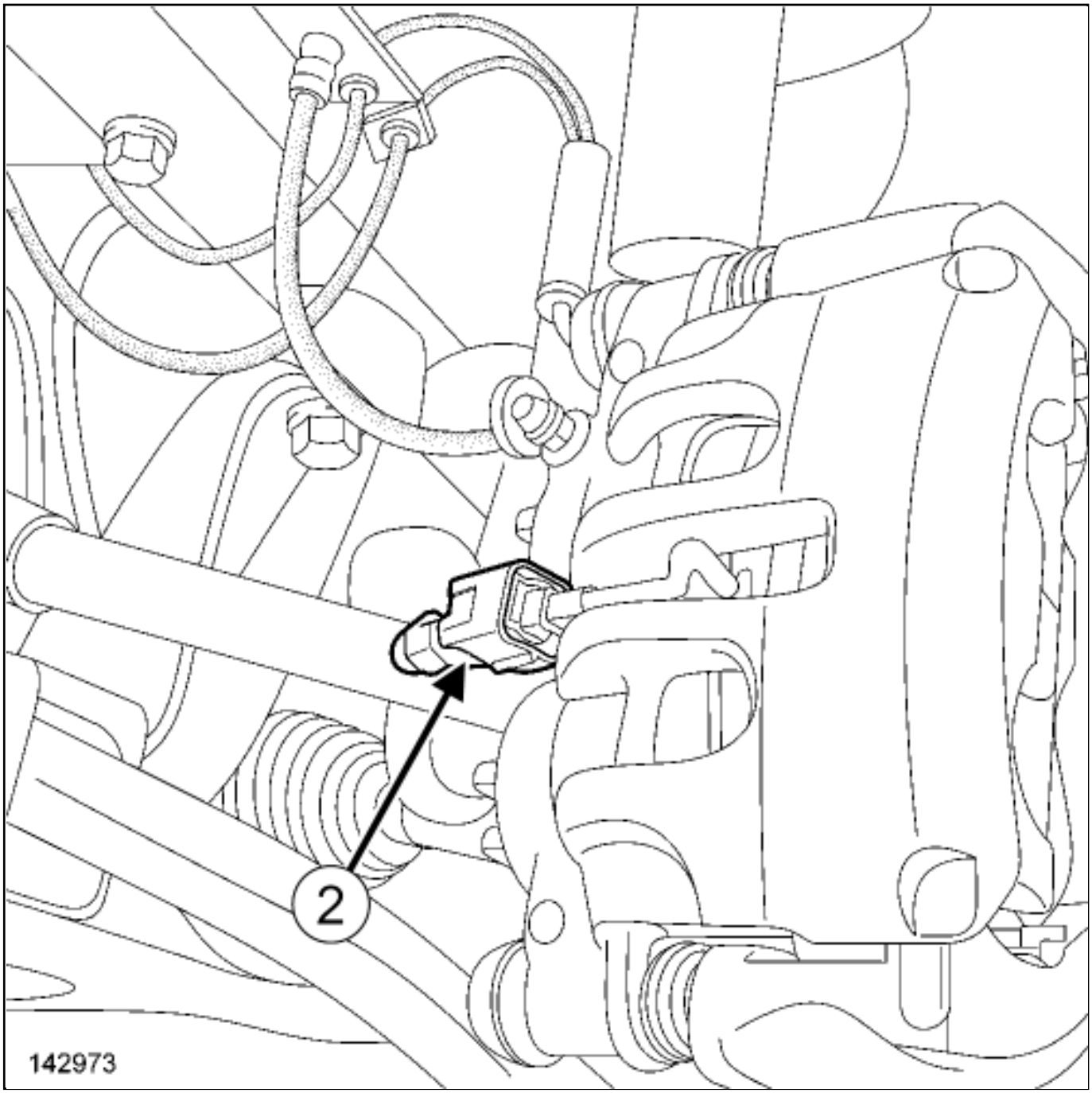
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove the front wheelsWheel: Removal - Refitting .

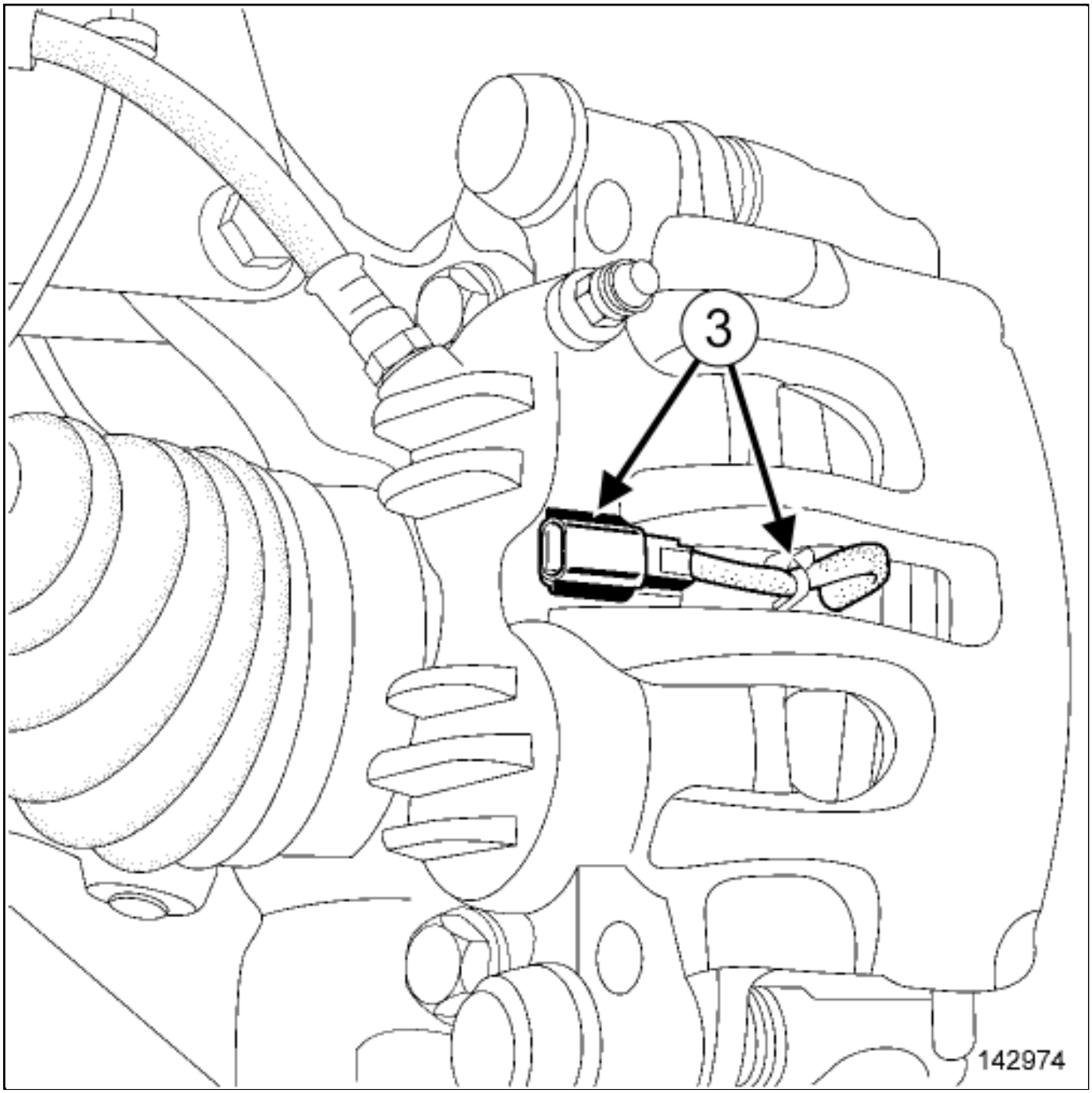
2. REMOVAL OPERATION



- Set the wheels straight ahead.
- Mark the position of the front brake hose cap(1) on the base of the shock absorber using a indelible pencil .
- Unclip the front brake hose cap(1) from the shock absorber base.



- Disconnect the connector(2) of the front brake pad wear warning light.

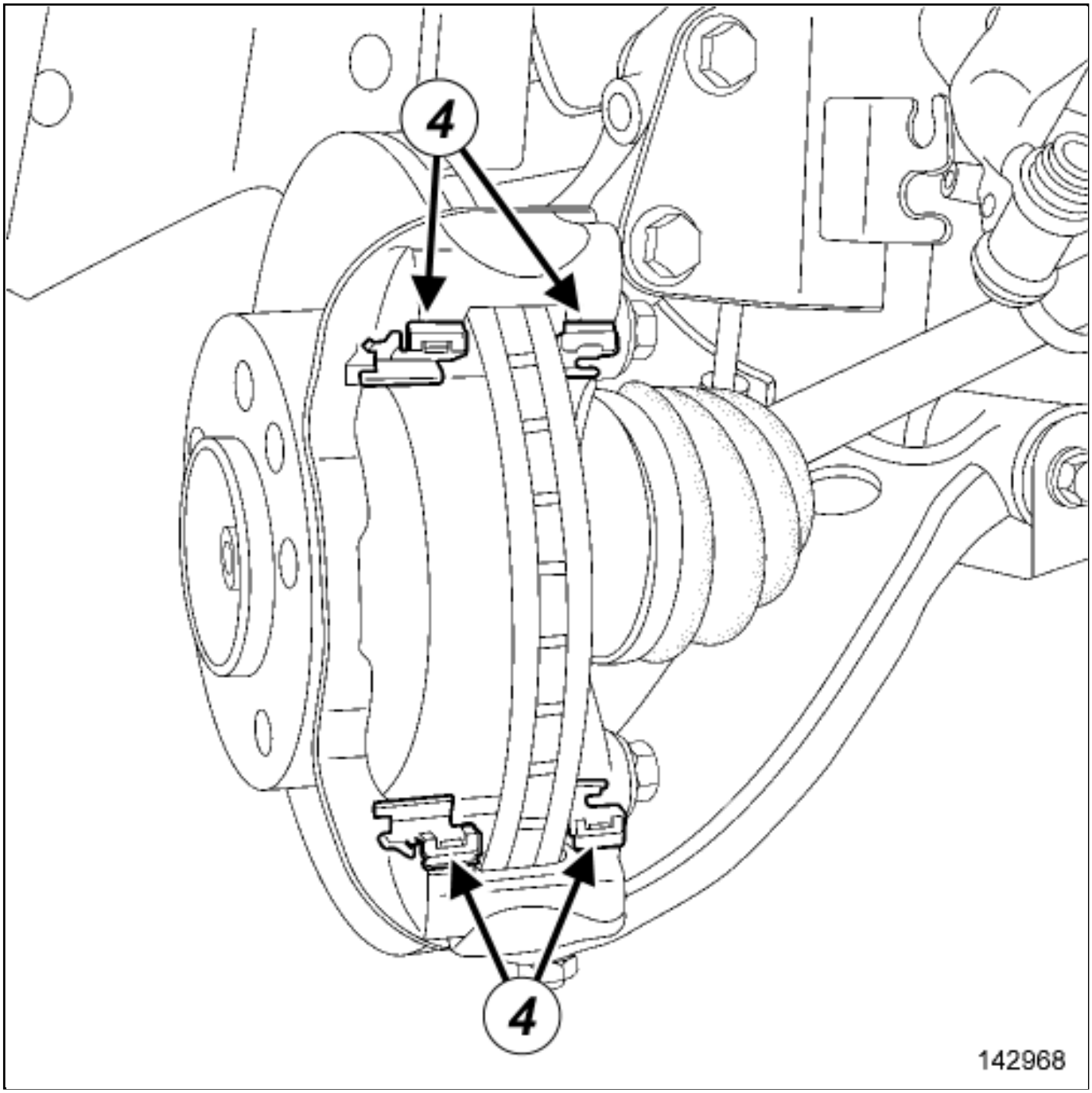


- Unclip the cable of the front brake pad wear warning light at(3) .

- Remove (see 31A, Front axle components, Front brake calliper assembly: Exploded view) :
  - the cap of the lower guide pin bolt,
  - the bolt of the lower guide pin.

- Tip the front brake calliper.

- Remove the front brake pads(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .



Remove the noise reducing fins(4) .

REFITTING

1. REFITTING PREPARATION OPERATION

Measure the thickness of the brake pads and compare them with the minimum values(see **Brake:**

Specifications) .

Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

Clean using a wire brush and brake cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):

- the front calliper mountings,
- the front callipers.

Push the front brake calliper piston fully into its housing using the toolBrake calliper piston return tool. (**Fre. 1190-01**) .

2. REFITTING OPERATION

Refit **(see 31A, Front axle components, Front brake calliper assembly: Exploded view)** :

- the noise-reducing fins,
- the front brake pads.

Fit the front brake calliper.

Proceed in the reverse order to removal.

Set the wheels straight ahead.

Clip the front brake hose cap on to the base of the shock absorber, aligning the marks made using a indelible pencil.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Repair-13x03x03x01-01x37-1-31-1.xml

XSL version : 3.02 du 22/07/11

FRONT BUMPER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

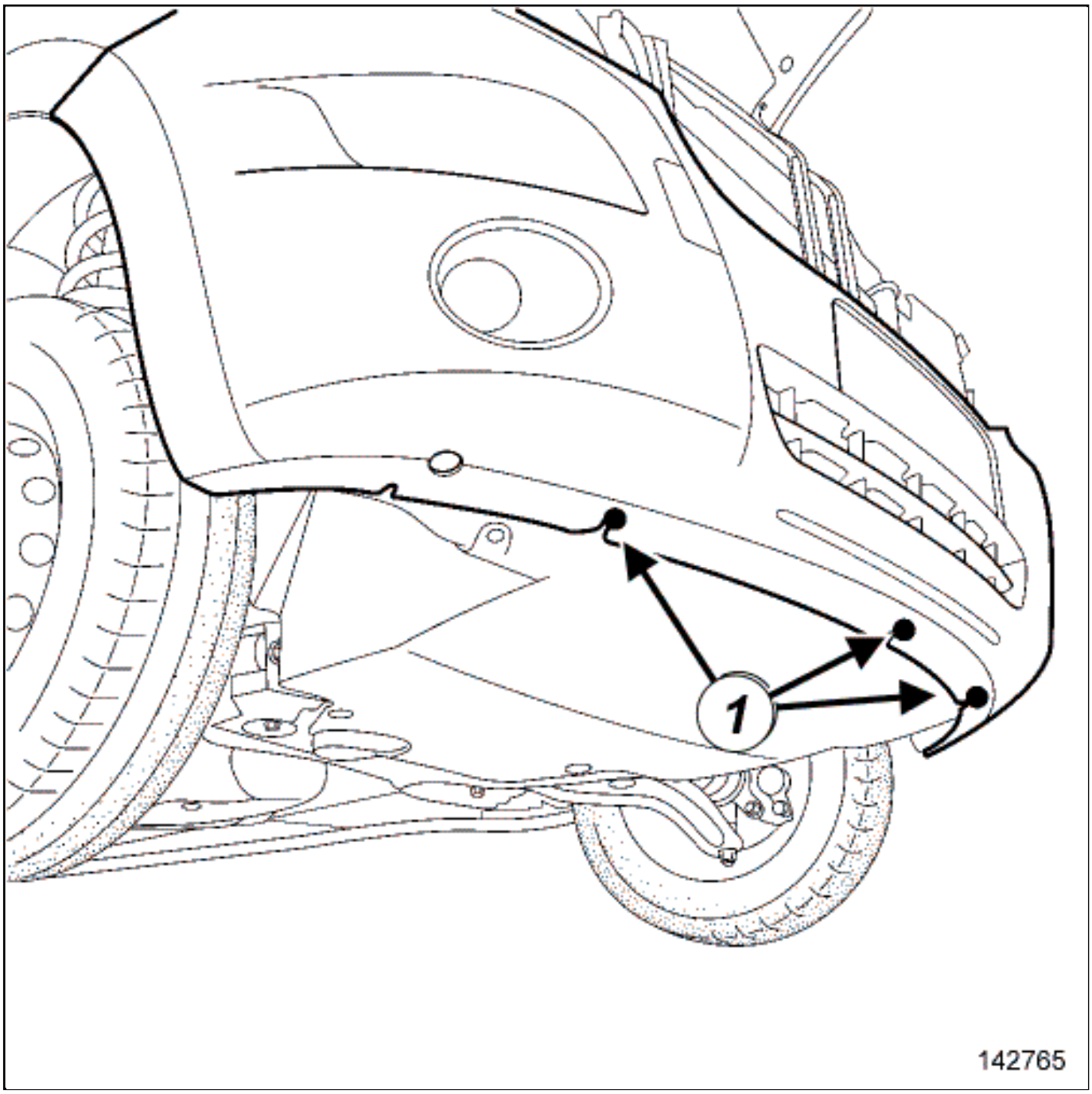
REMOVAL

1. REMOVAL PREPARATION OPERATION

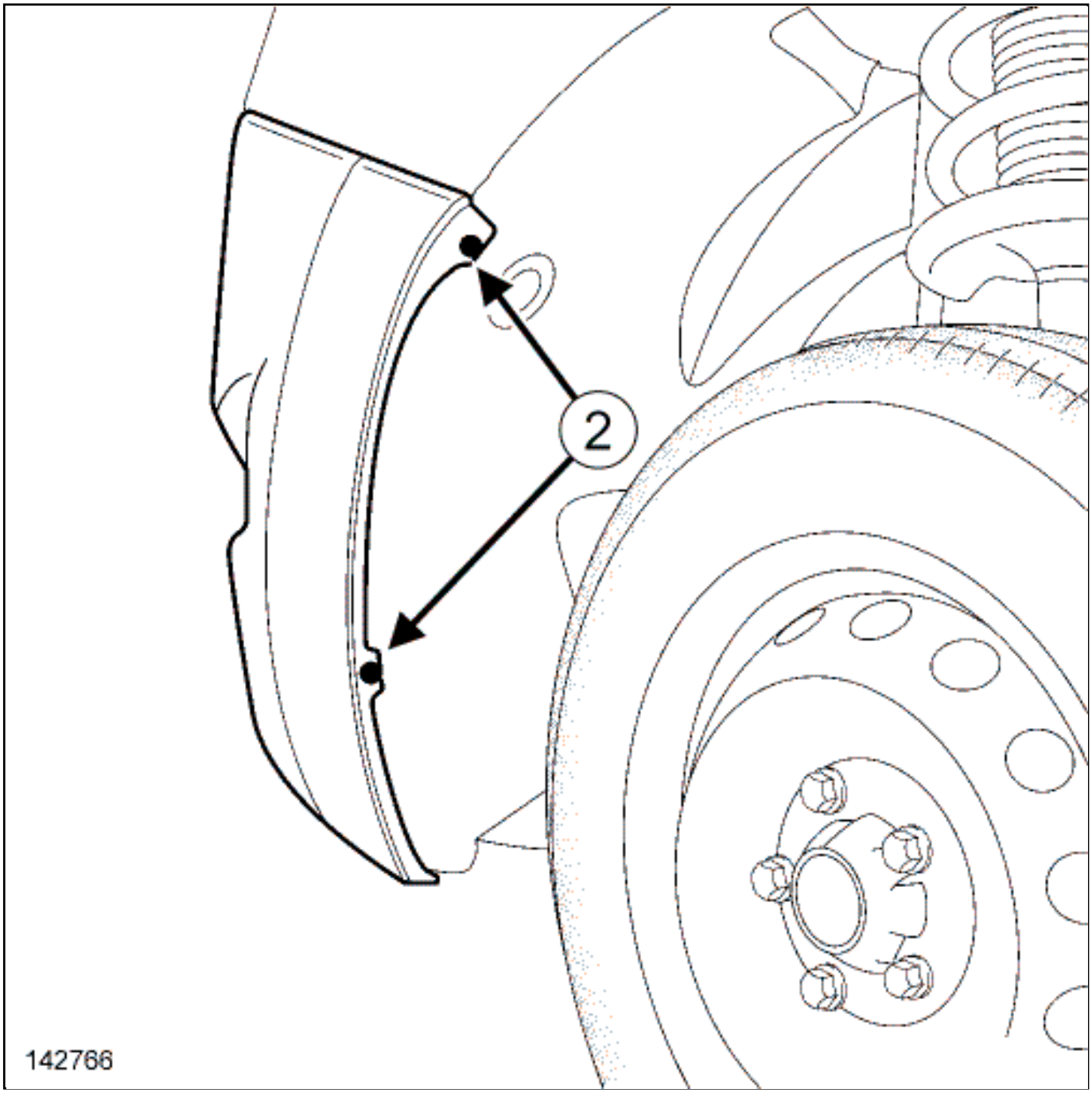
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** ,
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights).

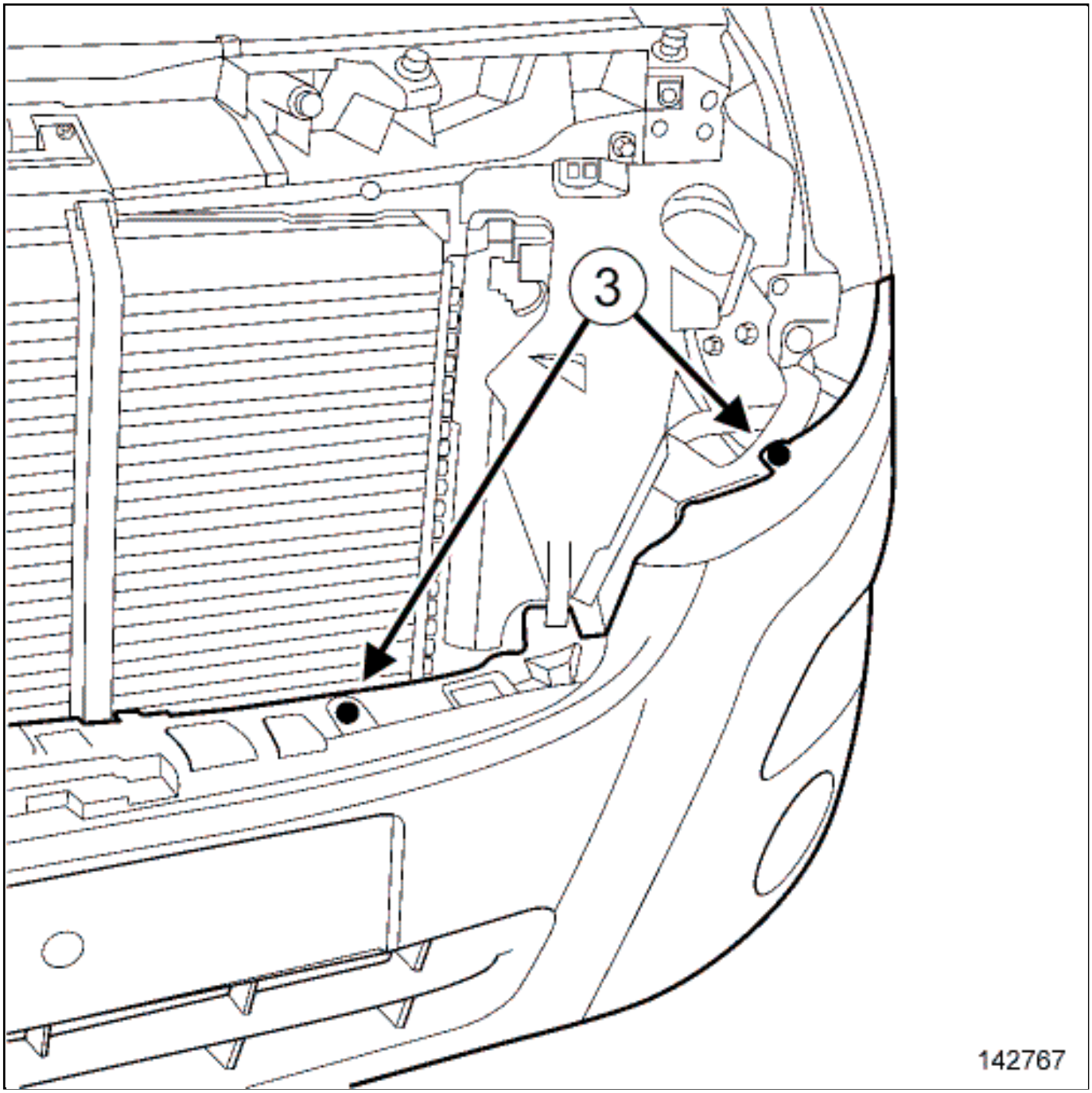
1. REMOVAL OPERATION



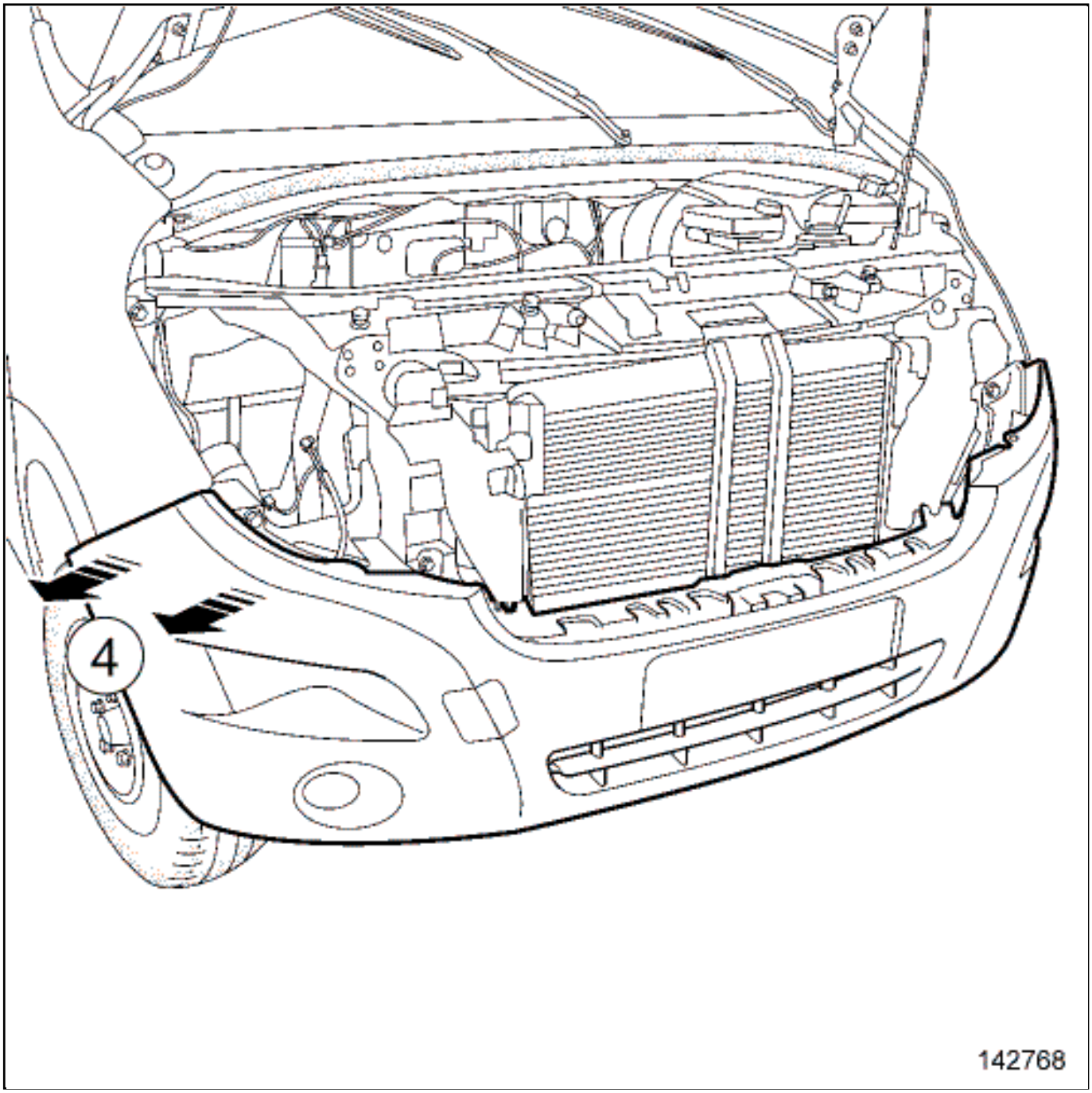
- Remove the bolts(1) .



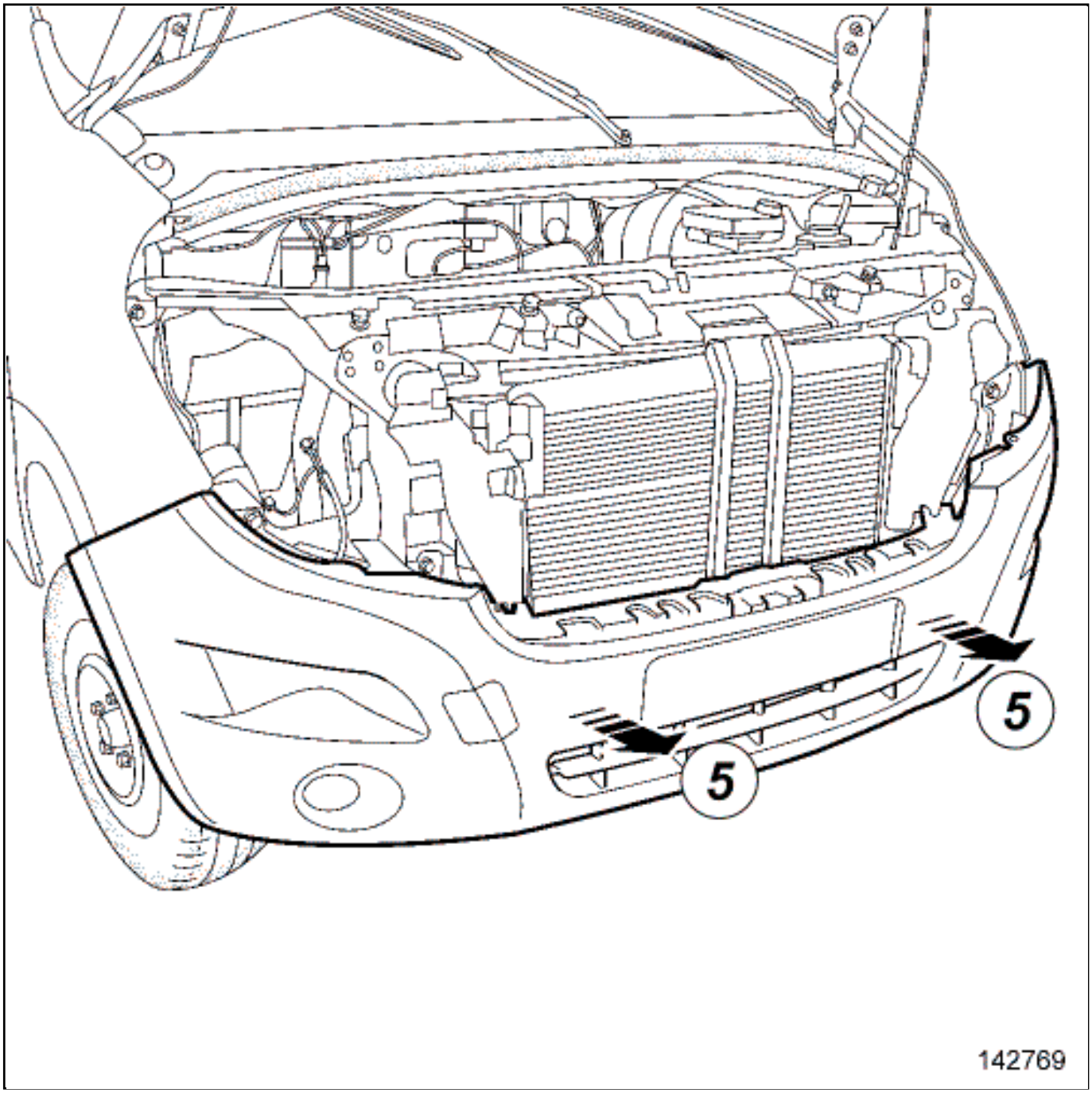
- Remove the bolts(2) .



- Remove the bolts(3) .



Unclip the side sections of the front bumper by(4) .



Partially remove the front bumper by(5) (this operation requires two people).

Disconnect the fog light connectors.

Remove the front bumper (this operation requires two people).

REFITTING

Proceed in the reverse order to removal.

Repair-50x05x02-01x37-1-21-1.xml

XSL version : 3.02 du 22/07/11

FRONT CAMERA : REMOVAL - REFITTING

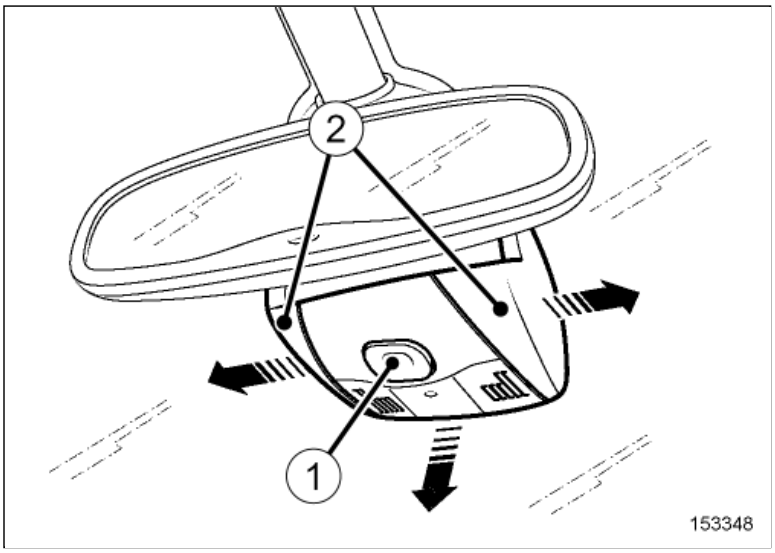
Special tooling required	
Target screen for rear view camera adjustment	
Target screen for front view camera adjustment	

Equipment required
Diagnostic tool

REMOVAL

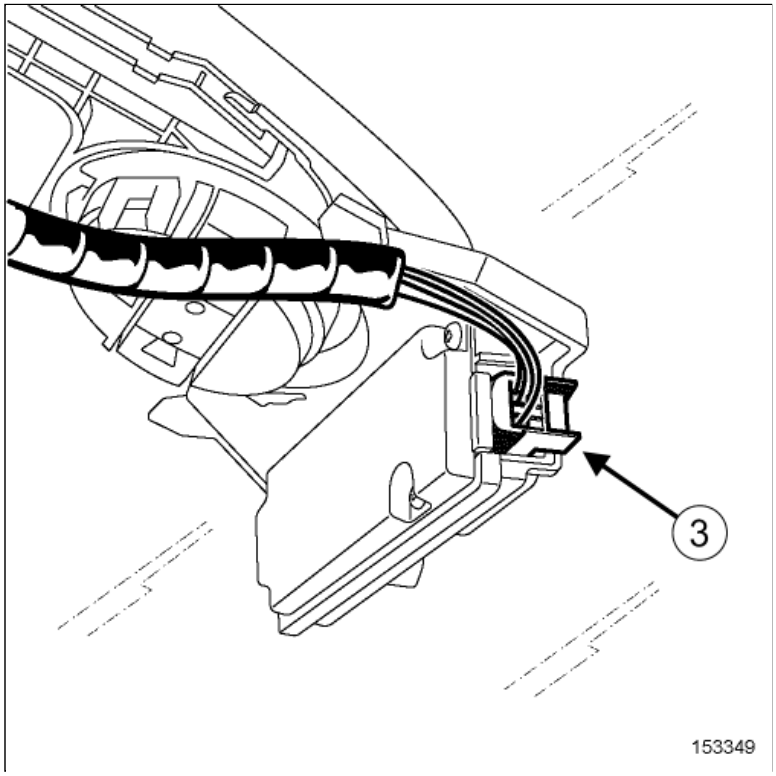
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

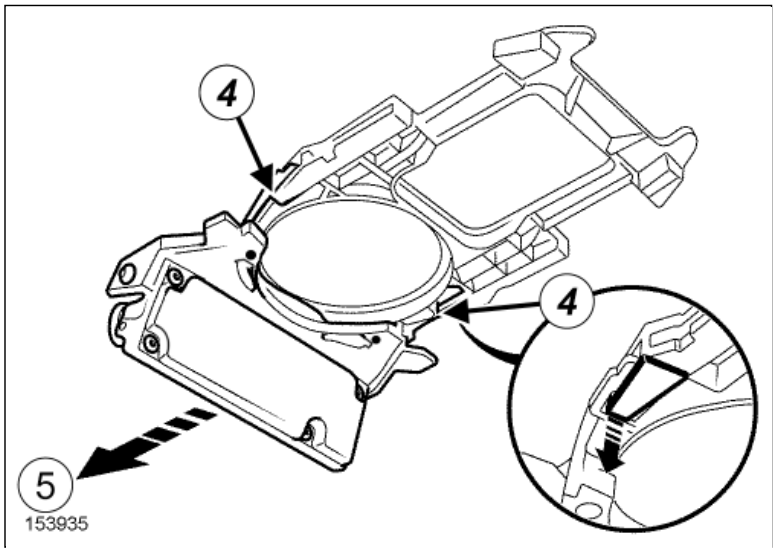


- Remove:
  - the centre trim(1) ,
  - the side trims(2) .

2. REMOVAL OPERATION



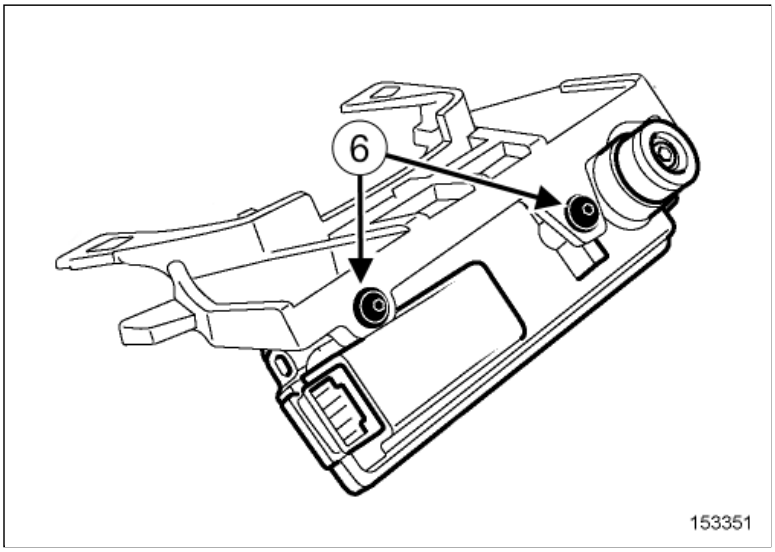
- Disconnect the front camera connector(3) .



- Remove(5) the front camera bracket by unclipping with care the clips(4) .

Note:

Unclip carefully the front camera bracket from the windscreen support; damage on windscreen support causes a replacement of the windscreen.



- Remove:
  - the front camera screws(6) ,
  - the front camera.

REFITTING

1. REFITTING PREPARATION OPERATION

- Part always to be replaced:
  - the front camera screws.

2. REFITTING OPERATION

- Refit:
  - the front camera on its bracket,
  - the front camera screws.

- Torque tighten the front camera screws on the front camera bracket1.75 N.m .

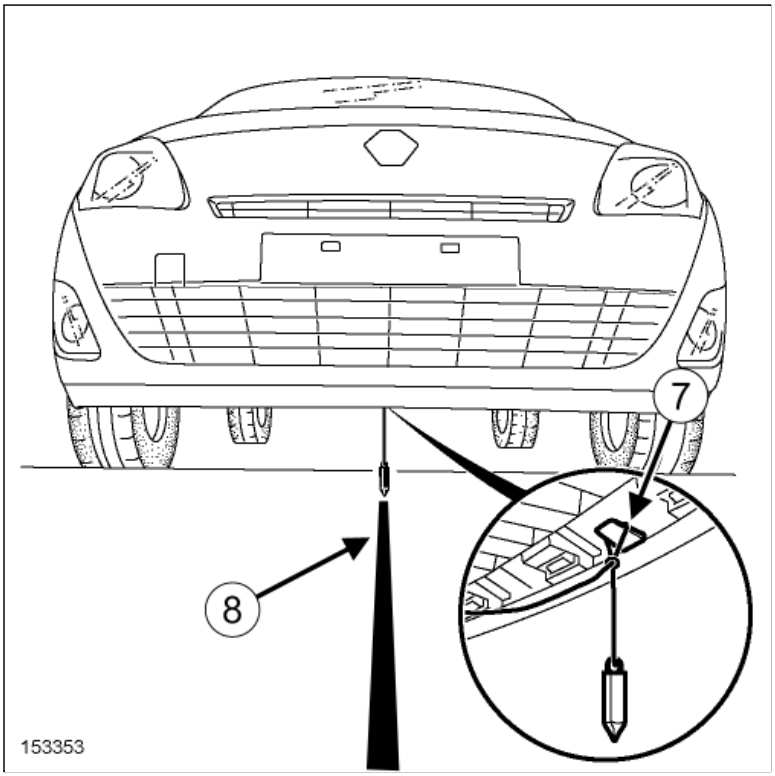
- Proceed in the reverse order to removal.

3. CALIBRATION

- Position the vehicle on a level horizontal working area.

- Ensure that:
  - the luggage compartment is empty,
  - the tyre pressure is set to the standard tuning.

- During the calibration operation, no passenger must be in the vehicle.

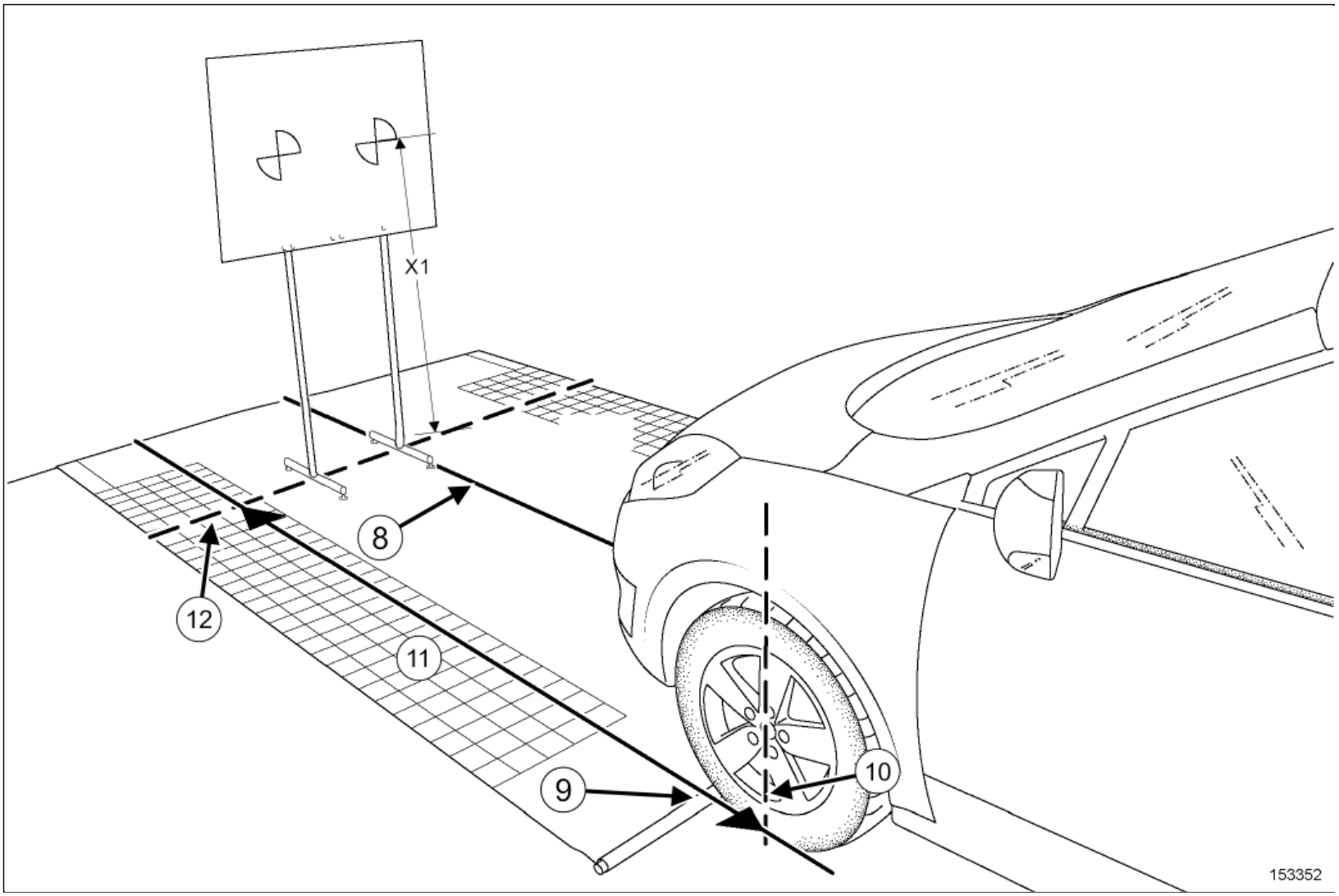


- Mark the central axis of the vehicle on the bumper by fitting the plumb line on the front bumper pin(7)
- Position the gaugeTarget screen for rear view camera adjustment on the ground ahead and parallel to the vehicle, aligning the central axis of the vehicle with the central black line(8) of the gauge.
- Move the gaugeTarget screen for rear view camera adjustment forward so that the two front wheels are in contact with the gauge, ensuring that the two wheels touch the gauge at(9) .
- Check that the central axis of the vehicle is correctly aligned with the central black line of the gauge(8) .

Note:

Incorrect alignment of the two marks prevents the image from being adjusted correctly.

- If the marks are not aligned, align them before unrolling the gauge.
- Unroll the gauge completely ahead the vehicle, ensuring that the axes have not moved.



- From the front wheel axle(10), measure the3000 mm (11) each side of the vehicle, parallel to the central black line of the gauge(8).
  - make a mark(12) on the gauge, perpendicular to the central black line of the gauge,
  - position the right foot of theTarget screen for front view camera adjustment on the central black line of the gauge at(8)

Note:

The two targets plane shall be located at a distance of 3000 mmof the front axle vehicle.

The right target shall be aligned with the vehicle center line with a maximum tolerance of +/- 50 mm.

- Adjust the targets height(X1) to 1.45 musing the foot height adjustment screws.

Note:

The maximum height position deviation of the left/right foot of theTarget screen for front view camera adjustment is +/- 9 mm(wich stands for +/- 1˚ of roll angle between the two targets and the horizontal line).

- Switch on the ignition.

- Apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select “Front camera computer”,
  - go to repair mode,
  - display the "Before/after repair procedure" for the computer selected,
  - carry out the operations described in the "After repair procedure" section.

FRONT CENTRE SEAT BELT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front bench seat: Exploded view**) (75A, Front seat frames and mechanisms).

Note:

The seat belt must be handled by the inertia reel mechanism (risk of damaging the strap).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Note:

If the vehicle is equipped with a passenger frontal airbag, the front centre seat belt is equipped with a pyrotechnic system. The battery must be disconnected before the operation.

If the vehicle is not equipped with a passenger frontal airbag, the front centre seat belt is equipped with a mechanical inertia reel. It is not necessary to disconnect the battery.

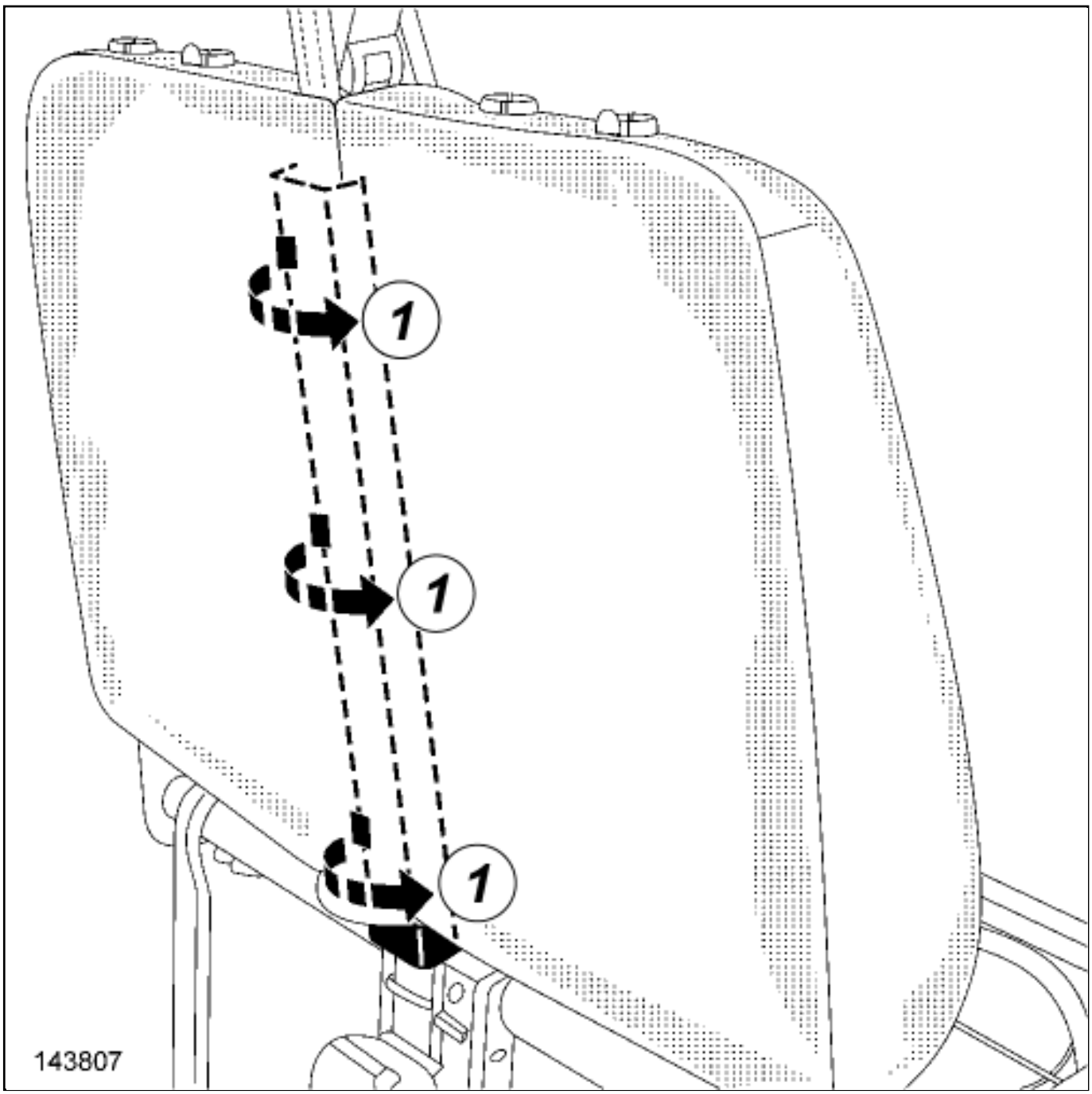
- Remove the complete front bench seat(see **Front bench seat: Exploded view**) (75A, Front seat frames and

mechanisms).

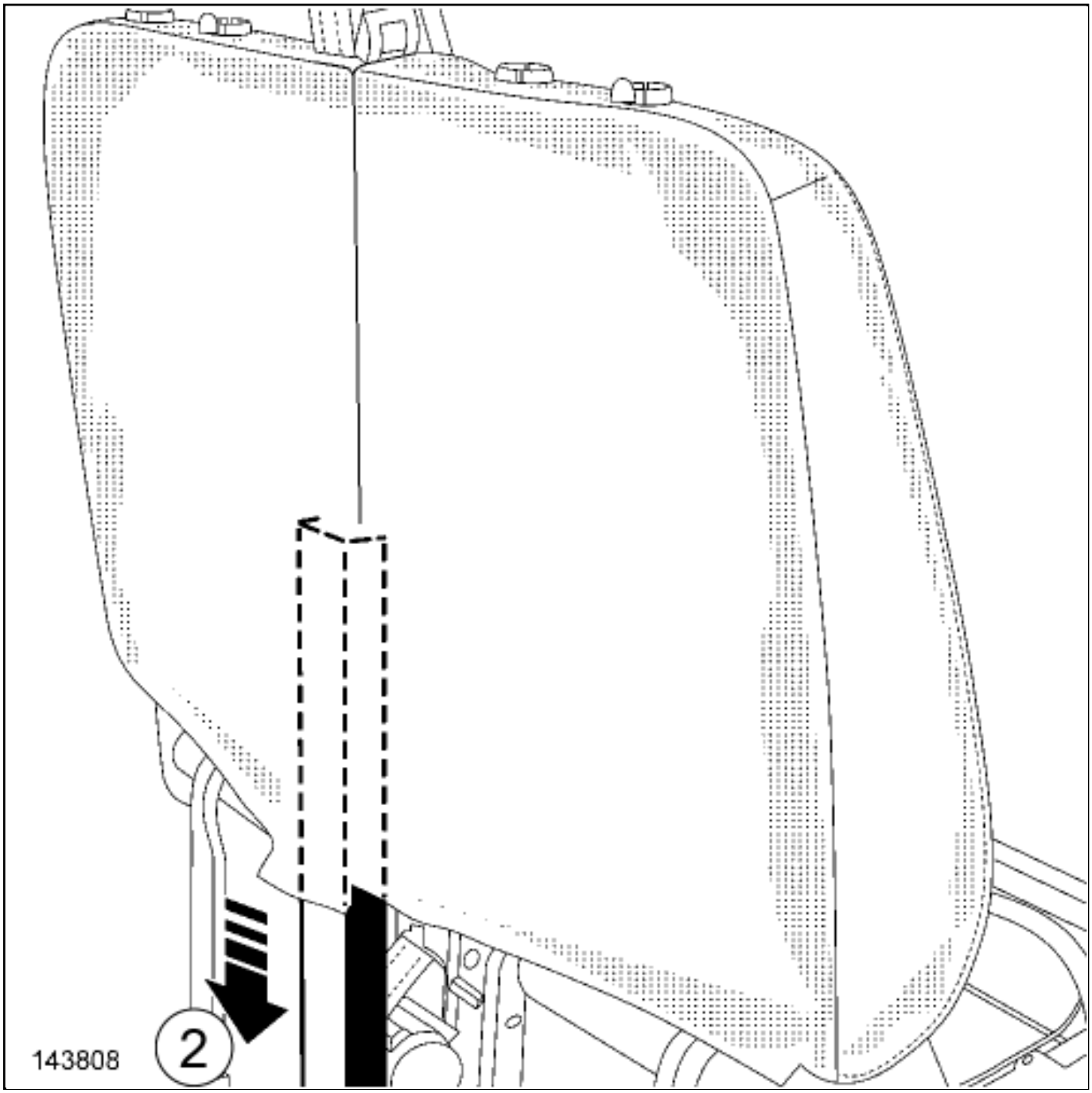
- Remove the casing of the front bench seat belt inertia reel(see **Front bench seat: Exploded view**) (75A, Front seat frames and mechanisms).

- Remove the casing for the seat belt return mechanism(see **Front bench seat: Exploded view**) (75A, Front seat frames and mechanisms).

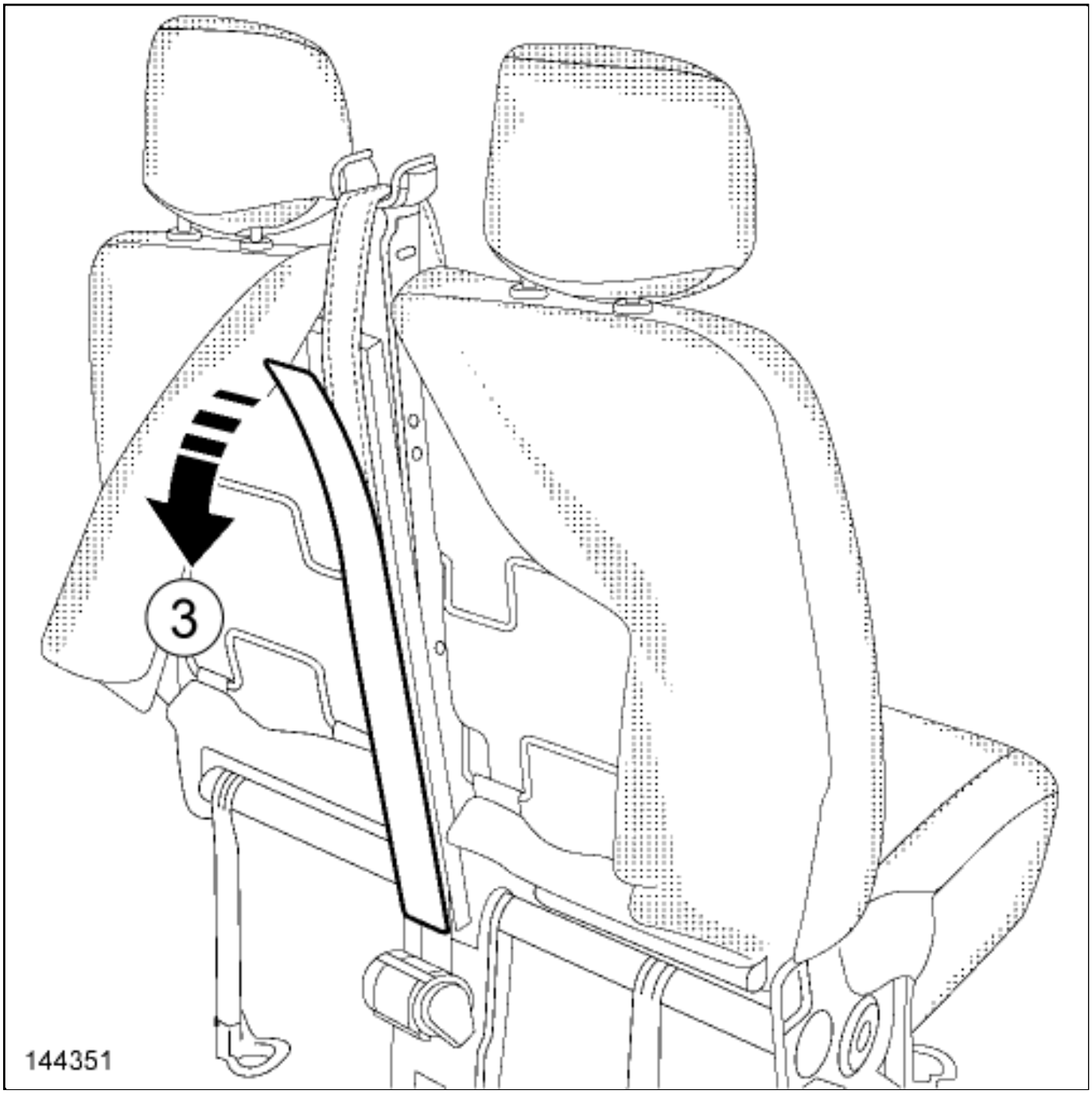
2. REMOVAL OPERATION



- Unclip the front bench seat belt casing by(1) .



- Slide the seat belt casing of the front bench seat at(2) in order to release the retaining sections of the front bench seatback cover.



- Detach the closure strip of the front bench seat belt strap guide at(3) .

- Extract the front bench seat belt from its guide.

- Remove the front bench seat belt(see **Front bench seat: Exploded view**) (75A, Front seat frames and mechanisms).

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the mountings of the front centre seat belt

- Detach the double-sided adhesive tape from the closure strip of the front bench seat belt strap guide.

- Use a LINT-FREE CLOTHsoaked in heptane(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the two parts in contact with the front bench seat belt strap guide.

- Use a clean and dry LINT-FREE CLOTH(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to wipe the two parts in contact with the front bench seat belt strap guide.

2. REFITTING OPERATION

- Refit the front bench seat belt(see **Front bench seat: Exploded view**) (75A, Front seat frames and mechanisms).

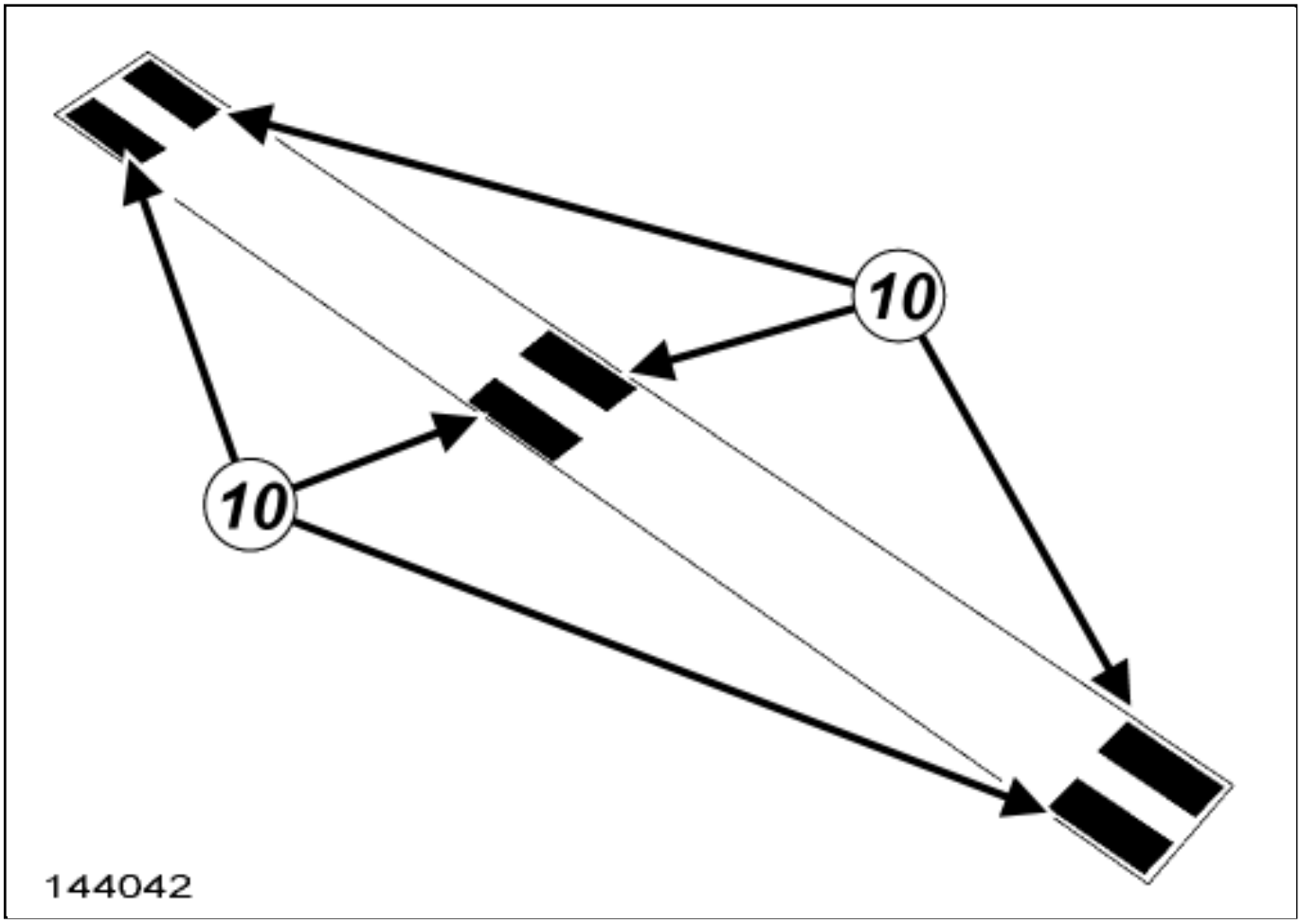
- Insert the front bench seat belt strap in its guide.

Note:

Check that the seat belt is not twisted between the inertia reel and the front bench seat belt return mechanism.

Note:

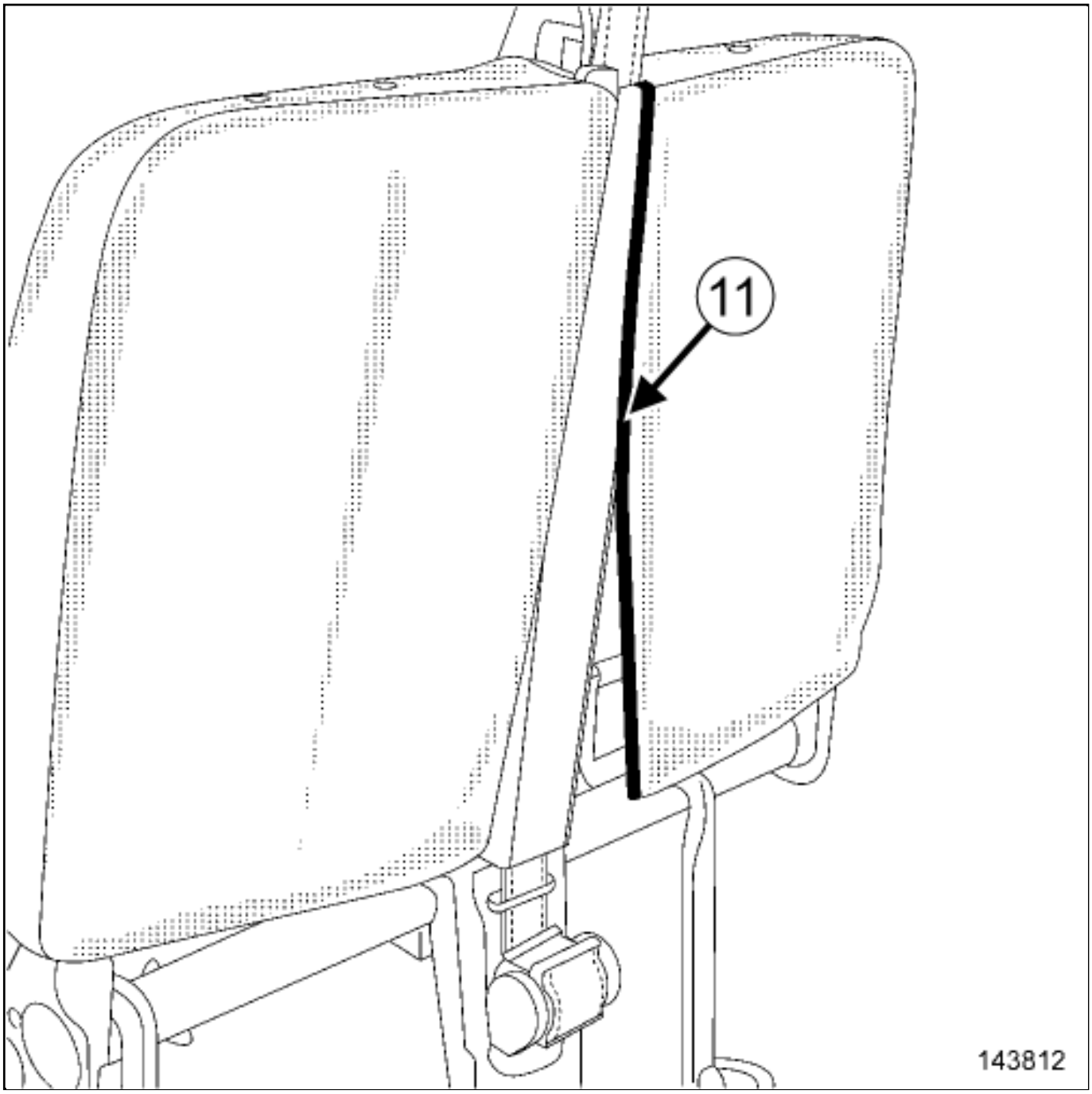
Check that the seat belt is not twisted between the front bench seat belt return mechanism and the seat belt lower fitting on the bench seat.

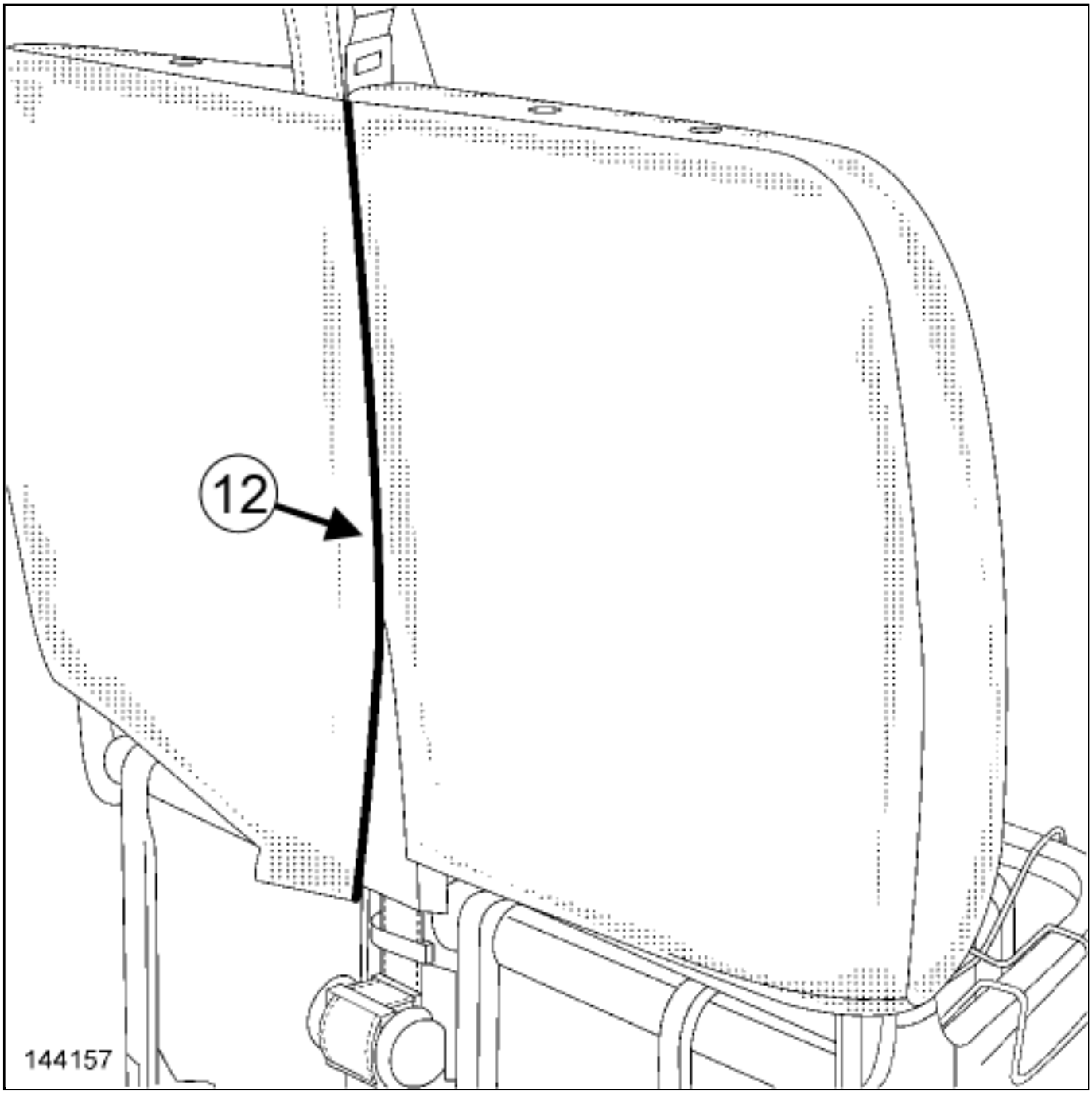


Bond:

- double-sided adhesive tapes(**10**) on the closure strip of the front bench seat belt strap guide,
- the closure strip of the front bench seat belt strap guide on the strap guide.

Proceed in the reverse order to removal.


11
143812



Refit:

- the front bench seat belt casing,
- the retaining strips at(11) then (12) .

3. FINAL OPERATION

Proceed in the reverse order to removal.

WARNING

To eliminate the risk of any accident, do not reuse pyrotechnic components.

It is essential to destroy pretensioners or airbags before scrapping a vehicle or a part only (see 88C, Airbags and pretensioners, Airbags and pretensioners: Recycling - Destruction) .

4. CHECKING AFTER REPAIR

- Check for correct operation 2 times by unreeling the front bench seat belt 300 mmand allowing it to return.

- Check that the front bench seat belt locks correctly by pulling the front bench seat belt strap with increasing speed 200to 300mmmaximum until the inertia reel locks.

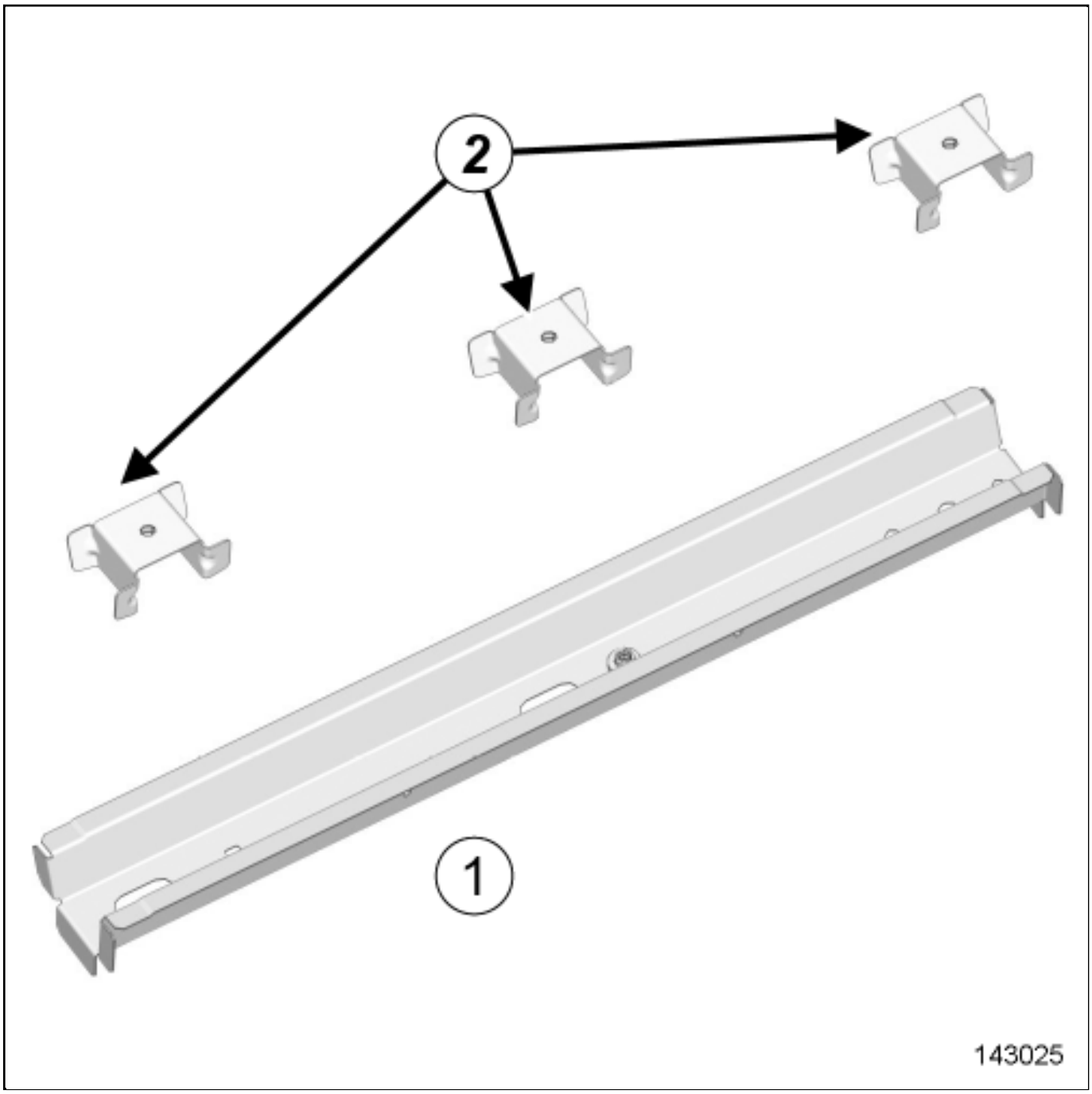
FRONT CROSS MEMBER UNDER FRONT SEAT: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Front cross member under front seat	THLE	1.2
(2)	Front seat mounting bracket	HLE	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

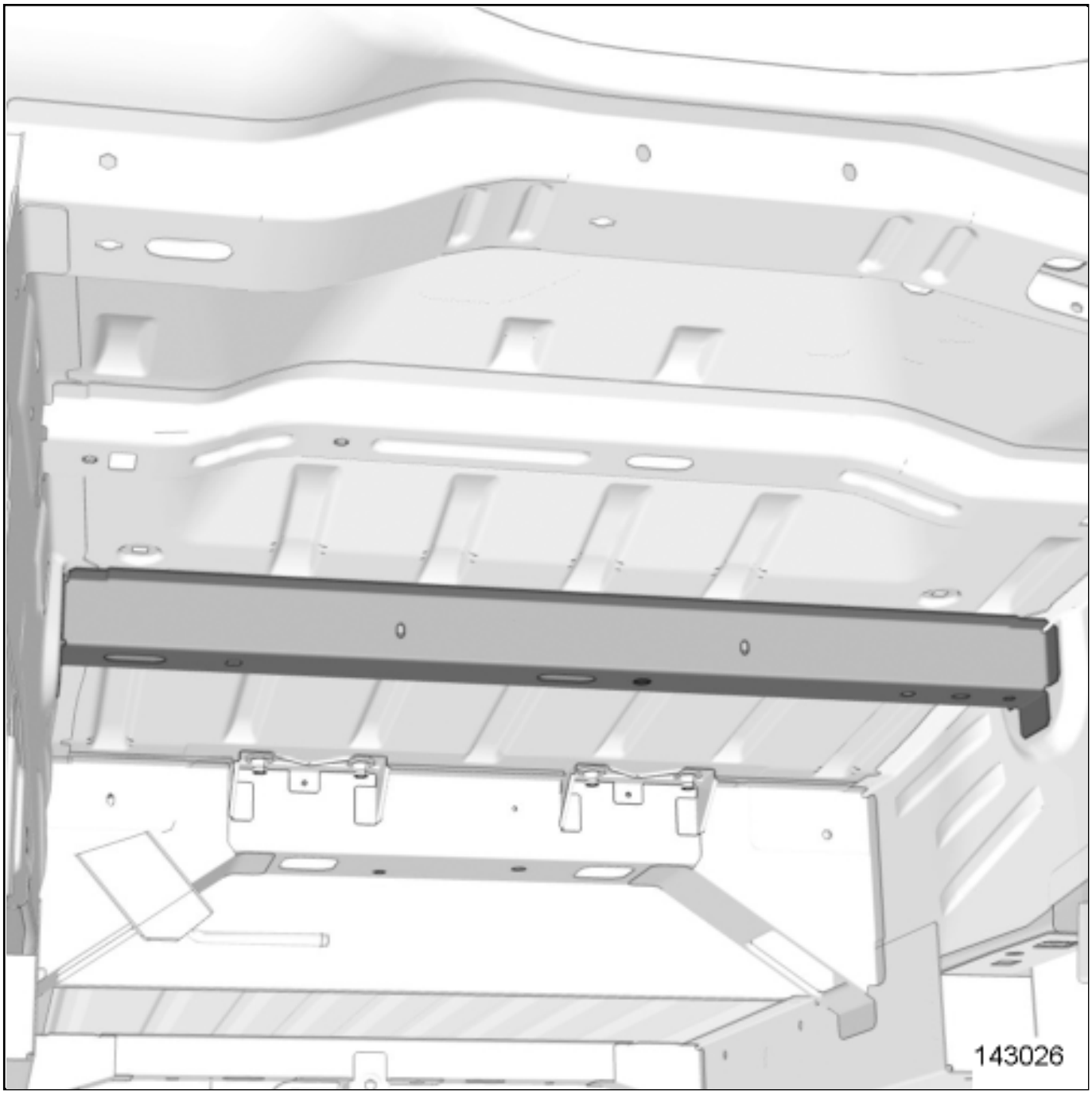
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

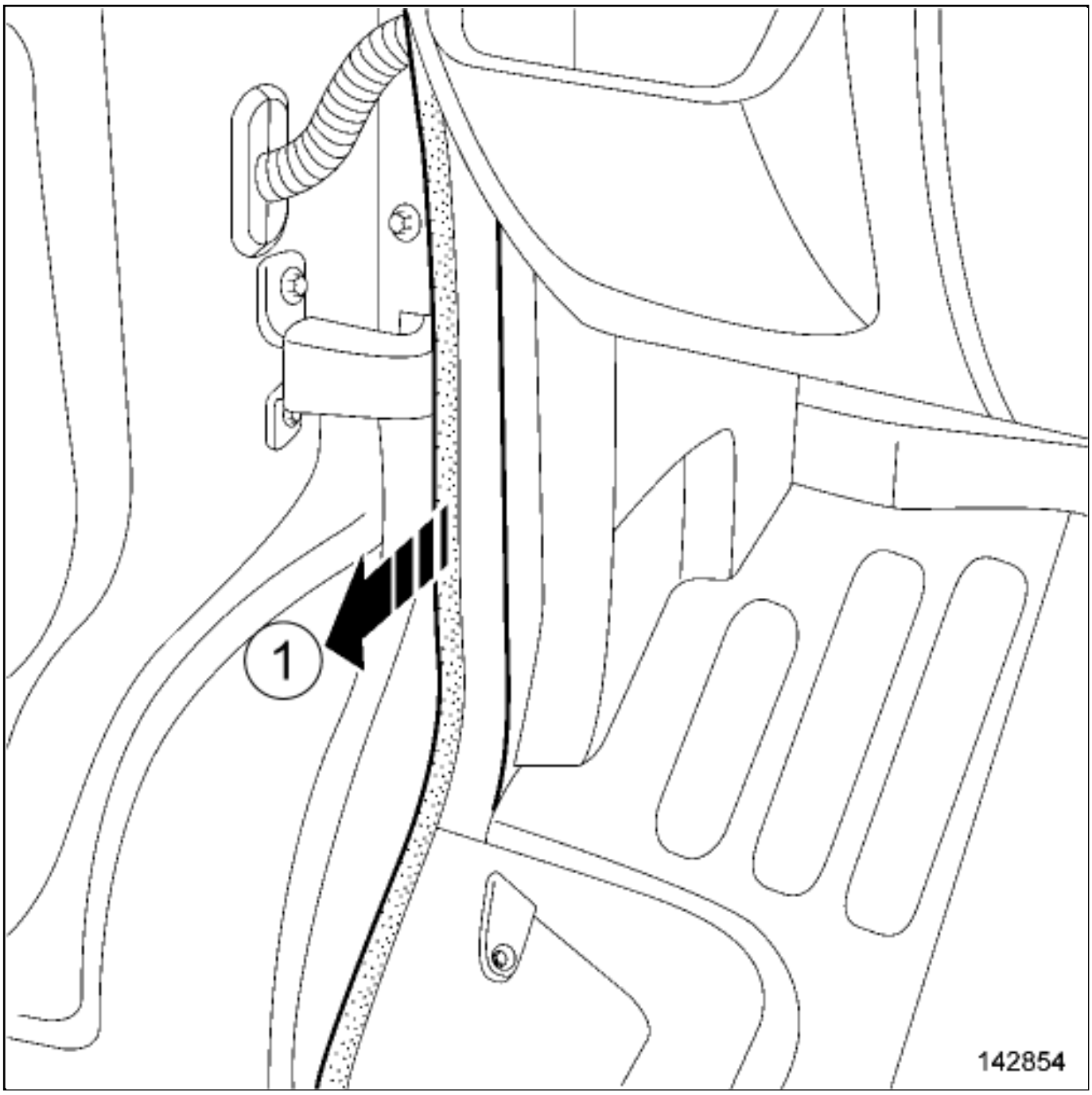
XSL version : 3.02 du 22/07/11

FRONT DOOR SILL LINING: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

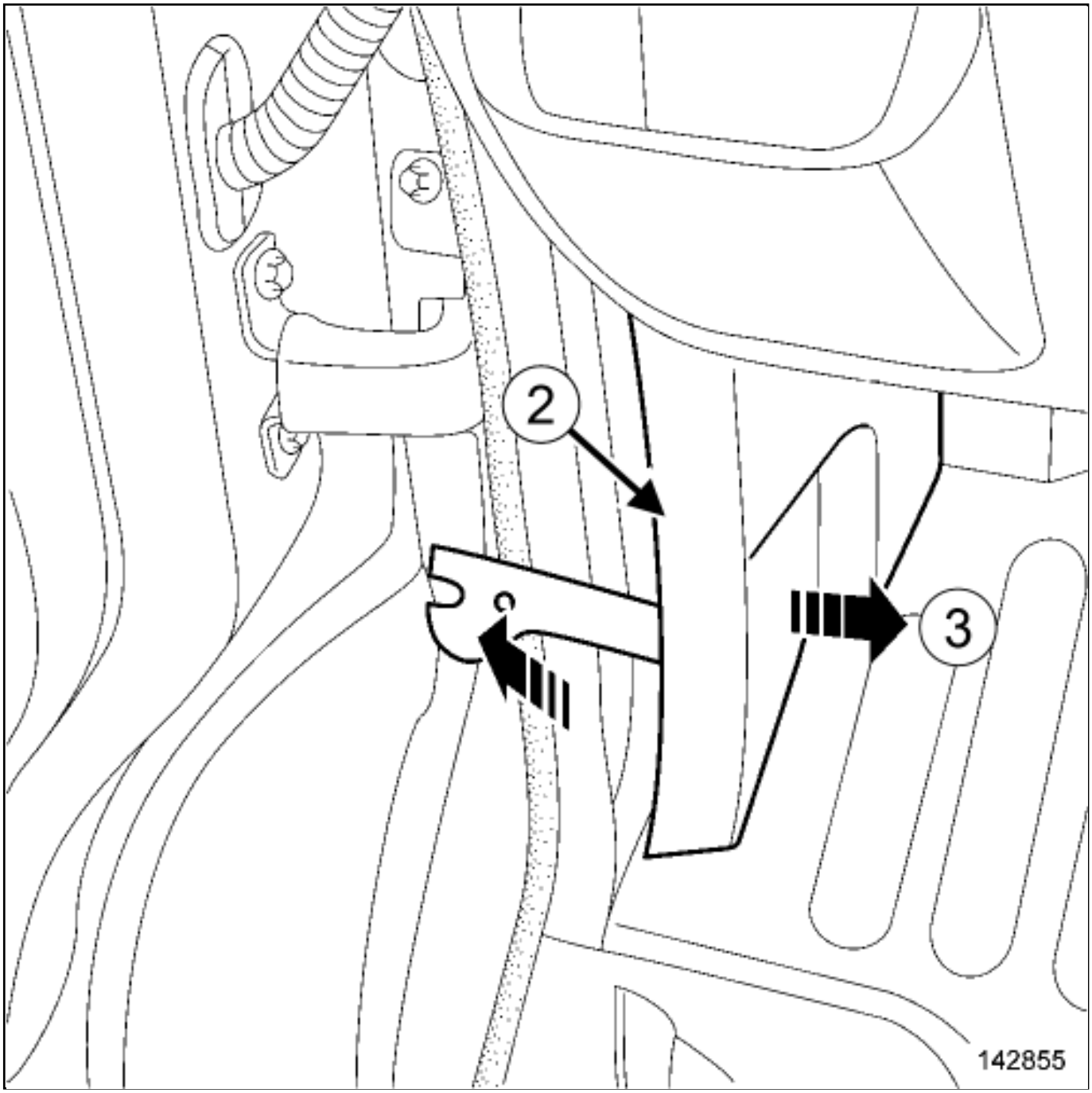
1. REMOVAL PREPARATION OPERATION



Remove:

- the front side door seal partially at(1) ,
- the bonnet release controlBonnet release control: Removal - Refitting (52A, Non-side opening element mechanisms).

1. REMOVAL OPERATION



Remove the front door sill lining(2) at (3) using the toolSet of trim removal levers.(Car. 1363) .

REFITTING

- Proceed in the reverse order to removal.

FRONT DRIVESHAFT HUB CARRIER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Hub locking tool.	Rou. 604-01
Ball joint extractor.	Tav. 476
Universal driveshaft push back tool (plate and claws without ram).	Tav. 1050-04

Equipment required
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front axle assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

CAUTION

In order not to damage the brake hose:

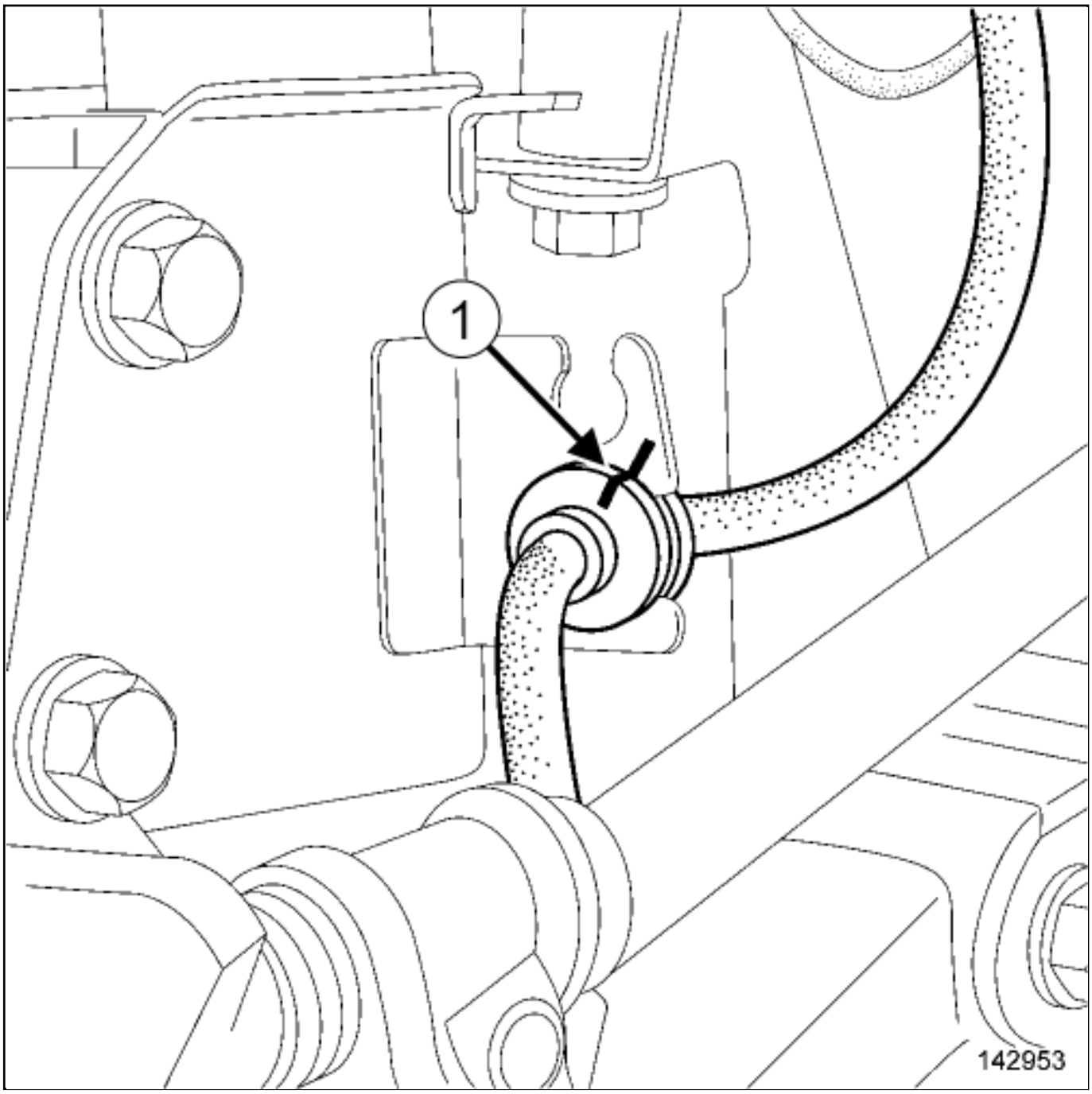
- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

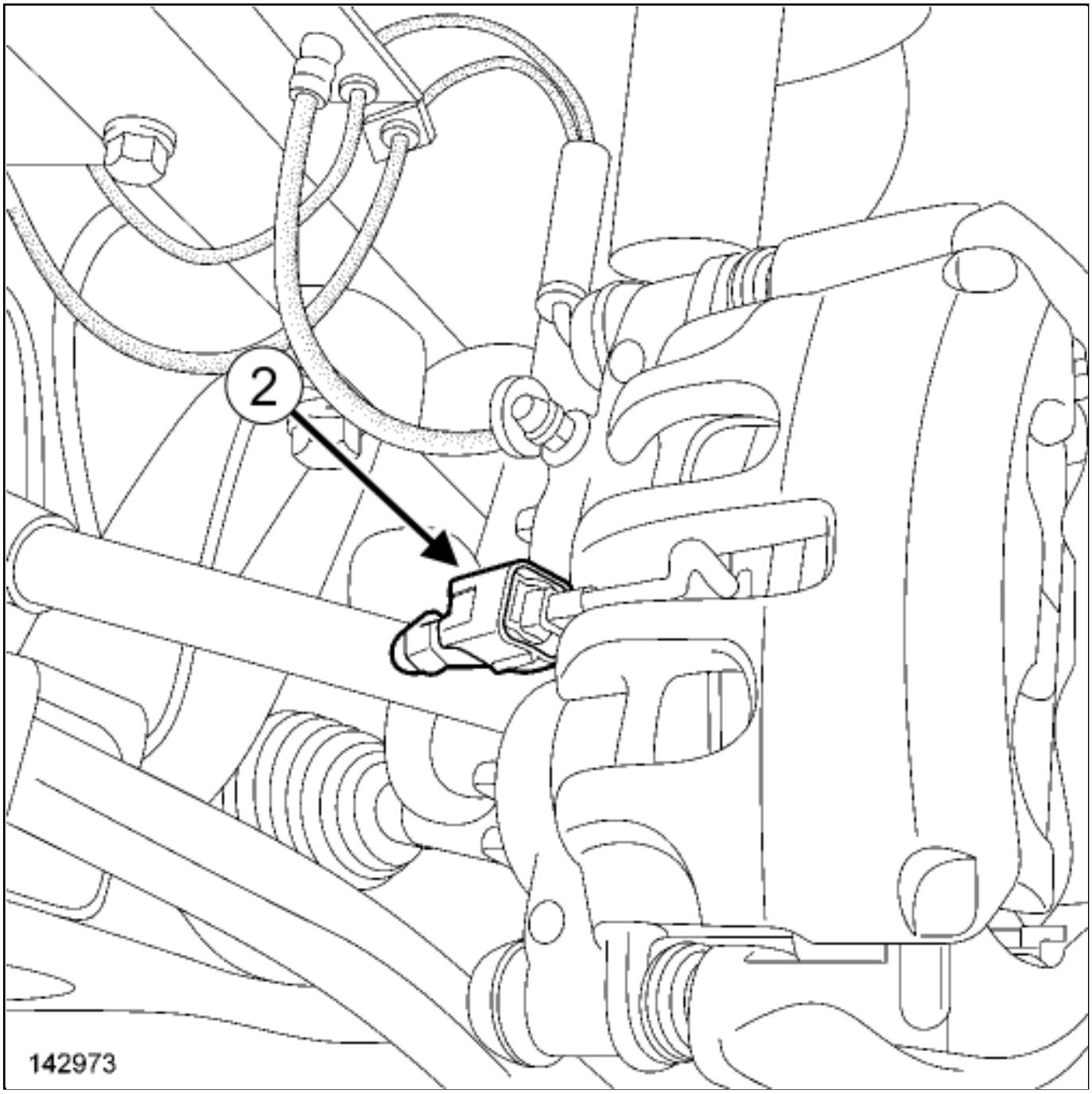
Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

- Remove the front wheel Wheel: Removal - Refitting .
- Set the wheels straight ahead.

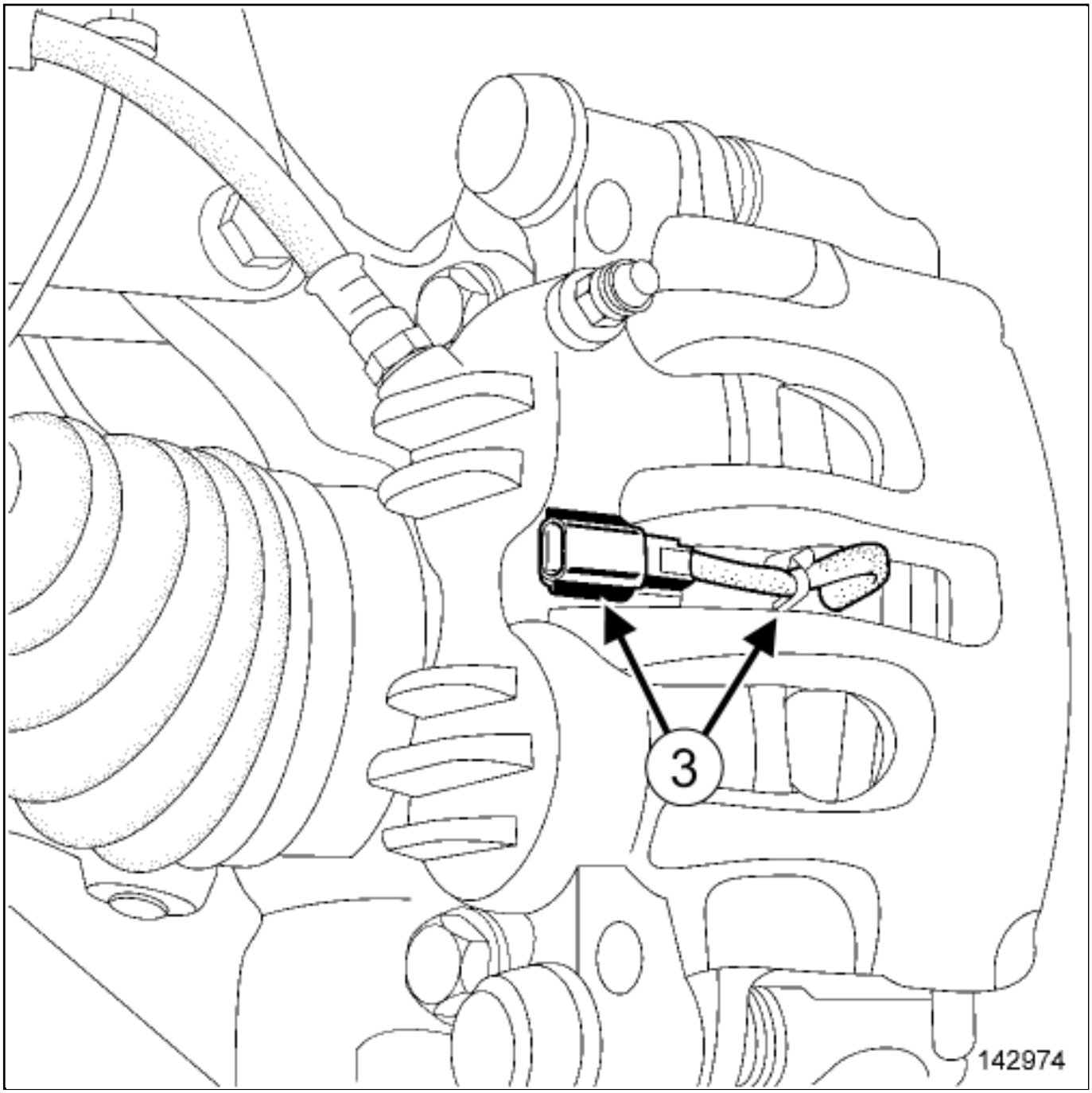


- Mark the position of the front brake hose cap(1) on the shock absorber base using an indelible pencil.
- Unclip the front brake hose cap(1) from the shock absorber base.

SPECIAL FEATURES OF THE LEFT-HAND SIDE



- Disconnect the connector(2) from the front brake pad wear warning light.



- Unclip the wiring of the front brake pad wear warning light from the brake calliper at(3) .

- Remove the calliper mounting bolts(see 31A, Front axle components, Front brake calliper assembly: Exploded view) .

- Attach the "brake calliper mounting - brake calliper" assembly to the shock absorber spring.

- Remove the front brake disc(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

2. REMOVAL OPERATION

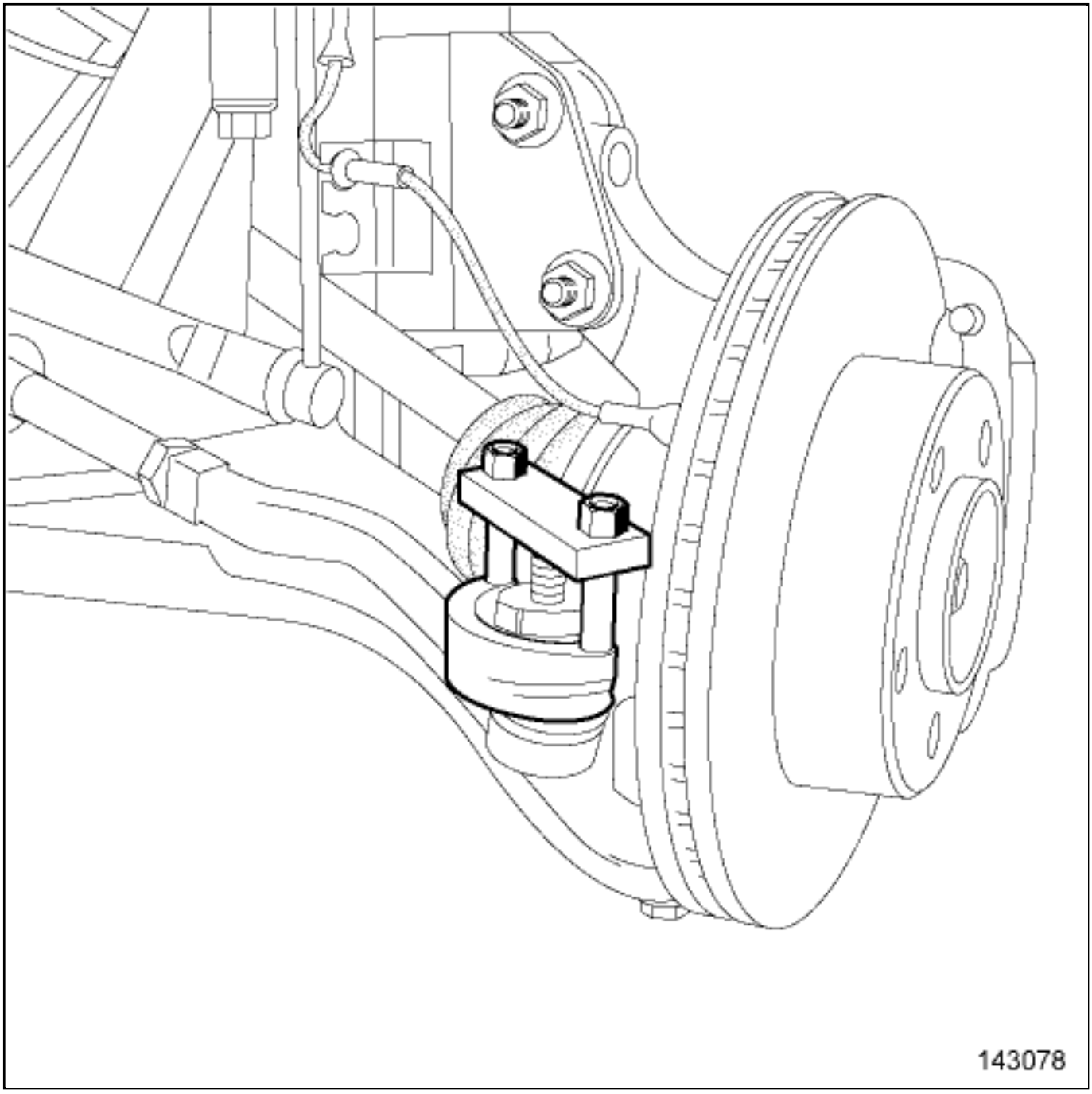
- Remove the bolt from the front wheel speed sensor(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

- Remove the wheel speed sensor from its housing.

CAUTION

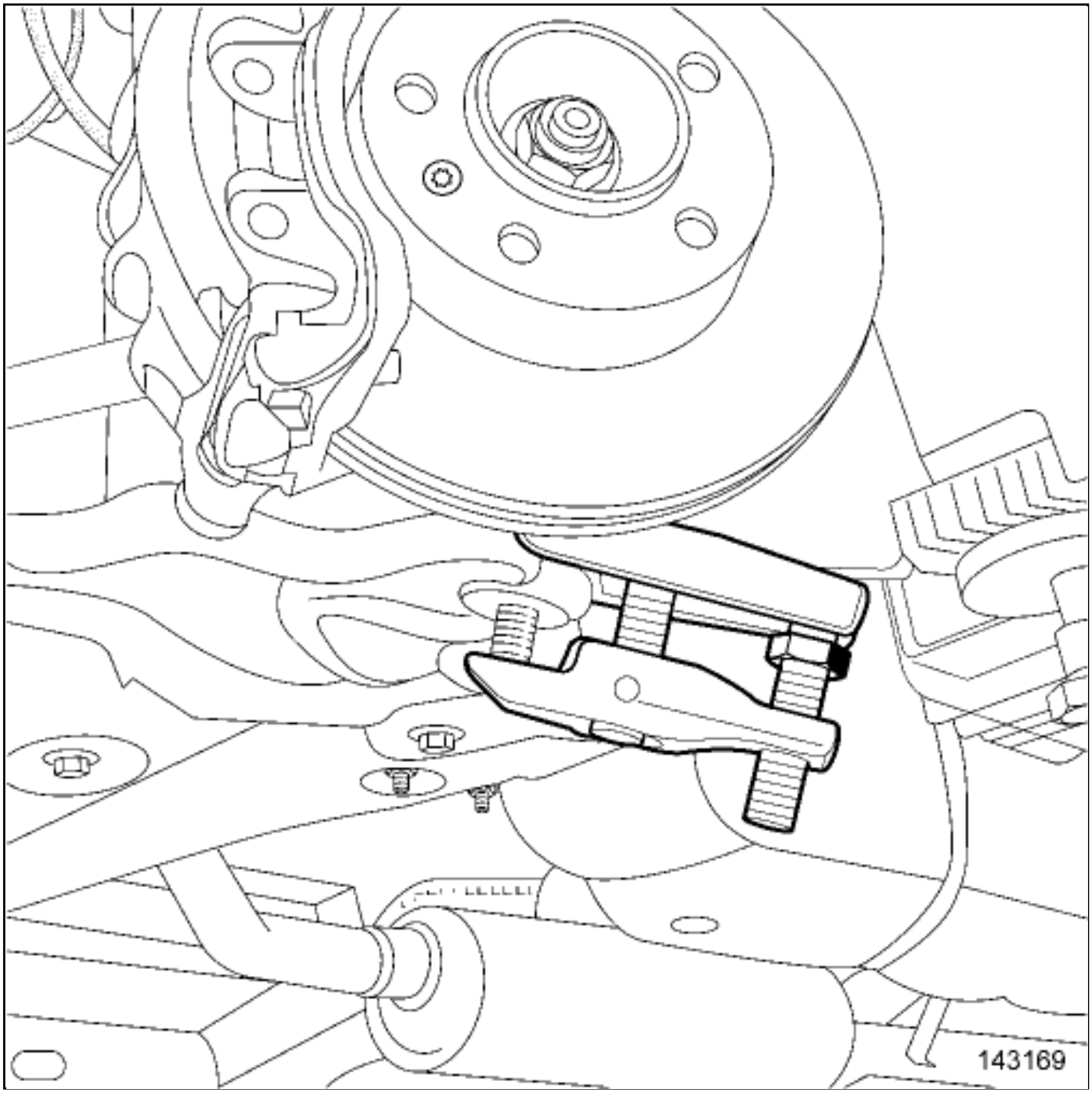
- In order to prevent irreversible damage to the front hub bearing:
  - Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
  - Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

- Remove:
  - the hub nutDriveshaft assembly: Exploded view using theHub locking tool.(Rou. 604-01) ,
  - the track rod end nut(see **Steering assembly: Exploded view**) ,
  - the track rod end protector.



- Detach the track rod end from the front driveshaft hub carrier using the toolBall joint extractor.(Tav. 476) .

- Remove the nut from the front driveshaft lower arm ball joint(see 31A, Front axle components, Front axle assembly: Exploded view) .



Detach:

- the ball joint of the front driveshaft lower arm using a ball joint extractor,
- the driveshaft from the front driveshaft hub carrier using the toolUniversal driveshaft push back tool (plate and claws without ram).(**Tav. 1050-04**) .

Remove **(see 31A, Front axle components, Front axle assembly: Exploded view)** :

- the shock absorber base bolts,
- the front driveshaft hub carrier.

When replacing the front driveshaft hub carrier, remove the lower arm ball joint**(see 31A, Front axle components, Front hub carrier assembly: Exploded view)** .

REFITTING

1. REFITTING PREPARATION OPERATION

- Refit the lower arm ball joint(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

CAUTION

- In order to prevent irreversible damage to the front hub bearing:
  - Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
  - Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

- Set the wheels straight ahead.

- Clip the front brake hose cap on to the base of the shock absorber, aligning the marks made using a indelible pencil .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT DRIVESHAFT LOWER ARM BALL JOINT: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)Front hub carrier assembly: Exploded view .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

- Remove:
  - the front wheelWheel: Removal - Refitting ,
  - the front driveshaft hub carrierFront hub carrier assembly: Exploded view .

2. REMOVAL OPERATION

- Fit the front driveshaft hub carrier in a vice equipped with jaws.

Note:

"Hub carrier/lower ball joint" assembly specification (right-hand side):

The screwing direction of the lower arm ball joint on the right-hand hub carrier may be left or right.

- Remove the front driveshaft lower arm ball joint before ordering new:
  - lower arm ball joint with a left pitch: order the lower arm ball joint according to the criteria: produced before 07/23/2010.
  - lower arm ball joint with a right pitch: order the lower arm ball joint according to the criteria: produced after 07/23/2010.

- Remove the front driveshaft lower arm ball joint using a 46 mmlong socketFront hub carrier assembly: Exploded view .

REFITTING

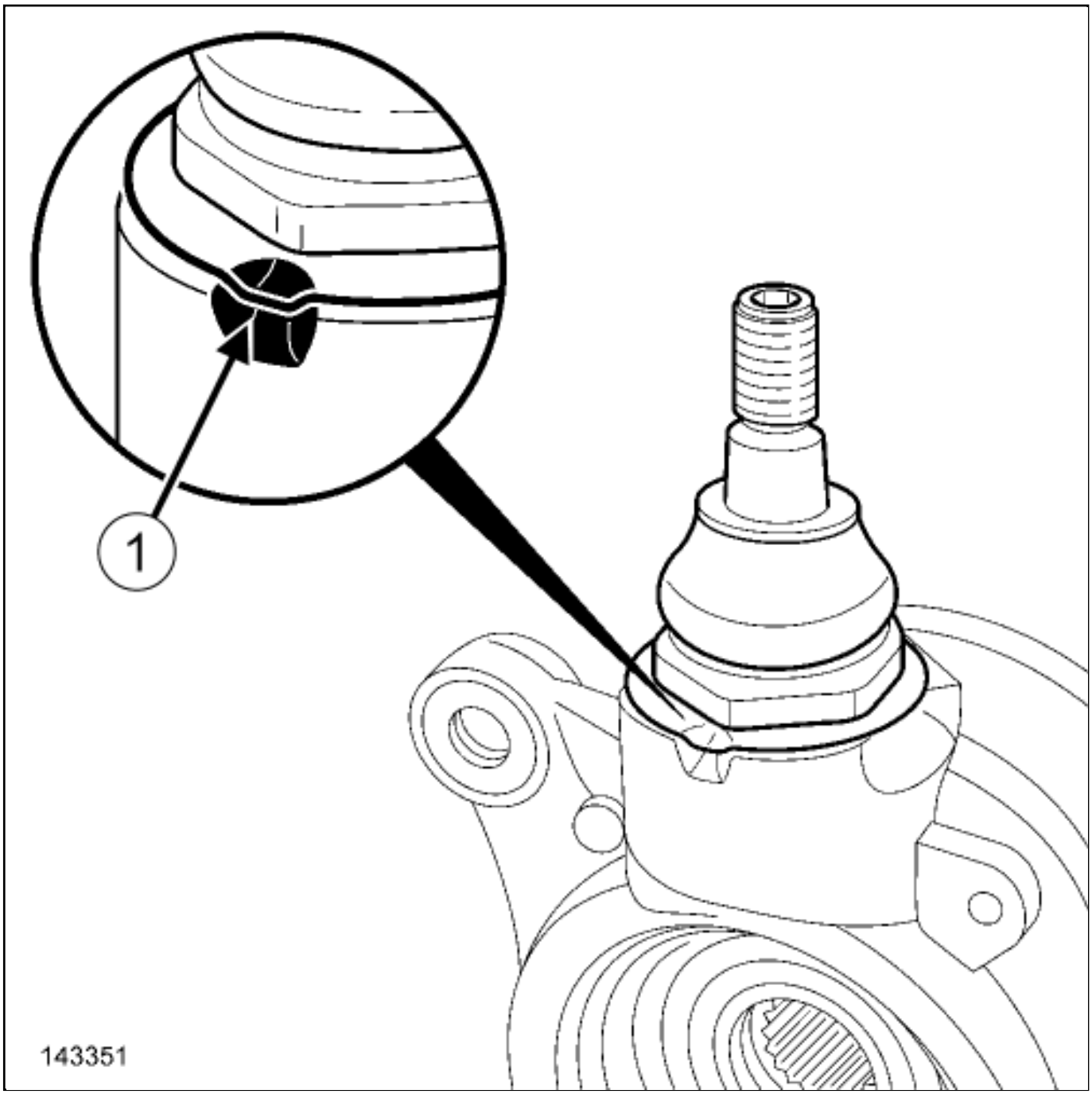
1. REFITTING PREPARATION OPERATION

- Remove any glue residue on the threadings of the hub carrier.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Torque tighten the front driveshaft lower arm ball joint Front hub carrier assembly: Exploded view .



- Lock the front driveshaft lower arm ball joint at(1) .

XSL version : 3.02 du 22/07/11

FRONT DRIVESHAFT LOWER ARM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front axle assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

1. REFITTING PREPARATION OPERATION

Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

Remove:

- the engine undertray,
- the front wheelWheel: Removal - Refitting .

2. OPERATION FOR REMOVAL OF PART CONCERNED

Remove the nut from the front driveshaft lower arm ball joint(see 31A, Front axle components, Front axle assembly: Exploded view) .

Remove the ball joint of the front driveshaft lower arm from the front driveshaft lower arm using a ball joint extractor.

Remove:

- the bolts of the front driveshaft lower arm on the front axle subframe(see 31A, Front axle components, Front axle assembly: Exploded view) ,
- the front driveshaft lower arm.

REFITTING

- Proceed in the reverse order to removal.

FRONT ELECTRIC WINDOW SWITCH ON PASSENGER DOOR: REMOVAL - REFITTING

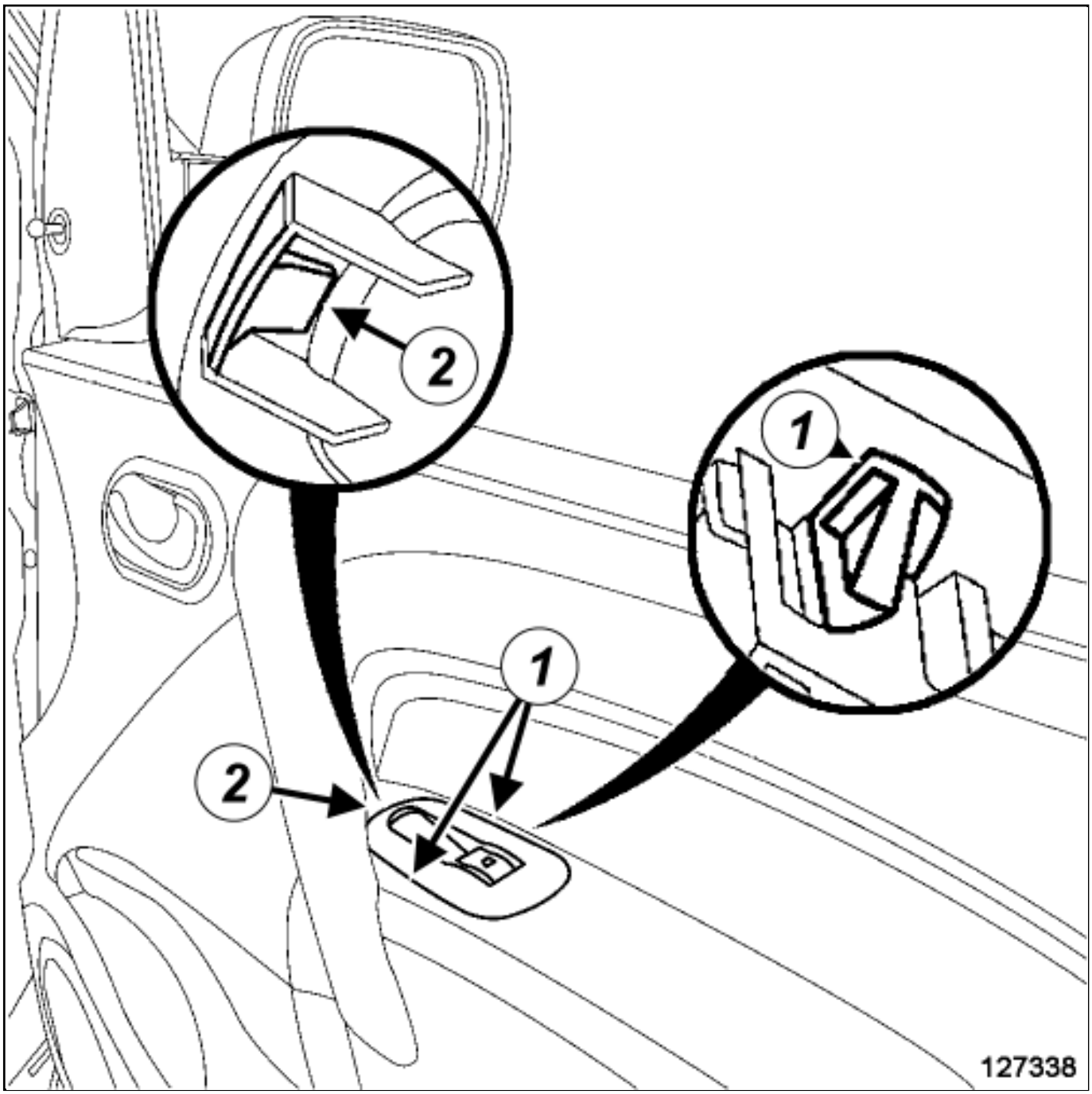
Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the front window winder switch plate on the passenger door using theSet of trim removal levers. (Car. 1363) by pressing on the clips(1) and (2) .

- Disconnect the connector.

- Remove switch.

REMOVAL

1. REFITTING OPERATION FOR PART CONCERNED

- Clip the switch.
- Connect the connector.
- Clip the front window winder switch plate onto the passenger door.

FRONT ELECTRIC WINDOW SWITCHES ON DRIVER'S DOOR: REMOVAL - REFITTING

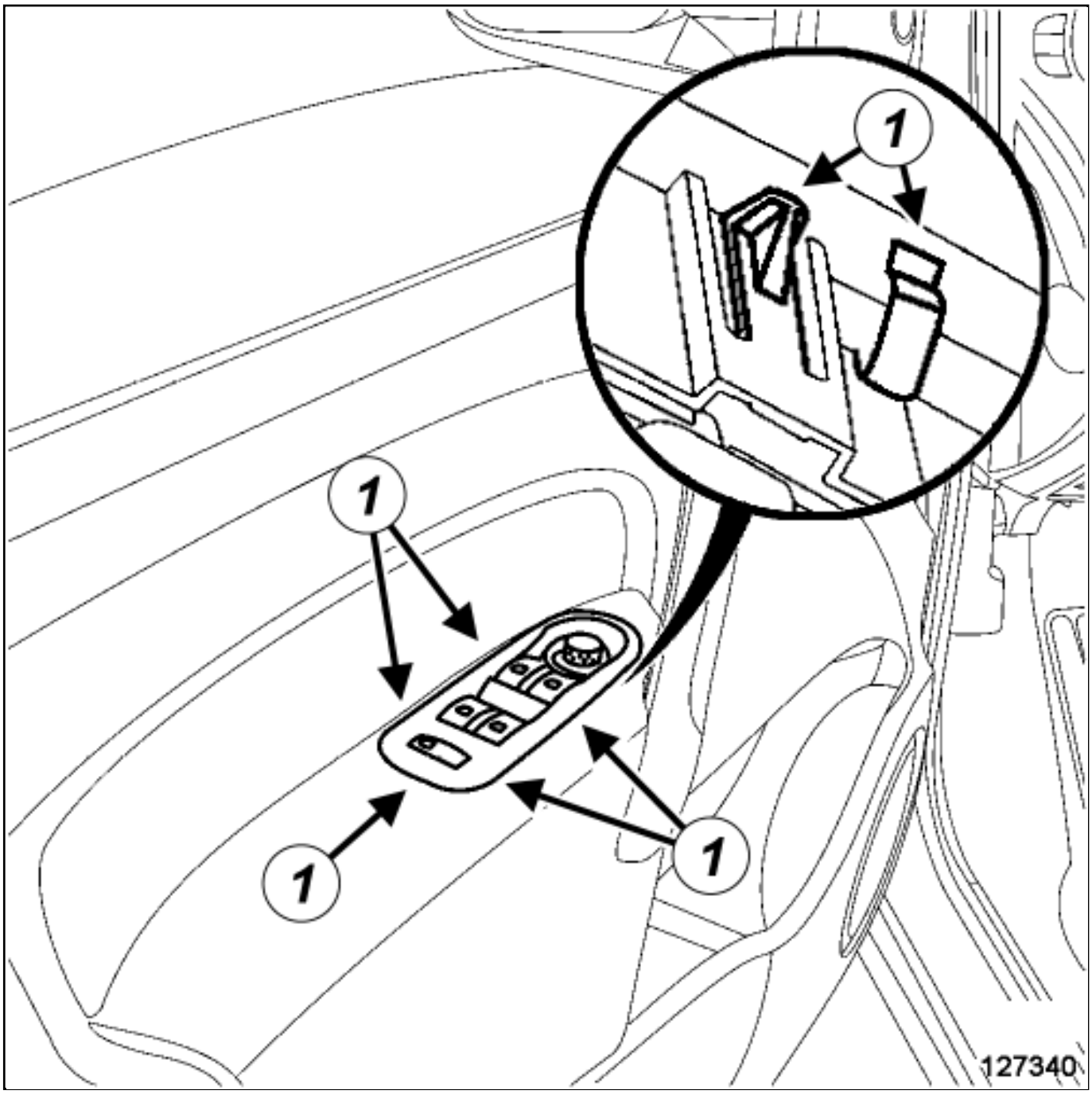
Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the front window switch plate on the driver's door using theSet of trim removal levers.(Car. 1363) by pressing on the clips(1) .
- Disconnect the connectors.
- Unclip the switches.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

- Clip on the switches.
- Connect the connectors.
- Clip the front window switch plate onto the driver's door.

FRONT END PANEL MOUNTING CENTRE LOWER SUPPORT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

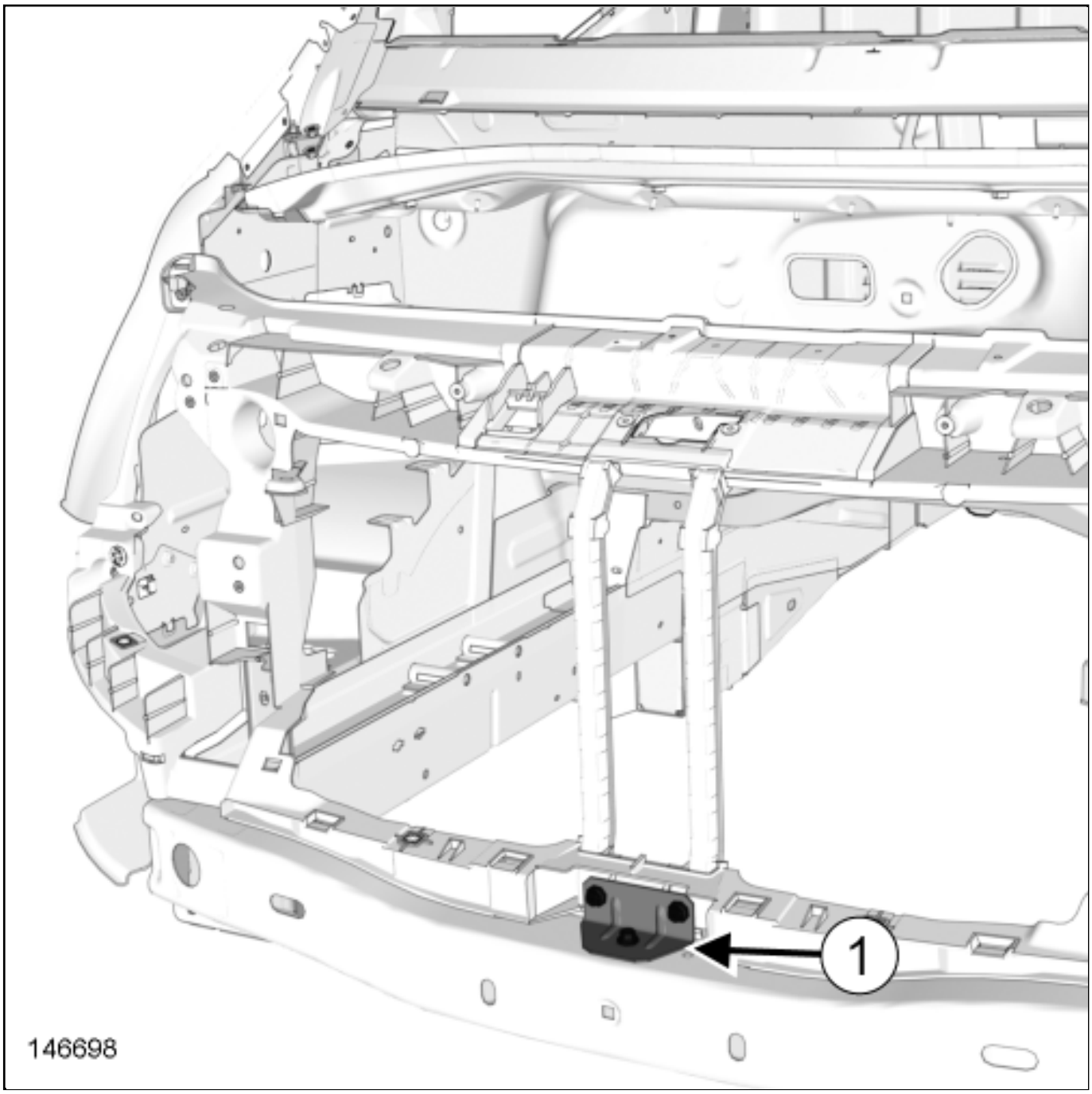
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection).

2. REMOVAL OPERATION



Remove:

- the bolts(1) ,
- the centre lower mounting support of the front end panel.

REFITTING

Proceed in the reverse order to removal.

FRONT END PANEL SIDE SUPPORT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

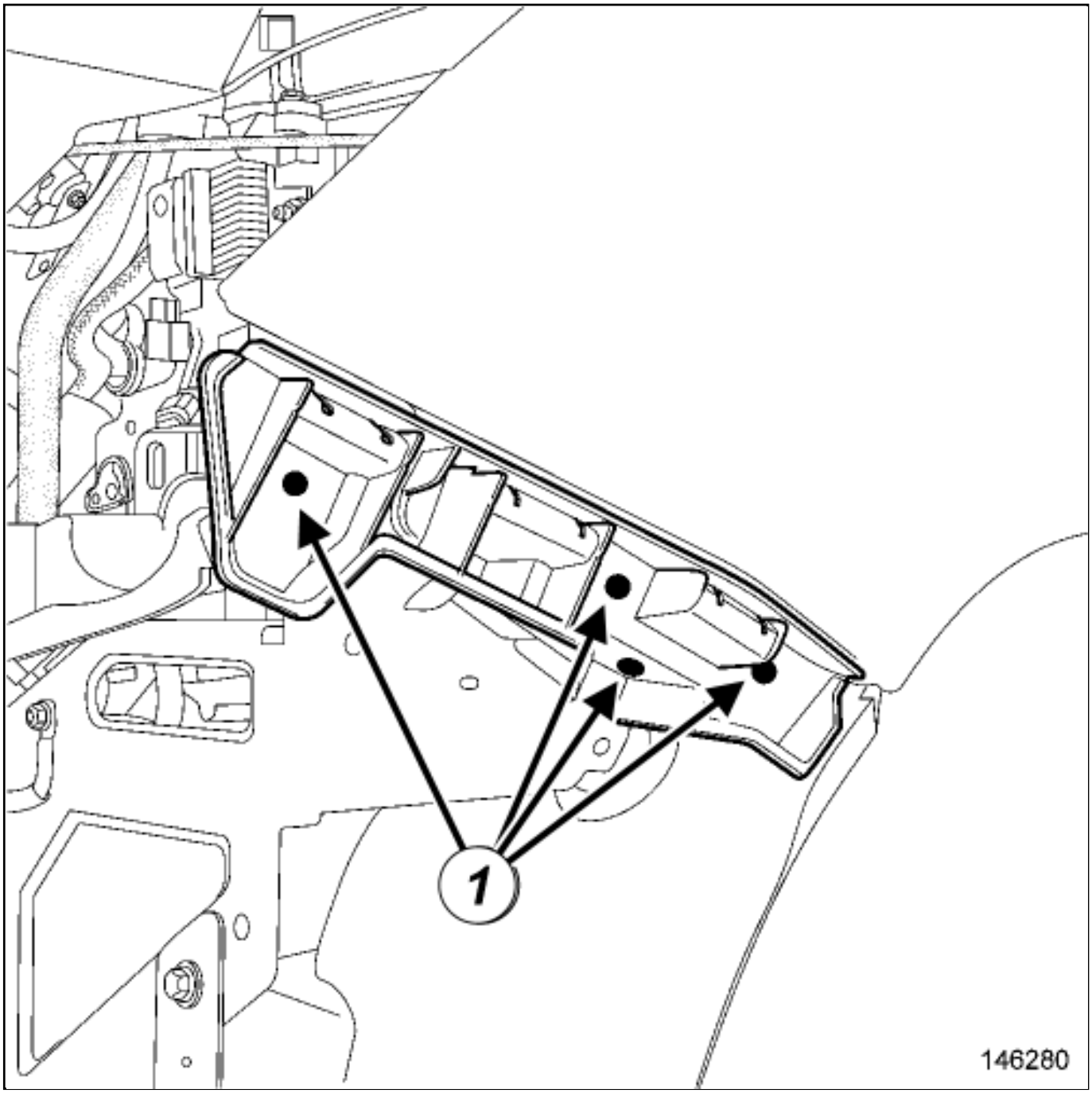
REMOVAL

1. INTERMEDIATE SIDE SUPPORT OF FRONT END PANEL

1- REMOVAL PREPARATION OPERATION

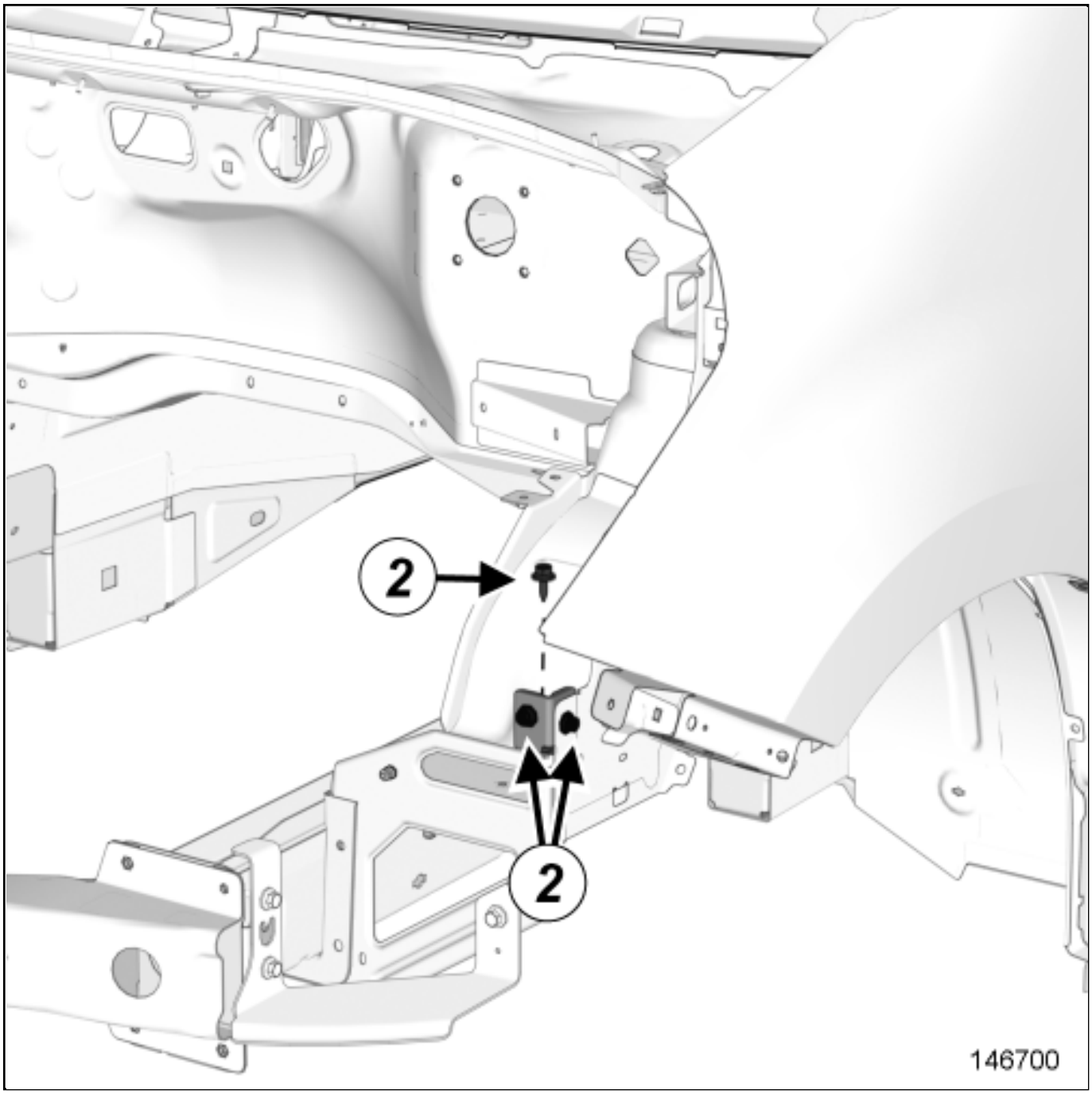
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection),
  - the front end panel**(see 42A, Front upper structure, Front end panel: Removal - Refitting)** .



- Drill out the rivets(1) .
- Remove the front bumper support.

2- REMOVAL OPERATION



- Remove:
  - the bolts(**2**) ,
  - the intermediate side support of the front end panel.

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the rivets of the front bumper mounting

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

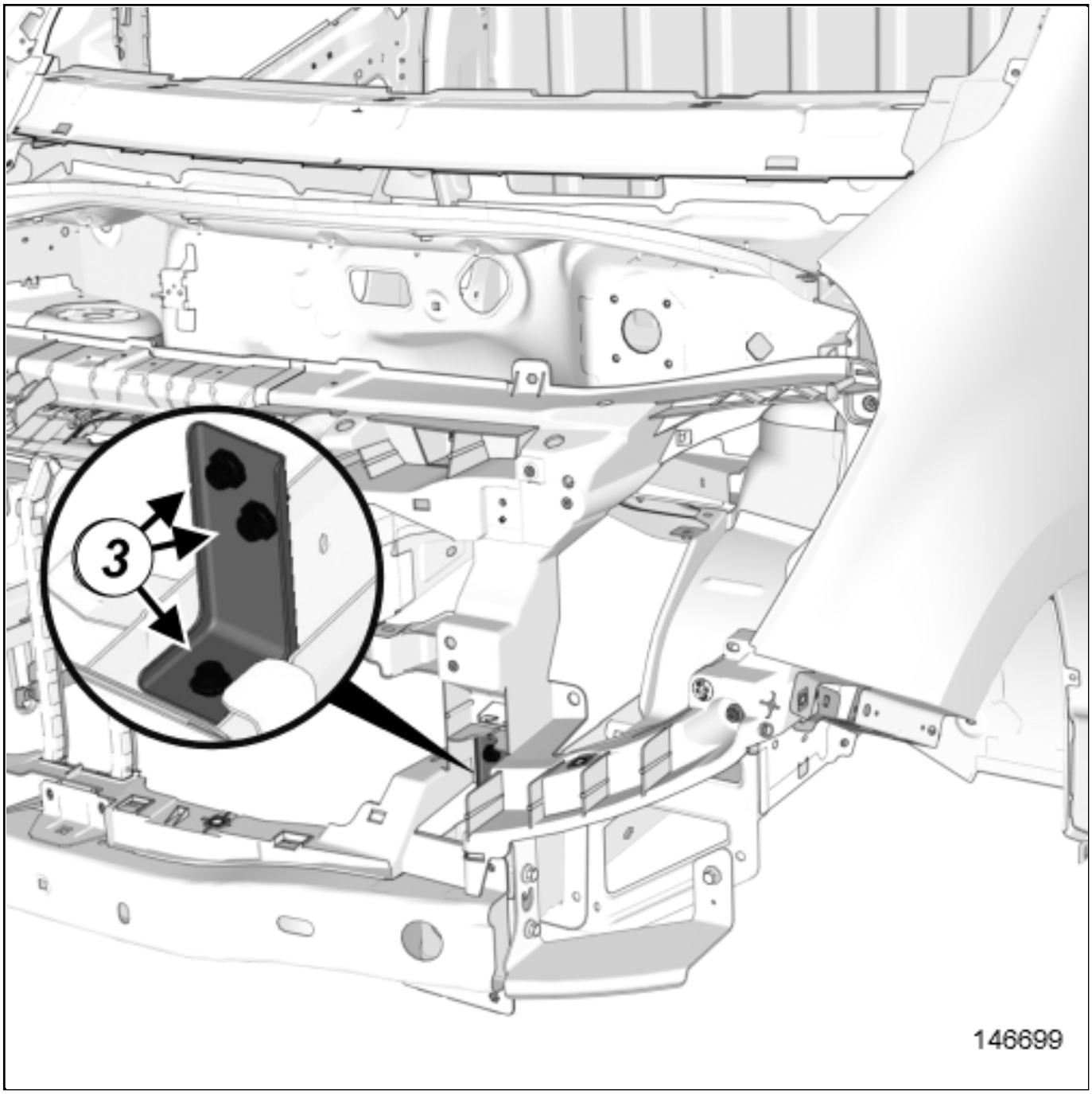
REMOVAL

1. LOWER SIDE SUPPORT OF FRONT END PANEL

1- REMOVAL PREPARATION OPERATION

- Remove:
  - the radiator grille **Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights **Headlight: Removal - Refitting** (80B, Headlights).

2- REMOVAL OPERATION



Remove:

- the bolts(**3**) ,
- the lower side support of the front end panel.

REFITTING

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

FRONT END PANEL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

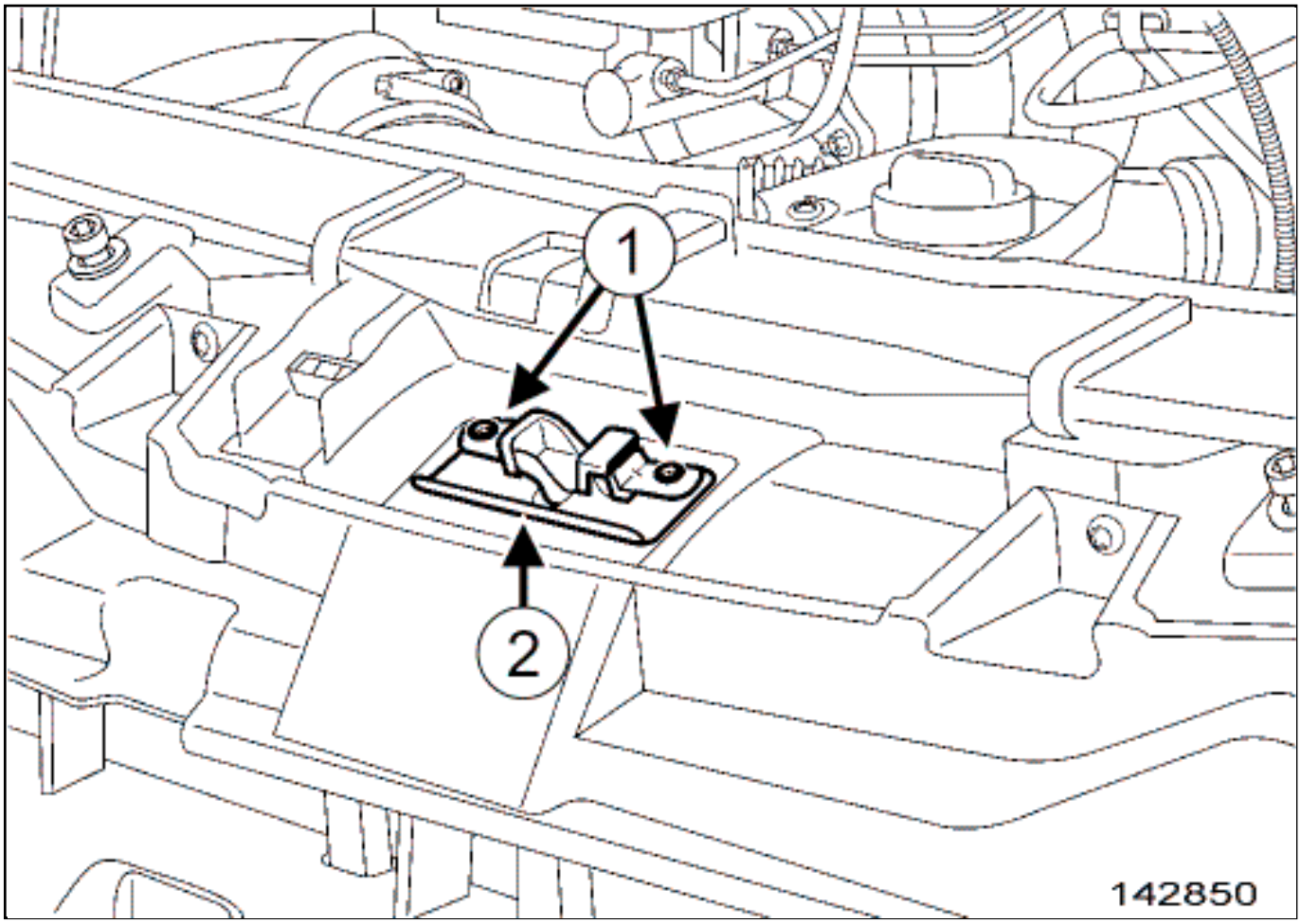
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

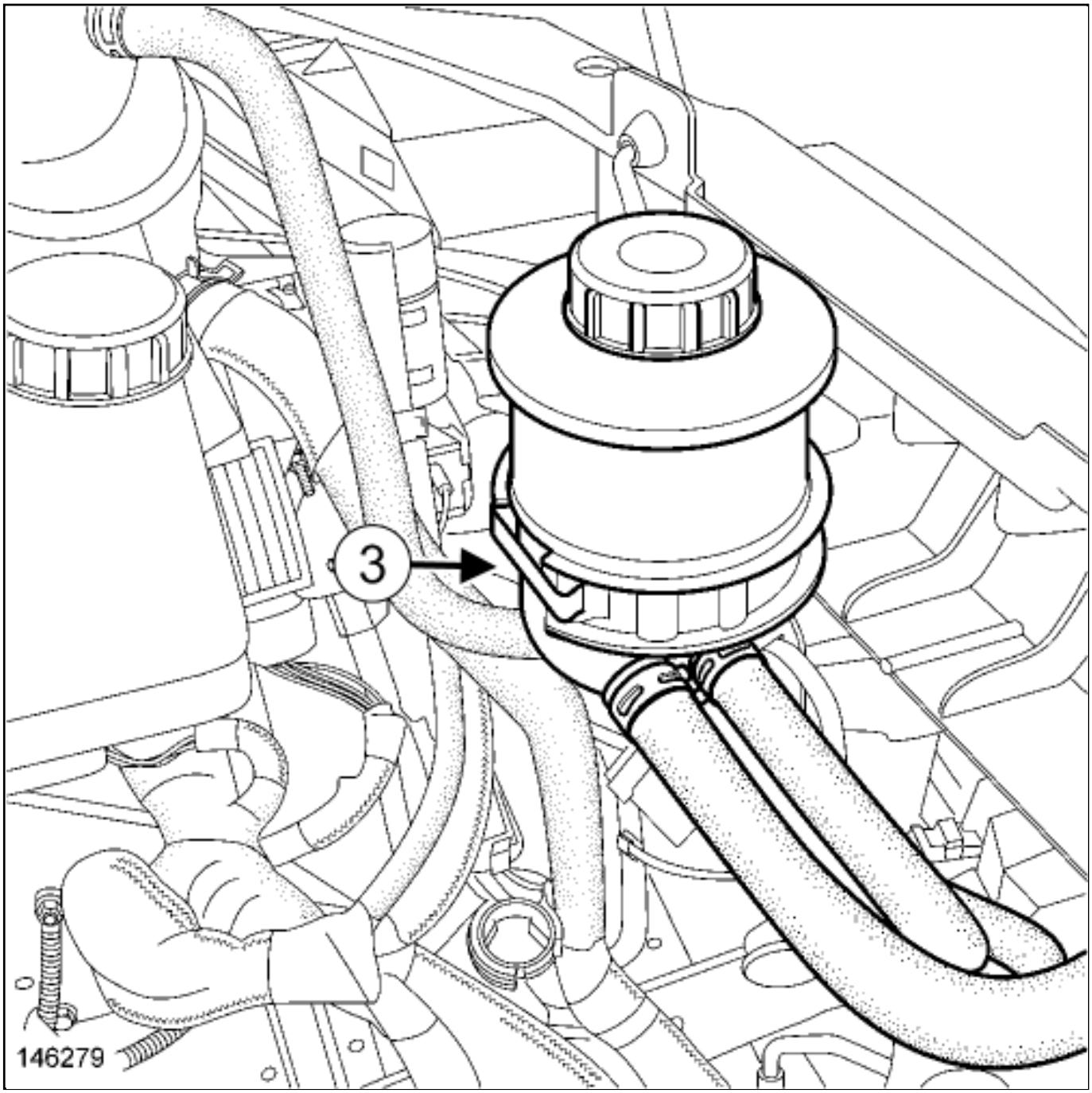
- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection),
  - the lower side supports of the front end panel**(see 42A, Front upper structure, Front end panel side support: Removal - Refitting)** ,
  - the audible warning**Audible warning: Removal - Refitting** (82B, Horn).



- Remove:
  - the bonnet lock bolts(1) ,
  - the permanent shim(2) .

- Release the bonnet catch.

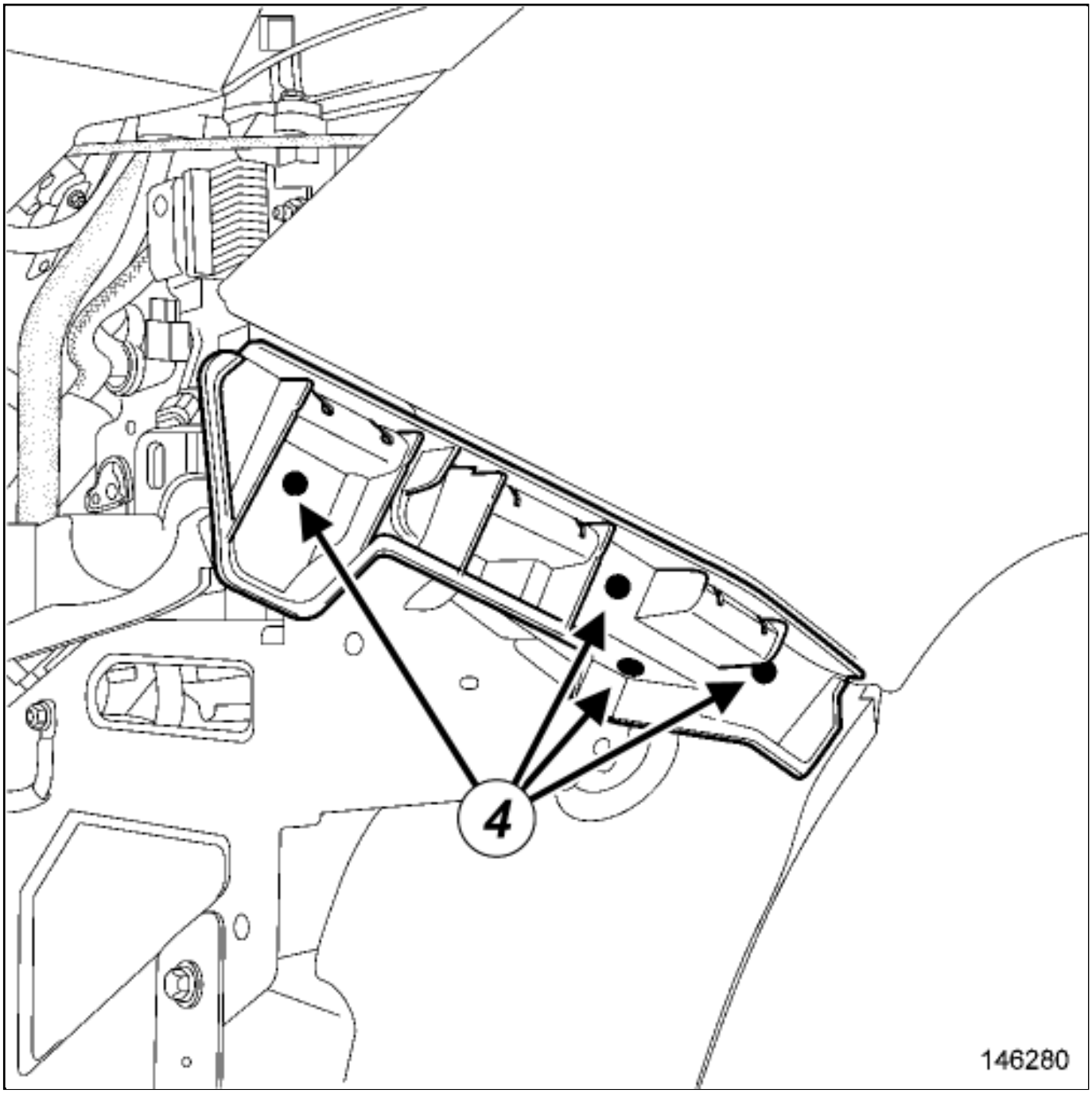
- Unclip the bonnet opening control cable.



- Remove:
  - the retaining clip(**3**) of the power-assisted steering fluid reservoir,
  - the power-assisted steering fluid reservoir partially.

- Remove the bolt from the air filter unit air inlet pipe**Air inlet assembly: Exploded view** (12A, Fuel mixture).

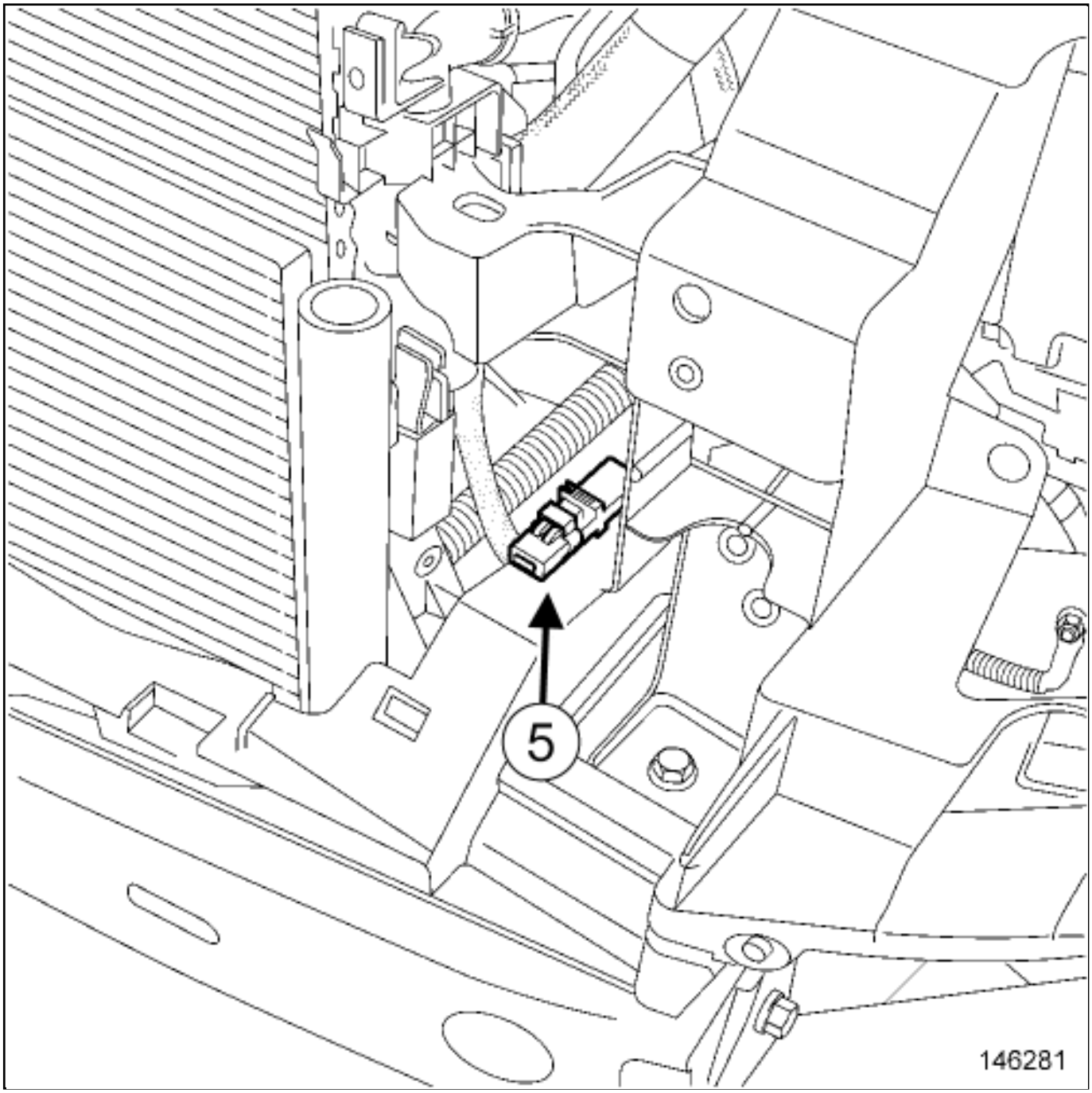
- Move aside the air inlet pipe from the air filter unit.



- Remove:
  - the rivets(4) of the front bumper mounting,
  - the front bumper support.

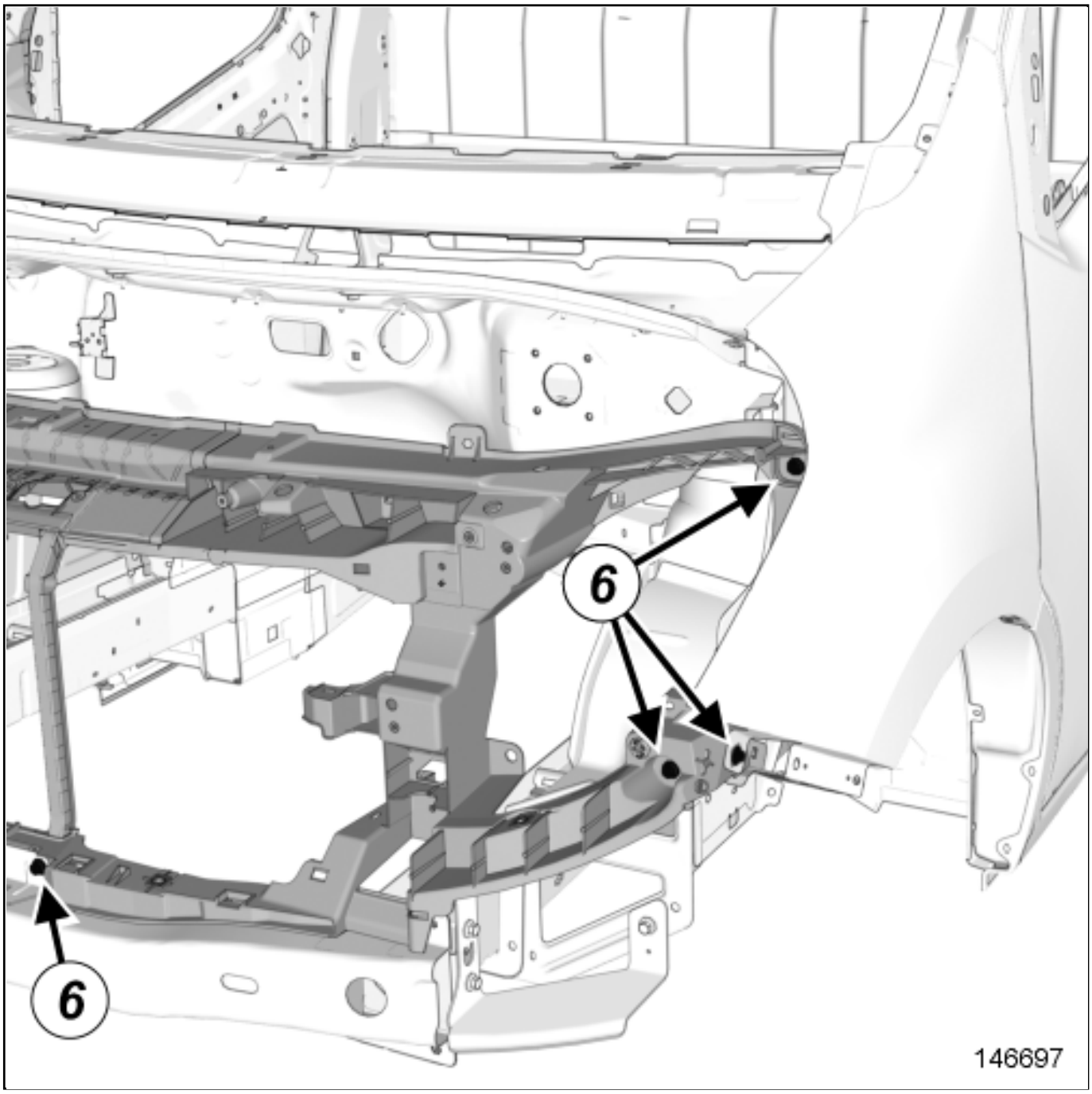
- Remove the oil filler neck bolts Engine oil circuit assembly: Exploded view (10A, Engine and cylinder block assembly).

- Move aside the oil filler neck.



- Unclip the connector(5).
- Unclip the connector.
- Keep the bonnet open.
- Clip the bonnet stay onto the front end panel.

2. REMOVAL OPERATION



Remove:

- the bolts(6) ,
- the front end panel.

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the rivets of the front bumper mounting.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.
- Torque tighten the bonnet catch bolts8 N.m.

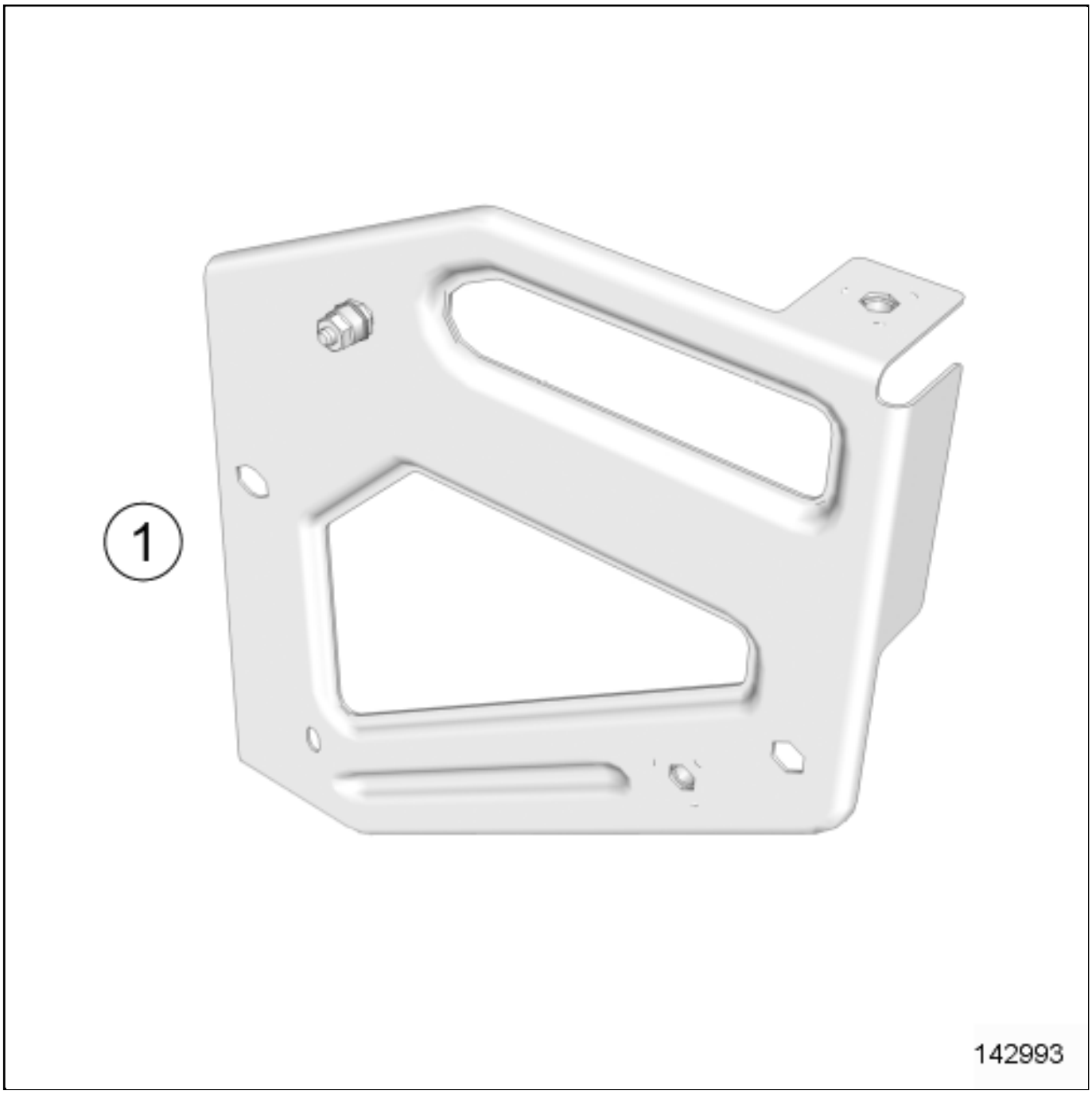
FRONT END SIDE CROSS MEMBER: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Front end side cross member	Mild steel	1.2

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

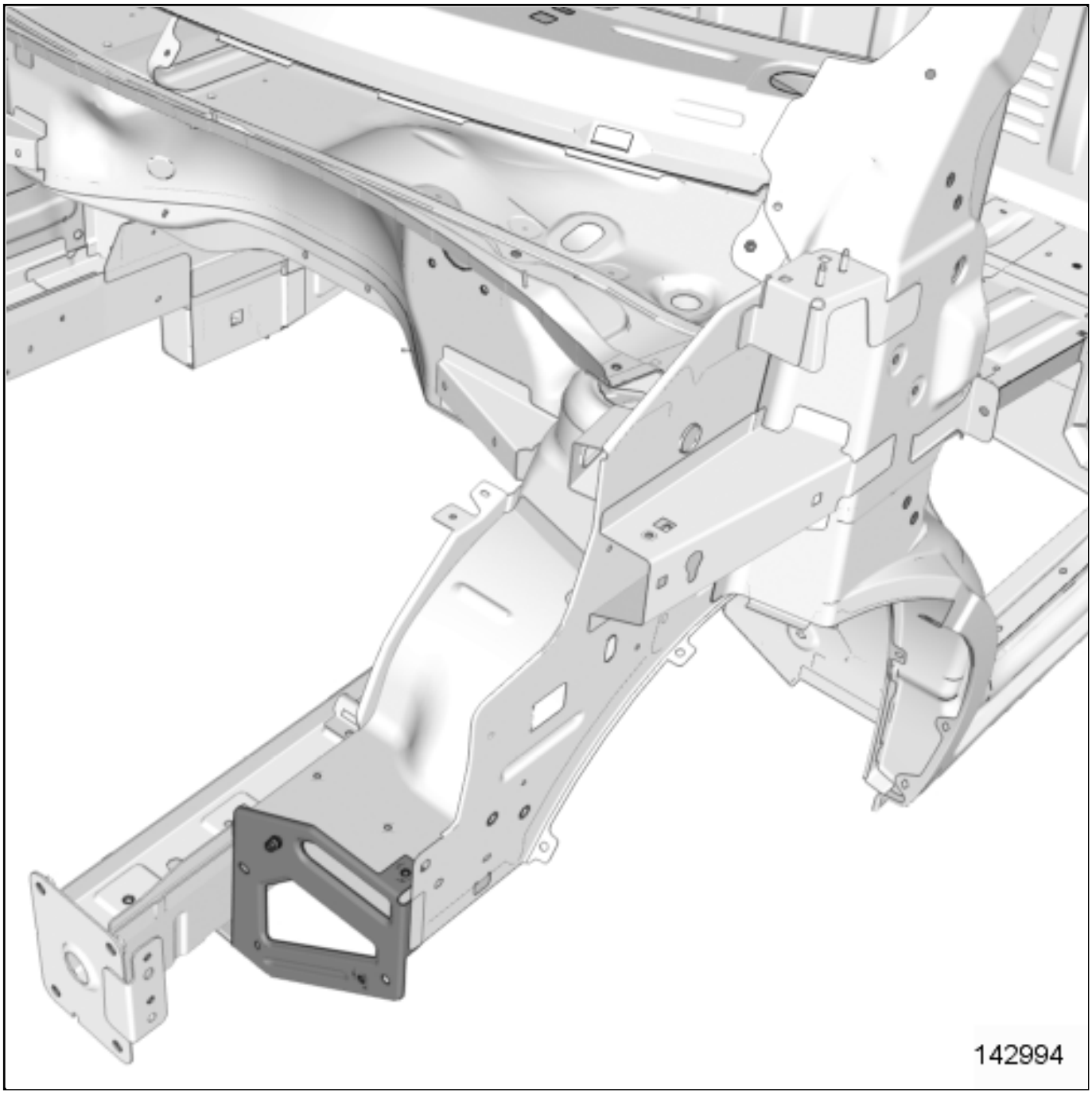
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FRONT FOG LIGHT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

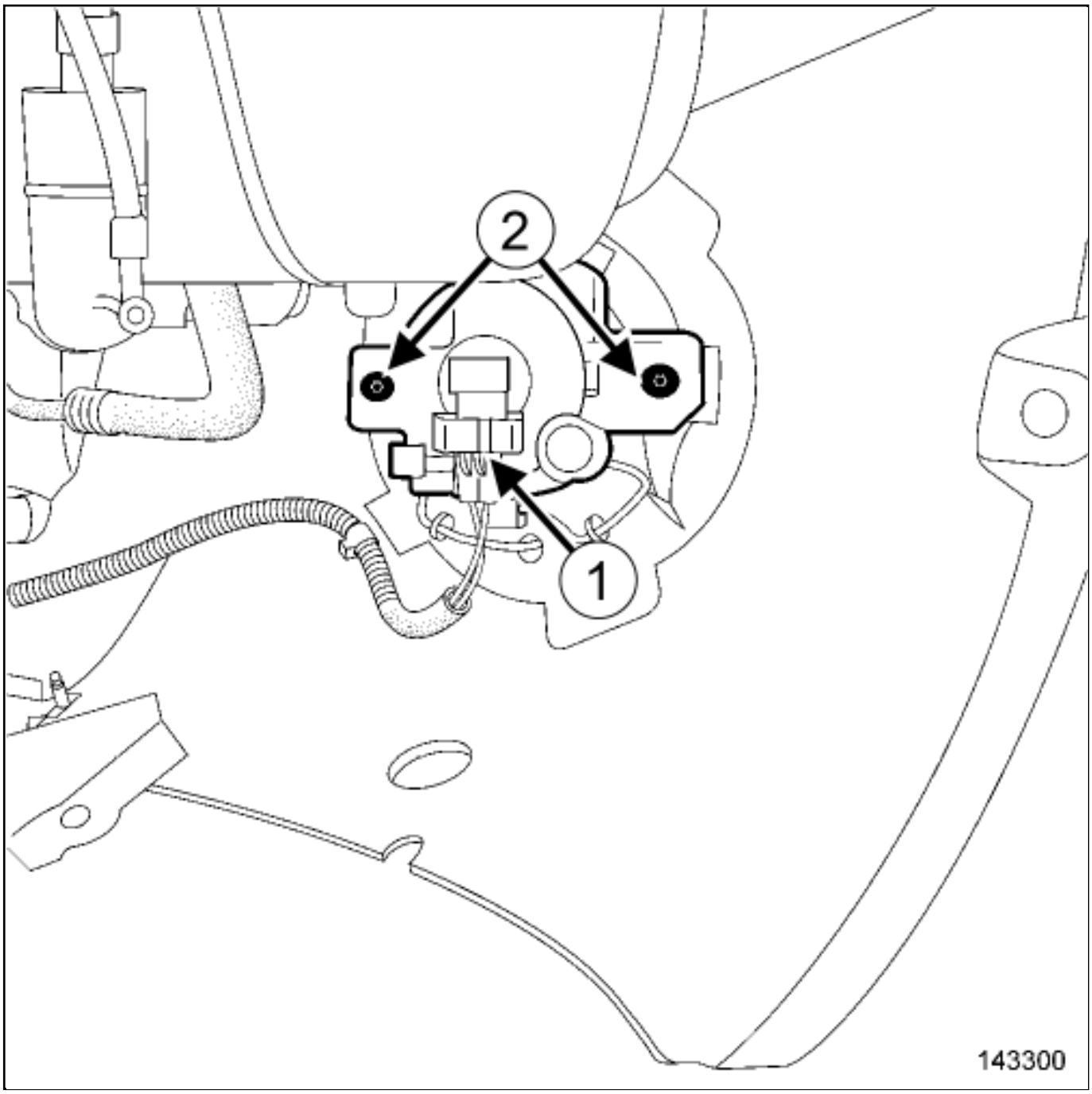
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the front section of the front wheel arch liner**Front wheel arch liner: Removal - Refitting** (55A, Exterior protection).

2. REMOVAL OPERATION



- Disconnect the front fog light connector(1) .
- Remove:
  - the bolts(2) from the front fog light,
  - the front fog light.

1- WHEN REPLACING THE FRONT FOG LIGHT

- Remove the front fog light bulb(see 80B, Headlights, Front fog light bulb: Removal - Refitting) .

REFITTING

- Proceed in the reverse order to removal.

FRONT FOG LIGHT BULB: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

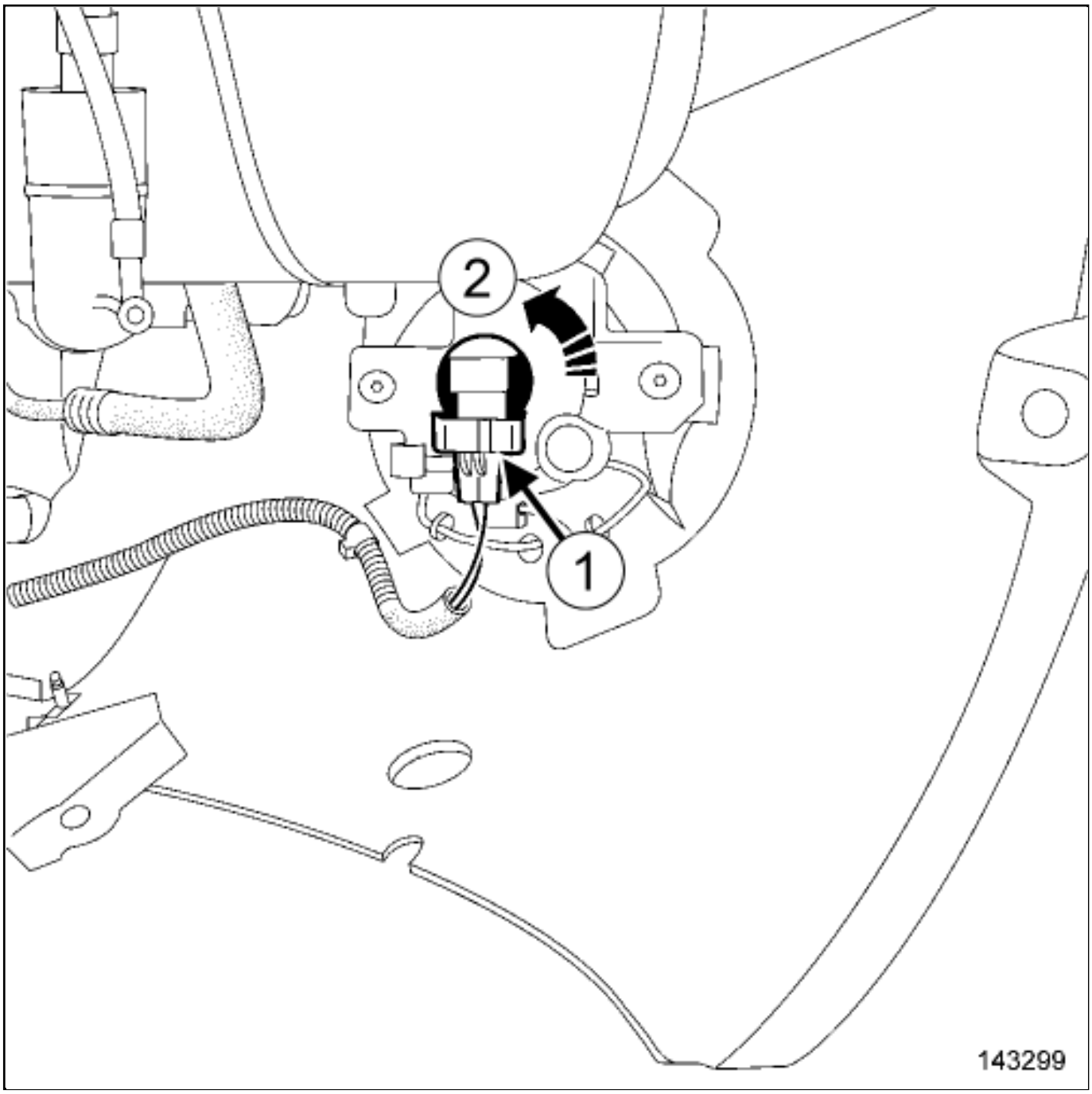
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the front section of the front wheel arch liner**Front wheel arch liner: Removal - Refitting** (55A, Exterior protection).

2. REMOVAL OPERATION



- Disconnect the front fog light connector(1) .
- Remove the front fog light bulb by turning it a quarter of a turn anti-clockwise(2) .

REFITTING

Note:

If the bulbs are changed, only use approved bulbs.

- Proceed in the reverse order to removal.

Repair-80x02x02x05-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

FRONT FOG LIGHT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

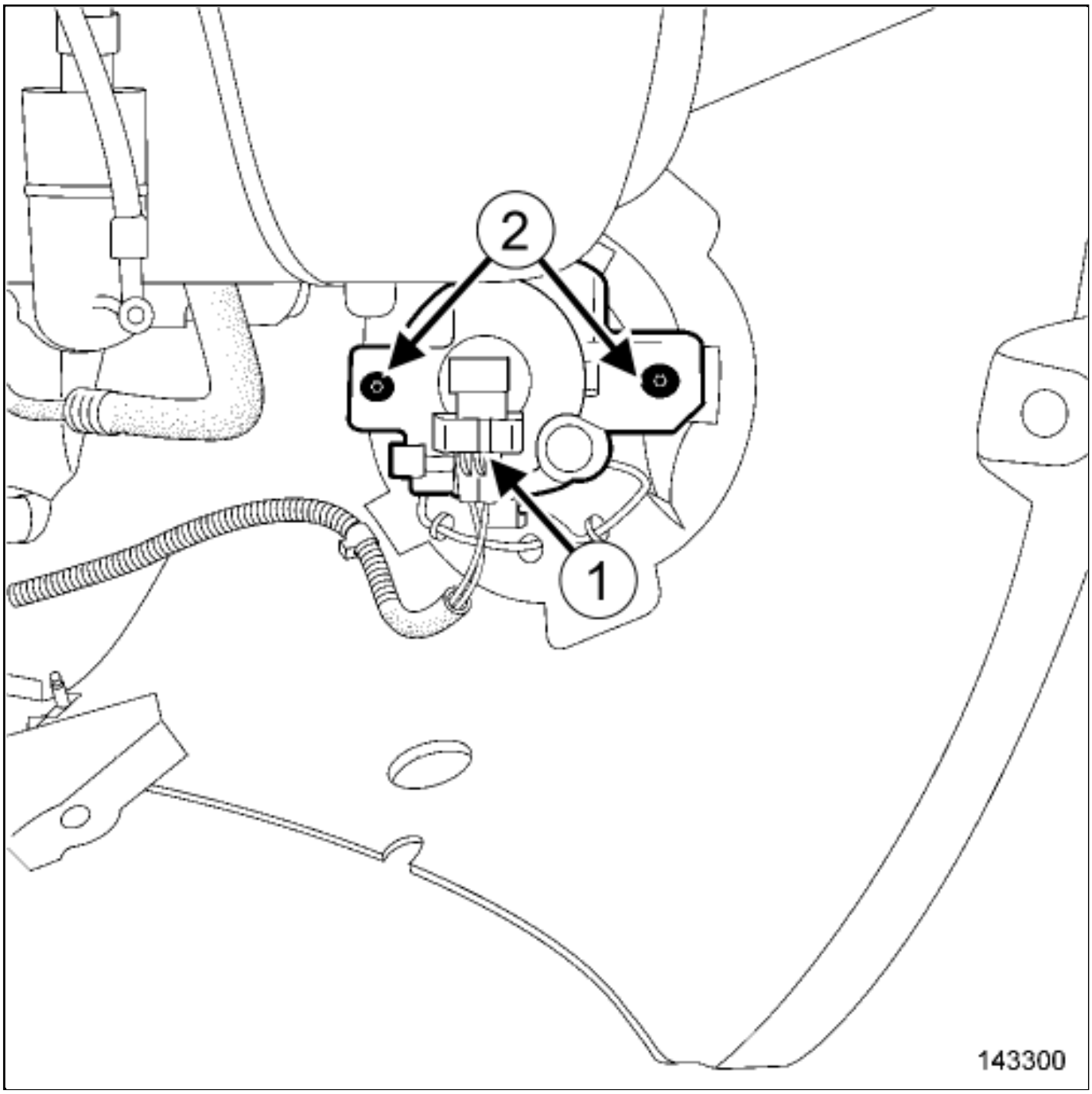
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the front section of the front wheel arch liner**Front wheel arch liner: Removal - Refitting** (55A, Exterior protection).

2. REMOVAL OPERATION



- Disconnect the front fog light connector(1) .
- Remove:
  - the bolts(2) from the front fog light,
  - the front fog light.

1- WHEN REPLACING THE FRONT FOG LIGHT

- Remove the front fog light bulb(see 80B, Headlights, Front fog light bulb: Removal - Refitting) .

REFITTING

-

Proceed in the reverse order to removal.

Repair-80x02x02x06-01x37-1-22-1.xml

XSL version : 3.02 du 22/07/11

FRONT FOOTWELL AIR DISTRIBUTION DUCT: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Air distribution circuit assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

1- LEFT-HAND SIDE

Remove:

- the gloveboxGlovebox: Removal - Refitting (57A, Interior equipment),
- the central consoleCentre console: Removal - Refitting (57A, Interior equipment).

2- RIGHT-HAND SIDE

Remove:

- the dashboard lower trimDashboard lower trim: Removal - Refitting (57A, Interior equipment),
- the central consoleCentre console: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION

Remove the A-pillar air duct on the side concerned(see 61A, Heating, Air distribution circuit assembly: Exploded view) .

REFITTING

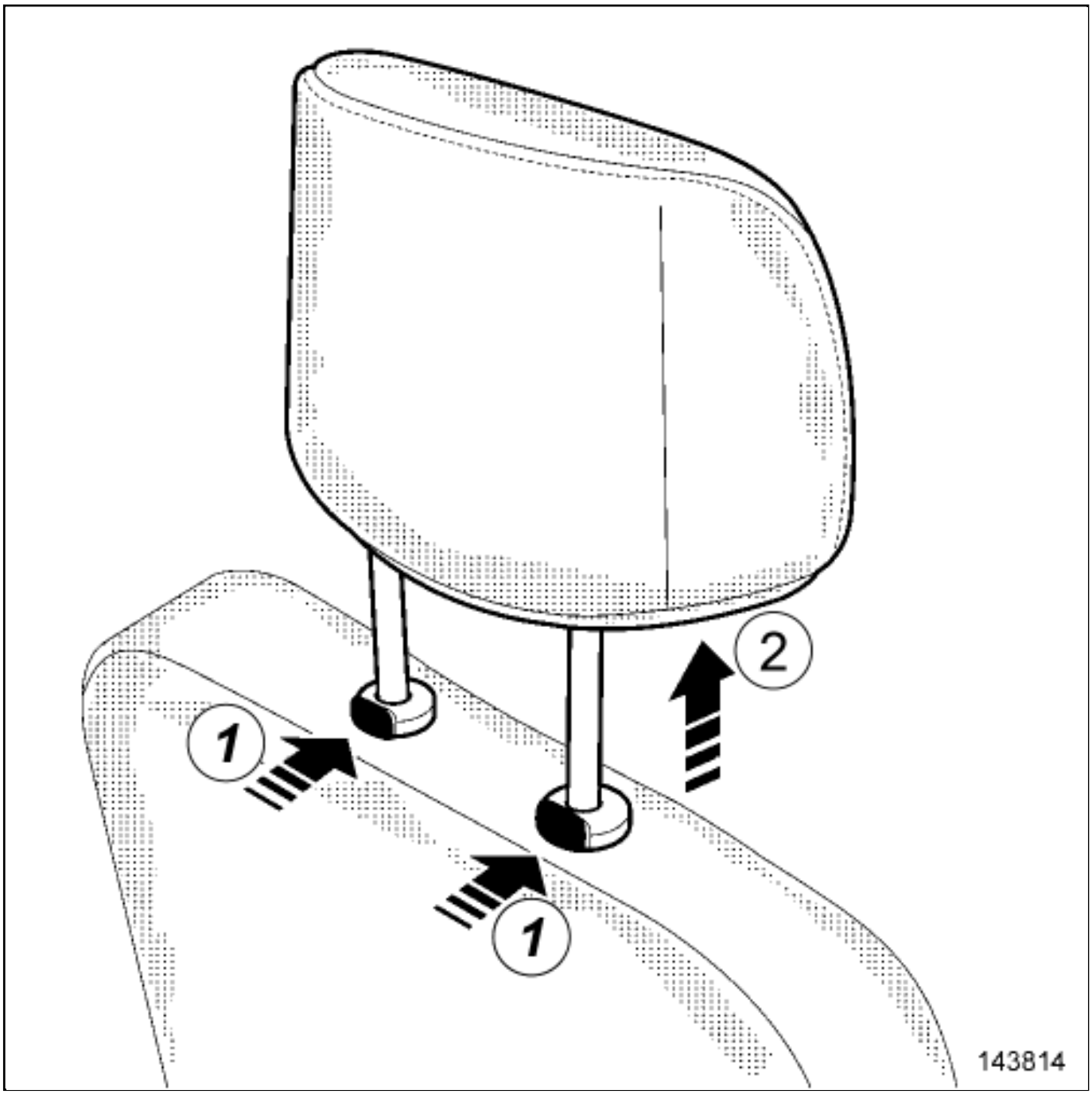
Proceed in the reverse order to removal.

FRONT HEADREST: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) .

REMOVAL

1. REMOVAL OPERATION



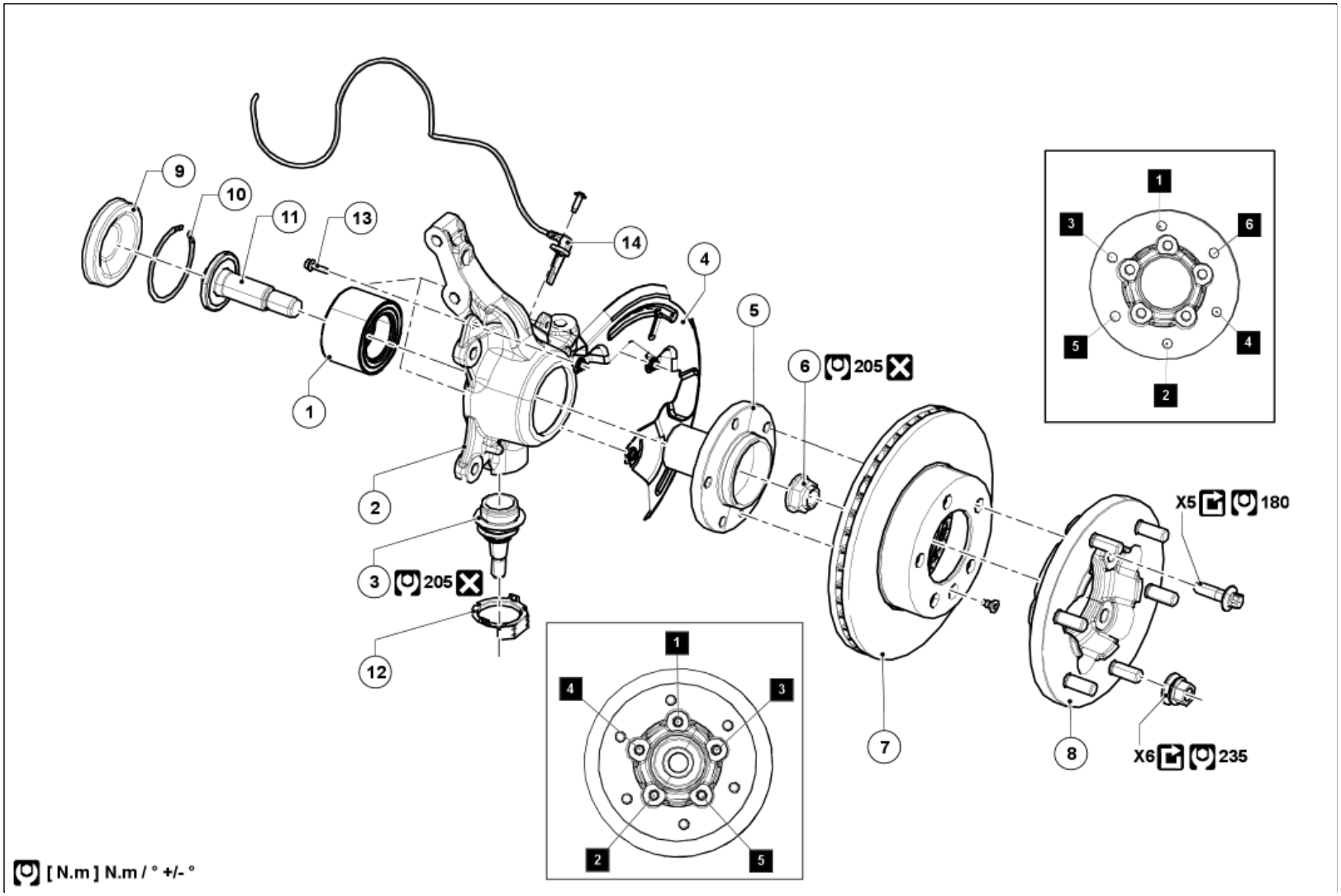
- Raise the front seat headrest fully.

- Press the unlocking buttons on each front seat headrest guide at(1) .
- Remove the front seat headrest at(2) .

REFITTING

- Proceed in the reverse order to removal.

FRONT HUB CARRIER ASSEMBLY: EXPLODED VIEW



(see **Illustration key: Description**) .

Marks	Designations	Informations
1	Bearing of front knuckle	(see 31A, Front axle components, Front hub carrier bearing: Removal - Refitting)
2	Knukle of front half axle	(see 31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting)
3	Lower ball joint	(see 31A, Front axle components, Front driveshaft lower arm ball joint: Removal - Refitting)
4	Protector of disc	
5	Hub of front axle	(see 31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting)
6	Nut of hub	(see 31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting)
7	Front disc	(see 31A, Front axle components, Front brake disc: Removal - Refitting)
8	Wheel support	
9	Hide hub	(see 31A, Front axle components, Front hub carrier bearing: Removal - Refitting)
10	Spring ring of front knuckle's bearing	(see 31A, Front axle components, Front hub carrier bearing: Removal - Refitting)
11	Spindle	(see 31A, Front axle components, Front hub carrier bearing: Removal - Refitting)
12	Ball joint protector	(see 31A, Front axle components, Front driveshaft lower arm ball joint: Removal - Refitting)
13	Screw of protector disc	
14	ABS sensor	(see **Wheel speed sensor: Removal - Refitting**)

FRONT HUB CARRIER BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

CAUTION

- In order to prevent irreversible damage to the front hub bearing:
  - Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
  - Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheelWheel: Removal - Refitting .
- Remove (see 31A, Front axle components, Front brake calliper assembly: Exploded view) :
  - the front brake pads,

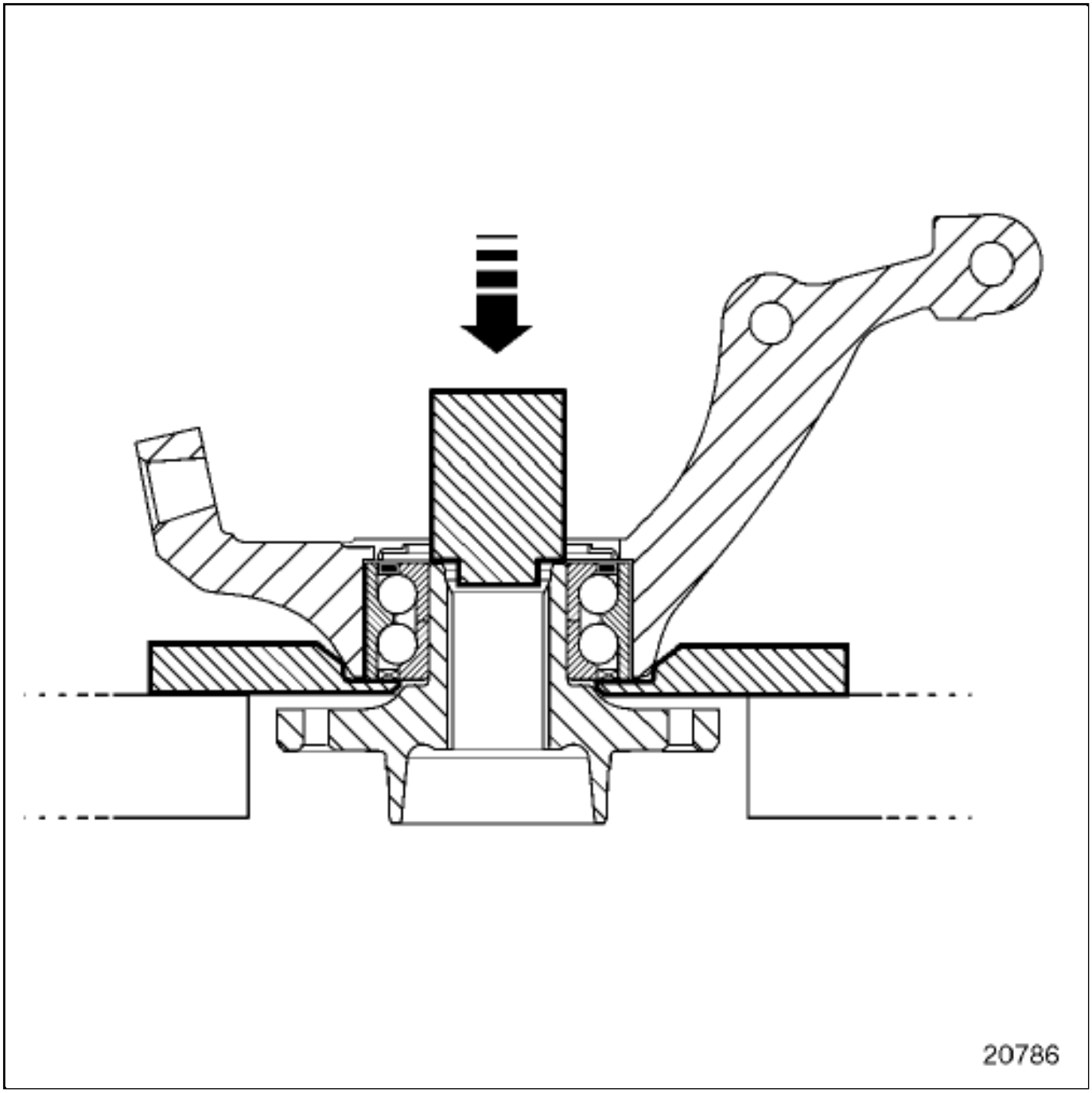
- the front brake calliper mounting.

Remove (see 31A, Front axle components, Front hub carrier assembly: Exploded view) :

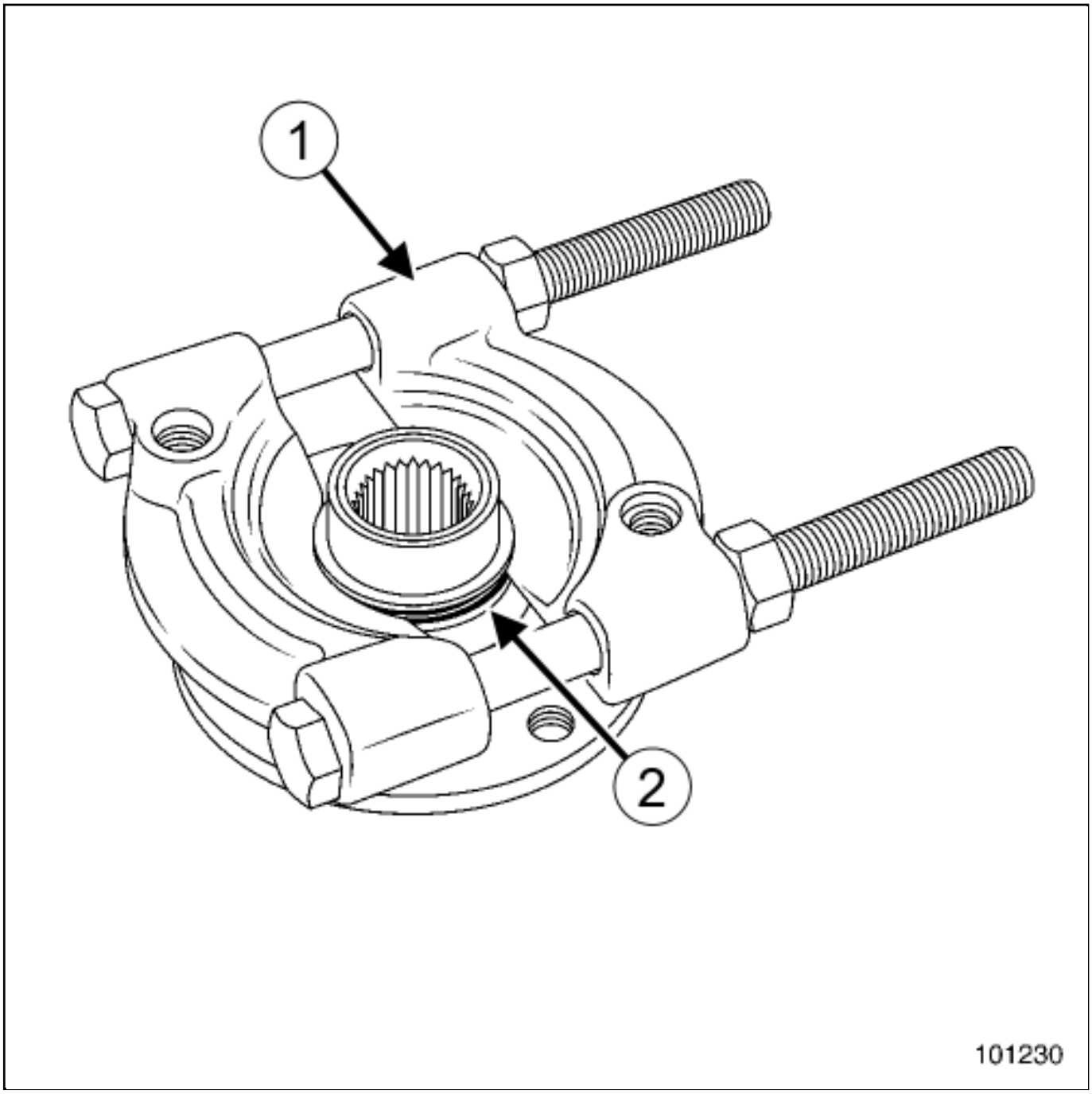
- the front brake disc,
- the front driveshaft hub carrier.

2. REMOVAL OPERATION

Remove the elastic ring from the front driveshaft hub carrier(see 31A, Front axle components, Front hub carrier assembly: Exploded view) .

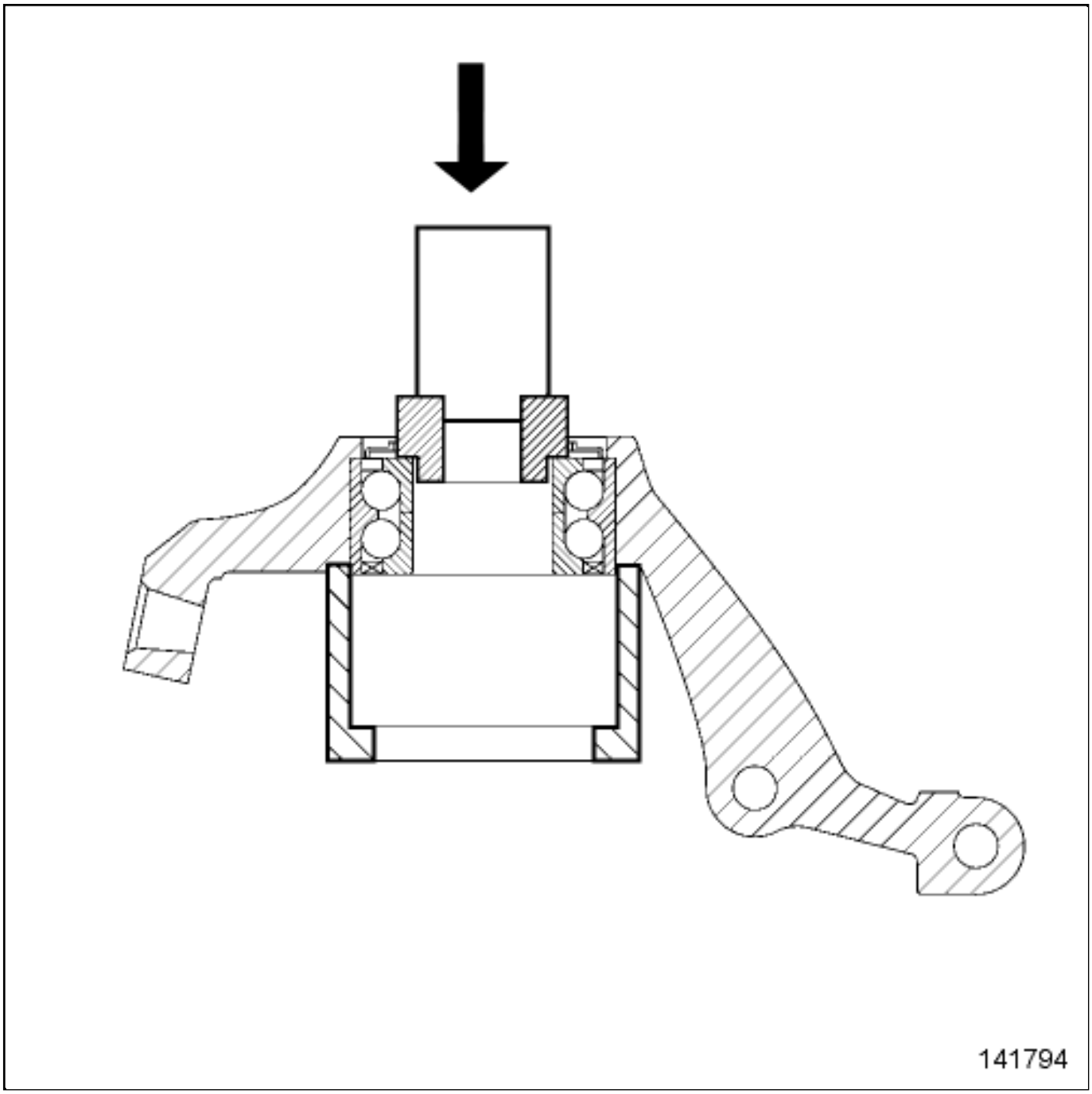


Remove the hub with a press, applying pressure with a tube with an external diameter of 54 mm.



- Place the extractor jaws(1) in the groove of the internal bush(2) .

- Remove the internal bush from the hub, applying pressure to the hub with a tube with an external diameter of 54 mm.



- Remove the bearing from the front driveshaft hub carrier by applying pressure to the internal bush with a tube with an external diameter of 84 mm.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:
  - the internal and external surfaces of the bearing, in contact with the hub carrier and the hub,

- the hub carrier surfaces in contact with the bearing,
- the hub surfaces in contact with the bearing.

CAUTION

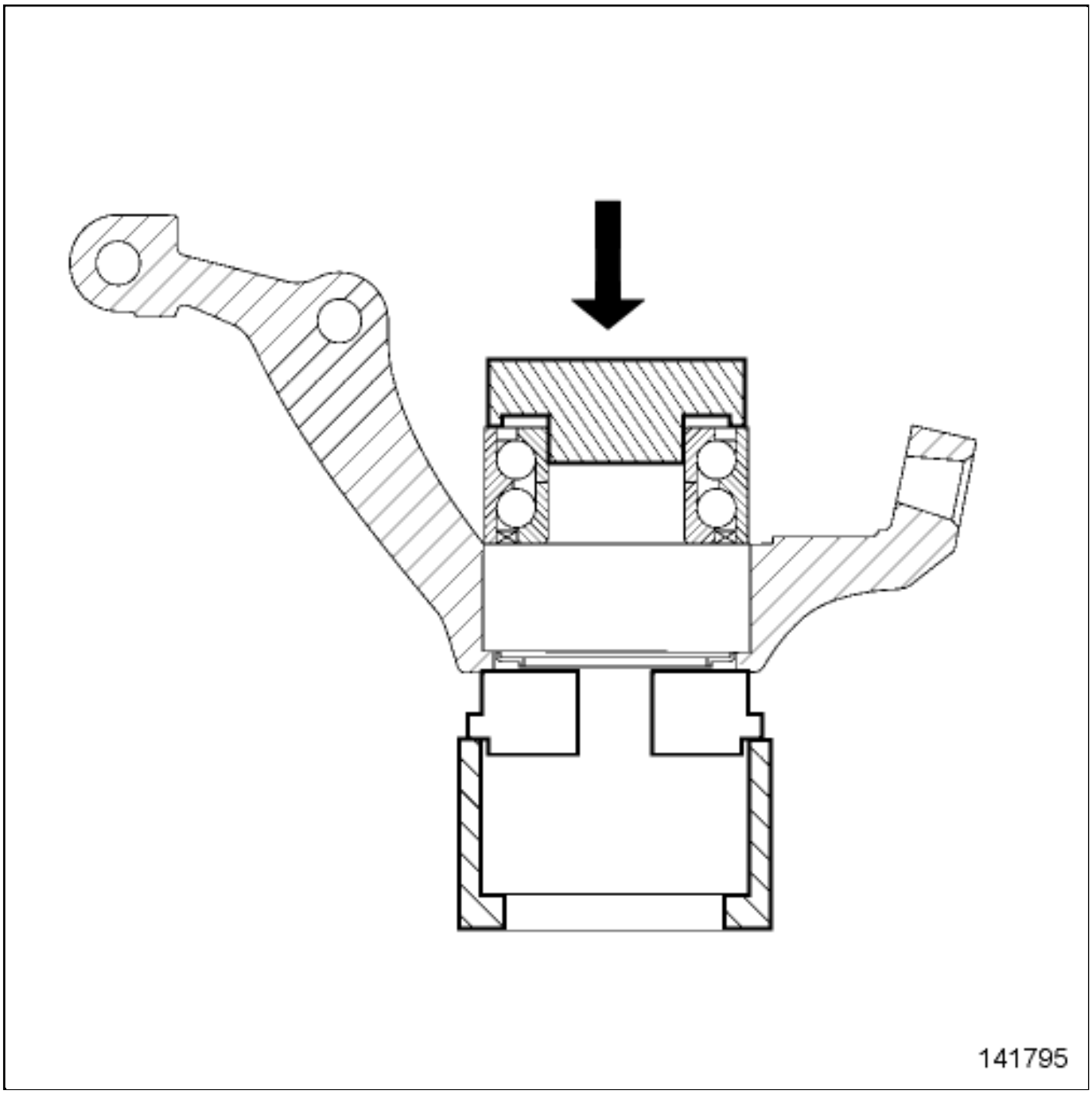
To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

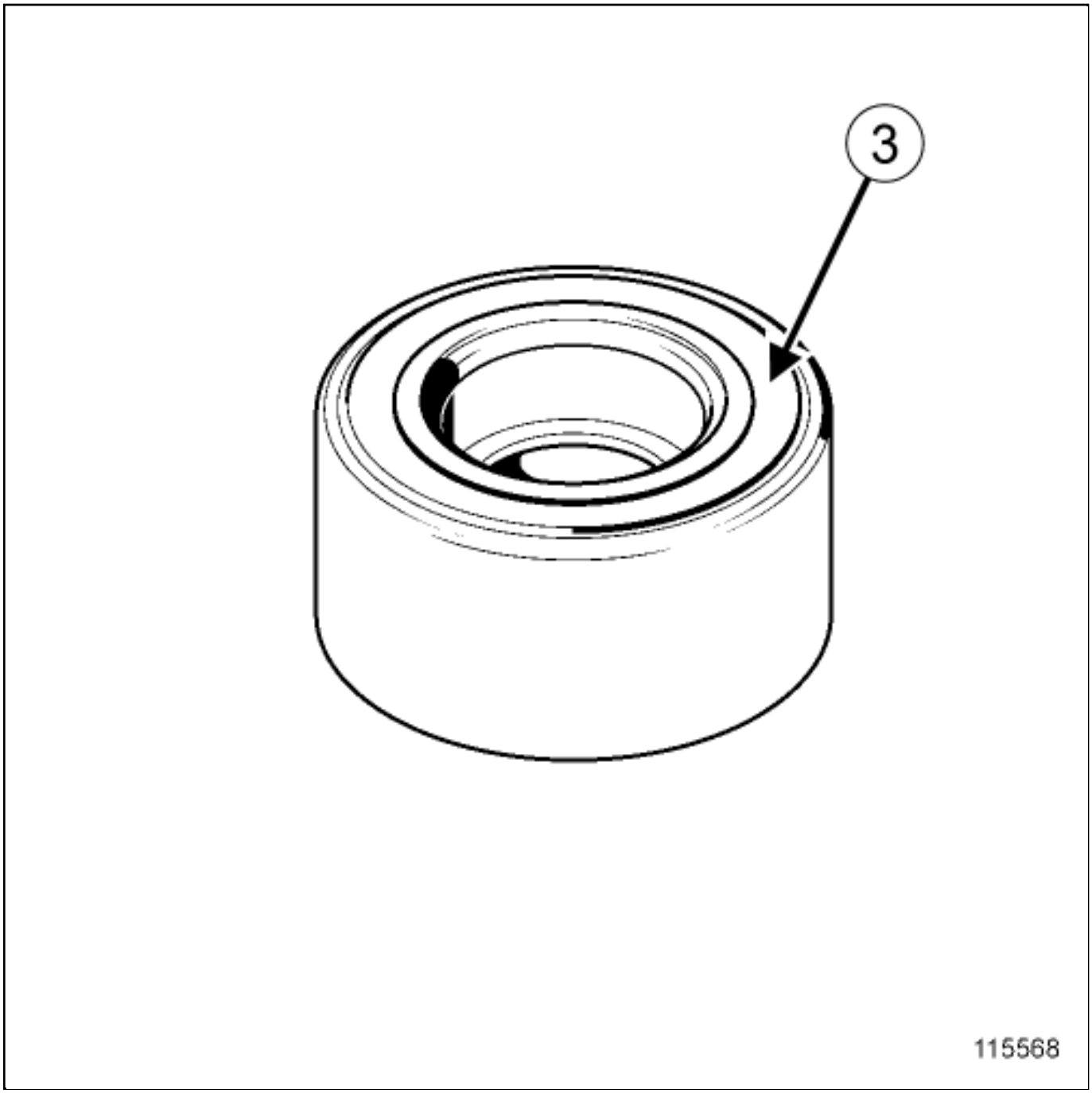
CAUTION

Do not press the bearing's internal bush so as to avoid damaging the bearing (very high shrink-fitting force).

- Check the condition of the hub surface and the bore of the hub carrier in contact with the bearing.
- Replace any component whose contact surfaces have deep scratches or cracks.

2. REFITTING OPERATION


141795



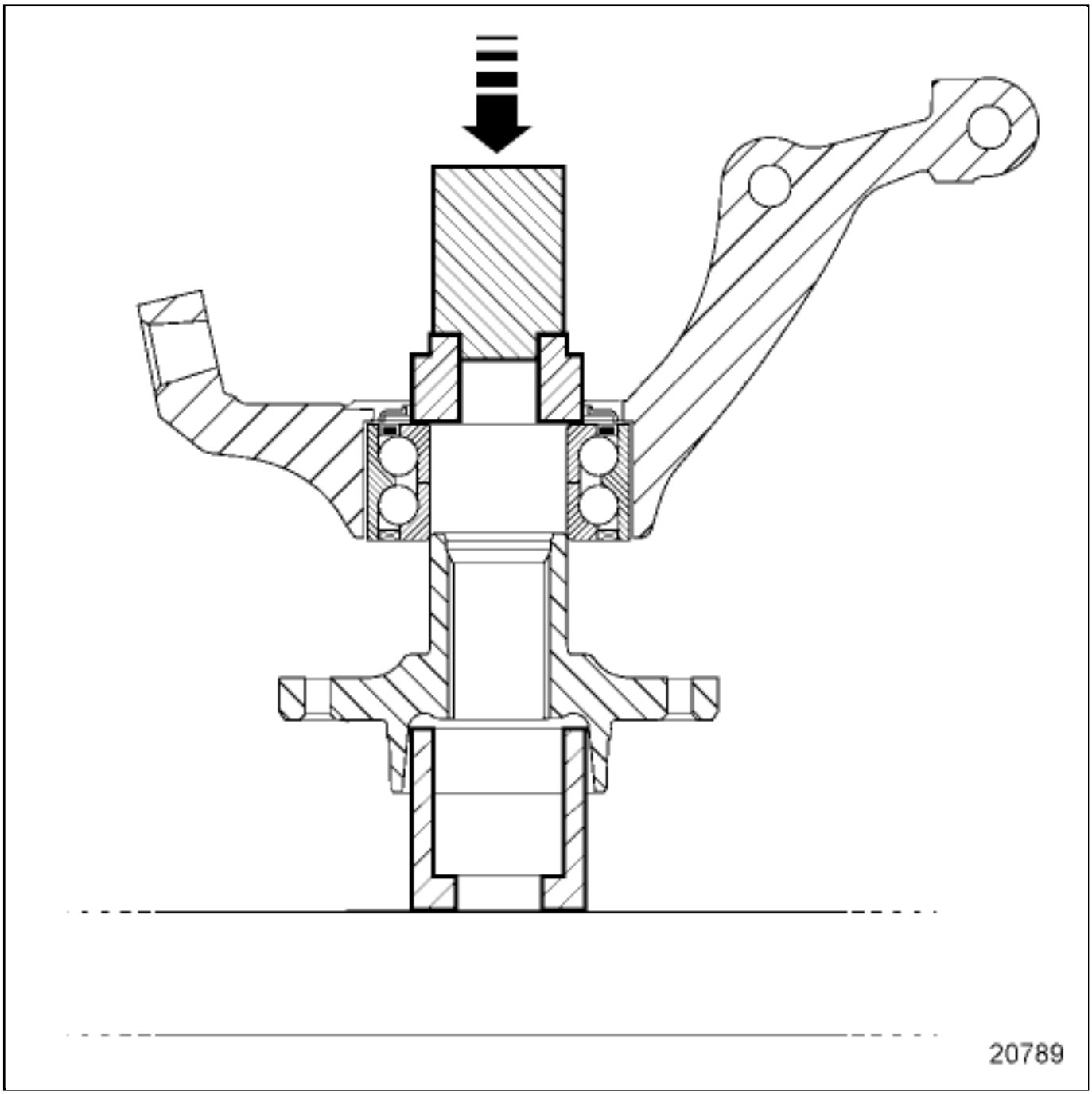
CAUTION

To ensure that the wheel speed sensor works properly, do not mark the sensor target (3) on the bearing.

- Position the sensor target on the wheel side of the bearing on the hub carrier.

Apply pressure to the external bush with a tube with an external diameter of 89 mmand an internal diameter of 84 mm(old bearing).

Apply a fitting force of 50,000 Nto ensure that the bearing is correctly fitted on the hub carrier shoulder.



Refit:

- the hub using a tube with an external diameter of 70 mm,
- the elastic ring on the front driveshaft hub carrier.

3. FINAL OPERATION

Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

FRONT IMPACT CROSS MEMBER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

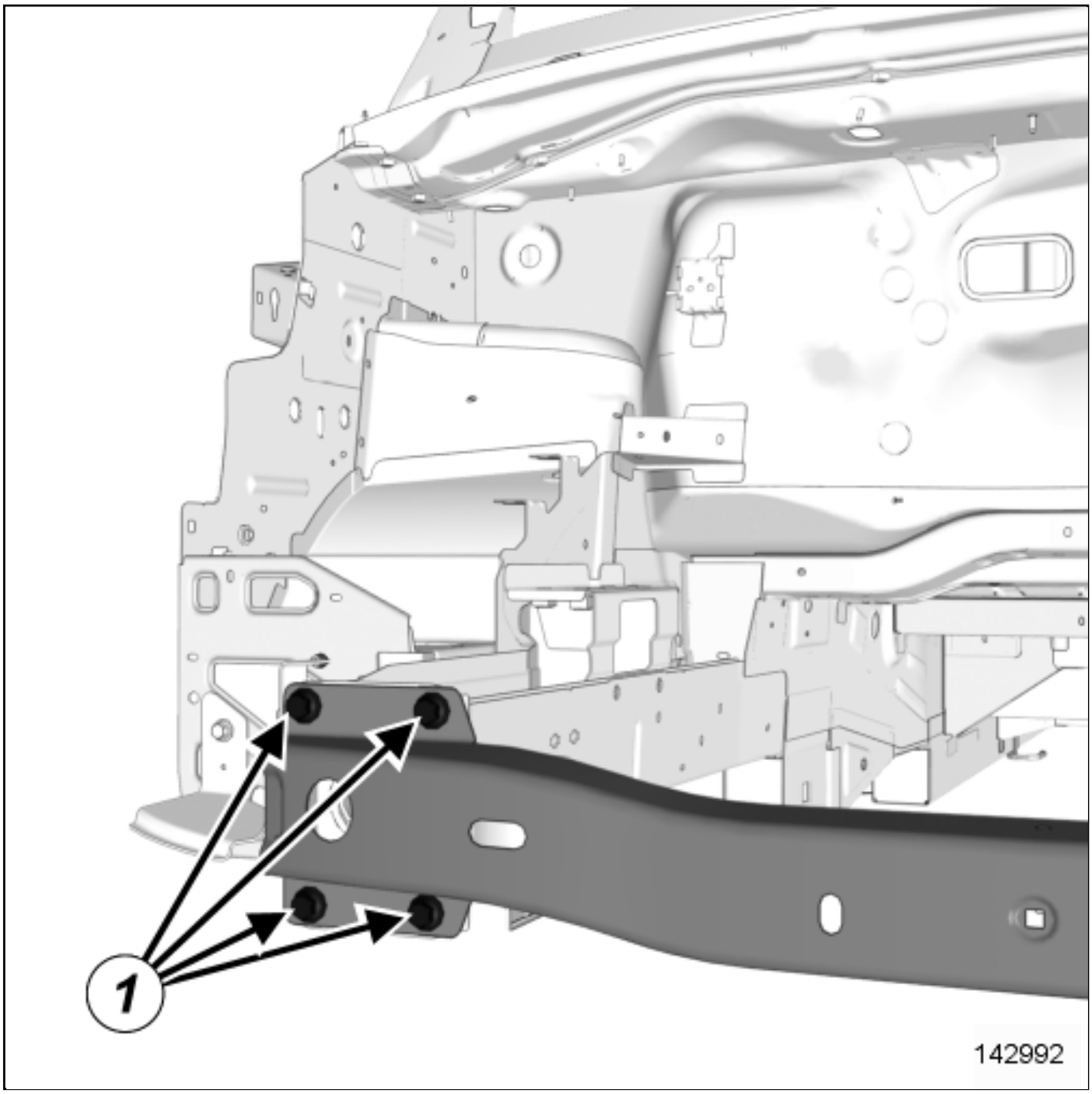
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection).

2. REMOVAL OPERATION



Remove:

- the bolts(1) ,
- the front impact cross member.

REFITTING

1. REFITTING OPERATION

Refit:

- the front impact cross member,
- the bolts.

2. FINAL OPERATION

Refit the front bumper **Front bumper: Removal - Refitting** (55A, Exterior protection).

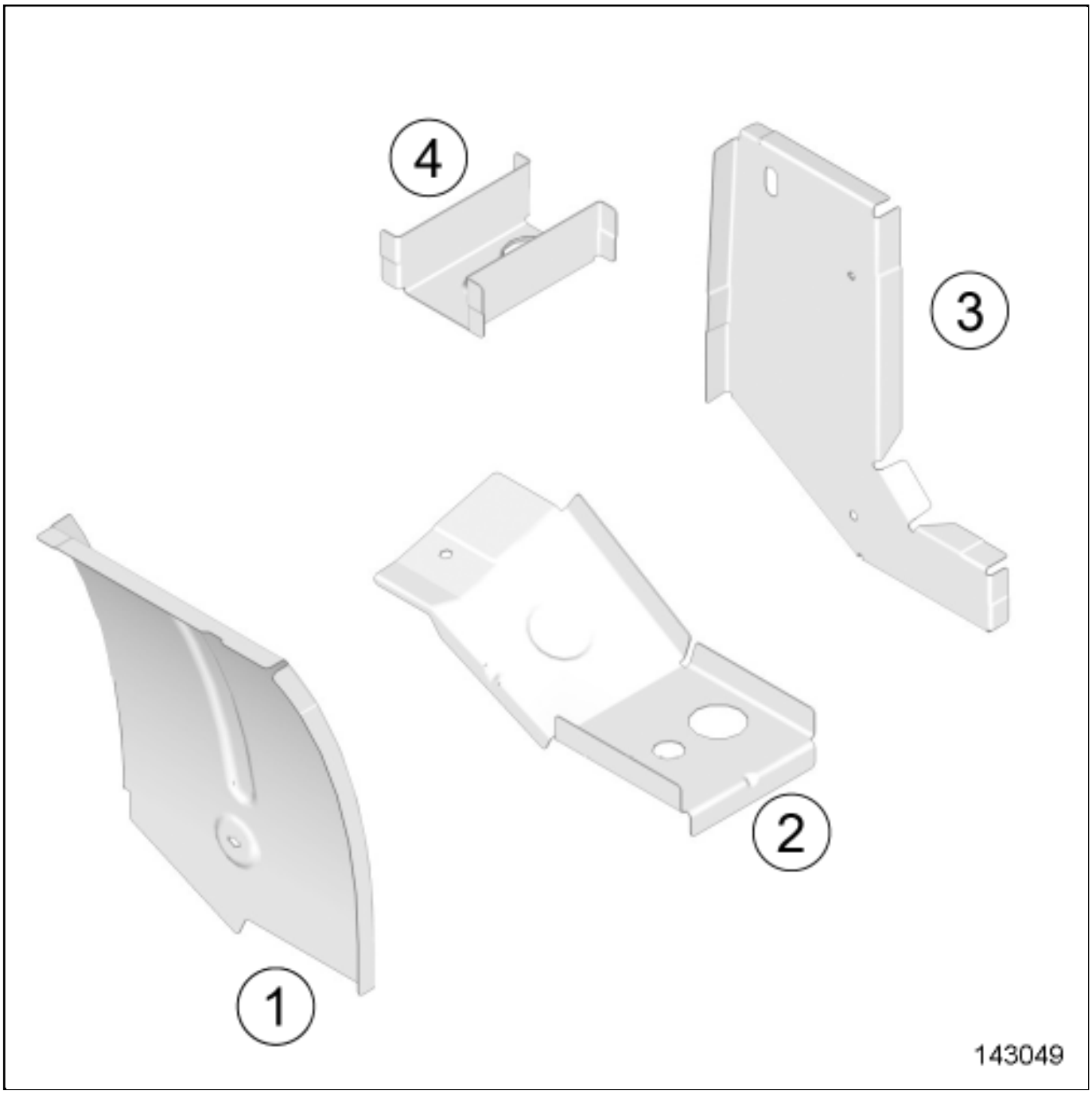
FRONT JACKING POINT: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART


4
3
2
1
143049

No.	Description	Type	Thickness (mm)
(1)	Jack support front closure panel component	HLE	1.0
(2)	Front jacking point	HLE	1.5
(3)	Jack support rear closure panel component	Mild steel	1.0
(4)	Jack support reinforcement	HLE	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

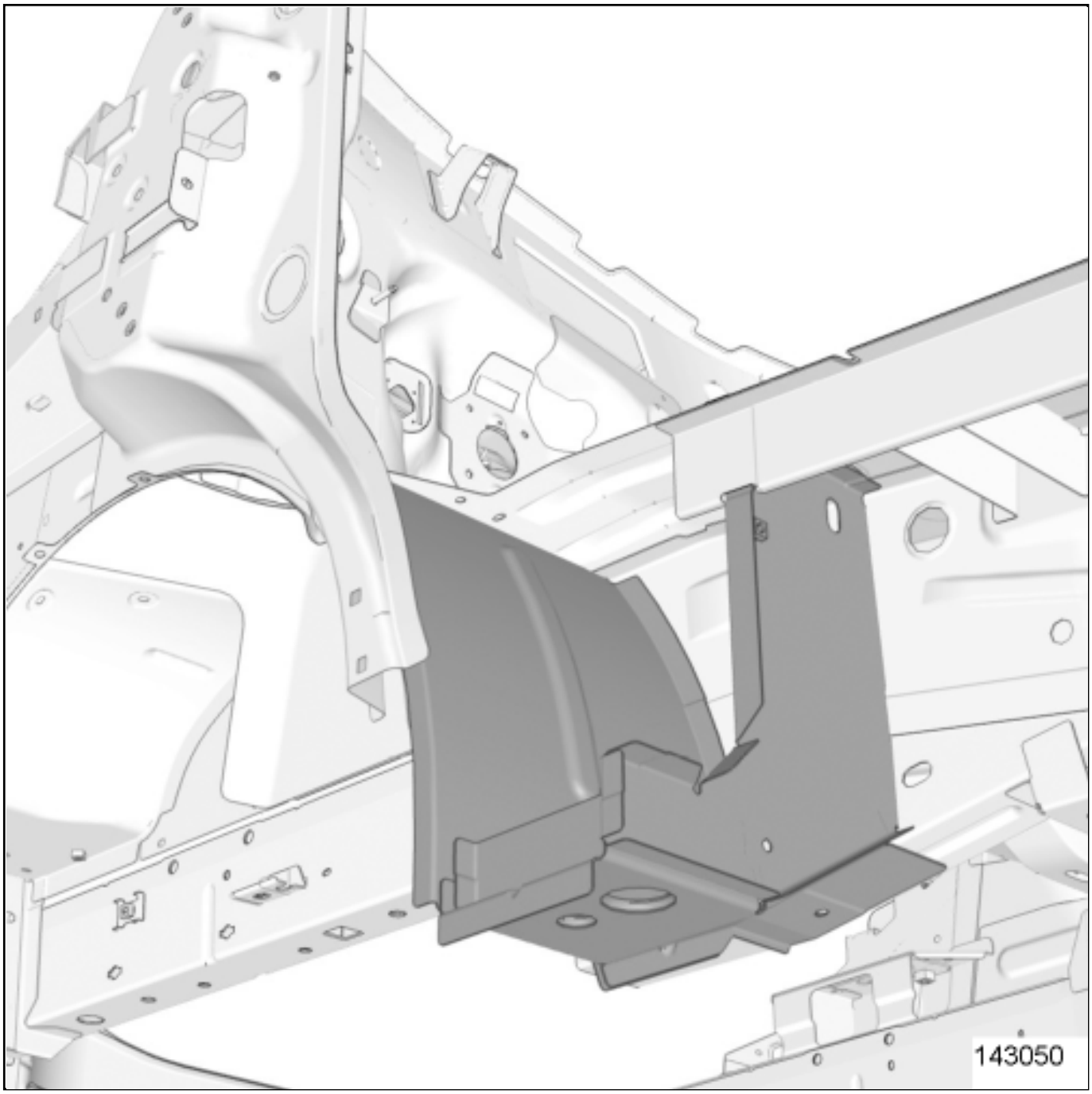
Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FRONT LIGHTING: LIST AND LOCATION OF COMPONENTS

1. LIST OF COMPONENTS

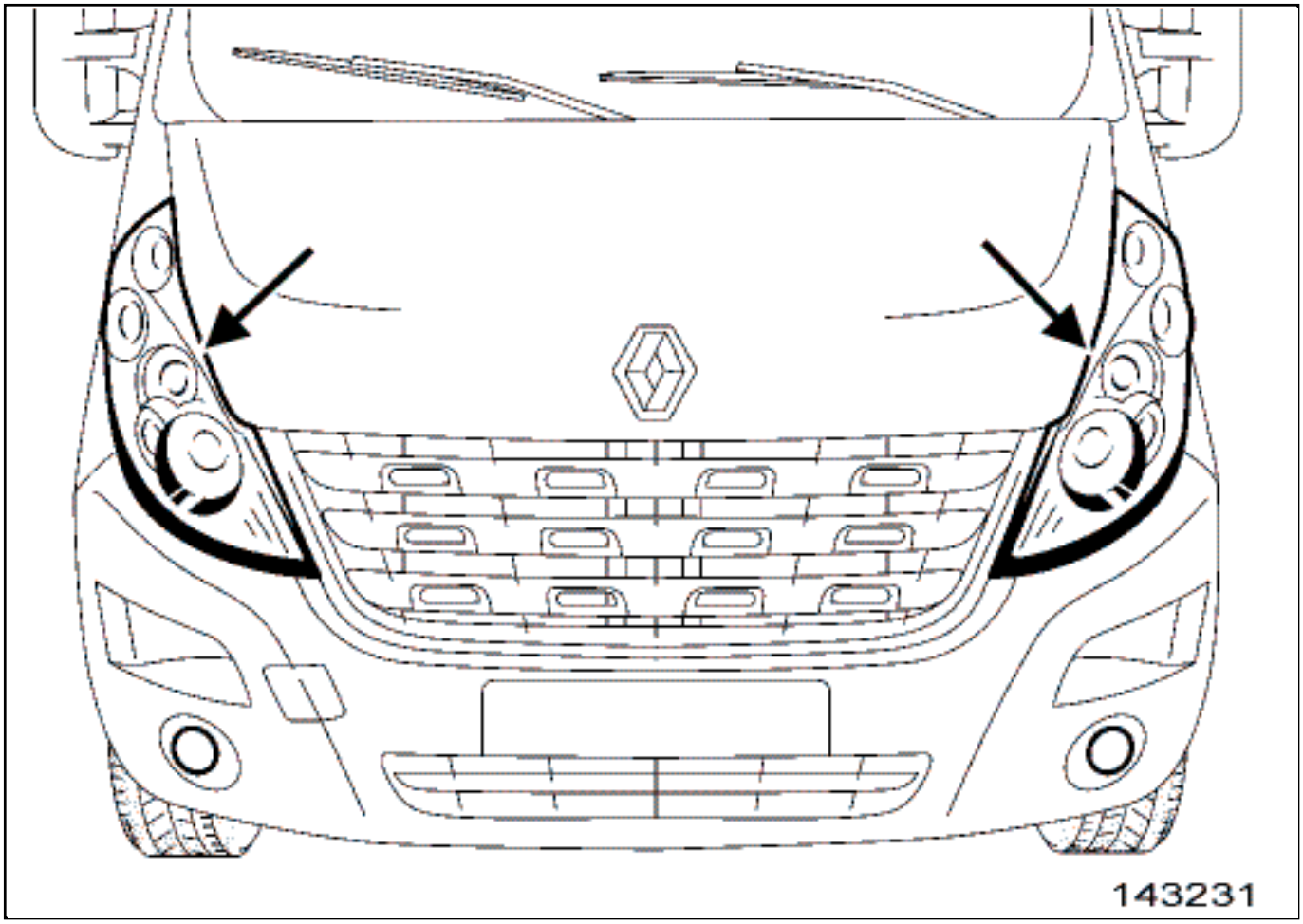
1- THE FRONT LIGHTING CONSISTS OF:

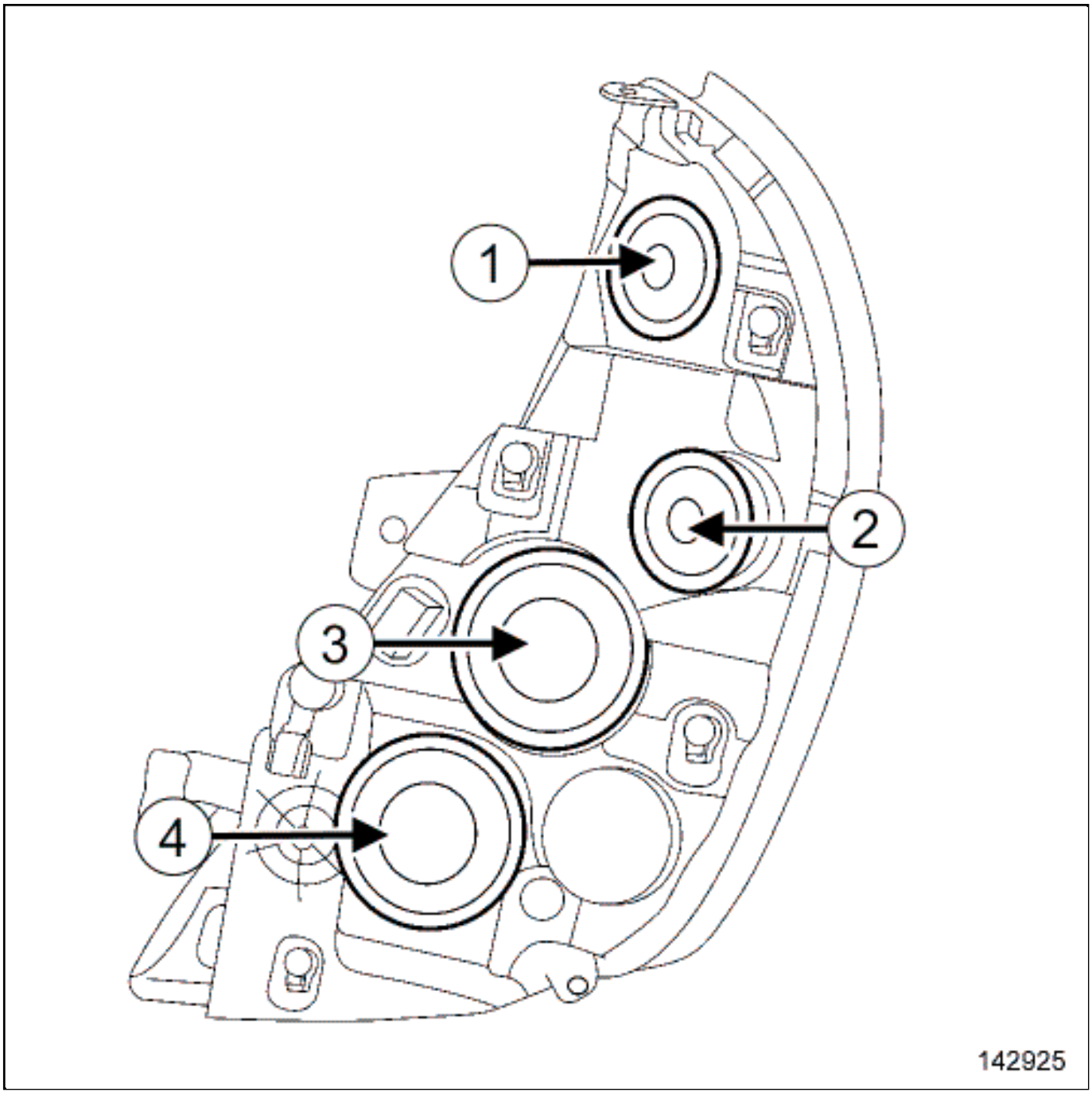
- headlights(see 80B, Headlights, Headlight: Removal - Refitting)
- headlight bulbs(see 80B, Headlights, Headlight bulb: Removal - Refitting)
- headlight beam adjustment actuators(see 80B, Headlights, Remote headlight beam adjustment actuator: Removal - Refitting)
- a remote headlight beam adjustment control(see 80B, Headlights, Remote headlight beam adjustment control: Removal - Refitting)
- side indicators(see 80B, Headlights, Side indicator: Removal - Refitting)

- front fog lights(see 80B, Headlights, Front fog light: Removal - Refitting)
- front fog light bulbs(see 80B, Headlights, Front fog light bulb: Removal - Refitting)

2. LOCATION OF COMPONENTS

HEADLIGHTS





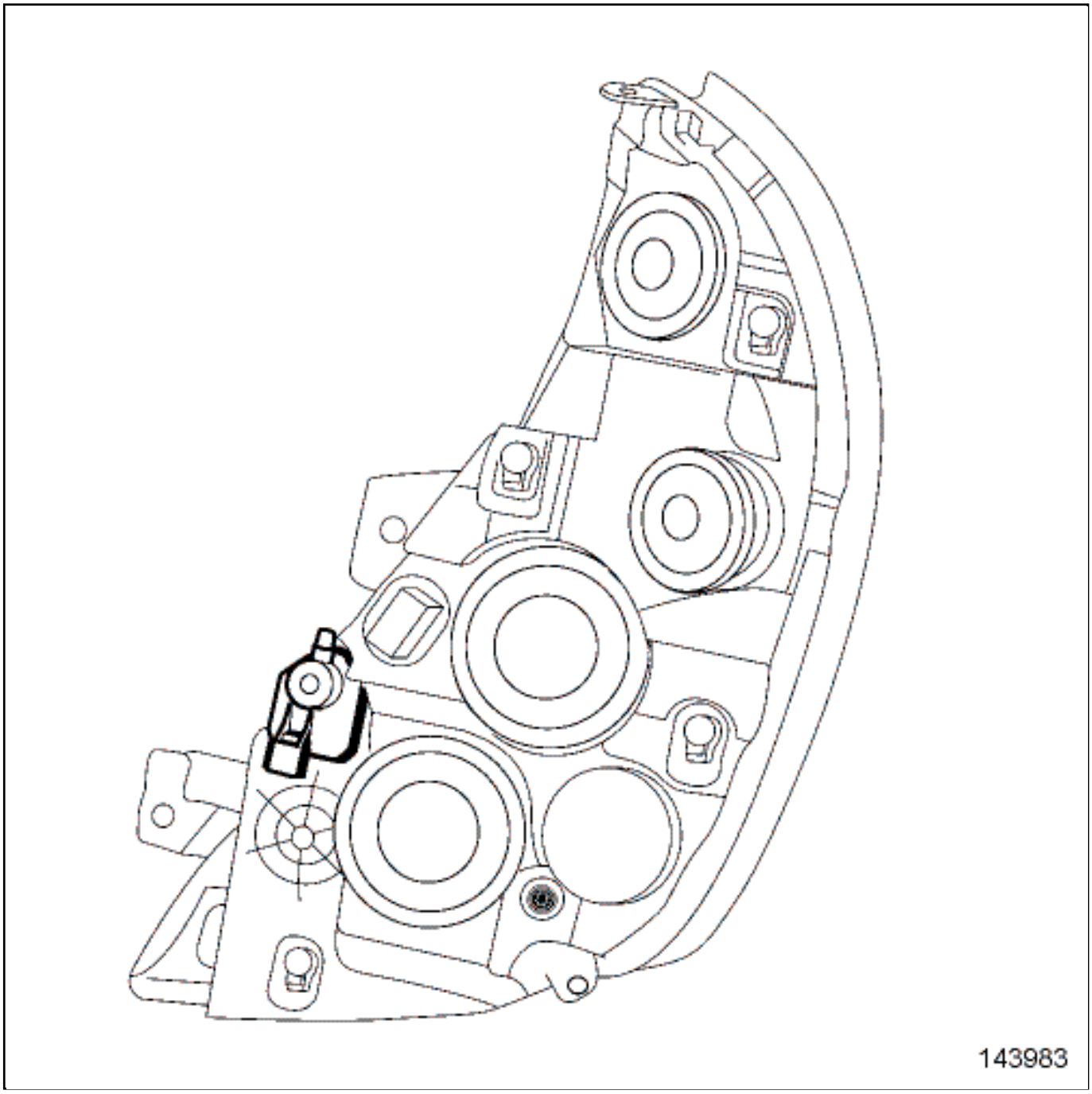
(1) Direction indicator bulb

(2) side light bulb

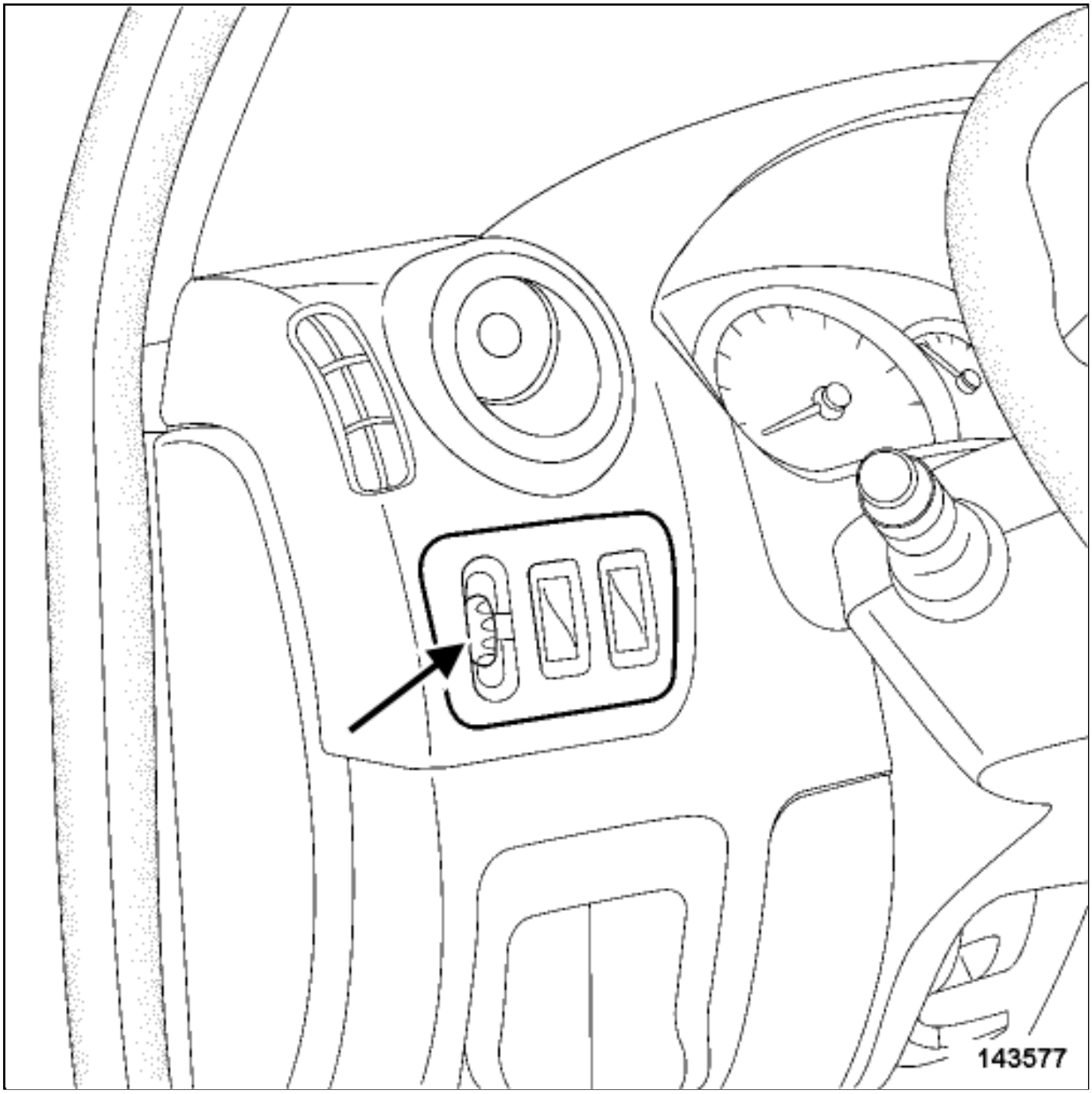
(3) main beam headlight bulb

(4) dipped beam headlight bulb

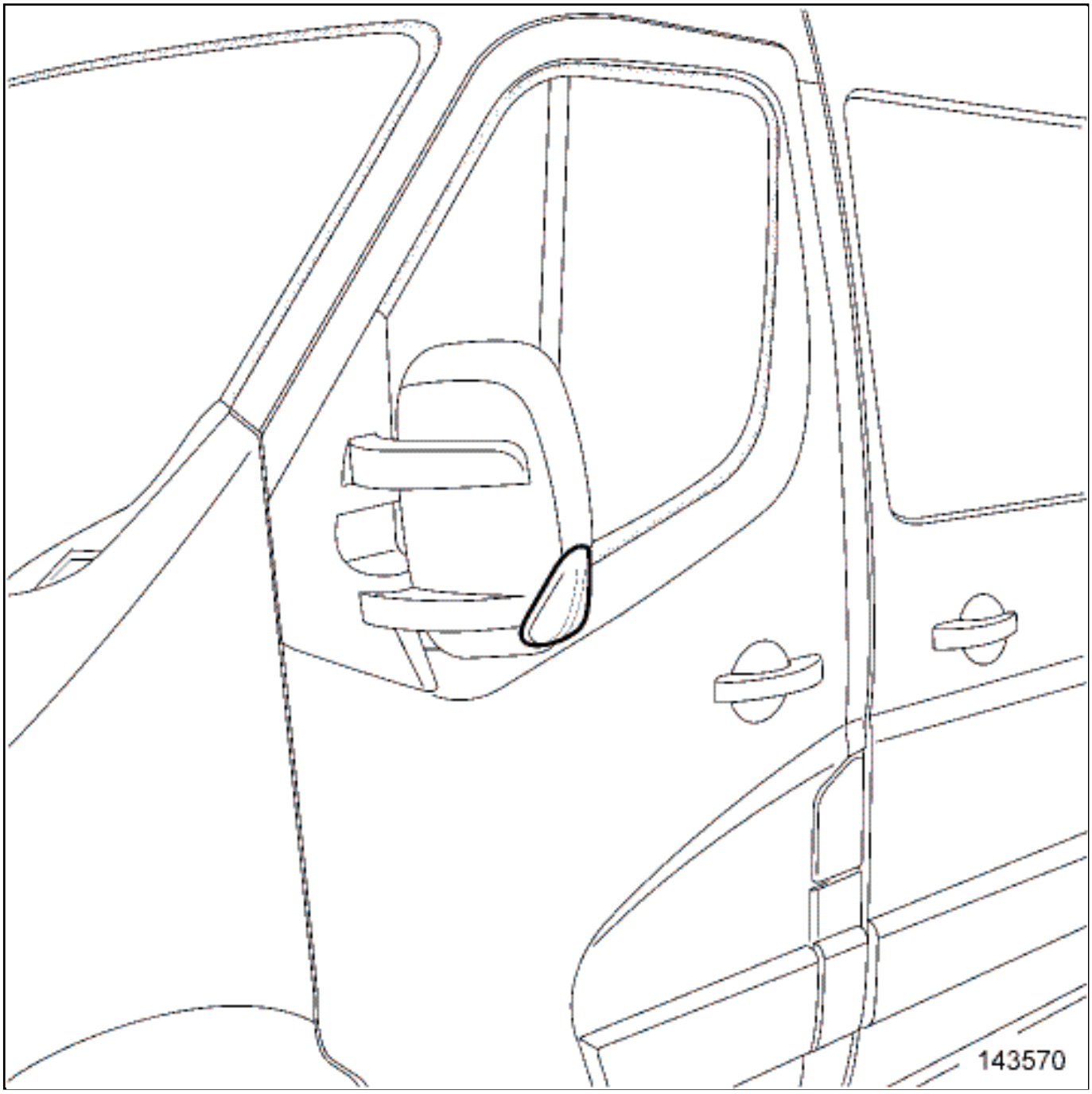
REMOTE HEADLIGHT BEAM ADJUSTMENT ACTUATOR



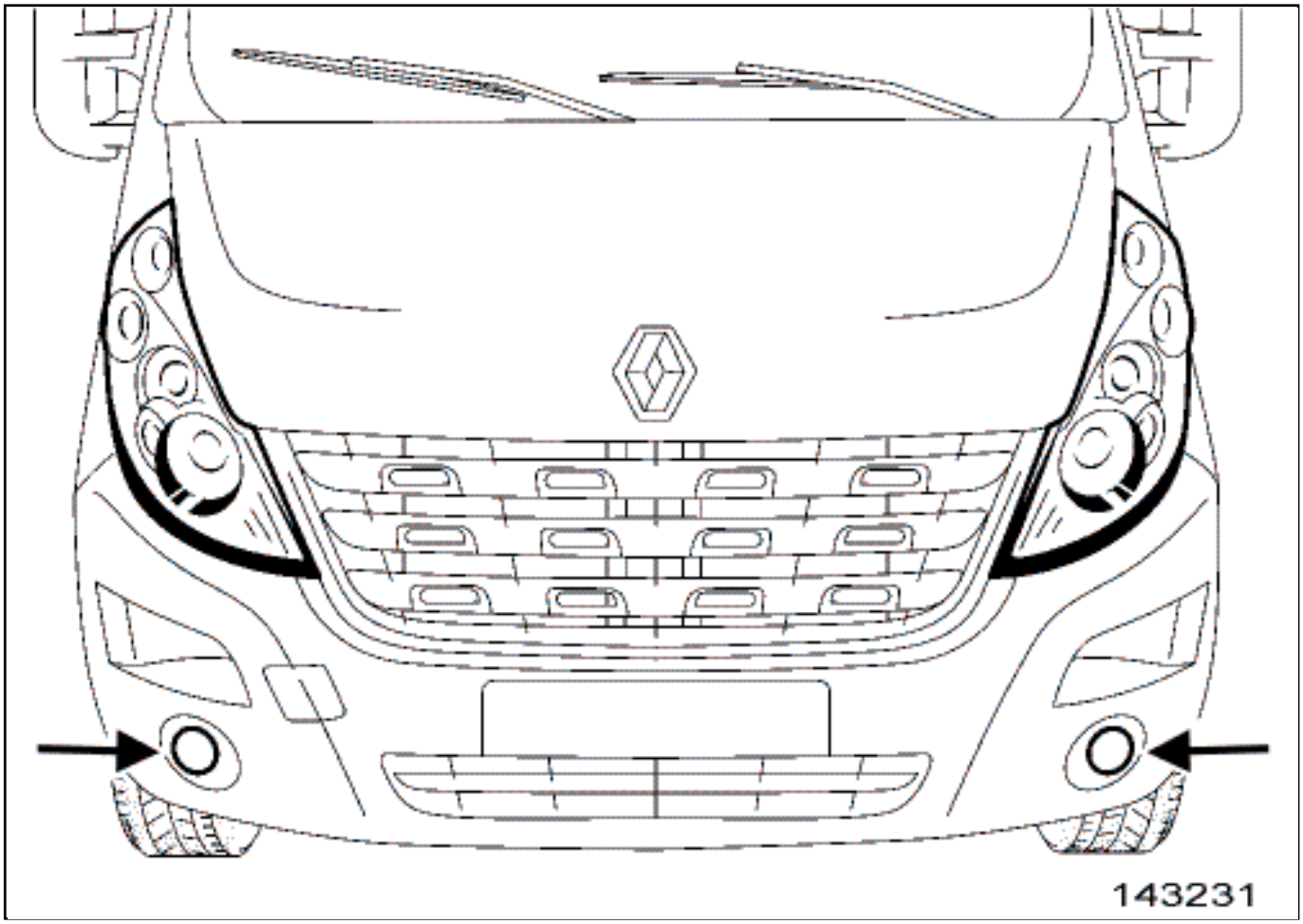
REMOTE HEADLIGHT BEAM ADJUSTMENT CONTROL



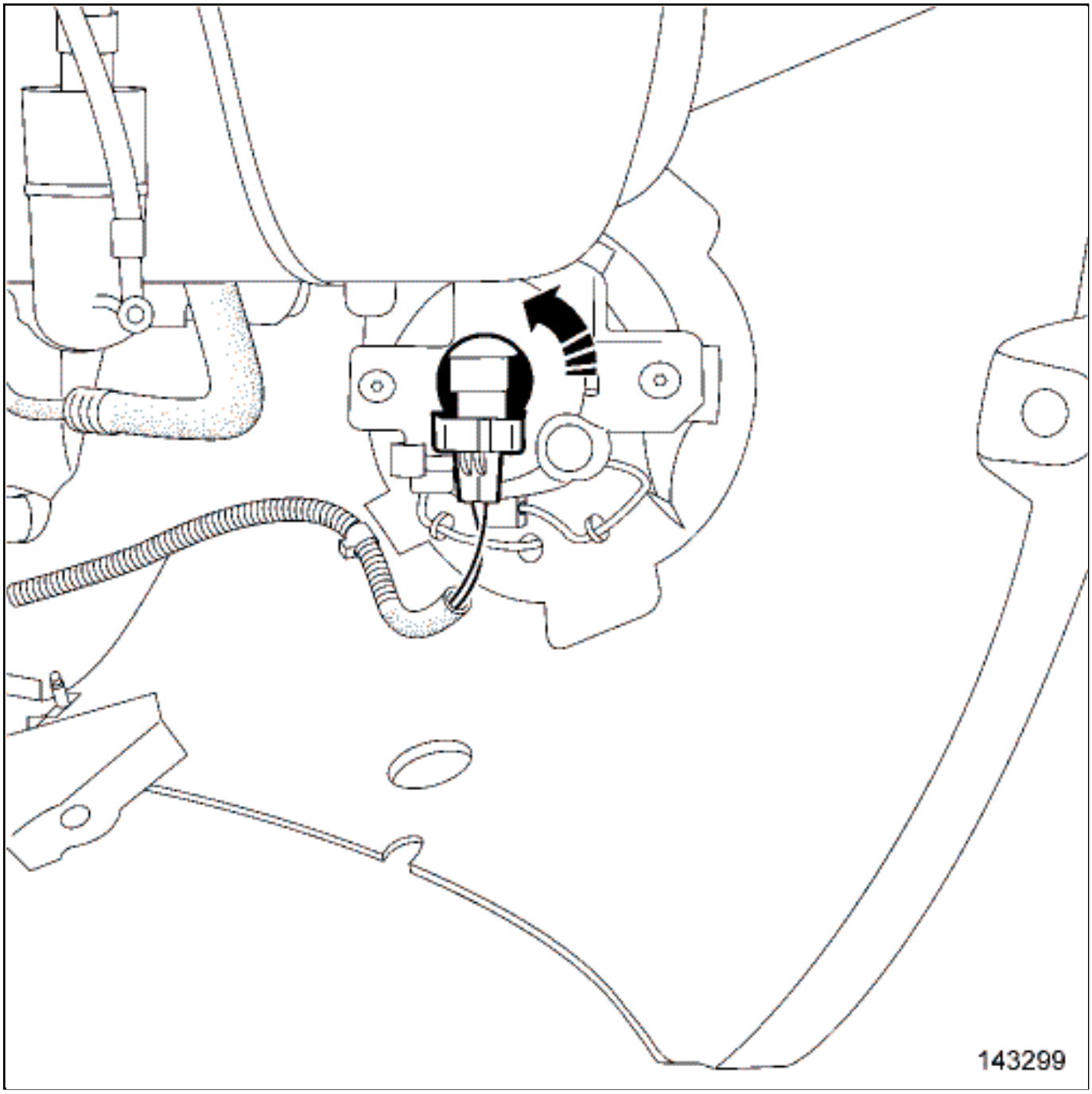
SIDE INDICATOR



FRONT FOG LIGHTS



FRONT FOG LIGHT BULB


143299

FRONT SEAT BASE TRIM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) .

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 Airbag and pretensioners: Precautions for repair) (88C, Airbags and pretensioners),
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

REMOVAL

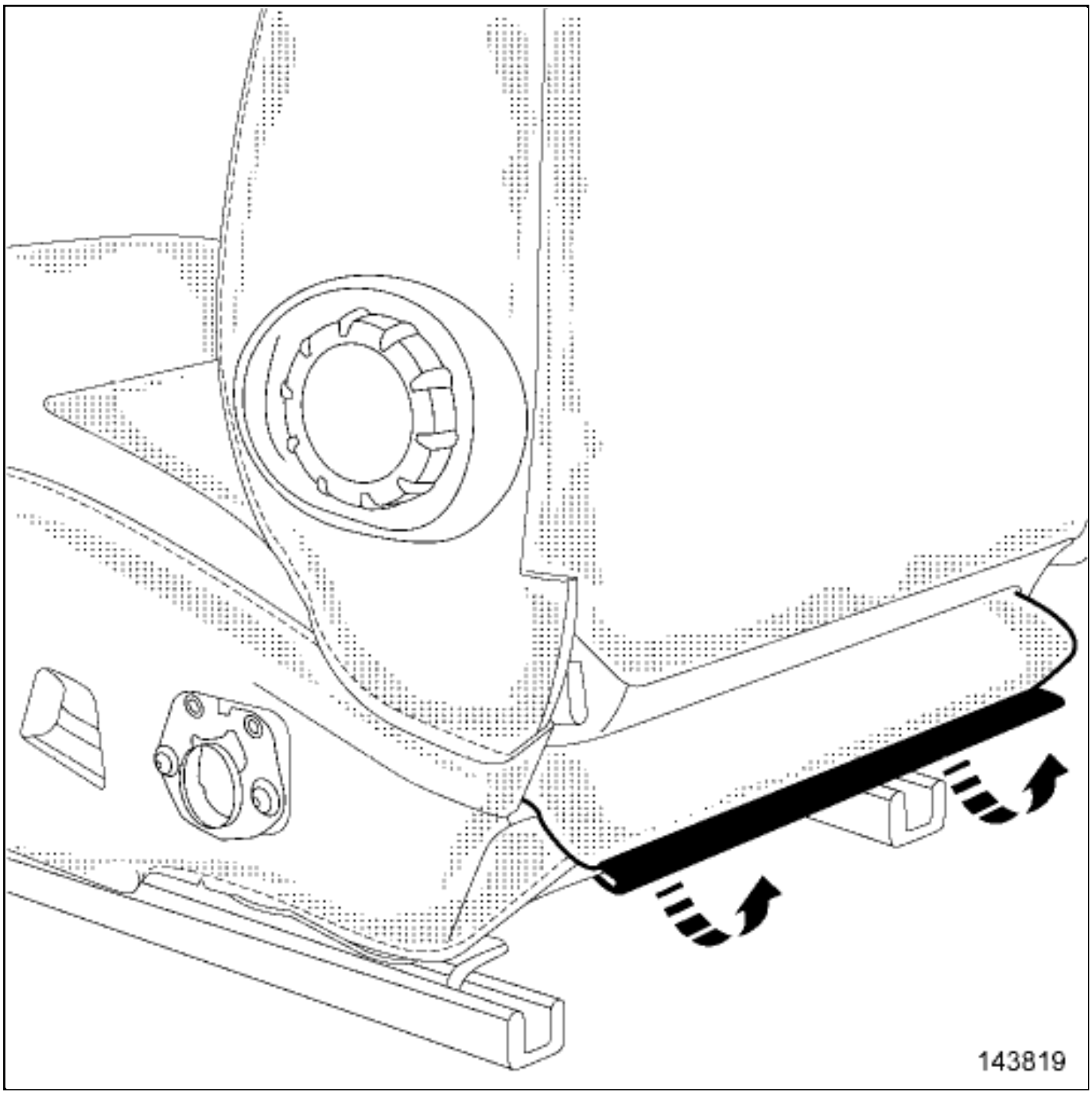
1. REMOVAL PREPARATION OPERATION

- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).

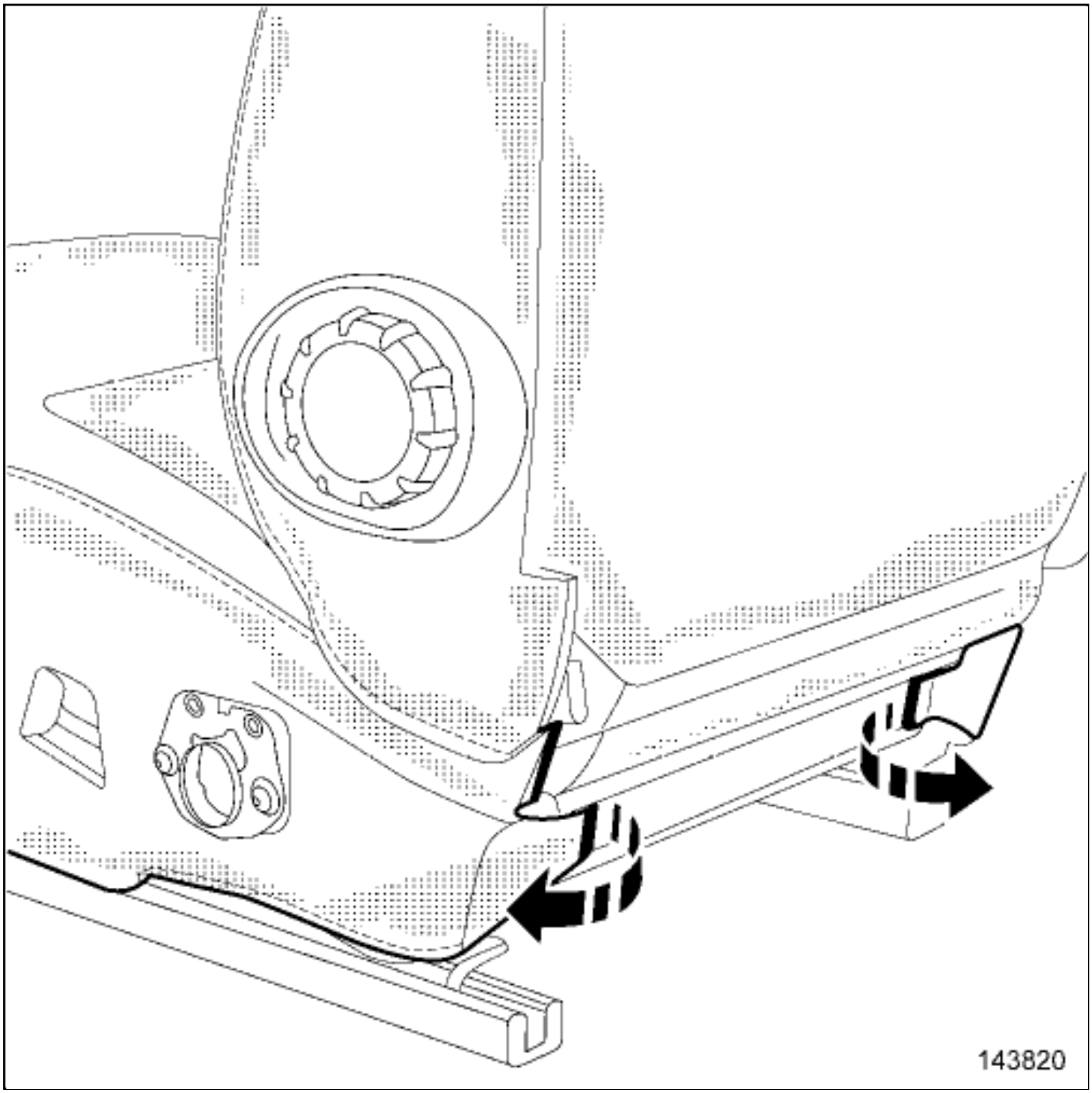
- Remove the front seat(see **Front seat: Exploded view**)

- Remove the front seat base exterior casing(see **Front seat: Exploded view**) .

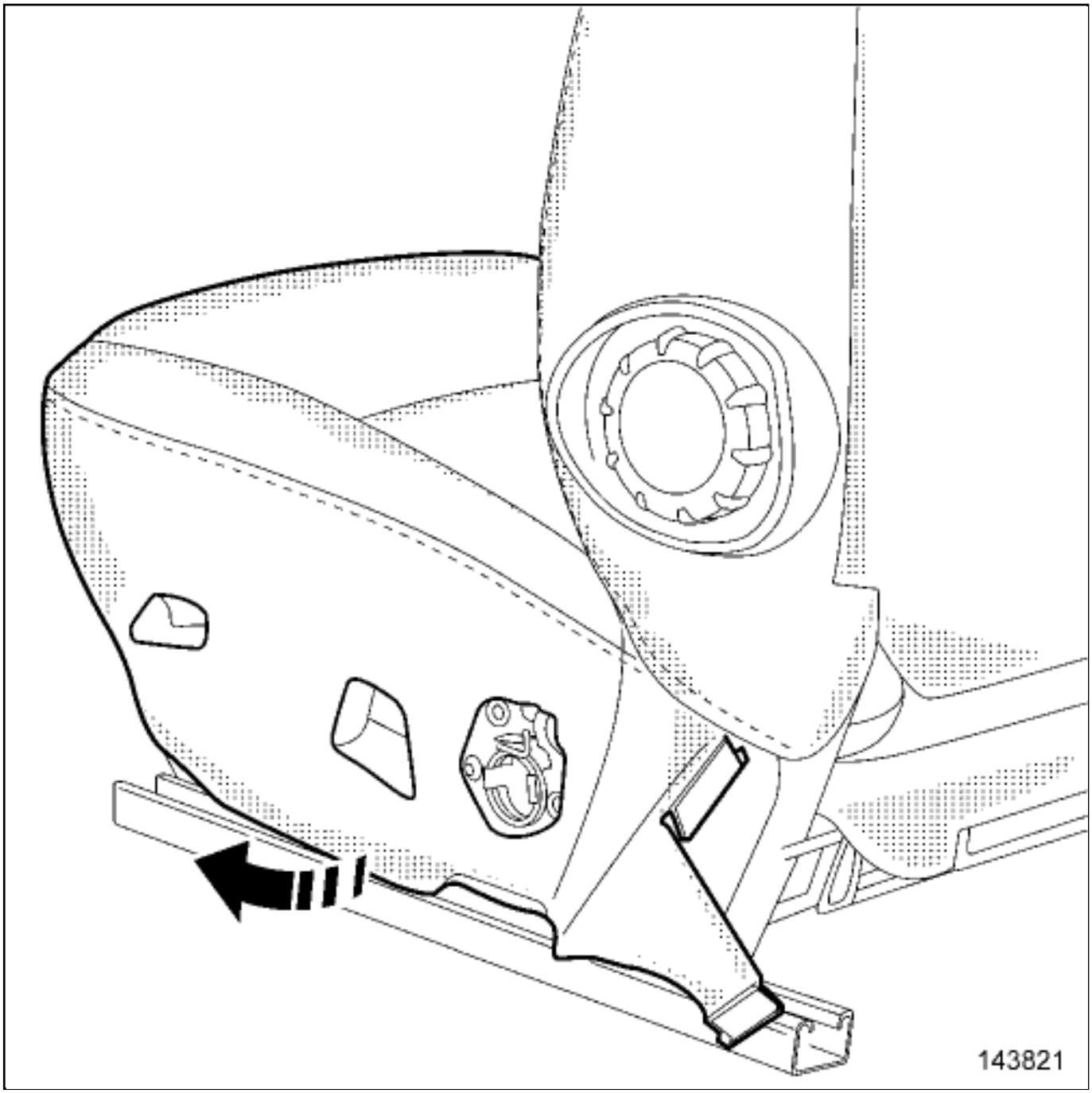
2. REMOVAL OPERATION



- Unclip the lower retaining section of the front seat base cover.

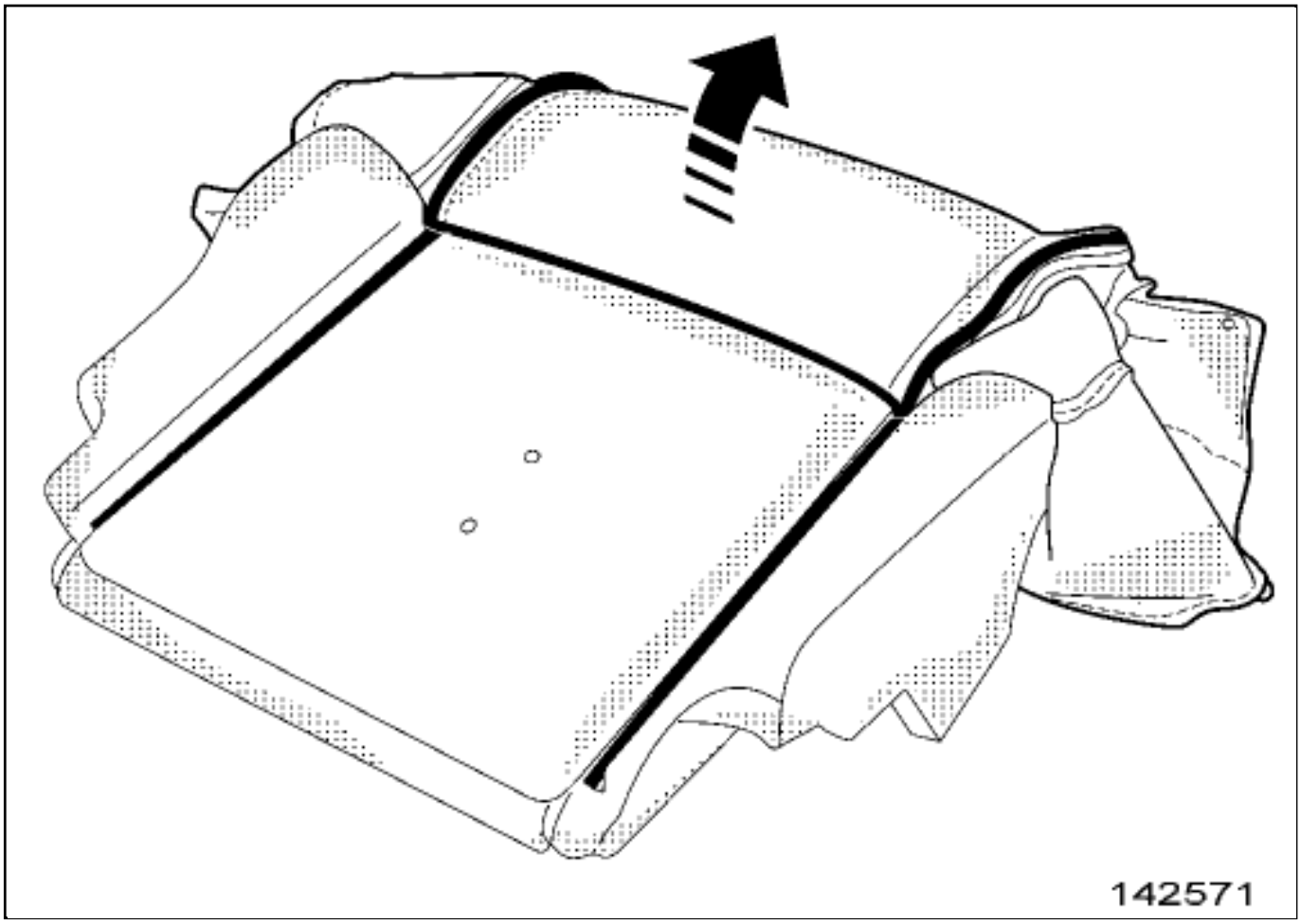


- Unclip the side retaining sections of the front seat base cover.

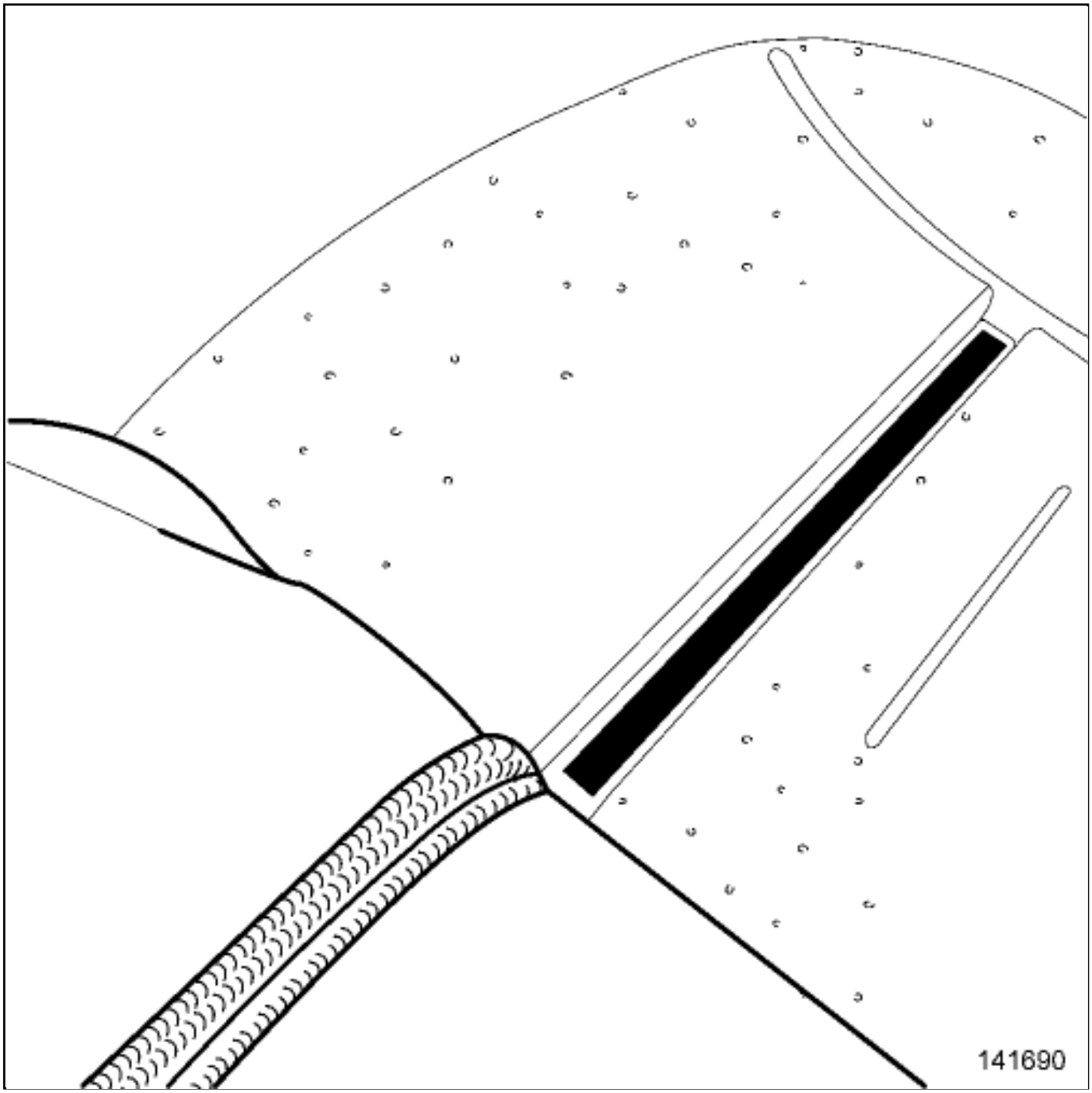


- Unclip the front seat base cover.

- Remove the "foam - cover" assembly.



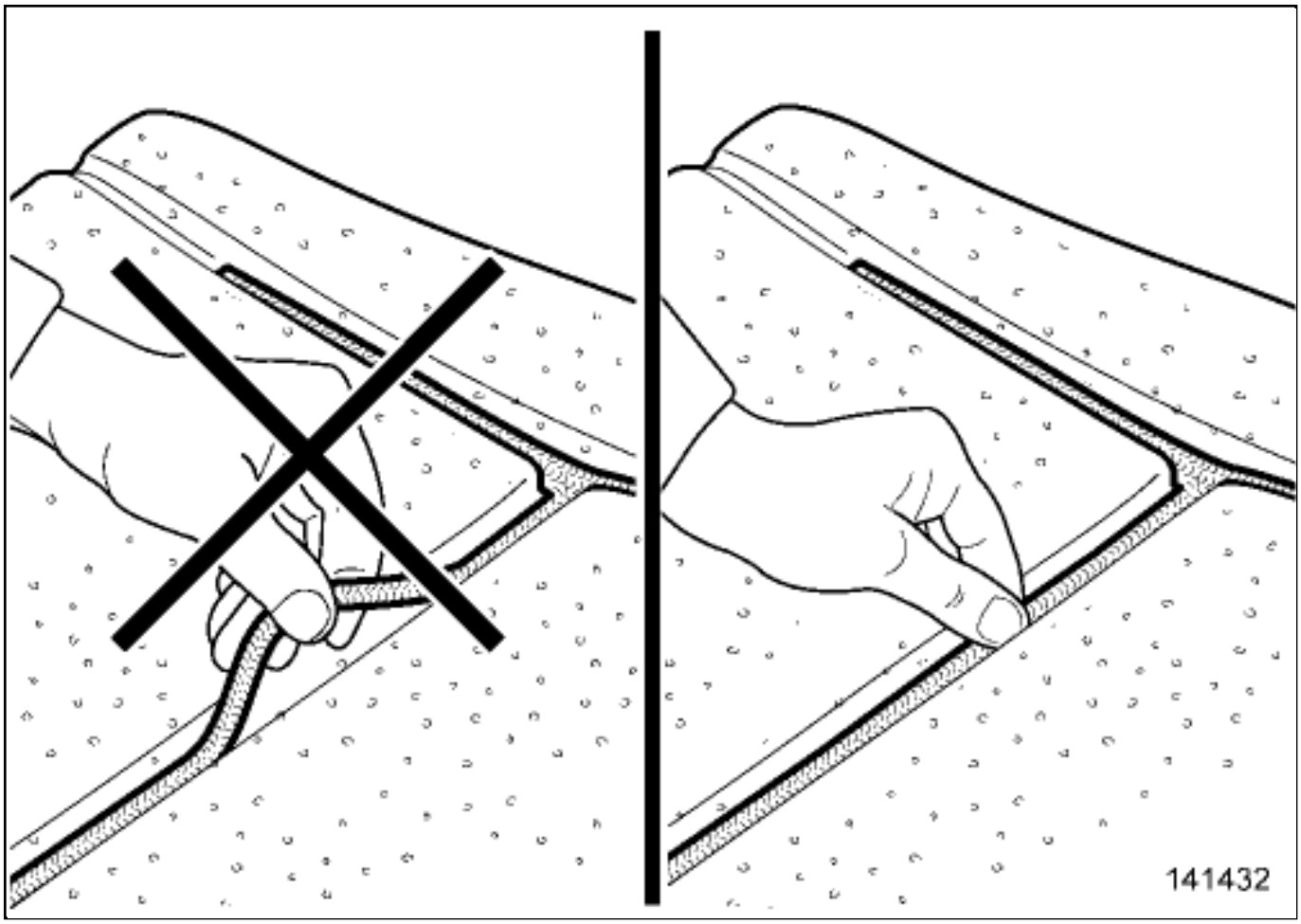
Remove the front seat base cover.



CAUTION

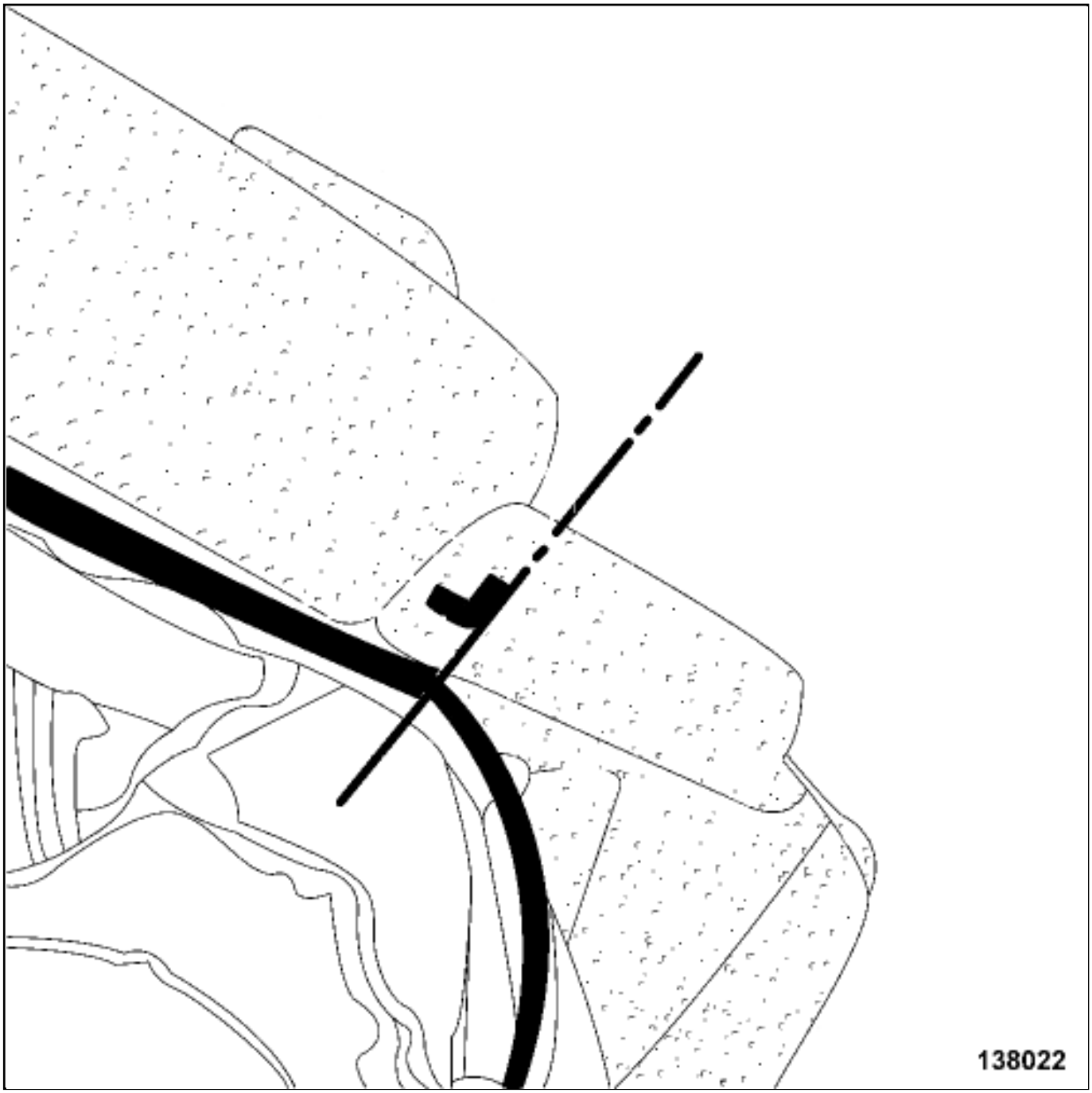
To avoid any risk of damaging the foam, separate the cover from the foam by holding the velcro strips.

REFITTING



CAUTION

To avoid any risk of detaching or creating folds in the cover, check that the velcro strips are secured correctly on the foam. If the velcro strips tear, replace the foam.



Align the velcro strips with the marks.

Note:

The pre-markings on the foam are a guide for positioning the ends of the velcro strips.

2. FINAL OPERATION

Proceed in the reverse order to removal.

Repair-70x10x02x02-01x37-1-27-1.xml

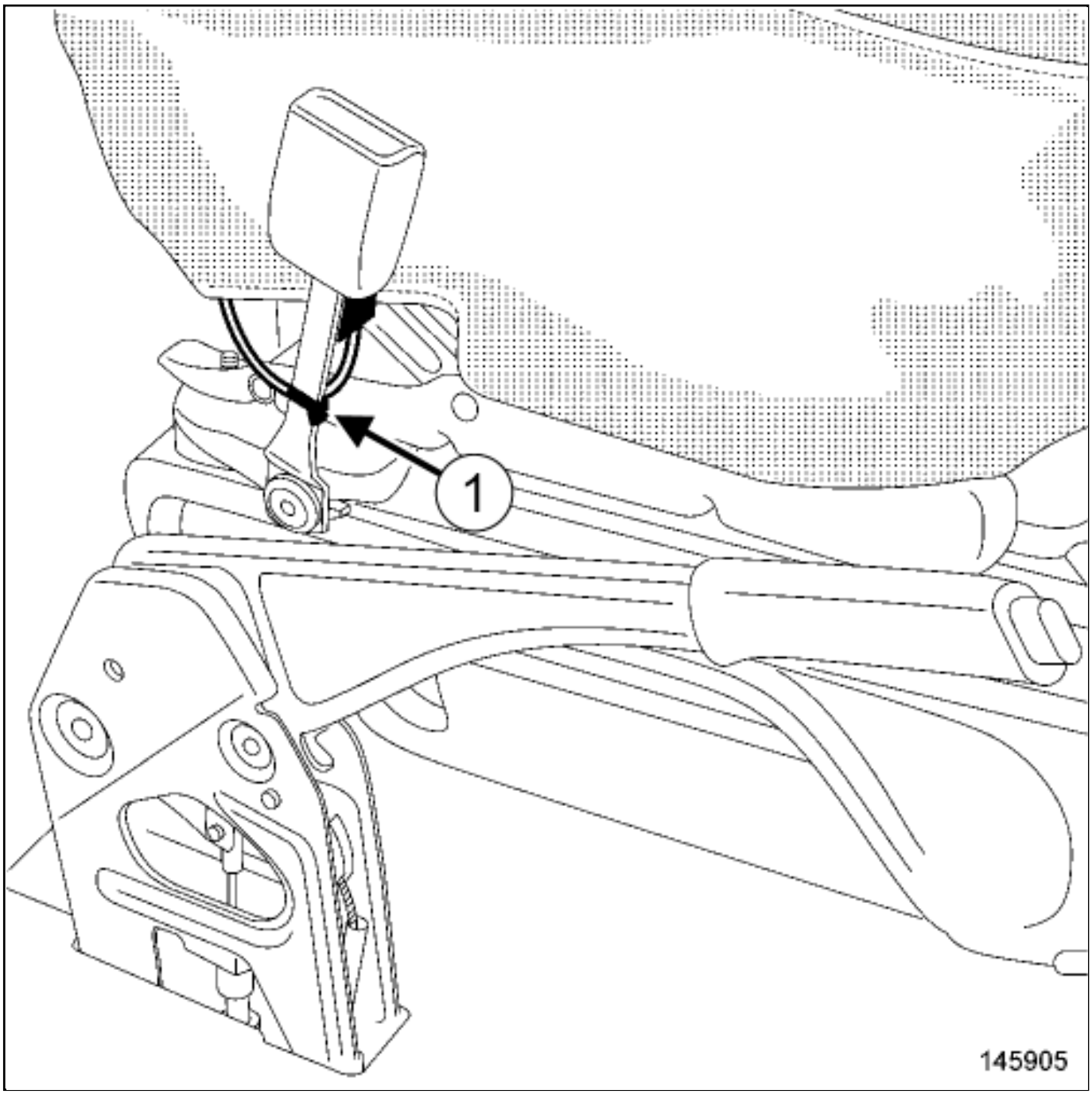
XSL version : 3.02 du 22/07/11

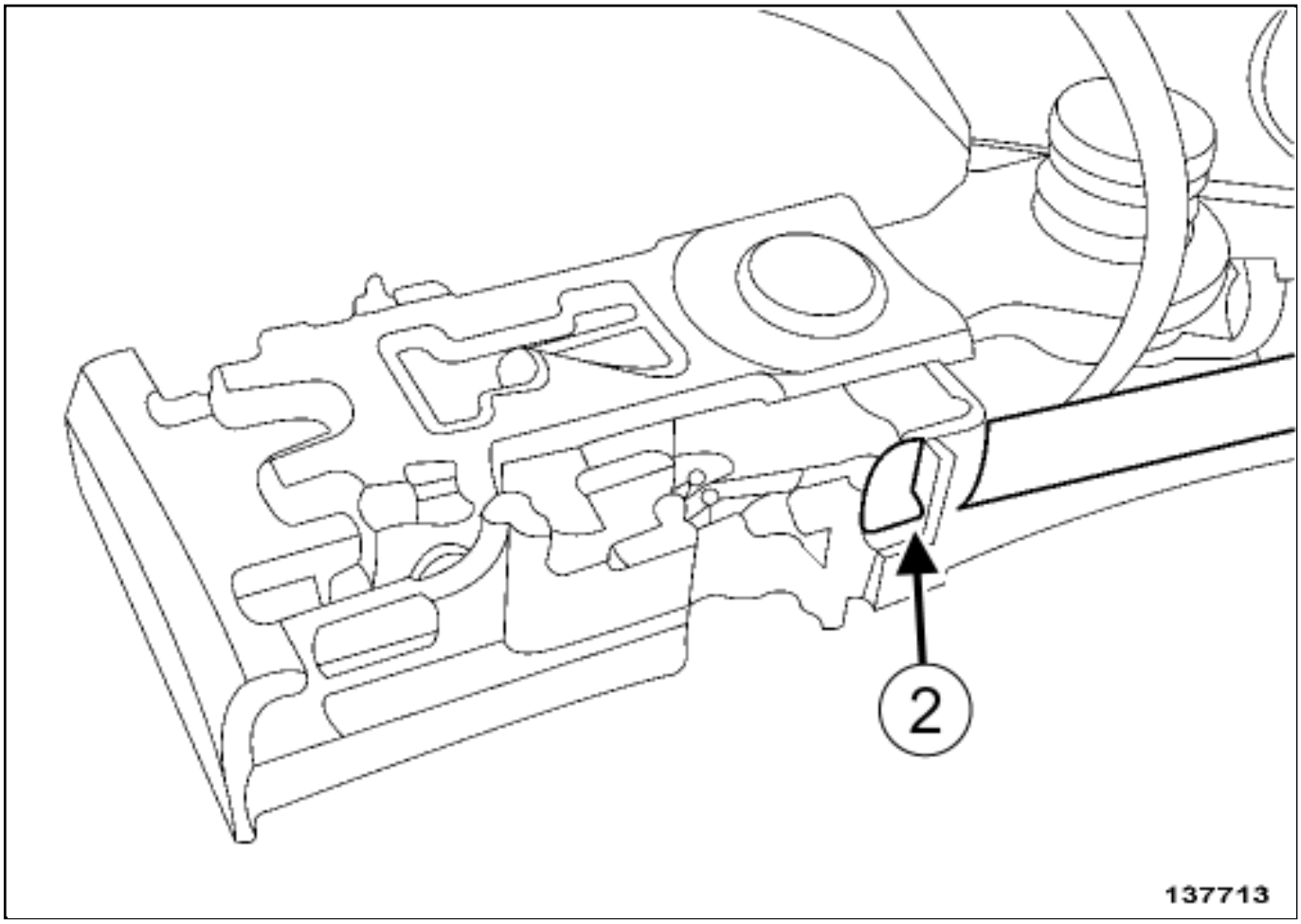
FRONT SEAT BELT BUCKLE: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) (75A, Front seat frames and mechanisms).

REMOVAL

1. REMOVAL OPERATION





- Cut the plastic clip(1) .

- Disconnect the connector for the front seat belt buckle using a shim(2)

- Remove the front seat belt buckle(see **Front seat: Exploded view**) (75A, Front seat frames and mechanisms).

REFITTING

- Proceed in the reverse order to removal.

FRONT SEAT FRAME: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) **.**

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 Airbag and pretensioners: Precautions for repair) (88C, Airbags and pretensioners),
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

REMOVAL

1. REMOVAL OPERATION

- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).

- Remove (see **Front seat: Exploded view**) :
  - the front seat,
  - the seat belt buckle of the front seat,
  - the front seat runner bolts on the front seat frame,
  - the front seat runner,
  - the seat belt stalk mounting of the front seat.

- Remove (see **Front seat: Exploded view**) :
  - the trim of the front seat height adjustment control,
  - the front seat height adjustment control.

- Remove the front seat exterior casing(see **Front seat: Exploded view**) .

- Remove the "foam - cover" assembly from the front seat base(see **Front seat: Exploded view**) .

- Remove (see **Front seat: Exploded view**) :
  - the rivets of the front seat height adjustment mechanism,
  - the front seat height adjustment mechanism.

CAUTION

To prevent any risk of damaging the covers and mechanisms, recover any metal residues when cutting the seat trim clips and/or drilling out the rivet.

- Remove the front seat armrest(see **Front seat: Exploded view**) .

- Remove (see **Front seat: Exploded view**) :
  - the front seat headrest,
  - the front seatback angle control,
  - the front seatback "foam - cover" assembly,
  - the front seat headrest guides.

- Remove the front seat chest-level side airbag(see **Front seat: Exploded view**) .

- Remove (see **Front seat: Exploded view**) :
  - the rivets of the front seat armrest support,

- the front seat armrest support.

Remove (see **Front seat: Exploded view**) :

- the front seat lumbar pad,
- the retaining clip,
- the front seat electrical wiring.

REFITTING

Proceed in the reverse order to removal.

FRONT SEAT LOWER CASING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

WARNING

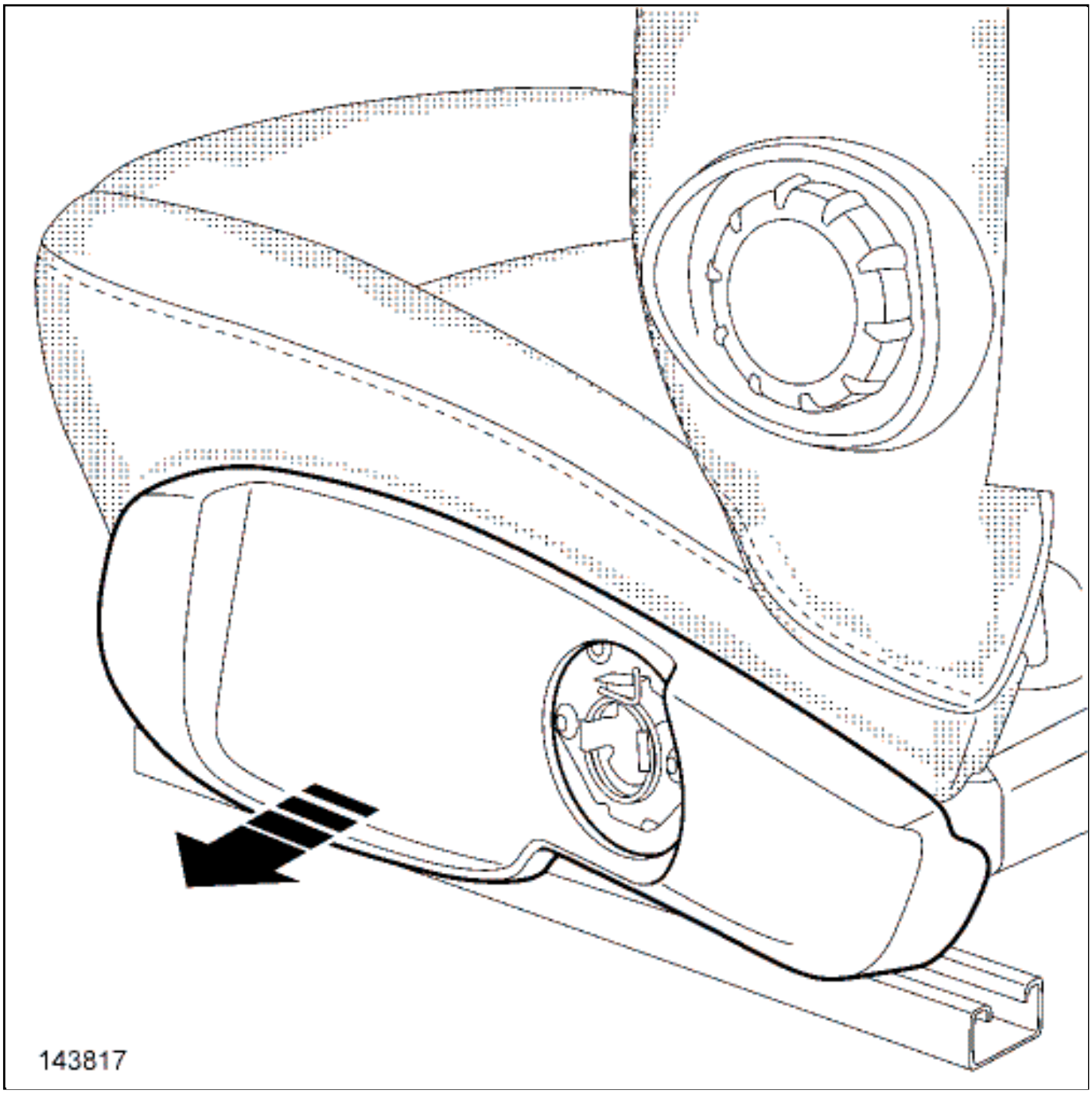
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

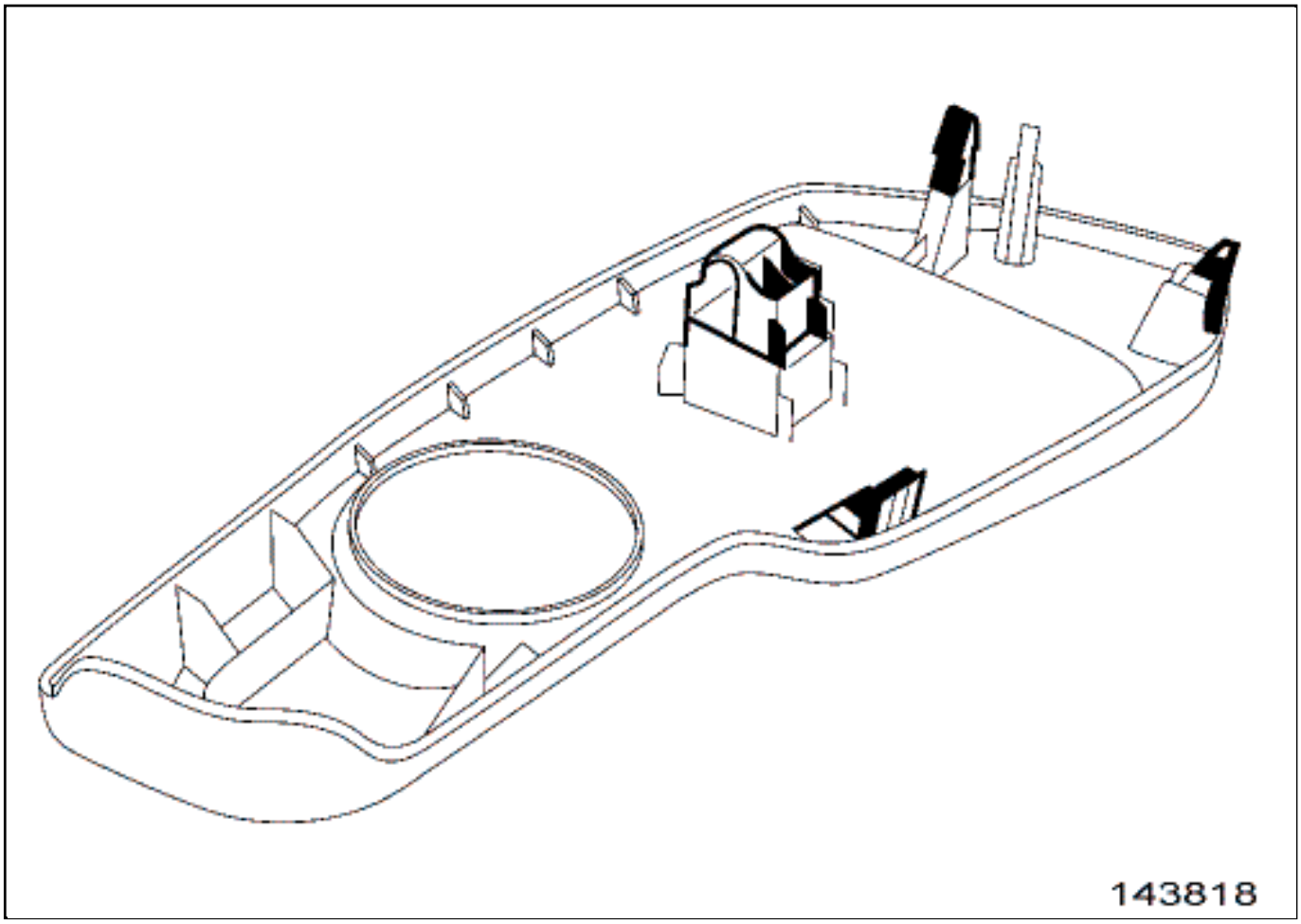
Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

1- FRONT SEAT BASE EXTERIOR CASING


143817



- Remove the front seat base exterior casing.

2- FRONT SEAT BASE INTERIOR CASING

REFITTING

Proceed in the reverse order to removal.

FRONT SEAT LUMBAR ADJUSTMENT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).

- Remove (see **Front seat: Exploded view**) :
  - the front seat,
  - the front seat headrest.

- Remove the front seat armrest(see **Front seat: Exploded view**) .

- Remove the front seatback "foam - cover" assembly(see **Front seat: Exploded view**) .

2. REMOVAL OPERATION

Note:

For this operation, the lumbar pad must be loose.

- Drill the front seat lumbar adjustment mechanism rivet(see **Front seat: Exploded view**) .

CAUTION

To prevent any risk of damaging the covers and mechanisms, recover any metal residues when cutting the seat trim clips and/or drilling out the rivet.

- Unclip the lumbar pad of the front seat(see **Front seat: Exploded view**) .

- Remove the "lumbar adjustment mechanism - lumbar pad" assembly(see **Front seat: Exploded view**) .

Note:

The Parts Department supplies the lumbar adjustment mechanism assembled with the lumbar pad.

REFITTING

-

Note:

The lumbar pad springs are positioned on the front seatback frame with the hook towards the rear

Proceed in the reverse order to removal.

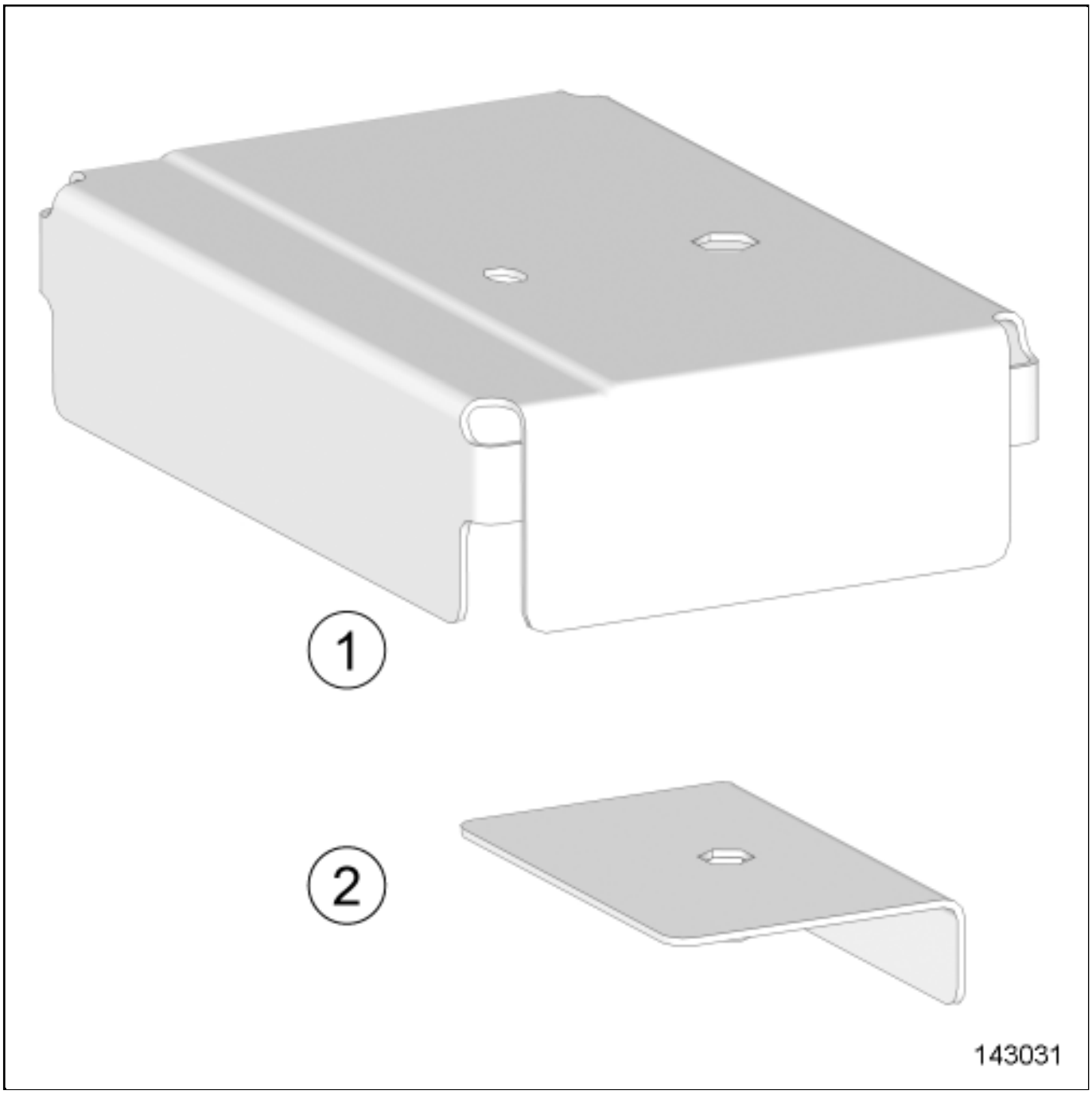
FRONT SEAT REAR MOUNTING EXTERIOR UNIT: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Seat exterior rear mounting bracket	HLE	1.8
(2)	Seat exterior rear mounting reinforcement	HLE	1.8

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

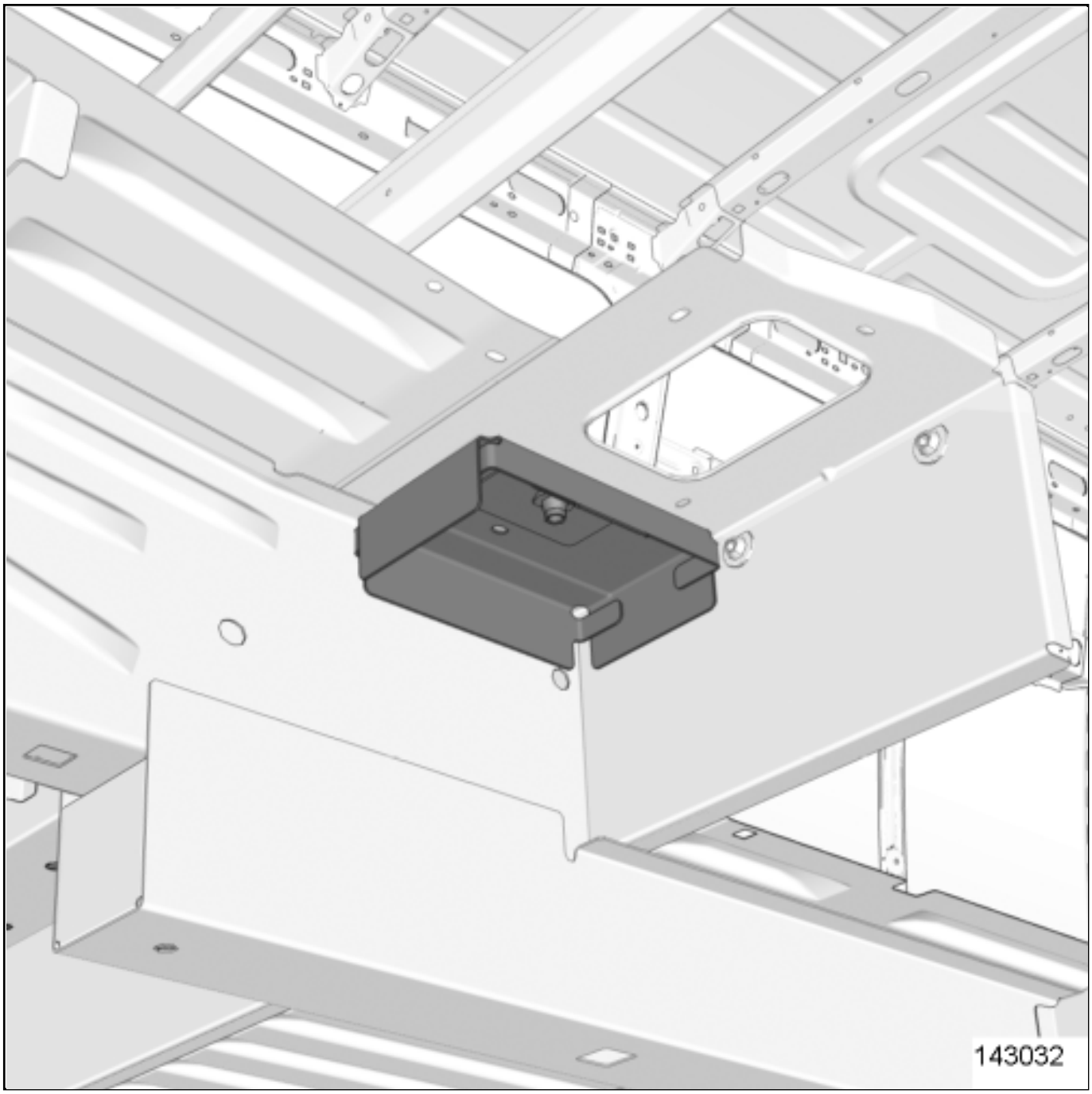
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FRONT SEATBACK TRIM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Front seat: Exploded view**) .

WARNING

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - Airbag and pretensioners: Precautions for the repair (88C, Airbag and pretensioners),
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

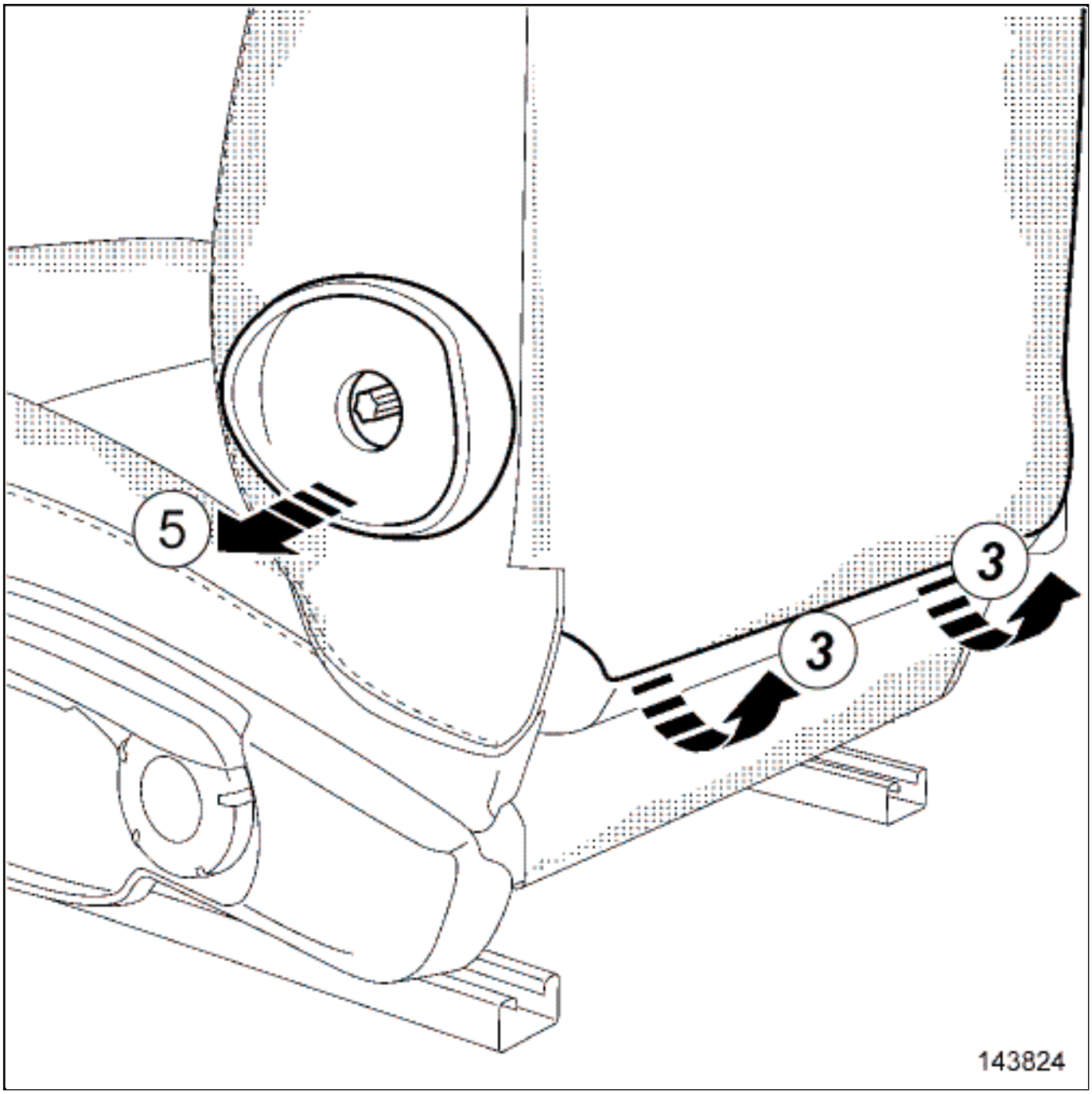
REMOVAL

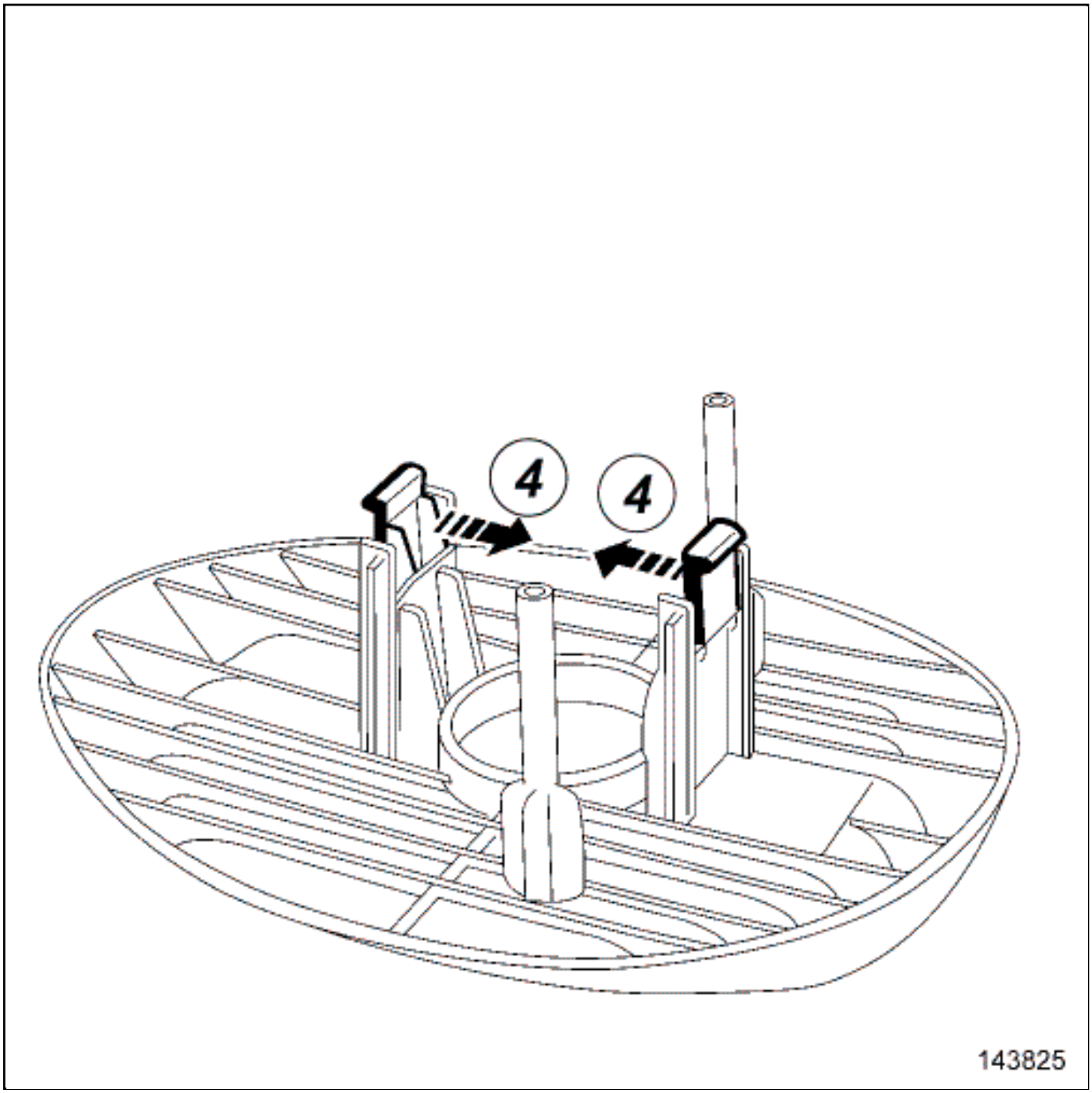
1. REMOVAL PREPARATION OPERATION

- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).

- Remove (see **Front seat: Exploded view**) :
  - the front seat,
  - the front seat headrest.

- Remove the front seat armrest(see **Front seat: Exploded view**) .

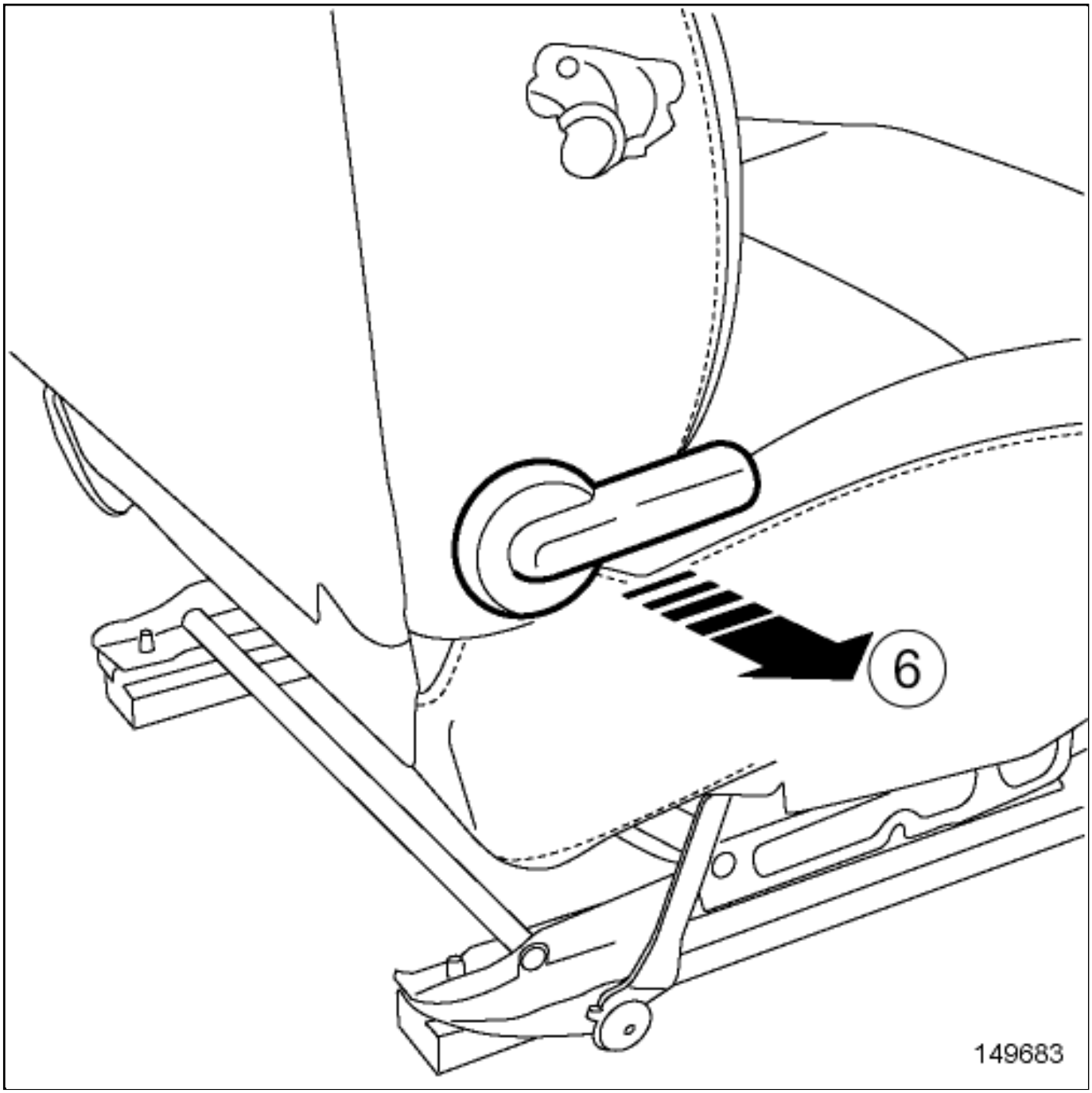


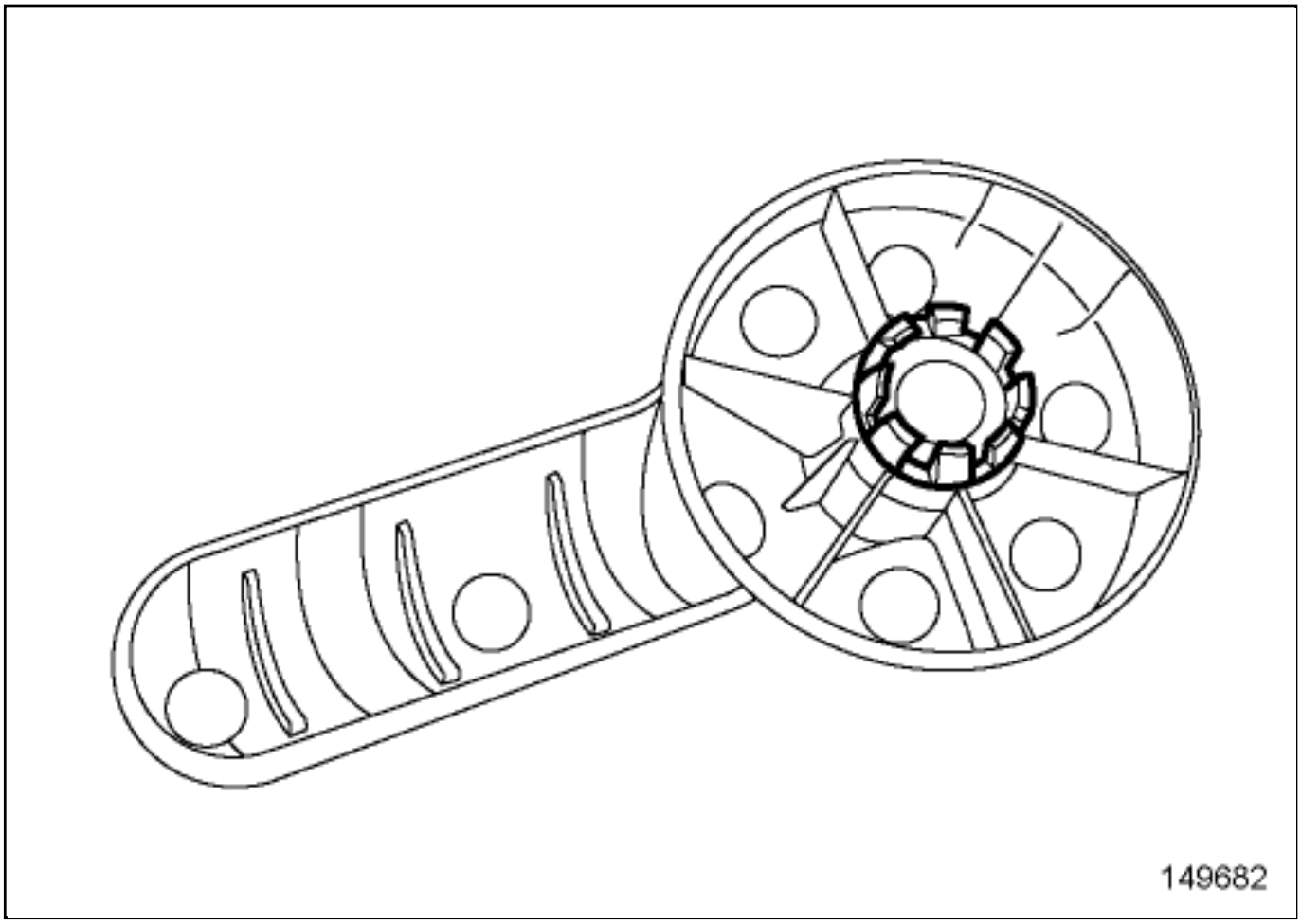


Unclip:

- the lower retaining sections of the front seatback cover at(3) ,
- the casing of the front seat lumbar adjustment control at(4) .

Remove the casing of the front seat lumbar adjustment control(5) .

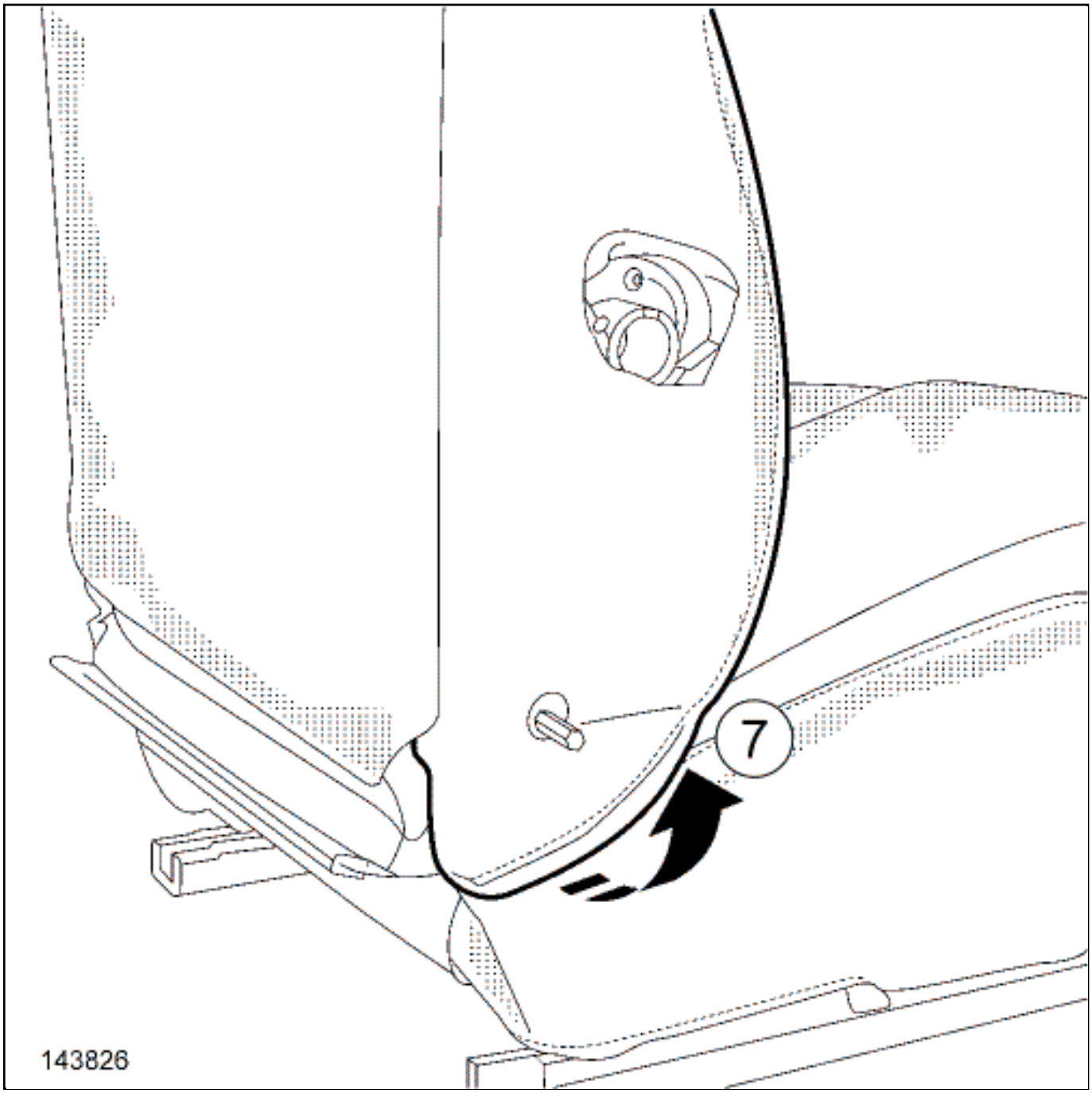

6
149683



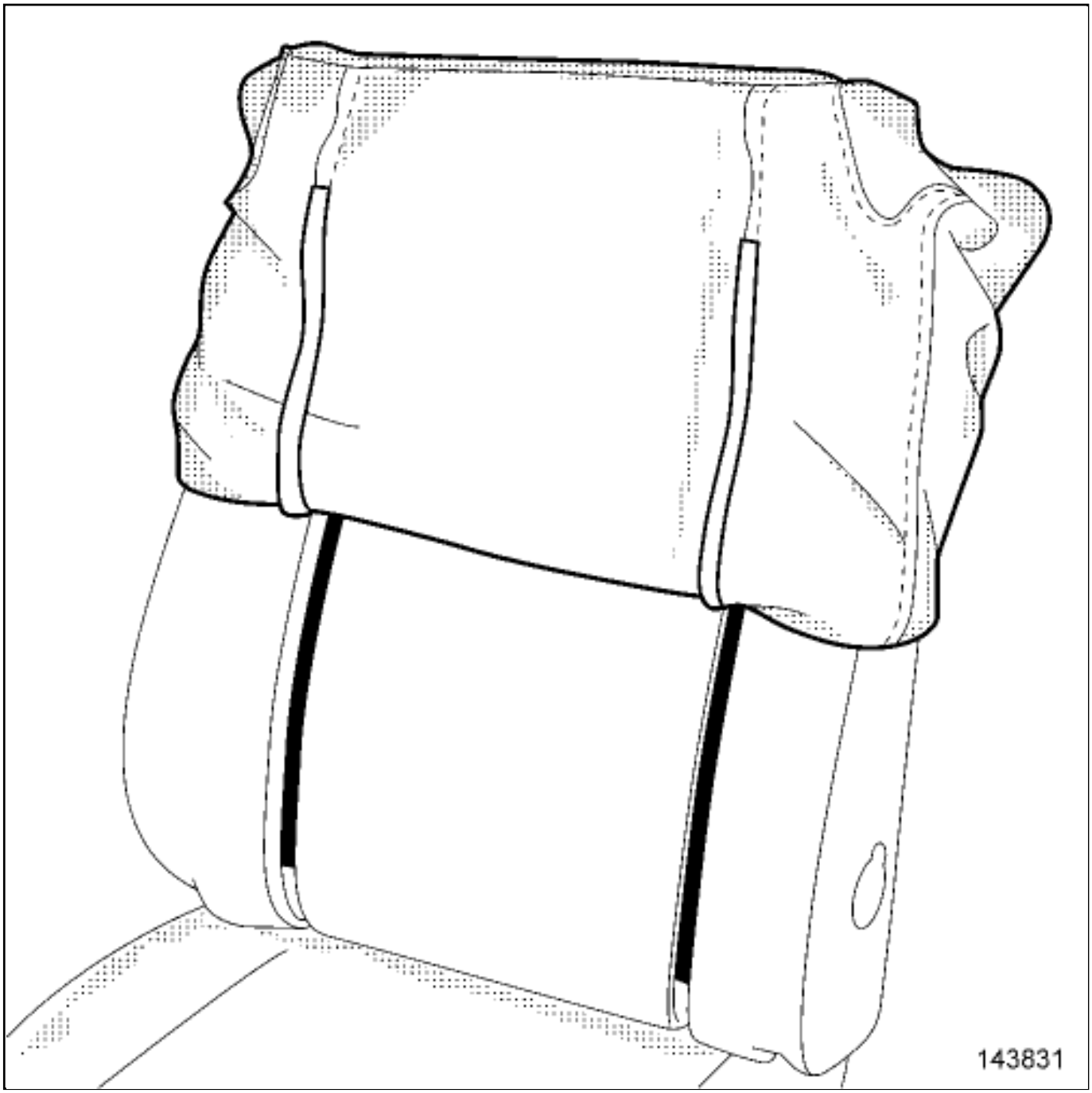
Remove the front seatback angle control by pulling it energetically at(6) .

CAUTION

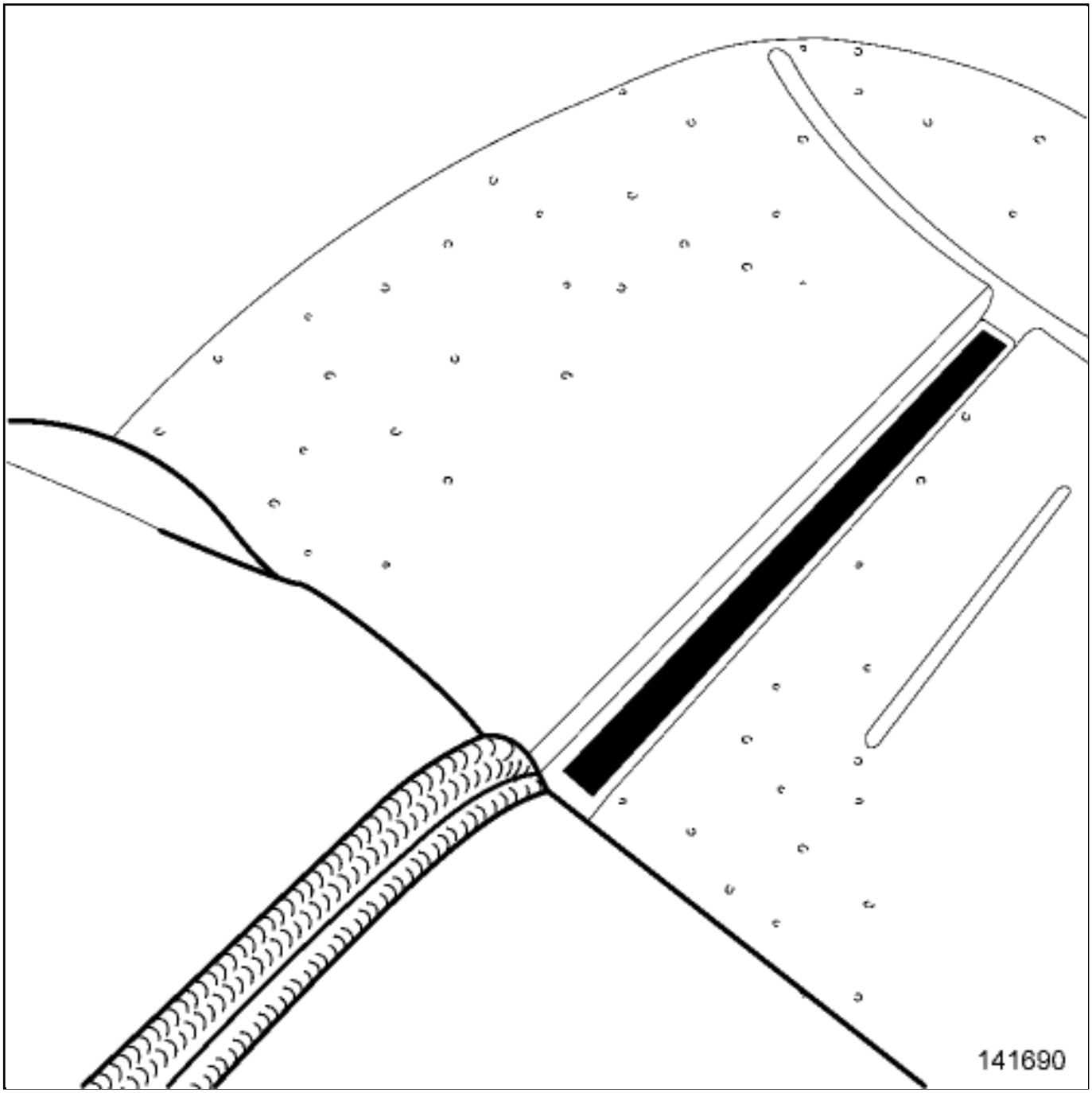
To avoid any risk of the front seatback angle control not being held securely, check that the locking clips are in good condition. If damaged (clip broken, bleached, etc.), replace the front seatback angle control.



Partially remove the front seatback cover at(7) .



Remove the front seatback cover.



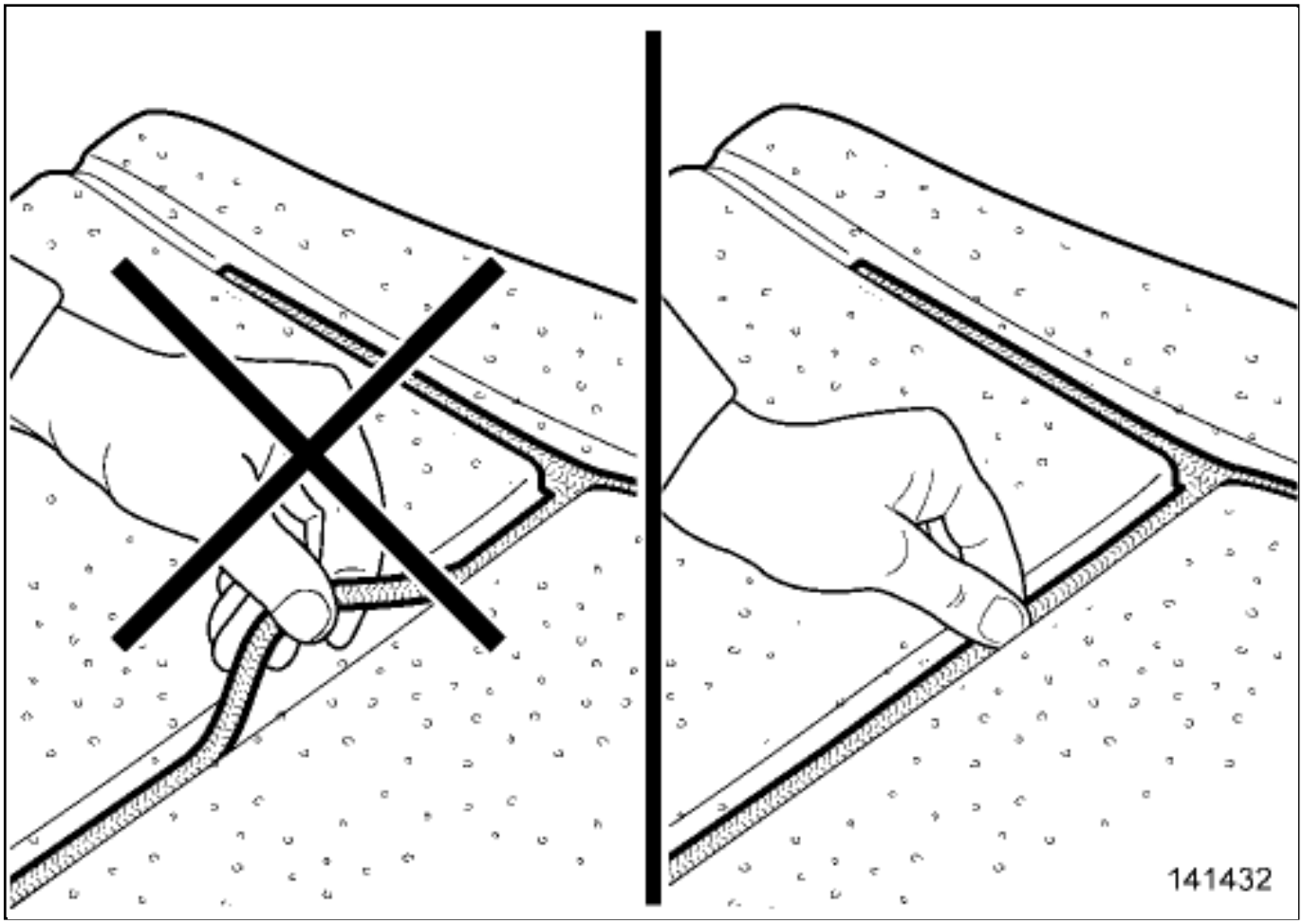
CAUTION

To avoid any risk of damaging the foam, separate the cover from the foam by holding the velcro strips.

Remove the front seat headrest guides(see **Front seat: Exploded view**) .

REFITTING

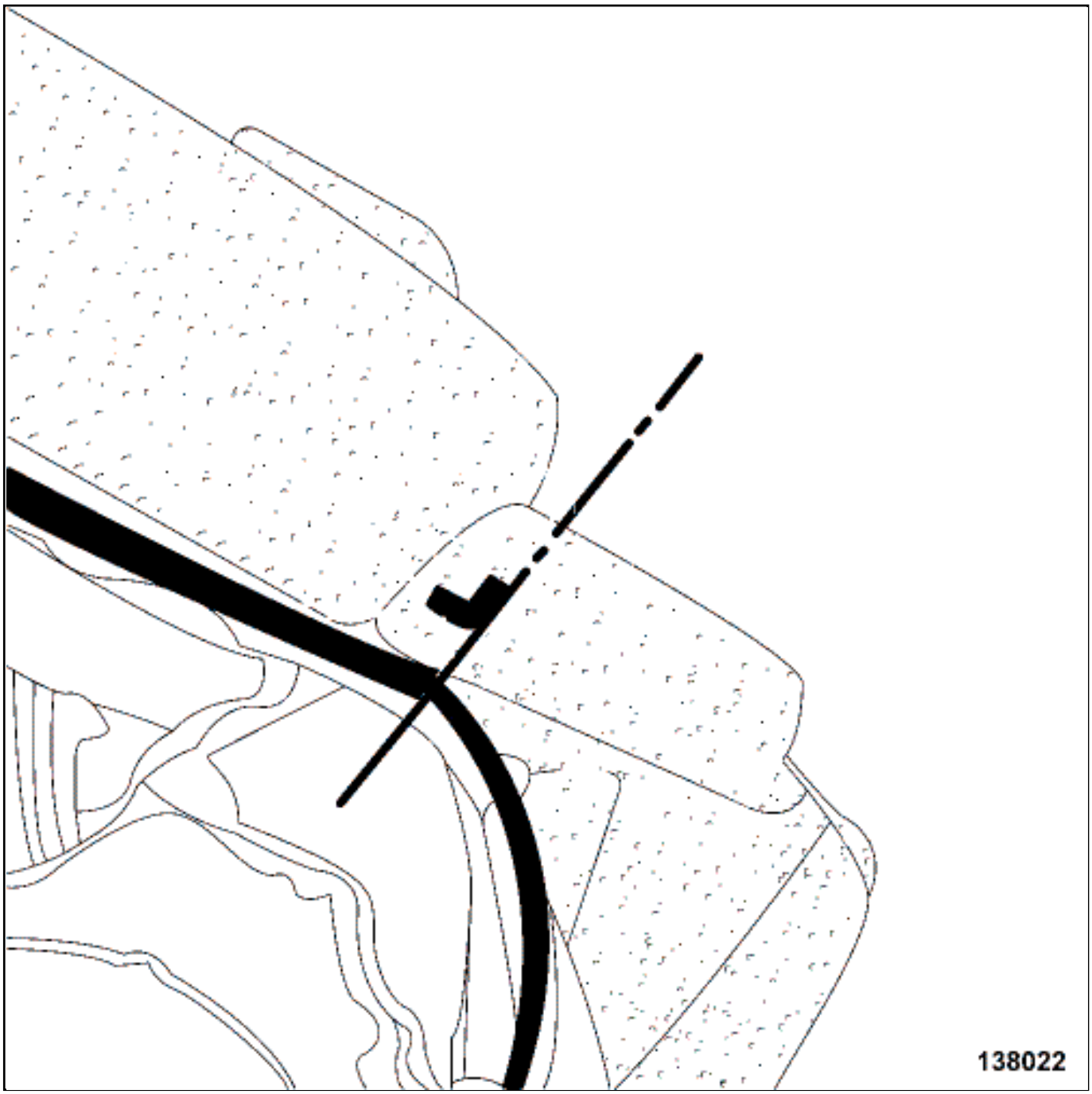
1. REFITTING PREPARATION OPERATION



CAUTION

To avoid any risk of detaching or creating folds in the cover, check that the velcro strips are secured correctly on the foam. If the velcro strips tear, replace the foam.

2. REFITTING OPERATION



Align the velcro strips with the marks.

Note:

The pre-markings on the foam are a guide for positioning the ends of the velcro strips.

3. FINAL OPERATION

Proceed in the reverse order to removal.

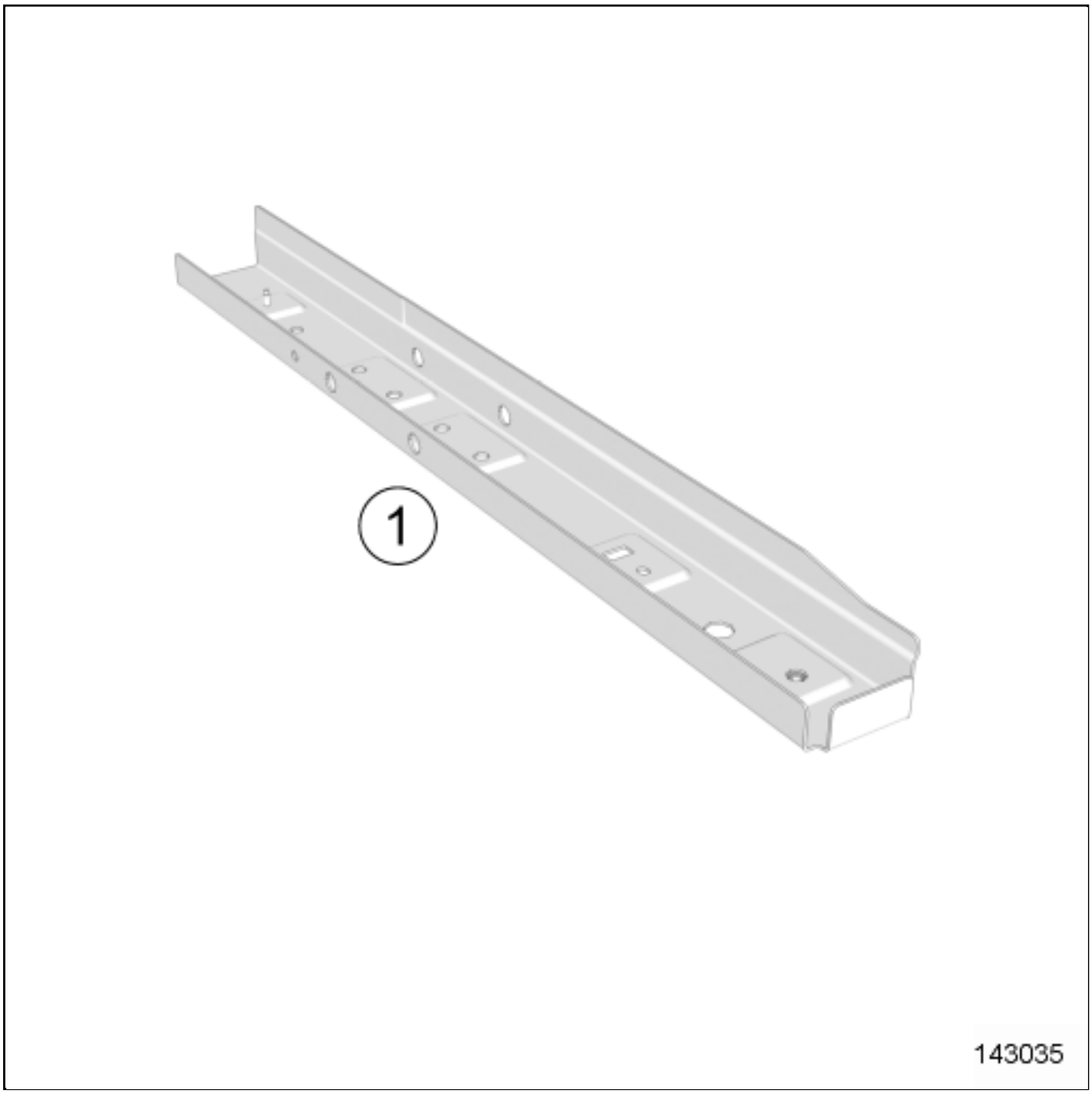
FRONT SECTION OF FRONT SIDE MEMBER CLOSURE PANEL: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Front section of front side member closure panel	HLE	2.1

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

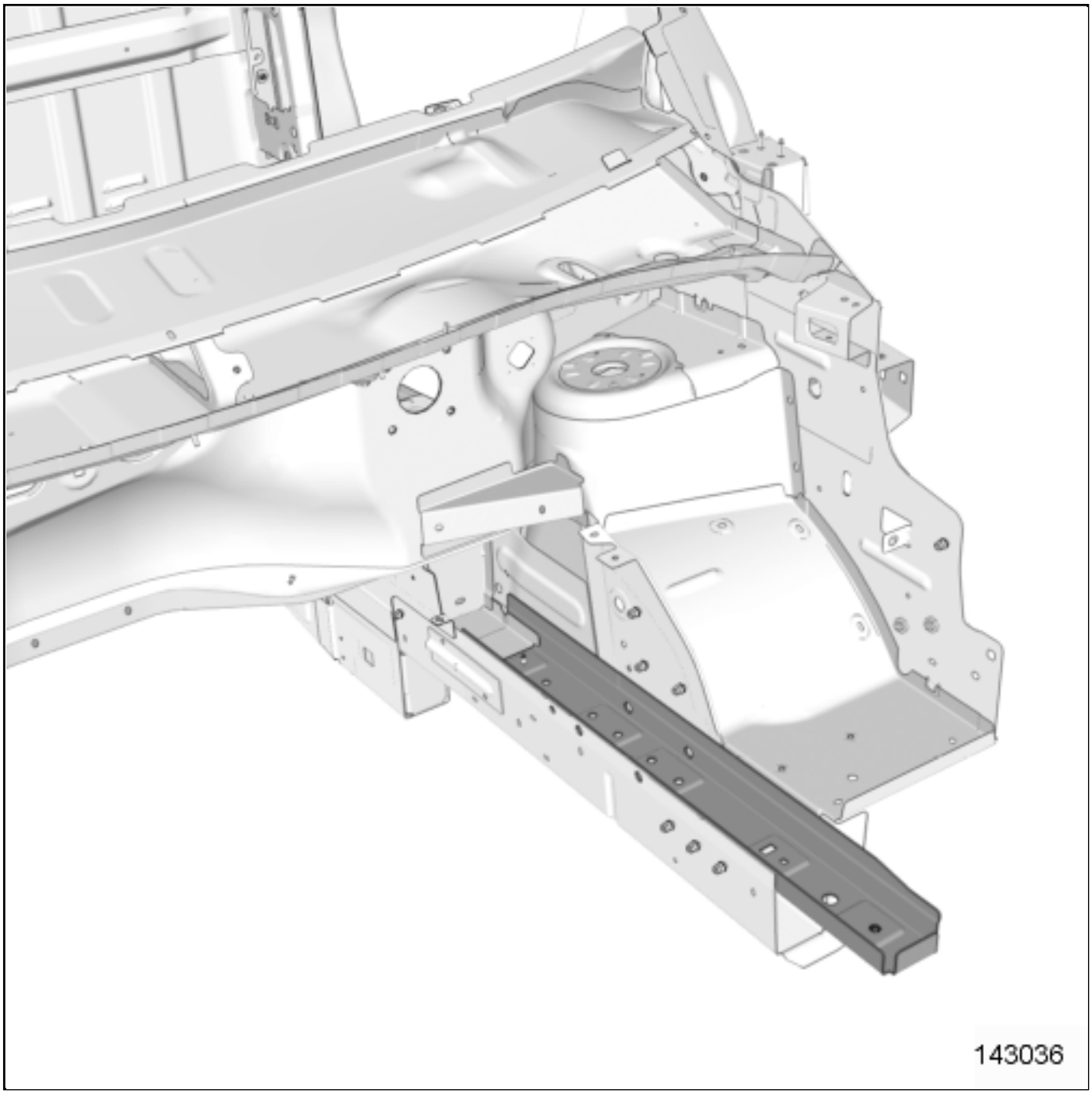
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

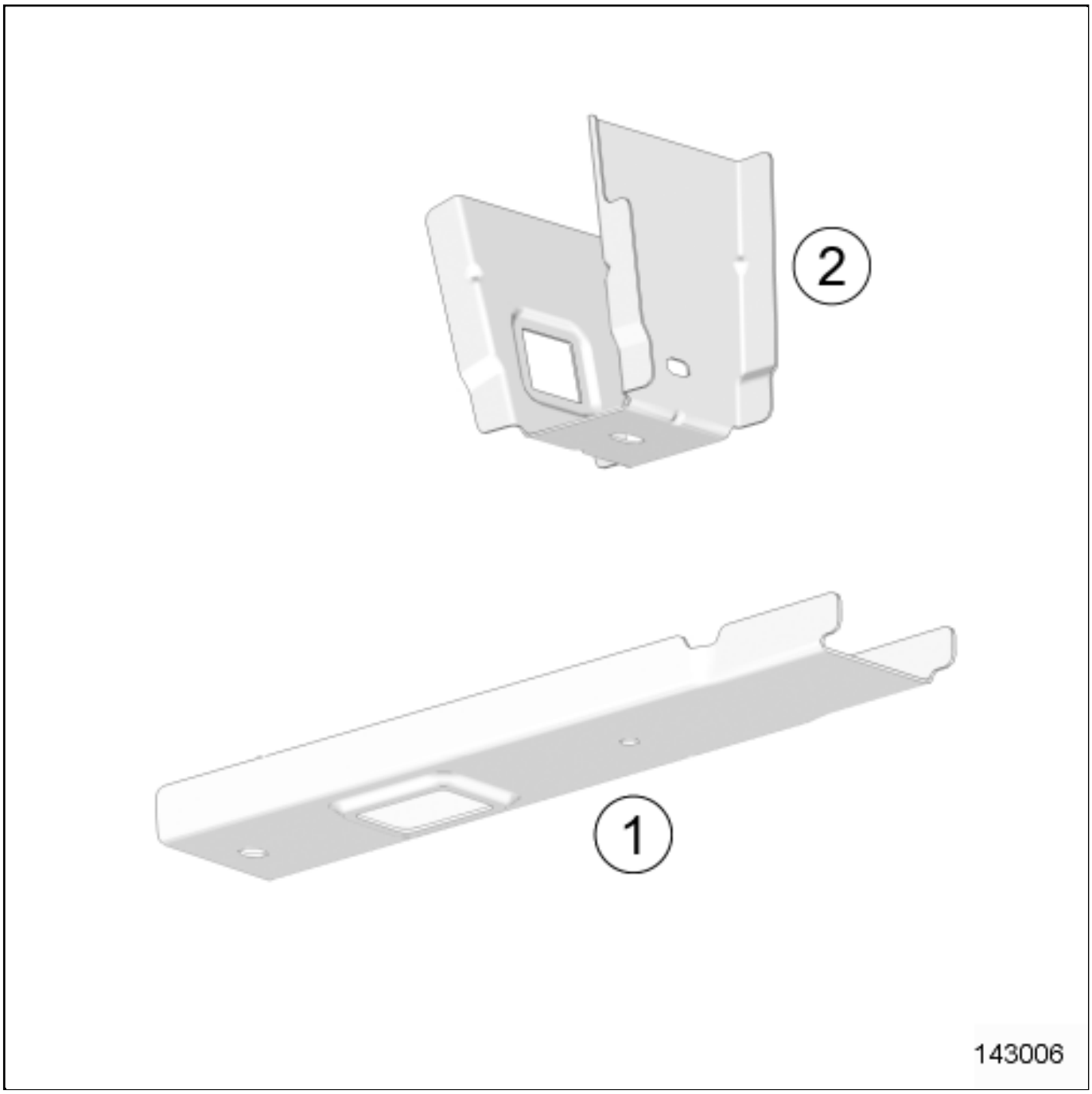
FRONT SECTION OF FRONT SIDE MEMBER REAR CLOSURE PANEL: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Front left-hand side member impact reinforcement	THLE	1.8
(2)	Front left-hand side member interior reinforcement	Mild steel	1.3

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

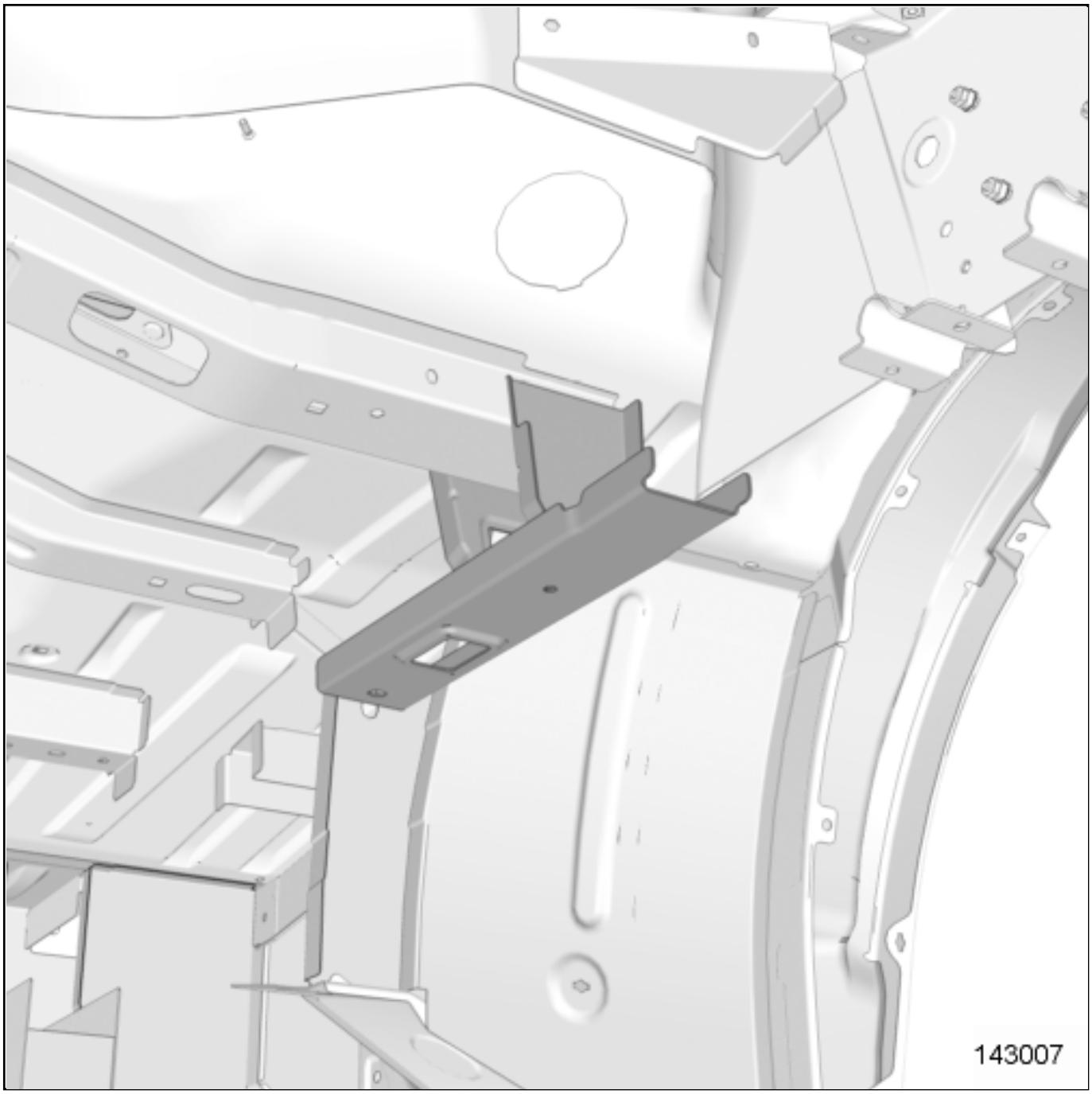
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FRONT SHOCK ABSORBER AND SPRING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
spring compressor
spanner for shock absorber rod nut
indelible pencil

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions (see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 31A, Front axle components, Front axle assembly: Exploded view) .

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 31A, Front axle components, Front axle components: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

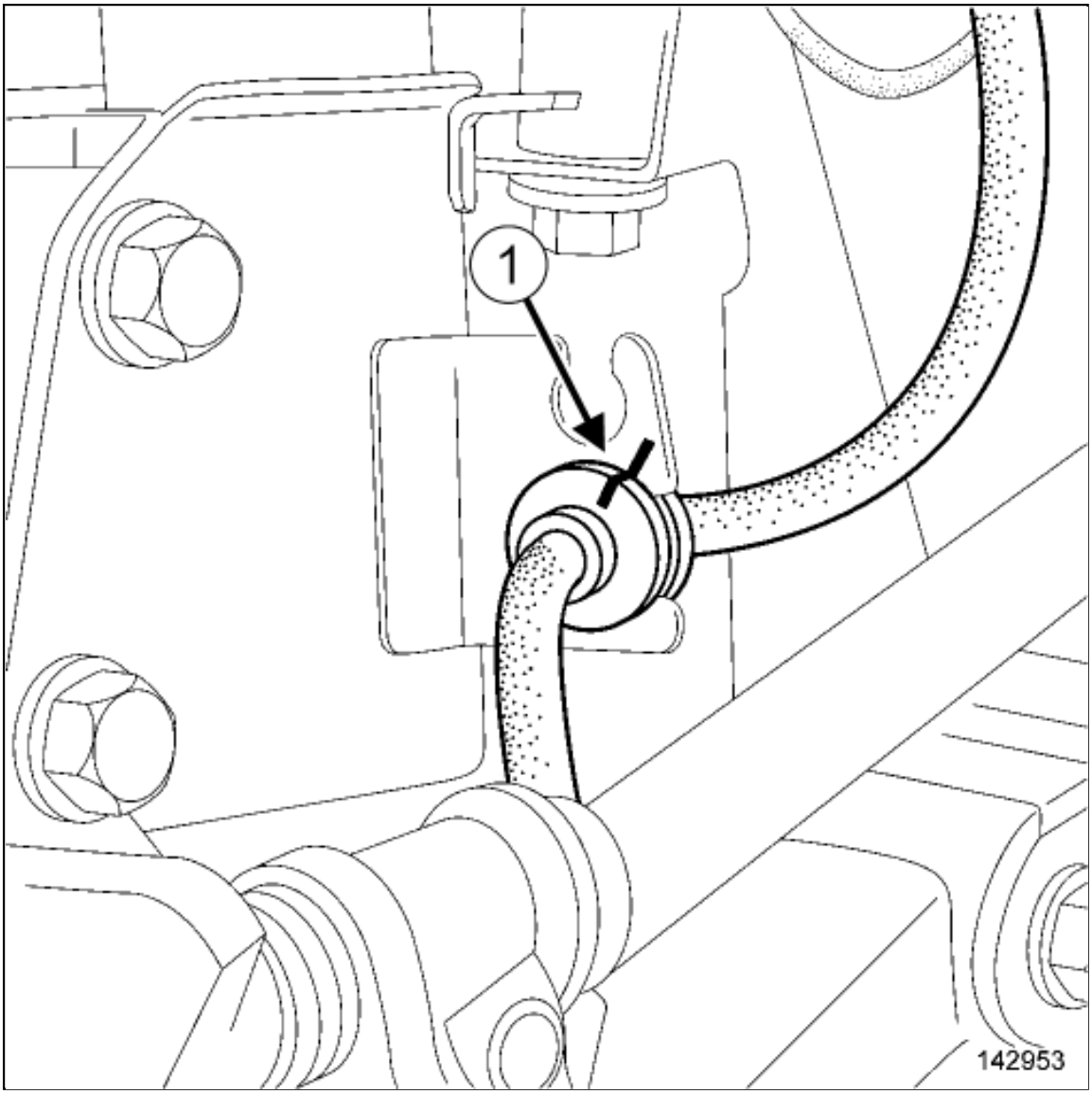
REMOVAL

1. REMOVAL PREPARATION OPERATION

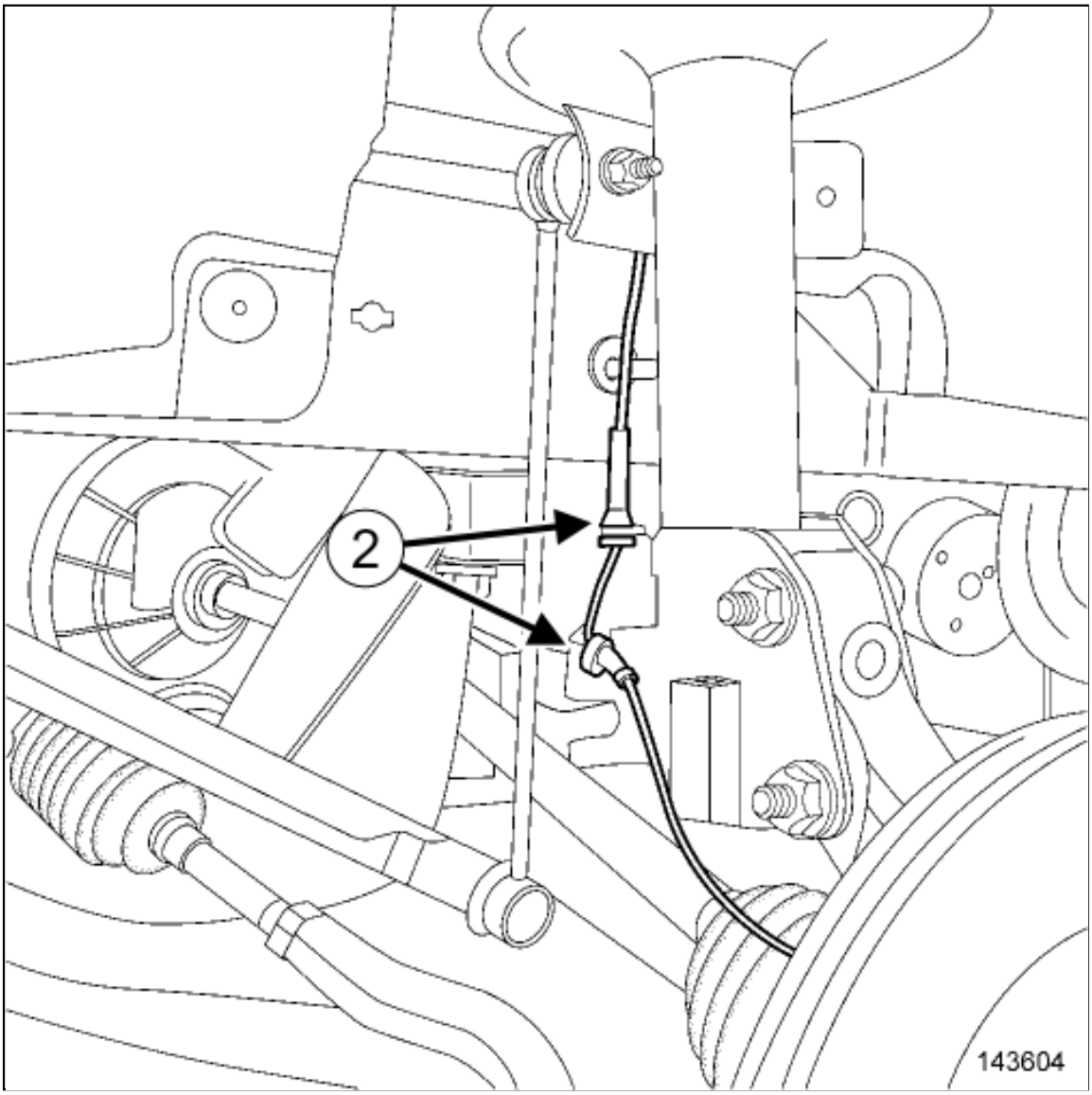
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the front wheelsWheel: Removal - Refitting .
- Move the coolant reservoirCoolant circuit assembly: Exploded view (19A, Cooling).

2. REMOVAL OPERATION

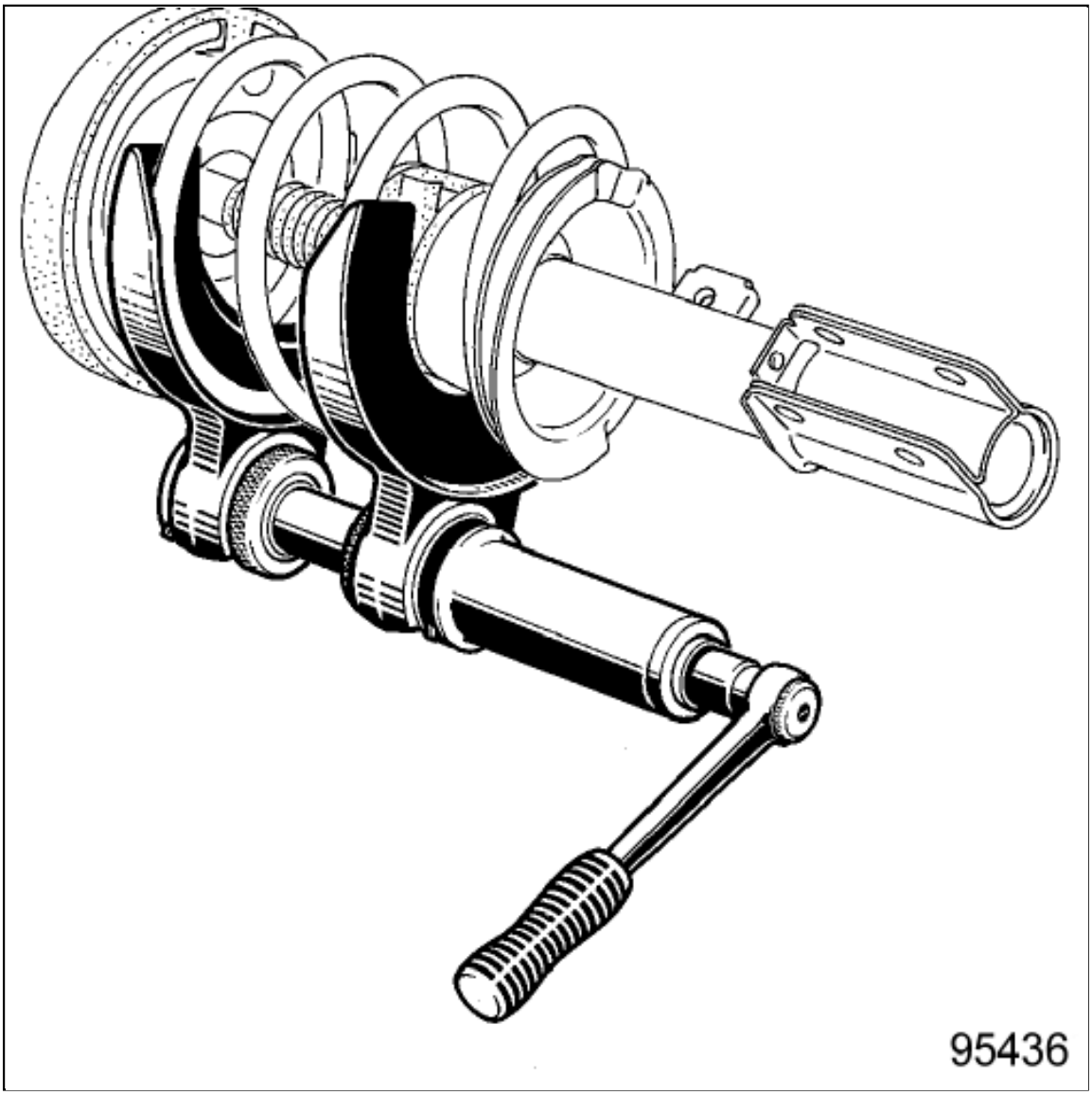
- Set the wheels straight ahead.



- Mark the position of the front brake hose cap on the base of the shock absorber using a indelible pencil.
- Unclip the front brake hose cap(1) from the shock absorber base.



- Unclip the wiring of the wheel speed sensor from the base of the shock absorber at(2) .
- Remove the nut from the anti-roll bar tie rod on the base of the shock absorber(see 31A, Front axle components, Front axle assembly: Exploded view) .
- Move the anti-roll bar tie rod away from the base of the shock absorber.
- Remove the shock absorber bolts(see 31A, Front axle components, Front axle assembly: Exploded view) .
- Attach the hub carrier to the subframe.
- Remove (see 31A, Front axle components, Front axle assembly: Exploded view) :
  - the rebound cup,
  - the "spring - shock absorber" assembly.

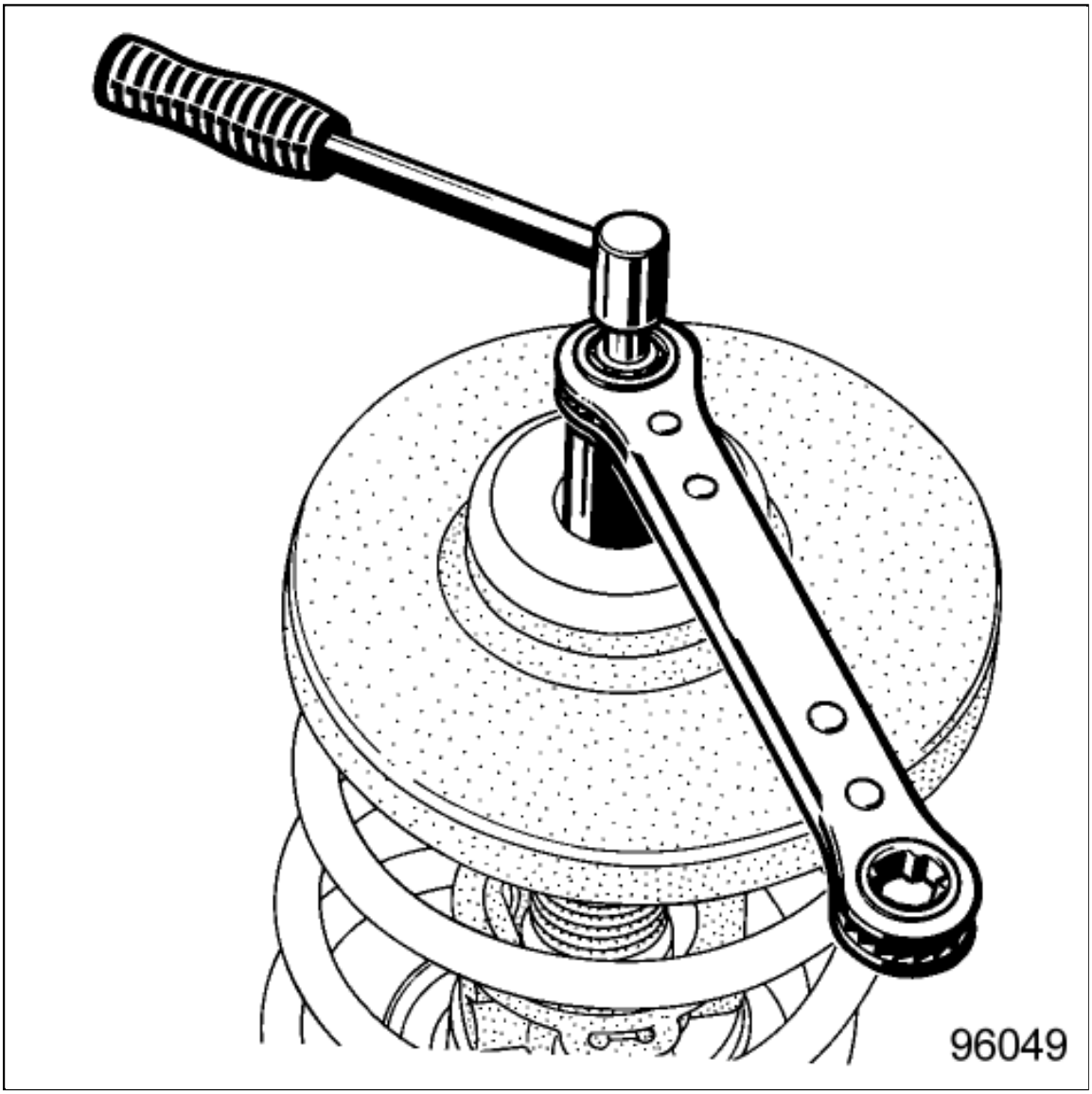


- Position the appropriate cups on the spring compressor.

- Position the spring compressoron the spring.

- Put the "spring compressor - spring" assembly in a vice equipped with jaws.

- Compress the spring using the spring compressoruntil the spring is released.



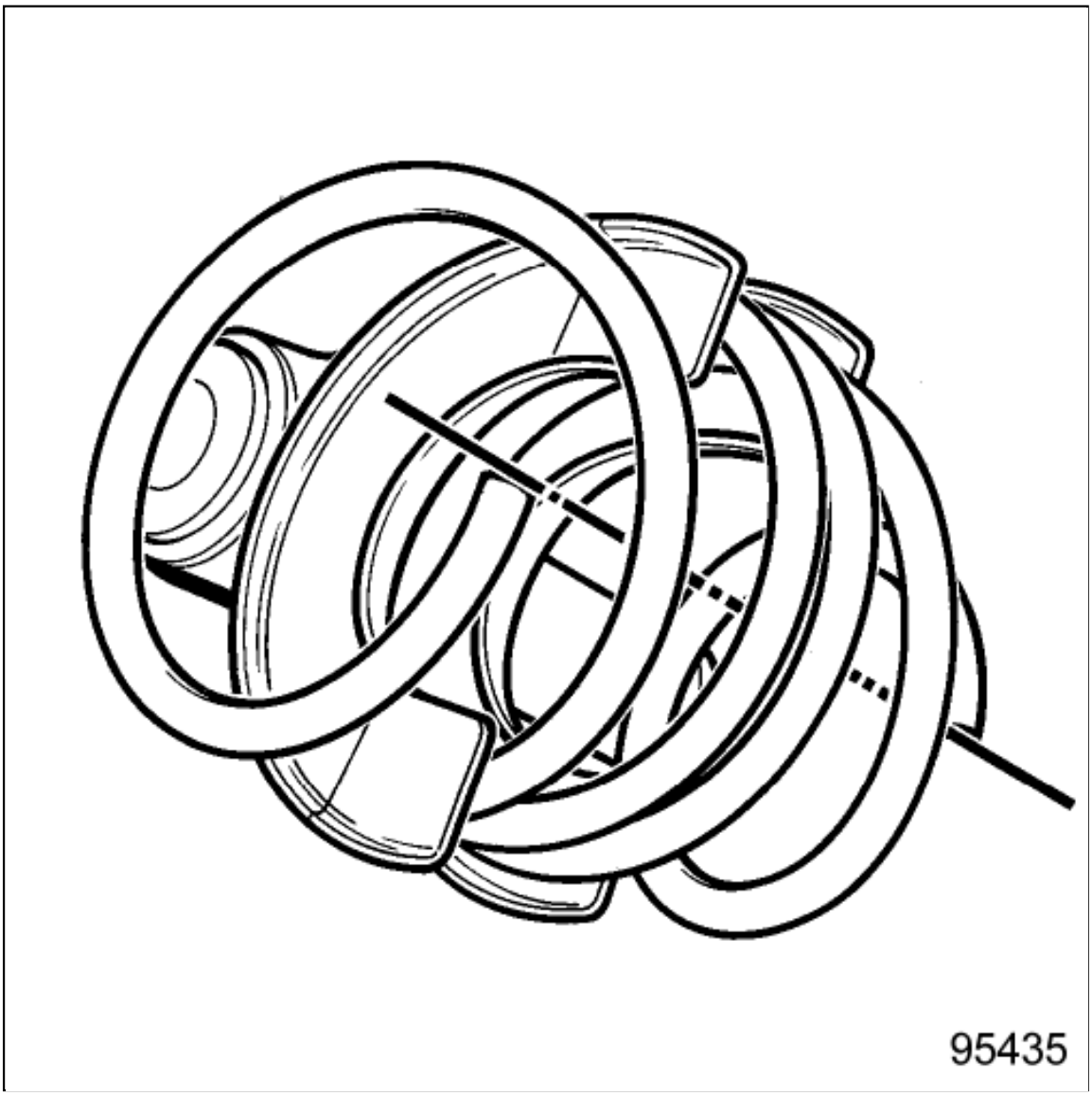
- Remove the shock absorber rod nut using the spanner for shock absorber rod nut.

- Separate the various components which make up the "spring/shock absorber" assembly.

- Decompress the spring.

REFITTING

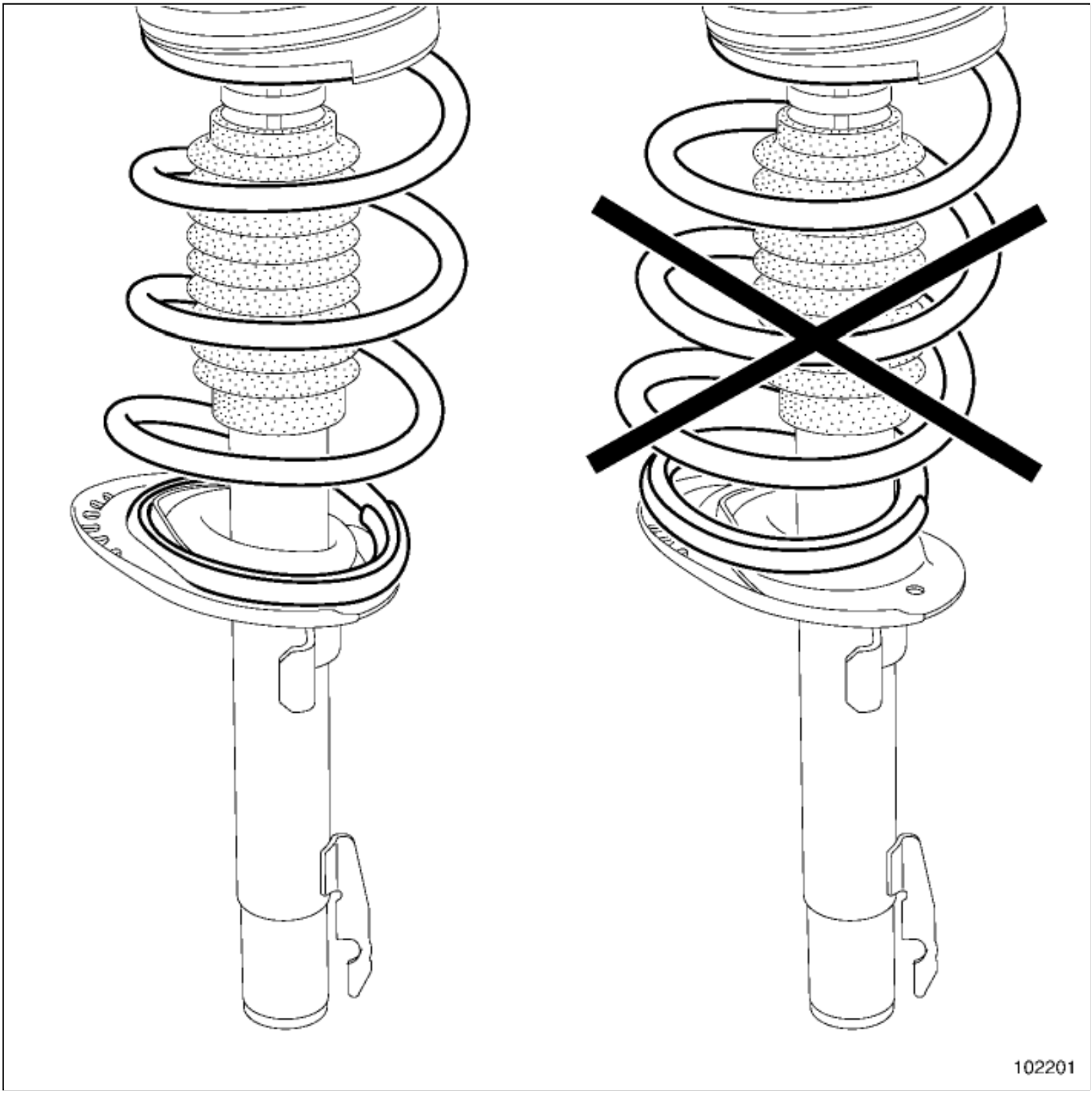
1. REFITTING PREPARATION OPERATION



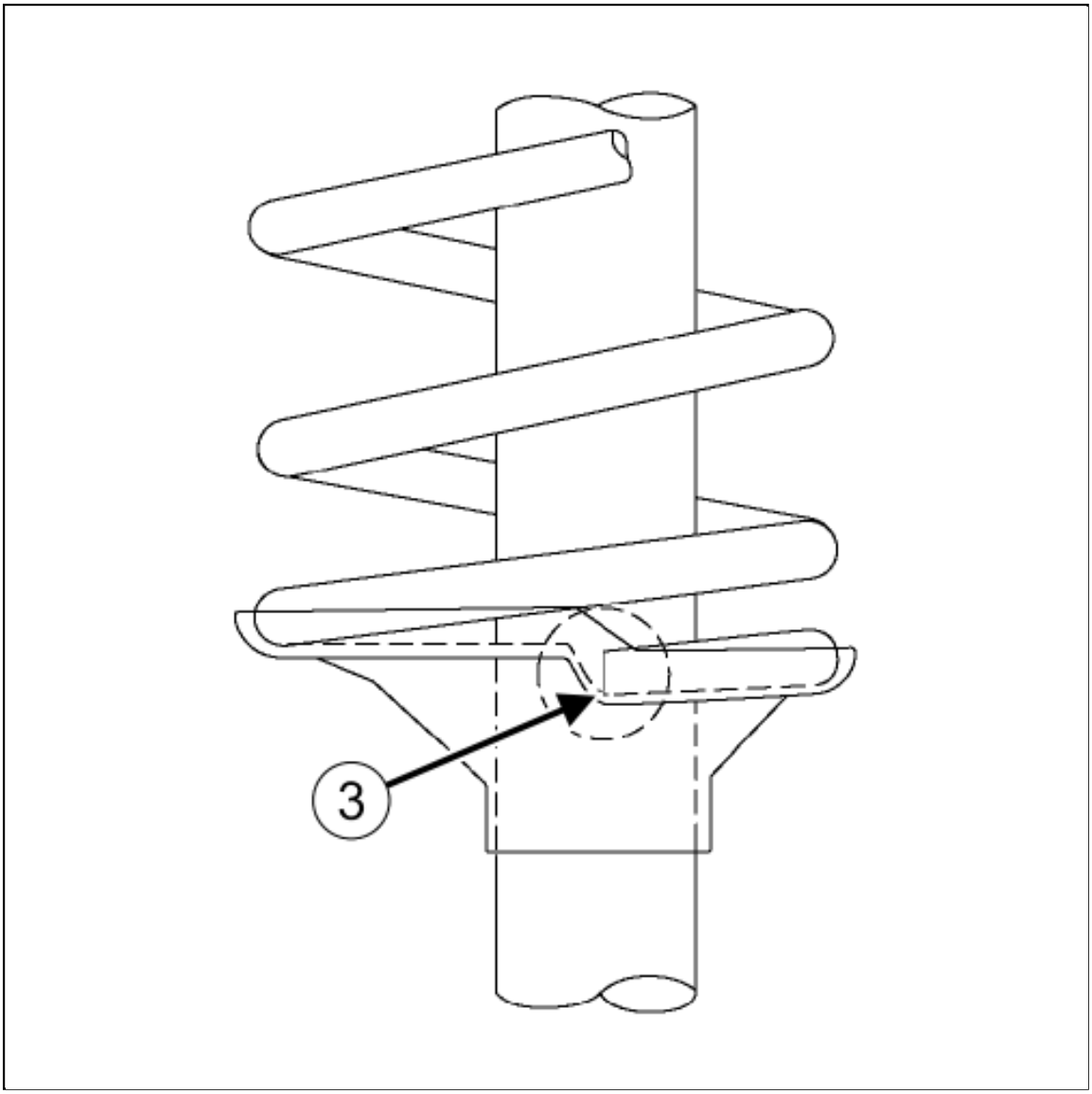
- Replace any faulty filter unit components(see 31A, Front axle components, Front axle assembly: Exploded view) .

2. REFITTING OPERATION

- Place the spring compressor in a vice equipped with jaws.
- Compress the spring.



Insert the spring in the neck of the cup.



Check that the the spring is correctly positioned on the cup(3) .

Respect the order and direction of fitting for the constituent parts.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Set the wheels straight ahead.

Clip the front brake hose cap on to the base of the shock absorber, aligning the marks made using a indelible pencil.

XSL version : 3.02 du 22/07/11

FRONT SIDE DOOR ELECTRIC WINDOW MECHANISM: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

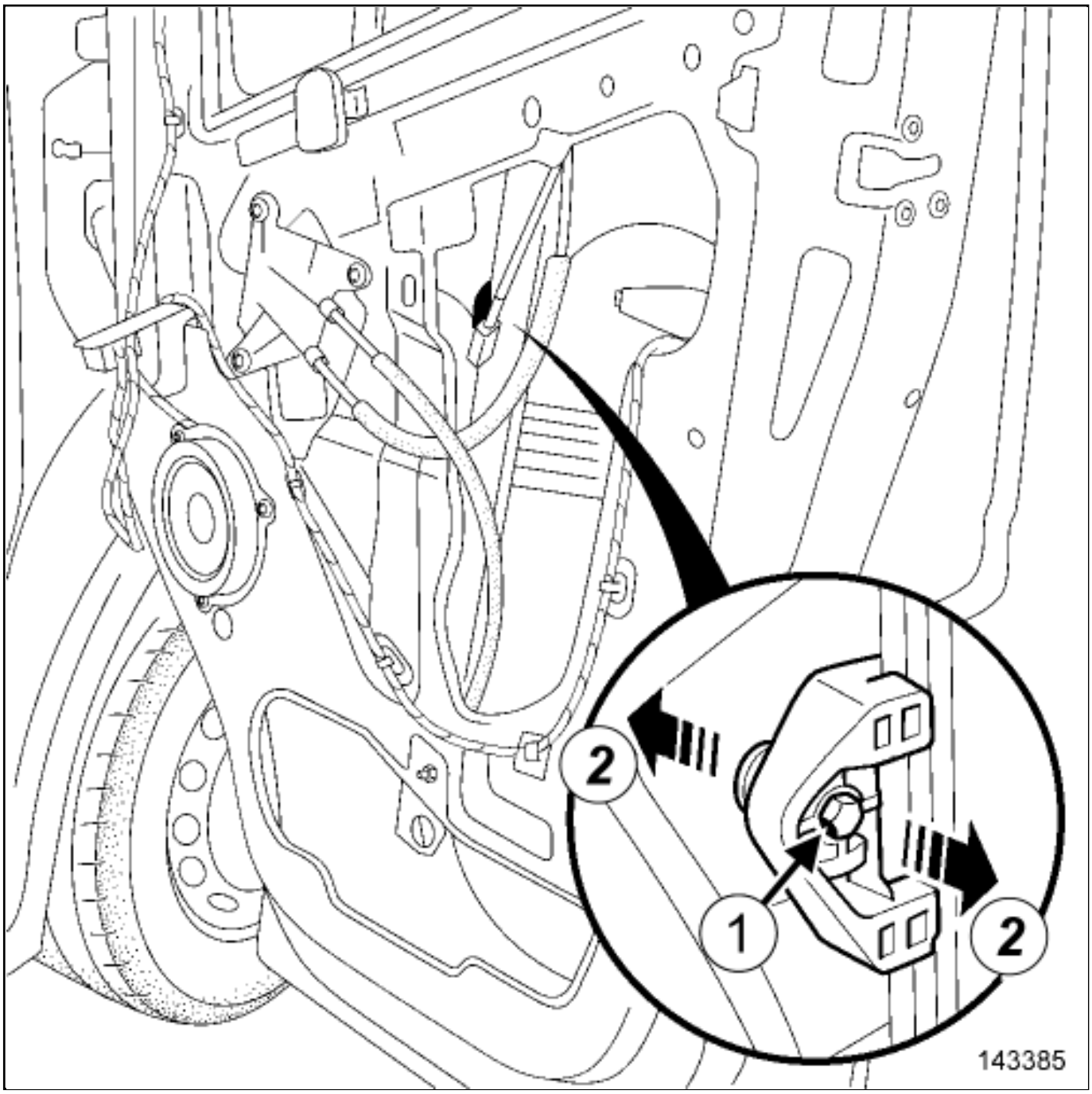
REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim):

- the front side door interior handle,
- the front side door trim,
- the door sealing film.

2. REMOVAL OPERATION



- Remove the bolt(1) .
- Secure the window in the raised position using masking tape.
- Unclip the window from the front side door electric window mechanism by(2) .
- Partially remove the front side door electric window mechanism(see 51A, Side opening element mechanisms , Front side opening element box section internal assembly: Exploded view) .
- Disconnect the electric window motor connector.
- Remove the front side door electric window mechanism(see 51A, Side opening element mechanisms, Front

side opening element box section internal assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.
- Carry out a function test.

FRONT SIDE DOOR FIXED WINDOW: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)Front side opening element box section internal assembly: Exploded view .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim):
  - the front side door interior handle,
  - the front side door trim,
  - the door sealing film.

- Remove the front side door electric window mechanism .

- Remove :
  - the front side door interior weatherstrip,
  - the front door window run channel, as necessary,
  - the front side door sliding window,
  - the support of the front side door run channel.

2. REMOVAL OPERATION

- Remove the front side door fixed window.

REFITTING

- Proceed in the reverse order to removal.

FRONT SIDE DOOR INTERIOR OPENING CONTROL: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

REMOVAL

1. REMOVAL OPERATION

- Remove the blanking cover of the front side door interior handleFront side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).
- Partially remove the front side door interior handle.
- Unclip the front side door interior opening control cable(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .
- Remove the front side door interior handleFront side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

REFITTING

- Proceed in the reverse order to removal.

FRONT SIDE DOOR LOCK BARREL: REMOVAL - REFITTING

parts always to be replaced:
front side opening element lock barrel locking ring

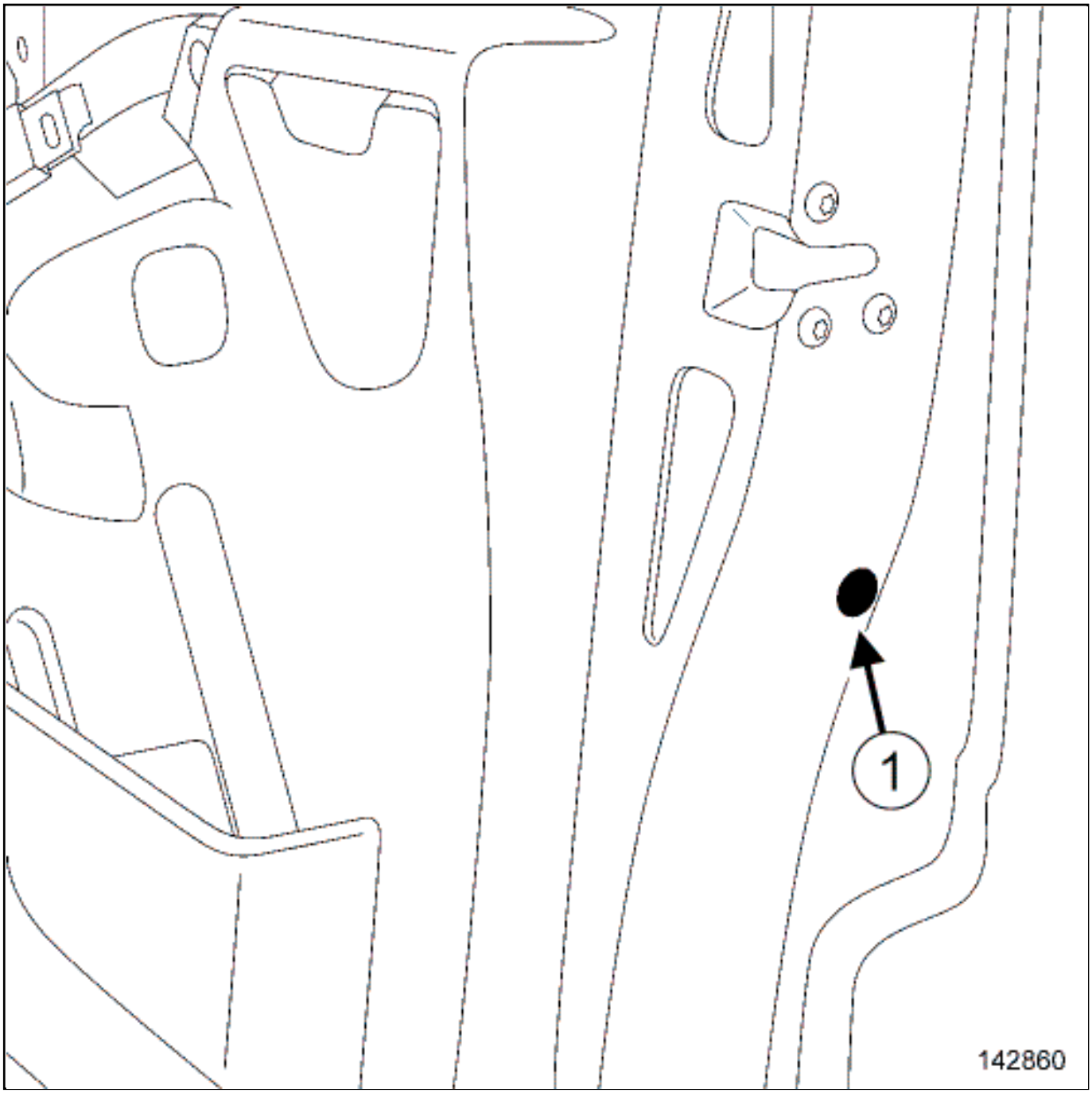
Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the front side door interior handleFront side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

- Remove the trim of the front side door lock barrel(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

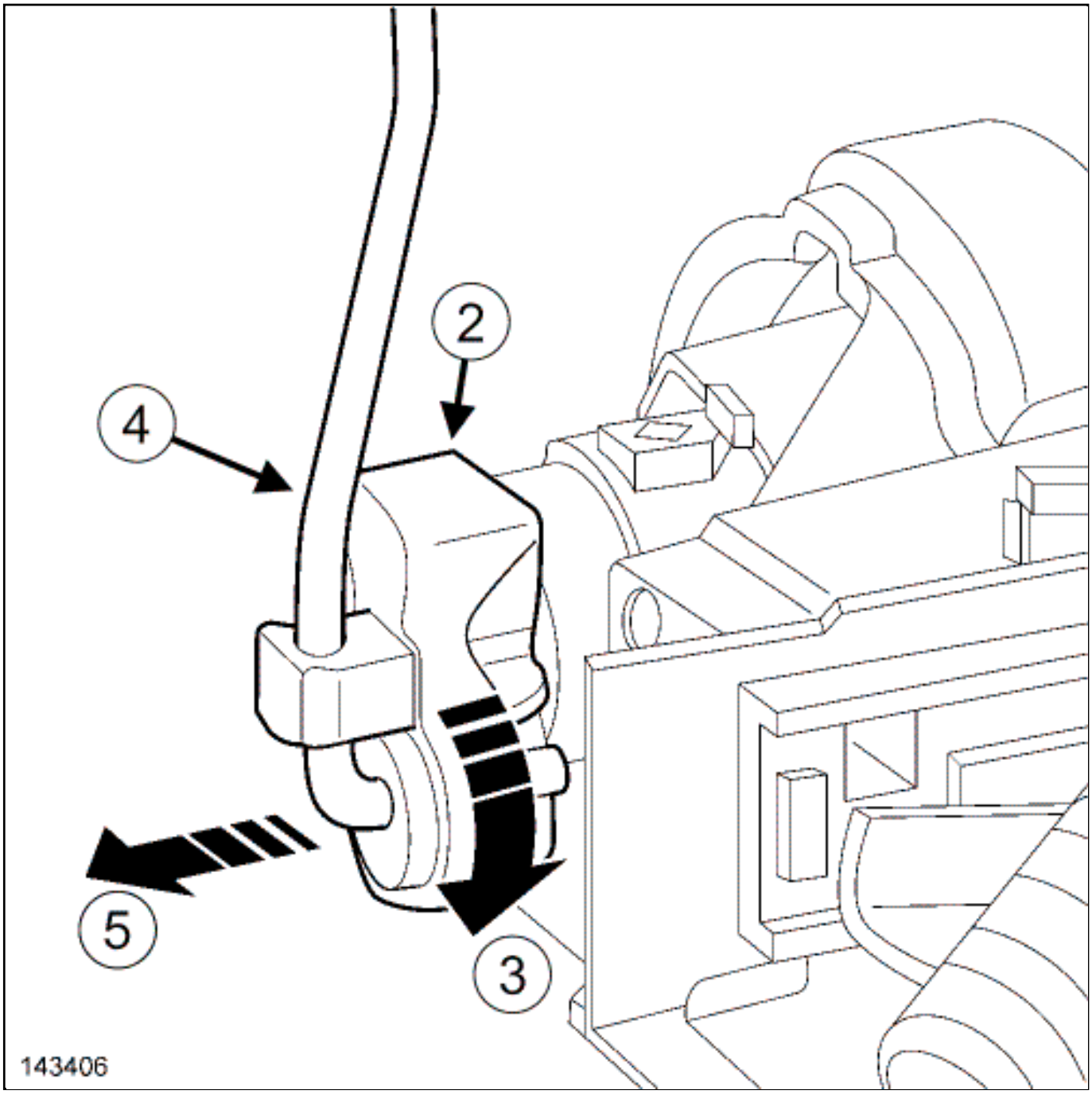


Remove the blanking cover(1) .

Remove Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim):

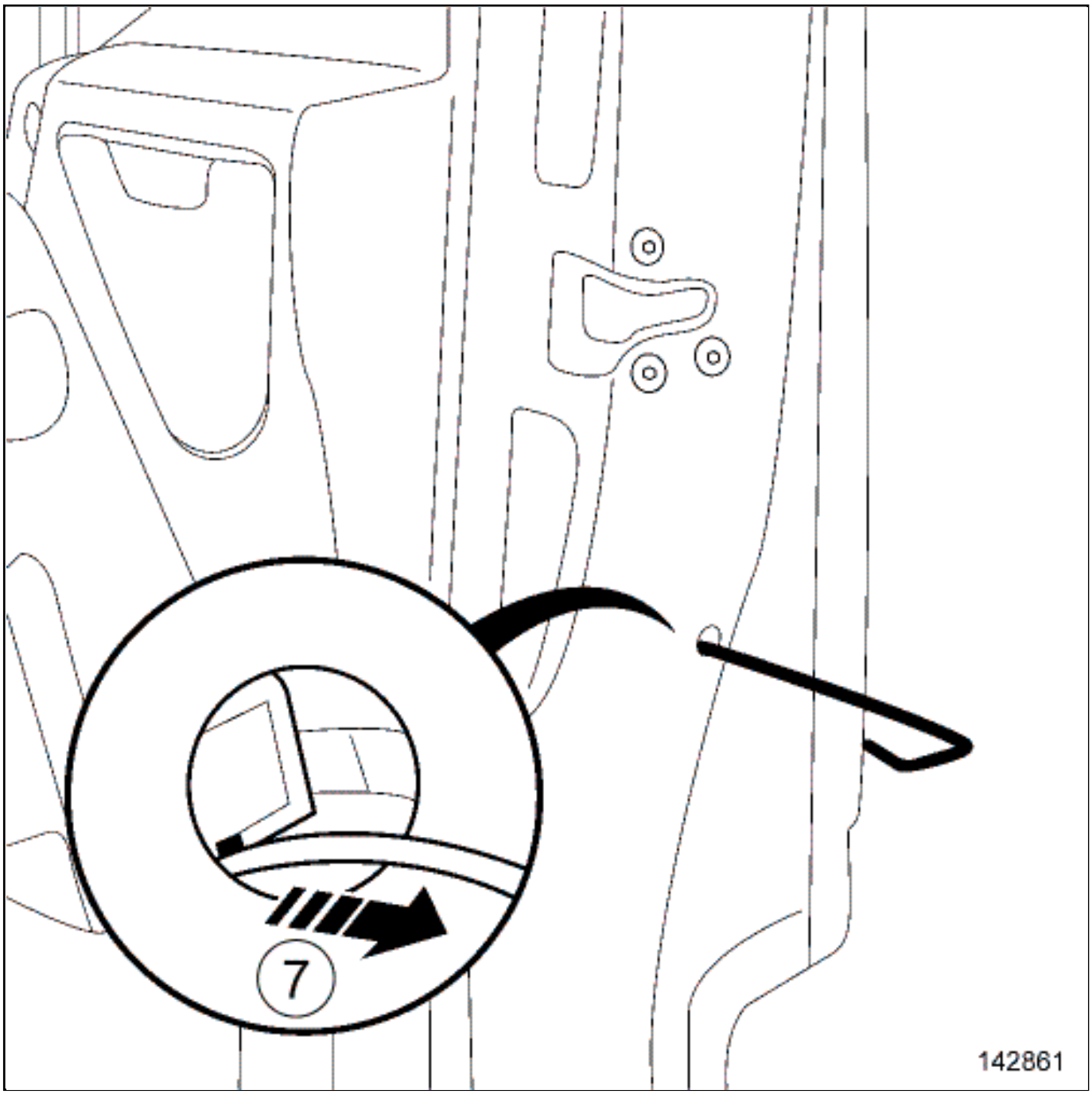
- the front side door trim.
- the door sealing film.

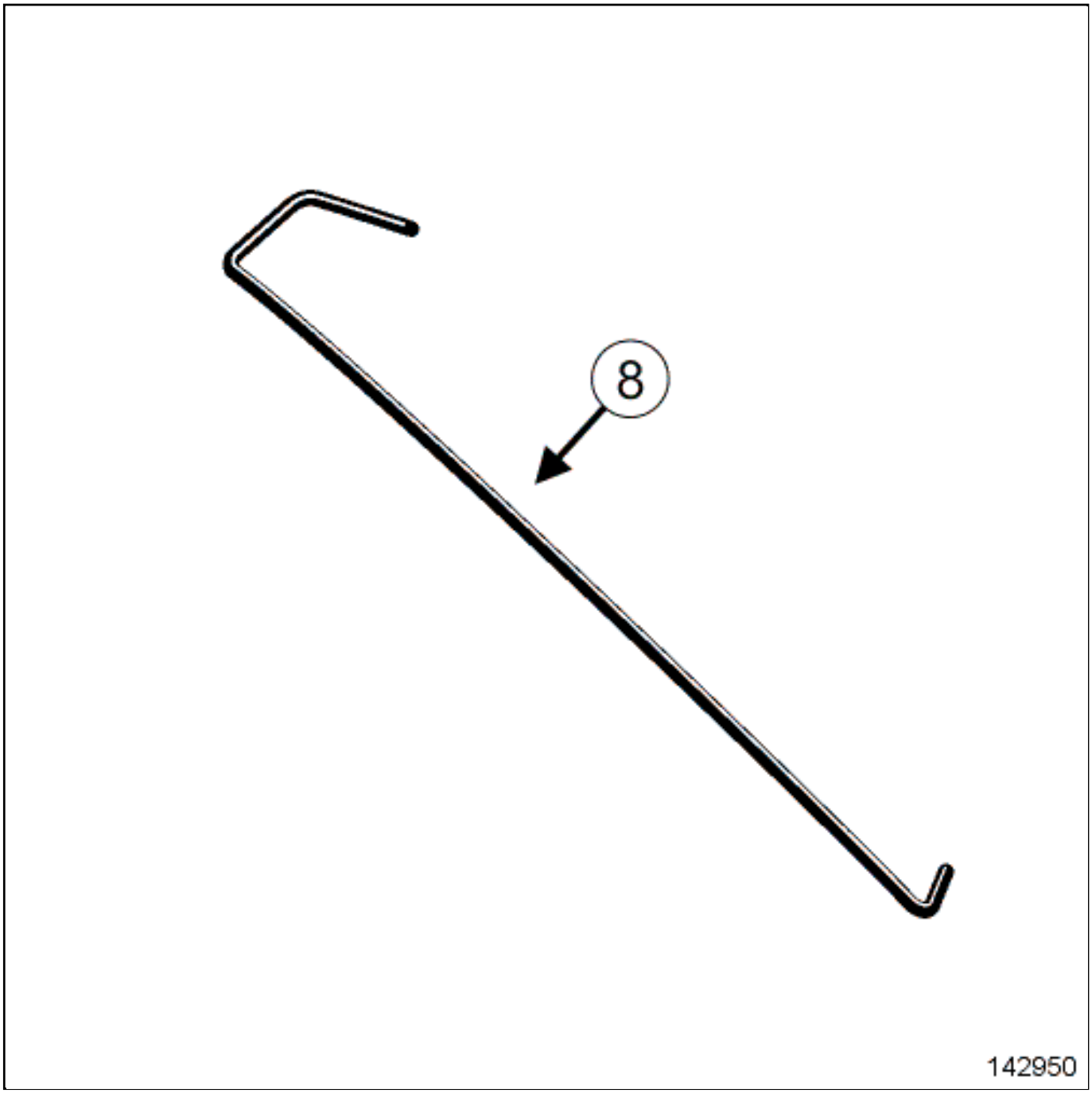
Remove the front side door channel(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .



- Unlock the lock barrel locking ring(2) by (3) .
- Unclip the exterior locking linkage(4) of the lock barrel locking ring by(5) .
- Separate the clips on the lock barrel locking ring using a screwdriver.
- Remove the lock barrel locking ring.

2. REMOVAL OPERATION


7
142861



Unlock the front side door lock barrel by(7) using a locally produced hook(8) .

Remove the front side door lock barrel(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: front side opening element lock barrel locking ring .

2. REFITTING OPERATION

Proceed in the reverse order to removal.

FRONT SIDE DOOR LOCK: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim):
  - the front side door interior handle,
  - the front side door trim,
  - the door sealing film.

- Remove the front side door channel(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

2. REMOVAL OPERATION

- Partially remove the front side door lock(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

- Disconnect the connector from the front side door lock.

- Unclip the front side door exterior opening control cable(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

- Remove the front side door lock(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

FRONT SIDE DOOR MANUAL WINDOW WINDER MECHANISM: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

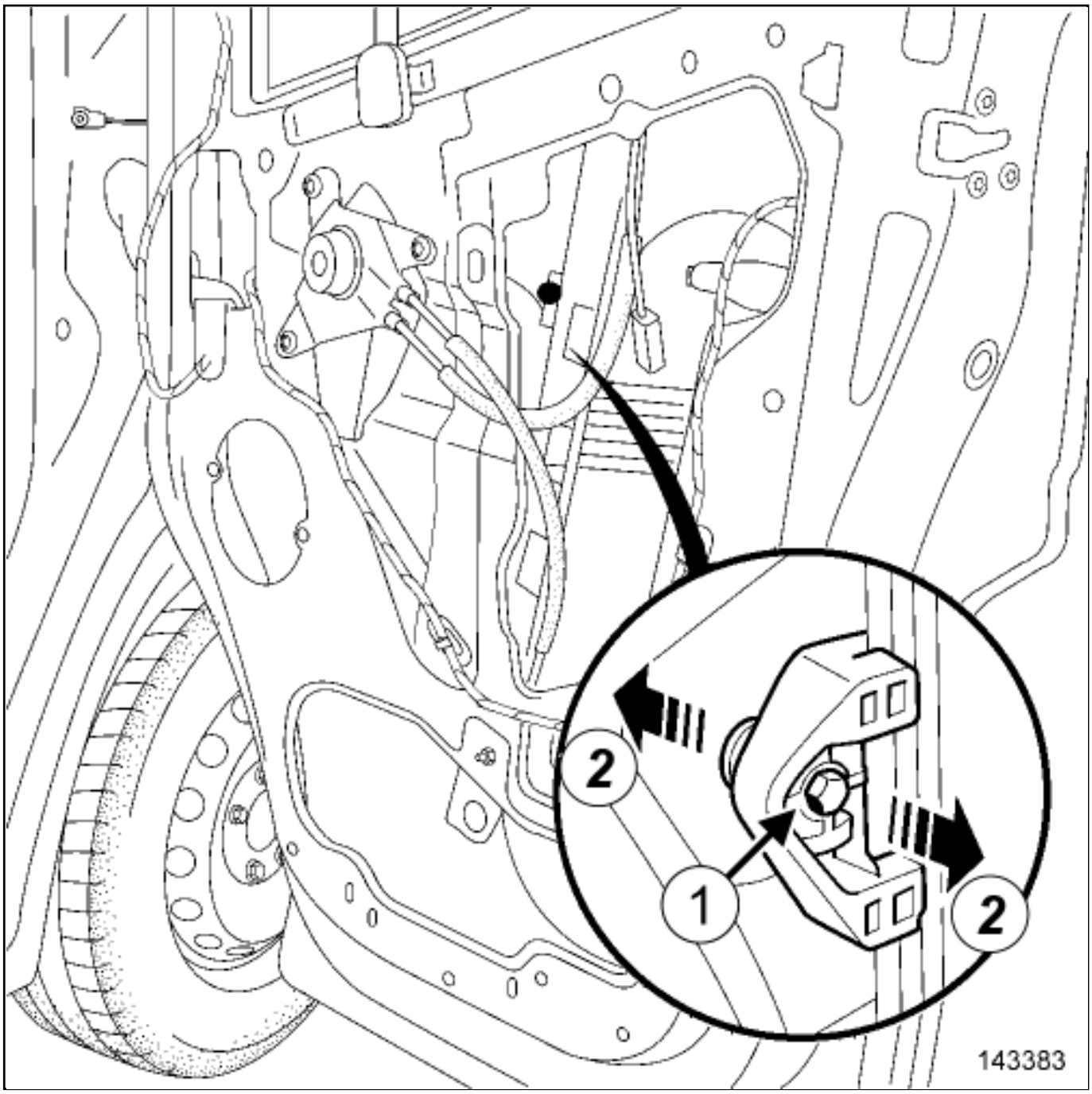
REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim):

- the front side door window winder handle,
- the front side door interior handle,
- the front side door trim,
- the door sealing film.

2. REMOVAL OPERATION



- Remove the bolt(1) .
- Secure the window in the raised position using masking tape.
- Unclip the window from the front side door manual window winder mechanism by(2) .
- Remove the front side door manual window winder mechanism(see 51A, Side opening element mechanisms , Front side opening element box section internal assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.
- Carry out a function test.

Repair-50x02x06x04-01x37-1-14-1.xml

XSL version : 3.02 du 22/07/11

FRONT SIDE DOOR SLIDE MOUNTING: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim):

- the front side door interior handle,
- the front side door trim,
- the door sealing film.

Remove the front side door electric window mechanism .

Remove (see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) :

- the front side door interior weatherstrip,
- the front door window run channel, as necessary,
- the front side door sliding window.

2. REMOVAL OPERATION

Remove the support of the front side door run channel(see 51A, Side opening element mechanisms, Front side opening element box section internal assembly: Exploded view) .

REFITTING

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

FRONT SIDE DOOR TRIM: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 72A, Side opening element trim, Front side opening element assembly on the passenger compartment side: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove (see 72A, Side opening element trim, Front side opening element assembly on the passenger compartment side: Exploded view) :
  - the front side door interior handle,
  - the door mirror cover,
  - the blanking covers,
  - the interior handle trim,
  - the front electric window switch.

2. REMOVAL OPERATION

- Remove the front side door trim(see 72A, Side opening element trim, Front side opening element assembly on the passenger compartment side: Exploded view) .

REFITTING

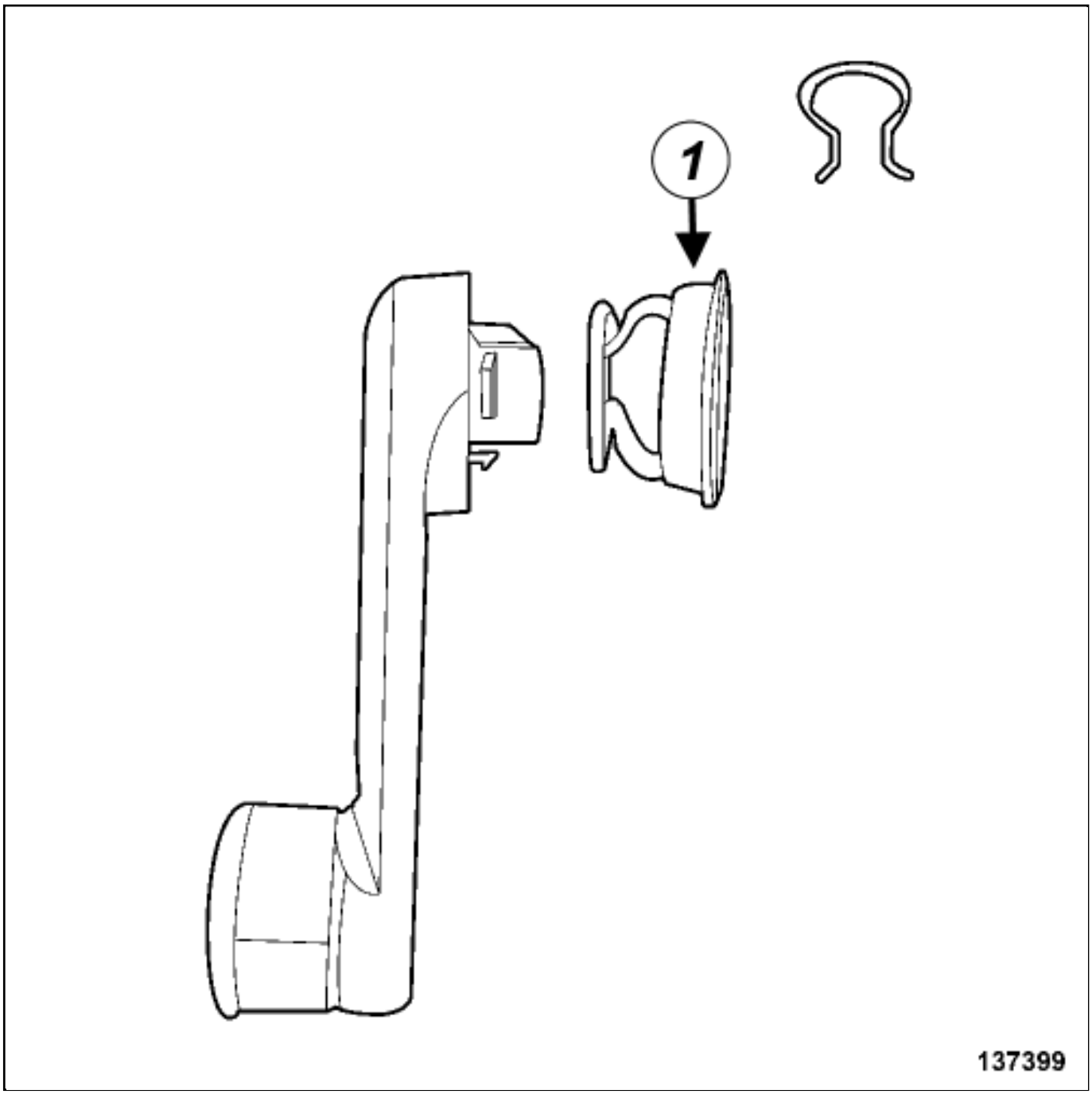
- Always replace the clips on the front side door trim.
- Proceed in the reverse order to removal.

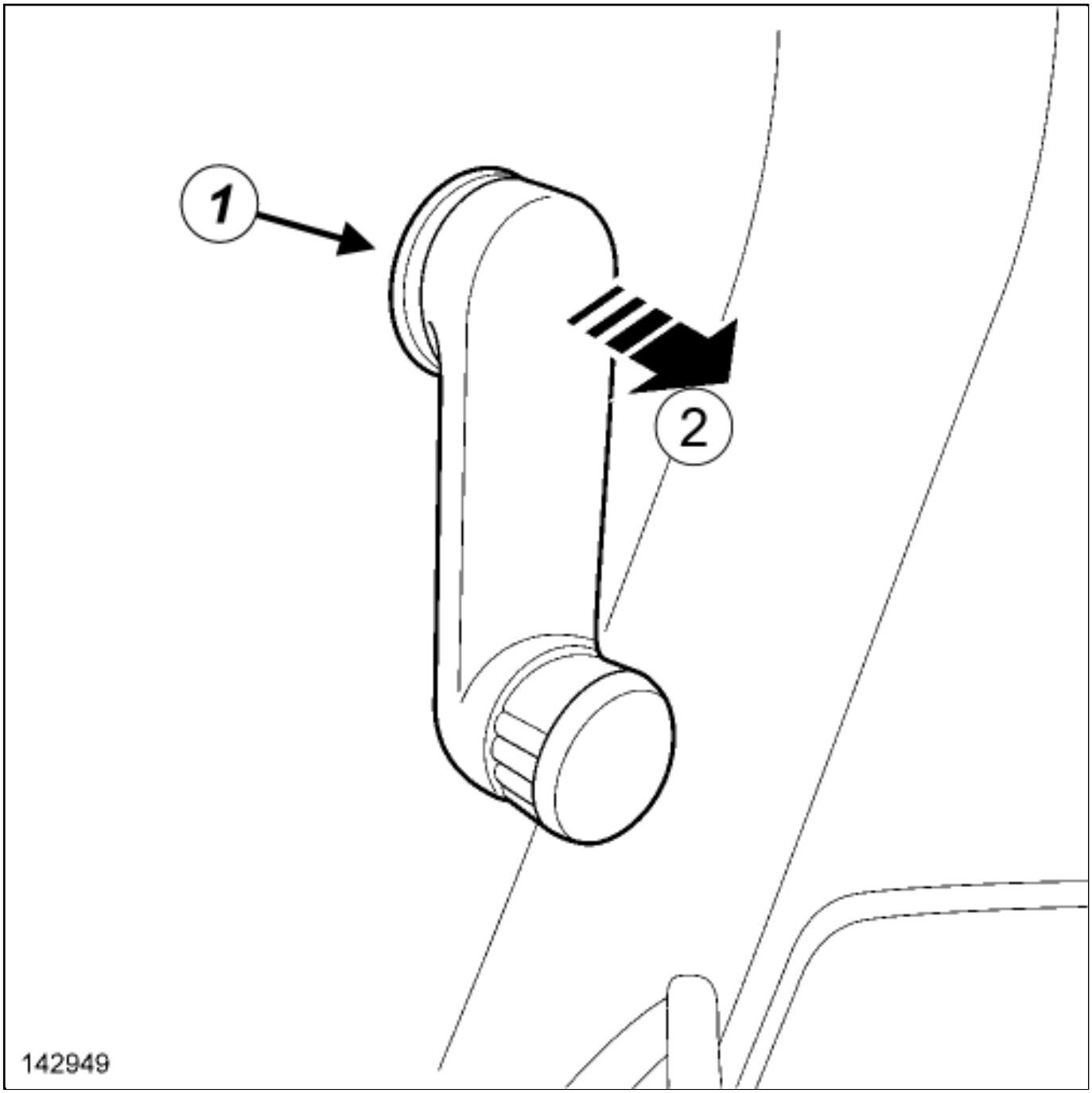
FRONT SIDE DOOR WINDOW WINDER HANDLE: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

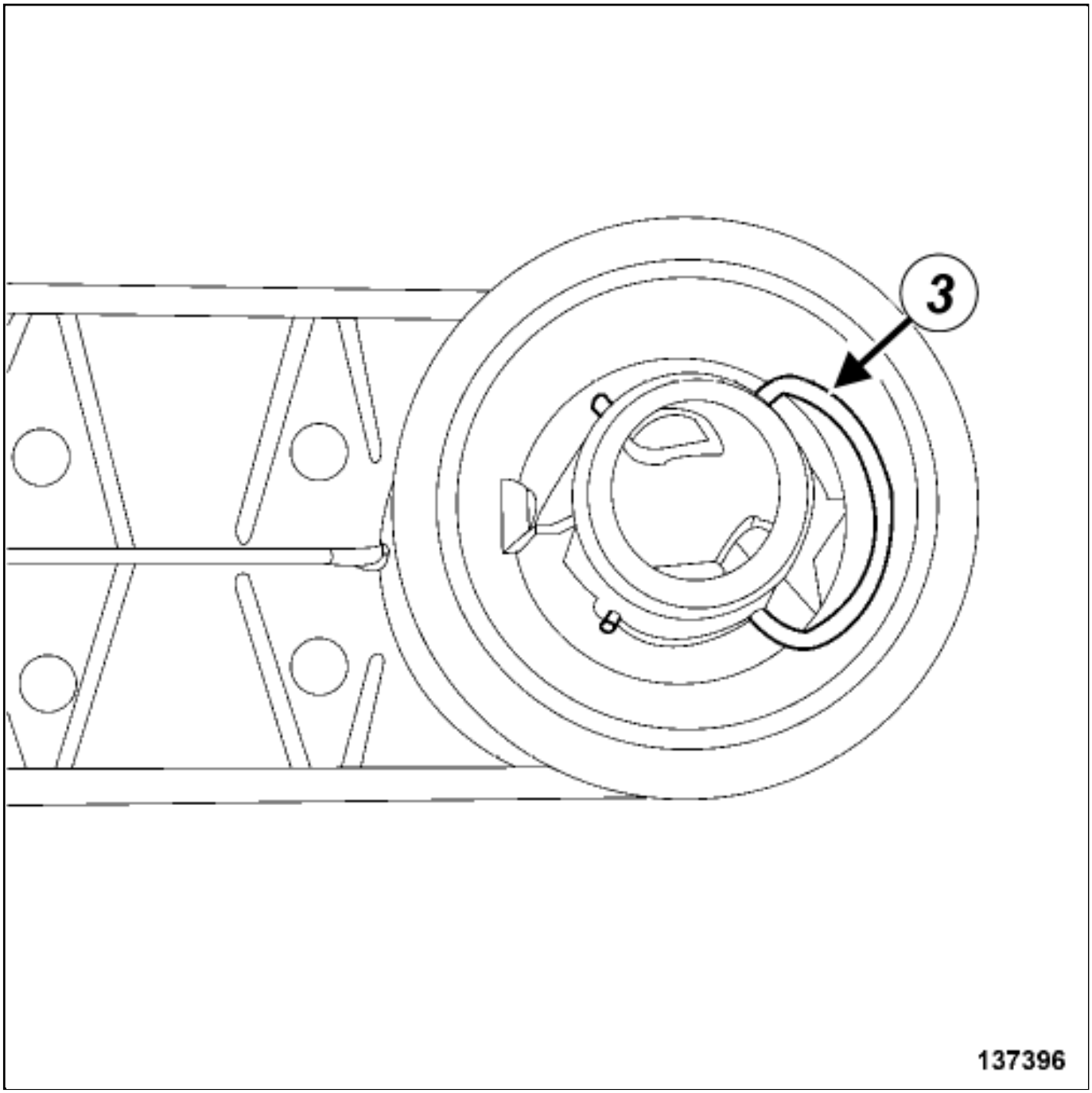
REMOVAL

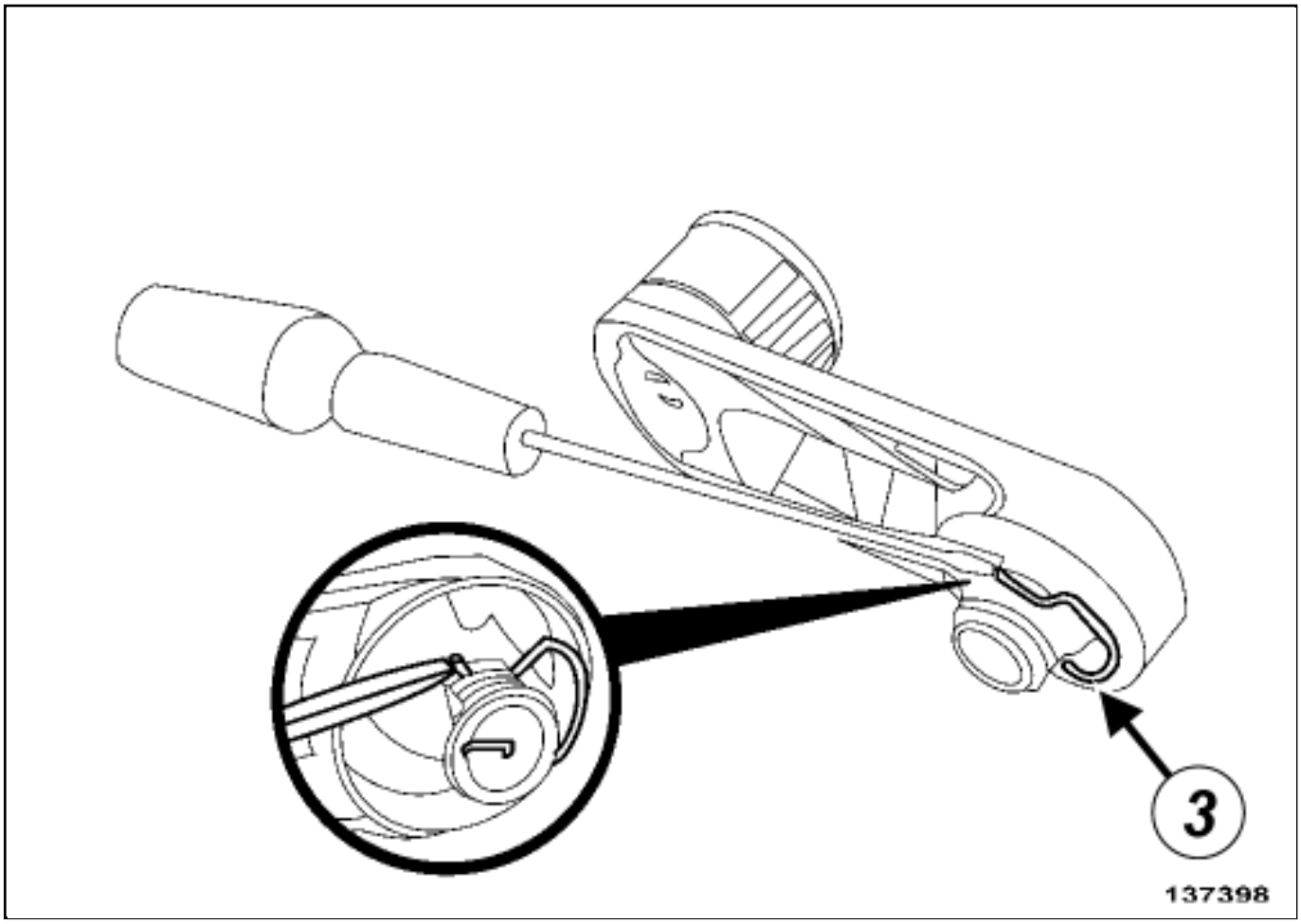
1. REMOVAL OPERATION





- Pull the ring(1) towards the vehicle interior(2) .


3
137396



Unclip the clip(3) .

Remove the front side door window winder handle[Front side opening element assembly on the passenger compartment side: Exploded view](#) (72A, Side opening elements trim).

REFITTING

Proceed in the reverse order to removal.

FRONT SIDE MEMBER, FRONT SECTION: REPLACEMENT

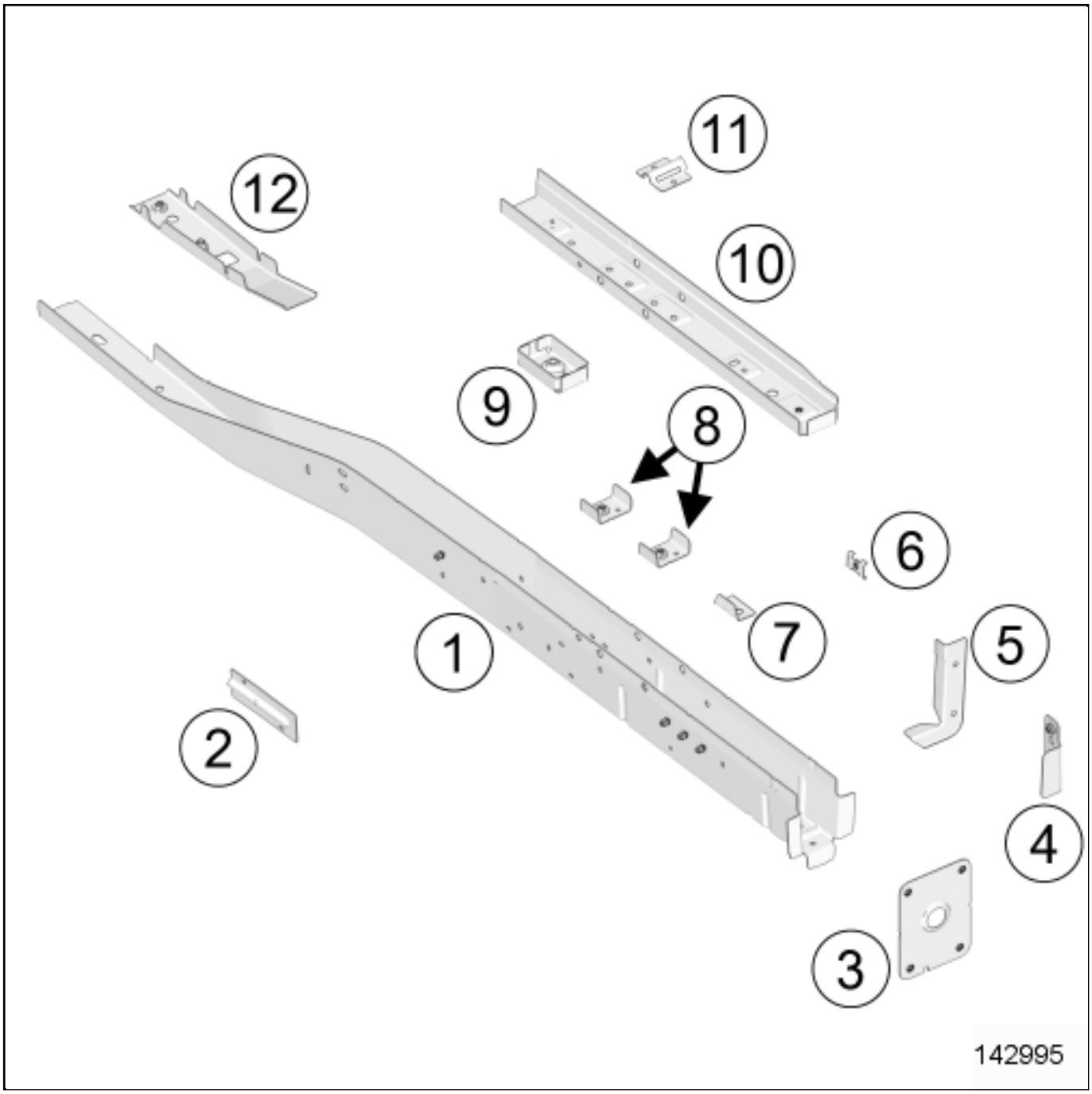
Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

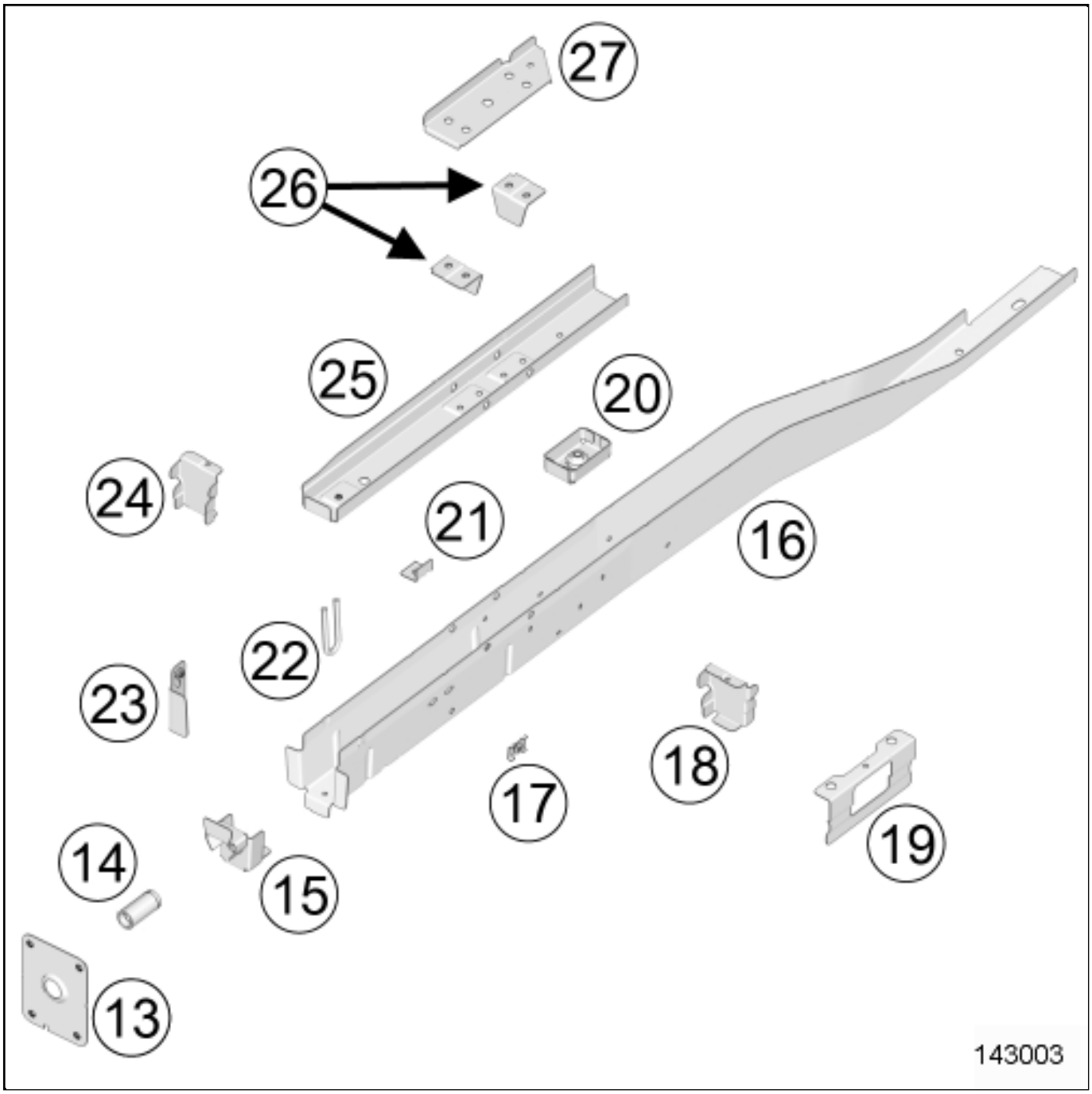
1. COMPOSITION OF THE SPARE PART

1- LEFT-HAND SIDE


11
12
10
9
8
6
7
1
5
2
4
3
142995

No.	Description	Type	Thickness (mm)
(1)	Front left-hand side member	HLE	2.3
(2)	Front left-hand side member impact reinforcement	HLE	2.3
(3)	Closure panel component of left hand A-pillar impact absorber unit	HLE	2.3
(4)	Front bumper left-hand foot panel bracket	HLE	2.3
(5)	Front left-hand wheel arch bracket	Mild steel	1.5
(6)	Rear left-hand spacer	HLE	2.0
(7)	Left-hand earth nut holder plate	Mild steel	1.0
(8)	Left hand A-pillar multifunction mounting support	HLE	2.0
(9)	Subframe front left-hand mounting plate	HLE	2.0
(10)	Rear closure panel component of front left-hand side member	HLE	2.1
(11)	Left-hand A-pillar hose support bracket	Mild steel	2.0
(12)	Front left-hand side member reinforcement bracket	HLE	1.8

2- RIGHT-HAND SIDE


27
26
25
20
24
21
16
22
23
18
17
19
14
15
13
143003

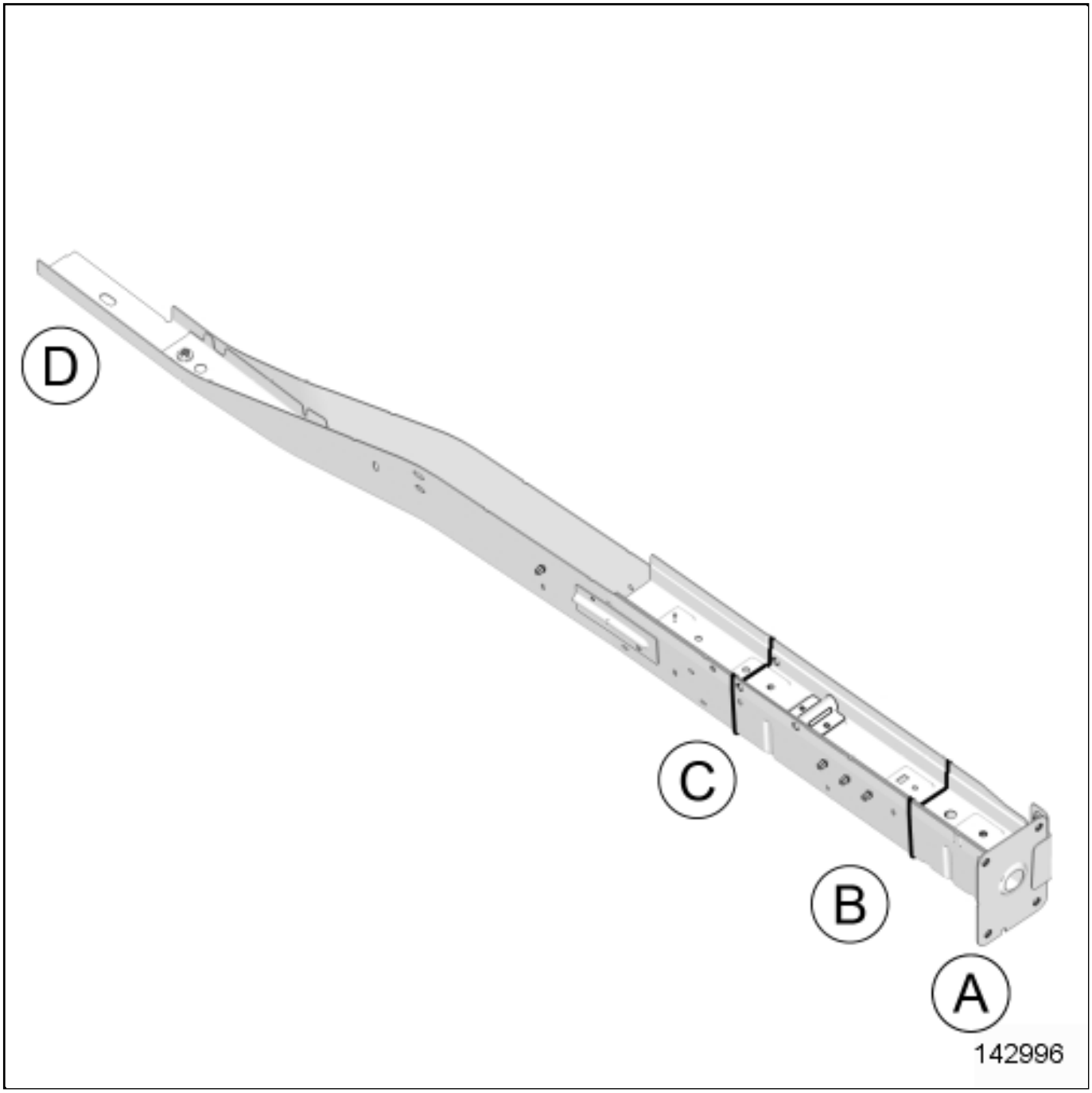
No.	Description	Type	Thickness (mm)
(13)	Closure panel component of A-pillar front impact absorber unit	HLE	2.3
(14)	Threaded bush	Mild steel	4.0
(15)	Front tow hitch support	THLE	2.5
(16)	Front right-hand side member	HLE	2.3
(17)	Right-hand earth nut holder plate	Mild steel	1.0
(18)	Rear height adjuster of engine rubber pad support	HLE	1.9
(19)	Closure panel component of height adjuster of engine rubber pad support	HLE	2.0
(20)	Subframe front right-hand mounting plate	HLE	2.0
(21)	Brake hose support bracket	Mild steel	1.9
(22)	Front towing ring	Mild steel	10.0
(23)	Front bumper right-hand foot panel bracket	HLE	2.3

(24)	Front height adjuster of engine rubber pad support	HLE	1.9
(25)	Rear closure panel component of front right-hand side member	HLE	2.1
(26)	Rear mounting bracket of engine rubber pad support	Mild steel	3.0
(27)	Engine rubber pad support	HLE	2.0

2. IN THE EVENT OF REPLACEMENT

The options for replacing this part are as follows:

- complete replacement AD,
- partial replacement AB,
- partial replacement AC.



CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

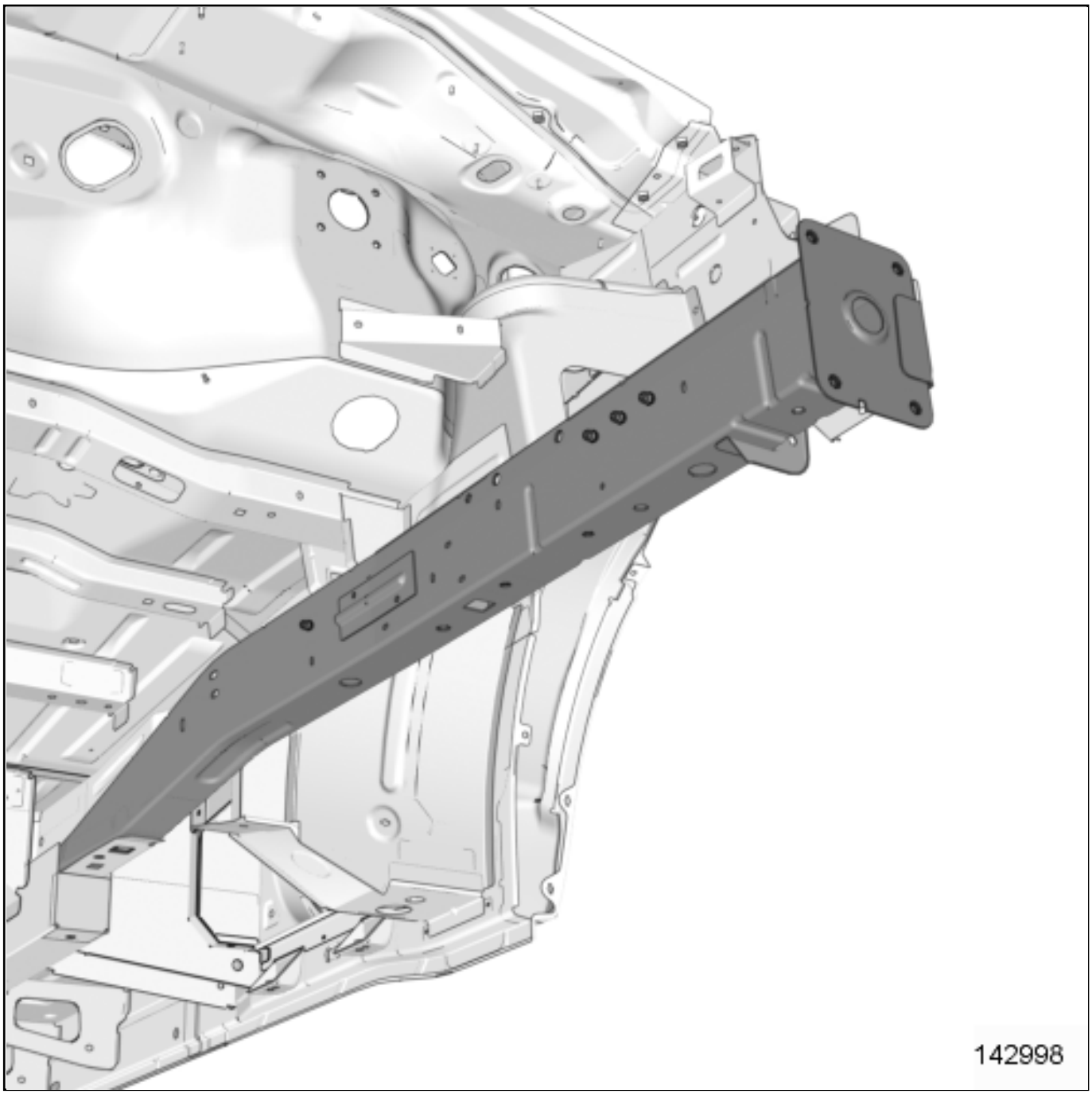
Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

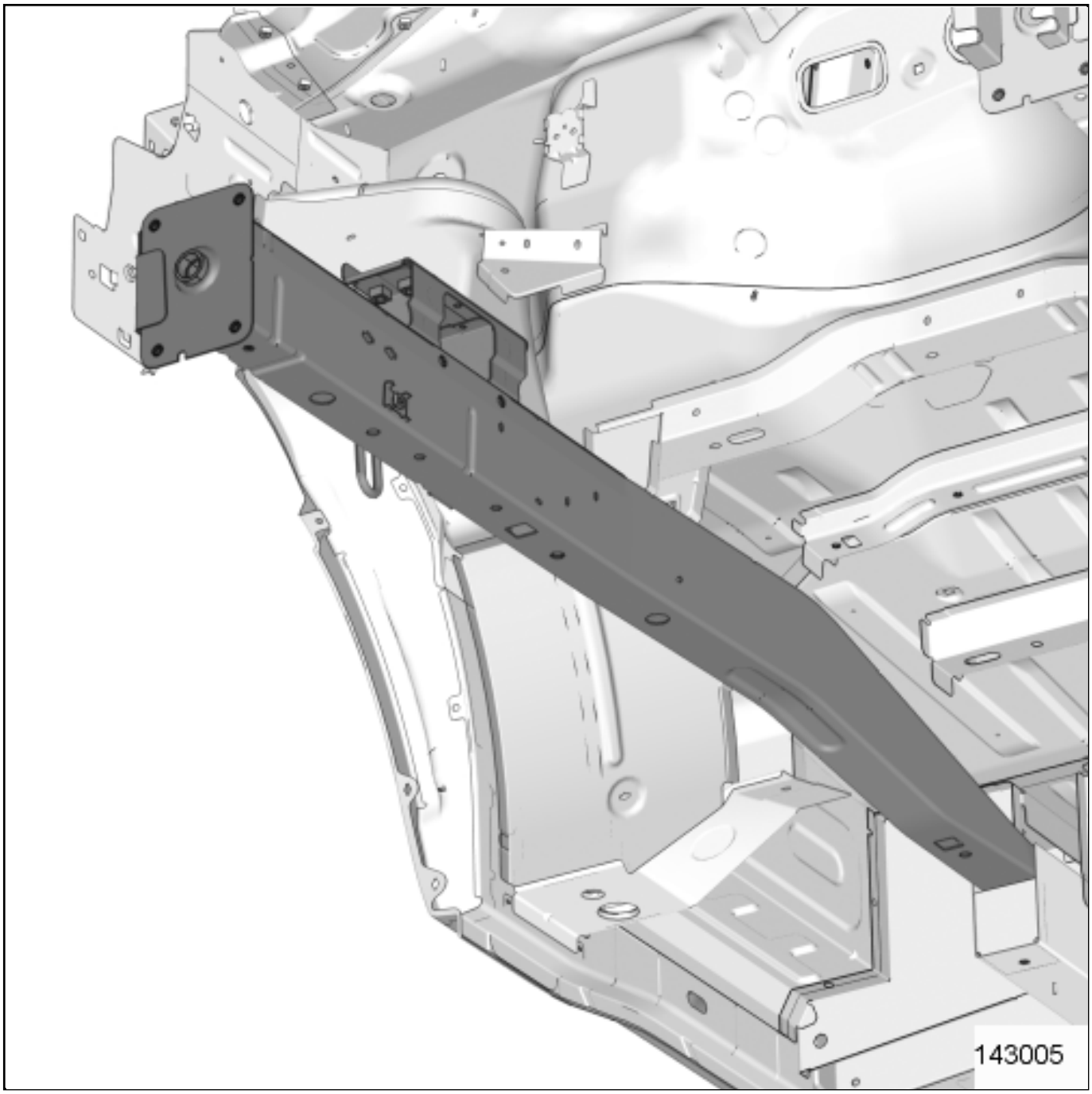
If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

2- COMPLETE REPLACEMENT RIGHT-HAND SIDE AD

WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

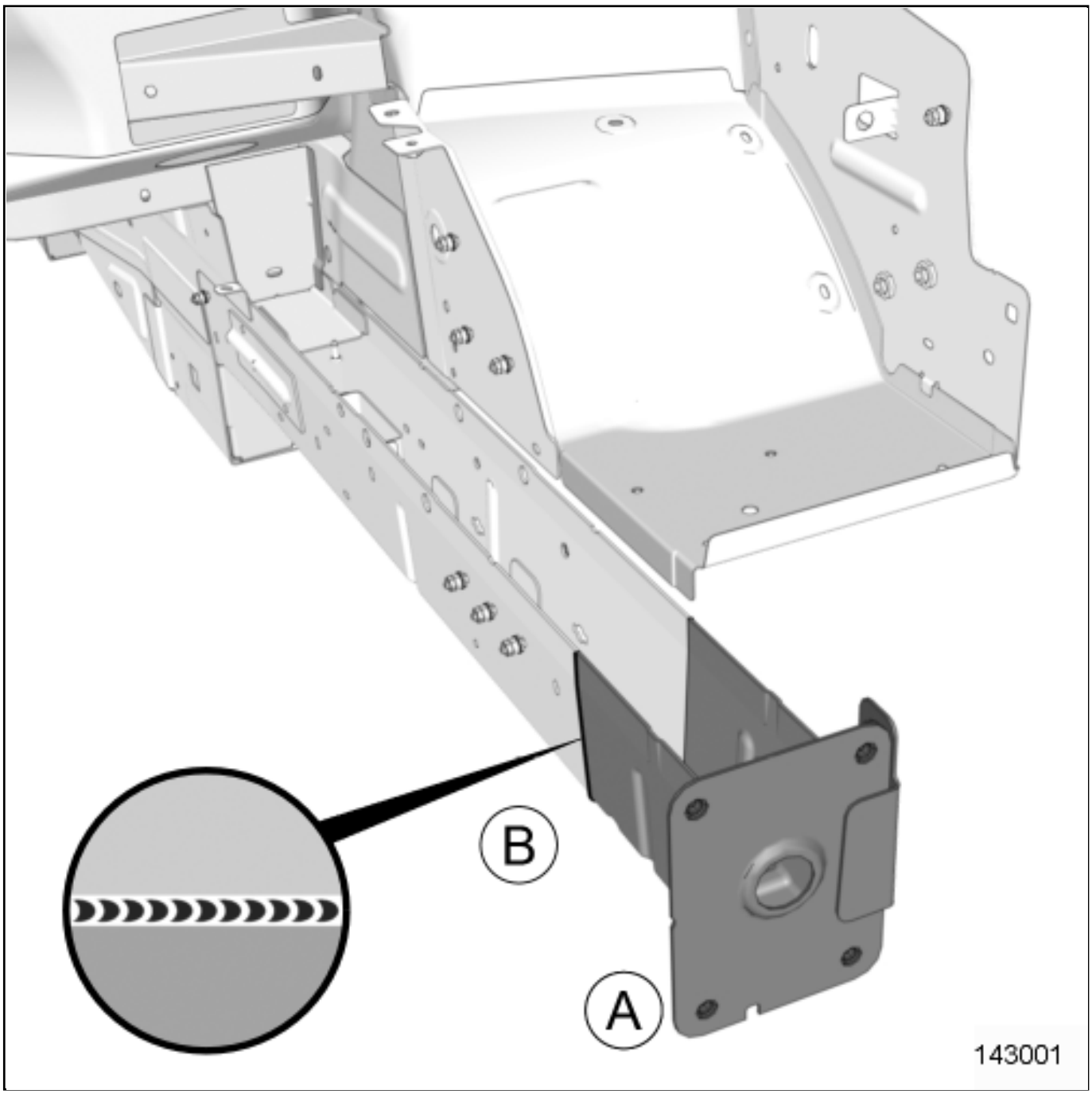
CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

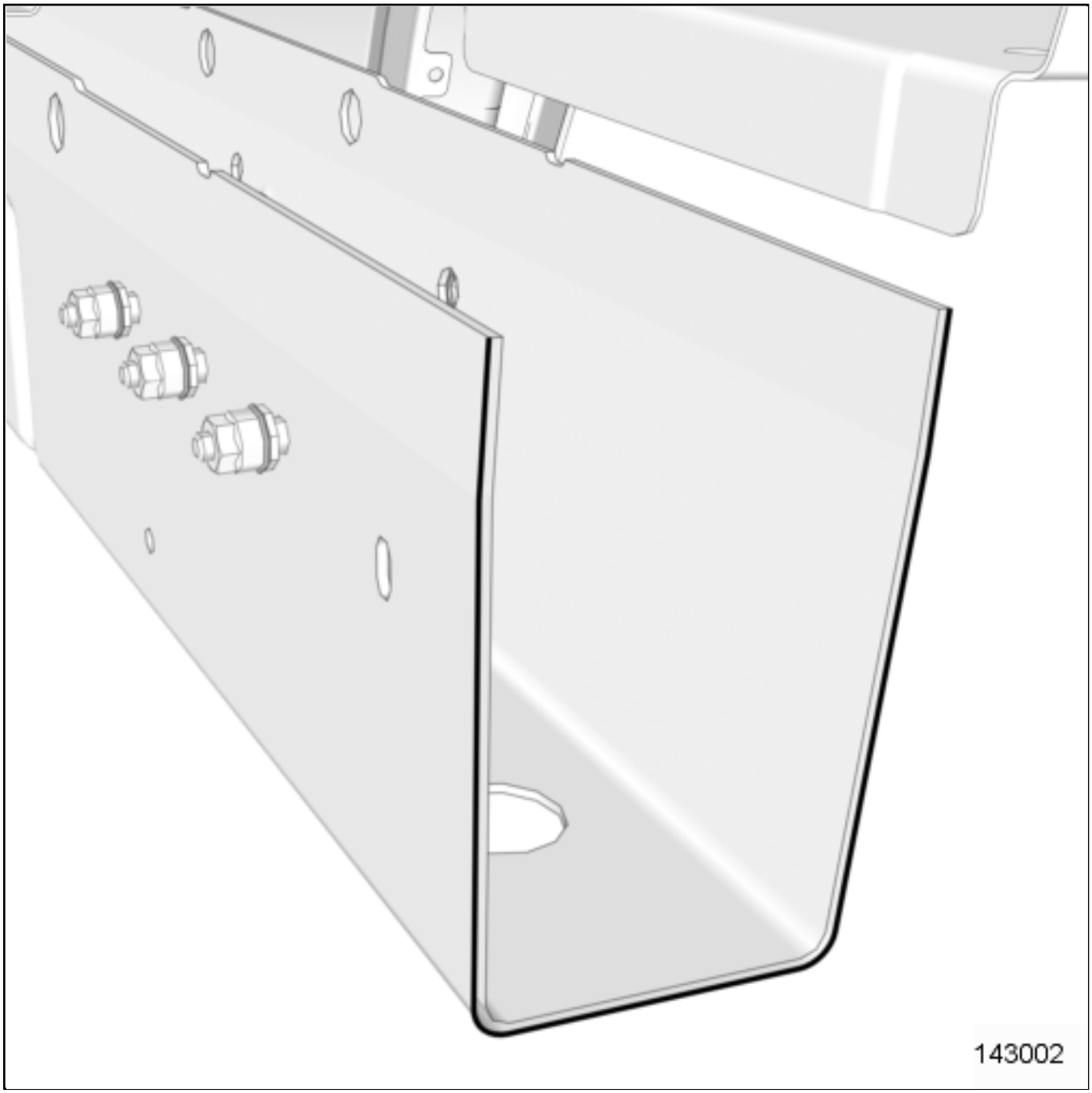
WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



DETAILED VIEW B



2)SPECIAL NOTES ON MATING

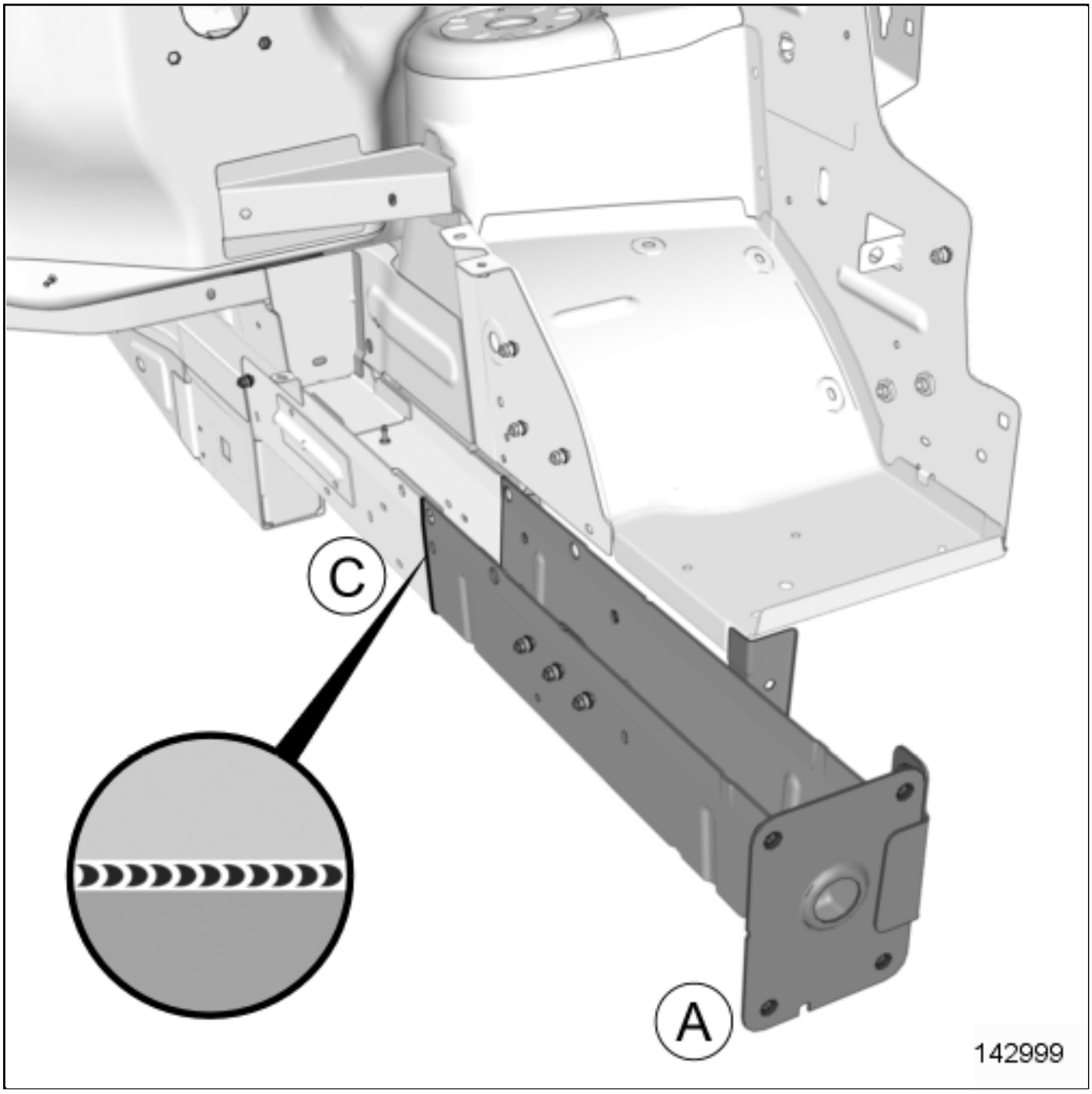
Make a butt weld using a bead of chain weld at(B) Connections by arc welding under shielding gas: Description (MR 400, 40C, Gas metal arc welded connections (GMAW)).

4- PARTIAL REPLACEMENT AC

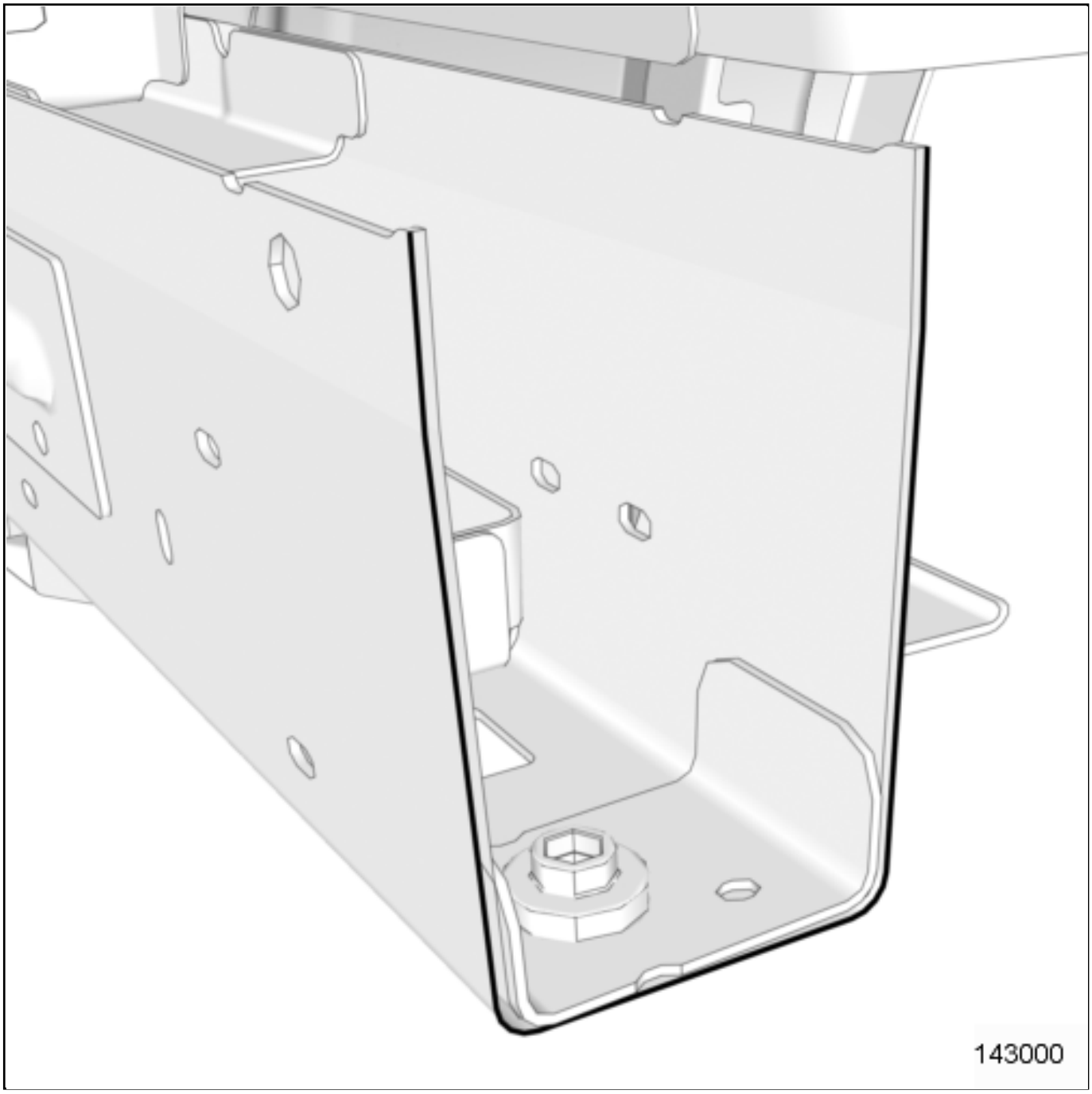
WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



DETAILED VIEW C



2)SPECIAL NOTES ON MATING

Make a butt weld using a bead of chain weld at(C) Connections by arc welding under shielding gas: Description (MR 400, 40C, Gas metal arc welded connections (GMAW)).

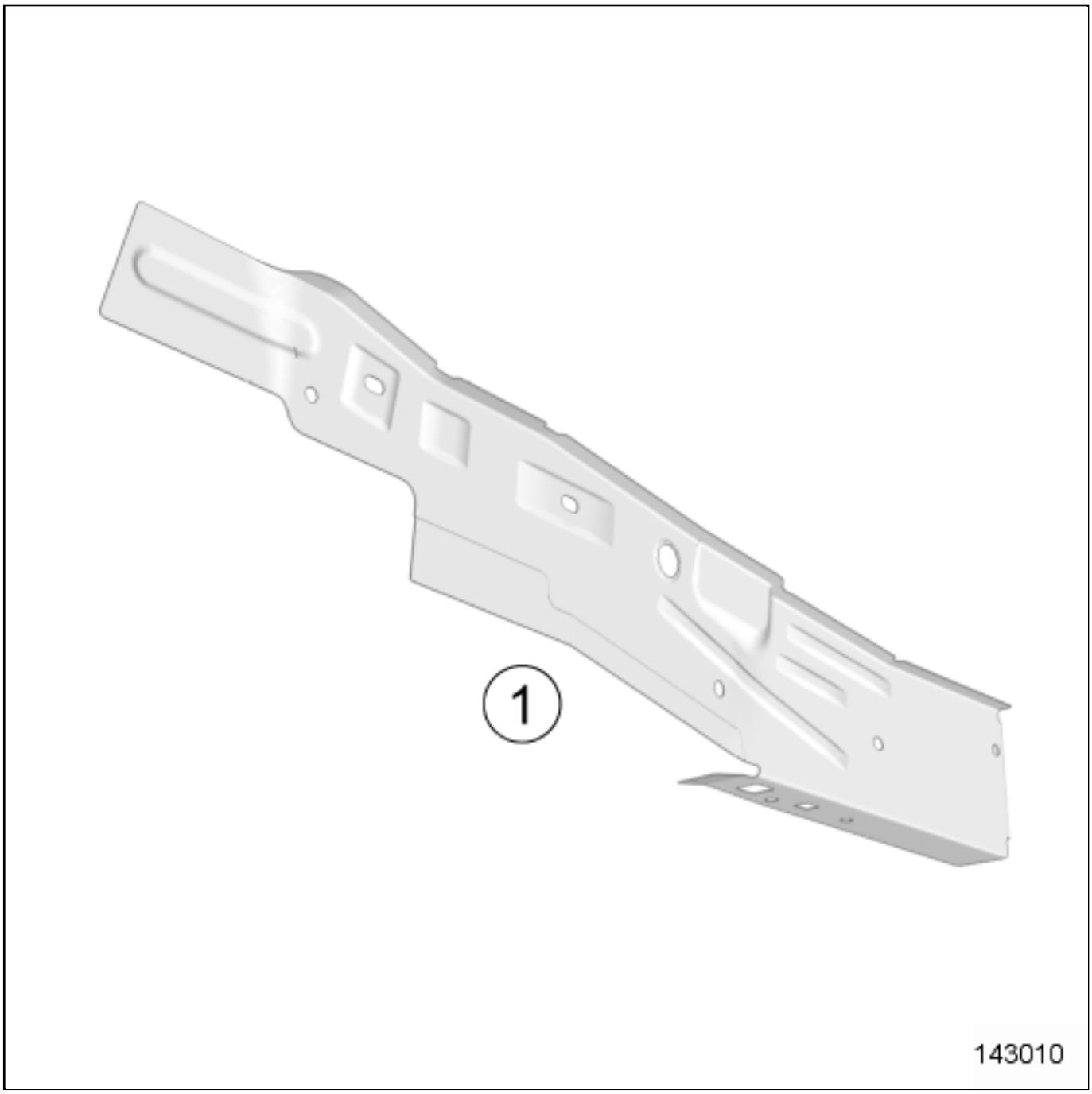
FRONT SIDE MEMBER, REAR SECTION: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Front side member rear part	THLE	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

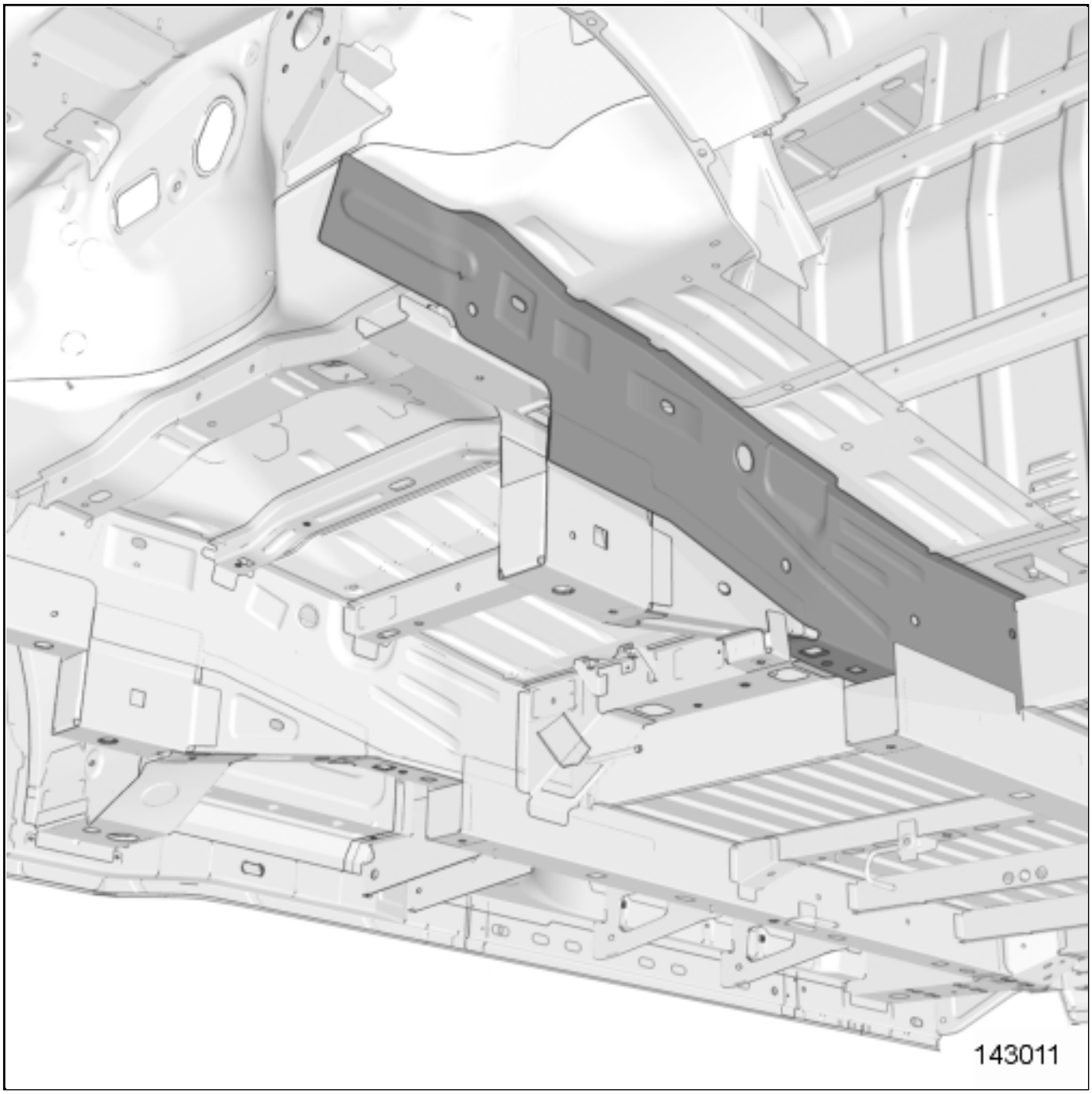
Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FRONT SIDE OPENING ELEMENT ASSEMBLY ON THE PASSENGER COMPARTMENT SIDE: EXPLODED VIEW

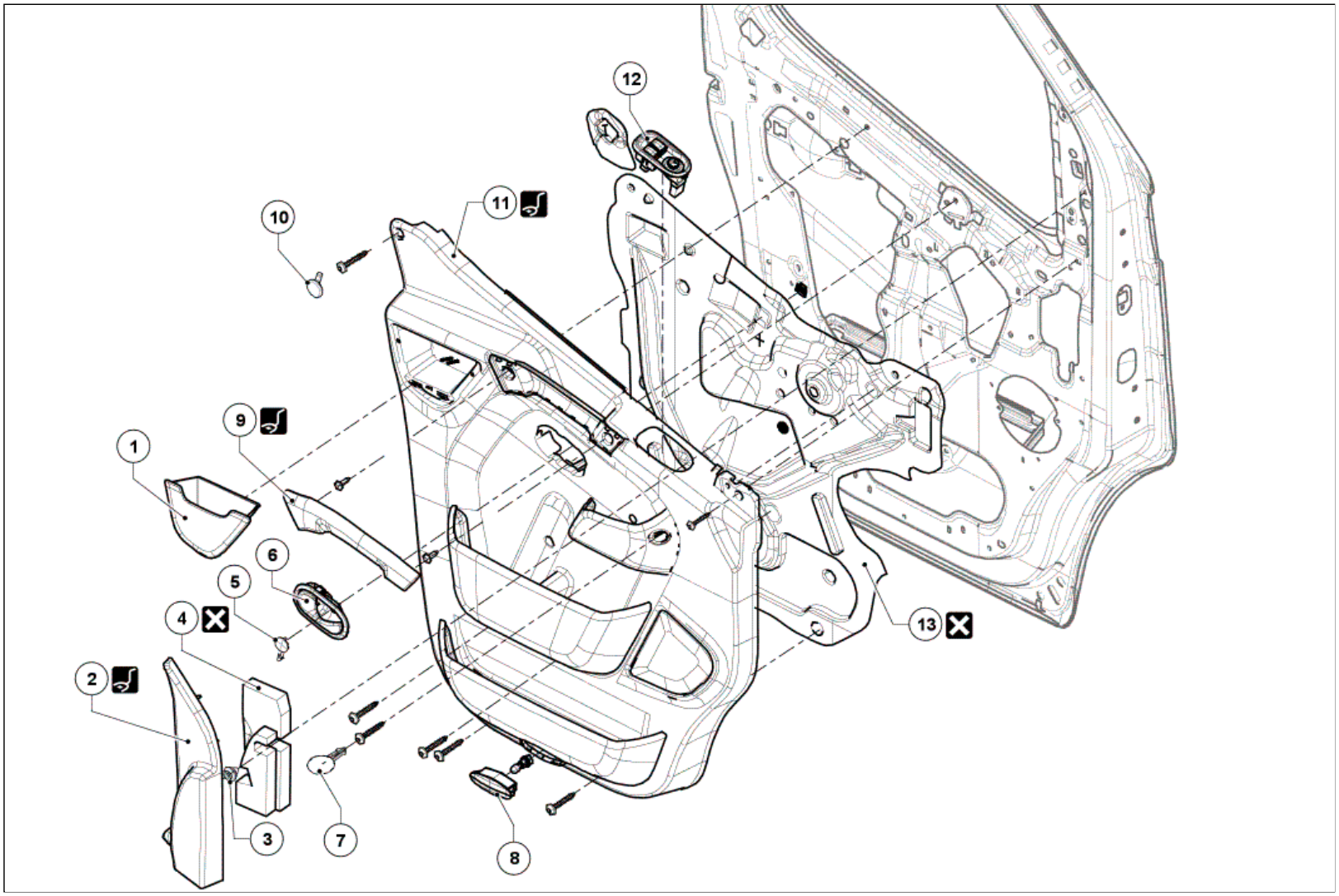


Illustration key: Description

Mark	Description	Information
1	Storage compartment	
2	Door mirror cover	(Car. 1363)
3	Door mirror cover clips	
4	Door mirror sealing film	Door sealing film: Removal - Refitting
5	Blanking cover of front door interior opening control	
6	Front side door interior opening control	Front side door interior opening control: Removal - Refitting
7	Front blanking cover of front side door trim	
8	Lower door light	Lower door light: Removal - Refitting
9	Interior handle trim	(Car. 1363)
10	Rear blanking cover of front side door trim	
11	Front side door trim	(see 72A, Side opening element trim, Front side door trim: Removal - Refitting)
12	Front electric window switch	
13	Door sealing film	Door sealing film: Removal - Refitting

FRONT SIDE OPENING ELEMENT BOX SECTION INTERNAL ASSEMBLY: EXPLODED VIEW

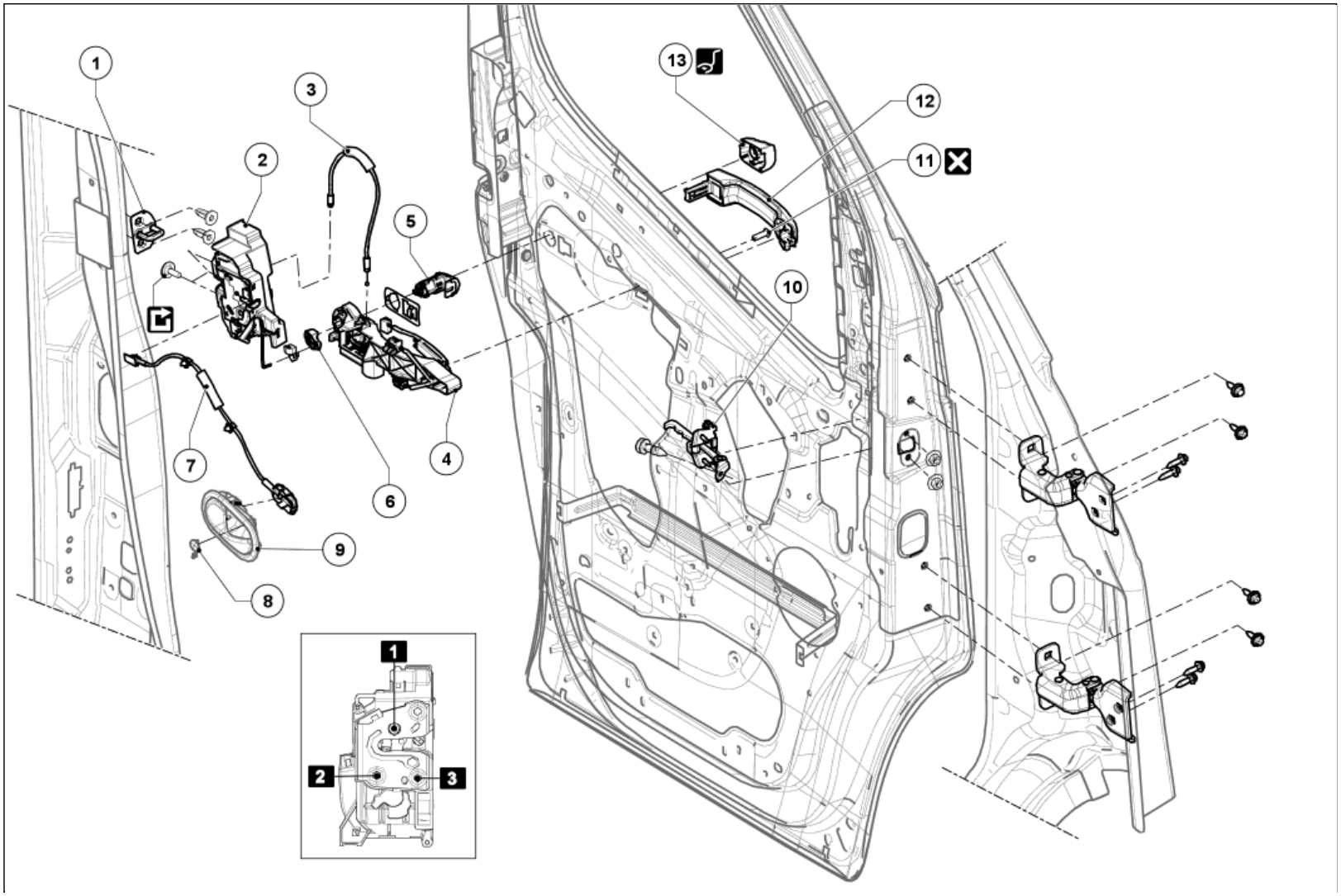


Illustration key: Description

Mark	Description	Information
1	Front side door striker panel	(see 51A, Side opening element mechanisms, Front side door striker panel: Removal - Refitting)
2	Front side door lock	(see 51A, Side opening element mechanisms, Front side door lock: Removal - Refitting)
3	Front side door exterior opening control cable	(see **Front side door opening linkage: Removal - Refitting**)
4	Front side door exterior handle module	(see 51A, Side opening element mechanisms, Exterior door handle: Removal - Refitting)
5	Front side door lock barrel	(see 51A, Side opening element mechanisms, Front side door lock barrel: Removal - Refitting)
6	Lock barrel locking ring	
7	Front side door interior opening control cable	(see **Front side door opening linkage: Removal - Refitting**)
8	Blanking cover of front door interior opening control	
9	Front side door interior opening control	(see 51A, Side opening element mechanisms, Front side door interior opening control: Removal - Refitting)
10	Front side door check strap	(see 51A, Side opening element mechanisms, Front side door check strap: Removal - Refitting)
11	Rivet of front side door exterior handle module	
12	Exterior door handle	(see 51A, Side opening element mechanisms, Exterior door handle: Removal - Refitting)
13	Trim of front side door lock barrel	(Car. 1363)

FRONT SIDE SEAT BELT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:

Front seat belt inertia reel bolt

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

Note:

The seat belt must be handled by the inertia reel mechanism (risk of damaging the strap).

REMOVAL

1. REMOVAL PREPARATION OPERATION

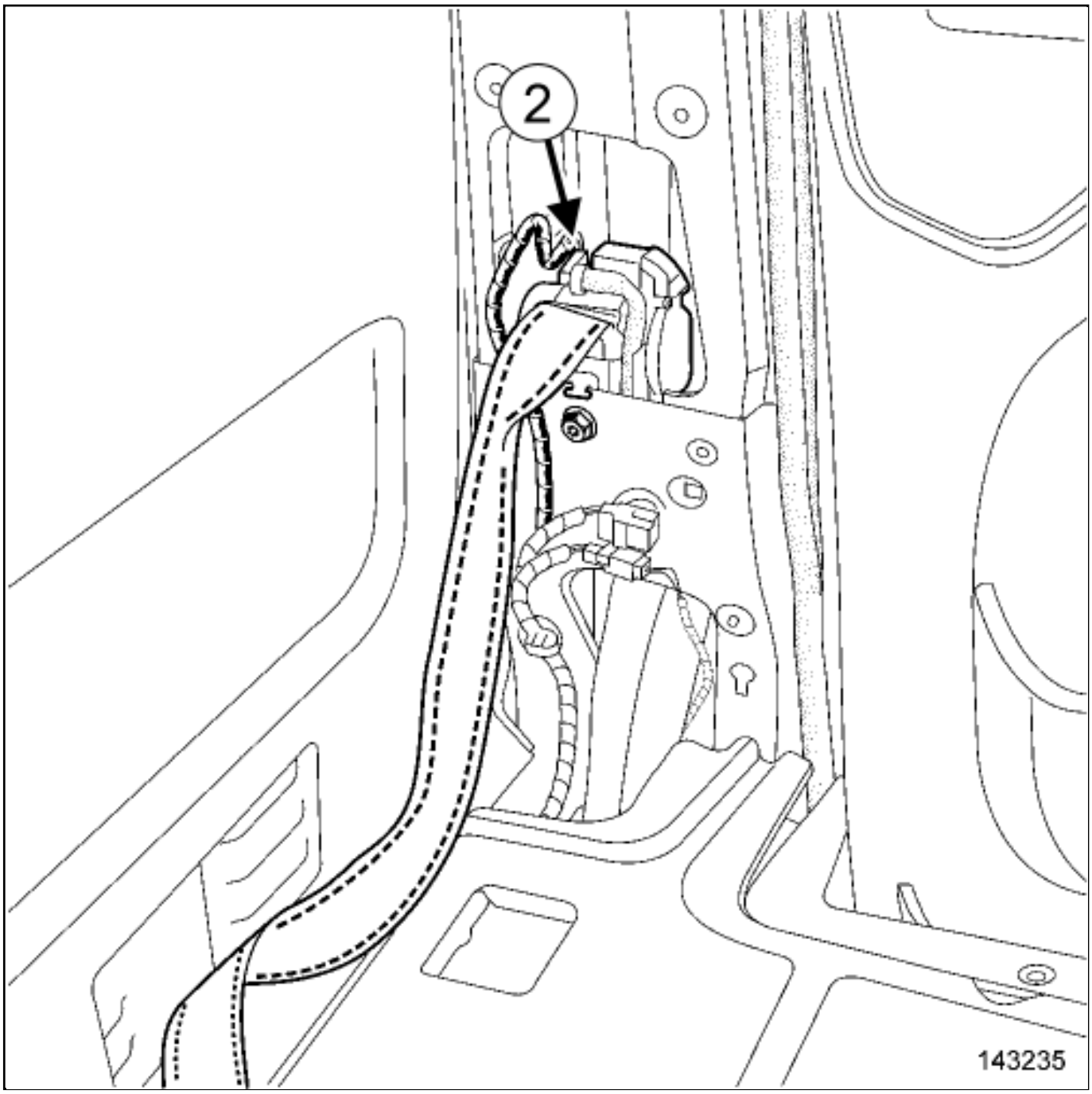
Note:

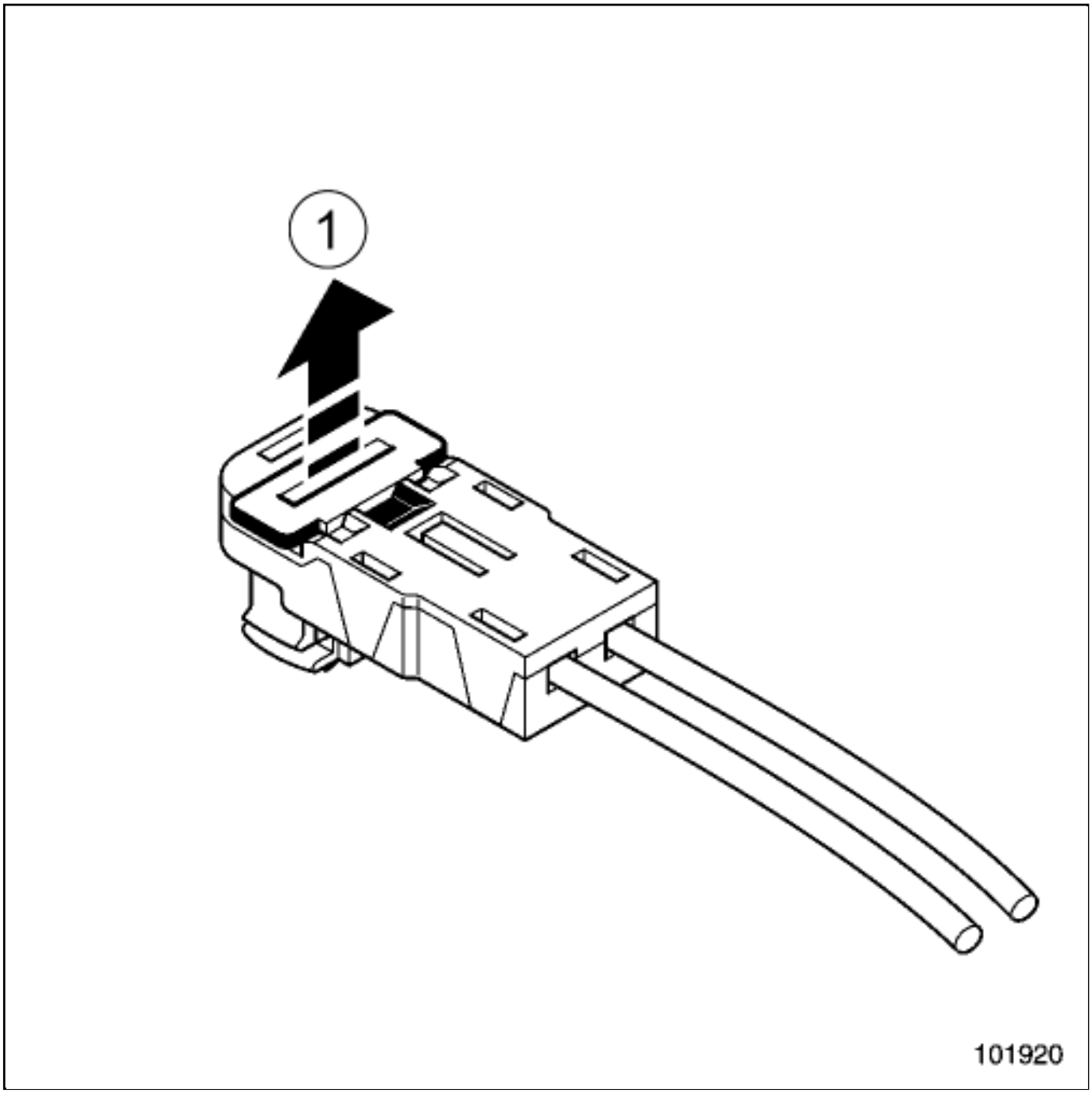
If the vehicle is equipped with a passenger frontal airbag, the passenger side seat belt is equipped with a pyrotechnic system. The battery must be disconnected before the operation.

If the vehicle is not equipped with a passenger frontal airbag, the passenger side seat belt is equipped with a mechanical inertia reel. It is not necessary to disconnect the battery.

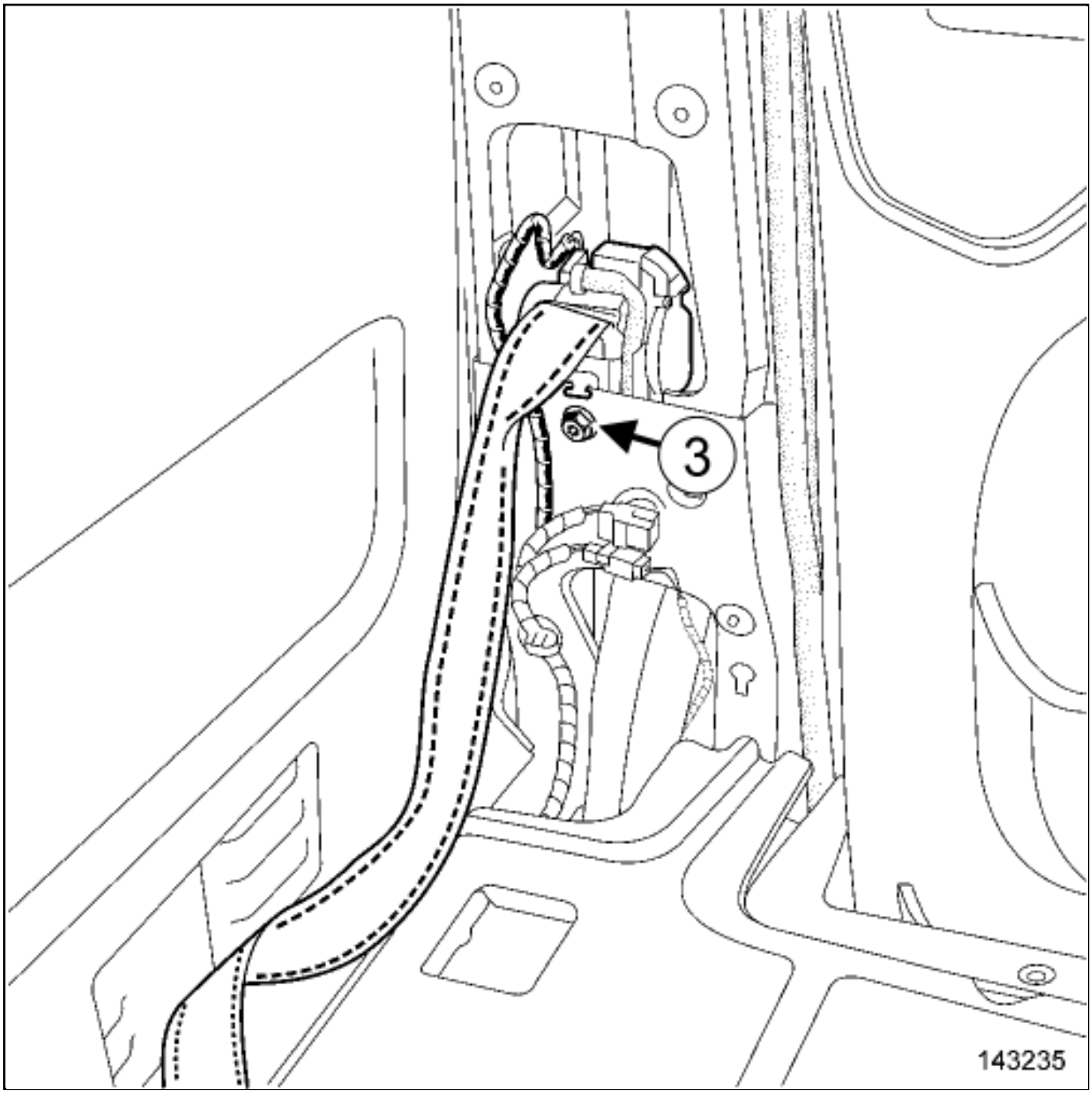
- Disconnect the battery Battery: Removal - Refitting .
- Remove the lower B-pillar trim B-pillar trim: Removal - Refitting (71A, Body internal trim).

2. REMOVAL OPERATION


2
143235



- Mark the wiring routing at the front side seat belt inertia reel.
- Unlock at (1) the connector(2) of the front side seat belt inertia reel.
- Disconnect the connector of the front side seat belt inertia reel.



Remove:

- the front side seat belt inertia reel bolt(**3**) ,
- the front side seat belt.

REFITTING

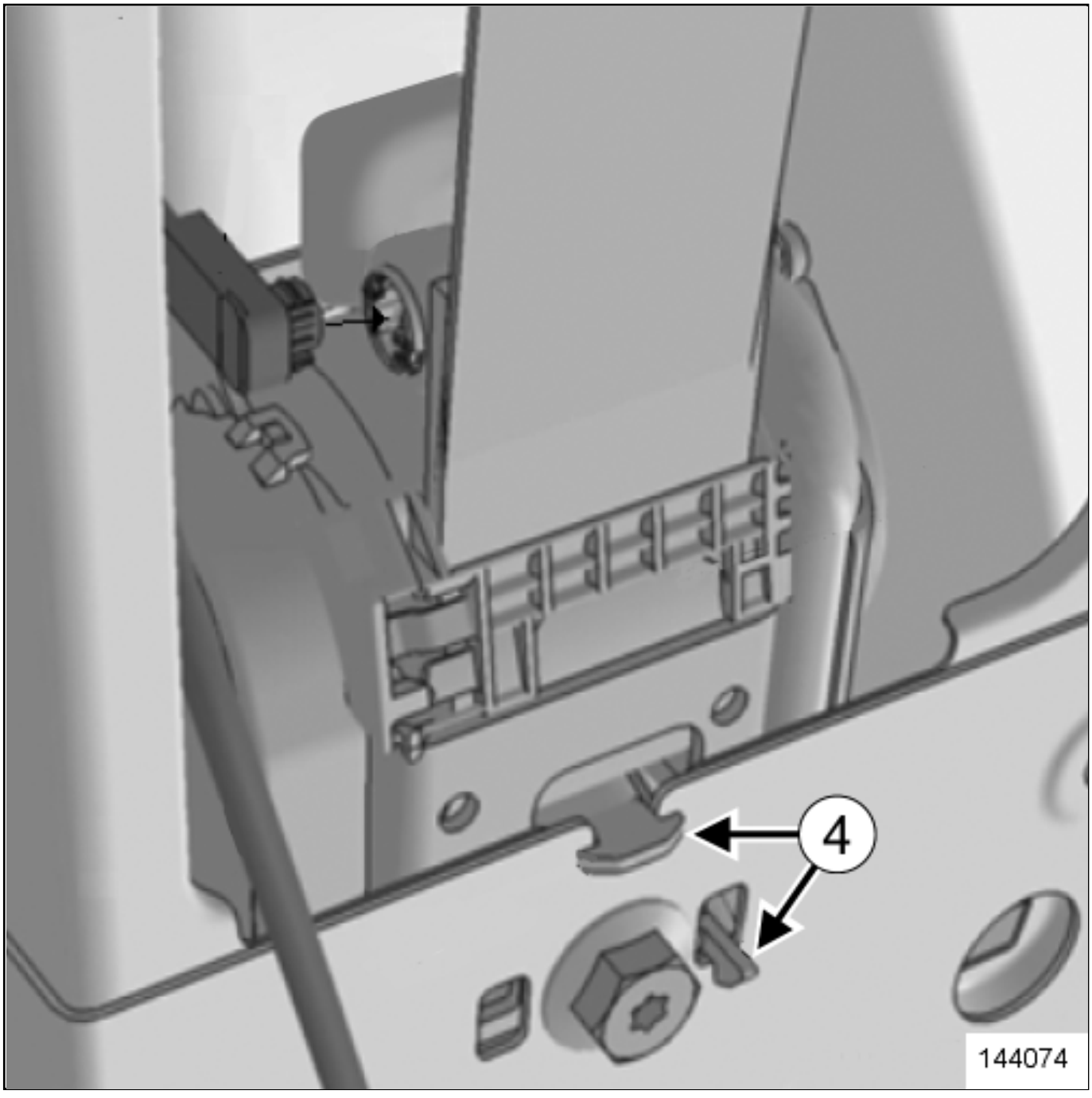
1. REFITTING PREPARATION OPERATION

WARNING

After a seat belt pyrotechnic component is triggered, it is essential to replace certain parts **(see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair)** .

parts always to be replaced: Front seat belt inertia reel bolt.

2. REFITTING OPERATION



- Position the indexing brackets(4) of the front side seat belt inertia reel in the notches on the body.

- Refit the front side seat belt.

- Torque tighten the front side seat belt inertia reel bolt30 N.m.

- Connect the connector of the front side seat belt inertia reel.

- Lock the connector of the front side seat belt inertia reel.

- Refit the wiring in the position marked during the removal operation.

3. FINAL OPERATION

- Refit the B-pillar trimB-pillar trim: Removal - Refitting (71A, Body internal trim).

Note:

Check that the seat belt is not twisted between the inertia reel and the front side seat belt return mechanism.

- Torque tighten the bolt of the front side seat belt return mechanism30 N.m.

- Driver's side:

Index the front side seat belt lower fitting on the driver's seat.

- Passenger side:

Index the front side seat belt lower fitting on the passenger bench seat.

Note:

Check that the seat belt is not twisted between the front side seat belt return mechanism and the lower fitting on the seat.

- Torque tighten the bolt of the front side seat belt lower fitting30 N.m.

- Connect the battery Battery: Removal - Refitting .

WARNING

To eliminate the risk of any accident, do not reuse pyrotechnic components.

It is essential to destroy pretensioners or airbags before scrapping a vehicle or a part only (see 88C, Airbags and pretensioners, Airbags and pretensioners: Recycling - Destruction) .

4. CHECKING AFTER REPAIR

- Check for correct operation 2 times by unreeling the front side seat belt 300 mmand allowing it to return.

- Check that the front side seat belt locks correctly by pulling the front side seat belt with increasing speed 200to 300 mmmaximum until the inertia reel locks.

- Switch on the ignition.

- Check that there are no faults on the instrument panel.

FRONT SPEAKERS: REMOVAL - REFITTING

Location and specifications (parts always to be replaced, etc.)Front side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

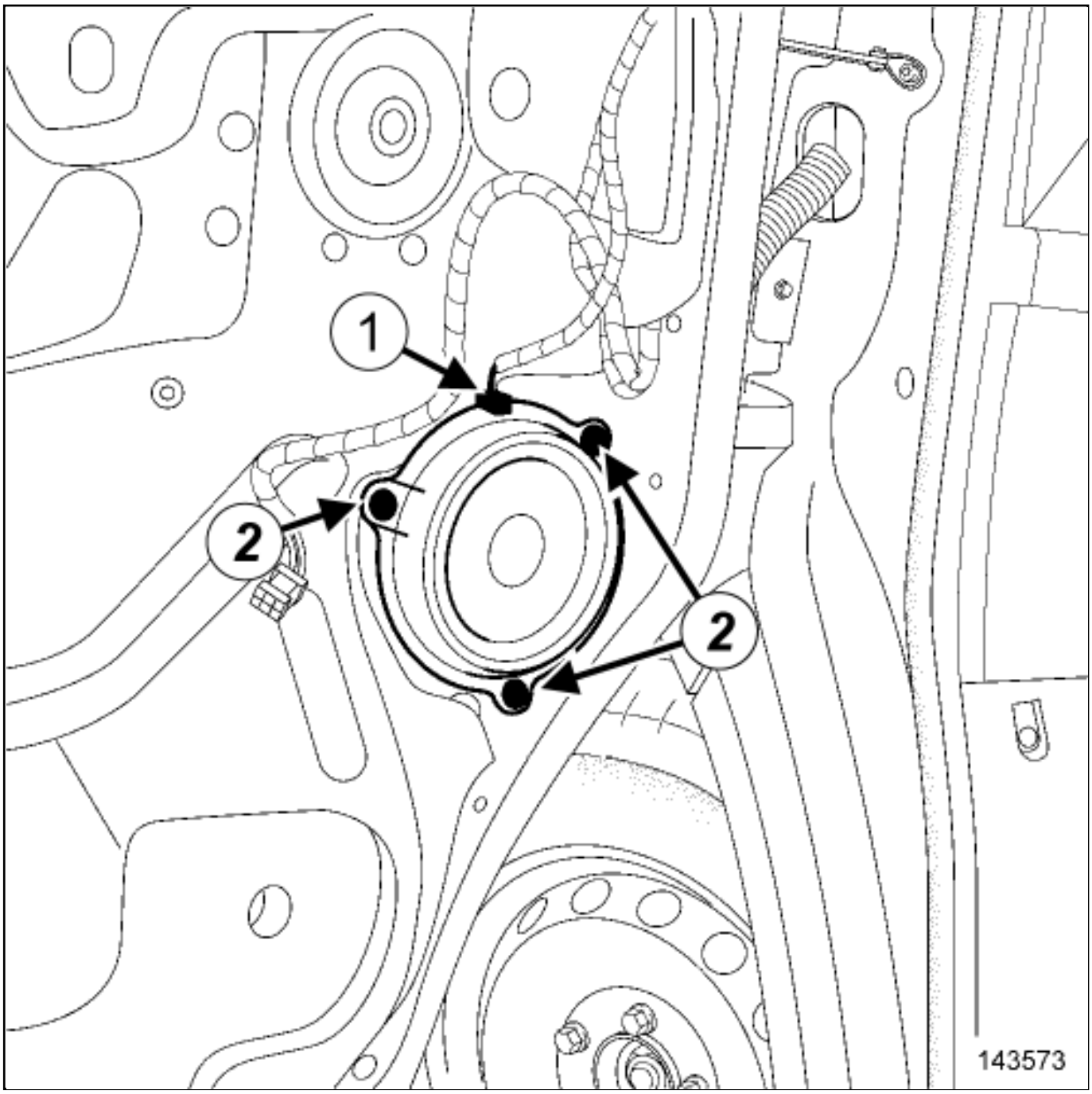
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

- Remove the front side door trimFront side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

2. REMOVAL OPERATION



- Disconnect the front speaker connector(1) .

- Remove:
  - the rivets(2) (see MR 400),
  - the front speaker.

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the front speaker rivets.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

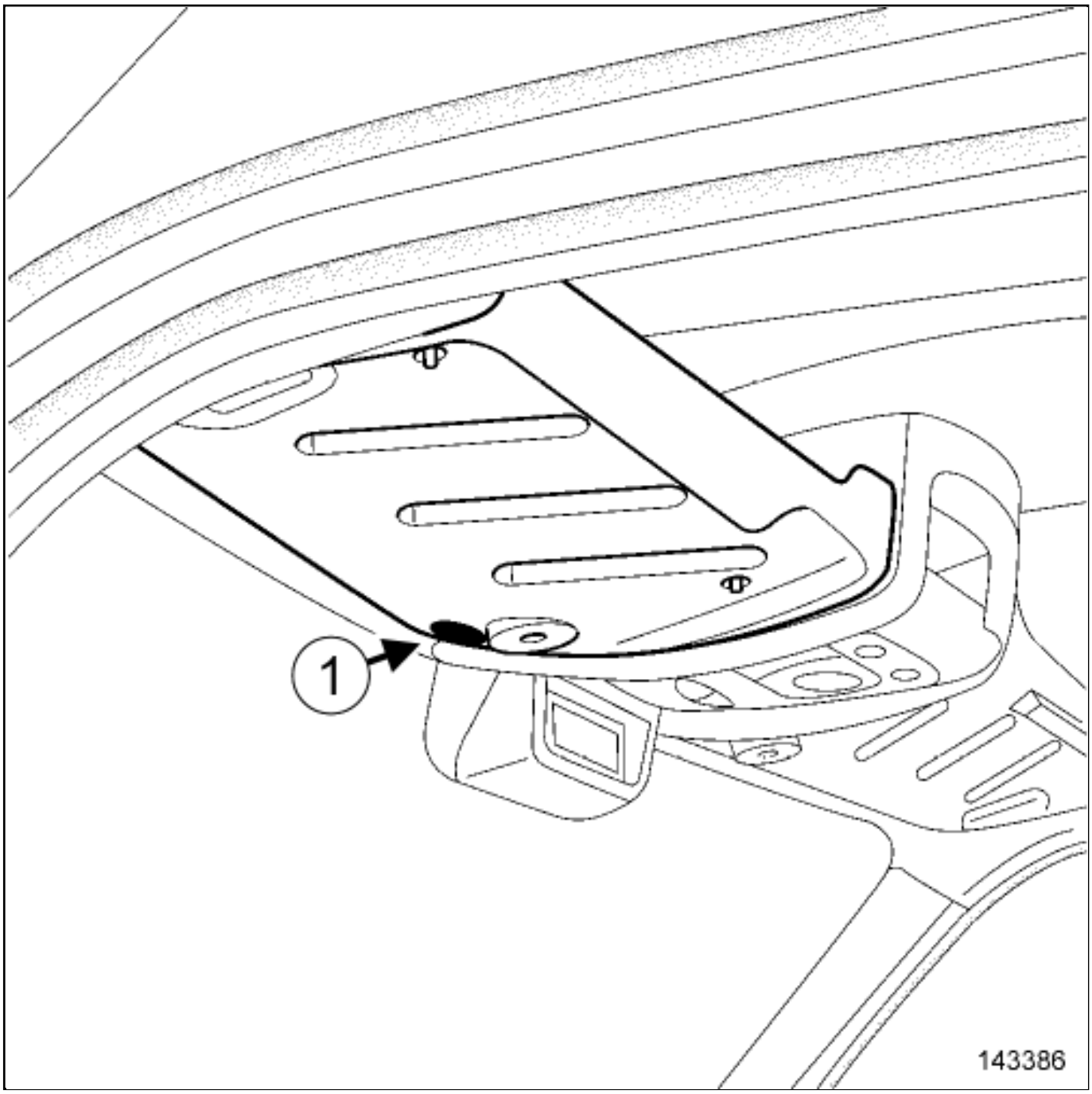
FRONT STORAGE COMPARTMENT UNDER THE ROOF: REMOVAL - REFITTING

REMOVAL

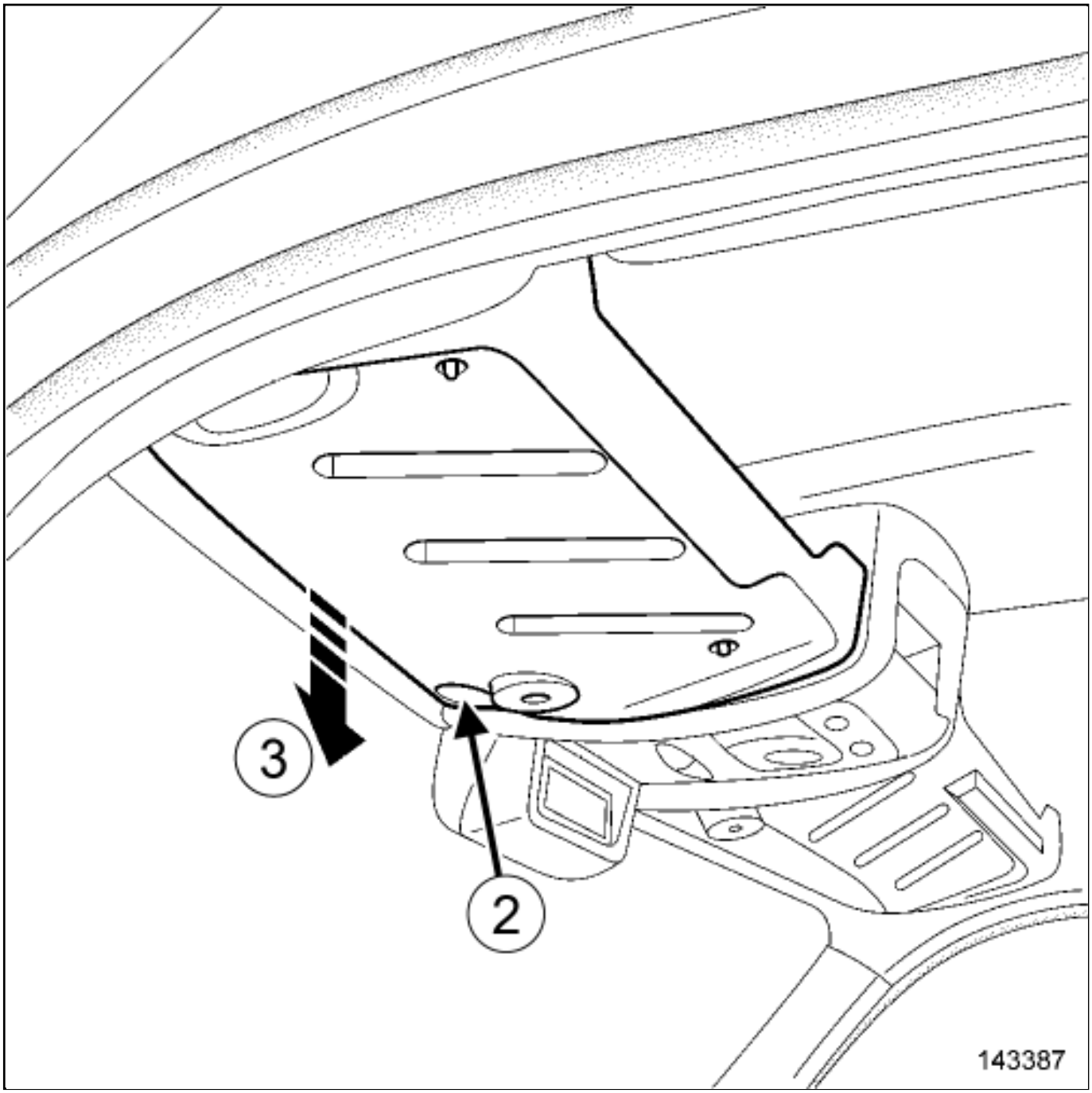
1. REMOVAL PREPARATION OPERATION

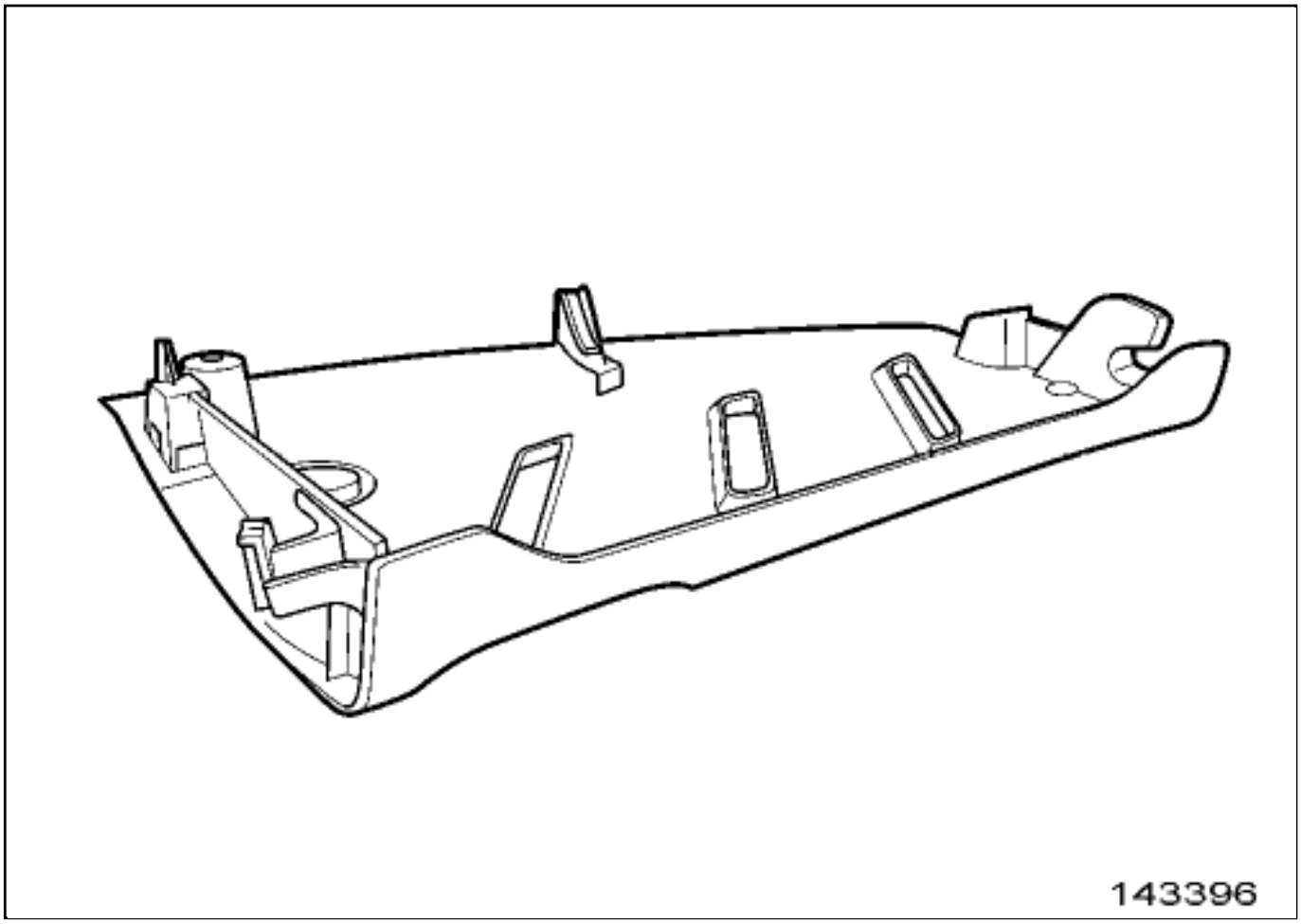
- Remove the sun visors(see 57A, Interior equipment, Sun visor: Removal - Refitting) .

2. REMOVAL OPERATION



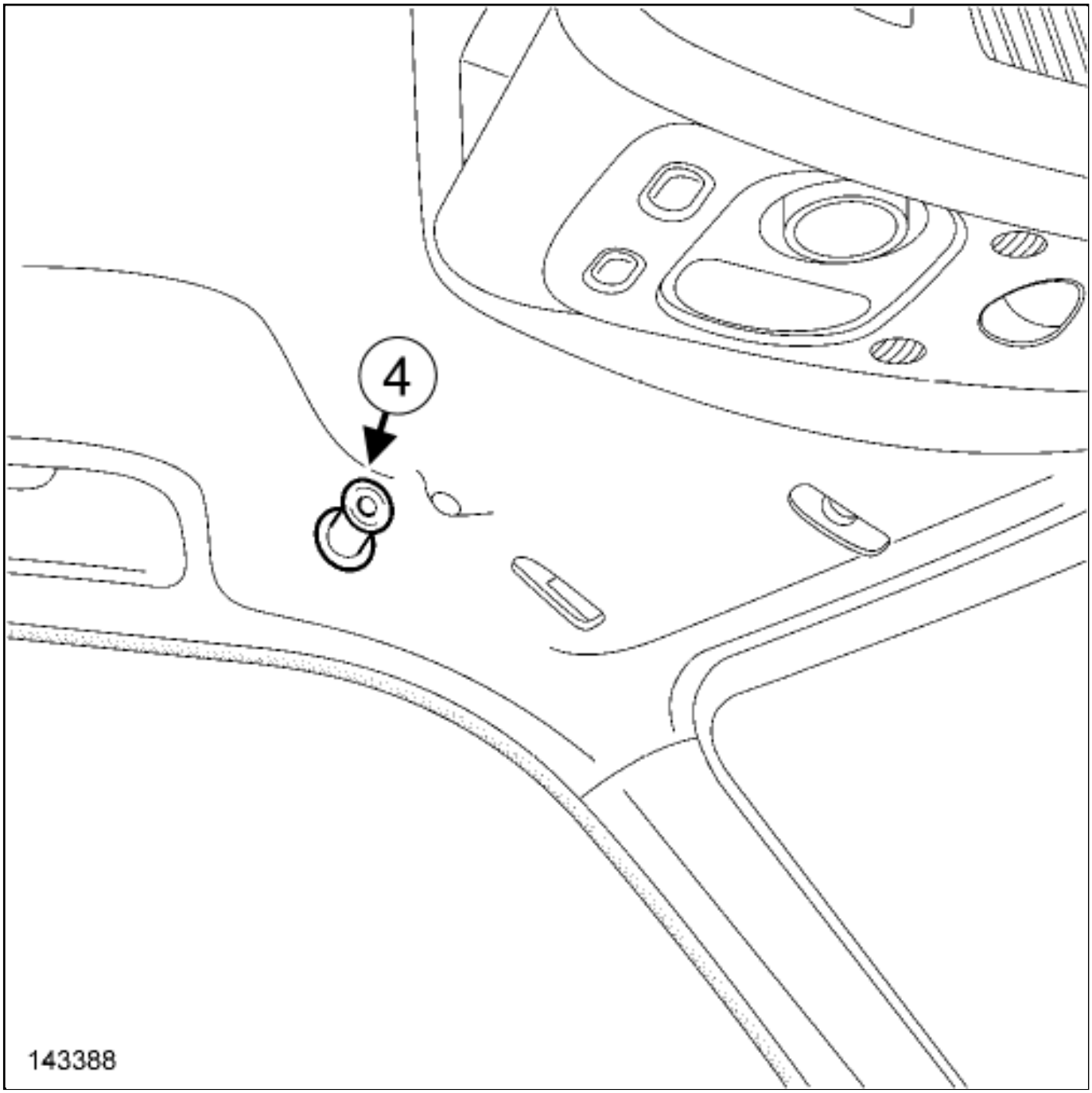
- Remove the blanking cover(1) .


3
2
143387



Remove:

- the bolt(2) ,
- the front storage compartments under the roof by(3) .



Remove the supports of the front storage compartments under the roof(4) .

REFITTING

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

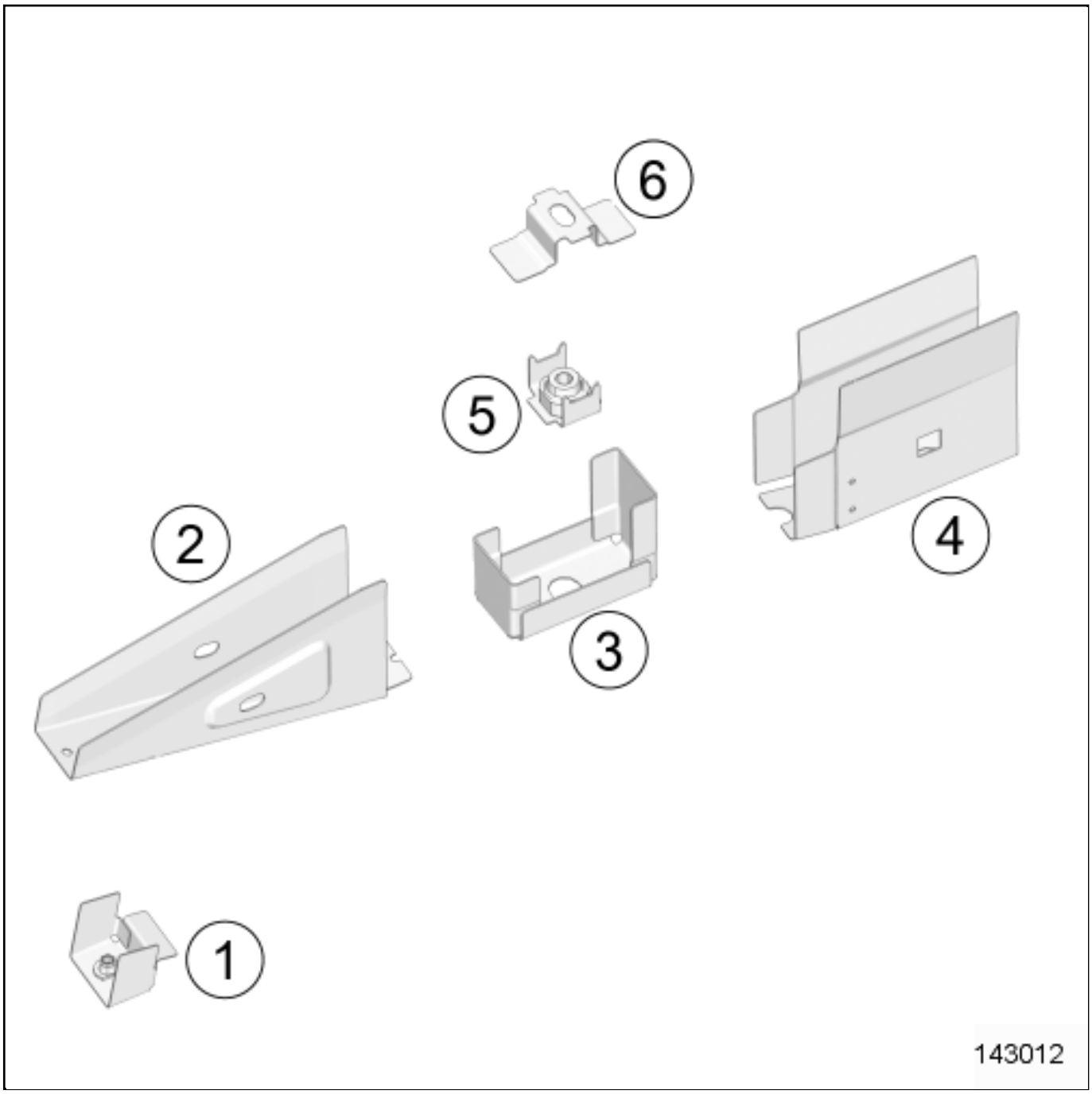
FRONT SUBFRAME REAR MOUNTING UNIT: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART


6
5
2
3
4
1
143012

No.	Description	Type	Thickness (mm)
(1)	Battery tray interior support	HLE	1.5
(2)	Front side member rear reinforcement	HLE	1.8
(3)	Rear subframe mounting reinforcement	HLE	2.0
(4)	Front side member front reinforcement	THLE	1.8
(5)	Subframe rear mounting plate	HLE	2.0
(6)	Housing of subframe rear mounting floating nut	HLE	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

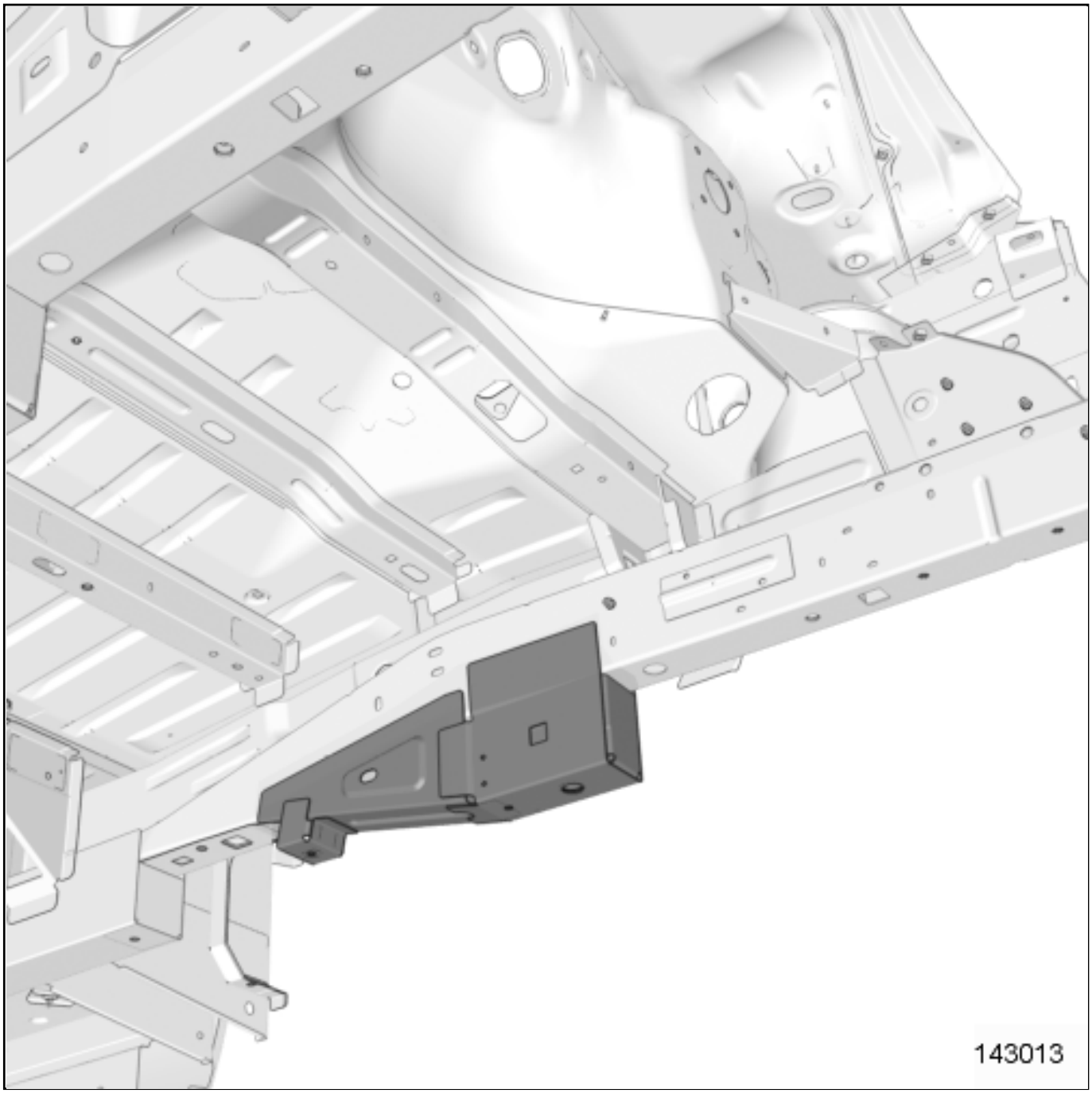
Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

FRONT WHEEL ARCH LINER: REMOVAL - REFITTING

Note:

The front and rear sections of the front wheel arch liner can be removed independently.

REMOVAL

1. REMOVAL PREPARATION OPERATION

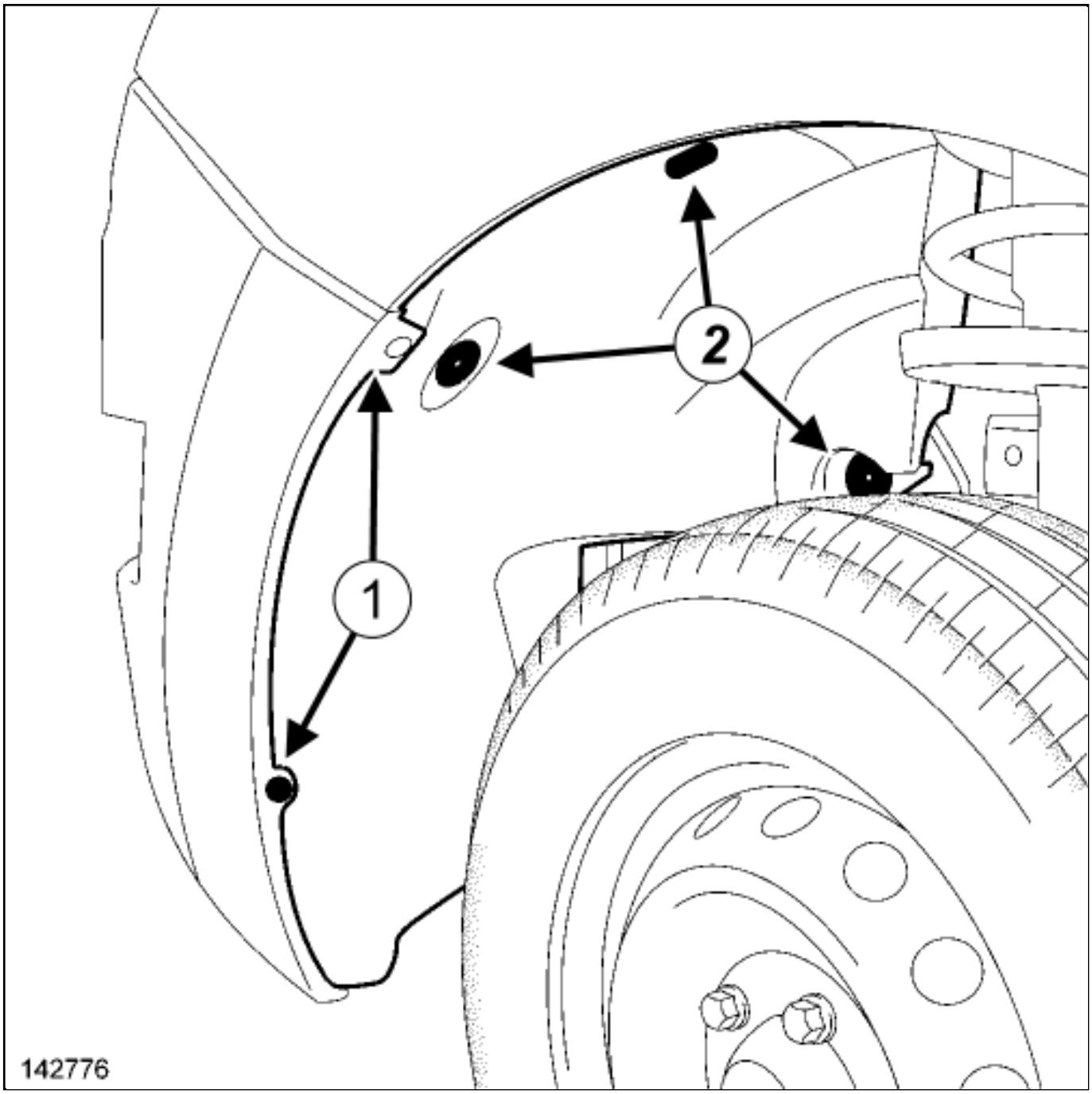
- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

FRONTMUD-FLAPS(BAVAVT)

- Remove the front flaps (see 55A, Exterior protection, Flap: Removal - Refitting) .

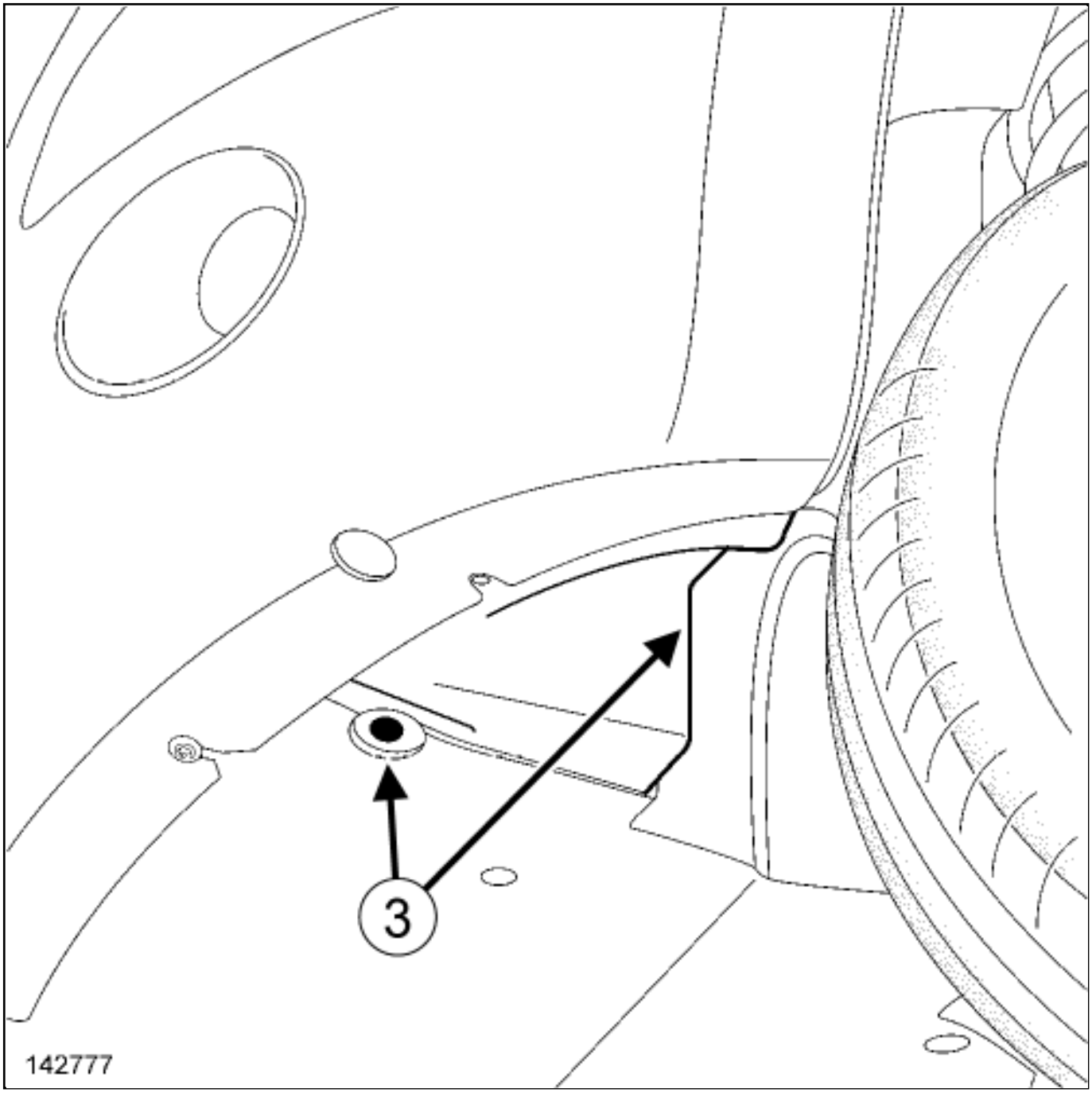
1. REMOVAL OPERATION

1- FRONT WHEEL ARCH LINER, FRONT SECTION



Remove:

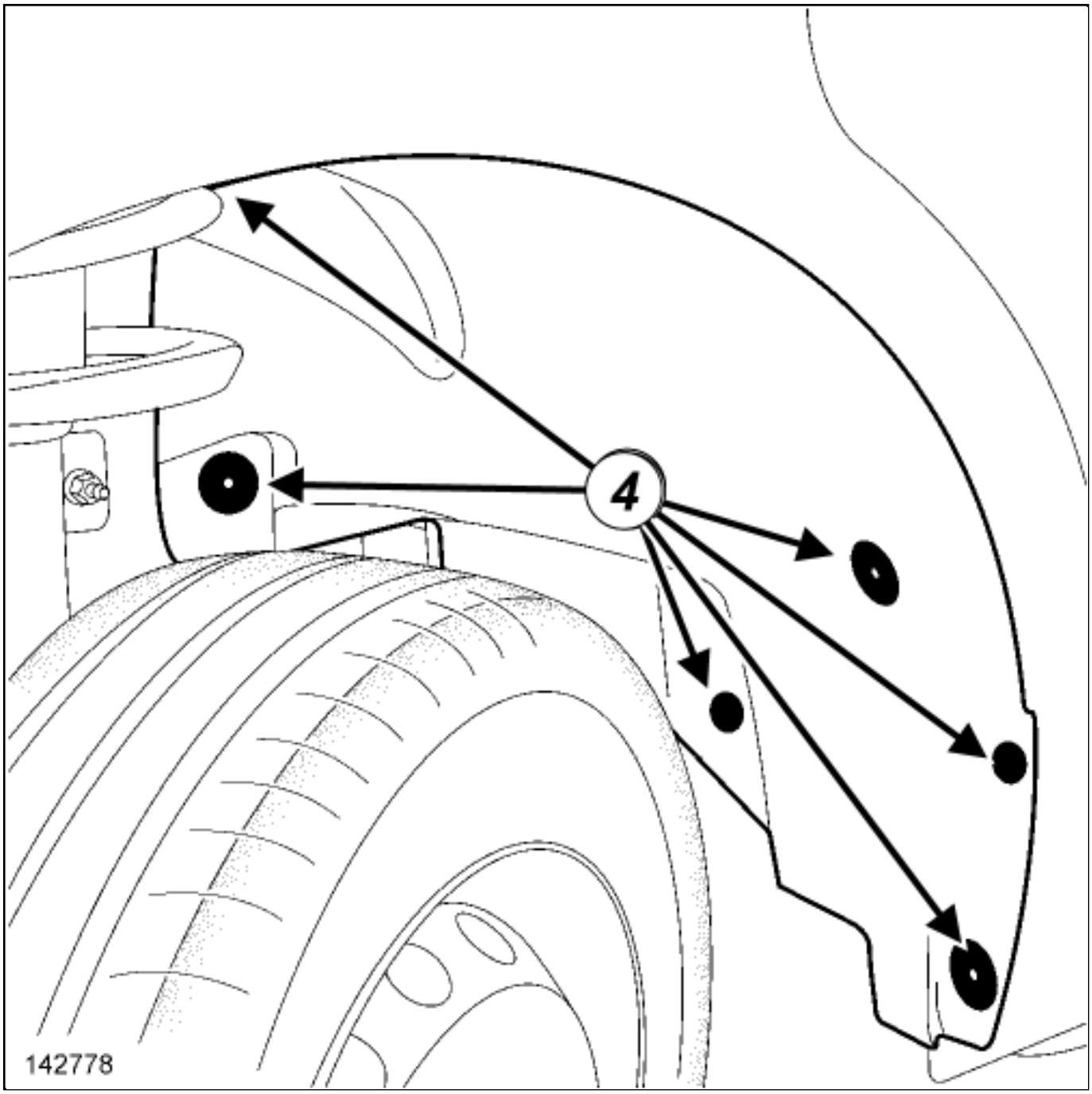
- the bolts(1) ,
- the clips(2) using an unclipping tool.



Remove:

- the bolts(3) ,
- the front wheel arch liner, front section.

2- FRONT WHEEL ARCH LINER, REAR SECTION



Remove:

- the clips(4) using the unclipping tool,
- the front wheel arch liner, rear section.

REFITTING

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

FRONT WHEEL ARCH, FRONT SECTION: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART

No.	Description	Type	Thickness (mm)
(1)	Front wheel arch, front section	Mild steel	1.2
(2)	Front wheel arch closure panel	Mild steel	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

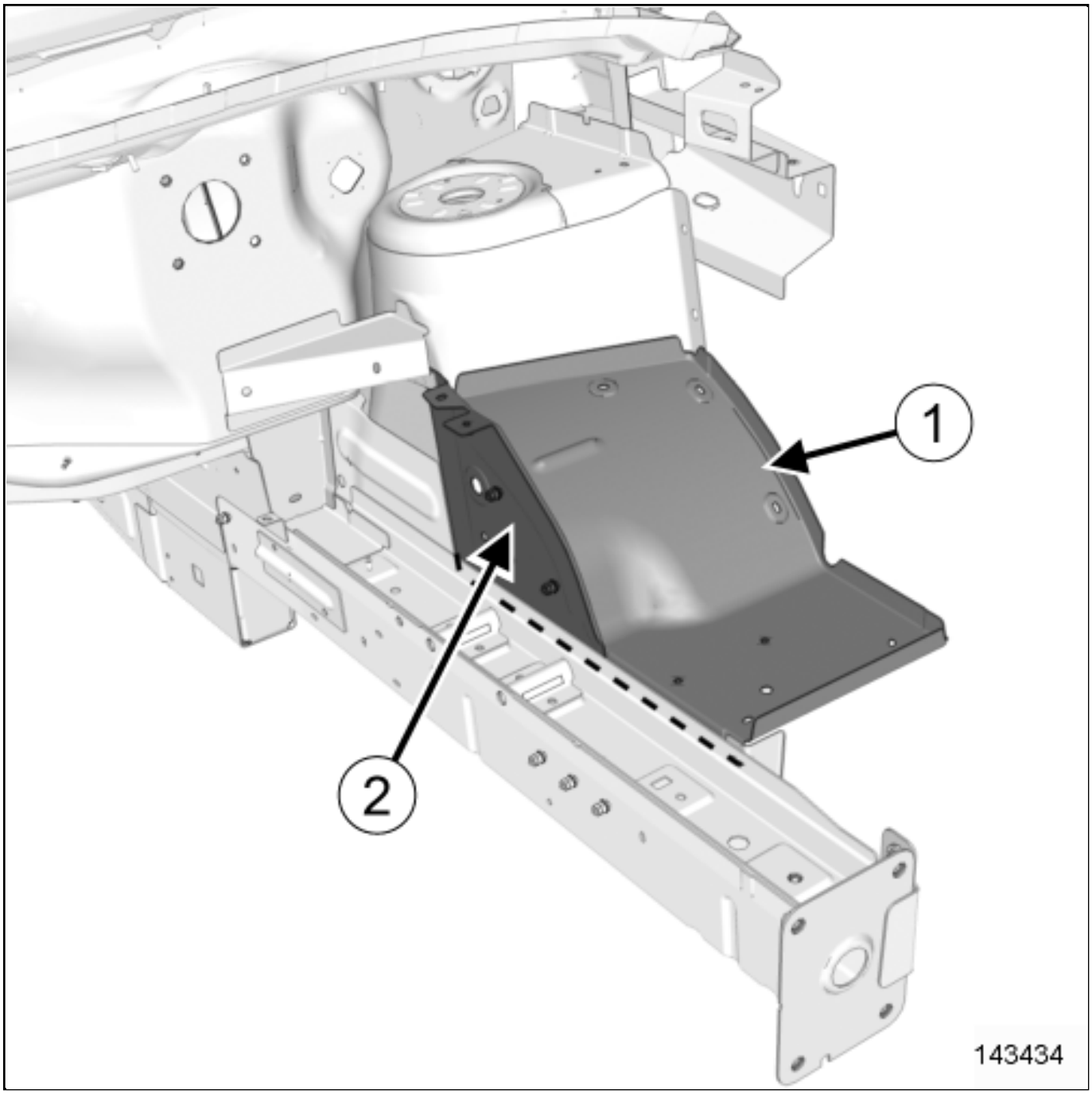
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



Note:

For complete replacement of the front wheel arch front section, it is also necessary to order the front wheel arch closure panel.

2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

Repair-40x06x08x06-02x49-1-2-1.xml

XSL version : 3.02 du 22/07/11

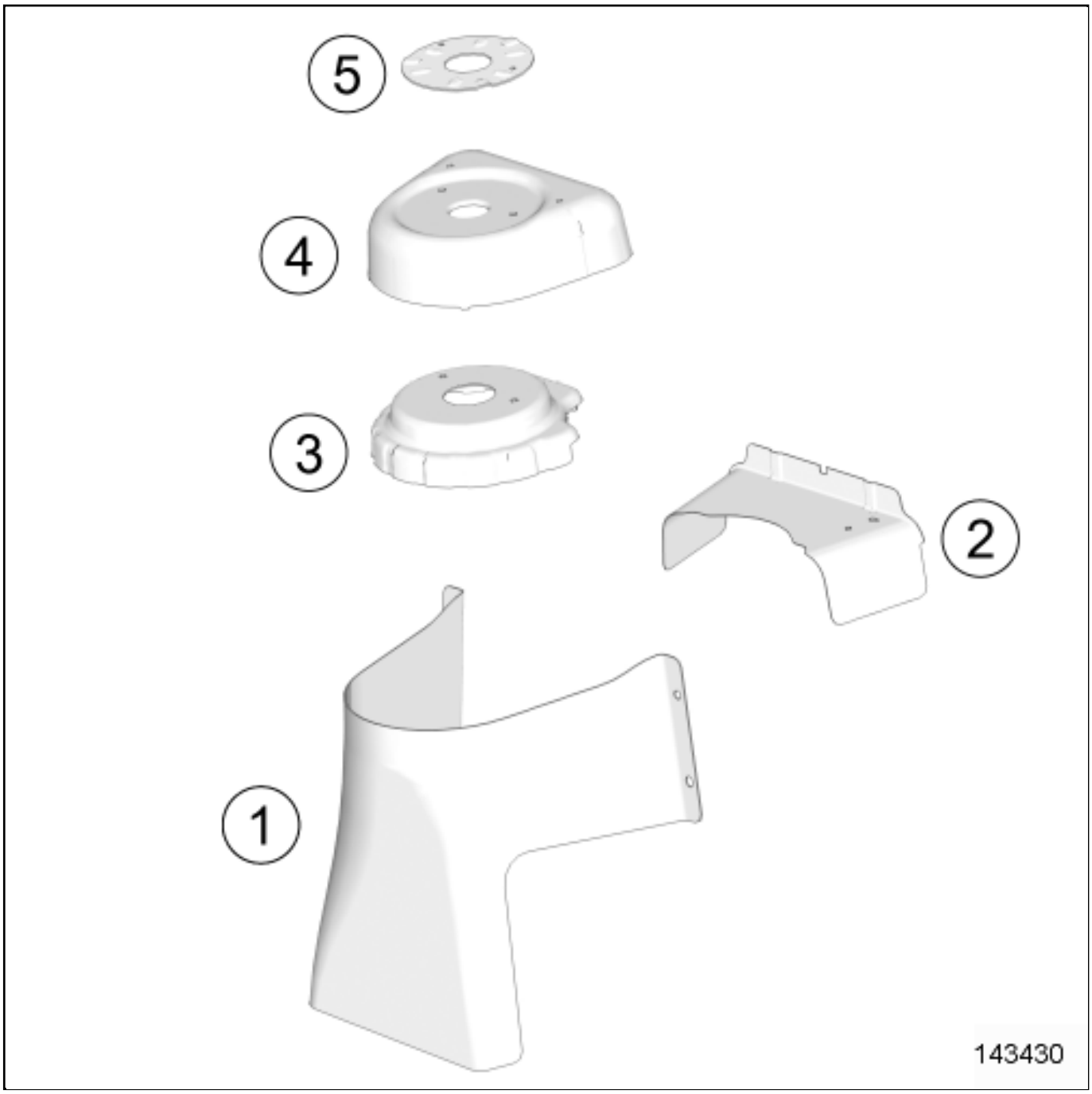
FRONT WHEEL ARCH: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART


5
4
3
2
1
143430

No.	Description	Type	Thickness (mm)
(1)	Front shock absorber cup height adjuster	HLE	1.5
(2)	Blanking cover of front shock absorber cup height adjuster	HLE	1.0
(3)	Front shock absorber cup reinforcement	HLE	1.8
(4)	Front shock absorber cup	HLE	2.3
(5)	Shock absorber turret reinforcement	HLE	2.0

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

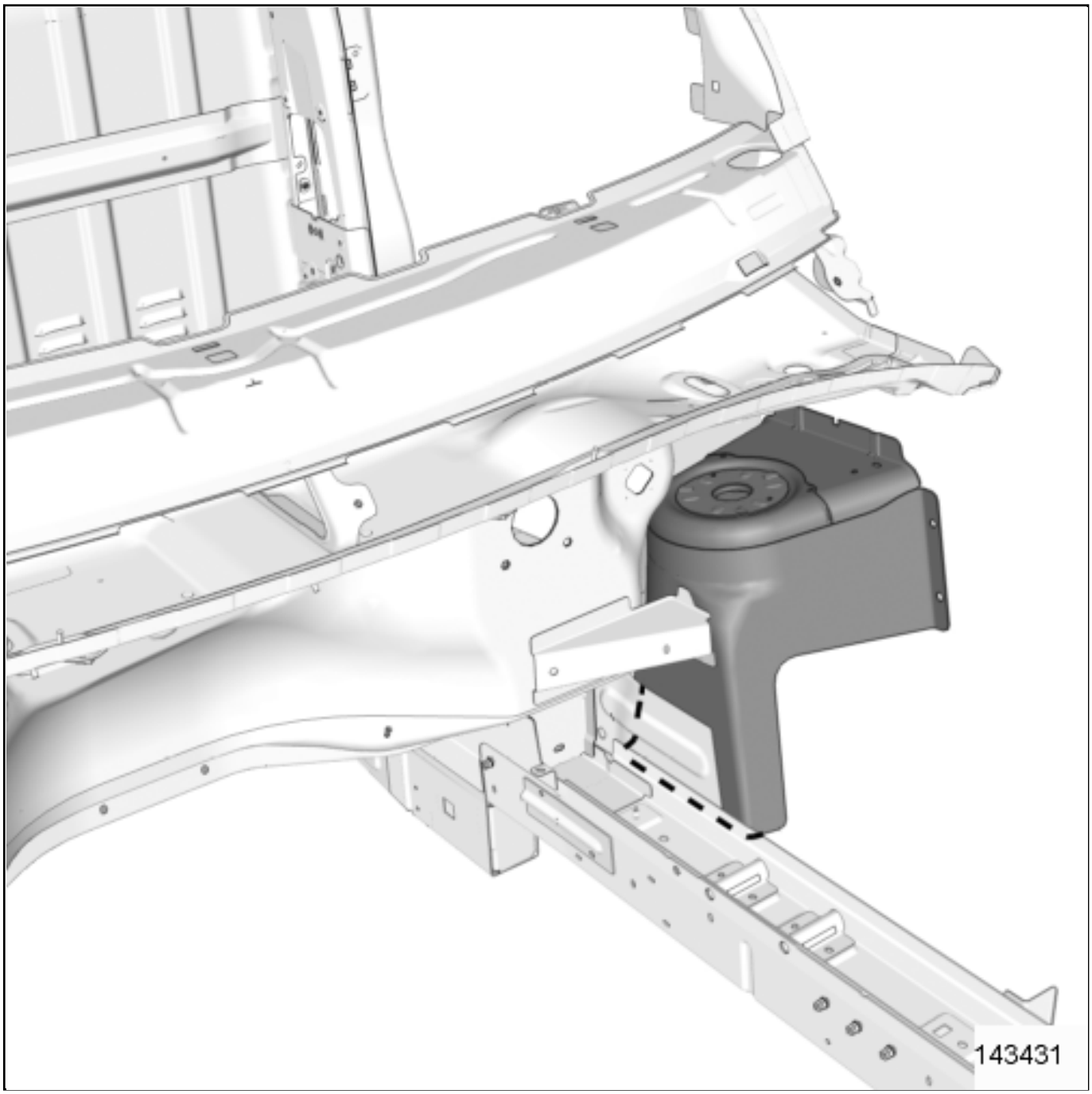
Locate the earths located near to the weld areaEarths on body: List and location of components .

1- COMPLETE REPLACEMENT

WARNING

Use a repair bench to ensure the positioning of the points and the geometry of the axle assemblies.

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FRONT WHEEL SPEED SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)Front hub carrier assembly: Exploded view .

WARNING

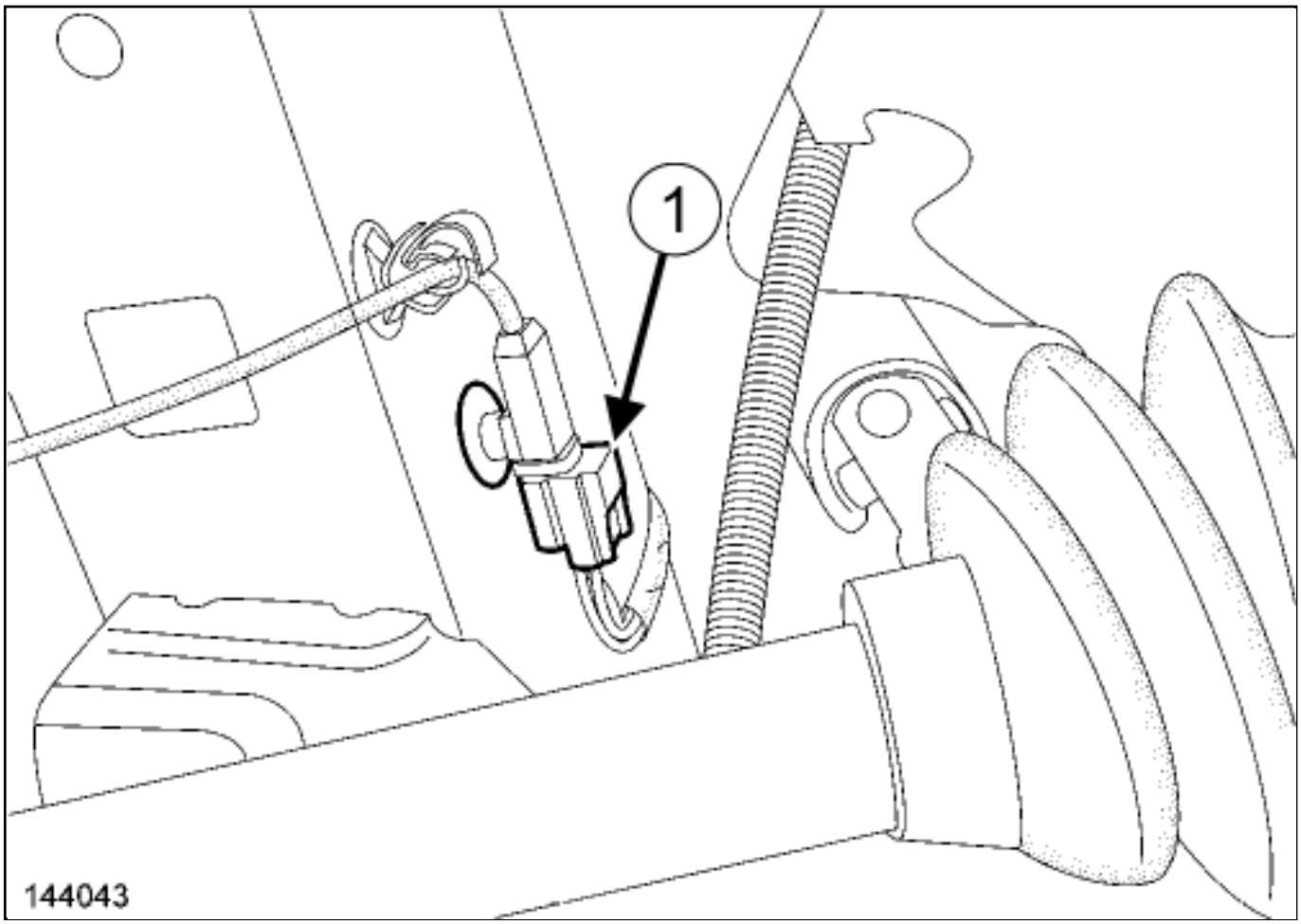
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 38C, Anti-lock braking system, ABS: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

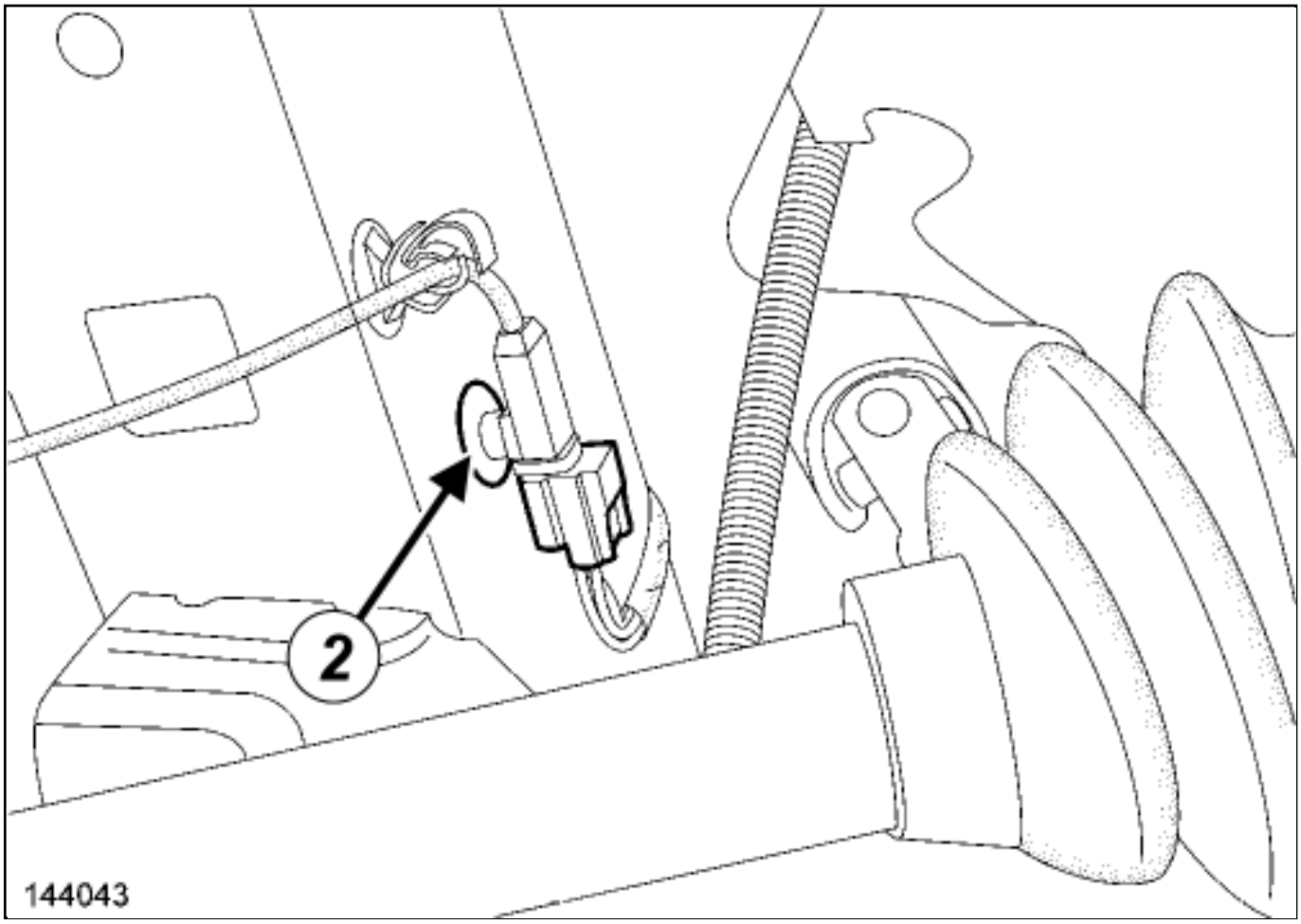
1. REMOVAL PREPARATION OPERATION

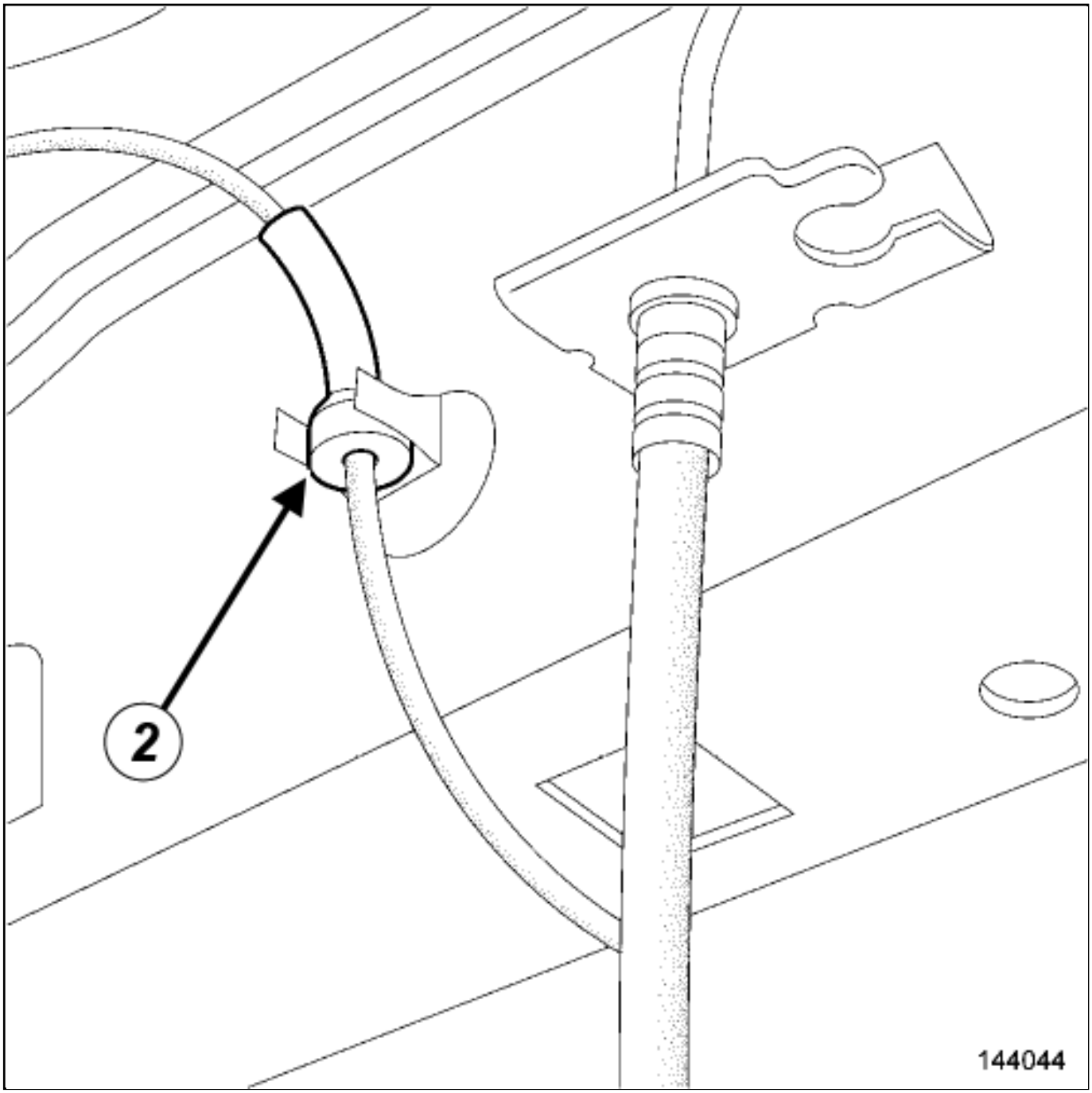
- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the front wheelWheel: Removal - Refitting .

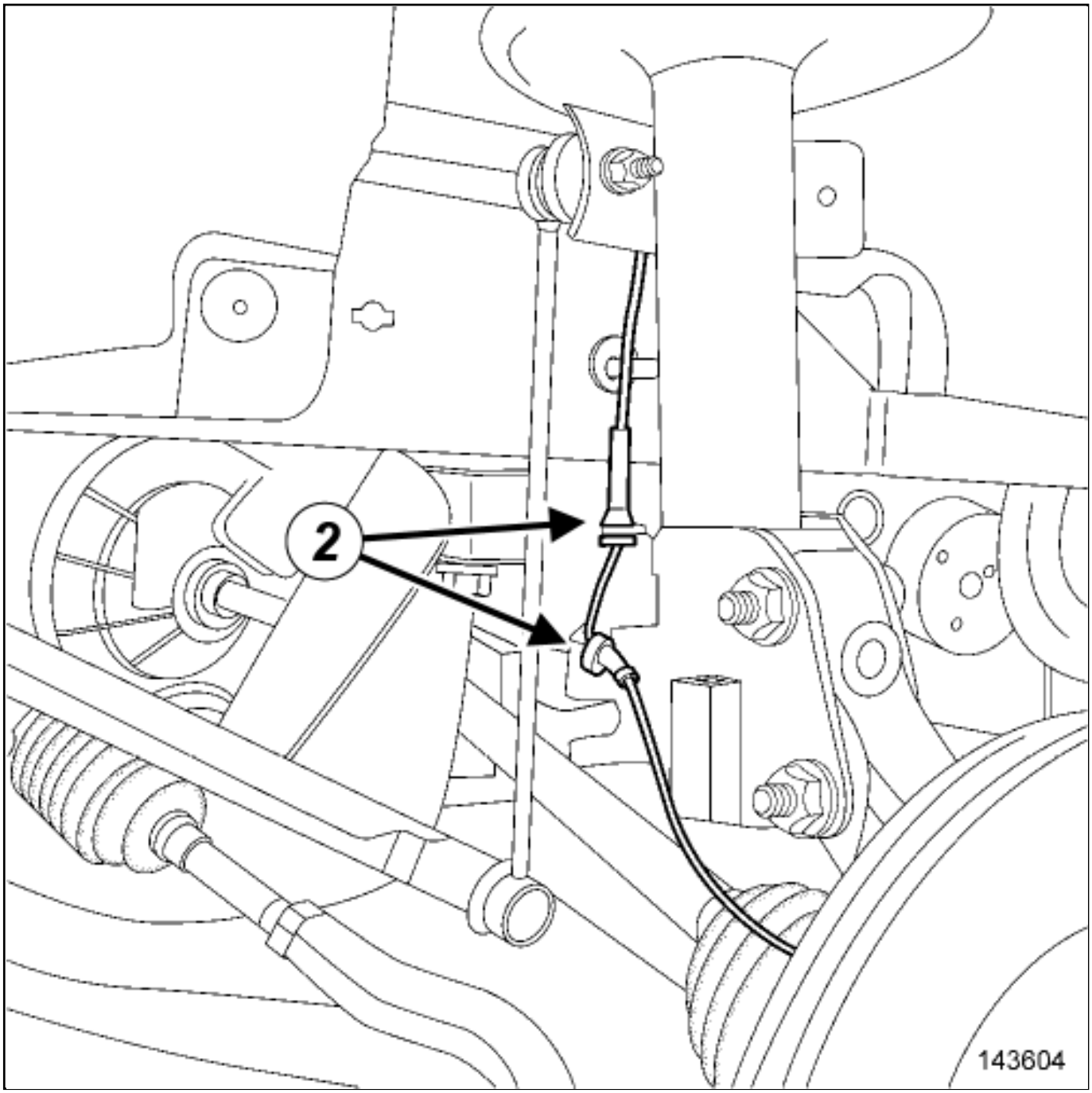
2. REMOVAL OPERATION



- Disconnect the wheel speed sensor connector(1) .


2
144043


2
144044



Unclip the wiring from the wheel speed sensor at(2) .

Remove Front hub carrier assembly: Exploded view :

- the front wheel speed sensor bolt,
- the front wheel speed sensor.

REFITTING

Proceed in the reverse order to removal.

CAUTION

To avoid damaging the wheel speed sensor cable:

- Do not tension the cable,
- Do not twist the cable,
- Check that there is no contact with the surrounding components,
- Do not use tools that may damage the cable.

Repair-13x03x10x14-01x37-1-9-1.xml

XSL version : 3.02 du 22/07/11

FRONT WING REAR MOUNTING SUPPORT: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART

No.	Description	Type	Thickness (mm)
(1)	Front wing rear mounting support	Mild steel	1.0

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

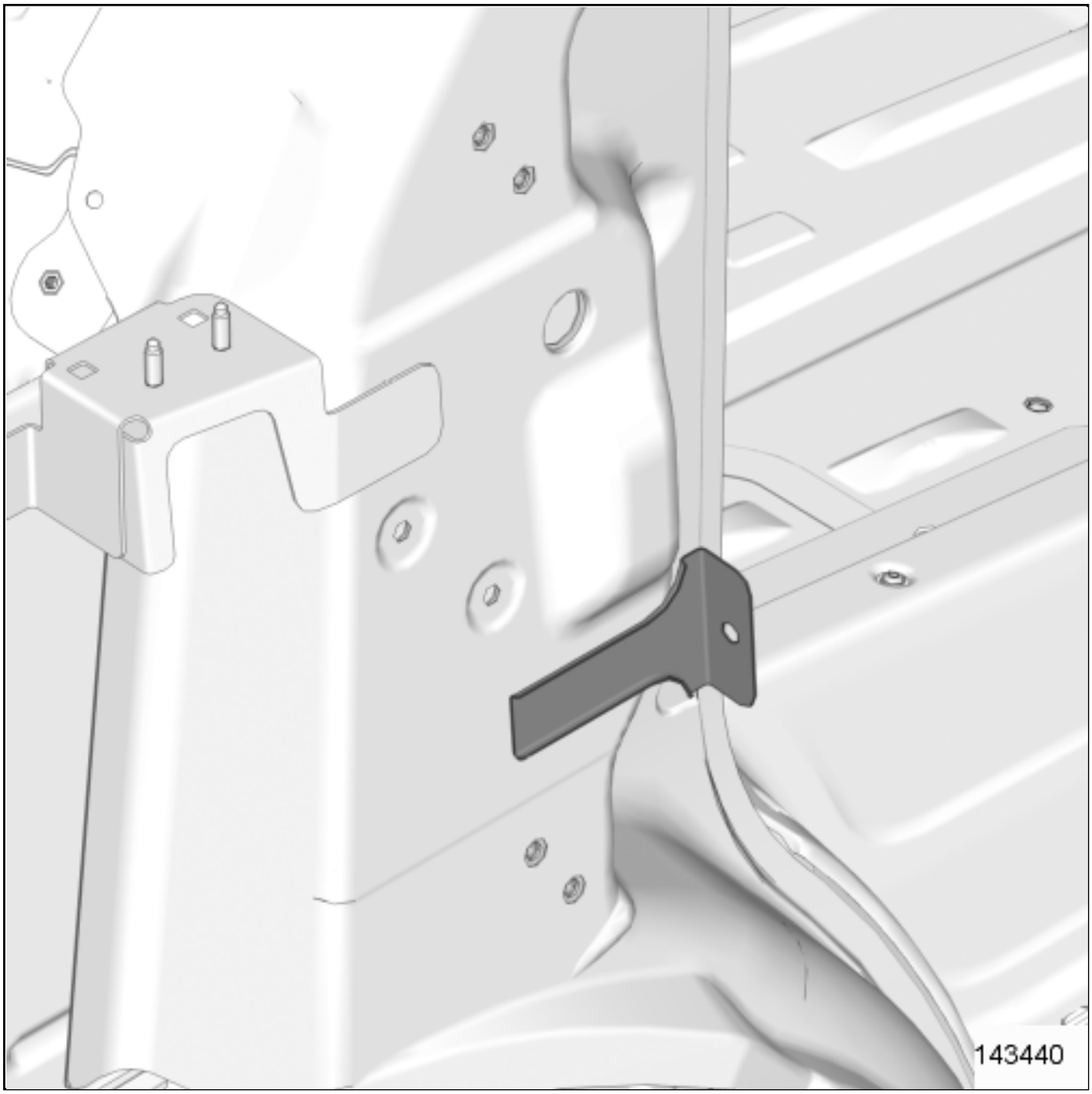
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

FRONT WING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

WARNING

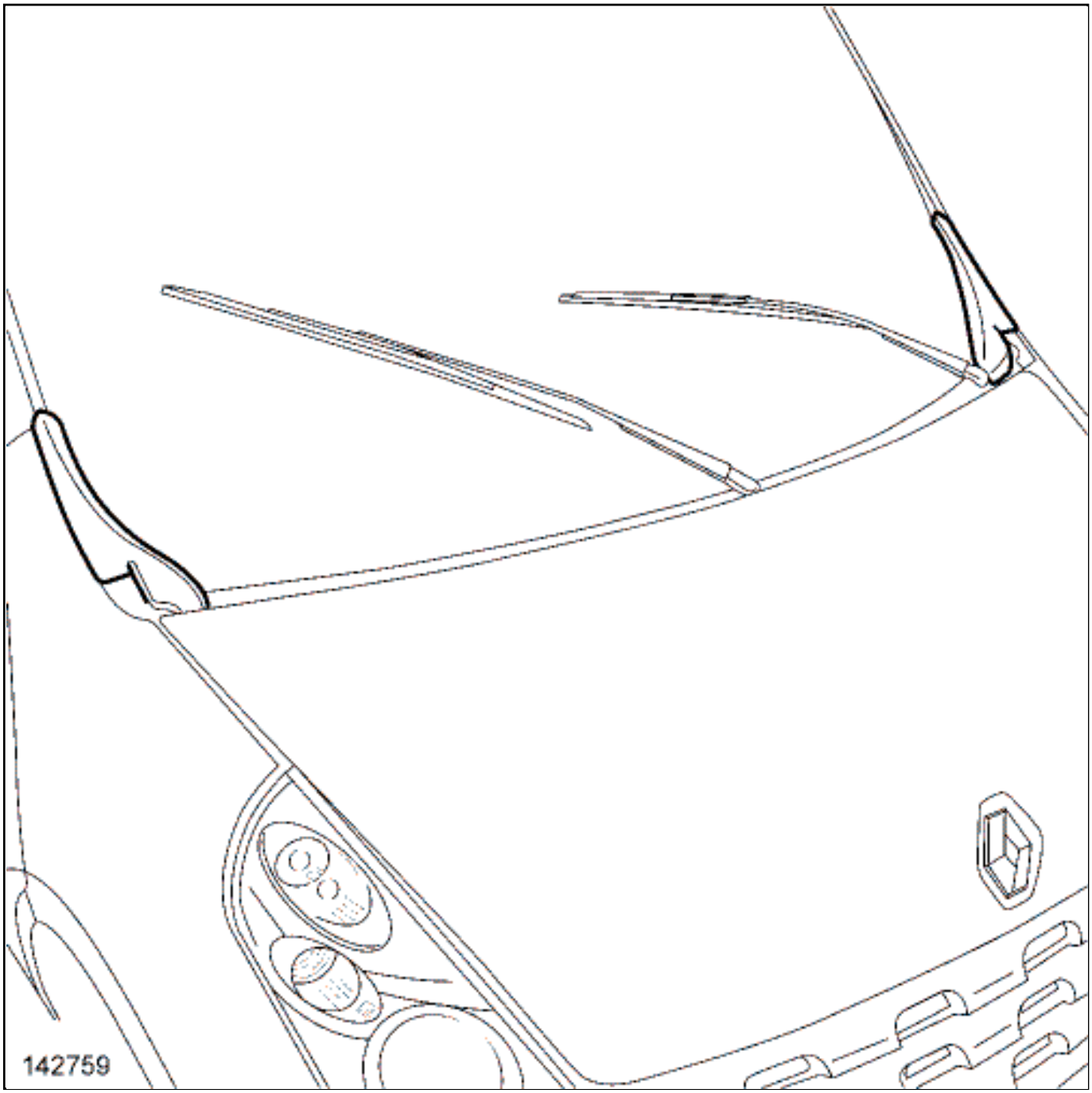
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

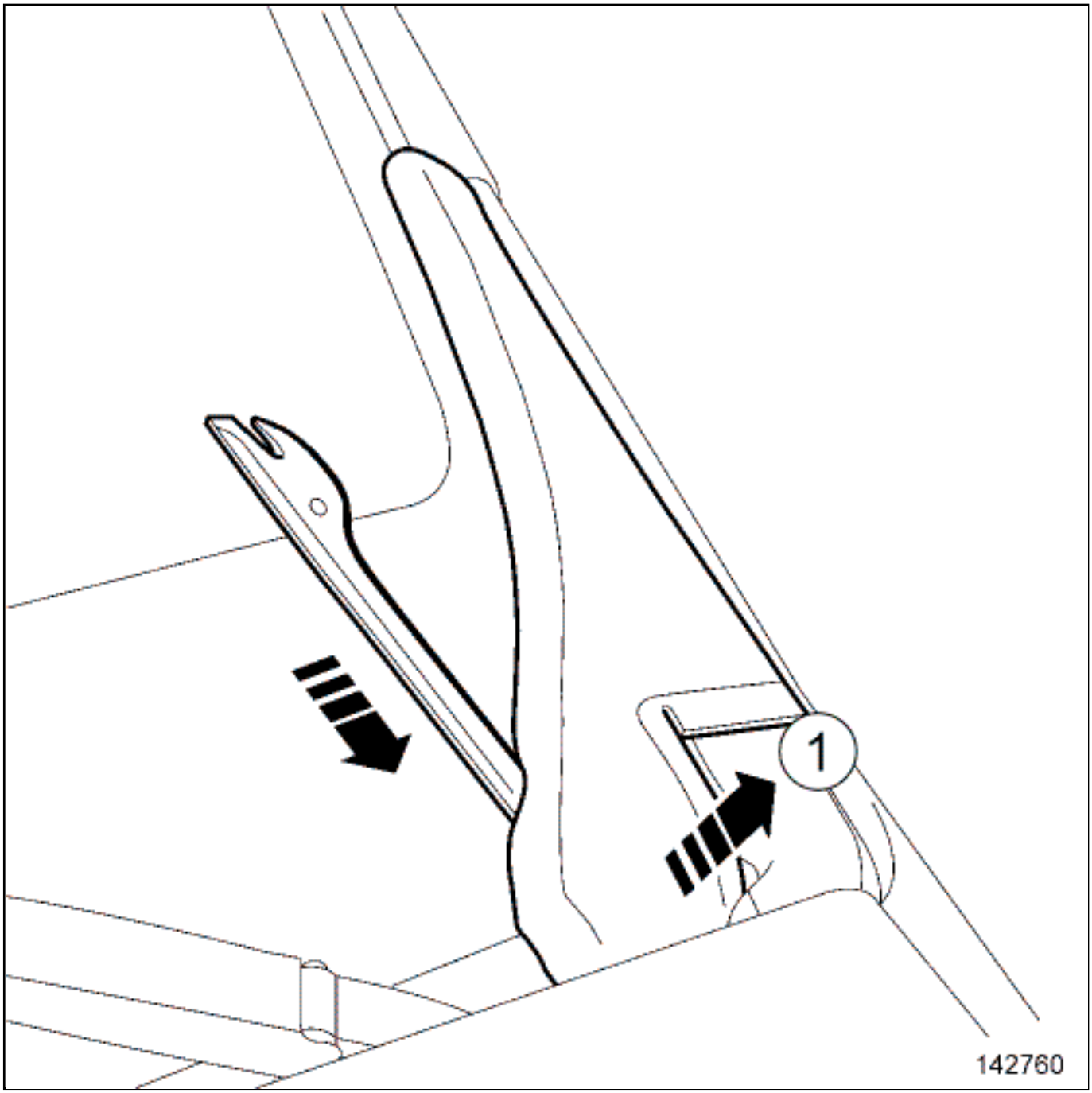
REMOVAL

1. REMOVAL PREPARATION OPERATION

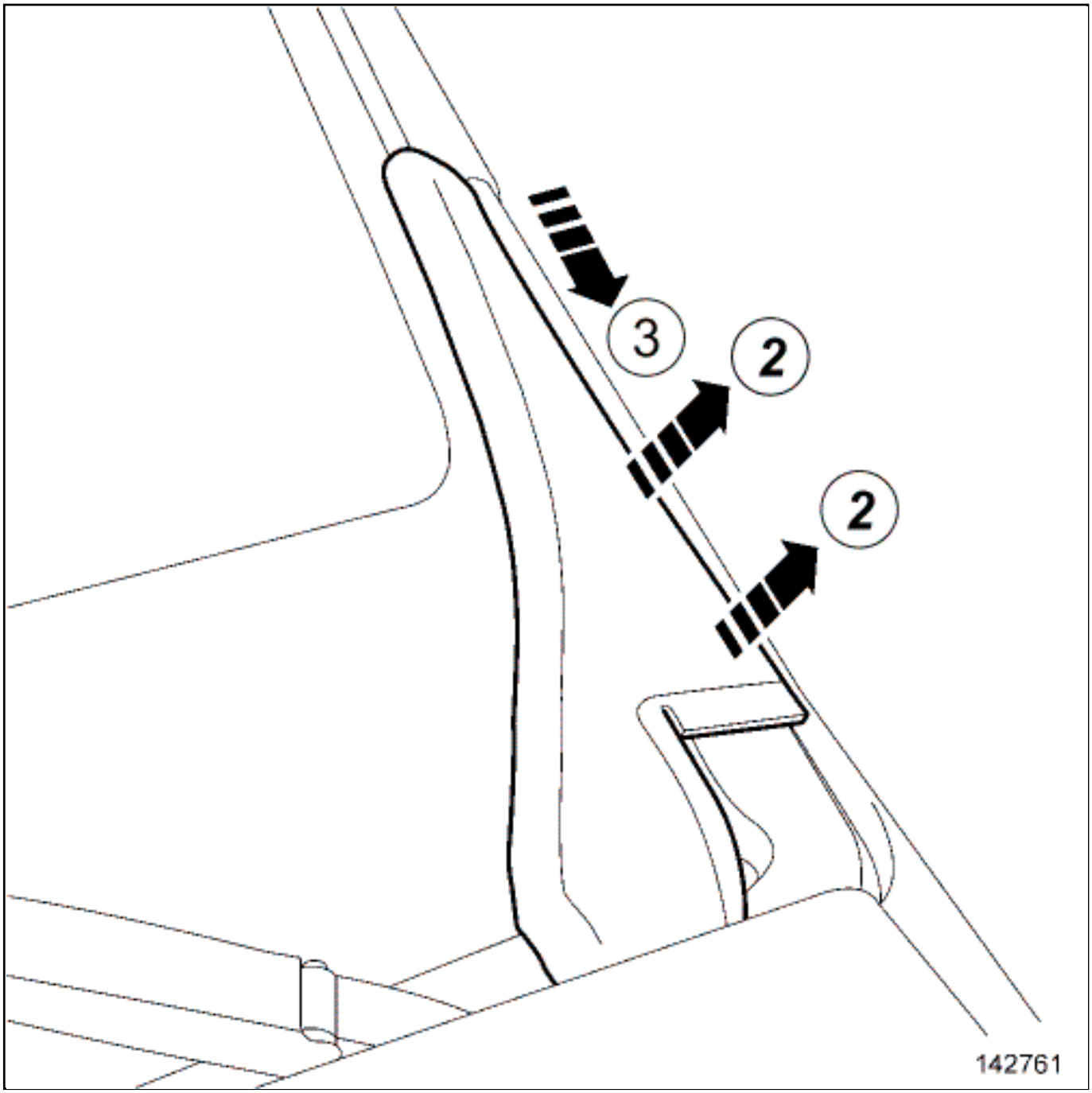
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection).

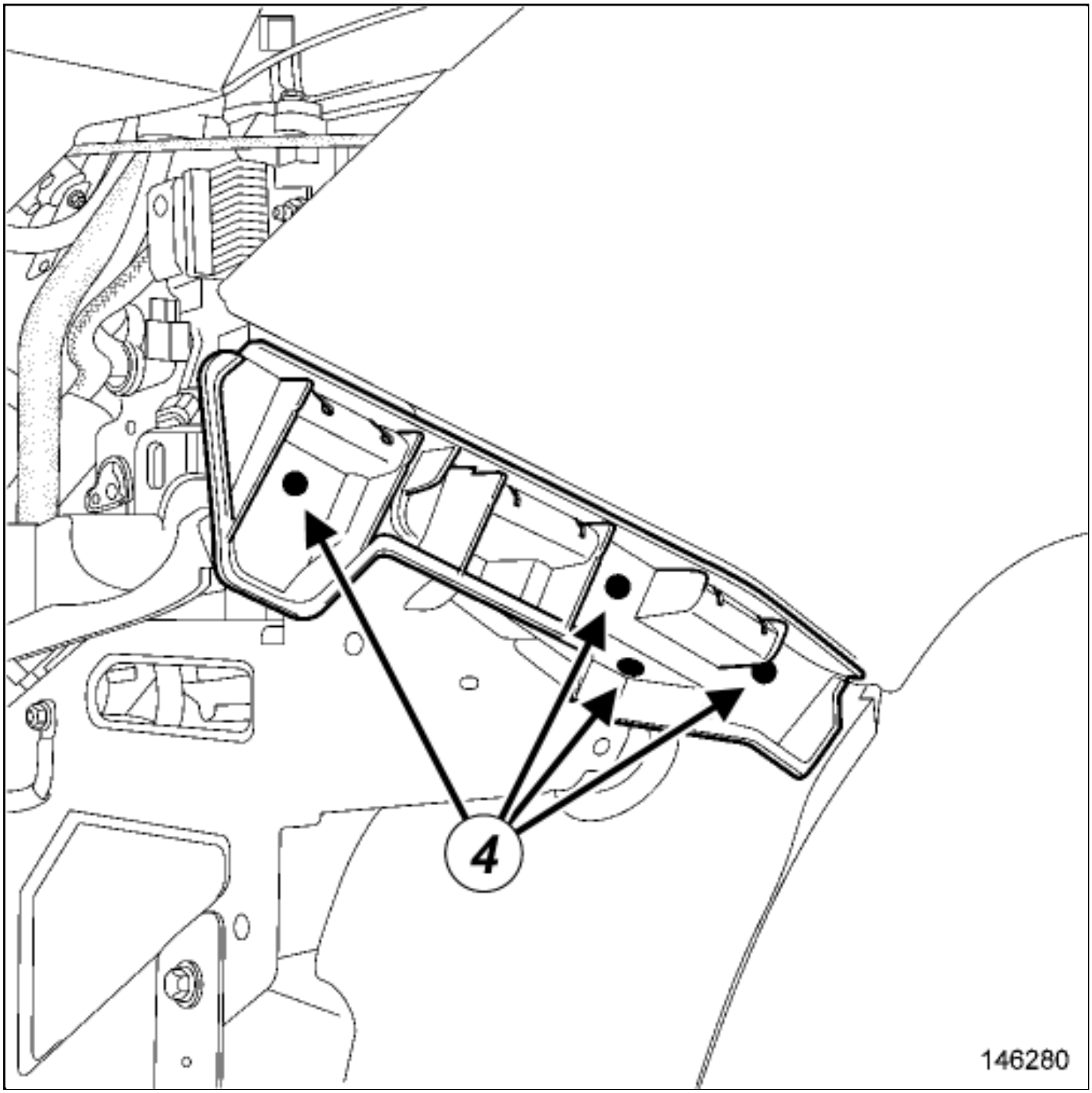

142759



Unclip the scuttle panel grille side trims in the direction(1) using the toolSet of trim removal levers. (Car. 1363) .

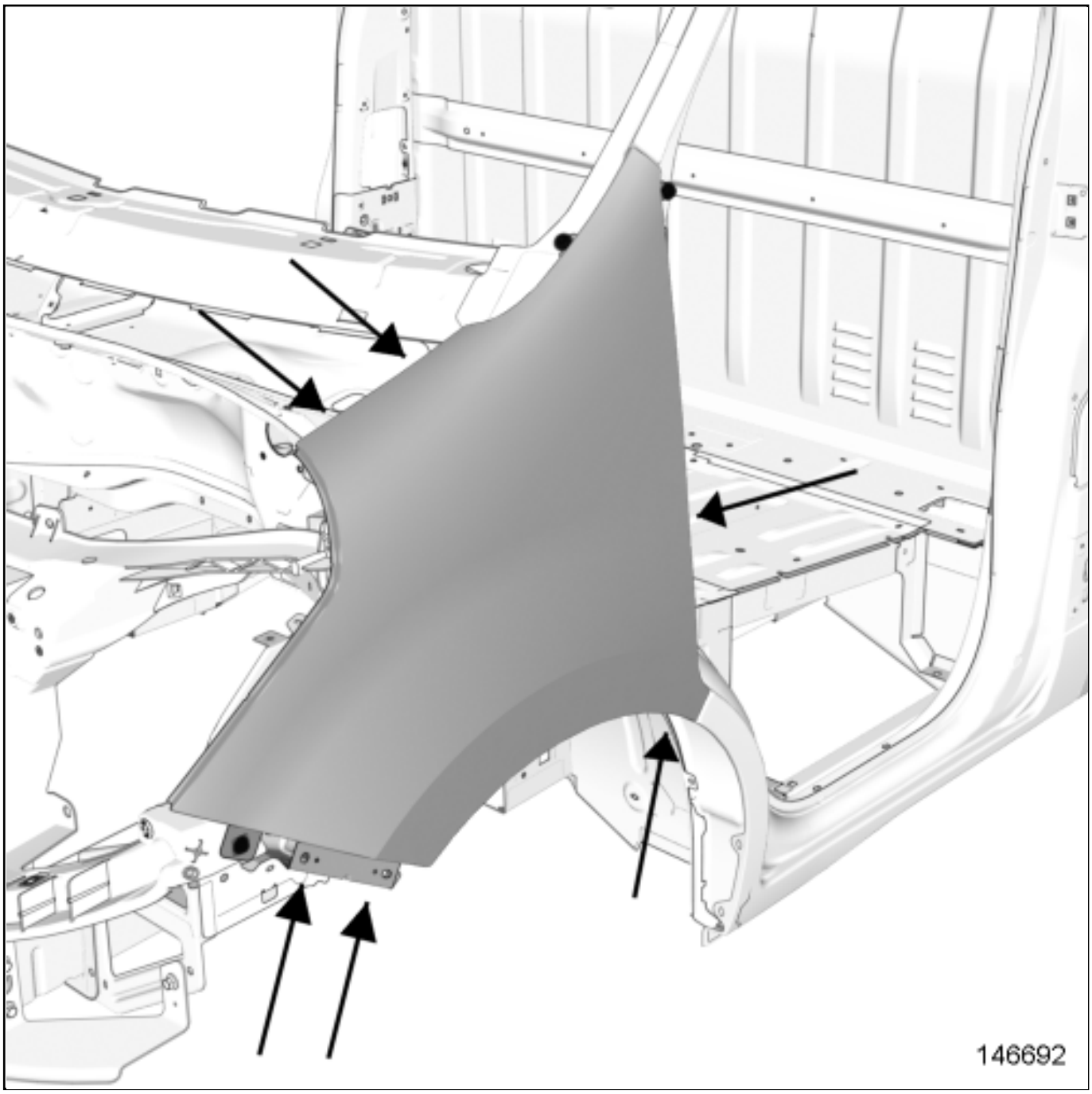


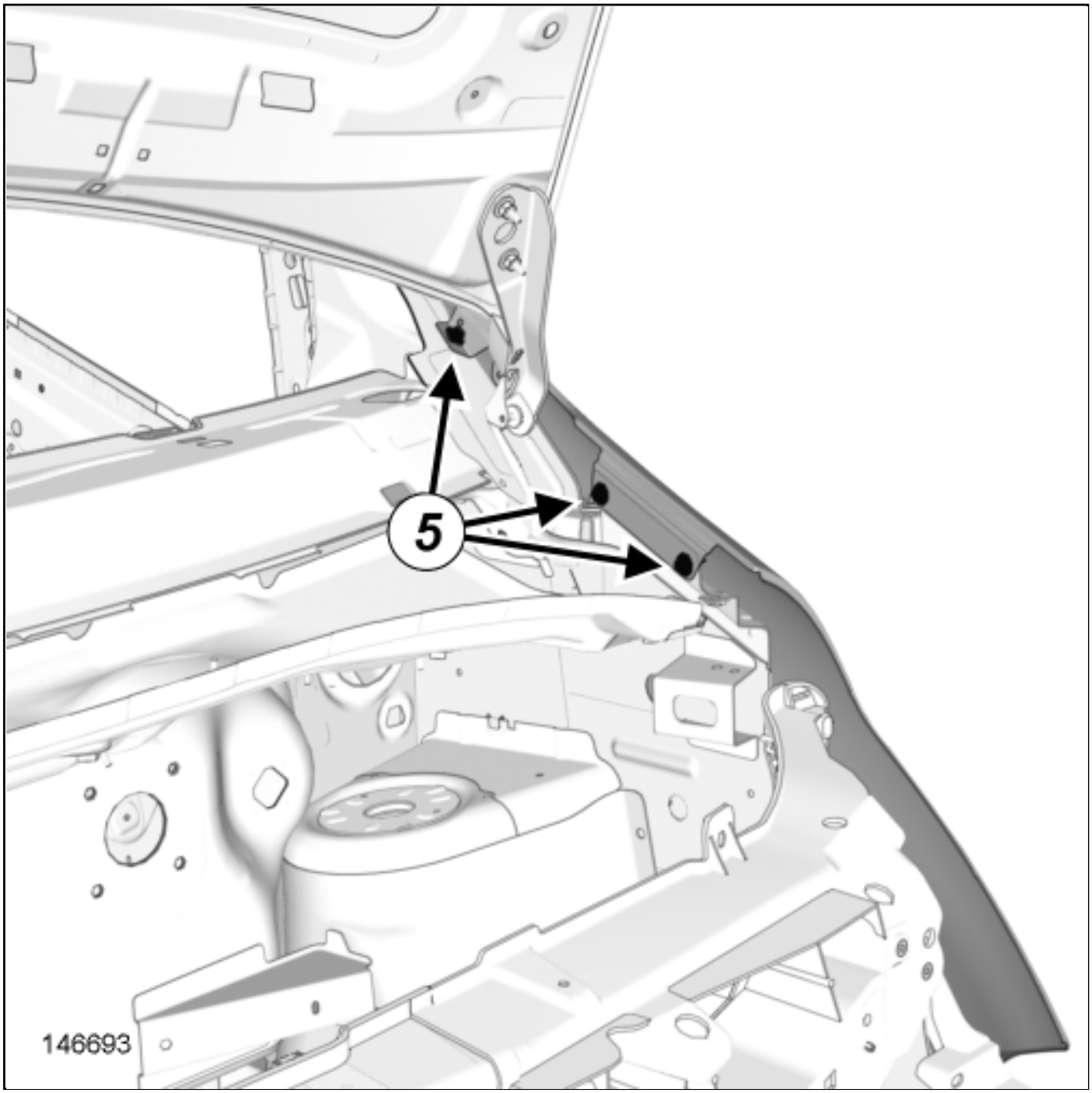
- Then remove the scuttle panel grille side trims in the directions(2) and (3) .

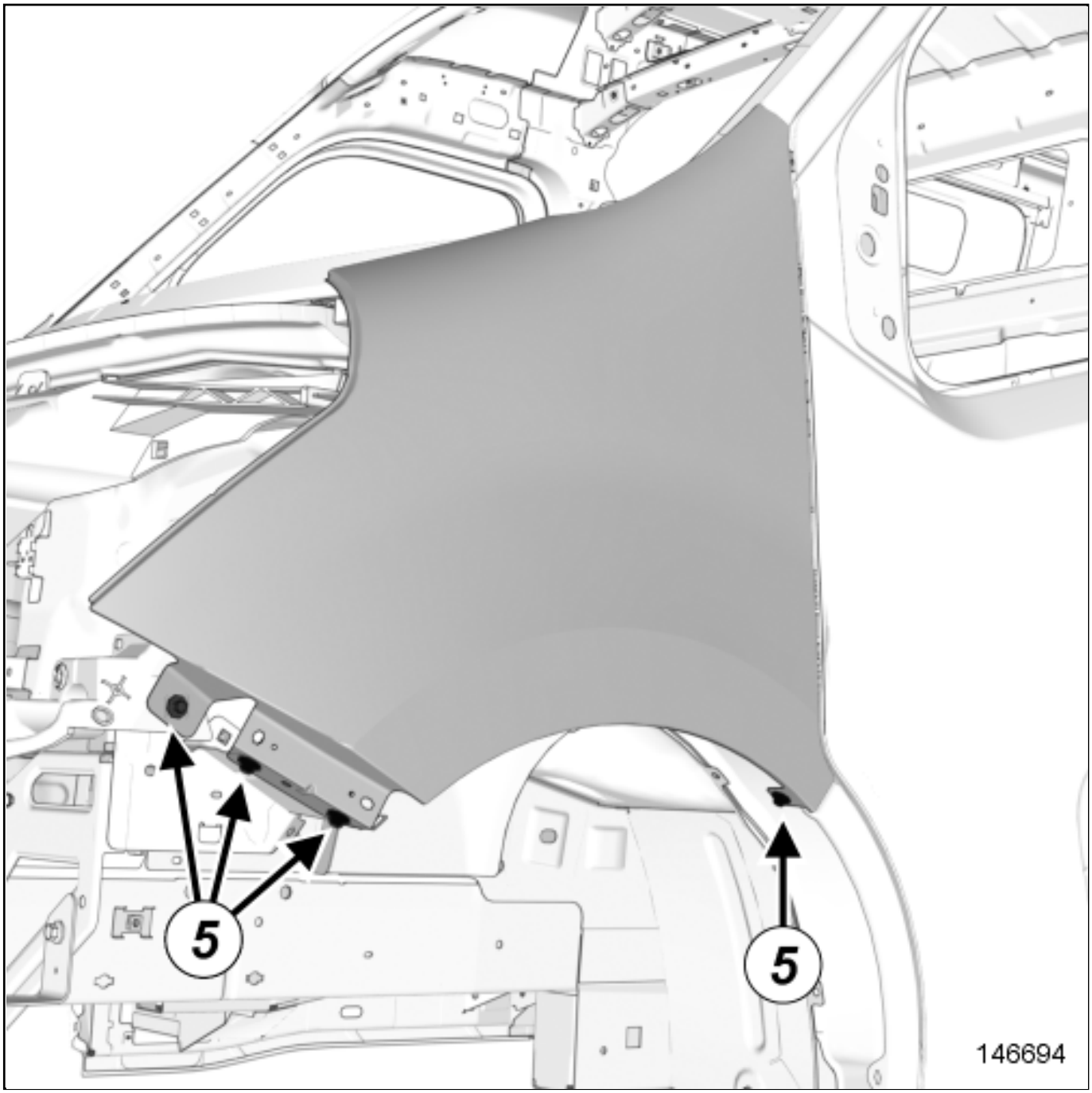


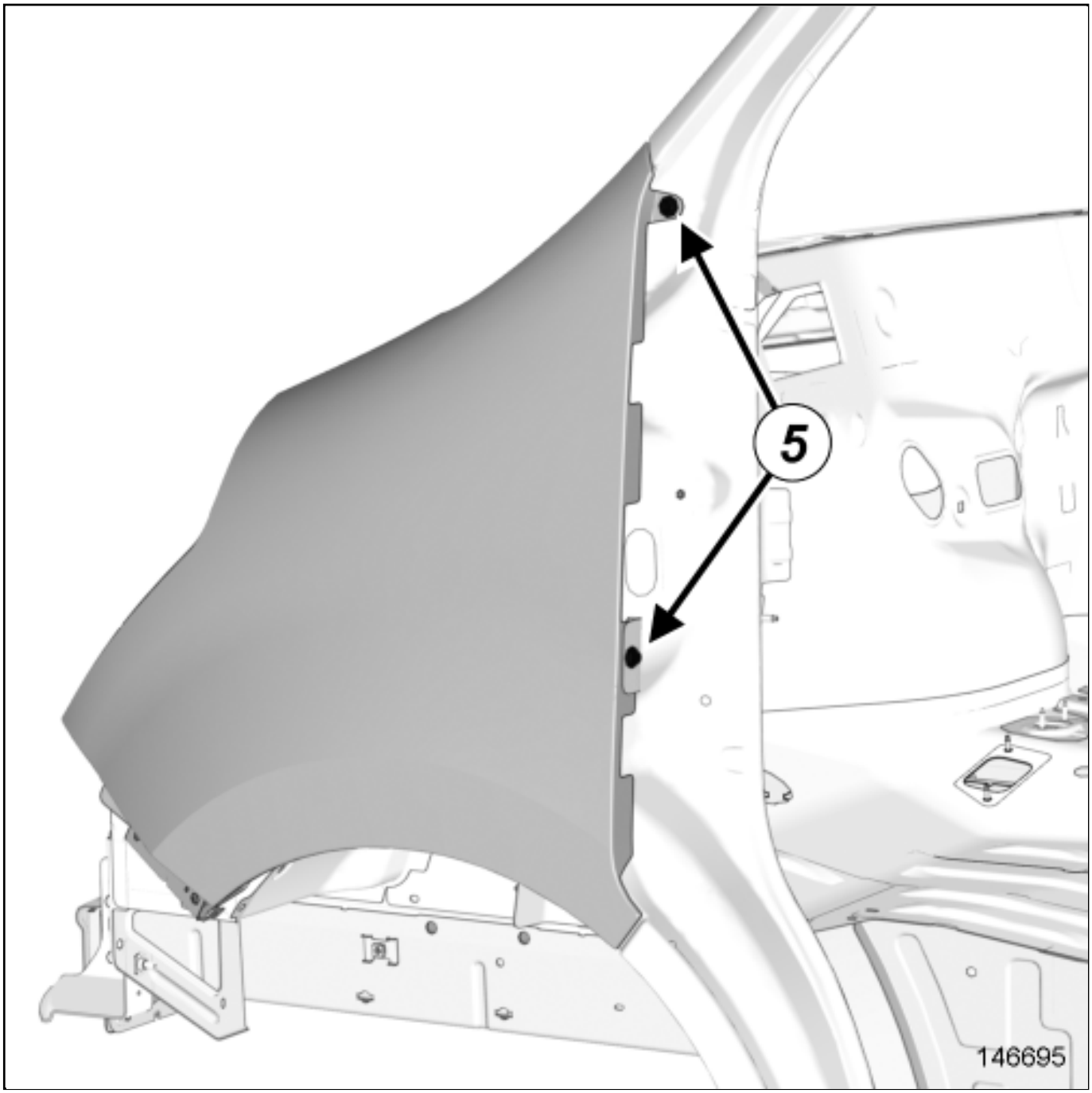
- Drill out the rivets(4) .
- Remove the front bumper support.

2. REMOVAL OPERATION


146692

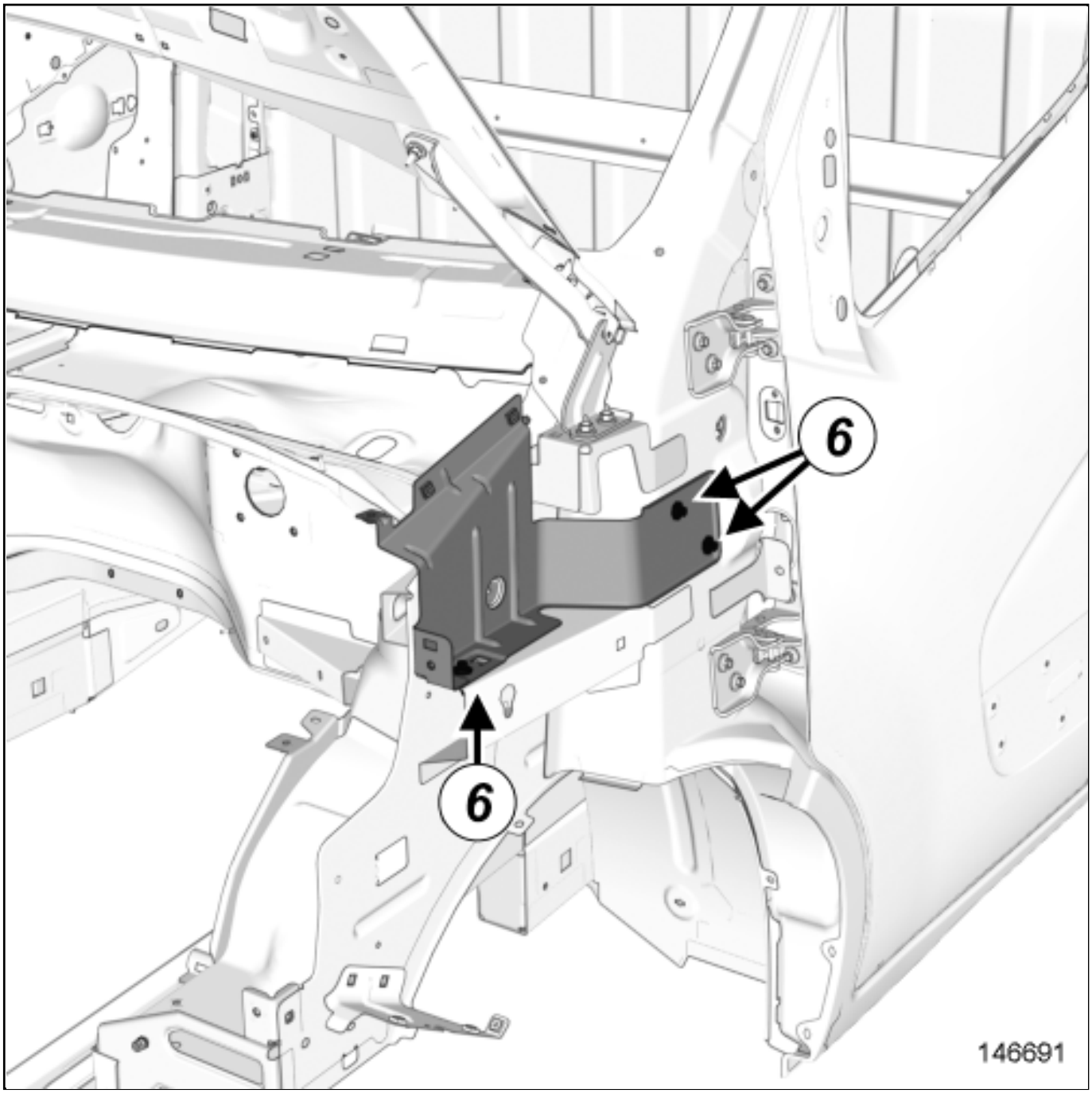

5
146693


5
5
146694



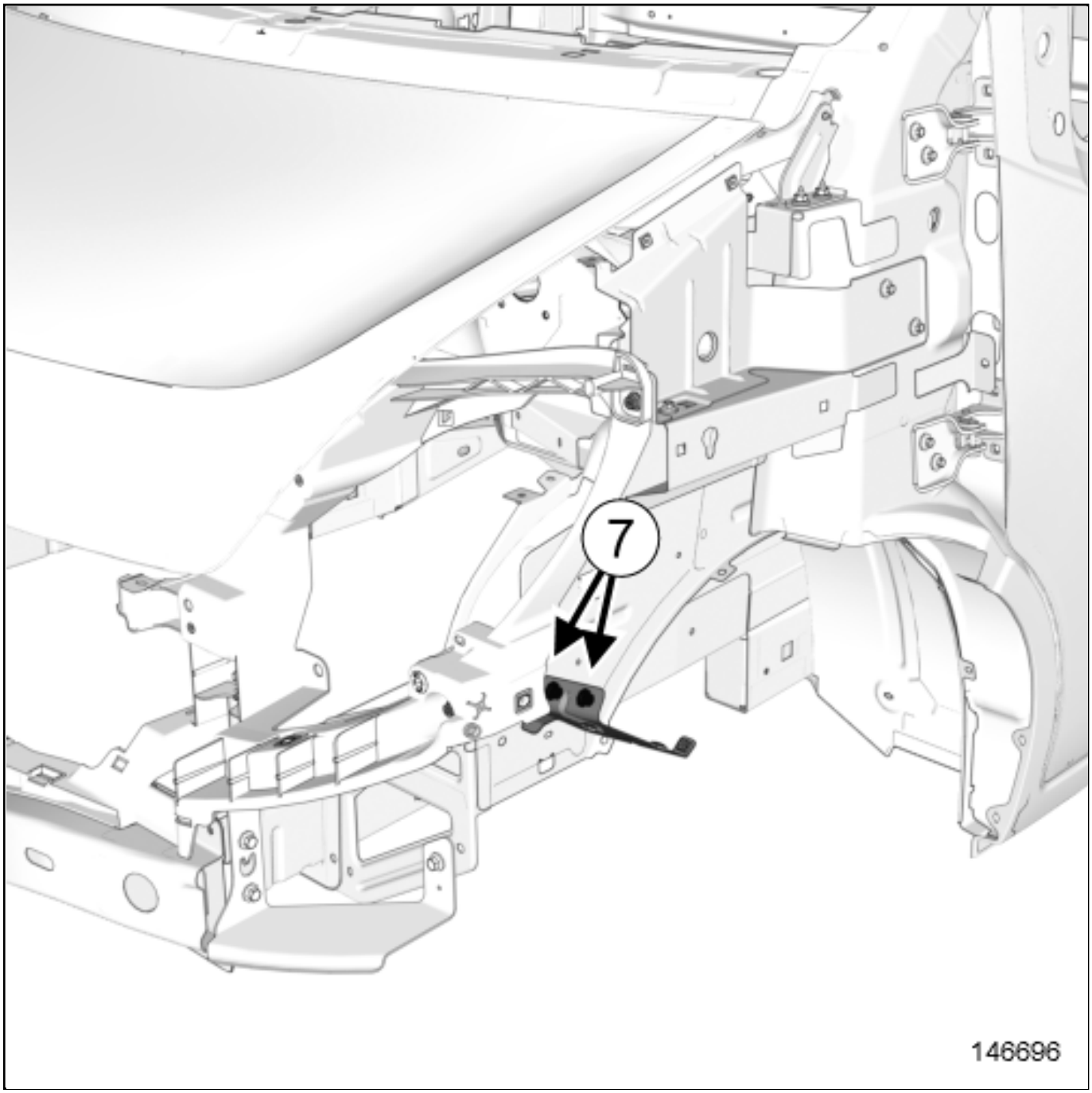
Remove:

- the bolts(5) ,
- the front wing.



Remove:

- the bolts(6) ,
- the front wing upper mounting.



Remove:

- the bolts(7) ,
- the front wing lower mounting.

REFITTING

1. REFITTING PREPARATION OPERATION

Always replace the rivets of the front bumper mounting.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Adjust the clearances and flush fitting**Vehicle panel gaps: Adjustment value** (01C, Vehicle bodywork specifications).

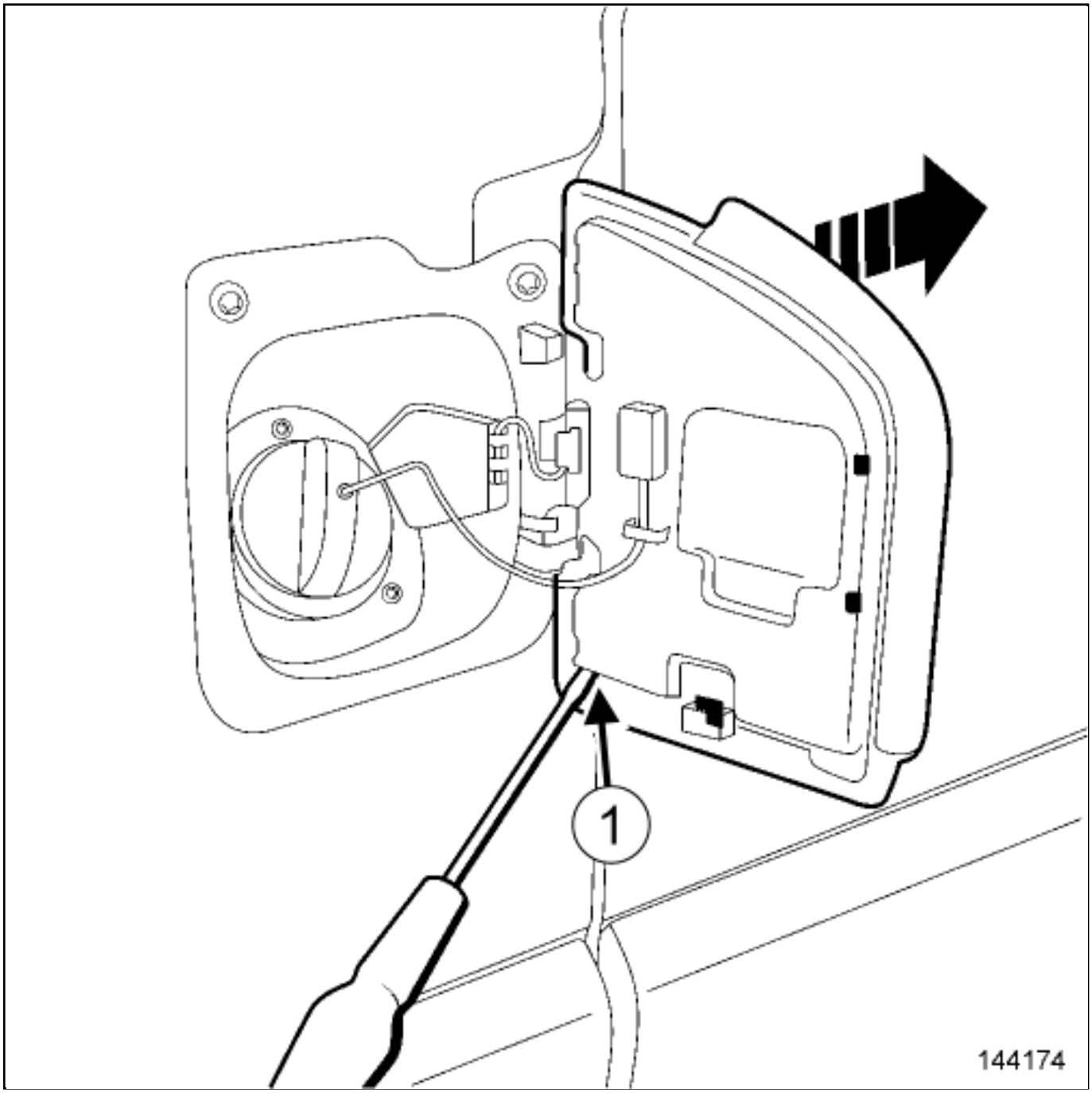
FUEL FILLER FLAP COVER: REMOVAL - REFITTING

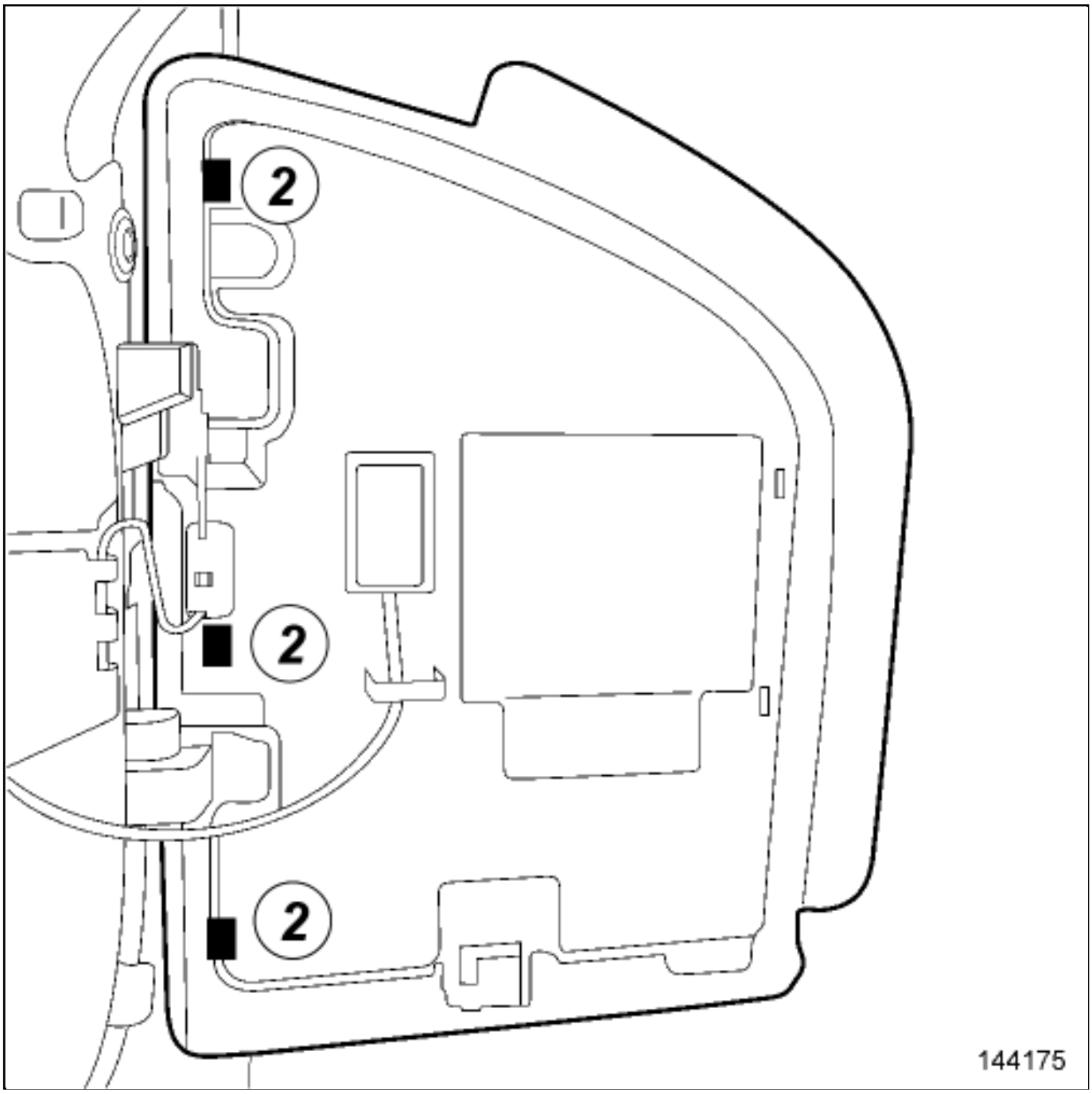
REMOVAL

1. REMOVAL PREPARATION OPERATION

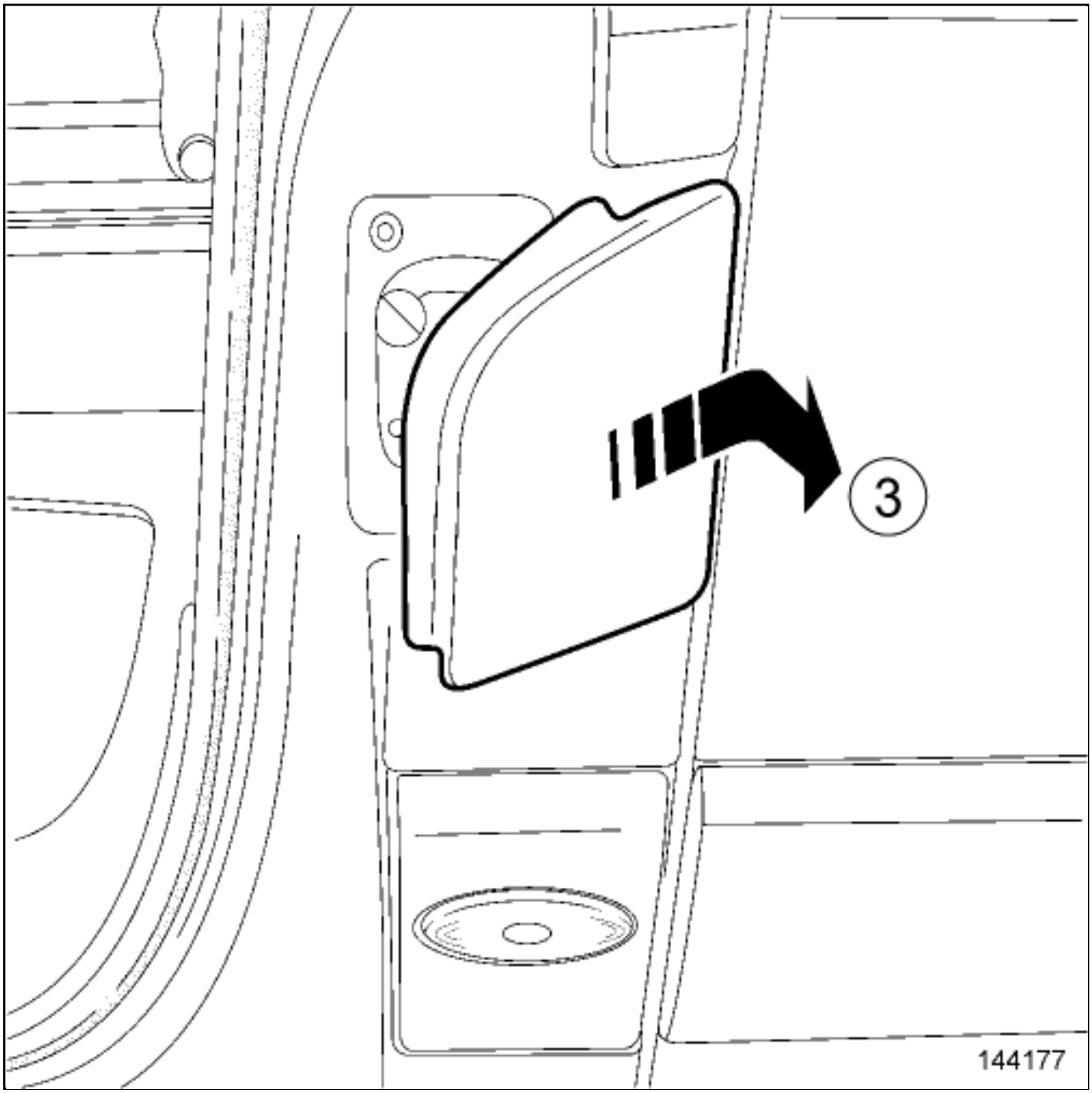
- Open the fuel filler flap cover.

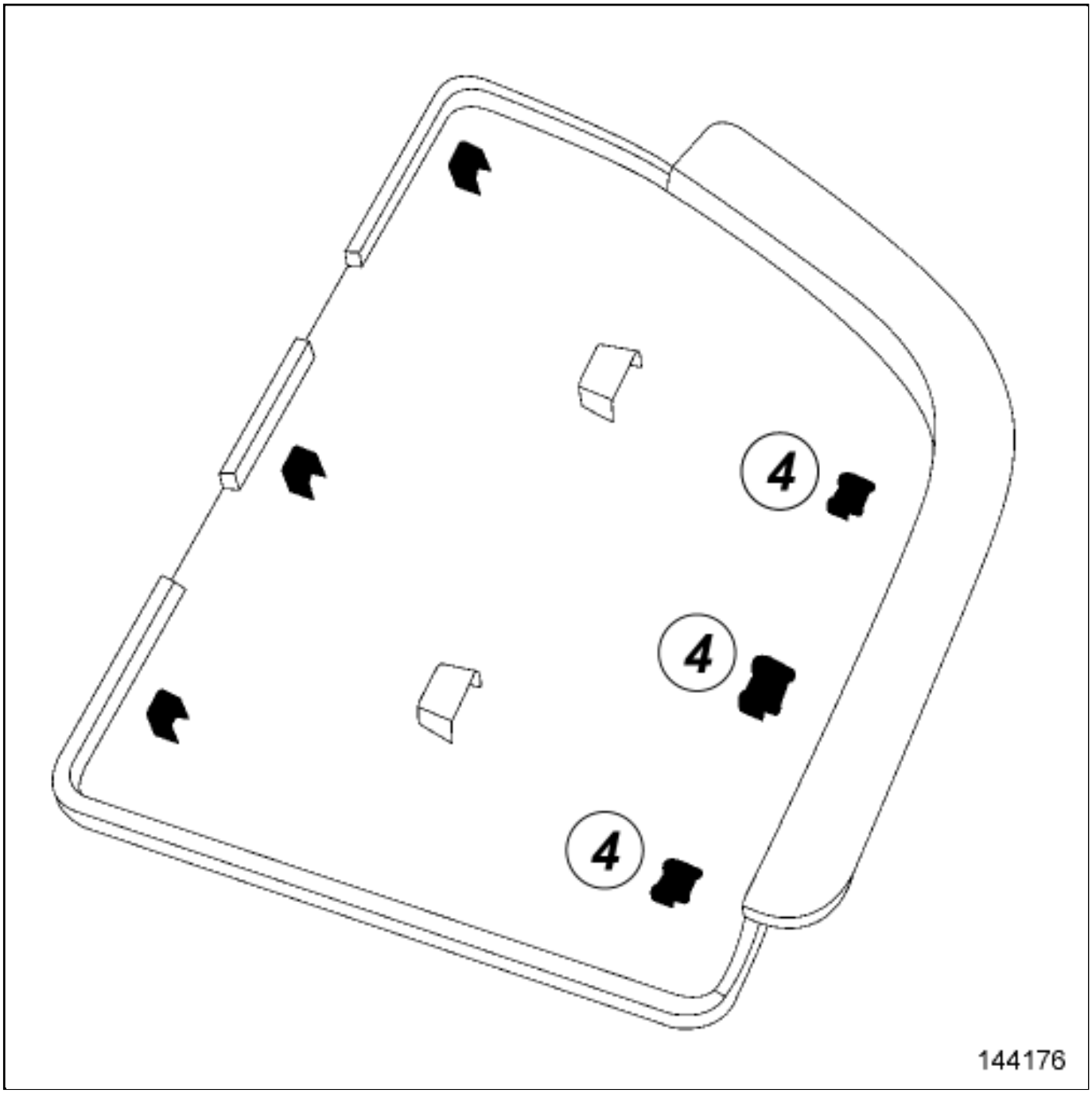
2. REMOVAL OPERATION





- Unclip the rear section of the fuel filler flap cover using a flat-blade screwdriver at(1) to release the lugs (2) .


3
144177



Remove the fuel filler flap cover at(3) to release the lugs(4) .

REFITTING

Proceed in the reverse order to removal.

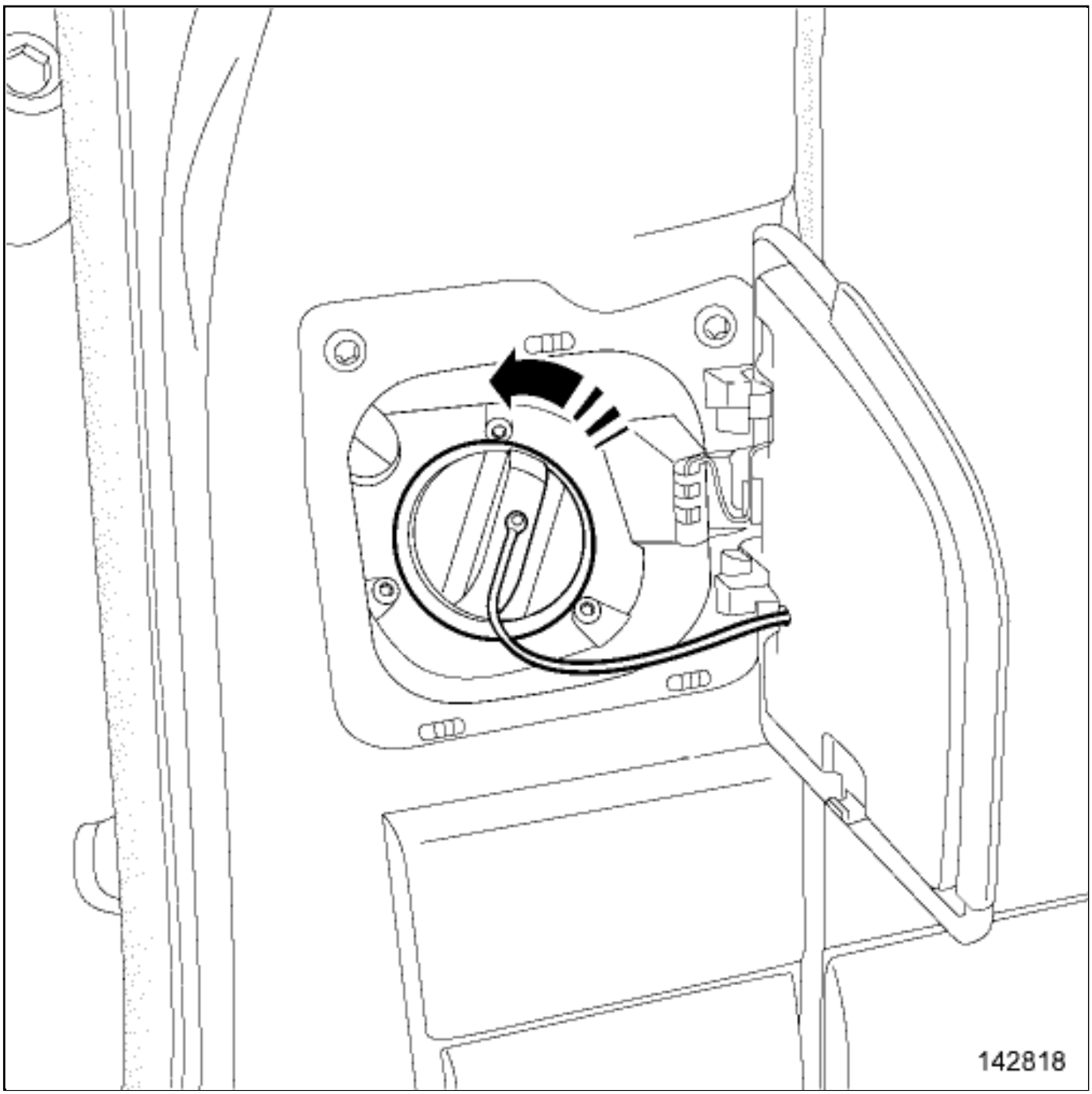
XSL version : 3.02 du 22/07/11

FUEL FILLER FLAP: REMOVAL - REFITTING

REMOVAL

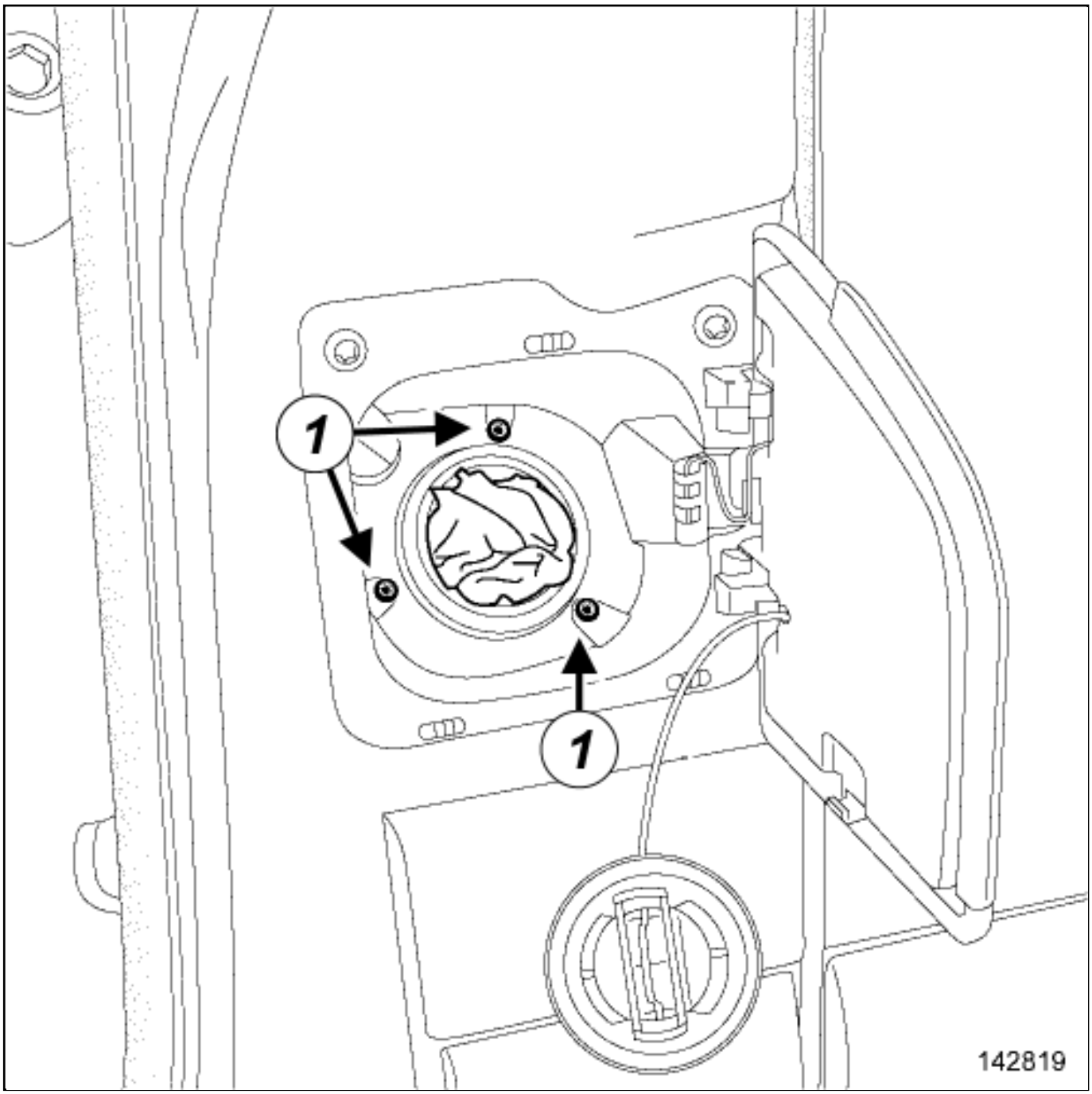
1. REMOVAL PREPARATION OPERATION

- Open the front left-hand side door.

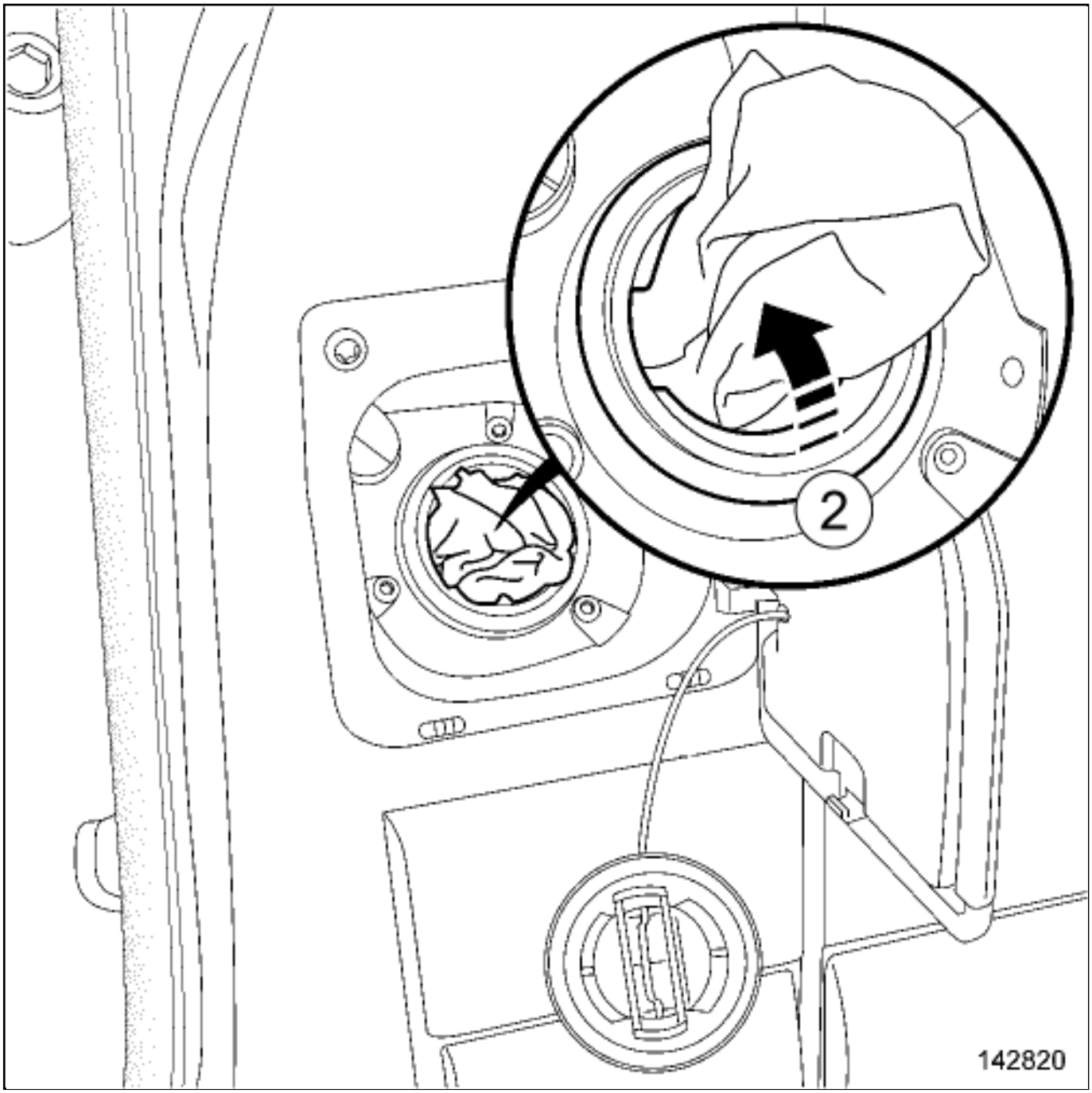


- Open the fuel filler cap.

- Place a cloth in the neck.

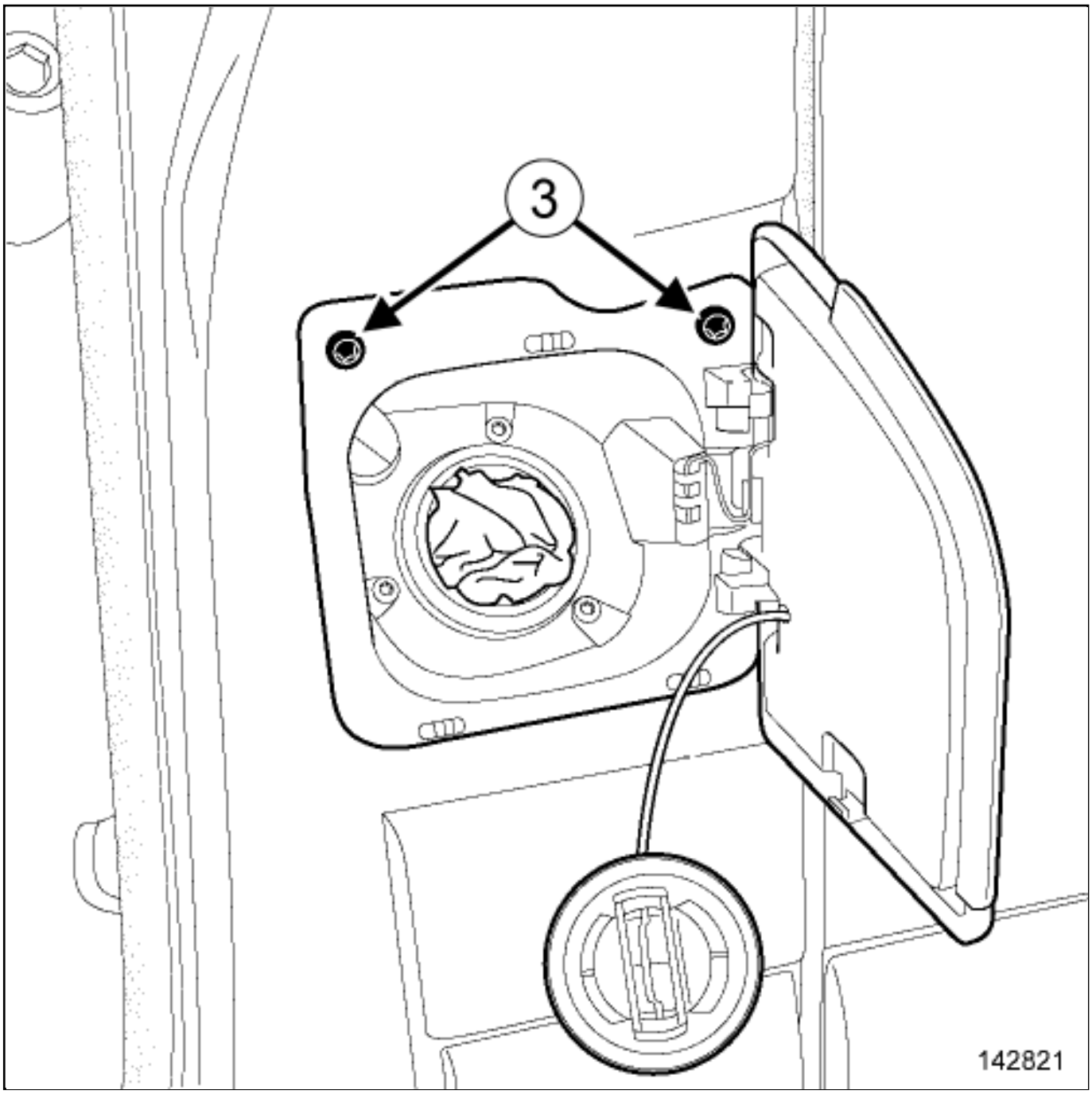


- Remove the bolts(1) .



- Unclip the fuel filler neck at(2) .

2. REMOVAL OPERATION



Remove:

- the bolts(3) ,
- the fuel filler flap.

REFITTING

Proceed in the reverse order to removal.

Repair-40x10x22-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

FUEL FILTER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

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

- Diesel injection: Precautions for the repair ,
- Vehicle: Precautions for the repair .

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

During this operation, it is essential to:

- refrain from smoking or bringing hot objects close to the working area,
- beware of fuel splashes when disconnecting the union.

CAUTION

The part removed is subject to customer safety controls, the safety instructions detailed in this procedure must be observed when removing and refitting.

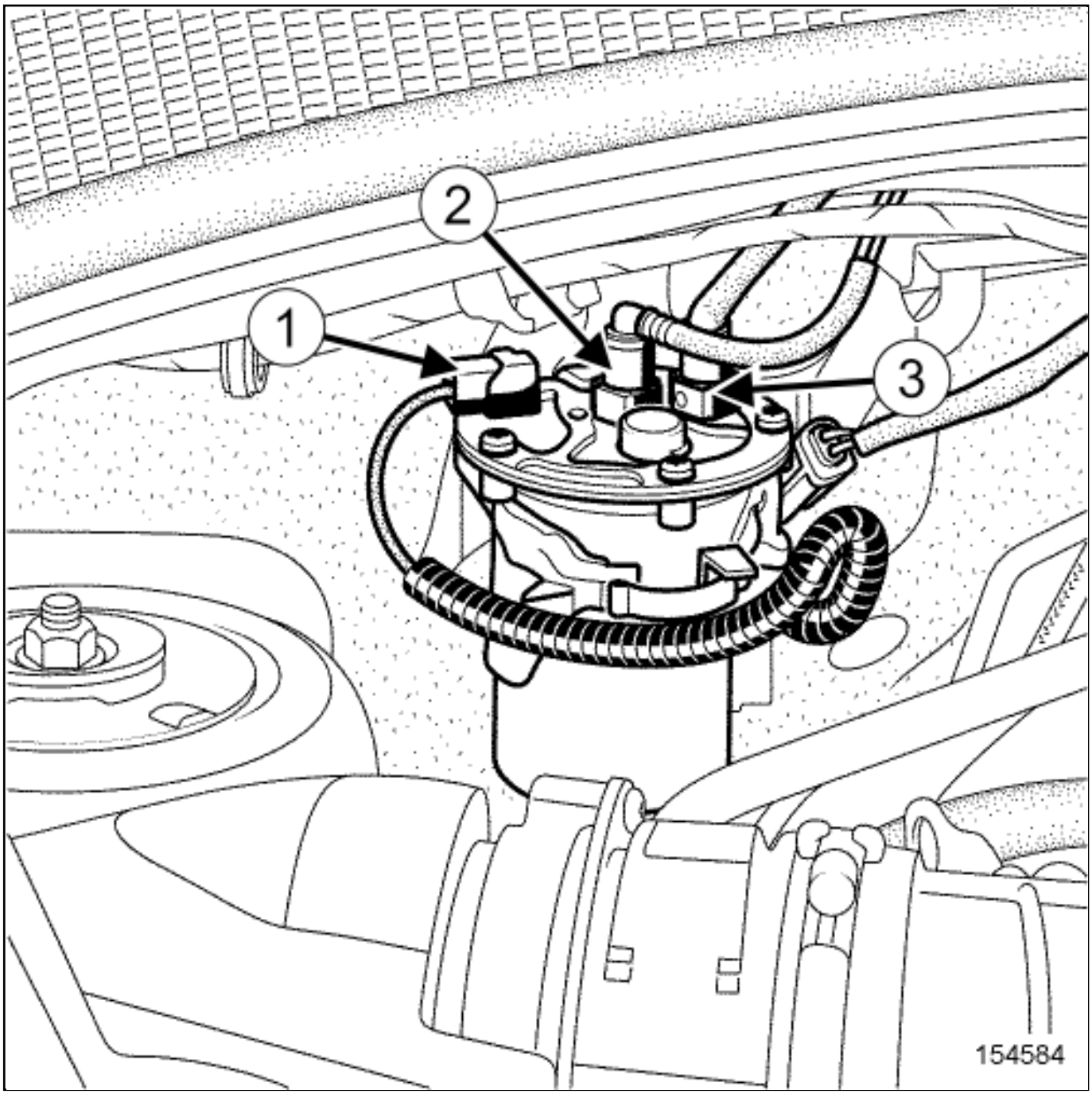
Note:

Make sure you have a new diesel filter before opening the fuel circuit.

REMOVAL

1. REMOVAL OPERATION

- Clean the quick-release unions before opening them Diesel injection: Precautions for the repair .



- Disconnect:
  - the fuel filter connector(1) ,
  - the high pressure pump fuel supply pipe on the fuel filter(2) ,
  - the fuel supply pipe on the fuel filter(3) .

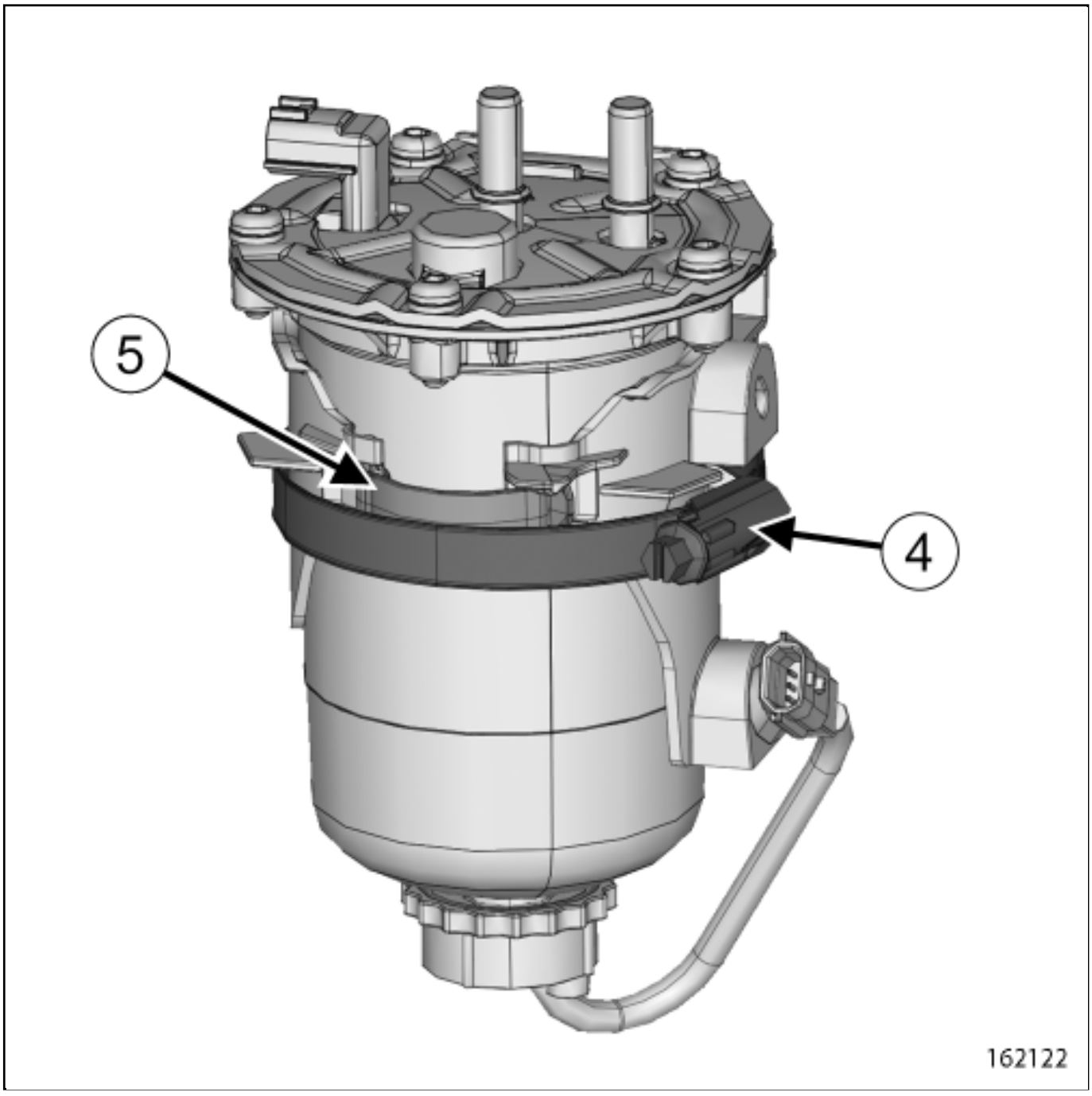
- Fit blanking plugs.

CAUTION

Keep the pipe unions away from contaminated areas.

CAUTION

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.



Remove:

- the clip(4) ,
- the clip(5) .

Remove the diesel filter assembly(see 13A, Fuel supply, Fuel supply assembly in engine compartment: Exploded view) .

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

> Note:
>
> Be careful not to pinch or damage the fuel pipes.

Switch on the ignition reapetedly for to fill the fuel circuit.

Start the vehicle.

2. DRAINING THE WATER INSIDE THE FUEL FILTER

Periodically drain any water contained in the diesel filter.

For filters without a water presence sensor:

- open the drain plug,
- let the water flow out,

close the plug.

FUEL FILTER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 13A, Fuel supply, Fuel supply assembly in engine compartment: Exploded view)** .

WARNING

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

- **Diesel injection: Precautions for the repair** ,
- **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

WARNING

During this operation, it is essential to:

- refrain from smoking or bringing hot objects close to the working area,
- beware of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

REMOVAL

1. REMOVAL OPERATION

- Clean the quick-release unions before opening themDiesel injection: Precautions for the repair .

- Disconnect (see 13A, Fuel supply, Fuel supply assembly in engine compartment: Exploded view) :
  - the connector of the fuel filter cover,
  - the high pressure pump fuel supply pipe to the fuel filter,
  - the fuel supply pipe on the fuel filter.

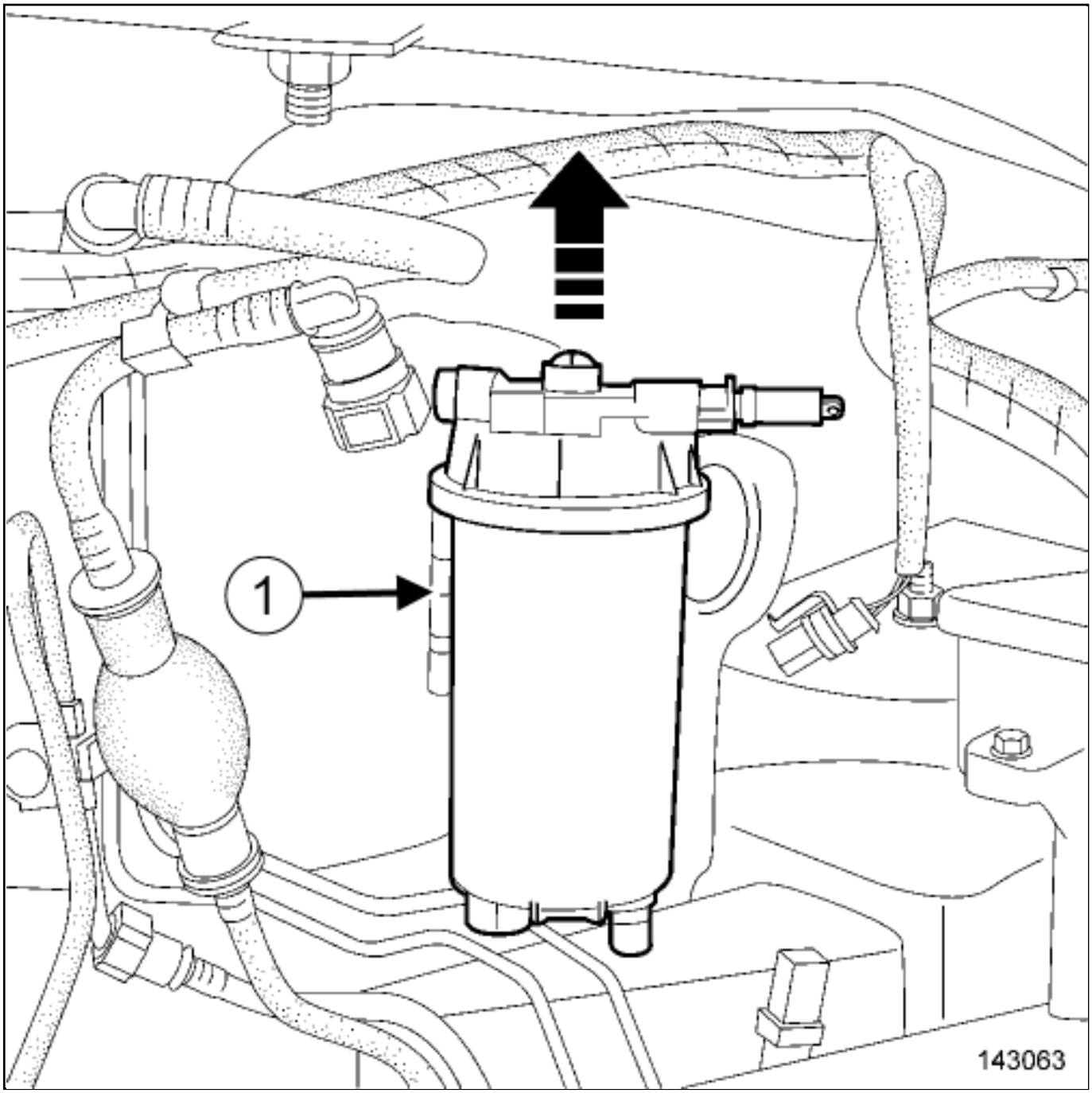
- Fit blanking plugs.

CAUTION

Keep the pipe unions away from contaminated areas.

CAUTION

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.



- Mark the position of the cover on the bowl.
- Unclip the fuel filter unit at(1) .
- Remove (see 13A, Fuel supply, Fuel supply assembly in engine compartment: Exploded view) :
  - the fuel filter cover,
  - the fuel filter,
  - the seal of the fuel filter bowl.

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

Note:

Align the marking on the cover fitted with anti-contamination caps with the marking on the bowl.

CAUTION

The unions must be correctly positioned on the filter.

Note:

Be careful not to pinch or damage the fuel pipes.

1- BLEEDING THE CIRCUIT

- Turn the air bleed screw(see 13A, Fuel supply, Fuel supply assembly in engine compartment: Exploded view) 360 degrees.

- Activate the manual priming pump(see 13A, Fuel supply, Fuel supply assembly in engine compartment: Exploded view) until the fuel runs without air bubbles.

- Tighten the air bleed screw.

- Prime the fuel circuit once more using the manual priming pump.

2. DRAINING THE WATER INSIDE THE FUEL FILTER

- Periodically drain any water contained inside the fuel filter:
  - open the water bleed screw(see 13A, Fuel supply, Fuel supply assembly in engine compartment: Exploded view) ,
  - let the water flow out,
  - close the water bleed screw.

XSL version : 3.02 du 22/07/11

FUEL LEVEL SENSOR MODULE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Universal spanner for removing fuel gauge nuts.	Mot. 1397

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair** .

WARNING

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

Wear goggles with side protectors for this operation.

CAUTION

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

CAUTION

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19C, Tank, Fuel tank assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).
- Drain the fuel tank(see 19C, Tank, Fuel tank: Draining) .
- Remove the fuel tank(see 19C, Tank, Fuel tank assembly: Exploded view) .

2. REMOVAL OPERATION

- Disconnect (see 19C, Tank, Fuel tank assembly: Exploded view) :
  - the fuel supply pipe union from the fuel level sensor module,
  - the fuel return pipe union from the fuel level sensor module.
- Fit blanking plugs on the fuel pipe unions.

CAUTION

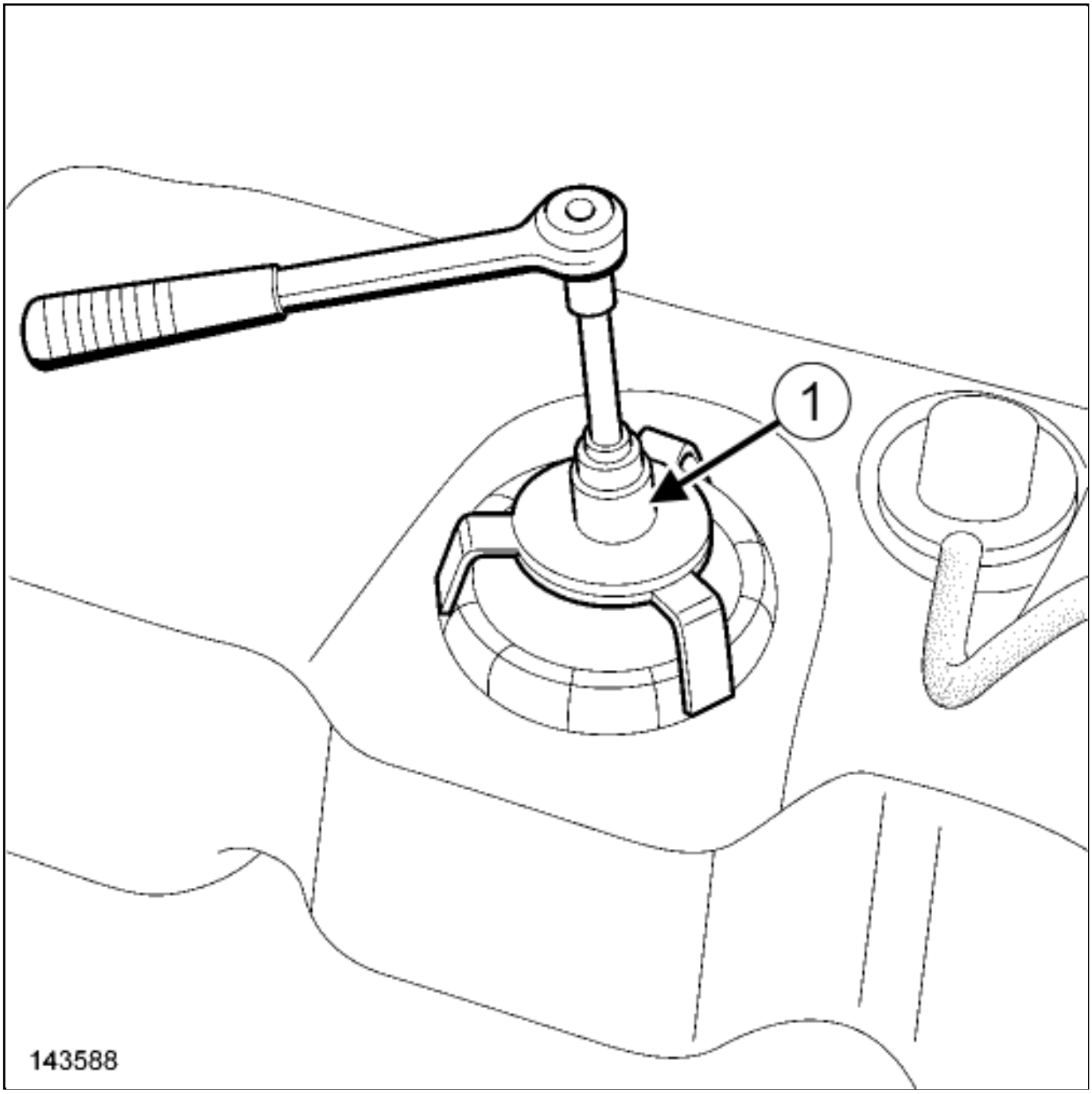
To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Unclip the following from the fuel supply support (see 19C, Tank, Fuel tank assembly: Exploded view) :

- the fuel supply pipe for the fuel level sensor module,
- the fuel return pipe for the fuel level sensor module.

Remove the following from the fuel tank (see 19C, Tank, Fuel tank assembly: Exploded view) :

- the fuel supply pipe for the fuel level sensor module,
- the fuel return pipe for the fuel level sensor module.



Remove the fuel level sensor module nut using theUniversal spanner for removing fuel gauge nuts. (Mot. 1397) (1) .

Let the fuel drain from the fuel level sensor module.

CAUTION

To prevent the tank from deforming, refit the fuel sender unit nut to the tank well immediately.

Remove (see 19C, Tank, Fuel tank assembly: Exploded view) :

- the fuel level sensor module, taking care not to damage the float,
- the fuel level sensor module seal.

REFITTING

1. REFITTING OPERATION

Note:

The fuel level sensor module is equipped with a foolproofing device, to stop it in rotation.

Tighten the nut until the mark on the nut is aligned with the mark on the fuel tank and with the mark on the fuel level sensor module.

Proceed in the reverse order to removal.

FUEL SUPPLY ASSEMBLY IN ENGINE COMPARTMENT: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

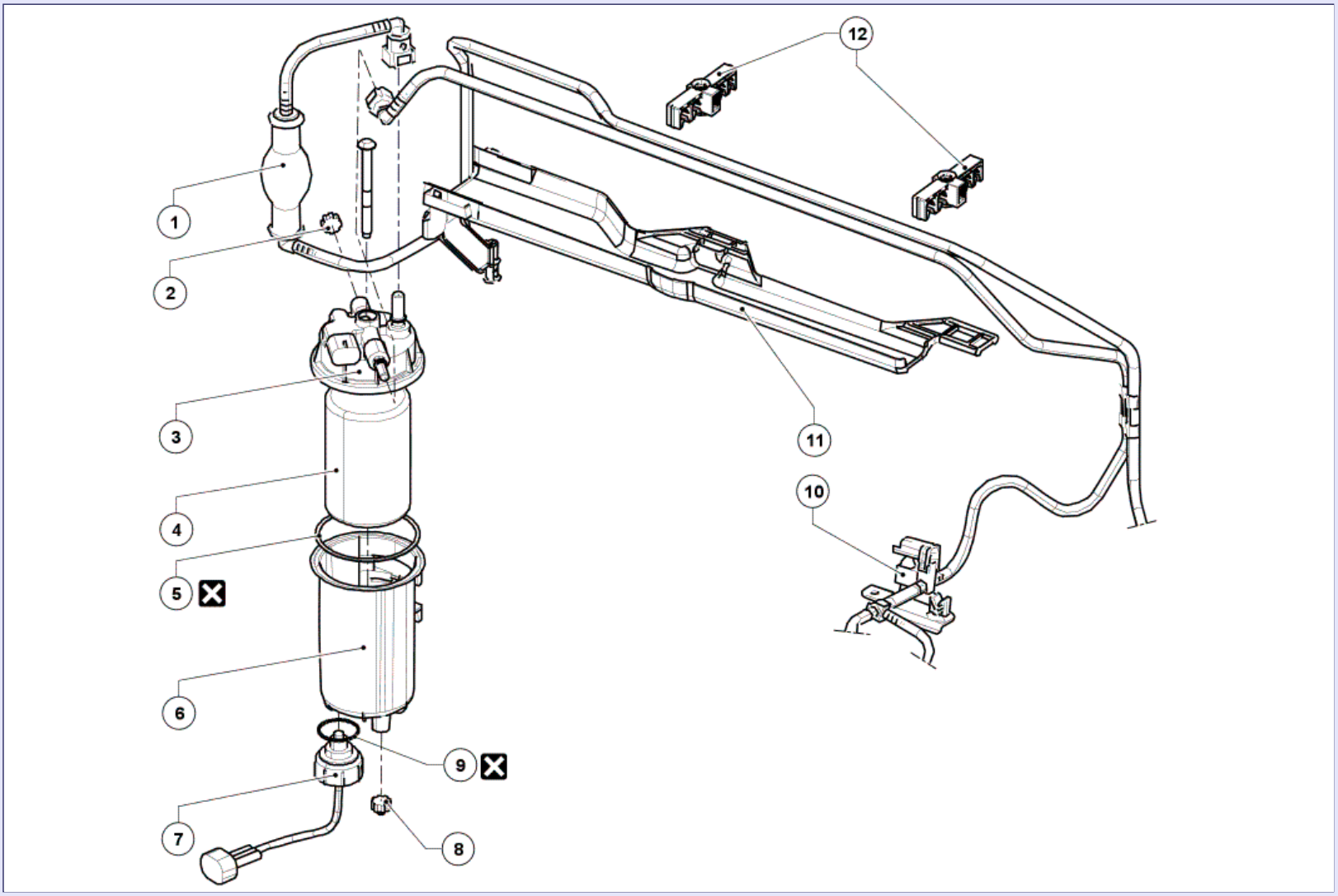


Illustration key: Description **Key.**

No.	Description	Information
1	Manual priming pump	(see 13A, Fuel supply, Manual priming pump: Removal - Refitting)
2	Fuel filter air bleed screw	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
3	Fuel filter cover	
4	Fuel filter	
5	Fuel filter cartridge seal	
6	Fuel filter bowl	
7	Water in diesel fuel sensor	
8	Water bleed screw	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
9	Water in diesel fuel sensor seal	
10	Fuel temperature sensor	
11	Fuel supply pipe neck	

12	Fuel supply pipe clip	

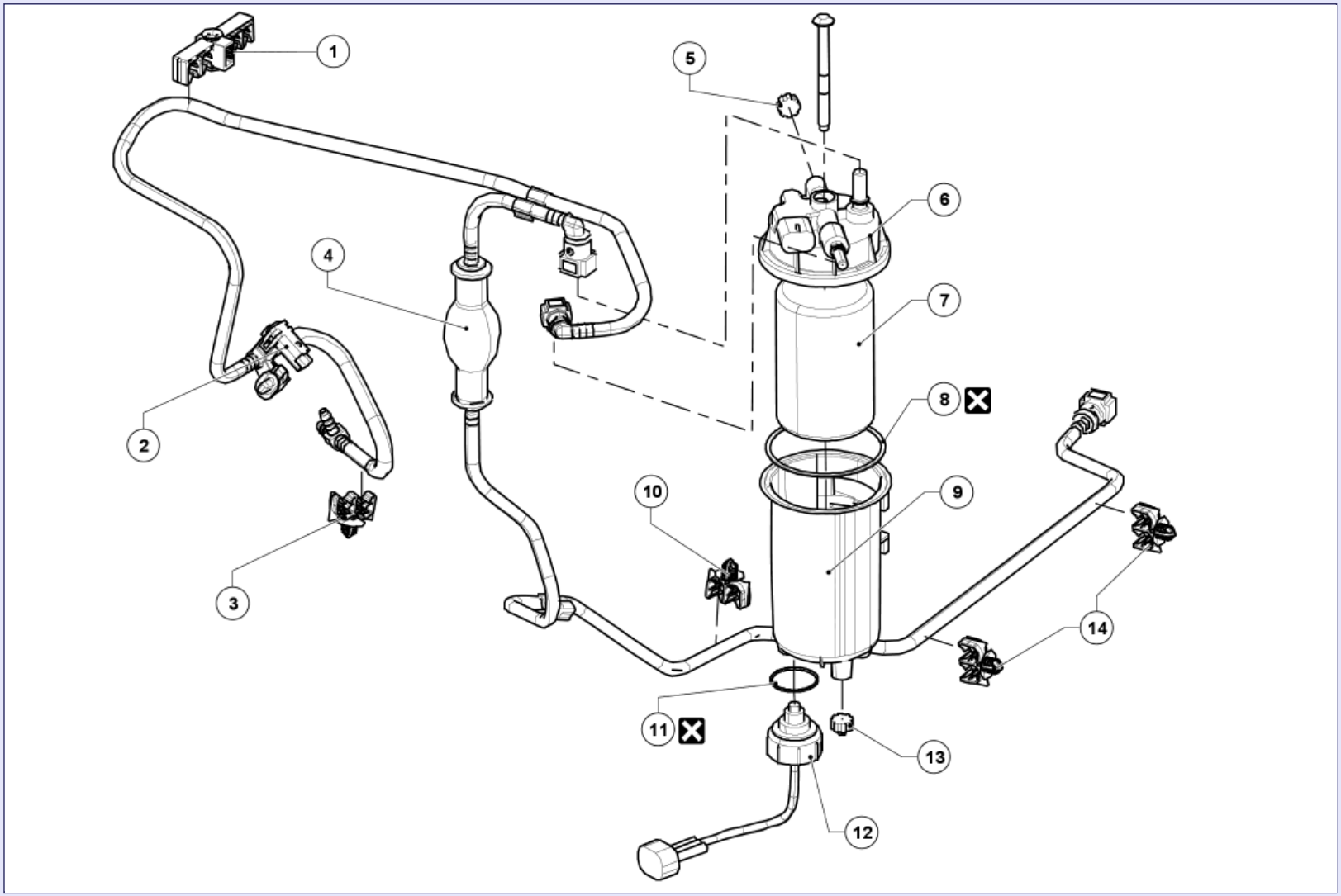


Illustration key: Description **Key.**

Mark	Description	Information
1	Fuel supply pipe clip	
2	Fuel temperature sensor	Cannot be separated from the fuel pipe
3	Fuel supply pipe clip	

4	Manual priming pump	(see 13A, Fuel supply, Manual priming pump: Removal - Refitting)
5	Fuel filter air bleed screw	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
6	Fuel filter cover	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
7	Fuel filter	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
8	Fuel filter cartridge seal	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
9	Fuel filter bowl	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
10	Fuel supply pipe clip	
11	Water in diesel fuel sensor seal	
12	Water in diesel fuel sensor	
13	Water bleed screw	(see 13A, Fuel supply, Fuel filter: Removal - Refitting) (see 13A,Fuel supply, Fuel filter: Removal - Refitting)
14	Fuel supply pipe clip	

M9T, 700 702 870 890(700 OR 702 OR 870 OR 890)

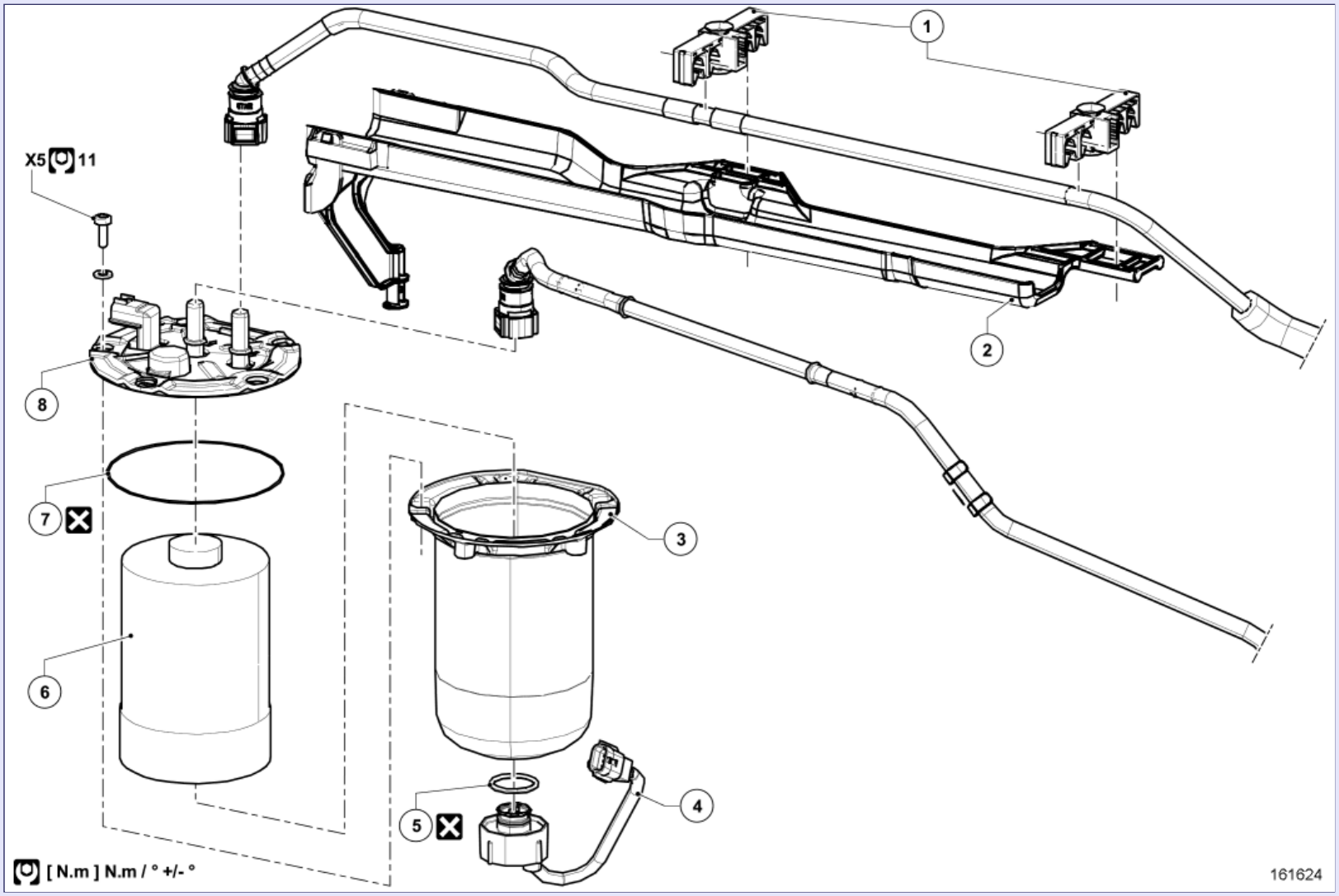


Illustration key: Description **Key.**

Mark	Description	Information
1	Fuel supply pipe clip	
2	Fuel supply pipe neck	
3	Fuel filter bowl	(see 13A, Fuel supply, Fuel filter: Removal - Refitting)
4	Water in diesel fuel sensor	
5	Water in diesel fuel sensor seal	
6	Fuel filter	(see 13A, Fuel supply, Fuel filter: Removal - Refitting)
7	Fuel filter cartridge seal	
8	Fuel filter cover	(see 13A, Fuel supply, Fuel filter: Removal - Refitting)

FUEL SUPPLY ASSEMBLY IN ENGINE COMPARTMENT: EXPLODED VIEW

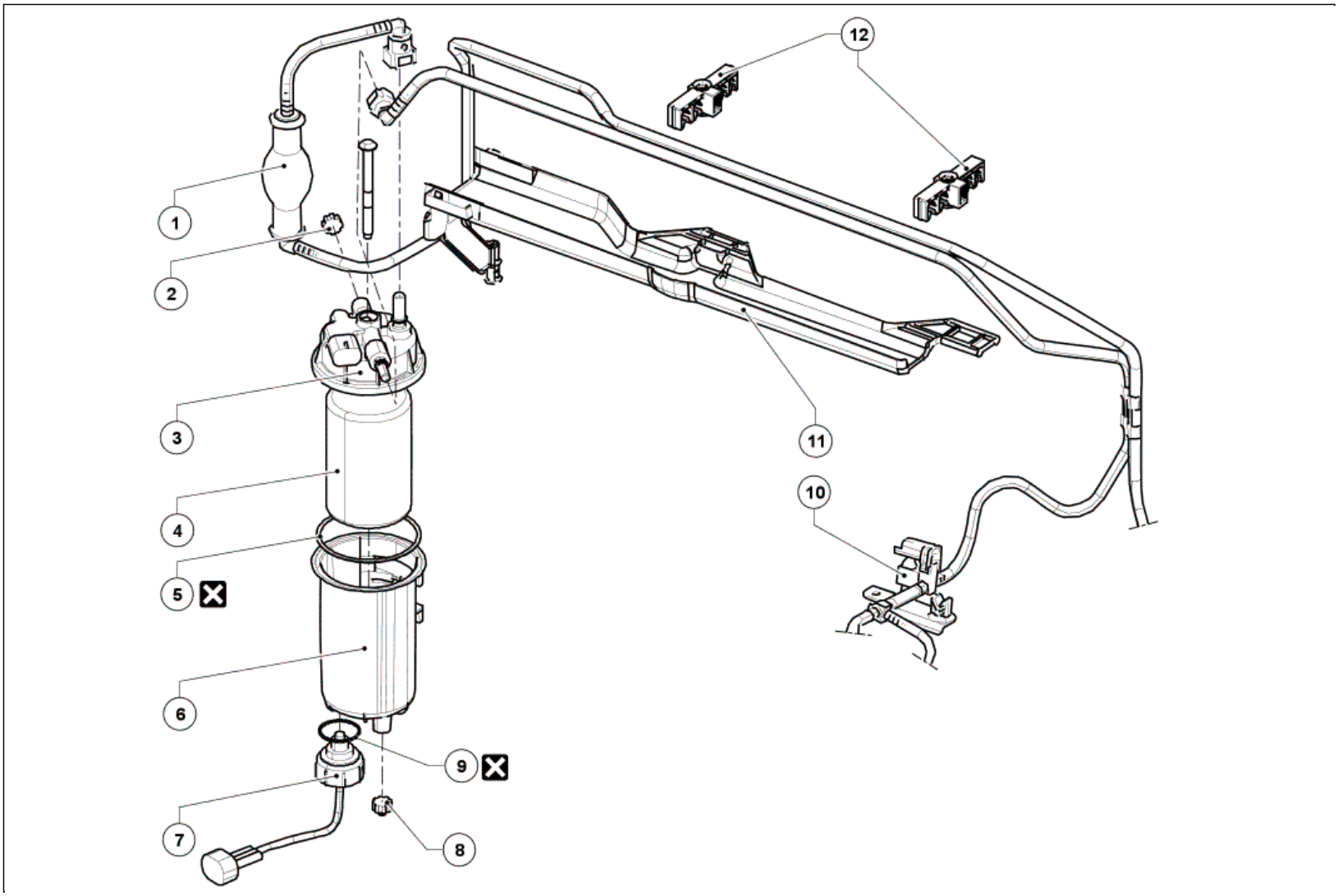


Illustration key: Description Key.

No.	Description	Information
1	Manual priming pump	(see 13A, Fuel supply, Manual priming pump: Removal - Refitting)
2	Fuel filter air bleed screw	Fuel filter: Removal - Refitting
3	Fuel filter cover	
4	Fuel filter	
5	Fuel filter cartridge seal	
6	Fuel filter bowl	
7	Water in diesel fuel sensor	
8	Water bleed screw	Fuel filter: Removal - Refitting
9	Water in diesel fuel sensor seal	
10	Fuel temperature sensor	
11	Fuel supply pipe neck	
12	Fuel supply pipe clip	

FUEL SUPPLY HOSES: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

- During this operation, be sure to:
  - refrain from smoking or bringing red hot objects close to the working area,
  - be careful of fuel splashes when disconnecting the union.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

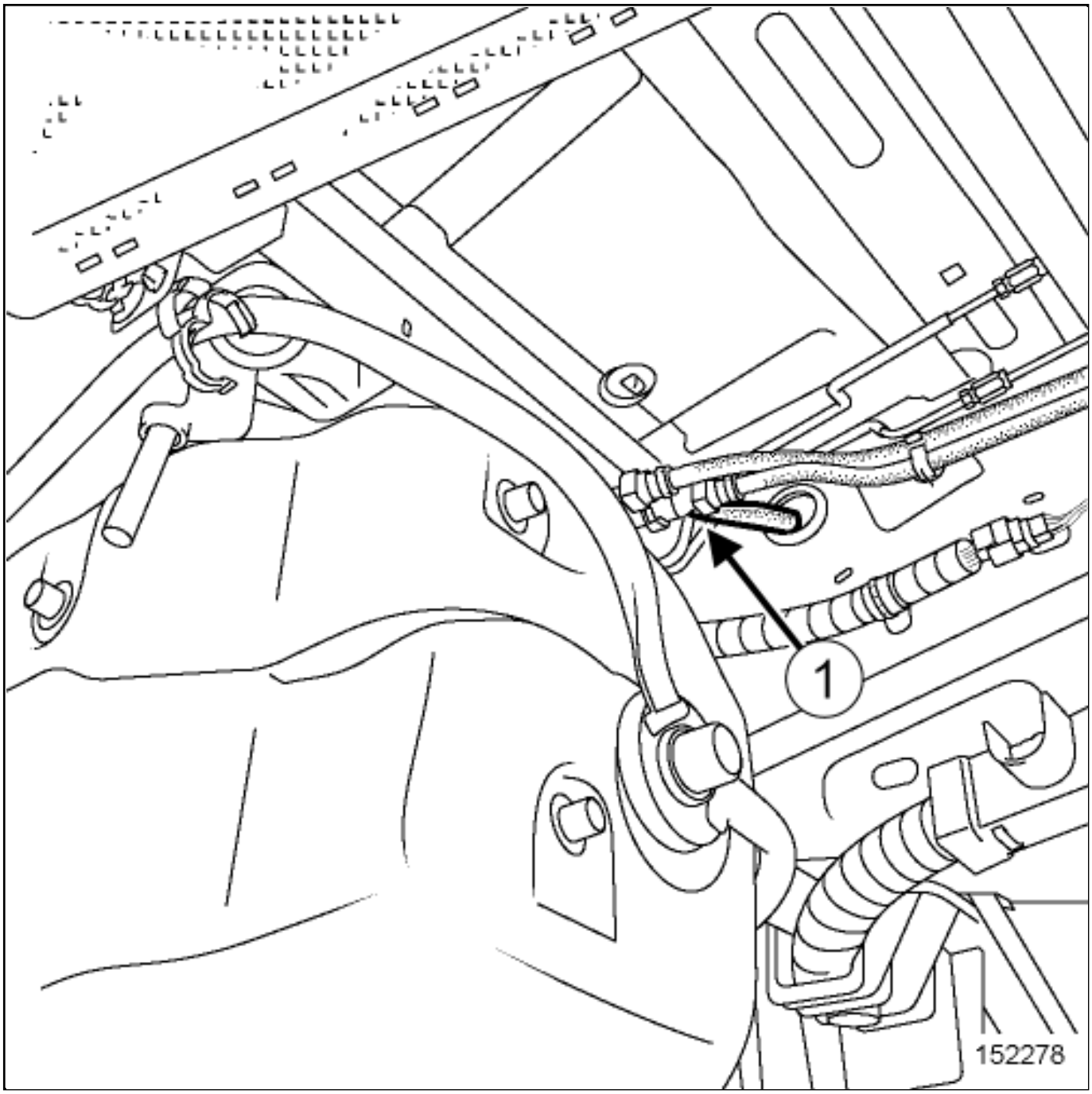
REMOVAL

1. REMOVAL PREPARATION OPERATION

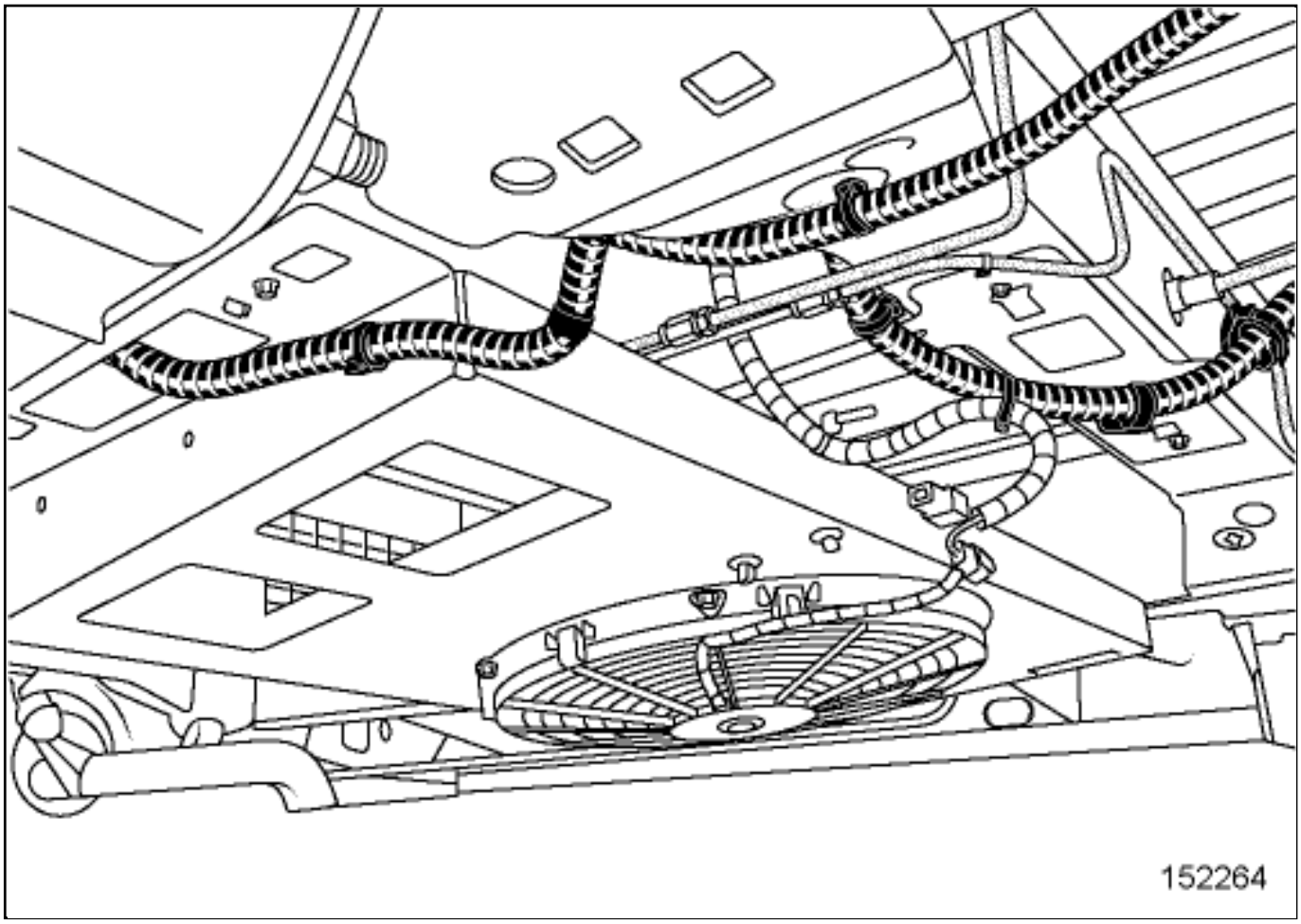
- Position the vehicle on a two-post lift Vehicle: Towing and lifting .

2. REMOVAL OPERATION

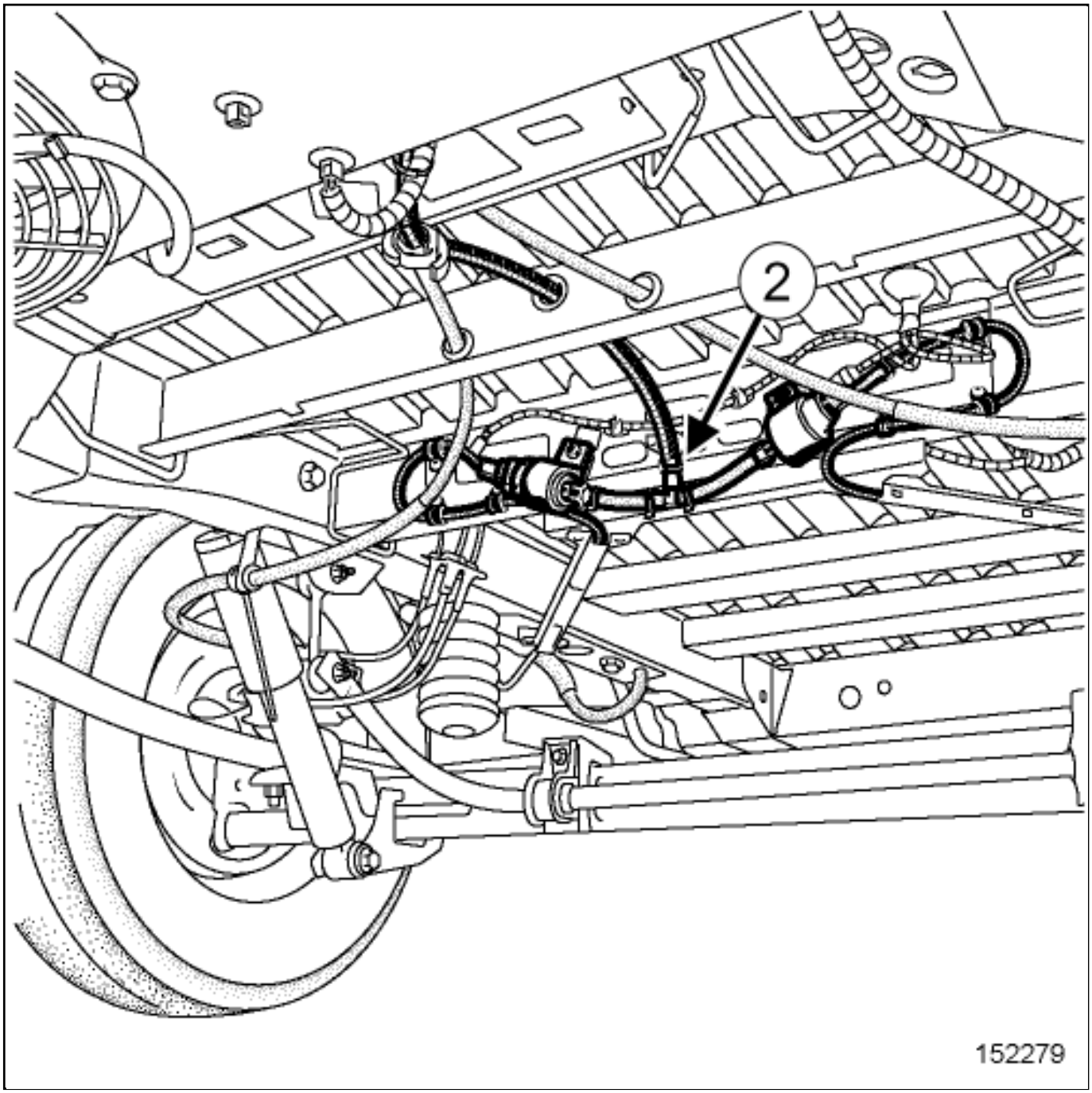
1- HOSE BETWEEN FUEL TANK AND METERING PUMPS



- Disconnect the fuel tank hose union at(1) .

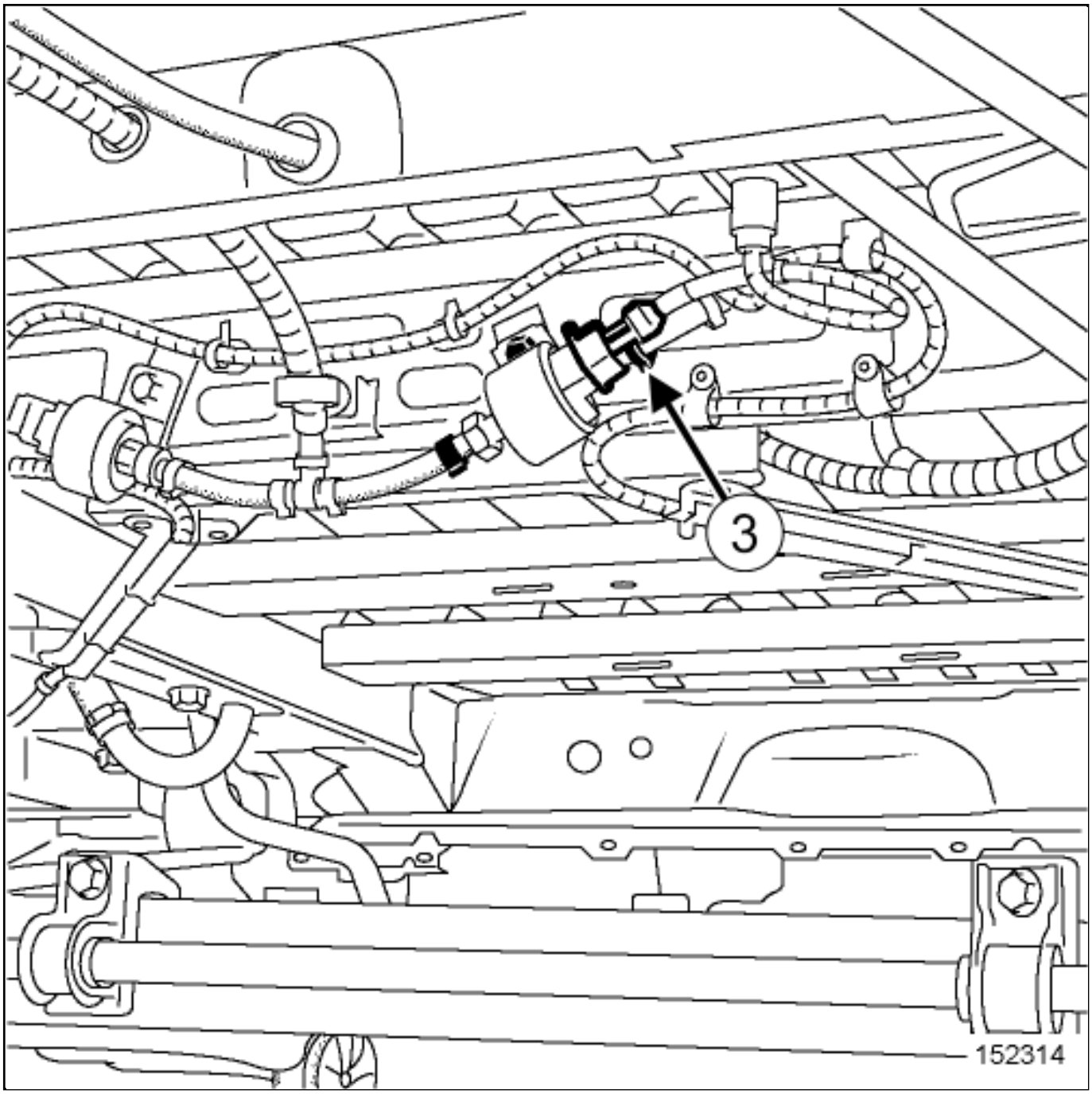


- Unclip the self-contained heater fuel supply hose.

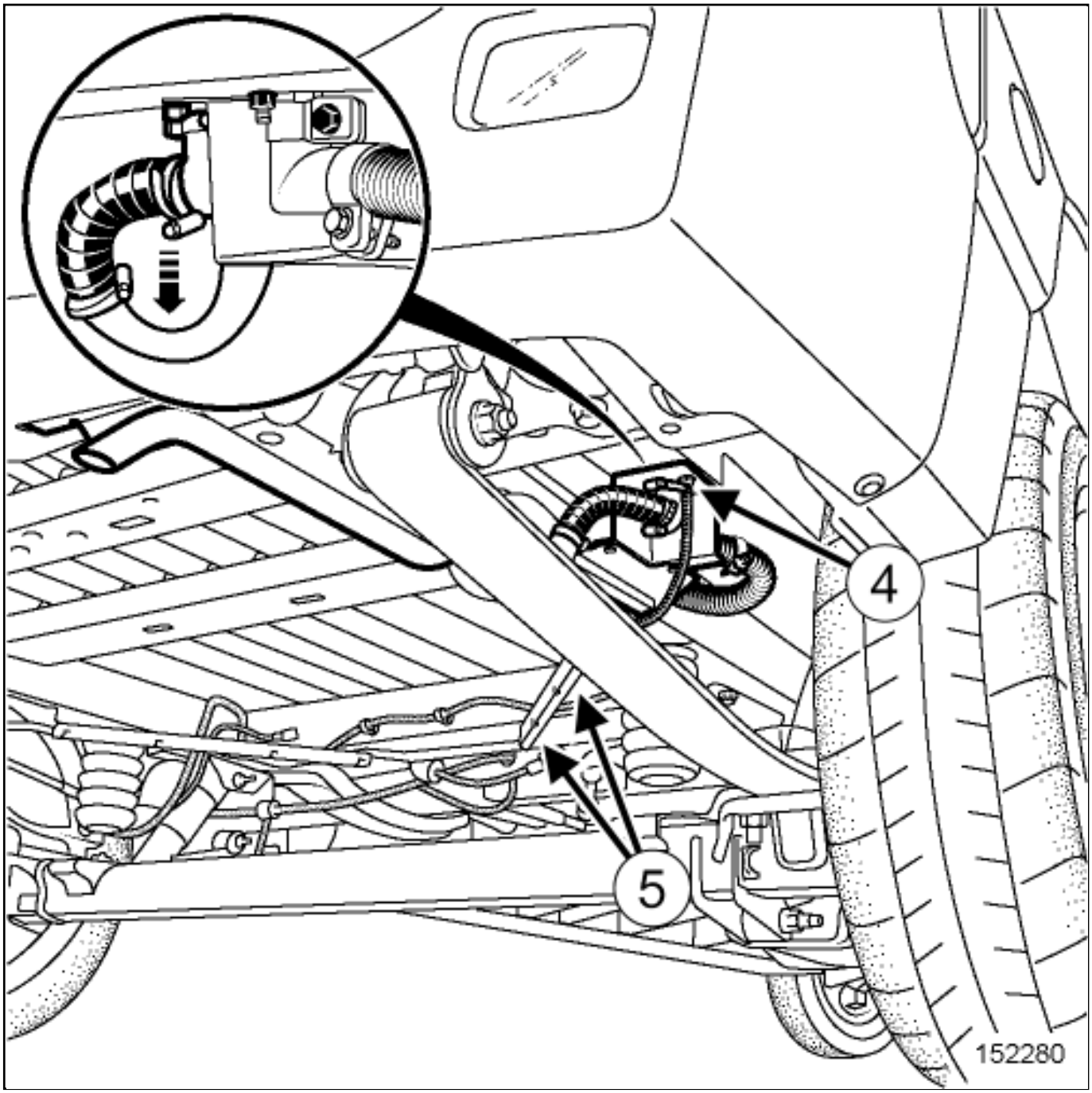


- Disconnect the self-contained heater fuel supply hose union at(2) .
- Unclip the self-contained heater fuel supply hose.
- Remove the self-contained heater fuel supply hose.
- Insert the blanking plugs.

2- HOSE BETWEEN METERING PUMPS AND SELF-CONTAINED HEATER



- Disconnect from the metering pump the fuel supply hose union at(3) .



- Disconnect the self-contained heater fuel supply hose at(4) .
- Drill rivets.
- Cut clips at(5) .
- Remove the self-contained heater fuel supply hose.

Insert the blanking plugs.

REFITTING

1. REFITTING PREPARATION OPERATION

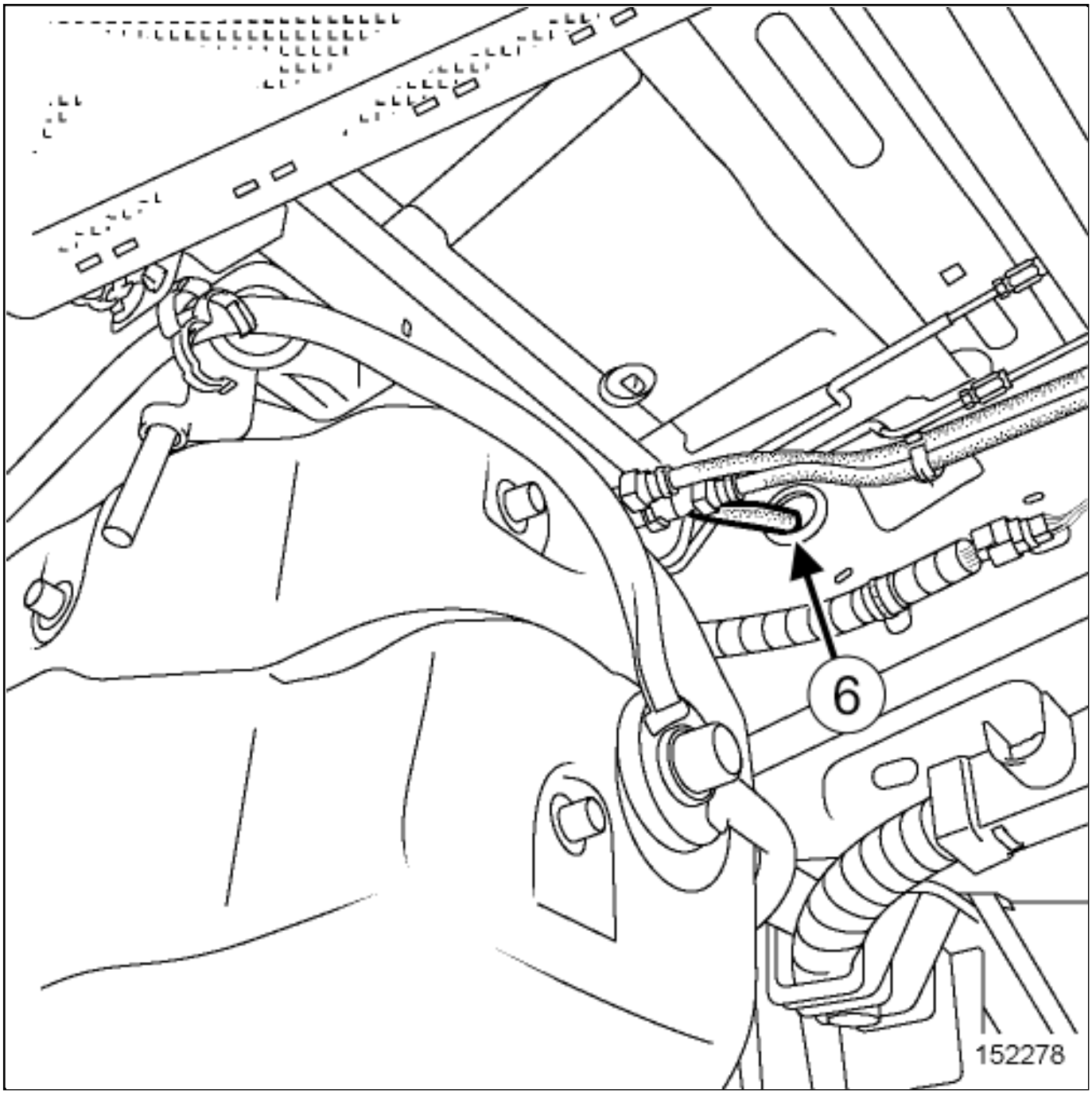
CAUTION

Do not remove the blanking plugs from each component until the last moment.

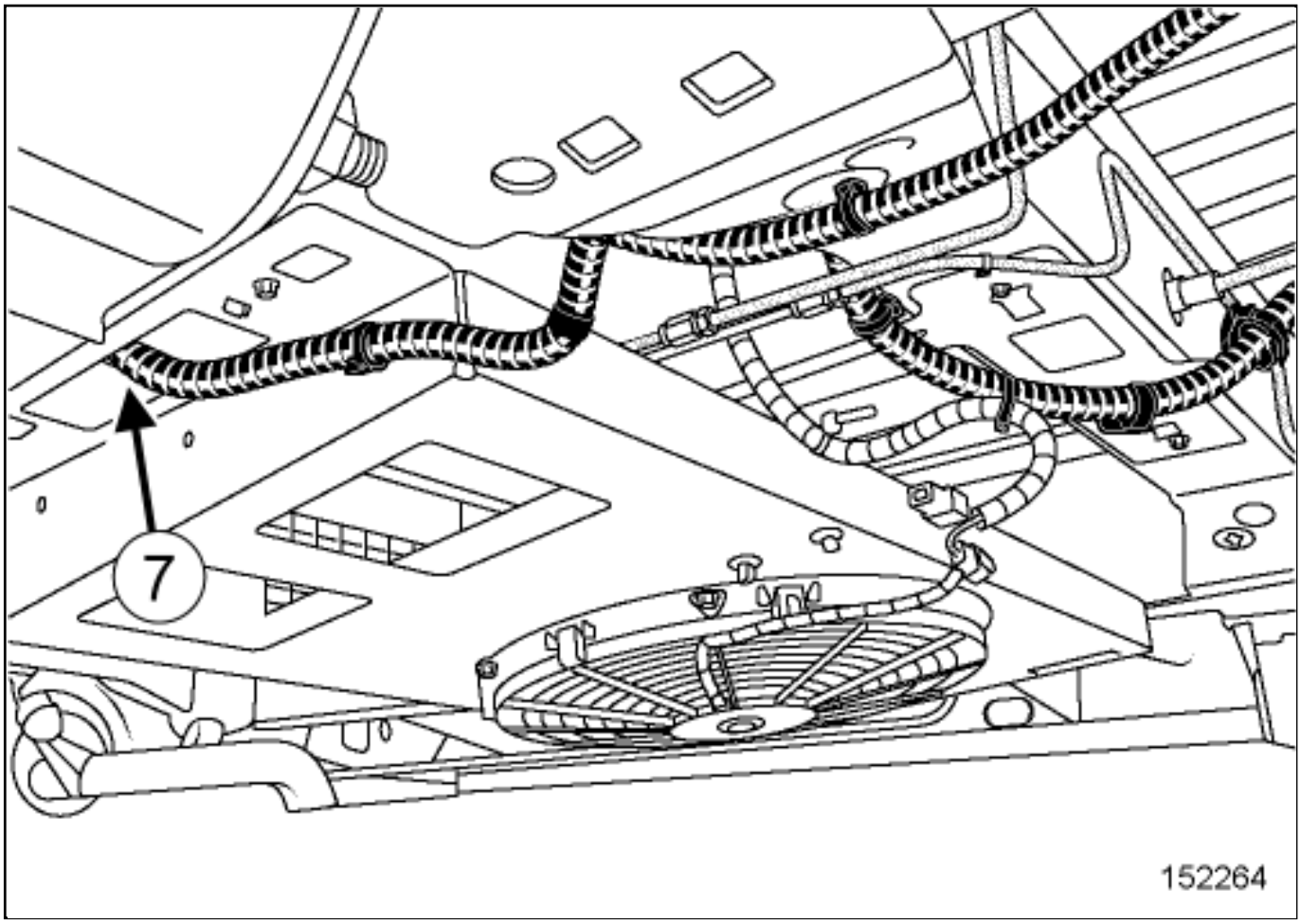
Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

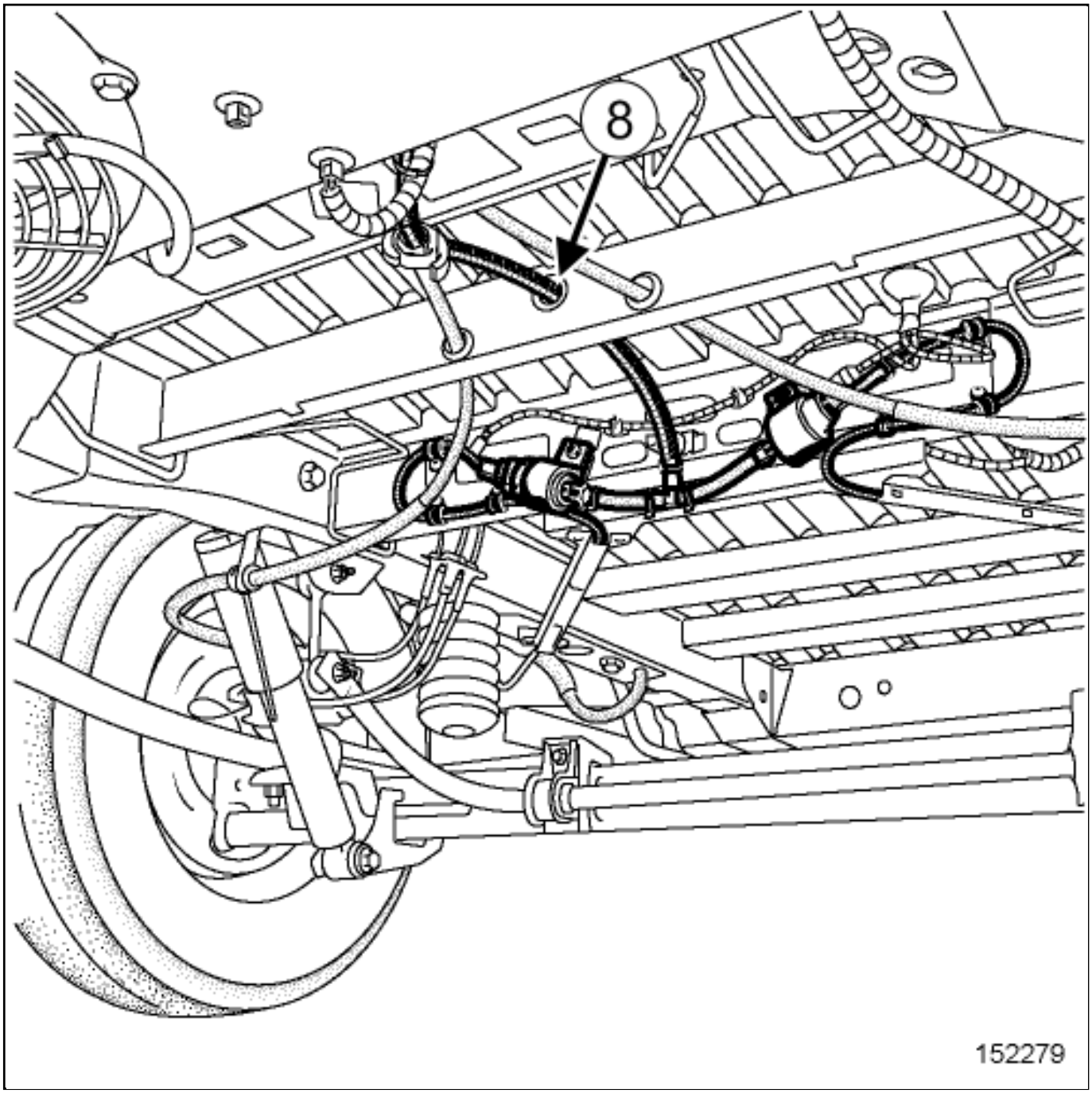
2. REFITTING OPERATION

1- HOSE BETWEEN FUEL TANK AND METERING PUMPS



Make pass the self-contained heater fuel supply hose by the hole(6) of the rear side member.


7
152264



- Push the self-contained heater fuel supply hose to see it at the level of the condenser(7) .

- Make go out the self-contained heater fuel supply hose by the hole of the condenser(7) and through the rear floor cross member hole(8) .

- Clip the self-contained heater fuel supply hose.

Remove the blanking plugs.

Refit:

- the self-contained heater fuel supply hose clip to the metering pumps union,
- the fuel tank hose union clip.

2- HOSE BETWEEN METERING PUMPS AND SELF-CONTAINED HEATER

Refit the self-contained heater fuel supply hose.

Remove the blanking plugs.

Refit:

- the self-contained heater fuel supply hose clip,
- the metering pump fuel supply hose clip,

Replace:

- clips,
- rivets.

FUSES: LIST AND LOCATION OF COMPONENTS

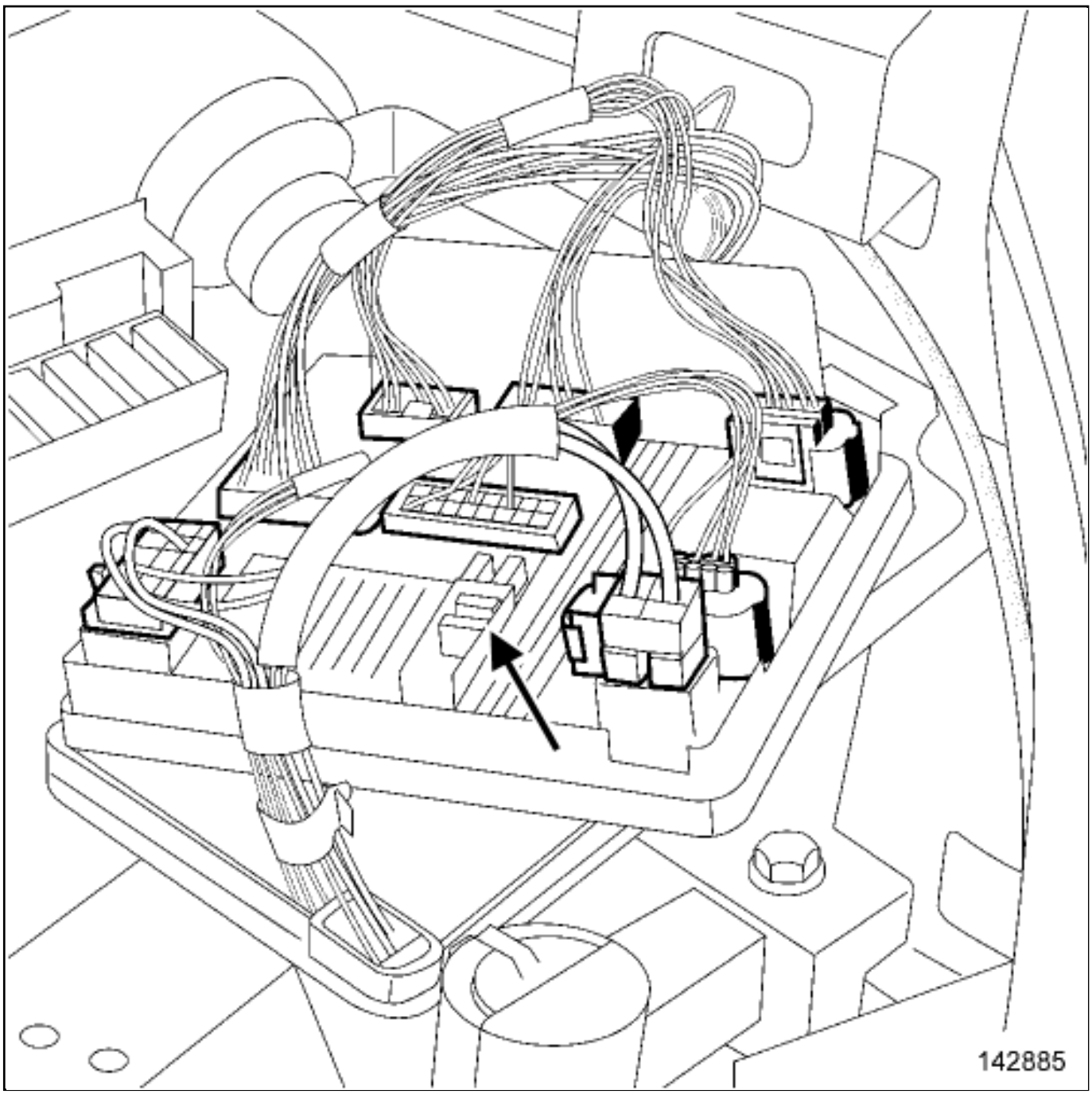
1. LIST OF COMPONENTS

The vehicle has several fuse boxes:

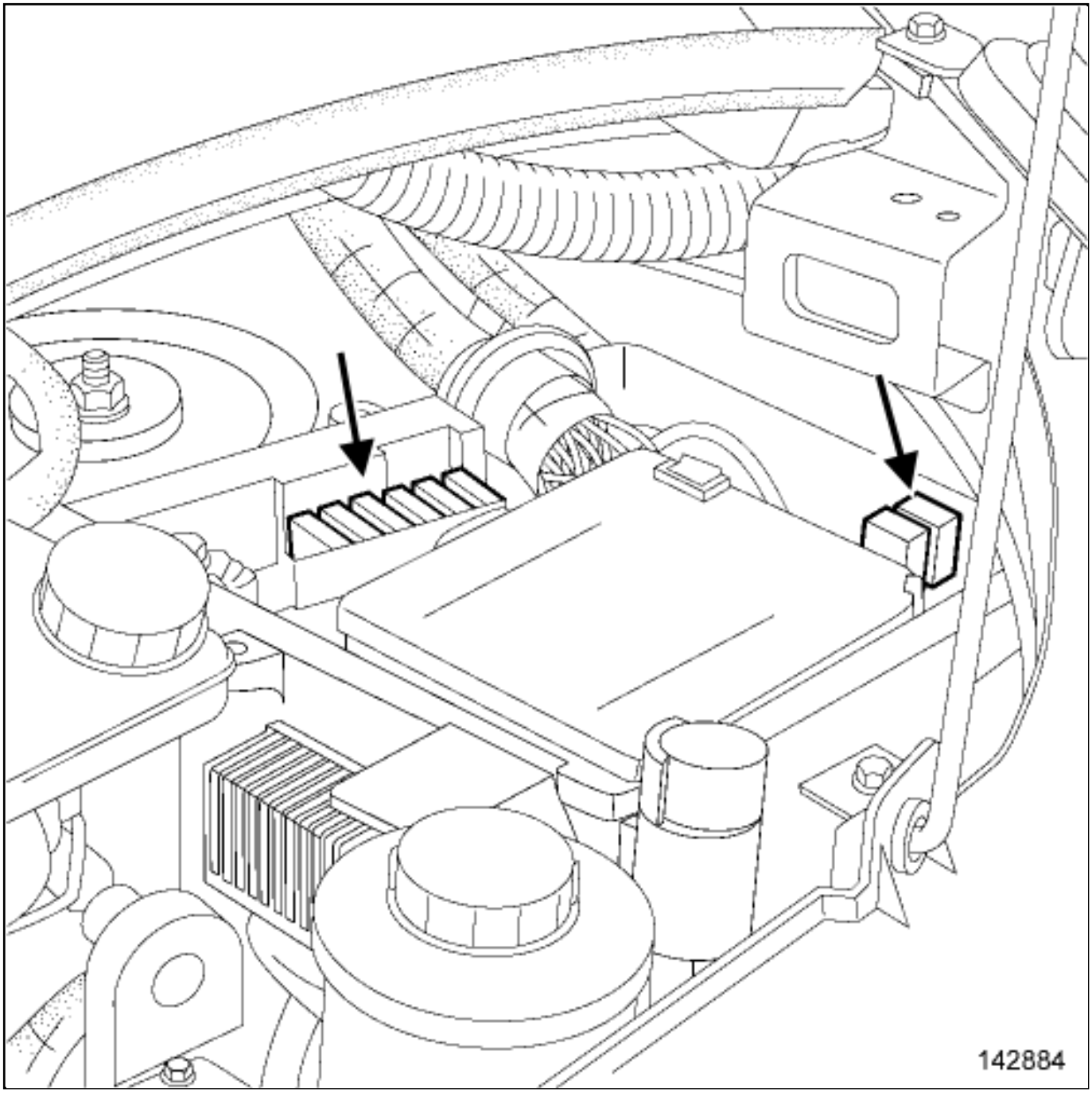
- Protection and Switching Unit fuses
- Engine compartment fuses and relays
- passenger compartment fuse and relay box
- battery protection fuses

2. POSITION OF THE COMPONENTS

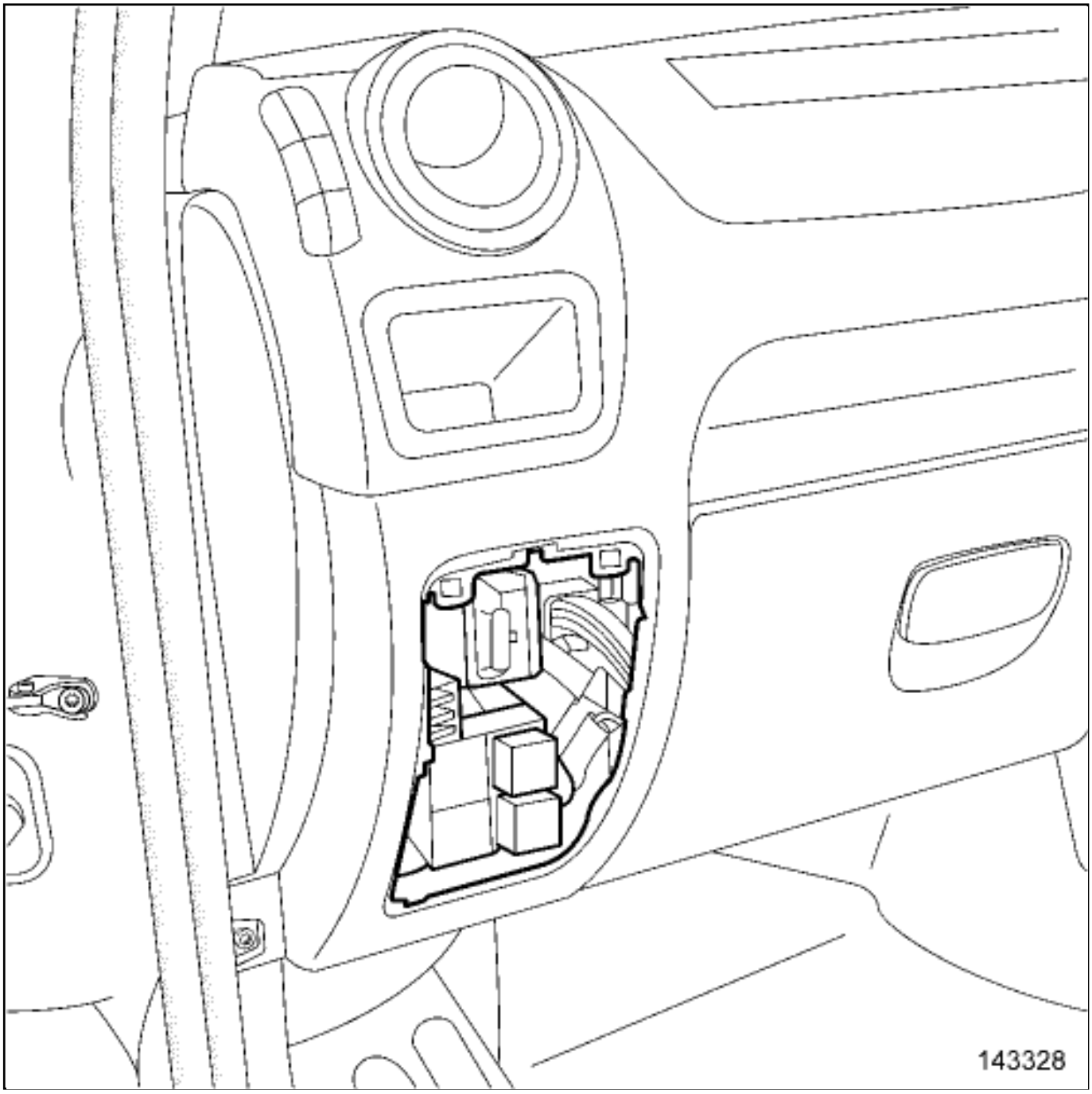
PROTECTION AND SWITCHING UNIT FUSES



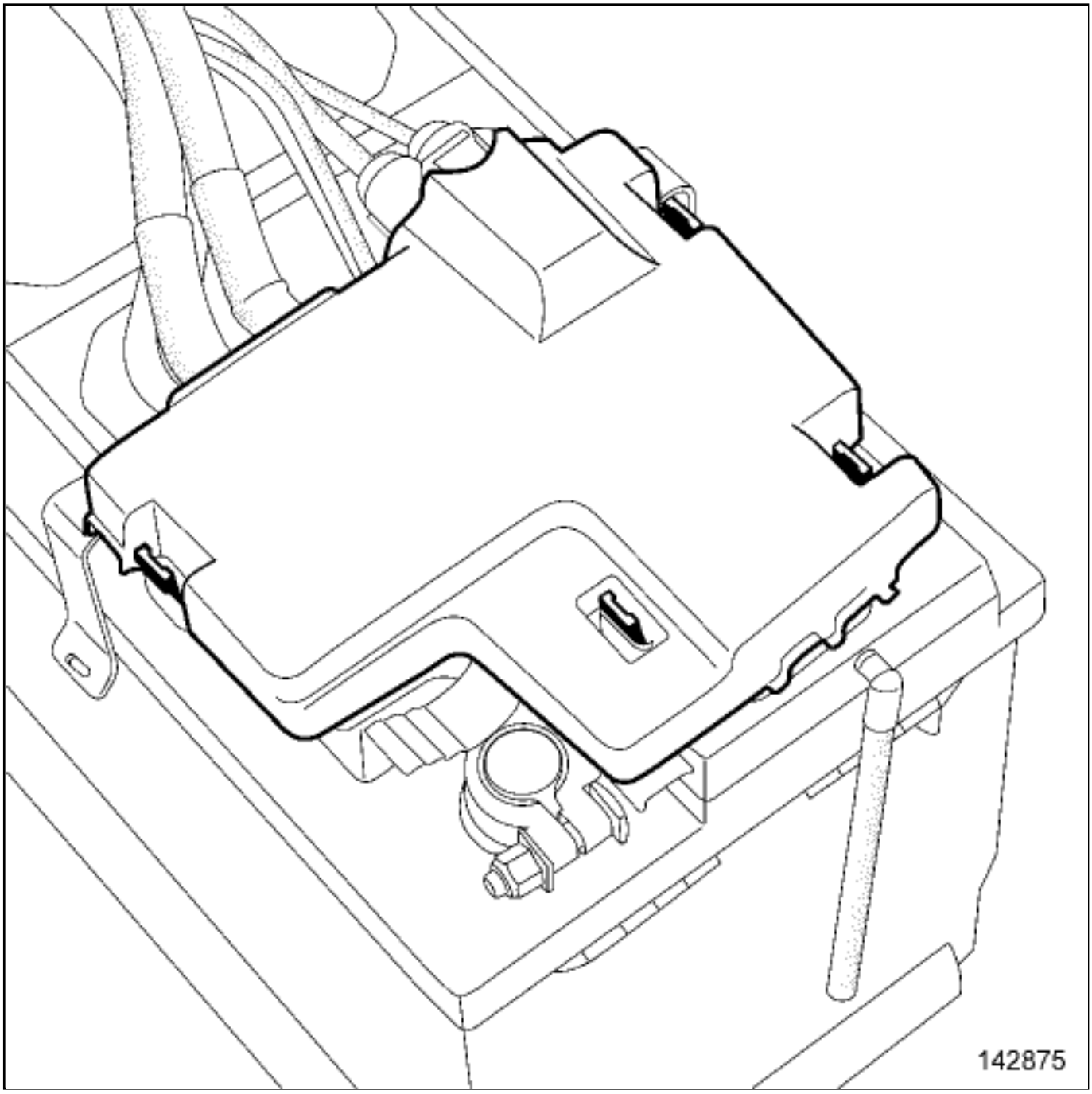
ENGINE COMPARTMENT FUSES AND RELAYS

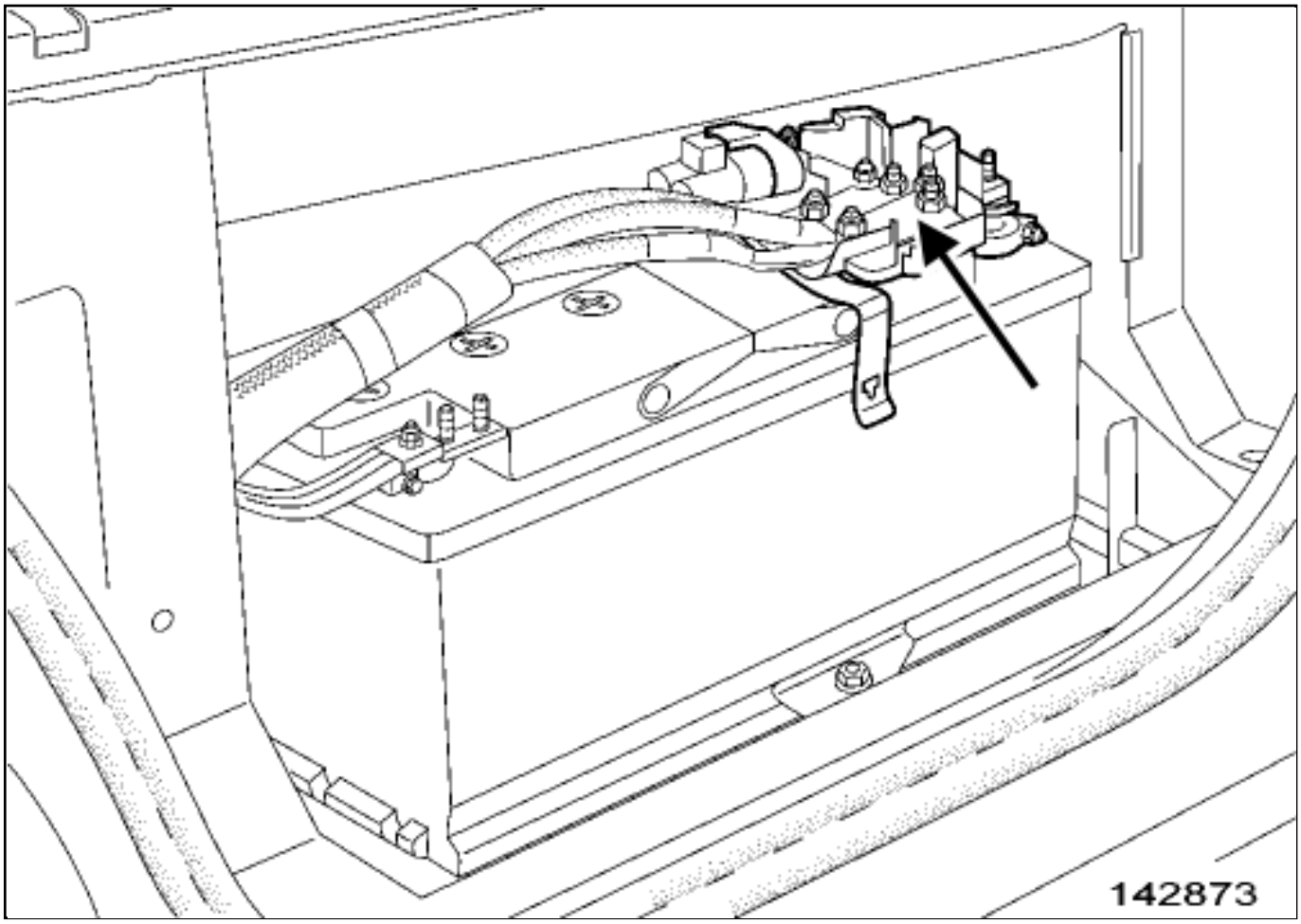


PASSENGER COMPARTMENT FUSE AND RELAY BOX



BATTERY PROTECTION FUSES


142875


142873

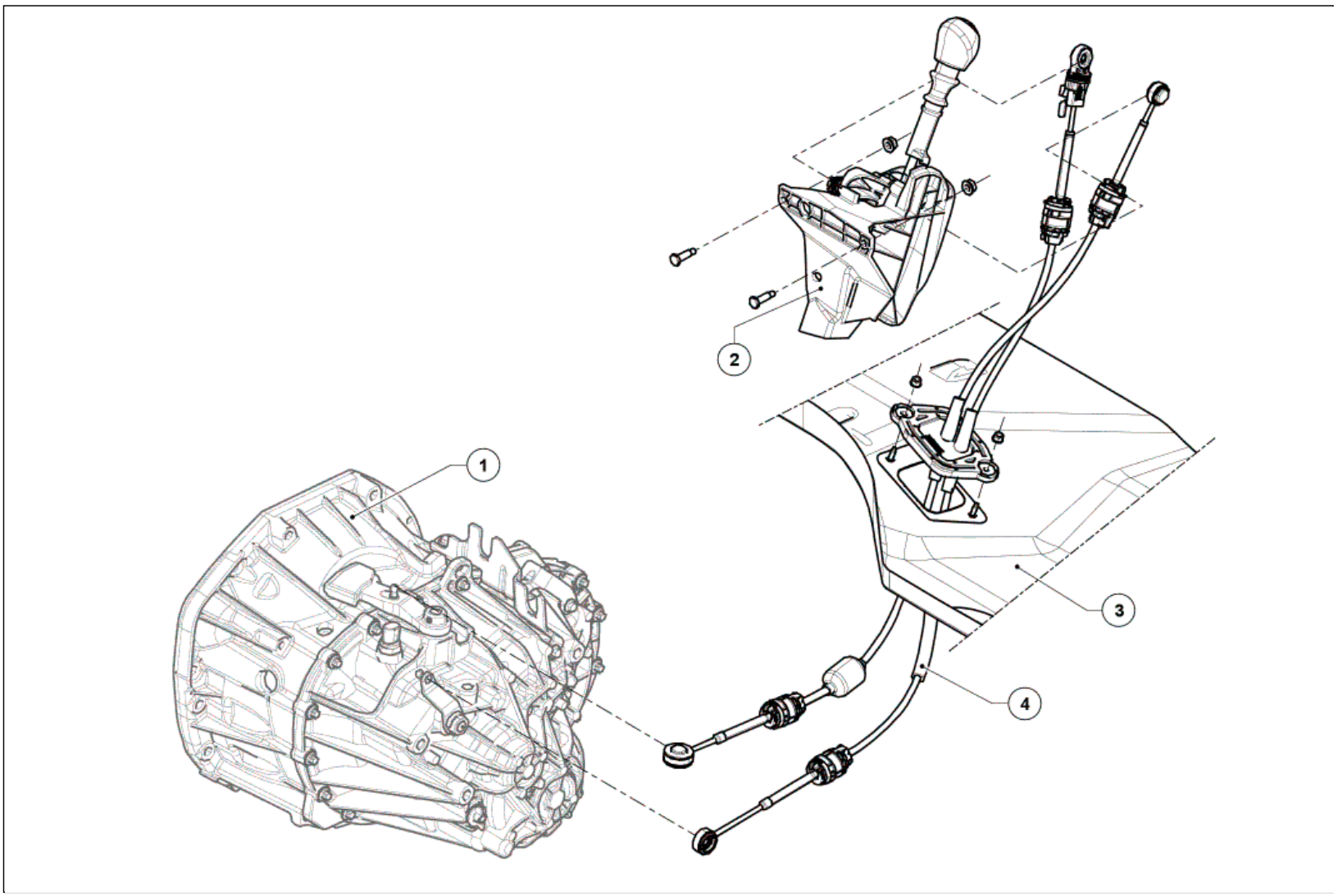
GEAR CONTROL ASSEMBLY: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

(see **Illustration key: Description**) Key.



Mark	Description	Information
3	Centre floor front extension	

Mark	Description	Information
1	Gearbox	AND (ZF4) ZF4
2	Gear lever	(see 37A, Mechanical component controls, Gear control unit: Removal - Refitting)
4	Gear control cable	(see **Gear selection control cable: Removal - Refitting**)

XSL version : 3.02 du 22/07/11

GEAR CONTROL UNIT: REMOVAL - REFITTING

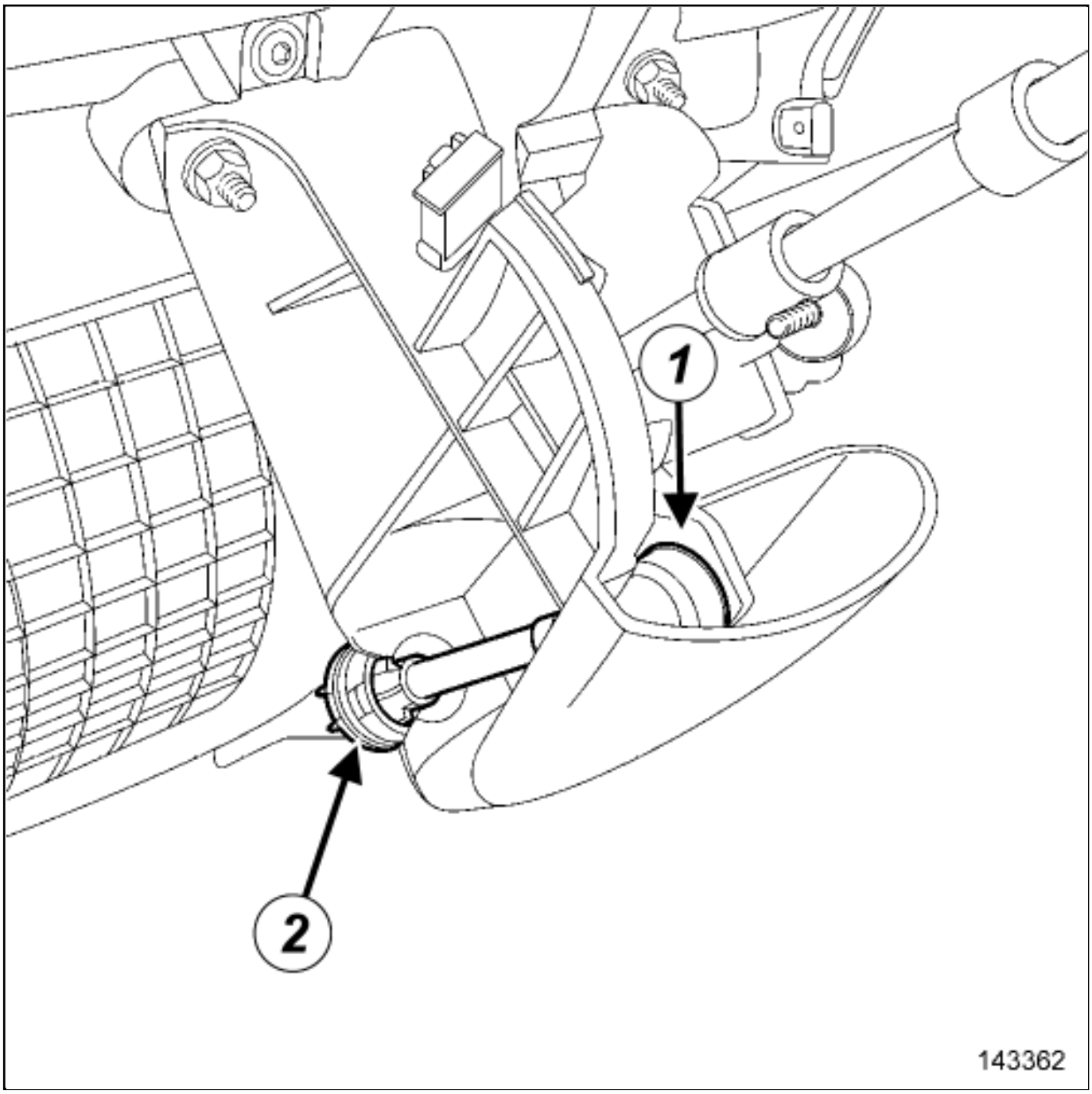
Location and specifications (tightening torques, parts always to be replaced, etc.)Gear control assembly: Exploded view .

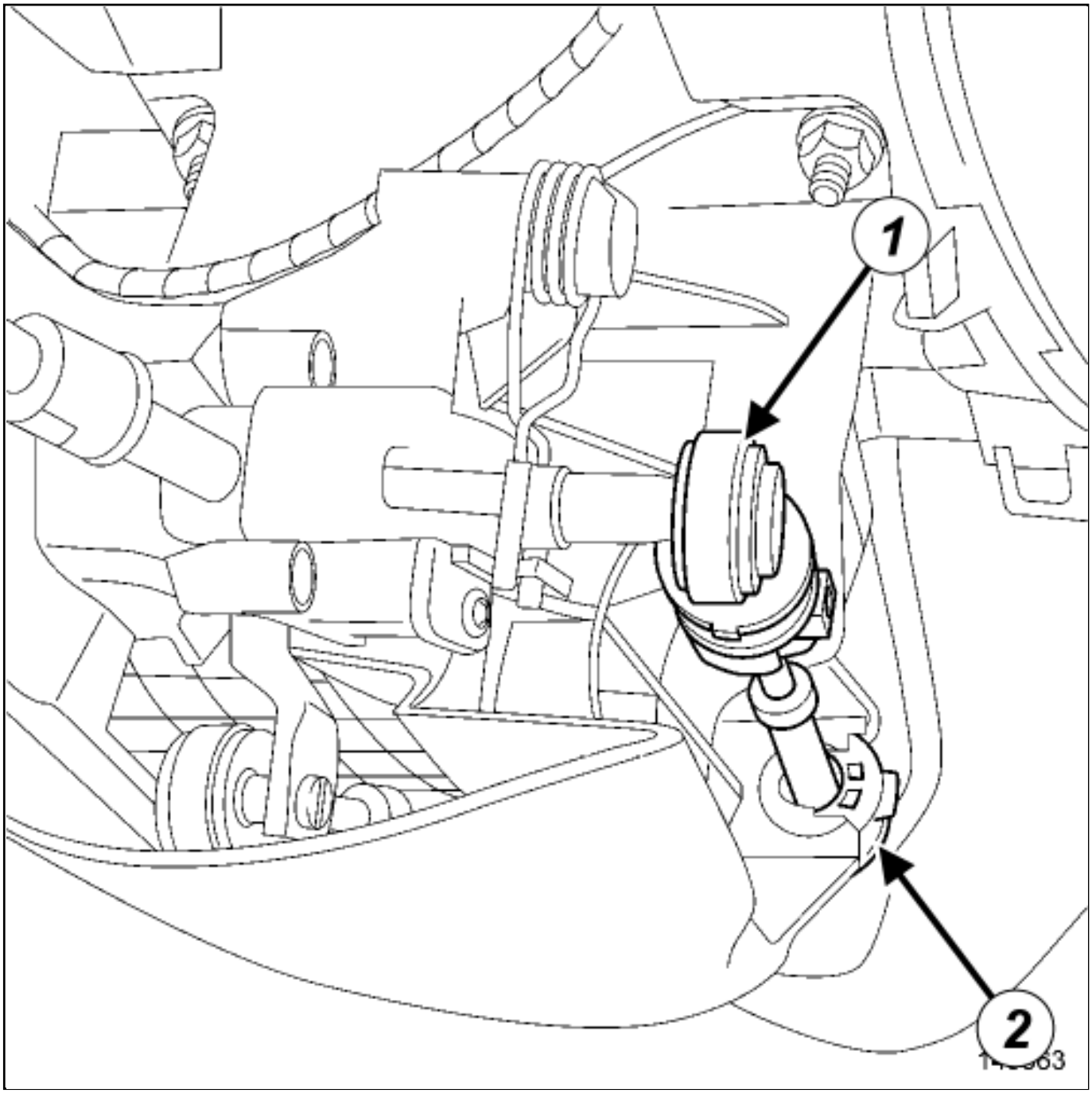
REMOVAL

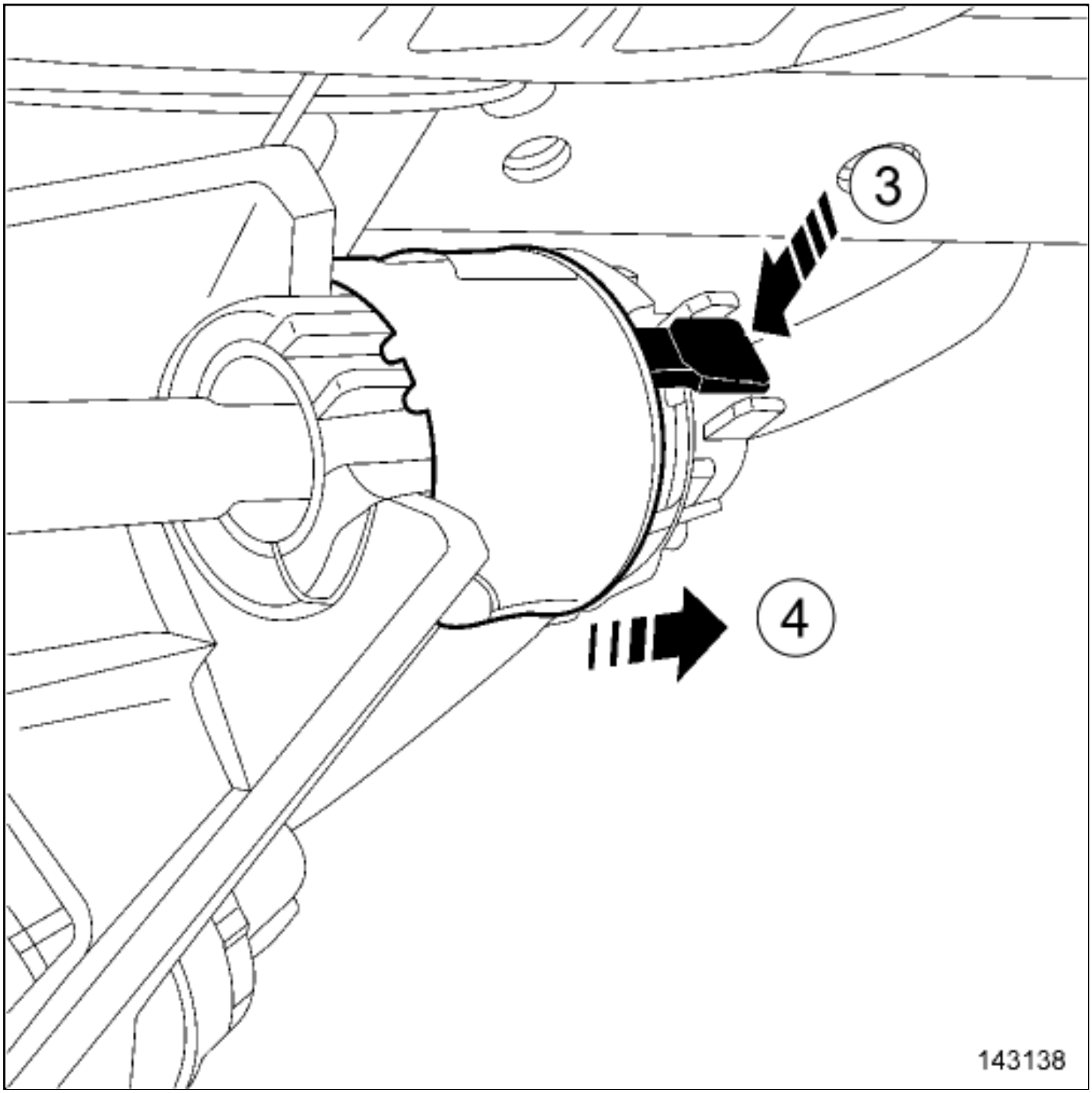
1. REMOVAL PREPARATION OPERATION

- Remove the centre consoleCentre console: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION


1
2
143362


1
2



- Unclip the anchoring ball joints(1) using an open-jawed spanner.

- Unclip the sheath stops of the gear control cables(2) by:
  - pressing the tab(3) ,
  - pulling the retaining ring of the control cables at(4) .

- Remove the gear control unitGear control assembly: Exploded view .

REFITTING

- Proceed in the reverse order to removal.
- Adjust the gear control cables(see **Mechanical gear control cable: Adjustment**) .
- Check that the system and gear selection are working correctly.

MECHANISM HOUSING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
component support

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

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 21A, Manual gearbox , Manual gearbox: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the manual gearbox Gearbox assembly: Exploded view .
- Position the gearbox on the component support (see 21A, Manual gearbox , Gearbox support equipment: Use) .
- Remove:
  - the gearshift plate (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) ,
  - the reverse gear switch Gearbox assembly: Exploded view .
- Remove the clutch housing Gearbox assembly: Exploded view .

- Remove the shaft unit(see 21A, Manual gearbox , Gearbox shaft: Removal - Refitting) .

2. REMOVAL OPERATION

- Remove the mechanism housingGearbox assembly: Exploded view .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean all the removed partsVehicle: Parts and consumables for the repair (04B, Consumables - Products).

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

GEARBOX OUTPUT FLANGE SEAL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Hub locking tool.	Rou. 604-01
Inertia seal extractor	Bvi. 1948
Tool for fitting driveshaft coupling output seal	Bvi. 1946

parts always to be replaced:
Gearbox output flange seal

WARNING

- Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

Location and specifications (tightening torques, parts always to be replaced, etc.) Gearbox assembly: Exploded view .

WARNING

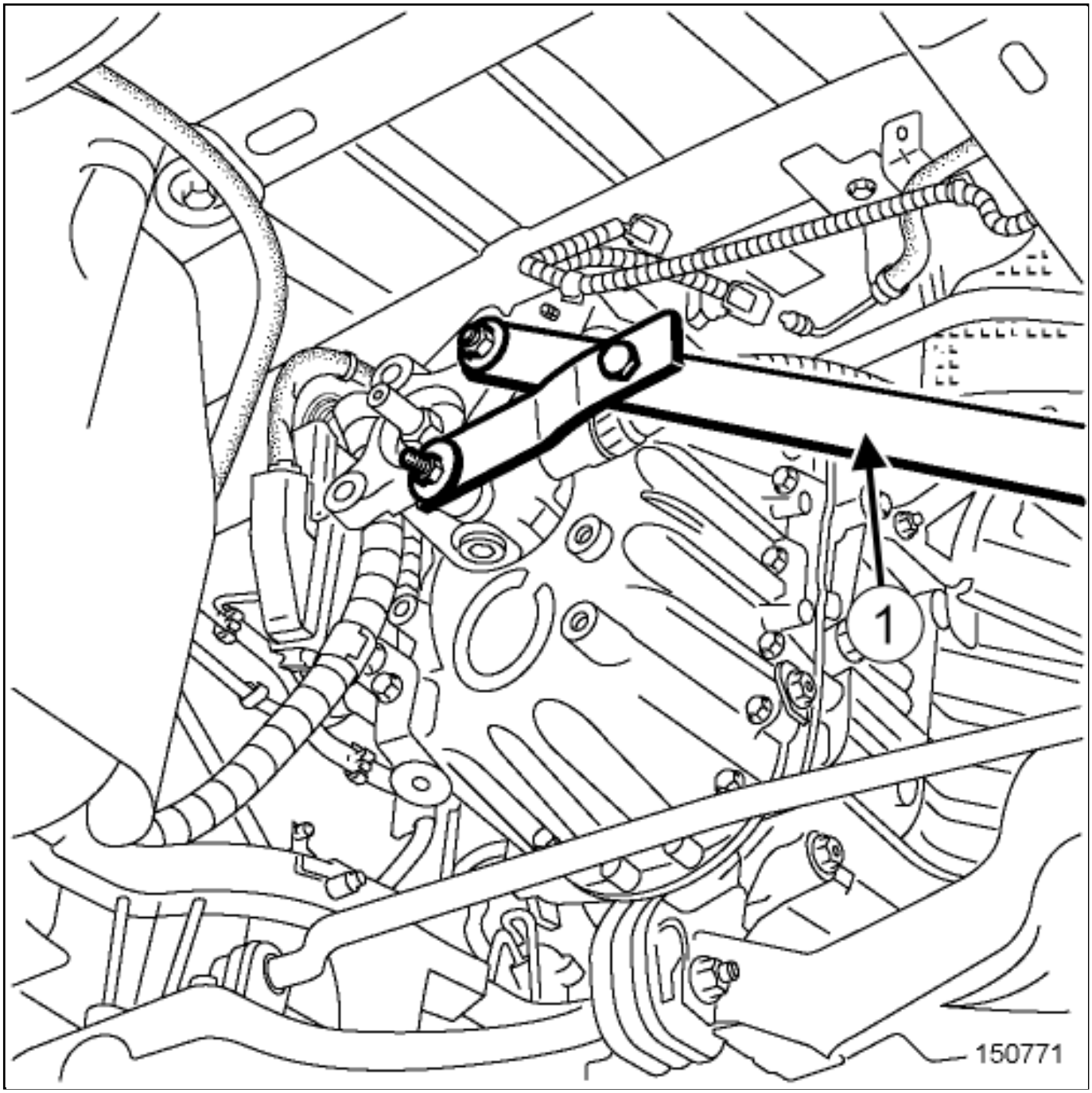
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

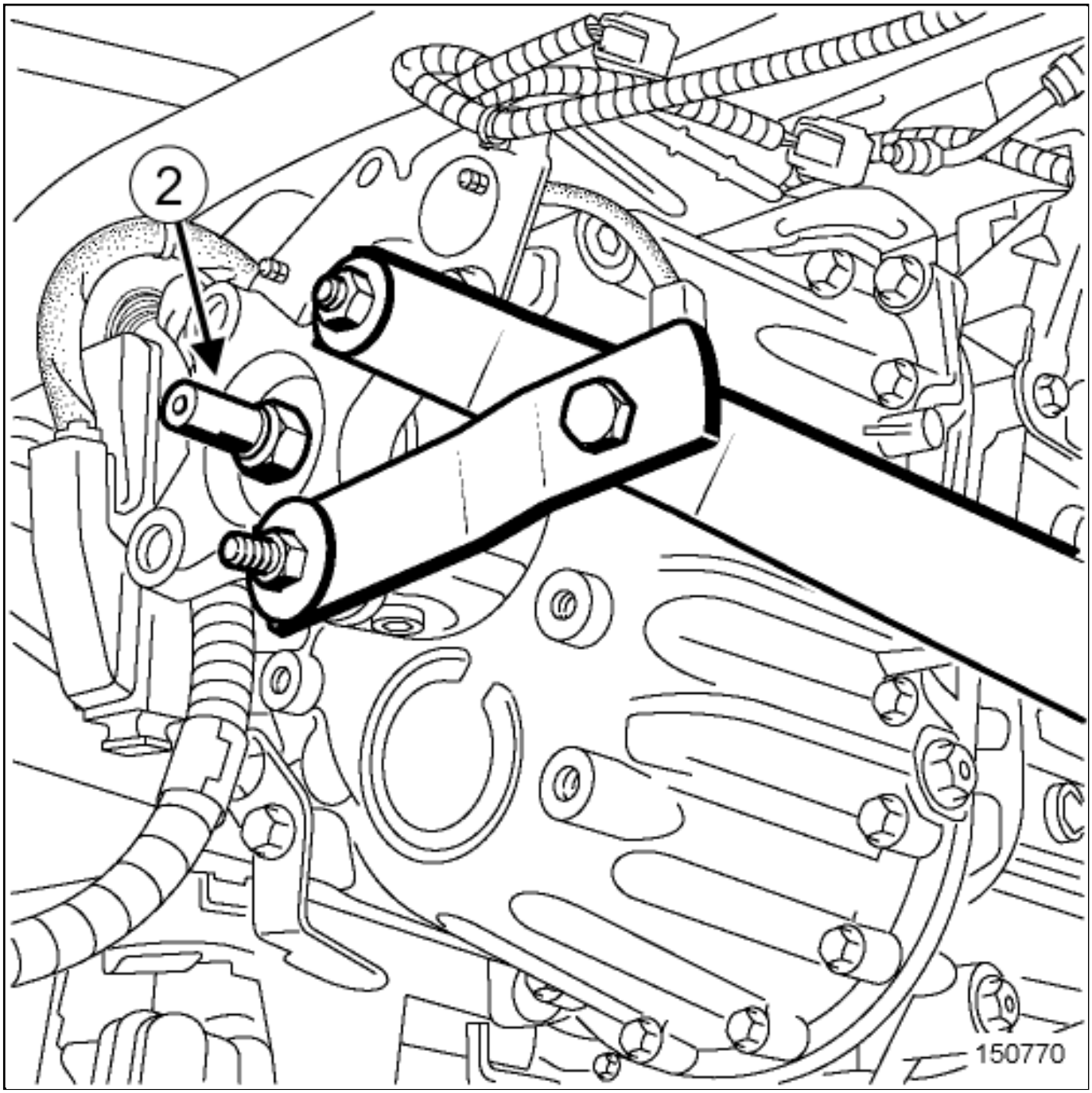
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Towing and lifting).
- Remove the longitudinal driveshaft Driveshaft assembly: Exploded view .

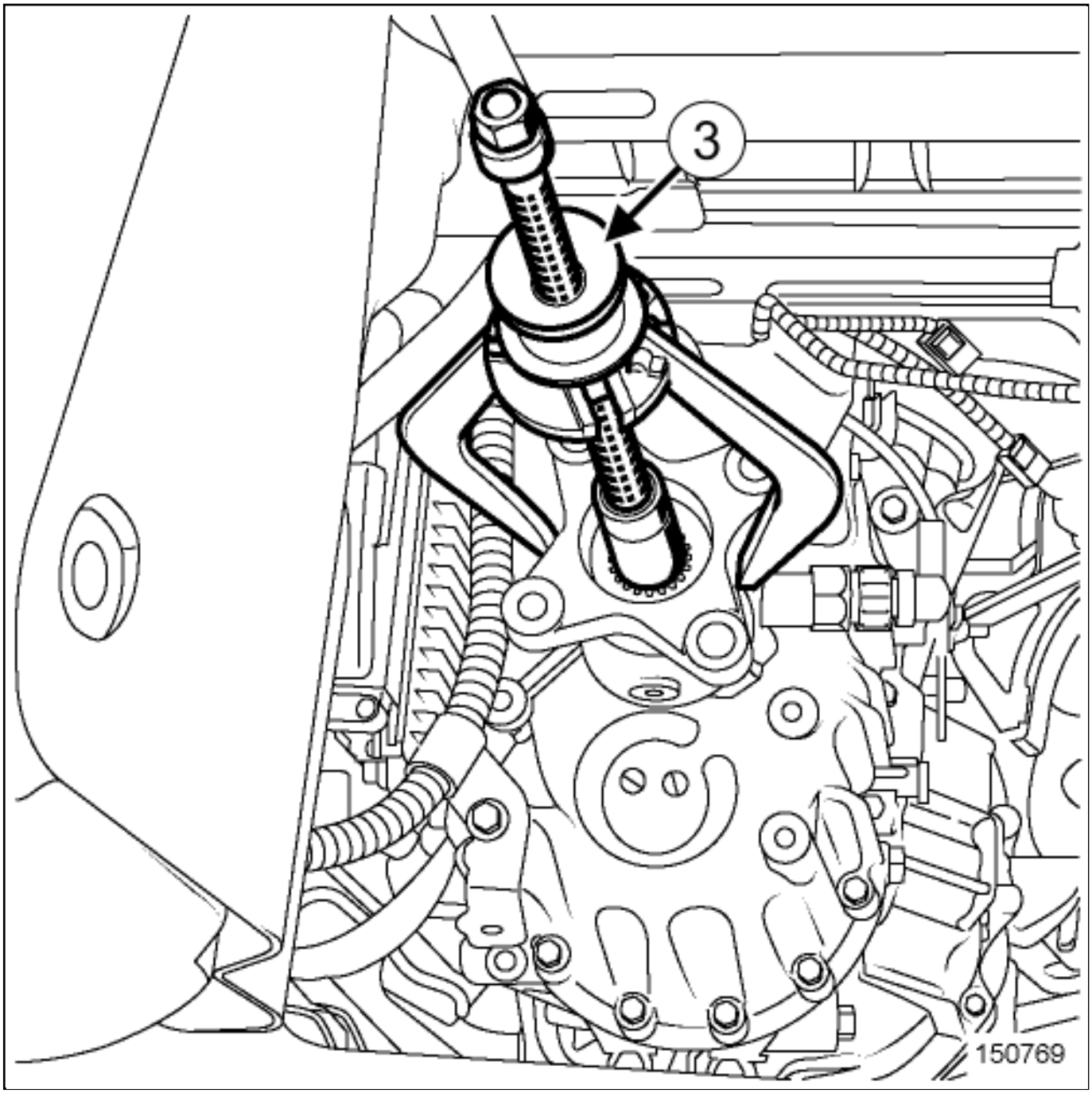
2. REMOVAL OPERATION



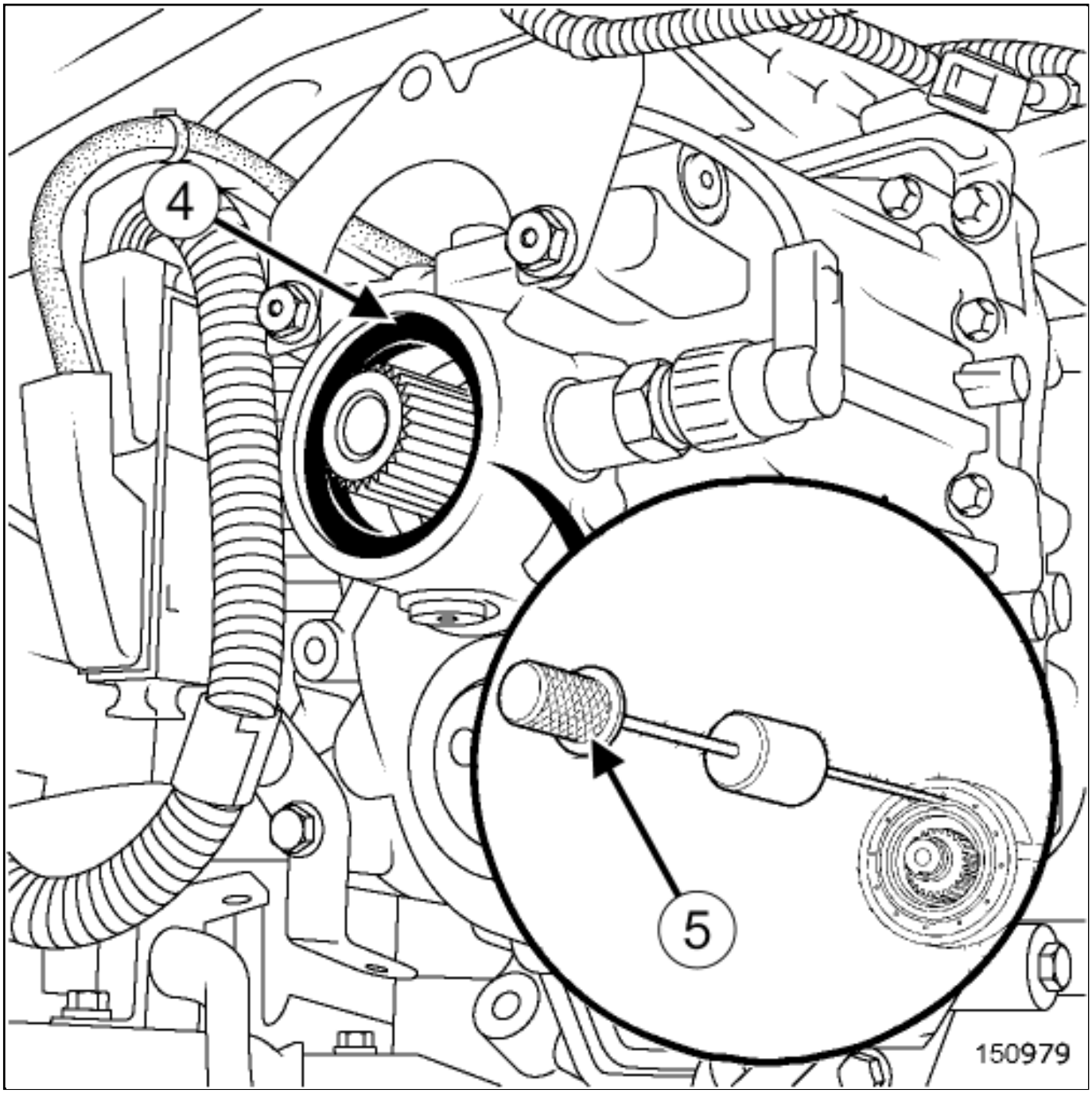
- Fit the toolHub locking tool.(Rou. 604-01) (1) on the gearbox output flange.



- Remove the bolt(2) from the gearbox output flange.



- Remove the gearbox output flange using a three-claw extractor(3) .



Remove the gearbox output flange seal(4) using the toolInertia seal extractor(Bvi. 1948) (5) .

REFITTING

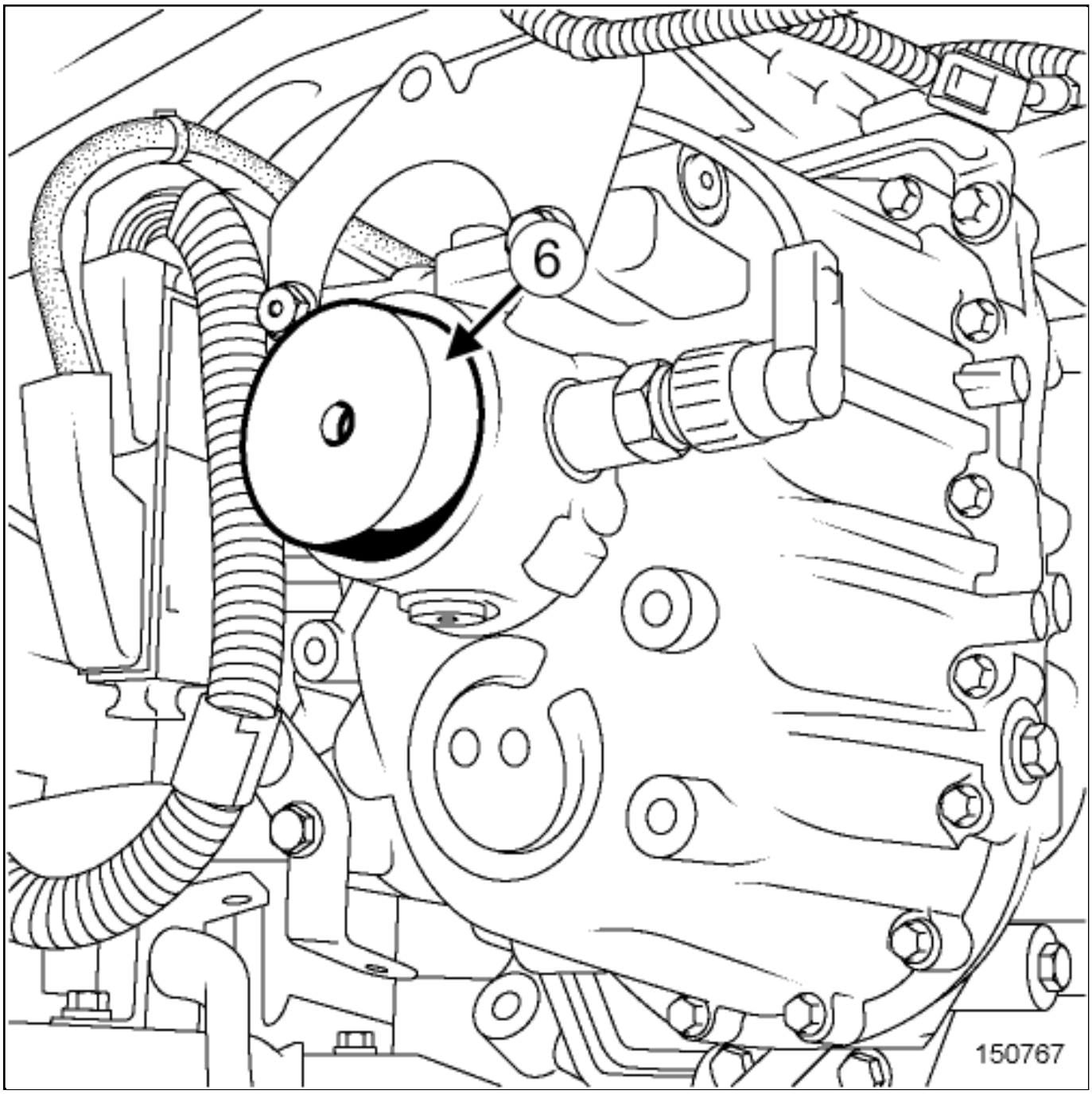
1. REFITTING PREPARATION OPERATION

parts always to be replaced: Gearbox output flange seal .

Use SURFACE CLEANERVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean and degrease:

- the gearbox output flange seal housing,
- the gearbox output flange joint face.

2. REFITTING OPERATION



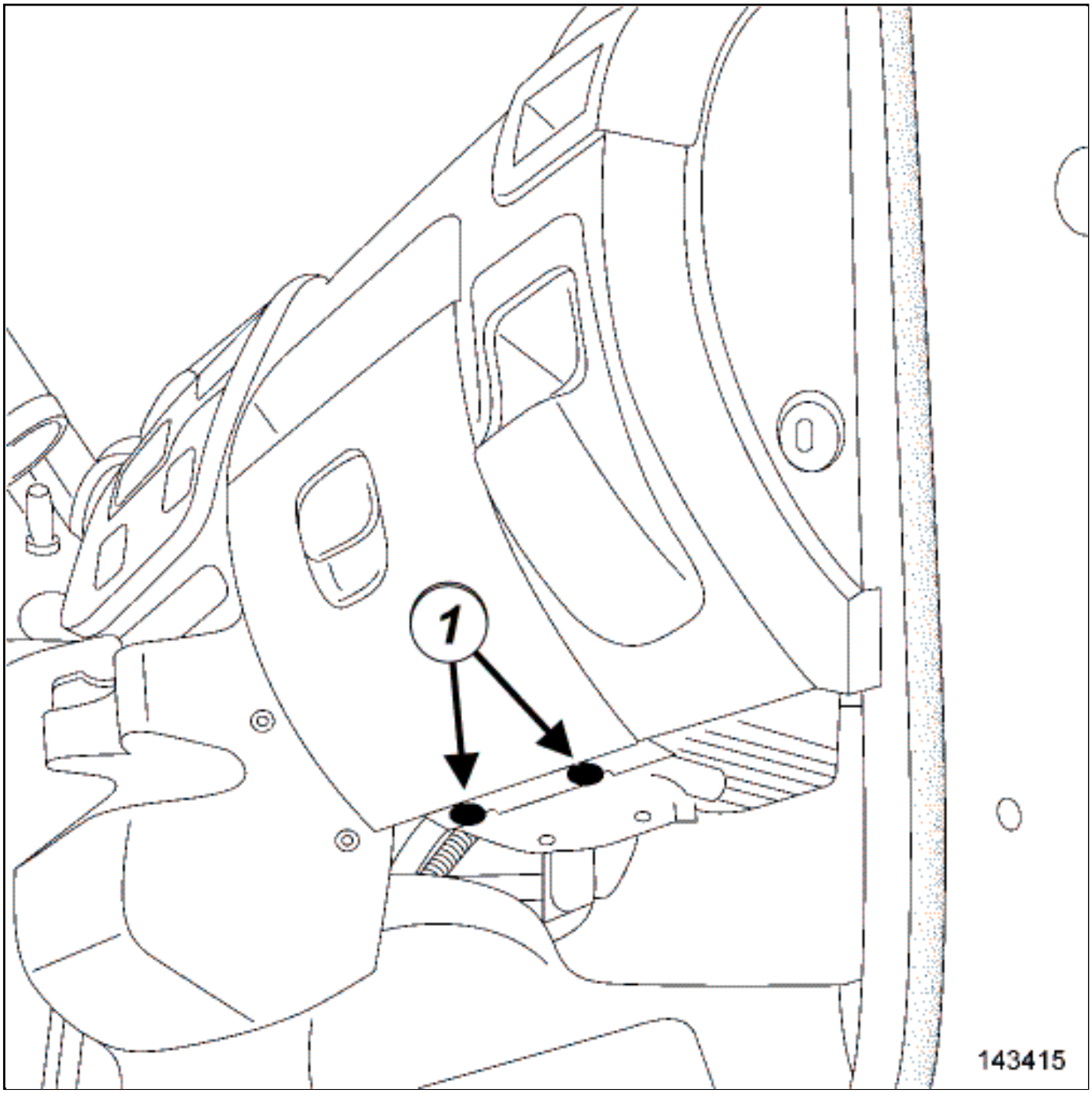
Refit a new seal using the toolTool for fitting driveshaft coupling output seal(Bvi. 1946) (6) .

Proceed in the reverse order to removal.

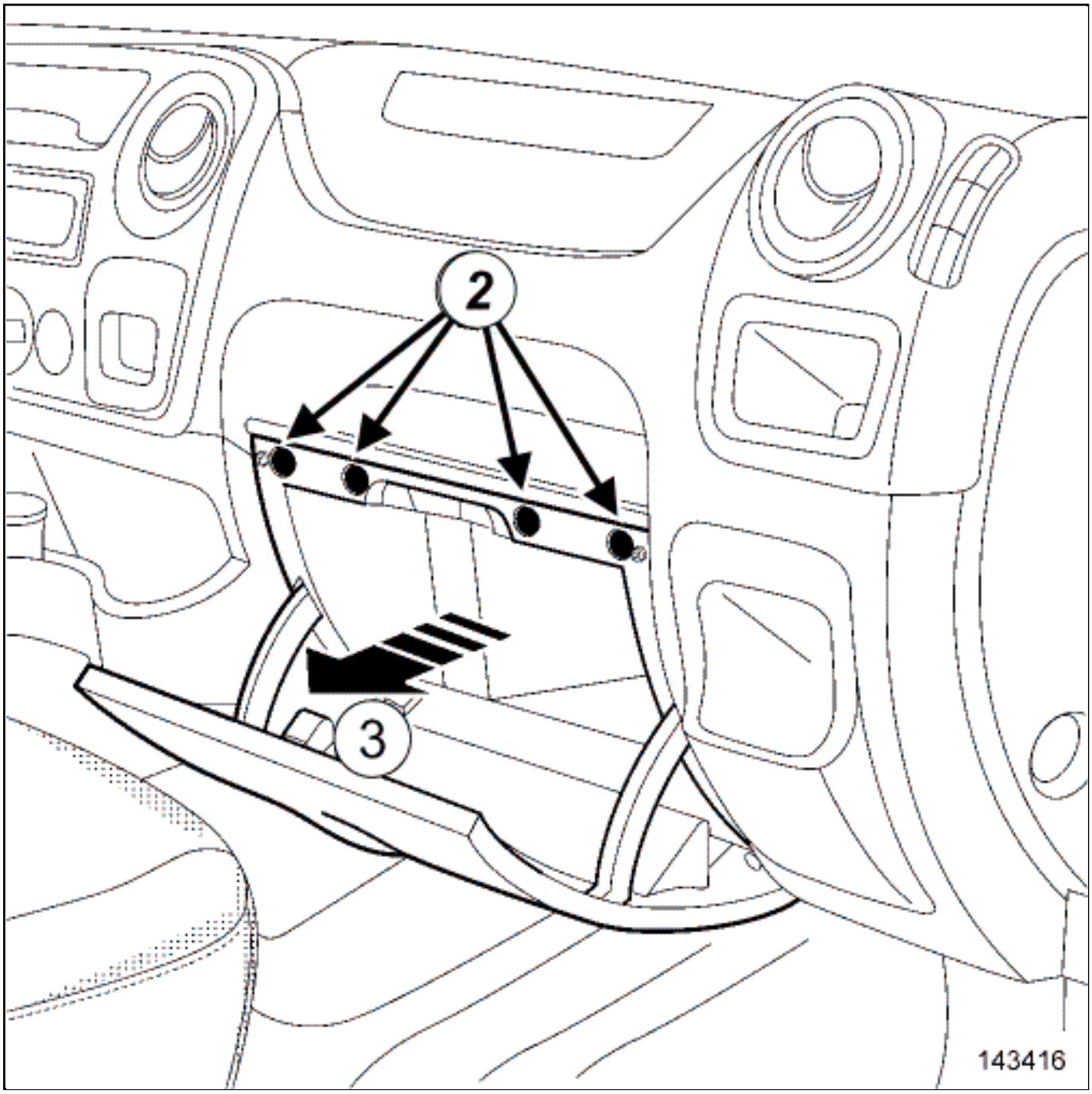
GLOVEBOX: REMOVAL - REFITTING

REMOVAL

1. REMOVAL OPERATION



- Remove the bolts(1) .
- Open the glovebox.



- Remove:
  - the bolts(2) ,
  - the glovebox by(3) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

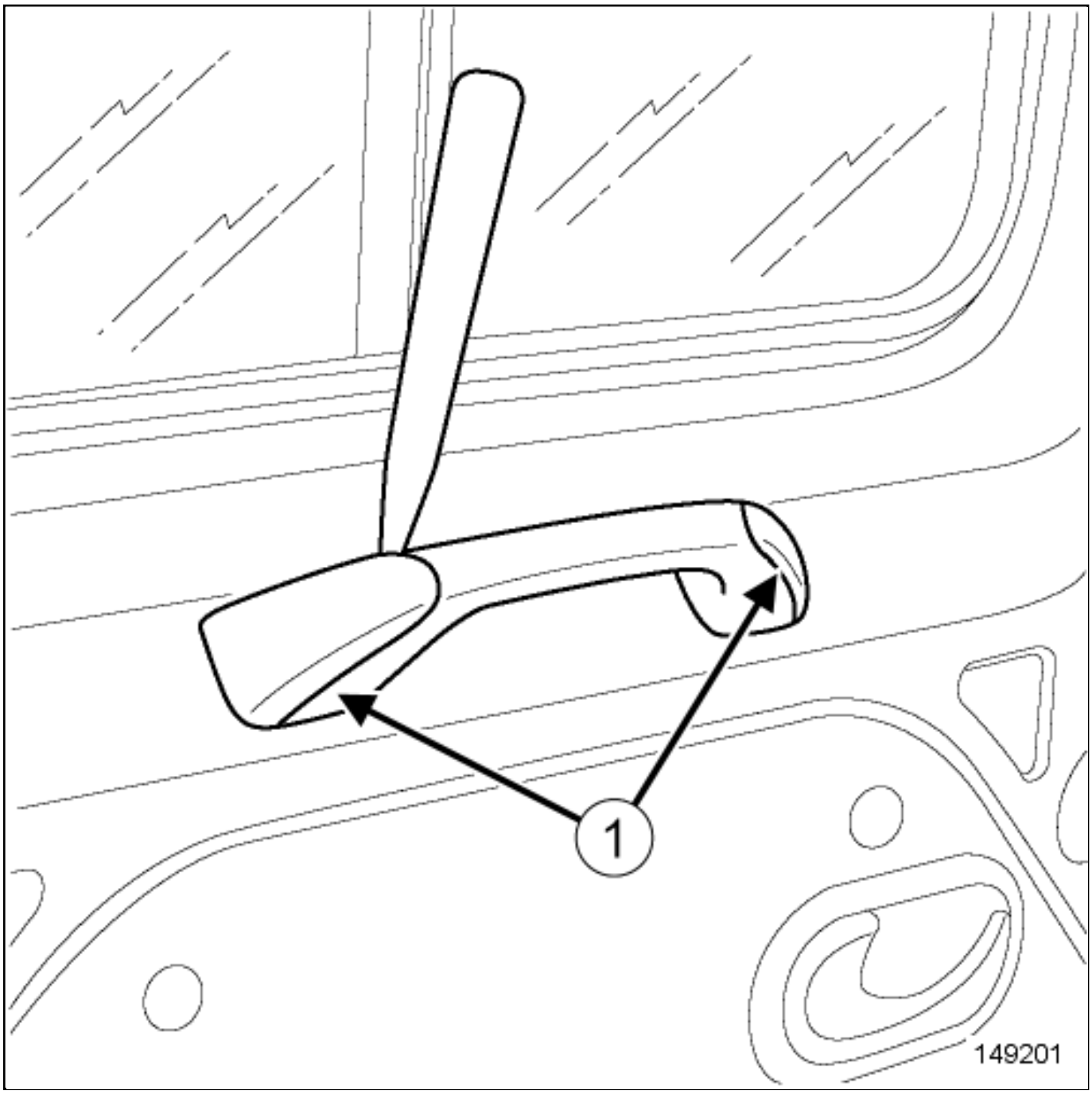
GRAB HANDLE: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

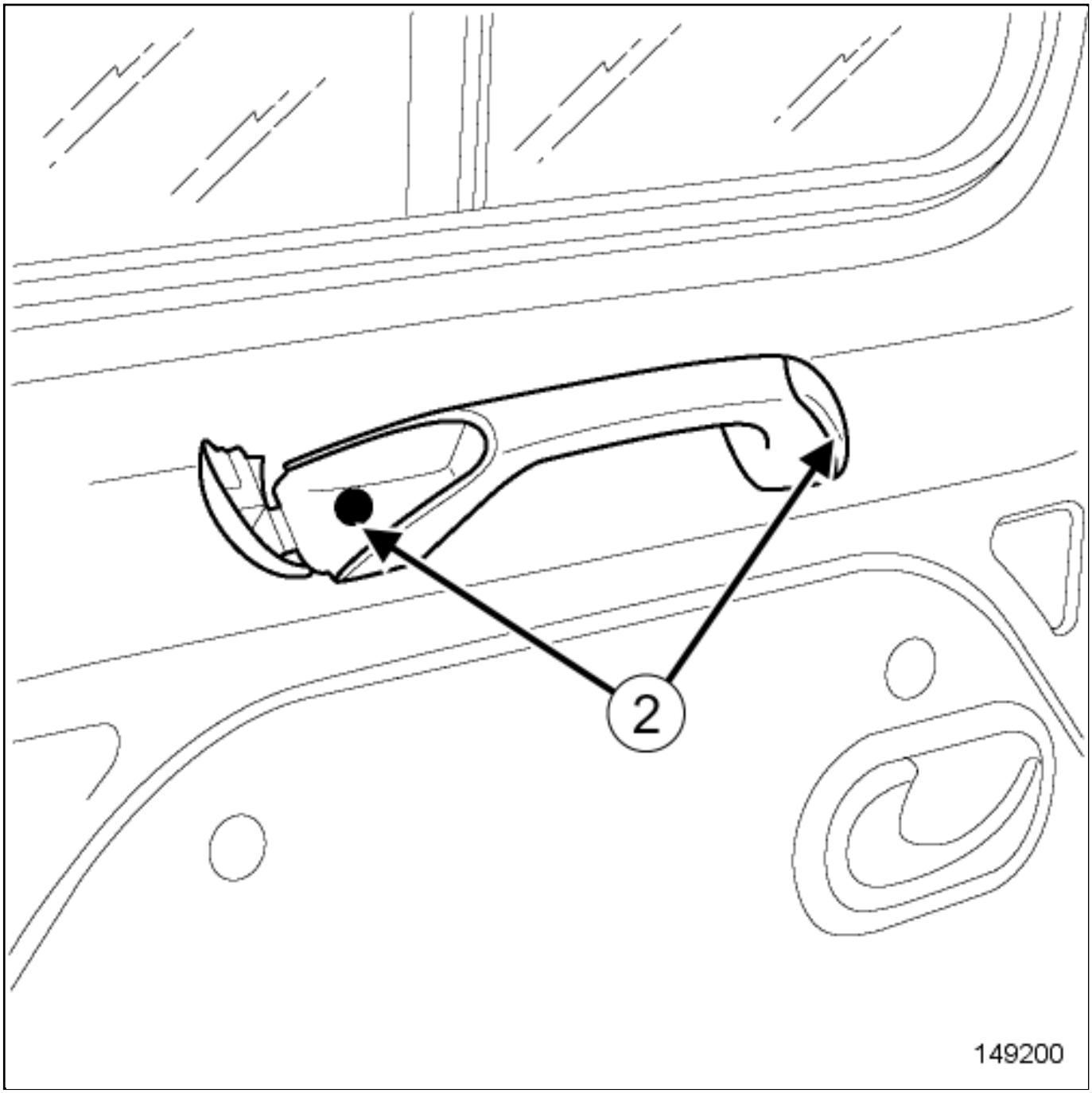
Location and specifications (tightening torques, parts always to be replaced, etc.)Rear side opening element assembly on the passenger compartment side: Exploded view (72A, Side opening elements trim).

REMOVAL

1. REMOVAL OPERATION



Unclip the side sections(1) of the rear side door pull handle using the toolSet of trim removal levers. (Car. 1363) .



- Remove the bolts of the rear side door pull handle(2) .
- Remove the rear side door pull handle(72A, Side opening elements trim).

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

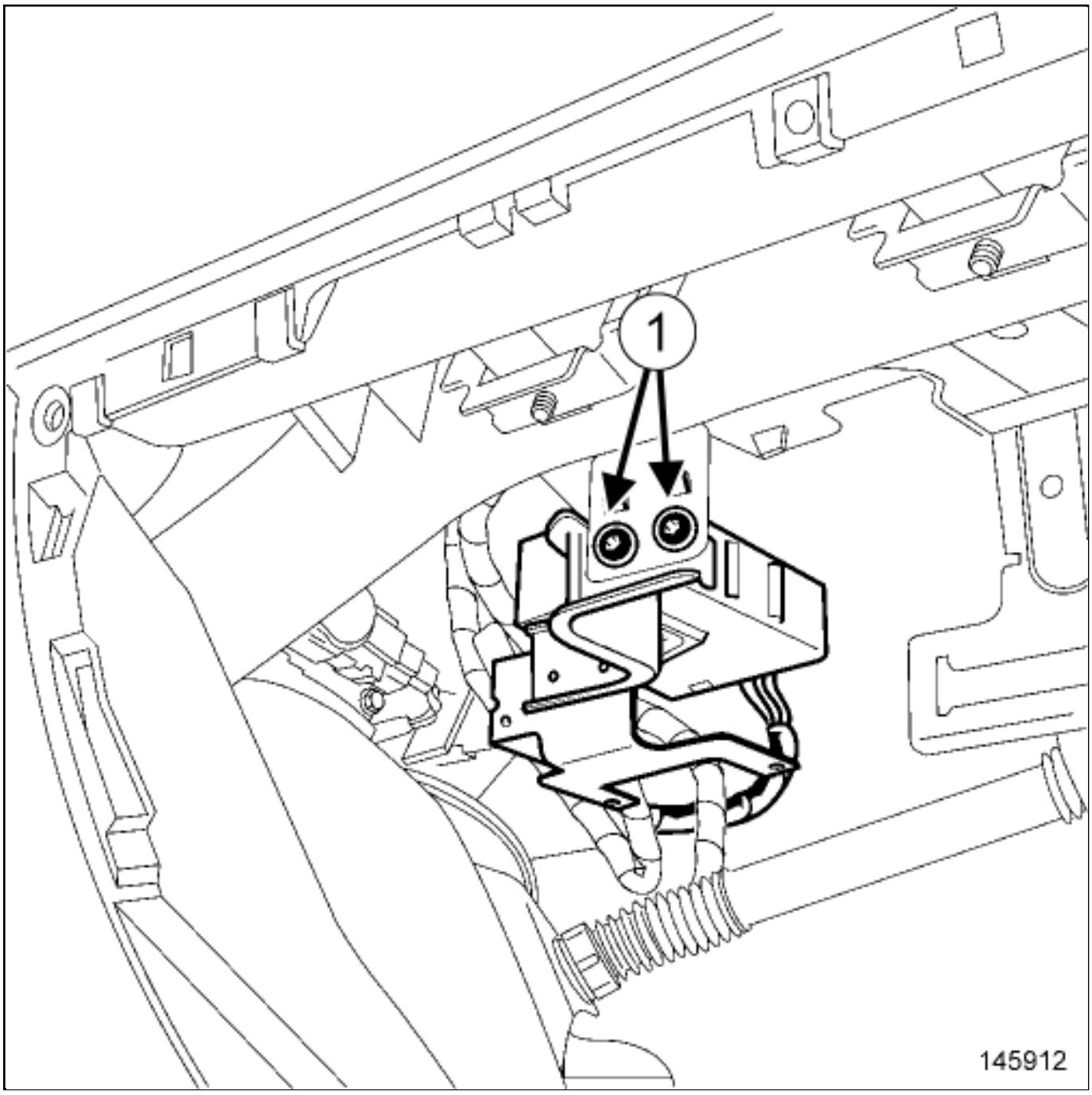
HANDS-FREE ACCESS COMPUTER: REMOVAL - REFITTING

REMOVAL

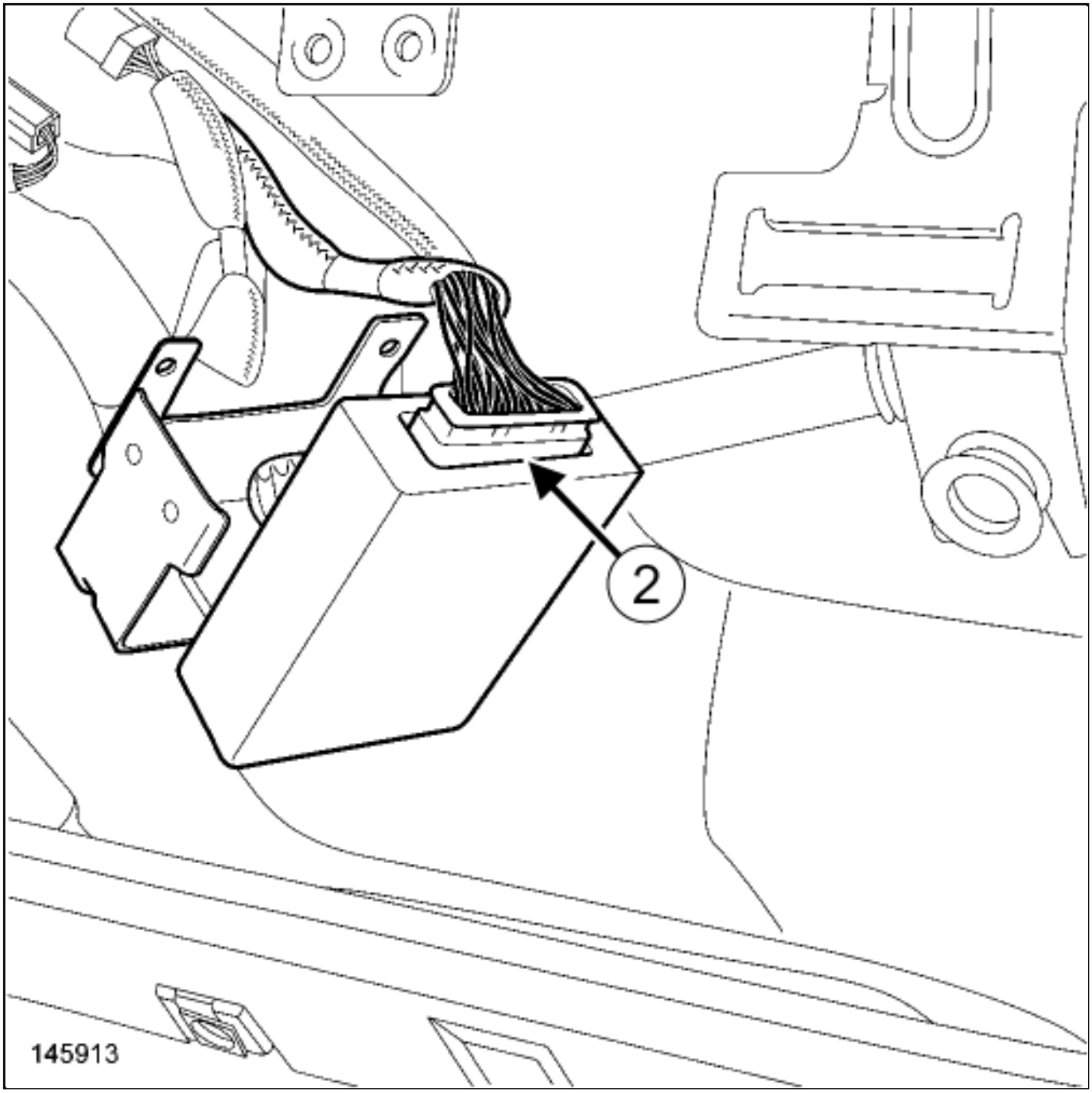
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

- Remove the glovebox Glovebox: Removal - Refitting (57A, Interior equipment).

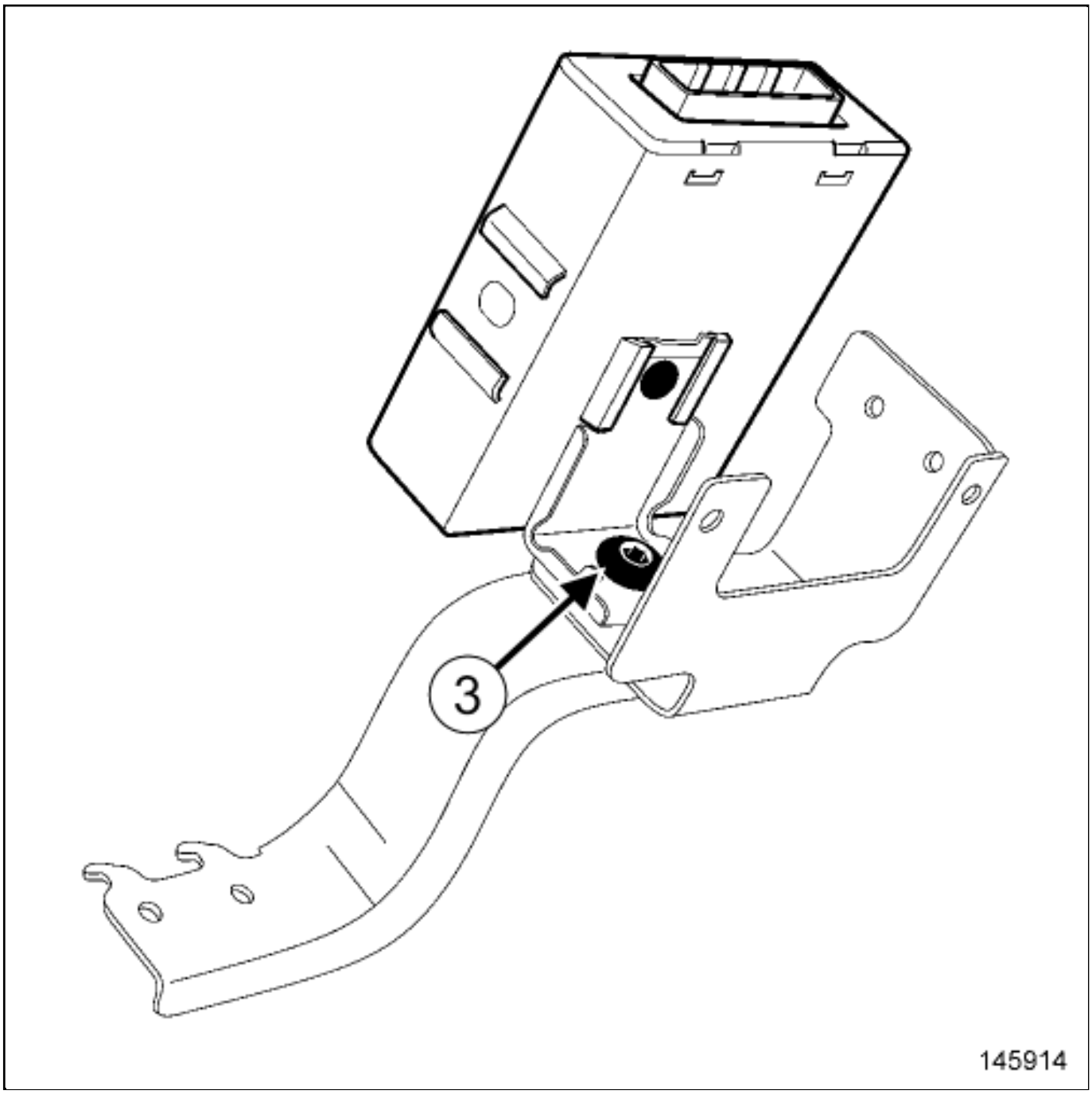


- Remove the bolts(1) from the support for the hands-free access computer.



- Disconnect the connector(2) of the hands-free access computer.
- Remove the "support - hands-free access computer" assembly.

2. REMOVAL OPERATION



- Remove the bolt(3) from the hands-free access computer.

REFITTING

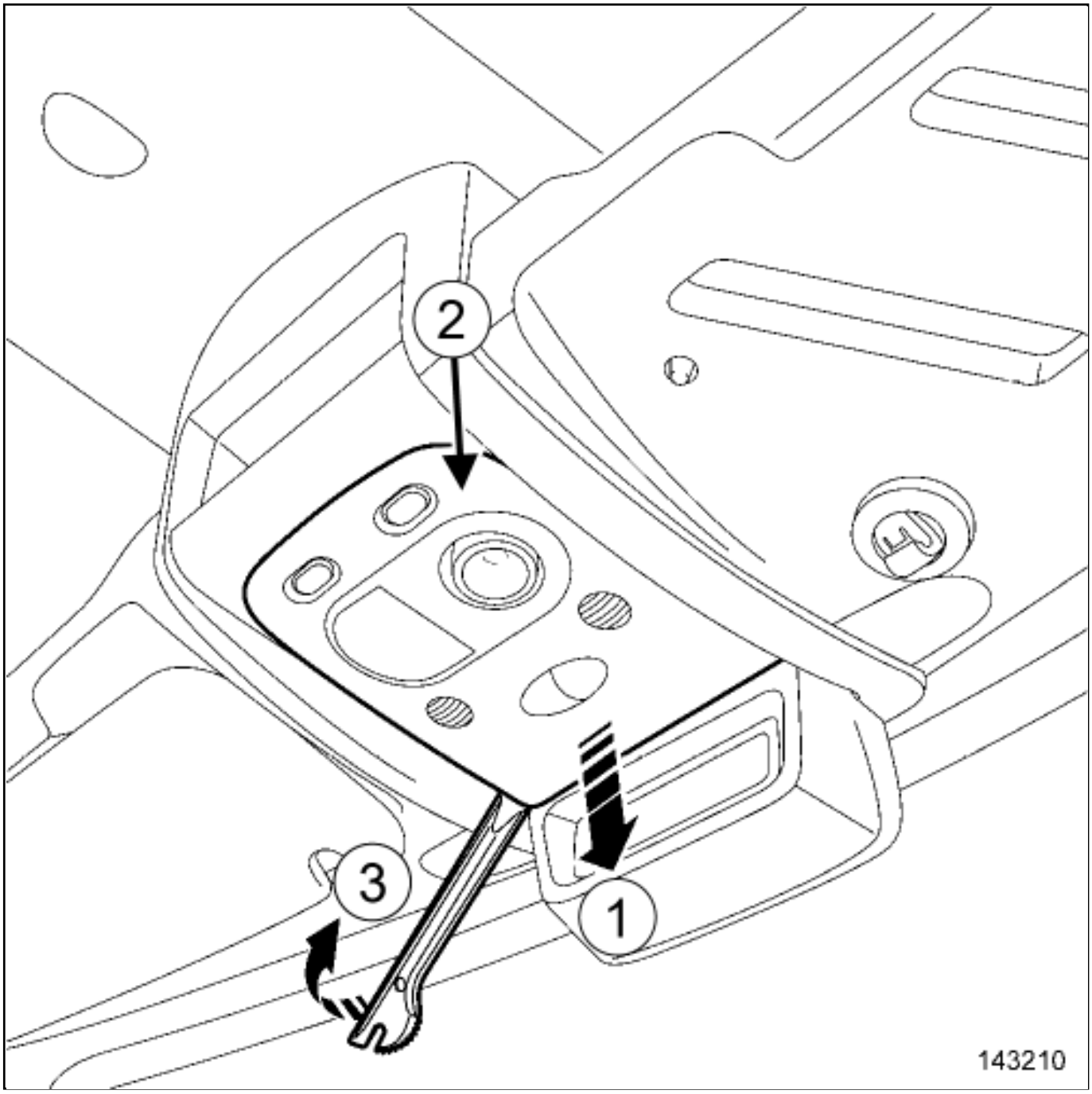
- Proceed in the reverse order to removal.

HAZARD WARNING LIGHTS AND CENTRAL DOOR CONTROL: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL PREPARATION OPERATION

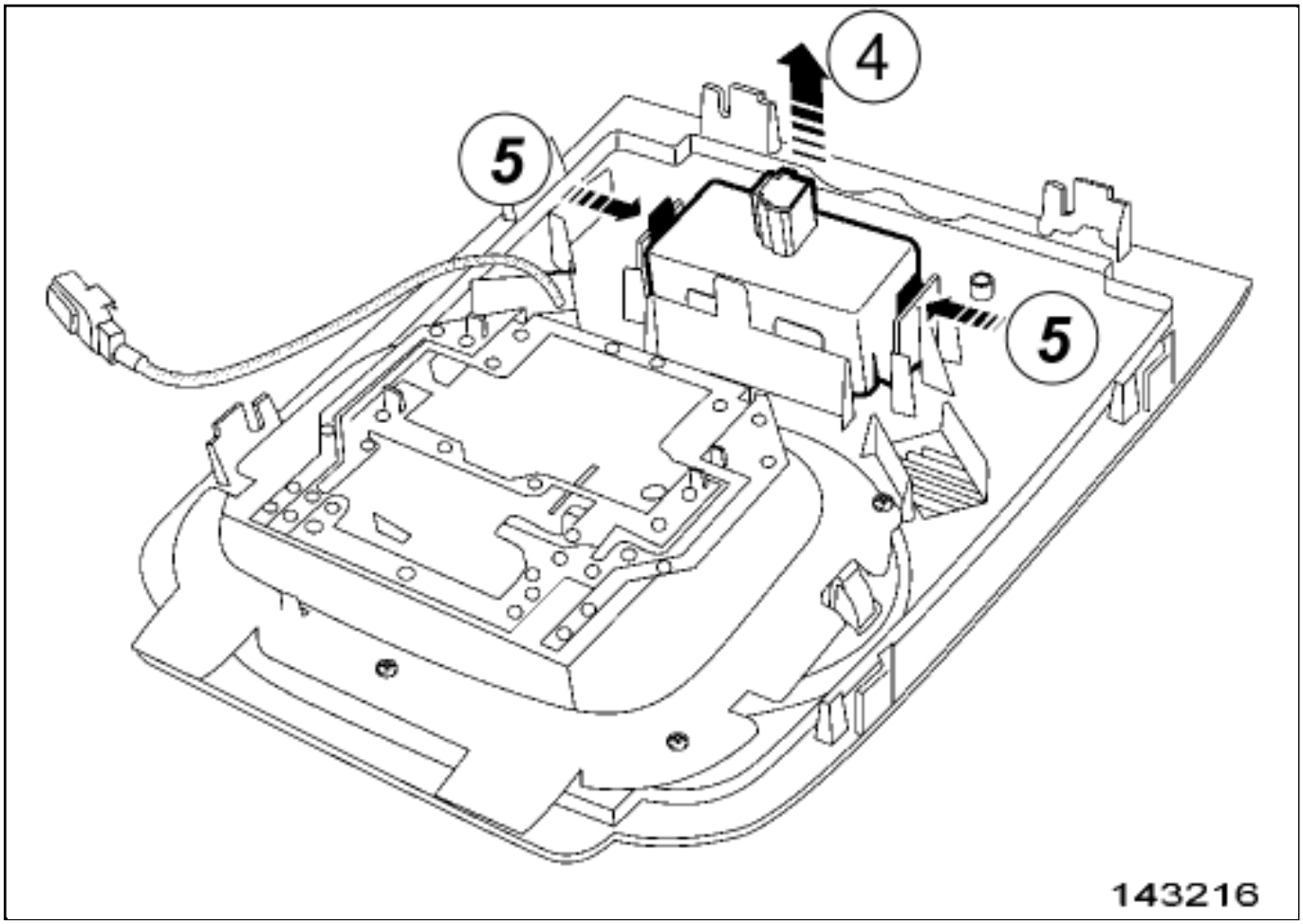


Remove (1) the interior light trim(2) using the toolSet of trim removal levers.(Car. 1363) by (3) .

Disconnect:

- the interior lighting connector,
- the connector of the hazard warning light and central door locking switch.

2. REMOVAL OPERATION



Remove (4) the hazard warning light and central door locking control by pressing the clips(5) .

REFITTING

Proceed in the reverse order to removal.

HEADLIGHT BULB: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

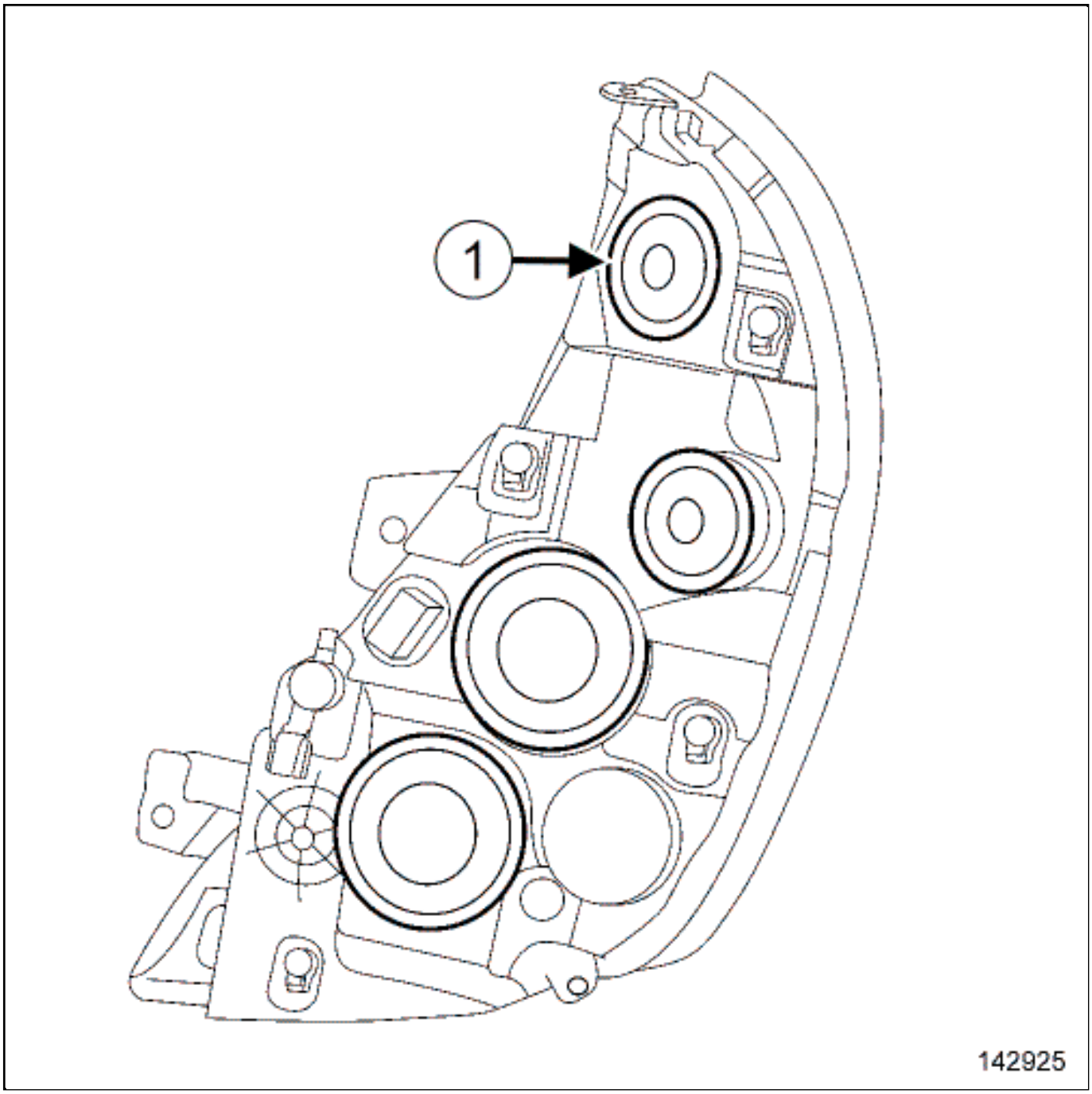
REMOVAL

1. REMOVAL PREPARATION OPERATION

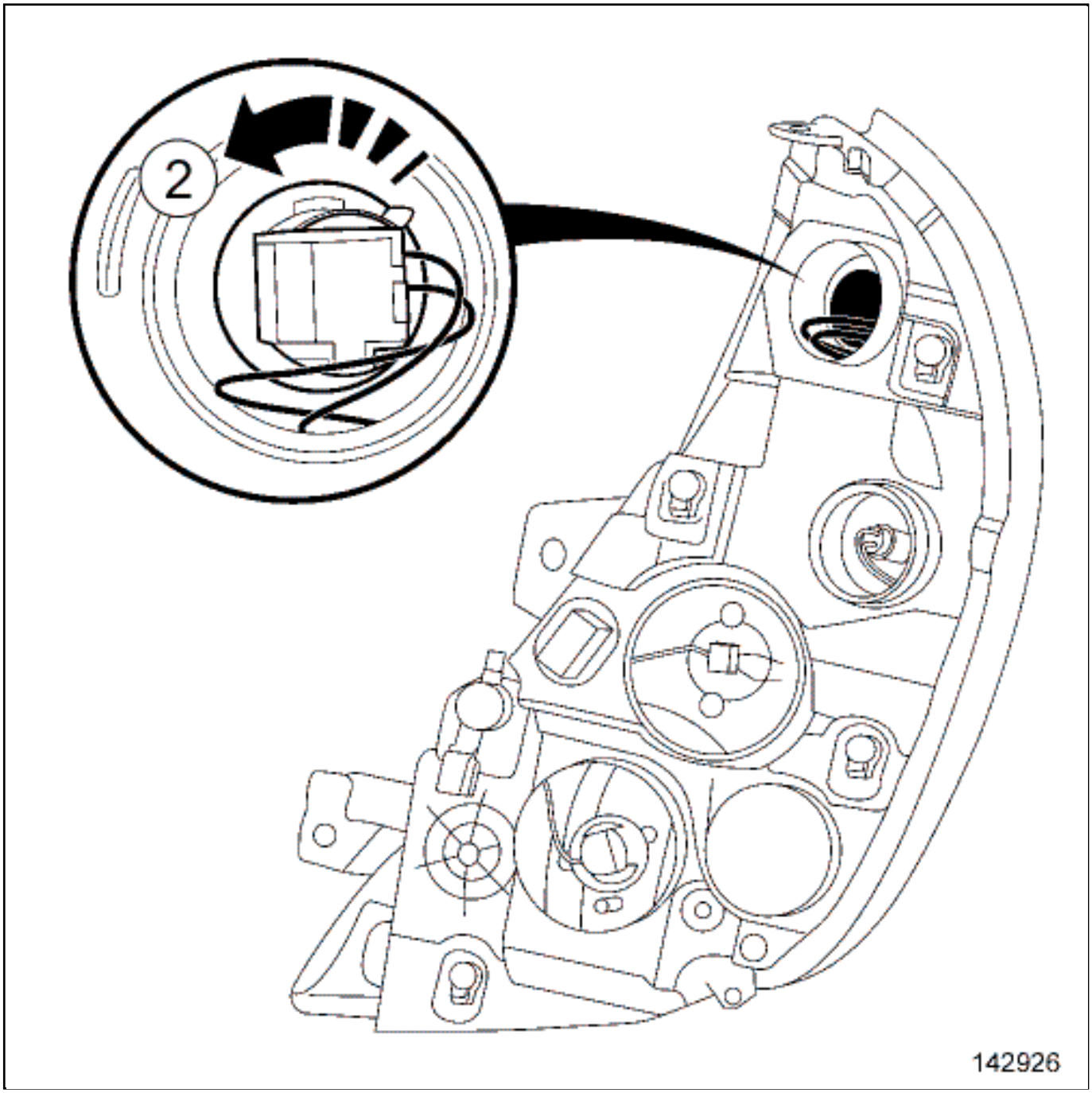
- Switch off the ignition.

2. REMOVAL OPERATION

1- DIRECTION INDICATOR BULB



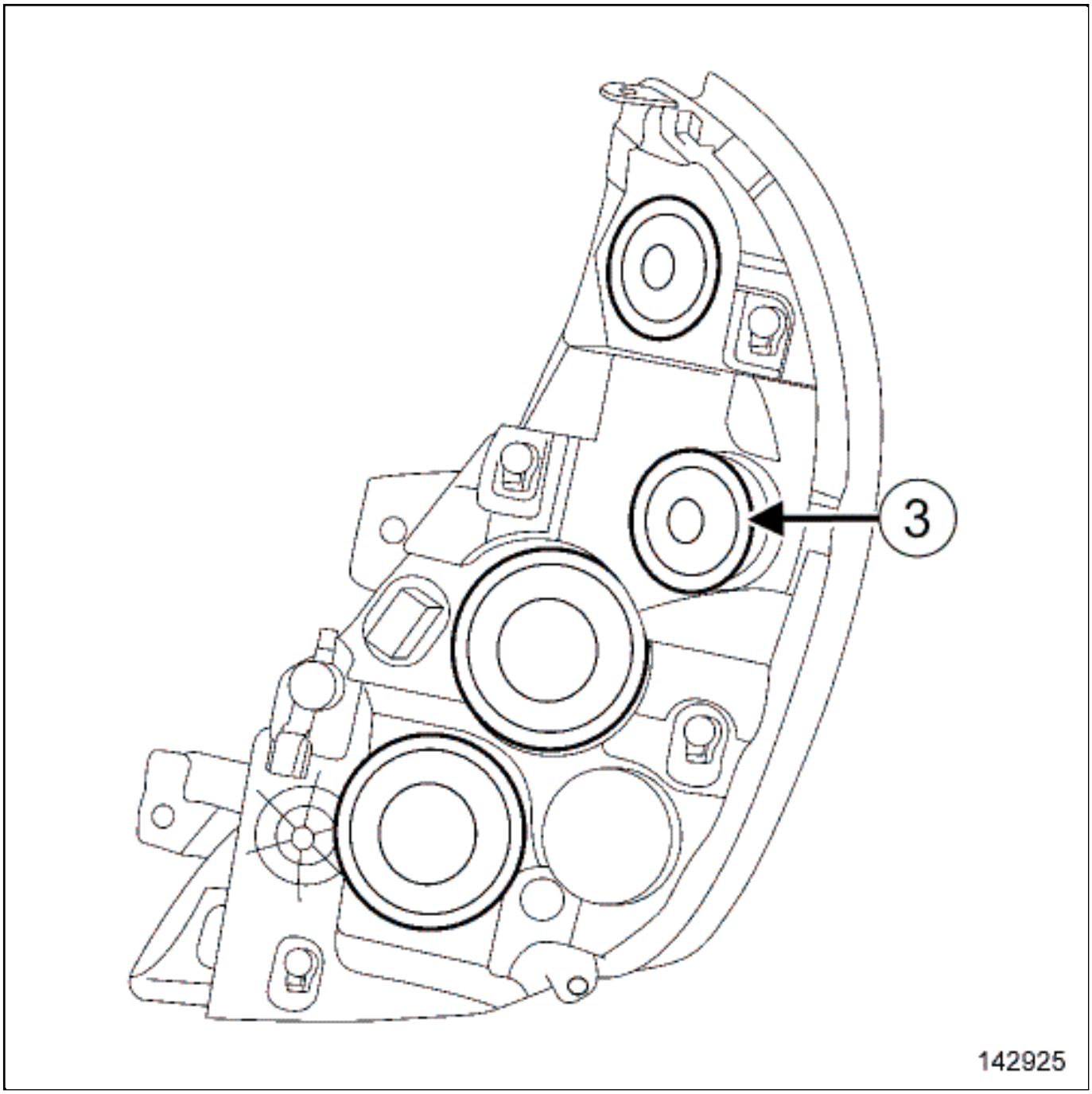
- Remove the sealing cover(1) .



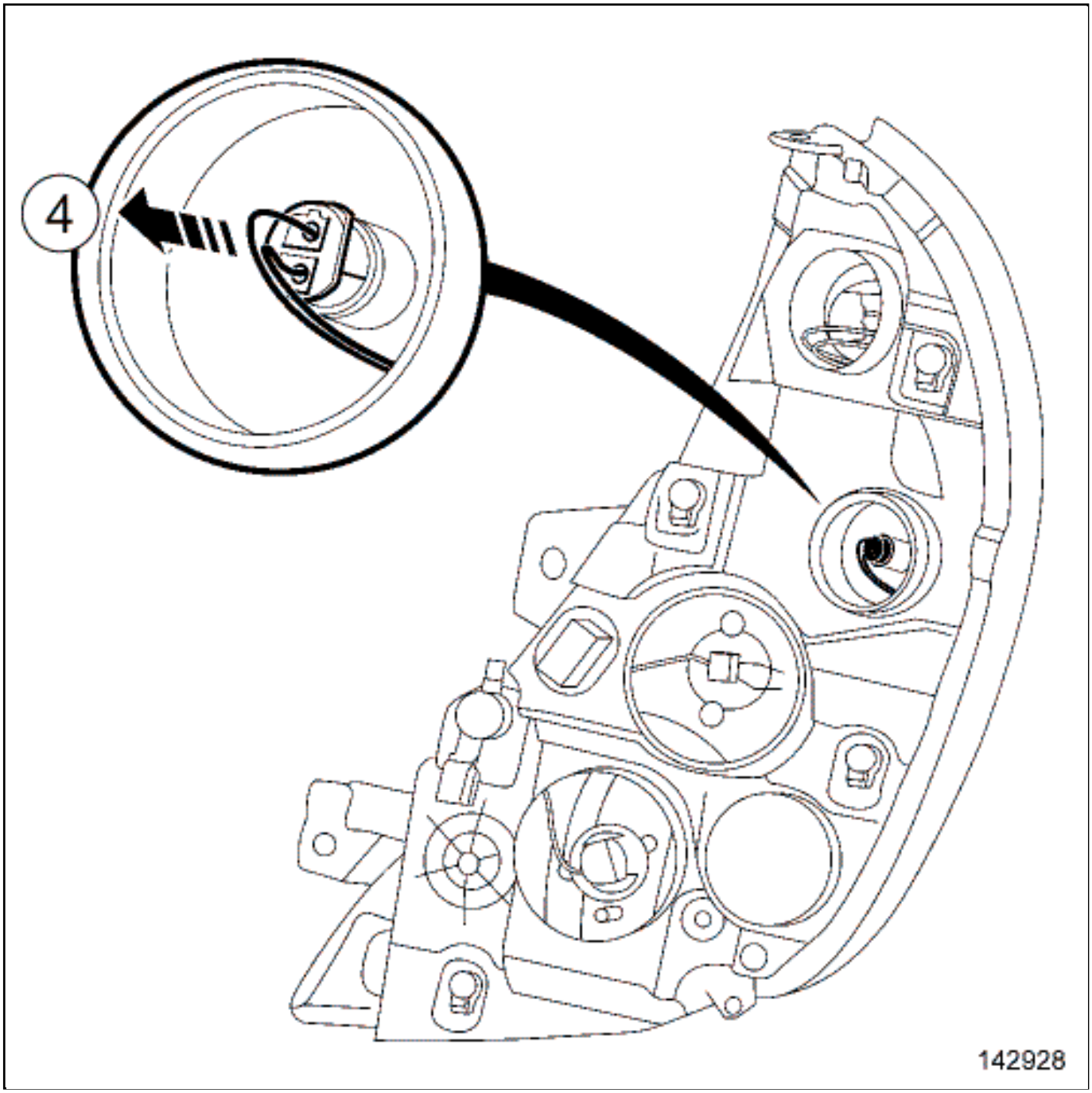
- Unlock the bulb holder by turning it a quarter of a turn anti-clockwise(2) .

- Remove:
  - the bulb holder from the headlight,
  - the direction indicator bulb from the bulb holder.

2- SIDE LIGHT BULB



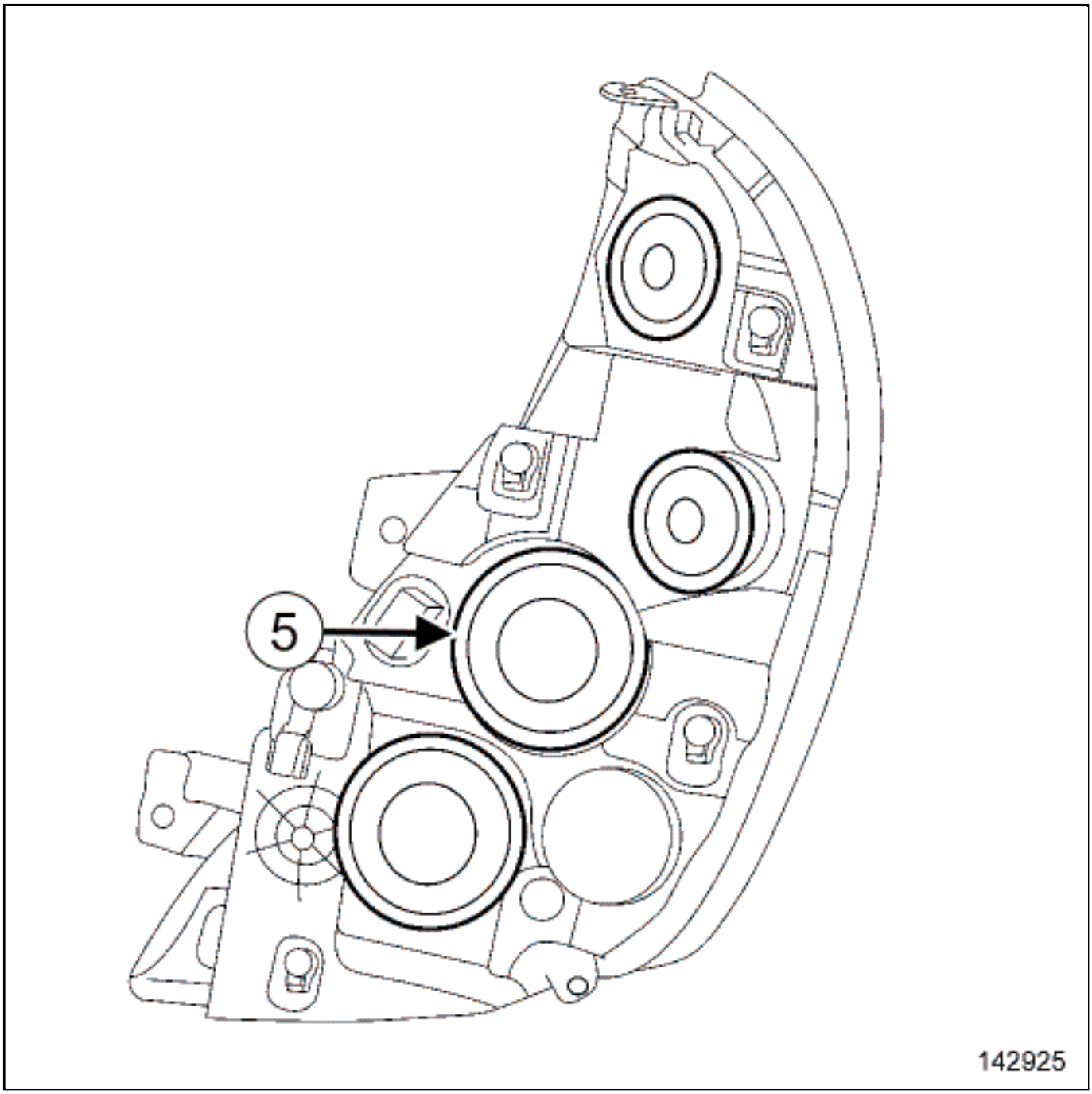
- Remove the sealing cover(3) .



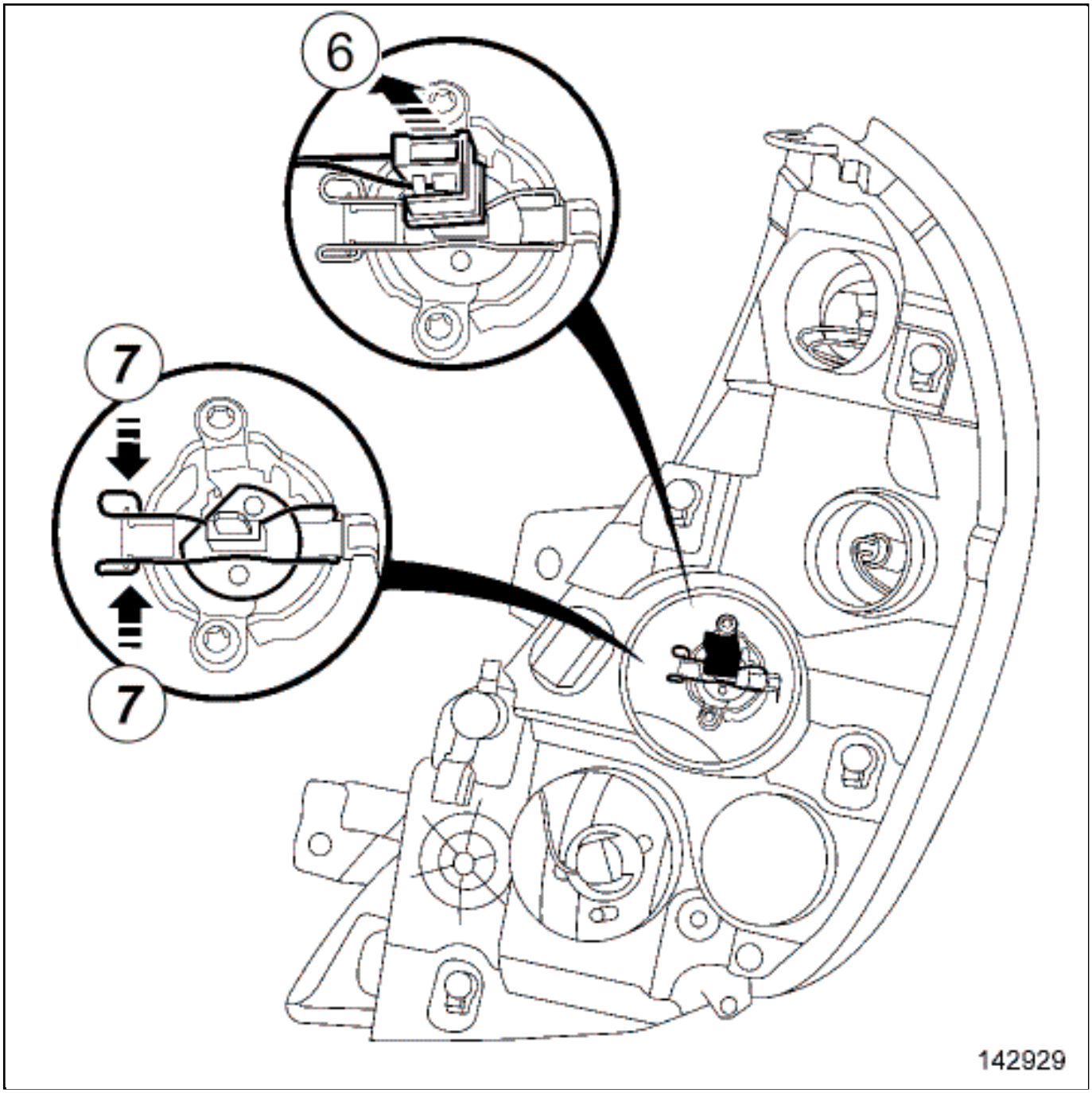
Unclip:

- the bulb holder from the headlight by(4) ,
- the side light from the bulb holder.

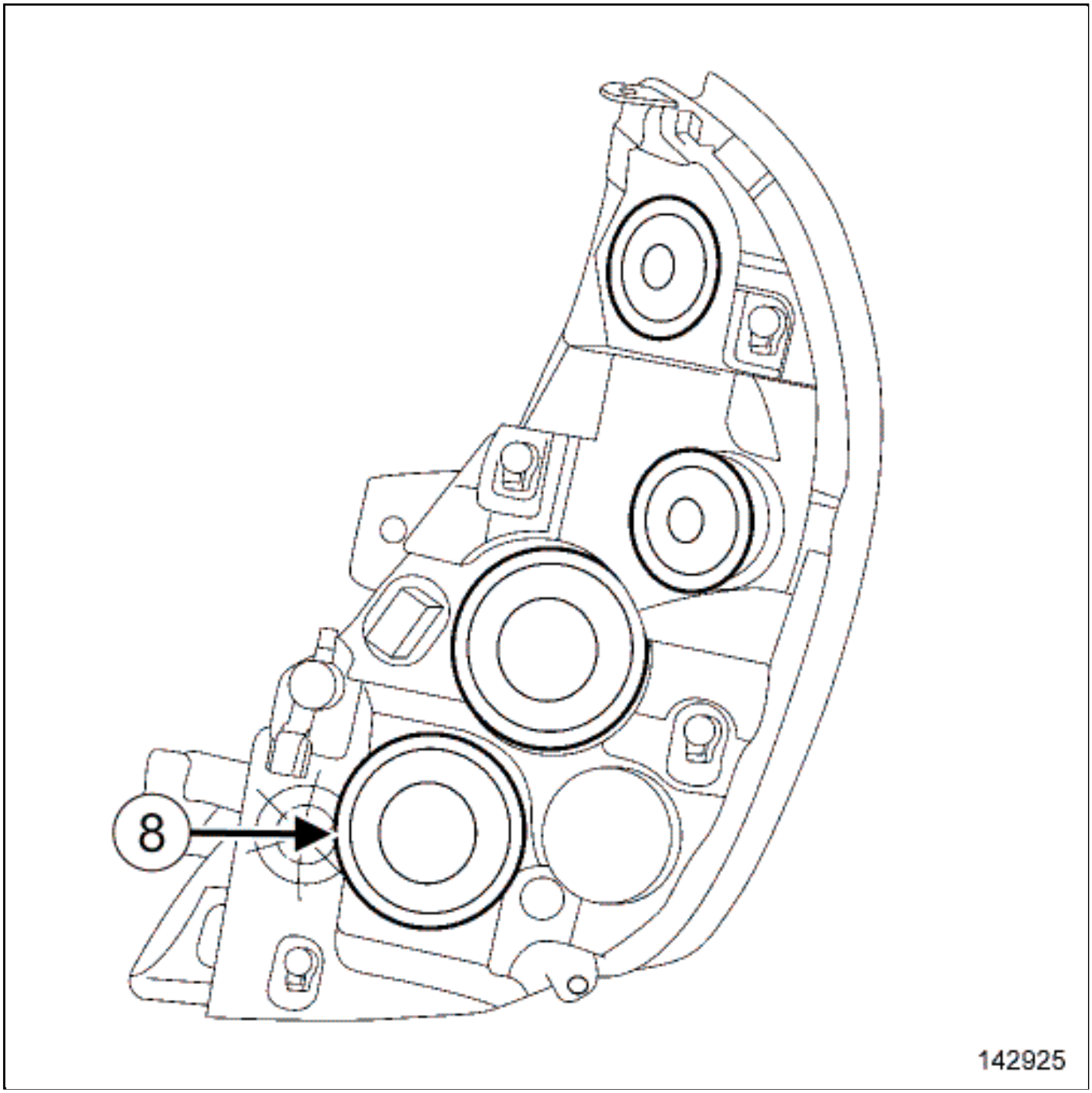
3- MAIN BEAM HEADLIGHT BULBS



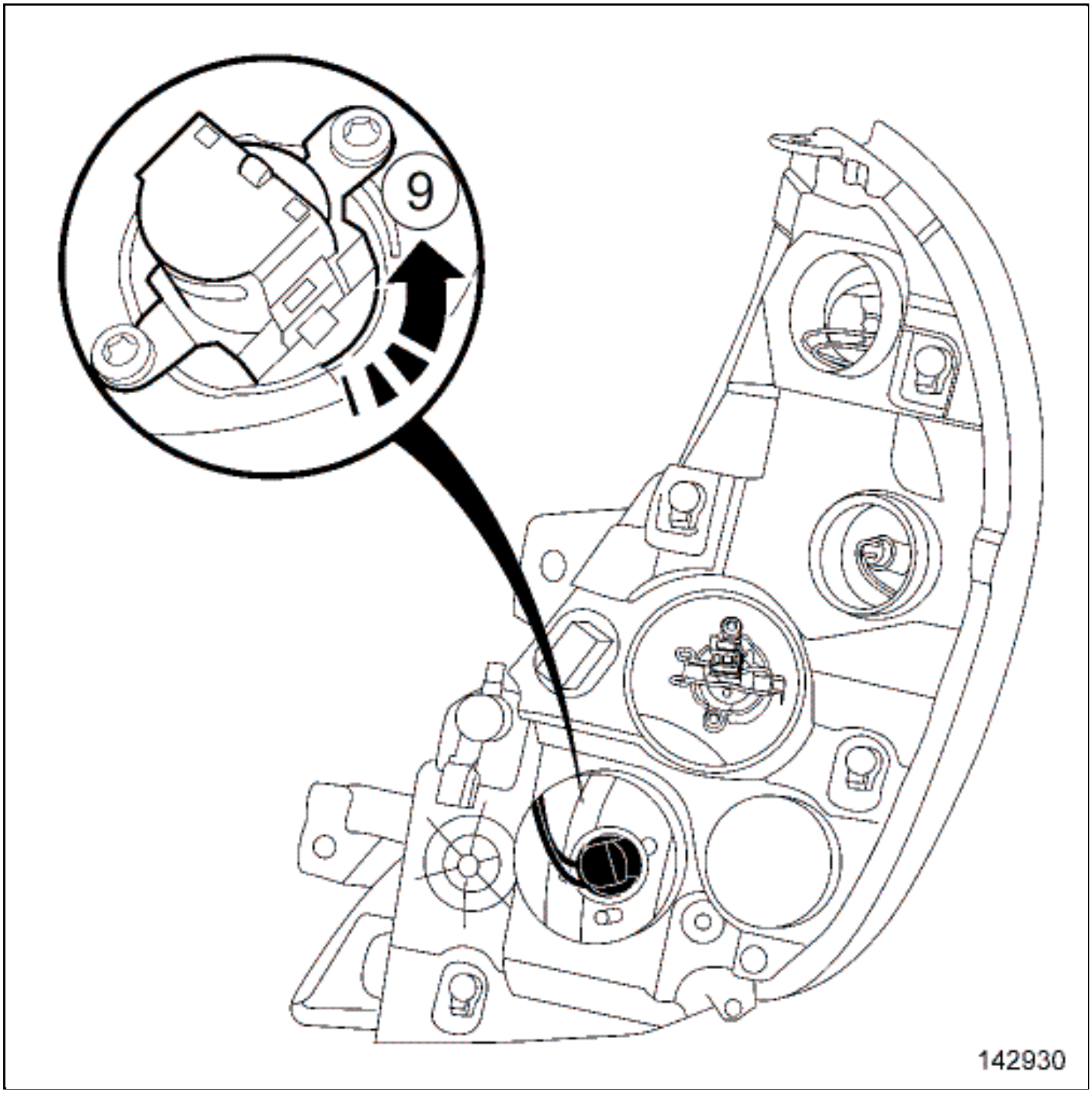
Remove the sealing cover(5) .



- Disconnect the connector from the main beam headlight bulb by(6) .
- Release the main beam headlight bulb from the headlight by unclipping the pins(7) .
- Remove the main beam headlight bulb.

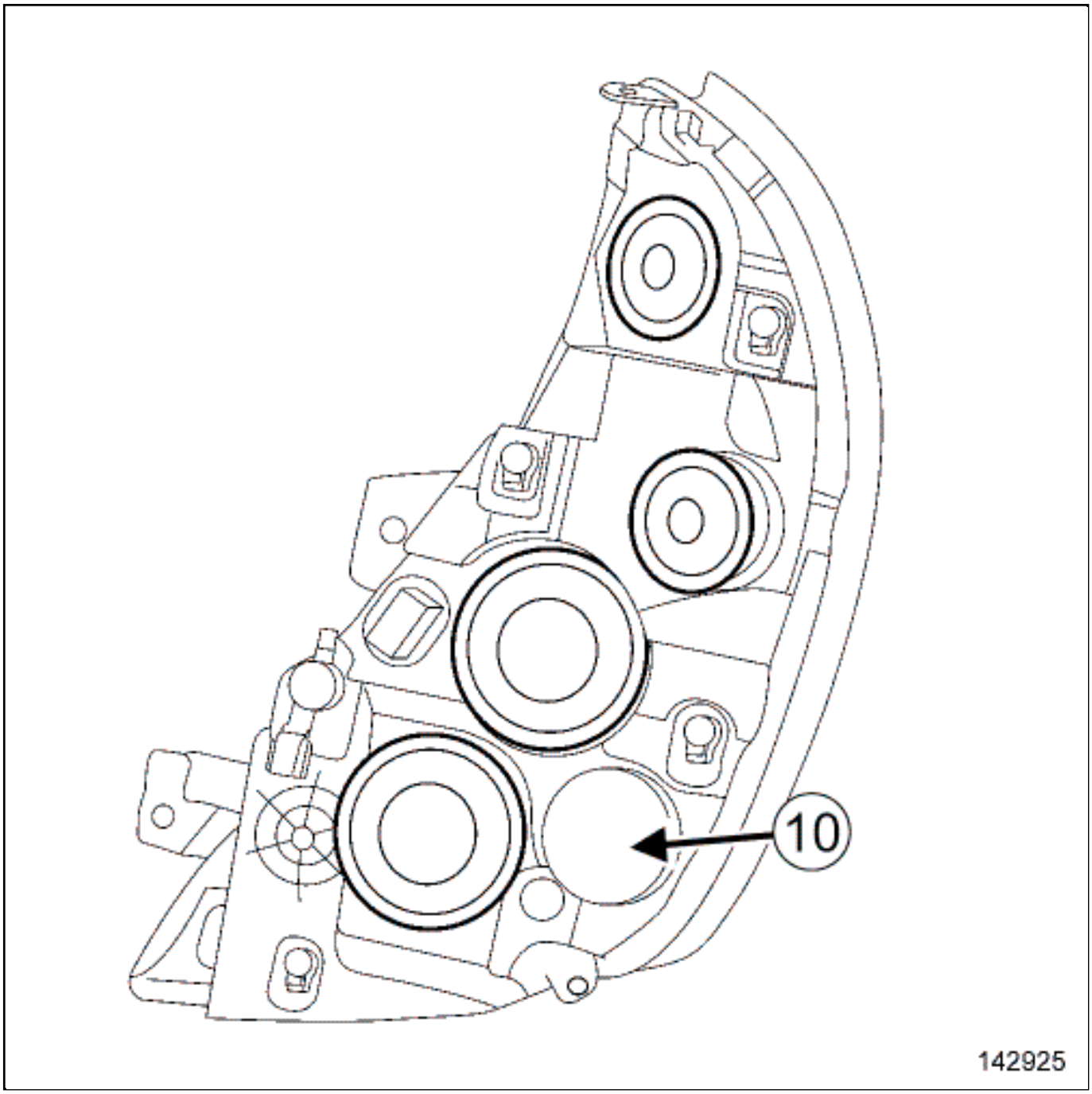


Remove the sealing cover(8) .

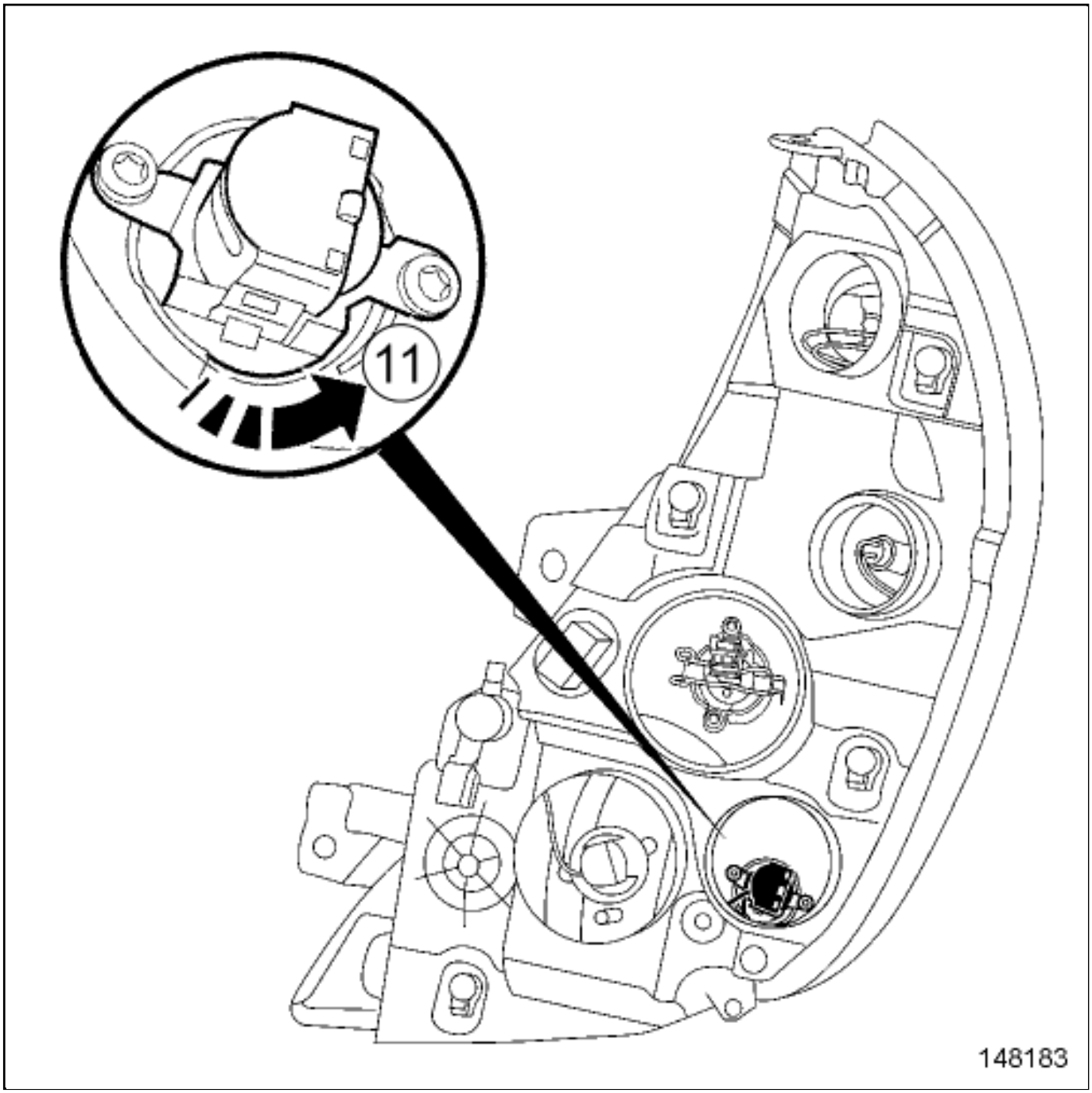


- Unlock the headlight bulb holder by turning it a quarter of a turn anti-clockwise(9) .
- Remove the bulb holder from the headlight.
- Unclip the dipped beam headlight bulb from the bulb holder.

1- ADDITIONAL CORNERING LIGHT BULB



Remove the sealing cover(10) .



- Unlock the headlight bulb holder by turning it a quarter of a turn anti-clockwise(11) .
- Remove the bulb holder from the headlight.
- Unclip the additional cornering light bulb from the bulb holder.

REFITTING

Note:

If the bulbs are changed, only use approved bulbs.

Proceed in the reverse order to removal.

Repair-80x02x02x07-01x37-1-10-1.xml

XSL version : 3.02 du 22/07/11

HEADLIGHT BULB: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

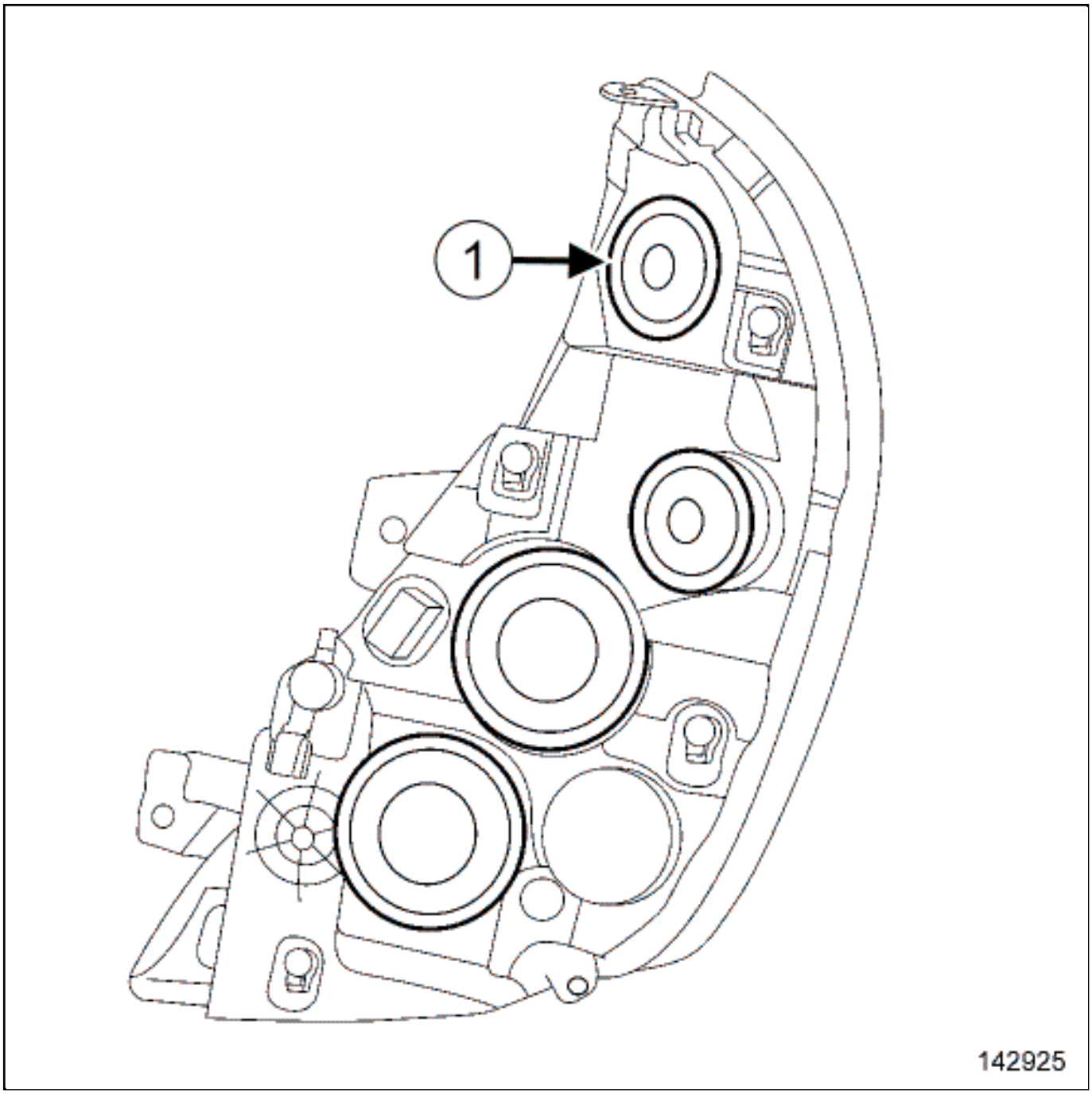
REMOVAL

1. REMOVAL PREPARATION OPERATION

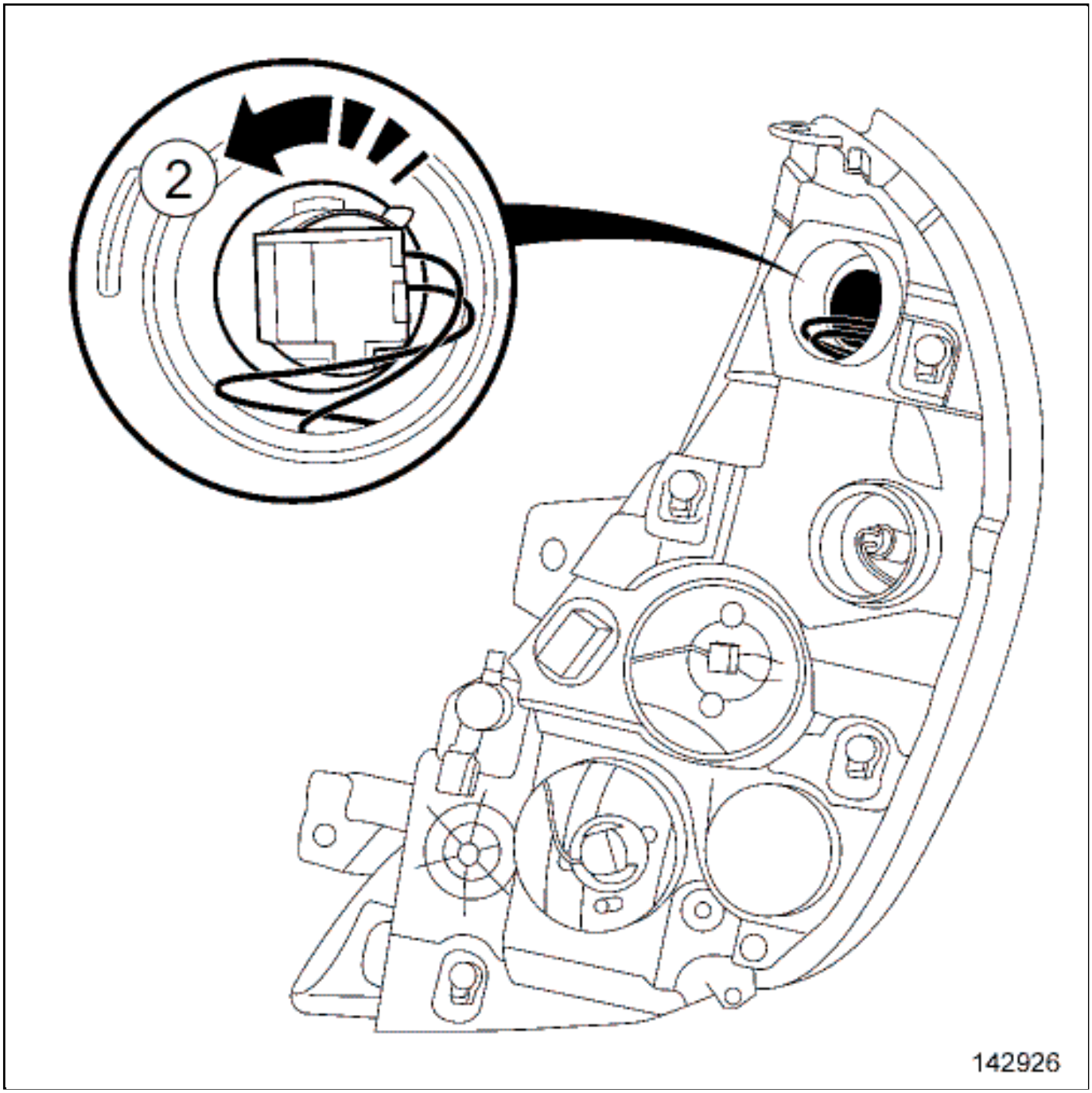
- Switch off the ignition.

2. REMOVAL OPERATION

1- DIRECTION INDICATOR BULB



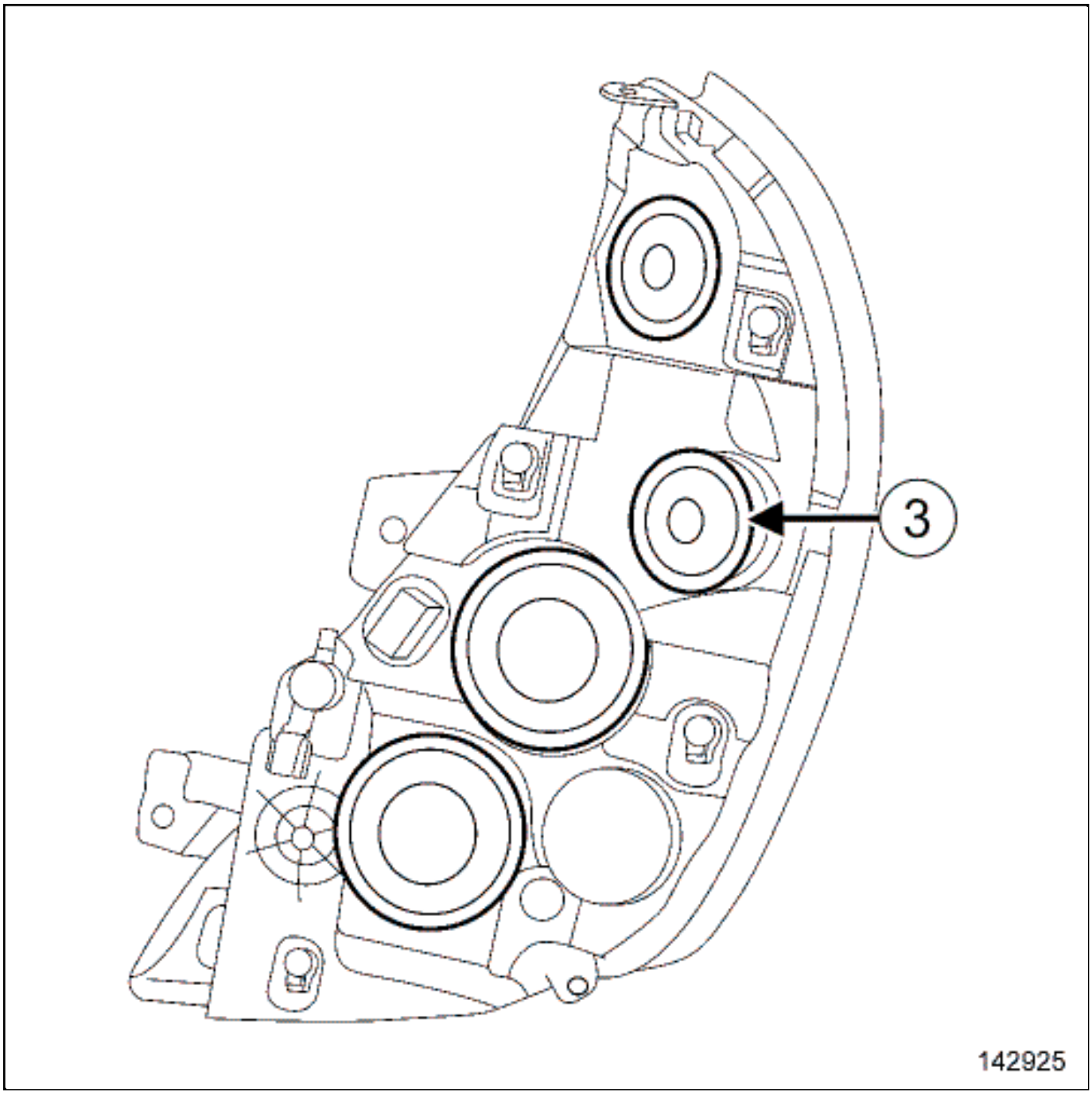
- Remove the sealing cover(1) .



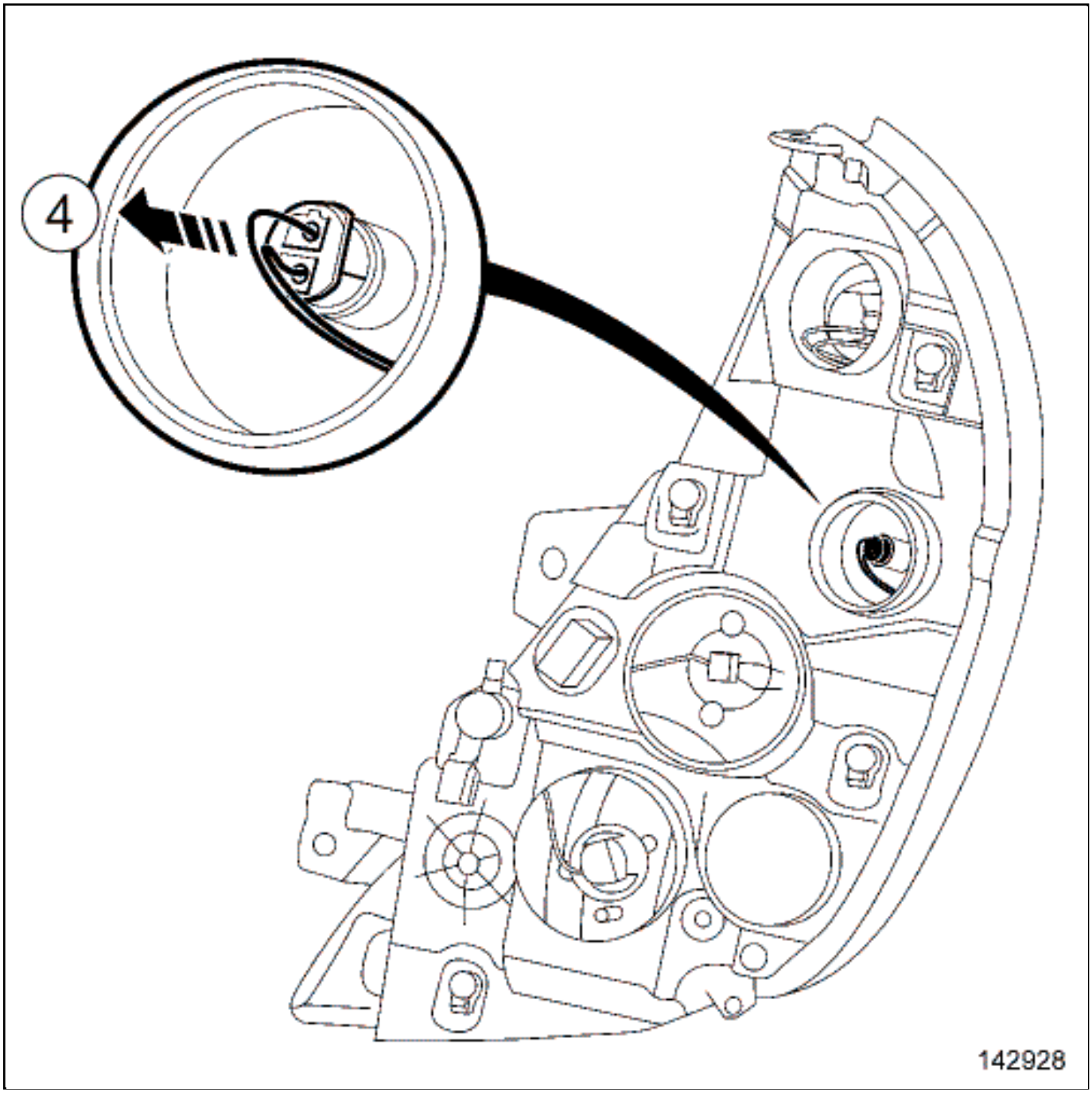
- Unlock the bulb holder by turning it a quarter of a turn anti-clockwise(2) .

- Remove:
  - the bulb holder from the headlight,
  - the direction indicator bulb from the bulb holder.

2- SIDE LIGHT BULB



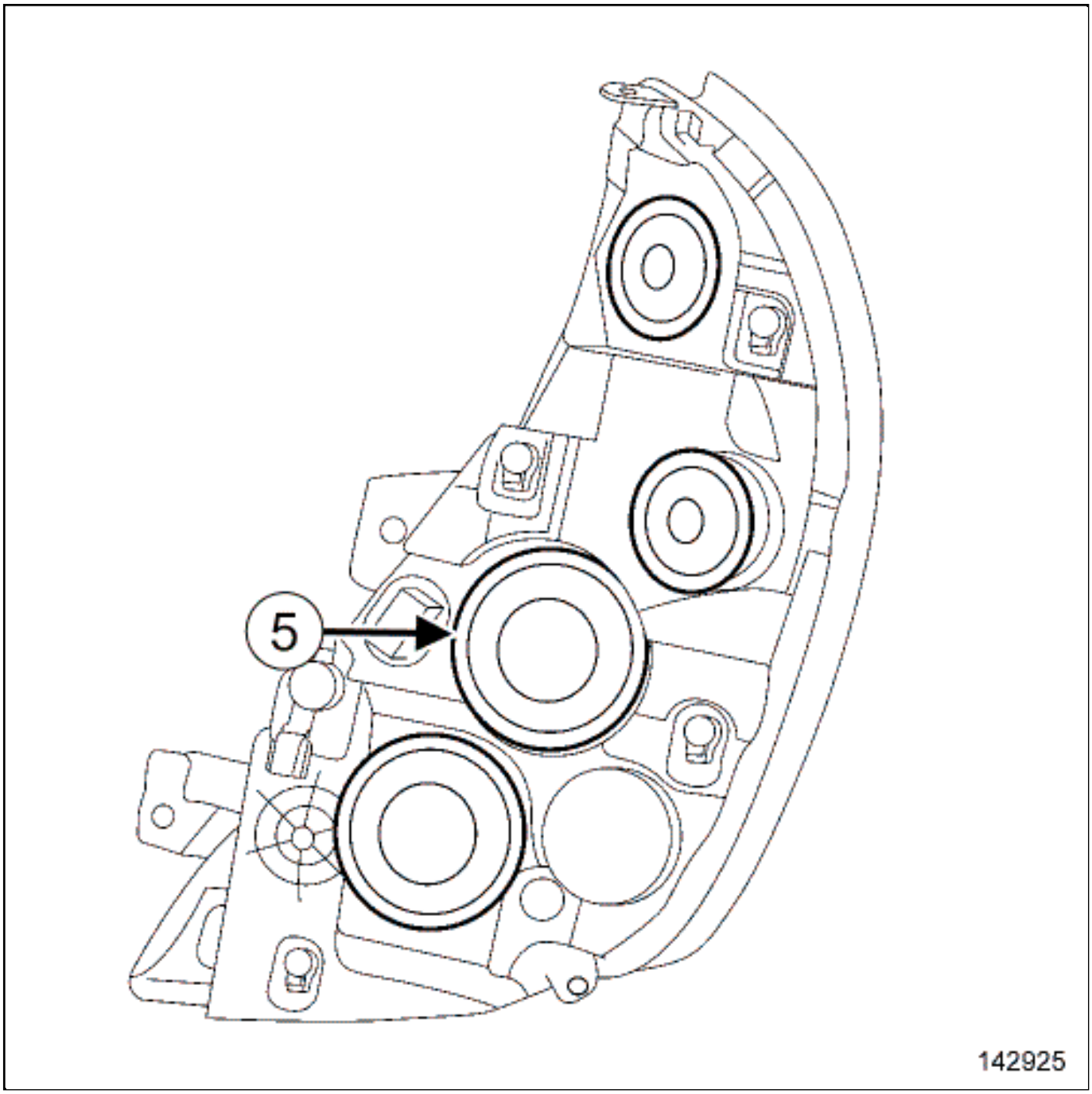
- Remove the sealing cover(3) .



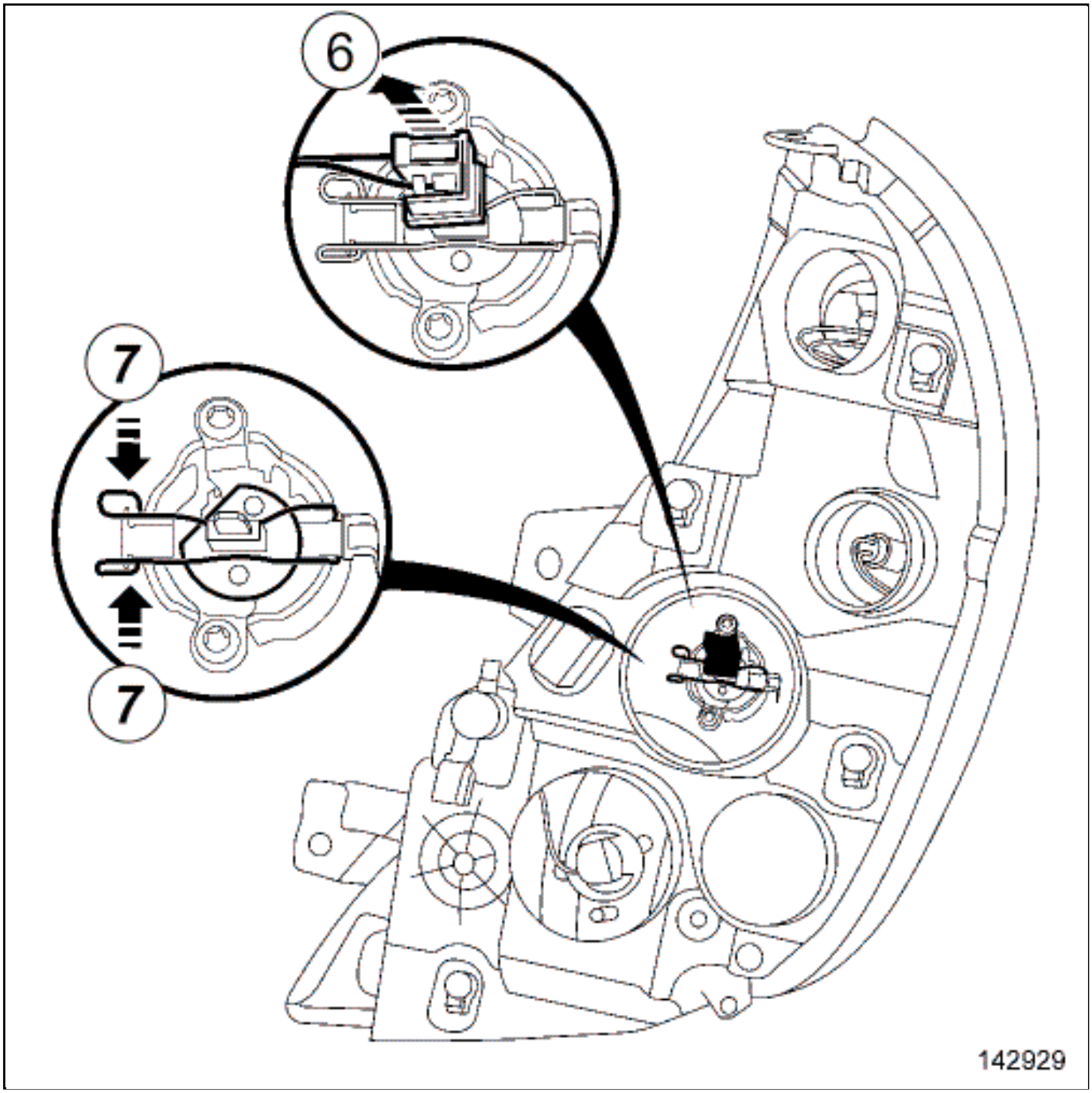
Unclip:

- the bulb holder from the headlight by(4) ,
- the side light from the bulb holder.

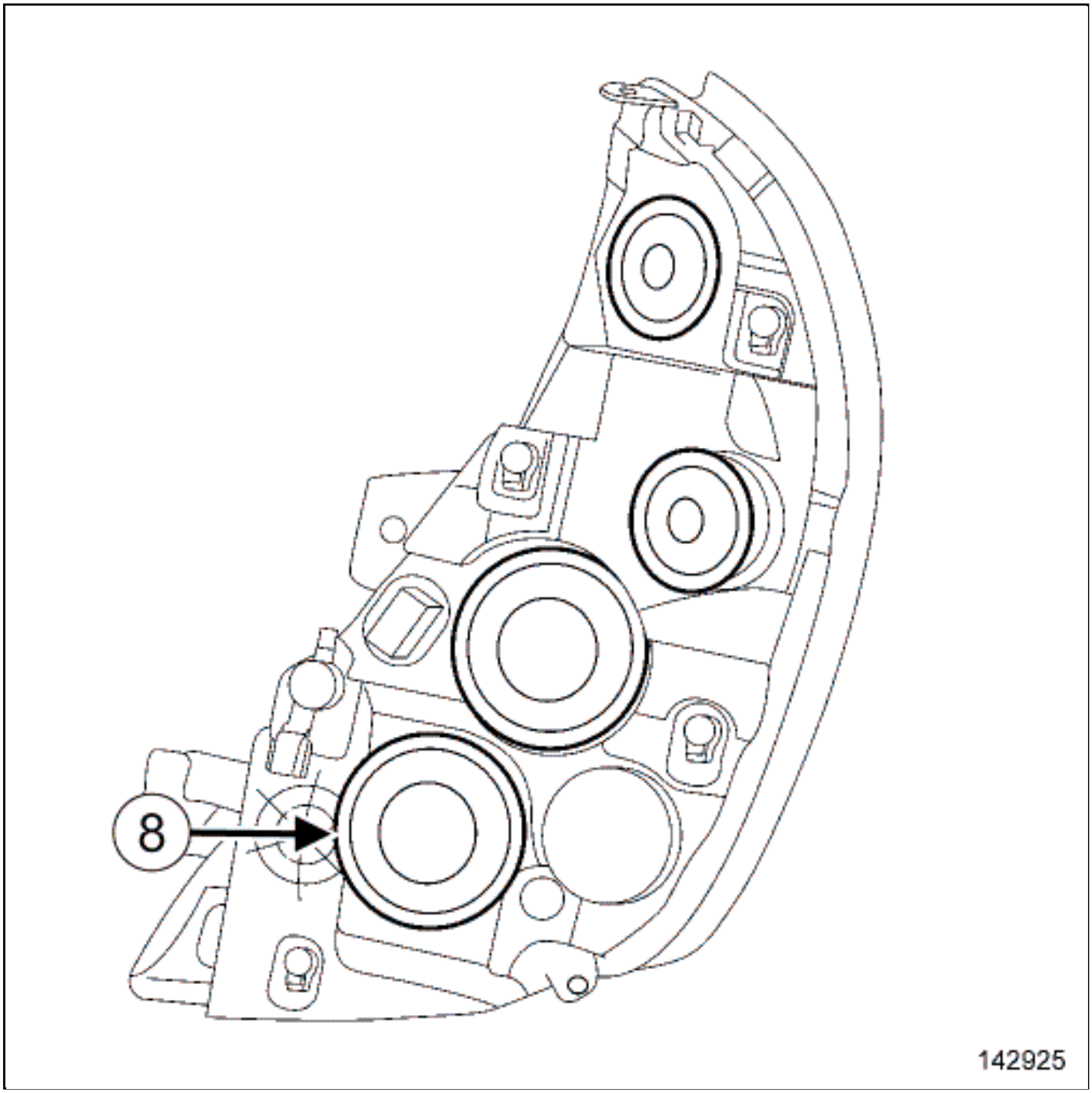
3- MAIN BEAM HEADLIGHT BULBS



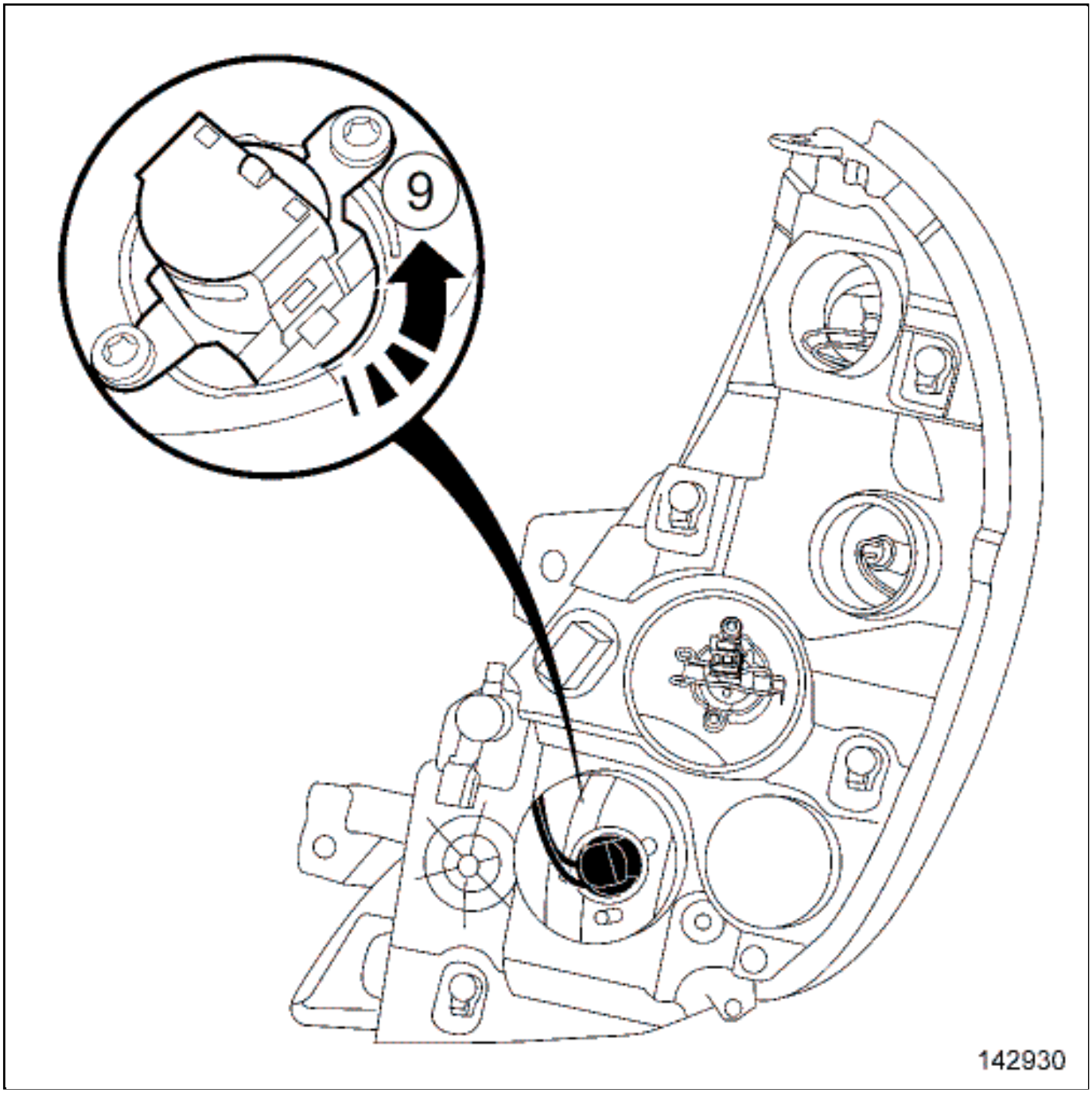
Remove the sealing cover(5) .



- Disconnect the connector from the main beam headlight bulb by(6) .
- Release the main beam headlight bulb from the headlight by unclipping the pins(7) .
- Remove the main beam headlight bulb.



Remove the sealing cover(8) .



- Unlock the headlight bulb holder by turning it a quarter of a turn anti-clockwise(9) .
- Remove the bulb holder from the headlight.
- Unclip the dipped beam headlight bulb from the bulb holder.

REFITTING

Note:

If the bulbs are changed, only use approved bulbs.

Proceed in the reverse order to removal.

HEADLIGHT BULB: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

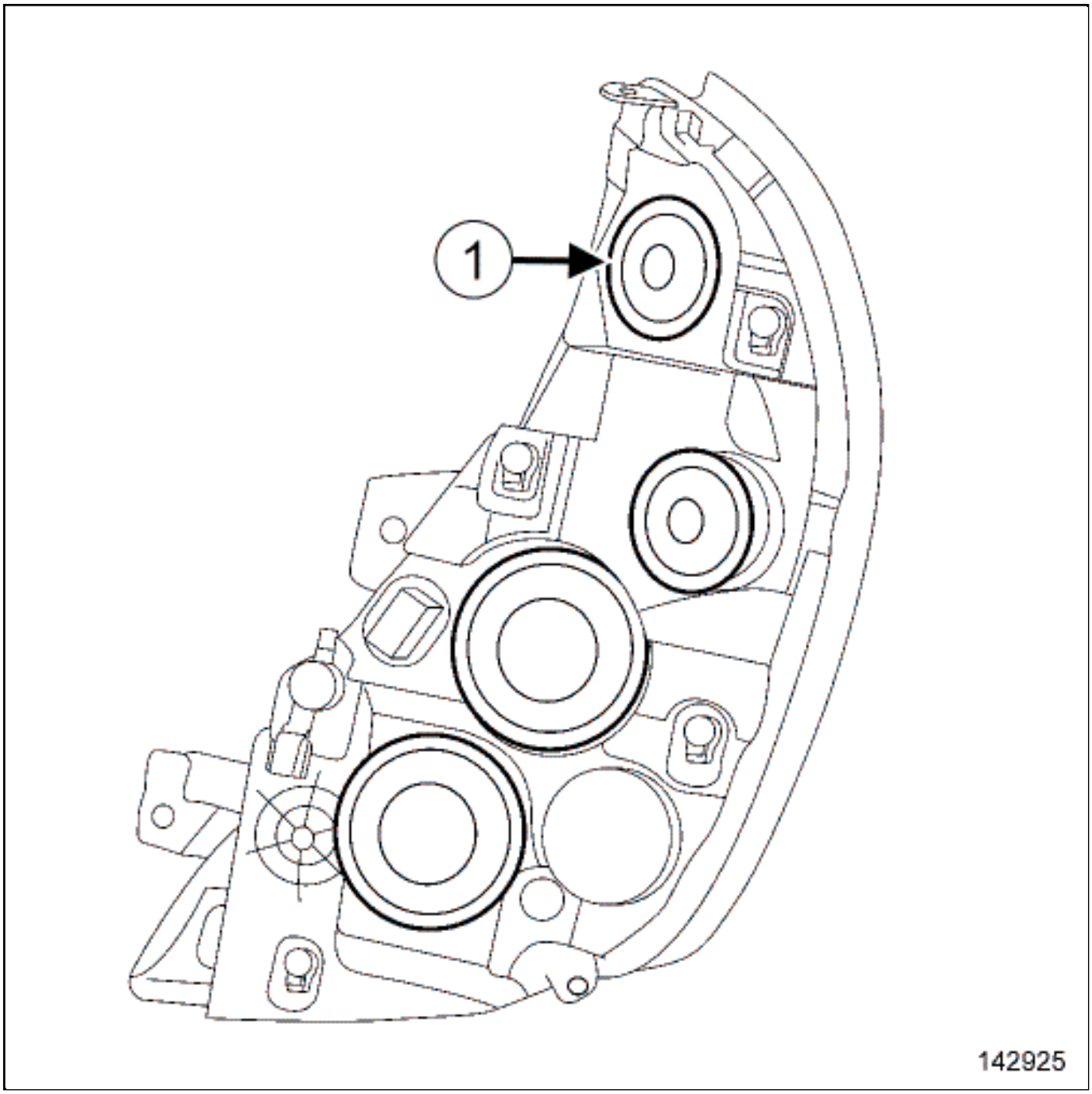
REMOVAL

1. REMOVAL PREPARATION OPERATION

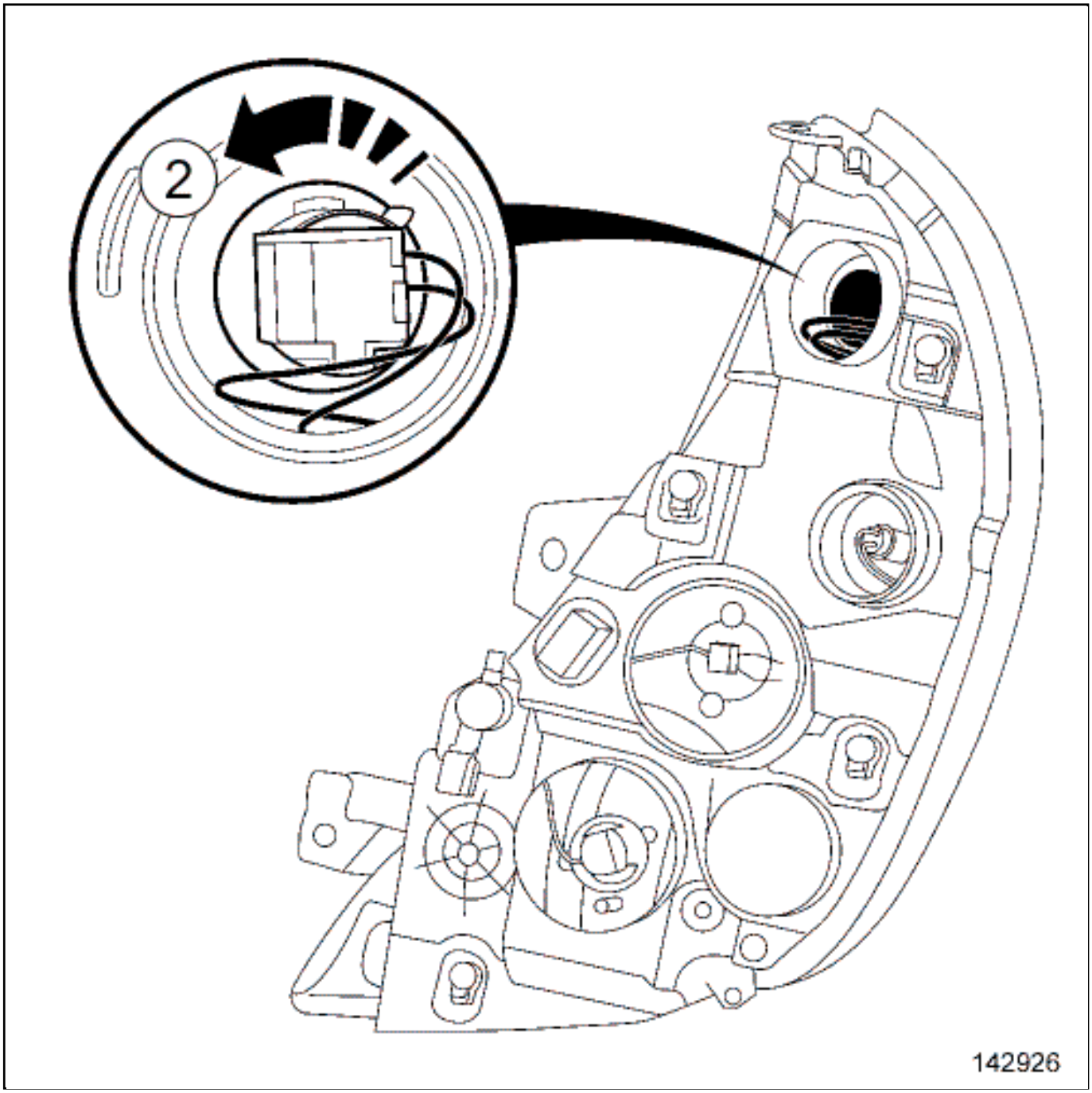
- Switch off the ignition.

2. REMOVAL OPERATION

1- DIRECTION INDICATOR BULB



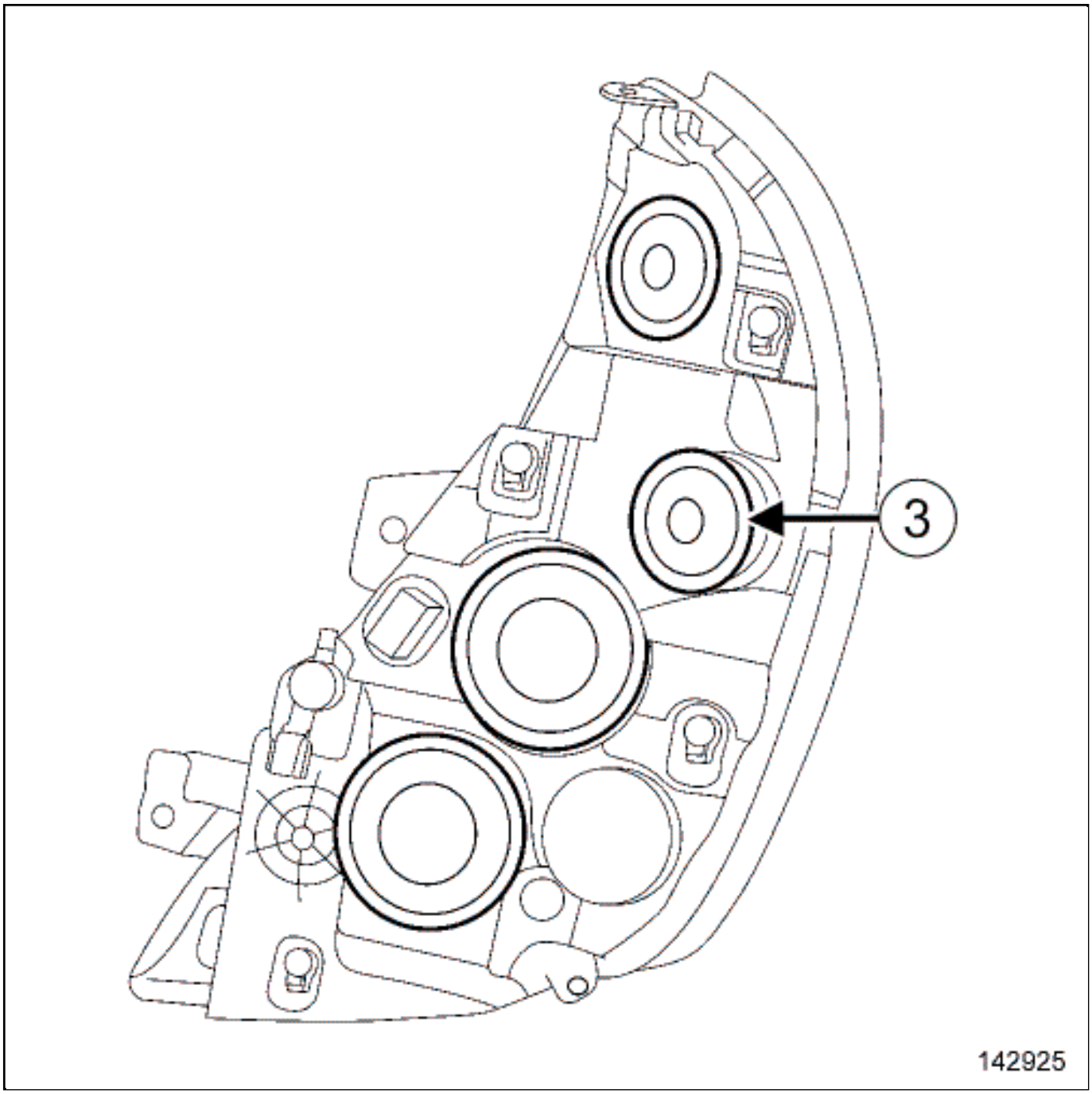
- Remove the sealing cover(1) .



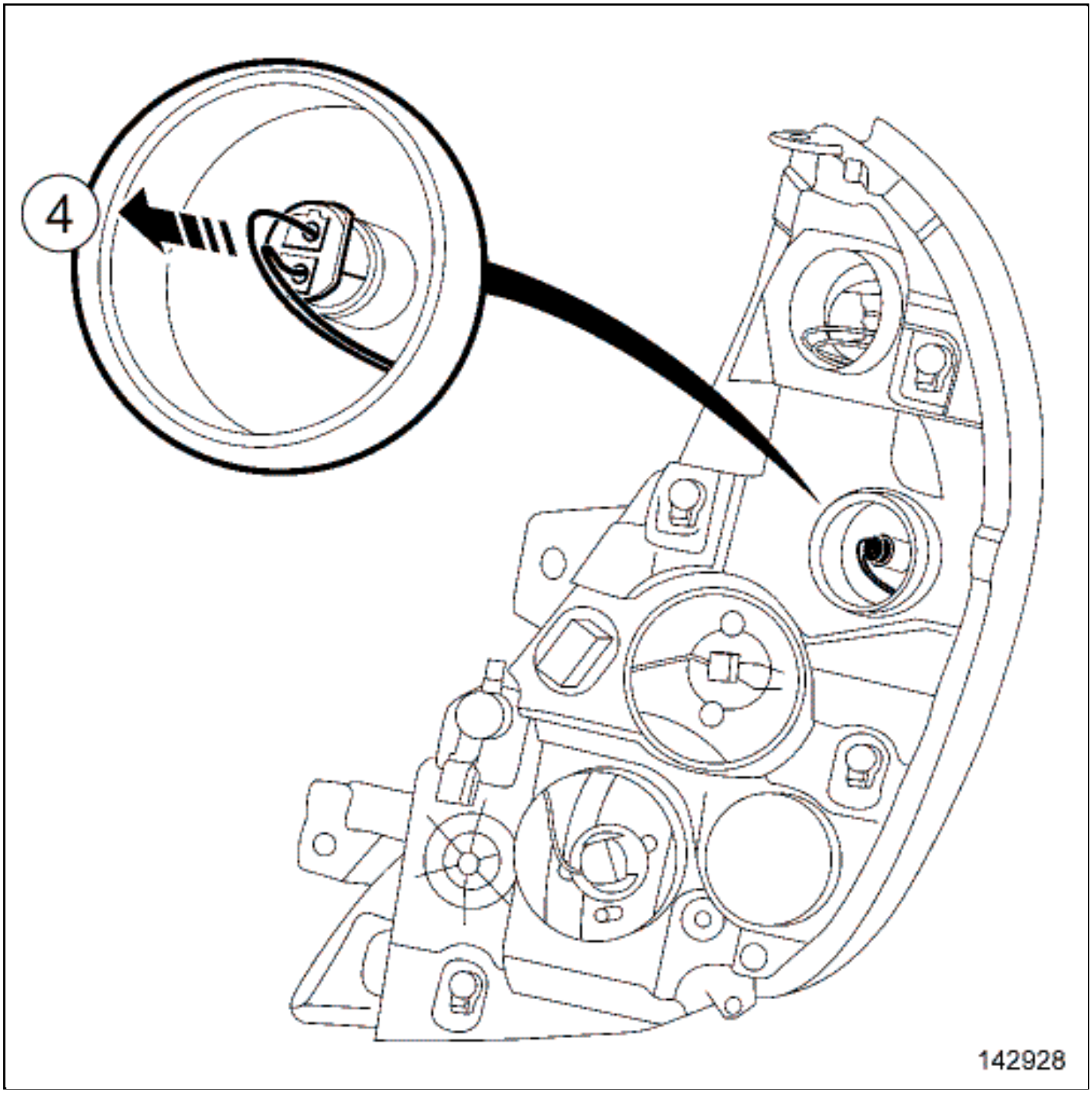
- Unlock the bulb holder by turning it a quarter of a turn anti-clockwise(2) .

- Remove:
  - the bulb holder from the headlight,
  - the direction indicator bulb from the bulb holder.

2- SIDE LIGHT BULB



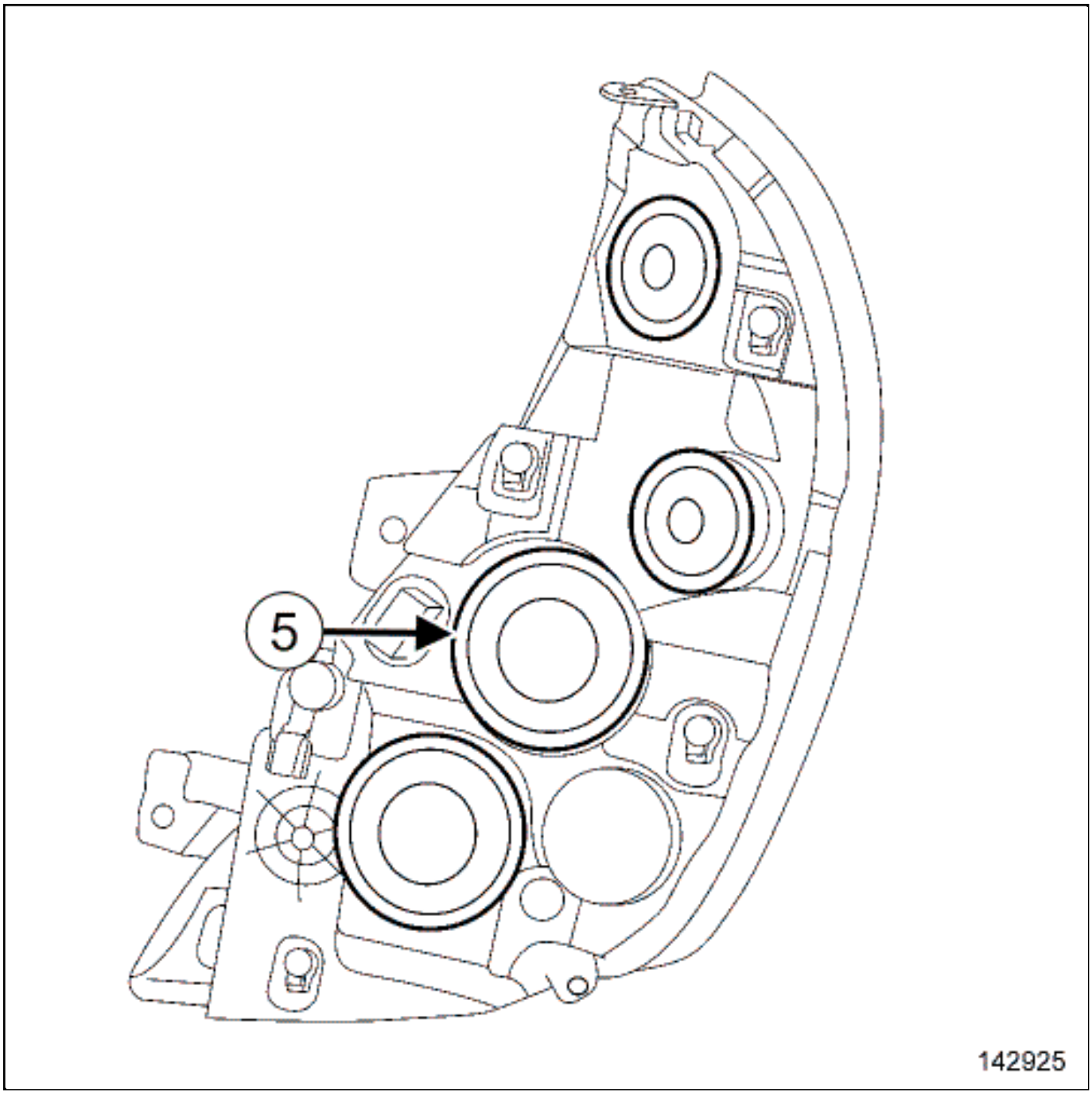
- Remove the sealing cover(3) .



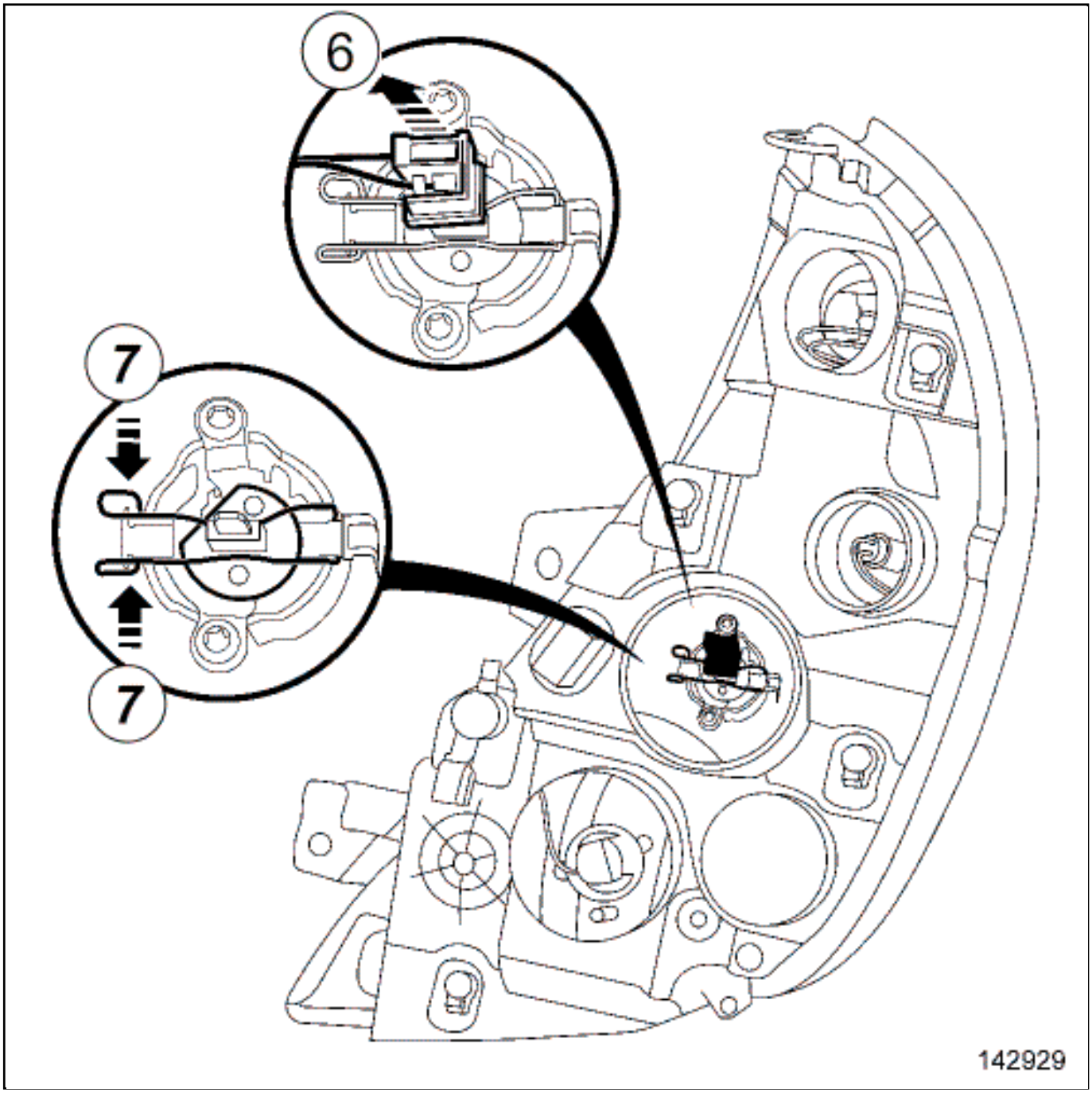
Unclip:

- the bulb holder from the headlight by(4) ,
- the side light from the bulb holder.

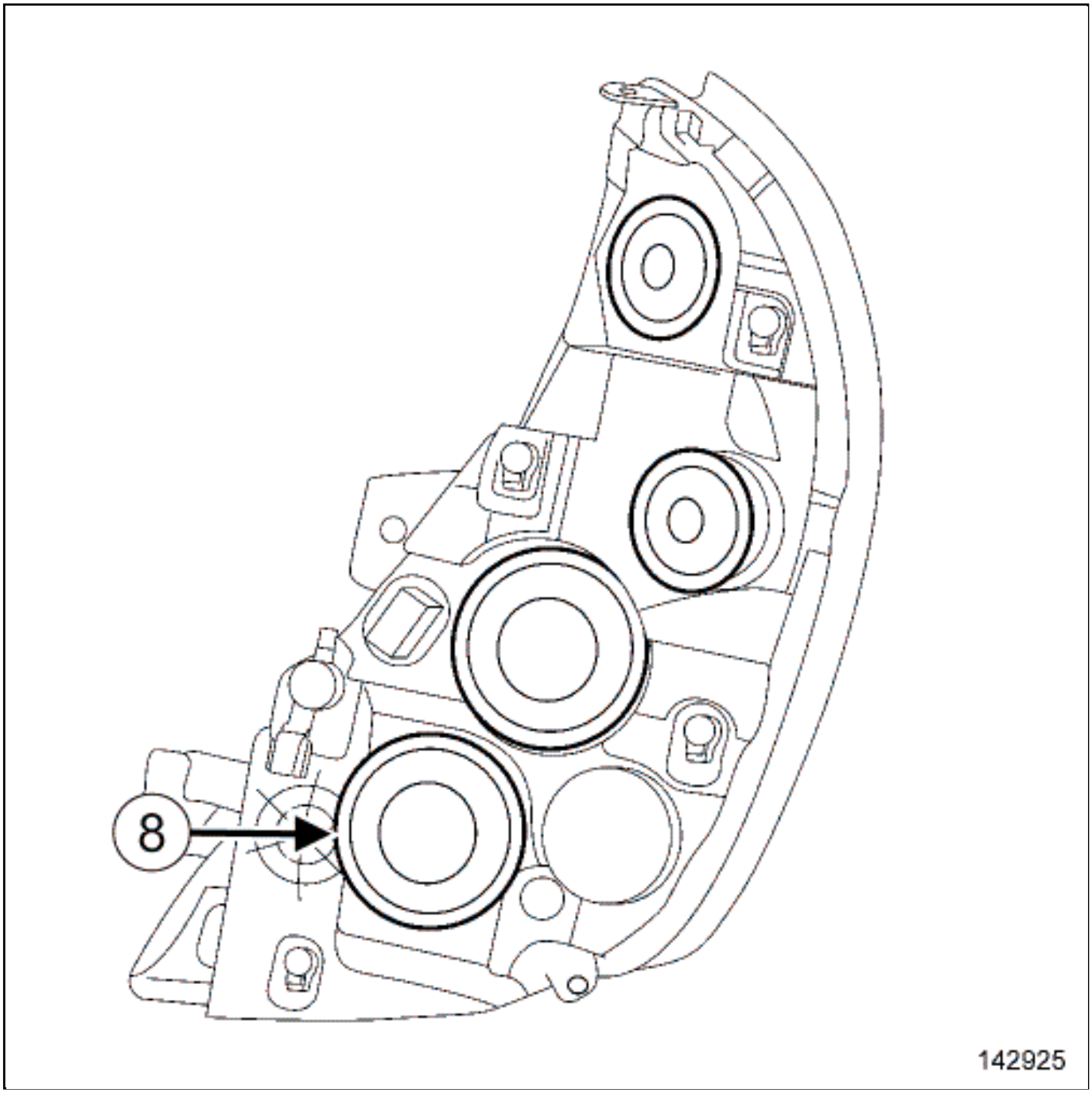
3- MAIN BEAM HEADLIGHT BULBS



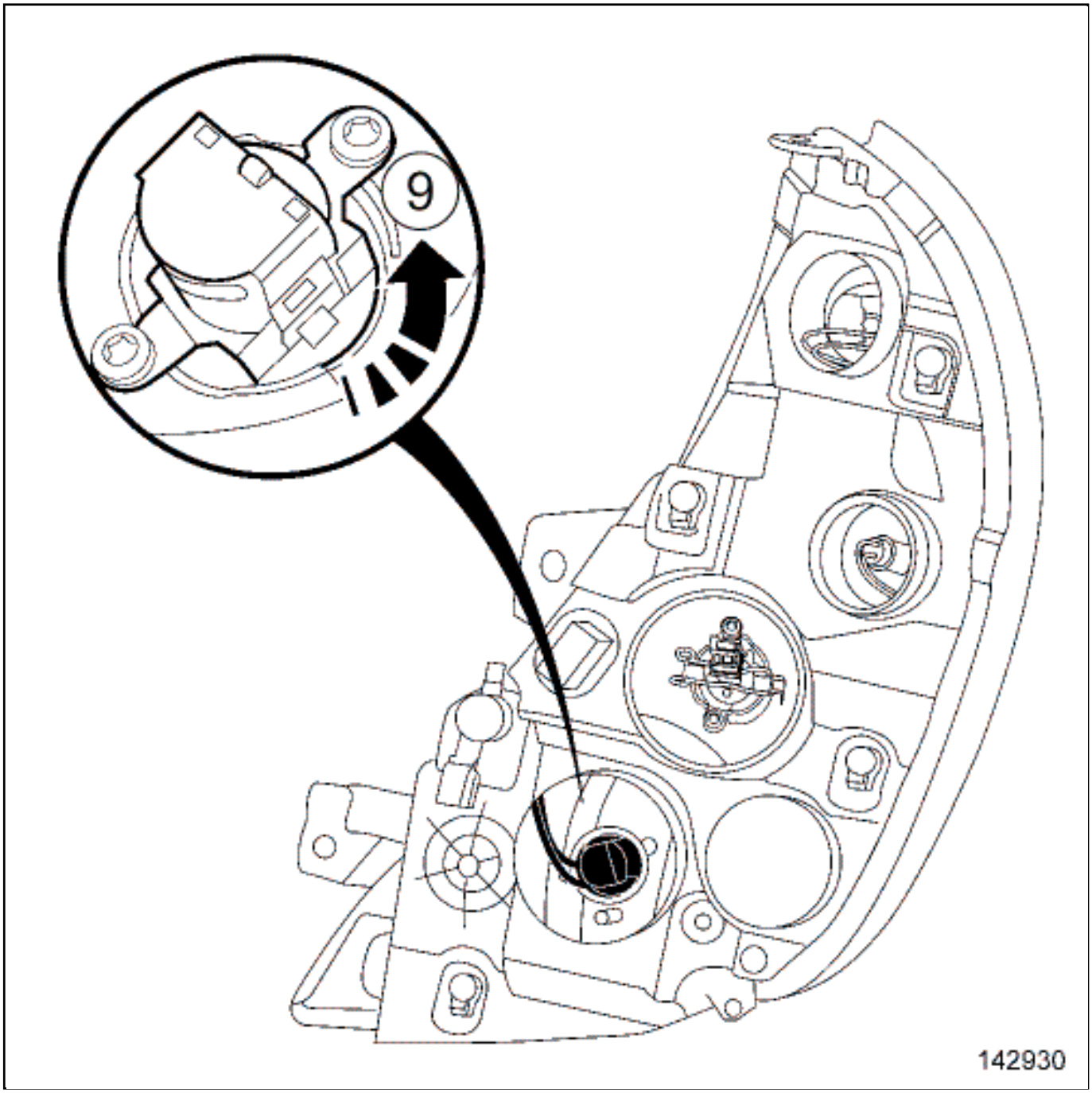
Remove the sealing cover(5) .



- Disconnect the connector from the main beam headlight bulb by(6) .
- Release the main beam headlight bulb from the headlight by unclipping the pins(7) .
- Remove the main beam headlight bulb.



Remove the sealing cover(8) .



- Unlock the headlight bulb holder by turning it a quarter of a turn anti-clockwise(9) .
- Remove the bulb holder from the headlight.
- Unclip the dipped beam headlight bulb from the bulb holder.

REFITTING

Note:

If the bulbs are changed, only use approved bulbs.

Proceed in the reverse order to removal.

HEADLIGHT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

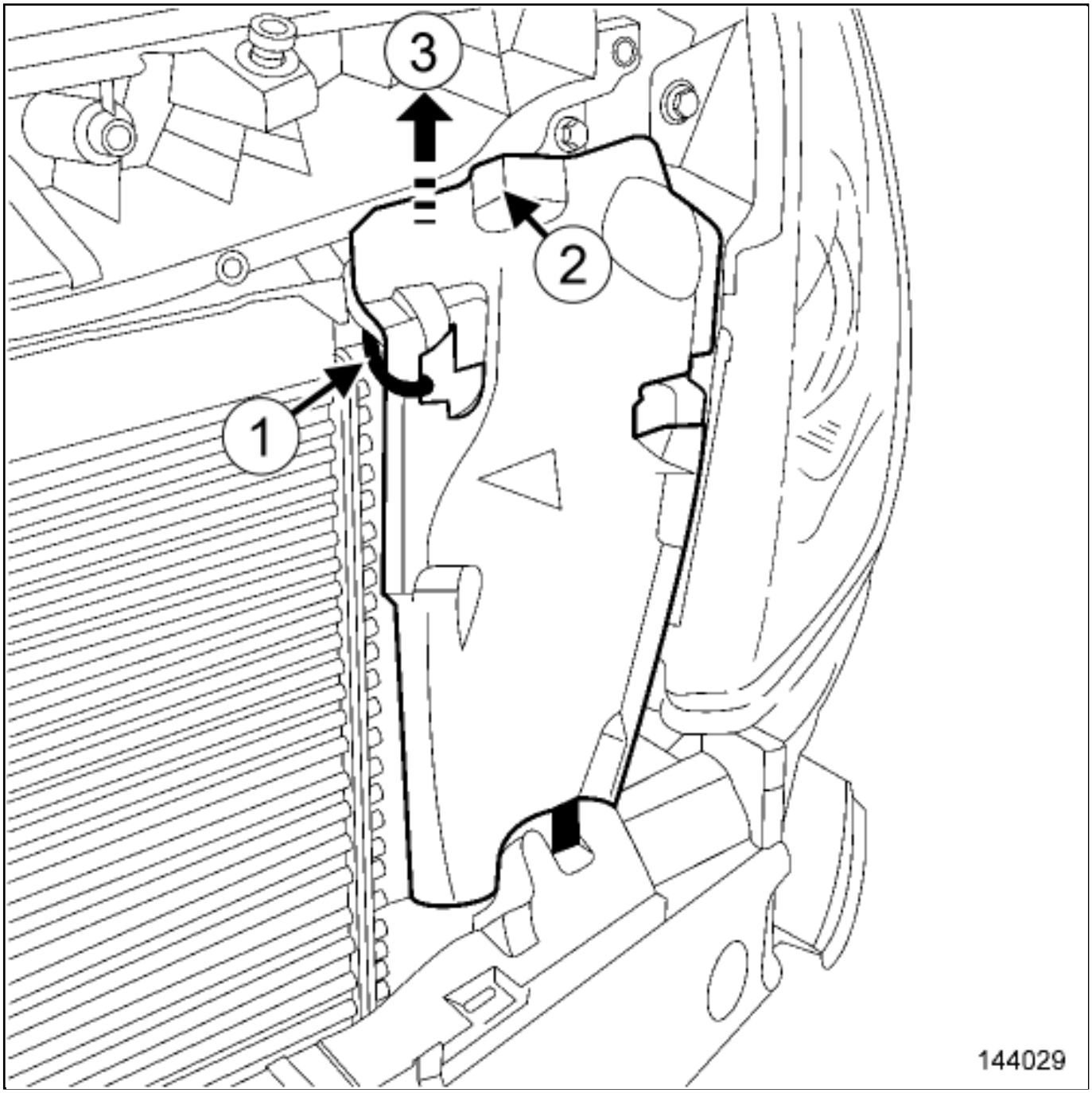
WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

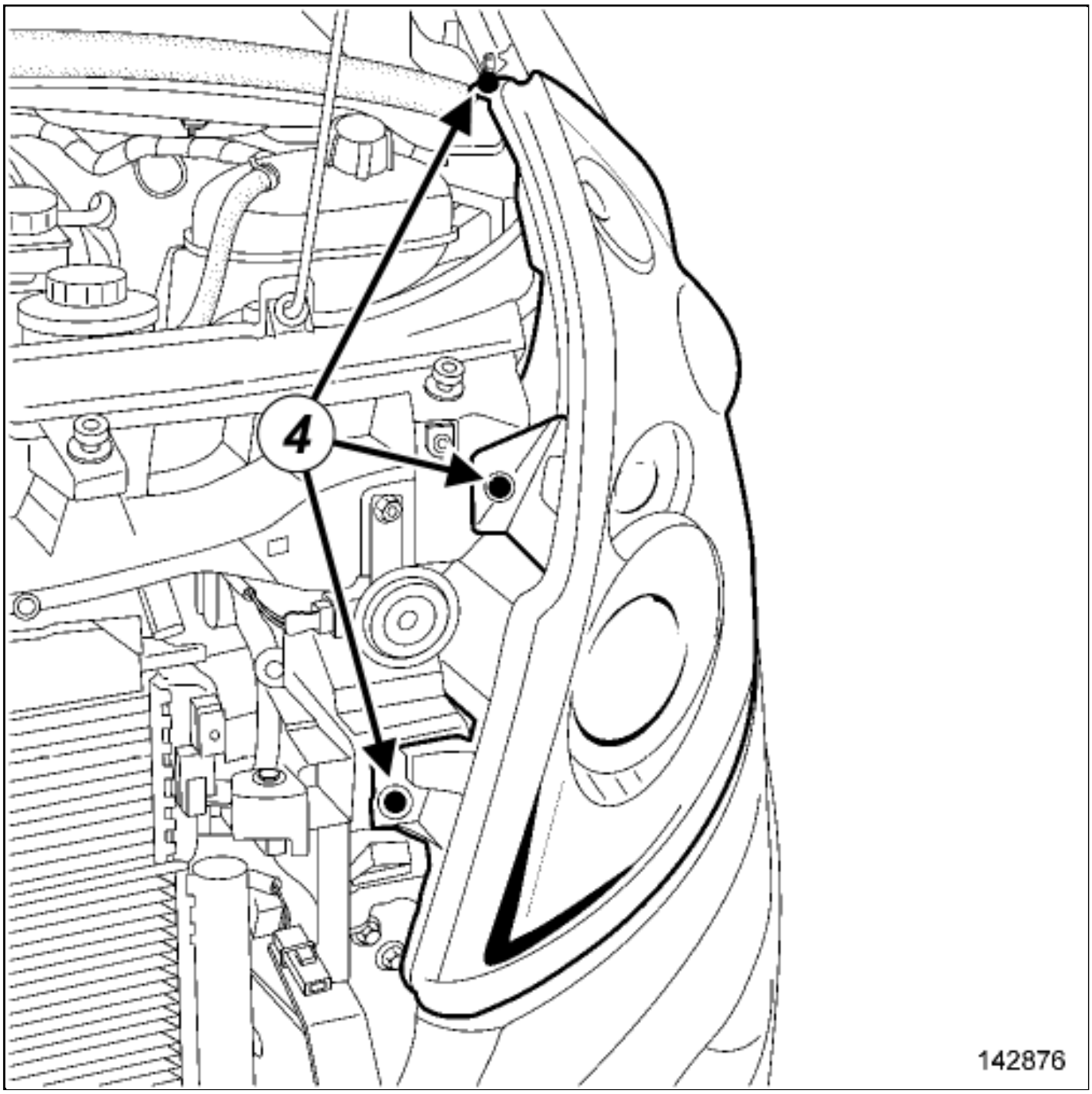
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.
- Remove the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment).

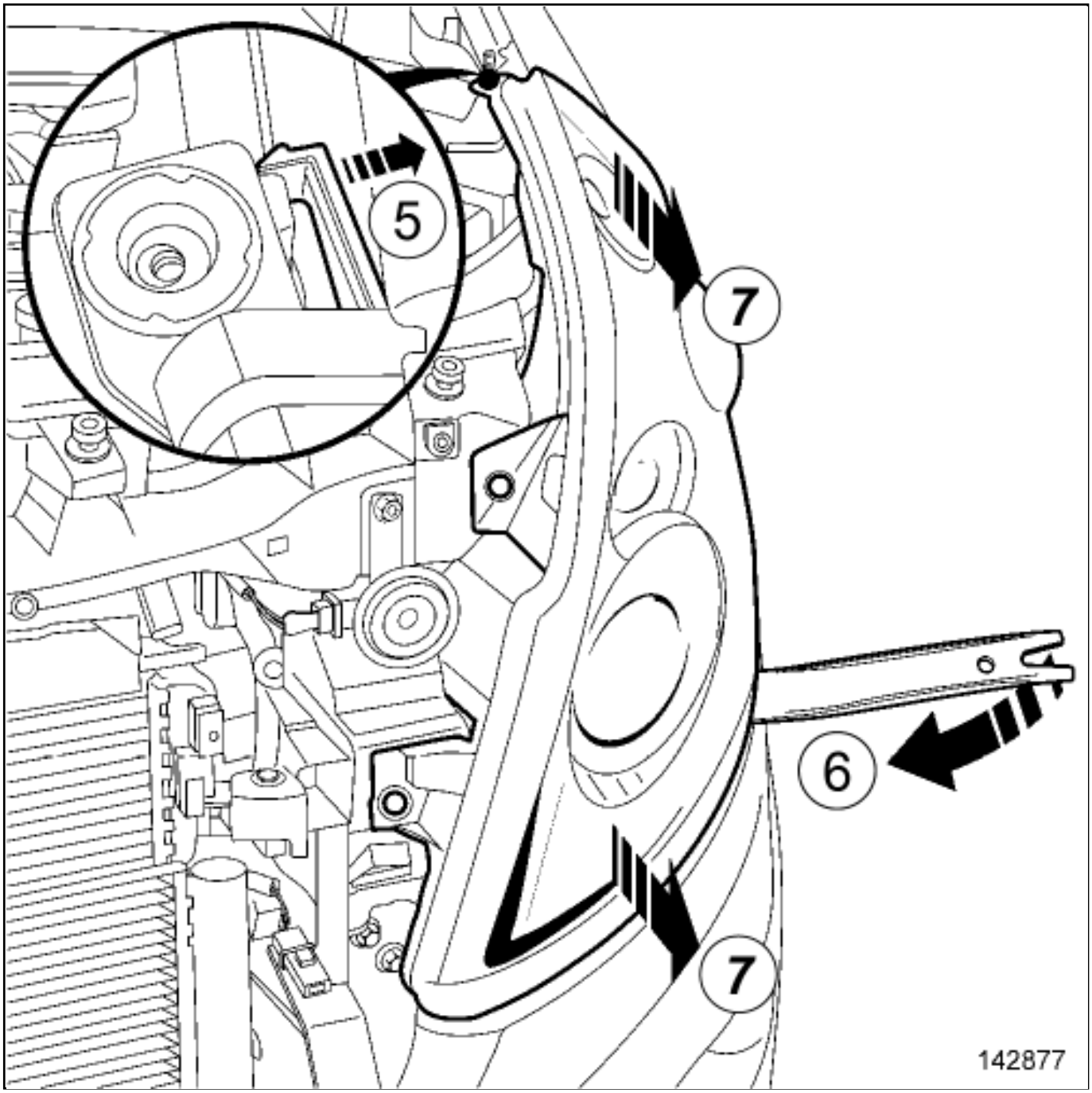


- Cut the plastic clip(1) of the air deflector.
- Unclip the air deflector at(2) .
- Remove the air deflector at(3) .

2. REMOVAL OPERATION



- Remove the bolts(4) from the headlight.



- Unclip:
  - the top of the headlight(**5**) ,
  - the bottom of the headlight(**6**) using the toolSet of trim removal levers.(**Car. 1363**) .
- Move the headlight towards the front of the vehicle(**7**) .
- Disconnect the headlight connectors.
- Remove the headlight.

1- WHEN REPLACING THE HEADLIGHT

- Remove the headlight bulbs(see 80B, Headlights, Headlight bulb: Removal - Refitting) .

REFITTING

- Proceed in the reverse order to removal.
-

  Adjust the headlights(see 80B, Headlights, Headlight: Adjustment) .

HEADLINING: REMOVAL - REFITTING

Special tooling required	
Trim removal lever.	Car. 1597
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL PREPARATION OPERATION

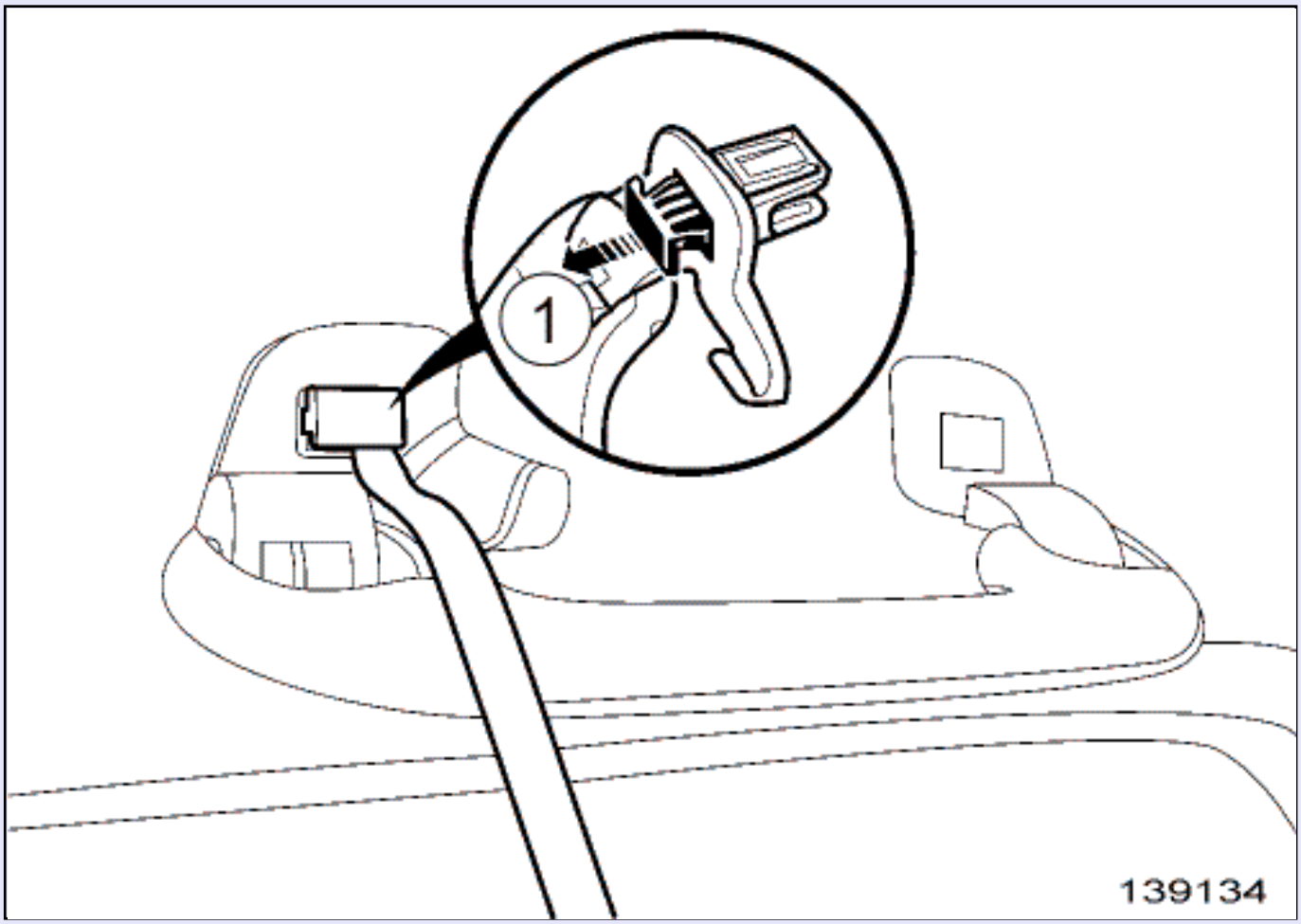
Remove:

- the windscreen pillar trims **(see 71A, Body internal trim, Windscreen pillar trim: Removal - Refitting)** ,
- the B-pillar lining **(see 71A, Body internal trim, B-pillar trim: Removal - Refitting)** ,
- the sun visors **Sun visor: Removal - Refitting** (57A, Interior equipment),
- the front storage compartments under the roof **Front storage compartment under the roof: Removal - Refitting** (57A, Interior equipment) (depending on the equipment),
- the headlining light **Headlining light: Removal - Refitting** (81B, Interior lighting),

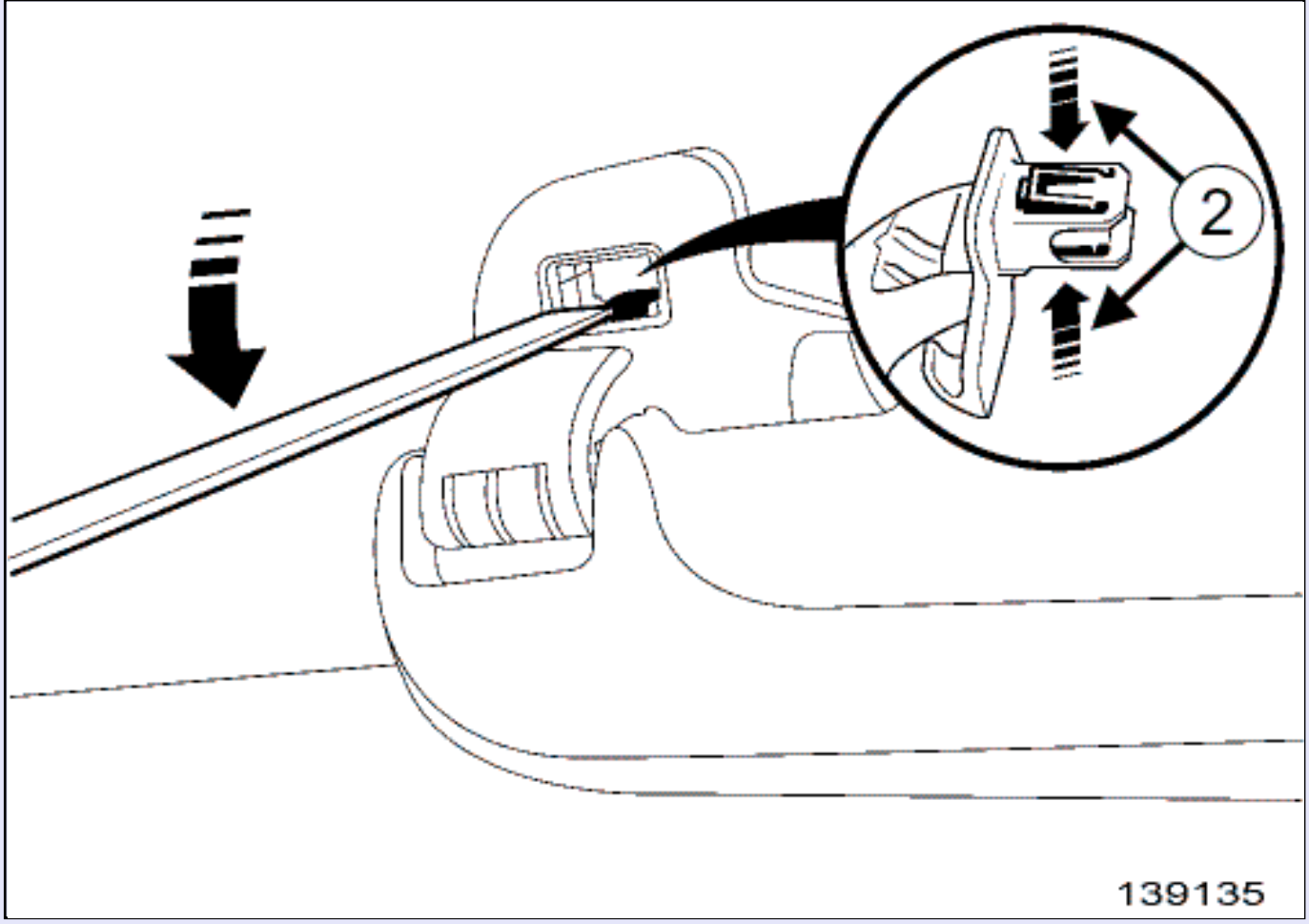
Remove the display **Display: Removal - Refitting** (86A, Radio).

Remove the tachograph **Tachograph: Removal - Refitting** (83A, Instrument panel).

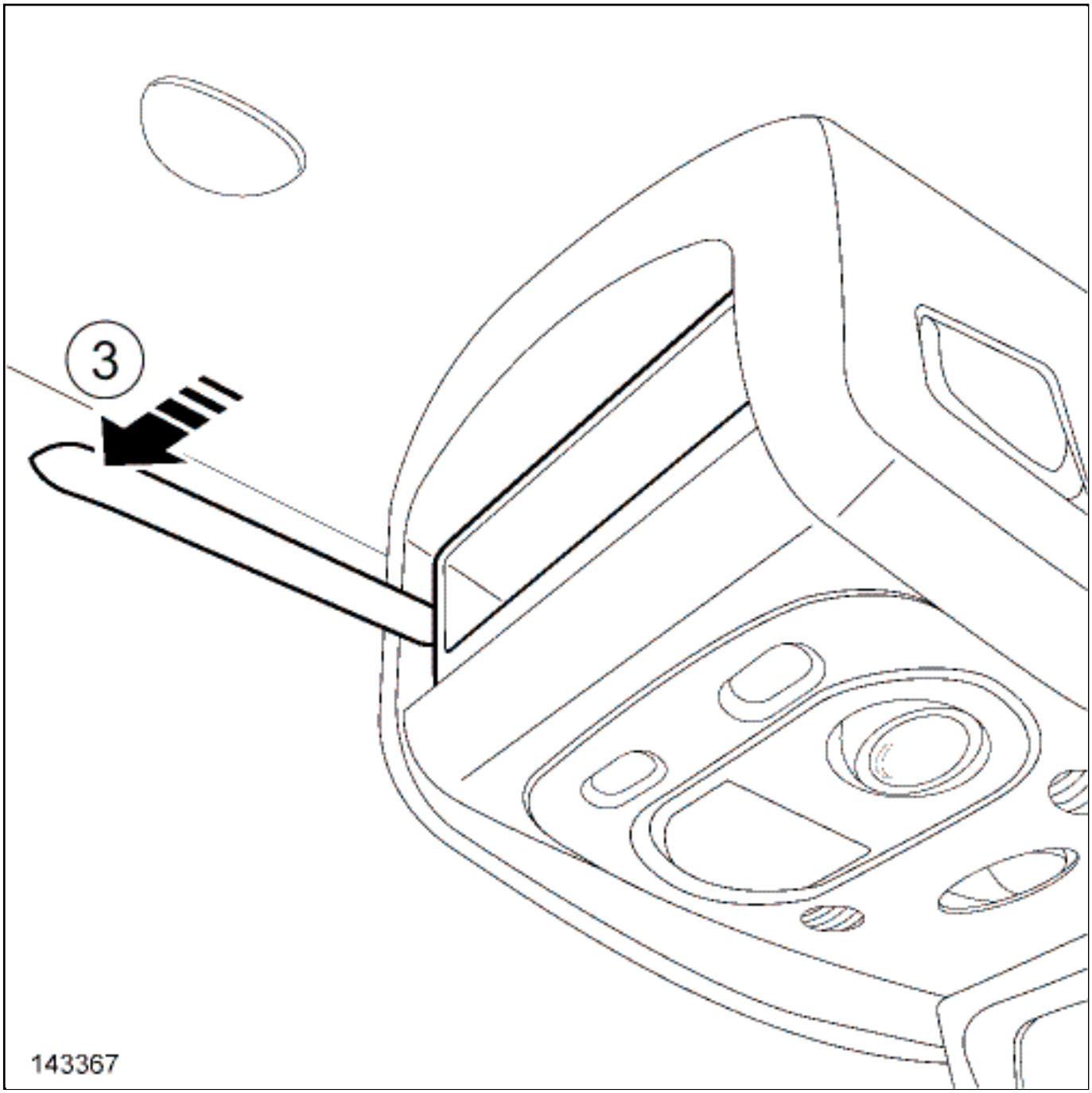
WITH GLASSES STORAGE(RGTLU)



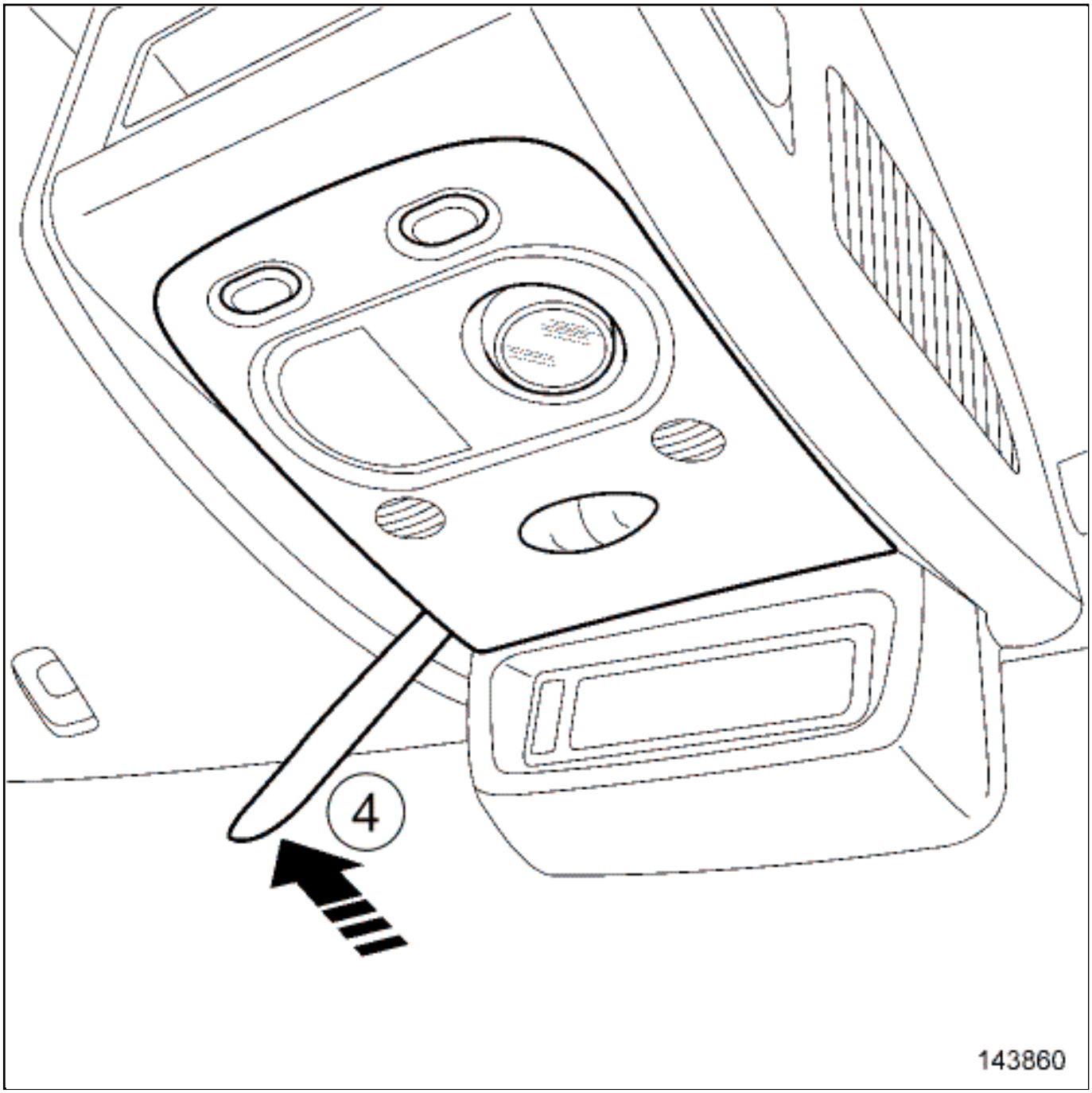
- Unclip the locking blanking covers at(1) using the toolTrim removal lever.(Car. 1597) .



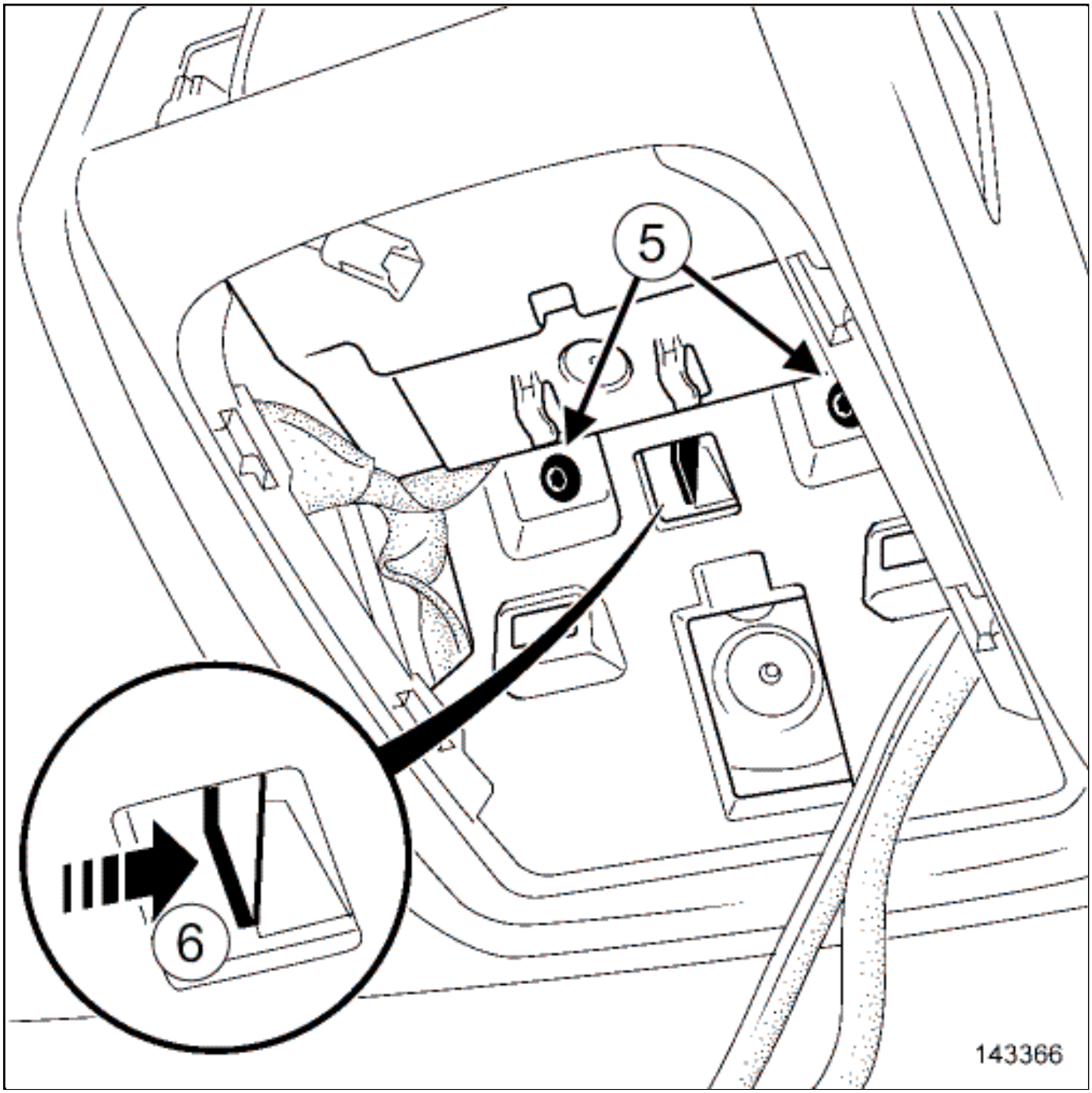
- Remove the glasses storage compartment by pressing on the clips at(2) using a flat-blade screwdriver.



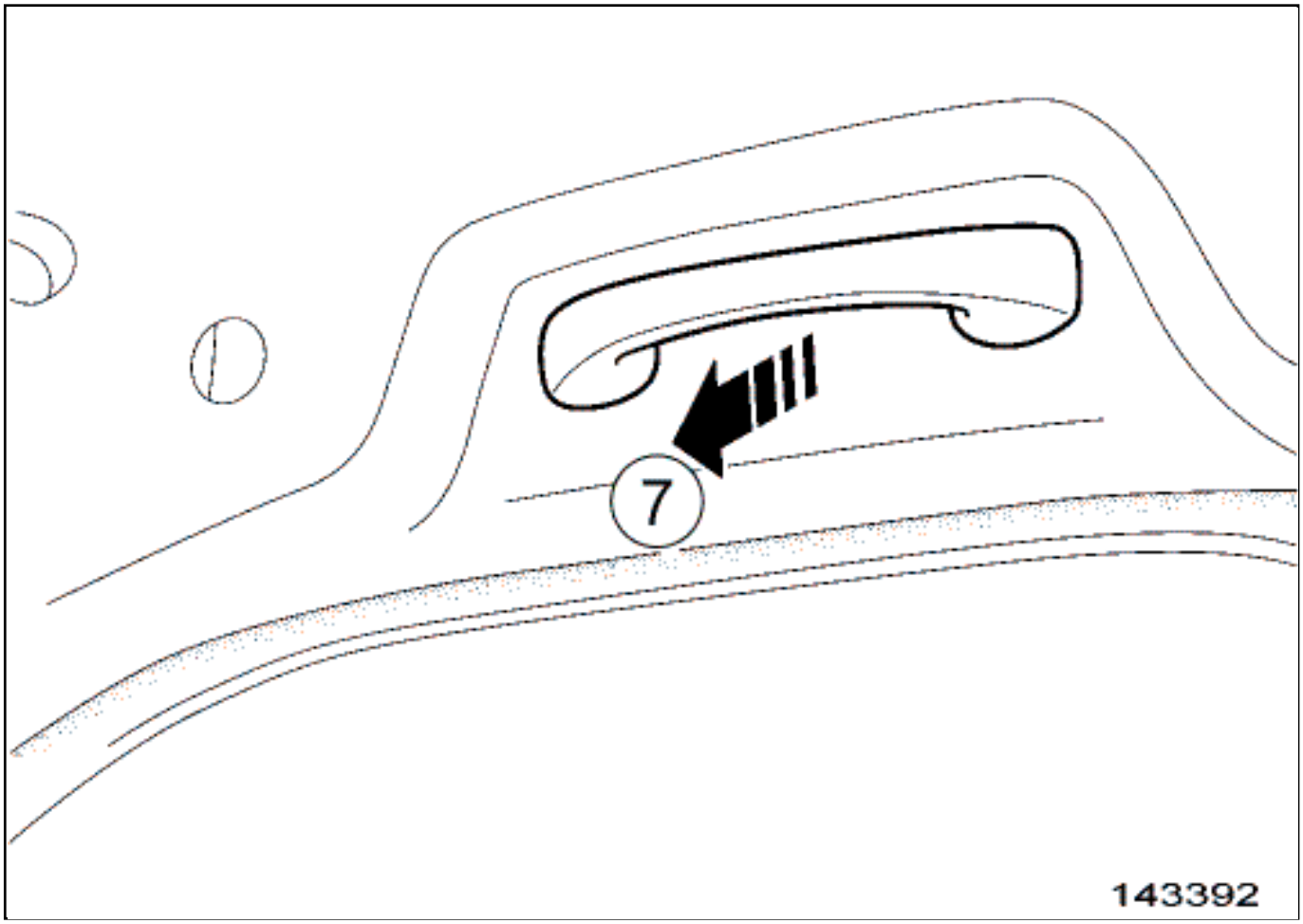
- Unclip the storage compartment at(3) using the toolSet of trim removal levers.(Car. 1363) .
- Remove the storage compartment.



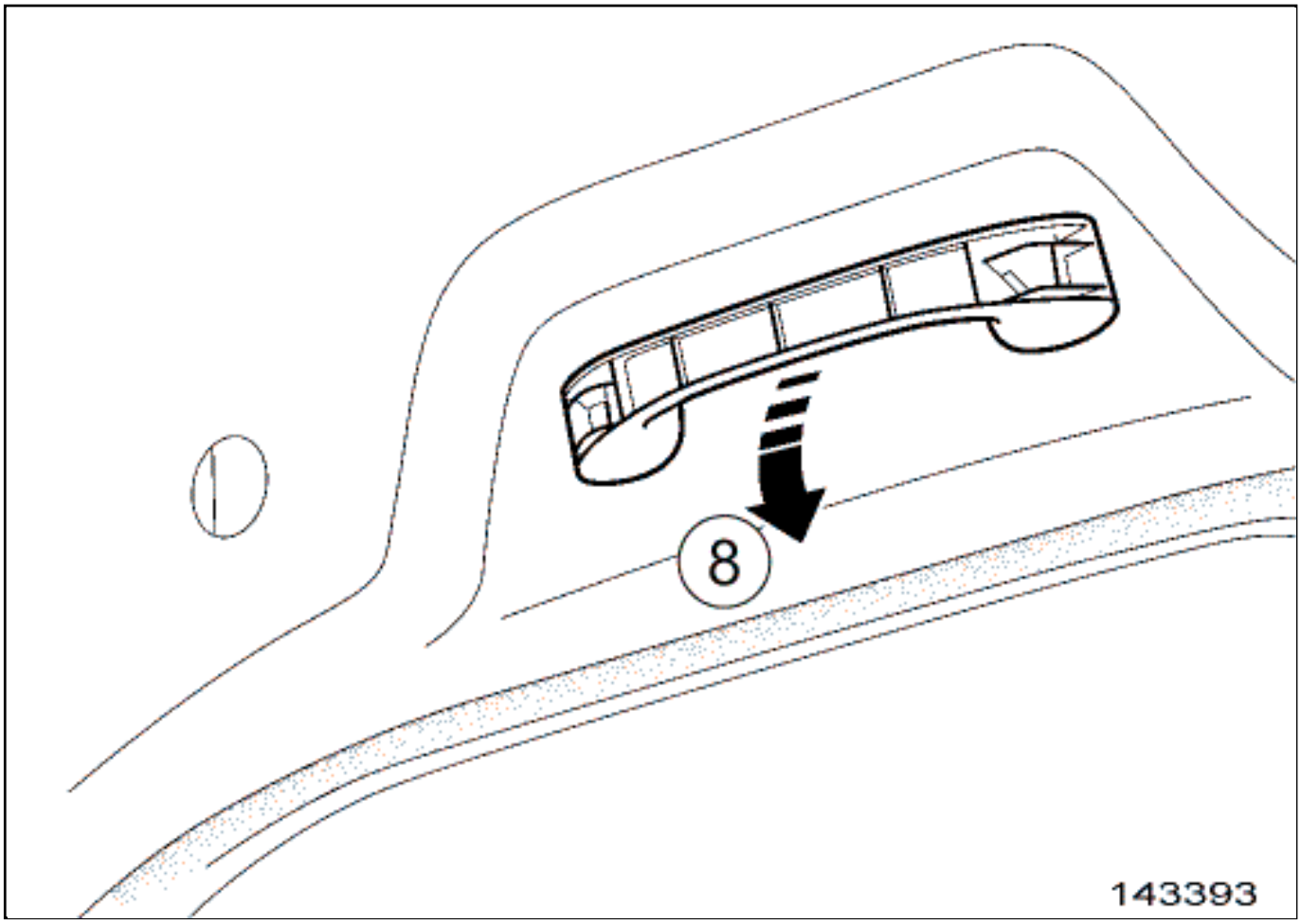
- Unclip the support plate of the headlining light at(4) using the toolSet of trim removal levers.(Car. 1363) .
- Disconnect the connectors.
- Remove the support plate from the headlining light.



- Remove the bolts(5) .
- Unclip the centre console under the roof at(6) .
- Remove the centre console under the roof.

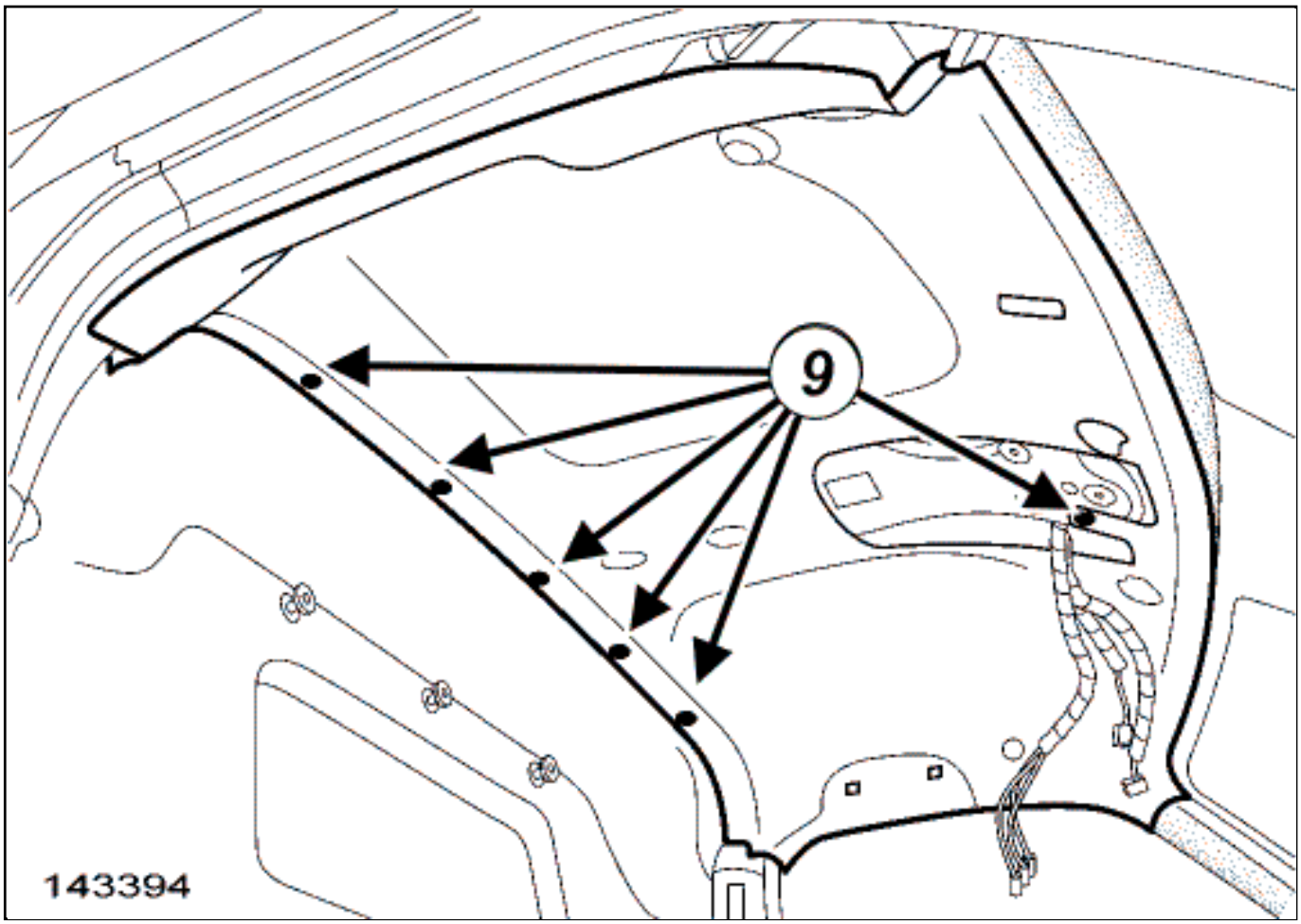


- Unclip the blanking cover for the grab handle at(7) .



Remove the grab handle at(8) .

2. REMOVAL OPERATION



Remove:

- the clips(9) ,
- the headlining.

REFITTING

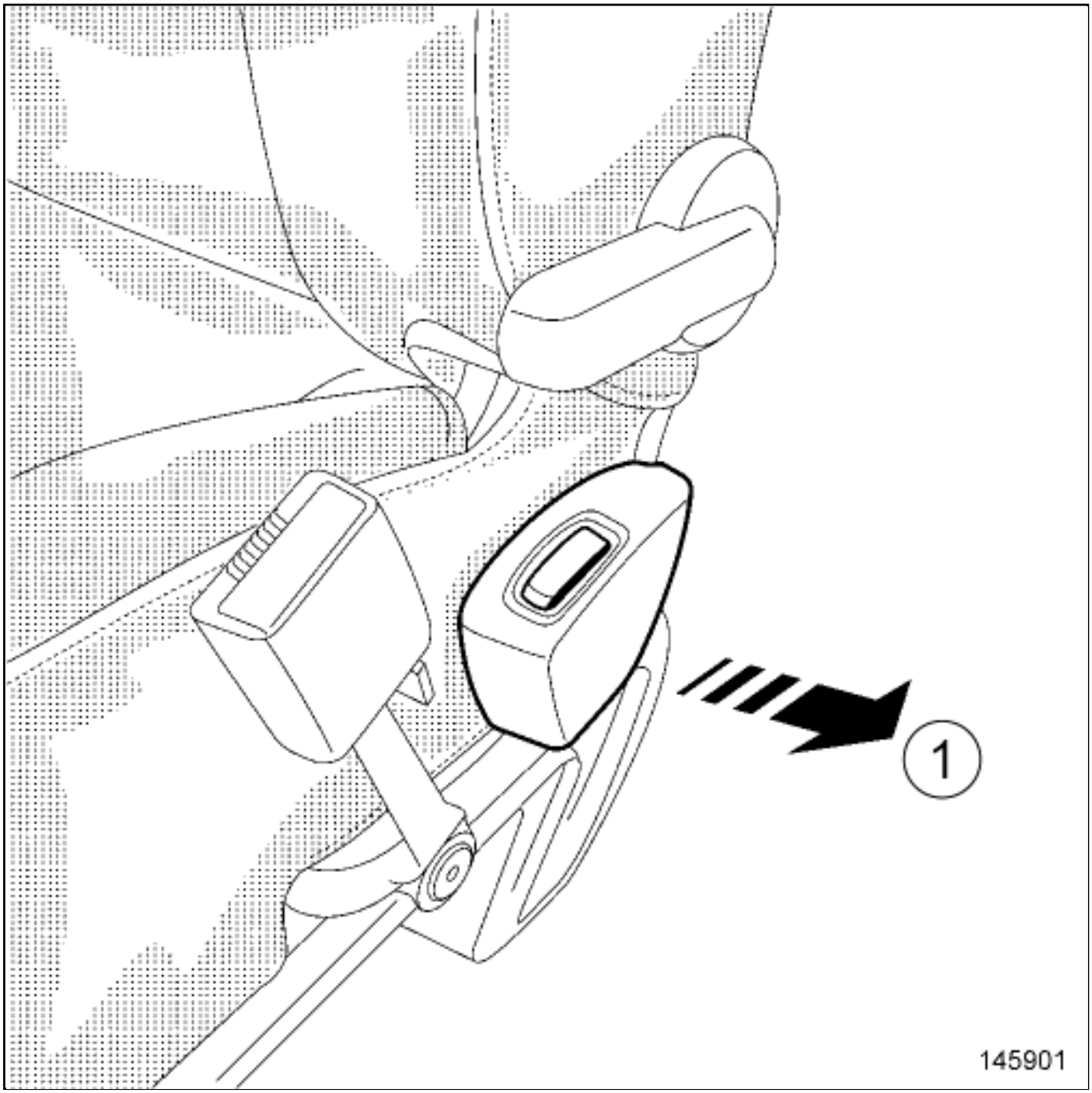
Proceed in the reverse order to removal.

HEATED SEAT PAD SWITCH: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

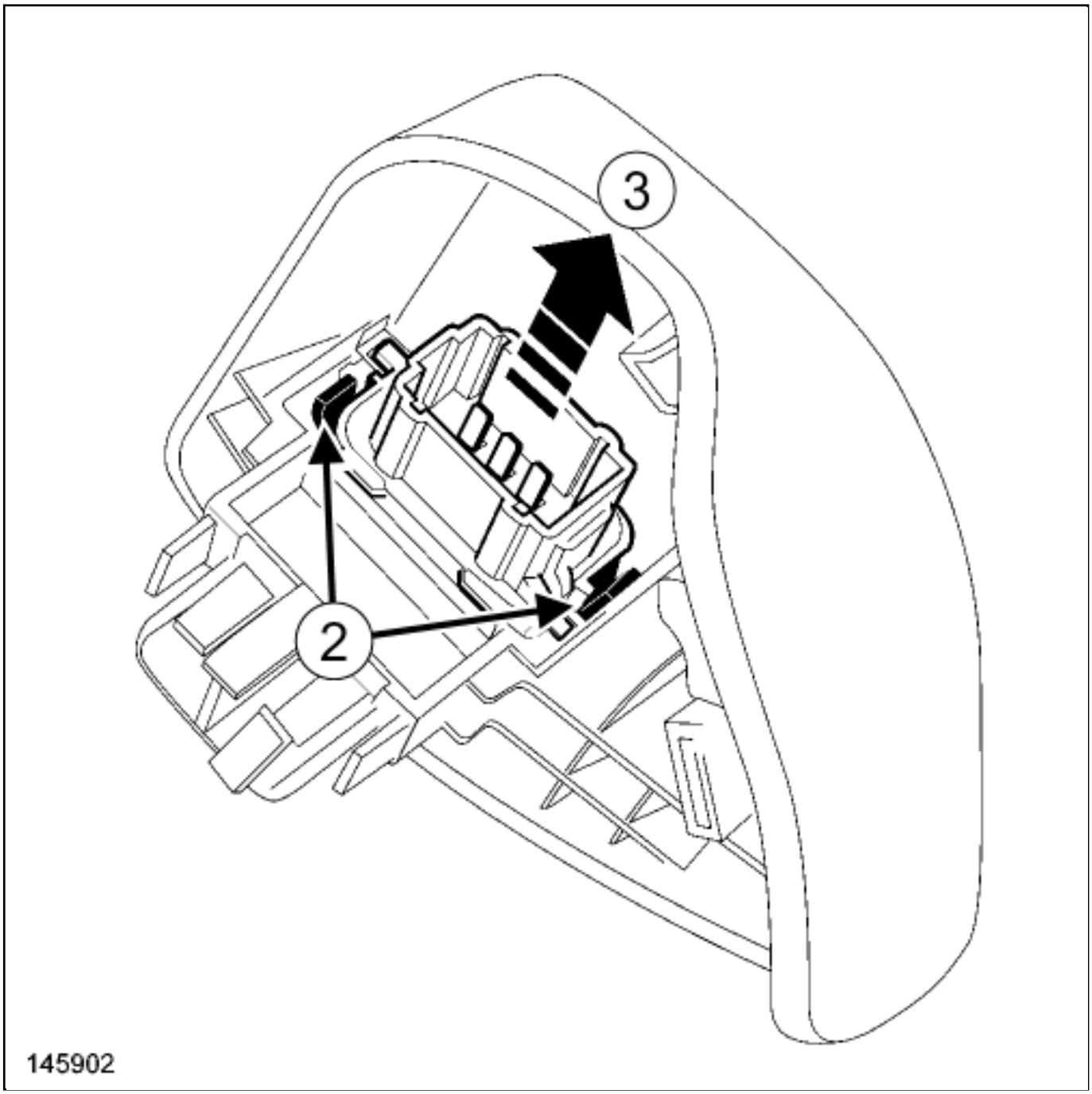
- Switch off the ignition.



- Remove the support from the heated seat pad switch(1) .

- Disconnect the heated seat pad switch connector.

2. REMOVAL OPERATION



- Remove the heated seat pad switch(3) by pressing on the clips(2) .

REFITTING

- Proceed in the reverse order to removal.

HEATER MATRIX: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pipe clamps.	Ms. 583

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

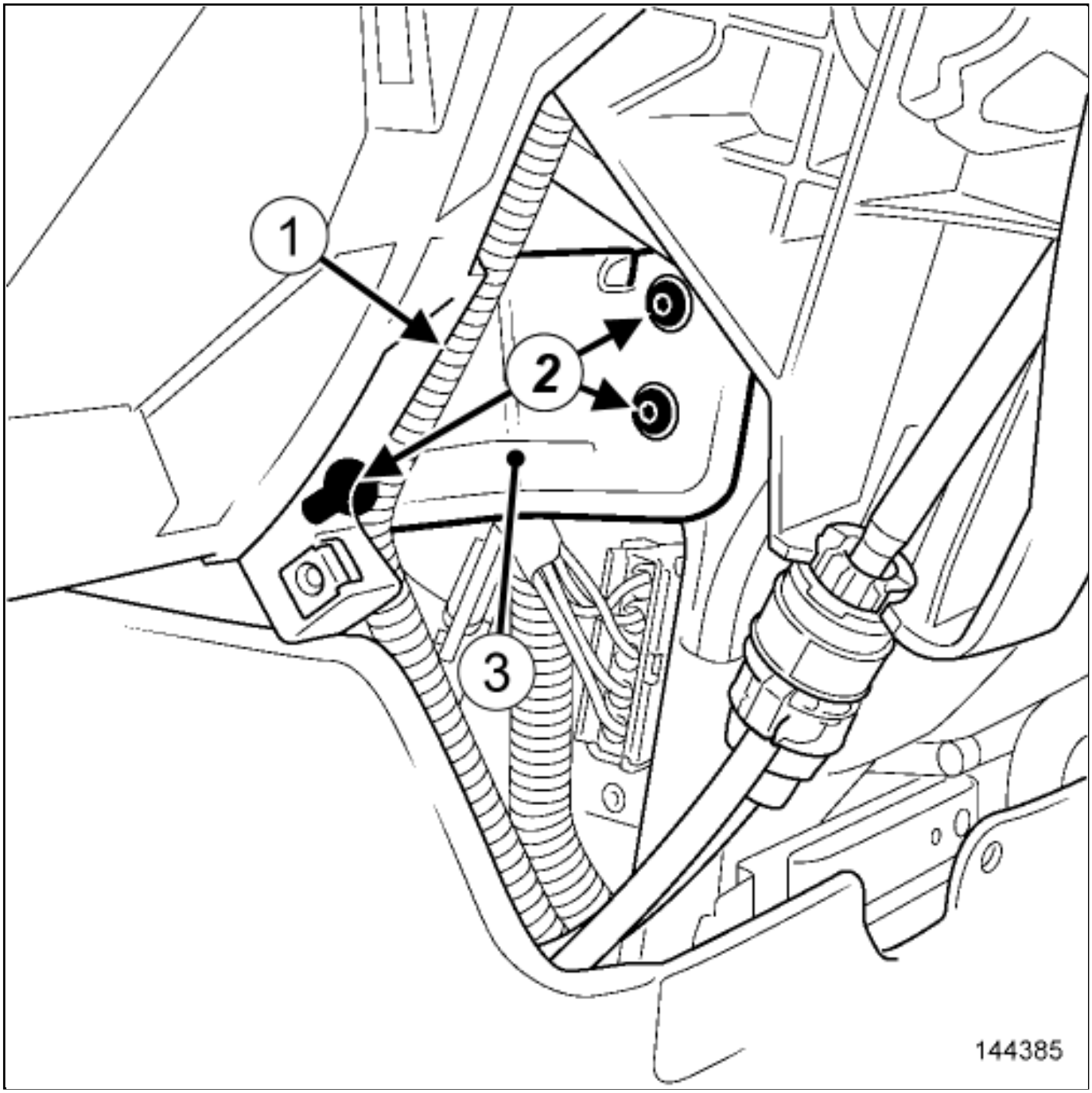
Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view)** .

REMOVAL

- Remove:
  - the glovebox**Glovebox: Removal - Refitting** (57A, Interior equipment),
  - the central console**Centre console: Removal - Refitting** (57A, Interior equipment).

- Unclip the glovebox refrigerant pipe.

- Remove the left-hand A-pillar air distribution duct**(see 61A, Heating, Air distribution circuit assembly: Exploded view)** .



- Unclip the wiring(1) from the dashboard cross member reinforcement (if fitted to the vehicle).
- Move the wiring away from the dashboard cross member reinforcement (if fitted to the vehicle).
- Remove:
  - the bolts(2) of the dashboard cross member reinforcement,
  - the dashboard cross member reinforcement(3) .
- Fit the toolPipe clamps.(Ms. 583) on the heater matrix hoses on the engine side.

1. REMOVAL OPERATION

- Remove (see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view)
  - the heater matrix pipe bracket,
  - the heater matrix pipe clips.

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

- Put a protective cover on the floor carpet.
- Position a container to collect the coolant under the heater matrix pipes.
- Move the heater matrix pipes aside(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .
- Remove the heater matrix(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the clips of the heater matrix pipes.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.
- Fill up and bleed the cooling systemCooling system: Draining - Refilling (19A, Cooling).

HEATER UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Note:

There are two heater units at each side of the underfloor.

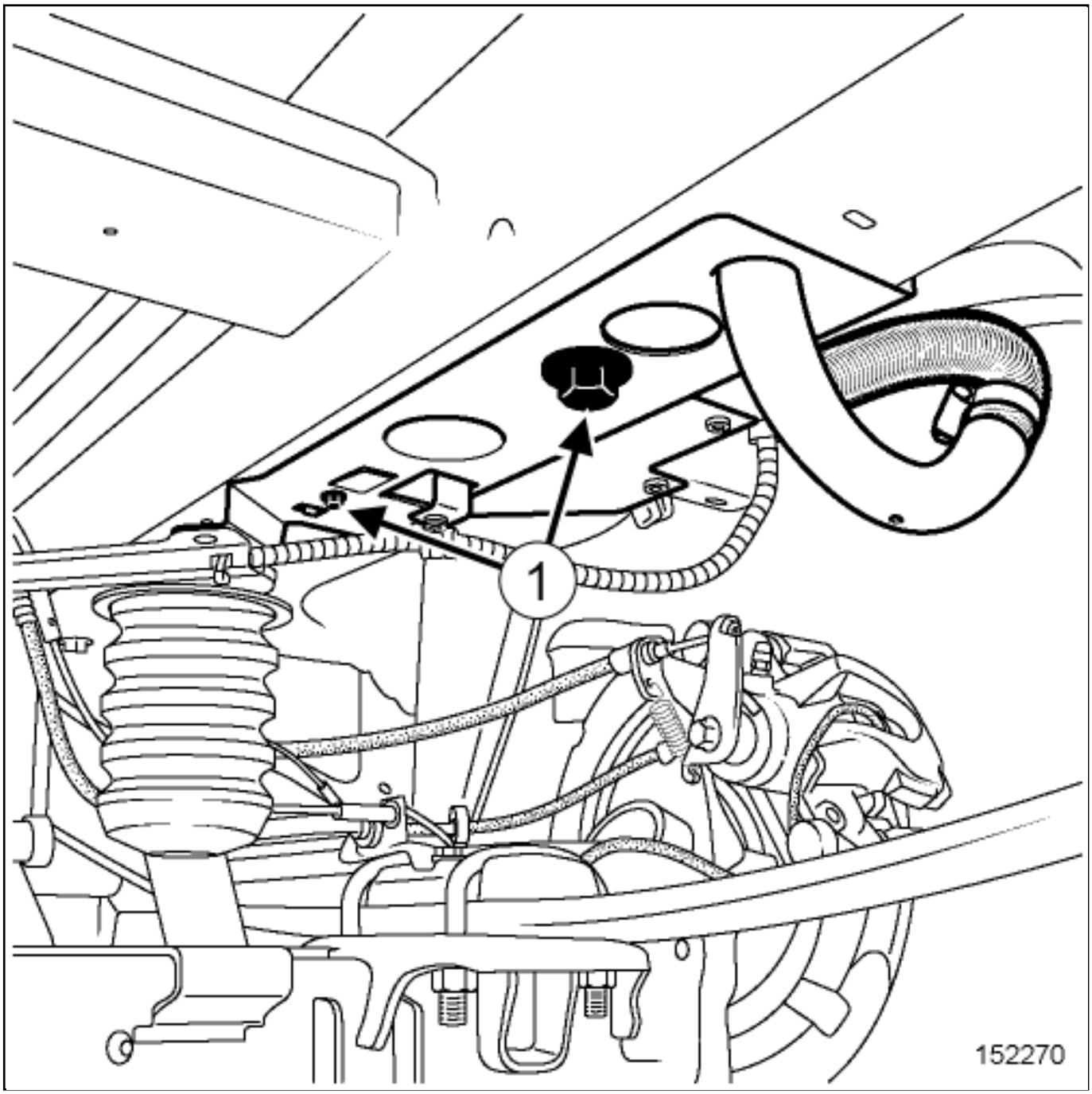
REMOVAL

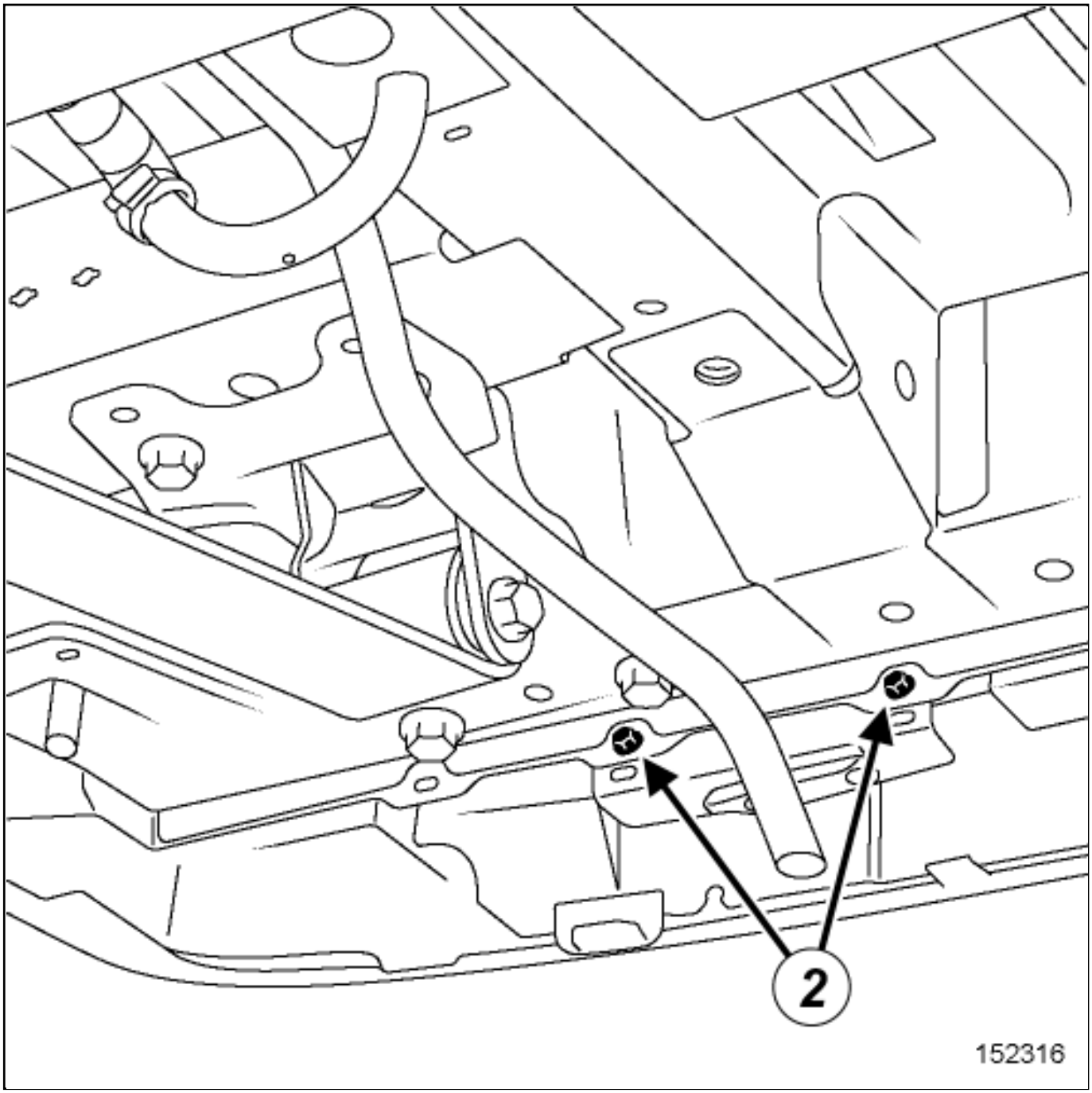
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting .
- Disconnect the battery Battery: Removal - Refitting .

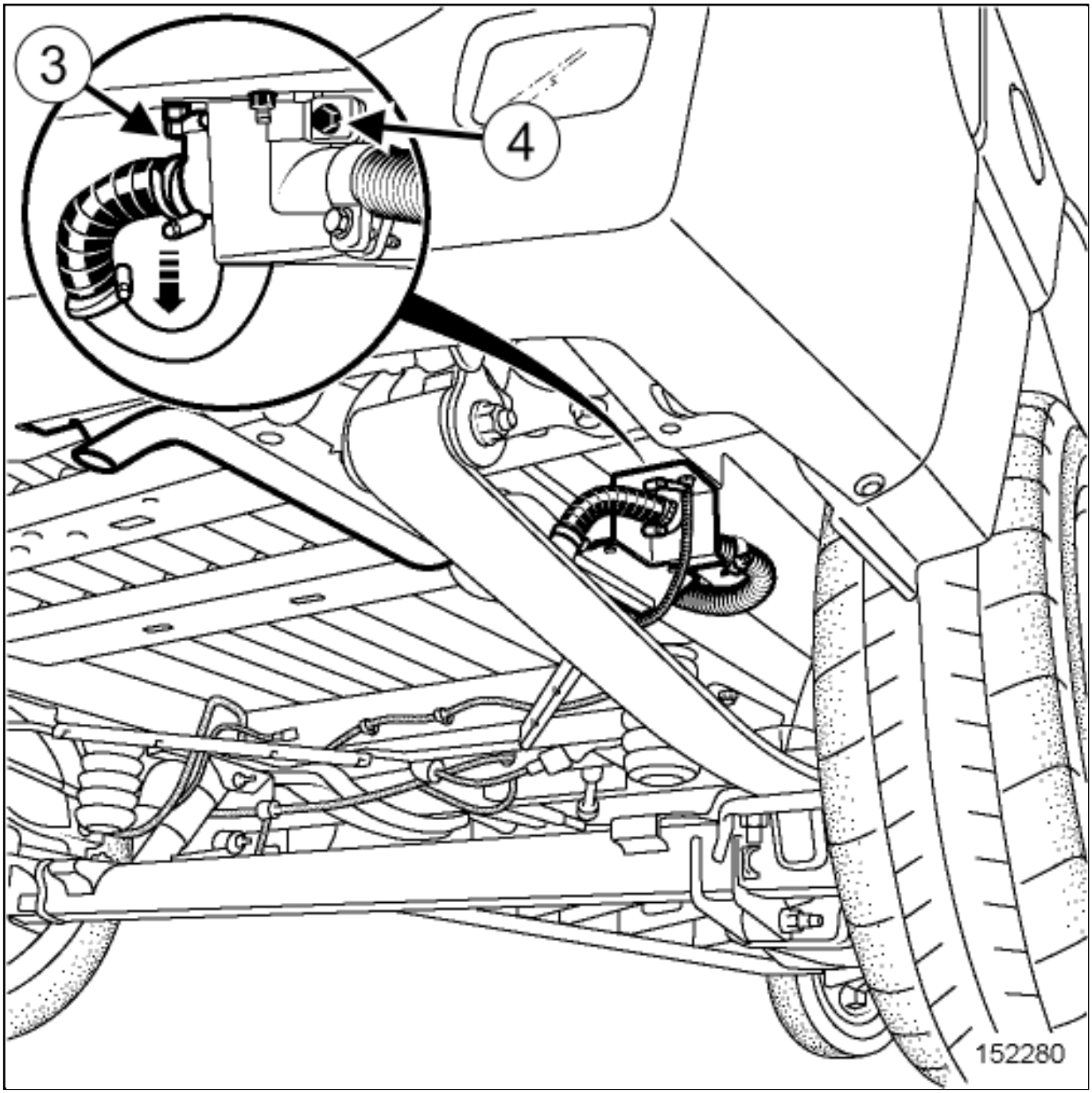
2. REMOVAL OPERATION

1- UNDER THE VEHICLE

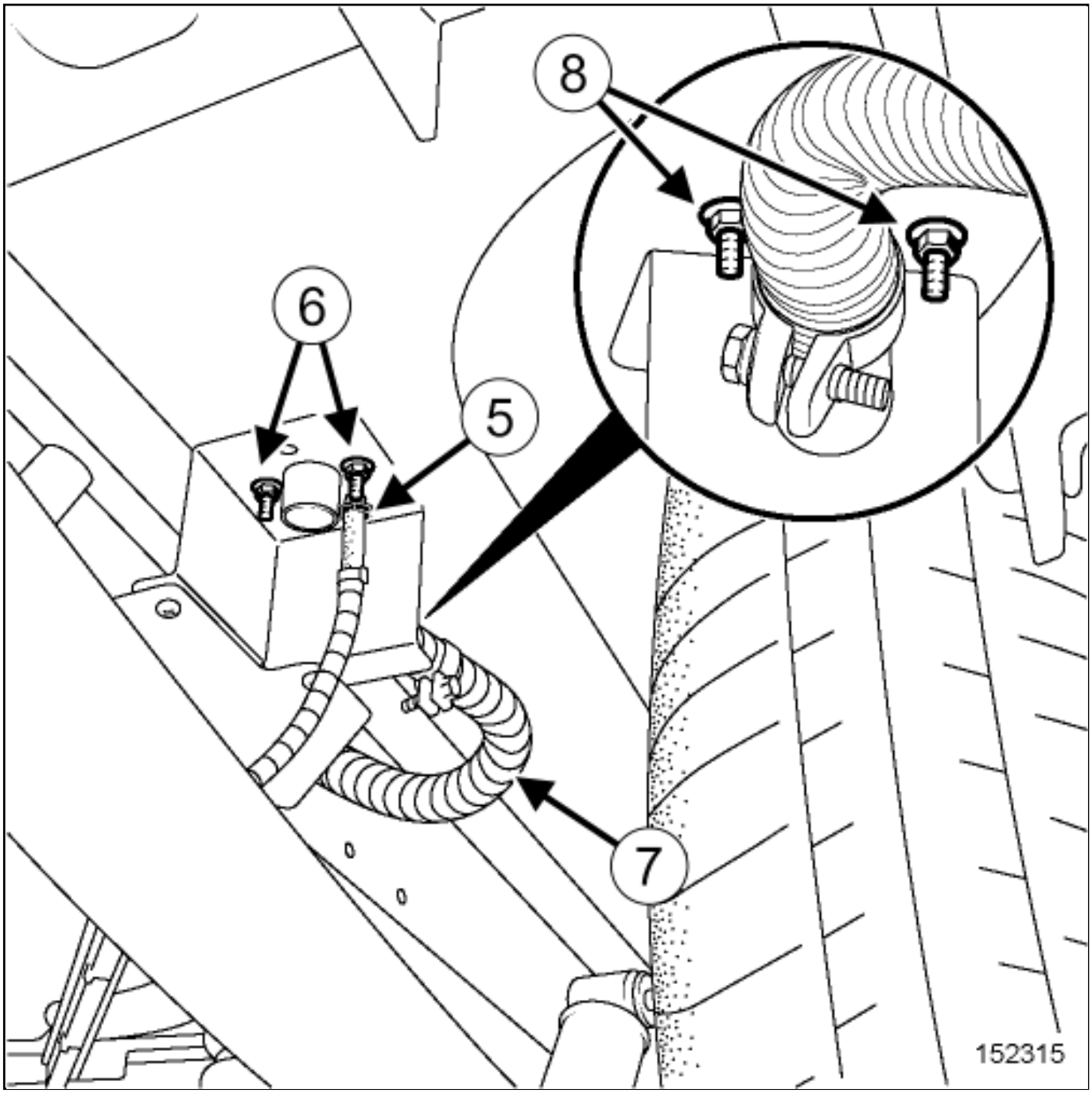




- Remove the exhaust support bolts(1) and (2) .



- Remove the air inlet pipe(3) .
- Loosen the clip from the exhaust pipe(4) .



Remove:

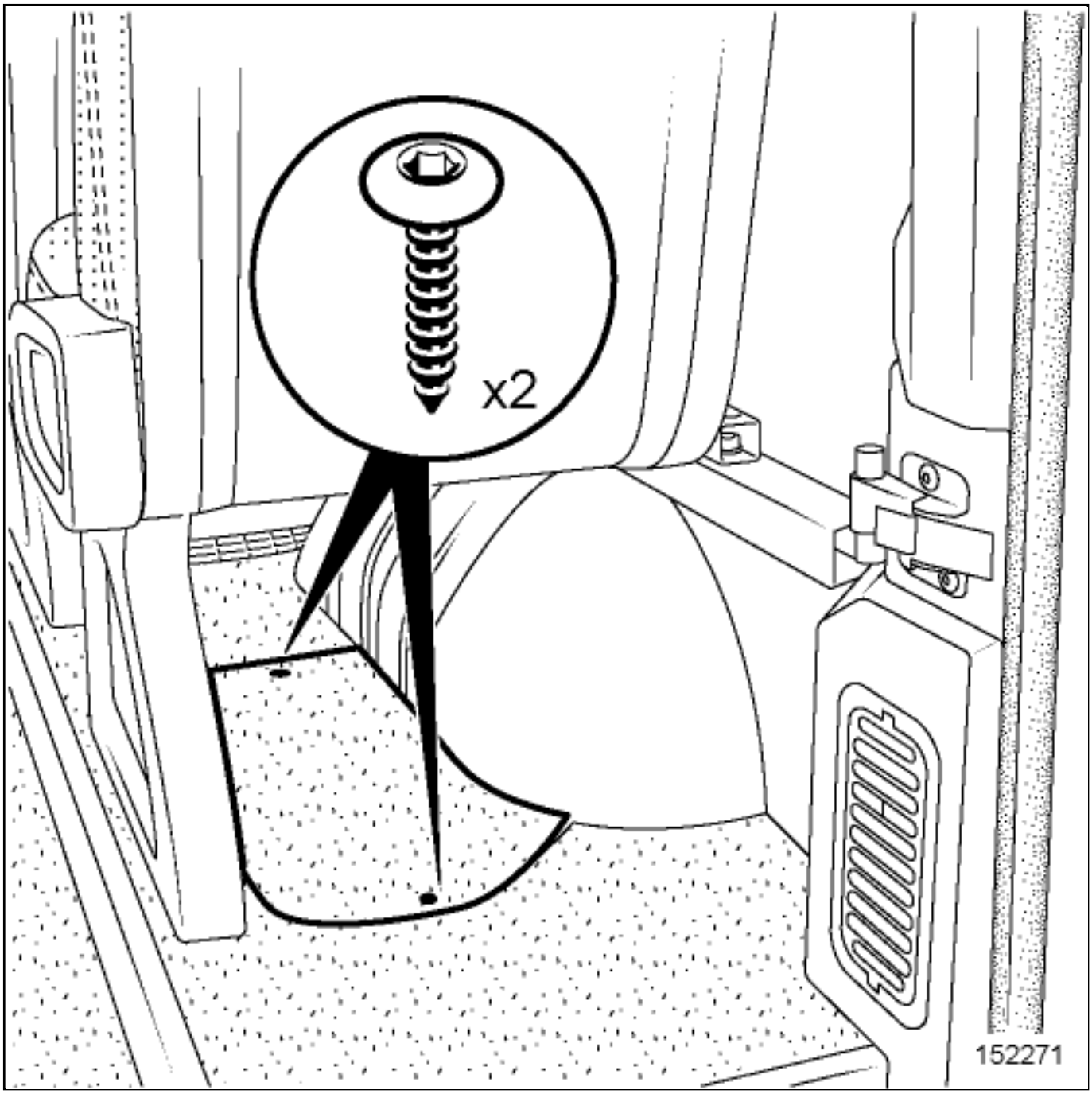
- the fuel supply hose(5) ,
- the heater unit bolts(6) on air inlet side.

Disconnect the exhaust pipe(7) .

Remove:

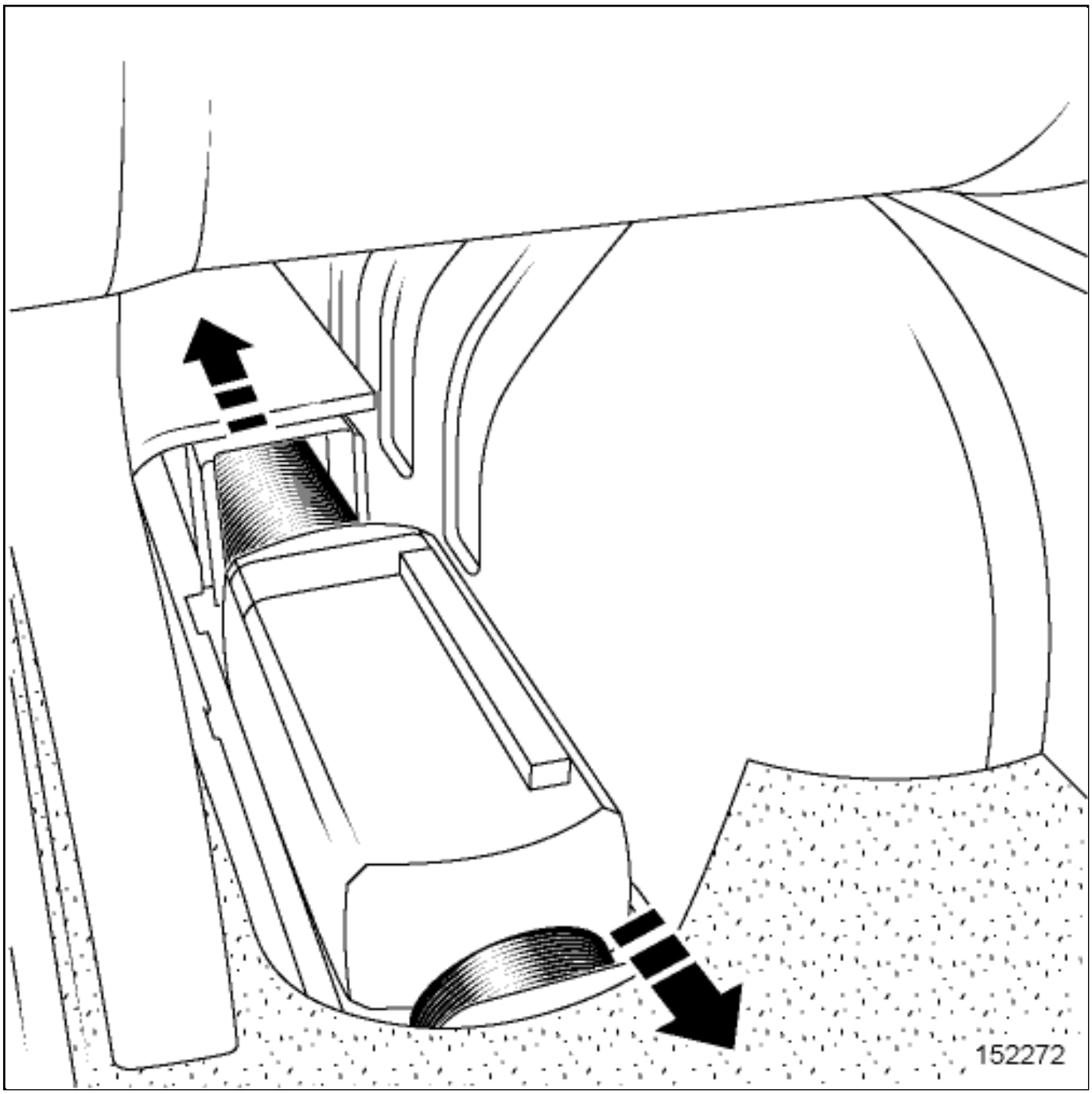
- the exhaust support,
- the heater unit bolts(8) on exhaust side.

2- IN THE PASSENGER COMPARTMENT



Remove:

- the bolts,
- the heater unit cover.



Disconnect:

- the trunking following the arrows,

the heater unit connector.

Remove the heater unit.

REFITTING

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

Proceed in the reverse order to removal.

HEATING: LIST AND LOCATION OF COMPONENTS

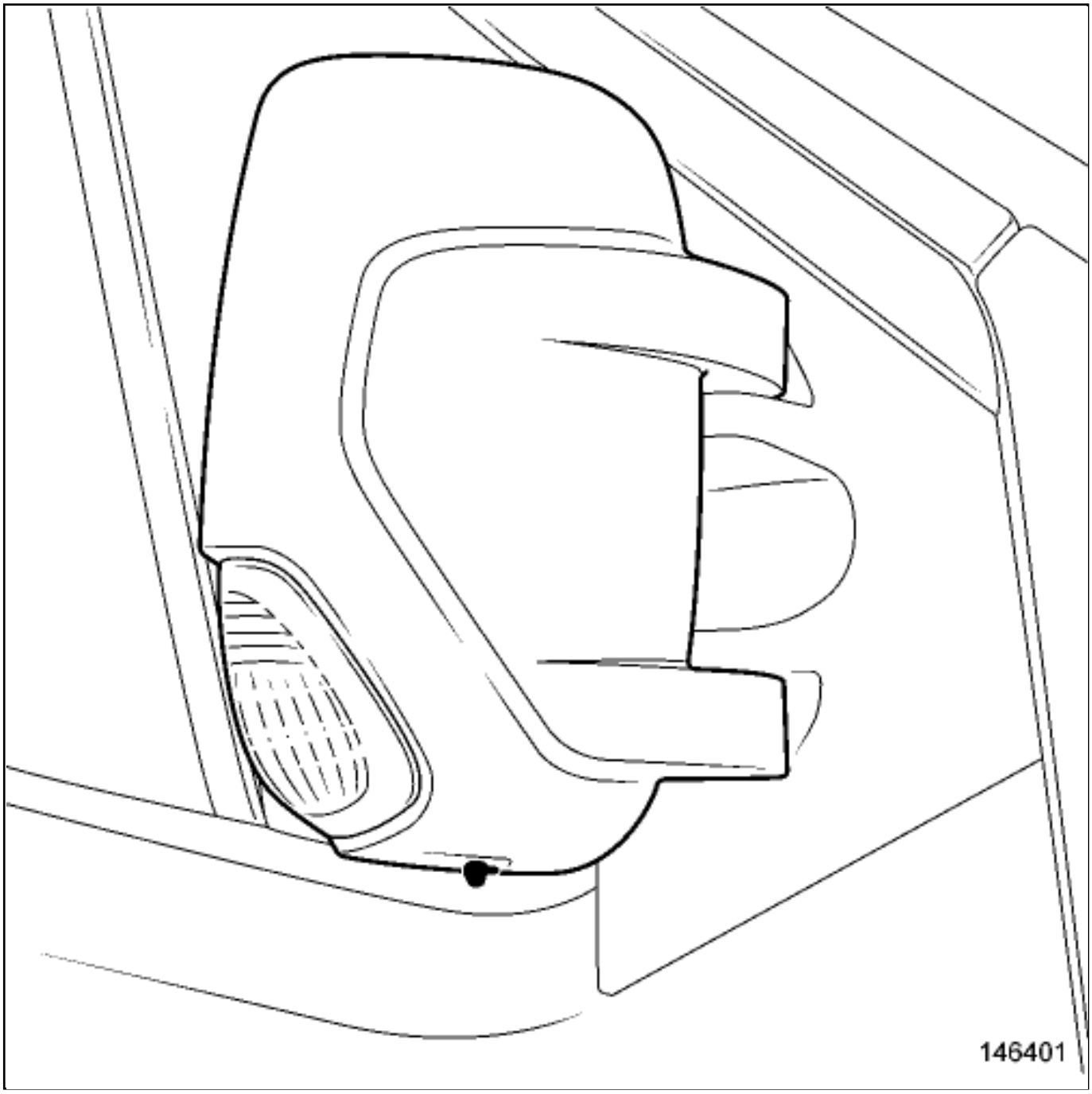
1. LIST OF COMPONENTS

1- THE AIR CONDITIONING SYSTEM IS COMPOSED OF:

- a control panel (see 61A, Heating, Control panel: Removal - Refitting)
- an external air temperature sensor (see 61A, Heating, Exterior temperature sensor: Removal - Refitting)

2. POSITION OF THE COMPONENTS

EXTERNAL AIR TEMPERATURE SENSOR


146401

HEATING RESISTORS: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the centre consoleCentre console: Removal - Refitting (57A, Interior equipment).

- Remove the gloveboxGlovebox: Removal - Refitting (57A, Interior equipment).

- Remove the left-hand A-pillar air distribution duct(see 61A, Heating, Air distribution circuit assembly: Exploded view) .

2. REMOVAL OPERATION

- Disconnect the heating resistor connector.

- Remove the heating resistor(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

HIGH LEVEL BRAKE LIGHT BULB: REMOVAL - REFITTING

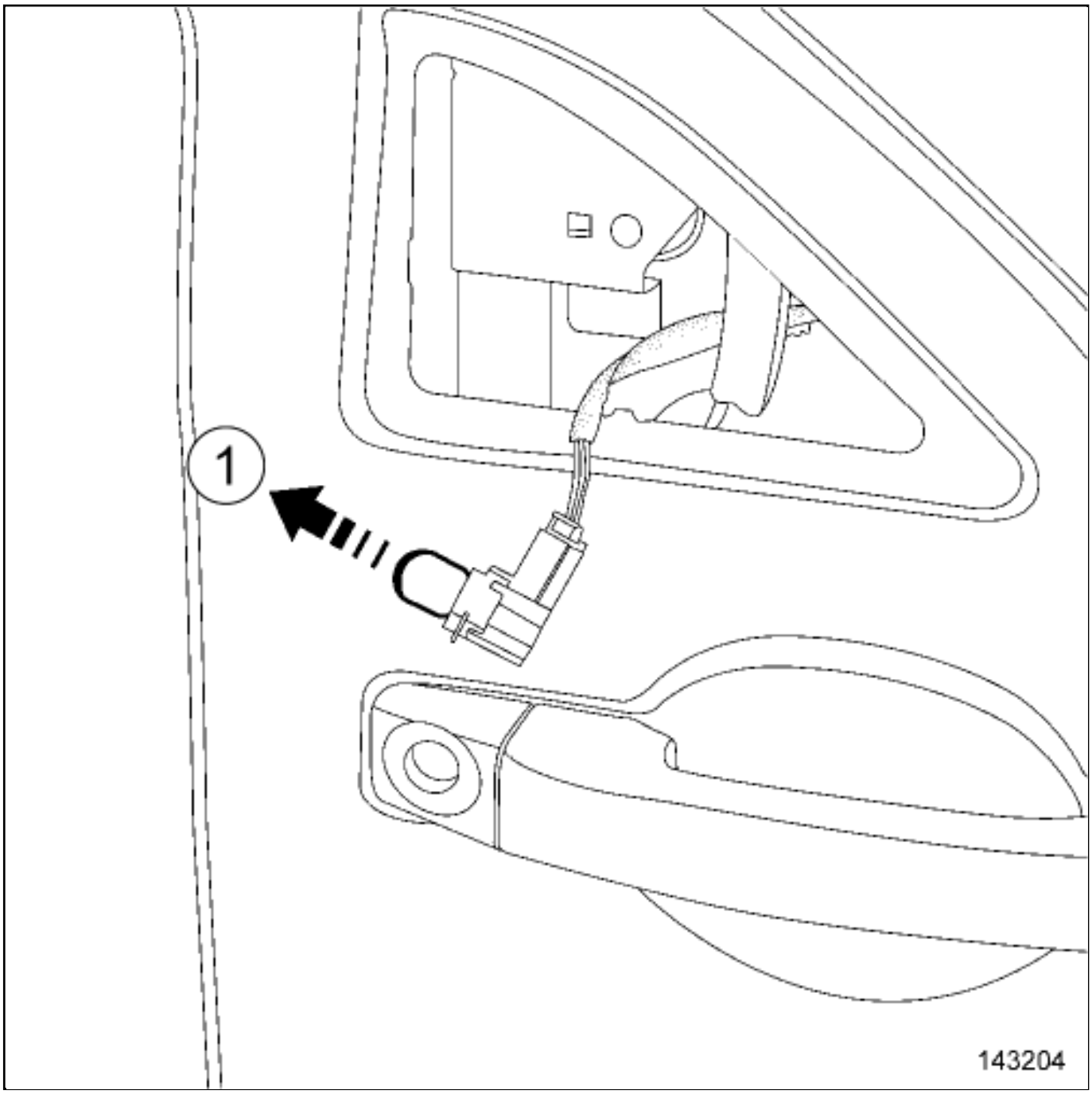
Location and specifications (tightening torques, parts always to be replaced, etc.)Exterior rear opening element assembly: Exploded view (52A, Non-side opening element mechanisms).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the high level brake lightExterior rear opening element assembly: Exploded view (52A, Non-side opening element mechanisms).

2. REMOVAL OPERATION



- Unclip the high level brake light bulb at(1) .

REFITTING

Note:

If the bulb is changed, only use an approved bulb.

- Proceed in the reverse order to removal.

HIGH PRESSURE PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
High pressure pump pinion locking tool	Mot. 1906

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 13B, Diesel injection , Injection assembly: Exploded view) .

WARNING

- Consult the safety and cleanliness advice and operation recommendations before carrying out any repair:
  - (see 13B, Diesel injection, Diesel injection: Precautions for the repair) ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

- During this operation, be sure to:
  - refrain from smoking or bringing red hot objects close to the working area,
  - be careful of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

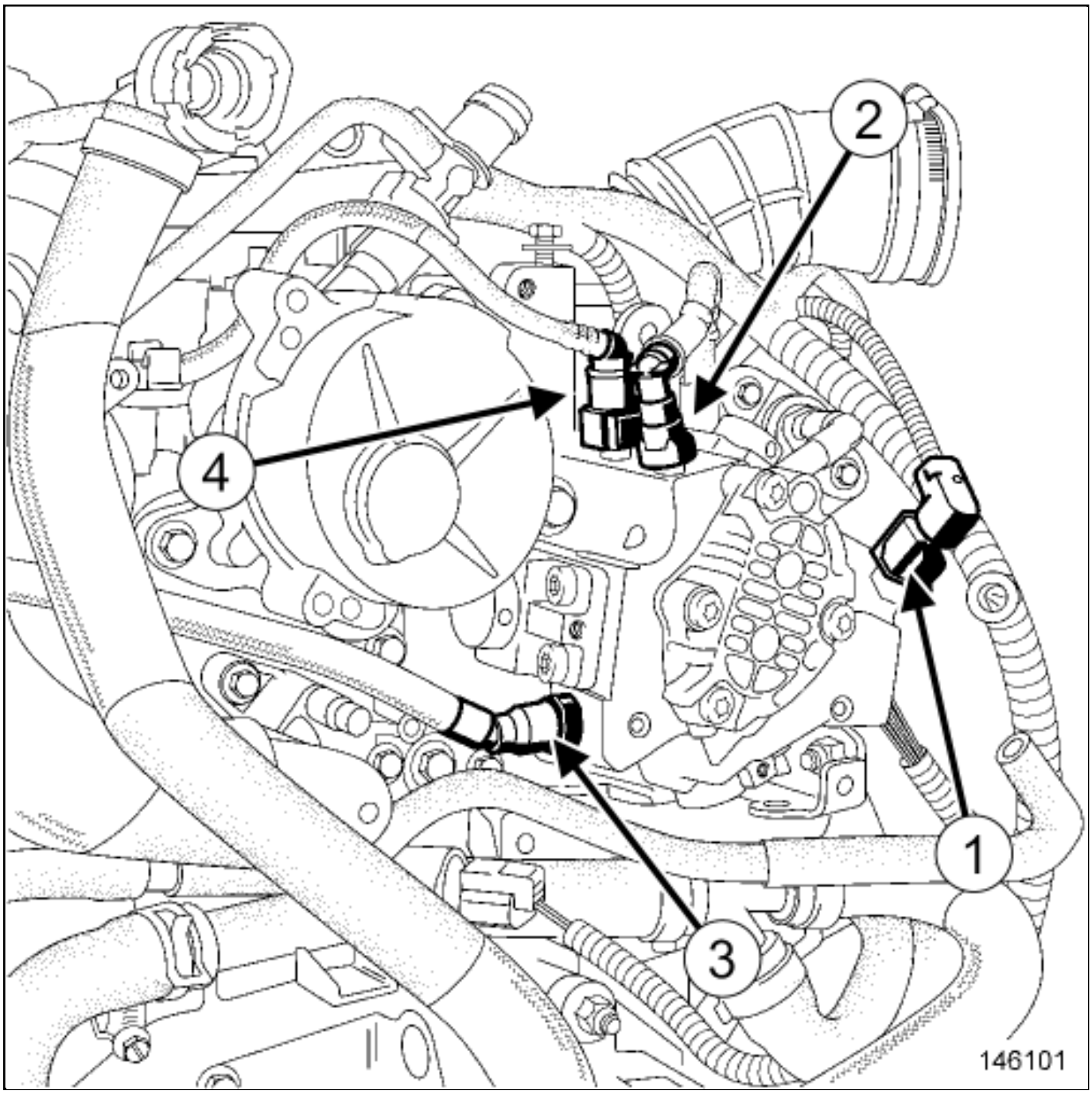
Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
  - the "engine and gearbox" assemblyAND (M9T) AND (700) M9T, 700,
  - the injector rail protector(see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the oil decanterAND (M9T) AND (700 OR 702) M9T, 700 702,
  - the high pressure pump protector(see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the high pressure pipe between the pump and the rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

2. REMOVAL OPERATION



CAUTION

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

WARNING

Wear goggles with side protectors for this operation.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Disconnect:

- the high pressure pump pressure regulator connector(1) ,
- the diesel supply pipe(2) of the exhaust fuel injector,
- the diesel supply pipe(3) from the high pressure pump,
- the diesel return pipe(4) from the high pressure pump.

Insert the blanking plugs.

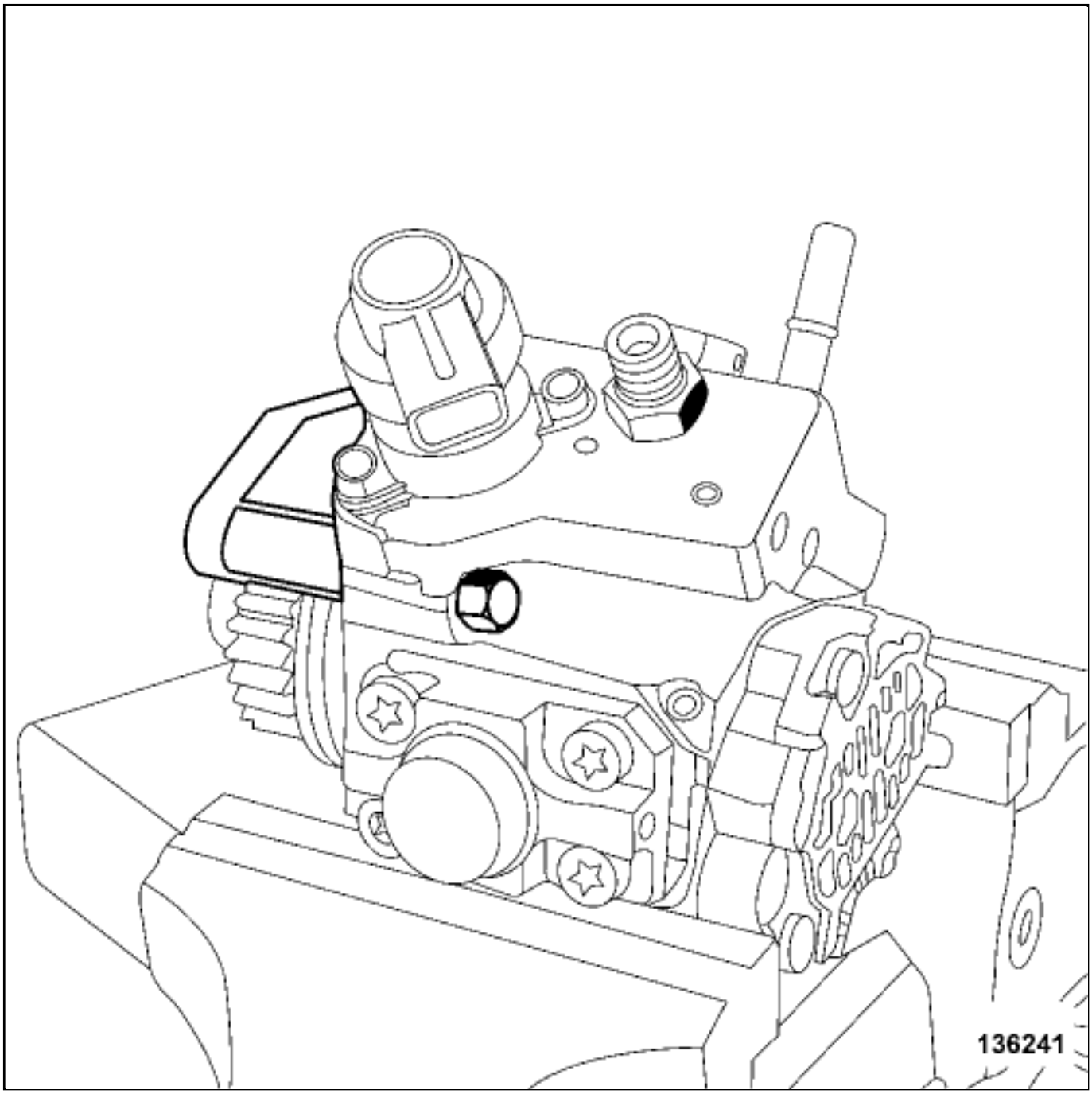
Remove (see 13B, Diesel injection, Injection assembly: Exploded view) (see 13B,Diesel injection, Injection assembly: Exploded view) :

- the high pressure pump,
- the high pressure pump seal.

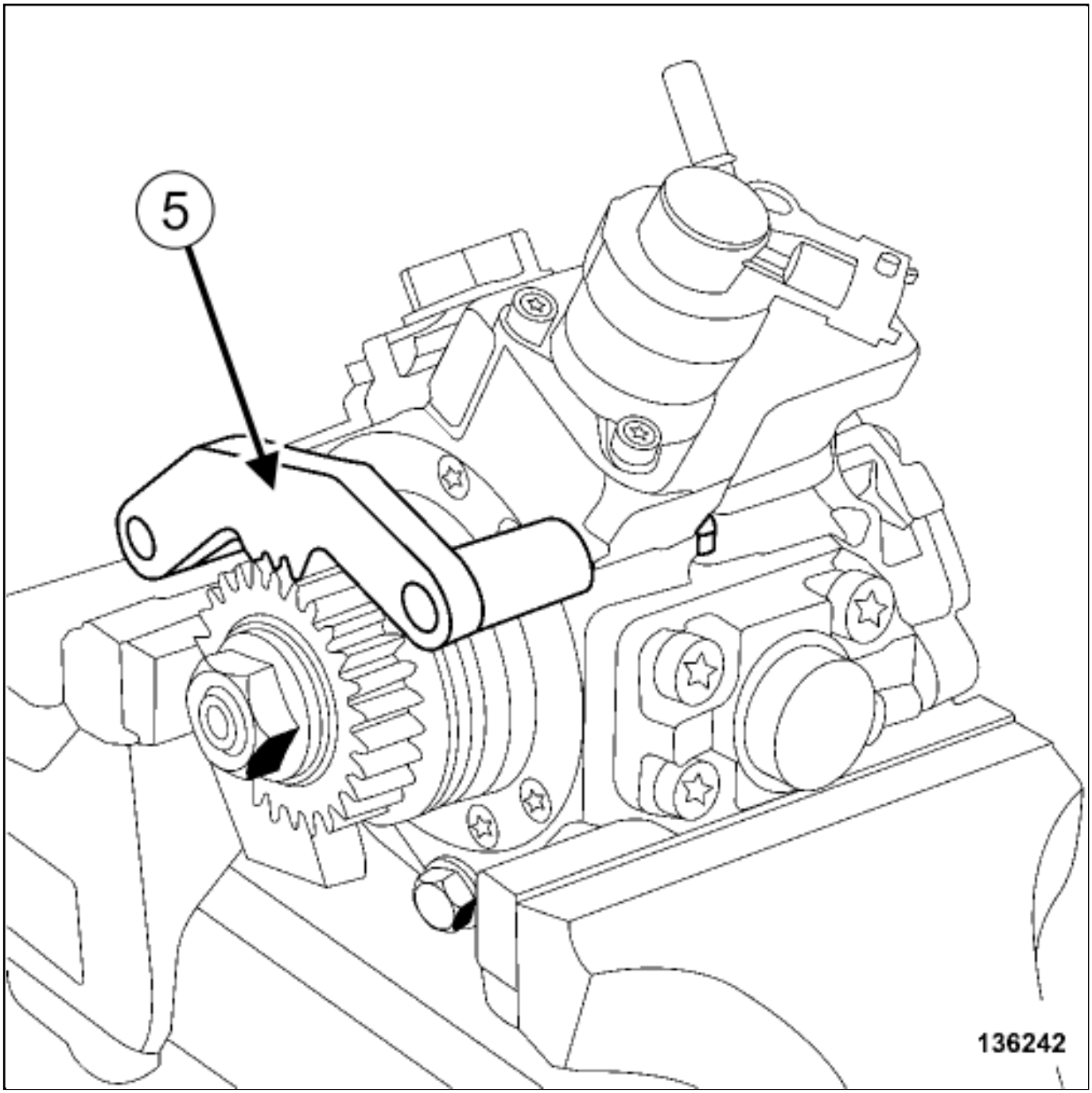
REFITTING

1. REFITTING PREPARATION OPERATION

1- IF REPLACING THE HIGH PRESSURE PUMP



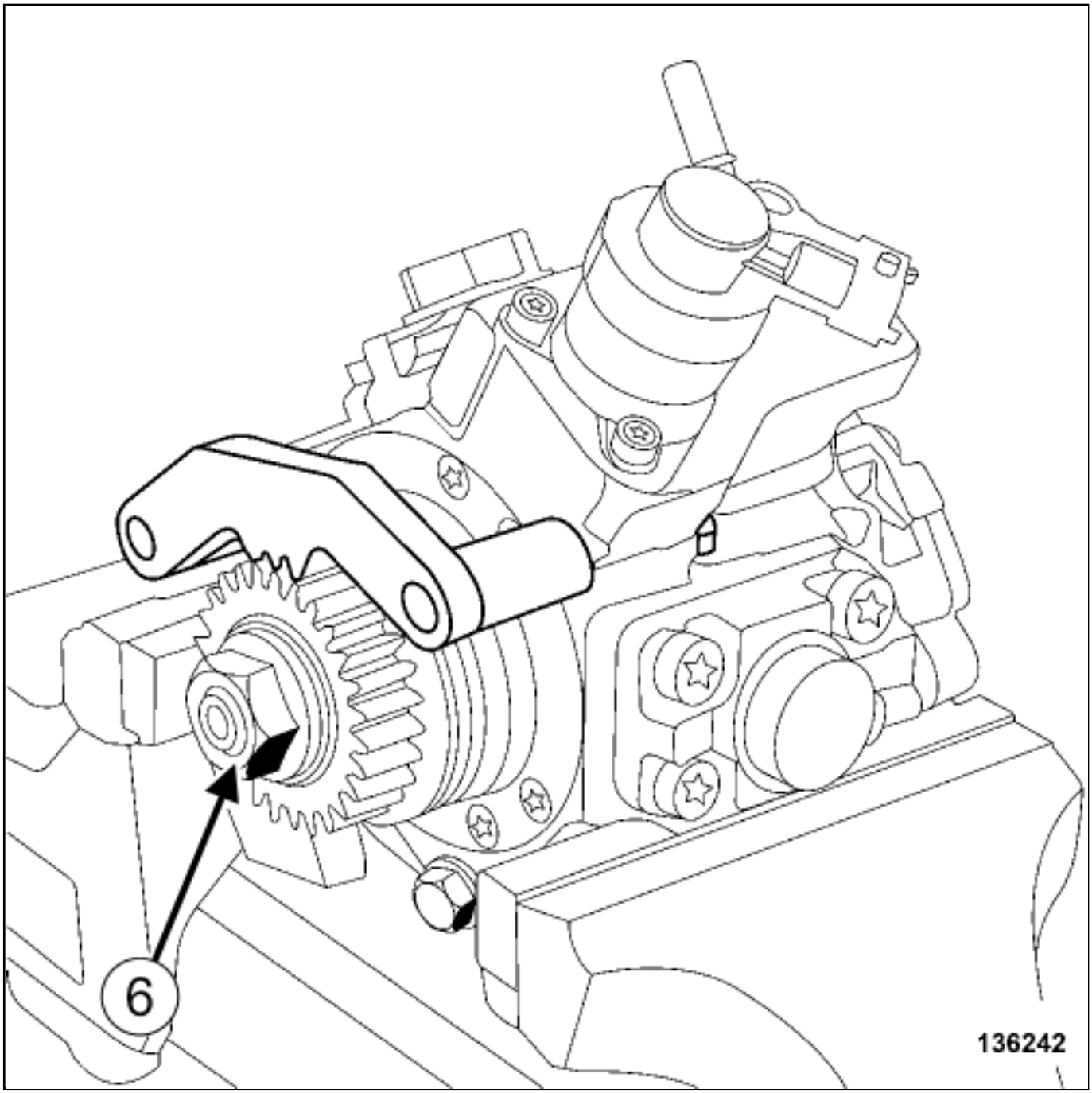
- Put the high pressure pump in a vice with jaws.



- Using the toolHigh pressure pump pinion locking tool(Mot. 1906) (5) , lock the high pressure pump pinion.

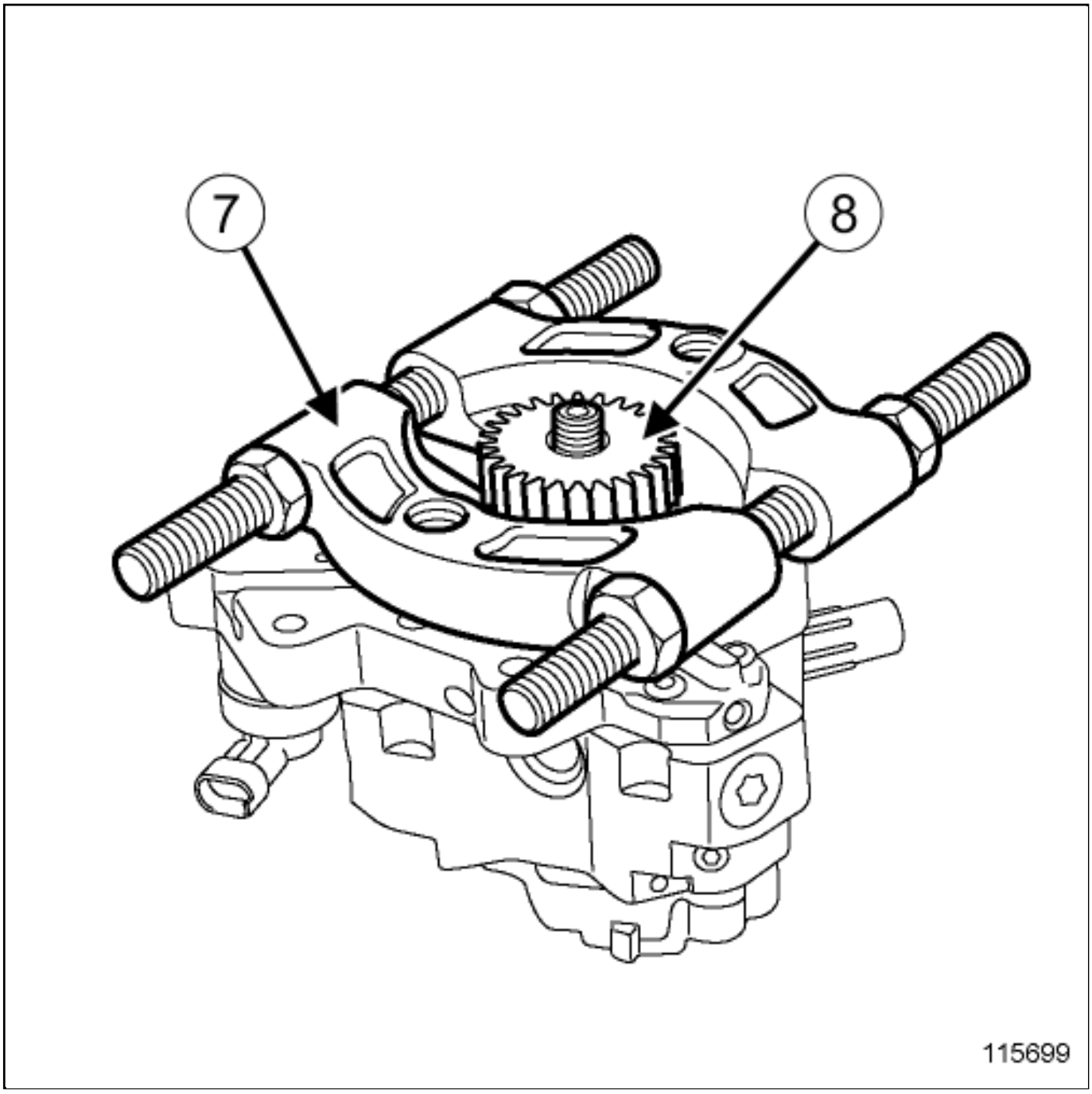
- Fit:
  - the washers of theHigh pressure pump pinion locking tool(Mot. 1906) on the high pressure pump,
  - the nuts of theHigh pressure pump pinion locking tool(Mot. 1906) on the high pressure pump.

- Tighten the nuts on the high pressure pump.

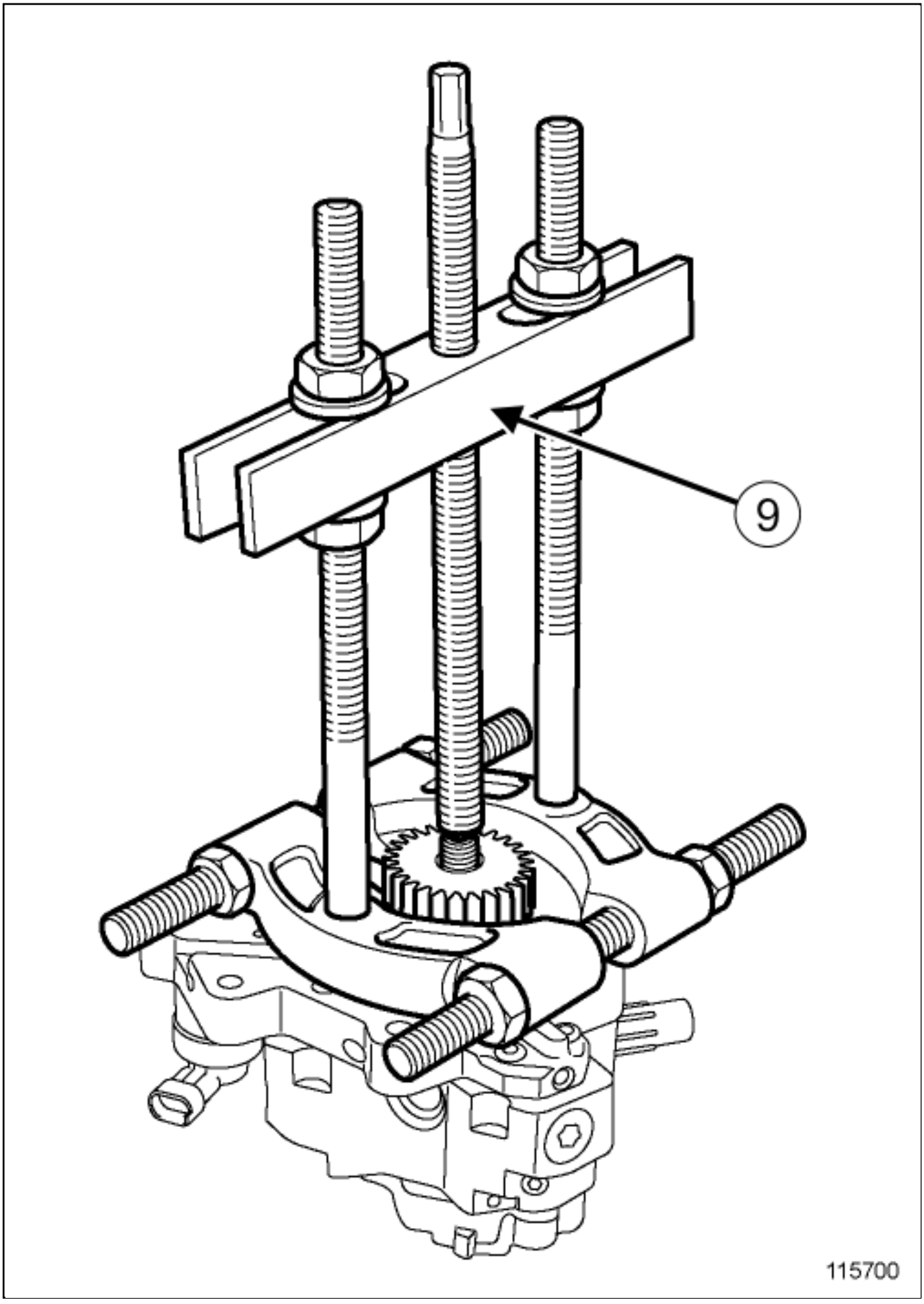


Remove:

- the high pressure pump pinion nut(6) ,
- the nuts of the toolHigh pressure pump pinion locking tool(Mot. 1906) ,
- the washers of theHigh pressure pump pinion locking tool(Mot. 1906) from the high pressure pump,
- theHigh pressure pump pinion locking tool(Mot. 1906) .



Fit a separator(7) under the high pressure pump pinion(8) .


9
115700

Fit an arm(9) on the separator.

Remove:

- the high pressure pump pinion,
- the separator and the arm.

Refit:

- the pinion to the new high pressure pump,
- the high pressure pump nut.

Put the high pressure pump in a vice with jaws.

Fit:

- theHigh pressure pump pinion locking tool(**Mot. 1906**) ,
- the washers of theHigh pressure pump pinion locking tool(**Mot. 1906**) on the high pressure pump,
- the nuts of theHigh pressure pump pinion locking tool(**Mot. 1906**) on the high pressure pump.

Tighten the nuts on the high pressure pump.

Torque tighten the high pressure pump pinion nut70 N.m.

2. REFITTING OPERATION

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

Proceed in the reverse order to removal.

Prime the fuel circuit using the manual priming pump.

Apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select the "Diesel injection computer" ,
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "injection pump" in the "List of components controlled by this computer" section,

carry out the operations described in the "After repair procedure" section.

HIGH PRESSURE PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Offset wrench for tightening High Pressure pump pipes.	Mot. 1746
Tool for removal - refitting pignon and high pressure pump	Mot. 2047

Equipment required
Diagnostic tool

parts always to be replaced:
High pressure pipe between the pump and rail

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 13B, Diesel injection , Injection assembly: Exploded view) .

WARNING

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair:

- (see 13B, Diesel injection, Diesel injection: Precautions for the repair) ,
- (see **Vehicle: Precautions for the repair**) .

WARNING

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

REMOVAL

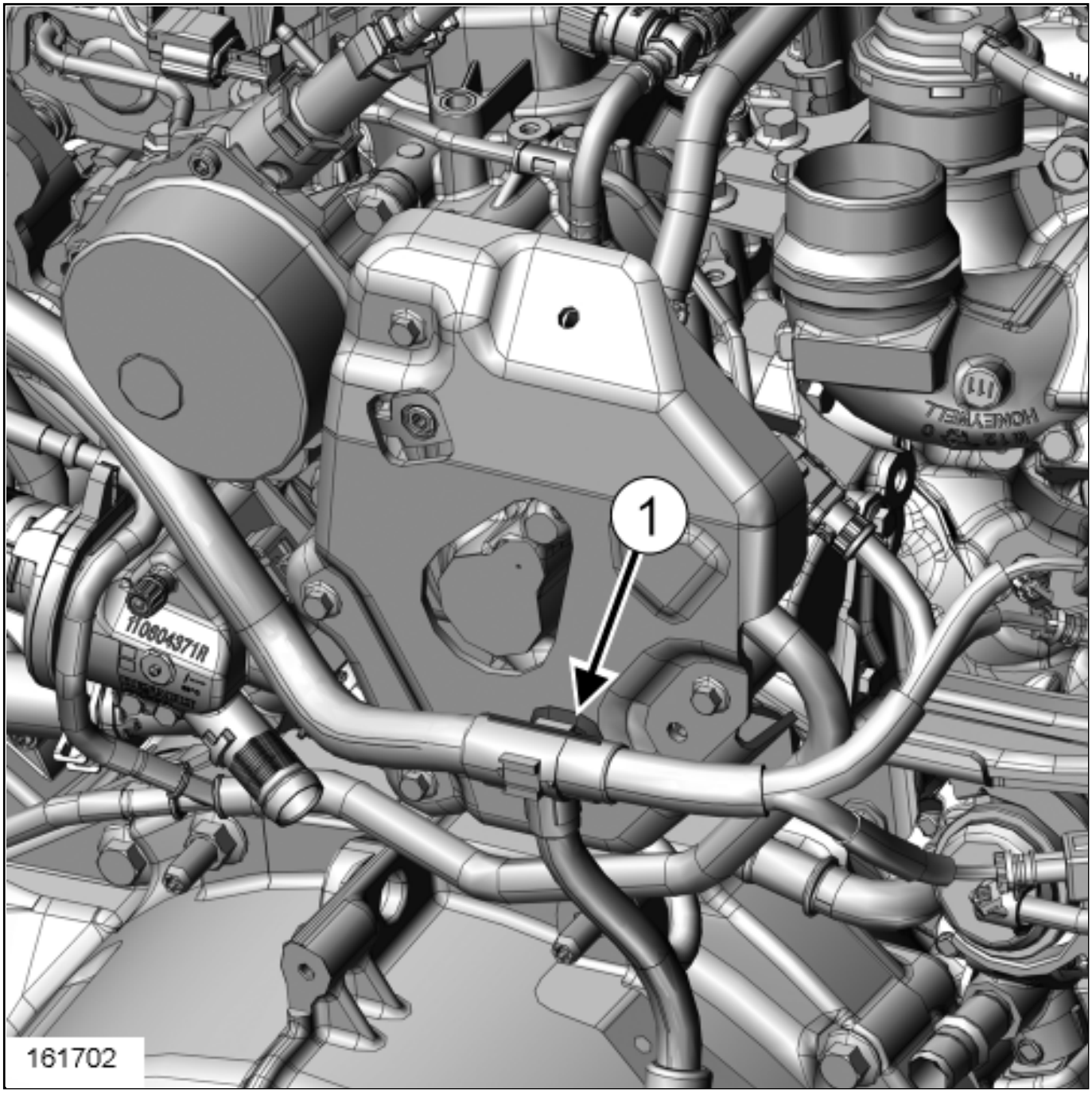
1. REMOVAL PREPARATION OPERATION

Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .

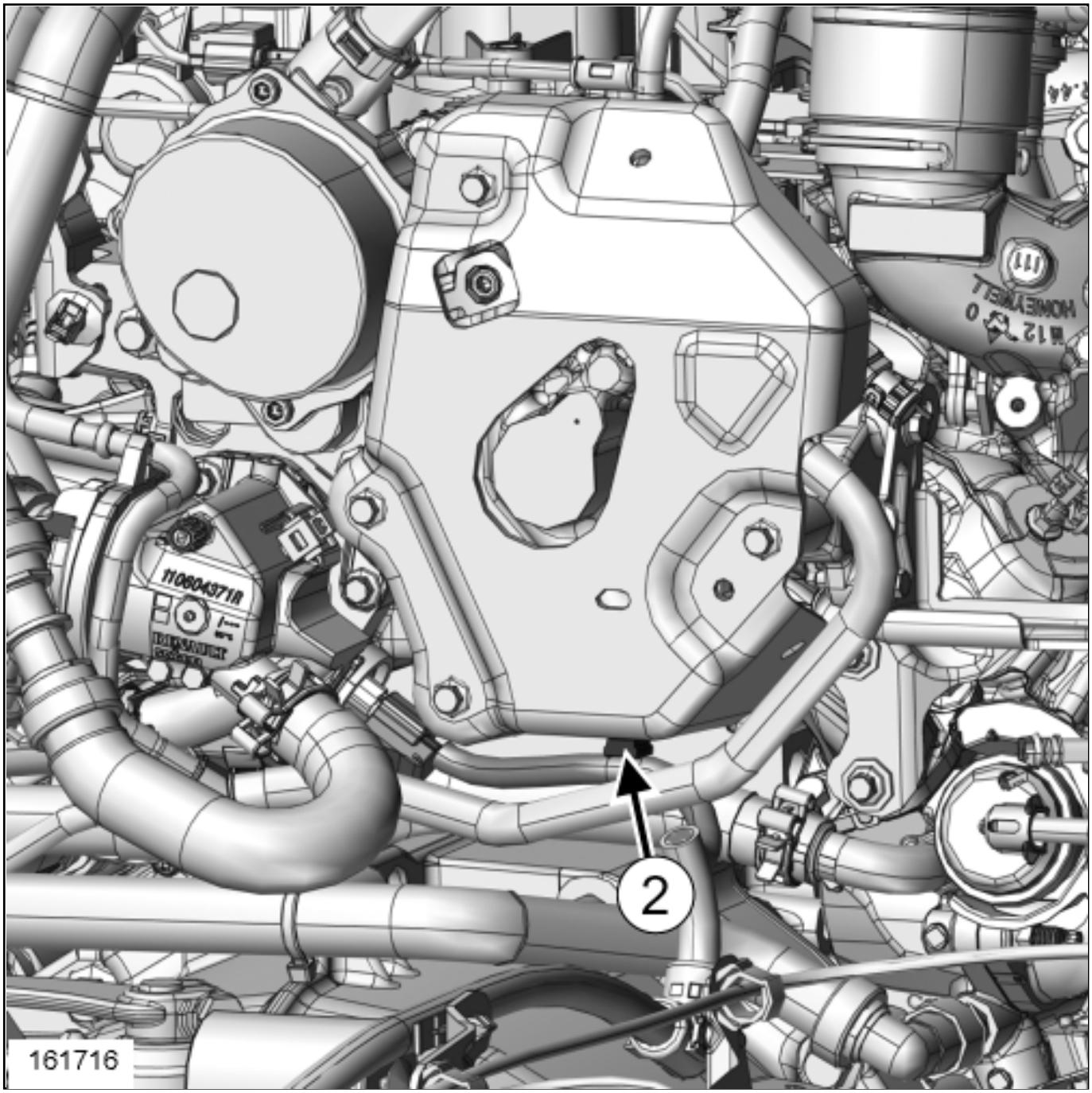
Disconnect the battery(see **Battery: Removal - Refitting**) .

Remove:

- the "engine and gearbox" assemblyAND (ZA4 OR ZF4) ZA4 ZF4AND (M9T) AND (700) M9T, 700,
- the injector rail protector ,
- the oil decanter ,



- Unclip the fuel collector pipe clip(1) from the high-pressure pump protector.



Unclip the coolant temperature sensor wiring clip(2) from the high-pressure pump protector.

Remove :

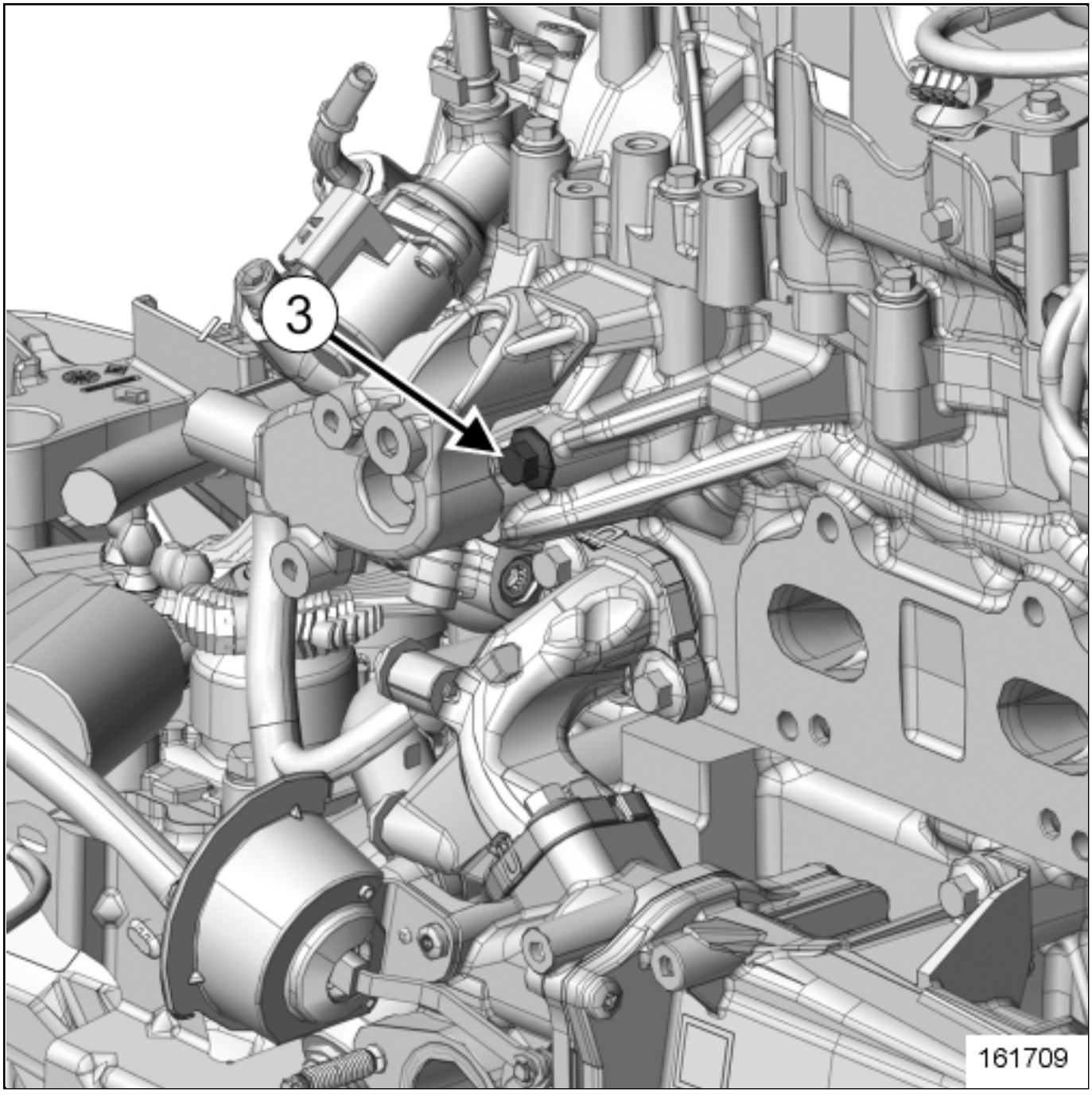
- the high-pressure pump protector bolts,
- the high-pressure pump protector.
- the nut of the high-pressure pipe between the pump and the rail,
- the high-pressure pipe between the pump and the rail.

CAUTION

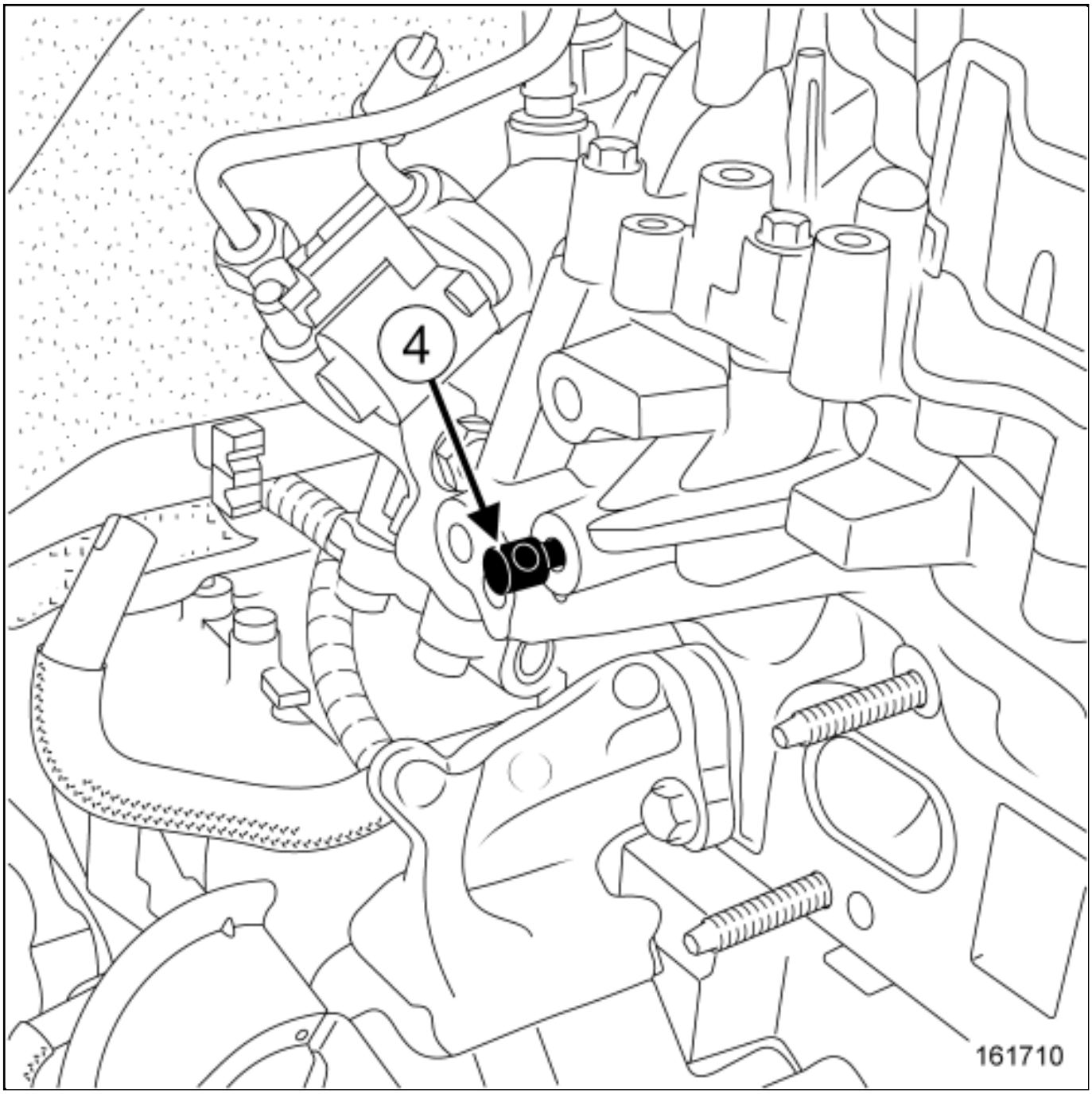
When loosening the nut on the high pressure pipe between the pump and the rail, it is essential to hold the intermediate union on the high pressure pump side firm using a lock spanner.

CAUTION

refit the protector of the high pressure pump pipe nut.



- Remove the bolt(3) of the gauging opening from the cylinder head.



-

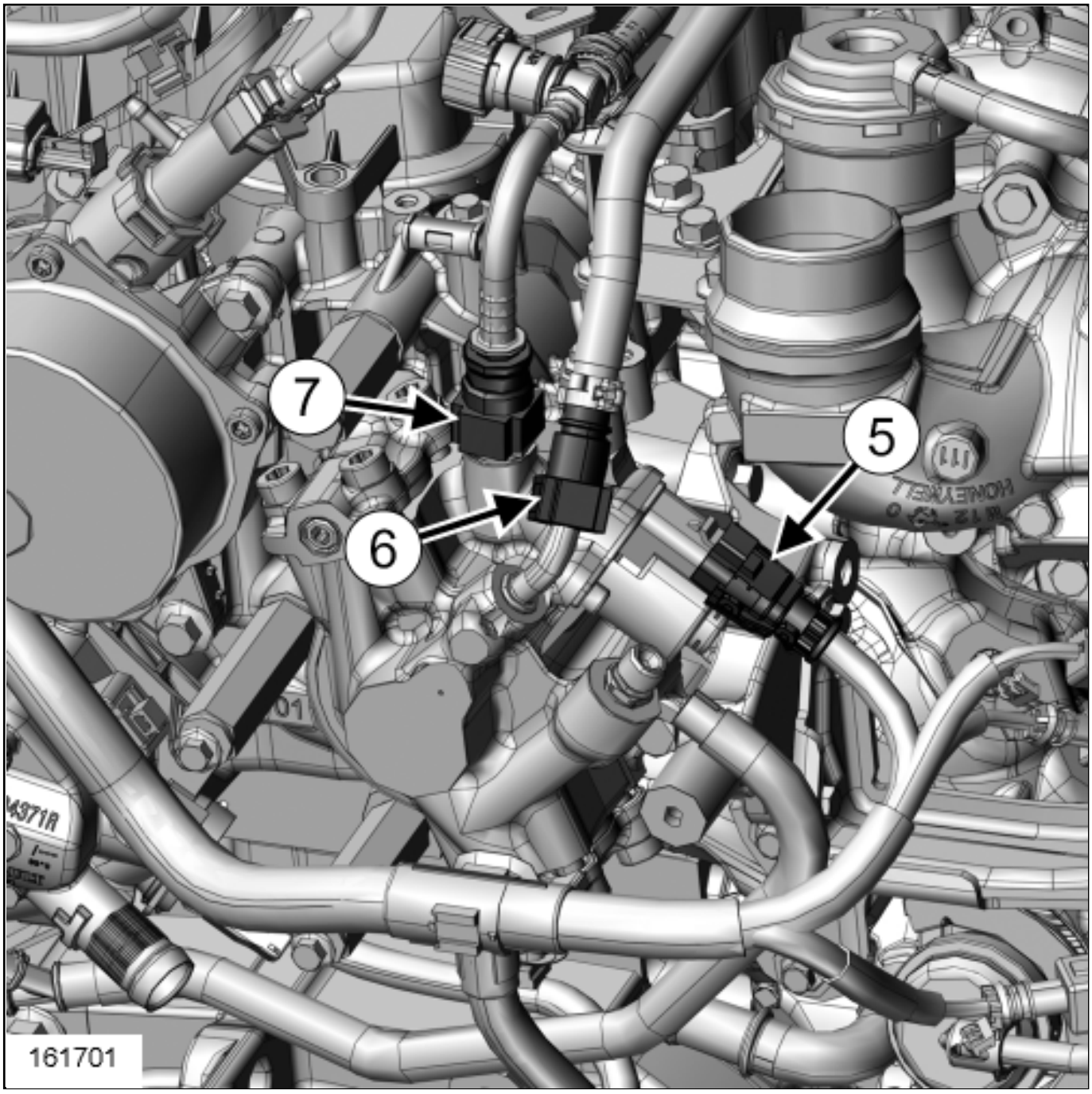
Fit the setting pin(4) of the toolTool for removal - refitting pignon and high pressure pump(Mot. 2047) in the gauging opening of the cylinder head.

-

Turn the crankshaft slowly while pushing on the setting pin of the toolTool for removal - refitting pignon and high pressure pump(Mot. 2047) until the high-pressure pump is blocked.

Mark the position of the crankshaft accessories pulley.

2. REMOVAL OPERATION



Disconnect from the high-pressure pump:

- the high-pressure pump pressure regulator connector(**5**) ,

- the fuel return pipe(6) ,
- the fuel supply pipe(7) .

CAUTION

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

WARNING

Wear goggles with side protectors for this operation.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Fit blanking plugs.

Remove :

- the high-pressure pump bolts,
- the high-pressure pump.

REFITTING

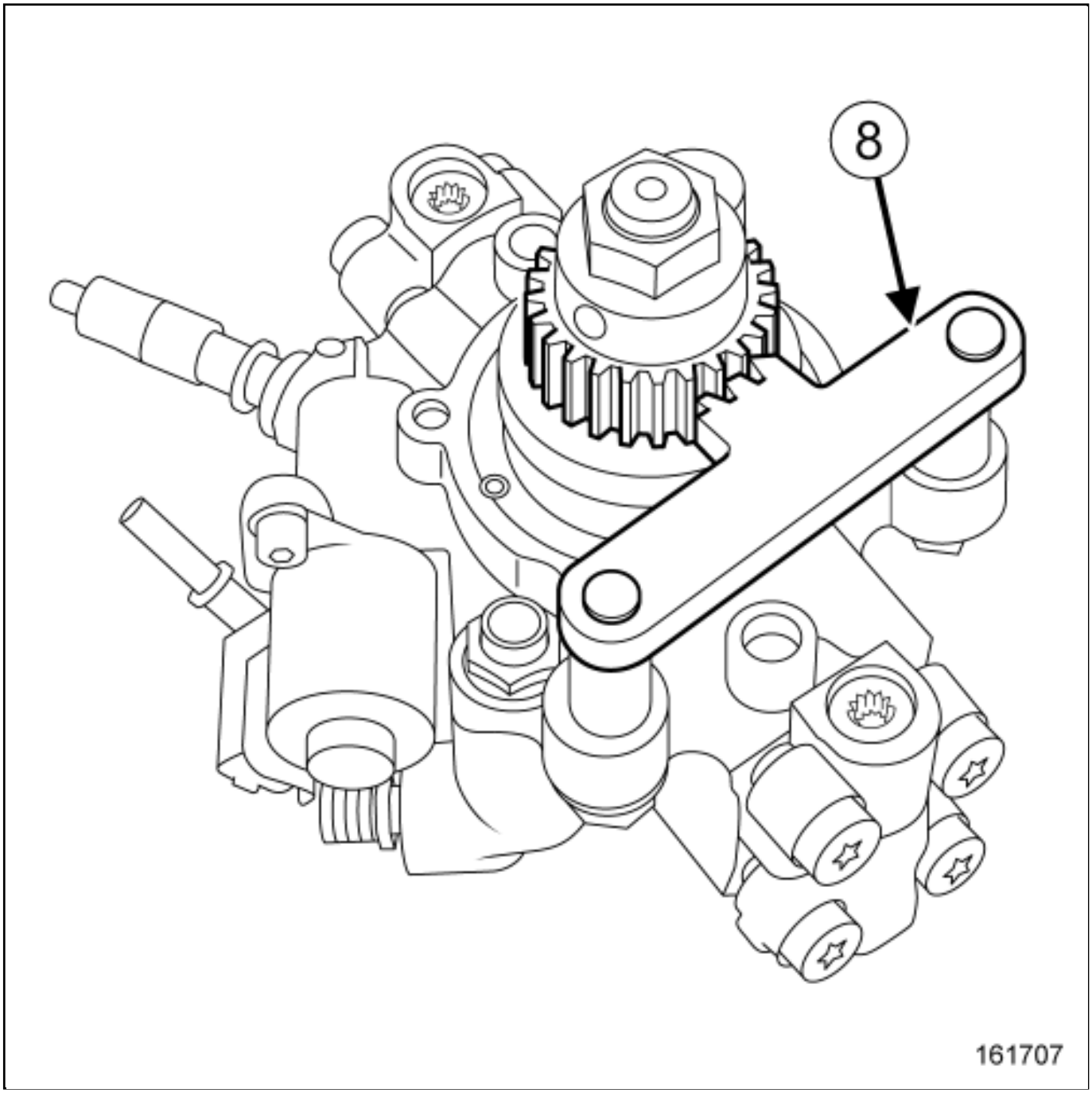
1. REFITTING PREPARATION OPERATION

parts always to be replaced: High pressure pipe between the pump and rail

parts always to be replaced: high-pressure pump sprocket seal

1- IF REPLACING THE HIGH-PRESSURE PUMP

Put the old high-pressure pump in a vice with jaws.



Fit the toolTool for removal - refitting pignon and high pressure pump(Mot. 2047) (8) on the old high-pressure pump to lock the high-pressure pump sprocket.

Loosen the high-pressure pump sprocket nut .

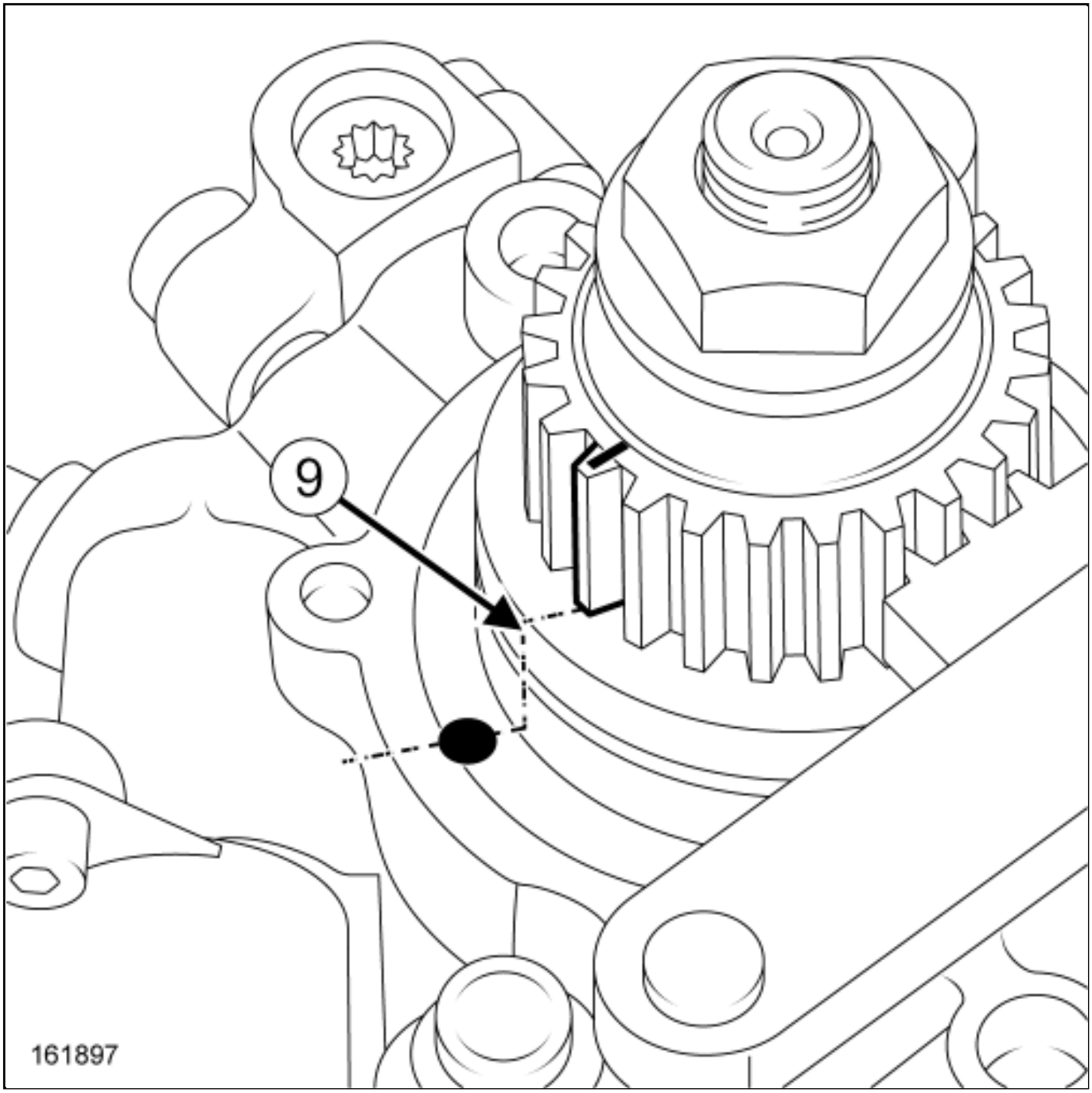
Remove the toolTool for removal - refitting pignon and high pressure pump(Mot. 2047) from the old high-pressure pump.

Remove :

- the high-pressure pump sprocket nut,
- the high-pressure pump sprocket,
- the high-pressure pump sprocket seal.

Fit on the new high-pressure pump :

- the high-pressure pump sprocket seal,
- the high-pressure pump sprocket,
- the high-pressure pump sprocket nut.



Adjust the position of the high-pressure pump sprocket nut with the mark(9) .

Put the new high-pressure pump in a vice with jaws.

Fit the toolTool for removal - refitting pignon and high pressure pump(Mot. 2047) on the new high-pressure pump to lock the high-pressure pump sprocket nut.

Torque tighten the high-pressure pump sprocket nut .

Remove the toolTool for removal - refitting pignon and high pressure pump(Mot. 2047) .

Remove the high-pressure pump sprocket from the vice.

2. REFITTING OPERATION

Refit :

- the high-pressure pump.
- the high-pressure pump bolts,

Torque tighten the high-pressure pump bolts .

Refit :

- the high-pressure pipe between the pump and the rail.
- the nut of the high-pressure pipe between the pump and the rail,

Torque tighten using the toolOffset wrench for tightening High Pressure pump pipes.(Mot. 1746) the nut of the high-pressure pipe between the pump and the rail .

Fit the setting pin of the toolTool for removal - refitting pignon and high pressure pump(Mot. 2047) in the gauging opening of the cylinder head.

Check that:

the setting pin of the toolTool for removal - refitting pignon and high pressure pump(**Mot. 2047**) is fully engaged,

the markings on the crankshaft accessories pulley are still aligned.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Prime the fuel circuit using the manual priming pump.

Apply the after repair procedure using the Diagnostic tool(see **Diagnostic tool : Use**) :

-Computer concerned by the After repair procedure:

"Injection computer" .

-Component affected by the After repair procedure:

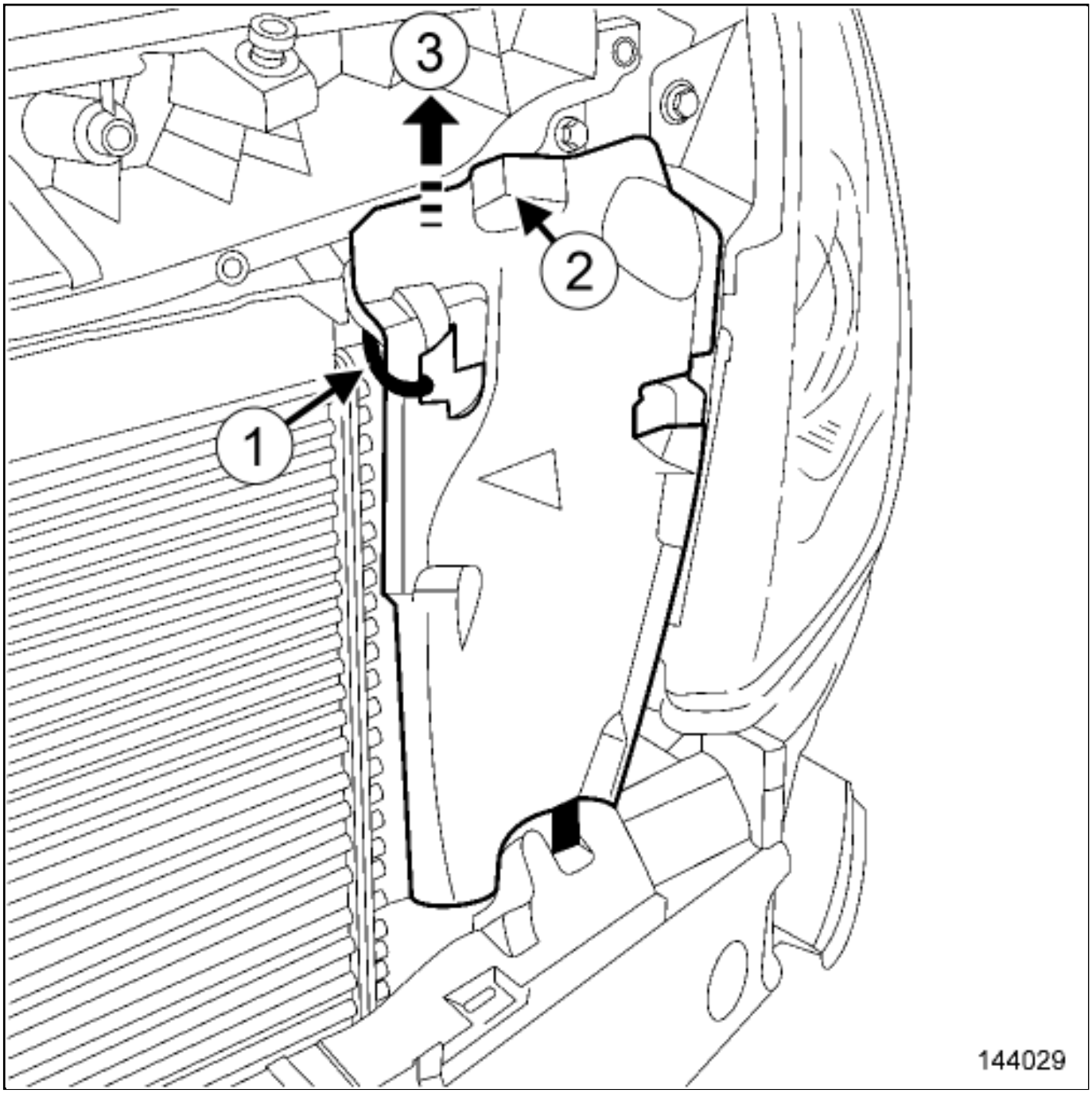
"high-pressure pump" .

AUDIBLE WARNING: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

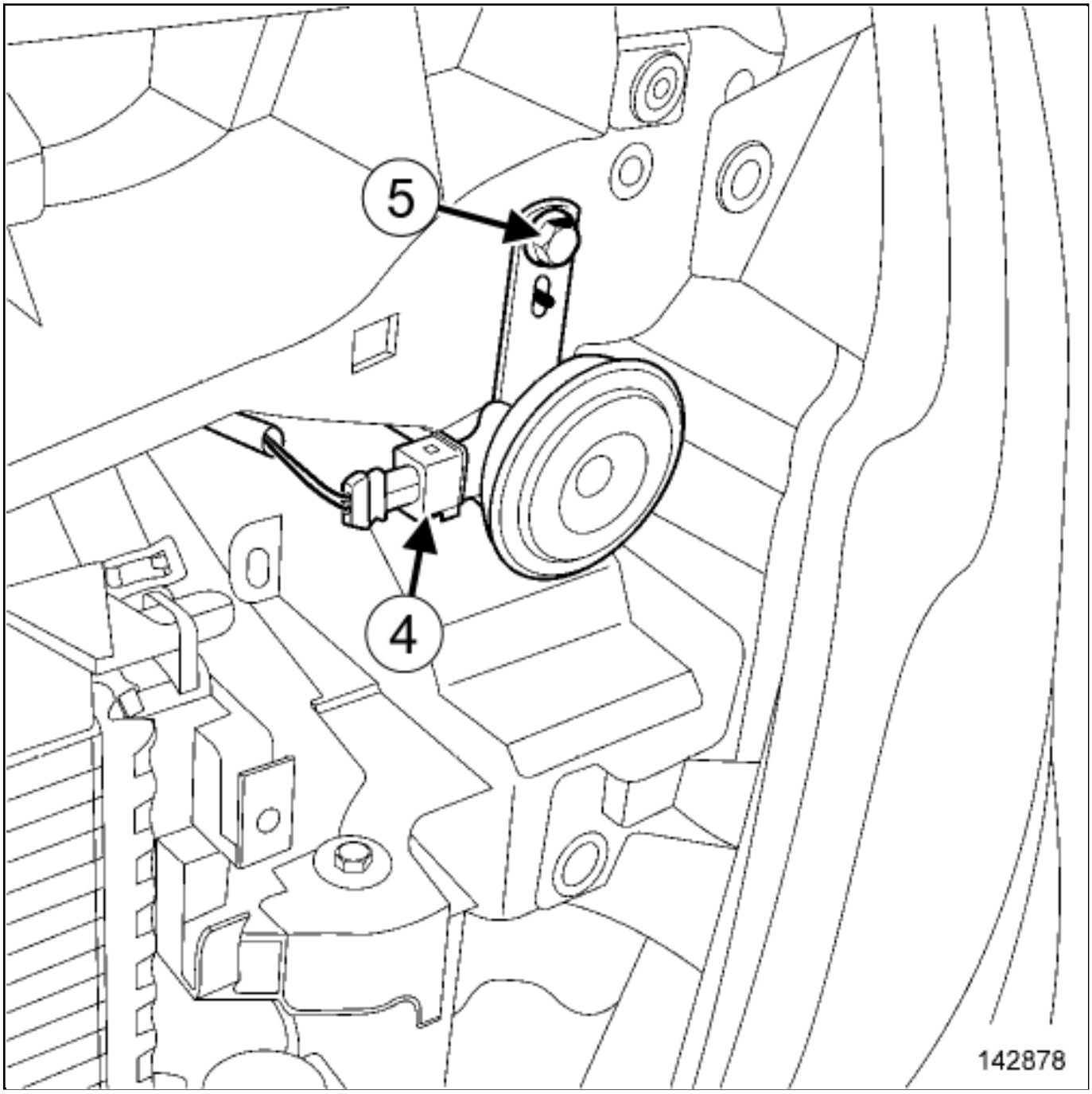
- Remove the radiator grille Radiator grille: Removal - Refitting (56A, Exterior equipment).



- Cut the plastic clip(1) of the left-hand air deflector.

- Unclip the left-hand air deflector at(2) .
- Remove the left-hand air deflector at(3) .

2. REMOVAL OPERATION



- Disconnect the horn connector(4) .
- Remove:
  - the horn bolt(5) ,
  - the horn.

REFITTING

1. REFITTING PREPARATION OPERATION

- Parts always to be replaced: plastic clip on the air deflector.

2. REFITTING OPERATION

- Refit the horn.
- Torque tighten the horn bolt21 N.m.
- Connect the horn connector.

3. FINAL OPERATION

- Proceed in the reverse order to removal.

HYDRAULIC BRAKE UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 38C, Anti-lock braking system, ABS: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

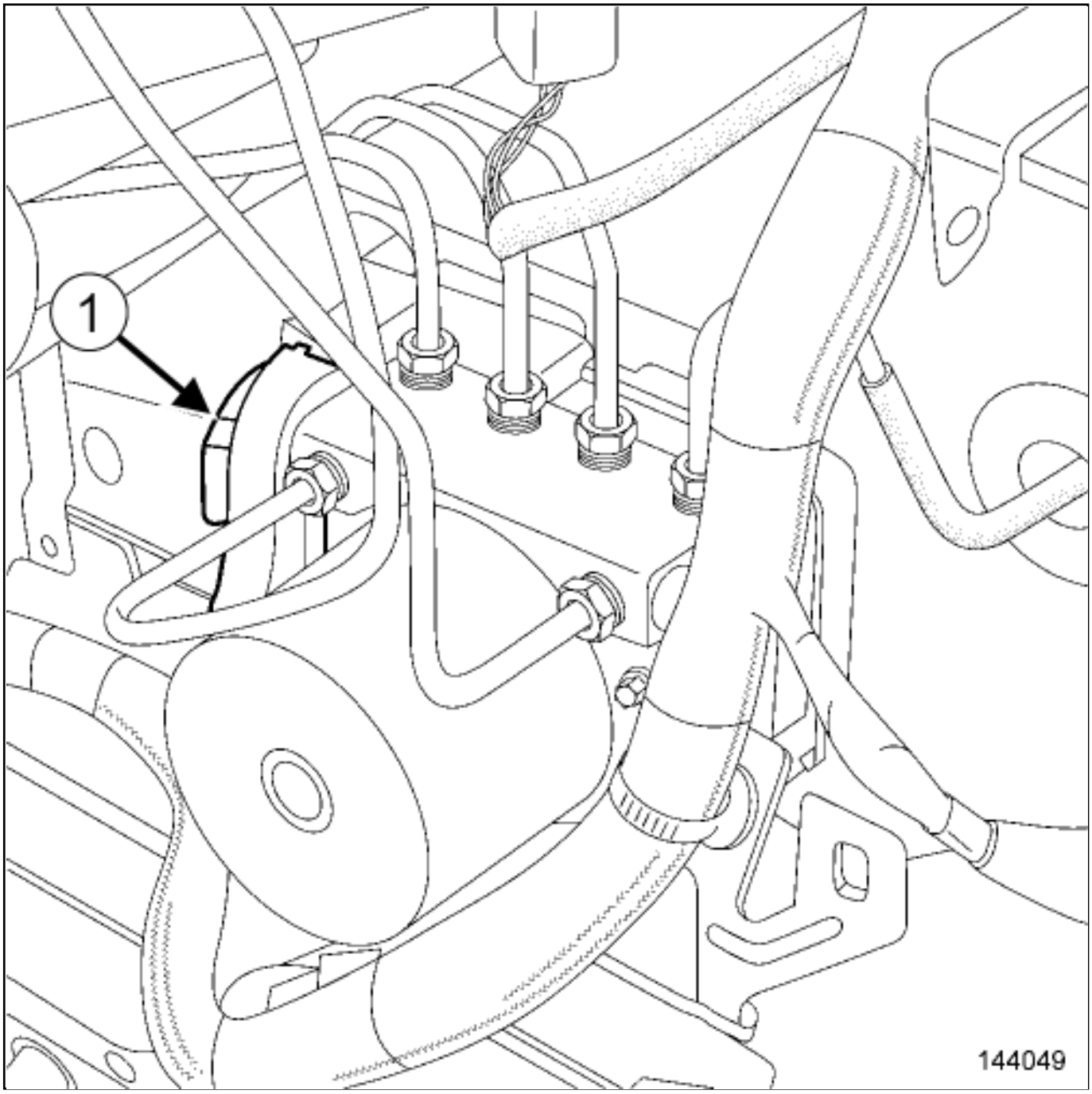
Apply the before repair procedure using the Diagnostic tool:

- connect the diagnostic tool,
- select "ABS-ESP computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "ABS-ESP computer" in the "List of components controlled by this computer" section,
- carry out the operations described in the "Before repair procedure" section.

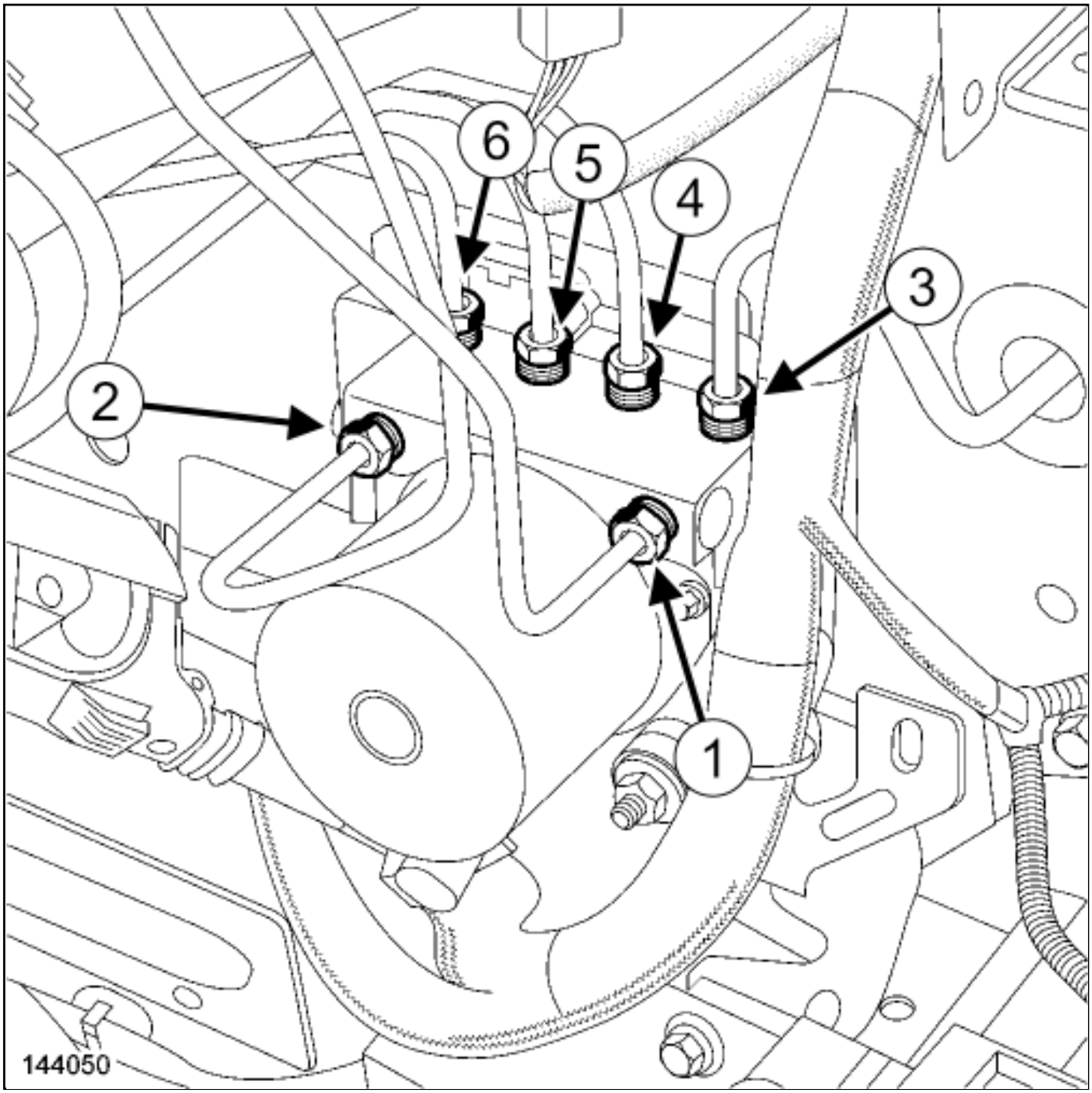
Disconnect the batteryBattery: Removal - Refitting (80A, Battery).

Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

2. OPERATION FOR REMOVAL OF PART CONCERNED



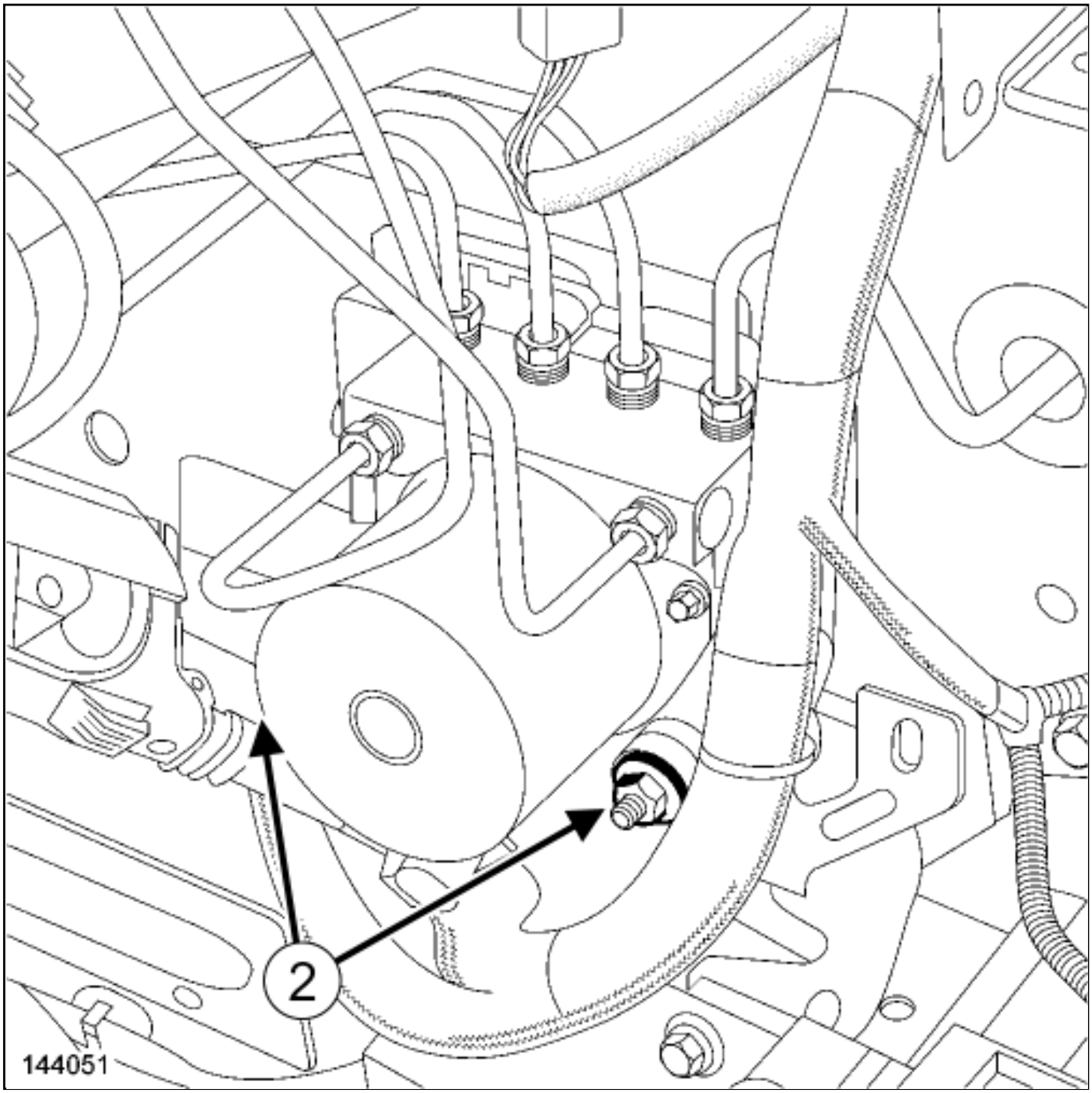
- Disconnect the hydraulic unit computer connector(1) .



CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

- Loosen in the order the brake pipe unions of the hydraulic unit.
- Fit blanking plugs on the hydraulic unit openings and on the brake pipe unions.



- Undo the hydraulic unit nuts(2) on its support.
- Remove the hydraulic brake unit.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

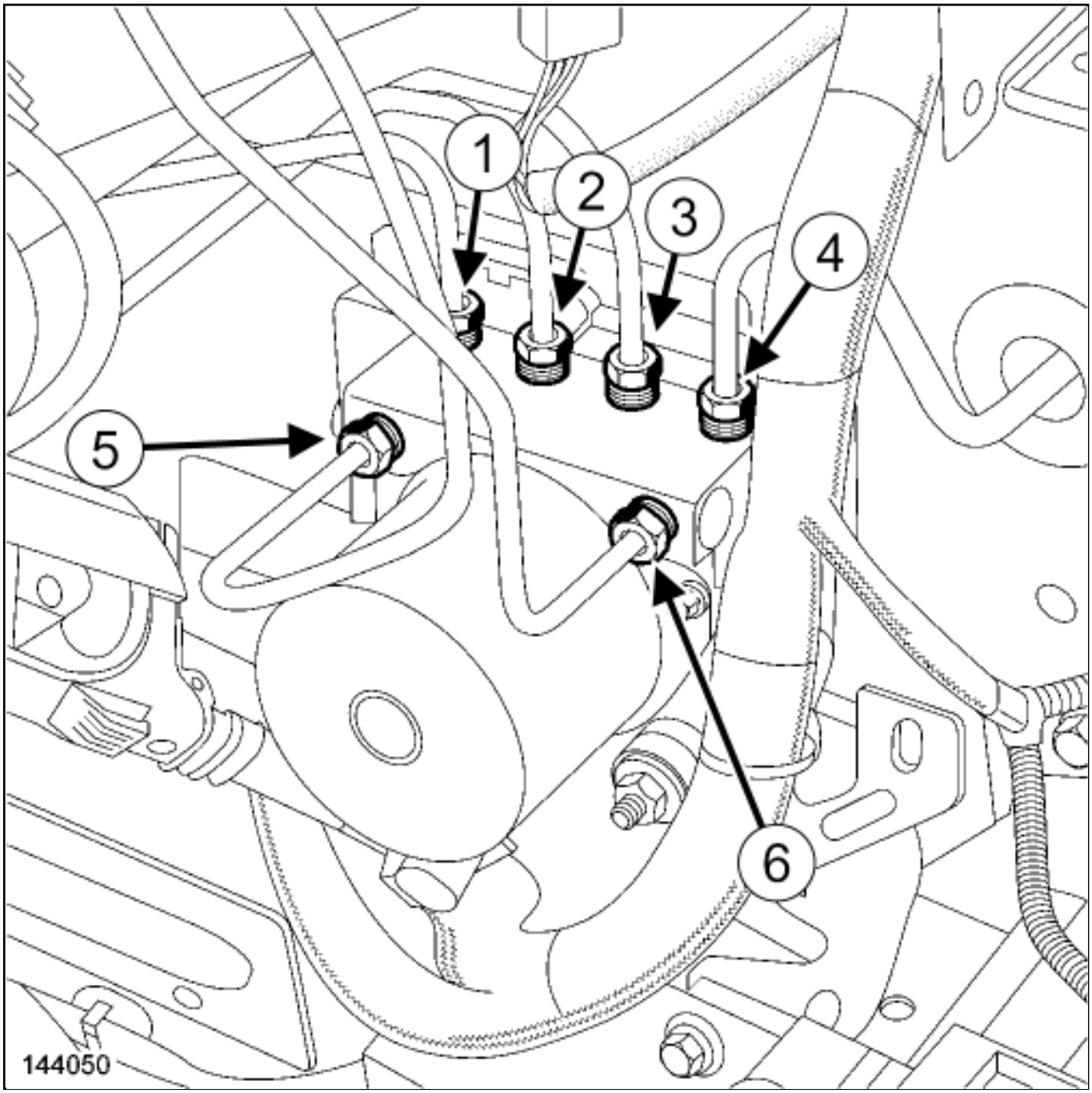
CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Check that the rubber seal is on the hydraulic unit support.

- Fit the hydraulic unit on its support.



Torque tighten the nuts of the hydraulic unit on its support[Brake circuit: Tightening torque] .

Torque tighten in order the brake pipe unions on the hydraulic unit[Brake circuit: Tightening torque] .

2. FINAL OPERATION

Proceed in the reverse order to removal.

Apply the after repair procedure using the Diagnostic tool:

- connect the diagnostic tool,
- select "ABS-ESP computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "ABS-ESP computer" in the "List of components controlled by this computer" section,

carry out the operations described in the "After repair procedure" section.

Bleed the brake circuit**Braking circuit: Bleed** .

HYDRAULIC BRAKE UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 38C, Anti-lock braking system, ABS: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

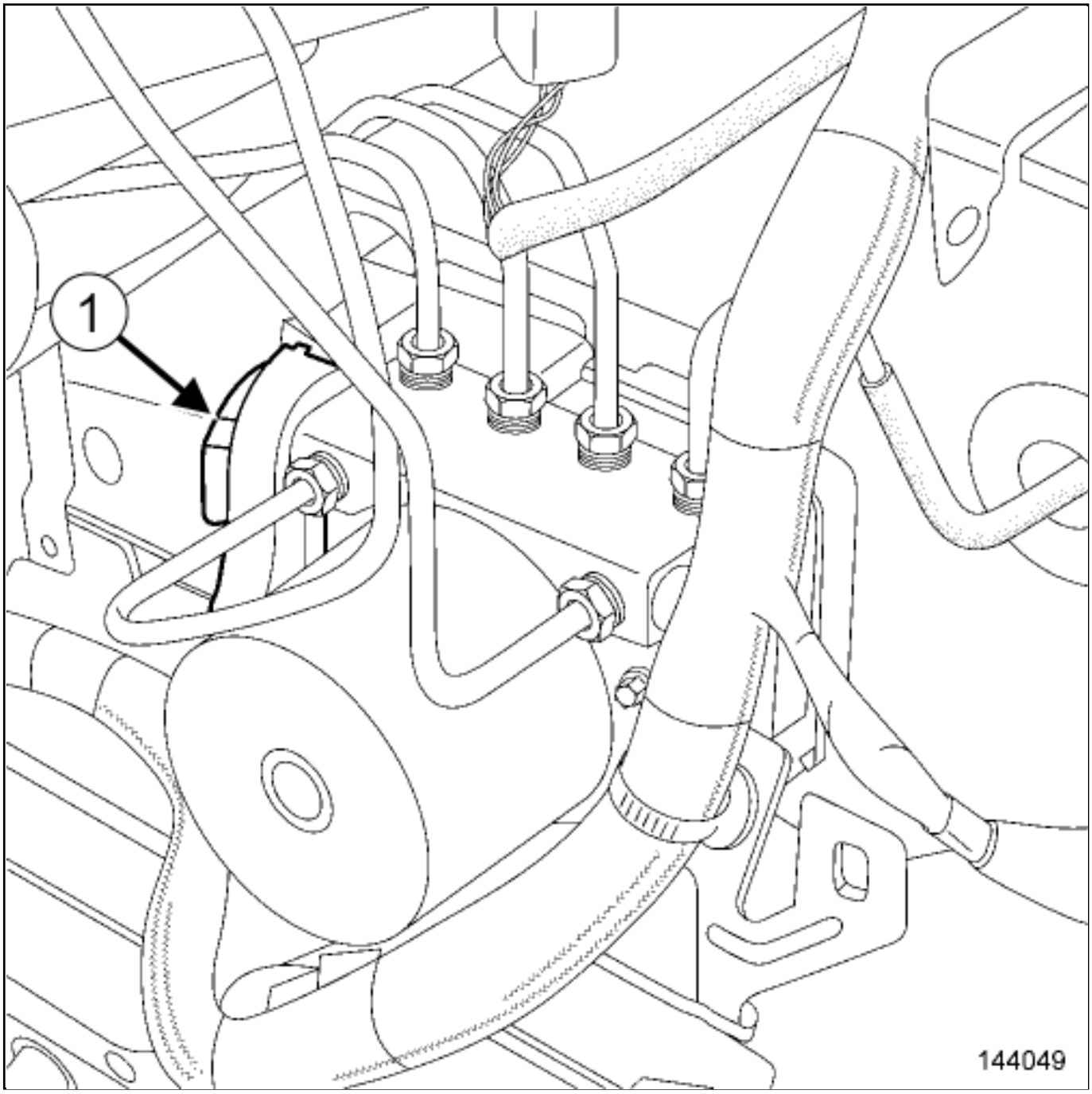
Apply the before repair procedure using the Diagnostic tool:

- connect the diagnostic tool,
- select "ABS-ESP computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "ABS-ESP computer" in the "List of components controlled by this computer" section,
- carry out the operations described in the "Before repair procedure" section.

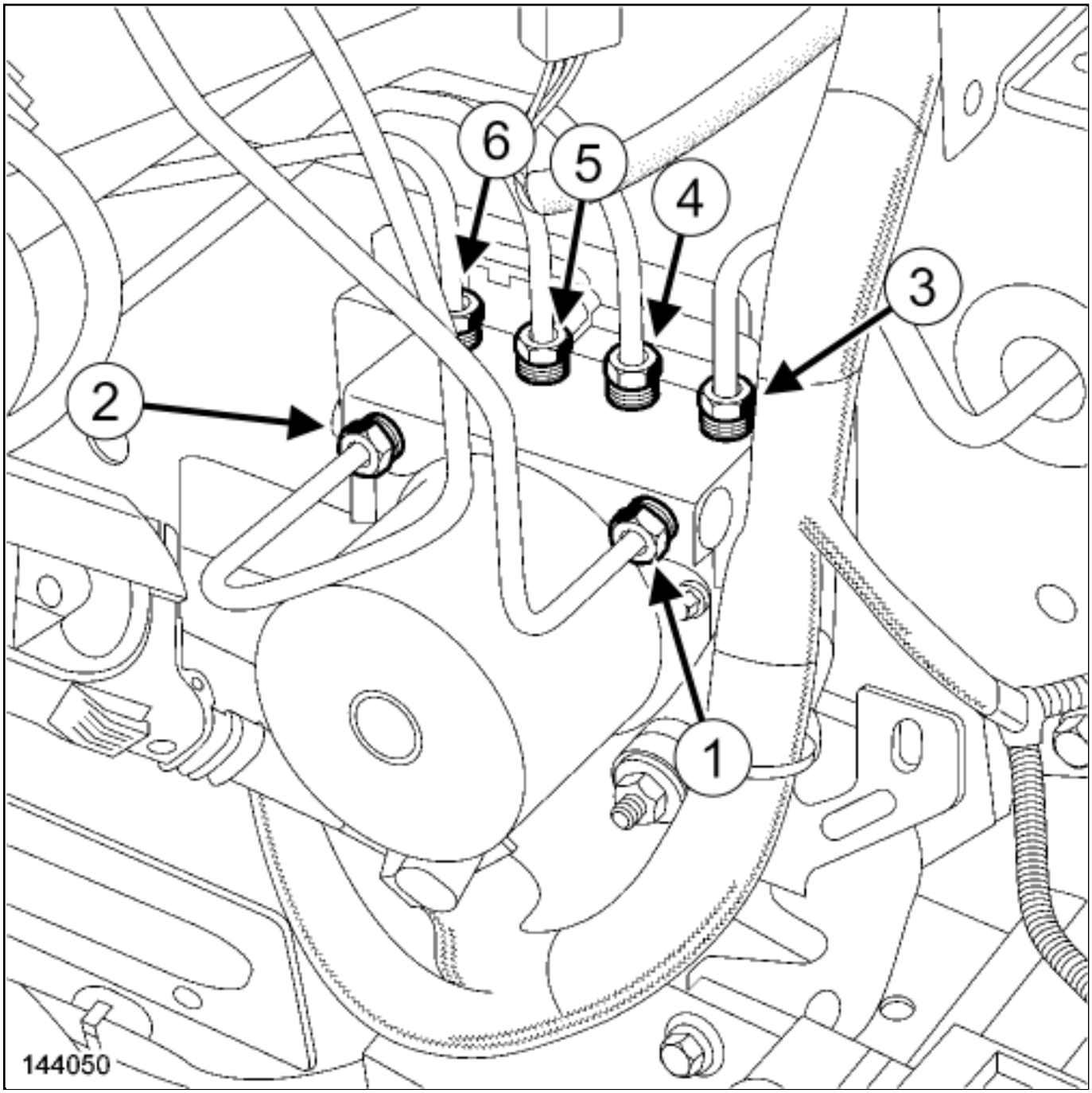
Disconnect the batteryBattery: Removal - Refitting (80A, Battery).

Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

2. OPERATION FOR REMOVAL OF PART CONCERNED



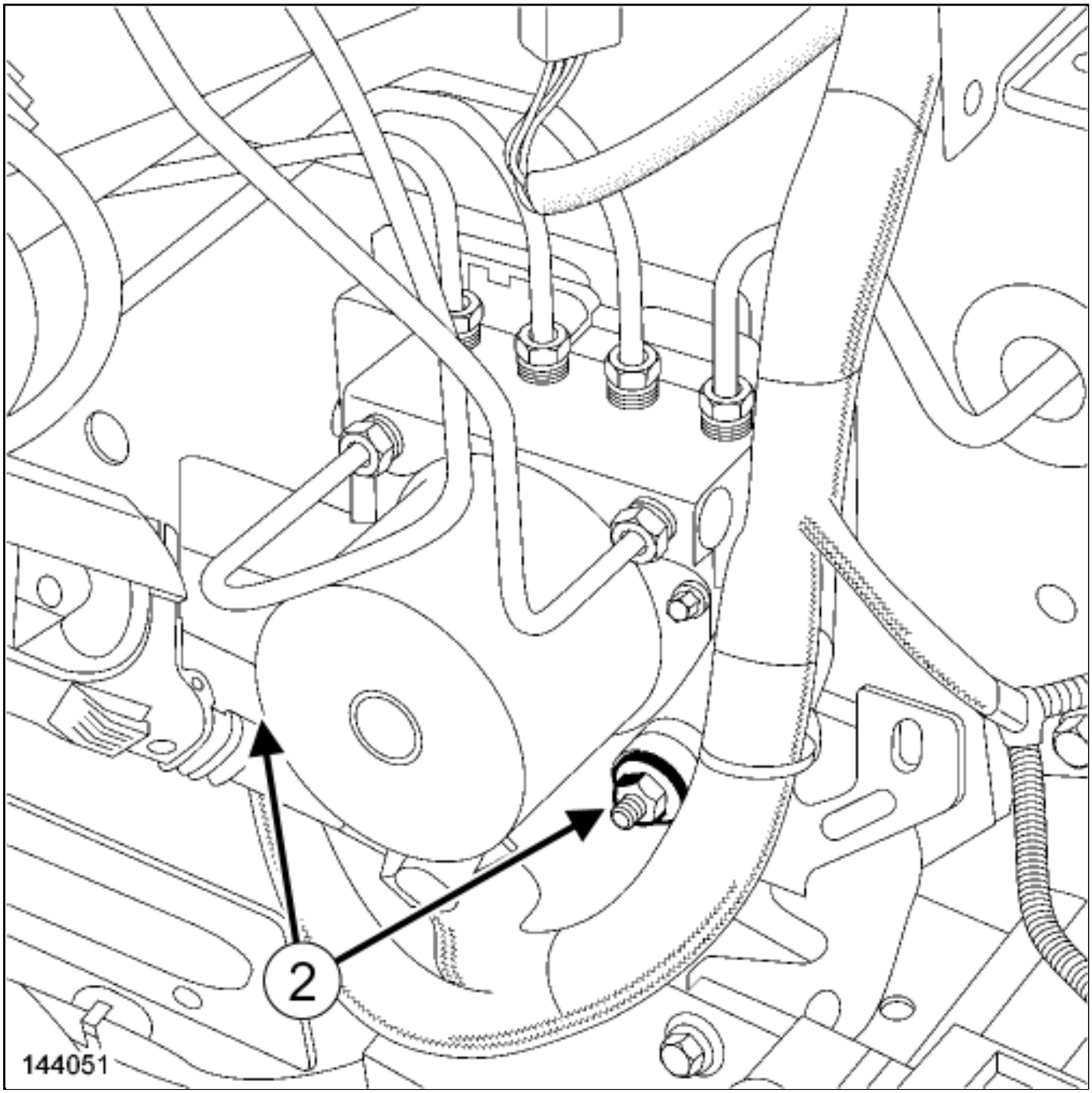
- Disconnect the hydraulic unit computer connector(1) .



CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

- Loosen in the order the brake pipe unions of the hydraulic unit.
- Fit blanking plugs on the hydraulic unit openings and on the brake pipe unions.



- Undo the hydraulic unit nuts(2) on its support.
- Remove the hydraulic brake unit.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

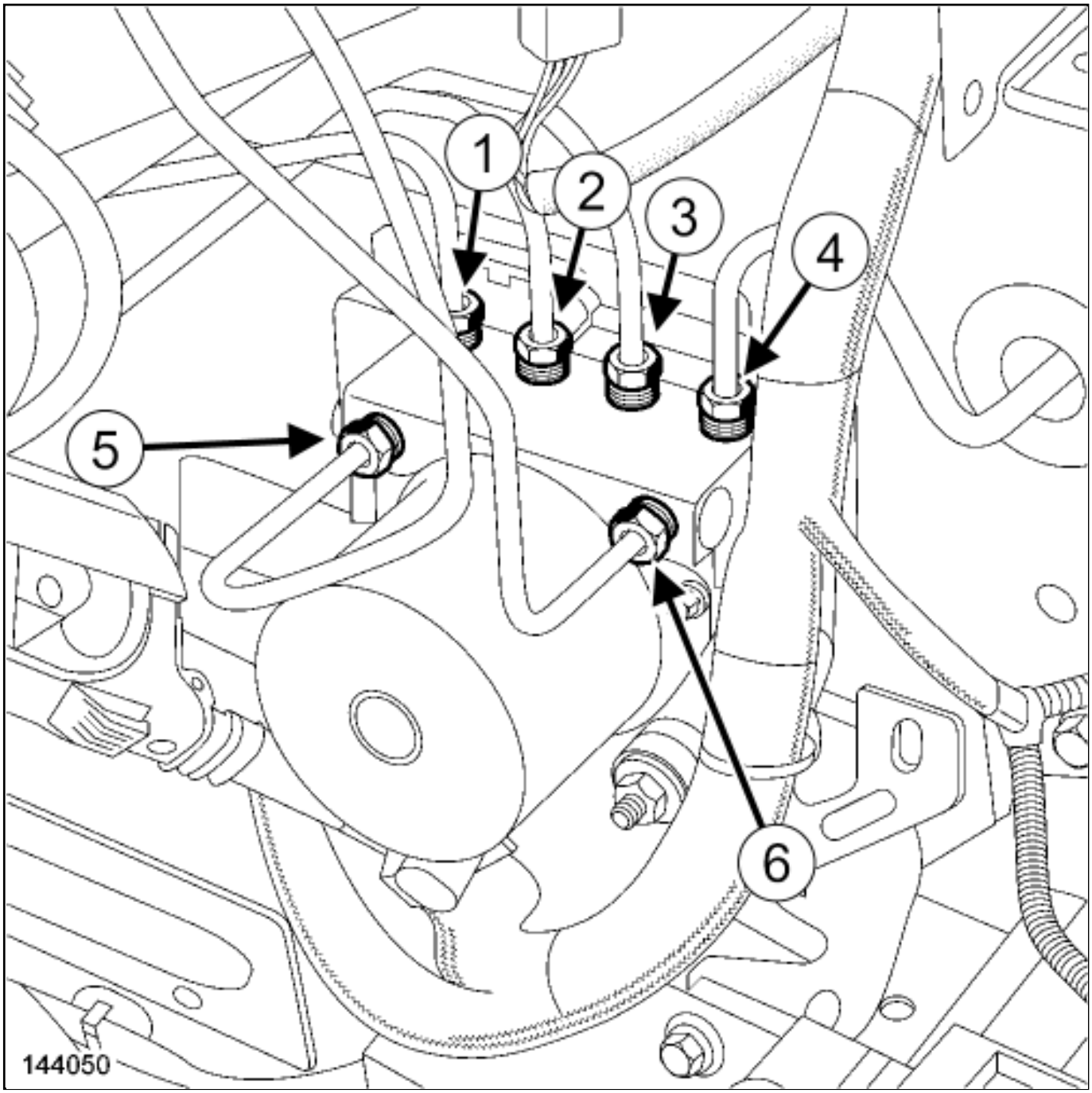
CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Check that the rubber seal is on the hydraulic unit support.

- Fit the hydraulic unit on its support.



Torque tighten the nuts of the hydraulic unit on its support[Brake circuit: Tightening torque] .

Torque tighten in order the brake pipe unions on the hydraulic unit[Brake circuit: Tightening torque] .

2. FINAL OPERATION

Proceed in the reverse order to removal.

Apply the after repair procedure using the Diagnostic tool:

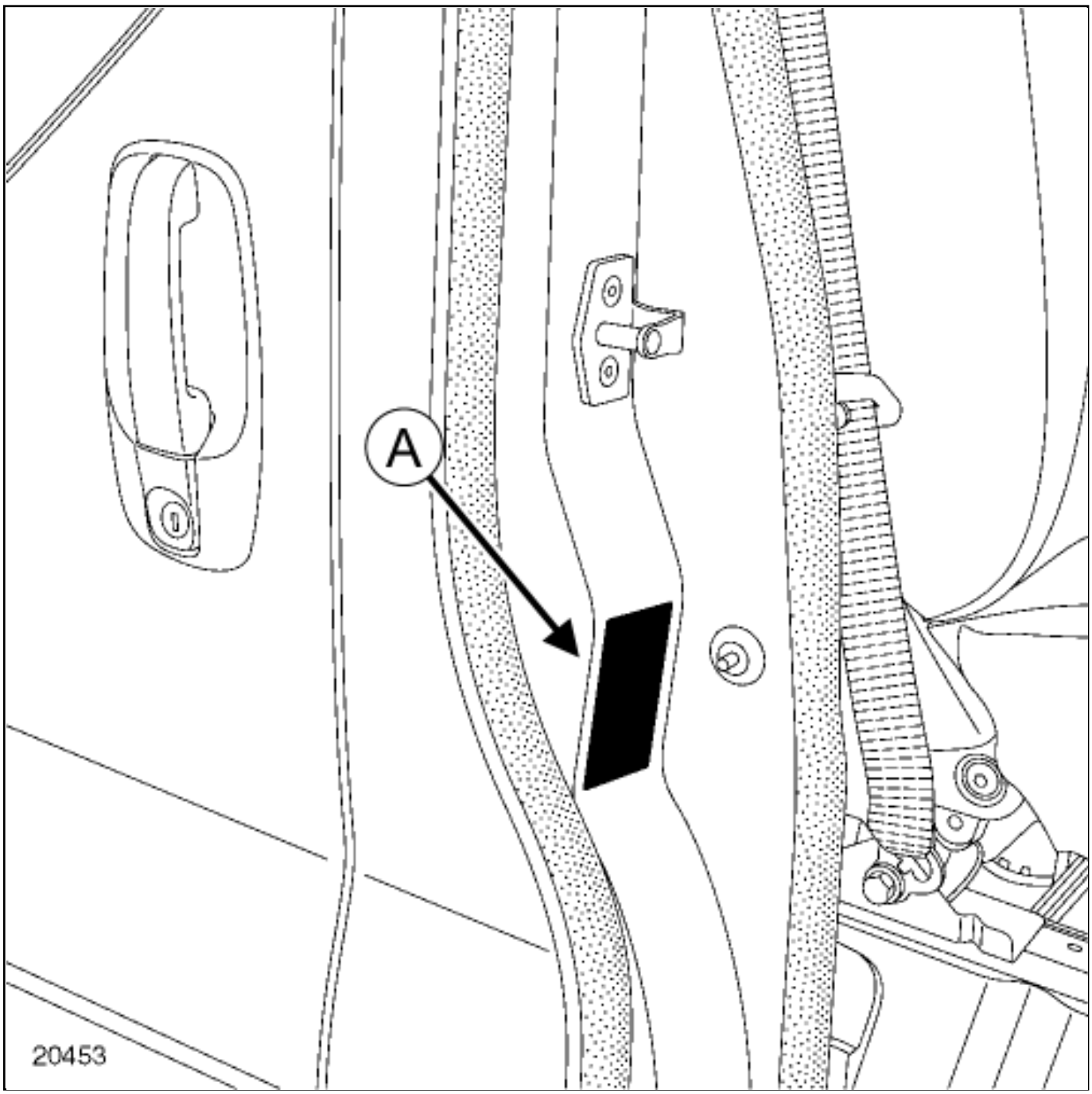
- connect the diagnostic tool,
- select "ABS-ESP computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "ABS-ESP computer" in the "List of components controlled by this computer" section,

carry out the operations described in the "After repair procedure" section.

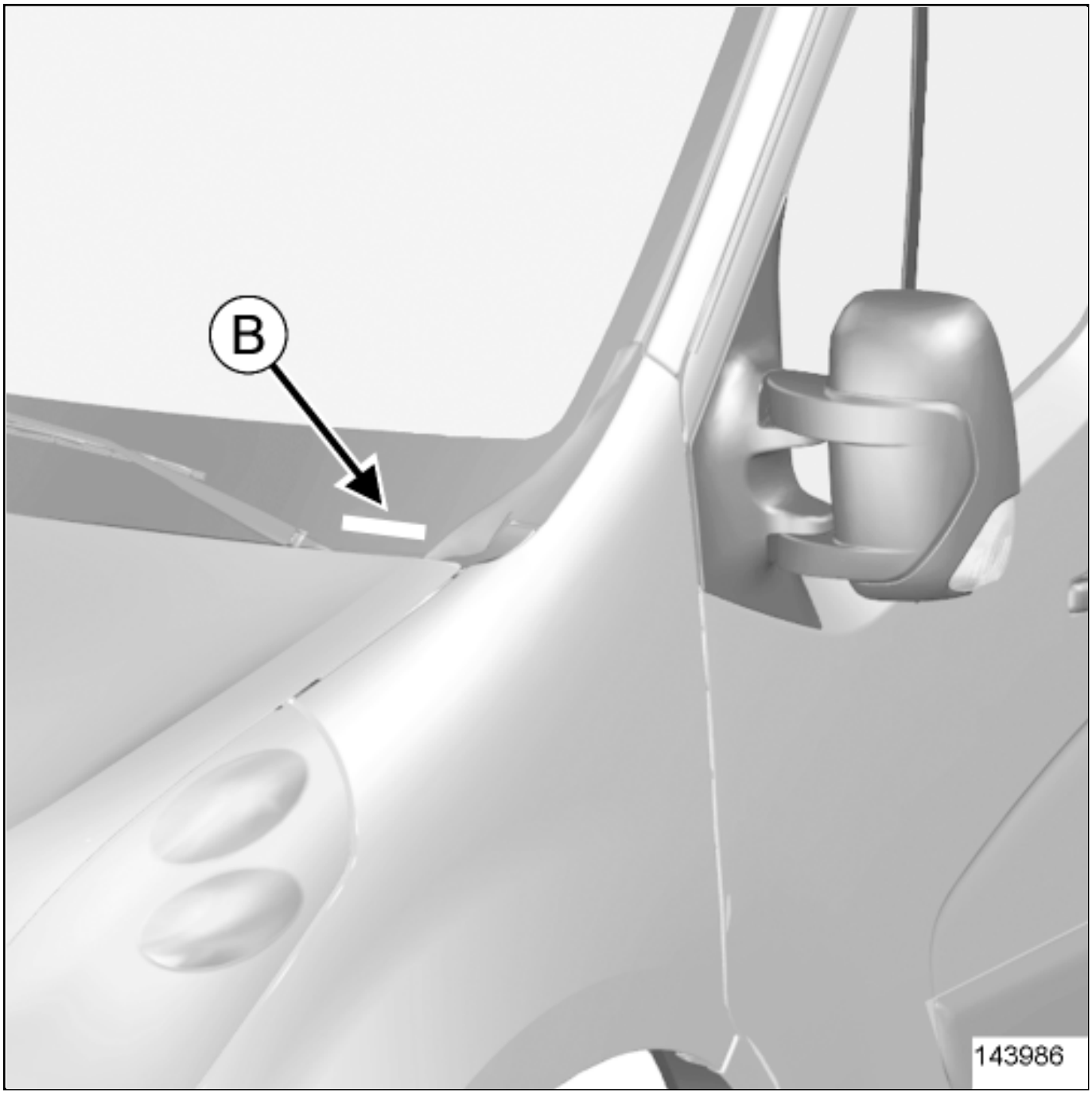
Bleed the brake circuit**Braking circuit: Bleed** .

IDENTIFICATION

1. LOCATION OF VEHICLE IDENTIFICATION PLATE (A)

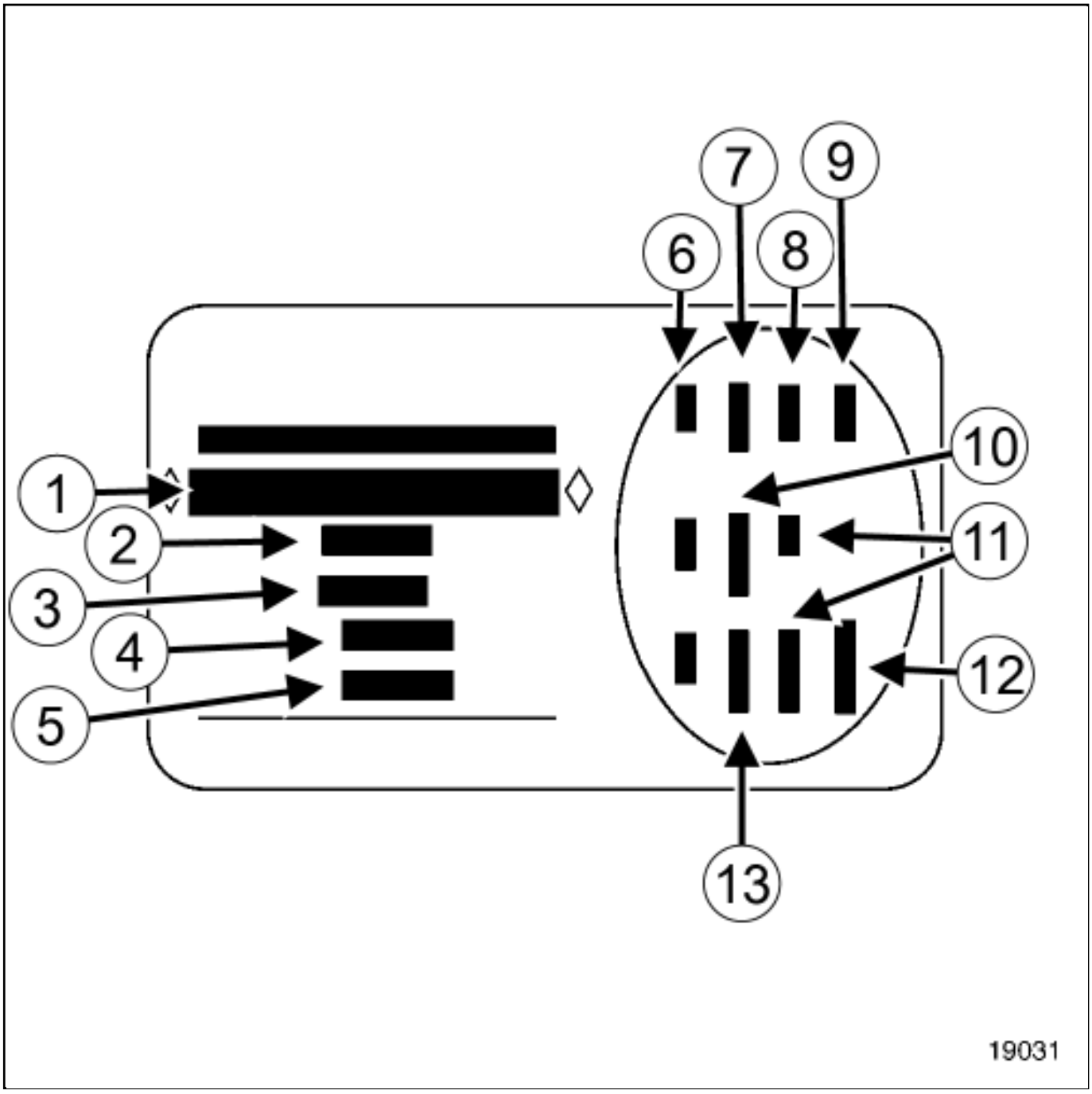


2. LOCATION OF THE VEHICLE IDENTIFICATION NUMBER (B)



3. DETAILED VIEW OF THE VEHICLE IDENTIFICATION PLATE

PLATE (A)



(1) Vehicle type and chassis number, this information is repeated on marking (B)

(2) MGVW (Maximum Gross Vehicle Weight)

(3) GTW (Gross train weight, Vehicle under load with trailer)

(4) Maximum permissible front axle load

(5) Maximum permissible rear axle load

(6) Vehicle technical specifications

(7) Paintwork reference number

(8) Equipment level

(9) Vehicle type

(10) Upholstery code

(11) Additional equipment details

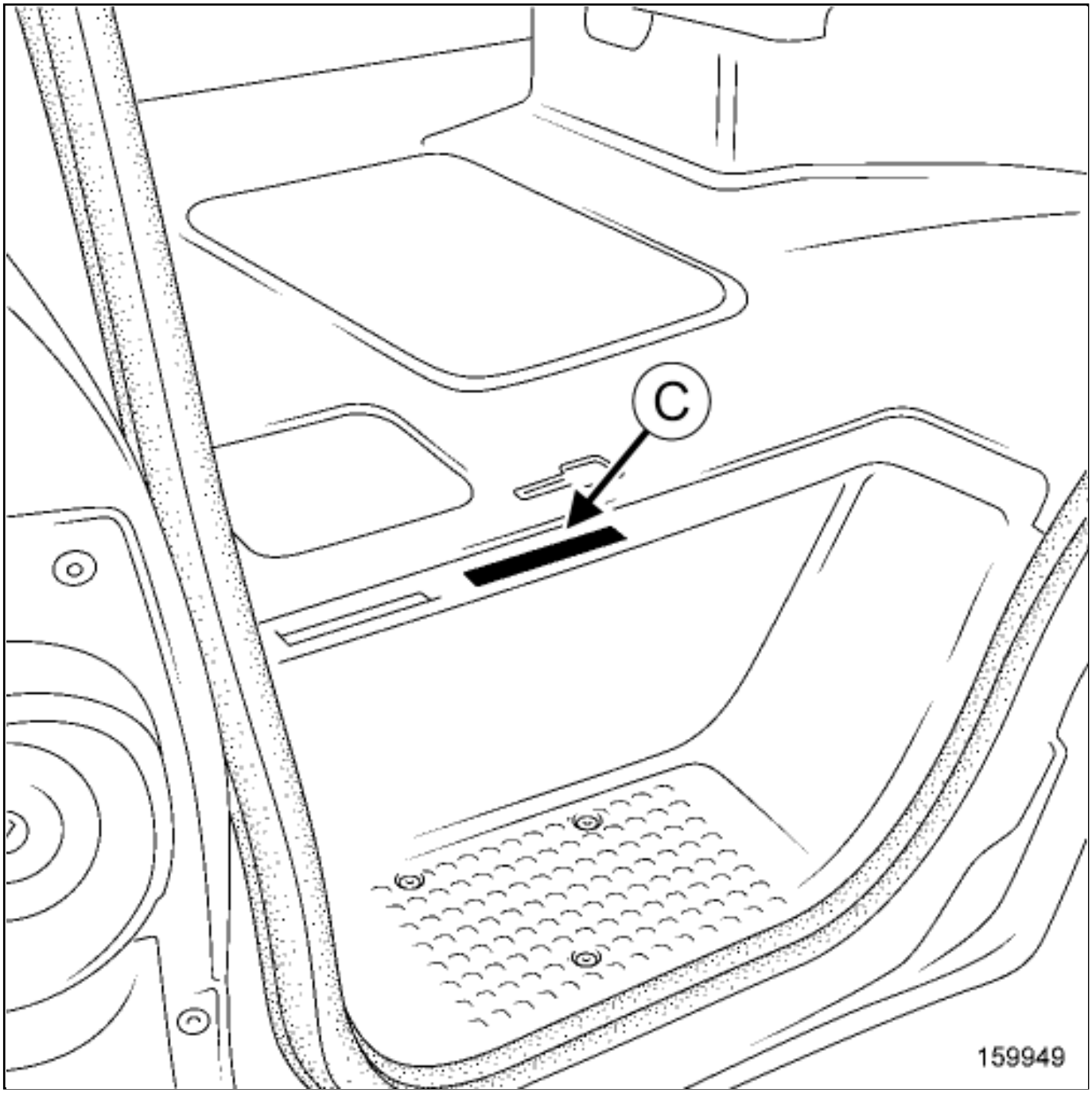
(12) Production number

(13) Interior trim code

4. COLD-MARKING OF THE BODY (C)

Note:

If the complete body is being replaced, it must be marked in compliance with the current regulations.


C
159949

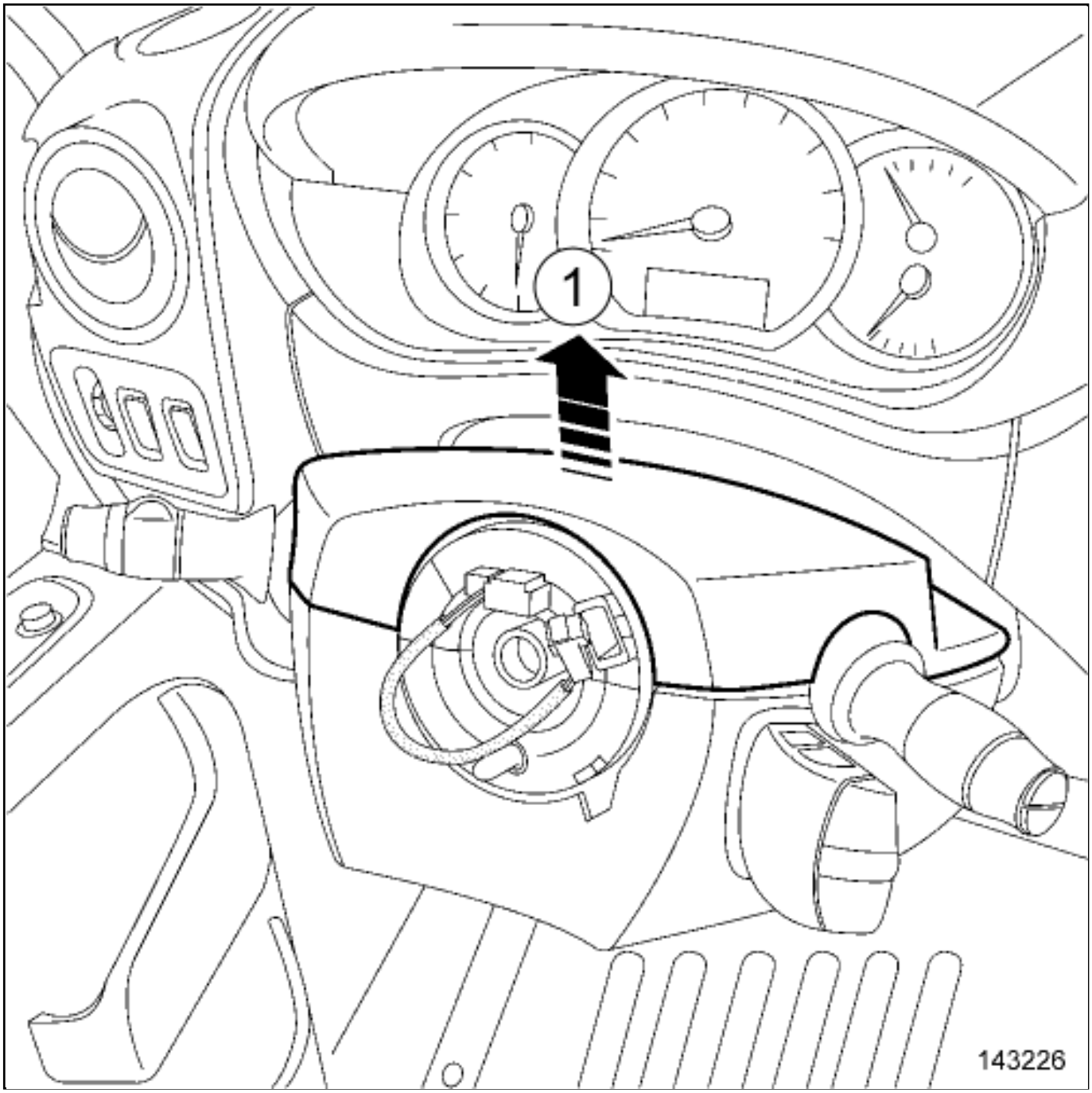
IGNITION SWITCH: REMOVAL - REFITTING

parts always to be replaced:
Ignition switch bolt

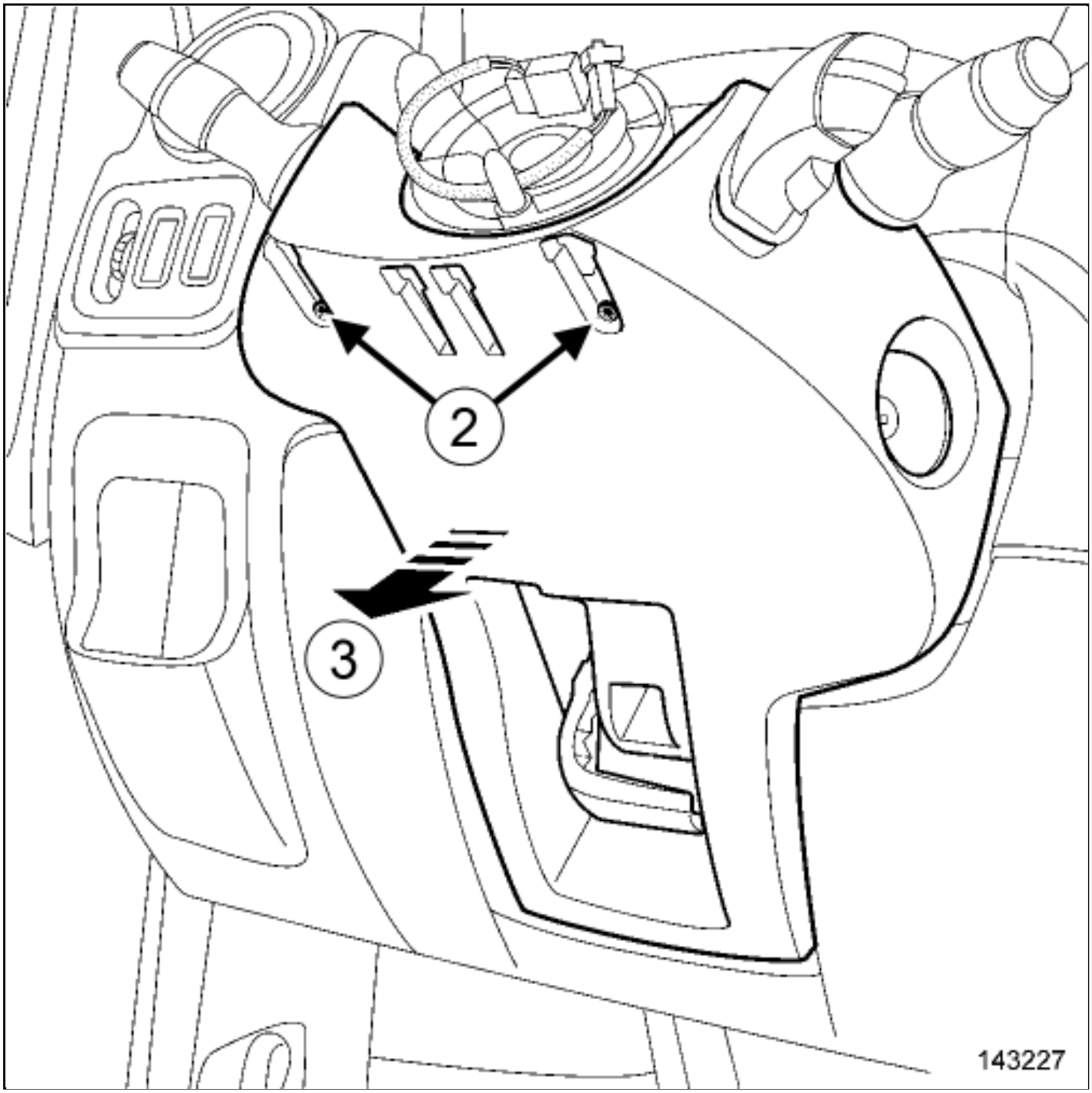
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the battery Battery: Removal - Refitting .

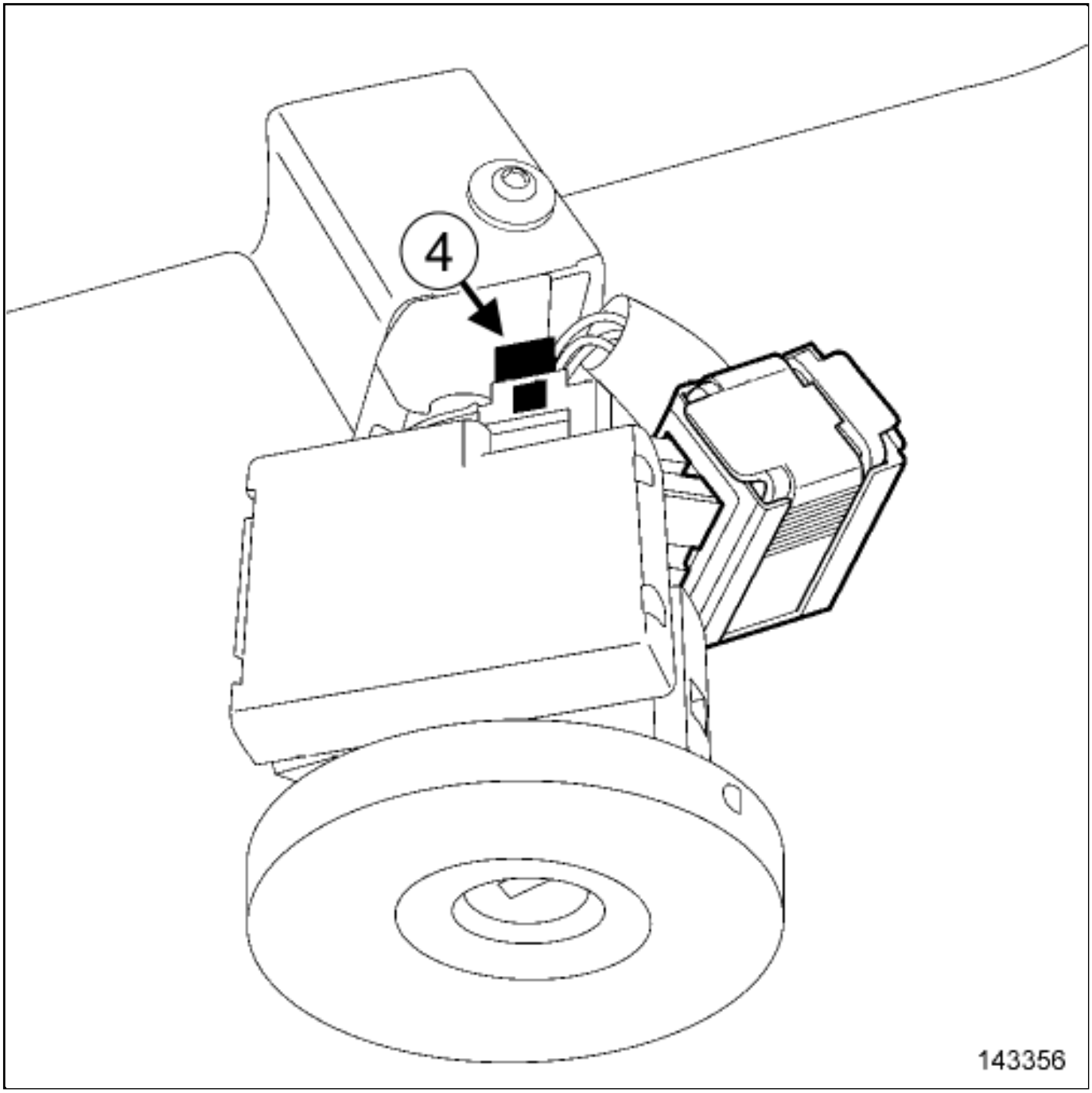


- Put the steering column into the lower position.
- Remove the upper steering column cover at(1) .



- Place the steering column in the upper position.

- Remove:
  - the bolts(2) on the lower steering column cover,
  - the lower steering column cover at(3) .



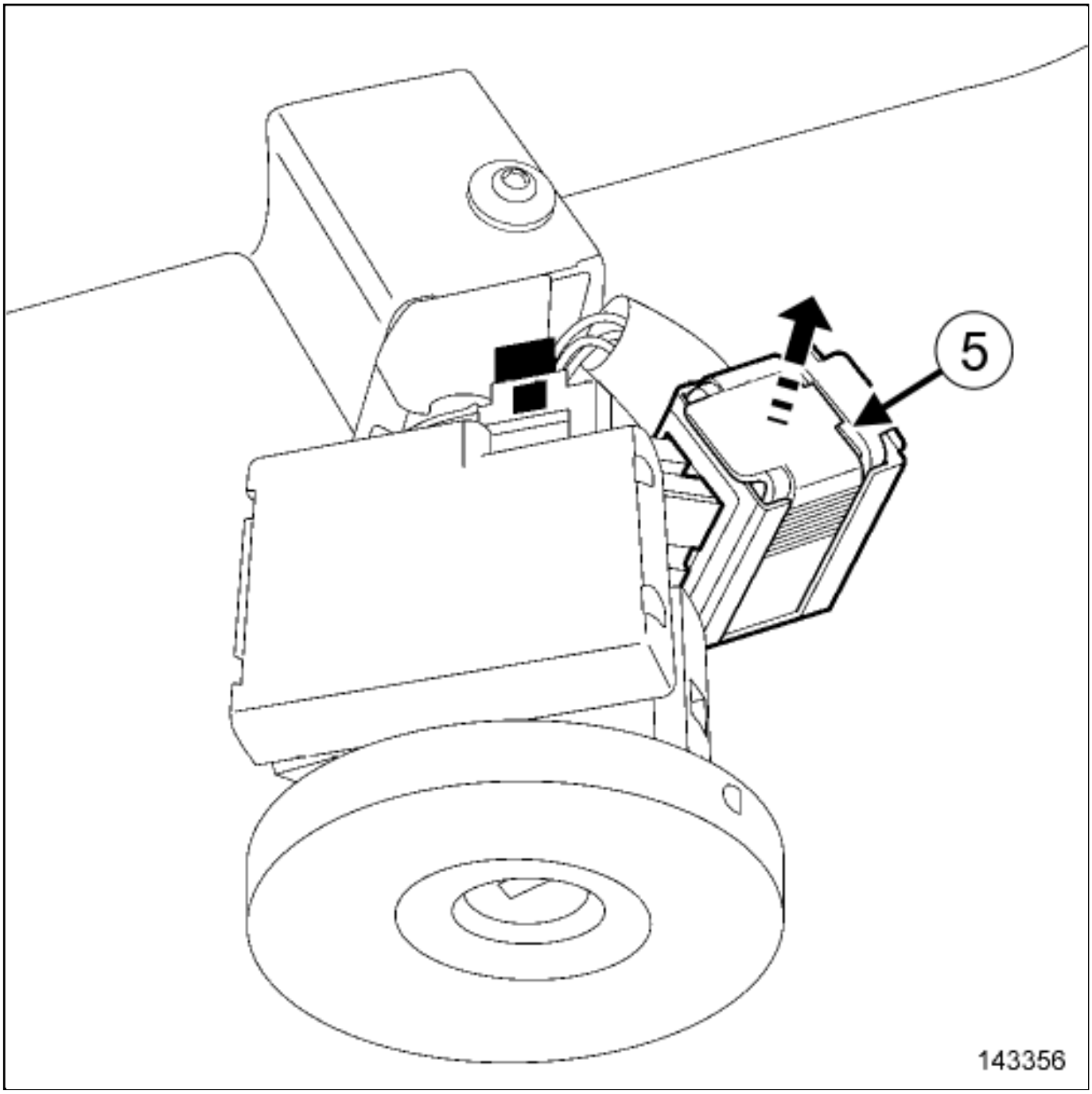
- Disconnect the connector(4) of the transponder ring.

1- WHEN REPLACING THE IGNITION SWITCH

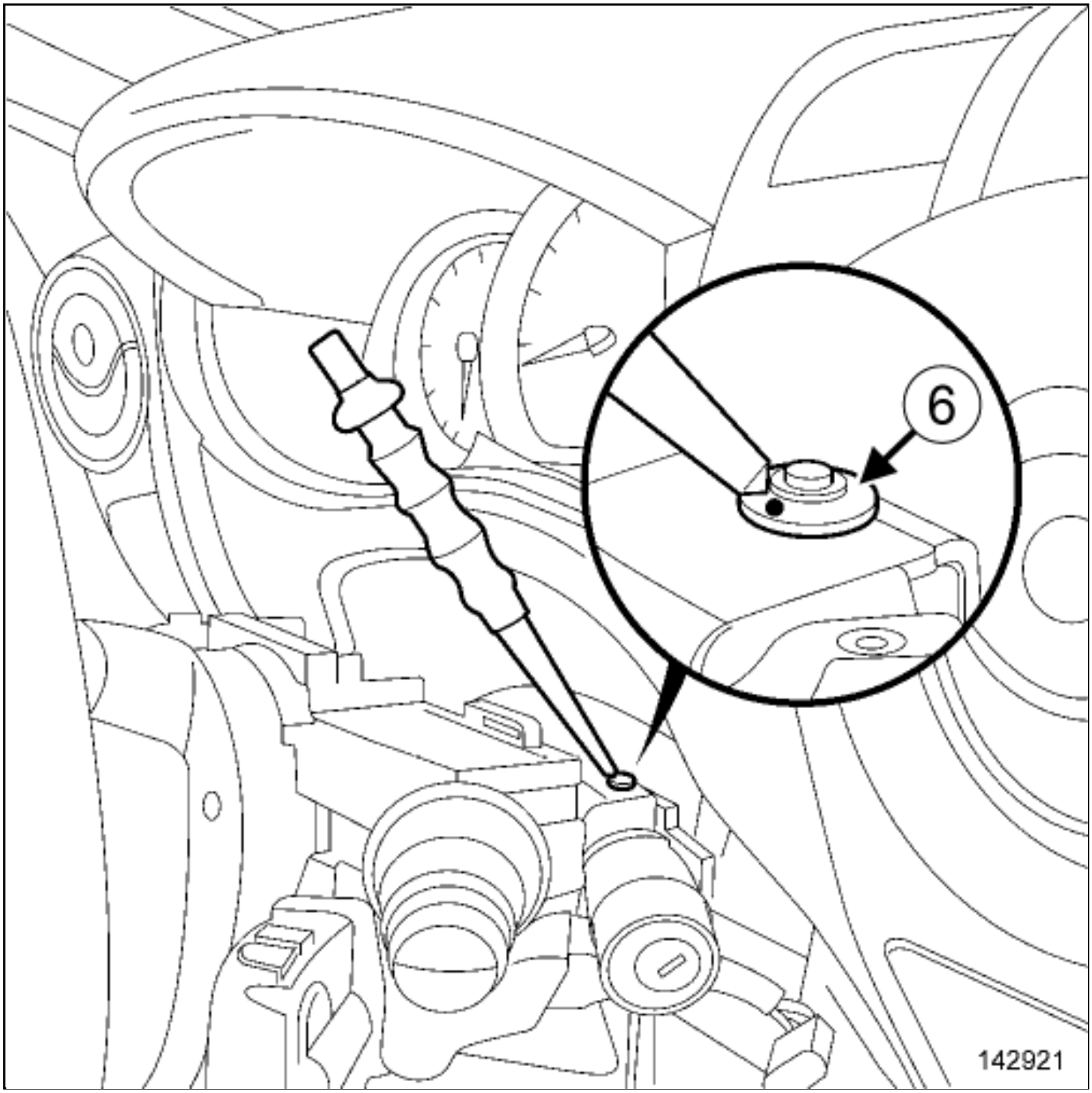
- Remove the antenna/transponder ring(see 82A, Engine immobiliser, Transponder ring: Removal - Refitting) .

2. REMOVAL OPERATION

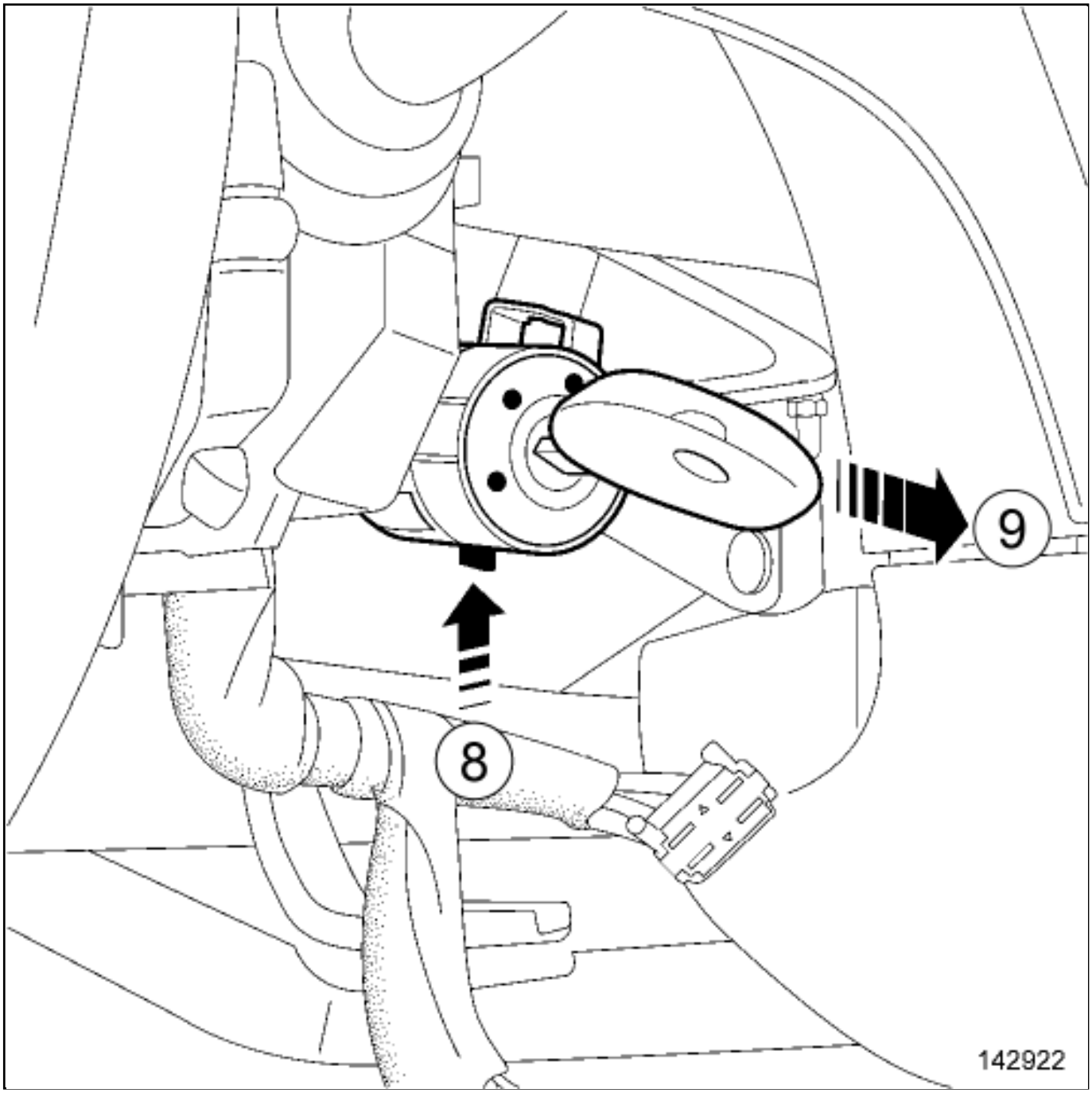
- Put the steering column into the lower position.

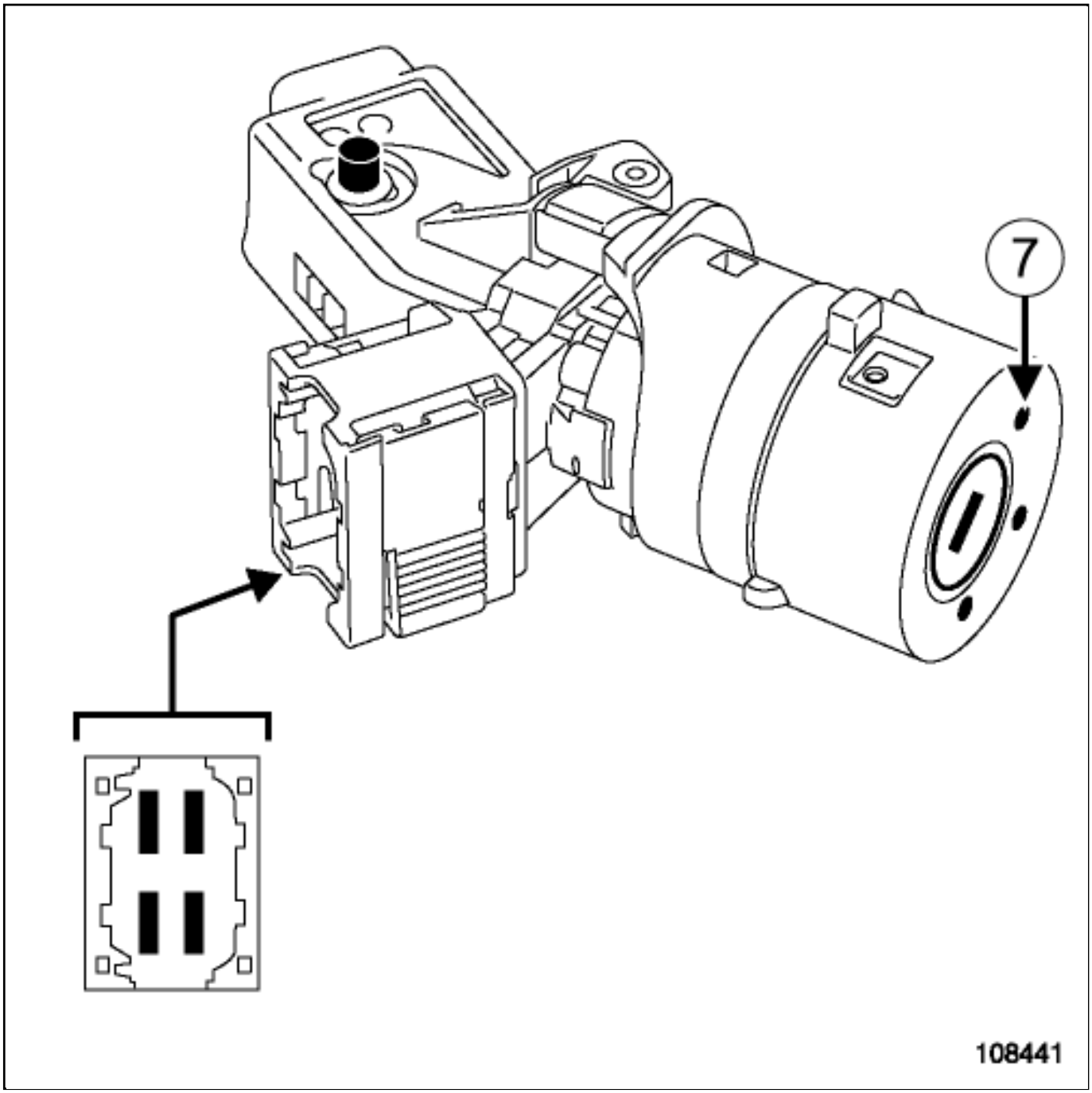


- Unlock the ignition switch connector(5) .
- Disconnect the ignition switch connector(5) .



- Remove the shear bolt(6) using a punch.


9
8
142922



- Position the ignition key to a position another than position "0"(7) .
- Press the retaining lug at(8) .
- Remove the ignition switch at(9) .

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: Ignition switch bolt .

2. REFITTING OPERATION

Note:

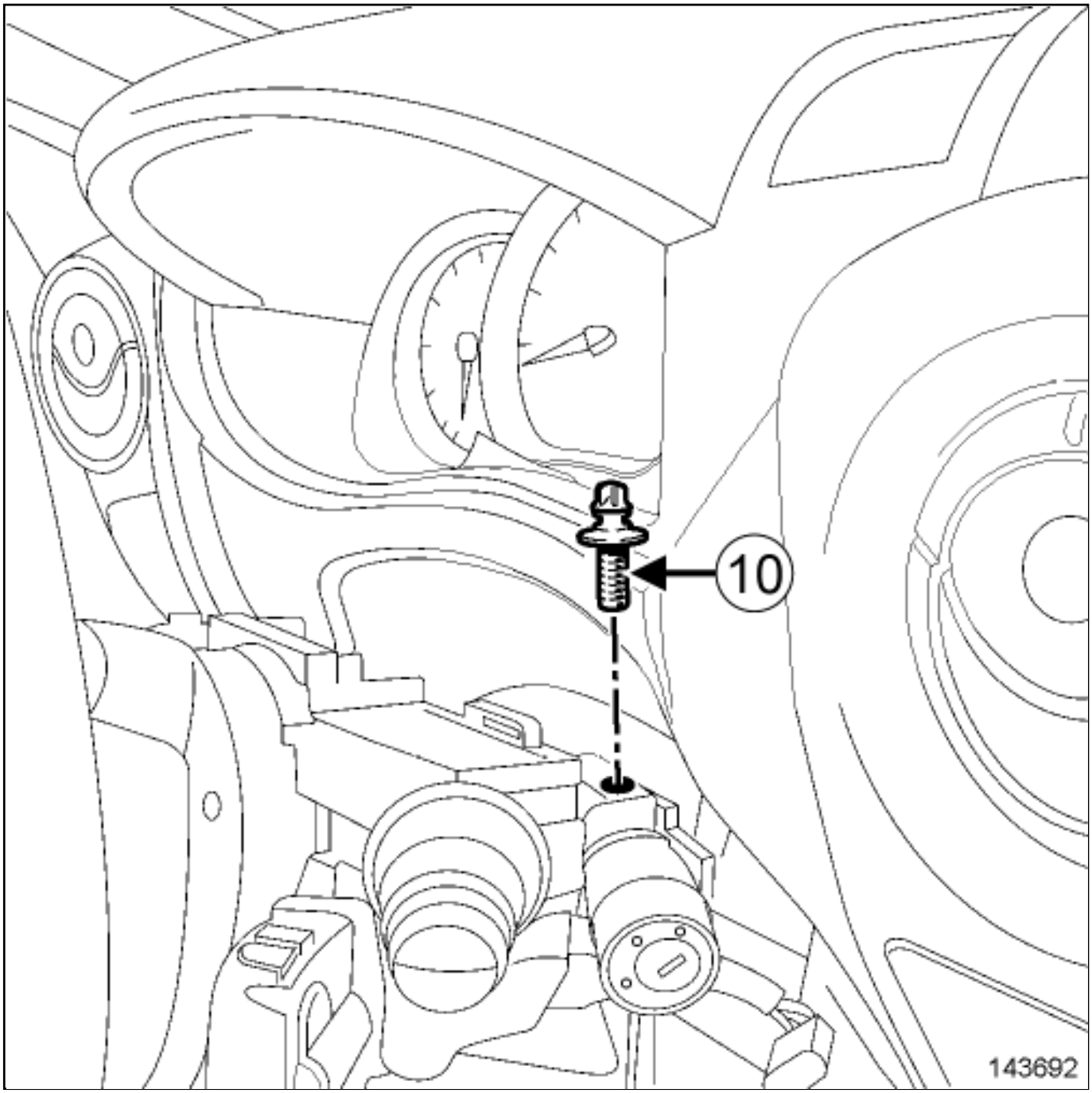
To protect against tampering, always secure the ignition switch with a shear bolt.

Be sure to recover the sheared-off part of the bolt after it has been tightened.

Position the ignition key to a position another than position "0".

Press the retaining lug.

Fit the ignition switch.



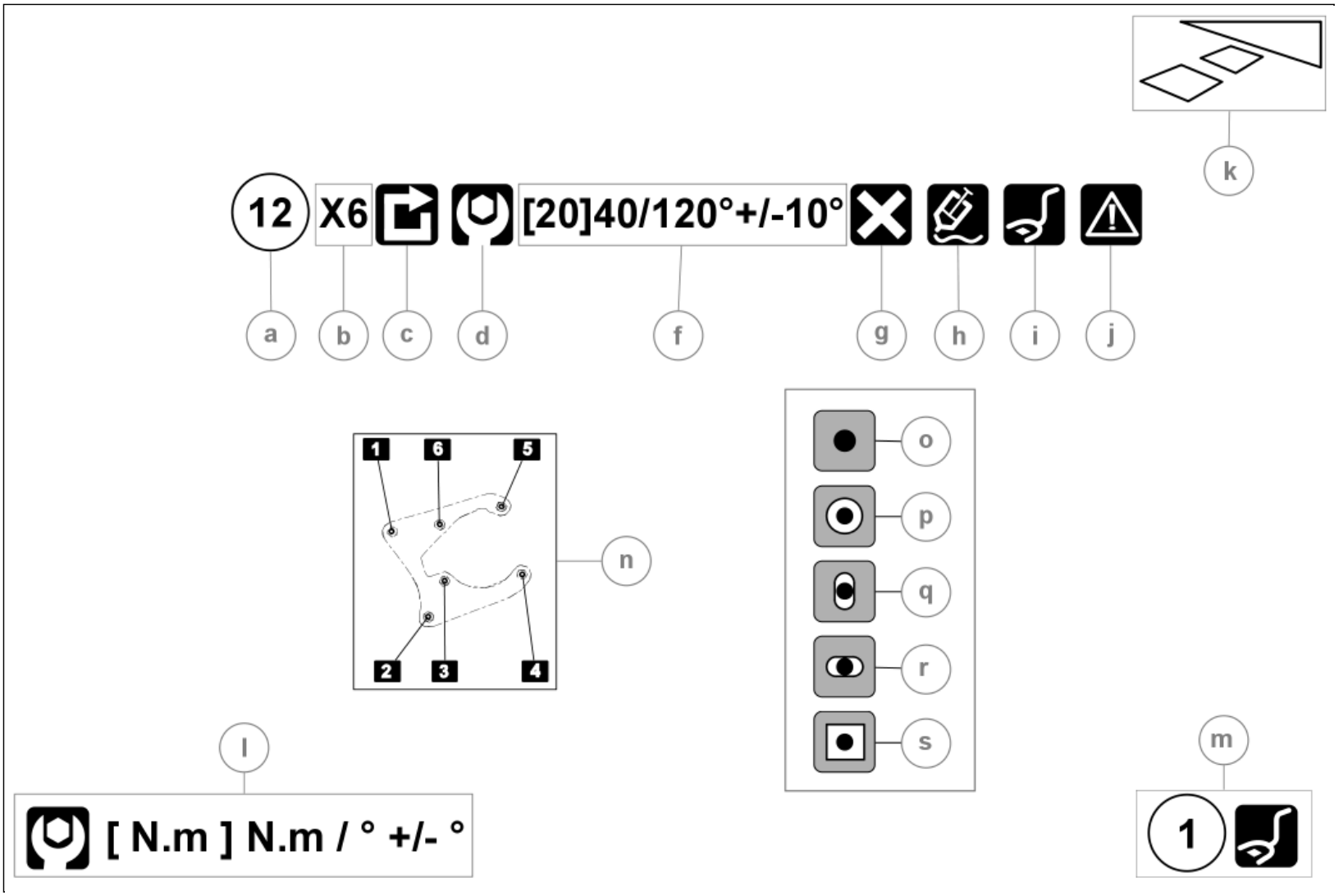
- Tighten the shear bolt(10) until the bolt head shears off.
- Connect the ignition switch connector.
- Lock the ignition switch connector.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Repair-30x04x04x04-01x37-1-17-1.xml

XSL version : 3.02 du 22/07/11



LEGEND FOR ICONS

a	No.
b	Part number
c	A tightening order must be respected
D	Non-standard tightening torque / angle
f	[Initial torque] tightening torque / tightening angle +/- tightening angle tolerance
g	Part always to be replaced
h	Product / Consumable
i	Special tooling / Equipment required
j	Safety precaution
k	Front of the vehicle
l	Tightening units
m	Special tooling / Equipment required to use on all of the assembled parts
n	Tightening order to be respected

The following icons represent the adjustment possibilities for the bodywork components:

- the black dot in the centre represents the body of the bolt,

- the grey section represents the component to be adjusted,

- the white section represents the adjustment area.

o	No adjustment possible
p	Adjustment possible along all axis
q	Adjustment possibly only along vertical axis
r	Adjustment possibly only along horizontal axis
s	Adjustment possible along all axis

TECHNICAL NOTE
EDITION ANGLAISE

July 2012
77 11 344 642

5037A
Service 0465

Type *S/*Section

All types

XXX X | **82A**

This note cancels and replaces Technical Note 3315E, part no. 77 11 206 336 and previous versions of Technical Note 5037A

01B-82A-87B-86A-86C **CODE SUPPLY PROCEDURE**

- Engine: **XXX**
- Gearbox: **XXX**

Basic manual:

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All rights reserved by **Renault s.a.s.**

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of **Renault s.a.s.**

© Renault s.a.s. 2012

CONTENTS

Page
0 Introduction 2
1 Access to code management 5
2 Searching for a code in GDC 5
2.1 Immobiliser code 5
2.1.1 Old procedure 6
2.1.2 New procedure 7
2.1.3 Error messages and procedures to follow 8
2.1.4 Emergency procedure 10
2.2 Radio code 11
2.2.1 "Enter pre-code" error screen 12
2.2.2 Finding the radio pre-code 13
2.2.3 The code supplied is not correct 13
2.2.4 Old radios without pre-code 14
2.3 Video control code 16
2.4 Tool reprogramming key 17

0) Introduction

Since 1st June 2005 there has been a single service available for supplying the following codes:

- Engine immobiliser
- Radio
- Video network
- Reprogramming key (NRE)

This service is Code Management (GDC) on RENAULT NET or importers' RENAULT NET.

Information required for use:

Immobiliser code:
VIN (17 characters)
number marked on the key head (old vehicles, 8 characters maximum)
Programming key supplied by diagnostic tool (new vehicles, 24 characters)

Note: The programming key is obligatory from CLIP CD65, i.e. from June 2006.

Radio code:
VIN (17 characters)
Pre-code or serial number of the radio

Radio pre-code if the first code obtained using the VIN is not correct
Pre-code = 1 letter + 3 digits
Refer to the detailed procedure §2.2.2 "Finding the radio pre-code"

Radio without pre-code:
Radio manufacturer: Philips/Blaupunkt/Pioneer/Alpine/Becker

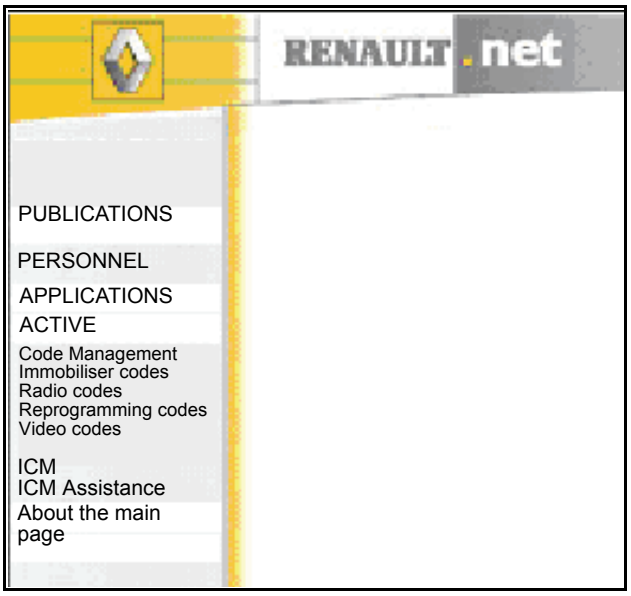
Video control code specific to Vel Satis:
VIN of the vehicle (17 characters)
Four-digit code supplied by the video control
Refer to the corresponding repair manual.

Reprogramming key (only in disconnected mode):
*Note: this key is an authorisation code provided by the diagnostic tool to the operator in order to obtain the reprogramming key from the code server.
VIN of the vehicle (17 characters)
Reprogramming key supplied by the diagnostic tool

WARNING
Access to the "code management" application is restricted to authorised personnel.
To use the code server, access rights are required.
These access rights (certificate) are integrated into the Tokens.
All code requests are recorded in a database. This database can be accessed by the police authorities.
Any member of personnel found to be making fraudulent use of management codes will be subject to corporate and legal proceedings.

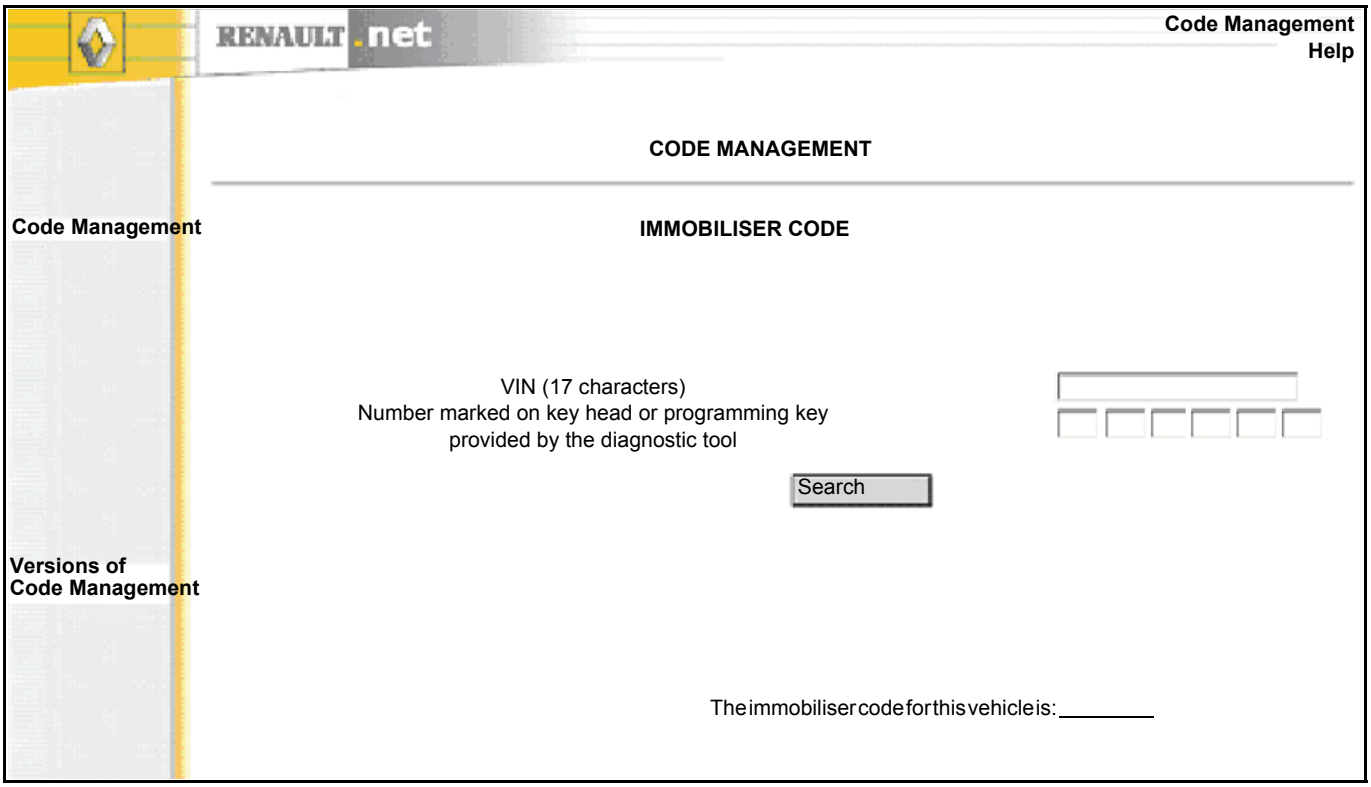
Using the Code Management server to find codes:

1) Main menu in Renault Net, under Applications you will find Code Management:



2) Finding a code in Code Management:
2.1 Immobiliser code:

Note:
To find out whether a vehicle is governed by the old or the new procedure, just start the programming procedure using your diagnostic tool. If the tool displays a **programming key**, this vehicle is governed by the new procedure.



2.1.1 Old procedure

– Enter the VIN
– Confirm with the "Search" button
– Immobiliser code supplied in the following form:
  4 digits (old vehicles)
  8 digits (MEGANE 1 and AVANTIME only)
  12 characters (digits and letters for other vehicles)

If the immobiliser code supplied is not correct and you have the key head number, resubmit your request with the same VIN and **key head number**:

Note:
The key head number is required for old vehicles; if the four-digit code supplied by the code server does not correspond to the vehicle, the key head code is used to recalculate the new four-digit code.

– Re-enter the VIN of the vehicle
– Enter the key head number (marked on the key head) 8 characters maximum (5 figures or 7 alphanumeric characters, or even 8 alphanumeric characters)
– Confirm with the "Search" button
– The immobiliser code (4 figures) is supplied

2.1.2 New procedure:
This new procedure affects vehicles from LAGUNA II, and new vehicles.
This has been compulsory since June 2006.

In disconnected mode:
– Enter the VIN + programming key supplied by the diagnostic tool.
– Confirm with the "Search" button
– The immobiliser code is supplied in the form of programming keys of 24, 40 or 28 characters, then supplied in the form of 13, 34 or 39 characters

In connected mode:
– The immobiliser code can be searched for and supplied automatically via the diagnostic tool.

2.1.3 Error messages and procedure to follow

MANAGEMENT CODE ERROR MESSAGE	PROCEDURE TO FOLLOW
All vehicles	
The VIN is not found on the World Vehicle Database	Re-enter the VIN. If the fault is still present, contact the Techline.
The diagnostic tool programming key is compulsory.	The vehicle corresponding to the VIN entered is subject to the new procedure described in paragraph 2.1.2. CLIP version 65 or a more recent version is required.
A new code cannot be supplied.	contact your technical assistance network
Old procedure	
The immobiliser code cannot be obtained by entering the VIN alone. For old vehicles with a four-digit security code, you must enter the code marked on the key head in addition to the VIN. If no number is marked on the key head, contact your technical assistance network	The immobiliser code cannot be obtained from the server; the key head code is required to calculate the immobiliser code. Open the key head to obtain the key head code. If the code does not appear on the key head, check the customer documents (e.g. invoice) to find the code. If this number cannot be found, contact your technical assistance network quoting the error message.
The immobiliser code cannot be obtained with values entered. Check that the values are correct. If they are correct, contact your technical assistance network	If the key head code is incorrect, the immobiliser code cannot be calculated by the server. Check the key head code.
New procedure	
1. Check the programming key. 2. Check that the VIN from the CLIP main menu is correct.	The programming key does not correspond to the VIN entered. 1. Check the programming key (6 x 4 characters); the programming key does not contain: the letters O and Q as these may be confused with the number 0 the letter I as it may be confused with the number 1. 2. In the CLIP main menu, enter the correct VIN of the vehicle (17 characters)

2.1.3 Error messages and procedure to follow (continued)

MANAGEMENT CODE ERROR MESSAGE	PROCEDURE TO FOLLOW
New procedure (continued)	
The Renault card (or key) stored by CLIP in the "insertion" section of the programming scenario cannot be found on the server. 1. Check the programming key. 2. Check that the Renault card (or key) was ordered directly by the production workshop in France with the VIN (new procedure). 3. Check that the Renault card (or key) corresponds to the vehicle (the VIN is included on the document supplied with the part).	1. Check the programming key. 2. Renault cards and keys must be ordered according to the new procedure: from June 2006, directly from the central manufacturing workshop (in France), with the vehicle's VIN. The Renault cards and keys can only be used with the VIN for which they have been ordered. The VIN is written on the sheet attached to the packet containing the part. 3. If the fault is still present, contact the Techline.
The immobiliser code is not available on the database. follow the emergency procedure (see 2.1.4)	Check the VIN and the programming key. If the fault is still present, follow the emergency procedure (see 2.1.4).
Another immobiliser chain computer has recently been programmed on this vehicle. You are not authorised to perform this operation. Follow the emergency procedure (see 2.1.4).	1. Check the programming key. 2. Restart the procedure with CLIP. 3. If the fault is still present, follow the emergency procedure (see 2.1.4)

2.1.4 Emergency procedure

From 2007, the help mail will be replaced by a text file.
Once the code has been requested, a button will appear: "create a text file".
This creates a text file which can be saved to the hard drive or to a mobile device.

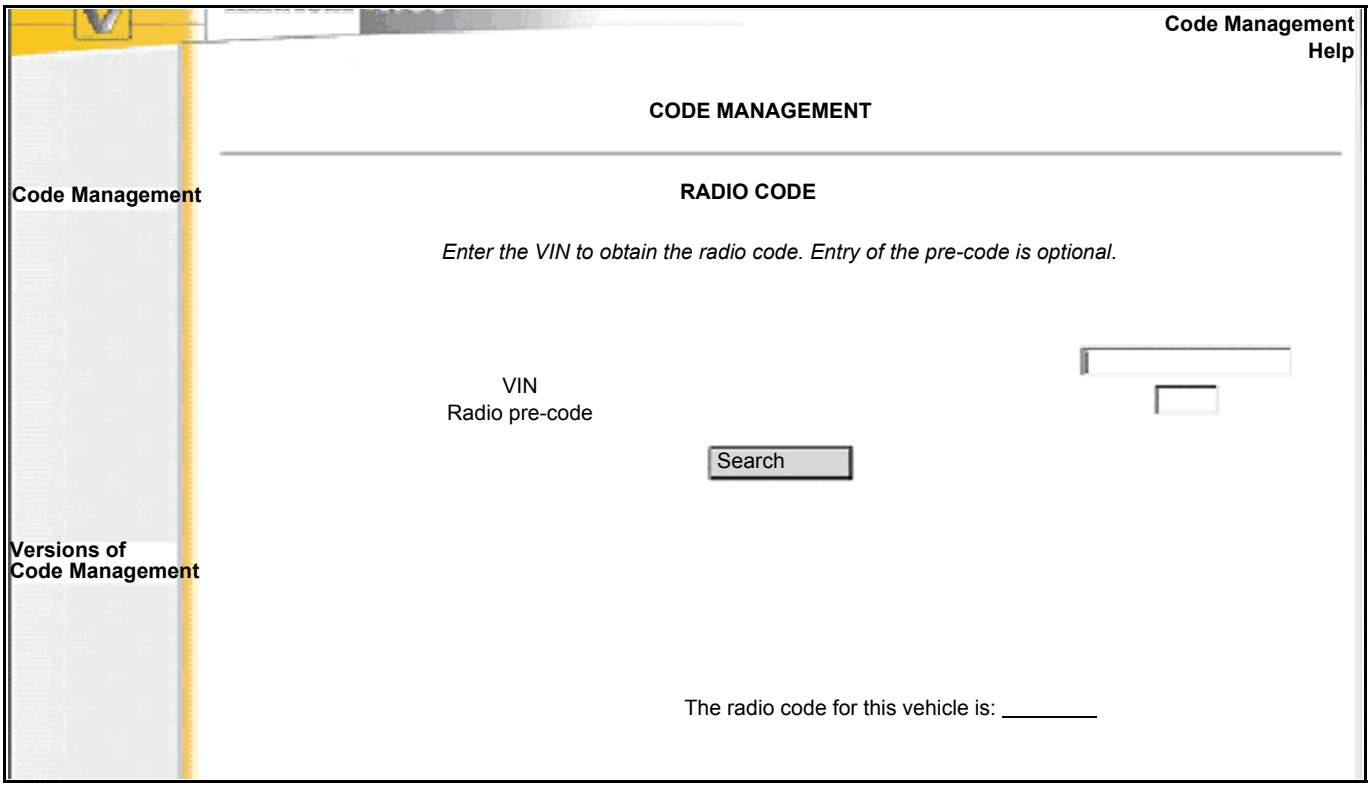
In the event of a fault, this text file contains all the information needed by the Techline :

- The VIN
- the key head code or programming key
- the message displayed

It is recommended that you use this text file to contact your technical assistance network.

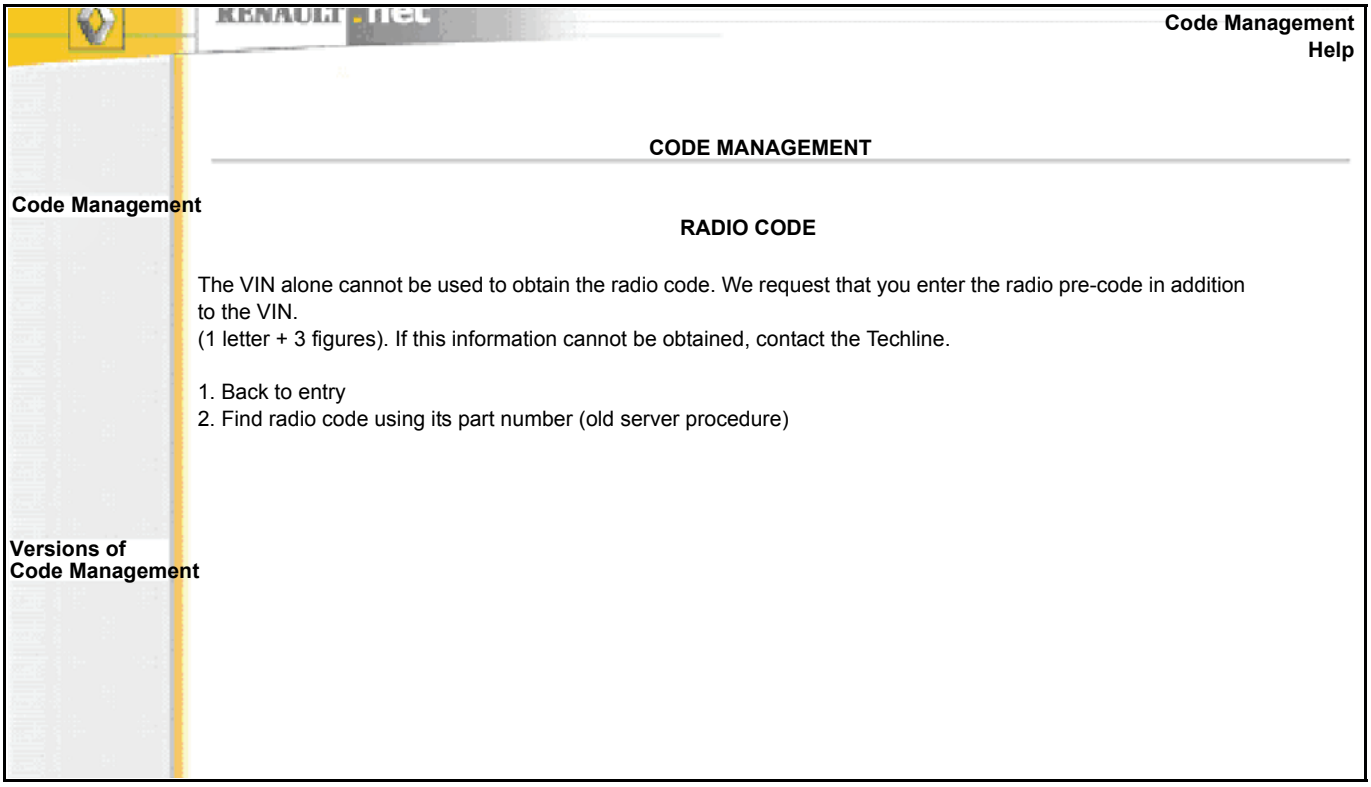
2.2 Radio code:

– Enter the VIN only
– Confirm with the "Search" button
– Radio code supplied



WARNING
It is not possible to obtain more than three radio codes for a single VIN.
The error message reads "A new code cannot be supplied".

2.2.1 "Enter pre-code" error screen



The radio code cannot be supplied by the server; the radio pre-code is required to calculate the radio code.
To find the radio pre-code, see paragraph 2.2.2.

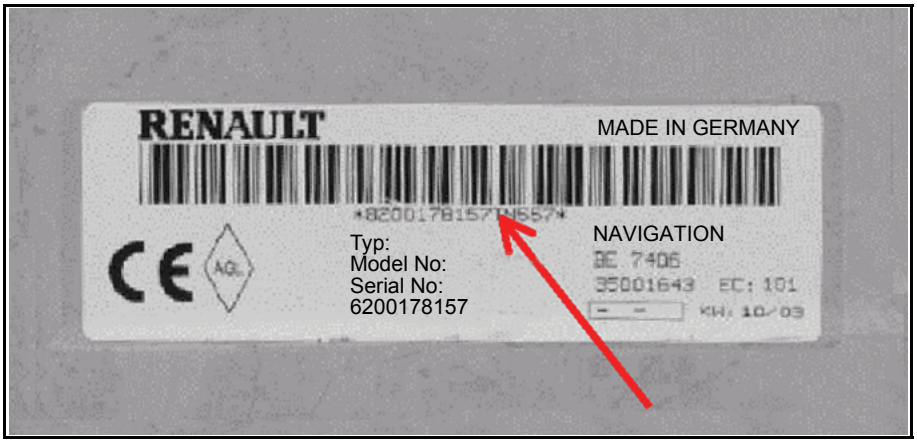
Once you have obtained the pre-code:
– Select option no. 1: "Return to entry"
– Enter the radio pre-code
– Confirm with the "Search" button
– Radio code supplied

Option no. 2, "Find radio code using its part number (old server procedure)" refers to old radios without a pre-code, see paragraph 2.2.4.

2.2.2 Finding the radio pre-code

Depending on the type of radio, recover the pre-code, either:
- from the radio display using the self-test procedure,
- by removing the radio; the pre-code is found on the label affixed to the radio.
- Vehicles with ITS Navigation: it is necessary to use the diagnostic tool obtain the pre-code

Note:
The pre-code consists of a letter and three digits (example below, N557).



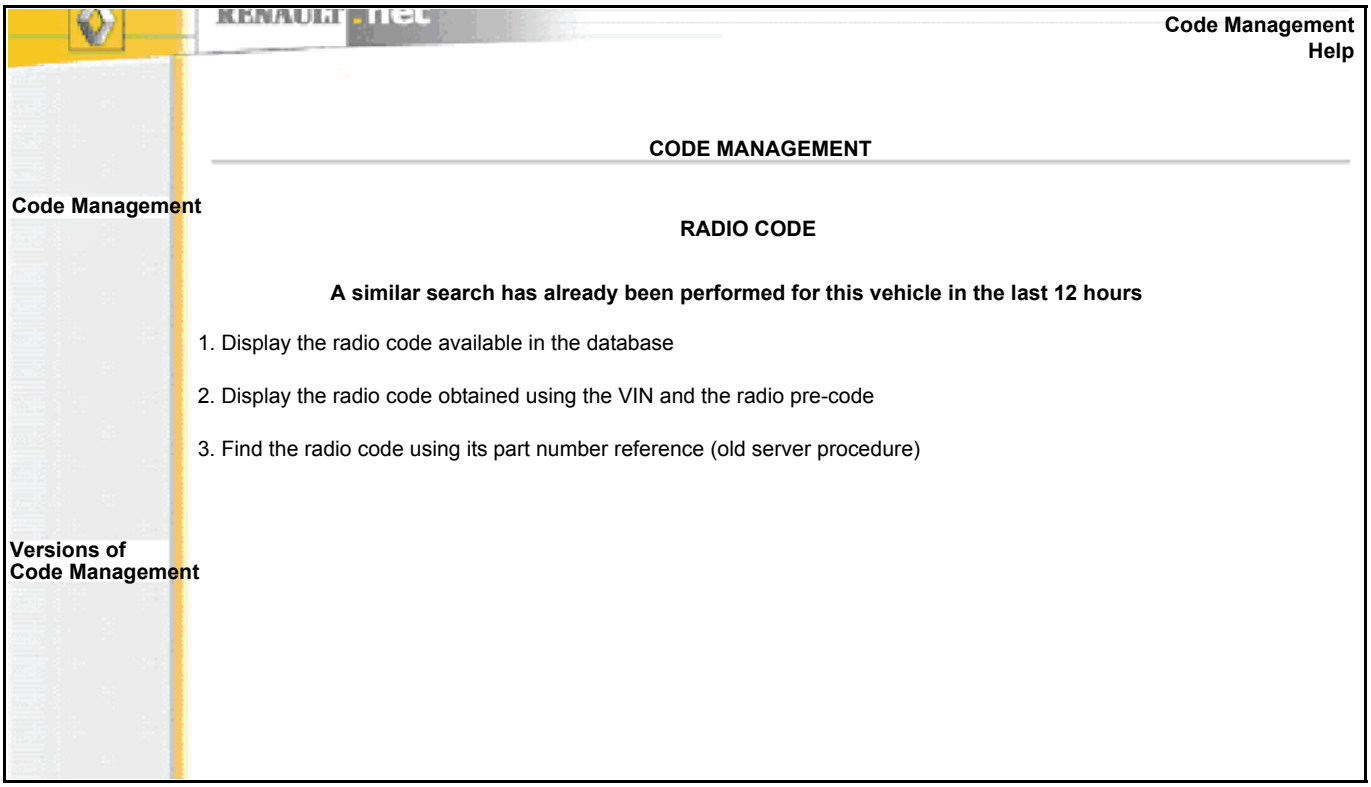
The pre-code is found after the Renault part number (8200 XXX XXX or 7700 XXX XXX) and the letter T

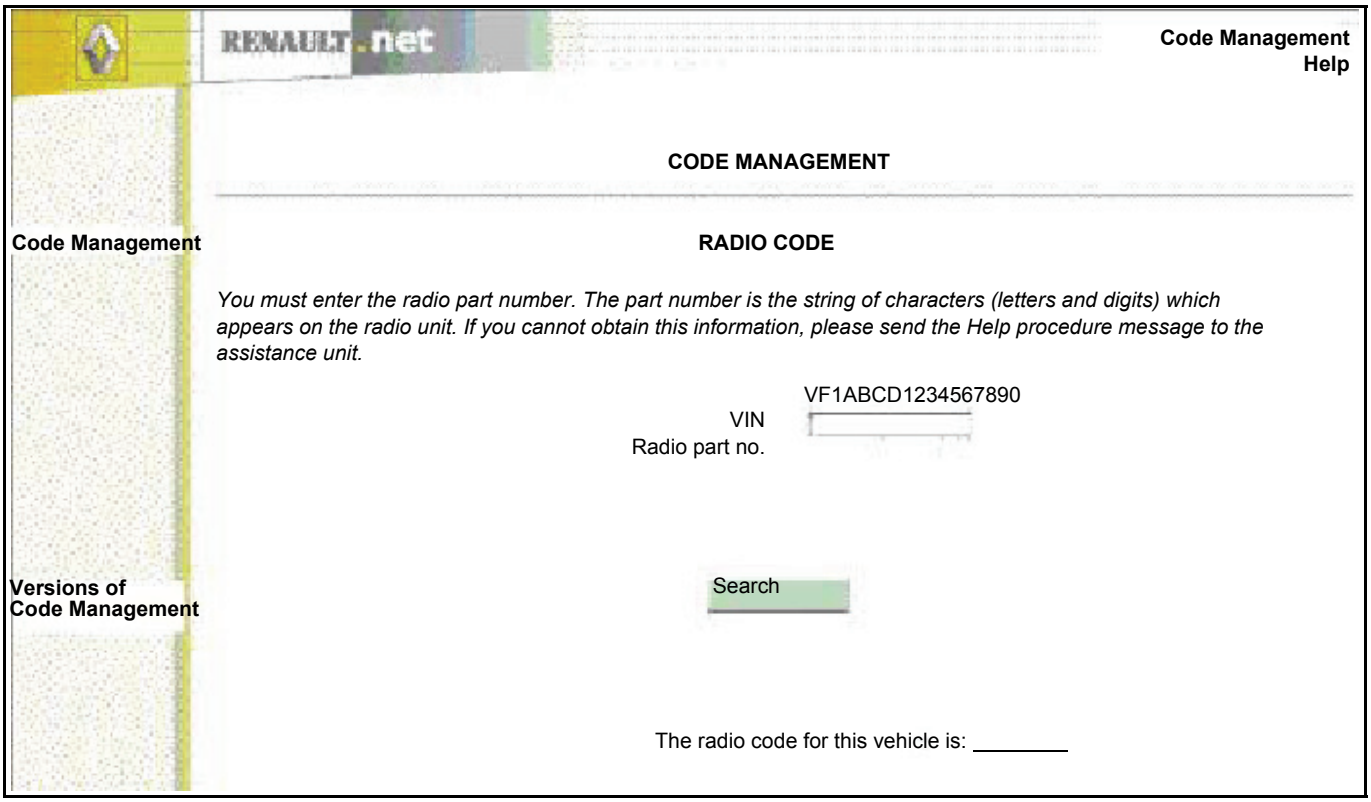
Example above: 8200178157T**N557**

2.2.3 The code supplied is not correct

If the code supplied from the first request with the vehicle VIN alone is not accepted by the radio, resend your request with the radio pre-code (paragraph 2.2.2).
– Re-enter the VIN of the vehicle
– Enter the radio pre-code
– Confirm with the "Search" button
– New radio code supplied

2.2.4 Old radios without pre-code:
To find a radio code using the radio part number (old minitel and voice server procedures), select:
"Find radio code using its part number (old server procedure)".





– Enter the radio part number in the "Radio part number" field

Example:

Radio part no.:

Philips = RN + 3 digits + 2 letters + 7 digits

Blaupunkt = BP + 4 digits + 1 letter + 7 digits

Pioneer = RN2006 + 1 letter + 7 digits or 1 letter + 7 digits (old models)

Alpine = AL + 9 digits

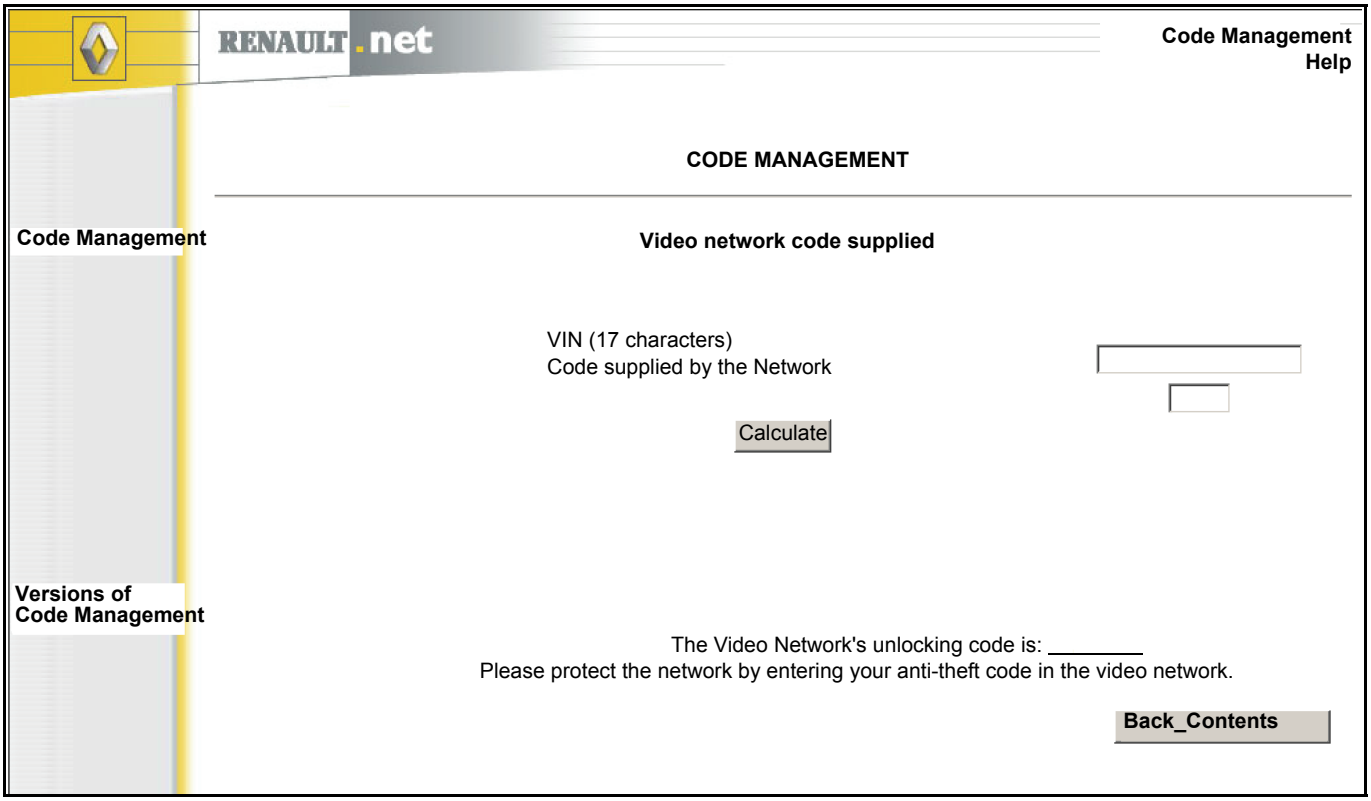
Becker = B or E + 7 digits

– Confirm with the "Search" button

– Radio code supplied

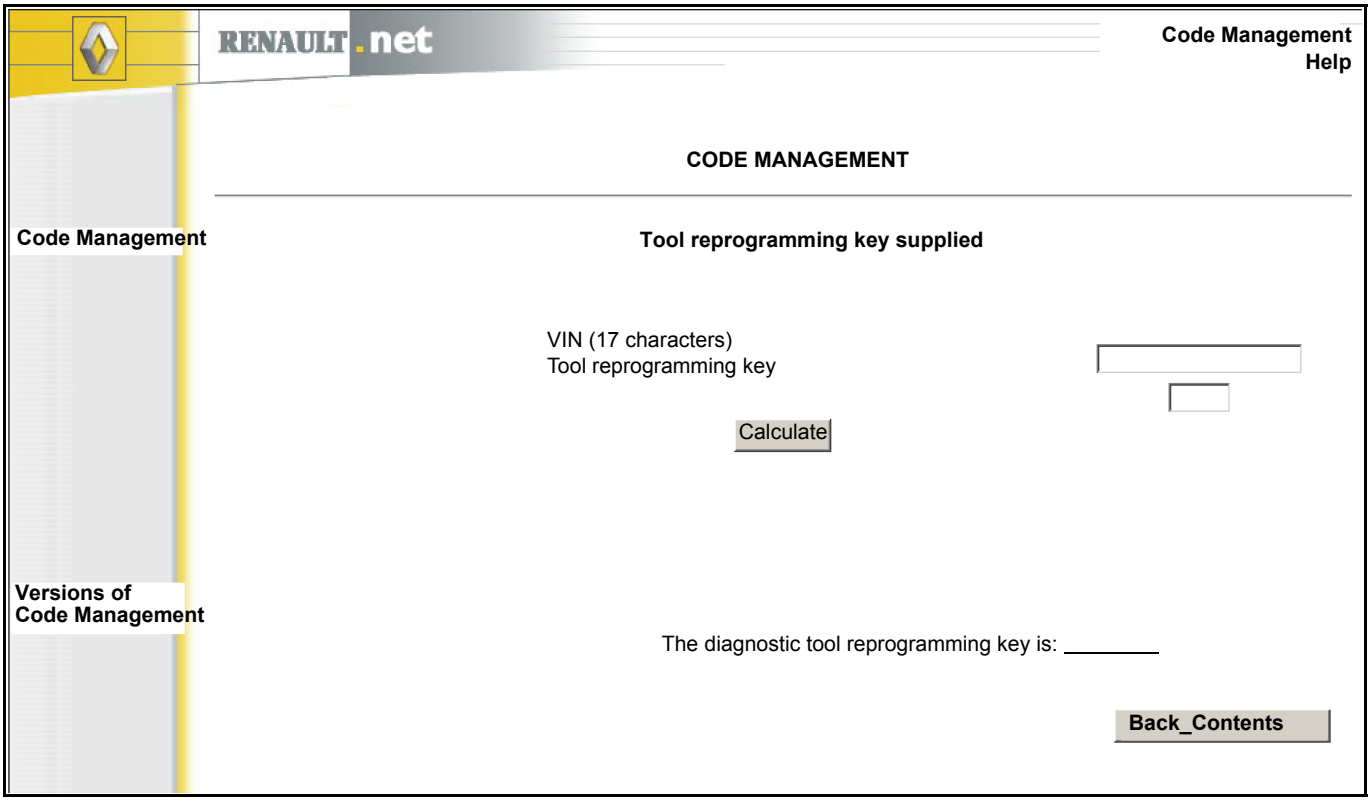
2.3 Video network code

– Enter the VIN of the vehicle
– Enter the four-digit code generated by the vehicle's video control
– Confirm with the "Calculate" button
– Four-digit code supplied by the code server



2.4 Tool reprogramming key:

– Enter the VIN of the vehicle
– Enter the six-digit code generated by the diagnostic tool
– Confirm with the "Calculate" button
– Six-character (letters and digits) reprogramming key supplied, to be entered in the diagnostic tool.



INHIBITOR SWITCH: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

WARNING

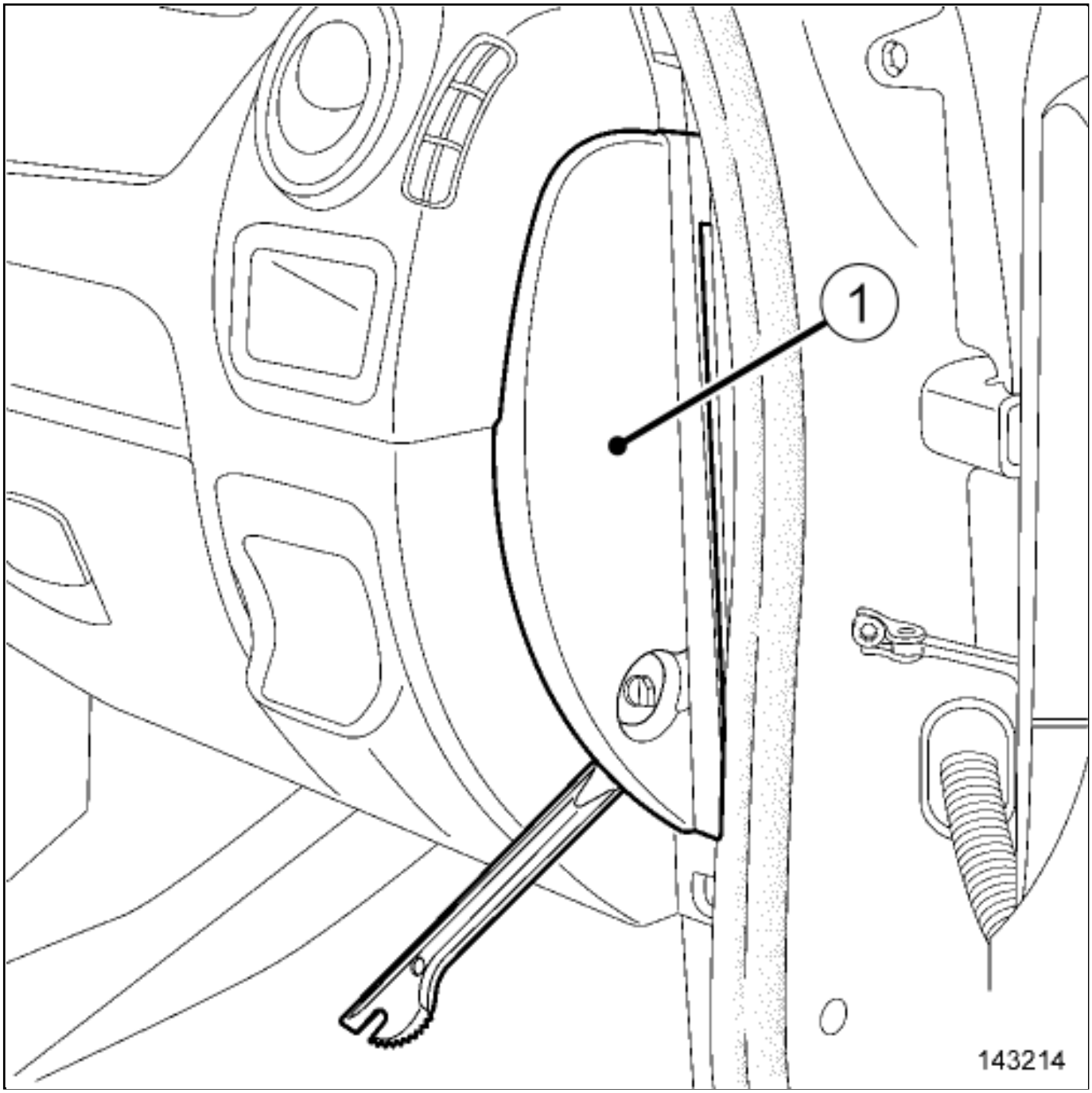
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair)
- Vehicle: Precautions for the repair

REMOVAL

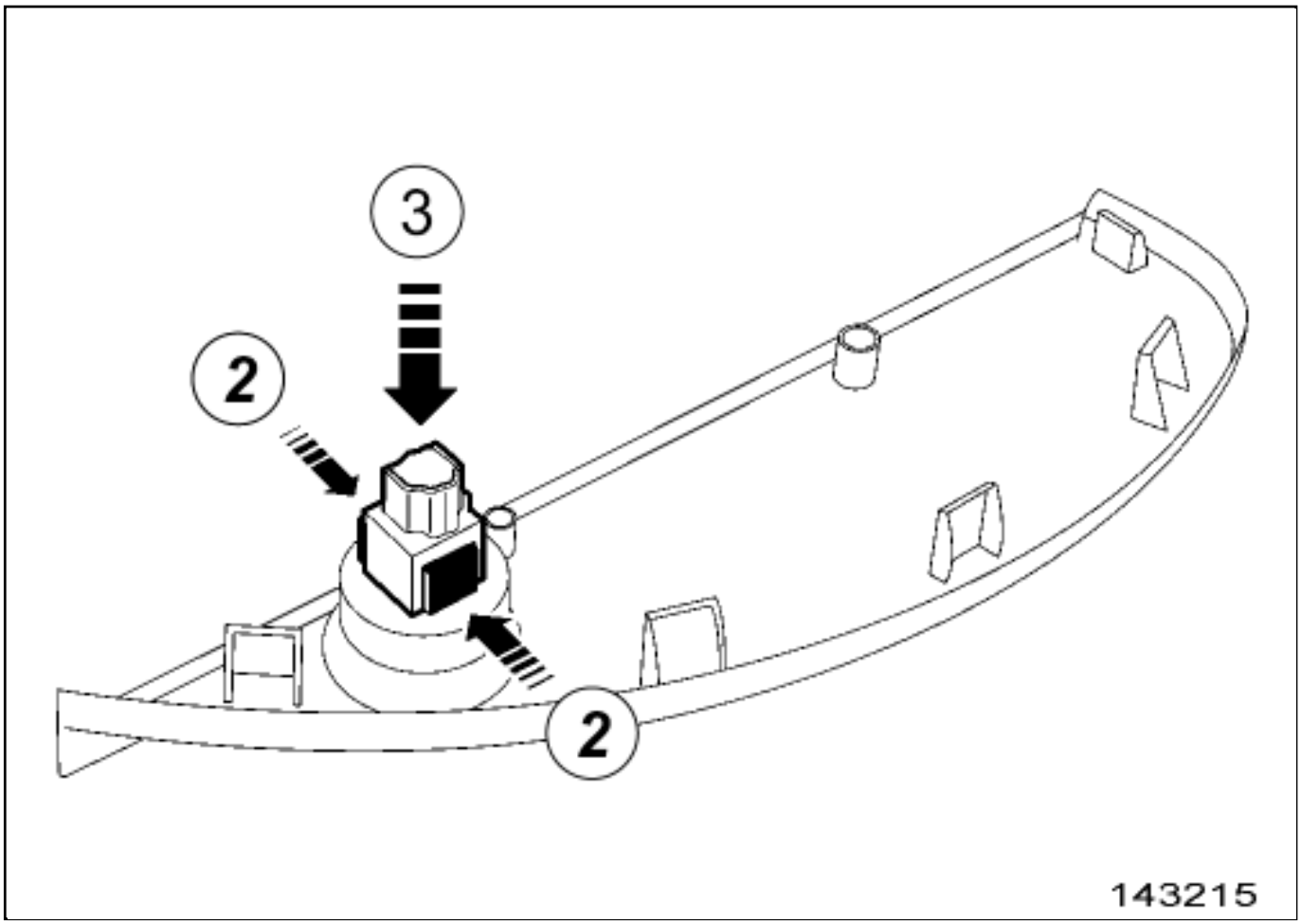
1. REMOVAL PREPARATION OPERATION

Apply the procedure for deactivating the safety systems.(see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair)



- Partially remove the front side door seal (if equipped).
- Unclip the dashboard side panel(1) using the Set of trim removal levers.(Car. 1363) .
- Disconnect the inhibitor switch connector.

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the inhibitor switch by pressing on the clips(2) and pushing towards(3) .

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

- Proceed in the reverse order to removal.

2. FINAL OPERATION

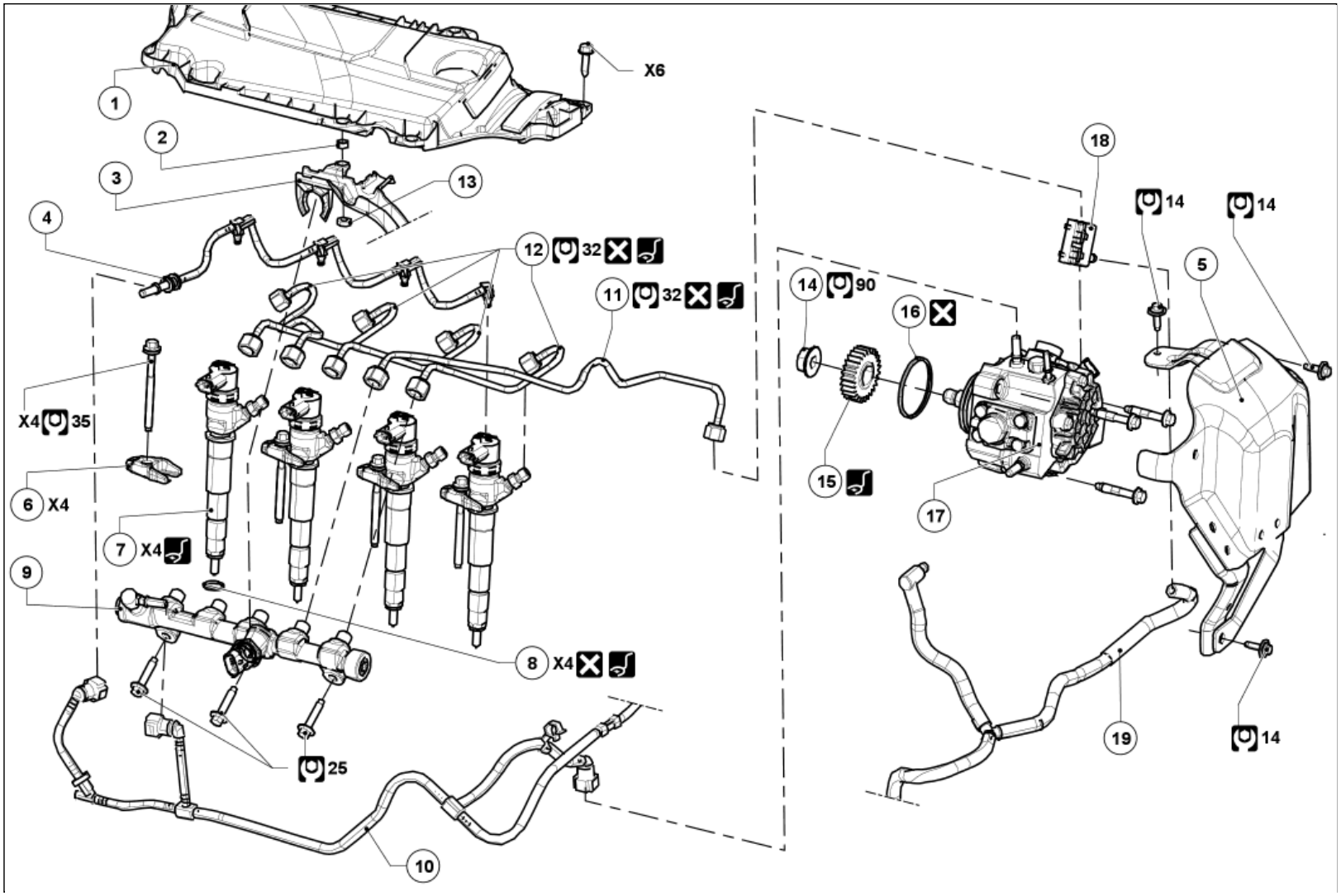
- Apply the procedure for activating the safety systems(see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) .

3. CHECKING AFTER REPAIR

- Perform an operational check by moving the switch from the "ON" position to the "OFF" position.

- In the "OFF" position, check the appearance of the "airbag OFF" message on the instrument panel.

INJECTIONASSEMBLY:EXPLODEDVIEW



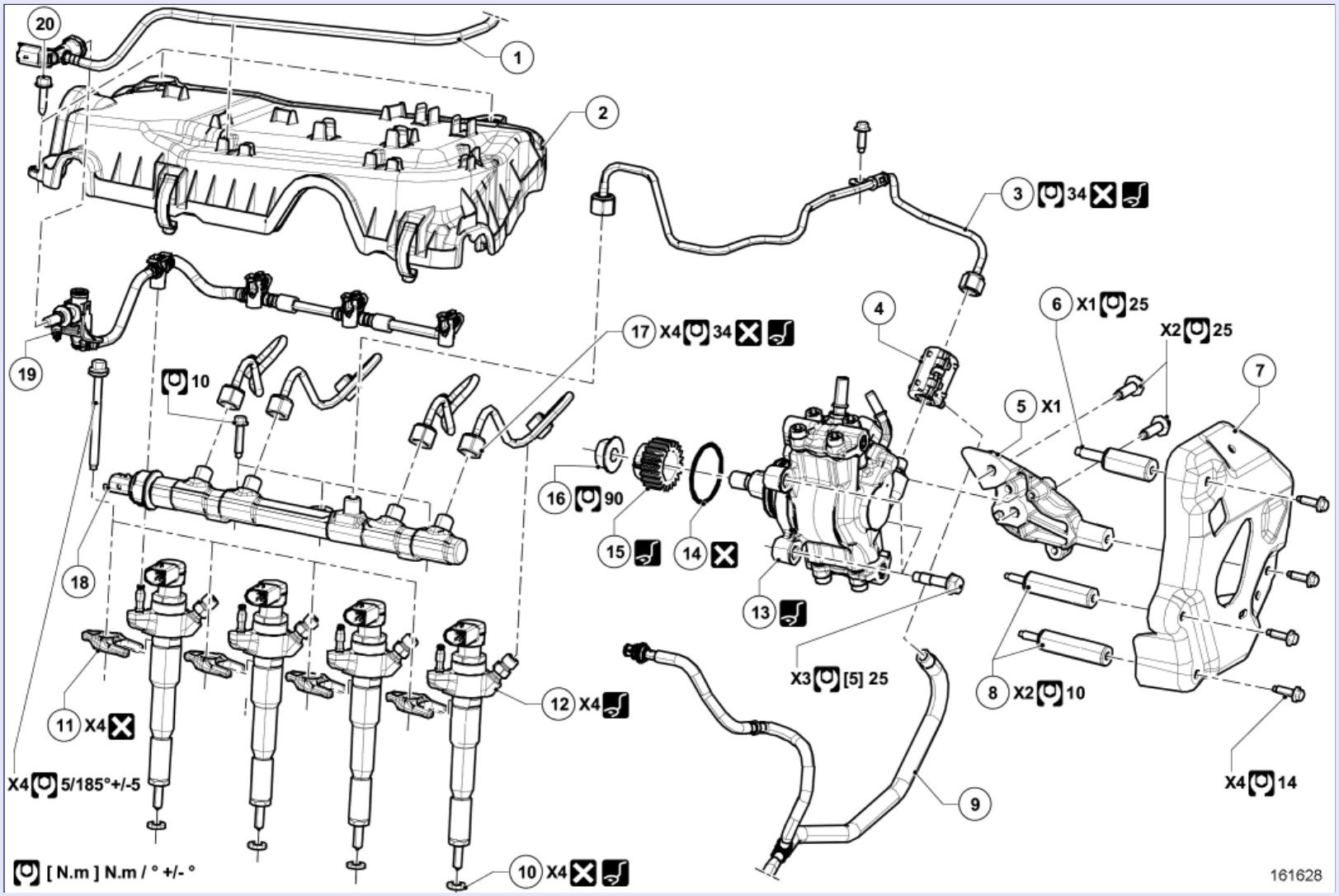
(see **Illustration key: Description**) Key.

(see 13B, Diesel injection, Diesel injection: Precautions for the repair) .

Mark	Description	Information
1	Injector rail protector	(see 13B, Diesel injection, Injector rail protector: Removal - Refitting)
2	Wiring channel upper spacer	
3	Wiring channel	
4	Diesel injector fuel return rail	(see 13B, Diesel injection, Diesel injector fuel return rail: Removal - Refitting)
5	High pressure pump protector	(see 13B, Diesel injection, High pressure pump: Removal - Refitting)
6	Injector clamp	(see 13B, Diesel injection, Diesel injector: Removal - Refitting)
7	Diesel injector	(see 13B, Diesel injection, Diesel injector: Removal - Refitting)
8	Heat protection washer	(see 13B, Diesel injection, Diesel injector: Removal - Refitting)
9	Injector rail	(see 13B, Diesel injection, Injector rail: Removal - Refitting)
10	Diesel return pipe	(see **Diesel return pipe: Removal - Refitting**)
11	High pressure pipe between the pump and rail	(see 13B, Diesel injection, Injector rail: Removal - Refitting)
12	High pressure pipe between the rail and injector	(see 13B, Diesel injection, Injector rail: Removal - Refitting)
13	Wiring channel lower spacer	
14	High pressure pump sprocket nut	(see 13B, Diesel injection, High pressure pump: Removal - Refitting)
15	High pressure pump sprocket	(see 13B, Diesel injection, High pressure pump: Removal - Refitting)
16	High pressure pump sprocket seal	(see 13B, Diesel injection, High pressure pump: Removal - Refitting)
17	High pressure pump	(see 13B, Diesel injection, High pressure pump: Removal - Refitting)
18	Fuel collector	
19	Fuel collector pipe	

INJECTIONASSEMBLY:EXPLODEDVIEW

Special tooling required	
Offset wrench for tightening High Pressure pump pipes.	Mot. 1746
Injector well cleaning kit	Mot. 1817
M9R/M9T injector extractor	Mot. 1966
Tool for removal - refitting pignon and high pressure pump	Mot. 2047



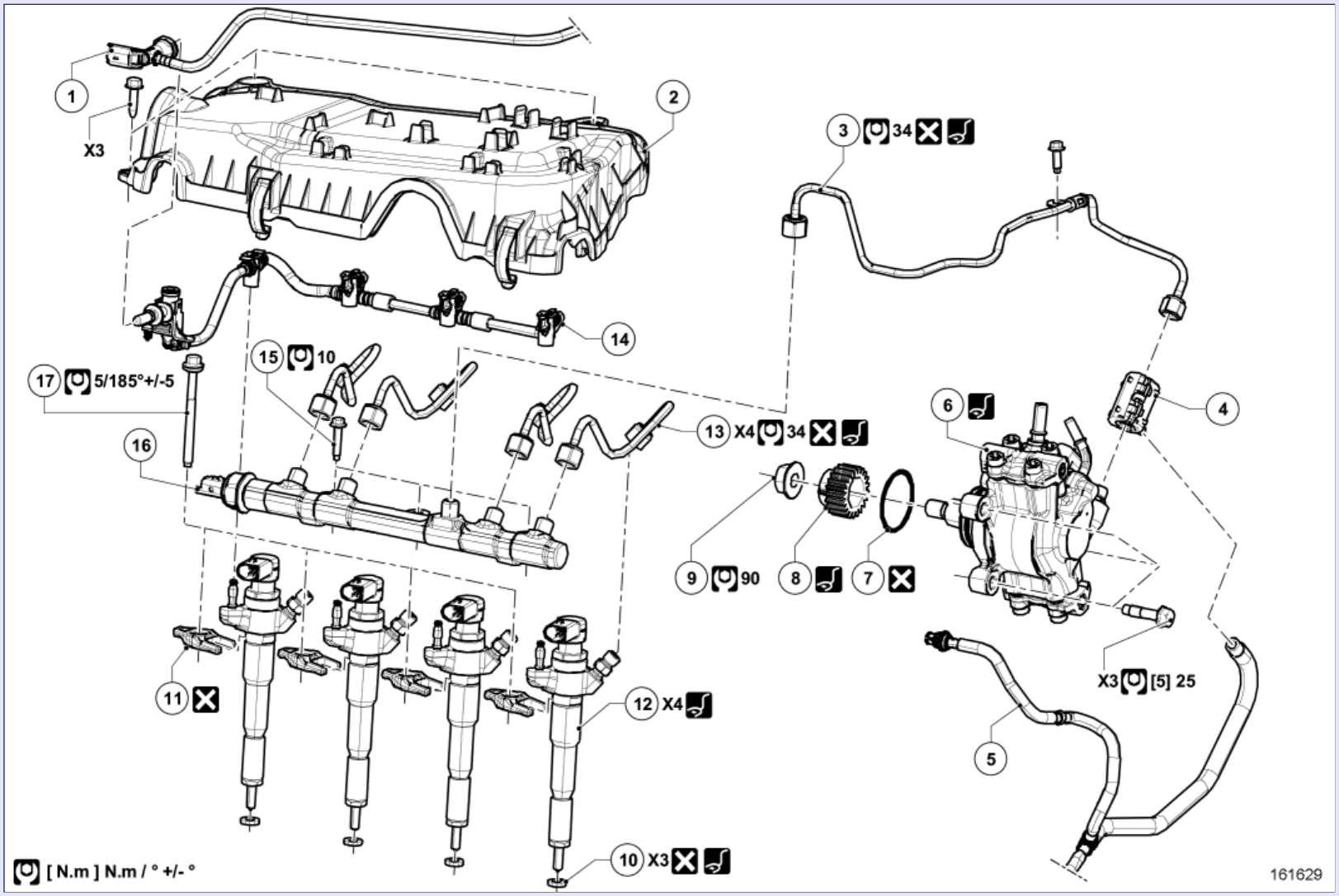
(see Illustration key: Description) .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques(see Tightening torques: General information) .

Marks	Designations	Informations
1	Diesel return pipe	
2	Injector rail protector	
3	High pressure pipe between the pump and rail	Offset wrench for tightening High Pressure pump pipes.(Mot. 1746)
4	Fuel collector	
5	High pressure pump bracket	
6	Guide pin	
7	High pressure pump protector	(see 13B, Diesel injection, High pressure pump: Removal - Refitting)
8	Guide pin	
9	Fuel collector pipe	
10	Heat protection washer	Injector well cleaning kit(Mot. 1817)

11	Injector clamp	(see 13B, Diesel injection, Diesel injector: Removal - Refitting)
12	Diesel injector	(see 13B, Diesel injection, Diesel injector: Removal - Refitting) M9R/M9T injector extractor(Mot. 1966)
13	High pressure pump	(see 13B, Diesel injection, High pressure pump: Removal - Refitting) Tool for removal - refitting pignon and high pressure pump(Mot. 2047)
14	High pressure pump sprocket seal	
15	High pressure pump sprocket	Tool for removal - refitting pignon and high pressure pump(Mot. 2047)
16	High pressure pump sprocket nut	
17	High pressure pipe between the rail and injector	Offset wrench for tightening High Pressure pump pipes.(Mot. 1746)
18	Injector rail	
19	Diesel injector fuel return rail	(see 13B, Diesel injection, Diesel injector fuel return rail: Removal - Refitting)
20	Injector rail protector bolts	

M9T, 702(702)



(see Illustration key: Description) .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques(see Tightening torques: General information) .

Marks	Designations	Informations
1	Diesel return pipe	
2	Injector rail protector	
3	High pressure pipe between the pump and rail	Offset wrench for tightening High Pressure pump pipes.(Mot. 1746)
4	Fuel collector	
5	Fuel collector pipe	
6	High pressure pump	(see 13B, Diesel injection, High pressure pump: Removal - Refitting) Tool for removal - refitting pignon and high pressure pump(Mot. 2047)
7	High pressure pump sprocket seal	
8	High pressure pump sprocket	Tool for removal - refitting pignon and high pressure pump(Mot. 2047)
9	High pressure pump sprocket nut	
10	Heat protection washer	Injector well cleaning kit(Mot. 1817)
11	Injector clamp	
12	Diesel injector	(see 13B, Diesel injection, Diesel injector: Removal - Refitting) M9R/M9T injector extractor(Mot. 1966)
13	High pressure pipe between the rail and injector	Offset wrench for tightening High Pressure pump pipes.(Mot. 1746)
14	Diesel injector fuel return rail	(see 13B, Diesel injection, Diesel injector fuel return rail: Removal - Refitting)
15	Injector rail bolt	
16	Injector rail	

INJECTION ASSEMBLY: EXPLODED VIEW

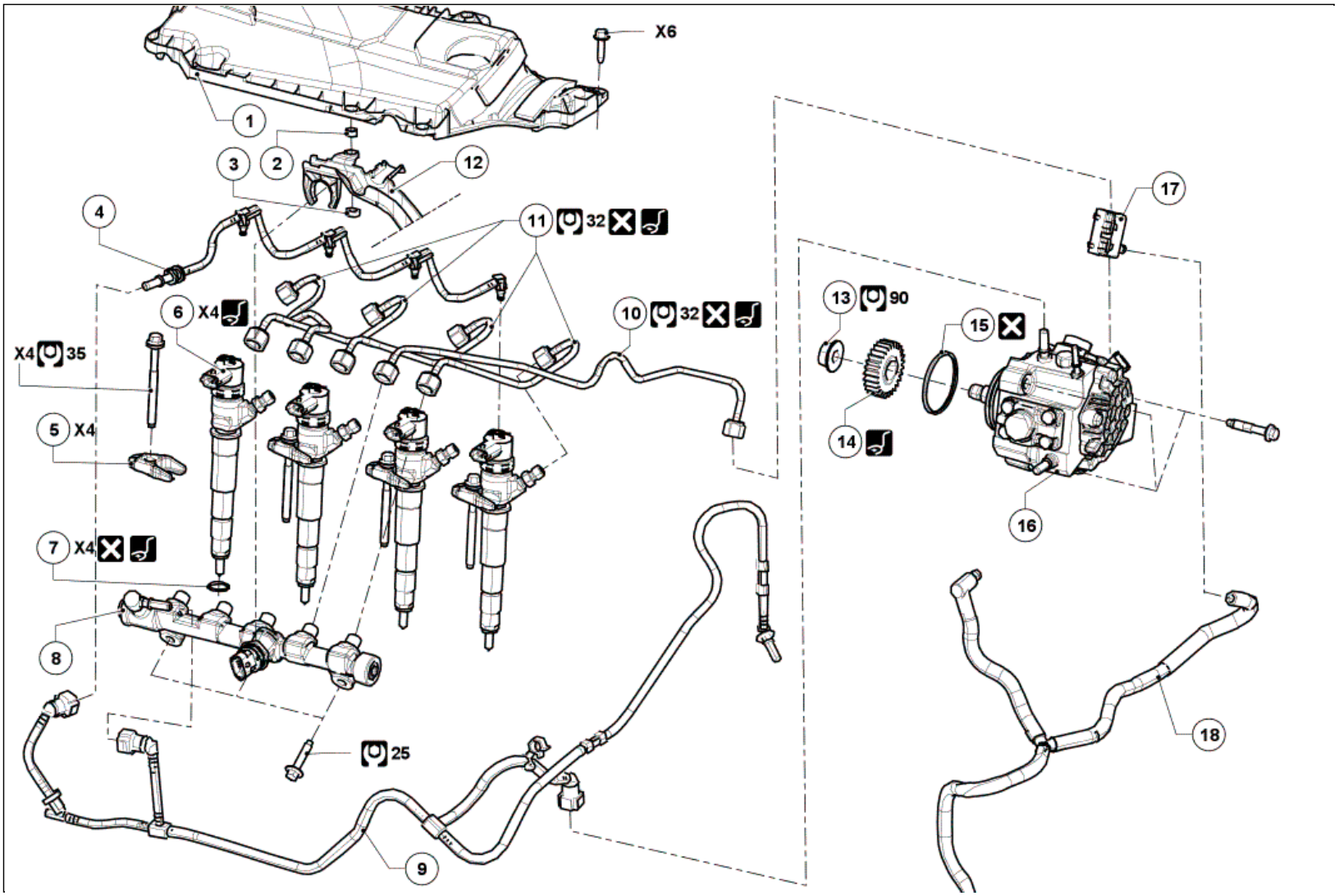


Illustration key: Description Key.

Diesel injection: Precautions for the repair .

No.	Description	Information
1	Injector rail protector	(see 13B, Diesel injection, Injector rail protector: Removal - Refitting)
2	Wiring channel upper spacer	
3	Wiring channel	
4	Diesel injector fuel return rail	(see 13B, Diesel injection, Diesel injector fuel return rail: Removal - Refitting)
5	Injector clamp	(see 13B, Diesel injection, Diesel injector: Removal - Refitting)
6	Diesel injector	
7	Heat protection washer	
8	Injector rail	(see 13B, Diesel injection, Injector rail: Removal - Refitting)
10	Diesel return pipe	
11	High pressure pipe between the pump and rail	(see 13B, Diesel injection, Injector rail: Removal - Refitting)
12	High pressure pipe between the rail and injector	
13	Wiring channel lower spacer	
14	High pressure pump sprocket nut	(see 13B, Diesel injection, High pressure pump: Removal - Refitting)
15	High pressure pump sprocket	
16	High pressure pump sprocket seal	
17	High pressure pump	
18	Fuel collector	
19	Fuel collector pipe	

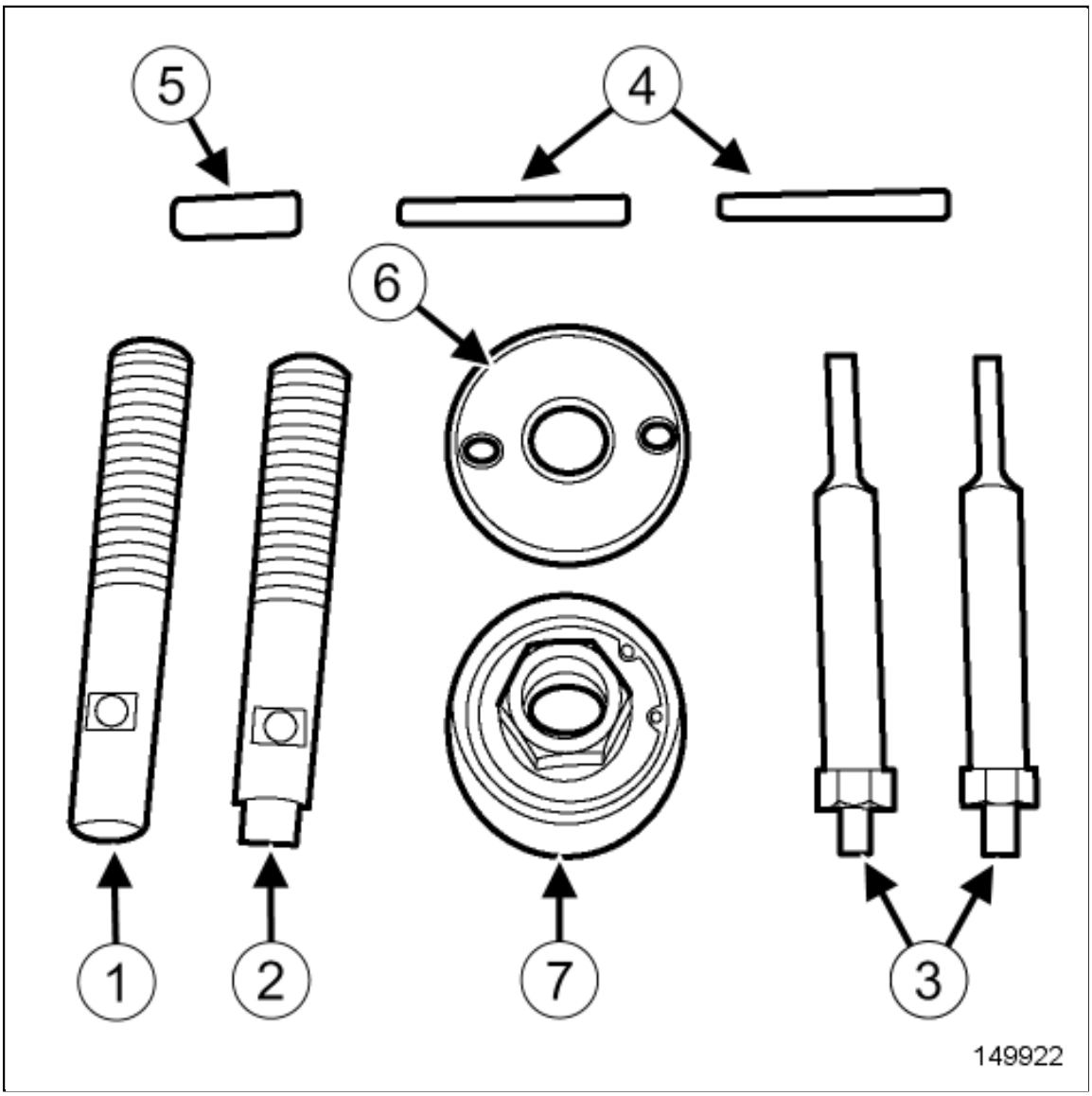
INJECTOR EXTRACTION TOOL: USE

Note, one or more warnings are present in this procedure

Special tooling required	
M9R/M9T injector extractor	Mot. 1966

parts always to be replaced:
Diesel injector

CONTENTS OF KIT



(1) Tapped pull rod (for piezoelectric injectors)

(2) Threaded pull rod (for solenoid injectors)

(3) Support legs

(4) Pin

(5) Hexagonal end piece (for solenoid injectors)

(6) Pressure plate

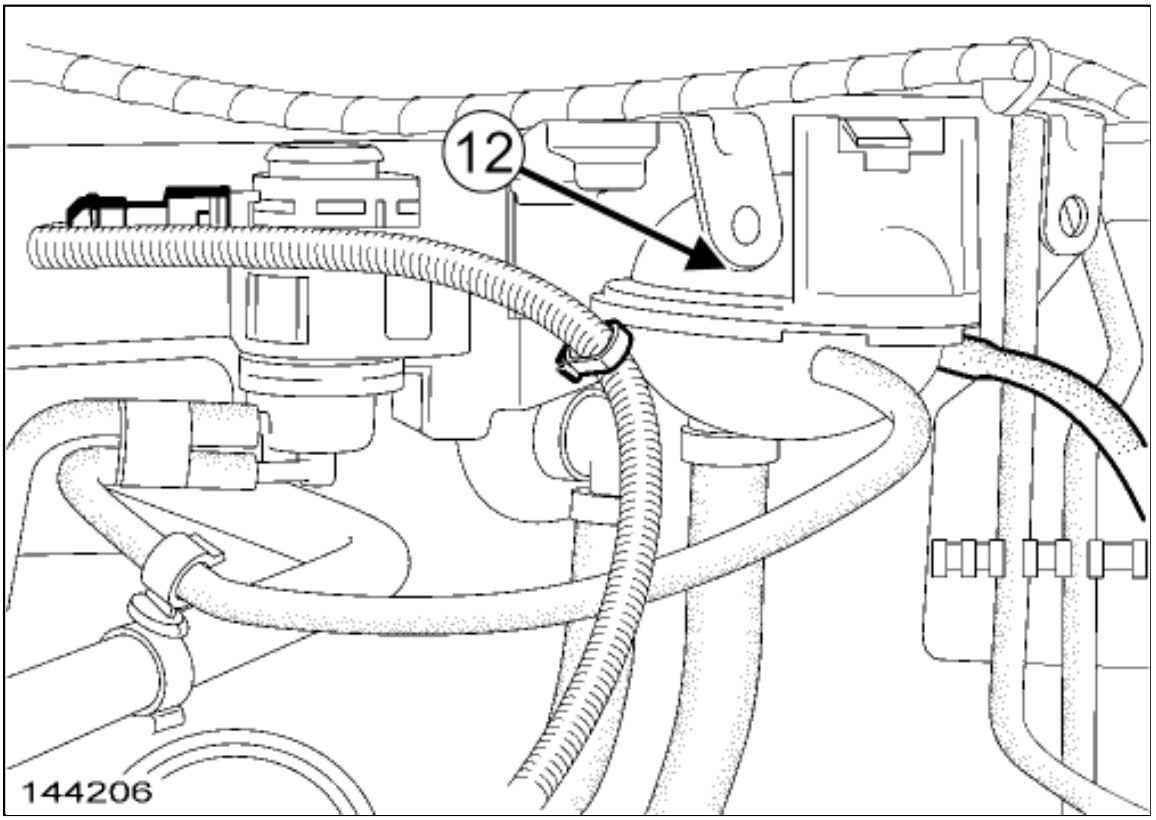
(7) Ball nut

Note:

There are two types of injectors, "piezoelectric" injectors and "solenoid injectors" . The tool fitting procedure differs depending on the injector type.

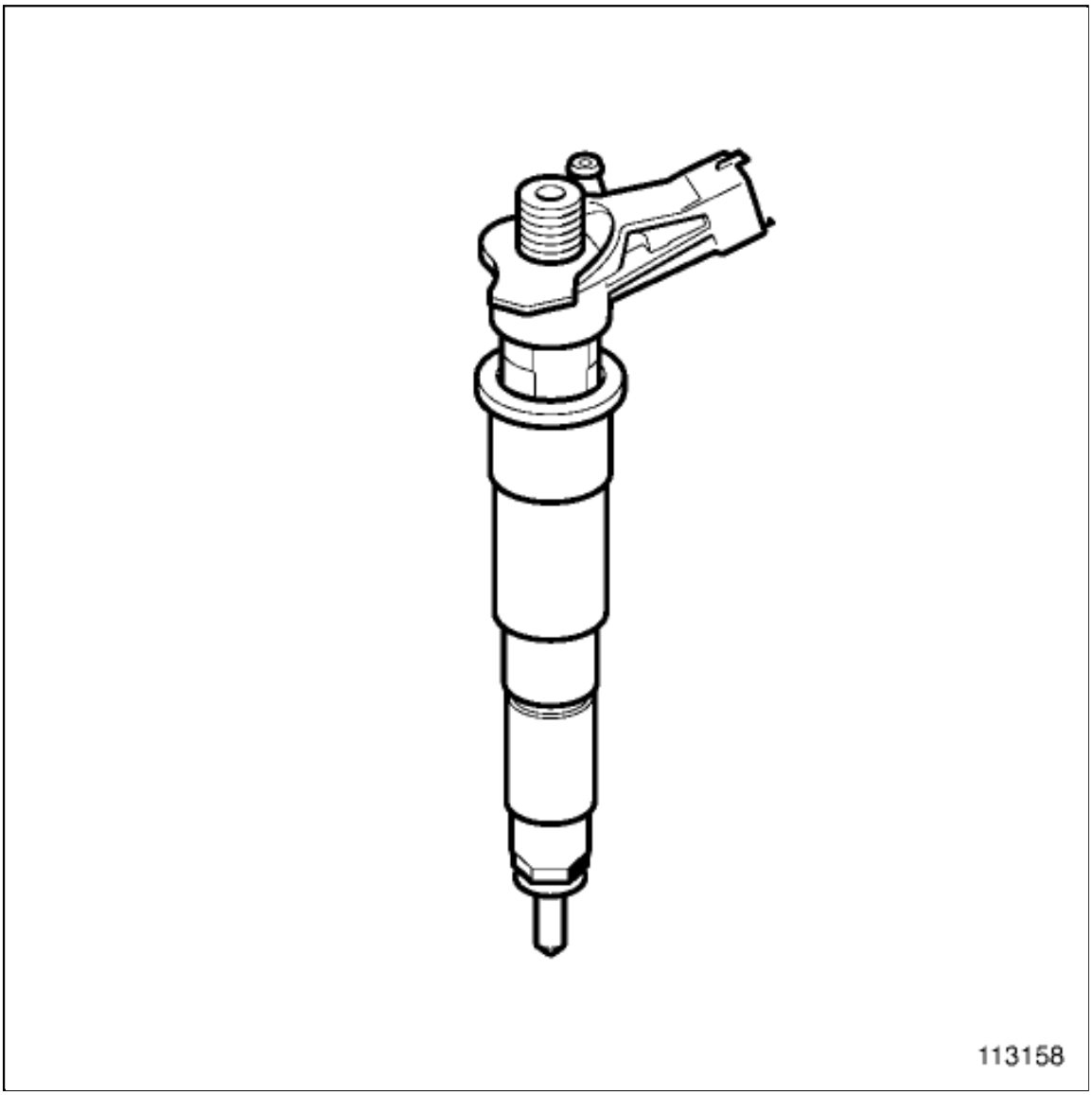
USE

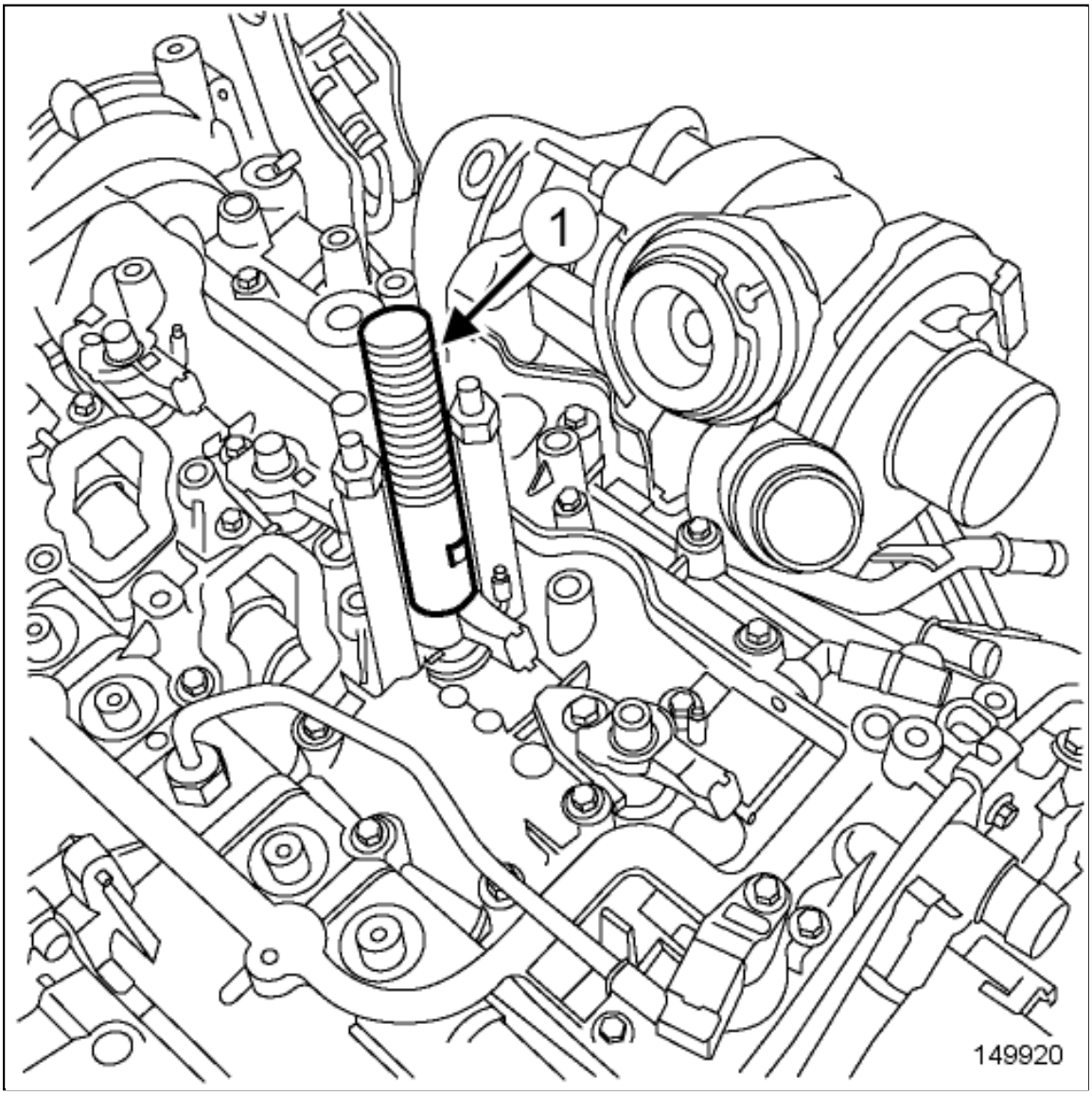
1. FITTING THE TOOL (MOT 1966) ON THE INJECTOR



- Unclip the brake servo pipe.
- Move aside the brake servo pipe.
- Unclip the vacuum tank(12) from the scoop under the scuttle panel grille.
- Move aside the vacuum tank.

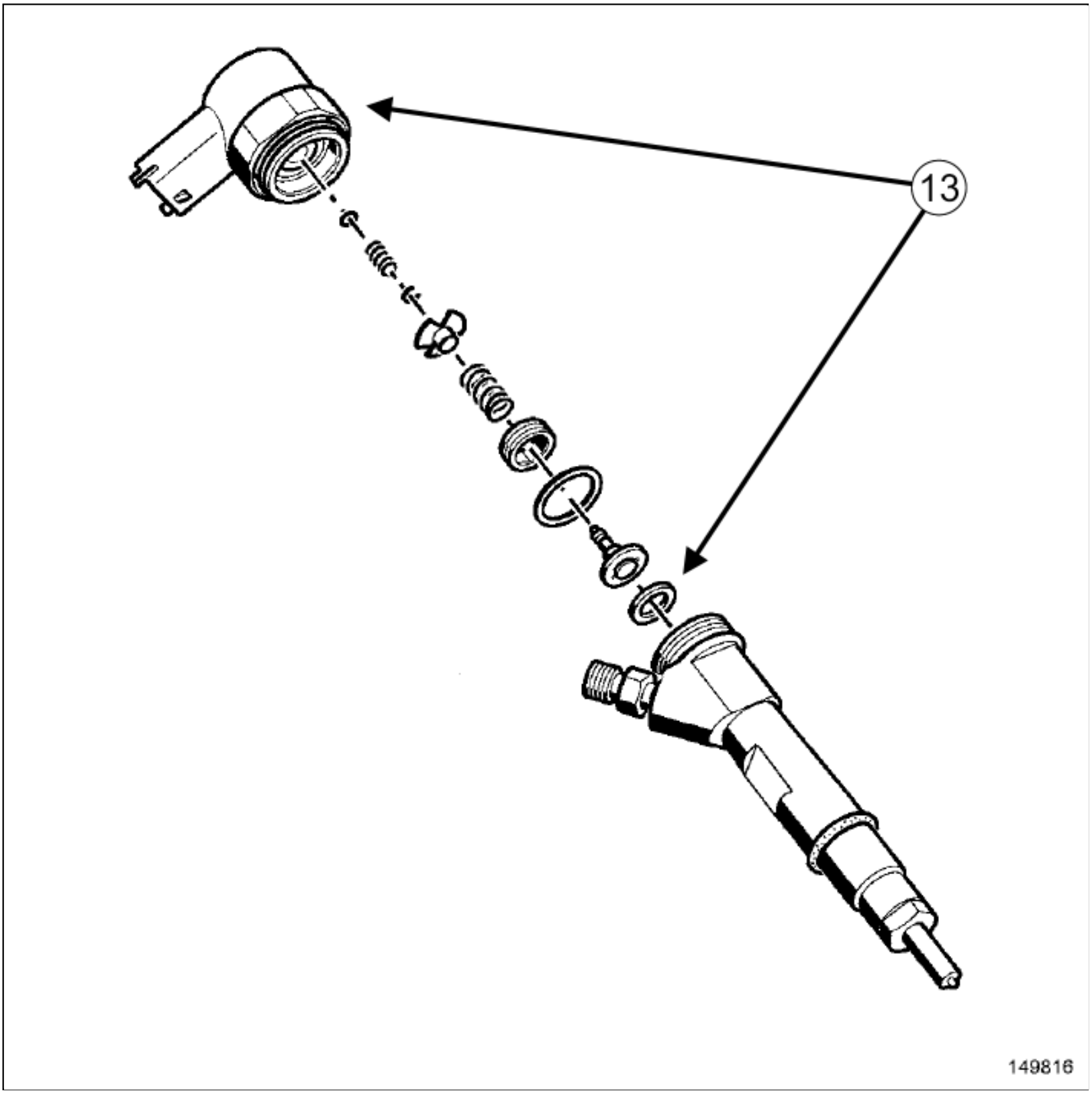
1- PIEZOELECTRIC TYPE INJECTOR

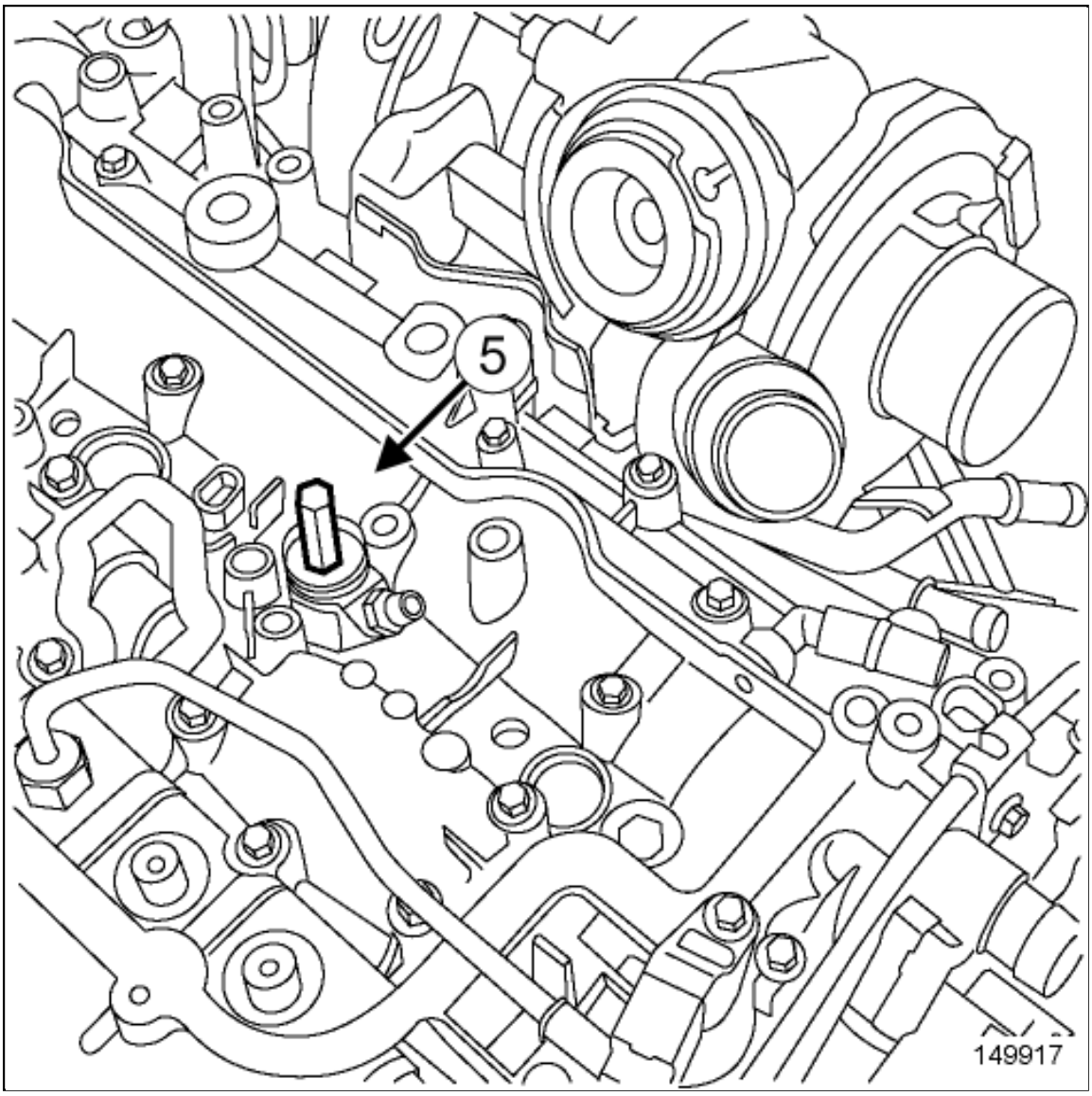


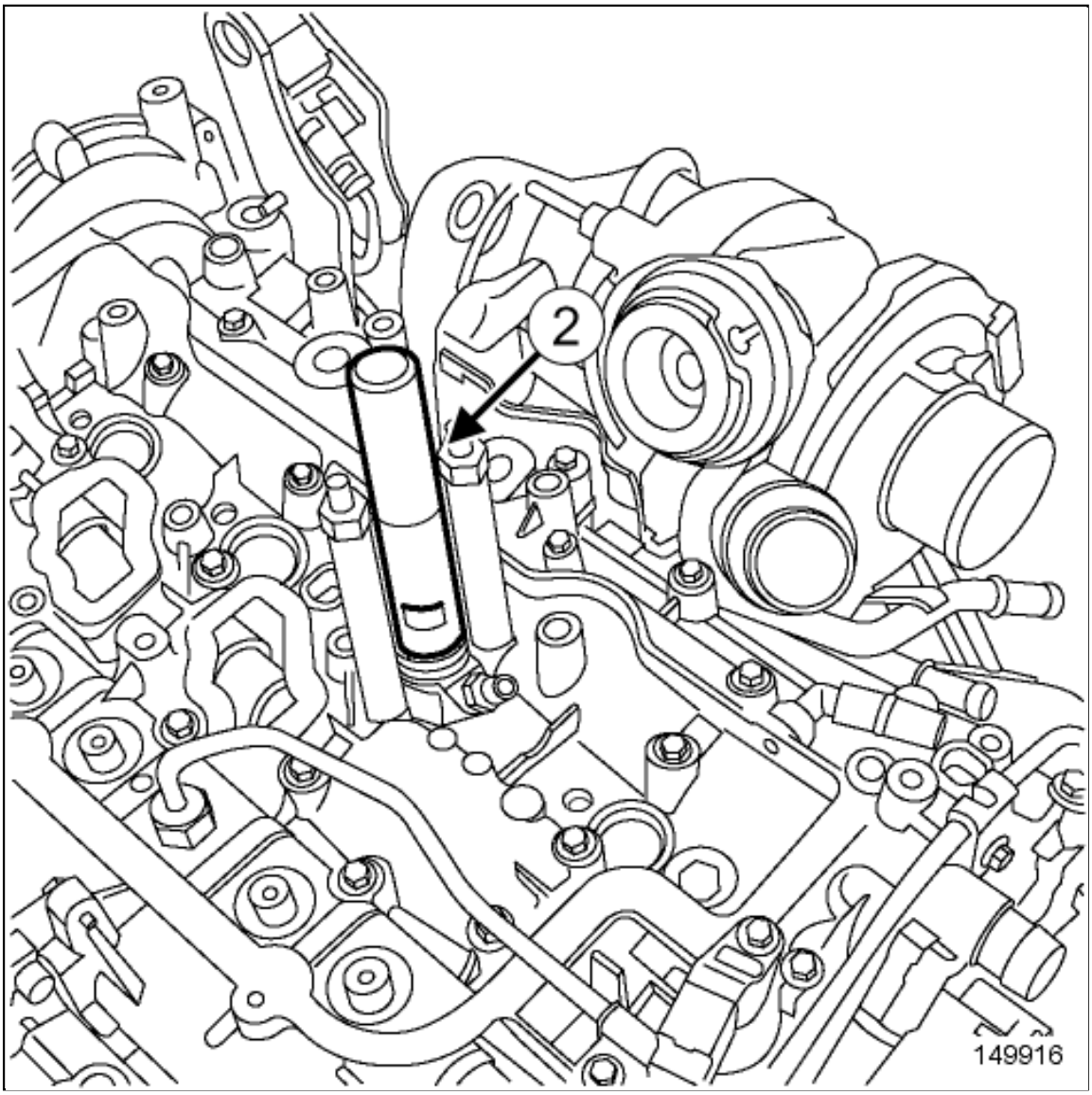


- Fit the tapped pull rod(1) on the high pressure pipe union.

2- SOLENOID TYPE INJECTOR


13
149816

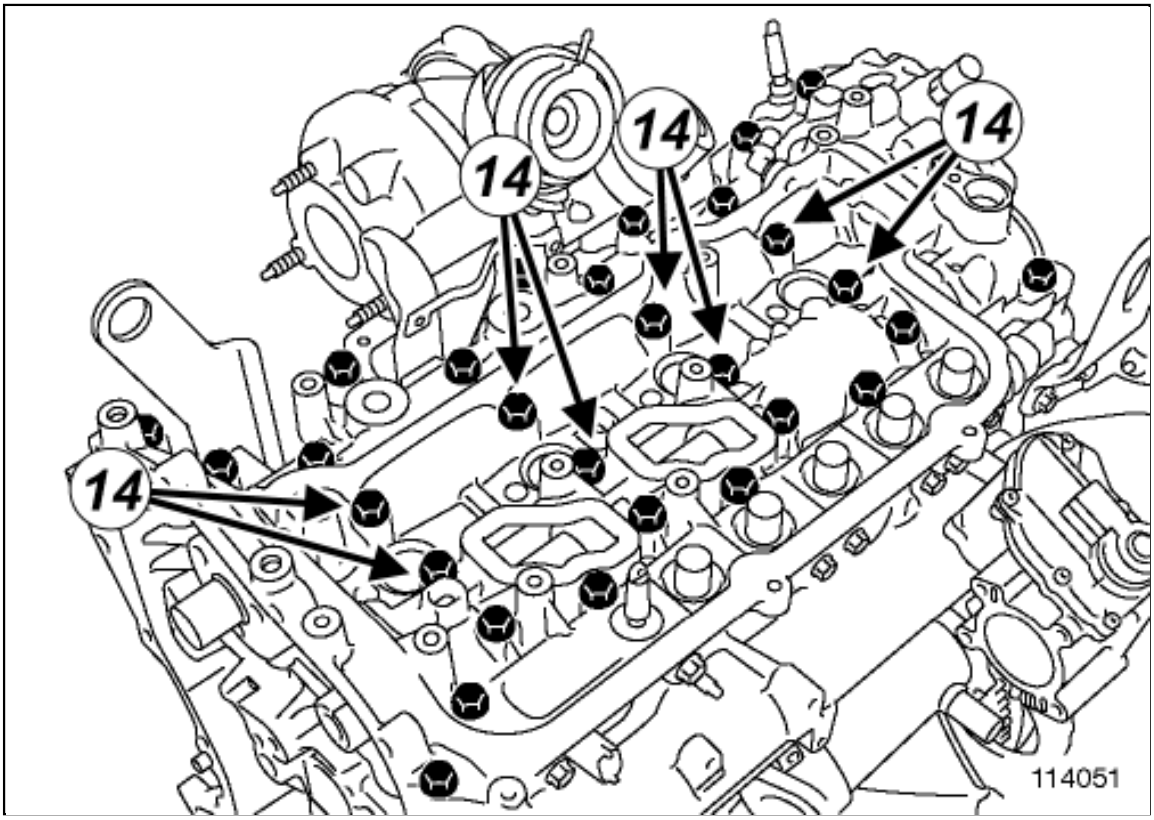

5
149917



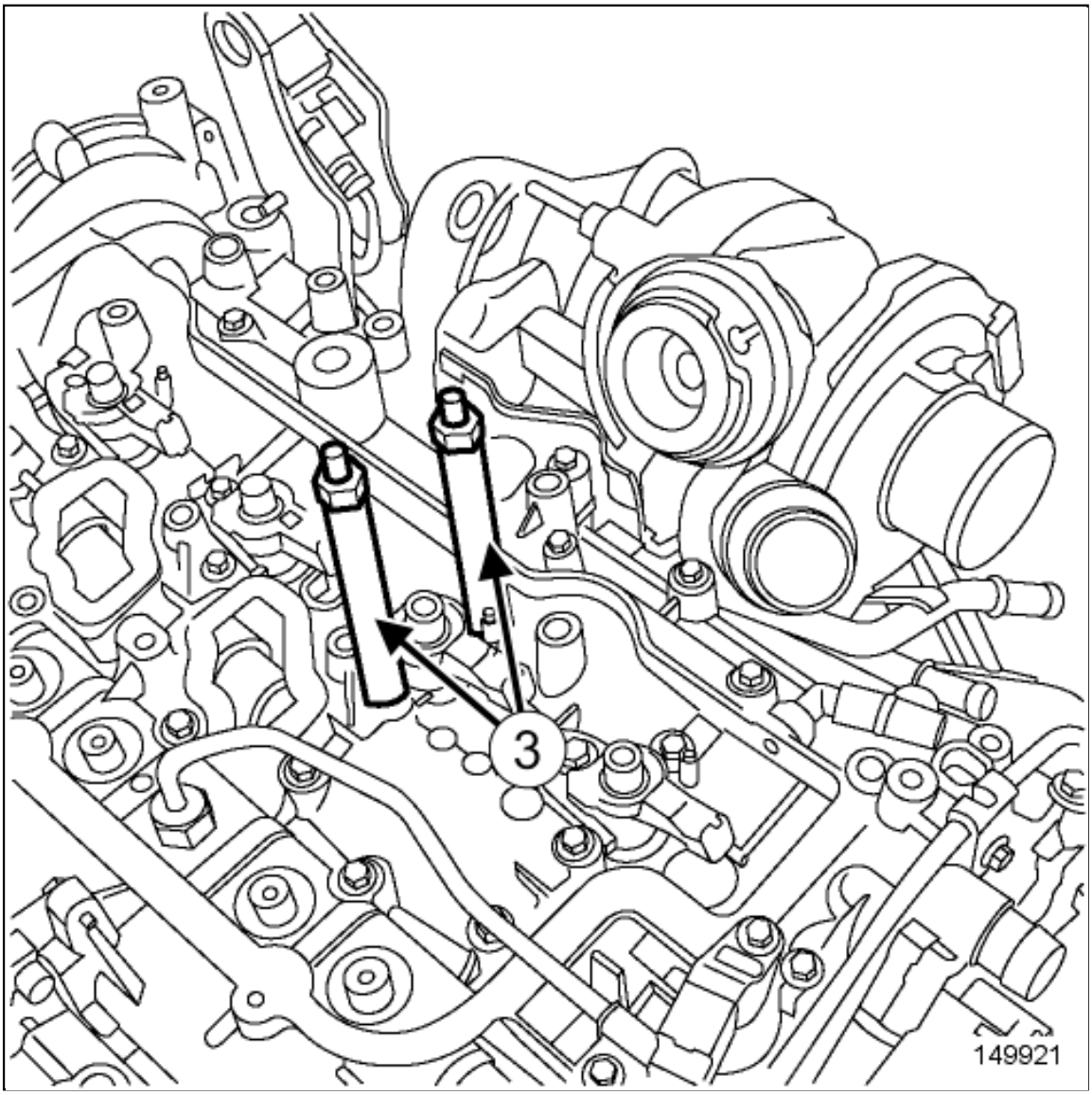
- Remove:
  - the diesel injector assembly(13) ,
  - the internal nut of the diesel injector using the hexagonal end piece(5) of the toolM9R/M9T injector extractor(Mot. 1966) .

- Fit the threaded pull rod(2) in place of the solenoid.

2. FITTING THE TOOL (MOT 1966) ON THE CAMSHAFT BEARING CAP COVER AND EXTRACTION

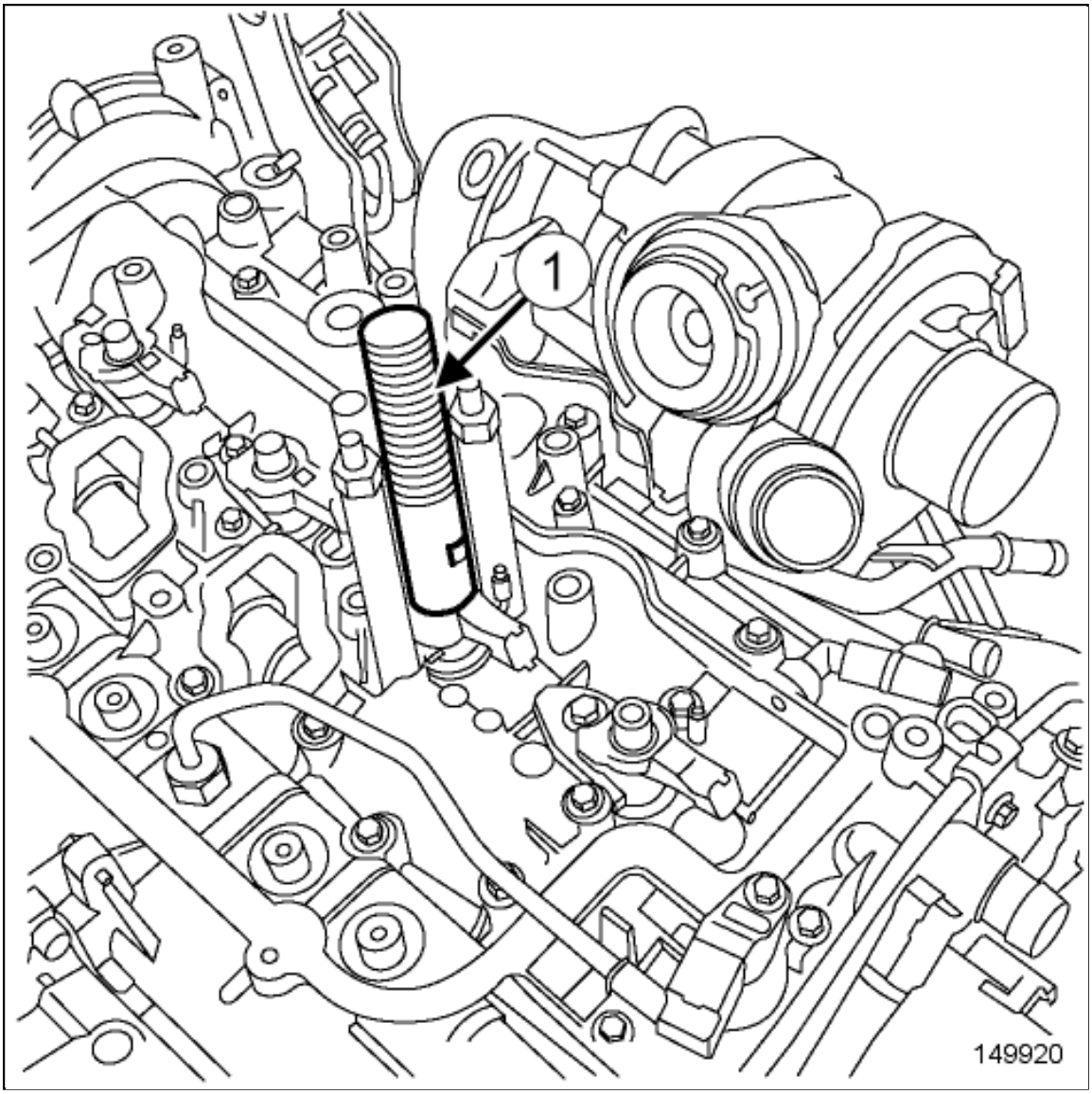


Remove the bolts(14) from the rocker cover according to the diesel injector concerned.



- Fit the support legs(3) on the rocker cover in place of the bolts(14) .

- Torque tighten the support legs on the rocker cover15 N.m.

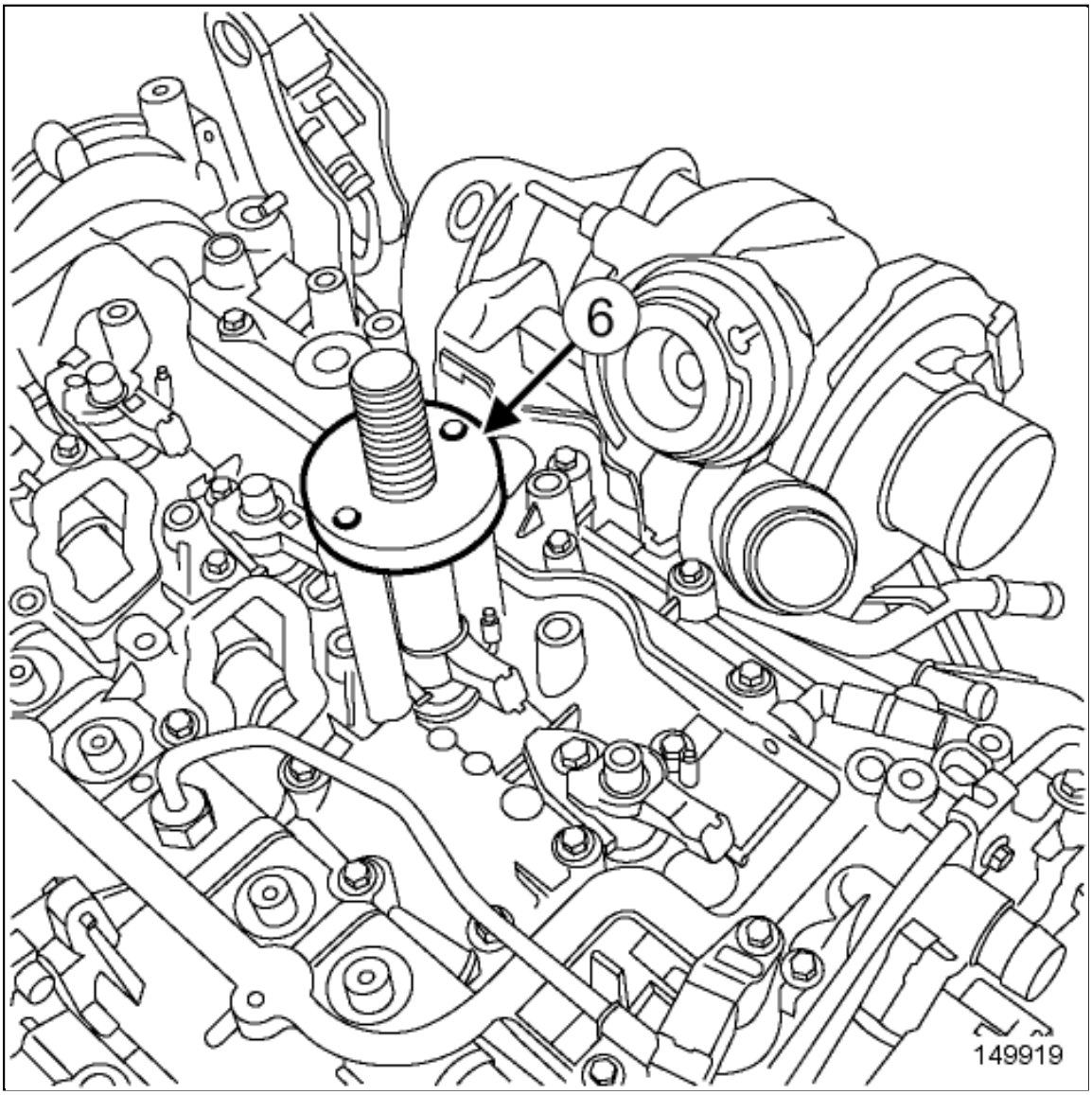


Fit the pull rod(1) on the diesel injector.

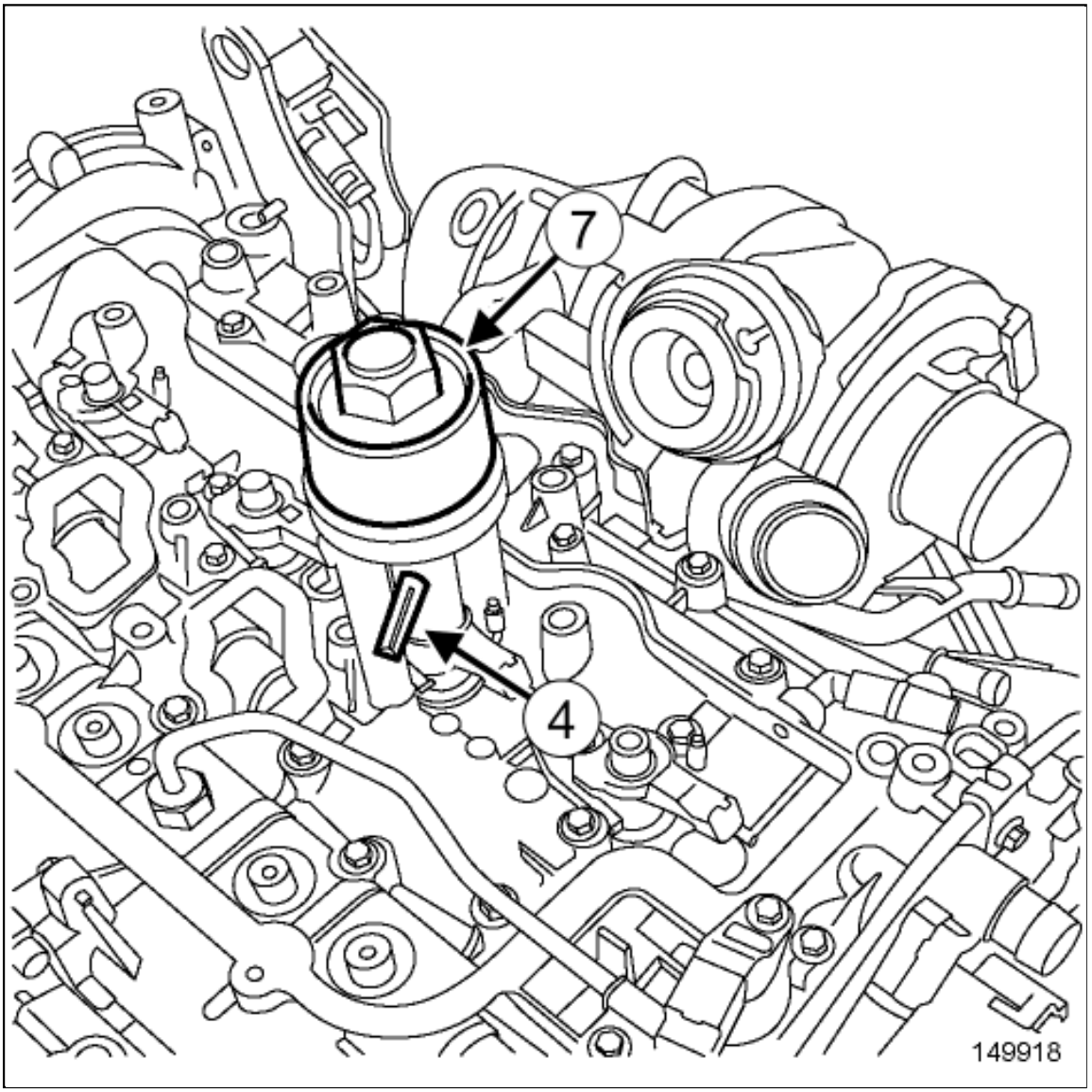
Note:

Tapped pull rod for "piezoelectric" type diesel injectors.

Threaded pull rod for "solenoid" type diesel injectors.



Fit the pressure plate(6).



Fit the pin(4) to prevent the pull rod from rotating.

Grease the threads of the pull rod using BR2 + grease Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

ATTENTION

Failure to observe the following procedure can lead to the destruction of the toolM9R/M9T injector extractor (**Mot. 1966**) .

Fit the ball nut(7) .

Tighten the ball nut until the diesel injector detaches.

parts always to be replaced: Diesel injector if removing with the toolM9R/M9T injector extractor(Mot. 1966) .

Always clean the well of the removed injectorInjector well cleaning tool: Use (Technical Note 6040A, 13B, Diesel injection).

Proceed in the reverse order to removal.

INJECTOR RAIL PROTECTOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

WARNING

Systematically refit the injector rail protector and the high pressure pump protections before starting the engine to avoid any risk of projections of fuel in case of high-pressure circuit leakage.

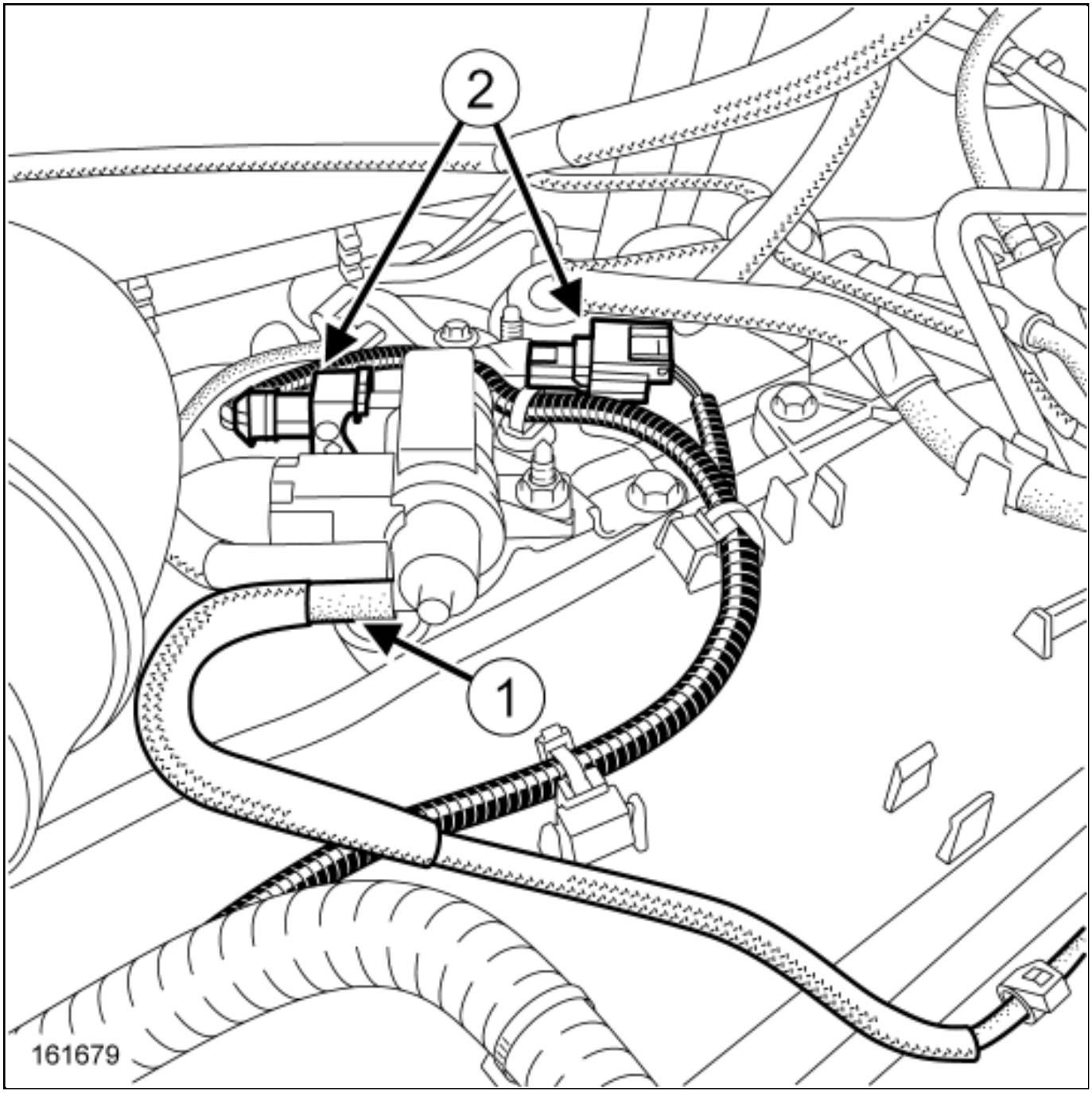
Location and specifications (tightening torques, parts always to be replaced, etc.)(see 13B, Diesel injection, Injection assembly: Exploded view) .

REMOVAL

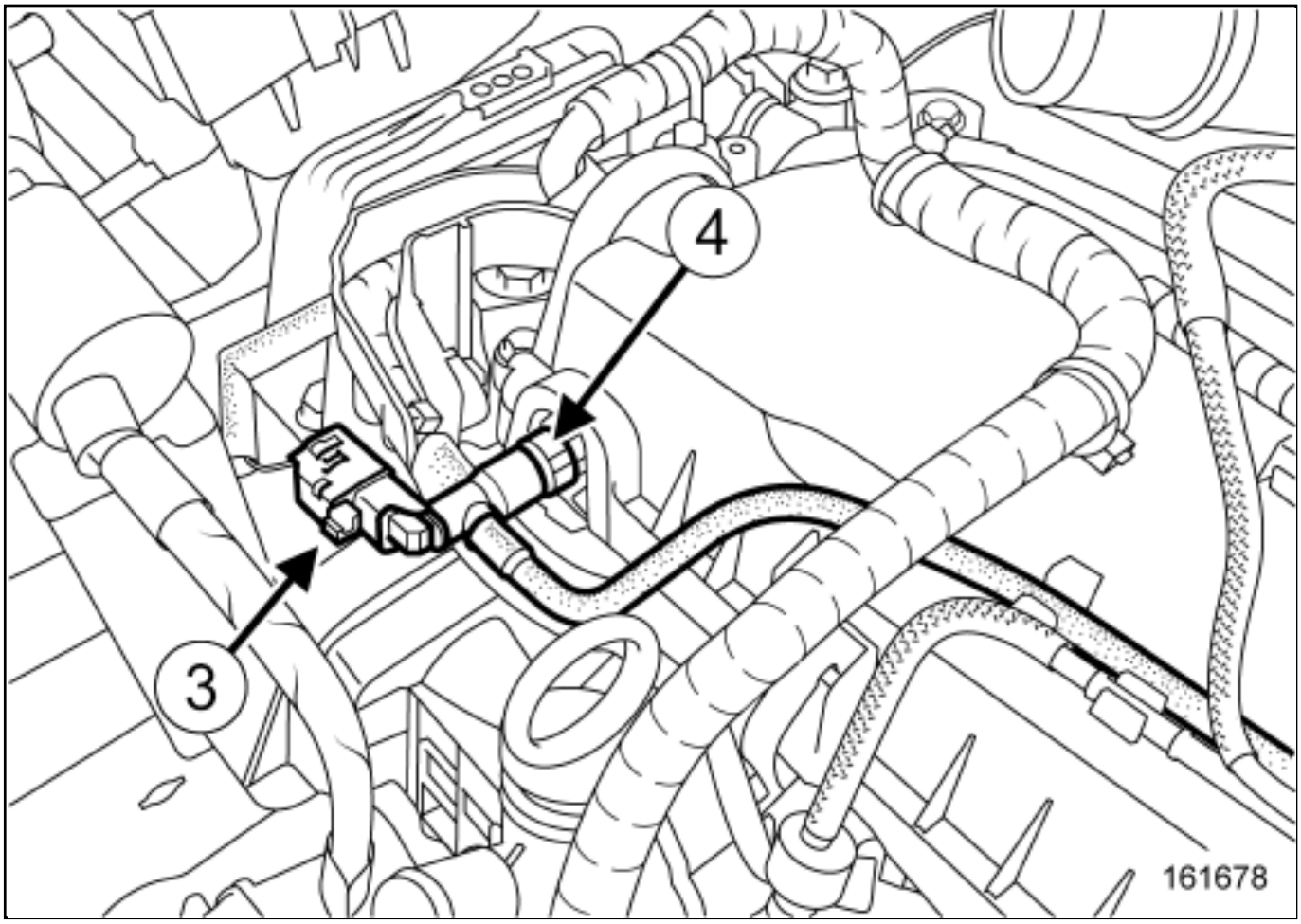
1. REMOVAL PREPARATION OPERATION

- Disconnect the battery(see **Battery: Removal - Refitting**) .

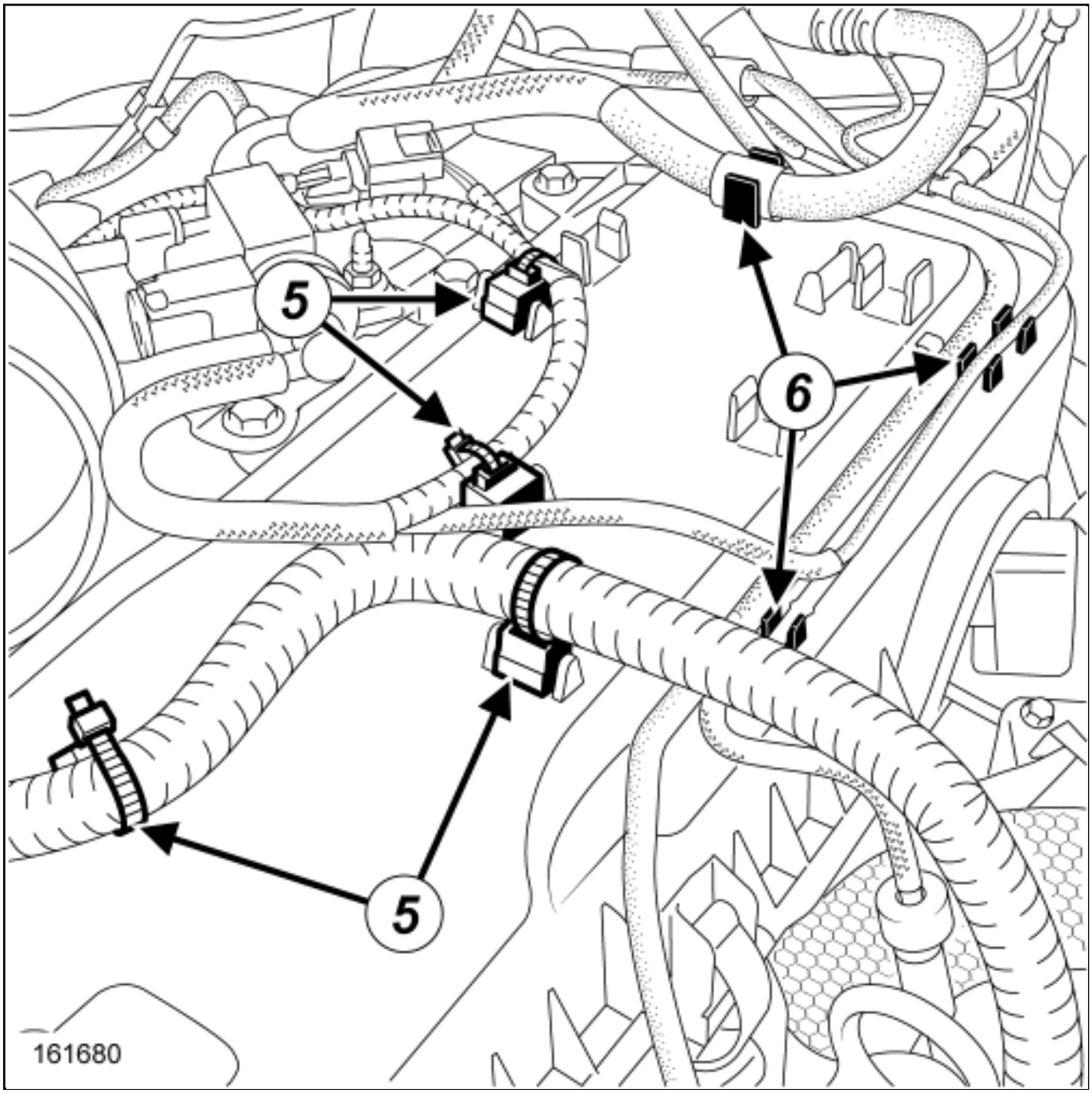
- Remove AND (ZA4 OR ZF4) ZA4 ZF4:
  - the turbocharger air inlet pipe,
  - the intercooler air inlet pipe.



- Disconnect the pipe (1) from the sensor.
- Disconnect the connectors(2) from the sensor.



- Disconnect the sensor (3) .
- Unclip the fuel return pipe(4) .



- Unclip from the injector rail protector:
  - the engine wiring(**5**) ,
  - the pipes(**6**) .

2. REMOVAL OPERATION

- Remove :
  - the injector rail protector mounting bolts,
  - the injector rail protector.

REFITTING

1. REFITTING OPERATION

Refit :

- the injector rail protector,
- the injector rail protector mounting bolts.

Torque tighten the injector rail protector mounting bolts .

2. FINAL OPERATION

Proceed in the reverse order to removal.

INJECTOR RAIL PROTECTOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

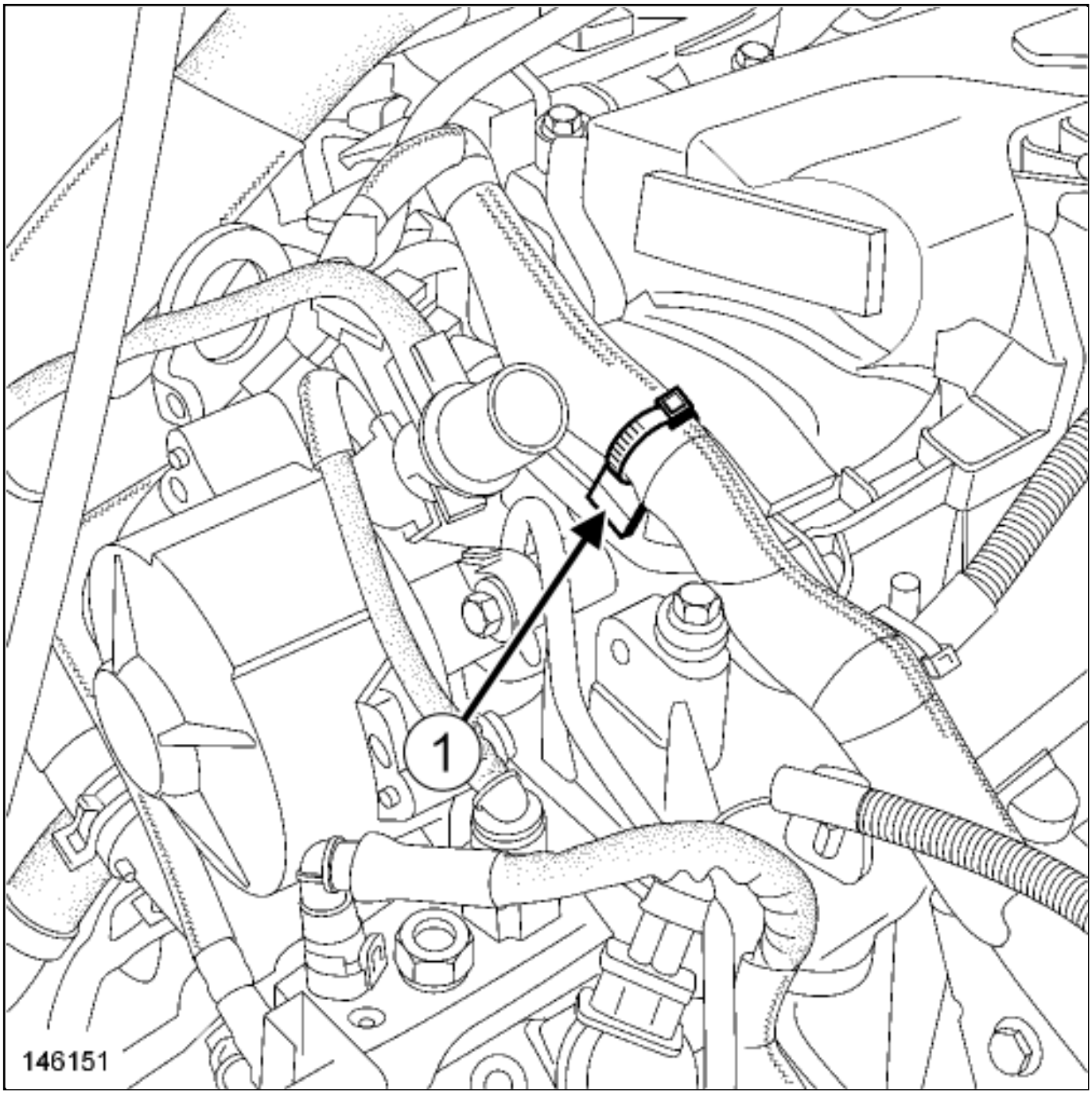
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 13B, Diesel injection , Injection assembly: Exploded view)** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

2. REMOVAL OPERATION



- Unclip the engine wiring(1) from the injector rail protector.

- Remove the injector rail protector(see 13B, Diesel injection, Injection assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

INJECTOR RAIL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Tool for removing high pressure pipes.	Mot. 1566
Offset wrench for tightening High Pressure pump pipes.	Mot. 1746

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 13B, Diesel injection , Injection assembly: Exploded view)** .

WARNING

- Consult the safety and cleanliness advice and operation recommendations before carrying out any repair:
  - **(see 13B, Diesel injection, Diesel injection: Precautions for the repair)** ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

- During this operation, be sure to:
  - refrain from smoking or bringing red hot objects close to the working area,
  - be careful of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

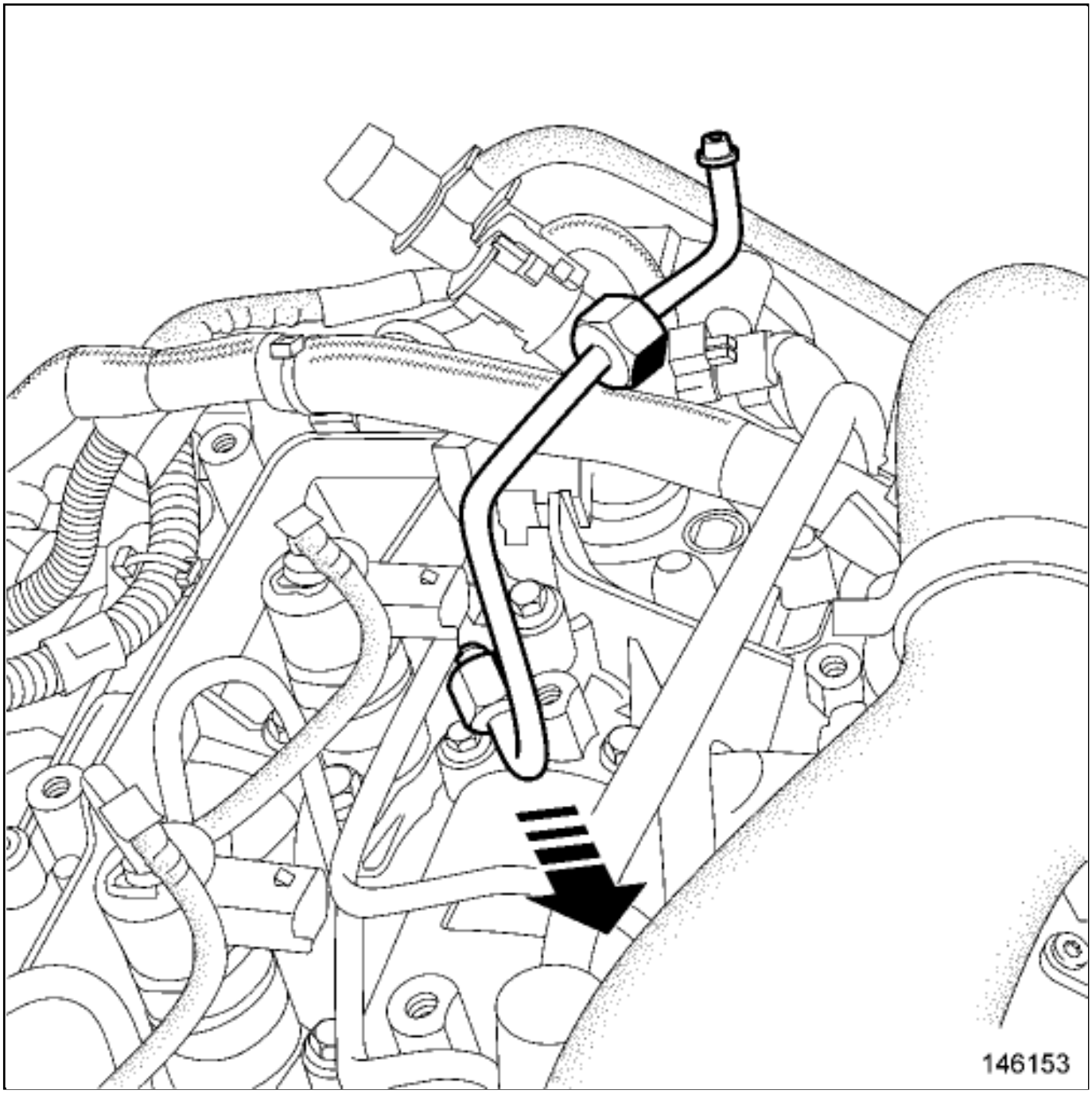
Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
  - the injector rail protector(see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the oil decanterAND (M9T) AND (700 OR 702) M9T, 700 702,
  - the nuts of the high pressure pipes between the rail and the injectors from the injector rail(see 13B, Diesel injection , Injection assembly: Exploded view) ,
  - the nuts of the high pressure pipes between the rail and the injectors from the diesel injectors(see 13B, Diesel injection , Injection assembly: Exploded view) .

REMOVING THE HIGH PRESSURE PIPE OF INJECTOR 1



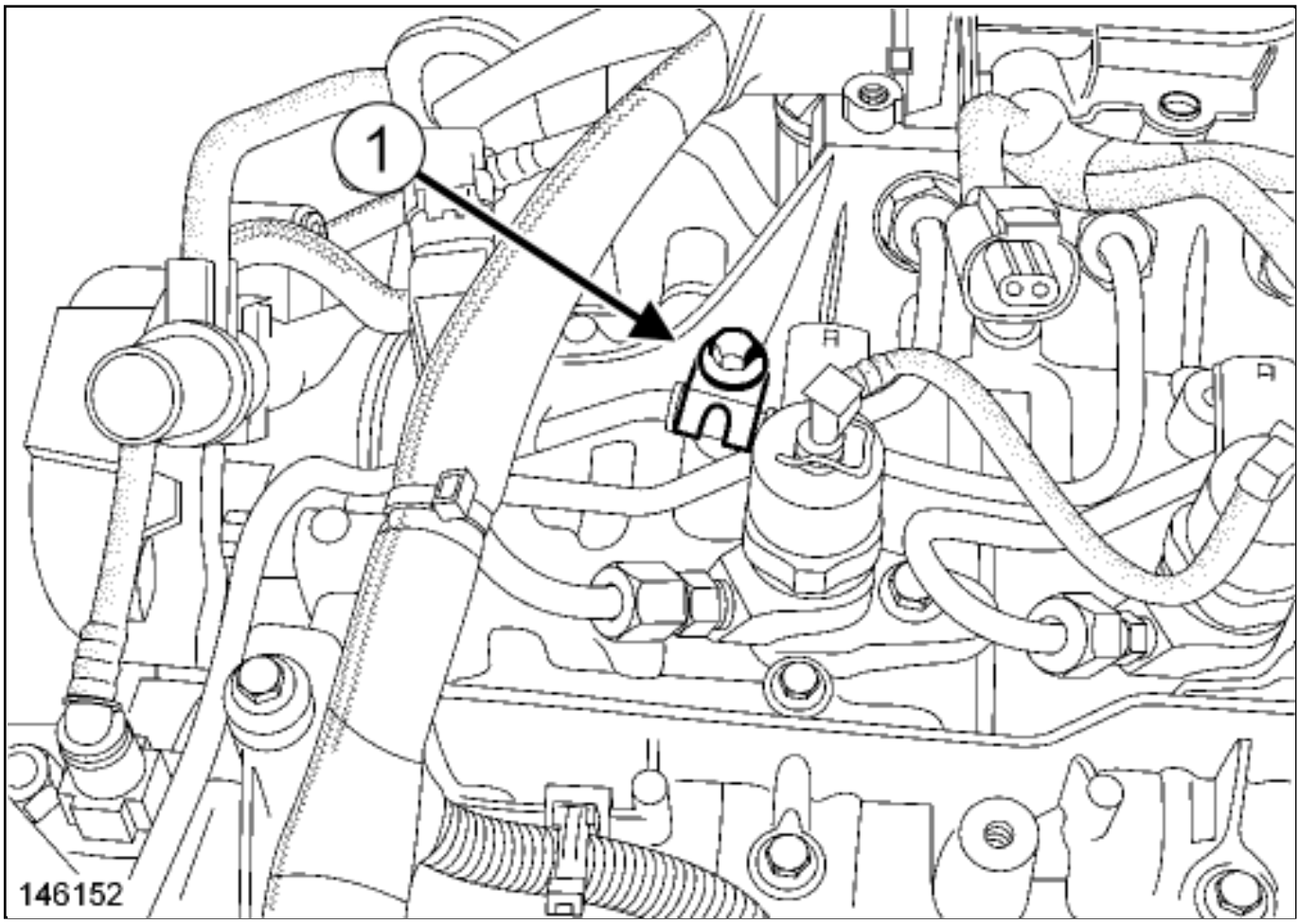
- Remove the high pressure pipes between the rail and the injectors(see 13B, Diesel injection, Injection assembly: Exploded view) (see 13B,Diesel injection, Injection assembly: Exploded view) .

- Remove:
  - the exhaust fuel injector solenoid valveAND (M9T) AND (670 OR 680 OR 880) M9T, 670 680 880AND (M9T) AND (690 OR 698 OR 890 OR 898) M9T, 690 698 890 898,
  - the bolts of the high pressure pump protector(see 13B, Diesel injection, Injection assembly: Exploded view) .

- Move aside the high pressure pump protector.

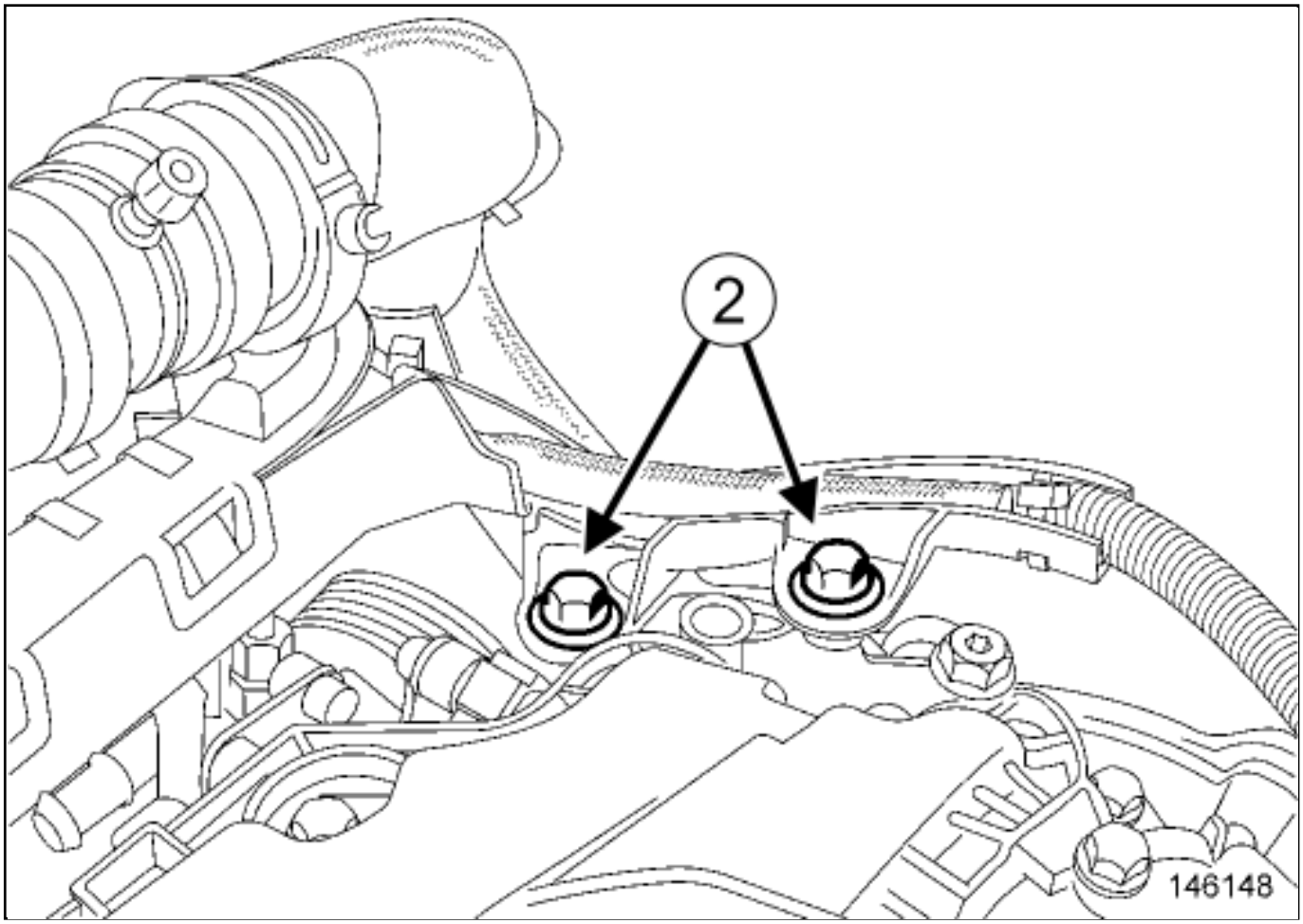
Remove (see 13B, Diesel injection, Injection assembly: Exploded view) :

- the fuel collector,
- the nut of the high pressure pipe between the pump and the rail from the high pressure pump using the toolTool for removing high pressure pipes.(Mot. 1566) and the toolOffset wrench for tightening High Pressure pump pipes. (Mot. 1746) ,
- the nut of the high pressure pipe between the pump and the rail from the injector rail using the toolTool for removing high pressure pipes.(Mot. 1566) and the toolOffset wrench for tightening High Pressure pump pipes.(Mot. 1746) .



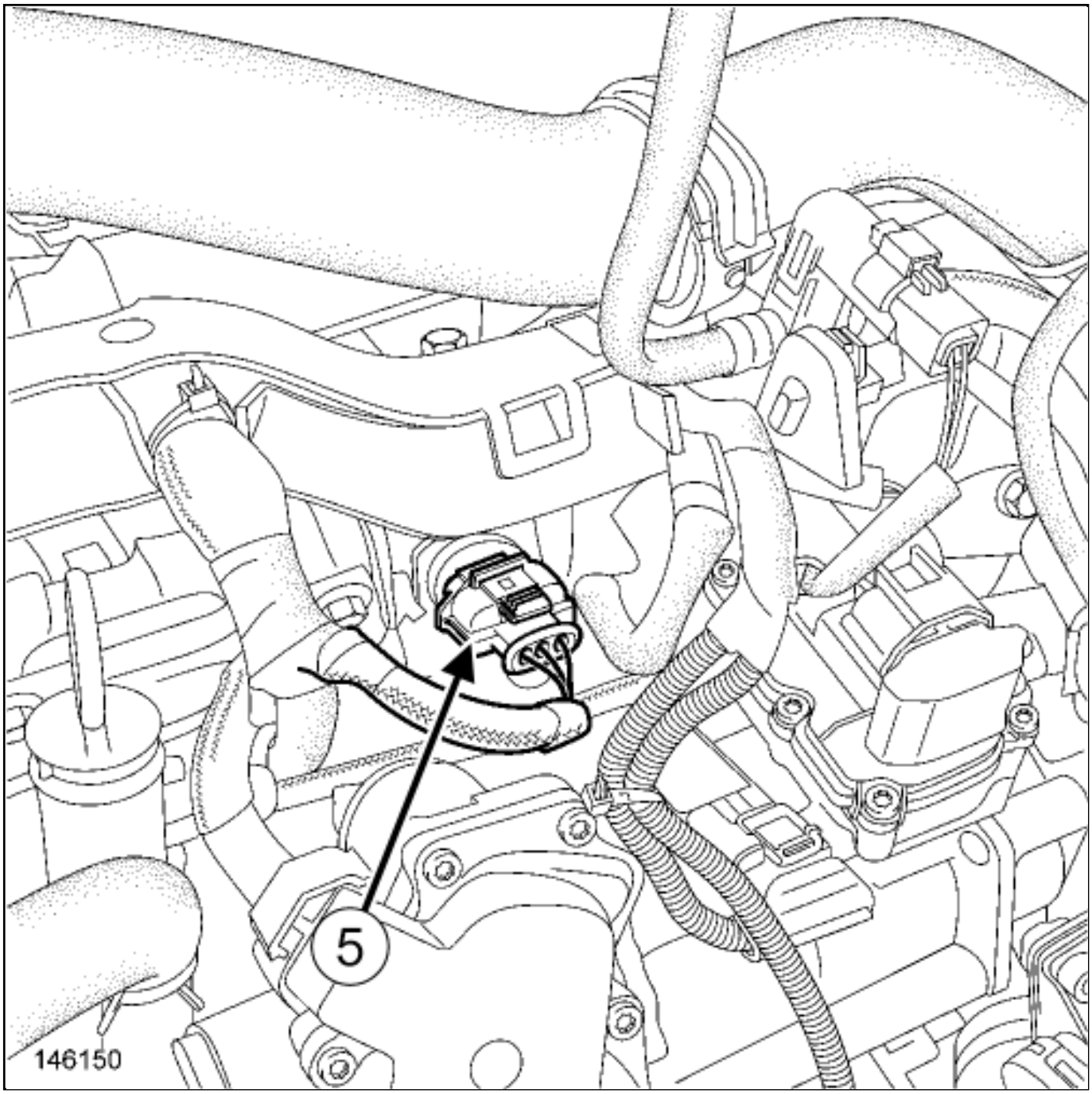
Remove:

- the bolt(1) from the the bracket of the high pressure pipe between the pump and the rail,
- the high pressure pipe between the pump and the rail(see 13B, Diesel injection, Injection assembly: Exploded view) (see 13B,Diesel injection, Injection assembly: Exploded view) .



- Remove the bolts(2) from the engine wiring harness channel.
- Move aside the engine wiring channel.

2. REMOVAL OPERATION



- Disconnect:
  - the heater plug connectorsAND (M9T) AND (700 OR 702) M9T, 700 702,
  - the connector(5) from the rail pressure sensor(see 13B, Diesel injection, Injection assembly: Exploded view) .

- Remove the bolt from the engine oil dipstick guideAND (M9T) AND (700 OR 702) M9T, 700 702.

- Move the engine oil dipstick guide to one sideAND (M9T) AND (700 OR 702) M9T, 700 702.

- Remove the injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

- Insert the blanking plugs.

REFITTING

1. REFITTING PREPARATION OPERATION

1- WHEN REPLACING THE INJECTOR RAIL:

- Remove the rail pressure sensor on the old injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

- Refit the rail pressure sensor to the injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

2. REFITTING OPERATION

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Proceed in the reverse order to removal.

- Prime the diesel circuit using the manual priming pump.

INJECTOR RAIL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Offset wrench for tightening High Pressure pump pipes.	Mot. 1746
Set of high pressure pipe removal wrenches (diameter 14,17,19)	Mot. 2022

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 13B, Diesel injection, Injection assembly: Exploded view)** .

WARNING

- Consult the safety and cleanliness advice and operation recommendations before carrying out any repair:
  - **(see 13B, Diesel injection, Diesel injection: Precautions for the repair)** ,
  - (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

- During this operation, be sure to:
  - refrain from smoking or bringing red hot objects close to the working area,
  - be careful of fuel splashes when disconnecting the union.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

CAUTION

Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

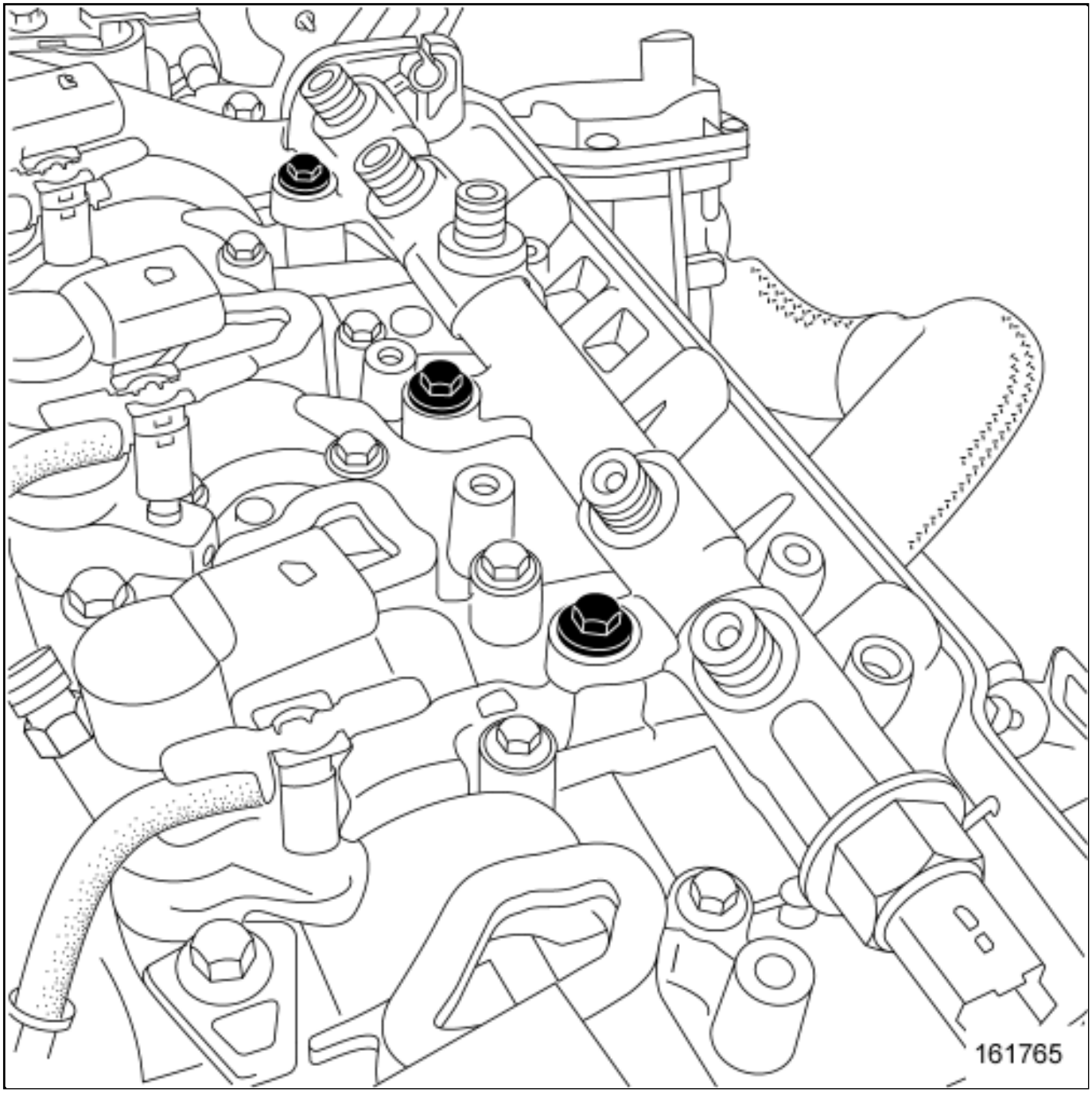
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
  - the injector rail protector(see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the oil decanter(see **Engine oil circuit assembly: Exploded view**) .

2. REMOVAL OEPRATION

- Remove:
  - the nuts of the high pressure pipes between the rail and the injectors from the injector rail(see 13B, Diesel injection , Injection assembly: Exploded view) ,
  - the nut of the high pressure pipes between the rail and the high pressure pump from the injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the nuts of the high pressure pipes between the rail and the injectors from the diesel injectors(see 13B, Diesel injection , Injection assembly: Exploded view) .



- Remove the injector rail mounting nuts.

- Remove the injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

- Insert blanking plugs.

REFITTING

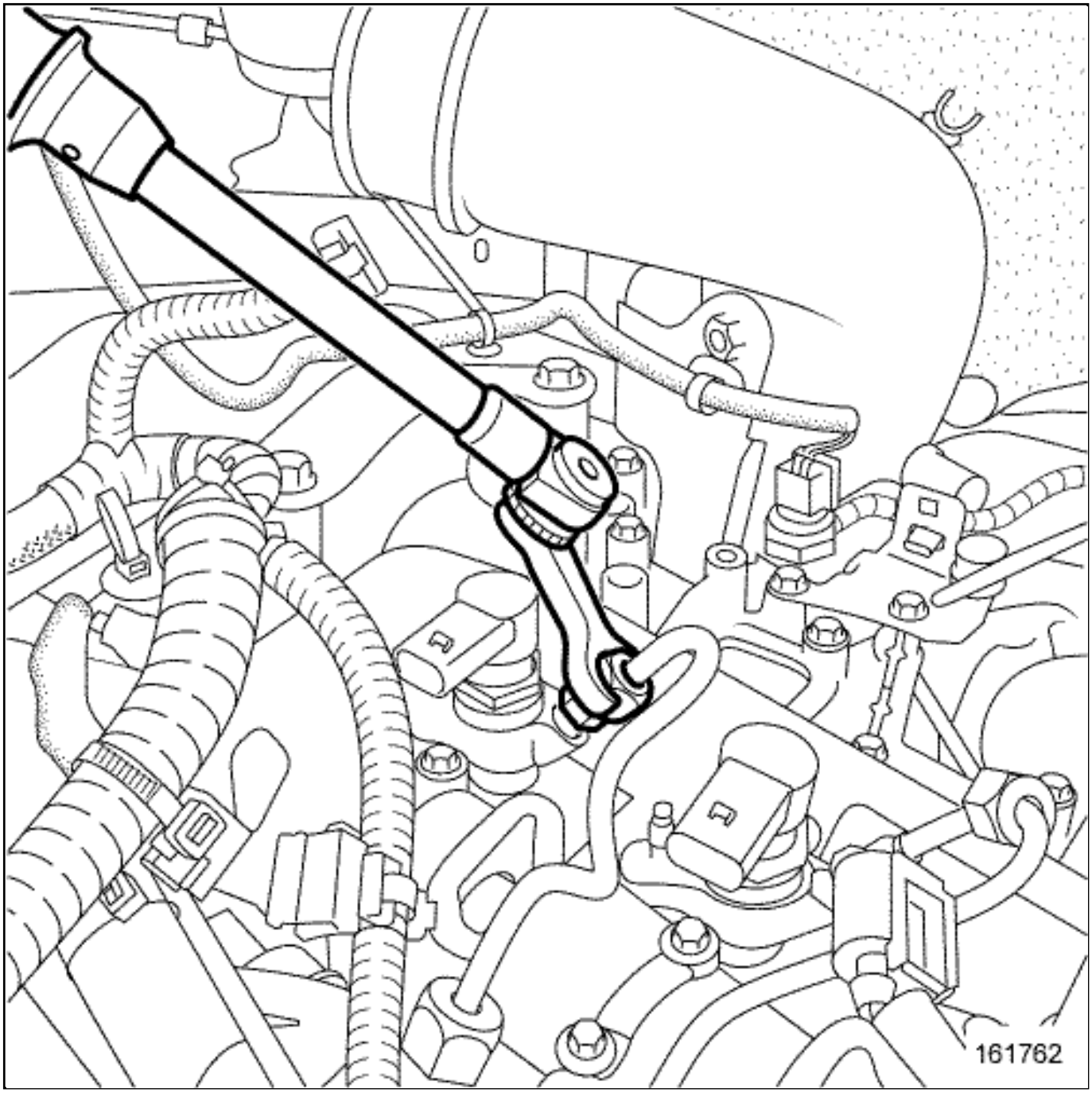
1. REFITTING

CAUTION

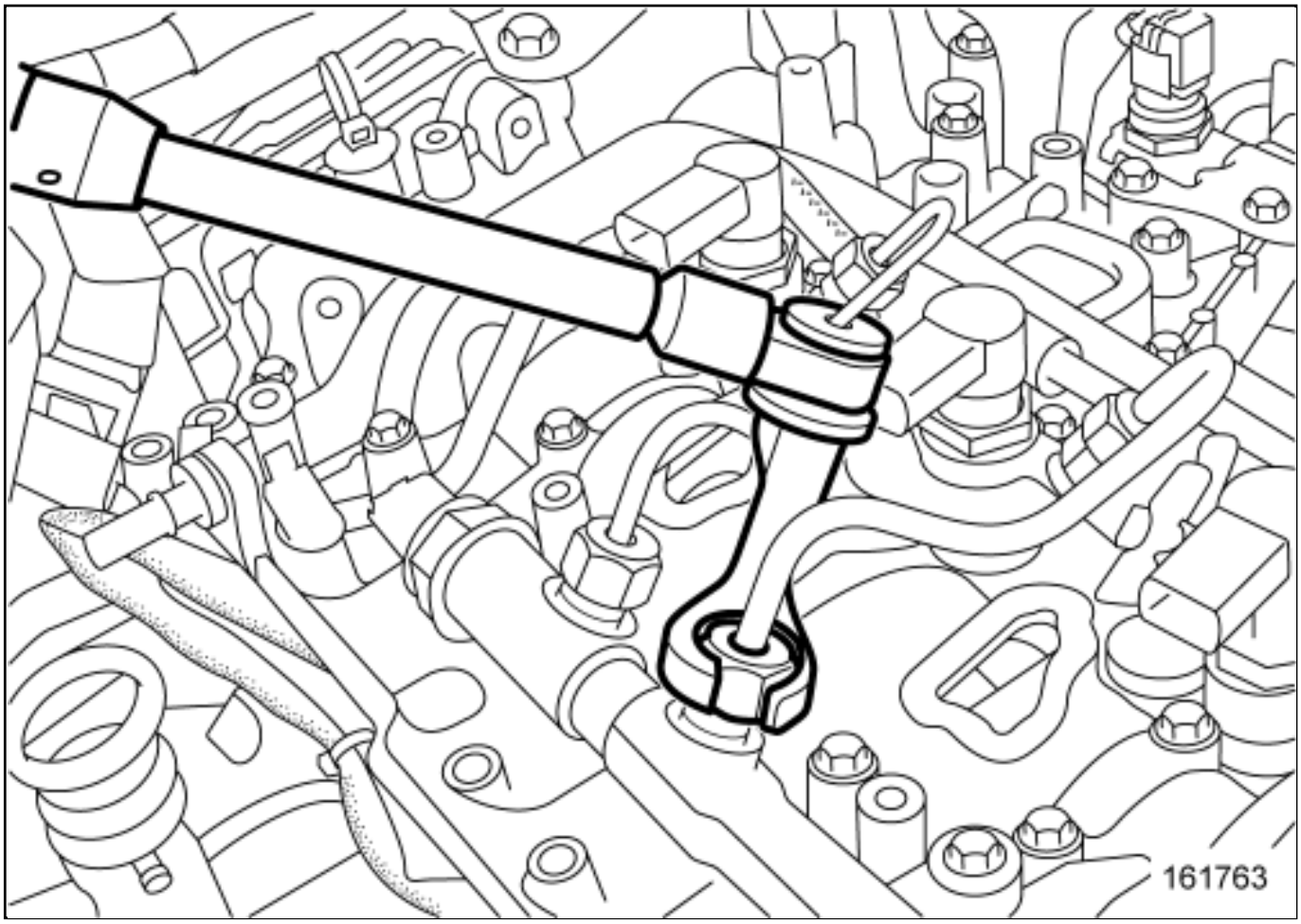
Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

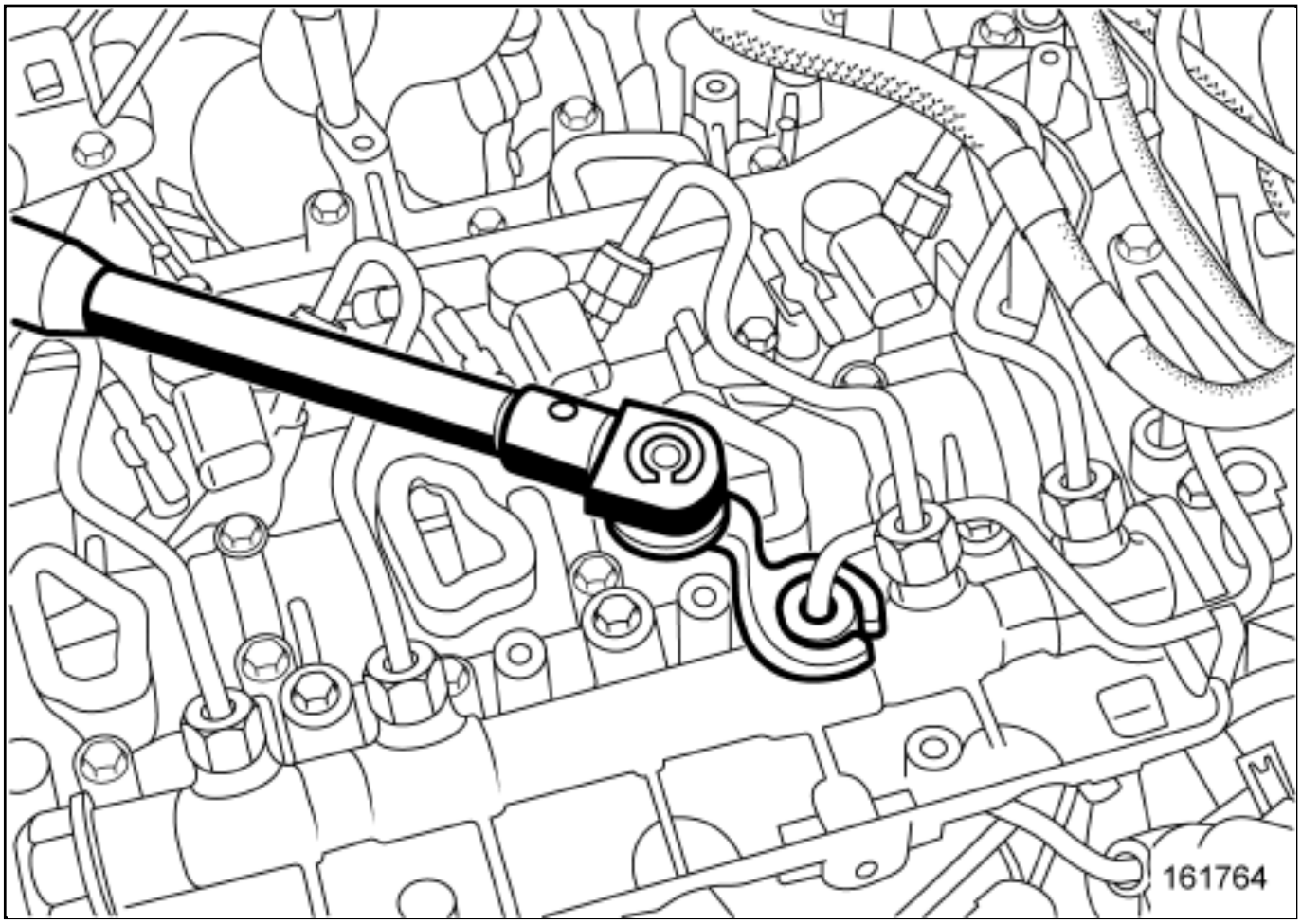
- Refit the injector rail.
- Refit the injector rail mounitng bolts.
- Torque tighten the injector rail mounting bolt10 N.m.
- Refit:
  - the nuts of the high pressure pipes between the rail and the injectors from the injector rail(see 13B, Diesel injection , Injection assembly: Exploded view) ,
  - the nut of the high pressure pipes between the rail and the high pressure pump from the injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the nuts of the high pressure pipes between the rail and the injectors from the diesel injectors(see 13B, Diesel injection , Injection assembly: Exploded view) .



- the nuts of the high pressure pipes between the rail and the injectors from the diesel injector34 N.m using the toolOffset wrench for tightening High Pressure pump pipes.(Mot. 1746) (see 13B, Diesel injection , Injection assembly: Exploded view) (see 13B,Diesel injection, Injection assembly: Exploded view) ,



- the nuts of the high pressure pipes between the rail and the injectors from the injector rail34 N.m using the toolSet of high pressure pipe removal wrenches (diameter 14,17,19)(Mot. 2022) (see 13B, Diesel injection, Injection assembly: Exploded view) (see 13B,Diesel injection, Injection assembly: Exploded view) ,



the nuts of the high pressure pipes between the rail and the high pressure pipe from the injector rail 34 N.musing the toolSet of high pressure pipe removal wrenches (diameter 14,17,19)(Mot. 2022) (see 13B, Diesel injection, Injection assembly: Exploded view) (see 13B,Diesel injection, Injection assembly: Exploded view) ,

2. FINAL OPERATION

Process in the reverse order to removal.

INJECTOR RAIL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Tool for removing high pressure pipes.	Mot. 1566
Offset wrench for tightening High Pressure pump pipes.	Mot. 1746

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 13B, Diesel injection, Injection assembly: Exploded view) .

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair:

- Diesel injection: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

IMPORTANT

During this operation, be sure to:

- refrain from smoking or bringing red hot objects close to the working area,
- be careful of fuel splashes when disconnecting the union.

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

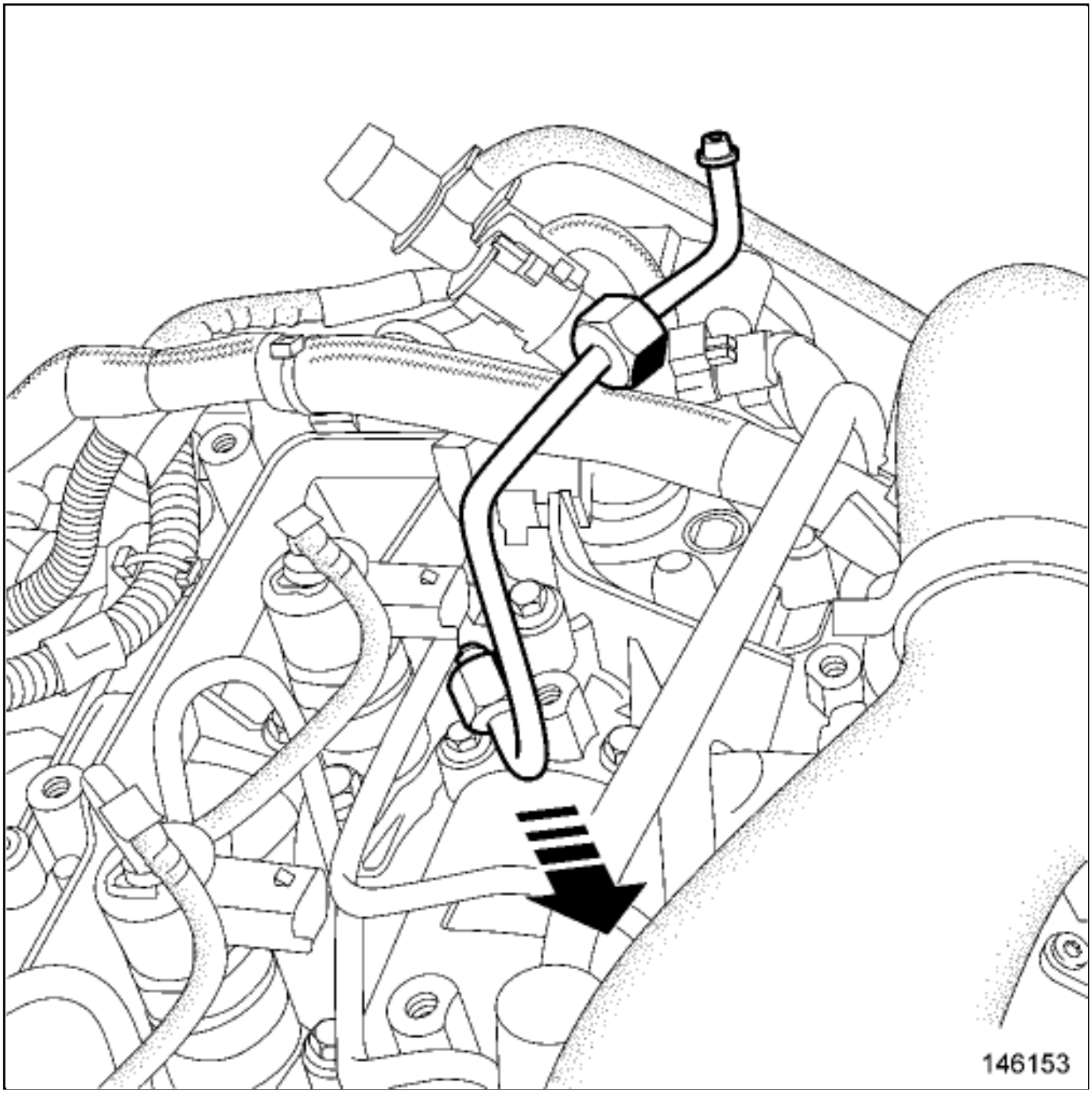
Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Only use cleaning cloths.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Remove the air outlet pipe from the air filter box (see 12A, Fuel mixture, Air inlet assembly: Exploded view) .
- Remove:
  - the injector rail protector (see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the oil decanter Engine oil circuit assembly: Exploded view ,
  - the nuts of the high pressure pipes between the rail and the injectors from the injector rail (see 13B, Diesel injection , Injection assembly: Exploded view) ,
  - the nuts of the high pressure pipes between the rail and the injectors from the diesel injectors (see 13B, Diesel injection , Injection assembly: Exploded view) .

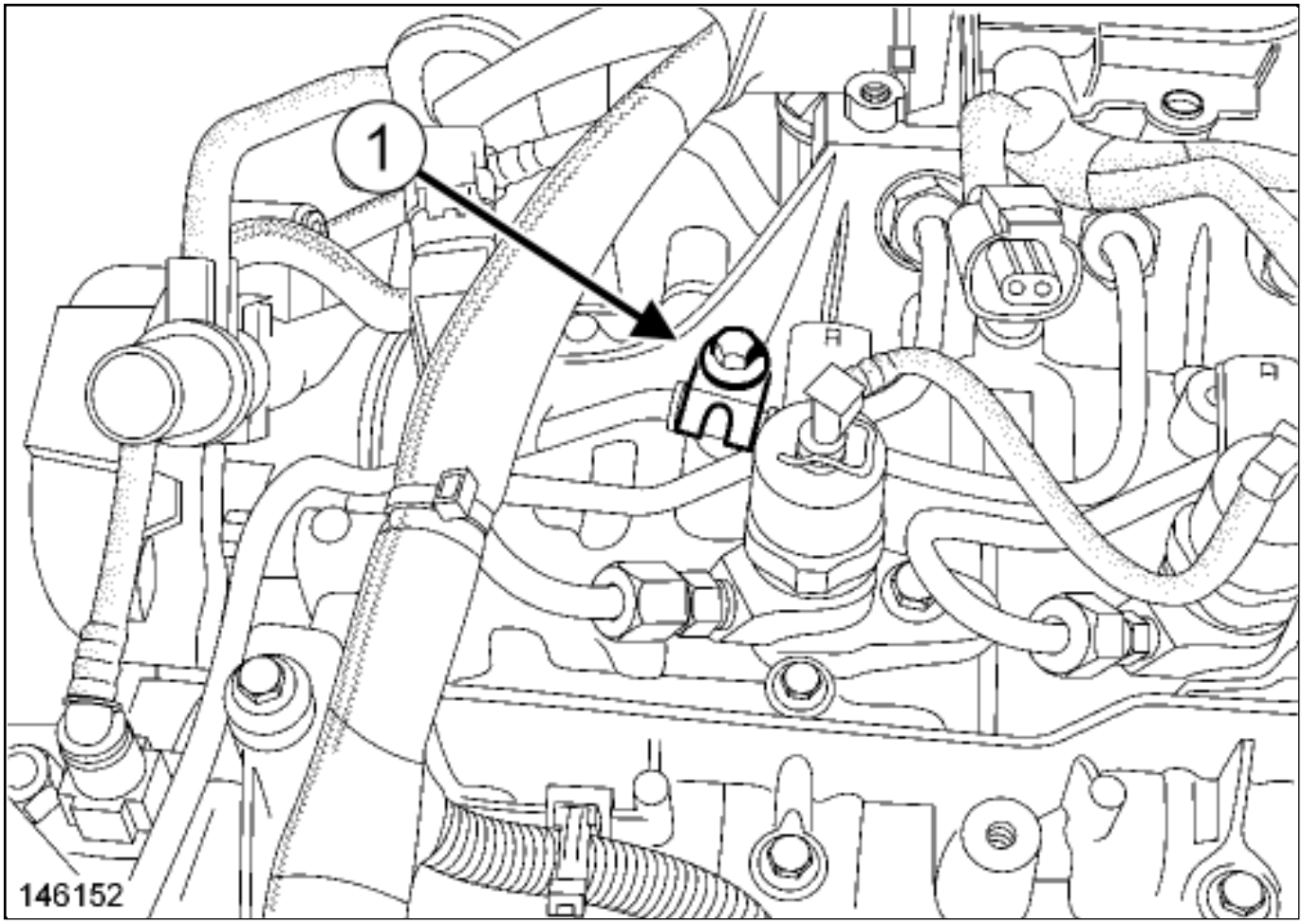
REMOVING THE HIGH PRESSURE PIPE OF INJECTOR 1



Remove the high pressure pipes between the rail and the injectors(see 13B, Diesel injection, Injection assembly: Exploded view) .

Remove (see 13B, Diesel injection, Injection assembly: Exploded view) :

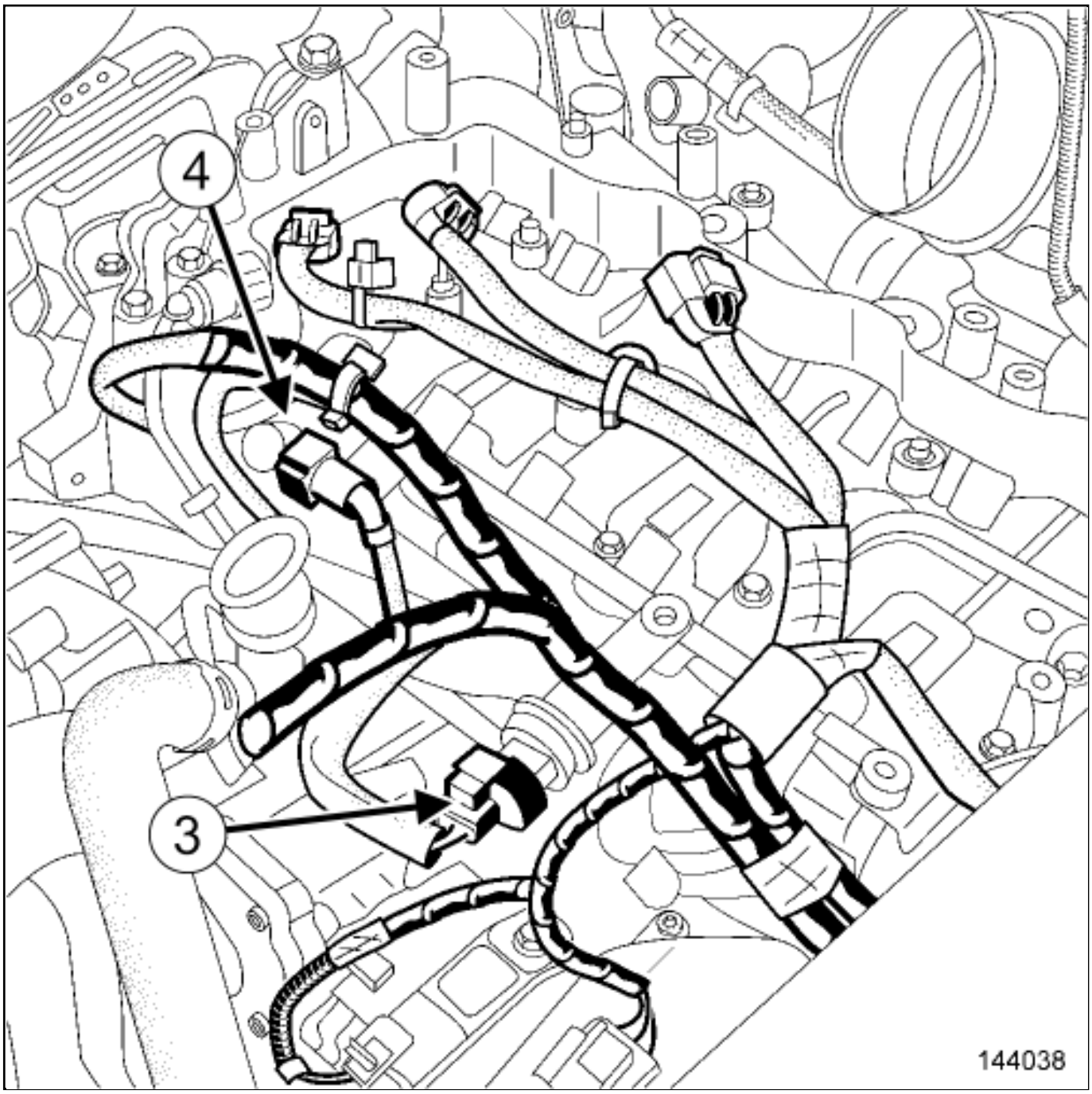
- the fuel collector,
- the nut of the high pressure pipe between the pump and the rail from the high pressure pump using the toolTool for removing high pressure pipes.(Mot. 1566) and the toolOffset wrench for tightening High Pressure pump pipes. (Mot. 1746) ,
- the nut of the high pressure pipe between the pump and the rail from the injector rail using the toolTool for removing high pressure pipes.(Mot. 1566) and the toolOffset wrench for tightening High Pressure pump pipes.(Mot. 1746) .



Remove:

- the bolt(1) from the the bracket of the high pressure pipe between the pump and the rail,
- the high pressure pipe between the pump and the rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

2. REMOVAL OPERATION



- Disconnect:
  - the heater plug connectors(see 11A, Top and front of engine, Cylinder head assembly: Exploded view) ,
  - the connector(3) from the rail pressure sensor(see 13B, Diesel injection, Injection assembly: Exploded view) ,
  - the fuel return pipe union(4) from the injector rail.

- Remove the bolt from the engine oil dipstick guideEngine oil circuit assembly: Exploded view .

- Move the engine oil dipstick guide to one sideEngine oil circuit assembly: Exploded view .

- Remove the injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

WARNING

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

- Insert the blanking plugs.

REFITTING

1. REFITTING PREPARATION OPERATION

1- WHEN REPLACING THE INJECTOR RAIL:

- Remove the rail pressure sensor on the old injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

- Refit the rail pressure sensor to the injector rail(see 13B, Diesel injection, Injection assembly: Exploded view) .

2. REFITTING OPERATION

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

- Proceed in the reverse order to removal.

- Prime the diesel circuit using the manual priming pump.

INLET DISTRIBUTOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:
inlet distributor seal

WARNING

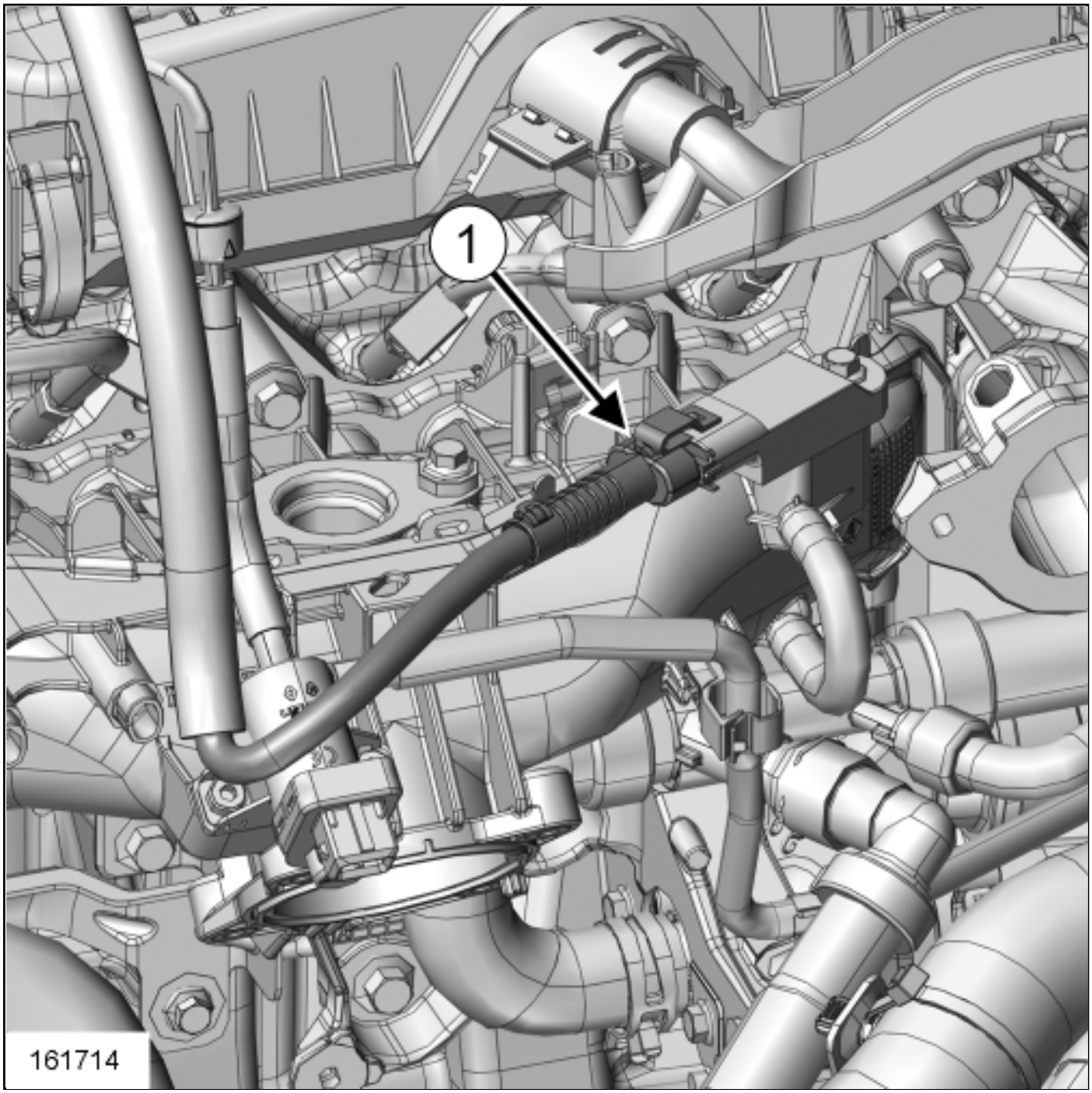
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)Exhaust gas recirculation circuit assembly: Exploded view .

REMOVAL

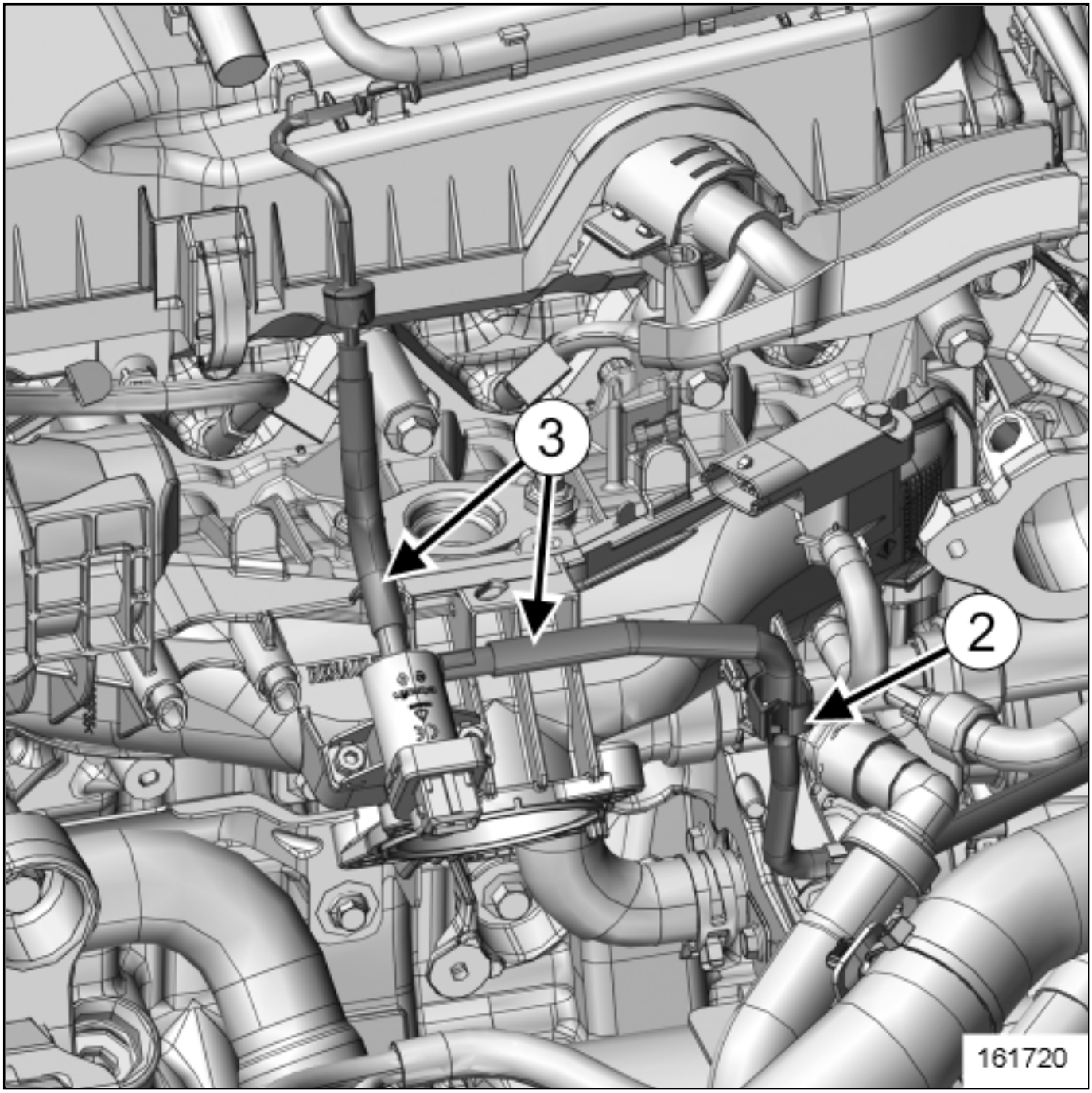
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting .
- Disconnect the batteryBattery: Removal - Refitting .
- Remove the engine undertray.
- Remove the intercooler air outlet pipe(see 12A, Fuel mixture, Air inlet assembly: Exploded view) .
- Remove :
  - the damper valve,
  - the exhaust gas recirculation rigid pipe at the exhaust gas cooler outlet,
  - the exhaust gas recirculation solenoid valve,
  - the exhaust gas circuit temperature sensor.

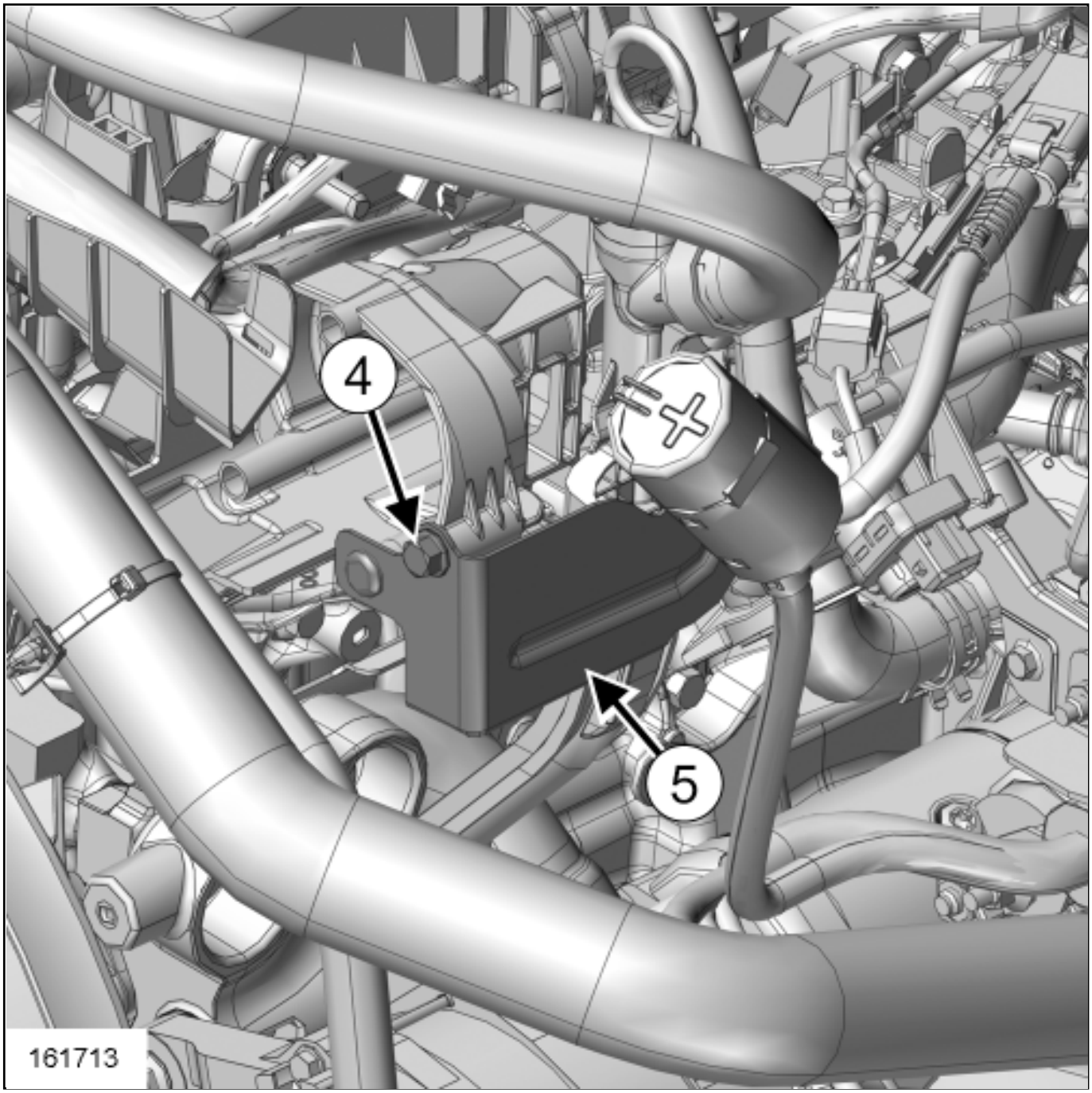


- Disconnect the air inlet pressure sensor connector(1) .

- Remove :
  - the air inlet pressure sensor bolt,
  - the air inlet pressure sensor.



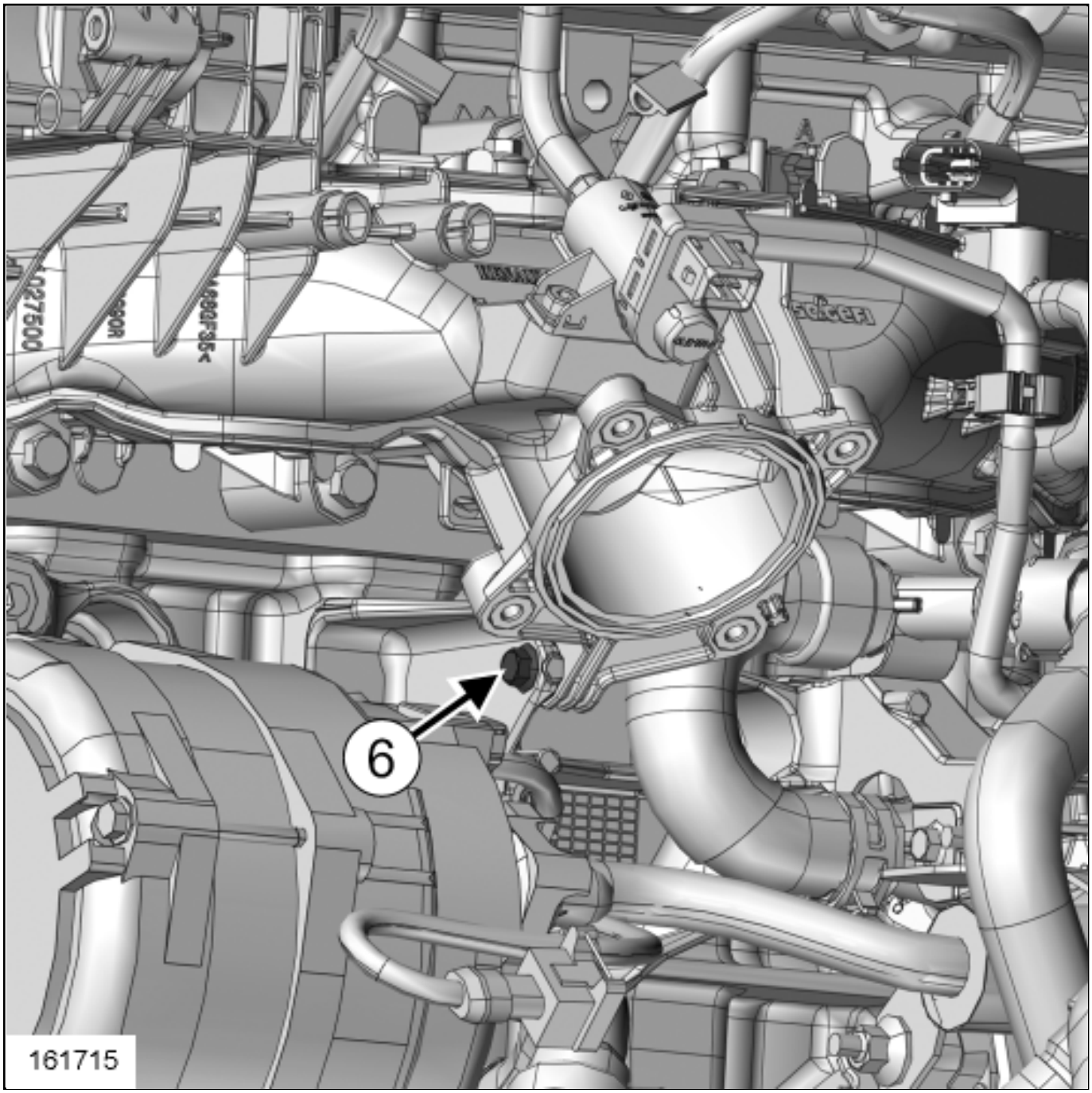
- Unclip the water circulation control solenoid valve vacuum pipe at(2) .
- Disconnect the water circulation control solenoid valve vacuum pipes(3) .



- Remove the bolt(5) of the remote battery plug bracket.
- Move aside the remote battery plug with its bracket(4) .

- Remove :
  - the engine oil dipstick,
  - the engine oil dipstick guide bolts,
  - the engine oil filler neck bolts,
  - the engine oil "filler neck - dipstick guide" assembly,
  - the engine oil dipstick guide seal.

2. REMOVAL OPERATION



Remove the inlet distributor bracket bolt(6) .

Remove :

- the inlet distributor bolts,
- the inlet distributor,

- the inlet distributor seals,
- the water circulation control solenoid valve bolts,
- the water circulation control solenoid valve.

3. REFITTING PREPARATION OPERATION

parts always to be replaced: inlet distributor seal

Parts always to be replaced: engine oil dipstick guide seal.

Clean and degrease using surface cleaner Vehicle: Parts and consumables for the repair :

- the joint face between the inlet distributor and the cylinder head,
- the joint face between the inlet distributor and the EGR solenoid valve,
- the joint face between the inlet distributor and the damper valve.

4. REFITTING OPERATION

Refit :

- the inlet distributor seals.
- the inlet distributor,
- the inlet distributor bolts,

Torque tighten in order the inlet distributor bolts .

Refit the inlet distributor bracket bolt.

5. FINAL OPERATION

Proceed in the reverse order to removal.

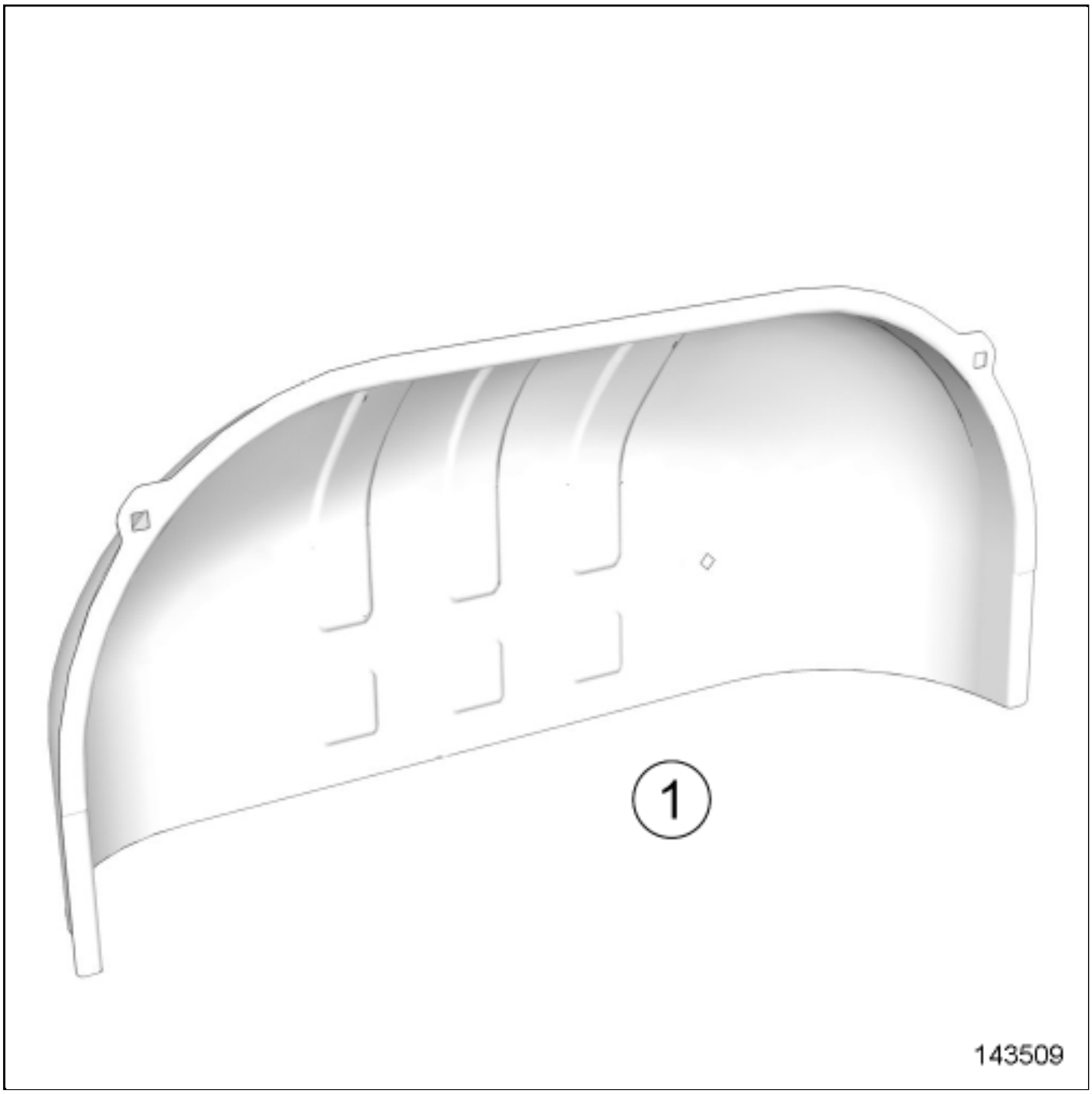
INNER REAR WHEEL ARCH: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Inner rear wheel arch	Mild steel	0.75

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

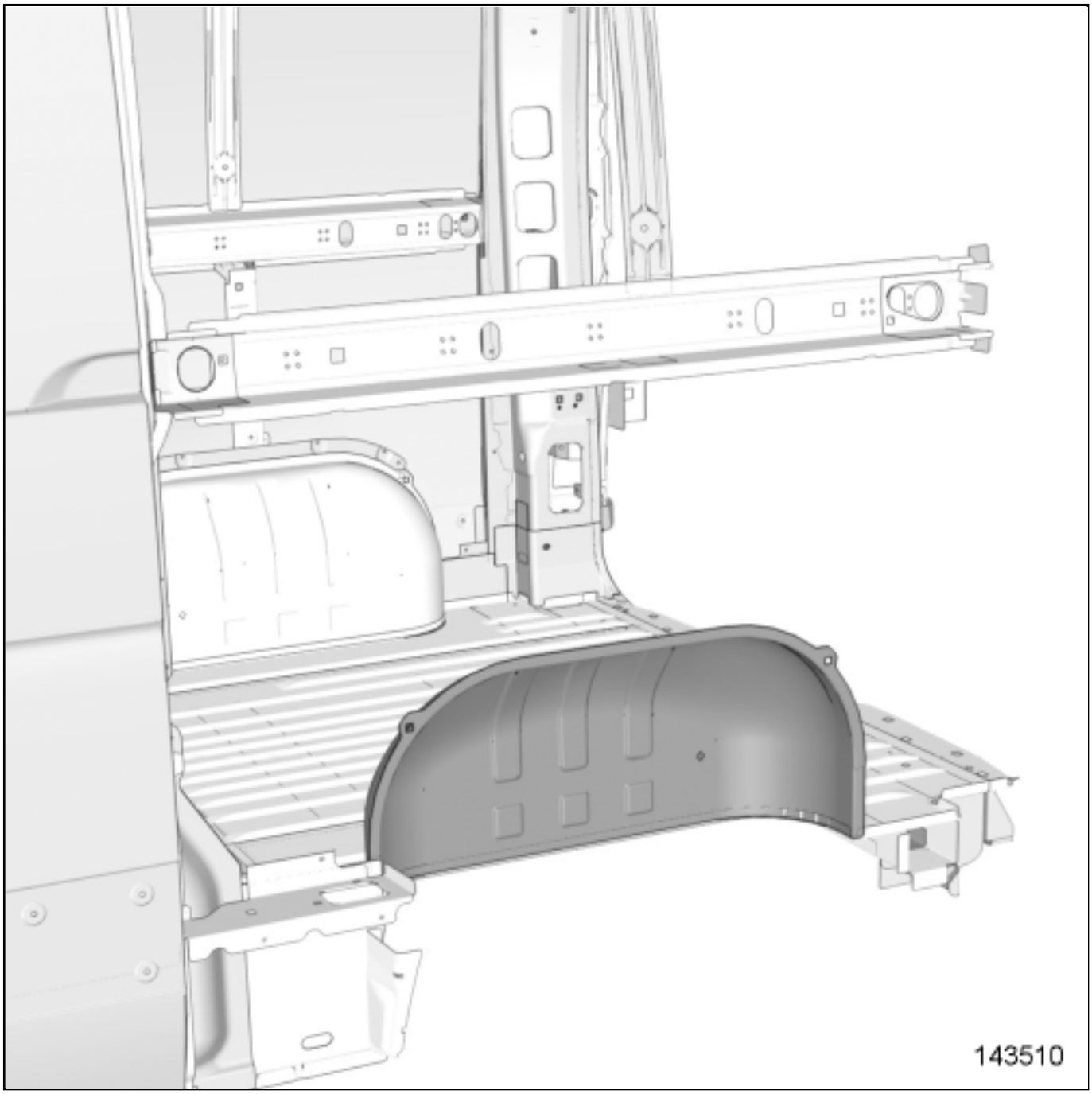
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area(see **Earths on body: List and location of components**) .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

INPUT SHAFT ASSEMBLY: EXPLODED VIEW

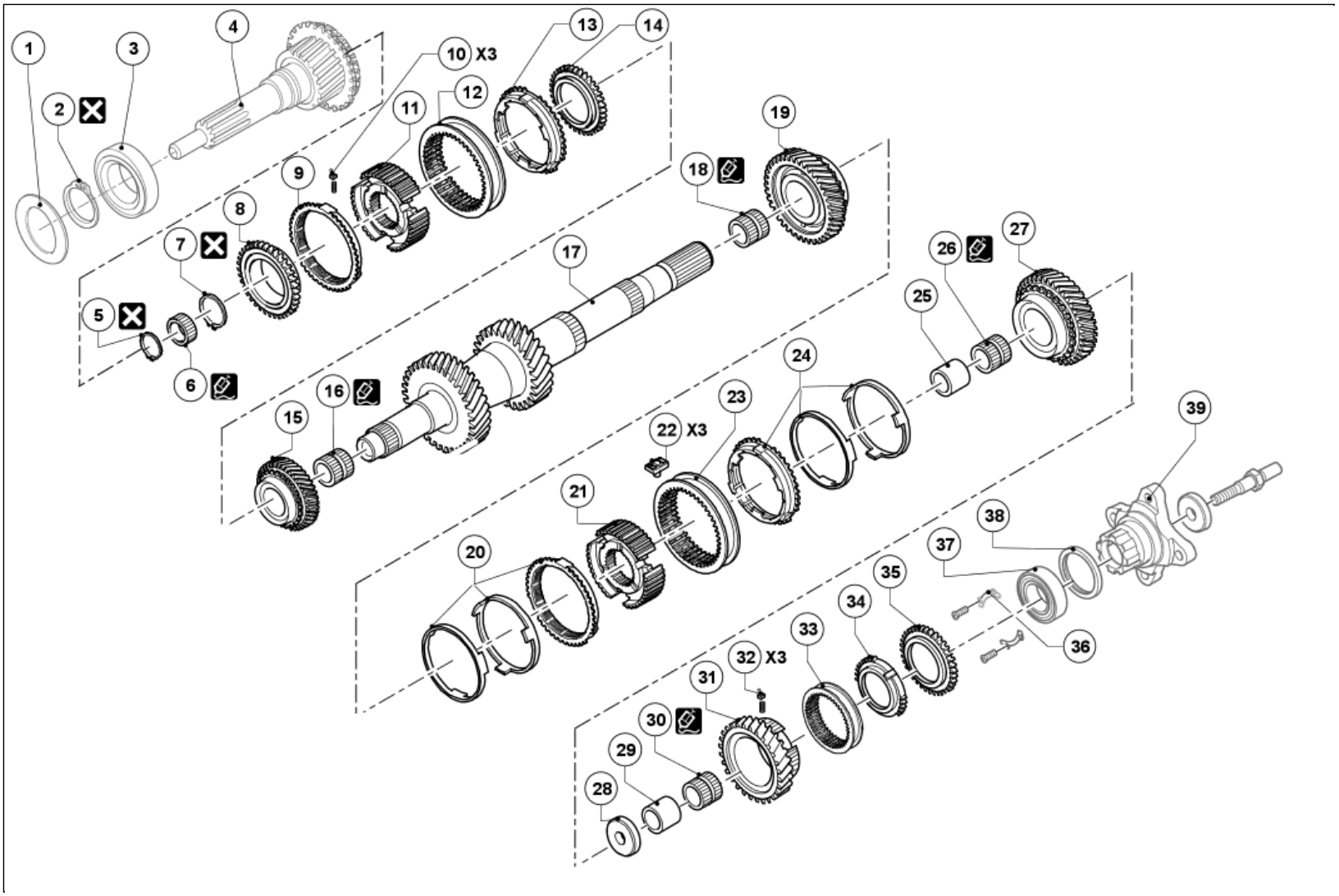


Illustration key: Description Key.

Mark	Description	Information
1	Input shaft lip seal	Gearbox assembly: Exploded view
2	Clutch shaft stop ring	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
3	Input shaft bearing on clutch housing	Gearbox assembly: Exploded view
4	Clutch shaft	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
5	Cylindrical roller bearing stop ring	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
6	Cylindrical roller bearing	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
7	Stop ring of the 5th and 6th synchroniser hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
8	6th clutch hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
9	6th synchroniser ring	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
10	Locking ball and spring of the 5th and 6th synchroniser hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
11	5th and 6th synchroniser hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
12	5th and 6th synchroniser	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
13	5th synchroniser ring	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
14	5th clutch hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
15	5th idle gear	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
16	5th idle gear needle bearing	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
17	Primary shaft	(see 21A, Manual gearbox , Gearbox shaft: Removal - Refitting)
18	2nd idle gear needle bearing	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
19	2nd idle gear	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
20	2nd synchroniser rings	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
21	1st and 2nd synchroniser hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
22	Locking ball cartridge of the 1st and 2nd synchroniser hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
23	1st and 2nd synchroniser	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
24	1st synchroniser rings	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
25	1st idle gear spacer	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
26	1st idle gear needle bearing	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
27	1st idle gear	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
28	Reverse gear idle gear washer	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
29	Reverse gear idle gear spacer	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
30	Reverse gear idle gear needle bearing	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)

31	Reverse gear synchroniser hub and idle gear	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
32	Locking ball and spring of the reverse gear synchroniser hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
33	Reverse gear synchroniser	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
34	Reverse gear synchroniser ring	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
35	Reverse gear clutch hub	(see 21A, Manual gearbox , Input shaft: Stripping - Rebuilding)
36	Stop	Gearbox assembly: Exploded view
37	Input shaft bearing on mechanism housing	Gearbox assembly: Exploded view
38	Gearbox output flange seal	Gearbox assembly: Exploded view
39	Gearbox output flange	Gearbox assembly: Exploded view

INPUT SHAFT LIP SEAL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Inertia seal extractor	Bvi. 1948
Tool for fitting the ZF4 primary shaft seal	Bvi. 1947
Washer of compensation for installation primary shaft seal.	Bvi. 1985

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructionsVehicle: Precautions for the repair

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 21A, Manual gearbox, Gearbox assembly: Exploded view) .

WARNING

To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

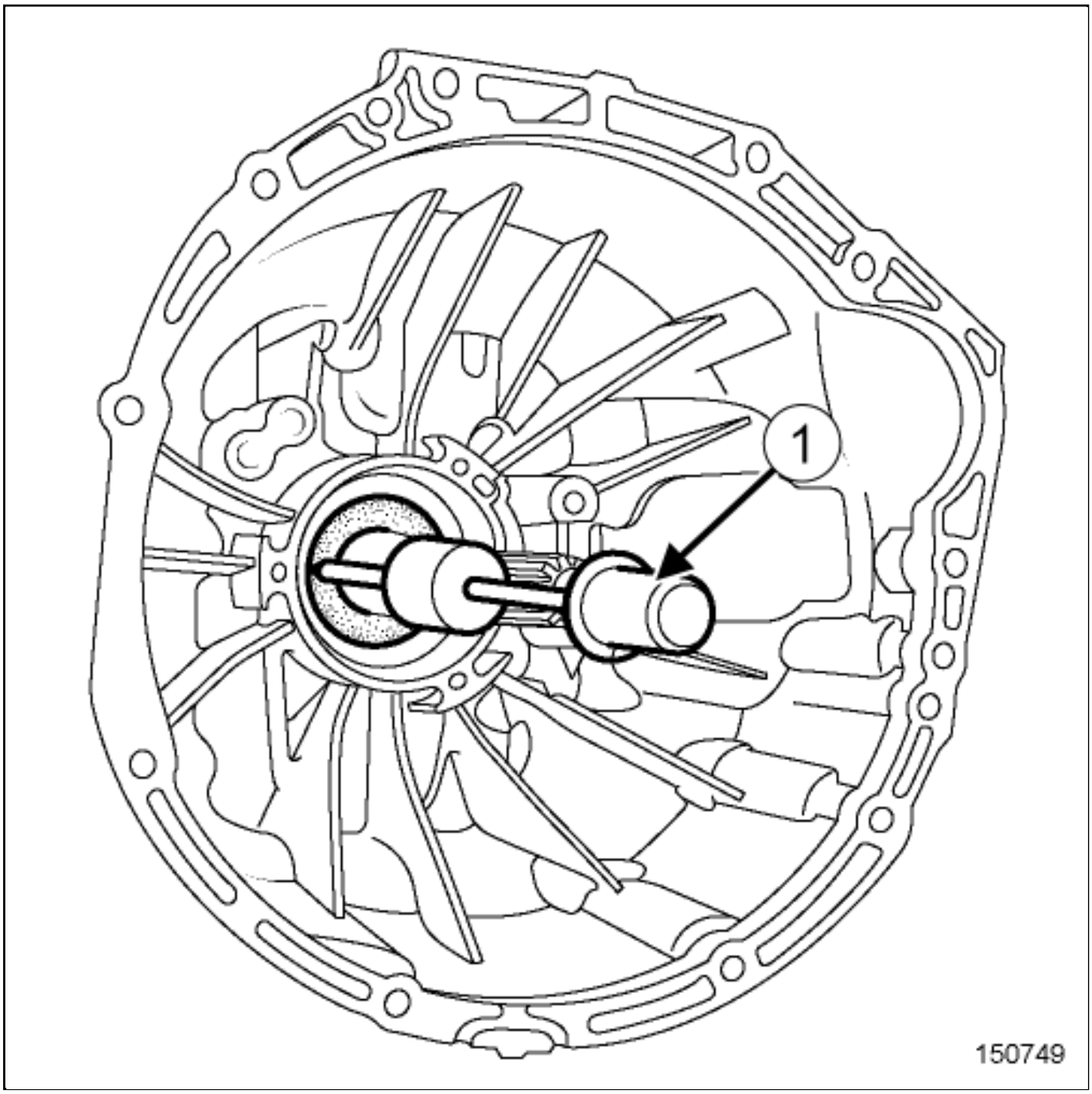
REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove:

- the manual gearbox(see 21A, Manual gearbox , Gearbox assembly: Exploded view) ,
- the clutch forkClutch assembly: Exploded view ,
- the clutch thrust bearing guide(see 21A, Manual gearbox , Gearbox assembly: Exploded view) .

2. REMOVAL OPERATION



- Remove the input shaft lip seal using the toolInertia seal extractor(Bvi. 1948) (1) .

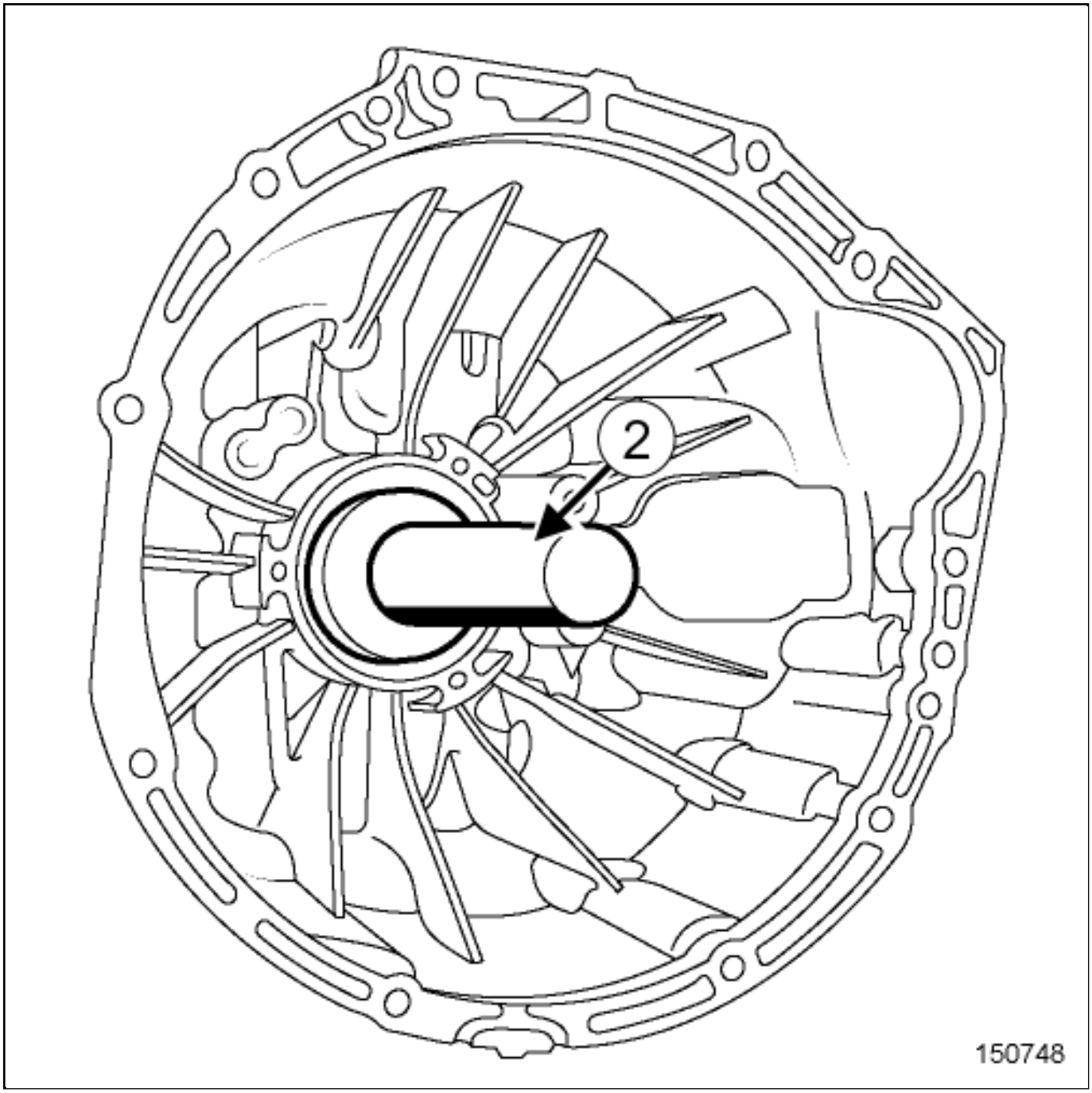
REFITTING

1. REFITTING PREPARATION OPERATION

- Coat vaseline around the outside edges of the new input shaft lip seal.

- Fill the space between the input shaft lock ring and the input shaft lip seal with greaseVehicle: Parts and consumables for the repair (04B, Consumables - Products).

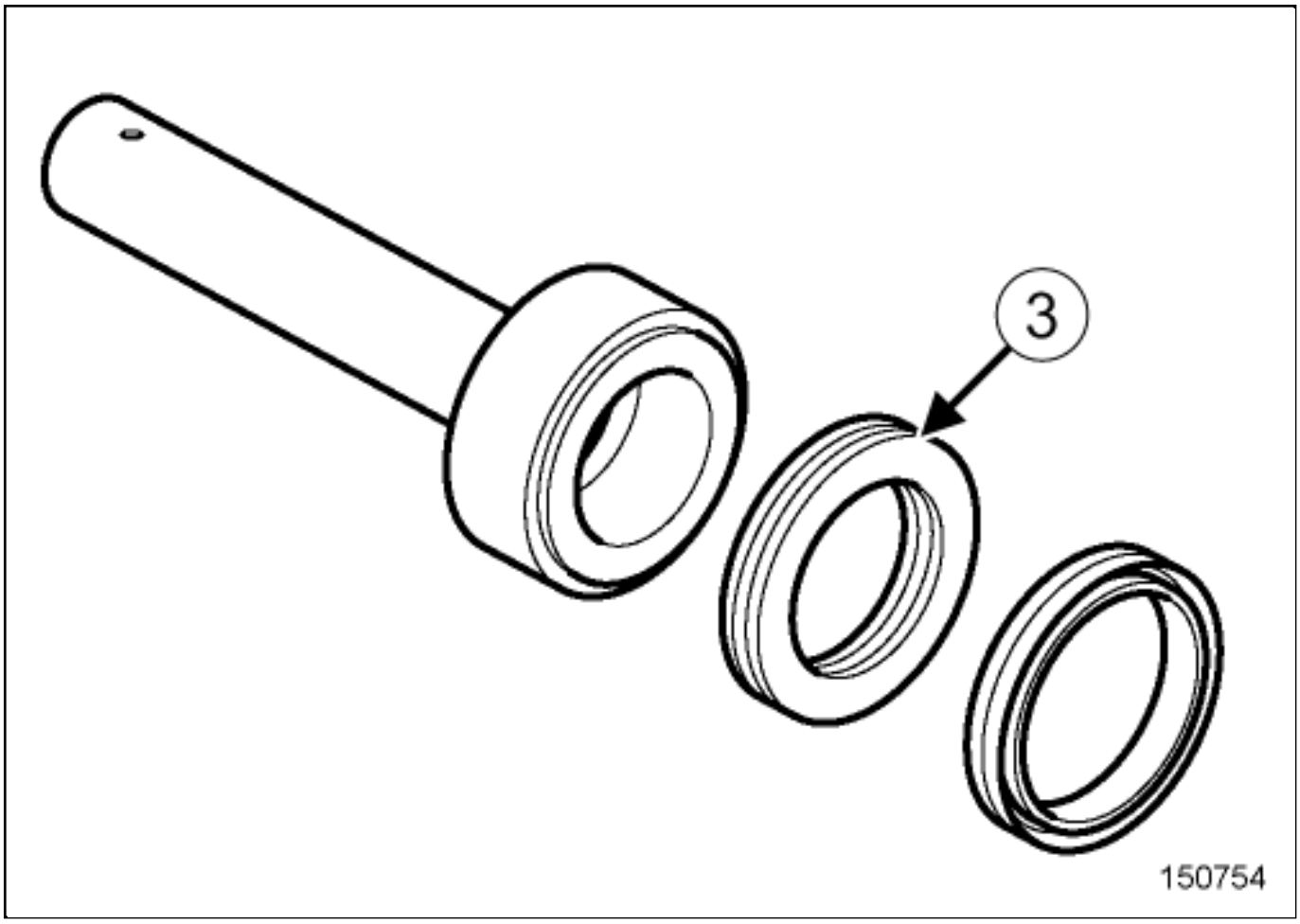
2. REFITTING OPERATION



- Fit a new seal using the toolTool for fitting the ZF4 primary shaft seal(Bvi. 1947) (2) .

Note:

For a good installation, use the additional toolWasher of compensation for installation primary shaft seal.(Bvi. 1985) .



- Refit a new seal using the toolsTool for fitting the ZF4 primary shaft seal(Bvi. 1947) and Washer of compensation for installation primary shaft seal.(Bvi. 1985) (3) .

- Proceed in the reverse order to removal.

INPUT SHAFT: STRIPPING - REBUILDING

Note, one or more warnings are present in this procedure

Special tooling required	
ZF4 gearbox internal renovation kit	Bvi. 1950

Equipment required
component support

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 21A, Manual gearbox , Manual gearbox: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

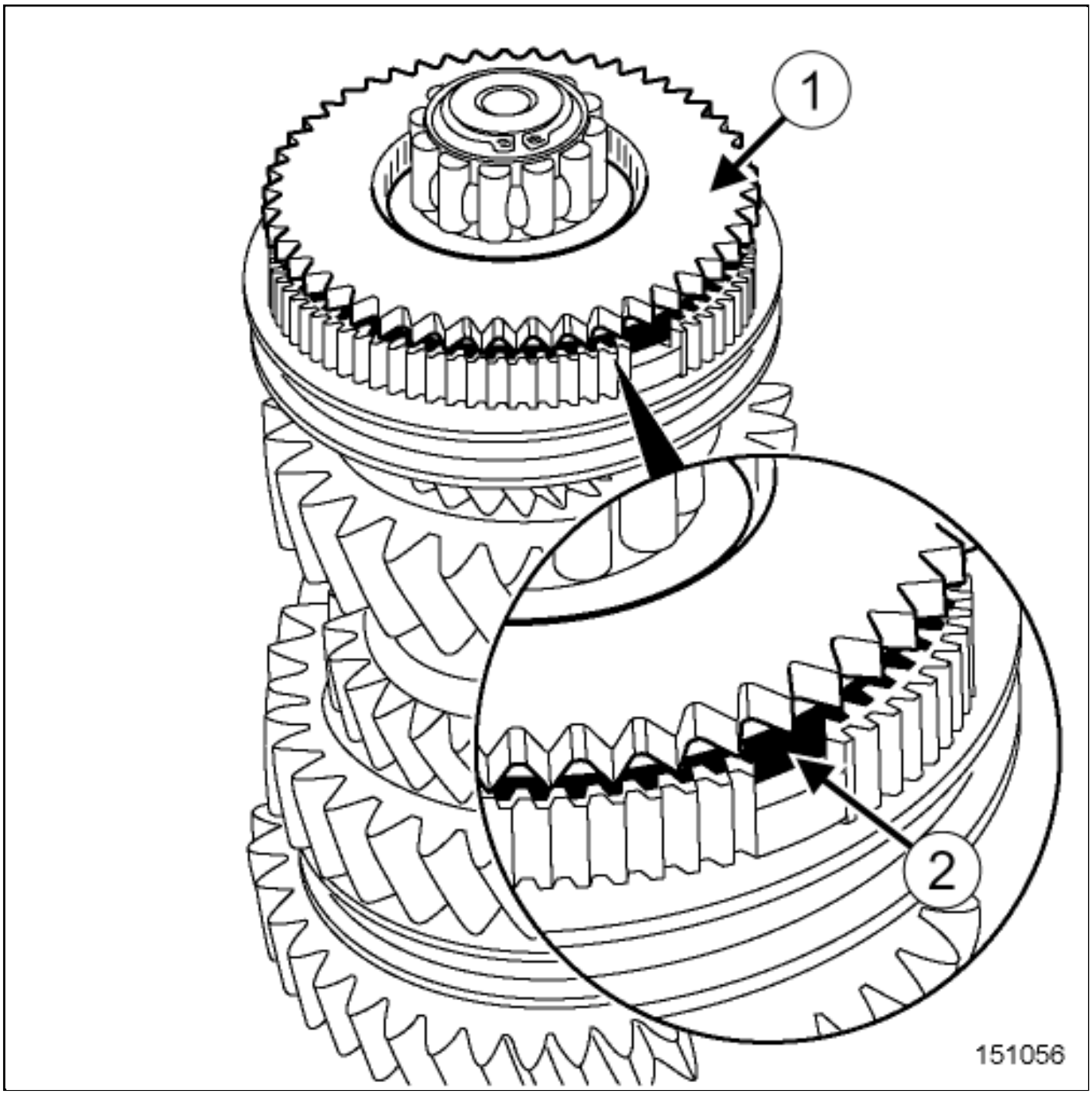
STRIPPING

1. STRIPPING PREPARATION OPERATION

- Remove the manual gearbox Gearbox assembly: Exploded view .
- Position the gearbox on the component support (see 21A, Manual gearbox , Gearbox support equipment: Use) .
- Remove:
  - the gearshift plate (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) ,
  - the reverse gear switch Gearbox assembly: Exploded view .
- Remove the clutch housing Gearbox assembly: Exploded view .
- Remove the shaft unit (see 21A, Manual gearbox , Gearbox shaft: Removal - Refitting) .
- Remove the assembly of gearbox control shafts and forks (see 21A, Manual gearbox , Selector shafts and

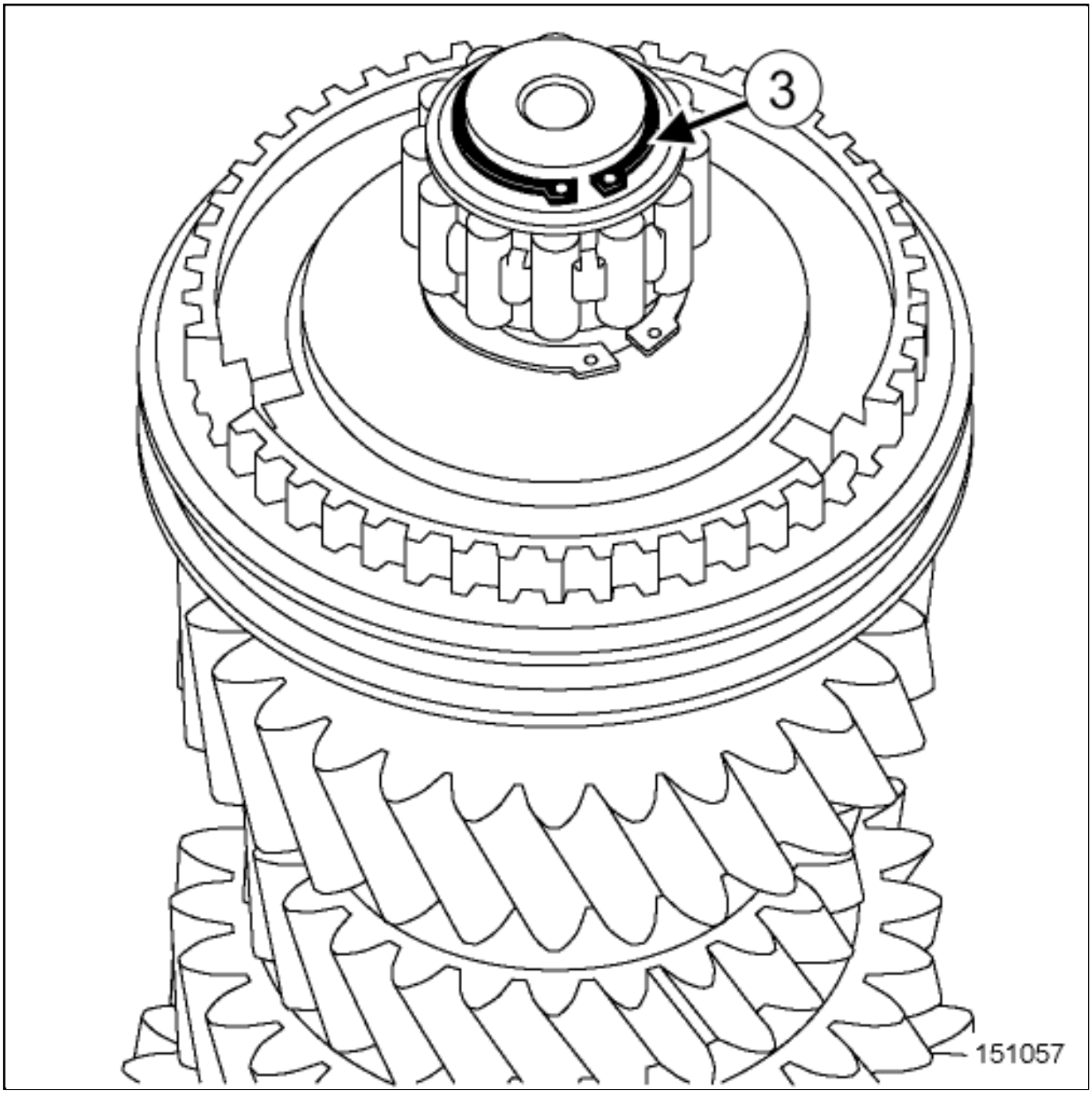
gearbox forks assembly: Exploded view) from the shaft unit.

2. STRIPPING OPERATION

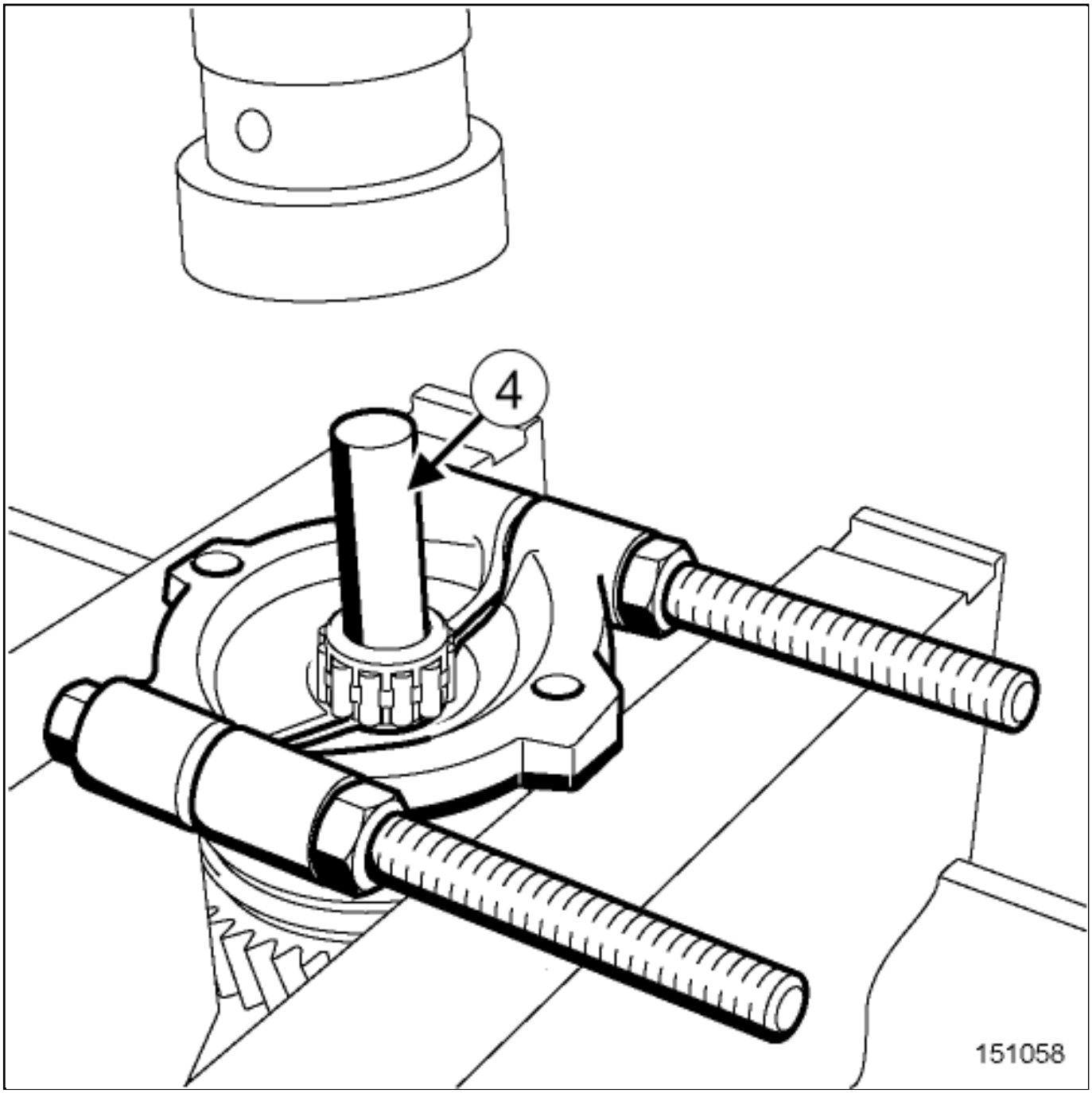


Remove (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

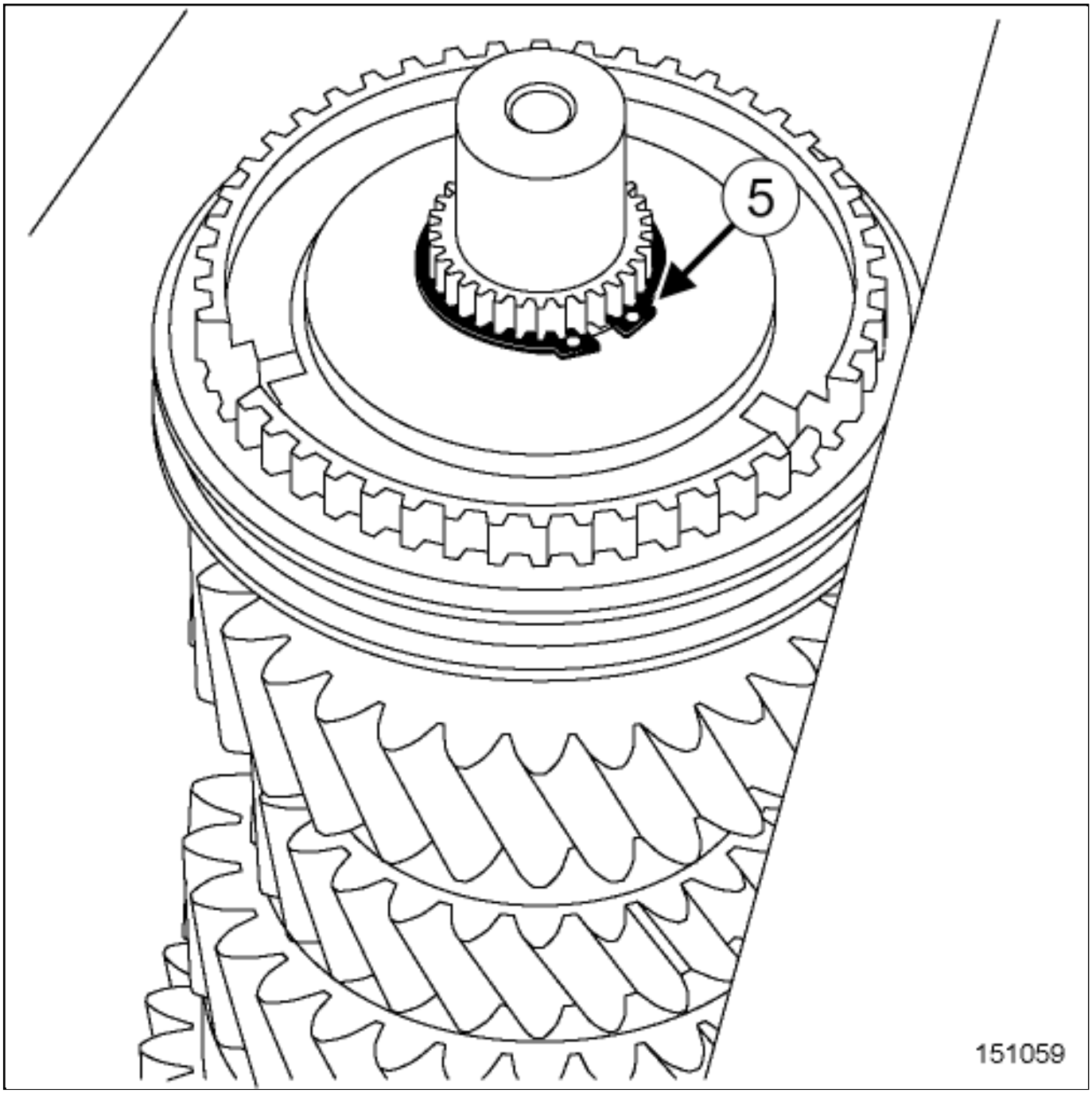
- the 6th clutch hub(1) ,
- the 6th synchroniser ring(2) .



❑ Remove the cylindrical roller bearing stop ring(3) **(see 21A, Manual gearbox , Input shaft assembly: Exploded view)** .



- Use a hydraulic press, an extractor and toolZF4 gearbox internal renovation kit(Bvi. 1950) F (4) to remove the cylindrical roller bearing(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

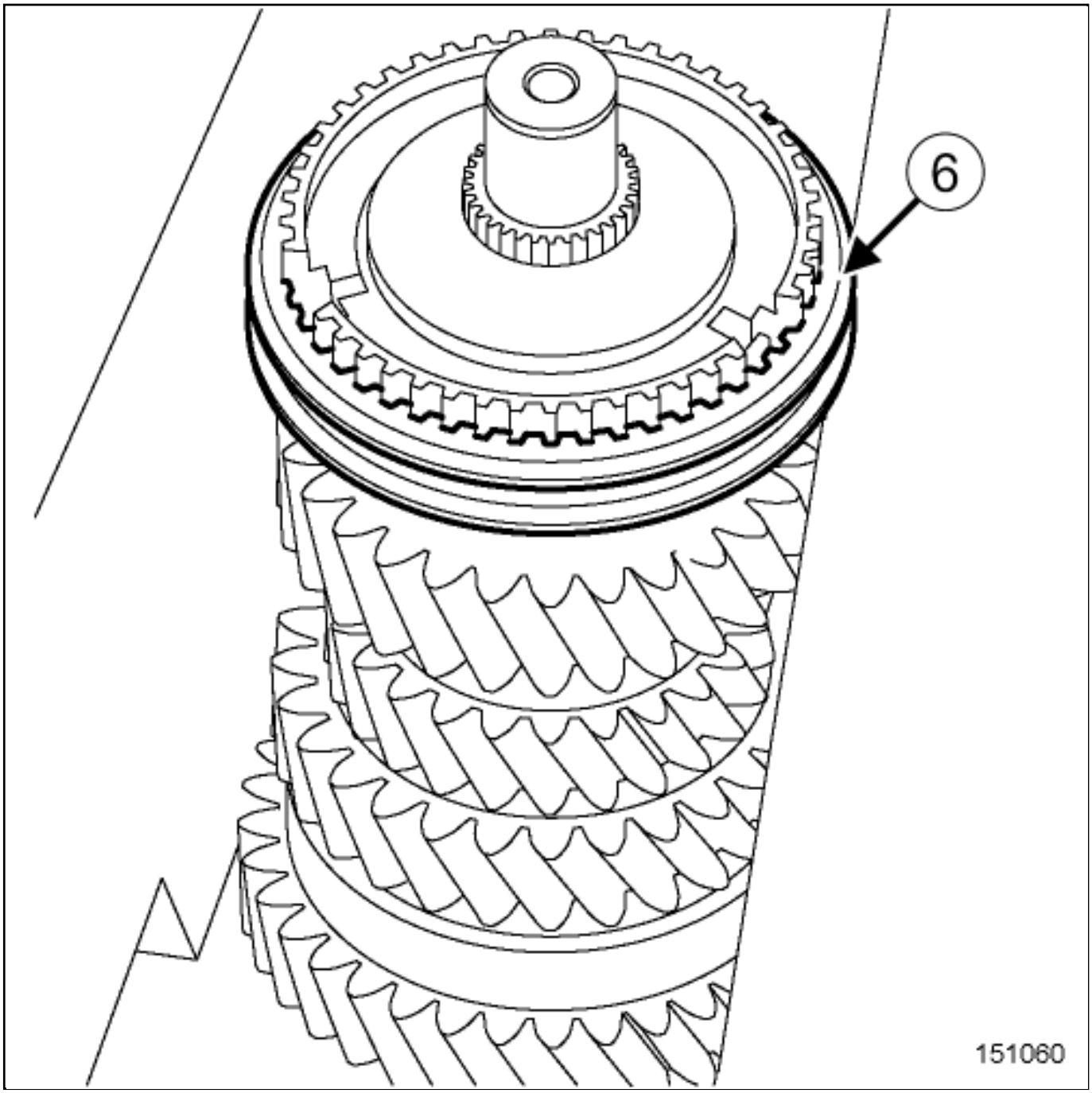


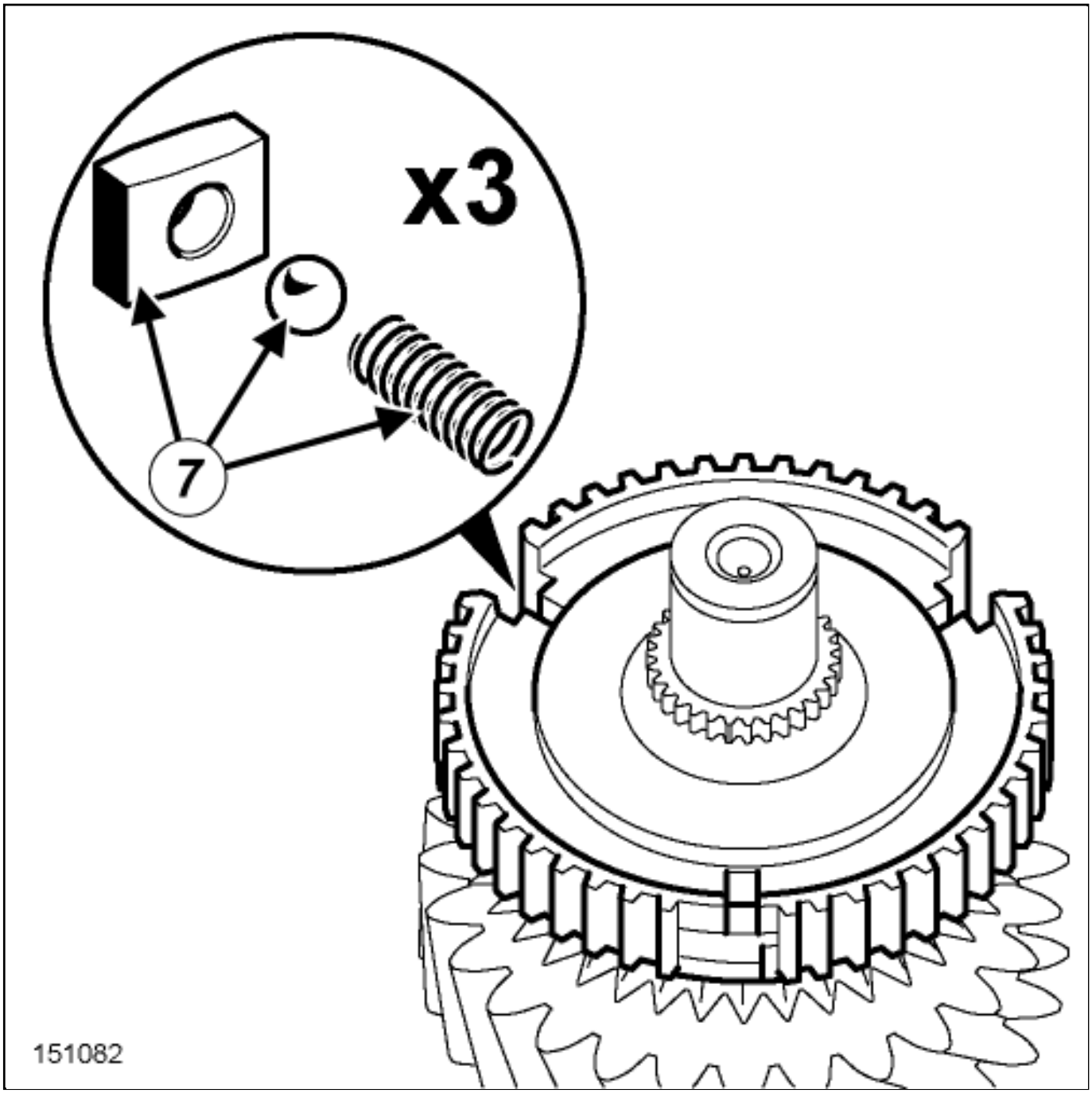
❏ Remove the stop ring of the 5th and 6th synchroniser hub(5) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

CAUTION

The three pressure parts with a pressure spring and a ball respectively will be released.

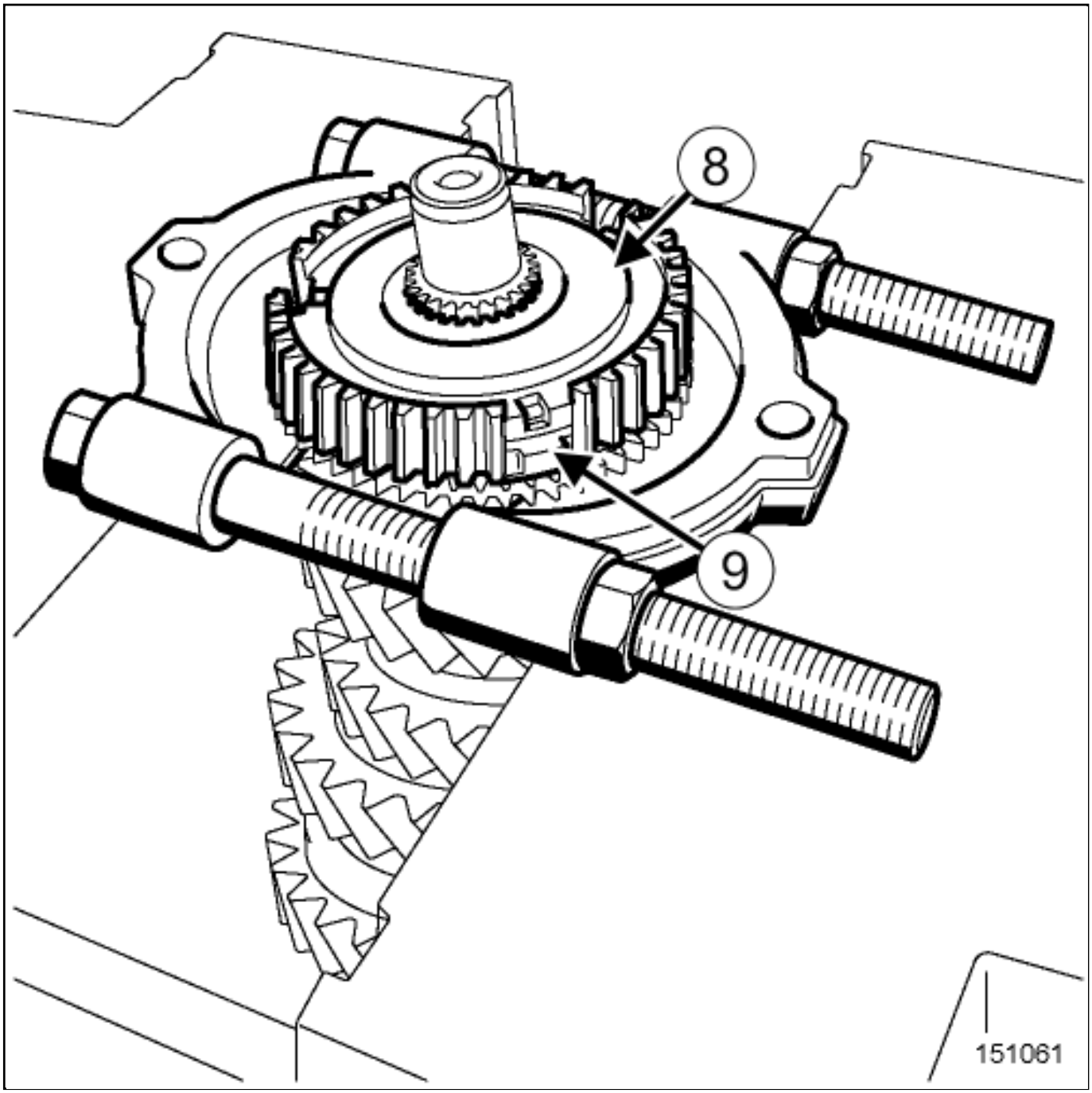
Immobilise the parts with a cloth so that they do not jump out.

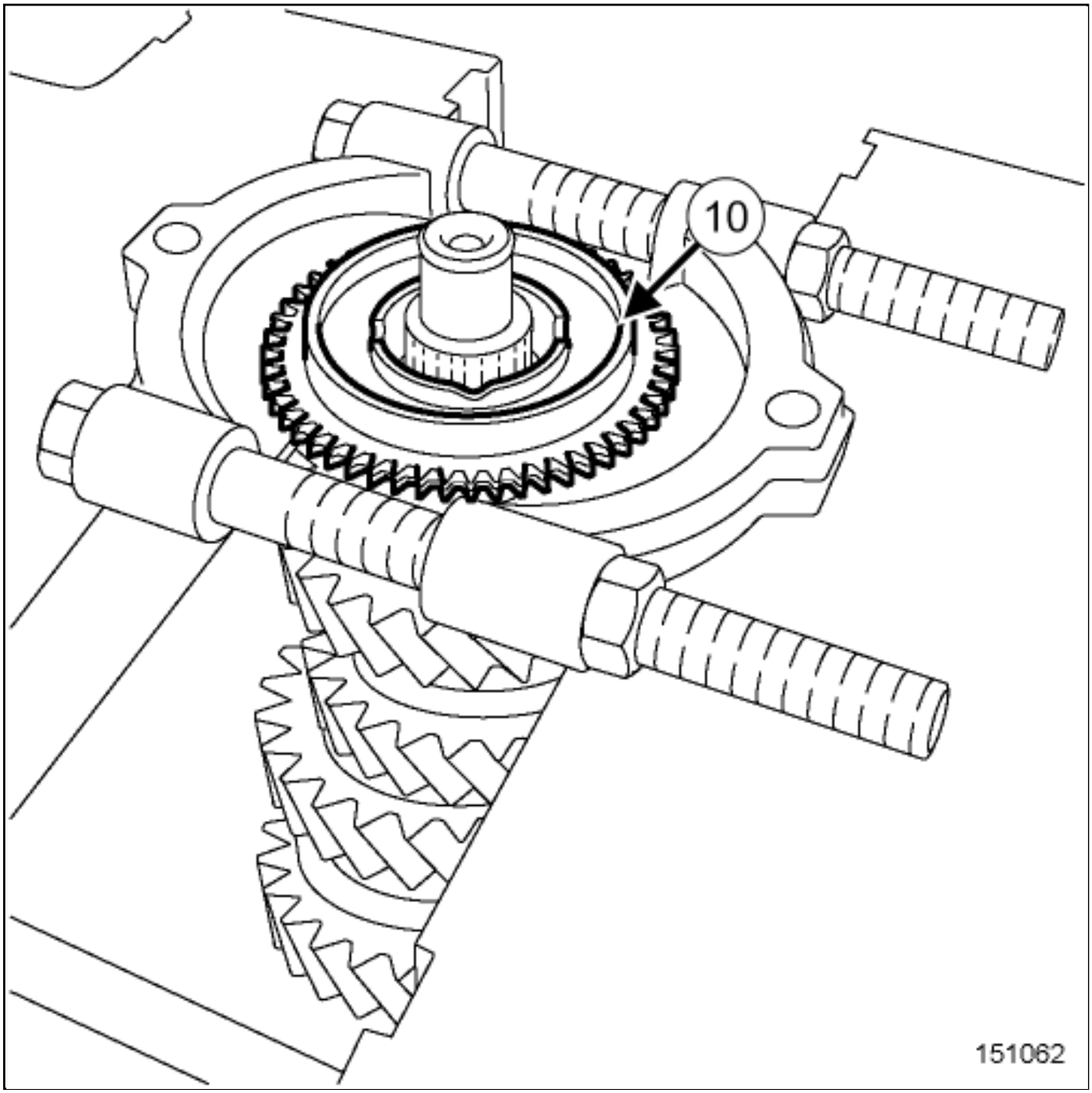

6
151060



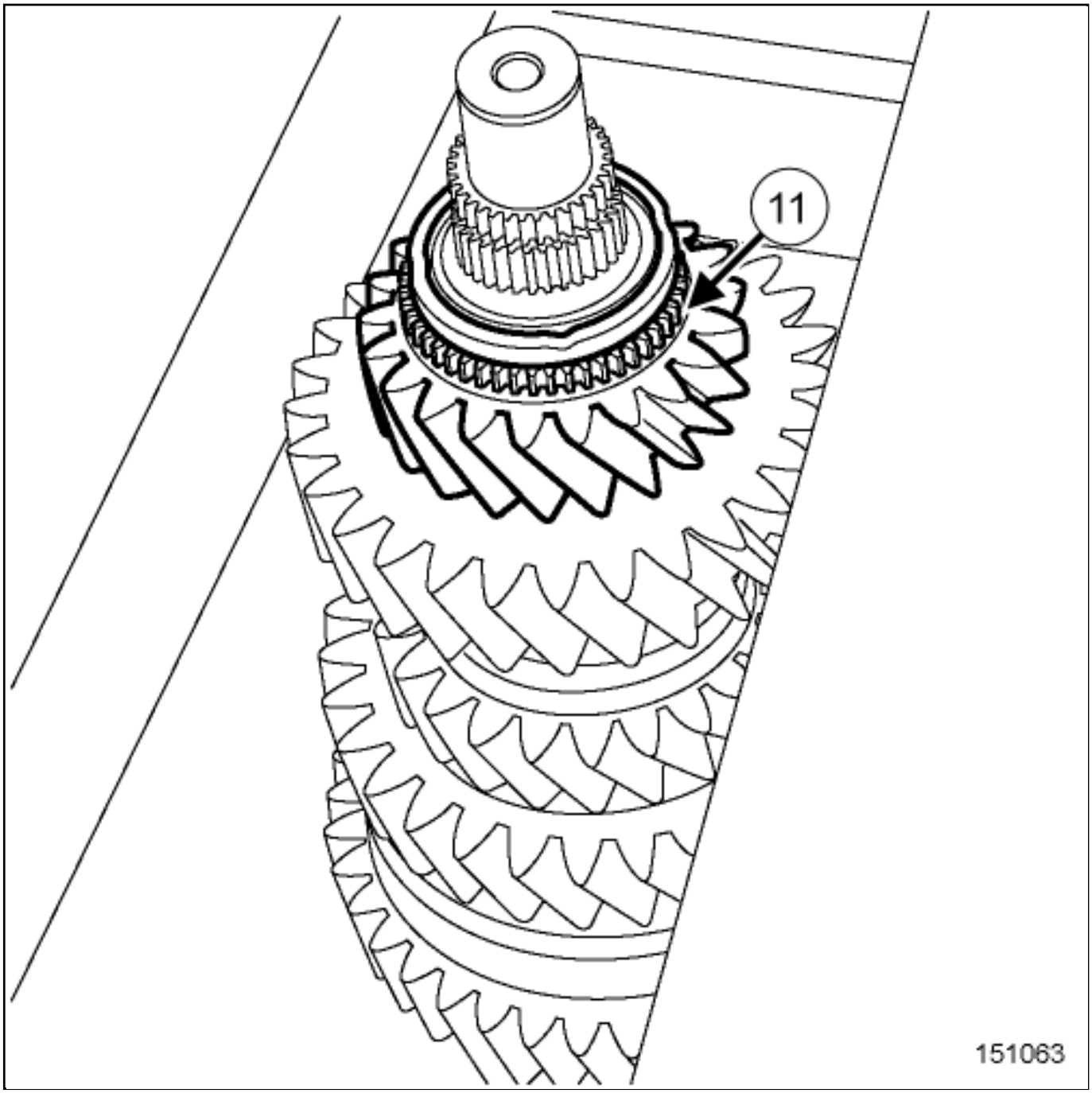
Remove (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- the 5th and 6th synchroniser(6) ,
- the locking ball and spring(7) of the 5th and 6th synchroniser hub.

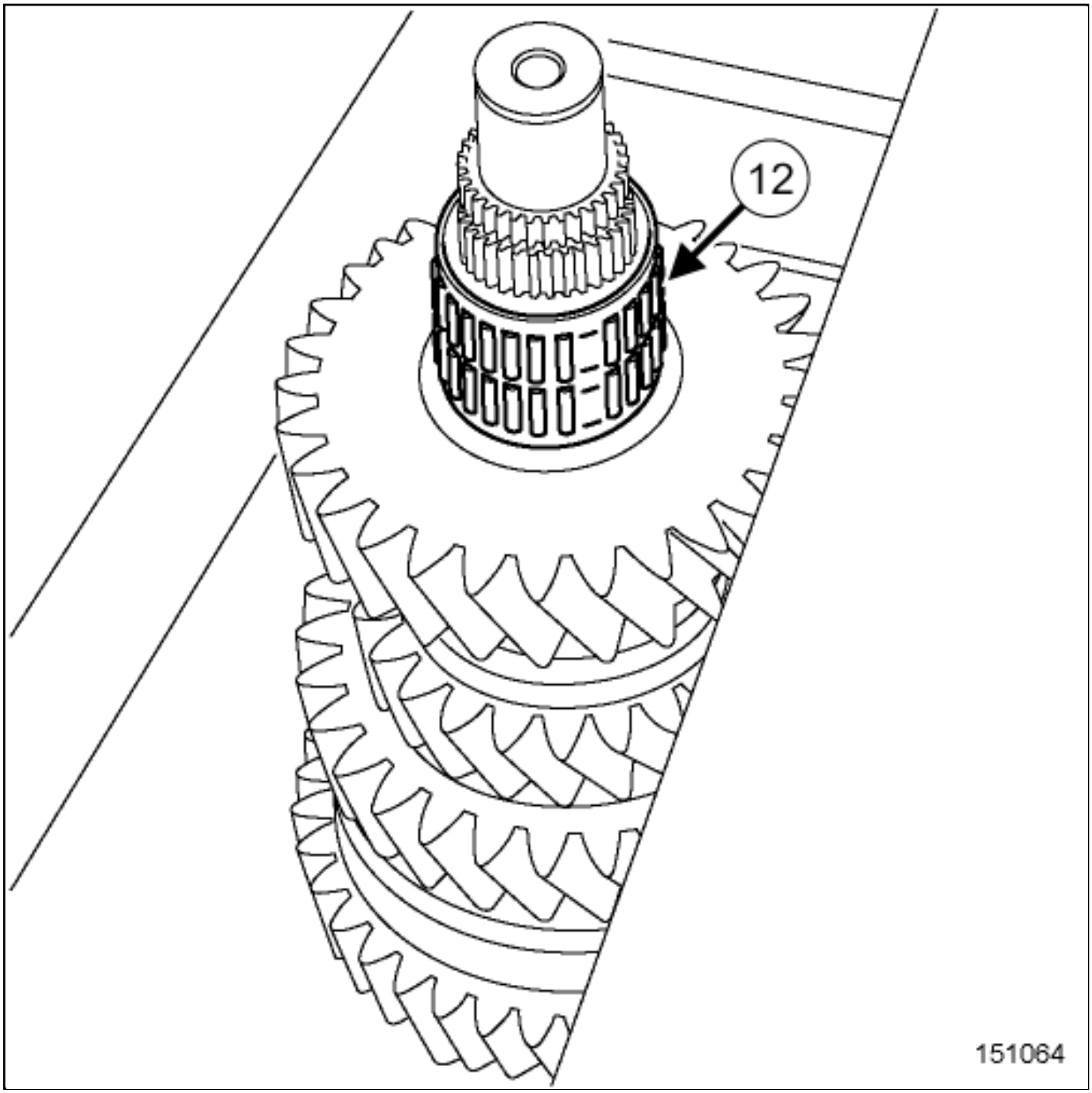

8
9
151061



- Use a hydraulic press and an extractor to remove(see 21A, Manual gearbox , Input shaft assembly: Exploded view) :
  - the 5th and 6th synchroniser hub(8) ,
  - the 5th synchroniser ring(9) ,
  - the 5th clutch hub(10) .

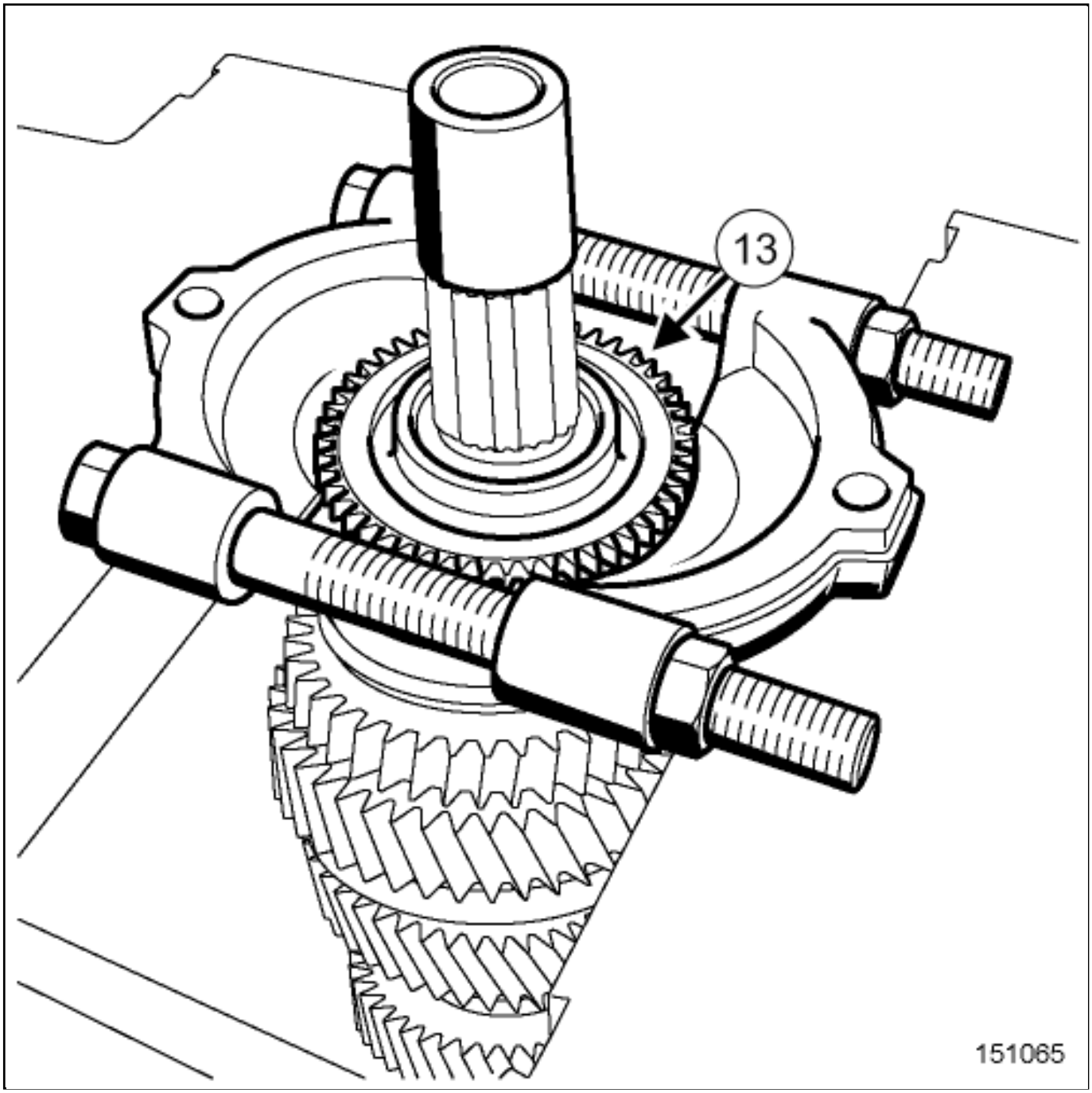


- Remove the 5th idle gear(11) **(see 21A, Manual gearbox , Input shaft assembly: Exploded view)** .

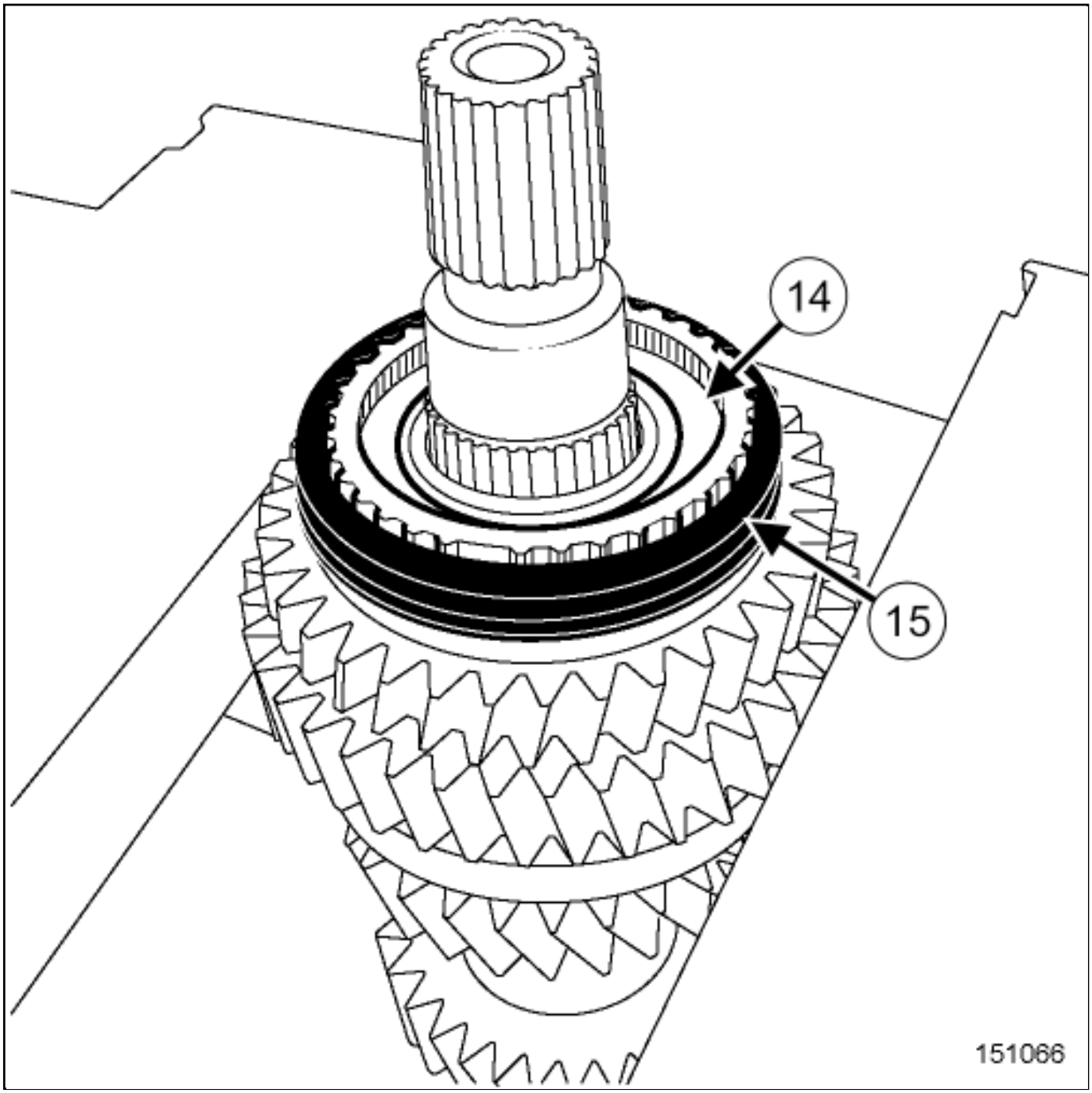


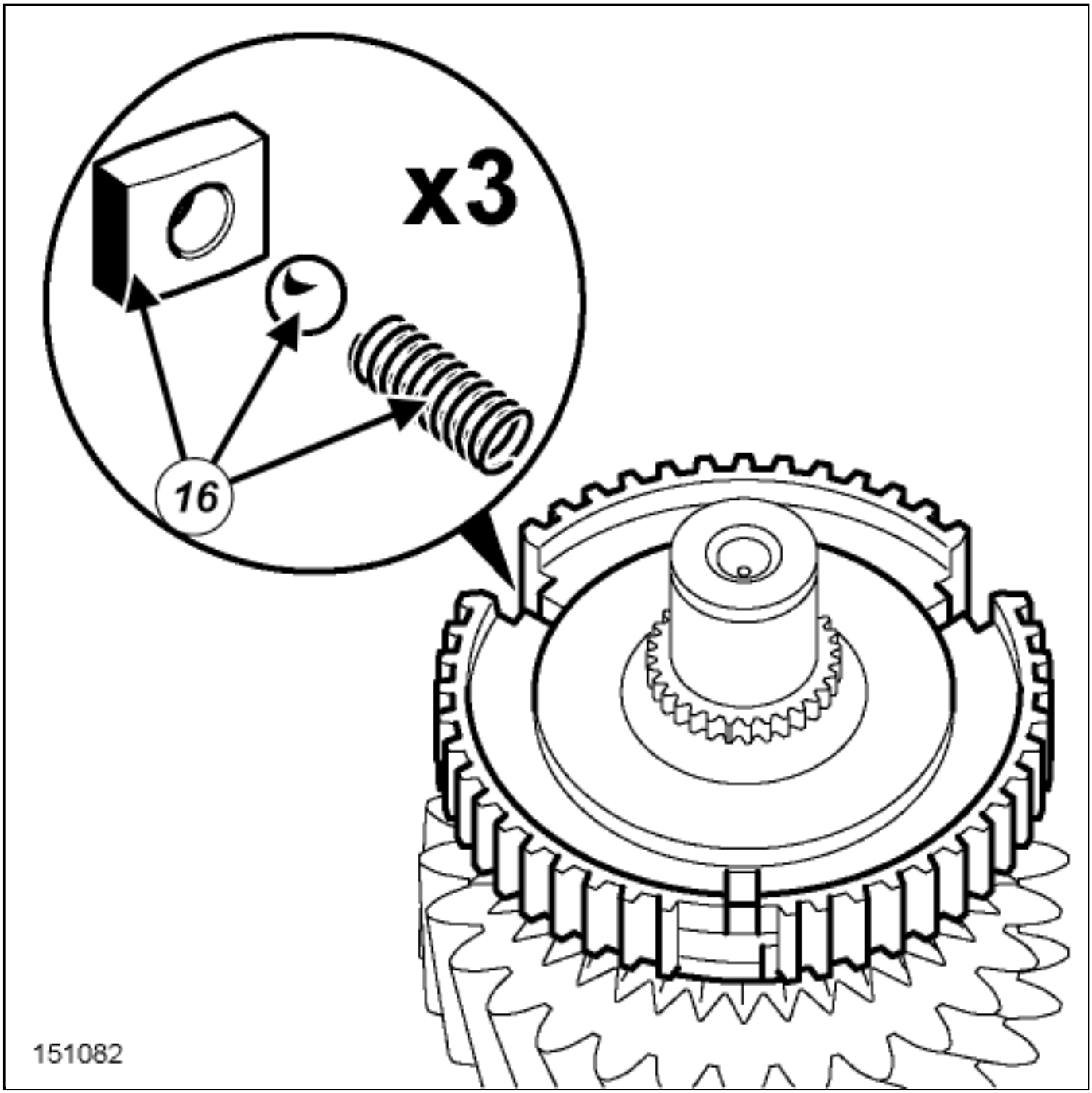
- Remove the 5th idle gear needle bearing(12) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

- Rotate the input shaft.



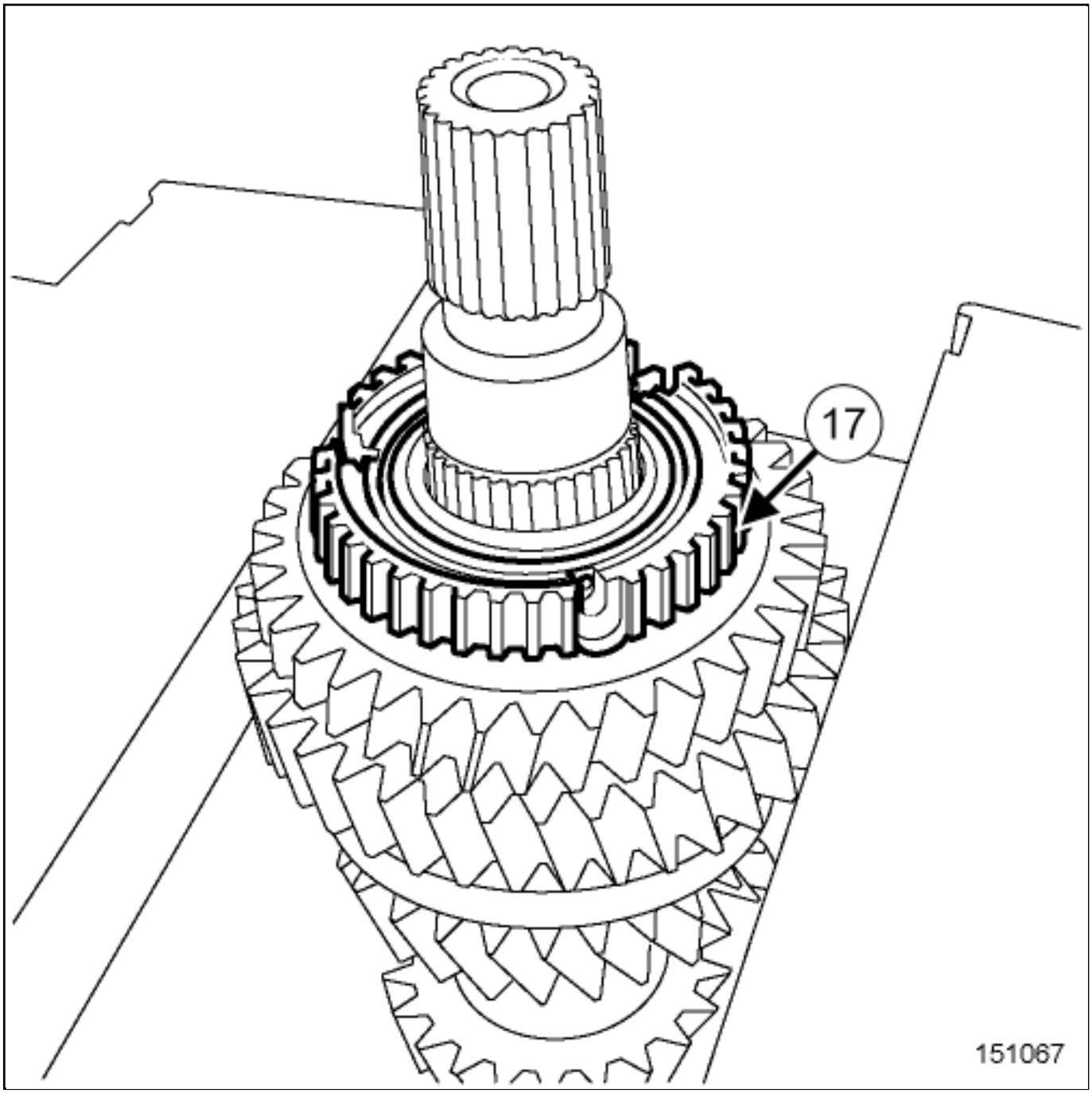
- Use a hydraulic press, an extractor and toolZF4 gearbox internal renovation kit(Bvi. 1950) A to remove the reverse gear clutch hub(13) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .


14
15
151066

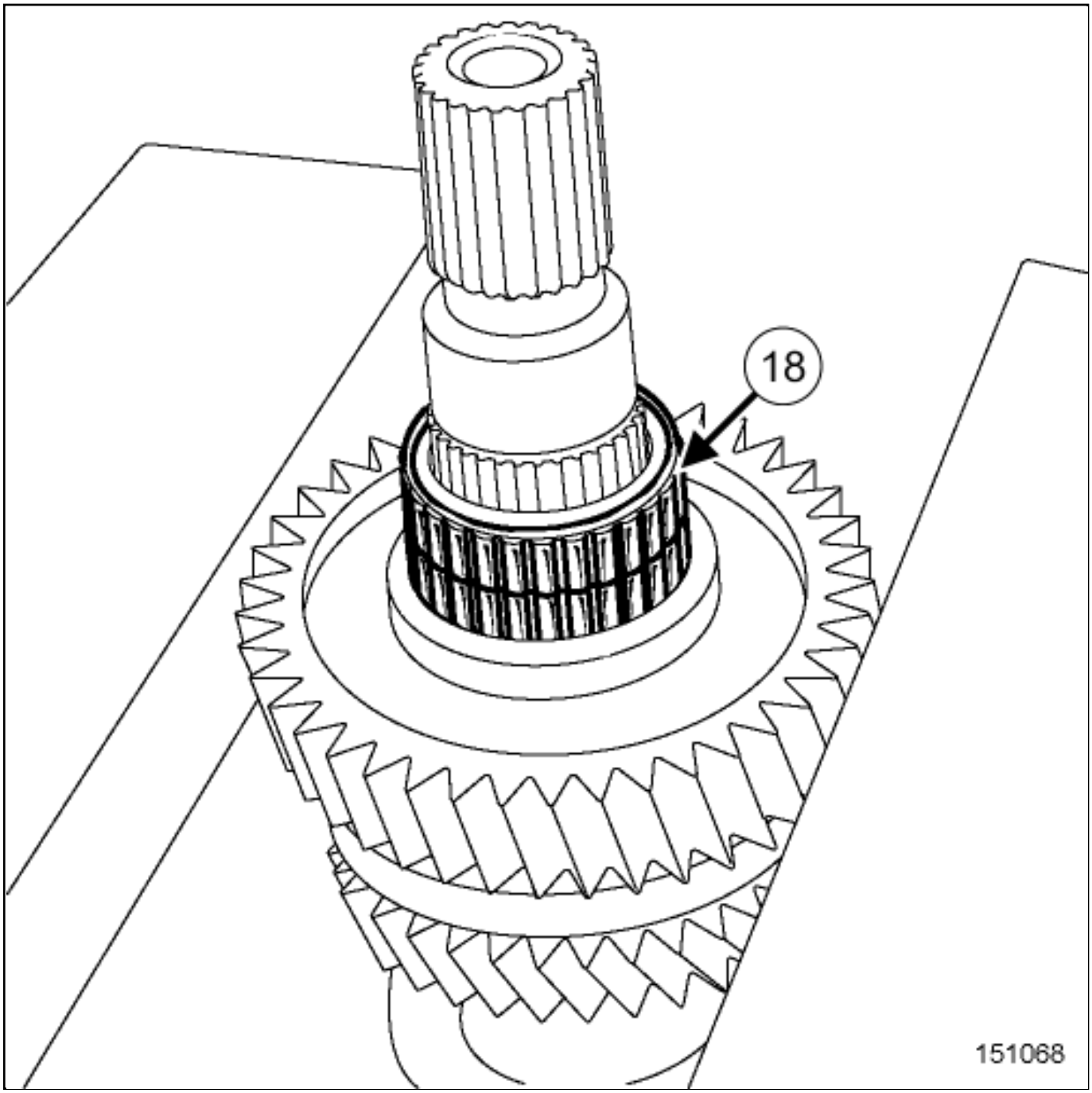


Remove (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

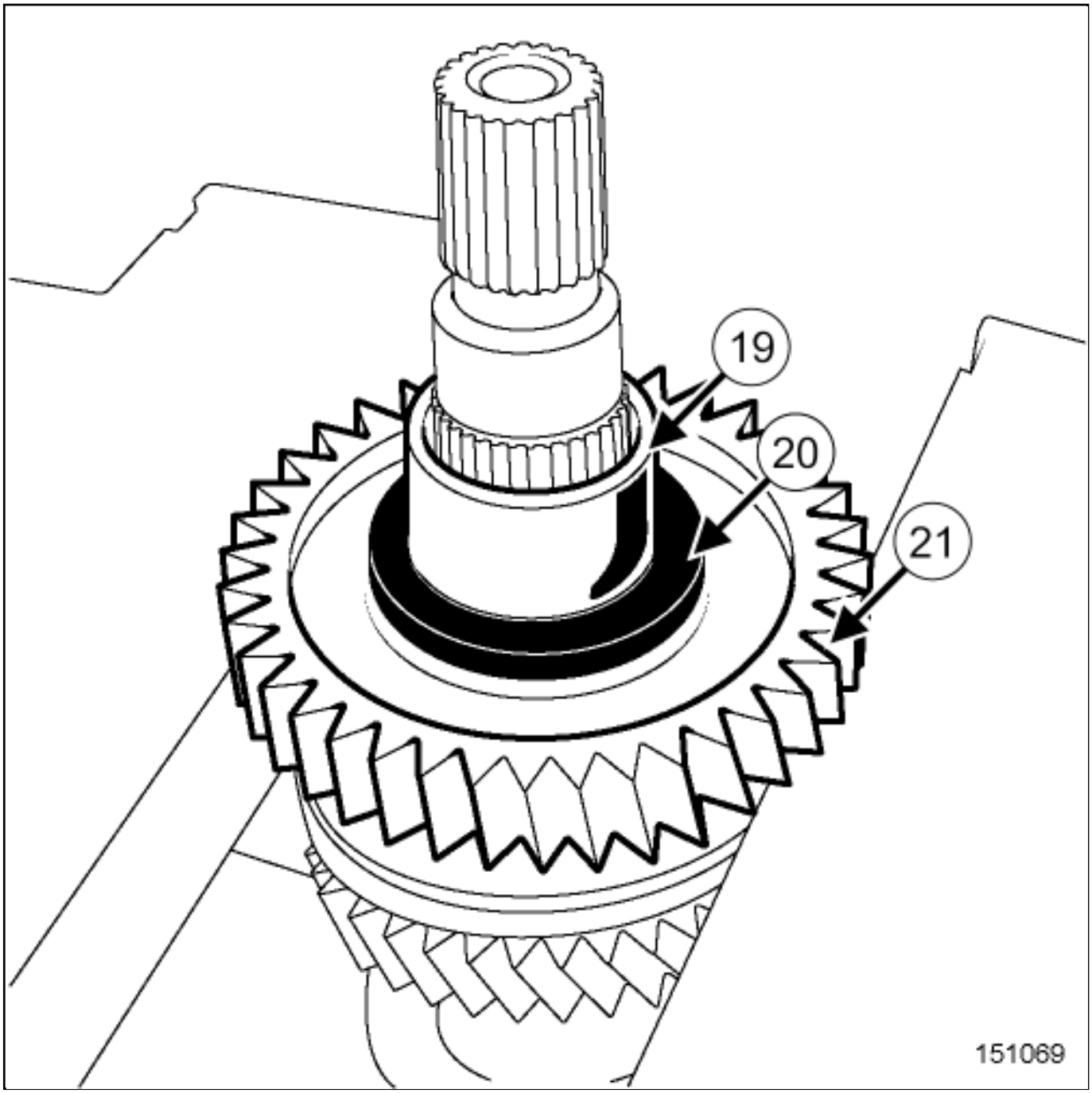
- the reverse gear synchroniser ring(14) ,
- the reverse gear synchroniser(15) ,
- the locking ball and spring of the reverse gear synchroniser hub(16) .



Remove the reverse gear synchroniser hub and idle gear(17) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

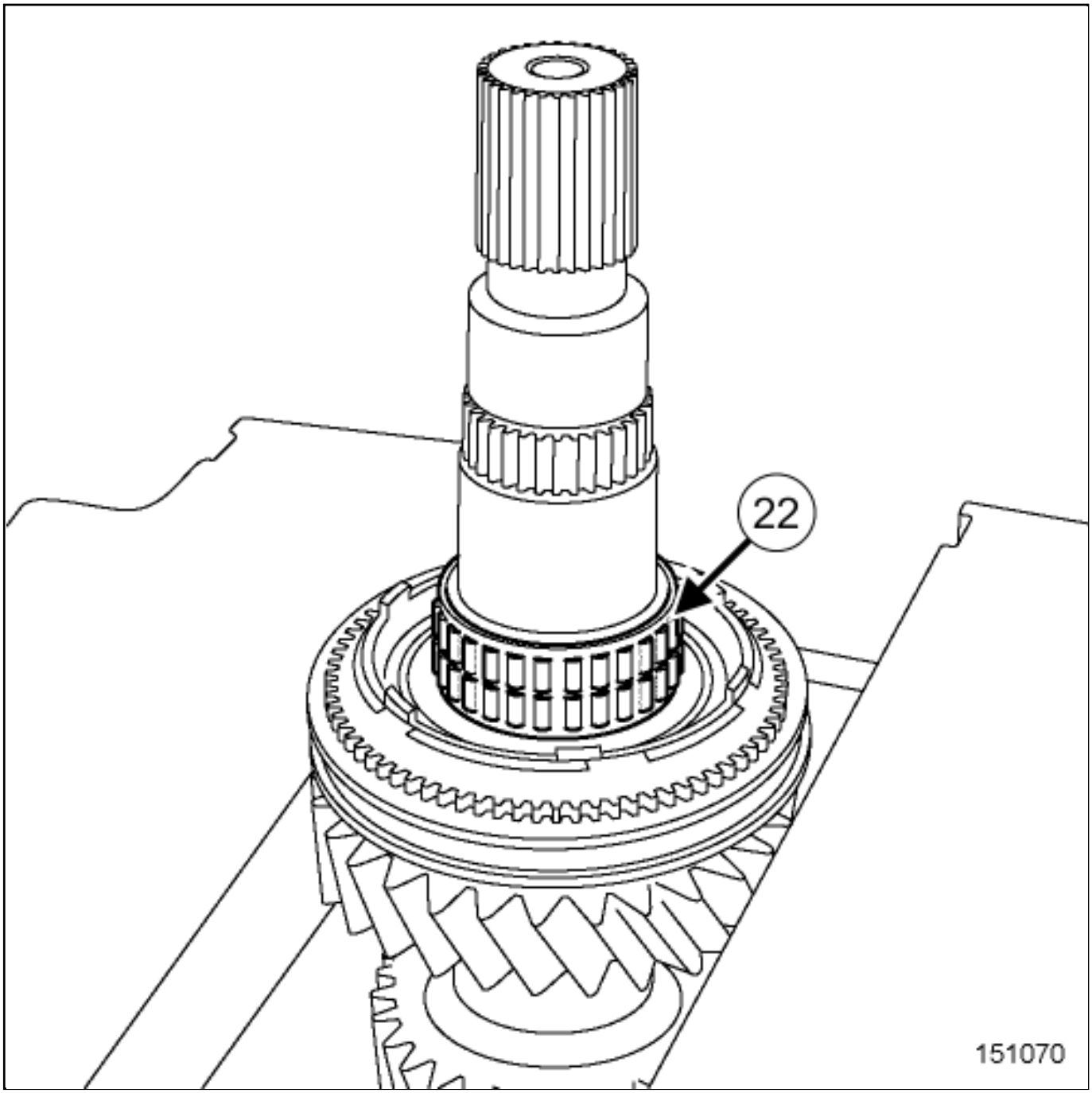


Remove the reverse gear idle gear needle bearing(18) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

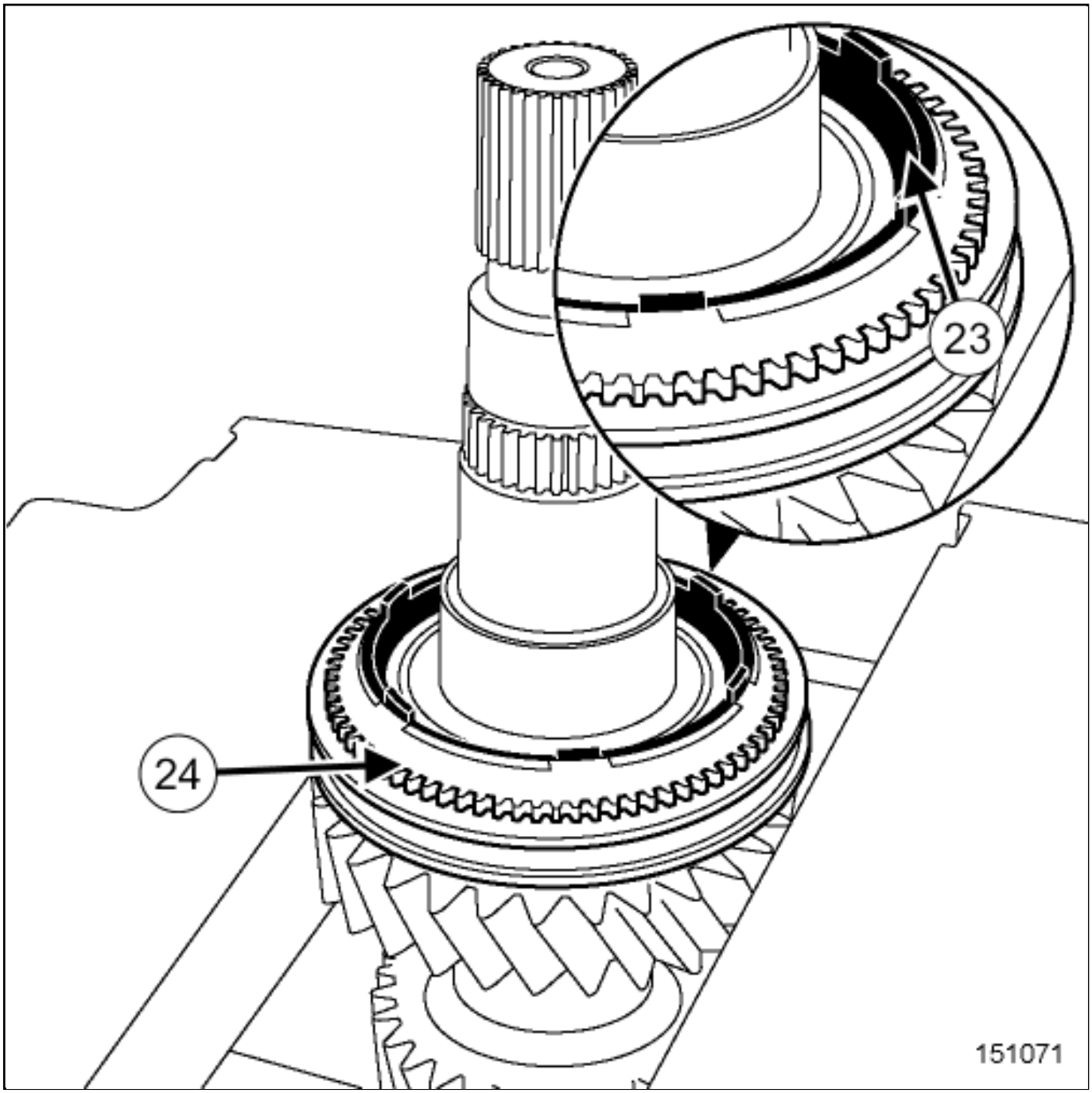


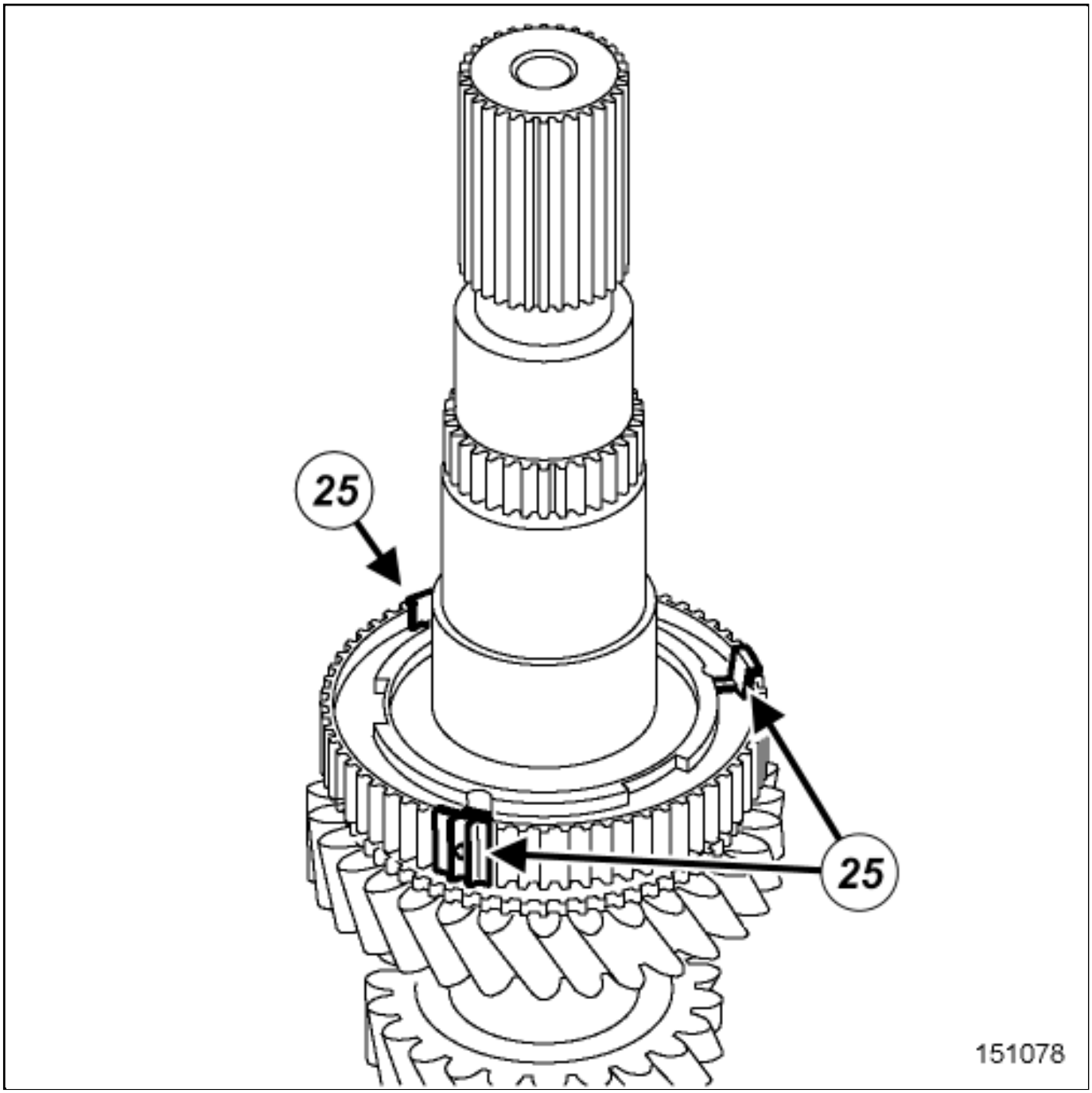
Use a hydraulic press and an extractor to remove(see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- the reverse gear idle gear spacer(19) ,
- the reverse gear idle gear washer(20) ,
- the 1st idle gear(21) .



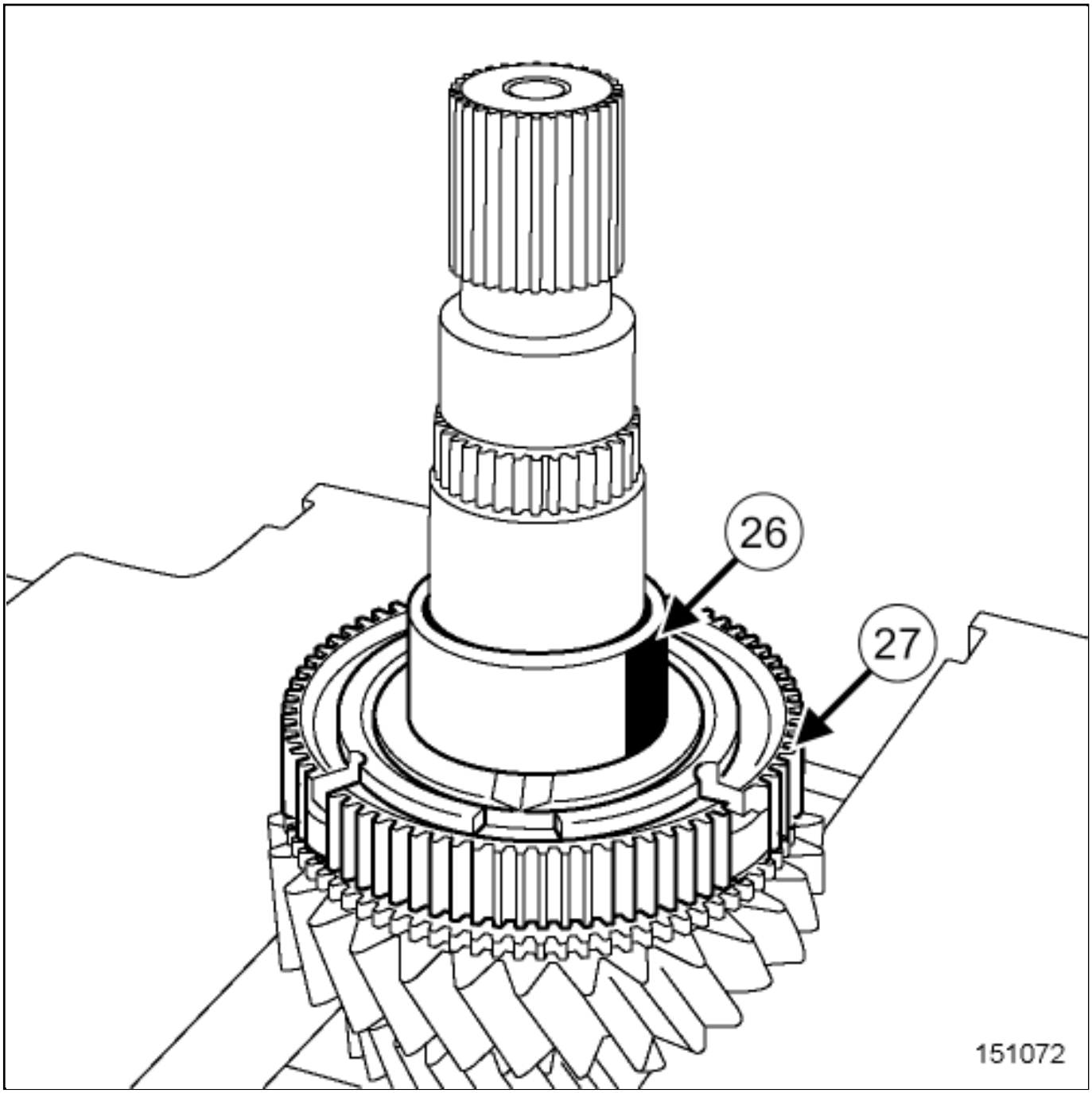
Remove the 1st idle gear needle bearing(22) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .


23
24
151071



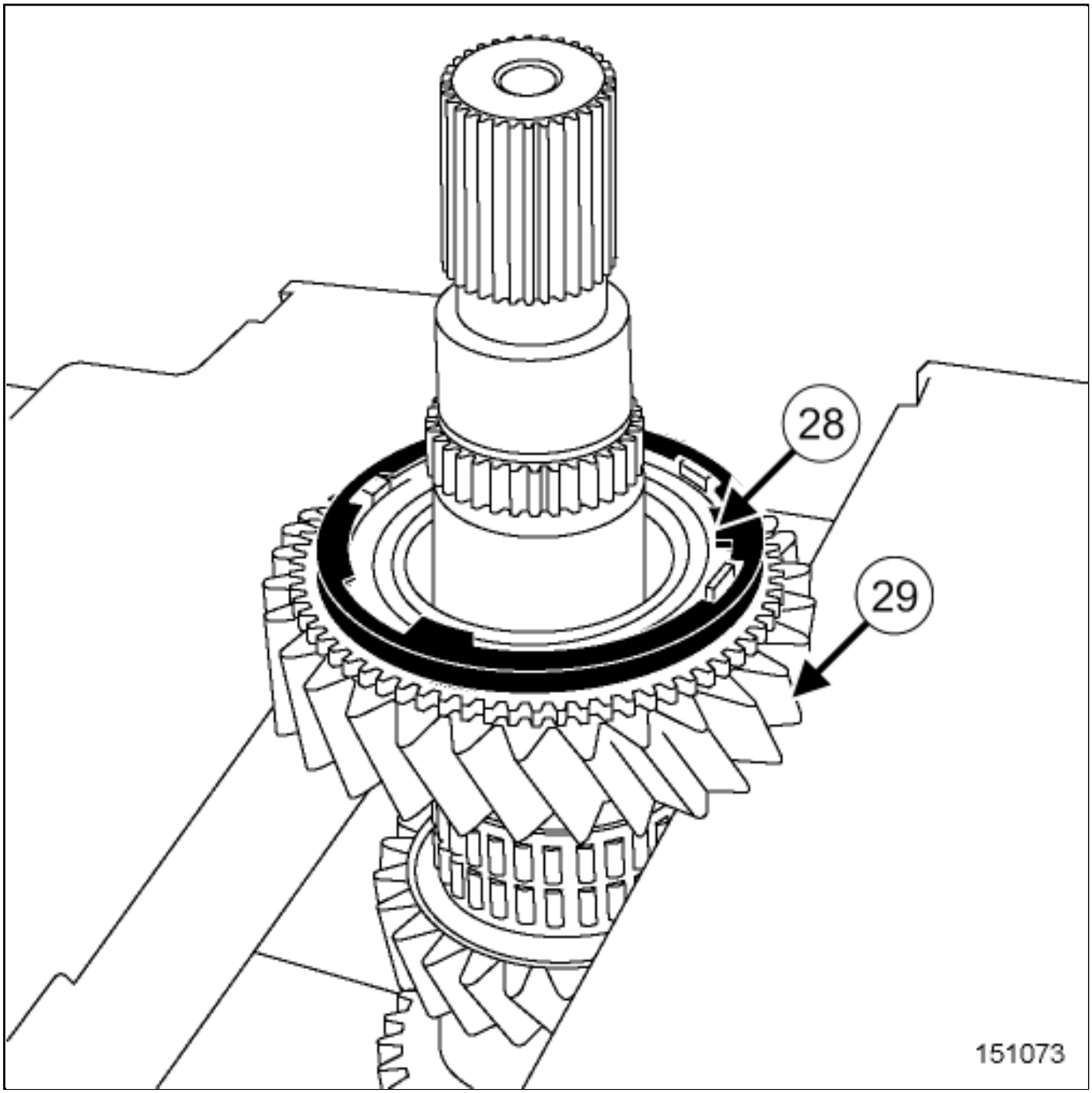
Remove (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- the 1st synchroniser ring(23) ,
- the 1st and 2nd synchroniser(24) ,
- the locking ball cartridge of the 1st and 2nd synchroniser hub(25) .



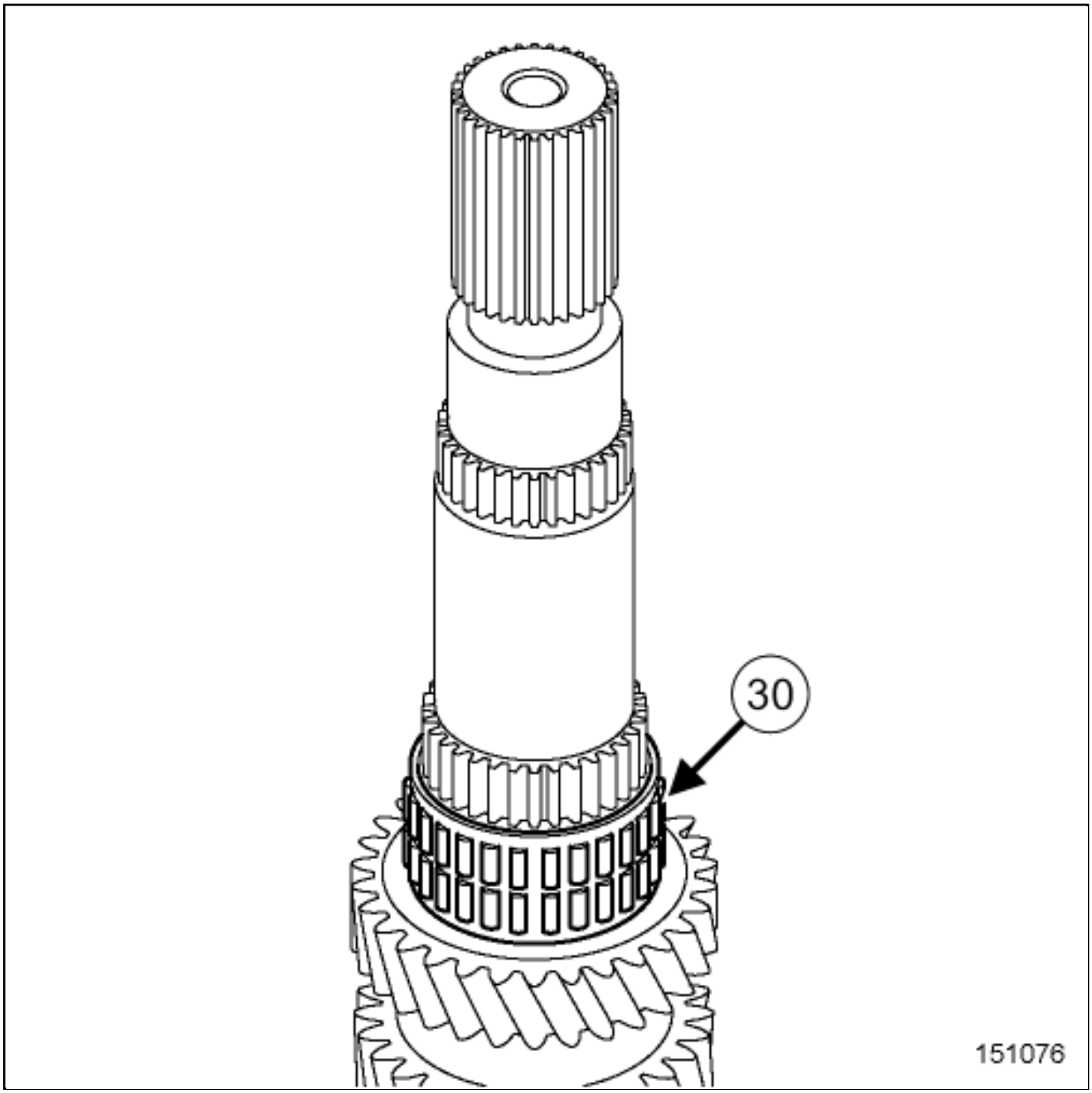
Use a hydraulic press, an extractor to remove(see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- the 1st idle gear spacer(26) ,
- the 1st and 2nd synchroniser hub(27) .



Remove (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- the 2nd synchroniser ring(28) ,
- the 2nd idle gear(29) .



Remove the 2nd idle gear needle bearing(30) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

REBUILDING

1. REBUILDING PREPARATION OPERATION

Clean all the removed parts[Vehicle: Parts and consumables for the repair] (04B, Consumables - Products).

Always replace:

- the cylindrical roller bearing,
- the 5th idle gear needle bearing,
- the reverse gear idle gear needle bearing,
- the 1st idle gear needle bearing,
- the 2nd idle gear needle bearing.

2. REBUILDING OPERATION

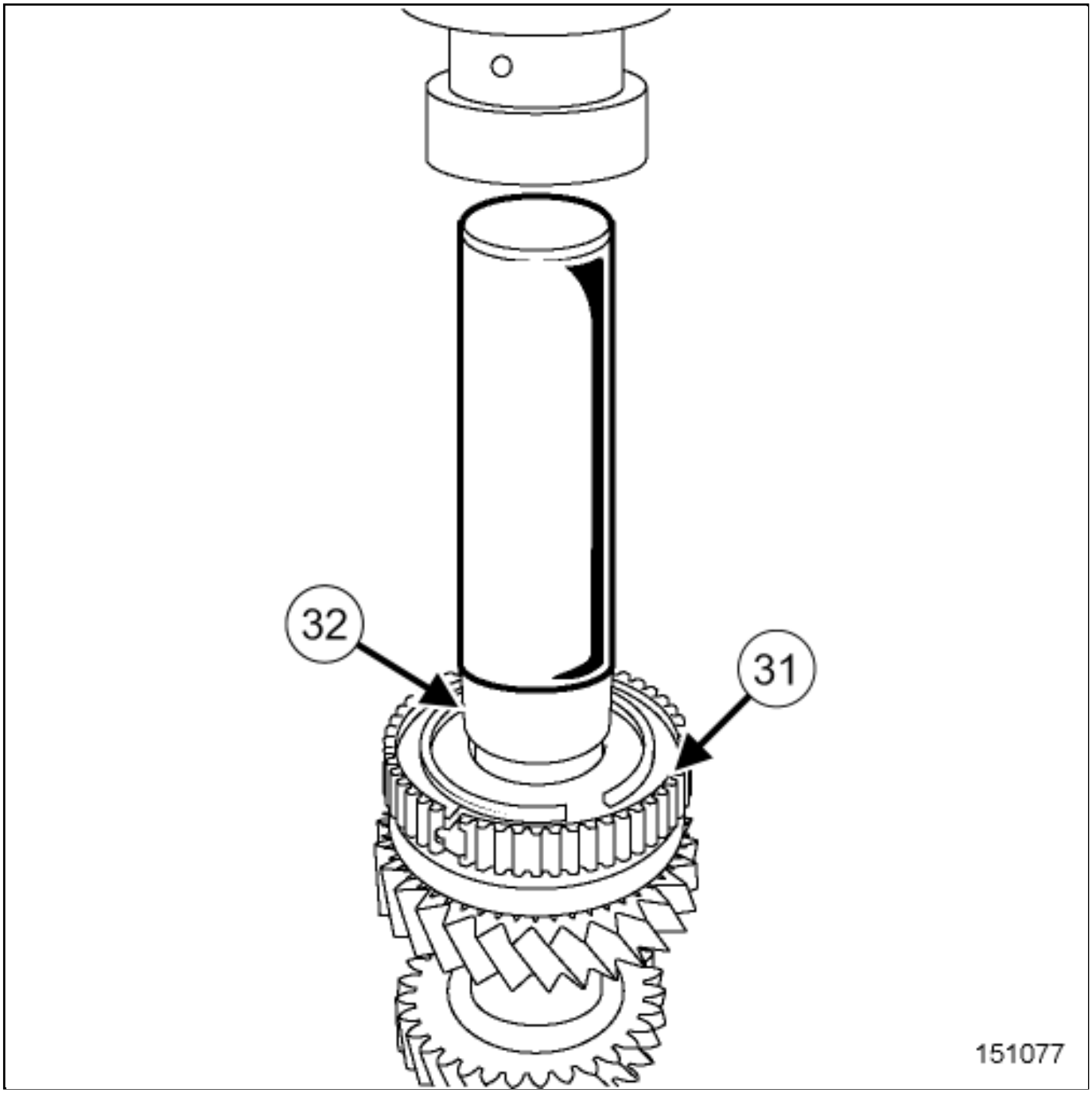
Lightly oil the 2nd idle gear needle bearing[(see 21A, Manual gearbox , Input shaft assembly: Exploded view)] .

Refit a new 2nd idle gear needle bearing[(see 21A, Manual gearbox , Input shaft assembly: Exploded view)] on the input shaft.

Refit the 2nd idle gear on the input shaft so that the synchroniser drive teeth are facing the gearbox output end[(see 21A, Manual gearbox , Input shaft assembly: Exploded view)] .

Check the wear on the synchromesh parts.

Refit the 2nd synchroniser rings on the 1st and 2nd synchroniser hub[(see 21A, Manual gearbox , Input shaft assembly: Exploded view)] .



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) D to refit:

- the assembly on the input shaft(31) ,
- the 1st idle gear spacer(32) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Refit (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- the locking ball cartridge of the 1st and 2nd synchroniser hub,

the 1st and 2nd synchroniser on the 1st and 2nd synchroniser hub.

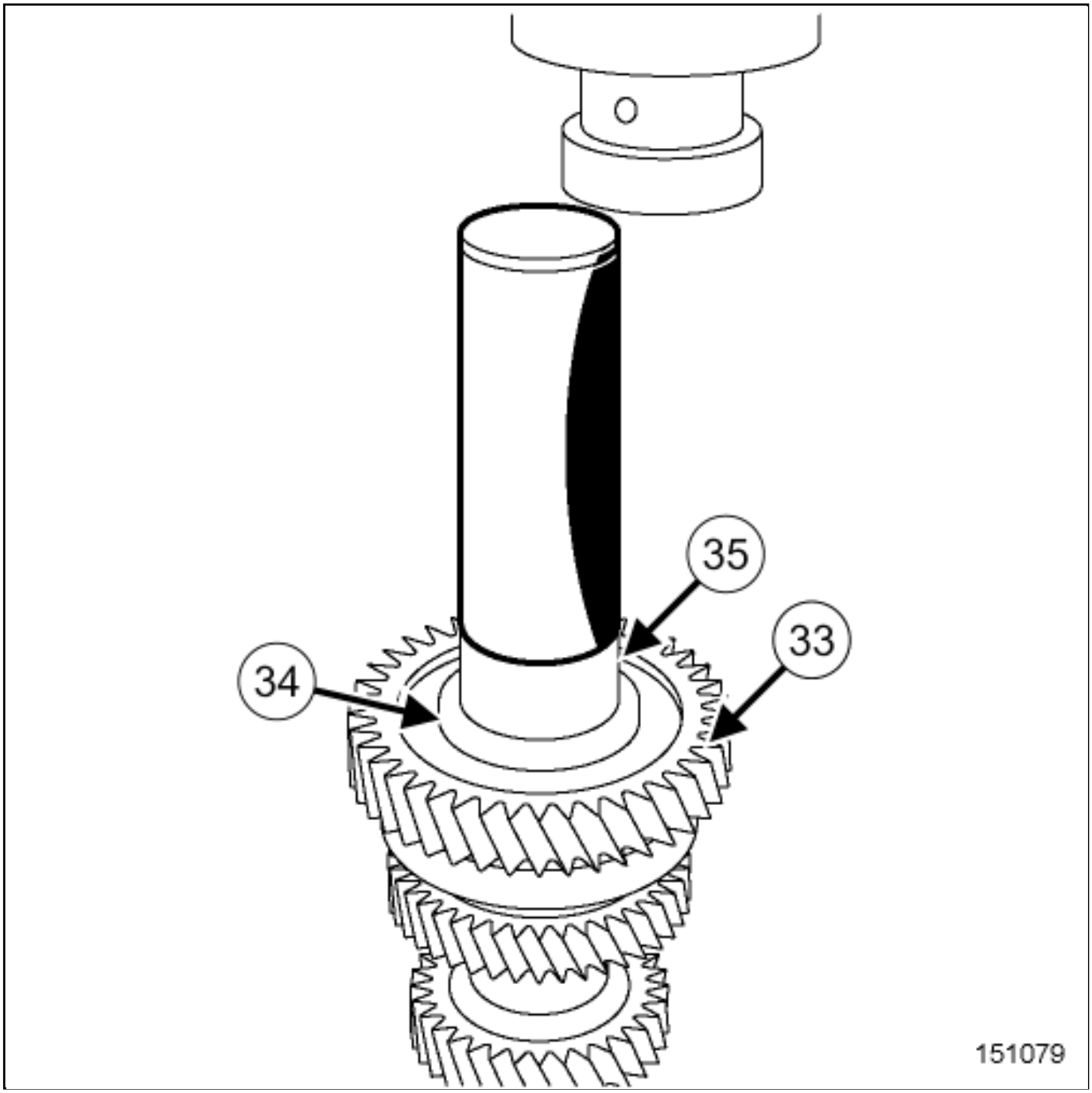
Note:

The notches of the 1st and 2nd synchroniser (inner side) must line up exactly with the synchroniser hub recesses.

Refit the 1st synchroniser rings(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Lightly oil the 1st idle gear needle bearing(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Refit a new 1st idle gear needle bearing(see 21A, Manual gearbox , Input shaft assembly: Exploded view) on the input shaft.



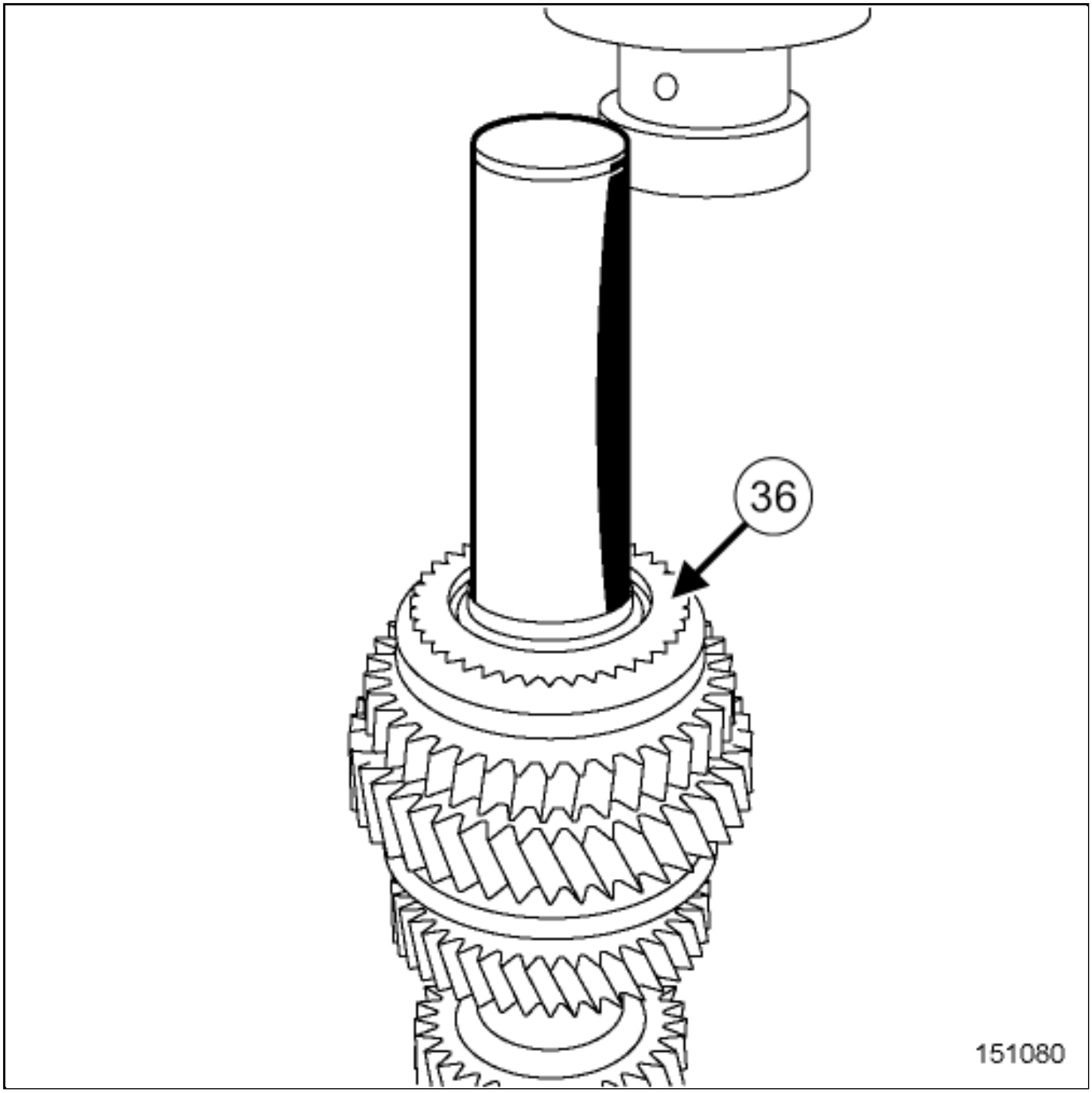
Use a hydraulic press and toolZF4 gearbox internal renovation kit(**Bvi. 1950**) D to refit:

- the 1st idle gear(**33**) ,
- the reverse gear idle gear washer(**34**) ,
- the reverse gear idle gear spacer(**35**) .

Lightly oil the reverse gear idle gear needle bearing(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Refit (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- a new reverse gear idle gear needle bearing,
- the reverse gear synchroniser on the reverse gear synchroniser hub and idle gear,
- the locking balls and springs of the reverse gear synchroniser hub on the reverse gear synchroniser hub and idle gear,
- the reverse gear synchroniser hub and idle gear,
- the reverse gear synchroniser ring.



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) D to refit the reverse gear clutch hub(36) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Rotate the input shaft(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

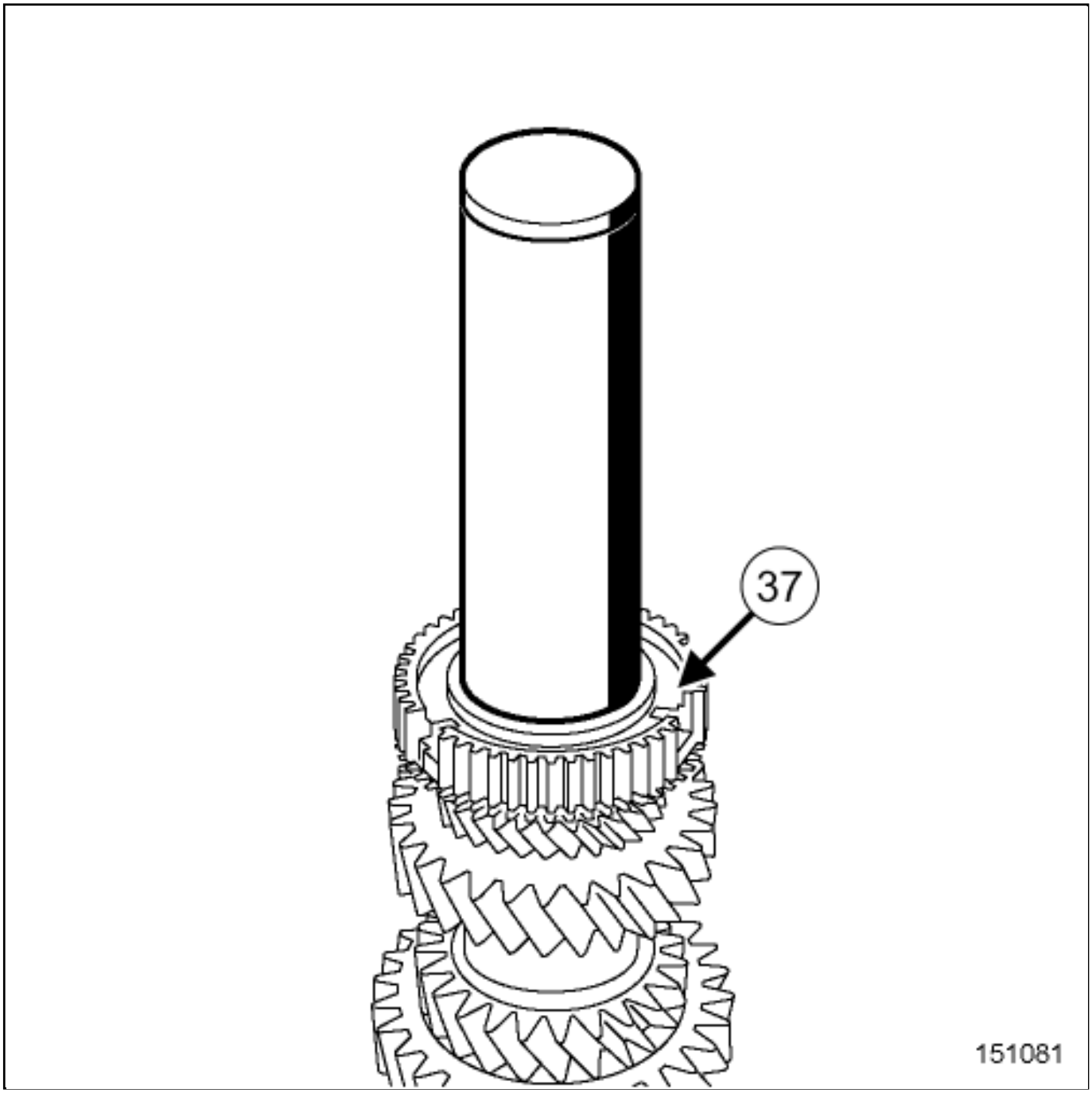
Oil the 2nd idle gear needle bearing(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Refit (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- a new 2nd idle gear needle bearing,
- the 5th idle gear. The helical 5th clutch hub must be facing the gearbox input end.

Check the wear on the synchromesh parts.

Refit (see 21A, Manual gearbox , Input shaft assembly: Exploded view) the "5th clutch hub - 5th synchroniser ring" assembly on the 5th and 6th synchroniser hub.



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) D to refit the "5th clutch hub - 5th synchroniser ring - 5th and 6th synchroniser hub" assembly on the input shaft(37) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Note:

The 6th hub stop ring must go right to the bottom of the groove in the main shaft.

The stop ring end float must be 0to 0.1 mm.

Aim for 0.0 mm.

Refit the stop ring of the 5th and 6th synchroniser hub(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Refit the 5th and 6th synchroniser(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Note:

The notches of the 5th and 6th synchroniser (inner side) must line up exactly with the synchroniser hub recesses.

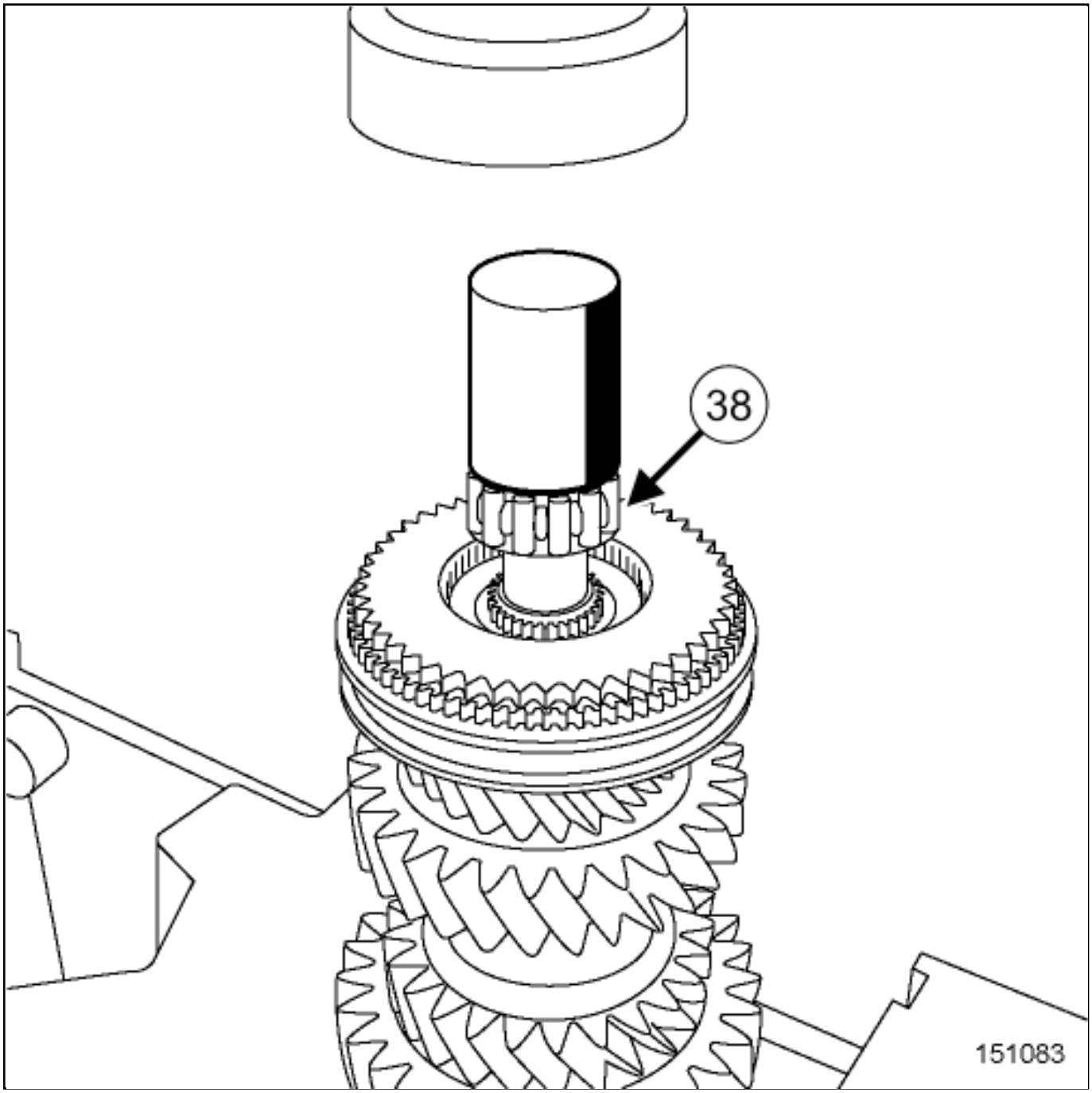
Refit (see 21A, Manual gearbox , Input shaft assembly: Exploded view) :

- the locking ball and spring of the 5th and 6th synchroniser hub,
- the 6th synchroniser ring.

Note:

The synchroniser ring teeth must be above the pressure parts in the 5th and 6th synchroniser hub.

Refit the 6th clutch hub(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) A to refit a new cylindrical roller bearing(38) (see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

Refit the cylindrical roller bearing stop ring(see 21A, Manual gearbox , Input shaft assembly: Exploded view) .

3. FINAL OPERATION

Proceed in the reverse order to stripping.

Repair-12x01x04x11-01x31-1-7-1.xml

XSL version : 3.02 du 22/07/11

INSTRUMENT PANEL: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

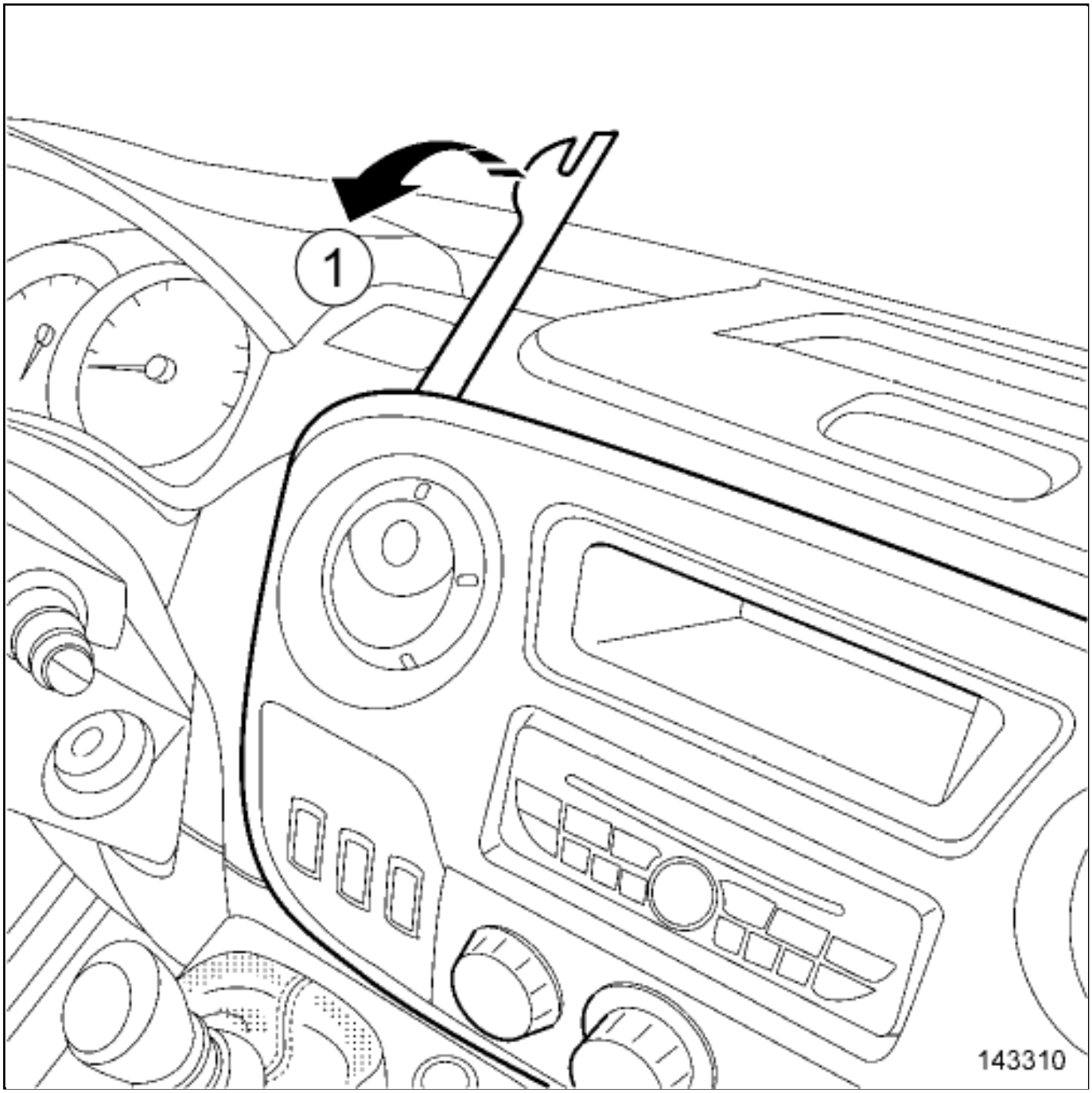
Equipment required
Diagnostic tool

REMOVAL

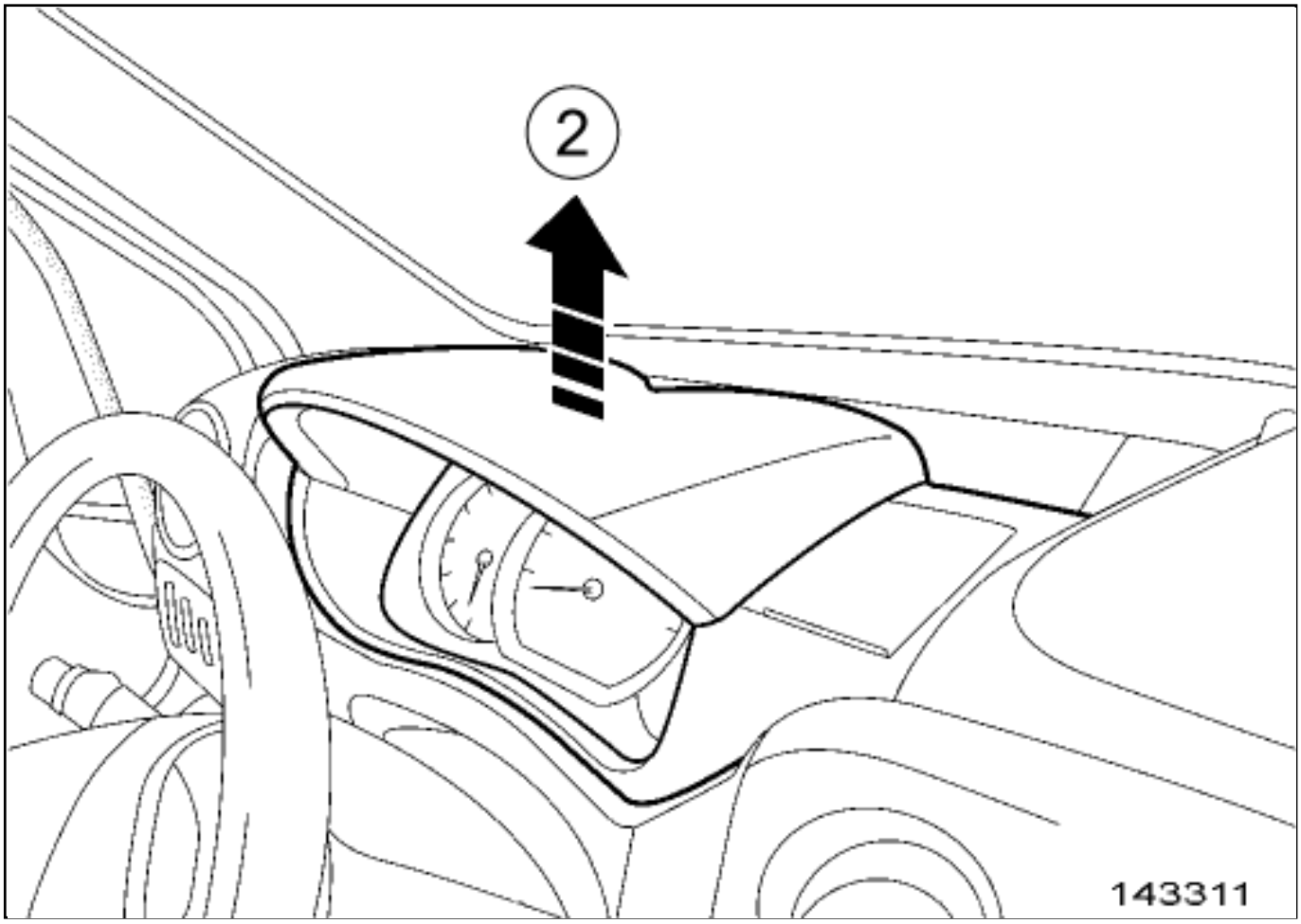
1. REMOVAL PREPARATION OPERATION

- In the event of replacement, apply the Before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Instrument panel" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - carry out the operations described in the "Before repair procedure" section.

- Switch off the ignition.

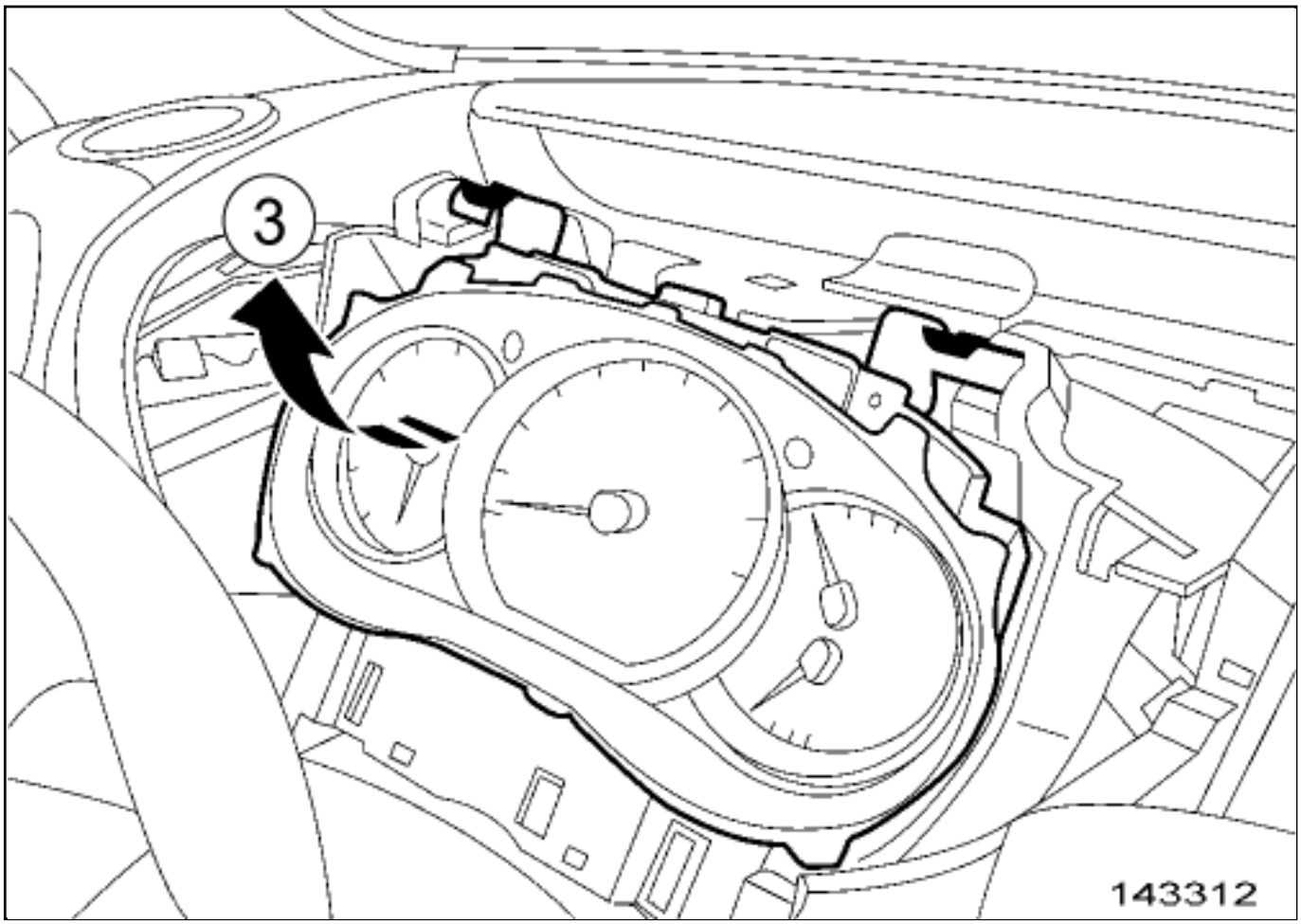


- Move away the upper corner of the centre front panel using the toolSet of trim removal levers.(Car. 1363) by (1) .

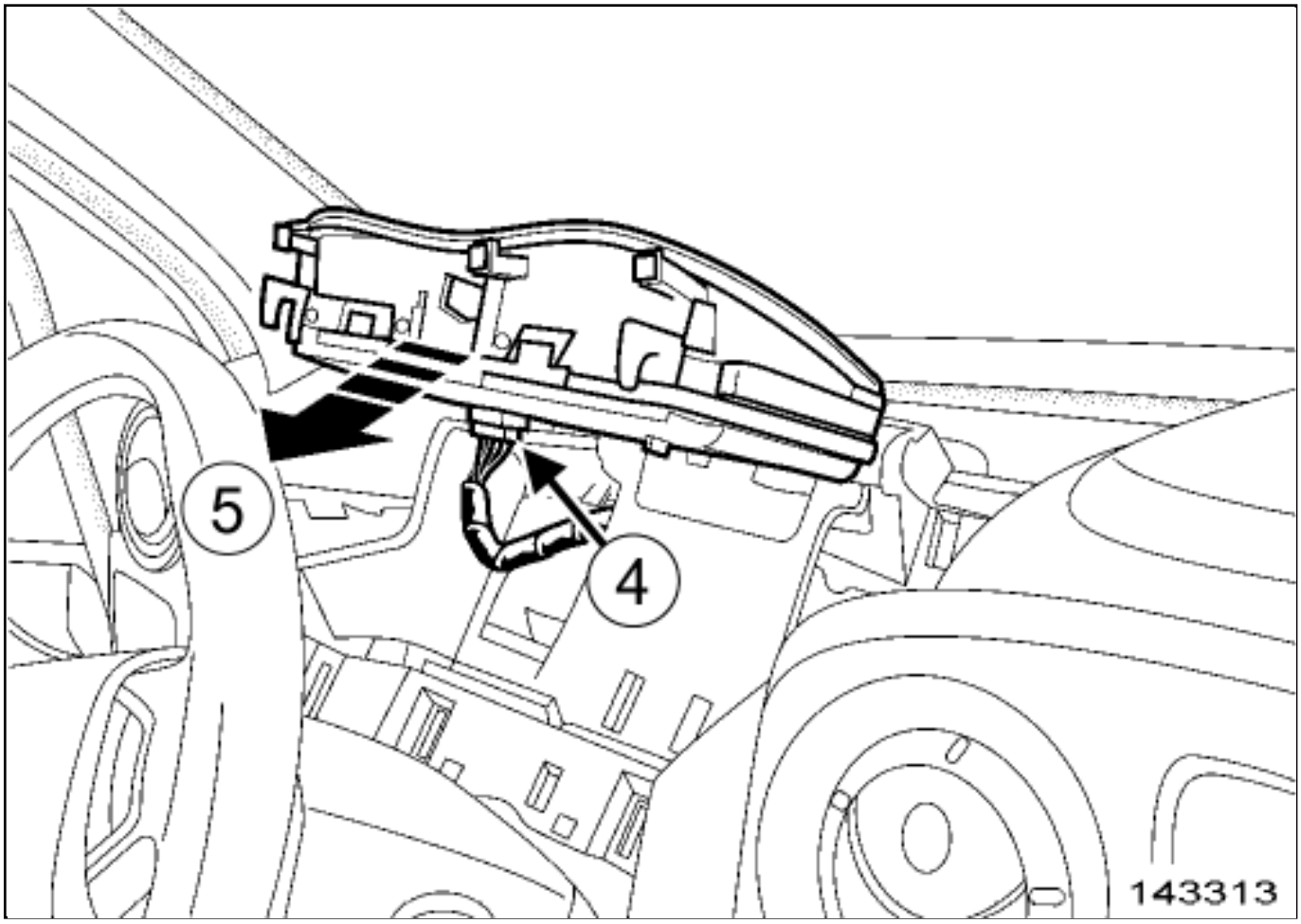


- Unclip the instrument panel visor by(2) .

2. REMOVAL OPERATION



- Unclip the instrument panel by(3) .



Disconnect the connector(4) from the instrument panel.

Unclip the instrument panel by(5) .

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

2. FINAL OPERATION

Switch on the ignition.

In the event of a replacement, apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Instrument panel" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- carry out the operations described in the "After repair procedure" section.

INTERCOOLER AIR OUTLET PIPE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:
turbocharger air cooler air outlet pipe seal
Damper valve seal

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

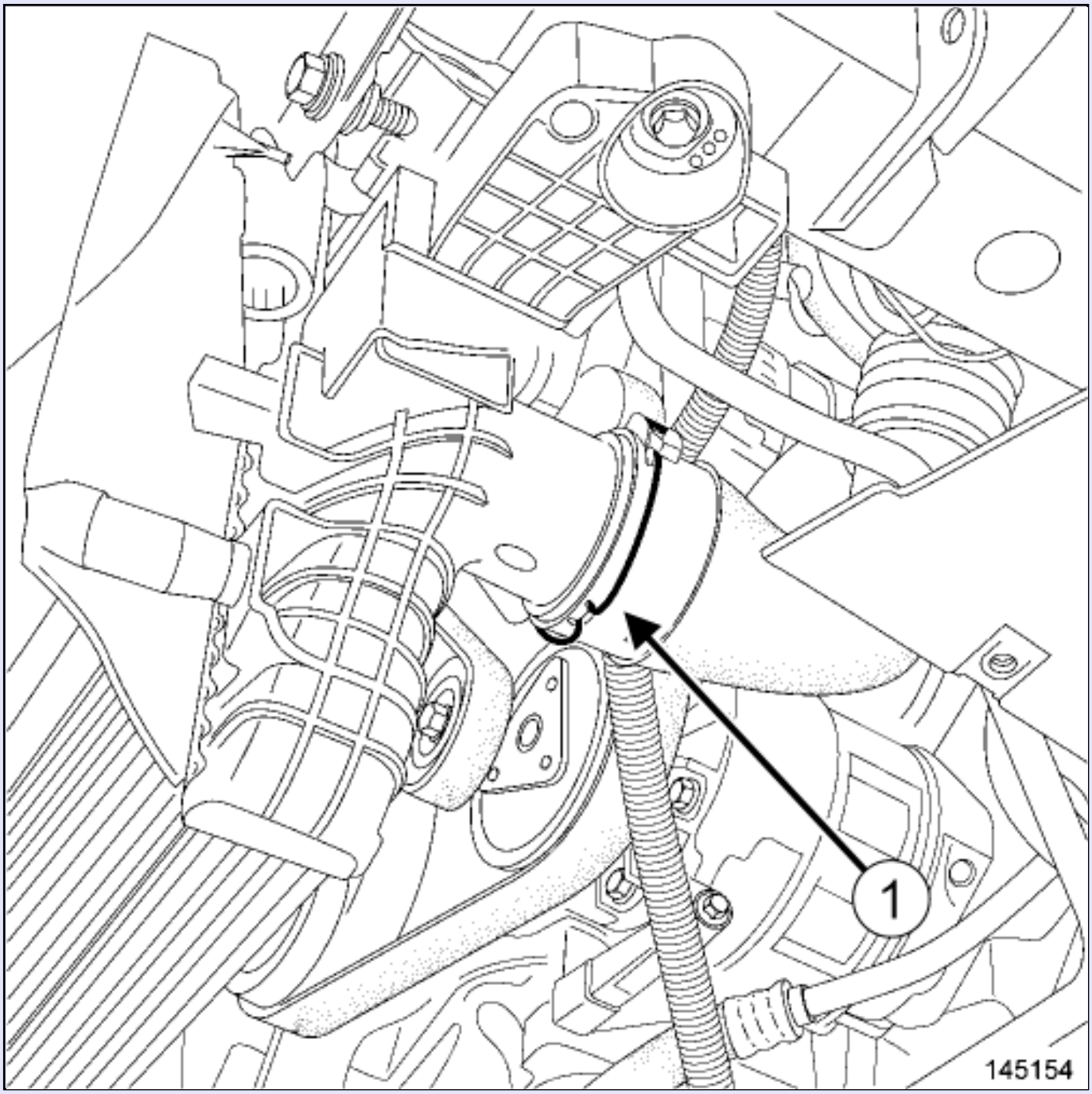
Location and specifications (tightening torques, parts always to be replaced, etc.)**Air inlet assembly: Exploded view** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .
- Remove the engine undertray.

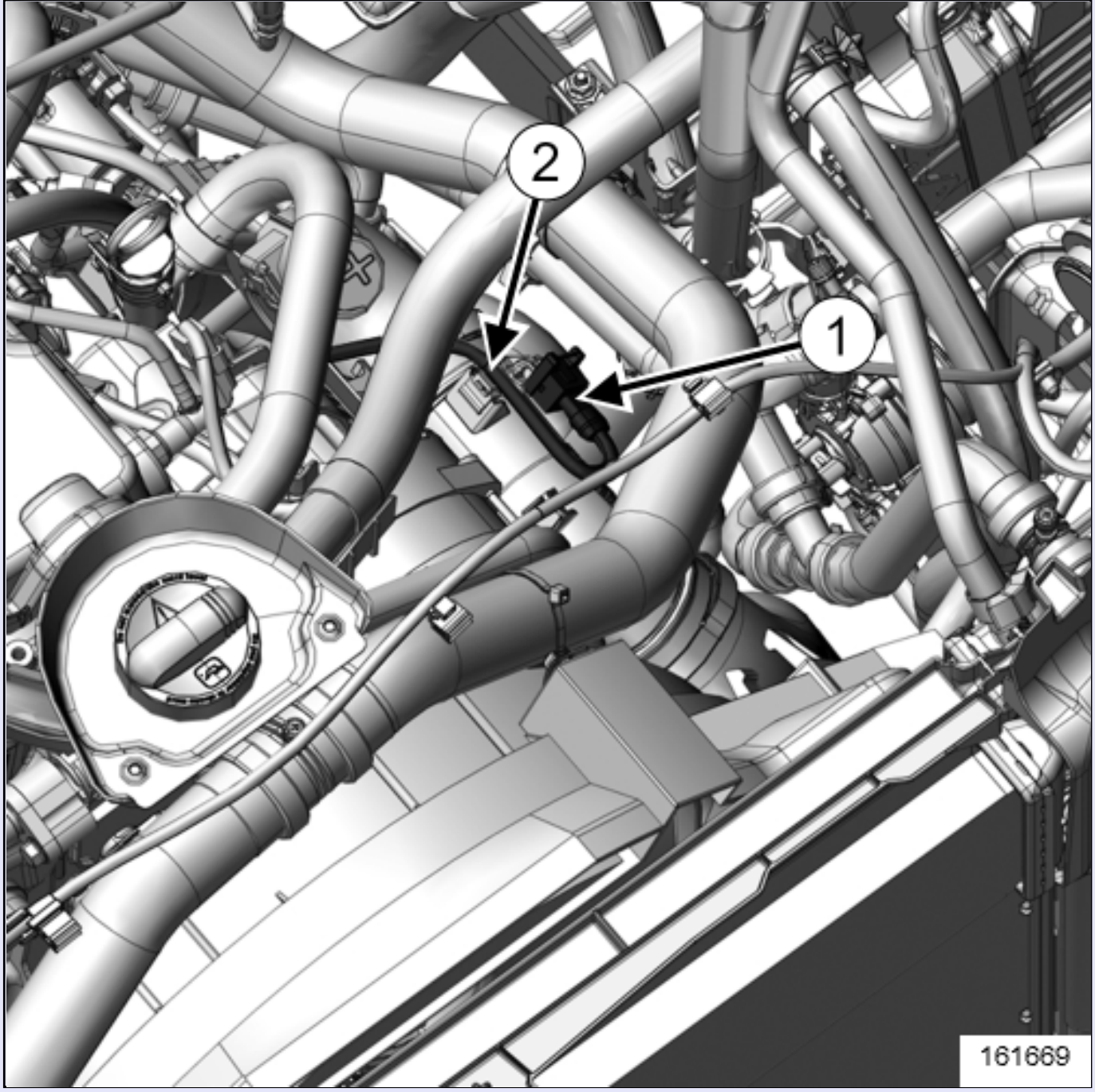
2. REMOVAL OPERATION



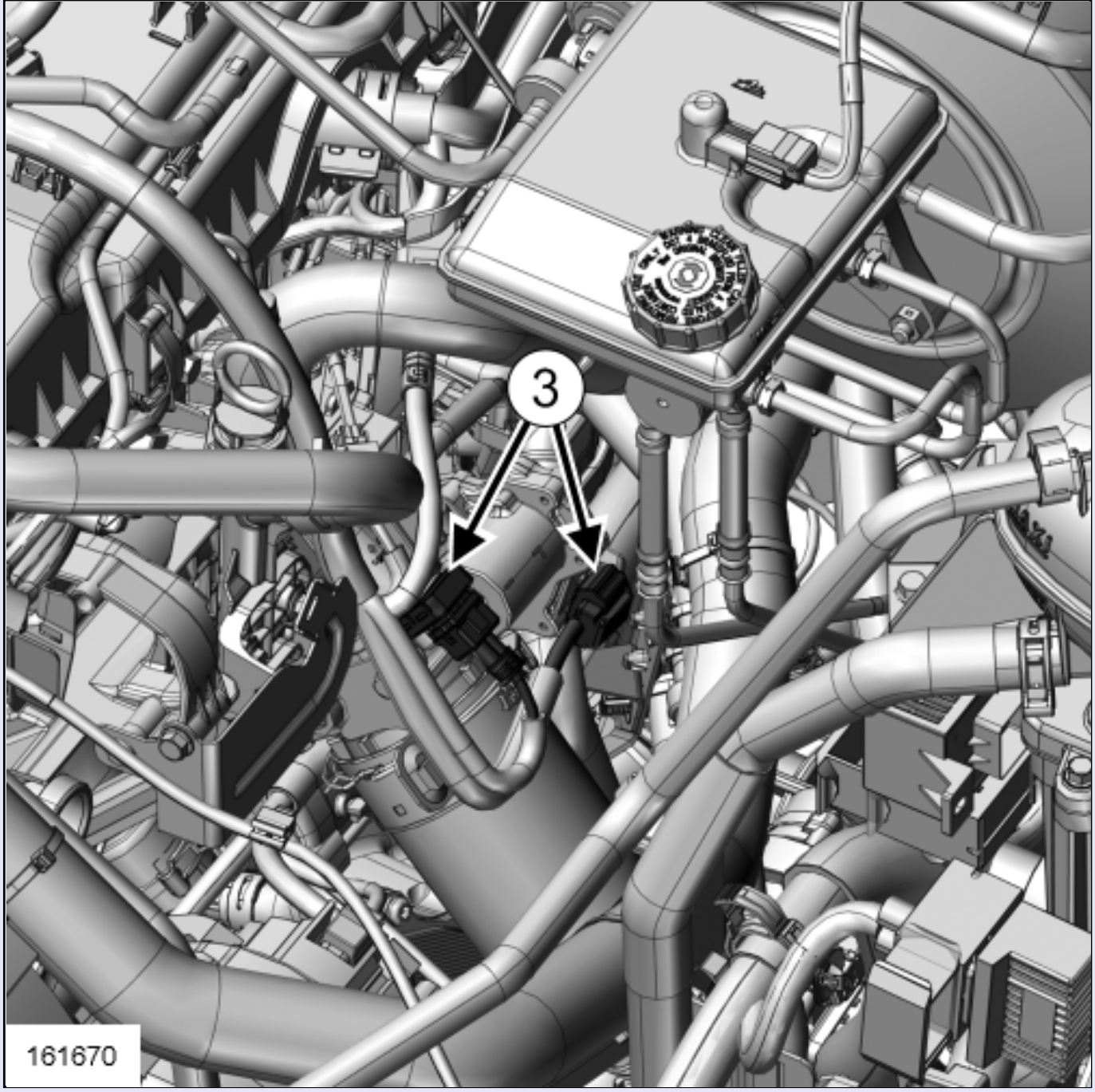
- Separate the clip (1) on the intercooler air outlet pipe.

- Undo the clip on the intercooler air outlet pipe Air inlet assembly: Exploded view .

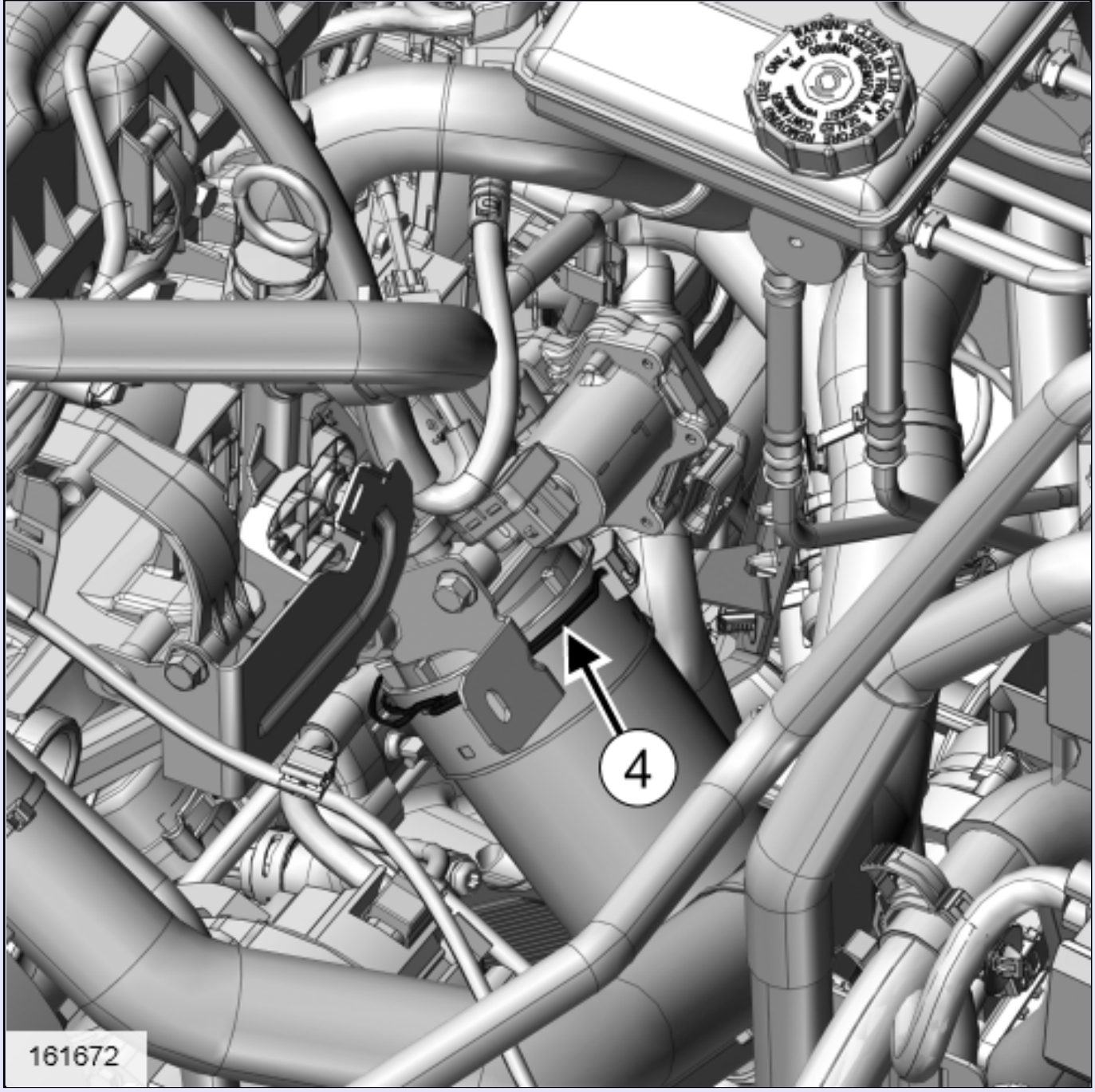
M9T, 700(700)

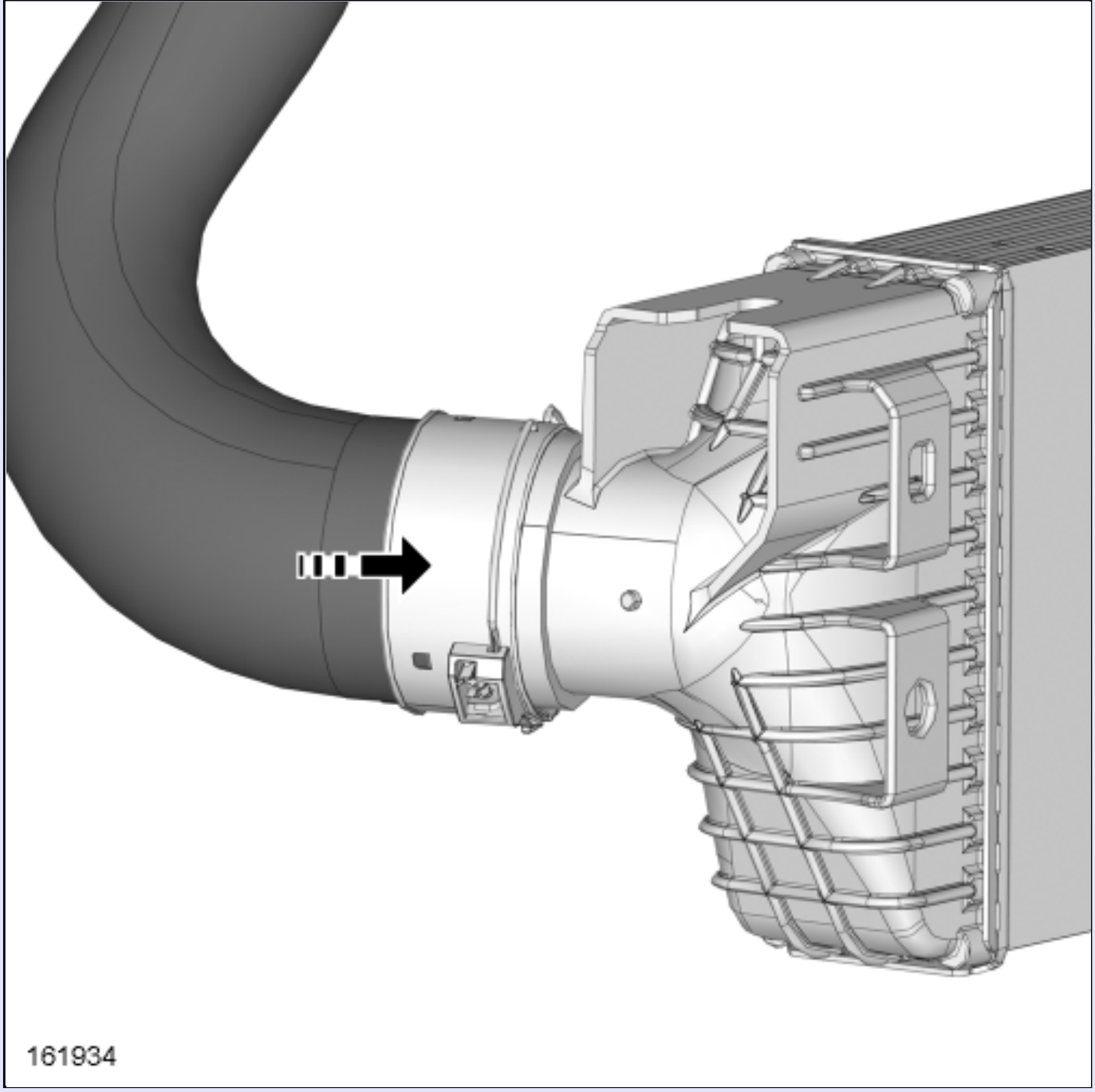


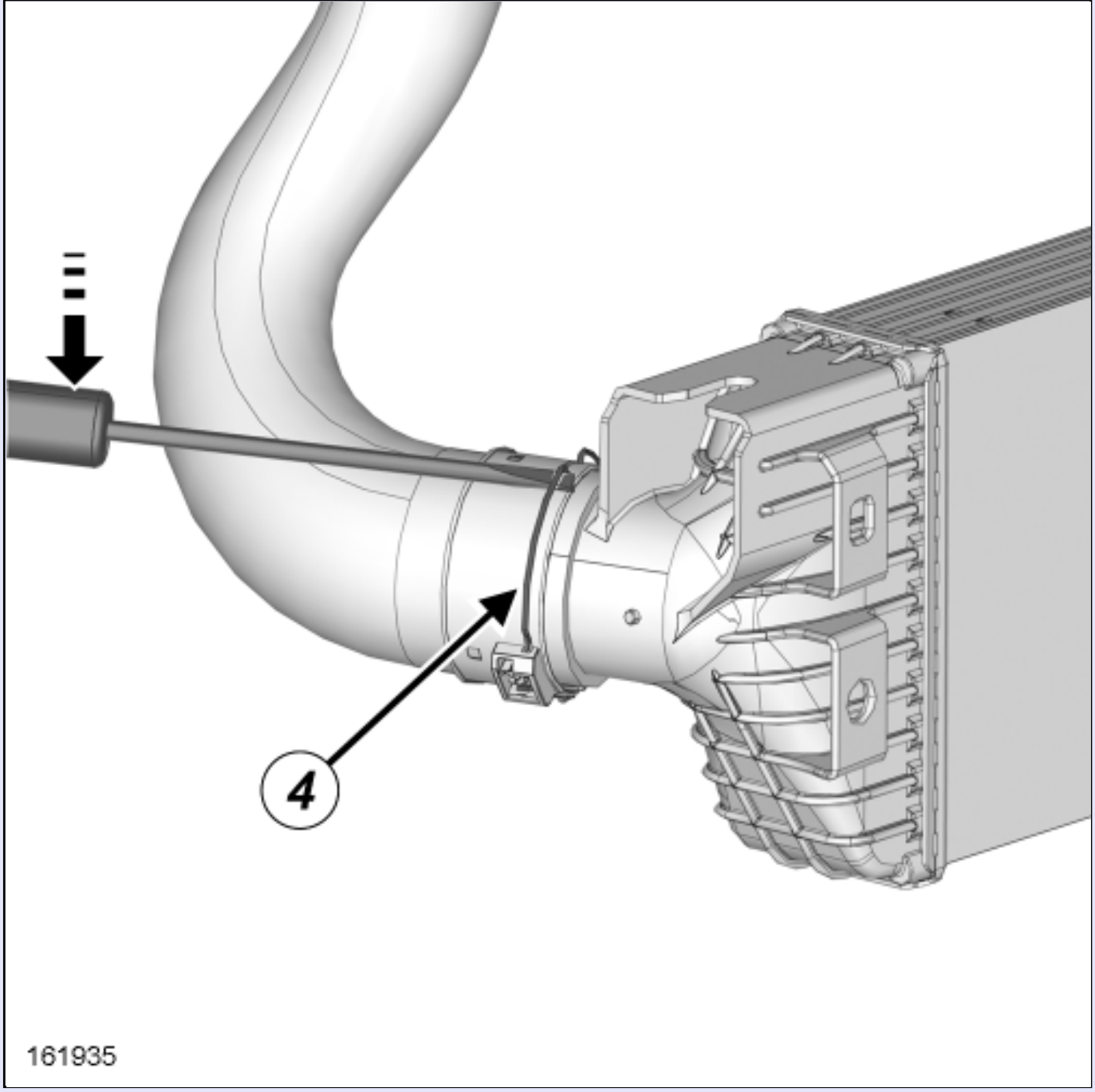
- Disconnect the air inlet temperature sensor connector(1) .
- Unclip the air inlet temperature sensor cable(2) from the intercooler air outlet pipe.

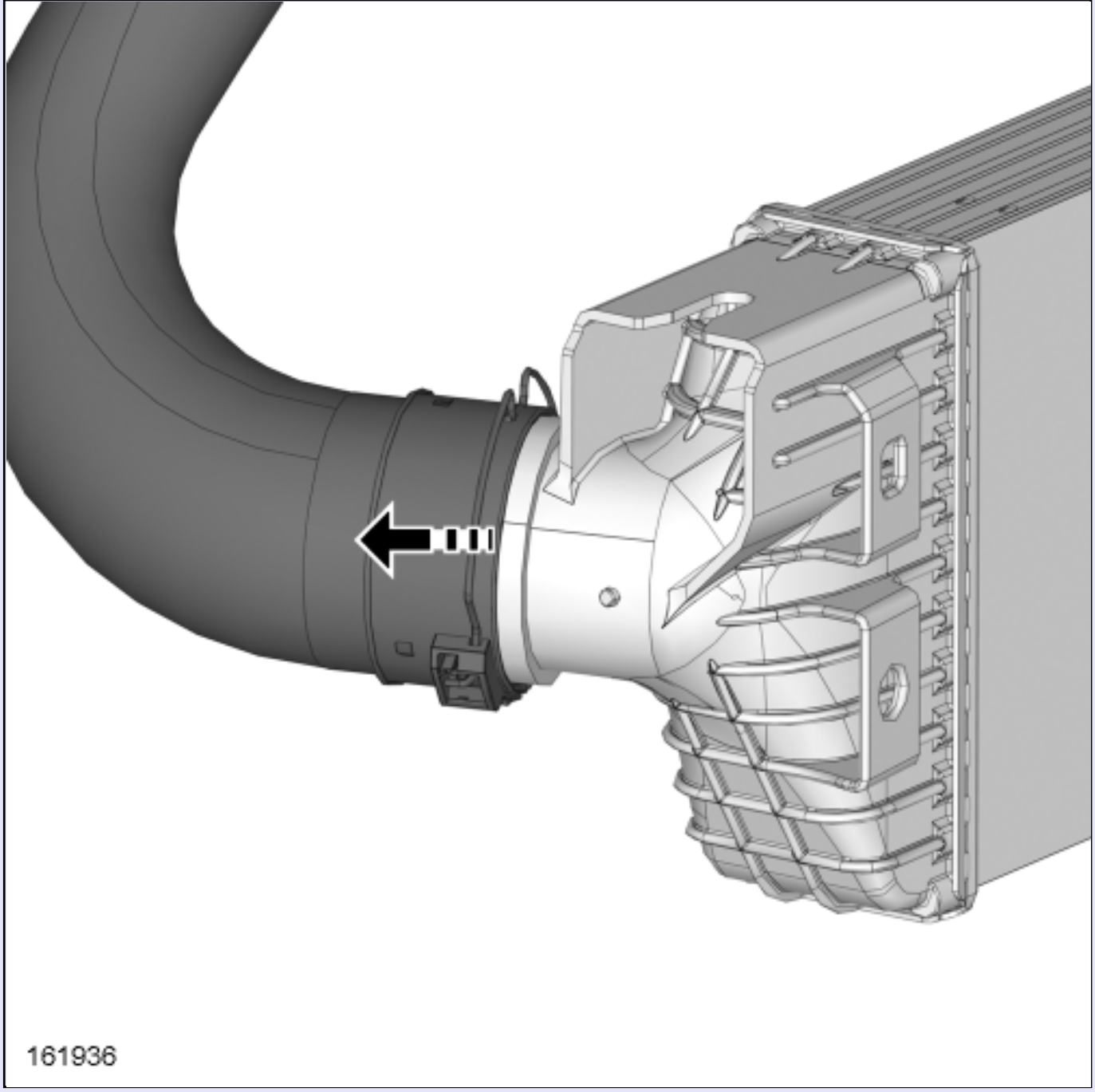


- Disconnect the damper valve connectors(3) .
- Move aside the damper valve connectors.


4
161672


161934


4
161935



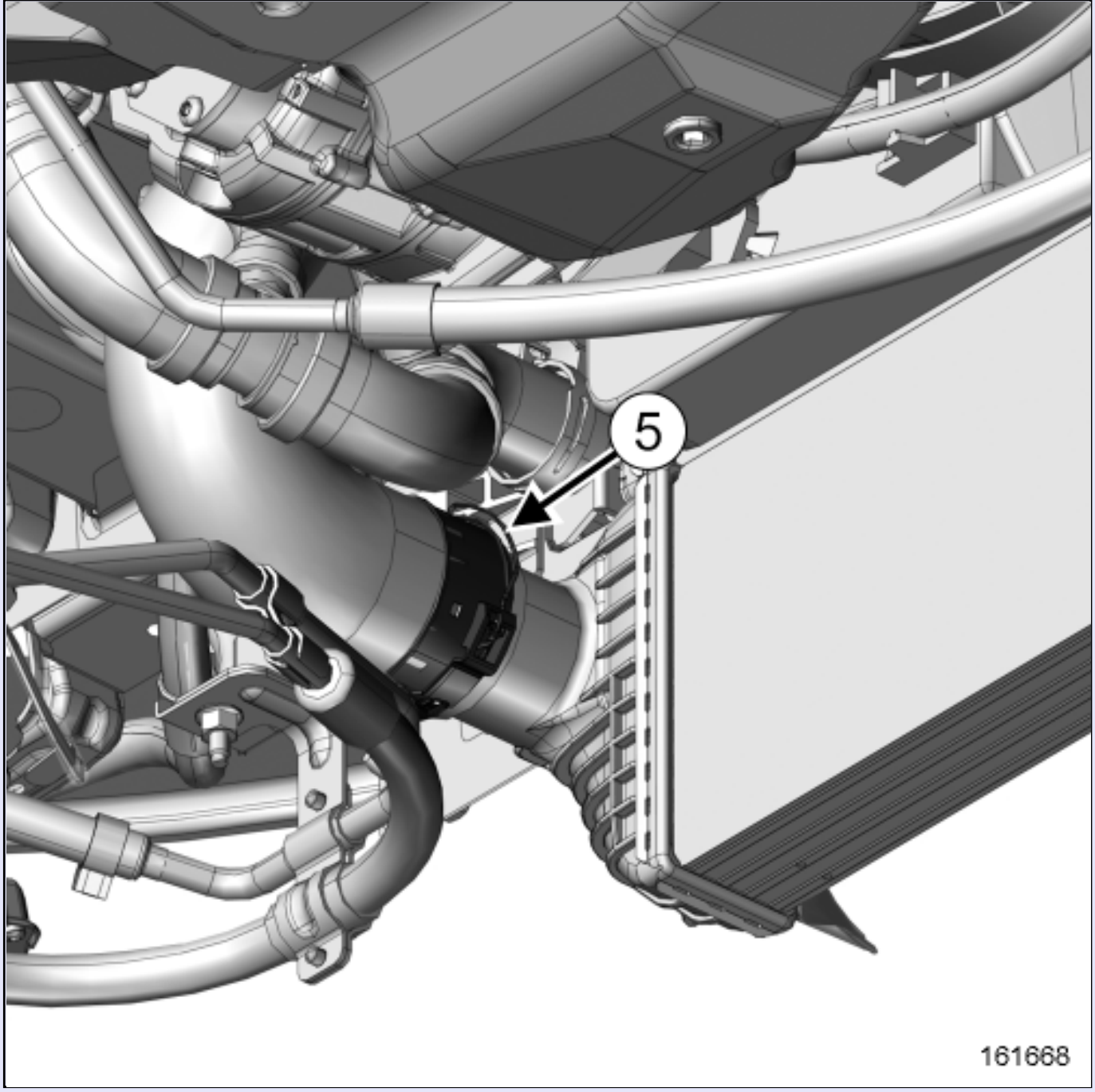
Move aside the clip(4) of the intercooler air outlet pipe on the damper valve side.

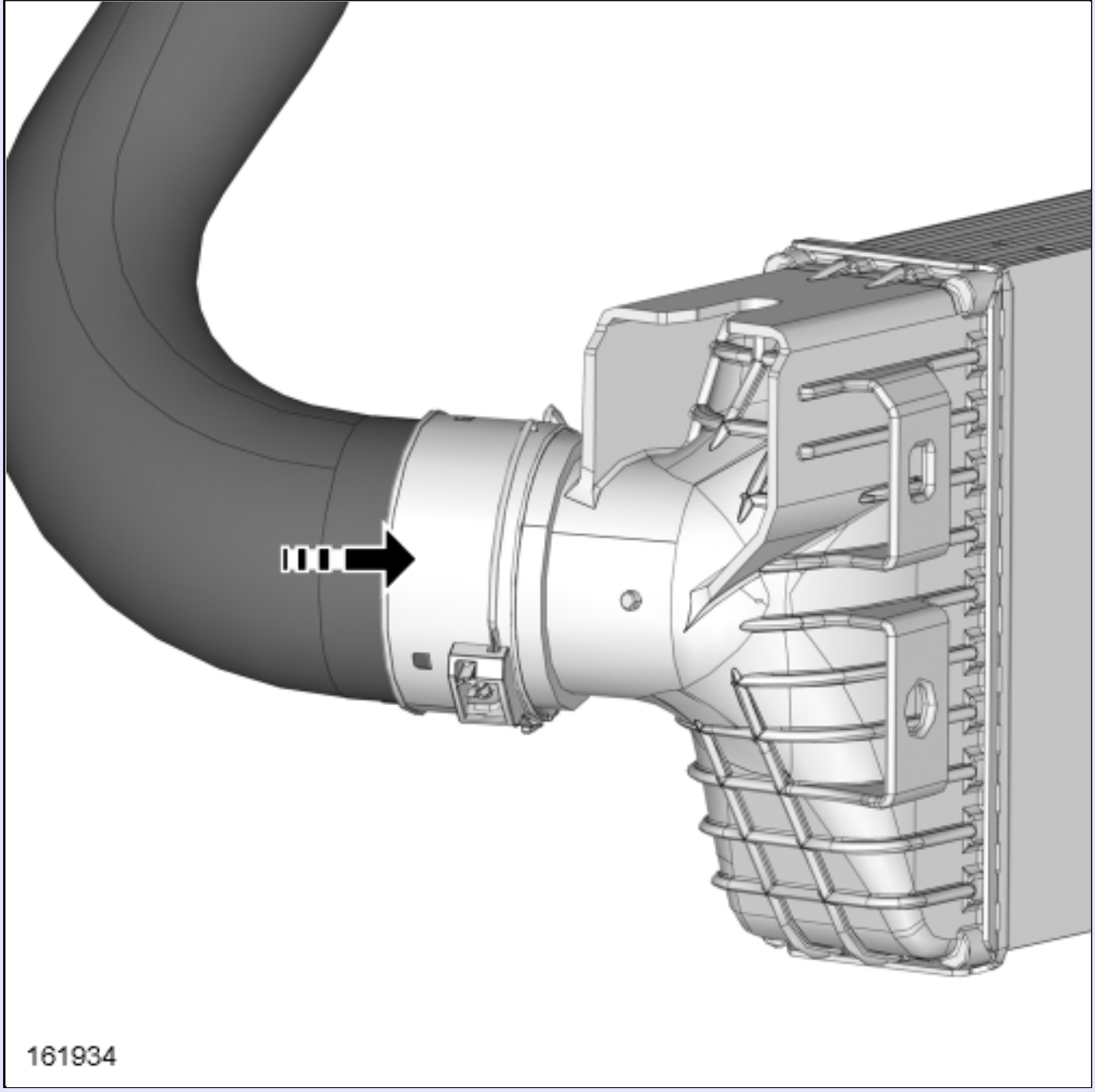
CAUTION

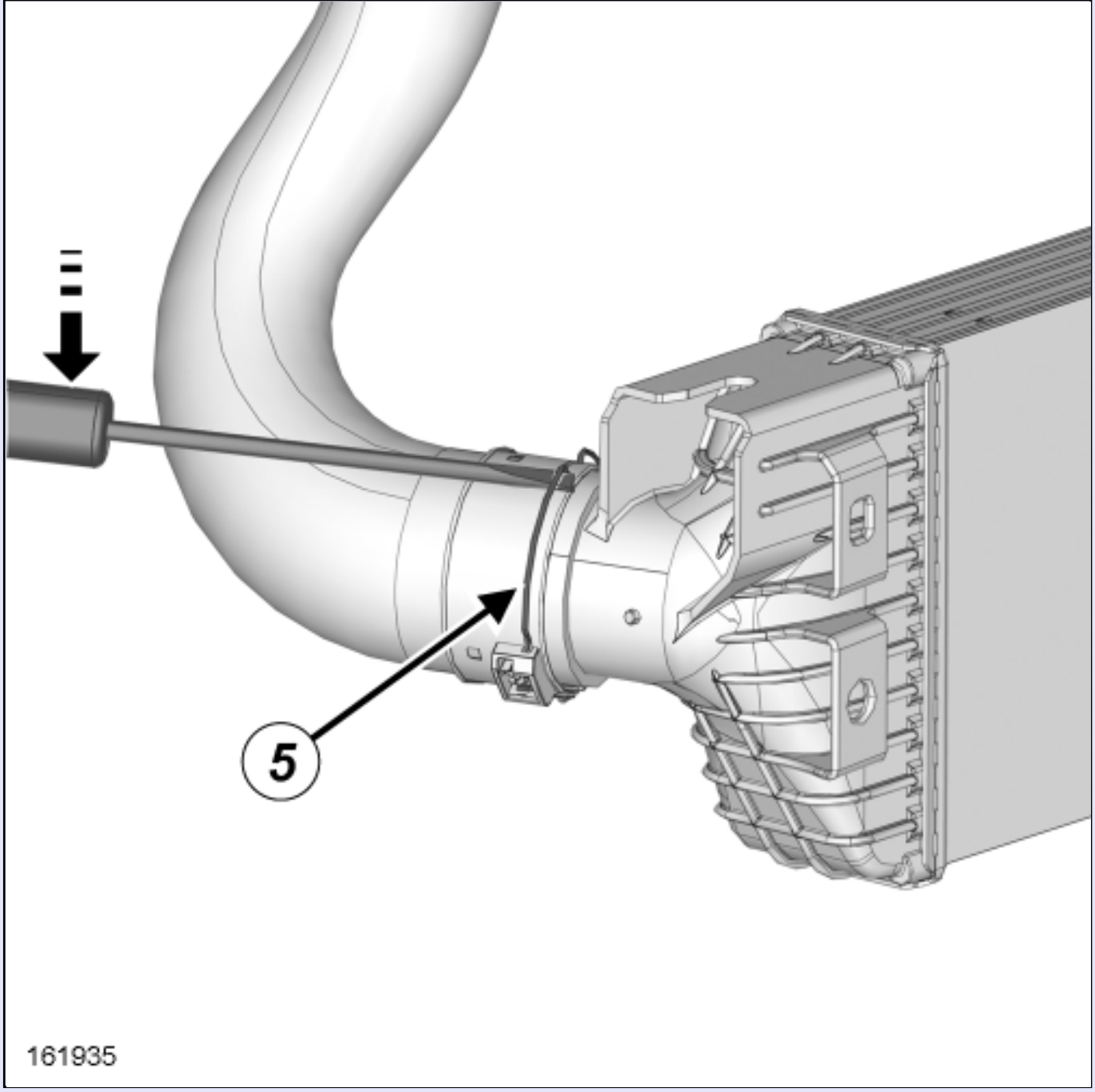
Make sure to follow the instructions to properly remove the clip:

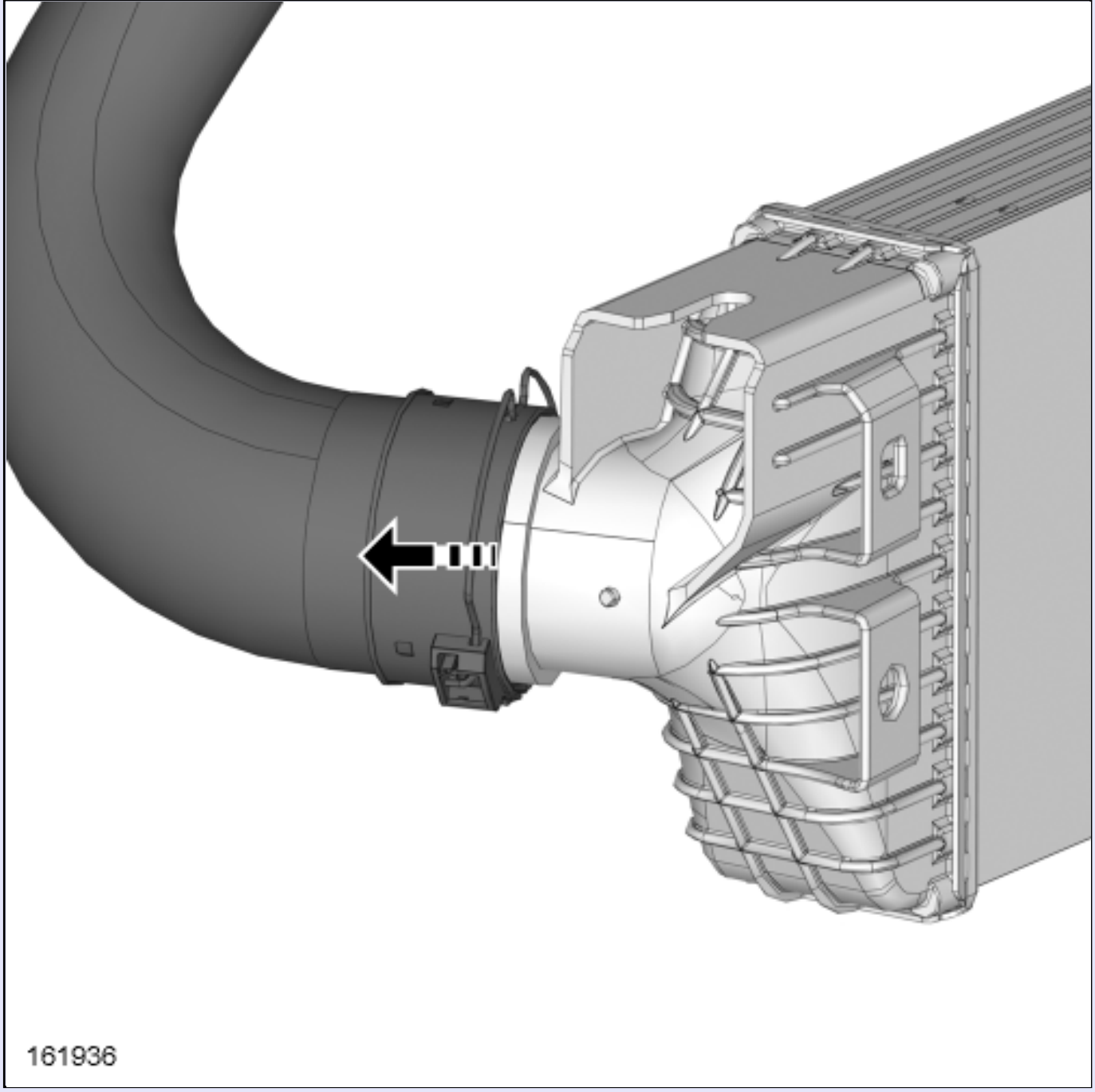
- push the pipe towards the damper valve,
- while pushing the pipe, lever up the clip with using a flat-blade screwdriver to unlock the clip from its 3 notches,
- disconnect the pipe from the intercooler.

Disconnect the intercooler air outlet pipe from the damper valve.


5
161668


161934


5
161935



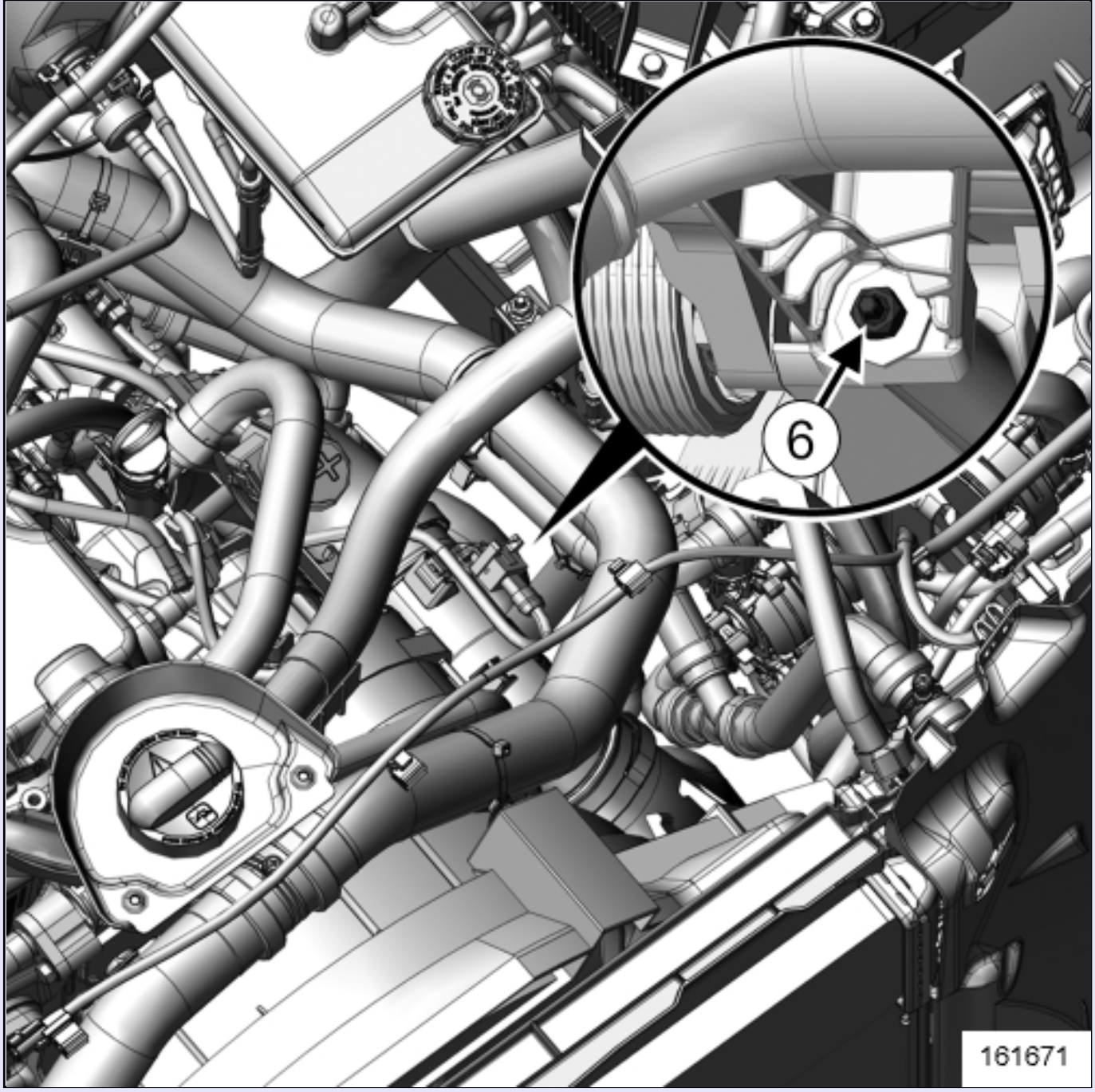
Move aside the clip(5) of the intercooler air outlet pipe on the intercooler side.

CAUTION

Make sure to follow the instructions to properly disconnect the pipe:

- push the pipe towards the intercooler,
- while pushing the pipe, lever up the clip with using a flat-blade screwdriver to unlock the clip from its 3 notches,
- disconnect the pipe from the intercooler.

Disconnect the intercooler air outlet pipe from the intercooler.



Remove the nut(6) of the intercooler air outlet pipe bracket.

Remove :

- the intercooler air outlet pipe,
- the intercooler air outlet pipe seals.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: turbocharger air cooler air outlet pipe seal

parts always to be replaced: Damper valve seal

2. REFITTING OPERATION

Refit :

- the intercooler air outlet pipe new seals,
- the intercooler air outlet pipe.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Note:

Check that the intercooler air outlet pipe is correctly connected on both sides by "pulling and pushing" the intercooler air outlet pipe.

INTERCOOLER : REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**Air inlet assembly: Exploded view** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

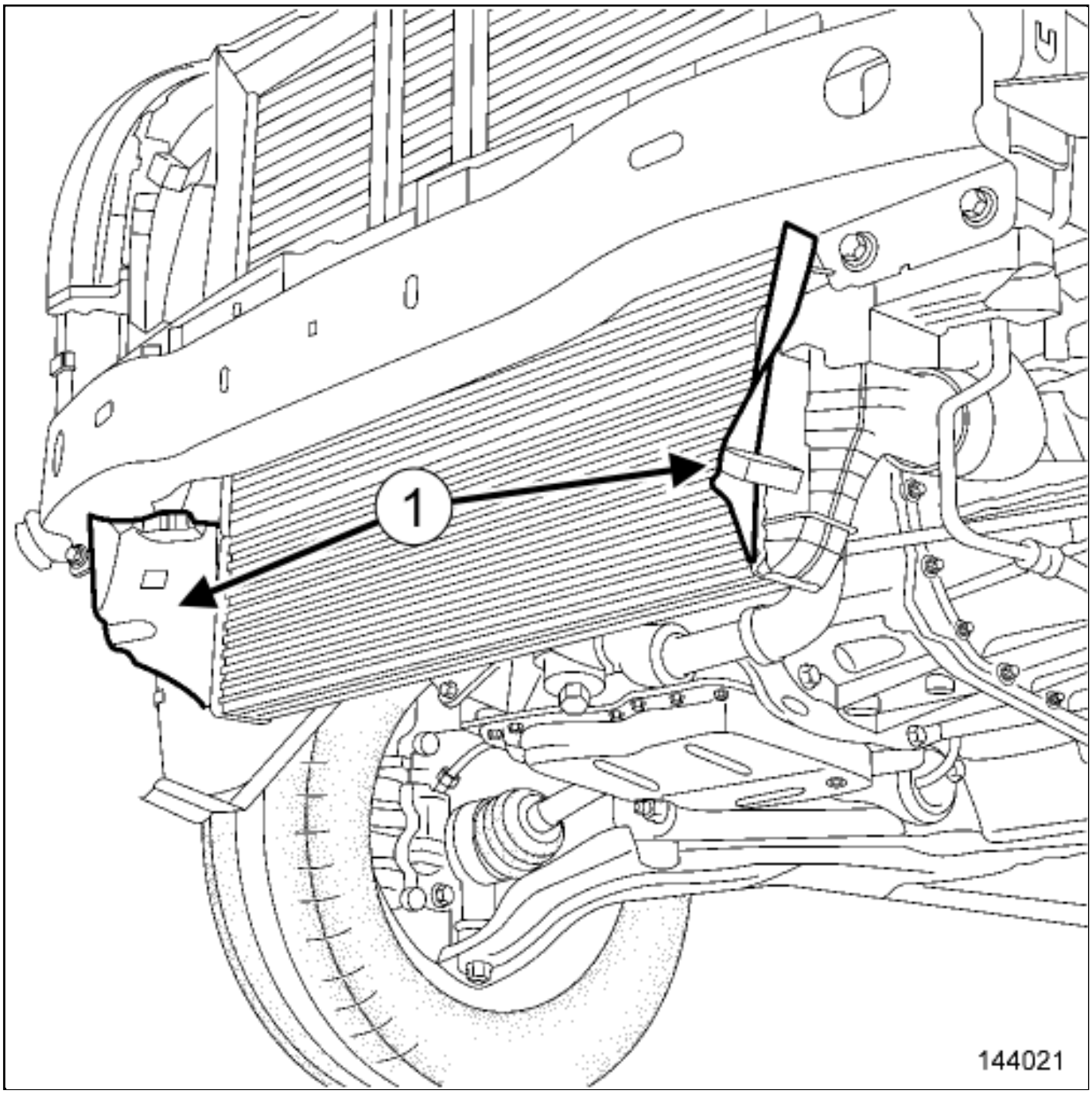
- Remove:
  - the engine undertray,
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection),
  - the intercooler air outlet pipe.

- Remove the intercooler air inlet pipe clip at the intercooler end.

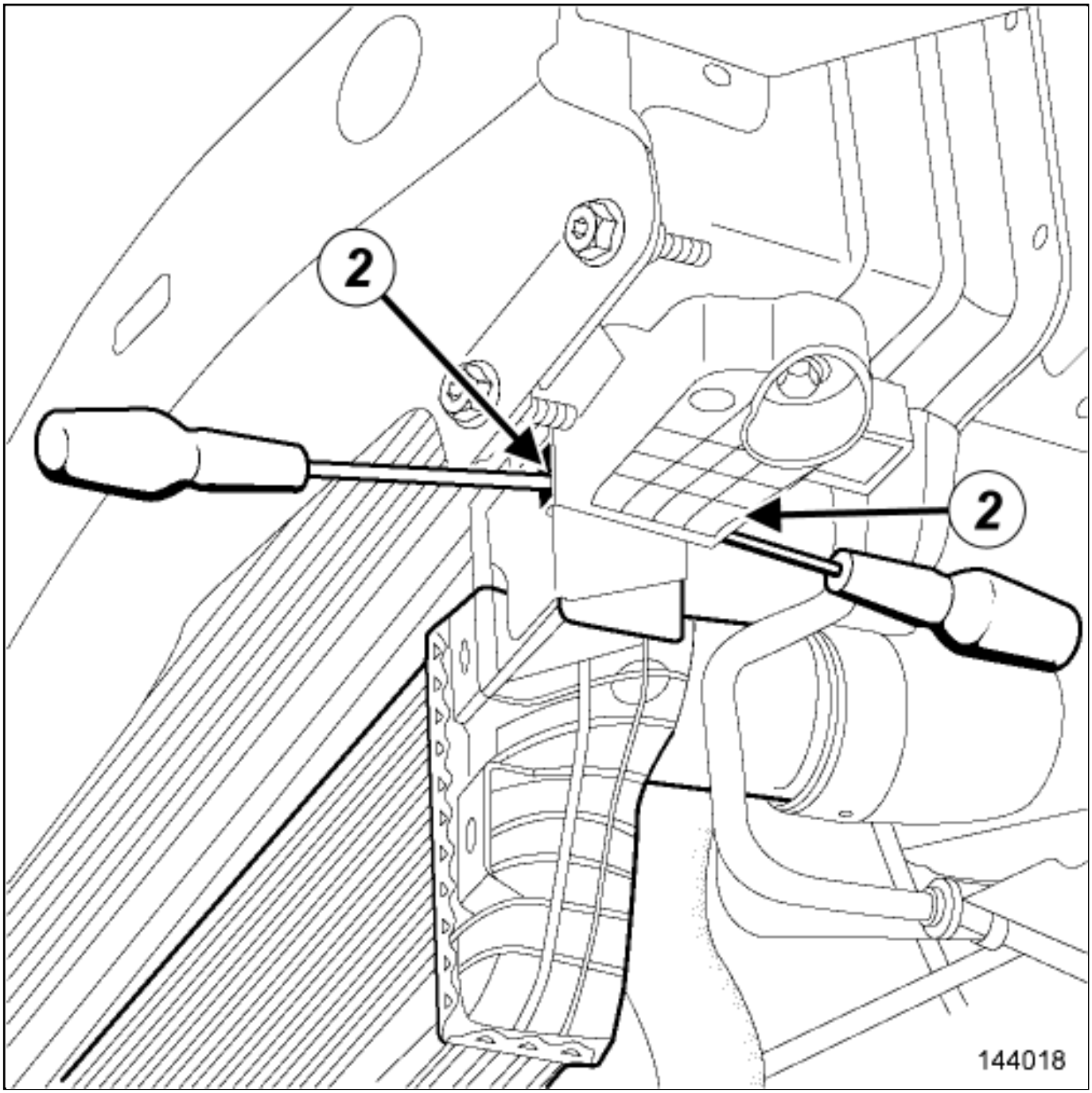
- Disconnect the intercooler air inlet pipe from the intercooler.

- Remove the seal at the intercooler end of the intercooler air inlet pipe.

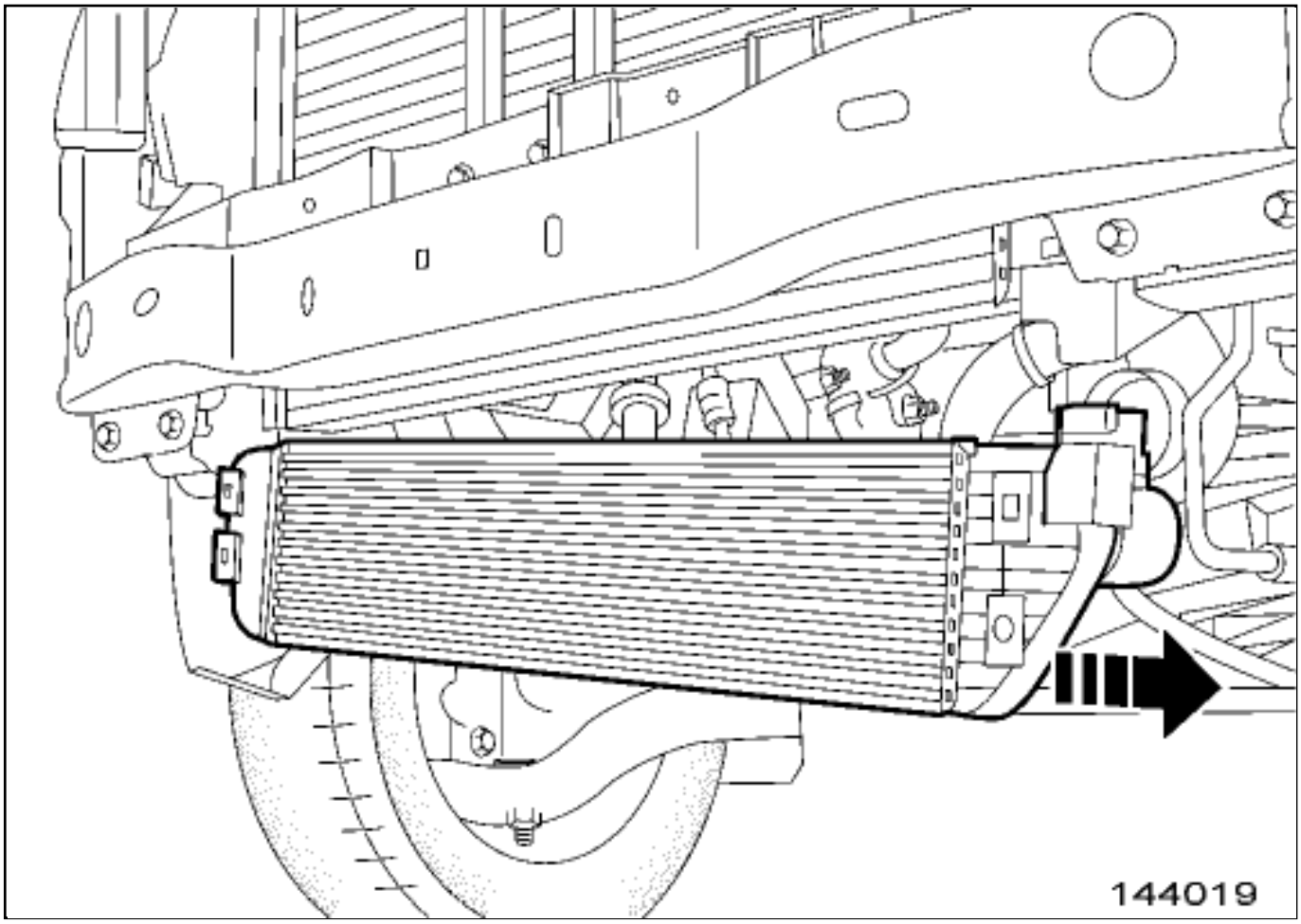
2. REMOVAL OPERATION



- Remove the intercooler deflectors(1) .



- Unclip the intercooler at(2) using two screwdrivers.



- Remove the intercooler in the direction of the arrow.

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

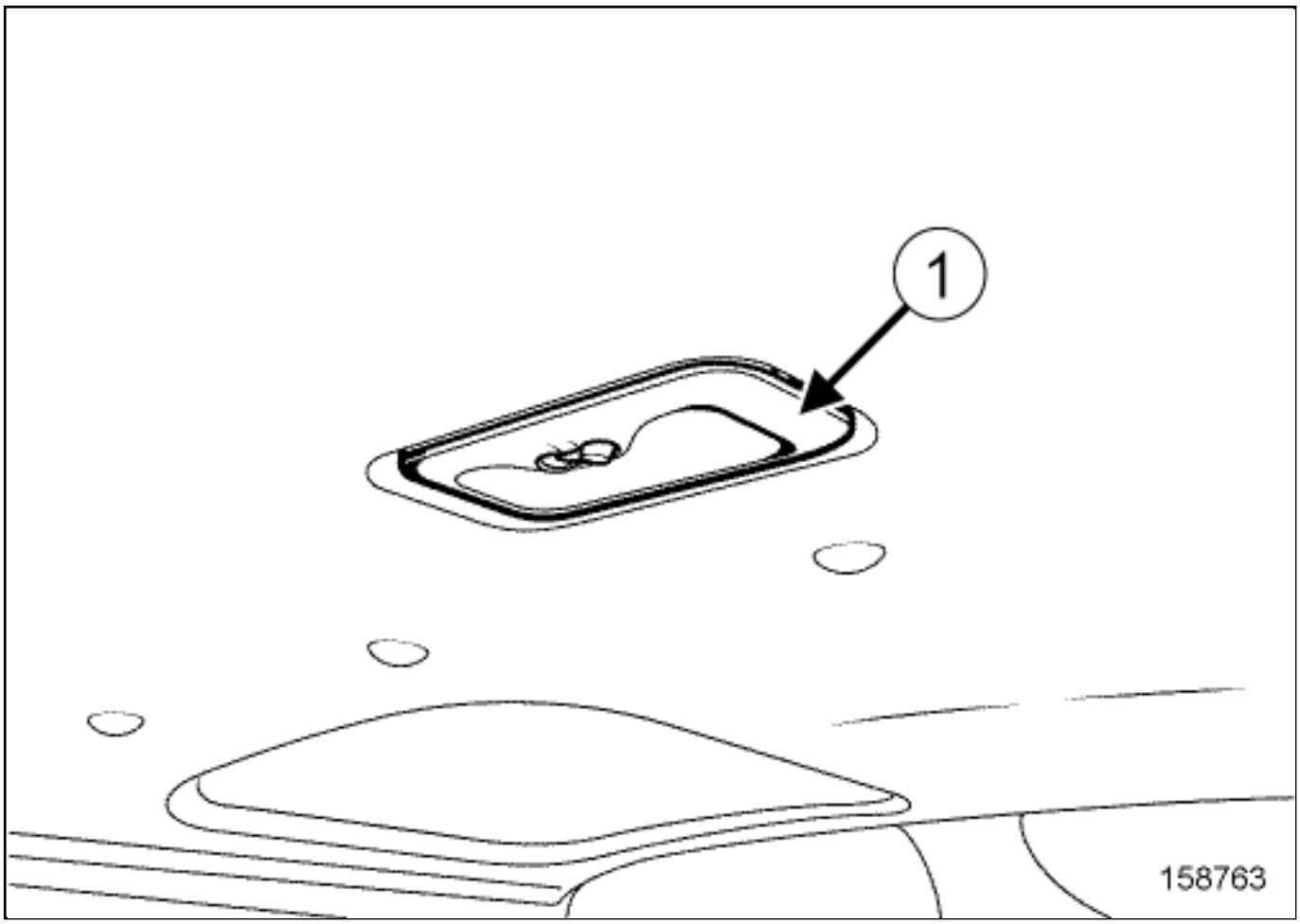
INTERIOR LIGHT: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL OPERATION

1- SINGLE LIGHT



- Unclip the courtesy light(1) using the tool atSet of trim removal levers.(Car. 1363) .
- Disconnect the courtesy light connector.
- Remove the courtesy light.

REFITTING

1. REFITTING OPERATION

Note:

Use an approved bulb for replacement.

- Connect the courtesy light connector.
- Clip on the courtesy light.

INTERIOR LIGHTING: LIST AND LOCATION OF COMPONENTS

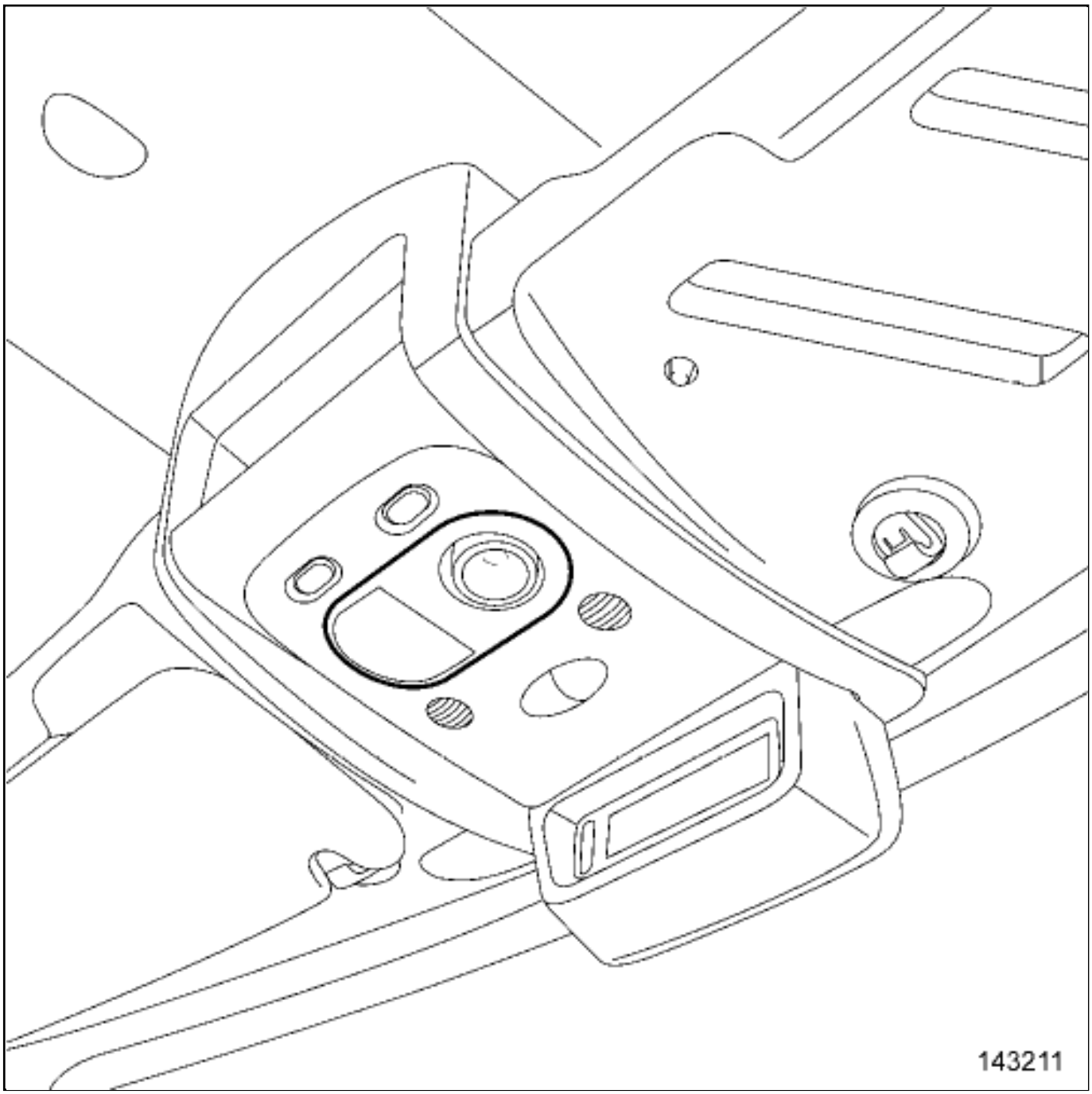
1. LIST OF COMPONENTS

1- THE INTERIOR LIGHTING CONSISTS OF:

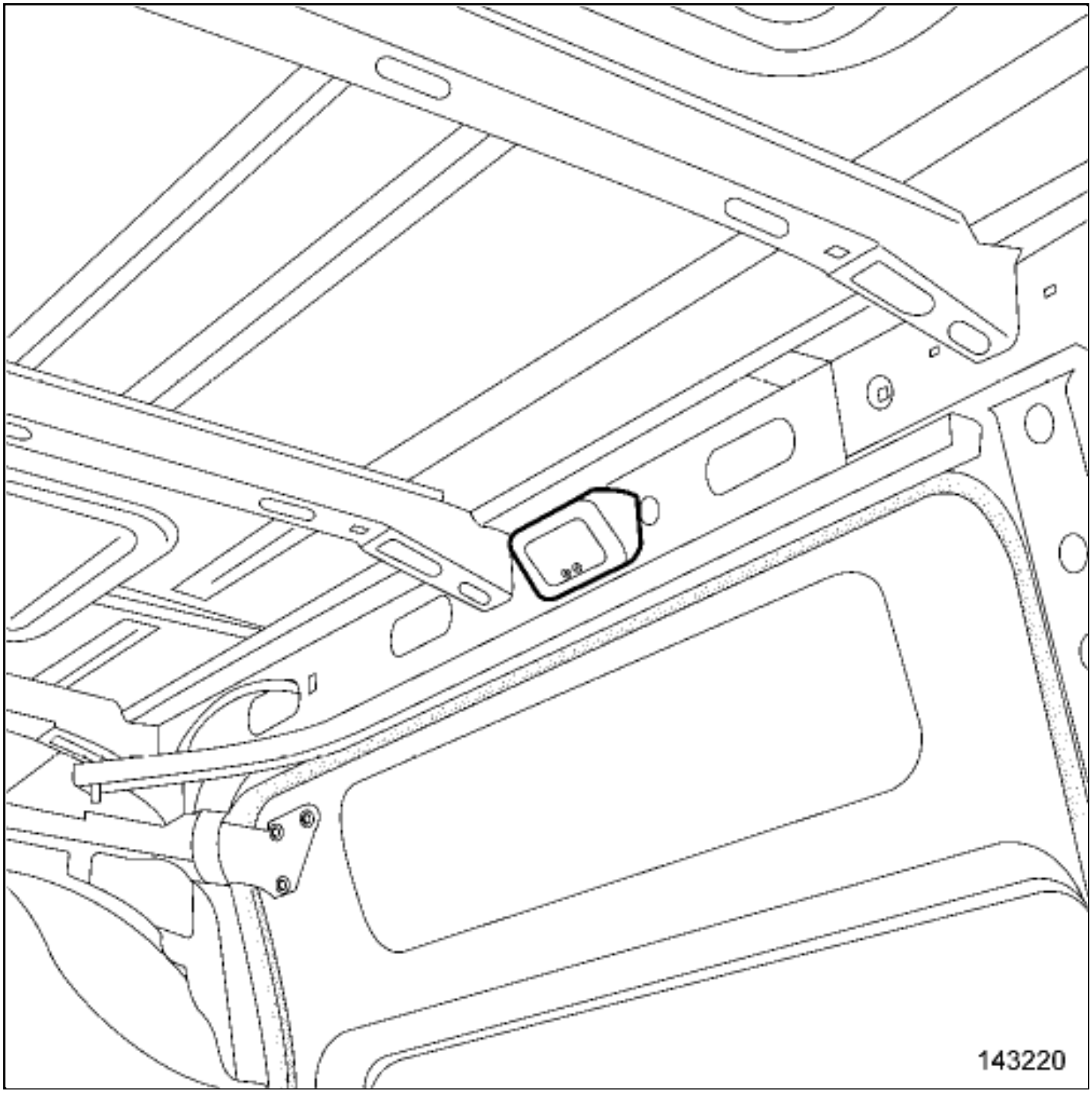
- headlining lights(see 81B, Interior lighting, Headlining light: Removal - Refitting)

2. LOCATION OF COMPONENTS

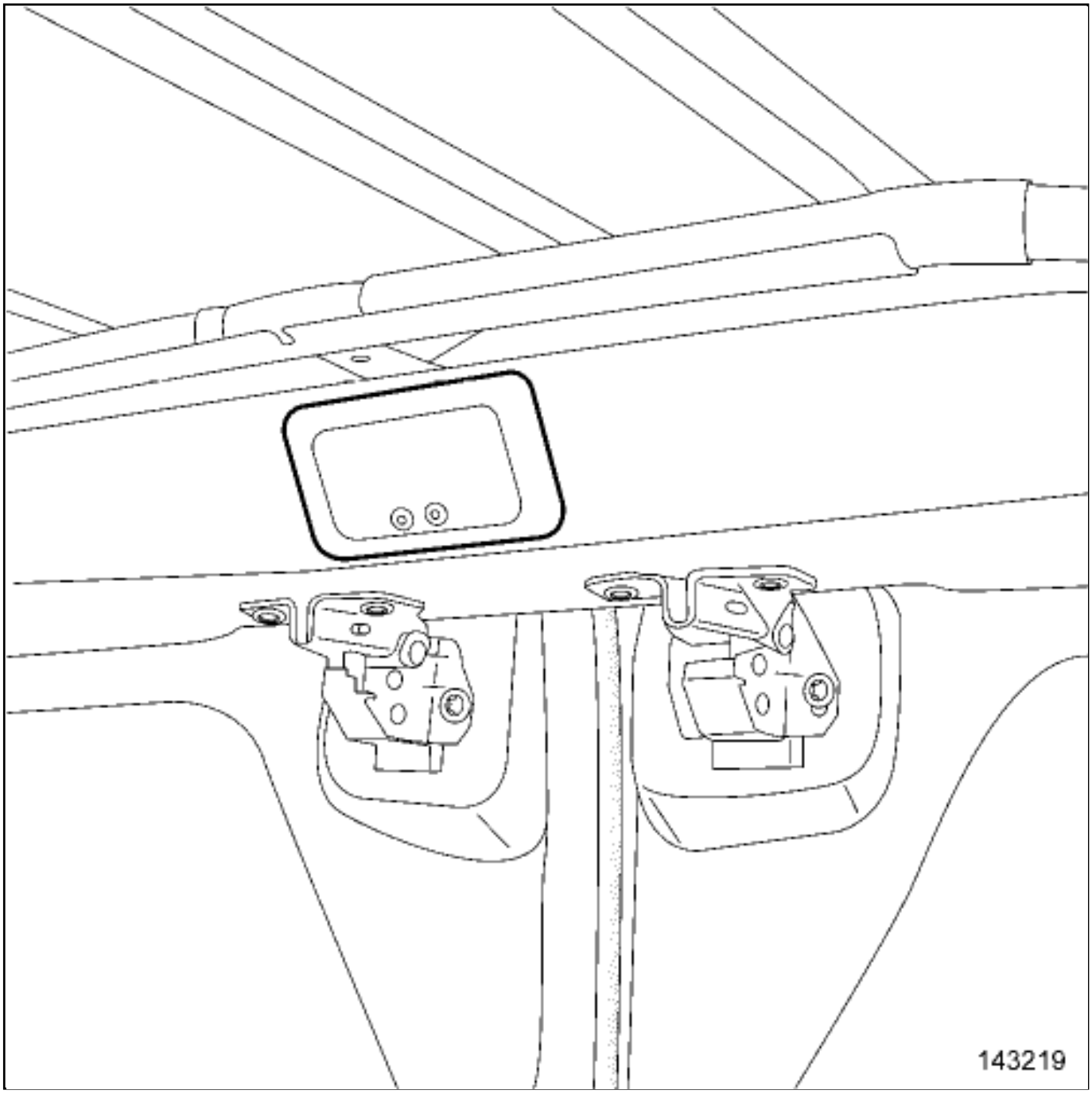
FRONT HEADLINING LIGHT



CENTRE HADLINING LIGHT



REAR HEADLINING LIGHT


143219

HIGH LEVEL BRAKE LIGHT BULB: REMOVAL - REFITTING

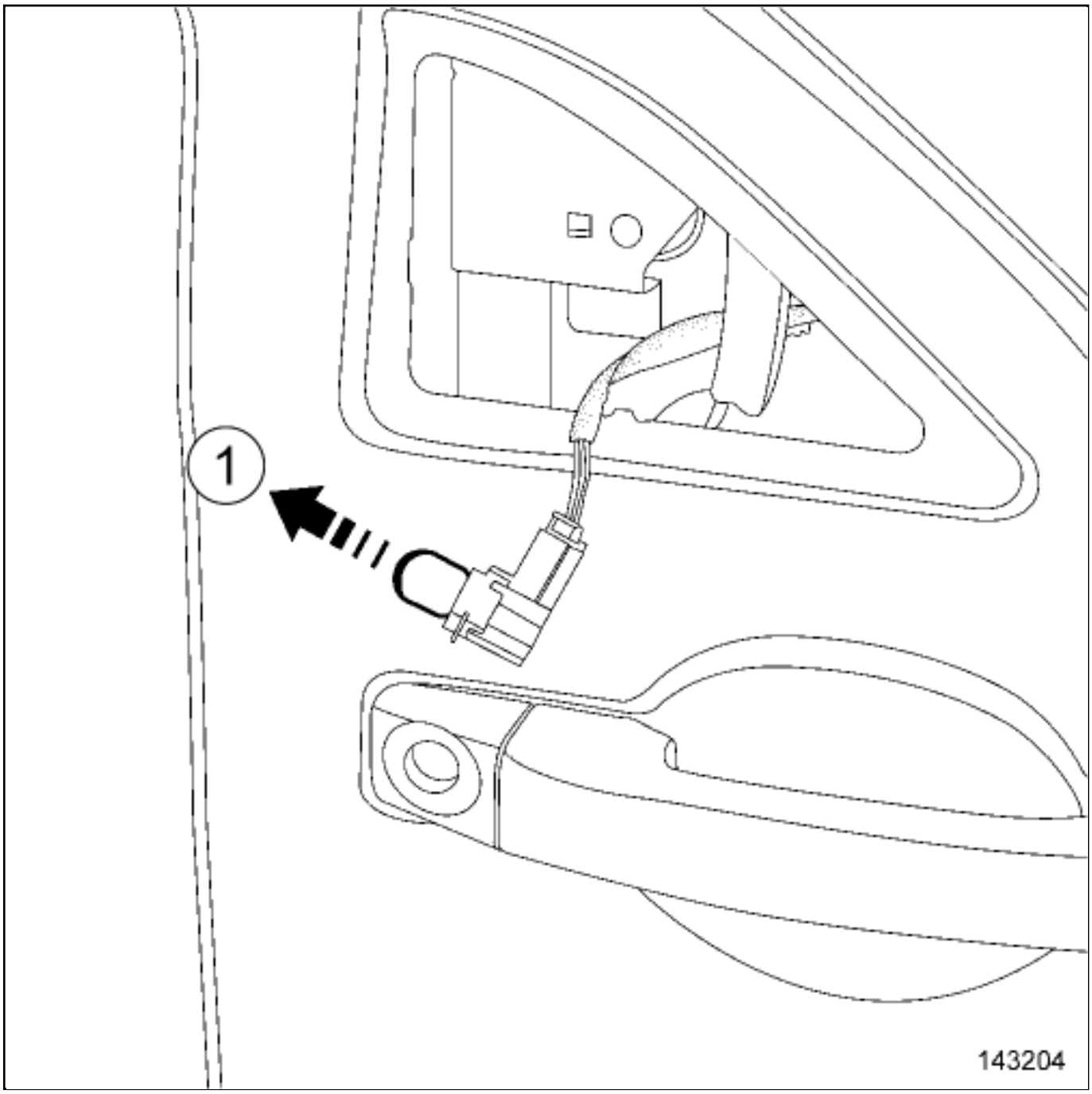
Location and specifications (tightening torques, parts always to be replaced, etc.)Exterior rear opening element assembly: Exploded view (52A, Non-side opening element mechanisms).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the high level brake lightExterior rear opening element assembly: Exploded view (52A, Non-side opening element mechanisms).

2. REMOVAL OPERATION



- Unclip the high level brake light bulb at(1) .

REFITTING

Note:

If the bulb is changed, only use an approved bulb.

- Proceed in the reverse order to removal.

LATERAL ACCELERATION AND YAW SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

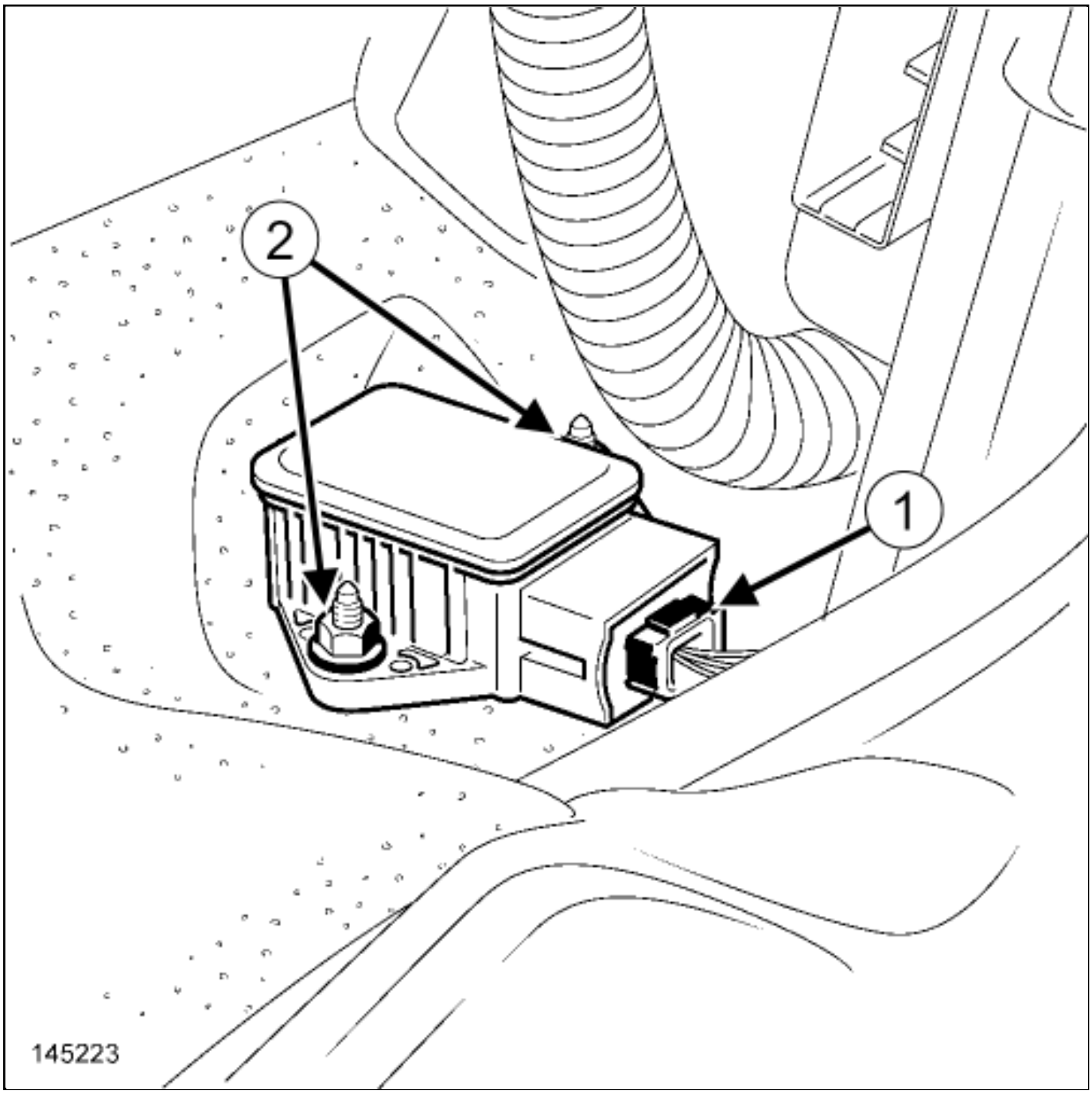
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 38C, Anti-lock braking system, ABS: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the centre consoleCentre console: Removal - Refitting (57A, Interior equipment).
- Remove the floor carpet.

2. REMOVAL OPERATION



- Disconnect the lateral acceleration and yaw sensor connector(1) .

- Remove:
  - the(2) lateral acceleration and yaw sensor nuts,
  - the lateral acceleration and yaw sensor.

REFITTING

1. REFITTING OPERATION

- Refit the lateral acceleration and yaw sensor.
- Torque tighten the lateral acceleration and yaw sensor nuts8 N.m.

2. FINAL OPERATION

- Refit the floor carpet.
- Refit the centre consoleCentre console: Removal - Refitting (57A, Interior equipment).

LEFT-HAND SUSPENDED ENGINE MOUNTING: REMOVAL - REFITTING

Special tooling required	
Support for removal - refitting of engine - gearbox assembly	Mot. 1390

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) .

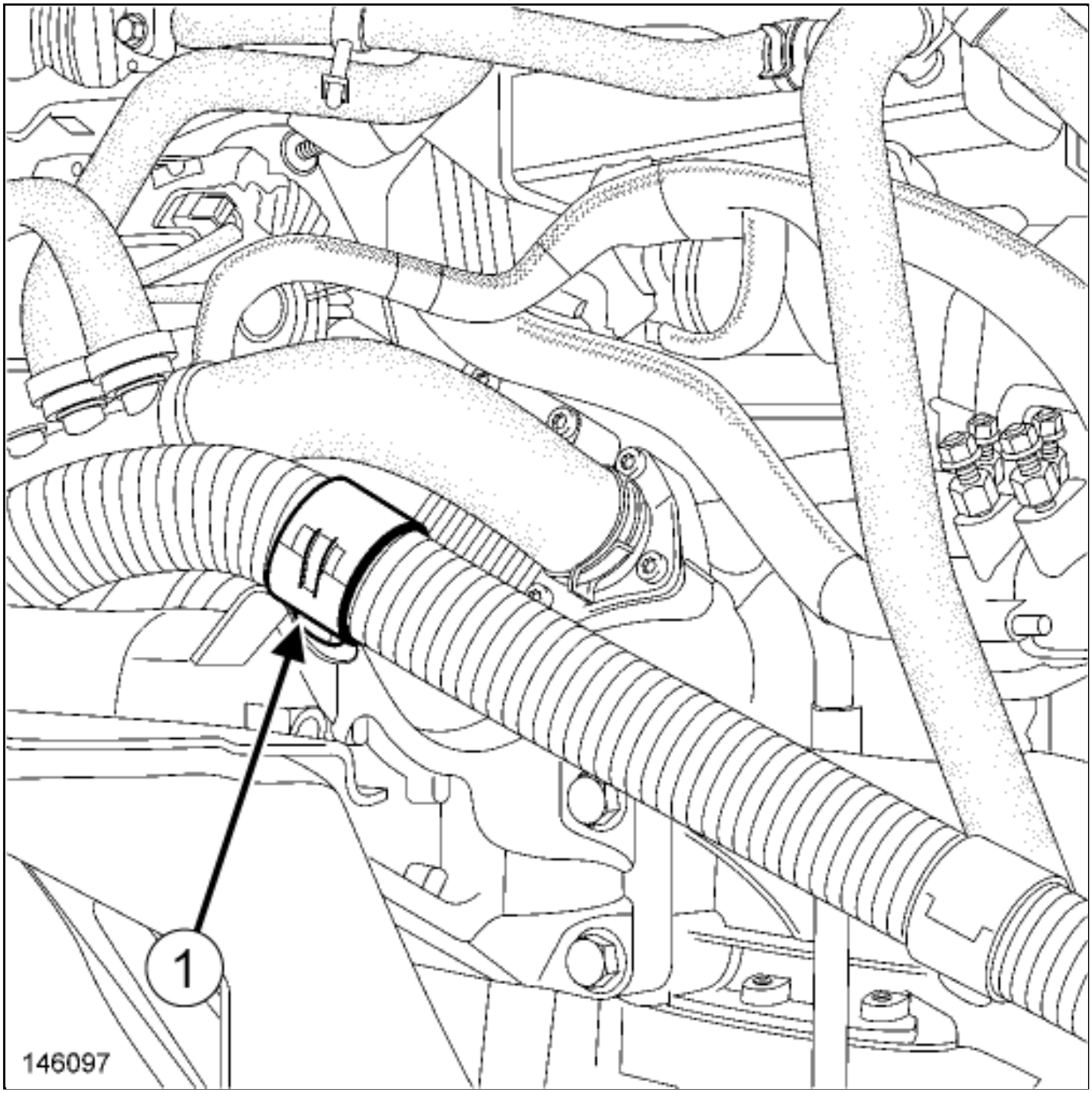
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the nut of the electric coolant pump support at the turbocharger outletCoolant circuit assembly: Exploded view .

- Move the electric coolant pump away from the turbocharger outlet.

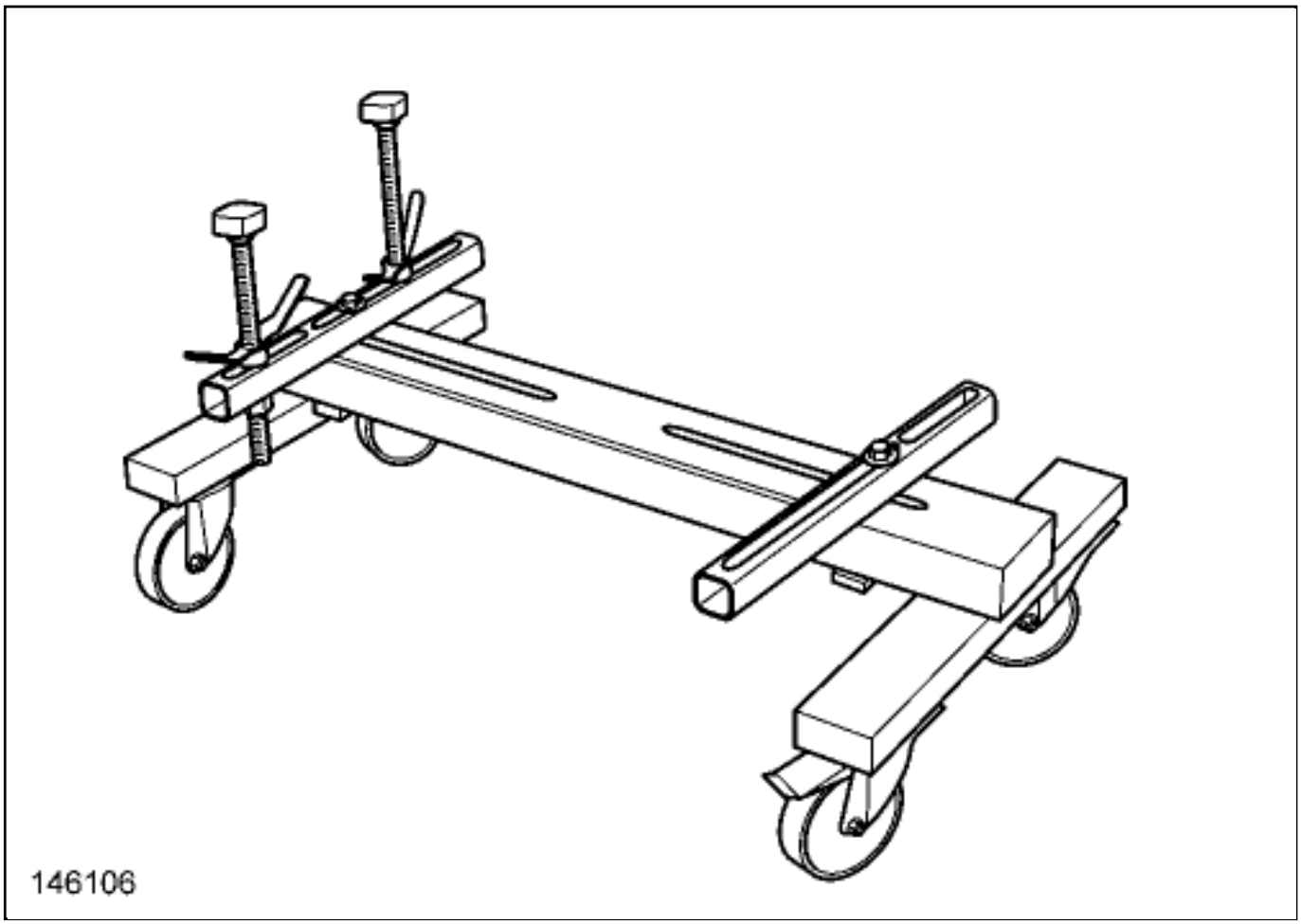


- Unclip the wiring(1) from the engine mounting.

- Remove the bolt of the power-assisted steering return pipe from the engine mounting (36B, Power-assisted steering).

Power-assisted steering assembly: Exploded view

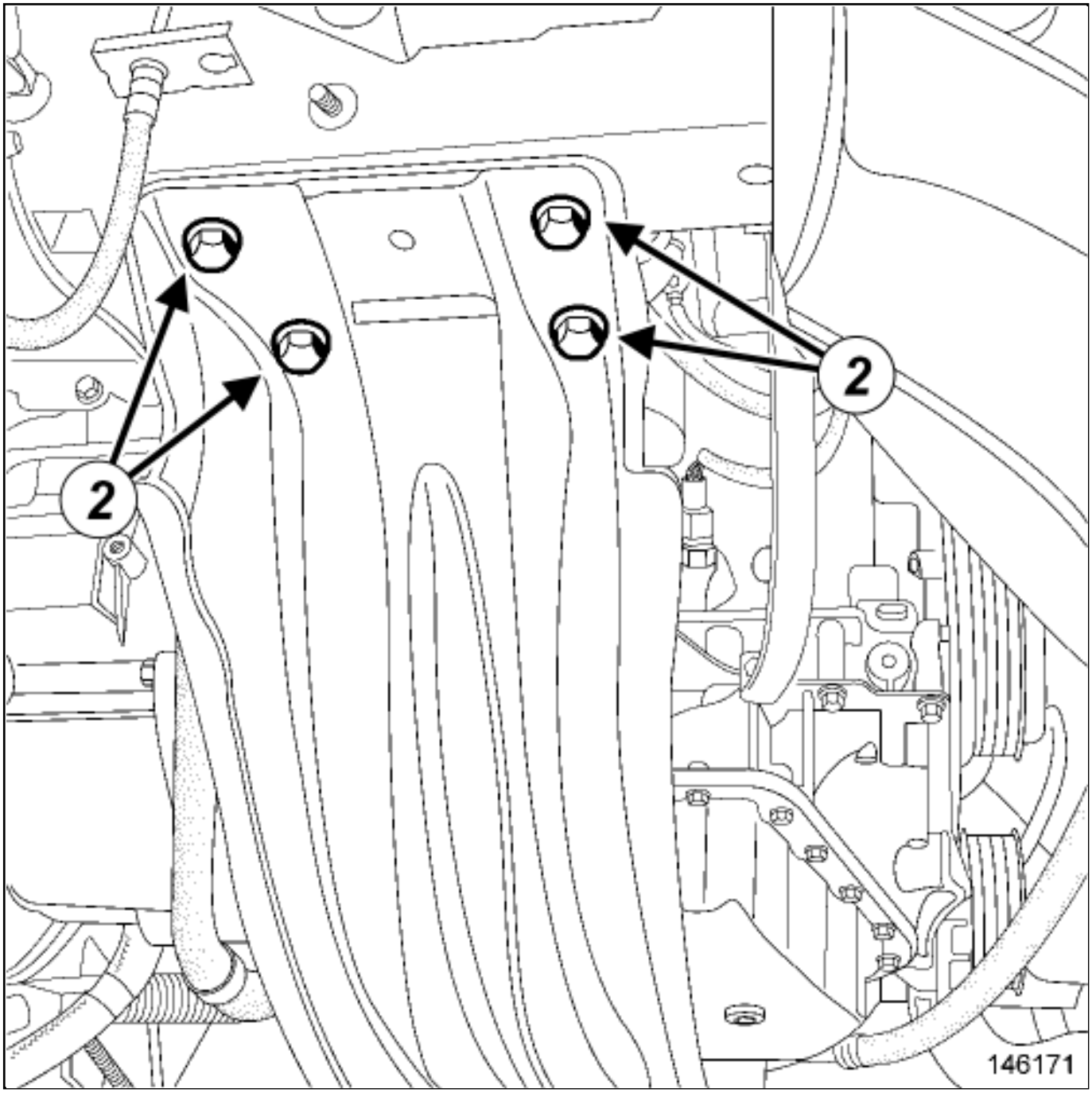
2. REMOVAL OPERATION



Position the Support for removal - refitting of engine - gearbox assembly(Mot. 1390) under the engine.

Remove the following from the engine mounting(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) :

- the bolt of the front left-hand rubber pad,
- the bolt of the front right-hand rubber pad.



- Remove the engine mounting bolts(2) .

- Move the engine mounting aside.

- Remove the left-hand rubber pad(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

- Torque tighten the engine mounting bolts62 N.m.

LEFT-HAND SUSPENDED ENGINE MOUNTING: REMOVAL - REFITTING

Special tooling required	
Support for removal - refitting of engine - gearbox assembly	Mot. 1390

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) .

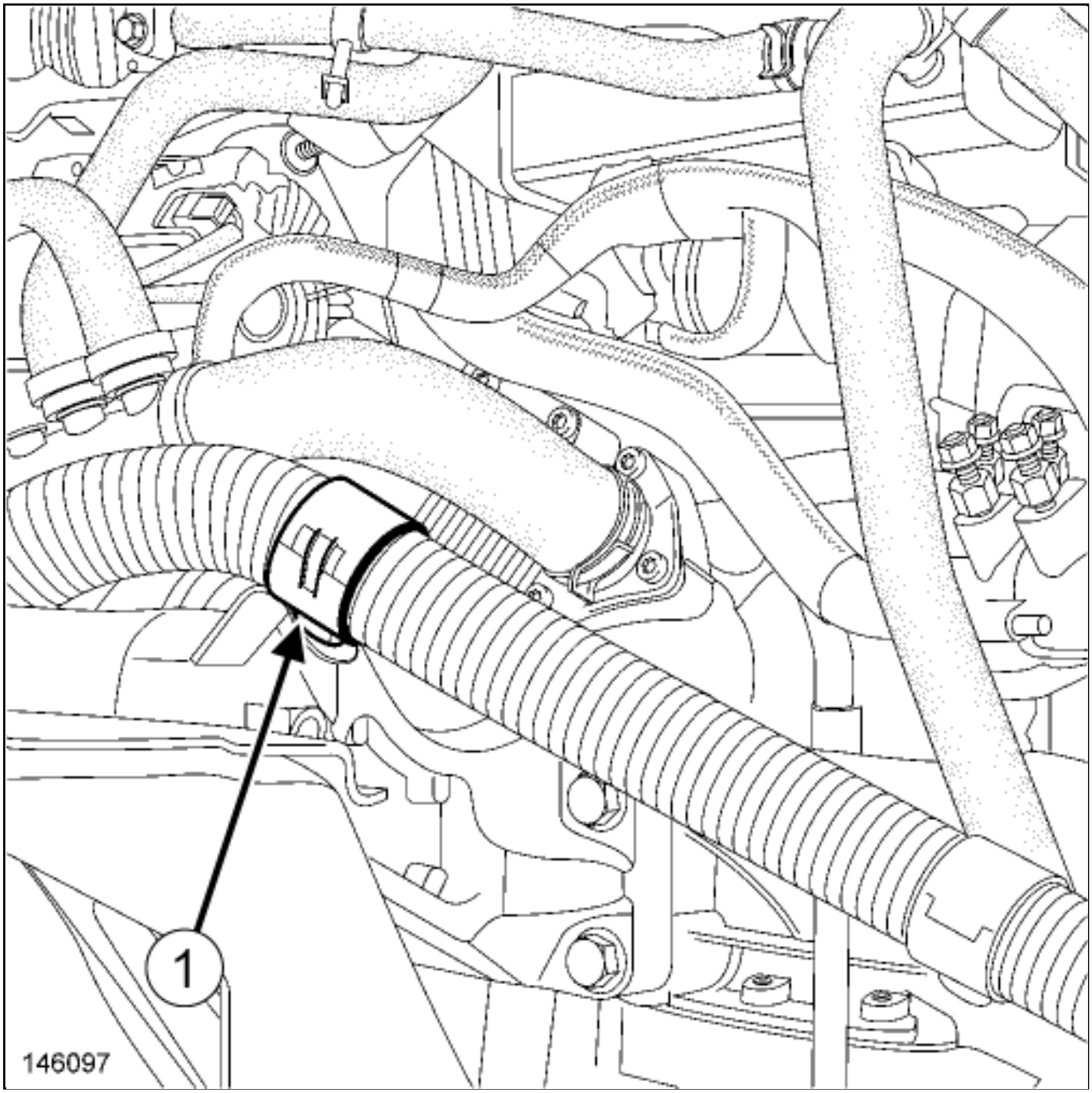
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the nut of the electric coolant pump support at the turbocharger outletCoolant circuit assembly: Exploded view .

- Move the electric coolant pump away from the turbocharger outlet.

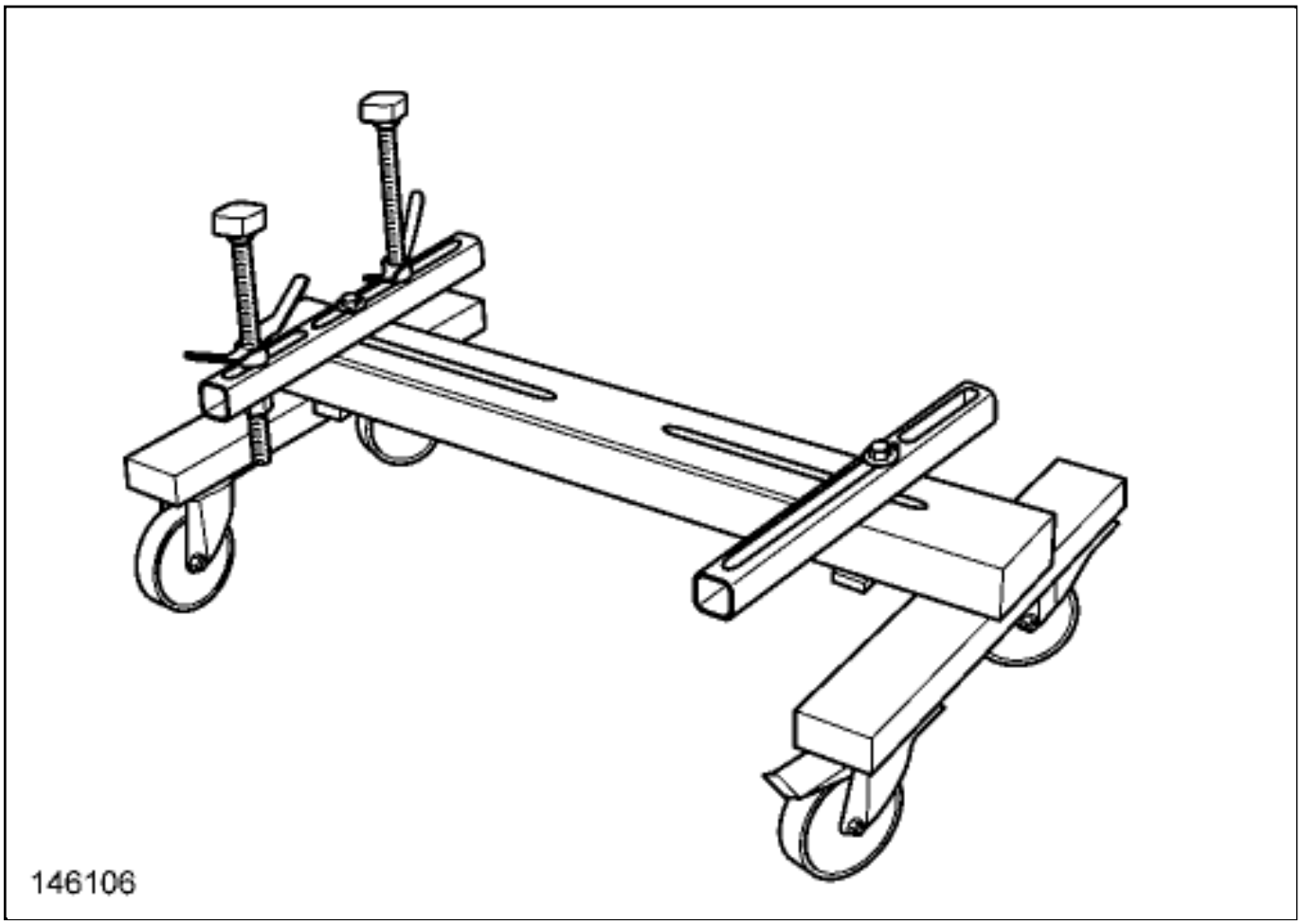


- Unclip the wiring(1) from the engine mounting.

- Remove the bolt of the power-assisted steering return pipe from the engine mounting (36B, Power-assisted steering).

Power-assisted steering assembly: Exploded view

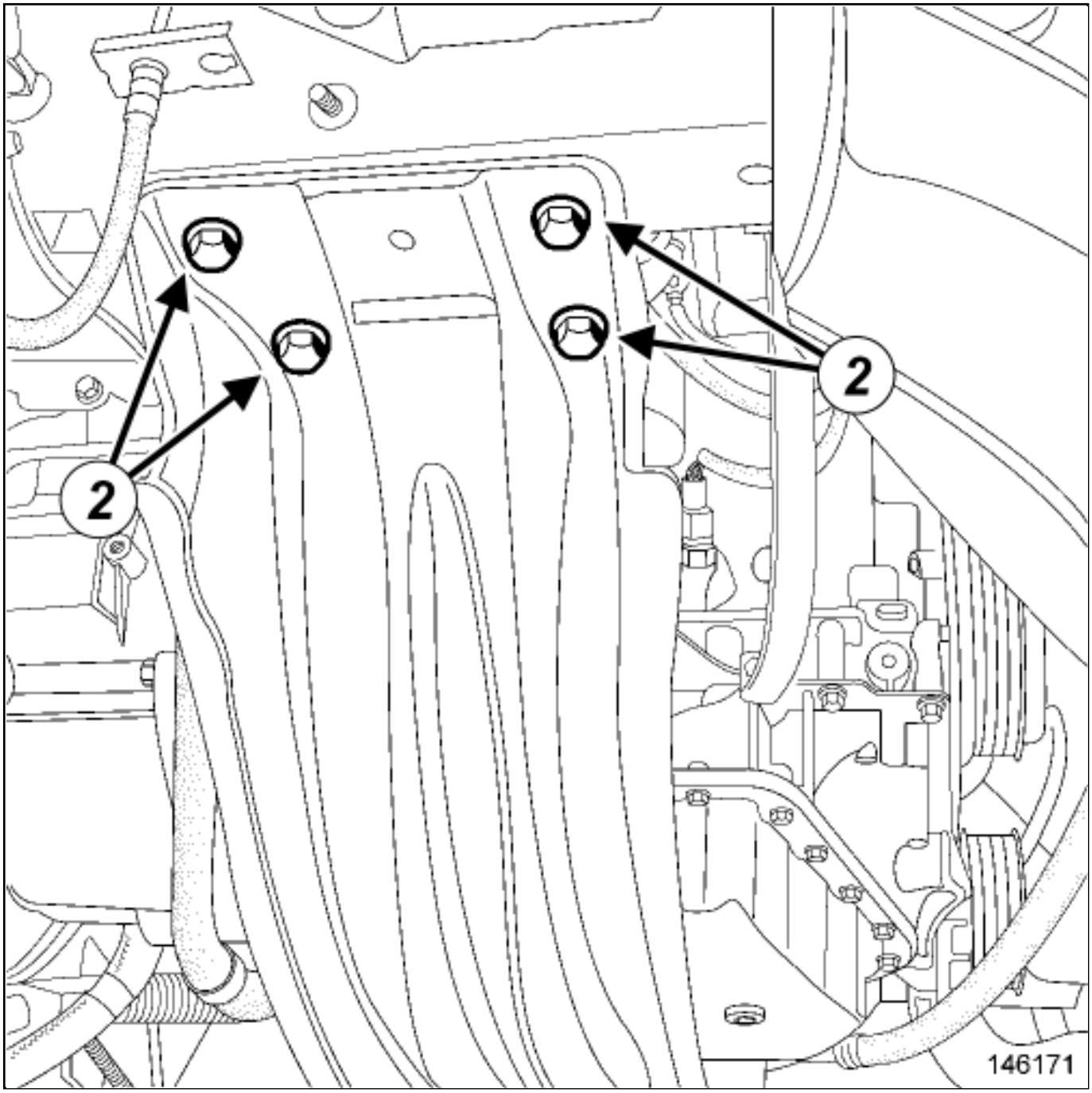
2. REMOVAL OPERATION



Position the Support for removal - refitting of engine - gearbox assembly(Mot. 1390) under the engine.

Remove the following from the engine mounting(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) :

- the bolt of the front left-hand rubber pad,
- the bolt of the front right-hand rubber pad.



- Remove the engine mounting bolts(2) .

- Move the engine mounting aside.

- Remove the left-hand rubber pad(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

- Torque tighten the engine mounting bolts62 N.m.

LIFTING EYES: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

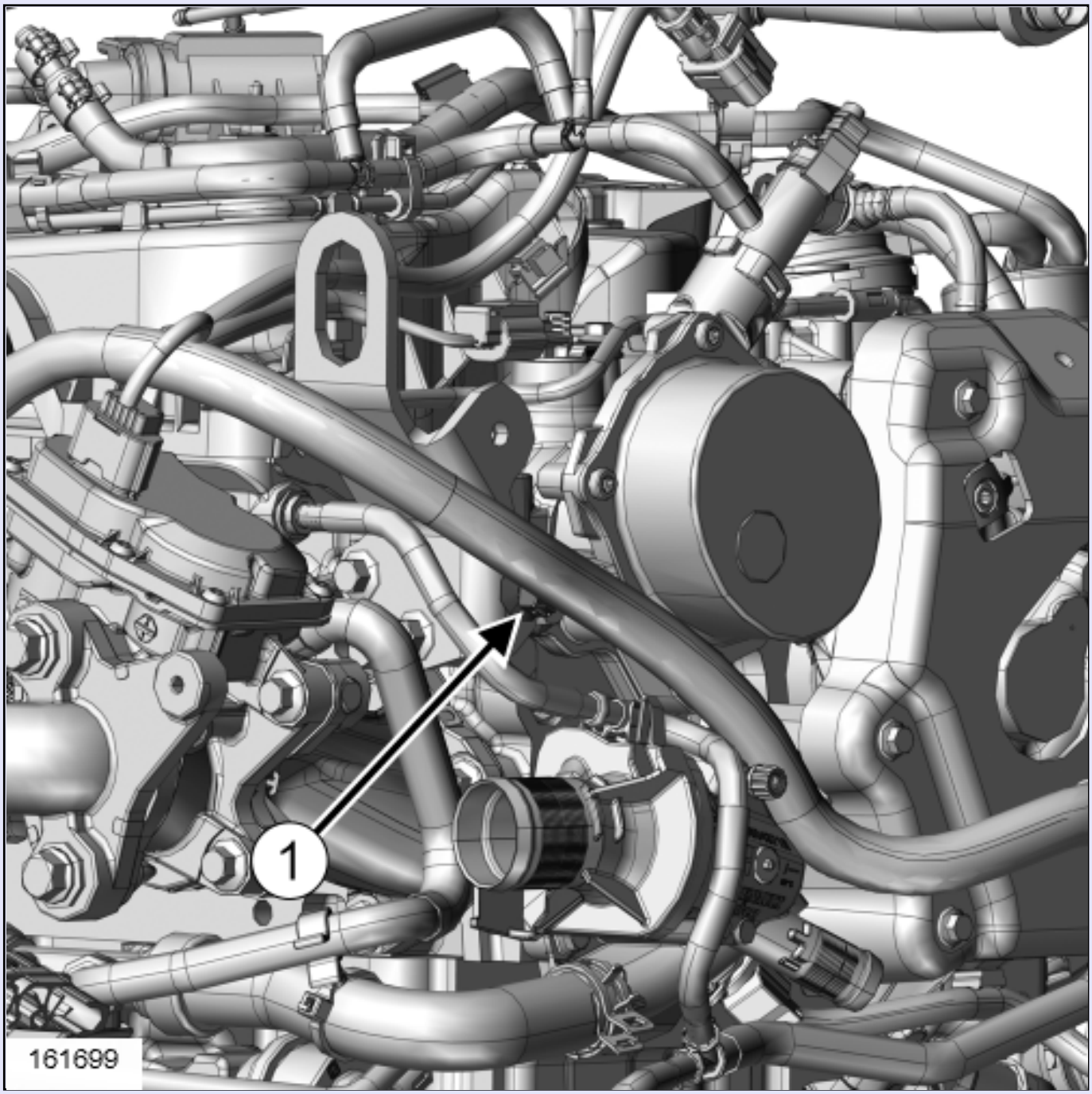
REMOVAL

1. REMOVAL OPERATION FOR THE LIFTING EYE ON THE INLET SIDE

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

- Remove (see 11A, Top and front of engine, Cylinder head assembly: Exploded view) :
  - the lifting eye bolts on the inlet side,
  - the lifting eye on the inlet side.

M9T, 700(700)



- Unclip the wiring at(1) .

- Remove :

- the lifting eye bolts on the inlet side,
- the lifting eye on the inlet side.

REFITTING

1. REFITTING PREPARATION OPERATION

Refit (see 11A, Top and front of engine, Cylinder head assembly: Exploded view) :

- the lifting eye on the inlet side,
- the lifting eye bolts on the inlet side.

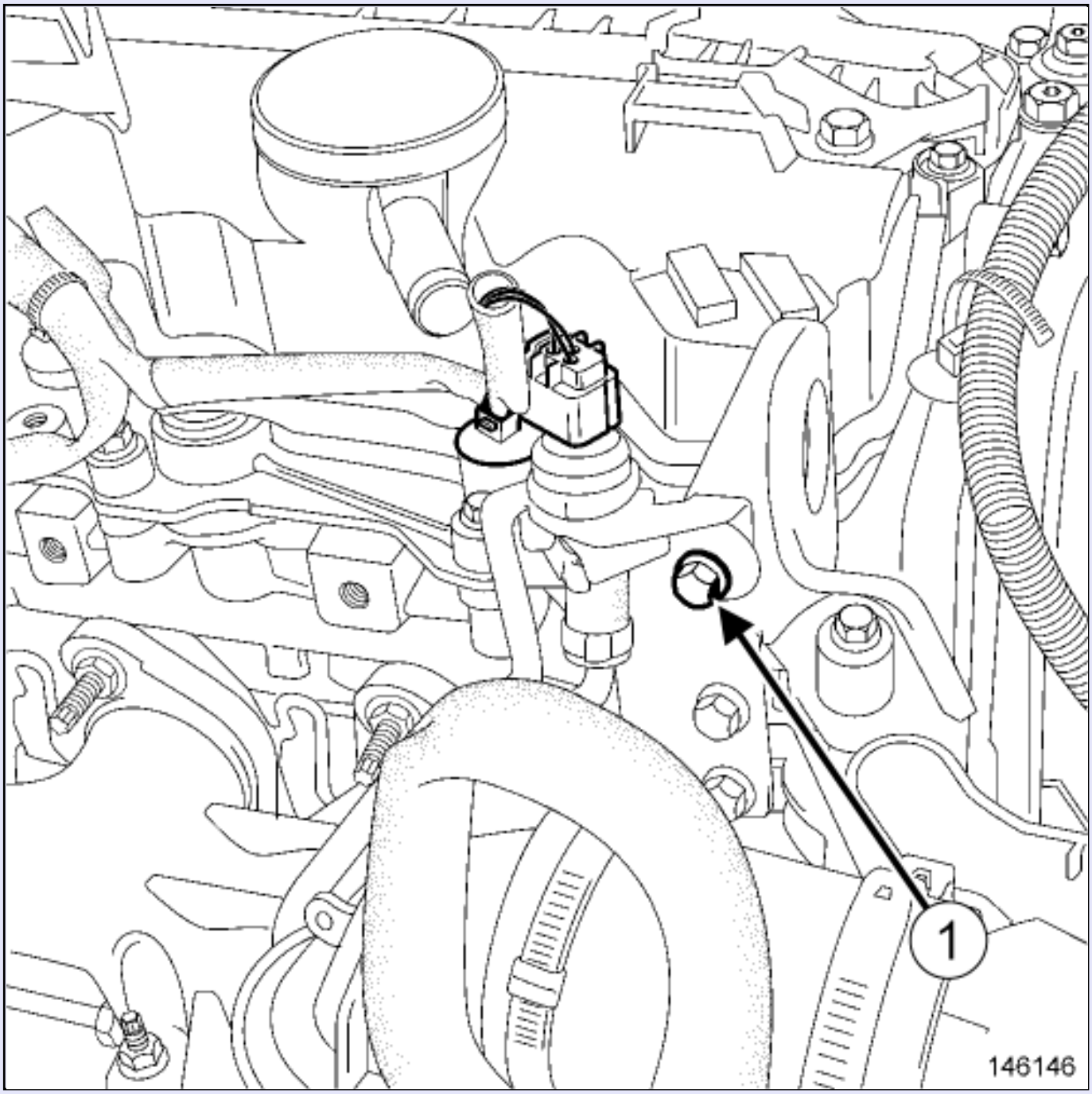
Torque tighten the lifting eye bolts on the inlet side(see 11A, Top and front of engine, Cylinder head assembly: Exploded view) .

2. FINAL OPERATION

Proceed in the reverse order to removal.

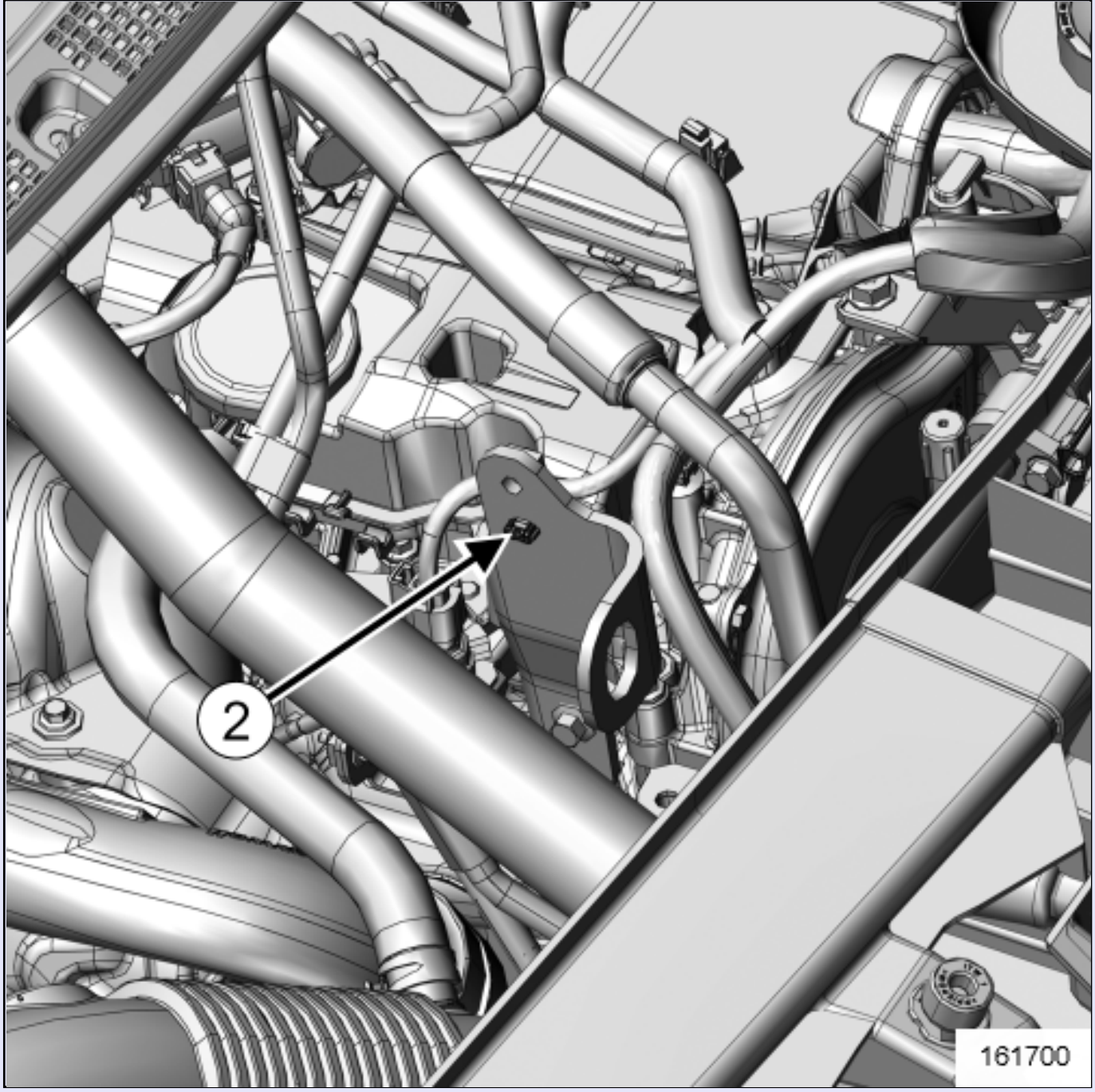
REMOVAL

1. REMOVAL PREPARATION OPERATION FOR THE LIFTING EYE ON THE EXHAUST SIDE



- Remove the bolt(1) from the exhaust gas pressure sensor support.
- Move aside the exhaust gas pressure sensor support.

M9T, 700(700)



- Unclip the exhaust gas pressure sensor wiring at(2) .

2. REMOVAL OPERATION FOR THE LIFTING EYE ON THE EXHAUST SIDE

- Remove (see 11A, Top and front of engine, Cylinder head assembly: Exploded view) :
  - the lifting eye bolts on the exhaust side,
  - the lifting eye on the exhaust side.

REFITTING

1. REMOVAL PREPARATION OPERATION

Refit (see 11A, Top and front of engine, Cylinder head assembly: Exploded view) :

- the lifting eye on the exhaust side,
- the lifting eye bolts on the exhaust side.

Torque tighten the lifting eye bolts on the exhaust side(see 11A, Top and front of engine, Cylinder head assembly: Exploded view) .

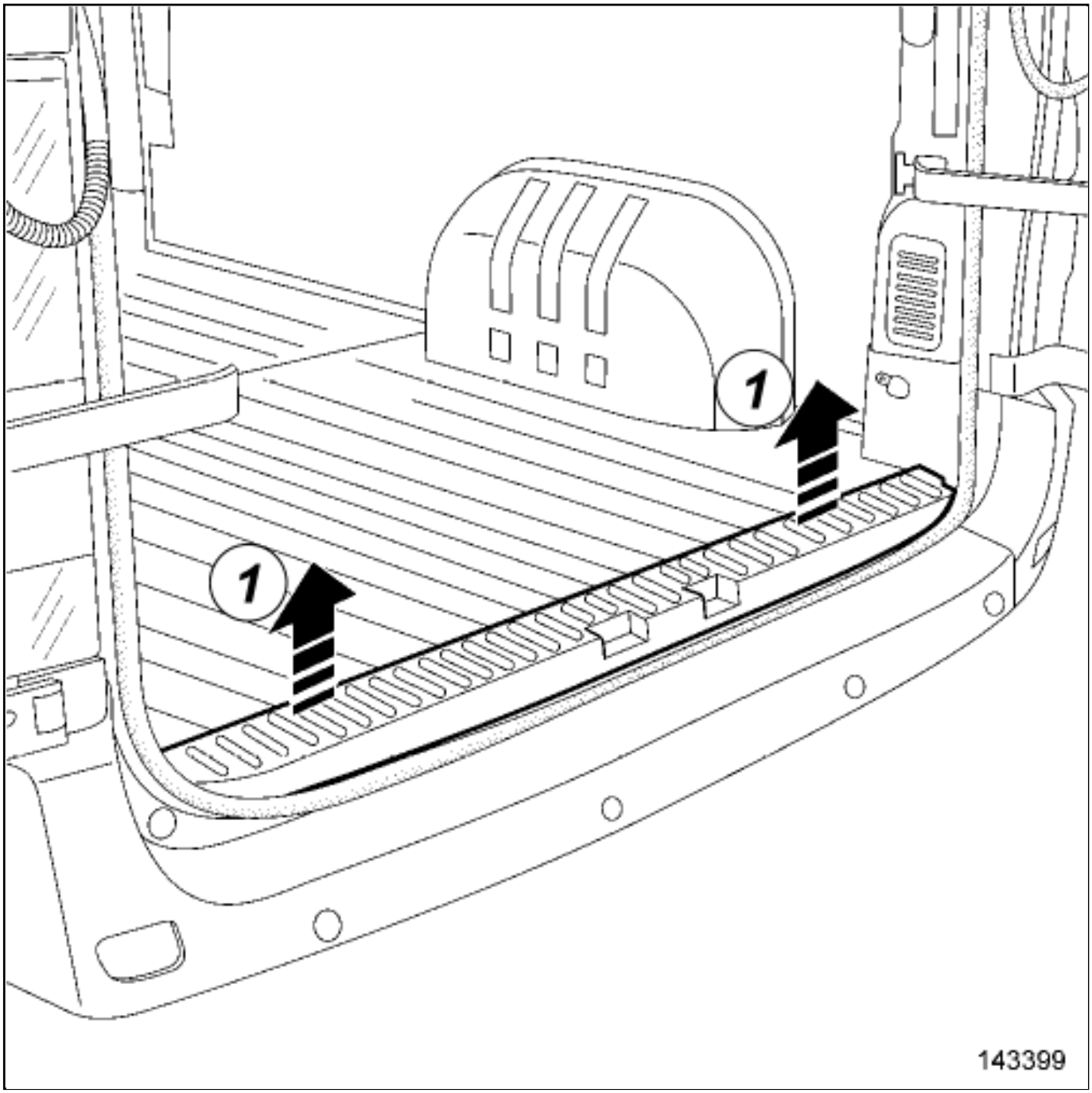
2. FINAL OPERATION

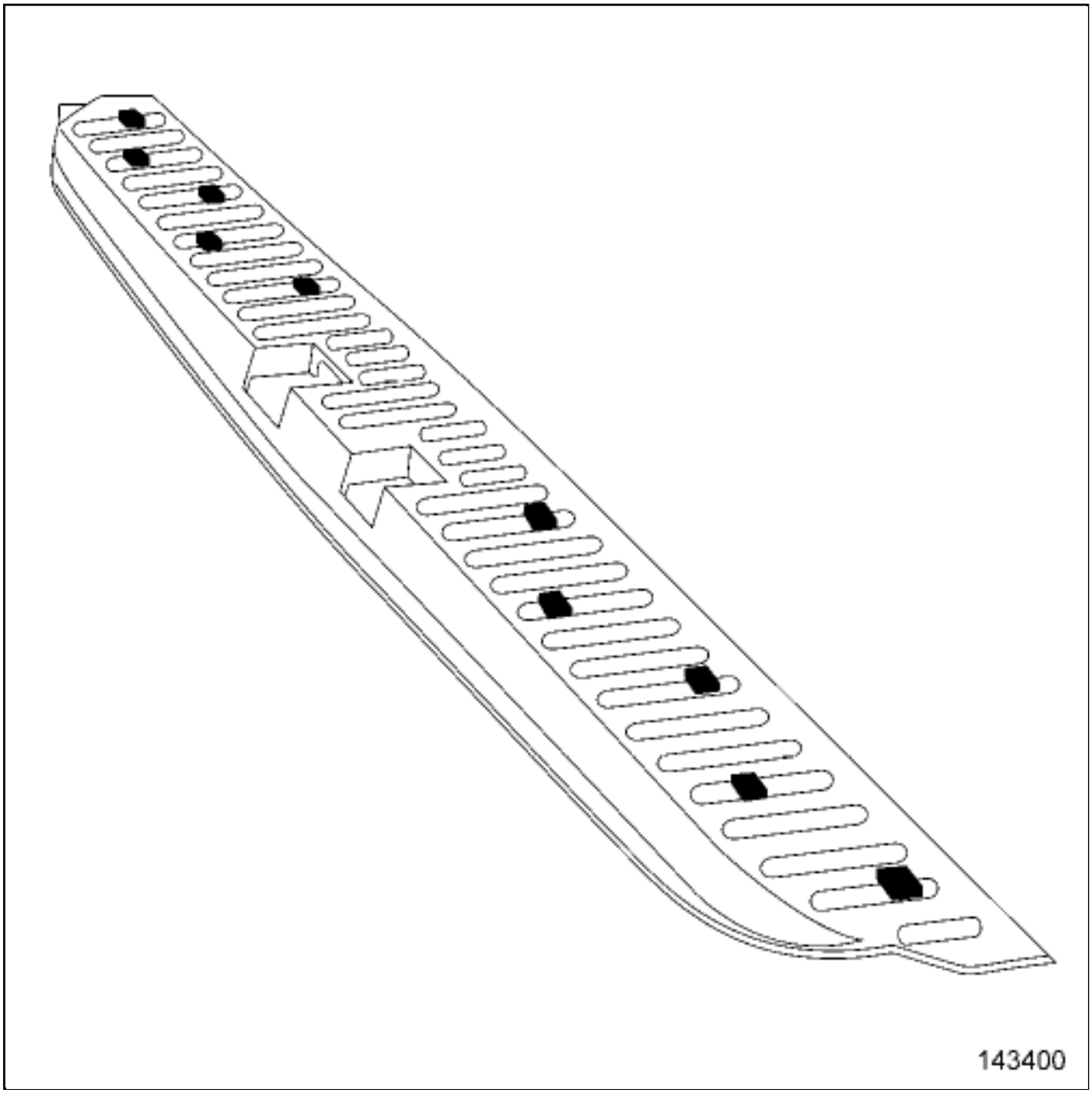
Proceed in the reverse order to removal.

LOADING DOOR SILL: REMOVAL - REFITTING

REMOVAL

1. REMOVAL OPERATION





- Unclip the loading door sill at(1) .
- Remove the loading door sill.

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

LONGITUDINAL DRIVESHAFT INPUT SEAL: REMOVAL - REFITTING

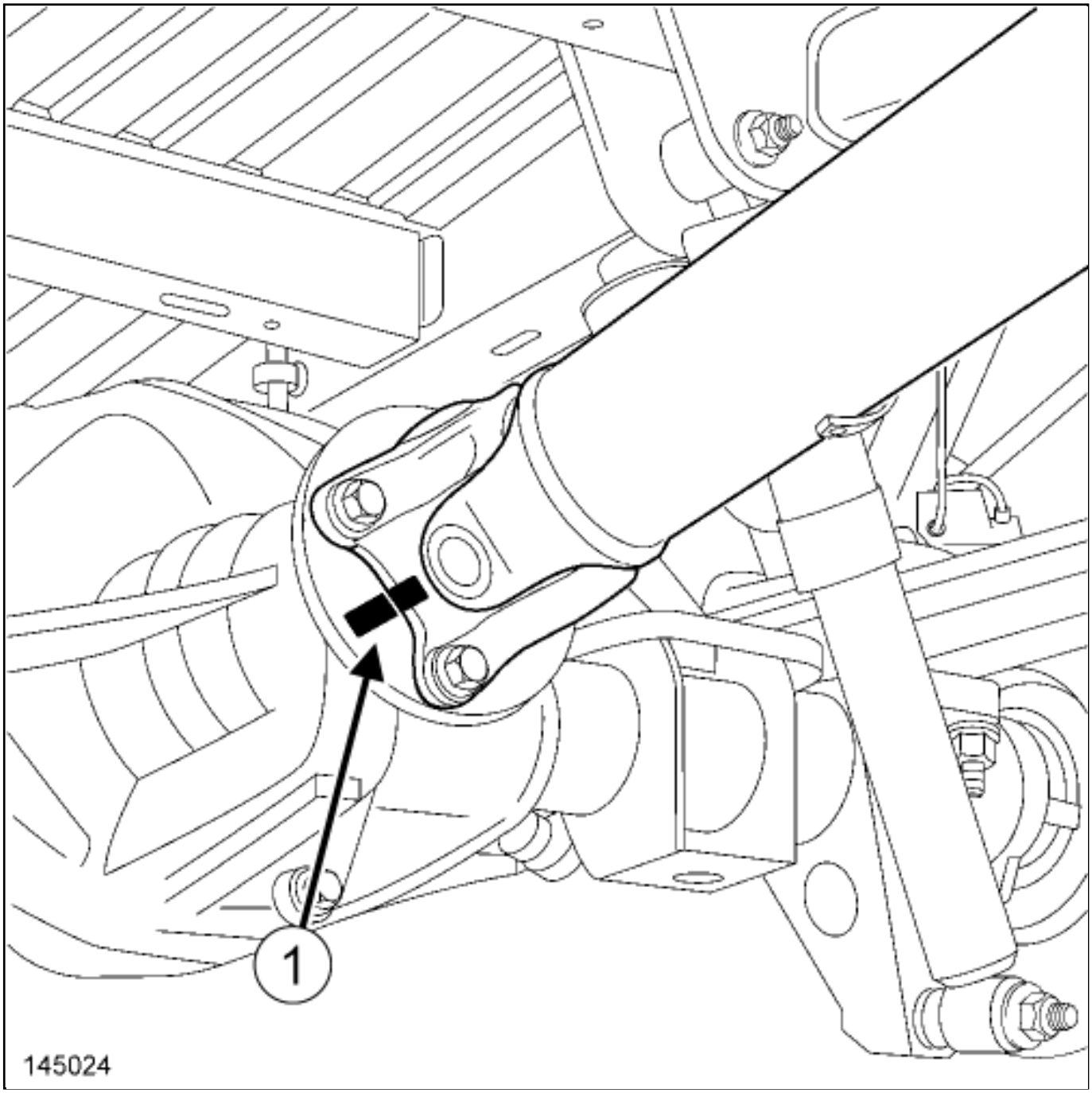
Special tooling required	
Hub locking tool.	Rou. 604-01
Tool for fitting crankshaft seal (timing end)	Mot. 1560
Inertia seal extractor	Bvi. 1948

Equipment required
safety strap(s)
indelible pencil

REMOVAL

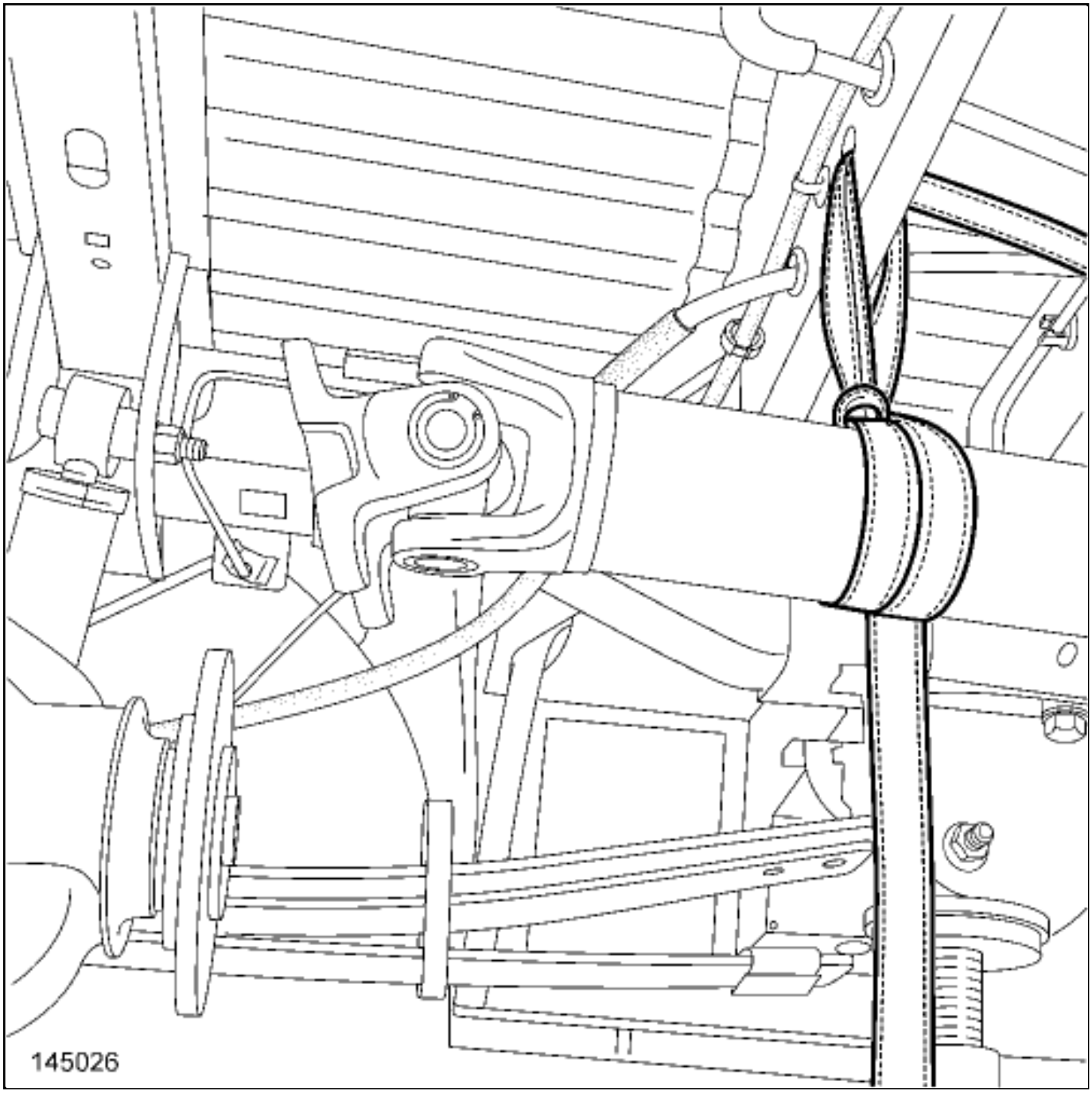
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

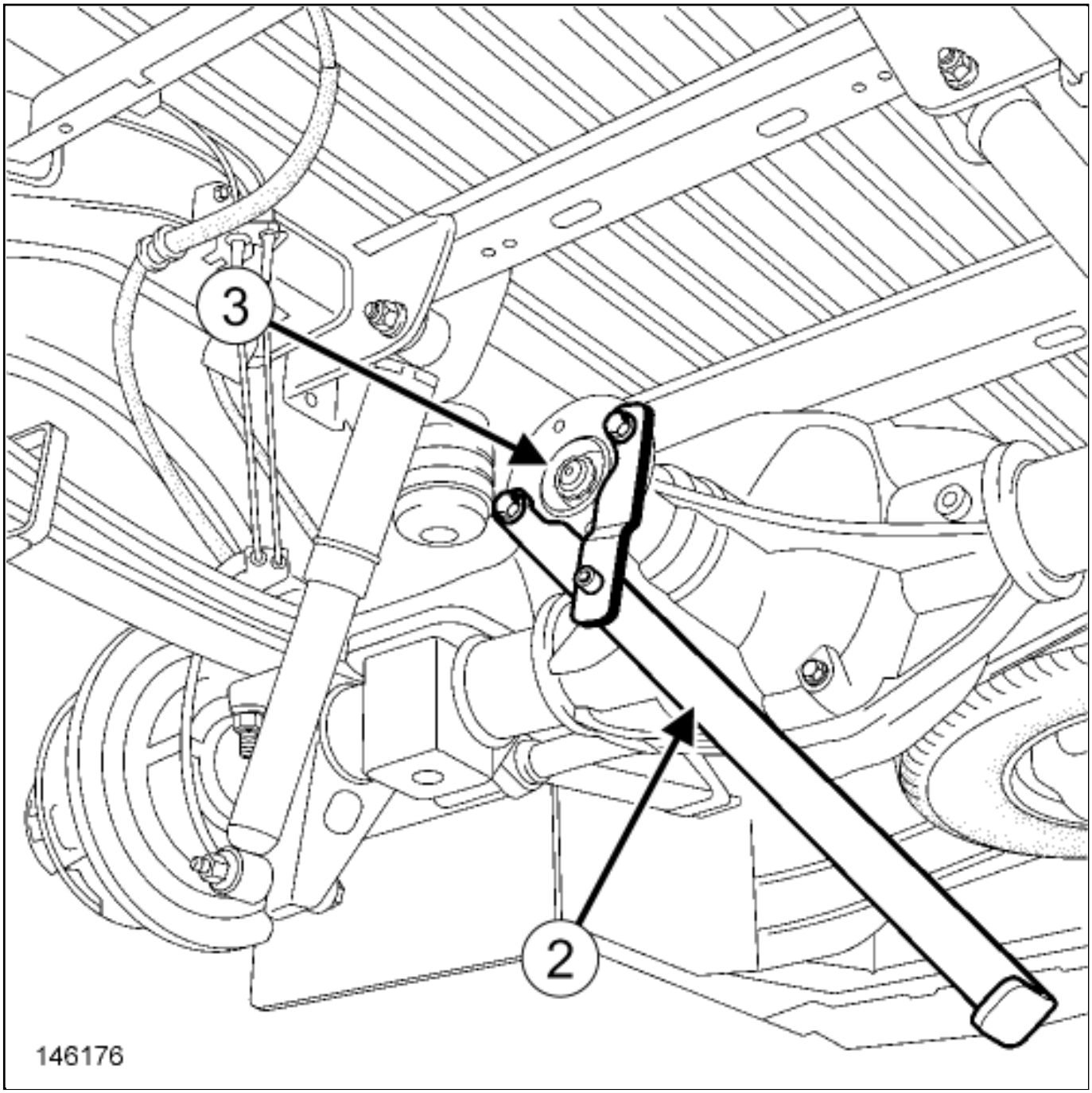


- Mark the position of the longitudinal driveshaft bracket using a indelible pencil at (1) .

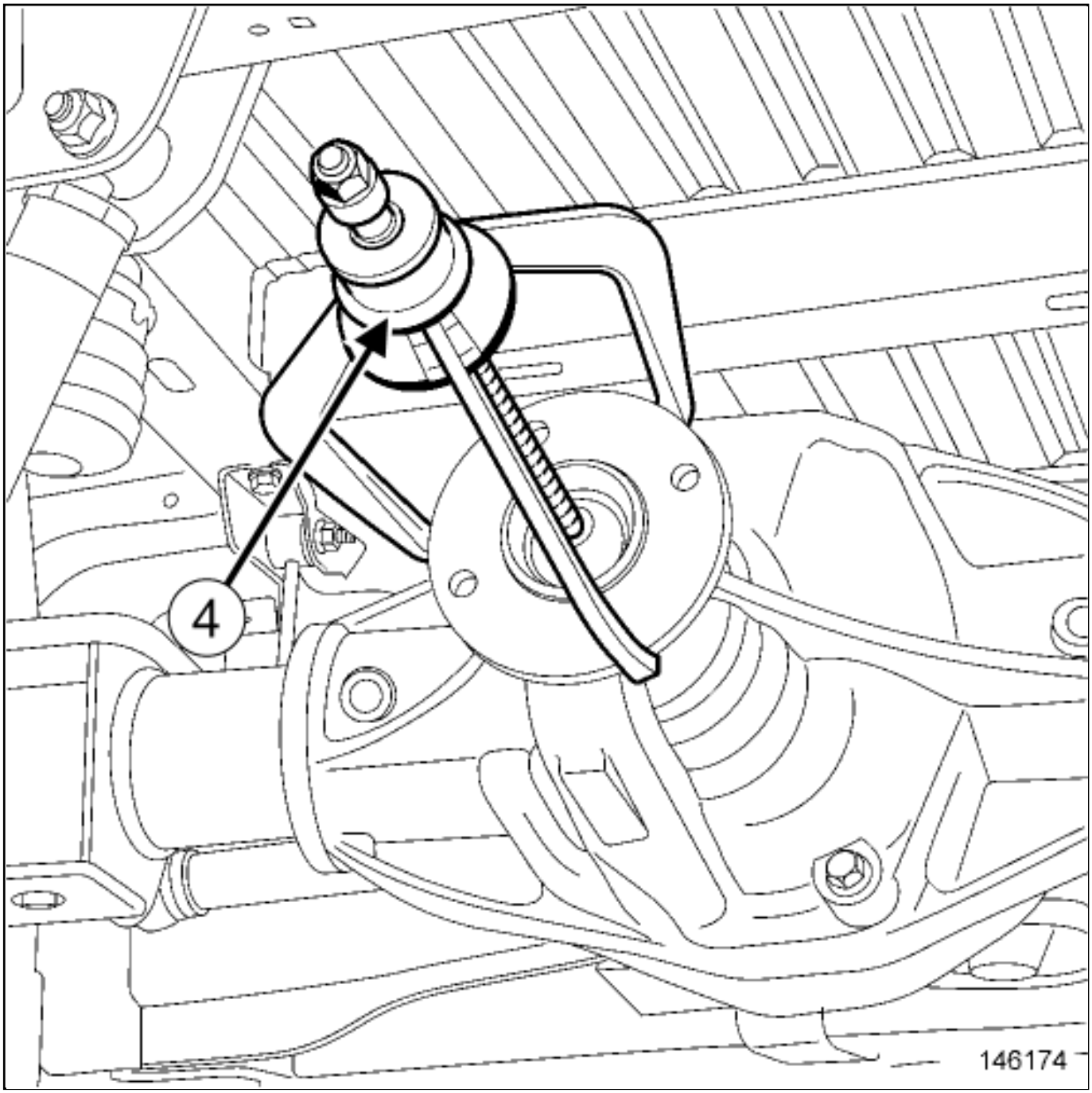
- Remove the bolts and nuts from the universal joint on the final drive side Driveshaft assembly: Exploded view .



- Attach the longitudinal driveshaft to the body using a safety strap(s).

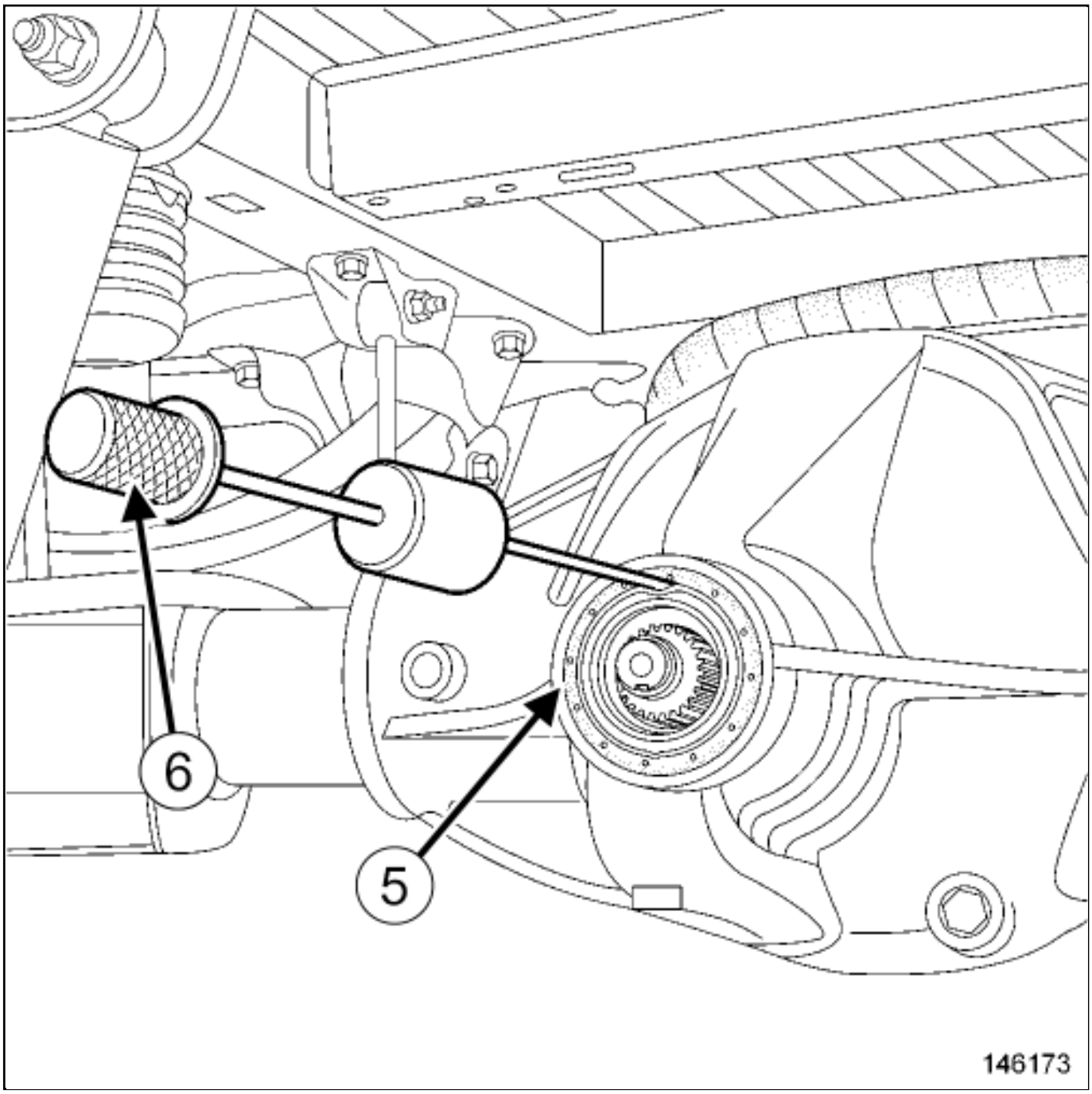


- Fit the toolHub locking tool.(Rou. 604-01) (2) on the rear final drive bracket.
- Remove the nut(3) from the rear final drive bracket.



Remove the bracket from the rear final drive using a three-claw extractor(4) .

2. REMOVAL OPERATION



Remove the longitudinal driveshaft input seal(5) using the toolInertia seal extractor(Bvi. 1948) (6) .

REFITTING

1. REFITTING PREPARATION OPERATION

Always replace the longitudinal driveshaft input seal.

Use surface cleaner[Vehicle: Parts and consumables for the repair](04B, Consumables - Products) to clean and degrease the housing of the longitudinal driveshaft inlet seal.

2. REFITTING OPERATION

Refit the longitudinal driveshaft input seal using the toolTool for fitting crankshaft seal (timing end) (Mot. 1560) .

Proceed in the reverse order to removal.

LONGITUDINAL DRIVESHAFT RELAY BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Tool for removing and refitting rear final drive - driveshaft cross pieces	Bvi. 1945

Equipment required
sliding two-claw extractor
roll pin punch

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 29A, Driveshafts , Driveshaft assembly: Exploded view) .

WARNING

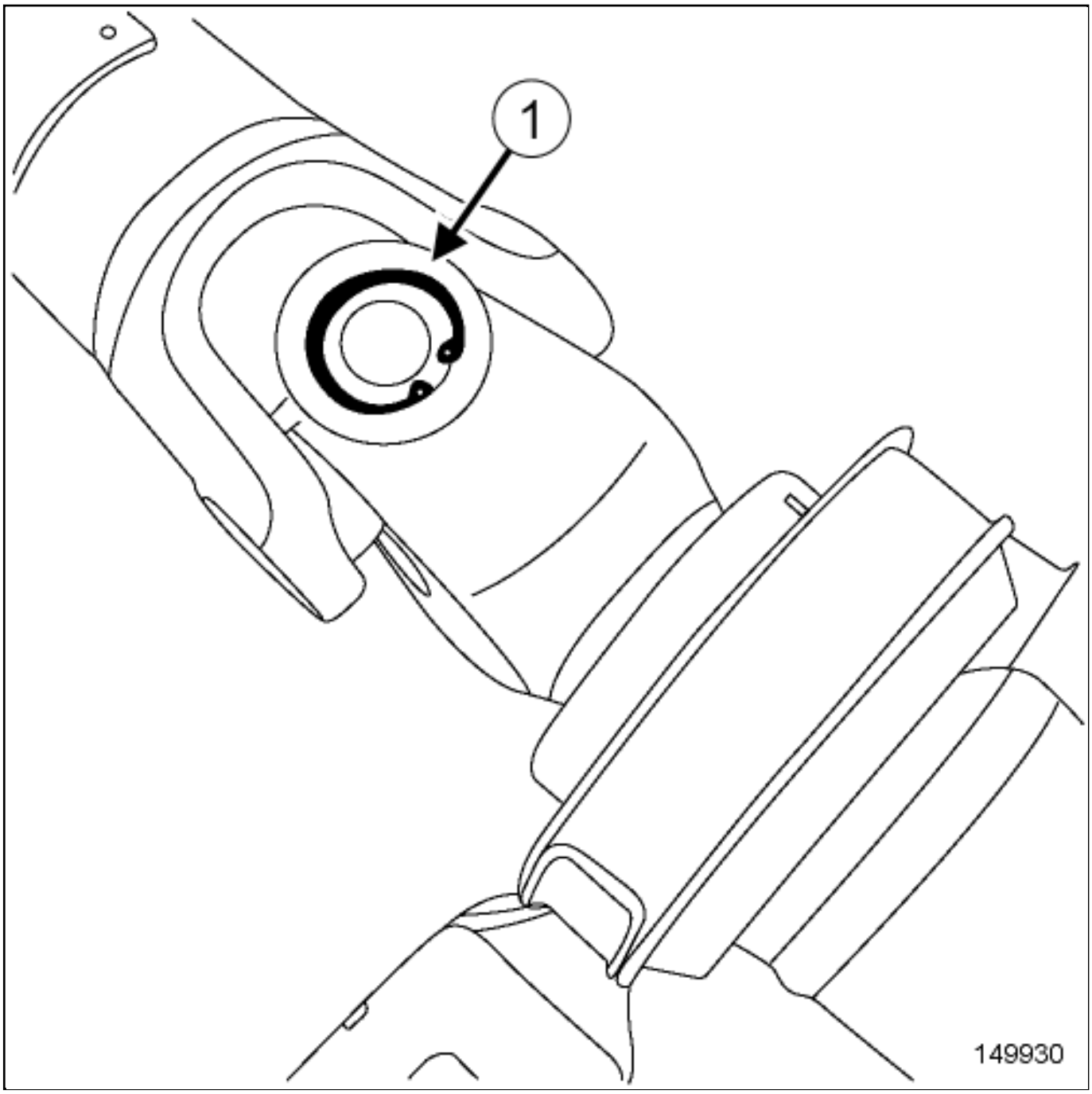
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

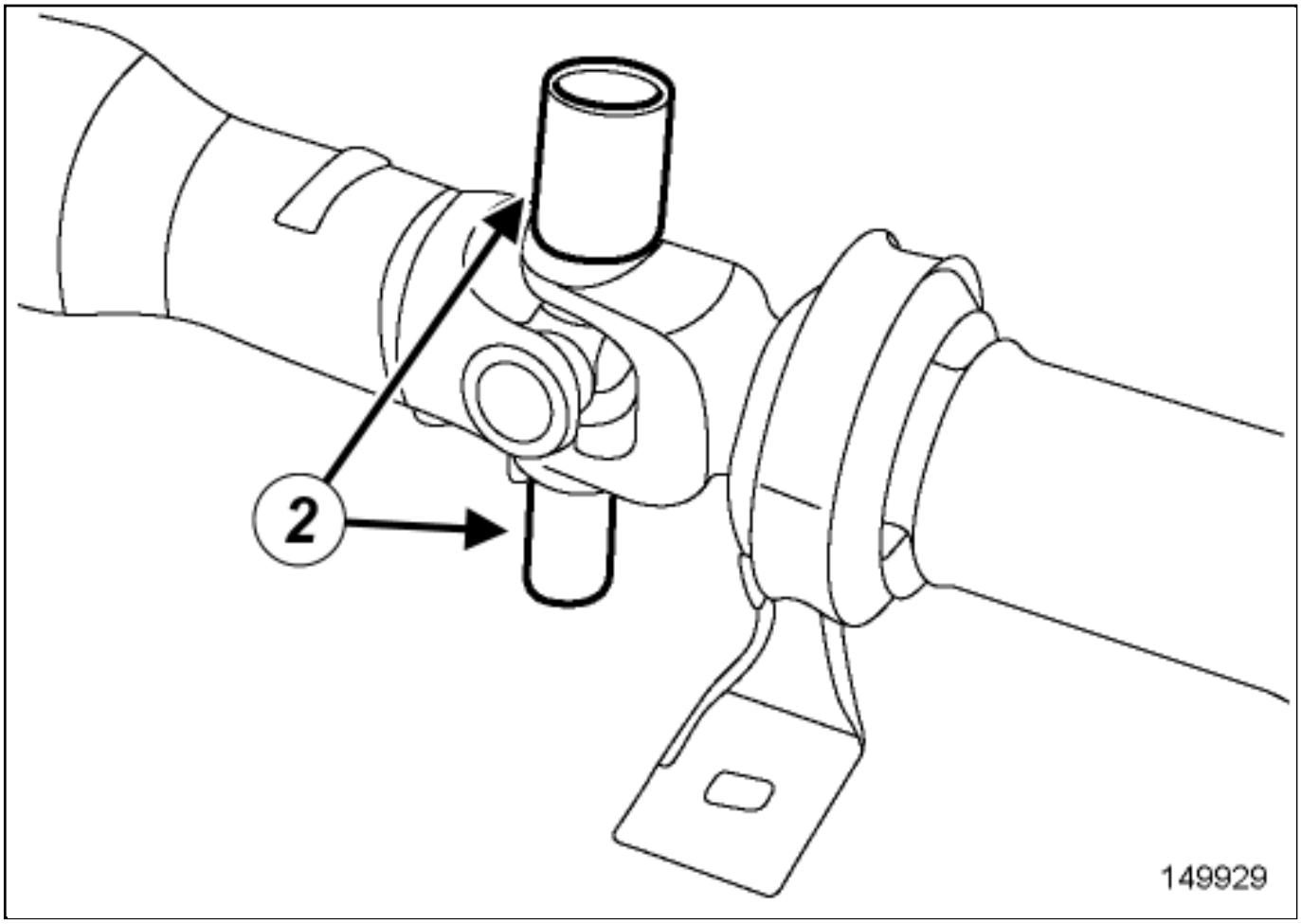
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the longitudinal driveshaft(see 29A, Driveshafts , Driveshaft assembly: Exploded view) .

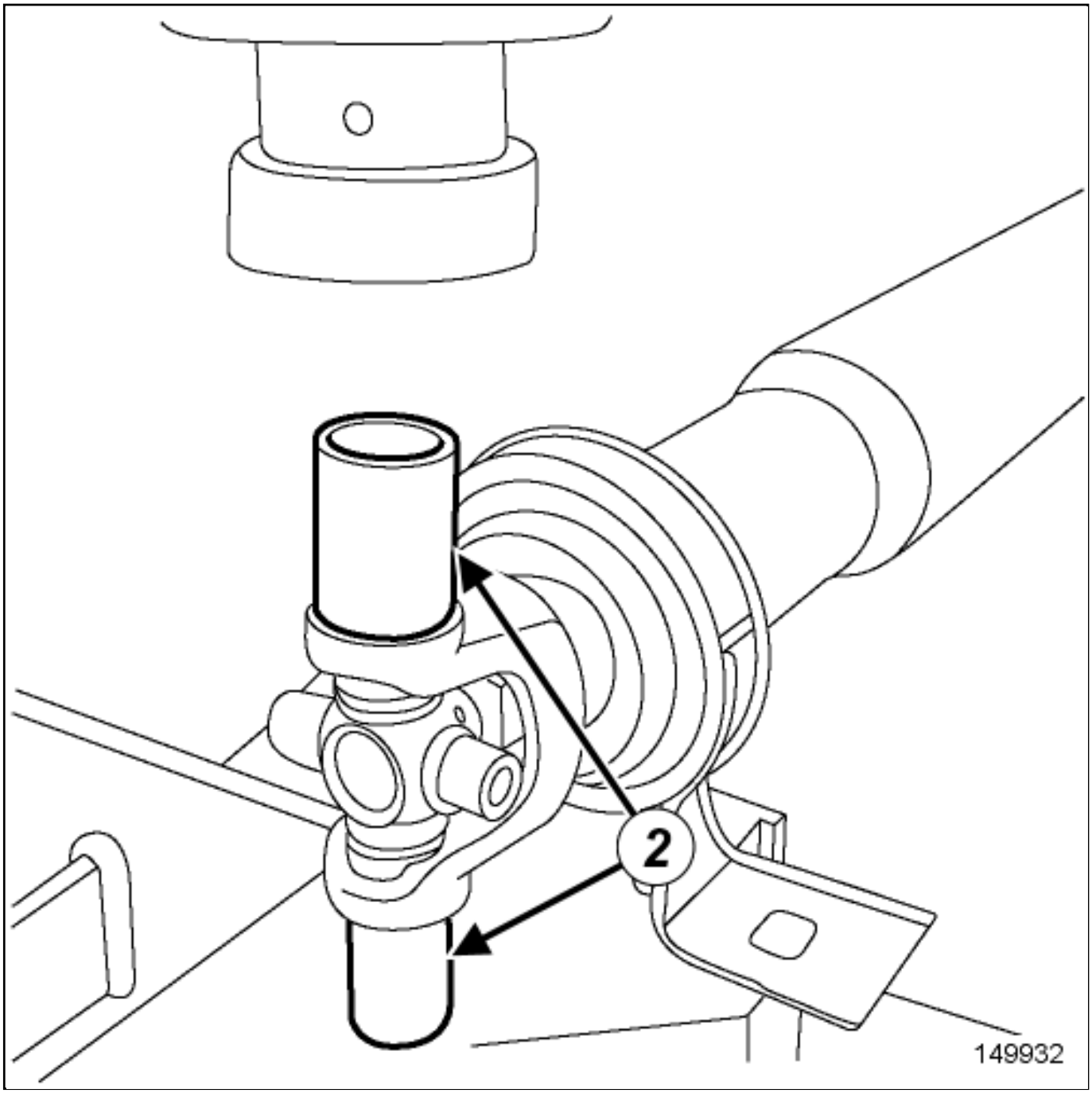
2. REMOVAL OPERATION



- Remove the circlips(1) of the universal joint cross piece(see 29A, Driveshafts , Driveshaft assembly: Exploded view) .

- Use grey abrasive pads(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the surface of the bushings of the universal joint cross piece.


2
149929



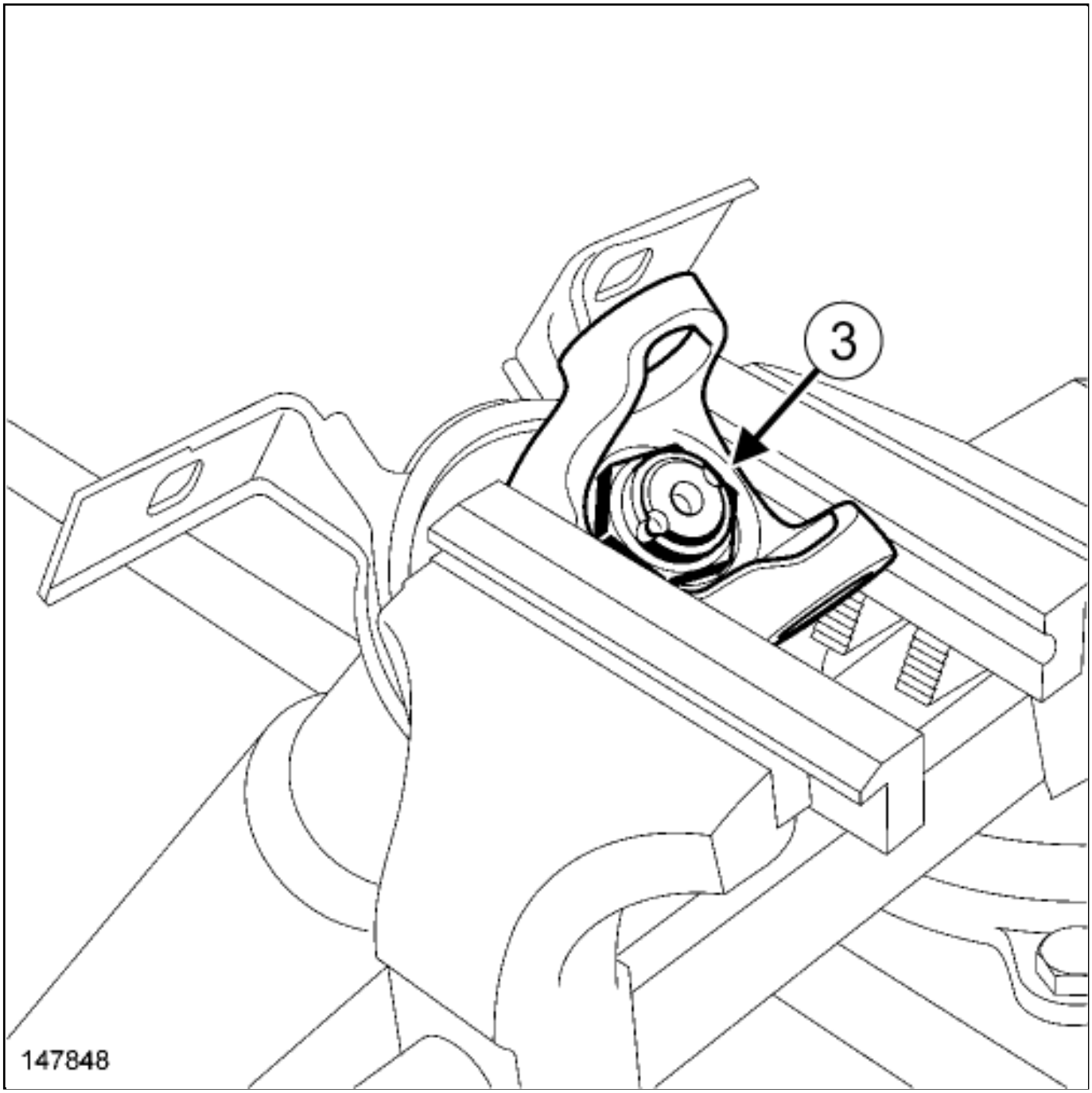
Gently push out the bushings of the universal joint cross piece(see 29A, Driveshafts , Driveshaft assembly: Exploded view) using the toolTool for removing and refitting rear final drive - driveshaft cross pieces (Bvi. 1945) (2) and a press.

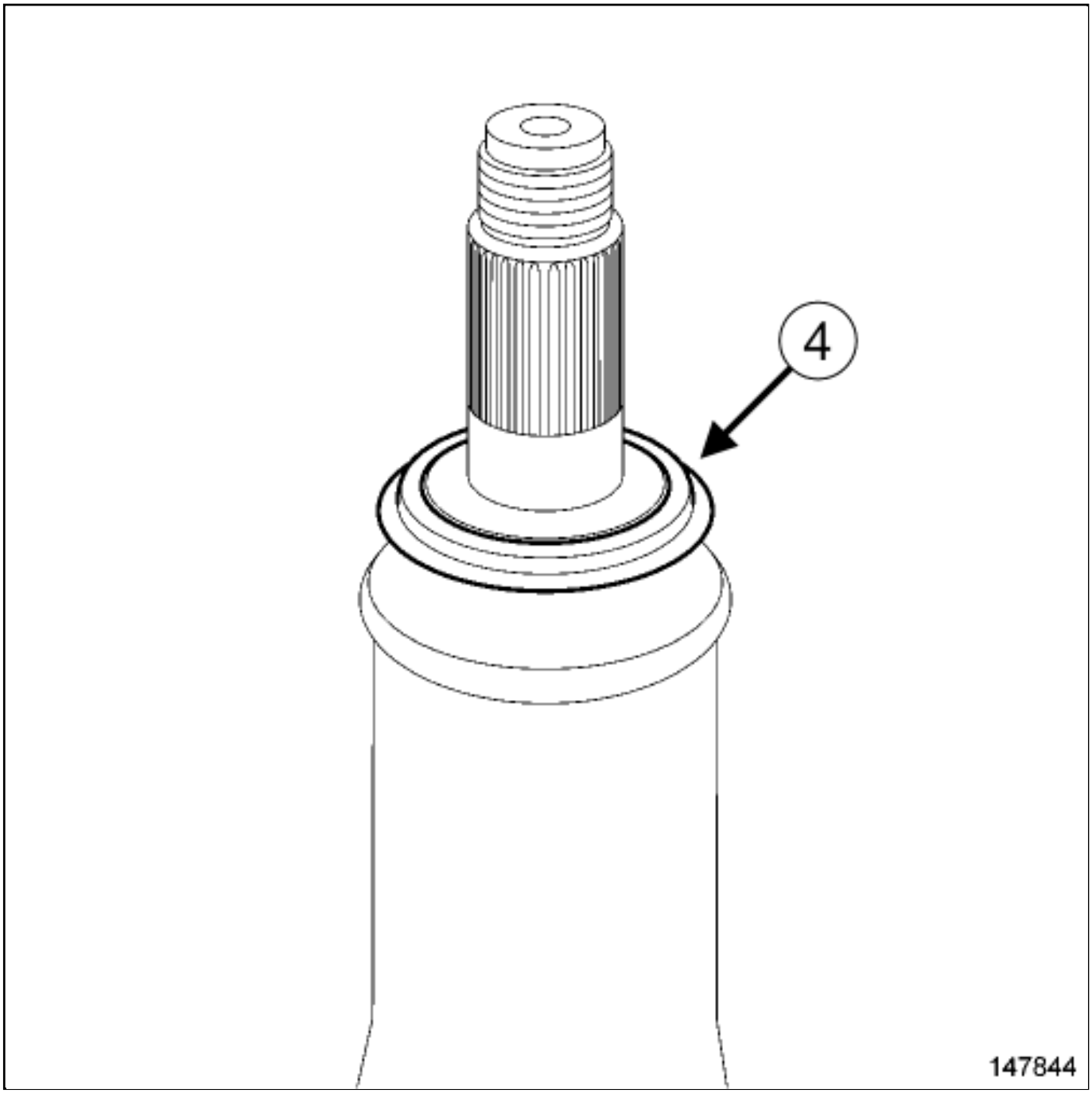
Note:

This operation requires three people.

Remove (see 29A, Driveshafts , Driveshaft assembly: Exploded view) :

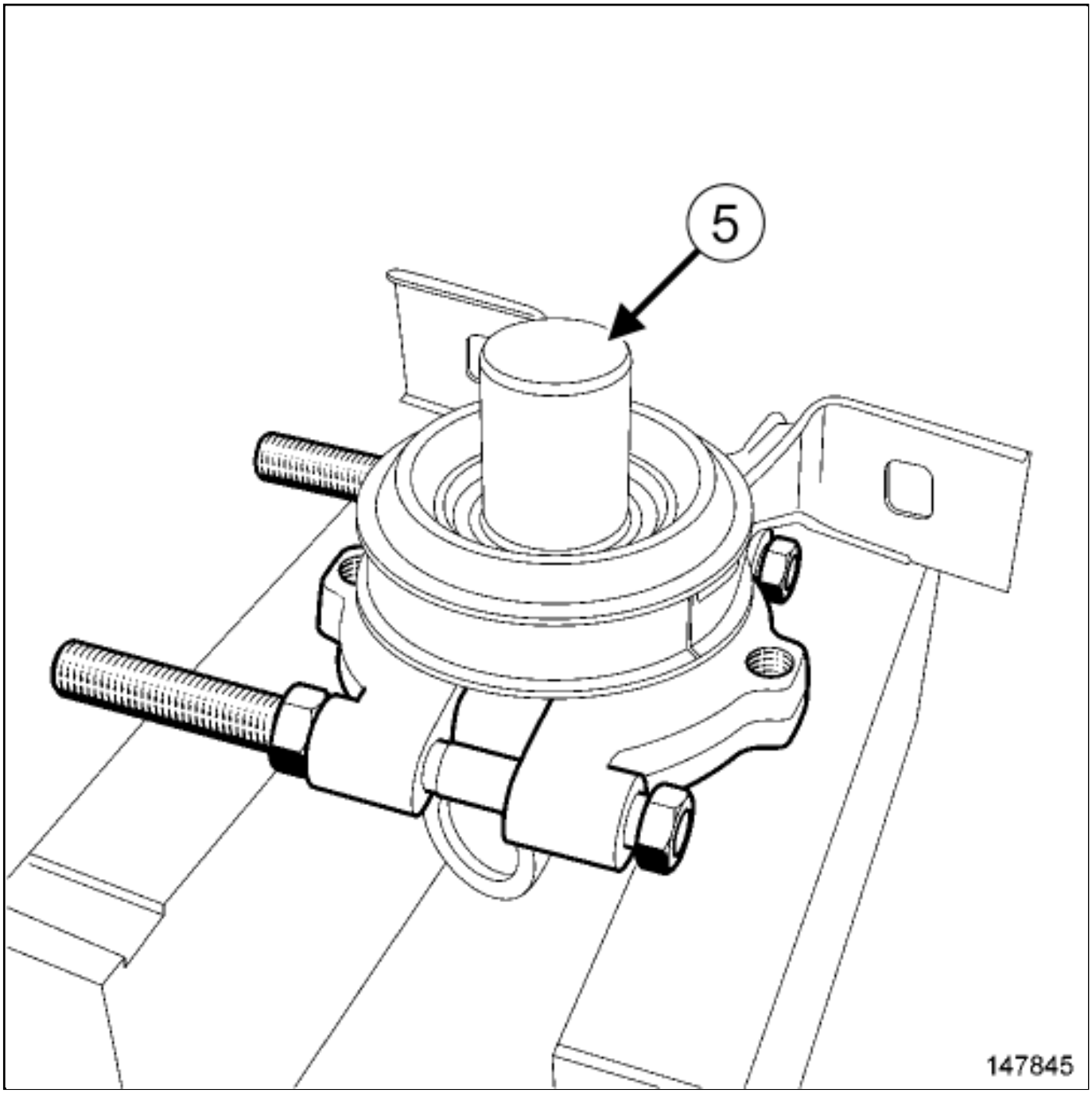
- the universal joint cross piece,
- the bushings of the universal joint cross piece using a roll pin punch.





- Fit the universal joint yoke in a vice equipped with jaws.

- Remove (see 29A, Driveshafts , Driveshaft assembly: Exploded view) :
  - the yoke nut(3) ,
  - the universal joint yoke,
  - the dust seal of the universal joint yoke(4) .



Remove the longitudinal driveshaft relay bearing using a sliding two-claw extractorand a tube with an external diameter of 44 mm(5) .

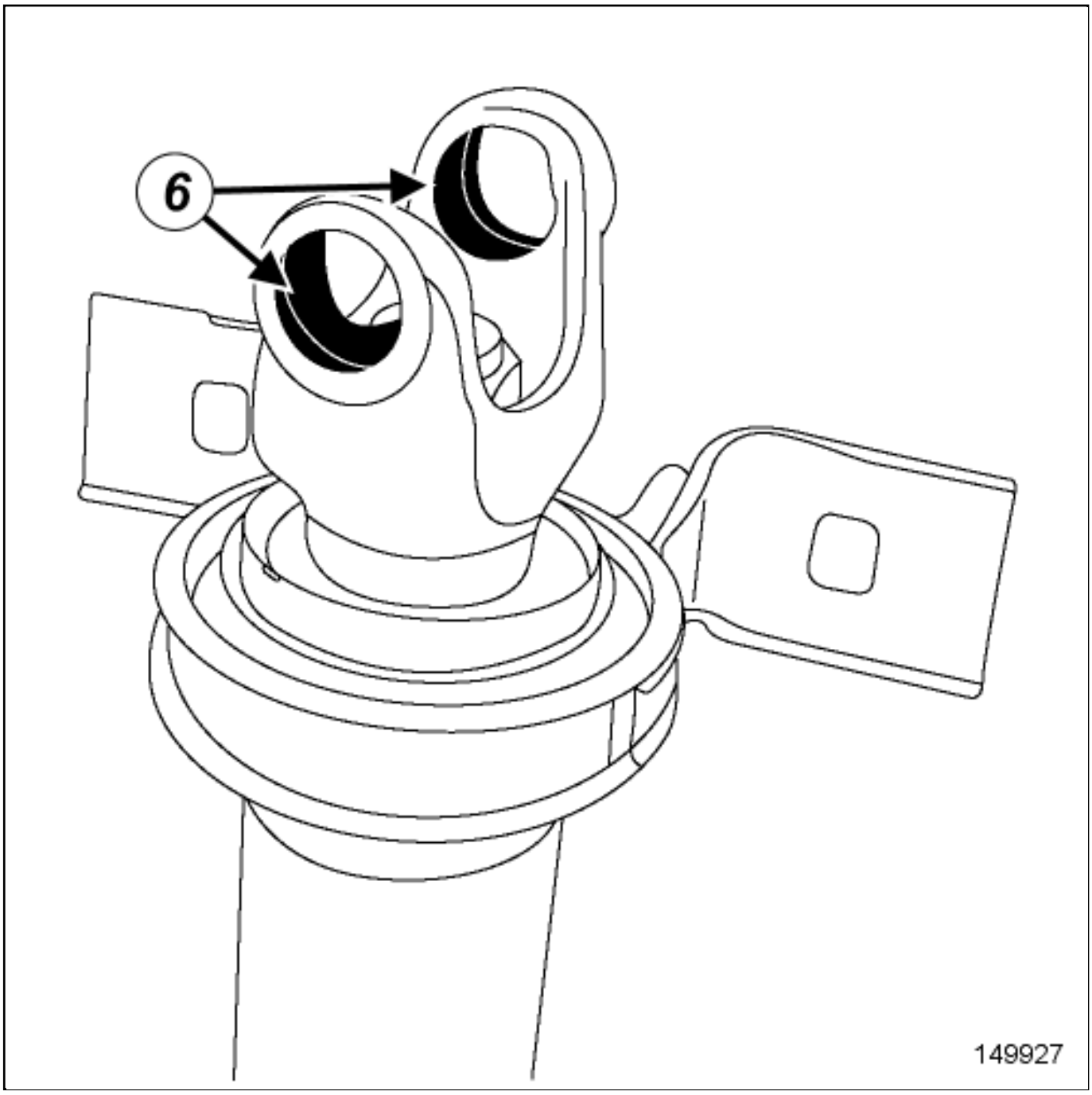
REFITTING

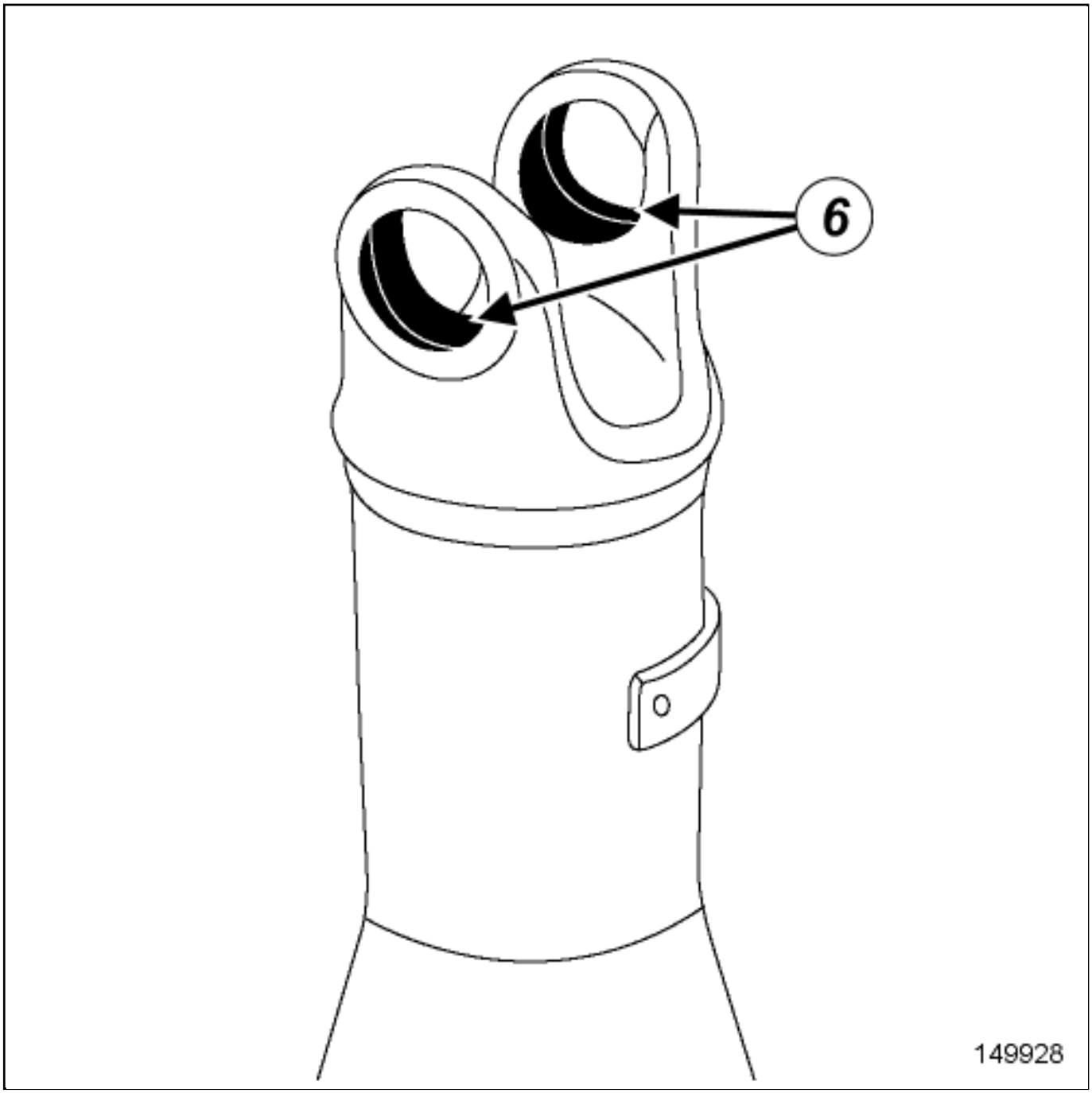
1. REMOVAL PREPARATION OPERATION

Always replace:

- the universal joint cross piece,
- the bushings of the universal joint cross piece,

- the circlips of the universal joint cross piece,
- the yoke nut,
- the dust seal of the universal joint yoke.





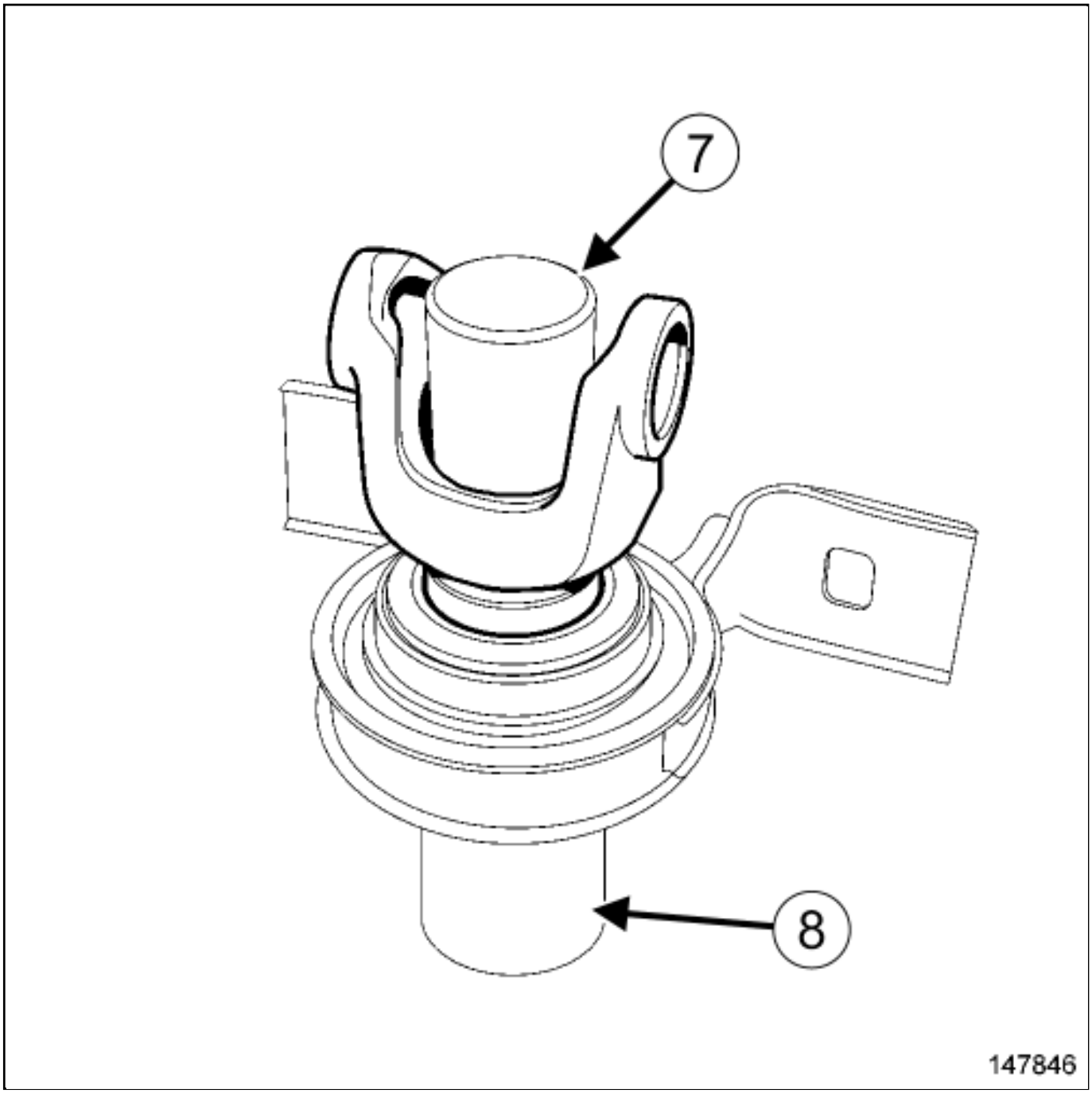
Clean using grey abrasive pads(see **Vehicle: Parts and consumables for the repair**) :

- the housings of the bushings of the universal joint cross piece(6) ,
- the mating surface of the longitudinal driveshaft relay bearing on the universal joint yoke.

Note:

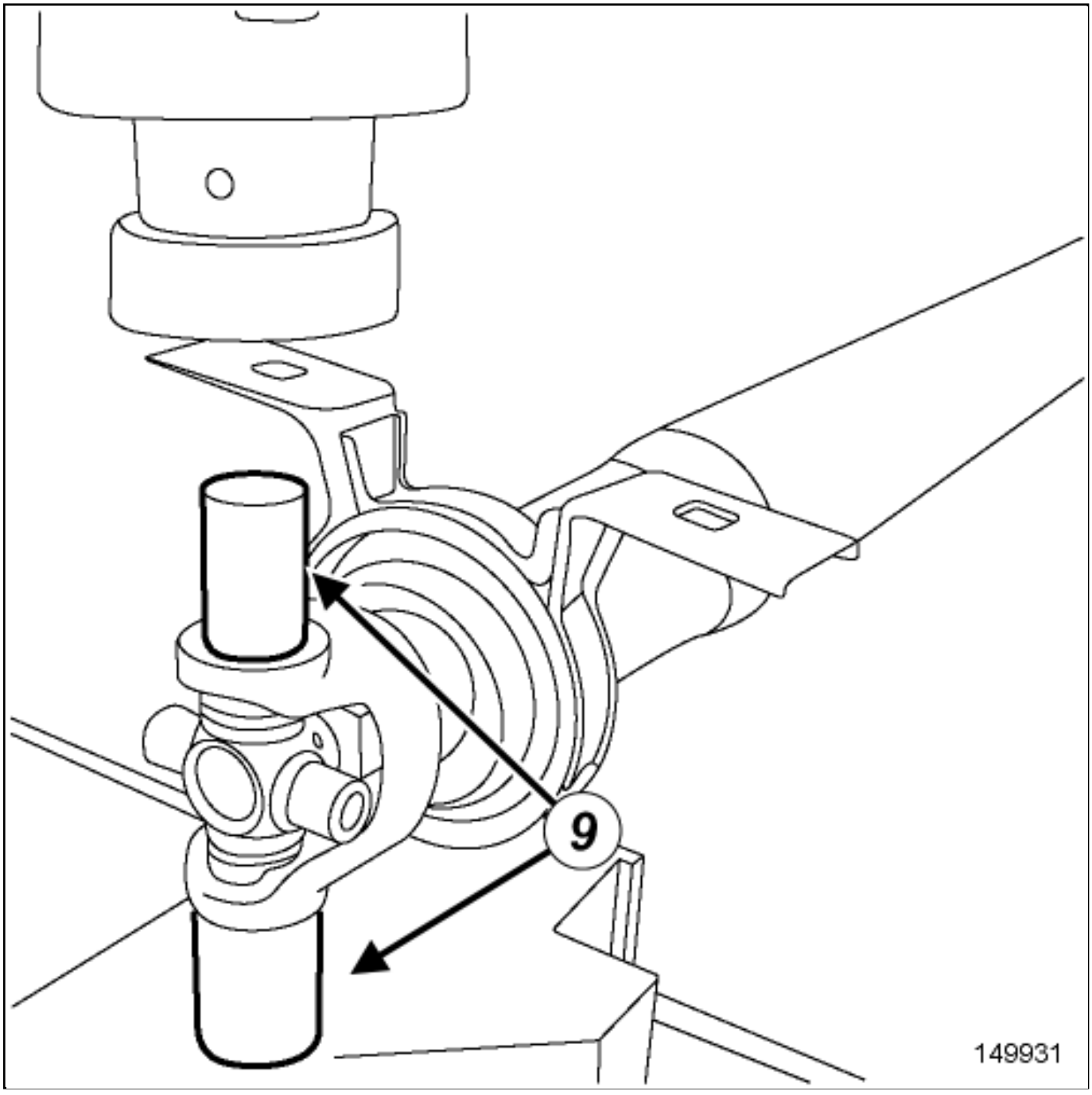
Check that there are no burrs on the housings of the bushings of the universal joint cross piece.

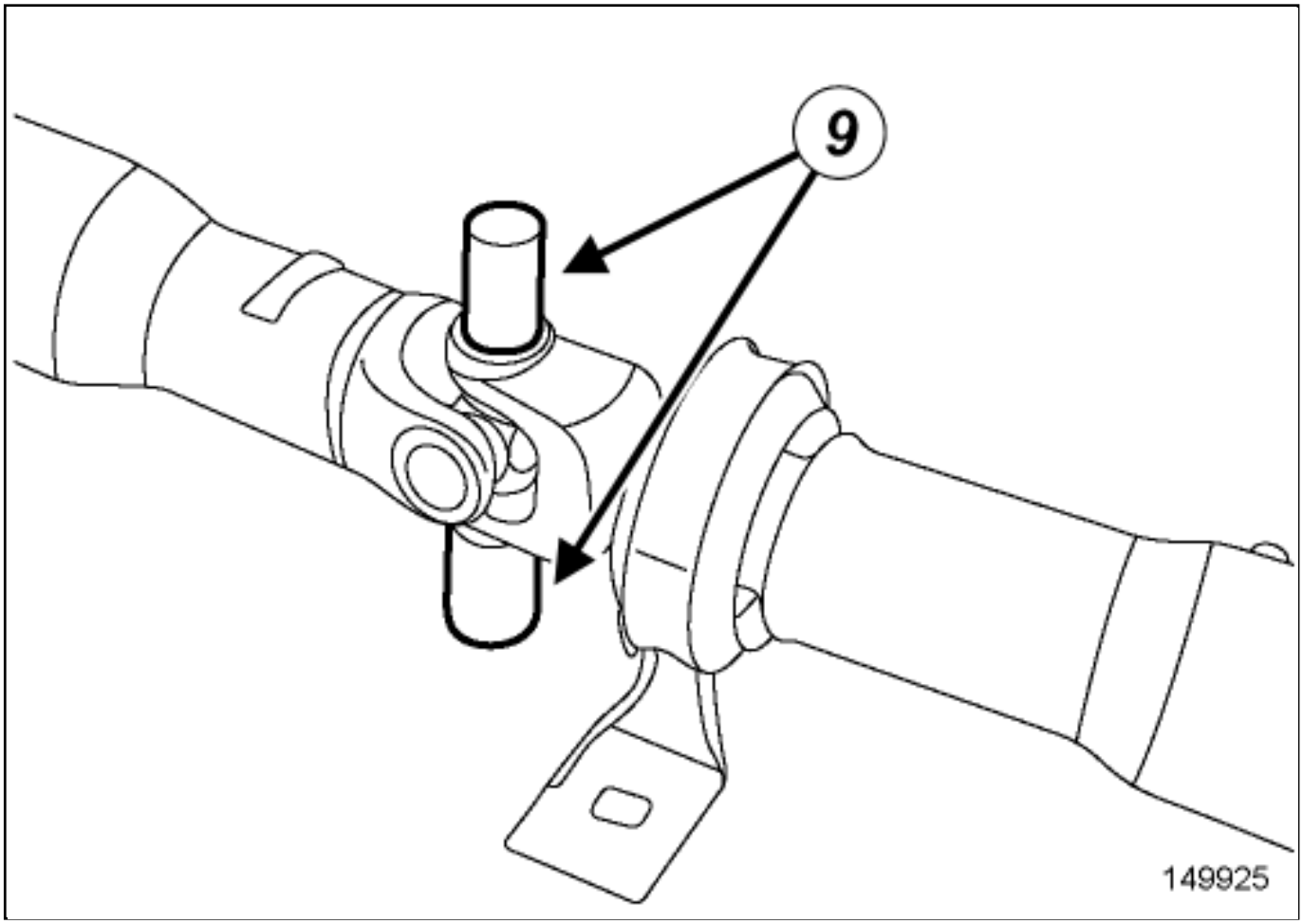
2. REFITTING OPERATION



Refit:

- the longitudinal driveshaft relay bearing on the universal joint yoke using a tube with an external diameter of 35 mm(7) and a tube with an external diameter of 51 mmand an internal diameter of 48 mm(8) ,
- the dust seal of the universal joint yoke(see 29A, Driveshafts , Driveshaft assembly: Exploded view) ,
- the universal joint yoke,
- the yoke nut(see 29A, Driveshafts , Driveshaft assembly: Exploded view) .





Fit (see 29A, Driveshafts , Driveshaft assembly: Exploded view) :

- the universal joint cross piece,
- the bushings of the universal joint cross piece one by one while keeping them vertical using the toolTool for removing and refitting rear final drive - driveshaft cross pieces(Bvi. 1945) (9) and a press.

Note:

This operation requires three people.

Refit the circlips of the universal joint cross piece(see 29A, Driveshafts , Driveshaft assembly: Exploded view) .

3. FINAL OPERATION

Proceed in the reverse order to removal.

Repair-12x06x04x01-01x37-1-1-1.xml

XSL version : 3.02 du 22/07/11

LOWER COVER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Removes housing with silicone seals.	Mot. 1716

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)** .

WARNING

Wear goggles with side protectors for this operation.

WARNING

Wear cut-resistant gloves during the operation.

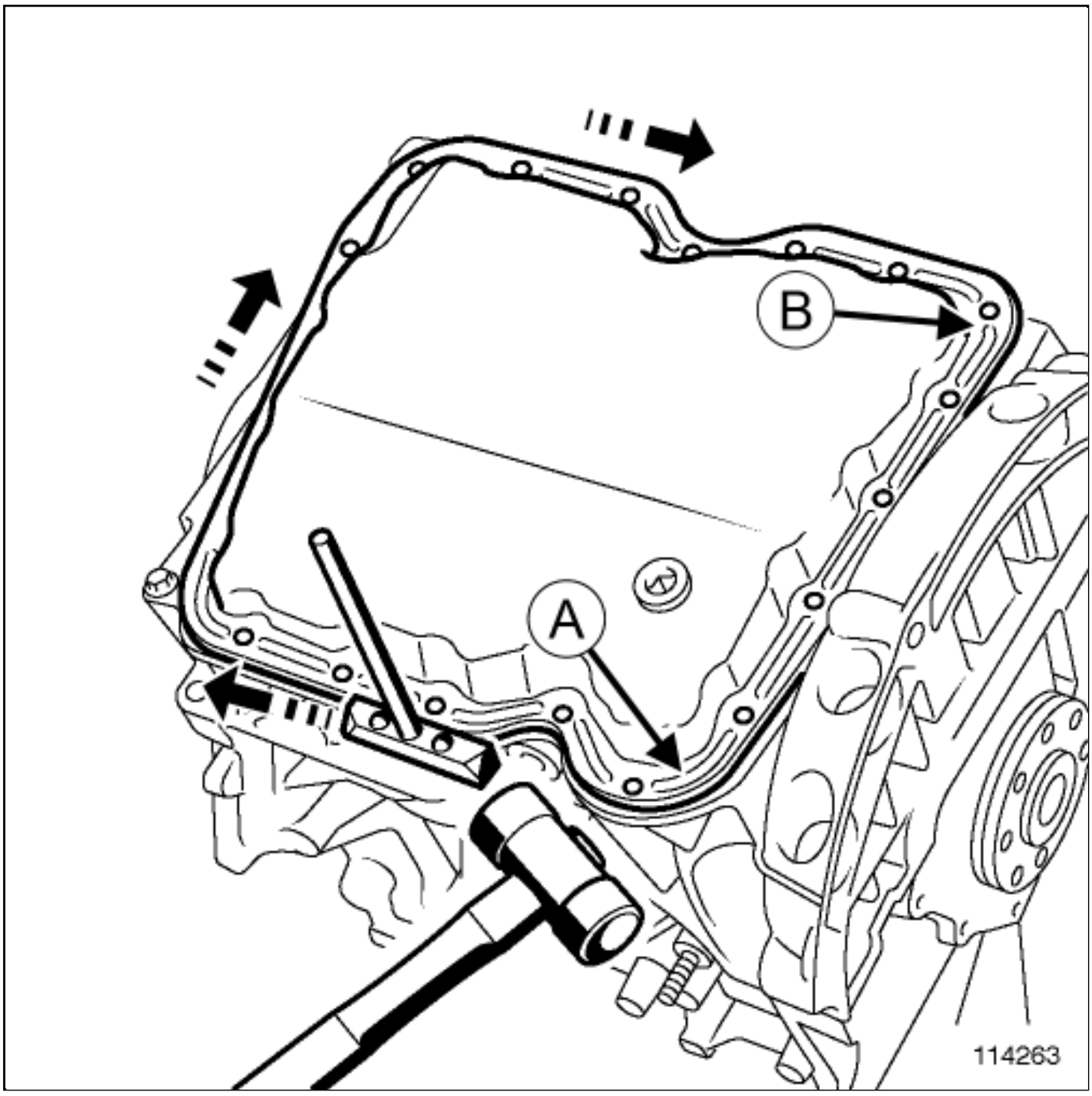
REMOVAL

1. REMOVAL PREPARATION OPERATION

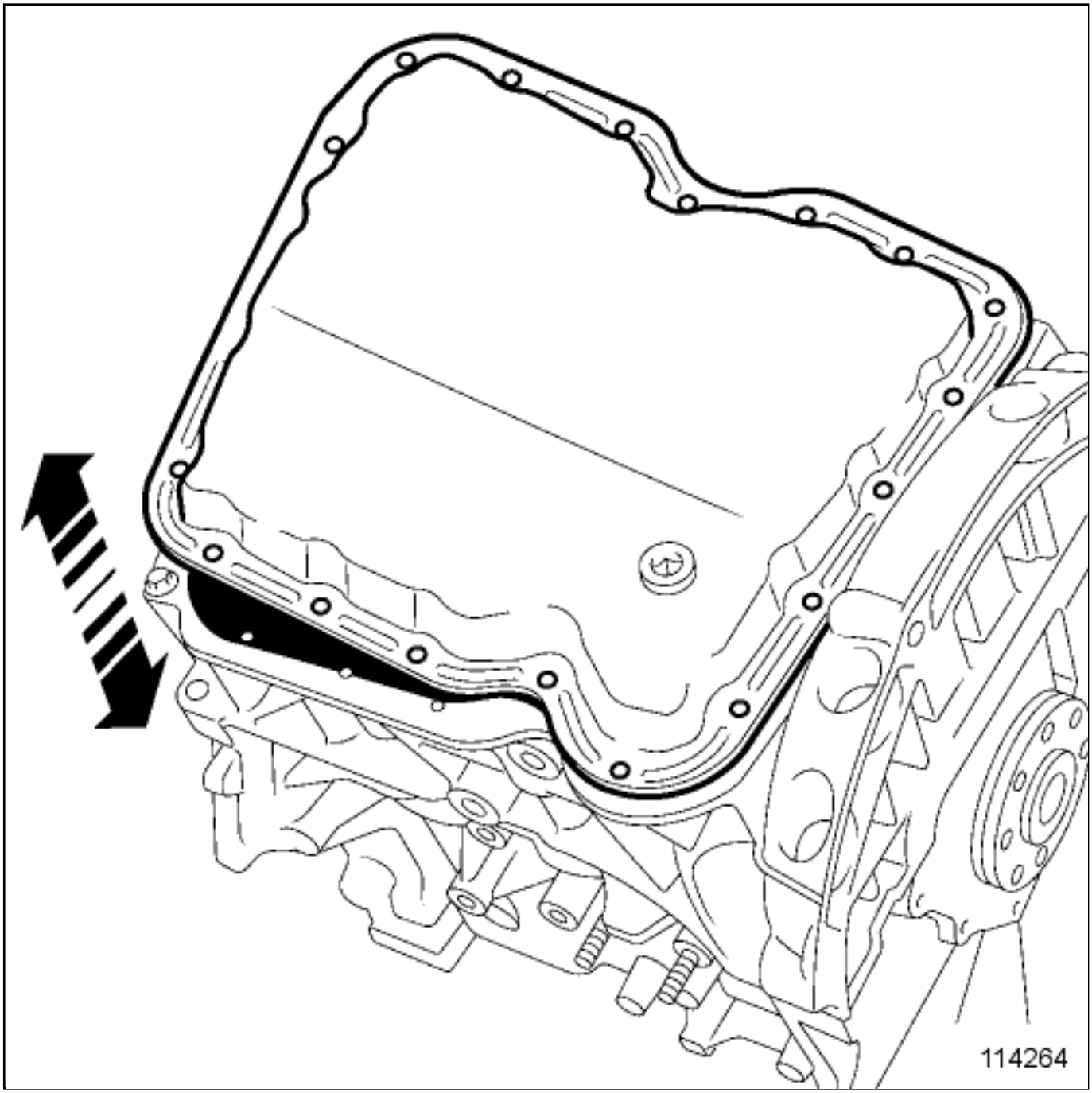
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Remove the engine undertray.
- Drain the engine oil**(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling)** .

2. REMOVAL OPERATION

- Remove the sump bolts(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view)
.



- Cut the silicone seal on the sump using theRemoves housing with silicone seals.(Mot. 1716) from (A) to (B) .



- Cut the rest of the silicone seal by removing the sump.

Note:

Gradually detach the sump with small alternating movements to prevent damaging the sump.

- Remove the sump(see 10A, Engine and cylinder block assembly, Cylinder block assembly: Exploded view) .

REFITTING

1. REMOVAL PREPARATION OPERATION

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

CAUTION

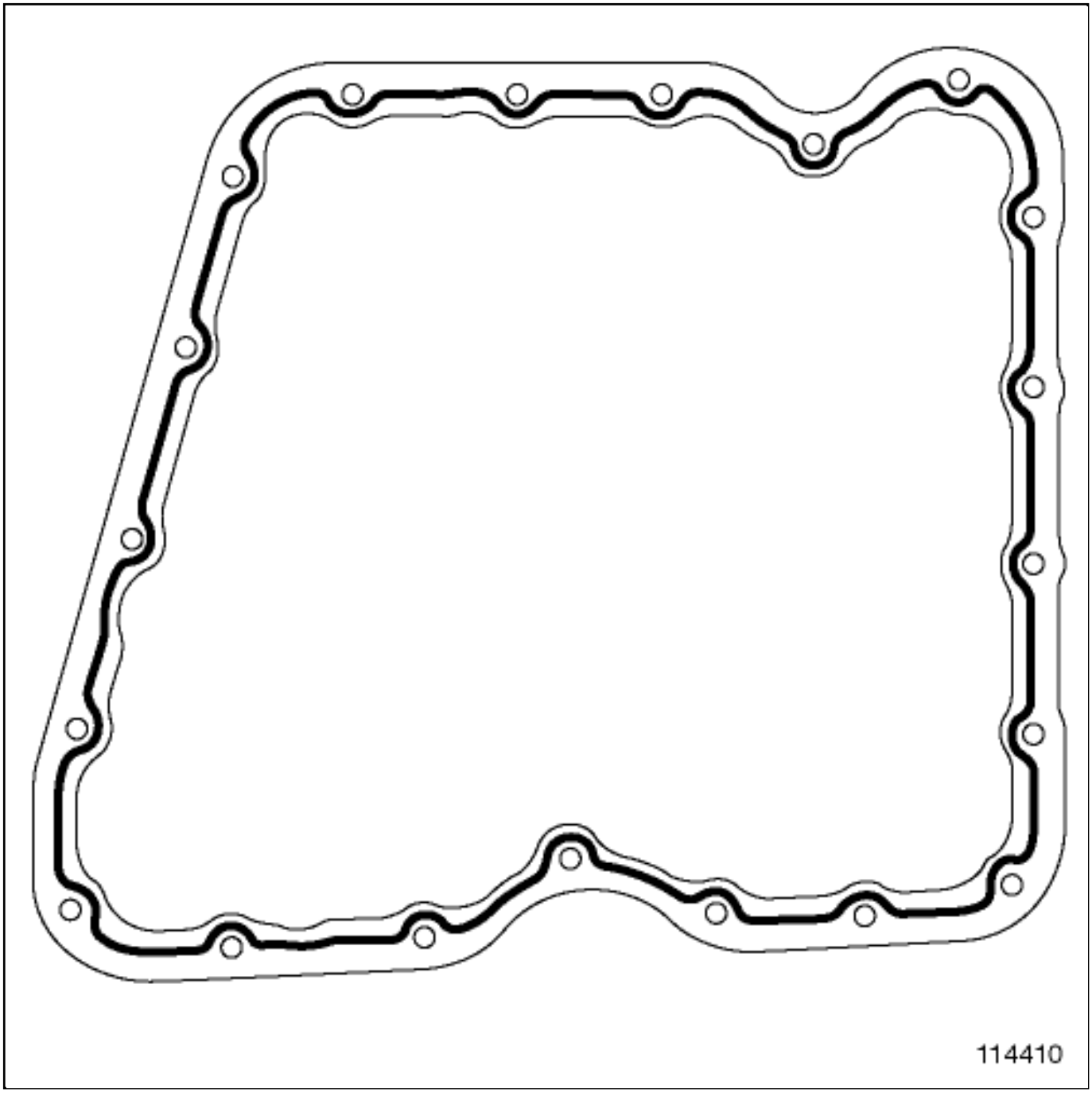
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

Use super cleaning agent for joint faces Vehicle: Parts and consumables for the repair (04B, Consumables - Products) and a wooden spatula to clean the mating faces:

- of the sump,
- the cylinder block.



Apply a bead of silicone adhesive seal[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products) with a diameter of 5 mm ± 2 mmto the sump in order to ensure a good seal.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Fill up the engine oil(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling) .

XSL version : 3.02 du 22/07/11

LOWER COVER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Removes housing with silicone seals.	Mot. 1716

Location and specifications (tightening torques, parts always to be replaced, etc.)Cylinder block assembly: Exploded view .

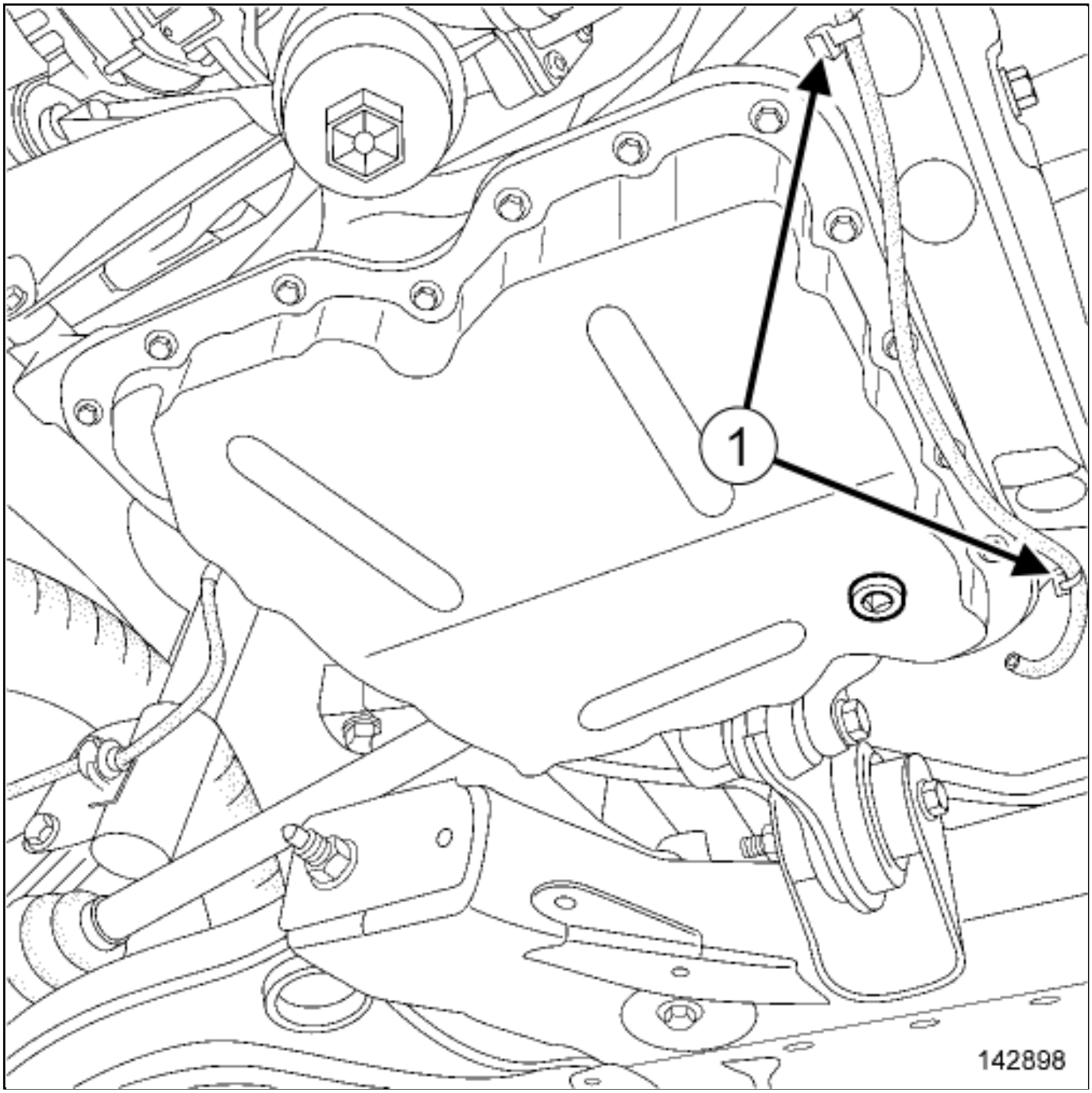
IMPORTANT
Wear goggles with side protectors for this operation.

IMPORTANT
Wear cut-resistant gloves during the operation.

REMOVAL

1. REMOVAL PREPARATION OPERATION

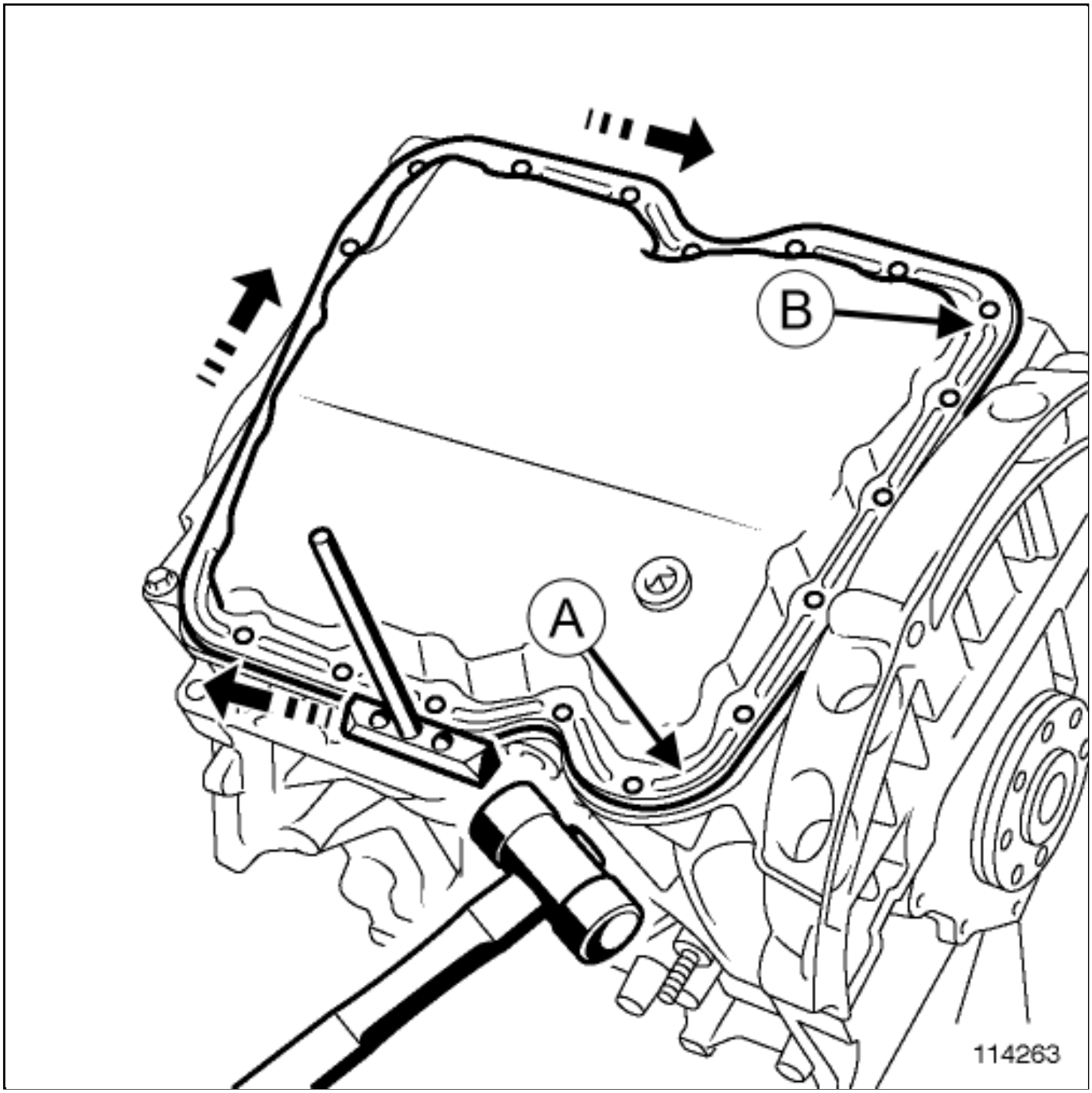
- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the engine undertray.
- Drain the engine oil(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling) .



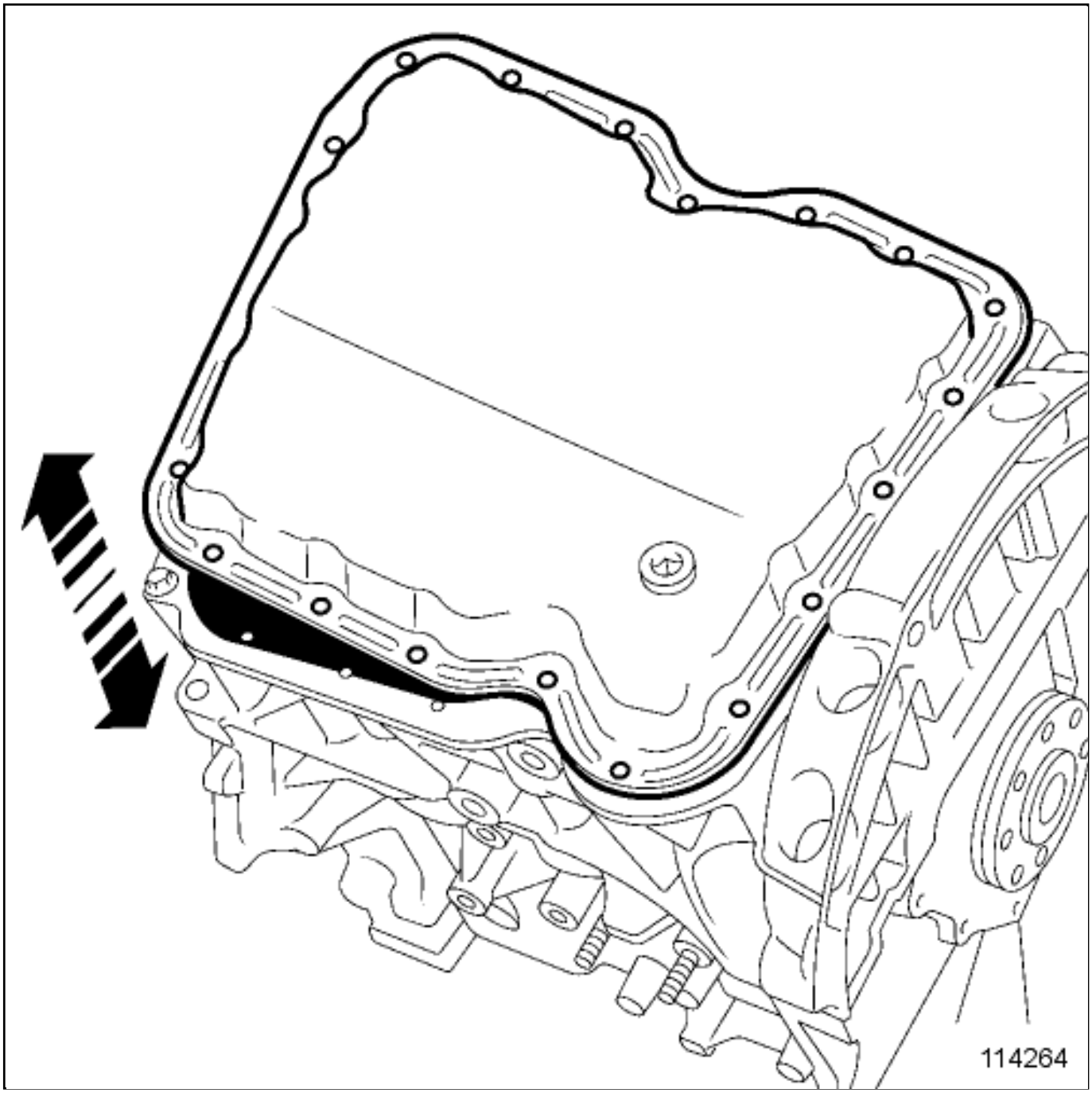
- Unclip the breather pipe from the sump(1) .
- Move the breather pipe away from the sump.

2. REMOVAL OPERATION

- Remove the sump boltsCylinder block assembly: Exploded view .



- Cut the silicone seal on the sump using theRemoves housing with silicone seals.(Mot. 1716) from (A) to (B) .



- Cut the rest of the silicone seal by removing the sump.

Note:

Gradually detach the sump with small alternating movements to prevent damaging the sump.

- Remove the sump Cylinder block assembly: Exploded view .

REFITTING

1. REMOVAL PREPARATION OPERATION

WARNING

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

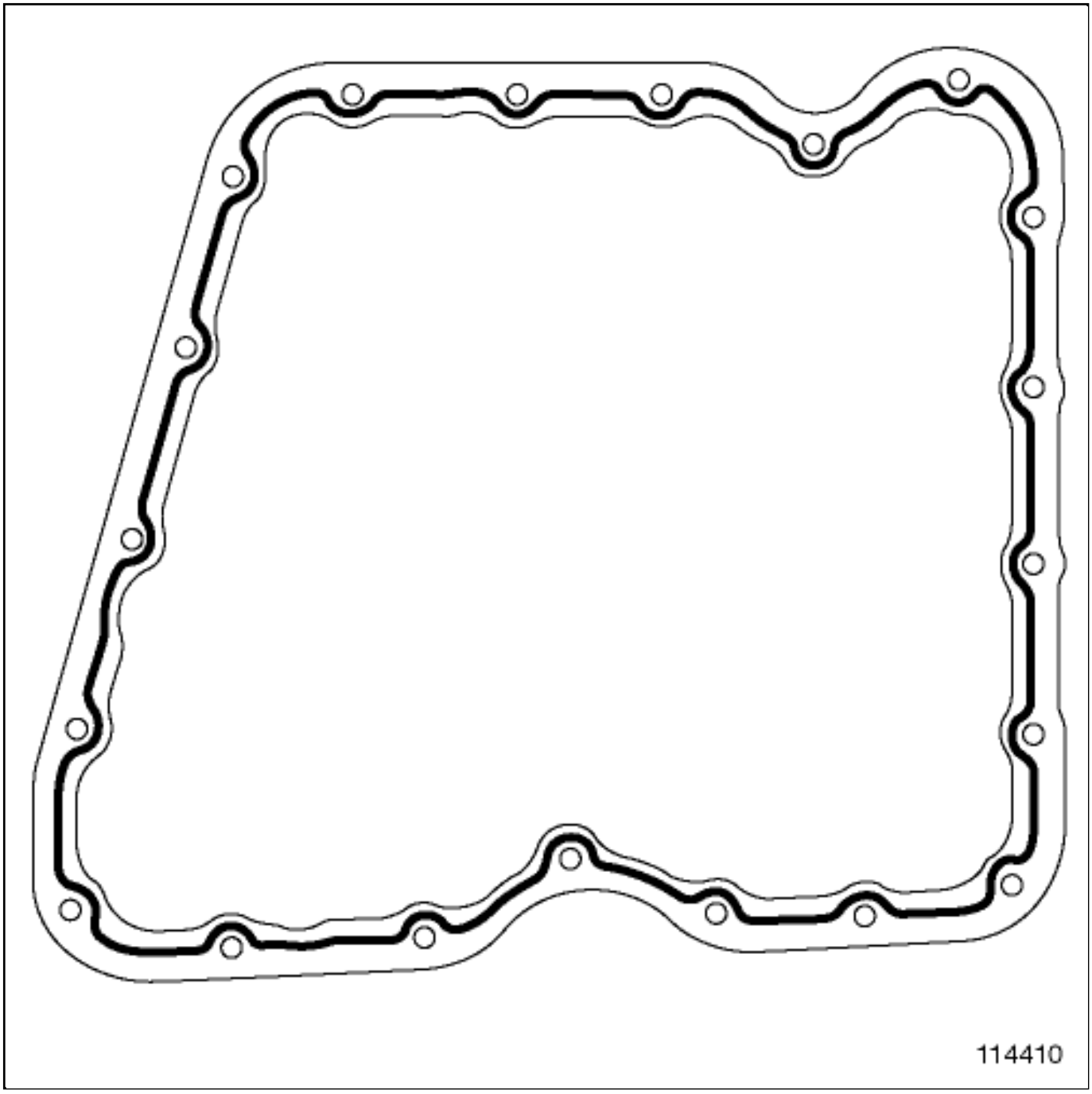
WARNING

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- Use super cleaning agent for joint faces Vehicle: Parts and consumables for the repair (04B, Consumables - Products) and a wooden spatula to clean the mating faces:
  - of the sump,
  - the cylinder block.



Apply a bead of silicone adhesive seal[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products) with a diameter of 5 mm ± 2 mmto the sump in order to ensure a good seal.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Fill up the engine oil(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling) .

LOWER ENGINE TIE-BAR: REMOVAL - REFITTING

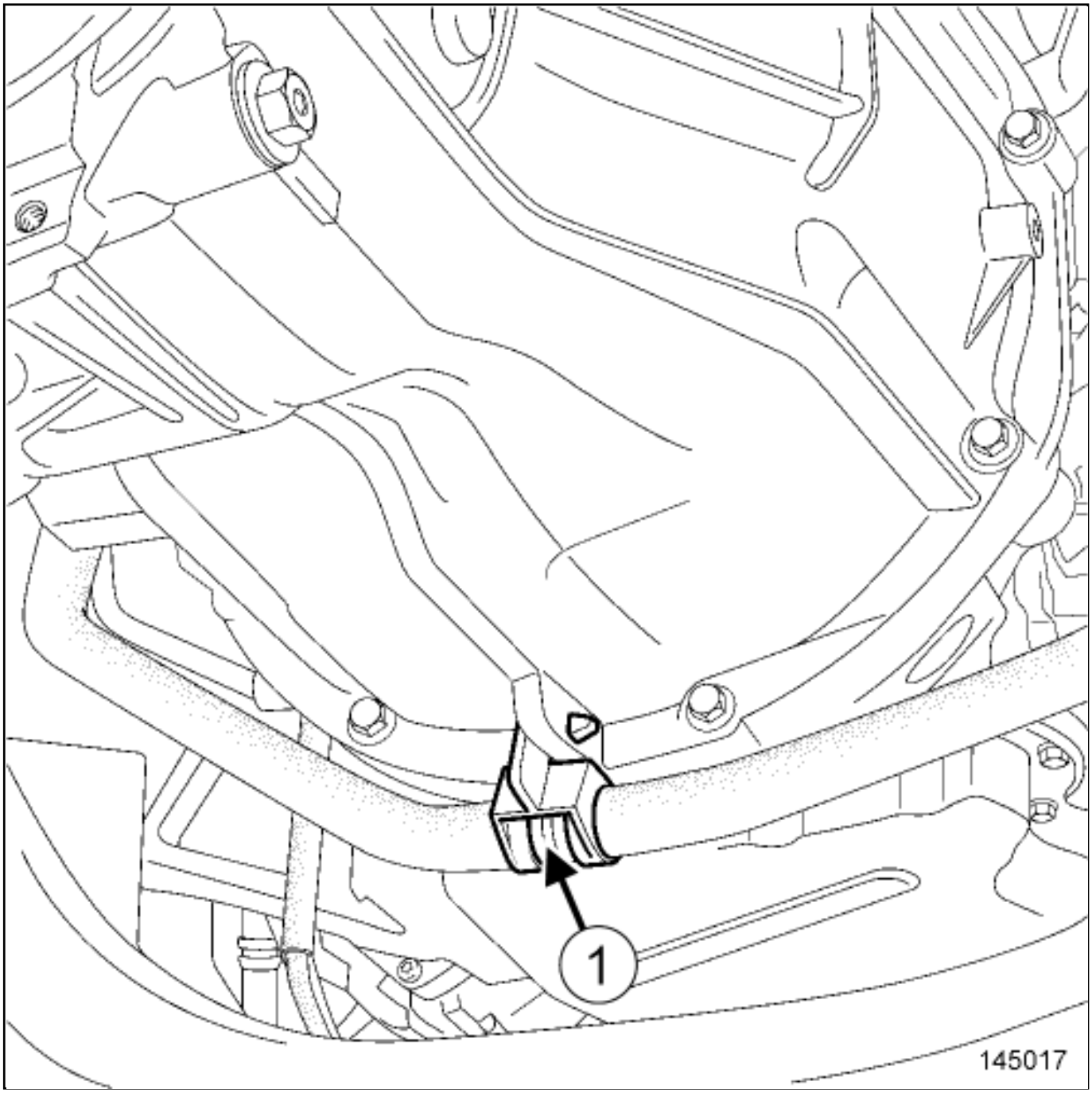
Special tooling required	
Support for removal - refitting of engine - gearbox assembly	Mot. 1390
Adapter for engine support tool Mot.1390.	Mot. 1709

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) .

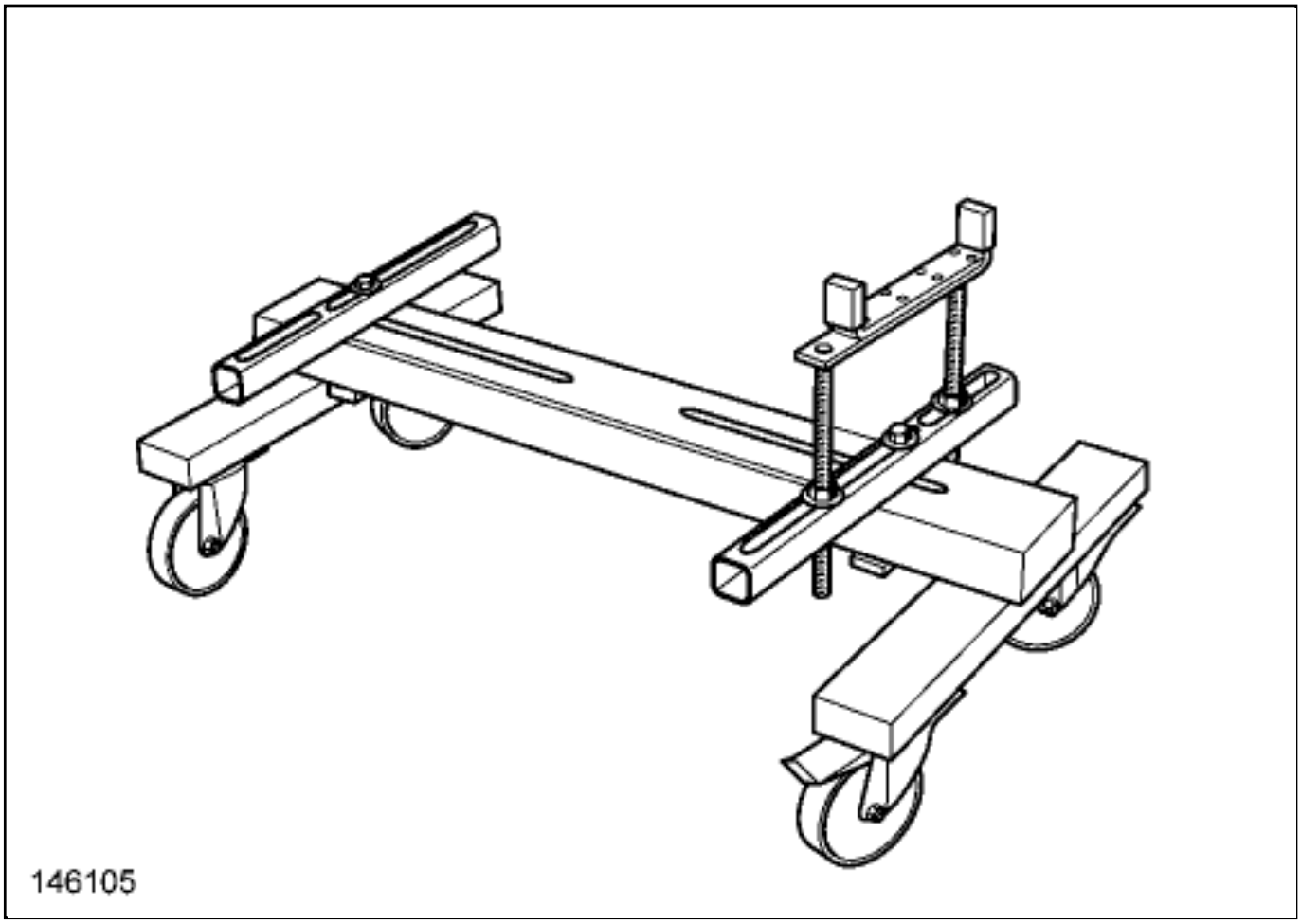
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the engine undertray.



- Unclip the heater matrix outlet coolant pipe from the gearbox(1) .
- Move the heater matrix outlet coolant pipe away from the gearbox.



Fit the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) equipped with the tool Adapter for engine support tool Mot.1390.(Mot. 1709) under the engine.

2. REMOVAL OPERATION

Remove (see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) :

- the rear rubber pad bolt from the front axle assembly subframe,
- the bolts of the rear rubber pad on the gearbox,
- the rear rubber pad.

REFITTING

Proceed in the reverse order to removal.

MAINTENANCEOPERATIONALINSTRUCTIONS :SERVICE

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool
Electronic check tool

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**

The Renault maintenance programme includes all checks, top-ups, adjustments, and part replacements necessary for vehicle maintenance. For information on the specific service intervals for the vehicle, refer to the maintenance booklet or to ICM.

1. CONTENT OF THE DIFFERENT TYPES OF SERVICES AND THE ANNUAL INTERMEDIATE VISIT:

1- SERVICES:

The types of service (Maintenance Service, General Service, Renault Service) and the operations to be performed may vary depending on the vehicle and the date of manufacture. To find out which specific checks and operations should be performed on the vehicle, refer to the vehicle maintenance booklet.

1- ANNUAL INTERMEDIATE VISIT:

For vehicles for which the oil change is to be performed no later than every 2 years, a non-obligatory visit including the following operations is advised:

- check the engine oil level,
- check the level, condition, and sealing of the brake fluid circuit,
- check the coolant level,
- check the level, condition, and sealing of the power-assisted steering circuit,
- check the washer fluid level,
- electronic fault finding of the battery with the test tool,
- electronic fault finding of the computers,
- condition of the windscreen and rear view mirrors,

- wear of the windscreen wiper and rear wiper blades,
- check the exterior lighting and signals,
- condition and pressure of the tyres (including emergency spare wheel or tyre repair aerosol),
- condition of gaiters, rubber mounting bushes, and ball joints,
- exhaust system check,
- sealing of the front and rear shock absorbers,
- wear of the front and rear brake pads and brake discs.

NOTE: the content of the intermediate visit, as well as its commercial name, may vary from one country to another. Thus additional checks and / or operations could be added to this list. For more information, please contact the manufacturer's technical teams in your country

2. SPECIAL CONDITIONS OF CUSTOMER USE AND MAINTENANCE MANAGEMENT FOR VEHICLES EQUIPPED WITH THE OCS (OIL CONTROL SYSTEM) FOR GERMANY, ANDORRA, AUSTRIA, BELGIUM, DENMARK, SPAIN, ESTONIA, FINLAND, FRANCE, GREAT BRITAIN, GREECE, HUNGARY, IRELAND, ICELAND, ITALY, LATVIA, LIECHTENSTEIN, LITHUANIA, LUXEMBOURG, NORWAY, NETHERLANDS, POLAND, PORTUGAL, CZECH REPUBLIC, SLOVAKIA, SLOVENIA, SWEDEN, SWITZERLAND, CROATIA, ISRAEL:

Definitions:

What does it mean that a vehicle is operated under normal conditions of customer use?

A vehicle is operated under normal conditions of customer use if it is not operated under the special conditions of customer use (see below). In this case, observe the standard maintenance programme provided in the maintenance booklet or ICM (Shared World Information).

What does it mean that a vehicle is operated under special conditions of customer use?

A special condition of customer use affects the replacement frequency of one or several parts of the maintenance programme (service, air filter replacement, fuel filter replacement, etc.). The vehicle is said to operate under special conditions of customer use if:

− The instrument panel displays that a service is required (change engine oil and oil filter), only for vehicles equipped with the OCS (Oil Control System) oil quality control device. See "List of vehicles equipped with OCS or information in ICM (Shared World Information)",

− At least 50% of the vehicle operating time is with the engine idling (example: constant door-to-door driving without stopping the engine),

− At least 50% of trips are at an average speed of less than 18 mph (30 km/h) (primarily urban use, taxi, etc.),

− At least 30% of the miles driven involve towing a trailer, caravan, etc. weighing more than 500 kg (condition only for passenger vehicles),

- Use in a dusty environment (work-site, + than 600 miles (1000 km)/year on unpaved roads, etc.),

- Extended use (+ than 3000 miles (5000 km)/year) at temperatures continuously below -15˚C.

What is the OCS (Oil Control System) and what does it detect?

The OCS is a device that evaluates oil degradation by calculations, taking into account the severe engine operating conditions that affect the oil. Thus, under certain driving conditions, the instrument panel indicates to the customer that a service is required.

Which vehicles are equipped with the OCS device?

THE MODELS EQUIPPED WITH THE OCS ARE FOR THE COUNTRIES OF GERMANY, ANDORRA, AUSTRIA, BELGIUM, DENMARK, SPAIN, ESTONIA, FINLAND, FRANCE, GREAT BRITAIN, GREECE, HUNGARY, IRELAND, ICELAND, ITALY, LATVIA, LIECHTENSTEIN, LITHUANIA, LUXEMBOURG, NORWAY, NETHERLANDS, POLAND, PORTUGAL, CZECH REPUBLIC, SLOVAKIA, SLOVENIA, SWEDEN, SWITZERLAND, CROATIA, AND ISRAEL:

Note :

For the Dacia vehicles consult the ICM for the vehicles manufactured starting from 14/06/2011, before consulting the table.

For the Renault vehicles consult the ICM for the vehicles manufactured starting from 01/01/2010, before consulting the table.

Model	engine	Engine suffix	Vehicles affected:
Dacia	K9K emission control standard Euro 5	all	all
WIND	D4F, K4M	All	All
TWINGO II	D4F turbocharged	All	All
TWINGO II	K4M emission control standard Euro 5	All	All
TWINGO II	K9K	718	All
TWINGO II	K9K	740	Vehicles with oil service every 18 000 miles (30 000 Km) /2 years
TWINGO II	K9K emission control standard Euro 5	All	All
CLIO III phase 1	K9K	764	Vehicles with oil service every 18,000 miles (30,000 Km) / 1 year
CLIO III phase 2	K9K emission control standard Euro 5	All	All
CLIO III	D4F turbocharged	All	All

CLIO III	D4F	742	Vehicles with oil service every 18,000 miles (30,000 Km) / 1 year
CLIO III	K4M	862	All
MODUS	D4F turbocharged	All	All
MODUS	D4F	742	All
MODUS	K9K	764	Vehicles with oil service every 18,000 miles (30,000 Km) / 1 year
MODUS	K9K without particle filter	All	Vehicles with oil service every 18 000 miles (30 000 Km) /2 years
MODUS	K9K emission control standard Euro 5	All	All
KANGOO II	K4M emission control standard Euro 5	All	All
KANGOO II	K9K	All	All
MEGANE II and SCENIC II	K9K	732	Vehicles with oil service every 18,000 miles (30,000 Km) / 1 year
MEGANE II and SCENIC II	M9R	700,721,722	Vehicles with oil service every 18,000 miles (30,000 Km) / 1 year
MEGANE II	M9R	724	Vehicles with oil service every 12,000 miles (20,000 Km) / 1 year
MEGANE II and SCENIC II	F9Q	816,818	Vehicles with oil service every 18,000 miles (30,000 Km) / 1 year

FLUENCE and MEGANE III/SCENIC III	K9K	830	Vehicles with oil service interval every 2 years
FLUENCE and MEGANE III/SCENIC III	K9K	832, 834, 836, 837	All
FLUENCE and MEGANE III/SCENIC III	K9K emission control standard Euro 5	All	All
MEGANE III/SCENIC III	F9Q, M9R, H4J, F4R, R9M	All	All
Koleos	M9R emission control standard Euro 5	All	All
LAGUNA III	K9K,M9R,V9X	All	All
LAGUNA III	M4R	726	All
ESPACE IV	M9R	All	Vehicles with oil service every 18,000 miles (30,000 Km) / 1 year
LATITUDE	Diesel	All	All
MASTER II phase 3	G9U	All	All
TRAFIC phase 2 and 3	M9R	All	Vehicles manufactured from 01/12/06
TRAFIC phase 2 and 3	G9U	All	All
MASTER III	All	All	All

1- FOR TURKEY, ROMANIA AND BULGARIA :

For the vehicles sold starting from 01/01/2011, consult the ICM.

1- MANAGEMENT OF VEHICLE MAINTENANCE IN CASE OF DRIVING UNDER SPECIAL CONDITIONS OF CUSTOMER USE:

It is ESSENTIAL to read the instructions:

Depending on whether the vehicle is fitted with OCS or not, refer to the corresponding table below.

The tables below contain X's or notes to specify the maintenance operations to be performed depending on the special conditions of customer use.

For the other maintenance programme parts that need not be replaced early, the maintenance interval is the same as recommended for normal conditions of customer use (see the maintenance booklet or ICM). If this interval will be reached before the next customer visit, replace this part ahead of schedule.

If the vehicle is operated under several of these special conditions of customer use, apply the most stringent recommendation for replacement specified for the special conditions of use concerned.

FOR MODELS WITHOUT OCS:

	Divide by 2 the engine oil and oil filter service interval for normal conditions of use		Divide by 2 the air filter replacement interval for normal conditions of use (1)		Divide by 2 the diesel filter replacement interval for normal conditions of use (1)		Replace the belts and rollers 18,000 miles (30,000 km) sooner than for normal use conditions (1)(2)	Replace the cabin filter during every service for normal conditions of use (1)
	Distance (kilometres or miles)	Time	Distance (kilometres or miles)	Time	Distance (kilometres or miles)	Time		
At least 50% of the vehicle operating time with the engine idling (e.g. constant door-to-door driving without stopping the engine)	X	X	X	X	X	X	X	
At least 50% of trips at an average speed of less than 18 mph (30 km/h) (primarily urban use, taxi, etc.),	X		X		X		X	X

At least 30% of the miles driven while towing a trailer, caravan, etc. weighing more than 500 kg (condition only for passenger vehicles),	X				X		X	
Use in a dusty environment (work-site, + than 600 miles (1000 km)/year on unpaved roads, etc.),	X		X		X		X	X
Extended use (+ than 3000 miles (5000 km) /year) at temperatures continuously below -15˚C.	X							

(1) If the recommended interval will be reached before the next customer visit, replace the part concerned ahead of schedule.

(2) Certain pulleys of certain engines must be replaced when replacing the accessories belt. See the "Supplementary operations" section.

FOR MODELS WITH OCS (SEE THE TABLE OF MODELS EQUIPPED WITH THE

OCS AND THE COUNTRIES CONCERNED):

	Divide by 2 the engine oil and oil filter service interval for normal conditions of use (1)		Divide by 2 the air filter replacement interval for normal conditions of use (1)		Divide by 2 the diesel filter replacement interval for normal conditions of use (1)		Replace the belts and rollers 18,000 miles (30,000 km) sooner than for normal use conditions (1)(2)	Replace the cabin filter during every service for normal conditions of use (1)
	Distance (kilometres or miles)	Time	Distance (kilometres or miles)	Time	Distance (kilometres or miles)	Time		
Instrument panel display that a service is required (engine oil and oil filter service) due to the OCS (Oil Control System).	Observe the message on the vehicle instrument panel and perform the service (engine oil and oil filter service) when it is requested(1).							
At least 50% of the vehicle operating time with the engine idling (e.g. constant door-to-door driving without stopping the engine)			X	X	X	X	X	

At least 50% of trips at an average speed of less than 18 mph (30 km/h) (primarily urban use, taxi, etc.),			X		X		X	X
At least 30% of the miles driven while towing a trailer, caravan, etc. weighing more than 500 kg (condition only for passenger vehicles),					X		X	
Use in a dusty environment (work-site, + than 600 miles (1000 km)/year on unpaved roads, etc.),	X		X		X		X	X

Extended use (+ than 3000 miles (5000 km) /year) at temperatures continuously below -15˚C.	X							

(1) If the recommended interval will be reached before the next customer visit, replace the part concerned ahead of schedule.

(2) Certain pulleys of certain engines must be replaced when replacing the accessories belt. See the "Supplementary operations" section.

3. SPECIAL CONDITIONS OF CUSTOMER USE (OIL CONTROL SYSTEM) FOR THE COUNTRIES NOT MENTIONED ABOVE:

See the vehicle's maintenance booklet.

4. PROCEDURES FOR PERFORMING OPERATIONS AND CHECKS DURING THE MAINTENANCE OR SERVICE:

The customer must be warned if a check reveals a fault.

Checks marked with an asterisk depend on the vehicle or the country.

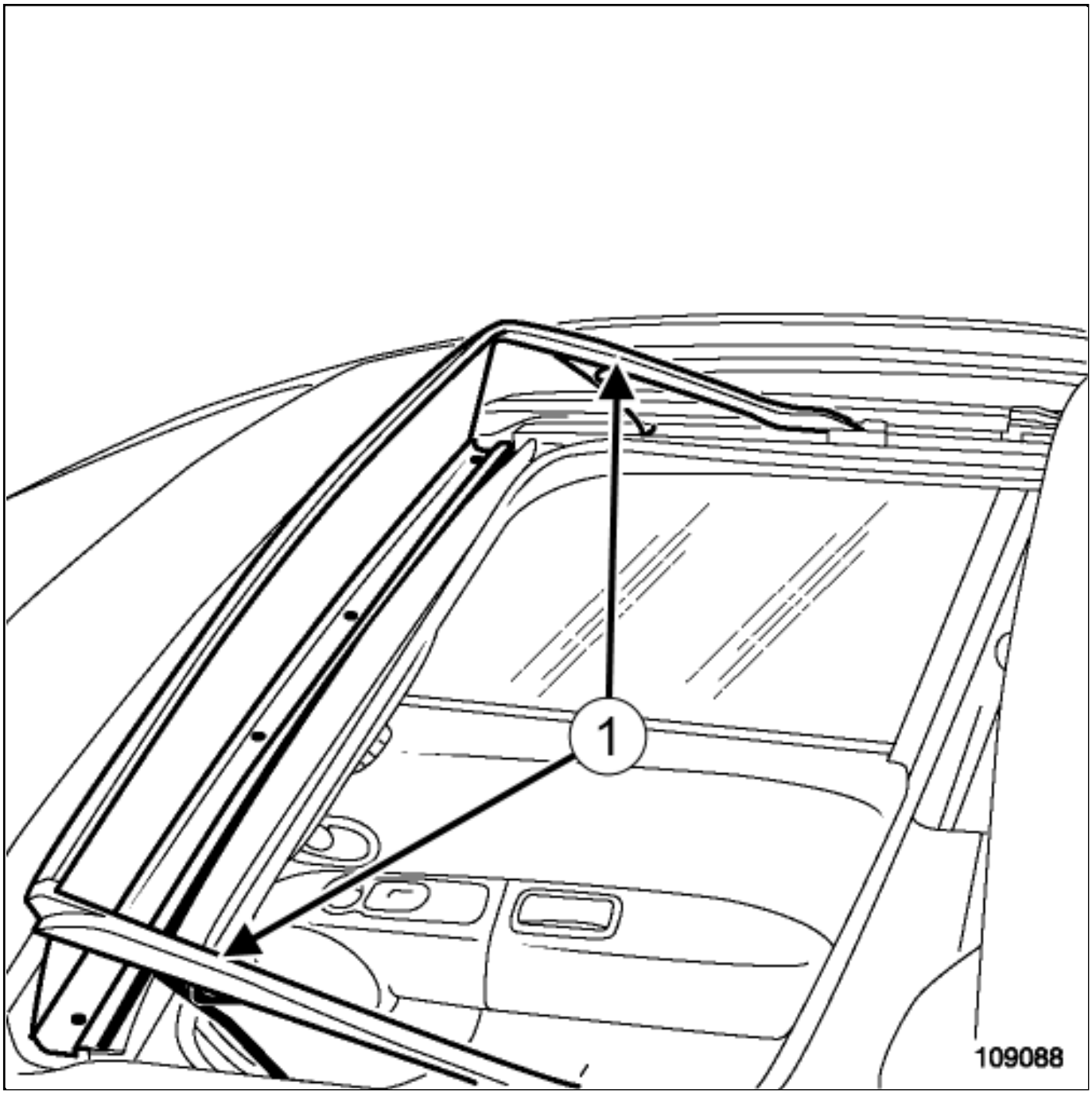
1- BODYWORK: ANTICORROSION CHECK

- Visually inspect the condition of the:
  - vehicle,
  - underside of the vehicle,
  - wheel arches.

Indicate any damage to the underbody protection, and all cuts, ruptures, scratches or corrosion anywhere on the vehicle.

This inspection contributes to the validity of the anticorrosion warranty. It is therefore necessary to complete the maintenance sheets in the maintenance booklet.

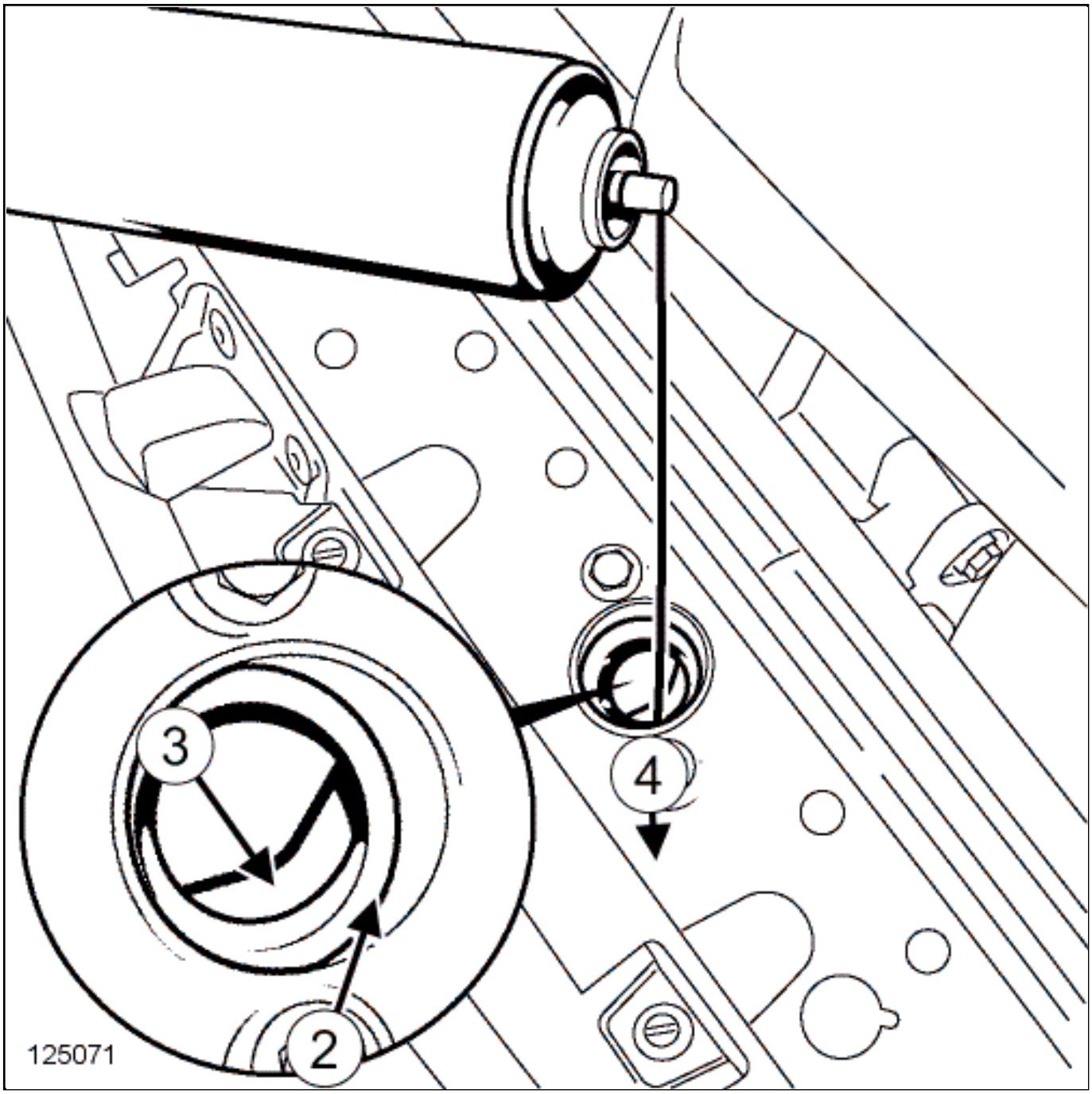
2- BODYWORK: CLEANING THE DEFLECTOR ARMS AND PANORAMIC SUNROOF MOBILE PANEL



Use a dry, lint-free cloth to clean the sunroof deflector arms (1) and the section of the mobile panel with which they come into contact.

3- BODYWORK: CHECKING THE BONNET LOCK LUBRICATION AND OPERATION

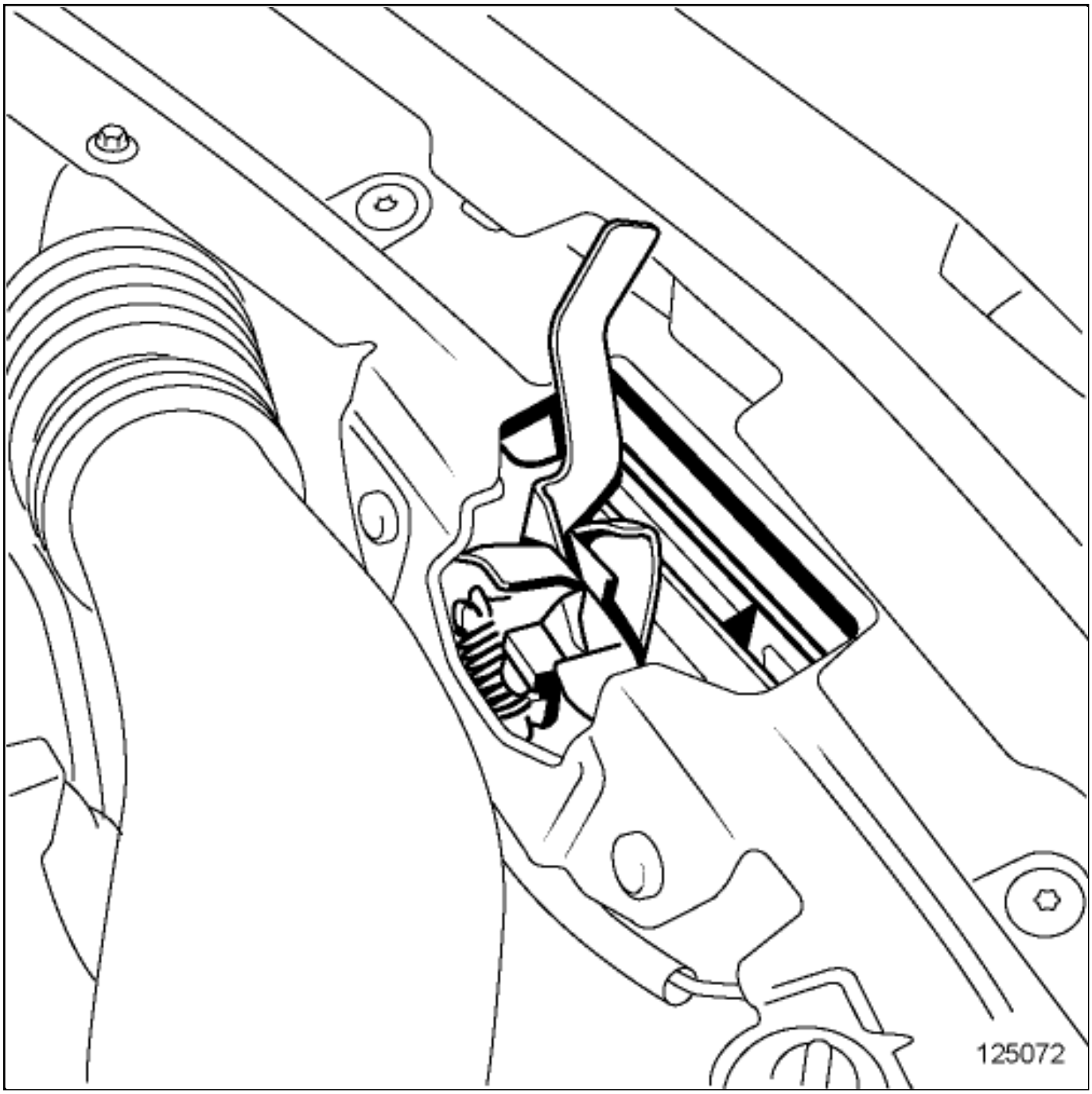
1)GUILLOTINE TYPE LOCK



As specified in the photo above, apply silicone-free lubricant Vehicle: Parts and consumables for the repair (04B, Consumables - Products), placing it between the body of the lock (2) and the lock blade (3) in the direction of the lock blade hinge shaft (4).

Let it set for1 minute, then manoeuvre 10 times from the bonnet release catch in the passenger compartment.

2)OTHER TYPES OF LOCK



Apply silicone-free lubricant[Vehicle: Parts and consumables for the repair](04B, Consumables - Products) to the catch assembly.

Let it set for1 minute, then manoeuvre 10 times from the bonnet release catch in the passenger compartment.

4- GREASING OF THE REAR DOOR HINGES AND THE UPPER STRIKER PANEL HOOK OF THE SLIDING SIDE DOOR(MASTER II PHASE 3)

Apply opening element greaseto the rear door hinges and the upper striker panel hook of the sliding side door (see **Vehicle: Parts and consumables for the repair**)

5- ENGINE: DRAINING THE ENGINE OIL

The oil grade is essential for maintaining the service life of the engine. Carefully follow the manufacturer's recommendations specified in the Technical Note **Engine oil: Specifications** (Technical Note 6013A, 04A, Lubricants).

Use the correct quantity of oil and the correct sump plug sealing washer **Engine oil: Draining - Refilling** (10A, Engine and peripherals).

After topping up, let the oil run for approximately 10 minutes before checking the level. The oil level maximum mark on the dipstick must never be exceeded (risk of damage to the engine).

6- ENGINE: REPLACING THE OIL FILTER

Replace the engine oil filter after each oil service **Oil filter: Removal - Refitting** (10A, Engine and peripherals).

7- ENGINE: CHECKING THE EXHAUST SYSTEM

☐ Visually inspect:

- that there is no corrosion, piercing or impact to the silencer, expansion chamber, catalytic converter and particle filter*,
- that the rubber mounting bushes are not torn or cracked,
- that the exhaust pipe is not in contact with the underside of the vehicle.

8- ENGINE: BLEEDING WATER FROM THE FUEL FILTER* (IF THE PART HAS NOT REACHED ITS REPLACEMENT INTERVAL)

Bleed the water from the fuel filter by unscrewing the water bleed cap and letting the water run into a suitable container.

9- ENGINE: CHECKING THE CLUTCH PLAY* FOR LOGAN-SANDERO (EXCEPT FOR AUTOMATIC COMPENSATION)

(Logan and Sandero only) Use the recommended checking procedure **Clutch control: Adjustment** (37A, Mechanical component controls).

10- CHECKING THE LEVELS, CONDITION AND SEALING OF THE HYDRAULIC CIRCUITS: HYDRAULIC POWER-ASSISTED STEERING*

Check the hydraulic steering fluid level: it should be between the minimum and maximum level on the reservoir.

Visually check the sealing, ensuring that there are no leaks, or any abnormal loss of fluid.

Top up, if necessary.

11- CHECKING THE LEVEL, CONDITION AND SEALING OF THE HYDRAULIC CIRCUITS: COOLING

Check the coolant level: it should be between the minimum and maximum level on the reservoir.

Visually check the circuit sealing, ensuring that there are no leaks, or any abnormal loss of fluid.

Top up, if necessary.

12- CHECKING THE LEVEL, CONDITION AND SEALING OF THE HYDRAULIC CIRCUITS: HYDRAULIC BRAKE/CLUTCH*

Visually check the circuit sealing, checking the condition and that there are no leaks around the engine compartment, under the vehicle or at the unions.

- Check the brake fluid level:
  - If the level is between the minimum and maximum, do not add brake fluid as wear on the discs, pads, drums and linings leads to a progressive drop in the brake fluid level in the tank which will usually be rectified once these components are replaced. However, the brake fluid level should never drop below the minimum mark.
  - If there is an abnormal loss of fluid, the cause of which cannot be found with this check, advise the customer.

13- CHECKING THE LEVEL, CONDITION AND SEALING OF THE HYDRAULIC CIRCUITS: SEQUENTIAL GEARBOX HYDRAULIC UNIT*

Check the hydraulic unit oil level: it should be between the minimum and maximum level on the reservoir.

Visually check the sealing, ensuring that there are no leaks, or any abnormal loss of fluid.

Top up, if necessary.

14- CHECKING THE LEVEL, CONDITION AND SEALING OF THE HYDRAULIC CIRCUITS: SEQUENTIAL GEARBOX HYDRAULIC CLUTCH*

Check the hydraulic clutch fluid level, it should be at the middle level of the reservoir.

Visually check the sealing, ensuring that there are no leaks, or any abnormal loss of fluid.

Top up, if necessary.

15- CHECKING THE CHASSIS: CONDITION OF THE GAITERS, RUBBER MOUNTING BUSHES AND BALL JOINTS

Check the condition of the driveshaft and steering rubber gaiters, all ball joints and the rubber mounting bushes. There must not be any signs of tearing or cracks.

16- CHECKING THE CHASSIS: TYRE CONDITION AND PRESSURE (INCLUDING EMERGENCY SPARE WHEEL OR PRESENCE OF TYRE-REPAIR AEROSOL)

Check that the tread depth of the tyres has not reached the wear warning strips, explain the degree of tyre wear to the customer.

Check that there is no abnormal tyre wear, and no bulges, blisters, tears or foreign objects (sharp object, screw, etc.).

Check and readjust the tyre inflation pressure when cold according to the type of driving.

Check the pressure and condition of the emergency spare wheel, or if not supplied with the vehicle, check that there is a tyre repair aerosol in the vehicle.

Respect the recommended pressure shown on the label on the door (if the vehicle does not have one, refer to the Driver's Handbook or.

17- CHECKING THE CHASSIS: PRESENCE OF THE WHEEL VALVE CAPS

Check that each valve cap is present.

18- CHECKING THE CHASSIS: SEALING OF THE FRONT AND REAR SHOCK ABSORBERS

Visually check that there is no oil leaking along the length of the shock absorbers.

19- CHECKING THE CHASSIS: WEAR OF THE FRONT AND REAR BRAKE PADS AND BRAKE DISCS*, AND SWAPPING THE FRONT AND REAR WHEELS

In order to perform a quality check, always remove the wheels (an electric impact wrench or a pneumatic wrench can be used to loosen the wheel bolts and nuts).

Check the thickness of the brake pads and compare to the minimum authorised value. In case of partial wear, advise the customer of the degree of wear to the brake pads.

Check the thickness of the front brake discs and the thickness of the rear brake discs and compare to the minimum authorised value. In case of partial wear, advise the customer of the degree of wear to the brake discs.

Refit the wheels. For Duster 4X4, swap the front and rear wheels.

When refitting the wheels, an electric impact wrench set at low speed can be used to fit the wheel bolts and nuts until contact, then torque tighten them.

20- CHECKING VISIBILITY: EXTERIOR LIGHTING AND SIGNALS

Check the side lights, dipped headlights, main beam headlights, front and rear fog lights, the direction

indicators and side mounted indicators, the reversing lights, the hazard warning lights, the brake lights, the registration plate lighting and the additional cornering lights*.

21- CHECKING VISIBILITY: INTERIOR LIGHTING

Checking door lighting, interior lights and sun visors, glovebox and luggage compartment lights.

22- CHECKING VISIBILITY: CONDITION OF THE WINDSCREEN AND DOOR MIRRORS

Check that there are no cracks or chips.

23- CHECKING VISIBILITY: WEAR ON THE FRONT AND REAR WINDSCREEN WIPER BLADES

Check the quality of the wiping function and check that the wiper blades are not torn or cracked.

24- CHECKING VISIBILITY: FRONT AND REAR WINDSCREEN WASHER FLUID LEVEL

Check that there is windscreen washer fluid present.

Top up, if necessary.

25- LABELS: CHECKING THE AIRBAG SAFETY AND ENGINE COMPARTMENT LABELS ARE PRESENT AND CORRECTLY POSITIONED

☐ Check that the vehicle has the following original safety labels:

- airbag, located on the windscreen, sun visor and passenger side of the dashboard,
- battery, oil, cooling system, heating and air conditioning system, engine cooling fan located in the engine compartment.

26- ELECTRONIC CHECK: BATTERY

Check the condition of the battery with the tool "Midtronics R330".

27- ELECTRONIC CHECK: COMPUTERS

Note:

Always check the condition of the battery before checking the computers as insufficient voltage can affect the computers.

The purpose of this procedure is to see if any of the computers are faulty.

The following tools are essential for carrying out fault finding on these systems:

- an approved Renault Electronic check tool(QUEST) with the latest update,
- an approved Renault Diagnostic tool(CLIP) with the latest update,
- a CAN probe.

Running fault finding on the computers highlights possible faults not displayed by the system self-test procedure, and allows them to be analysed and deleted

28- CHECKING CHARGING CORD (ONLY TWIZY):

Visually check the charging cord without removing.

29- CHECKING ELECTRIC VEHICLE (ONLY KANGOO AND FLUENCE):

Electronic check :

Select the symptome in MCS (Modulate Targeting Symptome): R201, integrate it into the order of repair.

Make a electronic check of computers, see "Electronic check : computers".

Make the checks of symptome R201: "Maintenance Range".

NB :

Do not control the system Quick Dropbecause it is canceled.

30- ELECTRONIC FAULT FINDING: OPERATION OF THE INSTRUMENT PANEL WARNING LIGHTS

Check that the following warning lights come on when the ignition is switched on:

- STOP warning light,
- SERVICE warning light.

31- REINITIALISATION: MAINTENANCE/OIL SERVICE DISPLAY*

Reset the maintenance/oil service interval display (see Driver's Handbook).

32- SERVICE SHEETS: AFFIXING THE SERVICE LABEL IN THE ENGINE COMPARTMENT*

Fill in the maintenance label and affix it in the engine compartment.

5. SUPPLEMENTARY OPERATIONS:

The removal and refitting procedures and some of the checks to be carried out during maintenance are set out in the repair manuals or the technical notes. The information and repair methods given below are specific to the maintenance programme.

For an exhaustive description of the operations to be carried out during the maintenance operation, refer to the vehicle maintenance booklet.

1- REPLACEMENT OF THE ACCESSORIES BELT, ROLLERS, AND PULLEYS (PULLEY TO BE REPLACED DEPENDING ON THE VEHICLE)

When replacing the belt, it is essential to replace the tensioning rollers and fixed rollers across the whole range. It is also necessary to replace the damper pulley (also known as the crankshaft accessories pulley) or the alternator pulley on certain engines, see below.

Table of pulleys to be replaced during maintenance only according to the accessories belt replacement frequency. The vehicles concerned are those for which the maintenance booklets mention a replacement for certain engines. The detail of the vehicle variants concerned is given below (vehicles manufactured after June 2006):

1)FOR GERMANY, ANDORRA, AUSTRIA, BELGIUM, DENMARK, SPAIN, ESTONIA, FINLAND, FRANCE, GREAT BRITAIN, GREECE, HUNGARY, IRELAND, ICELAND, ITALY, LATVIA, LIECHTENSTEIN, LITHUANIA, LUXEMBOURG, NORWAY, NETHERLANDS, POLAND, PORTUGAL, CZECH REPUBLIC, SLOVAKIA, SLOVENIA, SWEDEN, SWITZERLAND, CROATIA, ISRAEL:

RECOMMENDATIONS FOR REPLACING THE DAMPER PULLEY (CRANKSHAFT ACCESSORIES PULLEY):

Engine type	Engine suffix	Recommendation for replacing the damper pulley during maintenance operations
F4R	714, 715, 720, 760, 761, 762, 763, 764, 765, 766, 767, 770, 771, 774, 776, 784, 786, 787, 792, 794, 795, 796, 797, 800, 811, 820, 830, 867, 870, 886, 887, 896, 897.	To be replaced each time the accessories belt and its rollers are scheduled for replacement
F9Q	260, 262, 264, 660, 664, 670, 674, 680, 755, 757, 758, 759, 800, 803, 804, 808, 812, 814, 816, 818, 820.	
M9R	610, 700, 720, 721, 722, 740, 760, 761, 780, 812.	
G9T equipped with air conditioning	600 ,605, 606, 607, 642, 645, 702, 703, 706, 707, 710, 712, 720, 722, 742, 743, 750.	
G9U equipped with air conditioning	630, 632, 650, 720, 724, 730, 750, 754.	
V9X	All	

RECOMMENDATIONS FOR REPLACING THE ALTERNATOR PULLEY:

Engine type	Engine suffix	Recommendations for replacing the alternator pulley during maintenance
F4R	802, 813.	To be replaced each time the accessories belt and its rollers are scheduled for replacement

2)OTHER COUNTRIES:

RECOMMENDATIONS FOR REPLACING THE DAMPER PULLEY (CRANKSHAFT ACCESSORIES PULLEY):

Engine type	Engine suffix	Recommendation for replacing the damper pulley
K4J equipped with air conditioning	730, 732, 740, 770, 780.	To be replaced each time the accessories belt and its rollers are scheduled for replacement
K4M equipped with air conditioning	604, 606, 680, 690, 694, 696, 697, 698, 716, 744, 745, 760, 761, 762, 764, 766, 768, 770, 780, 782, 788, 790, 791, 794, 800, 801, 804, 812, 813, 814, 824, 830, 831, 834, 835, 844, 854, 856, 862, 866.	
K4M equipped with air conditioning	838, 839, 848, 858	To be replaced every other time the accessories belt and its rollers are scheduled for replacement
K9K	782	

F4R	714, 715, 720, 760, 761, 762, 763, 764, 765, 766, 767, 770, 771, 774, 776, 784, 786, 787, 792, 794, 795, 796, 797, 800, 811, 820, 830, 867, 870, 886, 887, 896, 897.	To be replaced each time the accessories belt and its rollers are scheduled for replacement
K9K	278, 282, 288, 292, 732, 734, 764, 772, 780, 804, 806, 832, 836.	
F9Q	260, 262, 264, 660, 664, 670, 674, 680, 755, 757, 758, 759, 794, 800, 803, 804, 808, 812, 814, 816, 818, 820.	
G9T equipped with air conditioning	600 ,605, 606, 607, 642, 645, 702, 703, 706, 707, 710, 712, 720, 722, 742, 743, 750.	
G9U equipped with air conditioning	630, 632, 650, 720, 724, 730, 750, 754.	
M9R	610, 700, 720, 721, 722, 740, 742, 760, 761, 780, 812.	
V9X	All	
M9R	802, 803, 805, 809, 816, 830, 832, 833.	To be replaced every other time the accessories belt and its rollers are scheduled for replacement
M9T	All	To be replaced every other time the accessories belt and its rollers are scheduled for replacement

RECOMMENDATIONS FOR REPLACING THE ALTERNATOR PULLEY:

Engine type	Engine suffix	Recommendations for replacing the alternator pulley during maintenance
F4R	802, 813	To be replaced each time the accessories belt and its rollers are scheduled for replacement

2- REPLACING THE TIMING BELT AND ROLLERS

When replacing the belt, it is essential to replace the tensioning and fixed rollers across the whole range. Certain vehicle/engine specifications require associated parts to be replaced, therefore it is necessary to consult the repair procedure for the vehicle and engine for further details.

3- CHECKING THE REAR BRAKE LININGS FOR VEHICLES FITTED WITH DRUMS

Check the wheel cylinders for any possible leaks.

Remove any dust from the brake linings using a brake cleaning product.

Check the thickness of the drum linings and compare it to the minimum authorised thickness..

4- CLEANING THE AIR CONDITIONING SYSTEM

The air conditioning system is cleaned by cleaning the evaporator.

6. STANDARD OF PROFESSIONAL ACTIVITY

The Standard of Professional Activity is a tool which describes the operation to perform in an optimised order favouring time and quality. This way of working allows for the elimination and reduction of unnecessary actions, the grouping together of operations by operation area and a reduction in down time.

Order of performance	Principal steps	Key points
Preparing the vehicle:		
1	Consult the repair order and ICM editions to find out:- The works to be performed and additional operations- The presence of OTS	
2	Check that the driver's protections are in place (front seat, steering wheel, floor carpet, gear lever)	
3	Check for the maintenance booklet and the wheel anti-theft key (if equipped) on the passenger seat	
4	Check the instrument panel warning lights with the ignition on	Warning light (STOP and SERVICE)
5	Start the vehicle and check that all the warning lights go out	No warning light lit
6	Move the vehicle to the workstation, leave the engine running	
Passenger compartment checks:		
7	Step out of the vehicle and connect the exhaust gas extraction system	

8	☐ Check the exterior signals and lights: ■ Side lights, ■ Dipped headlights, ■ Main beam headlights, ■ Front and rear fog lights, ■ direction indicators and side mounted indicators, ■ Front and rear hazard warning lights, ■ Brake lights, ■ number plate lighting, ■ Reversing lights, ■ Additional cornering lights,	Use a mirror If not done whilst walking around the vehicle
9	☐ Check the interior lighting: ■ Courtesy lights, ■ Sun visors, ■ Glovebox.	
10	Release the bonnet, and remove the diagnostic socket cover	
11	Reset the distance before oil change/maintenance display	
12	Switch off the engine and switch on the ignition again	
13	Step out of the vehicle, take the wheel anti-theft key	
Front visibility check:		
14	Check the condition of the windscreen wiper blades	
15	Check the condition of the windscreen	
Engine compartment checks:		
16	Open the bonnet	

17	Run fault finding on the battery with the "MIDTRONICS R330" tool.	
18	Grease the bonnet catch using silicone-free lubricant	
19	Go back into the passenger compartment, switch on the ignition and connect the Diagnostic tool "Clip" or Electronic check tool "Quest" and run the computer scan	
20	Release the bonnet 10 times using the control in the driver's position	
21	Check the levels and sealing of the hydraulic circuits in the engine compartment: ■ the coolant circuit, ■ of the hydraulic power-assisted steering circuit (depending on the version), ■ of the brake fluid and clutch circuit (depending on the version), ■ hydraulic unit of the sequential gearbox (depending on the version).	Do not top up the brake fluid level
22	Check the washer fluid level.	
23	Remove the oil filler cap	
24	Loosen the oil filter if accessible from above.	
25	Check the clutch clearance (Logan version)	
26	Bleed the water from the fuel filter (if accessible)	Bleed the fuel filter if it has not reached its replacement interval

27	Check for the presence of the "Manufacturer's Recommendations" label located in the engine compartment	The "manufacturer's recommendations" labels include: oil, battery, cooling circuit, fan, air conditioning.
Check the condition of the bodywork on the driver's side:		
28	Check the lighting of the front door sill	
29	Read and retain the tyre pressure	
30	Check the condition of the rear view mirror	
31	Visually inspect the condition of the bodywork	
32	Check the lighting of the rear door sill (if equipped)	
33	Position the arms or pads of the lift (depending on the type of lift)	
34	Take the pressure gauge (if it is not present in the kit)	
Rear vehicle checks:		
35	Check the lighting of the luggage compartment	
36	Check the level of wear of the emergency spare wheel (if accessible through the luggage compartment)	
37	Check the pressure and the presence of the valve cap	

38	Check the condition of the rear screen wiper blade	
Check the condition of the bodywork on the passenger's side:		
39	Visually inspect the condition of the bodywork	
40	Check the lighting of the rear door sill	
41	Check the lighting of the front door sill	
42	Check the presence of the airbag label on the passenger's side	
43	Check the condition of the rear view mirror	
44	Position the arms or pads of the lift (depending on the type of lift)	
Computer checks		
45	Record the scan results of Diagnostic tool "Clip" or Electronic check tool"Quest"	
46	Disconnect the Diagnostic tool"Clip" or Electronic check tool "quest"	
Panoramic sunroof check		
47	Clean the arms of the sunroof deflector and the section of the mobile panel which comes into contact with them (if equipped)	
48	Raise the vehicle to chest height	

Check on driver's side front wheel		
49	Check the level of wear of the tyre + presence of foreign bodies (blisters, tears, foreign objects)	
50	Remove the wheel	Wheel: Removal - Refitting (35A, Wheels and tyres)
51	Check the level of brake pad wear	Note the degree of wear on the test certificate
52	Check the brake disc wear	
53	Check the condition of the brake hose	
54	Check the condition of the rubber mounting bushes and suspension arm ball joint	
55	Check the sealing of the shock absorber	
56	Check for corrosion on wheel arch, the condition of the spring, shock absorber cups and shock absorber	
57	Check the condition of the driveshaft gaiters and steering gaiters	
58	Check the level of power-assisted steering fluid (Laguna 3)	
Check on driver's side rear wheel:		
59	Check the level of wear of the tyre + presence of foreign bodies (blisters, tears, foreign objects)	

60	Remove the wheel	Wheel: Removal - Refitting (35A, Wheels and tyres)
61	Check the level of wear of the brake pads, depending on the version	Note the degree of wear on the test certificate
62	Check the brake disc wear (if equipped)	
63	Check the condition of the brake hose	
64	Check the sealing of the shock absorber.	
65	Check for corrosion on wheel arch, the condition of the spring, shock absorber cups and shock absorber	
Check on passenger's side rear wheel:		
66	Check the level of wear of the tyre + presence of foreign bodies (blisters, tears, foreign objects)	
67	Remove the wheel	Wheel: Removal - Refitting (35A, Wheels and tyres)
68	Check the level of wear of the brake pads, depending on the version	Note the degree of wear on the test certificate
69	Check the brake disc wear (if equipped)	
70	Check the condition of the brake hose	
71	Check the sealing of the shock absorber.	

72	Check for corrosion on wheel arch, the condition of the spring, shock absorber cups and shock absorber	
Check on passenger's side front wheel		
73	Check the level of wear of the tyre + presence of foreign bodies (blisters, tears, foreign objects)	
74	Remove the wheel	Wheel: Removal - Refitting (35A, Wheels and tyres)
75	Check the level of brake pad wear	Note the degree of wear on the test certificate
76	Check the brake disc wear	
77	Check the condition of the brake hose	
78	Check the condition of the rubber mounting bushes and suspension arm ball joint	
79	Check the sealing of the shock absorbers.	
80	Check for corrosion on wheel arch, the condition of the spring, shock absorber cups and shock absorber	
81	Check the condition of the driveshaft gaiters and steering gaiters	
82	Bleed the water in the fuel filter (if accessible through wheel arch) according to the maintenance programme)	

83	Raise the vehicle to the upper position	
Underbody operations		
84	Remove the protection plate underneath the engine and position the oil collector	
85	Remove the drain plug	Let the oil flow for 10 minutes
86	Remove the oil filter (version accessed from underneath)	
87	Check the exhaust system: Corrosion, contact with body and condition of the rubber mounting bushes	
88	Check the condition of the catalytic converter	
89	Check the condition of the spring, shock absorber cups and shock absorber on the right-hand and left-hand sides (if accessible fromunderneath)	
90	Check the condition of the underbody brake pipes	
91	Check the condition and pressure of the emergency spare wheel (if accessible from underneath)	
92	☐ Check the engine components using a lamp: ■ Cooling system hoses, ■ Coolant pump, ■ Engine block, ■ Turbocharger	

93	Parts are supplied using Dialogys and the physical values should be noted (tightening torque, oil grade and quantity)	
94	Refit the new oil filter (if accessible)	Lubricate the seal, tighten to torque depending on the model
95	Refit the drain plug	With new seal and according to recommended part number, for copper seals, the lips should be on the plug side (panel cover) Torque tighten depending on the model
96	Clean the oil residues	
97	Drain the oil collector.	
	Supplementary operation: replacement of fuel filter	See ICM/Maintenance booklet
98	Refit the protection plate underneath the engine	
99	Read the tyre pressure on the label on the driver's side door (if equipped)	Pressure to be applied depends on customer's driving type
100	Lower the vehicle to chest height	
Operations on driver's side front wheel		
101	Refit the wheel	**Wheel: Removal - Refitting** (35A, Wheels and tyres)

102	Check the tyre pressure and the presence of the valve cap	
Operations on driver's side rear wheel		
	Supplementary operation: remove dust and check the drum brake (if equipped)	See ICM/Maintenance booklet
103	Refit the wheel	Wheel: Removal - Refitting (35A, Wheels and tyres)
104	Check the tyre pressures and the presence of the valve cap	
Operations on passenger's side rear wheel		
	Supplementary operation: remove dust and check the drum brake (if equipped)	See ICM/Maintenance booklet
105	Refit the wheel	Wheel: Removal - Refitting (35A, Wheels and tyres)
106	Check the tyre pressures and the presence of the valve cap	
Operations on passenger's side front wheel		
	Remove - refit diesel filter (depending on the version)	See ICM/Maintenance booklet
107	Refit the wheel	Wheel: Removal - Refitting (35A, Wheels and tyres)

108	Check the tyre pressures and the presence of the valve cap	
109	Lower the vehicle to the low position	
Operations in the engine compartment		
110	Refit the new oil filter (if accessible)	Lubricate the seal, tighten by hand or to torque depending on the model
111	Fill the engine oil	Respect the grade and quantity of engine oil.
112	Replace the oil filler cap	
	Supplementary operation: replacement of diesel filter (depending on the version)	See ICM/Maintenance booklet
	Supplementary operation: replacement of fuel filter (depending on the version)	See ICM/Maintenance booklet
	Supplementary operation: replacement of air filter	See ICM/Maintenance booklet
	Supplementary operation: replacement of spark plugs	See ICM/Maintenance booklet
	Supplementary operation: replacement of brake fluid	See ICM/Maintenance booklet
	Supplementary operation: replacement of coolant	See ICM/Maintenance booklet
	Supplementary operation: replacement of accessories belt and rollers	See ICM/Maintenance booklet

	Supplementary operation: replacement of damper pulley/alternator pulley (depending on the version)	See Technical Note 6018/Maintenance booklet
	Supplementary operation: replacement of timing belt and rollers	See ICM/Maintenance booklet
	Supplementary operation: check and clean air conditioning system	See ICM/Maintenance booklet
	Supplementary operation: replacement of cabin filter (depending on the version)	See ICM/Maintenance booklet
Internal vehicle operation		
113	Start the vehicle	
114	Switch off the ignition	
	Supplementary operation: replacement of cabin filter (depending on the version)	See ICM/Maintenance booklet
Wheel torque tightening		
115	Consult the tightening torque in the technical documentation	
116	Torque tighten the front wheel on the driver's side and refit the trim (if equipped)	Refitting the trim confirms the tightening operation.
117	Torque tighten the rear wheel on the driver's side and refit the trim (if equipped)	Refitting the trim confirms the tightening operation.
118	Torque tighten the rear wheel on the passenger's side and refit the trim (if equipped)	Refitting the trim confirms the tightening operation.

119	Torque tighten the front wheel on the passenger's side and refit the trim (if equipped)	Refitting the trim confirms the tightening operation.
Administrative operations		
120	Fill in the test certificate	
121	Indicate, according to the degree of importance, the next works to be performed in order to ensure vehicle conformity.	
Final inspection in the engine compartment:		
122	Fill in and position the maintenance label	
123	After waiting at least 10 minutes after the last top-up or starting the engine, check the oil level using the dipstick	
124	Top up if necessary	
125	Clean the engine cover and the battery cover	

MAINTENANCEVALUES:DESCRIPTION

Special tooling required	
Brake calliper piston return tool.	Fre. 1190-01
Support plate for pushing back the brake calliper piston	Fre. 1939

1. ENGINE MAINTENANCE SUMMARY

M9T, 670 680 702 870 880, PARTICLE FILTER(670 OR 680 OR 702 OR 870 OR 880)

OIL	Engine oil capacity with oil filter replacement	8 litres

M9T, 690 698 700 890 898, PARTICLE FILTER(690 OR 698 OR 700 OR 890 OR 898)

OIL	Engine oil capacity with oil filter replacement	8.9 litres

DRAIN PLUG	Tool	Oil change end piece with an 8 mm square drive
	Tightening torque	50 N.m
OILFILTER	Tool	27 mm spanner
	Tightening torque	25 N.m

COOLANT	Coolant grade	GLACEOL RX type D
	Cooling system capacity	11 litres

WHEELS	Tightening torque	235 N.m

FOR THE FOLLOWING COUNTRIES: GERMANY, ANDORRA, AUSTRIA, BELGIUM, DENMARK, SPAIN, ESTONIA, FINLAND, FRANCE, GREAT BRITAIN, GREECE, HUNGARY, IRELAND, ICELAND, ITALY, LATVIA, LIECHTENSTEIN, LITHUANIA, LUXEMBOURG, NORWAY, NETHERLANDS, POLAND, PORTUGAL, CZECH REPUBLIC, SLOVAKIA, SLOVENIA, SWEDEN, SWITZERLAND, CROATIA, ISRAEL.

BRAKE FLUID	Brake fluid grade	DOT 4, ISO CLASS 6, RENAULT Standard: 03-50-006

FOR OTHER COUNTRIES.

BRAKE FLUID	Brake fluid grade	DOT 4, ISO CLASS 6, RENAULT Standard: 03-50-006

FRONT BRAKES

Tools	Tool	Brake calliper piston return tool.(Fre. 1190-01) and Support plate for pushing back the brake calliper piston(Fre. 1939)
Tightening torques	Front guide pin bolts	85 N.m
	Front calliper support bolts	195 N.m

Measurement	Front disc diameter	302 mm
	Minimum front brake disc thickness	24.5 mm
	Minimum front brake pad thickness	10 mm

REAR BRAKES

Tools	Tool	Brake calliper piston return tool.(Fre. 1190-01) and Support plate for pushing back the brake calliper piston(Fre. 1939)
Tightening torques	Rear disc bolts	68 N.m
	Rear guide pin bolts	85 N.m
	Rear calliper support bolts	180 N.m

Measurement	Rear disc diameter	302 mm
	Minimum rear brake disc thickness	15 mm
	Minimum rear brake pad thickness	10 mm

MAINTENANCEVALUES:DESCRIPTION

Special tooling required	
Brake calliper piston return tool.	Fre. 1190-01
Support plate for pushing back the brake calliper piston	Fre. 1939

1. ENGINE MAINTENANCE SUMMARY

Note:

(*) The engine oil grade and viscosity only applies to the following countries:

Germany, Andorra, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Great Britain, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Norway, Netherlands, Poland, Portugal, Czech Republic, Slovakia, Slovenia, Sweden, Switzerland, Croatia, Israel.

Important: for vehicles in countries which are not listed above, please refer to Technical Note 6013A**Engine oil: Specifications** .

M9T, 670 680 700 870 880, PARTICLE FILTER(670 OR 680 OR 700 OR 870 OR 880)

OIL	Engine oil grade (*)	RN720
	Oil viscosity (*) depending on external temperature	t > -20˚C 5W30 or 5W40 t > -25˚C 5W30 or 5W40 t > -30˚C 0W30 or 0W40
	Engine oil capacity with oil filter replacement	8 litres

M9T, 690 698 702 890 898, PARTICLE FILTER(690 OR 698 OR 702 OR 890 OR 898)

OIL	Engine oil grade (*)	RN720
	Oil viscosity (*) depending on external temperature	t > -20˚C 5W30 or 5W40 t > -25˚C 5W30 or 5W40 t > -30˚C 0W30 or 0W40
	Engine oil capacity with oil filter replacement	8.9 litres

DRAIN PLUG	Tool	Oil change end piece with an 8 mm square drive
	Tightening torque	50 N.m
OILFILTER	Tool	27 mm spanner
	Tightening torque	25 N.m

COOLANT	Coolant grade	GLACEOL RX type D
	Cooling system capacity	11 litres

2. CHASSIS MAINTENANCE SUMMARY

WHEELS	Tightening torque	235 N.m

FOR THE FOLLOWING COUNTRIES: GERMANY, ANDORRA, AUSTRIA, BELGIUM, DENMARK, SPAIN, ESTONIA, FINLAND, FRANCE, GREAT BRITAIN, GREECE, HUNGARY, IRELAND, ICELAND, ITALY, LATVIA, LIECHTENSTEIN, LITHUANIA, LUXEMBOURG, NORWAY, NETHERLANDS, POLAND, PORTUGAL, CZECH REPUBLIC, SLOVAKIA, SLOVENIA, SWEDEN, SWITZERLAND, CROATIA, ISRAEL.

BRAKE FLUID	Brake fluid grade	DOT 4, ISO CLASS 6, RENAULT Standard: 03-50-006

FOR OTHER COUNTRIES.

BRAKE FLUID	Brake fluid grade	DOT 4, ISO CLASS 6, RENAULT Standard: 03-50-006

FRONT BRAKES

Tools	Tool	Brake calliper piston return tool.(Fre. 1190-01) and Support plate for pushing back the brake calliper piston(Fre. 1939)
Tightening torques	Front guide pin bolts	85 N.m
	Front calliper support bolts	195 N.m

Measurement	Front disc diameter	302 mm
	Minimum front brake disc thickness	24.5 mm
	Minimum front brake pad thickness	10 mm

REAR BRAKES

Tools	Tool	Brake calliper piston return tool.(Fre. 1190-01) and Support plate for pushing back the brake calliper piston(Fre. 1939)
Tightening torques	Rear disc bolts	68 N.m
	Rear guide pin bolts	85 N.m
	Rear calliper support bolts	180 N.m

Measurement	Rear disc diameter	302 mm
	Minimum rear brake disc thickness	15 mm
	Minimum rear brake pad thickness	10 mm

RENAULT

Technical Note 6511A

PKX, PFX, TL4, NDX, JBX, JCX, JHX, JR5

Sub-section concerned: 01E

Manual gearbox fault finding

All vehicles with PK4, PK5, PK6, PK7, PK9, PF1, PF6, TL4, JB0, JB1, JB2, JB3, JB4, JB5, JB9, JC5, JC7, JH1, JH3, JR5, ND0 manual gearboxes

Fault finding procedures for incorrect gear changes

77 11 399 122 **Edition 1 - APRIL 2007** **Edition Anglaise**

"The repair procedures given by the Manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which its vehicles are constructed."

All rights reserved by RENAULT.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of RENAULT.

© Renault s.a.s. 2007

Contents

Page

01E FAULT FINDING INTRODUCTION

Fault finding - Introduction	01E-1
Fault finding - Customer Complaints	01E-4
Fault finding - Fault finding chart	01E-5

1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **All 2 wheel drive vehicles**

Function concerned: **Manual gearboxes**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- MR for the vehicle concerned.
- MR of the gearbox concerned:

*

Gearbox	Technical Note No.
PA6 - PK5 - PK6	**Technical Note 6003A**
TL4	**Technical Note 6019A**
JBX - JCX	**MR-BV-JB-JC**
PF6 - PK4	**Technical Note 6021A**
JA3, JH1, JH3, JR5	**Technical Note 6029A**
ND0	**Technical Note 6034A**

3. FAULT FINDING PROCEDURE

- Identify the type of gear change discrepancy using the definitions given (see definition of symptoms).
- Use the ALPs (fault finding charts) to identify the cause of the fault

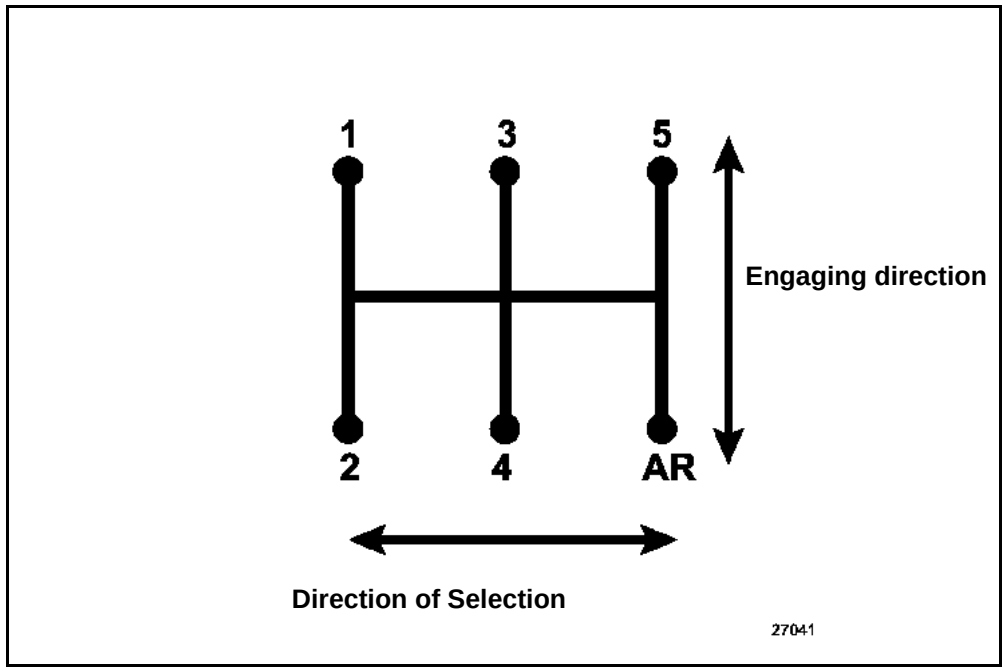
4. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any damage or injury:
The road tests referred to in this document should be carried out in accordance with Road Traffic Regulations (speed limits must be obeyed).

IMPORTANT
When carrying out road tests, obey Road Traffic Regulations, especially speed limits.

It may be necessary to carry out the road test with the customer to observe the driving habits of the customer (insufficient movement when changing gear, clutch not disengaged sufficiently etc.). The fault stated by the customer is due to ignorance or unfamiliarity with the normal operation of the gearbox.

5. DEFINITION OF SYMPTOMS



A. Gear change hitch:

Definition:
One or several points of resistance felt when moving the lever which stop or at least slow down movement. It appears randomly with regard to the gear being selected and how often it appears.

Appearance context:
- More likely to appear when the gearbox is cold (aggravating factor), for example in the first few miles of a journey (not on the motorway).
- Gear change sticks when changing up or down a gear.

B. Gear jumps:

Definition:
One or several of the gears selected jumps out of gear without touching the control lever.

Appearance context:
Generally occurs in only one of the following cases:
- at a stable engine speed,
- when accelerating
- when decelerating
- when lifting off the accelerator.

Note: the gear may jump in inverse proportion to torque or at a stable engine speed.

C. Hard or impossible to engage a gear (gear selected)

Definition:
Temporary difficulty in engaging a gear or impossible to do so.

Appearance context:
When engaging the gear, having already selected the gear (when all conditions making it possible for the gear to be engaged are present: clutch disengaged, gear selected, etc.).

D. Gear control blocked or inoperative:

Definition:
Impossible to engage or disengage a gear on one or several lines (as soon as the action begins and in the direction of selection) or with the gear engaged, the vehicle acts as though it is still in neutral.

Appearance context:
All conditions making it possible for the gear to be engaged are present: clutch disengaged, gear selected, etc.

JAMMING WITH CABLE OPERATED GEARBOXES	ALP 1
JAMMING WITH ROD OPERATED GEARBOXES	ALP 2
CABLE OPERATED GEARBOXES JUMPING OUT OF GEAR	ALP 3
ROD OPERATED GEARBOXES JUMPING OUT OF GEAR	ALP 4
DIFFICULT OR IMPOSSIBLE TO ENGAGE GEARS FOR CABLE OPERATED GEARBOXES	ALP 5
DIFFICULT OR IMPOSSIBLE TO ENGAGE GEARS FOR ROD OPERATED GEARBOXES	ALP 6
GEARBOX LOCKED OR INEFFECTIVE FOR CABLE OPERATED GEARBOXES	ALP 7
GEARBOX LOCKED OR INEFFECTIVE FOR ROD OPERATED GEARBOXES	ALP 8

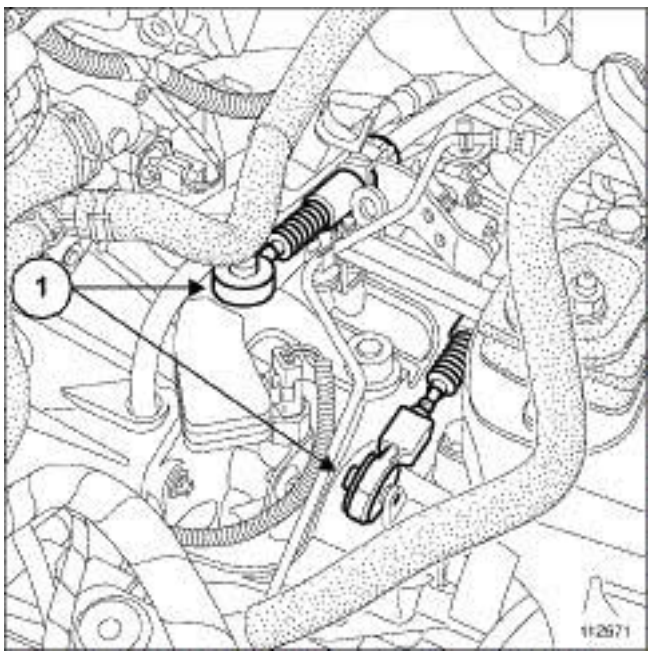
ALP 1	Jamming with cable operated gearboxes

NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **If there is jamming in 2nd AND 3rd with the ND gearbox: see Technical Note 4559A, gears jamming when engaging 2nd or 3rd gear.** – **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

External control check

Visually inspect:
- The condition of the control (gaiter end (1) incorrectly fixed, cables clipped, etc.).

Not correct → Replace the faulty part or parts and/or clean the travel of the external control.

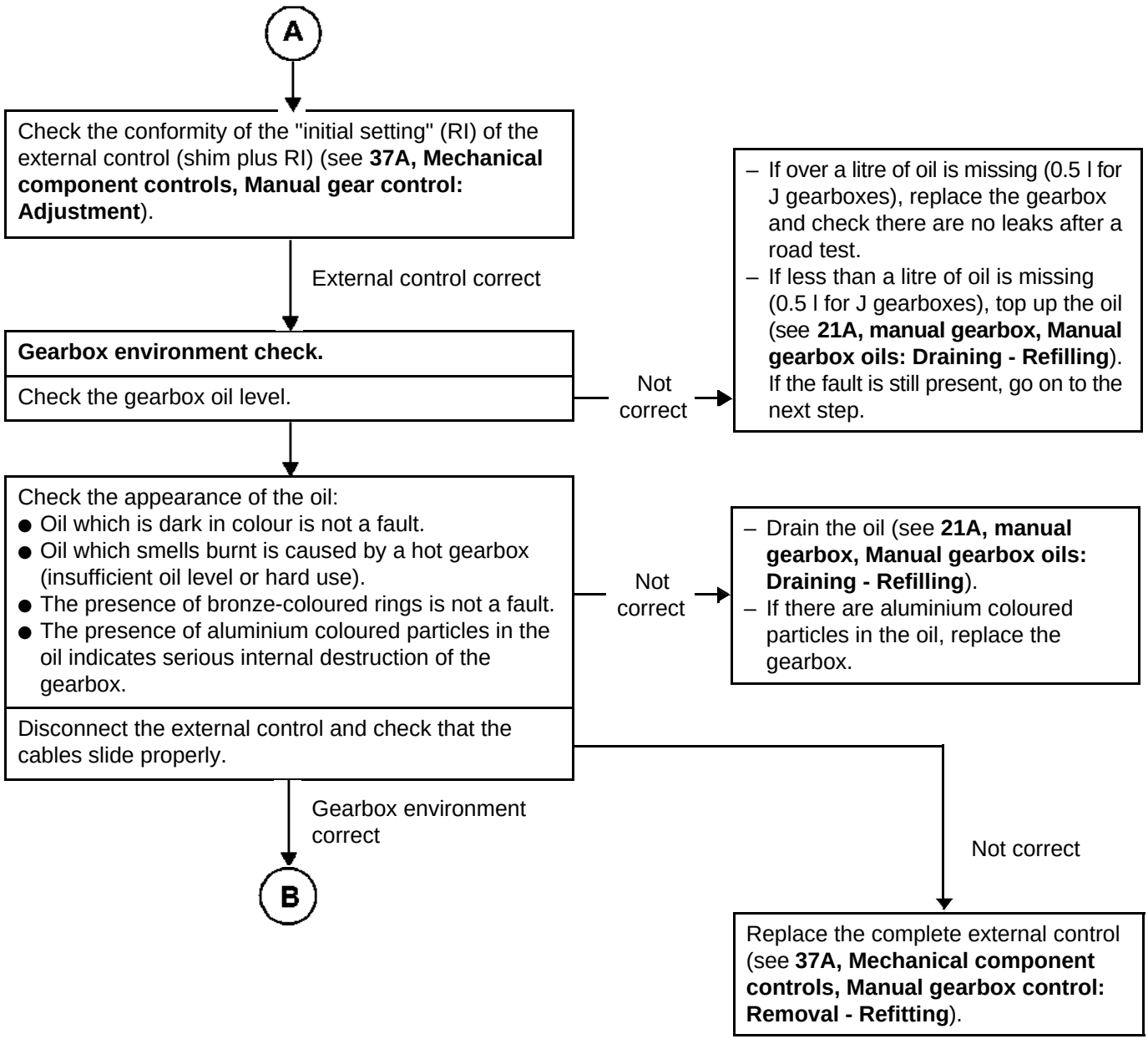


- Ensure the area surrounding the gearbox selector is correct (no foreign bodies etc.).
- The positioning of the gaiter of the control unit.

Not correct → Ensure the conformity of the Initial Setting (see **37A, Mechanical component controls, Manual gear control: Adjustment**).

A

ALP 1 CONTINUED 1	



ALP 1 CONTINUED 2	

B

Clutch check

Check that the clutch operates correctly (see **MR-394, 20A, Clutch, Fault finding chart**).

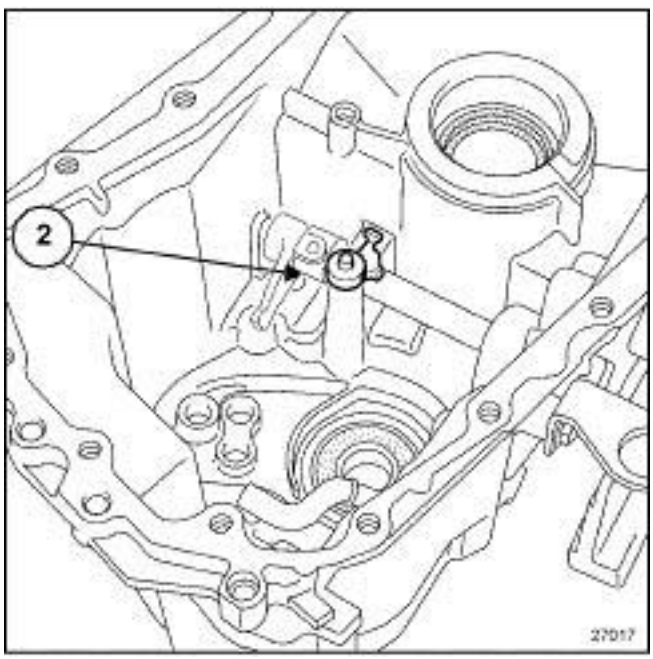
Check there is no clutch drag by checking its disengagement point (see **Technical Note 3451A, Clutch: Fault finding**).

Not correct → Carry out the corrective actions.

Gearbox environment correct

Remove and open the gearbox.

In the case of a complaint about jamming when shifting from 5th to 4th on a cable operated J gearbox.



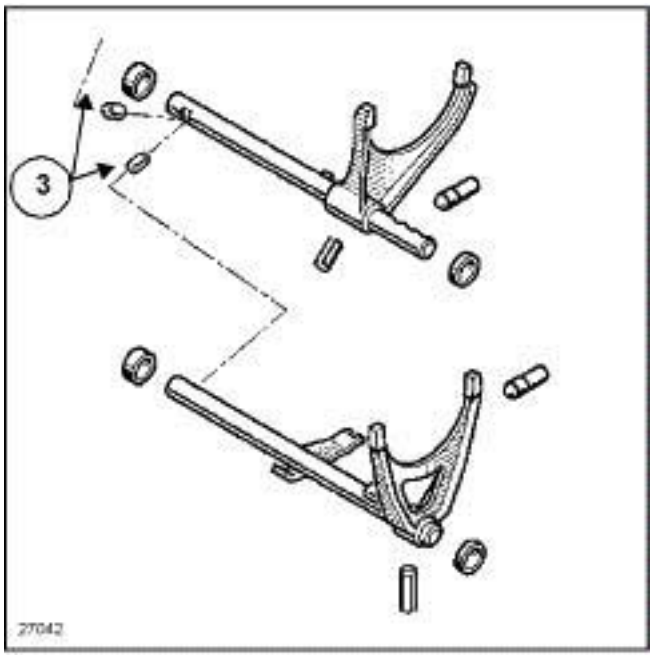
Not correct → Replace the latch kit (2) for reverse gear (see **Technical Note 6029A, manual gearbox, manual gearbox control shaft: Removal - Refitting**).

C

ALP 1 CONTINUED 3	

C

Check:
- The locking shafts slide correctly (3)
- The locking shafts are correct (3)



Not correct →
- Replace the locking shafts (see **Technical Note Gearbox*, manual gearbox, shafts and synchronisers: Refitting**).
- If the sliding fault is still present, contact Techline (clutch cover fault).

Locking shafts correct ↓

In all other cases and for all other gearboxes
Replace the function of the gear or gears corresponding to the customer complaint (pinion, hub, selector rod, blocking ring and engaging ring).

* see introduction

ALP 2	**Jamming with rod operated gearboxes**

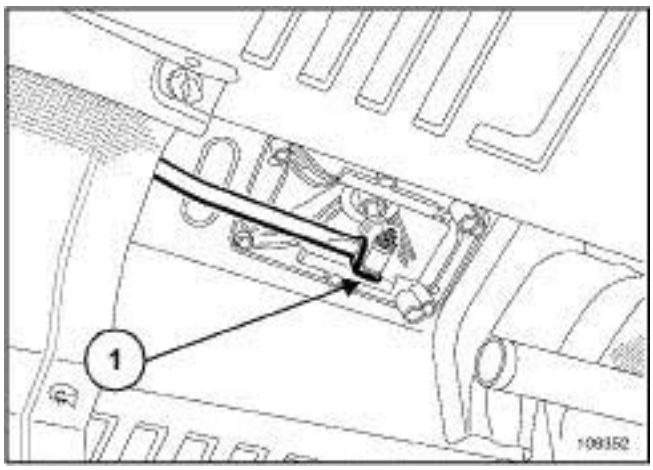
NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **If there is jamming in 2nd AND 3rd with the ND gearbox: see Technical Note 4559A, gears jamming when engaging 2nd or 3rd gear.** **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

ALP 2 CONTINUED 1	

External control check

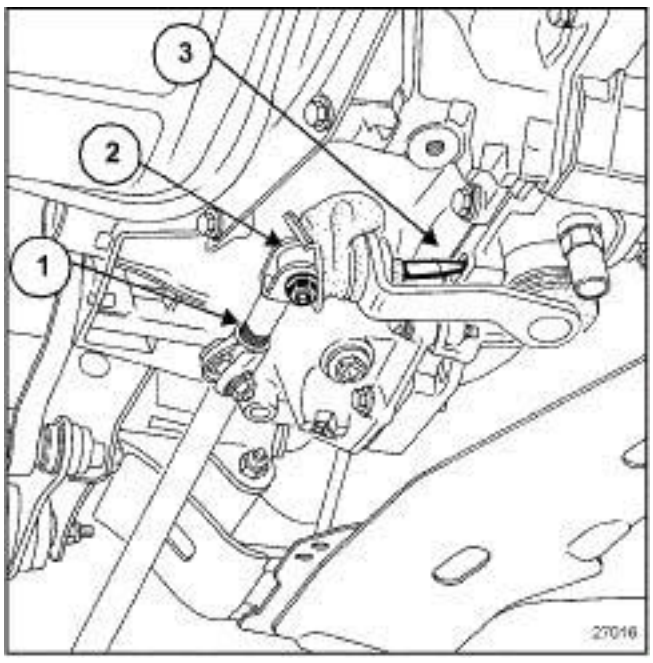
Visually inspect:

- The presence of grease (33 medium) on the control lever / selector linkage joint (1).



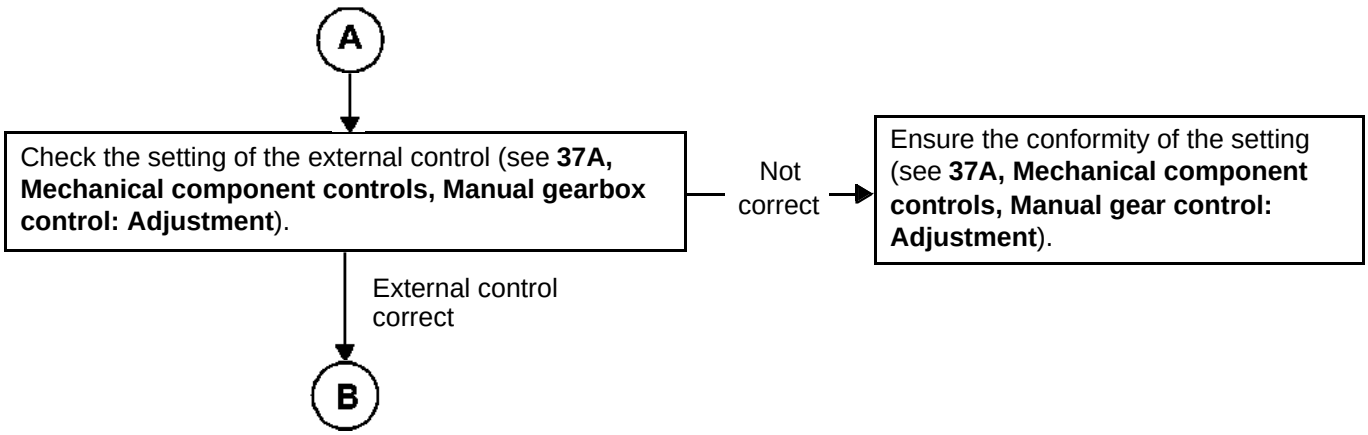
Not correct → Grease the parts that have insufficient grease

- The presence of grease (transmission grease) on the selector linkage / gearbox linkage joint (2) (detach the gaiter and remove the plastic clip if necessary).
- The presence of grease (33 medium) at the gearbox output lever / linkage joint (3).

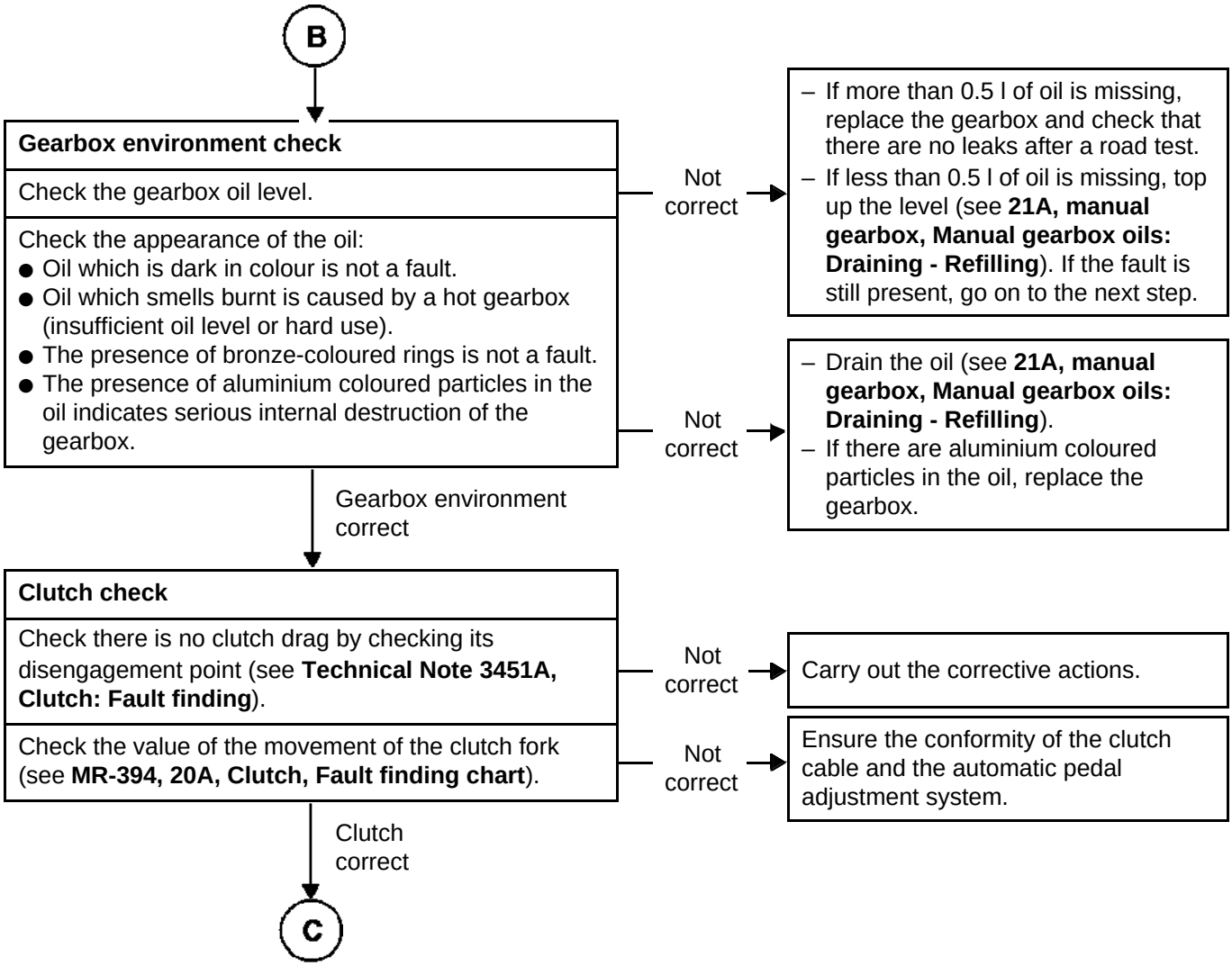


→ A

ALP 2 CONTINUED 2	



ALP 2 CONTINUED 3	

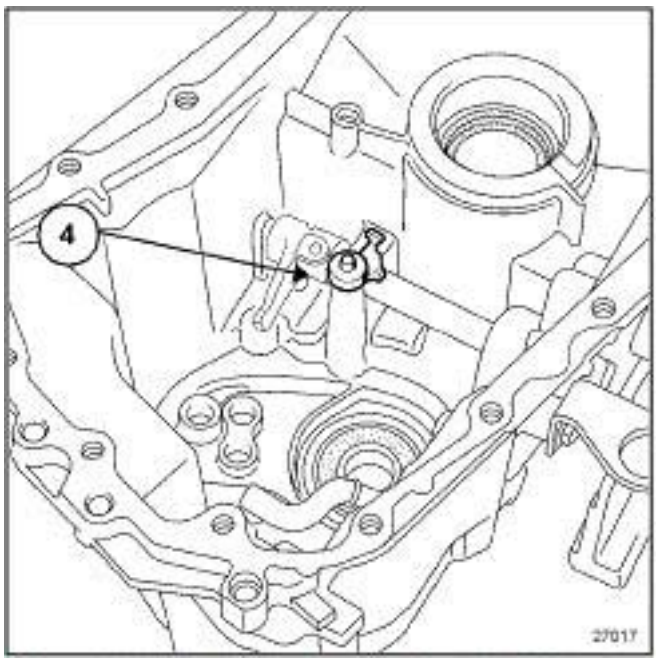


ALP 2 CONTINUED 4	

C

Remove and open the gearbox.

In the case of a complaint about jamming when shifting from 5th to 4th on a JH gearbox.



Not correct →

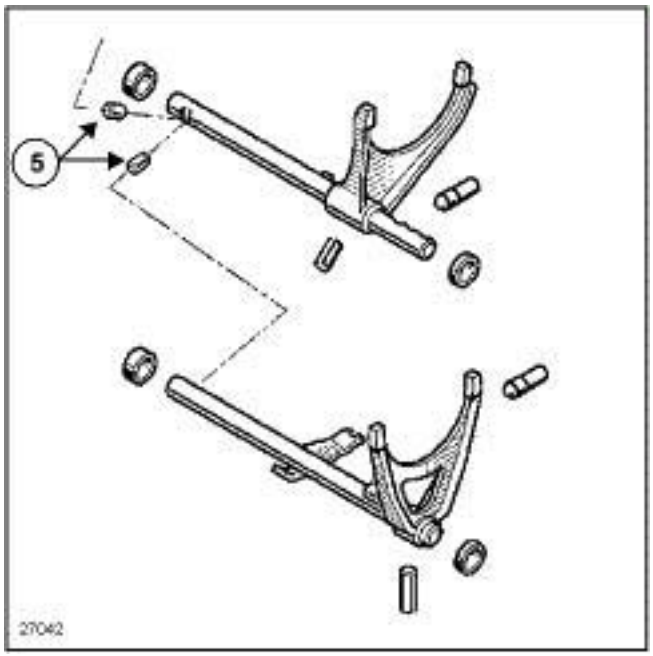
Replace the latch kit for reverse gear (4) (see **Technical Note 6029A, manual gearbox, manual gearbox control shaft: Removal - Refitting**).

D

ALP 2 CONTINUED 5	

D

Check:
- The locking shafts slide correctly (5)
- The locking shafts are correct (5)



Not correct →
- Replace the locking shafts (see **Technical Note Gearbox*, manual gearbox, shafts and synchronisers: Refitting**).
- If the sliding fault is still present, contact the Techline for information on the clutch cover.

Locking shafts correct ↓

Replace the function of the gear or gears corresponding to the customer complaint (pinion, hub, selector rod, blocking ring and engaging ring).

* see introduction

ALP 3	Cable operated gearboxes jumping out of gear

NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

External control check:

Check there are no foreign bodies at the external control (control unit and gearbox side) which inhibit its operation.

Not correct → – Clean the external control cable routing.

Check that the cables move freely (sheath grommets, "corrugated sheaths", bulkhead grommets, etc.) for example, after a previous operation under the bonnet (incorrect refitting).

Not correct → – If there is no damage: correct the routing.
– If there is damage: replace the external control (see **37A, Mechanical component controls, Manual gearbox control: Removal - Refitting**).

Check that there is no significant or abnormal play at the lever (in the direction of the gear change).

- Unit side:
  - no play at the cable sleeve stop,
  - no play at the cable ball joint (in the direction of the gear change).
- Gearbox side:
  - no play at the cable sleeve stop,
  - no play at the cable ball joint (in the direction of the gear change),
  - no play at the dampers (rubber particles indicating destruction of the dampers).

Not correct → – Replace the external control (see **37A, Mechanical component controls, Manual gearbox control: Removal - Refitting**).

External control correct → A

ALP 3 CONTINUED 1	

(A)

Engine and transmission assembly suspended mountings check:

Check the suspended mountings on the engine and gearbox sides and the engine tie-bar (broken, damaged, incorrectly tightened, incorrectly positioned, etc.).

Not correct → Replace the damaged suspended engine mounting or engine tie-bar (see **19D, Engine mounting**).

Check the suspended mounting rubber pads on the engine and gearbox sides and engine tie-bar (torn, damaged, incorrectly positioned, missing, etc.).

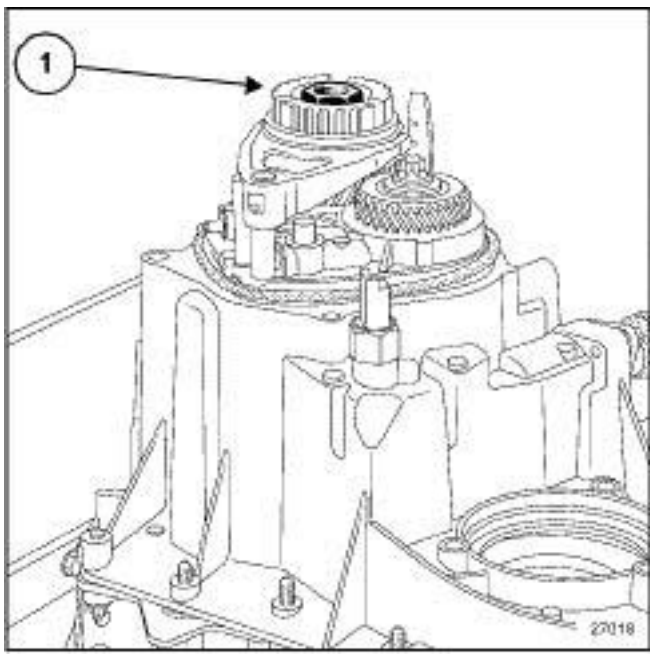
Not correct → Replace the damaged rubber pad (see **19D, Engine mounting**).

Engine and transmission assembly suspended mountings

Checking the 5th gear nut on the input shaft (1) (only on J gearbox)

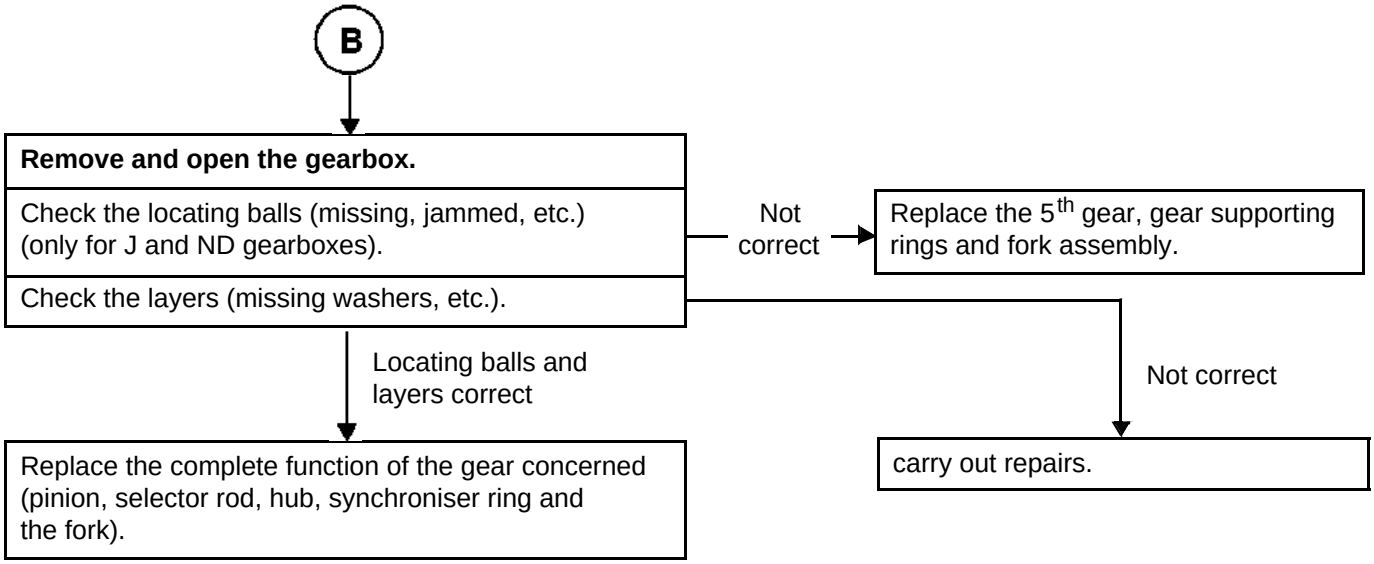
If the vehicle is fitted with a J gearbox and is only jumping out of gear in 5th.

Not correct → Replace the 5th gear, gear supporting rings and fork assembly.



5th gear nut correct → (B)

ALP 3 CONTINUED 2	



ALP 4	Rod operated gearboxes jumping out of gear

NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

External control check

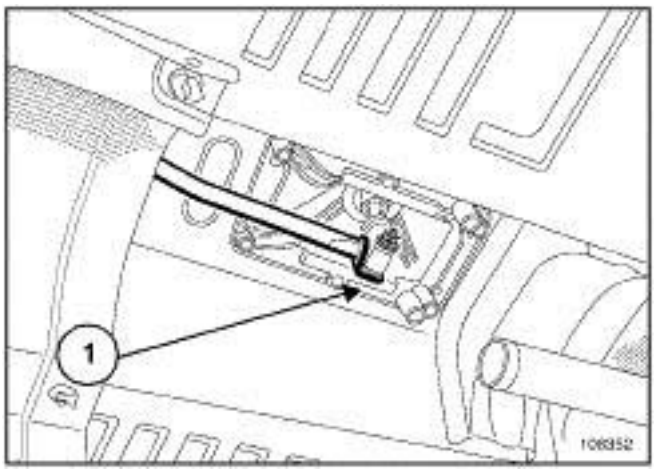
Check there are no foreign bodies at the external control (control unit and gearbox side) which inhibit its operation.

Not correct → Clean the external control cable route.

Check that there are no signs of impact on the gear selector rod.

Not correct → Replace the gear selector rod.

Check that there is no play at the lever (in the direction of the gear change).
- Module on the end of the selector rod (1) (see Technical Note 3439A, Mechanical component controls).



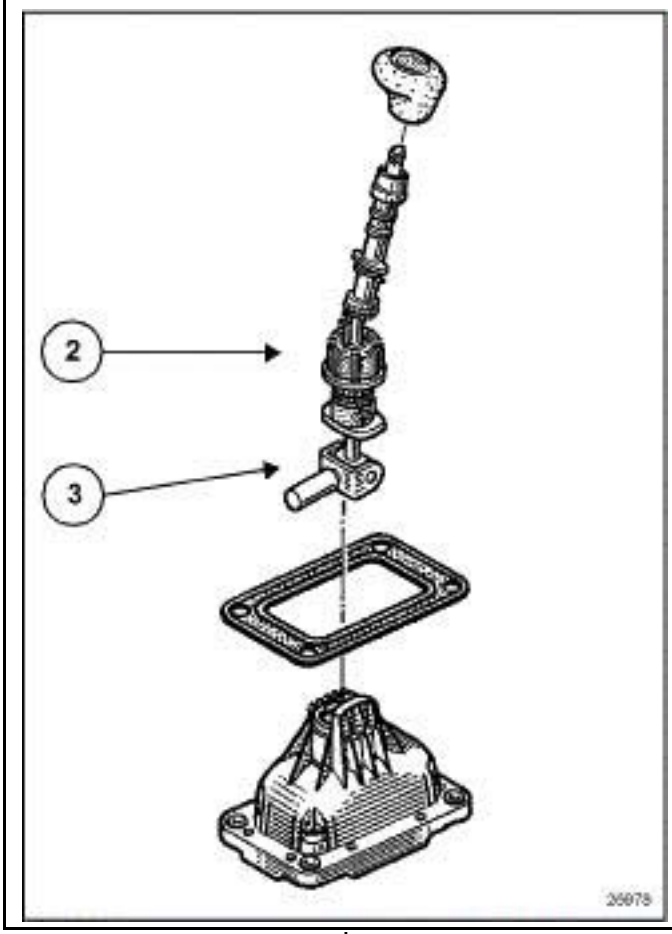
Not correct →
- If there is a fault on the unit side: replace the control lever or the complete function if one unit (see **37A, Mechanical component controls, Manual gear control: Removal - Refitting**).
- If there is a fault on the gearbox side: replace the selector rod (and spacer if required).

A

ALP 4 CONTINUED 1	

A

● Control unit side:
  – no play at the lever ball joint (2),
  – no play at the joint at the foot of the lever or the selector rod mounting (3),
  – check that there is no tension at the gear lever gaiter (if necessary check without the gaiter).



Not correct →

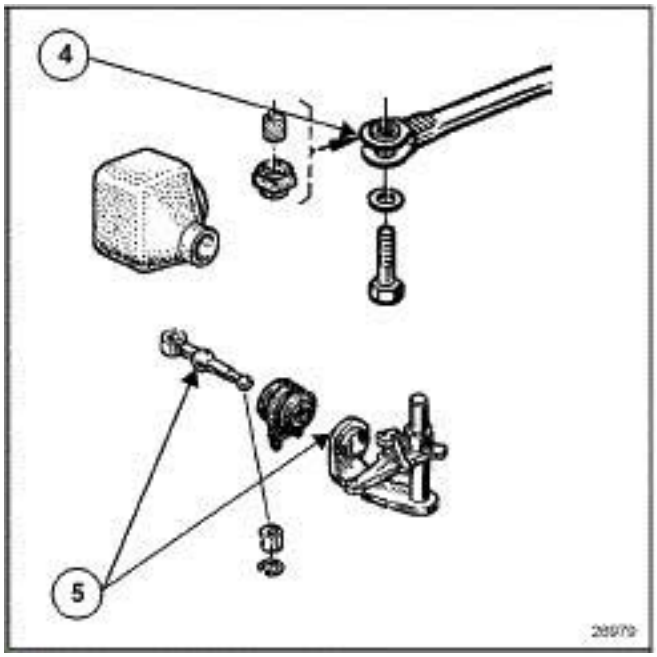
– If there is a fault on the unit side: replace the control lever or the complete function if it is not sold separately (see **37A, Mechanical component controls, Manual gear control: Removal - Refitting**).
– If there is a fault on the gearbox side: replace the selector rod (and spacer if required).

B

ALP 4 CONTINUED 2	

B

● Gearbox side:
– no play at the linkage - selector rod connection (4),
– no play at the manual gearbox lever ball joints (5).



External control correct

Engine and transmission assembly suspended mountings check:

Check the suspended mountings on the engine and gearbox sides and the engine tie-bar (broken, damaged, incorrectly tightened, incorrectly positioned, etc.).

Not correct → Replace the damaged suspended engine mounting or engine tie-bar (see **19D, Engine mounting**).

C

ALP 4 CONTINUED 3	

C

Check the suspended mounting rubber pads on the engine and gearbox sides and engine tie-bar (torn, damaged, incorrectly positioned, missing, etc.).

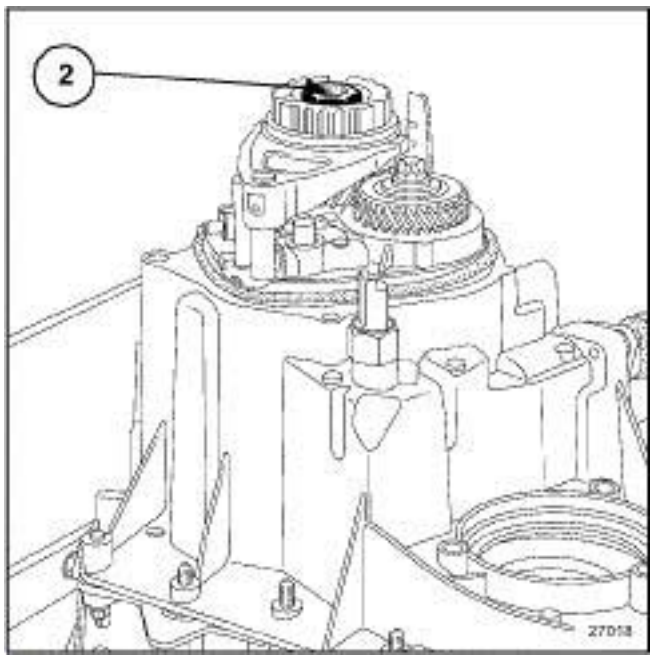
Not correct → Replace the damaged rubber pad (see **19D, Engine mounting**).

Engine and transmission assembly suspended mountings

Checking the 5th gear nut on the input shaft (only on J gearbox)

Not correct → Replace the 5th gear, gear supporting rings and fork assembly.

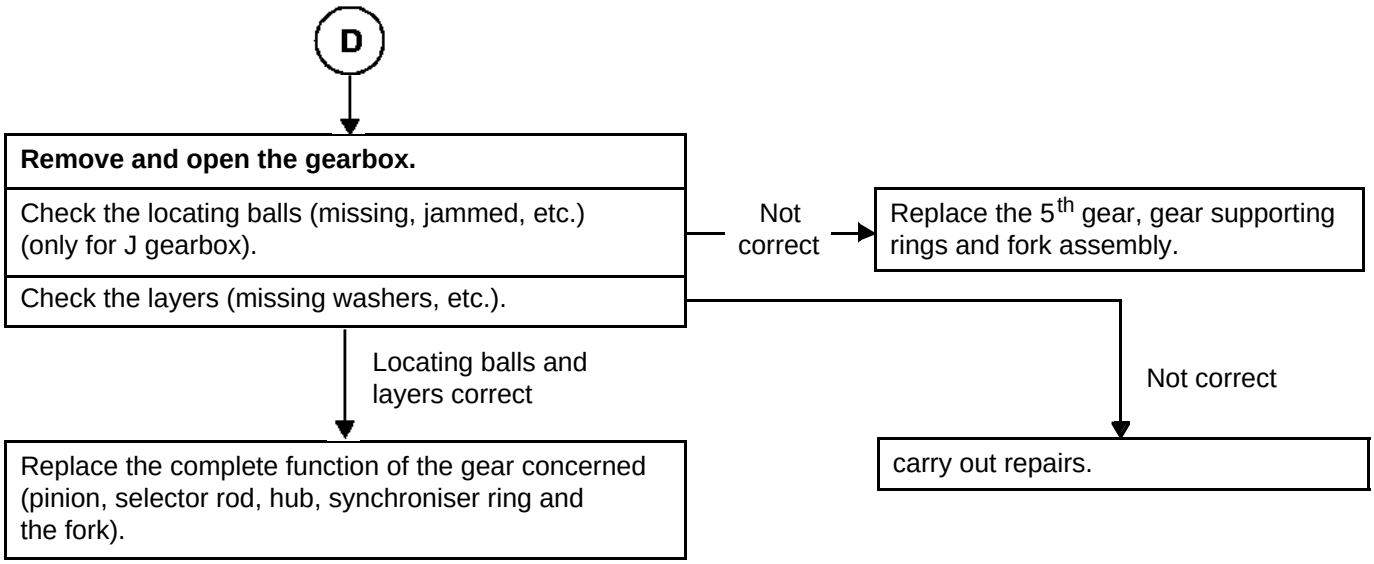
If the vehicle is fitted with a J gearbox and is only jumping out of gear in 5th.



5th gear nut correct

D

ALP 4 CONTINUED 4	



ALP 5	Difficult or impossible to engage gears for cable operated gearboxes

NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

Oil level check

Check the gearbox oil level before any operations.

Not correct → If over a litre of oil is missing (0.5 l for the J range), replace the gearbox and check there are no leaks after a road test.
If less than a litre of oil is missing (0.5 l for the J range), top up the oil (see **21A, manual gearbox, Manual gearbox oils: Draining - Refilling**).
If the fault is still present, go on to the next step.

Oil level correct ↓

External control check

Check that there are no foreign bodies at the external control (control unit and gearbox side) that inhibit its operation.

Not correct → Correct the routing manually.

Check that the "initial setting" (RI) of the external control (shim plus RI) (see **37A, Mechanical component controls, Manual gear control: Adjustment**).

Not correct → Ensure the conformity of the Initial Setting (see **37A, Mechanical component controls, Manual gear control: Adjustment**).

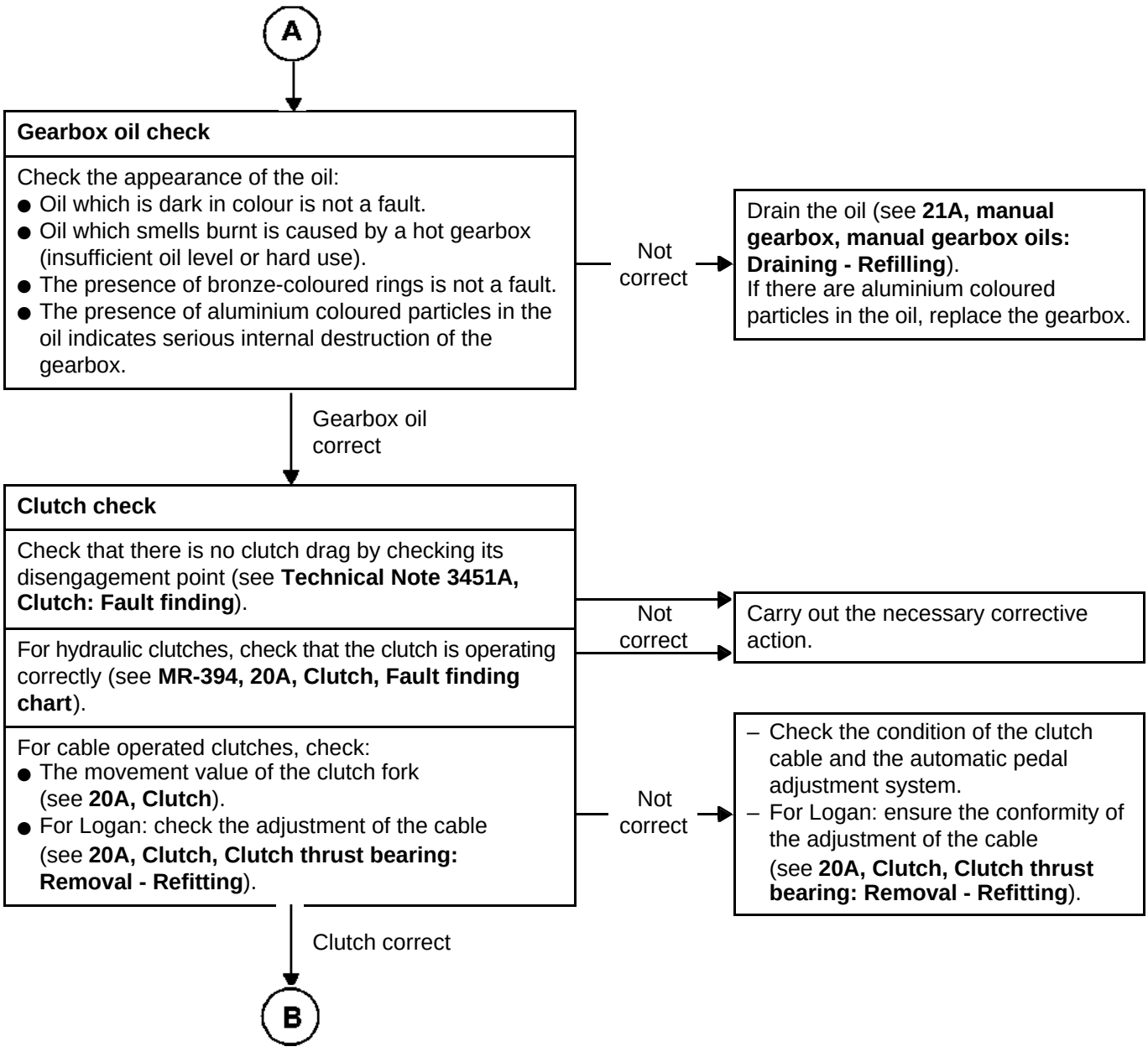
Check there is no significant or abnormal play at the lever (in the direction of selection).

Not correct → Replace the external control (see **37A, Mechanical component controls, Manual gearbox control: Removal - Refitting**).

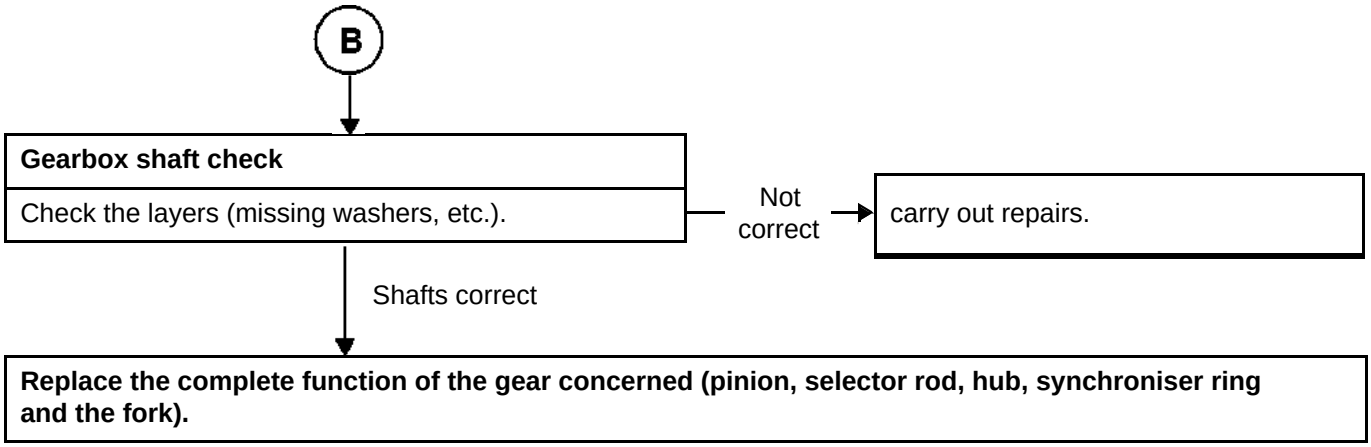
External control correct ↓

(A)

ALP 5 CONTINUED 1	



ALP 5 CONTINUED 2	



ALP 6	Difficult or impossible to engage gears for rod operated gearboxes

NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

Oil level check

Check the gearbox oil level before any operations.

Not correct →
– If more than 0.5 l of oil is missing, replace the gearbox and check that there are no leaks after a road test.
– If less than 0.5 l of oil is missing, top up the level (see **21A, manual gearbox, Manual gearbox oils: Draining - Refilling**).
– If the fault is still present, go on to the next step.

Oil level correct ↓

External control check

Check that there are no foreign bodies at the external control (control unit and gearbox side) that inhibit its operation.

Not correct → Correct the routing manually.

Check the setting of the external control (see **37A, Mechanical component controls, Manual gearbox control: Adjustment**).

Not correct → Replace the selector rod.

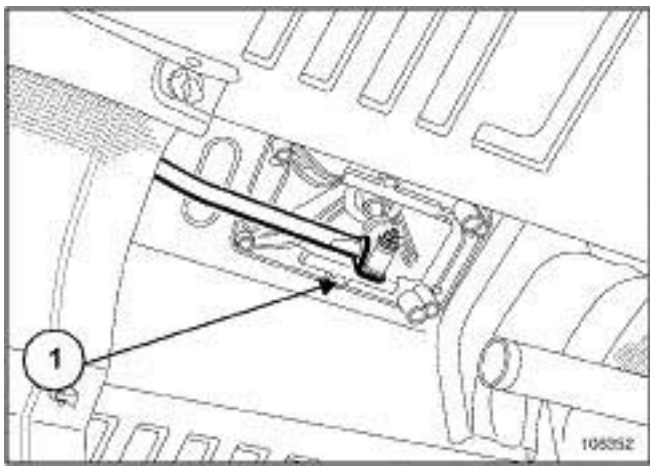
↓

(A)

ALP 6 CONTINUED 1	

Check that there is no play at the lever (in the direction of the gear change).

- Module on the end of the selector rod (1) (See **Technical Note 3439A, Mechanical component controls**).



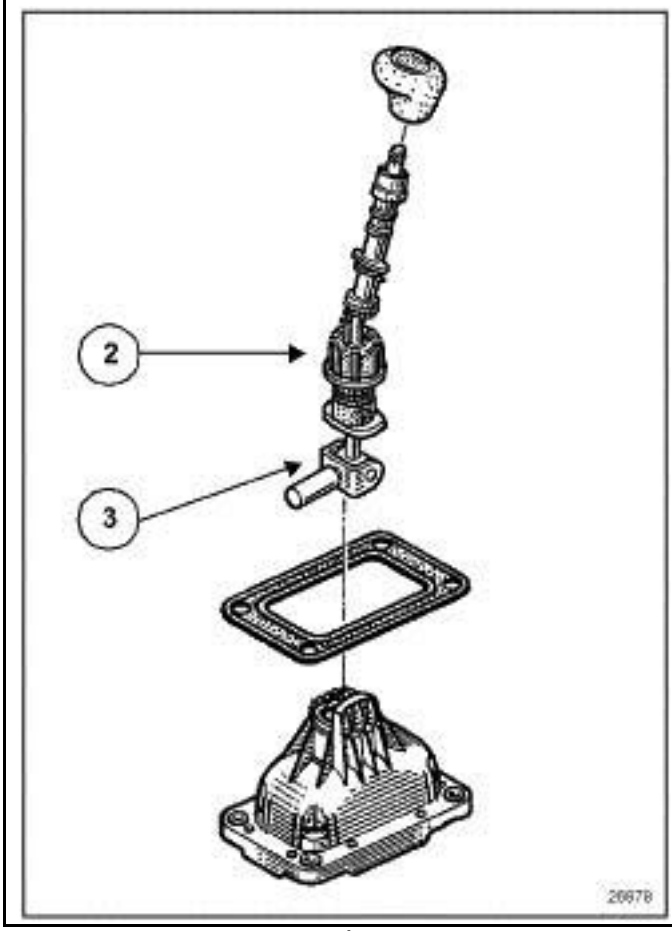
Not correct →

- If there is a fault on the unit side: replace the control lever or the complete function if it is not sold separately (see **37A, Mechanical component controls, Manual gear control: Removal - refitting**).
- If there is a fault on the gearbox side: replace the selector rod (and spacer if required).

ALP 6 CONTINUED 2	

B

● Control unit side:
  – no play at the lever ball joint (2),
  – no play at the joint at the foot of the lever or the selector rod mounting (3),
  – check that there is no tension at the gear lever gaiter (if necessary check without the gaiter).



Not correct →

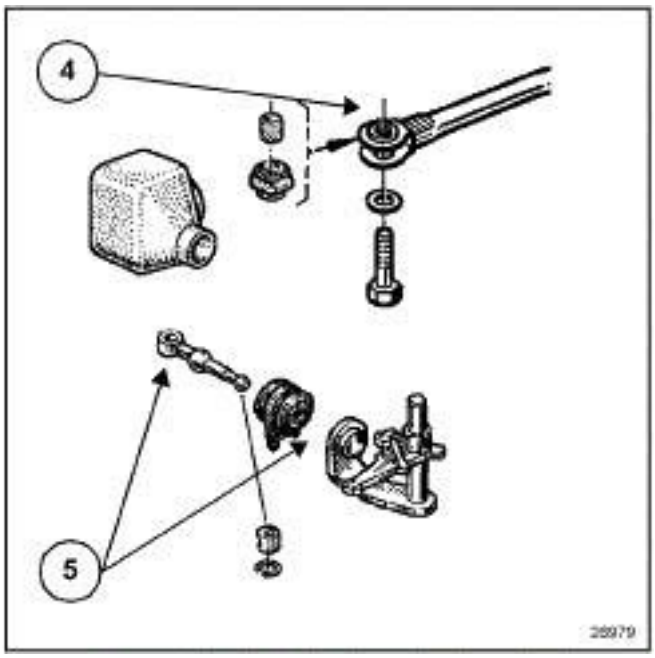
– If there is a fault on the unit side: replace the control lever or the complete function if it is not sold separately (see **37A, Mechanical component controls, Manual gear control: Removal - refitting**).
– If there is a fault on the gearbox side: replace the selector rod (and spacer if required).

C

ALP 6 CONTINUED 3	

C

● Gearbox side:
  – no play at the linkage - selector rod connection (4)
  – no play at the manual gearbox lever ball joints (5)



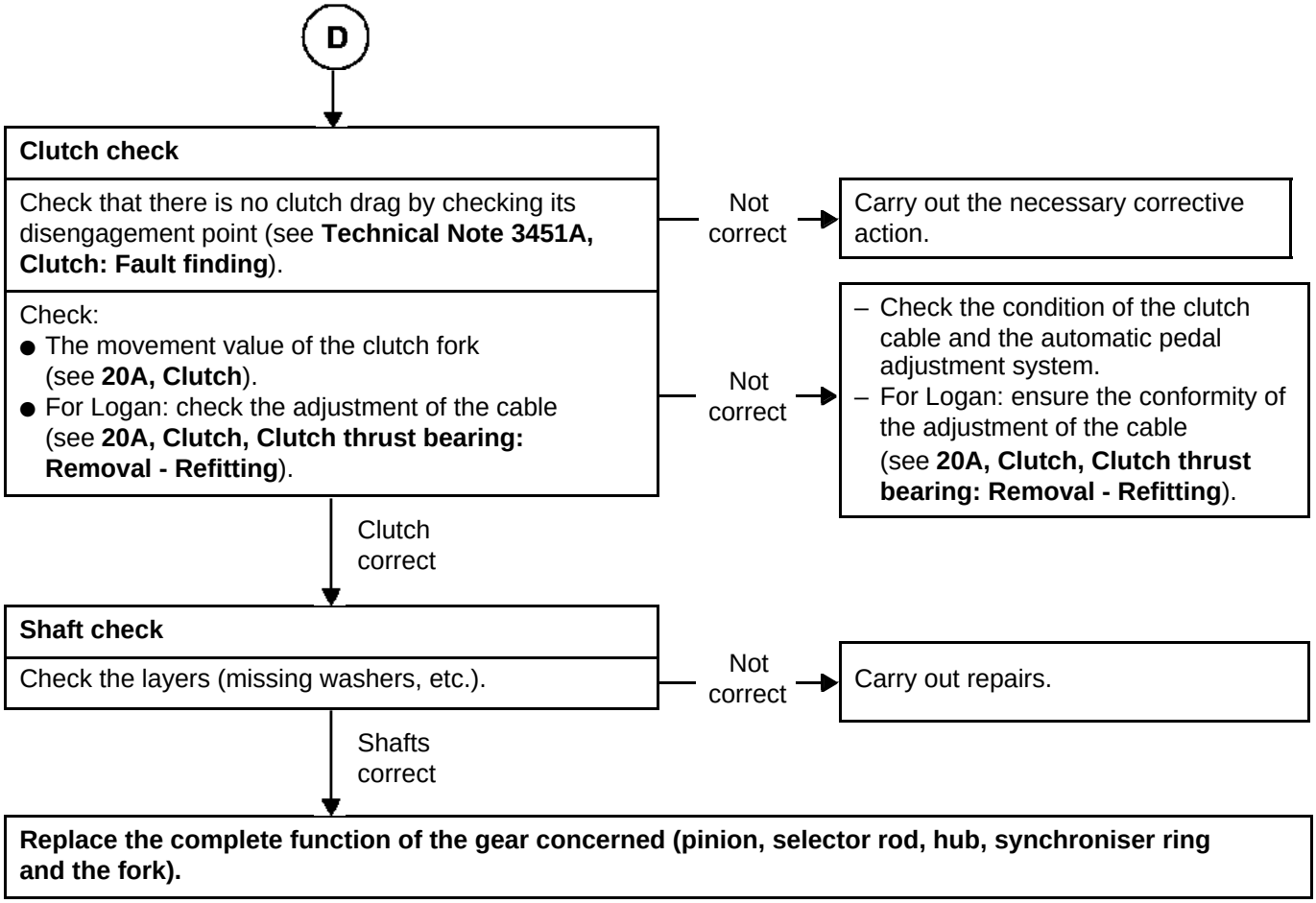
Gearbox oil check

Check the appearance of the oil:
- Oil which is dark in colour is not a fault.
- Oil which smells burnt is caused by a hot gearbox (insufficient oil level or hard use).
- The presence of bronze-coloured rings is not a fault.
- The presence of aluminium coloured particles in the oil indicates serious internal destruction of the gearbox.

Not correct →
– Drain the oil (see **21A, manual gearbox, Manual gearbox oils: Draining - Refilling**).
– If there are aluminium coloured particles in the oil, replace the gearbox.

Gearbox oil correct → D

ALP 6 CONTINUED 4	



ALP 7	**Gearbox locked or ineffective for cable operated gearboxes**

NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

Oil level check

Check the gearbox oil level before any operations.

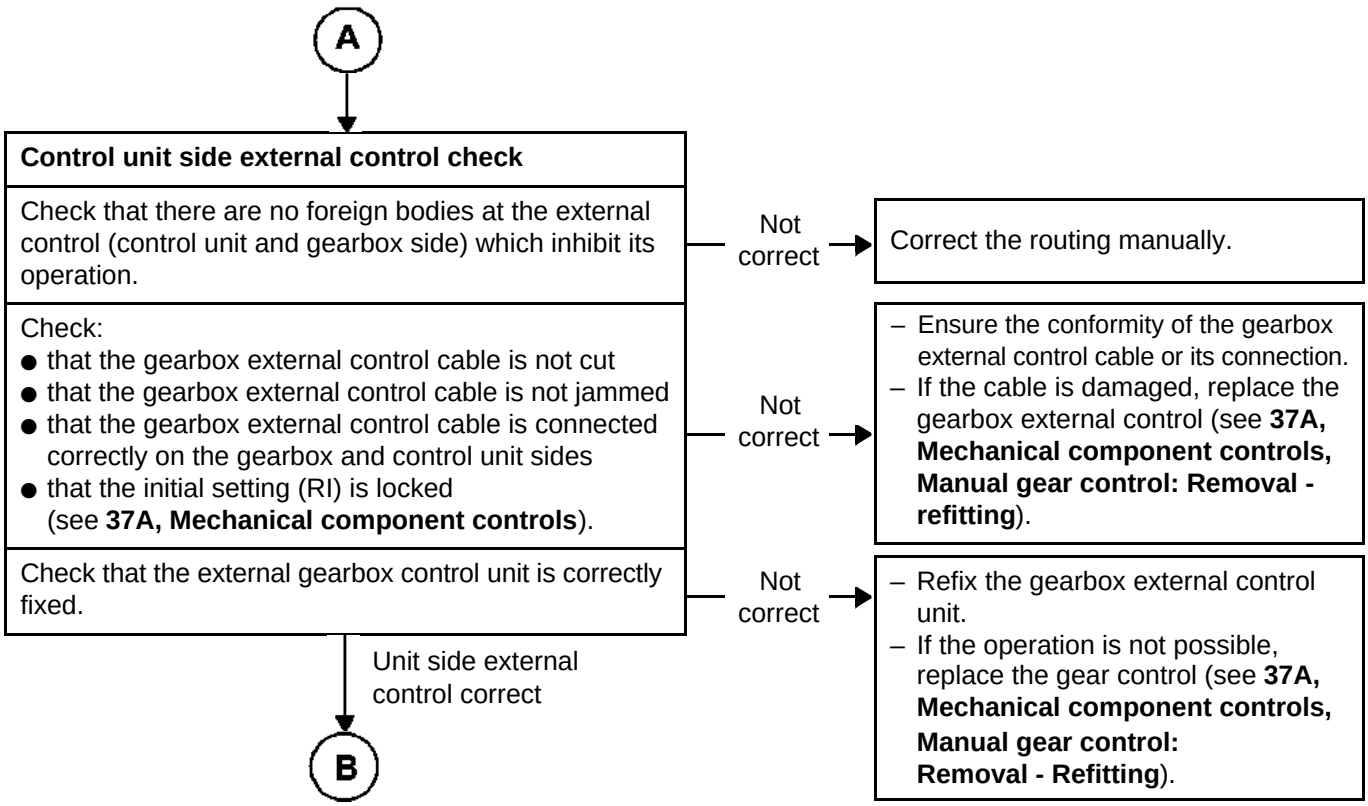
Not correct →

– If over a litre of oil is missing (0.5 l for the J range), replace the gearbox and check there are no leaks after a road test.
– If less than a litre of oil is missing (0.5 l for the J range), top up the oil (see **21A, manual gearbox, Manual gearbox oils: Draining - Refilling**).
– If the fault is still present, go on to the next step.

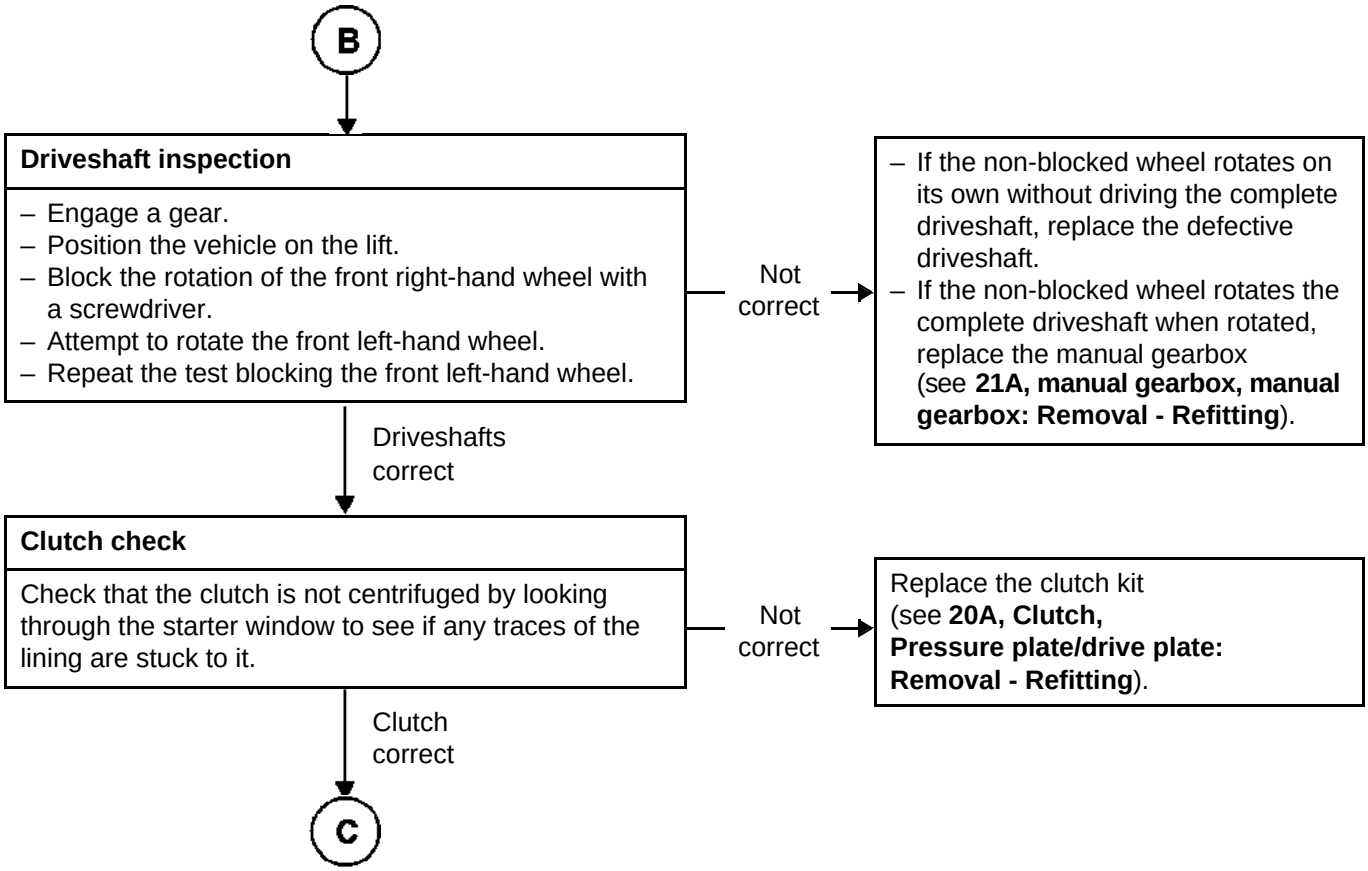
Oil level correct ↓

A

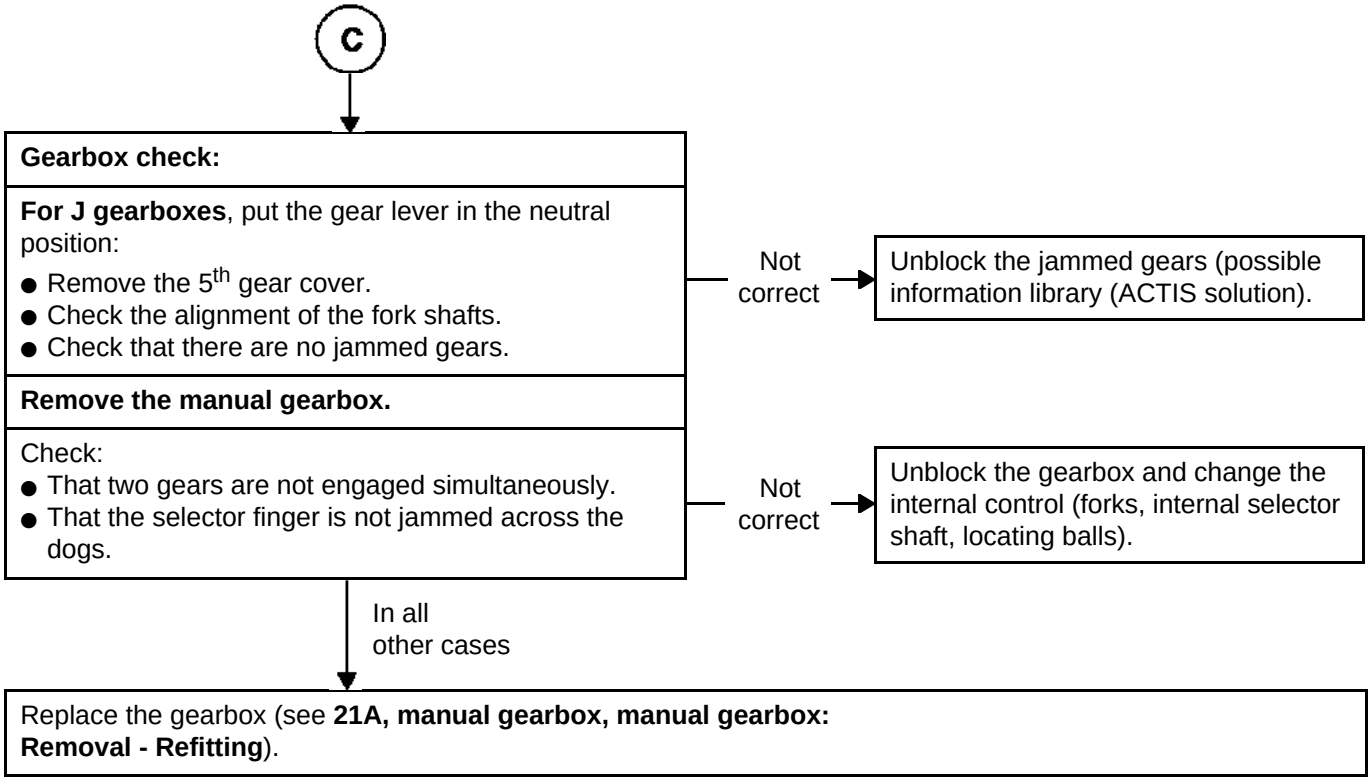
ALP 7 CONTINUED 1	



ALP 7 CONTINUED 2	



ALP 7 CONTINUED 3	



ALP 8	**Gearbox locked or ineffective for rod operated gearboxes**

NOTES	– **Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.** – **Check that the clutch pedal travel is not obstructed by the floor carpet.** – **The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.**

Oil level check

Check the gearbox oil level before any operations.

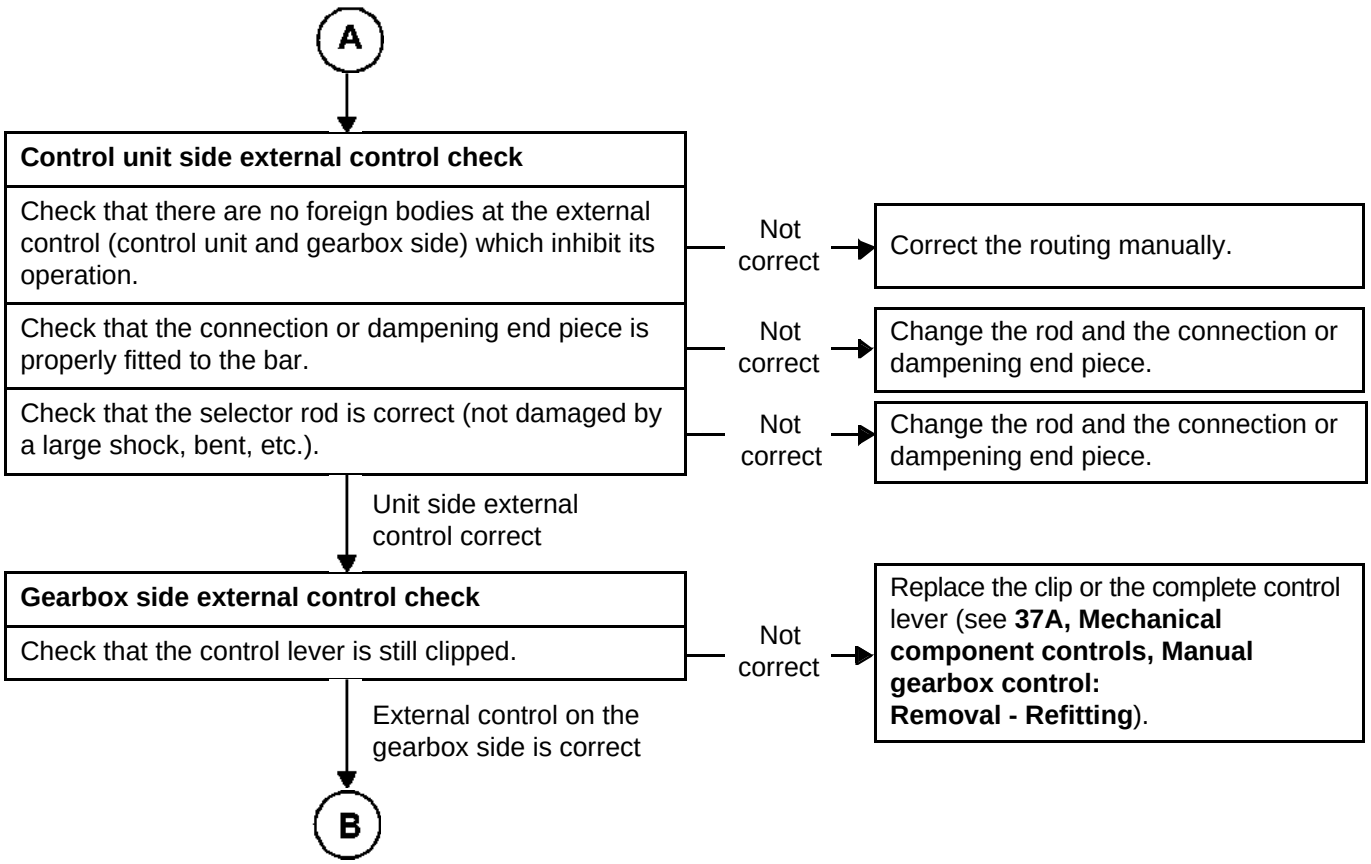
Not correct →

– If more than 0.5 l of oil is missing, replace the gearbox and check there are no leaks after a road test.
– If less than 0.5 l of oil is missing, top up the level (see **21A, manual gearbox, Manual gearbox oils: Draining - Refilling**). If the fault is still present, go on to the next step.

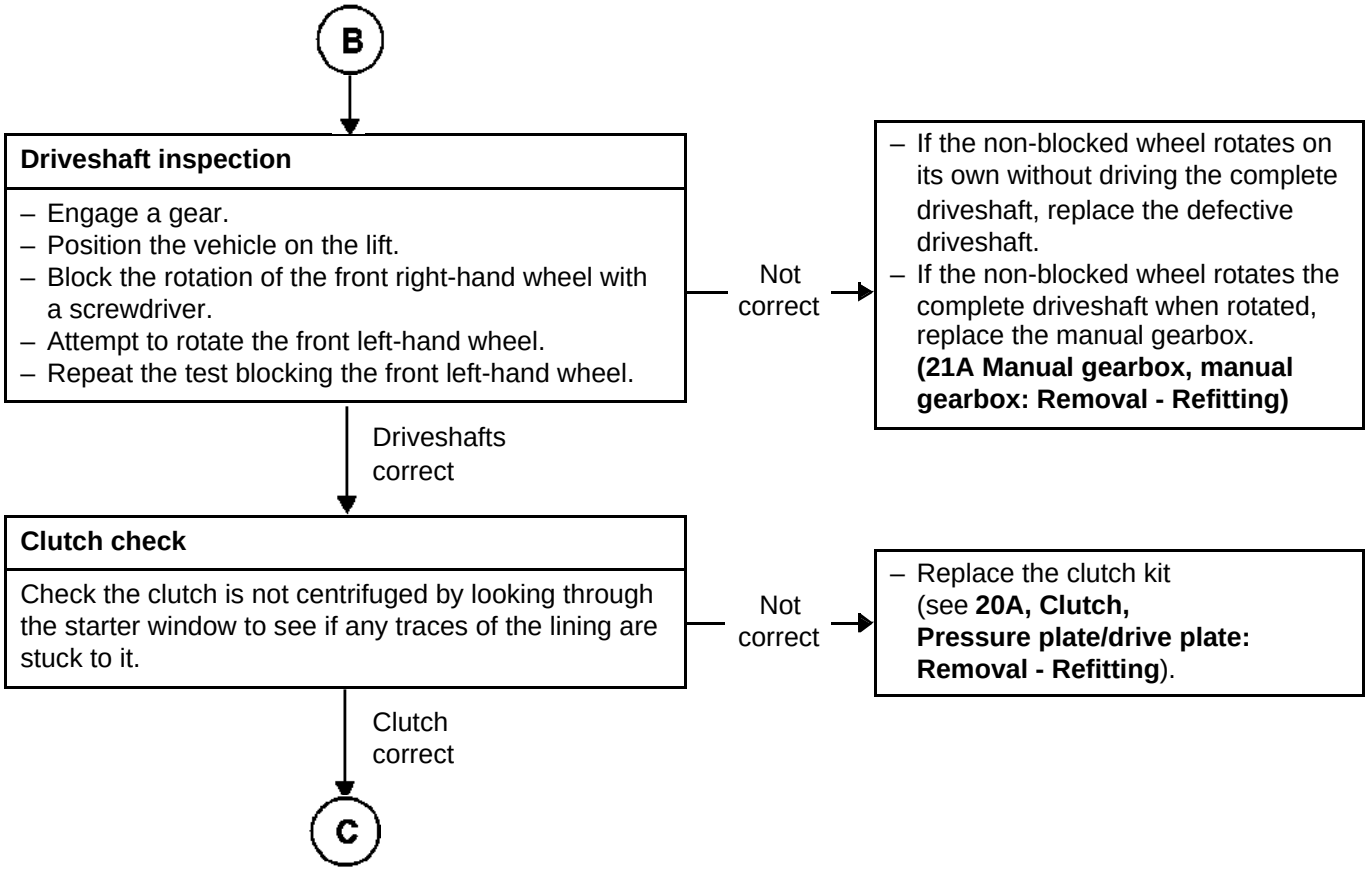
Oil level correct ↓

A

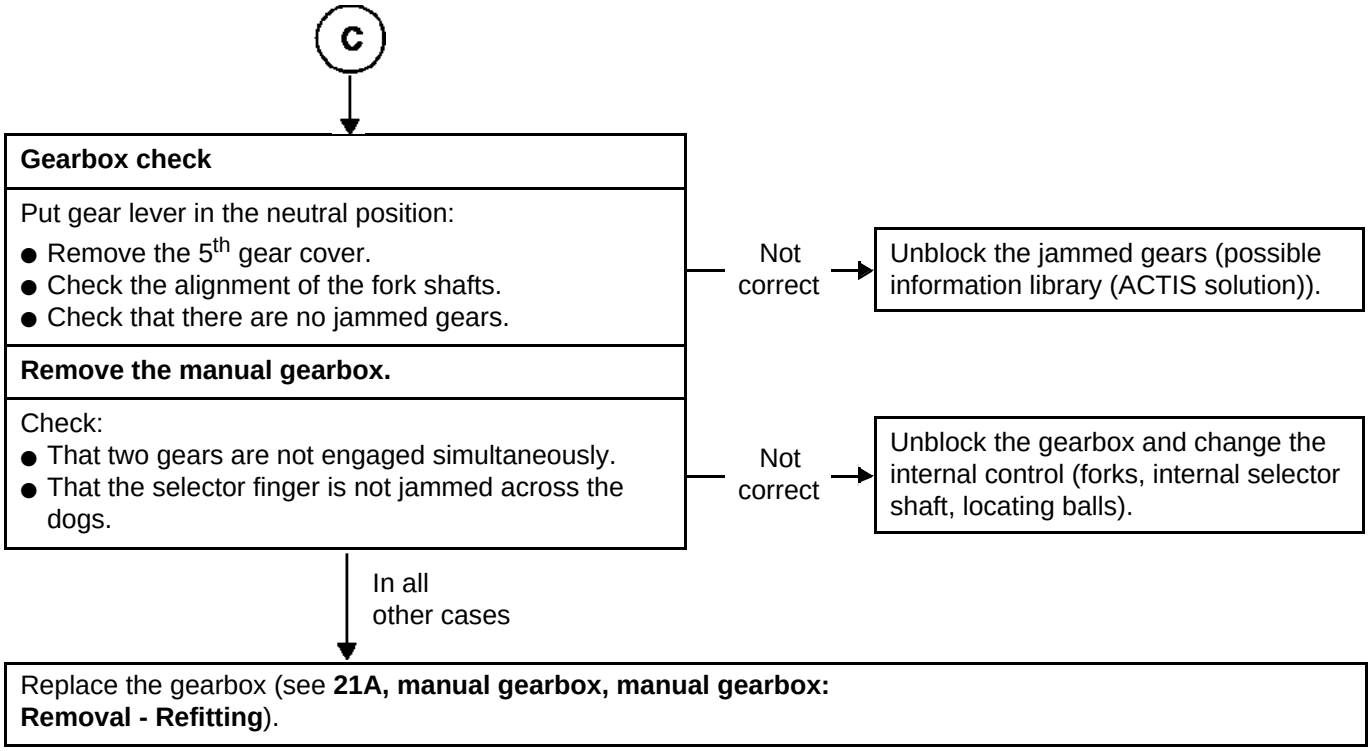
ALP 8 CONTINUED 1	



ALP 8 CONTINUED 2	



ALP 8 CONTINUED 3	



MANUALGEARBOXOIL:SPECIFICATIONS

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair** .

1. GEARBOX TYPE/OIL TYPE CORRELATIONS:

GEARBOX TYPE	TYPE OF OIL FOR GEARBOX
JBX JCX JEX JRX JHX JSX NDX TLX	TRANSELF TRJ 75W80 or TRANSELF NFJ 75W80
PKX PFX VMX NEX NGX N0X UNX	TRANSELF TRX 75W80 or TRANSELF NFP 75W80
ZFX	TRANSELF LD 75W80

Component identification:

The third character Xcorresponds to the figure written on the identification plate and therefore covers the entire manual gearbox range.

2. STANDARDS AND PART NUMBERS OF THE VARIOUS RECOMMENDED OILS:

DESIGNATION	STANDARD	PART NUMBER
TRANSELF TRX 75W80 or TRANSELF NFP 75W80	APIGL4, MIL-L-2105 C or D	7711573523 (5 litres)
TRANSELF TRJ 75W80 or TRANSELF NFJ 75W80	APIGL4, MIL-L-2105 C or D	7711226421 (1 litre)
TRANSELF LD 75W80	APIGL4, MIL-L-2105	May be ordered from ELF

3. IDENTIFICATION OF OIL FOR STANDARD EXCHANGE PK1 GEARBOXES:

Note:

For standard exchange PK1 gearboxes, the oil type (TRZ or TRP) is shown on a label.

These two oils are replaced by TRX 75W80 or NFP 75W80.

MANUAL GEARBOX OILS: DRAINING - FILLING

Note, one or more warnings are present in this procedure

Equipment required
torque wrench
oil recovery tray

WARNING

- Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

Location and specifications (tightening torques, parts always to be replaced, etc.) (see 21A, Manual gearbox, Gearbox assembly: Exploded view) .

Gearbox type	Capacity (litres)
ZF4,ZA4	2.2
ZF4 PTO	2.4

1. PARTS AND CONSUMABLES FOR THE REPAIR

- Consumables for repair:
  - Manual gearbox oil Manual gearbox oil: Specifications (Technical Note 6012A, 04A, Lubricants).

2. DRAINING OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Position the oil recovery tray under the gearbox.
- Remove the drain plug (see 21A, Manual gearbox , Gearbox assembly: Exploded view) .

- Let the oil run into the oil recovery tray.

- Refit the drain plug(see 21A, Manual gearbox , Gearbox assembly: Exploded view) using a torque wrench.

3. FILLING

- Remove the filler cap(see 21A, Manual gearbox , Gearbox assembly: Exploded view) .

- Fill the gearbox using a syringe containing recommended oilManual gearbox oil: Specifications (Technical Note 6012A, 04A, Lubricants) until the oil overflows out of the filler cap hole.

- Refit the filler cap(see 21A, Manual gearbox , Gearbox assembly: Exploded view) using a torque wrench.

- Wipe any oil run-off with a cloth.

- Remove the oil recovery tray.

MANUAL GEARBOX: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Ball joint extractor.	Tav. 476
Support for removal - refitting of engine - gearbox assembly	Mot. 1390
Adapter for engine support tool Mot.1390.	Mot. 1709

Equipment required
safety strap(s)
oil recovery tray

WARNING

- Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

Location and specifications (tightening torques, parts always to be replaced, etc.) (see 21A, Manual gearbox, Gearbox assembly: Exploded view) .

WARNING

To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Remove:

- the engine undertray,
- the front wheelsWheel: Removal - Refitting (35A, Wheels and tyres),
- the longitudinal driveshaftPropshaft: Removal - Refitting ,
- the exhaust silencer(19B, Exhaust).

M9T, 690 696 698(690 OR 696 OR 698)

- Remove the particle filter(see **Exhaust assembly under body: Exploded view**) (19B, Exhaust).

M9T, 686 692 694(686 OR 692 OR 694)

- Remove the catalytic converter(see **Exhaust assembly under body: Exploded view**) (19B, Exhaust).

- Remove the subframeFront axle subframe: Removal - Refitting (31A, Front axle components).

- Fit a oil recovery trayunder the power-assisted steering pipes of the steering box.

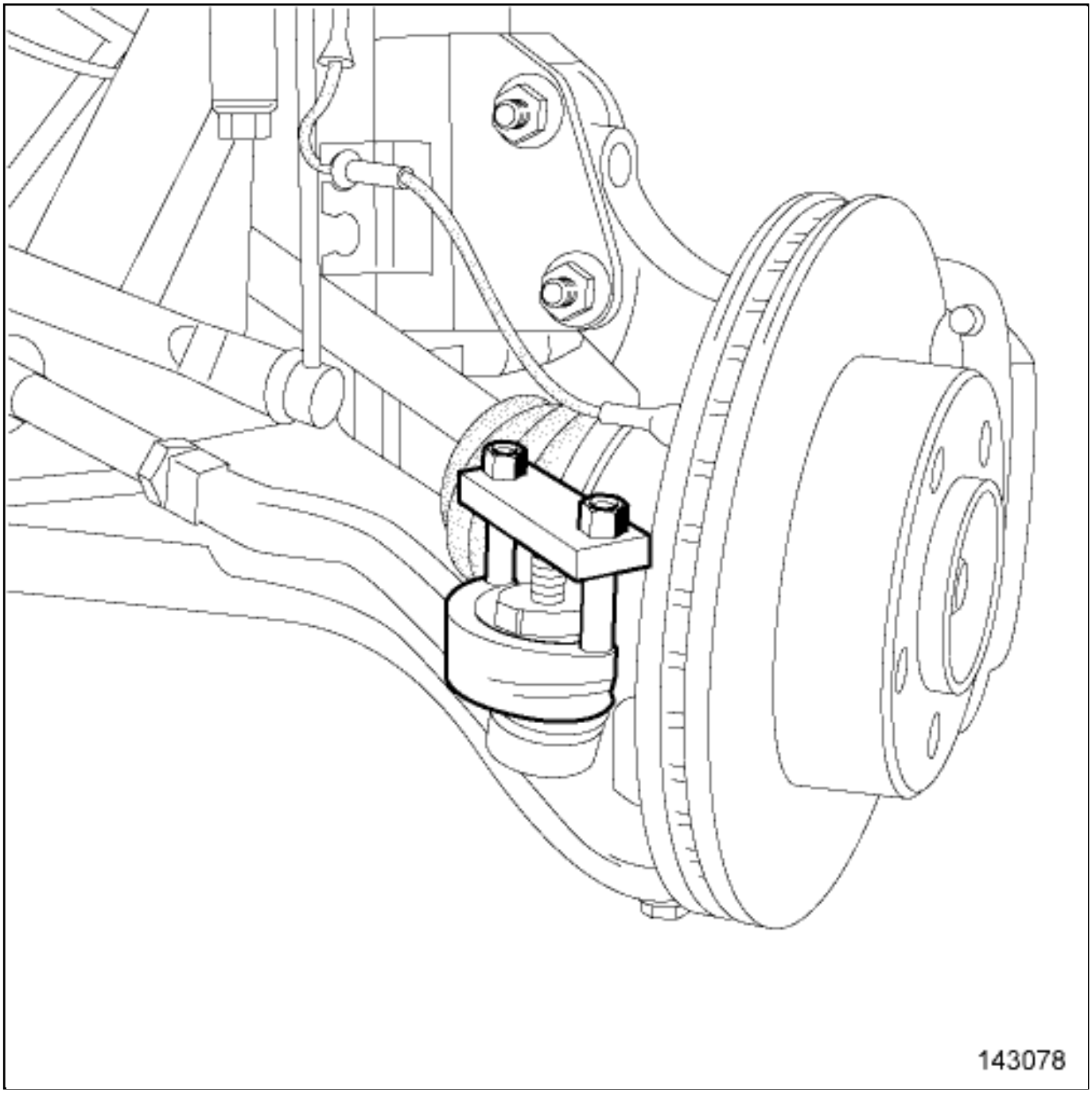
- Remove the power-assisted steering pipe bracket bolt on the steering boxPower-assisted steering assembly: Exploded view (36B, Power-assisted steering).

- Disconnect the power-assisted steering pipes.

- Insert the blanking plugs.

- Remove the universal joint boltPower-assisted steering assembly: Exploded view (36B, Power-assisted steering).

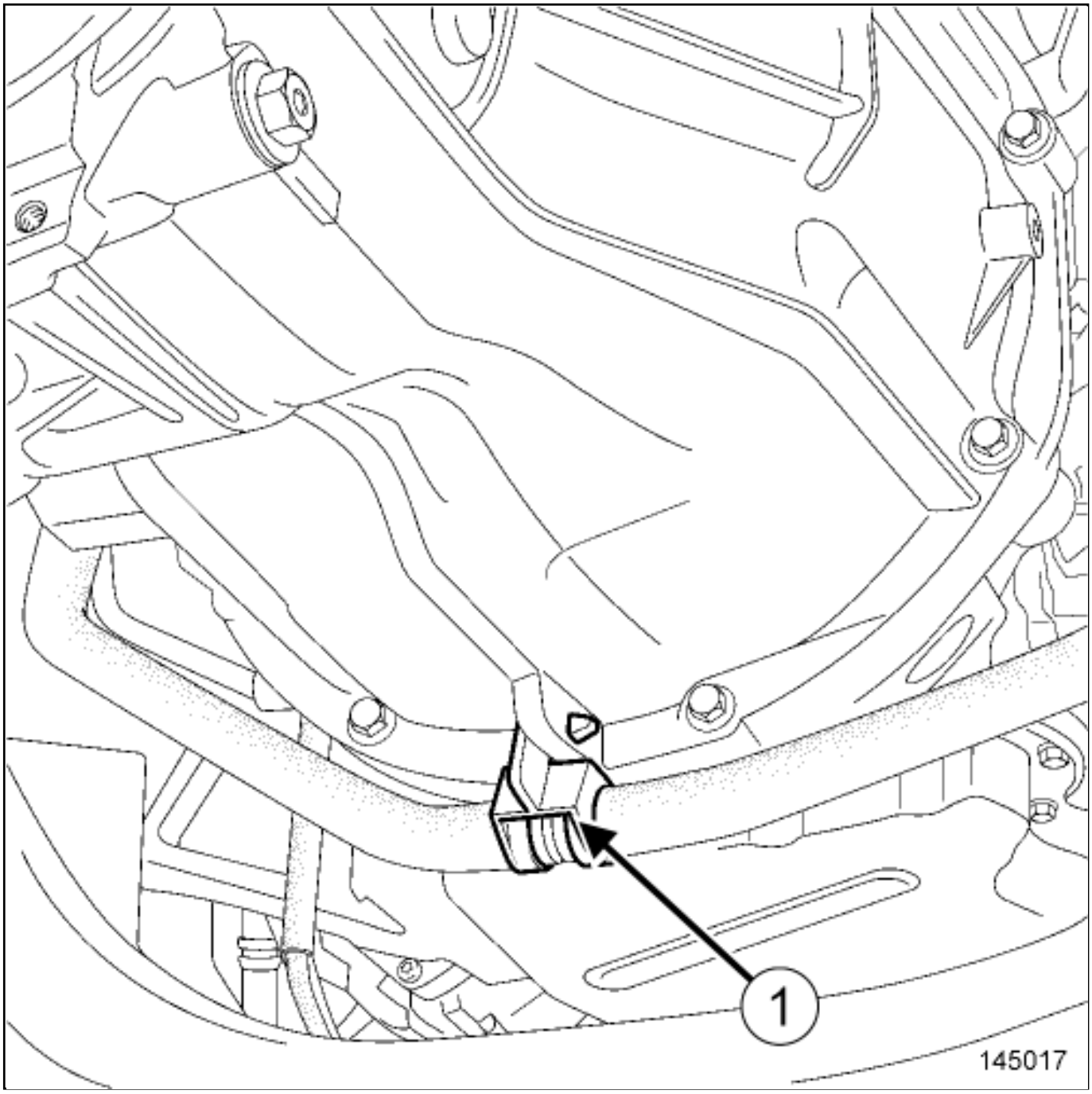
- Remove the nuts from the track rod endsSteering assembly: Exploded view (36B, Power-assisted steering).



- Extract the track rod ends using the toolBall joint extractor.(Tav. 476) .

- Remove:
  - the safety strap(s)from the steering box,
  - the steering box.

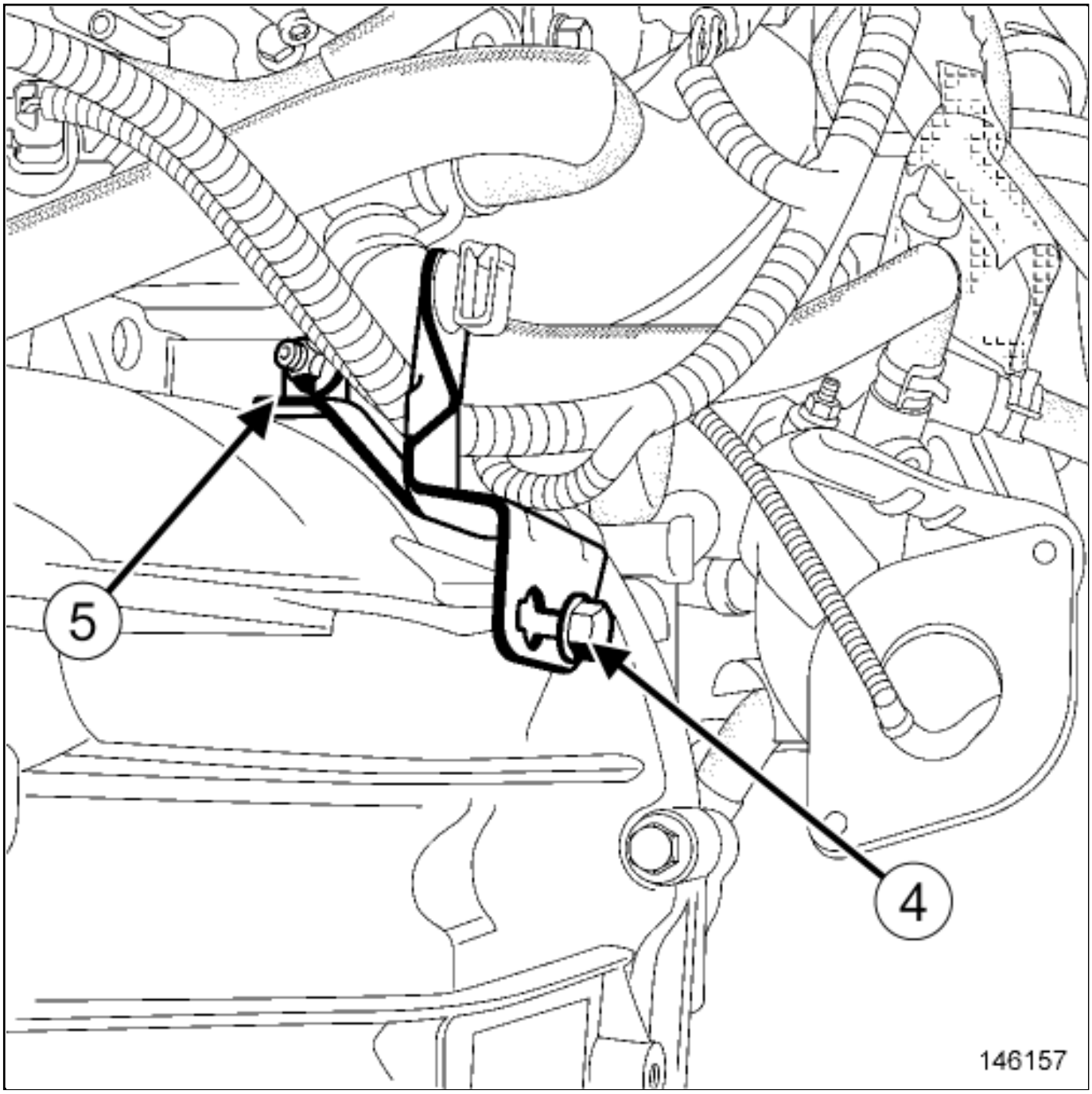
- Unclip Gear control assembly: Exploded view (37A, Mechanical component controls):
  - the gear control cables from the selector ball joints using an open-jawed spanner,
  - the gear control cables from their support.



- Unclip the gearbox coolant pipe(1) .

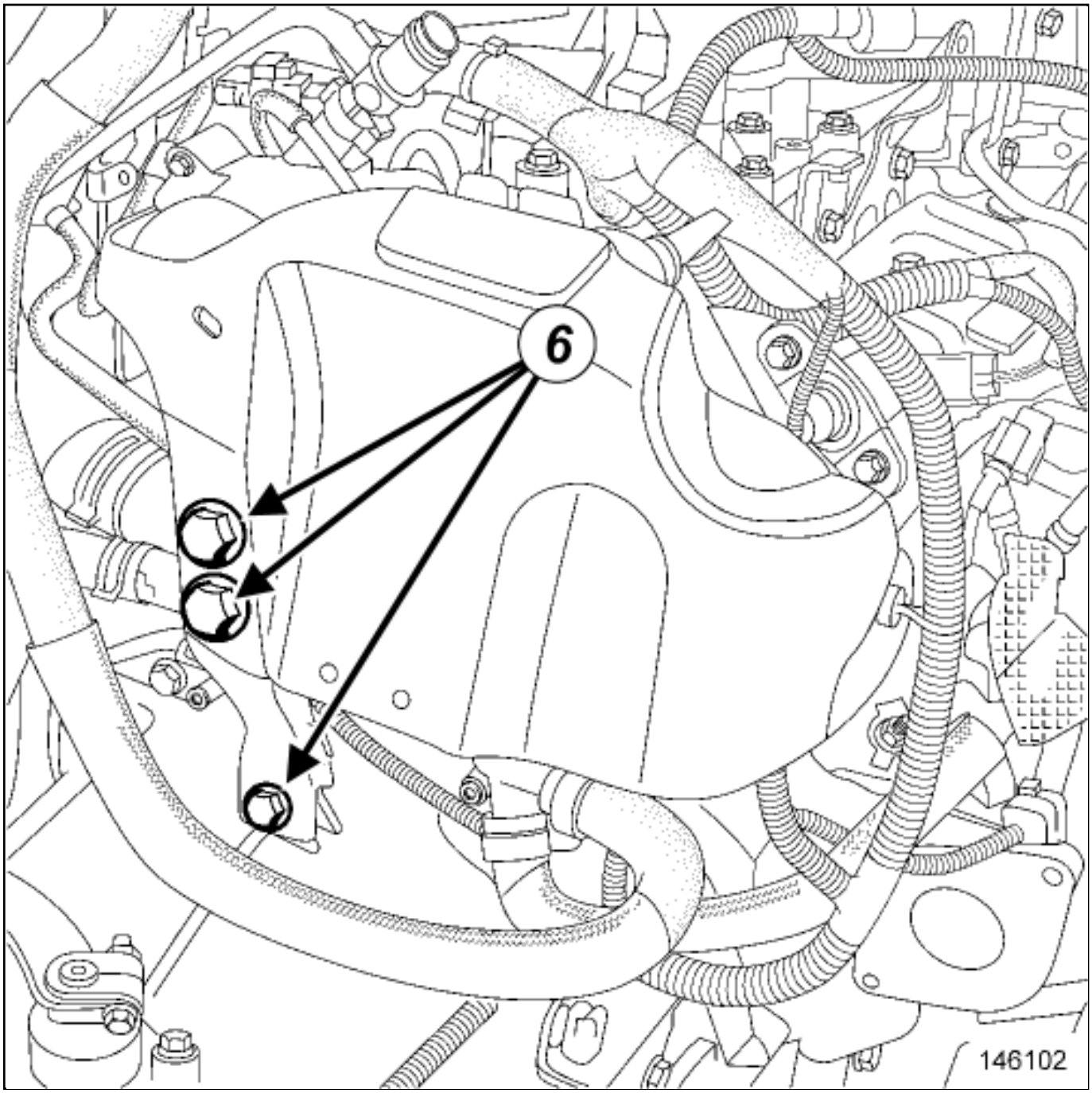
- Remove the starter[Cylinder block assembly: Exploded view](10A, Engine and cylinder block assembly).

- Remove the bolts from the clutch slave cylinder support[(see 21A, Manual gearbox , Gearbox assembly: Exploded view)] .



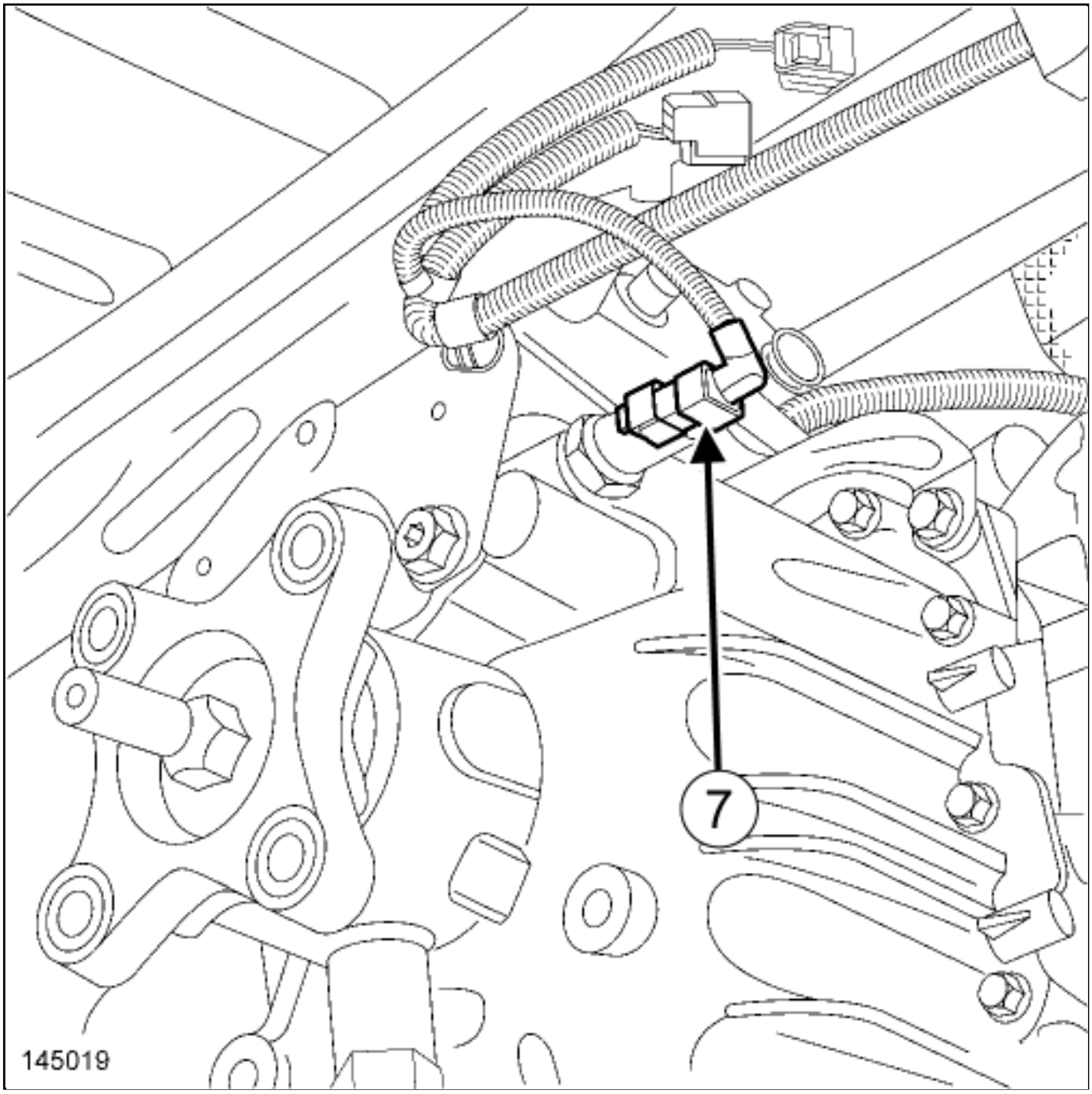
Remove:

- the bolt(4) of the wiring support,
- the nut(5) of the wiring support,
- the wiring support.

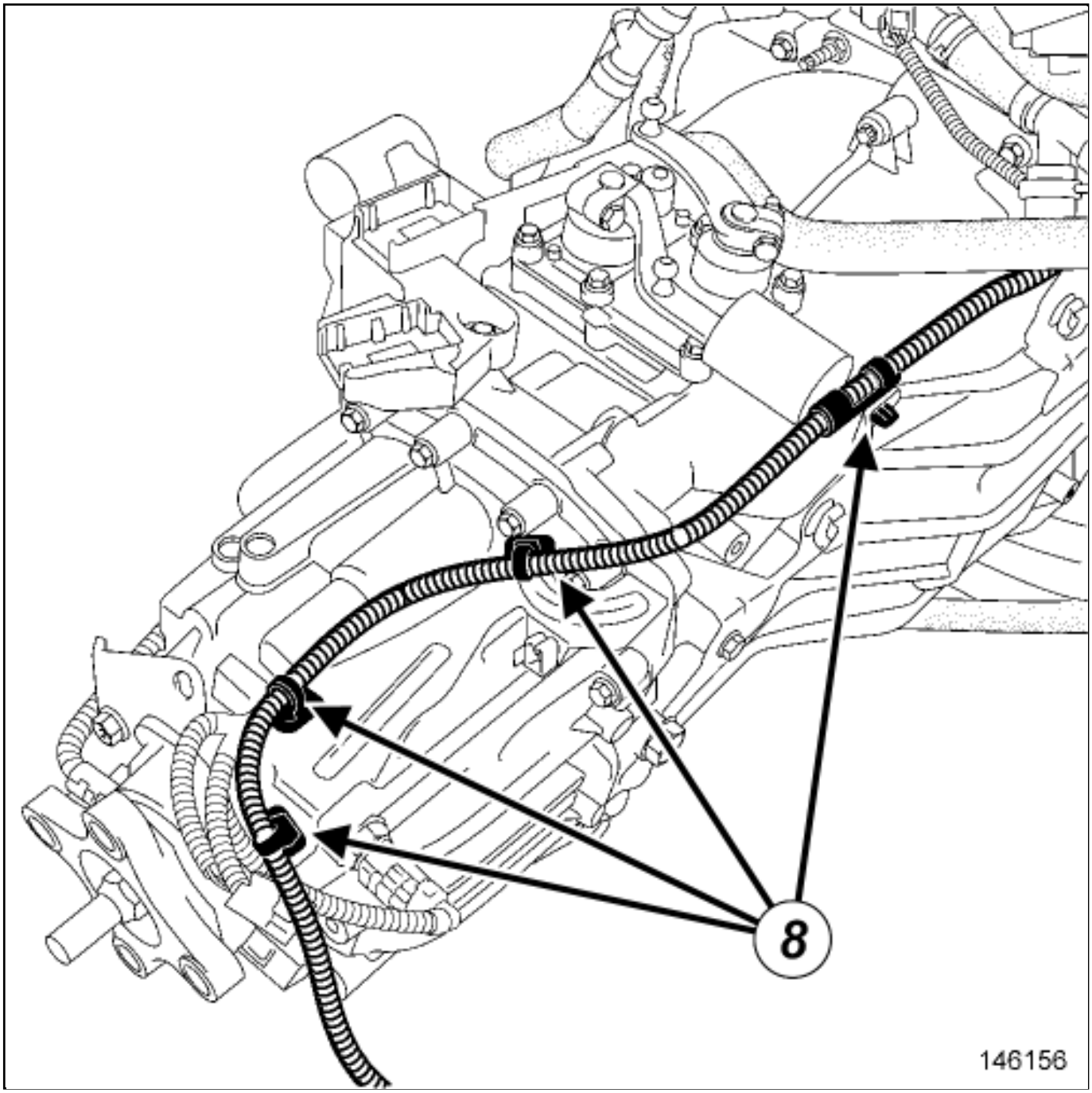


Remove:

- the bolts(**6**) of the high pressure pump protector tie-rod,
- the tie-rod of the high pressure pump protector.

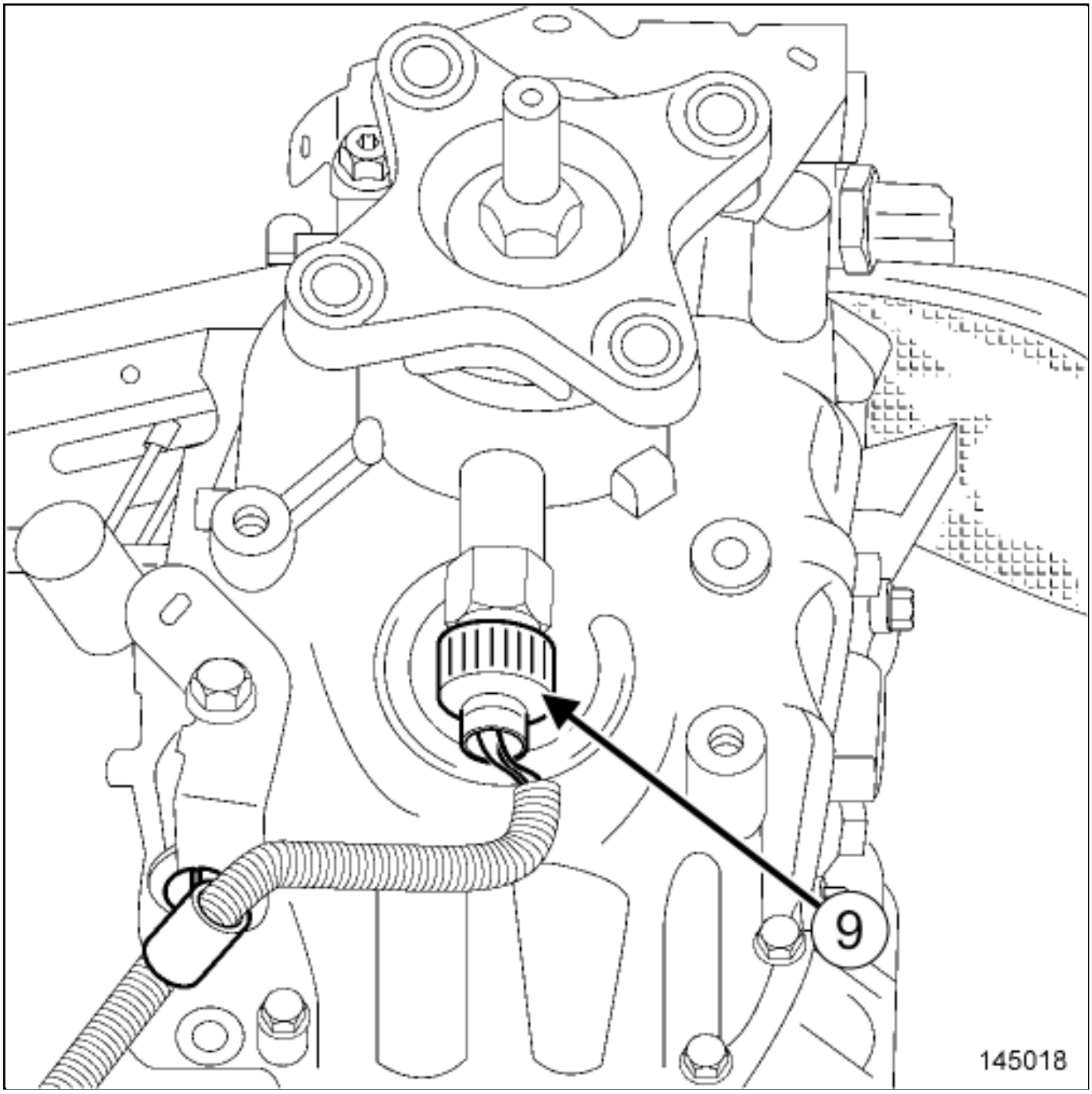


- Disconnect the reverse gear switch(7) .



- Unclip the wiring from the gearbox at(8) .

IF FITTED

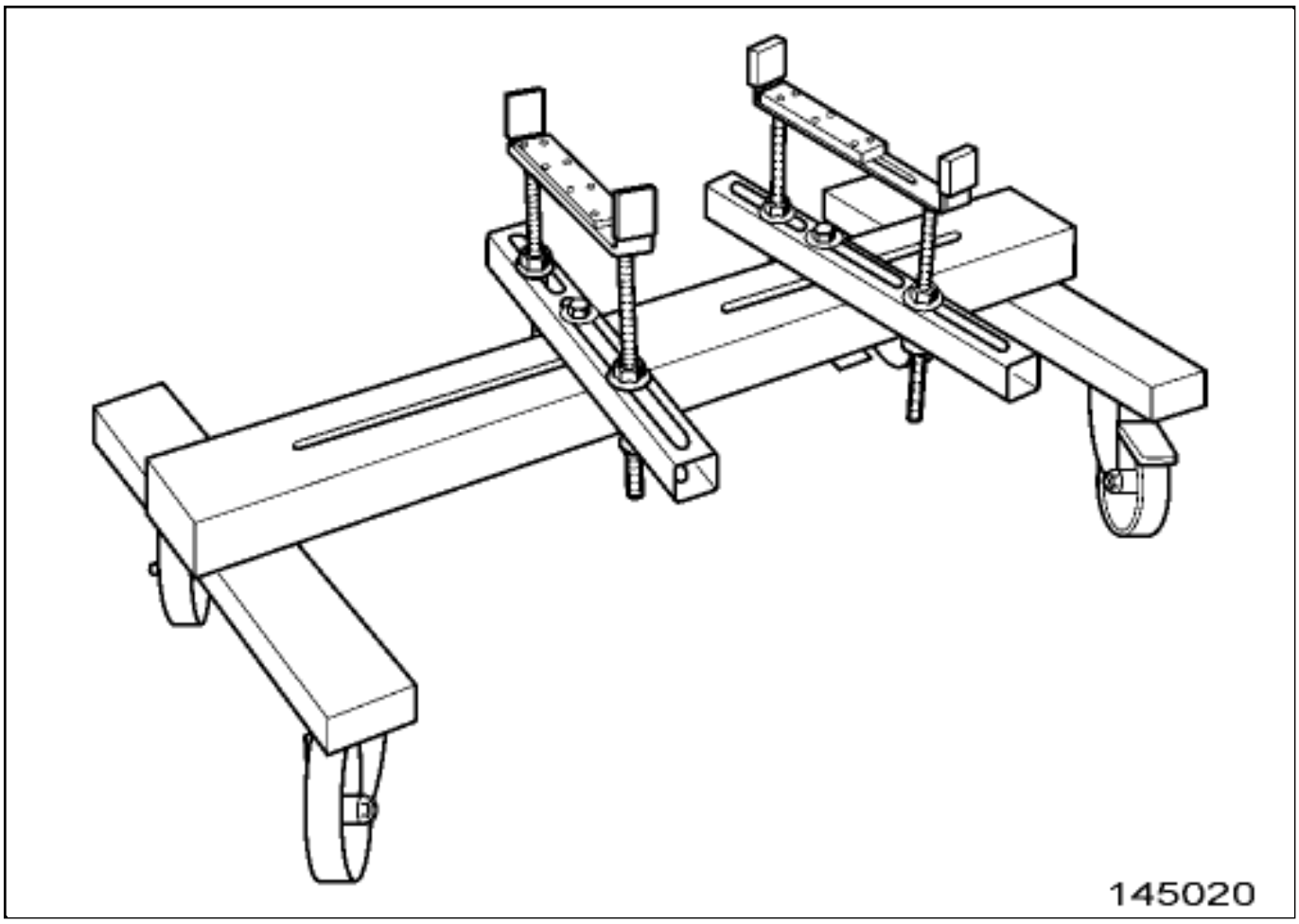


Disconnect the speed sensor(9) .

Unclip the speed sensor wiring.

2. REMOVAL OPERATION

Remove the upper bolts of the gearbox(see 21A, Manual gearbox , Gearbox assembly: Exploded view) .



Fit the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) under the gearbox.

Using a safety strap(s), strap the gearbox on theSupport for removal - refitting of engine - gearbox assembly (Mot. 1390) .

Remove the safety strap(s) from the gearbox.

Remove (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :

- the gearbox lower bolts,
- the gearbox.

Remove the clutch thrust bearing[Clutch assembly: Exploded view] .

If replacing the gearbox, remove[(see 21A, Manual gearbox , Gearbox assembly: Exploded view)] :

- the reverse gear switch,
- the speed sensor.

REFITTING

1. REFITTING PREPARATION OPERATION

If replacing the gearbox, refit[(see 21A, Manual gearbox , Gearbox assembly: Exploded view)] :

- the reverse gear switch,
- the speed sensor.

Proceed in the reverse order to removal.

Note:

Before refit the clutch actuator module[Clutch assembly: Exploded view] , check that the clutch thrust bearing is fitted well.

XSL version : 3.02 du 22/07/11

MANUAL GEARBOX: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Ball joint extractor.	Tav. 476
Support for removal - refitting of engine - gearbox assembly	Mot. 1390
Adapter for engine support tool Mot.1390.	Mot. 1709

Equipment required
safety strap(s)
oil recovery tray

WARNING

- Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

Location and specifications (tightening torques, parts always to be replaced, etc.) (see 21A, Manual gearbox, Gearbox assembly: Exploded view) .

WARNING

To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Remove:

- the engine undertray,
- the front wheelsWheel: Removal - Refitting (35A, Wheels and tyres),
- the longitudinal driveshaftPropshaft: Removal - Refitting ,
- the exhaust silencer(19B, Exhaust).

M9T, 690 696 698(690 OR 696 OR 698)

- Remove the particle filter(see **Exhaust assembly under body: Exploded view**) (19B, Exhaust).

M9T, 686 692 694(686 OR 692 OR 694)

- Remove the catalytic converter(see **Exhaust assembly under body: Exploded view**) (19B, Exhaust).

- Remove the subframeFront axle subframe: Removal - Refitting (31A, Front axle components).

- Fit a oil recovery trayunder the power-assisted steering pipes of the steering box.

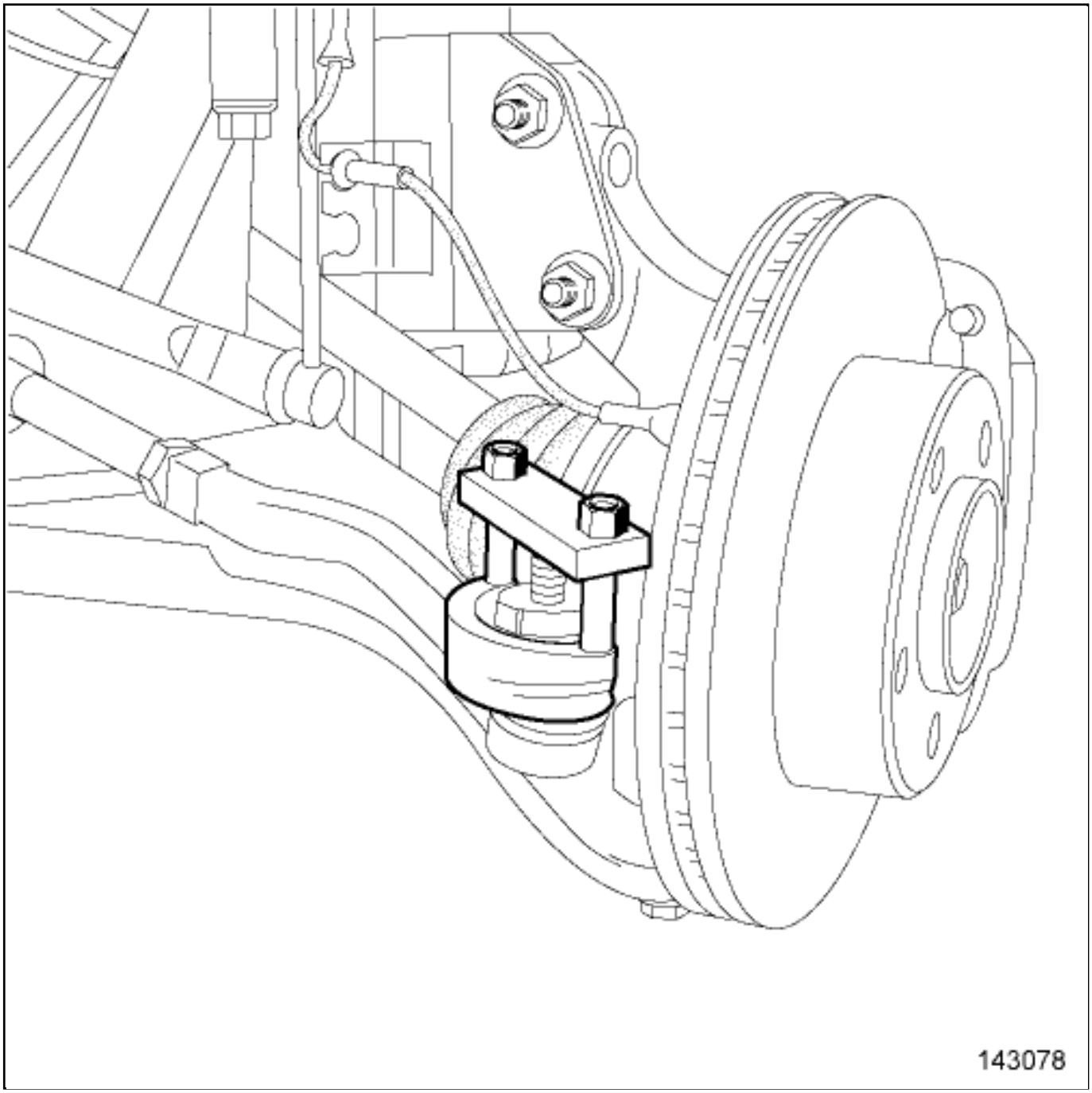
- Remove the power-assisted steering pipe bracket bolt on the steering boxPower-assisted steering assembly: Exploded view (36B, Power-assisted steering).

- Disconnect the power-assisted steering pipes.

- Insert the blanking plugs.

- Remove the universal joint boltPower-assisted steering assembly: Exploded view (36B, Power-assisted steering).

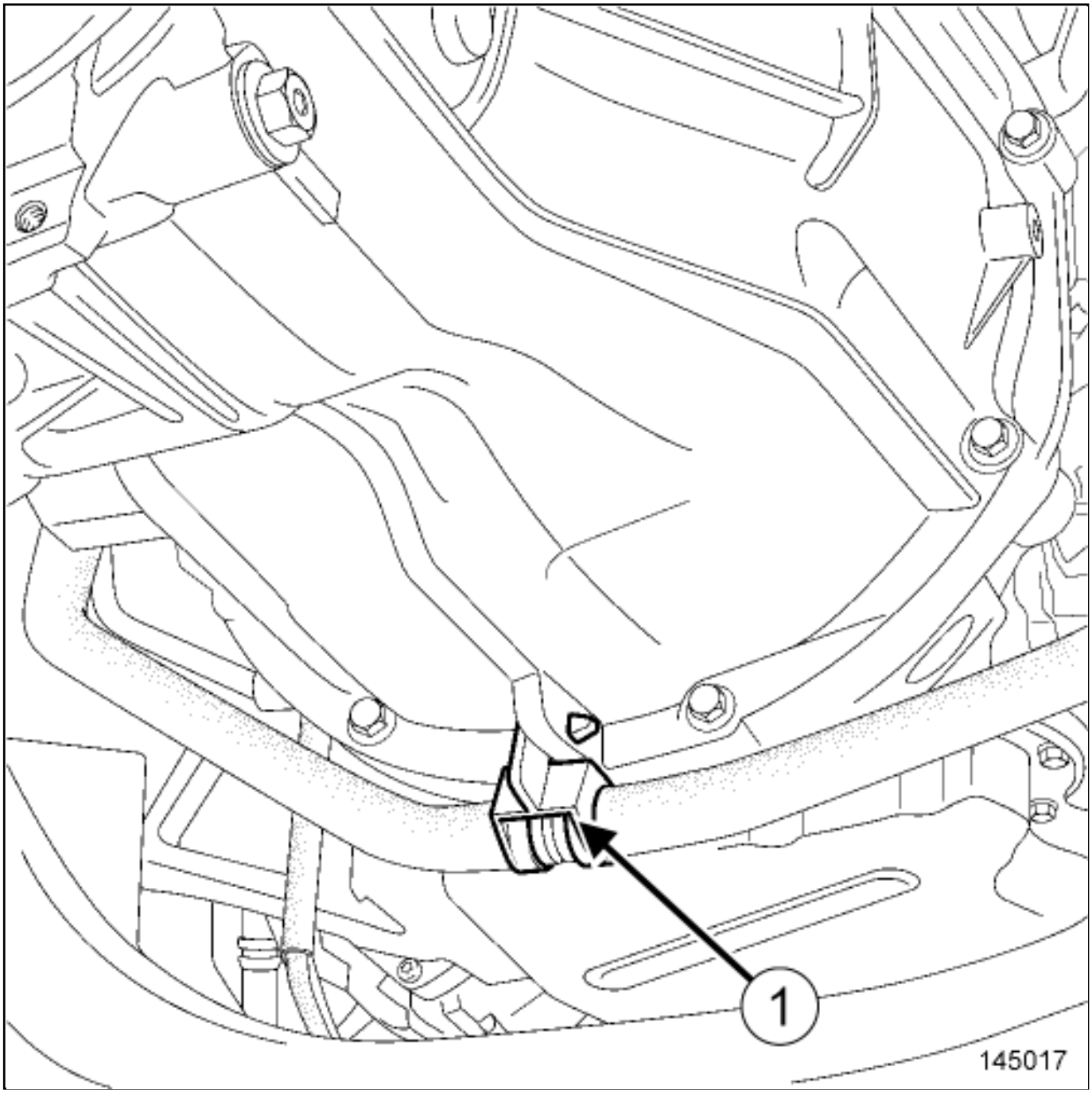
- Remove the nuts from the track rod endsSteering assembly: Exploded view (36B, Power-assisted steering).



- Extract the track rod ends using the toolBall joint extractor.(Tav. 476) .

- Remove:
  - the safety strap(s)from the steering box,
  - the steering box.

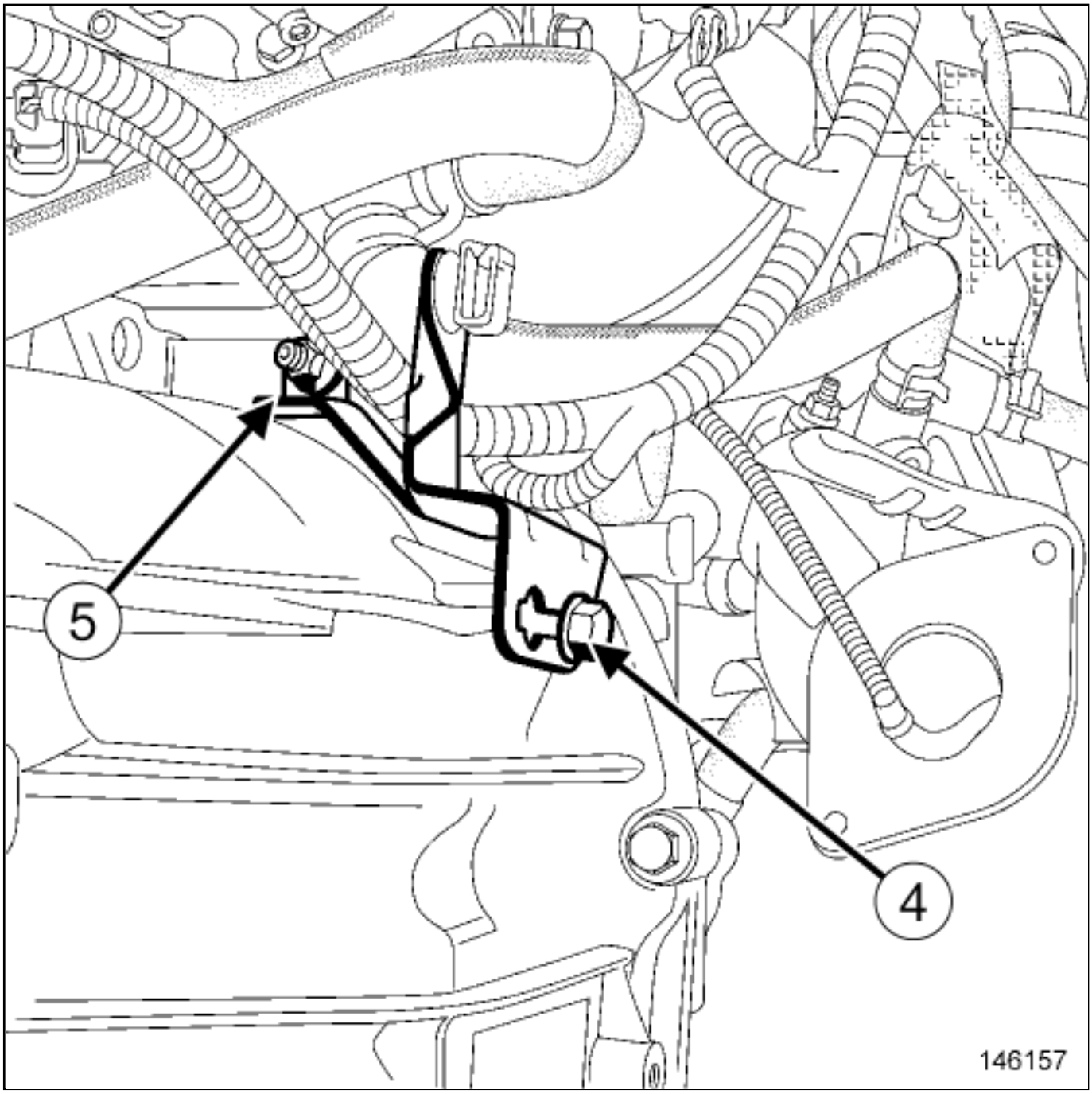
- Unclip Gear control assembly: Exploded view (37A, Mechanical component controls):
  - the gear control cables from the selector ball joints using an open-jawed spanner,
  - the gear control cables from their support.



- Unclip the gearbox coolant pipe(1) .

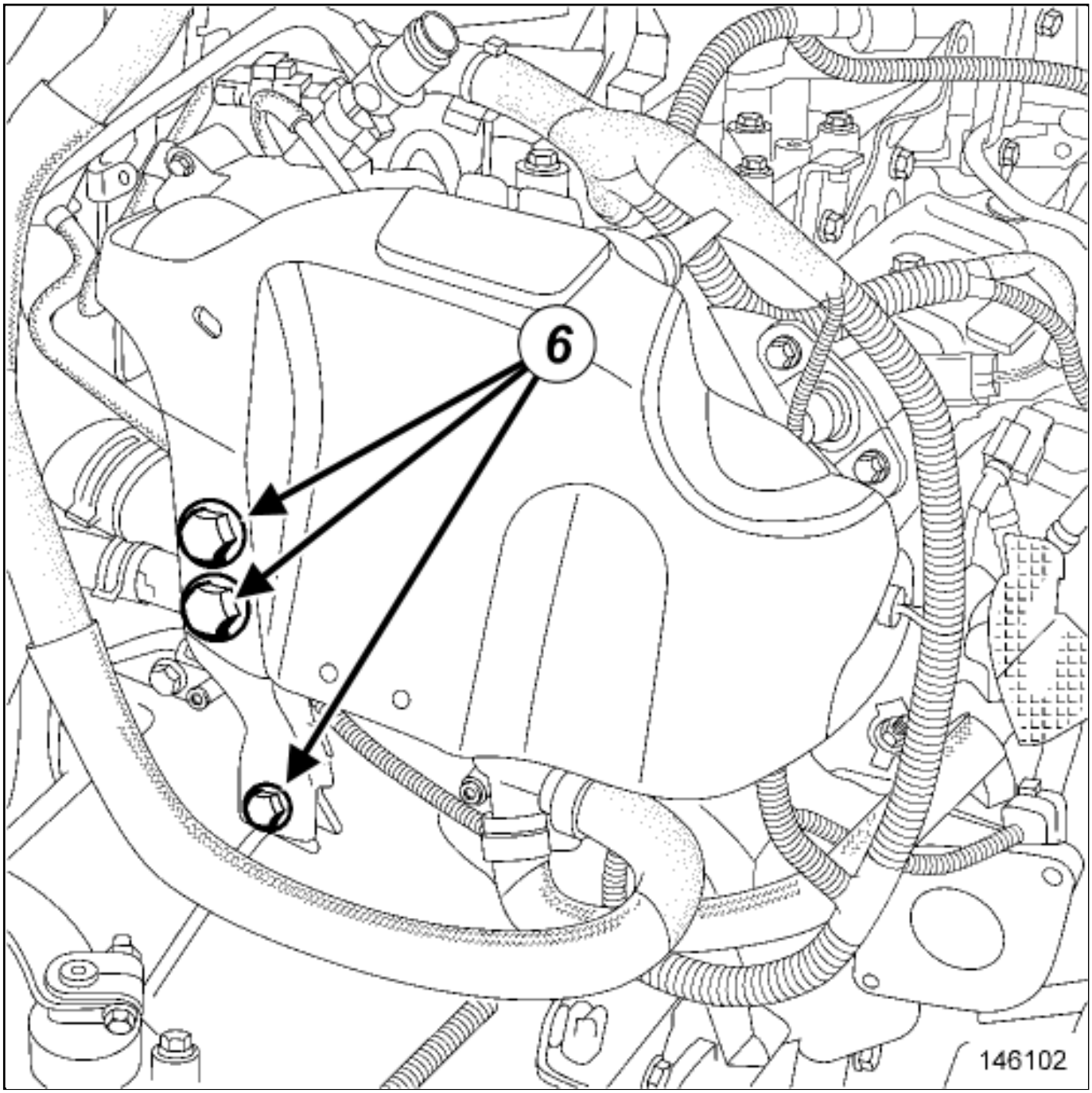
- Remove the starter[Cylinder block assembly: Exploded view](10A, Engine and cylinder block assembly).

- Remove the bolts from the clutch slave cylinder support[(see 21A, Manual gearbox , Gearbox assembly: Exploded view)] .



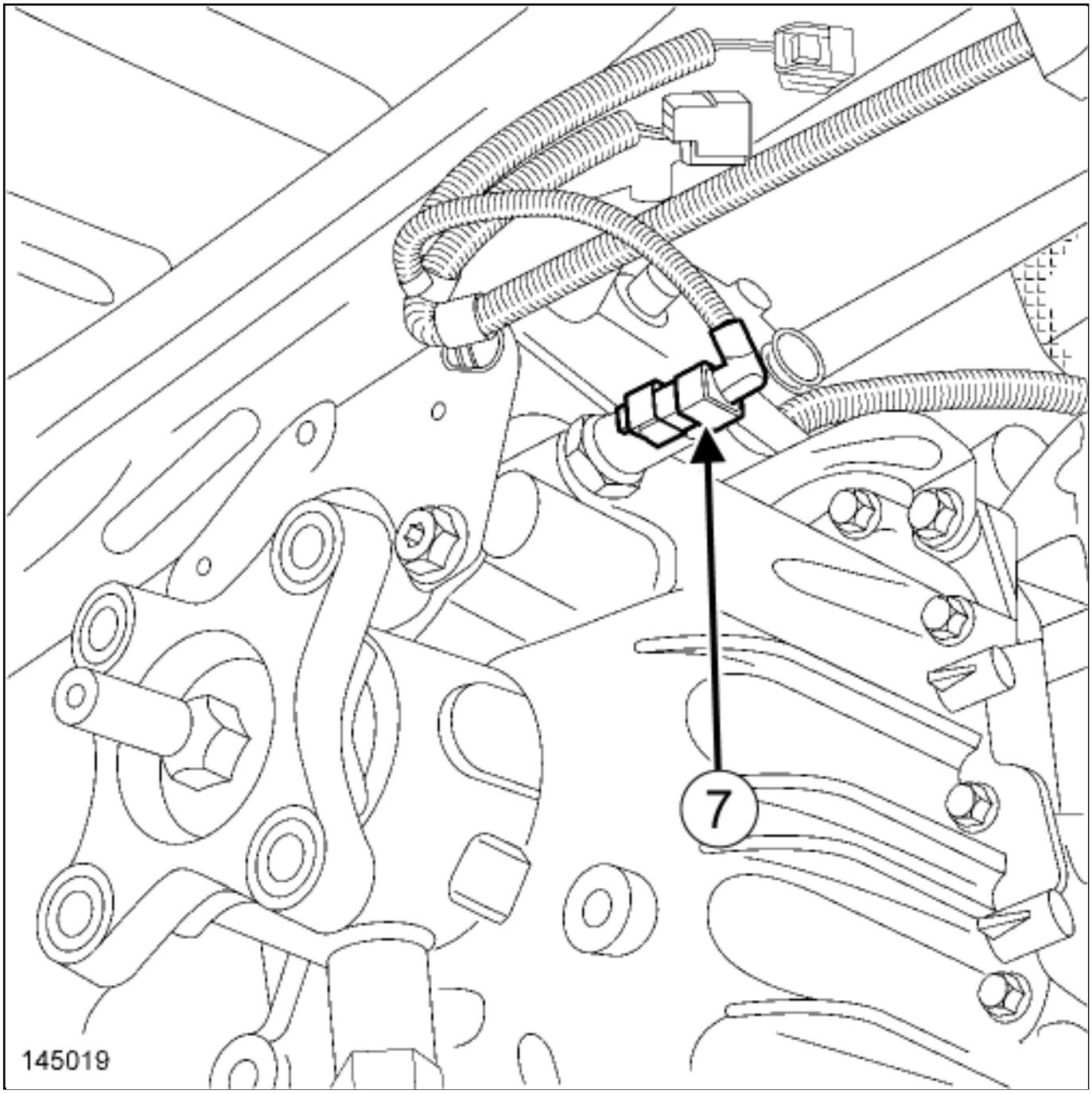
Remove:

- the bolt(4) of the wiring support,
- the nut(5) of the wiring support,
- the wiring support.

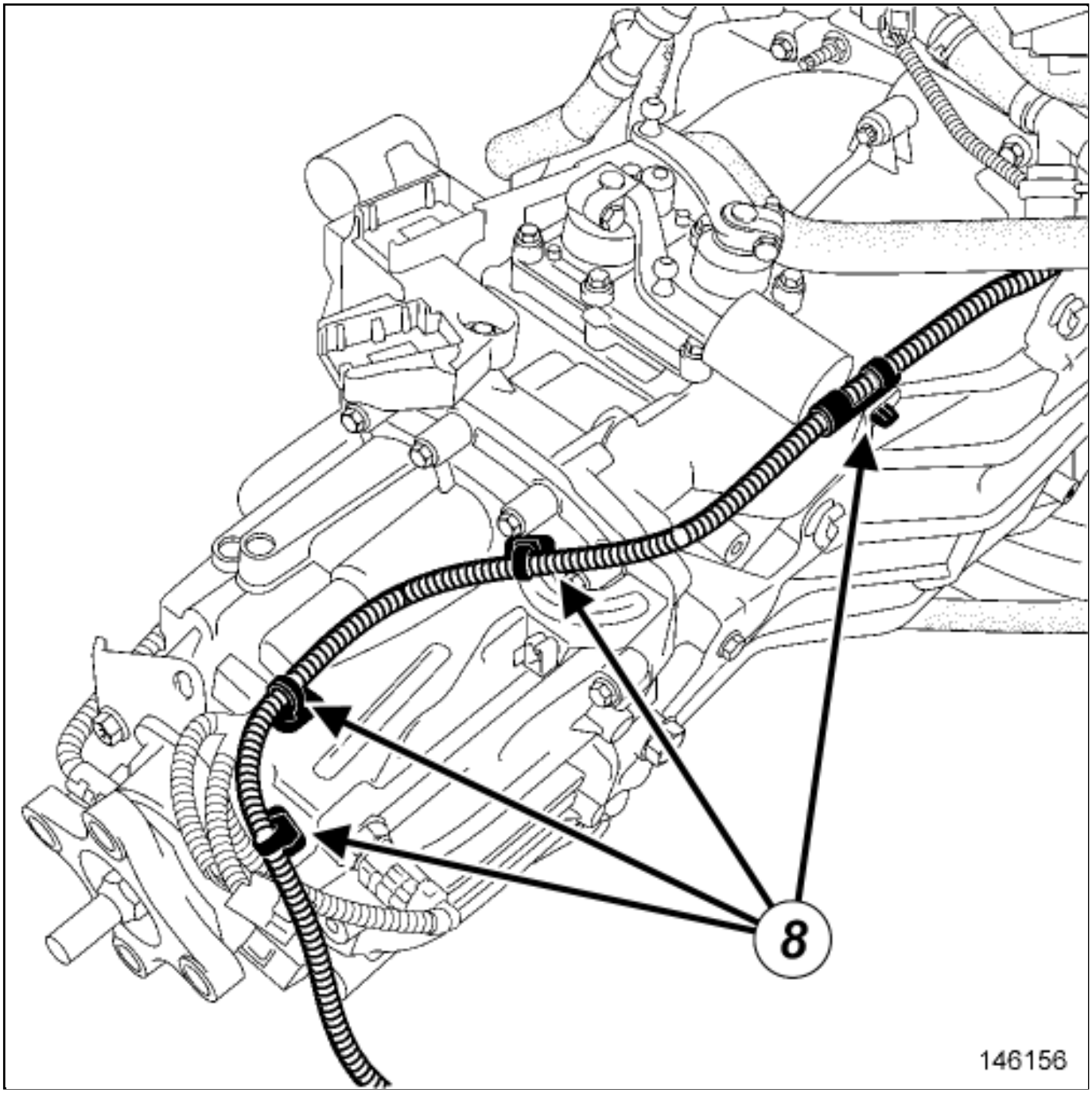


Remove:

- the bolts(**6**) of the high pressure pump protector tie-rod,
- the tie-rod of the high pressure pump protector.

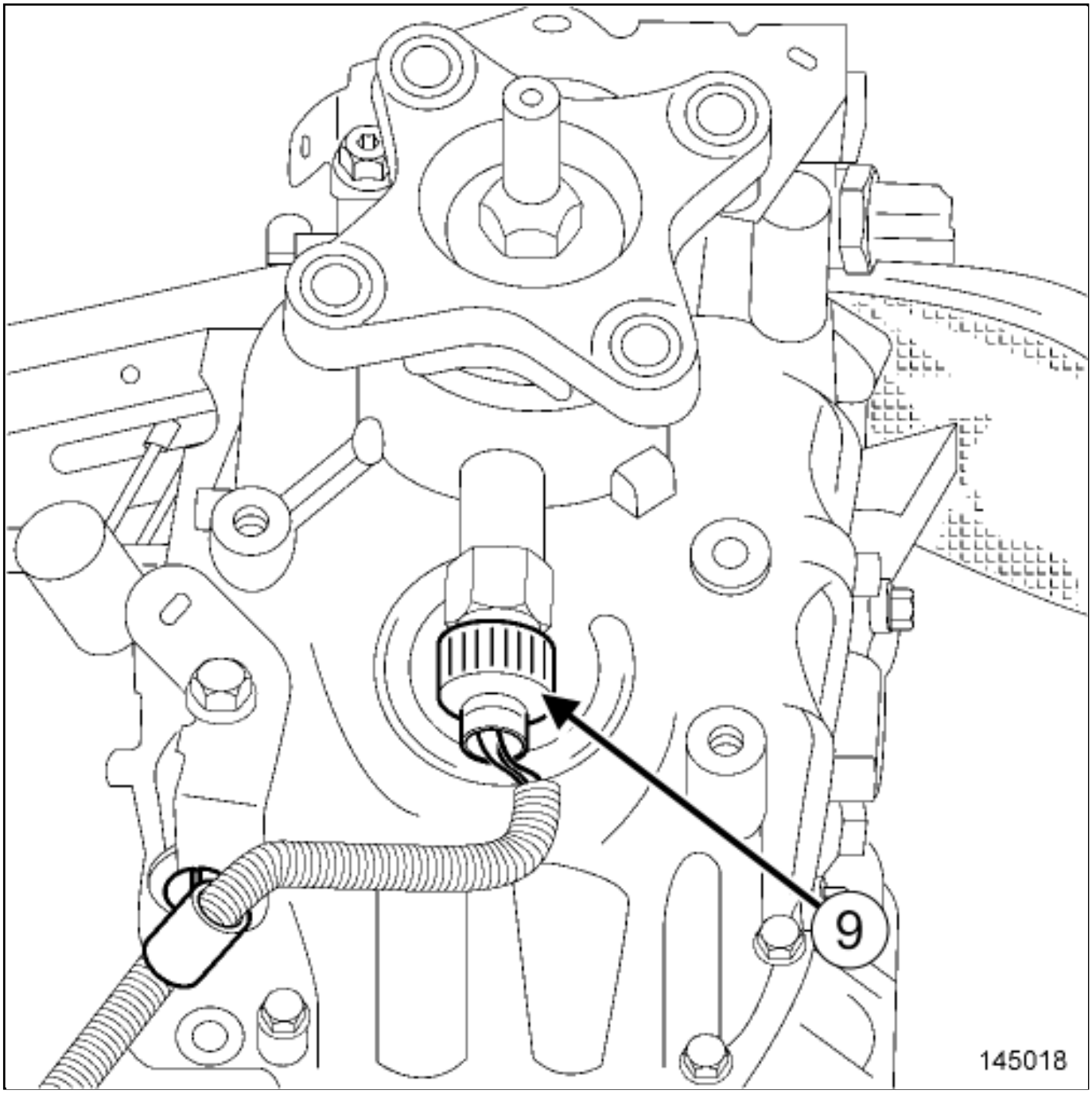


- Disconnect the reverse gear switch(7) .



- Unclip the wiring from the gearbox at(8) .

IF FITTED

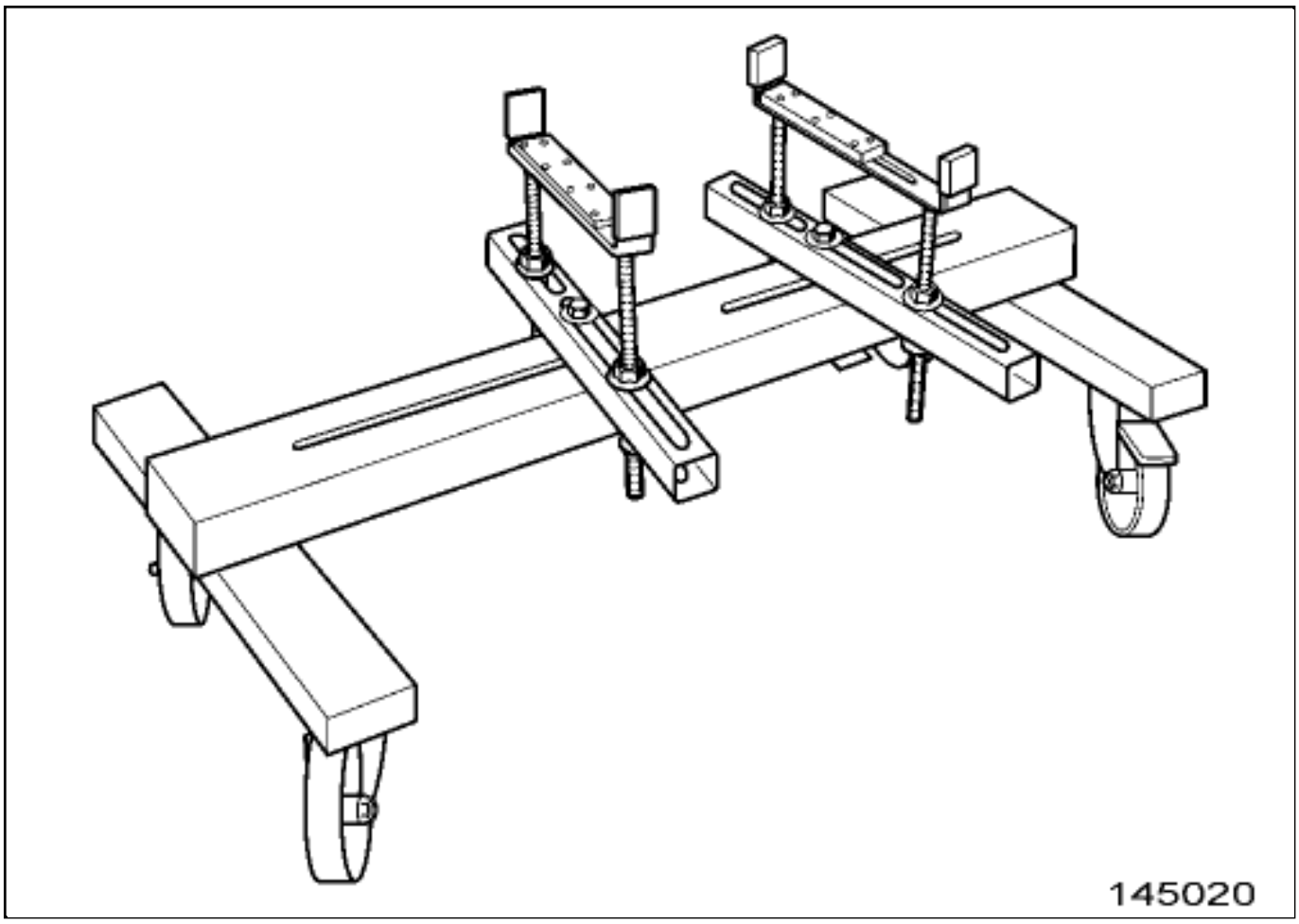


Disconnect the speed sensor(9) .

Unclip the speed sensor wiring.

2. REMOVAL OPERATION

Remove the upper bolts of the gearbox(see 21A, Manual gearbox , Gearbox assembly: Exploded view) .



Fit the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) under the gearbox.

Using a safety strap(s), strap the gearbox on theSupport for removal - refitting of engine - gearbox assembly (Mot. 1390) .

Remove the safety strap(s) from the gearbox.

Remove (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :

- the gearbox lower bolts,
- the gearbox.

Remove the clutch thrust bearing[Clutch assembly: Exploded view] .

If replacing the gearbox, remove[(see 21A, Manual gearbox , Gearbox assembly: Exploded view)] :

- the reverse gear switch,
- the speed sensor.

REFITTING

1. REFITTING PREPARATION OPERATION

If replacing the gearbox, refit[(see 21A, Manual gearbox , Gearbox assembly: Exploded view)] :

- the reverse gear switch,
- the speed sensor.

Proceed in the reverse order to removal.

Note:

Before refit the clutch actuator module[Clutch assembly: Exploded view] , check that the clutch thrust bearing is fitted well.

XSL version : 3.02 du 22/07/11

MASTER CYLINDER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 37A, Mechanical component controls, Braking control assembly: Exploded view)** .

CAUTION

Always replace the master cylinder if it is dropped or in the event of an impact (risk of malfunction).

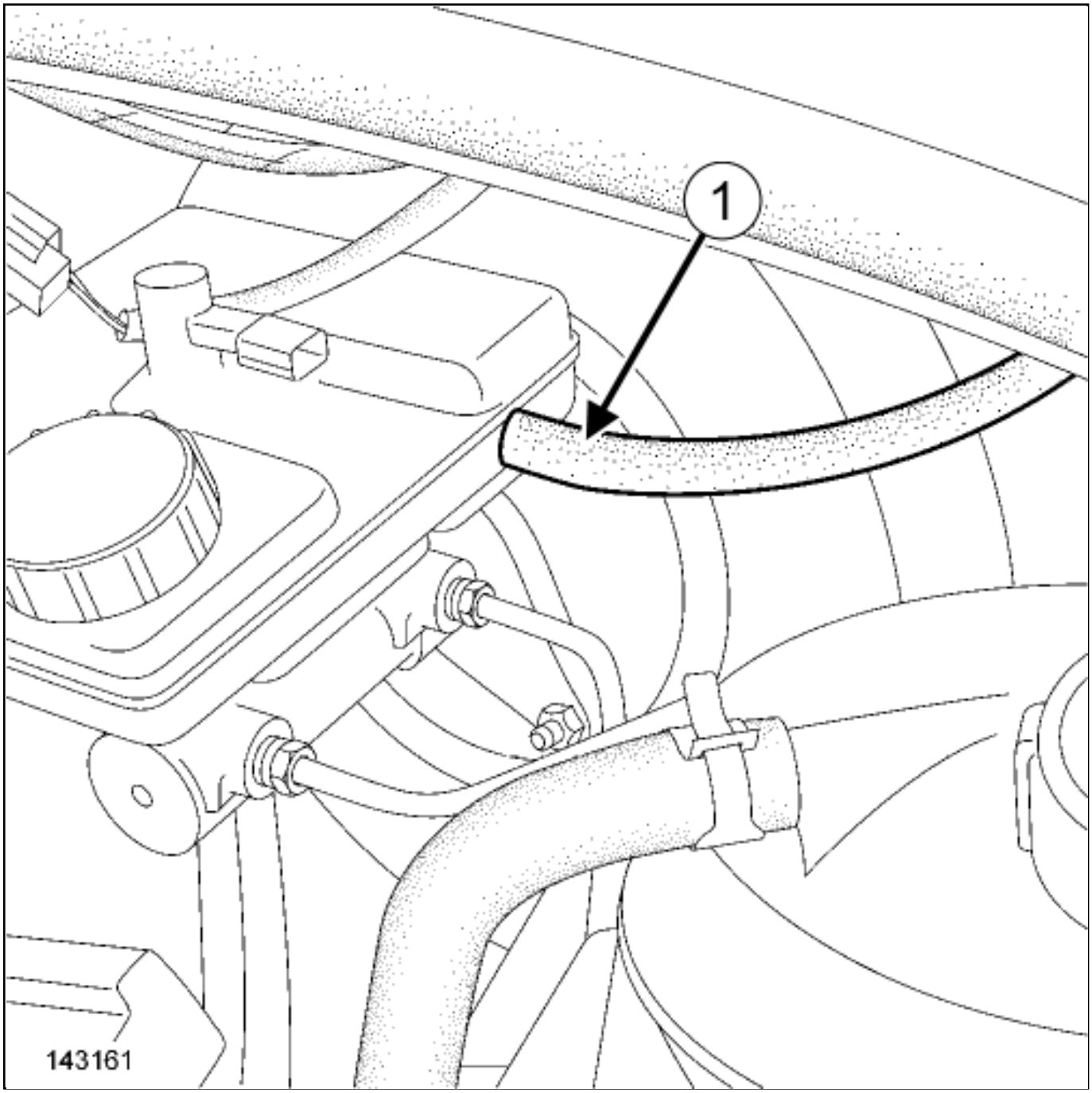
CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

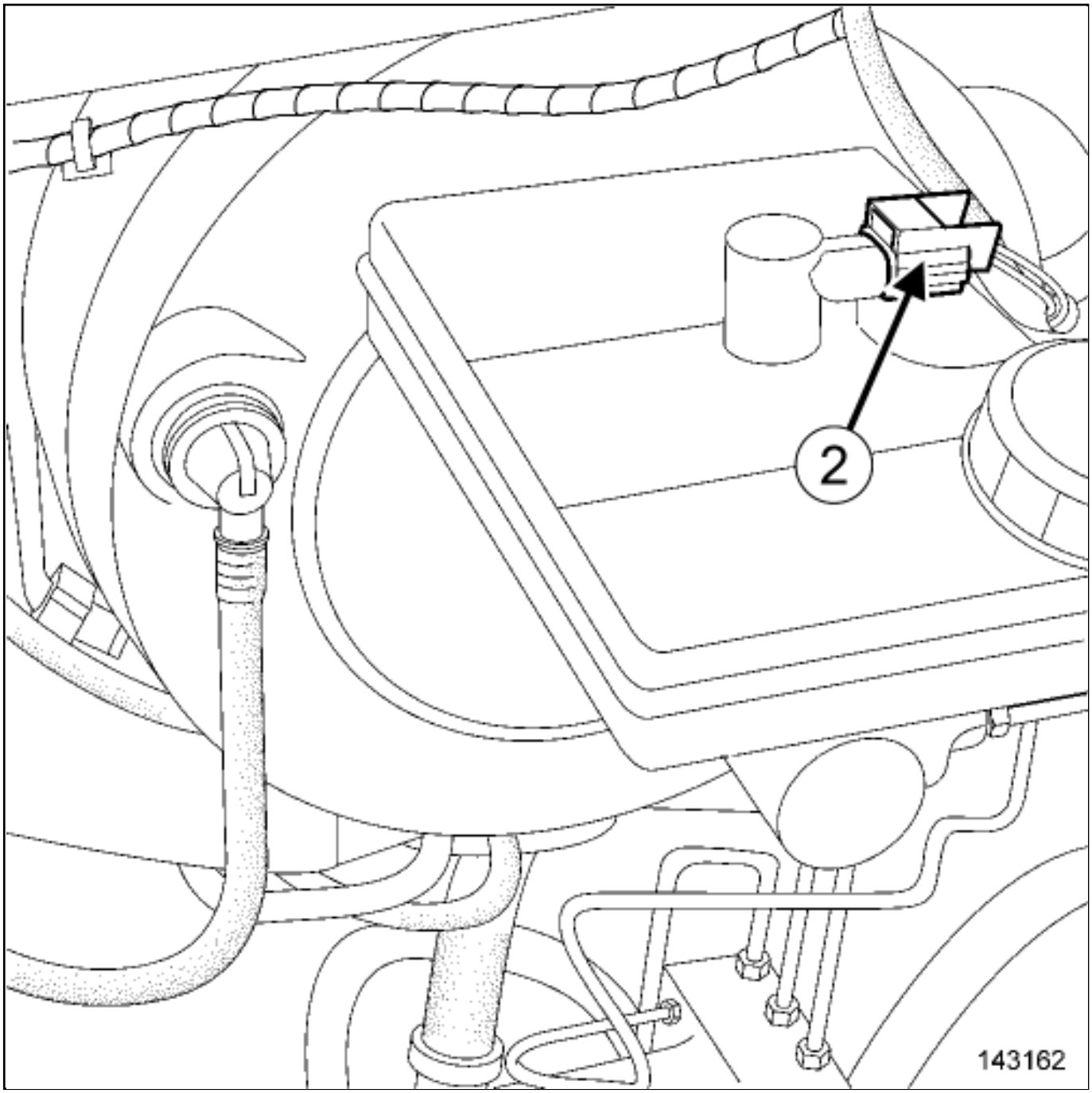
REMOVAL

1. REMOVAL OPERATION

- Drain the brake fluid reservoir with a syringe.
- Position a container to catch any brake fluid remaining in the master cylinder which may run out.



- Disconnect the supply pipe from the clutch master cylinder(1) .



- Disconnect the brake fluid level sensor connector(2) .

- Remove (see 37A, Mechanical component controls, Braking control assembly: Exploded view) :
  - the brake fluid reservoir retaining pin,
  - the brake fluid reservoir.

- Fit blanking plugs on the openings of the master cylinder and the brake pipes.

- Remove (see 37A, Mechanical component controls, Braking control assembly: Exploded view) :
  - the rigid pipe unions,
  - the master cylinder.

REFITTING

- Fit the brake pipe unions on the master cylinder without tightening them.
- Proceed in the reverse order to removal.
- Bleed the braking circuit(see **Braking circuit: Bleed**) .

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

Note:

The brake fluid level sensor connector is correctly connected when the "locking click" sound is heard.

MECHANISM HOUSING BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
ZF4 gearbox internal renovation kit	Bvi. 1950

Equipment required
component support

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 21A, Manual gearbox , Manual gearbox: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove the manual gearboxGearbox assembly: Exploded view .

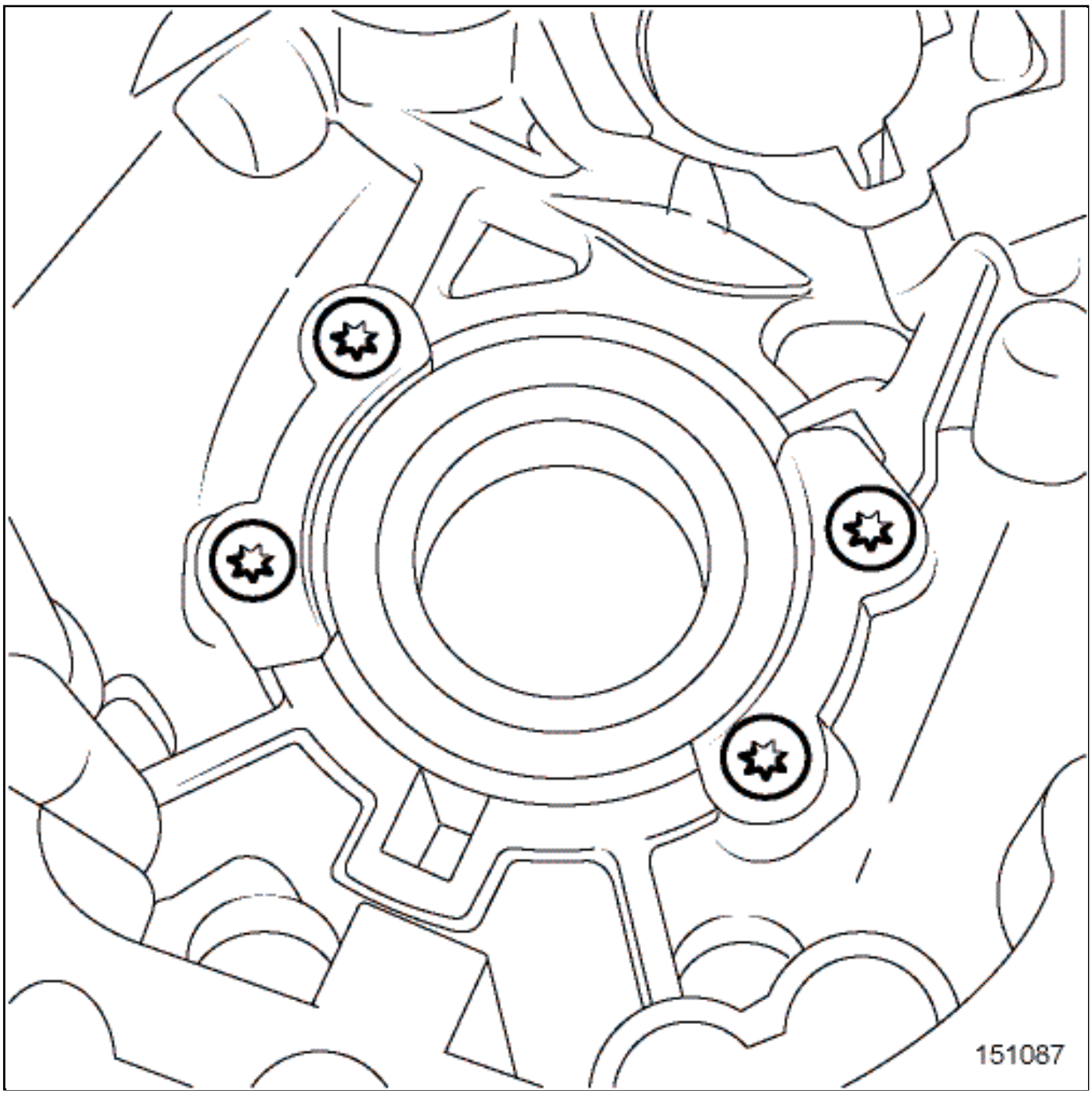
Position the gearbox on the component support(see 21A, Manual gearbox , Gearbox support equipment: Use) .

Remove:

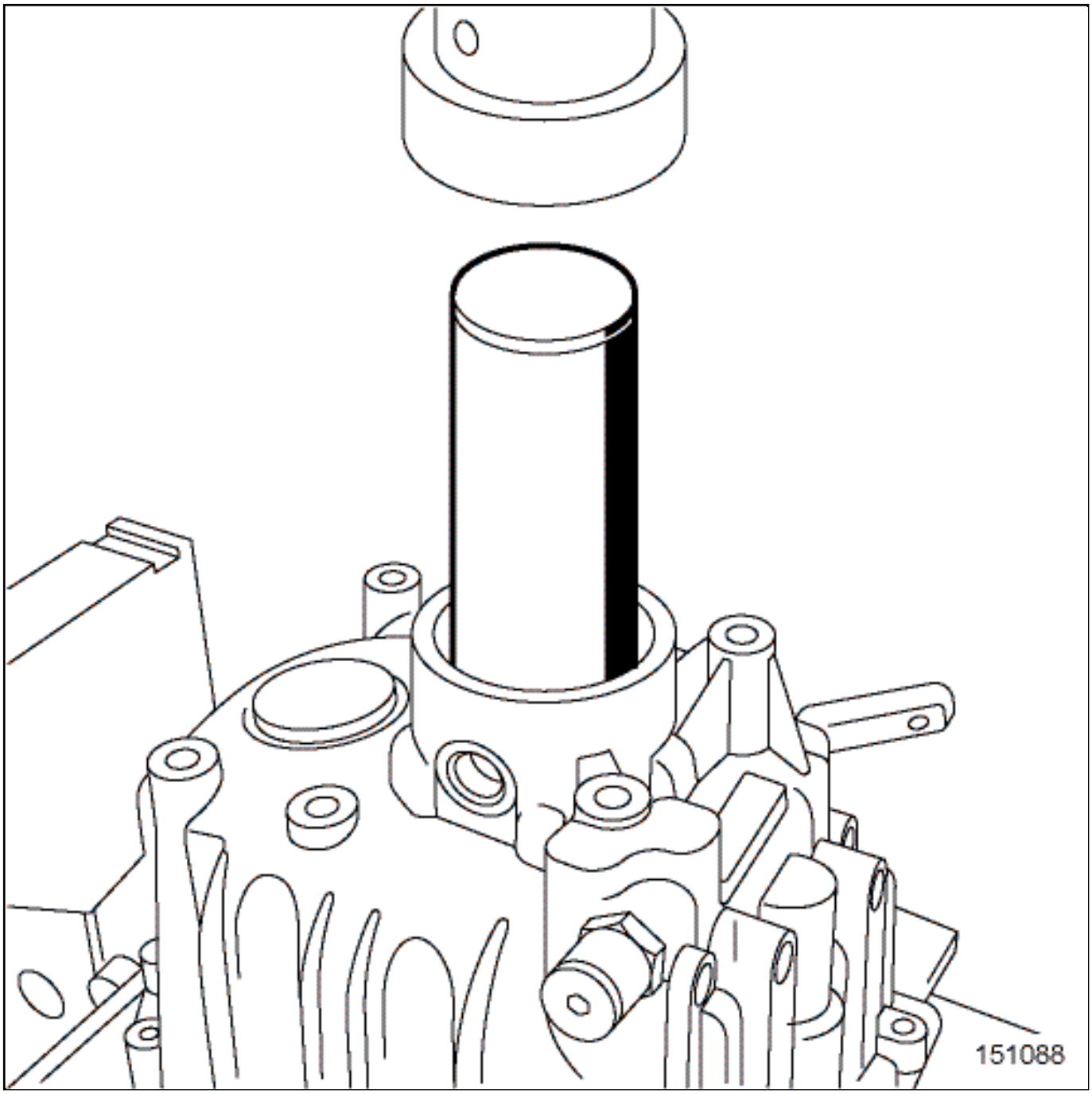
- the gearshift plate(see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) ,
- the reverse gear switchGearbox assembly: Exploded view .

- Remove the clutch housing Gearbox assembly: Exploded view .
- Remove the shaft unit (see 21A, Manual gearbox , Gearbox shaft: Removal - Refitting) .
- Remove the mechanism housing Gearbox assembly: Exploded view .

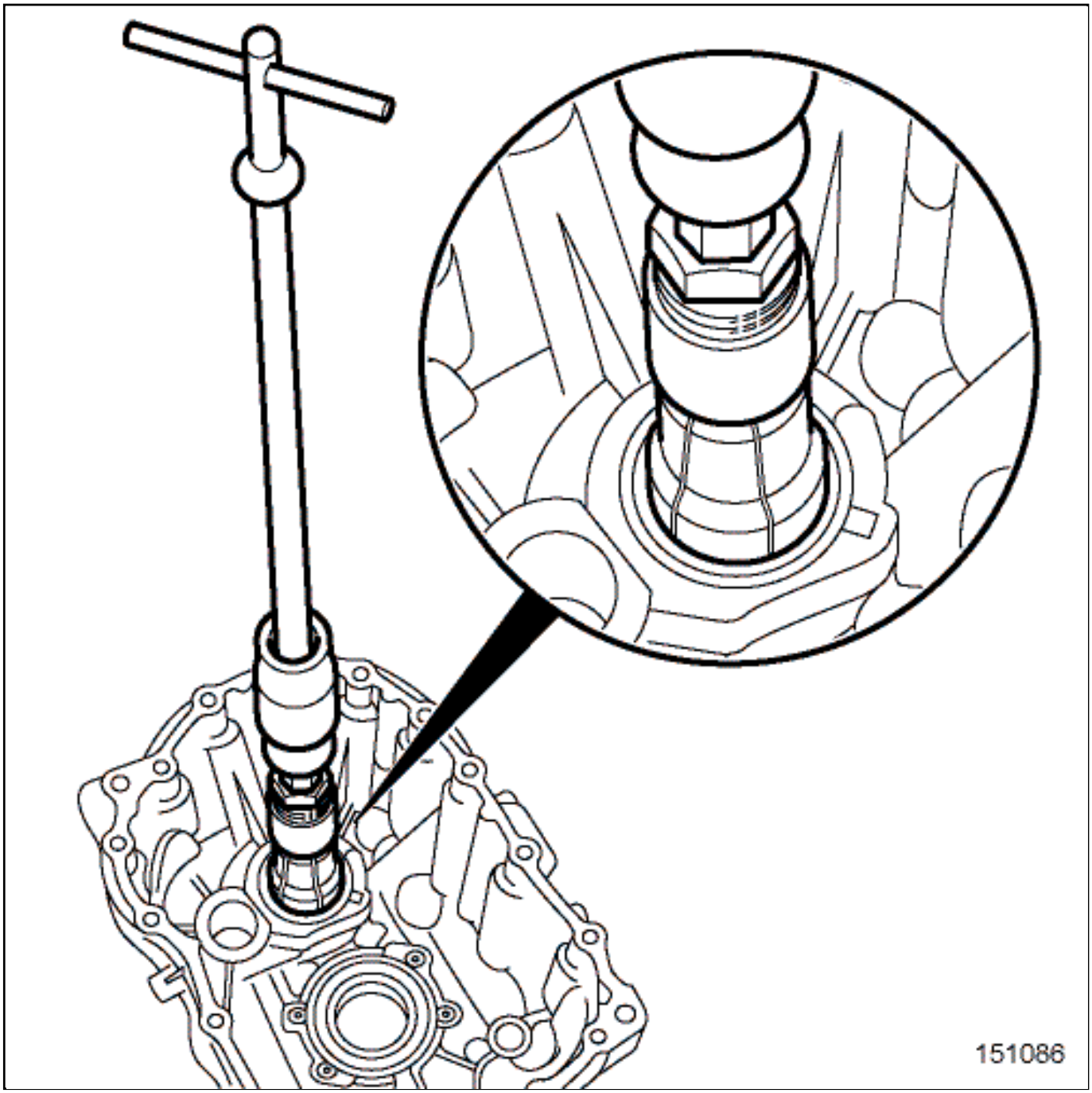
2. REMOVAL OPERATION



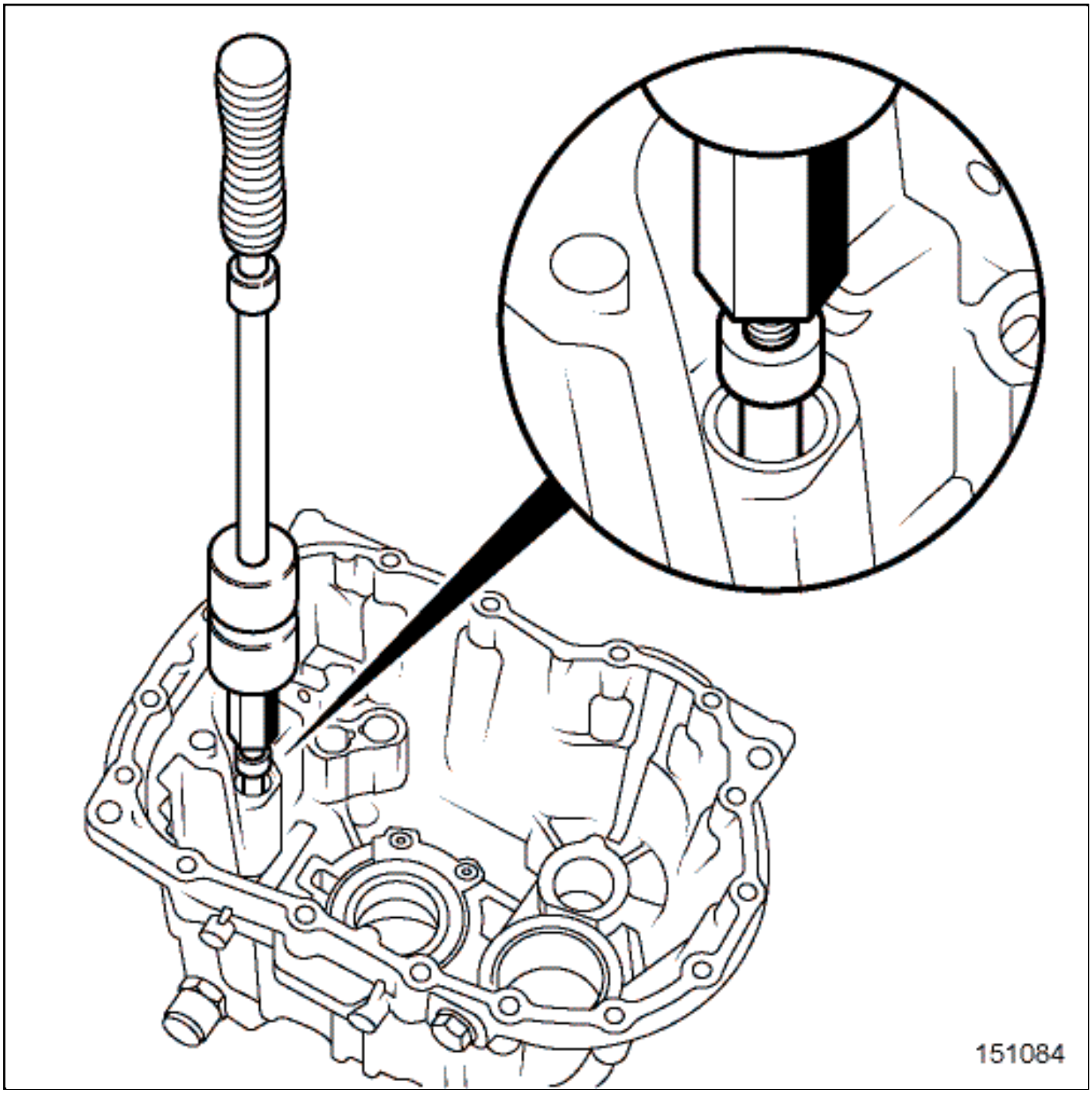
- Remove Gearbox assembly: Exploded view :
  - the stops bolts(1) ,
  - the stops(2) ,



- Remove the input shaft bearing on the mechanism housing use toolZF4 gearbox internal renovation kit (Bvi. 1950) D (3) Gearbox assembly: Exploded view .



- Remove the outer bush of the output shaft bearing on the mechanism housing(4) Gearbox assembly: Exploded view .



Remove the ball bearing(5) Gearbox assembly: Exploded view .

REFITTING

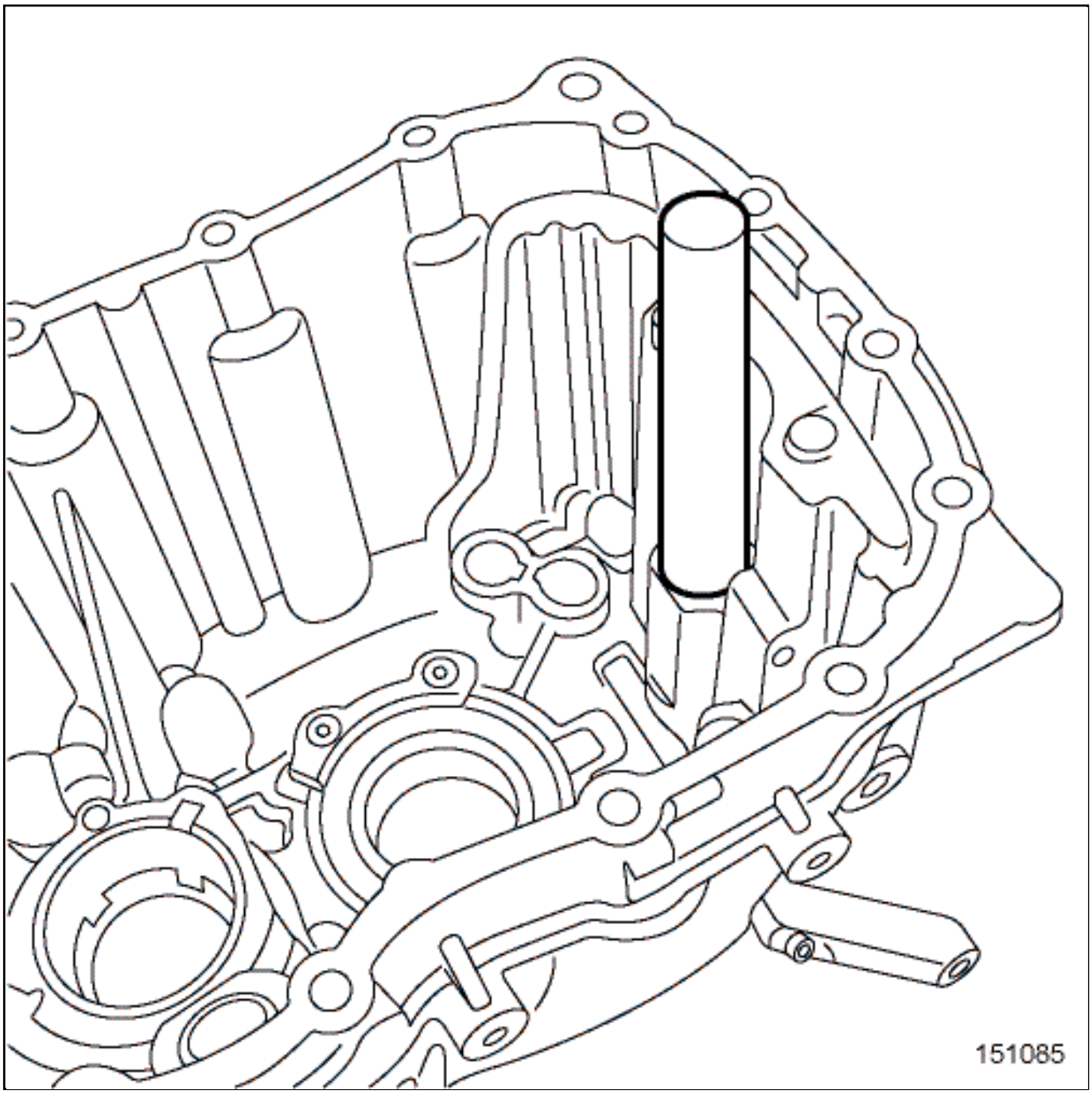
1. REFITTING PREPARATION OPERATION

Clean all the removed parts**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

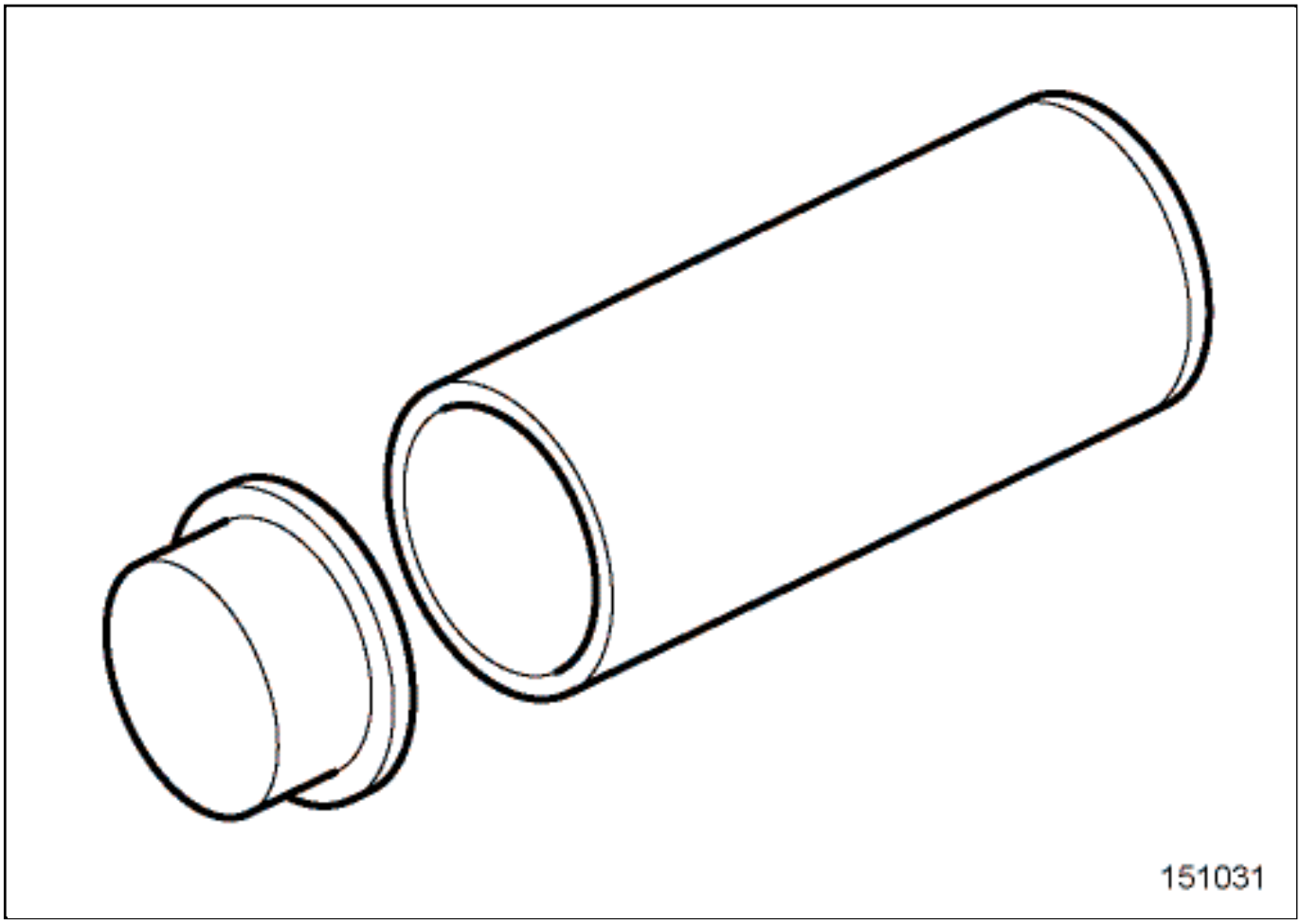
Always replace:

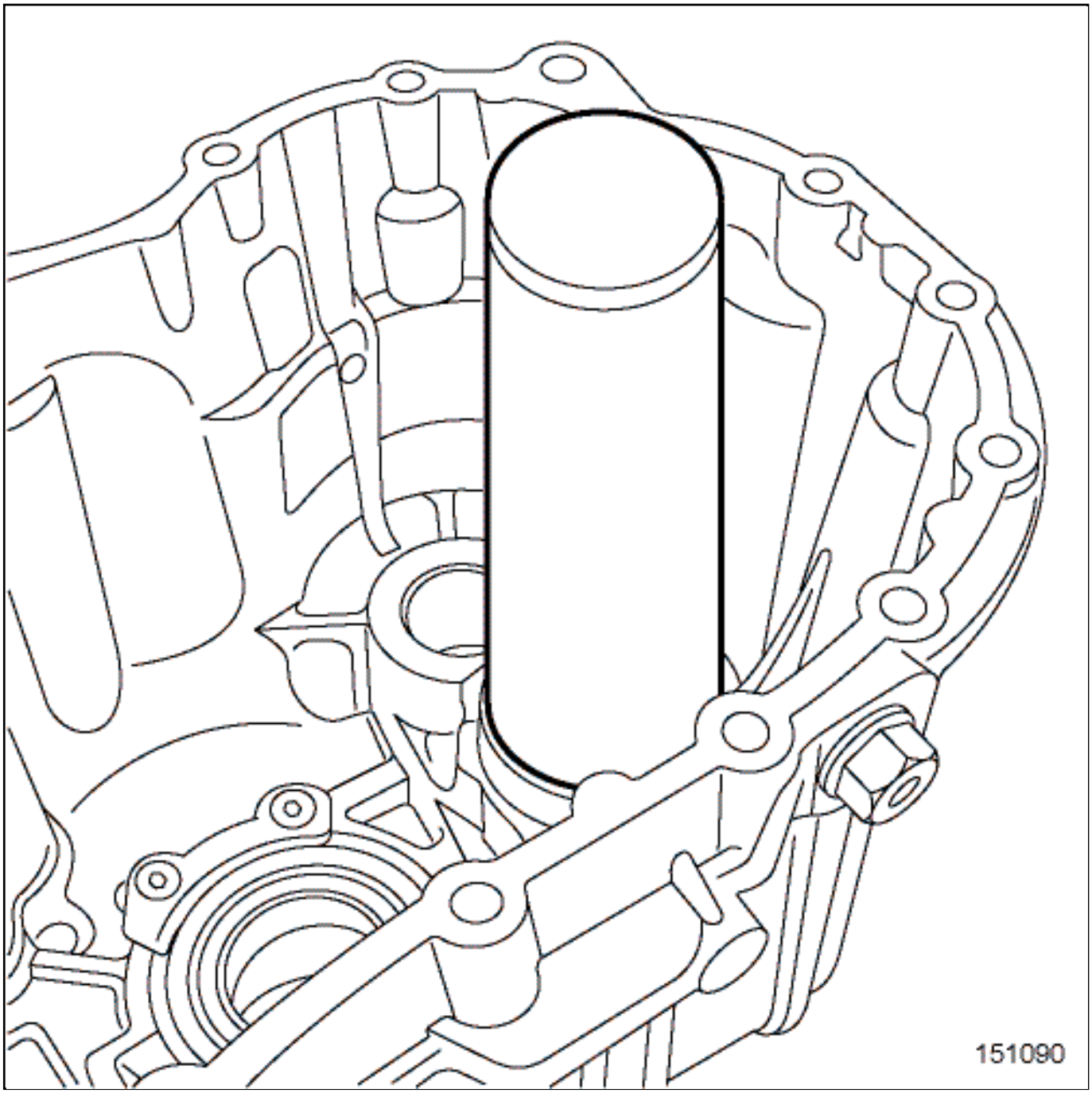
- the ball bearing,
- the outer bush of the output shaft bearing on the mechanism housing,
- the input shaft bearing on the mechanism housing,
- the stops bolts.

2. REFITTING OPERATION

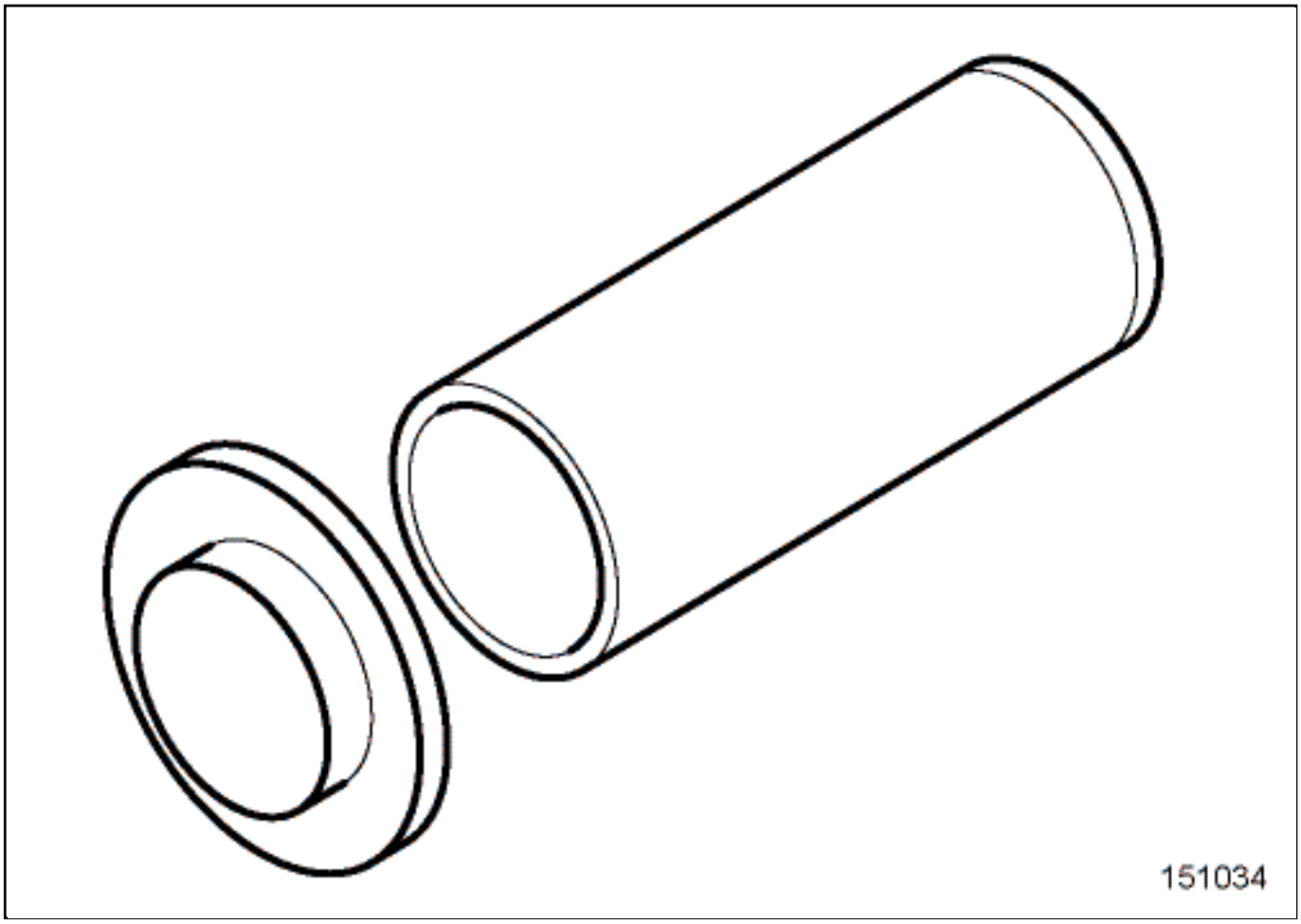


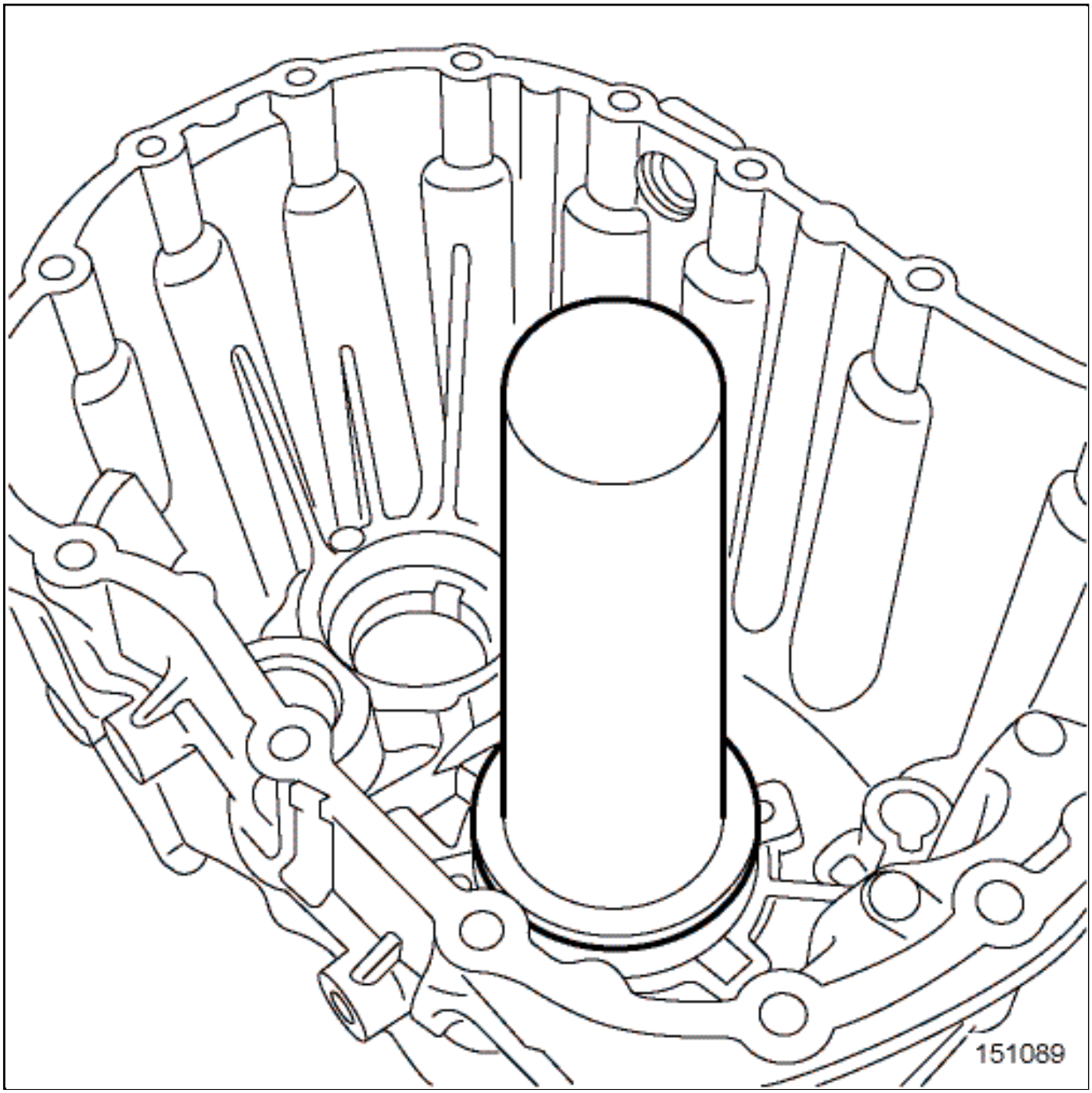
Use an hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) F (6) to refit the ball bearing Gearbox assembly: Exploded view .


151031



Use an hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) (C) + (D) (7) to refit the outer bush of the output shaft bearing on the mechanism housingGearbox assembly: Exploded view .


151034



Use an hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) (D) + (B) (8) to refit the input shaft bearing on the mechanism housingGearbox assembly: Exploded view .

Refit Gearbox assembly: Exploded view :

- the new stops bolts,

the stops.

Proceed in the reverse order to removal.

Repair-12x01x04x13-01x37-1-17-1.xml

XSL version : 3.02 du 22/07/11

METERING PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

- During this operation, be sure to:
  - refrain from smoking or bringing red hot objects close to the working area,
  - be careful of fuel splashes when disconnecting the union.

CAUTION

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

Note:

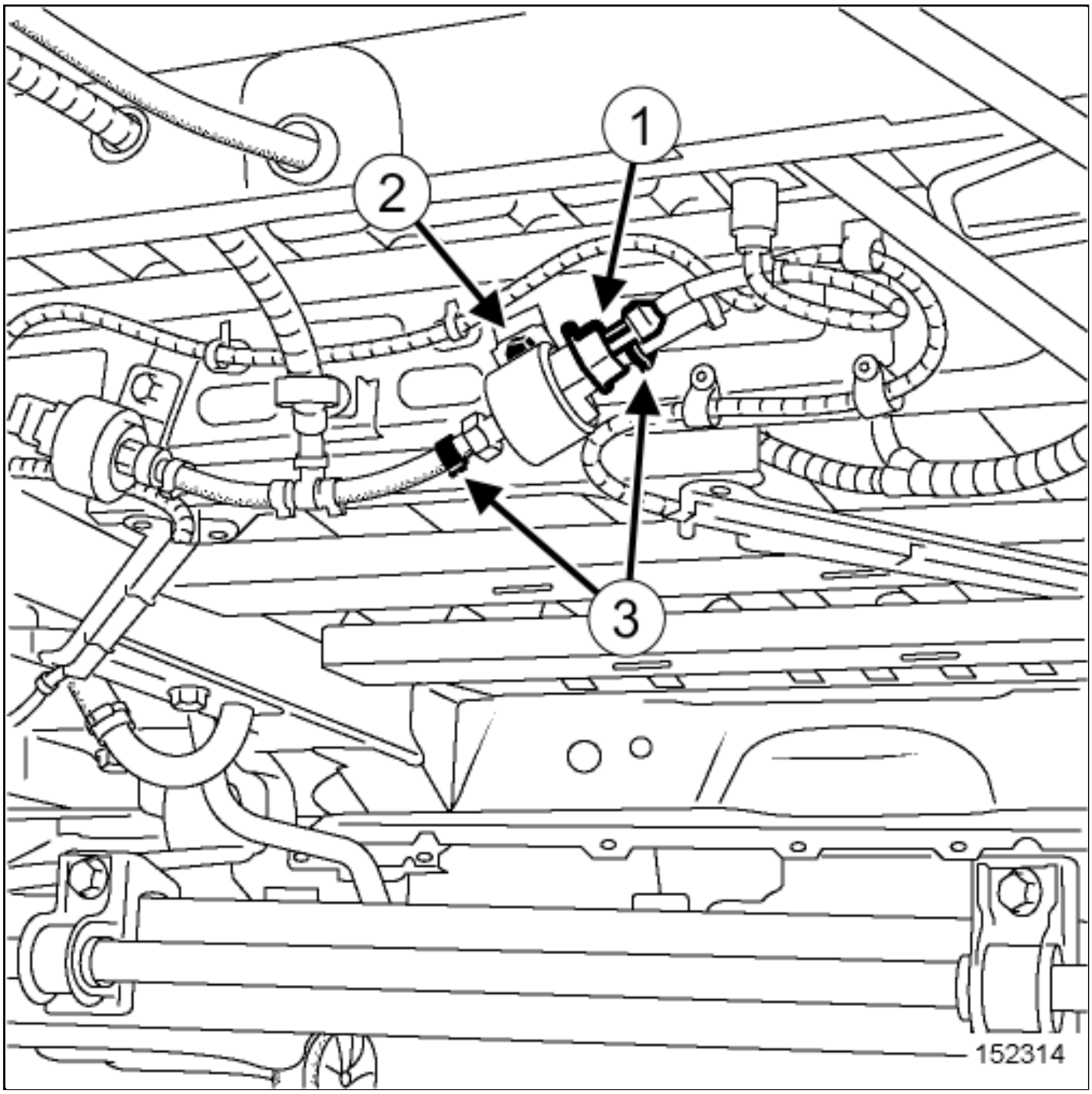
There are two metering pumps at each side under the vehicle.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting .

2. REMOVAL OPERATION



- Remove:
  - the metering pump connector(1) ,
  - the metering pump bolt(2) ,
  - the fuel hoses clips(3) .

- Disconnect from the metering pump the fuel supply hoses.

- Remove the metering pump.

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the fuel supply hose clips.

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

2. REFITTING OPERATION

- Refit:
  - the metering pump,
  - the fuel hoses with new clips.

- Connect the metering pump connector.

MIXING MOTOR: REMOVAL - REFITTING

Equipment required
Diagnostic tool

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove:
  - the dashboard lower trimDashboard lower trim: Removal - Refitting (57A, Interior equipment),
  - the front air distribution duct(see 61A, Heating, Air distribution circuit assembly: Exploded view) .

2. REMOVAL OPERATION

- Disconnect the air mixing motor connector.
- Remove the mixing motor(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REFITTING

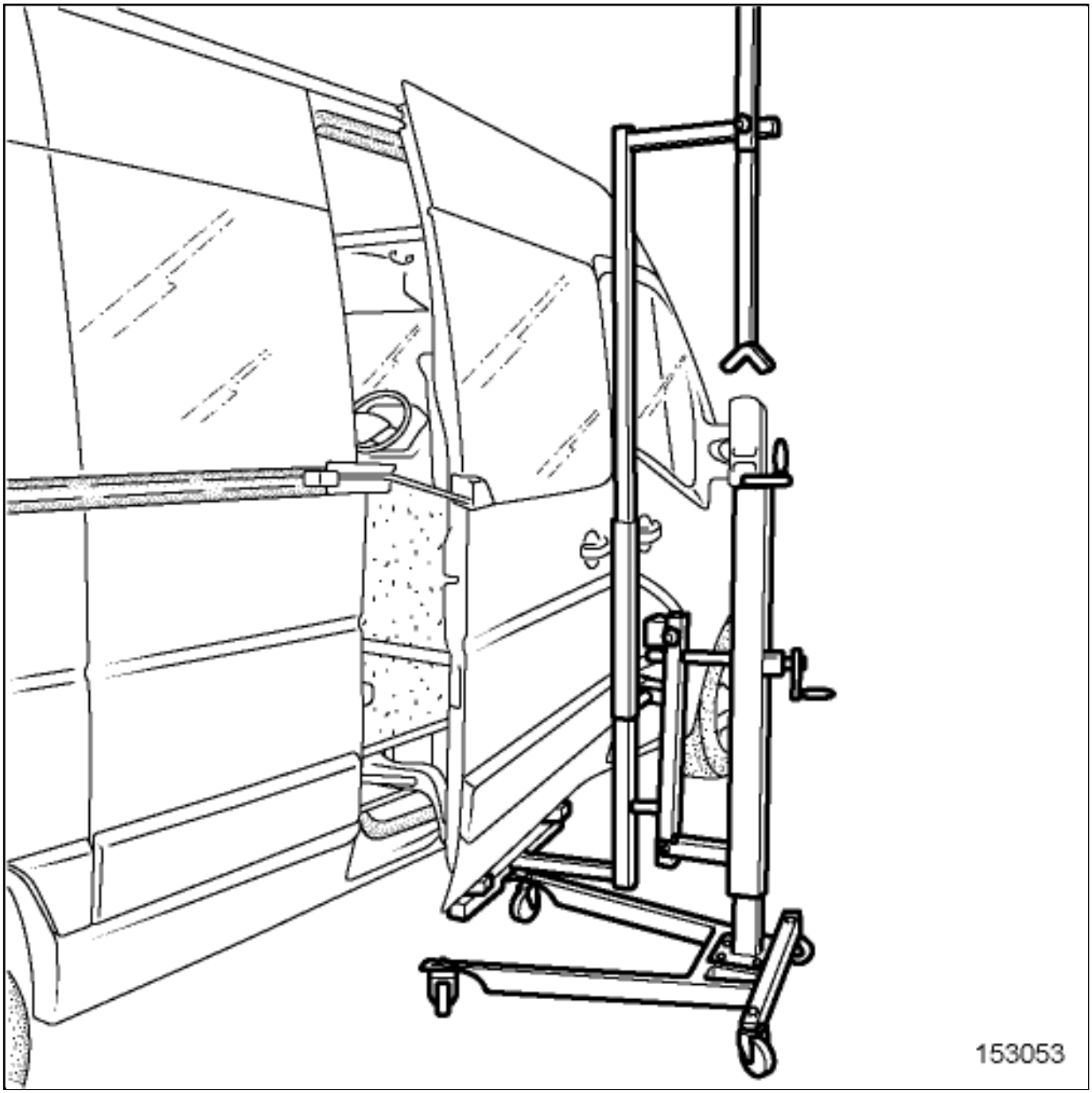
- Proceed in the reverse order to removal.
- Apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Climate control computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - select "front air mixing flap actuator" in the "List of components controlled by this computer" section,
  - carry out the operations described in the "After repair procedure" section.

MOTORISED SLIDING SIDE OPENING ELEMENT DRIVE BELT : REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

REMOVAL

1. REMOVAL PREPARATION OPERATION



- Fit the tool DOOR SUPPORT.

Note:

It is necessary to hold the sliding side door using the tool DOOR SUPPORT.

Number of Renault agreement: 661000.

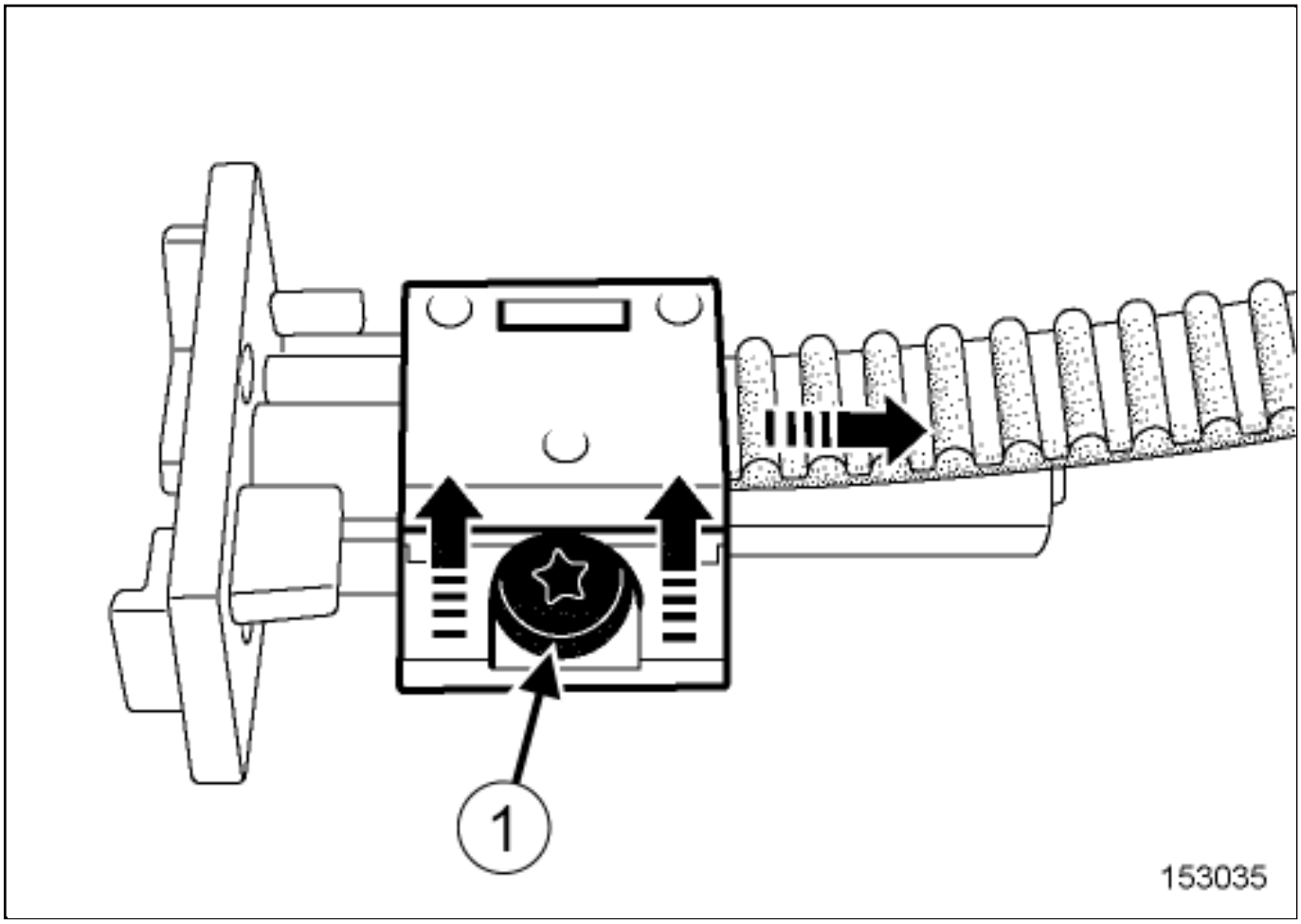
Part no.: SUP 01.

- Remove the end piece of sliding side door centre runner (see 51A, Side opening element mechanisms, Exterior rear side opening element assembly: Exploded view) .

- Remove the sliding side door carriage (see 51A, Side opening element mechanisms, Rear side opening element drive mechanism: Removal - Refitting) .

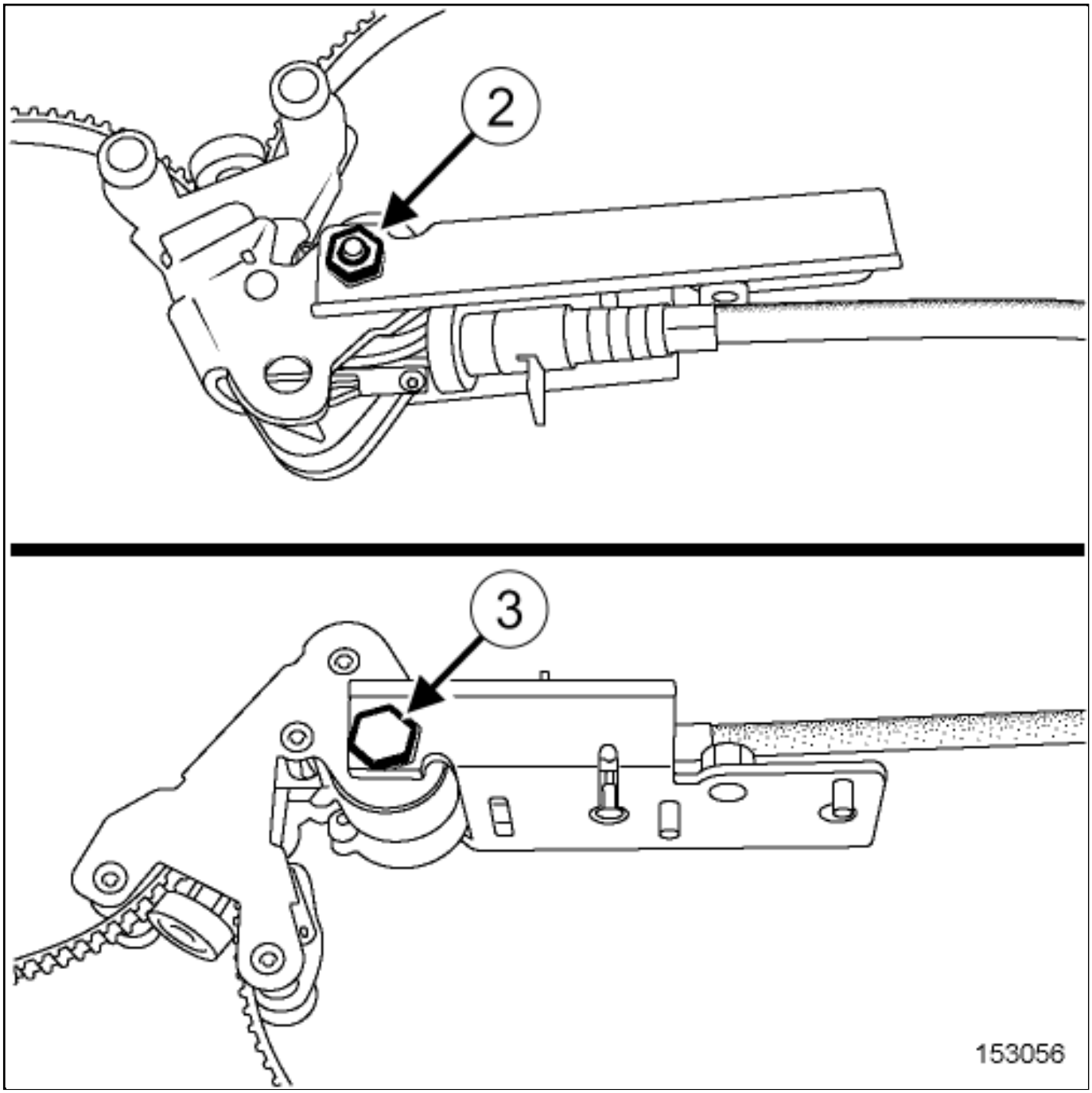
2. REMOVAL OPERATION

Note: observe the drive belt routing on the sliding side door carriage for a correct reffiting



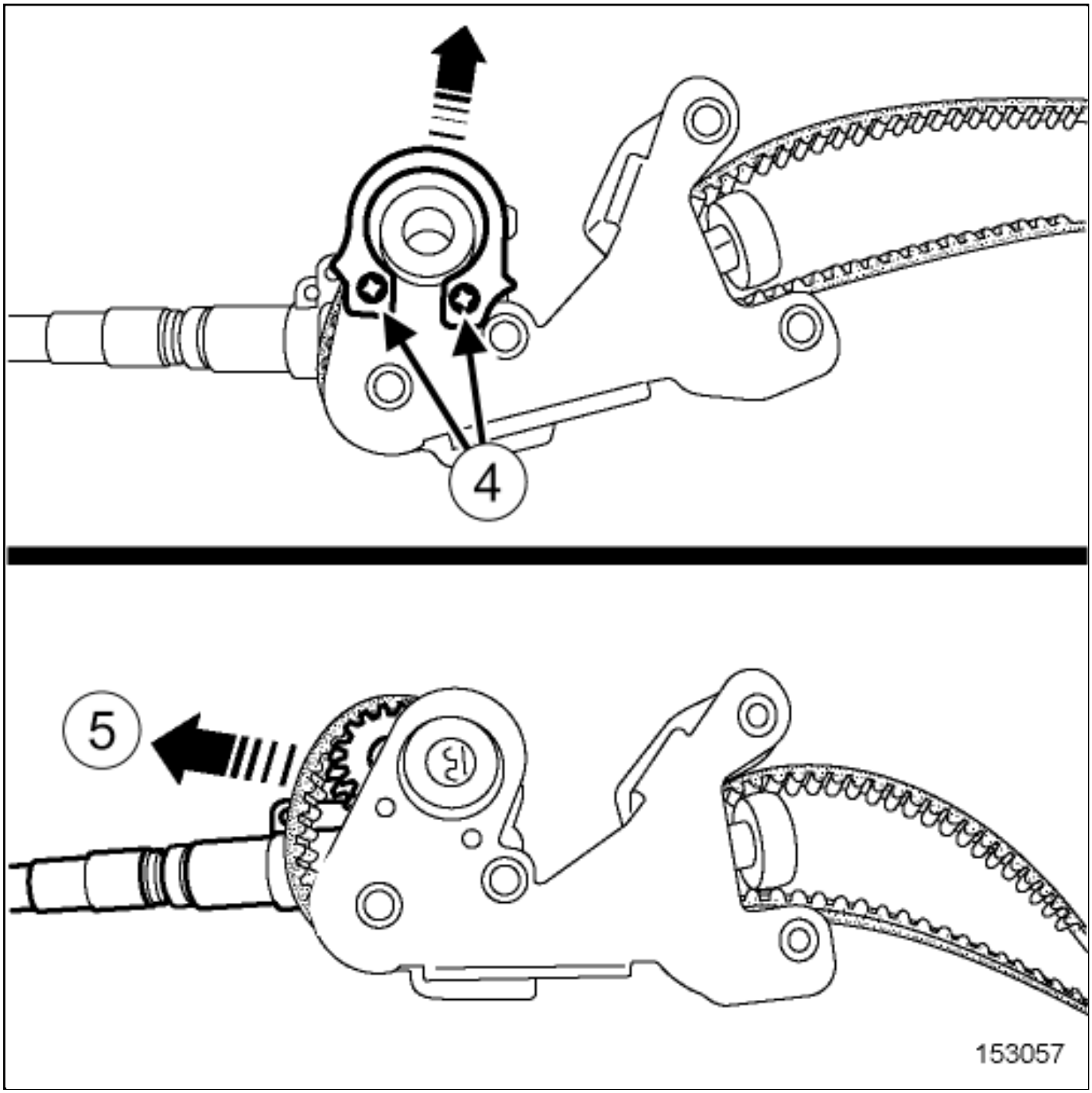
Remove:

- the drive belt rear mounting support bolt(1) ,
- the drive belt rear mounting support.



Remove:

- the sliding side door carriage nut(**2**) ,
- the sliding side door carriage axis(**3**) .



- Remove:
  - the sproket protector housing bolts(4) ,
  - the sproket protector housing.

Note:

Mark the drive belt routing on the sliding side door carriage before removing it.

- Extract (5) the "sprocket - drive belt" assembly from the sliding side door carriage.

REFITTING

1. REFITTING PREPARATION OPERATION

- Replace the sliding side opening element drive belt all the 15 000 cycles.

- Always replace the sliding side opening element drive belt and the assembly components that relate to it :
  - the bearings ,
  - the rollers ,
  - the circlips,
  - the dust seal ,
  - the belt guide,
  - the roller axle .

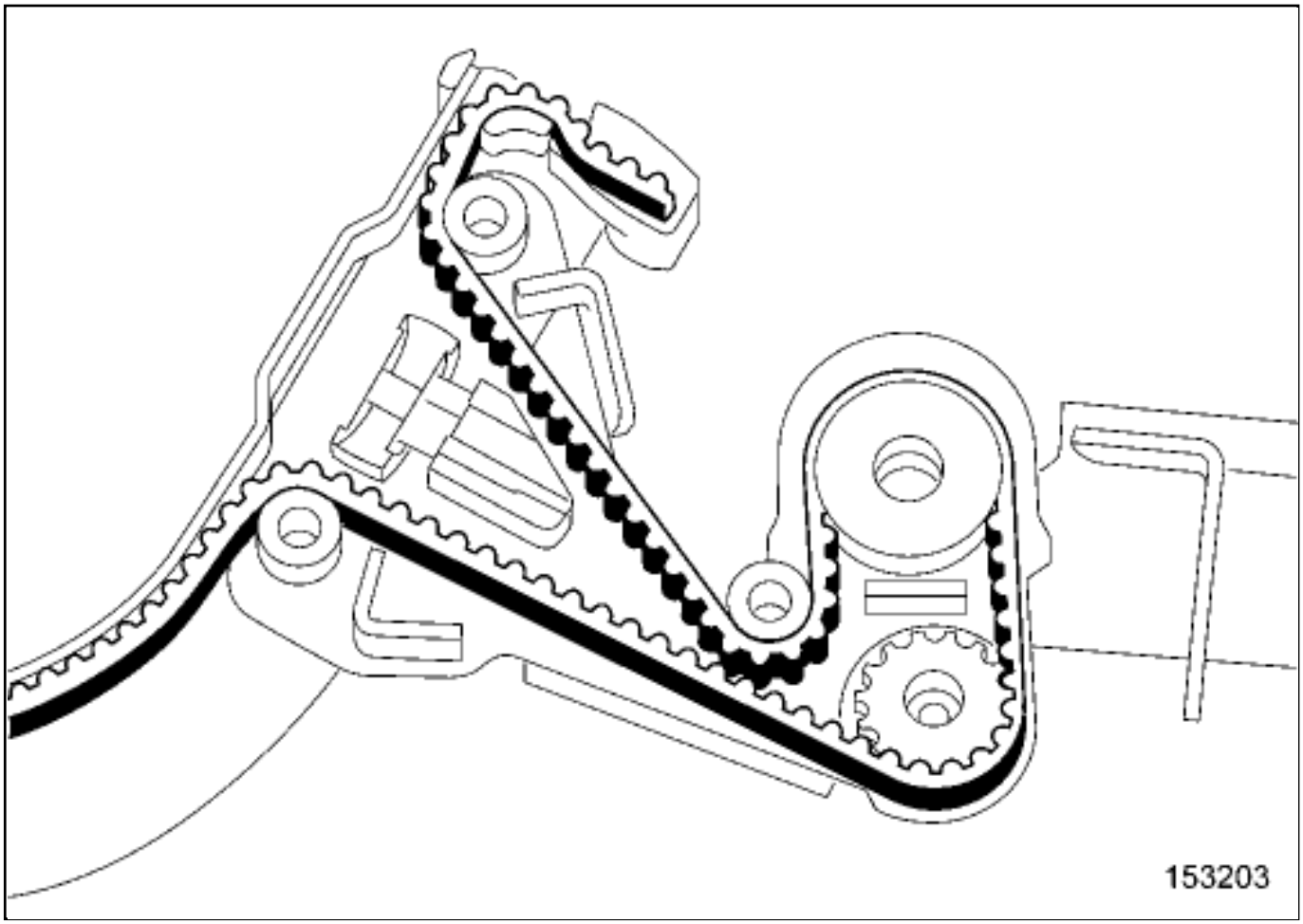
WARNING

Always replace the side door carriage all the 50 000 cycles.

2. REFITTING OPERATION

During the refitting ,handle the belt with care,do not bend in two

- Proceed in the reverse order to removal.



- Torque tighten:
  - the sproket protector housing bolts 3 N.m,
  - the sliding side door carriage nut 8 N.m,
  - the drive belt rear mounting support bolt 5 N.m.

- Adjust the drive belt tension (see 51A, Side opening element mechanisms, Rear side opening element drive mechanism: Adjustment) .

Note:

Apply the sliding side door initialisation procedure after carrying out work. (see 51A, Side opening element mechanisms, Rear side opening element drive mechanism: Adjustment)

XSL version : 3.02 du 22/07/11

MULTIFUNCTION SUPPORT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
refrigerant charging station

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**Engine accessories assembly: Exploded view** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).
- Remove the engine undertray.
- Remove :
  - the accessories belt,
  - the power-assisted steering pump,
  - the alternator protector,
  - the alternator.
- Remove the dummy pulley.

2. REMOVAL OPERATION

- Remove the multifunction support.

REFITTING

- Proceed in the reverse order to removal.

- Fill and bleed the power-assisted steering circuit Power-assisted steering circuit: Bleeding (36B, Power-assisted steering).

NAVIGATION SCREEN: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

Equipment required
Diagnostic tool

REMOVAL

1. REMOVAL PREPARATION OPERATION

- In the event of replacement, apply the Before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select “Navigation computer”,
  - go to repair mode,
  - display the "Before/after repair procedure" for the computer selected,
  - carry out the operations described in the "Before repair procedure" section.

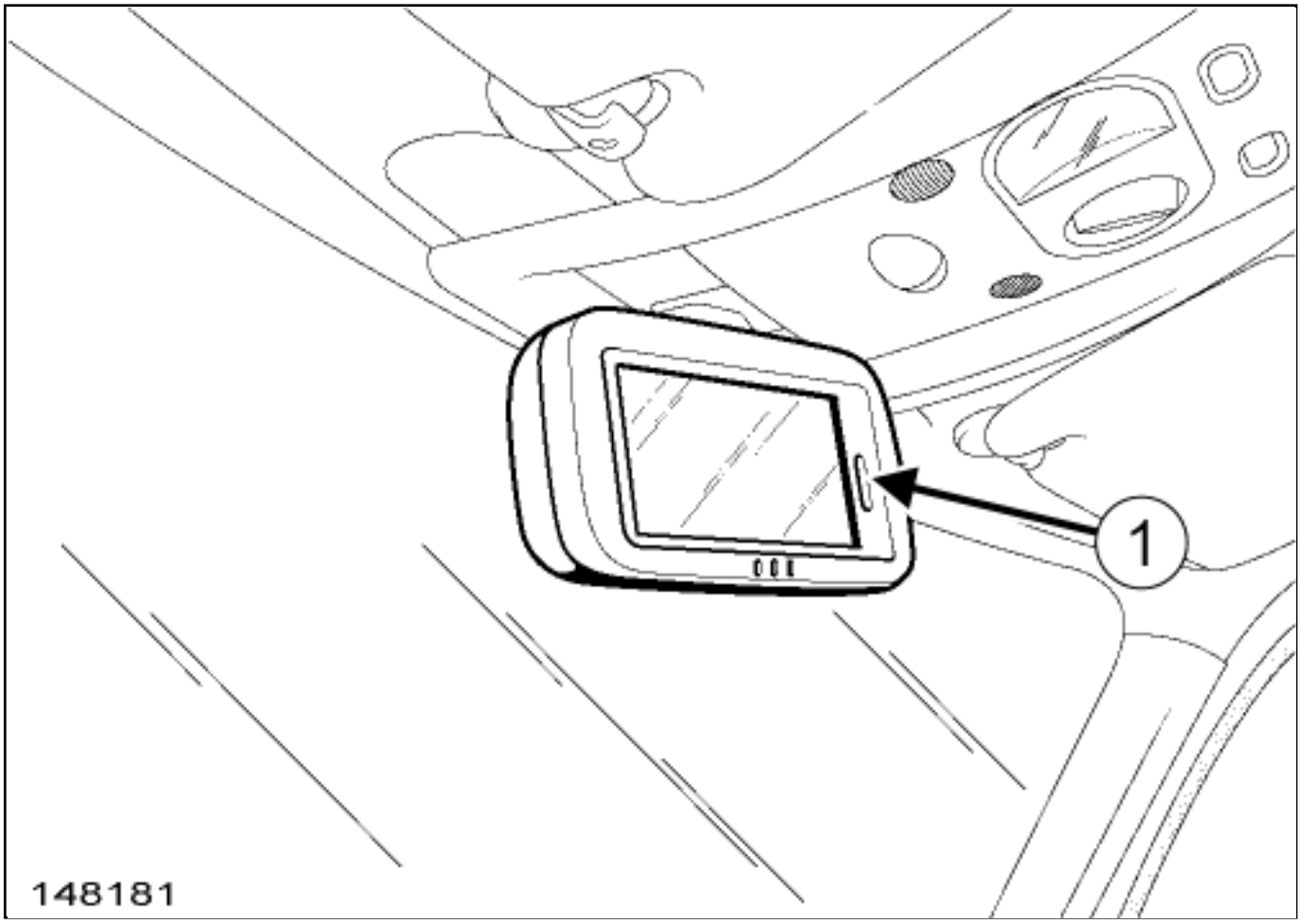
- Switch off the ignition.

CAUTION

To prevent damaging the navigation system, wait 1 minuteafter switching off the + after ignition feed.

CAUTION

Do not press on the screen as this may damage it.

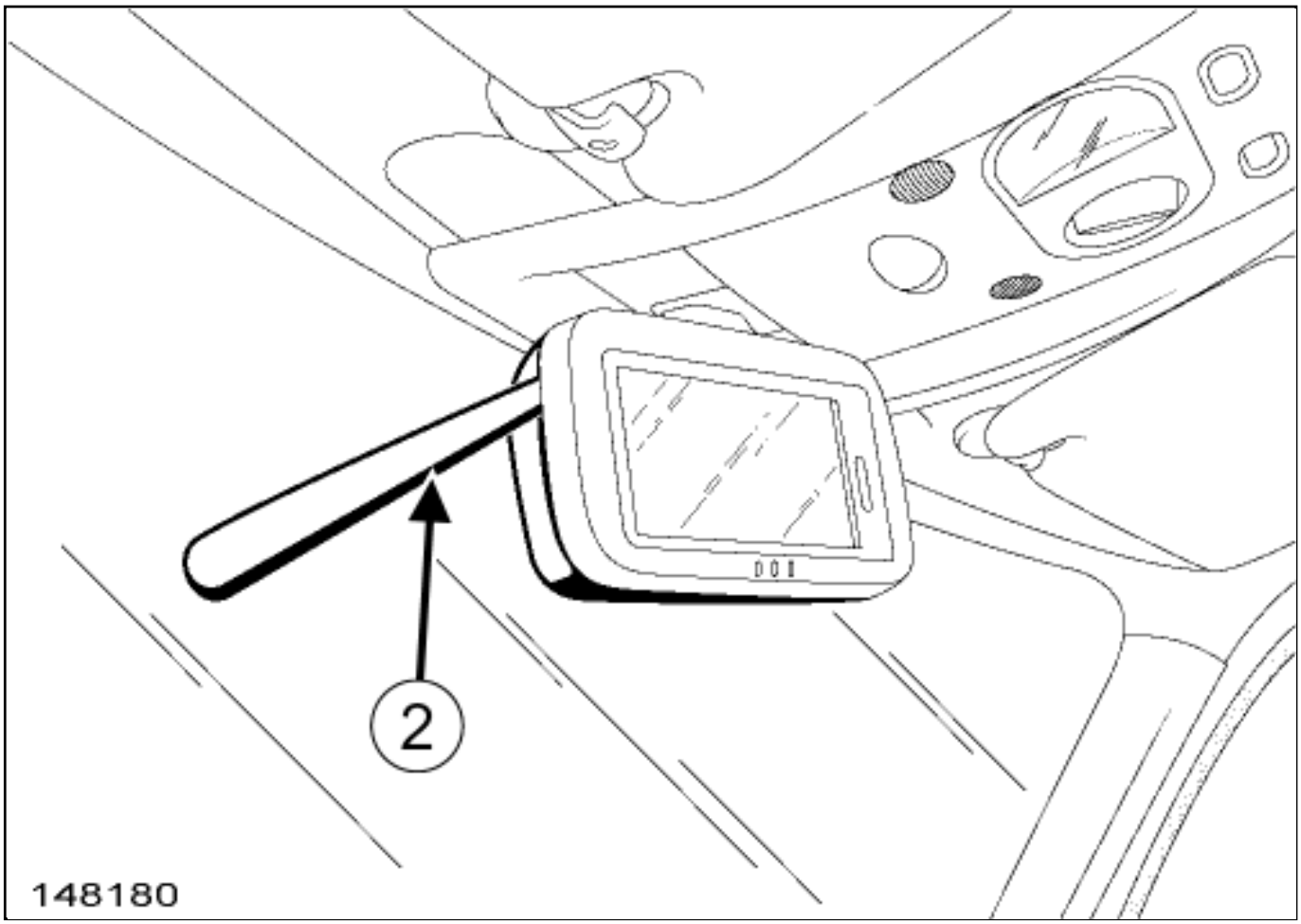


- Take the SD card(1) out of its housing.

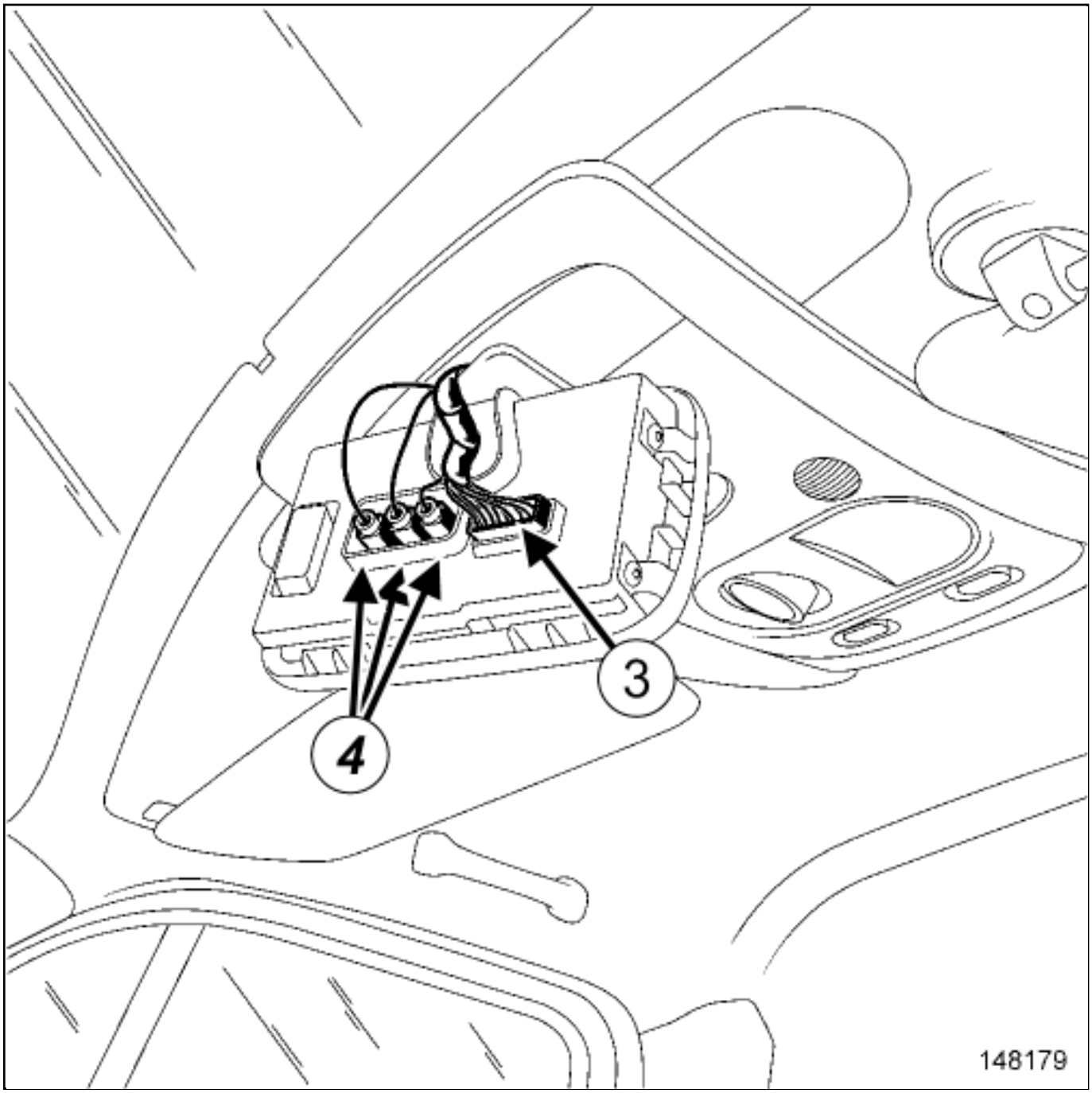
Note:

When replacing the computer, mark the removed SD card and give it back to the customer when they come to collect the vehicle.

2. REMOVAL OPERATION



- Unclip the navigation screen rear trim using the toolSet of trim removal levers.(Car. 1363) (2) .

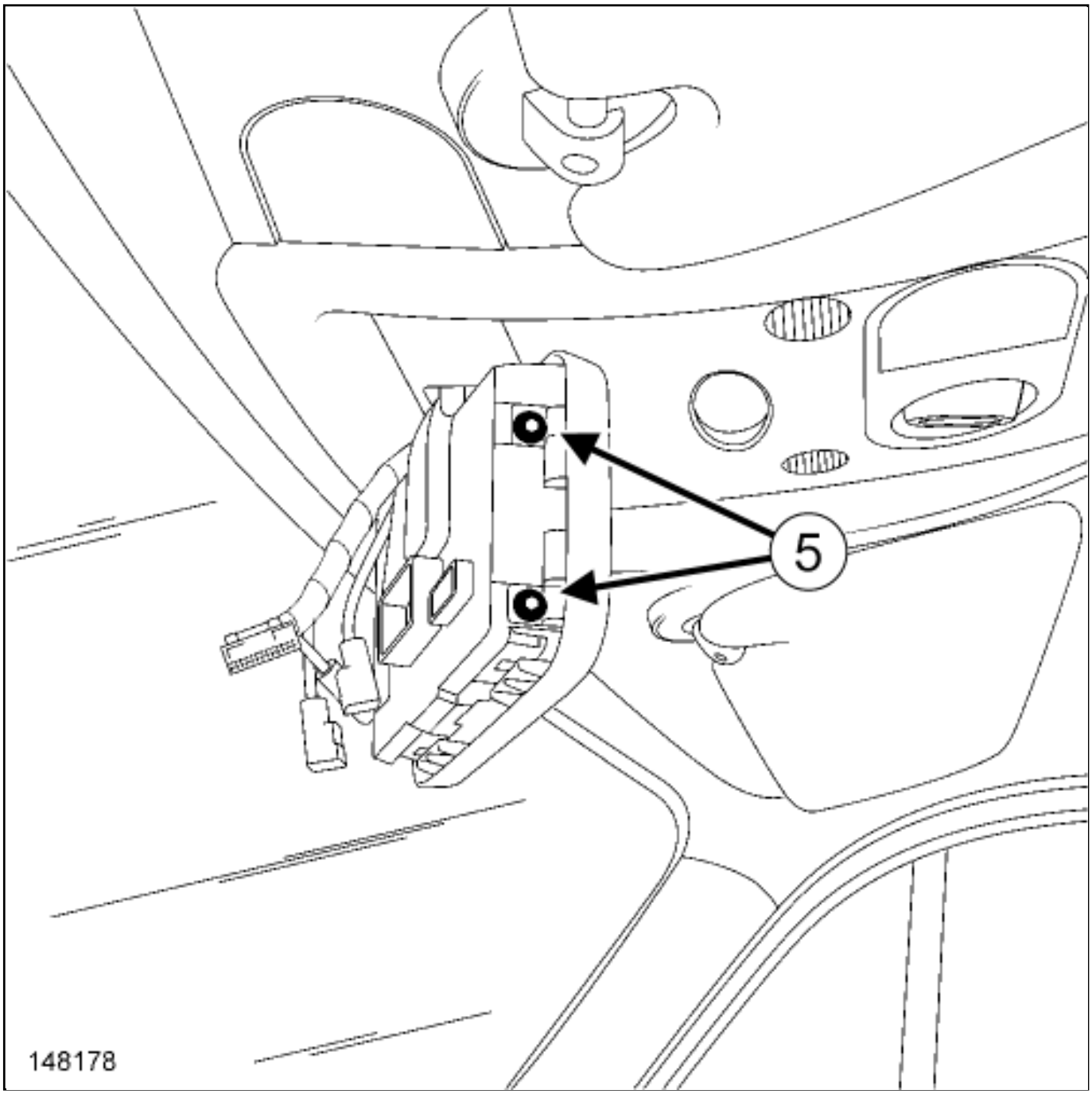


- Disconnect the navigation screen connector(3) .
- Unclip the navigation screen wiring.
- Mark the position of the aerials.

CAUTION

- To ensure correct operation:
  - do not pinch the aerial cable,
  - do not bend the aerial cable,
  - do not force the aerial cable when refitting.

- Disconnect the aerials(4) .



- Remove:
  - the navigation screen bolts(5) from its support,

- the navigation screen.

REFITTING

1. REFITTING PREPARATION OPERATION

- When replacing the navigation computer, always replace the SD card.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

CAUTION

Do not press on the screen as this may damage it.

- Insert the SD card in its housing.
- When replacing the navigation computer, insert the new SD card in its housing.

3. CHECKING AFTER REPAIR

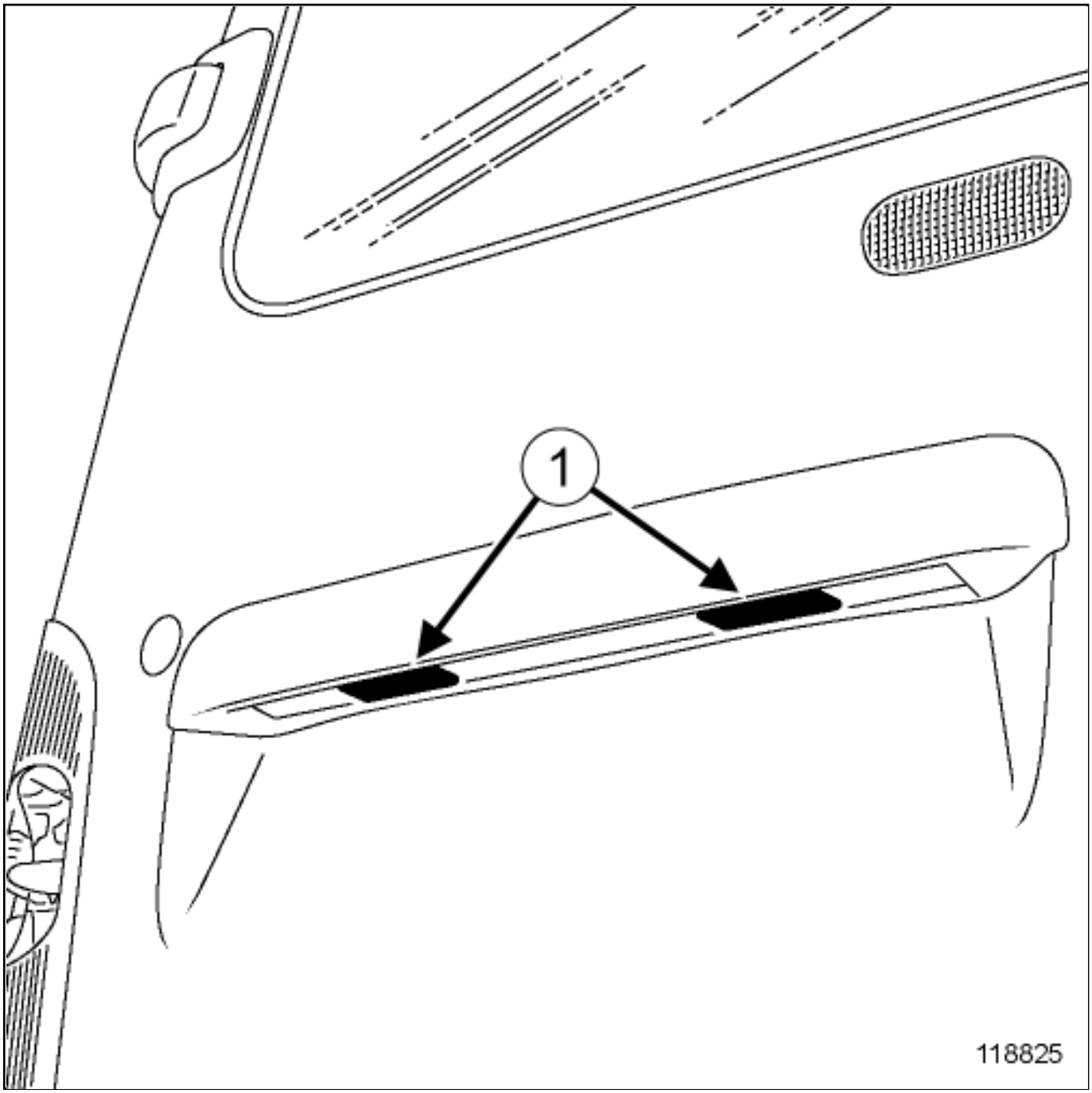
- Switch on the ignition.
- In the event of a replacement, apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select “Navigation computer”,
  - go to repair mode,
  - display the "Before/after repair procedure" for the computer selected,
  - carry out the operations described in the "After repair procedure" section.
- When replacing the navigation computer, always hand the following over the customer:
  - the new card located in the housing of the navigation screen,
  - the SD card used with the old computer so that the customer can recover their personal data and transfer it over to the new card.
- Check the operation of navigation system, if the satellites can be accessed.

XSL version : 3.02 du 22/07/11

NUMBER PLATE LIGHT: REMOVAL - REFITTING

REMOVAL

1. OPERATION FOR REMOVAL OF PART CONCERNED



- Unclip the number plate light(1) using a flat-blade screwdriver.

- Disconnect the connectors(2) from the number plate lights.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

- When replacing bulbs, use approved W5Wbulbs.
- Connect the number plate light connectors.

- Clip on the number plate lights.

OFFSET MULTIMEDIA SOCKET COMPUTER: REMOVAL - REFITTING

Equipment required
Diagnostic tool

REMOVAL

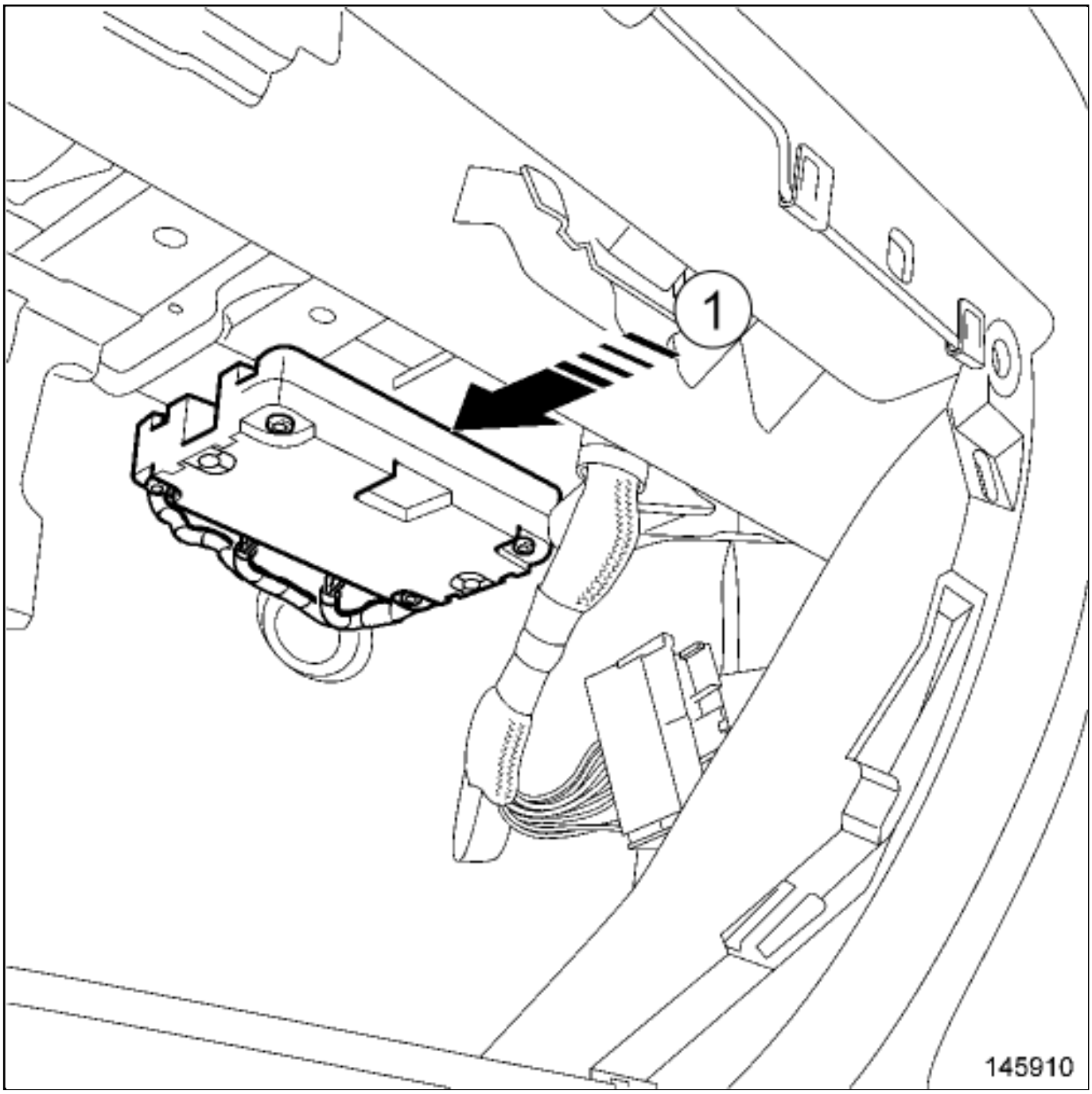
1. REMOVAL PREPARATION OPERATION

- In the event of replacement, apply the Before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Mobile connectivity computer",
  - go to repair mode,
  - display the "Before/after repair procedure" for the computer selected,
  - carry out the operations described in the "Before repair procedure" section.

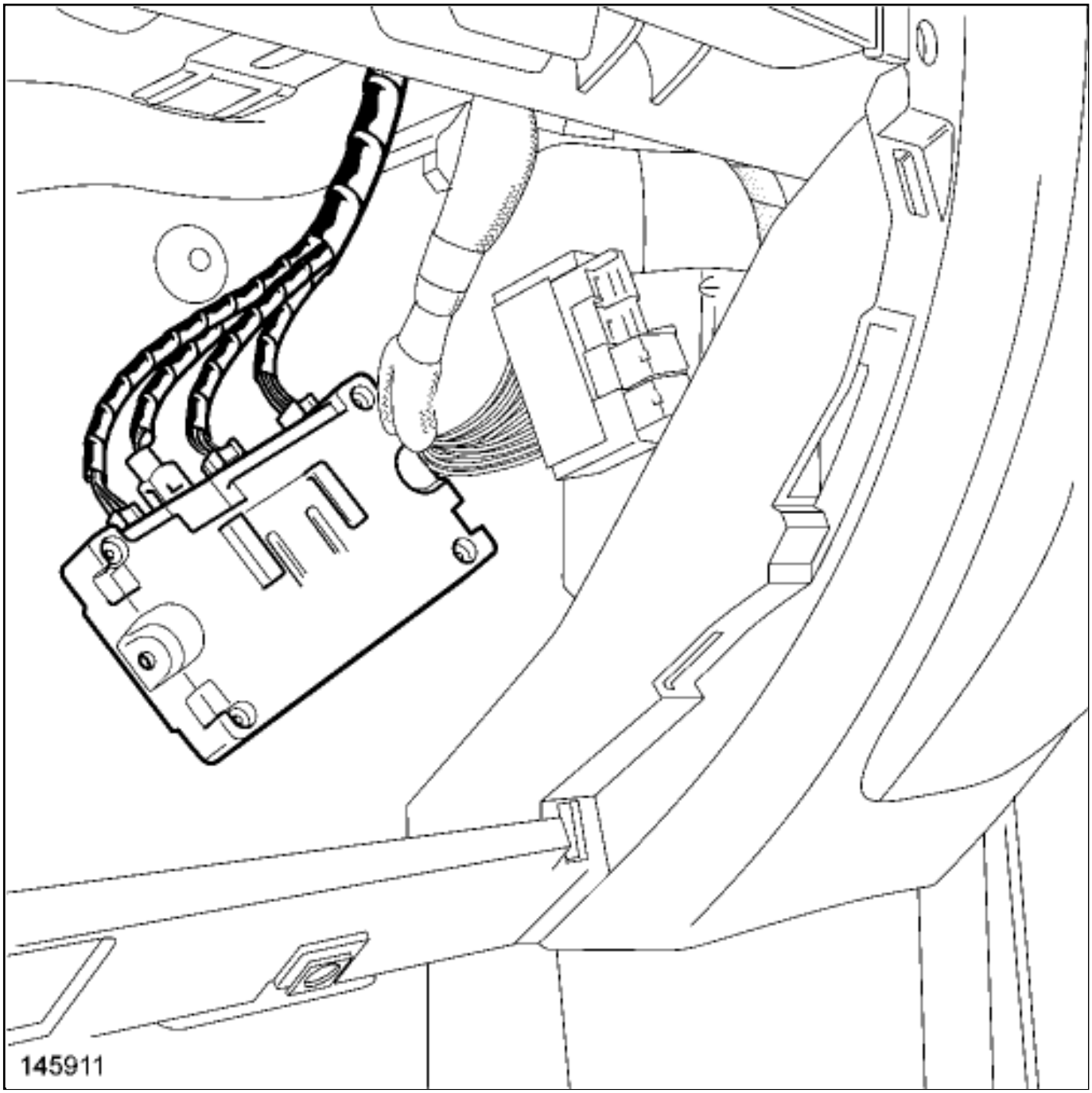
- Disconnect the battery Battery: Removal - Refitting .

- Remove the glovebox Glovebox: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION



- Unclip the offset multimedia socket computer towards the rear(1) .



- Disconnect the offset multimedia socket computer connectors.
- Remove the offset multimedia socket computer.

REFITTING

1. REFITTING OPERATION

- Connect the offset multimedia socket computer connectors.

- Clip the offset multimedia socket computer onto its mounting.

2. FINAL OPERATION

- Refit the glovebox Glovebox: Removal - Refitting (57A, Interior equipment).

- Connect the battery Battery: Removal - Refitting .

- Switch on the ignition.

- In the event of a replacement, apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Mobile connectivity computer",
  - go to repair mode,
  - display the "Before/after repair procedure" for the computer selected,
  - carry out the operations described in the "After repair procedure" section.

OIL DECANTER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

Location and specifications (tightening torques, parts always to be replaced, etc.)Engine oil circuit assembly: Exploded view .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the air filter unit air outlet pipe(see 12A, Fuel mixture, Air inlet assembly: Exploded view) .

- Remove the injector rail protector(see 13B, Diesel injection, Injection assembly: Exploded view) .

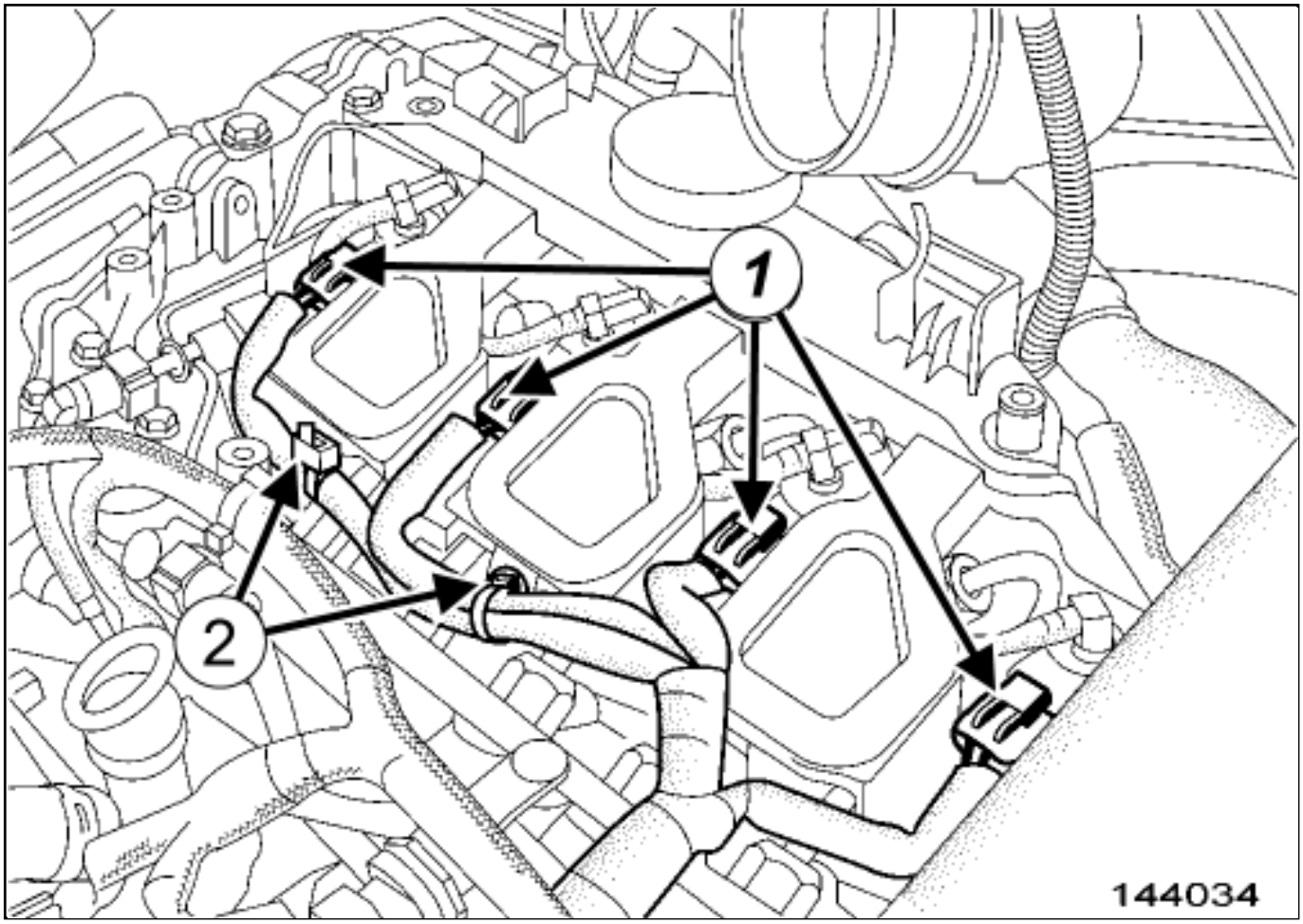
- Unclip the wiring from the turbocharger air inlet pipe(see 12A, Fuel mixture, Air inlet assembly: Exploded view) .

- Remove (see 12A, Fuel mixture, Air inlet assembly: Exploded view) :
  - the turbocharger air inlet pipe bolts on the turbocharger,
  - the turbocharger air inlet pipe seal.

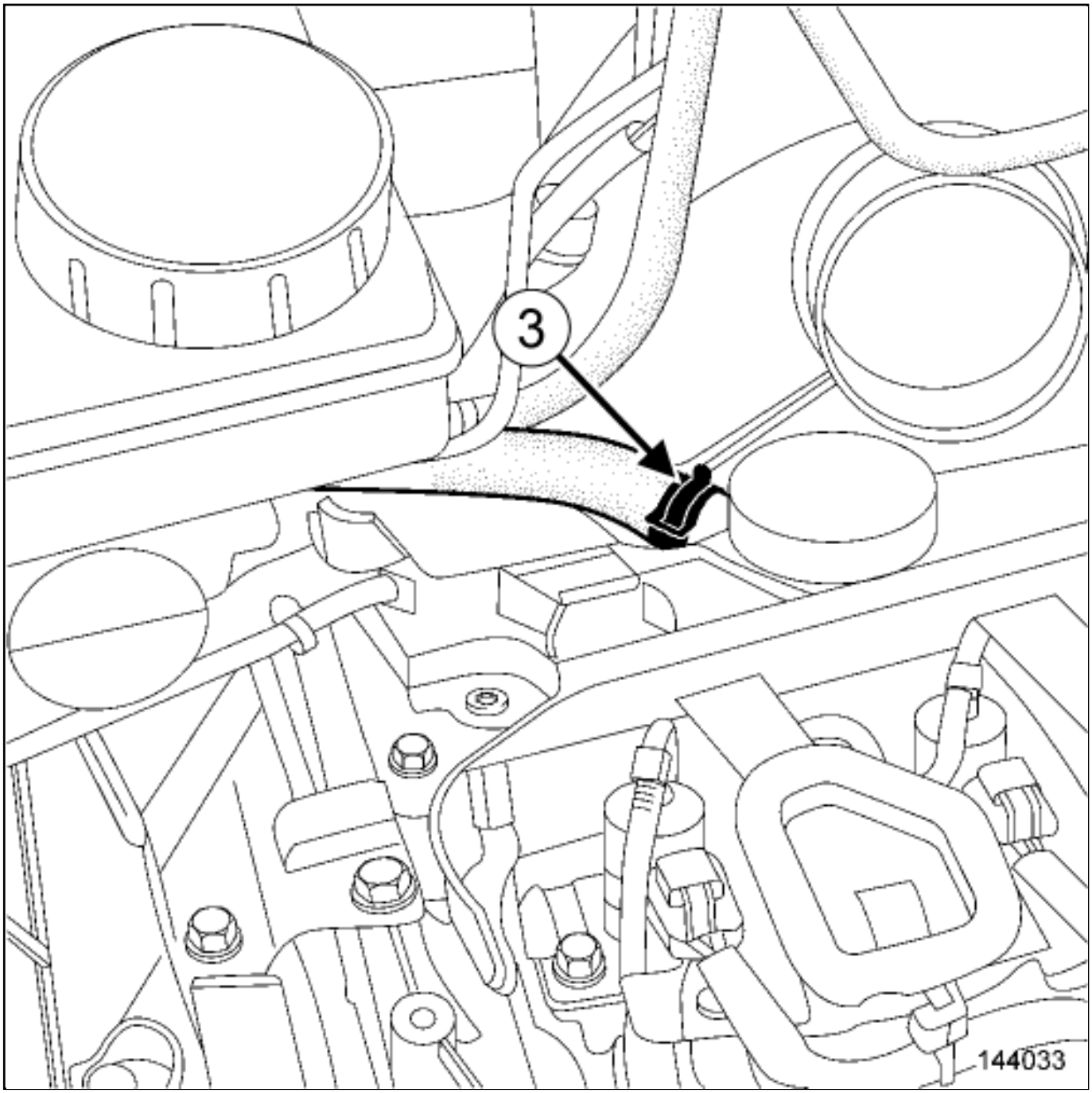
- Unclip (see 12A, Fuel mixture, Air inlet assembly: Exploded view) :
  - the intercooler air inlet pipe clip on the turbocharger,
  - the vacuum pipe on the intercooler air inlet pipe.

- Disconnect the intercooler air inlet pipe from the turbocharger(see 12A, Fuel mixture, Air inlet assembly: Exploded view) .

- Remove (see 12A, Fuel mixture, Air inlet assembly: Exploded view) :
  - the intercooler air inlet pipe bolt on the inlet distributor,
  - the intercooler air inlet pipe seal at the turbocharger end.



- Disconnect the diesel injector connectors(1) .
- Unclip the diesel injector wiring(2) on the oil decanter.
- Move aside the diesel injector wiring.



Separate the oil vapour rebreathing pipe clip(3) on the oil decanter using the toolRemote operation pliers for hose clips.(Mot. 1448) .

Disconnect the oil vapour rebreathing pipe from the oil decanter.

2. REMOVAL OPERATION

Remove Engine oil circuit assembly: Exploded view :

- the oil decanter,
- the oil decanter seals.

REFITTING

1. REFITTING PREPARATION OPERATION

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean and degrease:
  - the oil decanter seal housings, if they are being reused,
  - the rocker cover joint faces.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

OIL FILTER UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
refrigerant charging station

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view)** .

CAUTION

Always check the oil level using the engine oil dipstick.

Do not exceed the maximum level on the engine oil dipstick (as this could damage the engine).

Correct the engine oil level if necessary before delivering the vehicle to the customer.

REMOVAL

1. REMOVAL PREPARATION OPERATION

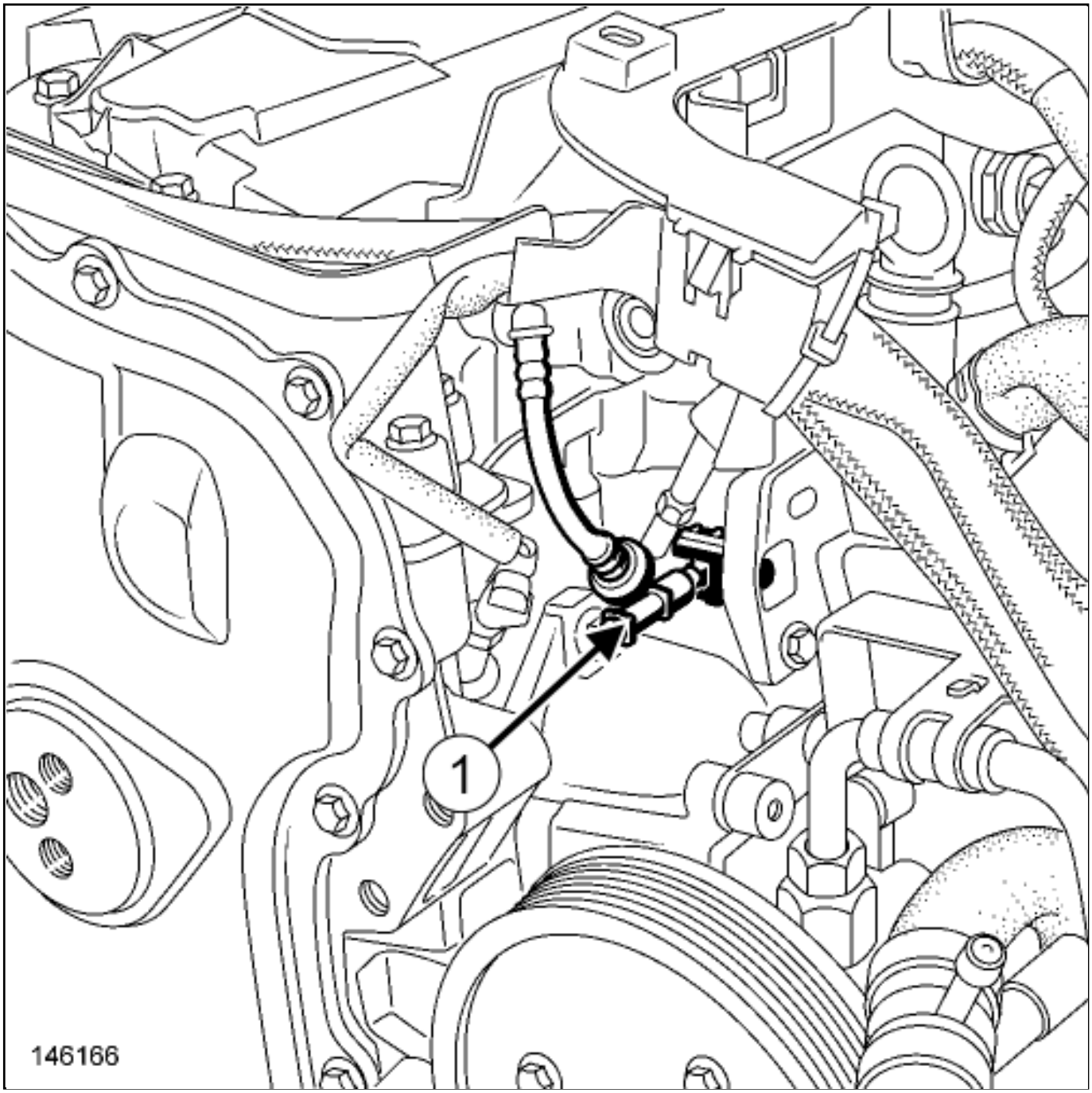
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).
- Remove the engine undertray.
- Drain the cooling system**Cooling system: Draining - Refilling** .

Remove Engine accessories assembly: Exploded view :

- the accessories belt,
- the power-assisted steering pump,
- the alternator protector,
- the alternator.

Remove:

- the multifunction support,
- the engine oil dipstick(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .



Unclip the fuel return pipe(1) from the engine oil dipstick guide.

- Remove:
  - the engine oil dipstick guide (see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) ,
  - the oil filter (see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .

2. REMOVAL OPERATION

- Separate the clip of the coolant pump inlet pipe on the oil filter unit Coolant circuit assembly: Exploded view .
- Disconnect the coolant pump inlet pipe from the oil filter unit Coolant circuit assembly: Exploded view .
- Separate the clip of the exhaust gas cooler coolant outlet pipe on the oil filter unit Coolant circuit assembly: Exploded view .
- Disconnect the exhaust gas cooler coolant outlet pipe from the oil filter unit Coolant circuit assembly: Exploded view .
- Separate the clip of the cooling radiator outlet pipe on the oil filter unit Coolant circuit assembly: Exploded view .
- Disconnect the cooling radiator outlet pipe from the oil filter unit Coolant circuit assembly: Exploded view .
- Disconnect the oil pressure sensor connector (see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .
- Remove (see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) :
  - the oil filter unit,
  - the oil filter unit seal.

REFITTING

1. REFITTING PREPARATION OPERATION

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean and degrease:
  - the cylinder block gasket face,
  - the oil filter unit seal housings and gasket faces.

1- IF REPLACING THE OIL FILTER UNIT

❏ Remove the oil pressure sensor from the old oil filter unit(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .

❏ Refit the oil pressure sensor on the new oil filter unit(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .

2. REFITTING OPERATION

❏ Proceed in the reverse order to removal.

❏ Top up the engine oil level(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling) .

CAUTION

Always check the oil level using the engine oil dipstick.

Do not exceed the maximum level on the dipstick (could destroy the engine).

Correct the engine oil level if necessary before delivering the vehicle to the customer.

❏ Before refitting the engine undertray, fill and bleed the engine cooling systemCooling system: Draining - Refilling .

❏ Fill and bleed the power-assisted steering circuitPower-assisted steering circuit: Bleeding (36B, Power-assisted steering).

OIL LEVEL SENSOR: REMOVAL - REFITTING

Locations and specifications (tightening torques, parts always be replaced, etc.)(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .

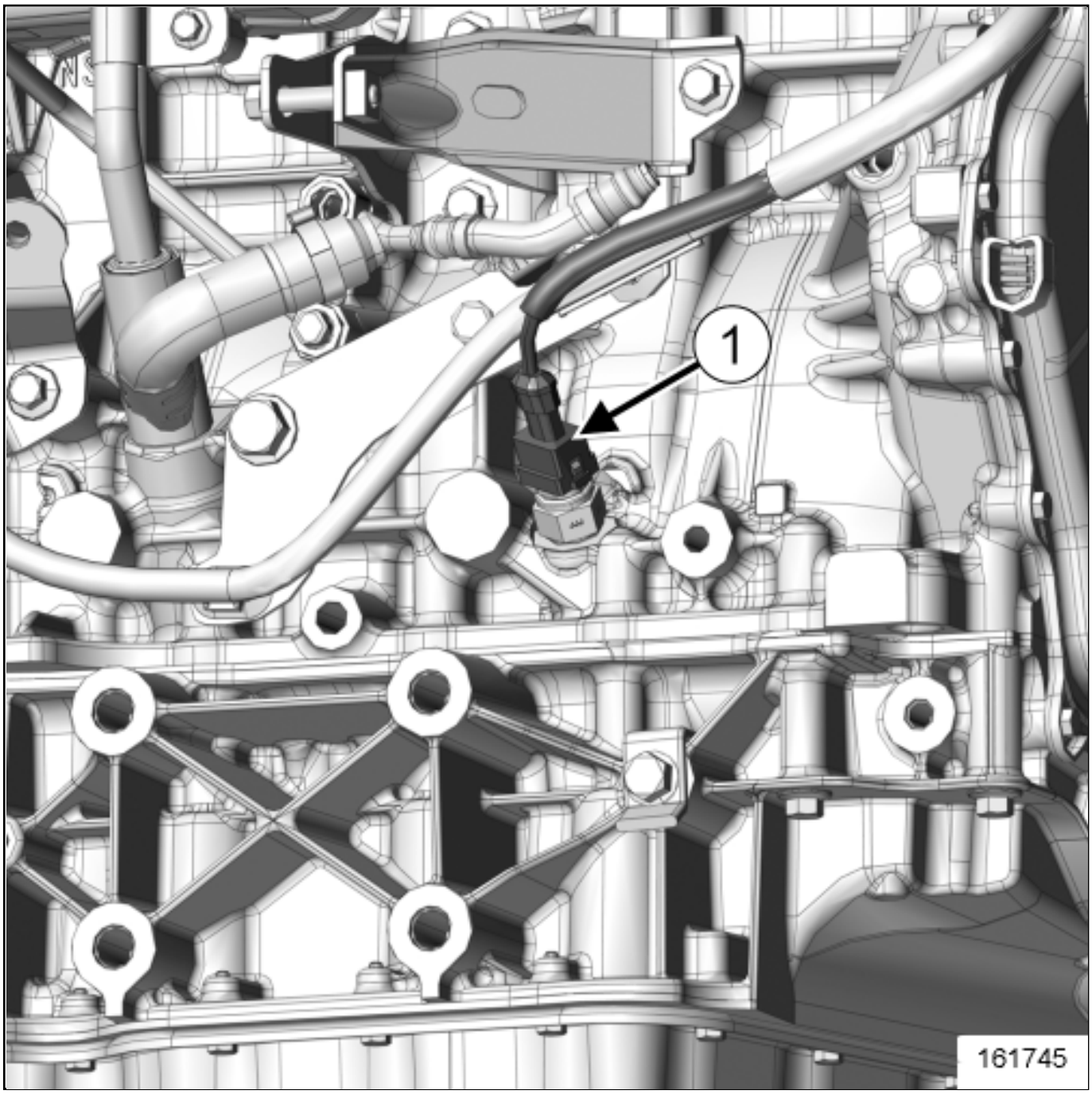
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the intercooler air inlet pipe.

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the duct between the low pressure turbocharger and the turbo-manifold,
  - the low pressure turbocharger.

2. REMOVAL OPERATION



- Disconnect the oil level sensor connector(1) .

- Remove the oil level sensor .

REFITTING

1. FINAL OPERATION

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

OIL LEVEL SENSOR: REMOVAL - REFITTING

Locations and specifications (tightening torques, parts always be replaced, etc.)(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .

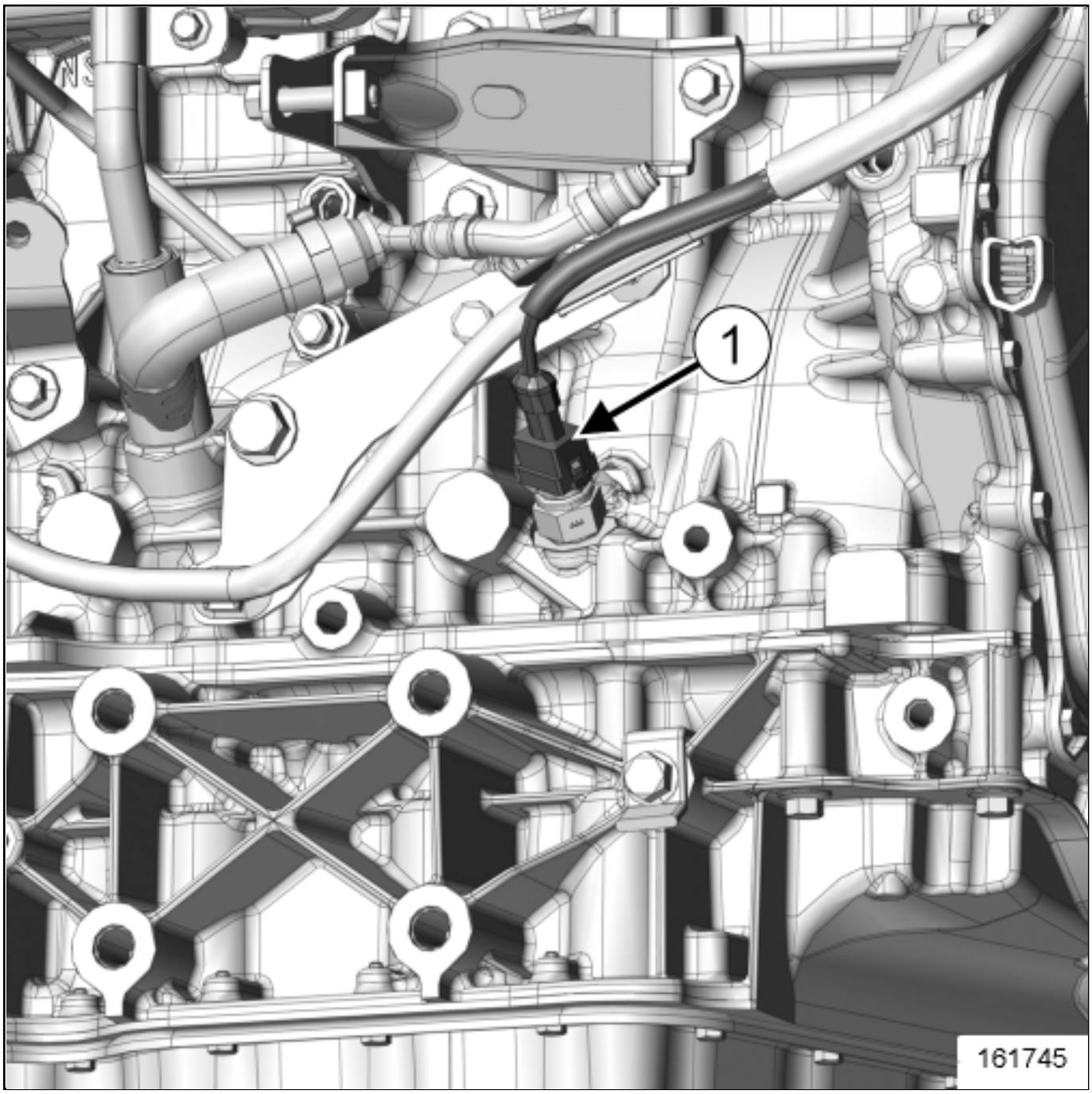
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the intercooler air inlet pipeAir inlet assembly: Exploded view .

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the duct between the low pressure turbocharger and the turbo-manifold,
  - the low pressure turbocharger.

2. REMOVAL OPERATION



- Disconnect the oil level sensor connector(1) .

- Remove the oil level sensor(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .

REFITTING

1. FINAL OPERATION

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

OIL PRESSURE: CHECK

Note, one or more warnings are present in this procedure

Special tooling required	
22 mm socket for removal - refitting of oxygen sensors.	Mot. 1495-01
Set of replacement unions for kit Mot.836-05.	Mot. 836-06

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

OIL PRESSURE TABLES:

Engine	Engine suffix	Minimum oil pressure (bar)				Maximum oil pressure (bar)
		Idling speed	at 2000 rpm	at 3000 rpm	at 4000 rpm	
M9T	All	1.4	-	4.7	-	6.4

END PIECES TO BE USED:

Engine	End pieces
M9R	(C) + (F)

1. PREPARATION OPERATION FOR CHECK

CAUTION

Always check the oil level using the dipstick.

Do not exceed the maximum level on the dipstick (could destroy the engine).

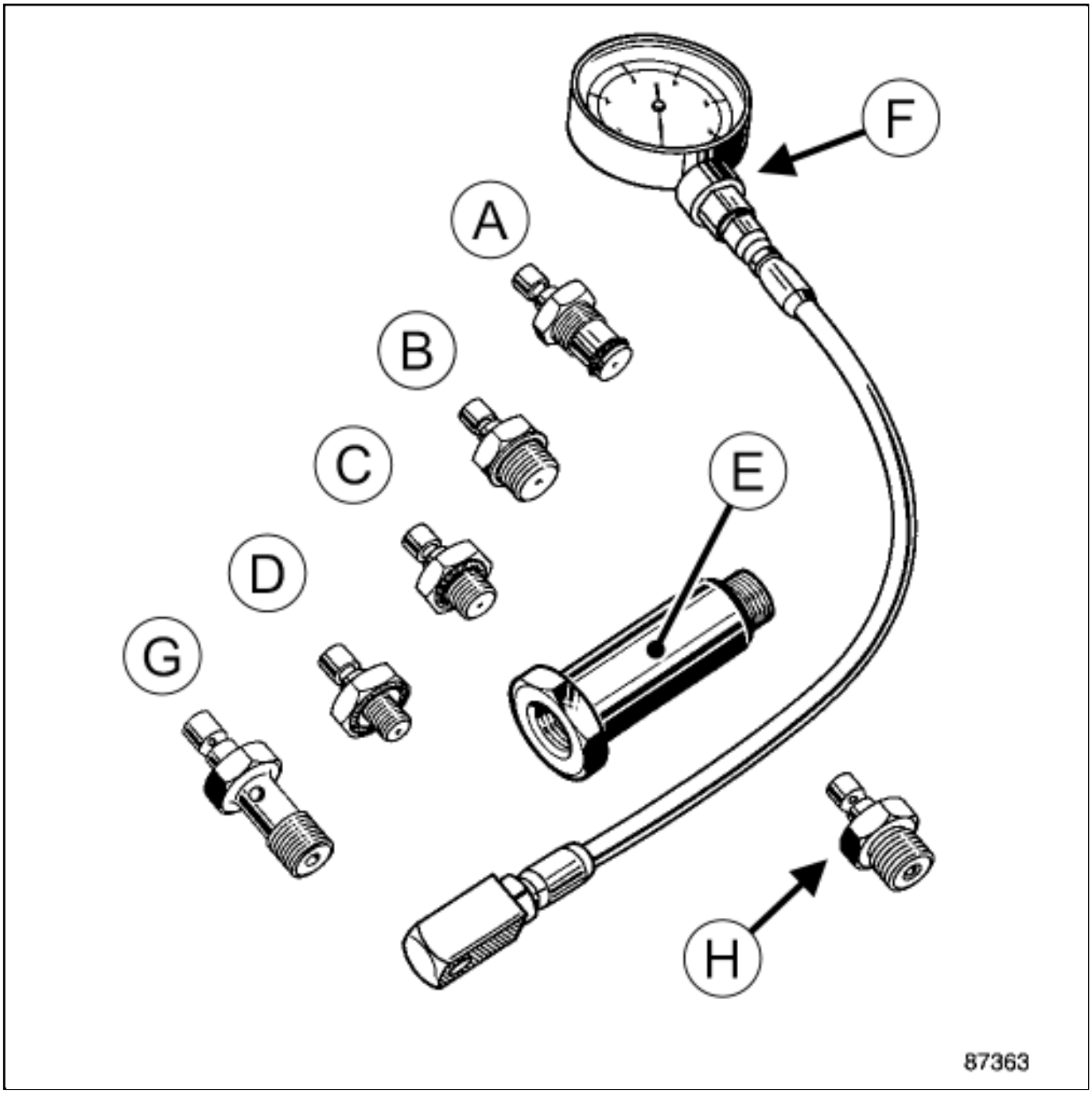
Correct the engine oil level if necessary before delivering the vehicle to the customer.

Note:

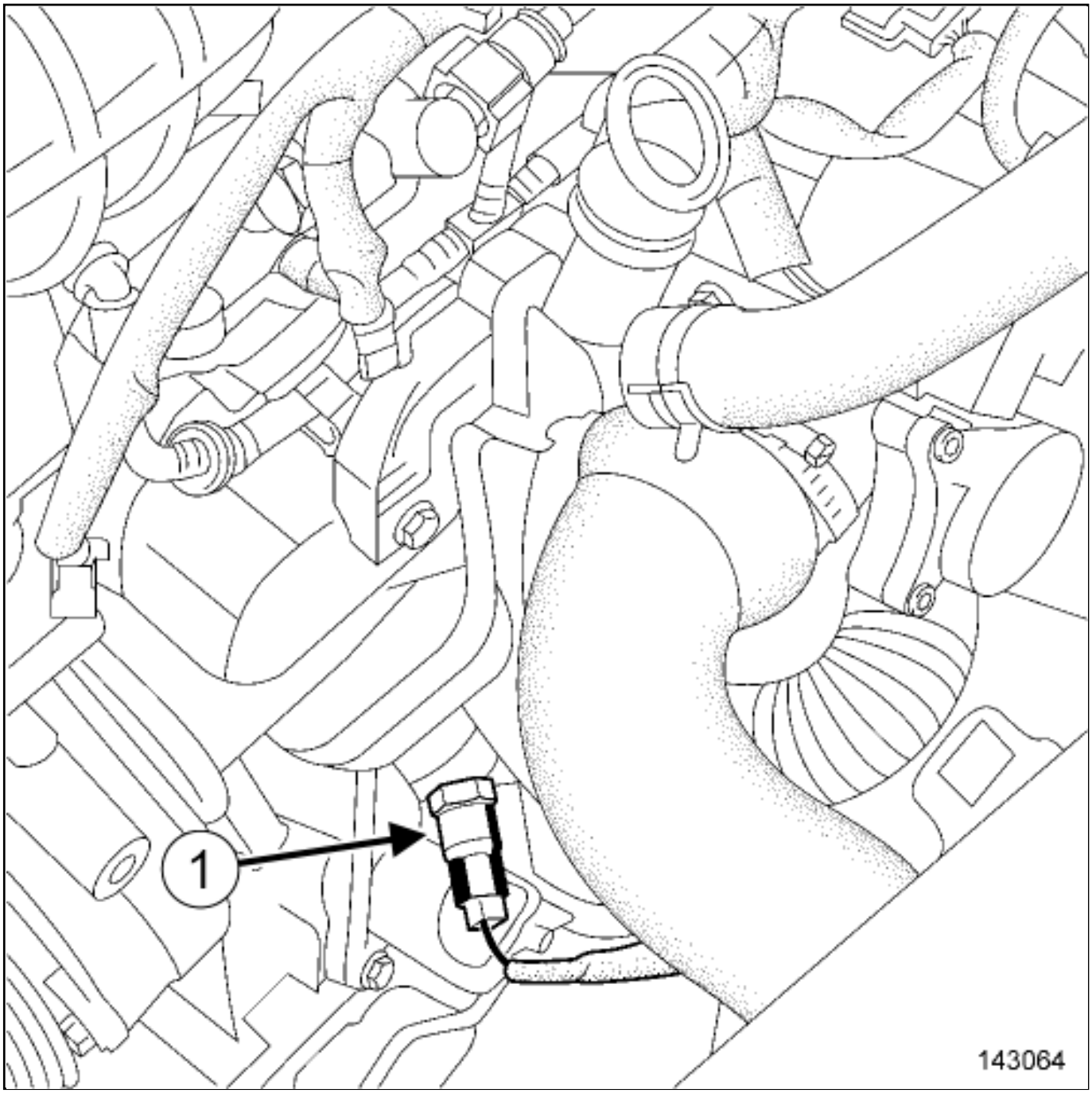
When topping up the engine oil, always leave at least 10 minutesbefore checking the level with a dipstick.

2. CHECKING

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Remove the engine undertray.



- Remove the oil pressure sensor(see 10A, Engine and cylinder block assembly, Oil pressure sensor: Removal - Refitting) .



- In place of the oil pressure sensor(1), fit the toolSet of replacement unions for kit Mot.836-05.(Mot. 836-06) with suitable adapters using the tool22 mm socket for removal - refitting of oxygen sensors.(Mot. 1495-01) or a 22 mmlong socket.

- Start the vehicle.

- Monitor the engine oil pressure as the oil temperature rises (approximately 80°Cor the first time the engine cooling fan is activated); it should not be less than the pressure at idle speed.

- If the oil pressure is lower than the pressure at idle speed, check that:
  - the oil filter is not clogged,

- dirt or swarf is not present in the engine oil,
- the oil pump is in good condition and being correctly driven.

- Check the oil pressure in comparison with the values given in the table above.
- Switch off the engine.
- Remove the Set of replacement unions for kit Mot.836-05.(Mot. 836-06) with the end pieces.
- Refit the oil pressure sensor(see 10A, Engine and cylinder block assembly, Oil pressure sensor: Removal - Refitting) .
- Wipe any oil run-off with a cloth.
- Wait at least 10 minutes.
- Check the oil level using the dipstick.
- Top up the oil level if necessary(see 10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling) .
- Start the vehicle and check that there are no oil leaks at the oil pressure sensor.

OIL PRESSURE SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
22 mm socket for removal - refitting of oxygen sensors - 1/2 square drive and 24 mm hexagonal ext.	Mot. 1495

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view)** .

CAUTION

Always check the oil level using the engine oil dipstick.

Do not exceed the maximum level on the dipstick (could destroy the engine).

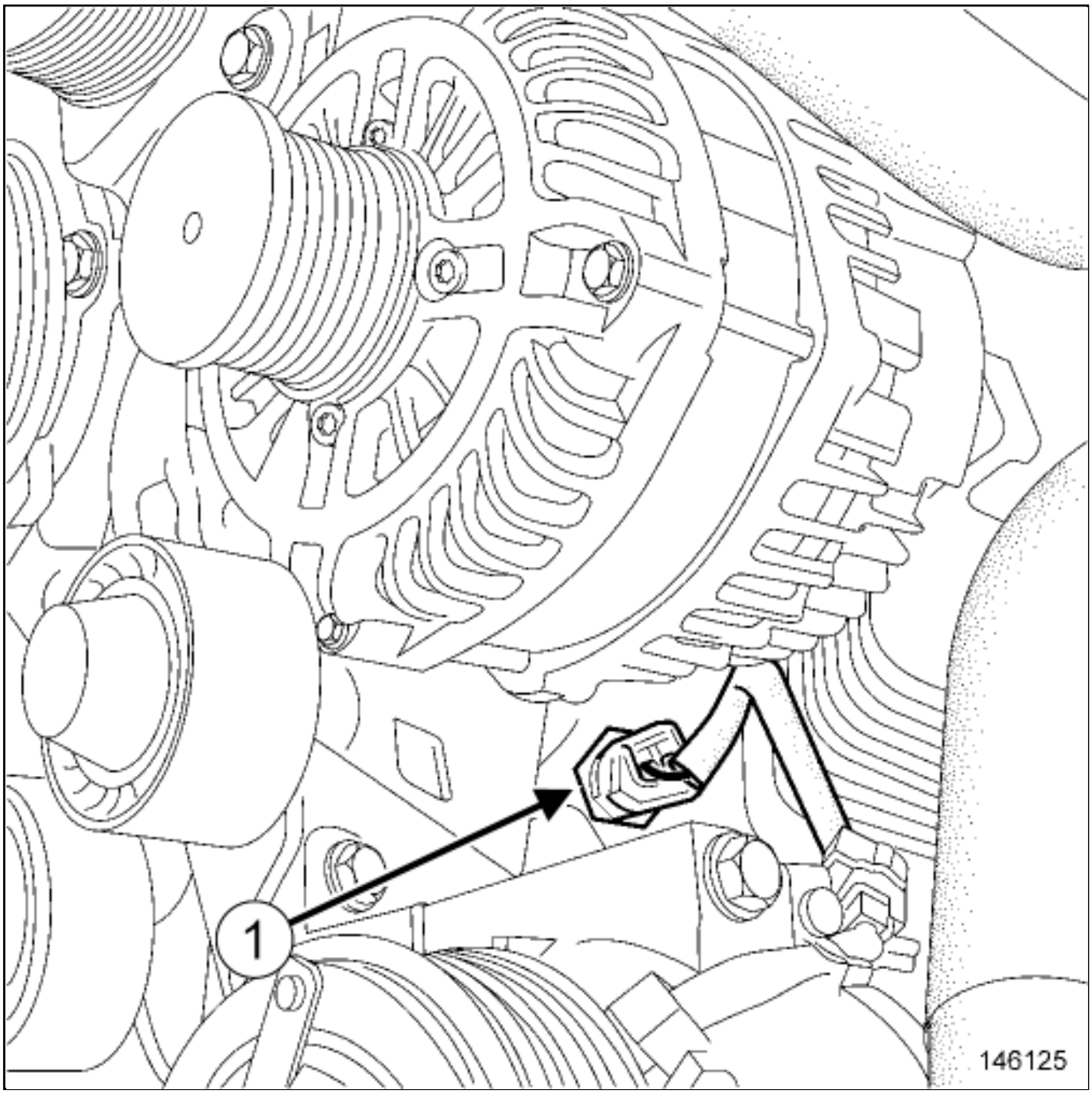
Correct the engine oil level if necessary before delivering the vehicle to the customer.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Remove the engine undertray.

2. REMOVAL OPERATION



- Disconnect the oil pressure sensor connector(1) .

- Remove the oil pressure sensor using the22 mm socket for removal - refitting of oxygen sensors - 1/2 square drive and 24 mm hexagonal ext.(Mot. 1495) (see 10A, Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) (see 10A,Engine and cylinder block assembly, Engine oil circuit assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

OPENING AERIAL: REMOVAL - REFITTING

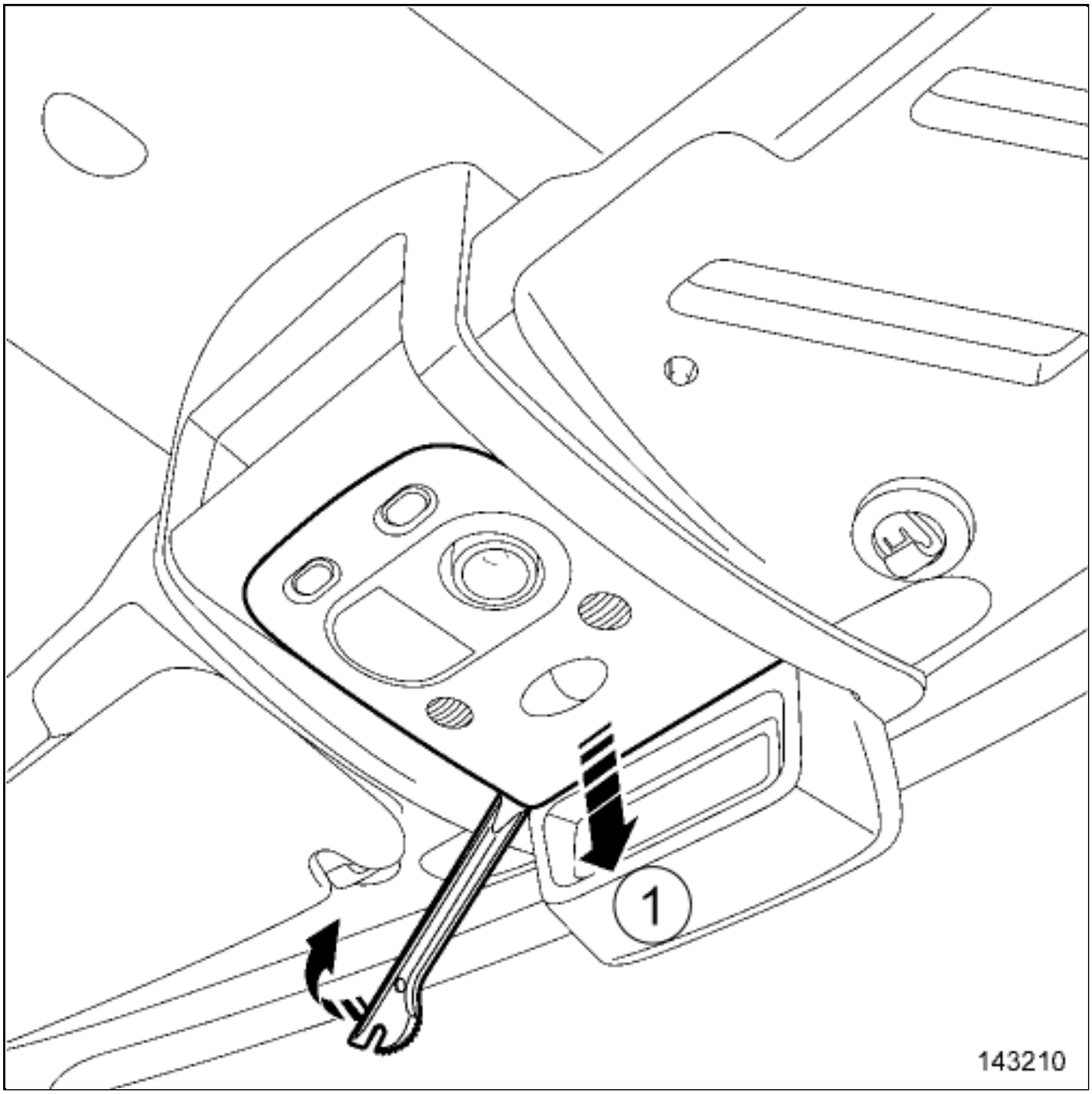
Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.

1- UPPER OPENING AERIAL



Remove the interior light at(1) using the toolSet of trim removal levers.(Car. 1363) .

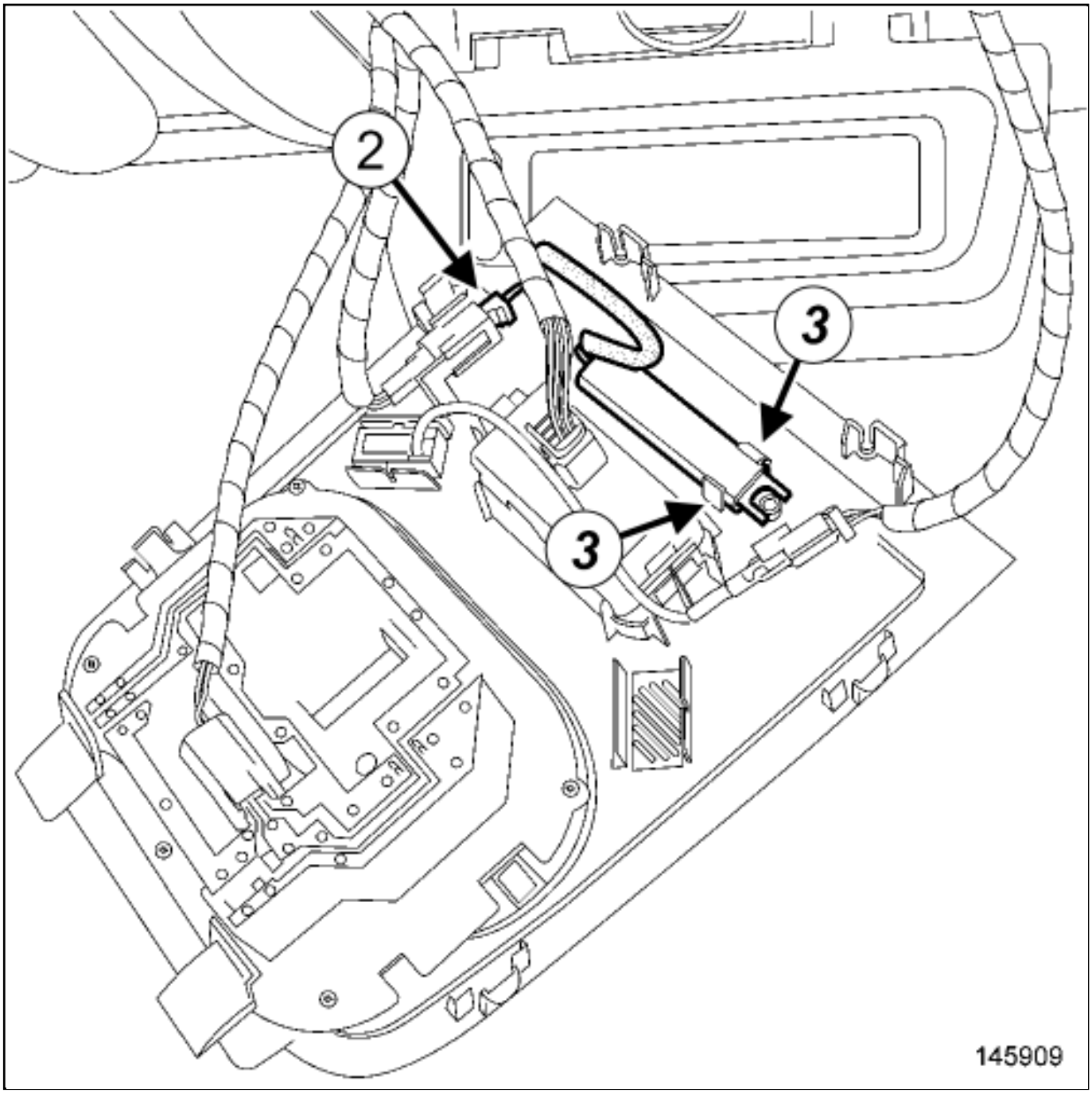
2- LOWER OPENING AERIAL

Remove:

- the central consoleCentre console: Removal - Refitting (57A, Interior equipment),
- the passenger side door sill liningFront door sill lining: Removal - Refitting (71A, Body internal trim),
- partially remove the floor carpet.

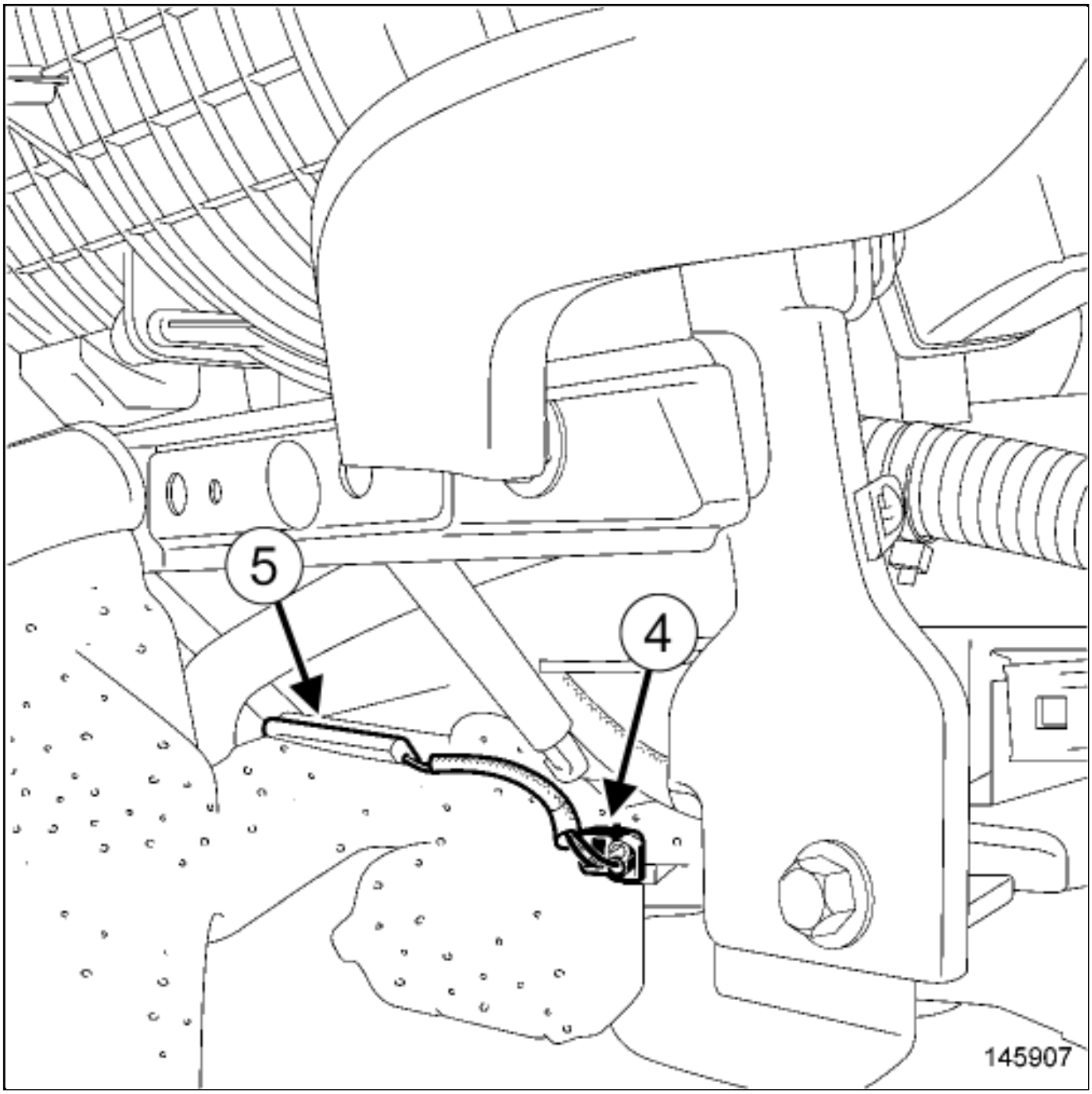
2. REMOVAL OPERATION

1- UPPER OPENING AERIAL



- Disconnect the connector(2) from the opening aerial.
- Remove the opening aerial by pressing on the clips(3) .

2- LOWER OPENING AERIAL



- Disconnect the connector(4) from the opening aerial.
- Extract the opening aerial(5) from the soundproofing under the distribution unit.

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

OPENING ELEMENTS MANAGEMENT: LIST AND LOCATION OF COMPONENTS

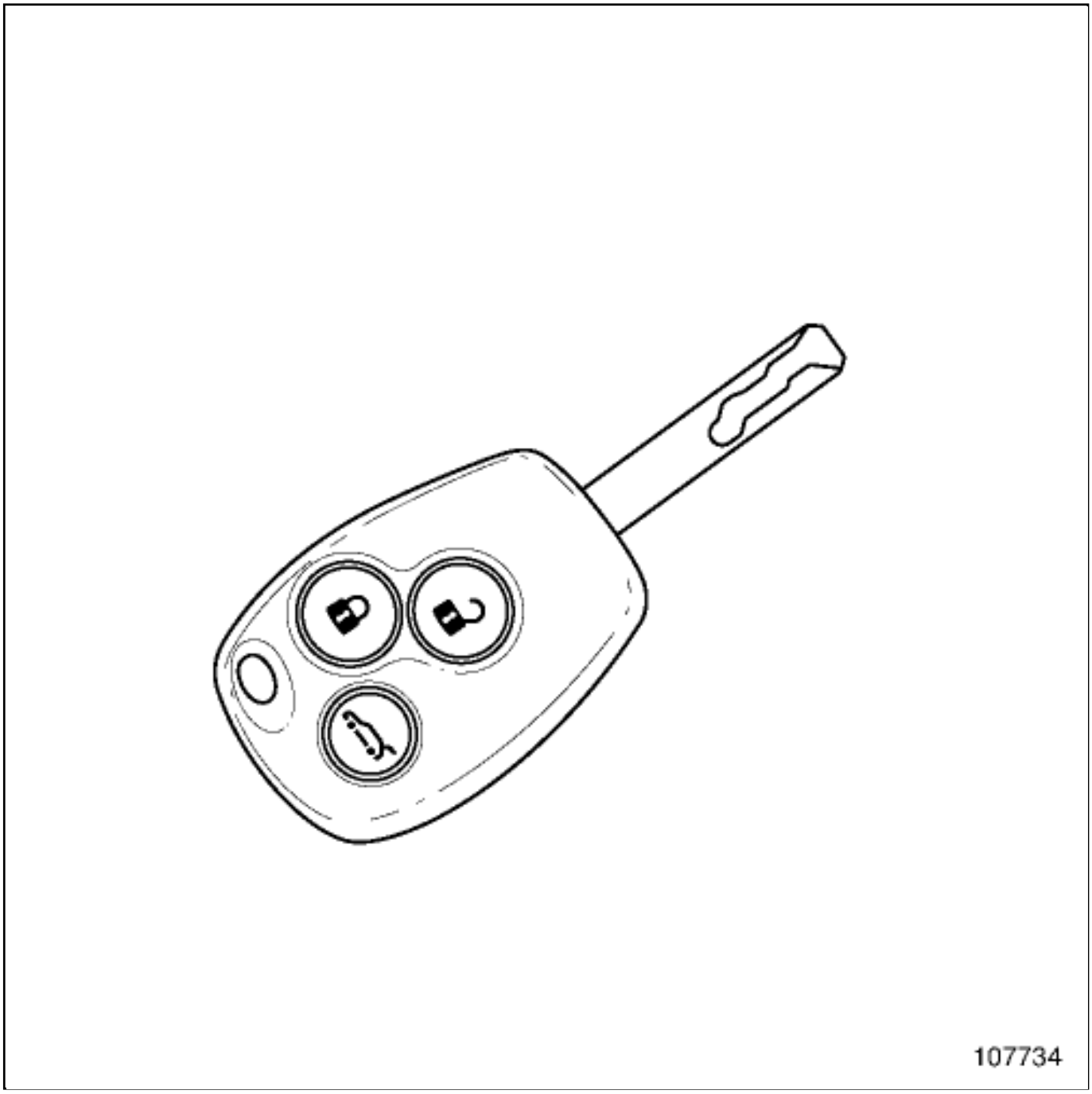
1. LIST OF COMPONENTS

1- THE OPENING ELEMENTS MANAGEMENT SYSTEM CONSISTS OF:

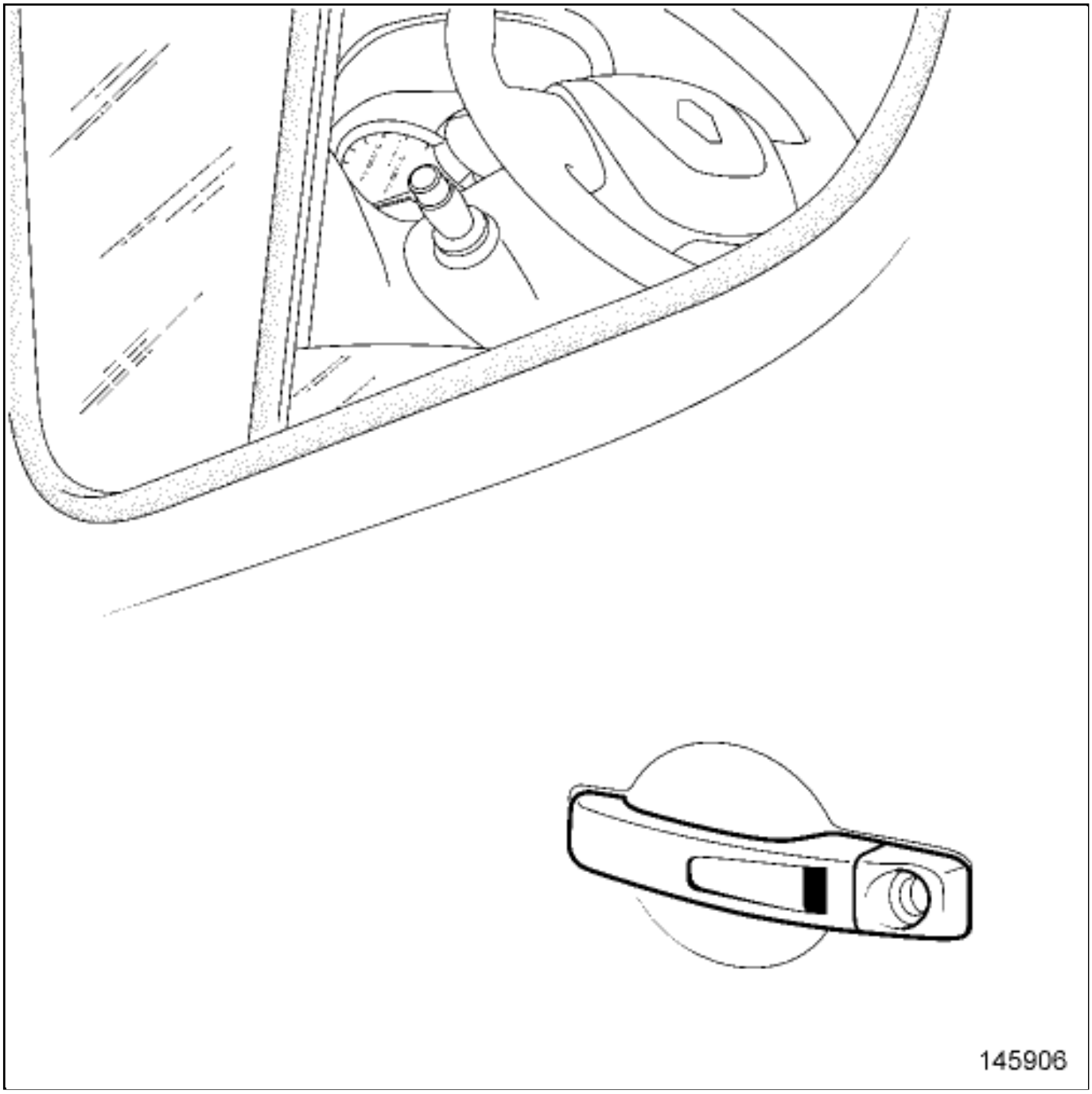
- an ignition key
- a central door locking switch on the front left-hand handle**Exterior door handle: Removal - Refitting** (51A, Side opening element mechanisms)
- opening aerials**(see 87C, Opening element management, Opening aerial: Removal - Refitting)**
- a hands-free transmitter
- a hands-free access computer**(see 87C, Opening element management, Hands-free access computer: Removal - Refitting)**

2. LOCATION OF COMPONENTS

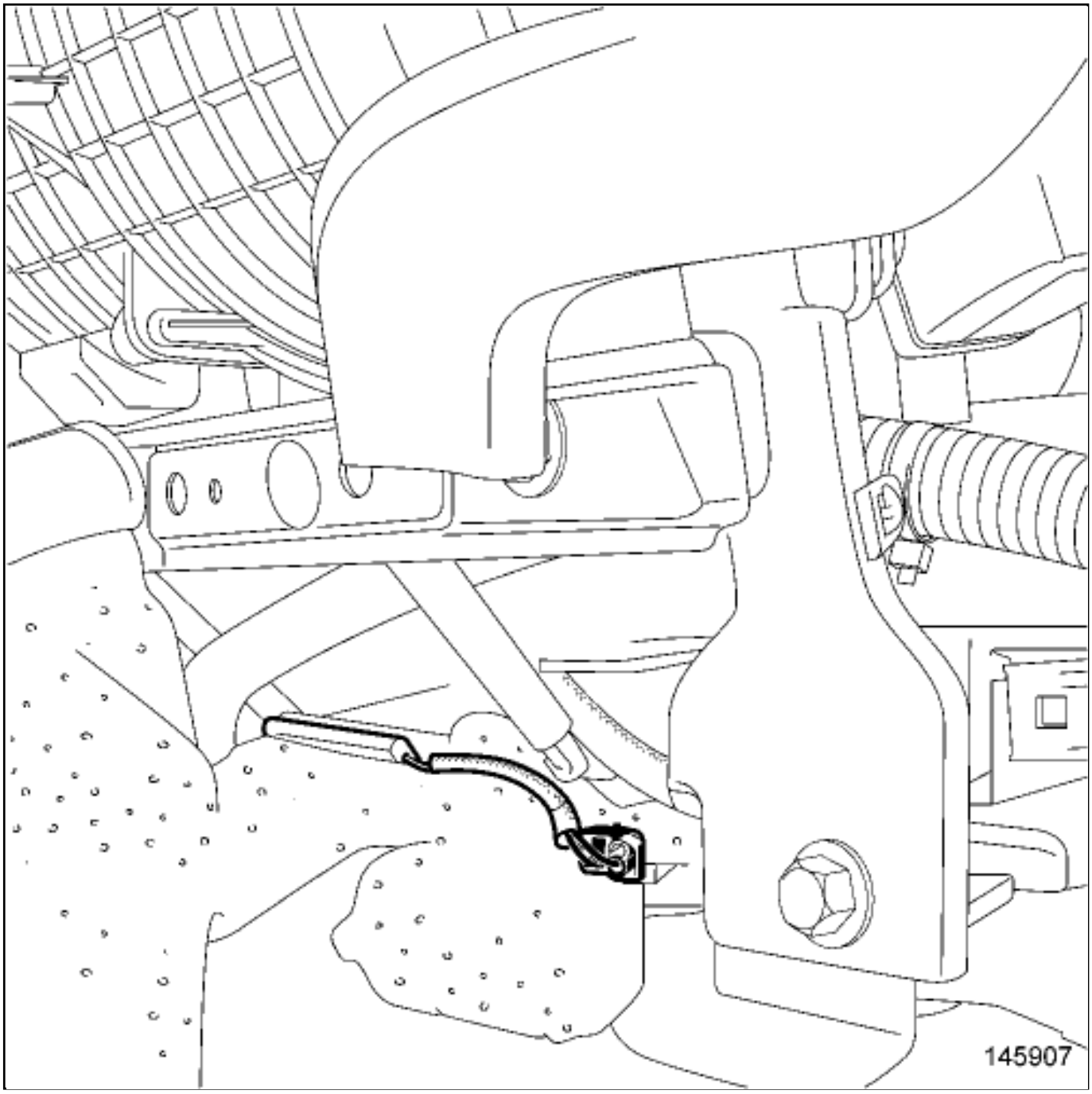
IGNITION KEY



CENTRAL DOOR LOCKING SWITCH ON THE FRONT LEFT-HAND DOOR HANDLE

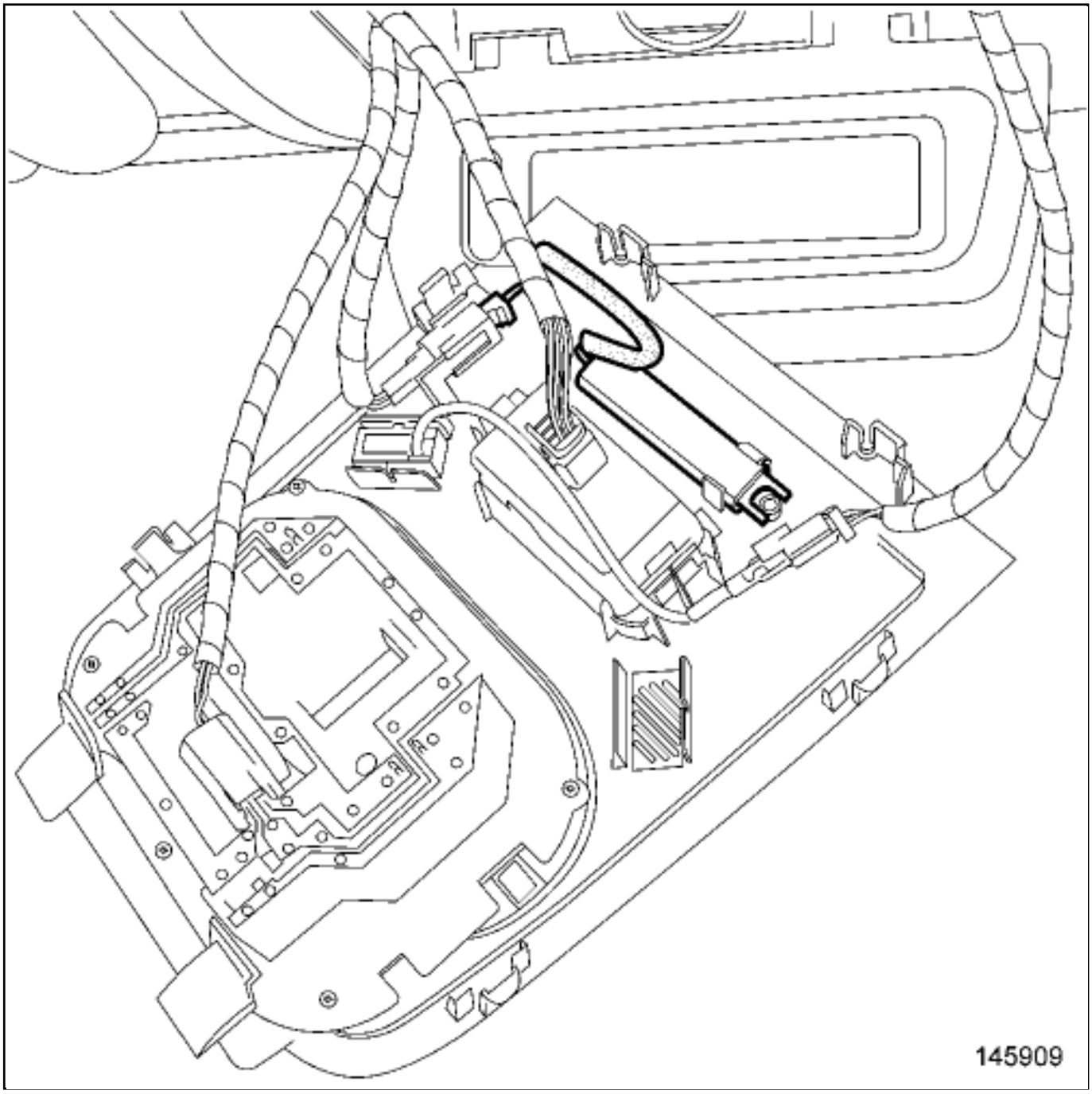


LOWER OPENING AERIAL



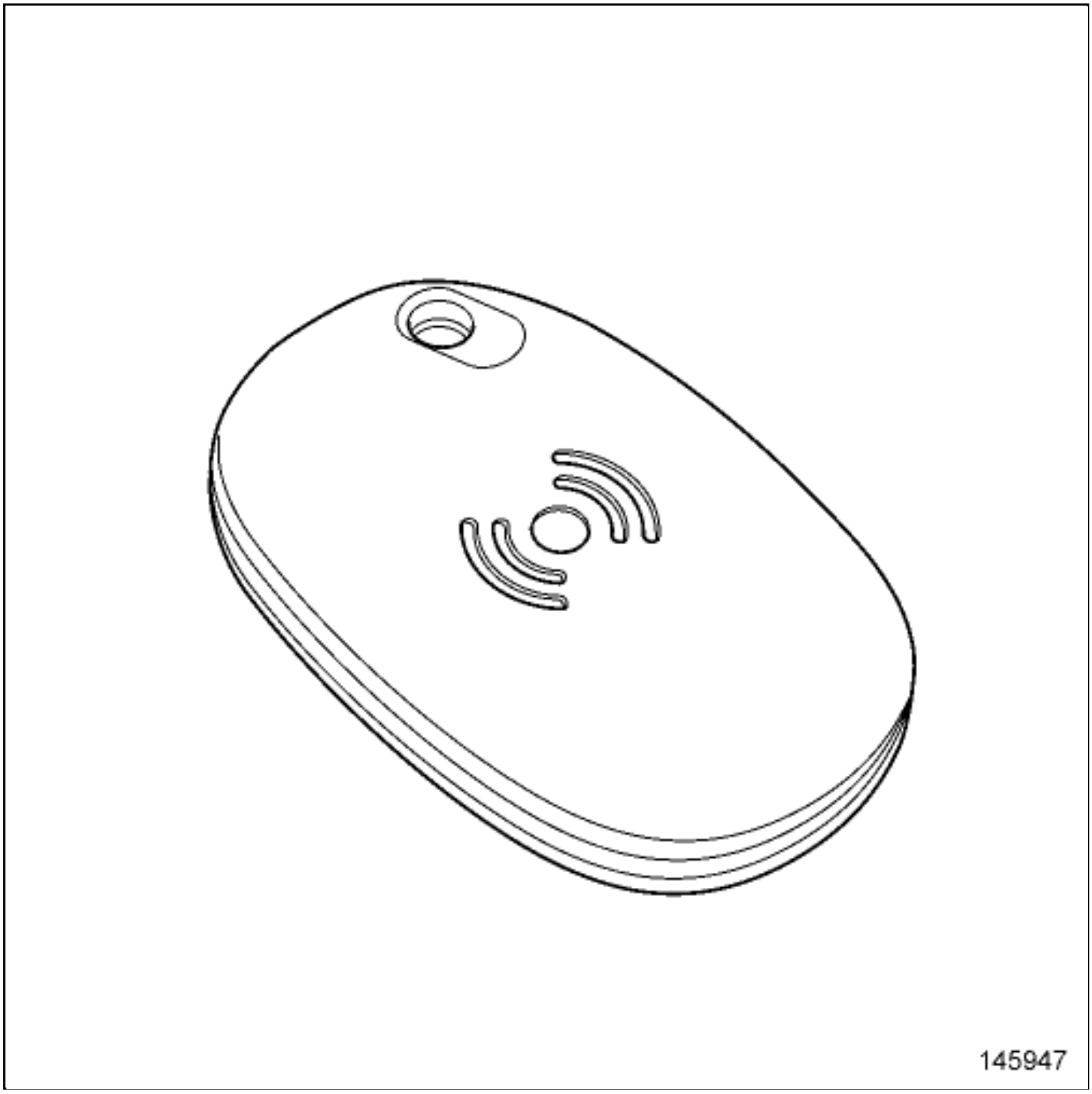
The lower opening aerial is located on the soundproofing, under the distribution unit.

UPPER OPENING AERIAL

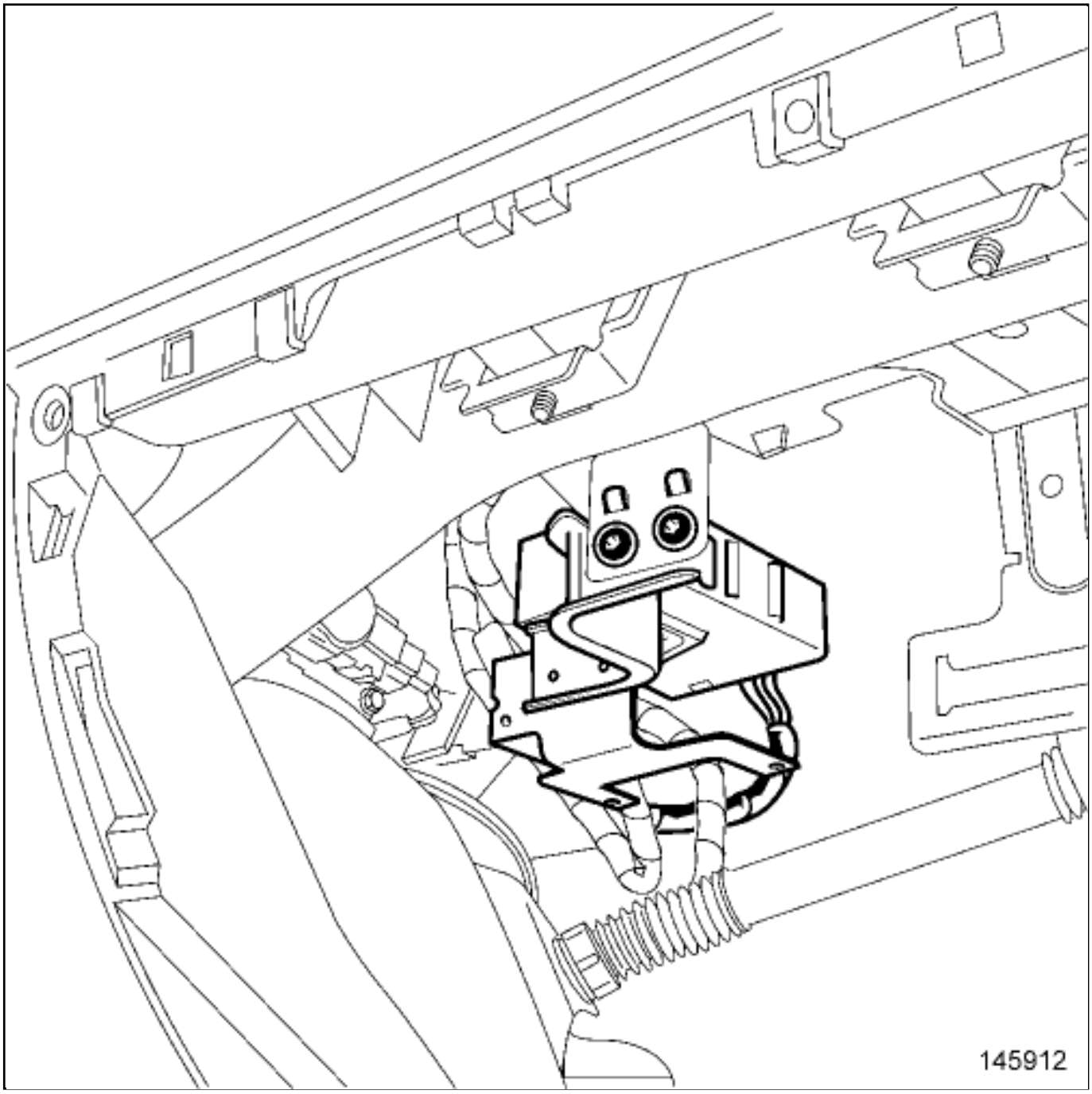


The upper opening aerial is located on the interior light.

HANDS-FREE TRANSMITTER



HANDS-FREE ACCESS COMPUTER



The hands-free access computer is located on the dashboard cross member, behind the glovebox.

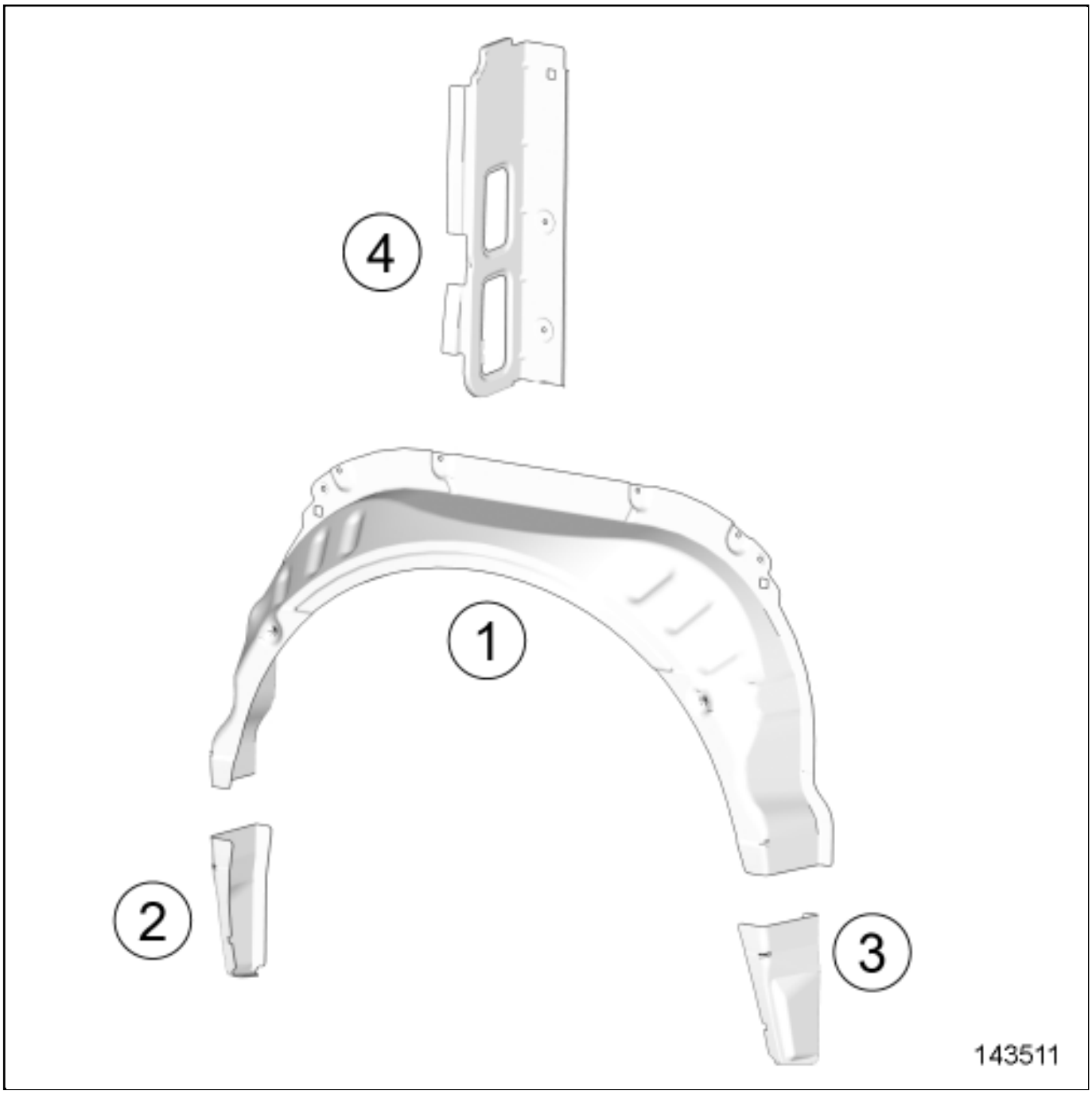
OUTER REAR WHEEL ARCH: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

1. COMPOSITION OF THE SPARE PART

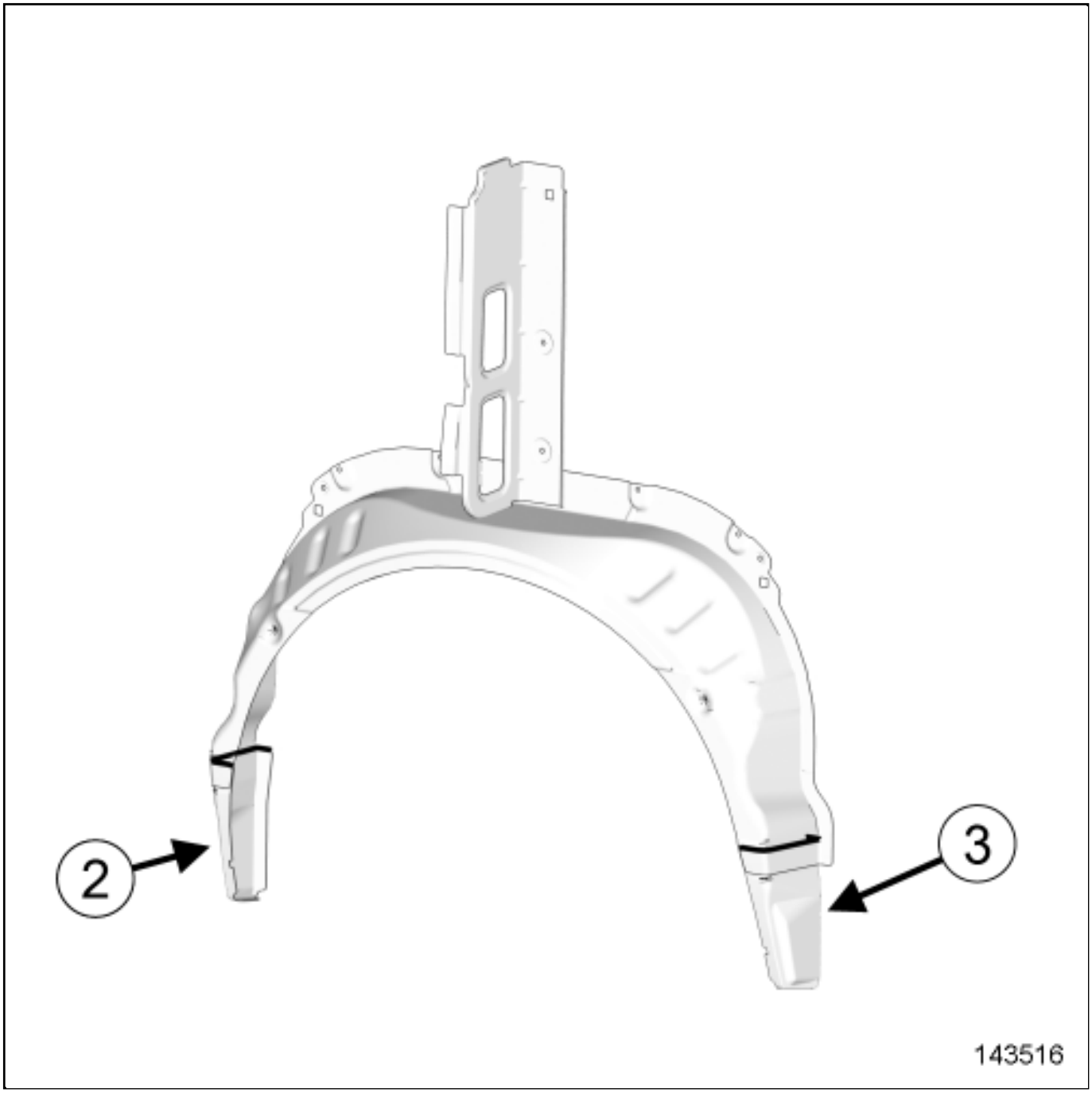

4
1
2
3
143511

No.	Description	Type	Thickness (mm)
(1)	Outer rear wheel arch	Mild steel	0.7
(2)	Outer rear wheel arch, front section	Mild steel	1.5
(3)	Outer rear wheel arch, rear section	Mild steel	1.5
(4)	Side panel vertical stiffener	Mild steel	0.8

2. IN THE EVENT OF REPLACEMENT

The options for replacing this part are as follows:

- Complete replacement
- Partial replacement 1+2+4,
- Partial replacement 1+3+4,
- Partial replacement 2+3.



CAUTION

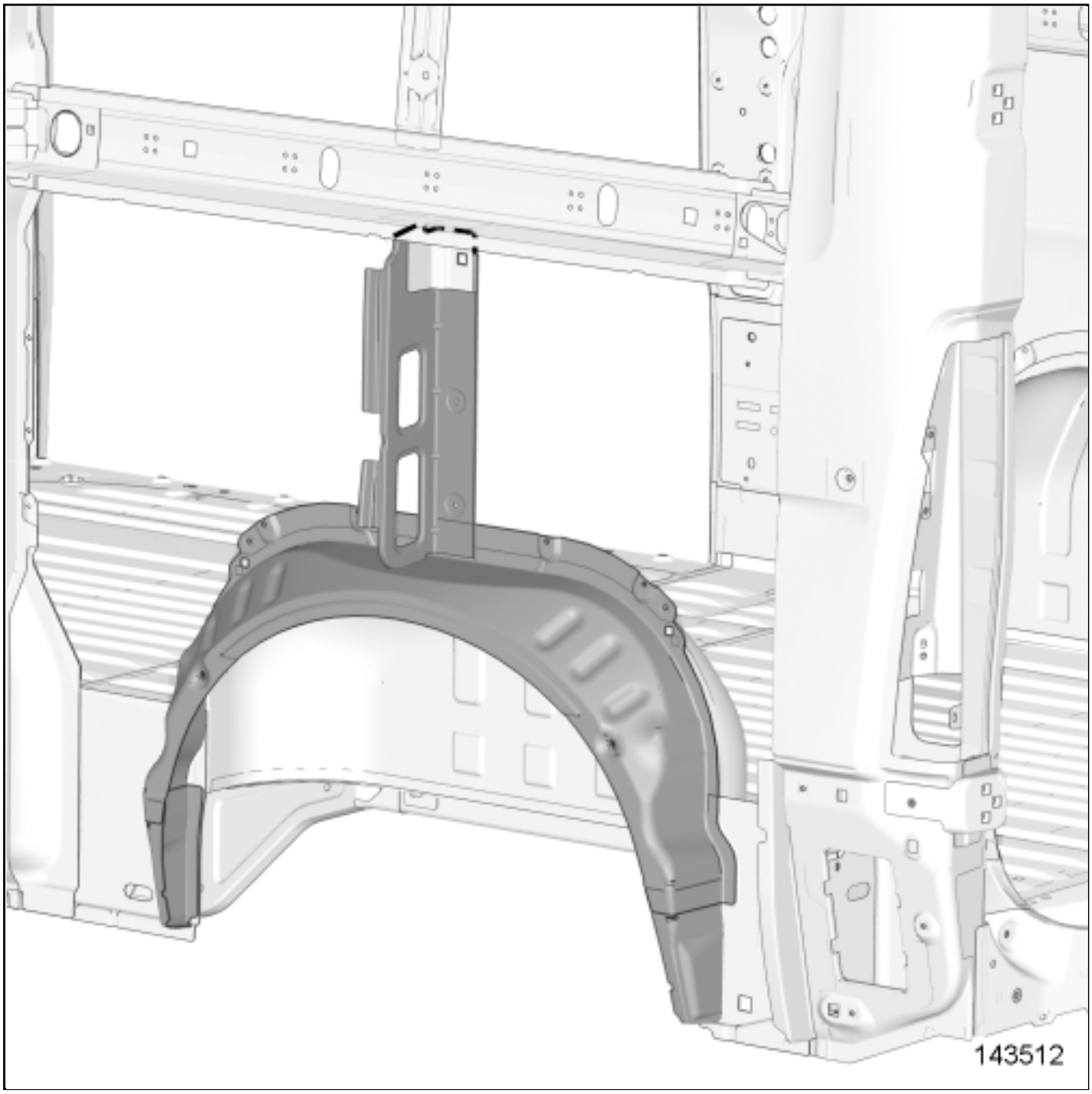
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area(see **Earths on body: List and location of components**) .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



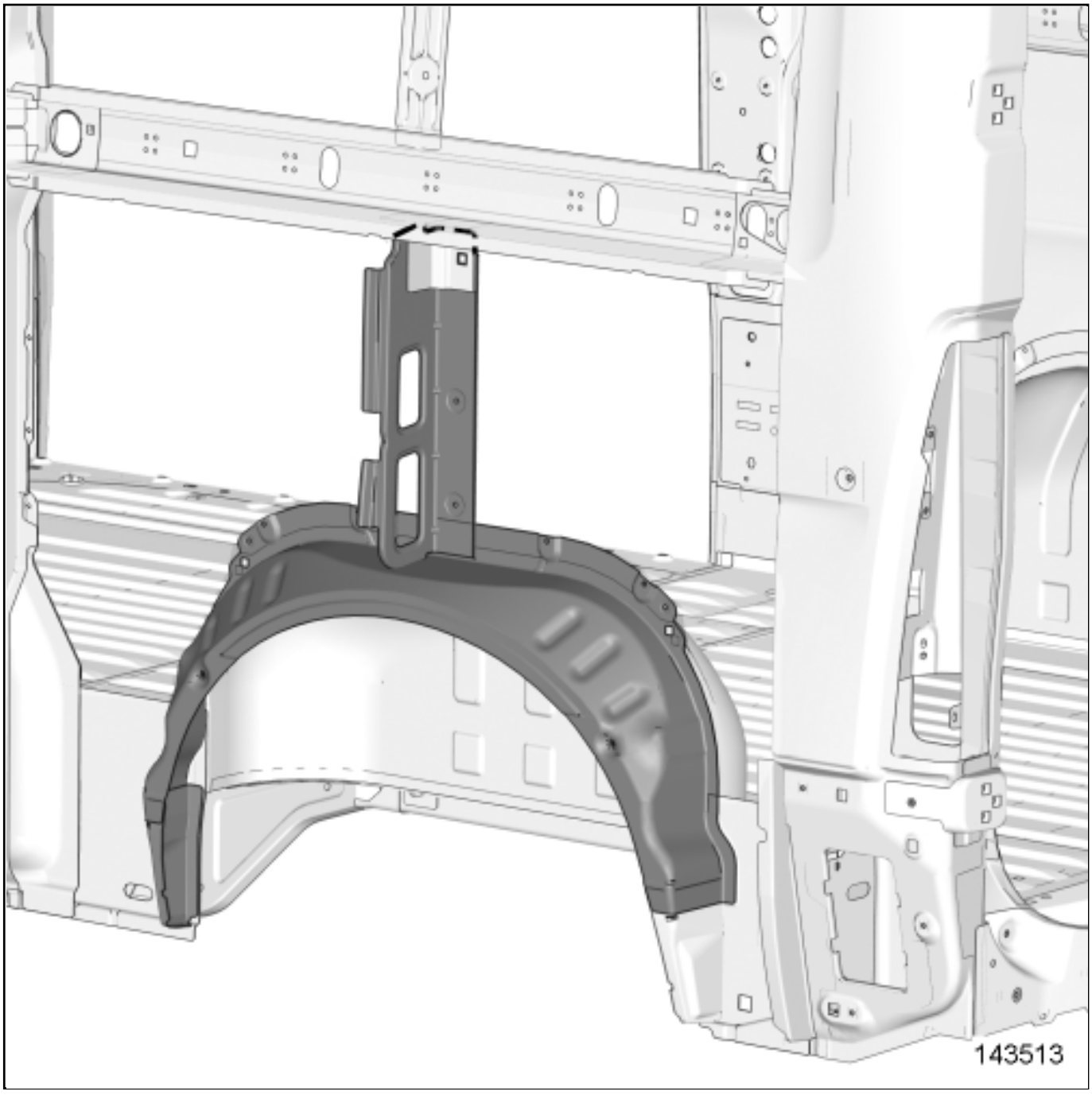
2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

2- PARTIAL REPLACEMENT 1+2+4

1)PART IN POSITION



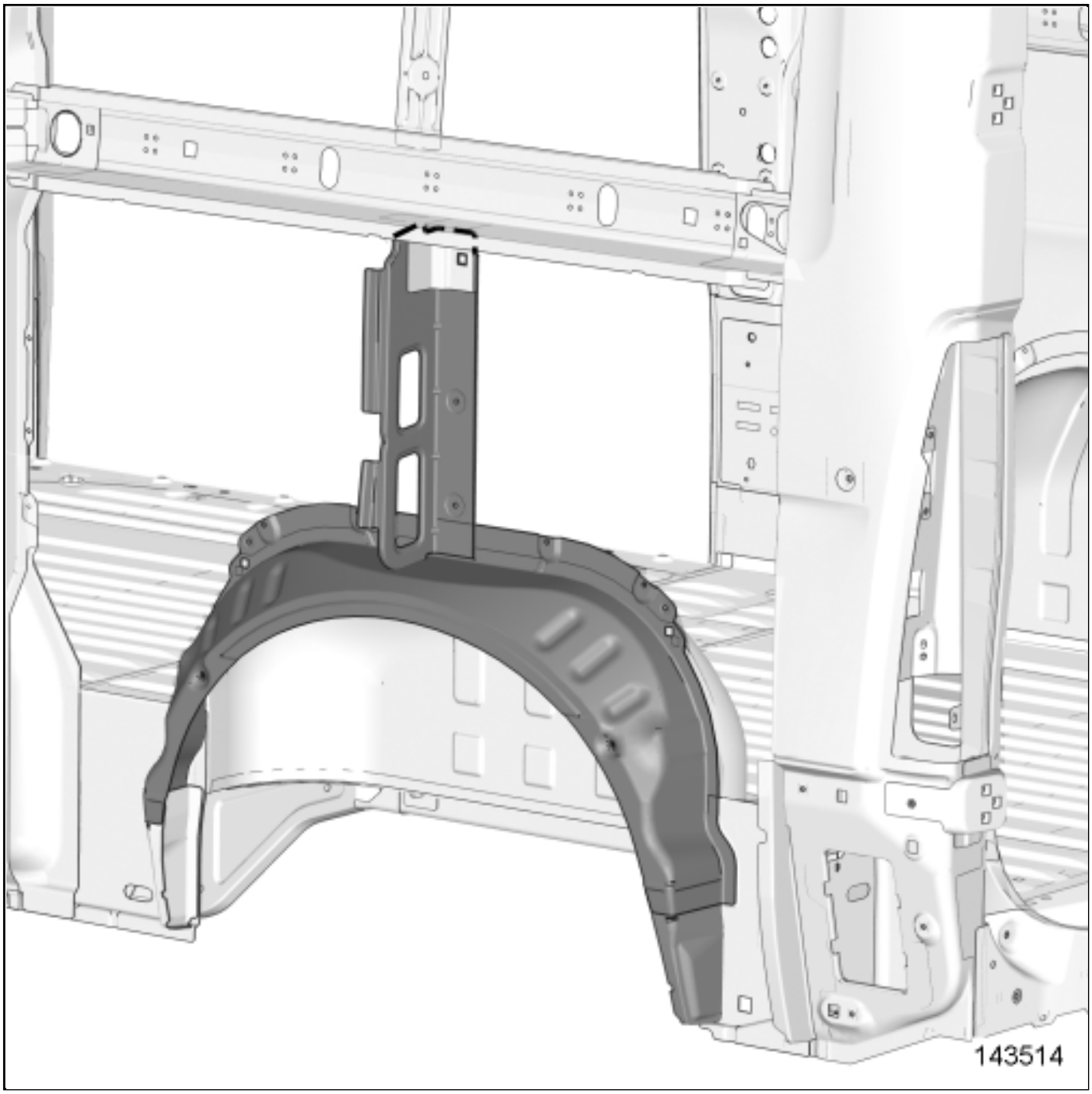
2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

3- PARTIAL REPLACEMENT 1+3+4

1)PART IN POSITION



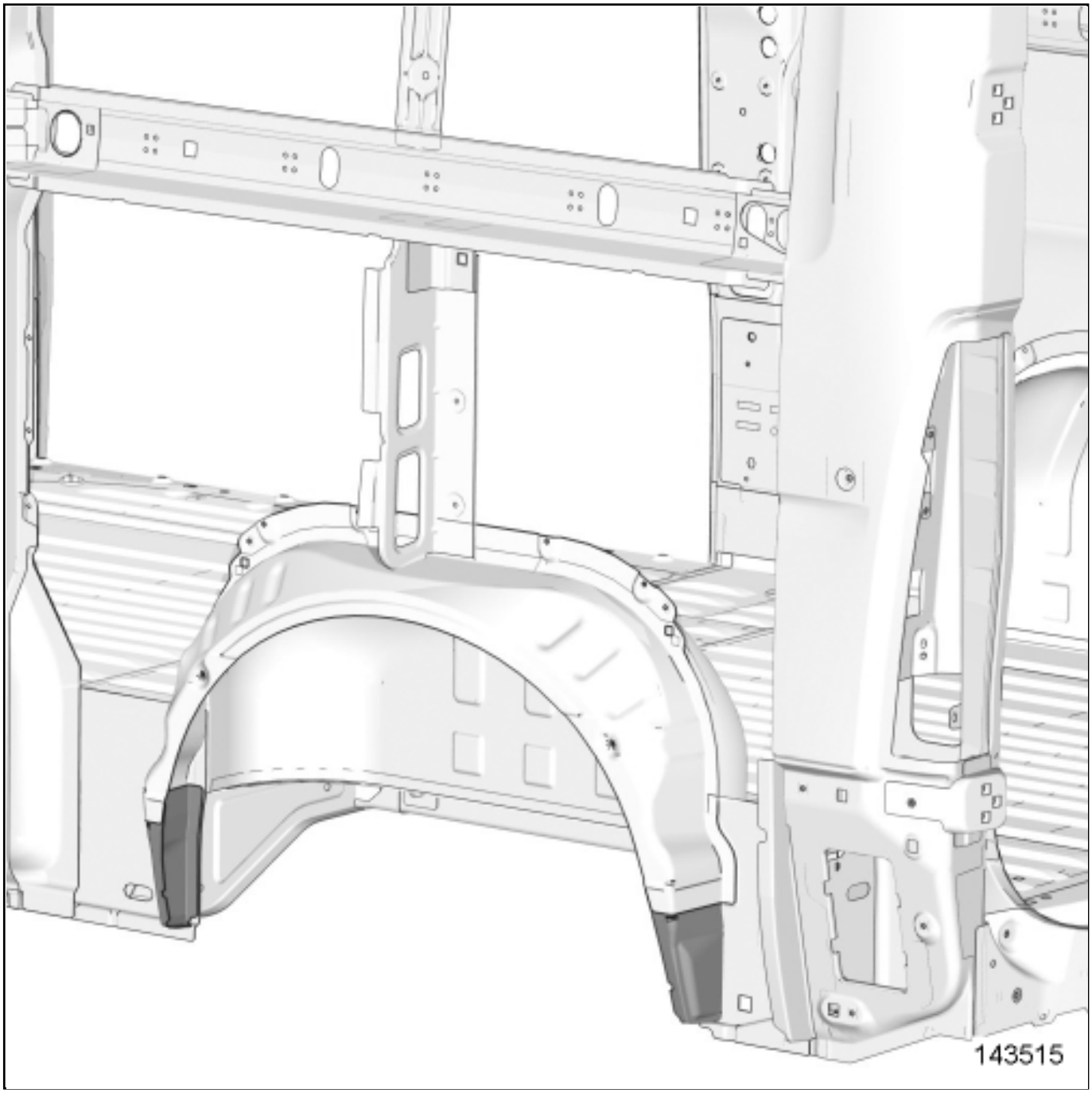
2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

4- PARTIAL REPLACEMENT 2+3

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

Repair-40x09x16x02-02x49-1-3-1.xml

XSL version : 3.02 du 22/07/11

OUTPUT SHAFT ASSEMBLY: EXPLODED VIEW

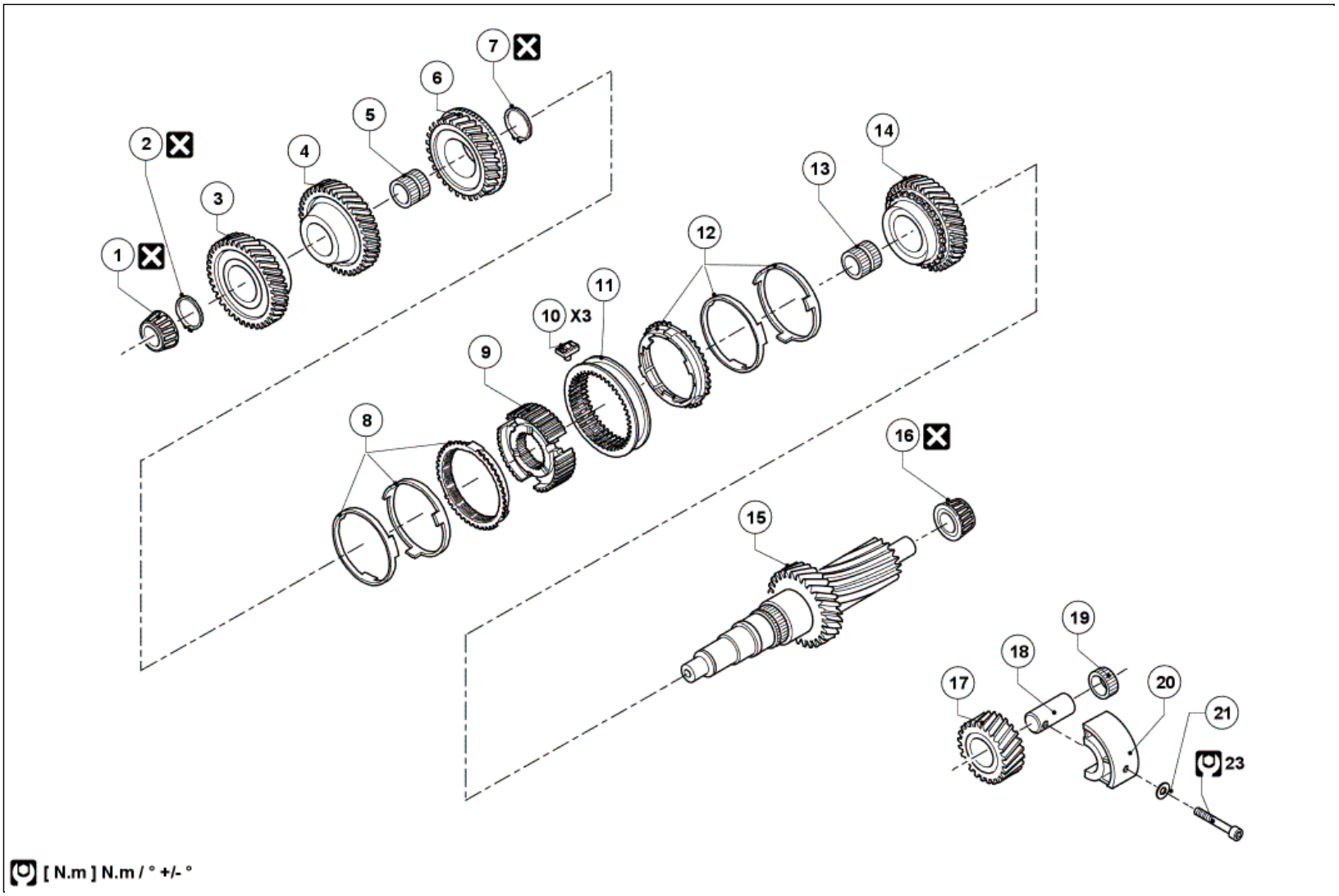


Illustration key: Description Key.

Mark	Description	Information
1	Tapered roller bearing at the clutch housing end	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
2	6th fixed gear stop ring	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
3	6th fixed gear	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
4	5th fixed gear	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
5	3rd idle gear needle bearing	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
6	3rd idle gear	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
7	Stop ring of the 3rd and 4th synchroniser hub	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
8	3rd synchroniser rings	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
9	3rd and 4th synchroniser hub	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
10	Locking ball cartridge of the 3rd and 4th synchroniser hub	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
11	3rd and 4th synchroniser	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
12	4th synchroniser rings	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
13	4th idle gear needle bearing	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
14	4th idle gear	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
15	Output shaft	(see 21A, Manual gearbox , Gearbox shaft: Removal - Refitting)
16	Tapered roller bearing at the mechanism housing end	(see 21A, Manual gearbox , Output shaft: Stripping - Rebuilding)
17	Intermediate gear	(see **Output shaft: Removal - Refitting**)
18	Intermediate gear shaft	(see **Output shaft: Removal - Refitting**)
19	Intermediate gear needle bearing	(see **Output shaft: Removal - Refitting**)
20	Half-seal	(see **Output shaft: Removal - Refitting**)
21	Washer	(see **Output shaft: Removal - Refitting**)

OUTPUT SHAFT: STRIPPING - REBUILDING

Note, one or more warnings are present in this procedure

Special tooling required	
ZF4 gearbox internal renovation kit	Bvi. 1950

Equipment required
component support
sliding two-claw extractor

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 21A, Manual gearbox , Manual gearbox: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

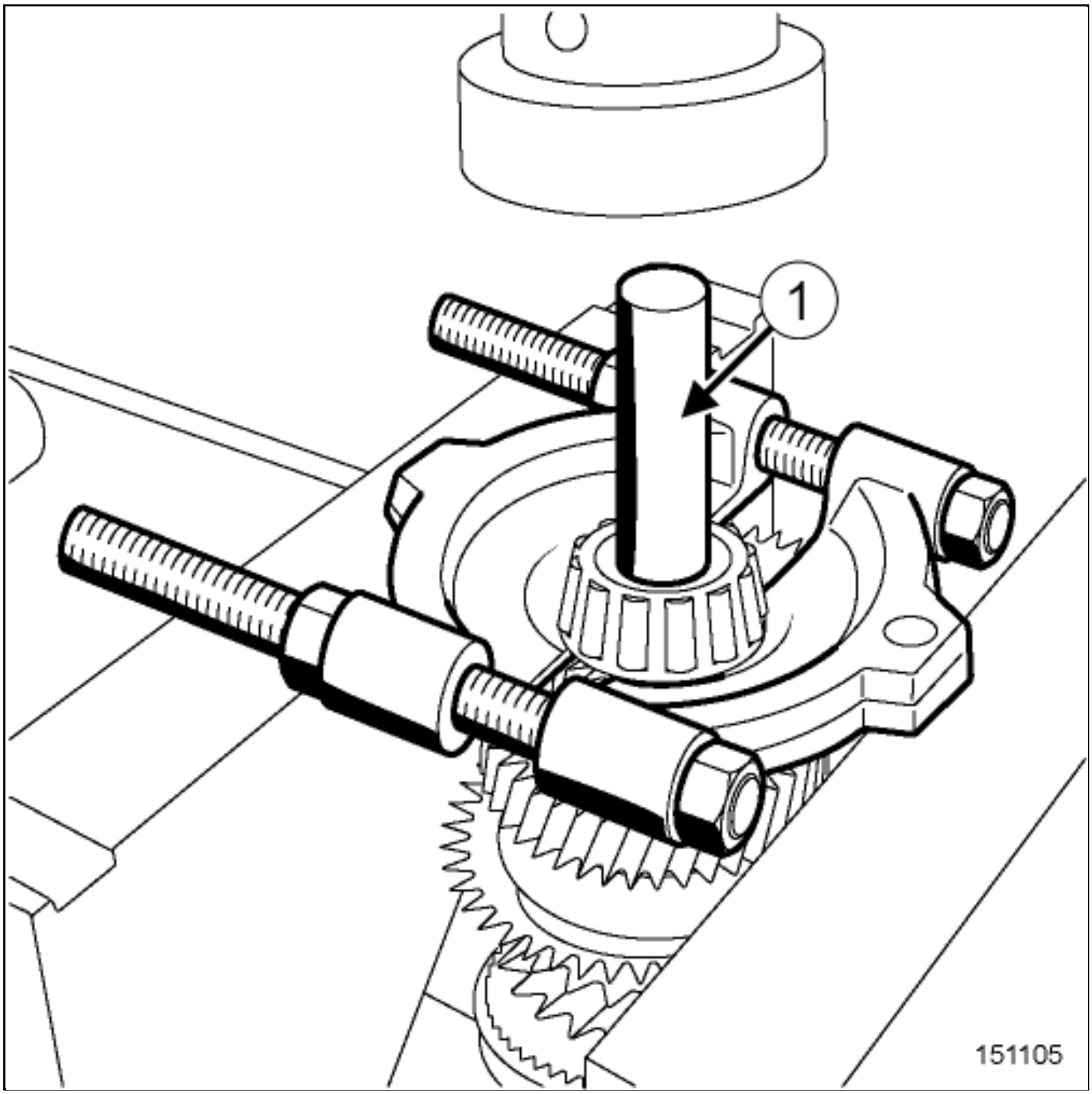
STRIPPING

1. STRIPPING PREPARATION OPERATION

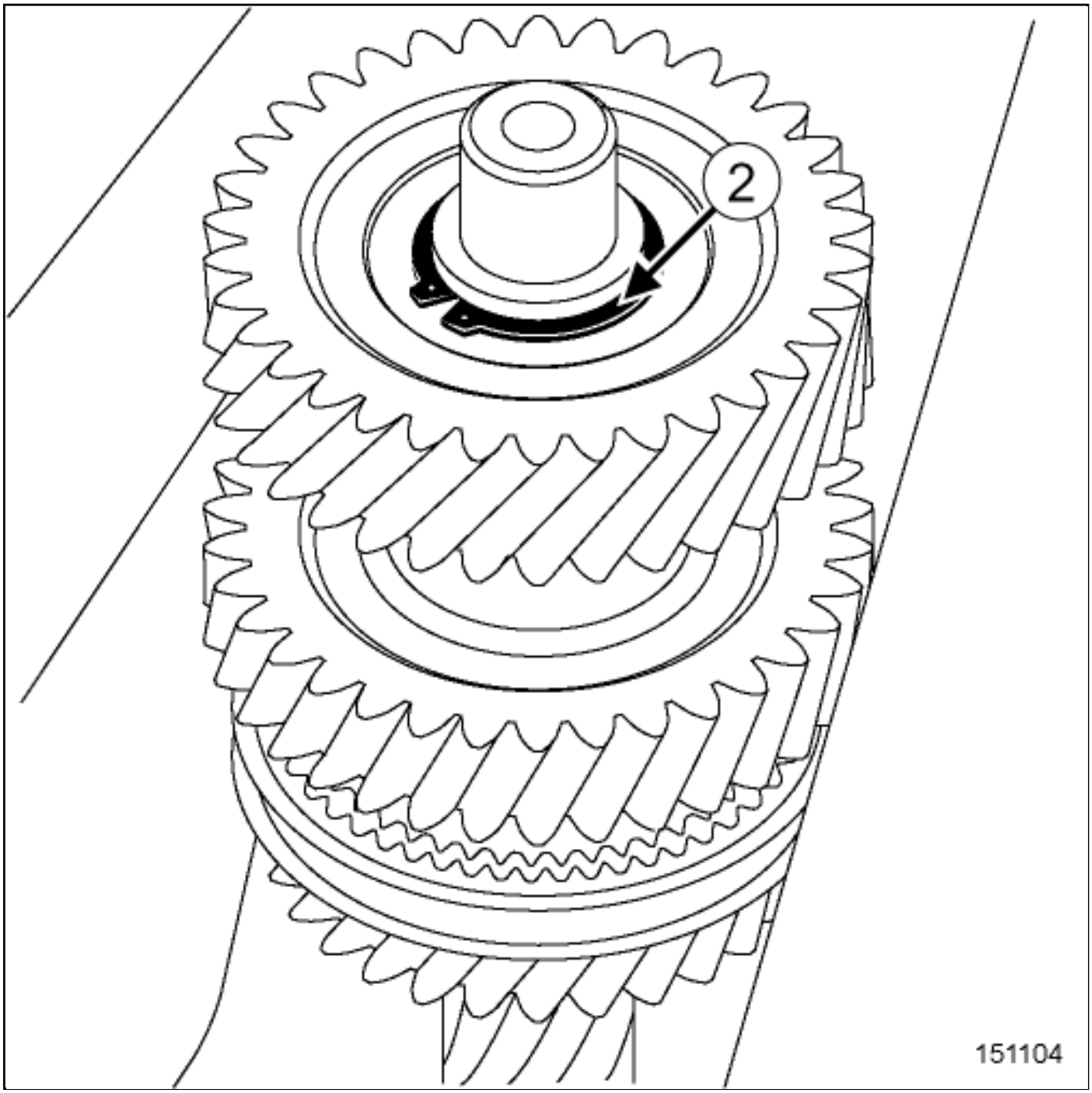
- Remove the manual gearbox Gearbox assembly: Exploded view .
- Position the gearbox on the component support (see 21A, Manual gearbox , Gearbox support equipment: Use) .
- Remove:
  - the gearshift plate (see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) ,
  - the reverse gear switch Gearbox assembly: Exploded view .
- Remove the clutch housing Gearbox assembly: Exploded view .
- Remove the shaft unit using a sliding two-claw extractor.

Remove the assembly of gearbox control shafts and forks(see 21A, Manual gearbox , Selector shafts and gearbox forks assembly: Exploded view) from the shaft unit.

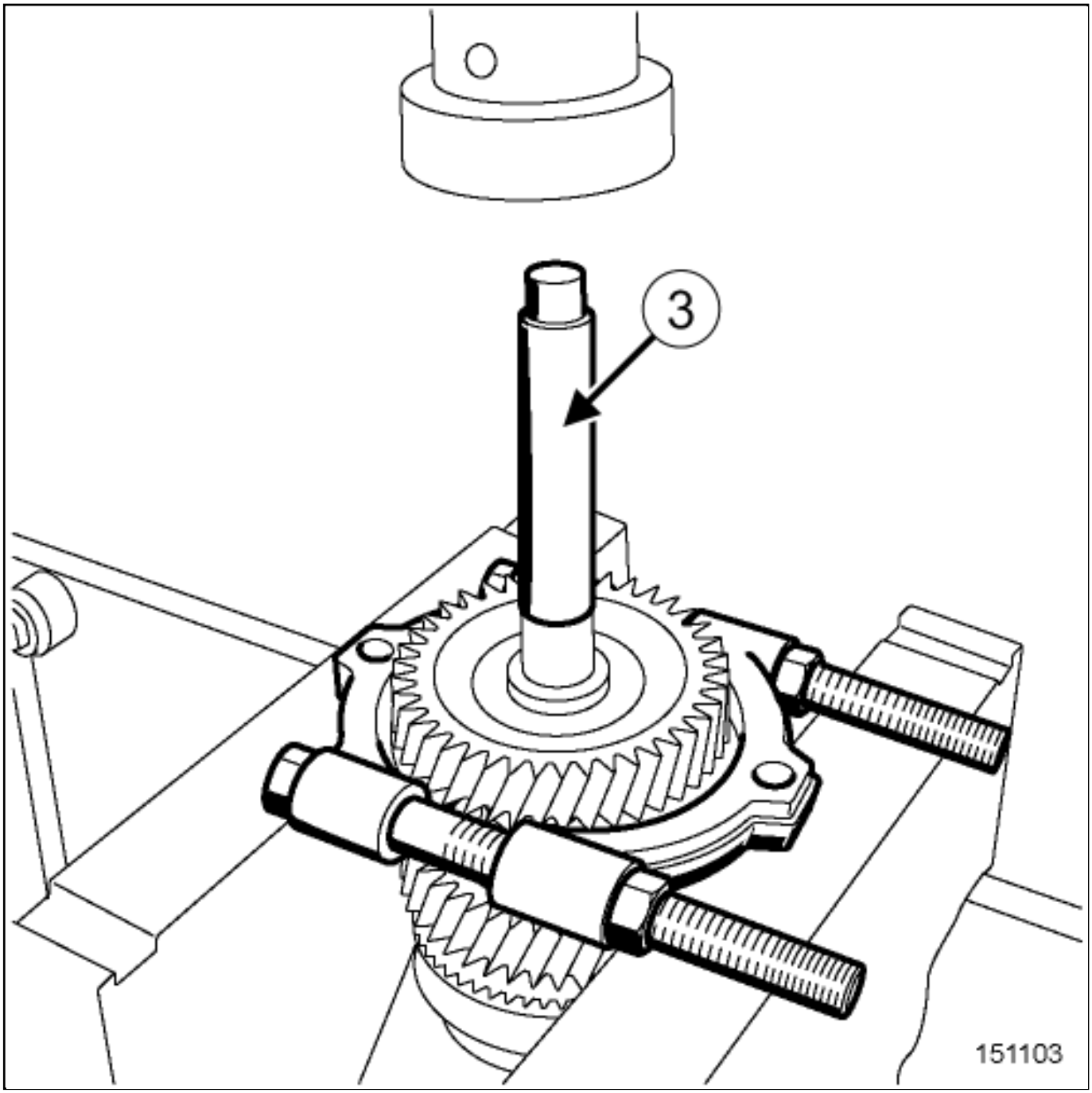
2. STRIPPING OPERATION



Use a hydraulic press, toolZF4 gearbox internal renovation kit(Bvi. 1950) F (1) and an extractor to remove the tapered roller bearing at the clutch housing end(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .



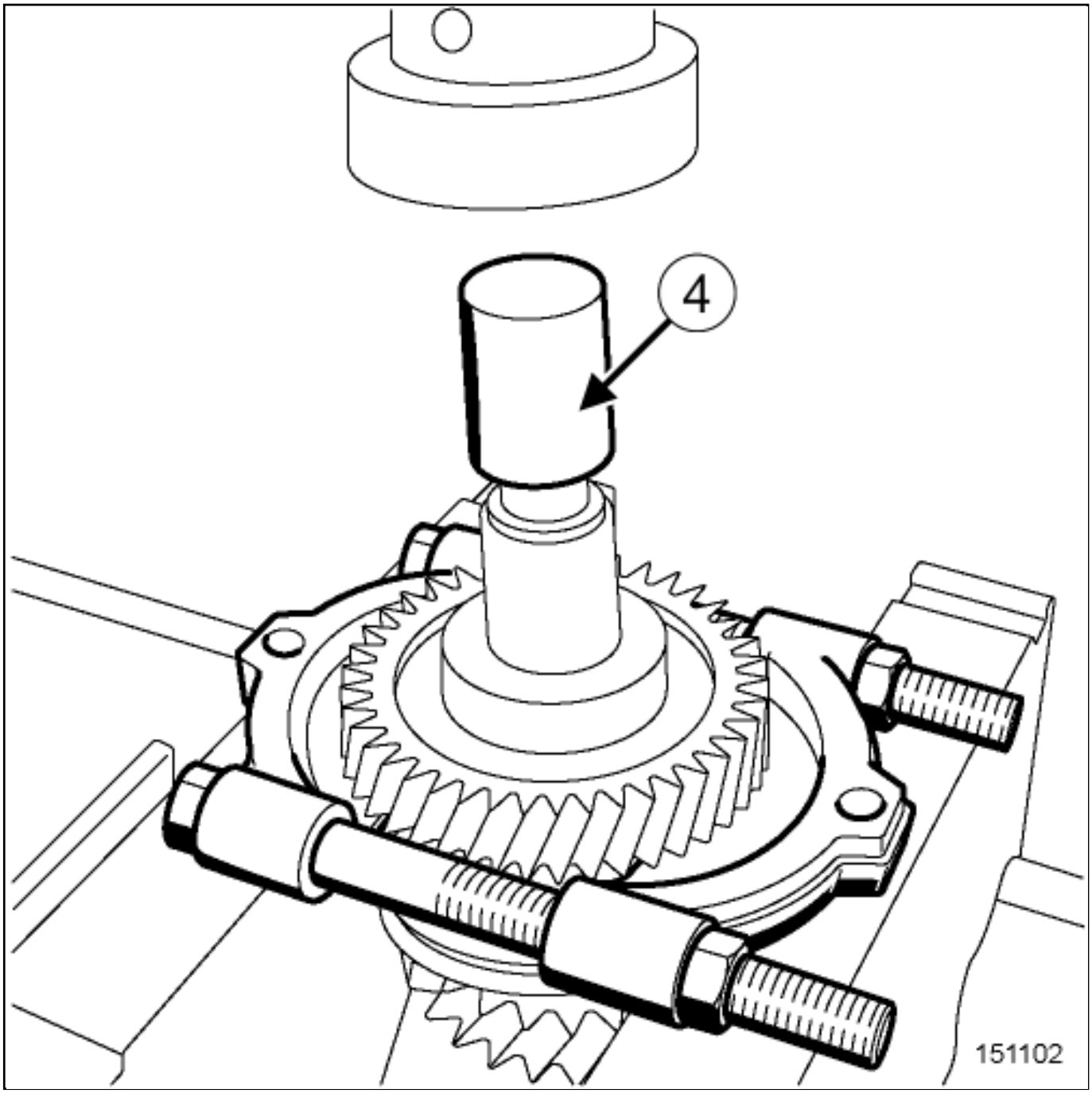
- Remove the 6th fixed gear stop ring(2) **(see 21A, Manual gearbox , Output shaft assembly: Exploded view)** .



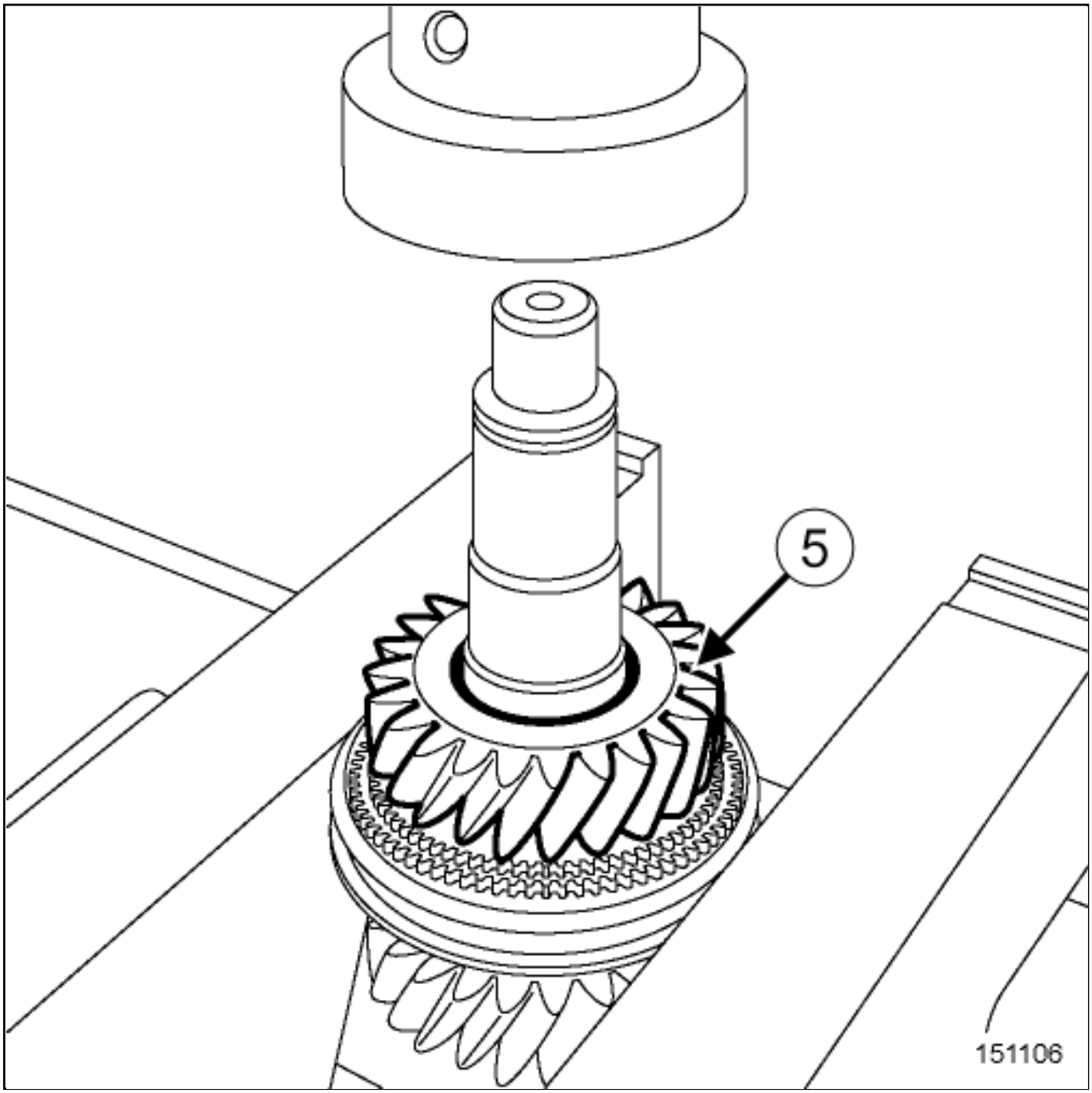
- Use a hydraulic press, toolZF4 gearbox internal renovation kit(Bvi. 1950) F (3) and an extractor to remove the 6th fixed gear(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .

Note:

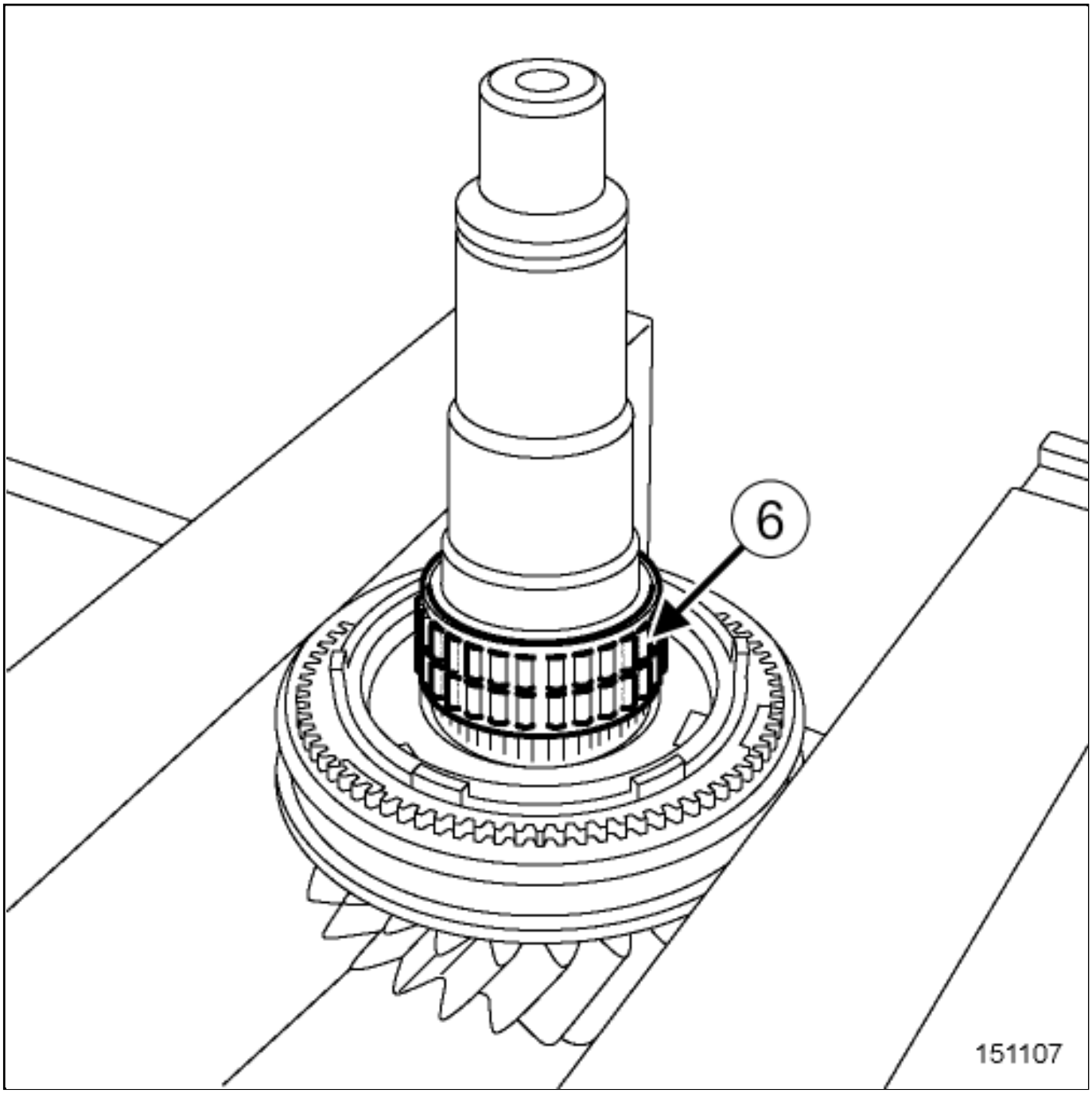
Because of the high extraction forces, extract the helical gears individually.



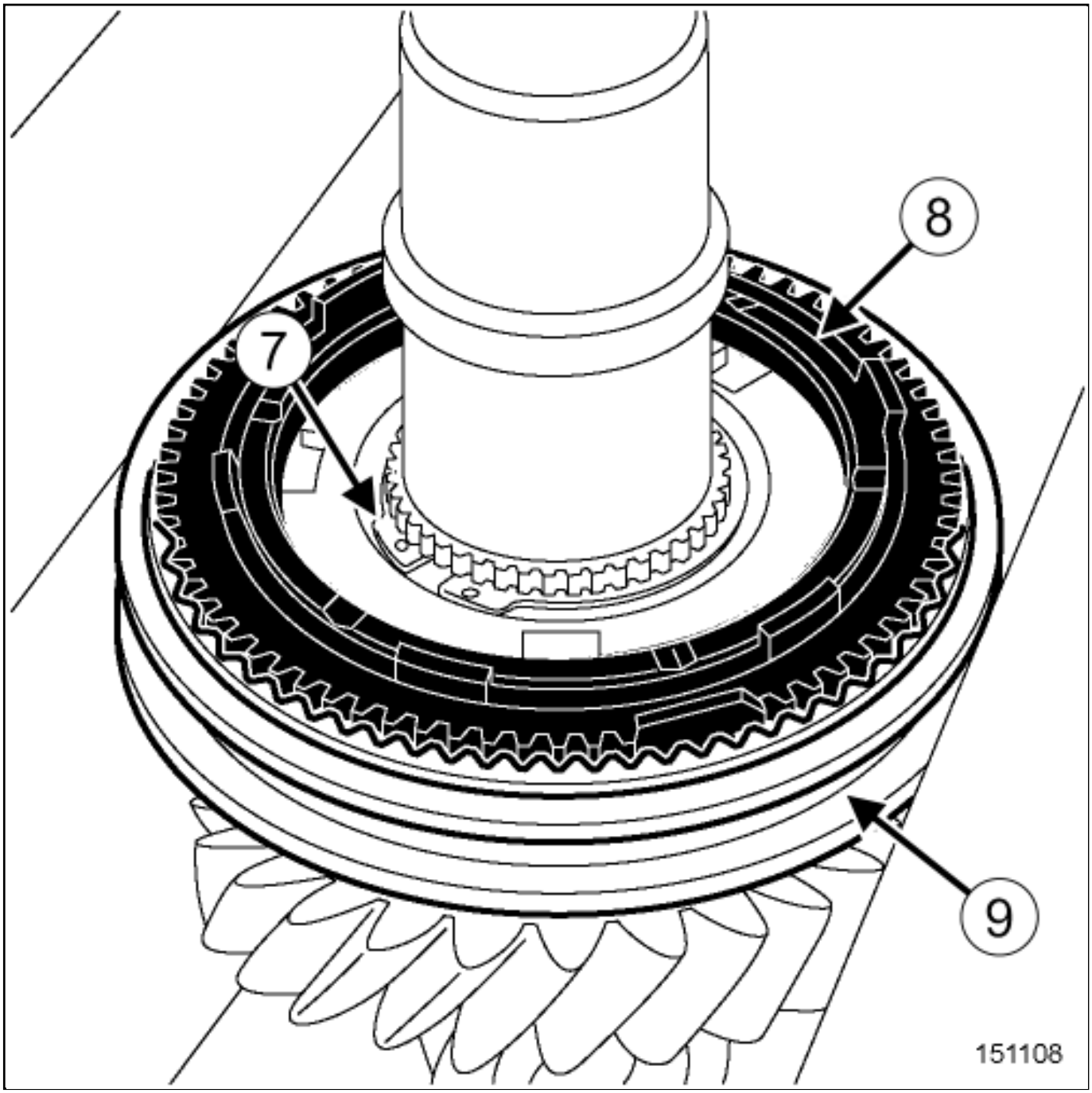
Use a hydraulic press, toolZF4 gearbox internal renovation kit(Bvi. 1950) A (4) and an extractor to remove the 5th fixed gear(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .



- Remove the 3rd idle gear(5) **(see 21A, Manual gearbox , Output shaft assembly: Exploded view)** .

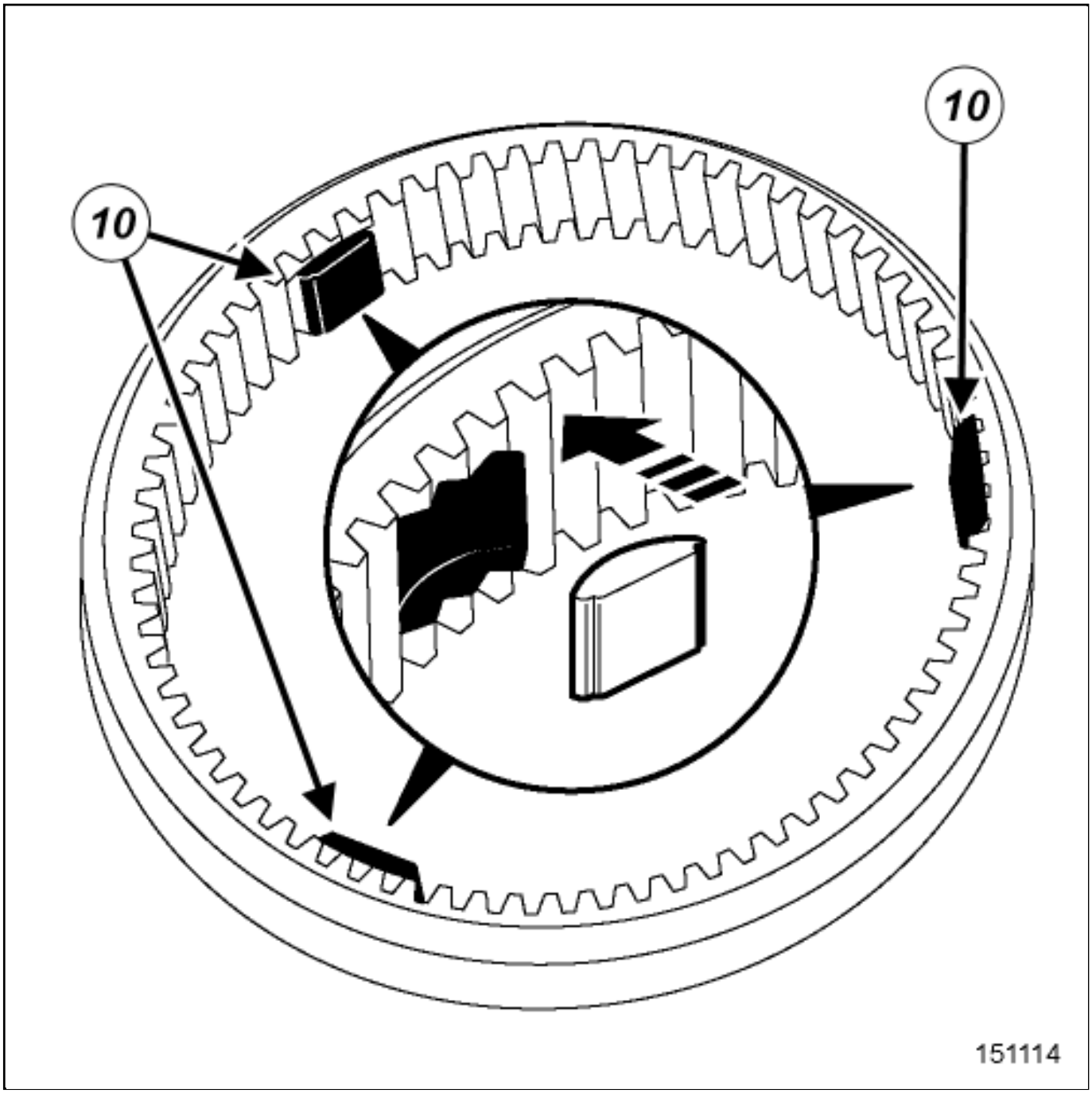


❏ Remove the 3rd idle gear needle bearing(6) **(see 21A, Manual gearbox , Output shaft assembly: Exploded view)** .

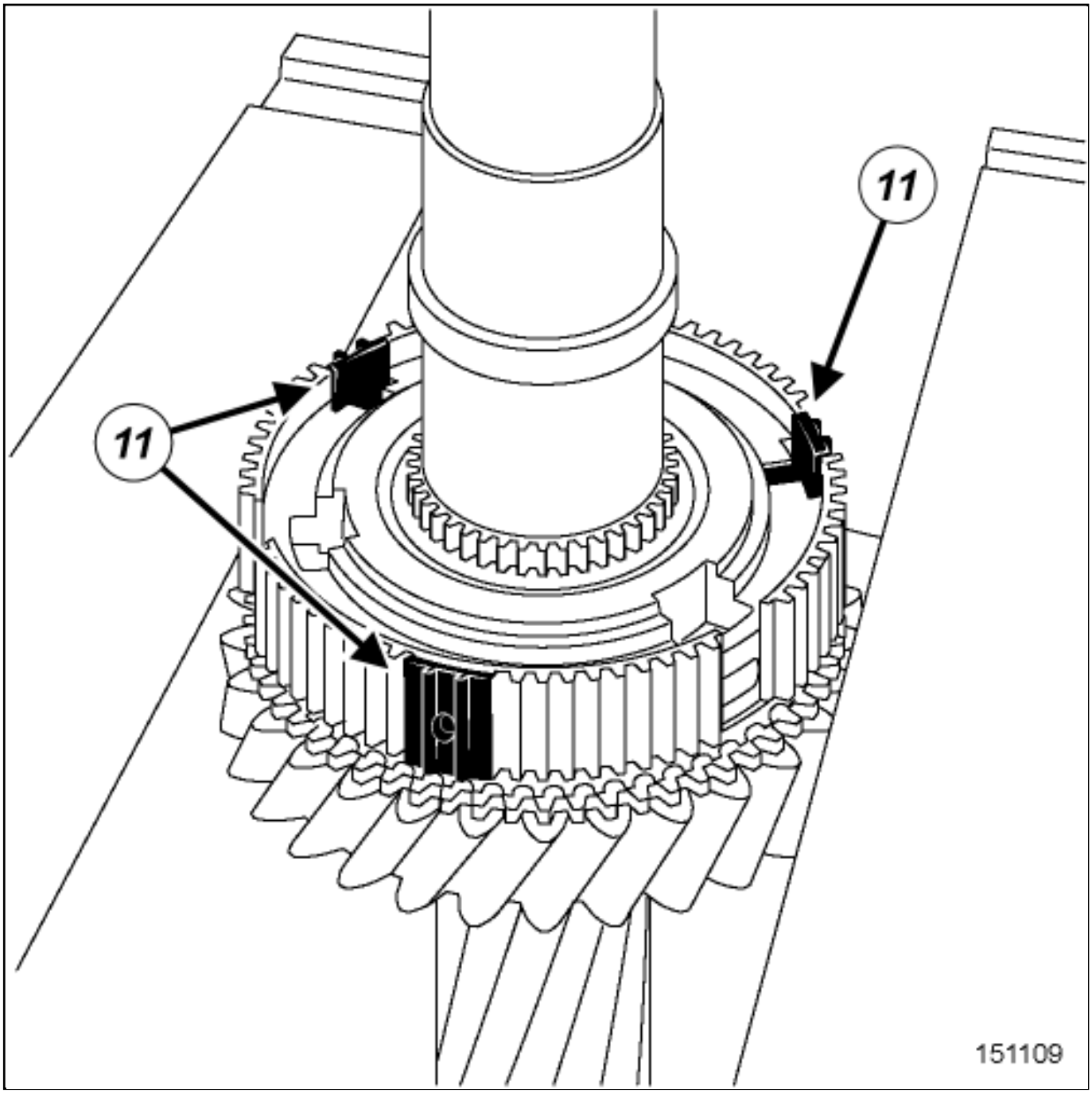


Remove (see 21A, Manual gearbox , Output shaft assembly: Exploded view) :

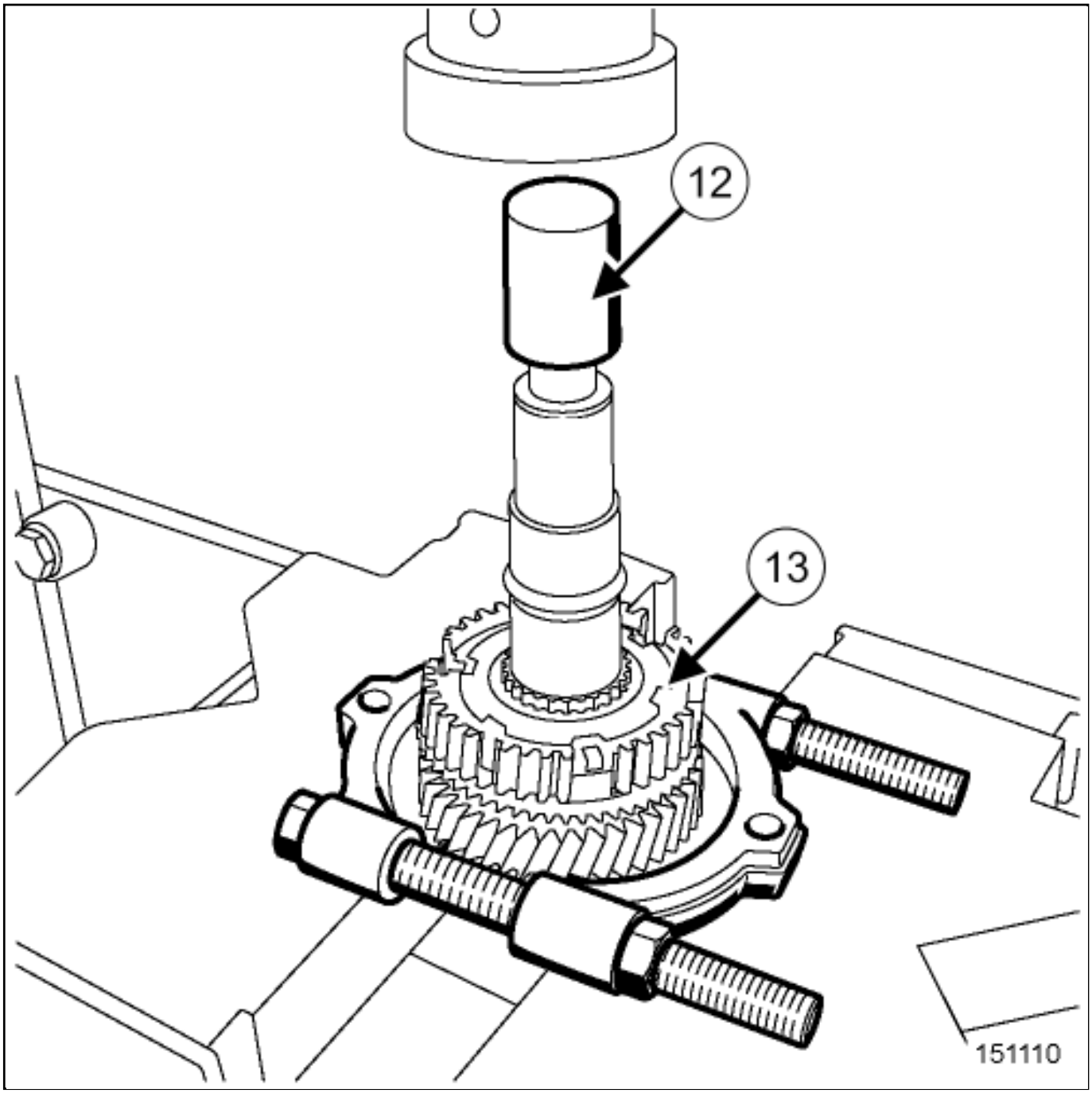
- the stop ring of the 3rd and 4th synchroniser hub(7) ,
- the 3rd synchroniser rings(8) ,
- the 3rd and 4th synchroniser(9) .



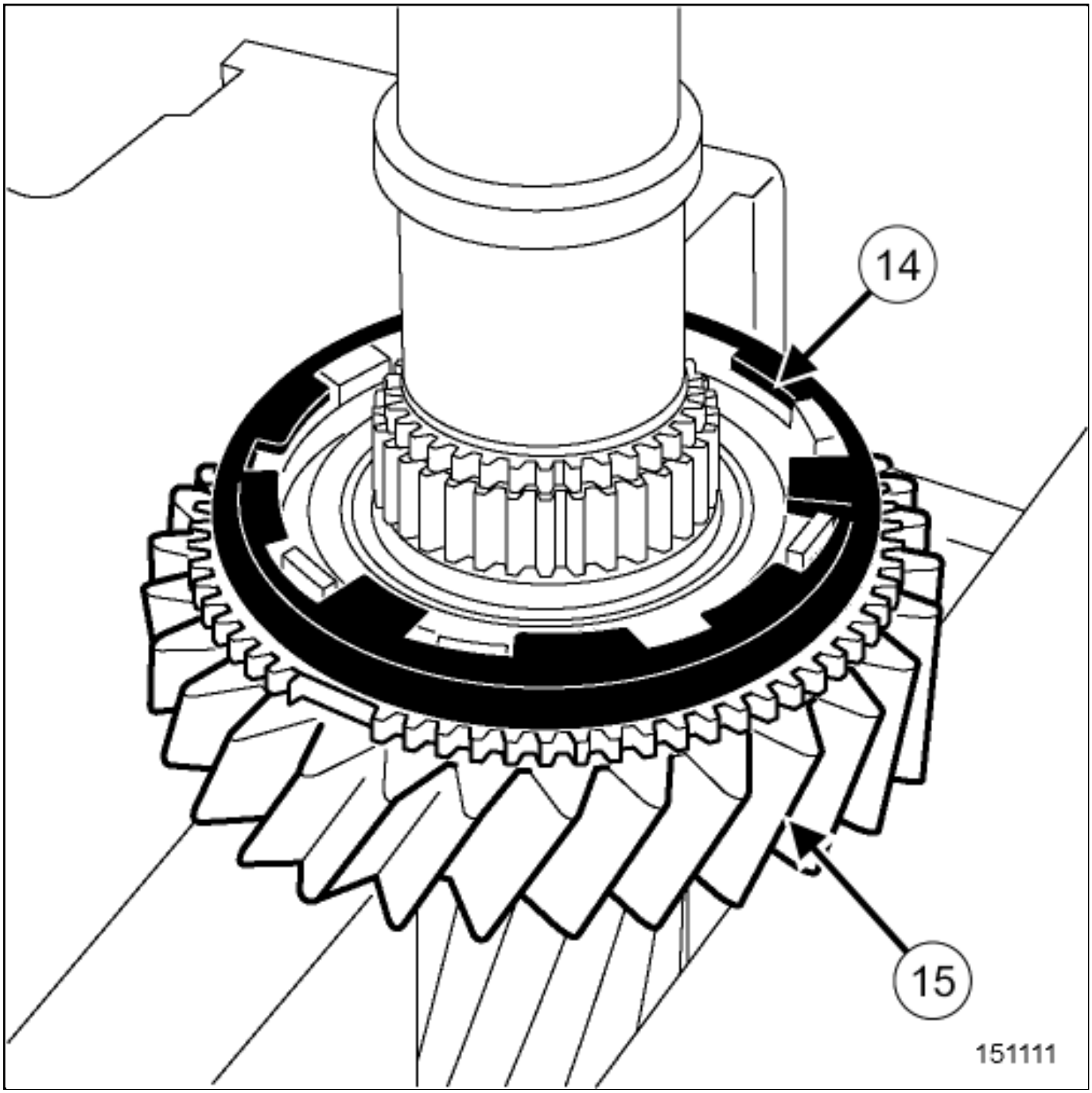
- Remove the locking collet(10) .



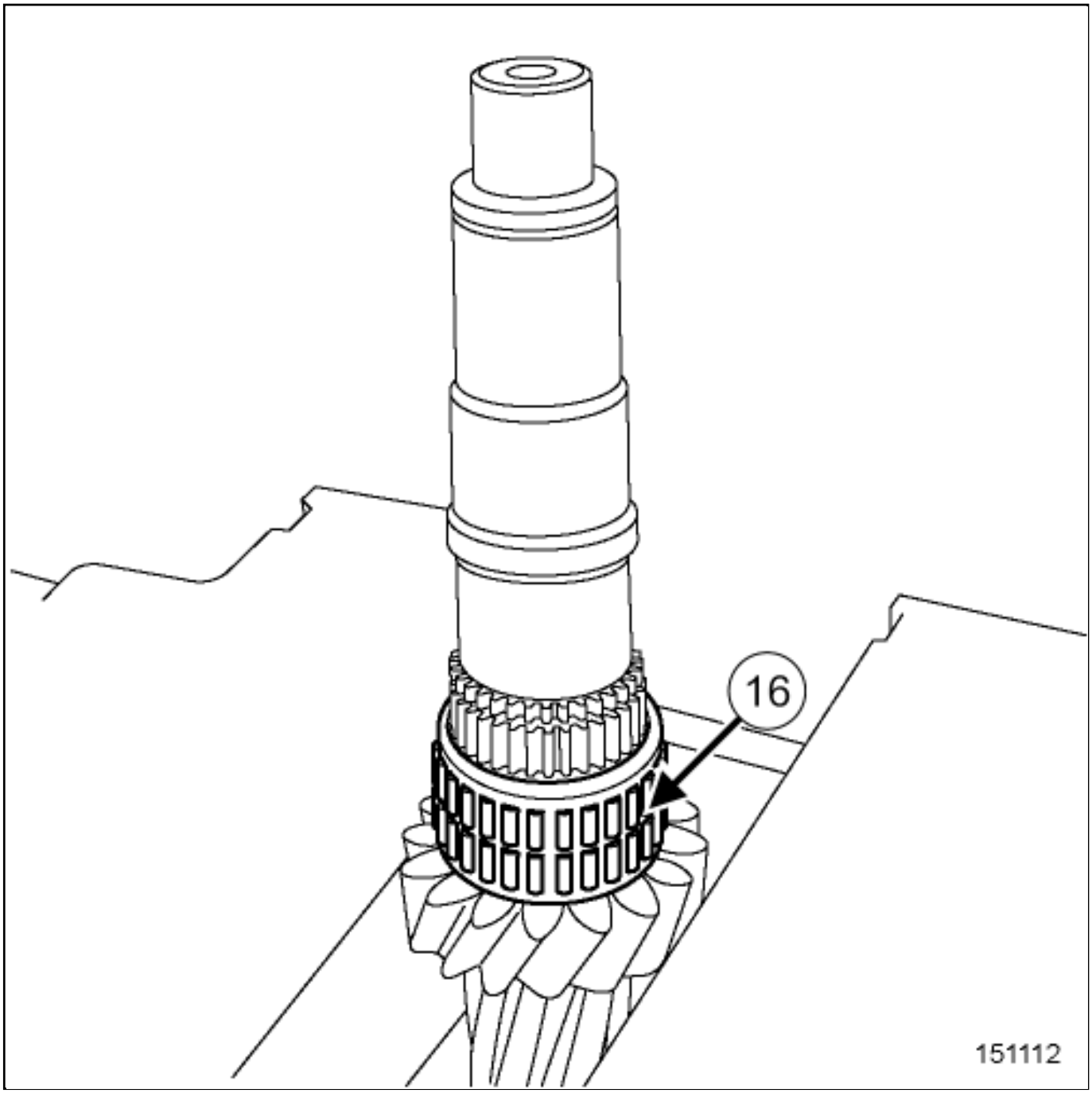
❏ Remove the locking ball cartridge of the 3rd and 4th synchroniser hub(11) **(see 21A, Manual gearbox , Output shaft assembly: Exploded view)** .



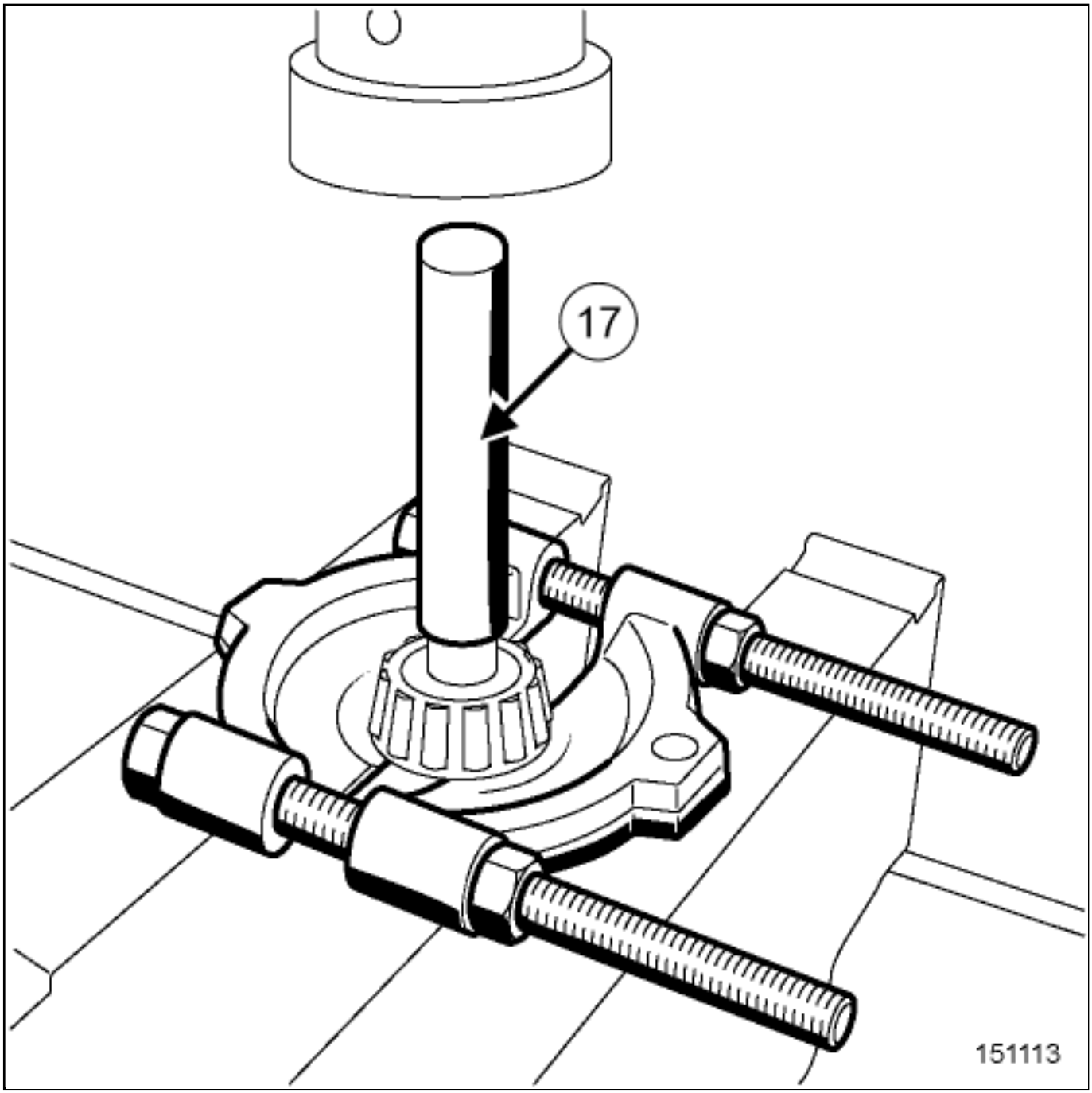
❏ Use a hydraulic press, toolZF4 gearbox internal renovation kit(Bvi. 1950) A (12) and an extractor to remove the 3rd and 4th synchroniser hub(13) (see 21A, Manual gearbox , Output shaft assembly: Exploded view) .



- Remove (see 21A, Manual gearbox , Output shaft assembly: Exploded view) :
  - the 4th synchroniser rings(14) ,
  - the 4th idle gear(15) .



Remove the 4th idle gear needle bearing(16) (see 21A, Manual gearbox , Output shaft assembly: Exploded view) .



Use a hydraulic press, toolZF4 gearbox internal renovation kit(Bvi. 1950) F (17) and an extractor to remove the tapered roller bearing at the mechanism housing end(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .

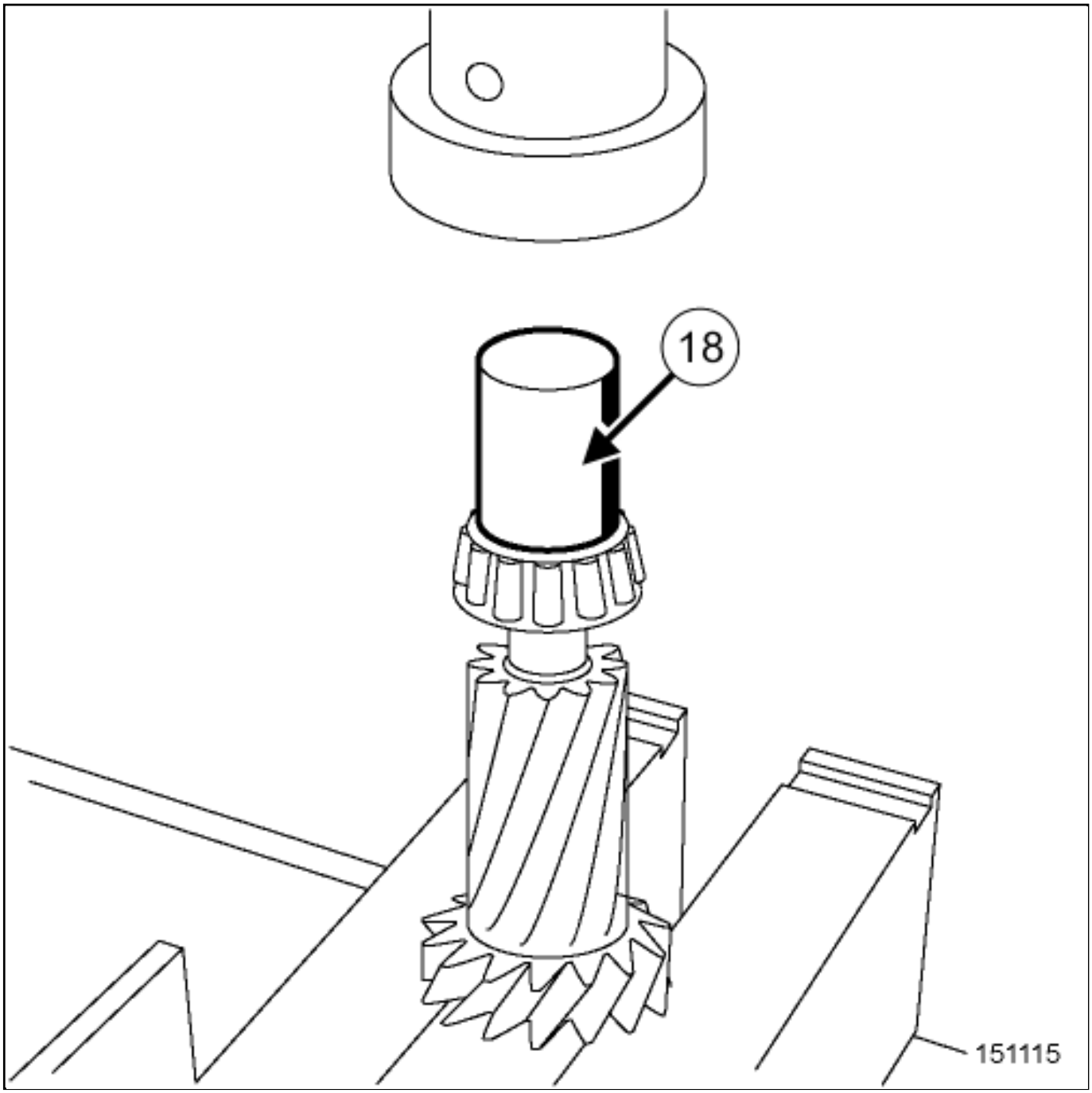
REBUILDING

1. REBUILDING PREPARATION OPERATION

Clean all the removed parts[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products).

Always replace bearings.

2. REBUILDING OPERATION



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) A (18) to refit the tapered roller bearing at the mechanism housing end(see 21A, Manual gearbox , Output shaft assembly: Exploded view)

Oil the 4th idle gear needle bearing(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .

Refit (see 21A, Manual gearbox , Output shaft assembly: Exploded view) :

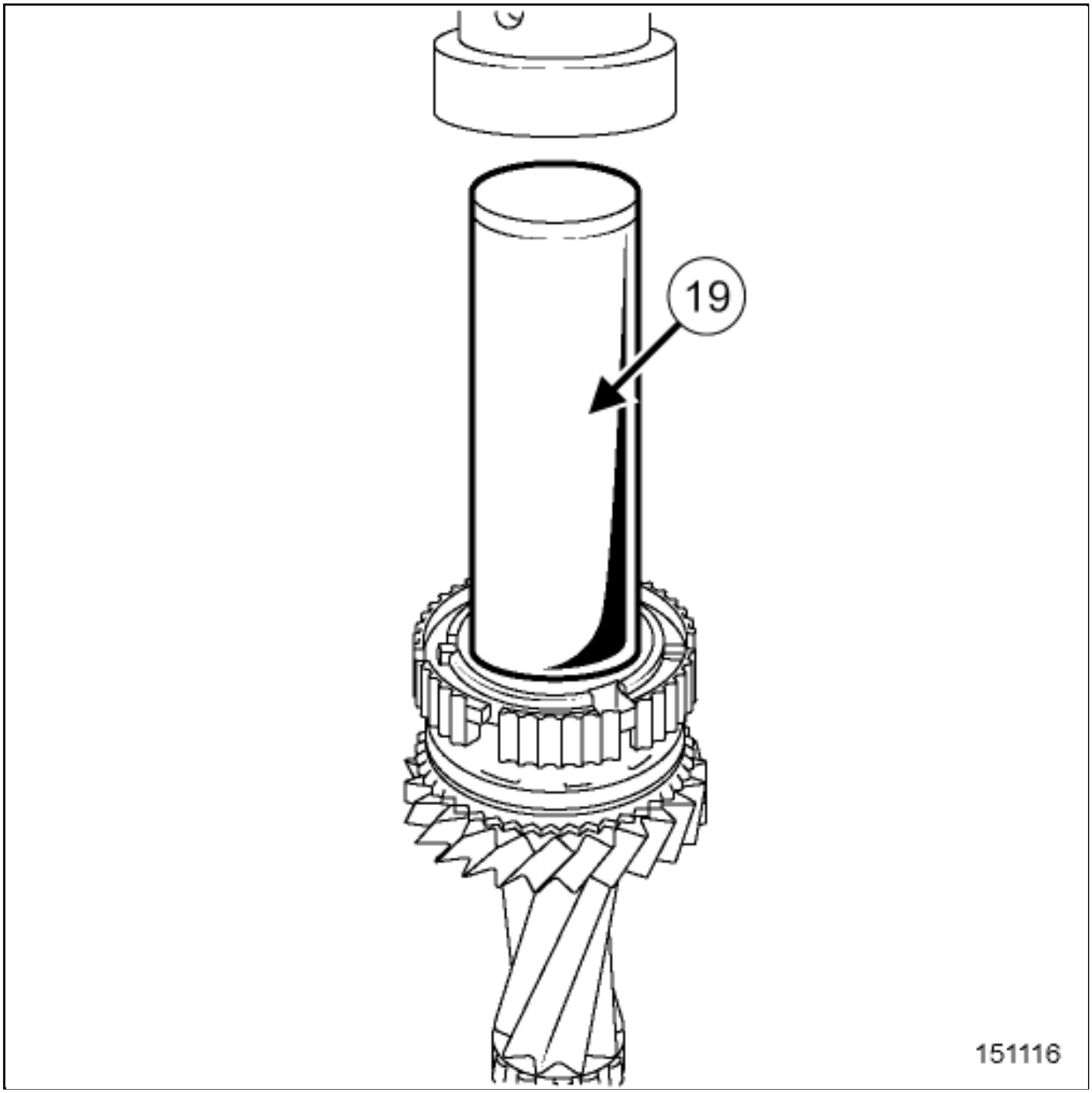
- the 4th idle gear needle bearing,
- the 4th idle gear.

Check the wear on the synchromesh parts.

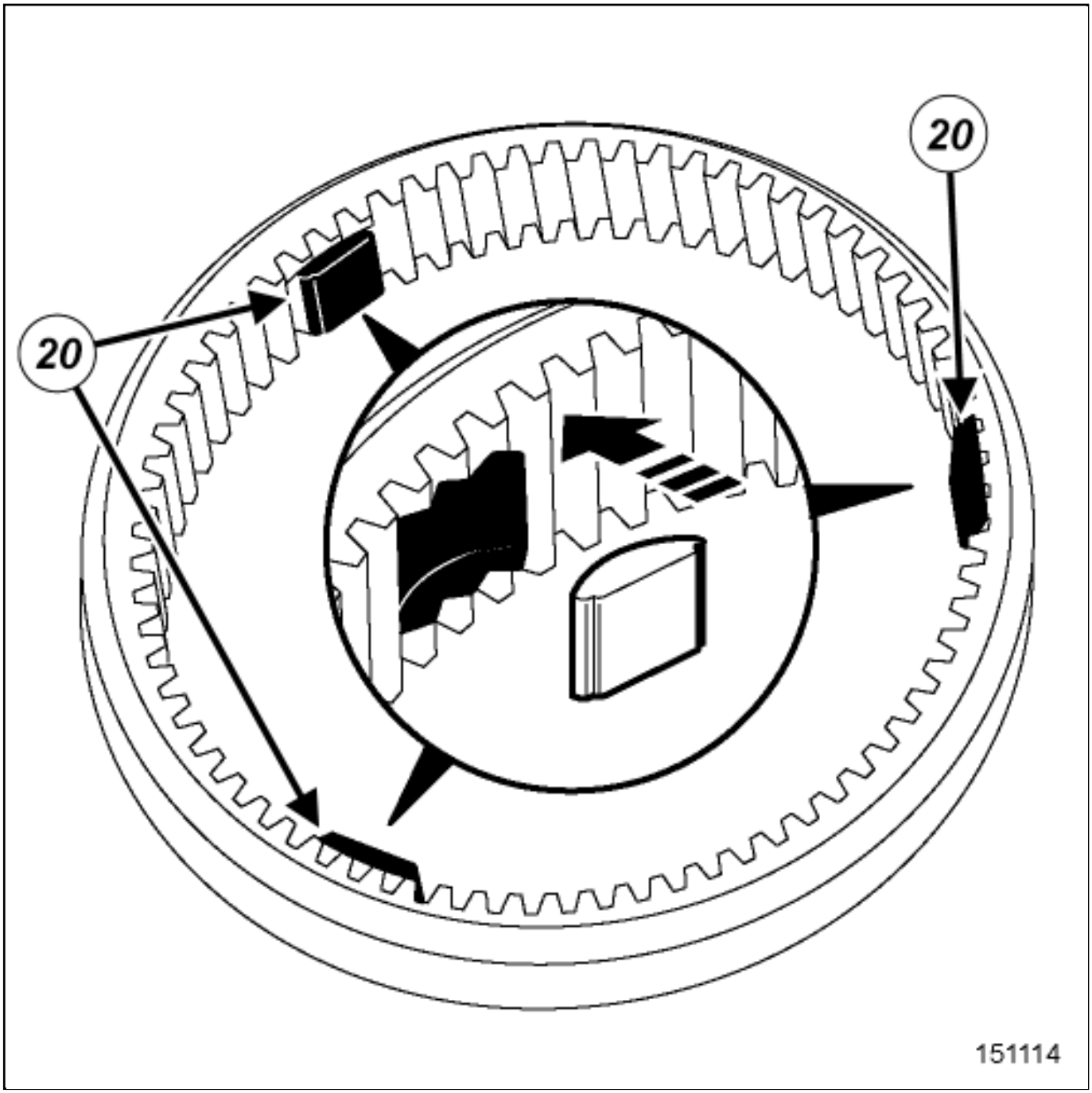
Note:

The notches of the 3rd and 4th synchroniser (inner side) must line up exactly with the recesses of the 3rd and 4th synchroniser hub.

Refit the 4th synchroniser rings on the 3rd and 4th synchroniser hub(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) D (19) to refit the 4th synchroniser rings - 3rd and 4th synchroniser hub assembly(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .



Refit (see 21A, Manual gearbox , Output shaft assembly: Exploded view) :

- the locking ball cartridges of the 3rd and 4th synchroniser hub,
- the locking collet(20) ,
- the 3rd and 4th synchroniser,
- the 3rd synchroniser rings,

the stop ring of the 3rd and 4th synchroniser hub.

Note:

The stop ring of the 3rd and 4th synchroniser hub must go right to the bottom of the groove in the intermediate shaft.

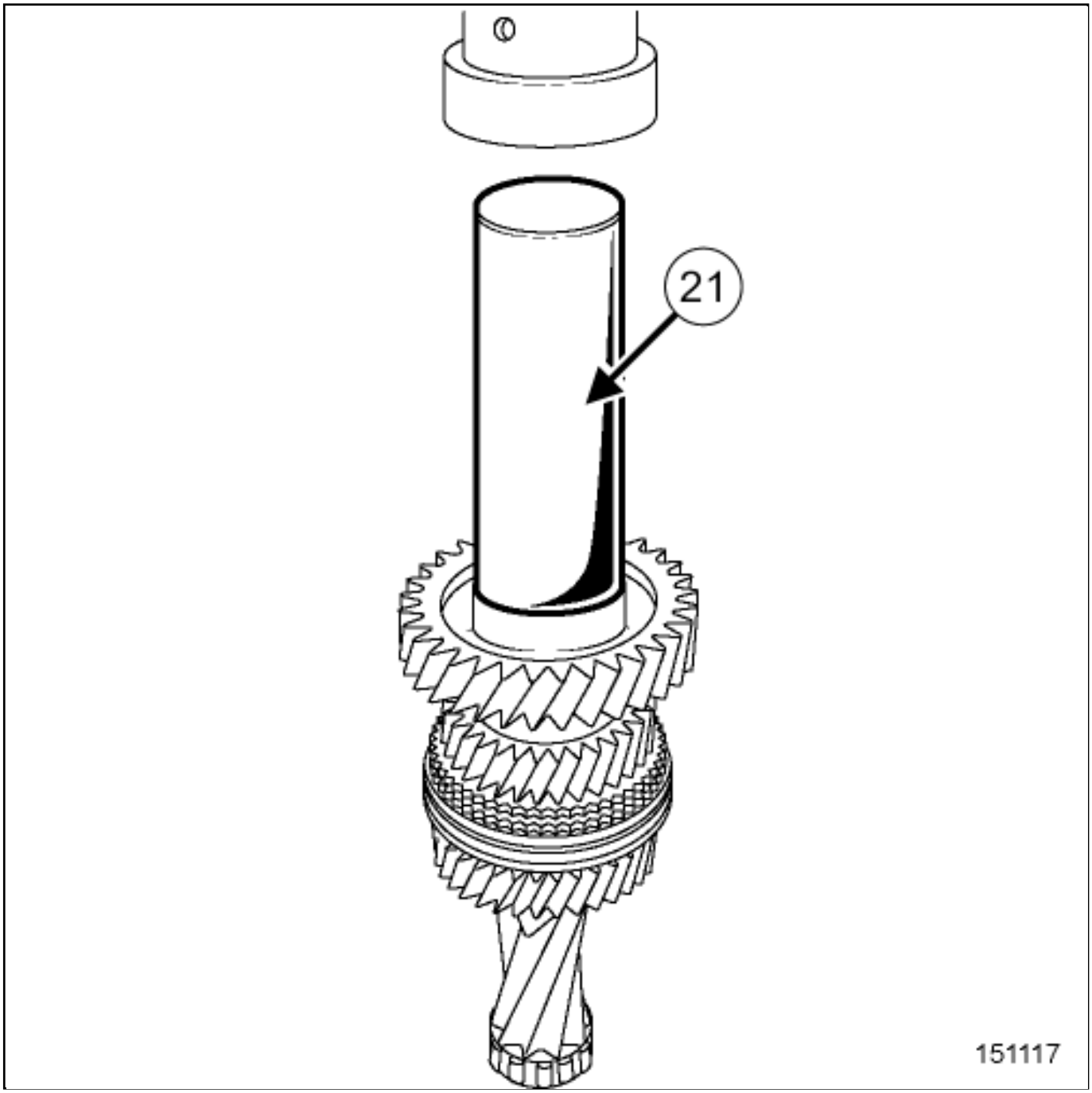
The end float of the stop ring of the 3rd and 4th synchroniser hub must be 0to 0.1 mm .

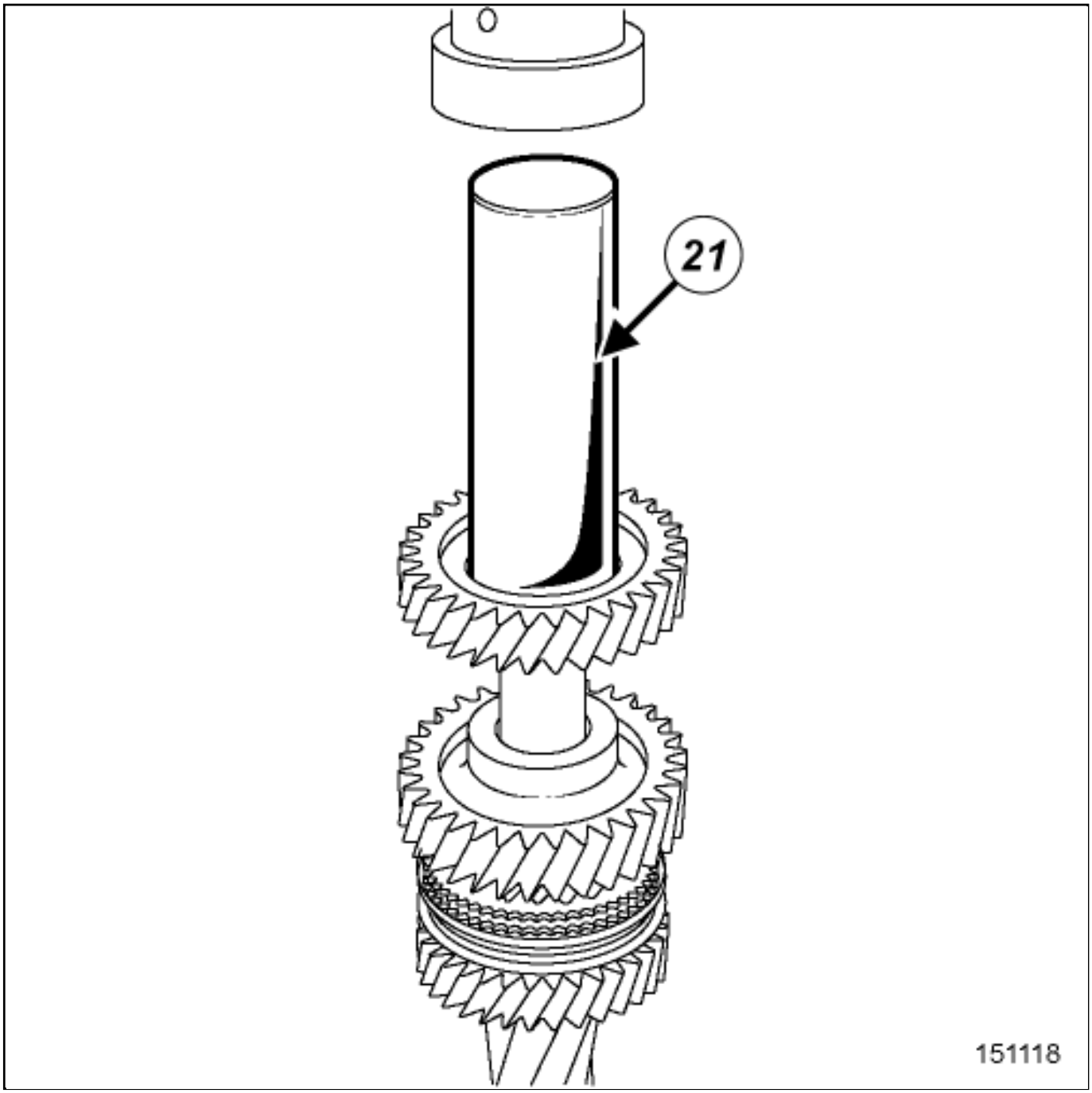
Aim for 0.0 mm.

Oil the 3rd idle gear needle bearing(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .

Refit the 3rd idle gear needle bearing(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .

Refit the 3rd idle gear(see 21A, Manual gearbox , Output shaft assembly: Exploded view) against the synchroniser and move the 3rd and 4th synchroniser to the neutral position. You will be able to hear clearly the pressure parts clicking into place.


21
151117



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) D (21) to refit:

- the 5th fixed gear,
- the 6th fixed gear.

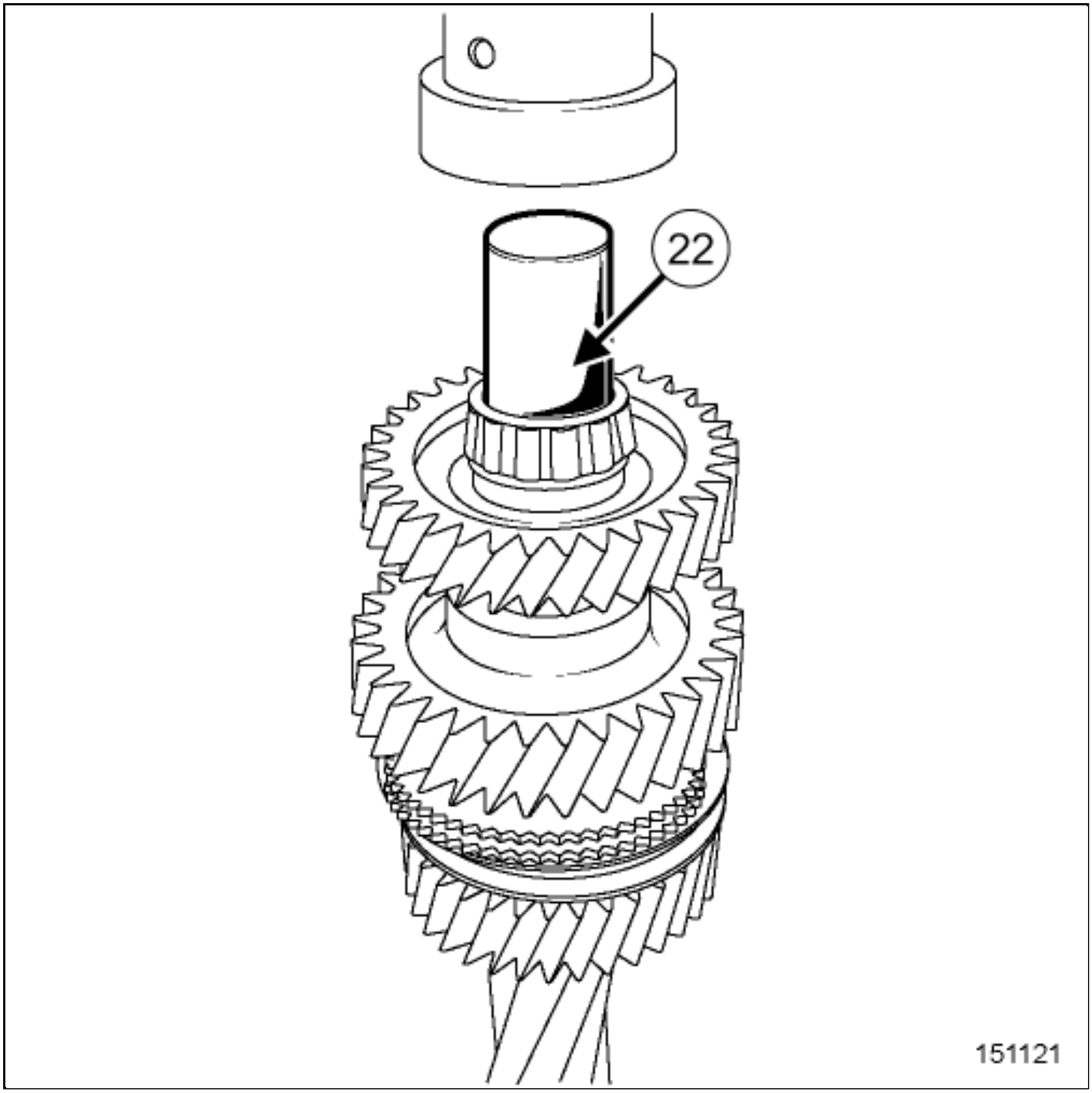
Refit the 6th fixed gear stop ring(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .

Note:

The 6th fixed gear stop ring must go right to the bottom of the groove in the output shaft.

The end float of the 6th fixed gear stop ring must be 0to 0.1 mm.

Aim for 0.0 mm.



Use a hydraulic press and toolZF4 gearbox internal renovation kit(Bvi. 1950) D (22) to refit the tapered roller bearing at the clutch housing end(see 21A, Manual gearbox , Output shaft assembly: Exploded view) .

3. FINAL OPERATION

Proceed in the reverse order to stripping.

OXYGEN SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
22 mm socket for removal - refitting of oxygen sensors.	Mot. 1495-01

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Exhaust assembly in engine compartment: Exploded view**) .

CAUTION

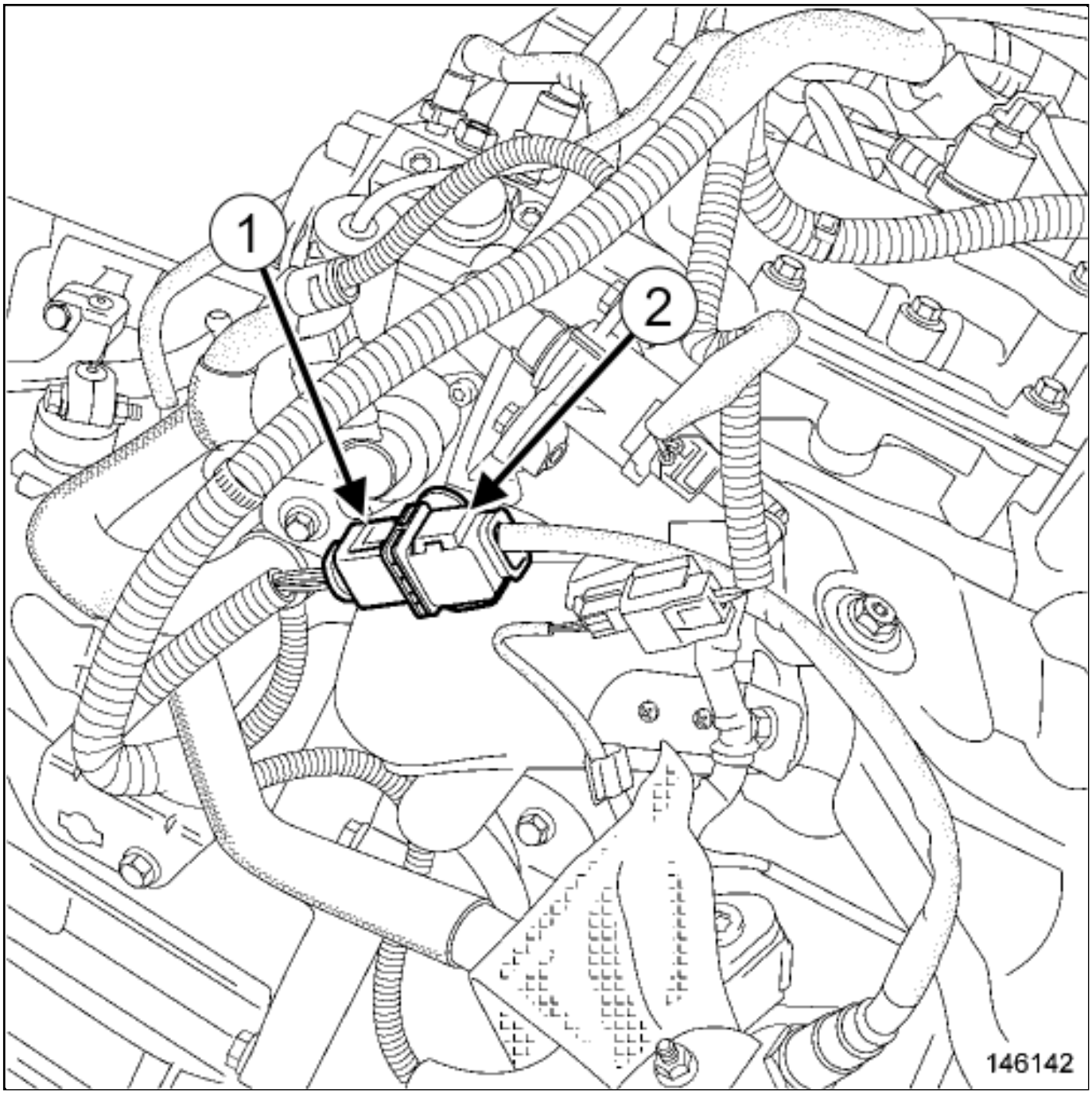
Do not use any product designed to improve the electrical contact in the injection computer and oxygen sensor connectors or on the bodies of the oxygen sensors.

Failure to respect this advice causes the oxygen sensor to malfunction and results in failure to comply with the emission control standard.

CAUTION

If the connections are corroded, repair the wiring (see Wiring: Precautions for repair) (Technical Note 6015A, 88A, Wiring).

REMOVAL



- Disconnect the oxygen sensor connector(1) .

- Unclip the oxygen sensor wiring(2) .

- Remove the oxygen sensor(see **Exhaust assembly in engine compartment: Exploded view**) using the 22 mm socket for removal - refitting of oxygen sensors.(**Mot. 1495-01**) .

REFITTING

- Refit the oxygen sensor(see **Exhaust assembly in engine compartment: Exploded view**) using the tool22 mm socket for removal - refitting of oxygen sensors.(**Mot. 1495-01**) .

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

PARKING BRAKE CABLES: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Parking brake assembly: Exploded view**) .

REMOVAL

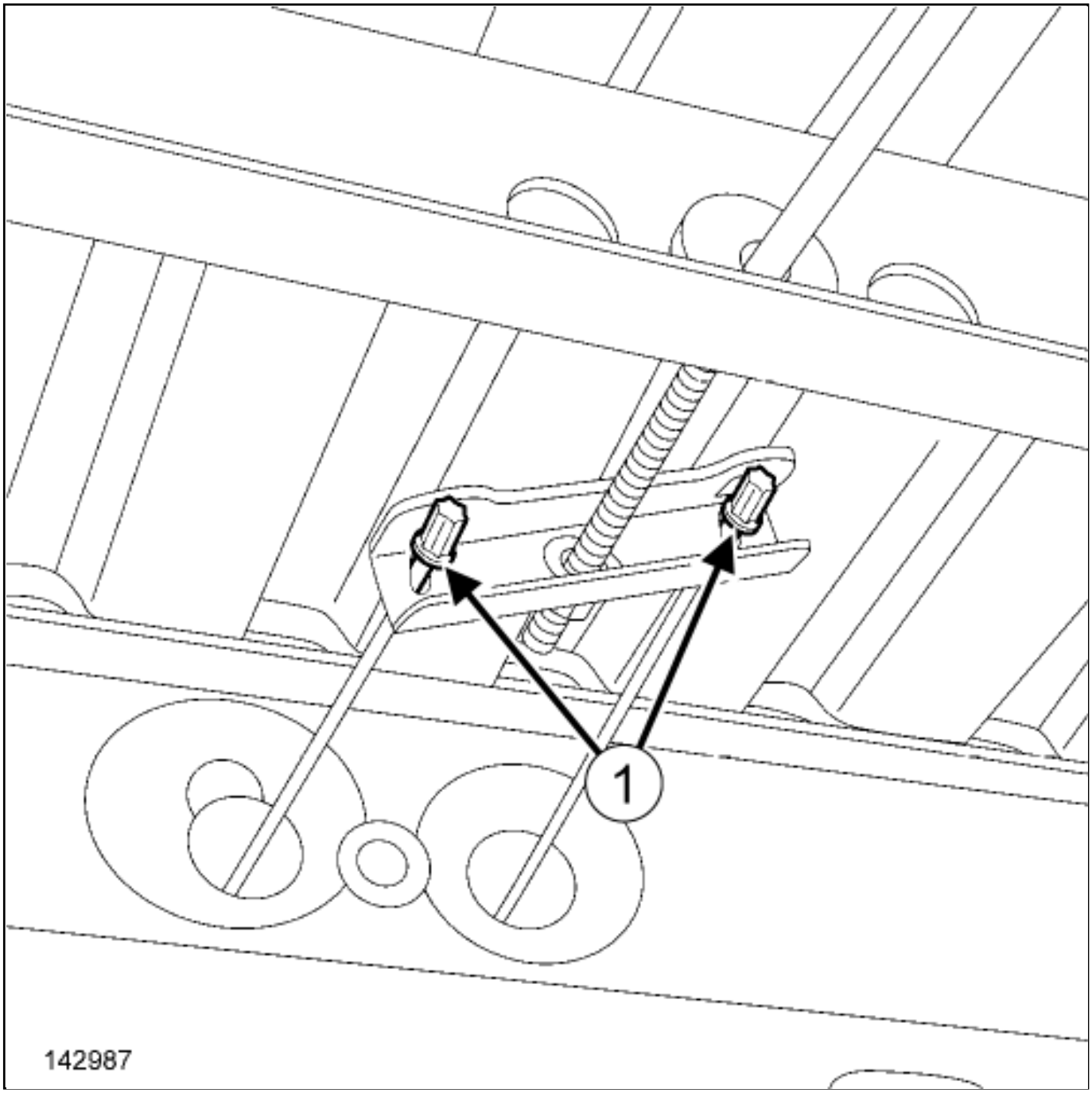
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

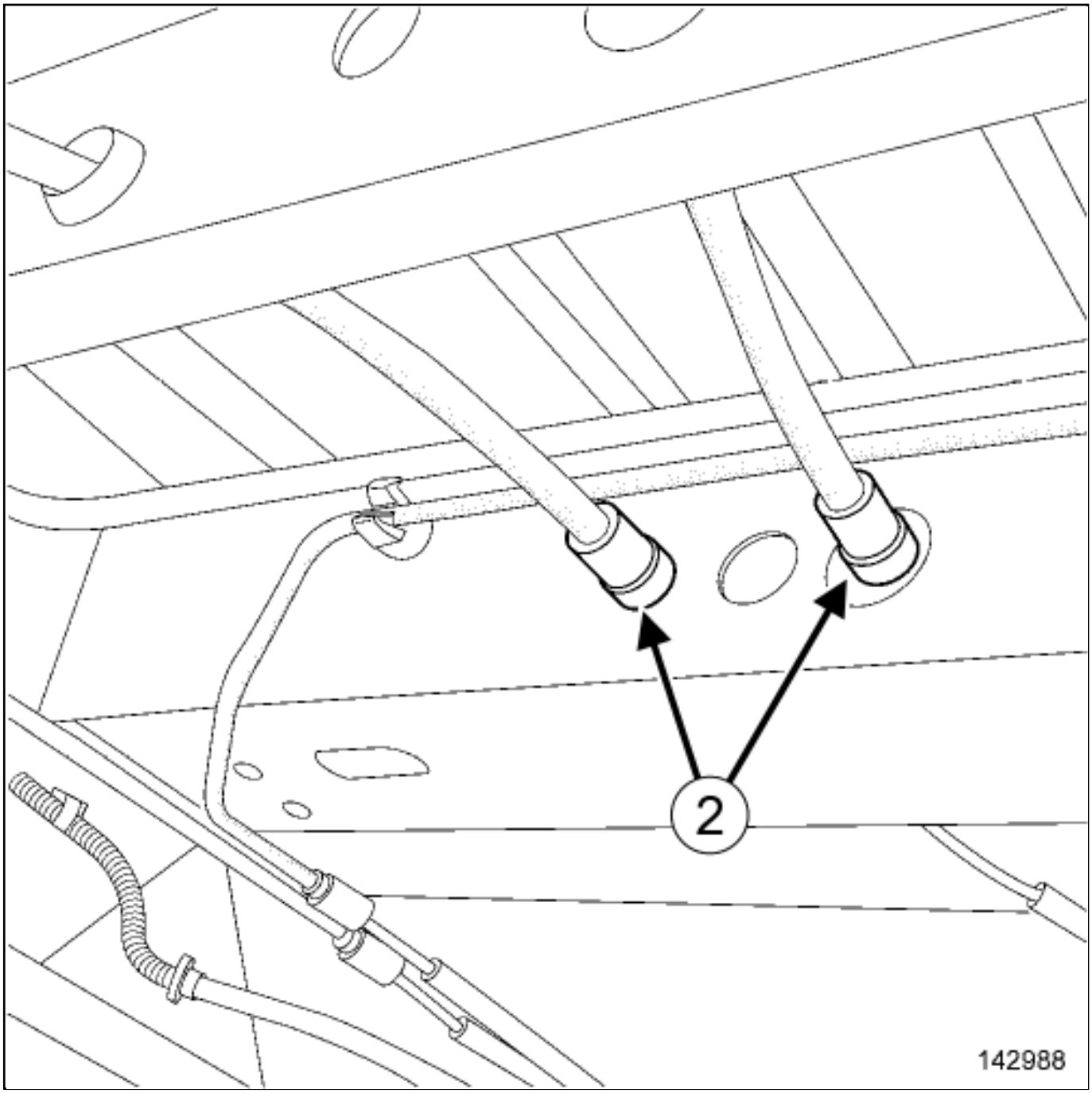
2. REMOVAL OPERATION

1- PARKING BRAKE CABLES BETWEEN THE INTERMEDIATE LINKAGE AND THE REAR BRAKE CALLIPERS

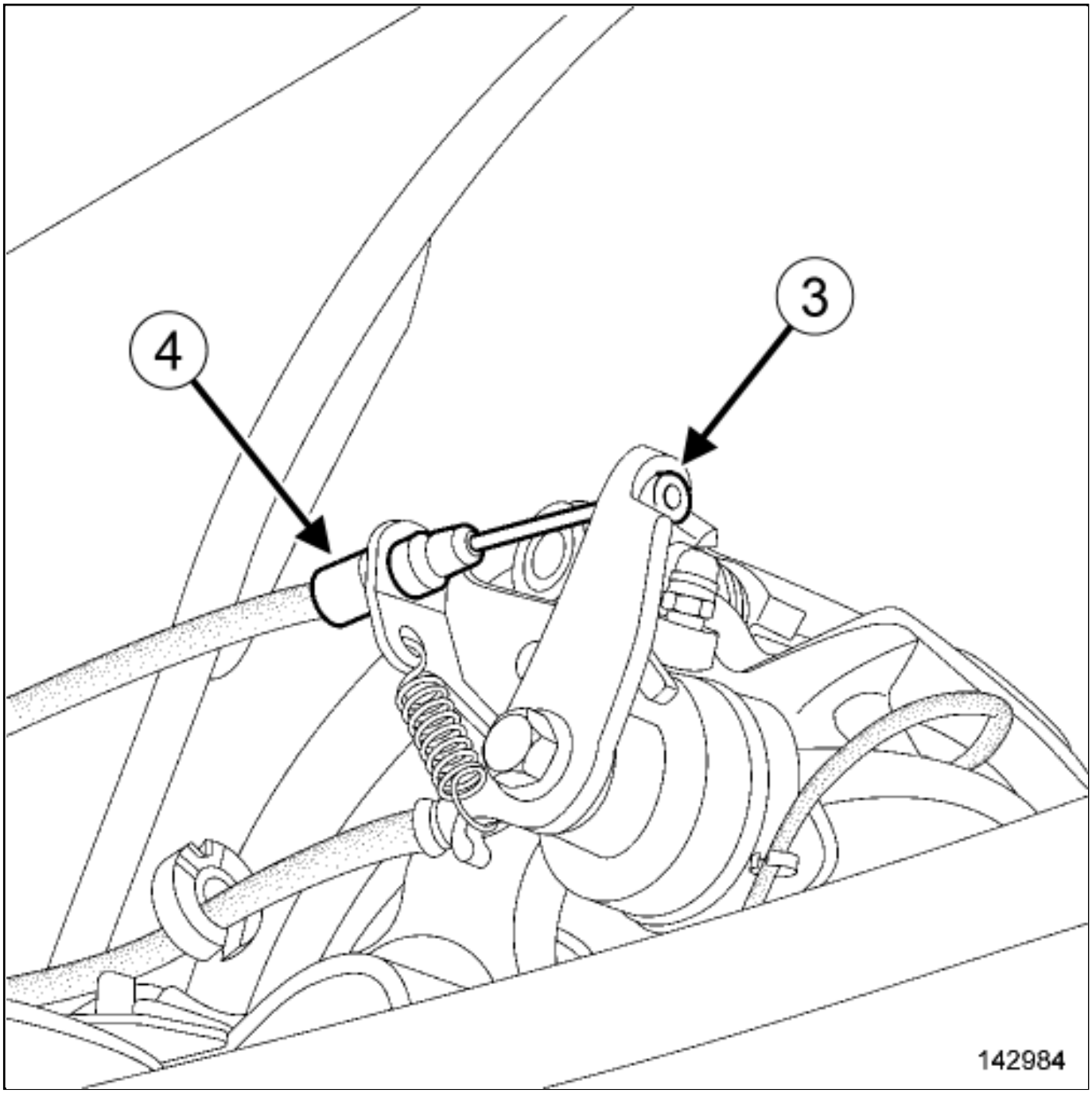
- Remove the rear wheels**Wheel: Removal - Refitting** .
- Loosen the adjusting nut of the parking brake cables(see **Parking brake assembly: Exploded view**) .



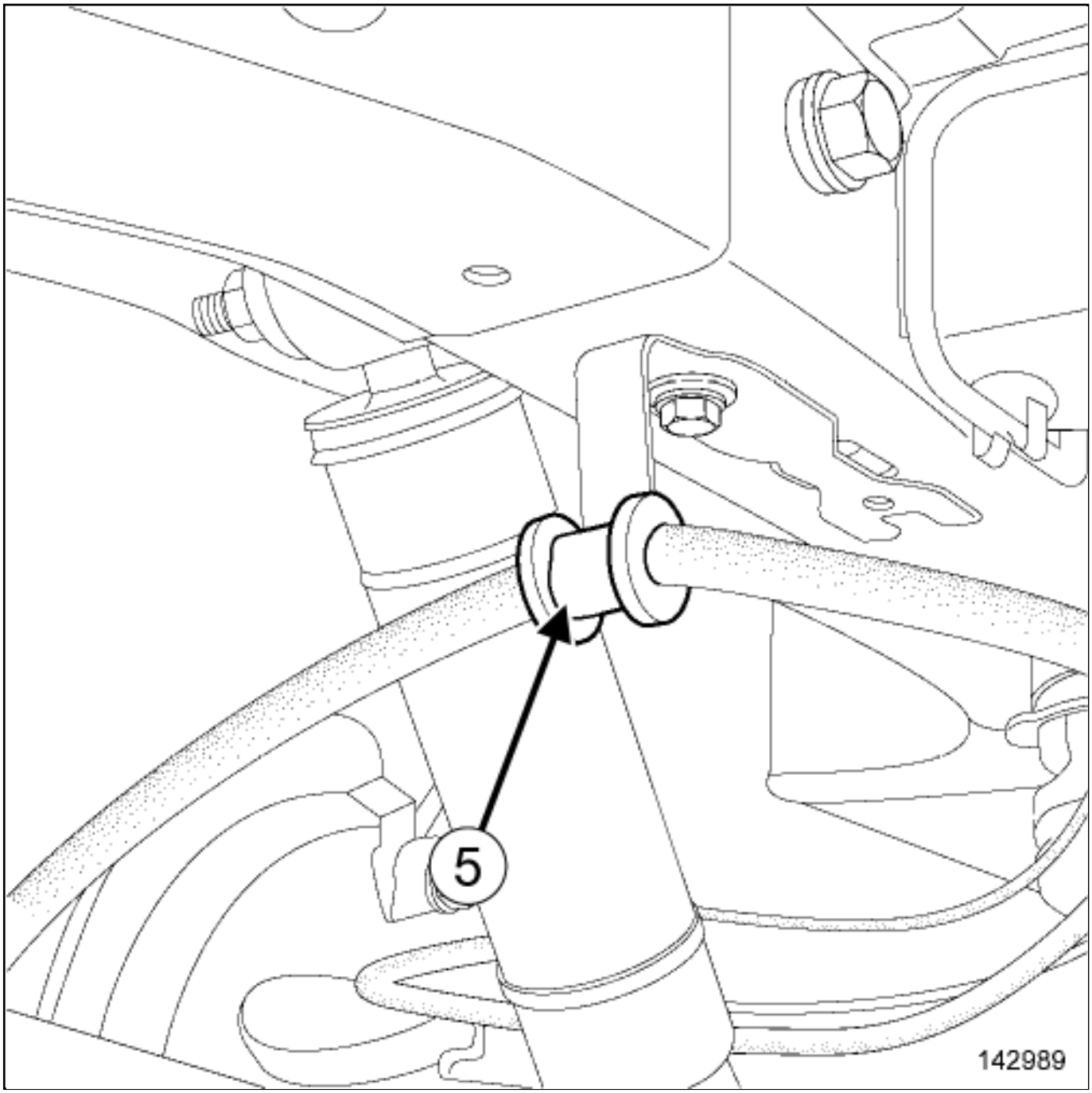
- Detach the parking brake cables(1) from the compensator.



- Unclip the parking brake cables(2) from the body.



- Remove the parking brake cables(3) from the rear brake callipers.
- Unclip the parking brake cables from the sheath stops at(4) .

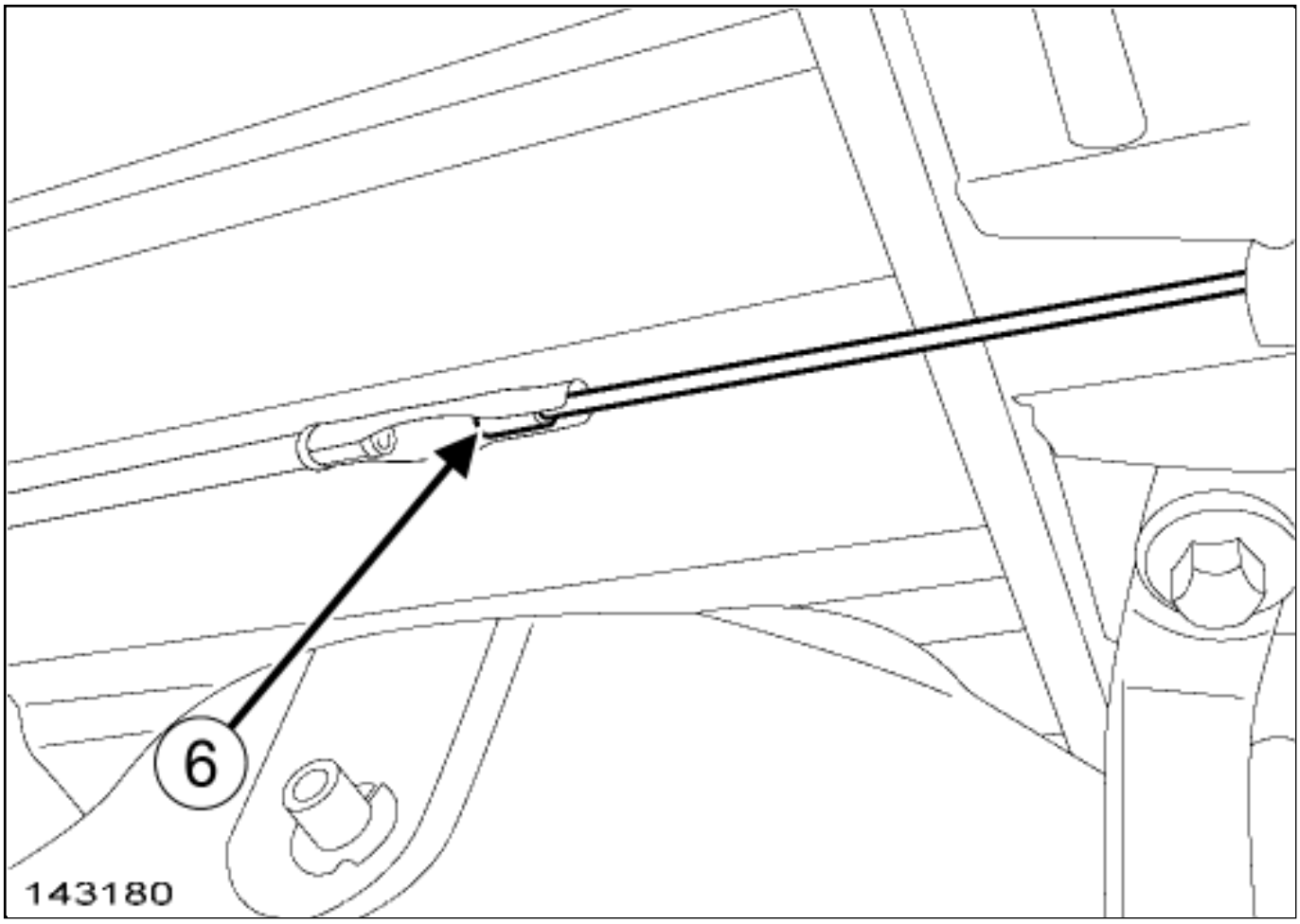


Unclip the parking brake cables from their support at(5) .

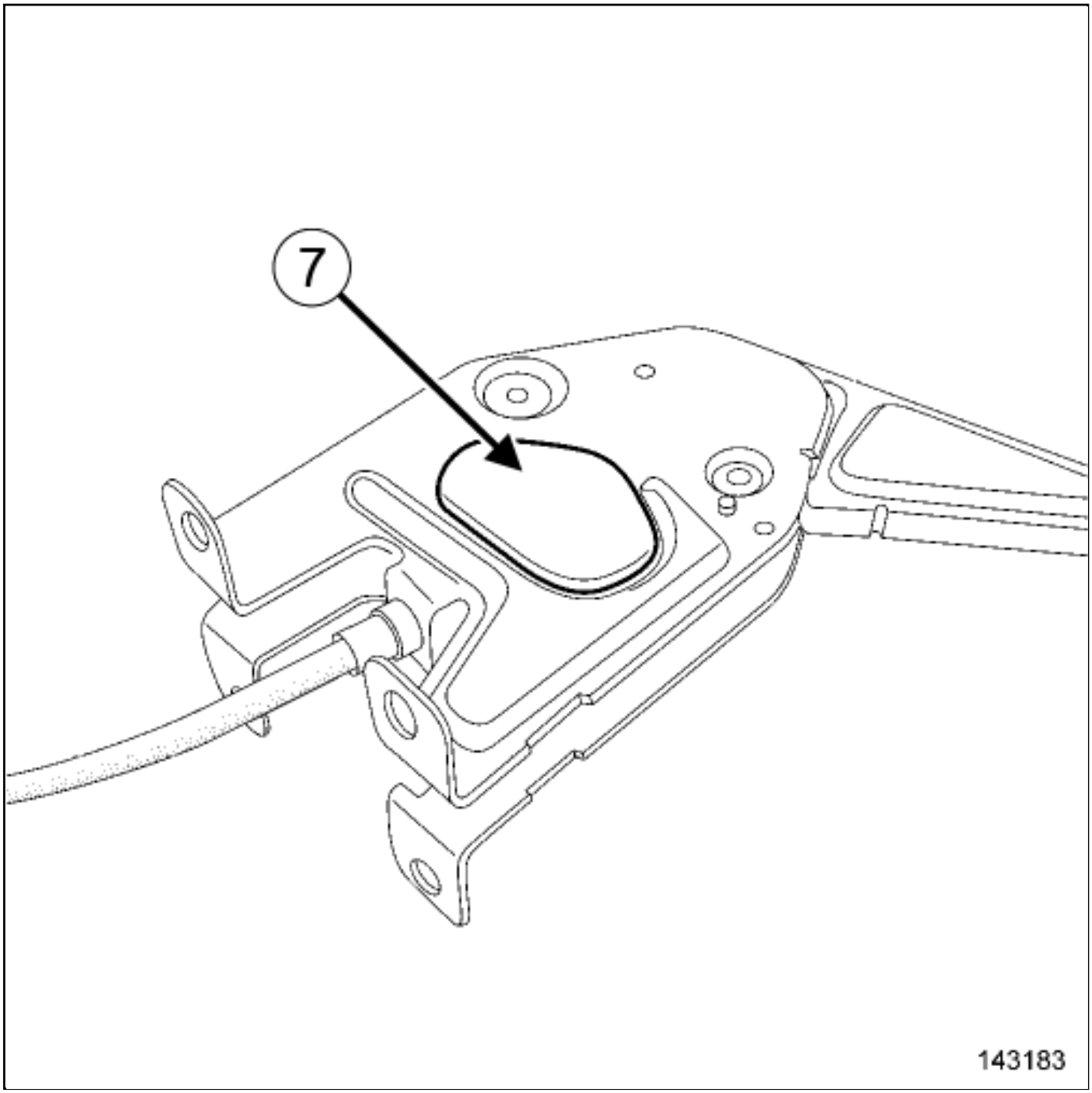
Remove the parking brake cables, noting their routing.

2- PARKING BRAKE CABLE BETWEEN THE LINKAGE AND THE PARKING BRAKE LEVER

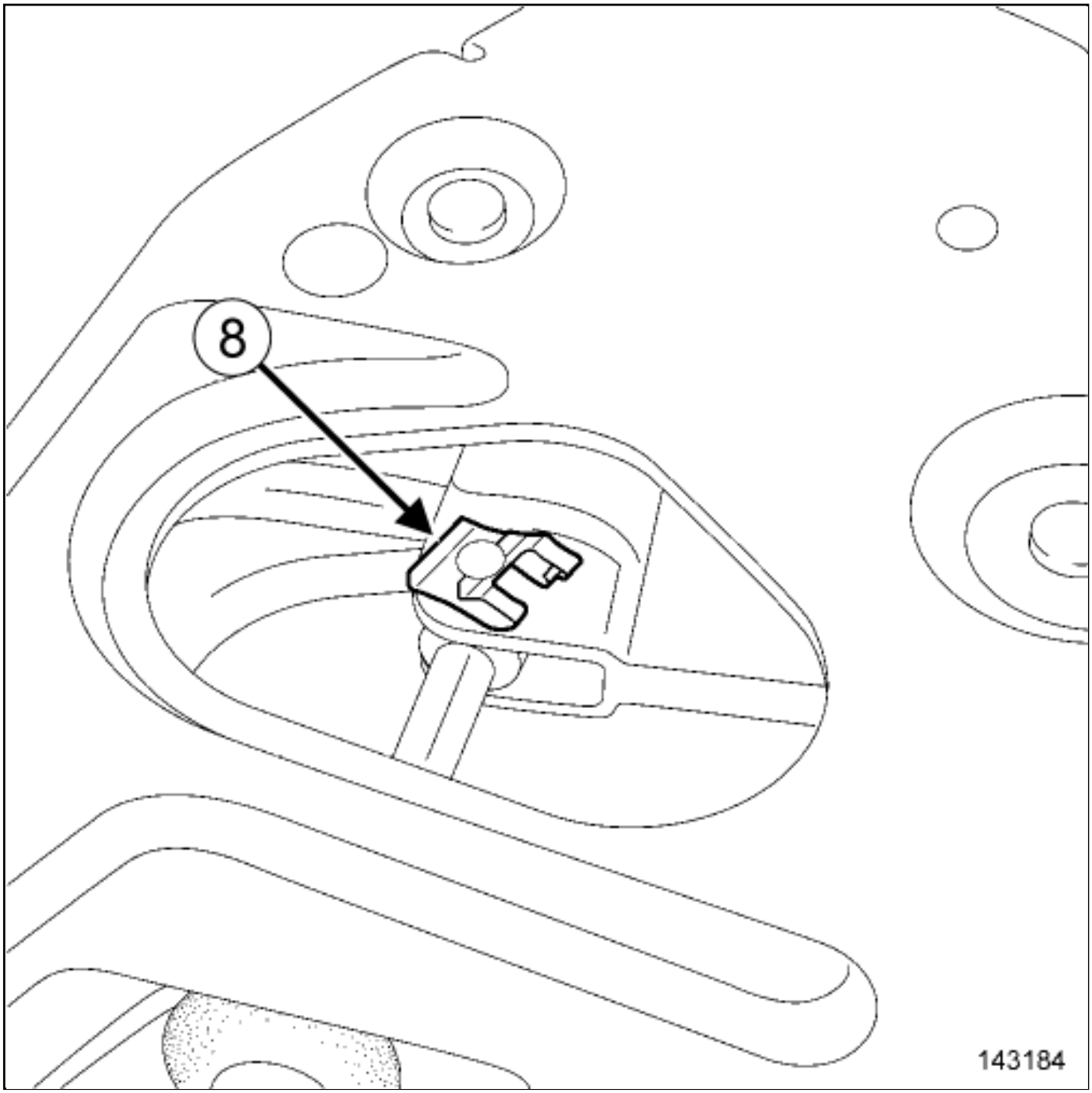
Loosen the adjusting nut of the parking brake cables(see **Parking brake assembly: Exploded view**) .



Remove the parking brake cable(6) from the compensator.

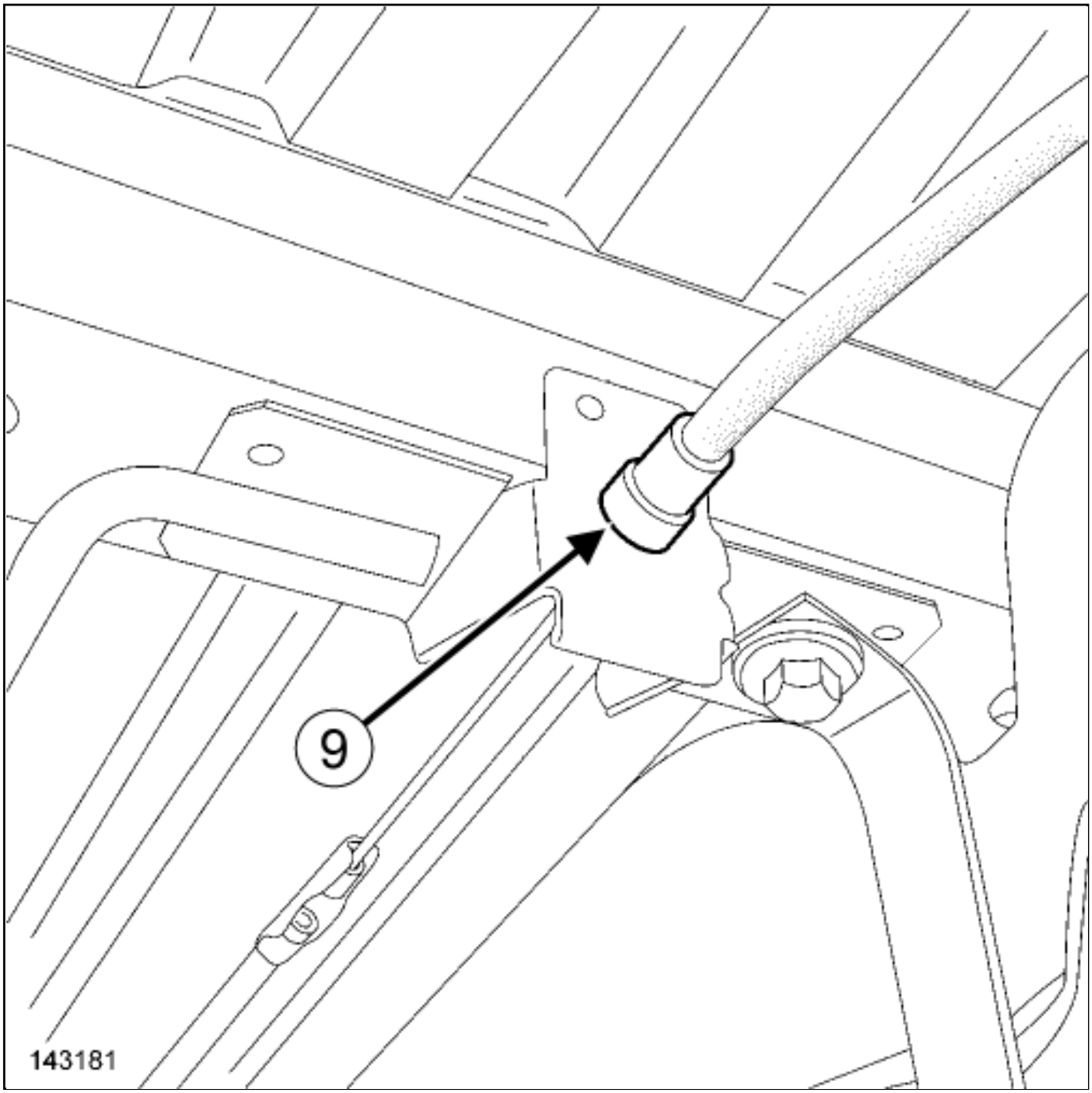


Remove the covers(7) of the parking brake lever.



Remove (see **Parking brake assembly: Exploded view**) :

- the clip(**8**) of the parking brake cable pin on the parking brake lever,
- the parking brake cable pin on the parking brake lever,
- the parking brake cable from the parking brake lever.



Unclip from the body:

- the sheath stop(9) of the parking brake cable,
- the parking brake cable.

Remove the parking brake cable between the intermediate linkage and the parking brake lever.

REFITTING

1. REFITTING PREPARATION OPERATION

Always replace the clip of the pin for the parking brake cable between the linkage and the parking brake lever on the parking brake lever.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Adjust the parking brake cables(see 37A, Mechanical component controls, Parking brake lever: Adjustment) .

PARKING BRAKE LEVER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Parking brake assembly: Exploded view**) .

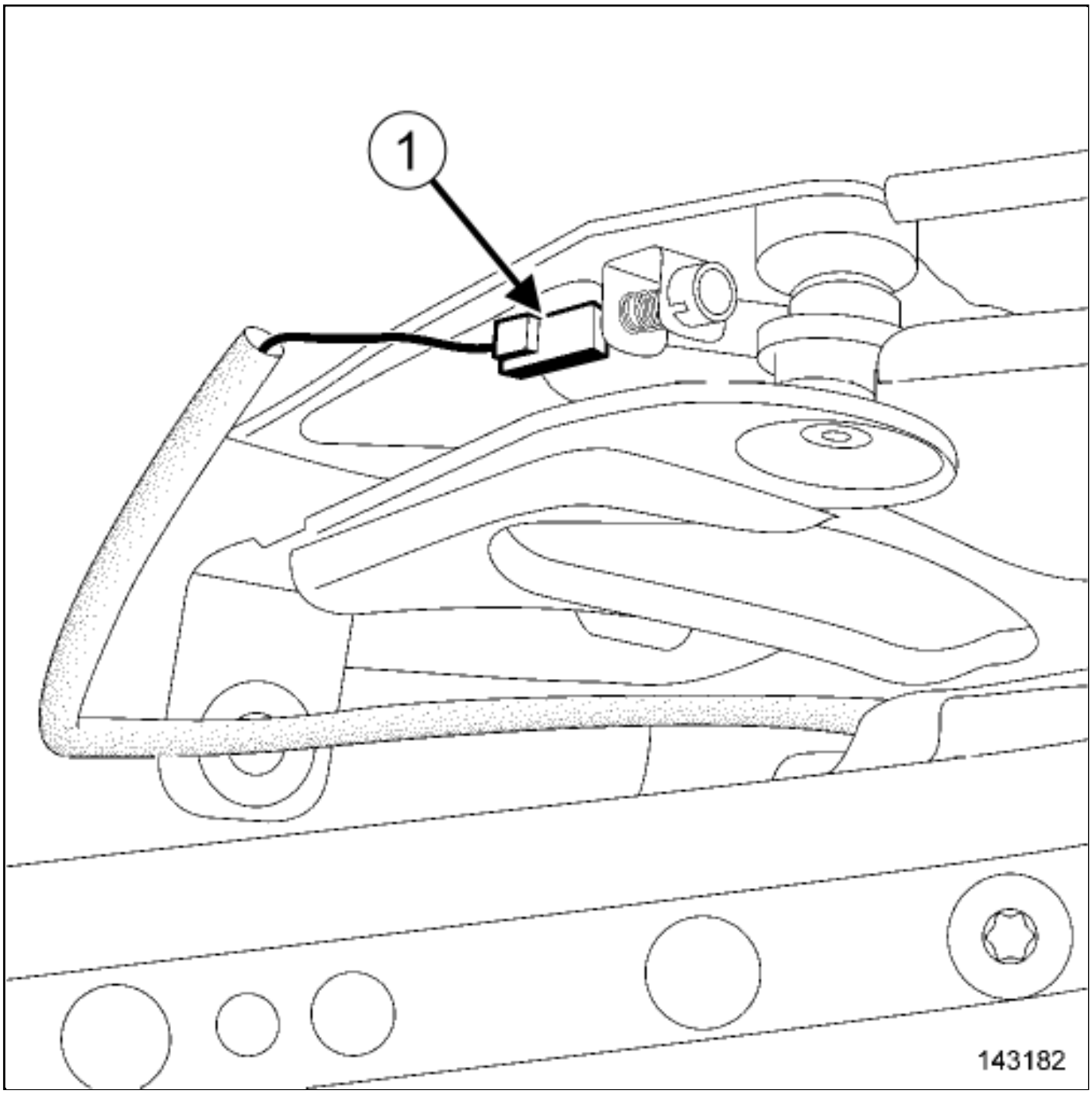
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove the parking brake cable between the intermediate linkage and the parking brake control lever **(see 37A, Mechanical component controls, Parking brake cables: Removal - Refitting)** .

2. REMOVAL OPERATION



- Disconnect the parking brake switch connector(1) .

- Remove the parking brake lever(see **Parking brake assembly: Exploded view**) .

REFITTING

- Proceed in the reverse order to removal.

- Adjust the parking brake cables(**see 37A, Mechanical component controls, Parking brake lever: Adjustment**) .

XSL version : 3.02 du 22/07/11

PARKING BRAKE LEVER: ADJUSTMENT

Note:

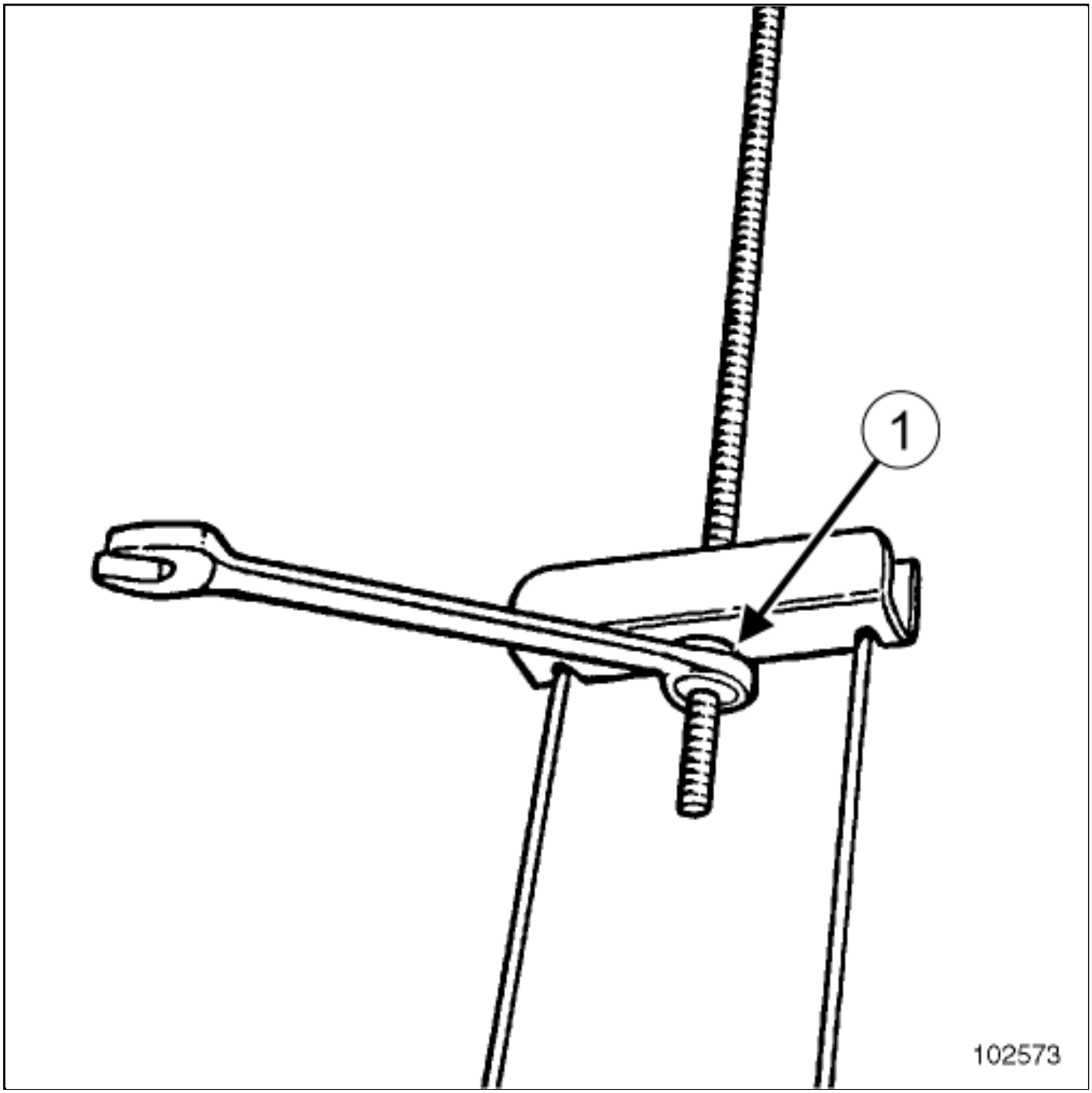
- A poorly adjusted parking brake:
  - prevents correct operation of the automatic compensation system for the brake shoes,
  - causes premature wear of brake shoes.

ADJUSTMENT

1. ADJUSTMENT PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .
- Apply the parking brake five times to condition the cables for normal use.
- Put the parking brake lever into the released position.
- Check that the rear wheels turn freely. If they do not, check the following components and if necessary repair:
  - the parking brake cables,
  - the calliper piston,
  - the automatic compensation system,
  - calliper.
- Remove the rear wheels**Wheel: Removal - Refitting** .

2. OPERATION FOR ADJUSTMENT OF PART CONCERNED



- Loosen the nut(1) to release the cables.

- Position the parking brake lever at the 2nd notch.
- Move the adjustment nut until the disc or drum can no longer be turned by hand.
- Pull the brake lever several times.
- Put the parking brake lever into the released position.
- The disc or the drum must be able to turn freely. If not, move the nut gradually until the disc or drum

can turn freely.

3. FINAL OPERATION

- Refit the rear wheels **Wheel: Removal - Refitting** .

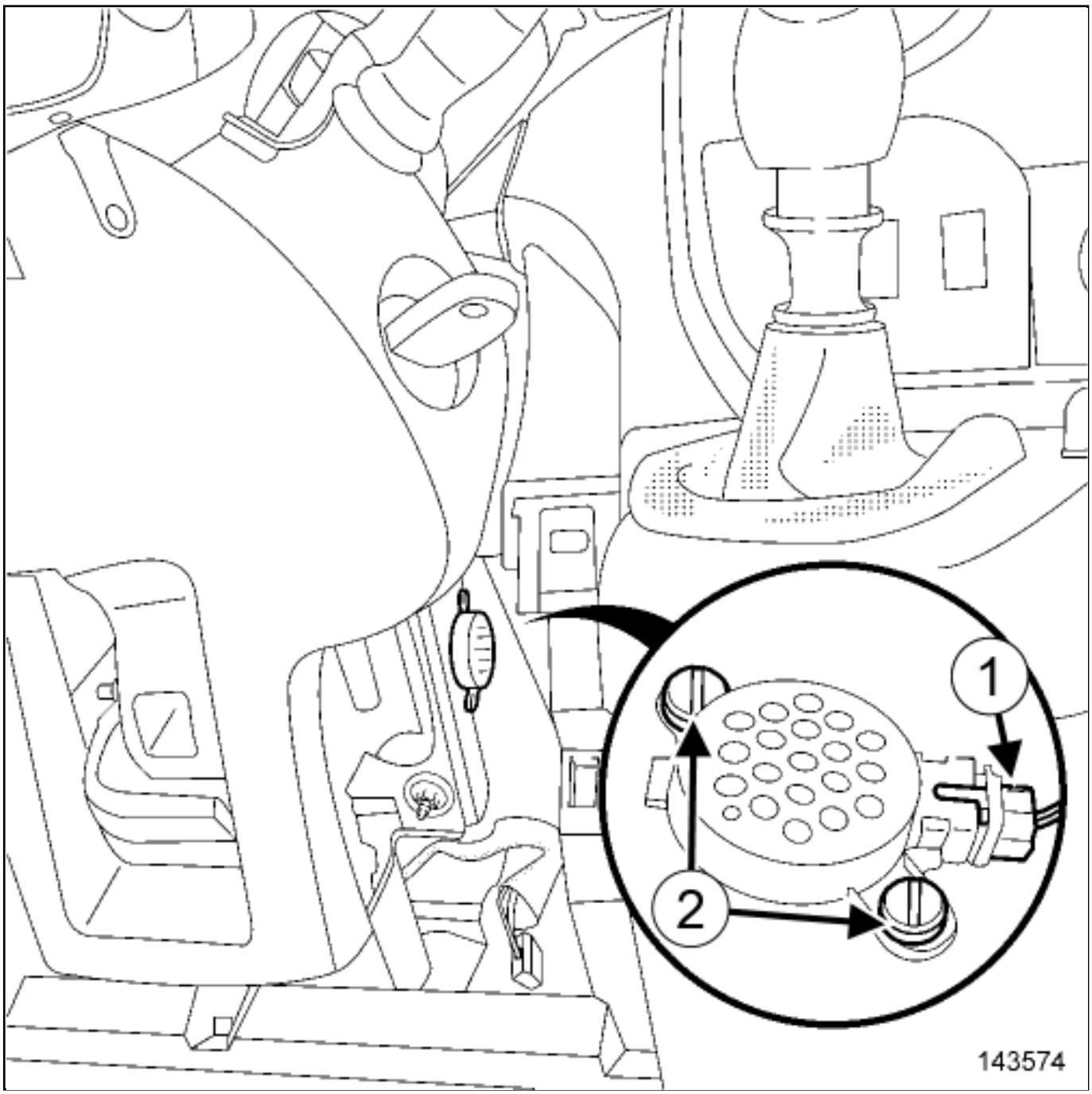
PARKING DISTANCE CONTROL BUZZER: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the dashboard lower trim Dashboard lower trim: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION



- Disconnect the connector(1) from the parking distance control buzzer.

- Remove:
  - the bolts(2) of the parking distance control buzzer,
  - the parking distance control buzzer.

REFITTING

- Proceed in the reverse order to removal.

PARKING DISTANCE CONTROL COMPUTER: REMOVAL - REFITTING

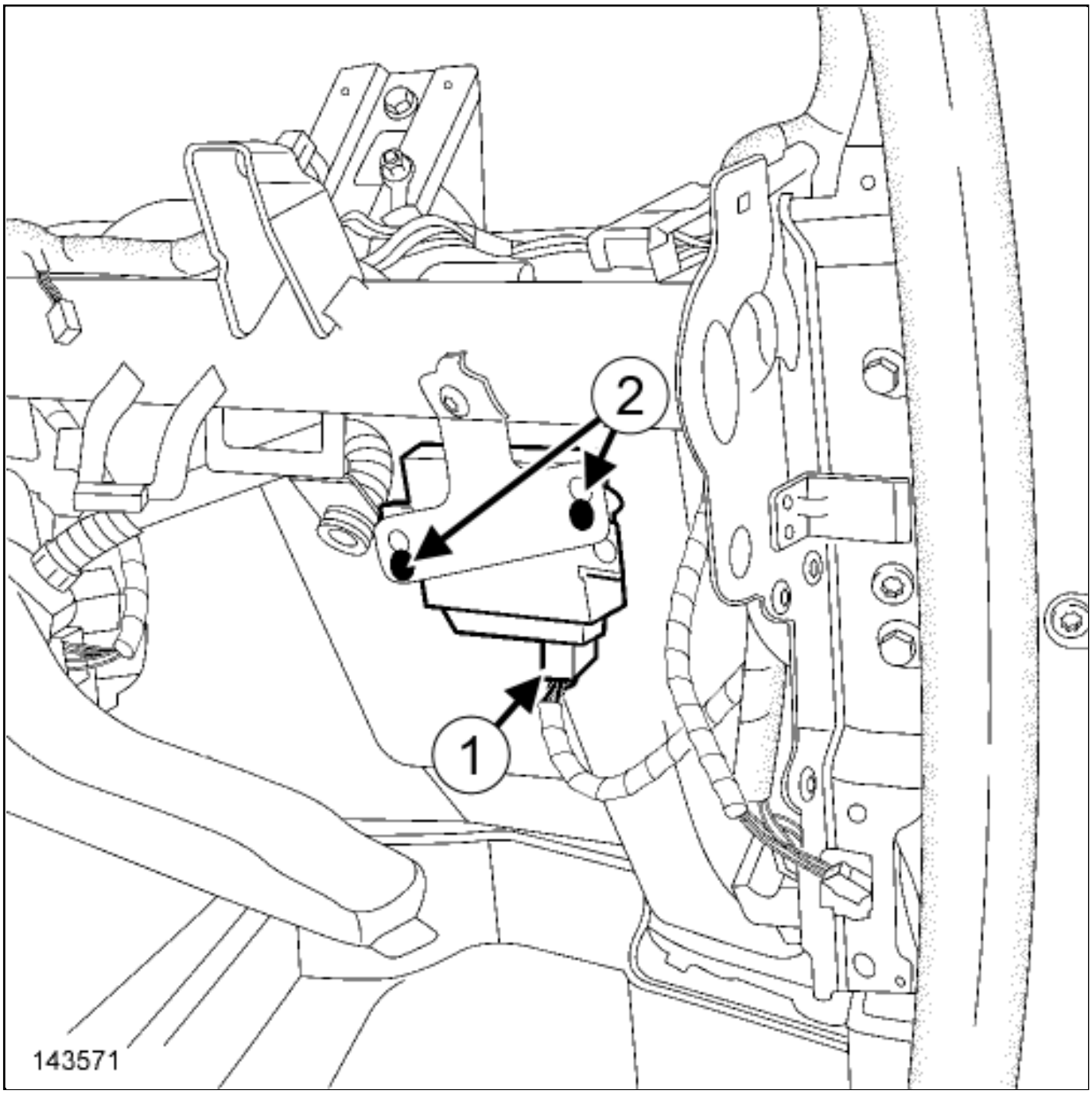
Equipment required
Diagnostic tool

REMOVAL

1. REMOVAL PREPARATION OPERATION

- In the event of replacement, apply the Before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Parking distance control computer",
  - go to repair mode,
  - display the "Before/After repair procedure",
  - carry out the operations described in the "Before repair procedure" section.
- Switch off the ignition.
- Disconnect the battery Battery: Removal - Refitting .
- Remove the glovebox Glovebox: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION



- Disconnect the parking distance control computer connector(1) .
- Undo the parking distance control computer bolts(2) .
- Remove the parking distance control computer from its support by releasing its bolts from the oblong holes.

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

2. FINAL OPERATION

- Connect the battery Battery: Removal - Refitting .

- In the event of a replacement, apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Parking distance control computer",
  - go to repair mode,
  - display the "Before/After repair procedure",
  - carry out the operations described in the "After repair procedure" section.

PARTICLE FILTER PRESSURE SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19B, Exhaust, Exhaust assembly under body: Exploded view)** .

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 19B, Exhaust, Exhaust: Precautions for the repair)** ,
- **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

CAUTION

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

WARNING

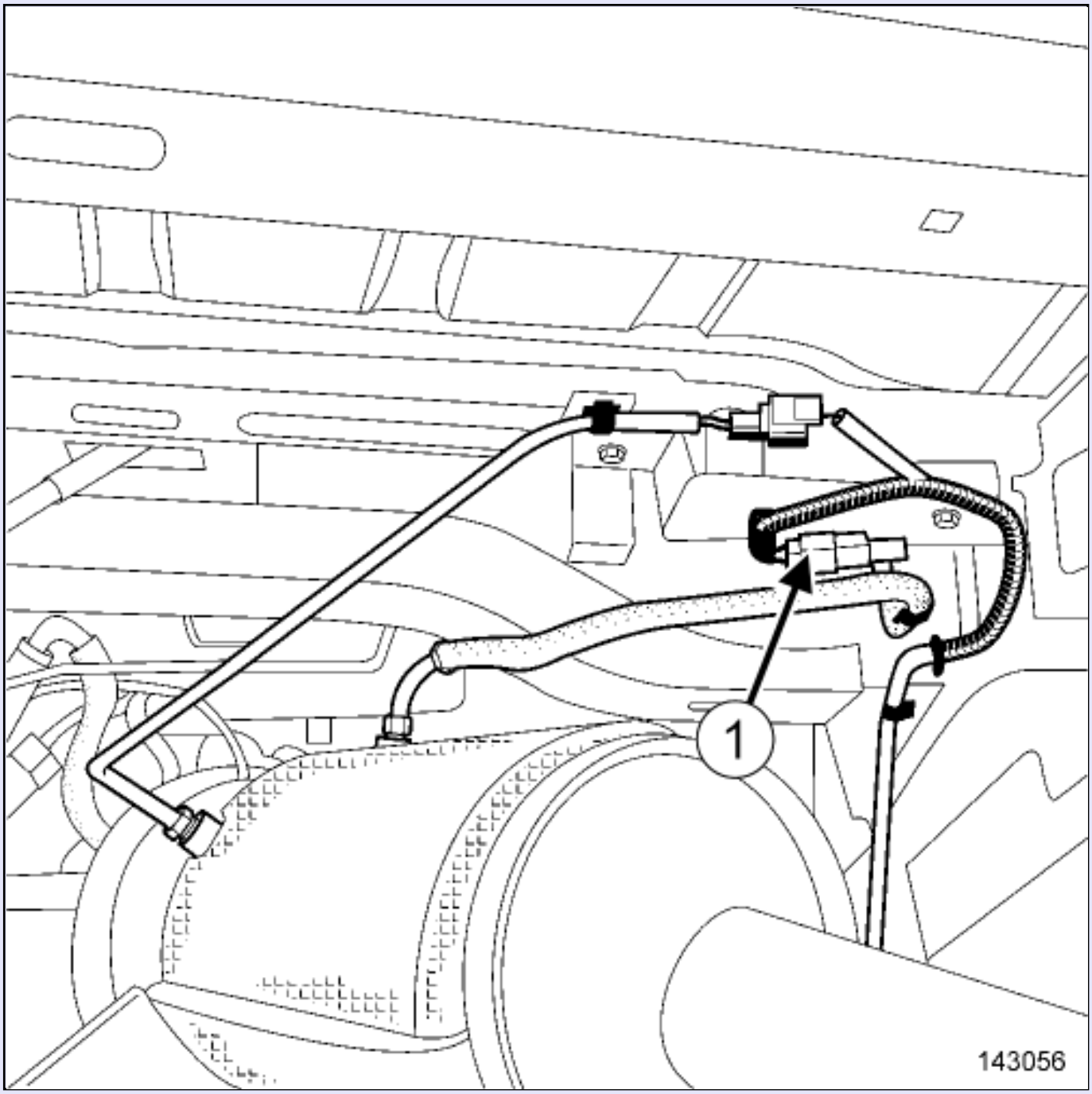
Wear heat protective gloves during the operation.

REMOVAL

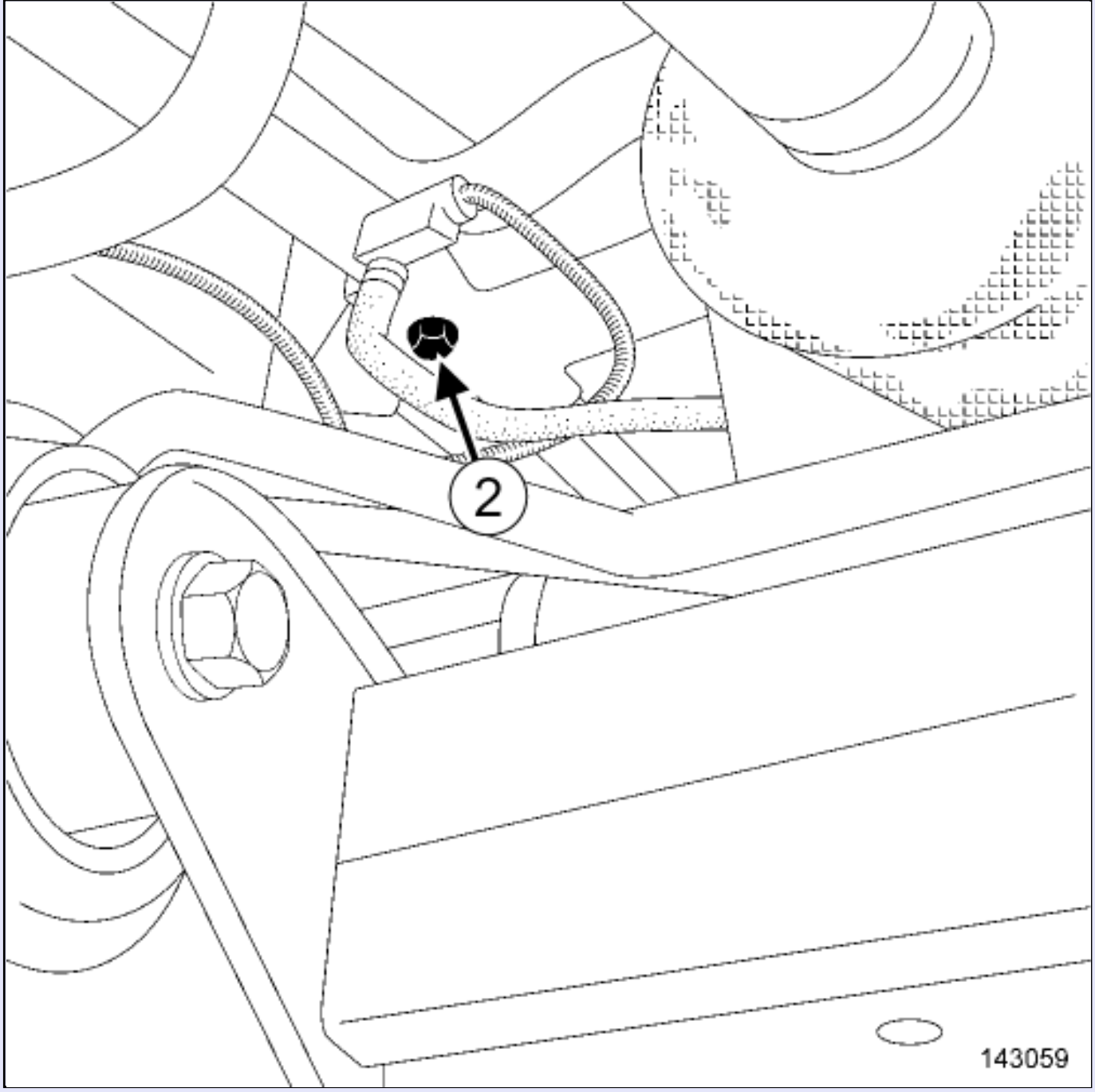
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting .
- Remove the undertray.

2. REMOVAL OPERATION



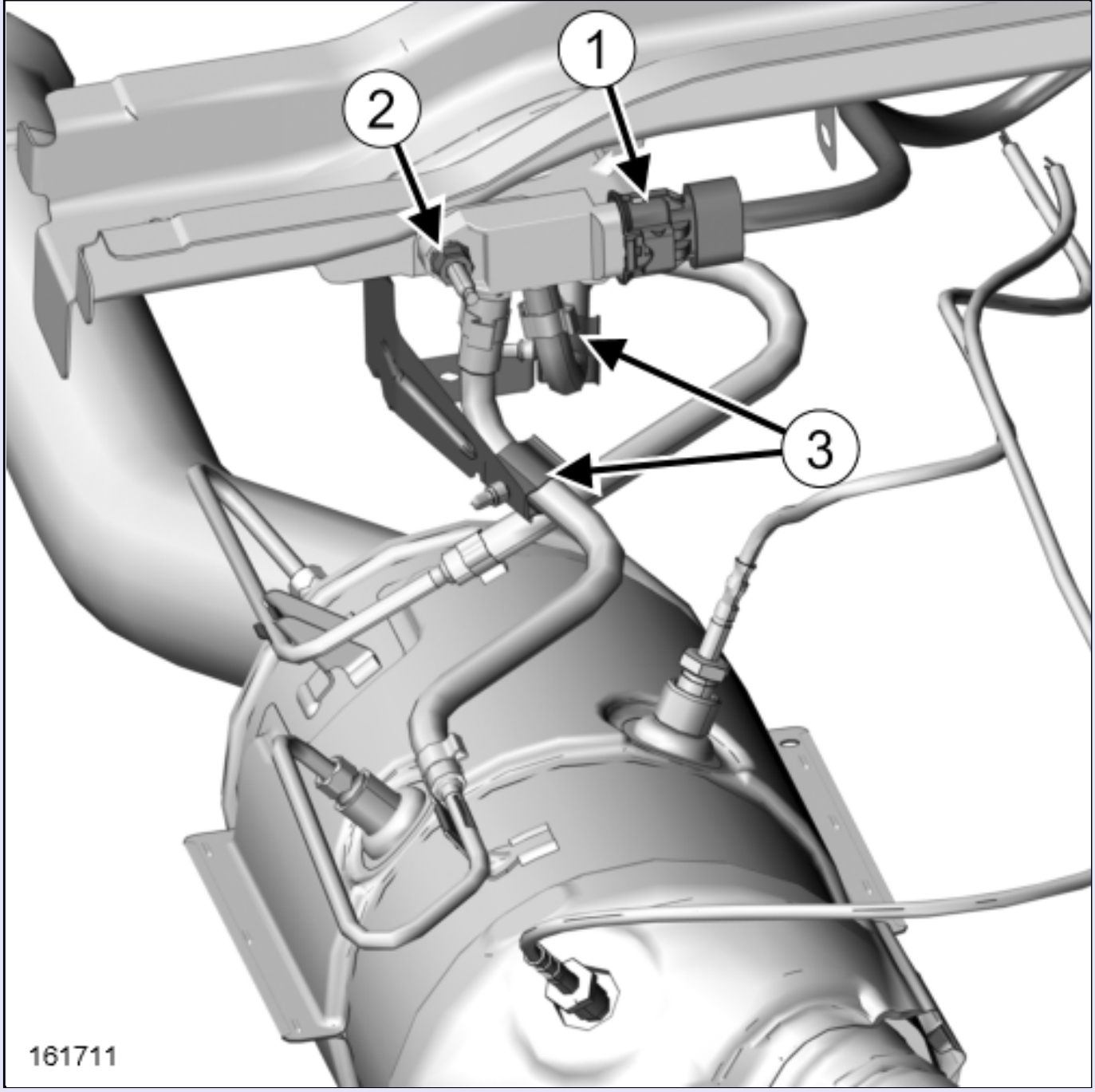
- Disconnect the particle filter pressure sensor connector(1) .



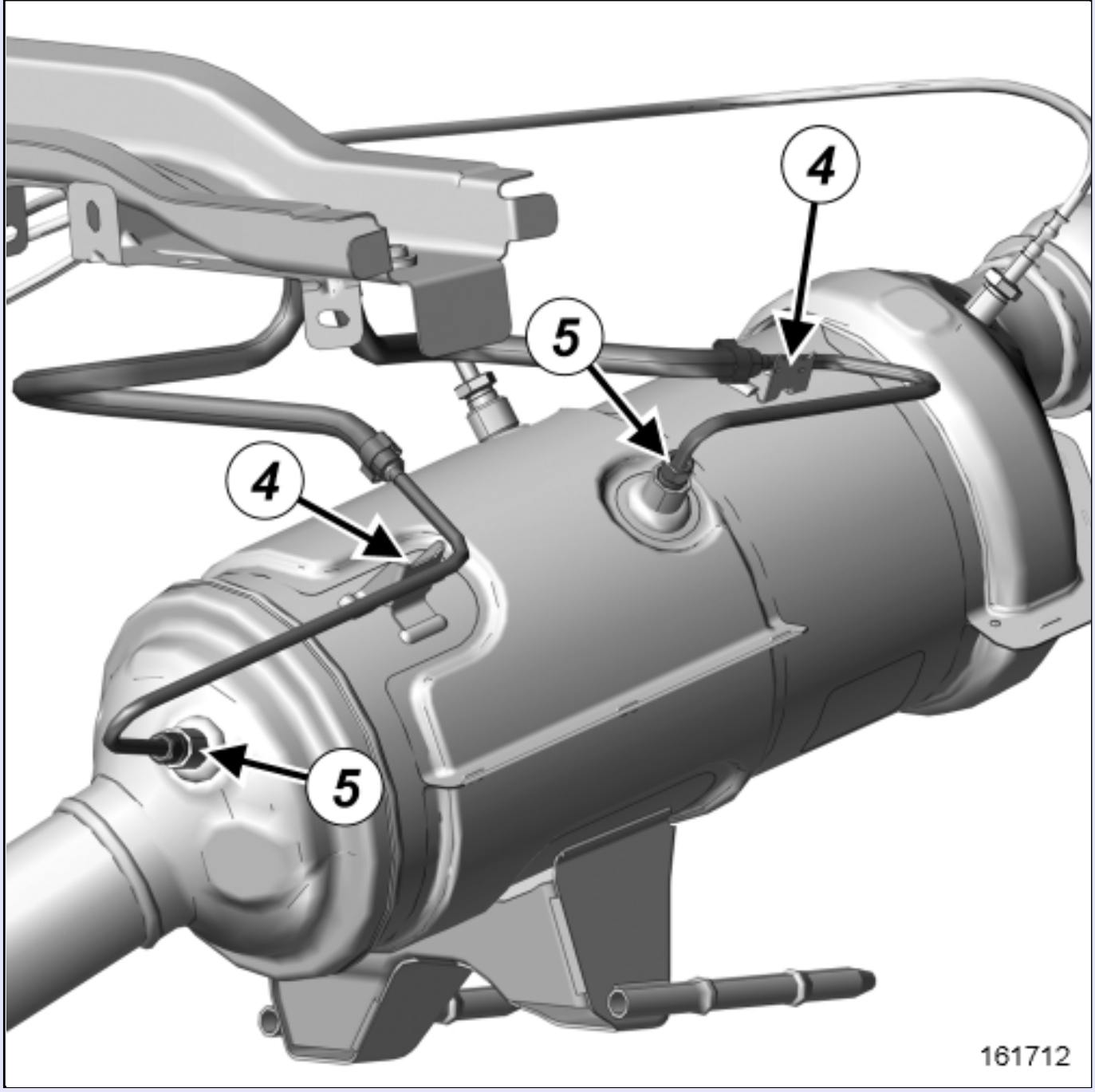
- Remove the particle filter pressure sensor nut(2) .

- Undo the union nut of the particle filter pressure sensor(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .

- Remove the particle filter pressure sensor(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .



- Disconnect the particle filter pressure differential sensor connector(1) .
- Unclip the particle filter pressure sensor cables at(3) .
- Remove the particle filter pressure differential sensor nut(2) .



- Unclip the particle filter pressure sensor cables at(4) .
- Disconnect the particle filter pressure sensors(5) .
- Remove the "particle filter pressure differential sensor - particle filter pressure sensors" assembly (see 19B, Exhaust, Exhaust assembly under body: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

If reusing the sensor, coat it with COPPER-ALUMINIUM LUBRICANT Vehicle: Parts and consumables for the repair .

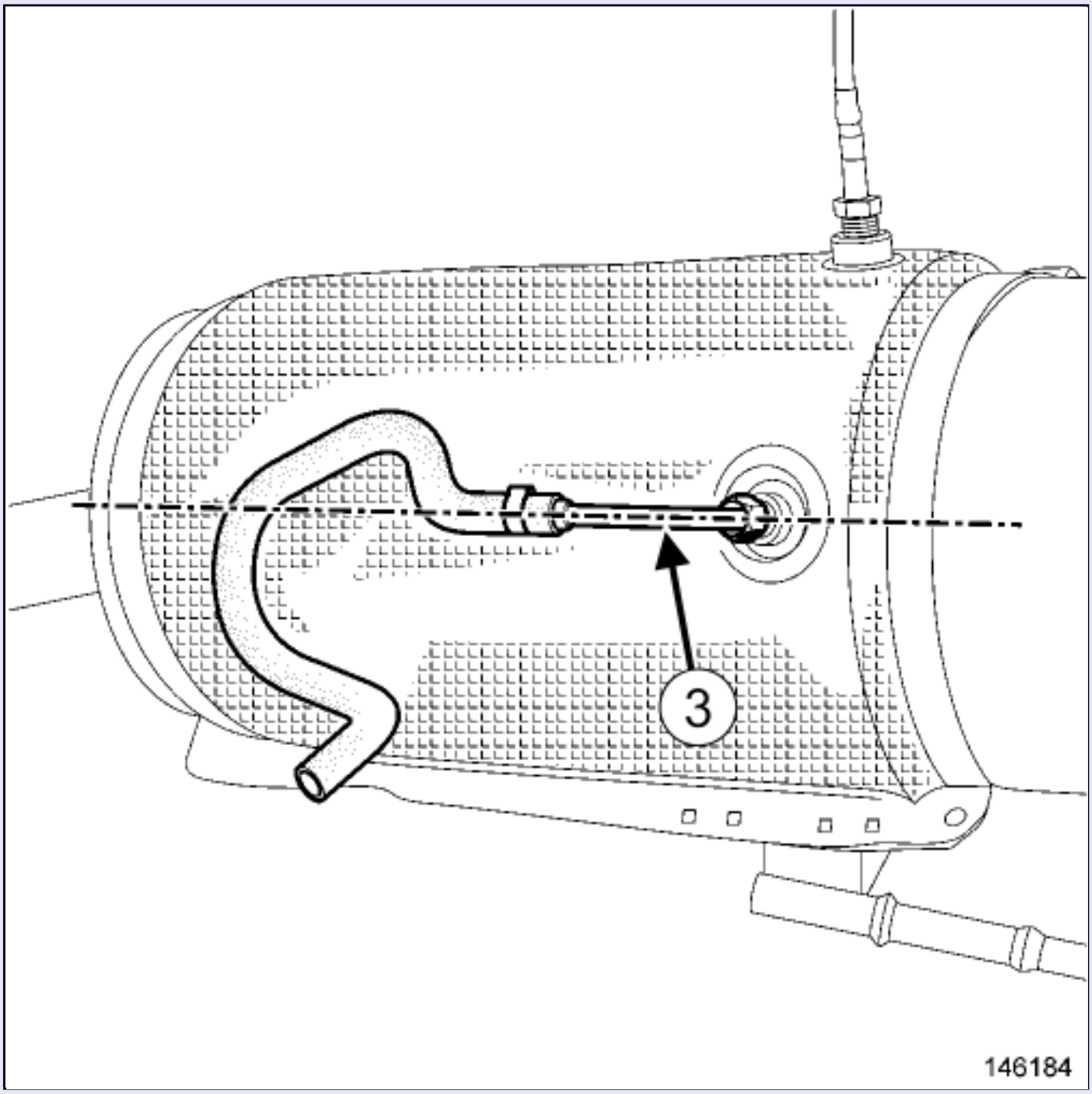
Note:

Do not lubricate a new sensor.

2. REFITTING OPERATION

M9T, 670 680 690 696 698 870 880 882 890 896 898(670 OR 680 OR 690 OR 696 OR 698 OR 870 OR 880 OR 882 OR 890 OR 896 OR 898)

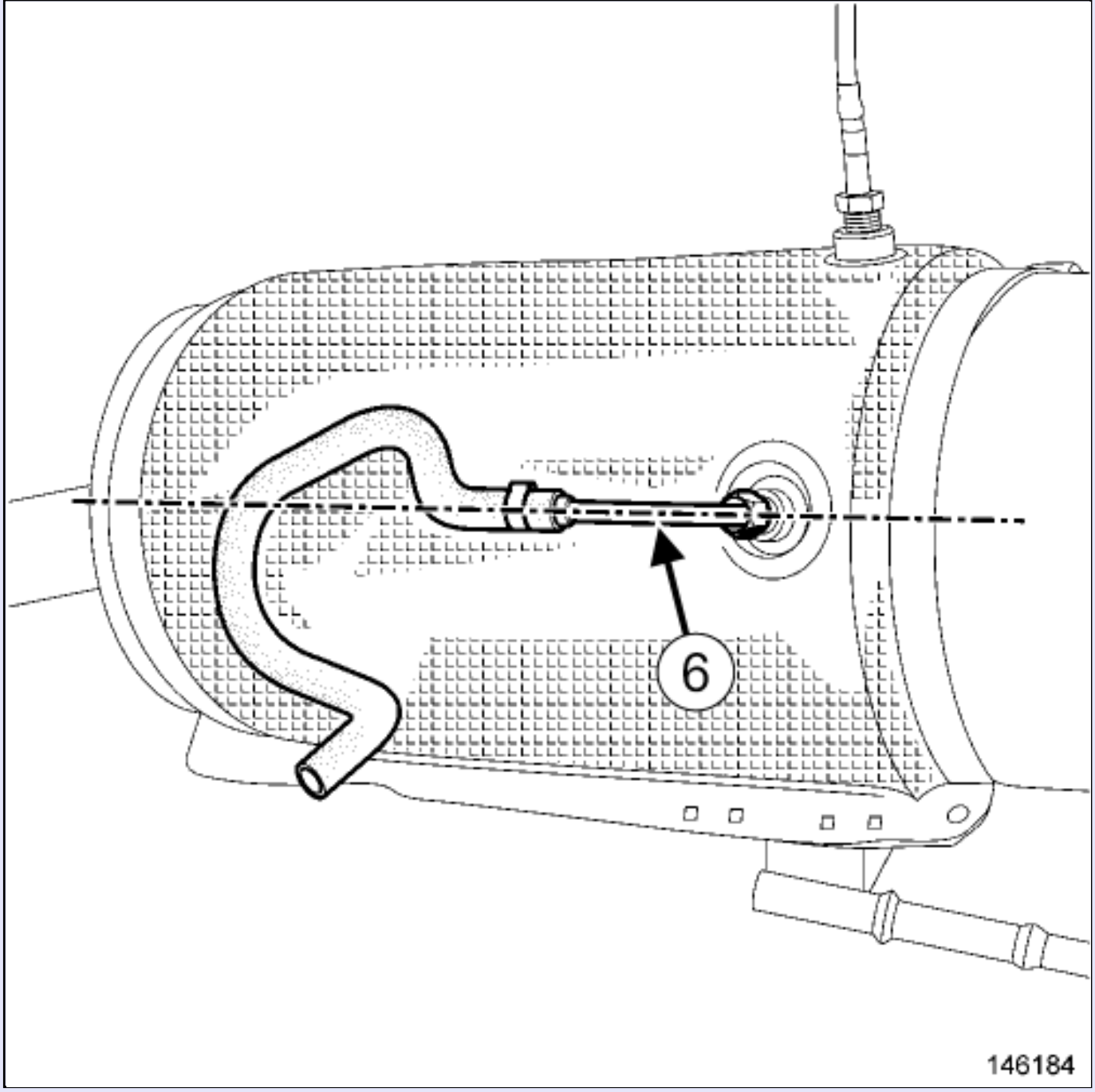
- Refit the particle filter pressure sensor(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .



- Fit the rigid section(3) of the particle filter pressure sensors then turn it so that it is at an angle of + 3˚ to the exhaust pipe longitudinal axis.

M9T, 700 702(700 OR 702)

- Refit the particle filter pressure sensors(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .



❑ Fit the rigid section(6) of the particle filter pressure sensors then turn it so that it is at an angle of + 3˚ to the exhaust pipe longitudinal axis.

3. FINAL OPERATION

❑ Proceed in the reverse order to removal.

❑ Apply the after repair procedure using the Diagnostic tool[Diagnostic tool : Use] :

-Computer concerned by the after repair procedure:

■"Injection computer"

-Component affected by the after repair procedure:

■"Particle filter pressure sensor"

PARTICLE FILTER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pliers for removing exhaust pipe rubber mounting bushes	Mot. 1857

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19B, Exhaust, Exhaust assembly under body: Exploded view)** .

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 19B, Exhaust, Exhaust: Precautions for the repair)** ,
- **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

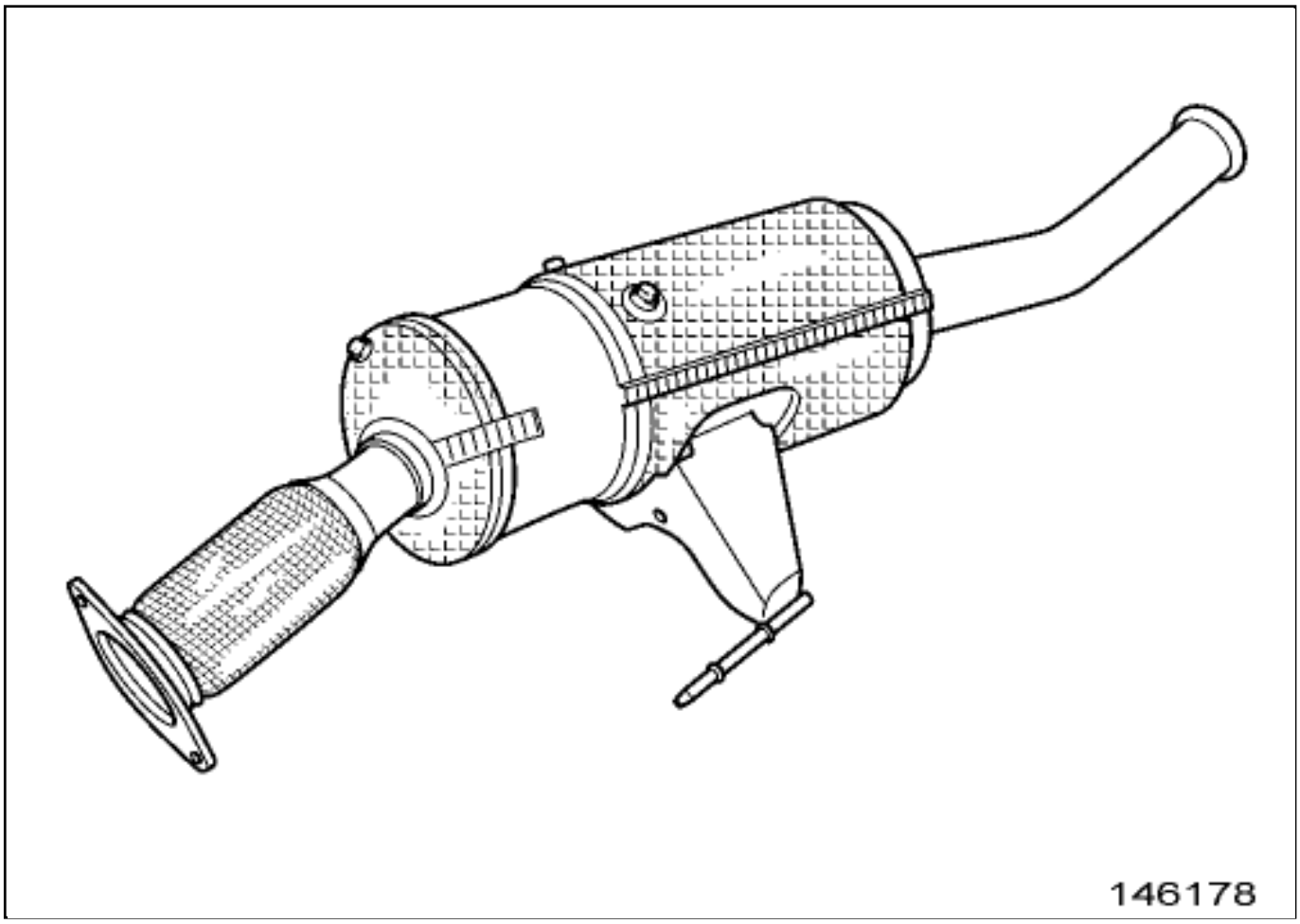
CAUTION

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

WARNING

Wear heat protective gloves during the operation.



- The catalytic converter is integrated into the particle filter.
- For the removal of the catalytic converter, see the removal of the particle filter(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the engine undertray.

2. REMOVAL OPERATION

Remove (see 19B, Exhaust, Exhaust assembly under body: Exploded view) :

- the union nut of the particle filter pressure sensor,
- the union nut of the particle filter temperature sensor,
- the union nut of the catalytic converter temperature sensor,
- the particle filter exhaust clip,
- the particle filter bracket nuts,
- the particle filter bracket seal,
- the particle filter from the rubber mounting bushes of the front axle subframe,
- the particle filter.

Note:

In case of difficulty removing the rubber mounting bushes, use the toolPliers for removing exhaust pipe rubber mounting bushes(Mot. 1857) .

If necessary, spray brake cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products):

- inside the particle filter mounts,
- on the welded threads of the particle filter.

REFITTING

1. REFITTING PREPARATION OPERATION

Use surface cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean and degrease the bearing faces between the exhaust flange and the particle filter.

Coat with COPPER-ALUMINIUM LUBRICANTVehicle: Parts and consumables for the repair (04B, Consumables - Products):

- the union nut of the particle filter pressure sensor,
- the union nut of the particle filter temperature sensor,
- the union nut of the catalytic converter temperature sensor.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Injection computer" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- select "Particle filter" in the "List of components controlled by this computer" section,
- carry out the operations described in the "After repair procedure" section.

- Start the engine.
- Check that there are no leaks and deal with them if necessary.
- Refit the engine undertray.

PARTICLE FILTER TEMPERATURE SENSORS: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.) **(see 19B, Exhaust, Exhaust assembly under body: Exploded view)** .

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 19B, Exhaust, Exhaust: Precautions for the repair)** ,
- **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

CAUTION

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

WARNING

Wear heat protective gloves during the operation.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

2. REMOVAL OPERATION

- Disconnect the catalytic converter temperature sensor connector (see 19B, Exhaust, Exhaust assembly under body: Exploded view) .
- Unclip the catalytic converter temperature sensor wiring.
- Loosen the union nut of the catalytic converter temperature sensor (see 19B, Exhaust, Exhaust assembly under body: Exploded view) .
- Remove the catalytic converter temperature sensor (see 19B, Exhaust, Exhaust assembly under body: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- If reusing the sensor, coat it with COPPER-ALUMINIUM LUBRICANT Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

Note:

Do not lubricate a new sensor.

2. REFITTING OPERATION

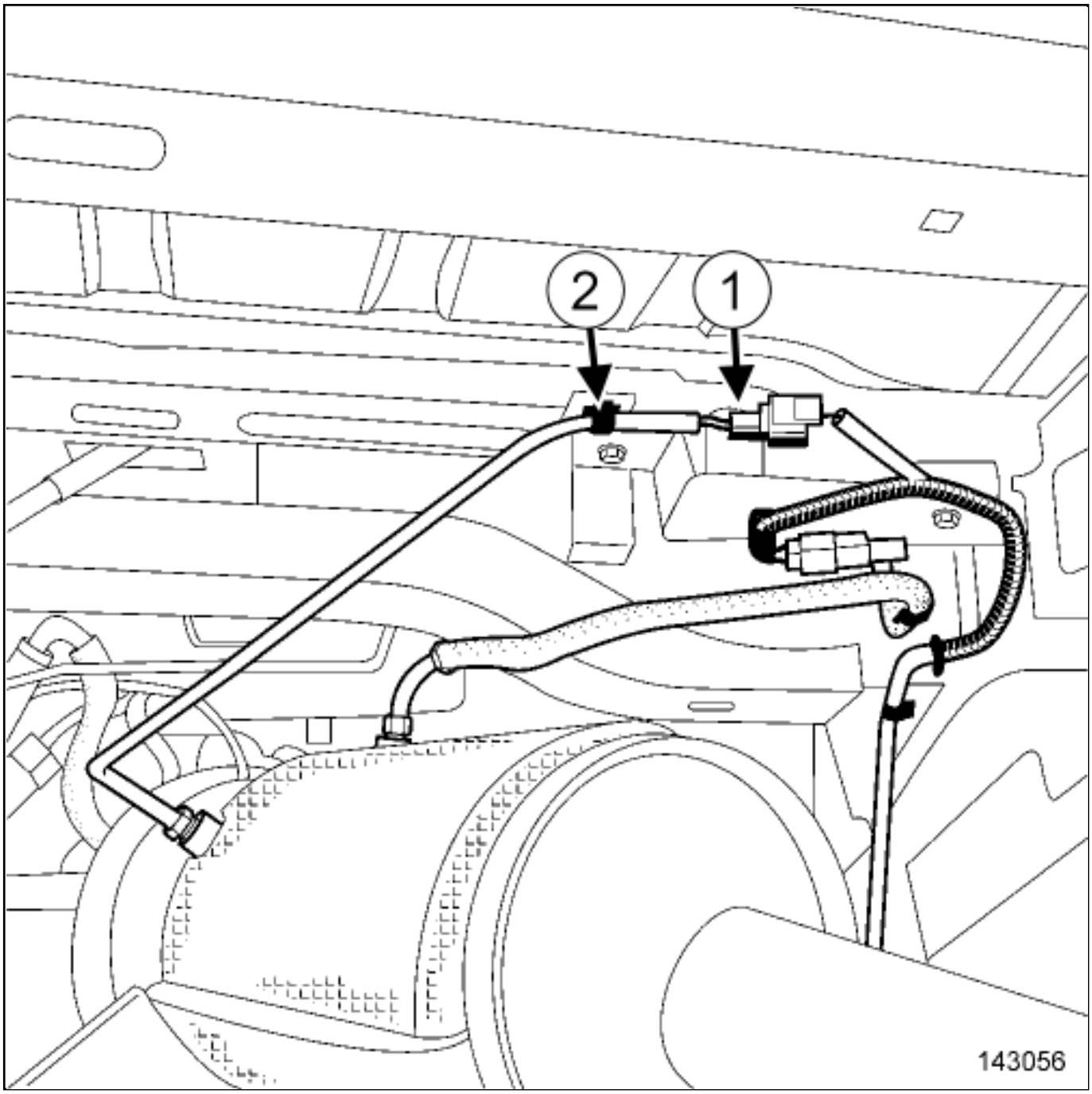
- Proceed in the reverse order to removal.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

2. REMOVAL OPERATION



- Disconnect the connector(1) of the particle filter temperature sensor(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .
- Unclip the wiring(2) of the particle filter temperature sensor.
- Loosen the union nut of the particle filter temperature sensor(see 19B, Exhaust, Exhaust assembly under body: Exploded view) .
- Remove the particle filter temperature sensor(see 19B, Exhaust, Exhaust assembly under body: Exploded

view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- If reusing the sensor, coat it with COPPER-ALUMINIUM LUBRICANTVehicle: Parts and consumables for the repair (04B, Consumables - Products).

Note:

Do not lubricate a new sensor.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

PASSENGER COMPARTMENT FAN ASSEMBLY CONTROL UNIT: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the batteryBattery: Removal - Refitting (80A, Battery).

- Remove the dashboard lower trimDashboard lower trim: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION

- Disconnect the connector of the passenger compartment fan assembly control unit.

- Remove the passenger compartment blower unit control unit(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

PASSENGER COMPARTMENT HEATING AND VENTILATION ASSEMBLY: EXPLODED VIEW

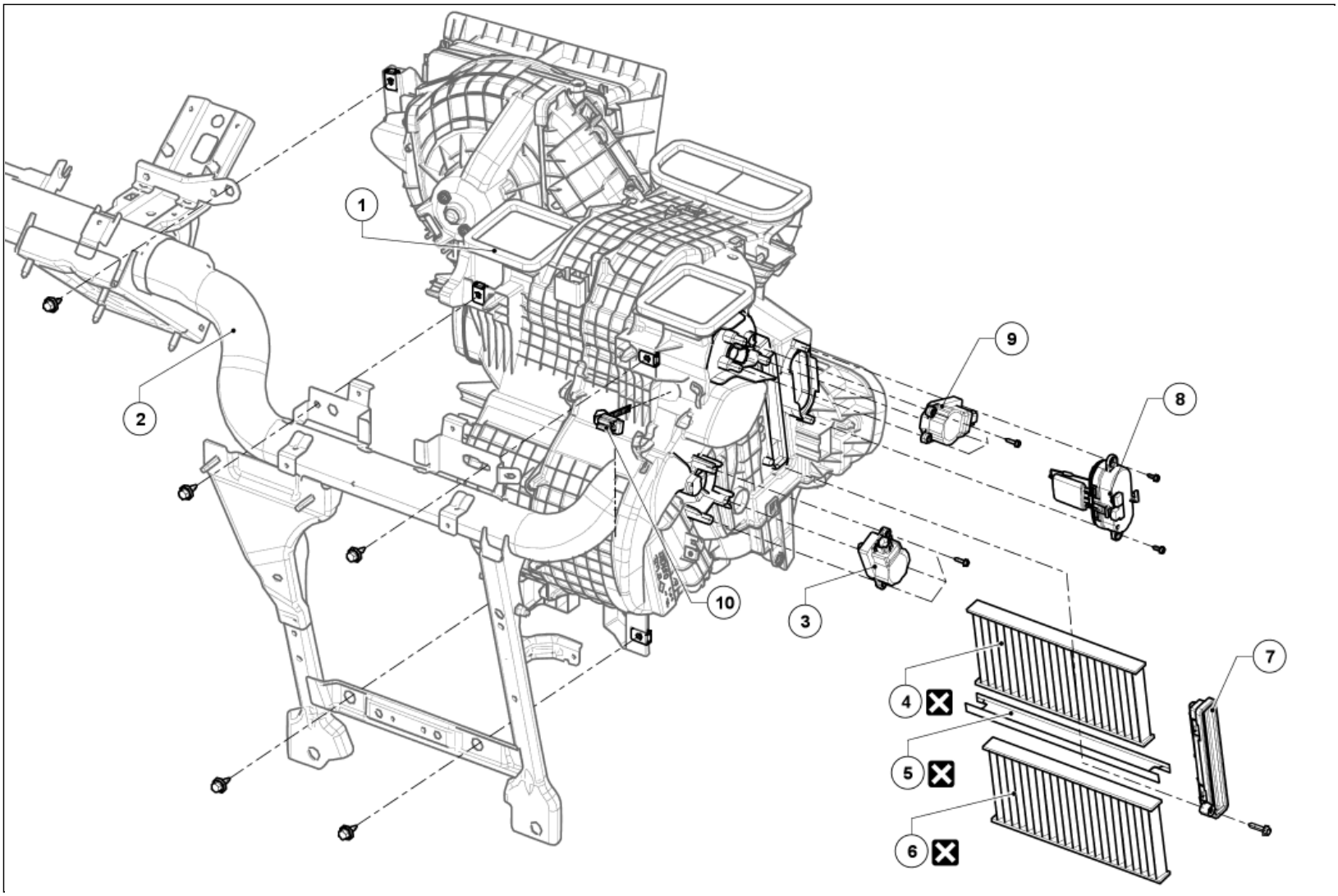


Illustration key: Description (01D, Mechanical introduction).

Mark	Description	Information
1	Distribution unit	(see 61A, Heating, Distribution unit: Removal - Refitting)
2	Dashboard cross member	(see **Dashboard cross member: Removal - Refitting**) (42A, Upper front structure)
3	Mixer motor	(see 61A, Heating, Mixing motor: Removal - Refitting)
4	Upper cabin filter	(see 61A, Heating, Cabin filter: Removal - Refitting)
5	Cabin filter adjusting strip	(see 61A, Heating, Cabin filter: Removal - Refitting)
6	Lower cabin filter	(see 61A, Heating, Cabin filter: Removal - Refitting)
7	Cabin filter flap	(see 61A, Heating, Cabin filter: Removal - Refitting)
8	Passenger compartment fan assembly control unit	(see 61A, Heating, Passenger compartment fan assembly control unit: Removal - Refitting)
9	Distribution motor	(see 61A, Heating, Distribution motor: Removal - Refitting)

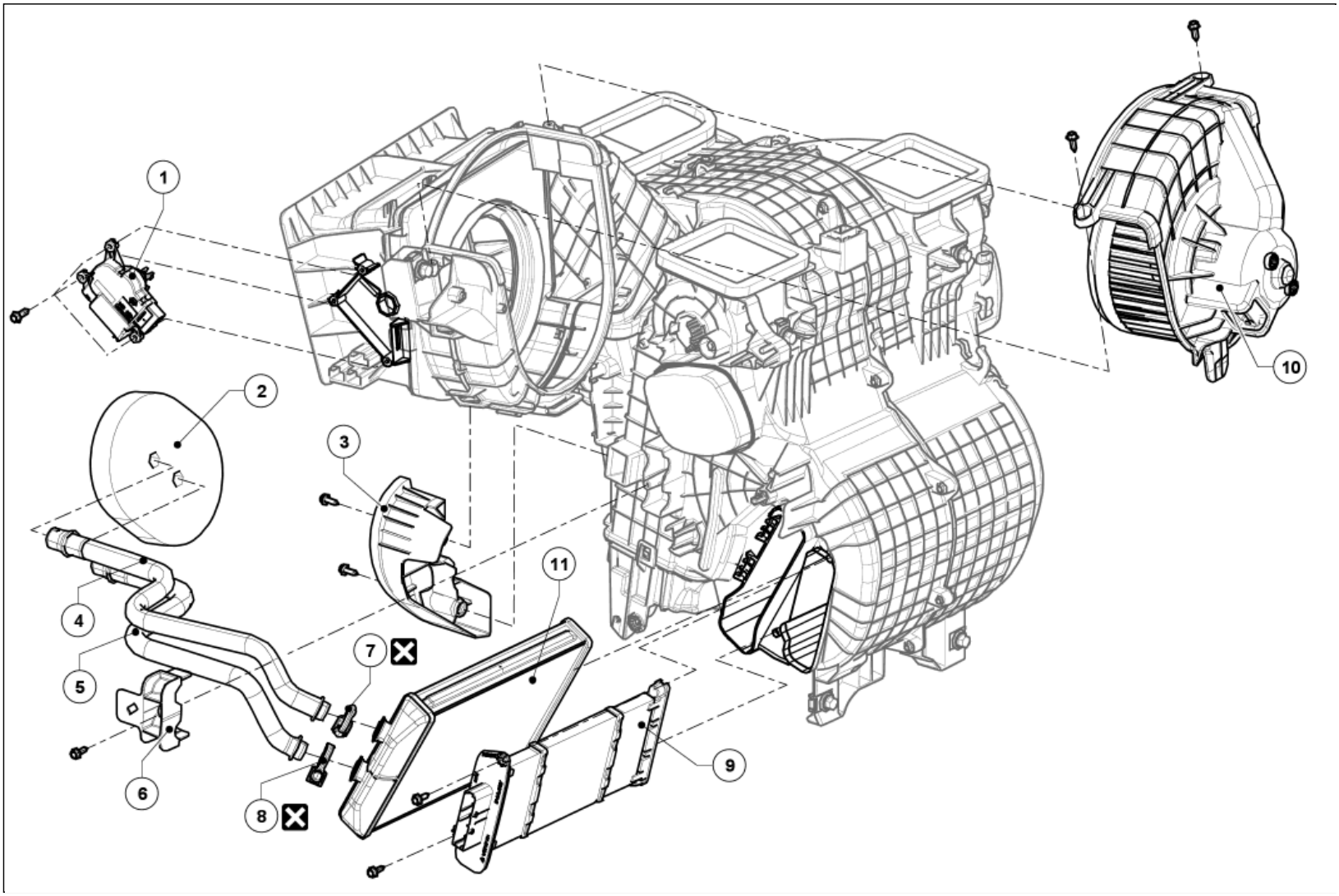


Illustration key: Description Key.

Mark	Description	Information
1	Recirculation motor	(see 61A, Heating, Recirculation motor: Removal - Refitting)
2	Insulating absorber	
3	Heater matrix pipe retaining guide	
4	Heater matrix pipe	(see 61A, Heating, Heater matrix: Removal - Refitting)
5	Heater matrix pipe	(see 61A, Heating, Heater matrix: Removal - Refitting)
6	Heater matrix pipe bracket	(see 61A, Heating, Heater matrix: Removal - Refitting)
7	Heater matrix pipe clip	(see 61A, Heating, Heater matrix: Removal - Refitting)
8	Heater matrix pipe clip	(see 61A, Heating, Heater matrix: Removal - Refitting)
9	Heating resistors	(see 61A, Heating, Heating resistors: Removal - Refitting)
10	Fan assembly	(see 61A, Heating, Fan assembly: Removal - Refitting)
11	Heater matrix	(see 61A, Heating, Heater matrix: Removal - Refitting)

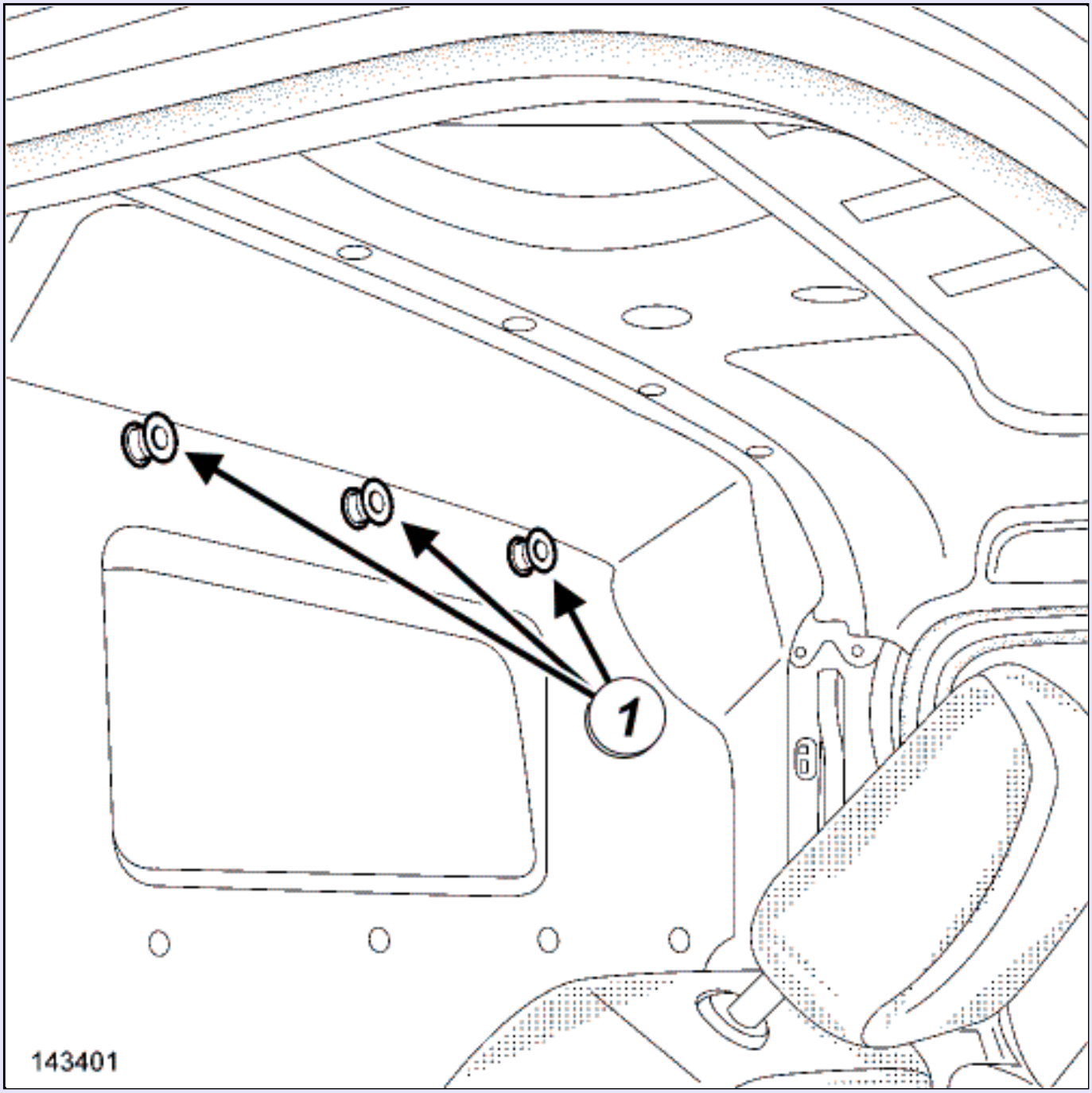
XSL version : 3.02 du 22/07/11

PASSENGER COMPARTMENT PARTITION TRIM: REMOVAL - REFITTING

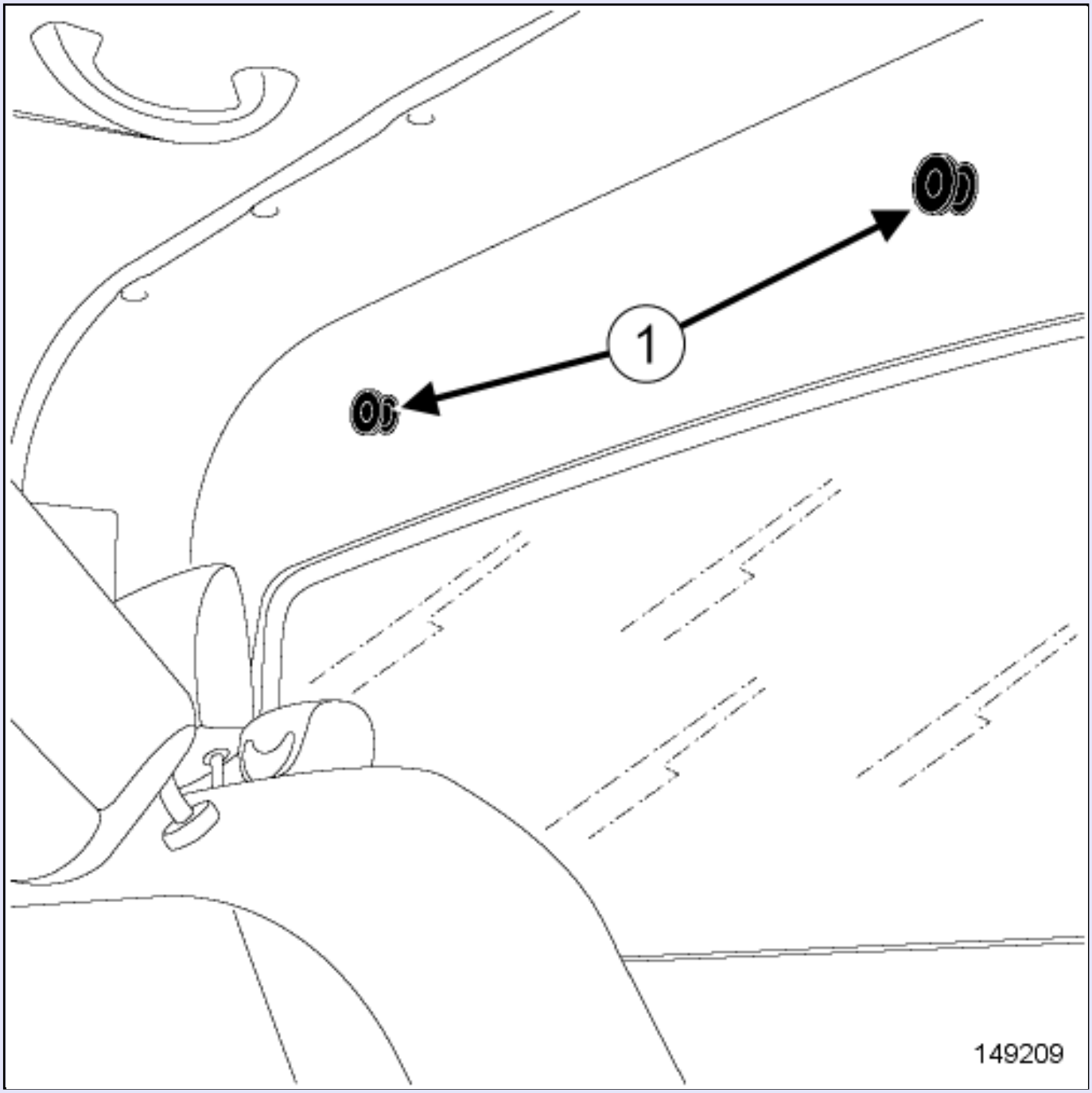
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the B-pillar trims (see 71A, Body internal trim, B-pillar trim: Removal - Refitting) .

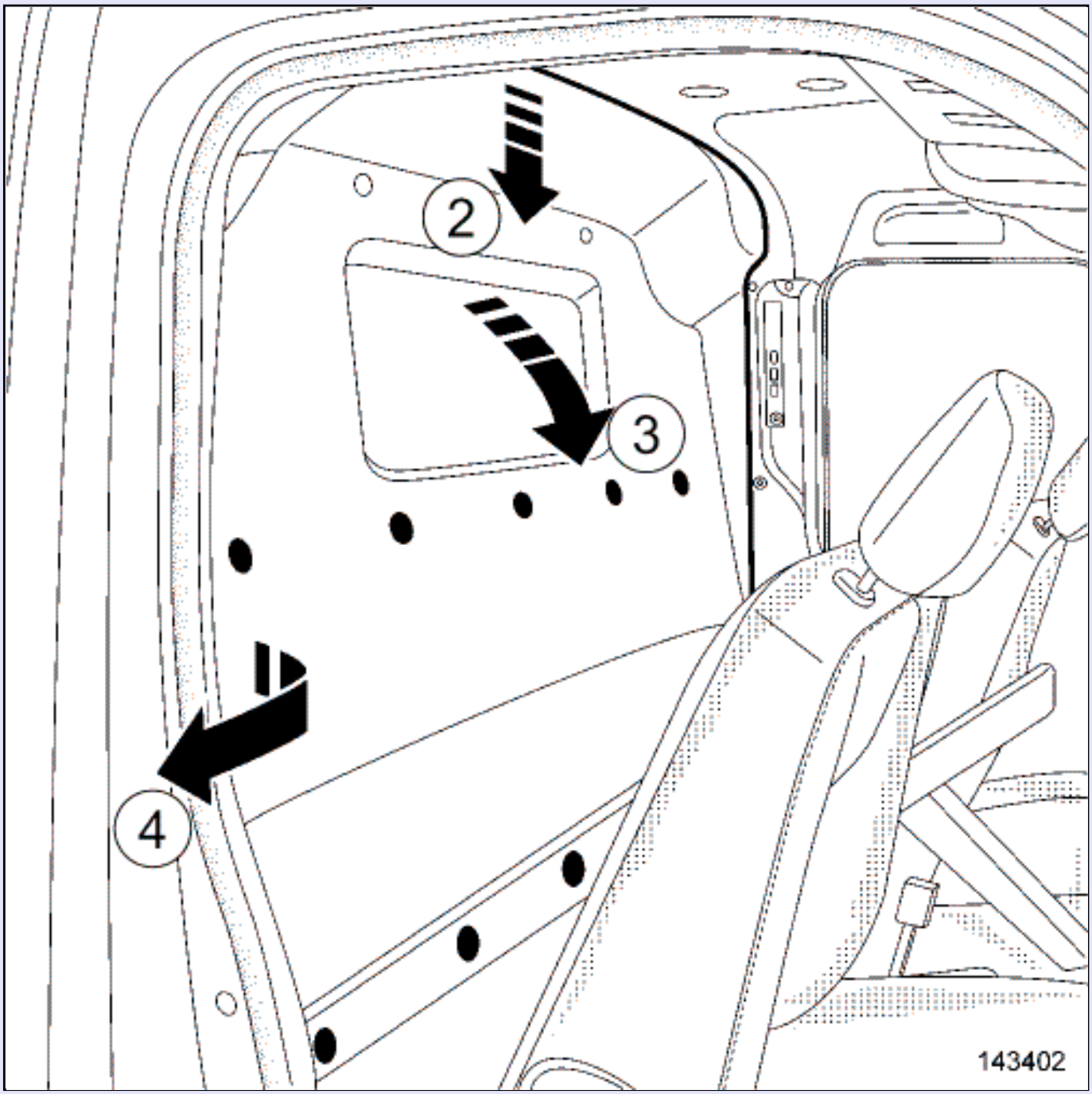


- Remove:
  - the bolts(1) ,
  - the supports(1) .



- Remove:
  - the bolts(1) ,
  - the supports(1) .

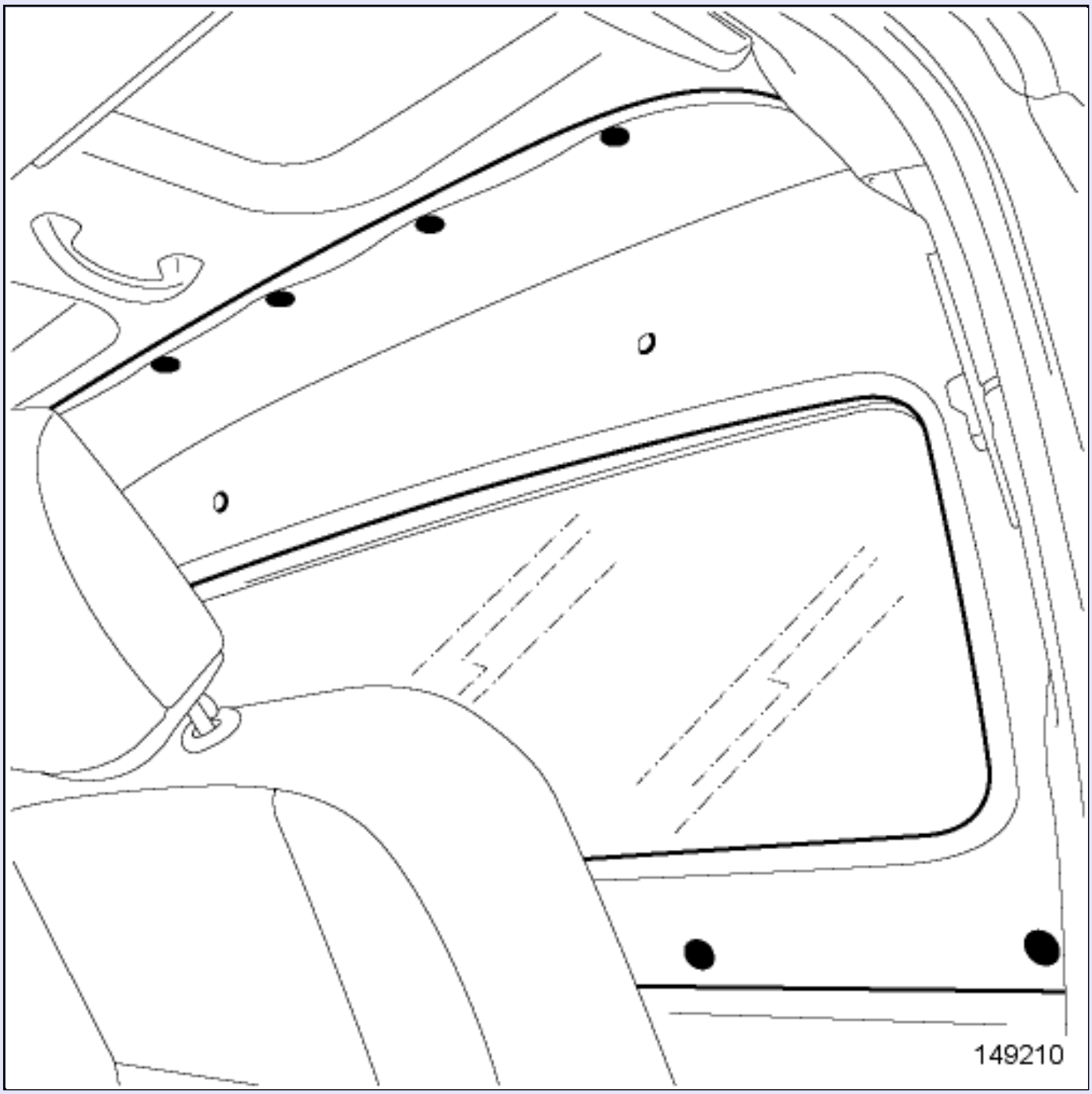
2. REMOVAL OPERATION



Remove:

- the clips using an unclipping tool,
- the rear panel trim at(2) and at (3) then at (4) .

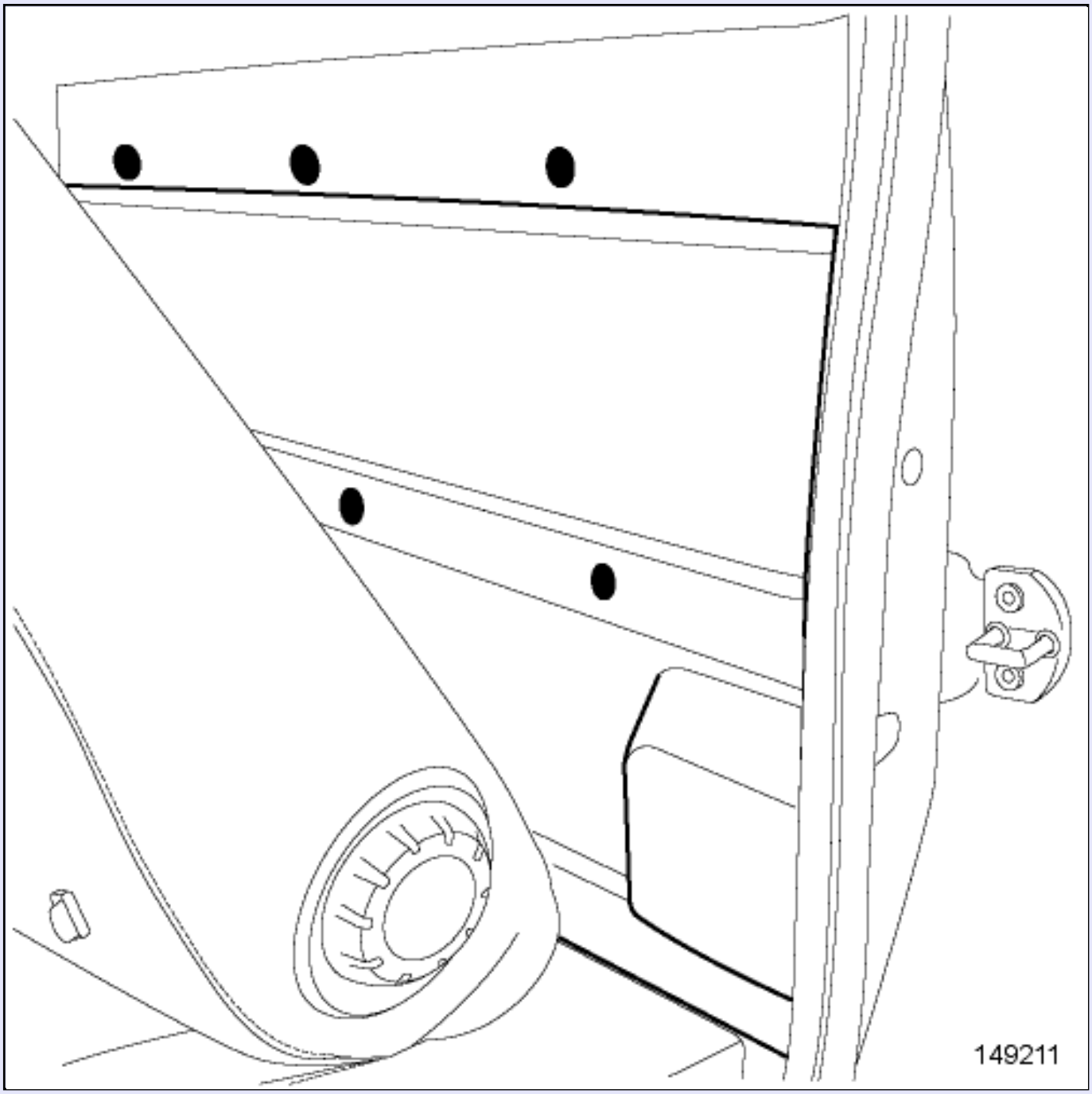
1- PASSENGER COMPARTMENT PARTITION TRIM UPPER SECTION



Remove:

- the clips,
- the passenger compartment partition trim upper section.

2- PASSENGER COMPARTMENT PARTITION TRIM LOWER SECTION



Remove:

- the clips,
- the passenger compartment partition trim lower section.

REFITTING

Proceed in the reverse order to removal.

Repair-40x03x20x01-01x37-1-2-1.xml

XSL version : 3.02 du 22/07/11

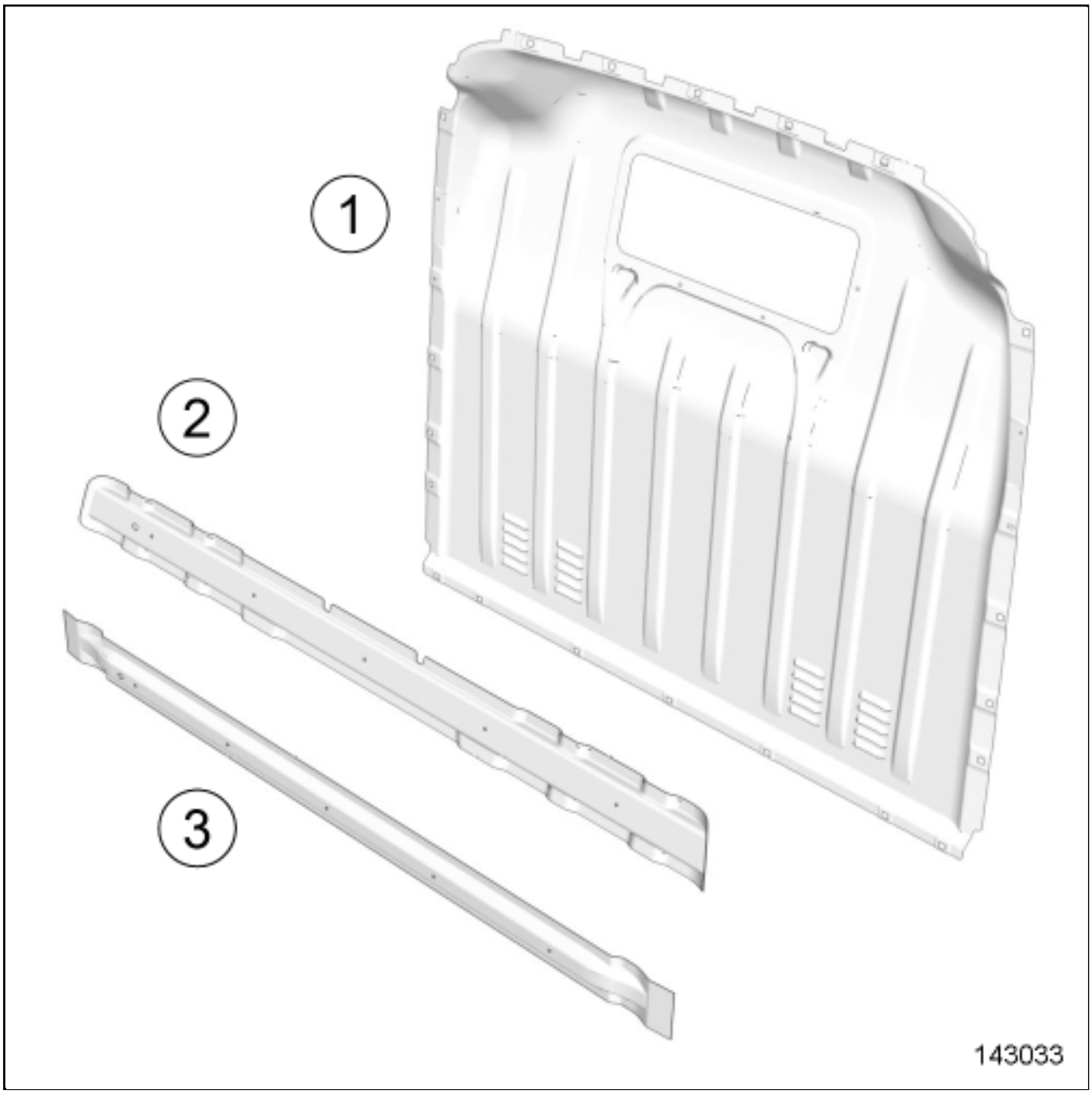
PASSENGERCOMPARTMENTPARTITION:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Glazed van partition	Mild steel	0.8
(2)	Lower reinforcement of van partition window	Mild steel	1.5
(3)	Lower reinforcement of van partition	Mild steel	1.2

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

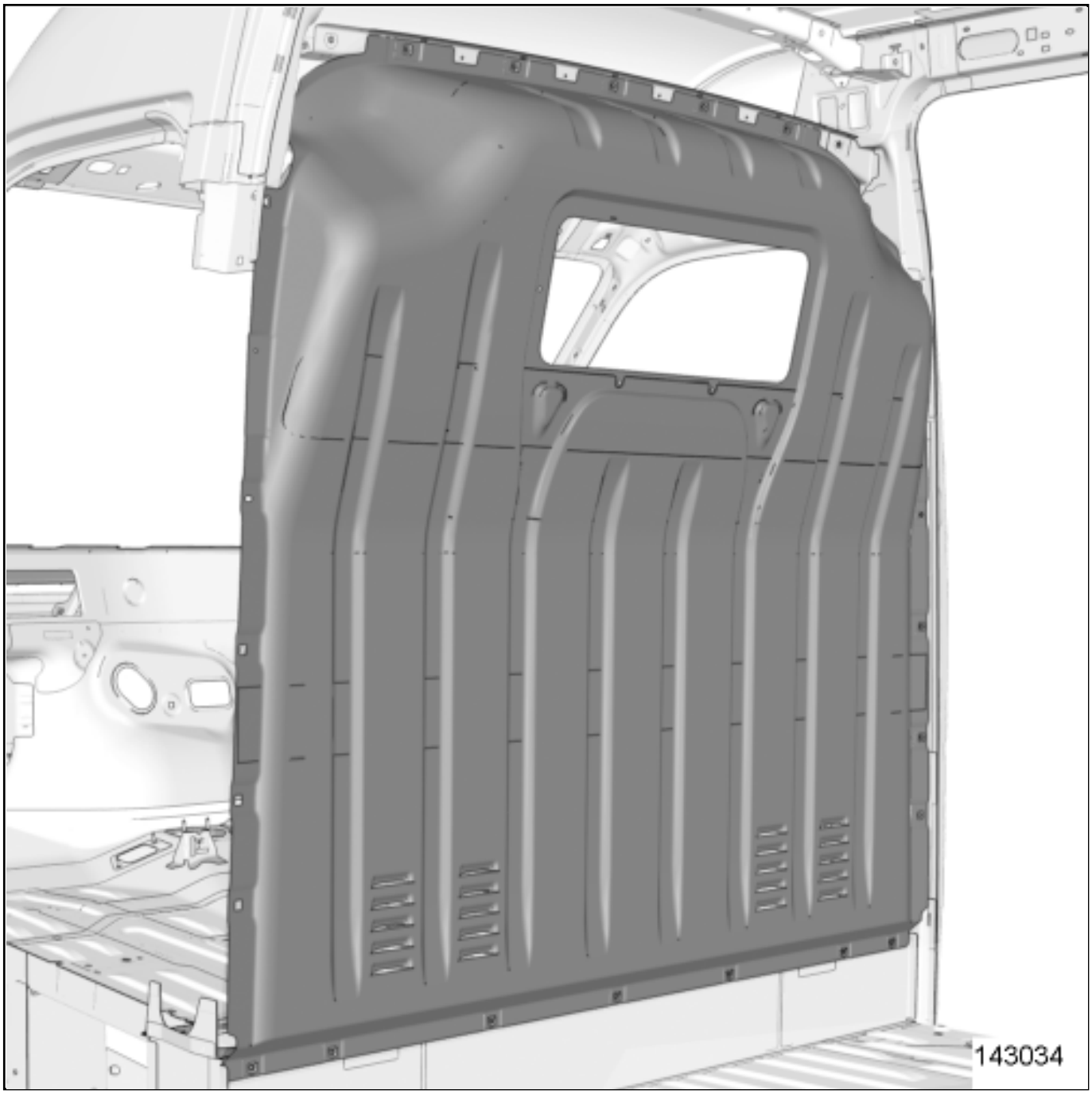
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

PASSENGER COMPARTMENT TEMPERATURE SENSOR: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the centre console Centre console: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION

- Unclip the passenger compartment temperature sensor connector from the centre console.
- Remove:
  - the passenger compartment temperature sensor bolts,
  - the passenger compartment temperature sensor.

REFITTING

- Proceed in the reverse order to removal.

PASSENGER'S FRONTAL AIRBAG: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

parts always to be replaced:

Passenger's frontal airbag mounting on dashboard cross member

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

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 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

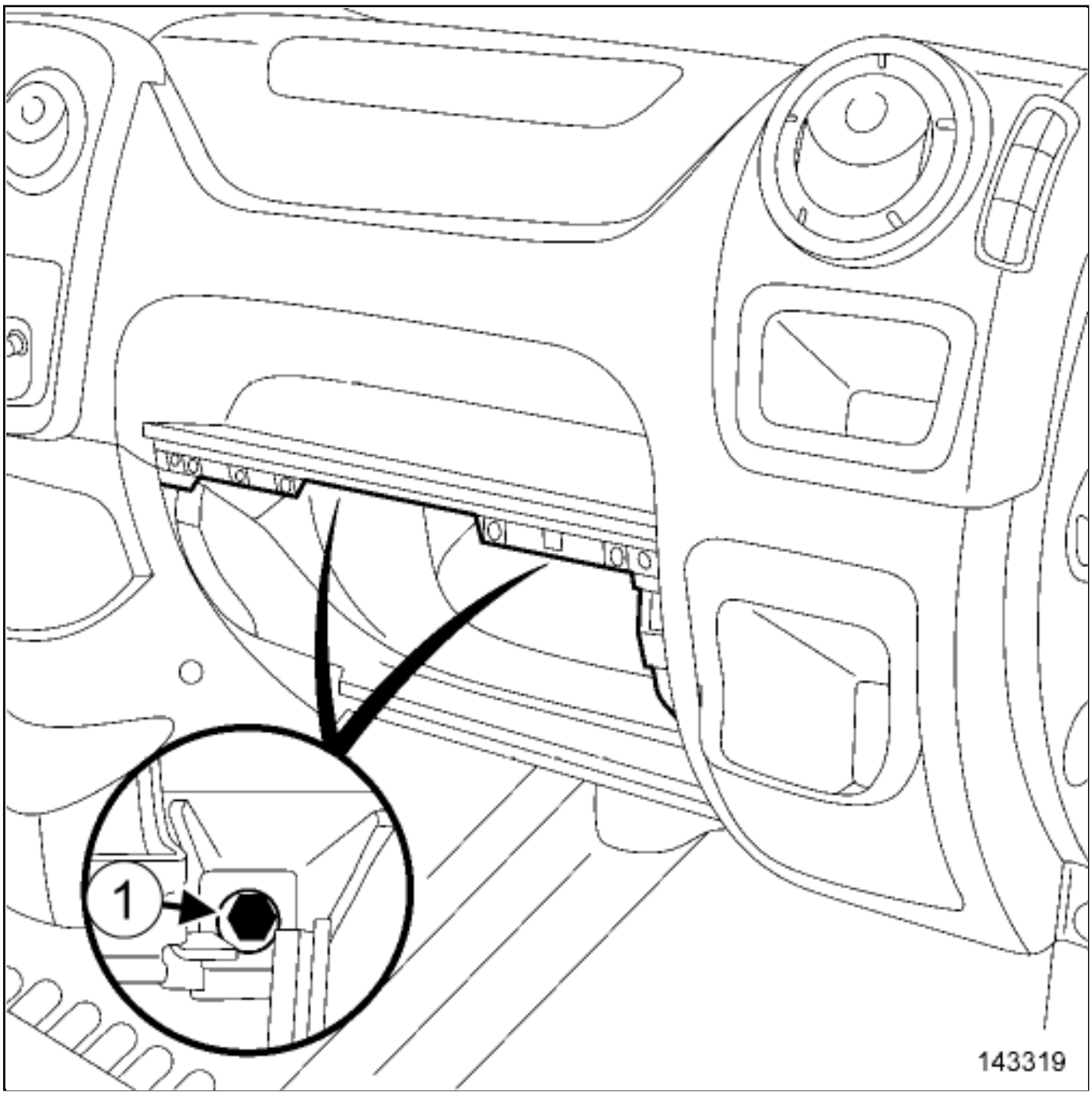
REMOVAL

1. REMOVAL PREPARATION OPERATION

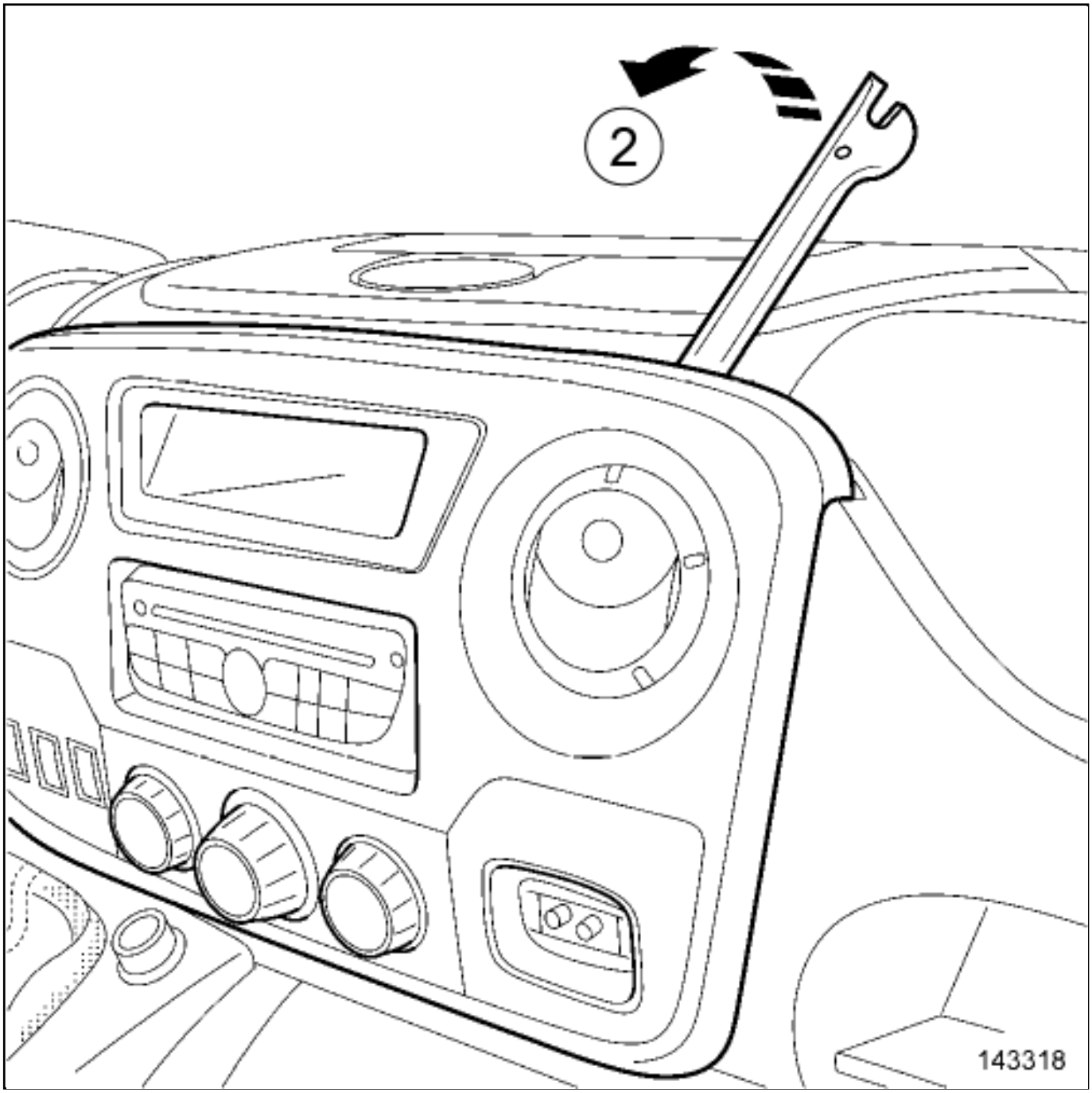
Disconnect the battery Battery: Removal - Refitting .

- Remove the glovebox[Glovebox: Removal - Refitting](57A, Interior equipment).

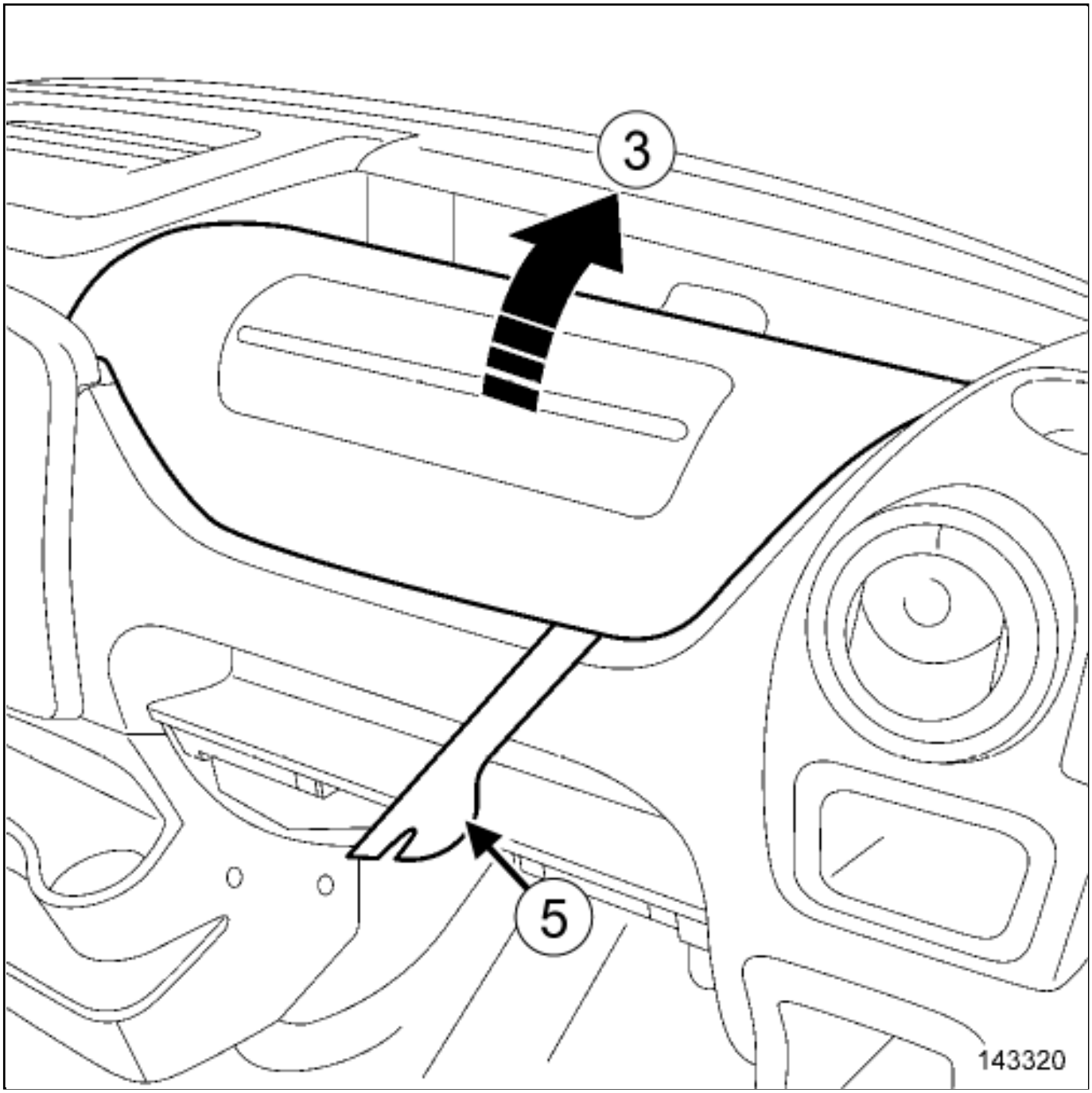
2. REMOVAL OPERATION

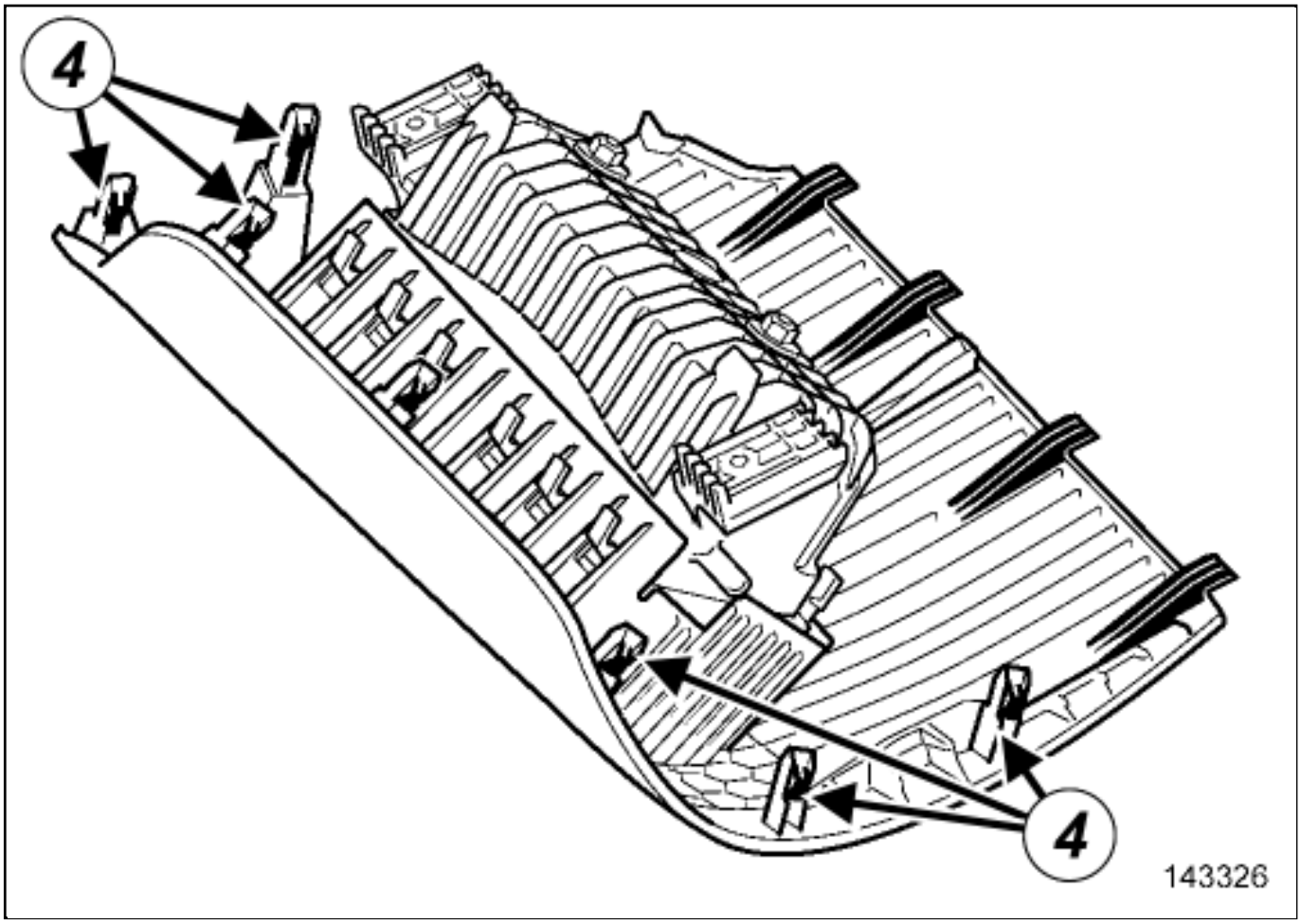


- Remove the front passenger airbag bolts(1) .



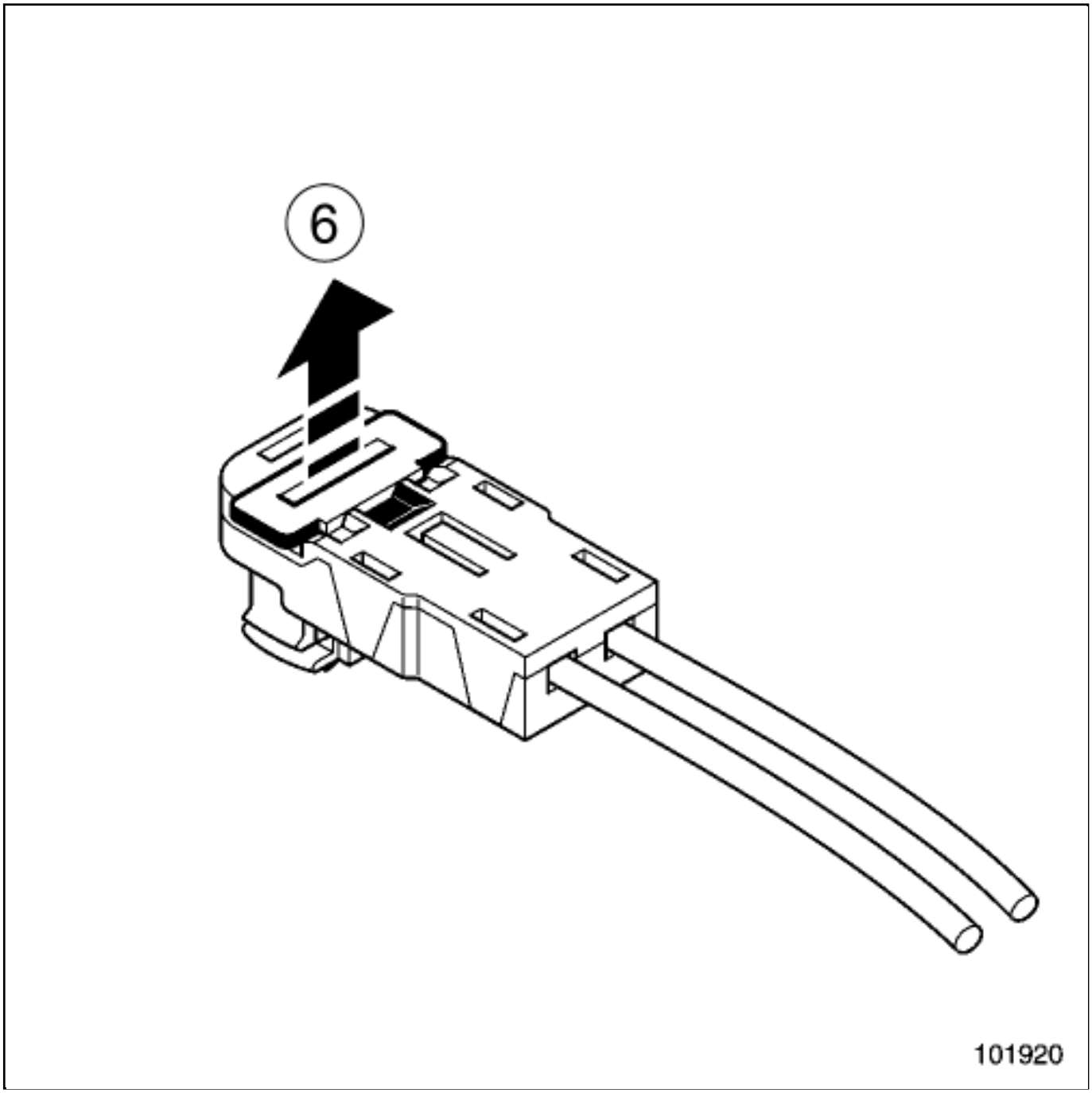
- Move away the upper corner of the centre front panel using the toolSet of trim removal levers.(Car. 1363) by (2) .


3
5
143320

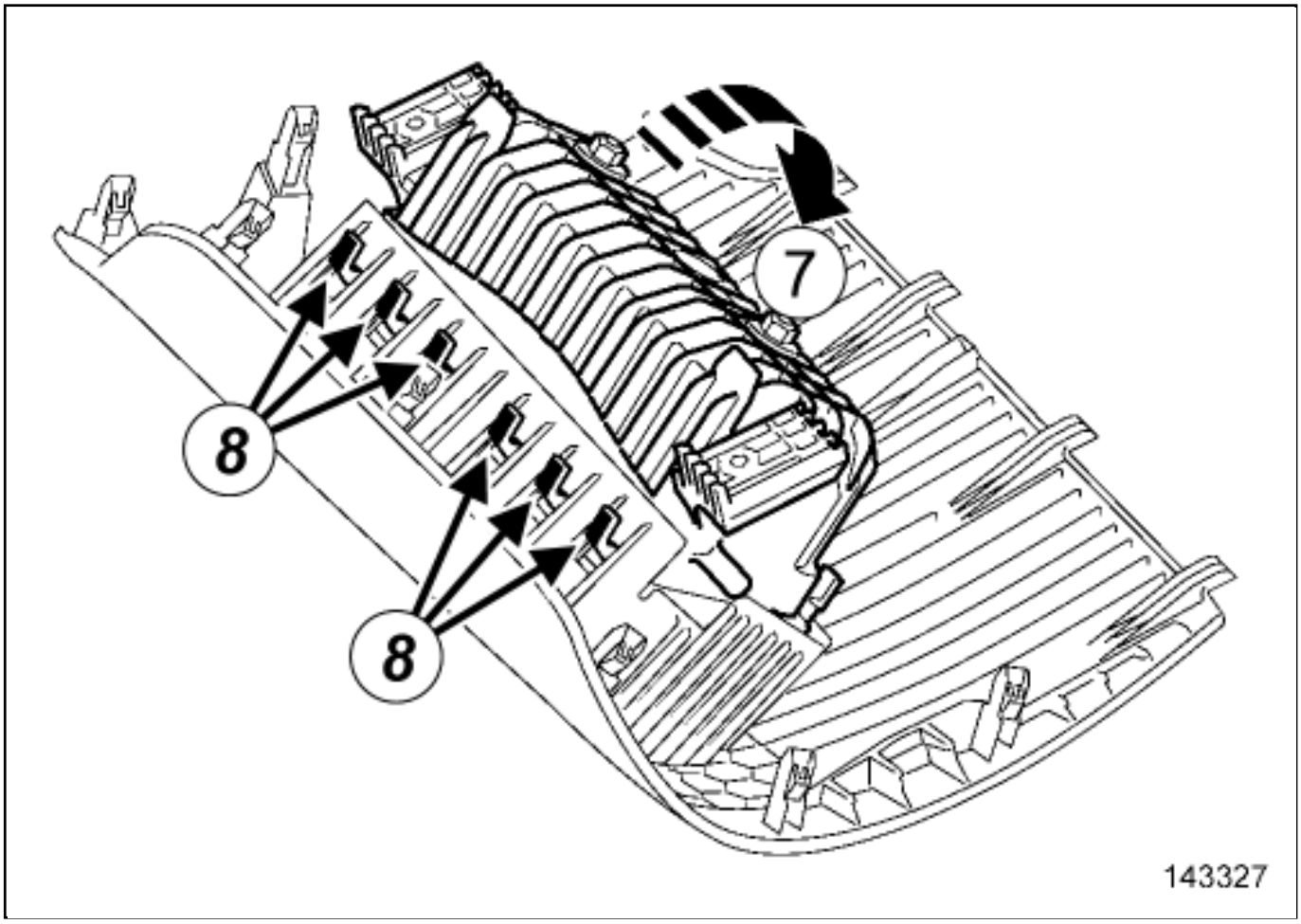


- Partially remove the "support - passenger frontal airbag" assembly(3) by pressing on the clips(4) using the toolSet of trim removal levers.(Car. 1363) (5) .

- Mark the wiring routing of the passenger frontal airbag.



- Unlock the passenger frontal airbag connector at(6) .
- Disconnect the passenger frontal airbag connector.
- Remove the "support - passenger frontal airbag" assembly.



- Unclip the passenger frontal airbag from its support at(7) by pressing carefully on the support to release the hooks(8) using the toolSet of trim removal levers.(Car. 1363) .

- Remove the passenger frontal airbag.

WARNING

To prevent the any component from being thrown upwards, store the airbag with the inflatable cushion facing upwards.

REFITTING

1. REFITTING PREPARATION OPERATION

-

parts always to be replaced: Passenger's frontal airbag mounting on dashboard cross member .

WARNING

After a pyrotechnic component is triggered, it is essential to replace certain parts **(see 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair)**

WARNING

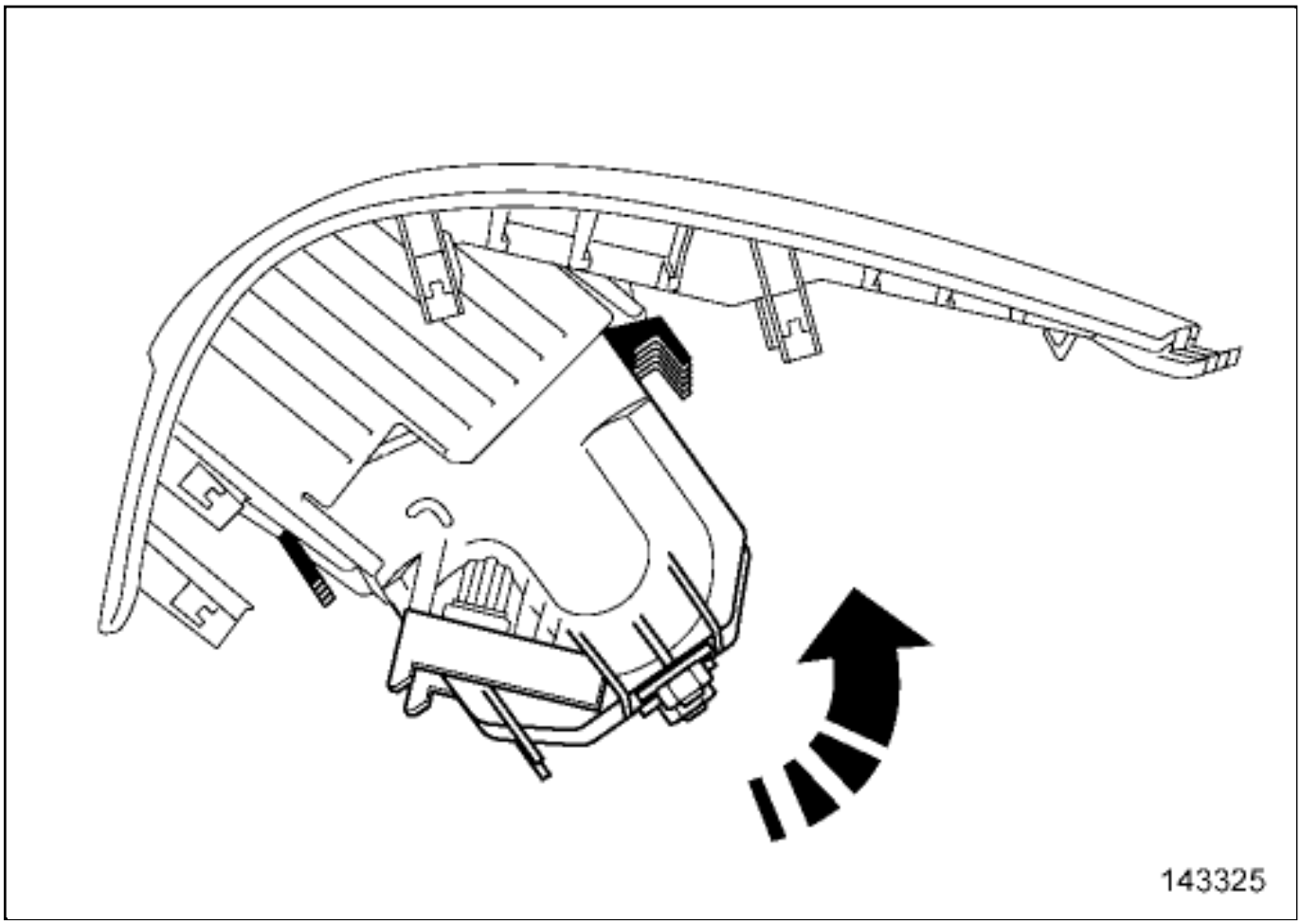
When the passenger front airbag is triggered, the consequent damage caused to the mountings always requires the dashboard to be replaced. Affix the label warning against fitting a rear-facing child seat on the front passenger seat to the passenger side of the dashboard.

Note:

Check the points where the passenger frontal airbag clips onto its support.

Replace the passenger frontal airbag support if one of the clipping points is weakened.

2. REFITTING OPERATION



Clip the passenger frontal airbag onto its support as shown in the illustration.

Note:

Check that all the hooks of the passenger airbag module are correctly fitted in the support.

Connect the passenger frontal airbag connector.

Lock the passenger frontal airbag connector.

CAUTION

To prevent damage to the wiring harness when refitting, observe the original routing.

- Refit the wiring of the passenger frontal airbag connector in the position marked during removal.
- Clip the "support - passenger frontal airbag" assembly on the dashboard.
- Torque tighten the passenger frontal airbag bolts21 N.m.

3. FINAL OPERATION

- Proceed in the reverse order to removal.

WARNING

To eliminate the risk of any accident, do not reuse pyrotechnic components.

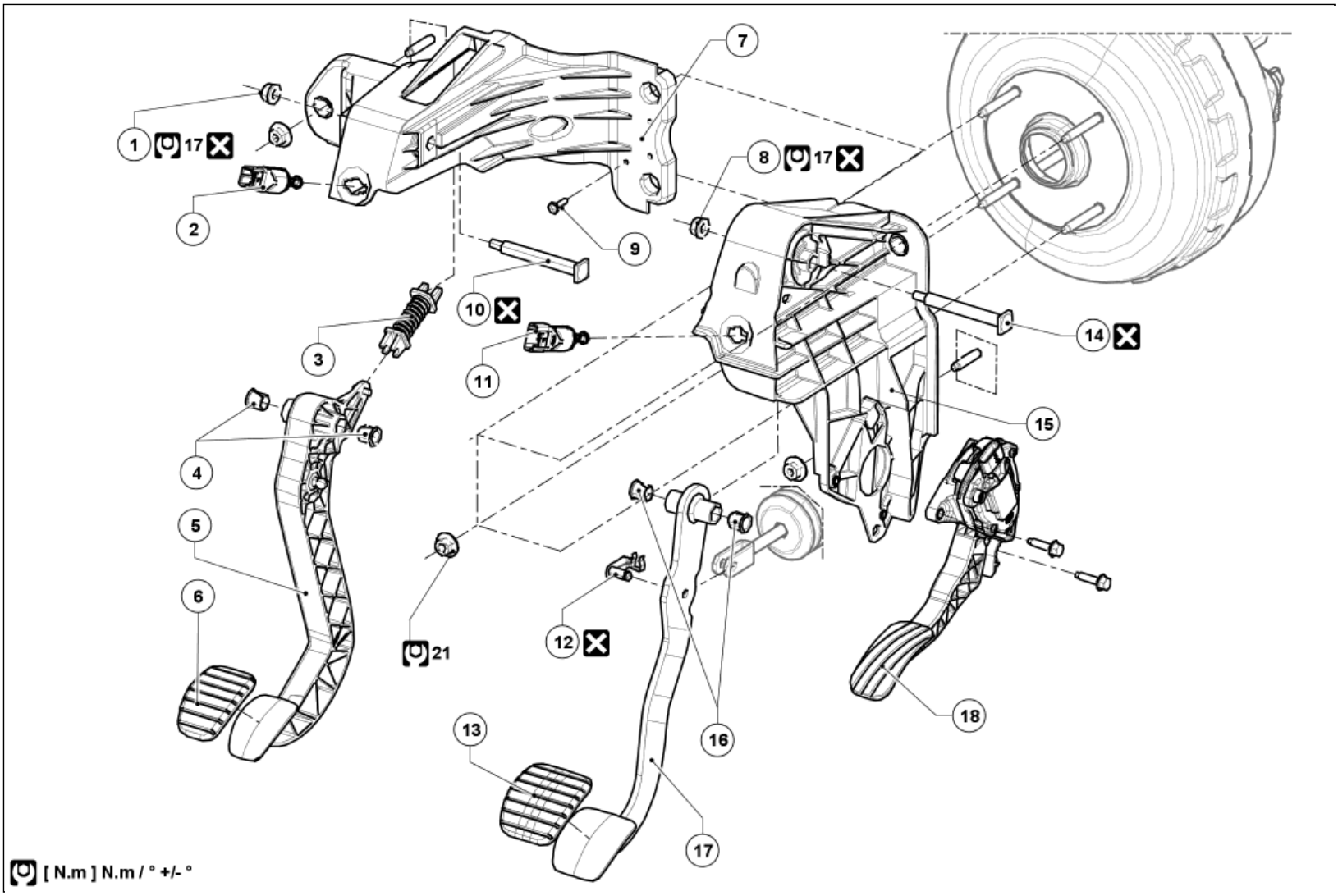
It is essential to destroy pretensioners or airbags before scrapping a vehicle or a part only (see 88C, Airbags and pretensioners, Airbags and pretensioners: Recycling - Destruction) .

4. CHECKING AFTER REPAIR

- Switch on the ignition.
- Check that there are no faults on the instrument panel.

XSL version : 3.02 du 22/07/11

PEDAL ASSEMBLY: EXPLODED VIEW



(see **Illustration key: Description**) .

For fastenings with no specified tightening torque values, refer to the Table of Standard Torques(see **Tightening torques: General information**) .

Marks	Designations	Informations
1	Clutch pedal hinge nut	

Marks	Designations	Informations
2	Clutch pedal switch	(see 37A, Mechanical component controls, Pedal switches: Adjustment)

Marks	Designations	Informations
3	Clutch pedal return spring	
4	Hinge bushing	
5	Clutch pedal	
6	Clutch pedal cover	
7	Clutch pedal yoke	

Marks	Designations	Informations
8	Brake pedal hinge nut	

Marks	Designations	Informations
9	Clutch pedal yoke bolt	
10	Clutch pedal hinge	

Marks	Designations	Informations
11	Brake pedal switch	(see 37A, Mechanical component controls, Pedal switches: Adjustment)
12	Brake pedal - servo rod connecting pin	
13	Brake pedal cover	
14	Brake pedal hinge	
15	Brake pedal yoke	
16	Hinge bushing	
17	Brake pedal	
18	Accelerator pedal	

PEDALSWITCHES: ADJUSTMENT

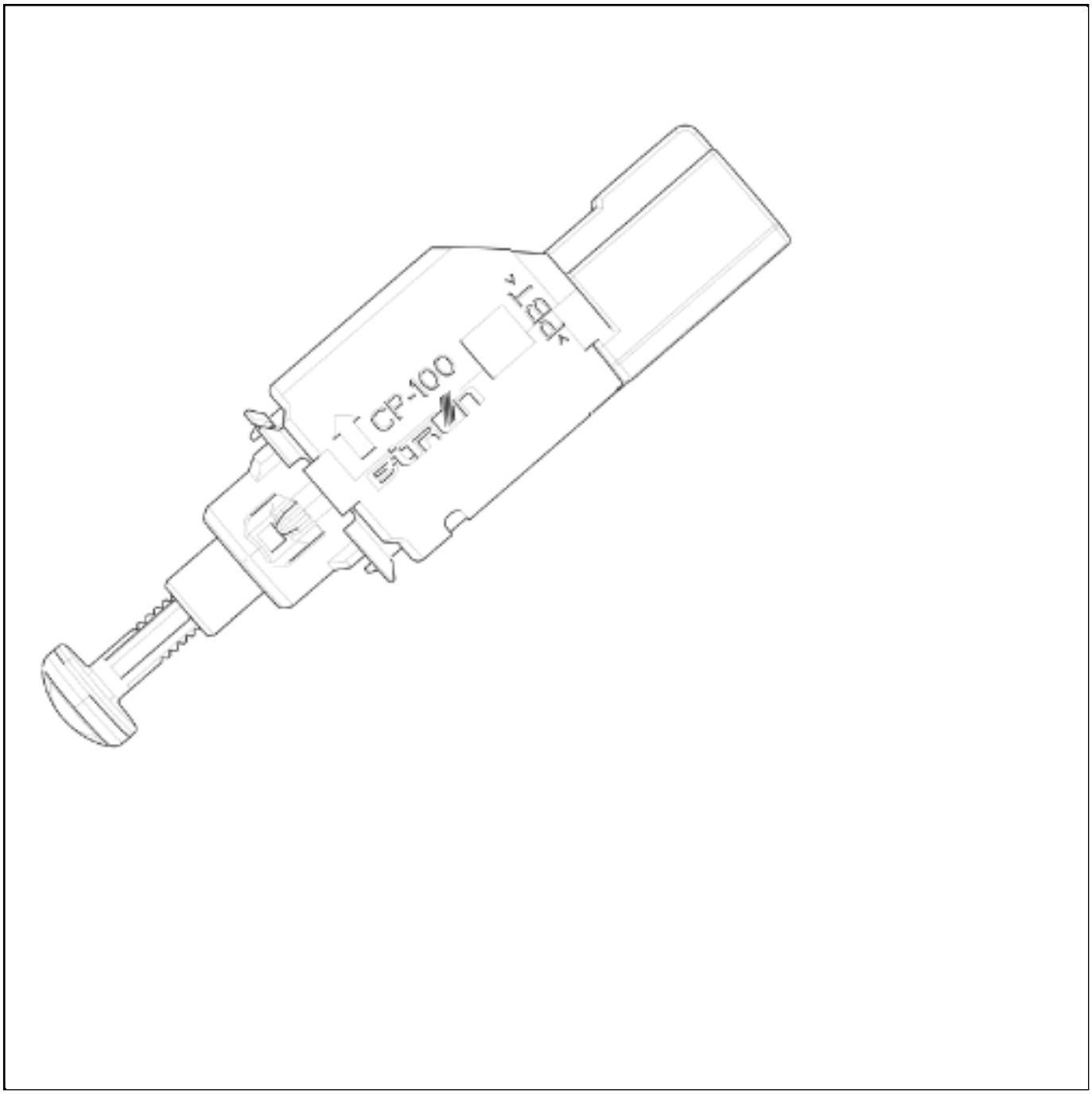
Note, one or more warnings are present in this procedure

WARNING

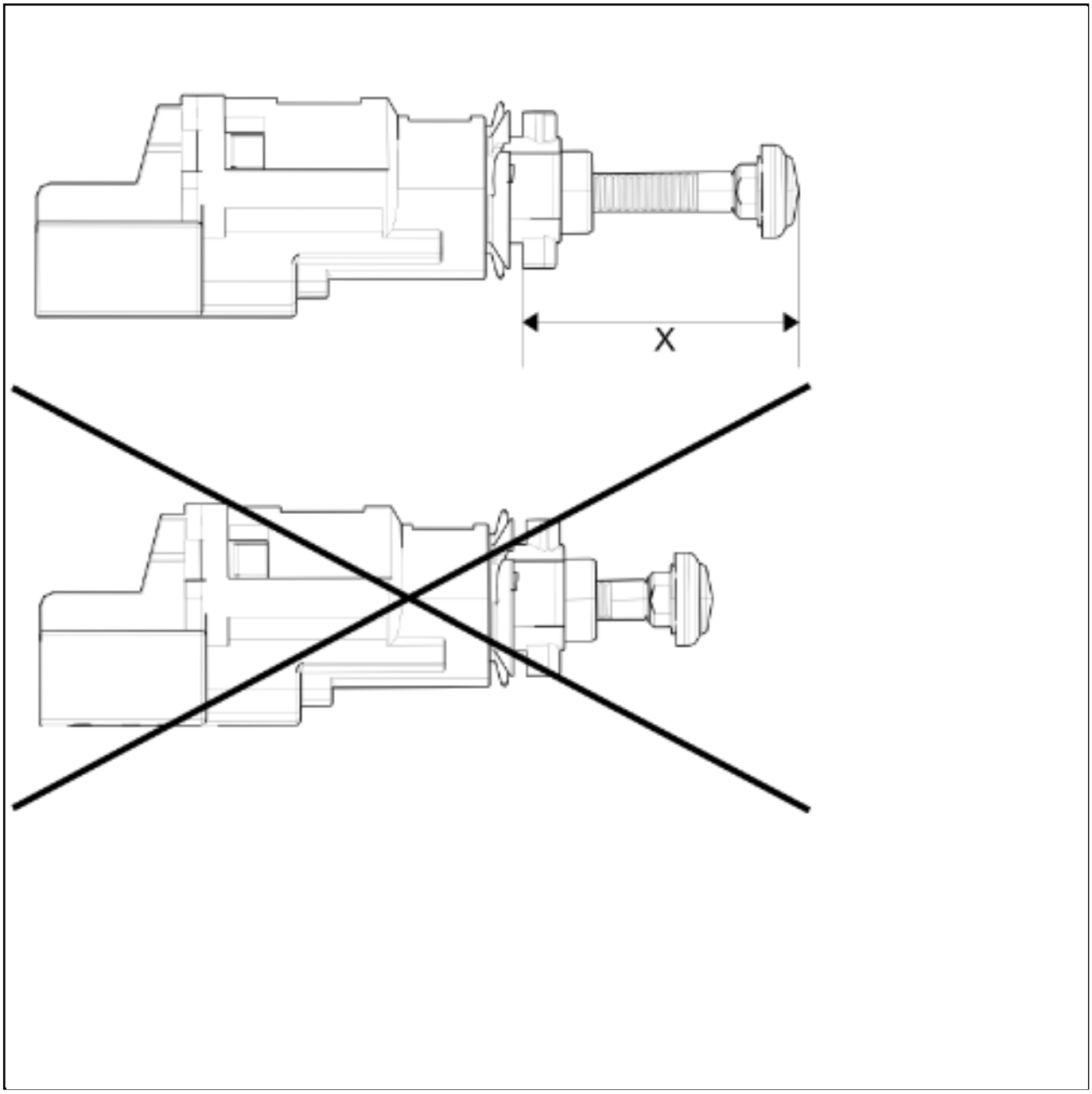
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see 37A, Mechanical component controls, Pedal assembly mechanism: Precautions for the repair) ,
- (see **Vehicle: Precautions for the repair**) .

1. VIMERCATI AND BITRON SWITCH (GENERATION 1)



SWITCH BEFORE FITTING



- Using a ruler, check that the dimension X is 28 mm.

If necessary, pull carefully on the notched rod to adjust the switch.

- If adjusting the brake pedal switch, check that the brake servo pushrod is connected to the brake pedal.

- If adjusting the clutch pedal switch, check that the master cylinder or the clutch cable is clipped onto the pedal.

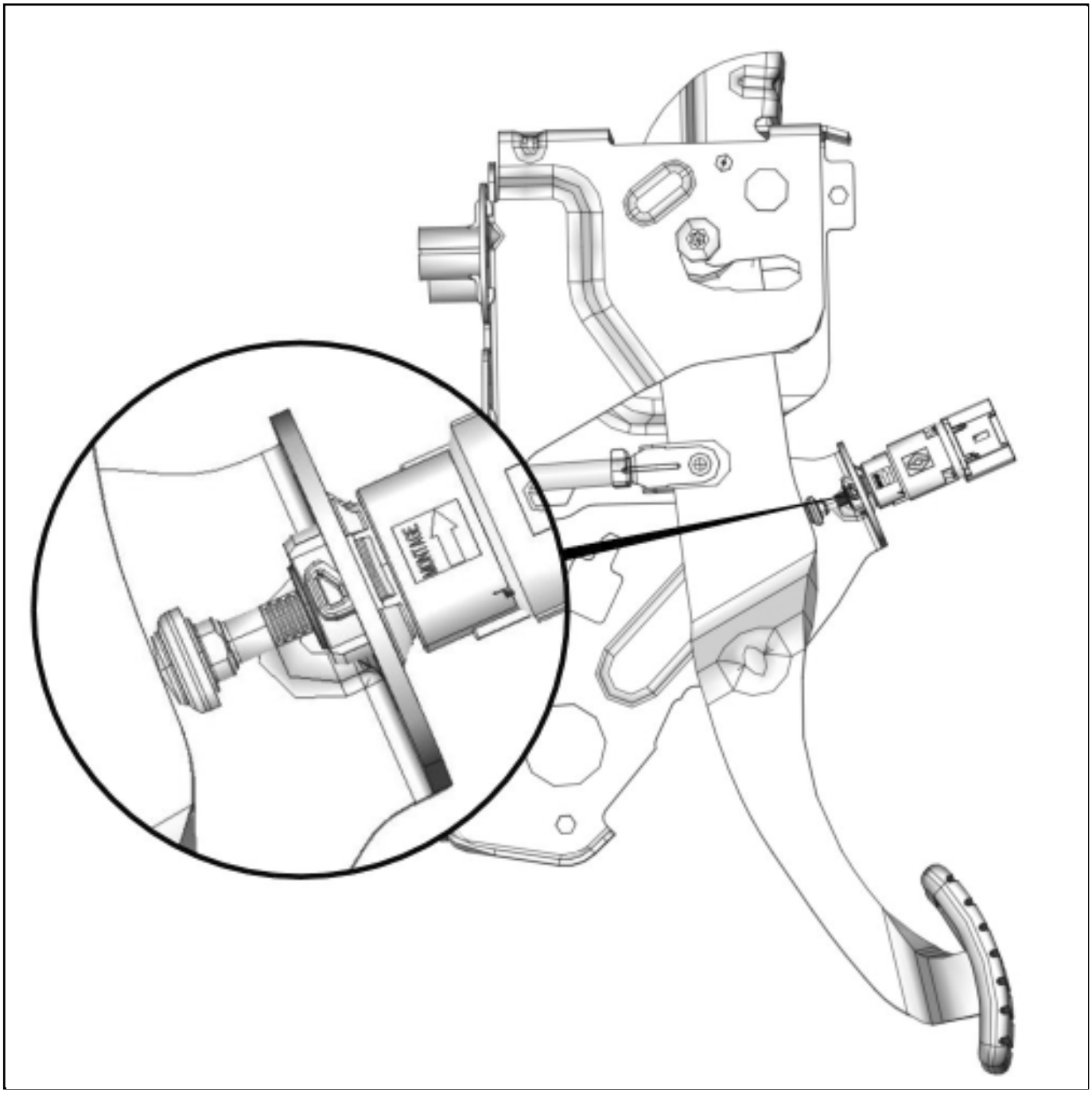
- Depress the pedal by hand.

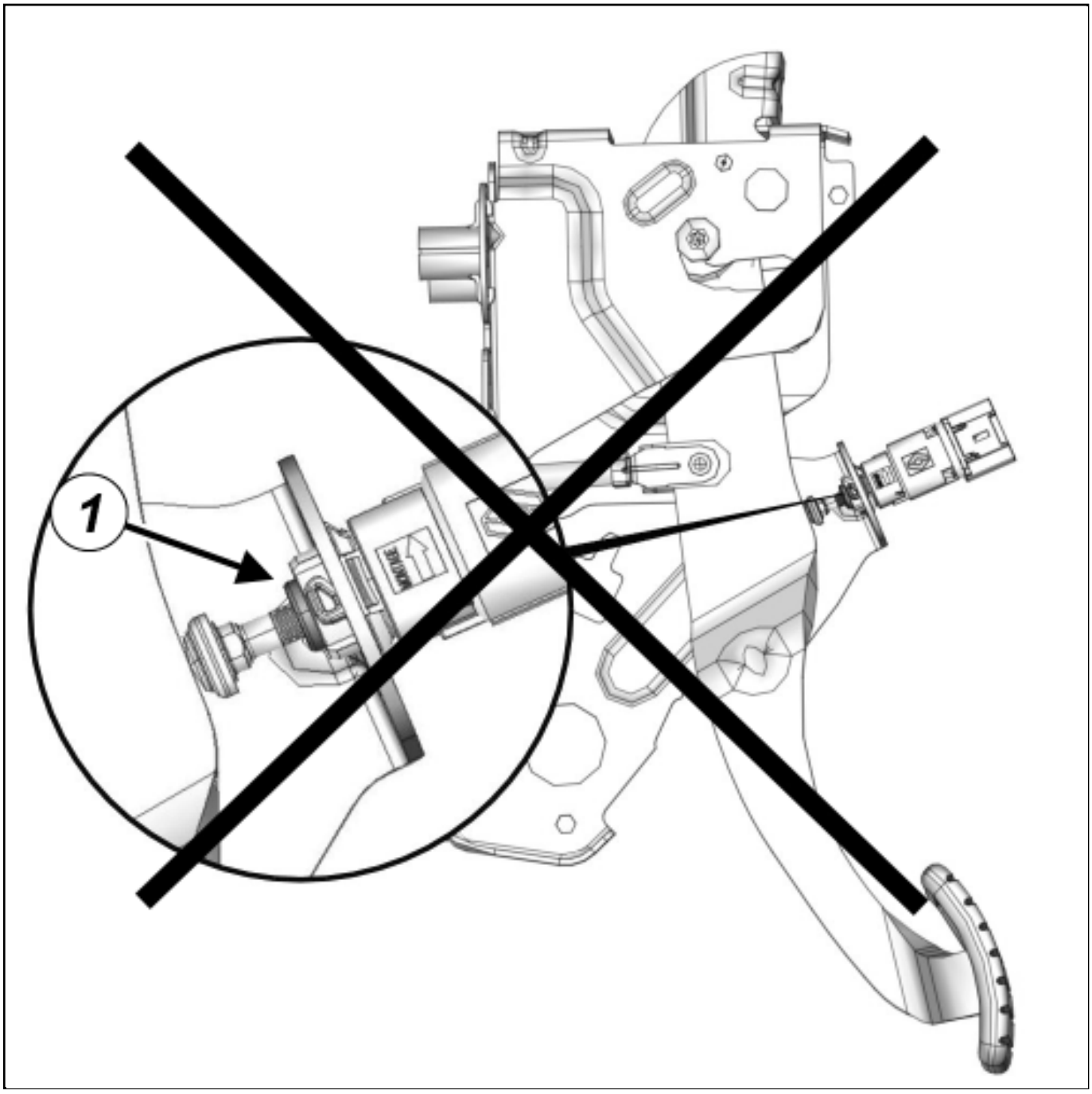
- Refit the switch
- Lock the switch by turning it a quarter of a turn clockwise.
- At the same time, carefully return the pedal.

Note:

The switch is automatically adjusted by fully depressing the pedal.

The automatic adjustment makes a clicking noise when in operation.





- Check that the flange(1) is not visible (otherwise, repeat the adjustment).

- Connect the switch connector.

1- CLUTCH PEDAL

- Check that the master cylinder or the clutch cable is clipped onto the pedal.

-

Depress the pedal by hand.

Refit the switch.

Lock the switch by turning it a quarter of a turn clockwise.

At the same time, carefully return the pedal.

Note:

The switch is automatically adjusted by fully depressing the pedal.

The automatic adjustment makes a clicking noise when in operation.

Connect the switch connector

2. BITRON SWITCH (GENERATION 2)

3. METHODE ELECTRONICS (GENERATION 4)

PEDAL YOKE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Pedal assembly: Exploded view**) **.**

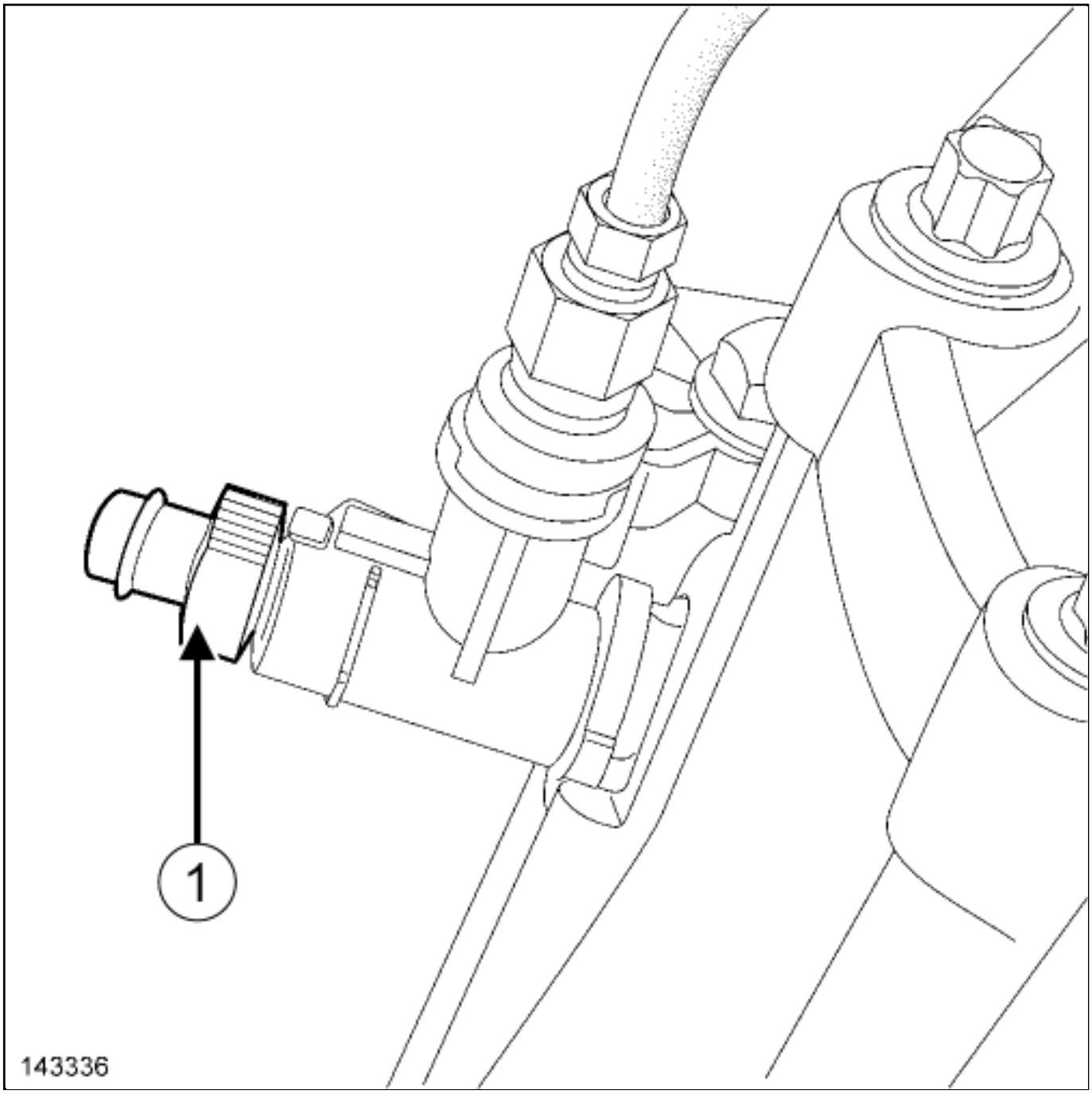
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).

- Remove:
  - the driver's frontal airbag**Driver's frontal airbag: Removal - Refitting** (88C, Airbags and pretensioners),
  - the steering wheel**Steering assembly: Exploded view** ,
  - the steering column switch assembly**Steering column switch assembly: Removal - Refitting** (84A, Control - Signals),
  - the A-pillar air duct**Air distribution circuit assembly: Exploded view** ,
  - the steering column**Steering assembly: Exploded view** ,
  - the clutch circuit bleed plug.

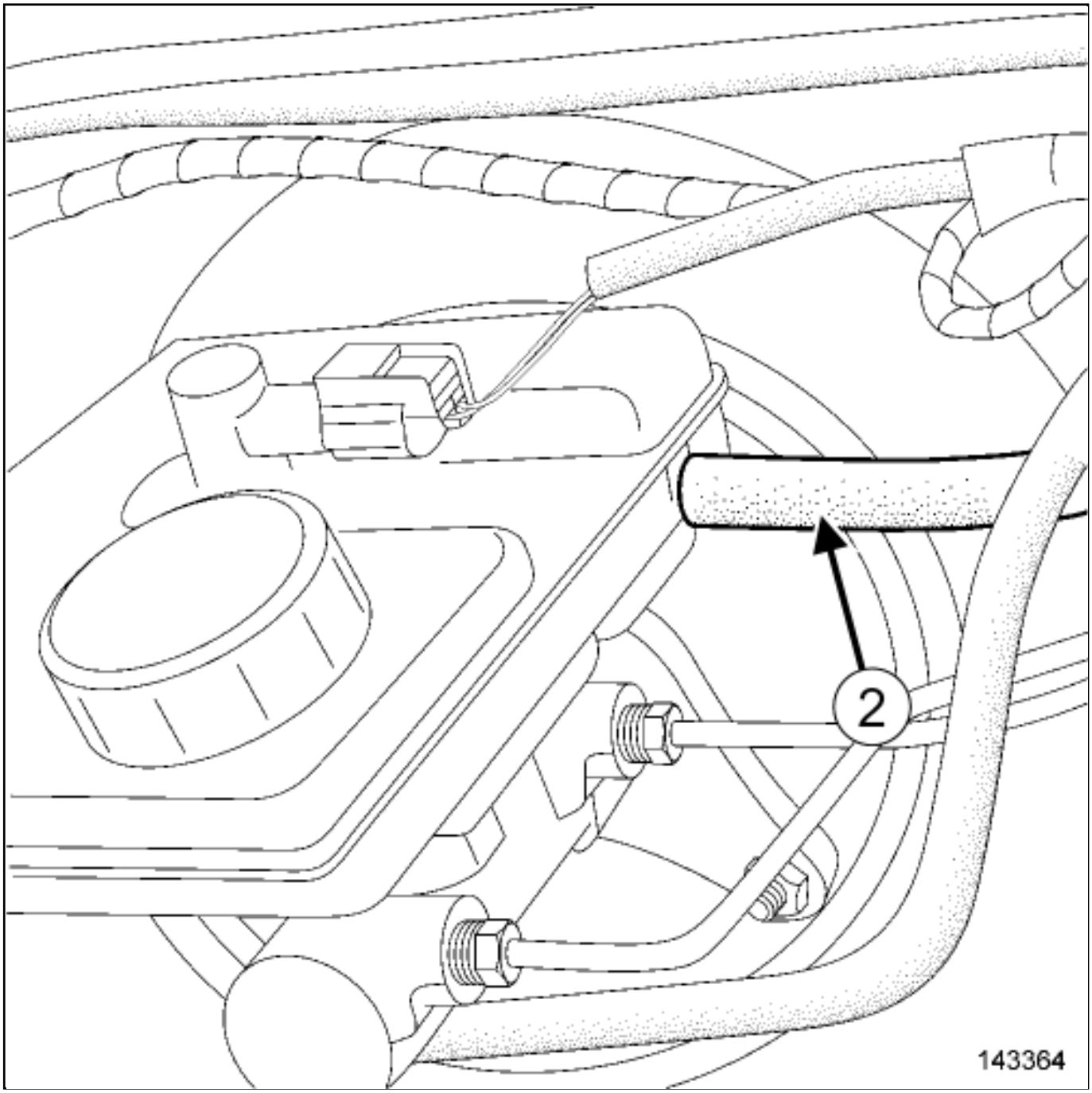
- Connect a transparent pipe to the bleed hole running to an empty container placed under the bleed hole.



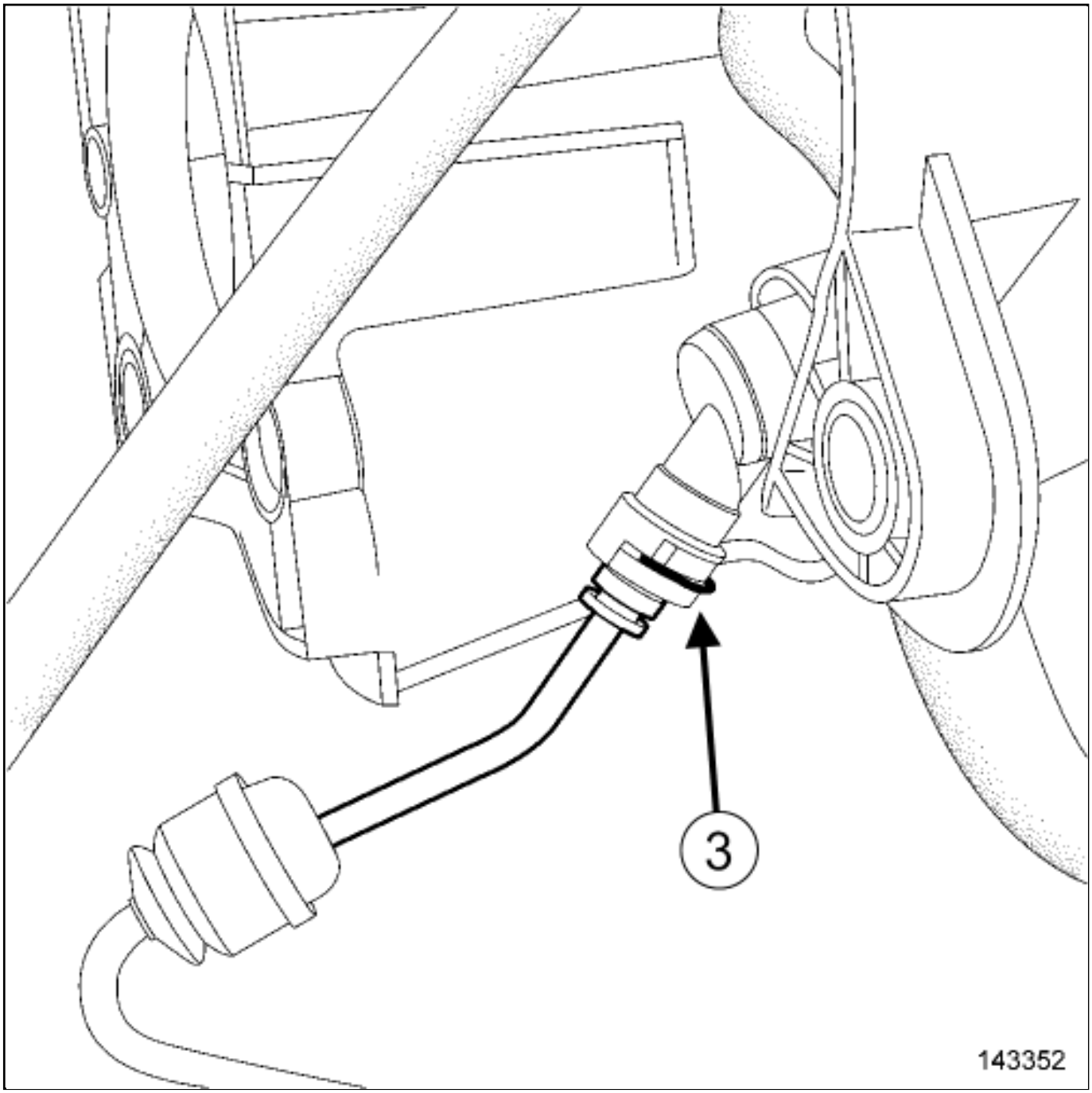
- Turn the clutch slave cylinder bleed tap(1) one turn anti-clockwise.

- Depress the clutch pedal by hand to empty the clutch circuit.

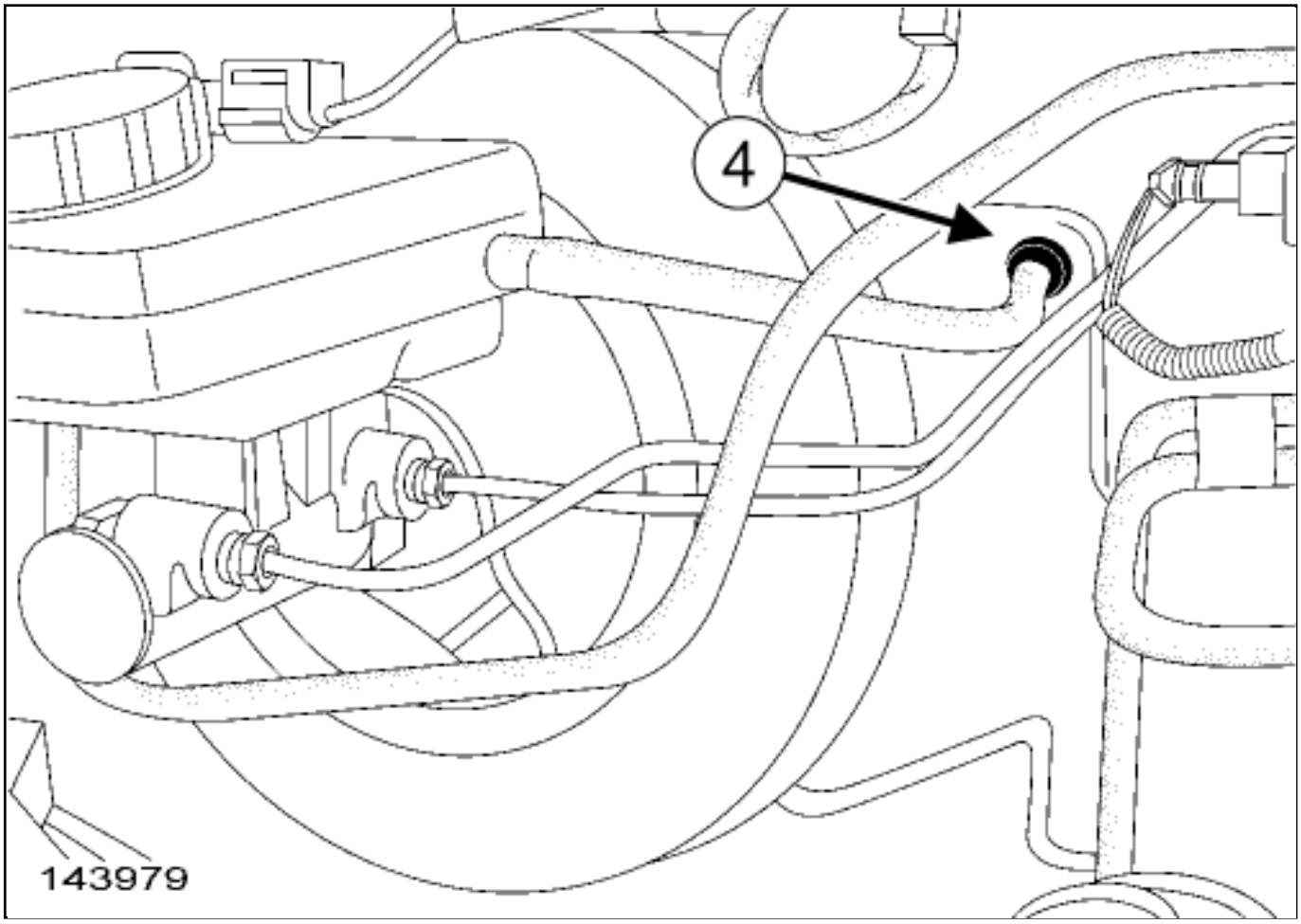
- Disconnect the transparent pipe and the container from the bleed hole of the clutch slave cylinder.



- Disconnect the clutch master cylinder supply pipe(2) from the brake fluid reservoir.

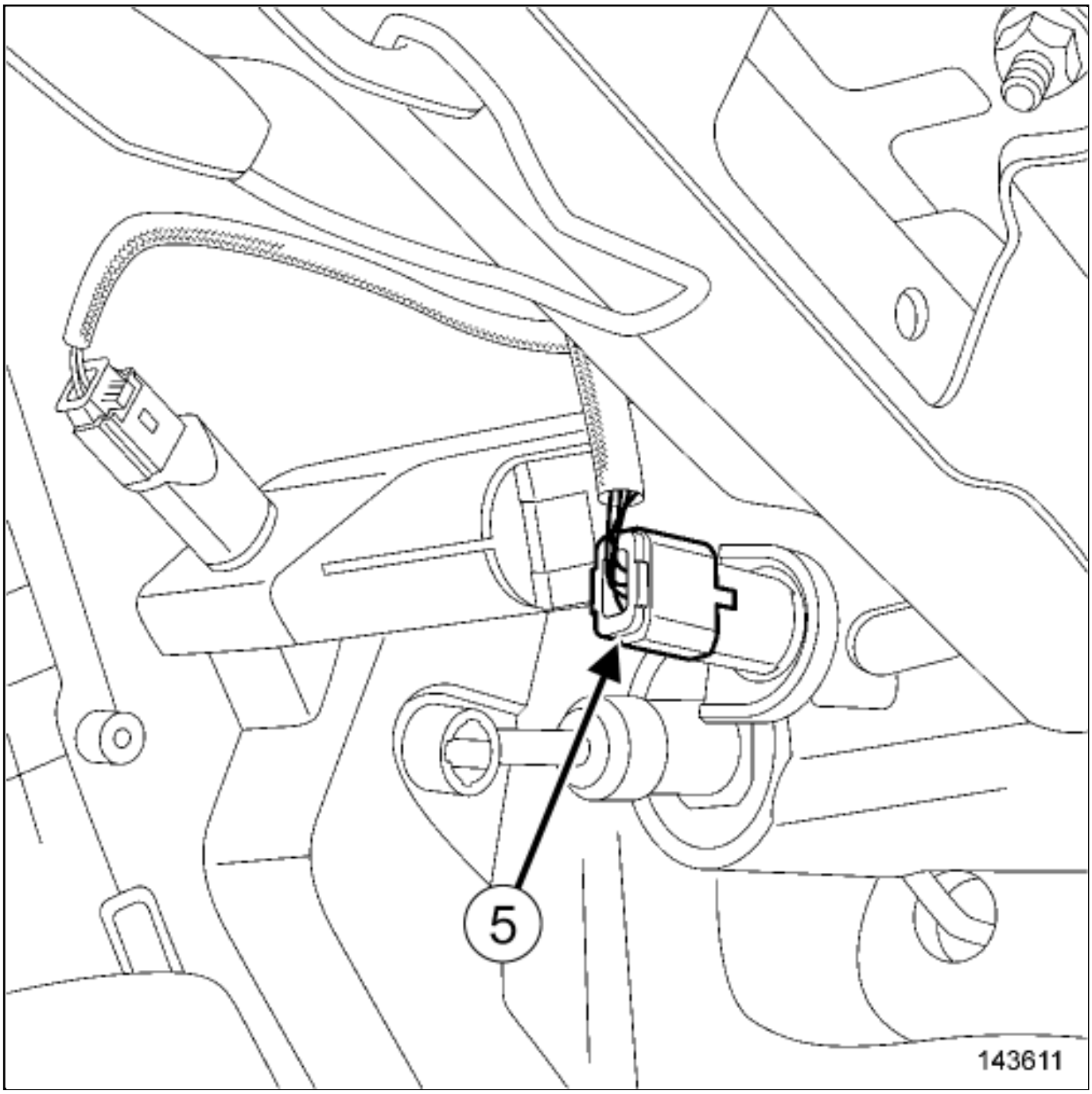


- Pull the clip(3) of the clutch master cylinder.
- Disconnect the hydraulic clutch control pipe from the clutch master cylinder.
- Fit blanking plugs into all openings.

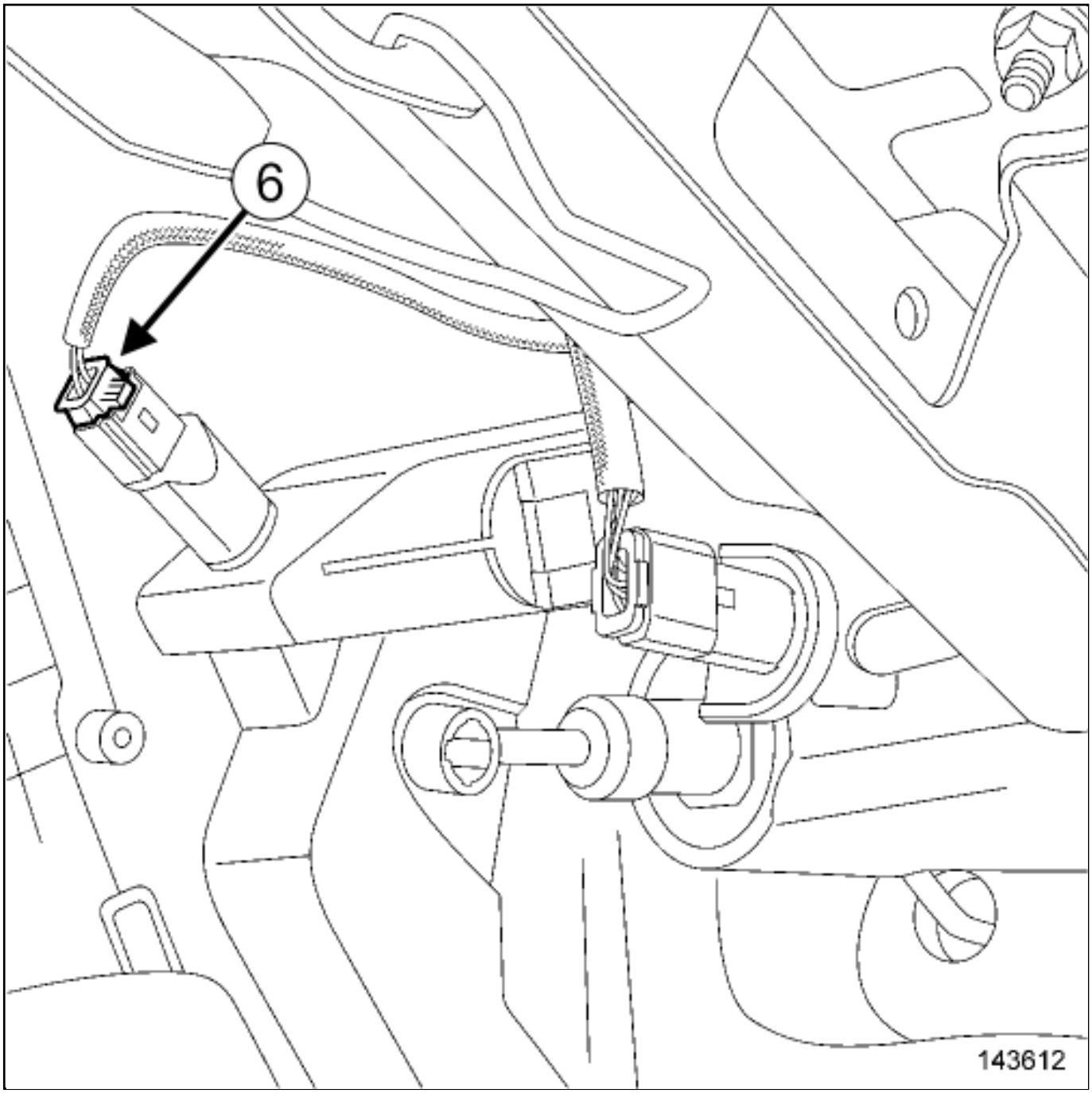


- Unclip the clutch master cylinder supply pipe from the bulkhead at(4) .

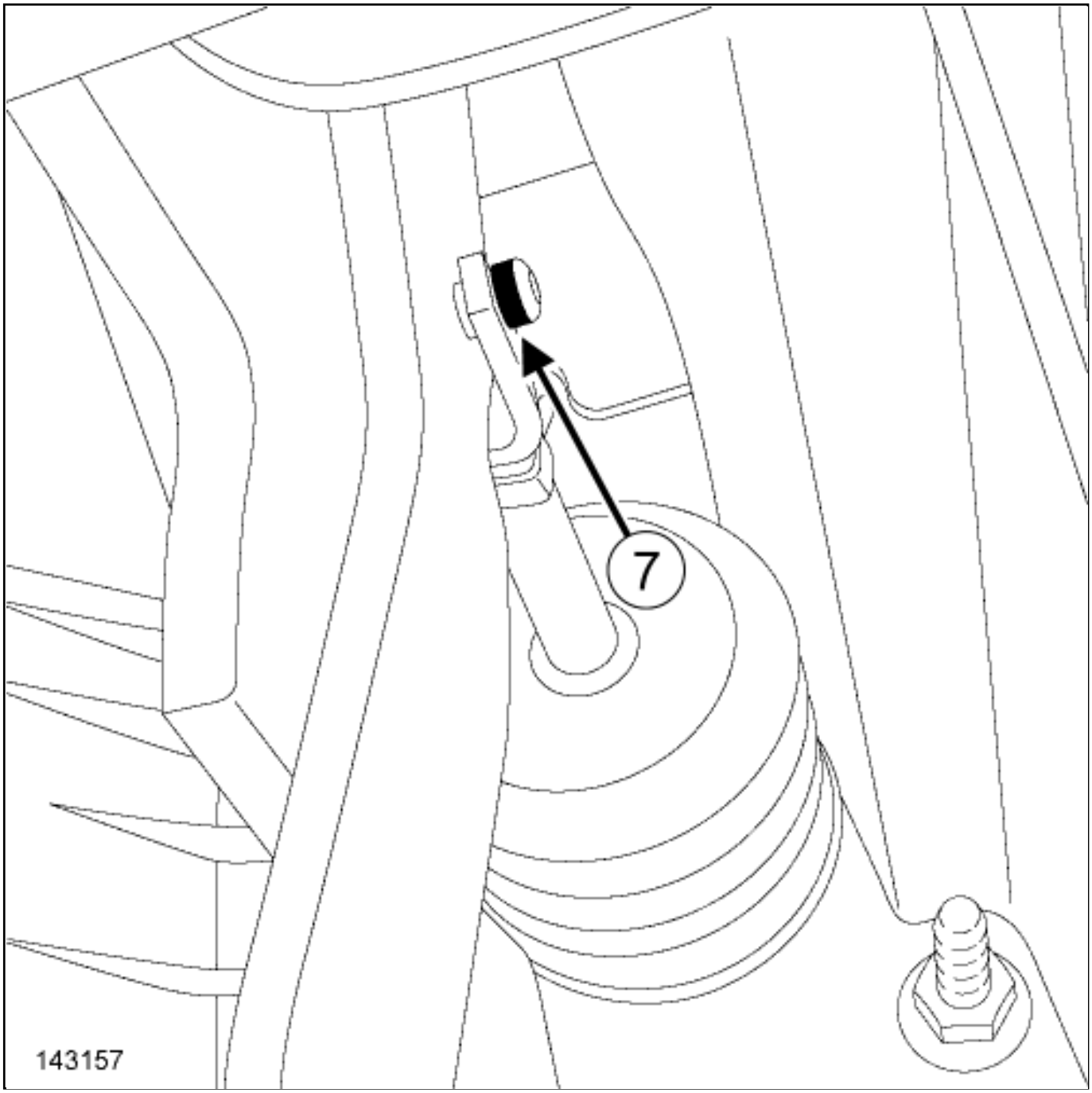
2. REMOVAL OPERATION



- Disconnect the brake pedal switch connector(5) .

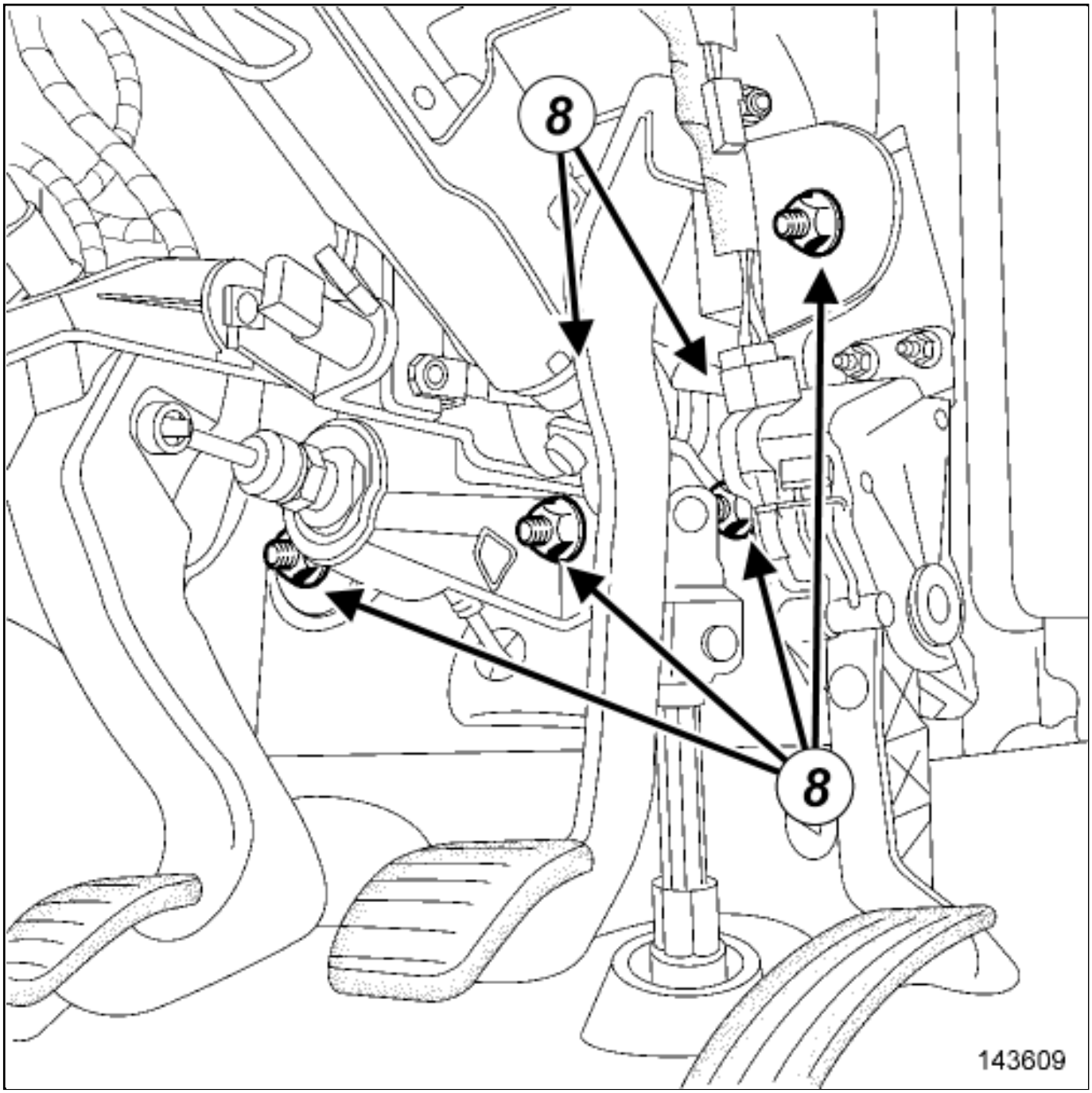


- Disconnect the connector(6) from the clutch pedal switch.



Remove the following from the brake pedal(see **Pedal assembly: Exploded view**) :

- the rubber ring(7) from the dual safety connecting shaft,
- the dual safety connecting shaft.



Remove:

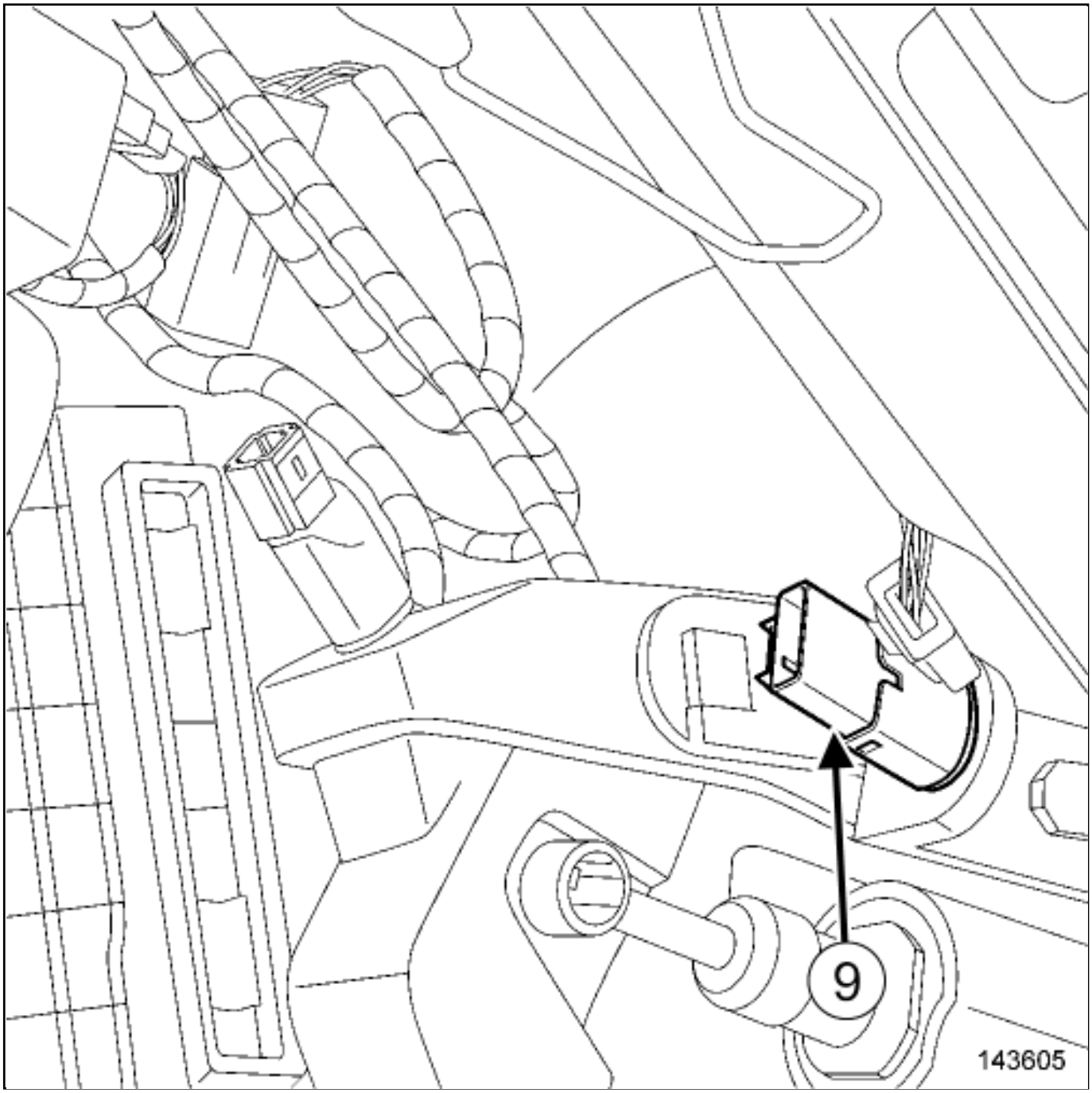
- the nuts(8) of the pedal yoke,
- the pedal yoke.

1- IN THE EVENT OF REPLACEMENT:

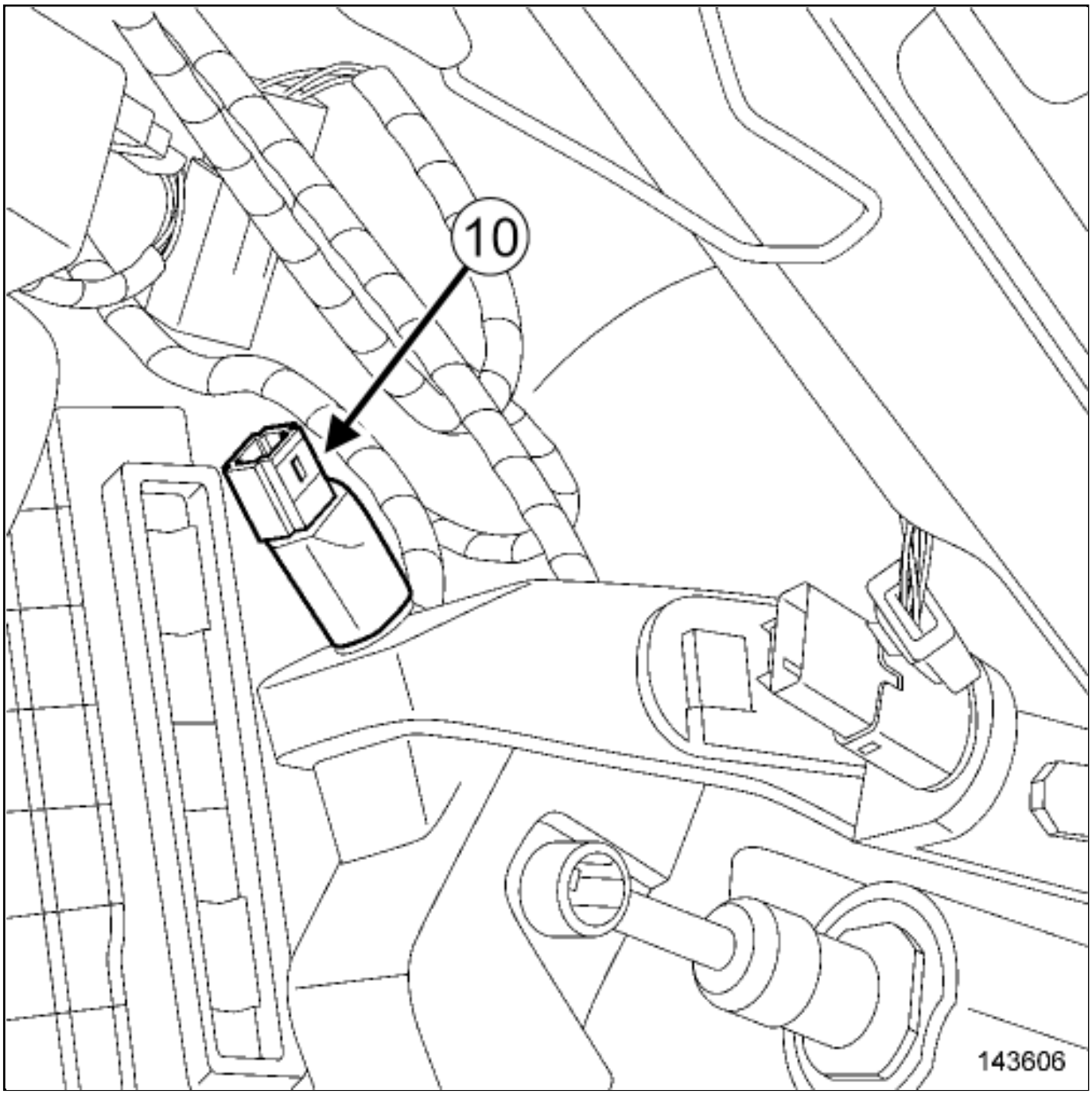
Remove the following from the pedal yoke(see 37A, Mechanical component controls, Pedal assembly: List and location of components) :

- the brake pedal,
- the clutch pedal.

Remove the clutch master cylinderClutch assembly: Exploded view .



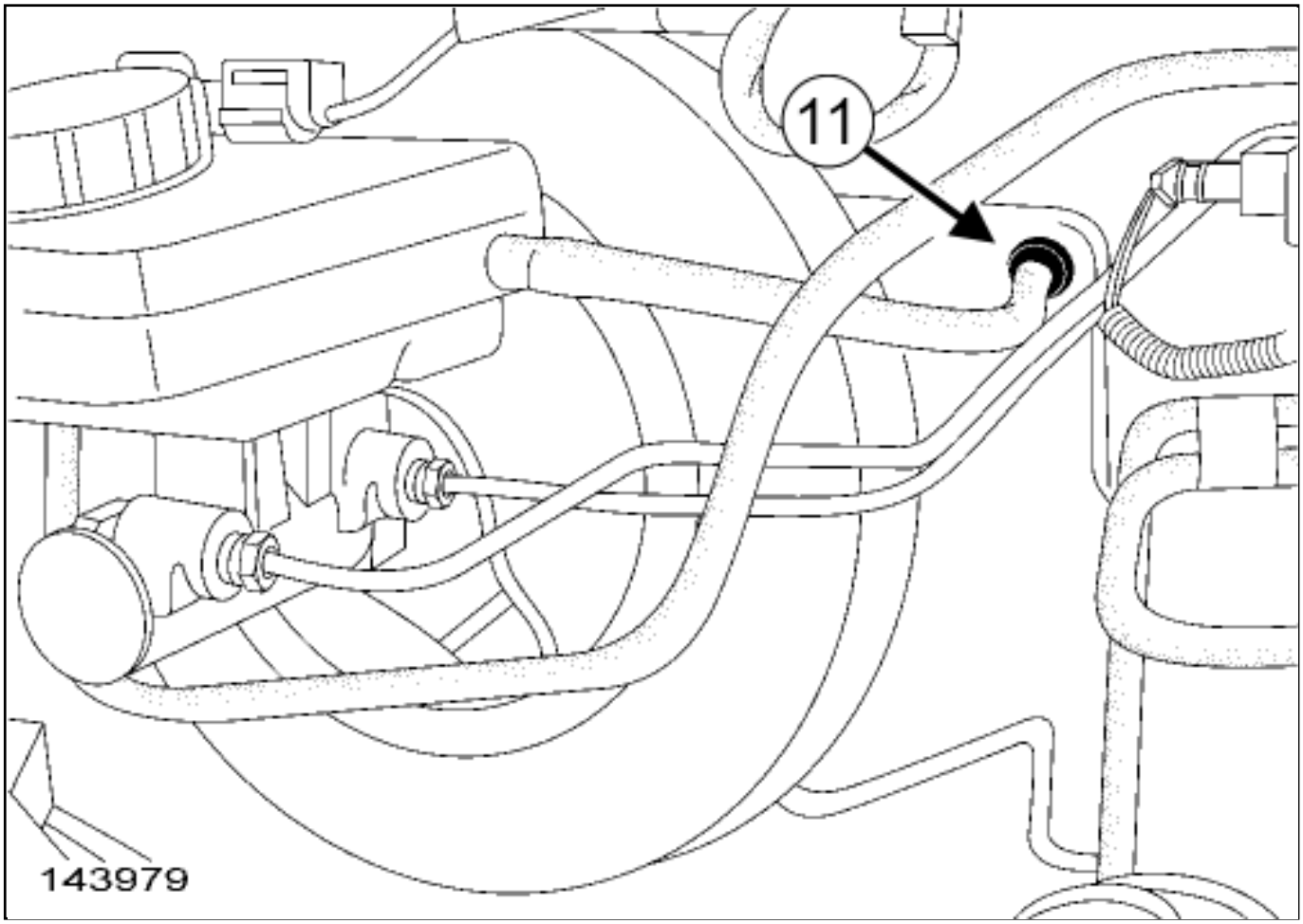
Remove the brake pedal switch by turning it a quarter of a turn anti-clockwise(9) .



Remove the clutch pedal switch by turning it a quarter of a turn anti-clockwise(10) .

REFITTING

Proceed in the reverse order to removal.



Correctly position the seal of the clutch master cylinder supply pipe on the bulkhead at(11) .

WARNING

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

Adjust the pedal switches **Pedal switches: Adjustment** .

Bleed the clutch circuit **Clutch circuit: Bleed** .

PISTON - CON ROD: CHECK

Note, one or more warnings are present in this procedure

Special tooling required	
Dial gauge support.	Mot. 251-01
Pressure plate for measuring piston liner protrusion.	Mot. 252-01
Depth gauge for measuring the height of crankpins.	Mot. 1319
Depth gauge for measuring the height of crankpins M9R engine.	Mot. 1799
Depth gauge for measuring the height of crankpins M9R engine.	Mot. 1799

Equipment required
component support
external micrometer
radial play measuring tape
compressed air nozzle
internal micrometer
set of feeler gauges

1. PREPARATION OPERATION FOR CHECK

CAUTION

It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump will irreparably damage the engine by:

- blocking the strainer,
- raising the oil level above maximum, with a risk of engine racing.

Note:

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair(see 10A, Engine and cylinder block assembly, Engine: Precautions for the repair) .

Remove the engine - gearbox assembly.

Position the engine on the component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

Remove the con rod - piston assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

Separate the con rod from the piston, if required by the check(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

Remove the segments, if required by the check(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

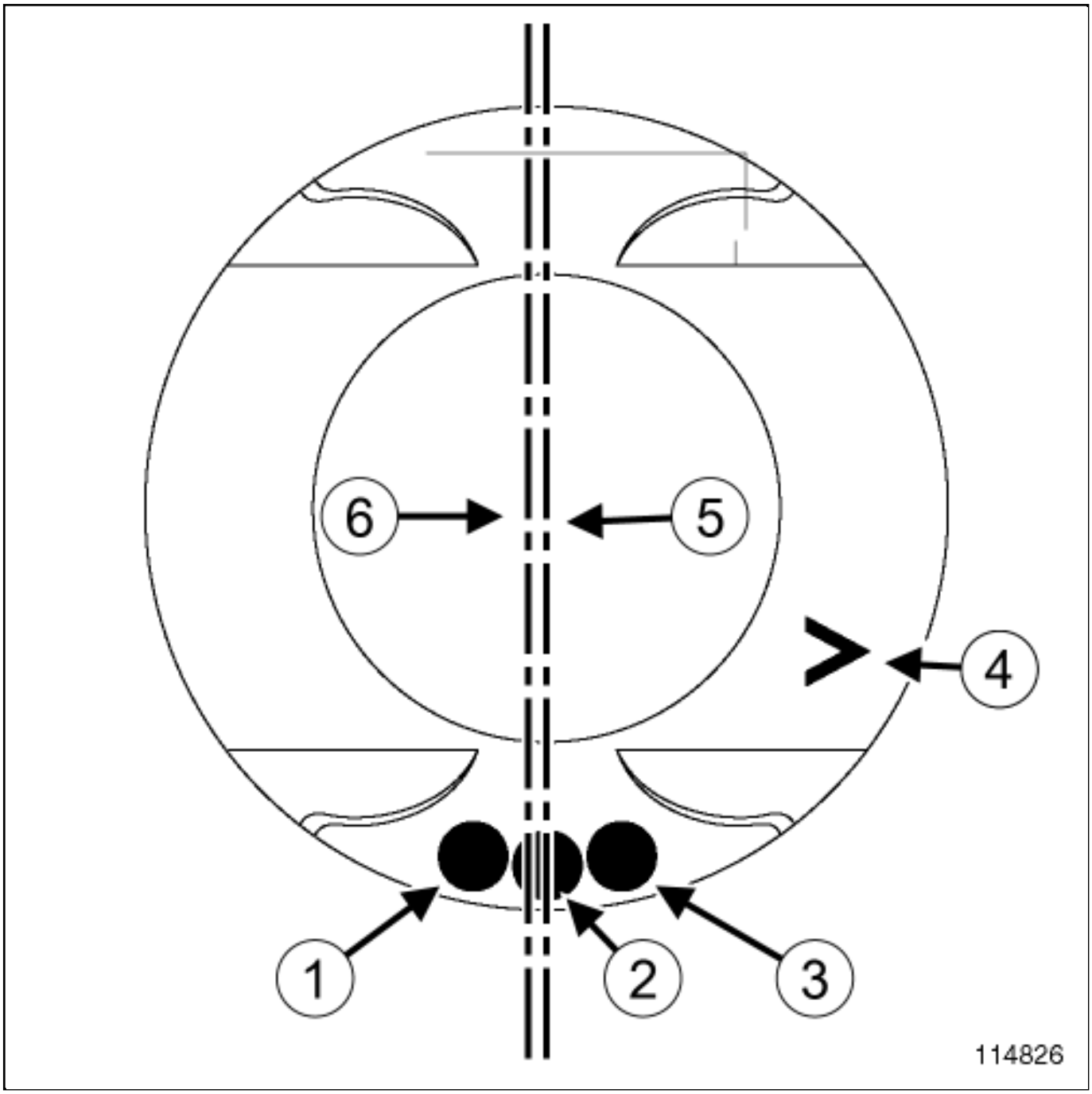
Before any checks:

- clean the part with surface cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) and dry using a compressed air nozzle,
- check that the part does not have any scratches, any trace of impact or abnormal wear (if necessary replace the part).

2. PISTON

1- PISTON IDENTIFICATION

1)PISTON MARKINGS



(1) : Date of manufacture

(2) : Gudgeon pin height class which corresponds to the height between the gudgeon pin and the piston crown

(3) : Modification in production suffix

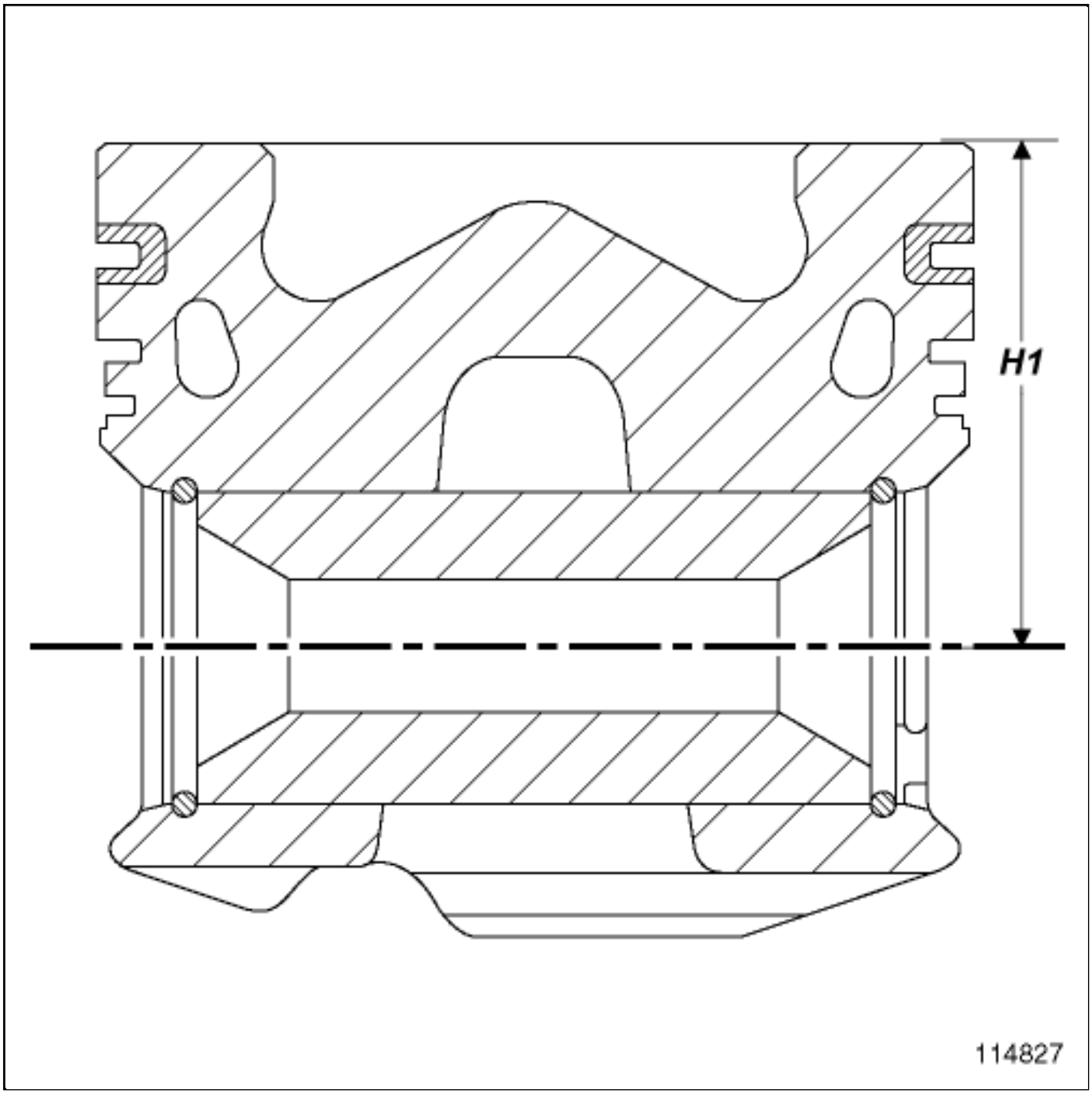
(4) : Piston fitting direction ∧towards the flywheel

(5) : Piston axis of symmetry

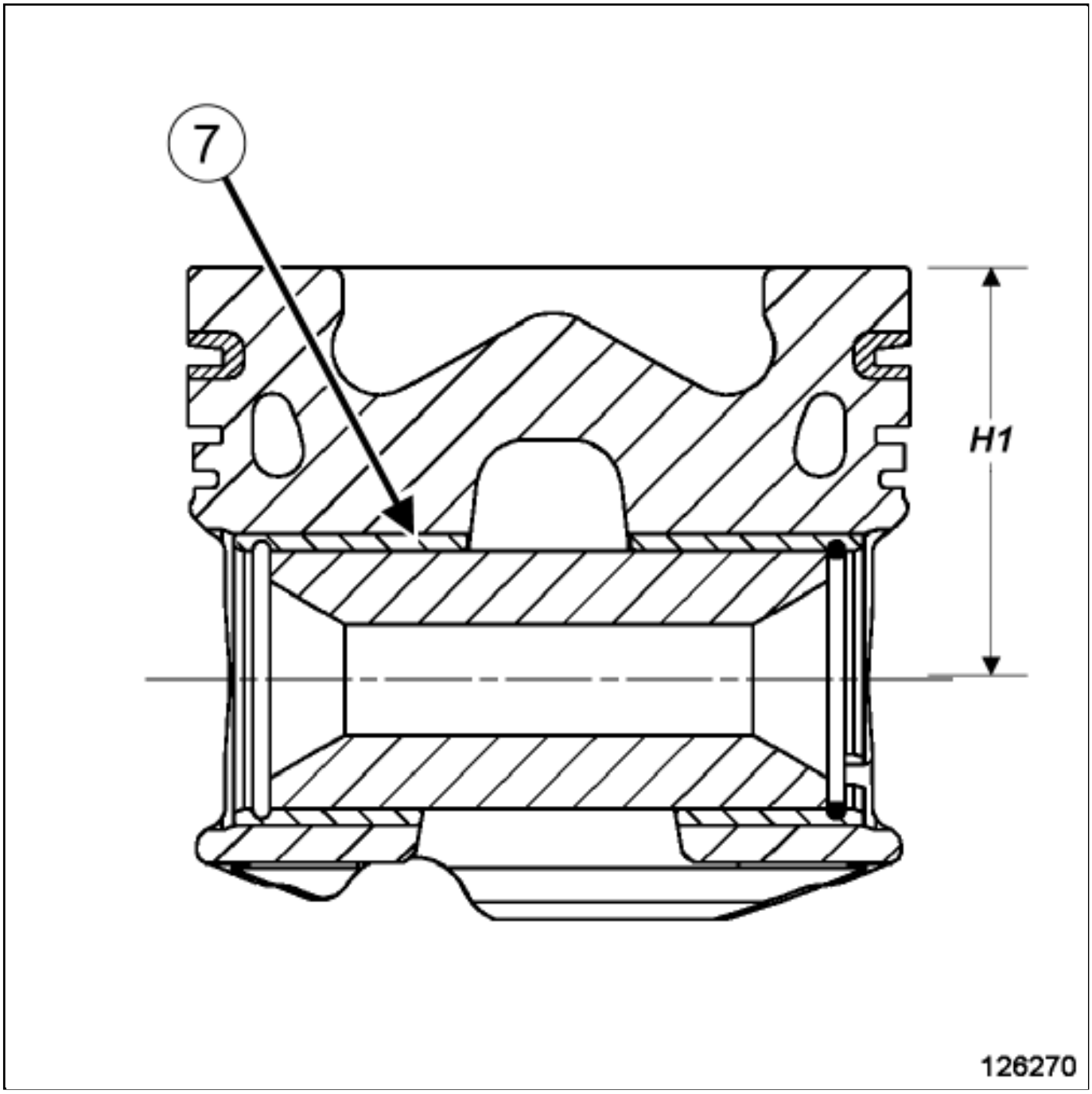
(6) : Axis of the gudgeon pin hole

2)GUDGEON PIN HEIGHT CATEGORY

PISTON WITHOUT GUDGEON PIN BRONZE RING



PISTON WITH GUDGEON PIN BRONZE RING



(H1) gudgeon pin height

(7) gudgeon pin bronze ring

Note:

- There are two types of piston:
  - piston without gudgeon pin bronze ring,
  - piston with gudgeon pin bronze ring.

The gudgeon pin bronze ring cannot be replaced.

Engine type	Diameter of gudgeon pin D = 30 mm		Diameter of gudgeon pin D = 32 mm	
	Piston category	Gudgeon pin height in mm	Piston category	Gudgeon pin height in mm
M9R700-740-742-746-780-782-784 up until 25/06/2007	A	47.895 to 47.937	-	-
	B	47.938 to 47.979	-	-
	C	47.980 to 48.021	-	-
	D	48.022 to 48.063	-	-
	E	48.064 to 48.105	-	-

M9R720-721-722-724-760-761 up until 11/05/2006	F	47.895 to 47.936	-	-
	G	47.937 to 47.978	-	-
	H	47.979 to 48.020	-	-
	J	48.021 to 48.062	-	-
	K	48.063 to 48.105	-	-
M9T670-672-676-678-680-686-690-692-694-696-698-700-702-870-872-876-880-882-890-892-896-898	-	-	A	47.86 to 47.90
	-	-	B	47.90 to 47.94
	-	-	C	47.94 to 47.98
	-	-	D	47.99 to 48.03
	-	-	E	48.03 to 48.07

M9R700-721-722-724-740-742-744-746-748-754-756-760-761-762-763-780-782-784-786-788-800-802-803-805-806-808-809-811-812-816-830-832-833-834-835-836-838-845-849	-	-	F	47.90 to 47.94
	-	-	G	47.94 to 47.98
	-	-	H	47.98 to 48.02
	-	-	J	48.02 to 48.06
	-	-	K	48.06 to 48.10
M9R610-615-630-692-804-814-815-817-820-824-828-839-844-846-850-854-855-856-857-858-859-862-864-865-866	-	-	R	47.90 to 47.94
	-	-	S	47.94 to 47.98
	-	-	T	47.98 to 48.02
	-	-	U	48.02 to 48.06
	-	-	X	48.06 to 48.10

Note:

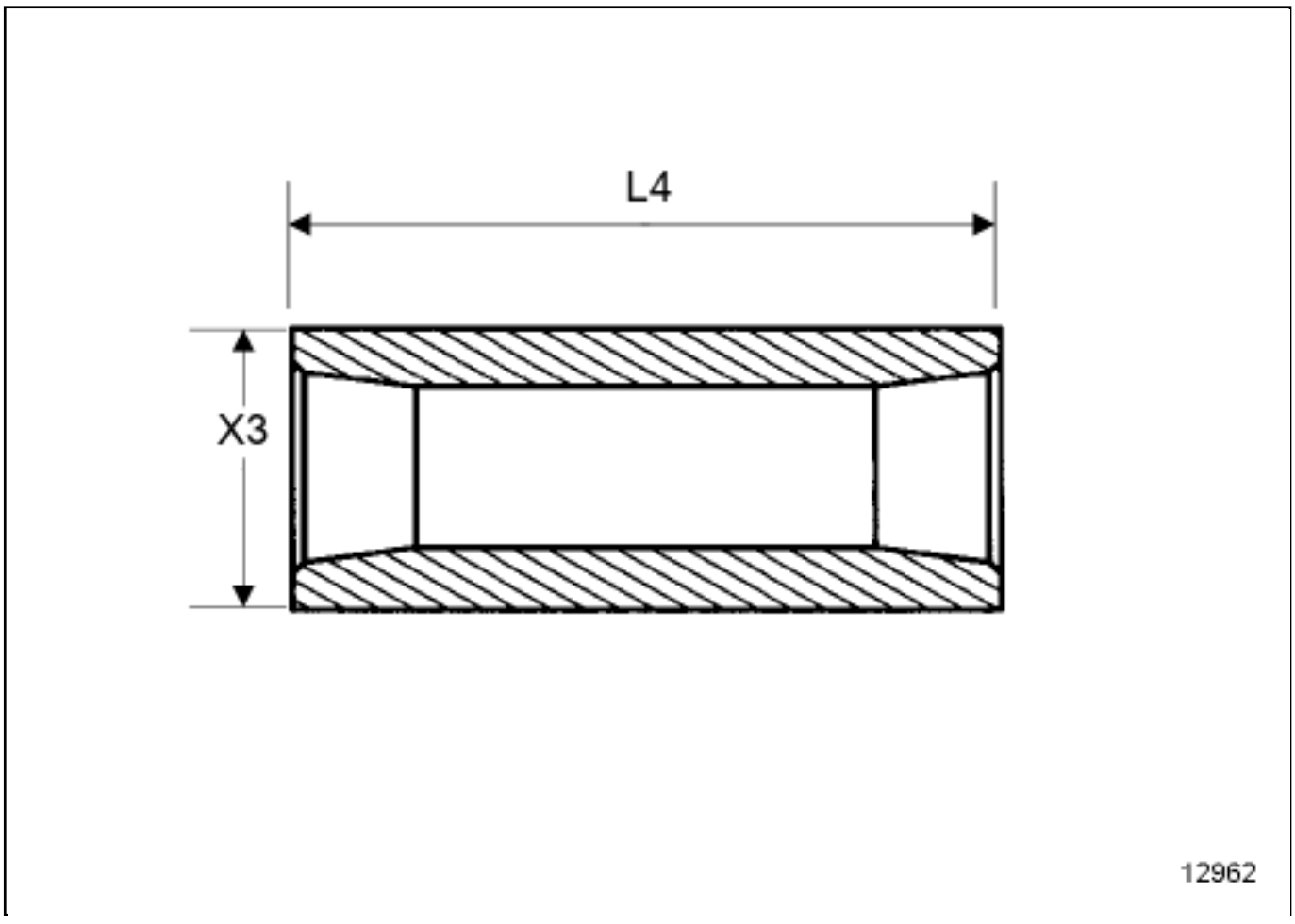
For a 30 mmdiameter gudgeon pin, there is no longer available a con rod in aftersale. Only con rods for a 32 mmdiameter gudgeon pin are available.

When replacing a piston or a con rod corresponding to a 30 mmdiameter gudgeon pin by a 32 mm diameter gudgeon pin, apply the fallowing method :

- order a set of 4 con rods,
- mesure the height of the crankpin for the 4 cylindres(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) ,
- calculate the height of the gudgeon pin(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) ,
- replace the 4 pistons by ordering new pistons with a 32 mmdiameter gudgeon pin after the piston pin height has been determined, take the value of the 32 mmdiameter gudgeon pin, piston category F, G, H, J, K.

2- PISTON CHECK

1)GUDGEON PIN CHECK

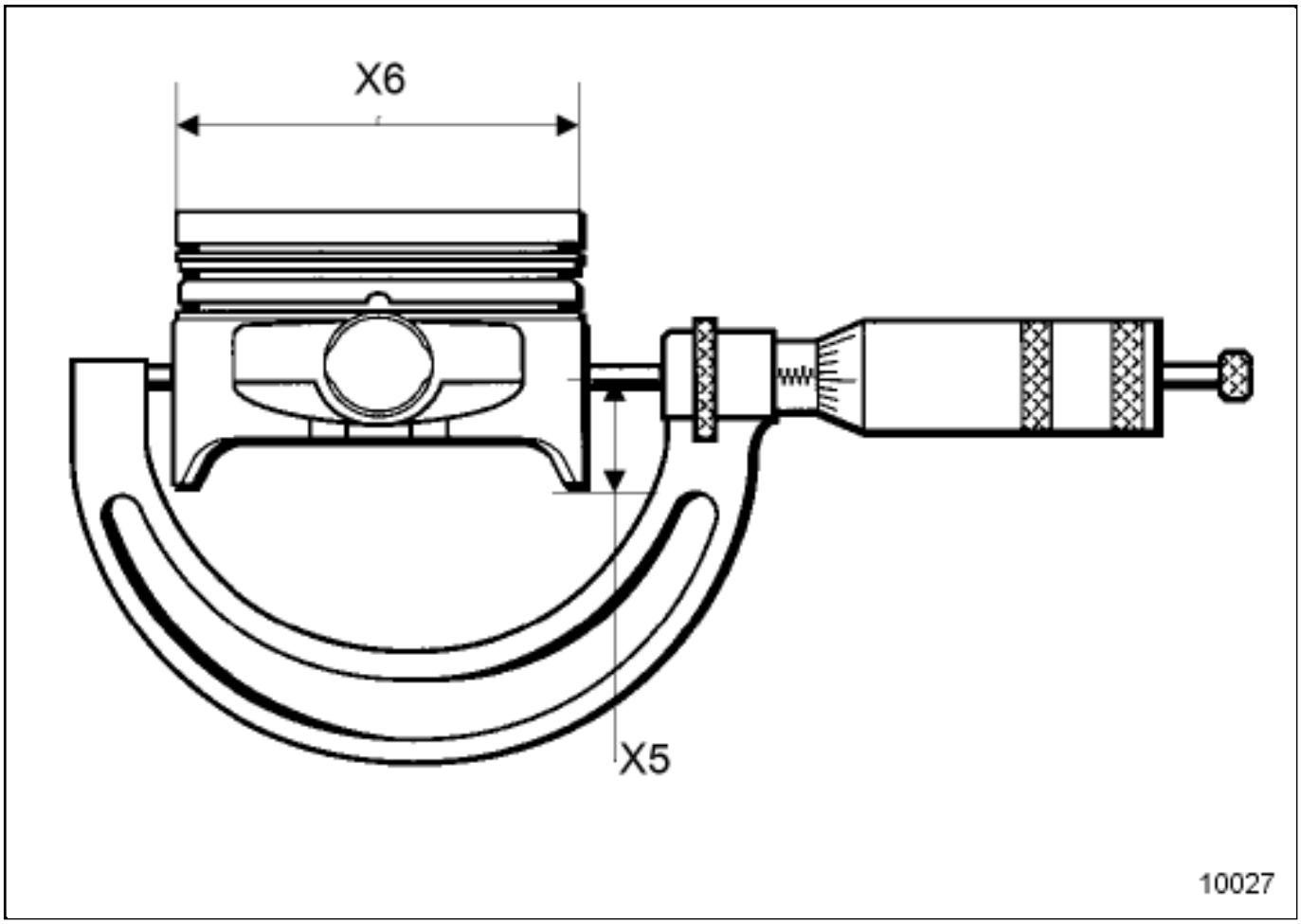


Check that the pin slides freely in the piston before checking it.

- Measure using an external micrometer:
  - the diameter(**X3**) of the gudgeon pin,
  - the length(**L4**) of the gudgeon pin.

Engine type	Gudgeon pin diameter X3 in mm	Gudgeon pin length L4 in mm
M9R700-740-742-746-780-782-784 up until 25/06/2006	30 +0 / -0.005	65 +0 / -0.3
M9R720-721-722-724-760-761 up until 11/05/2006		
M9T670672-676-678-680-686-690-692-694-696-698-700-702-870-872-876-880-882-890-892-896-898	32 +0 / -0.01	65 +0 / -0.3
M9R610-615-630-692-700-721-722-724-740-742-744-746-748-754-756-760-761-762-763-780-782-784-786-788-800-802-803-804-805-806-808-809-811-812-814-815-816-817-820-824-828-830-832-833-834-835-836-838-839-844-845-846-849-850-854-855-856-857-858-859-862-864-865-866		

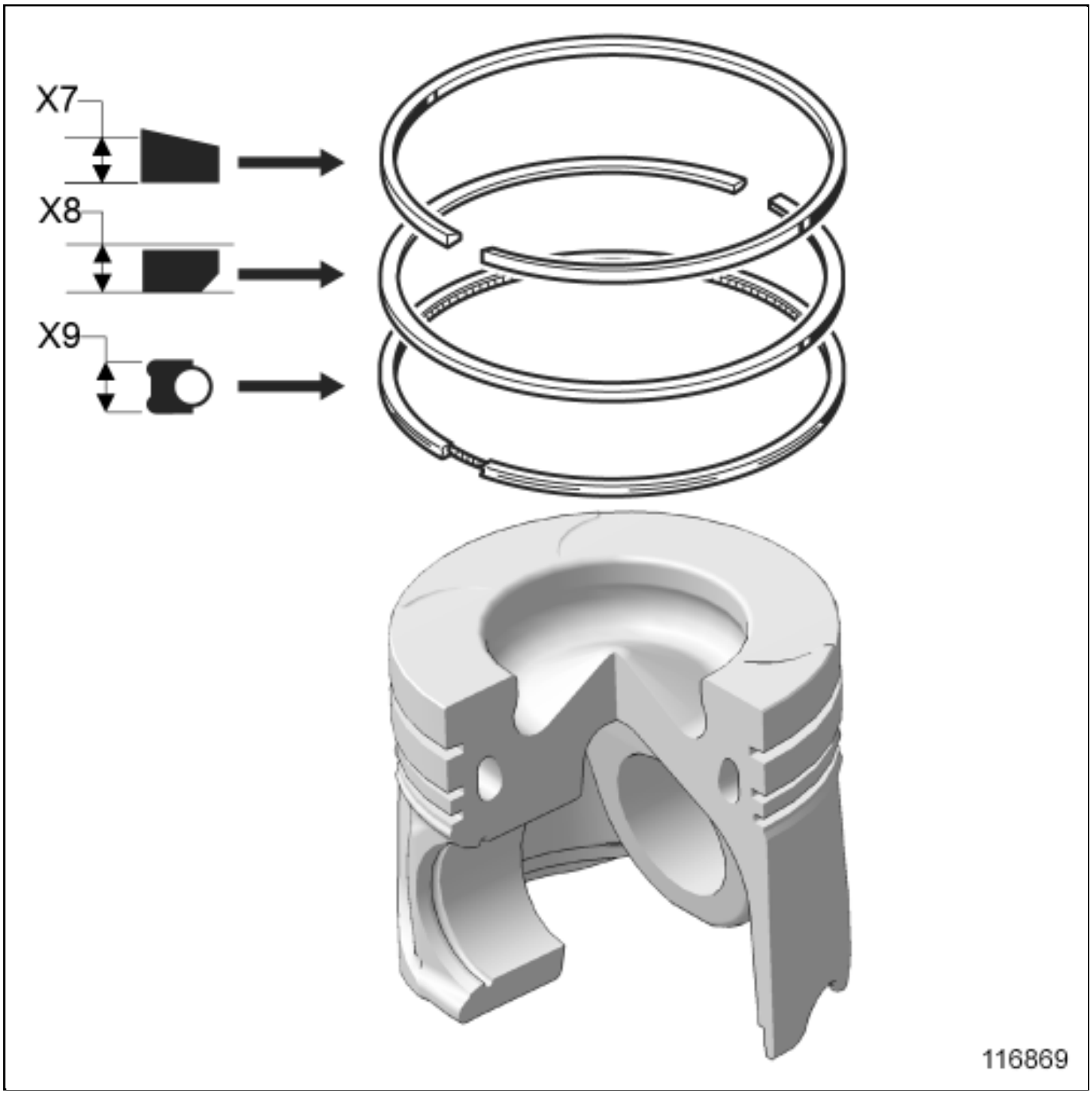
2)CHECKING THE PISTON DIAMETER



Measure using an external micrometerthe piston diameter(X6) along dimension(X5) = 44 mm.

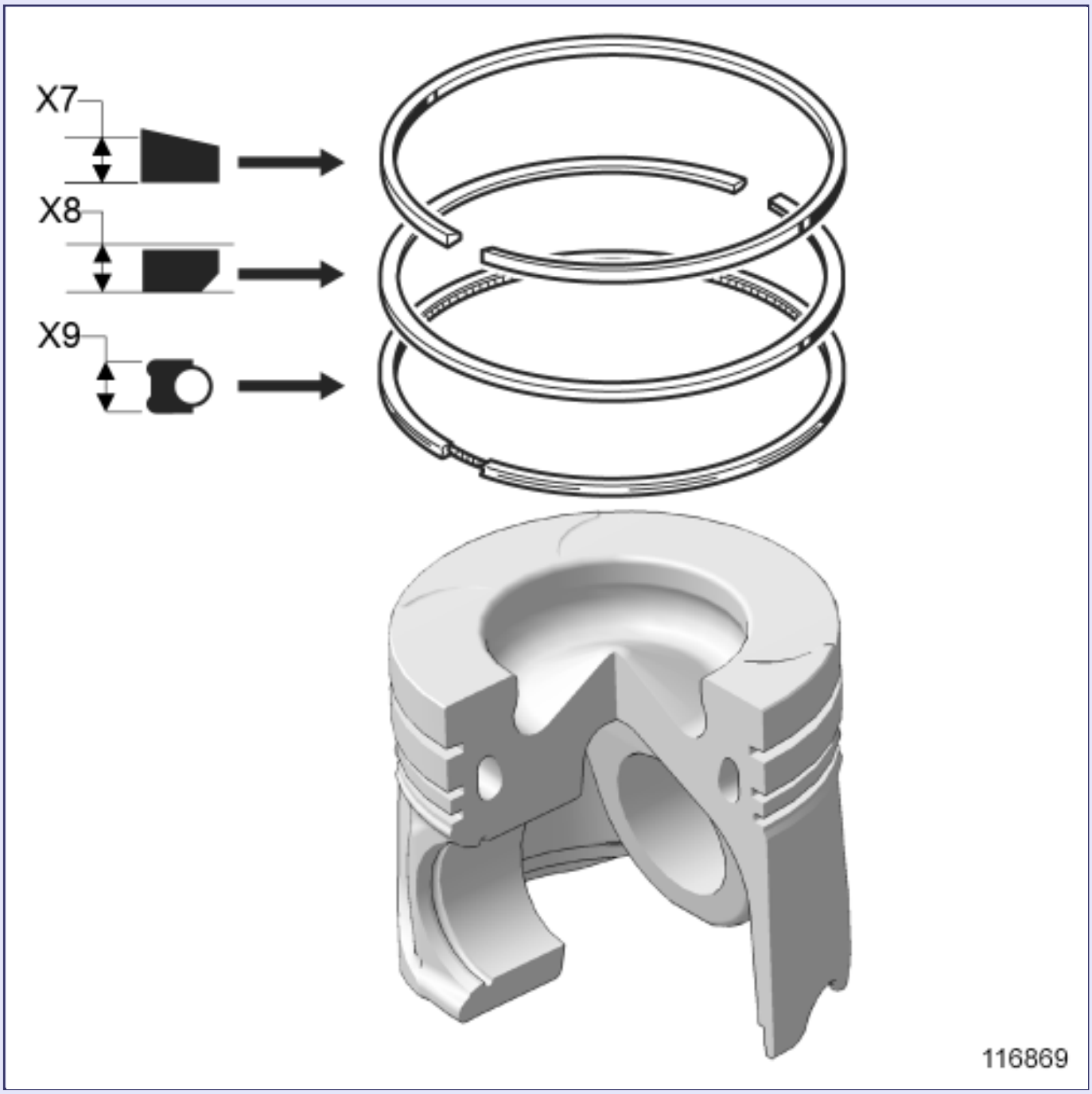
Engine type	Piston diameter X6 (mm)
M9R 610, 615, 630, 692, 700, 721, 722, 724, 740, 742, 744, 746, 748, 754, 756, 760, 761, 762, 763, 780, 782, 784, 786, 788, 800, 802, 803, 804, 805, 806, 808, 809, 811, 812, 814, 815, 816, 817, 820, 824, 828, 830, 832, 833, 834, 835, 836, 838, 839, 844, 845, 846, 849, 850, 854, 855, 856, 857, 858, 859, 862, 864, 865, 866	83.79 to 83.80
M9T 670, 672, 676, 678, 680, 686, 690, 692, 694, 696, 698,700,702, 870, 872, 876, 880, 882, 890, 892, 898, 896	84.79 to 84.80

3)CHECKING THE PISTON RINGS



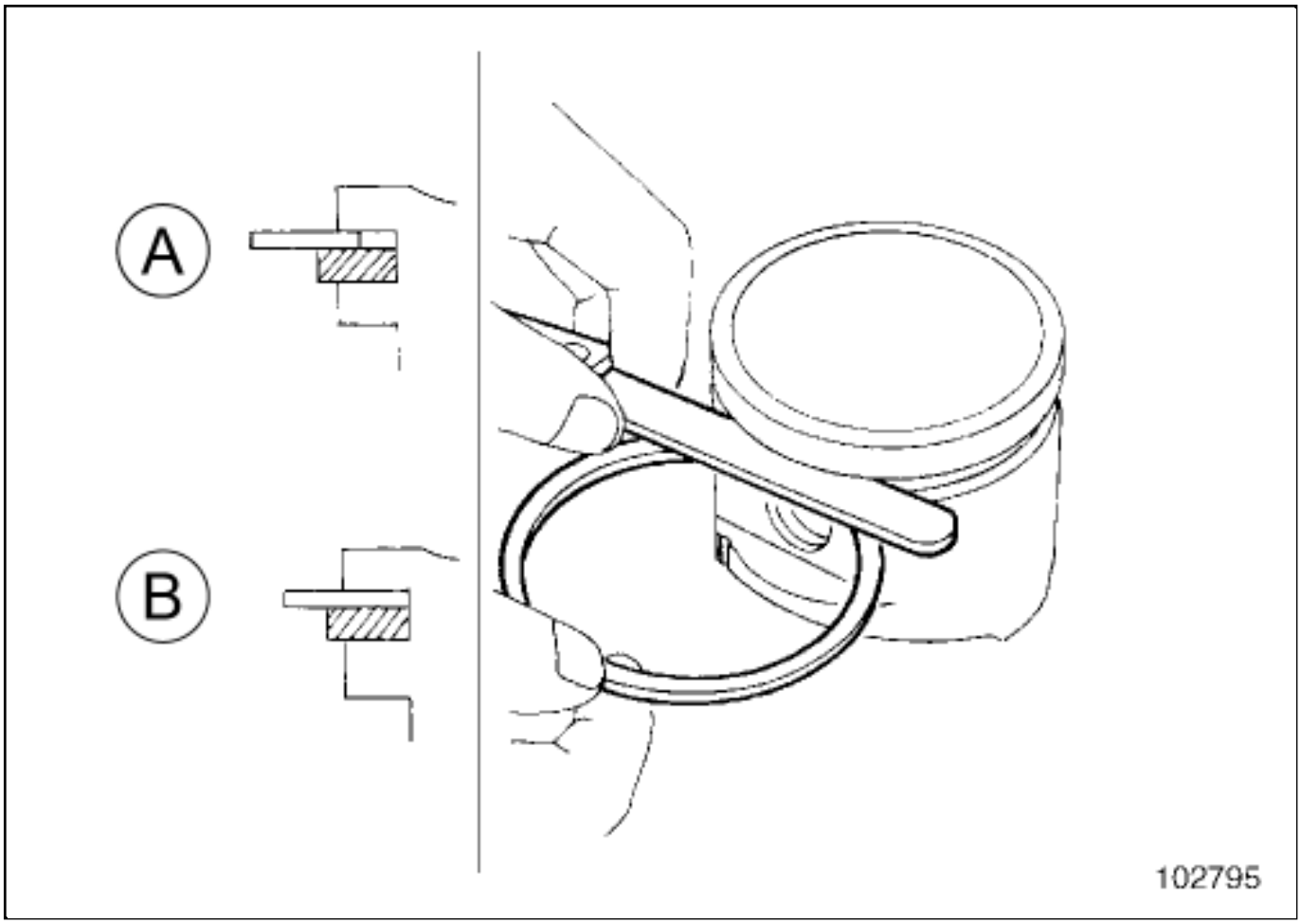
Measure using an external micrometerthe ring thickness:

- compression ring(**X7**) = 2.5 mm(for information, cannot be measured),
- sealing ring(**X8**) = 2 mm- **0.03- 0.01**,
- scraper ring(**X9**) = 2 mm- **0.03- 0.01**.



- Measure using an external micrometerthe ring thickness:
  - compression ring(X7) = **2 mm**(for information, cannot be measured),
  - sealing ring(X8) = **1,75 mm**- 0.03- **0.01**,
  - scraper ring(X9) = **2 mm**- 0.03- **0.01**.

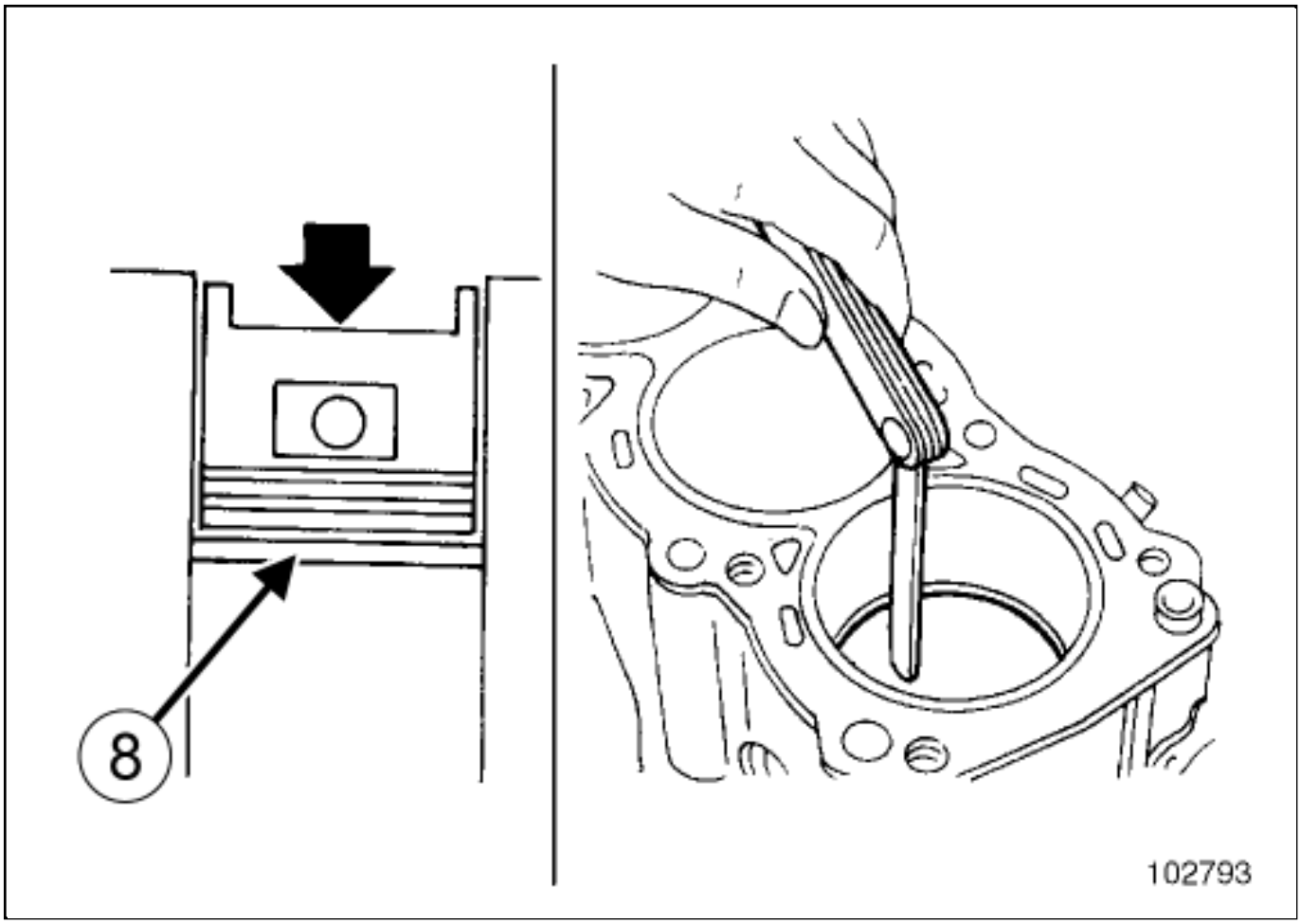
4)CHECKING THE CLEARANCE BETWEEN THE PISTON AND RING



(A) Set of shims incorrectly positioned

(B) Set of shims correctly positioned

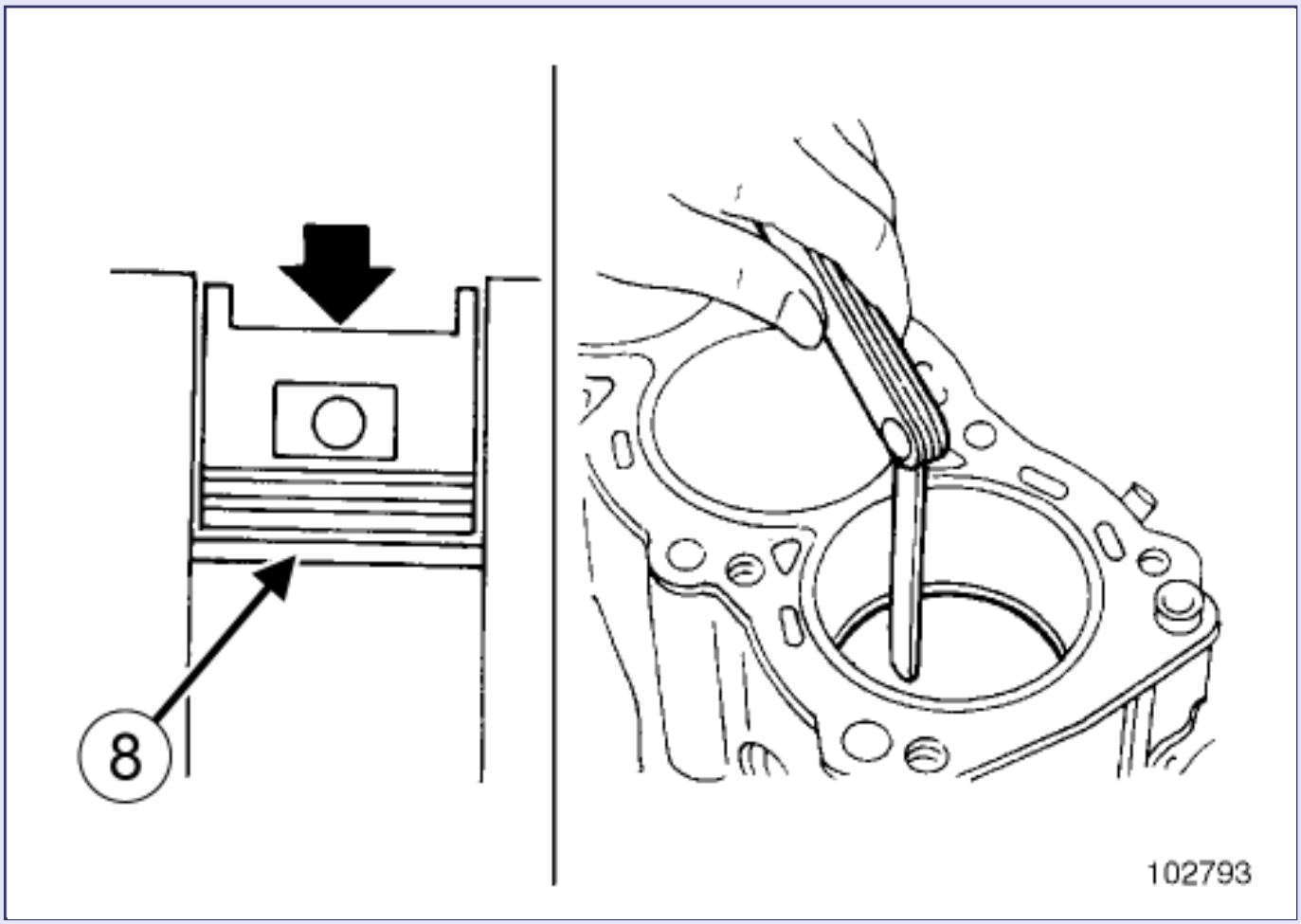
5)CHECKING PLAY AT THE RING SECTION



Place the piston ring(8) to be checked in the cylinder.

Push the ring to the centre of the cylinder using the piston.

- Measure the ring end clearance using a set of feeler gauges:
  - compression - clearance of 0.23 to 0.38 mm,
  - sealing - clearance of 0.6 to 0.8 mm,
  - scraper - clearance of 0.25 to 0.50 mm.



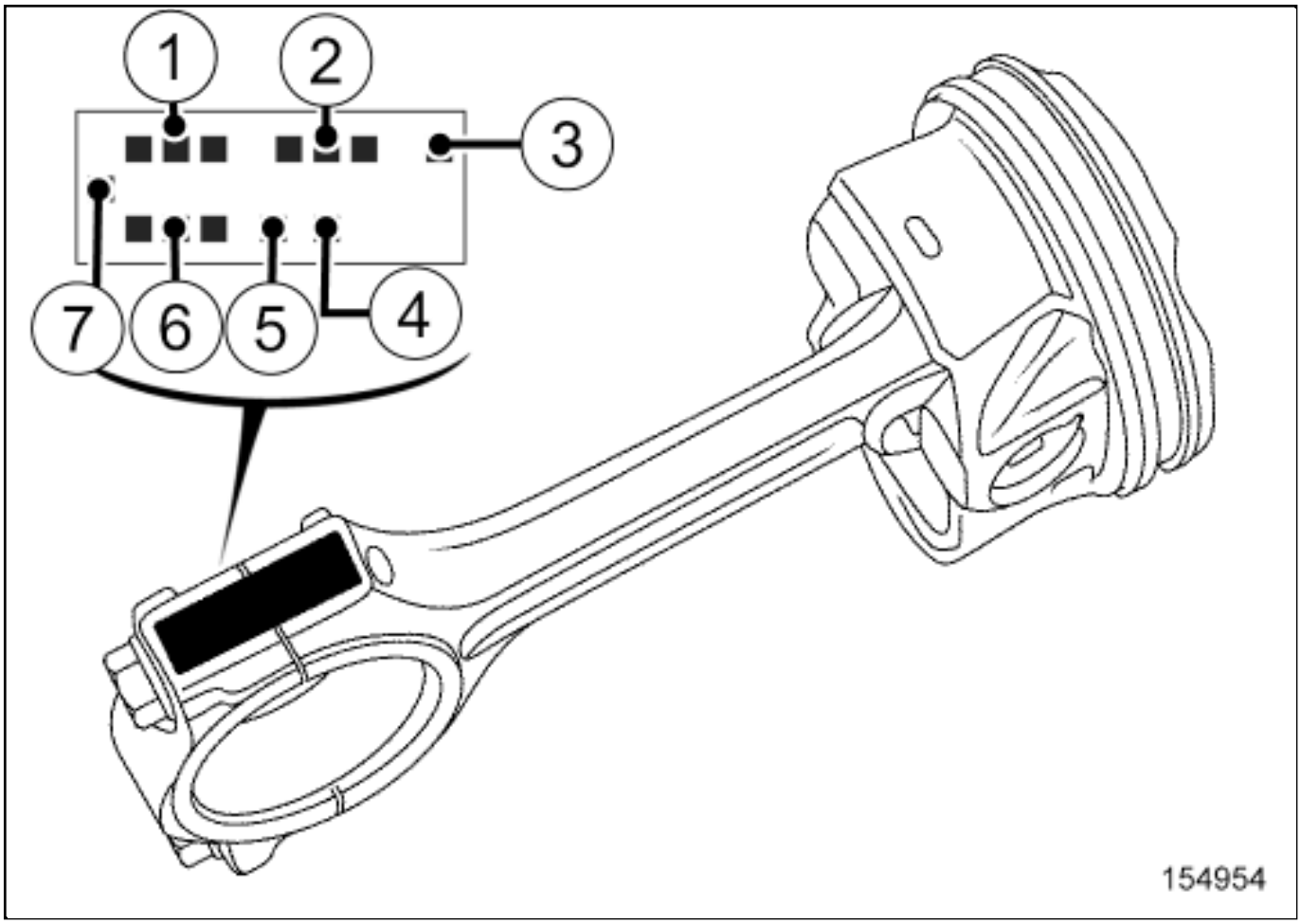
Place the piston ring(8) to be checked in the cylinder.

Push the ring to the centre of the cylinder using the piston.

- **Measure the ring end clearance using a set of feeler gauges:**
  - **compression - clearance of 0.25 to 0.40 mm,**
  - **sealing - clearance of 0.7 to 0.9 mm,**
  - **scraper - clearance of 0.2 to 0.4 mm.**

3. CON ROD

1- IDENTIFICATION OF THE CON ROD

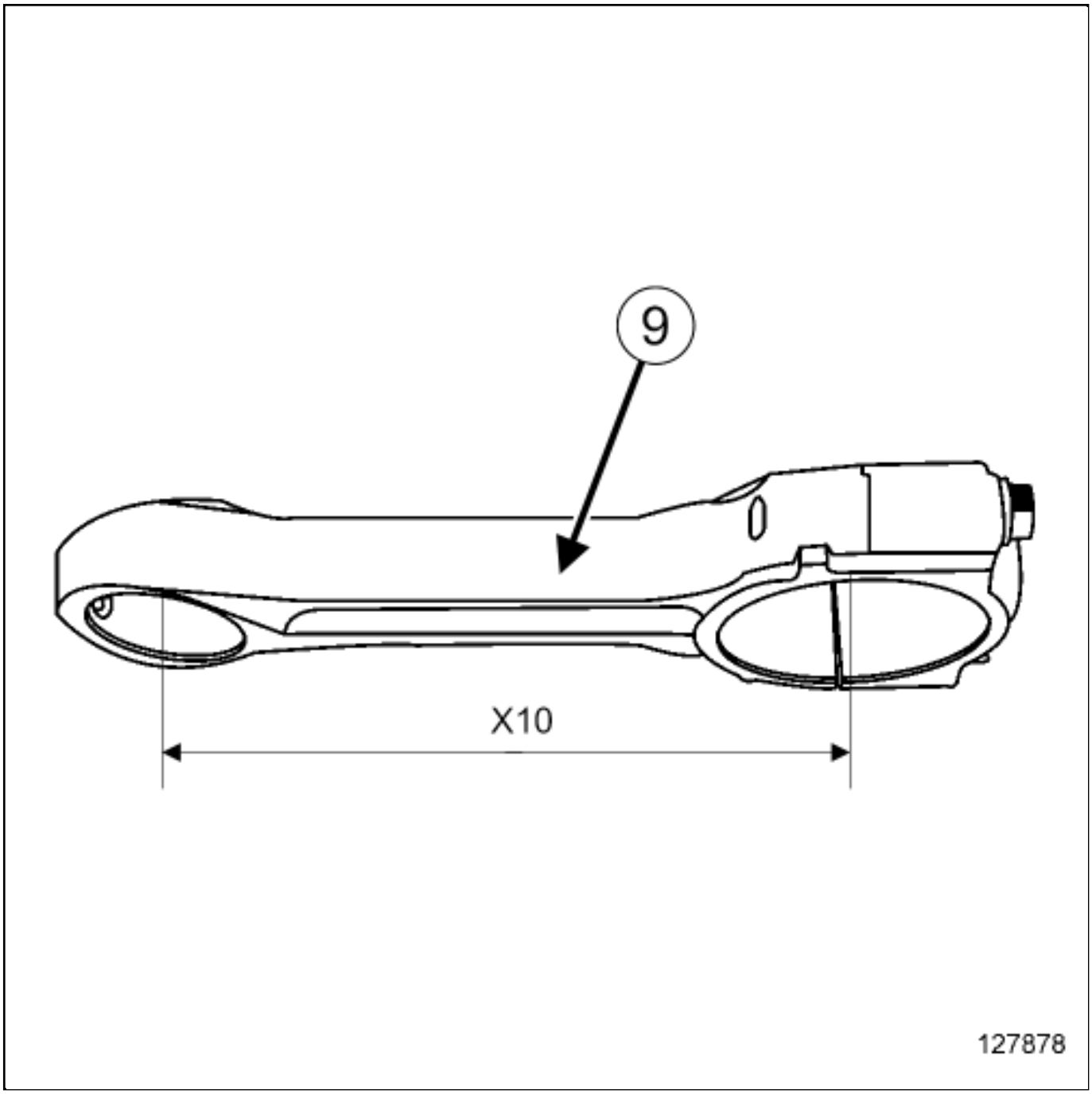


The marking includes:

- big end's diameter value(1) ,
- day(2) ,
- weighty class(3) ,
- year(4) ,
- team(5) ,
- centre-to-centre distance(6) ,
- class of centre-to-centre distance(7) .

Con rod category	Diameter of the big end (mm)
A	56.587
B	56.588
C	56.589
D	56.590
E	56.591
F	56.592
G	56.593
H	56.594
I	56.595
J	56.596
K	56.597
L	56.598
M	56.599
N	56.600
O	56.601
P	56.602

Q	56.603
R	56.604
S	56.605
T	56.606



(X10) centre-to-centre distance between the big end and small end

The first figure of the marking(9) corresponds to the class of centre-to-centre distance between the big end and the small end.

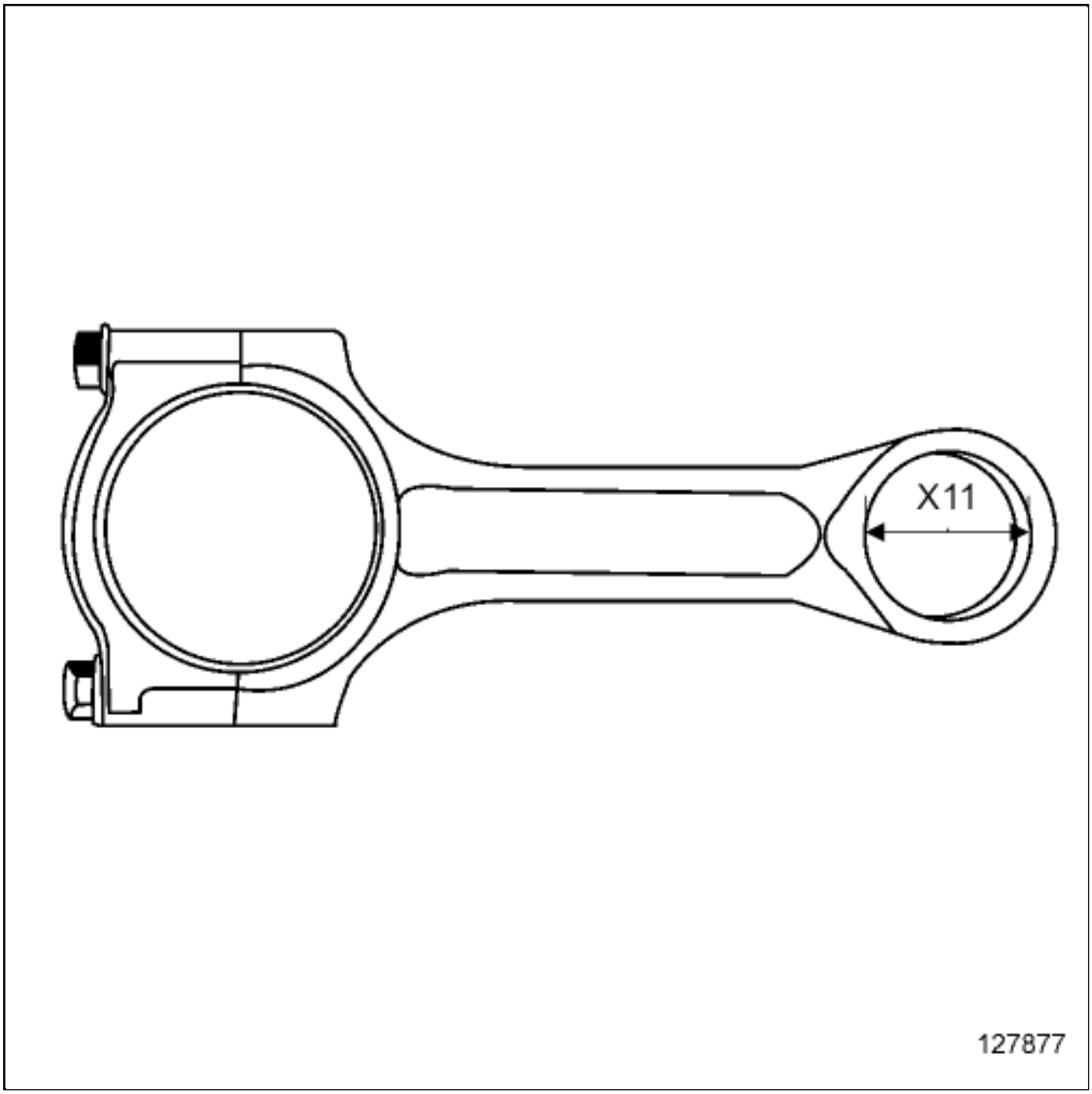
Engine type	Class of centre-to-centre distance	Centre-to-centre distance X10 (mm)
M9R	1	143.47 ± 0.01
	2	143.48 ± 0.01
	3*	143.50 ± 0.01
	4	143.51 ± 0.01
M9T	4	157.25 ± 0.02

Note:

*The Parts Department only sells type 3 con rods in sets of four con rods.

2- CHECKING THE CON ROD

1)CHECKING THE DIAMETERS OF THE BIG END AND SMALL END



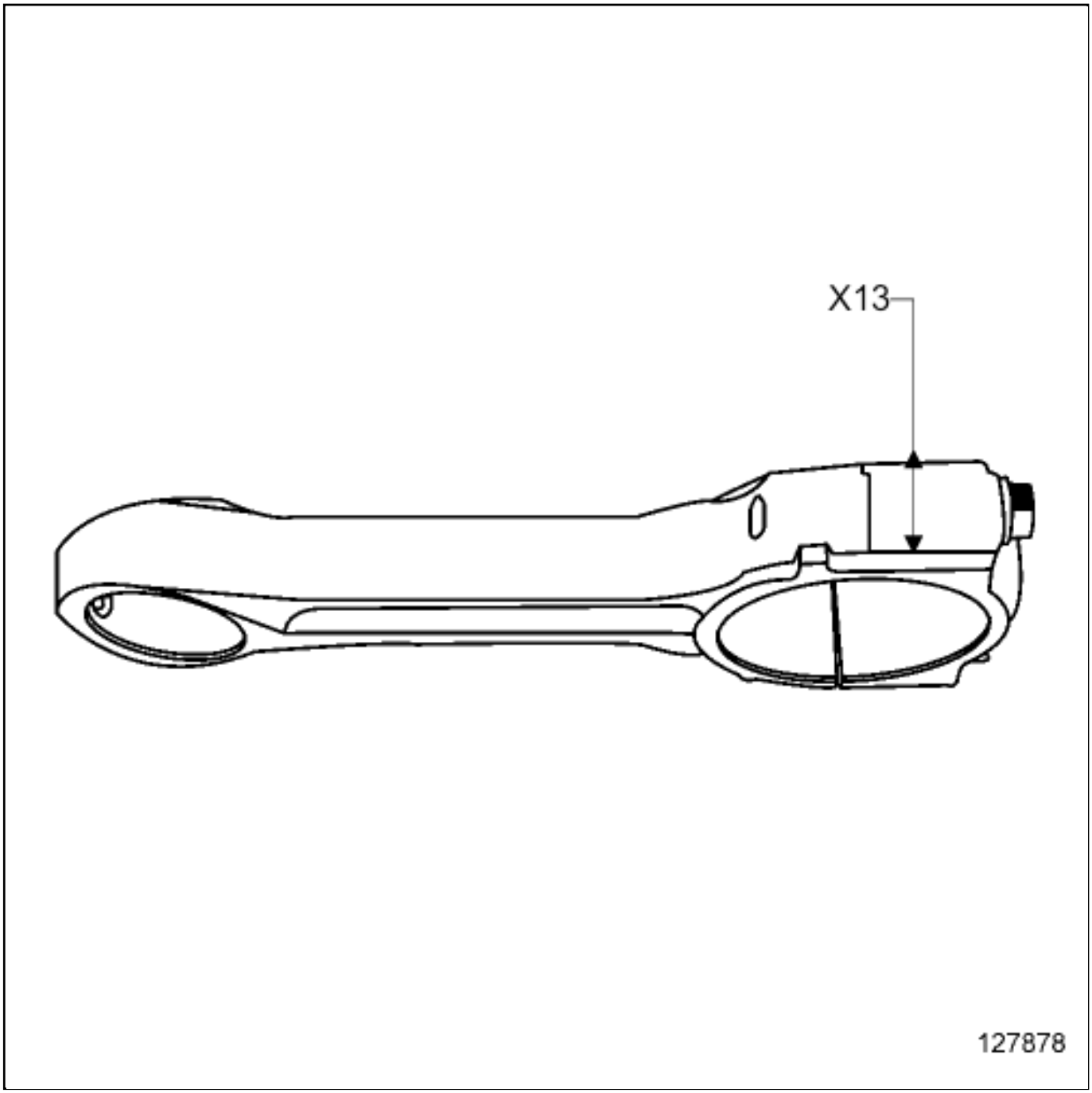
Measure using an internal micrometerthe diameter(X11) of the small end.

Engine type	Diameter X11 (mm)
M9R	32.02 ± 0.01 mm
M9T	32.02 ± 0.01 mm

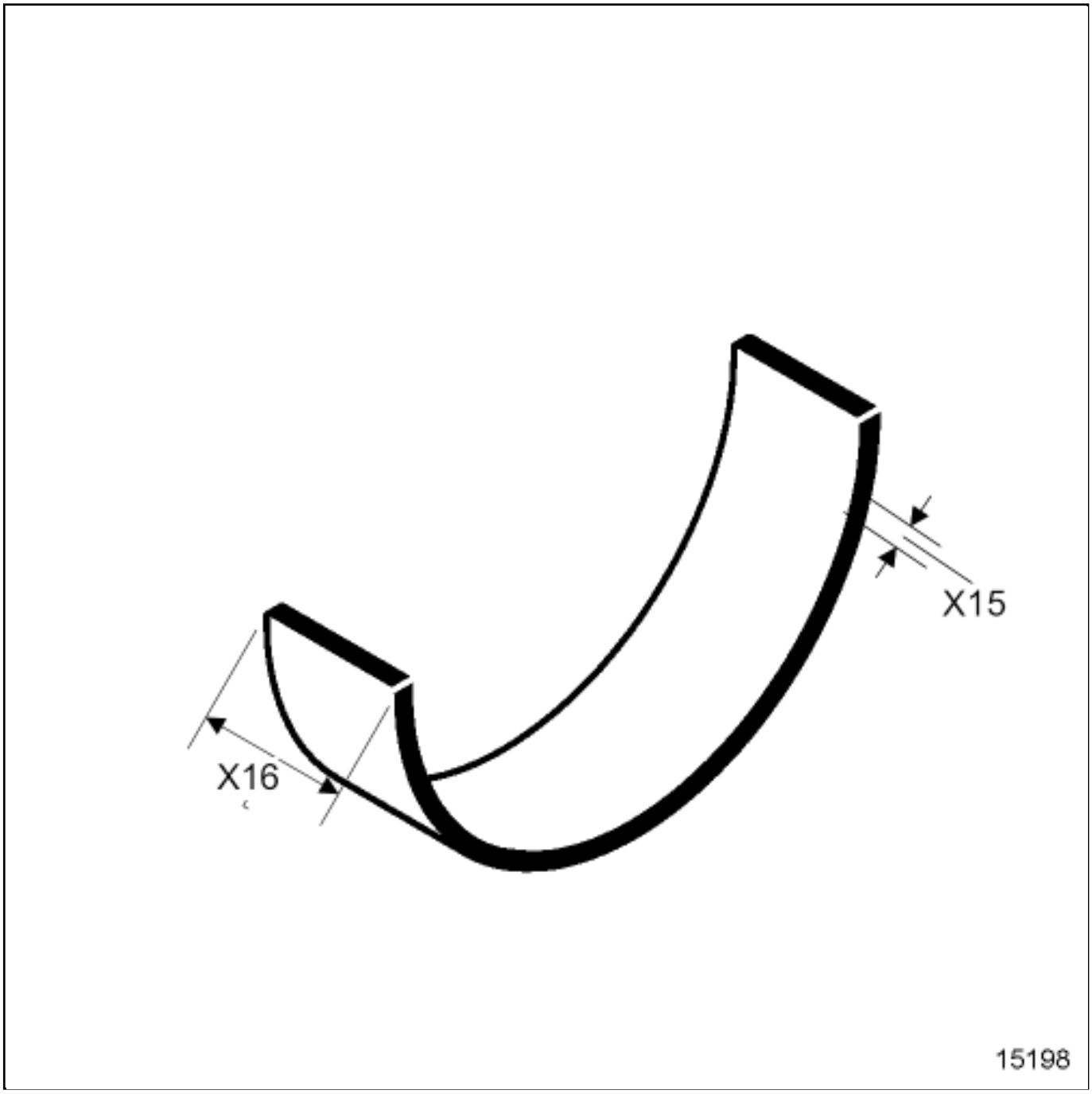
Note:

The replacement of the big end ring is not authorised.

2)CHECK THE THICKNESS OF THE BIG END



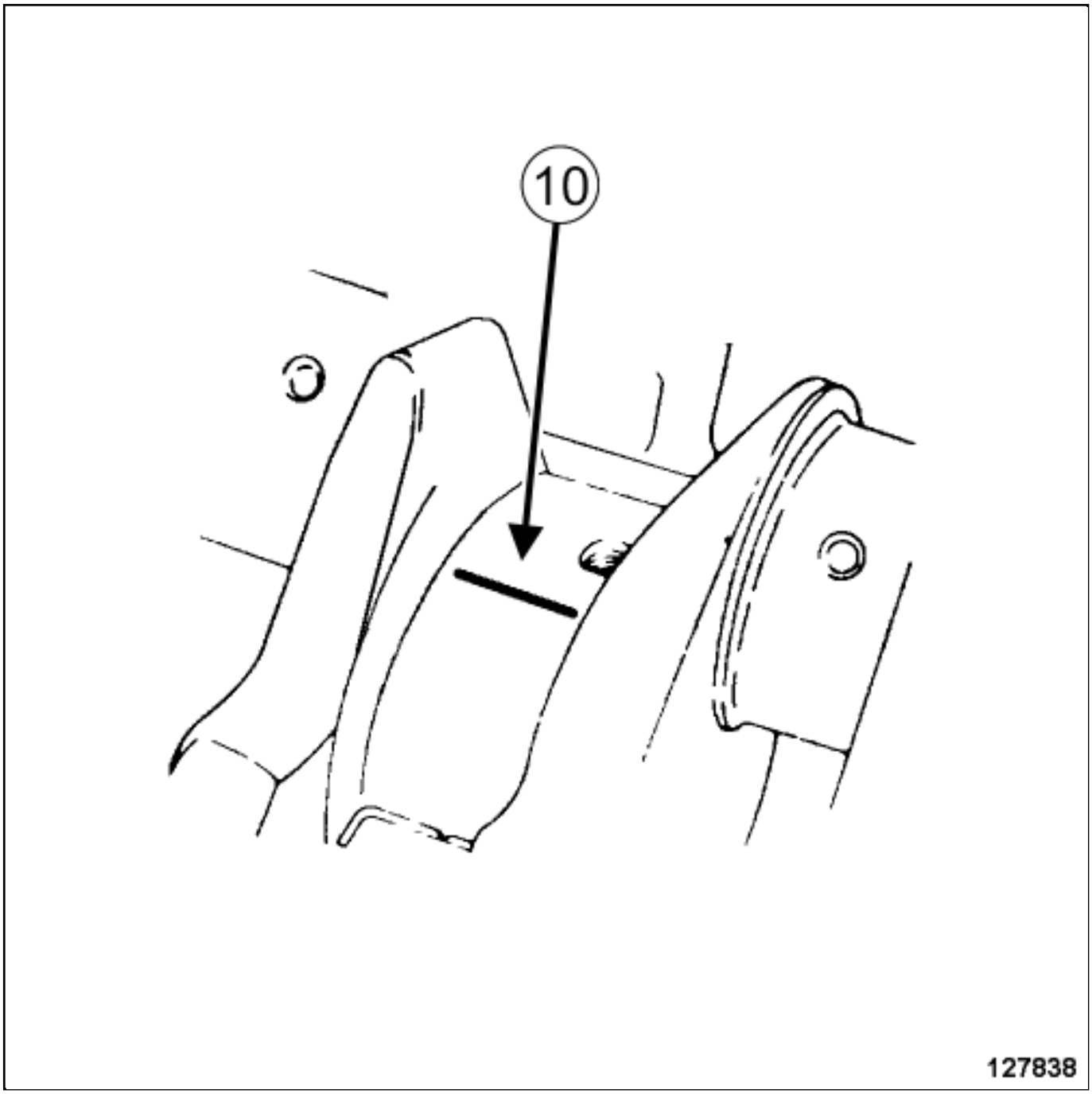
Measure using an external micrometerthe thickness(X13) of the big end flank = 24 ± 0.03 mm.


X15
X16
c
15198

Upper bearing shell class	Thickness (mm) (X15)	Width (mm) (X16)	Identification
1	1.768 to 1.772	19.00 to 19.25	Yellow
2	1.772 to 1.776	19.00 to 19.25	Blue
3	1.776 to 1.780	19.00 to 19.25	Red
4	1.780 to 1.784	19.00 to 19.25	Black

Lower bearing shell class	Thickness (mm) (X15)	Width (mm) (X16)	Identification
1	1.770 to 1.774	18.75 to 19.00	Yellow
2	1.774 to 1.778	18.75 to 19.00	Blue
3	1.778 to 1.782	18.75 to 19.00	Red
4	1.782 to 1.786	18.75 to 19.00	Black

4- CHECKING THE DIAMETRIC CLEARANCE OF THE BIG ENDS



Cut pieces of radial play measuring tape.

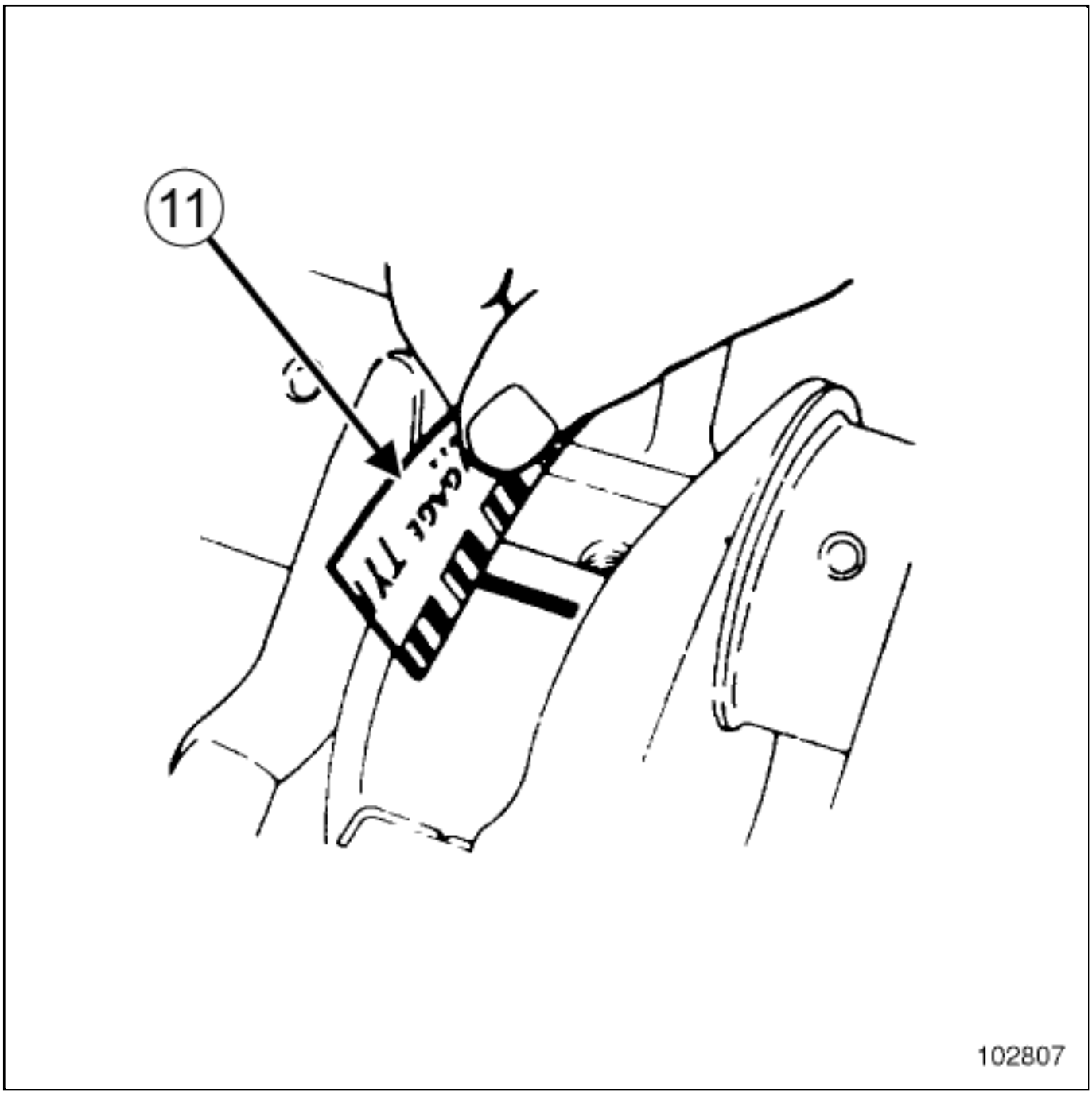
Insert the wire(10) into the axis of the crankshaft crankpins (avoiding the bearing lubrication holes).

Note:

Do not rotate the con rod or crankshaft during the following steps.

Refit the con rod - piston assembly(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

Remove the con rod - piston assembly(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .



Measure the flattening of the cable which must be between 0.05 and 0.1 mmusing the printed pin gauge on the wrapping paper(11) of the cable.

Clean off of any remaining parts of the measuring wire on the crankshaft and bearing shells.

5- DETERMINATION OF THE THICKNESS CLASS OF THE CON ROD BEARING SHELL

Note:

Any clearances of the crankshaft crankpin outside the tolerances can cause engine damage.

When replacing the crankshaft, con rods or con rod bearing shells, always use the following method to identify the con rod bearing shell thickness class to refit on each con rod:

- Determine:
  - the diameter category of the crankpin (see 10A, Engine and cylinder block assembly, Crankshaft: Check) ,
  - the piston crown diameter class (see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Determine the thickness class of the upper and lower con rod bearing shells to refit on the con rod using the following table:

LOWER BEARING SHELL THICKNESS CATEGORY

Con rod class																				
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**
Crankpin	A	R											N								
	B	R											N								
	C	B	R										N								
	D	B		R									N								
	E	B			R								N								
	F	B				R							N								
	G	B					R														
	H	B						R													
	I	B							R												
	J	B								R											
	K	J	B								R										
	L	J		B								R									
	M	J			B								R								
	N	J				B								R							
	O	J					B														

	P	J	B
	Q	J	B
	R	J	B
	S	J	B
	T	J	B
	U	J	B

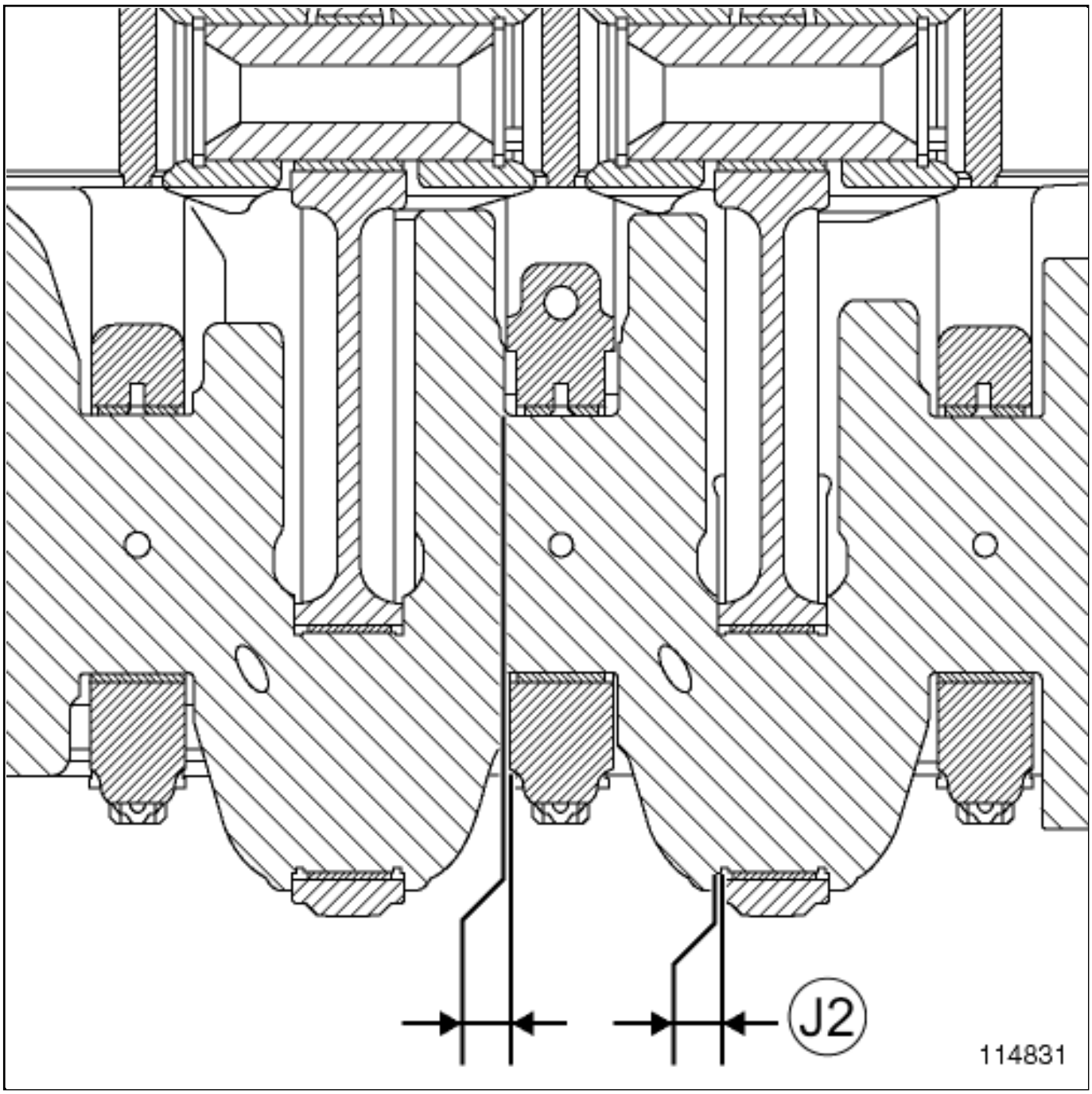
UPPER BEARING SHELL THICKNESS CATEGORY

Crankpin	Con rod class																			
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**
	A	R				N															
	B	R				N															
	C	R				N															
	D	R				N															
	E	R				N															
	F	R				N															
	G	B	R									N									
	H	B		R								N									
	I	B			R							N									
	J	B				R						N									
	K	B				R															
	L	B				R															
	M	B				R															
	N	B				R															
	O	J	B									R									

P	J	B	R
Q	J	B	R
R	J	B	R
S	J	B	
T	J	B	
U	J	B	

- Bearing shell colour mark:
  - B = Blue
  - R = Red
  - J = Yellow
  - N = Black

6- CHECKING THE LATERAL PLAY OF THE CON ROD



Use a set of feeler gauges to check that the clearance (J2) between the con rod and the crankshaft is between 0.02 and 0.48 mm.

4. DETERMINATION OF THE GUDGEON PIN HEIGHT CLASS

When replacing the con rods, crankshaft or cylinder block always identify the piston pin height class to guarantee the piston protrusion in relation to the cylinder block remains within the tolerances, before refitting the piston - con rod assemblies.

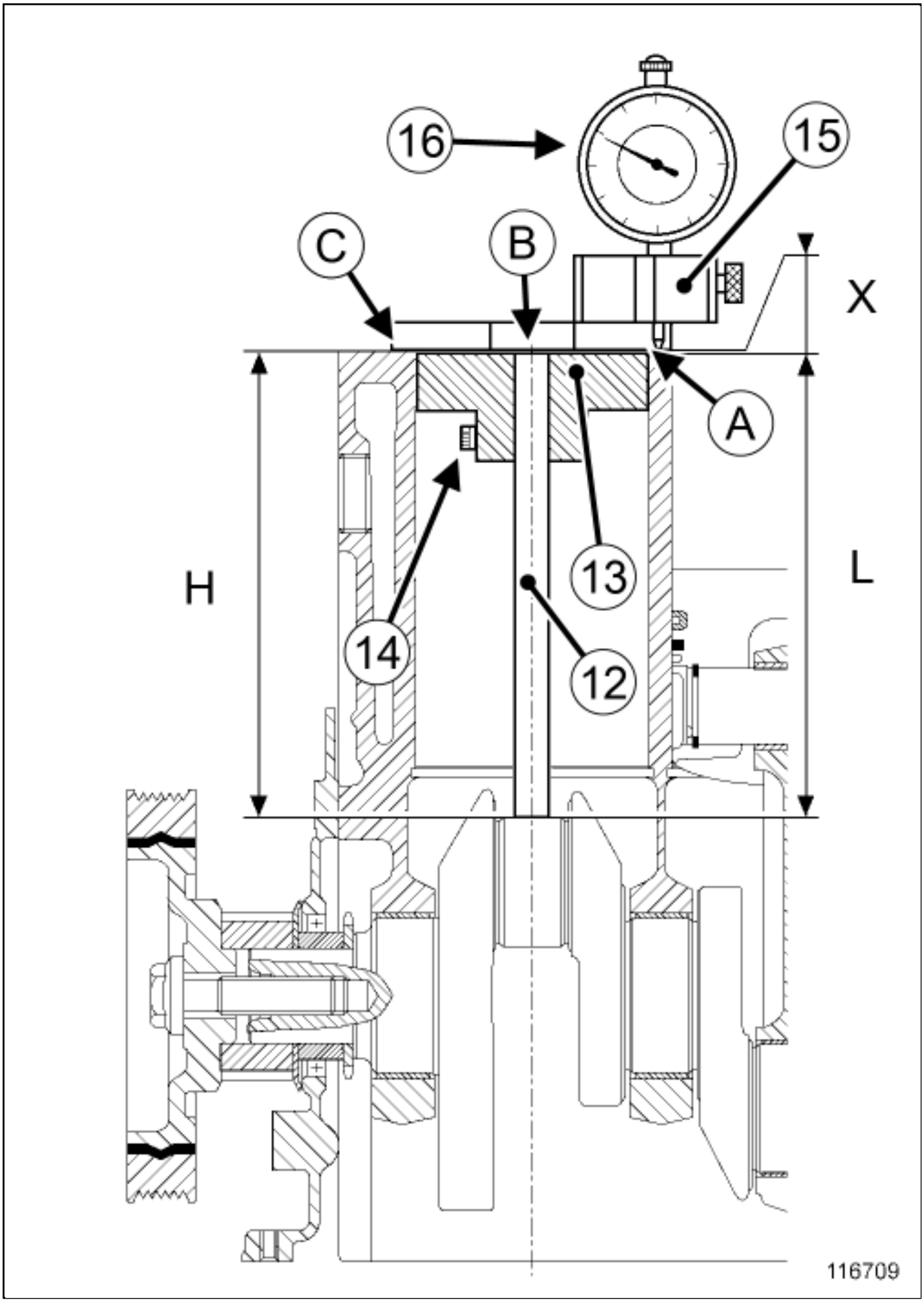
Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

1- MEASURING THE PROTRUSION USING THE GAUGE OF THE MOT. 1799 IN RELATION TO THE CYLINDER HEAD FACE OF THE CYLINDER BLOCK


16
15
C
B
X
A
H
L
13
14
12
116709

(H) = distance between the crankshaft crankpin at Top Dead Centre and the cylinder head face of the cylinder block

(L) = length of the depth gauge (12) of Mot. 1799

(X) = protrusion or retraction of the depth gauge in relation to the cylinder head face of the cylinder block

Degrease the crankshaft crankpins and the upper surface of the cylinder block.

Insert the depth gauge(12) of theDepth gauge for measuring the height of crankpins M9R engine.(Mot. 1799) in the dummy piston(13) of theDepth gauge for measuring the height of crankpins M9R engine. (Mot. 1799) (position the light on the depth gauge opposite the locking bolt(14)).

Tighten the locking bolt.

Check that the depth gauge slides freely in the dummy piston.

Move the crankshaft crankpins of cylinders 1 and 4 to Top Dead Centre.

Place:

- the "depth gauge - dummy piston" assembly in cylinder No. 1 (gauge in contact with the crankshaft crankpin),
- the dial gauge support(15) of theDepth gauge for measuring the height of crankpins.(Mot. 1319) on the dummy piston,
- the dial gauge(16) of theDepth gauge for measuring the height of crankpins.(Mot. 1319) on the support,
- the "support - dial gauge" assembly at the centre of the depth gauge at(C) .

Look for the top lifting point of the crankpin (Top Dead Centre) using the dial gauge.

Calibrate the dial gauge to zero setting the mid-point between the points(A) and (B) on the cylinder block.

Move the dial gauge support to the centre of the depth gauge at(C) .

Note the value(X) of cylinder 1.

Repeat the previous measurement operations for cylinder No. 4.

Note the value(X) of cylinder 4.

Bring the crankshaft crankpin for cylinder No. 2 to top dead centre.

Place:

- the "depth gauge - dummy piston" assembly in cylinder No. 2 (gauge in contact with the crankshaft crankpin),
- the support - dial gauge assembly onto the dummy piston.

Look for the top lifting point of the crankpin (Top Dead Centre) using the dial gauge.

Repeat the previous measurement operations for cylinders 2 and 3.

Note the values(X) of cylinders 2 and 3.

2- CALCULATING THE HEIGHT OF THE CRANKPIN

Calculate the crankpin heights H using the following formula:

H = L - X

For L, note the value indicated on the depth gauge.

For example:

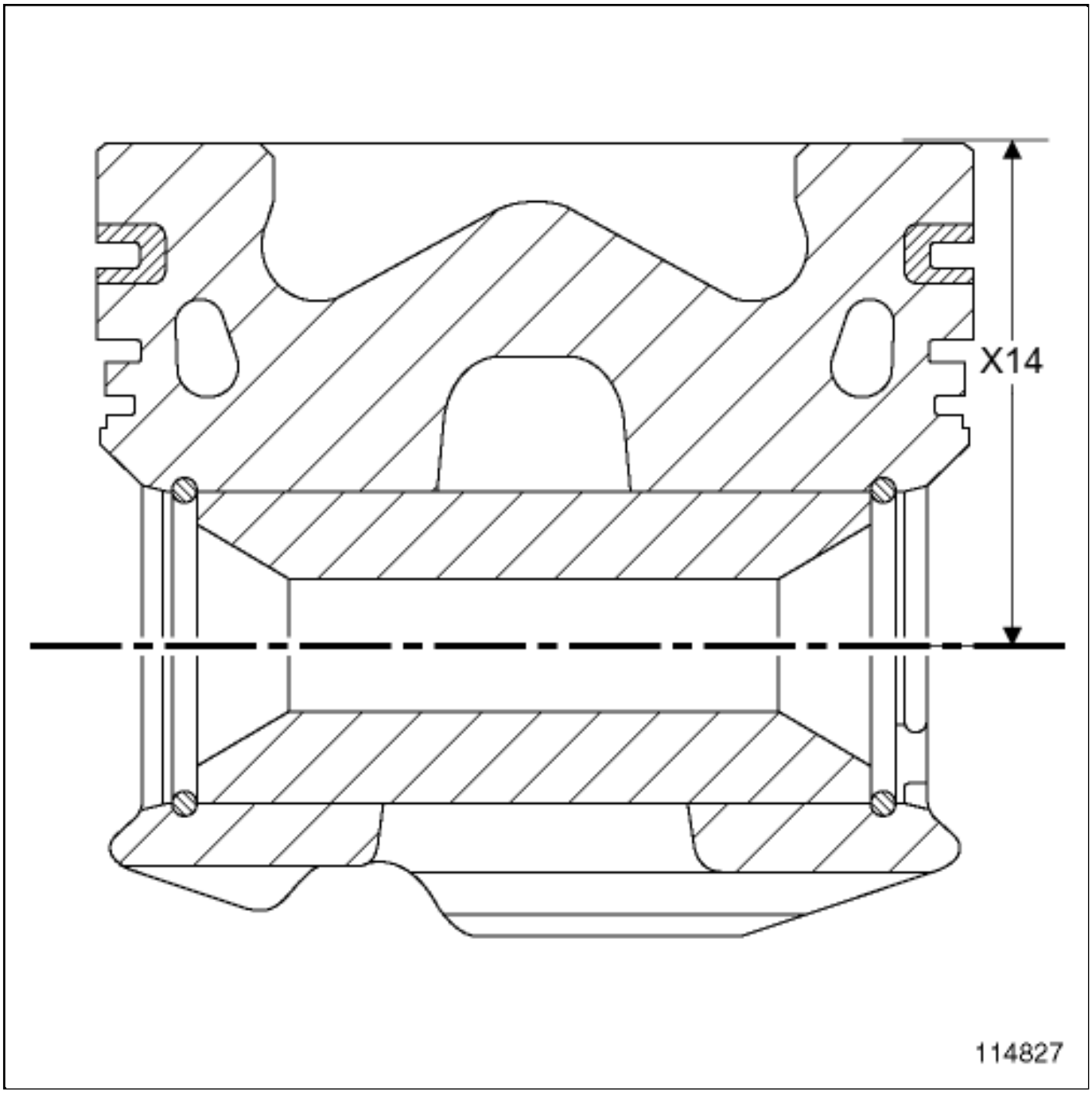
- value indicated on the gauge: L = 166.01 mm,
- protrusion of the depth gauge for cylinder No. 1 X = 0.98 mm,
- H = 166.01 - 0.98 = 165.03 mm.

Note:

Where there is a recess of the depth gauge in relation to the cylinder block, apply the formula:

H = L + X

3- CALCULATING THE GUDGEON PIN HEIGHT



Calculate the gudgeon pin heights(X14) using the following formula:

H14 = H + V - E

H = crankpin height in mmcalculated previously.

V = variable in mmdepending on thickness of the crushed cylinder head gasket (see the following formulas).

E = centre-to-centre distance in mmbetween the big end and small end (use the nominal value corresponding to the classes indicatedon the con rod (see III Con rod - 1 Con rod identification).

X43, M9R, 756 804 811 817 824 839 844 846(756 OR 804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (830 OR 832 OR 833 OR 834 OR 835 OR 836 OR 838 OR 850 OR 855 OR 856 OR 862 OR 864 OR 865 OR 866) AND (670 OR 672 OR 676 OR 678 OR 680 OR 686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 870 OR 872 OR 876 OR 880 OR 882 OR 890 OR 892 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (630 OR 692) AND (721 OR 722 OR 724) AND (754 OR 800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

Note:

With cylinder head gasket 1.15 mm(thickness of the crushed gasket)(see 10A, Engine and cylinder block assembly, Cylinder head: Check) .

H14 = H + 26.45 - E

For example:

- crankpin height calculated for cylinder No. 1: H = 165.03 mm,
- centre-to-centre distance of the original con rod (marking class 2) of cylinder No.1: E = 143.48 mm(see III Con rod - 1 Con rod identification),
- cylinder head gasket with crushed thickness of 1.17 mm,
- H14 = 165.03 + 26.47 - 143.48 = 48.02 mm,
- Refer to the table of the gudgeon pin height classes (see II Piston - 1 Piston identification - B - Gudgeon pin height class) to determine the piston class of cylinder no. 1 (corresponds to piston class C).

5. CHECKING THE PISTON PROTRUSION

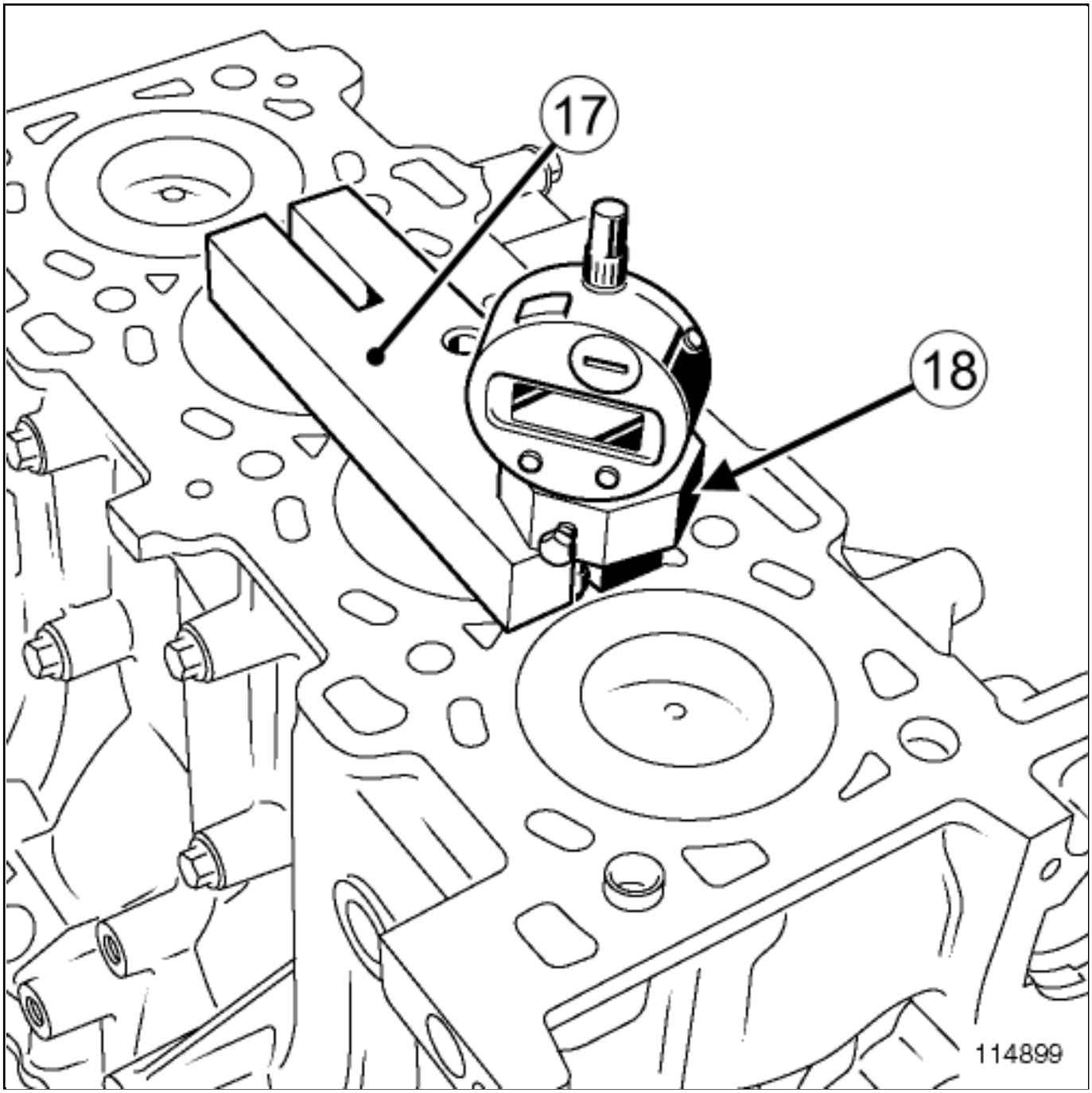
When replacing the con rods, crankshaft, cylinder block or piston, always check that the protrusion of every piston in relation to the face cylinder head of the cylinder block remains within the tolerances, after refitting the piston - con rod assemblies.

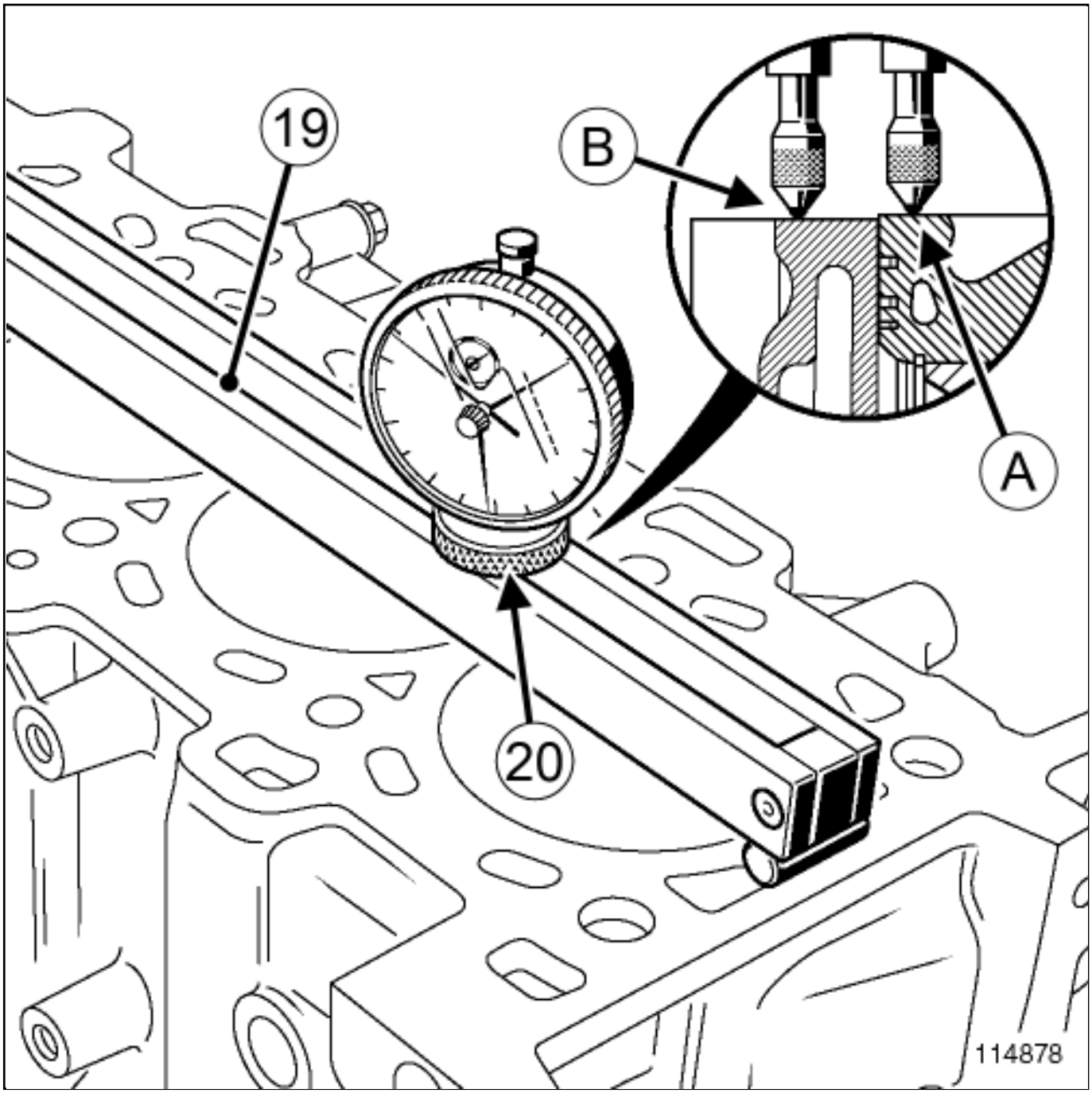
Note:

A piston protrusion outside the tolerances in relation to the cylinder head face of the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).


17
18
114899



Degrease the piston crowns.

Position the support plate(17) of thePressure plate for measuring piston liner protrusion.(Mot. 252-01) or the straightedge(19) on the cylinder block.

Note:

The measurement is taken along the longitudinal axis of the crankshaft to eliminate play caused by the movement of the piston.

Fit the Dial gauge support.(Mot. 251-01) - dial gauge assembly(18) on the support plate(17) or the "dial gauge - support" assembly(20) on the ruler(19) .

Move the pistons of cylinders No. 1 and No. 4 to Top Dead Centre.

Position the dial gauge feeler against the piston at(A) .

Look for the top lifting point of the piston (Top Dead Centre) using the dial gauge.

Note:

The dial gauge feeler must not be in a valve clearance area.

Calibrate the dial gauge to zero.

Position the dial gauge feeler against the cylinder block at(B) .

Check the piston protrusion value which should be between:

X43, M9R, 756 804 811 817 824 839 844 846(756 OR 804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (830 OR 832 OR 833 OR 834 OR 835 OR 836 OR 838 OR 850 OR 855 OR 856 OR 862 OR 864 OR 865 OR 866) AND (670 OR 672 OR 676 OR 678 OR 680 OR 686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 870 OR 872 OR 876 OR 880 OR 882 OR 890 OR 892 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (630) AND (721 OR 722 OR 724) AND (754 OR 800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

Note:

With cylinder head gasket 1.15 mm(thickness of the crushed gasket)(see 10A, Engine and cylinder block assembly, Cylinder head: Check) .

0.31 to 0.47 mm.

Repeat the previous operations for cylinders No 2 and No. 3.

6. FINAL OPERATION

Refit the piston rings (if removed)(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

Assemble the con rod and the piston (if separated)(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

Refit the con rod - piston assemblies(see 10A, Engine and cylinder block assembly, Piston - Con rod: Removal - Refitting) .

Remove the engine from component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

Refit the engine - gearbox assembly.

PISTON - CON ROD: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Flywheel locking tool.	Mot. 1431

Equipment required
component support
piston ring compressor
indelible pencil
compressed air nozzle

parts always to be replaced:
con rod cap bolts

REMOVAL

1. REMOVAL PREPARATION OPERATION

CAUTION

- It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump will irreparably damage the engine by:
  - blocking the strainer,
  - raising the oil level above maximum, with a risk of engine racing.

Note:

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair(see 10A, Engine and cylinder block assembly, Engine: Precautions for the repair) .

Remove:

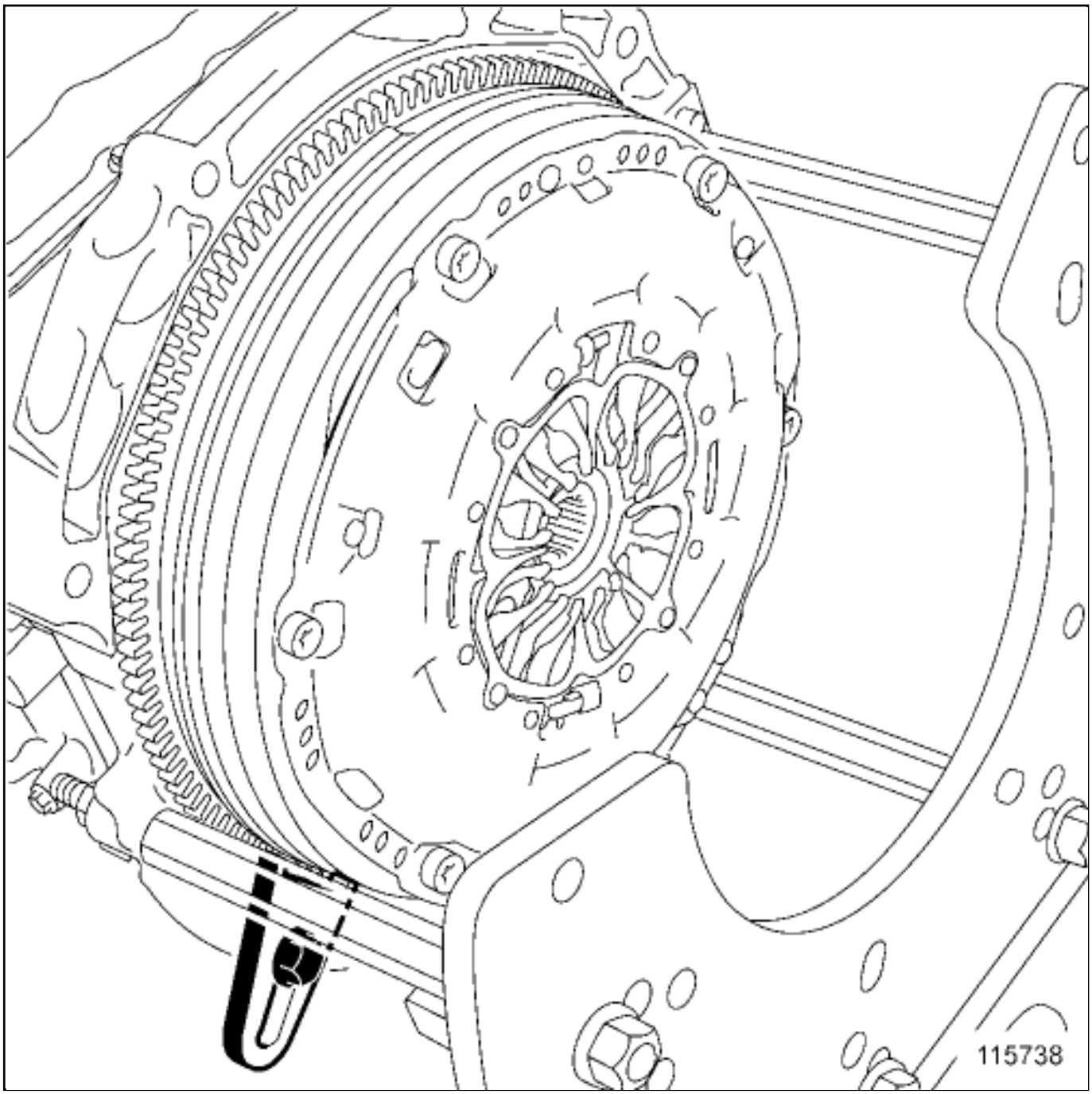
- the engine - gearbox assembly,
- the EGR pipe at the EGR cooler inlet.

Position the engine on the component support (see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

Drain the engine Engine oil: Draining - Refilling .

Remove:

- the accessories belt Accessories belt: Removal - Refitting ,
- the coolant pump Coolant pump: Removal - Refitting .



Immobilise the flywheel or the drive plate while fitting theFlywheel locking tool.(Mot. 1431) on the cylinder block.

Remove:

- the crankshaft accessories pulleyCrankshaft accessories pulley: Removal - Refitting ,
- the crankshaft seal on the timing sideCrankshaft seal on timing end: Removal - Refitting ,
- the timing chain(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

X43, M9R, 804 811 817 824 839 844 846(804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (678 OR 680 OR 696 OR 880 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 824 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

Remove the exhaust gas pressure sensorExhaust gas pressure sensor: Removal - Refitting .

Remove:

- the damper valve,
- depending on version, the turbocharger outlet catalytic pre-converter or catalytic converterCatalytic pre-converter: Removal - Refitting orCatalytic converter: Removal - Refitting ,
- the turbocharger oil pipesTurbocharger oil pipe: Removal - Refitting ,
- the vacuum pumpVacuum pump: Removal - Refitting (37A, Mechanical component controls),
- the high pressure pipe between the pump and the railHigh pressure pipe between pump and rail: Removal - Refitting ,
- the oil decanterOil decanter: Removal - Refitting ,
- the diesel return railDiesel injector fuel return rail: Removal - Refitting ,
- the high pressure pipes between the rail and the injectorsHigh pressure pipe between rail and injector: Removal - Refitting ,
- the diesel injectorsDiesel injector: Removal - Refitting ,
- the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the oil filter unitOil filter unit: Removal - Refitting .

Remove:

- the clutch disc and pressure platePressure plate - Disc: Removal - Refitting (20A, Clutch),
- the flywheelFlywheel: Removal - Refitting ,
- the flywheel locking toolFlywheel locking tool.(Mot. 1431) .

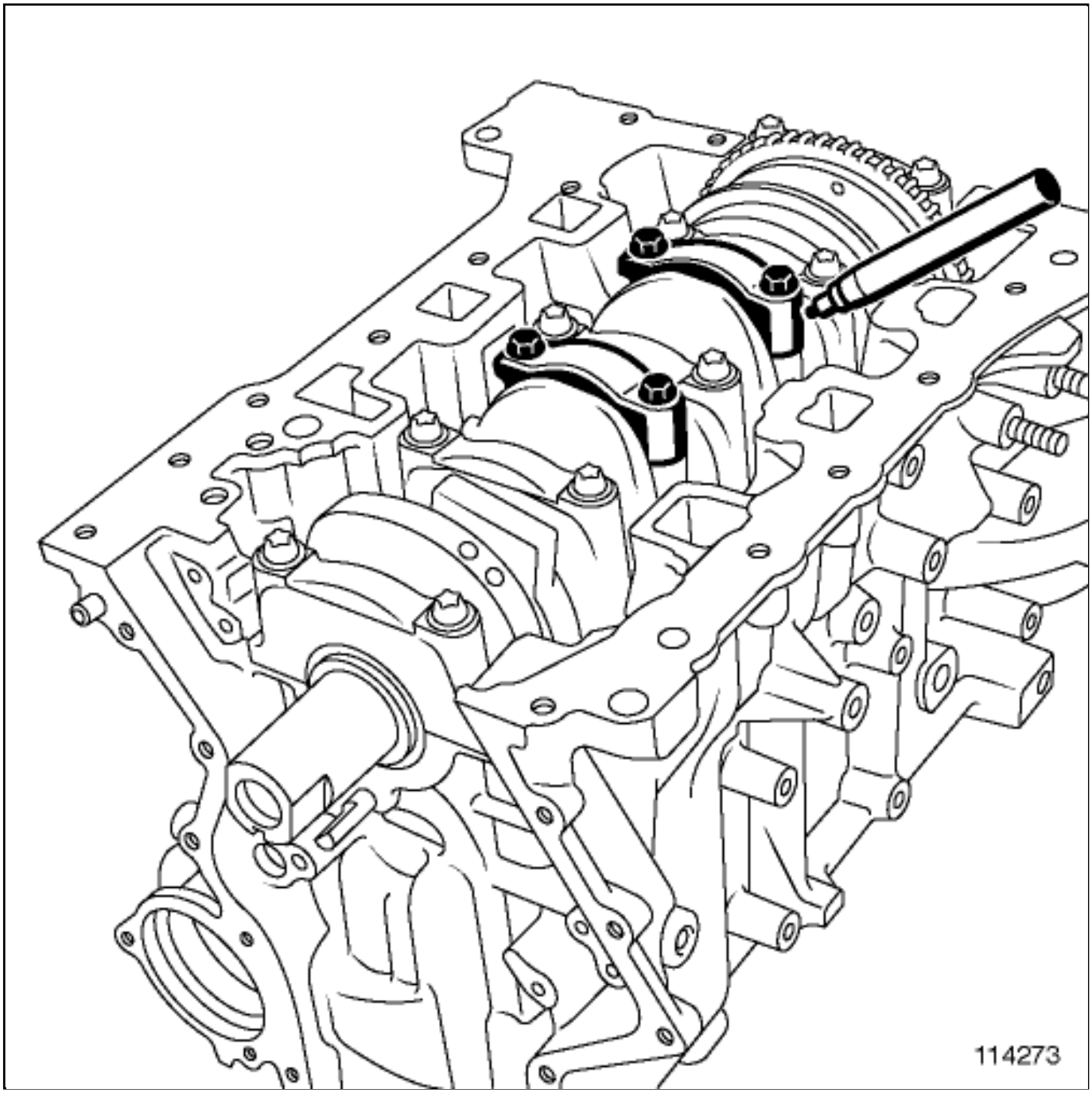
Remove:

- the gearbox side crankshaft sealCrankshaft seal, gearbox end: Removal - Refitting ,
- the sumpLower cover: Removal - Refitting ,
- the cylinder block base plate(see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) .

Remove the oil pumpOil pump: Removal - Refitting .

2. PISTON - CON ROD ASSEMBLY REMOVAL OPERATION

1- OPERATION FOR REMOVING THE PISTON - CON ROD ASSEMBLY



CAUTION

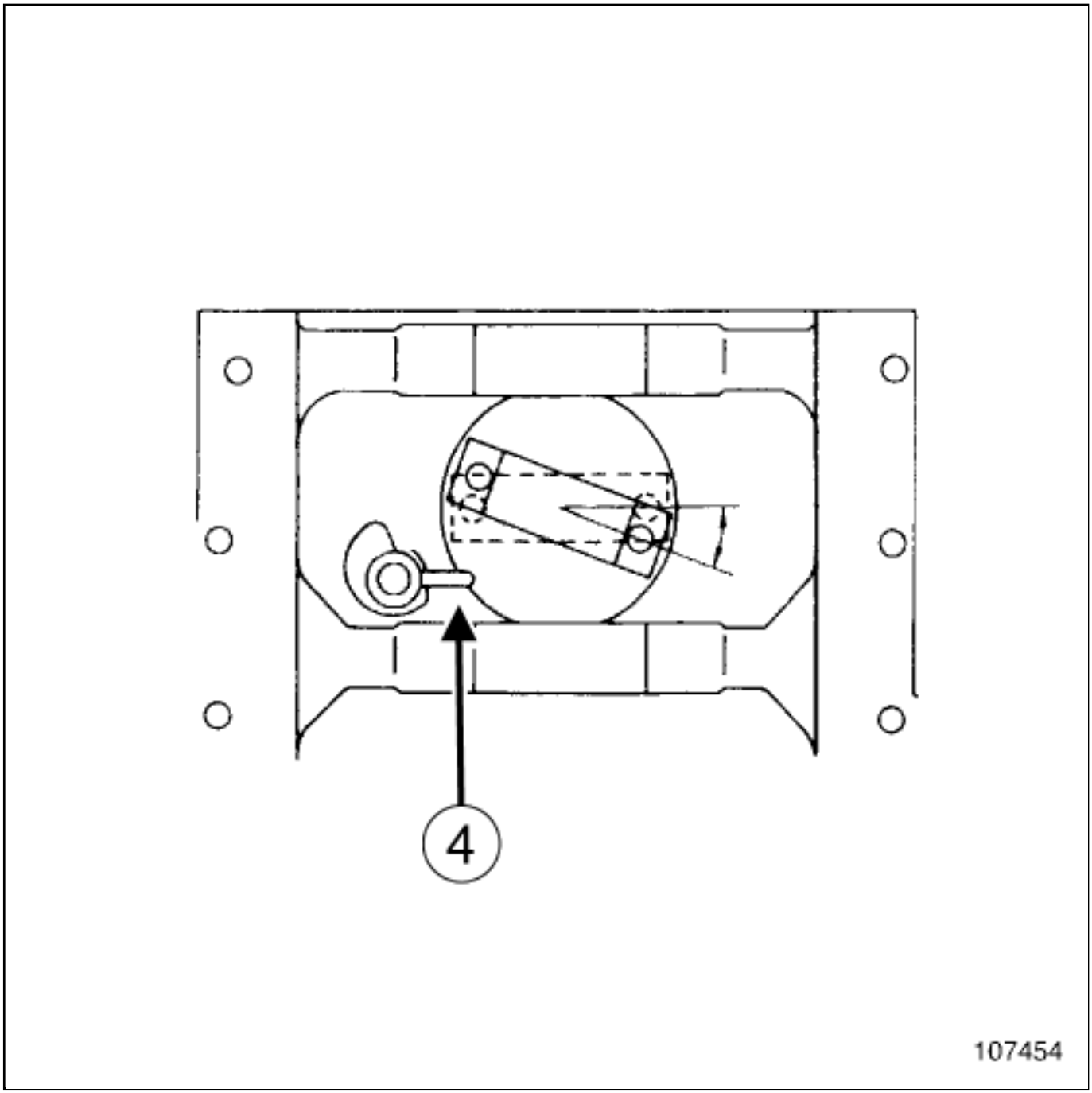
Do not use a punch or an etching tool to mark the con rod caps to match their bodies, to prevent incipient breakage of the con rod.

Use an indelible marker pen.

- Mark the con rod bodies and caps in relation to the cylinders using an indelible pencil(cylinder 1 timing end).

- Remove:
  - the con rod cap bolts,
  - the con rod cap,
  - the con rod cap bearing shell.

- Mark the bearing shell in relation to the con rod cap.



WARNING

Wear cut-resistant gloves during every operation.

- Remove the "con rod - piston" assembly through the cylinder head side of the cylinder block.

Note:

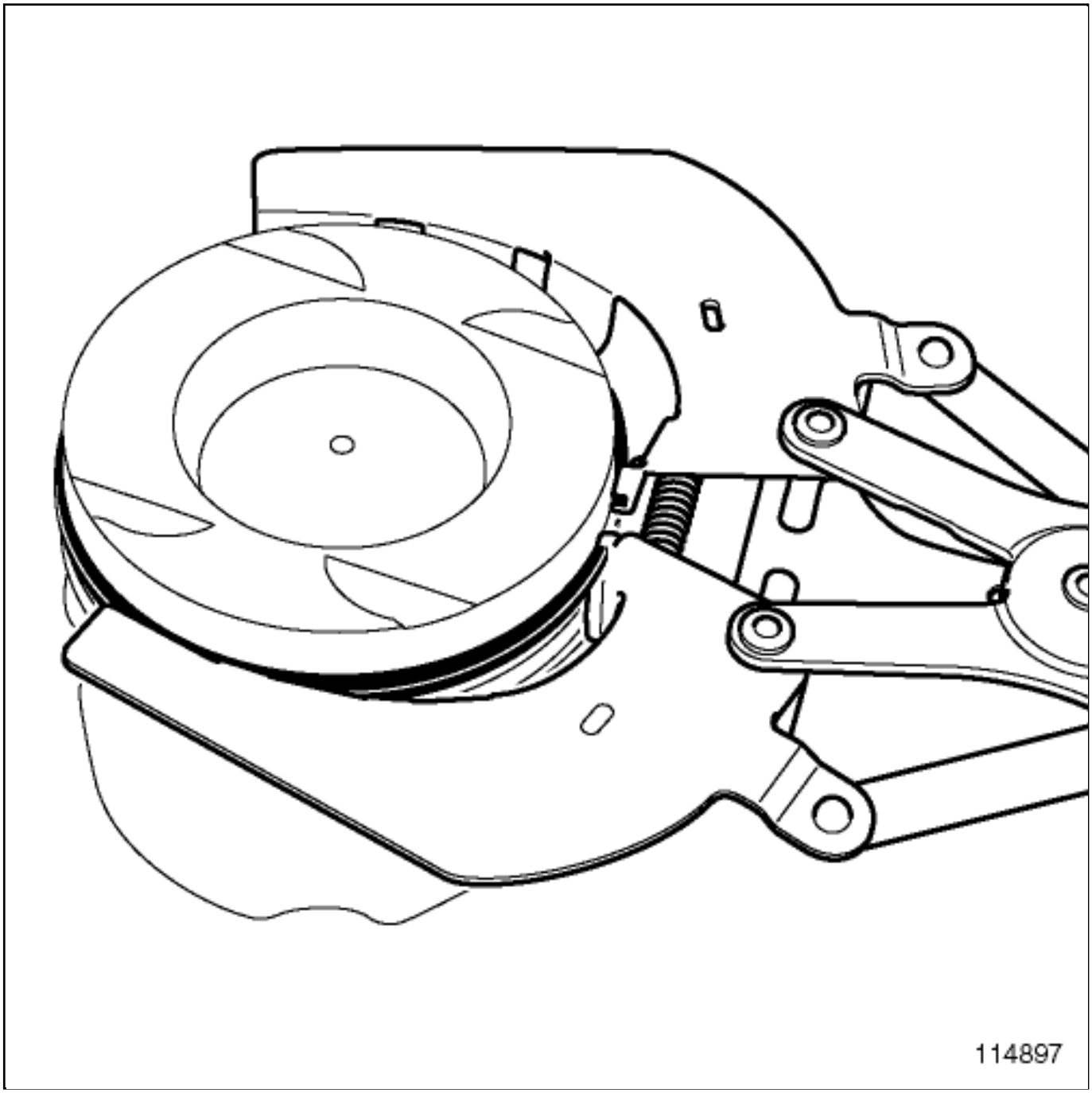
Do not damage the piston base cooling jet nozzles(4) when extracting the "con rod - piston" assembly.

Replacing the piston base cooling jet is not authorised.

- Remove the con rod body bearing shell.
- Mark the bearing in relation to the con rod body.
- Repeat the above operations on the other cylinders.

2- PISTON RING REMOVAL OPERATION

- Operation only to be carried out when replacing or checking the piston rings(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .



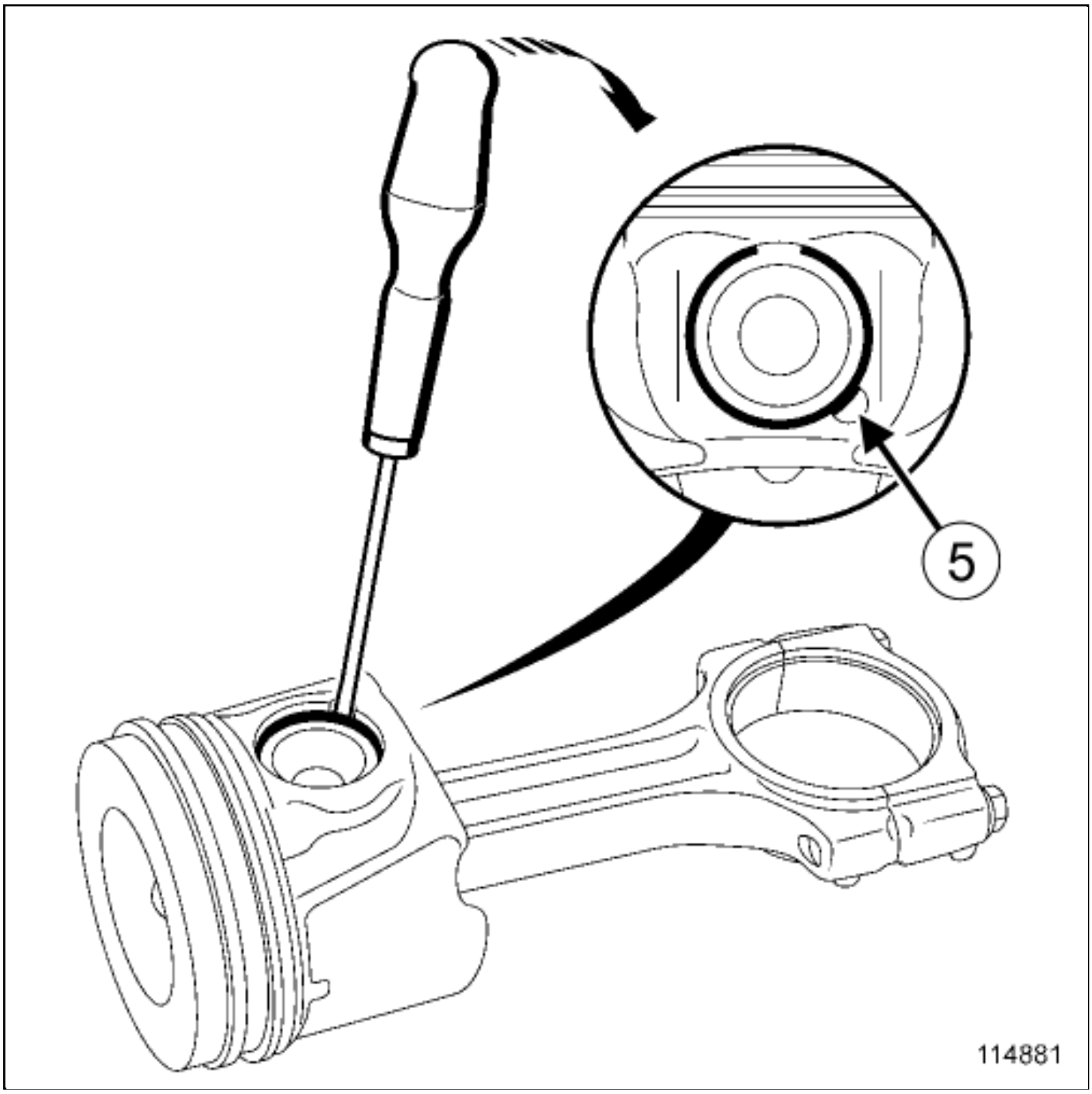
- Remove the piston rings using a piston ring compressor.

Note:

Take care not to damage the piston when removing the rings. Do not open the rings too much as they risk becoming damaged.

If reusing, mark the piston rings in relation to the piston.

Operation only to be carried out when replacing or checking the piston or con rod(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .



Mark the piston in relation to the cylinder using a indelible pencil.

Remove the locking spring ring from the gudgeon pin using a flat screwdriver (apply pressure in the piston groove (5)).

Remove the gudgeon pin by hand.

Mark the pin in relation to the piston using an indelible pencil.

REFITTING

1. REFITTING PREPARATION OPERATION

- parts always to be replaced: con rod cap bolts.

> Note:
>
> Do not knock or lean against the cap mating faces and the con rod body to prevent damaging the con rod.

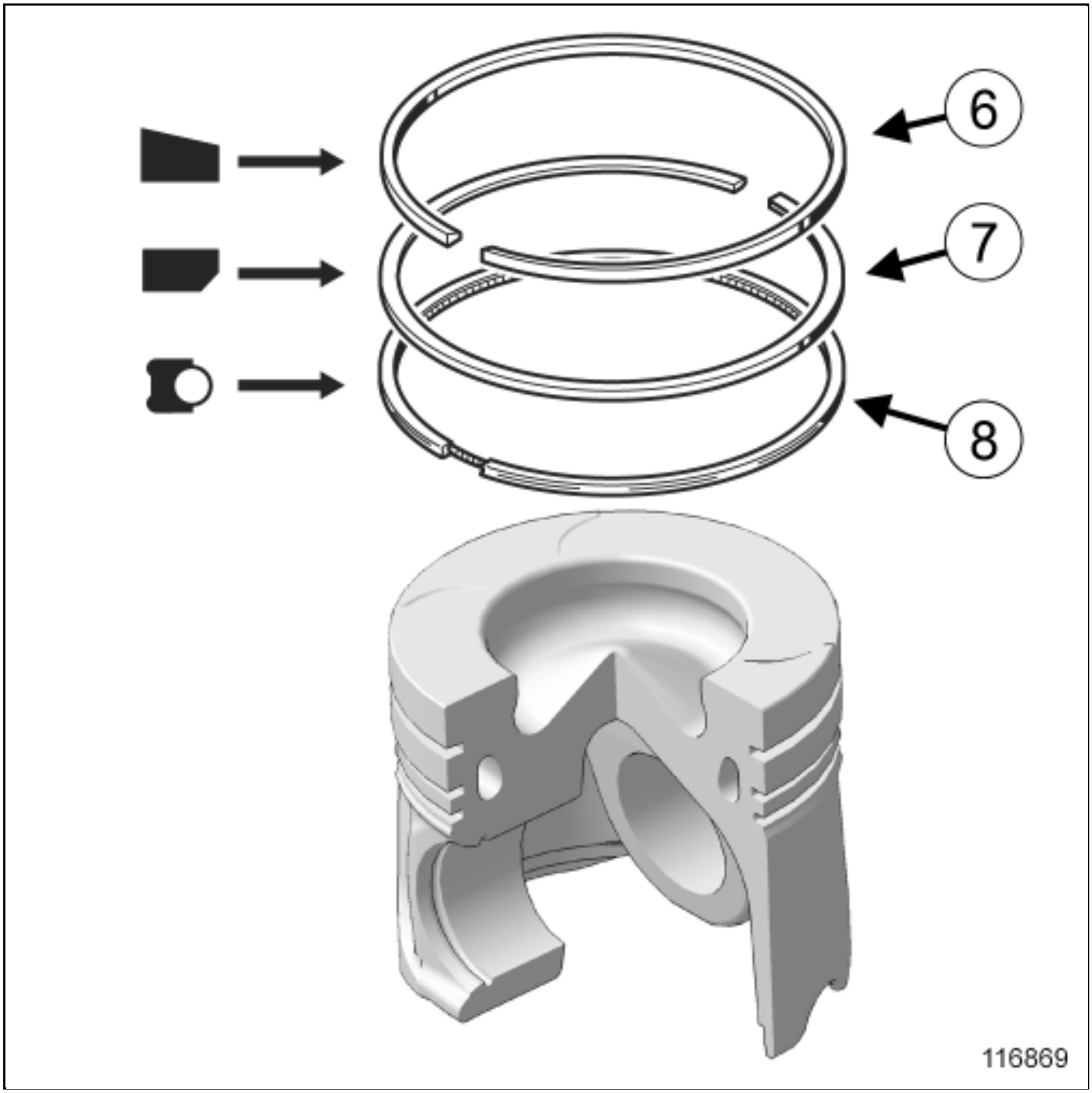
- Clean the "piston - con rod" assembly with surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Dry the "piston - con rod" assembly using a compressed air nozzle.

> **WARNING**
>
> Wear goggles with side protectors for this operation.

1- PISTON RING REFITTING OPERATION

- Operation only to be carried out when replacing or checking the piston rings (see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .



- Refit the piston rings using a piston ring compressor.

Note:

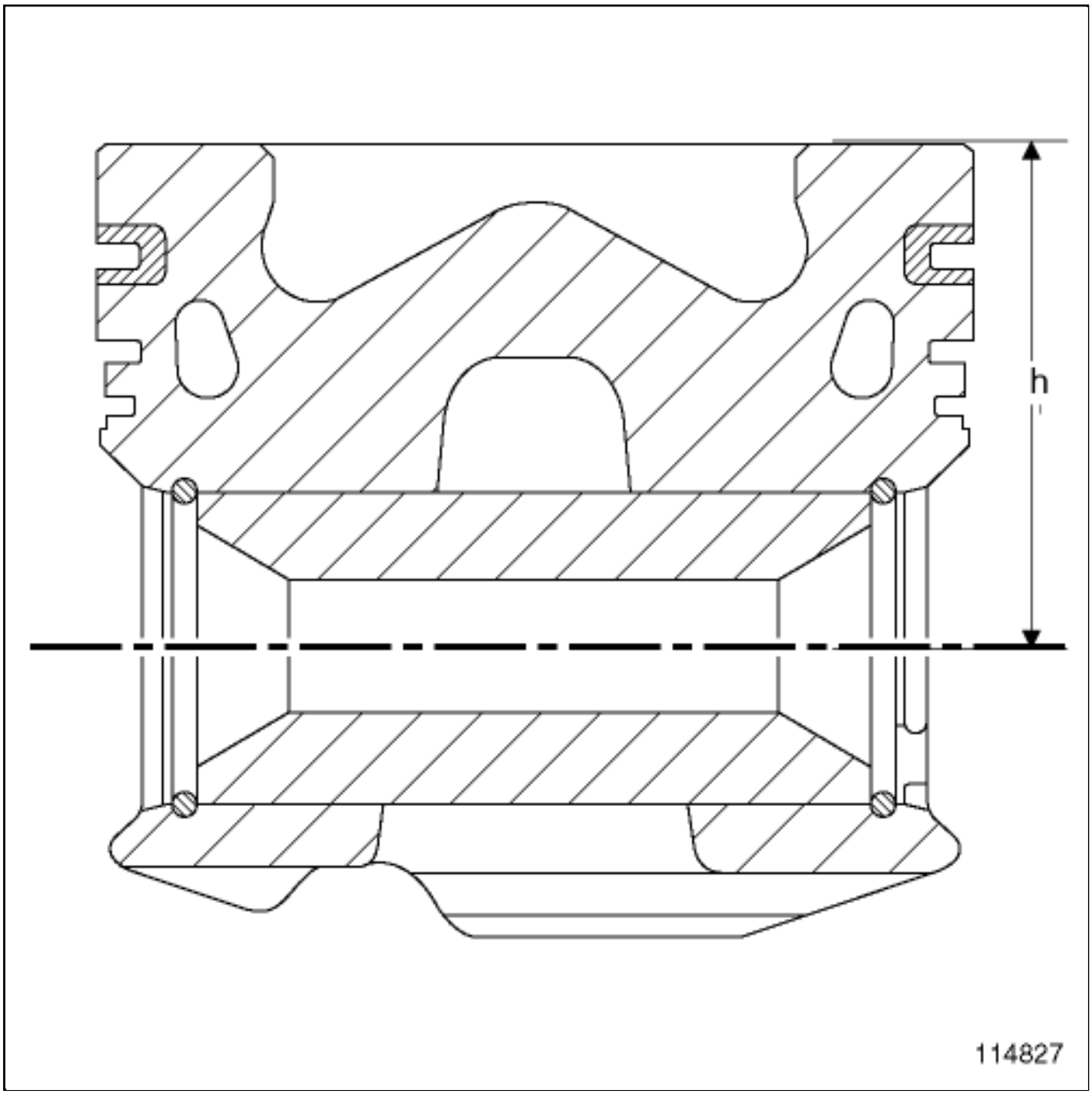
Respect the fitting direction of the piston rings by positioning the TOPmarking towards the piston head.

- Position the space in the "top compression ring"(6) opposite the space in the "second compression ring" (7) (same axis as gudgeon pin).

Position the space in the "oil ring"(8) opposite the space in the "second compression ring"(7) (same axis as gudgeon pin).

2- PISTON AND CON ROD ASSEMBLY OPERATION

Operation only to be carried out when replacing or checking the piston or con rod(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .



When replacing con rods or the piston, identify the new piston class to fit on the engine by calculating the height(h) of the gudgeon pin(see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) to

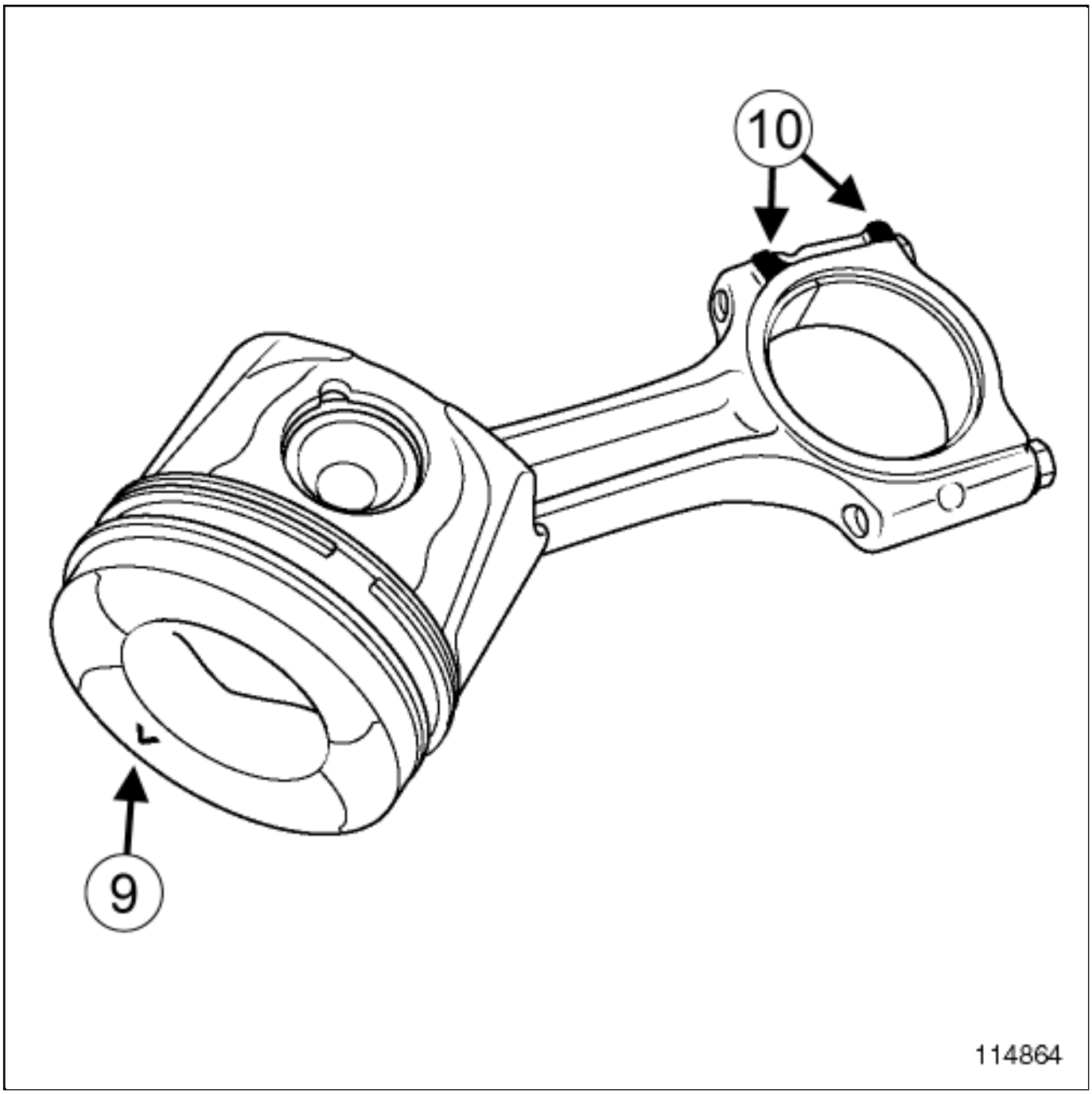
guarantee a piston protrusion in relation to the cylinder block within the tolerances.

Note:

A piston protrusion outside the tolerances in relation to the cylinder head face of the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).



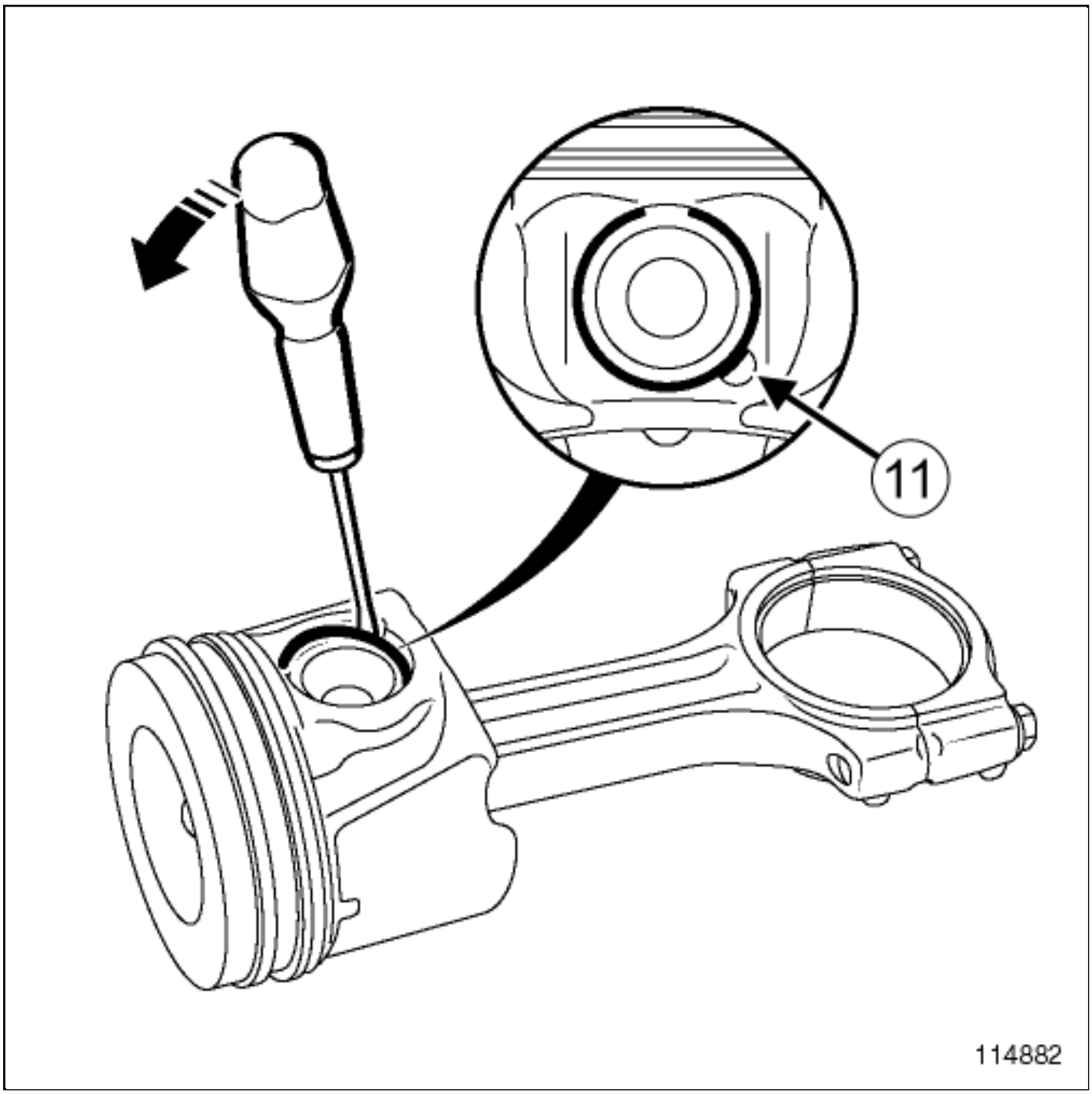
- Lubricate gudgeon pin with engine oil.

- Position the con rod in relation to the piston (piston marking(9) "V" is opposite the machined bosses (10) on the big end).

- Engage the pin in the piston and in the small end.

Note:

Check that the gudgeon pin slides and rotates easily in the piston and the small end.

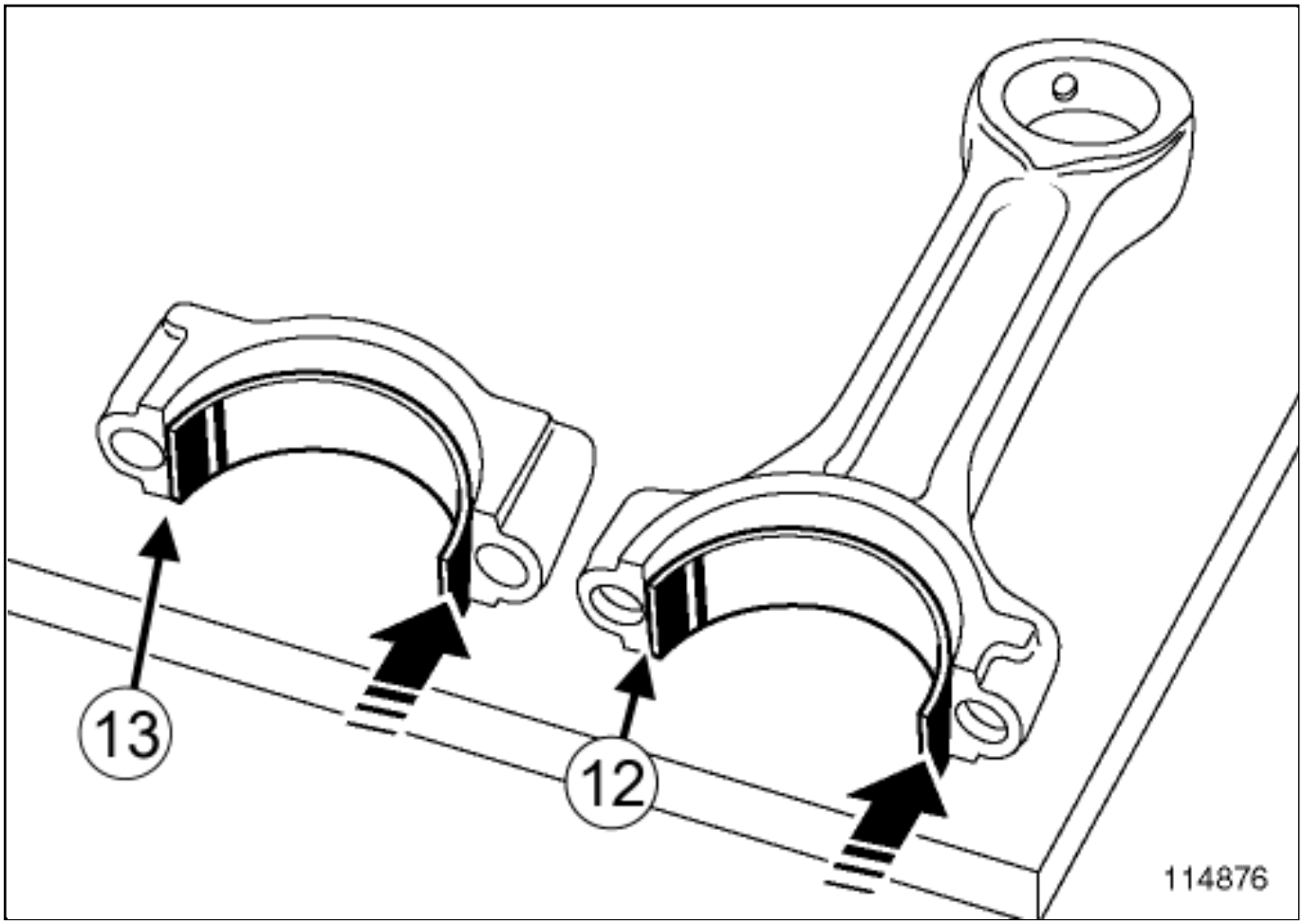


Refit the locking spring ring to the gudgeon pin using a flat screwdriver (apply pressure in the groove (11)).

Note:

Position the opening in the locking spring ring towards the piston crown.

3- FITTING THE CON ROD BEARING SHELLS



Note:

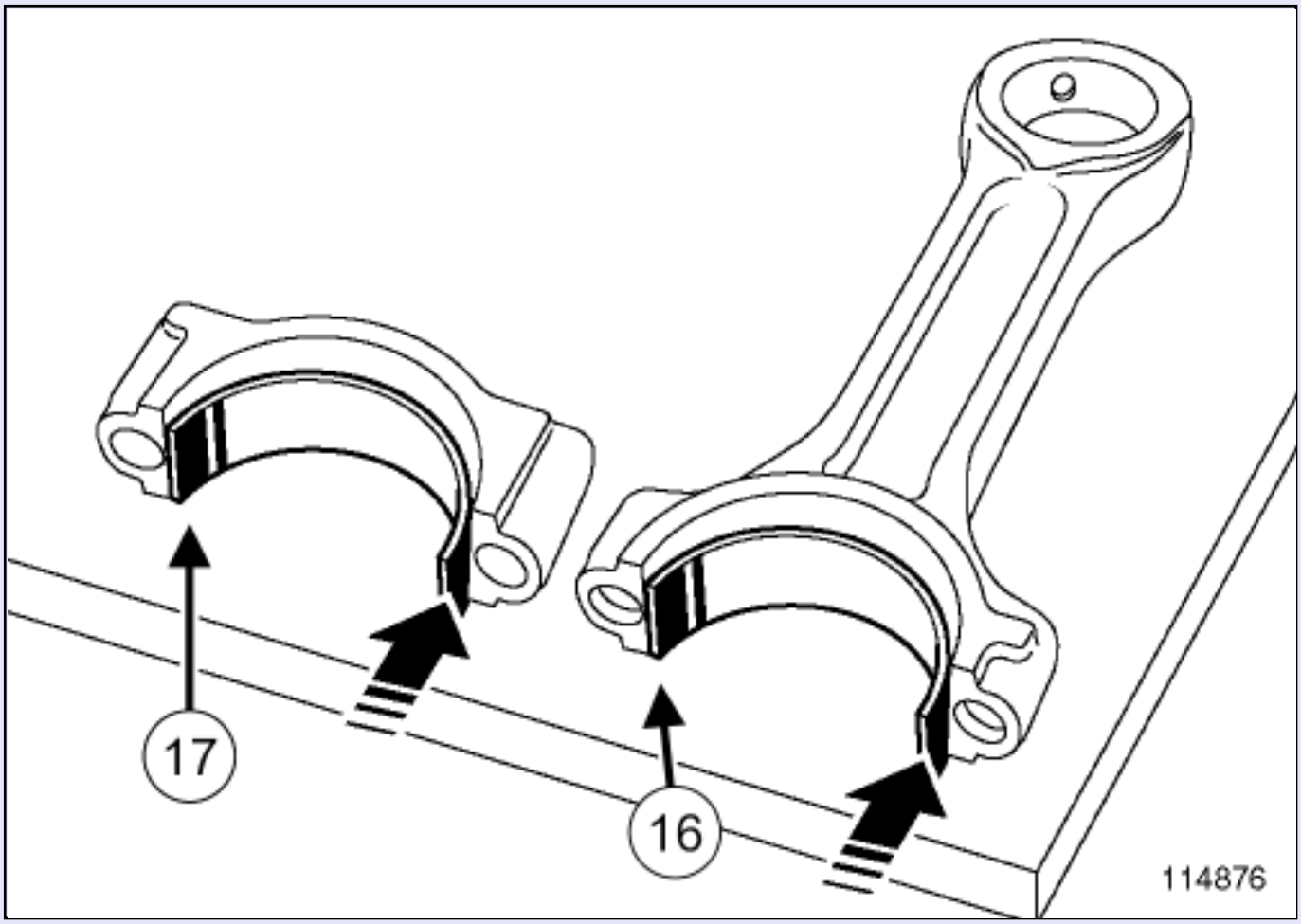
Do not knock or lean against the cap mating faces and the con rod body to prevent damaging the con rod.

- Place:
  - the con rod body on the bench,
  - the con rod upper bearing shell (width = 19 mm) on the bench.

- Secure the flush bearing shell of the con rod body mating face on side(12) and push from the opposite side until the con rod body mating face is flush.

- Place:
  - the con rod cap on the bench,
  - the con rod lower bearing shell (width = 19 mm) on the bench.

- Secure the flush bearing shell of the con rod cap mating face on side(13) and push from the other side until the con rod cap mating face is flush.



Note:

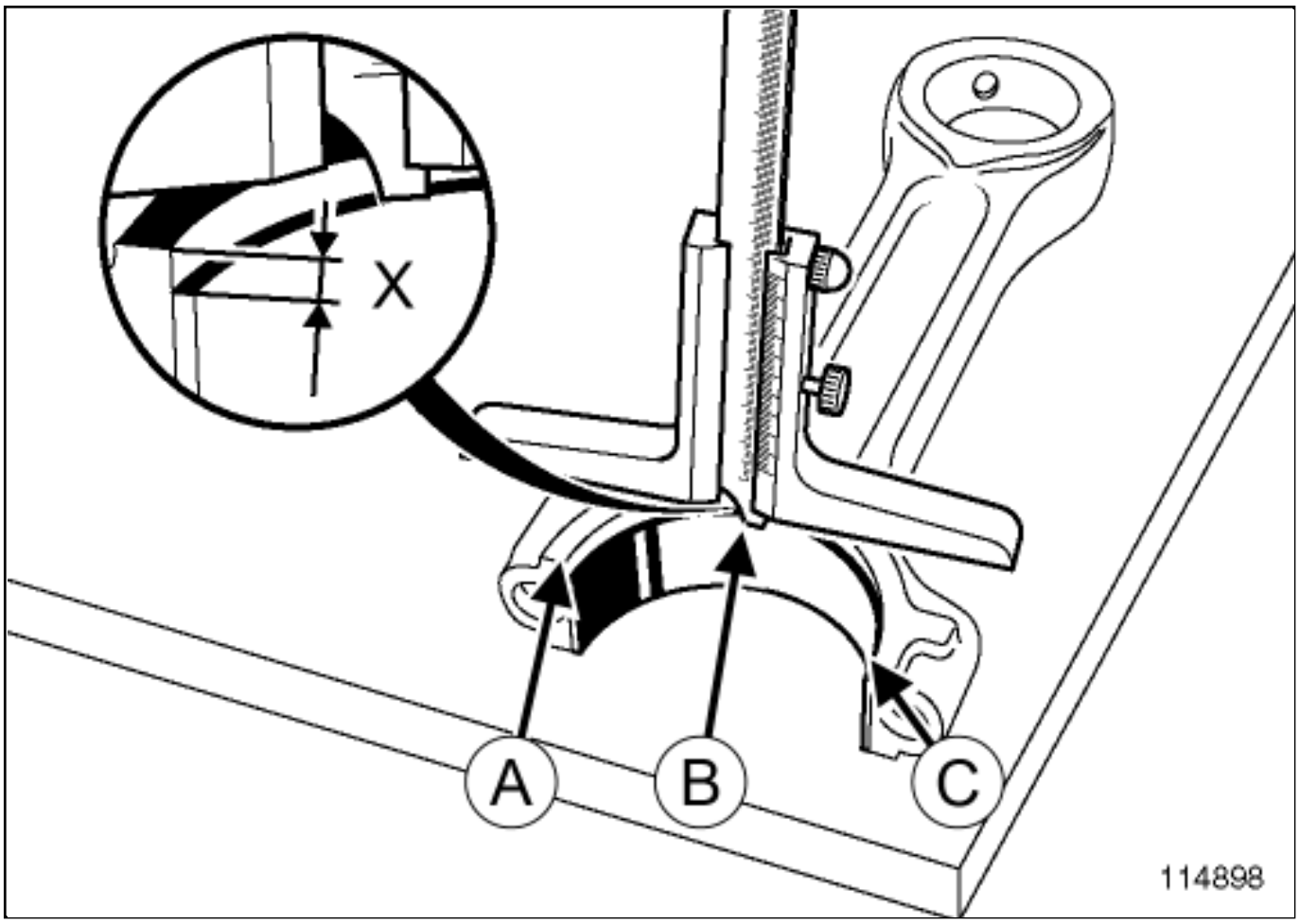
Do not knock or lean against the cap mating faces and the con rod body to prevent damaging the con rod.

- Place:
  - the con rod body on the bench,
  - the con rod upper bearing shell (width = 20,1 mm) on the bench.

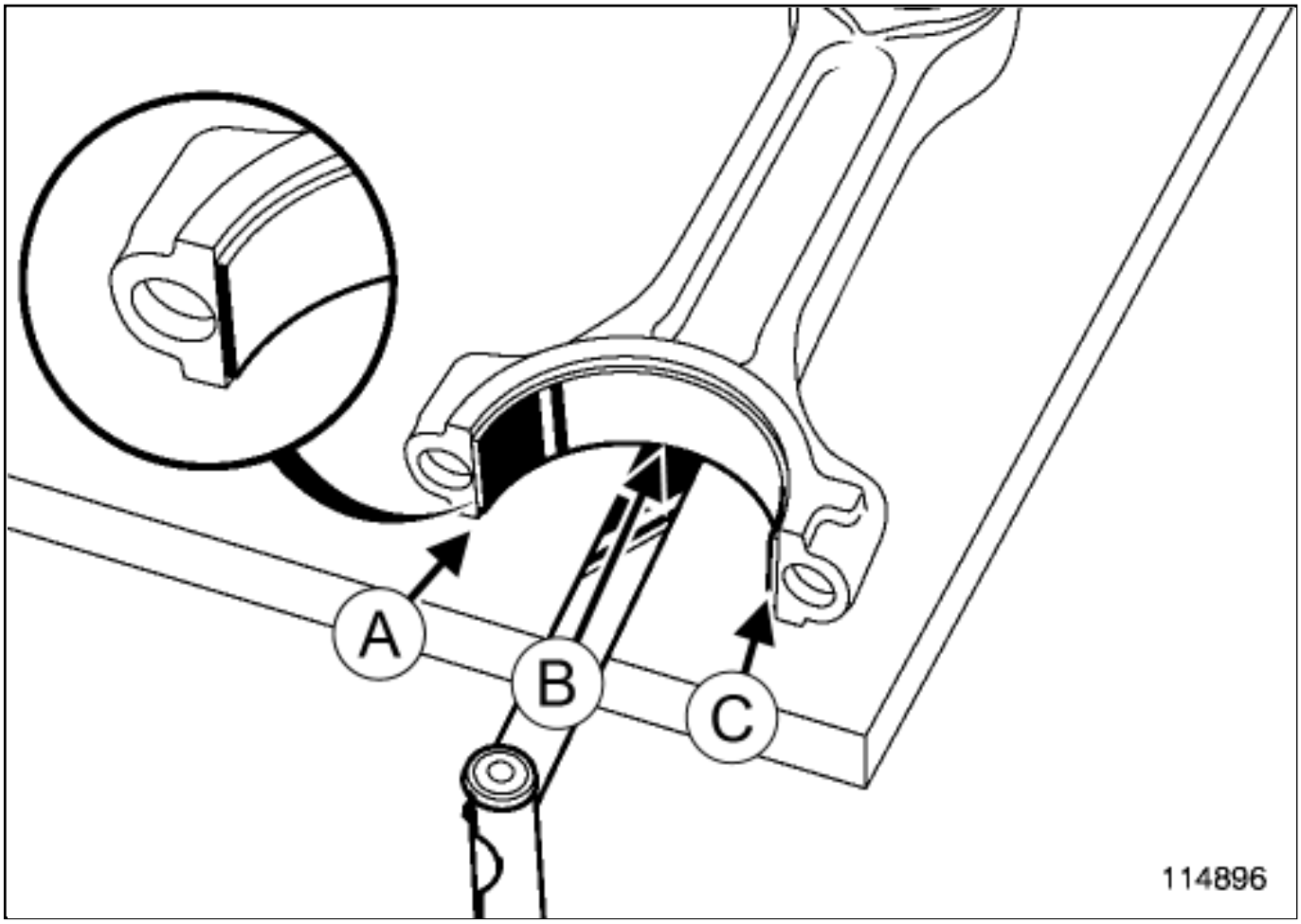
- Secure the flush bearing shell of the con rod body mating face on side(16) and push from the opposite side until the con rod body mating face is flush.

- Place:
  - the con rod cap on the bench,
  - the con rod lower bearing shell (width = 20,1 mm) on the bench.

❑ Secure the flush bearing shell of the con rod cap mating face on side(17) and push from the other side until the con rod cap mating face is flush.



❑ Measure the distance(X) between the edge of the bearing shell and the wall of the con rod body at points (A) , (B) and (C) .



- Centre the bearing shell on the con rod body.

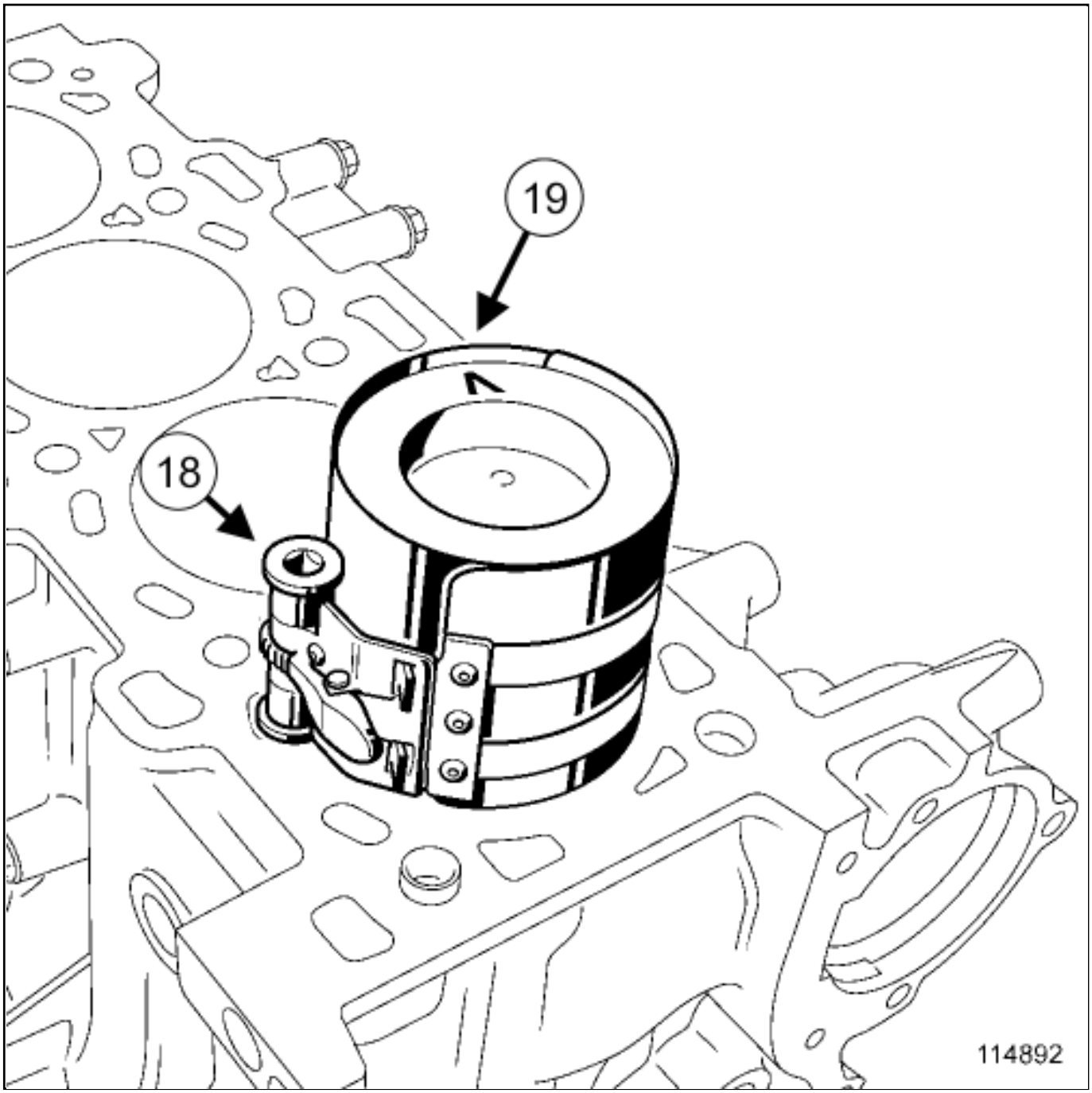
- Adjust the position of the bearing shell at points(A) , (B) and (C) using a set of feeler gauges (thickness of the gauge = X: 2 ± 0.1 mm).

- Repeat the previous operations on the remaining con rod bodies and caps.

2. REFITTING OPERATION FOR PISTON - CON ROD ASSEMBLY

- Lubricate with engine oil:
  - the cylinder block barrels,
  - the piston rings,
  - the piston skirts,
  - the crankshaft crankpins.

- Orient the piston rings on the gudgeon pin axis (see I Refitting preparation, 1-Piston ring refitting operation).



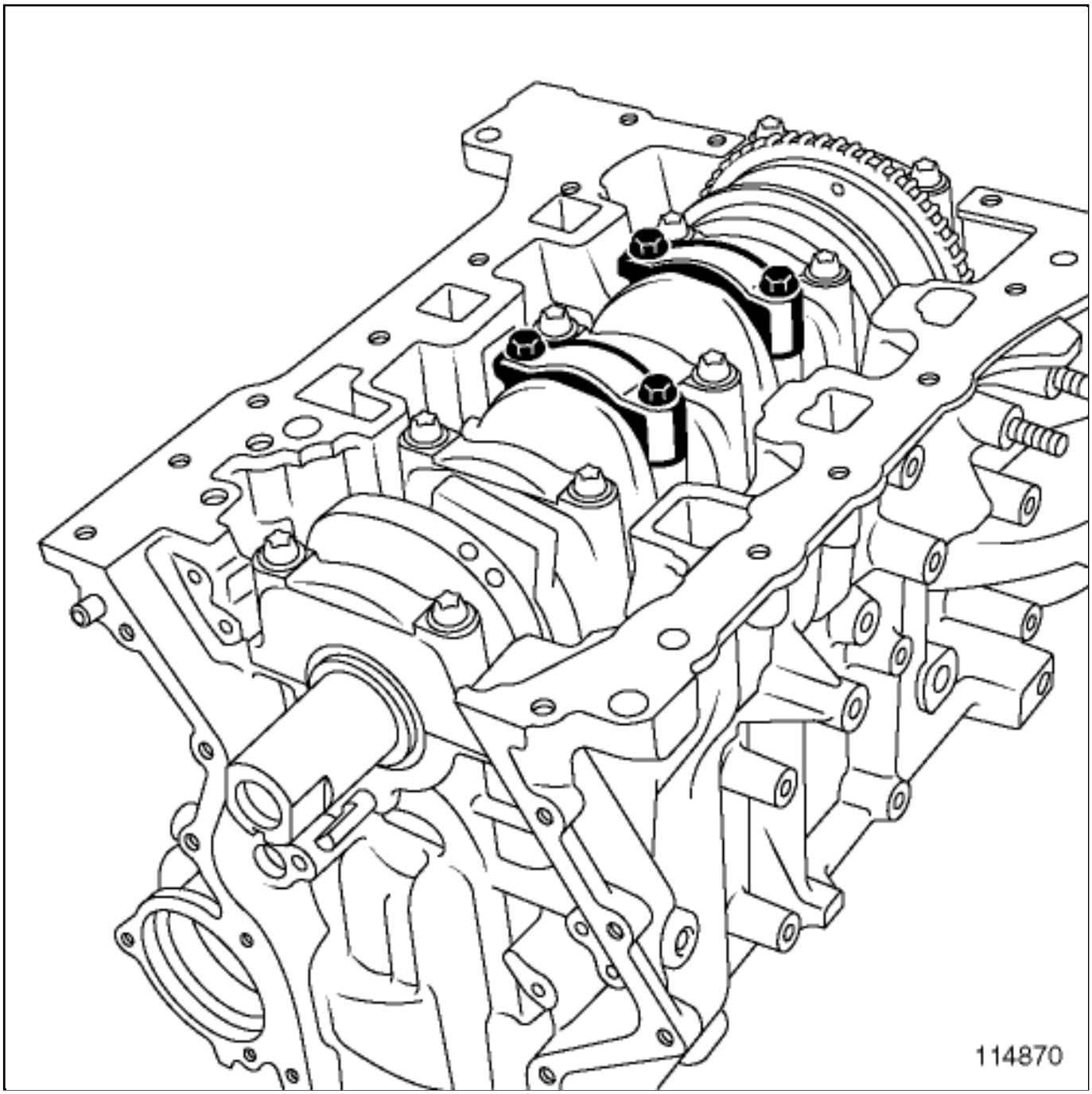
- Check that the piston rings are correctly engaged in the piston grooves.
- Place the piston in the piston mounting ring (allow the piston skirt to protrude by approximately 1 cm).
- Compress the piston rings by tightening the bolt(18) .
- Check that the pistons correspond to the cylinder block barrels (No. 1 timing end).
- Place the "con rod - piston" assembly in the cylinder.

Note:

Position the point of the "V"(19) engraved on the piston towards the flywheel end.

- Gradually insert the "con rod - piston" assembly in the cylinder (avoid any contact between the con rod and the piston base cooling jet).

- Position the big end on the crankshaft crankpin.

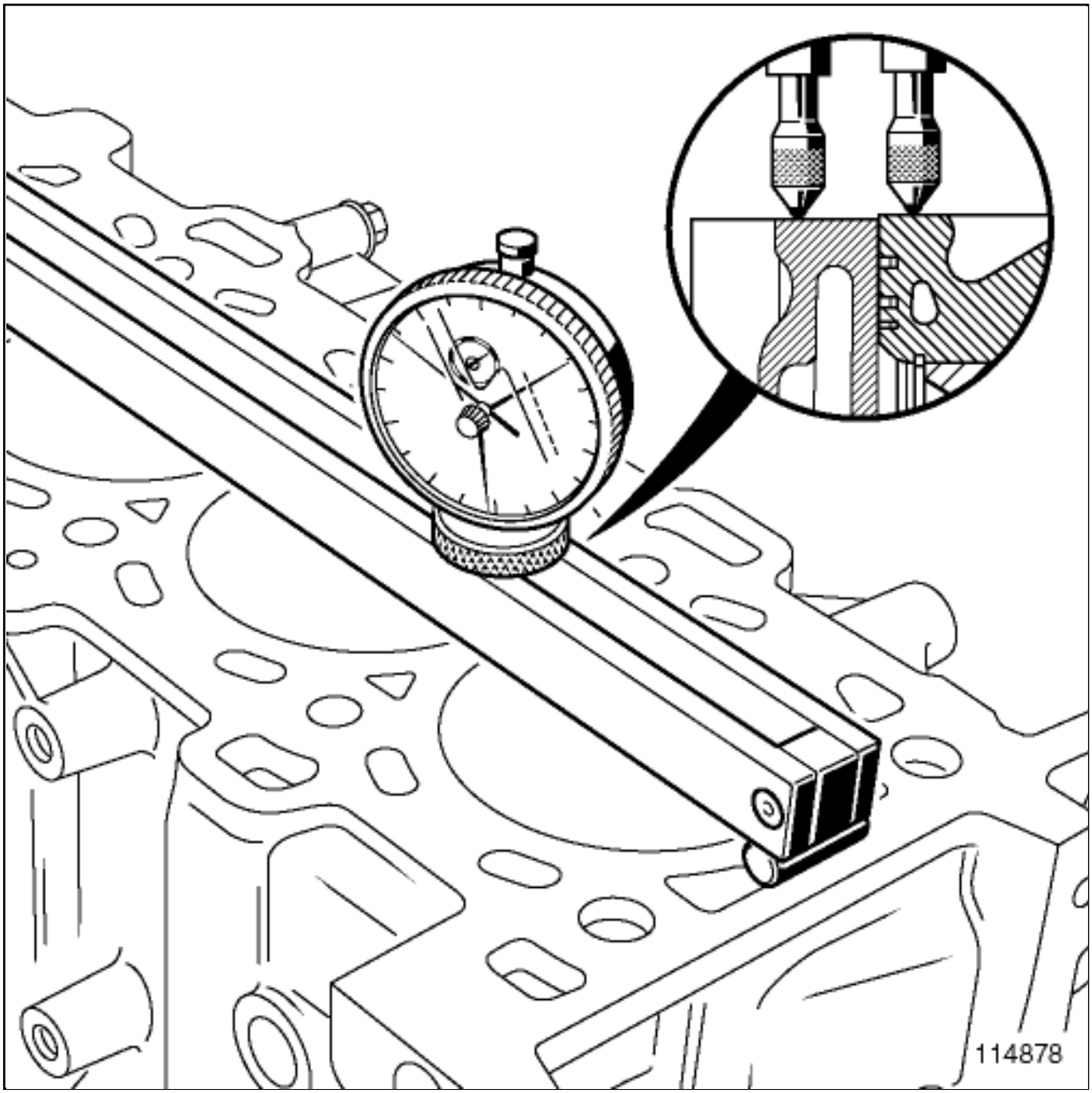


- Refit the con rod cap, ensuring that the con rod caps and bodies correspond.
- Screw on without tightening the newcon rod cap bolts.

Note:

Check that the con rod cap and body are in contact before tightening the bolts.

- Torque tighten to angle the conrod cap bolts25 N.m + 55° ± 6°.
- Check that the rotating parts turns freely, with no resistance.
- Repeat the previous operations for the remaining cylinders.



When replacing the con rod or piston, always check the piston protrusion in relation to the cylinder block (see 10A, Engine and cylinder block assembly, Piston - Con rod: Check) .

Note:

A piston protrusion outside the tolerances in relation to the cylinder block can lead to:

-an engine malfunction (incorrect start, pollution, poor performance),

- engine damage (piston in contact with the cylinder head or valves).

3. FINAL OPERATION

Refit the oil pump Oil pump: Removal - Refitting .

Refit:

- the cylinder block base plate (see 10A, Engine and cylinder block assembly, Cylinder block base plate: Removal - Refitting) ,
- the sump Lower cover: Removal - Refitting ,
- the gearbox side crankshaft seal Crankshaft seal, gearbox end: Removal - Refitting .

Refit:

- the flywheel Flywheel: Removal - Refitting ,
- the clutch disc and pressure plate Pressure plate - Disc: Removal - Refitting (20A, Clutch).

Refit:

- the oil filter unit Oil filter unit: Removal - Refitting ,
- the cylinder head (see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the rocker cover (see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the diesel injectors Diesel injector: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the oil decanter Oil decanter: Removal - Refitting ,
- the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls),
- the turbocharger oil pipes Turbocharger oil pipe: Removal - Refitting ,
- depending on version, the turbocharger outlet catalytic pre-converter or catalytic converter Catalytic pre-converter: Removal - Refitting or Catalytic converter: Removal - Refitting ,
- the damper valve.

X43, M9R, 804 811 817 824 839 844 846(804 OR 811 OR 817 OR 824 OR 839 OR 844 OR 846) AND (678 OR 680 OR 696 OR 880 OR 896 OR 898) AND (760 OR 762 OR 763) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 824 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858) AND (610 OR 615)

Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

Refit:

- the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) ,
- the crankshaft seal on the timing side Crankshaft seal on timing end: Removal - Refitting .

Immobilise the flywheel or the drive plate while fitting theFlywheel locking tool.(**Mot. 1431**) on the cylinder block.

Refit:

- the crankshaft accessories pulley**Crankshaft accessories pulley: Removal - Refitting** ,
- the coolant pump**Coolant pump: Removal - Refitting** ,
- the accessories belt**Accessories belt: Removal - Refitting** .

Remove:

- the toolFlywheel locking tool.(**Mot. 1431**) ,
- the engine from the component support**(see 10A, Engine and cylinder block assembly, Engine support equipment: Use)** .

Refit:

- the EGR pipe at the EGR cooler inlet,
- the engine - gearbox assembly.

Top up the engine oil**Engine oil: Draining - Refilling** .

PLASTIC MATERIAL BODYWORK COMPONENT: REPAIR

Note, one or more warnings are present in this procedure

1. PROCEDURES FOR REPAIRING PLASTICS

WARNING

Always wear protective gear (gloves, goggles and breathing masks).

Use extra ventilation source.

Use a supplied air mask if the area is not ventilated.

1- SPECIAL NOTES FOR REPAIRING PLASTICS

- Procedure 1 : repairing a deep scratch on a plastic chassis element.
- Procedure 2 : repairing a crack on a plastic chassis element.
- Procedure 3 : repairing a hole on a plastic chassis element.
- Procedure 4 : repairing a mounting bracket on a plastic chassis element.
- Procedure 5 : partial replacement of an element by cuting.
- Procedure 6 : partial replacement of an element by cuting with patcht drilling.

2. PROCEDURE 1

- Repairing a deep scratch on a plastic chassis element

1- BONDING METHOD

Note:

Before any repairs, check the reparability of components made from plastic materials.

(see 50A, General information, Products for plastic material bodywork components: Description) .

(see 50A, General information, Plastic material bodywork component: Precautions for the repair) .

- Wash the component in soapy water and rinse in clean water.

- Clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNERVehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

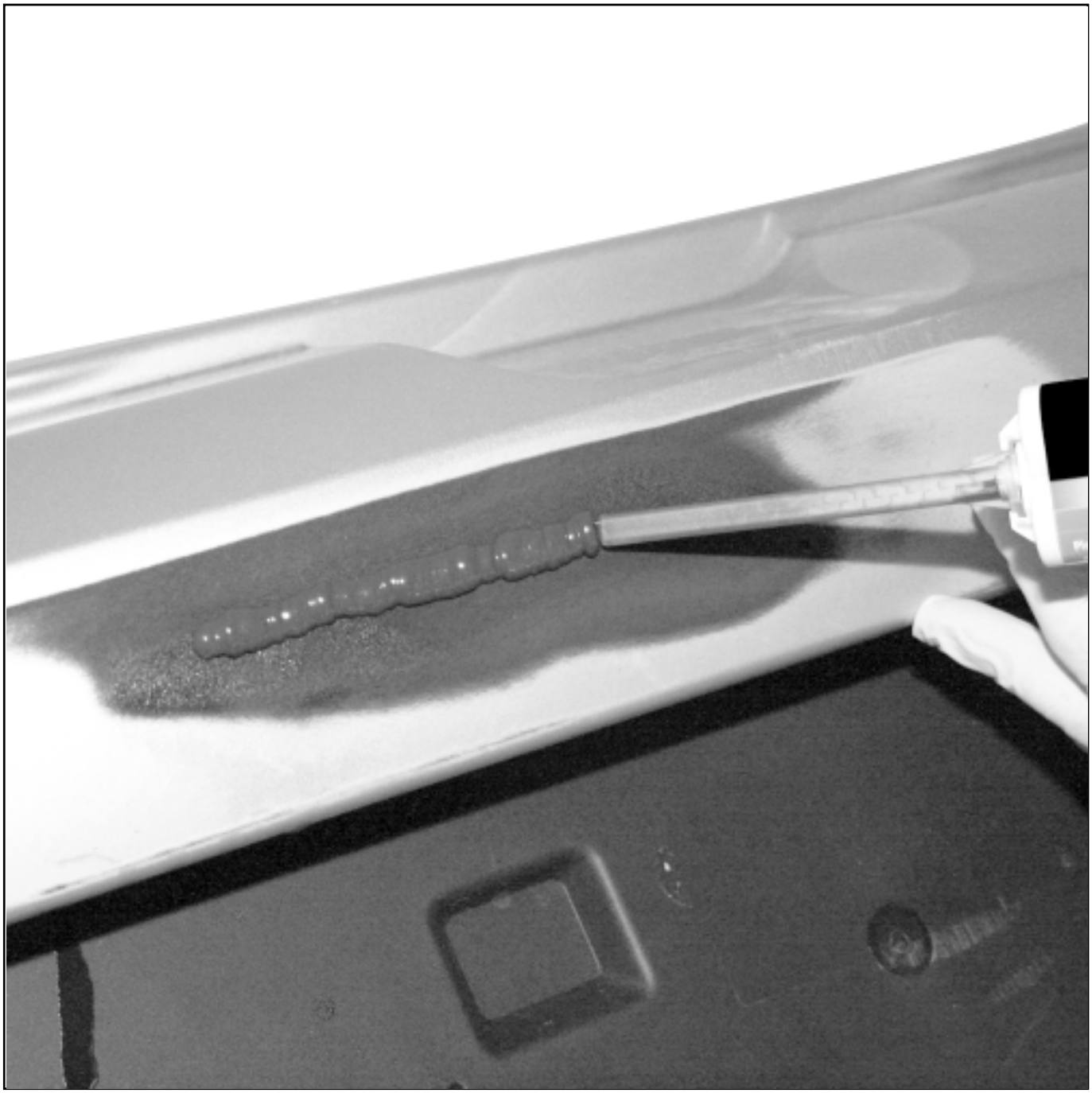
- Surface the scratch using the orbital sander with a P 150.

- Blow the component and clean the area to be repaired with the cleaner included in the Plastic repair kit.

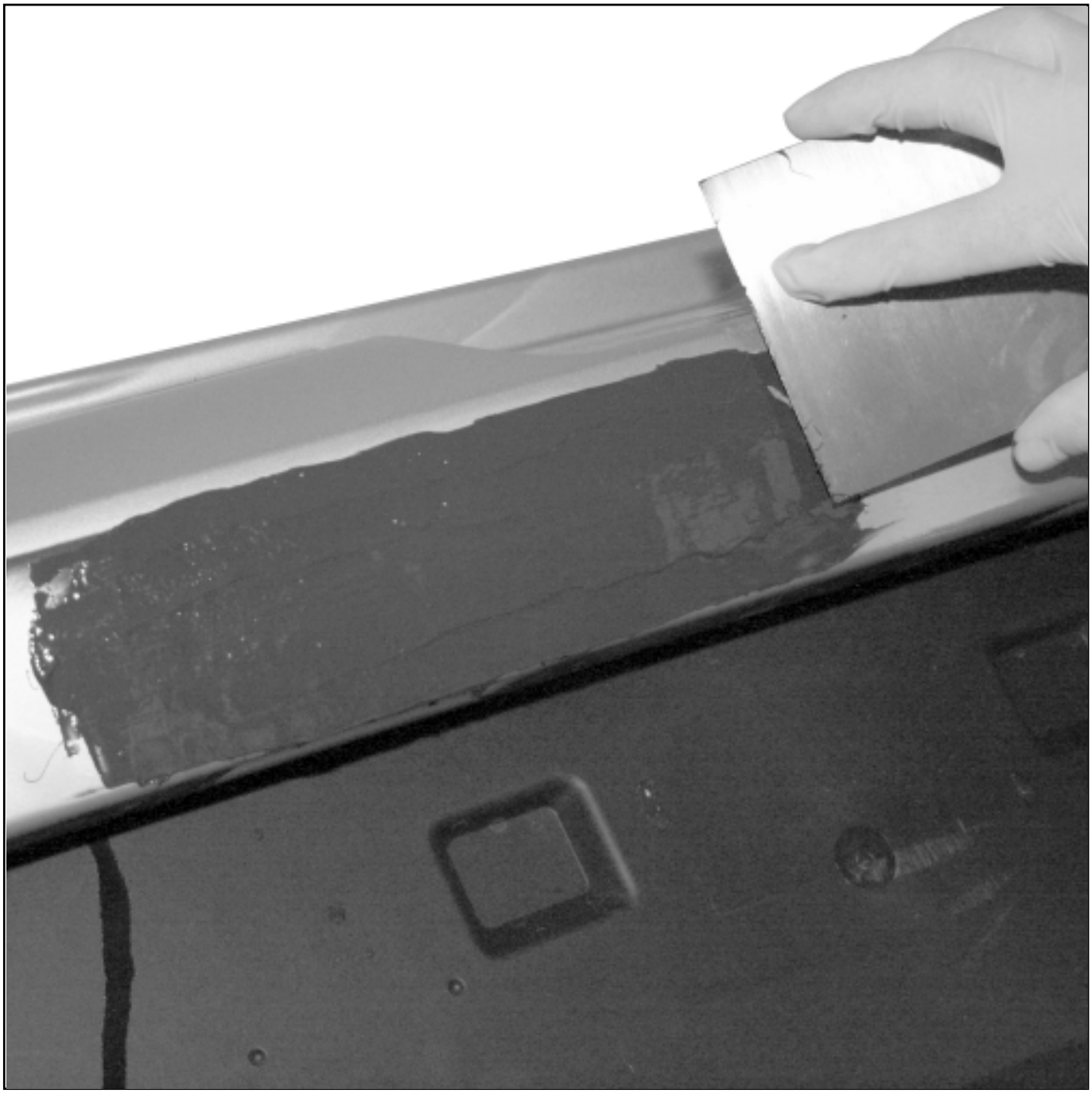
- Apply the adhesive primerincluded in the Plastic repair kitto the damaged area.

- Leave the adhesive primerto dry (see product technical sheet).

- Prepare the bi-component repair mastic(see 50A, General information, Products for plastic material bodywork components: Description) .



- Apply the bi-component repair mastic to the component.



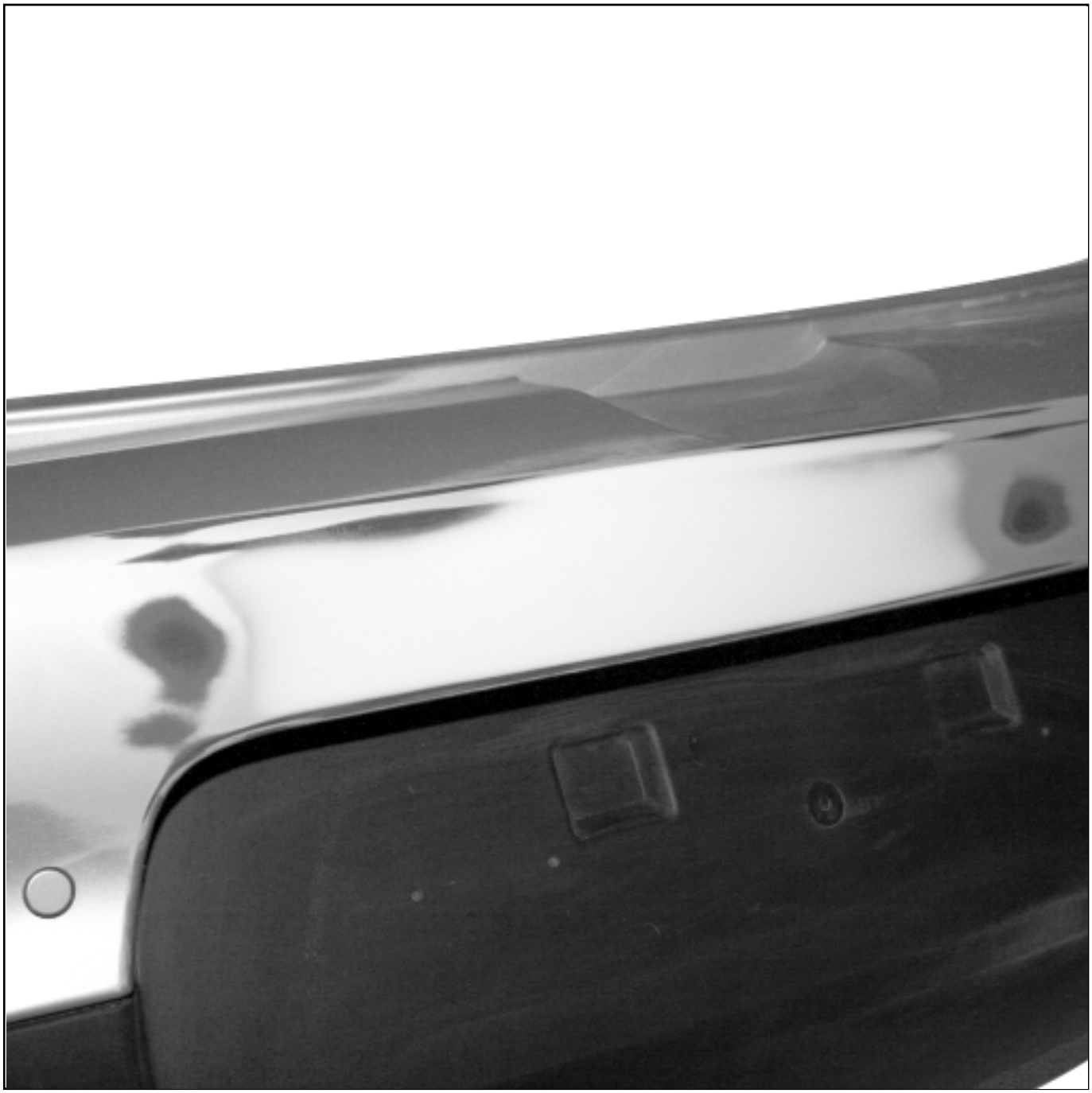
- Smooth using a mastic block creating a dome shape.

- Leave the bi-component repair masticto dry (see product technical sheet).

- Surface with a P 150then finish with a P 240.
- Blow the component and clean the area to be repaired with the cleaner included in the Plastic repair kit.

If necessary, apply a finishing mastic(see product technical sheet) **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

Sand the finishing masticwith a P 150then finish with a P 240.



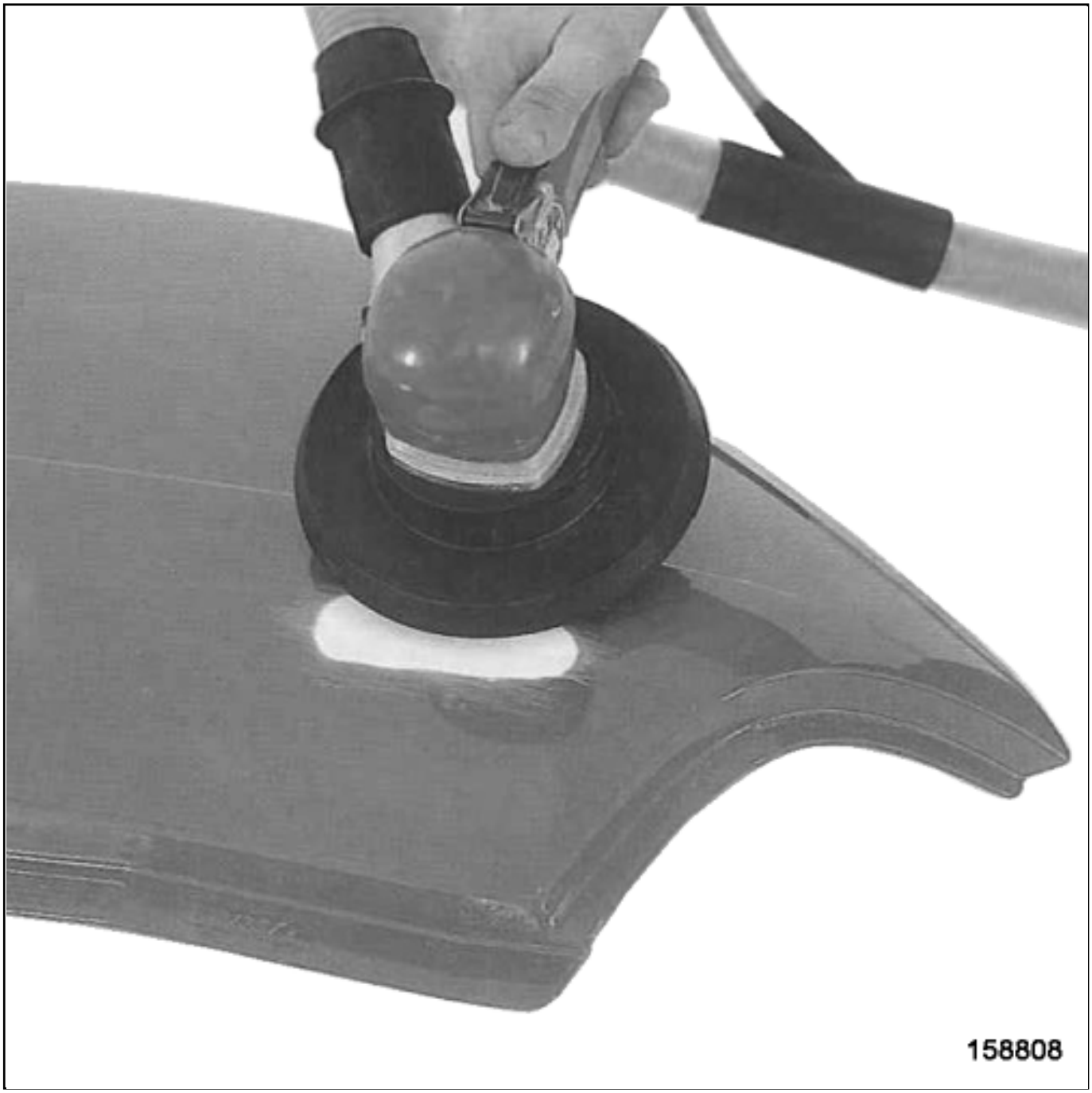
Follow the paint application procedure according to the material concerned:

- **SMC bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **Polypropylene / polyethylene bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **Noryl bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **ABS bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic).

2- RESIN EPOXY METHOD

Note:

Method apply only on RTM component.



- Chamfering 20 to 30mm around the crack using the orbital sander with a P 150.

- Sand the paint around the zone to be repaired using the orbital sander with a P 150

- Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).

- Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .

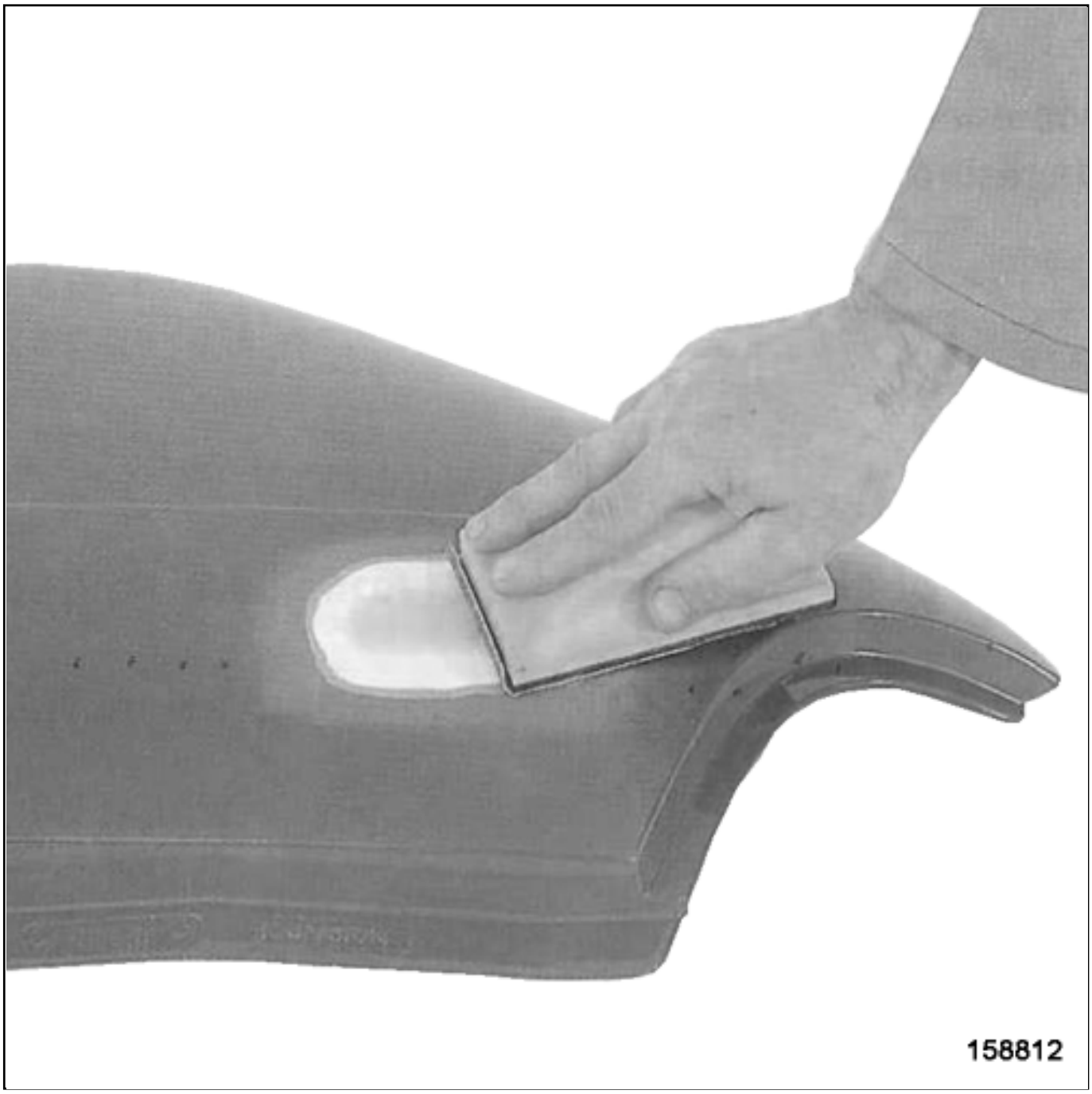
- Wet the chamfer using à brush soaked with Epoxy resin.

- Add short fibres with resin(50 % maxi.).

- Apply the mixture using a spatula.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).



- Sand using the orbital sander with a P 80then with a P180and P240.

- Apply if necessary a finishing mastic(see product technical sheet). (see **Vehicle: Parts and consumables for the repair**)

- Sand the finishing masticusing a P 150then finish using a P240.

3. PROCEDURE 2

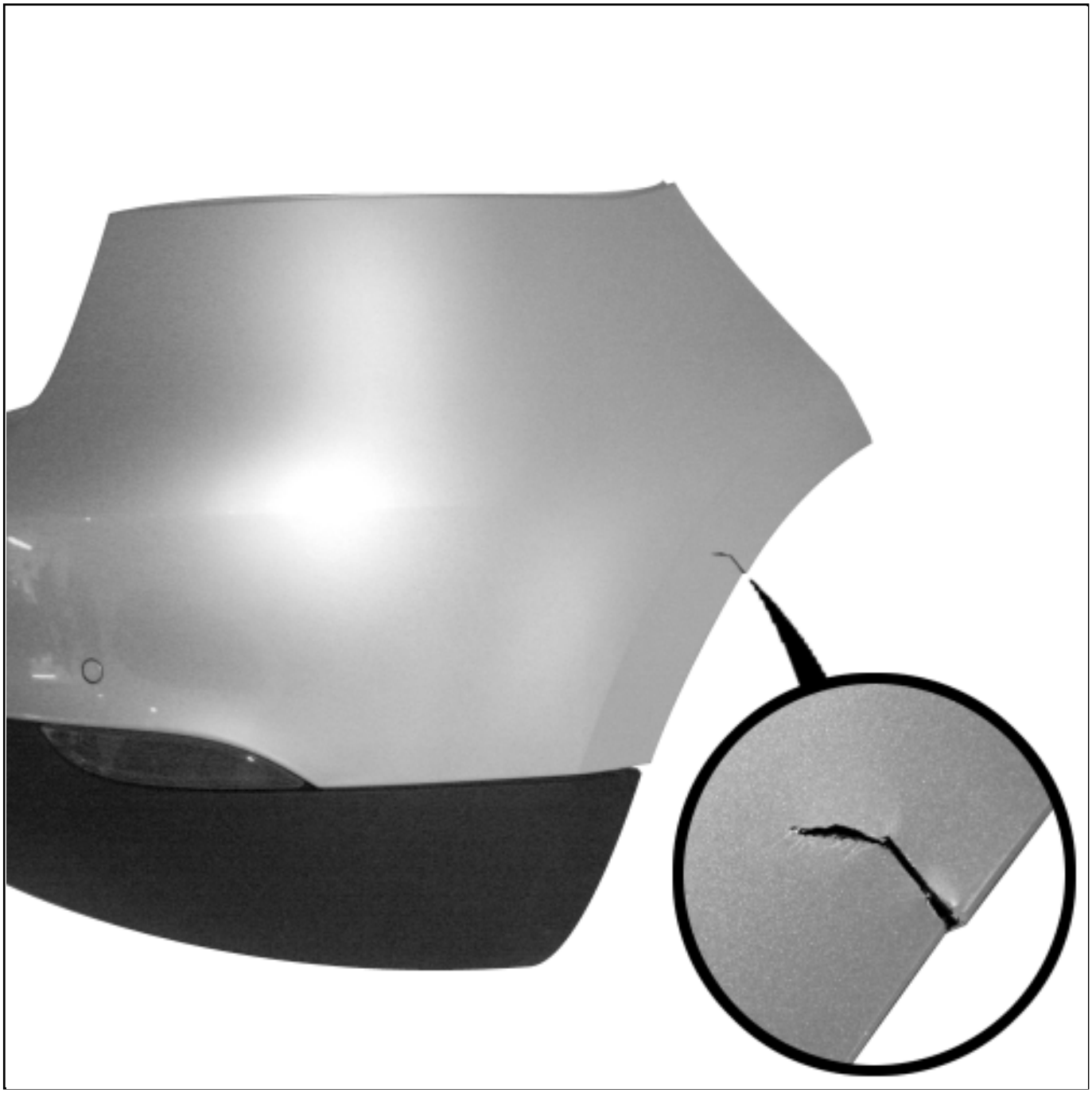
- Repairing cracks on a plastic chassis element.

Note:

Before any repairs, check the reparability of components made from plastic materials.

(see 50A, General information, Products for plastic material bodywork components: Description) .

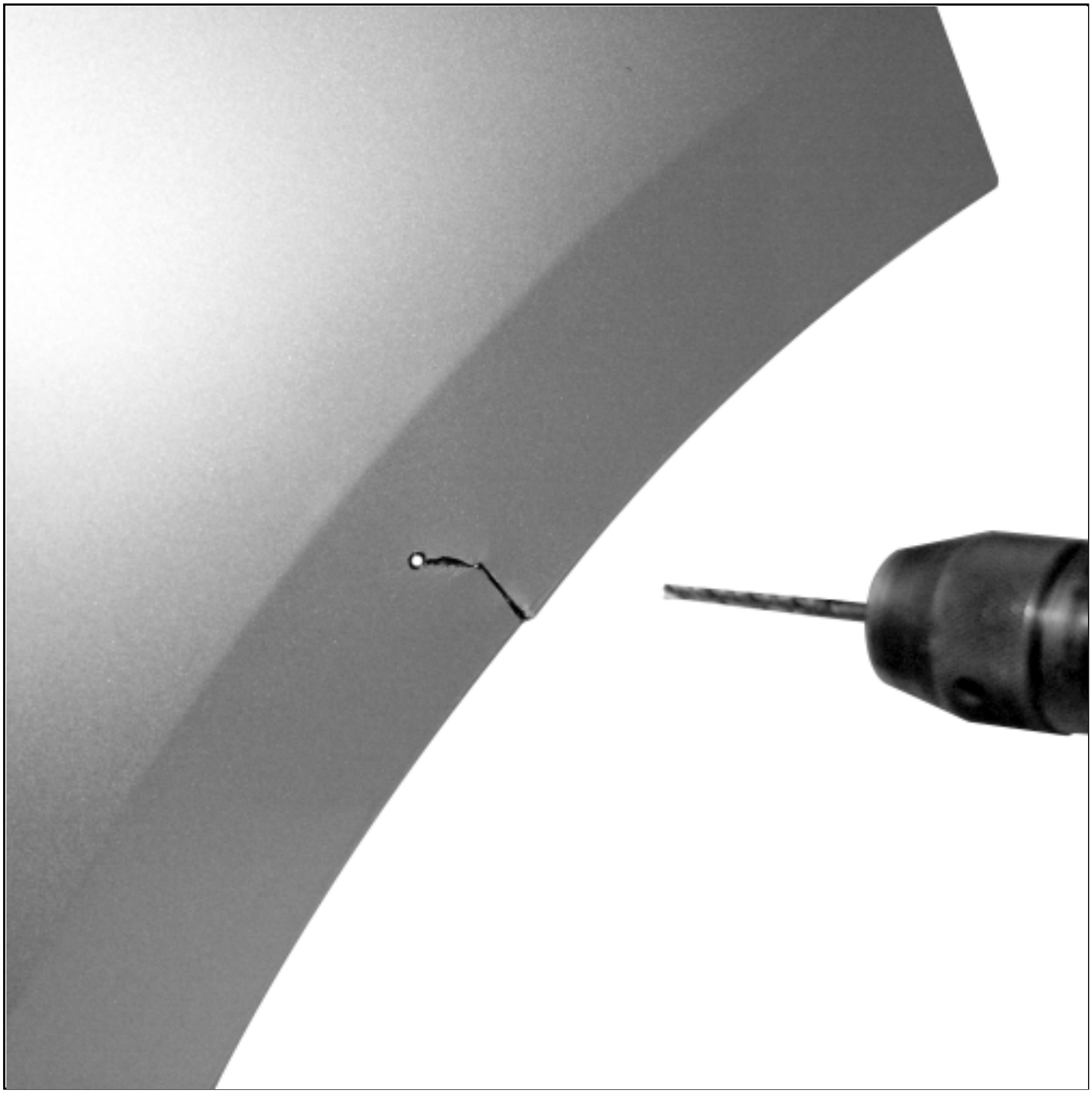
(see 50A, General information, Plastic material bodywork component: Precautions for the repair) .



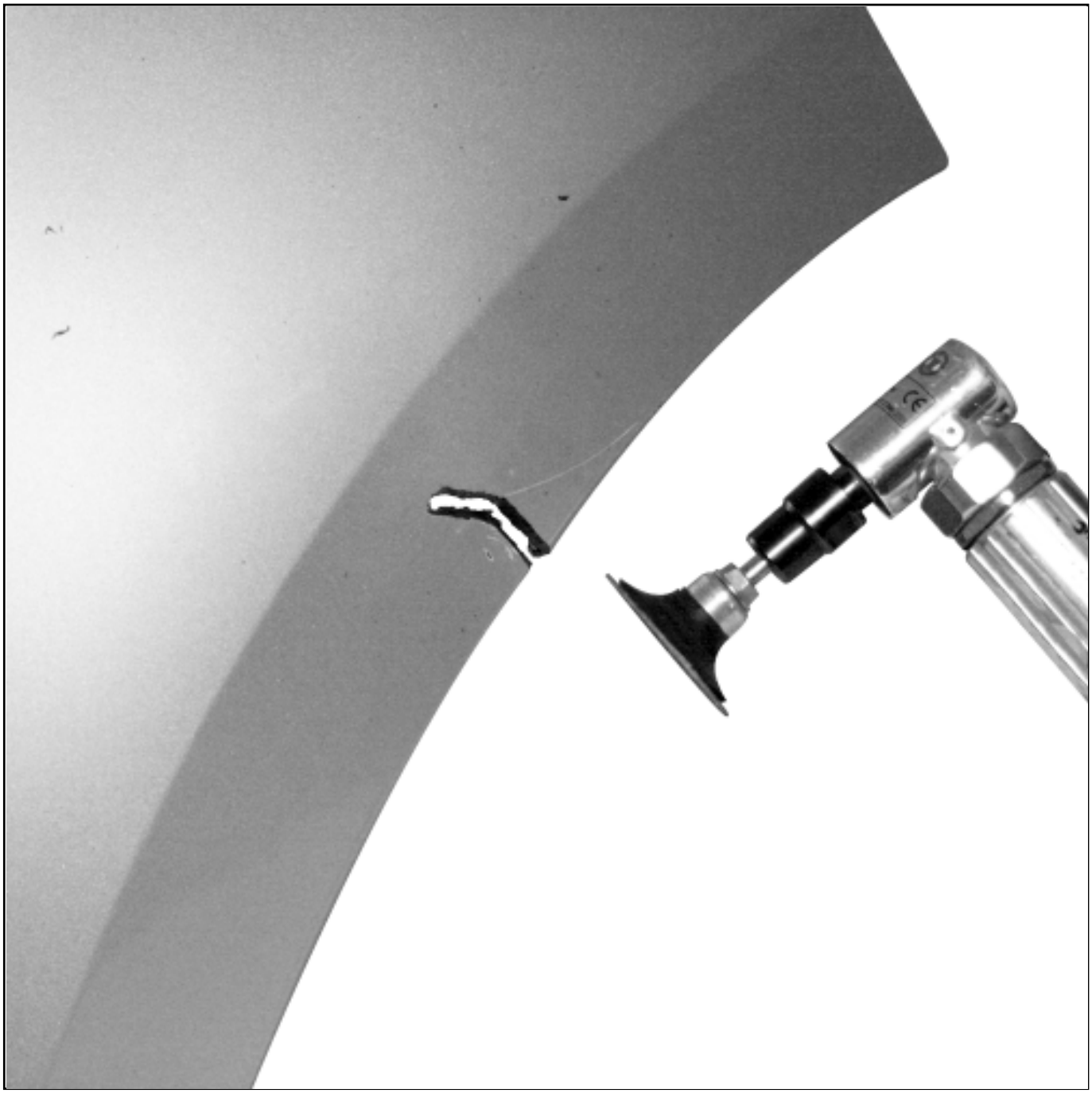
- Wash the component in soapy water and rinse in clean water.

- Clean the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).



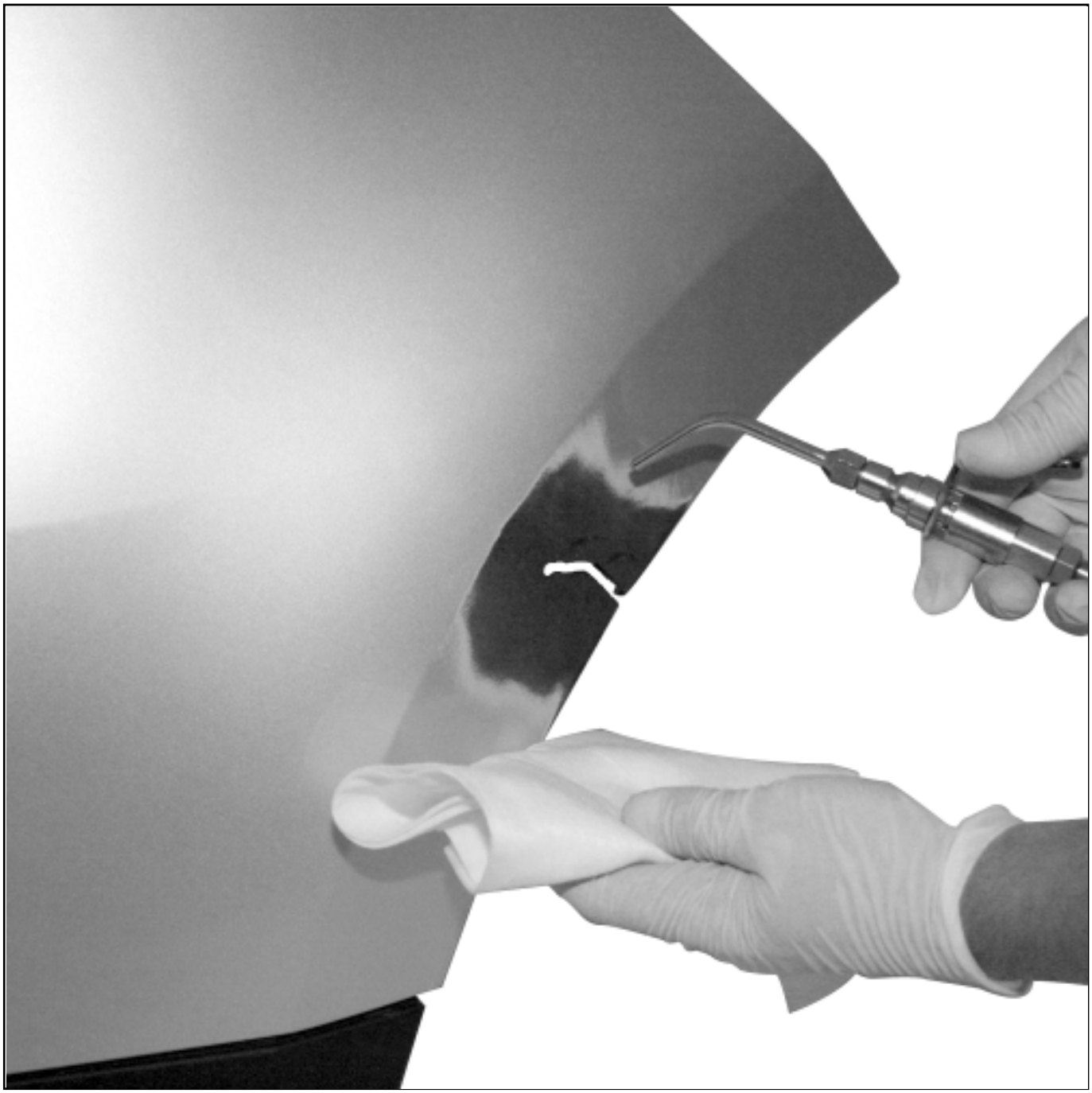
- Drill the end of the crack using a 4 mmdrill bit to stop it spreading.



- Extend the length of the crack by 2 mmusing an angle grinderor a sharp tool.

- Chamfer the crack on the exterior side using an angle grinder or a belt sander equipped with a P 120 abrasive pad.

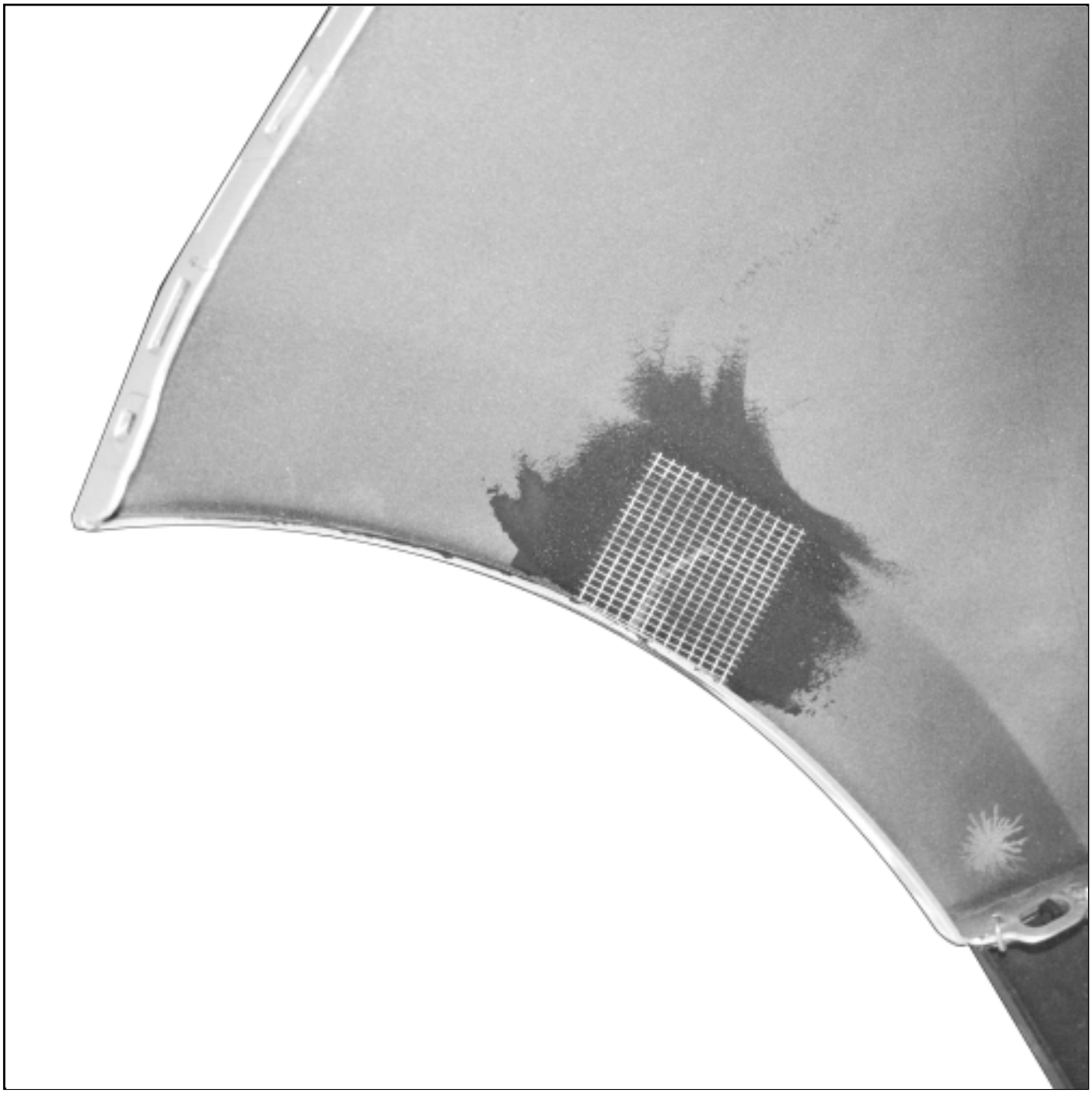
- Surface the interior and exterior areas to be repaired with a P 150.



- Blow the component and clean the area to be repaired with the cleaner included in the plastic repair kit box.

- Apply the adhesive primer included in the plastic repair kit to the interior and exterior areas.

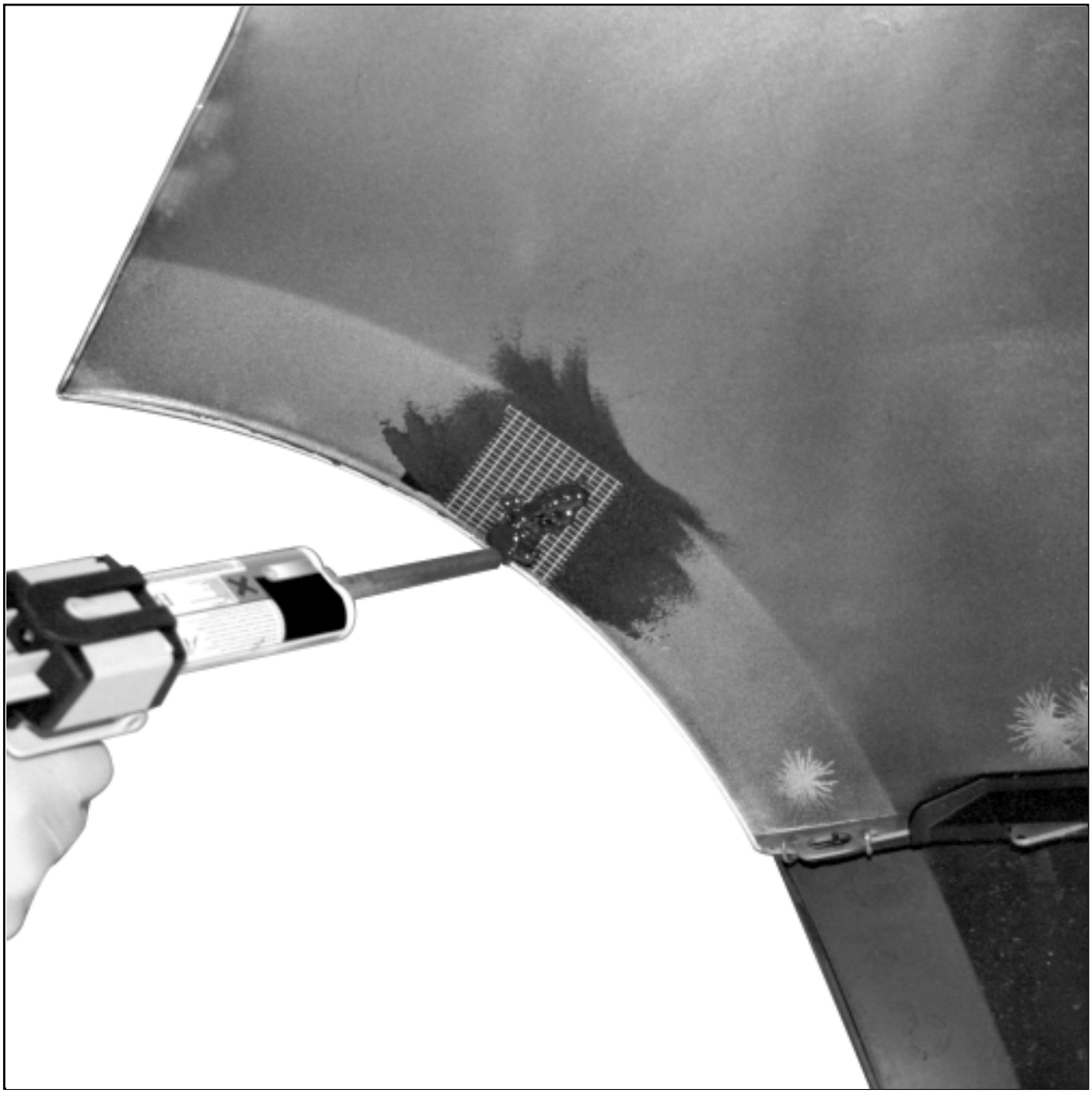
- Leave the adhesive primer to dry (see product technical sheet).



- Adjust a piece of reinforcing film (cloth)suitable for repairing the inside of the component.

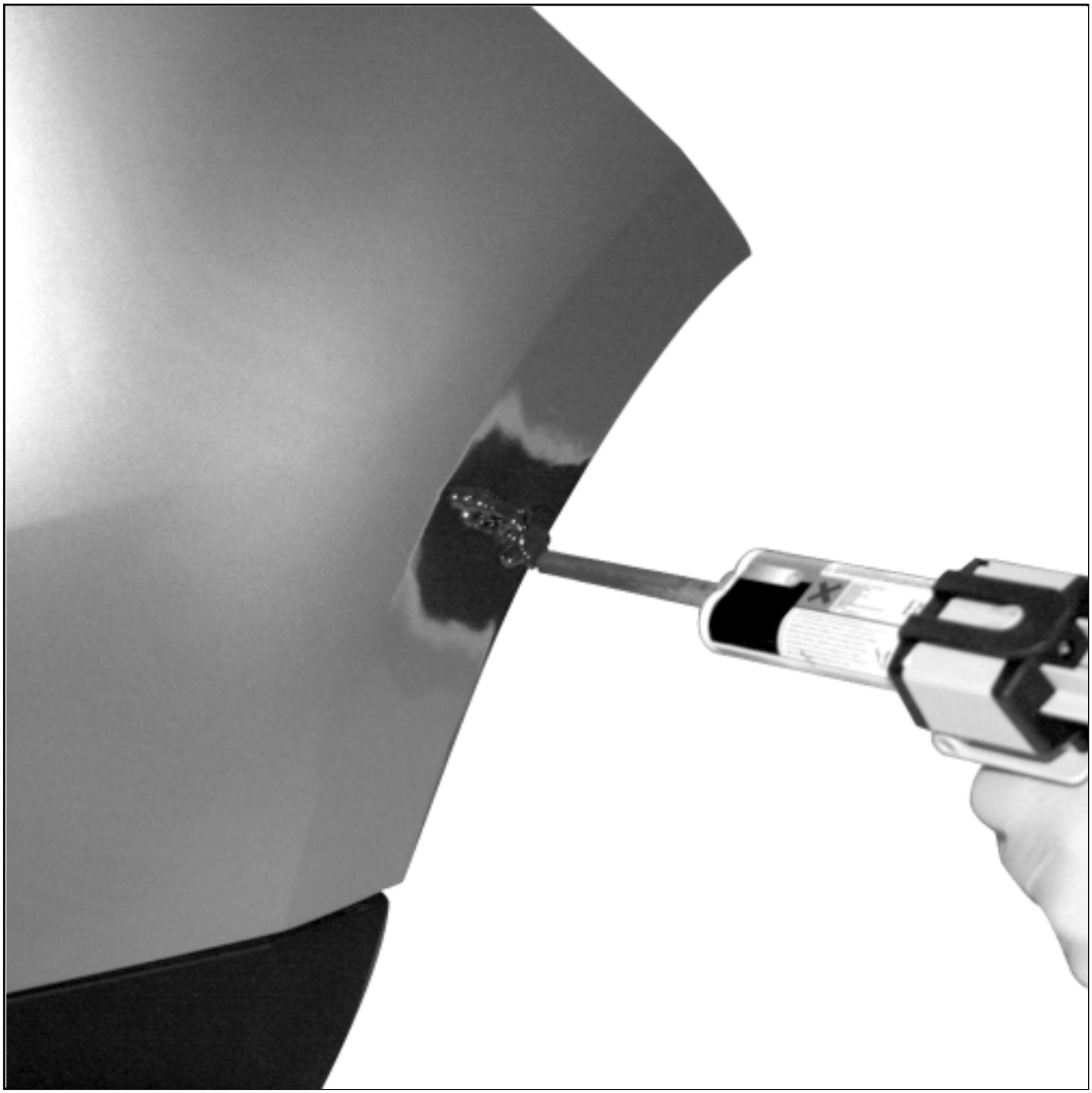
- Prepare the bi-component repair mastic(see 50A, General information, Products for plastic material bodywork components: Description) .

- Extrude a narrow bead around the area to be repaired on the inside of the component and apply reinforcing film (cloth).

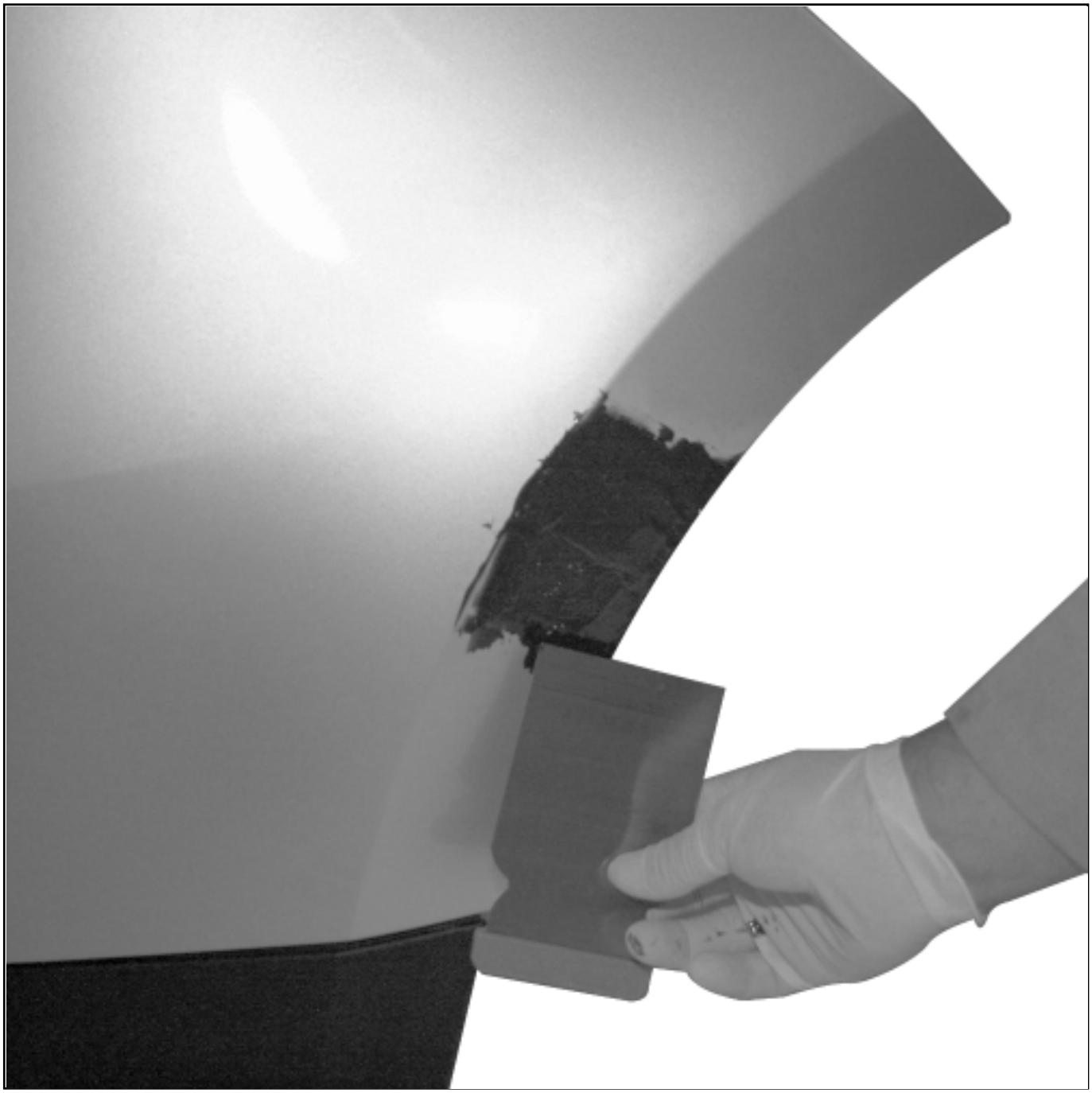


- Extrude a thick bead on the reinforcing filmat the crack.

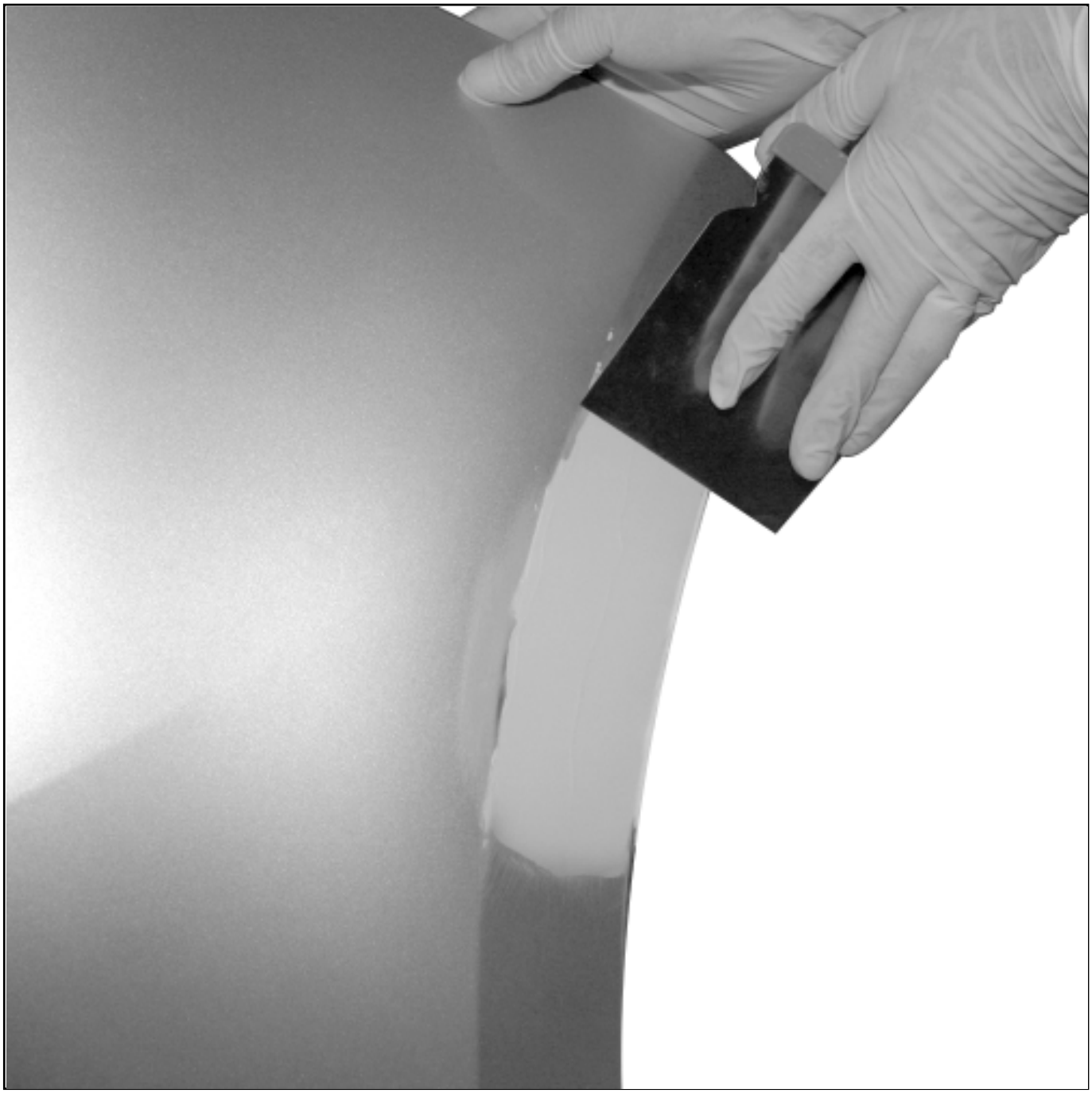
- Smooth using a spatula.



- Extrude a thick bead in the chamfer on the exterior side.

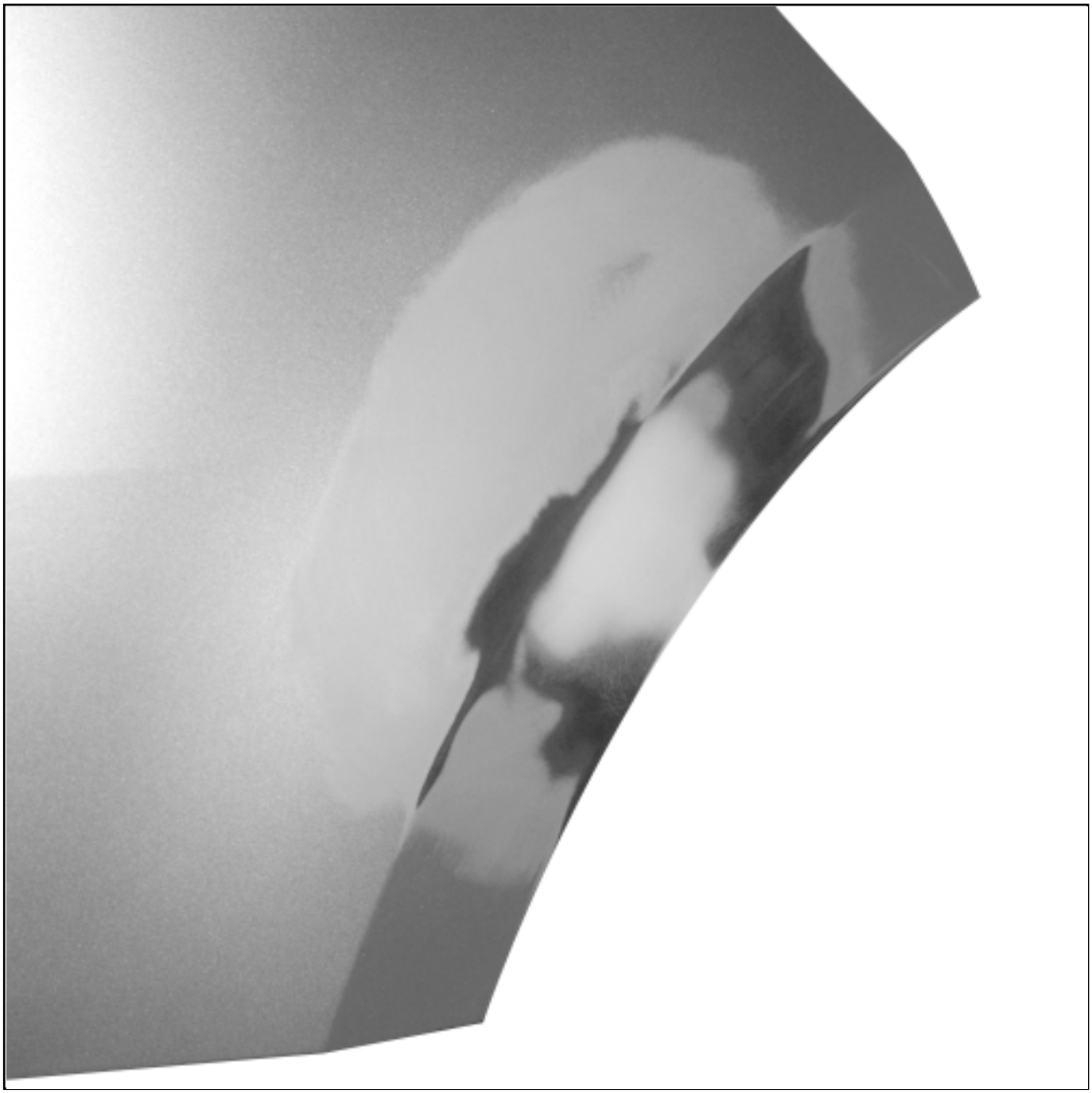


- Smooth using a spatula.
- Leave the bi-component repair masticto dry (see product technical sheet).
- Surface on the exterior side with a P 150then finish with a P 240.
- Blow the component and clean the area to be repaired with the cleaner included in the Plastic repair kit.



If necessary, apply a finishing mastic(see product technical sheet) **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

Sand the finishing masticwith a P 150then finish with a P 240.



Follow the paint application procedure according to the material concerned:

- **SMC bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **Polypropylene / polyethylene bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **Noryl bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **ABS bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic).

2- WELDING METHOD

Note:

Before any repairs, check the reparability of components made from plastic materials.

(see 50A, General information, Products for plastic material bodywork components: Description) .

(see 50A, General information, Plastic material bodywork component: Precautions for the repair) .

- Wash the component in soapy water and rinse in clean water.
- Clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNERVehicle: Parts and

consumables for the repair (04B, Consumables - Products).

- Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

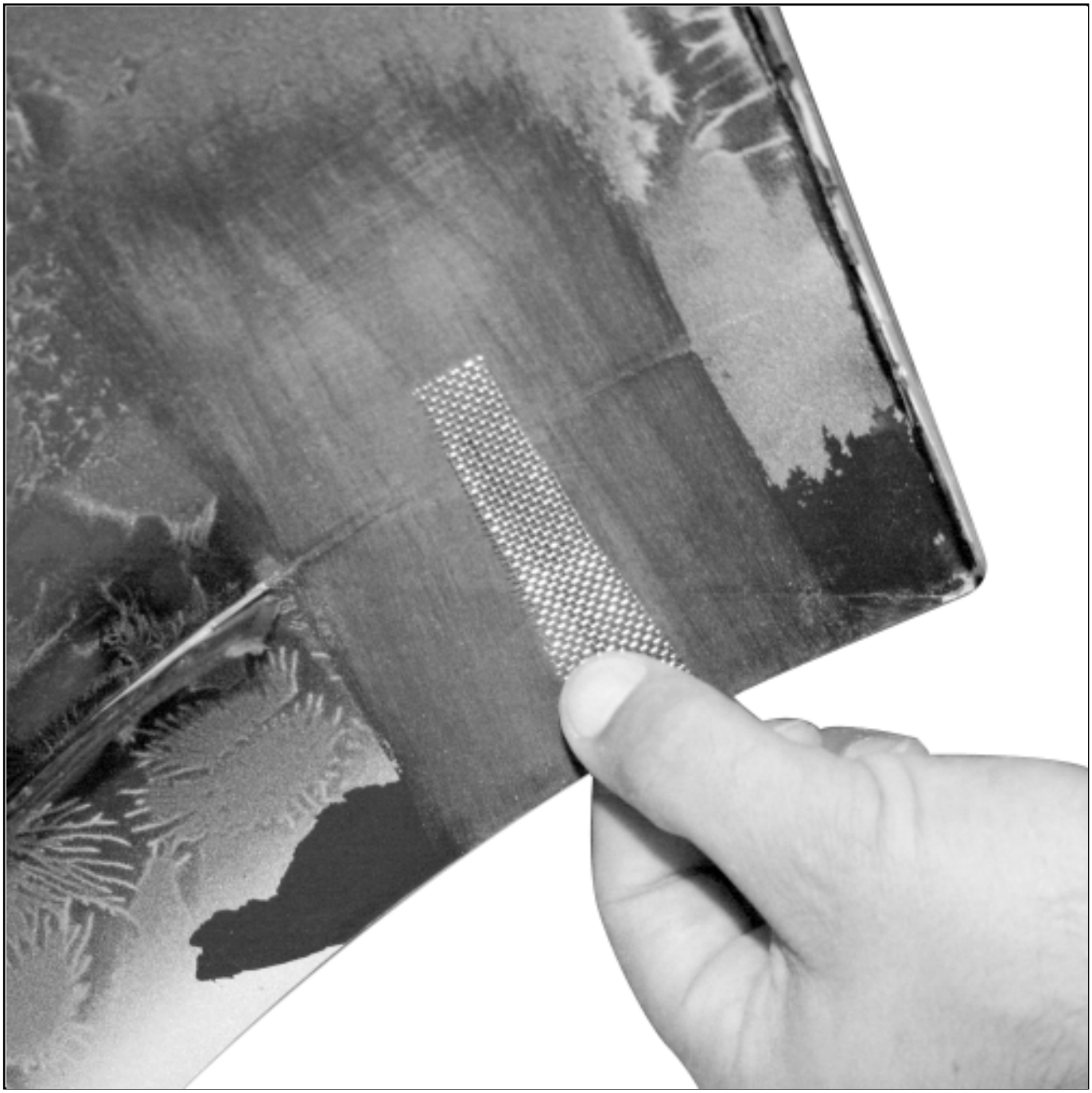
- Strip the paint with a P 150over a width of 50 mm.

- Blow the component and clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNER Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

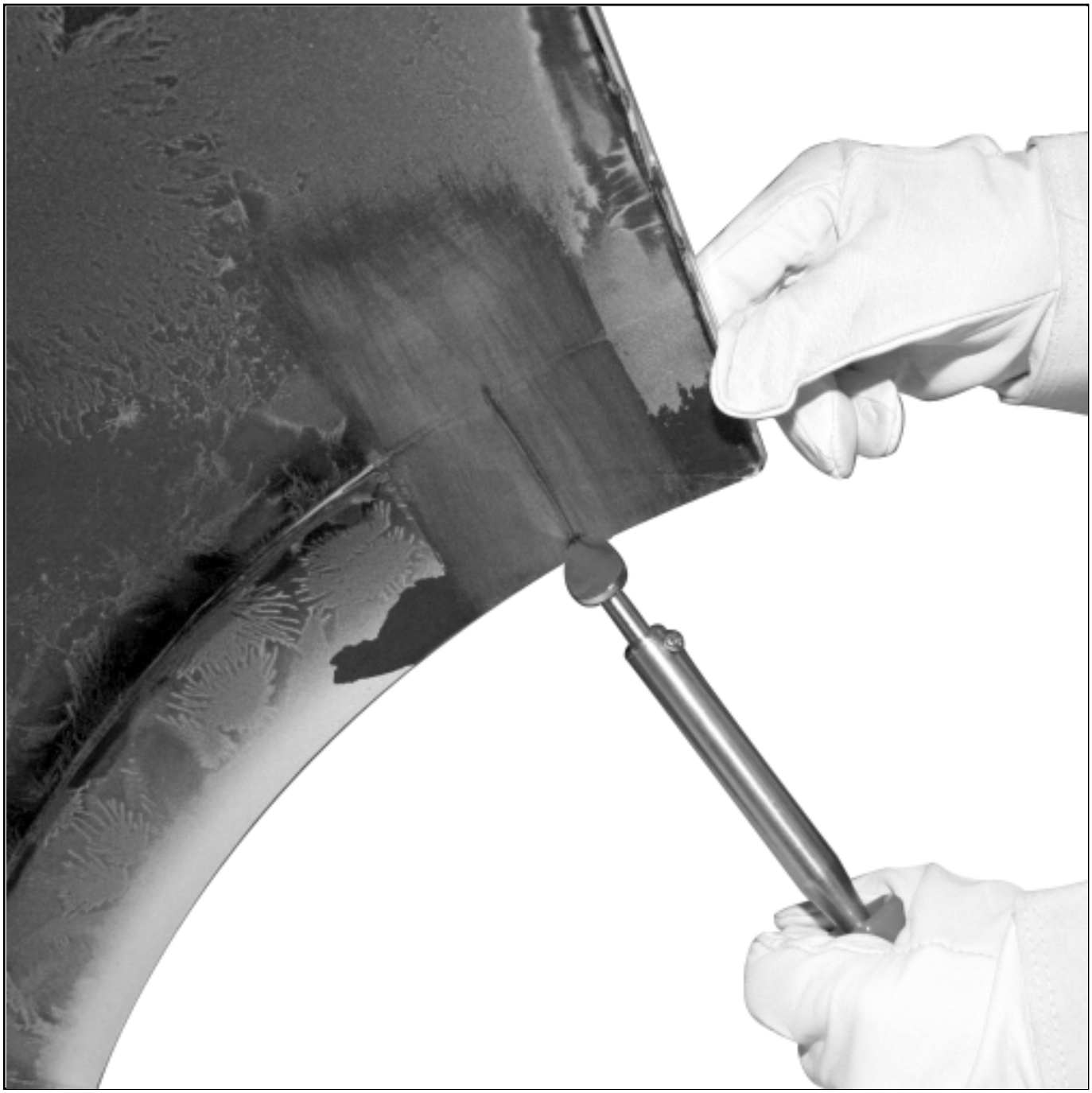
- Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Preheat the soldering iron.

- Cut the stainless steel mesh wider at the start of the crack.

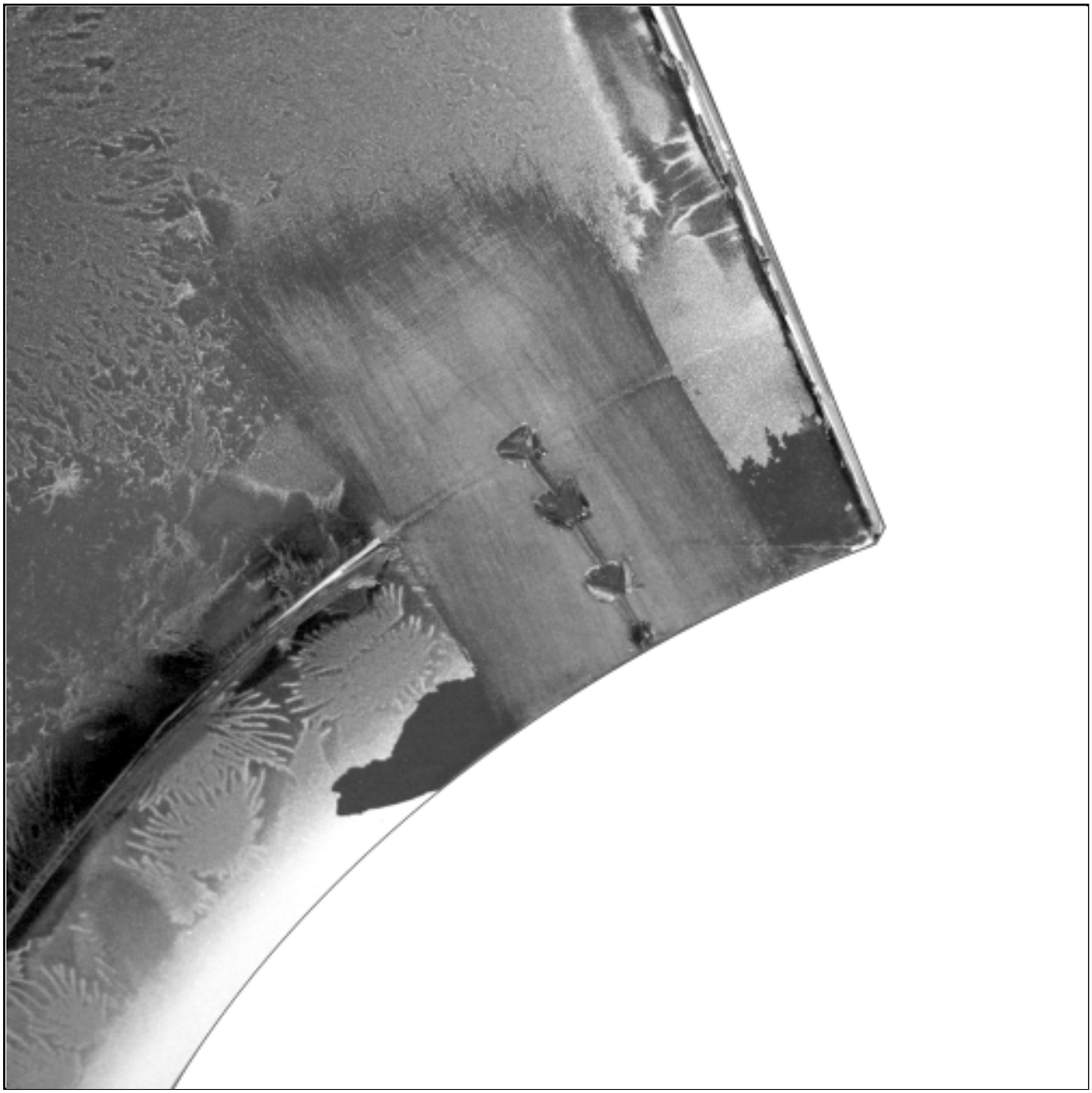


- Adjust the stainless steel mesh according to the shape of the support.



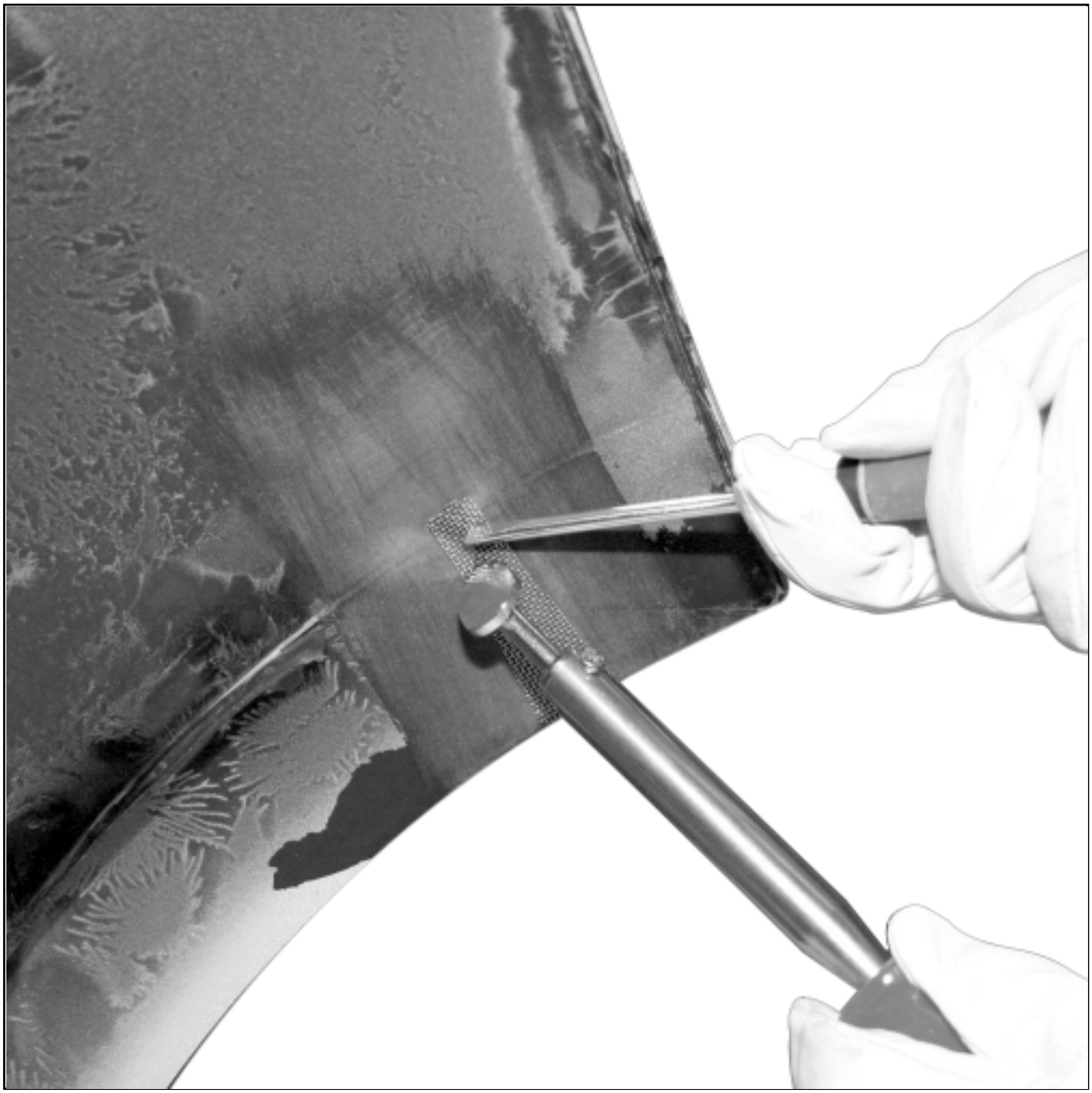
- Spot-weld the start of the crack with the tip of the soldering iron in order to maintain the shape.

- Cool the spot weld, for two seconds, vigorously with the cooler[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products).

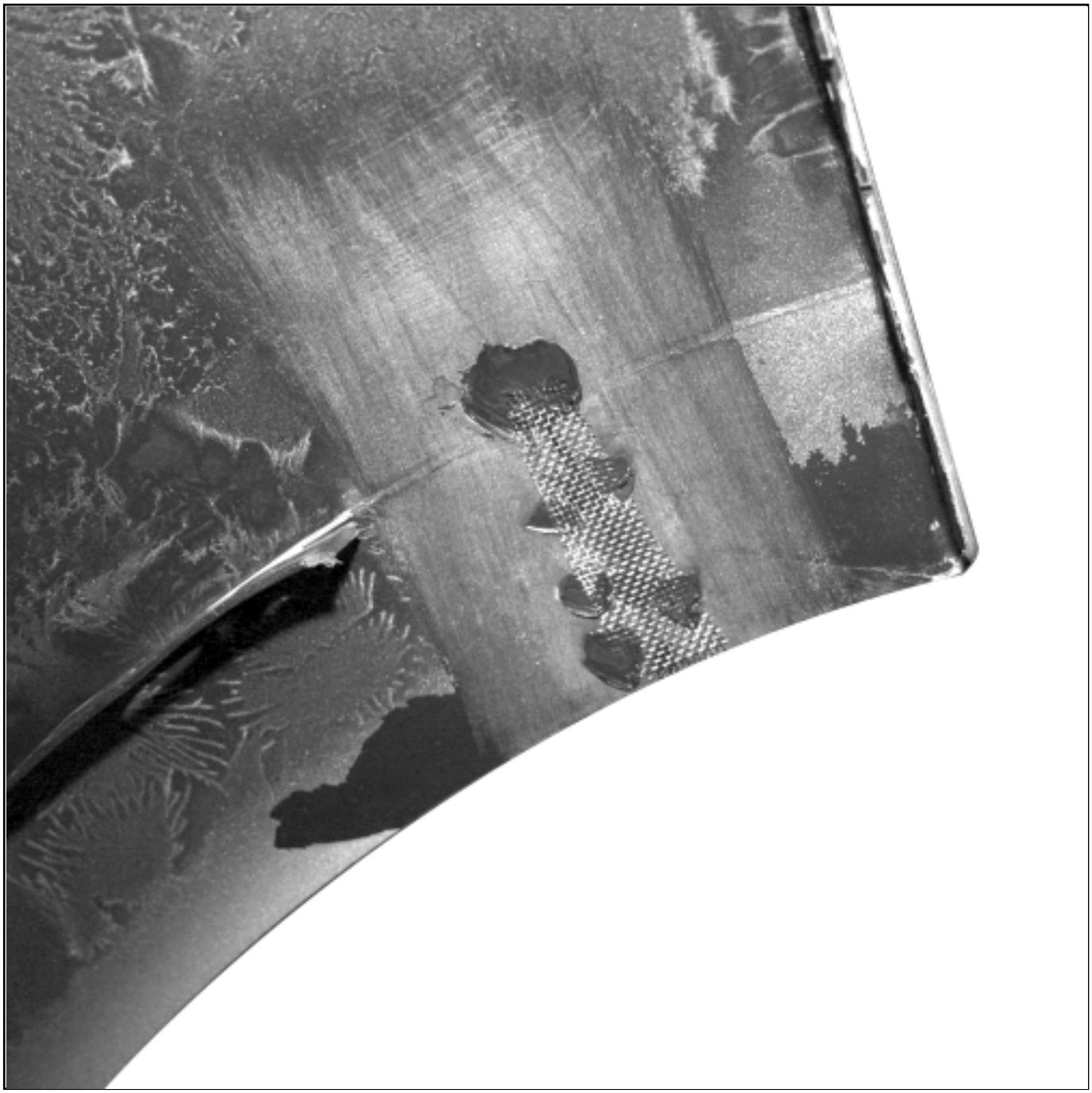


- Repeat this operation along the length of the crack.

- Cool each spot weld, for two seconds, vigorously with the cooler**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

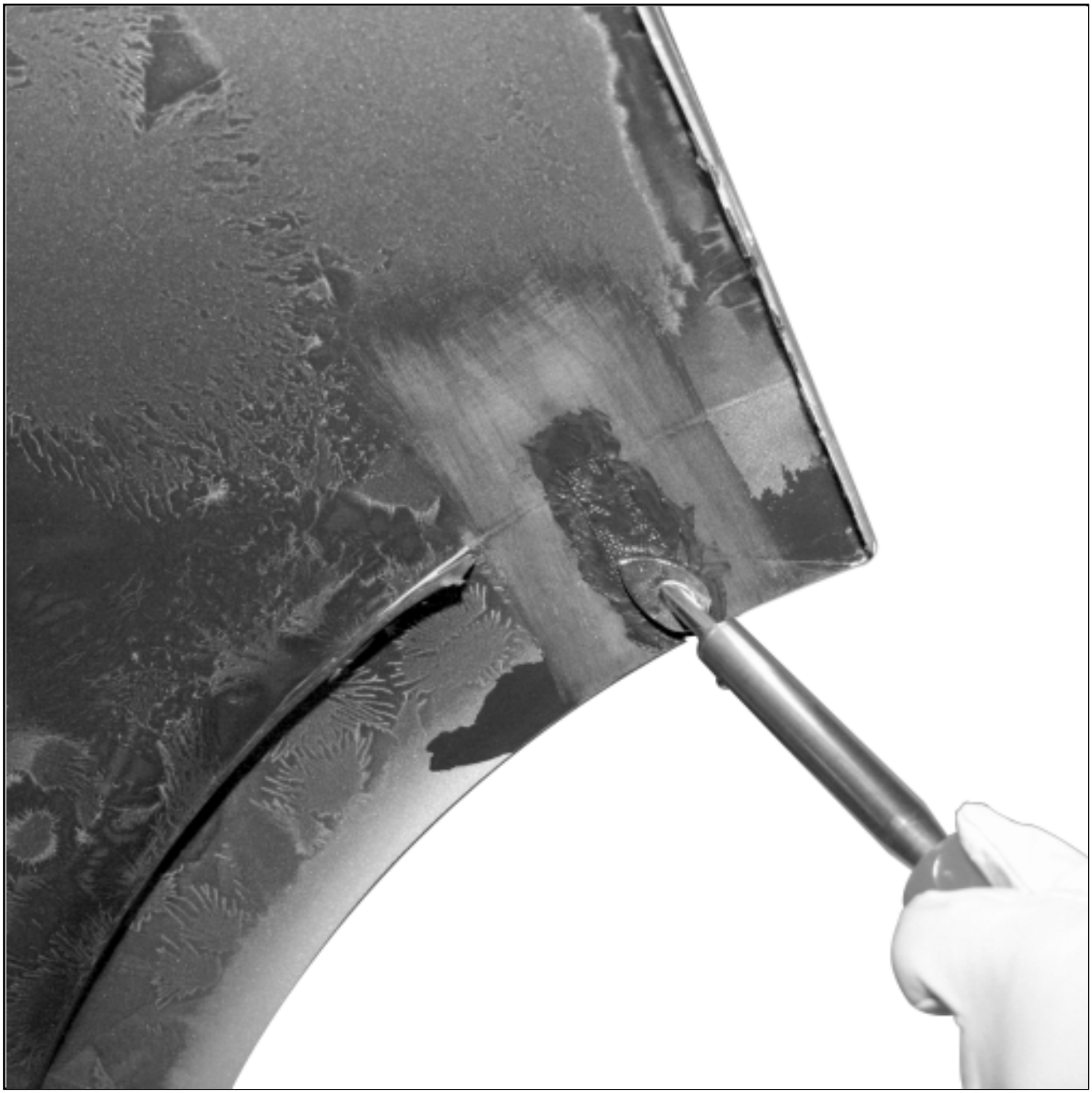


- Position the stainless steel mesh and hold it using a dedicated tool.



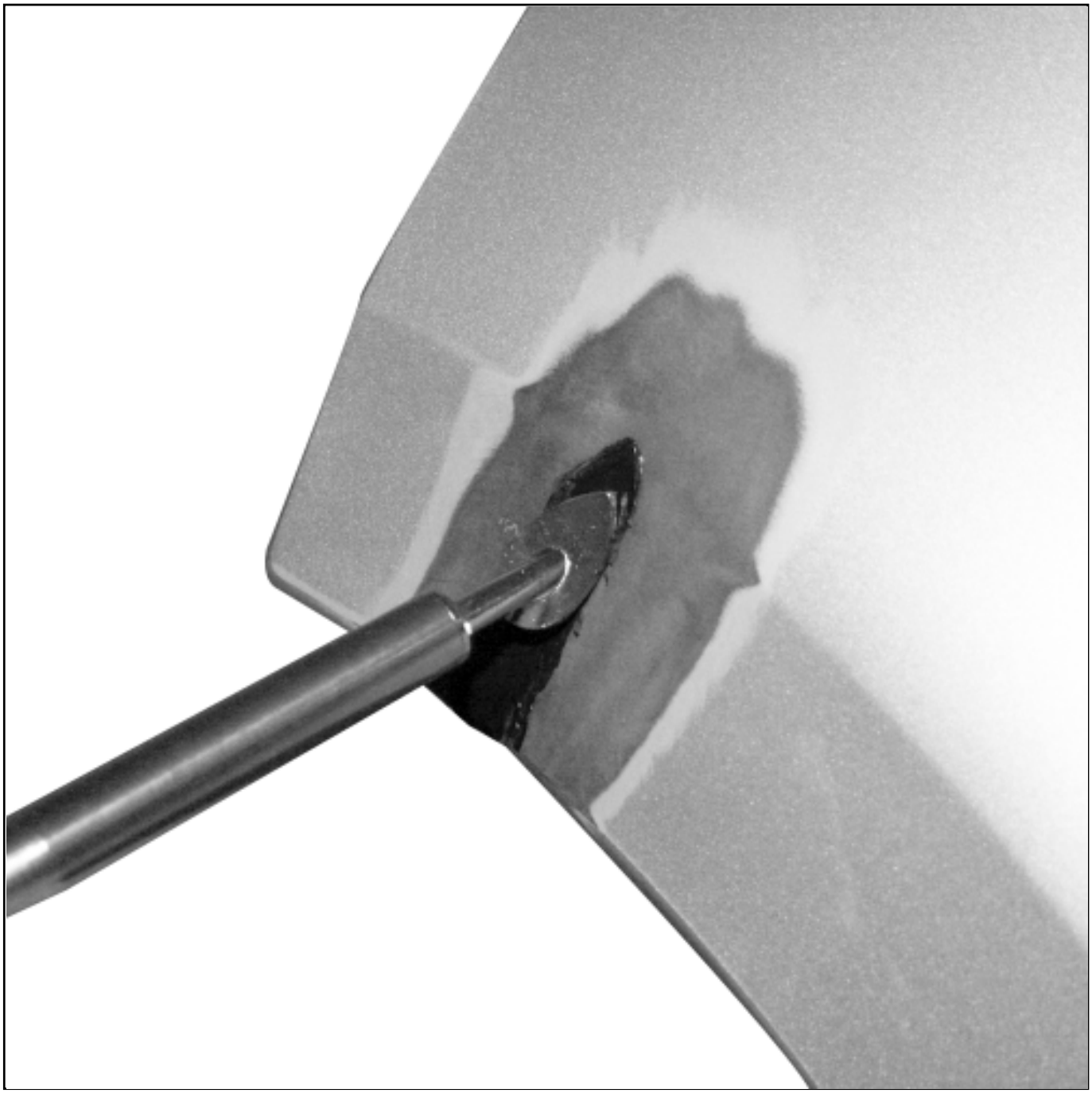
- Spot-weld the stainless steel mesh.

- Cool each spot weld, for two seconds, vigorously with the cooler**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

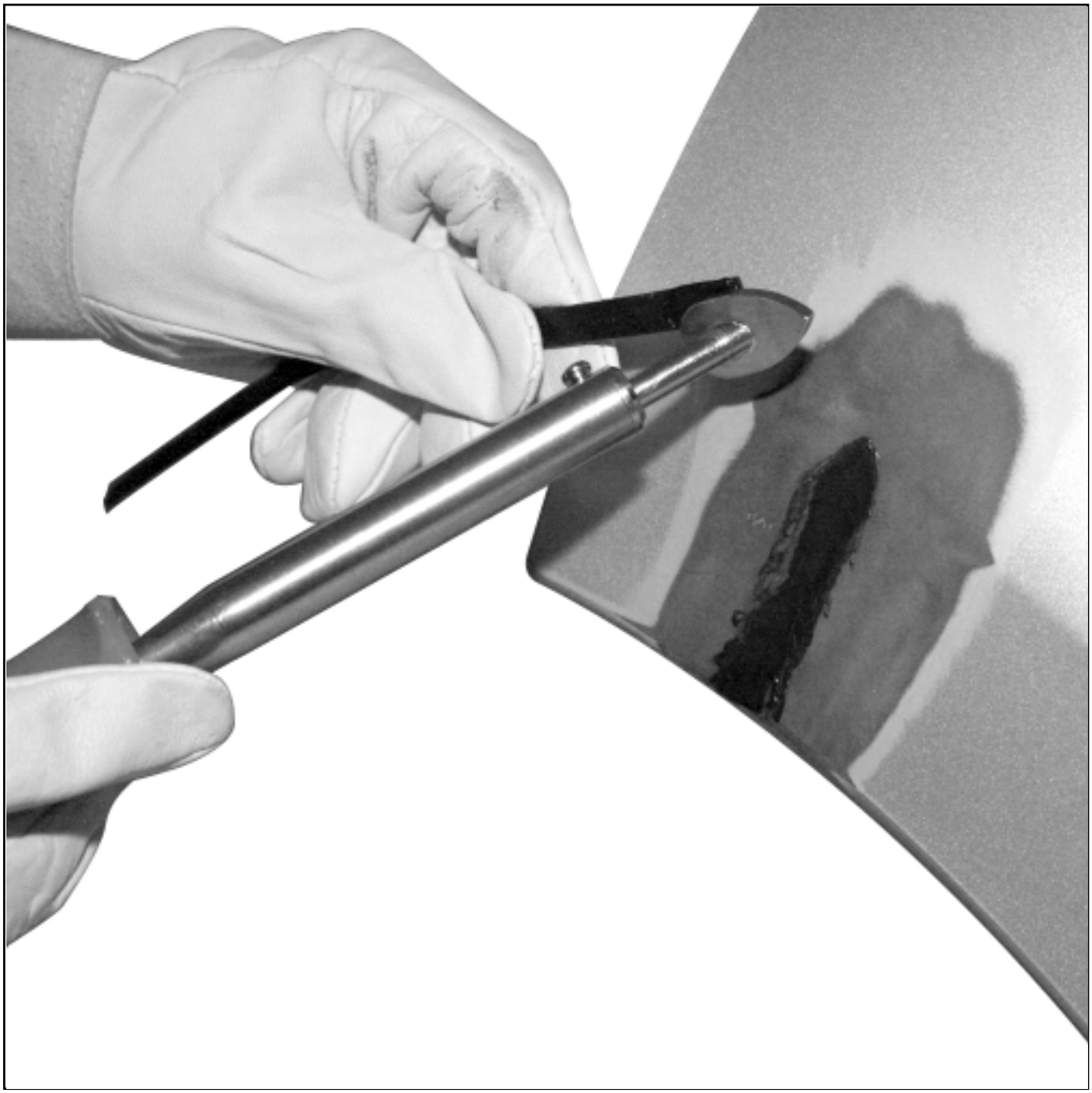


- Enclose the stainless steel mesh in the plastic material along the length of the crack.

- Cool the whole of the repaired area for two seconds, vigorously with the cooler**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).



- Weld the exterior part of the bumper.



❏ Add material by preheating the welding rod with the tip of the soldering iron (except for ABS, ASAand Polycarbonate type materials).

Note:

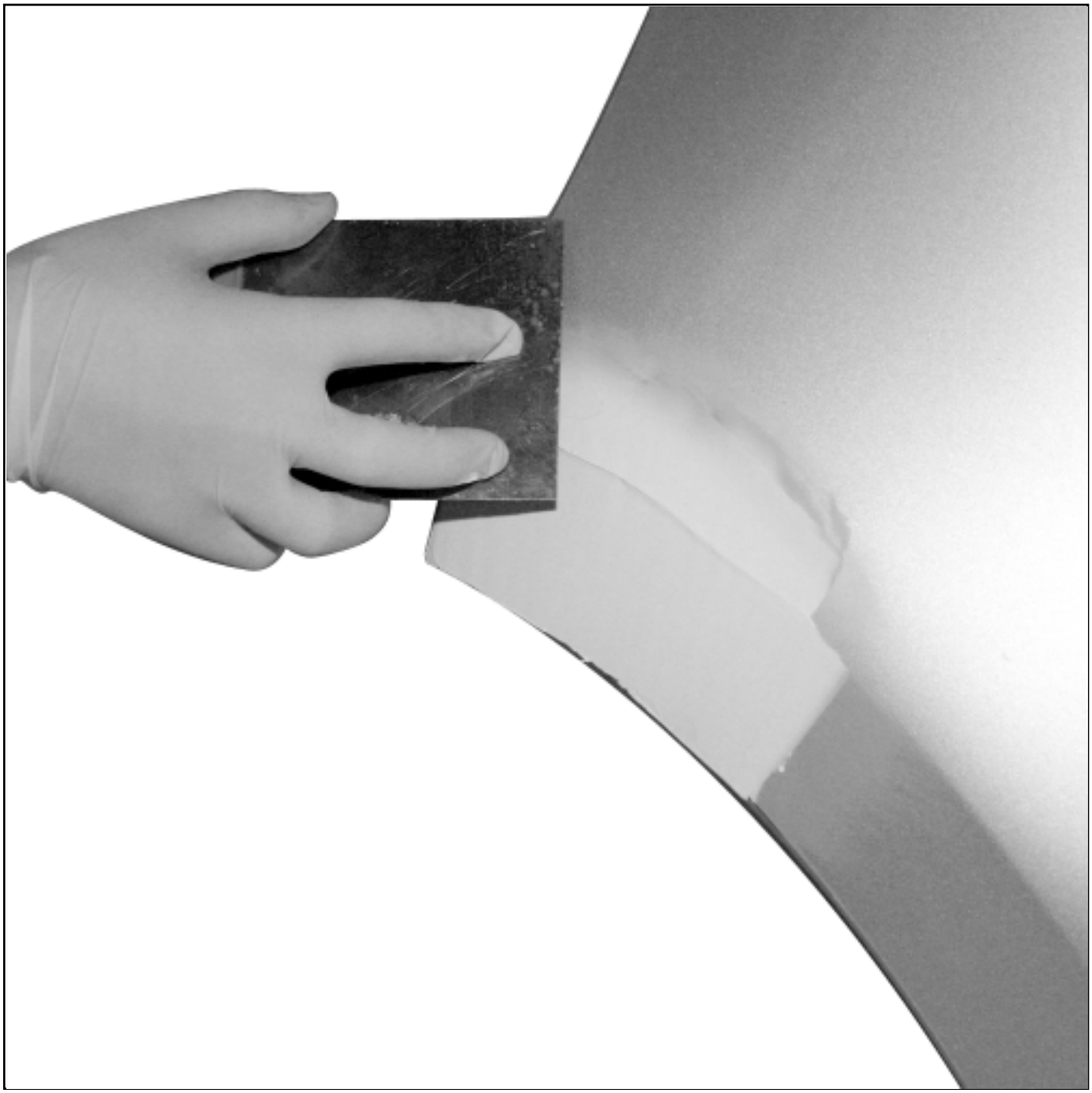
For ABS, ASAand Polycarbonate, fill the crack with the surrounding material

❏ Cool the whole of the repaired area for two seconds, vigorously with the cooler[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products).

- Surface with a P 80to P 150then finish with a P 240.

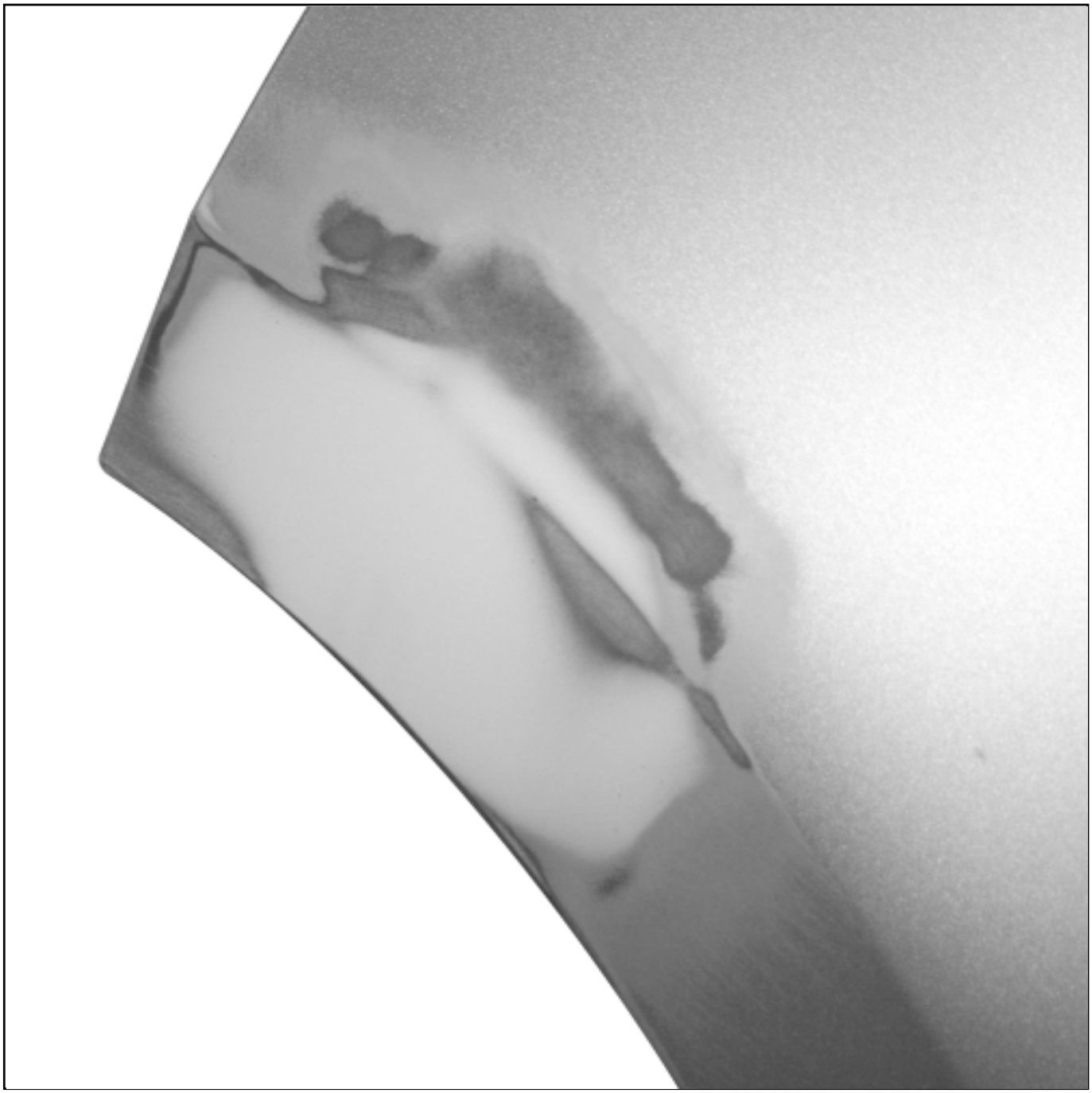
- Blow the component and clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNER **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

- Wipe the area with a clean, dry LINT-FREE CLOTH**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).



If necessary, apply a finishing mastic(see product technical sheet) **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

Sand the finishing masticwith a P 150then finish with a P 240.



- Follow the paint application procedure according to the material concerned:
  - **Polypropylene / polyethylene bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
  - **ABS bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic).

3- EPOXY RESINE METHOD

Note:

Method apply only on RTM component.

- Open the crack to let a hole of 10 mmwide.

- Chamfering between 30to 40 mmaround the crack using the orbital sander with a P80.

- Sand the paint around the zone to be repaired using the orbital sander with a P 150

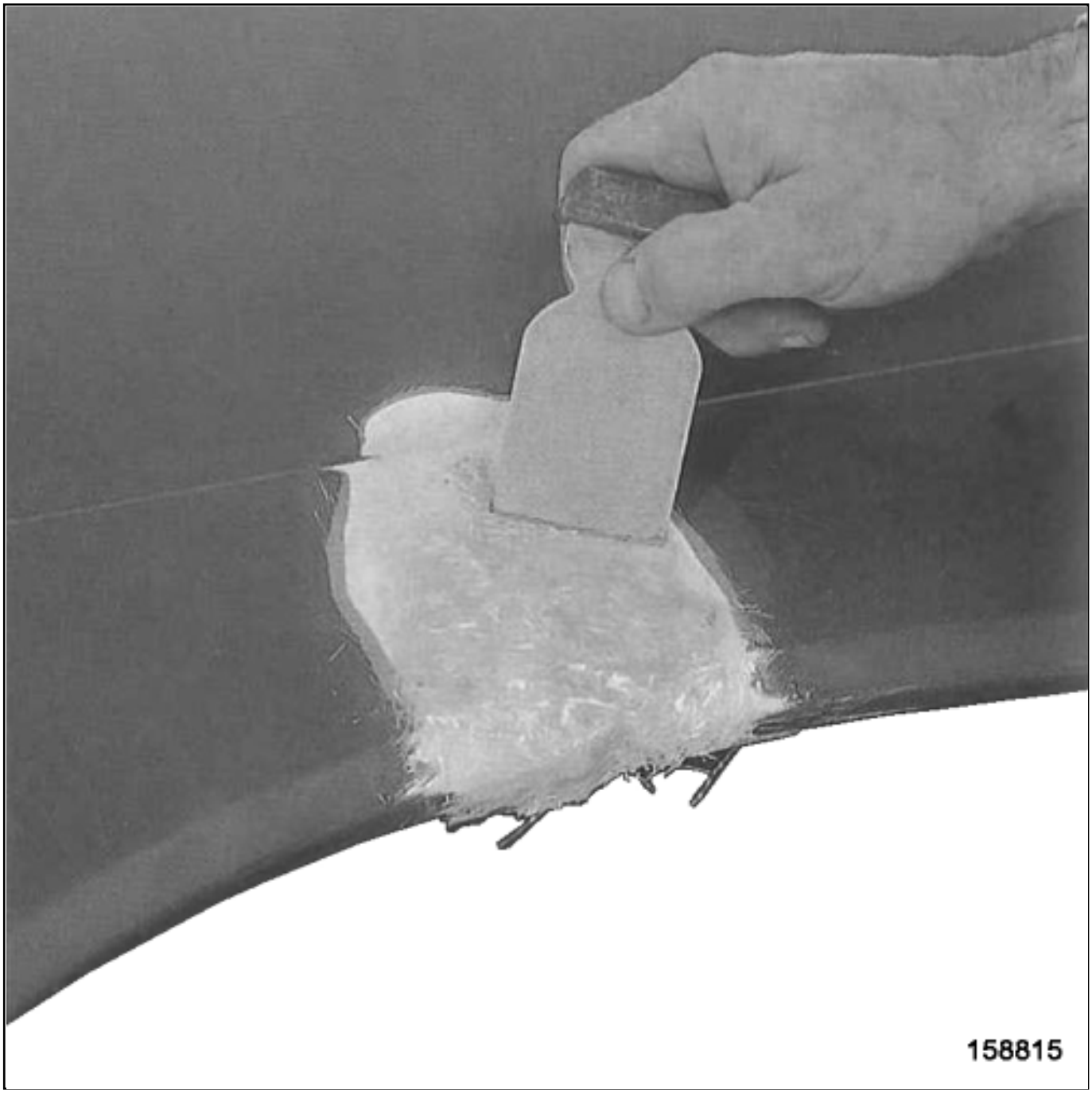
- Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).

- Align the borders of the component using a plate pad(local manufactured)and fix them with plate screws.

- Cut 2 strips of materialwith repair length, first of 50mmwide and second of 100 mmwide.

- Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).

- Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .



- Fit the strip of materiel.

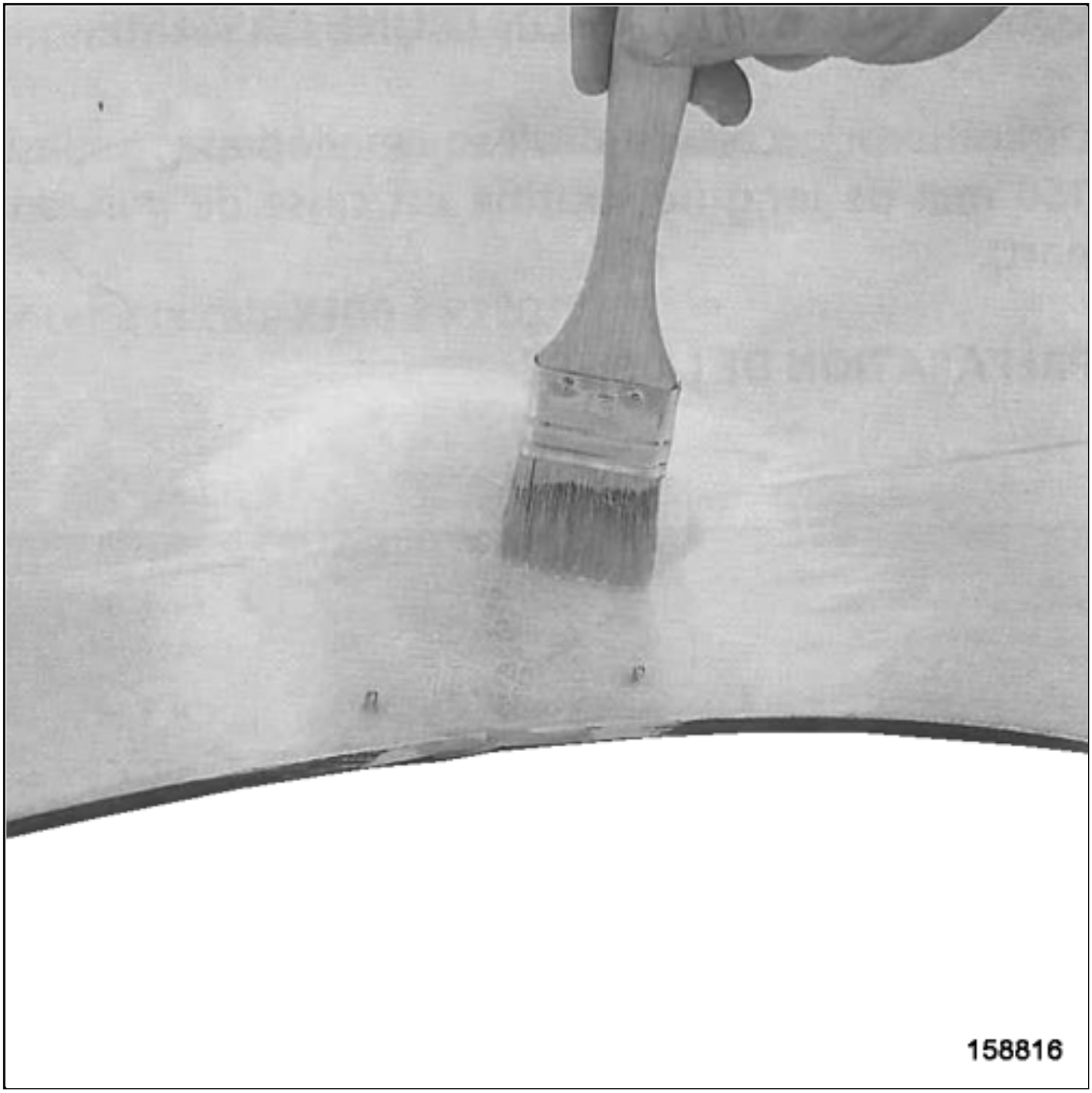
- Soaked the component interior with Epoxy resin.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).

- Remove the plate pads.

- Cut a strip covering the chamfer.



- Chamfering the screws holes.

- Fit the strip soaking with resin.

Note:

Pay particular attention at output screw area and at strips junction reinforcement to prevent the air bubbles form.

- Add short fibres with resin(50 % maxi.).
- Apply the mixture using a spatula.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).

- Sand using the orbital sander with a P 80then with a P180and P240.
- Apply if necessary a finishing mastic(see product technical sheet). (see **Vehicle: Parts and consumables for the repair**)
- Sand the finishing masticusing a P 150then finish using a P240.

4. PROCEDURE 3

- Repairing a hole on a plastic chassis element.

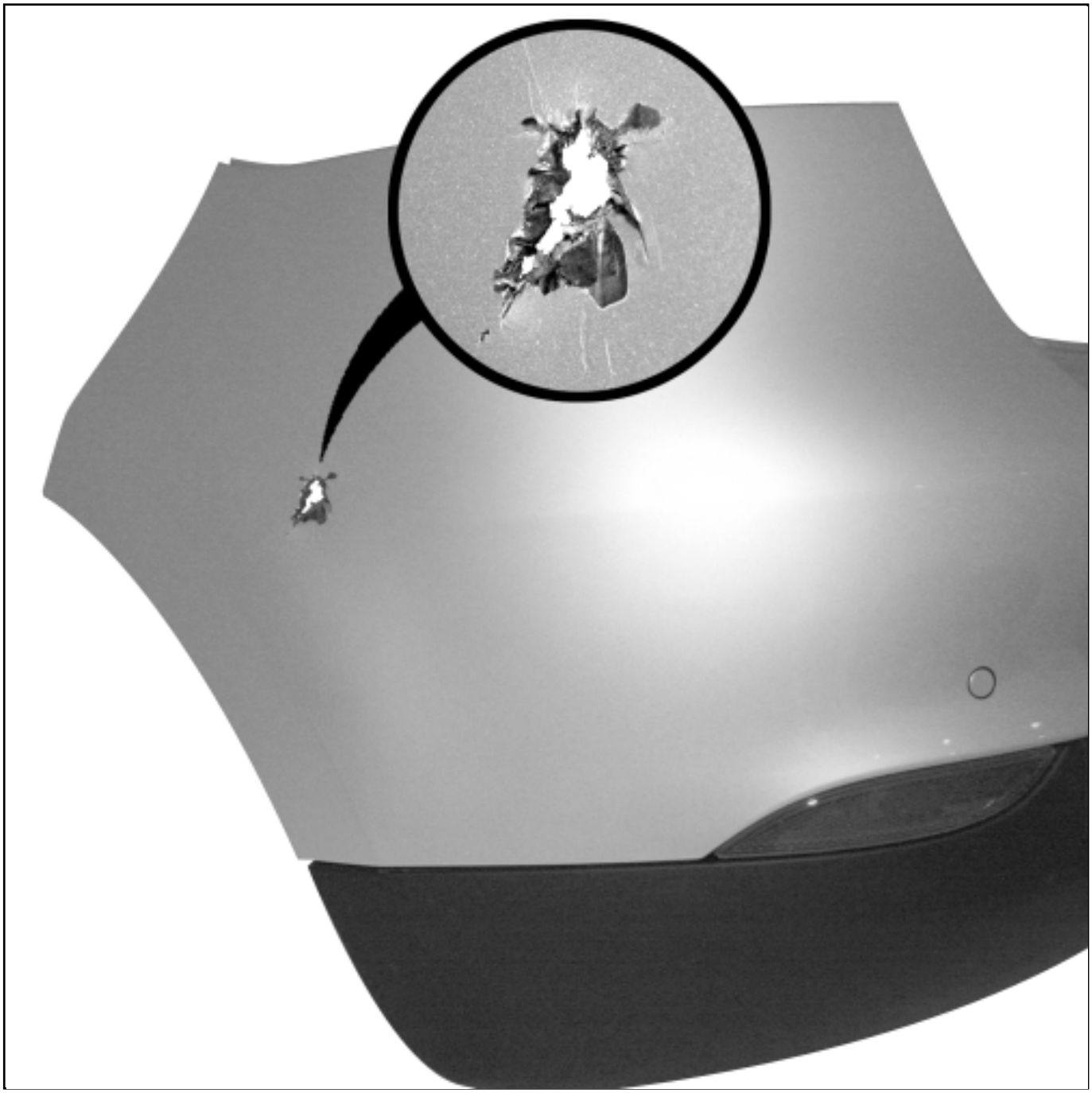
1- BONDING METHOD

Note:

Before any repairs, check the reparability of components made from plastic materials.

(see 50A, General information, Products for plastic material bodywork components: Description) .

(see 50A, General information, Plastic material bodywork component: Precautions for the repair) .



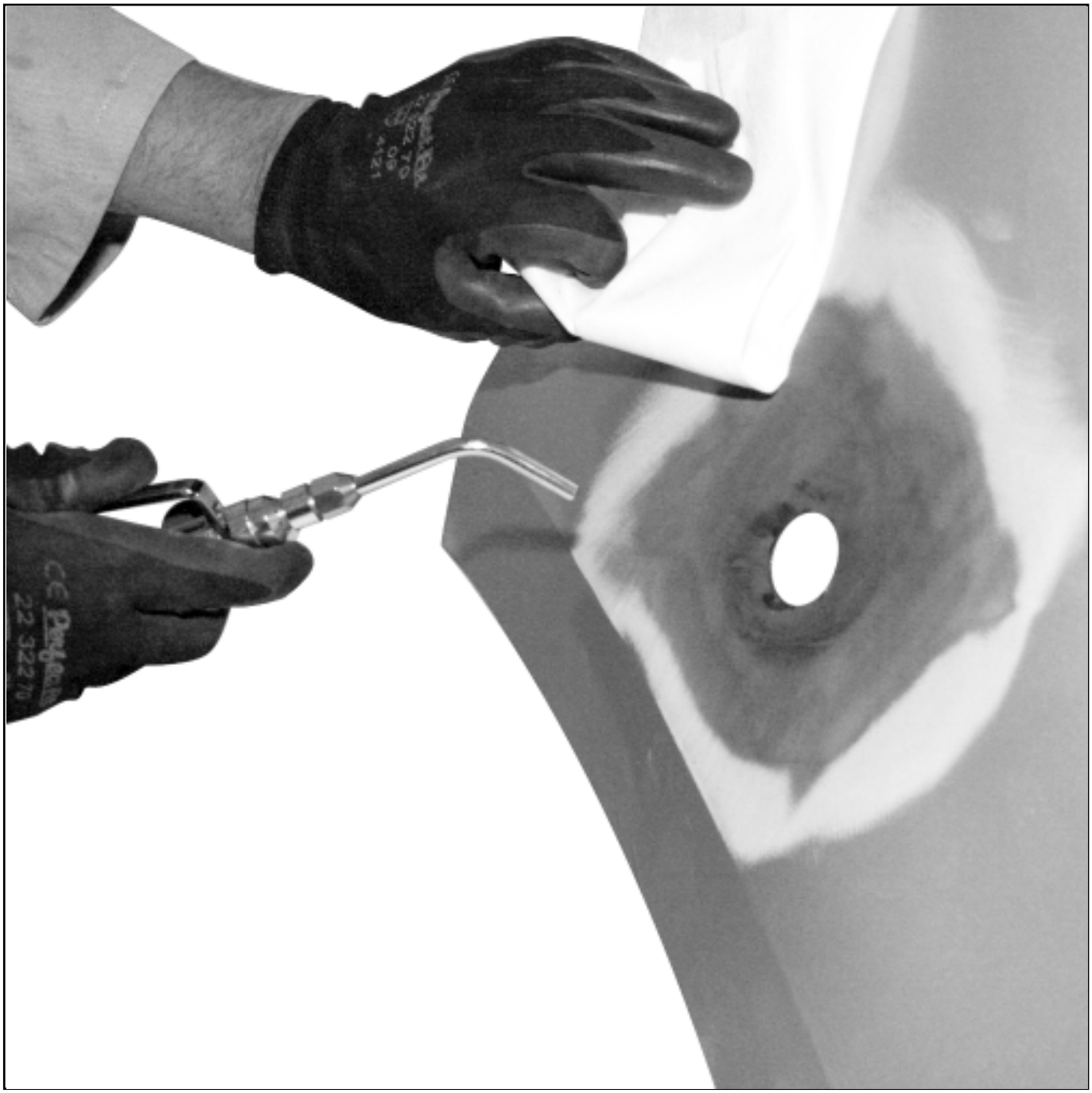
- Wash the component in soapy water and rinse in clean water.

- Clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNERVehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Chamfer on the exterior side using an angle grinder or a belt sander equipped with a P 120 abrasive pad.

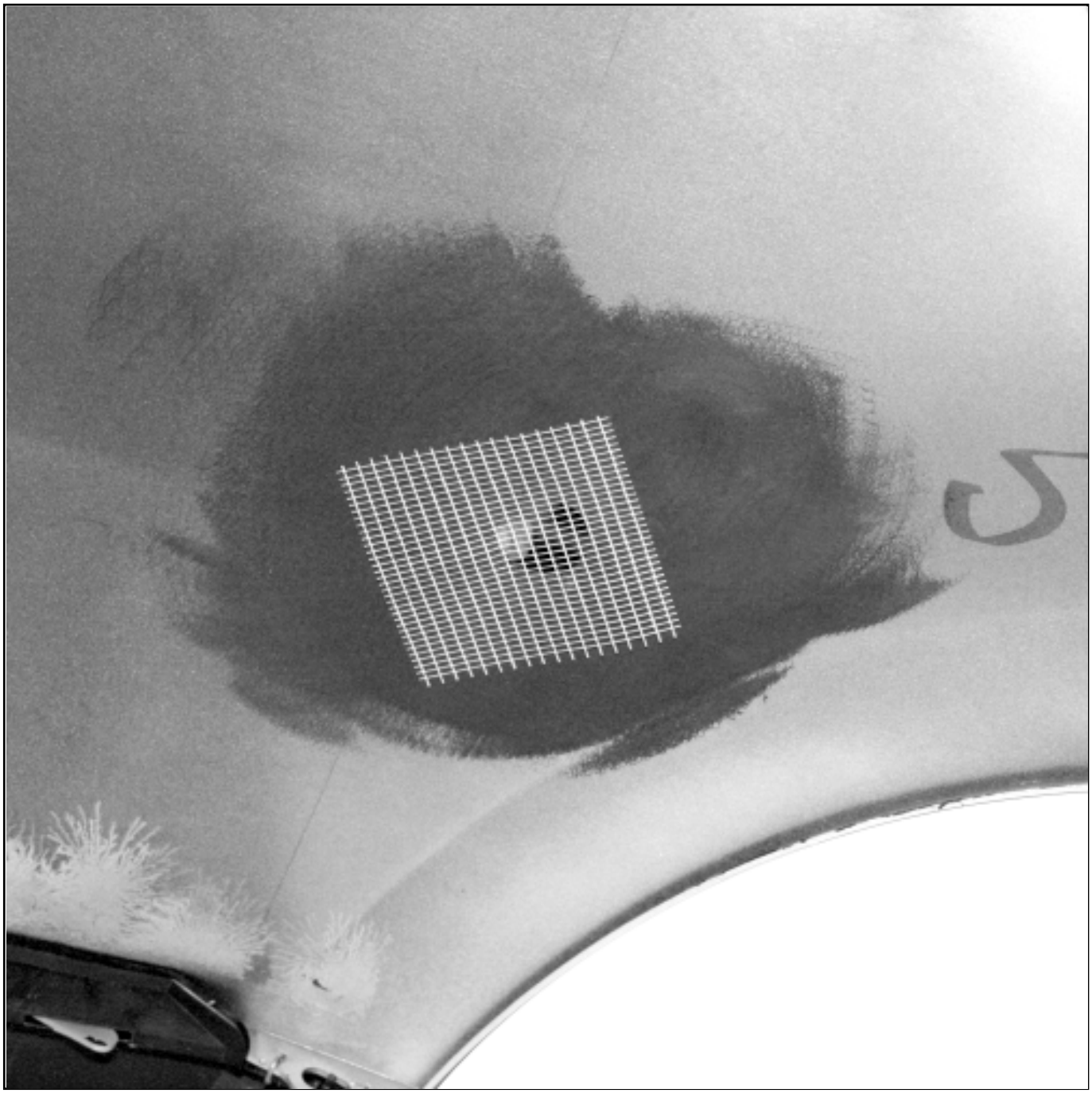
- Surface the interior and exterior areas with the orbital sander using a P 150.



- Blow the component and clean the area to be repaired with the cleaner included in the plastic repair kit box.

- Apply the adhesive primer included in the plastic repair kit to the interior and exterior areas.

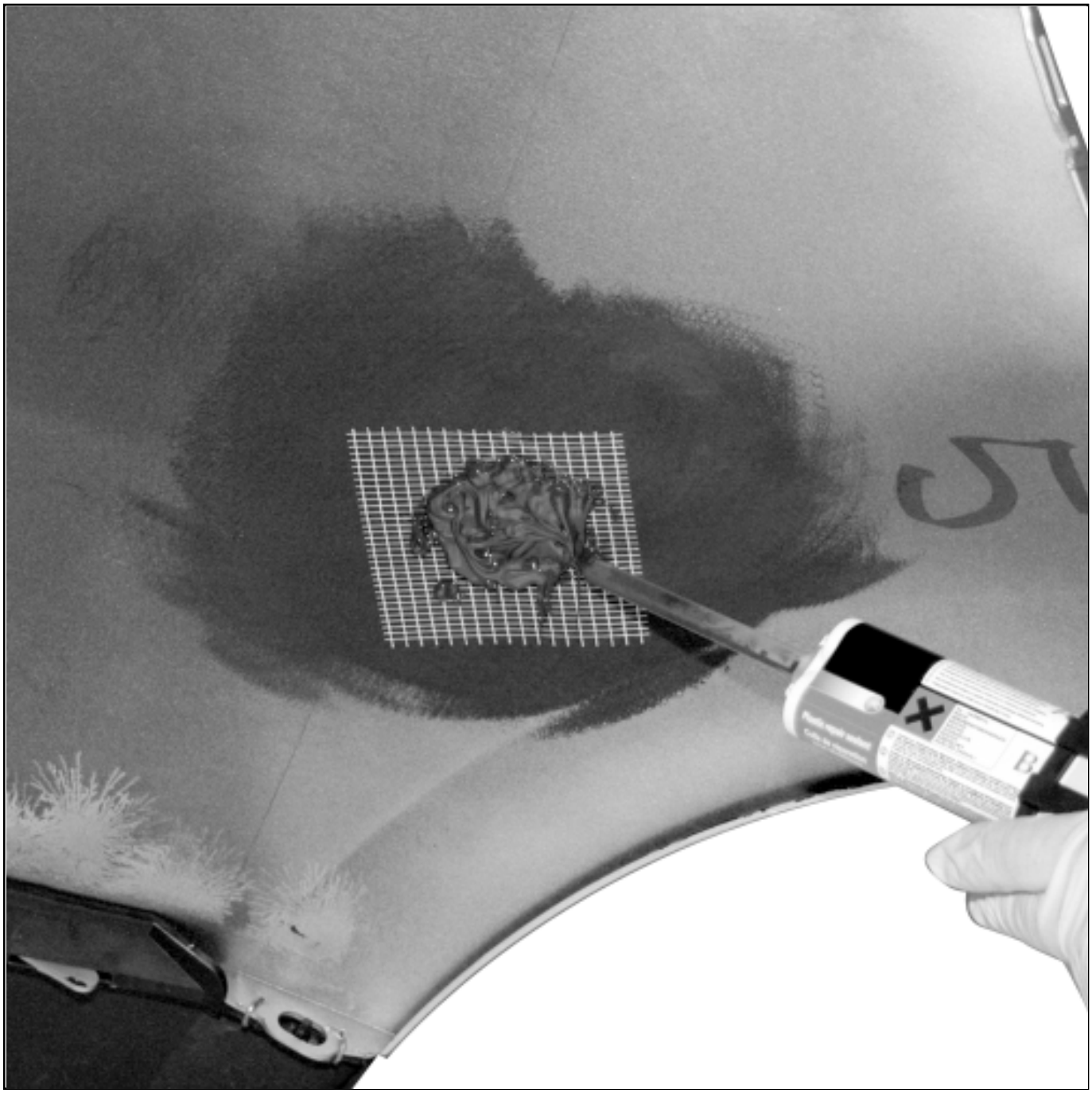
- Leave the adhesive primer to dry (see product technical sheet).



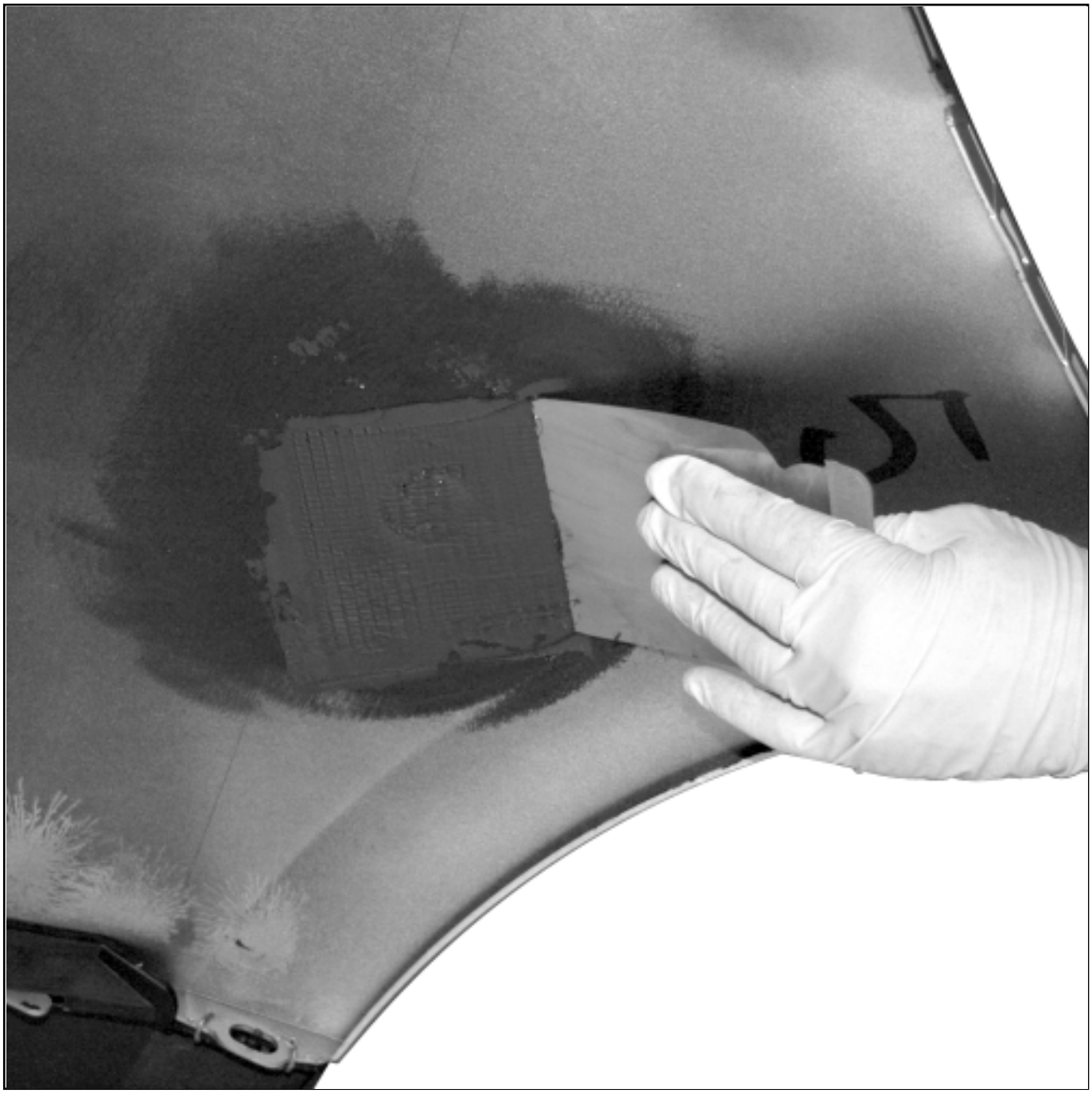
- Adjust a piece of reinforcing film (cloth)suitable for repairing the inside of the component.

- Prepare the bi-component repair mastic(see 50A, General information, Products for plastic material bodywork components: Description) .

- Extrude a narrow bead around the areas to be repaired on the inside of the component and apply reinforcing film (cloth).

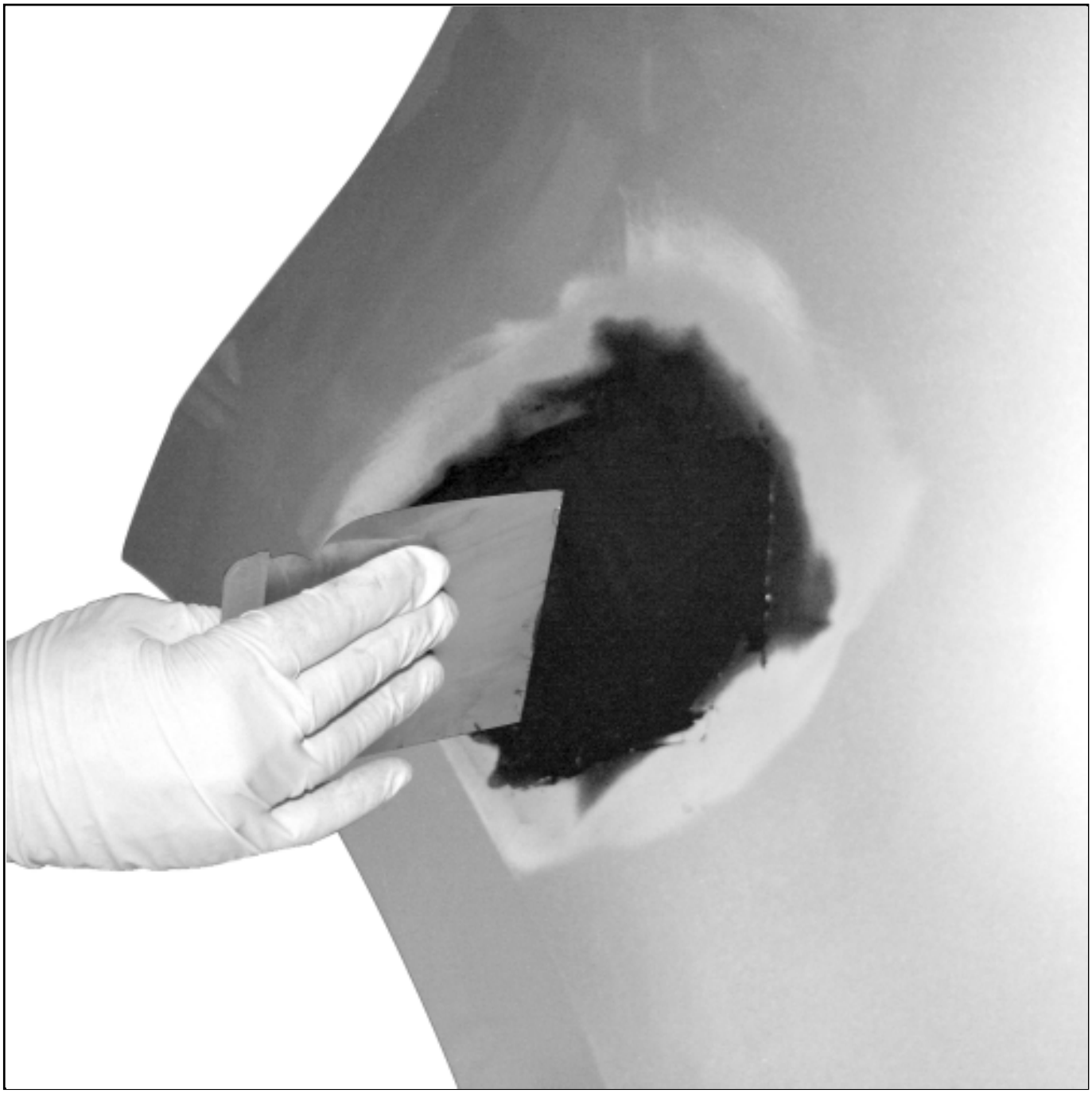


- Extrude a thick bead on the reinforcing film (cloth)at the hole.



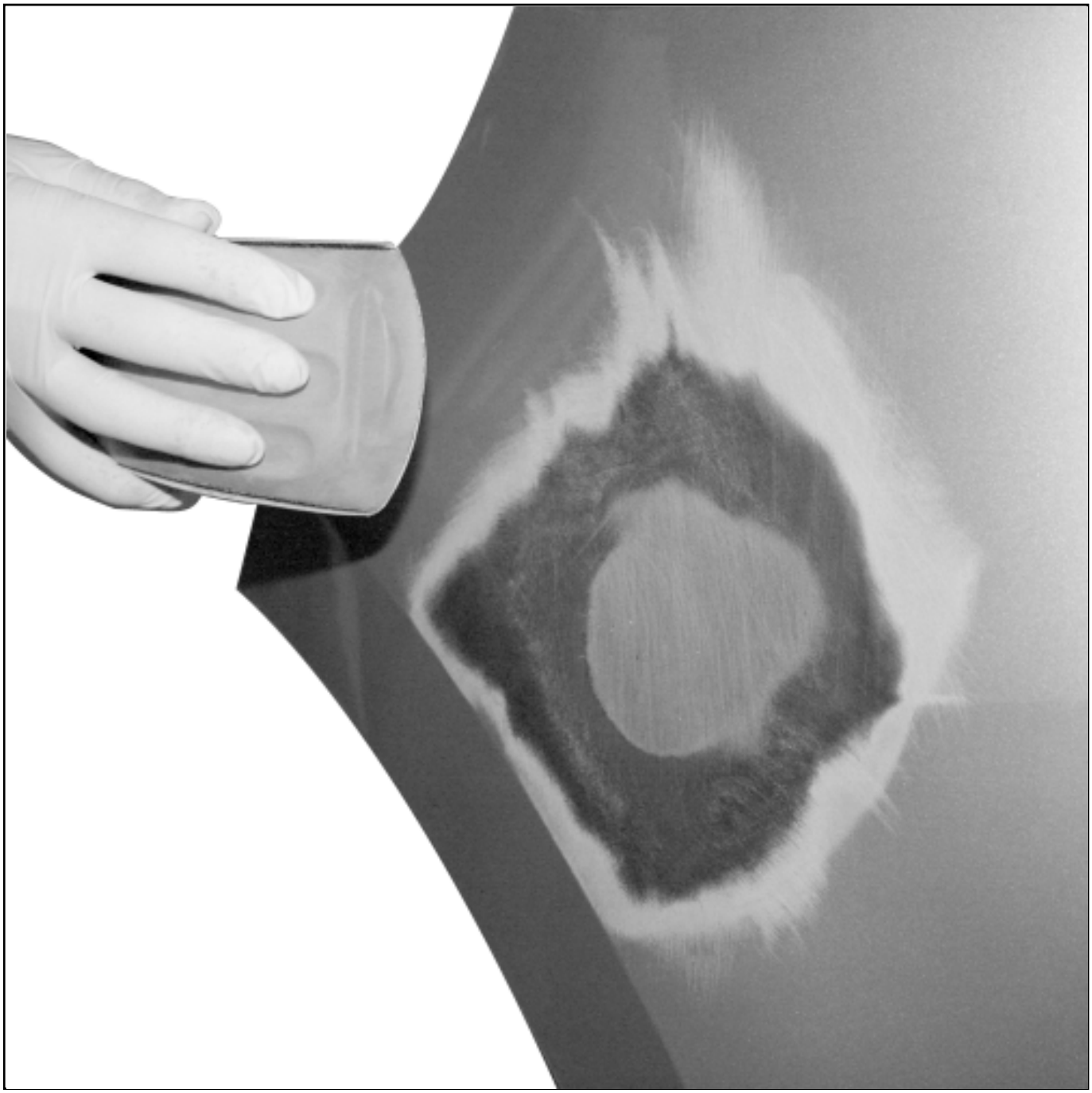
- Smooth using a spatula.

- Extrude a thick bead on the reinforcing film (cloth)at the hole on the exterior.

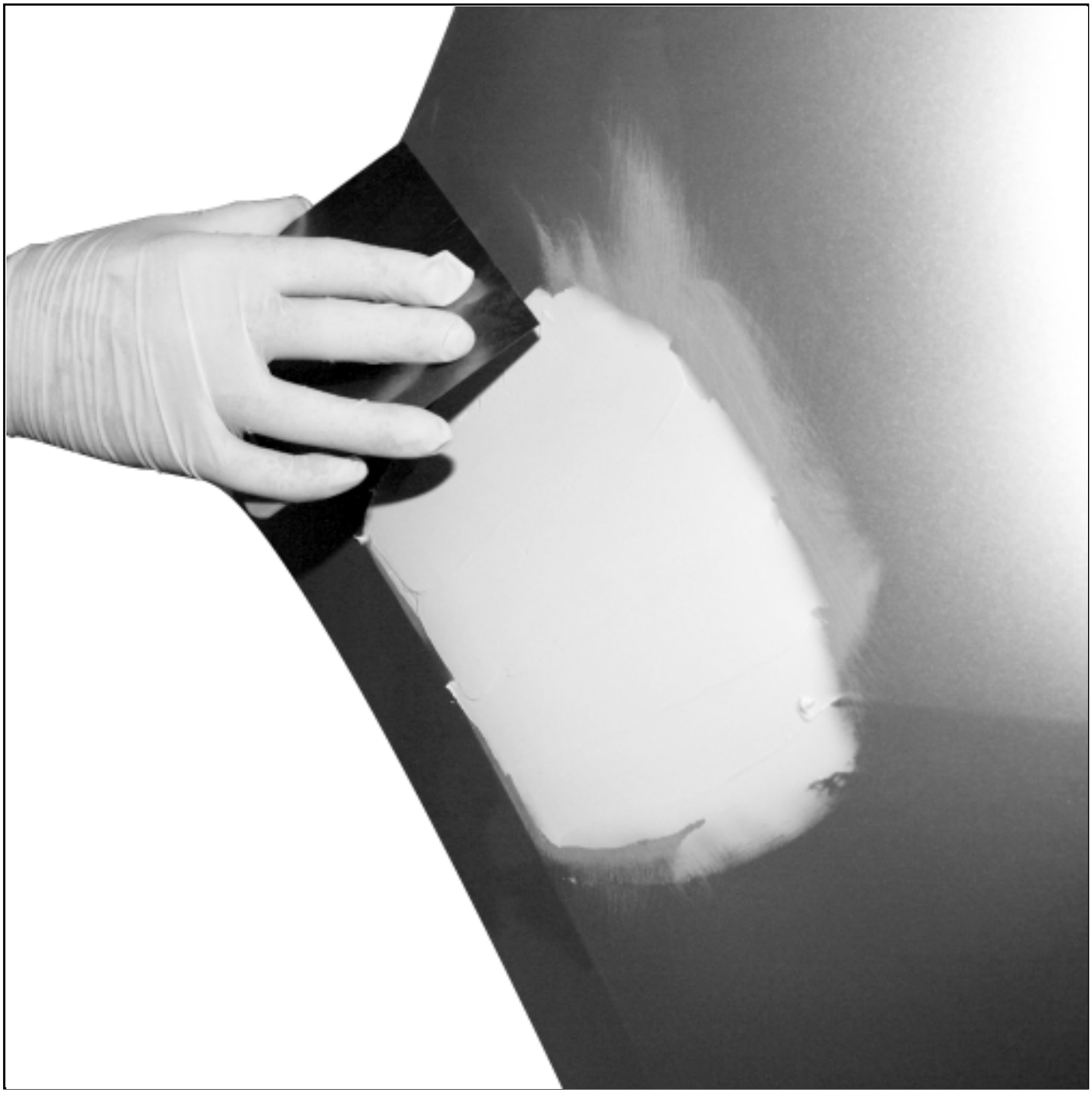


- Smooth using a spatula.

- Leave the bi-component repair masticto dry (see product technical sheet).

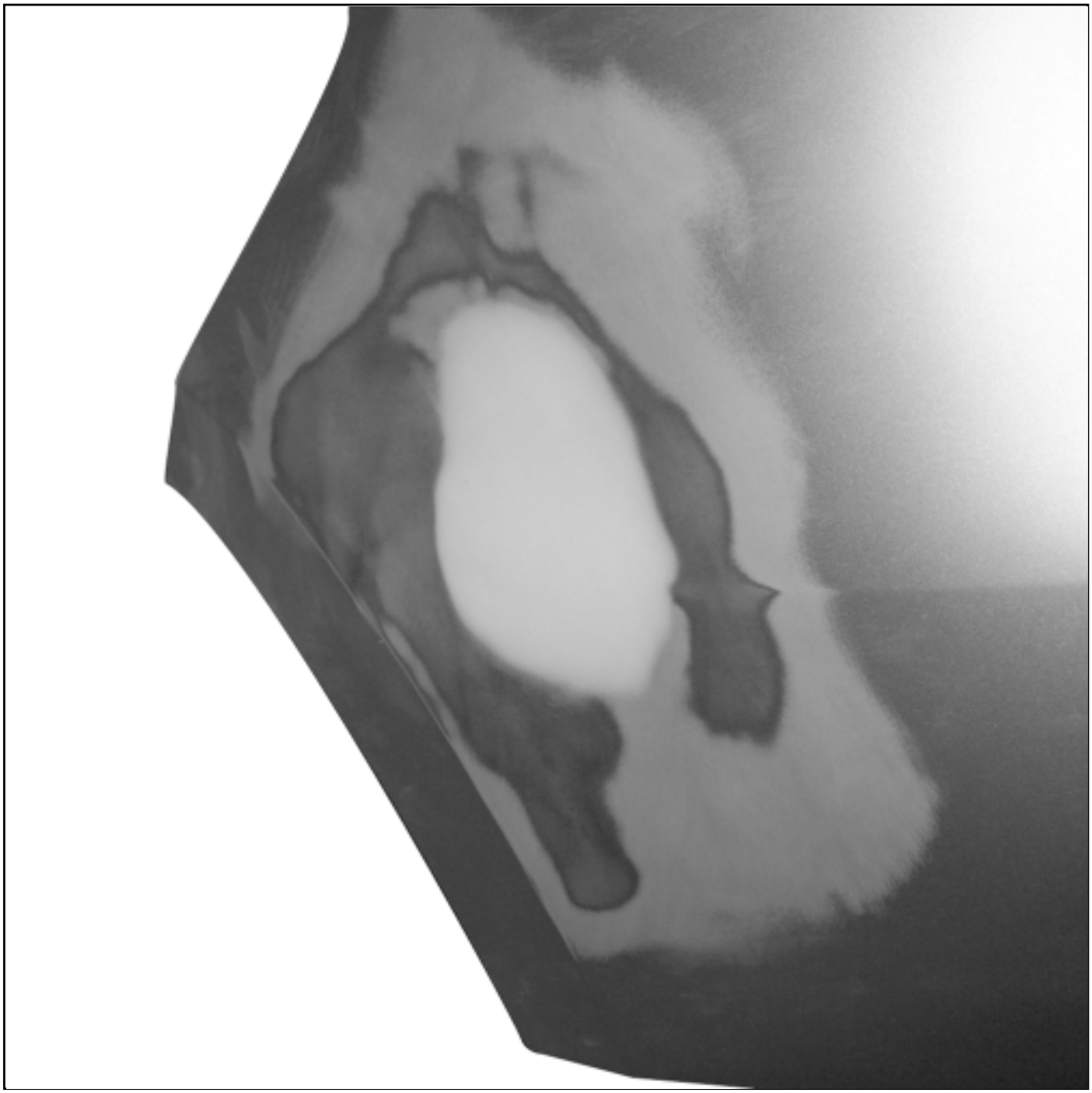


- Surface on the exterior side with a P 150then finish with a P 240.



- If necessary, apply a finishing mastic(see product technical sheet) **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

- Sand the finishing masticwith a P 150then finish with a P 240.



Follow the paint application procedure according to the material concerned:

- **SMC bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **Polypropylene / polyethylene bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **ABS bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic),
- **Noryl bodywork component: Preparation and paint range** (Technical Note 592A, 95A, Paint application procedure on plastic).

2- WELD METHOD

Note:

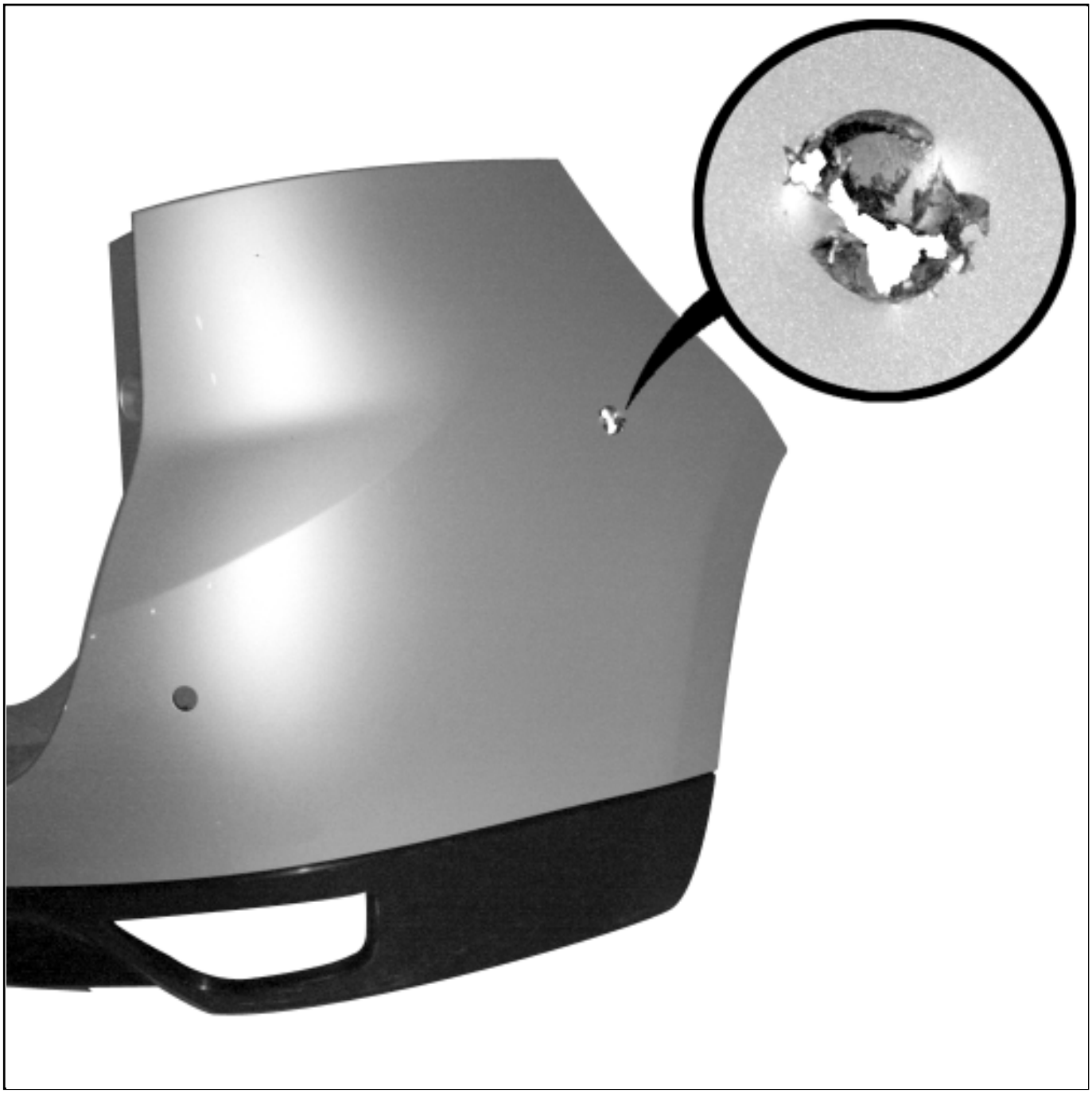
Before any repairs, check the reparability of components made from plastic materials.

(see 50A, General information, Products for plastic material bodywork components: Description) .

(see 50A, General information, Plastic material bodywork component: Precautions for the repair) .

Note:

This repair cannot be carried out on ABS, ASAand Polycarbonateplastics.



- Wash the component in soapy water and rinse in clean water.

- Clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNERVehicle: Parts and consumables for the repair (04B, Consumables - Products).

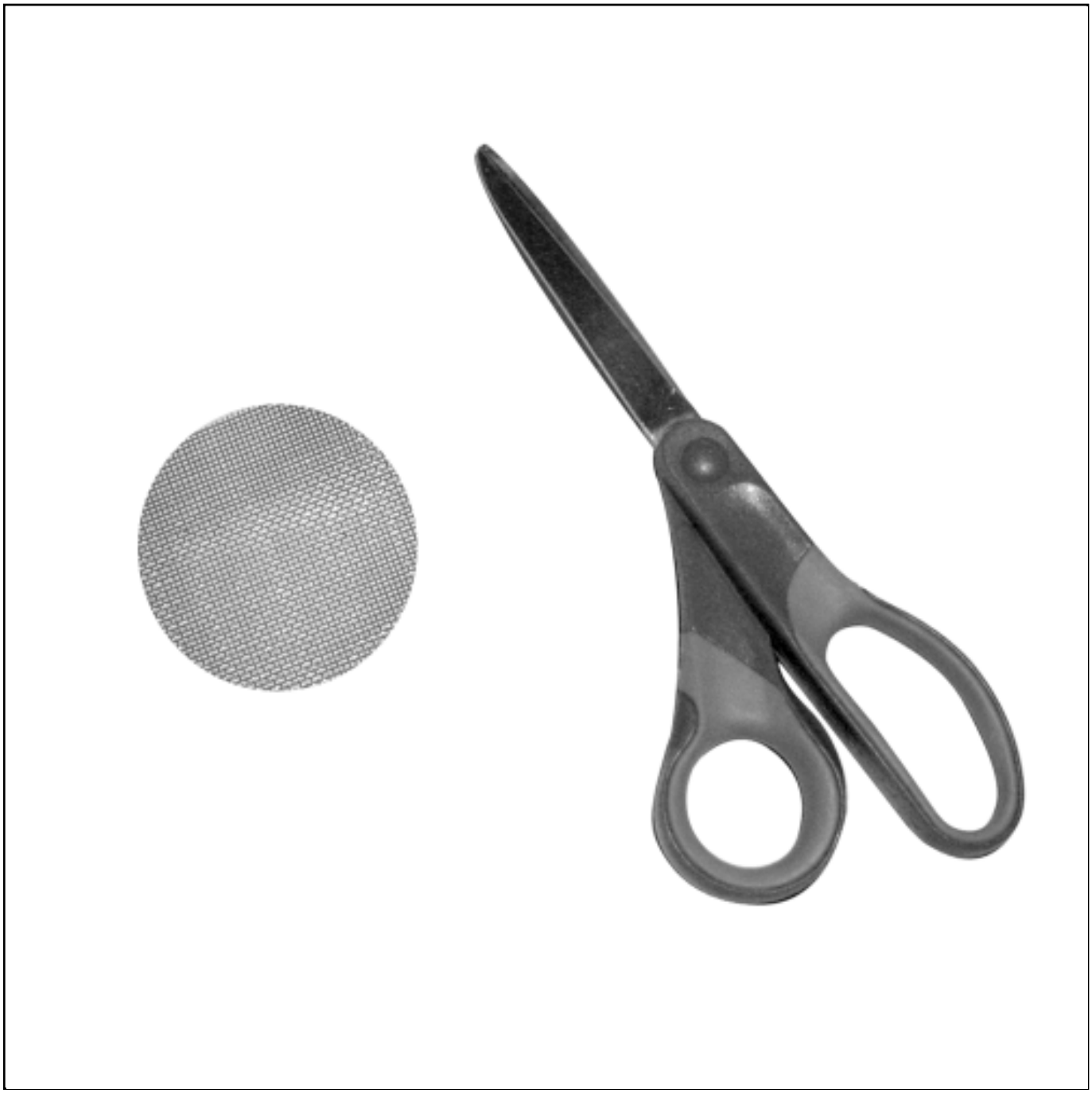
- Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Strip the paint with a P 150 over a radius of 100 mm.

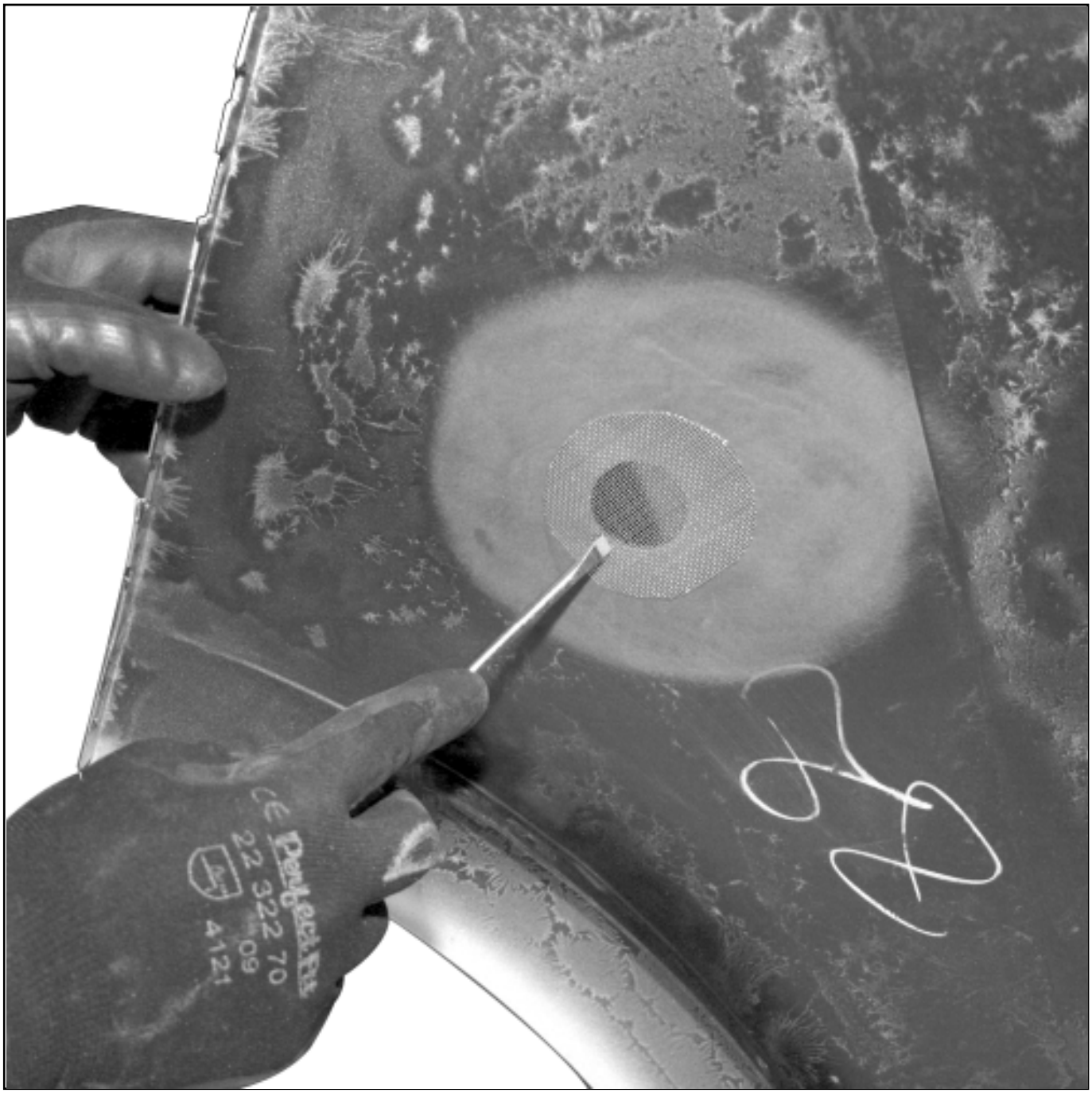
- Blow the component and clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNER Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

- Preheat the soldering iron.



- Cut the stainless steel mesh suitable for the repair.



- Adjust the stainless steel mesh and hold it using a dedicated tool.

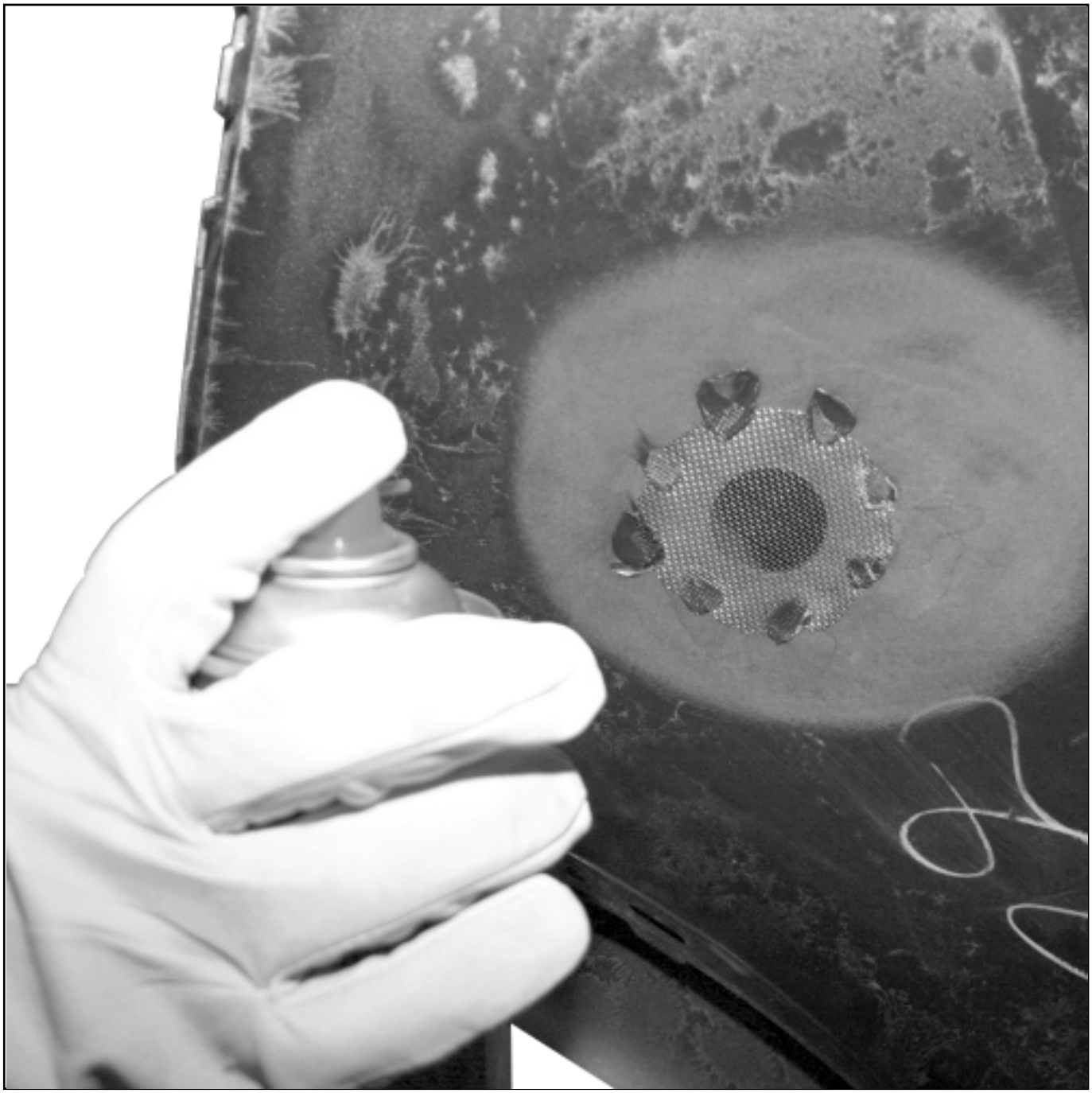
- Spot weld around the edge of the stainless steel mesh frame with the tip of the soldering iron.

Note:

For noryl:

Add material around the edge of the hole by preheating the welding rod with the tip of the soldering iron.

Enclose the stainless steel mesh in the additional material.



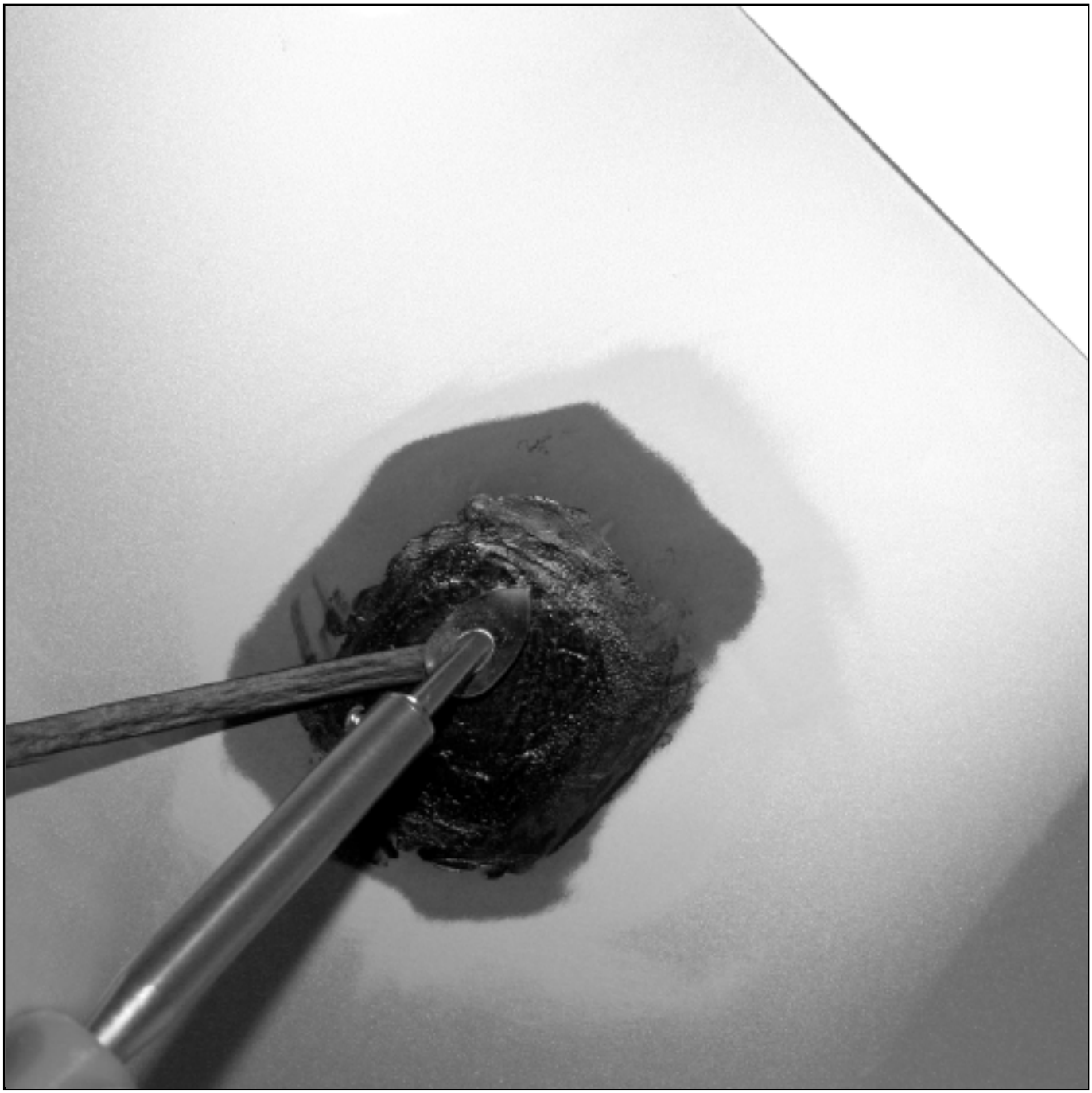
- Cool each spot weld, for two seconds, vigorously with the cooler**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

- Enclose the stainless steel frame in the plastic material.

- Cool the whole of the repaired area for two seconds, vigorously with the cooler**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

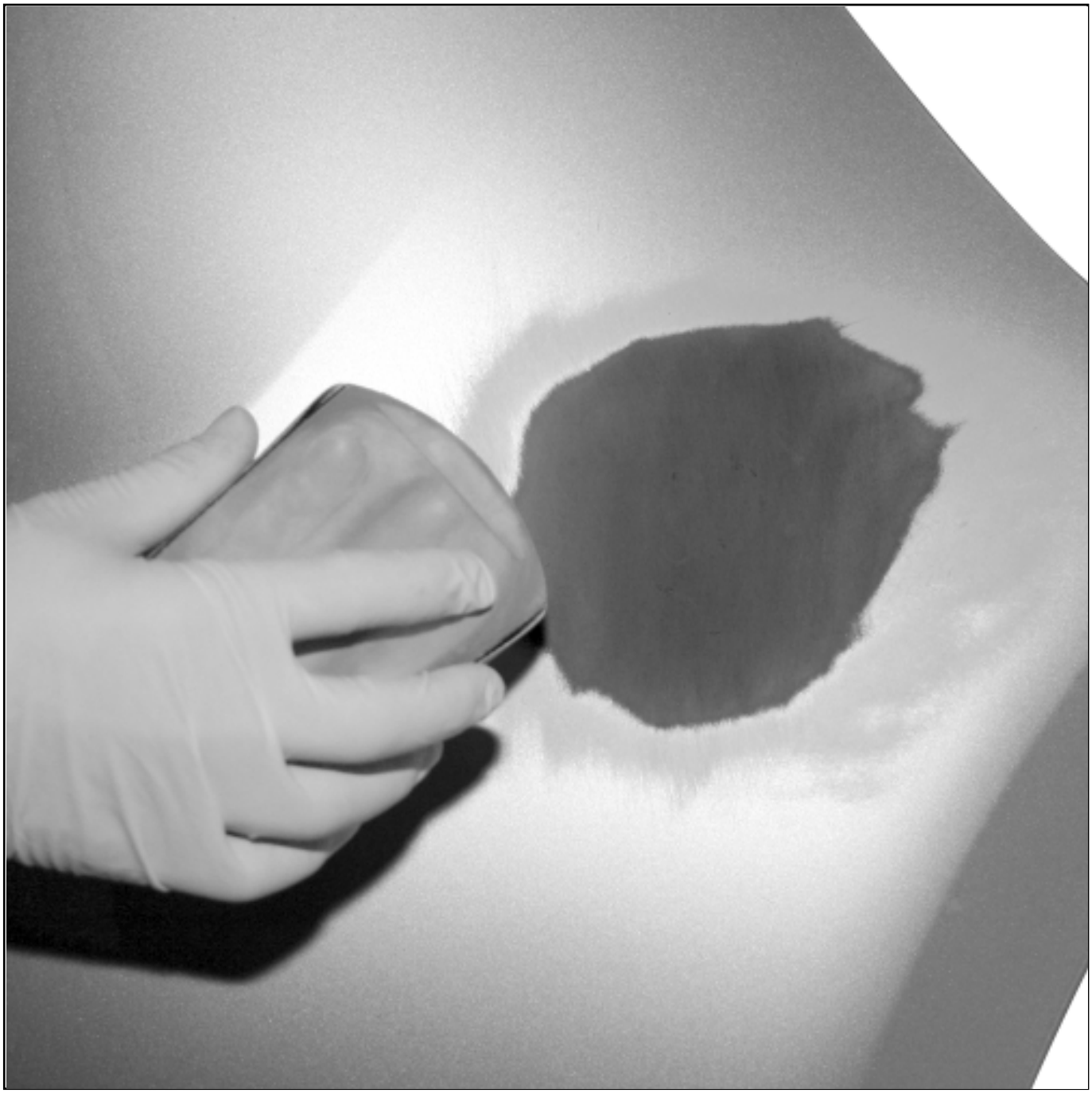
- Add material by preheating the welding rod with the tip of the soldering iron.

- Cool the whole of the repaired area for two seconds, vigorously with the coolerVehicle: Parts and consumables for the repair (04B, Consumables - Products).

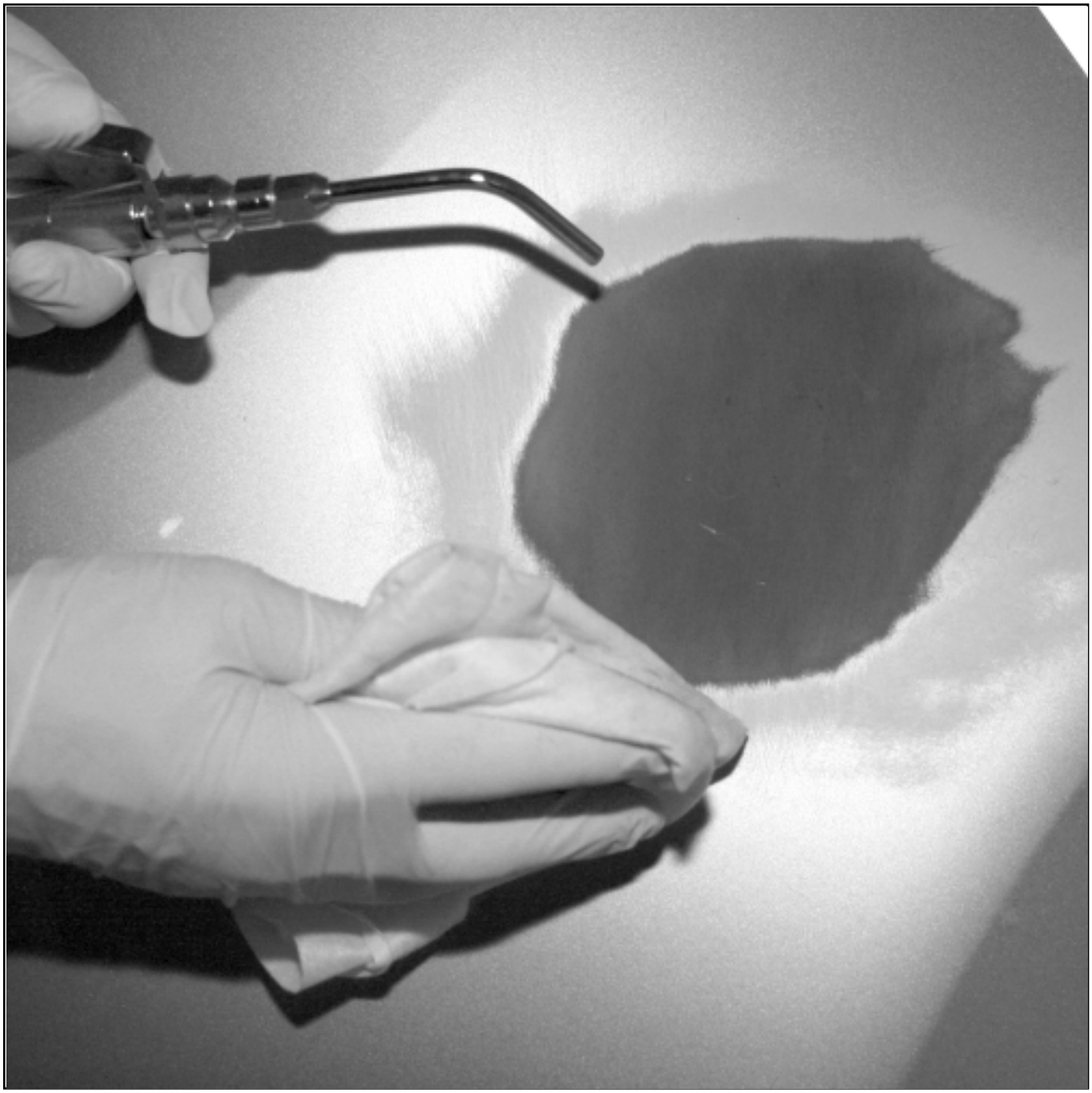


- Add material to the exterior by preheating the welding rod with the tip of the soldering iron.

- Cool the whole of the repaired area for two seconds, vigorously with the cooler[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products).

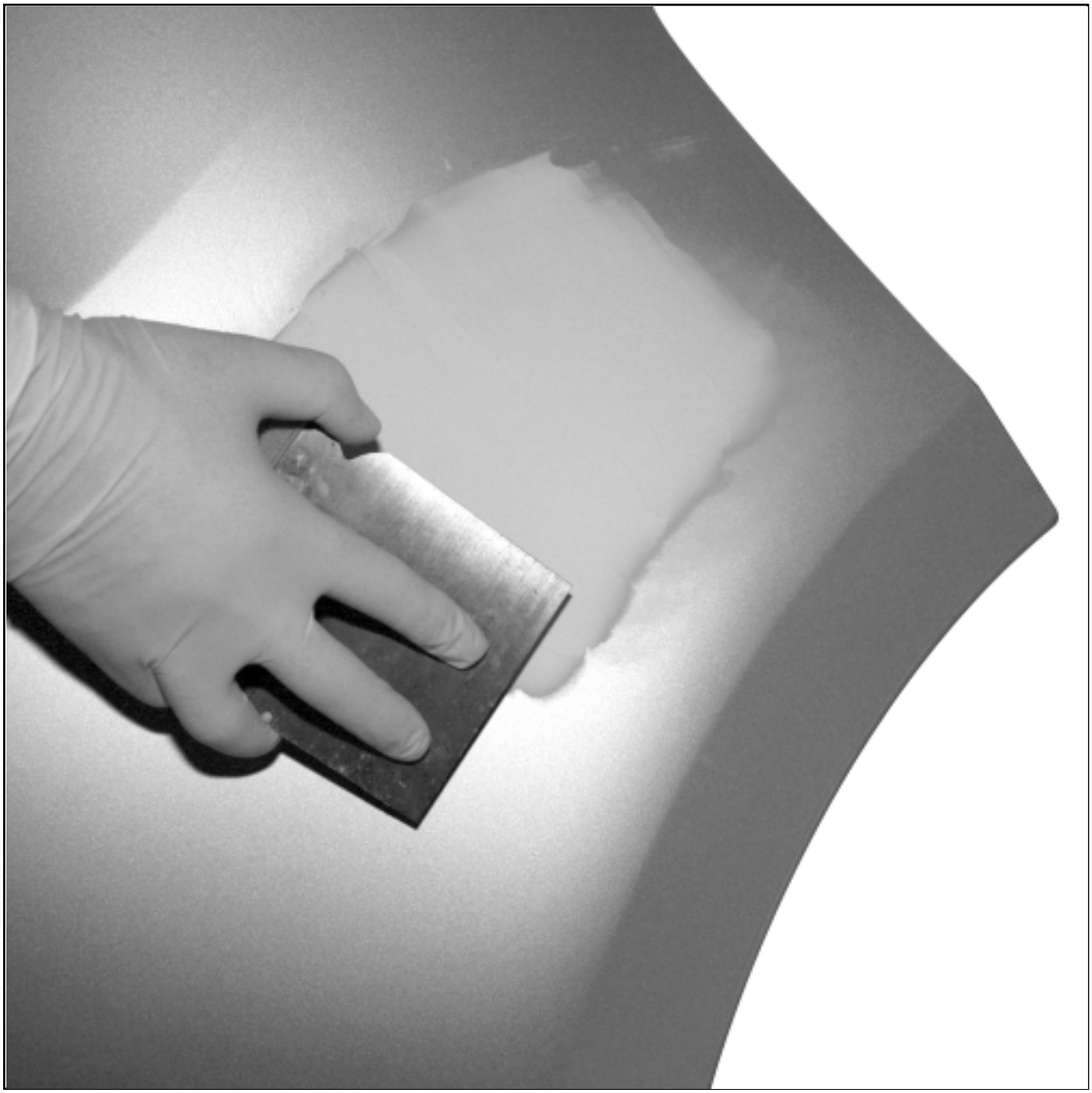


- Surface with a P 80to P 150then finish with a P 240.



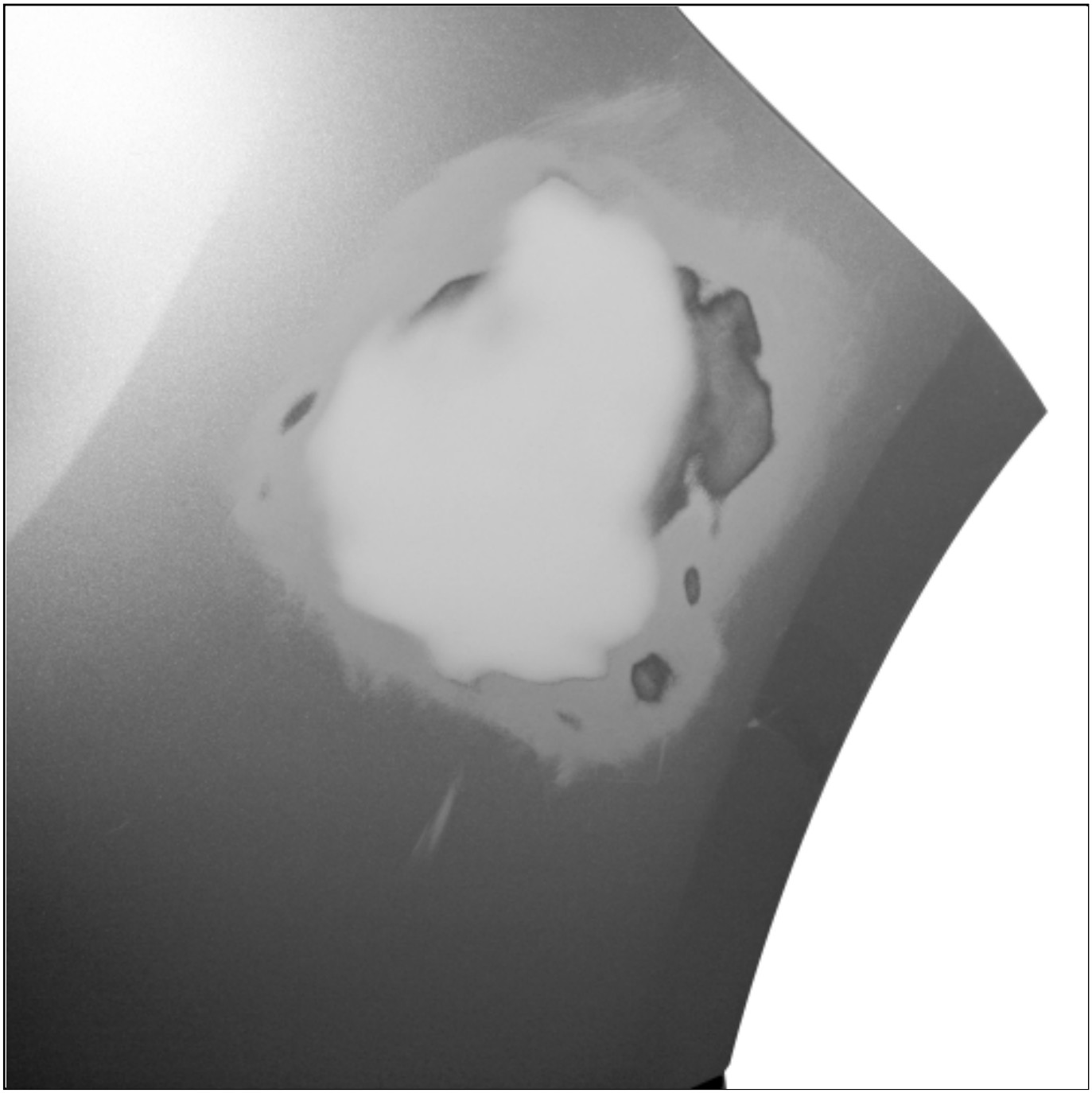
Blow the component and clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNER Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).



If necessary, apply a finishing mastic(see product technical sheet) **Vehicle: Parts and consumables for the repair** (04B, Consumables - Products).

Sand the finishing masticwith a P 150then finish with a P 240.

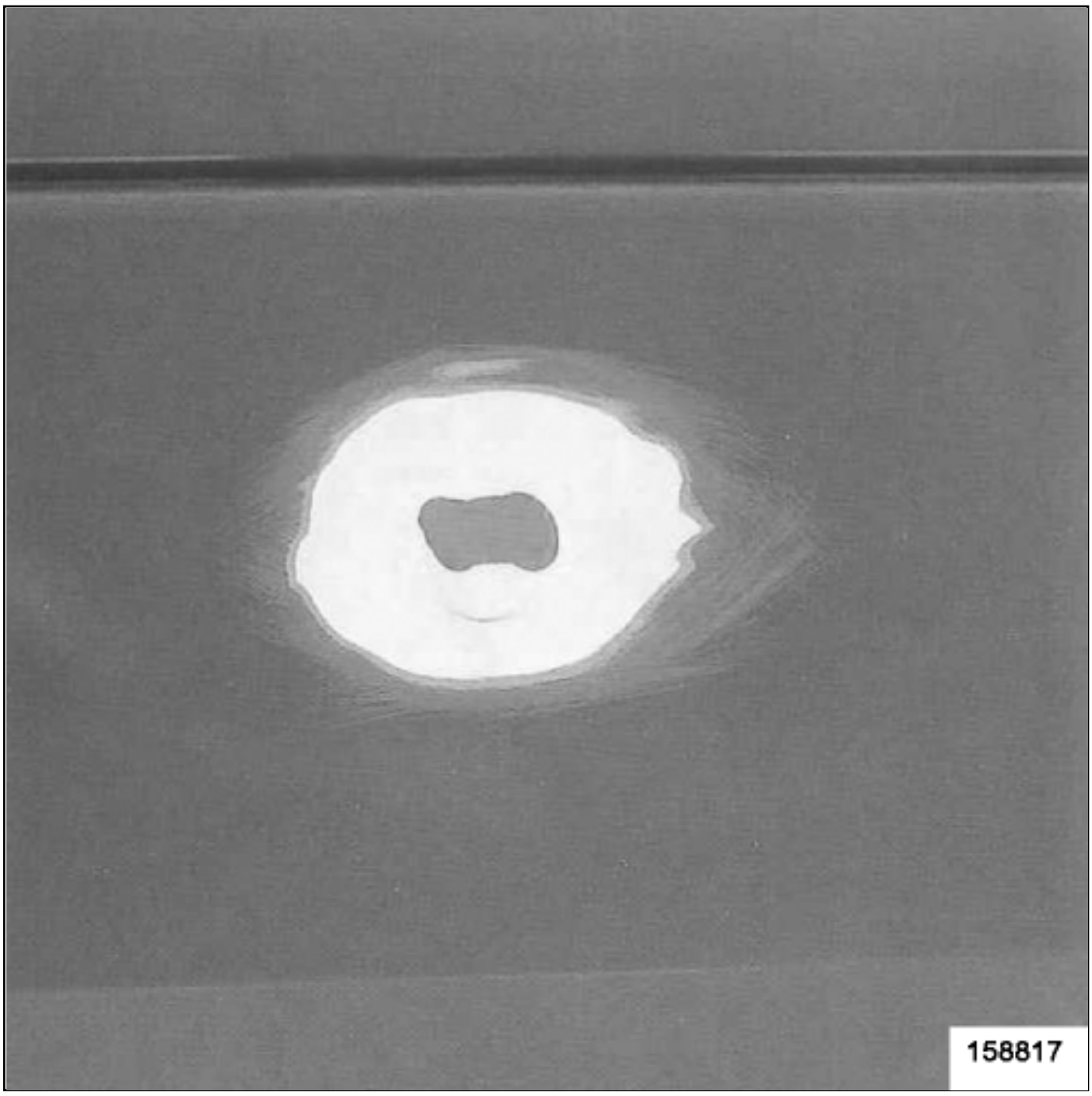


Follow the paint application procedure according to the material concerned:

- Polypropylene / polyethylene bodywork component: Preparation and paint range (Technical Note 592A, 95A, Paint application procedure on plastic),
- Noryl bodywork component: Preparation and paint range (Technical Note 592A, 95A, Paint application procedure on plastic).

Note:

Method apply only on RTM component.



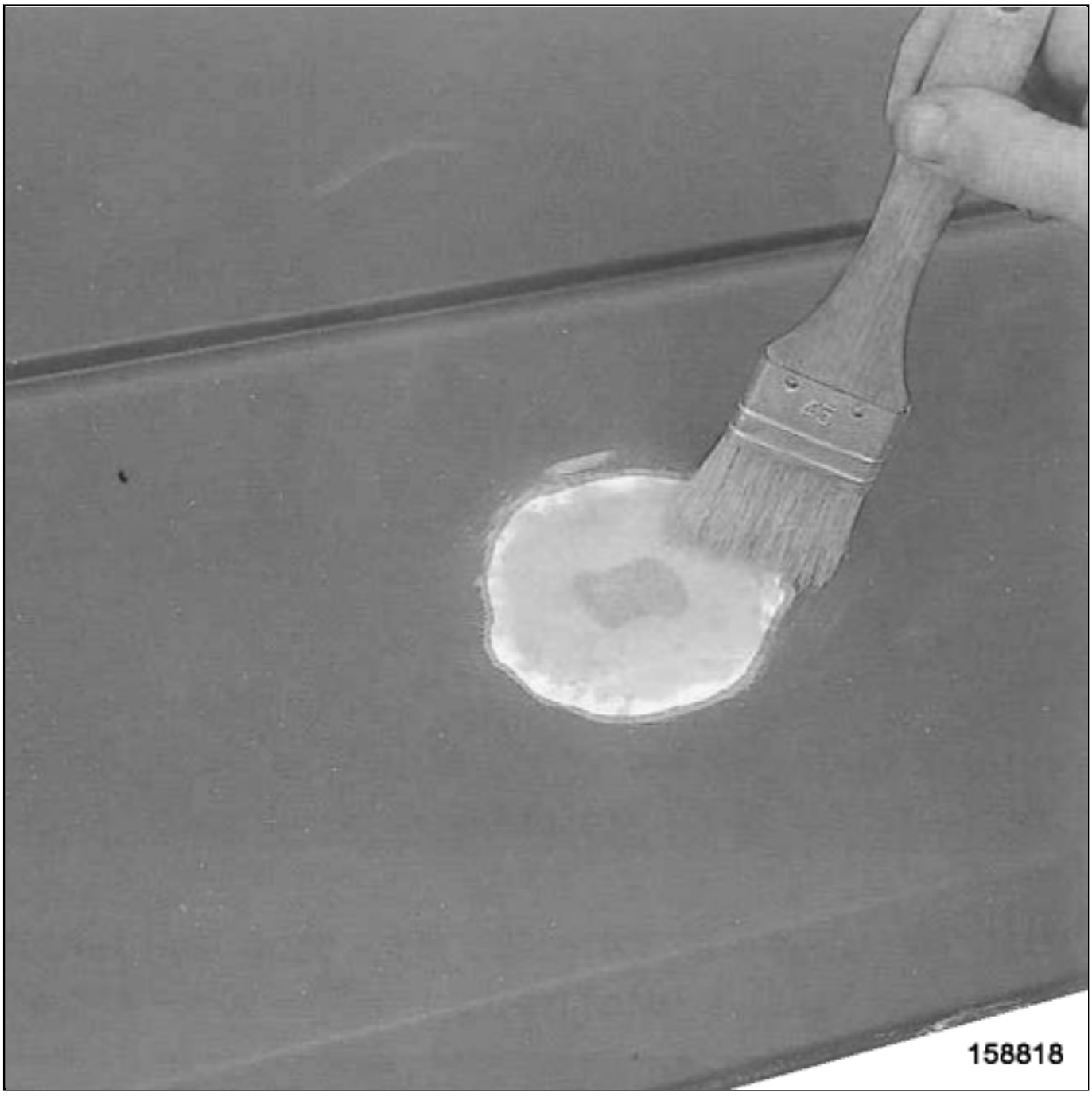
Chamfering around a radius between 30to 40 mmusing the orbital sander with a P80.

Sand the paint around the zone to be repaired using the orbital sander with a P 150

Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).

Cut a piece of materielrecovering the chamfering.

Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .



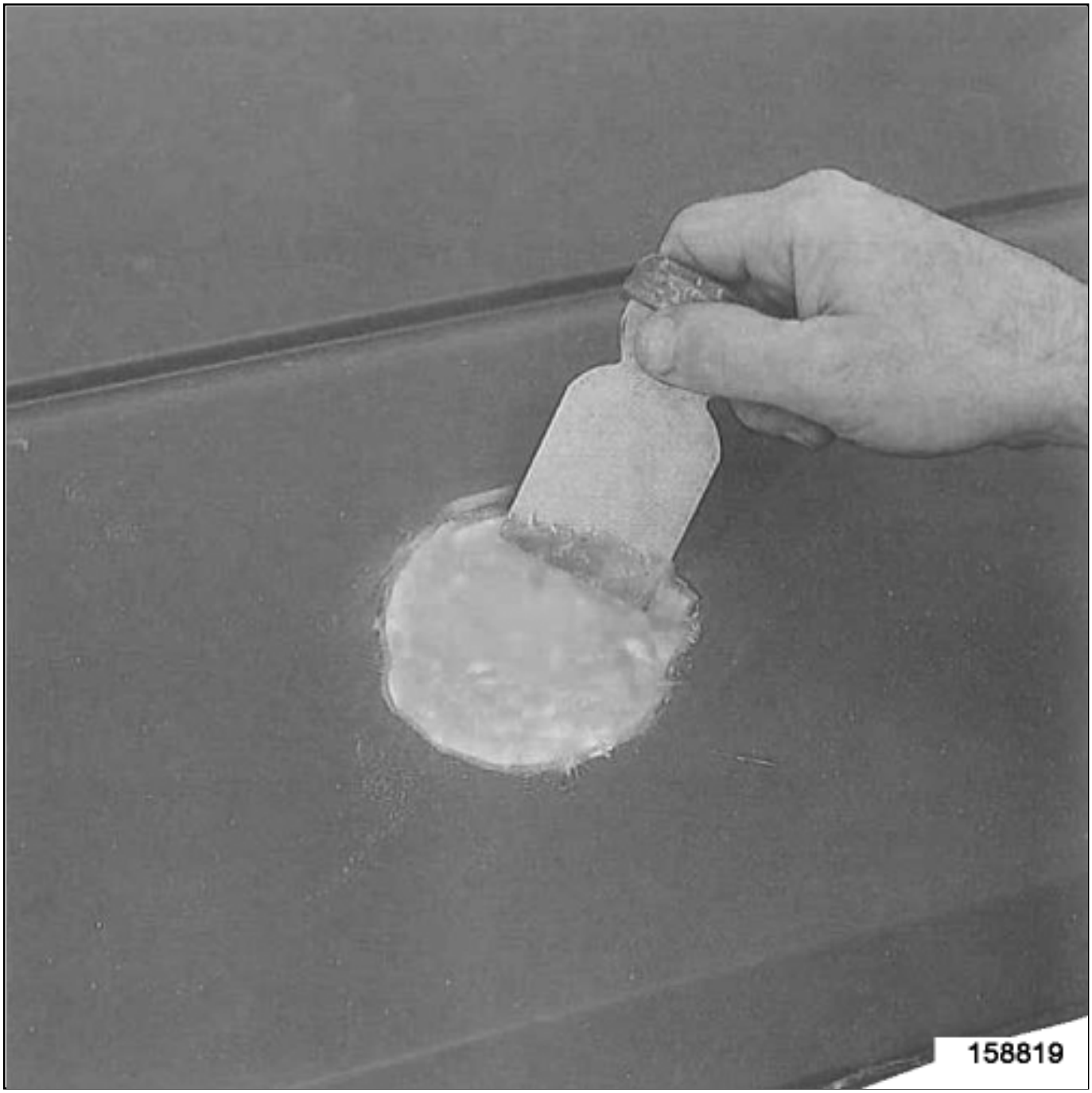
- Wet the chamfer with Epoxy resin.

- Position the reinforcement a poket.

- Soak the reinforcement with Epoxy resin.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).



- Prepare the Epoxy resin (see 50A, General information, Products for plastic material bodywork components: Description) .

- Add short fibres with resin and well mix.

- Fill the pocket with mixture.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).

Sand using the orbital sander with a P 80then with a P180and P240.

Apply if necessary a finishing mastic(see product technical sheet). (see **Vehicle: Parts and consumables for the repair**)

Sand the finishing masticusing a P 150then finish using a P240.

5. PROCEDURE 4

Repairing a mounting bracket on a plastic chassis element

1- BONDING METHOD

Note:

Before any repairs, check the reparability of components made from plastic materials.

(see 50A, General information, Products for plastic material bodywork components: Description) .

(see 50A, General information, Plastic material bodywork component: Precautions for the repair) .

Chamfer the two sections of the mounting bracket on both sides using a grinder with an angular member .

Blast and clean the inside and outside of the component with the cleanerincluded in the Plastic repair kit box.

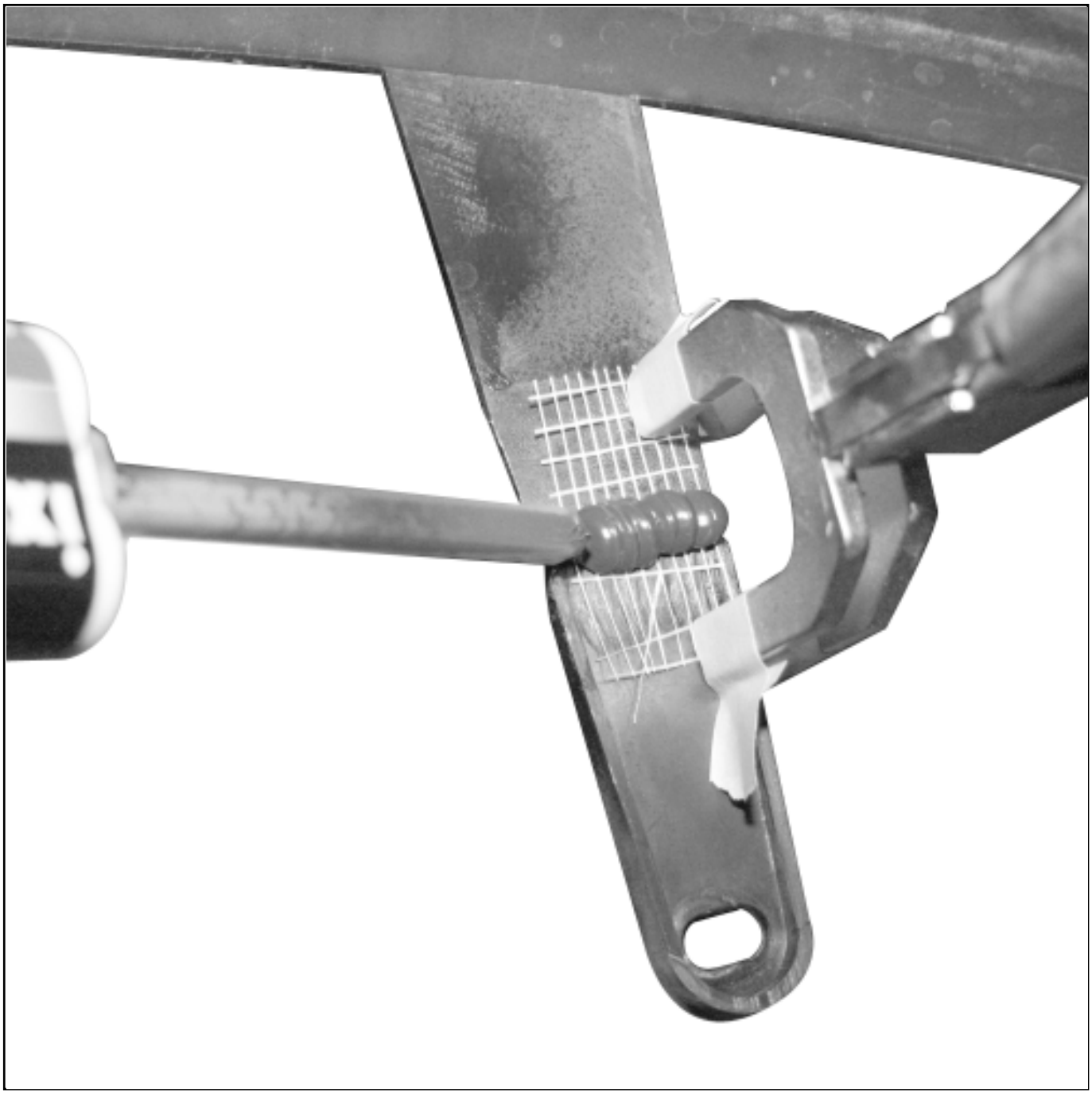
Apply the adhesive primerincluded in the Plastic repair kitbox to the inside and outside of the component.

Leave the adhesive primer to dry (see product technical sheet).

Adjust a piece of reinforcing film (cloth) adapted to repairing the internal and external faces.

Prepare the bi-component repair mastic (see 50A, General information, Products for plastic material bodywork components: Description) .

Maintain pressure on the two parts with pliers.



- Extrude bi-component repair masticbetween the two parts.
- Smooth the bi-component repair masticon the internal and external faces.
- Leave the bi-component repair masticto dry (see product technical sheet).

- Surface the exterior side with a P 150then finish with a P 240.
- Retouch the paintwork if necessary.

2- WELDING METHOD

Note:

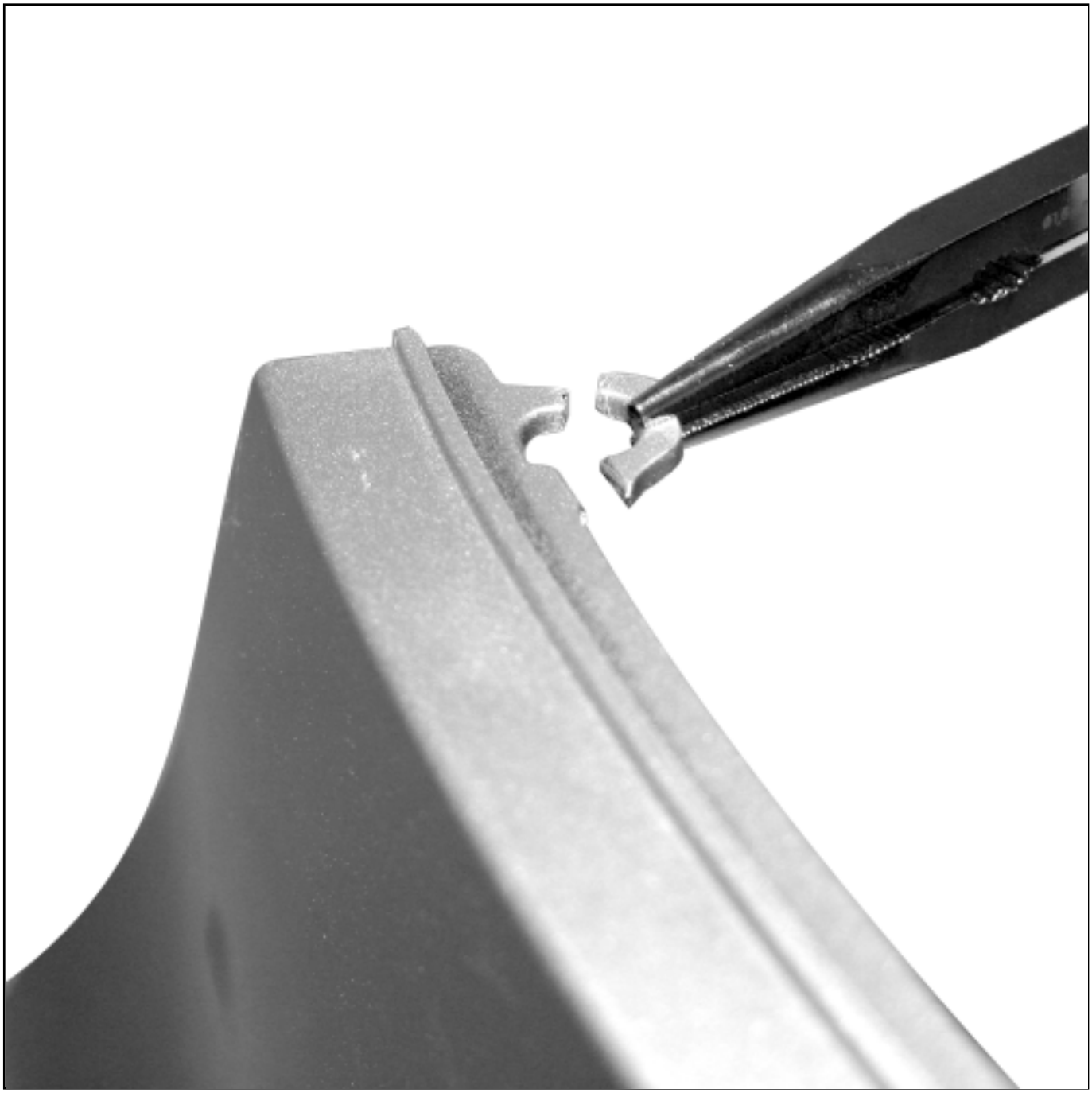
Before any repairs, check the reparability of components made from plastic materials.

(see 50A, General information, Products for plastic material bodywork components: Description) .

(see 50A, General information, Plastic material bodywork component: Precautions for the repair) .

Note:

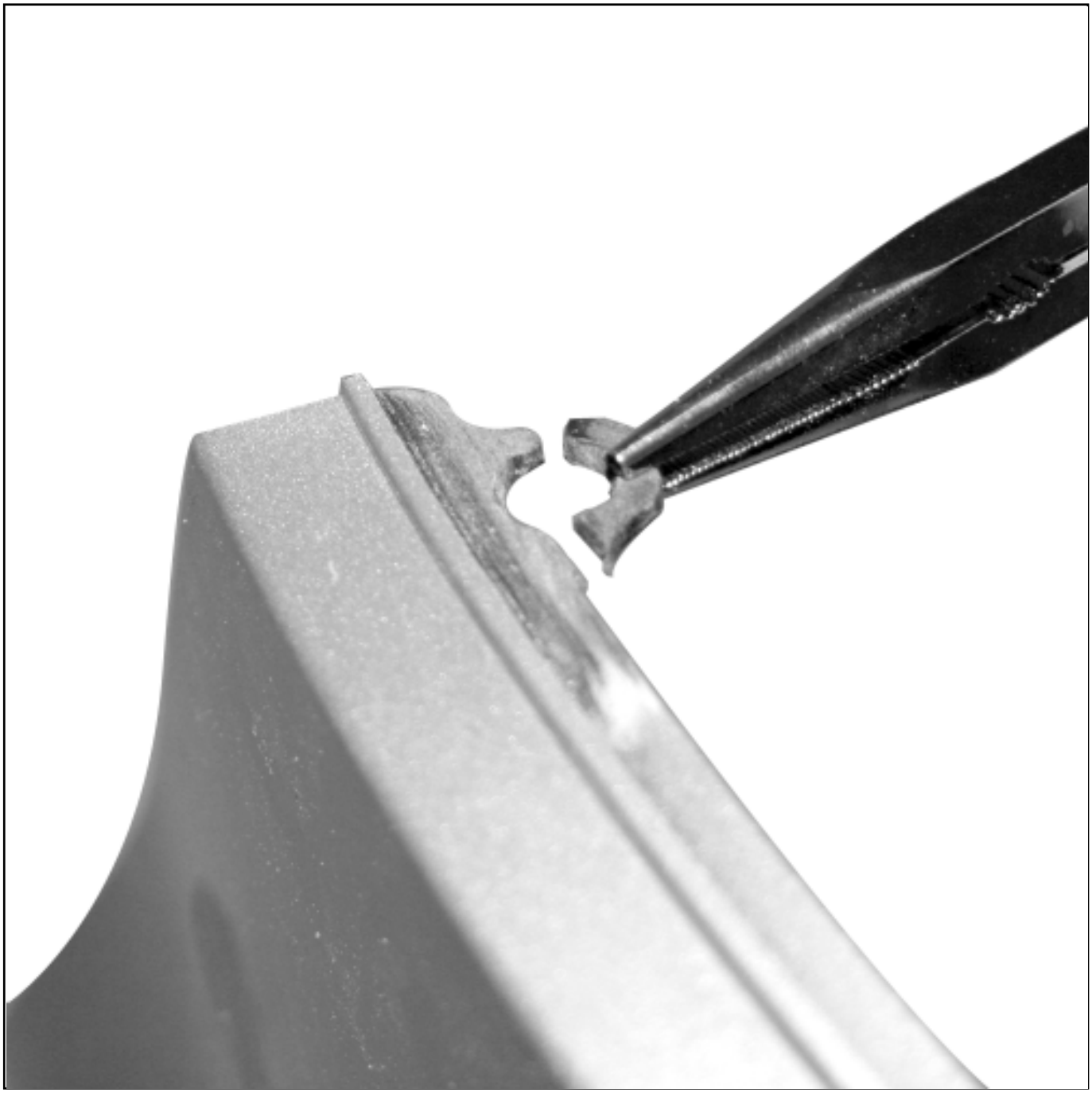
This repair cannot be carried out on ABS, ASAand Polycarbonateplastics.



Wash the component in soapy water and rinse in clean water.

Clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNERVehicle: Parts and consumables for the repair (04B, Consumables - Products).

Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).



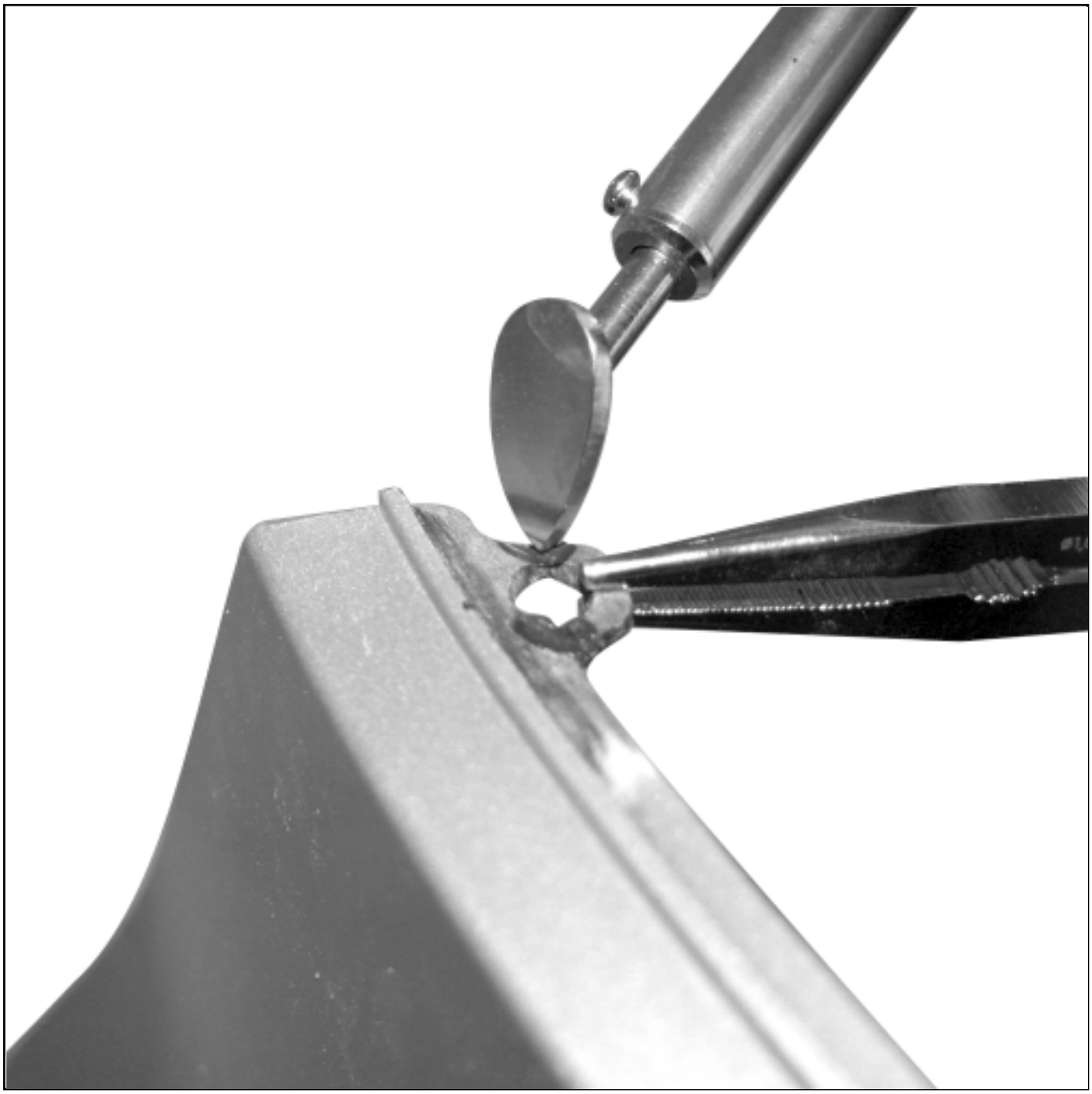
Strip the paint with P 150on the repair area.

Blow the component and clean the area to be repaired with a LINT-FREE CLOTHsoaked in ANTISTATIC THINNER Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

Wipe the area with a clean, dry LINT-FREE CLOTHVehicle: Parts and consumables for the repair (04B, Consumables - Products).

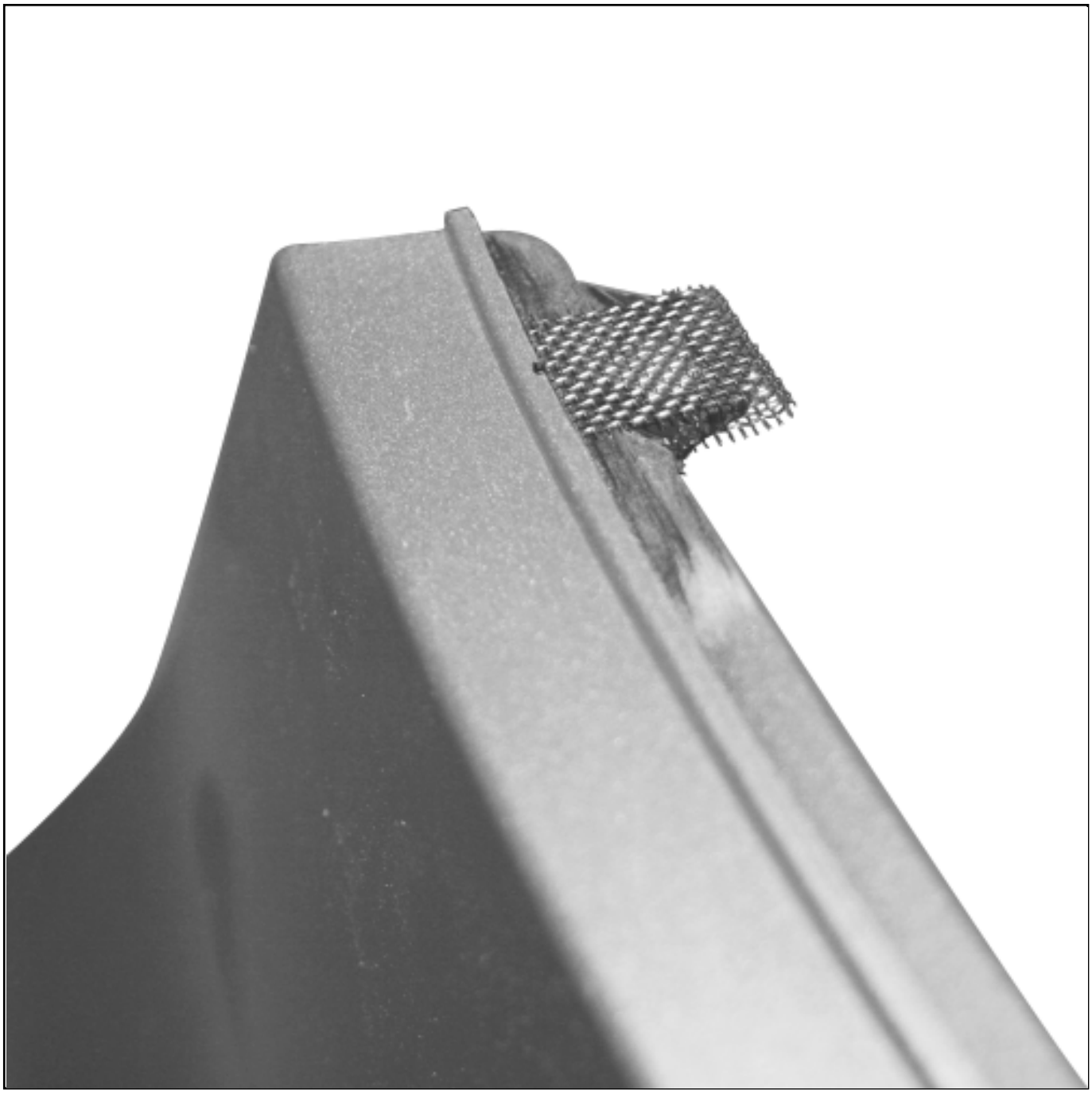
Preheat the soldering iron.

Cut the stainless steel mesh according to the shape of the support.



Spot-weld with the tip of the soldering iron on the ends in order to hold the mounting bracket.

Cool each spot weld, for two seconds, vigorously with the cooler[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products).



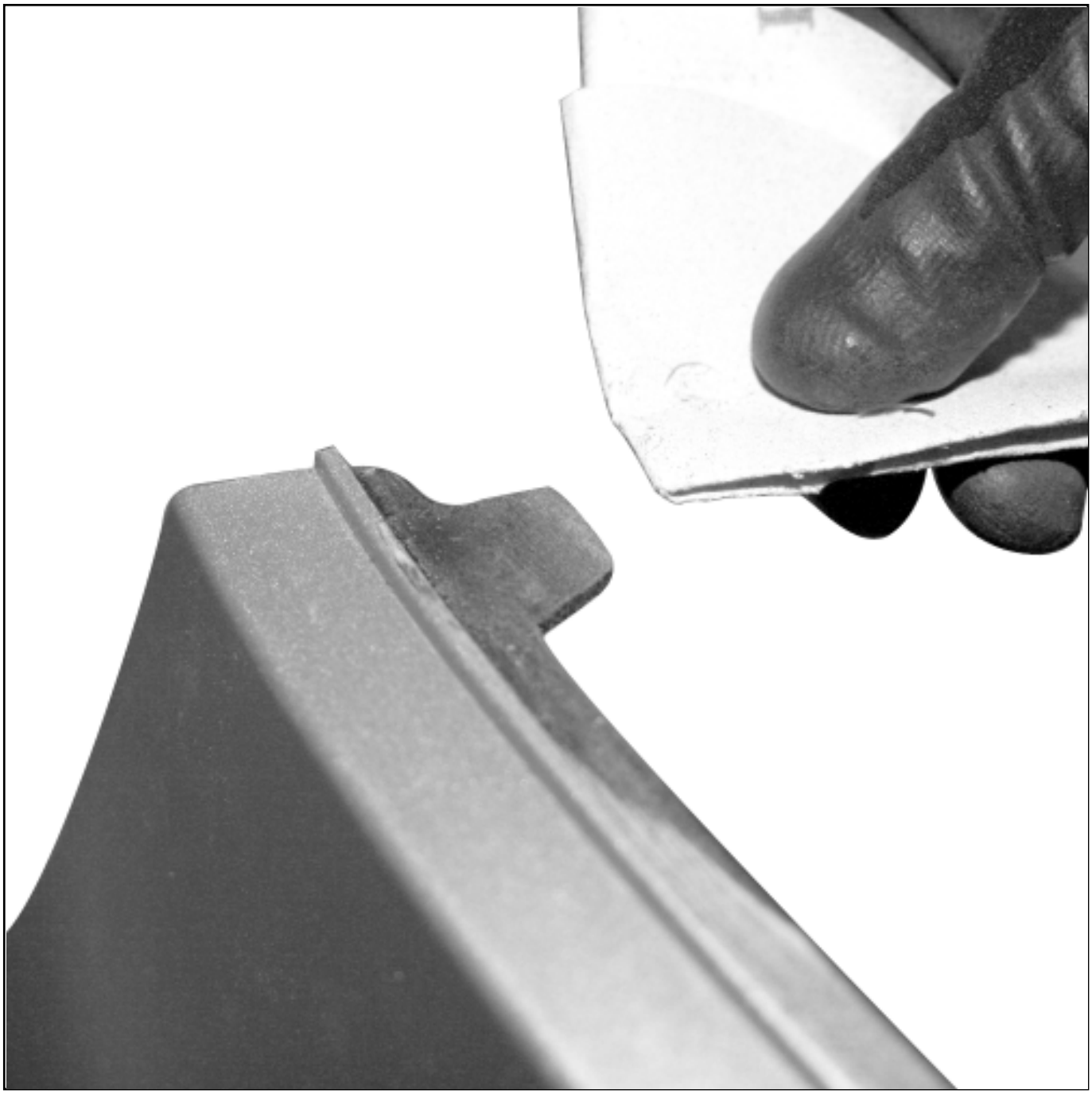
Position the stainless steel mesh and hold it using a dedicated tool.

Enclose the stainless steel frame in the plastic material.

Cool the whole of the repaired area for two seconds, vigorously with the cooler Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

Add material by preheating the welding rod with the tip of the soldering iron.

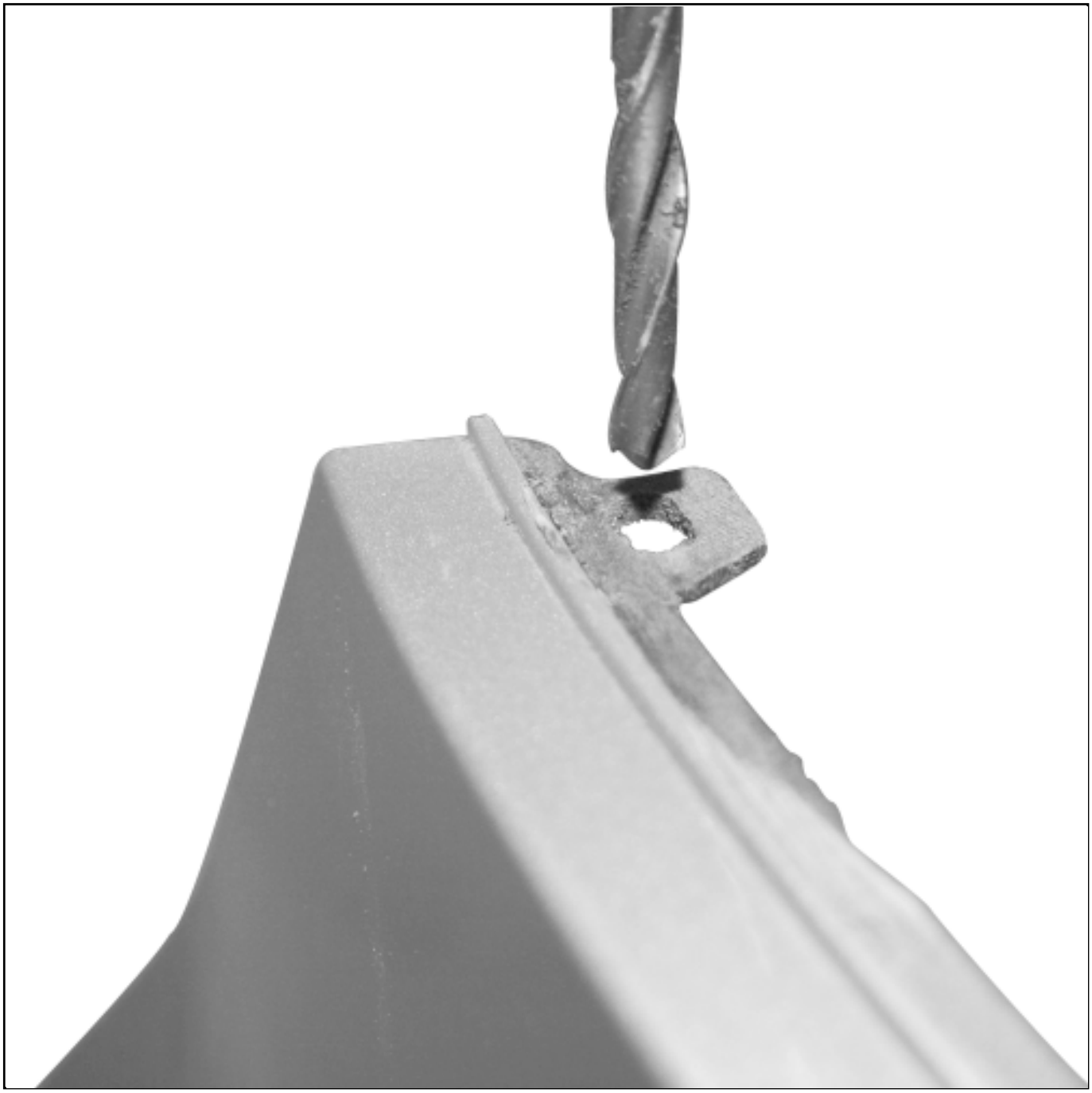
Cool the whole of the repaired area for two seconds, vigorously with the cooler Vehicle: Parts and consumables for the repair (04B, Consumables - Products).



Surface with a P 80 to P 150 then finish with a P 240.

Blow the component and clean the area to be repaired with a LINT-FREE CLOTH soaked in

ANTISTATIC THINNER Vehicle: Parts and consumables for the repair (04B, Consumables - Products).



Adjust the shape of the part to return it to its original appearance.

Retouch the paintwork if necessary.

6. PROCEDURE 5

Partial replacement of an element by cuting.

Note:

Method apply only on RTM component.

Note:

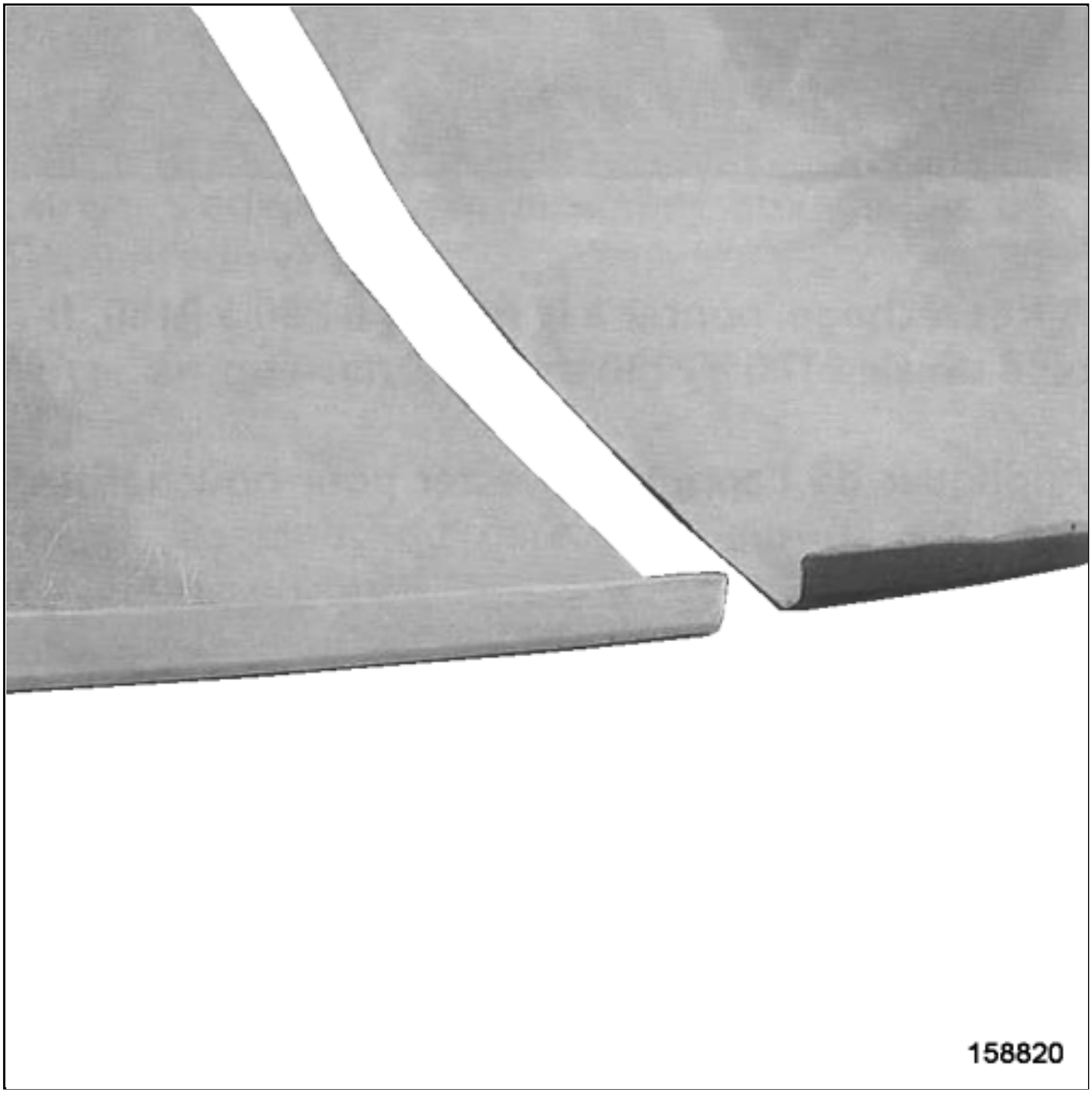
The components are manufactured by the method referred to as "contact" .

The reparation is performed by the interne face of the component.

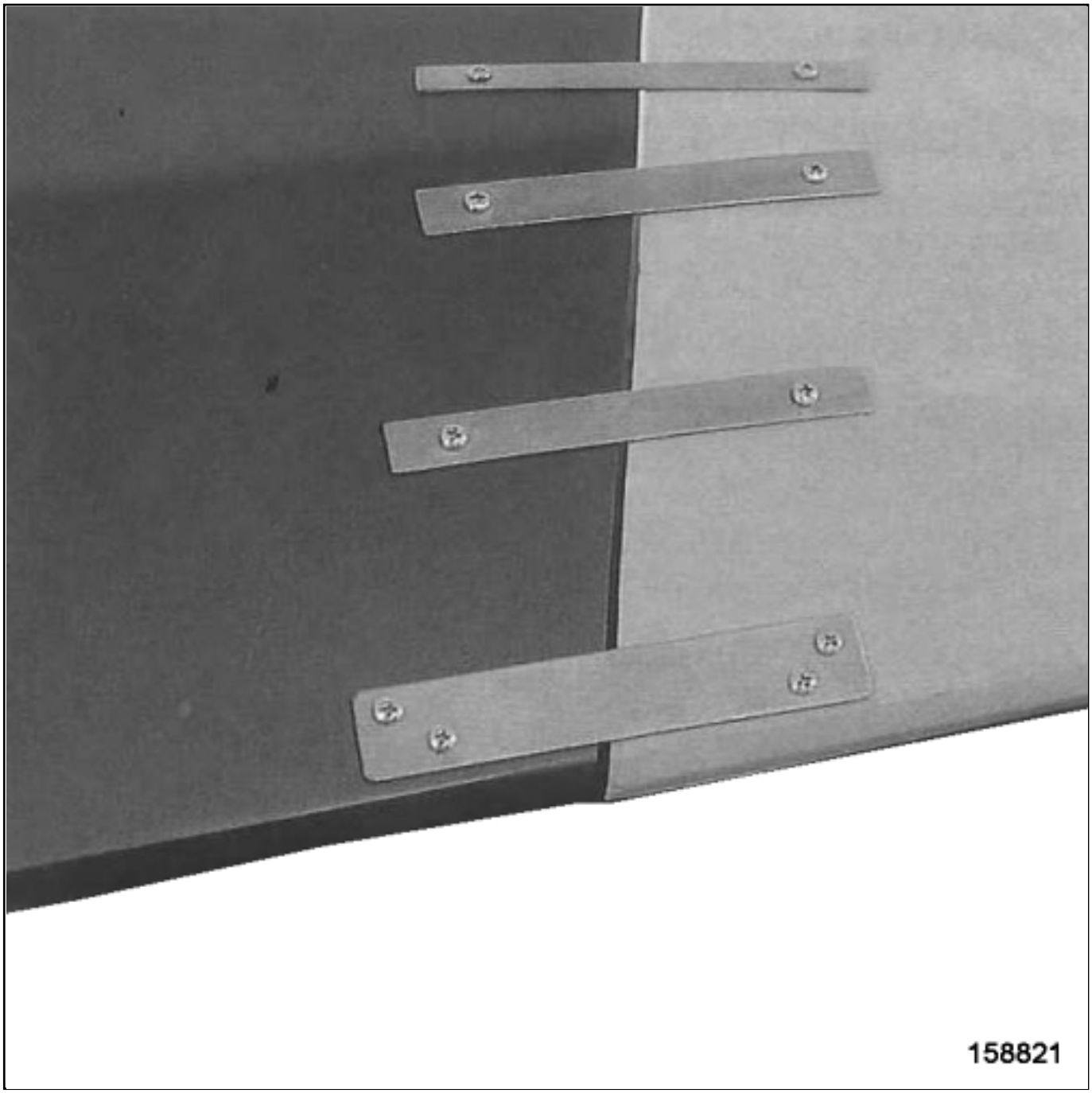
Cut the damaged component beyond the cracks.

Cut and adjust the new component.

Prepare a space from 5to 10mm between the two components.



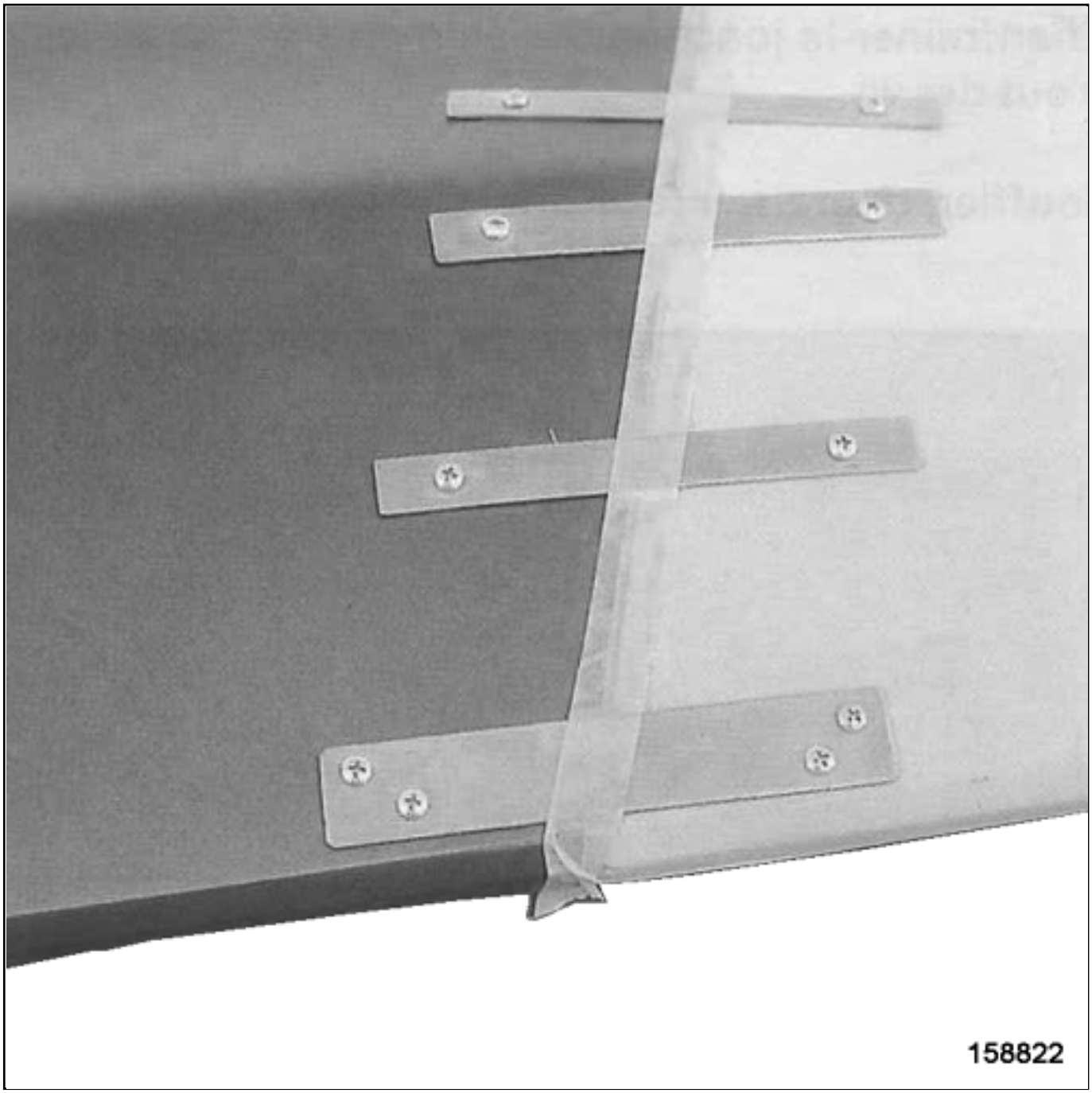
Chamfering the interne face of components on 100 mmwide.



- Position the new component.

- Hold the new component by the externe face using a plate pad(local manufactured)and fix them with plate screws.

- Check the clearance and the flush fitting.



- Bond a masking tape on externe face on all reparation length.
- Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).
- Cut a piece of materielrecovering the reparation assembly.
- Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components:

Description) .

Put the material strip by soaking with resin.

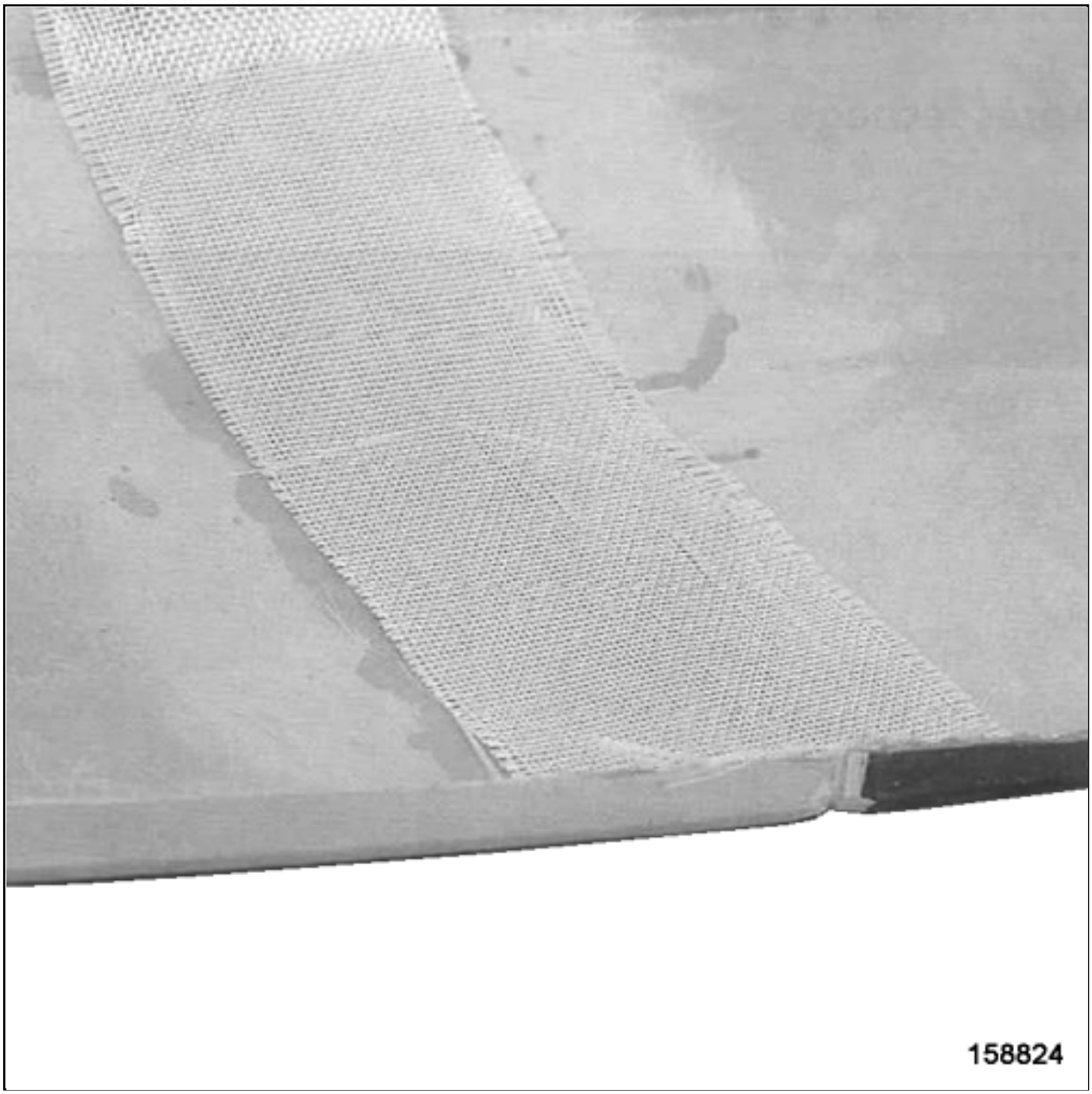
Note:

Pay particular attention at output screw area and at strips junction reinforcement to prevent the air bubbles form.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).

Remove the pads.



Prepare the reinforcement strips(material, cloth)by cuting then in a growing order 10 to 15 mm

Note:

According with the component width, the reinforcement strips number is variable, the purpose is to conserve the characteristic similar to the original.

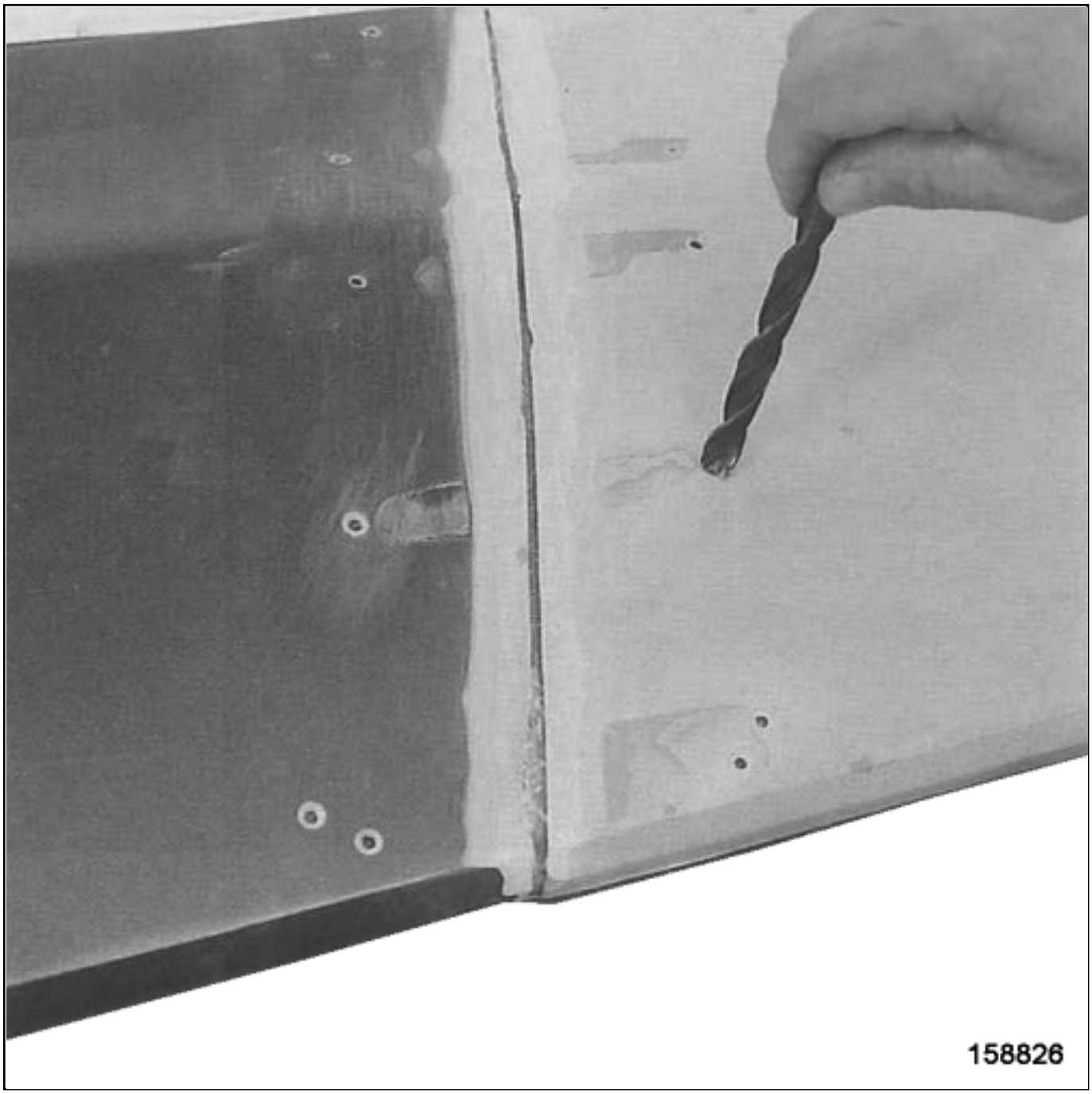
- Sand the zone to be repaired using the orbital sander with a P 40
- Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).
- Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .

Put the material strip by soaking with resin.

Pass the spiked roller.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).



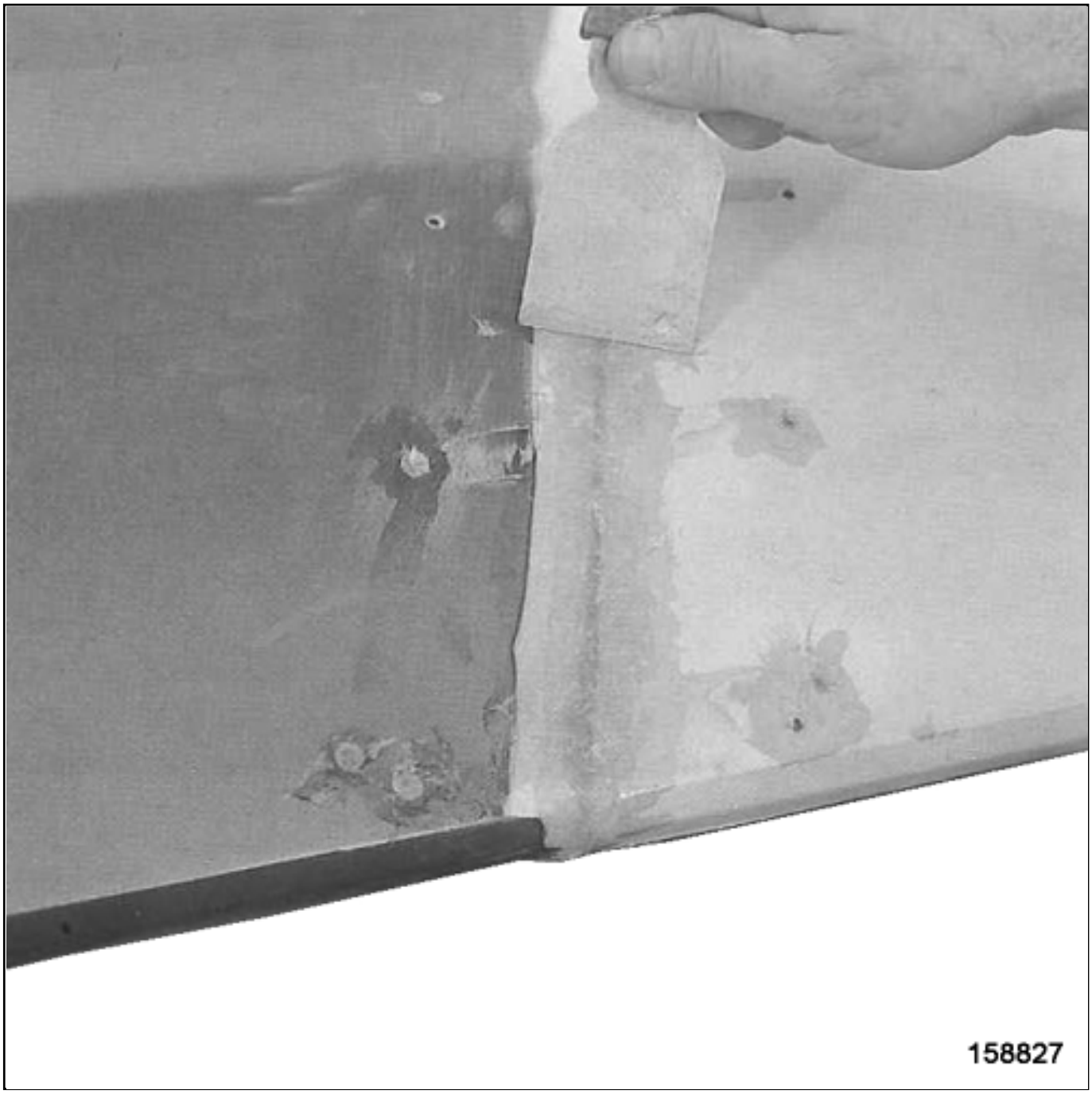
Chamfering the components junction.

Countersink the screws holes.

Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).

Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .

Add short fibres with resin and well mix.



Fill the chamfer and the holes using a spatula.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).

Apply if necessary a finishing mastic(see product technical sheet). (see **Vehicle: Parts and consumables for the repair**)

Sand the finishing masticusing a P 150then finish using a P240.

7. PROCEDURE 6

Partial replacement of an element by cuting with patcht drilling.

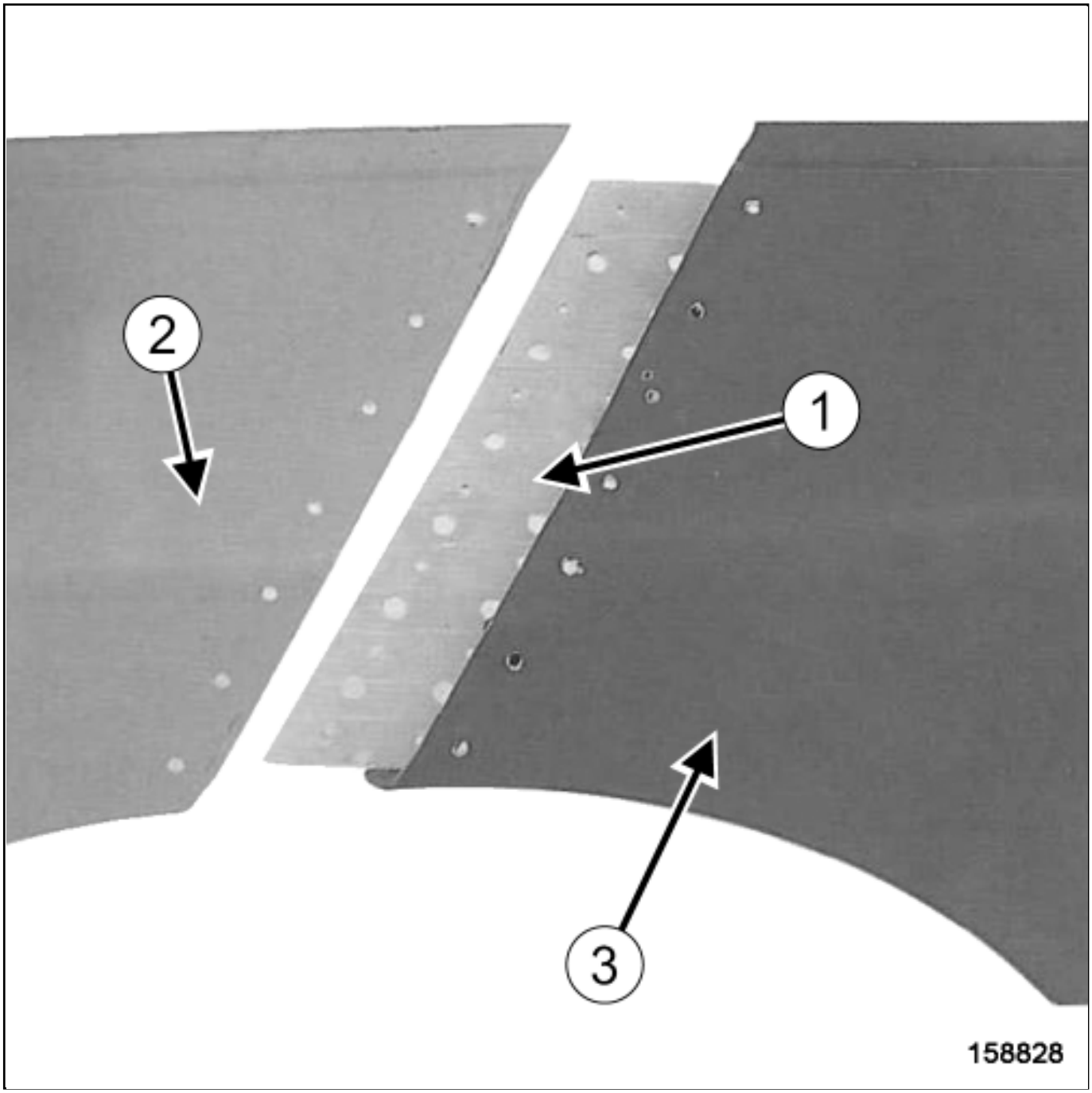
Note:

Method apply only on RTM component.

Note:

The components are manufactured by the method referred to as "contact" .

The reparation is performed by the interne face of the component.



- Cut the damaged component for facilitate the patcht drilling.
- Cut and adjust the new component.

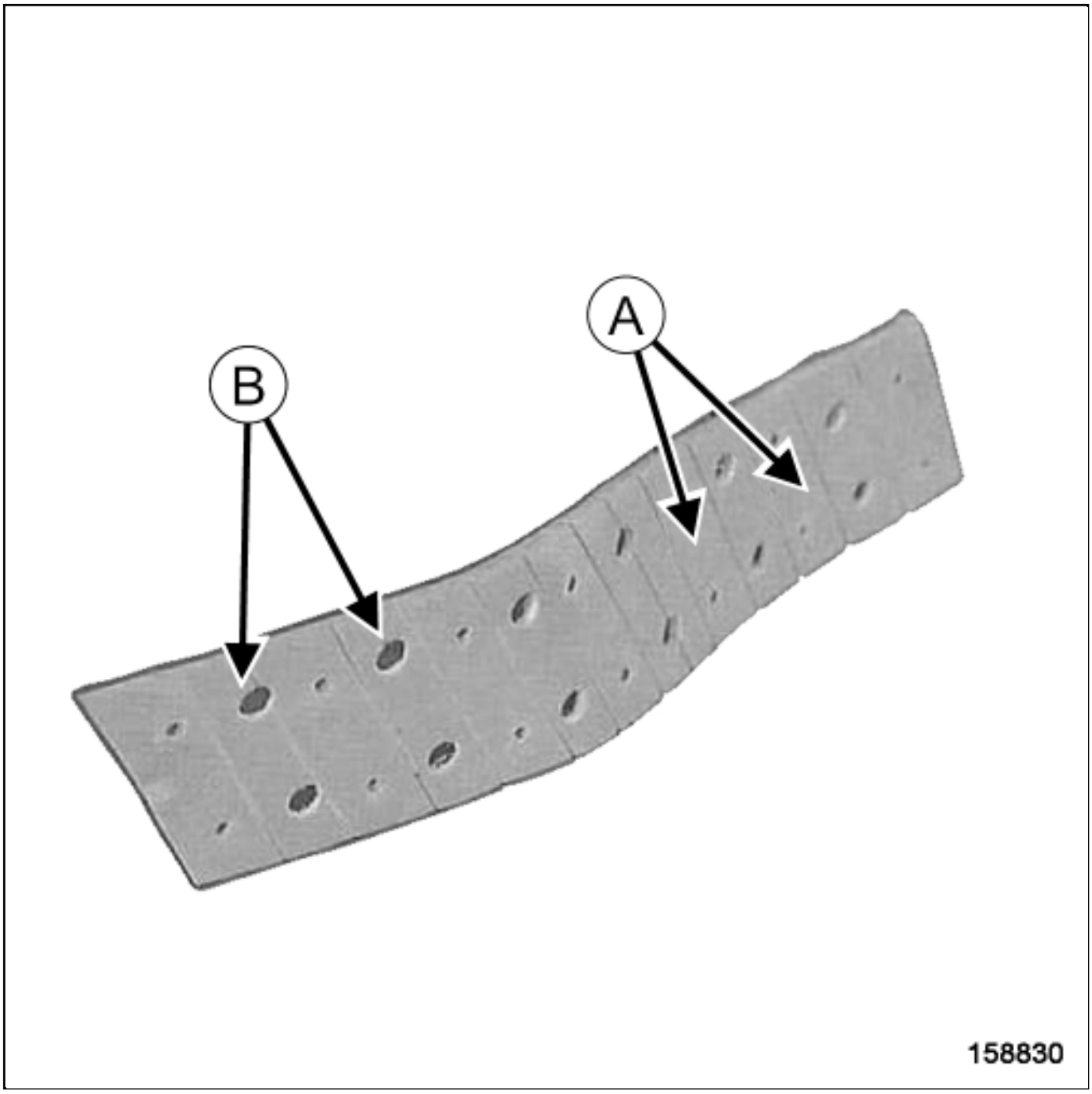
- Drill the component on the vehicle.
- Temporary fit on the vehicle the patch drilling with plate screws.
- Position the new comonent on the vehicle.

Fit on the vehicle the patch drilling with plate screws.

If necessary hold the new components with locking pliers.

Check the new component position.

Remove all components.



Do the grooves(A) , in the intern al side of patch drilling for adjust to the curve of component on the vehicle.

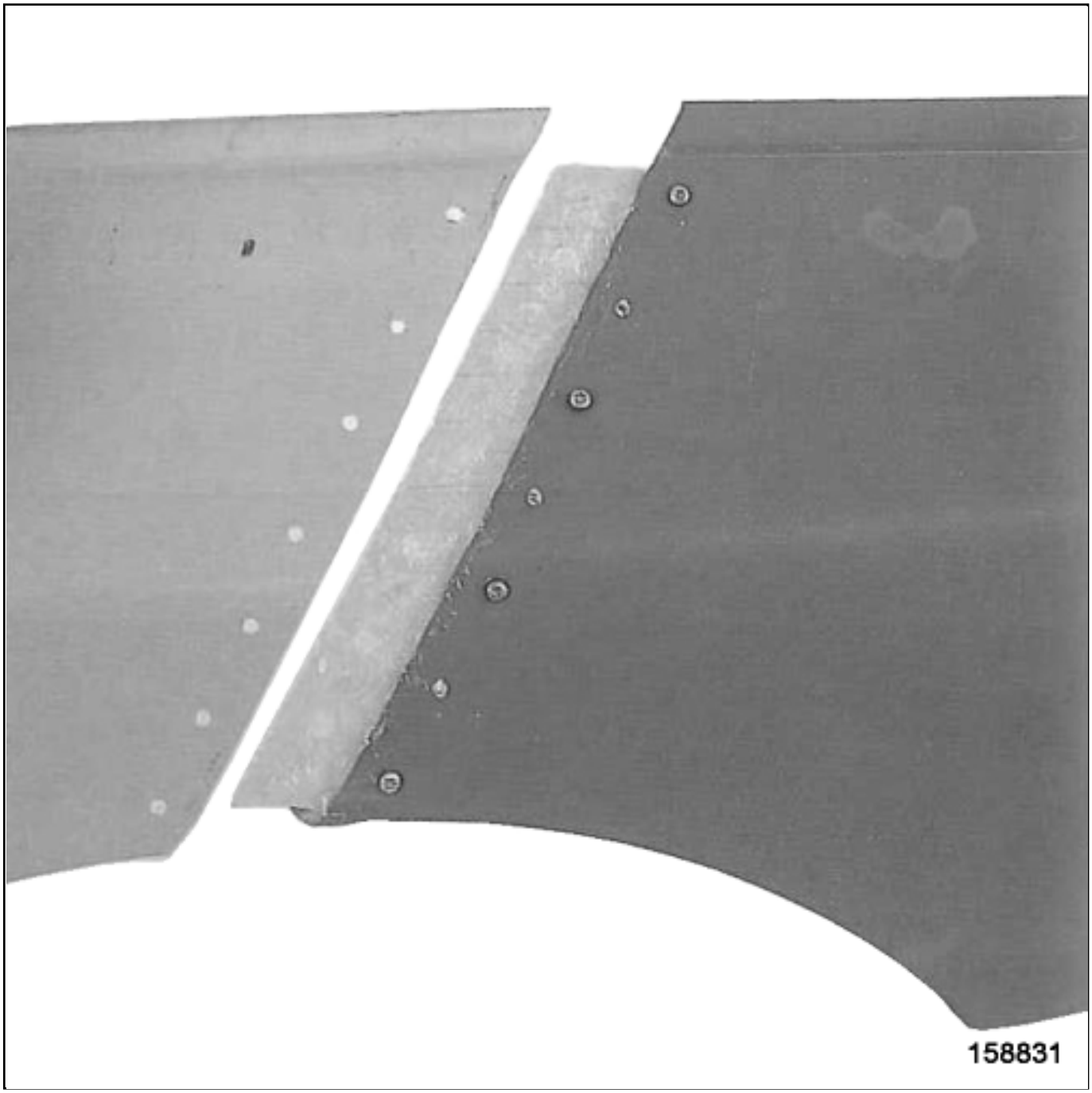
Drill the holes(B) with a 8 mmdiameter.

Countersink the holes fron external side.

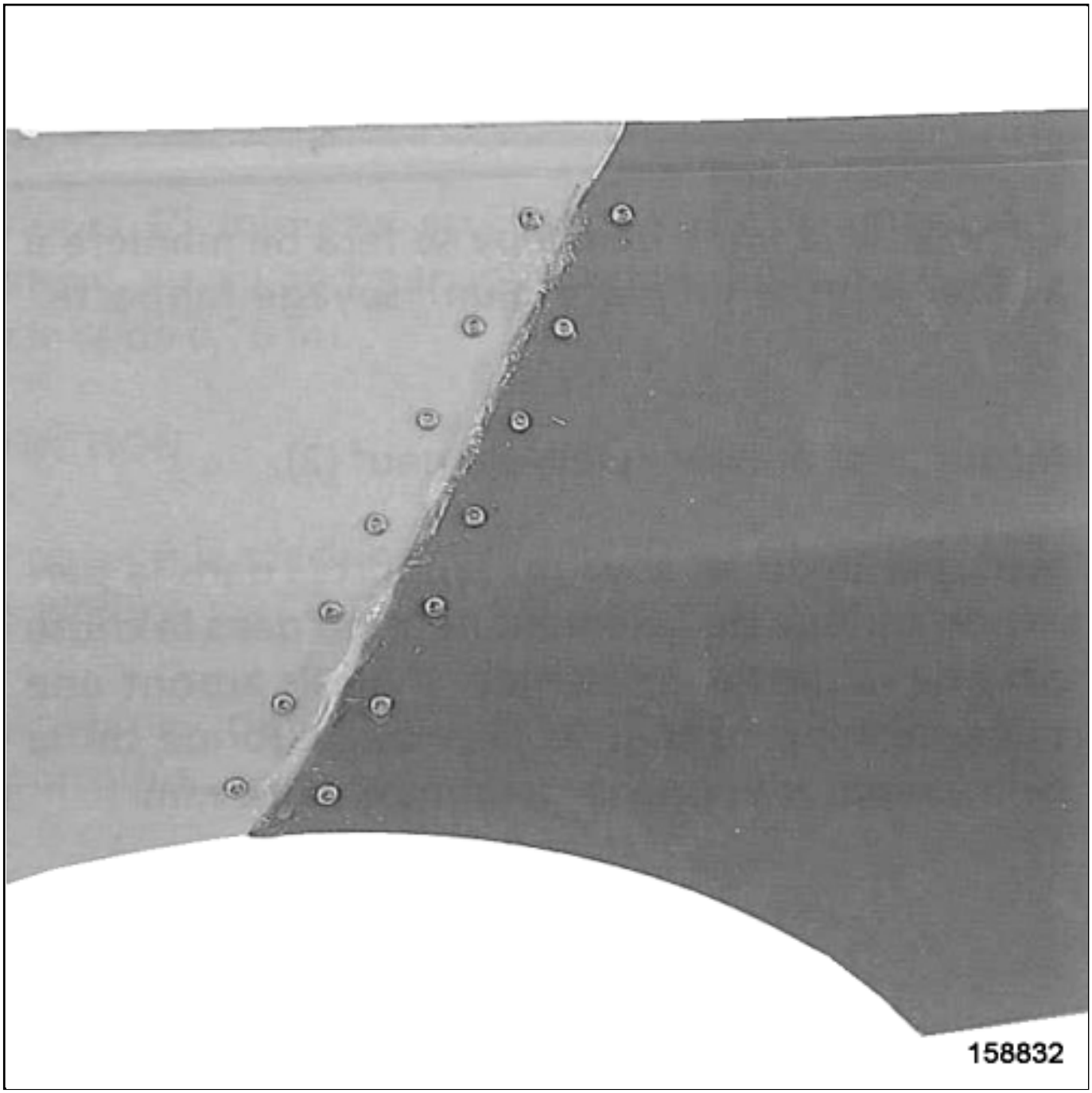
Sand the zone to be repaired using the orbital sander with a P 40

Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).

Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .



Band the half way of patcht drillingand fit on the component on the vehicle using plate screws.



Band the second half way of patcht drilling.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).

Remove the plate screws.

Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).

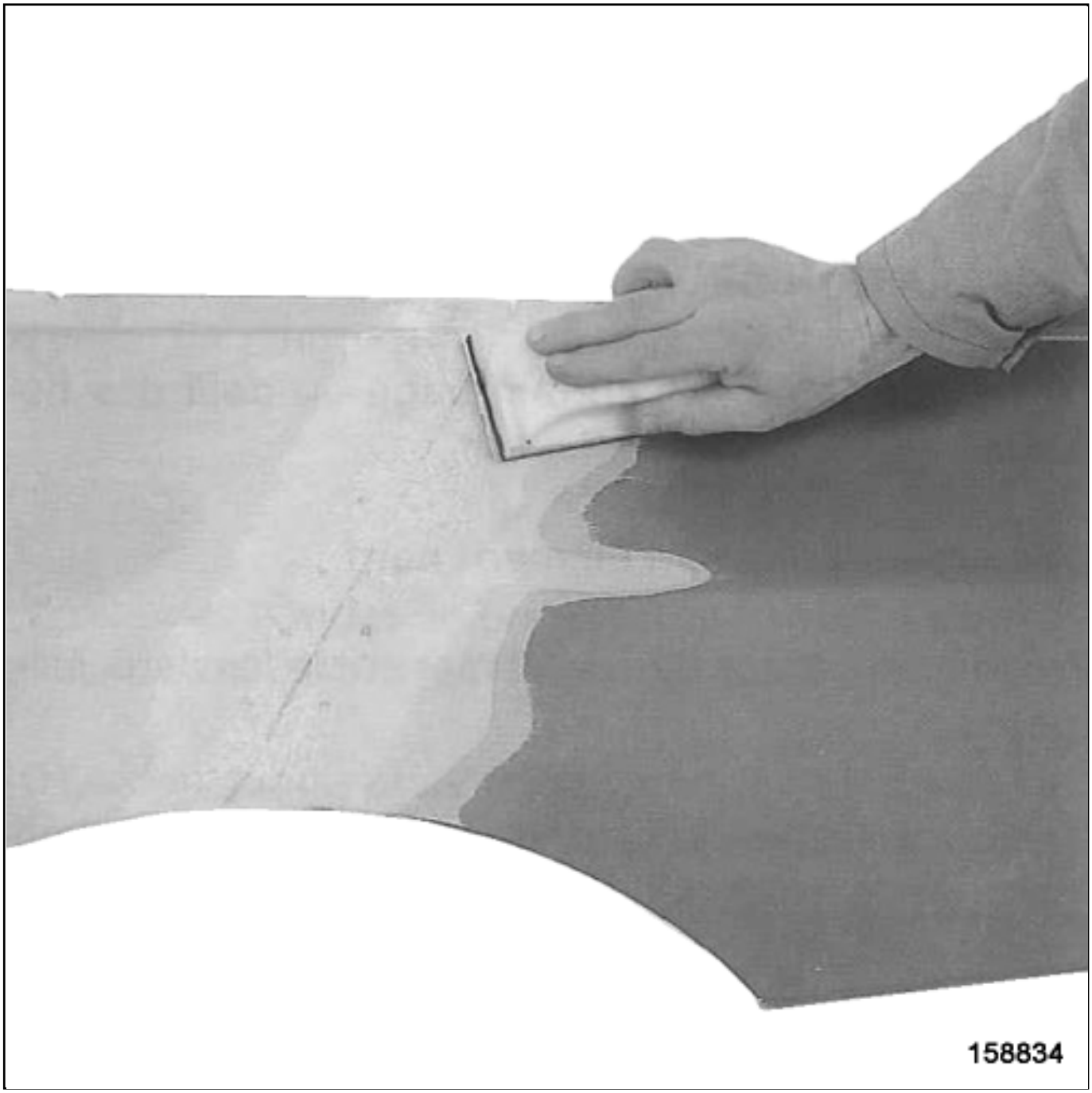
Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .

Apply the reinforcement by soaking of resin.

Note:

After 15 minutes,accelerate the hardening in drying oven or in infrared drying device(60° C maxi at a distance of 70 cm).

- Sand the zone to be repaired using the orbital sander with a P 40
- Blow the component and clean the area to be repaired with the Acetone(see product techincal sheet).
- Prepare the Epoxy resin(see 50A, General information, Products for plastic material bodywork components: Description) .
- Add short fibres with resin and well mix.
- Apply the mixture on reparation zone.



Sand using the orbital sander with a P 80then with a P180and P240.

Apply if necessary a finishing mastic(see product technical sheet). (see **Vehicle: Parts and consumables for the repair**)

Sand the finishing masticusing a P 150then finish using a P240.

XSL version : 3.02 du 22/07/11

POWER TAKE-OFF ACTUATOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

- Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

Location and specifications (tightening torques, parts always to be replaced, etc.) (see 21A, Manual gearbox, Gearbox assembly: Exploded view) .

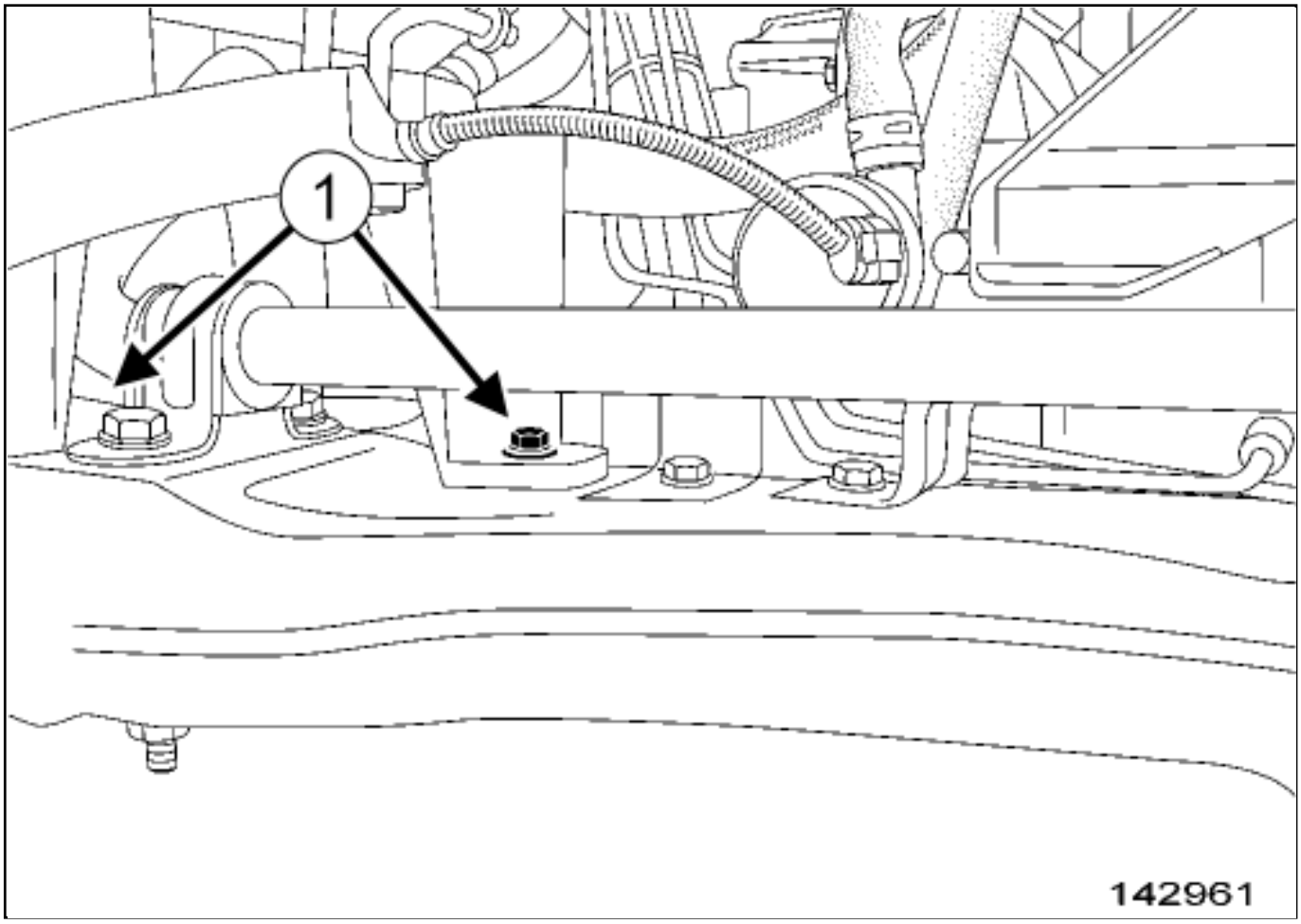
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

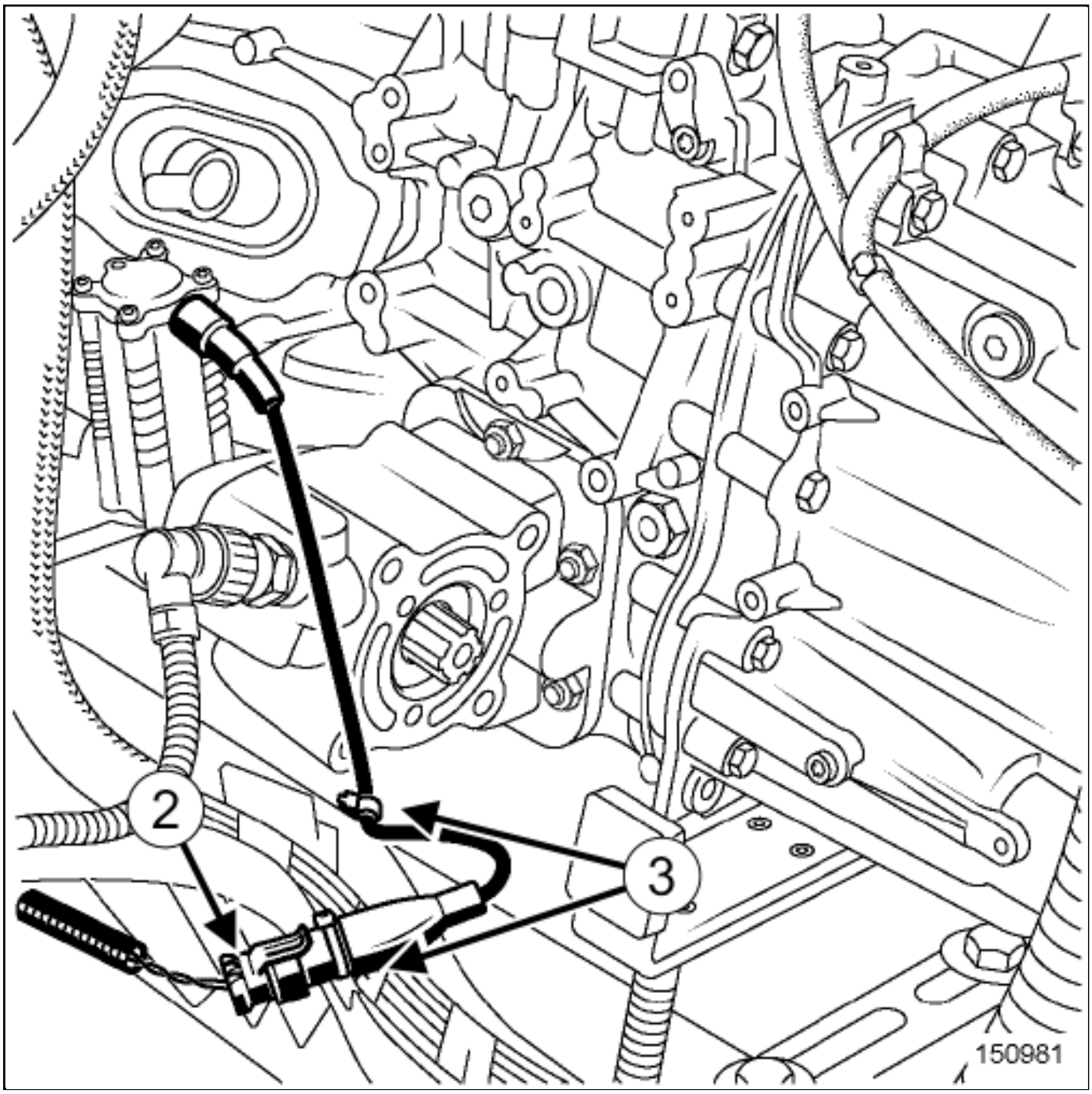
- Remove:
  - the engine undertray,
  - the clutch slave cylinder mounting bolts (see 21A, Manual gearbox , Gearbox assembly: Exploded view) .

- Move the clutch slave cylinder mounting.

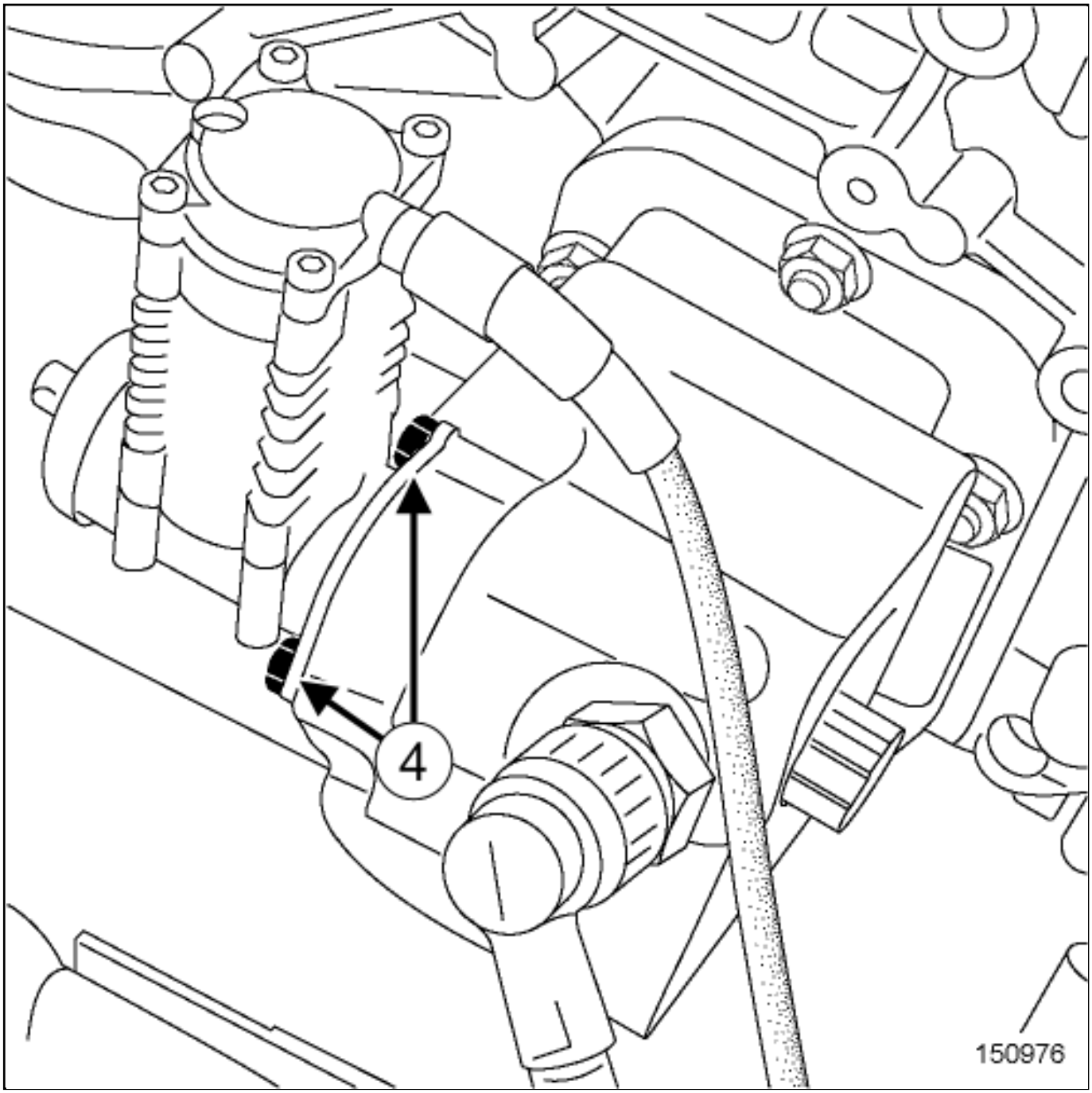


- Remove the wiring bolts(1) .
- Move aside the wiring.

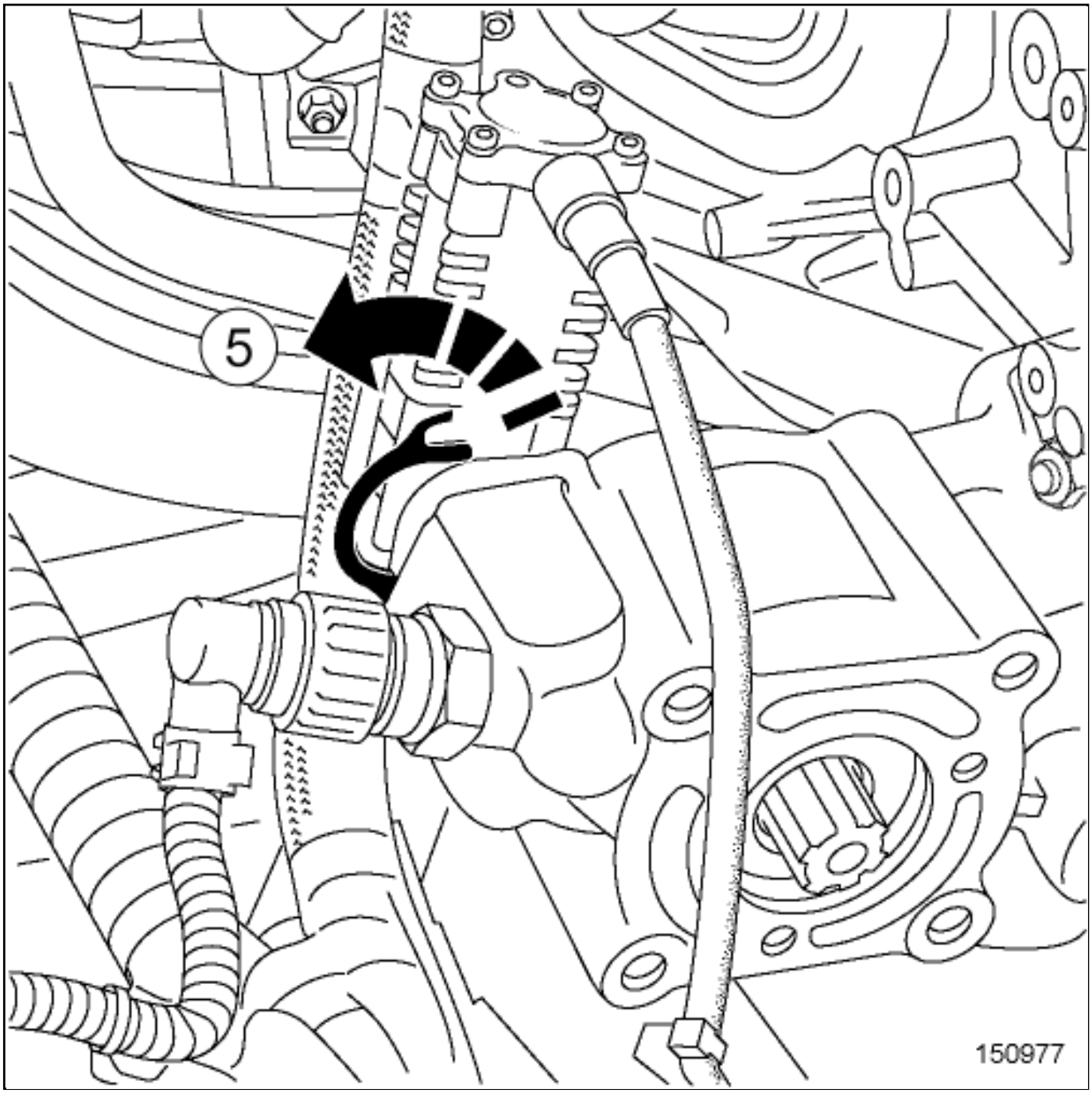
2. REMOVAL OPERATION



- Disconnect the power take-off actuator connector(2) .
- Detache the power take-off actuator wiring(3) .



- Undo the power take-off actuator bracket bolts(4) .



Tilt the power take-off actuator bracket(5) .

Remove (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :

- the power take-off actuator,
- the power take-off actuator seal.

REFITTING

1. REFITTING PREPARATION OPERATION

- Always replace the power take-off actuator seal.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

Repair-12x01x14x02-01x37-1-1-1.xml

XSL version : 3.02 du 22/07/11

POWER-ASSISTED STEERING ASSEMBLY: EXPLODED VIEW

PROPULSION TRANSMISSION, EMISSION CONTROL EURO 04 WITH OBD(E04A-Euro 04 with OBD)

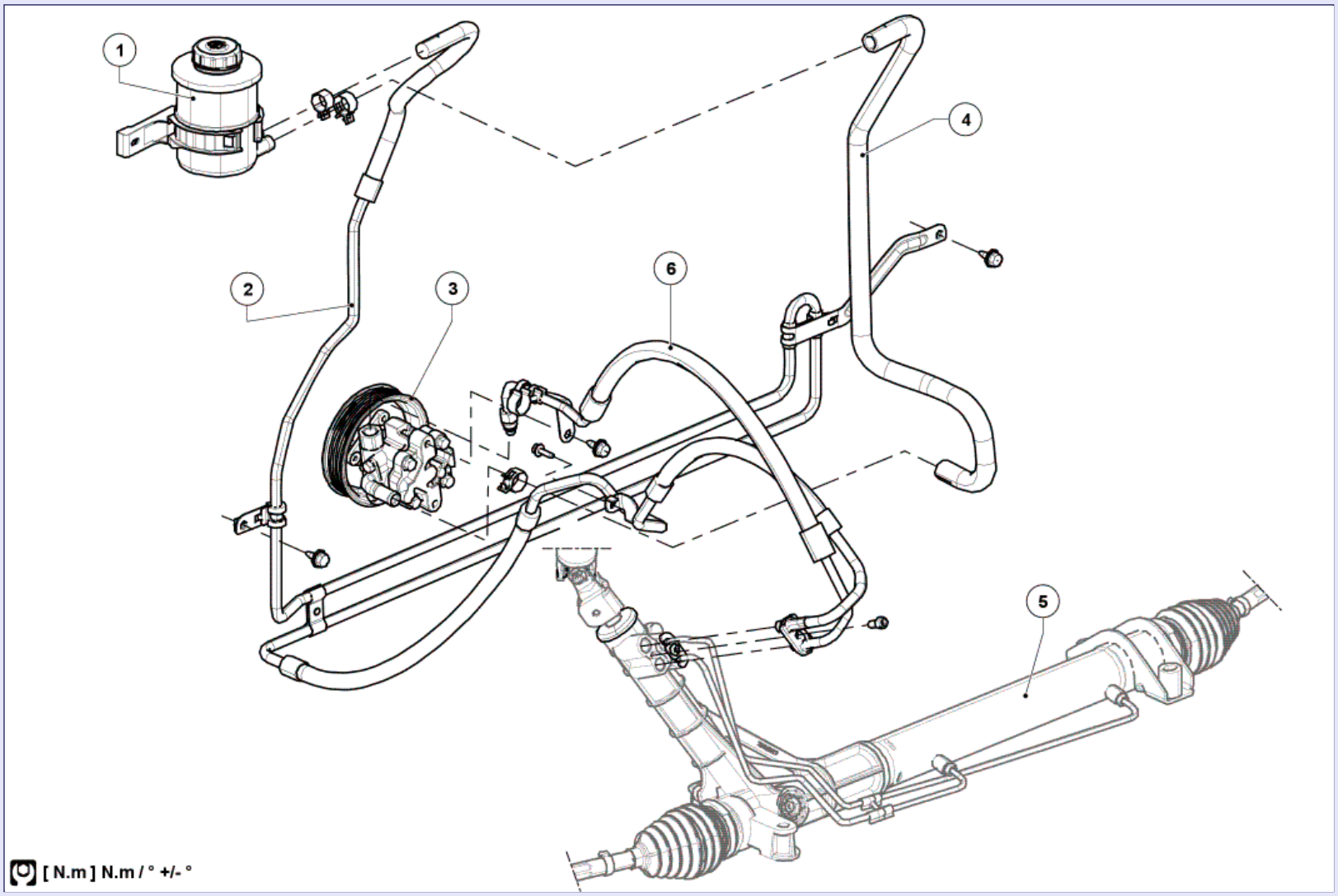


Illustration key: Description (01D, Mechanical introduction).

Mark	Description	Information
1	Power-assisted steering fluid reservoir	
2	Power-assisted steering return pipe	(see 36B, Power assisted steering, Power-assisted steering pipes: Removal - Refitting)
3	Power-assisted steering pump	(see 36B, Power assisted steering, Power-assisted steering pump: Removal - Refitting)
4	Power-assisted steering low pressure pipe	(see 36B, Power assisted steering, Power-assisted steering pipes: Removal - Refitting)
5	Steering box	Steering box: Removal - Refitting
6	Power-assisted steering pipes	(see 36B, Power assisted steering, Power-assisted steering pipes: Removal - Refitting)

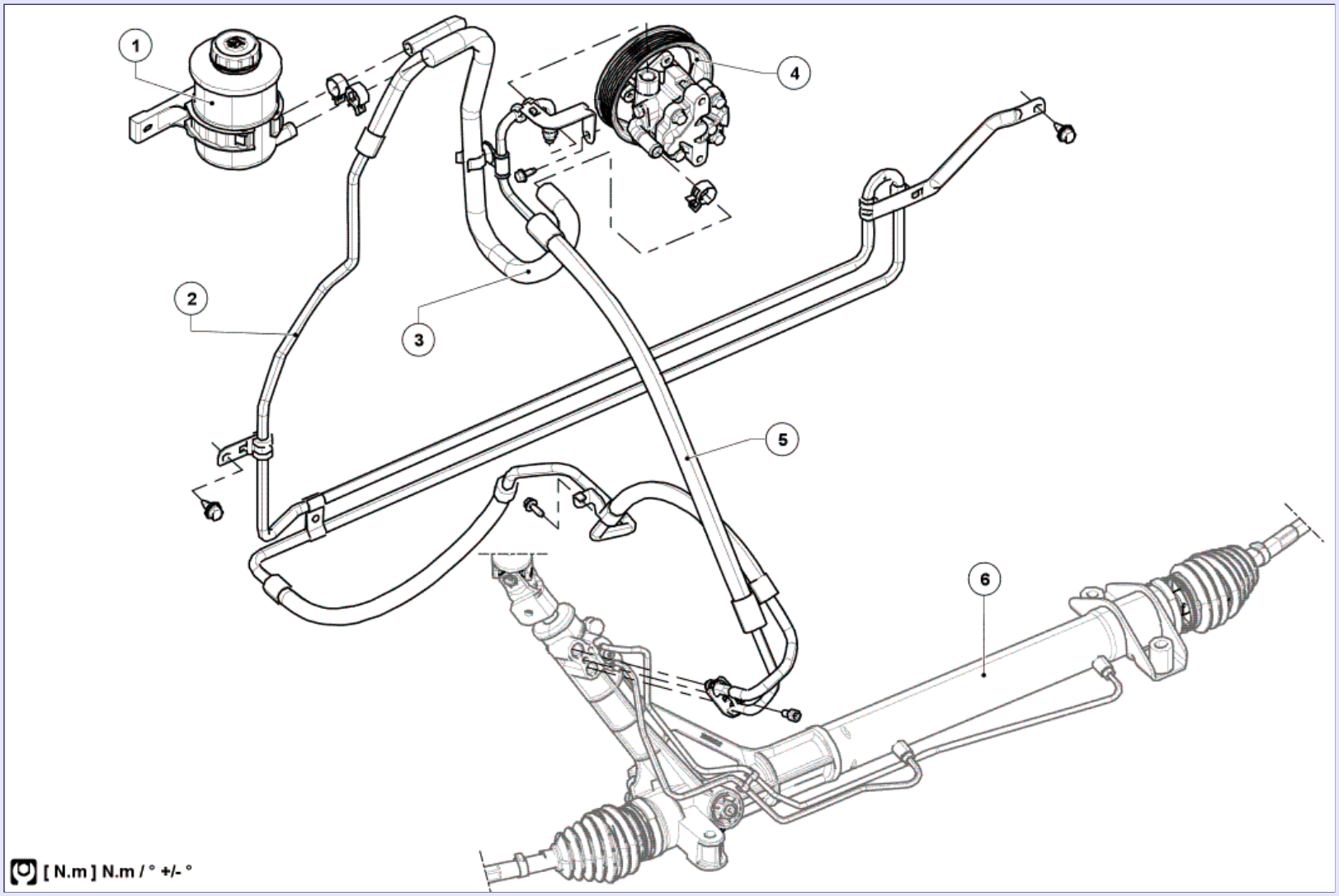


Illustration key: Description (01D, Mechanical introduction).

Mark	Description	Information
1	Power-assisted steering fluid reservoir	
2	Power-assisted steering return pipe	(see 36B, Power assisted steering, Power-assisted steering pipes: Removal - Refitting)
3	Power-assisted steering low pressure pipe	(see 36B, Power assisted steering, Power-assisted steering pipes: Removal - Refitting)
4	Power-assisted steering pump	(see 36B, Power assisted steering, Power-assisted steering pump: Removal - Refitting)
5	Power-assisted steering high pressure pipe	(see 36B, Power assisted steering, Power-assisted steering pipes: Removal - Refitting)
6	Steering box	Steering box: Removal - Refitting

POWER-ASSISTED STEERING CIRCUIT: BLEEDING

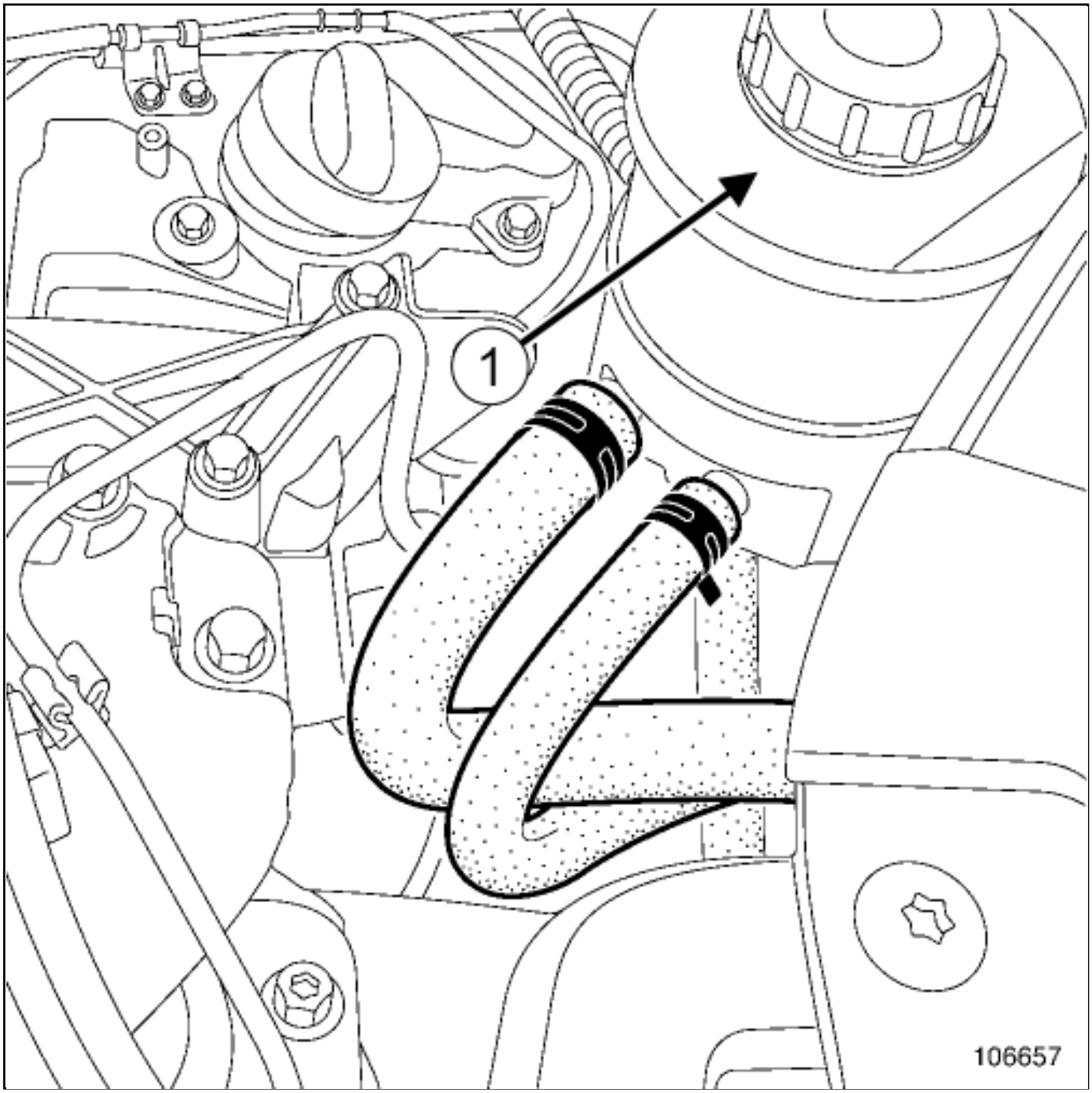
Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

BLEEDING

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Raise the vehicle until the front wheels are lifted off the ground.



- Fill the power-assisted steering fluid reservoir(1) .

- Start the vehicle.

- Top up the power-assisted steering fluid.

CAUTION

To prevent damaging the power-assisted steering system, do not keep the steering at full lock.

- Repeat the following operation three times:
  - turn the steering wheel to the left to lock the steering,
  - turn the steering wheel to the right to lock the steering.
- Top up the power-assisted steering fluid.

CAUTION

The level must be between the "MIN" and "MAX" markings on the reservoir.

POWER-ASSISTED STEERING PUMP ASSEMBLY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

Equipment required
Diagnostic tool
oil recovery tray

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions **Vehicle: Precautions for the repair**

WARNING

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair **Steering: Precautions for the repair** .

Location and specifications (tightening torques, parts always to be replaced, etc.) **(see 36B, Power assisted steering , Power-assisted steering assembly: Exploded view)** .

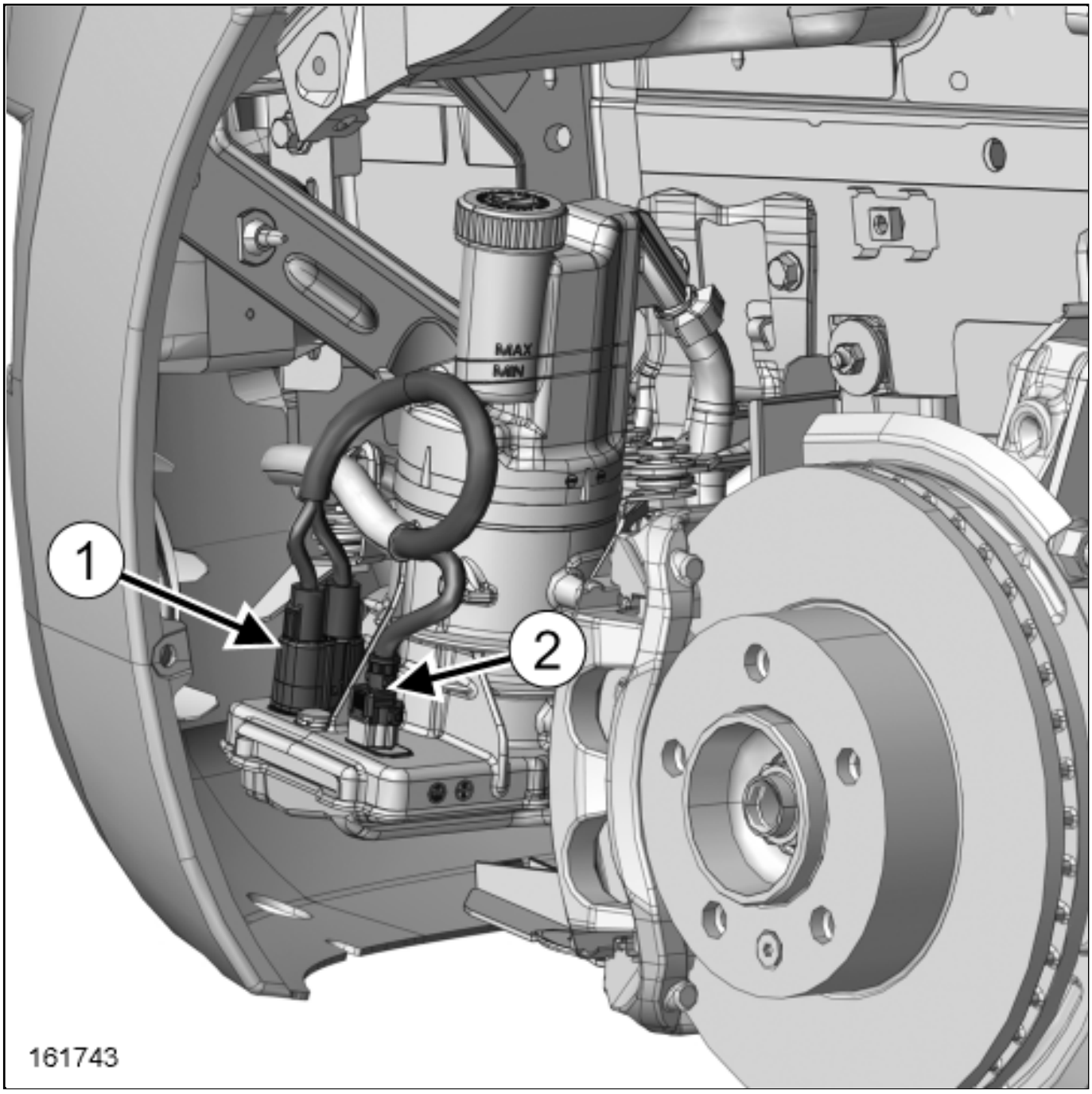
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift **Vehicle: Towing and lifting** .
- Disconnect the battery **Battery: Removal - Refitting** .
- Remove:

- the front left-hand wheel Wheel: Removal - Refitting ,
- the front left-hand wheel arch liner Front wheel arch liner: Removal - Refitting .

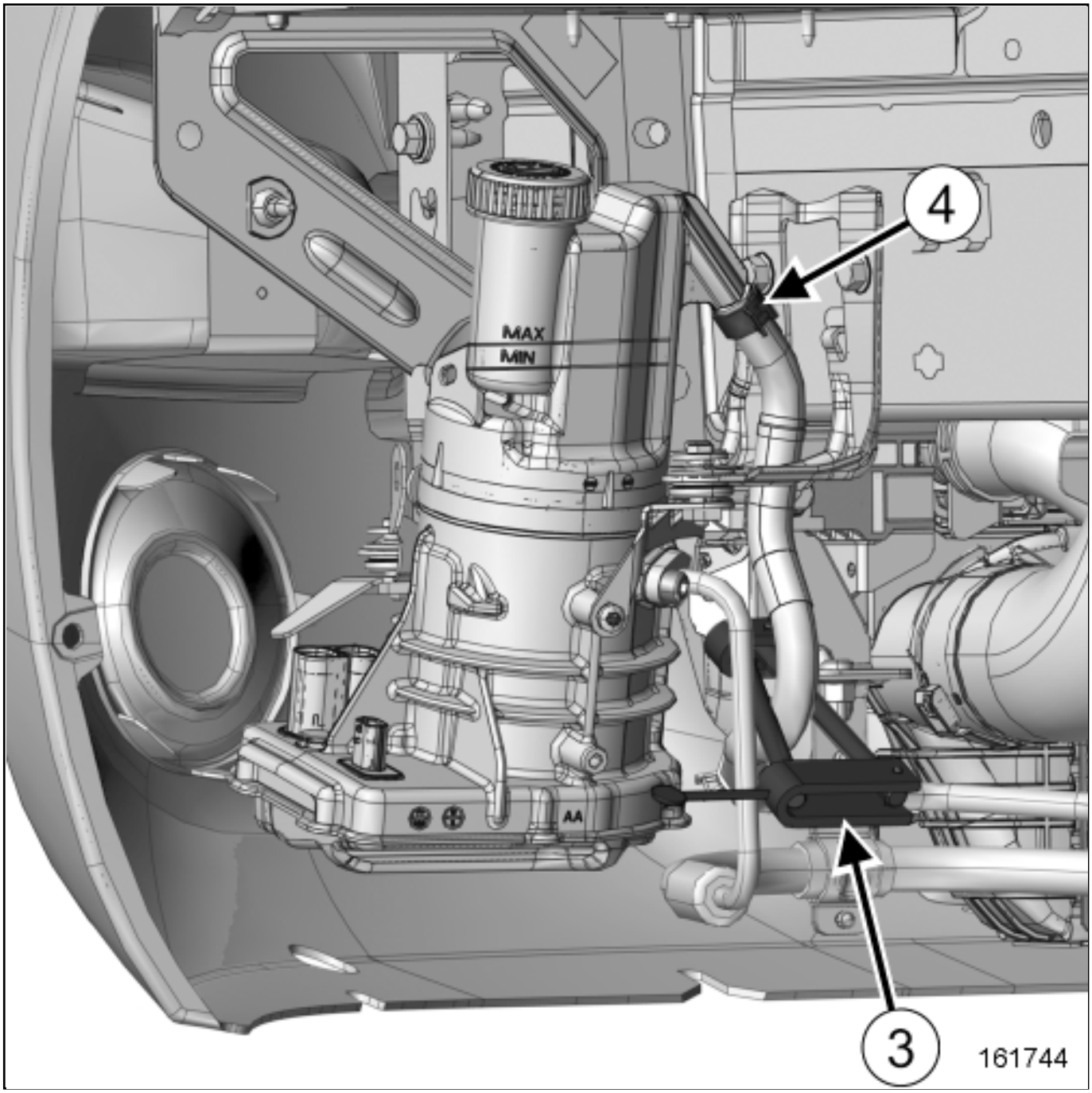
2. REMOVAL OPERATION



Disconnect:

- the power-assisted steering pump power connector(1) ,
- the power-assisted steering pump signal connector(2) ,

Position an oil recovery tray under the power-assisted steering pump.



- Clamp the power-assisted steering low-pressure pipe using the toolPipe clamps.(Ms. 583) (3) .
- Move aside the power-assisted steering low-pressure pipe clip(4) using the toolRemote operation pliers for hose clips.(Mot. 1448) .
- Disconnect the power-assisted steering low-pressure pipe from the power-assisted steering pump.
- Drain the remaining oil of the power-assisted steering pump reservoir.
- Fit blanking plugs.
- Move aside the power-assisted steering low-pressure pipe.

Remove the power-assisted steering high-pressure pipe bolt(see 36B, Power assisted steering, Power-assisted steering assembly: Exploded view) .

Disconnect the the power-assisted steering high-pressure pipe from the power-assisted steering pump (see 36B, Power assisted steering, Power-assisted steering assembly: Exploded view) .

Remove (see 36B, Power assisted steering, Power-assisted steering assembly: Exploded view) :

- the power-assisted steering pump assembly bolts,
- the power-assisted steering pump assembly,

REFITTING

1. REFITTING OPERATION

Refit (see 36B, Power assisted steering, Power-assisted steering assembly: Exploded view) :

- the power-assisted steering pump assembly,
- the power-assisted steering pump assembly bolts,

Torque tighten the power-assisted steering pump assembly bolts(see 36B, Power assisted steering, Power-assisted steering assembly: Exploded view) .

2. FINAL OPERATION

Proceed in the reverse order to removal.

Fill the pump assembly reservoir with power-assisted steering fluidVehicle: Parts and consumables for the repair .

Check that there are no leaks.

If the power-assisted steering pump assembly is replaced, apply the after repair procedure using the Diagnostic tool Diagnostic tool : Use :

-computer concerned by the after repair procedure:

- power-assisted steering pump assembly computer

-component affected by the after repair procedure:

- power-assisted steering pump assembly

POWER-ASSISTED STEERING PUMP PULLEY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**Engine accessories assembly: Exploded view** .

WARNING

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - **Steering: Precautions for the repair** ,
  - **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the front right-hand wheel**Wheel: Removal - Refitting** ,
  - the engine undertray.

- Loosen the power-assisted steering pump pulley bolts.

- Remove the accessories belt.

2. REMOVAL OPERATION

- Remove the power-assisted steering pump pulley.

REFITTING

- Proceed in the reverse order to removal.

POWER-TAKE-OFF: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

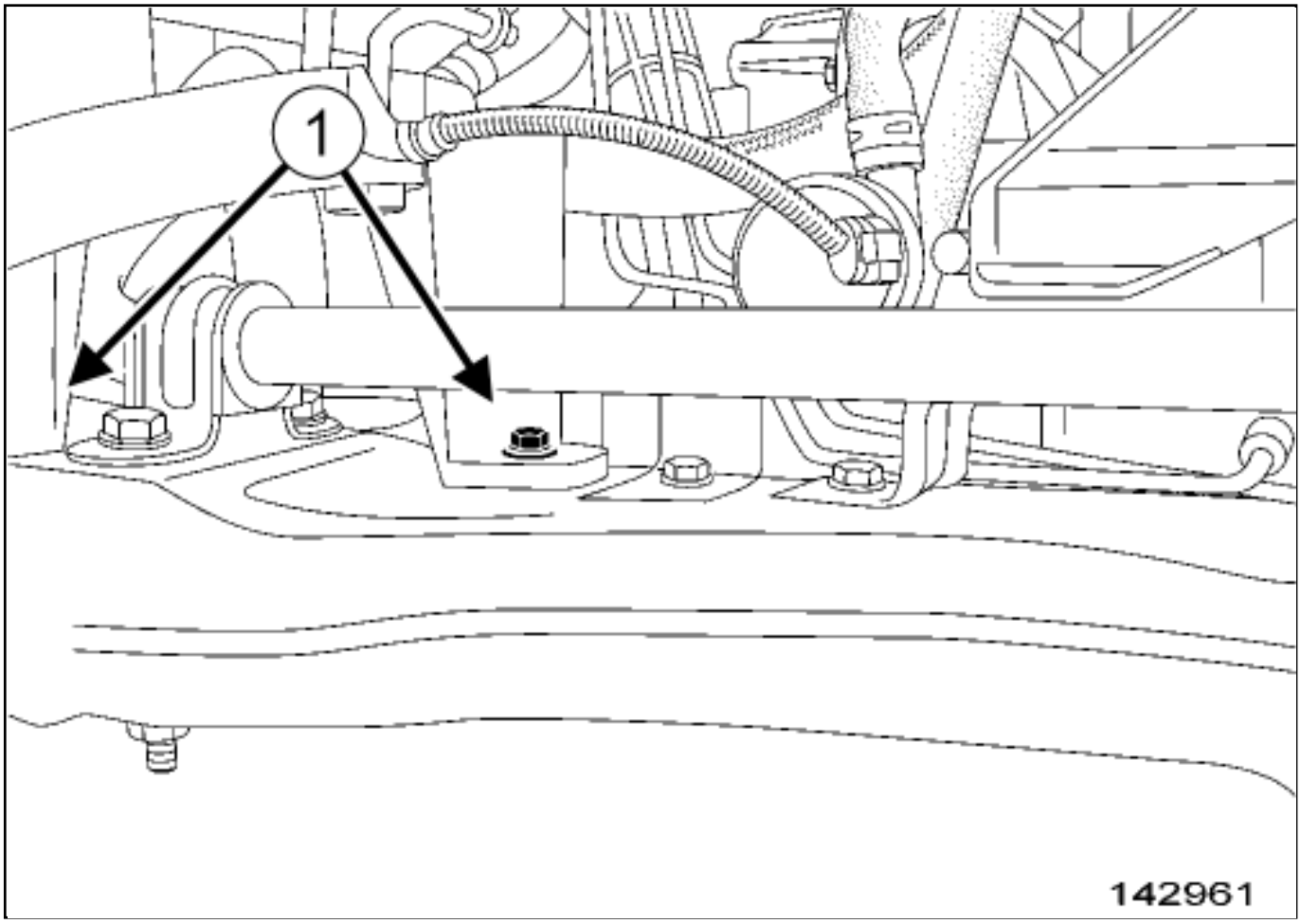
- Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

Location and specifications (tightening torques, parts always to be replaced, etc.) (see 21A, Manual gearbox, Gearbox assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

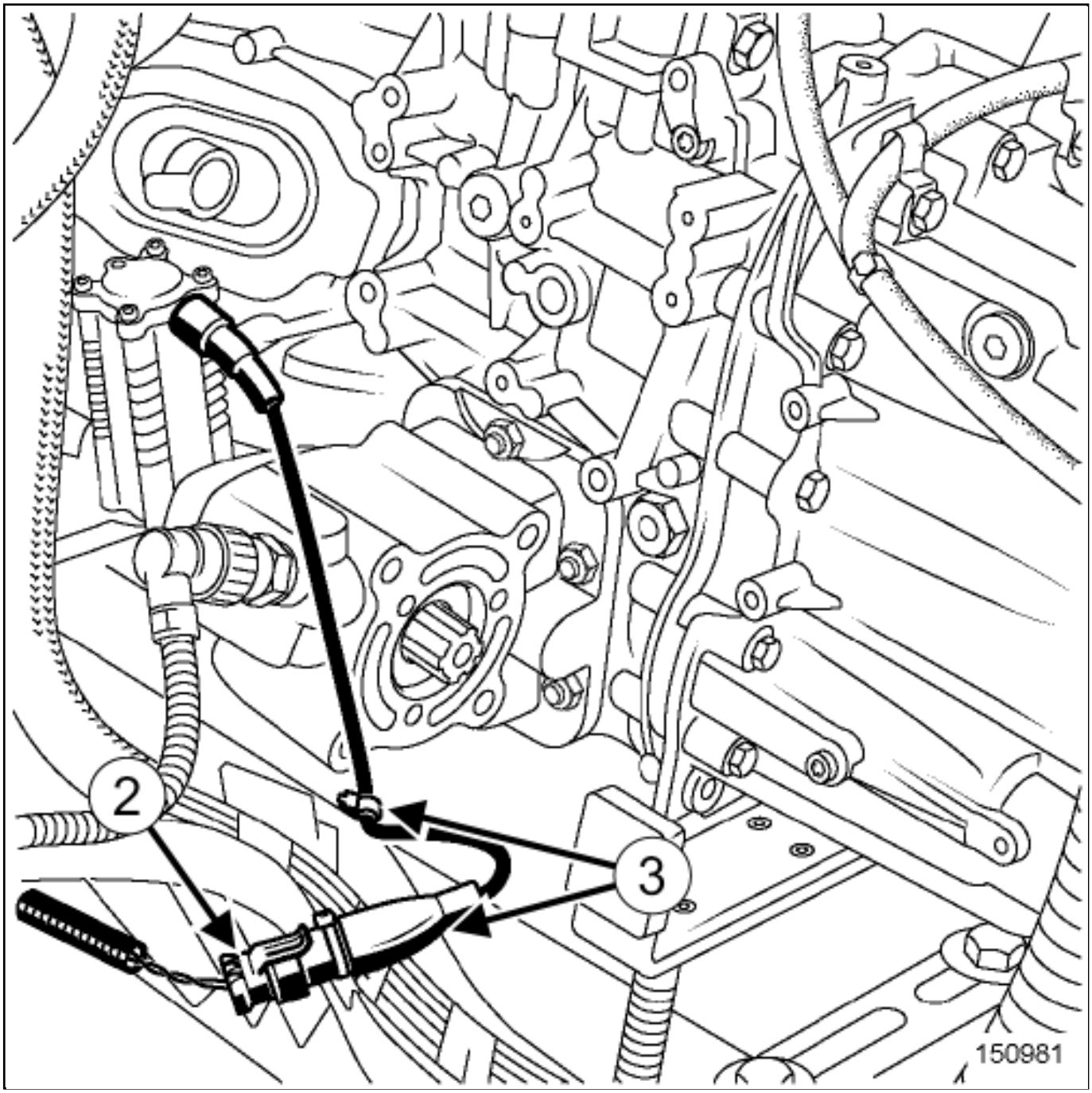
- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Drain the gearbox (see 21A, Manual gearbox , Manual gearbox oils: Draining - Filling) .
- Remove:
  - the engine undertray,
  - the clutch slave cylinder mounting bolts (see 21A, Manual gearbox , Gearbox assembly: Exploded view) .
- Move the clutch slave cylinder mounting.



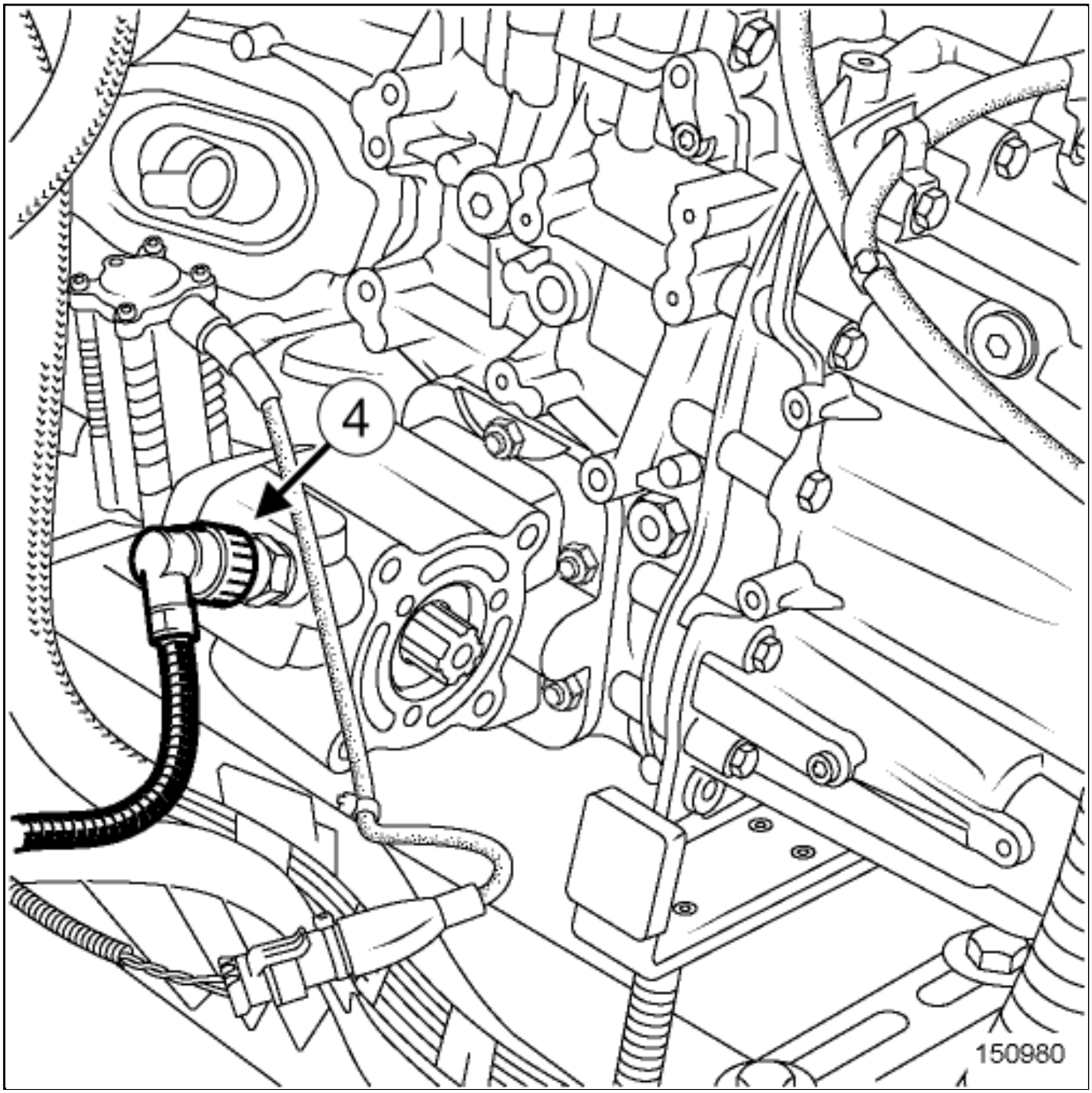
- Remove the wiring bolts(1) .
- Move aside the wiring.

2. REMOVAL OPERATION

- Disconnect the power take-off output accessory.



- Disconnect the power take-off actuator connector(2) .
- Detache the power take-off actuator wiring(3) .

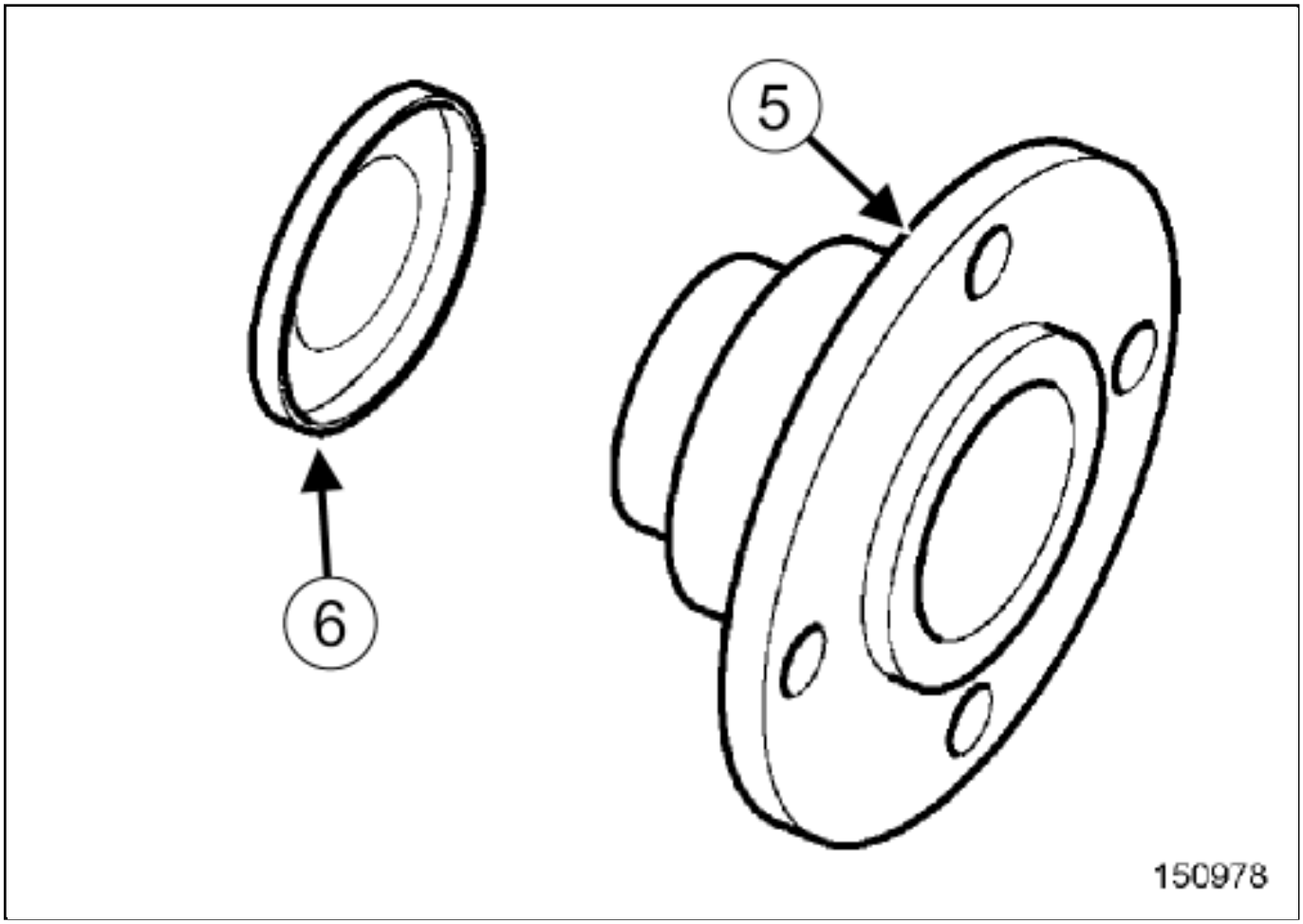


- Disconnect the power take-off switch connector(4) .

- Remove (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :
  - the power take-off nuts,
  - the power take-off,
  - the power take-off seal.

1- IN THE EVENT OF REPLACEMENT:

- Remove (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :
  - the power take-off actuator,
  - the power take-off switch.



- Remove :
  - the power take-off output flange(5) ,
  - the power take-off output flange seal(6) .

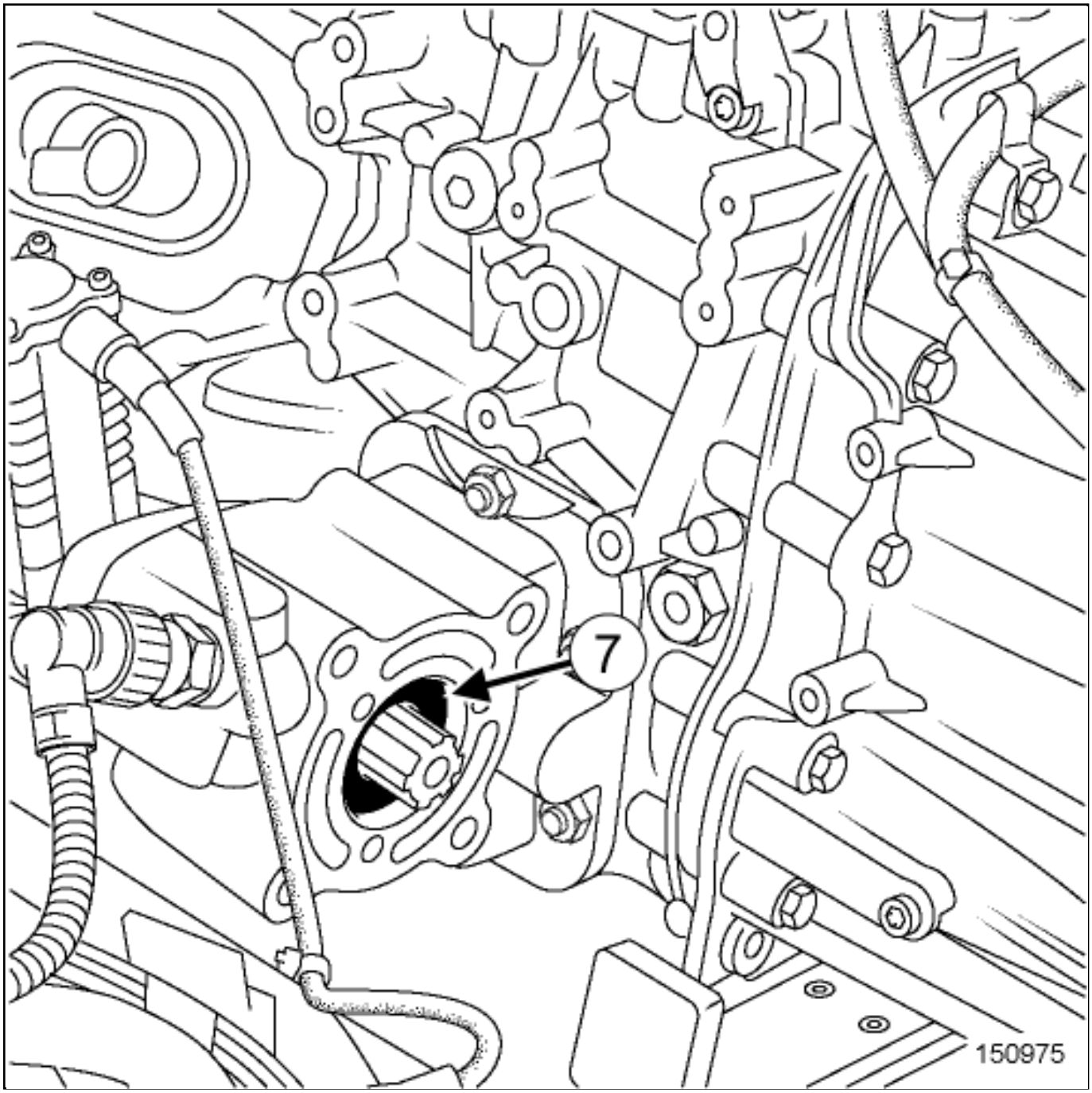
REFITTING

1. REFITTING PREPARATION OPERATION

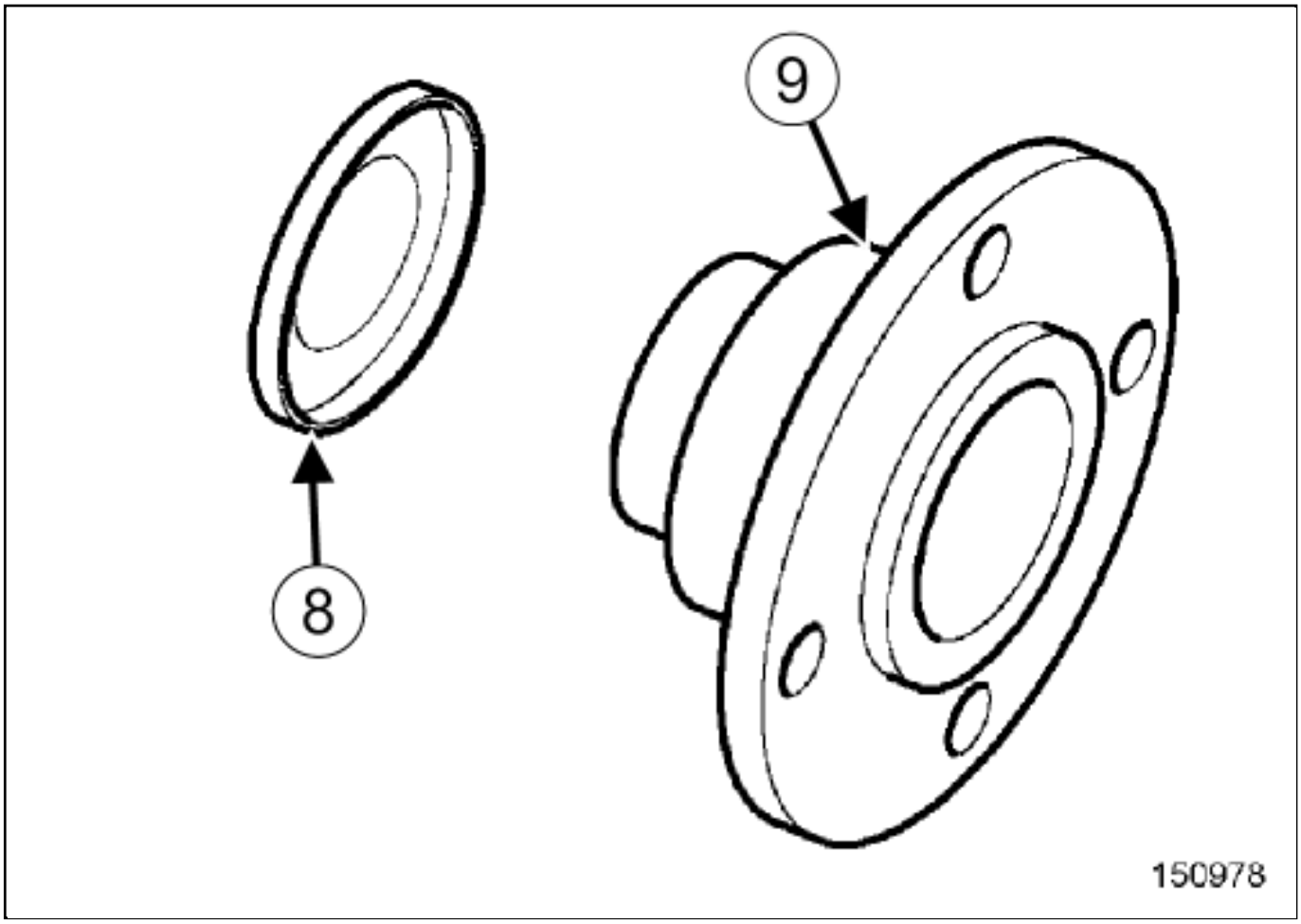
- Always replace the power take-off seal.
- Always replace the power take-off plug seal.

1- IN THE EVENT OF REPLACEMENT:

- Always replace the power take-off output flange seal.
- Refit (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :
  - the power take-off actuator,
  - the power take-off switch.



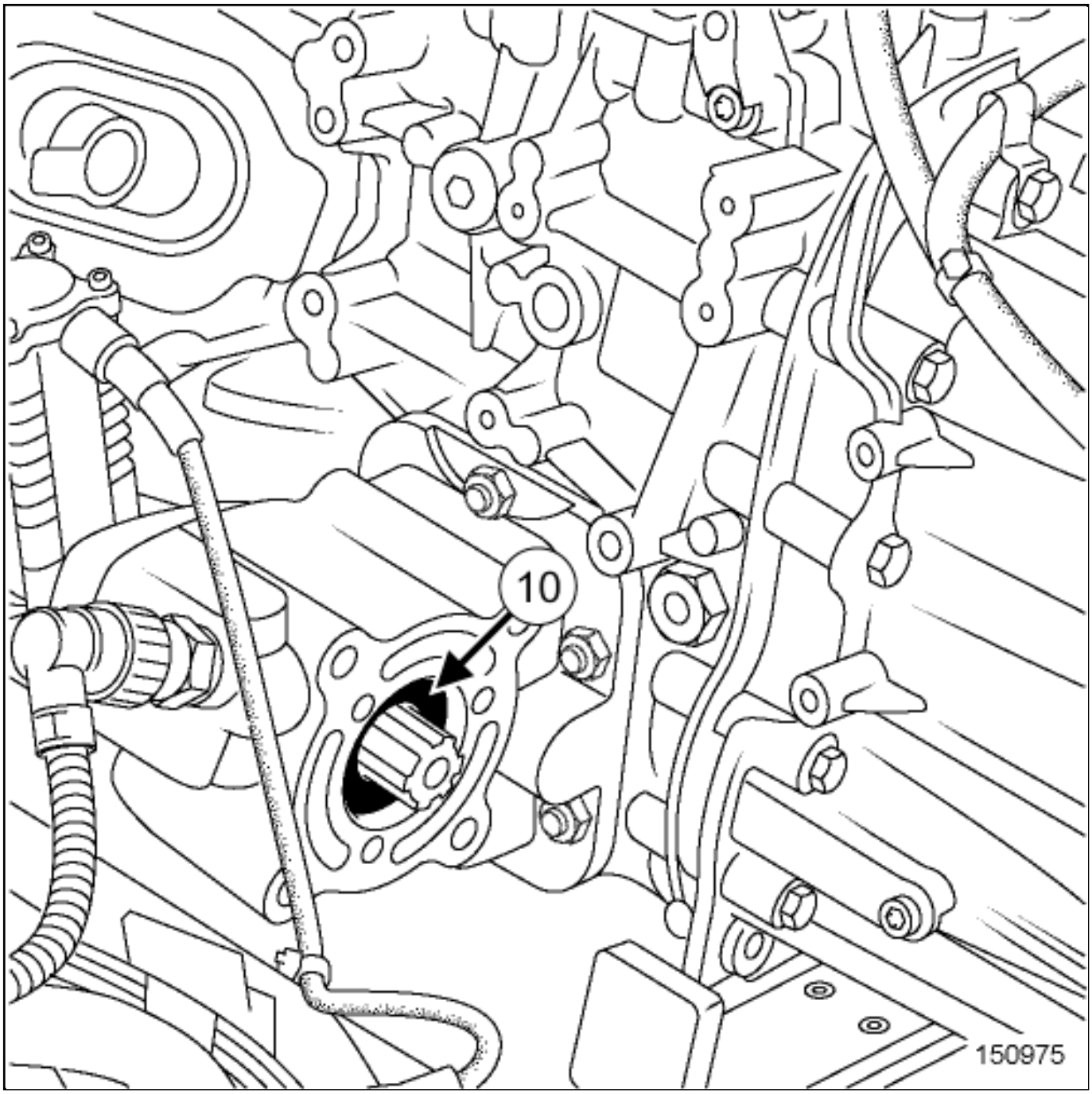
- Remove the power take-off output seal(7) .



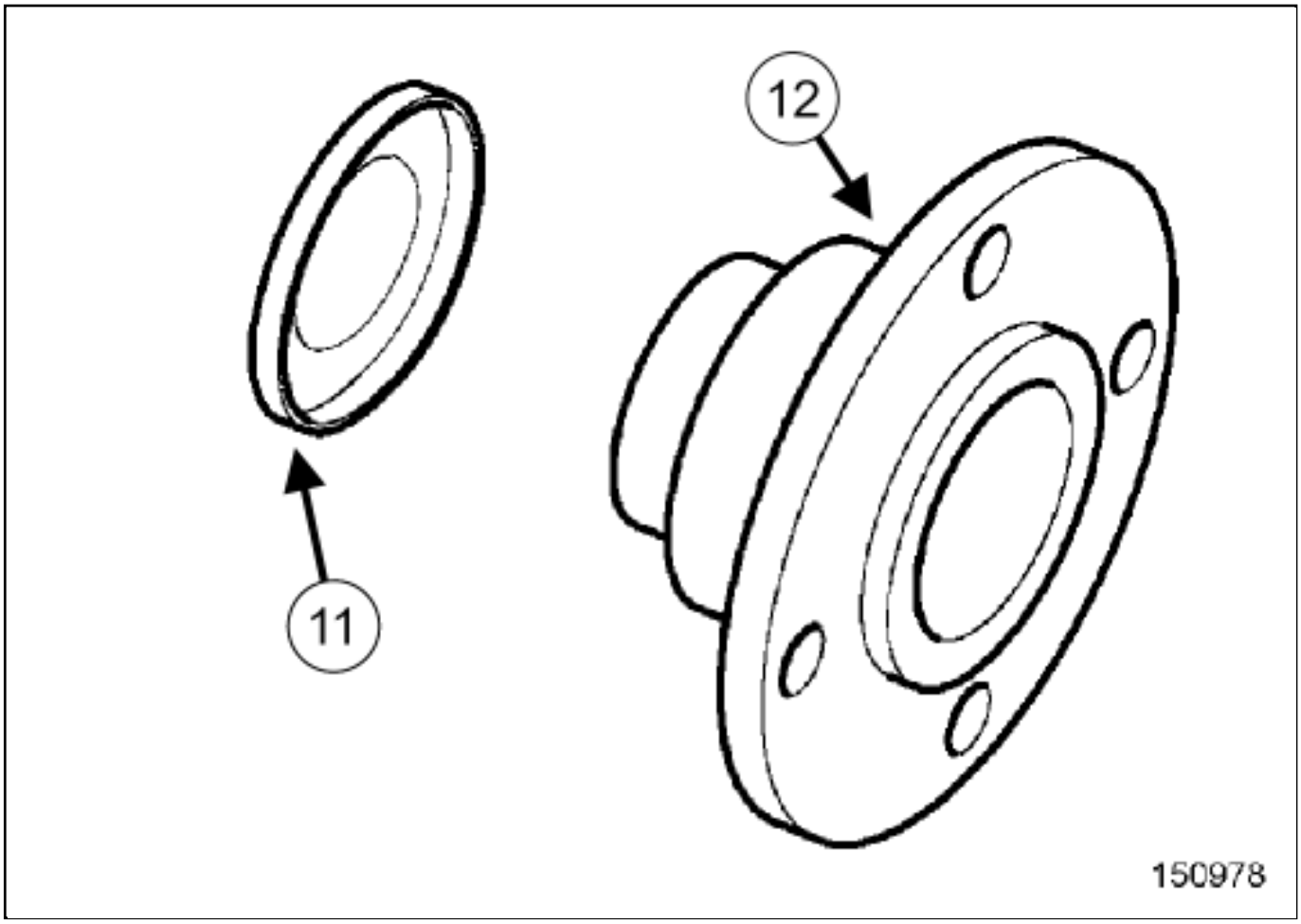
Fit:

- the power take-off output flange seal(**8**) ,
- the power take-off output flange(**9**) .

2- IN THE EVENT OF FIRST ASSEMBLY

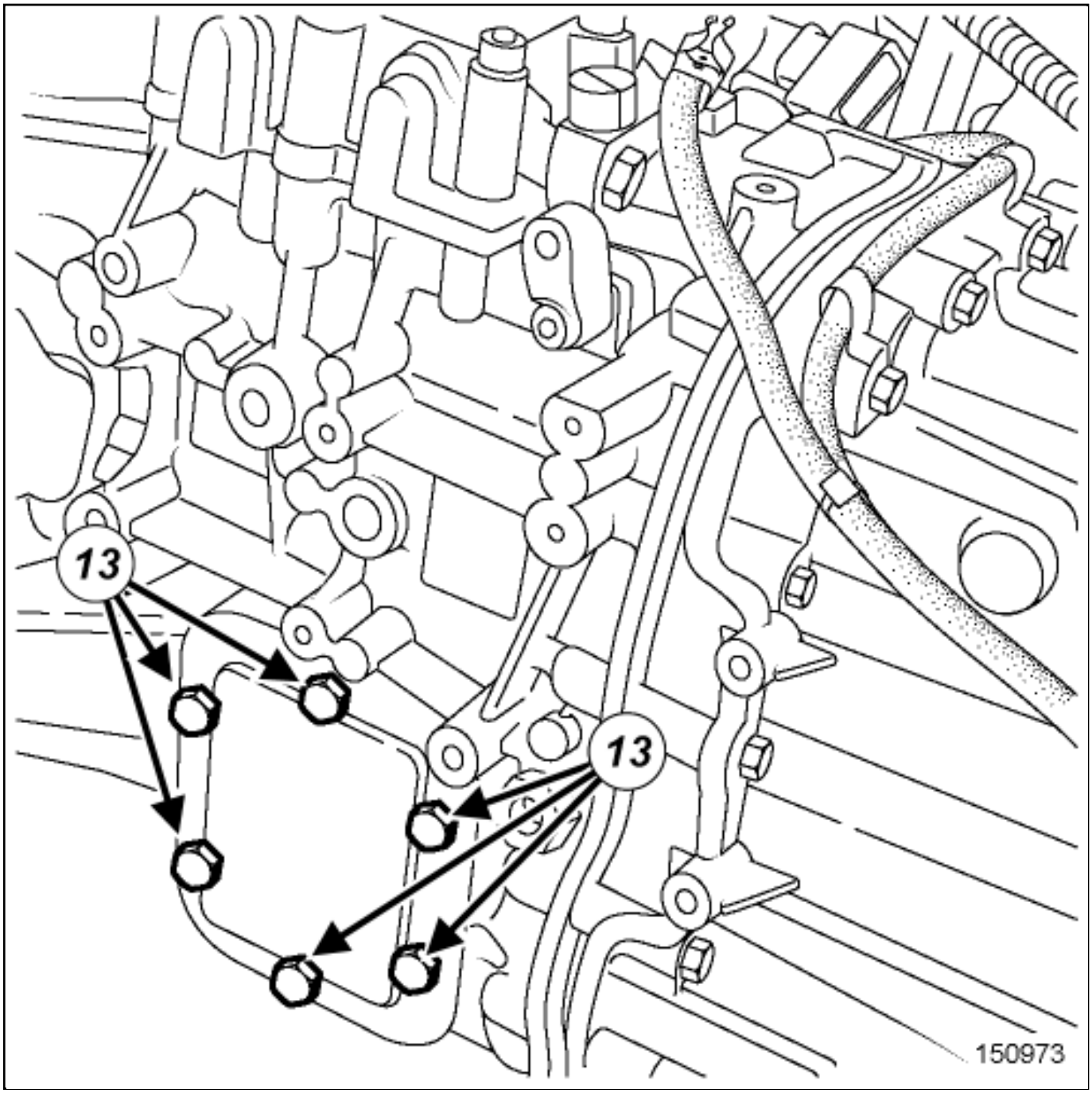


- Remove the power take-off output seal(10) .



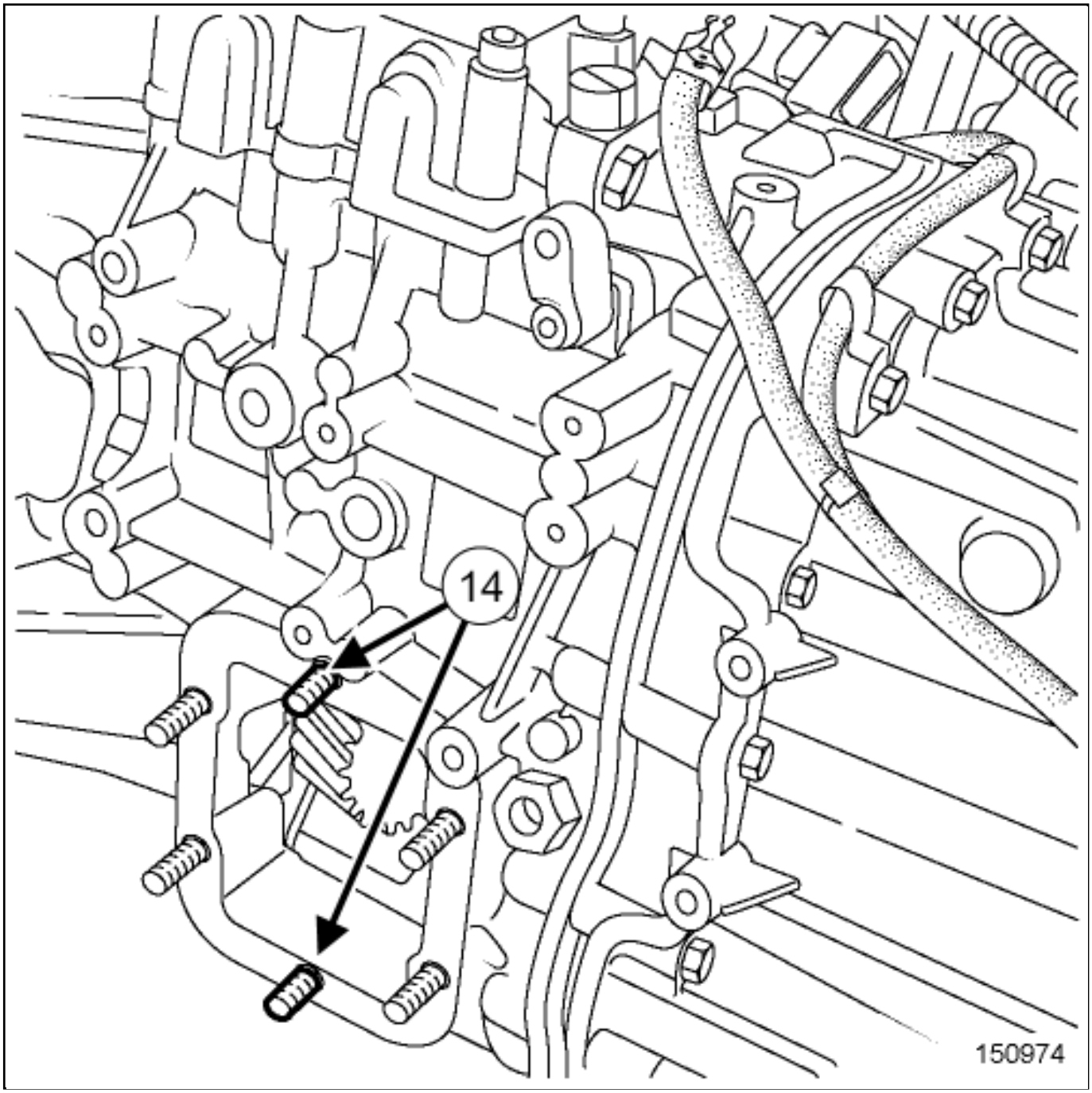
Fit:

- the power take-off output flange seal(**11**) ,
- the power take-off output flange(**12**) .



Remove (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :

- the cover bolts(13) ,
- the cover,
- the cover seal.



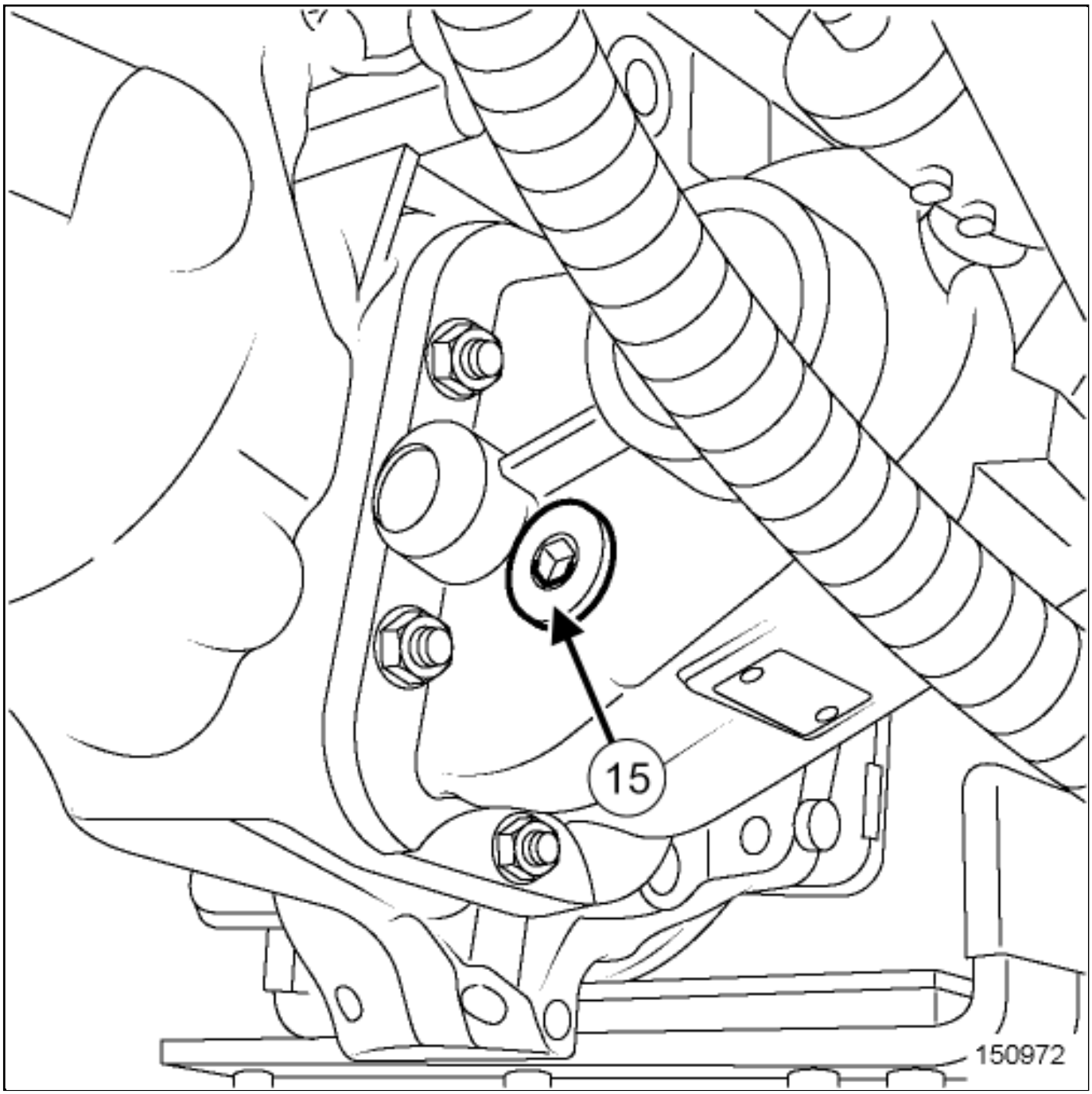
Fit the power take-off studs.

Note:

Fit the small power take-off studs in(14) .

2. REFITTING OPERATION

Proceed in the reverse order to removal.



Remove (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :

- the power take-off plug(15) ,
- the power take-off plug seal.

Check the power take-off drive pinion clearance.

Refit (see 21A, Manual gearbox , Gearbox assembly: Exploded view) :

- the new power take-off plug seal,
- the power take-off plug.

XSL version : 3.02 du 22/07/11

PRECAUTIONS FOR THE REPAIR

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**(see 01D, Mechanical introduction, Vehicle: Precautions for the repair)** .

1. GENERAL INFORMATION

All information contained in these manuals is intended exclusively for automotive industry professionals.

The documentation is intended to cover all vehicles in theRENAULTrange throughout the world, but may not cover equipment designed for use in specific countries.

The procedures and fault finding procedures recommended and described in this manual have been designed by automotive industry repair professionals.

1- GENERAL RECOMMENDATIONS

Observe basic principles of vehicle repair.

The quality of repair depends first and foremost on the care exercised by the person in carrying it out.

To ensure good repair:

- protect the sensitive areas of the vehicle (seats, steering wheel, wings, etc.),
- unless otherwise indicated, all repairs must be done with the ignition off,
- when welding on the vehicle, it is advisable to remove or disconnect components near the repair area that could be affected by the heat,
- use recommended professional products and original parts,
- observe the tightening torques,
- replace roll pins, self-locking or bonded nuts or bolts every time they are removed,
- take care with electrical and electronic components which cannot withstand excess voltage and improper handling; replace any electrical and electronic components which have experienced a voltage drop,
- make sure that the connectors are correctly clipped,
- do not pull on the wiring,

WITH STOP AND START (STOSTA)

Disable the Stop & Start system for all operations requiring the opening of the bonnet by the command located in the cockpit.

To ensure good repair:

- check for the sealing plugs on the connectors,
- do not just replace parts one after the other, carry out detailed fault finding beforehand,
- carry out a final check before returning the vehicle to the customer (set the clock, check the alarm operation, check the lights and indicators etc.),
- clean and degrease the sections to be bonded (threads, stub axle splines) to ensure proper adherence.
- Desactivate the start and stop mode for all interventions requiring the bonnet opening.

Protect the accessories and timing belts, the electrical accessories (starter, blanking cover, electric power assisted steering pump) and the mating face to prevent diesel fuel spilling onto the clutch friction plate.

The design quality of our vehicles demands that nothing is left to chance in making a good repair, and it is essential to refit parts or components exactly as they were originally (for instance: heat shields, wiring routing, pipe routing, particularly in the area of the orange high-voltage wirings).

Do not blow away dust (brakes, etc.), vacuum them up or clean the component with a cleaning agent (such as a brake cleaning product).

Use professional products and apply them with care, for example do not apply too much sealing paste to the sealing surface.

Exhaust gases (petrol and diesel) are pollutants. Operate engines or self-contained heaters with care and always use exhaust gas extractors.

Ensure that there is no risk of a short circuit occurring when the electrical connections are reconnected (e.g. charger, converter, traction battery and 12V battery, etc.). Some points need greasing, others do not, therefore particular attention should be paid during refitting operations to ensure that they work properly under all conditions.

2- SPECIAL TOOLING - EASE OF USE

The repair procedures have been designed using special tools; they must therefore be carried out using these tools to ensure a high degree of working safety and quality of repair.

The equipment we have approved has undergone careful research and testing, and must be used and maintained with care.

3- RELIABILITY - UPDATING

New repair procedures are constantly being developed in the interests of repair quality, either with new products (emission control, injection, electronics, etc.), or in fault finding. Be sure to consult the Workshop Repair Manuals or Technical Notes or fault finding summaries before any servicing operation.

Since vehicle specifications are subject to change during their commercial life, it is essential to check whether there are any updated Technical Notes when seeking information.

4- SAFETY

Operations on certain equipment and certain parts (for instance: spring-shock absorber assembly, electric traction reduction gearing, brake system, ABS, airbag, etc.) require particular attention to be paid to safety, cleanliness and care.

The safety symbol used in this manual indicates that special attention must be paid to the procedure or the tightening torque values.

- Working safely:
  - use suitable tools which are in good condition (use of "multi-purpose" tools, such as adjustable pliers, etc., should be avoided wherever possible),
  - use supports and adopt a correct posture when performing heavy work or raising loads,
  - make sure that the procedure used is not dangerous,
  - do not wear any jewellery or other small objects during an operation,
  - use personal protection (gloves, safety glasses, work shoes, masks, skin barrier creams, etc.),
  - always follow the safety instructions associated with the operation to be performed,
  - do not smoke when working on vehicles,
  - use smoke extractors (welding, exhaust gases, etc.),
  - do not use harmful products in unventilated rooms,
  - do not overstrain yourself or attempt inappropriate work operations,
  - use axle stands when working under a vehicle raised on a jack,
  - do not ingest any chemicals (brake fluid, coolant, etc.),
  - do not open the cooling circuit when it is hot and pressurised,
  - take care with components that are liable to start up suddenly (engine cooling fan, etc.).

- Respecting the environment:
  - do not allow waste refrigerants to escape into the atmosphere,
  - do not dispose of waste vehicle fluids (oil, brake fluid, etc.) in drains,
  - do not burn discarded products (tyres, etc.).

5- CONCLUSION

The procedures contained in this document merit your attention. Please read them carefully in order to reduce the risk of injury, and avoid using incorrect procedures that could damage the vehicle or make it dangerous in use.

Following the recommended procedures will help you to provide a quality of service which will ensure the

vehicles achieve the highest levels of performance and reliability.

Maintenance and repair operations must be carried out under the proper conditions to ensure that our vehicles run safely and reliably.

PRESSURE AT END OF COMPRESSION: CHECK

Note, one or more warnings are present in this procedure

Special tooling required	
Flexible end piece for taking end of compression pressure measurements.	Mot. 1772

Equipment required
Diagnostic tool
diesel compression gauge

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

CHECK

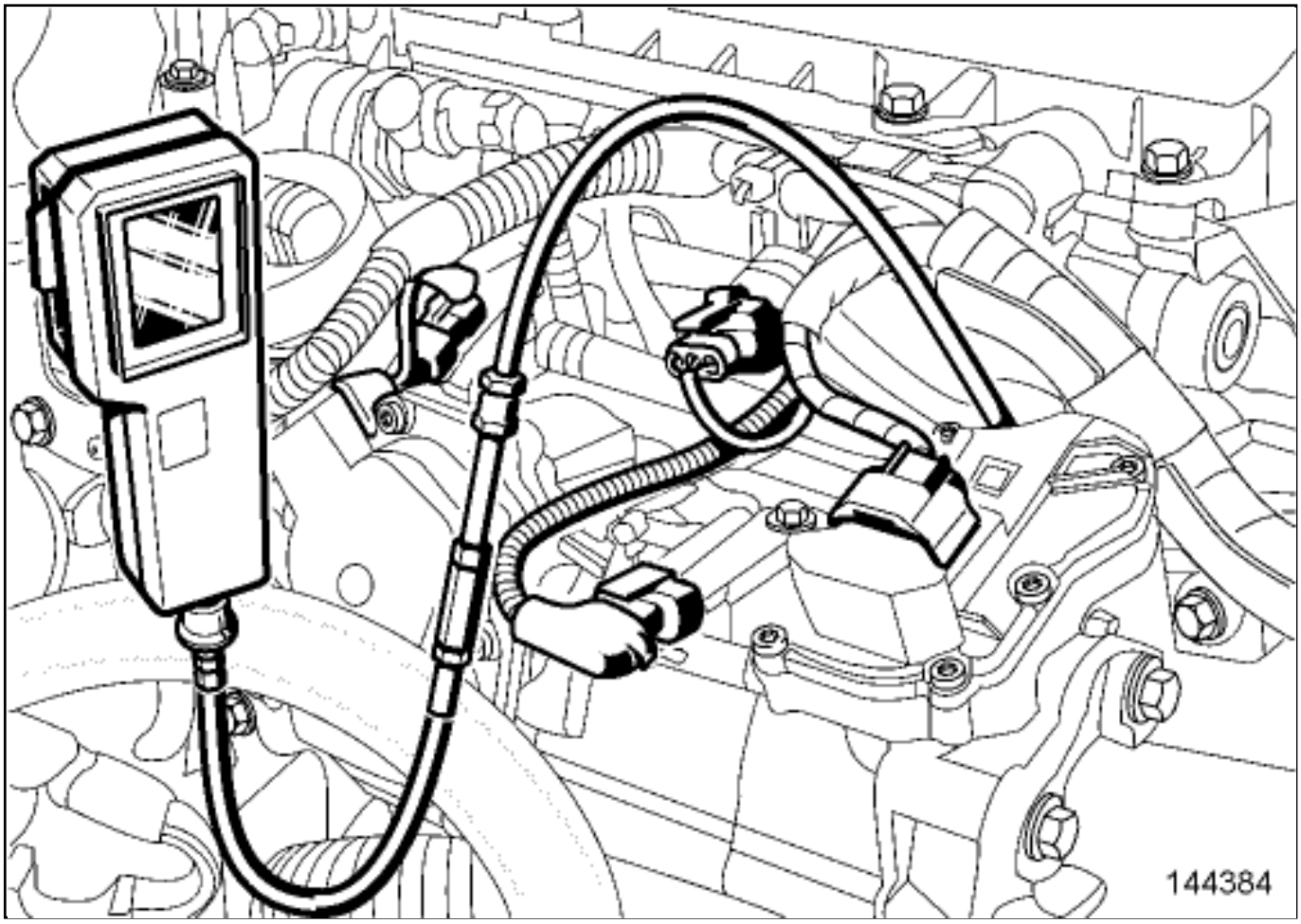
1. PREPARATION OPERATION FOR CHECK

- Remove the preheater plugs**(see 11A, Top and front of engine, Cylinder head assembly: Exploded view)** .

- Fit the hose end pieceFlexible end piece for taking end of compression pressure measurements.(Mot. 1772) in place of one of the removed plugs.

- Moderately tighten the hose end pieceFlexible end piece for taking end of compression pressure measurements. (Mot. 1772) using an open-jawed spanner.

- Screw the conversion hose end pieceFlexible end piece for taking end of compression pressure measurements. (Mot. 1772) of the diesel compression gaugeonto the hose.



- Connect the diesel compression gaugeto theFlexible end piece for taking end of compression pressure measurements. (Mot. 1772) .

- Run command with Diagnostic tool:
  - RZ003 : "ADAPTATIFS MOTEUR",
  - VP036 : "INHIBITION ALIMENTATION CARBURANT".

- Put the vehicle under the starting conditions with the gear lever in neutral.

2. TEST OPERATION

- Turn the engine ignition key to trigger the engine starting phase.

Note:

The engine will be driven for 20 swithout starting.

- Check the compression of cylinder no. 1.

Note:

Put the vehicle back in forced + after ignition feed as soon as the starter has stopped (in order to maintain engine start inhibition and to measure the compression of the other cylinders).

Note:

It is necessary to wait for at least 10 secondsbefore starting the engine each time (the starter will not run due to its thermal protection).

- Measure the compression of the other cylinders.

3. FINAL OPERATION

- Proceed in the reverse order to removal.
- Refit the heater plugs(see 11A, Top and front of engine, Cylinder head assembly: Exploded view) .

PRESSURE PLATE - DISC: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Flywheel locking tool.	Mot. 1431
Set of clutch plate centring mandrels.	Emb. 1780

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 20A, Clutch, Clutch assembly: Exploded view)** .

WARNING

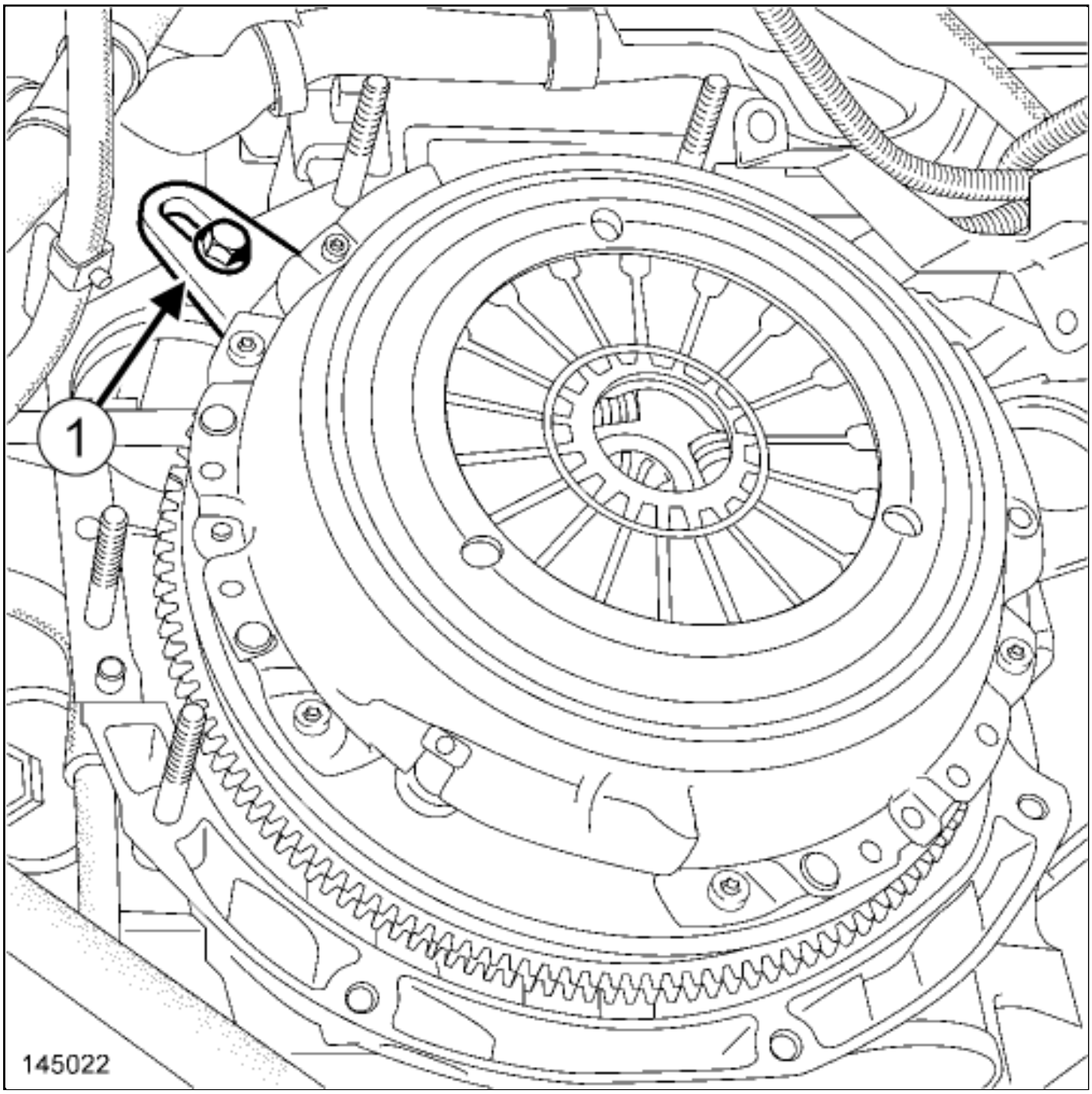
To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the manual gearbox**Gearbox assembly: Exploded view** .

2. REMOVAL OPERATION



- Fit the toolFlywheel locking tool.(Mot. 1431) (1) on the flywheel.

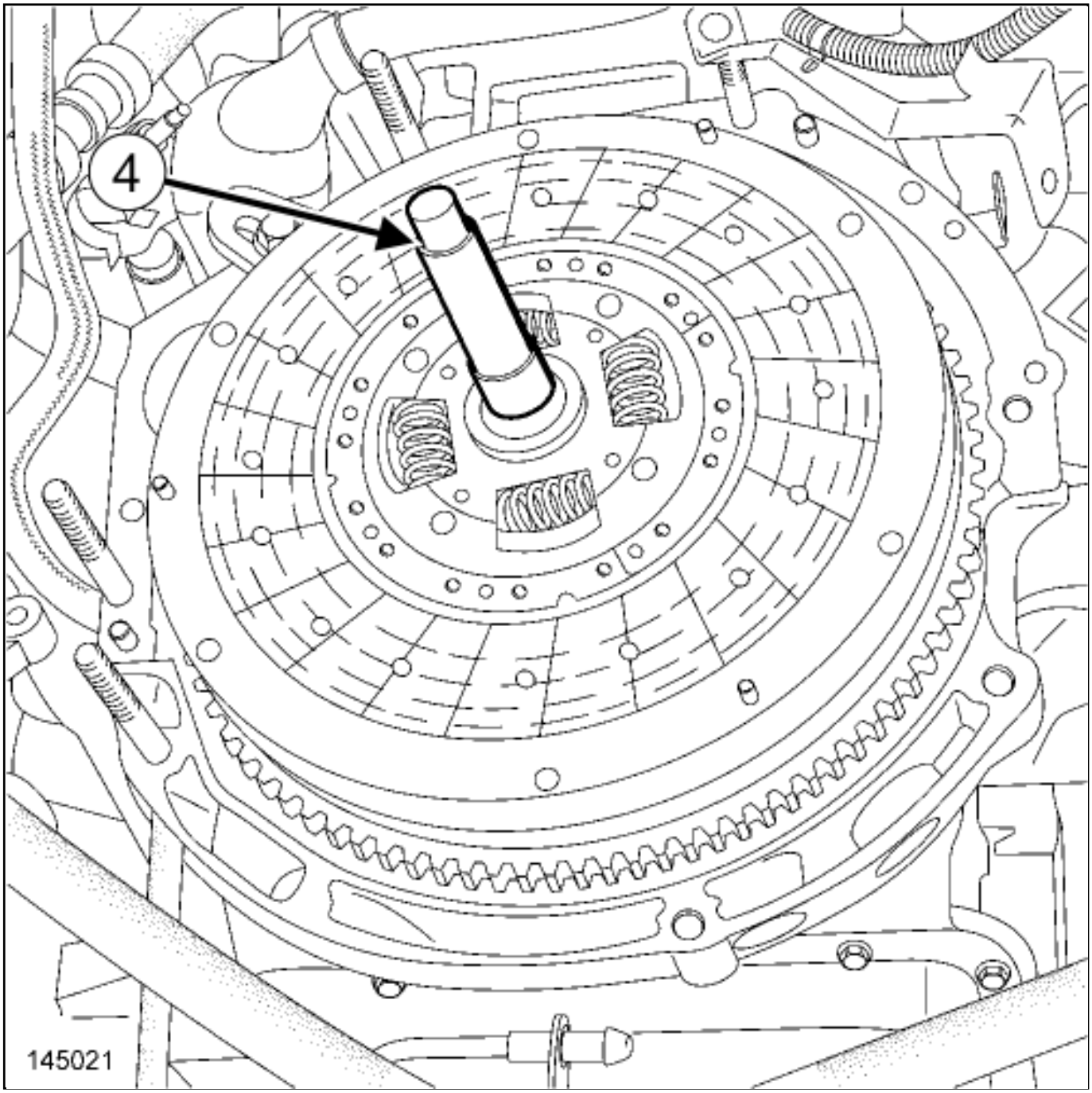
- Remove (see 20A, Clutch, Clutch assembly: Exploded view) :
  - the clutch pressure plate,
  - the clutch plate.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean and degrease:
  - the clutch shaft splines,
  - the flywheel friction face.

2. REFITTING OPERATION



- Centre the clutch plate using the toolSet of clutch plate centring mandrels.(Emb. 1780) .

- Refit the clutch pressure plate(see 20A, Clutch, Clutch assembly: Exploded view) .

3. FINAL OPERATION

- Proceed in the reverse order to removal.

PRESSURE SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

parts always to be replaced:
Tyre valve

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 **Tyre pressure monitor: Precautions for the repair**) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair** .

2
1
3
4
159878

No.	Description
1	pressure sensor
2	pressure sensor bolt
3	tyre valve
4	type valve cap

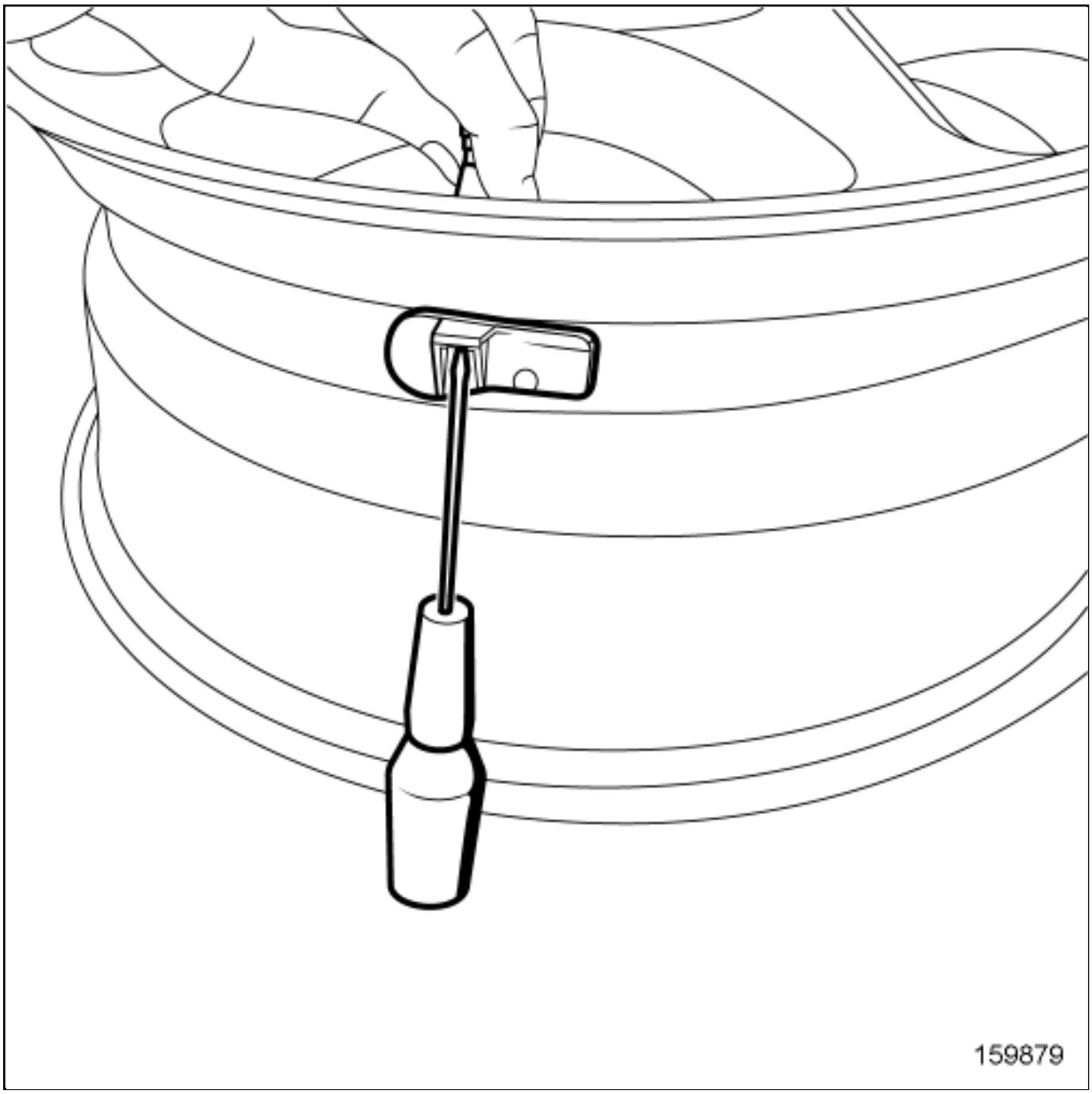
REMOVAL

1. REMOVAL PREPARATION OPERATION

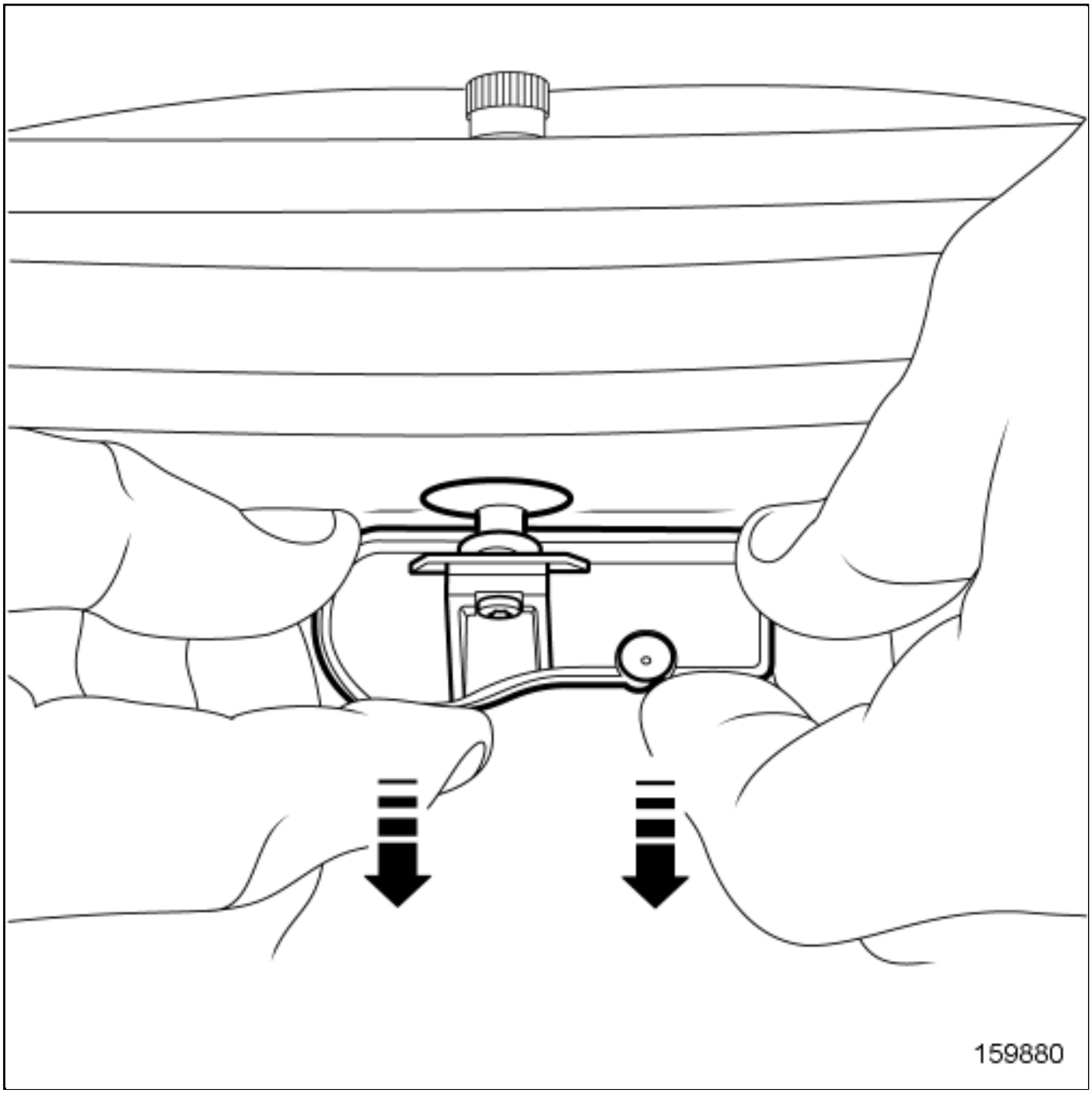
- Position the vehicle on a two-post lift **Vehicle: Towing and lifting** .

- Remove:
  - the wheels **Wheel: Removal - Refitting** ,
  - the tyres **Tyres: Removal - Refitting** .

2. REMOVAL OPERATION



- Remove the pressure sensor mounting bolt using a screwdriver as shown in the picture.



- Carefully remove by pulling the pressure sensor as shown in the picture.
- Remove the tyre valve.

REFITTING

1. REFITTING PREPARATION OPERATION

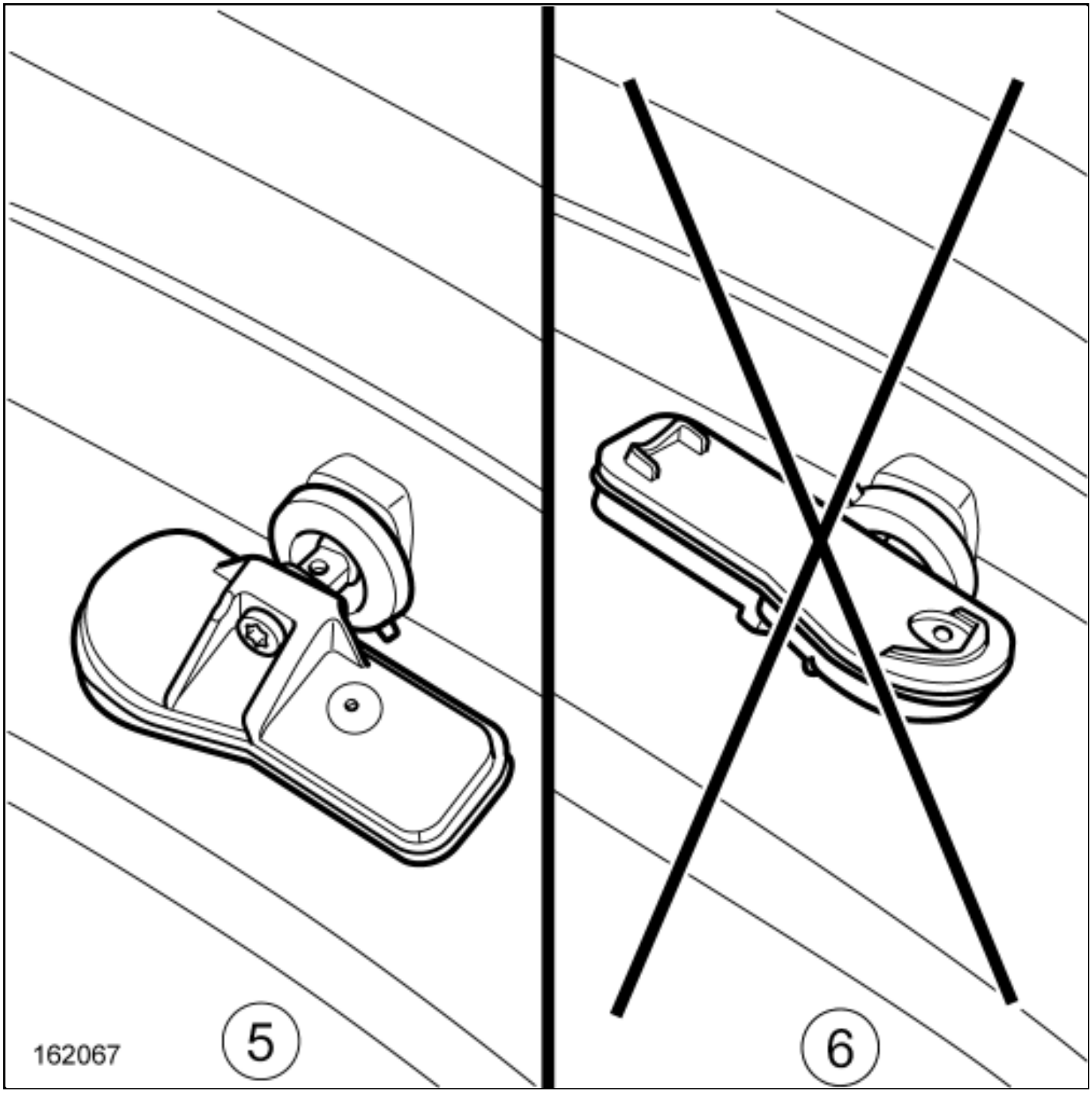
- Always replace the pressure sensor bolt.

parts always to be replaced: Tyre valve

2. REFITTING OPERATION

Refit:

- the tyre valve,
- the pressure sensor.

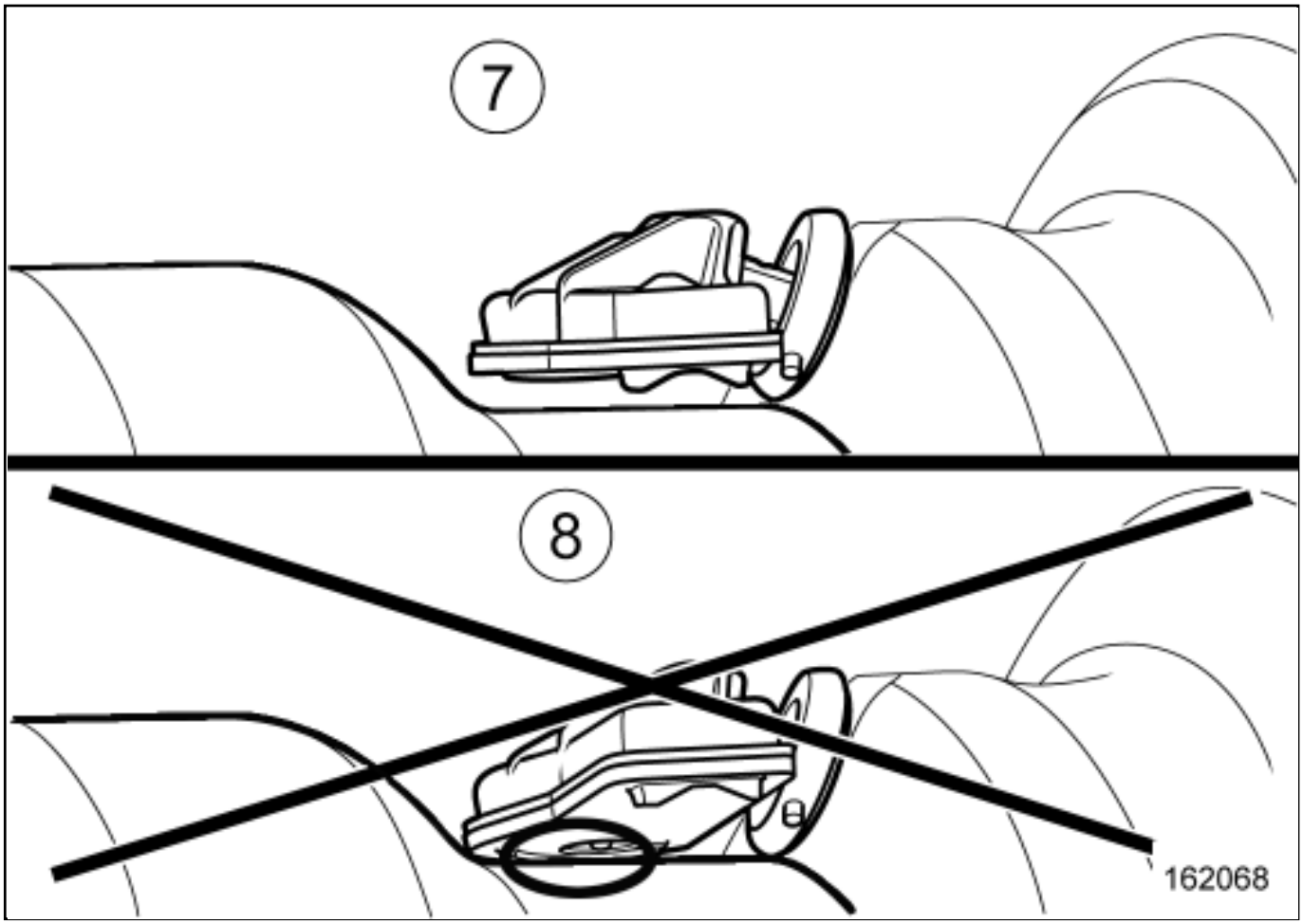


Make sure that the sensor is correctly positioned on the wheel rim:

- correctly fitted(5) .
- incorrectly fitted(6) ,

Note:

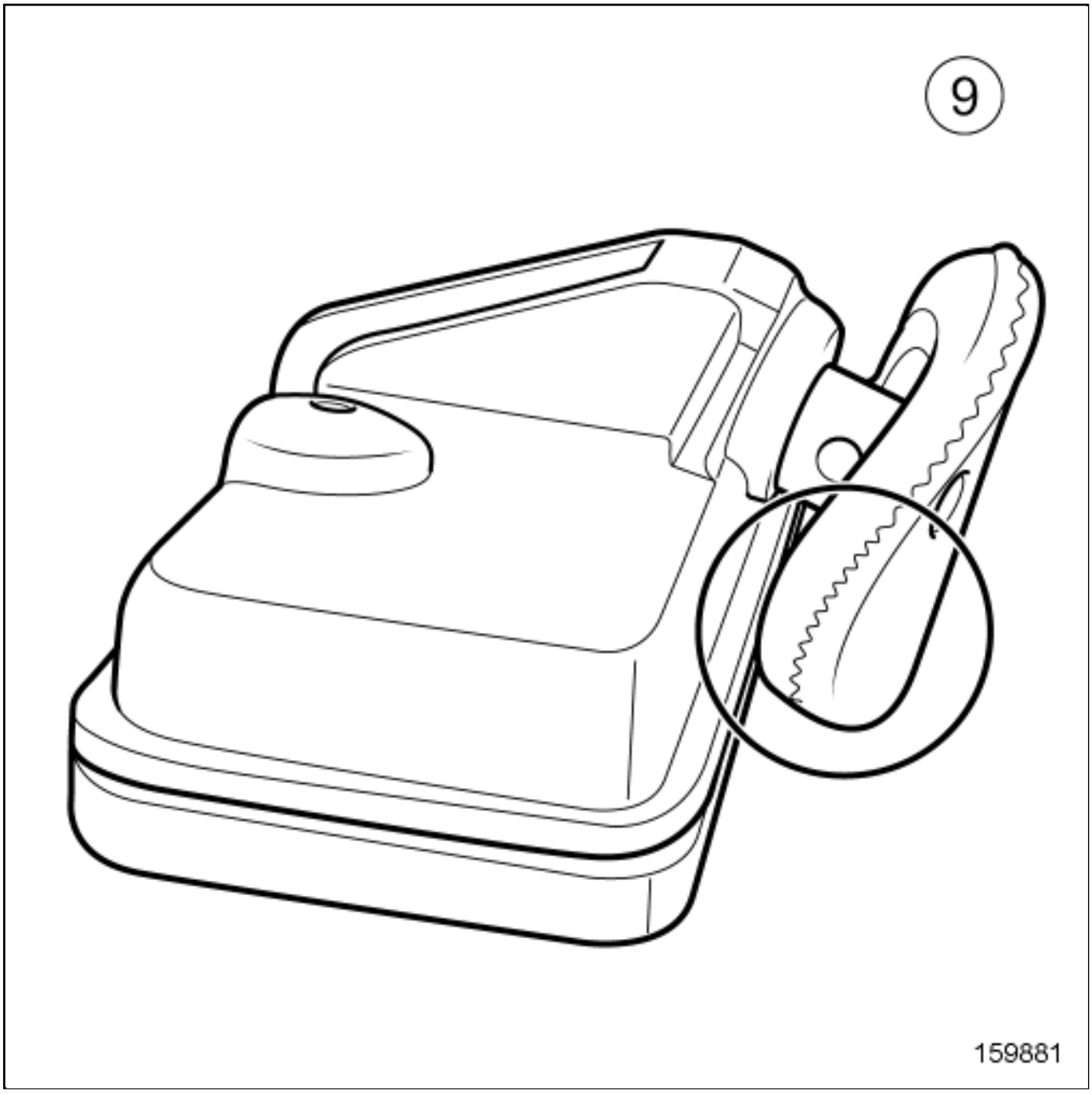
Position the pressure sensor so you can see the mounting bolt from above.

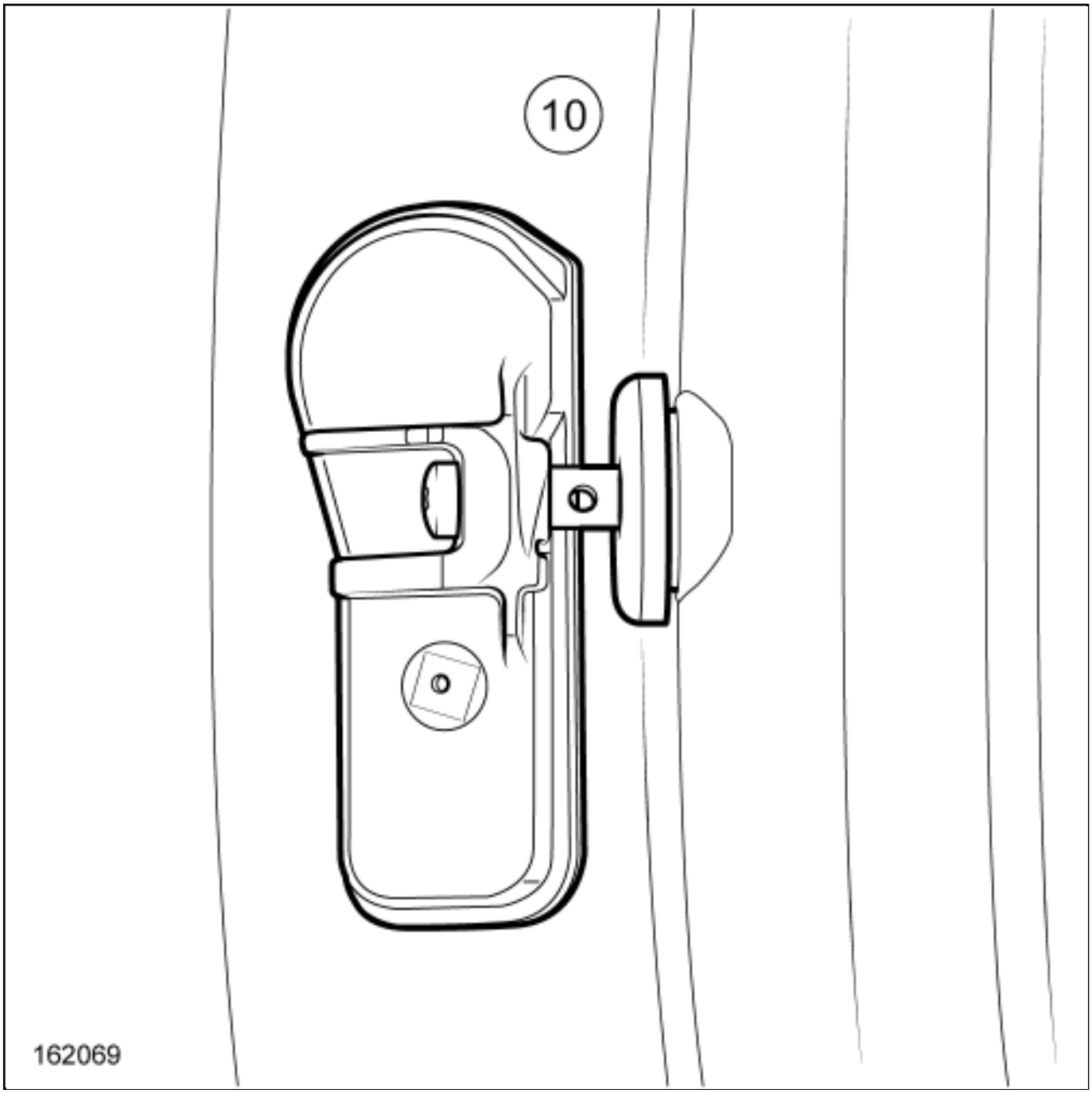


- Make sure that the sensor is correctly positioned on the wheel rim:
  - correctly fitted(7) ,
  - incorrectly fitted(8) .

Note:

There is no contact between the pressure sensor and the wheel rim.


9
159881



- Make sure that the sensor is correctly positioned on the wheel rim:
  - incorrectly fitted(**9**) ,
  - correctly fitted(**10**) .

- Check that the cup is completely pressed around the wheel hole.

- Refit the pressure sensor bolt.

- Torque tighten the pressure sensor bolt1.4 N.m .

3. FINAL OPERATION

- Proceed in the reverse order to removal.

1- WHEN REPLACING THE PRESSURE SENSOR

- Adjust the tyres to the recommended pressure(see **Tyre pressure: Identification**) .

- Apply the after repair procedure using the Diagnostic tool**Diagnostic tool : Use** :

-Computer concerned by the after repair procedure:

■"UCH"

-Component affected by the after repair procedure:

■"Pressure sensor"

PROPSHAFT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
safety strap(s)
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 29A, Driveshafts , Driveshaft assembly: Exploded view) .

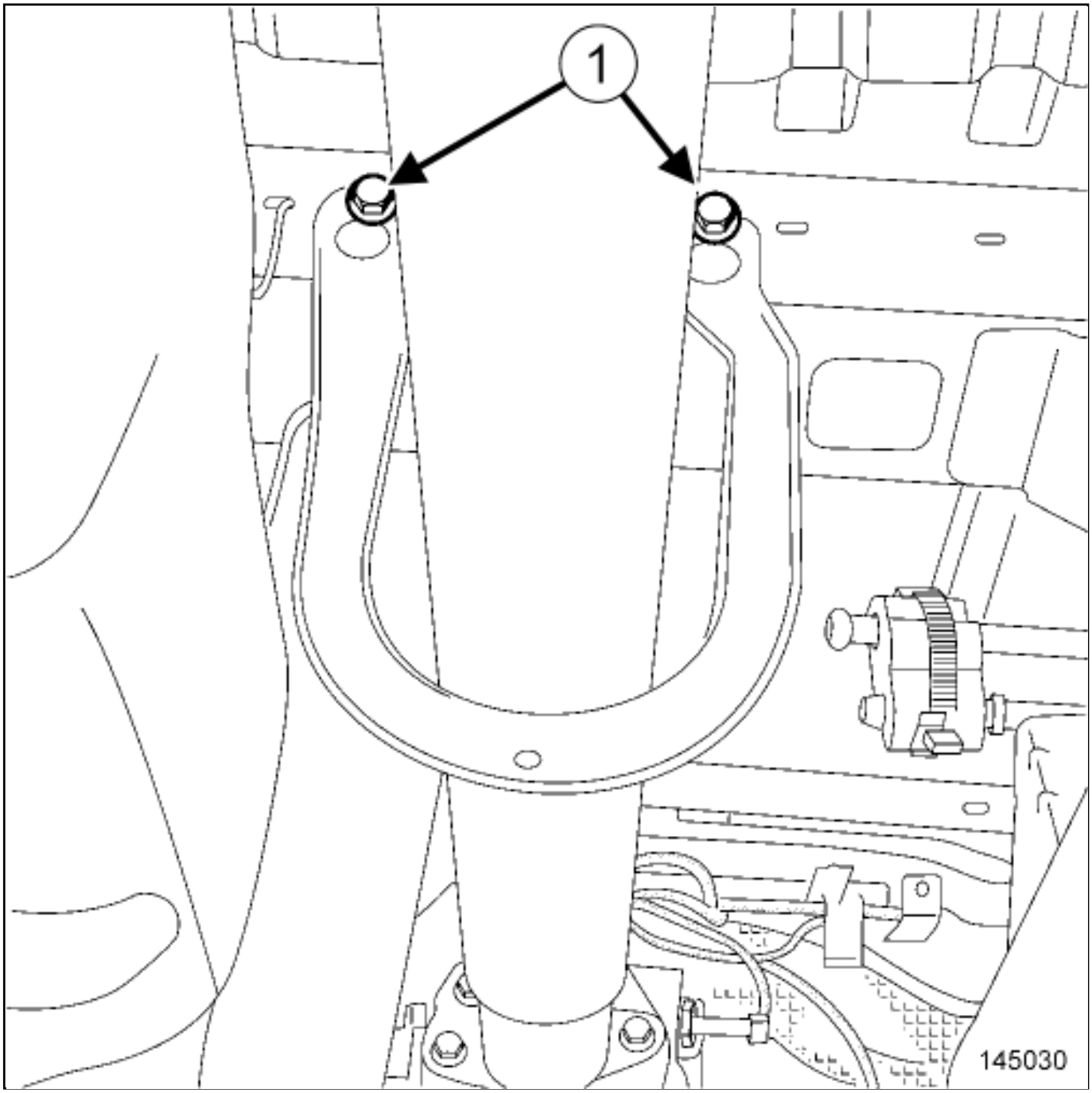
WARNING

To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

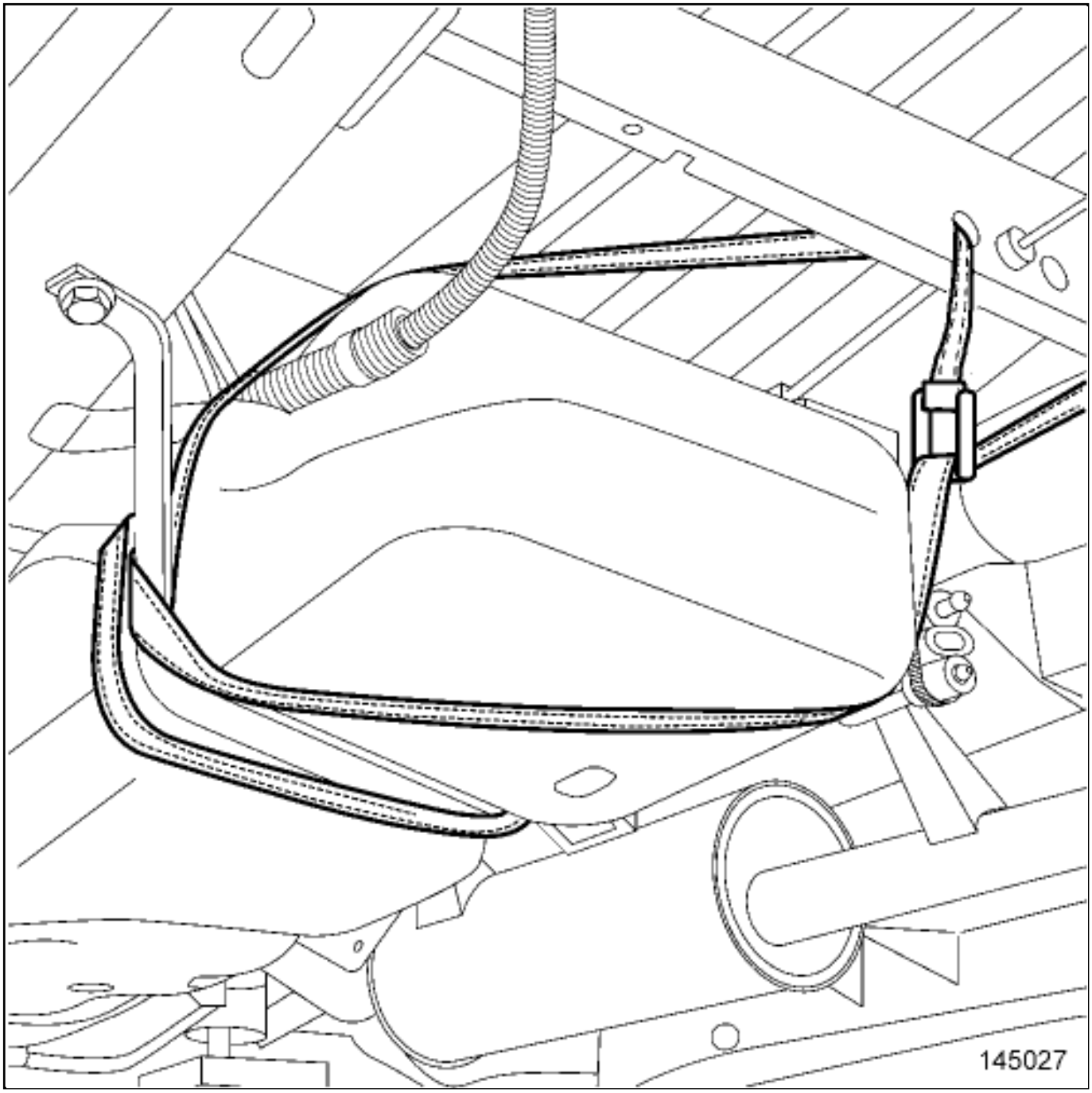
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

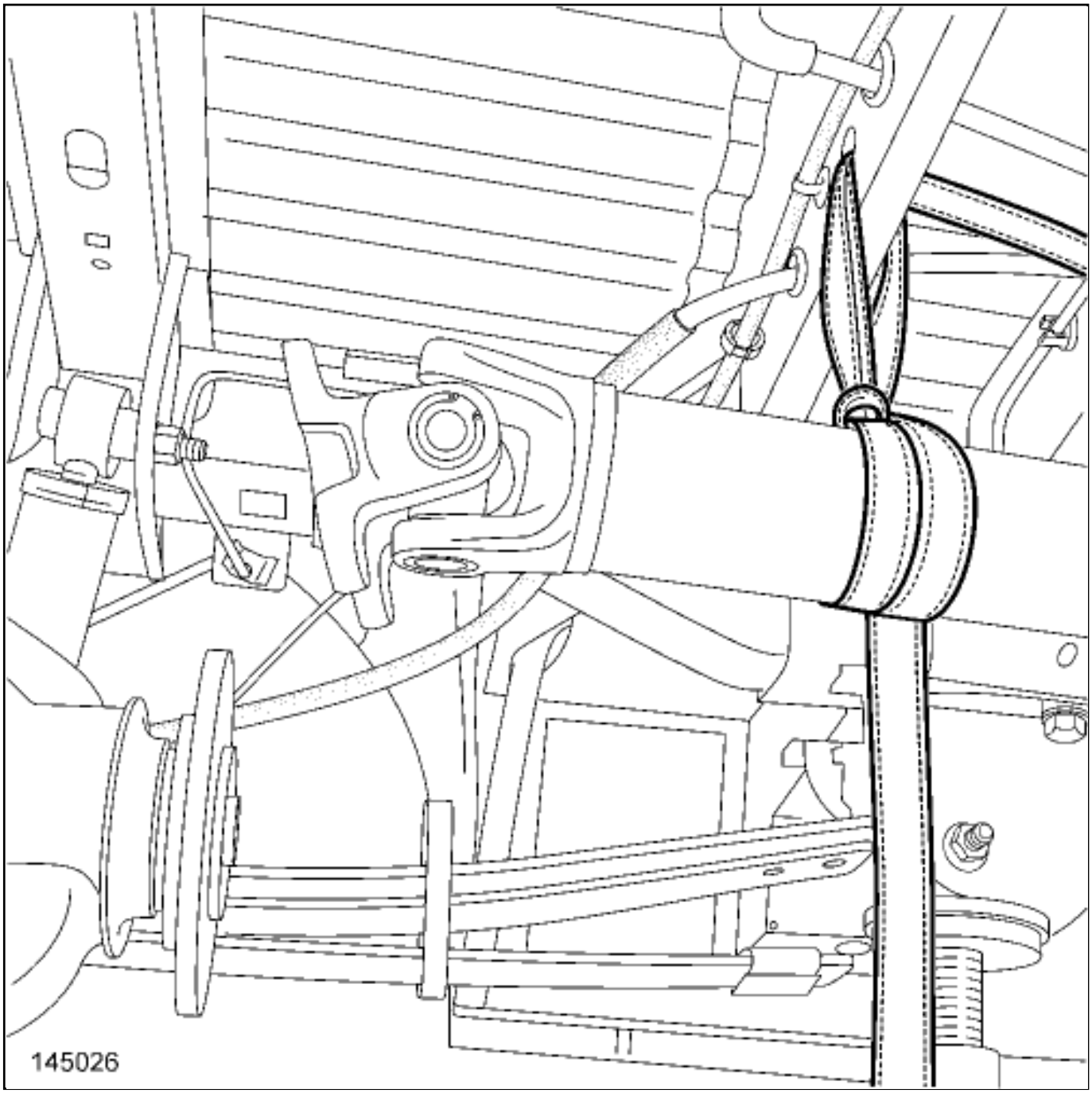


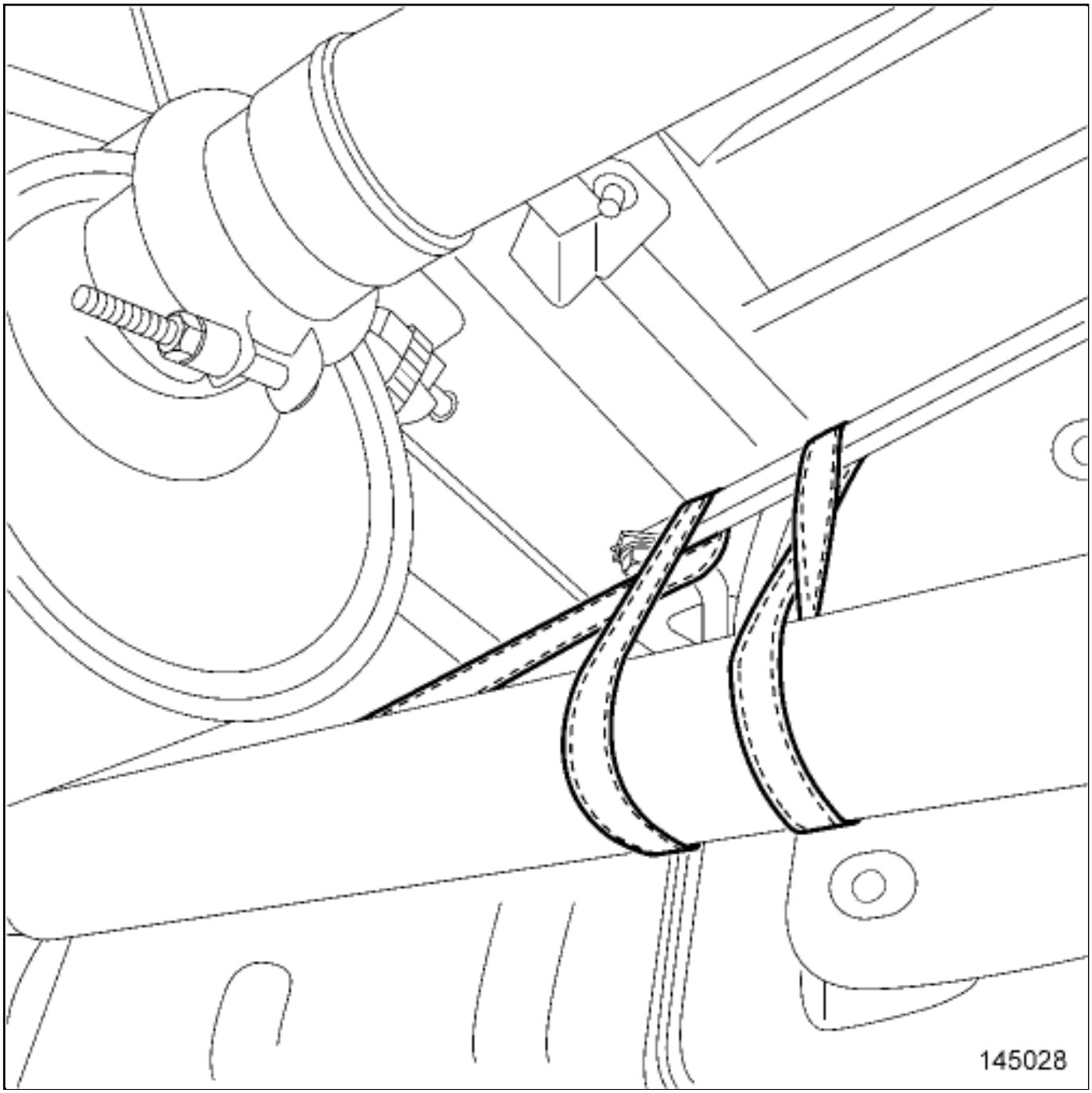
- Loosen the bolts(1) of the safety bracket.

- Undo (see 29A, Driveshafts , Driveshaft assembly: Exploded view) :
  - the relay bearing bolts on the engine side,
  - the relay bearing bolts on the final drive side.



- Fit a safety strap(s)under the fuel tank.


145026

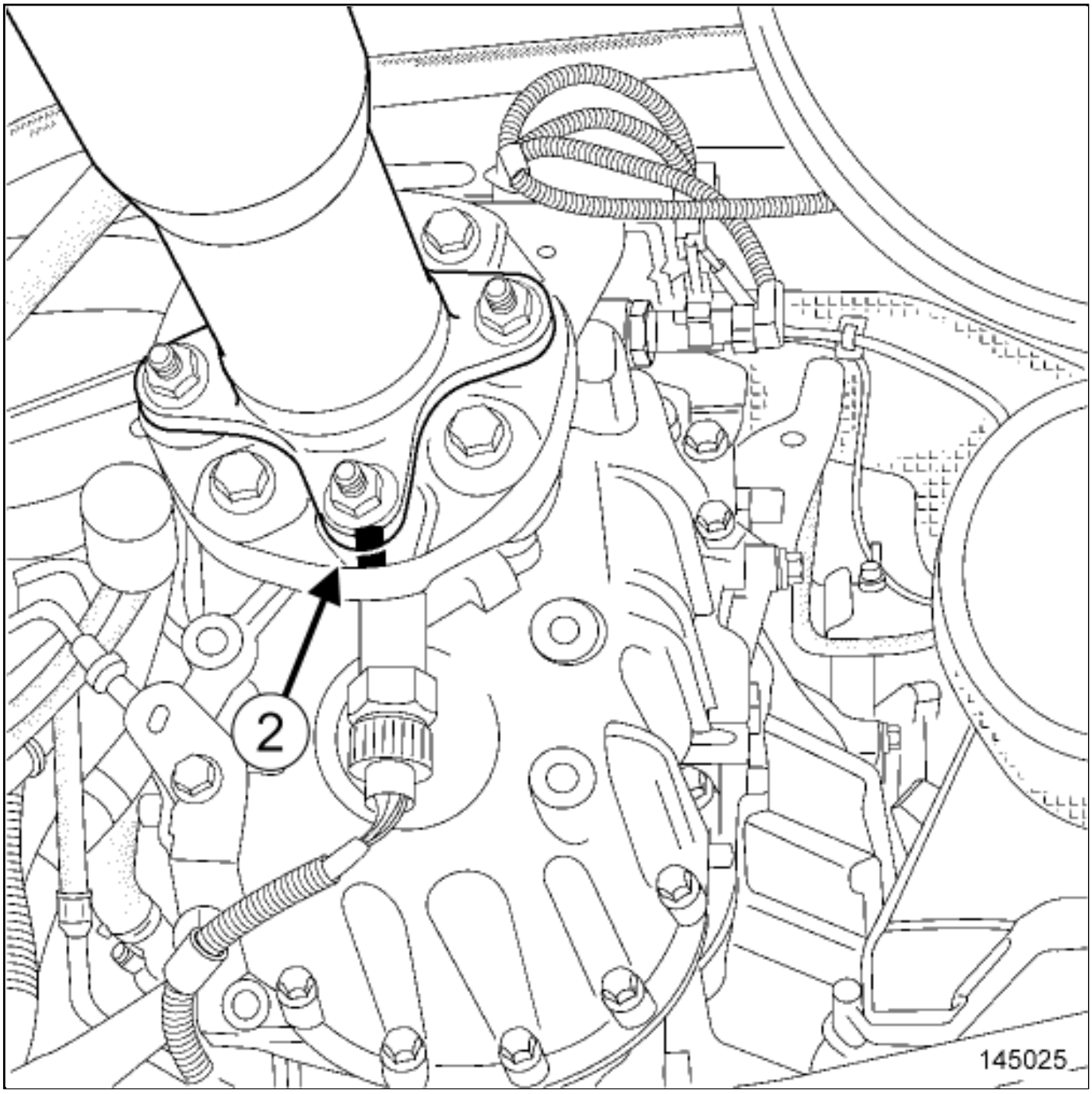


Fit safety strap(s)on the longitudinal driveshaft.

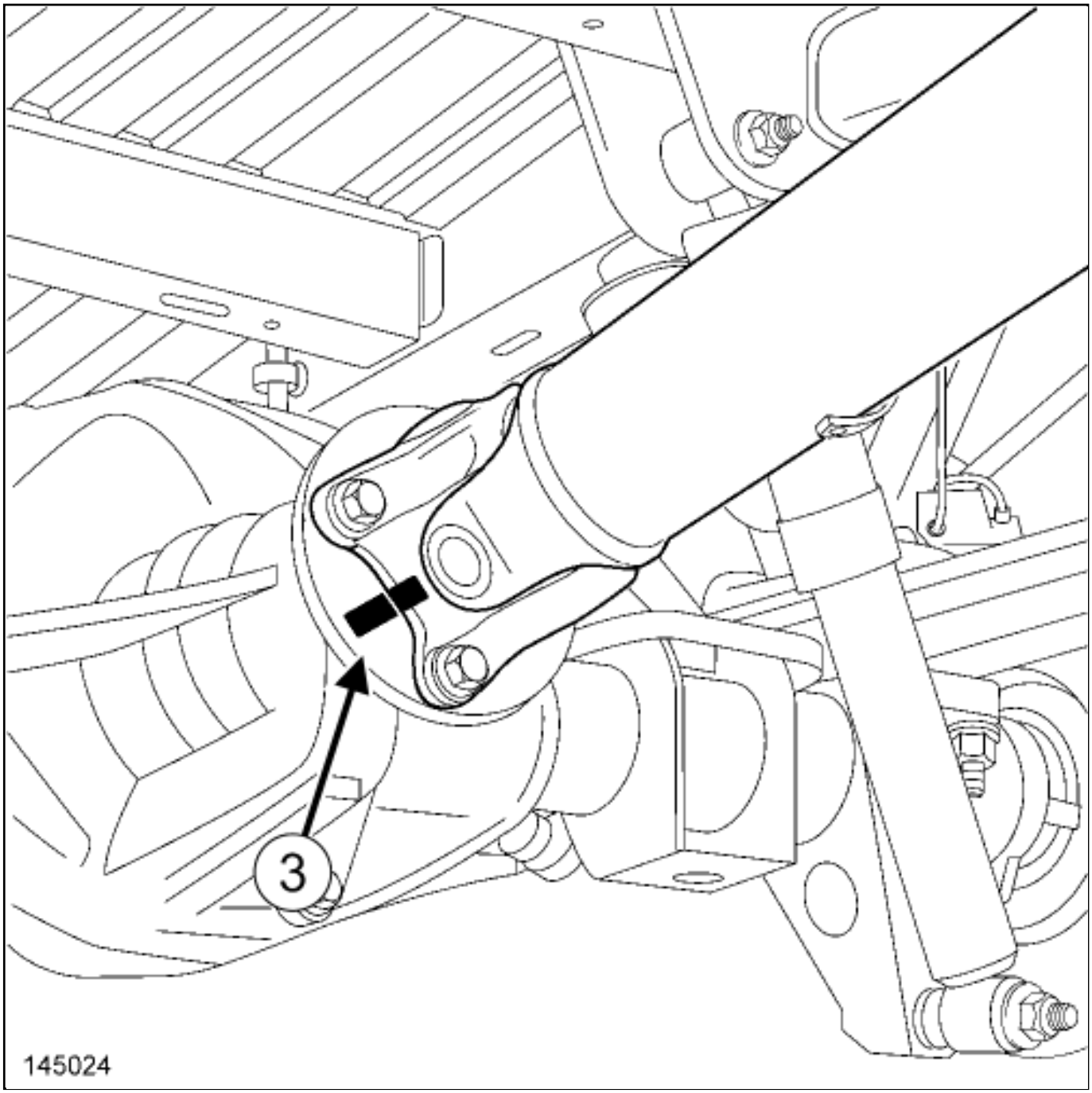
Remove (see 29A, Driveshafts , Driveshaft assembly: Exploded view) :

- the relay bearing bolts on the engine side,
- the relay bearing bolts on the final drive side.

2. REMOVAL OPERATION



Mark (2) the driveshaft and the gearbox output yoke using an indelible pencil.



Mark (3) the driveshaft and the final drive output yoke using an indelible pencil.

Remove the safety ring.

Remove (see 29A, Driveshafts , Driveshaft assembly: Exploded view) :

- the universal joint bolts and nuts on the gearbox side,

- the universal joint bolts and nuts on the final drive side,
- the propshaft.

REFITTING

1. REFITTING PREPARATION OPERATION

Use surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the bearing faces:

- of the longitudinal driveshaft,
- of the final drive output yoke,
- of the gearbox output yoke.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

PROTECTION AND SWITCHING UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

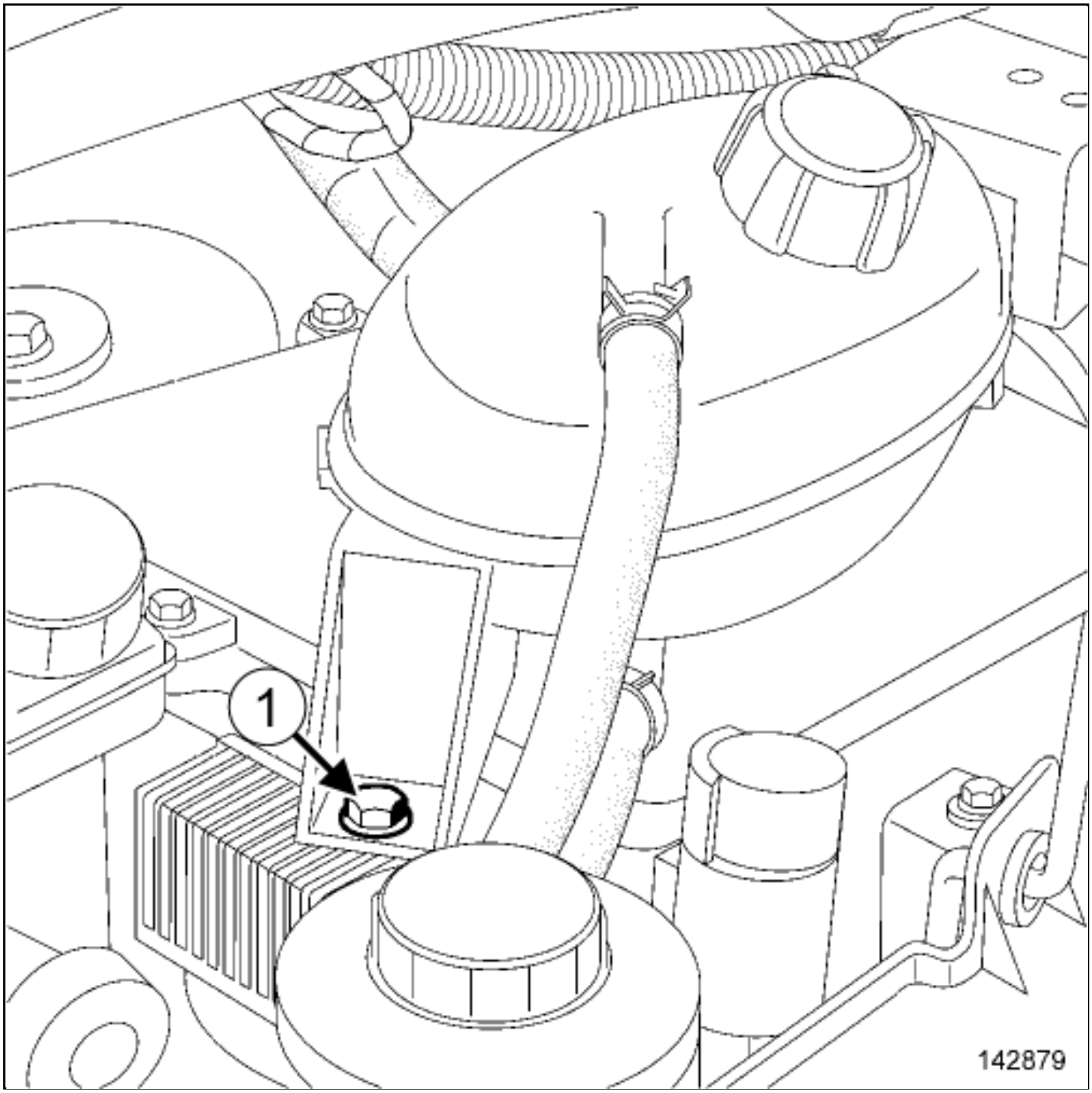
WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

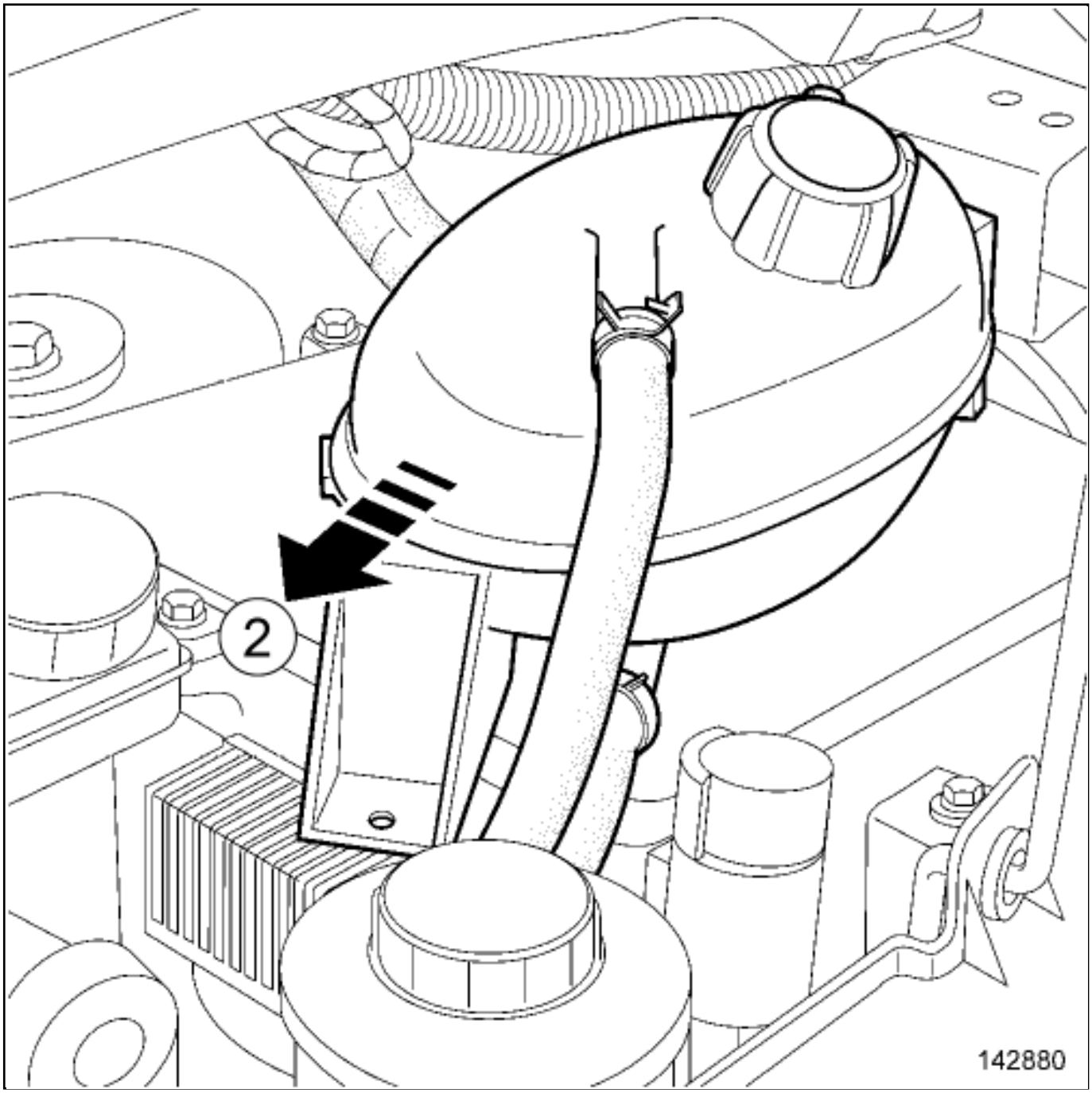
REMOVAL

1. REMOVAL PREPARATION OPERATION

- In the event of replacement, apply the Before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Protection and Switching Unit" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - carry out the operations described in the "Before repair procedure" section.
- Switch off the ignition.
- Disconnect the battery**Battery: Removal - Refitting** .

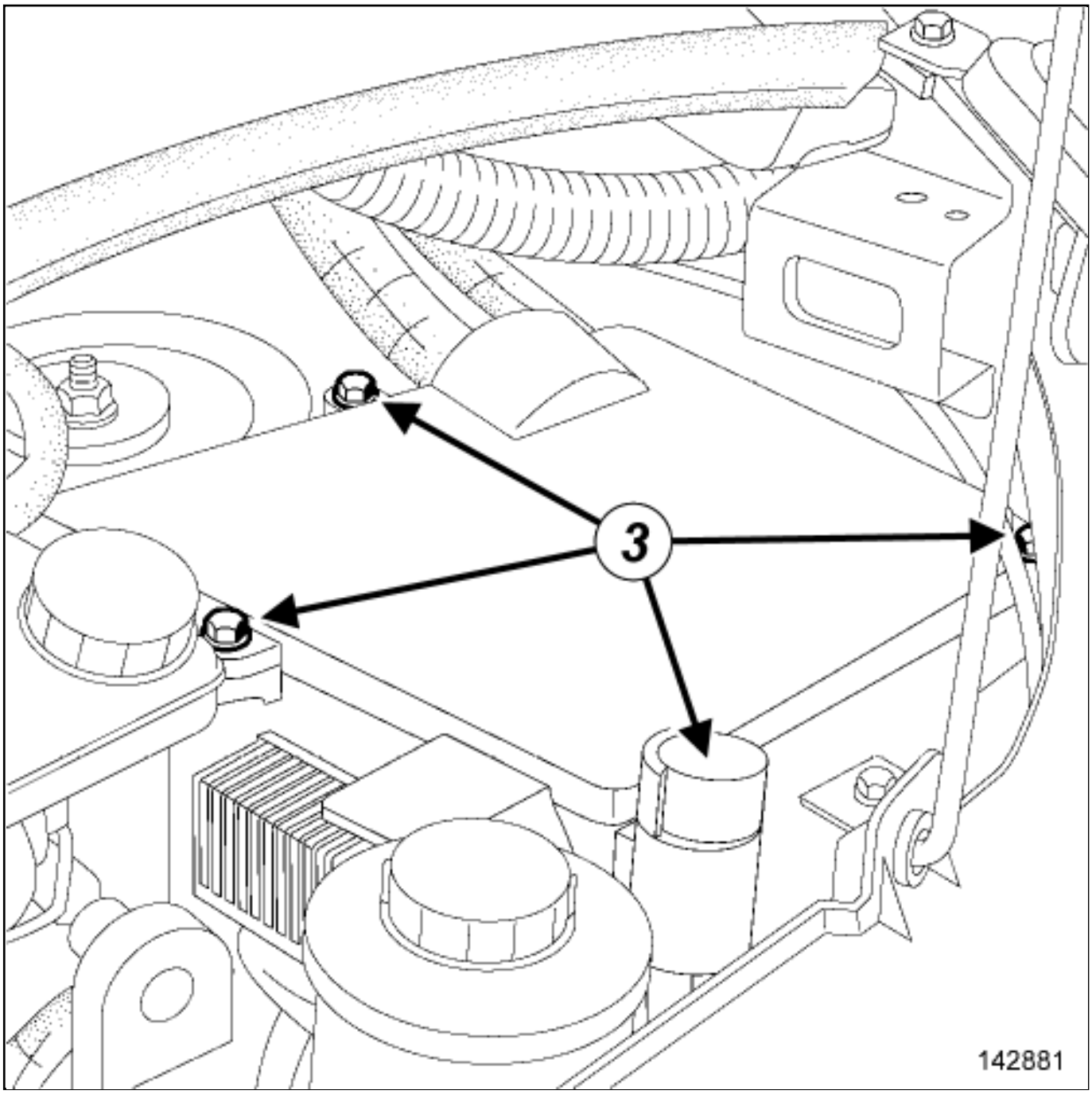


- Remove the bolt(1) from the expansion bottle.

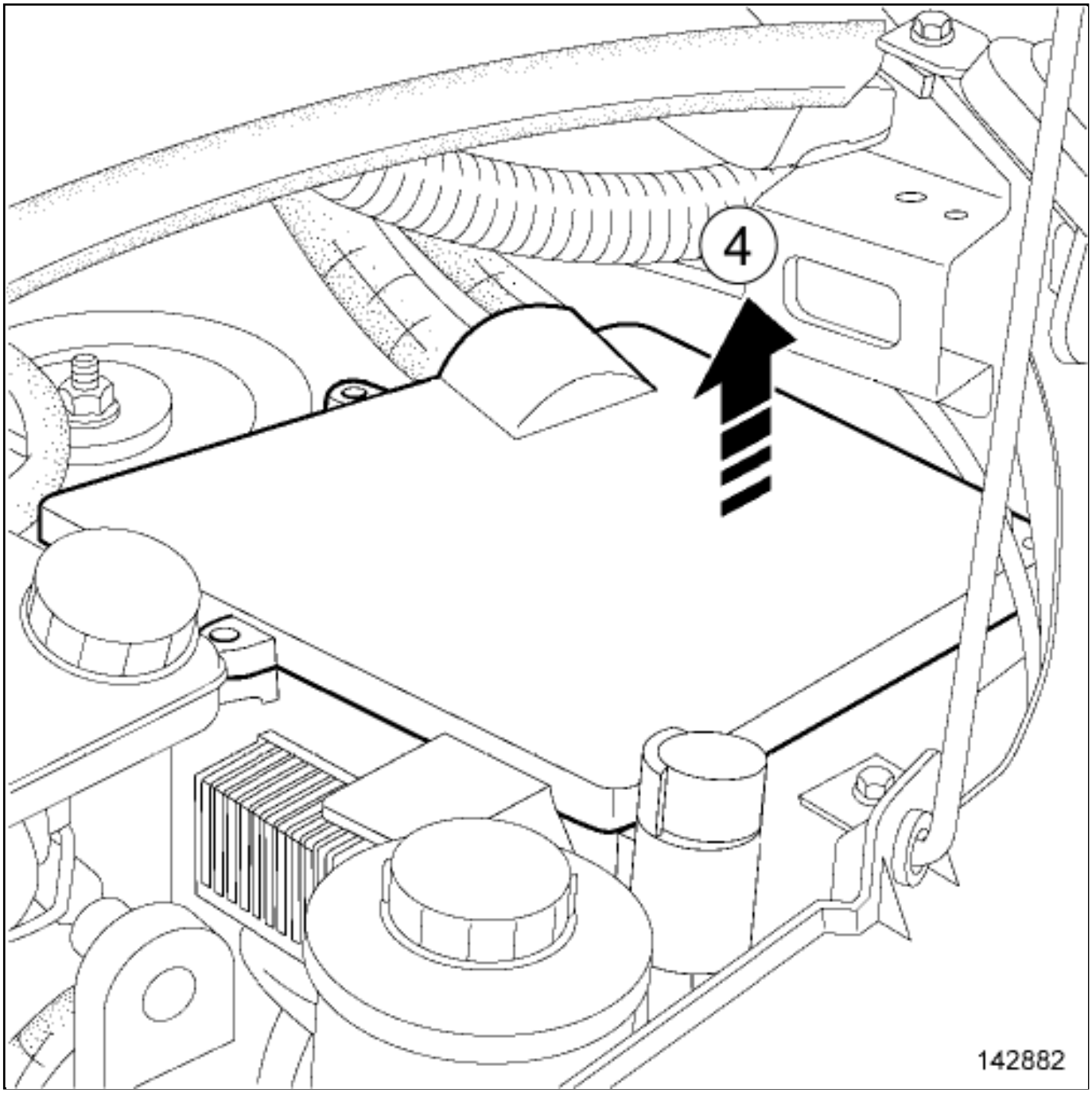


- Move aside the expansion bottle at(2) .

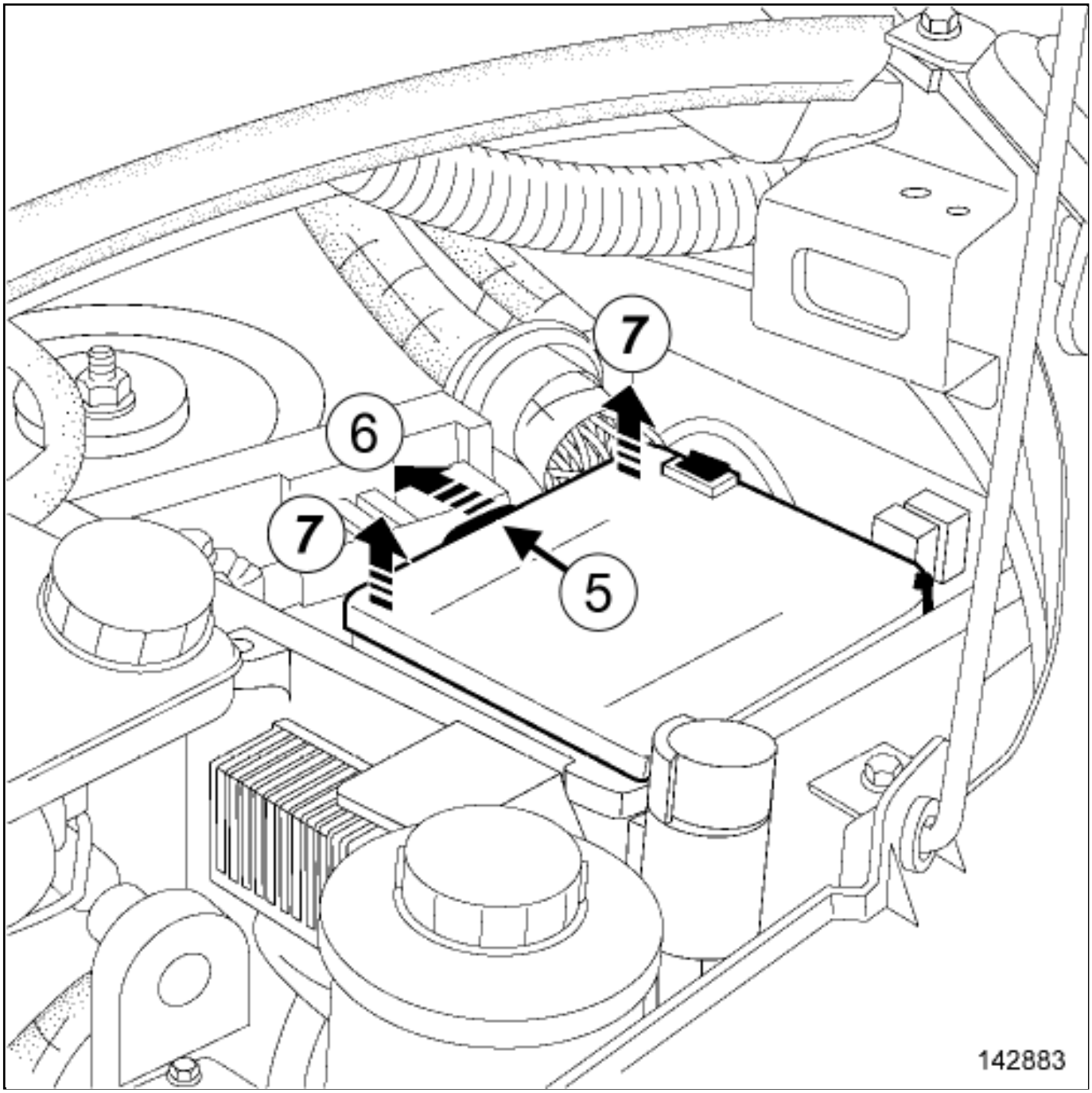
2. REMOVAL OPERATION



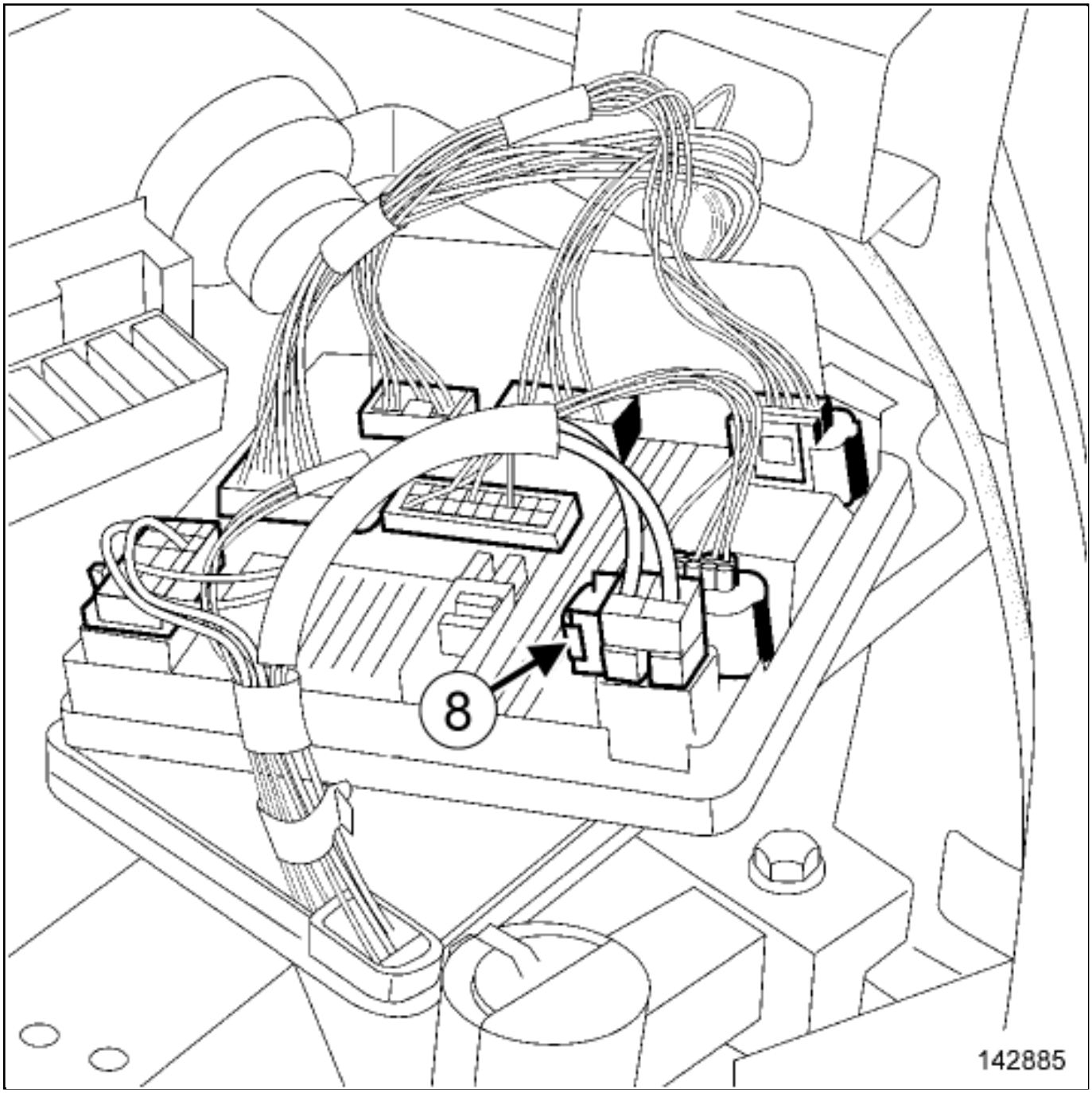
- Remove the Protection and Switching Unit cover bolts(3) .



Remove the Protection and Switching Unit cover(4) .



- Unclip the Protection and Switching Unit by moving the clip(5) in the direction(6) .
- Remove the Protection and Switching Unit(7) .
- Rotate the Protection and Switching Unit.



- Unlock the Protection and Switching Unit connector(8) .
- Disconnect the Protection and Switching Unit connectors.
- Remove the Protection and Switching Unit.

1. REFITTING OPERATION

Proceed in the reverse order to removal.

Note:

If the Protection and Switching Unit does not clip on correctly, check the condition of the wiring of the Protection and Switching Unit connectors.

2. FINAL OPERATION

Connect the battery Battery: Removal - Refitting .

In the event of a replacement, apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Protection and Switching Unit" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- carry out the operations described in the "After repair procedure" section.

PROXIMITY RADAR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

CAUTION

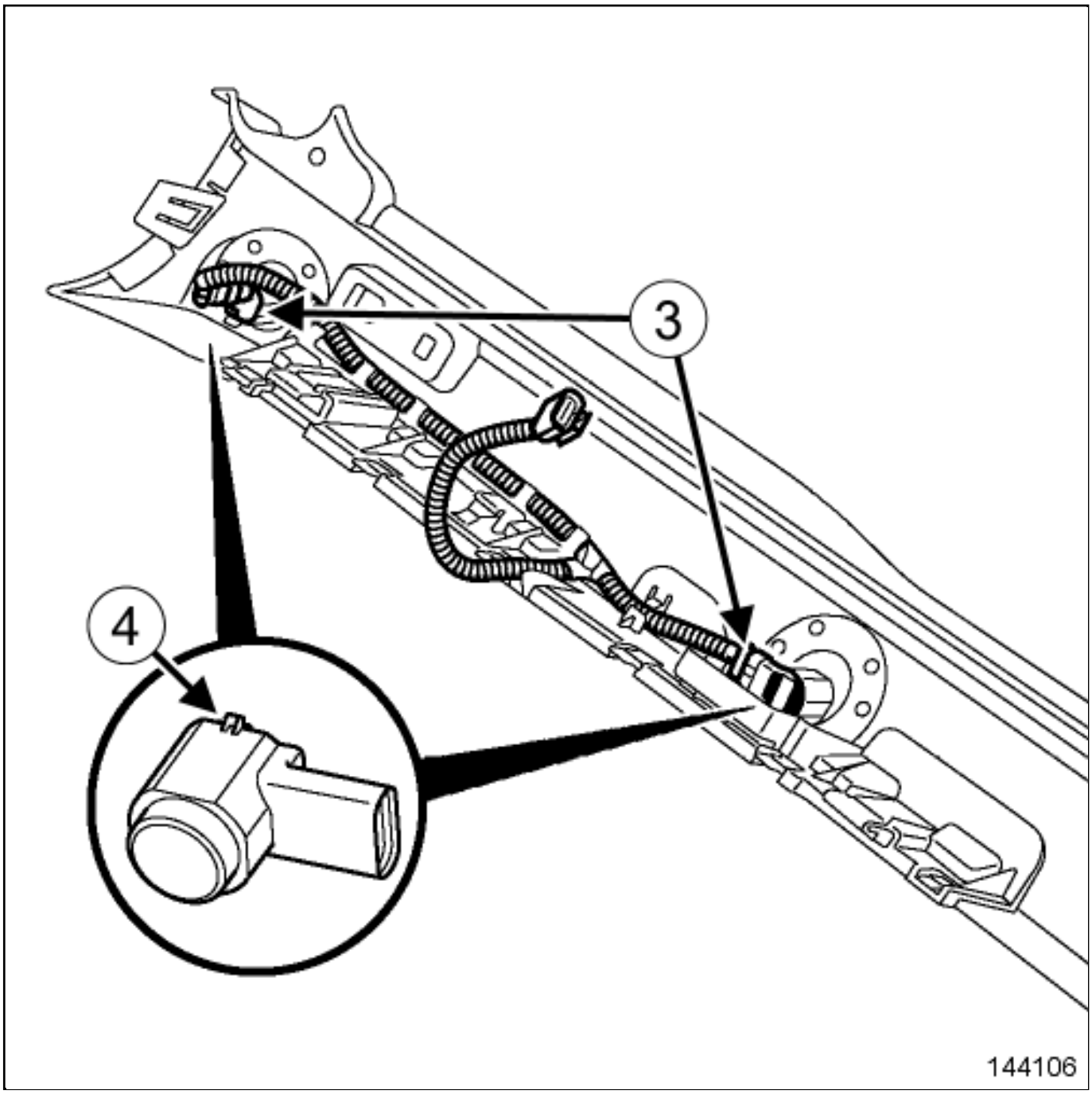
The proximity sensors are fragile. Handle with care as the external part cannot withstand impacts.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the rear bumper Rear bumper: Removal - Refitting (55A, Exterior protection).

2. REMOVAL OPERATION



Disconnect the connectors(3) from the proximity sensors.

Unclip the proximity sensors(4) .

REFITTING

1. REFITTING OPERATION

Clip the proximity sensors into place.

Connect the proximity sensor connectors.

2. FINAL OPERATION

Refit the rear bumper**Rear bumper: Removal - Refitting** (55A, Exterior protection).

RADIATOR GRILLE: REMOVAL - REFITTING

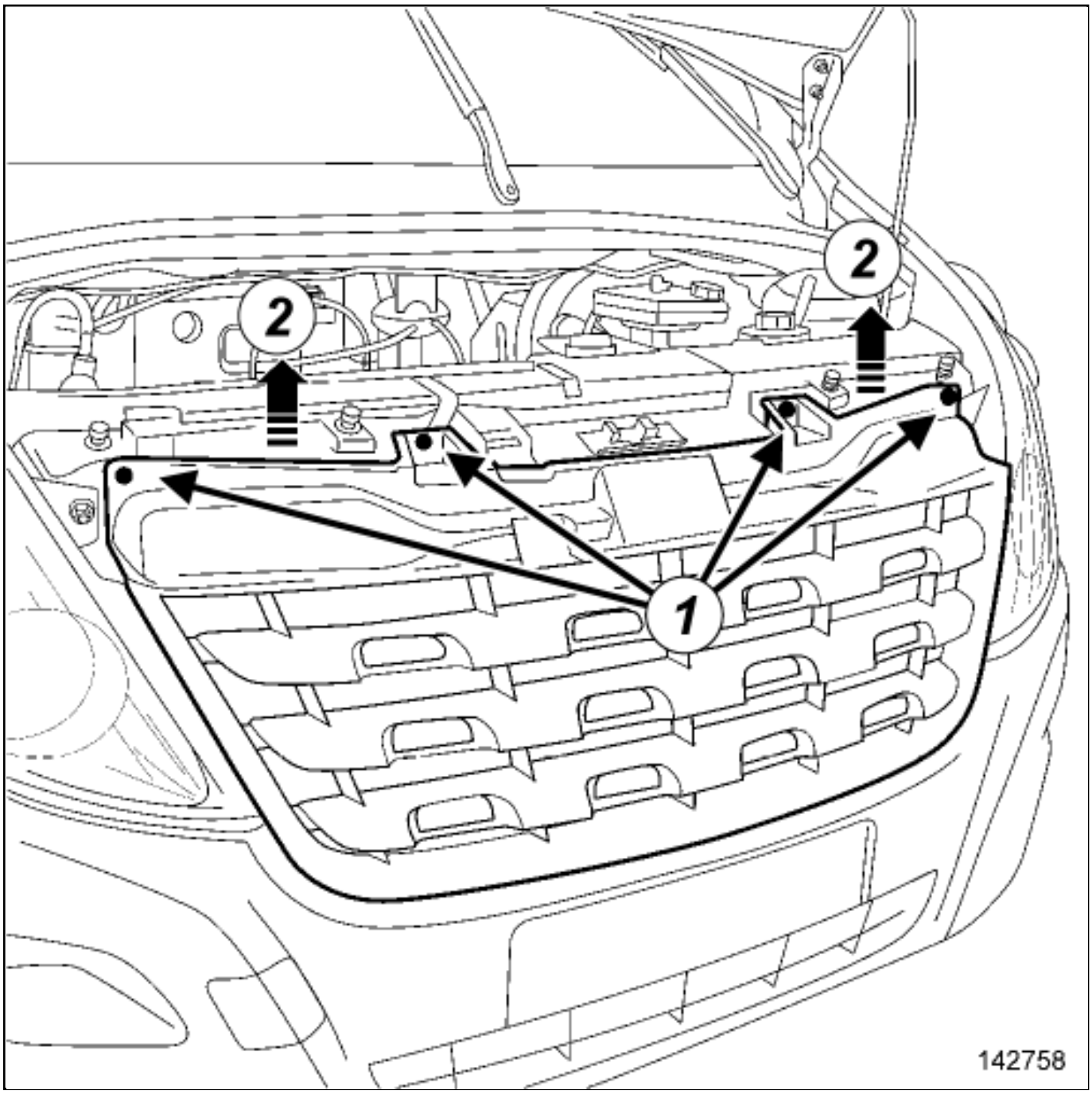
Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL OPERATION



Remove:

- the bolts(1) ,
- the radiator grille by(2) .

REFITTING

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

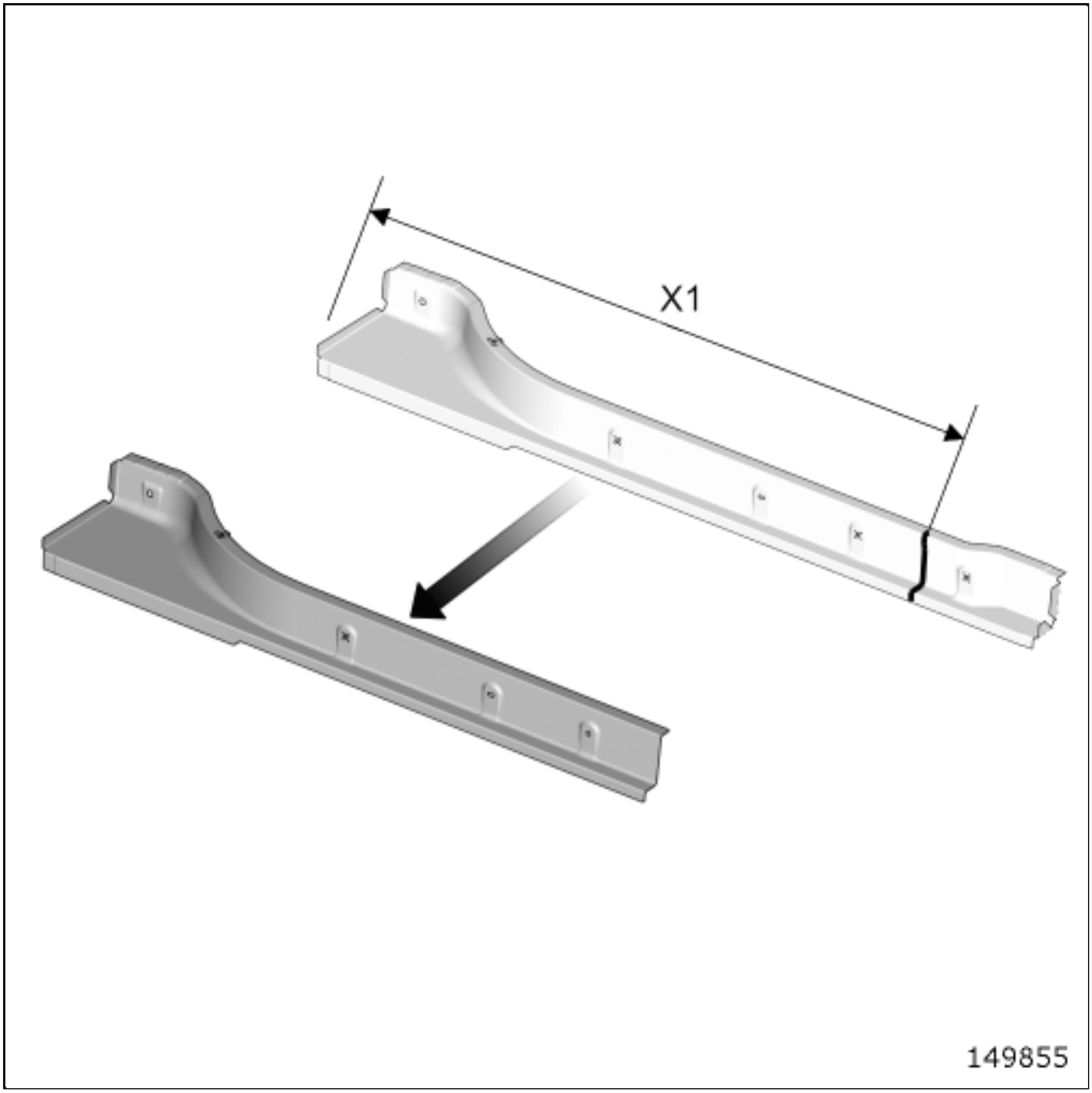
RAILUNIT:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

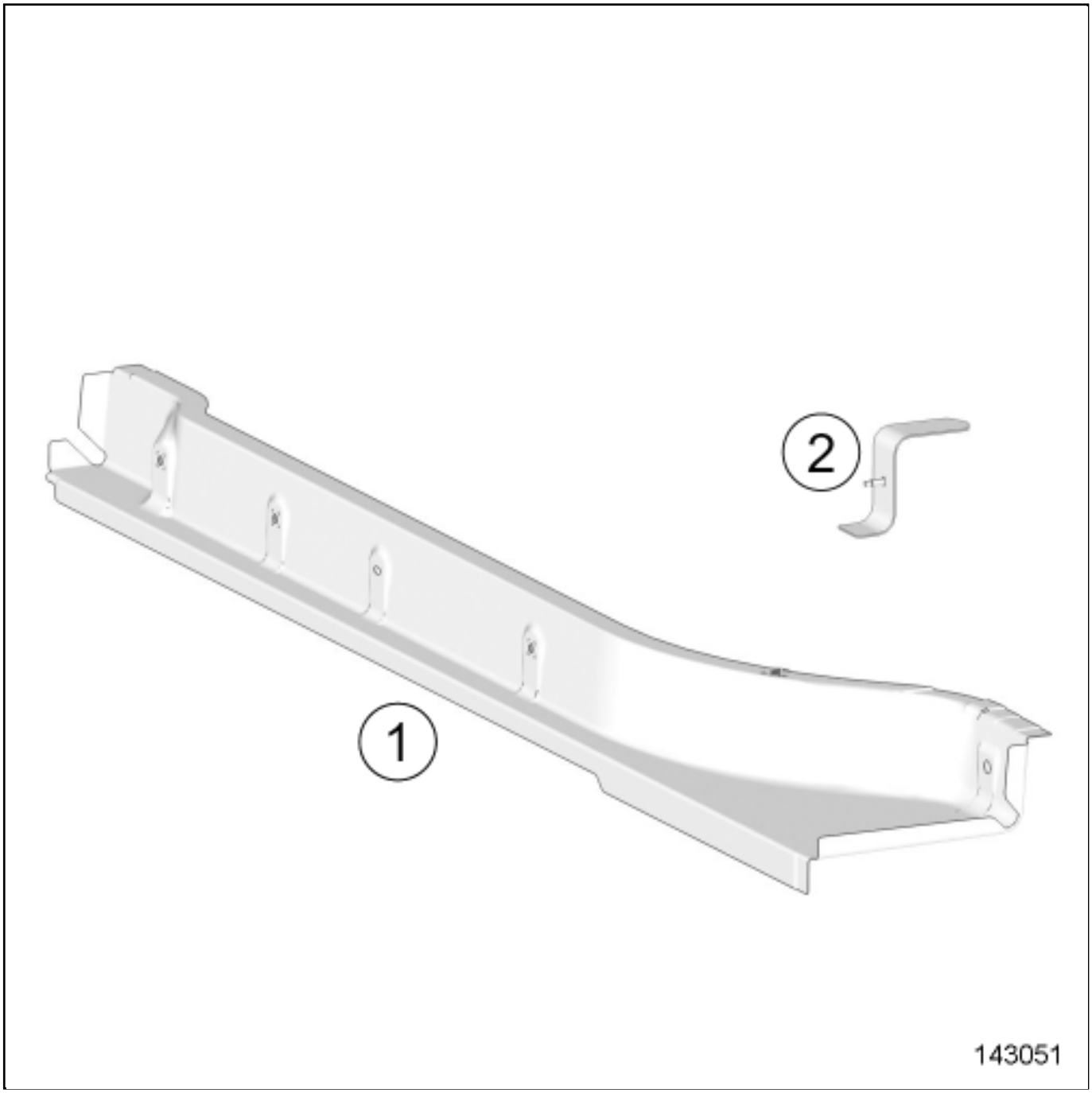
1. COMPOSITION OF THE SPARE PART



Note:

The Parts Department only supplies runner units for the "wheelbase 20" version. It is necessary to perform a conversion when replacing them on "wheelbase 10" versions.

- Cut the end of the runner unit as follows:
  - (X1) = 1230.2 mm.



No.	Description	Type	Thickness (mm)
(1)	Lower rail unit	Mild steel	0.8
(2)	Rail mounting bridge piece	Mild steel	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

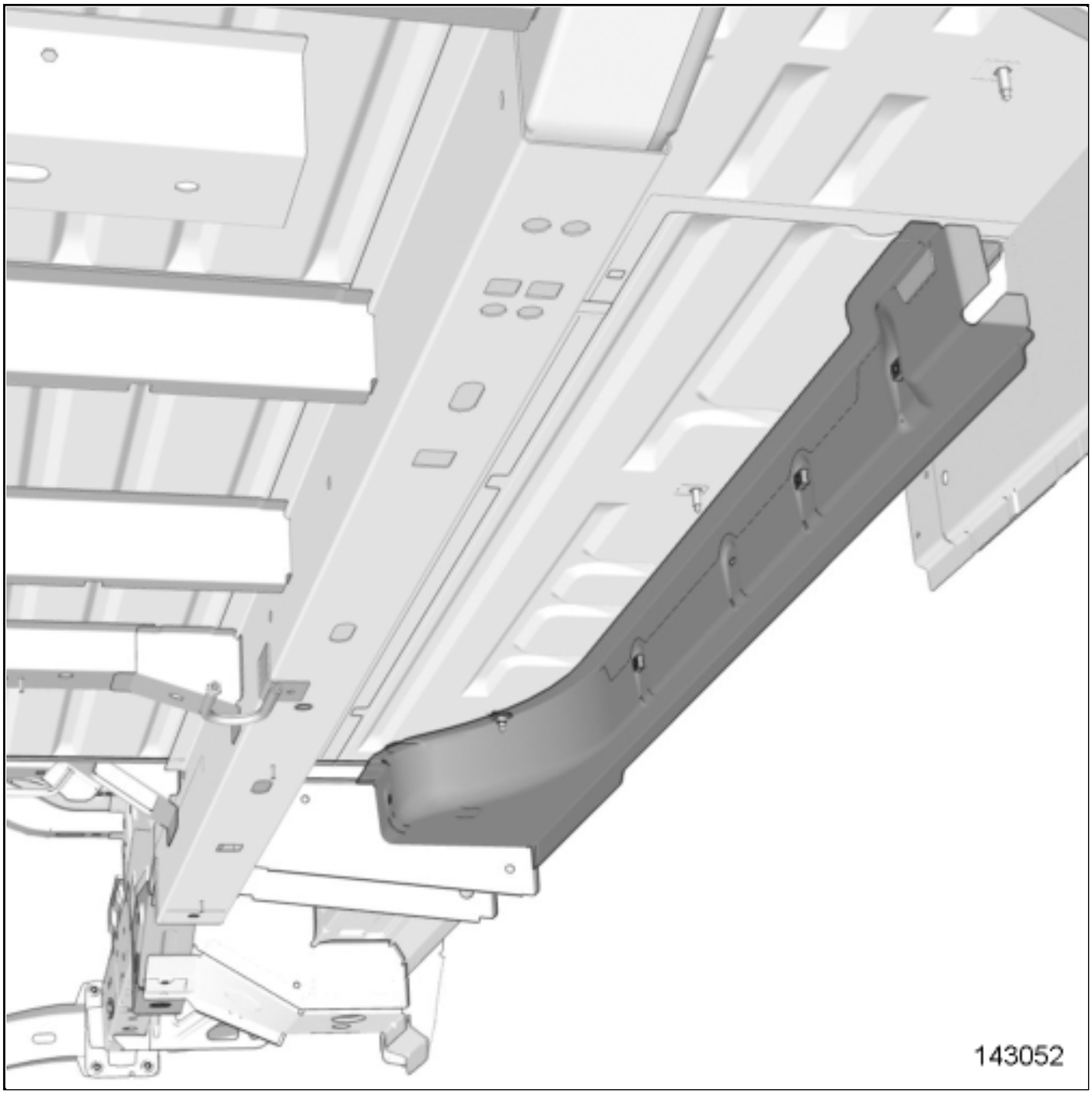
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

RAIN AND LIGHT SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

Equipment required
Diagnostic tool

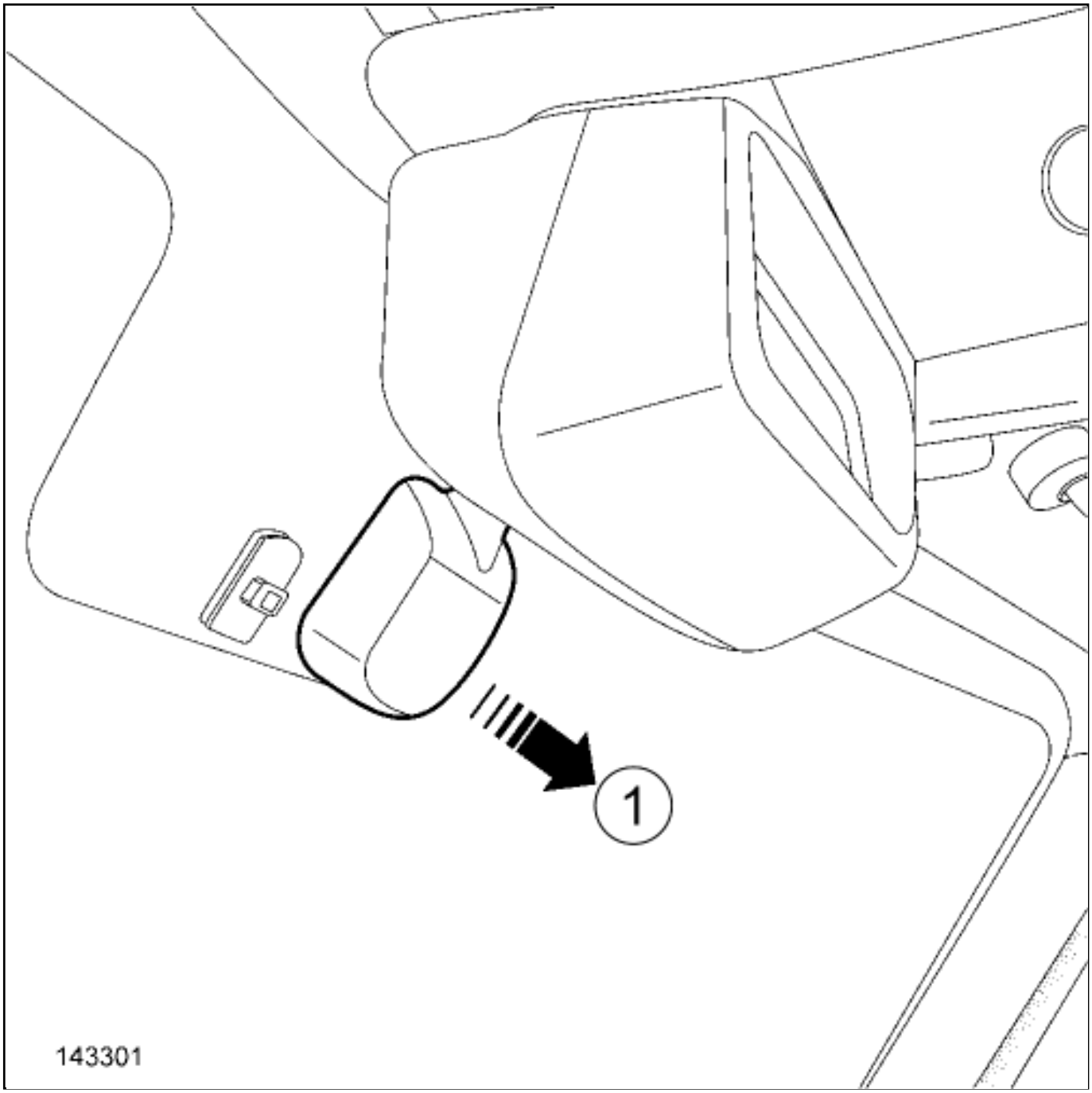
Note:

The rain and light sensor also controls the solar radiation function depending on the vehicle equipment level.

REMOVAL

1. REMOVAL PREPARATION OPERATION

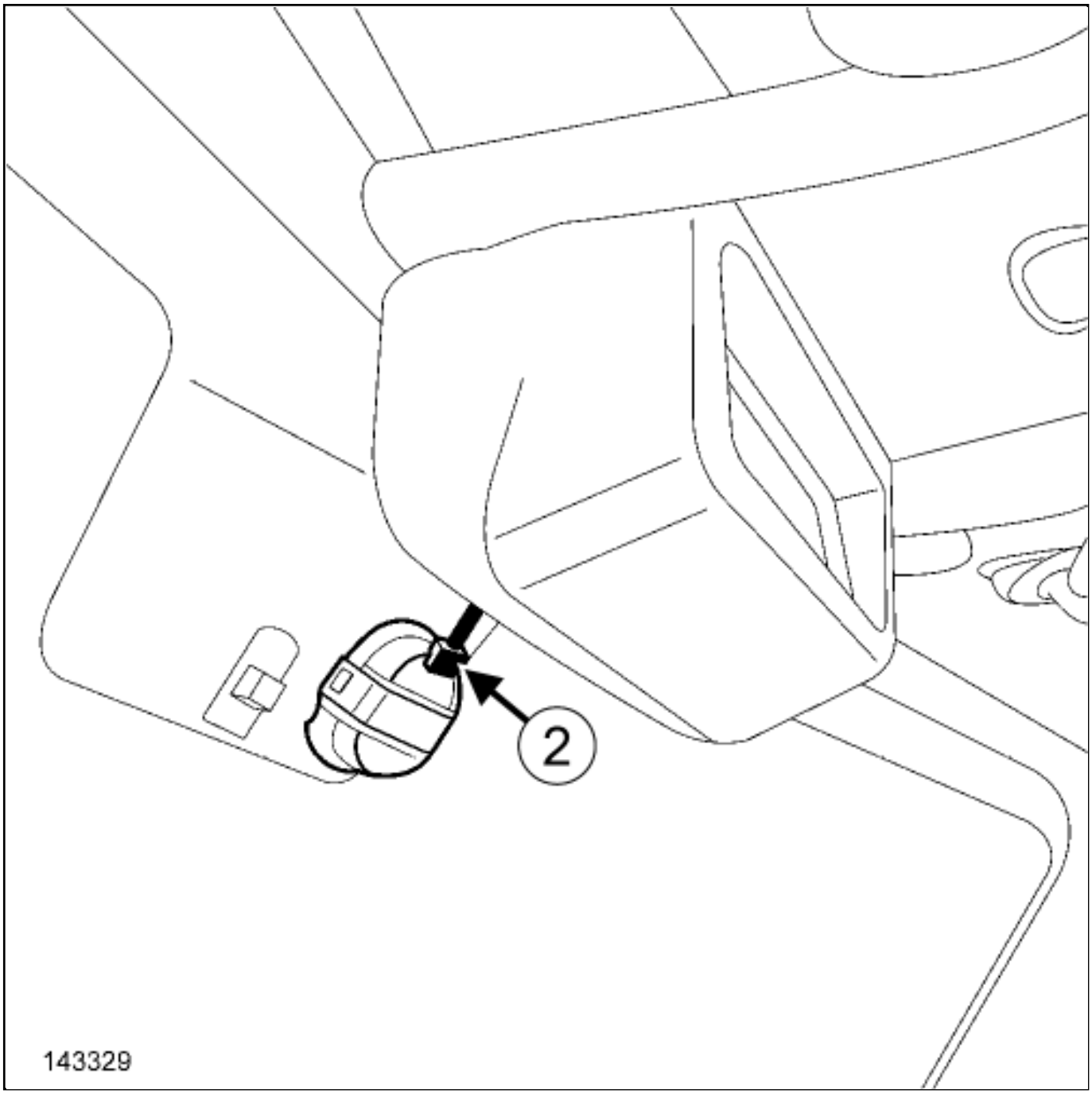
- Switch off the ignition.



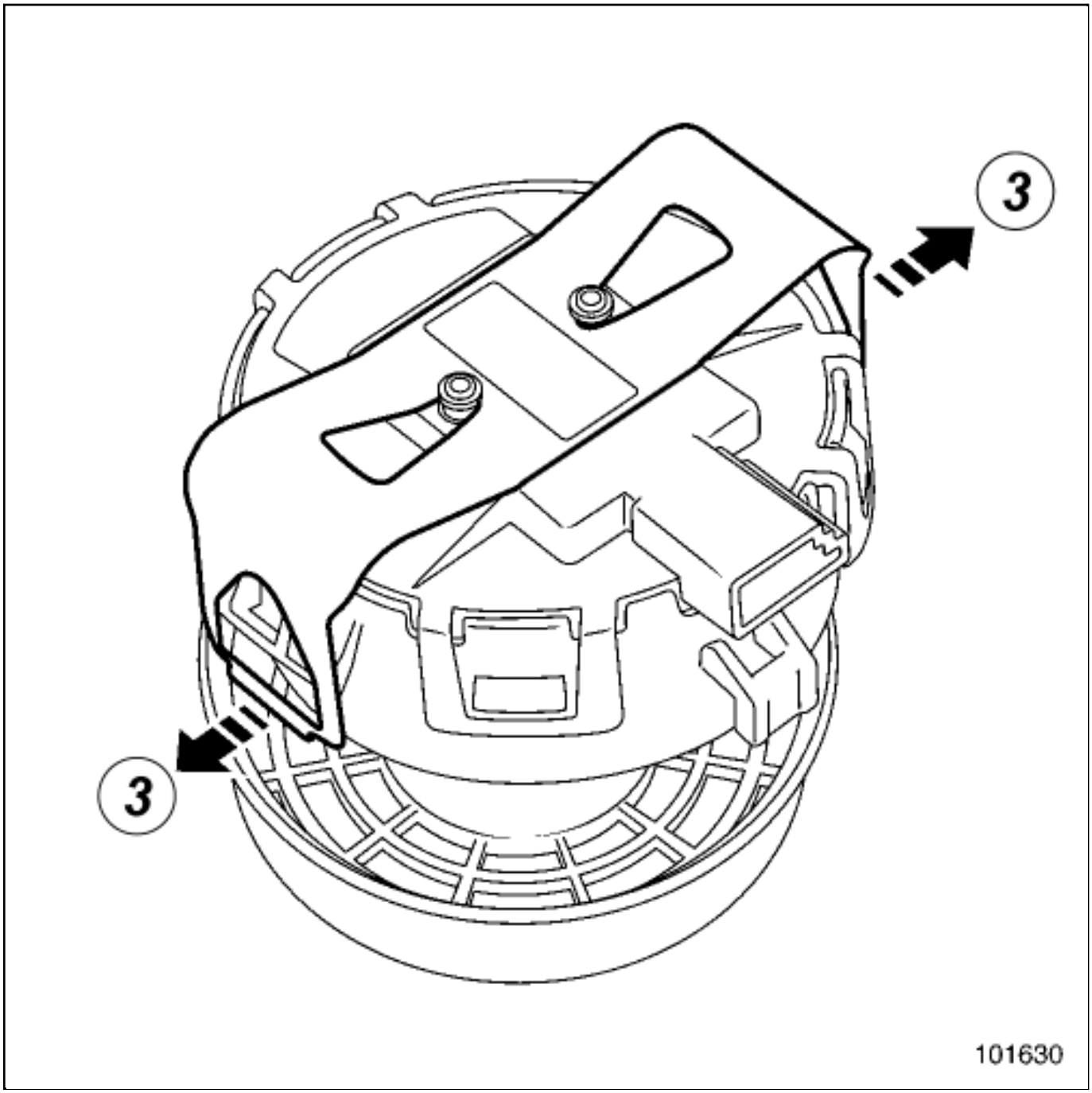
- Unclip the cover of the rain and light sensor by(1) .

2. REMOVAL OPERATION

1- REPLACING THE RAIN AND LIGHT SENSOR



- Disconnect the rain and light sensor connector(2) .



- Unclip the two side clips(3) from the rain and light sensor using theSet of trim removal levers.(Car. 1363) ,

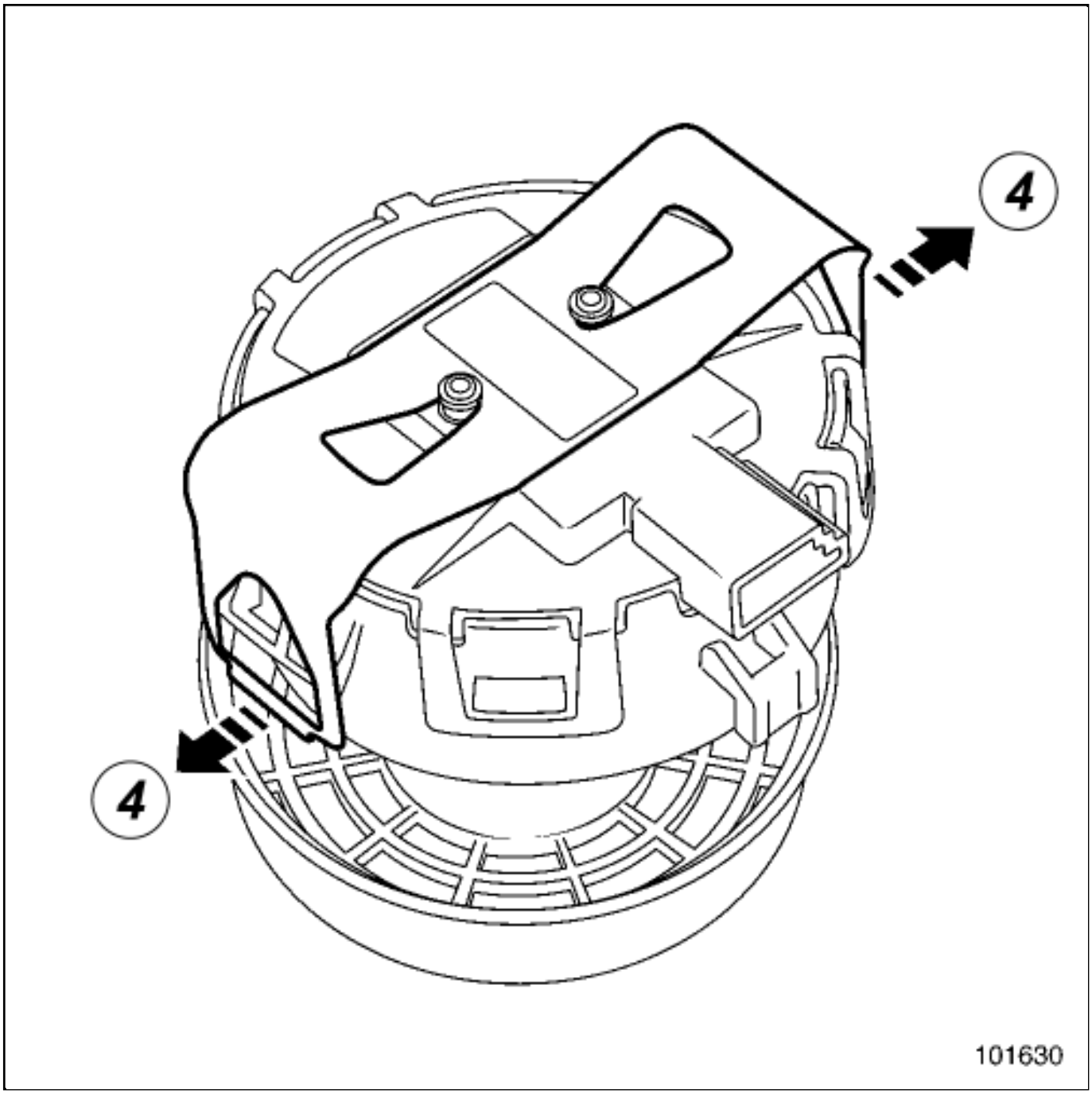
- Remove the rain and light sensor.

2- REPLACE THE WINDSCREEN

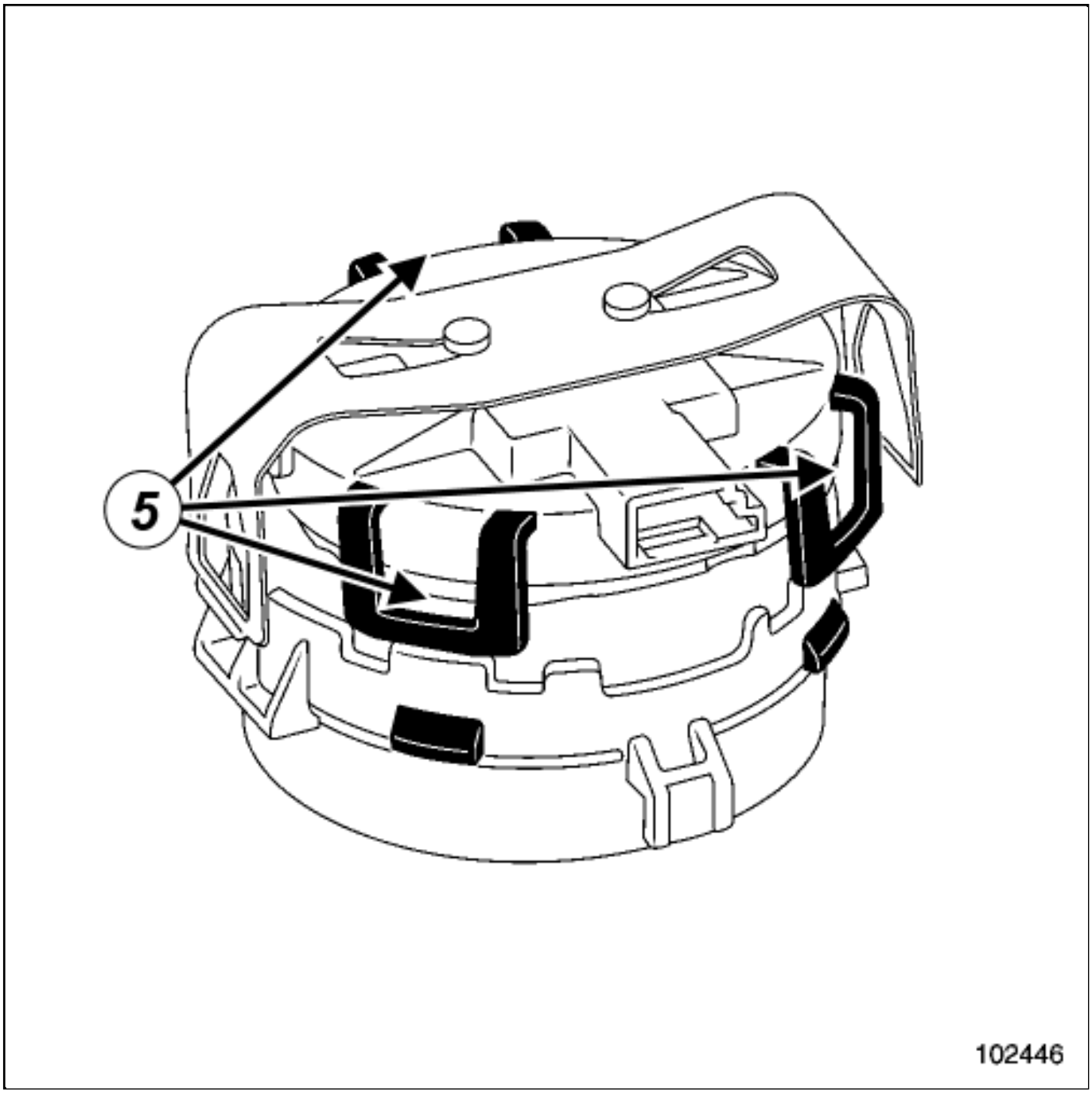
Note:

After the rain and light sensor has been removed, do not reuse the old adhesive base. Use a new adhesive base.

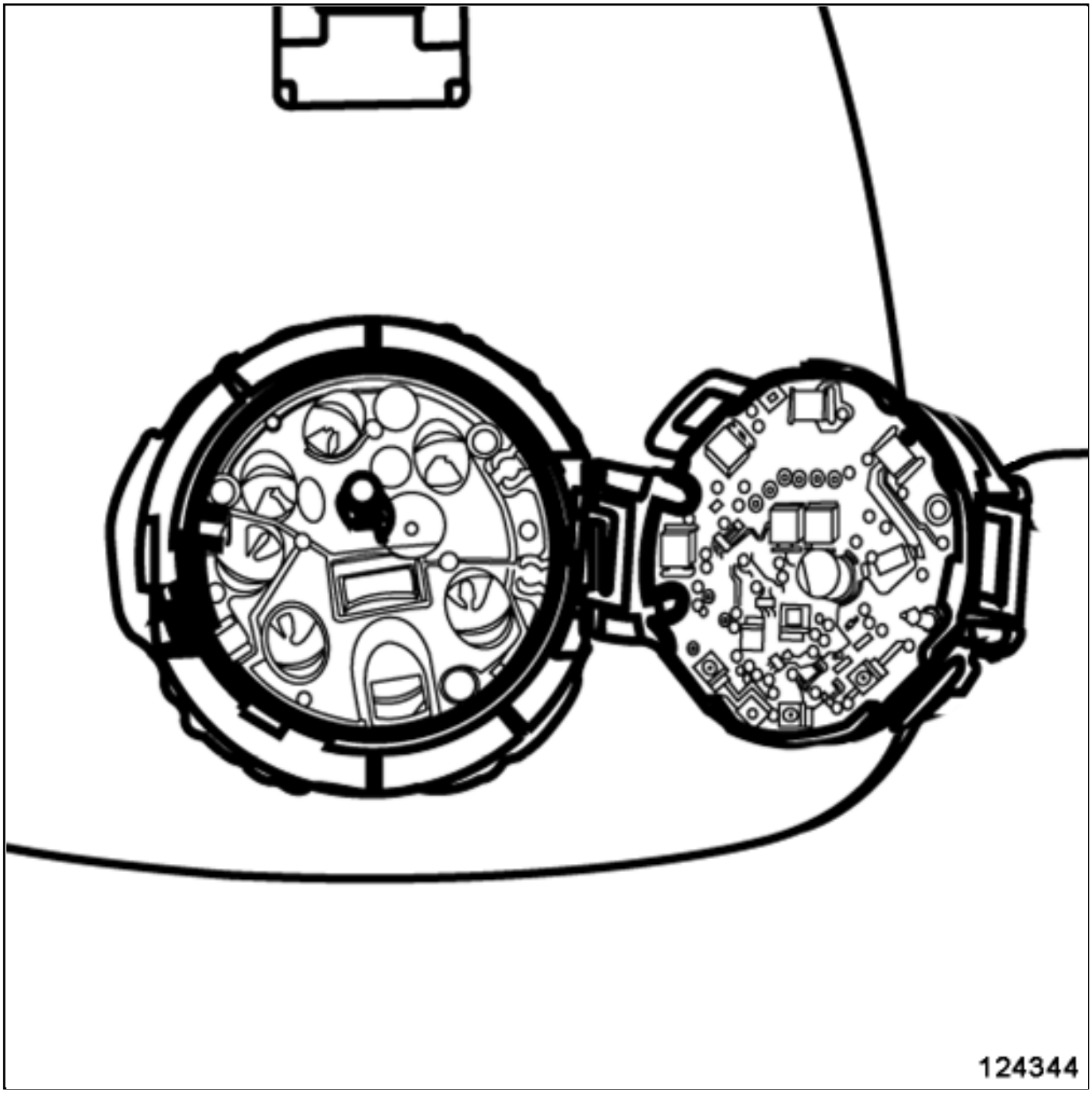
- Disconnect the rain and light sensor connector.



- Unclip the side clips(4) of the rain and light sensor from the base of the windscreen, using the toolSet of trim removal levers.(Car. 1363) .



- Unclip the rain and light sensor's printed circuit unit by pressing on the clips(5) using a small flat-bladescrewdriver.



- Remove the rain and light sensor's printed circuit unit.

REFITTING

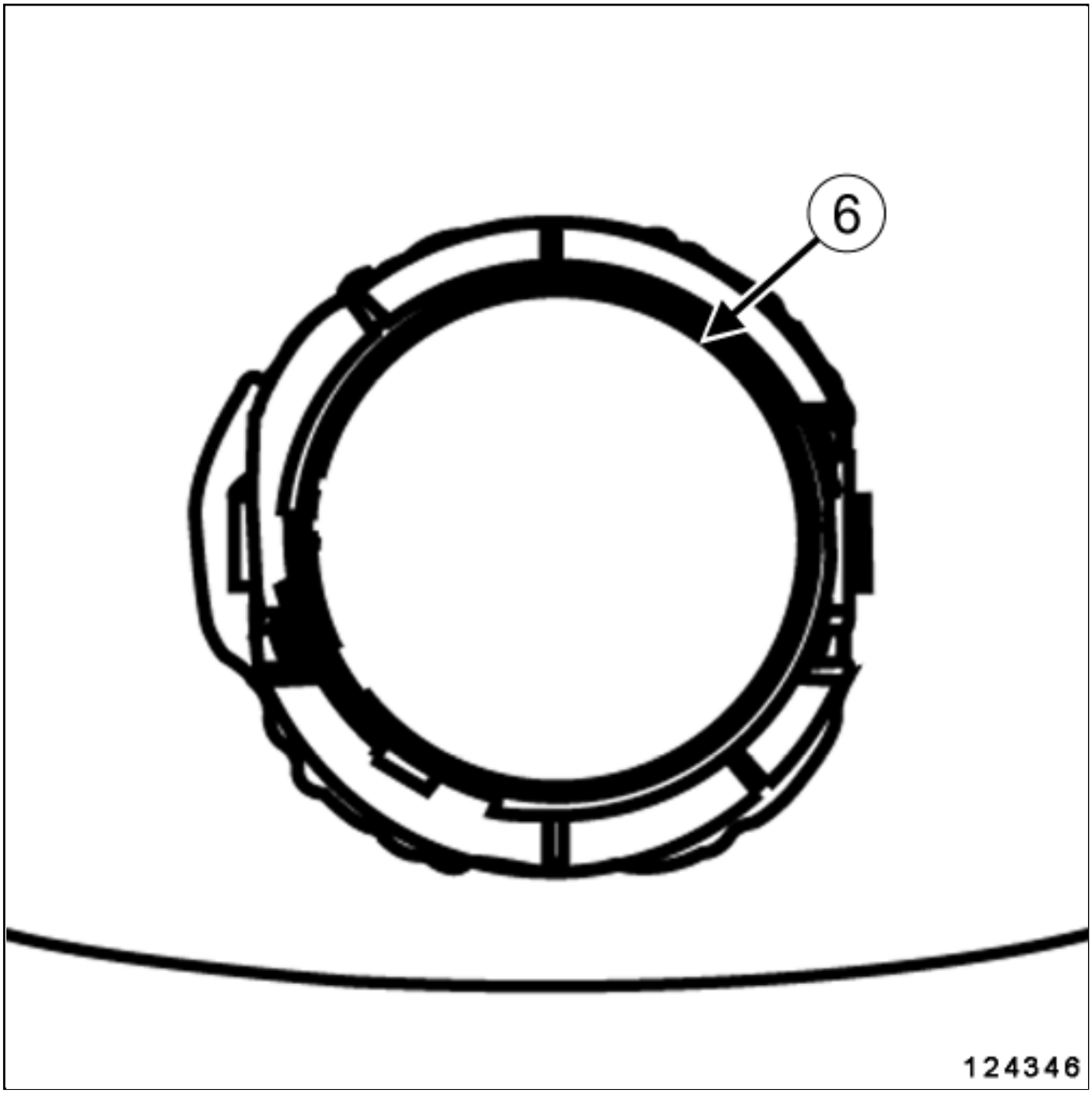
1. REFITTING PREPARATION OPERATION

CAUTION

The rain sensor should be removed and refitted in totally clean conditions: any dust or cloth residue could cause a malfunction.

Do not touch the electronic part of the sensor. Fit the sensor to the vehicle immediately after removing it from its packaging.

1- REPLACING THE RAIN AND LIGHT SENSOR



Clean:

- the sensor mounting ring(6) on the inside of the windscreen using the toolSet of trim removal levers.(Car. 1363) ,
- the outside of the windscreen in the area covered by the rain and light sensor.

2. REFITTING OPERATION

Note:

The audible locking of the side clips fixing the rain and light sensor into its mounting ring on the windscreen confirm that it is correctly held and positioned.

Note:

To avoid damaging the adhesive base, do not turn the rain and light sensor once it is positioned on the windscreen.

Note:

Wait 5 minutes before connecting the rain and light sensor to allow air bubbles between the adhesive base and the windscreen to disperse.

1- REPLACING THE RAIN AND LIGHT SENSOR

Proceed in the reverse order to removal.

Wait 5 minutes before connecting the rain and light sensor.

2- REPLACE THE WINDSCREEN

Position the new adhesive base with the transparent light guide(7) towards the bottom.

Position the rain and light sensor's printed circuit unit with the connector at the top.

Clip on:

- the rain and light sensor's printed circuit unit onto the new adhesive base,

the rain and light sensor onto the windscreen mounting base using the side clips.

Wait 5 minutes before connecting the rain and light sensor.

Connect the rain and light sensor connector.

3. FINAL OPERATION

Proceed in the reverse order to removal.

In the event of a replacement, apply the after repair procedure using the Diagnostic tool:

- connect the Diagnostic tool,
- select "UCH",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "Rain and light sensor" in the "List of components stored by this computer" section,

carry out the operations described in the "After repair procedure" section.

REAR AXLE ASSEMBLY: EXPLODED VIEW

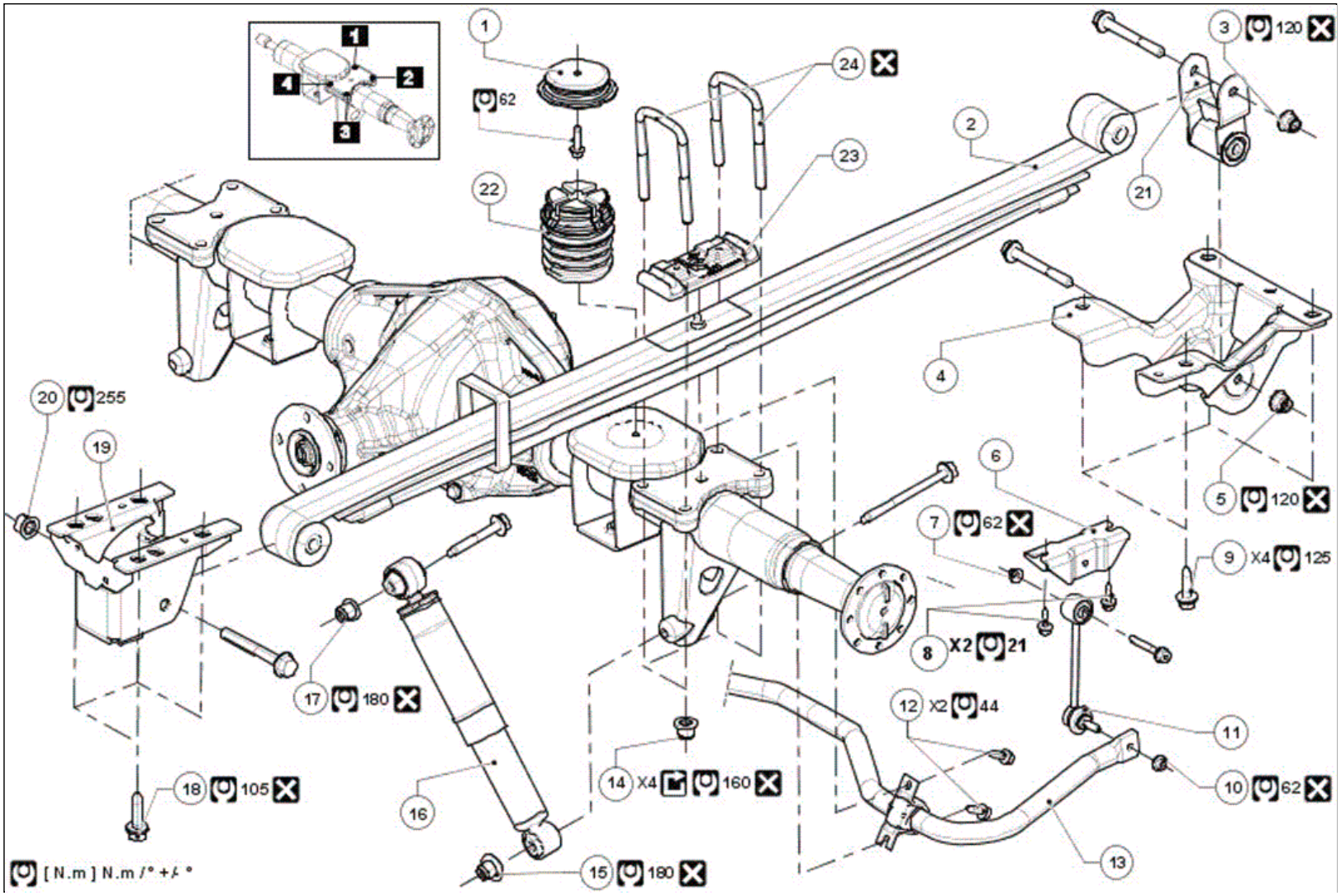


Illustration key: Description Key.

Mark	Description	Information
1	Suspension cup	
2	Rear suspension spring	(see 33A, Rear axle components, Rear suspension spring: Removal - Refitting)
3	Suspension shackle nut	
4	Suspension shackle support	
5	Suspension spring nut	
6	Anti-roll bar tie-rod mounting yoke	
7	Upper nut of the anti-roll bar tie-rod	
8	Yoke mounting bolts	
9	Shackle support bolt	
10	Lower nut of the anti-roll bar tie-rod	
11	Rear anti-roll bar tie rod	
12	Anti-roll bar mounting bolts	
13	Rear anti-roll bar	
14	Suspension spring calliper nut	Tighten in a cross sequence
15	Shock absorber lower mounting nut	(see 33A, Rear axle components, Shock absorber: Removal - Refitting)
16	Shock absorber	(see 33A, Rear axle components, Shock absorber: Removal - Refitting)
17	Shock absorber upper mounting nut	
18	Spring support bolt	
19	Spring support	
20	Spring support nut	
21	Suspension shackle	
22	Rear shock absorber impact stop	(see 33A, Rear axle components, Rear shock absorber impact stop: Removal - Refitting)
23	Suspension spring clamp	
24	Suspension spring calliper	

REAR AXLE OIL: DRAINING - FILLING

Note, one or more warnings are present in this procedure

Equipment required
oil recovery tray

Applicability	Capacity (litres)
Twin wheels	3
Single wheels	2.7

DRAINING

1. DRAINING PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

2. DRAINING OPERATION

- Position an oil recovery tray under the vehicle.

WARNING

Wear leaktight gloves (Nitrile type) for this operation.

- Remove the rear final drive drain plug Driveshaft assembly: Exploded view .
- Let the oil drain from the rear final drive.

FILLING

- Refit the drain plug of the rear final drive **Driveshaft assembly: Exploded view** .
- Remove the rear final drive filler cap **Driveshaft assembly: Exploded view** .
- Fill the rear final drive until it overflows using the oil recommended by the manufacturer (see Rear final drive oil: Specification) (Technical Note 6012A, 04A, Lubricants).
- Refit the rear final drive filler cap **Driveshaft assembly: Exploded view** .
- Wipe away any run-off.

REAR AXLE

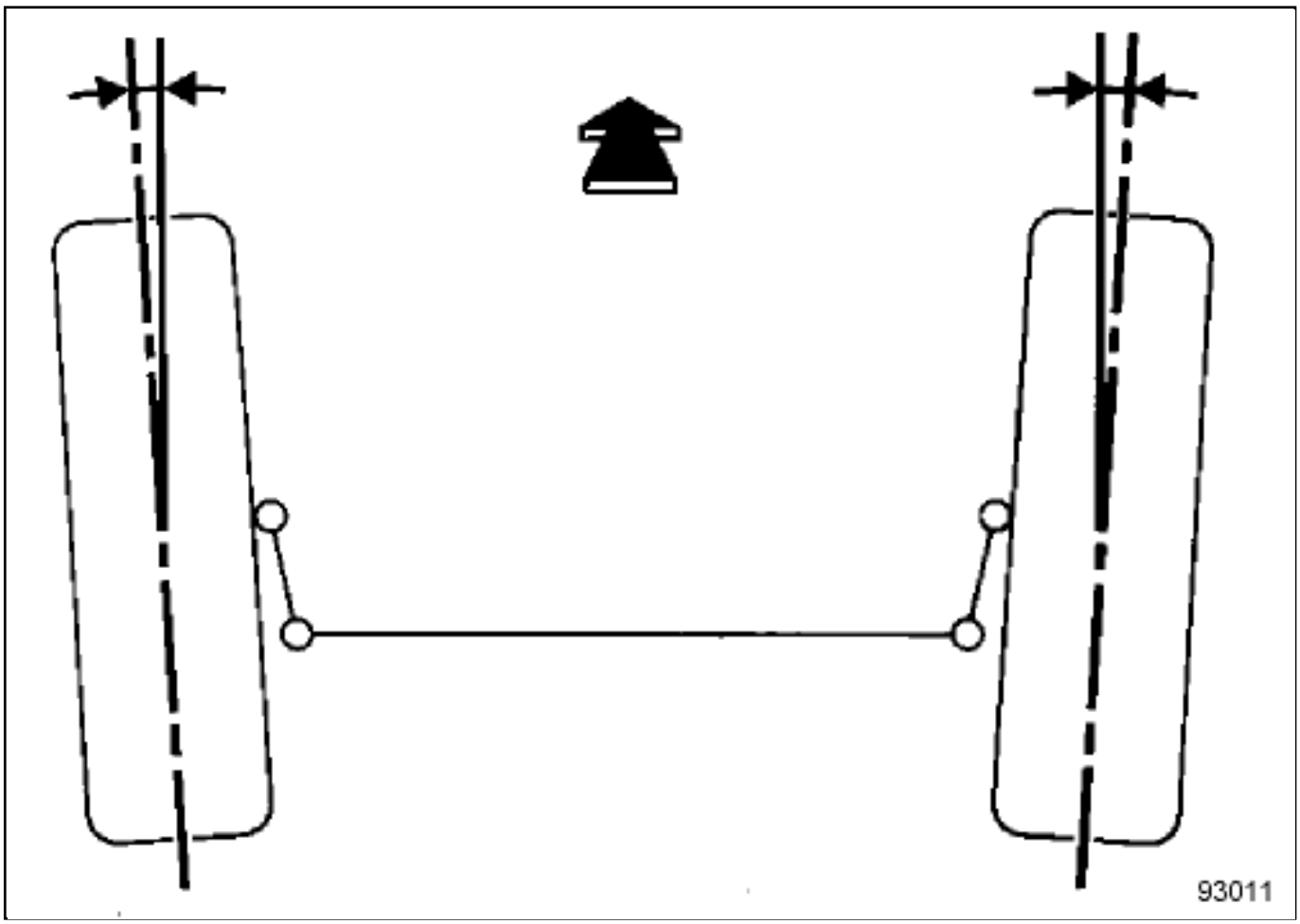
Note, one or more warnings are present in this procedure

1. WHEEL ALIGNMENT: MEANING OF SYMBOLS

CAUTION

- Symbols used by RENAULT:
  - toe-out: -
  - toe-in: +

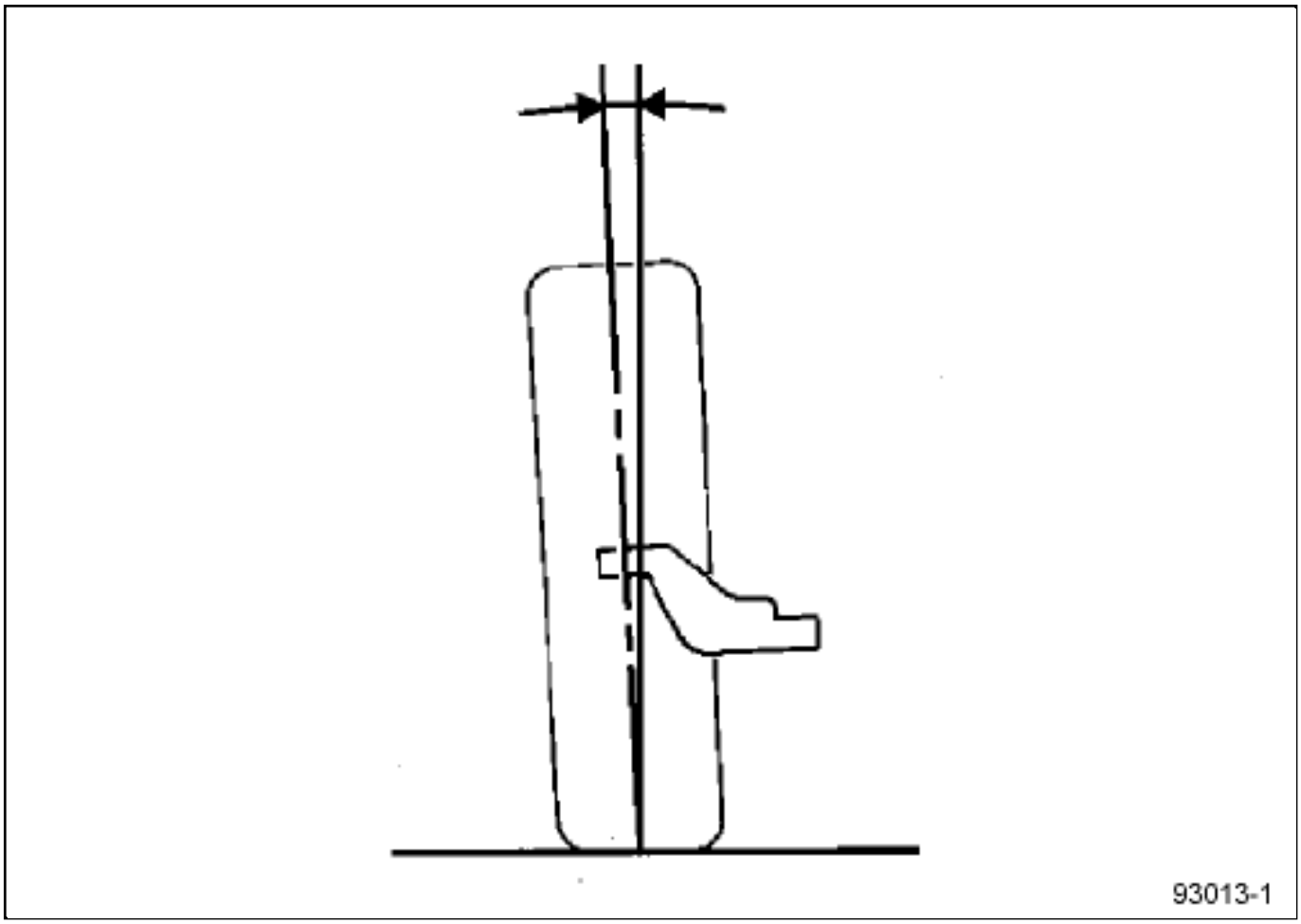
2. WHEEL ALIGNMENT



Value	Tolerance	Position of vehicle
+0˚	+10'	Vehicle in running order
	-10'	

3. CAMBER

Not adjustable.



Value	Tolerance	Position of vehicle
-0˚12'	+10'	Vehicle in running order
	-10'	

REAR BADGES: REMOVAL - REFITTING

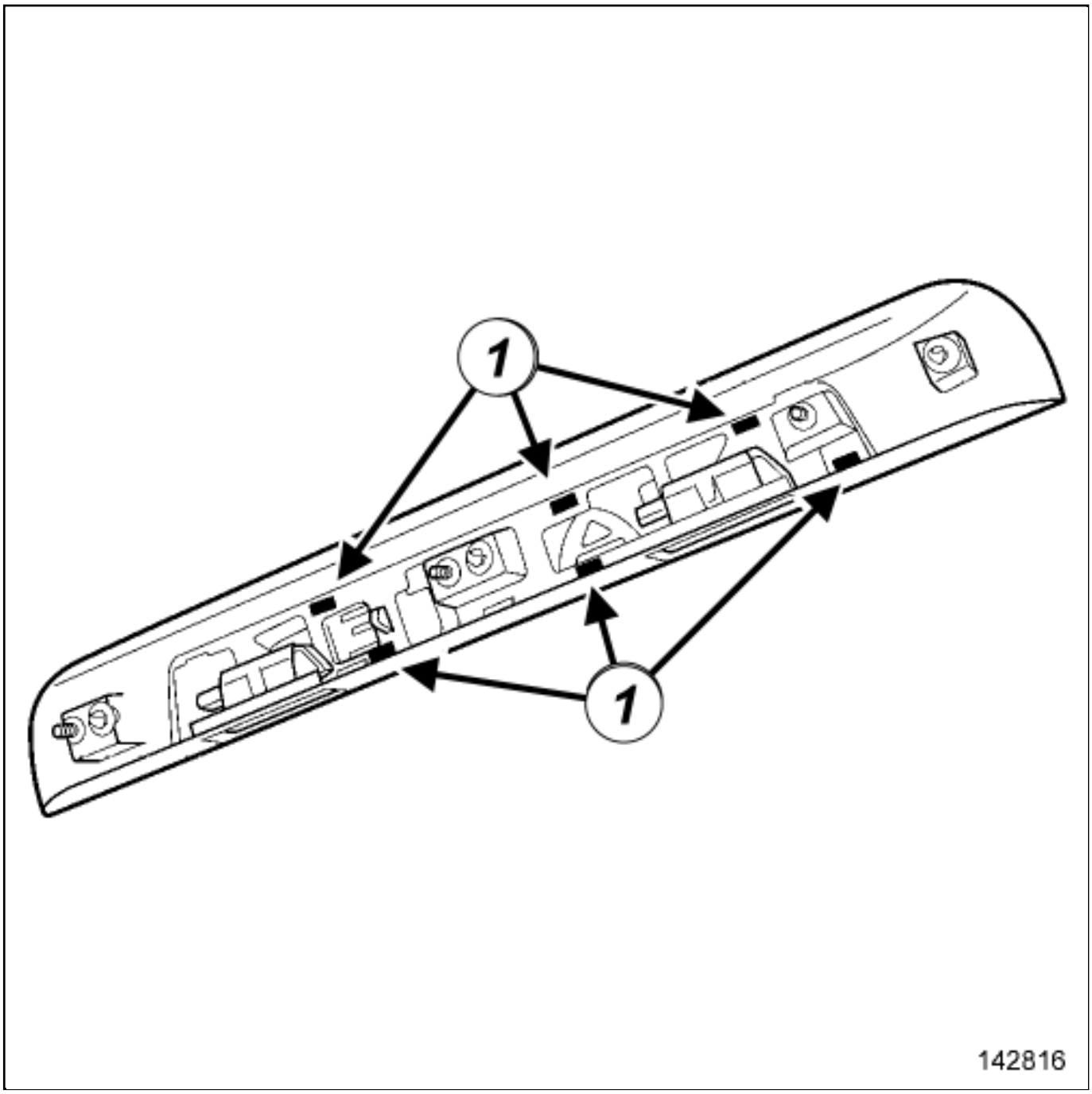
Location and specifications (tightening torques, parts always to be replaced, etc.)Exterior rear opening element assembly: Exploded view .

REMOVAL

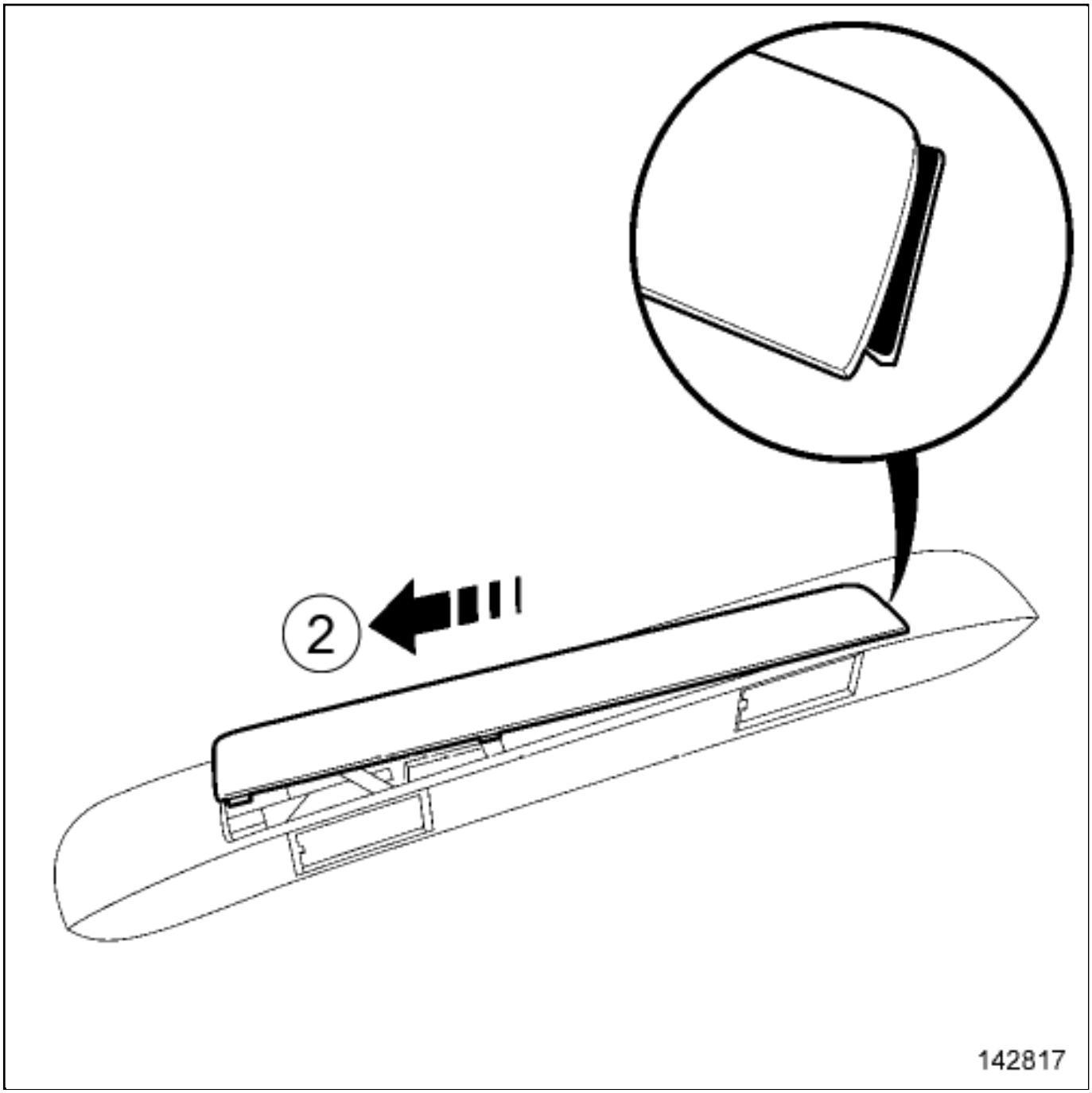
1. REMOVAL PREPARATION OPERATION

- Remove the rear left-hand loading door trimRear opening element assembly on the passenger compartment side: Exploded view (73A, Non-side opening elements trim).
- Remove the rear loading door stripExterior rear opening element assembly: Exploded view .
- Disconnect the license plate light connectors.

2. REMOVAL OPERATION



- Unclip the rear badge by pressing the clips(1) .



- Remove the rear badge by(2) .

REFITTING

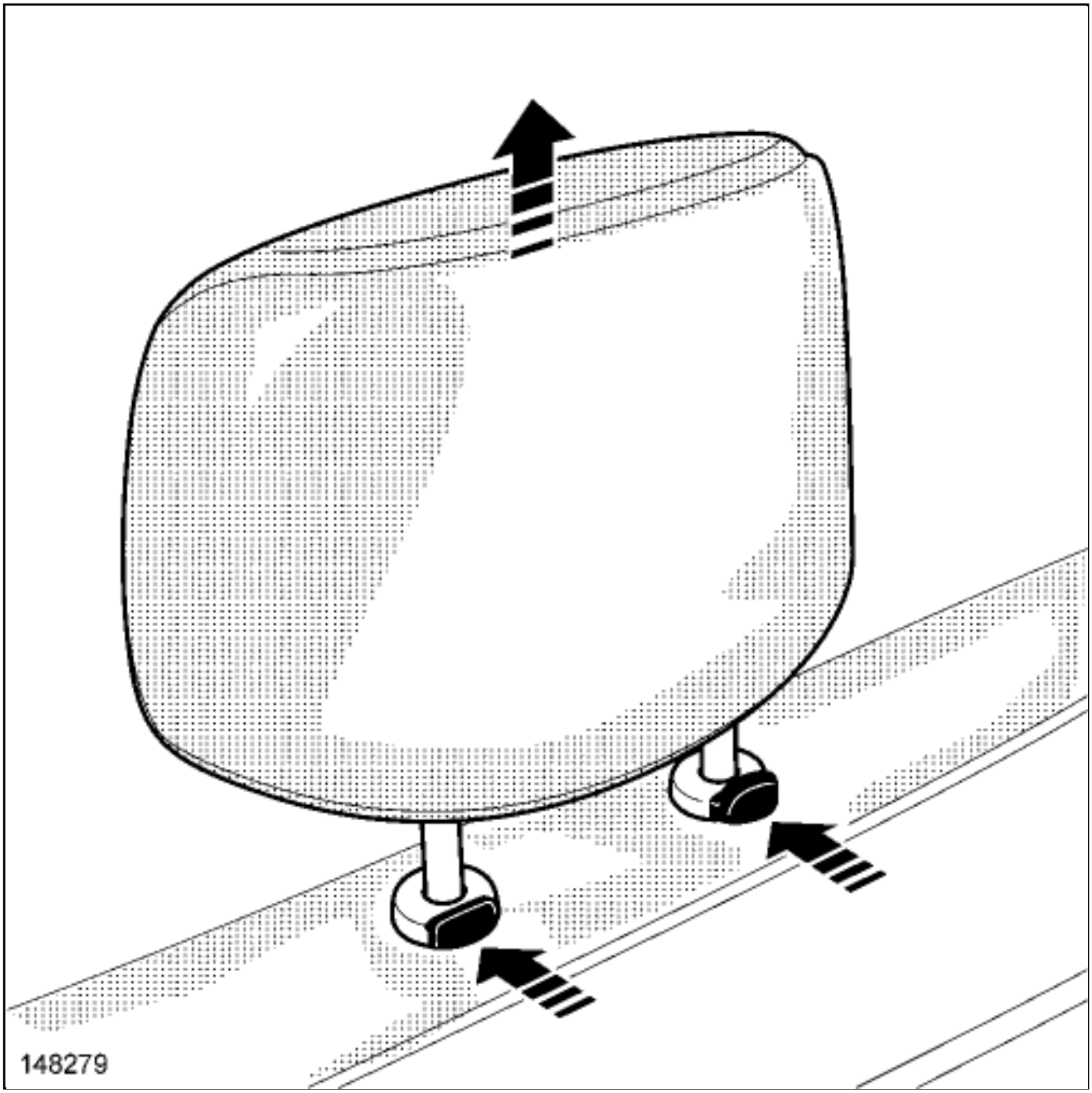
- Proceed in the reverse order to removal.

REAR BENCH SEAT HEADREST: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

REMOVAL

1. REMOVAL OPERATION



- Press the unlocking buttons of the rear bench seat headrest guides.
- Remove the rear bench seat headrest.

REFITTING

1. REFITTING OPERATION

- Refit the rear bench seat headrest into the guides to the safety notch position.
- Carry out a function test.

WARNING

To prevent the headrest coming away from the guide during a collision, check that headrest guide locking system is functioning correctly.

- Adjust the rear bench seat headrest to the low position.

REAR BRAKE CALLIPER ASSEMBLY: EXPLODED VIEW

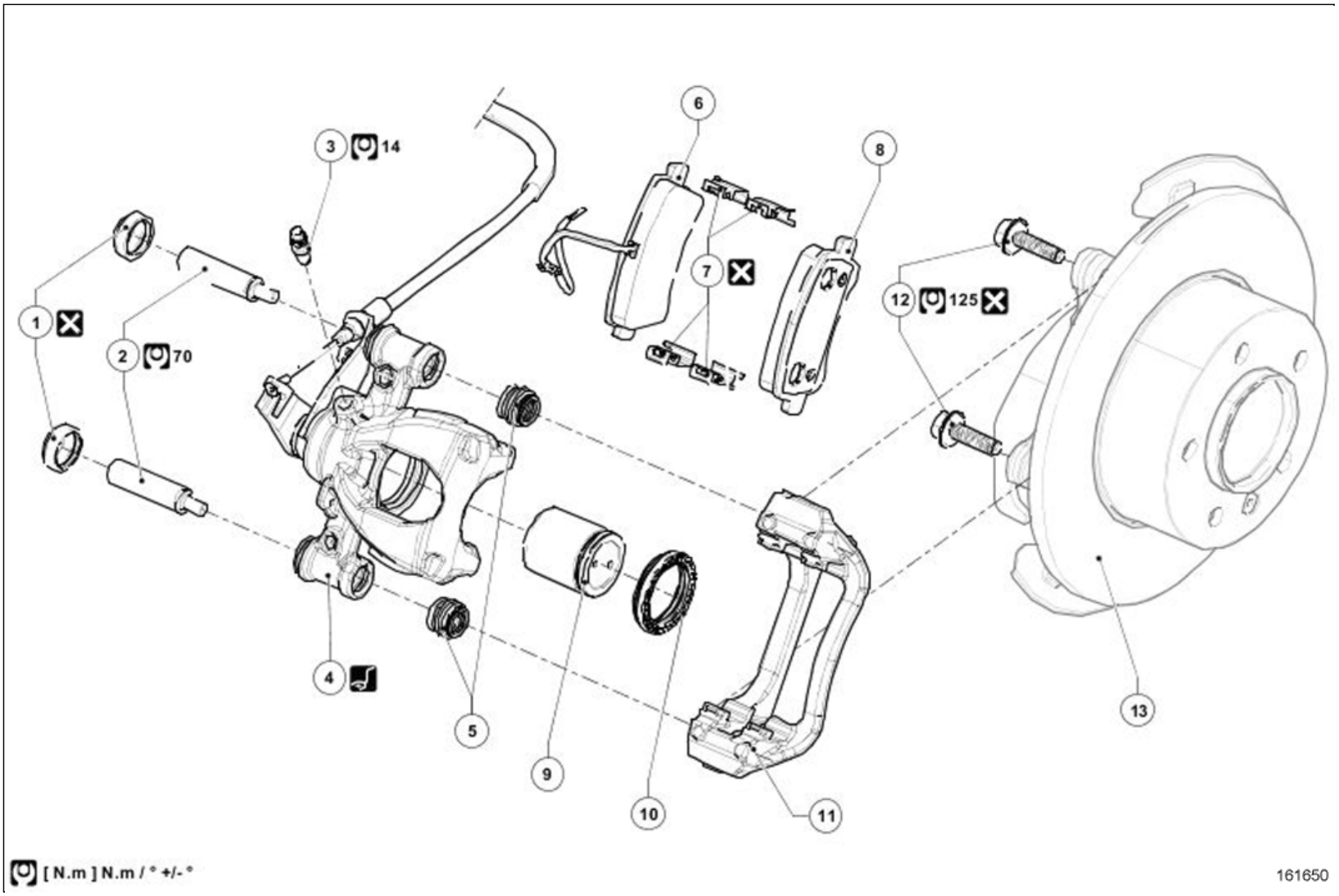


Illustration key: Description Key.

Mark	Description	Information
1	Brake calliper guide pin plug	
2	Brake calliper guide pin	
3	Brake calliper bleed screw	
4	Brake calliper	(FRE1190-01) (see 33A, Rear axle components, Rear brake calliper: Removal - Refitting)
5	Brake calliper guide pin gaiter	
6	Rear brake pad	(see 33A, Rear axle components, Rear brake pads: Removal - Refitting)
7	Brake pad tab	
8	Brake pad	(see 33A, Rear axle components, Rear brake pads: Removal - Refitting)
9	Brake calliper piston	
10	Dust seal of brake calliper piston	(see 33A, Rear axle components, Rear brake calliper: Repair)
11	Brake calliper mounting	(see 33A, Rear axle components, Rear brake calliper mounting: Removal - Refitting)
12	Brake calliper mounting bolt	
13	Brake disc	(see 33A, Rear axle components, Rear brake disc: Removal - Refitting) (see 33A, Rear axle components, Rear brake disc: Description)

REAR BRAKE CALLIPER ASSEMBLY: EXPLODED VIEW

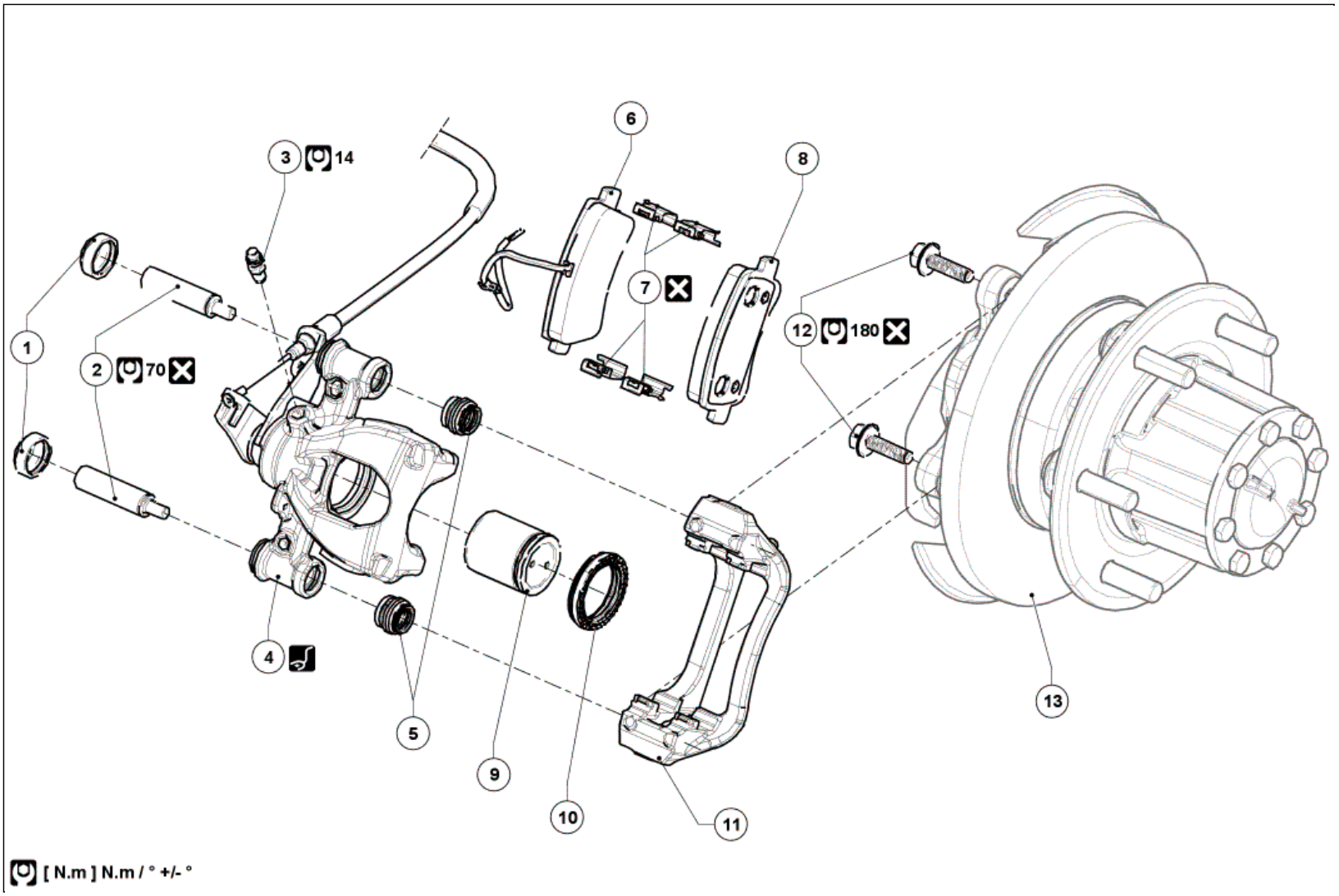


Illustration key: Description 01D, Mechanical introduction.

Brake circuit: Precautions for the repair

Mark	Description	Information
1	Brake calliper guide pin plug	
2	Brake calliper guide pin	
3	Brake calliper bleed screw	
4	Rear brake calliper	(see 33A, Rear axle components, Rear brake calliper: Removal - Refitting)
5	Brake calliper guide pin gaiter	
6	Rear brake pads	(see 33A, Rear axle components, Rear brake pads: Removal - Refitting)
7	Brake pad tab	
8	Rear brake pads	(see 33A, Rear axle components, Rear brake pads: Removal - Refitting)
9	Brake calliper piston	
10	Dust seal of brake calliper piston	
11	Brake calliper yoke	
12	Brake calliper mounting bolt	
13	Rear brake disc	(see 33A, Rear axle components, Rear brake disc: Removal - Refitting)

REAR BRAKE CALLIPER MOUNTING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting .
- Remove (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :
  - the rear brake pads,
  - the upper guide pin bolt cap,
  - the upper guide pin bolt.
- Attach the rear brake calliper to the rear spring.

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

2. REMOVAL OPERATION

Remove the rear brake calliper mounting(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

Clean using a wire brush and brake cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products):

- the rear brake calliper mounting,
- the rear brake calliper,
- the rear hub.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR BRAKE CALLIPER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Support plate for pushing back the brake calliper piston	Fre. 1939

Equipment required
pedal press
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

To avoid damaging the parking brake cable protectors and causing premature wear of the system, do not handle the cables with a tool.

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

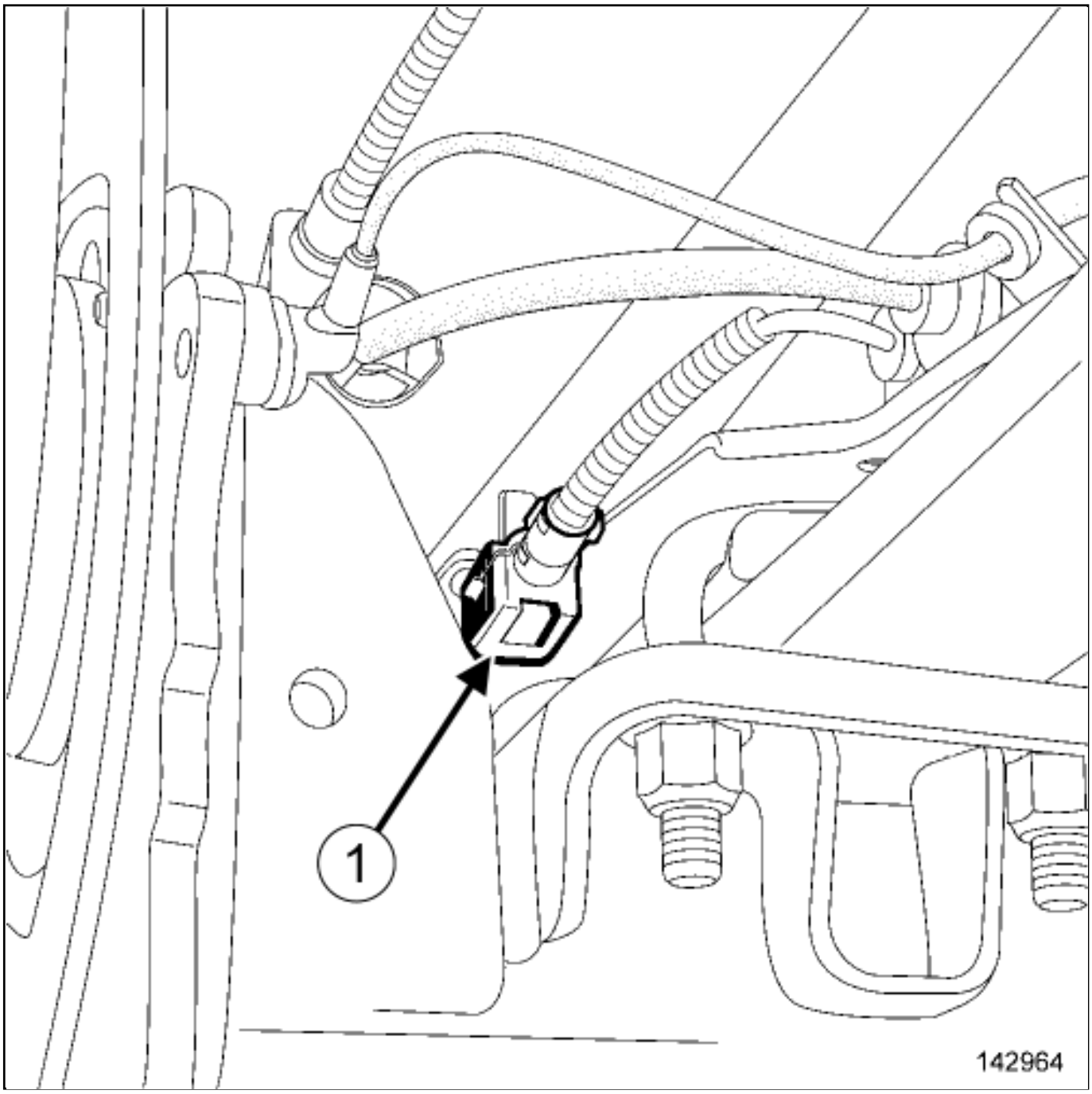
REMOVAL

1. REMOVAL PREPARATION OPERATION

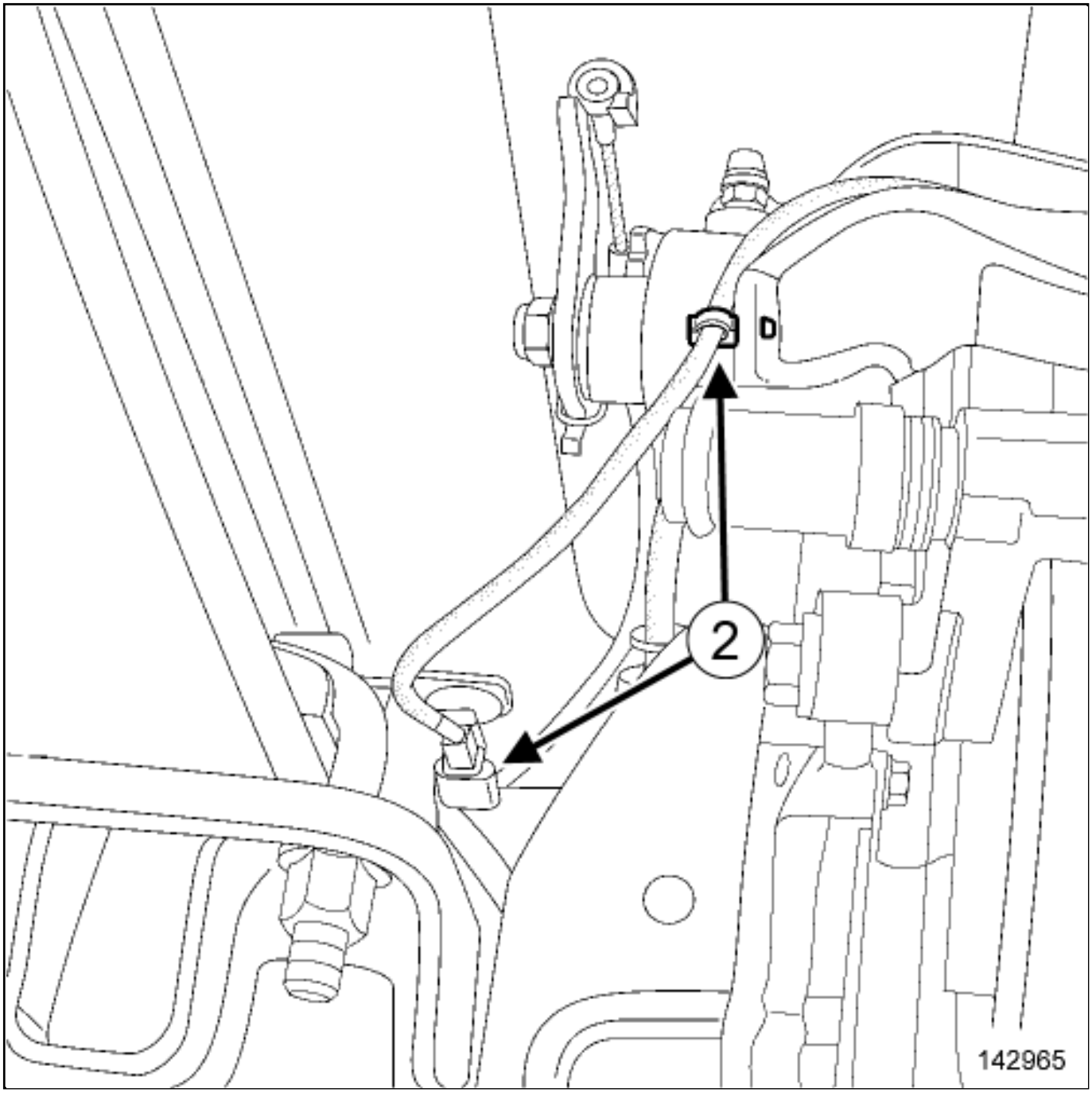
- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Release the parking brake.
- Position a pedal presson the brake pedal to limit the outflow of brake fluid.
- Remove the rear wheels Wheel: Removal - Refitting .

2. REMOVAL OPERATION

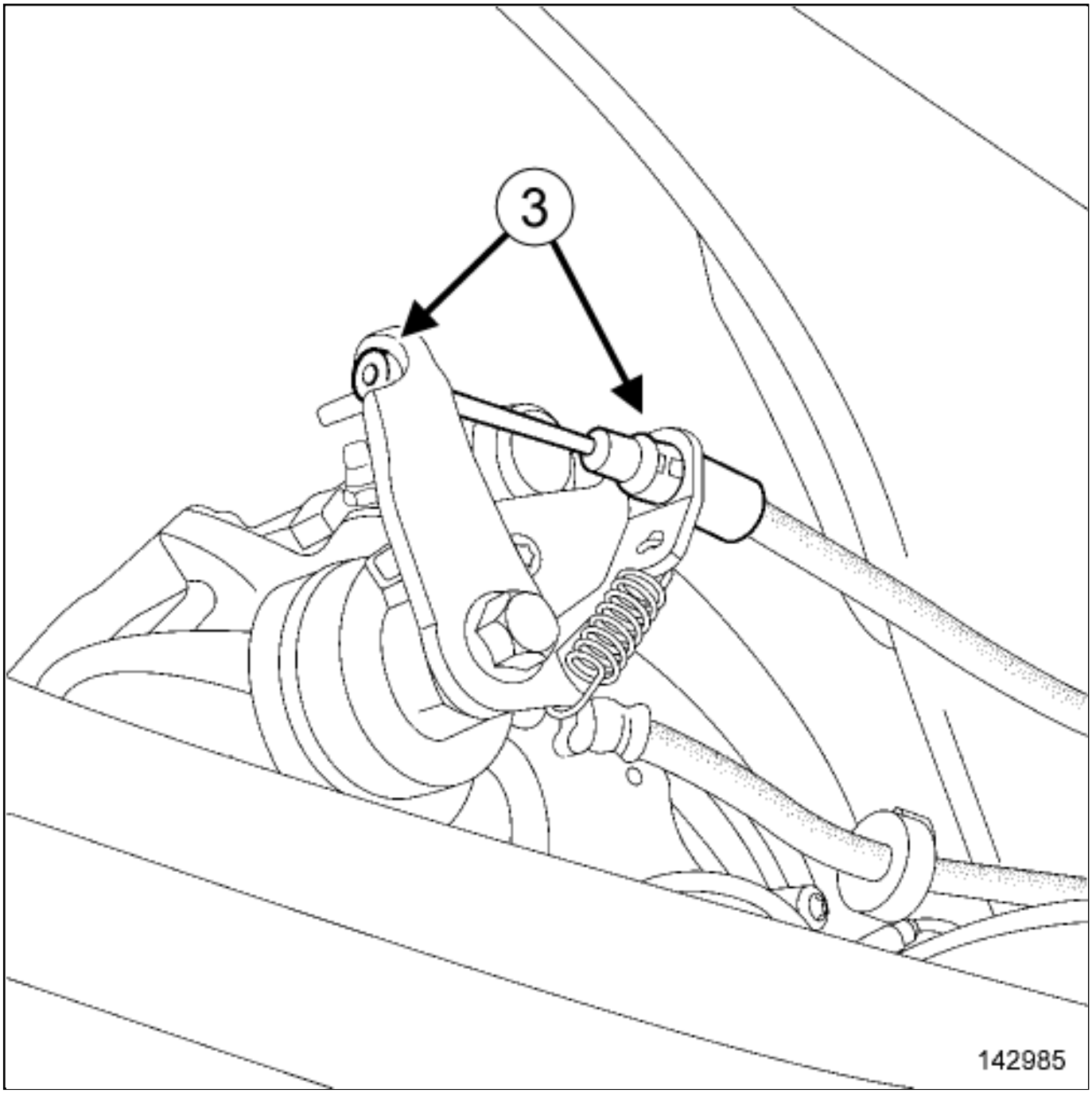
SPECIAL FEATURES OF THE RIGHT-HAND SIDE



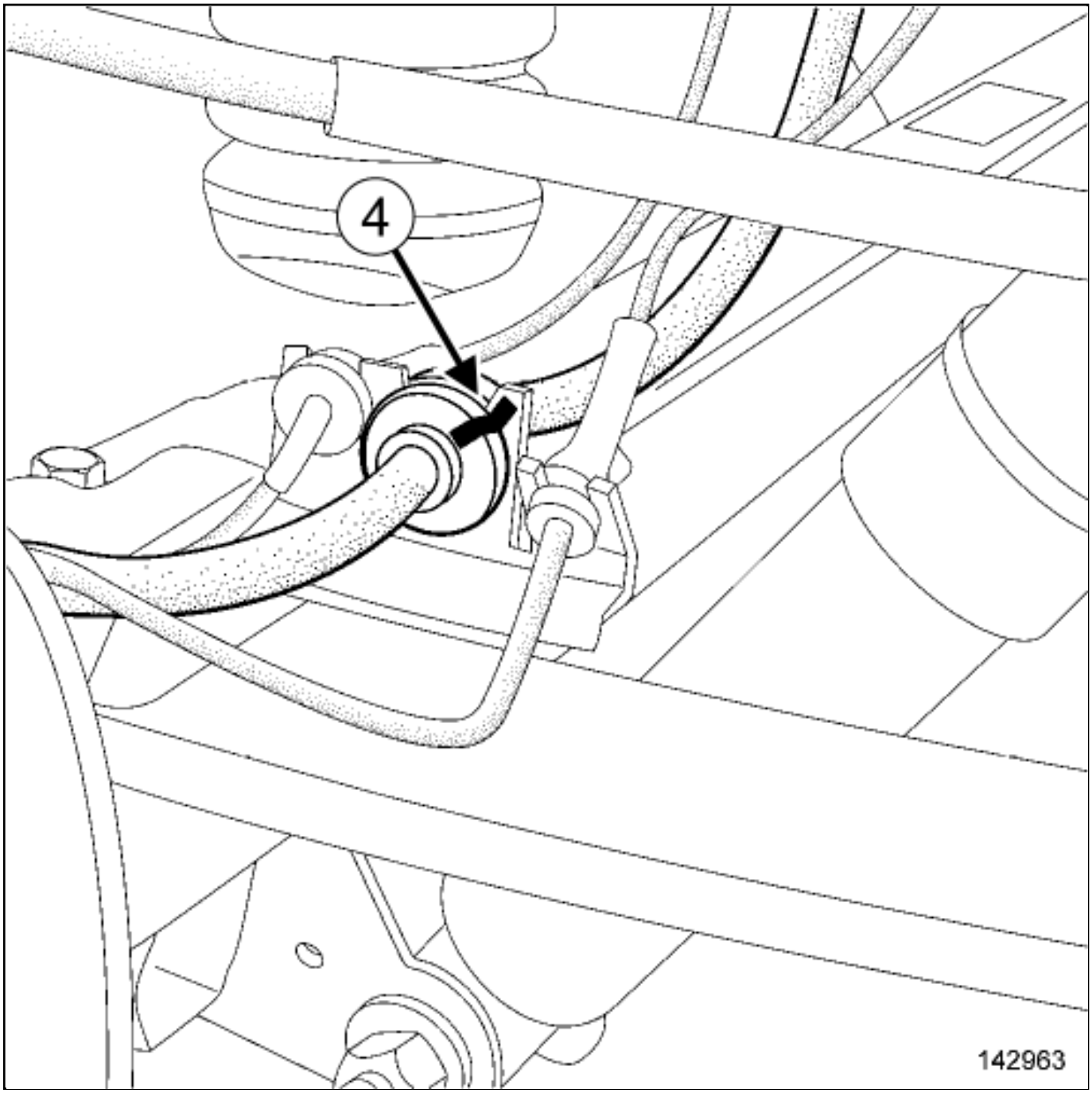
- Disconnect the connector(1) from the rear brake pad wear warning light.



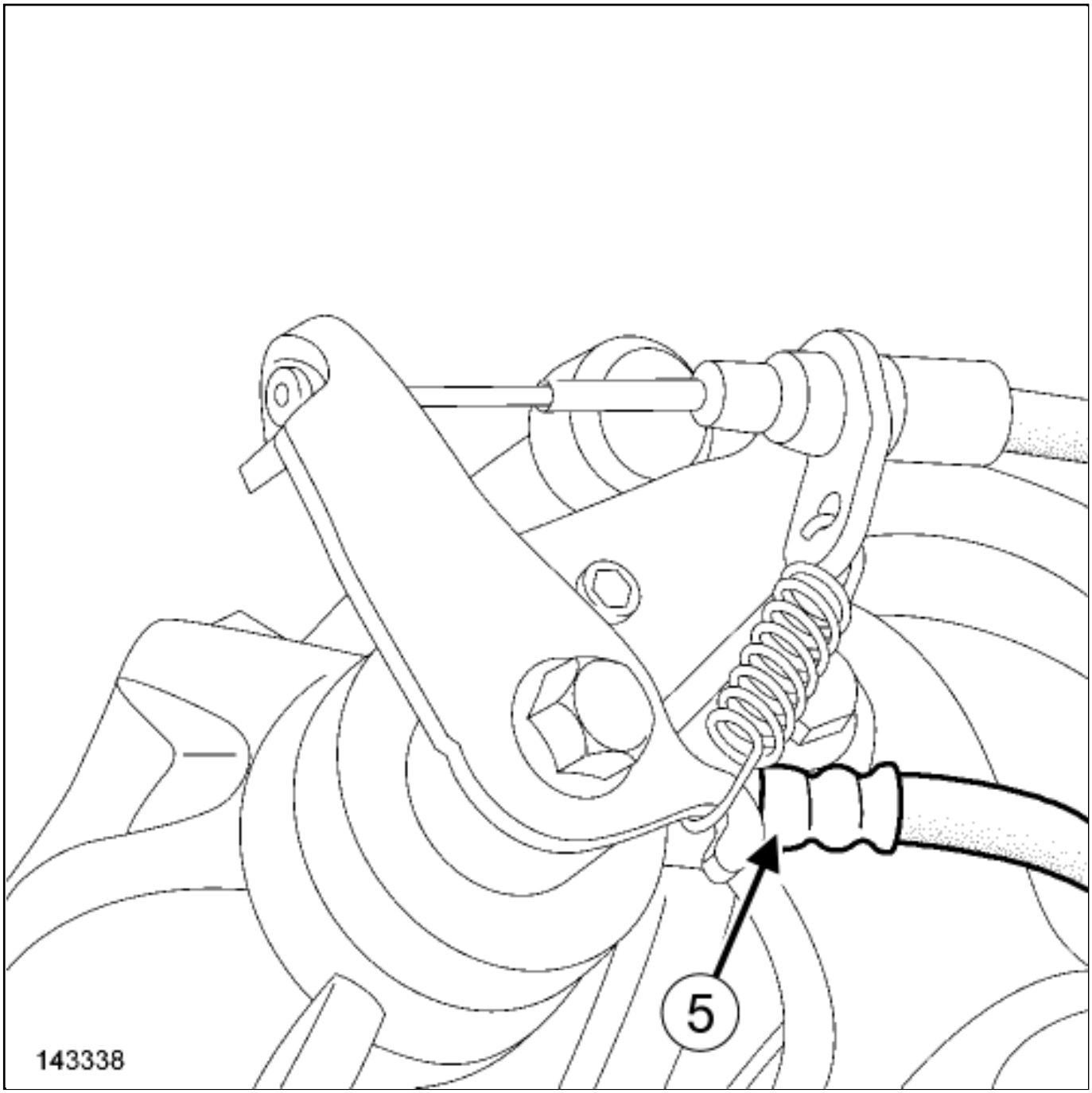
- Unclip the wiring of the rear brake pad wear warning light at(2) .



- Unclip the parking brake cable from the rear brake calliper at(3) .



- Mark the position of the rear brake hose cap(4) on the rear axle using an indelible pencil.
- Unclip the rear brake hose cap(4) from the rear axle.



- Undo the rear brake hose union(5) from the rear brake calliper.

- Remove (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :
  - the guide pin bolt caps of the rear brake calliper,
  - the guide pin bolts of the rear brake calliper,
  - the rear brake calliper from the rear brake calliper mounting,
  - the rear brake hose union from the rear brake calliper,
  - the rear brake calliper.

- Insert the blanking plugs.

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean using a wire brush and brake cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products):
  - the rear brake calliper,
  - the rear brake calliper mounting.

2. REFITTING OPERATION

- Push the rear brake calliper piston to the end of its housing using the toolSupport plate for pushing back the brake calliper piston(Fre. 1939) .
- Proceed in the reverse order to removal.
- Torque tighten the rear brake hose union on the rear brake calliper17 N.m.
- Bleed the braking circuitBraking circuit: Bleed .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR BRAKE CALLIPER: REPAIR

Note, one or more warnings are present in this procedure

Special tooling required	
Support plate for pushing back the brake calliper piston	Fre. 1939

Equipment required
pedal press

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear brake calliper assembly: Exploded view .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

Release the parking brake.

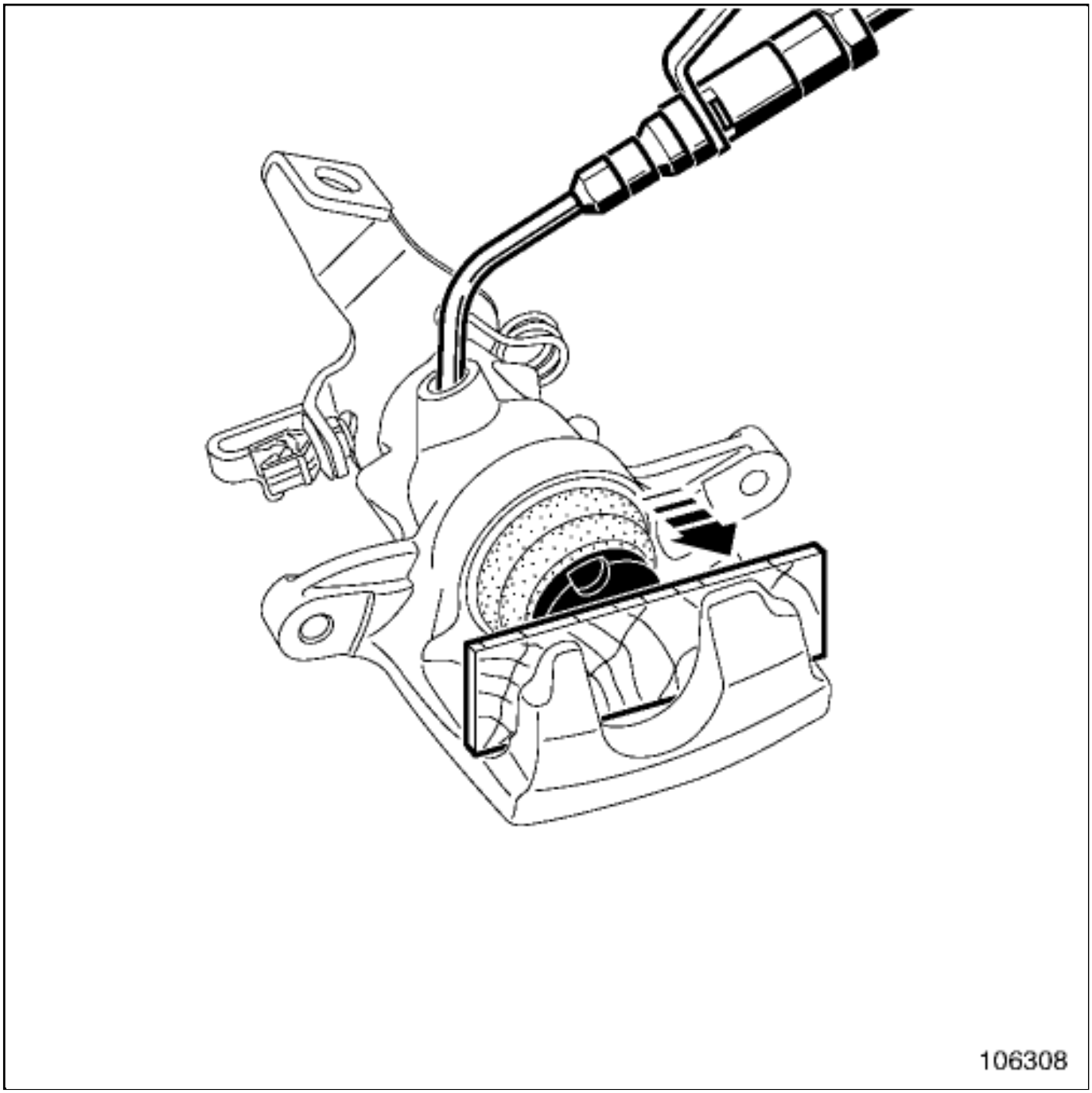
Position a pedal presson the brake pedal to limit the outflow of brake fluid.

Remove:

- the rear wheelWheel: Removal - Refitting ,

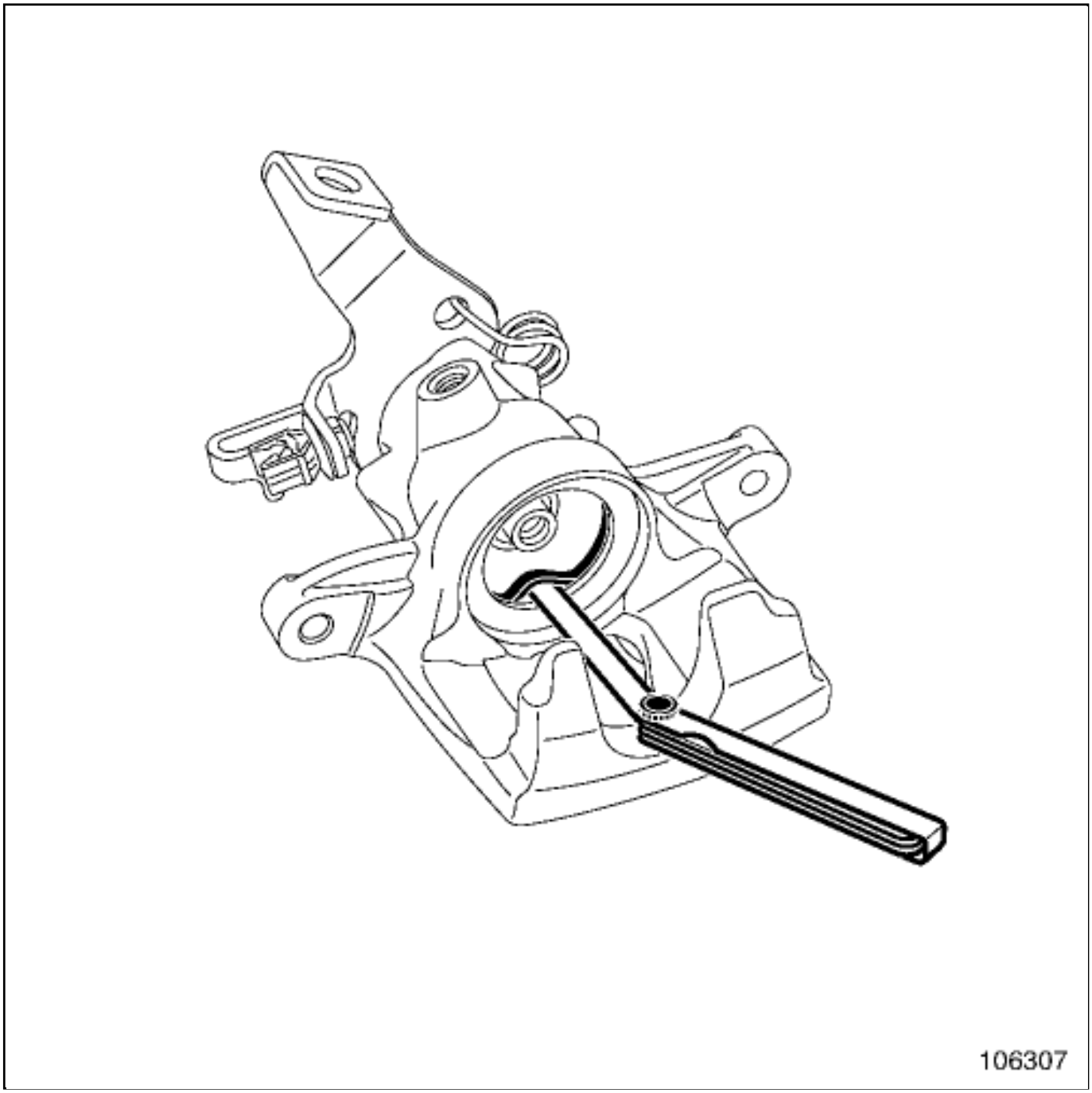
■ the rear brake caliperRear brake calliper assembly: Exploded view .

2. REMOVAL OPERATION



Remove the piston using compressed air, making sure to insert a wooden block between the calliper and the piston.

Remove the dust seal.



Remove the rectangular section seal from the calliper groove with a round edged spring blade (feeler gauge).

REFITTING

1. REFITTING PREPARATION OPERATION

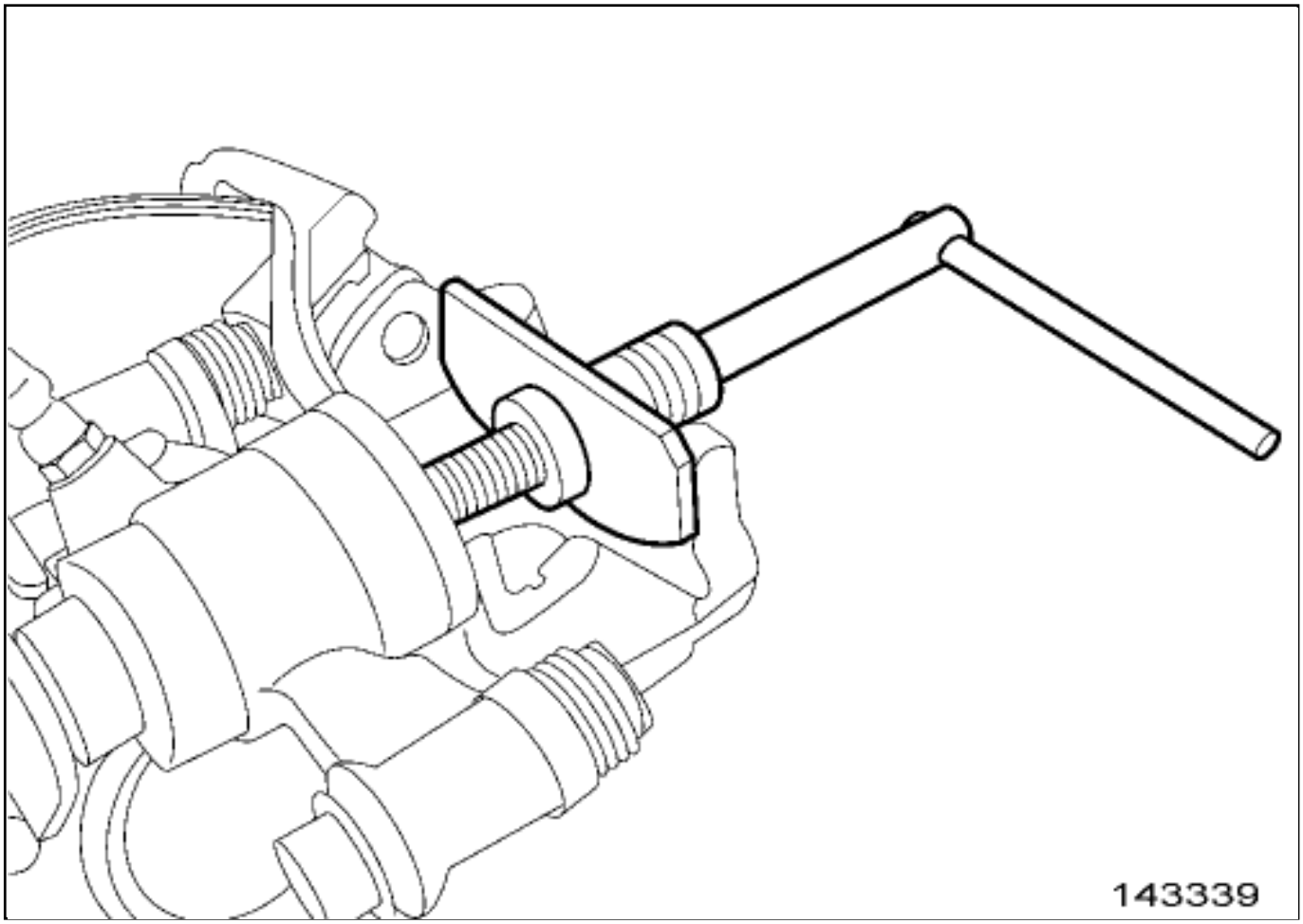
Replace the complete calliper in if there is:

- a scratch in the calliper bore,
- a scratch or crack on the calliper piston.

Clean using a wire brush and BRAKE CLEANERVehicle: Parts and consumables for the repair (04B, Consumables - Products):

- the calliper mounting,
- the brake calliper.

2. REFITTING OPERATION



Refit:

- the new rectangular section seal in the calliper groove,
- the piston (after having smeared it with the grease supplied in the repair kit) using theSupport plate for pushing back the brake calliper piston(Fre. 1939) ,
- the dust seal.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Bleed the brake circuitBraking circuit: Bleed .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Repair-13x03x04x08-01x22-1-10-1.xml

XSL version : 3.02 du 22/07/11

REAR BRAKE CALLIPER: REPAIR

Note, one or more warnings are present in this procedure

Special tooling required	
Support plate for pushing back the brake calliper piston	Fre. 1939

Equipment required
pedal press

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

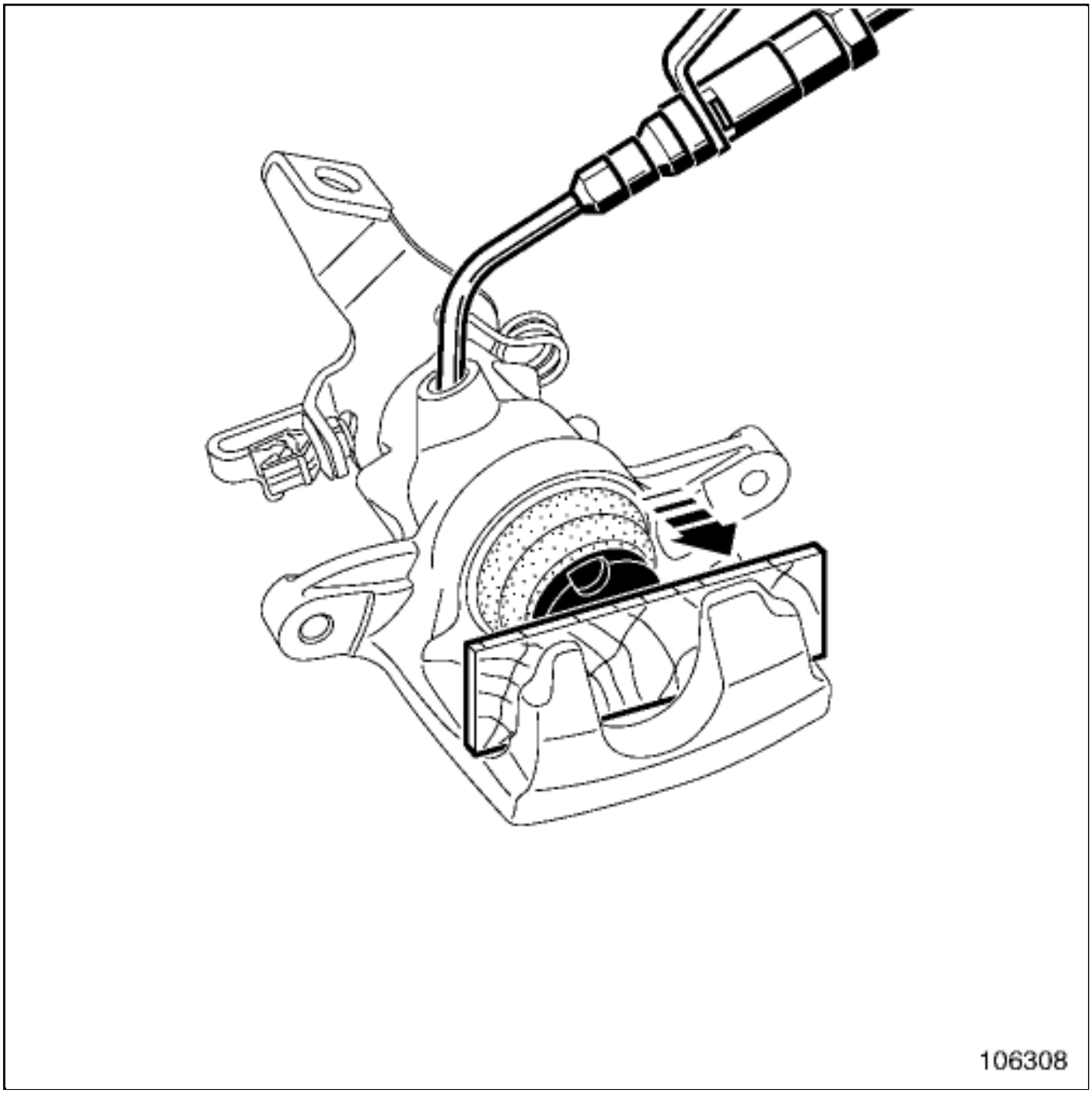
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Release the parking brake.
- Position a pedal presson the brake pedal to limit the outflow of brake fluid.
- Remove:
  - the rear wheelWheel: Removal - Refitting ,

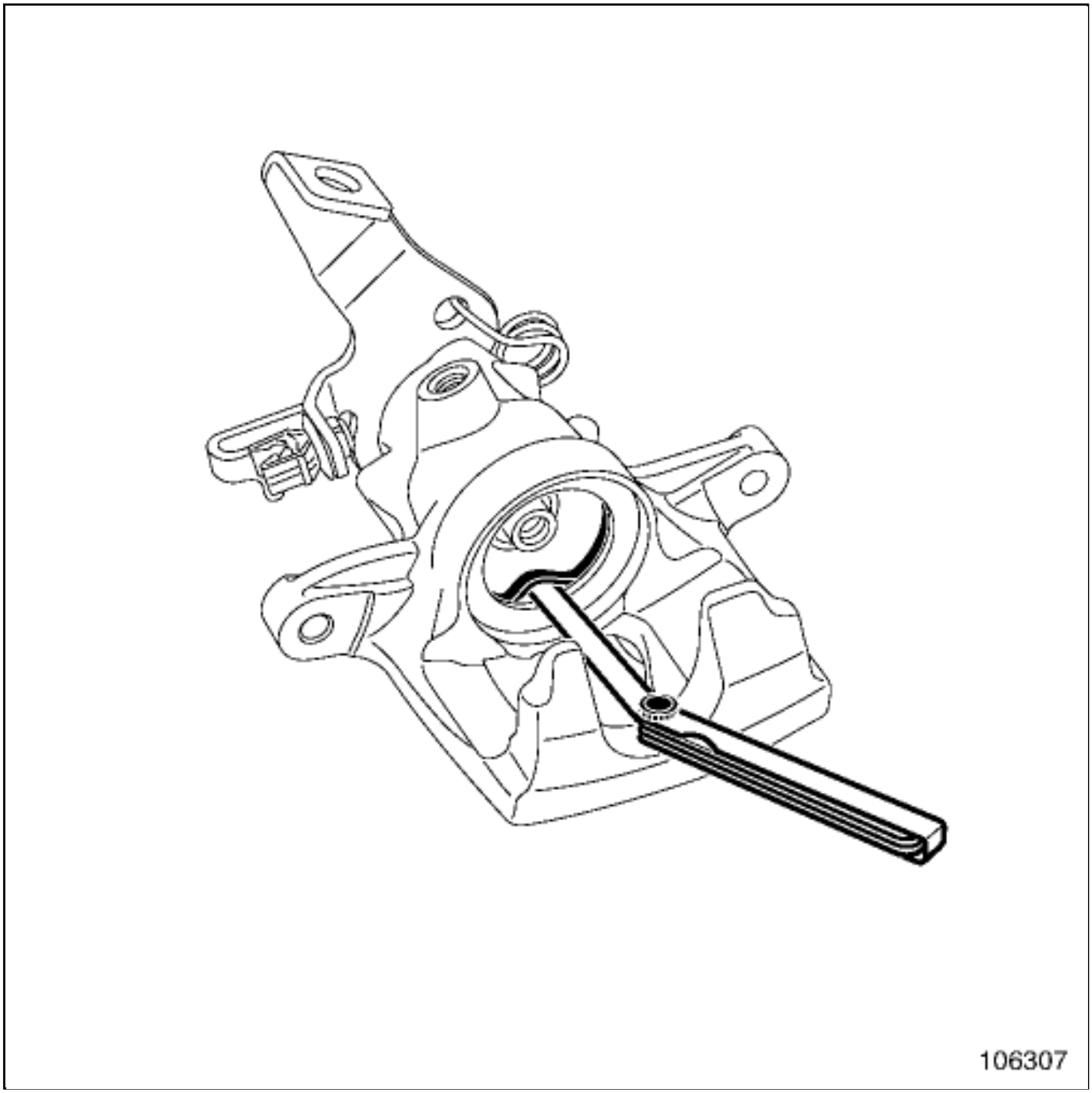
■ the rear brake calliper(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

2. REMOVAL OPERATION



- Remove the piston using compressed air, making sure to insert a wooden block between the calliper and the piston.

- Remove the dust seal.



Remove the rectangular section seal from the calliper groove with a round edged spring blade (feeler gauge).

REFITTING

1. REFITTING PREPARATION OPERATION

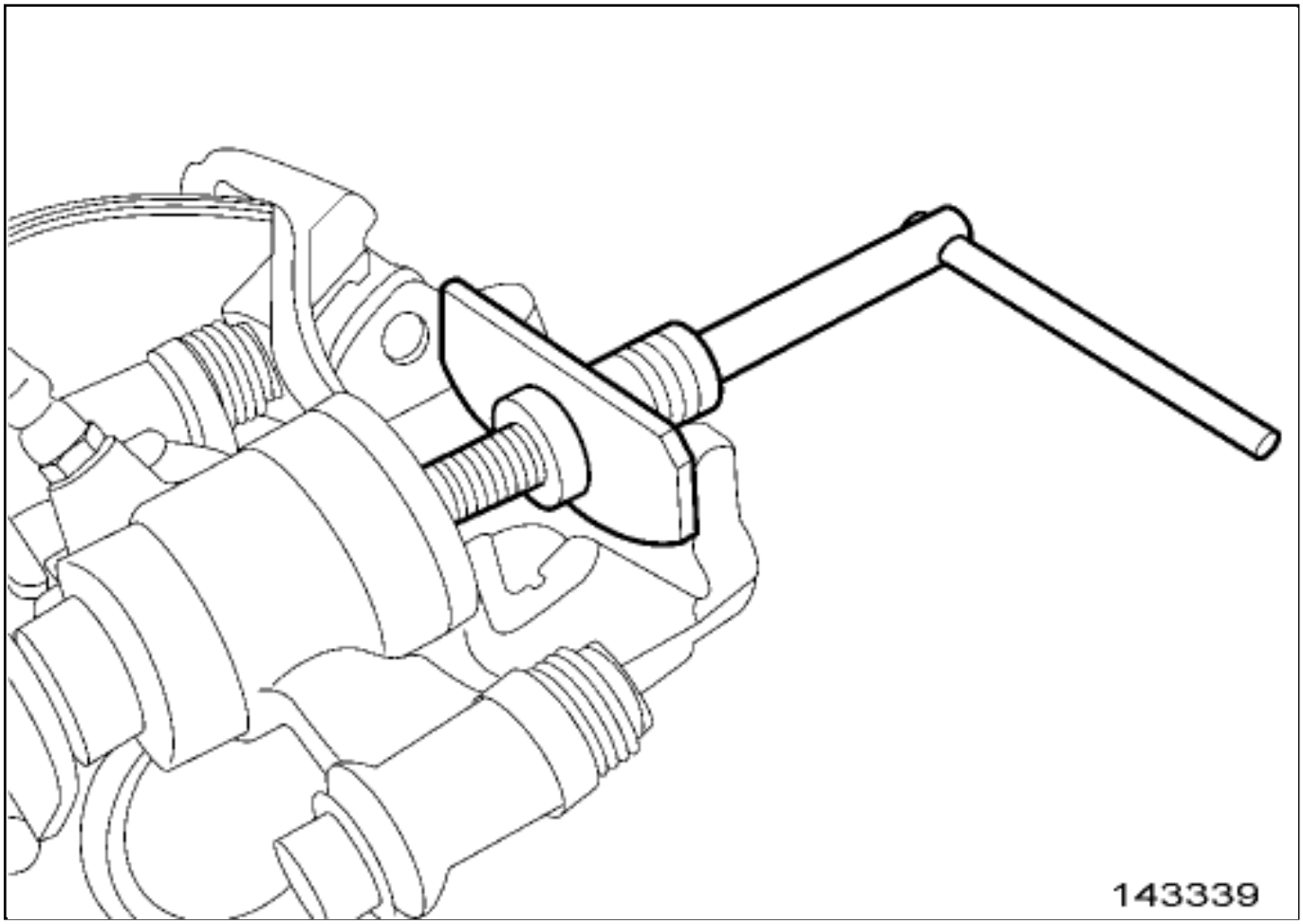
Replace the complete calliper in if there is:

- a scratch in the calliper bore,
- a scratch or crack on the calliper piston.

Clean using a wire brush and BRAKE CLEANERVehicle: Parts and consumables for the repair (04B, Consumables - Products):

- the calliper mounting,
- the brake calliper.

2. REFITTING OPERATION



Refit:

- the new rectangular section seal in the calliper groove,
- the piston (after having smeared it with the grease supplied in the repair kit) using theSupport plate for pushing back the brake calliper piston(Fre. 1939) ,
- the dust seal.

3. FINAL OPERATION

Proceed in the reverse order to removal.

Bleed the brake circuitBraking circuit: Bleed .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR BRAKE DISC: DESCRIPTION

1. PREPARATION OPERATION FOR CHECK

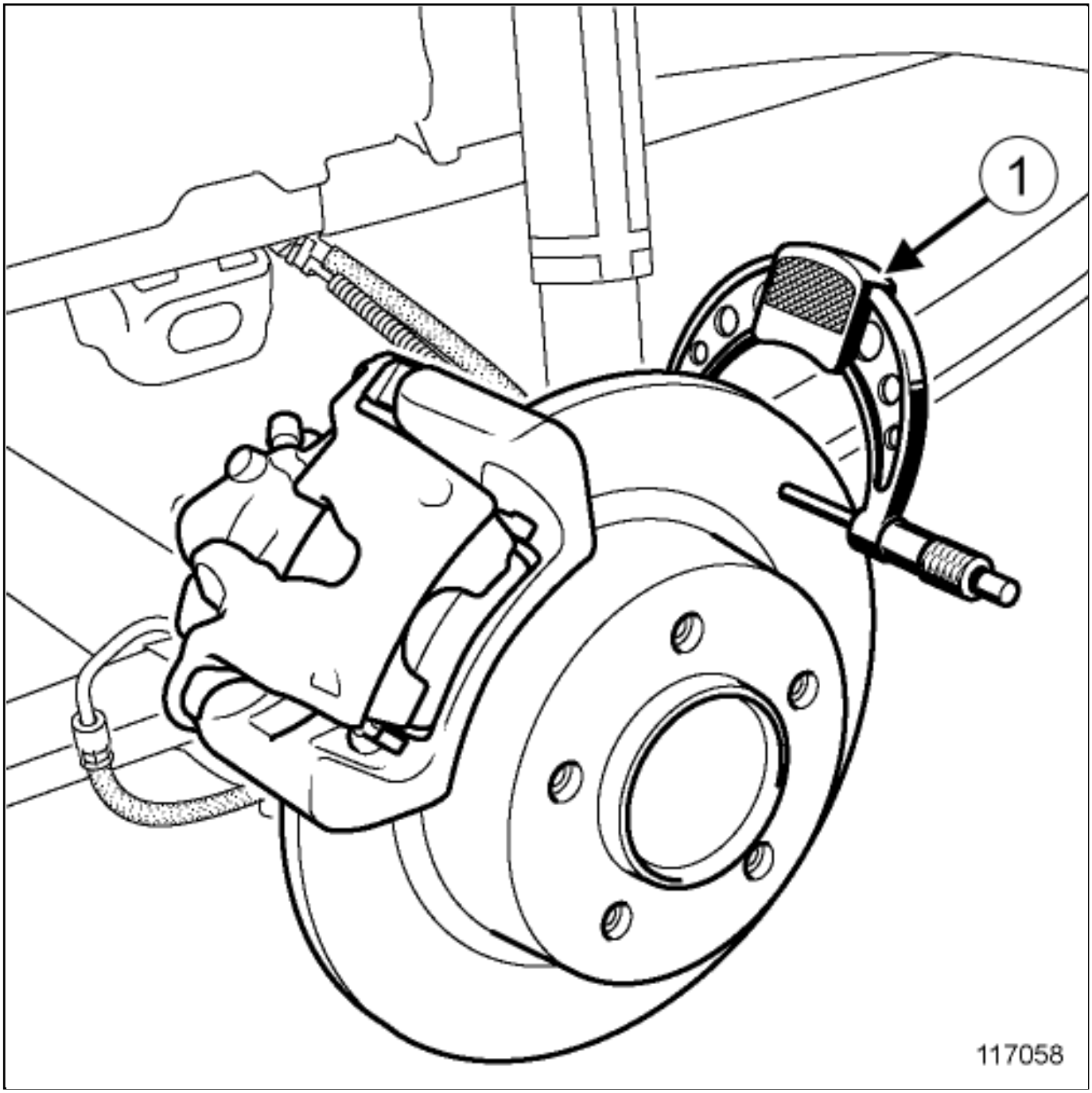
Position the vehicle on a two-post lift Vehicle: Towing and lifting .

Remove the wheel in question Wheel: Removal - Refitting .

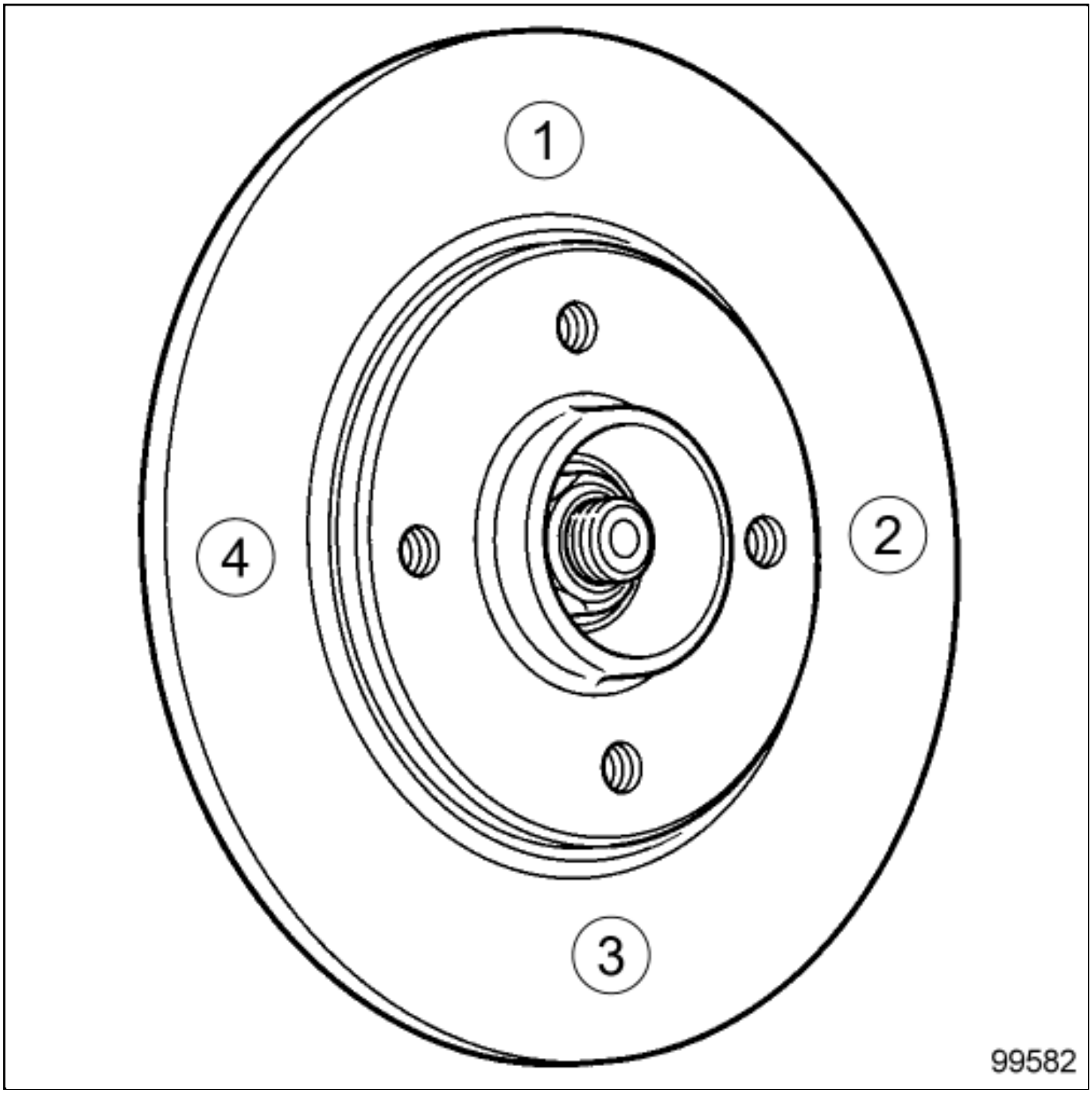
2. CHECKING OPERATION FOR PART CONCERNED

Note:

Use a Palmer type tool to check the thickness of the disc.



Position the Palmer tool(1) to measure the disc thickness.



Measure the thickness of the disc at 4 points in order (90˚ apart).

Compare the values with those recommended by the manufacturer**Brake: Specifications** .

3. FINAL OPERATION

Replace the discs if necessary**(see 33A, Rear axle components, Rear brake disc: Removal - Refitting)** .

Refit the wheel in question **Wheel: Removal - Refitting** .

REAR BRAKE DISC: DESCRIPTION

1. PREPARATION OPERATION FOR CHECK

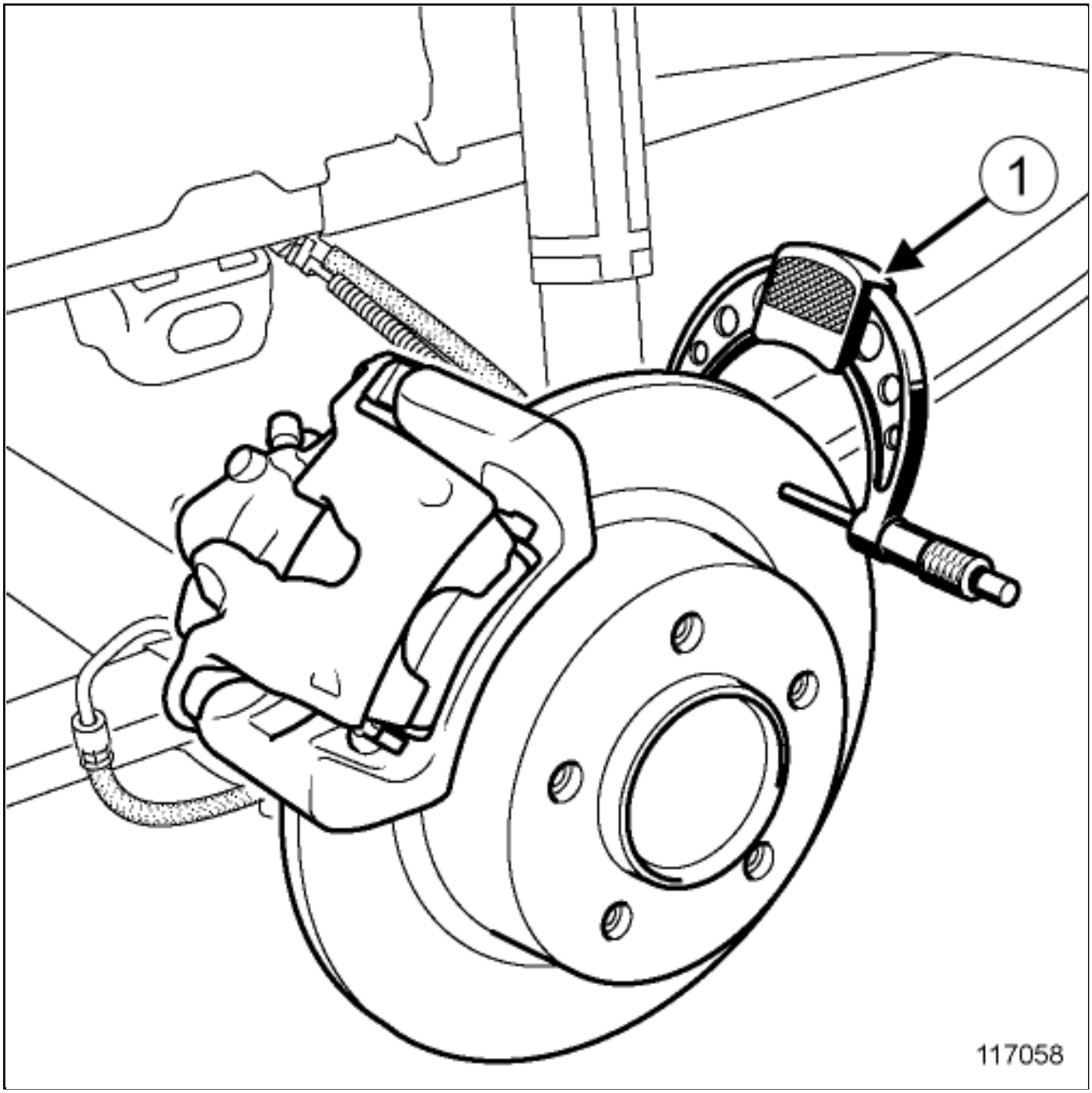
Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .

Remove the wheel in question**Wheel: Removal - Refitting** .

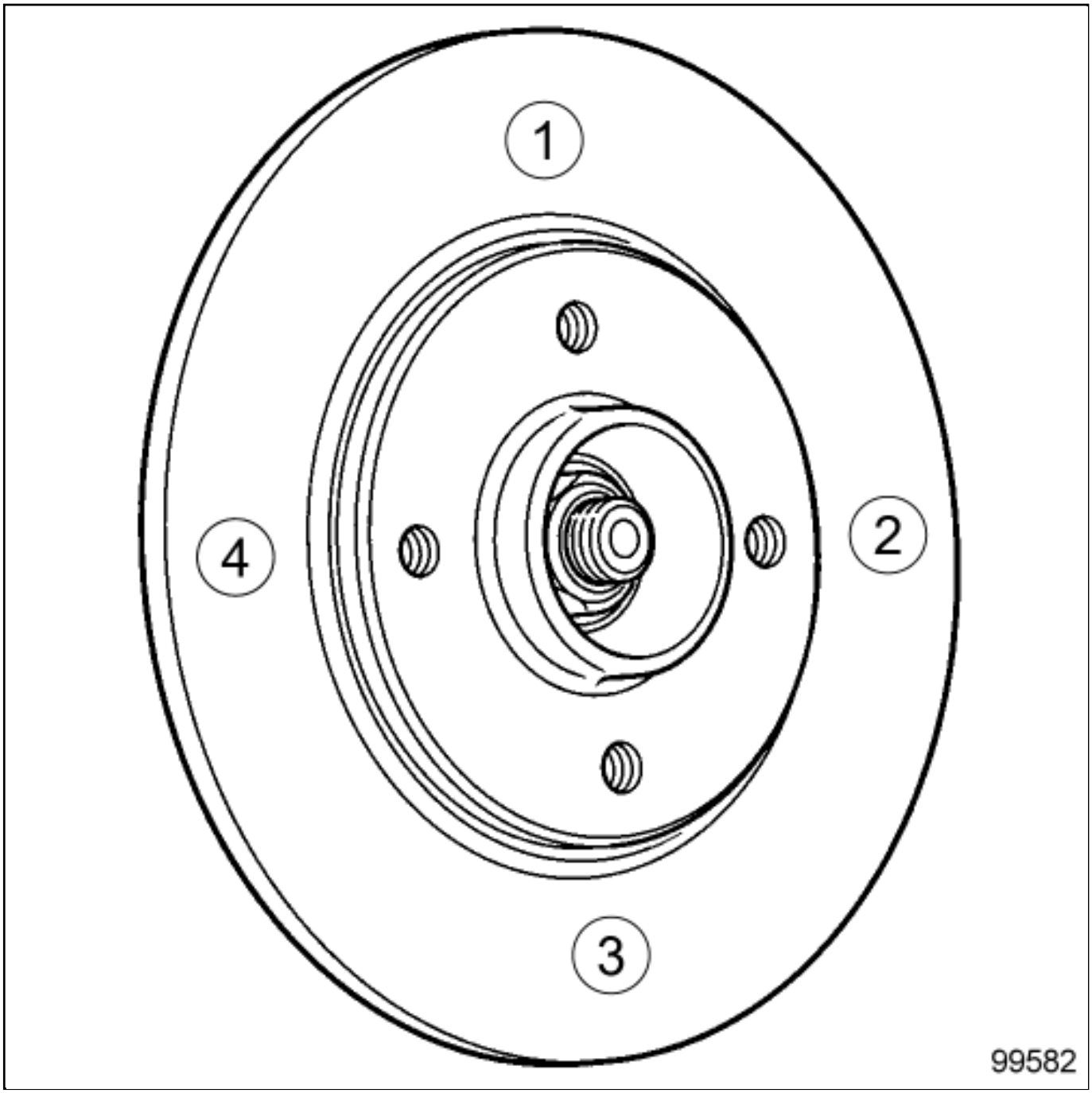
2. CHECKING OPERATION FOR PART CONCERNED

Note:

Use a Palmer type tool to check the thickness of the disc.



Position the Palmer tool(1) to measure the disc thickness.



Measure the thickness of the disc at 4 points in order (90˚ apart).

Compare the values with those recommended by the manufacturer Brake: Specifications .

3. FINAL OPERATION

Replace the discs if necessary (see 33A, Rear axle components, Rear brake disc: Removal - Refitting) .

Refit the wheel in question Wheel: Removal - Refitting .

XSL version : 3.02 du 22/07/11

REAR BRAKE DISC PROTECTOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

WARNING

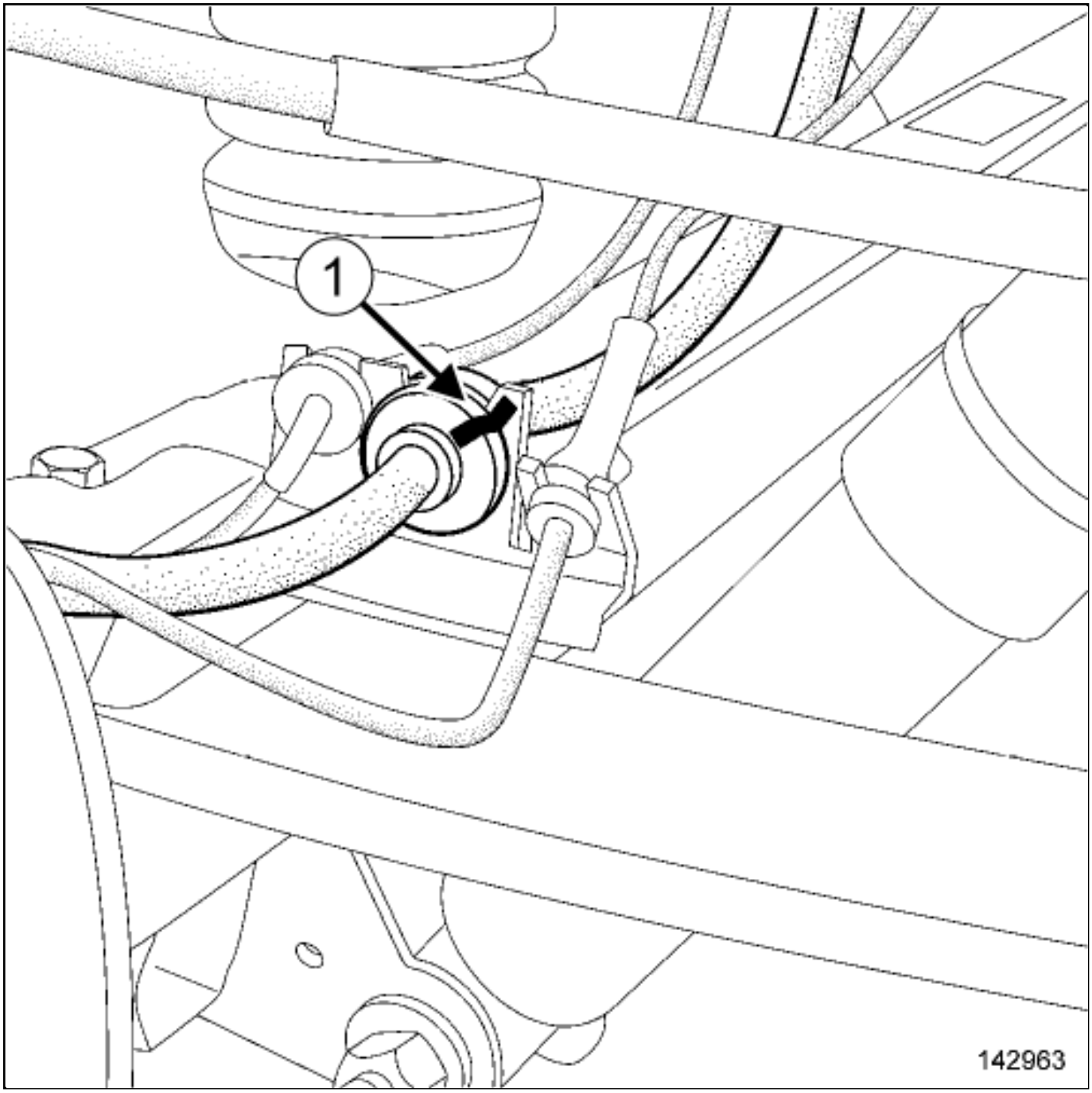
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

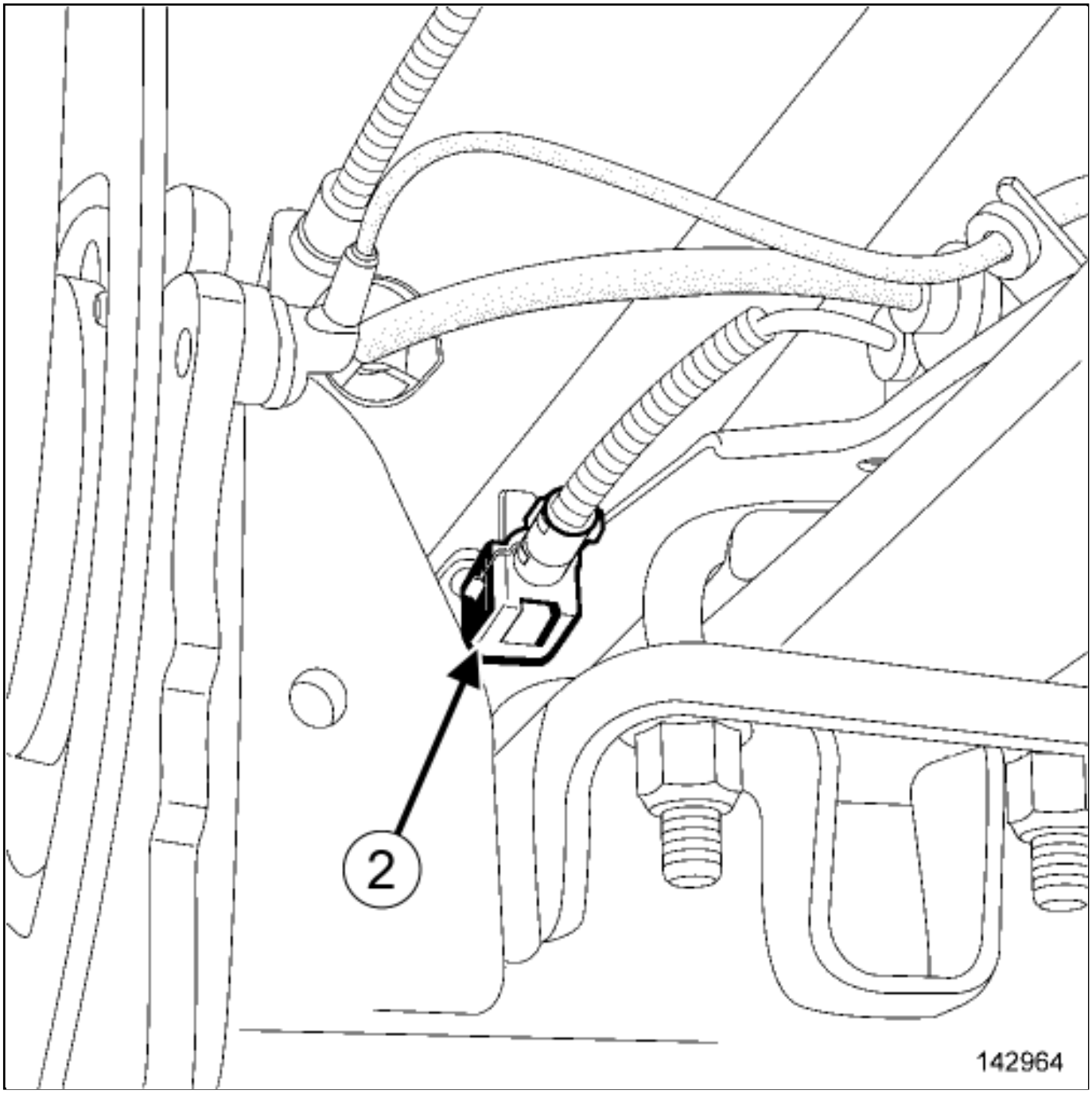
- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

- Remove the rear wheelsWheel: Removal - Refitting .

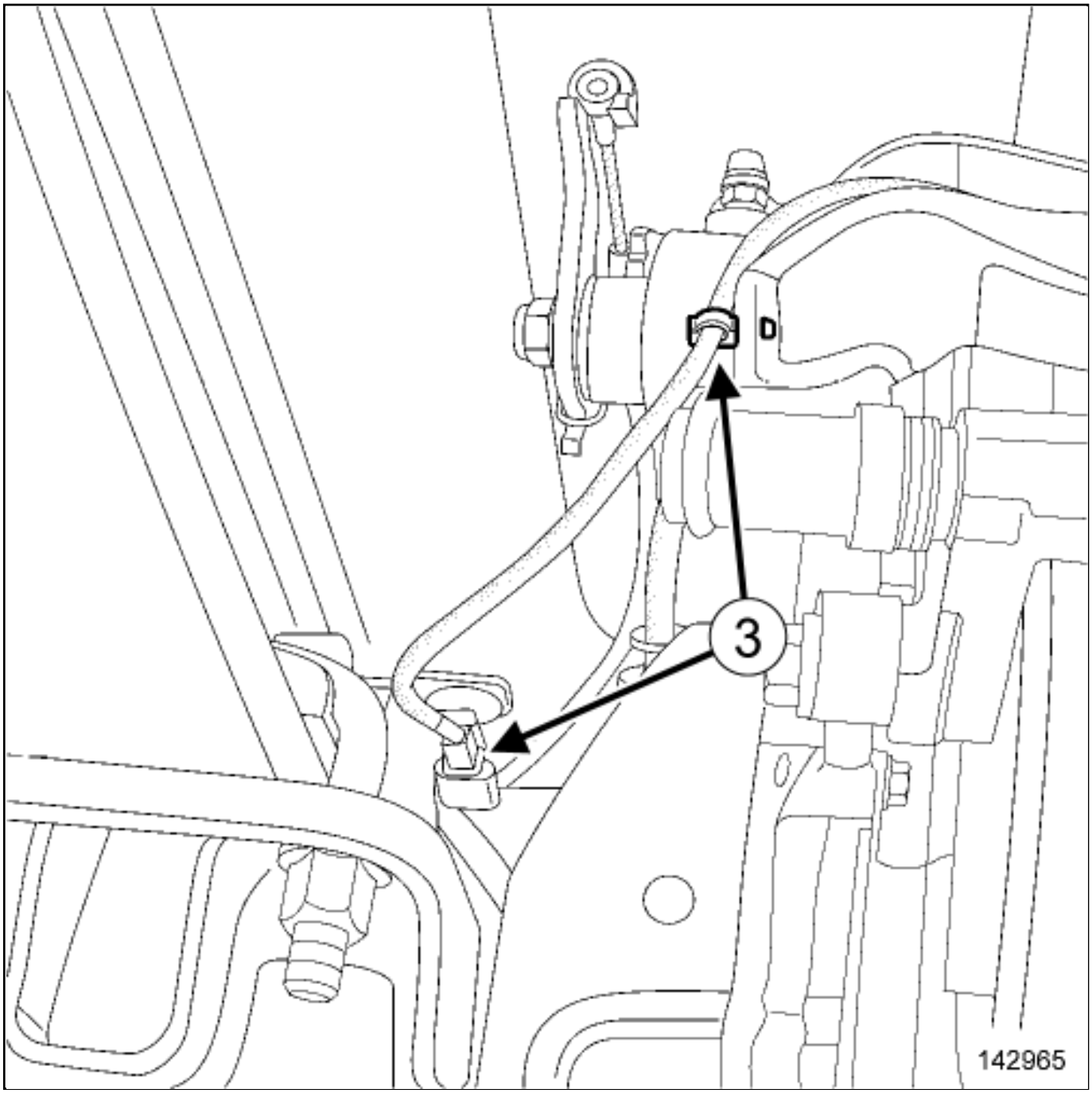


- Mark the position of the rear brake hose cap(1) on the rear axle using an indelible pencil.
- Unclip the rear brake hose cap(1) from the rear axle.

SPECIAL FEATURES OF THE RIGHT-HAND SIDE



- Disconnect the connector(2) from the rear brake pad wear warning light.



- Unclip the wiring of the rear brake pad wear warning light at(3) .

- Remove the calliper mounting bolts of the rear brake calliper(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

- Move aside the "calliper mounting - brake calliper" assembly.

- Attach the "calliper mounting - brake calliper" assembly to the rear leaf spring.

- Remove the rear brake discs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

2. REMOVAL OPERATION

- Remove the rear brake disc protector(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the brake discs using brake cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) and a wire brush.

- Dry the surface of the discs.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR BRAKE DISC: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Brake discs cannot be reground. If there is excessive wear or scoring, the brake discs must be replaced Brake: Specifications .

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting .
- Remove (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :
  - the rear brake pads,
  - the rear calliper mountings.
- Remove the hub carrier(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view)

2. REMOVAL OPERATION

- Remove the brake discs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the discs using brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).
- Dry the surface of the discs.
- Clean the mating faces of the disc on the hub using a wire brush and brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).
- Always replace the brake disc bolts.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR BRAKE DISC: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Brake discs cannot be reground. If there is excessive wear or scoring, the brake discs must be replaced Brake: Specifications .

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear hub carrier assembly: Exploded view .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting .
- Remove Rear brake calliper assembly: Exploded view :
  - the rear brake pads,
  - the rear calliper mountings.
- Remove the hub carrierRear hub carrier assembly: Exploded view

2. REMOVAL OPERATION

- Remove the brake discsRear hub carrier assembly: Exploded view .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the discs using brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).
- Dry the surface of the discs.
- Clean the mating faces of the disc on the hub using a wire brush and brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).
- Always replace the brake disc bolts.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR BRAKE DISC: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Brake discs cannot be reground. If there is excessive wear or scoring, the brake discs must be replaced Brake: Specifications .

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting .
- Remove (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :
  - the rear brake pads,
  - the rear calliper mountings.
- Remove the hub carrier(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view)

2. REMOVAL OPERATION

- Remove the brake discs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the discs using brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).
- Dry the surface of the discs.
- Clean the mating faces of the disc on the hub using a wire brush and brake cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).
- Always replace the brake disc bolts.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR BRAKE HOSE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
pedal press
indelible pencil

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

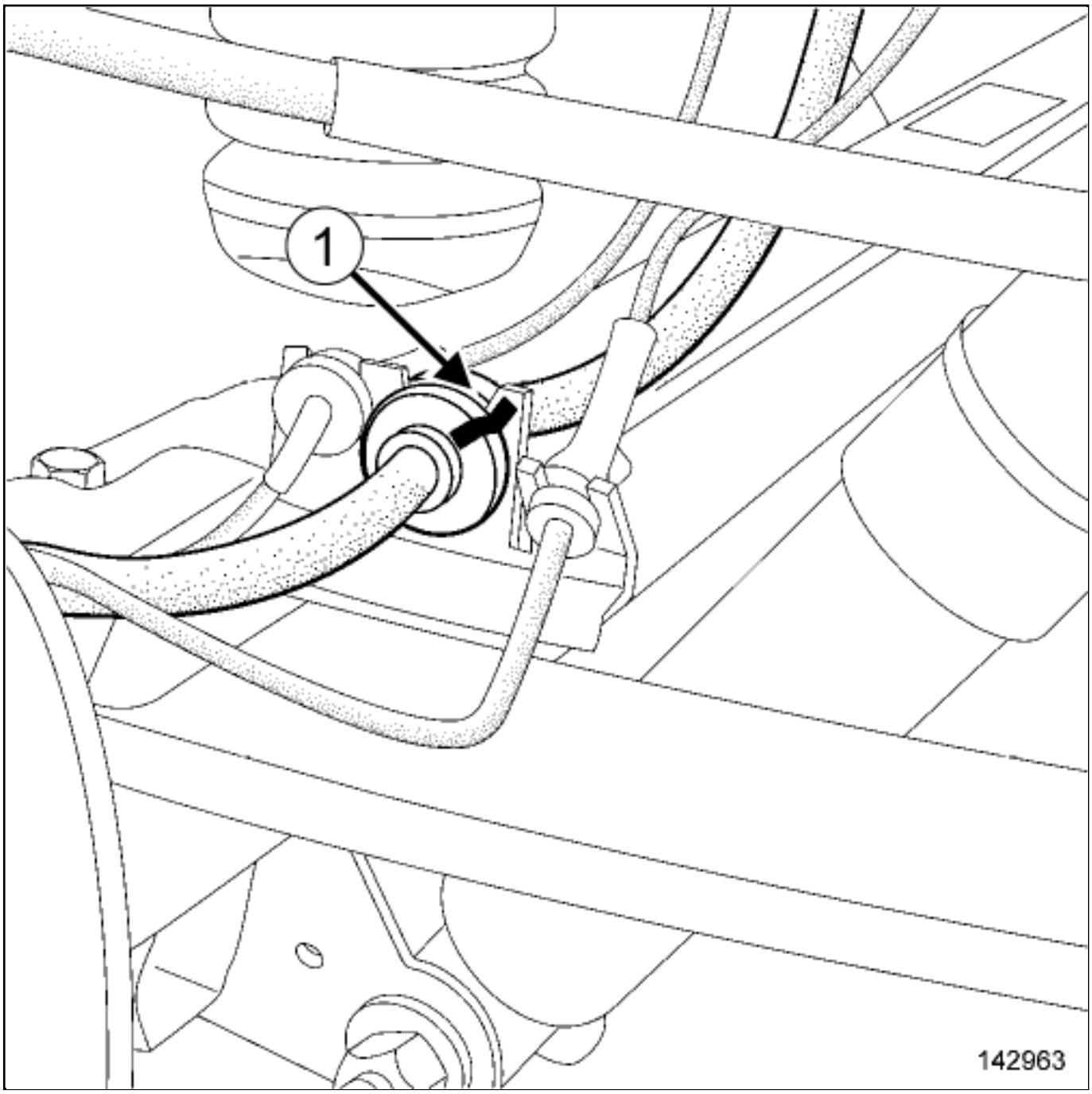
1. REMOVAL PREPARATION OPERATION

Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

Remove the rear wheelsWheel: Removal - Refitting .

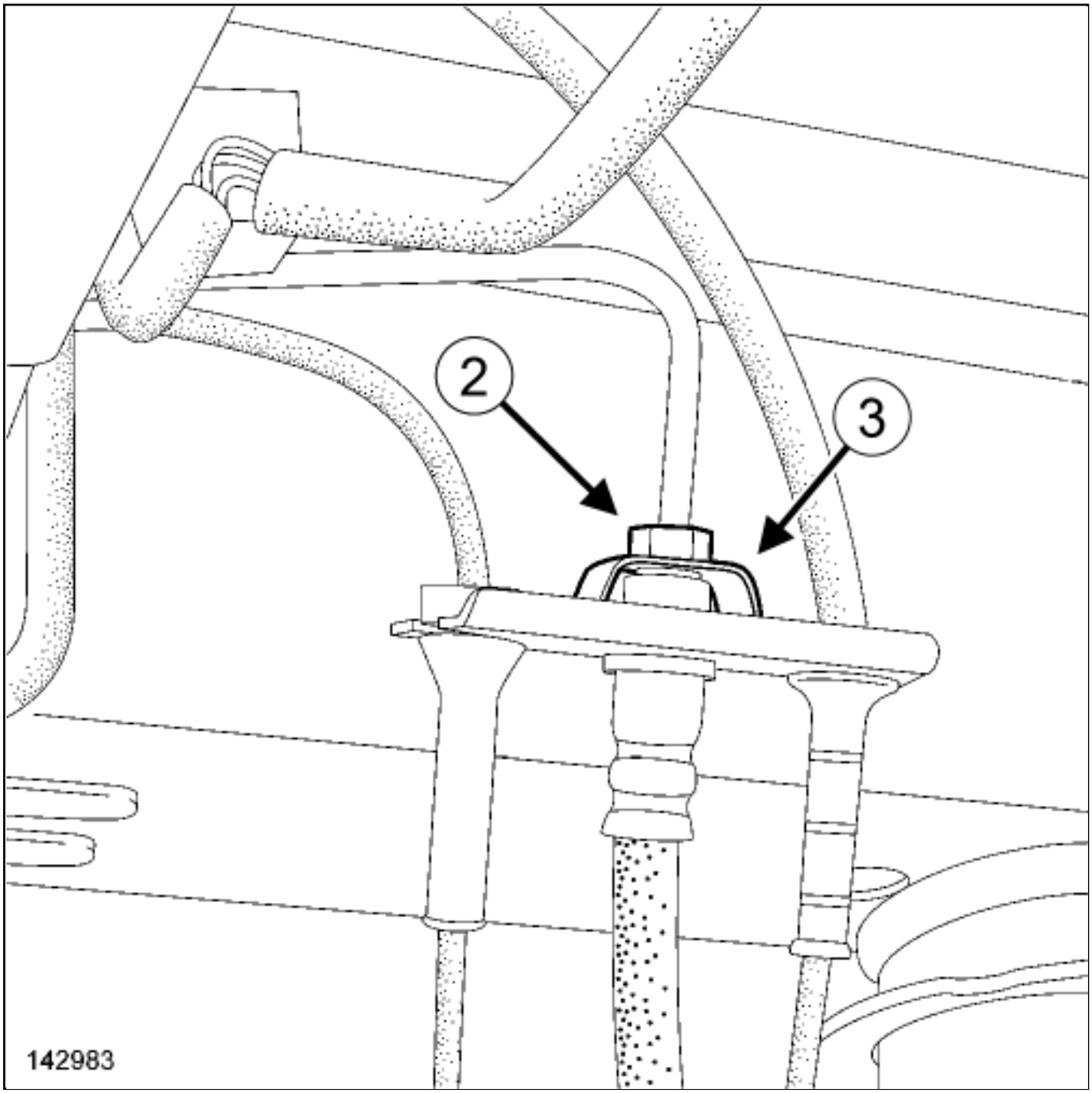
Position a pedal presson the brake pedal to limit the outflow of brake fluid.

2. REMOVAL OPERATION

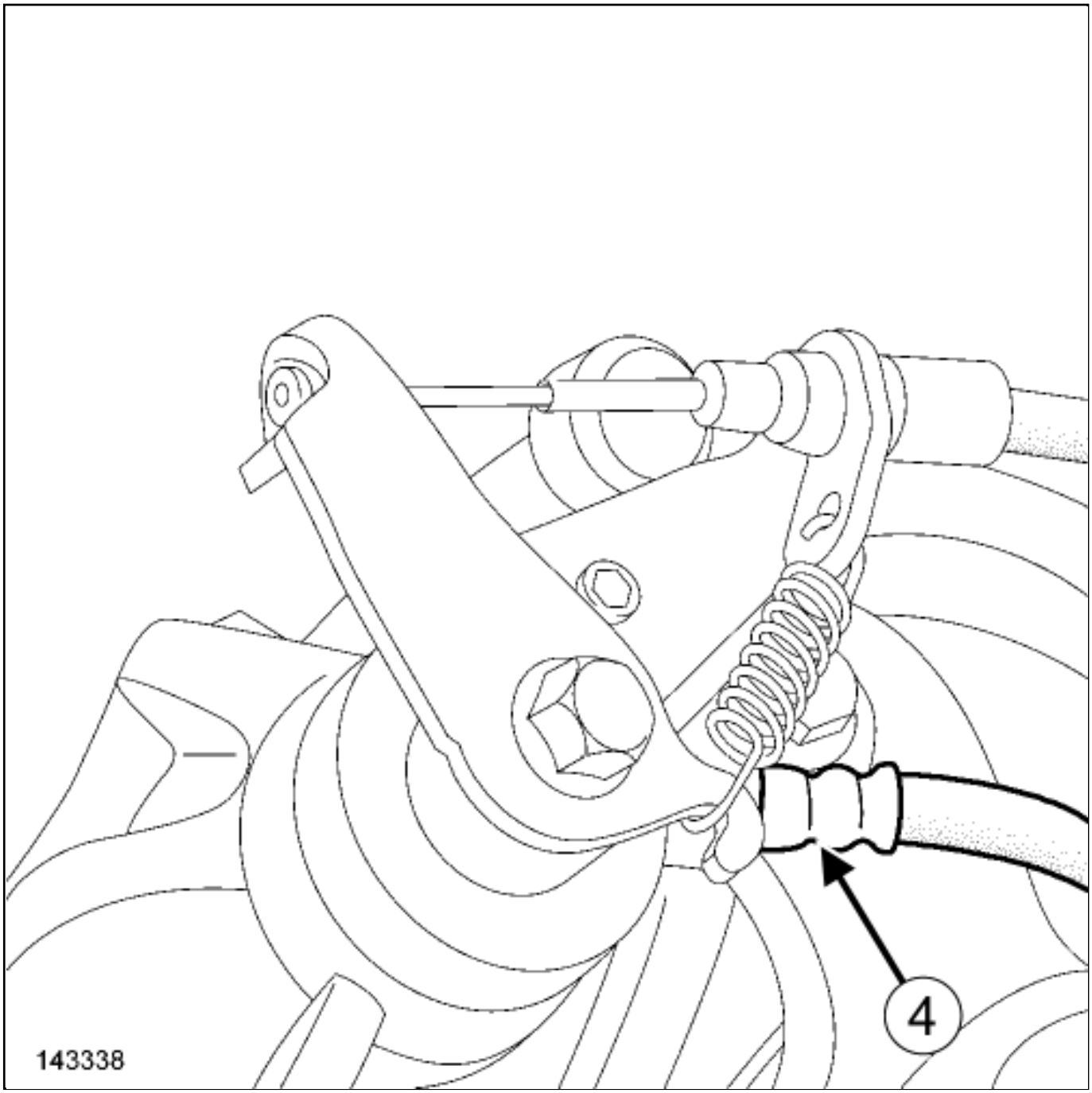


- If reusing the hose, mark the position of the rear brake hose cap(1) on the rear axle using an indelible pencil .

- Unclip the rear brake hose cap(1) from the rear axle.



- Undo the rear brake hose union(2) from the rigid pipe union.
- Remove the rear brake hose retaining fork(3) .



- Undo the rear brake hose union(4) from the rear brake calliper.

- Insert the blanking plugs.

- Remove the rear brake hose.

REFITTING

1. REFITTING OPERATION

- Remove the blanking plugs.

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

CAUTION

In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

- Refit the rear brake hose at the rear brake calliper end.
- Torque tighten the rear brake hose union on the rear brake calliper17 N.m.
- Refit:
  - the rear brake hose retaining fork,
  - the rear brake hose on the rigid pipe union.
- Torque tighten the rear brake hose union on the rigid pipe union14 N.m.

Clip the rear brake hose cap onto the rear axle, aligning the marks made using an indelible pencil.

2. FINAL OPERATION

- Remove the pedal press from the brake pedal.
- Refit the rear wheels **Wheel: Removal - Refitting** .
- Bleed the braking circuit **Braking circuit: Bleed** .

REAR BRAKE PADS: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Support plate for pushing back the brake calliper piston	Fre. 1939

Equipment required
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

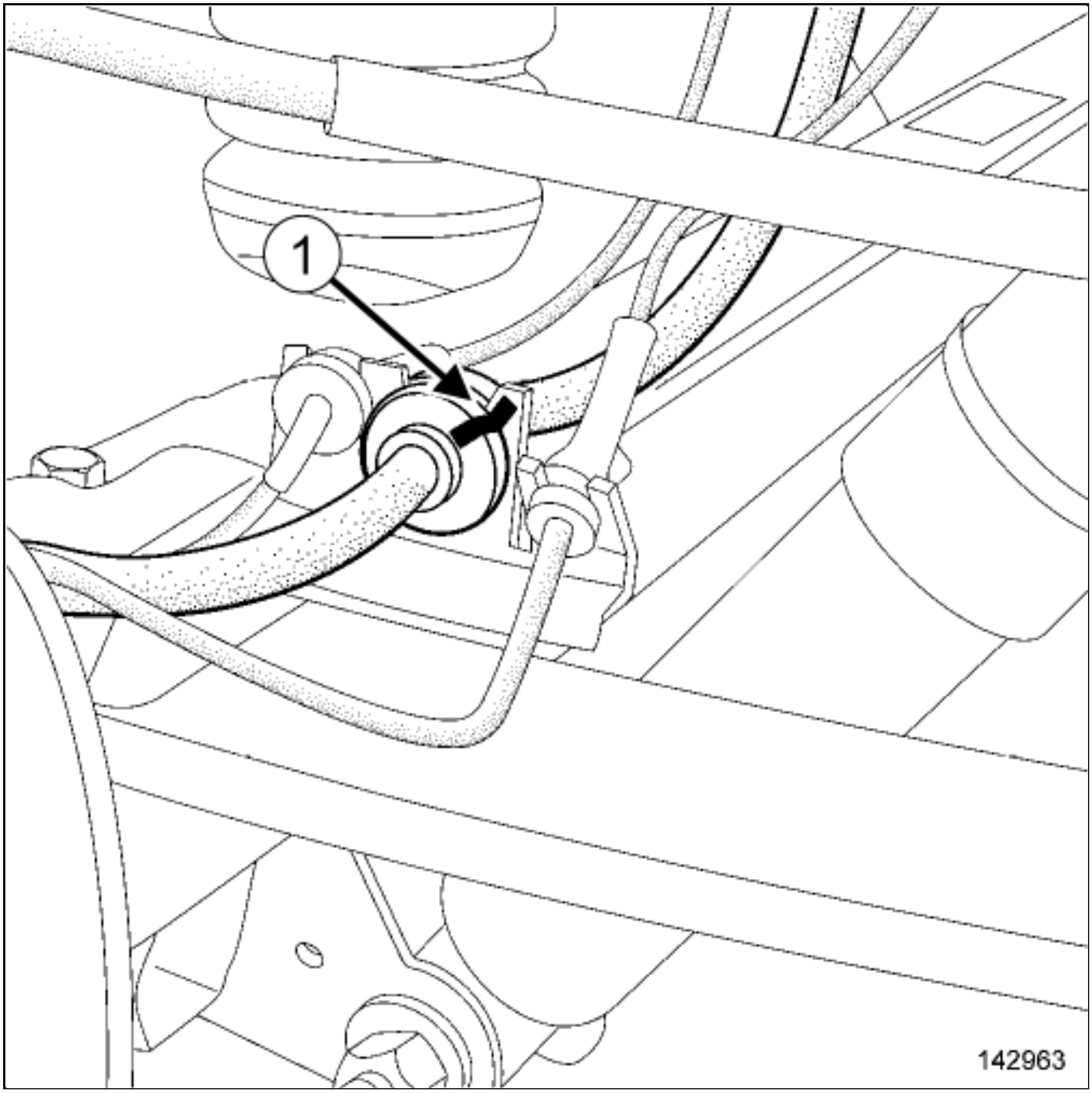
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

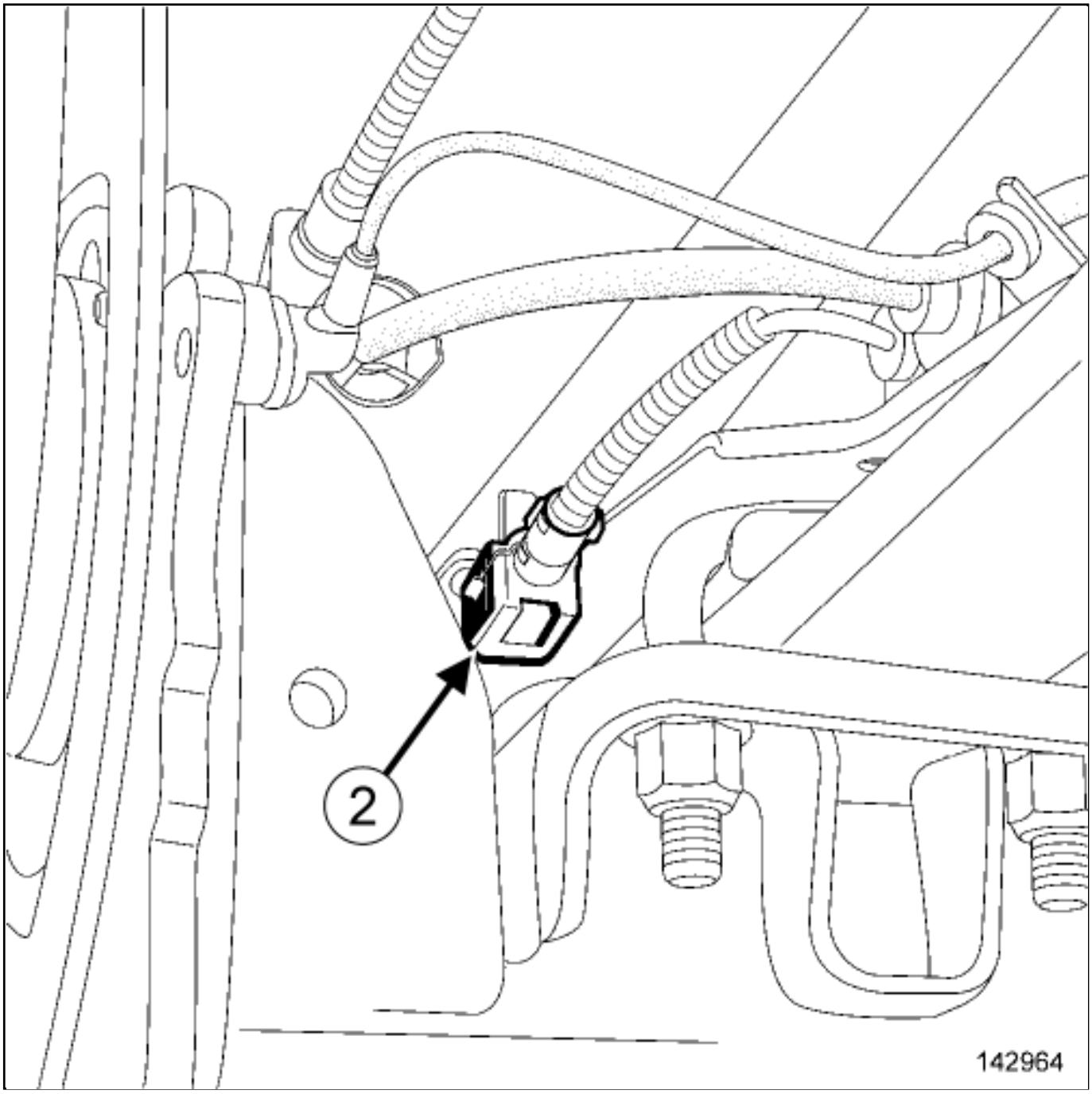
- Remove the rear wheelsWheel: Removal - Refitting .

2. REMOVAL OPERATION

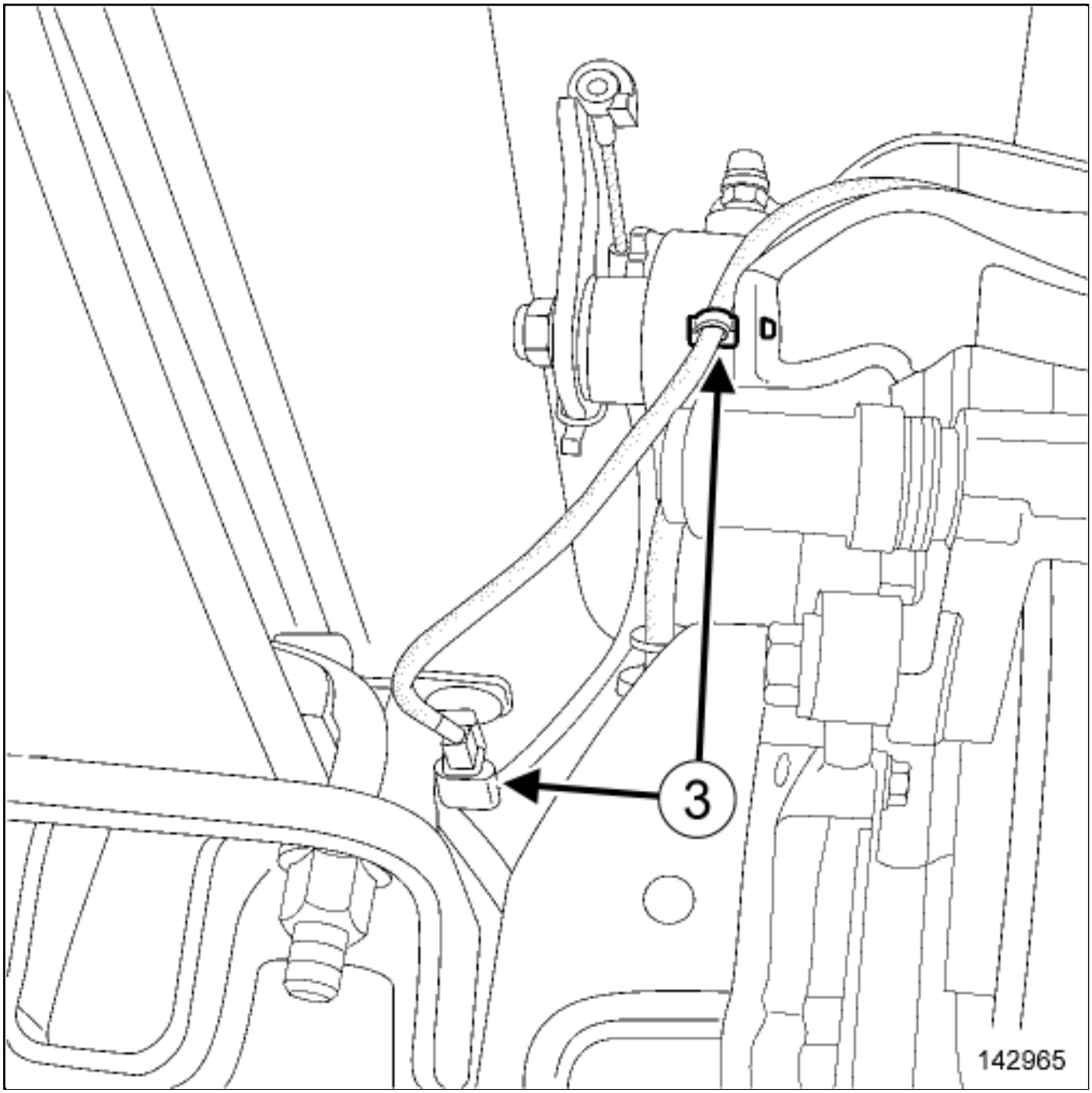


- Mark the position of the rear brake hose cap(1) on the rear axle using an indelible pencil.
- Unclip the rear brake hose cap(1) from the rear axle.

SPECIAL FEATURES OF THE RIGHT-HAND SIDE



- Disconnect the connector(2) of the rear brake pad wear warning light.

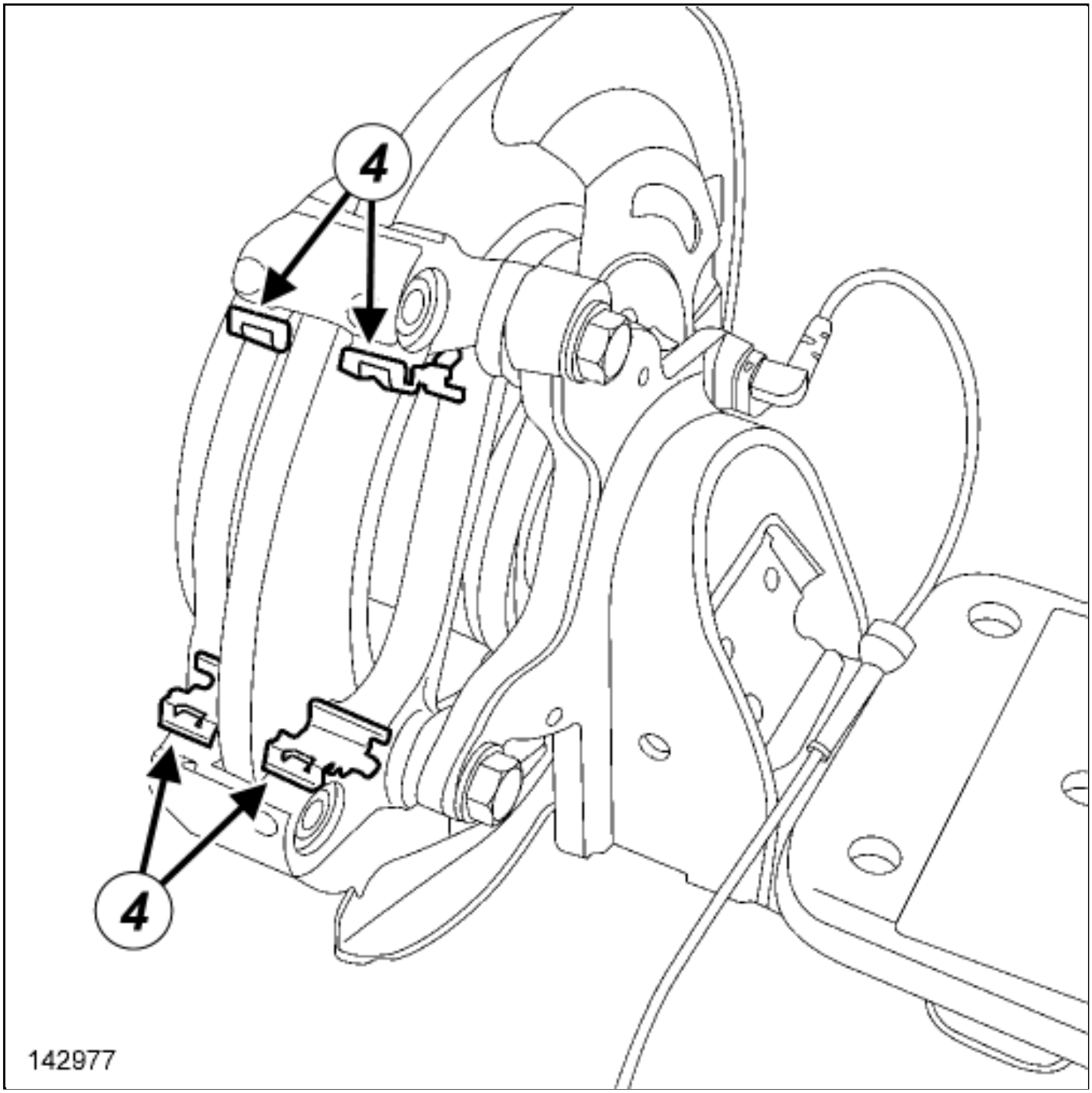


- Unclip the cable of the rear brake pad wear warning light at(3) .

- Remove (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :
  - the lower guide pin bolt cap,
  - the lower guide pin bolt.

- Tilt the rear brake calliper.

- Remove the rear brake pads(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .



Remove the noise reducing fins(4) .

REFITTING

1. REFITTING PREPARATION OPERATION

Measure the thickness of the brake pads and compare them with the minimum values Brake:

Specifications .

Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

Always replace the noise reducing fins of the rear brake pads.

Clean using a wire brush and brake cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products):

- the rear calliper mountings,
- the rear callipers.

Push the rear brake calliper piston to the end of its housing using the toolSupport plate for pushing back the brake calliper piston(Fre. 1939) .

2. REFITTING OPERATION

Refit (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :

- new noise reducing fins,
- the rear brake pads.

Proceed in the reverse order to removal.

Clip the rear brake hose cap onto the rear axle, aligning the marks made using an indelible pencil.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Repair-13x03x04x05-01x37-1-31-1.xml

XSL version : 3.02 du 22/07/11

REAR BRAKE PADS: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Support plate for pushing back the brake calliper piston	Fre. 1939

Equipment required
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

- In order not to damage the brake hose:
  - do not tension the hose,
  - do not twist the hose,
  - check that there is no contact with the surrounding components.

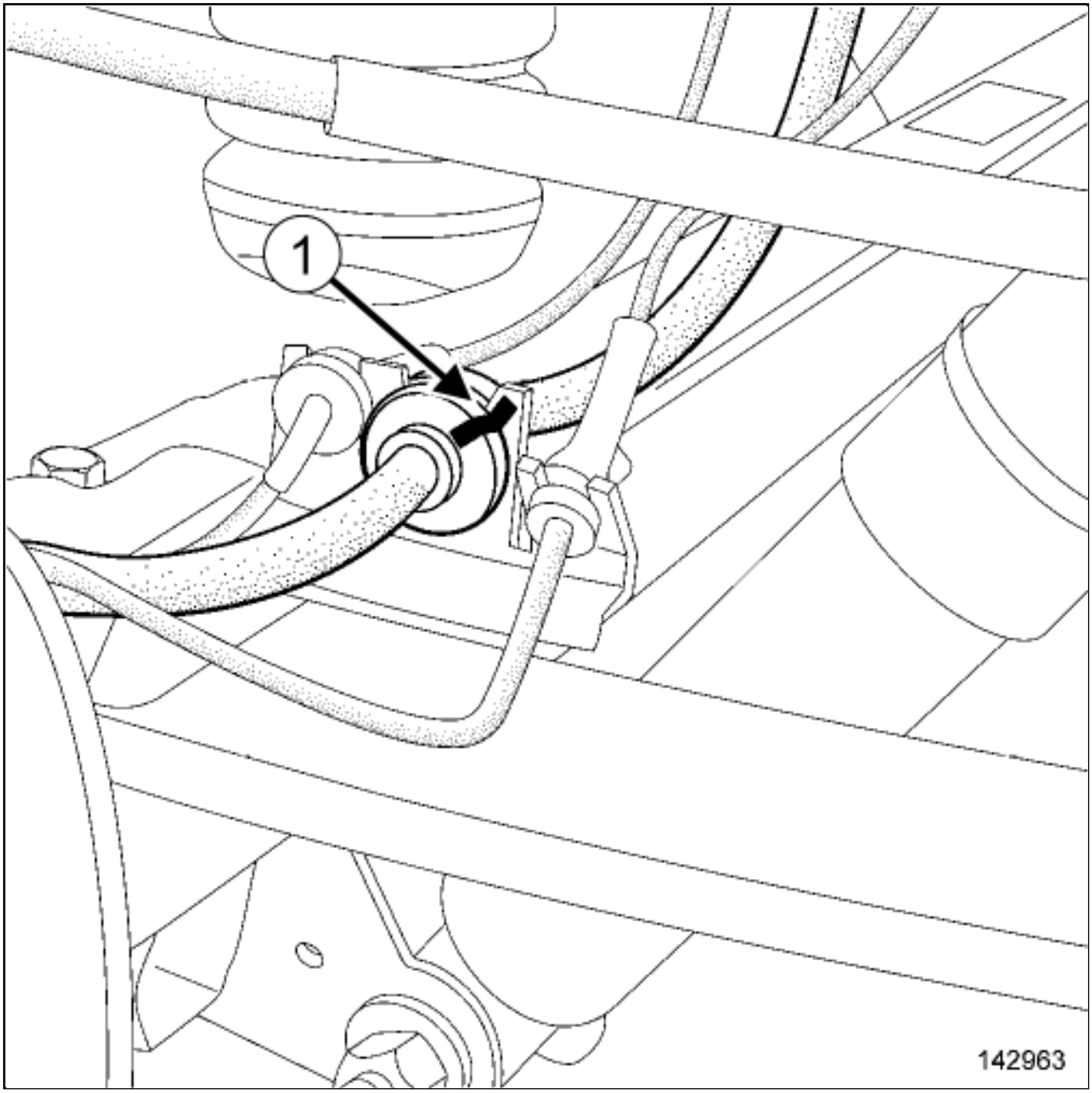
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

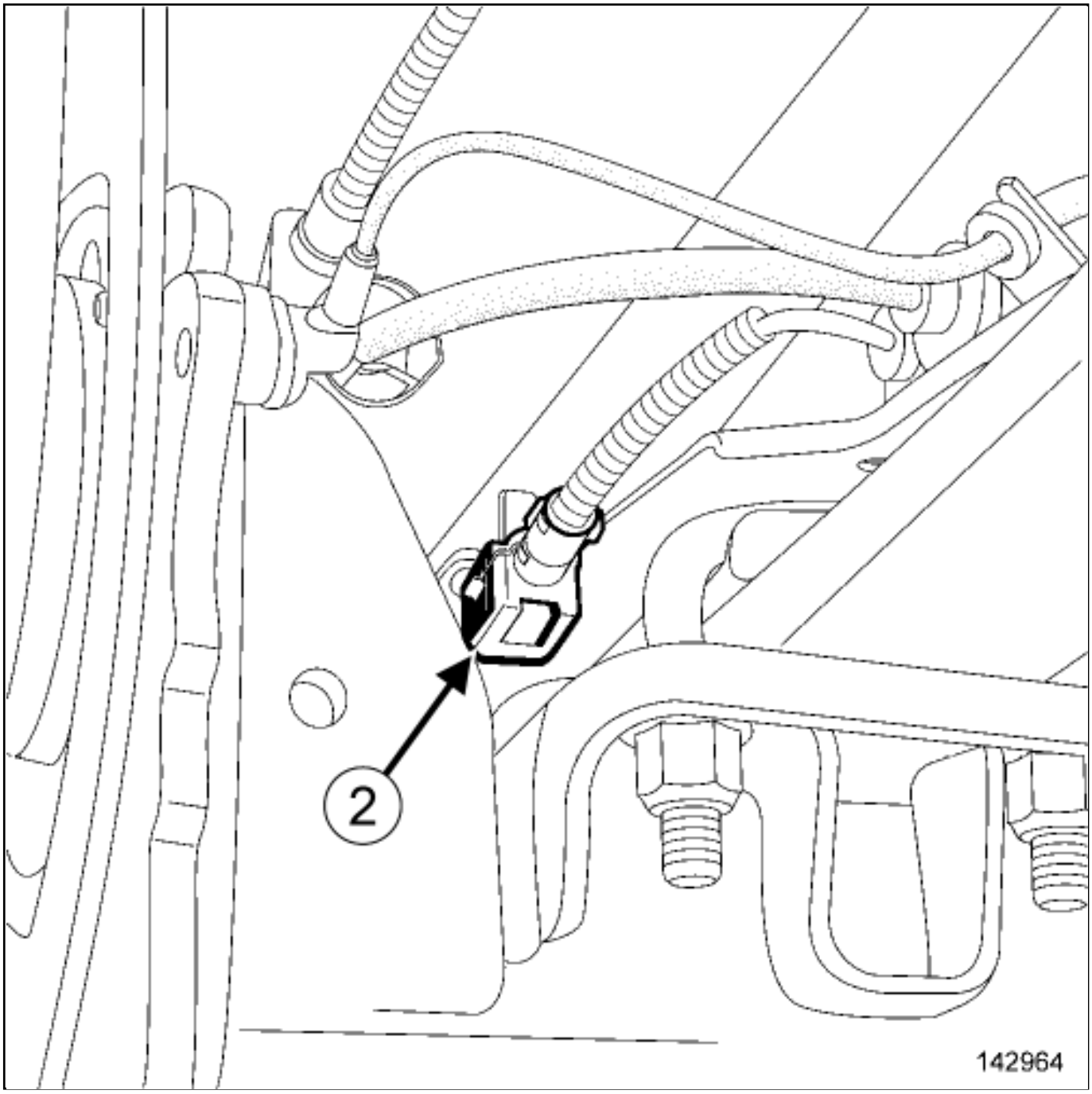
- Remove the rear wheelsWheel: Removal - Refitting .

2. REMOVAL OPERATION

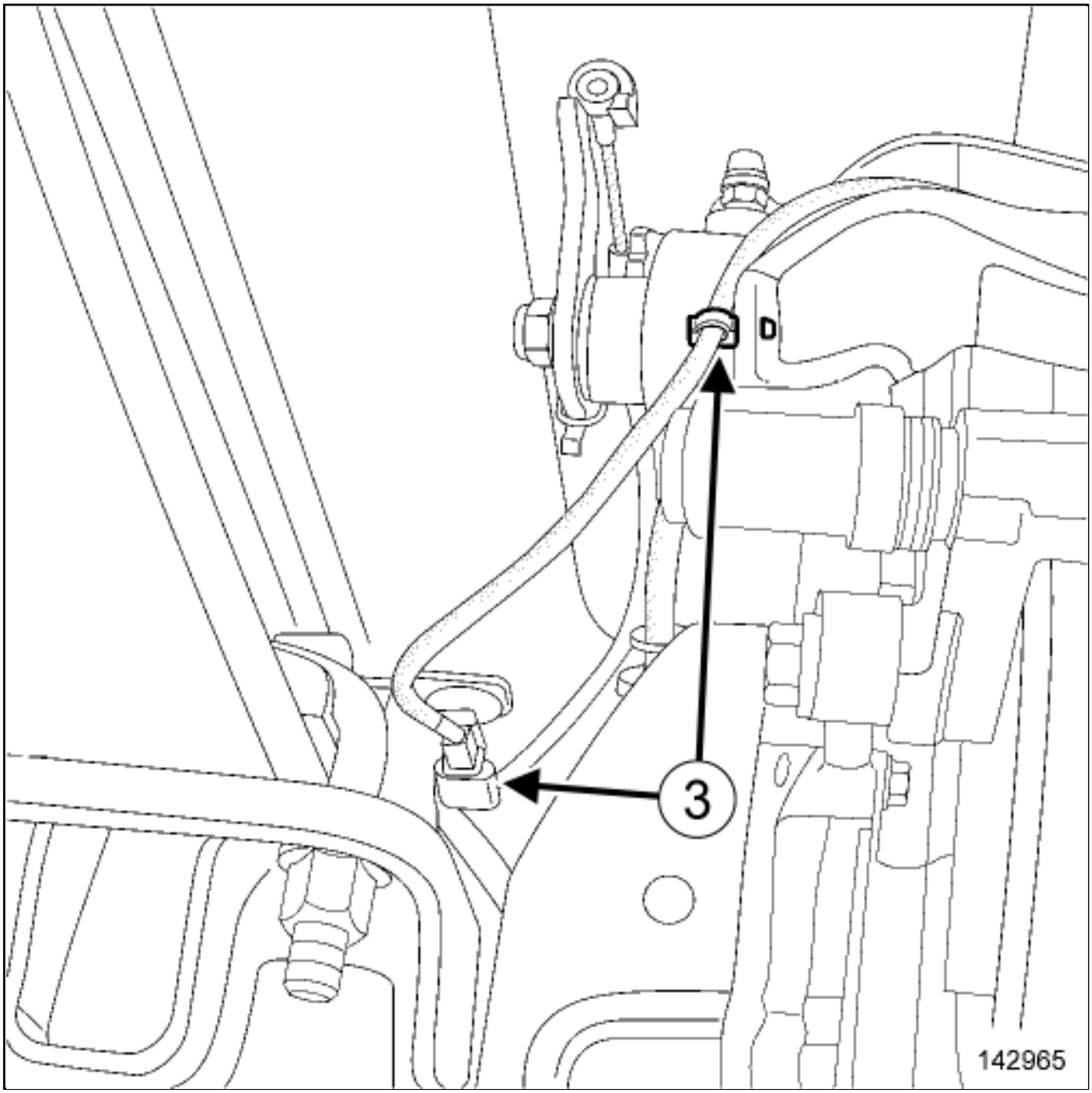


- Mark the position of the rear brake hose cap(1) on the rear axle using an indelible pencil.
- Unclip the rear brake hose cap(1) from the rear axle.

SPECIAL FEATURES OF THE RIGHT-HAND SIDE



- Disconnect the connector(2) of the rear brake pad wear warning light.

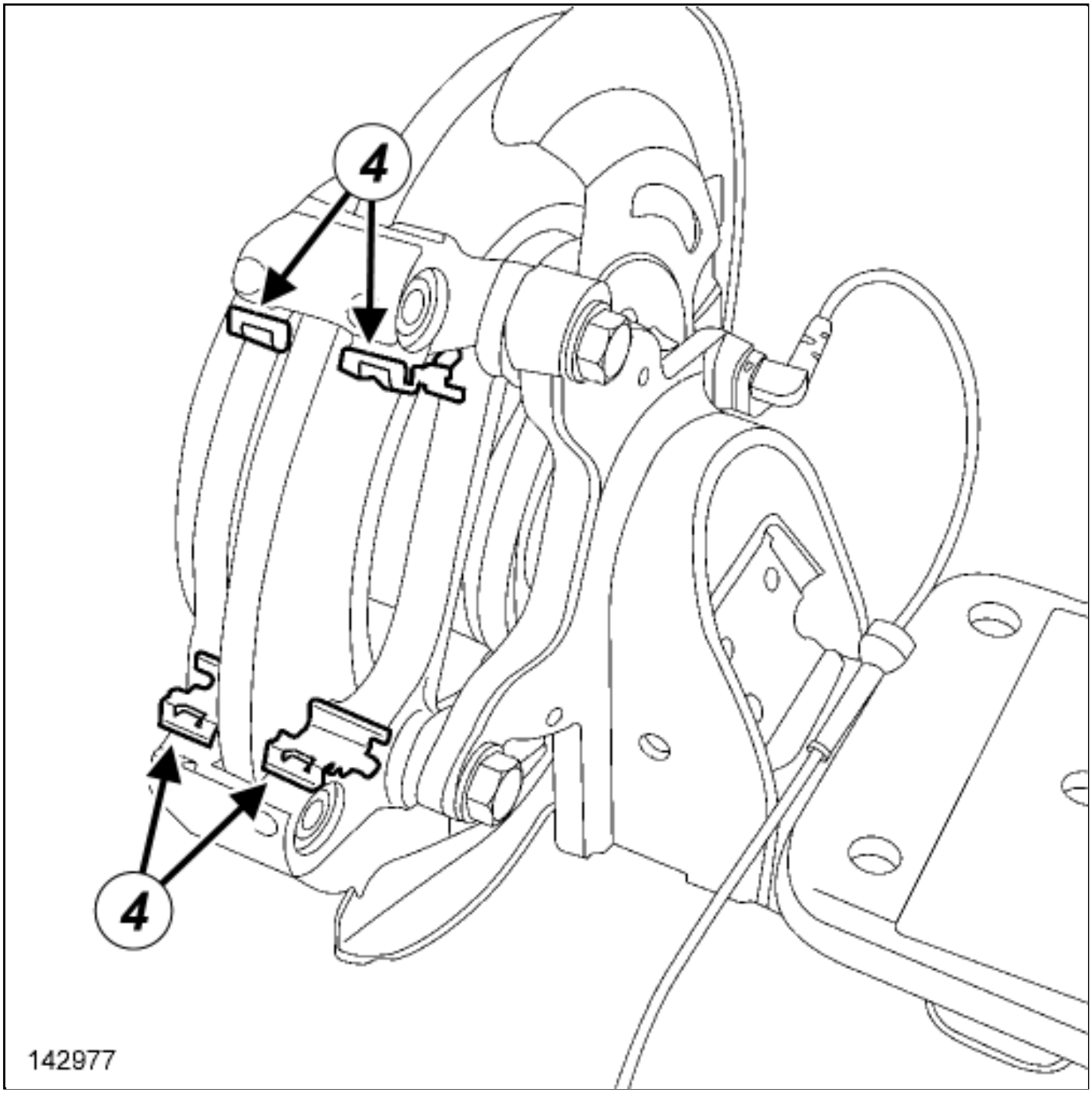


- Unclip the cable of the rear brake pad wear warning light at(3) .

- Remove (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :
  - the lower guide pin bolt cap,
  - the lower guide pin bolt.

- Tilt the rear brake calliper.

- Remove the rear brake pads(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .



Remove the noise reducing fins(4) .

REFITTING

1. REFITTING PREPARATION OPERATION

Measure the thickness of the brake pads and compare them with the minimum values Brake:

Specifications .

Do not allow friction materials to come into contact with grease, oil or other lubricants and cleaning products which are mineral oil based.

Always replace the noise reducing fins of the rear brake pads.

Clean using a wire brush and brake cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products):

- the rear calliper mountings,
- the rear callipers.

Push the rear brake calliper piston to the end of its housing using the toolSupport plate for pushing back the brake calliper piston(Fre. 1939) .

2. REFITTING OPERATION

Refit (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :

- new noise reducing fins,
- the rear brake pads.

Proceed in the reverse order to removal.

Clip the rear brake hose cap onto the rear axle, aligning the marks made using an indelible pencil.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

Repair-13x03x04x05-01x37-1-31-1.xml

XSL version : 3.02 du 22/07/11

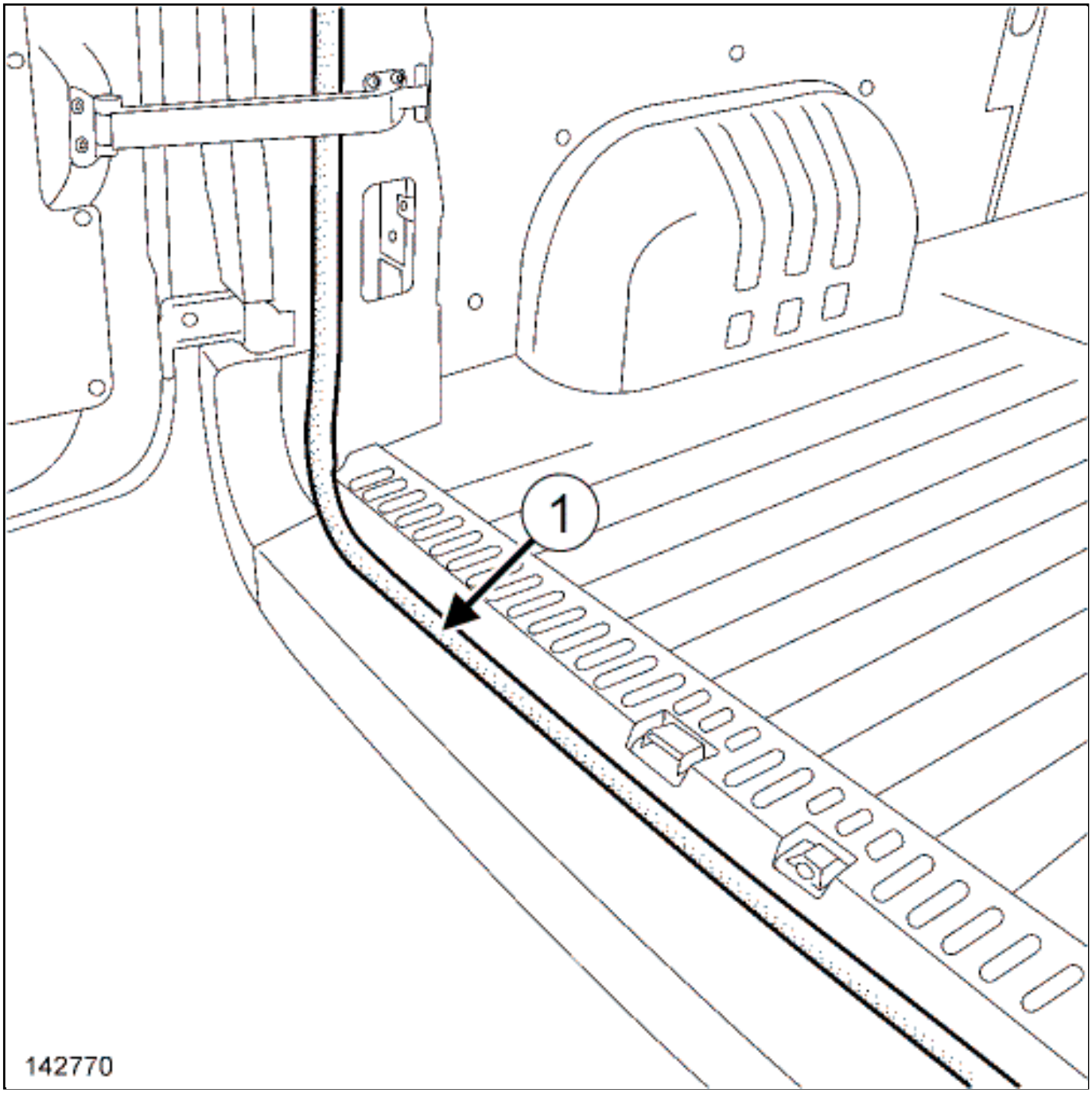
REAR BUMPER: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

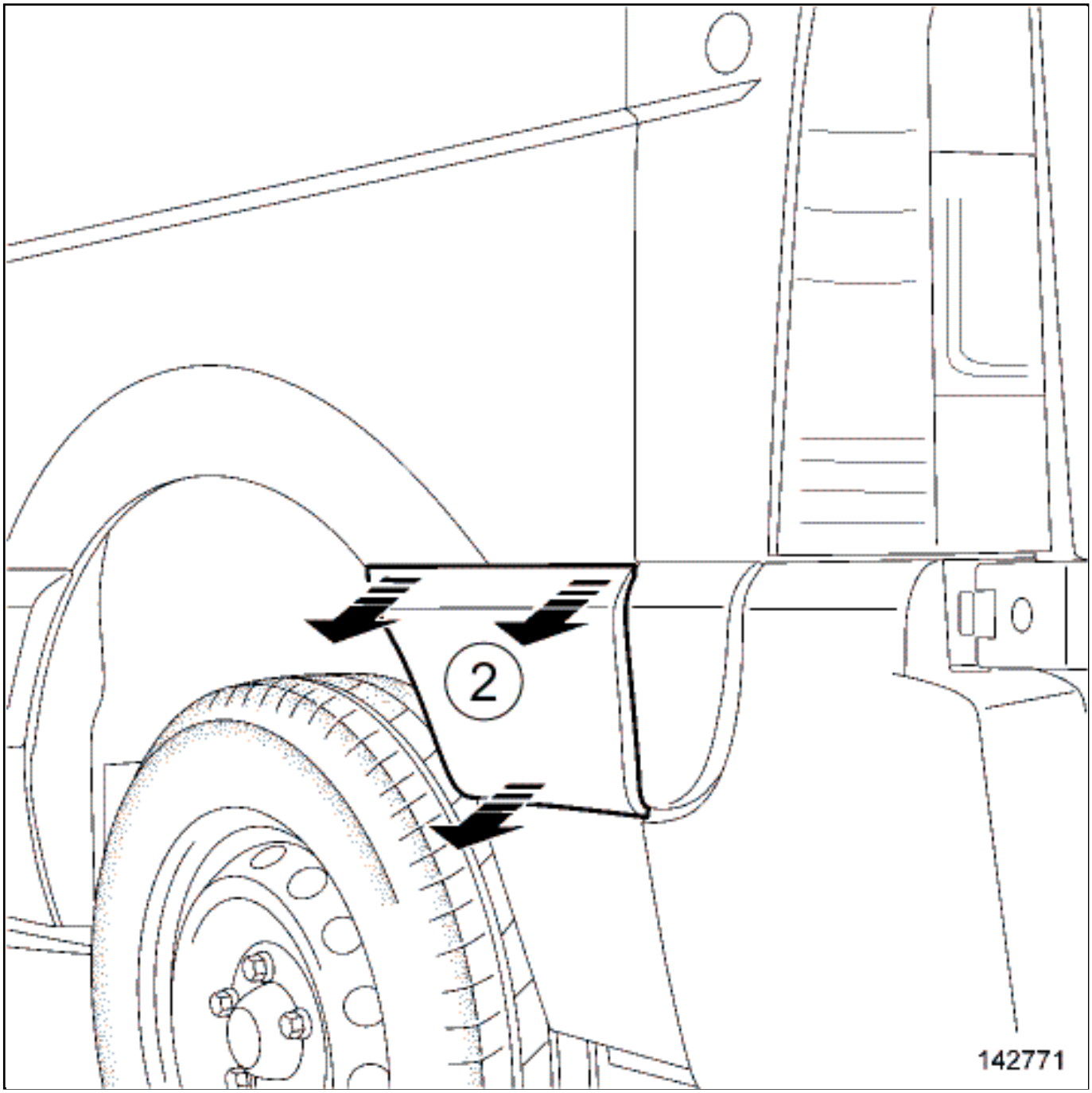
REMOVAL

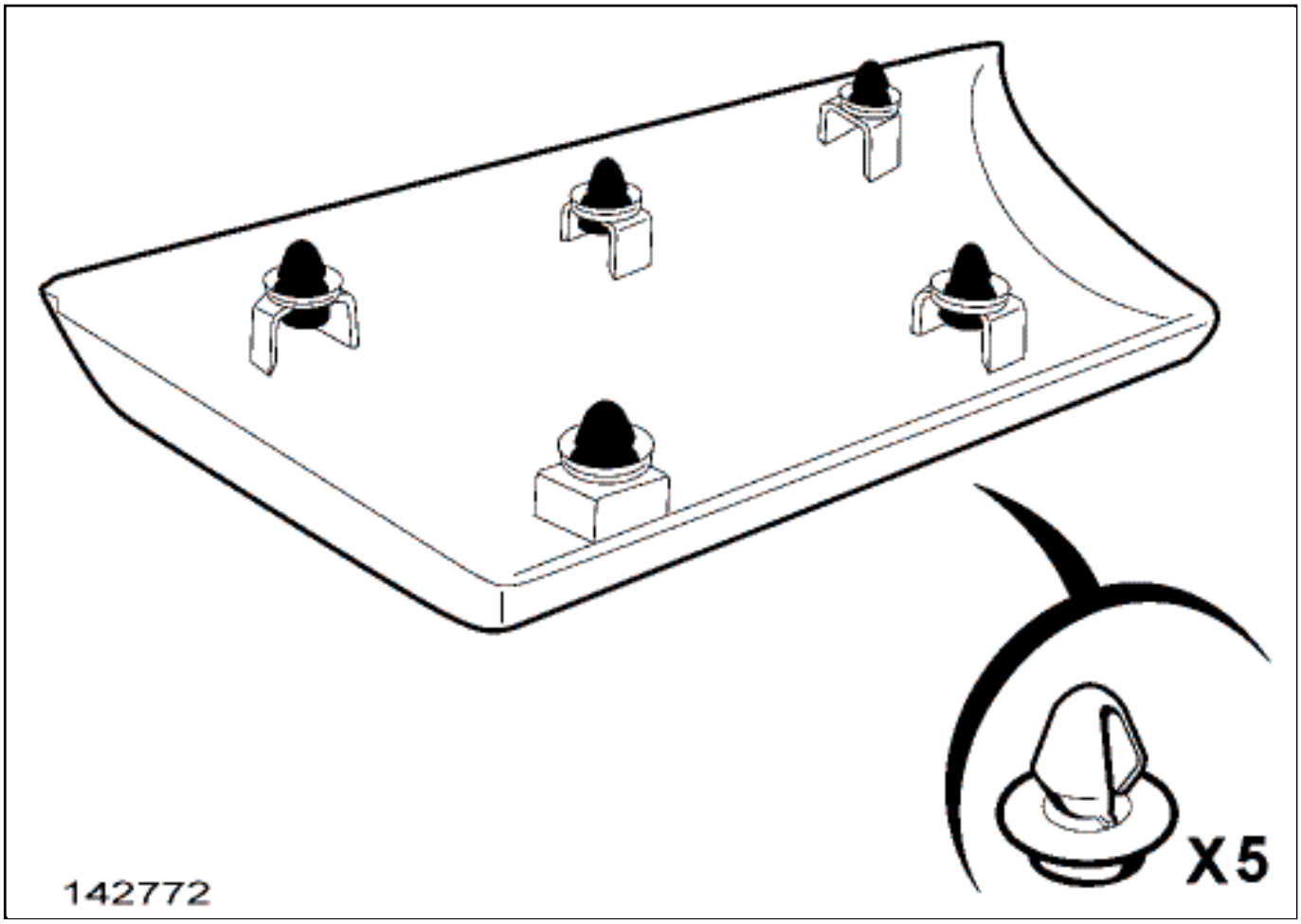
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Open the rear loading doors.



- Partially detach the lower section of the rear loading door seal(1) .

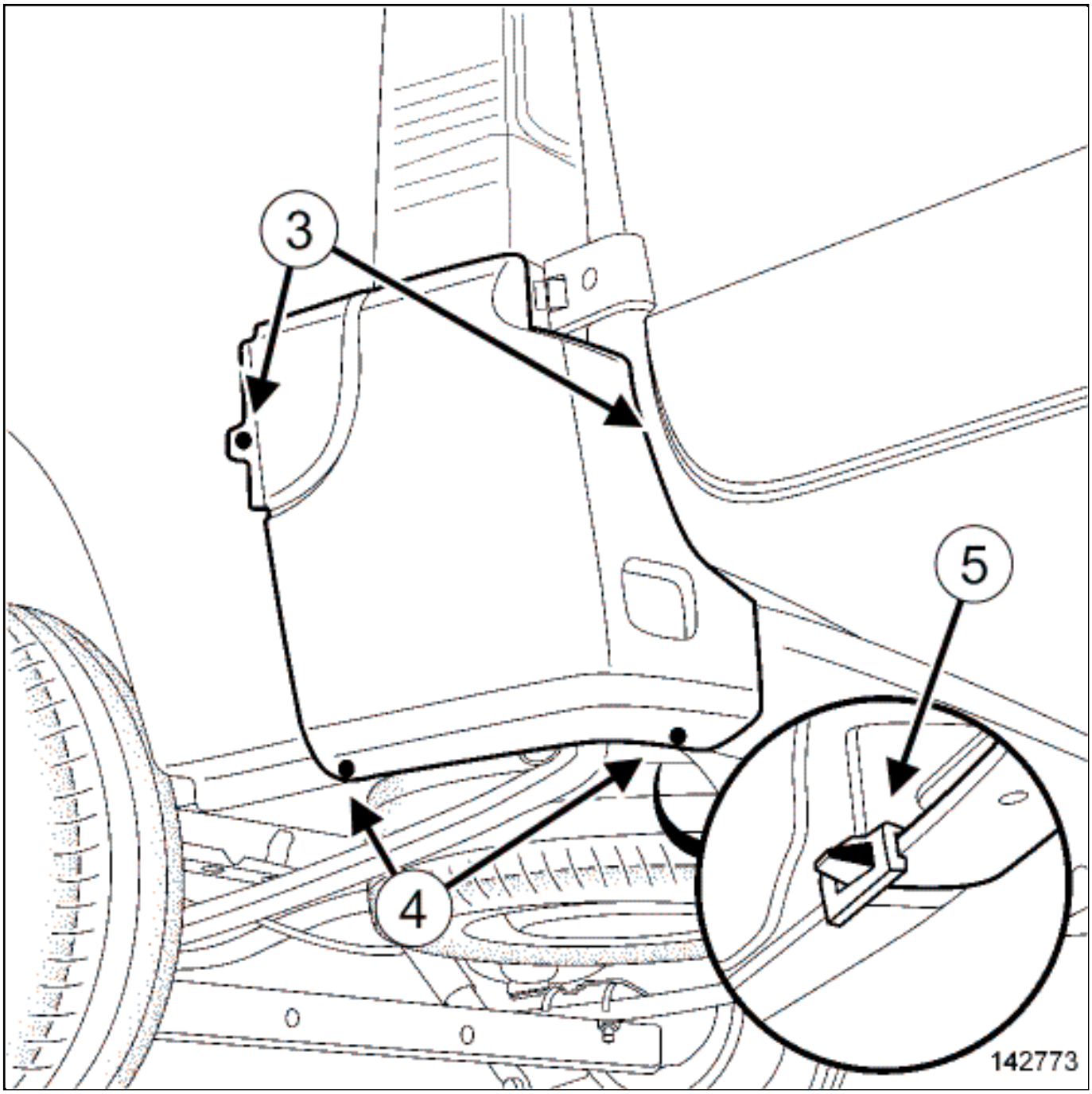

2
142771



Unclip the protective strips of the sill panel rear section by(2) using the toolSet of trim removal levers. (Car. 1363) .

2. REMOVAL OPERATION

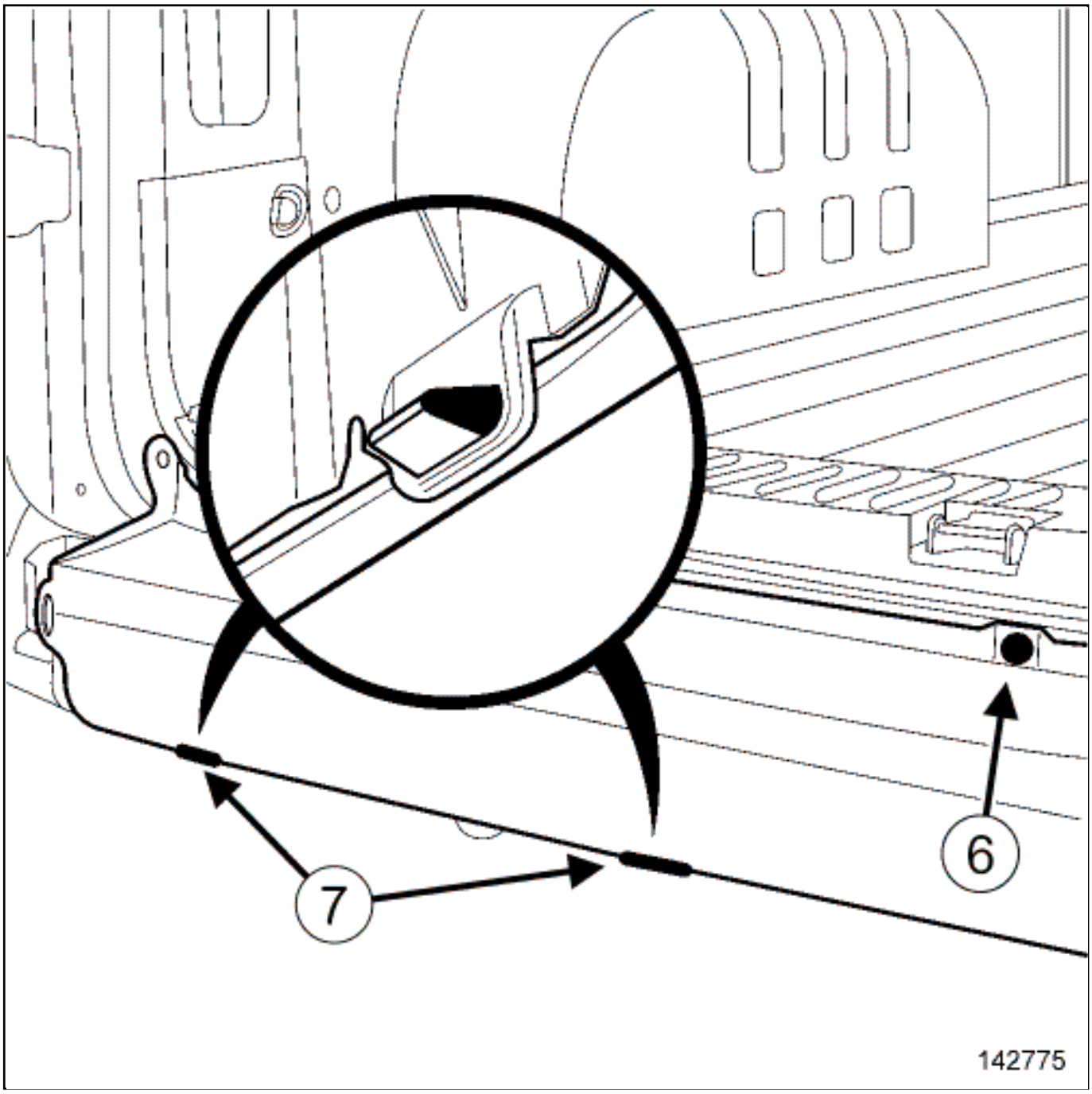
1- SIDE SECTIONS OF THE REAR BUMPER



Remove:

- the bolts(3) ,
- the plastic rivets(4) .

Unclip the side sections of the rear bumper at(5) .



- Remove the bolt(6) .
- Unclip the centre section of the rear bumper at(7) .
- Disconnect the rear proximity radar connectors.

Remove the centre section of the rear bumper.

REFITTING

Proceed in the reverse order to removal.

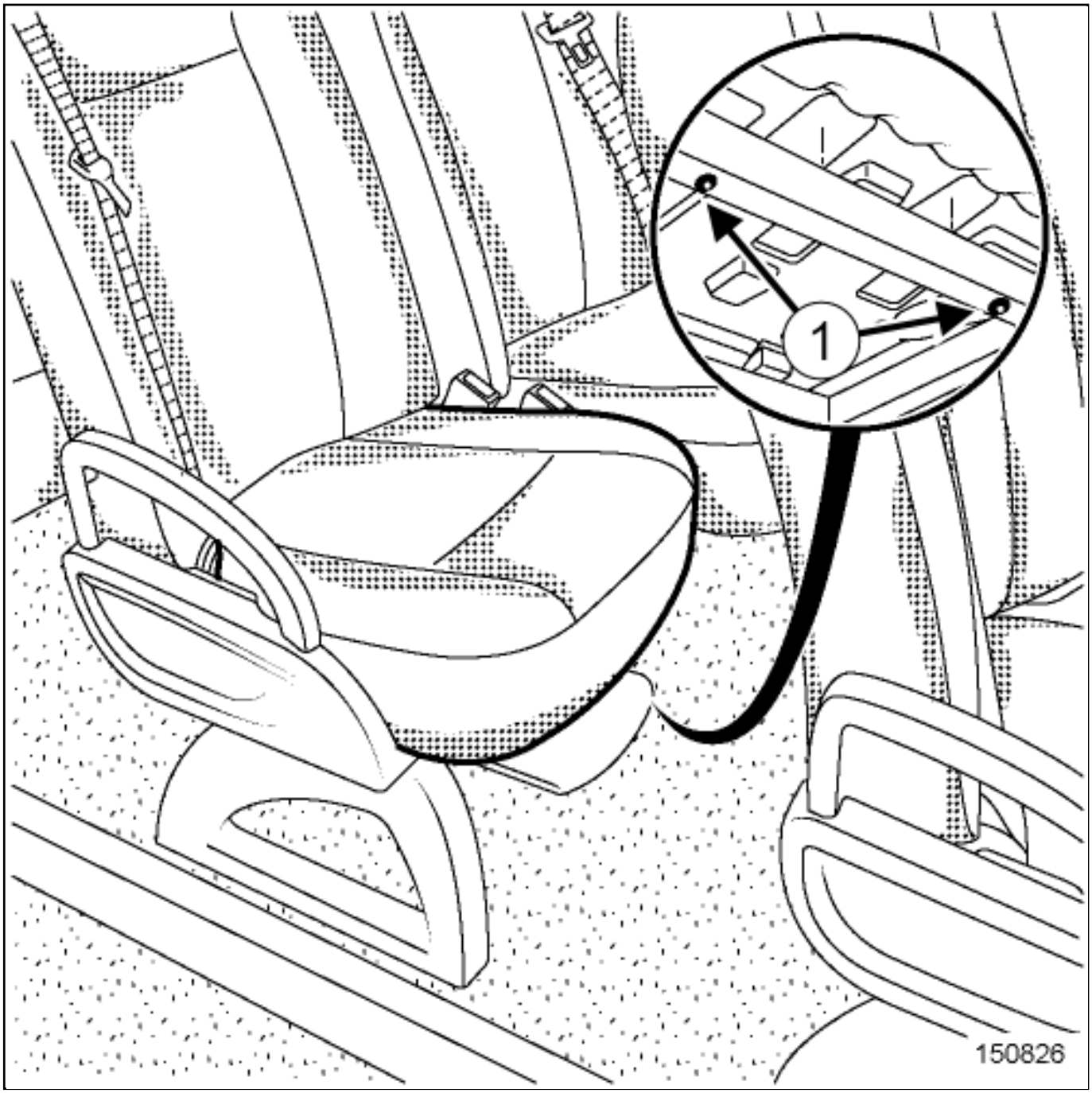
Repair-50x05x04-01x37-1-29-1.xml

XSL version : 3.02 du 22/07/11

REAR CENTRE SEAT BELT: REMOVAL - REFITTING

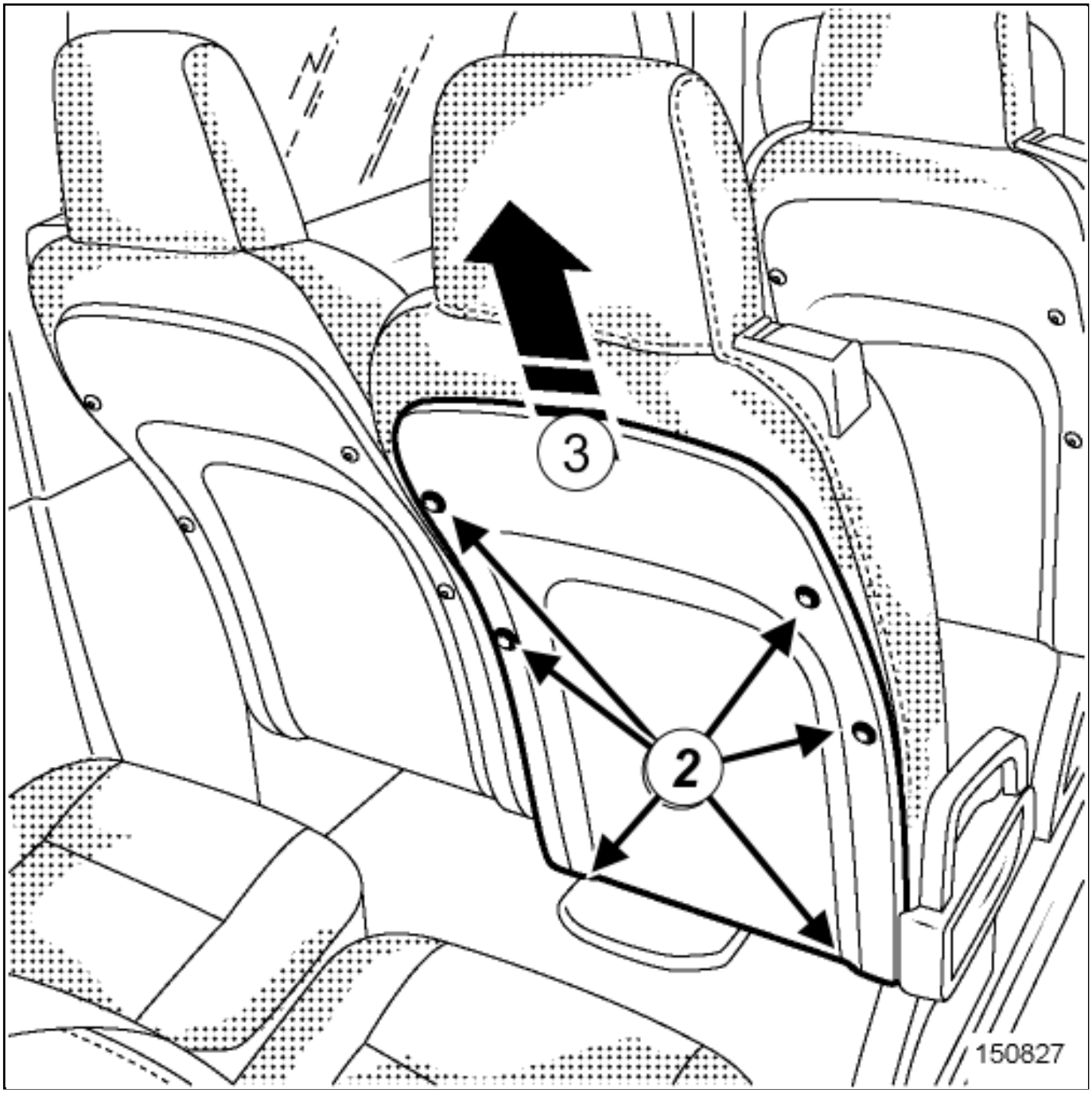
REMOVAL

1. REMOVAL PREPARATION OPERATION



Remove:

- the bolts(1) ,
- the rear seat base.

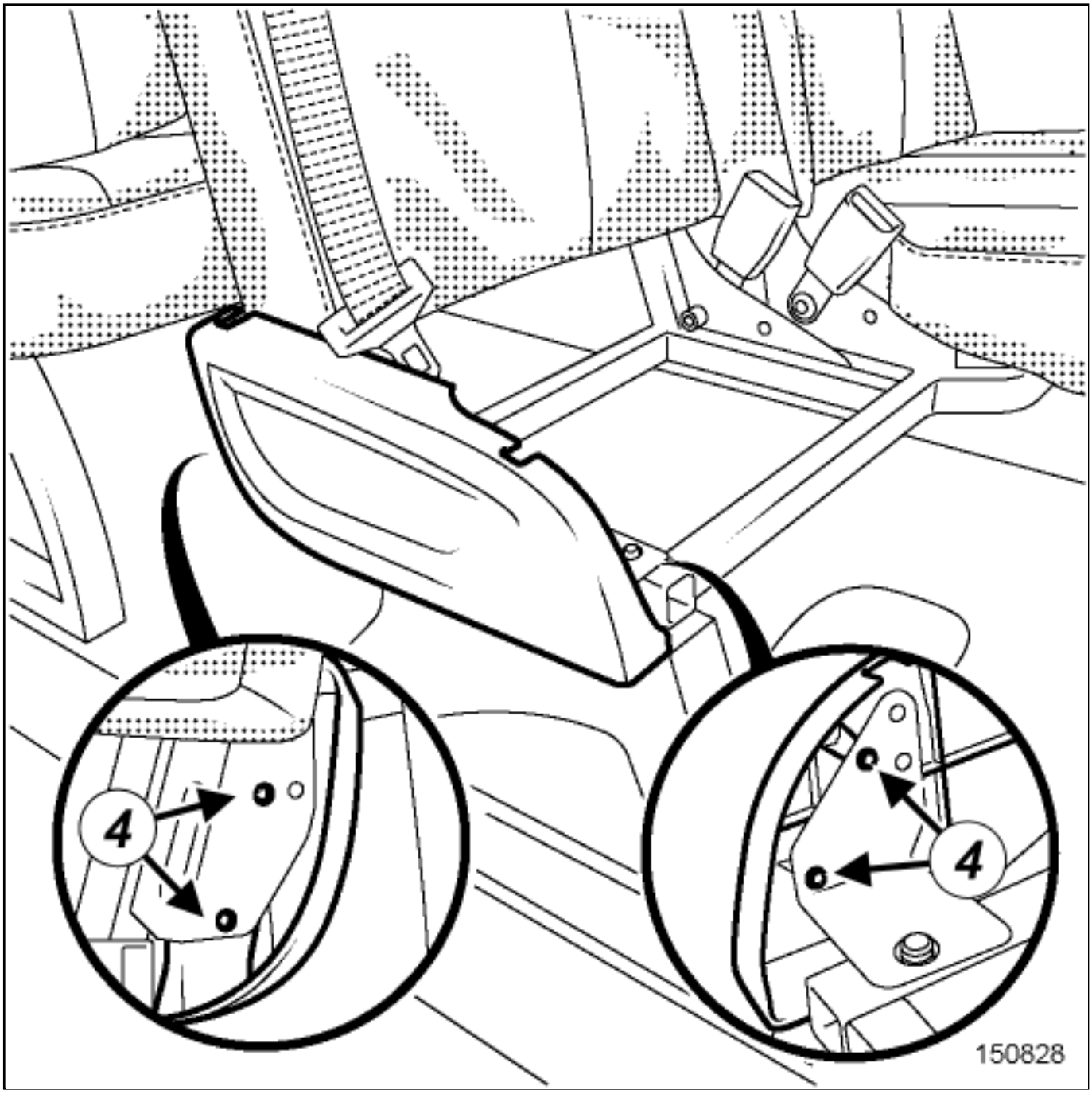


- Unclip the blanking covers(2) .
- Remove the bolts(2) .

Note:

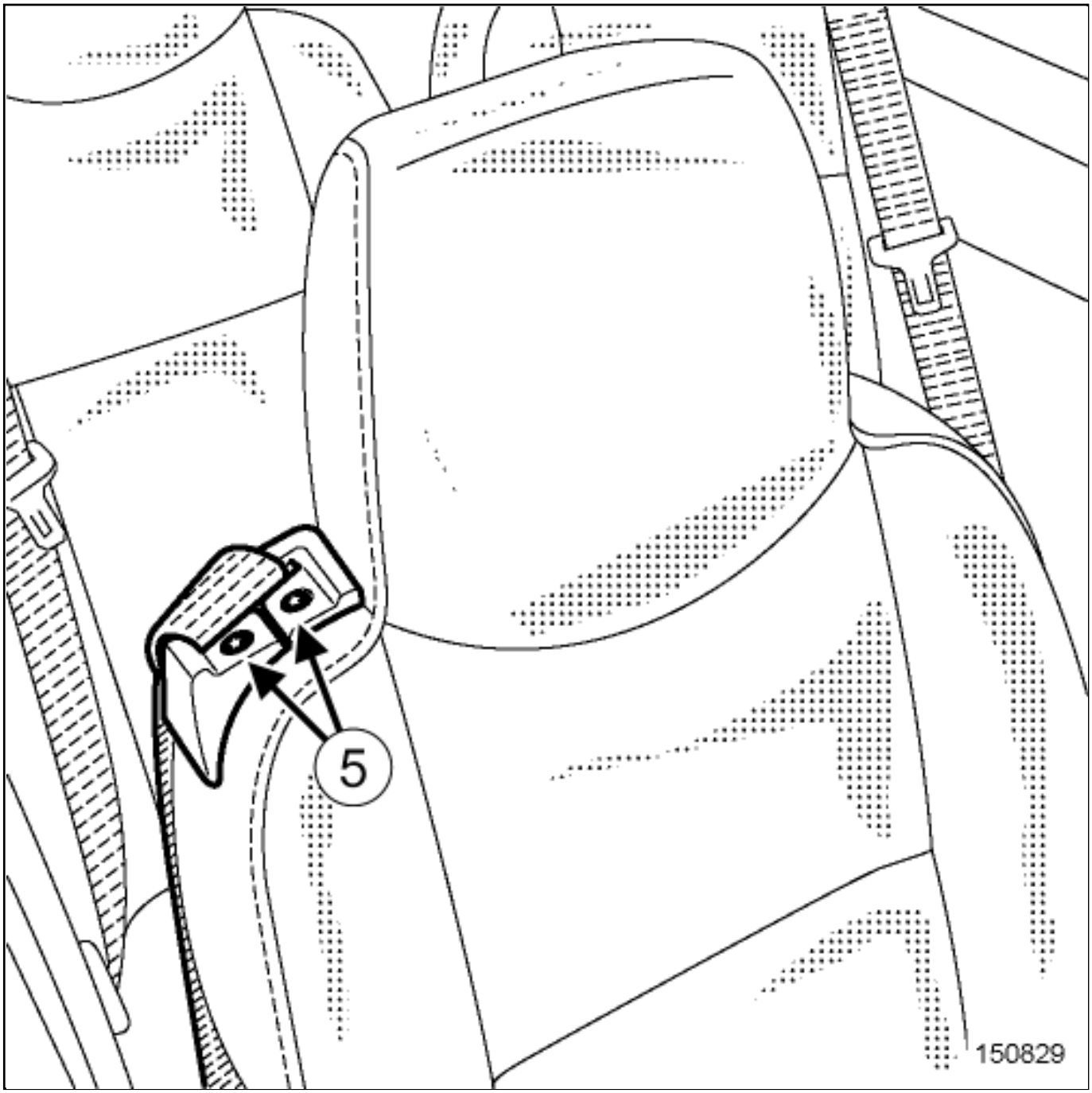
Mark the length of the mounting bolts when they are removed.

- Remove the backrest assembly at(3) .



Remove:

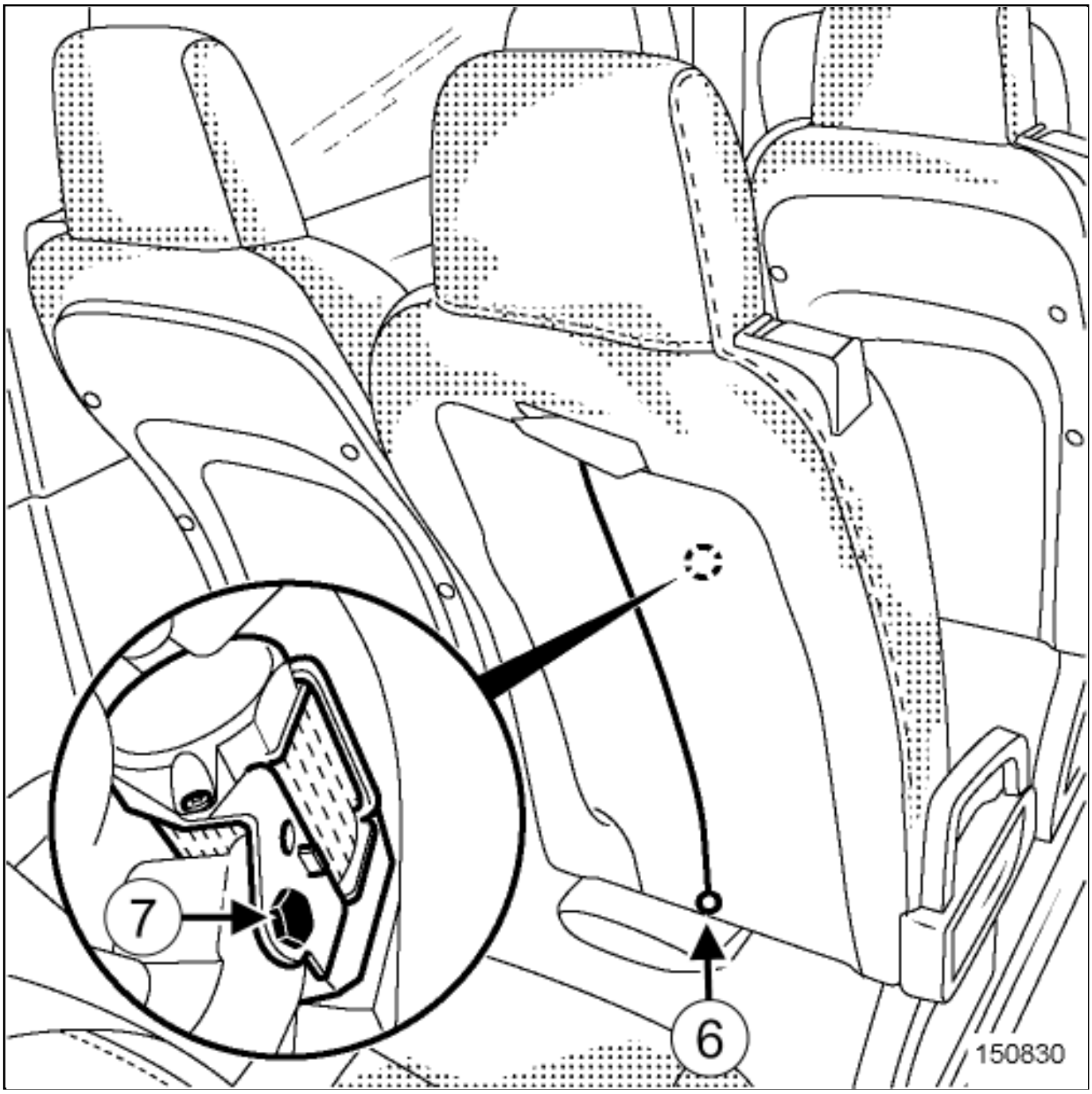
- the bolts(4) ,
- the side housing.



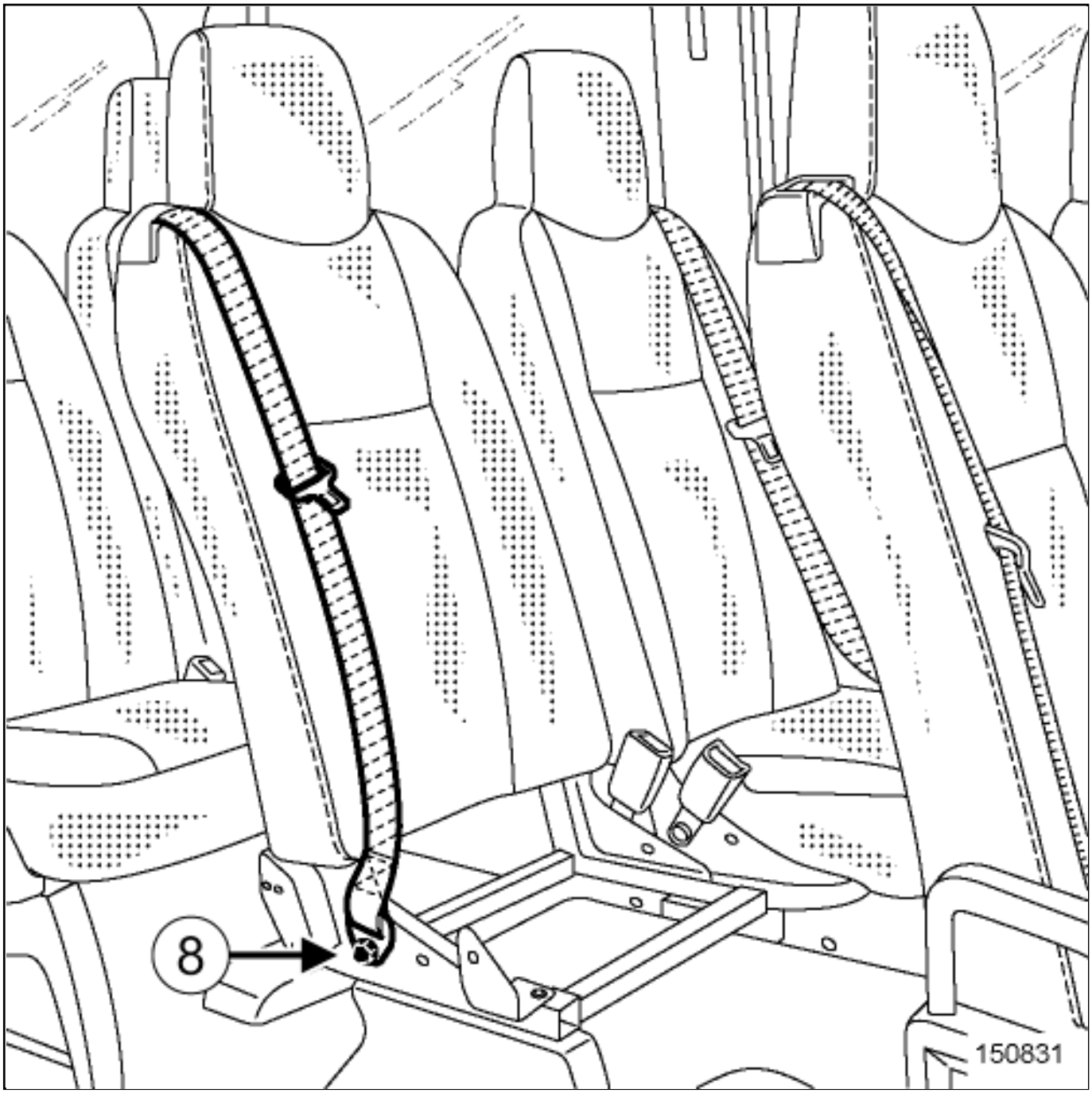
Remove:

- the bolts(5) ,
- the rear seat belt guide.

2. REMOVAL OPERATION



- Open the zip fastener(6) .
- Remove the bolt(7) .



Remove:

- the seat belt return mechanism bolt(8) ,
- the rear center seat belt.

REFITTING

1. REFITTING PREPARATION OPERATION

Always replace:

- the seat belt return mechanism bolt,
- the seat belt inertia reel bolt.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Tighten to torque:

- the seat belt return mechanism bolt 37 N.m,
- the seat belt inertia reel bolt 37 N.m.

REAR CENTRE SEAT BELT: REMOVAL - REFITTING

parts always to be replaced:
Rear seat belt inertia reel bolt
rear centre seat belt mounting

Note:

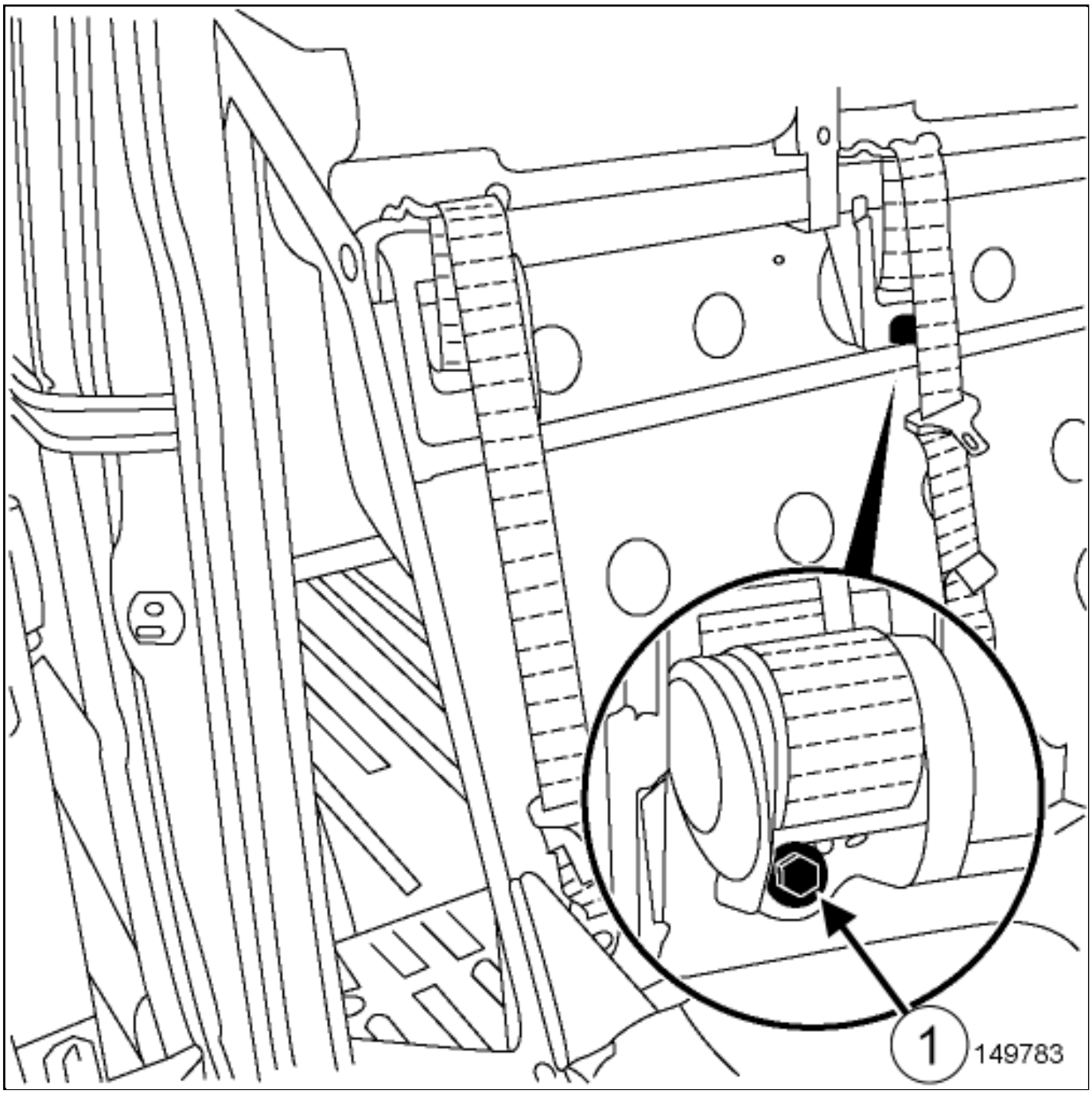
The rear seat belt must be handled by the inertia reel (risk of damaging the strap).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the trim of the single unit rear bench seatback Single unit rear bench seatback trim: Removal - Refitting (78A, Rear seat trim).

2. REMOVAL OPERATION



Remove:

- the rear centre seat belt inertia reel bolt(1) ,
- the rear centre seat belt.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: Rear seat belt inertia reel bolt.

parts always to be replaced: rear centre seat belt mounting.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.
- Torque tighten the bolt of the rear centre seat belt inertia reel30 N.m.

> Note:
>
> Ensure that the rear centre seat belt strap is not twisted between the inertia reel and the lower mounting of the rear centre seat belt.

3. CHECKING AFTER REPAIR

- Check for correct operation twice by unreeling the rear central seat belt 300 mmand allowing it to return.
- Check that the rear central seat belt locks correctly by pulling the rear central seat belt strap with increasing speed 200to300 mmmaximum until the inertia reel locks.

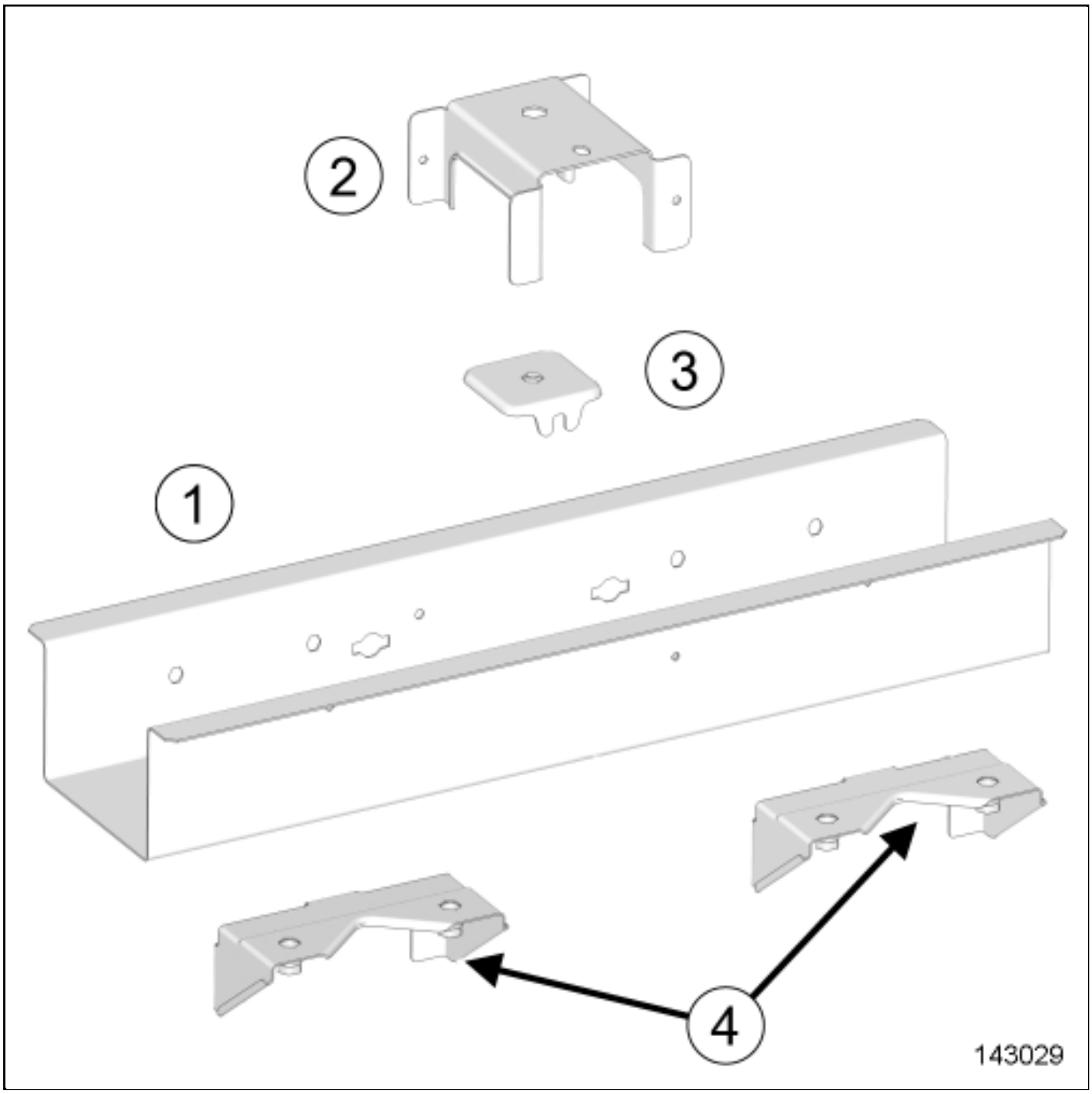
REAR CROSS MEMBER UNDER FRONT SEAT: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART


2
3
1
4
143029

No.	Description	Type	Thickness (mm)
(1)	Rear cross member under front seat	THLE	1.2
(2)	Centre seat rear interior mounting	HLE	1.5
(3)	Centre seat rear interior reinforcement	HLE	1.77
(4)	Parking brake mounting bracket	HLE	1

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

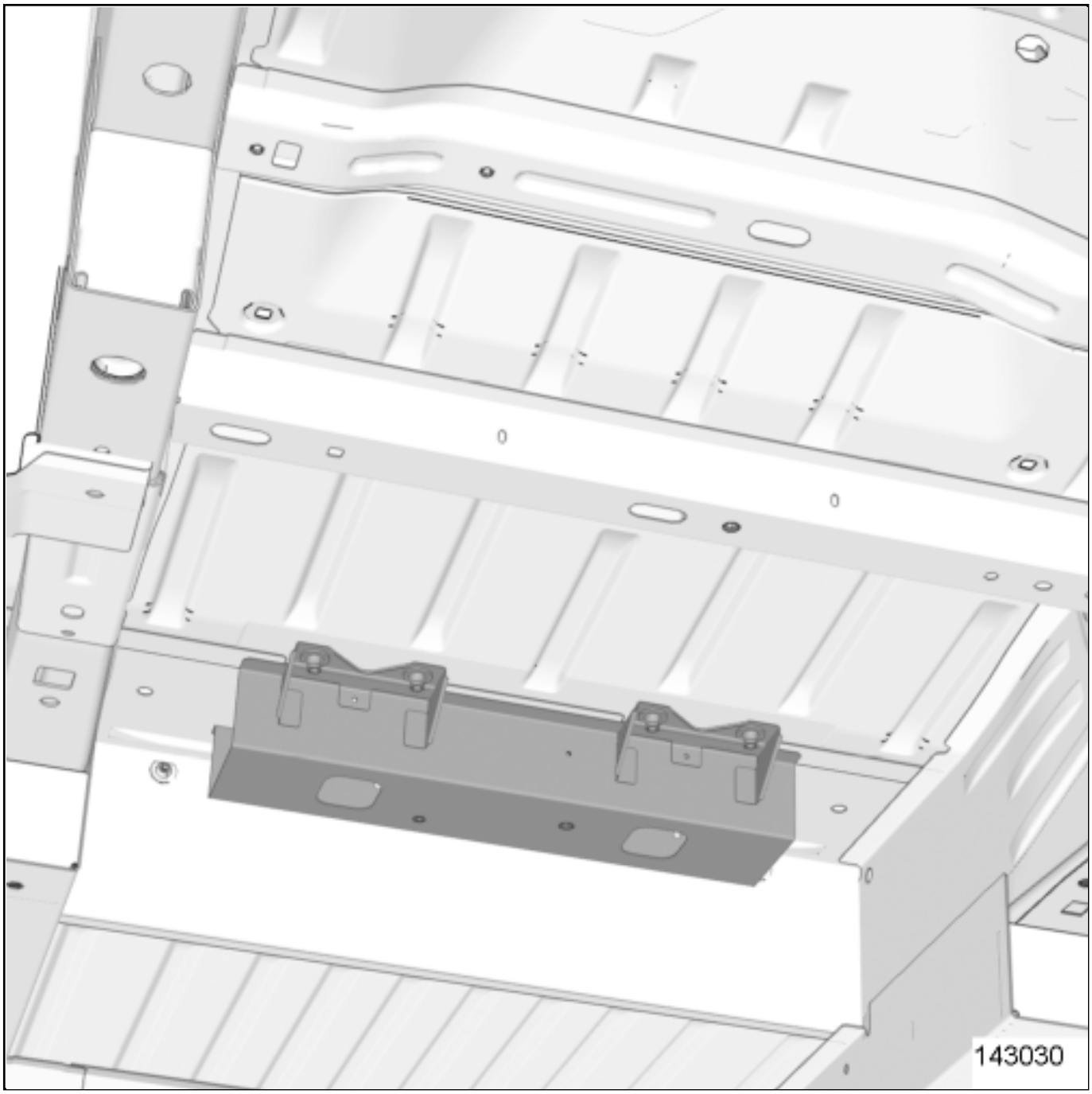
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

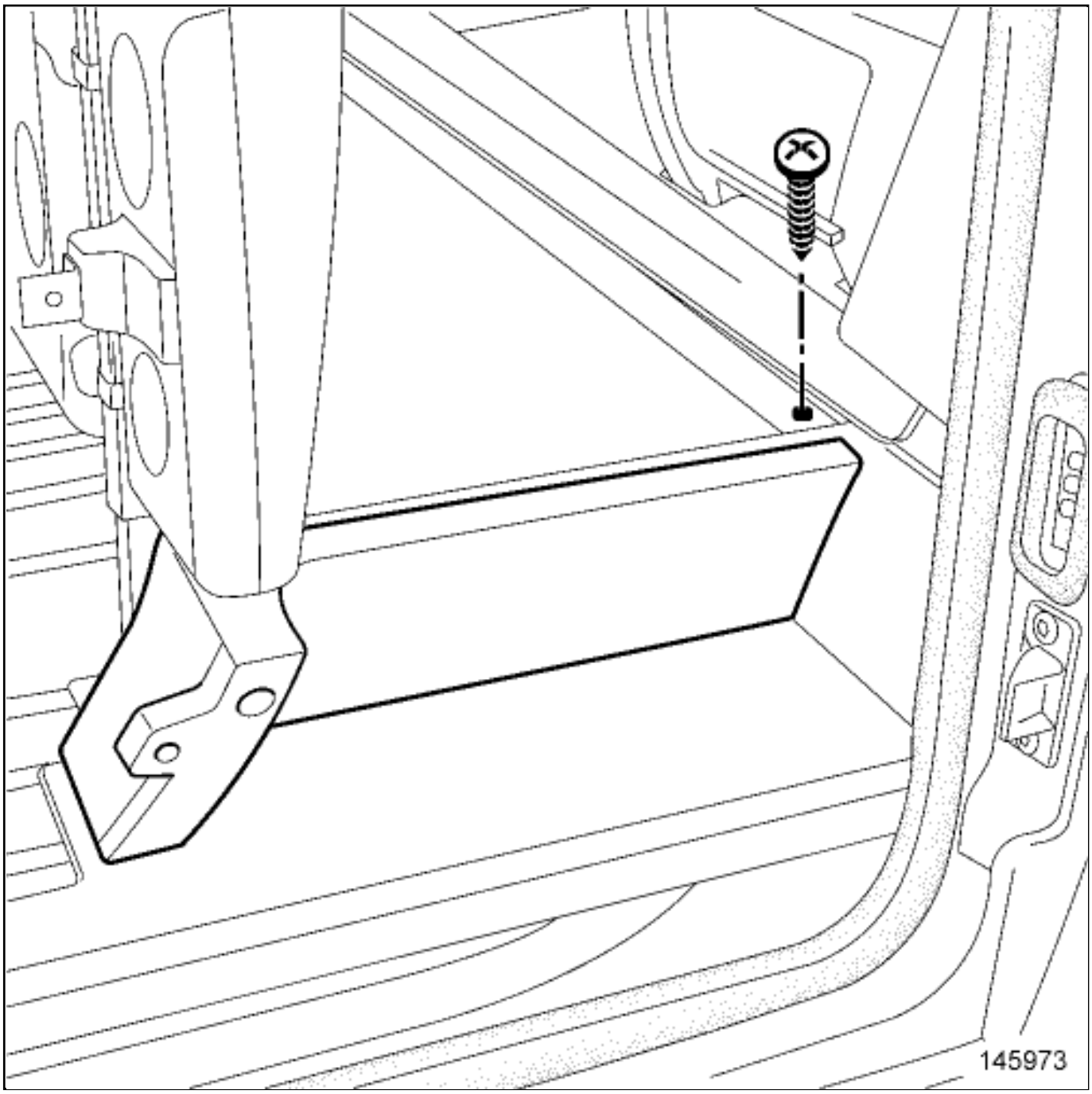
REAR DOOR SILL LINING: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the side trim of the passenger compartment partition (see 71A, Body internal trim, Passenger compartment partition trim: Removal - Refitting) .

2. REMOVAL OPERATION



- Remove:
  - the bolt,
  - the rear door sill lining.

REFITTING

- Proceed in the reverse order to removal.

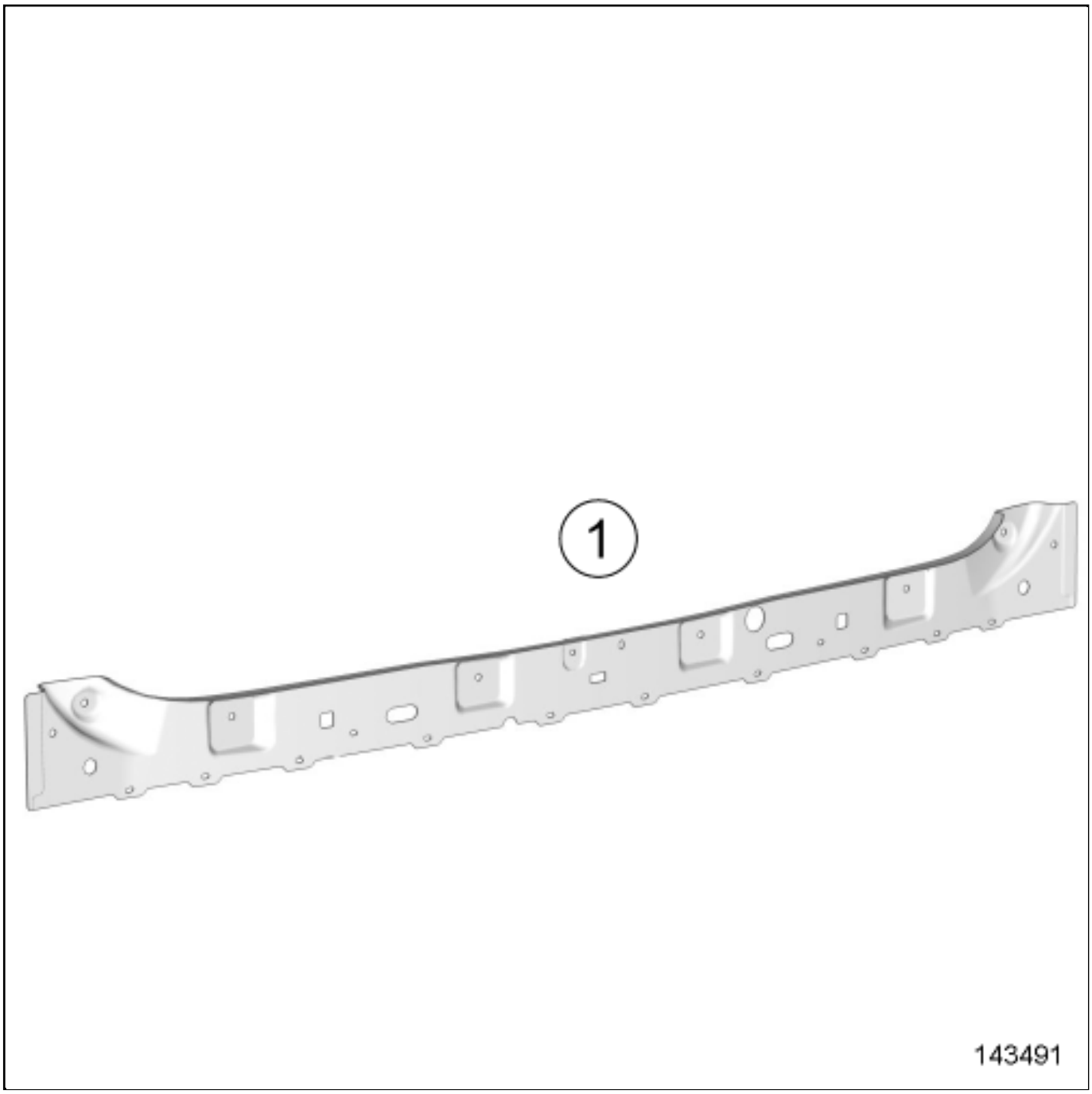
REAR END PANEL: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Rear end panel	HLE	1.4

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area(see **Earths on body: List and location of components**) .

1- COMPLETE REPLACEMENT

1)PART IN POSITION

2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

REAR END PILLAR LINING: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

1. COMPOSITION OF THE SPARE PART

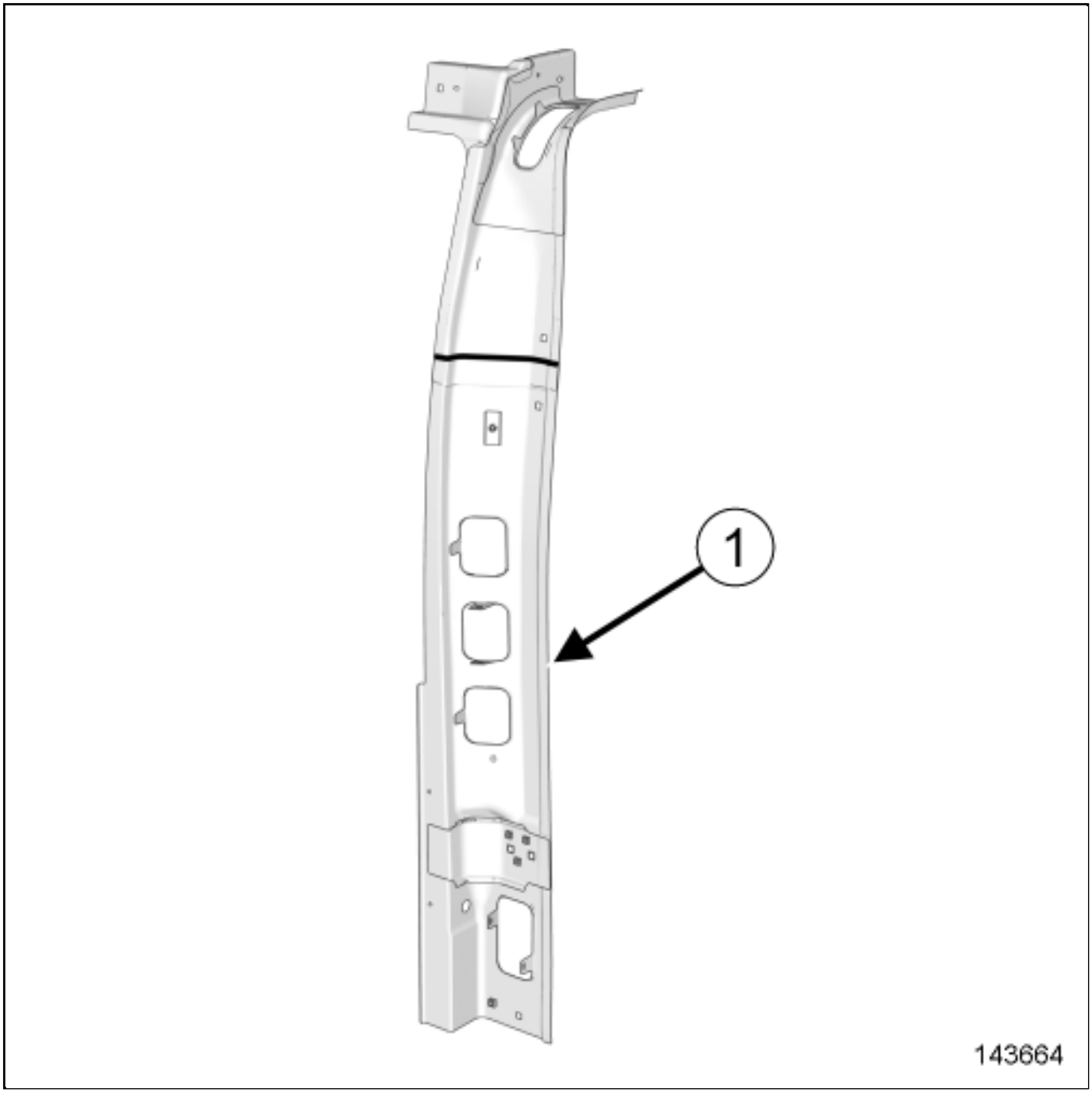
2
3
4
1
5
143476

No.	Description	Type	Thickness (mm)
(1)	Rear end pillar lining	Mild steel	0.9
(2)	Upper bracket of side roof rail rear lining	Mild steel	1.5
(3)	Upper lining reinforcement of rear end pillar	Mild steel	1.5
(4)	Rear upper end pillar lining	Mild steel	1.2
(5)	Rear door check strap reinforcement	HLE	1

2. IN THE EVENT OF REPLACEMENT

The options for replacing this part are as follows:

- Complete replacement
- partial replacement of the lower section(1) .



CAUTION

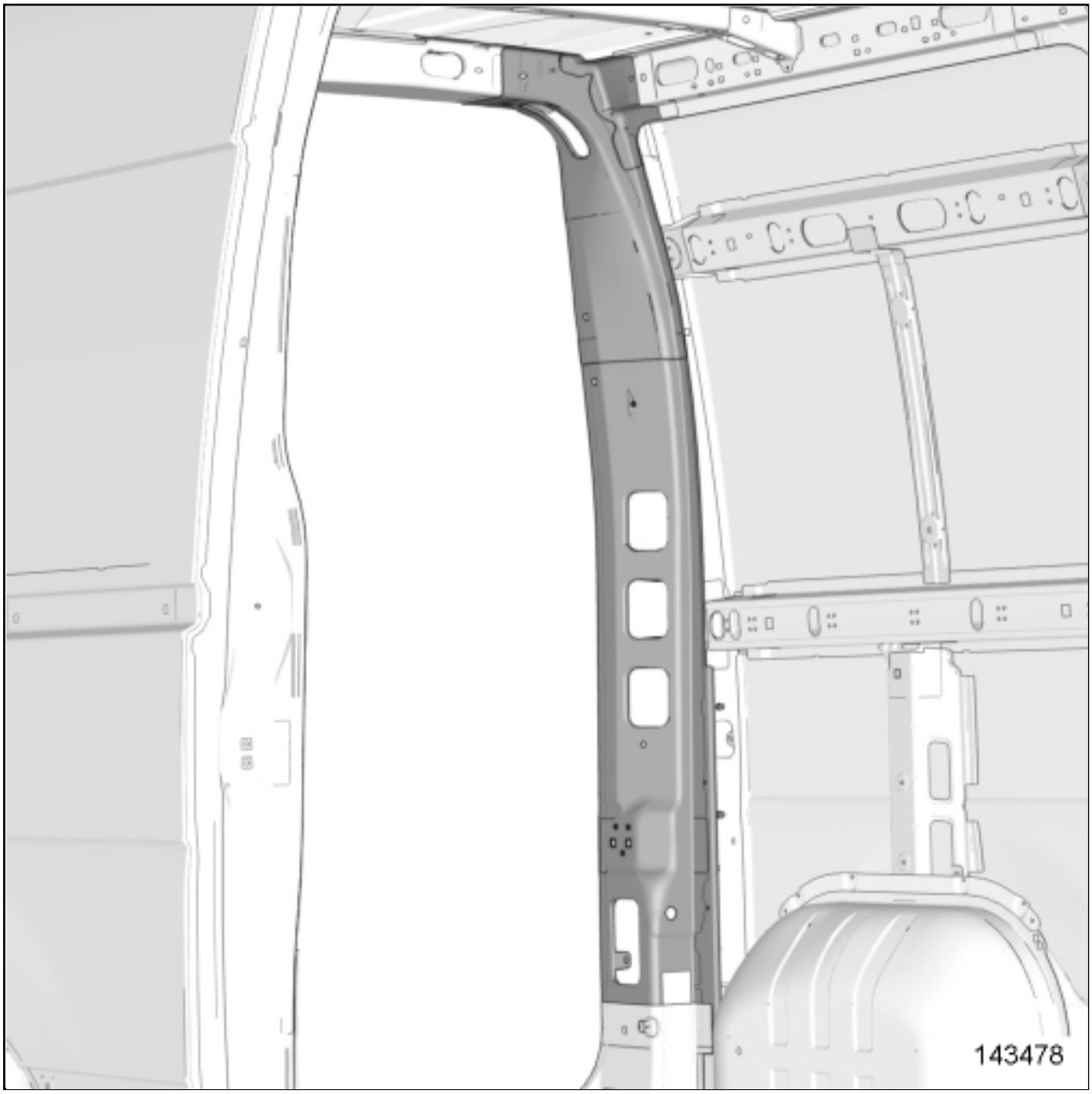
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area(see **Earths on body: List and location of components**) .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



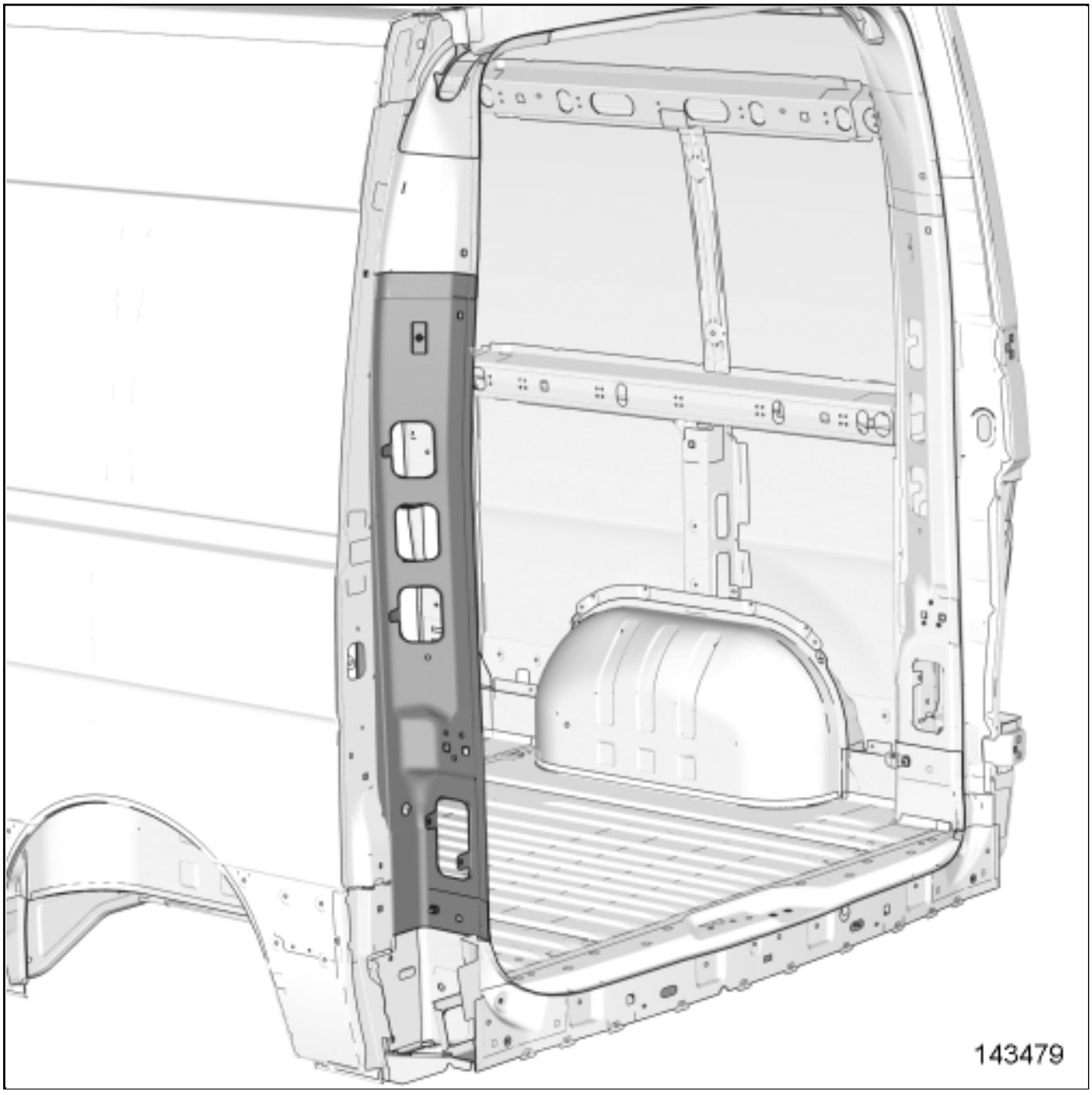
2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

2- PARTIAL REPLACEMENT OF THE LOWER SECTION

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

REAR FINAL DRIVE DIFFERENTIAL: ADJUSTMENT

Note, one or more warnings are present in this procedure

Equipment required
safety strap(s)
Dial gauge

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear final drive assembly: Exploded view .

IMPORTANT

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 26A, Rear axle , Rear final drive: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

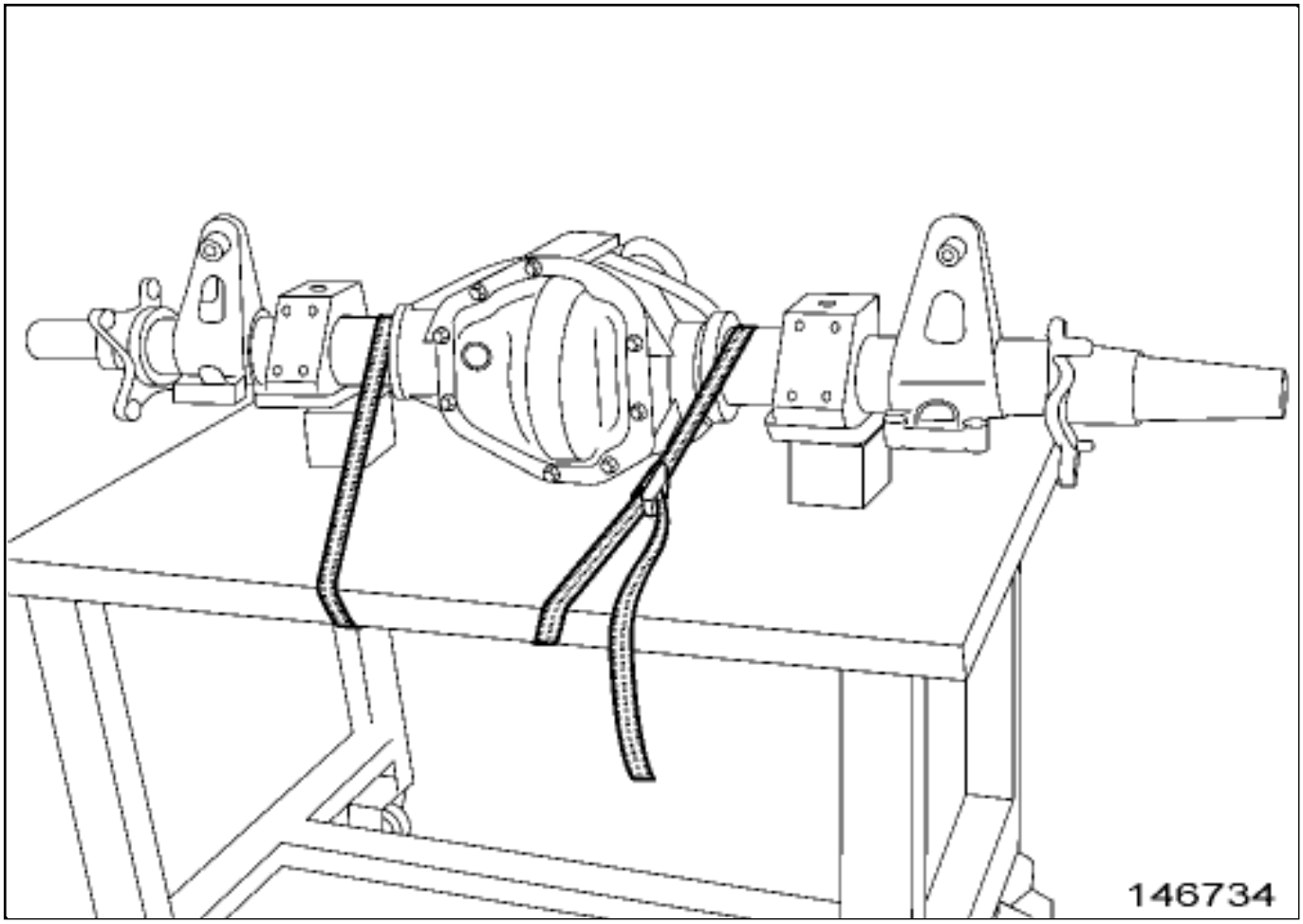
WARNING

Do not mix up the differential adjusting shims.

ADJUSTMENT

1. ADJUSTMENT PREPARATION OPERATION

- Remove the rear final driveRear final drive assembly: Exploded view .



- Strap the rear final drive on a workbench using a safety strap(s).

Note:

The rear final drive is very heavy.

- Remove the rear anti-roll bar Rear axle assembly: Exploded view (33A, Rear axle components).

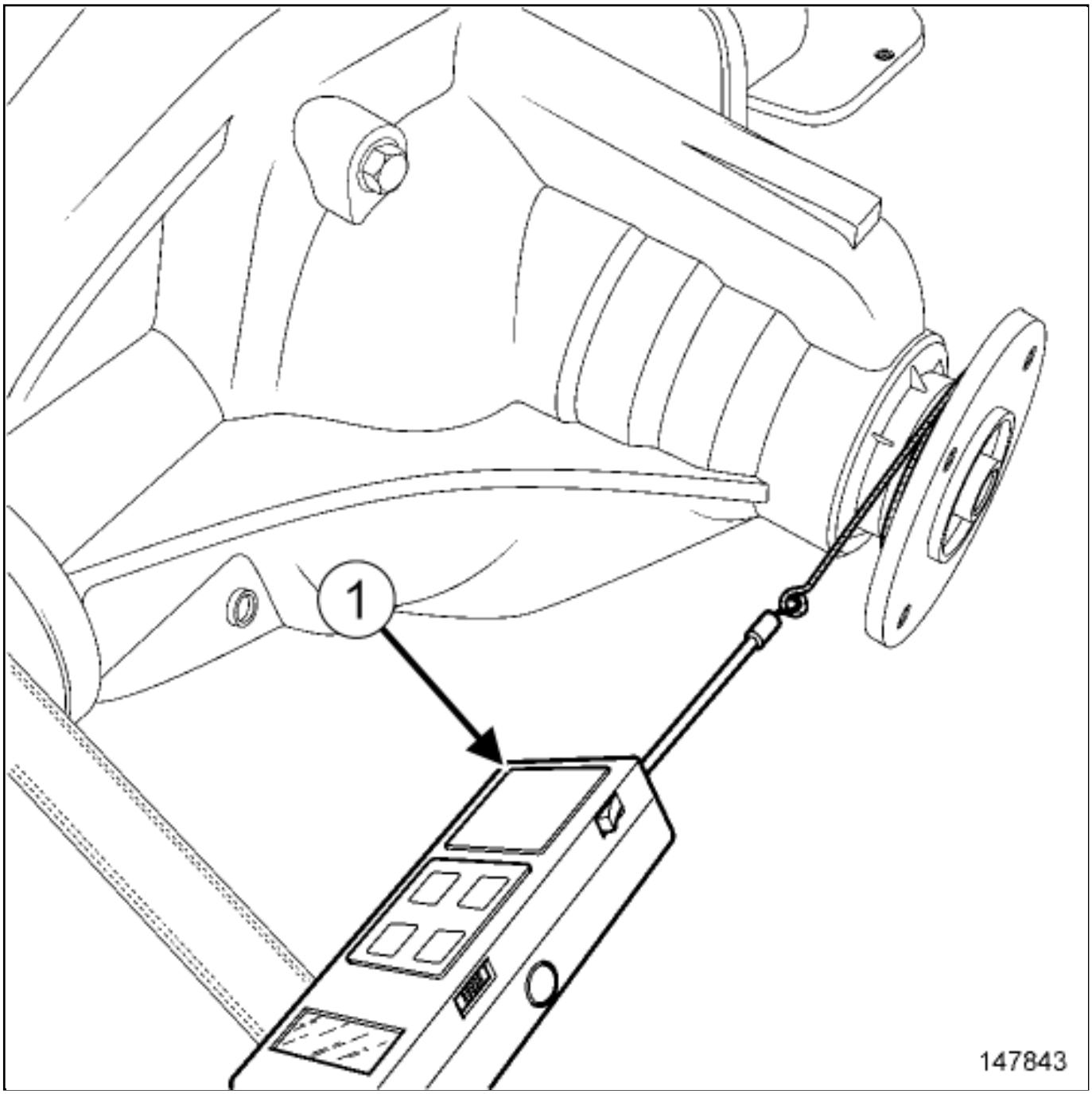
- Remove the rear brake discs Rear hub carrier assembly: Exploded view (33A, Rear axle components).

- Remove:
  - the rear wheel driveshafts Rear hub carrier assembly: Exploded view (33A, Rear axle components),
  - the rear final drive housing Rear final drive assembly: Exploded view .

2. ADJUSTMENT OPERATION

- Remove the differential Rear final drive assembly: Exploded view .

- Turn the input shaft 20 times to correctly position the bearings.



- Check the pretensioning torque of the bearings using a spring balance(1) .

- The input shaft must turn under a force between 78 N and 130 N.

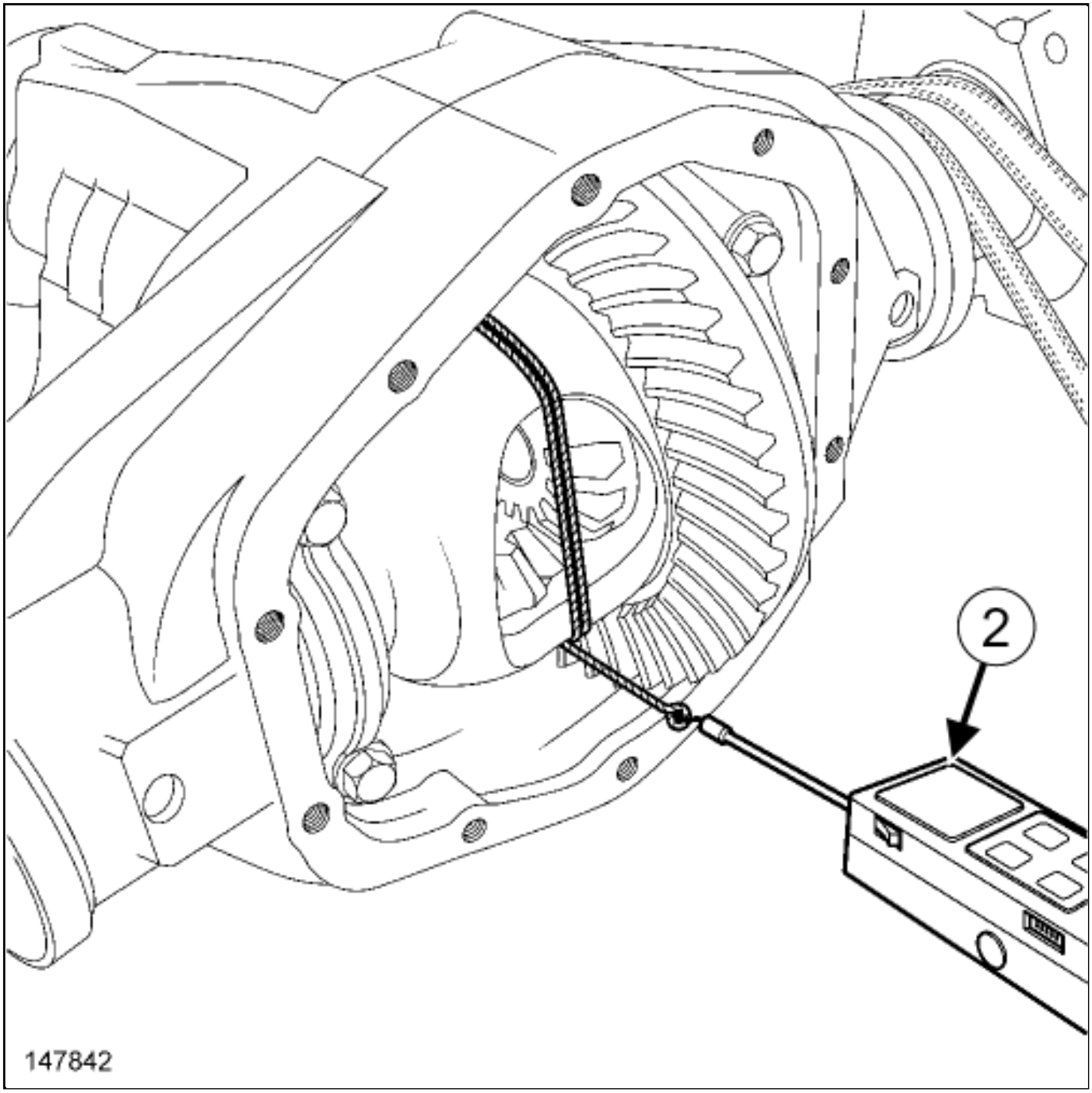
- If the pretensioning torque is not correct, decrease or increase the thickness of the adjusting shims behind the input shaft bearing cages.

Note:

A kit of 8 and 10 shims is available. The shims are machined from 0.04 mmin 0.04 mm increments.

2- CHECKING THE PRETENSIONING TORQUE OF THE DIFFERENTIAL

- Remove the input shaft.
- Refit the differential Rear final drive assembly: Exploded view .
- Turn the differential 20 timesto correctly position the bearings.



- Check the pretensioning torque of the bearings using a spring balance(2) .

- The differential must turn under a force between 17 Nand 27 N.

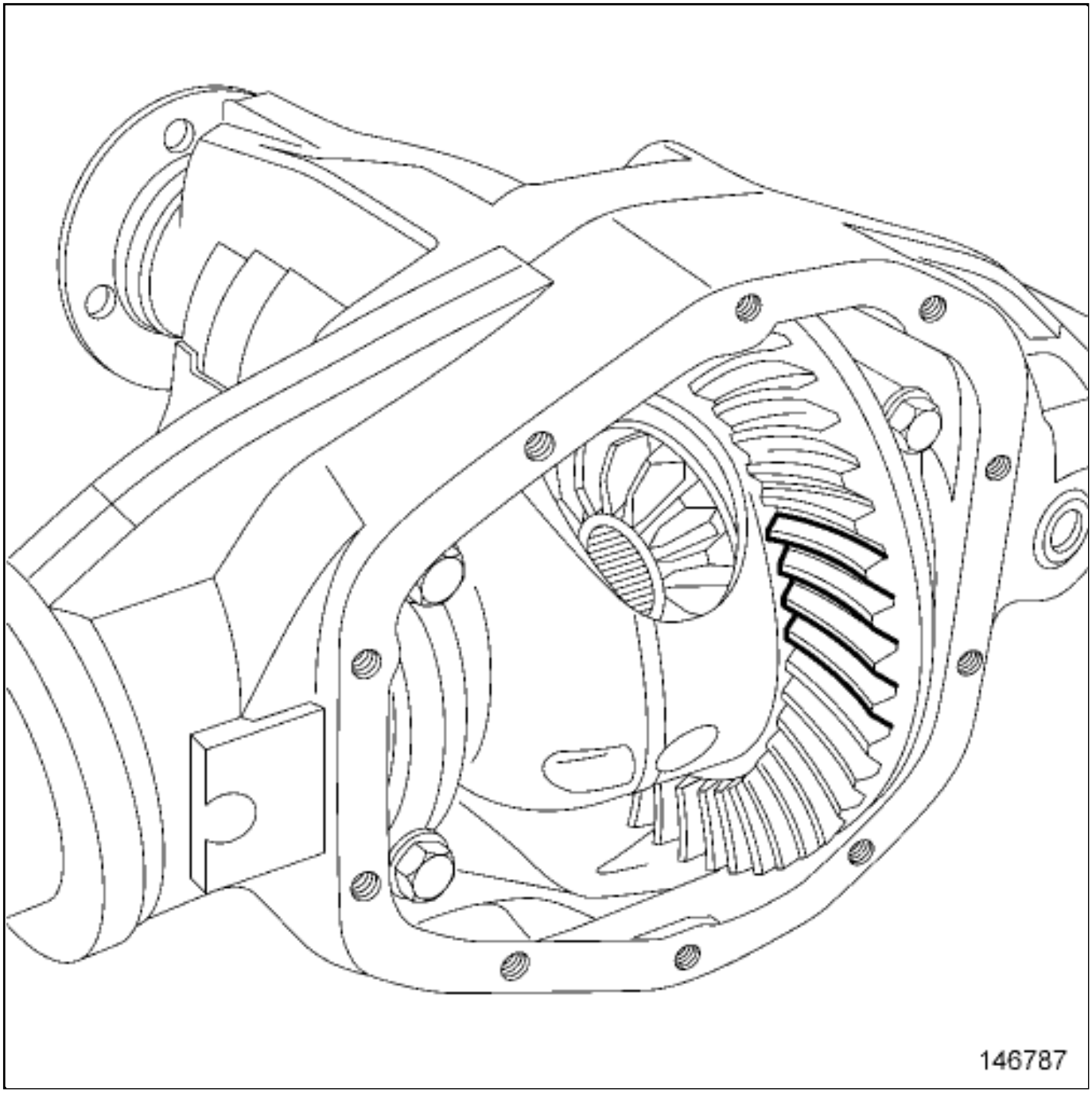
- If the pretensioning torque is not correct, increase or decrease the thickness of the adjusting shims behind the differential bearing cages.

Note:

A kit of 10 shims is available. The shims are machined from 0.04 mmin 0.04 mm increments.

- Refit the input shaft.

3- CHECKING THE CONICAL DISTANCE

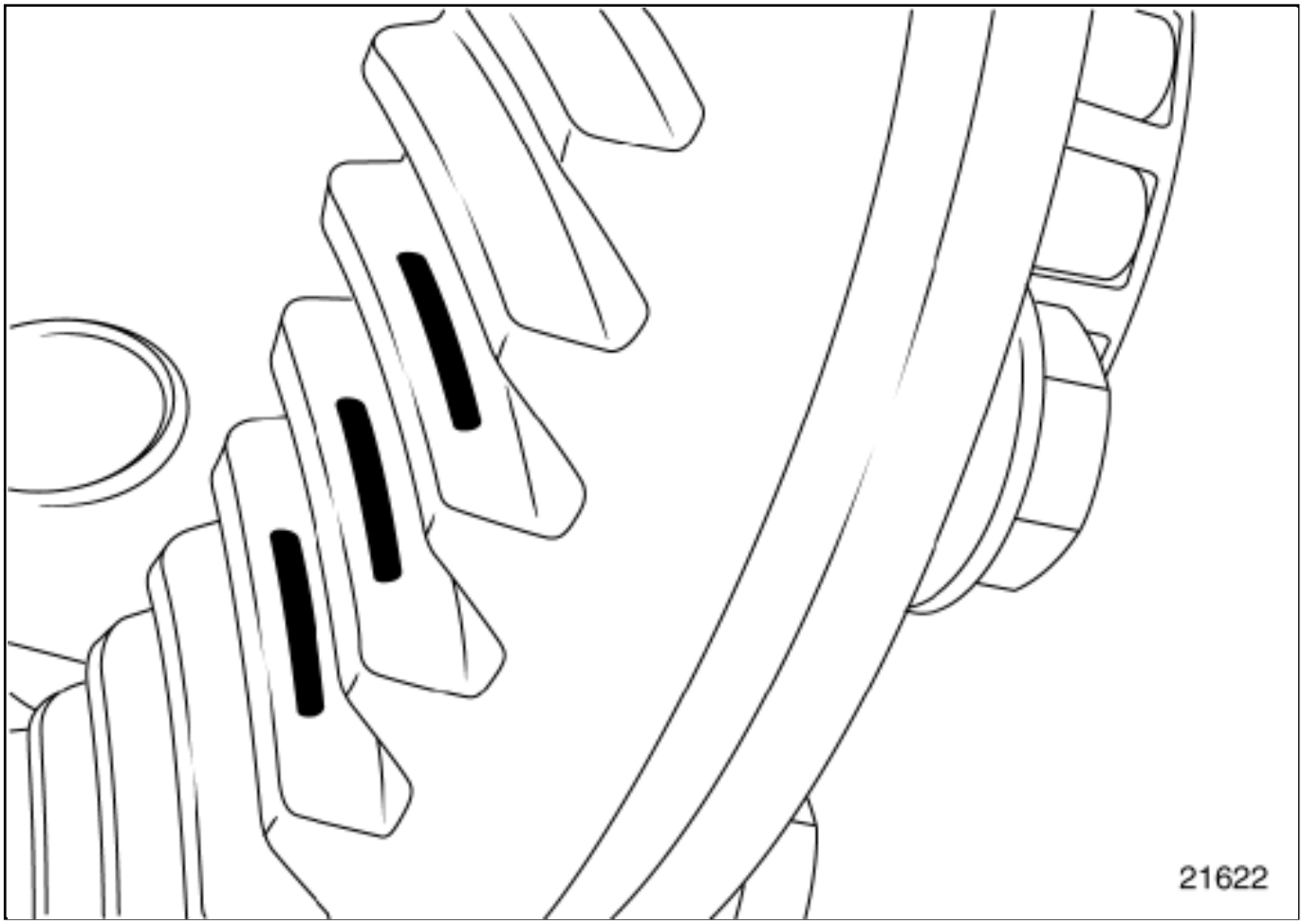


- Lightly spray with white revealing spray along the side faces of 3 to 4 differential crownwheel teeth

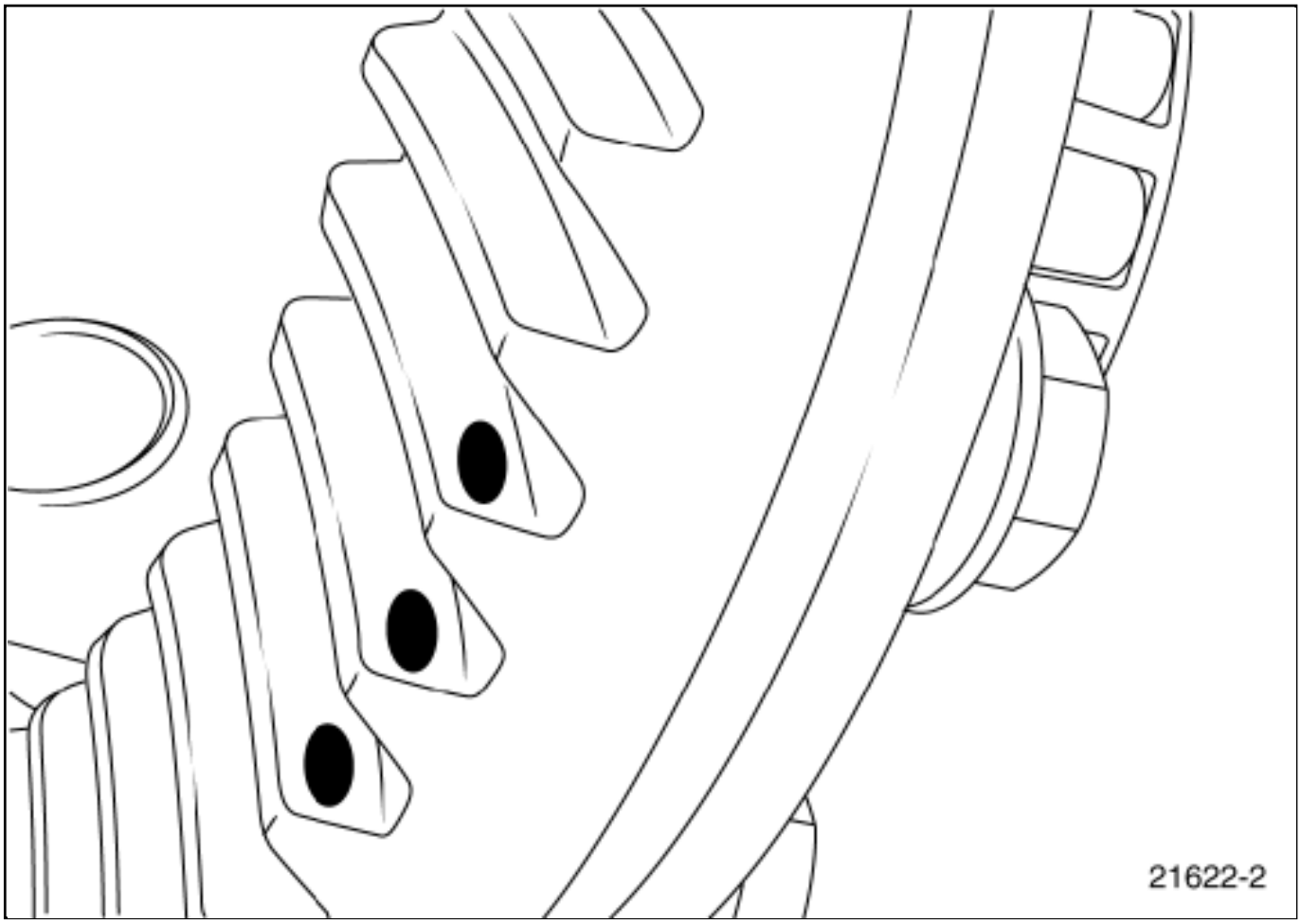
of the rear final drive, distributing the product at three different positions 120˚apart.

- Leave the revealing spray to work or blow on it very gently until it sticks to and completely covers the side faces of the teeth.

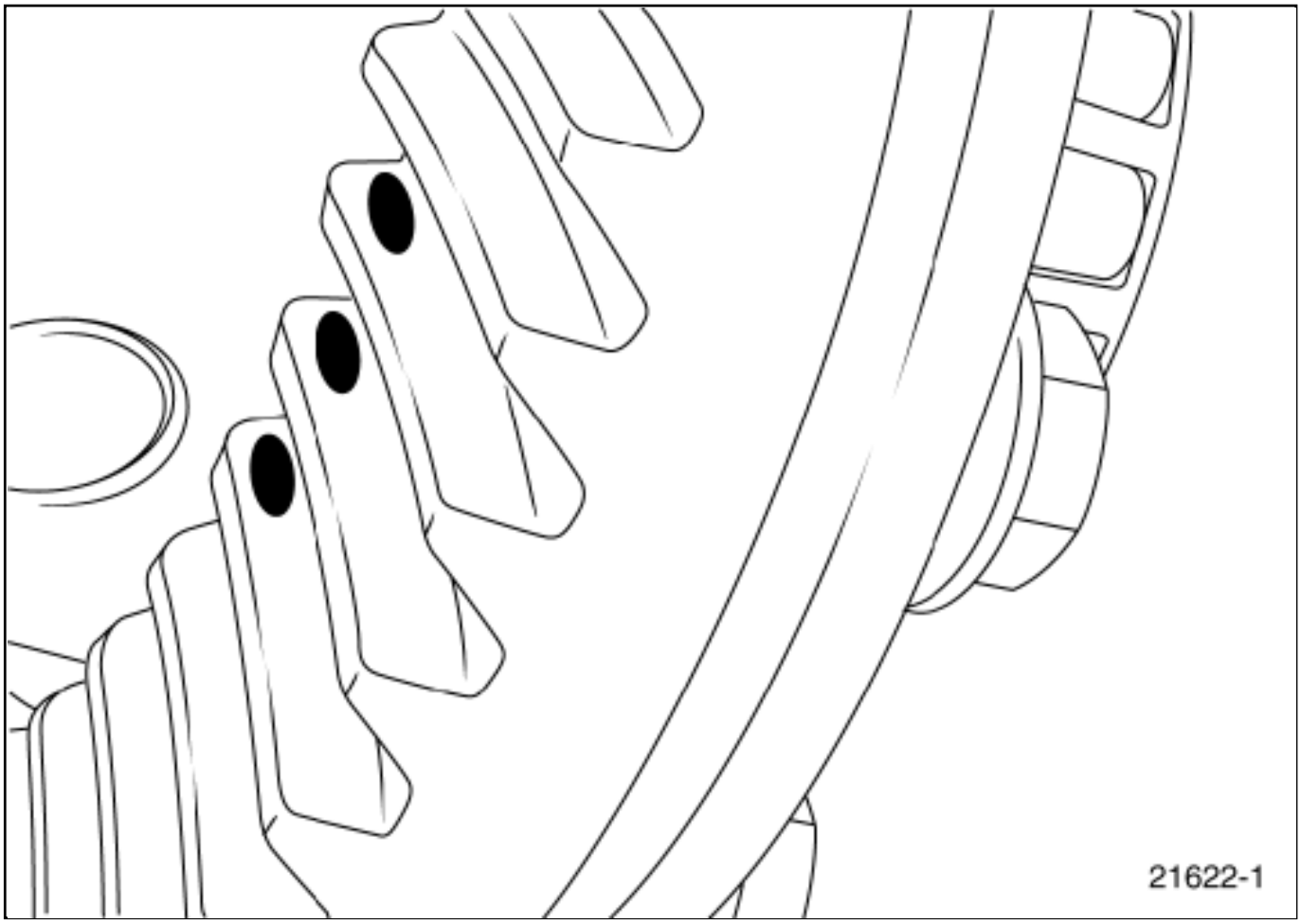
- Turn the differential crownwheel several times in both directions in order to check the mating face between the drive pinion and the differential crownwheel of the rear final drive.



- If the mating face is in the centre of the teeth side faces, the timing is correct.

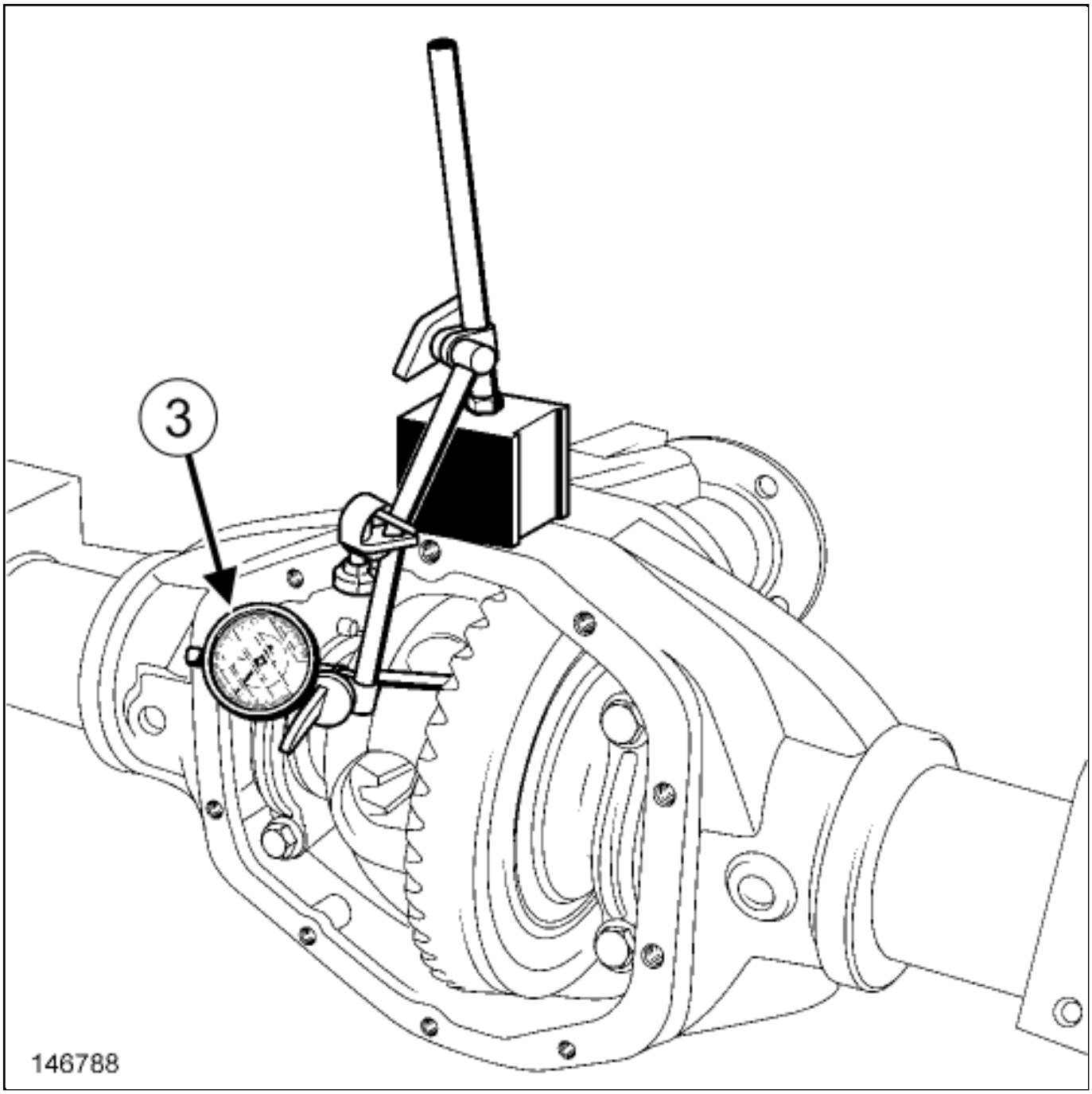


- If the mating face is above the sides of the teeth, the drive pinion is too far away from the differential shaft of the rear final drive, increase the thickness of the adjusting shim behind the bearing cage of the rear final drive input shaft Rear final drive assembly: Exploded view .



- If the mating face is below the sides of the teeth, the drive pinion is too close to the shaft of the rear final drive differential, decrease the thickness of the adjusting shim behind the large bearing cage of the rear final drive input shaft Rear final drive assembly: Exploded view .

4- CHECKING THE TEETH BACKLASH



- Fit a Dial gauge(3) .

- Put the movable part of the Dial gaugein contact on the edge of a tooth of the differential crownwheel of the rear final drive.

- Measure the backlash by slightly pivoting the differential of the rear final drive.

- Perform about ten rotations, the backlash must be between 0.18 mmand 0.24 mm.

- If the backlash is not correct, increase or decrease the thickness of the shims behind the differential bearing cages Rear final drive assembly: Exploded view .

- To reduce the backlash, increase the thickness of the shim on the differential crownwheel side of the rear final drive and decrease the shim on the unit side by the same thickness to retain the same pretensioning torque of the rear final drive differential bearings.

- To increase the backlash, decrease the thickness of the shim on the differential crownwheel side of the rear final drive and increase the shim on the unit side by the same thickness to retain the same pretensioning torque of the rear final drive differential bearings.

- Remove the Dial gauge.

3. FINAL OPERATION

- Proceed in the reverse order to removal.

REAR FINAL DRIVE DIFFERENTIAL BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Tool for removal - refitting of the lower arm bearing.	Tav. 1486

Equipment required
safety strap(s)

parts always to be replaced:
Rear final drive differential bearing

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear final drive assembly: Exploded view .

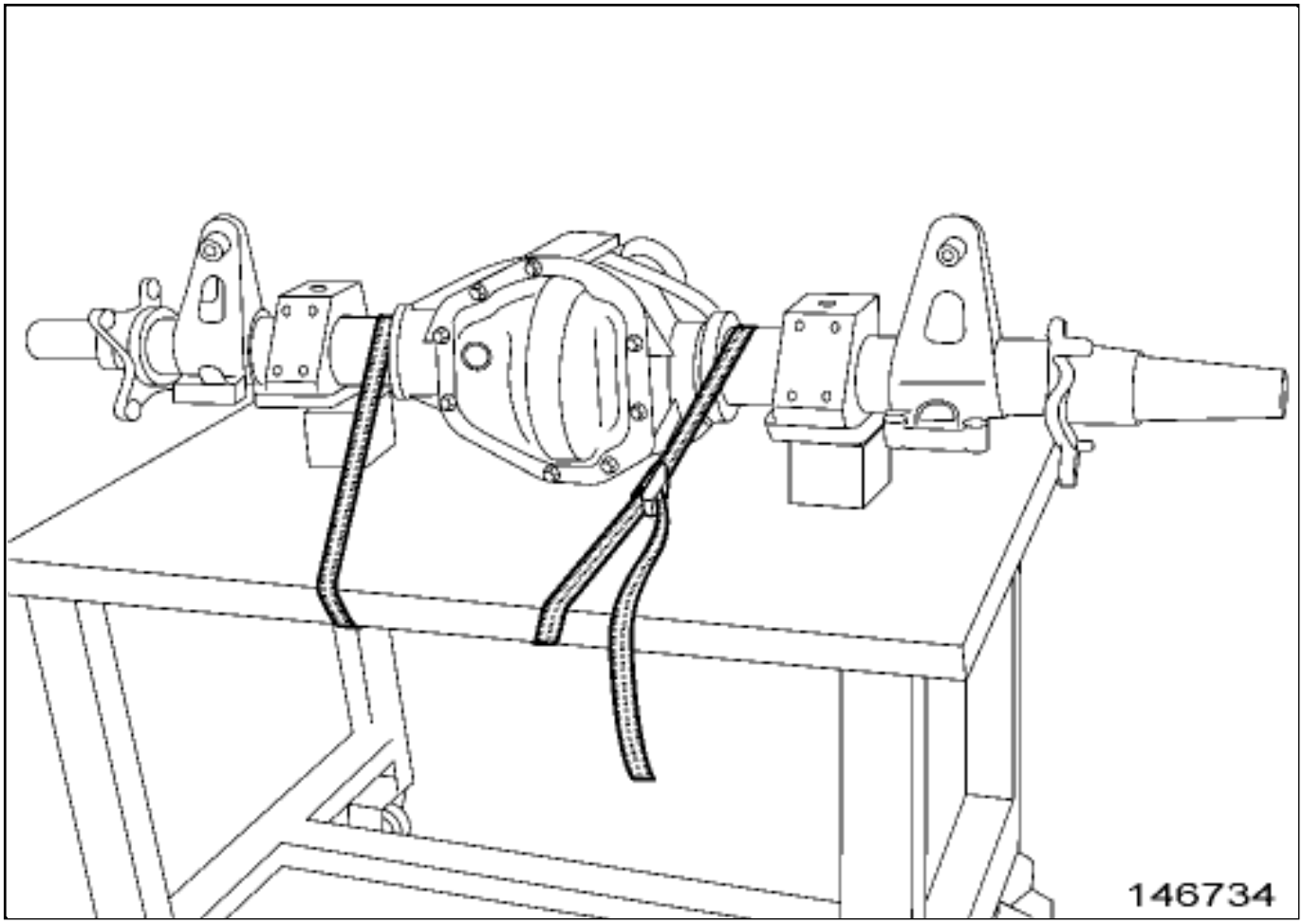
IMPORTANT

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 26A, Rear axle , Rear final drive: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the rear final driveRear final drive assembly: Exploded view .



- Strap the rear final drive on a workbench using a safety strap(s).

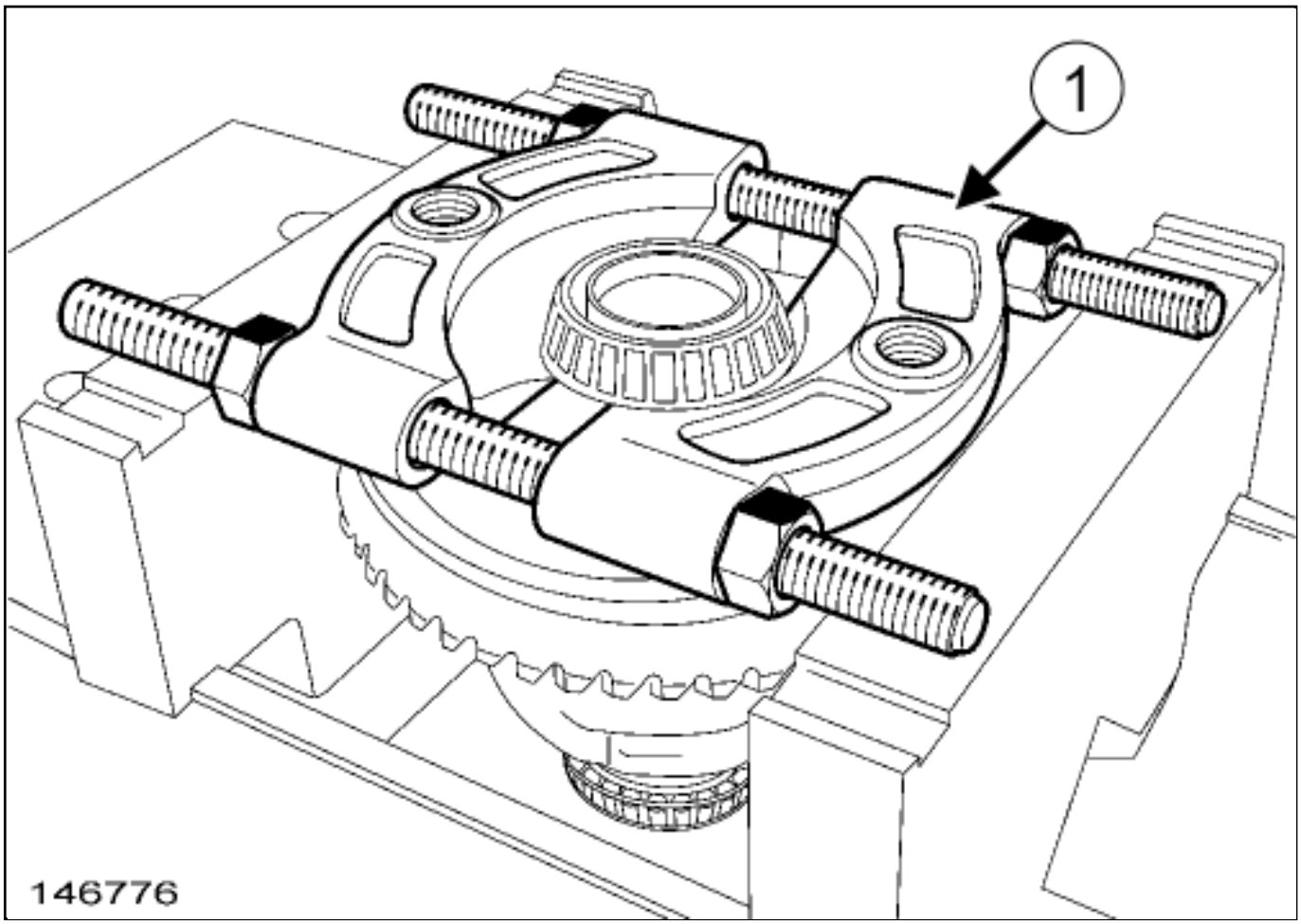
Note:

The weight of the rear final drive is very important.

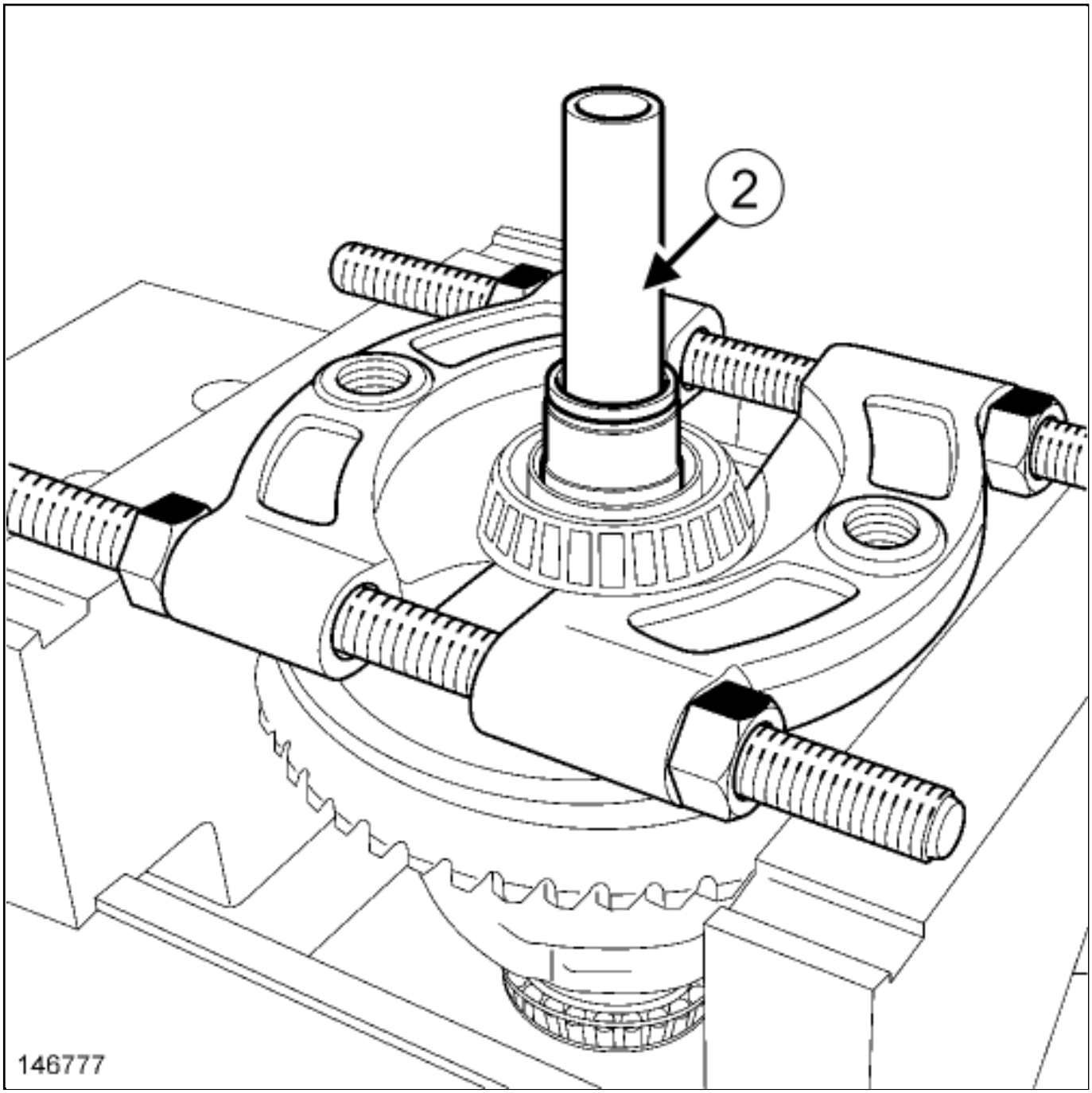
- Remove the rear anti-roll bar Rear axle assembly: Exploded view (33A, Rear axle components).

- Remove:
  - the rear wheel driveshafts Rear hub carrier assembly: Exploded view (33A, Rear axle components),
  - the rear final drive housing Rear final drive assembly: Exploded view ,
  - the rear final drive differential Rear final drive assembly: Exploded view .

2. REMOVAL OPERATION



- Fit an extractor(1) on the rear final drive differential.



- Remove the bearings from the rear final drive differential using a cylinder with a diameter of 57 mm(2) .

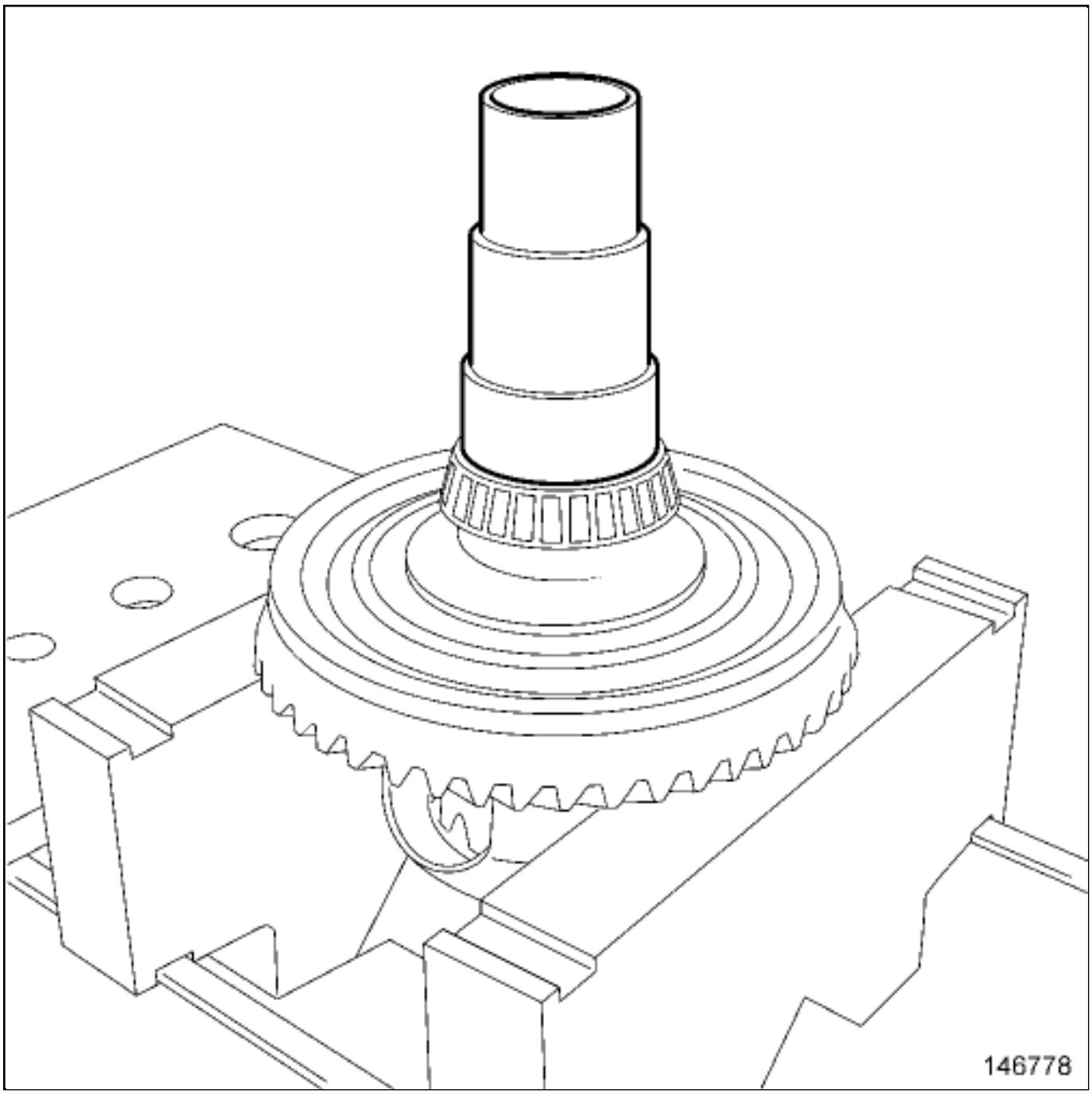
REFITTING

1. REFITTING PREPARATION OPERATION

-

parts always to be replaced: Rear final drive differential bearing .

2. REFITTING OPERATION



- Refit the bearings of the rear final drive differential using the toolTool for removal - refitting of the lower arm bearing.(Tav. 1486) .

- Proceed in the reverse order to removal.

- Adjust the rear final drive differential(see 26A, Rear axle , Rear final drive differential: Adjustment) .

XSL version : 3.02 du 22/07/11

REAR FINAL DRIVE DIFFERENTIAL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Kit for extracting and refitting rear final drive differential	Bvi. 1944

Equipment required
safety strap(s)

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear final drive assembly: Exploded view .

IMPORTANT

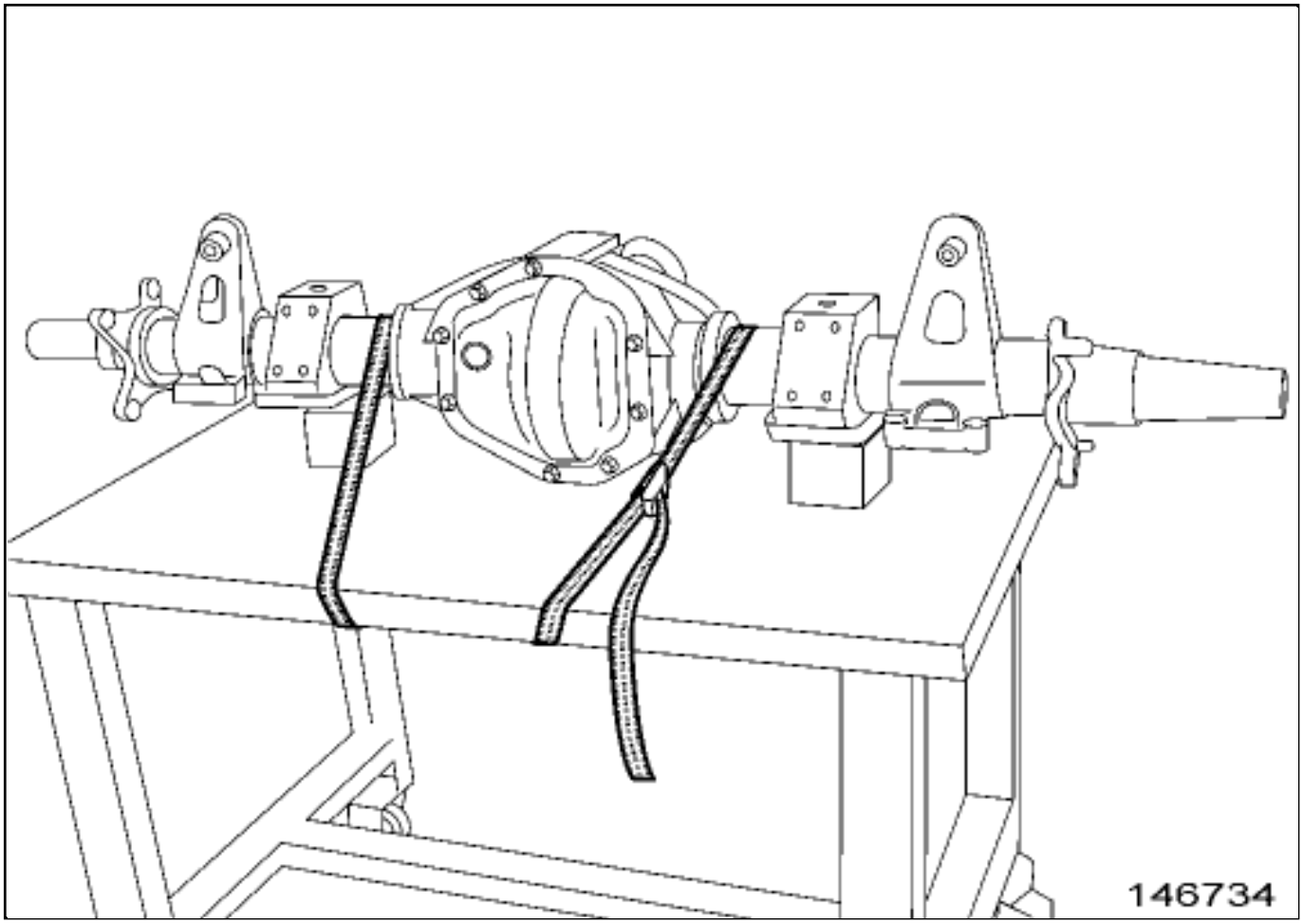
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see 26A, Rear axle , Rear final drive: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove the rear final driveRear final drive assembly: Exploded view .



- Strap the rear final drive on a workbench using a safety strap(s).

Note:

The weight of the rear final drive is very important.

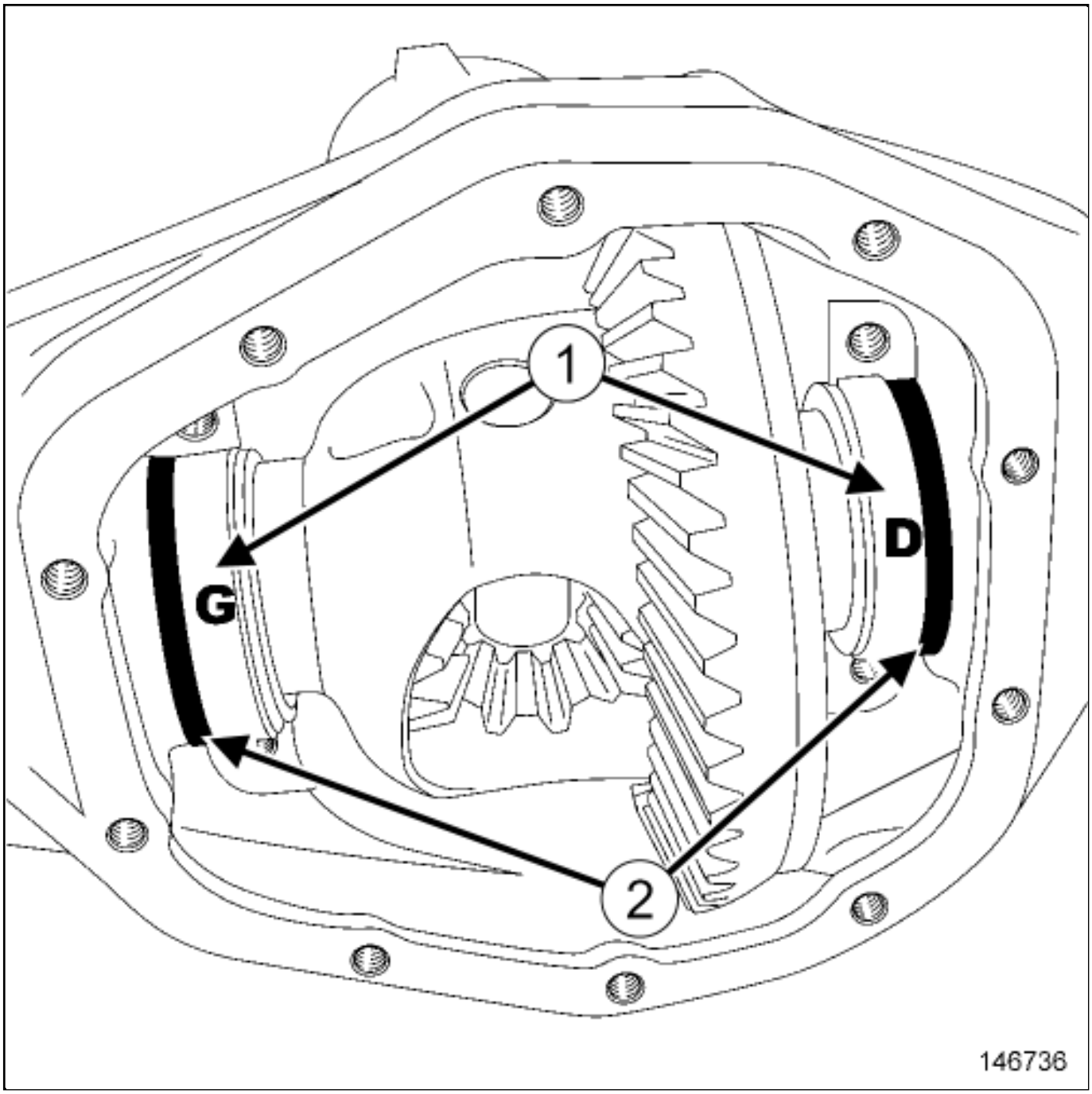
- Remove the rear anti-roll bar Rear axle assembly: Exploded view (33A, Rear axle components).

- Remove the rear brake discs Rear hub carrier assembly: Exploded view (33A, Rear axle components).

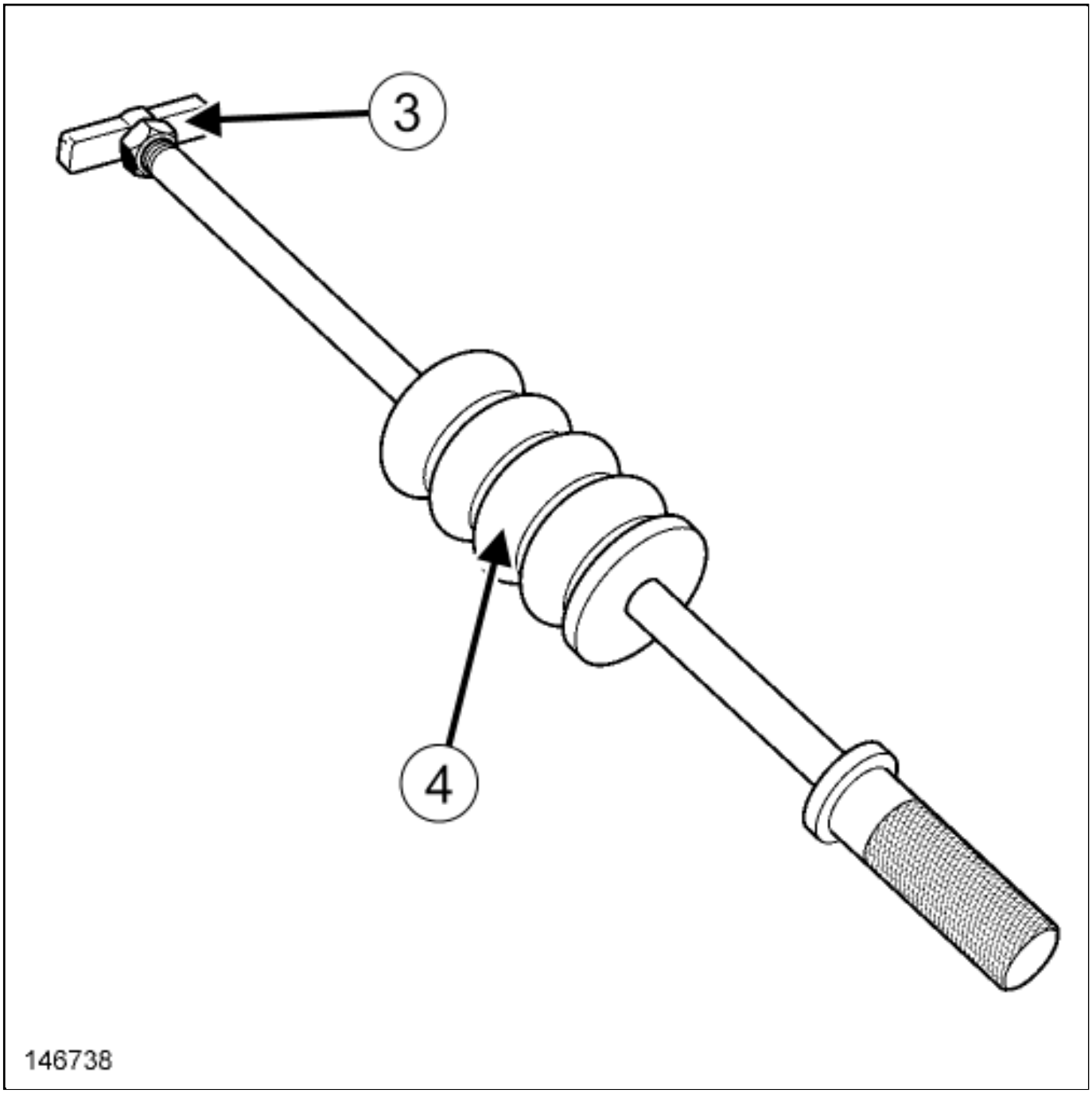
- Remove:
  - the rear wheel driveshafts Rear hub carrier assembly: Exploded view (33A, Rear axle components),
  - the rear final drive housing Rear final drive assembly: Exploded view .

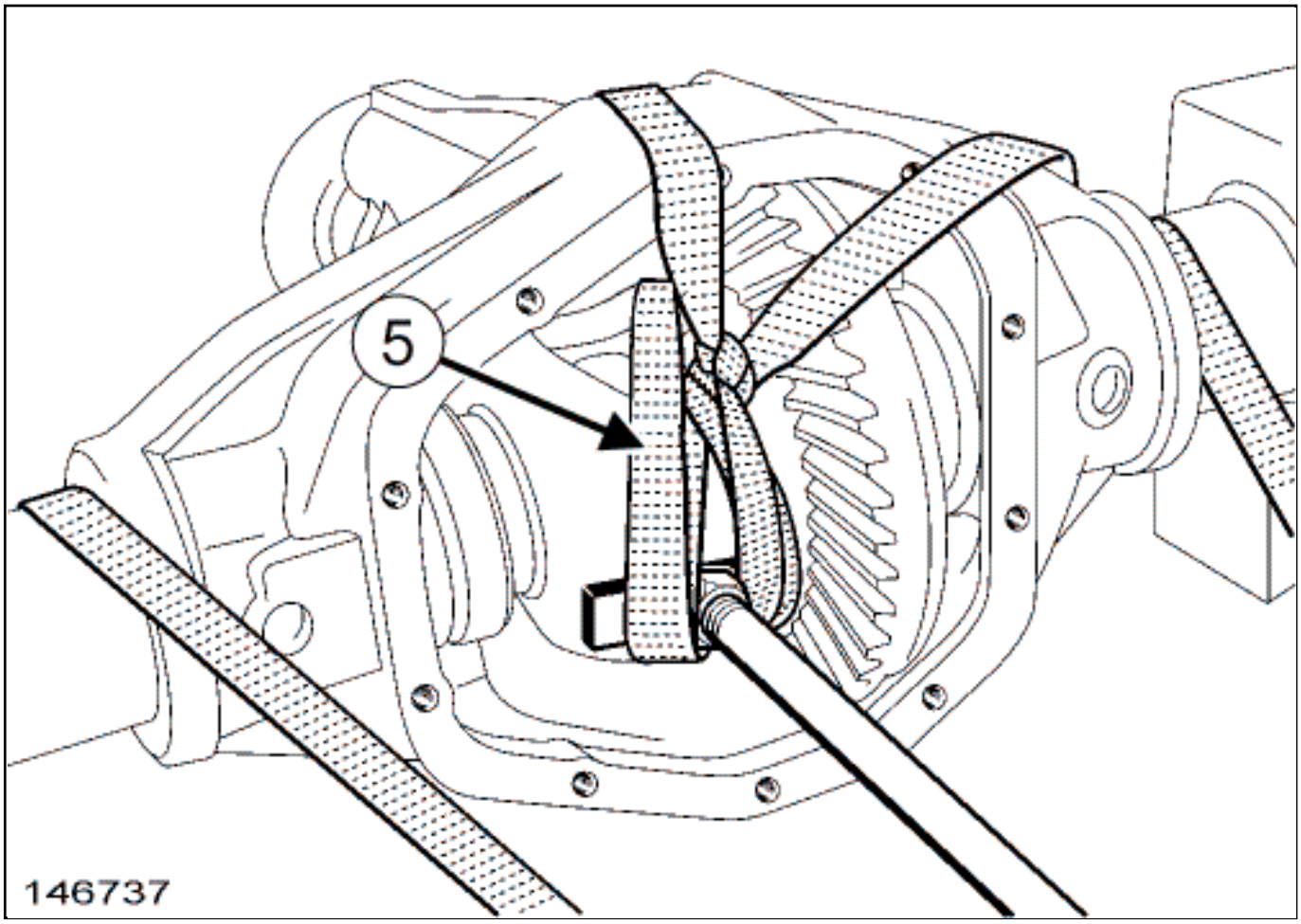
2. REMOVAL OPERATION

- Remove the half bearings of the rear final drive differential Rear final drive assembly: Exploded view .



- Mark the position:
  - of the exterior differential bearing cages(1) ,
  - of the differential adjusting shims(2) .


3
4
146738



- Fit the toolKit for extracting and refitting rear final drive differential(Bvi. 1944) (3) on an inertia extractor (4) .

- Strap the inertia extractor equipped with the toolKit for extracting and refitting rear final drive differential (Bvi. 1944) on the differential using a safety strap(s)(5) .

- Remove the rear final drive differential.

Note:

Do not mix up:

- the differential adjusting shims,

- the exterior differential bearing cages.

REFITTING

1. REFITTING PREPARATION OPERATION

1- IN THE EVENT OF REPLACEMENT

- Remove the bearings of the rear final drive differential Rear final drive assembly: Exploded view .
- Refit the bearings of the rear final drive differential Rear final drive assembly: Exploded view .

2. REFITTING OPERATION

- Refit the rear final drive differential with its original adjusting shims.
- Adjust the rear final drive differential (see 26A, Rear axle , Rear final drive differential: Adjustment) .
- Proceed in the reverse order to removal.

REAR FINAL DRIVE HOUSING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Removes housing with silicone seals.	Mot. 1716

Equipment required
safety strap(s)

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear final drive assembly: Exploded view .

IMPORTANT

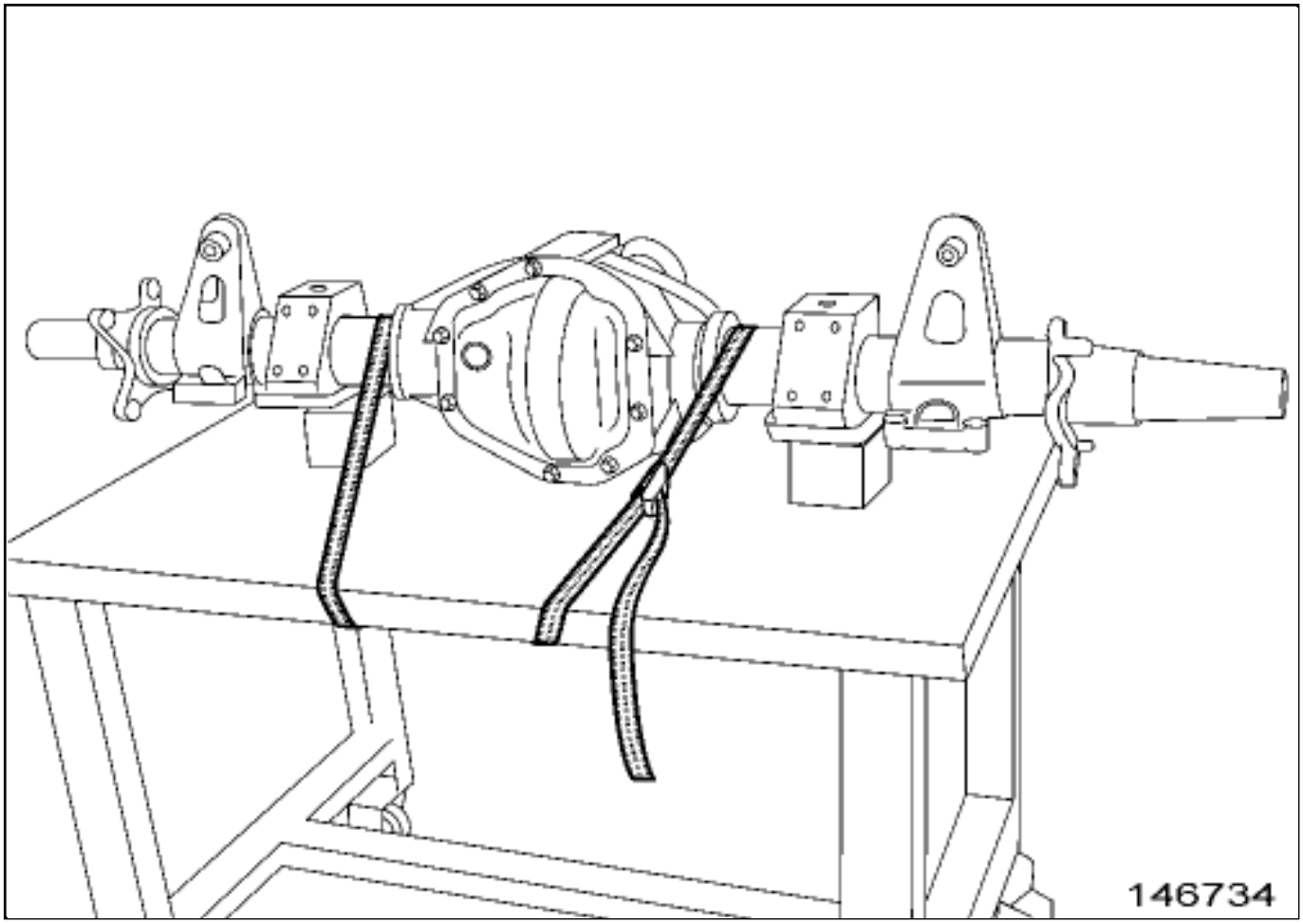
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see 26A, Rear axle , Rear final drive: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove the rear final driveRear final drive assembly: Exploded view .



- Strap the rear final drive on a workbench using a safety strap(s).

Note:

The weight of the rear final drive is very important.

- Remove the rear anti-roll bar Rear axle assembly: Exploded view (33A, Rear axle components).

2. REMOVAL OPERATION

- Remove the bolts from the rear final drive housing Rear final drive assembly: Exploded view .

- Cut the silicone sealant of the rear final drive housing using the toolRemoves housing with silicone seals. (Mot. 1716) .

- Remove the rear final drive housing.

Note:

Gradually detach the rear final drive housing with small alternating movements to prevent damaging the rear final drive housing.

REFITTING

1. REMOVAL PREPARATION OPERATION

WARNING

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

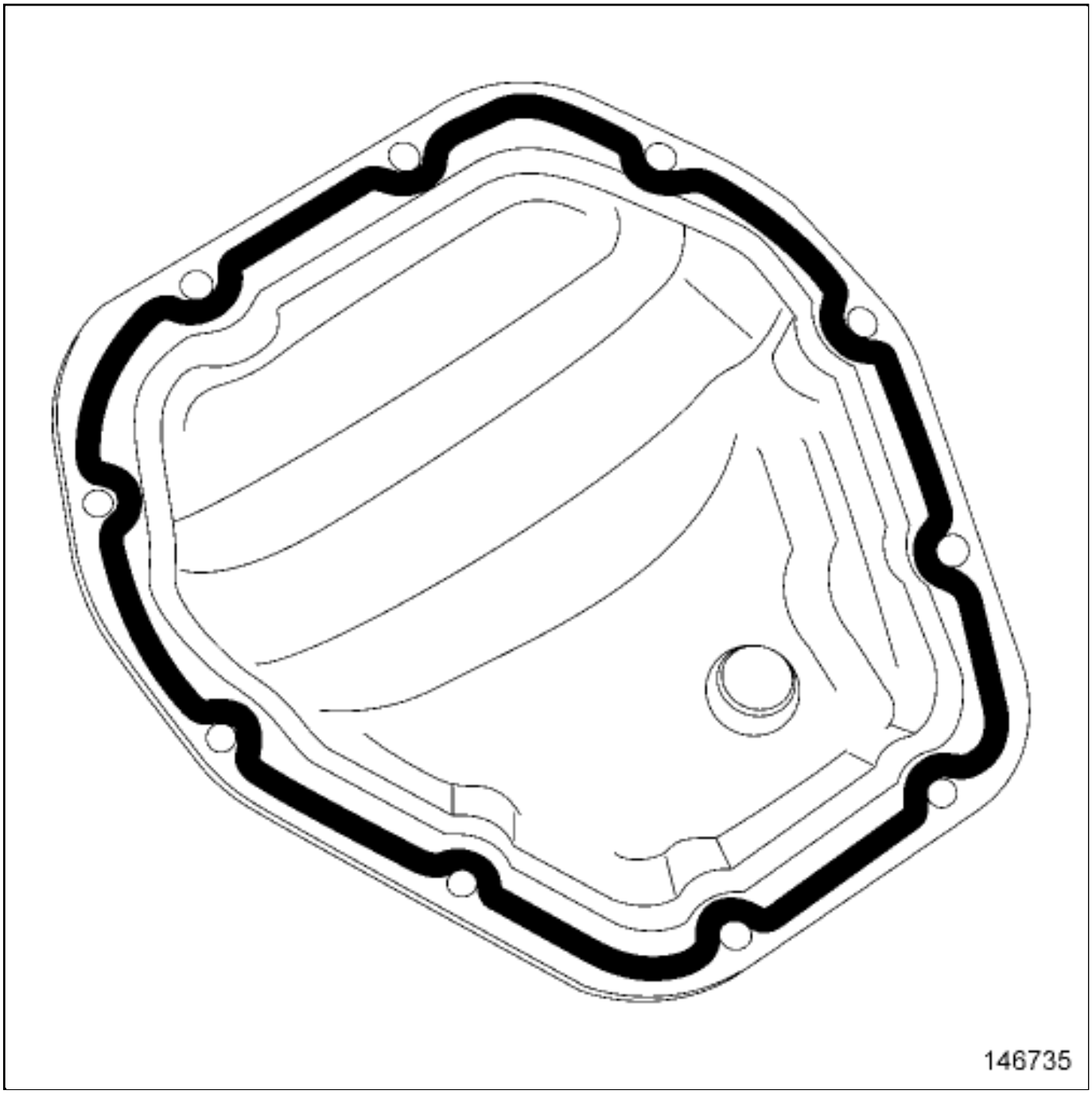
WARNING

Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- Use super cleaning agent for joint faces Vehicle: Parts and consumables for the repair (04B, Consumables - Products) and a wooden spatula to clean the mating faces:
  - of the rear final drive housing,
  - of the rear final drive.



- Apply a bead of silicone adhesive seal[Vehicle: Parts and consumables for the repair](#) (04B, Consumables - Products) with a diameter of 5 mm ± 2 mmto the rear final drive housing in order to ensure a good seal.

2. FINAL OPERATION

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

REAR FINAL DRIVE INPUT SHAFT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
safety strap(s)

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear final drive assembly: Exploded view .

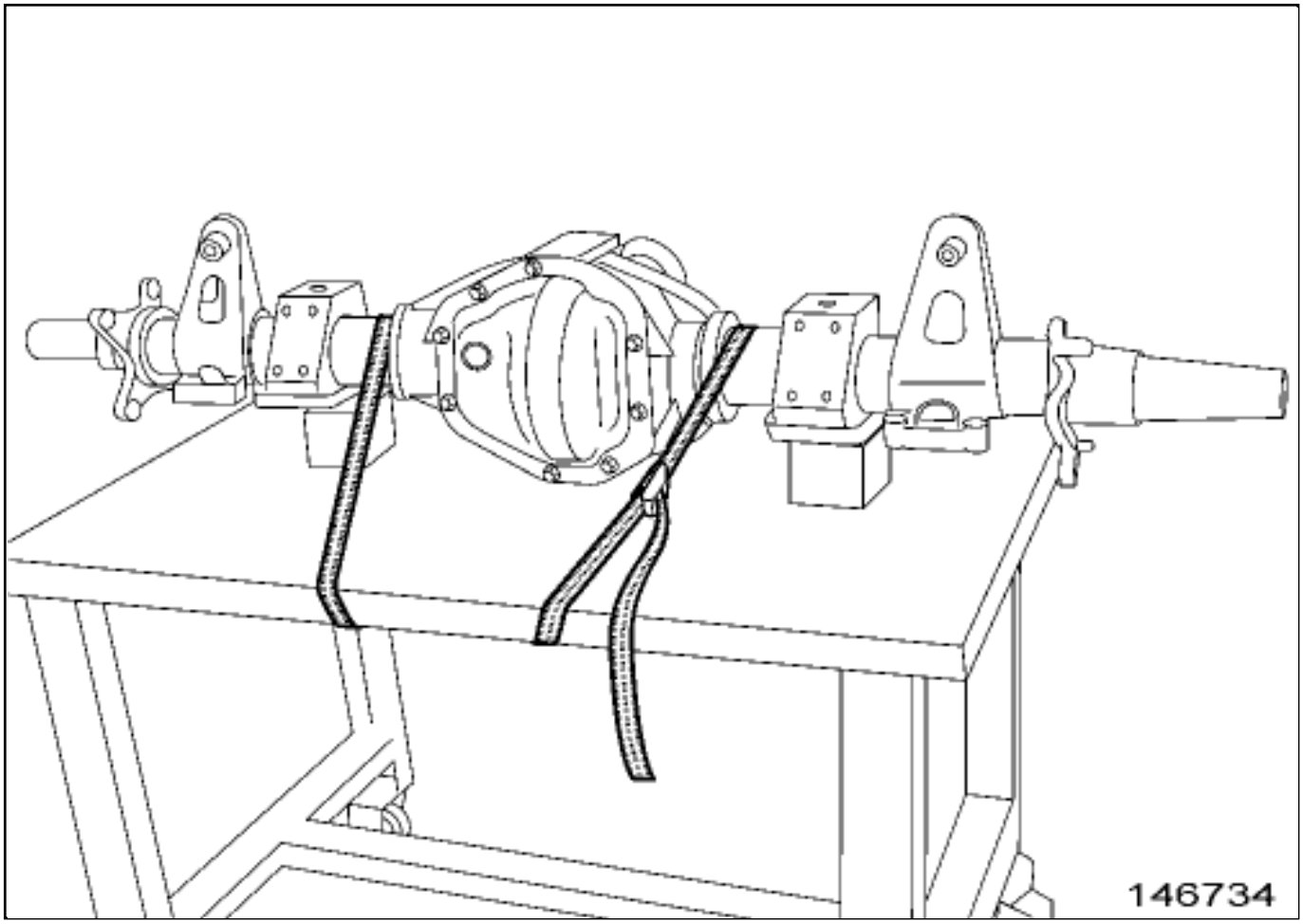
IMPORTANT

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 26A, Rear axle , Rear final drive: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the rear final driveRear final drive assembly: Exploded view .



- Strap the rear final drive on a workbench using a safety strap(s).

Note:

The weight of the rear final drive is very important.

- Remove the rear anti-roll bar Rear axle assembly: Exploded view (33A, Rear axle components).

- Remove the rear brake discs Rear hub carrier assembly: Exploded view (33A, Rear axle components).

- Remove:
  - the rear wheel driveshafts Rear hub carrier assembly: Exploded view (33A, Rear axle components),
  - the rear final drive housing Rear final drive assembly: Exploded view ,
  - the rear final drive differential Rear final drive assembly: Exploded view ,
  - the longitudinal driveshaft input seal Rear final drive assembly: Exploded view ,

2. REMOVAL OPERATION

- Remove the rear final drive input shaft.

REFITTING

1. REFITTING PREPARATION OPERATION

1- IN THE EVENT OF REPLACEMENT

- Remove the bearing of the rear final drive input shaft Rear final drive assembly: Exploded view .
- Refit the bearing of the rear final drive input shaft Rear final drive assembly: Exploded view .

2. REFITTING OPERATION

- Proceed in the reverse order to removal.
- Adjust the rear final drive differential (see 26A, Rear axle , Rear final drive differential: Adjustment) .

REAR FINAL DRIVE: 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
Adapter for engine support tool Mot.1390.	Mot. 1709

Equipment required
safety strap(s)
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear axle assembly: Exploded view (33A, Rear axle components).

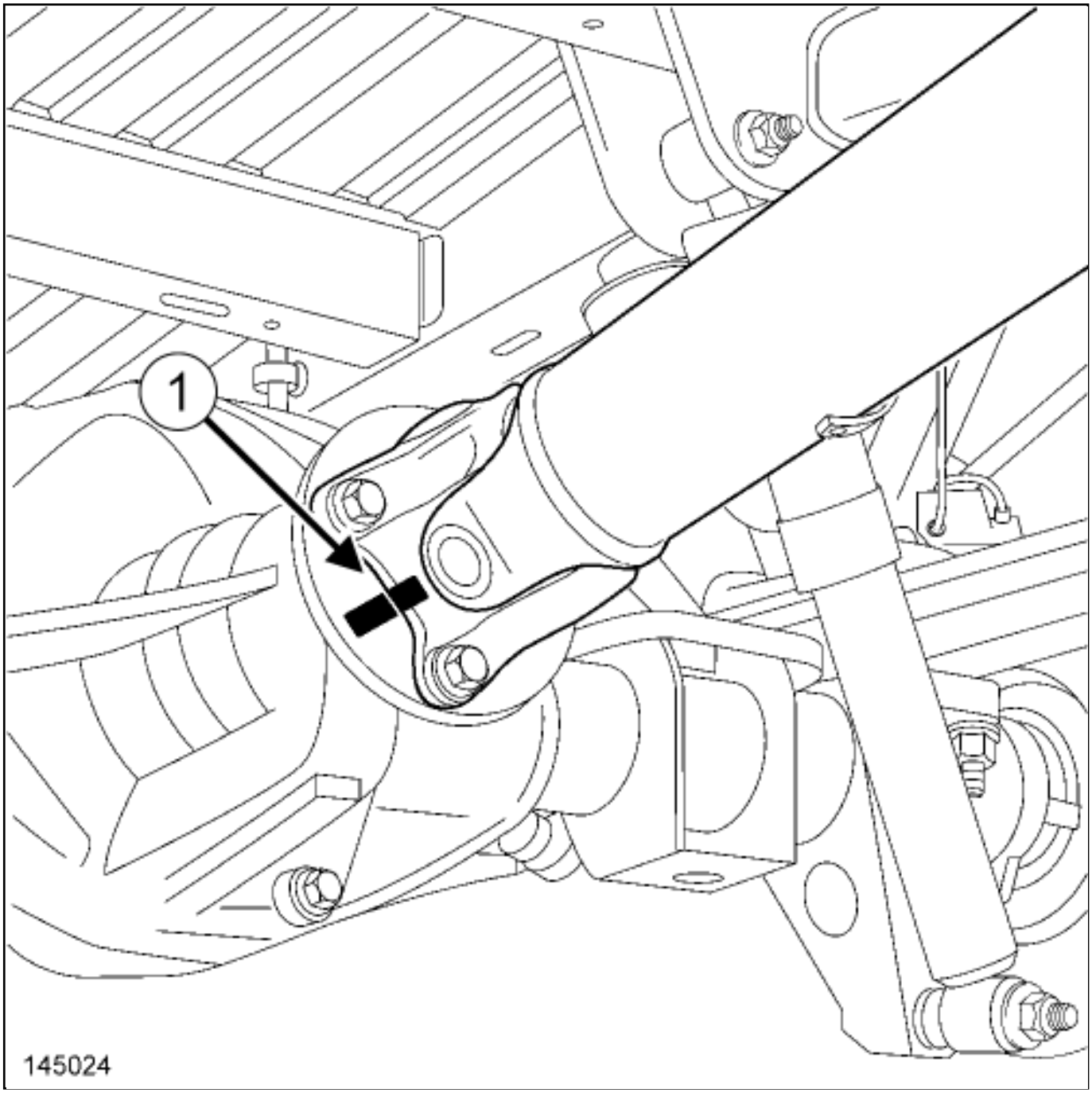
WARNING

To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

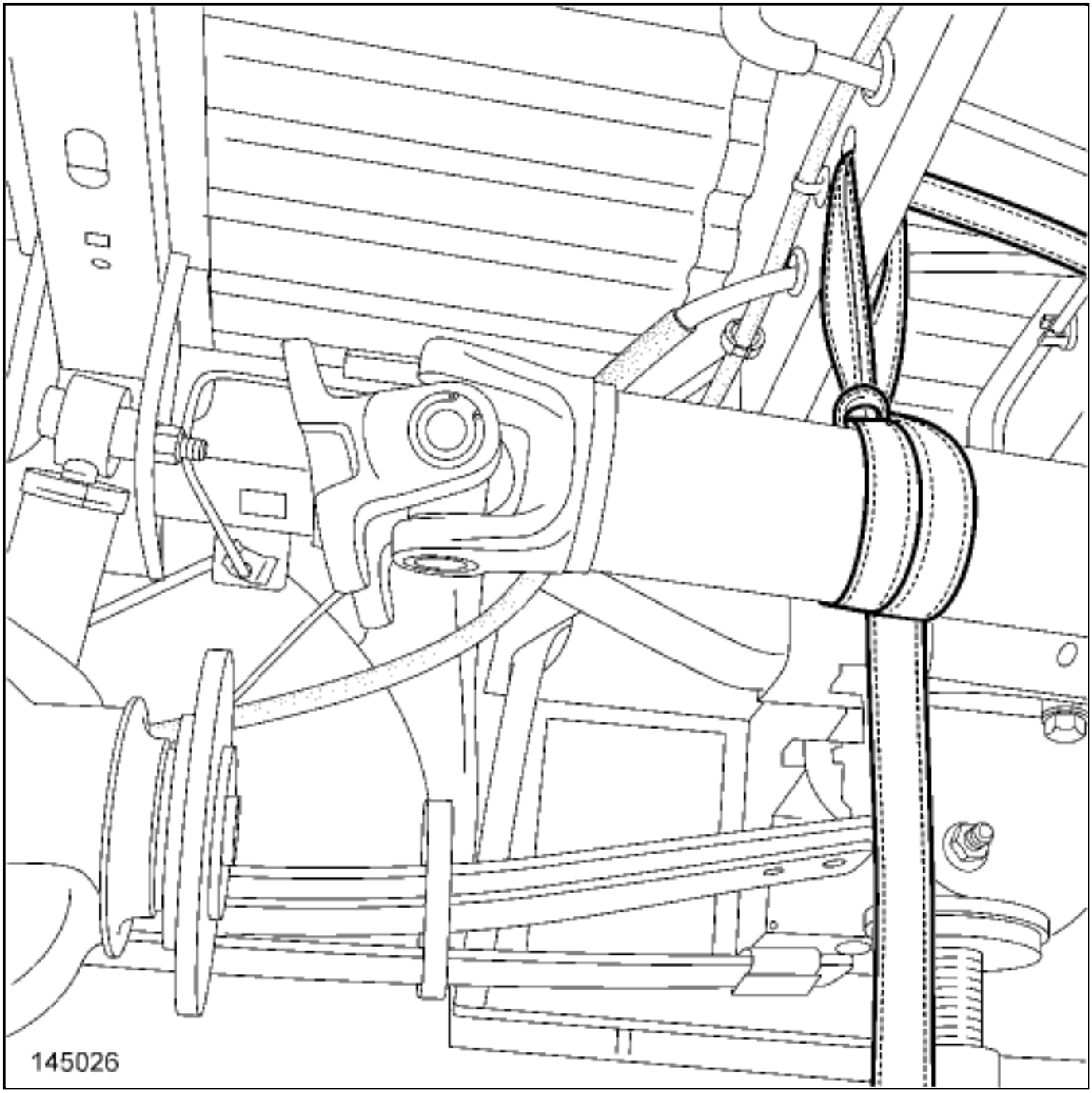
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting (35A, Wheels and tyres).

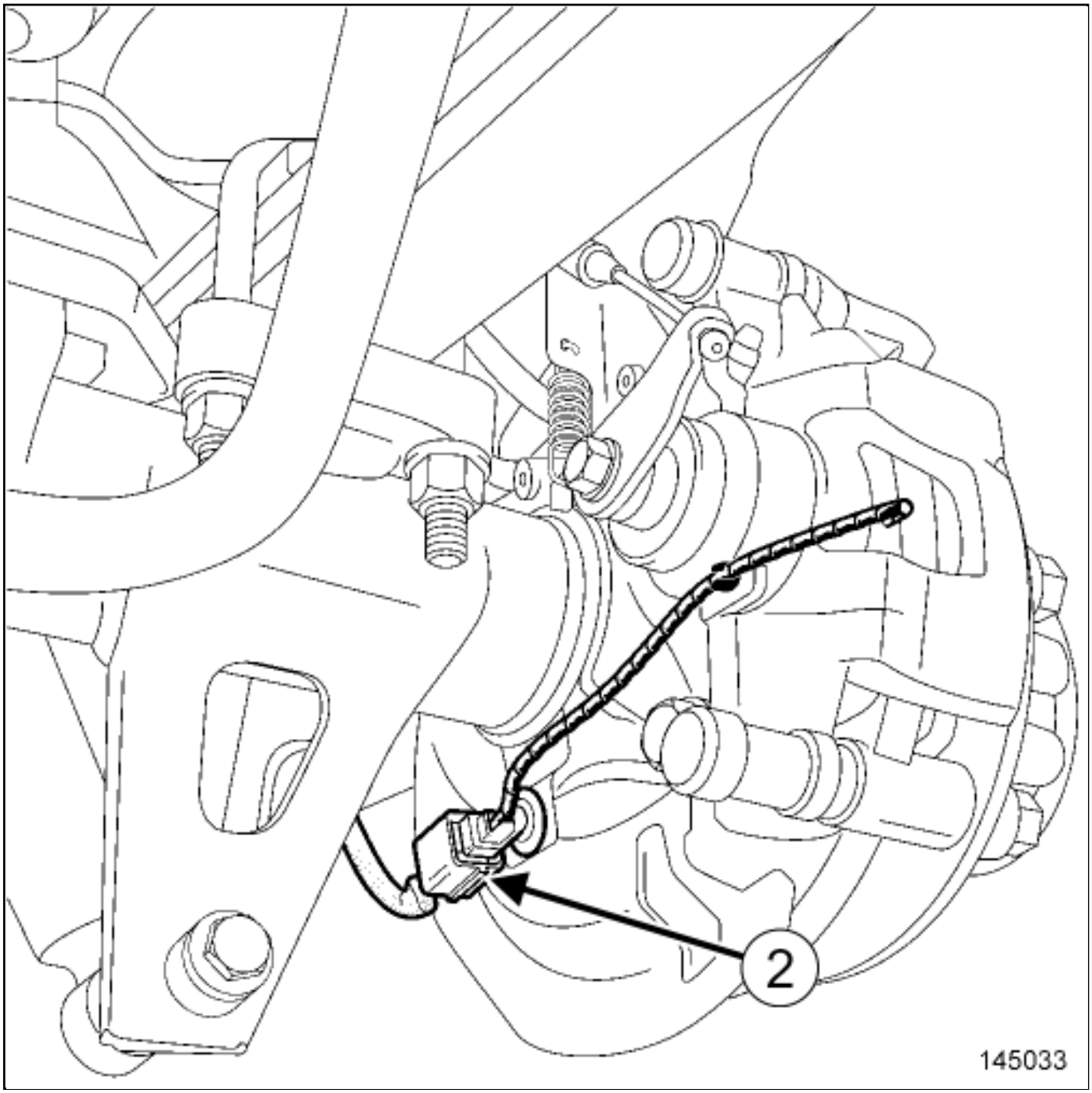


- Mark the position of the longitudinal driveshaft bracket at(1) .

- Remove the bolts and nuts from the universal joint on the final drive side Driveshaft assembly: Exploded view .

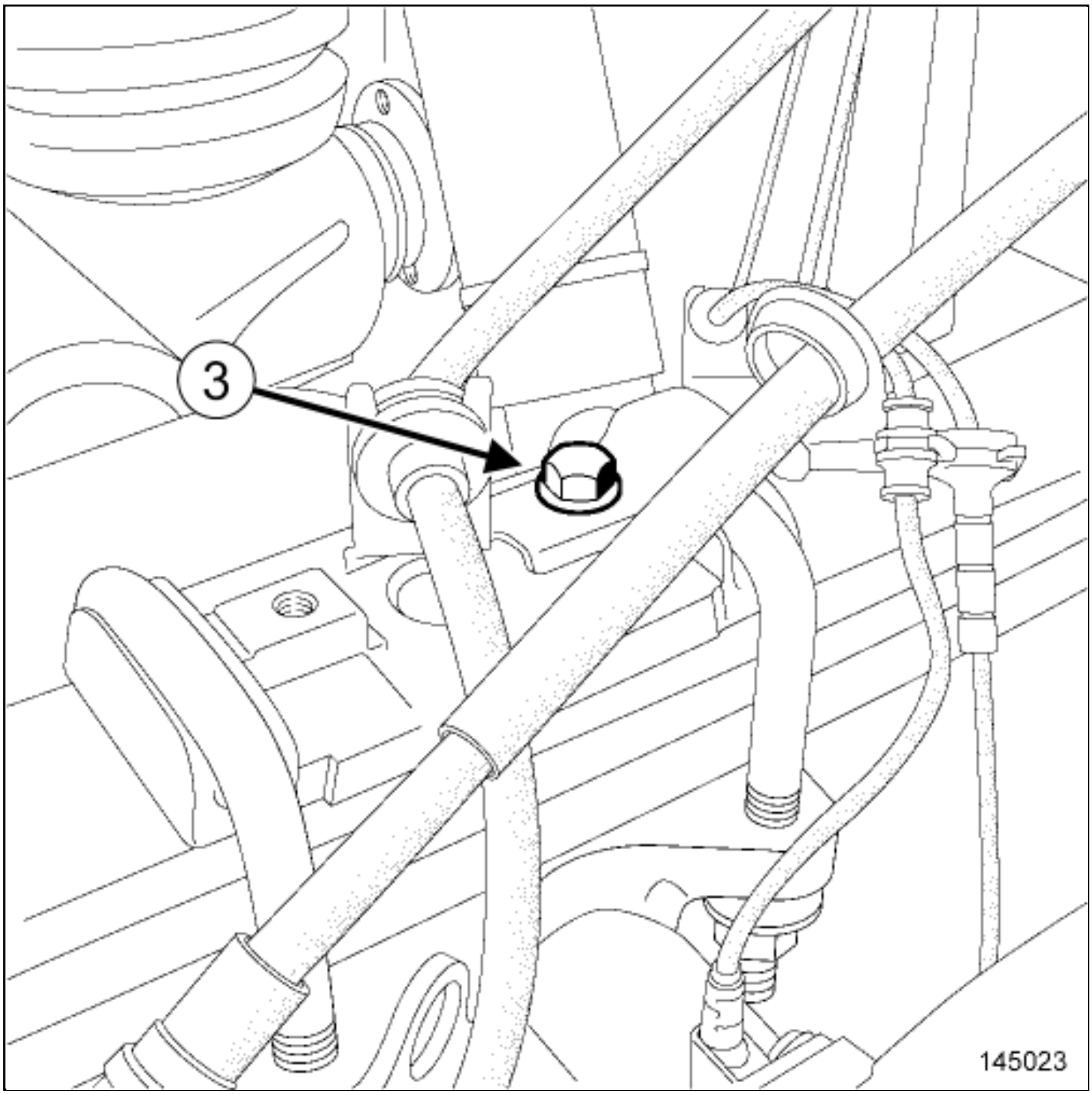


- Attach the longitudinal driveshaft to the body using a safety strap(s).

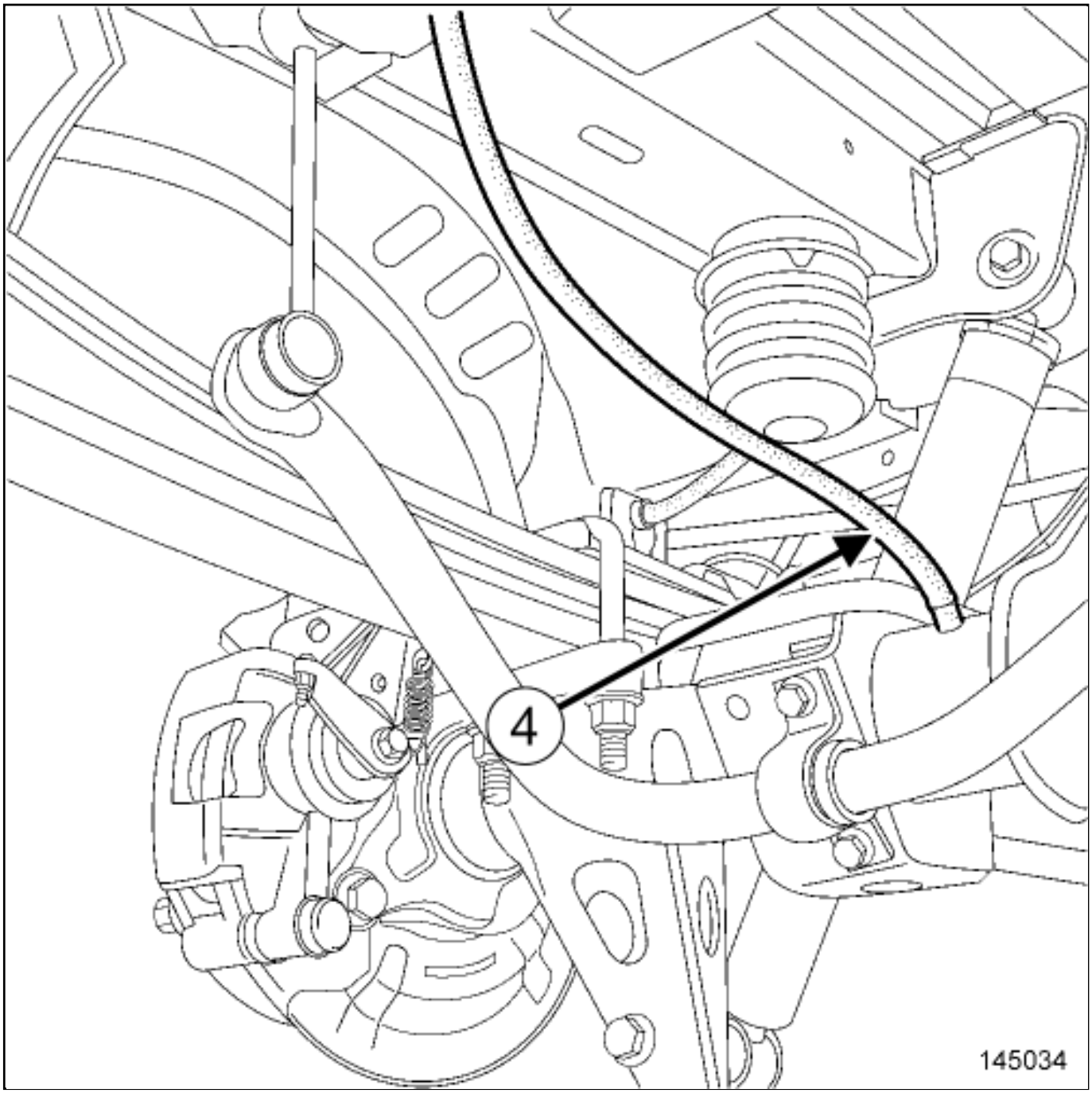


- Disconnect the connector(2) from the rear brake pad wear warning light.
- Unclip the wiring of the rear brake pad wear warning light.
- Remove Rear brake calliper assembly: Exploded view (33A, Rear axle components):
  - the plugs of the brake calliper guide pin.
  - the brake calliper guide pins.
- Attach the rear brake callipers to the body.
- Remove the ABS sensor boltRear hub carrier assembly: Exploded view (33A, Rear axle components).

- Move the ABS sensor to one side.



- Remove the bolt(3) from the handbrake cable support.
- Move the support away from the handbrake cable.

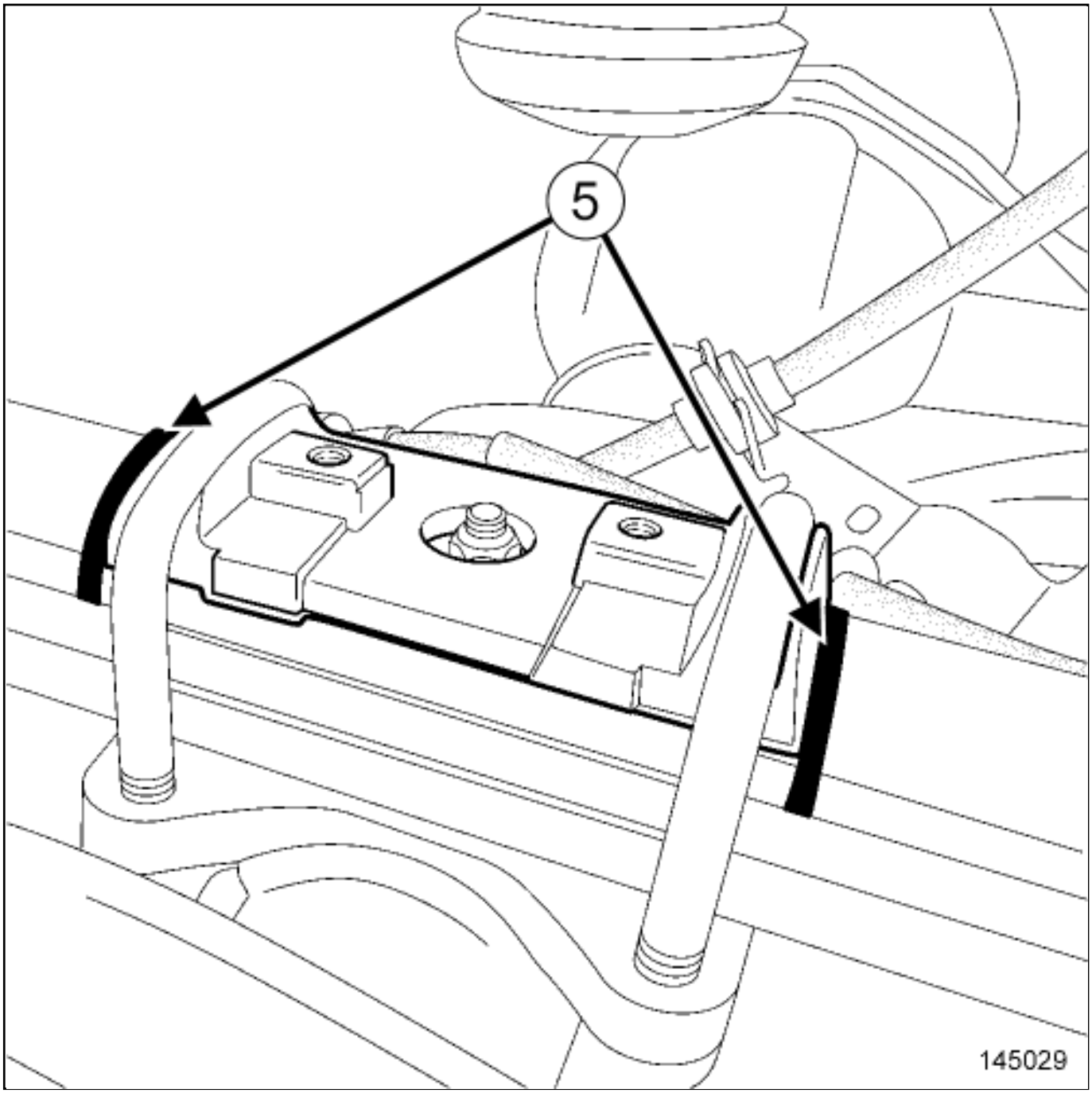


Disconnect the breather pipe(4) from the rear final drive.

Remove Rear axle assembly: Exploded view (33A, Rear axle components):

- the rear shock absorbers,
- the anti-roll bar tie rod upper bolt and nut.

2. REMOVAL OPERATION



Make a mark between the suspension spring brackets and the rear suspension springs using a indelible pencil .

Fit the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) under the rear final drive.

Attach the rear final drive to the toolSupport for removal - refitting of engine - gearbox assembly (Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) using a safety strap(s).

Remove Rear axle assembly: Exploded view (33A, Rear axle components):

- the nuts of the suspension spring calliper,
- the rear final drive.

When replacing the rear final drive, remove:

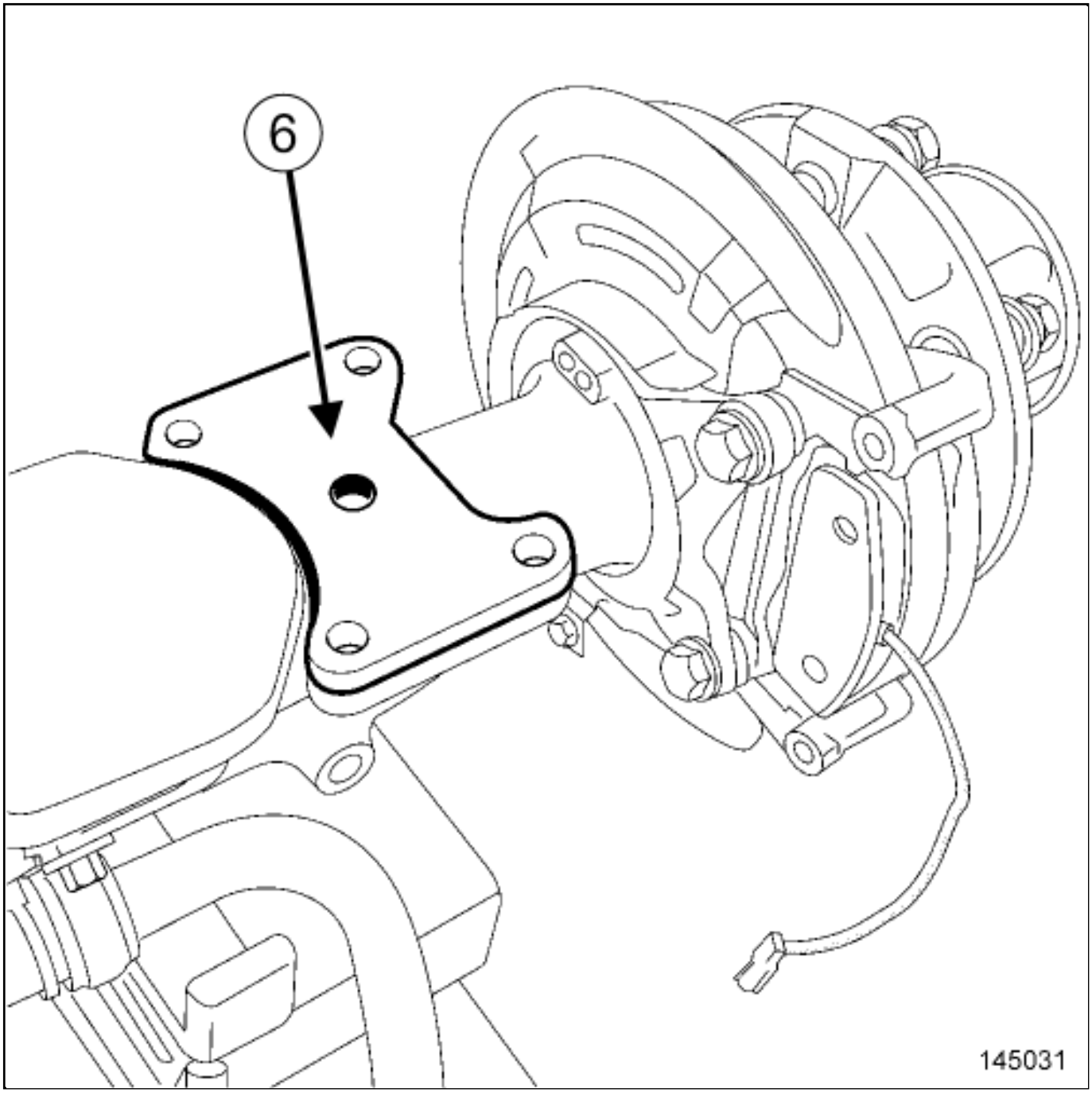
- the rear anti-roll barRear axle assembly: Exploded view (33A, Rear axle components),
- the brake calliper mountingsRear brake calliper assembly: Exploded view (33A, Rear axle components),
- the rear wheel driveshaftsRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the rear hubRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the brake disc guardRear hub carrier assembly: Exploded view (33A, Rear axle components).

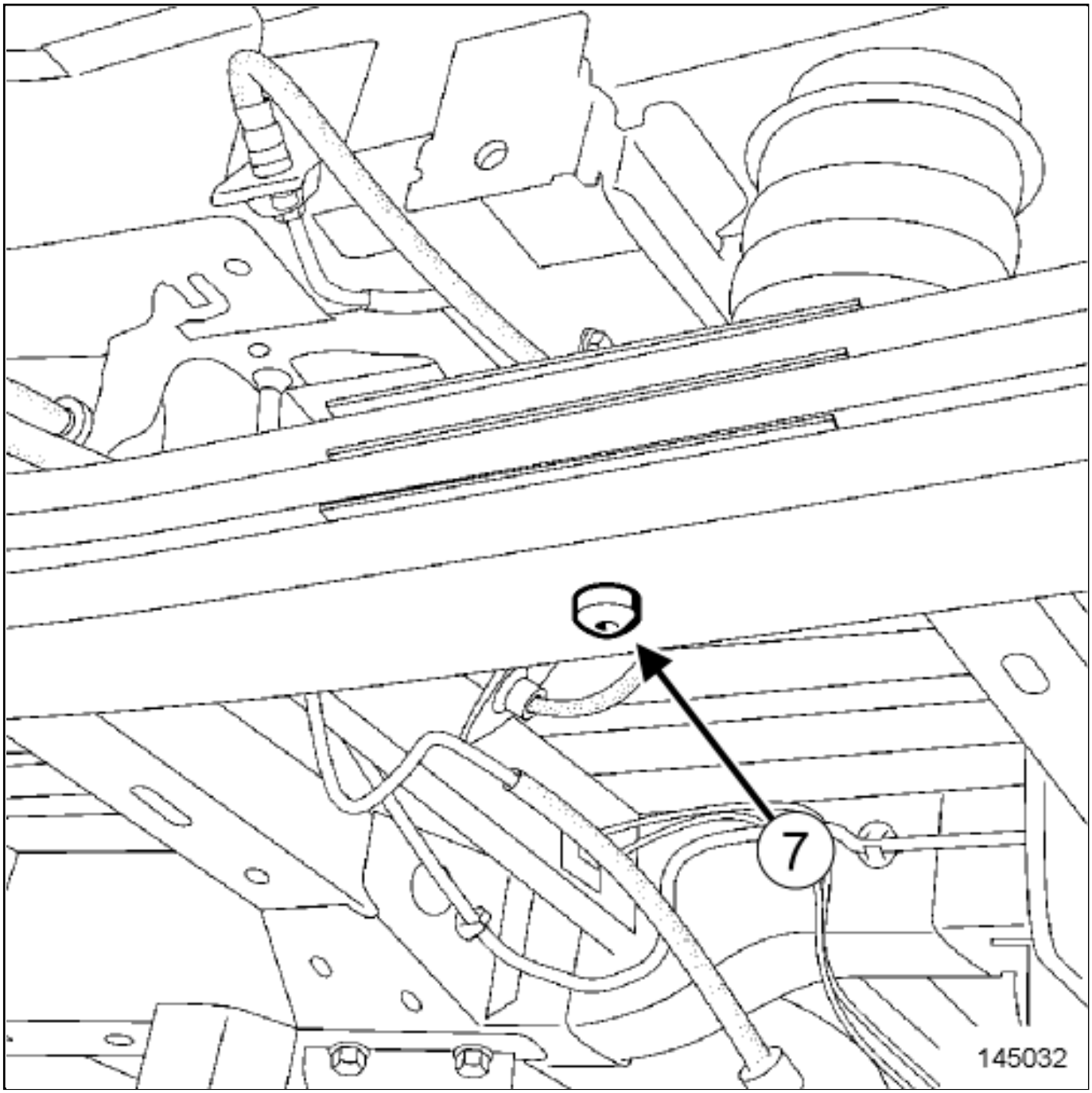
REFITTING

When replacing the rear final drive, refit:

- the brake disc guardRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the rear hubRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the rear wheel driveshaftsRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the brake calliper mountingsRear brake calliper assembly: Exploded view (33A, Rear axle components),

the rear anti-roll bar**Rear axle assembly: Exploded view** (33A, Rear axle components).





Note:

Position the rear final drive(6) on the pin(7) of the rear suspension springs.

Refit the suspension spring brackets on the marks made during removal.

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

REAR FINAL DRIVE: 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
Adapter for engine support tool Mot.1390.	Mot. 1709

Equipment required
safety strap(s)
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear axle assembly: Exploded view (33A, Rear axle components).

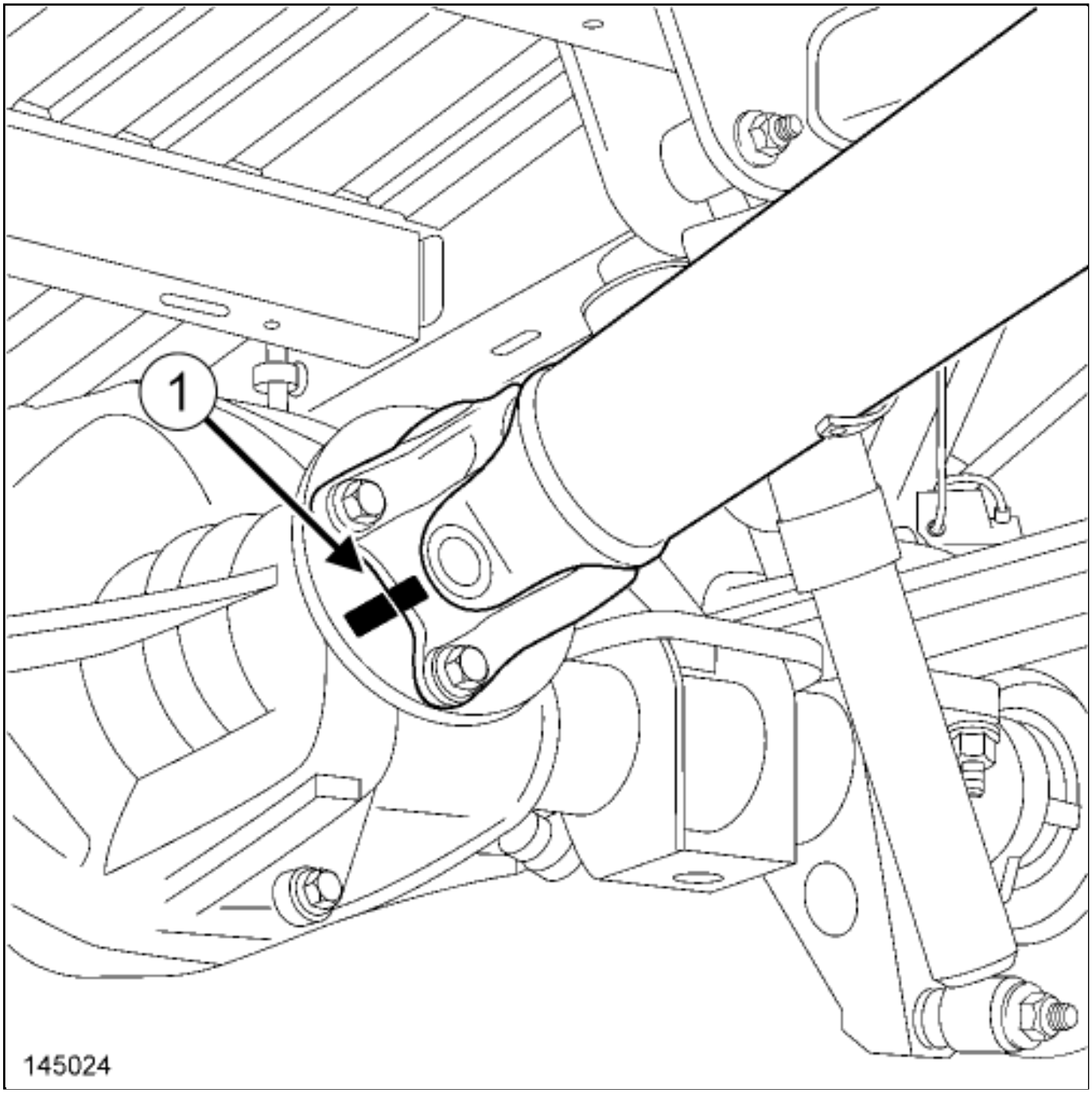
WARNING

To prevent the vehicle from falling, lash it to the vehicle lift using a strap.

REMOVAL

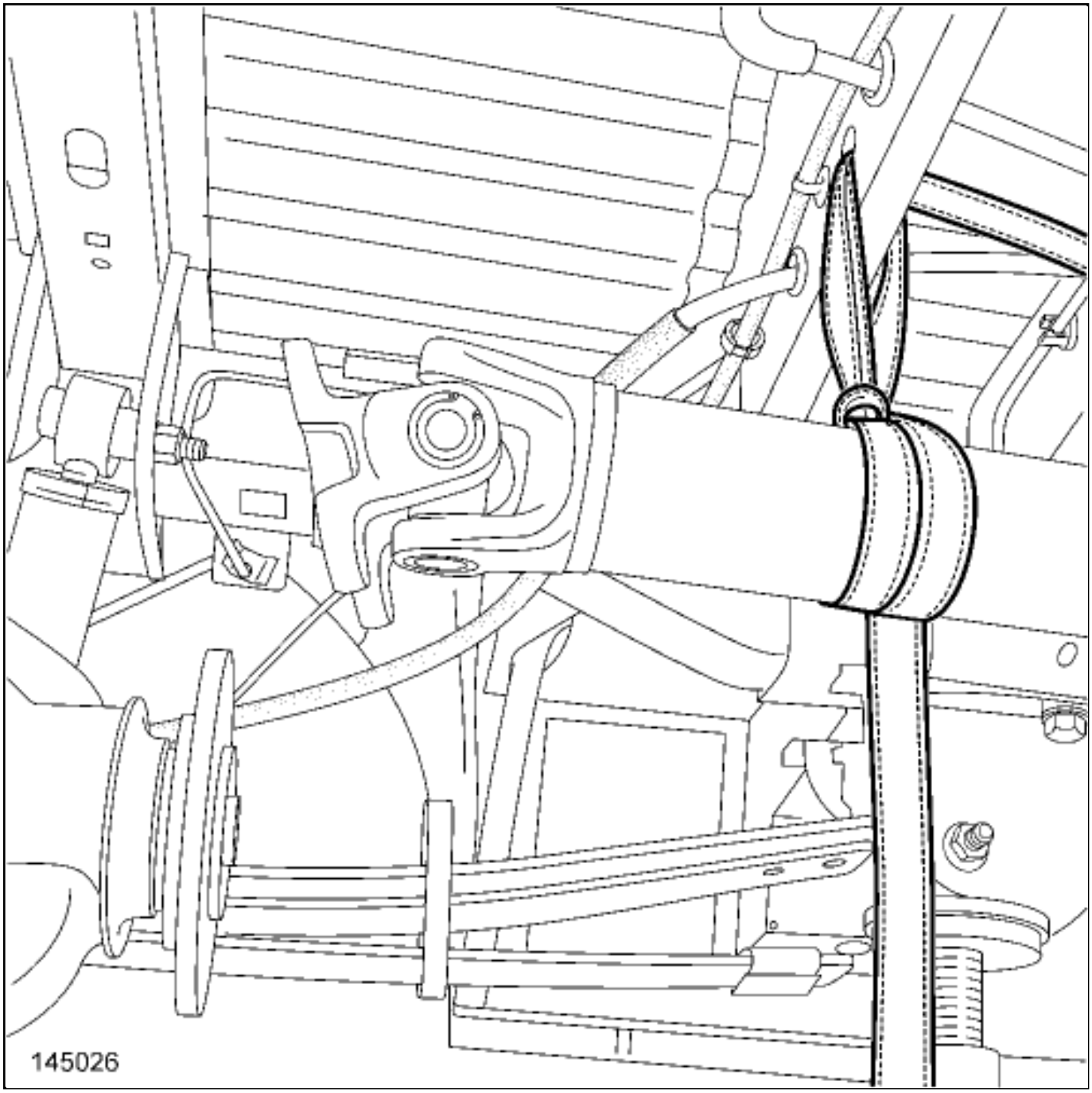
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting (35A, Wheels and tyres).

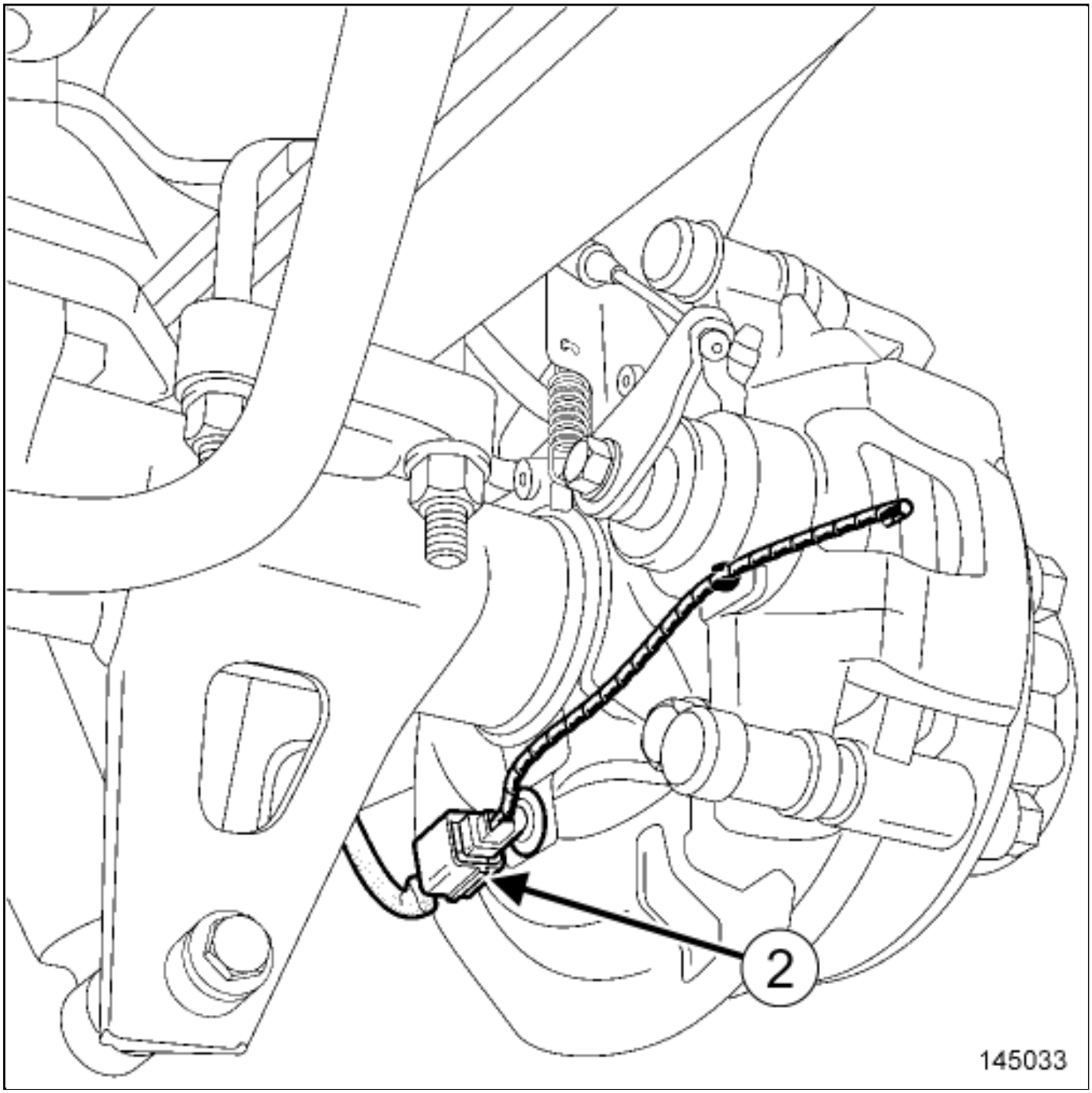


- Mark the position of the longitudinal driveshaft bracket at(1) .

- Remove the bolts and nuts from the universal joint on the final drive side Driveshaft assembly: Exploded view .

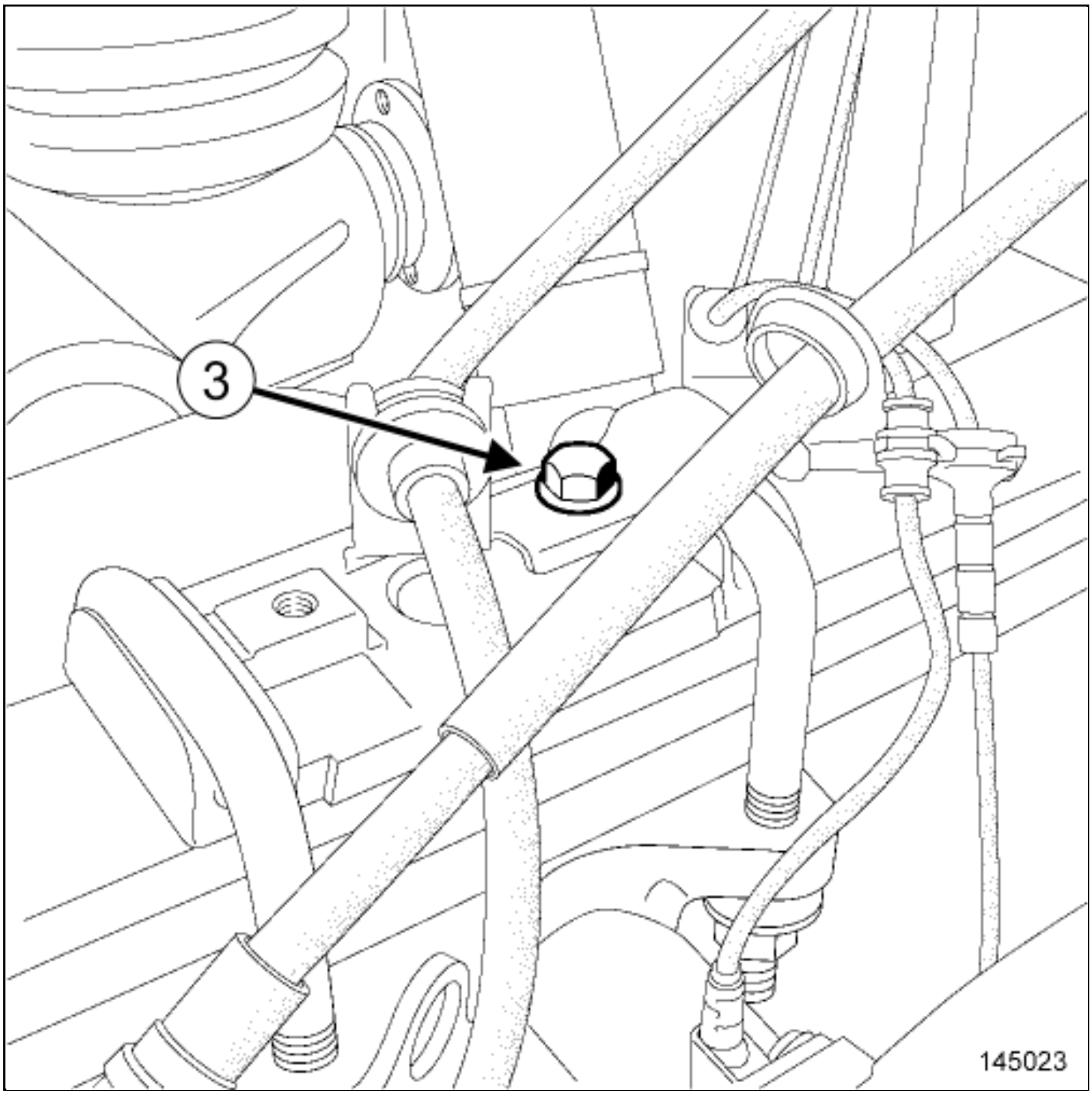


- Attach the longitudinal driveshaft to the body using a safety strap(s).

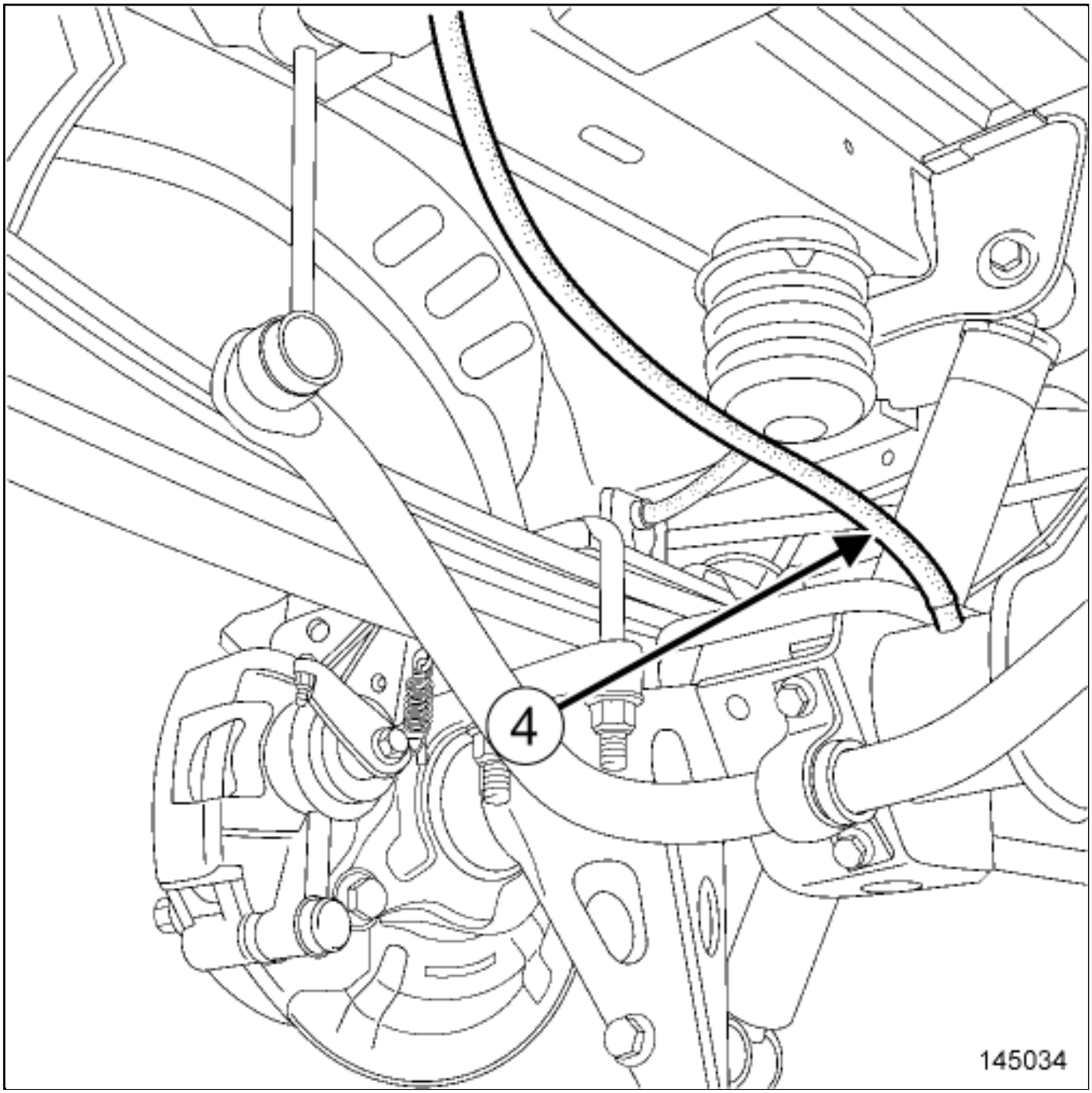


- Disconnect the connector(2) from the rear brake pad wear warning light.
- Unclip the wiring of the rear brake pad wear warning light.
- Remove Rear brake calliper assembly: Exploded view (33A, Rear axle components):
  - the plugs of the brake calliper guide pin.
  - the brake calliper guide pins.
- Attach the rear brake callipers to the body.
- Remove the ABS sensor boltRear hub carrier assembly: Exploded view (33A, Rear axle components).

- Move the ABS sensor to one side.



- Remove the bolt(3) from the handbrake cable support.
- Move the support away from the handbrake cable.

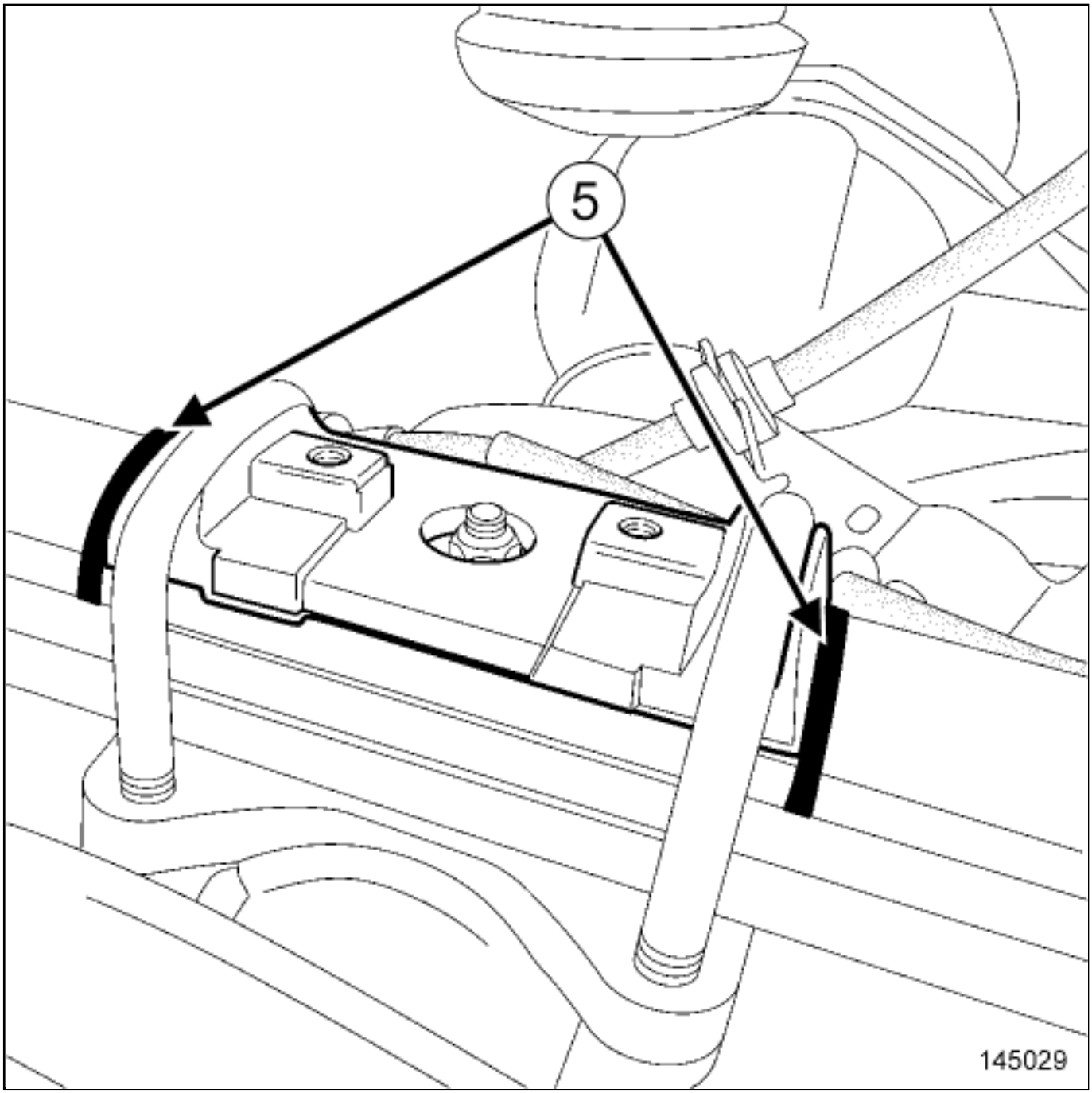


Disconnect the breather pipe(4) from the rear final drive.

Remove Rear axle assembly: Exploded view (33A, Rear axle components):

- the rear shock absorbers,
- the anti-roll bar tie rod upper bolt and nut.

2. REMOVAL OPERATION



Make a mark between the suspension spring brackets and the rear suspension springs using a indelible pencil .

Fit the toolSupport for removal - refitting of engine - gearbox assembly(Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) under the rear final drive.

Attach the rear final drive to the toolSupport for removal - refitting of engine - gearbox assembly (Mot. 1390) equipped with the toolAdapter for engine support tool Mot.1390.(Mot. 1709) using a safety strap(s).

Remove Rear axle assembly: Exploded view (33A, Rear axle components):

- the nuts of the suspension spring calliper,
- the rear final drive.

When replacing the rear final drive, remove:

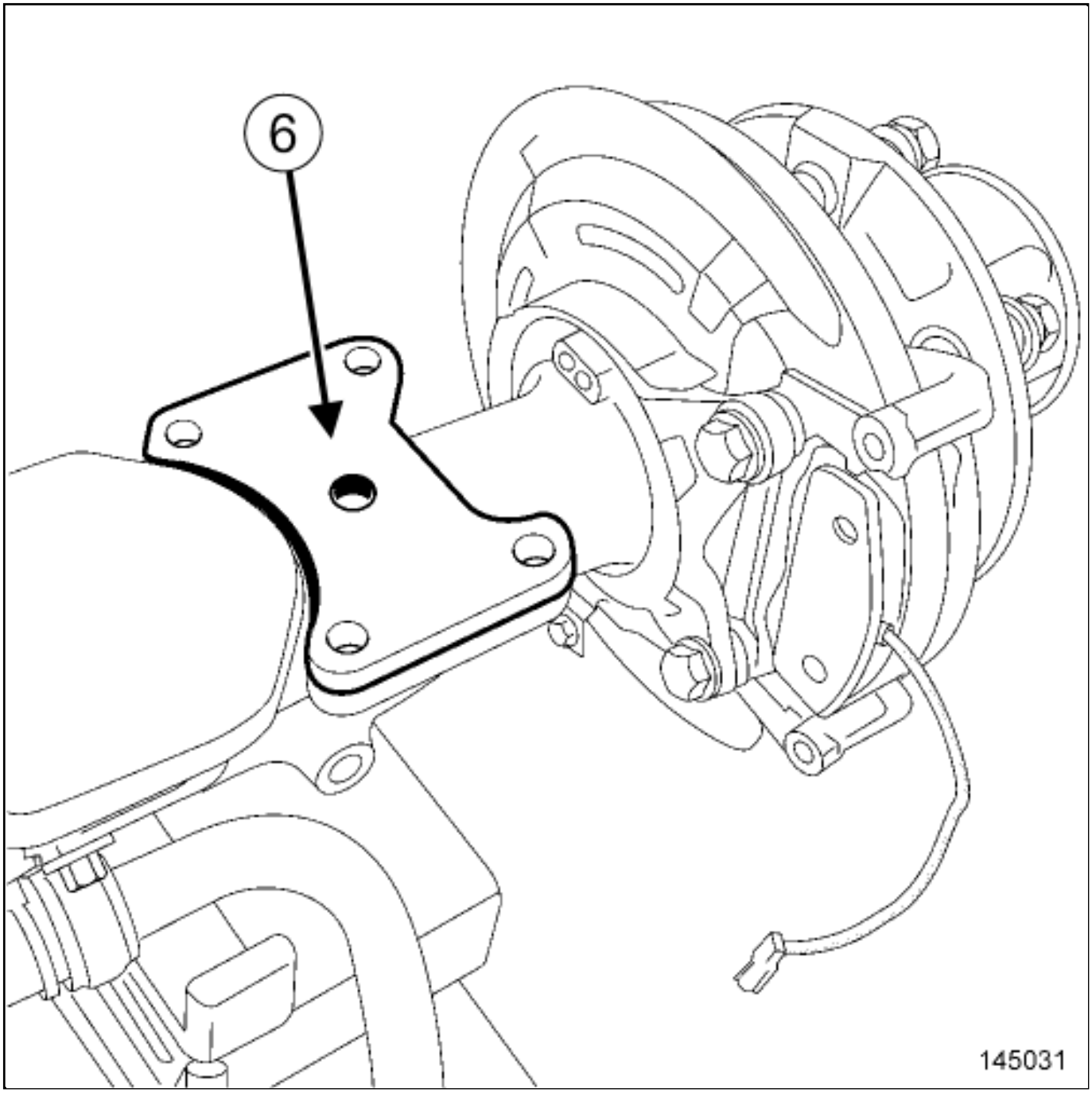
- the rear anti-roll barRear axle assembly: Exploded view (33A, Rear axle components),
- the brake calliper mountingsRear brake calliper assembly: Exploded view (33A, Rear axle components),
- the rear wheel driveshaftsRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the rear hubRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the brake disc guardRear hub carrier assembly: Exploded view (33A, Rear axle components).

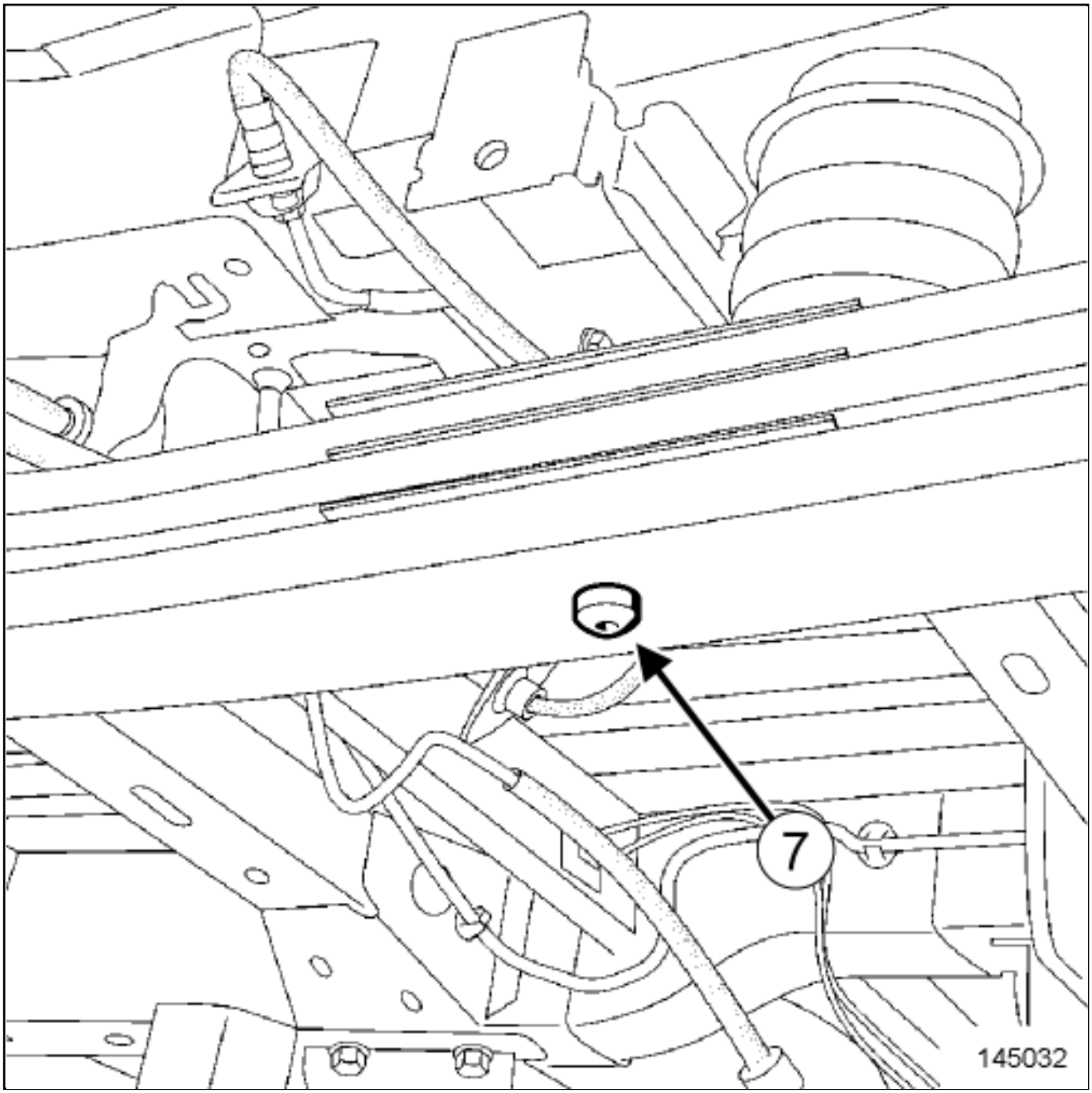
REFITTING

When replacing the rear final drive, refit:

- the brake disc guardRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the rear hubRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the rear wheel driveshaftsRear hub carrier assembly: Exploded view (33A, Rear axle components),
- the brake calliper mountingsRear brake calliper assembly: Exploded view (33A, Rear axle components),

the rear anti-roll bar**Rear axle assembly: Exploded view** (33A, Rear axle components).





Note:

Position the rear final drive(6) on the pin(7) of the rear suspension springs.

Refit the suspension spring brackets on the marks made during removal.

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

REAR HEADLINING: REMOVAL - REFITTING

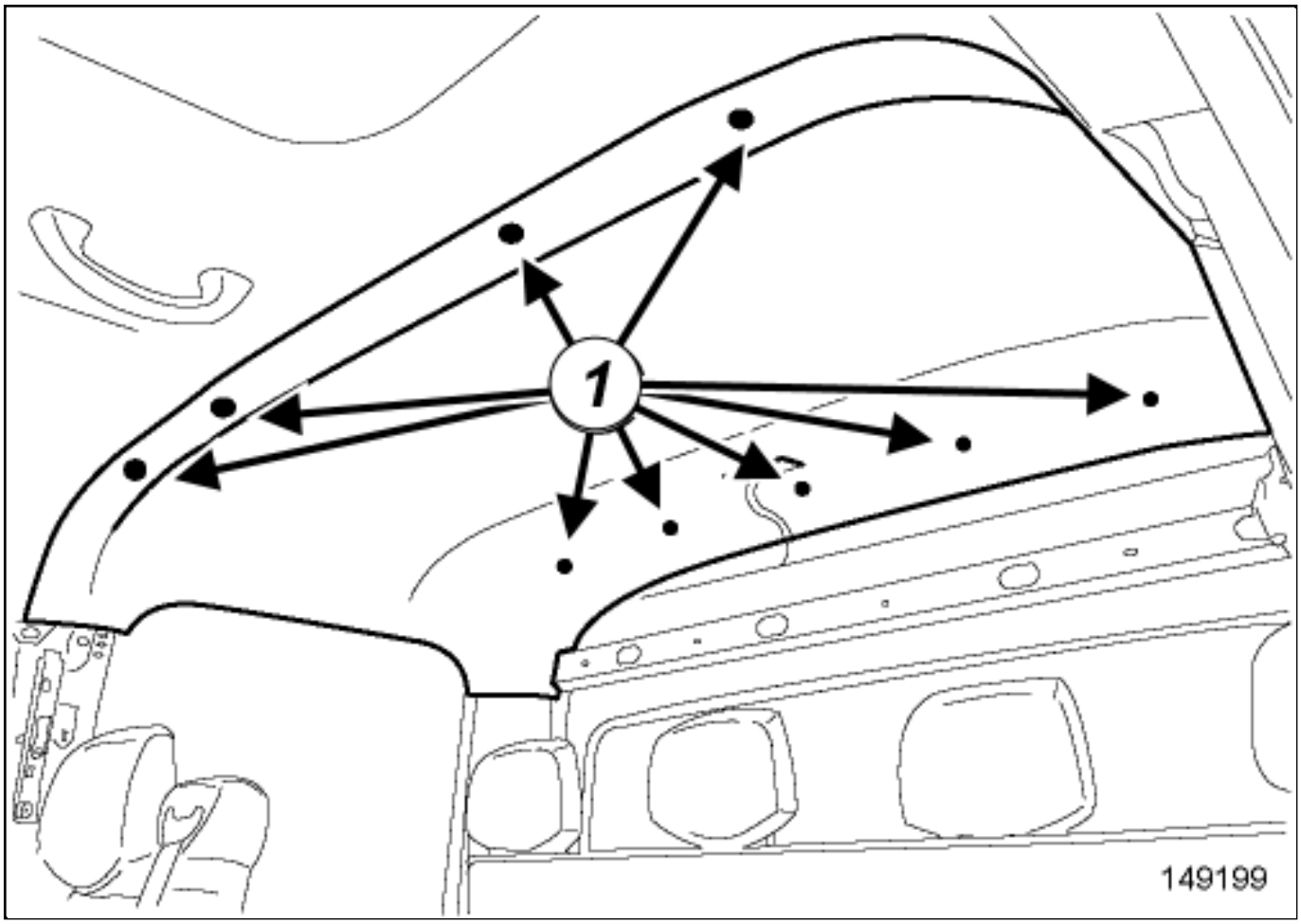
REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove:

- the B-pillar trim (see 71A, Body internal trim, B-pillar trim: Removal - Refitting) ,
- the headlining light Headlining light: Removal - Refitting (81B, Interior lighting).

2. REMOVAL OPERATION



Remove:

- the clips(1) ,
- the rear headlining.

REFITTING

- Proceed in the reverse order to removal.

Repair-70x02x04x10-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

REAR HEIGHT SENSOR: REMOVAL - REFITTING

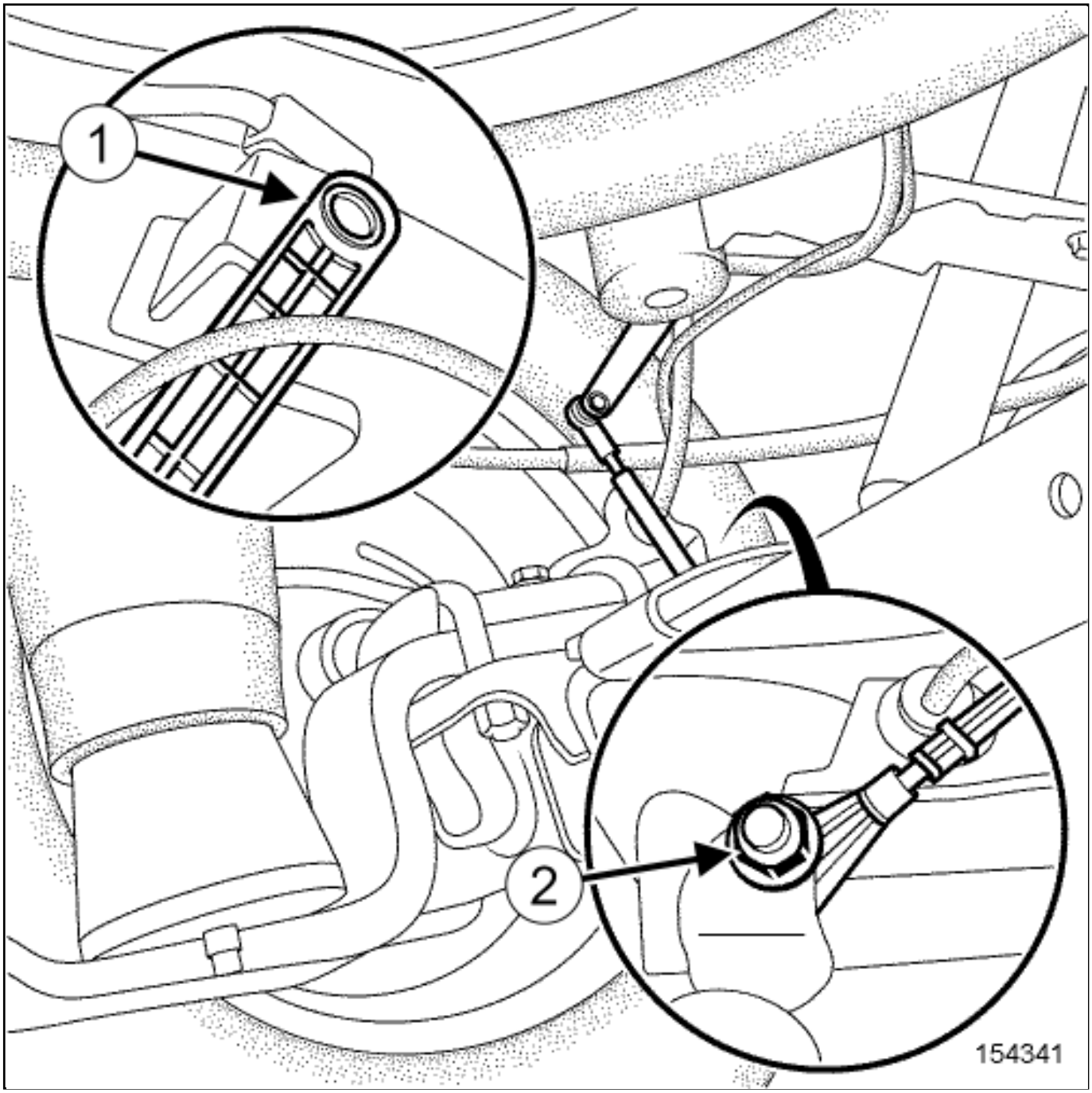
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** .
- Disconnect the battery(see **Battery: Removal - Refitting**) .

2. REMOVAL OPERATION

- Disconnect the rear height sensor connector.



Remove:

- the rear height sensor bolt(1) from the body,
- the rear height sensor bolt(2) from the rear axle,
- the rear height sensor.

REFITTING

1. REFITTING OPERATION

Refit the rear height sensor.

- Torque tighten:
  - the rear height sensor bolt on the body 12 N.m,
  - the rear height sensor bolt on the rear axle 12 N.m.

- Connect the rear height sensor connector.

2. FINAL OPERATION

- Proceed in the reverse order to removal.

REAR HUB CARRIER ASSEMBLY: EXPLODED VIEW

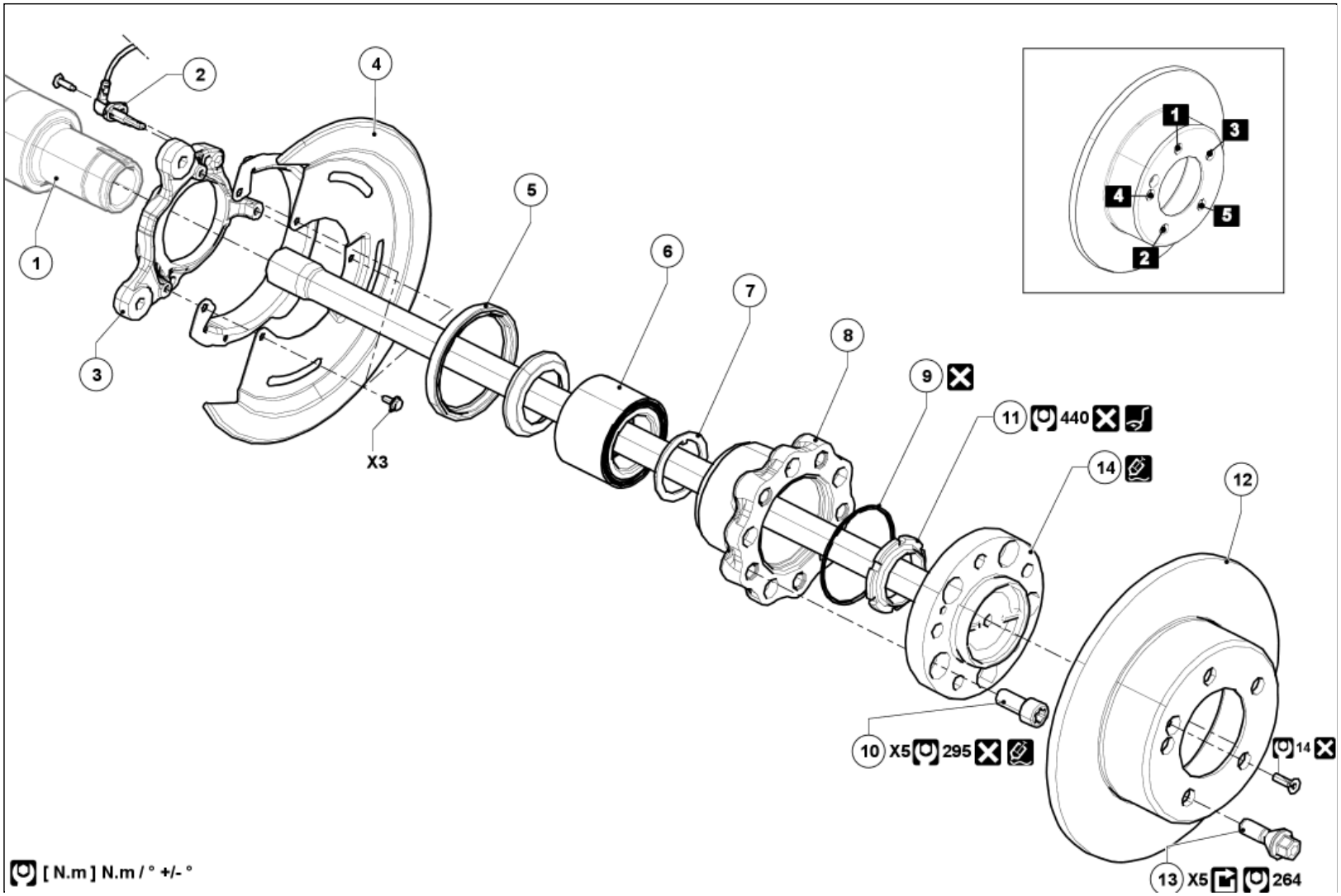


Illustration key: Description (01D, Mechanical introduction).

(see 33A, Rear axle components, Rear axle components: Precautions for the repair)

Mark	Description	Information
1	Rear axle	Rear final drive: Removal - Refitting
2	Rear wheel speed sensor	
3	Rear brake calliper mounting	
4	Rear brake disc protector	
5	ABS target	
6	Rear hub carrier bearing	(see 33A, Rear axle components, Rear hub carrier bearing: Removal - Refitting)
7	Thrust washer	
8	Rear wheel hub	
9	Seal	
10	Driveshaft bolt	Vehicle: Parts and consumables for the repair When refitting, add high strength thread lock
11	Hub mounting nut	(ROU. 1924)
12	Rear brake disc	(see 33A, Rear axle components, Rear brake disc: Removal - Refitting)
13	Wheel bolts	
14	Driveshaft	Vehicle: Parts and consumables for the repair When refitting, add SILICONE ADHESIVE SEALANT

REAR HUB CARRIER BEARING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
roll pin punch

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

- Remove the rear wheelWheel: Removal - Refitting .

- Remove (see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) :
  - the rear brake pads,
  - the rear brake calliper mounting.

- Remove the rear driveshaft(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

- Remove (see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) :
  - the rear brake disc,
  - the rear wheel arch.

2. REMOVAL OPERATION

Remove the exterior cages from the rear hub carrier bearings(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) using a roll pin punch.

REFITTING

1. REFITTING PREPARATION OPERATION

Use surface cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:

- the internal and external surfaces of the bearing, in contact with the hub and the rear axle,
- the rear axle surfaces in contact with the bearing,
- the hub surfaces in contact with the bearing.

CAUTION

To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

CAUTION

Do not press the bearing's internal bush so as to avoid damaging the bearing (very high shrink-fitting force).

Check the condition of the surfaces of the hub and the rear axle bore in contact with the bearing.

Replace any component whose contact surfaces have deep scratches or cracks.

2. REFITTING OPERATION

Refit the exterior cages of the rear hub carrier bearings(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) using a roll pin punch.

Proceed in the reverse order to removal.

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

REAR IMPACT LOWER CROSS MEMBER: REMOVAL - REFITTING

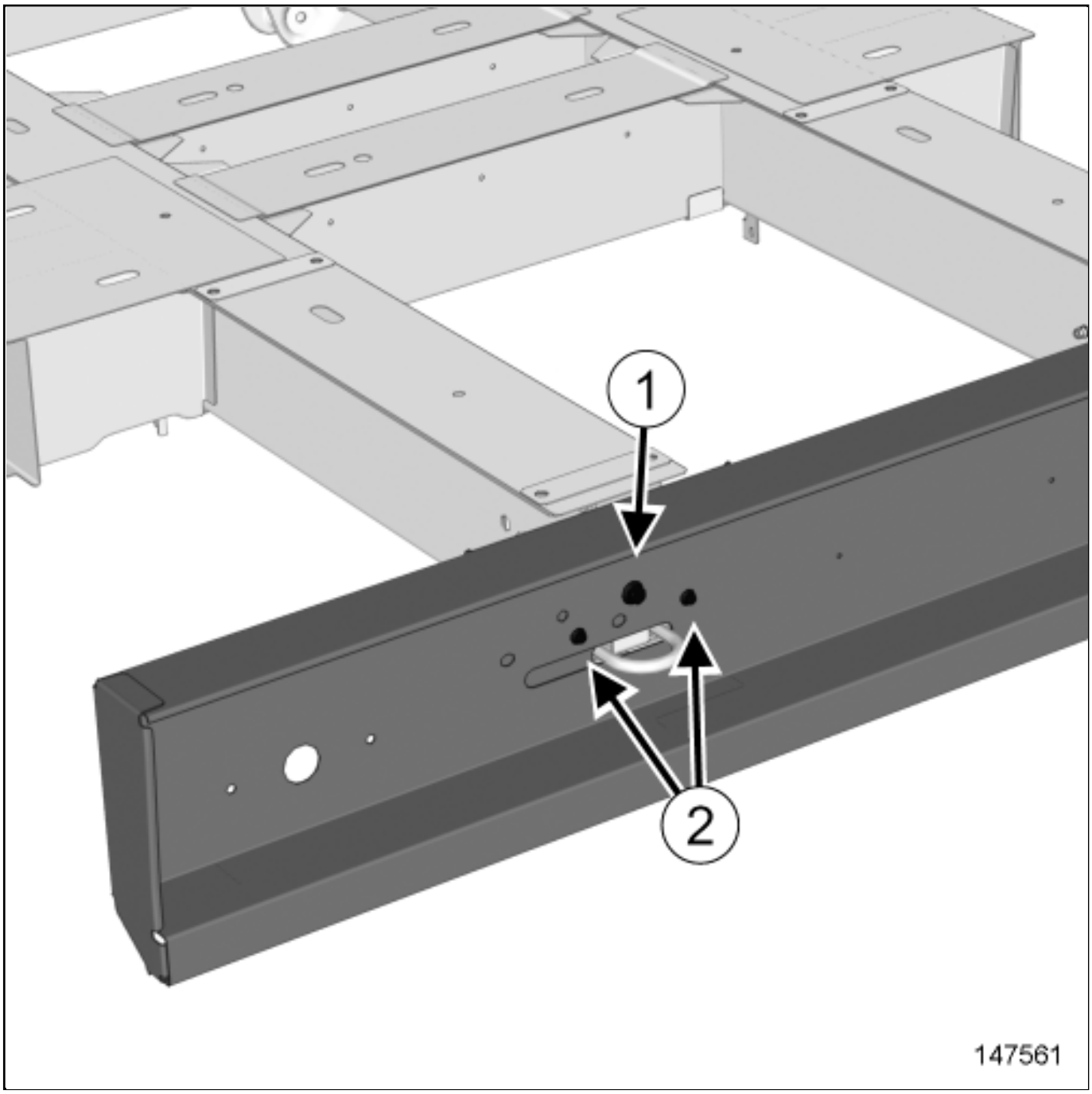
Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1.



Remove:

- the bolts(1) and (2) ,
- the rear impact lower cross member.

REFITTING

Proceed in the reverse order to removal.

Repair-40x09x28-01x37-1-11-1.xml

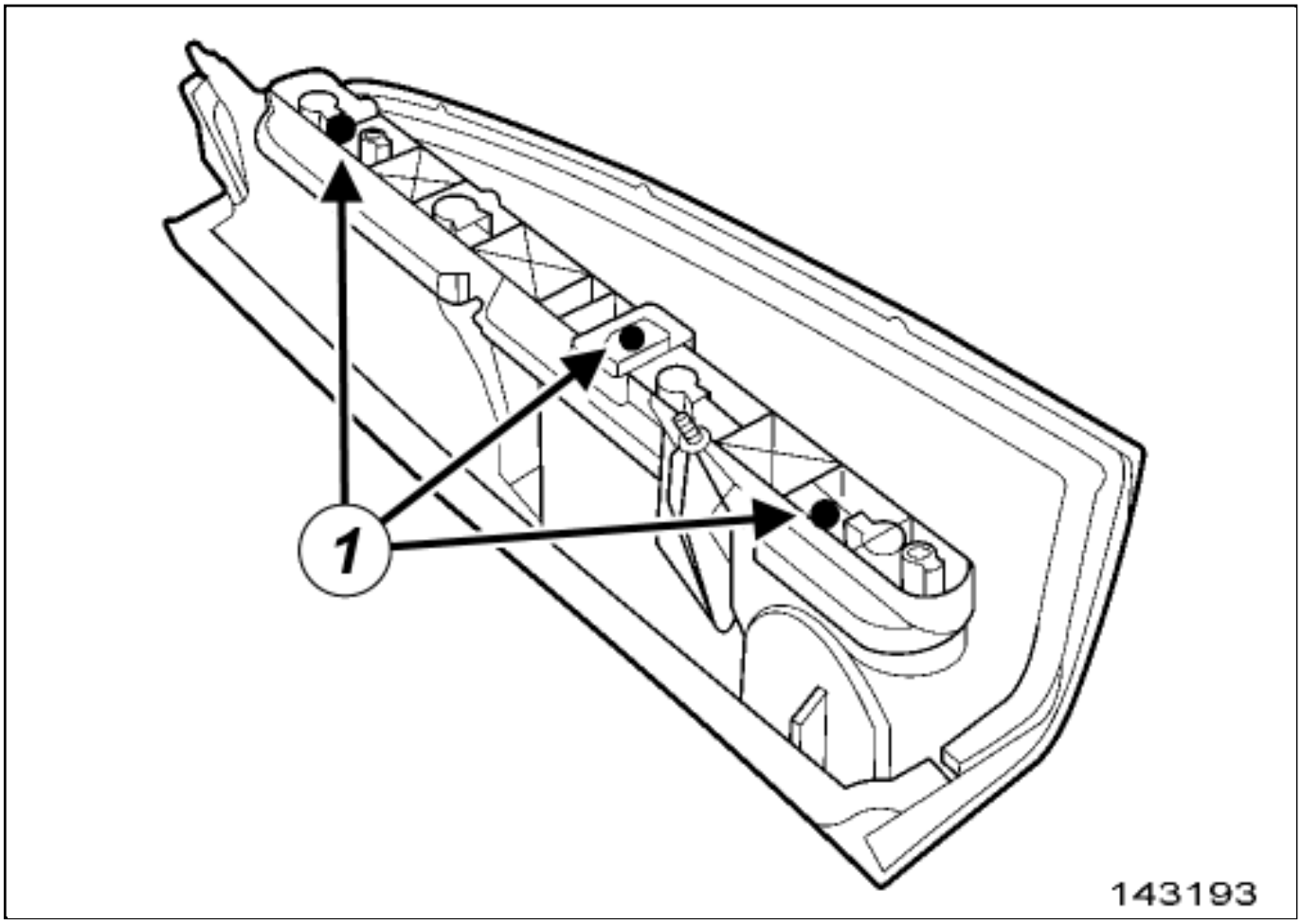
XSL version : 3.02 du 22/07/11

REAR LIGHT BULB: REMOVAL - REFITTING

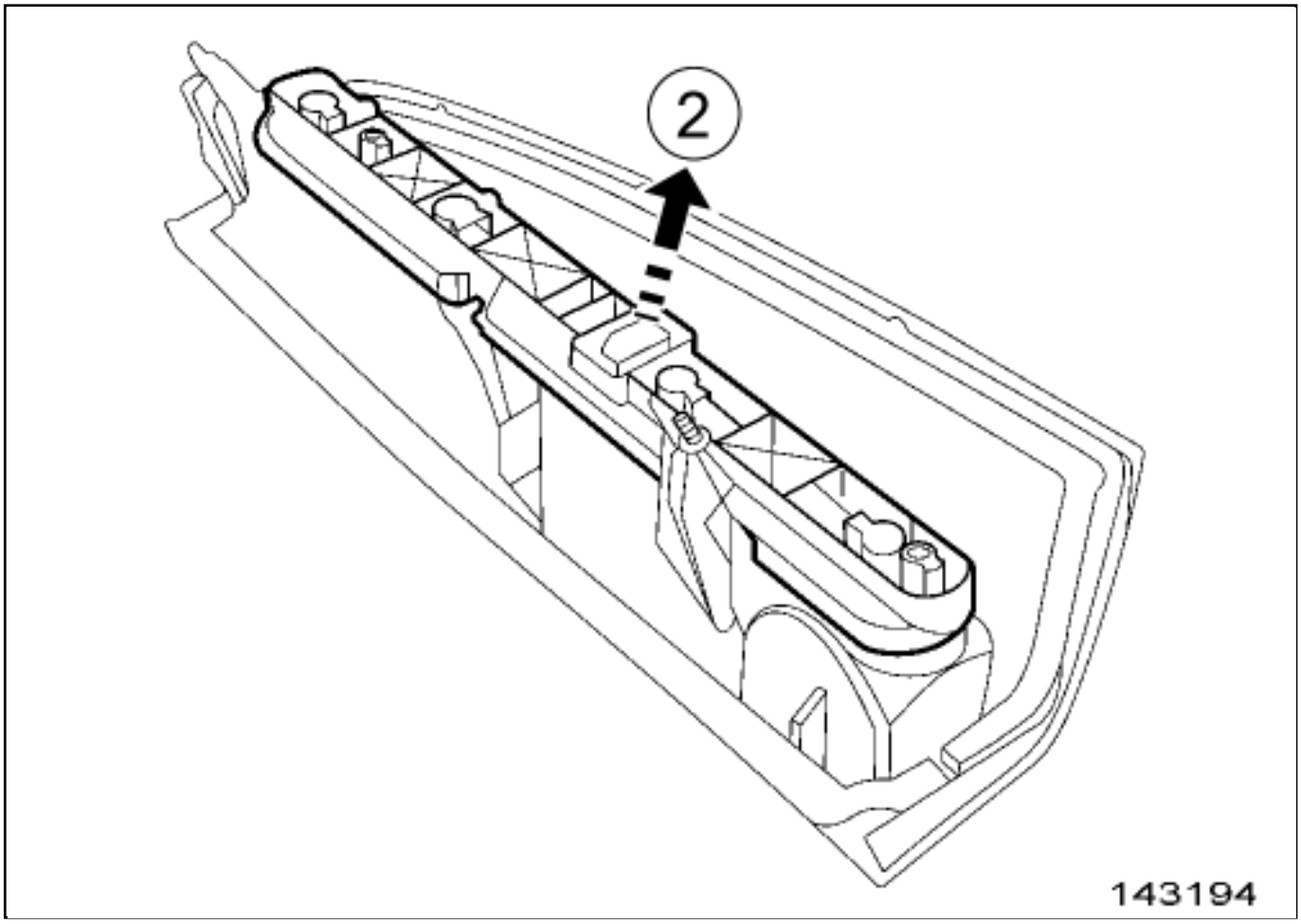
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the rear light on the wing(see 81A, Rear lighting, Rear wing light: Removal - Refitting) .

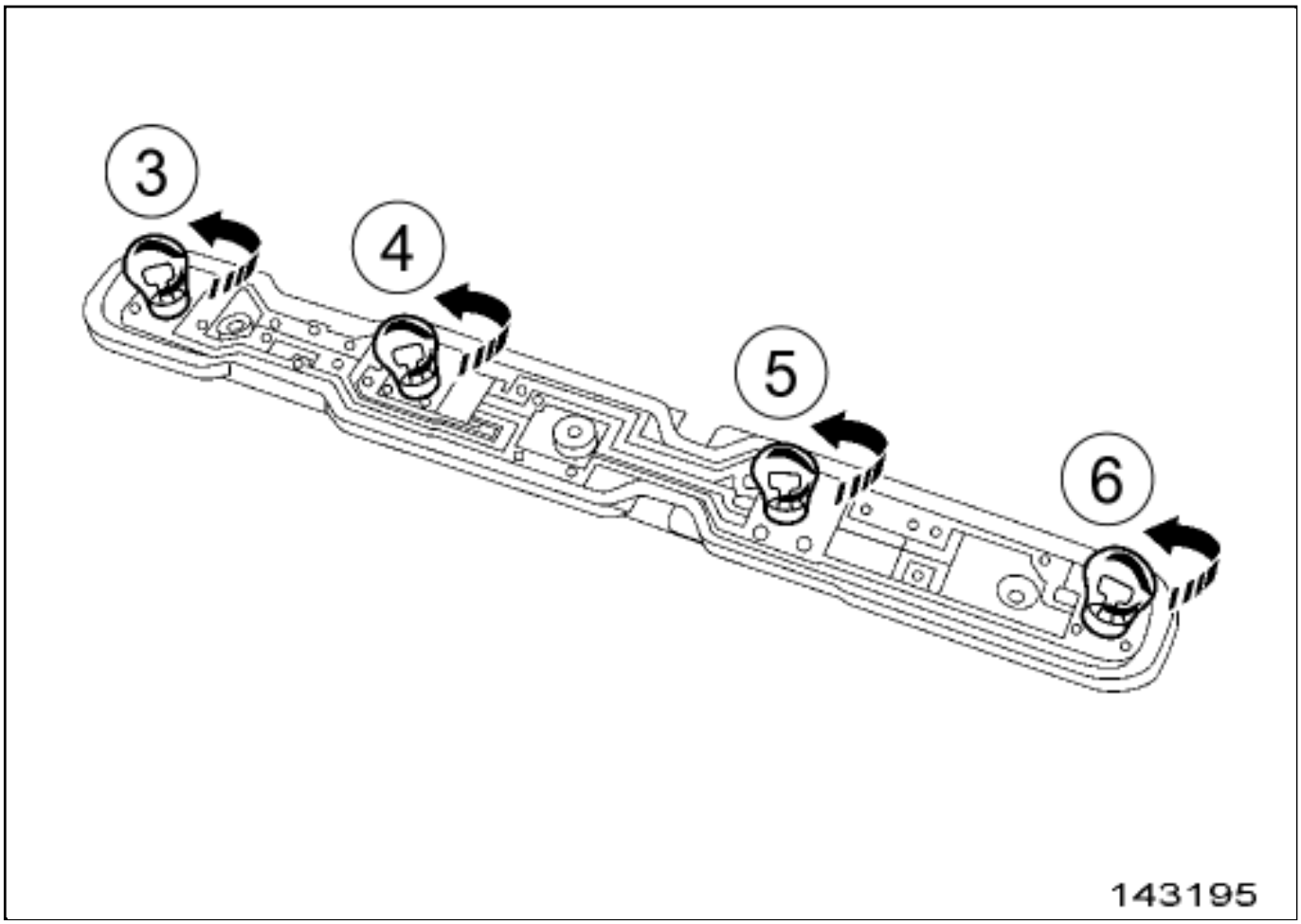


- Remove the bolts(1) from the bulb holder.



- Remove the bulb holder at(2) .

2. REMOVAL OPERATION



- Remove the bulbs from the following lights:
  - direction indicator at(3) ,
  - brake light and side light at(4) ,
  - reversing light(5) ,
  - fog light at(6) .

REFITTING

Note:

If the bulbs are changed, only use approved bulbs.

- Proceed in the reverse order to removal.

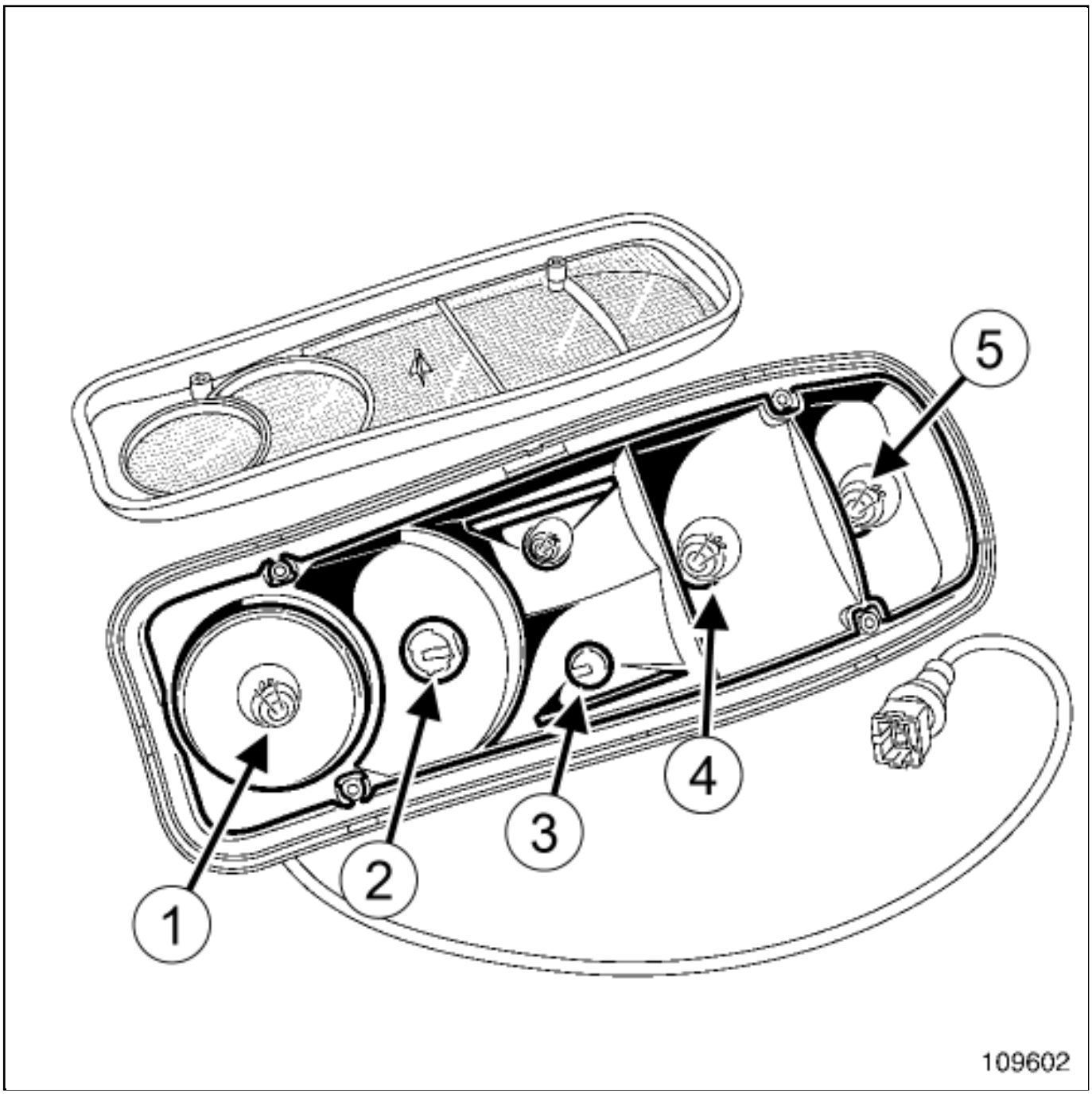
REAR LIGHT BULB: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the rear light(see 81A, Rear lighting, Rear light: Removal - Refitting)

2. OPERATION FOR REMOVAL OF PART CONCERNED



Remove:

- the fog light bulb(1) ,
- the reversing light bulb(2) ,
- the side light bulb(3) ,
- the brake light bulb(4) ,
- the direction indicator bulb(5) .

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

Refit:

- the P21Wdirection indicator bulb,
- the P21Wbrake light bulb,
- the R10Wside light bulb,
- the P21Wreversing light bulb,
- the fog light P21Wbulb.

2. FINAL OPERATION.

Refit the rear light(see 81A, Rear lighting, Rear light: Removal - Refitting) .

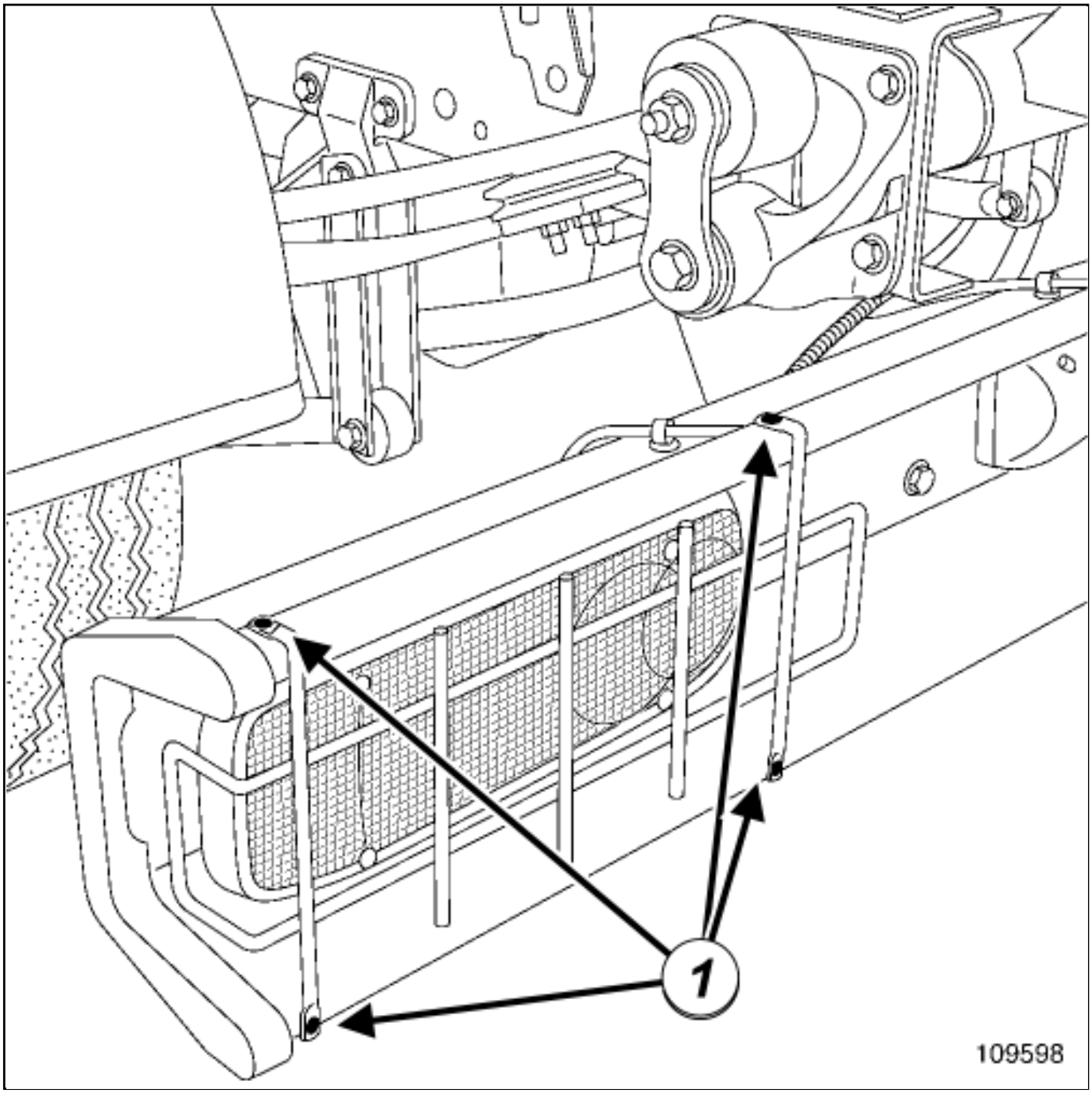
REAR LIGHT: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

Note:

On equipped vehicles, it is necessary to remove the rear light protection grille.



Remove:

- the rivets(1) of the protection grille (see MR 400),
- the rear light protection grille.

2. OPERATION FOR REMOVAL OF PART CONCERNED

Disconnect the connector(s) of the rear light.

Remove:

- the rear light bolts,
- the rear light.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

Refit:

- the rear light,
- the rear light bolts.

Connect the connector(s) of the rear light.

2. FINAL OPERATION

Refit the rear light protection grille, if fitted to the vehicle.

Replace the rivets of the rear light protection grille (see MR 400).

REAR LIGHTING: LIST AND LOCATION OF COMPONENTS

1. LIST OF COMPONENTS

1- THE "REAR LIGHTING" EQUIPMENT CONSISTS OF:

F62 J62(F62 OR J62)

- **the rear lights on the wing**(see 81A, Rear lighting, Rear wing light: Removal - Refitting)
- **a high-level brake light**(see 81A, Rear lighting, 3rd brake light: Removal - Refitting)
- **a high level brake light bulb**(see 81A, Rear lighting, High level brake light bulb: Removal - Refitting)

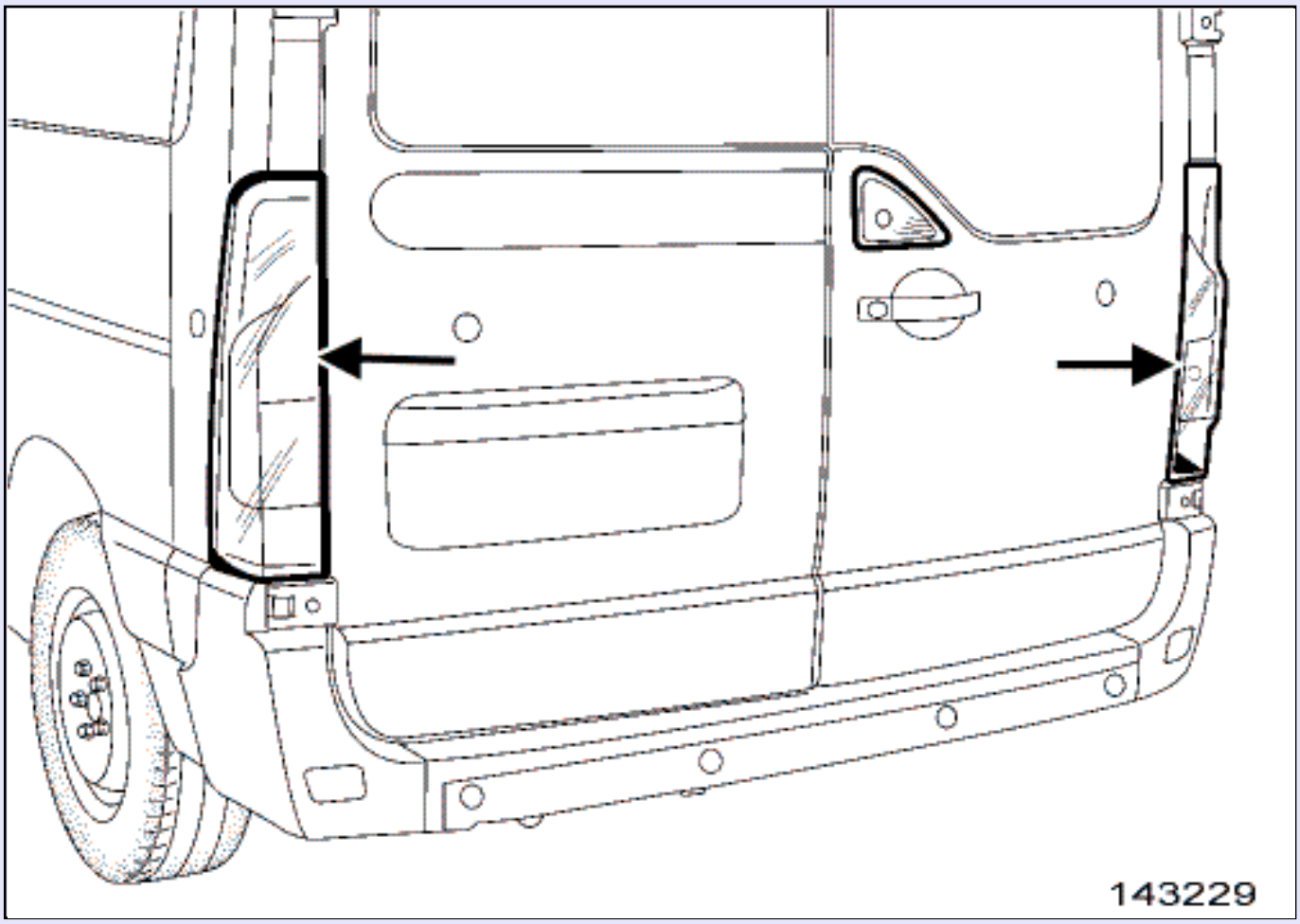
E62 H62 U62(E62 OR H62 OR U62)

- **rear lights**(see 81A, Rear lighting, Rear light: Removal - Refitting)

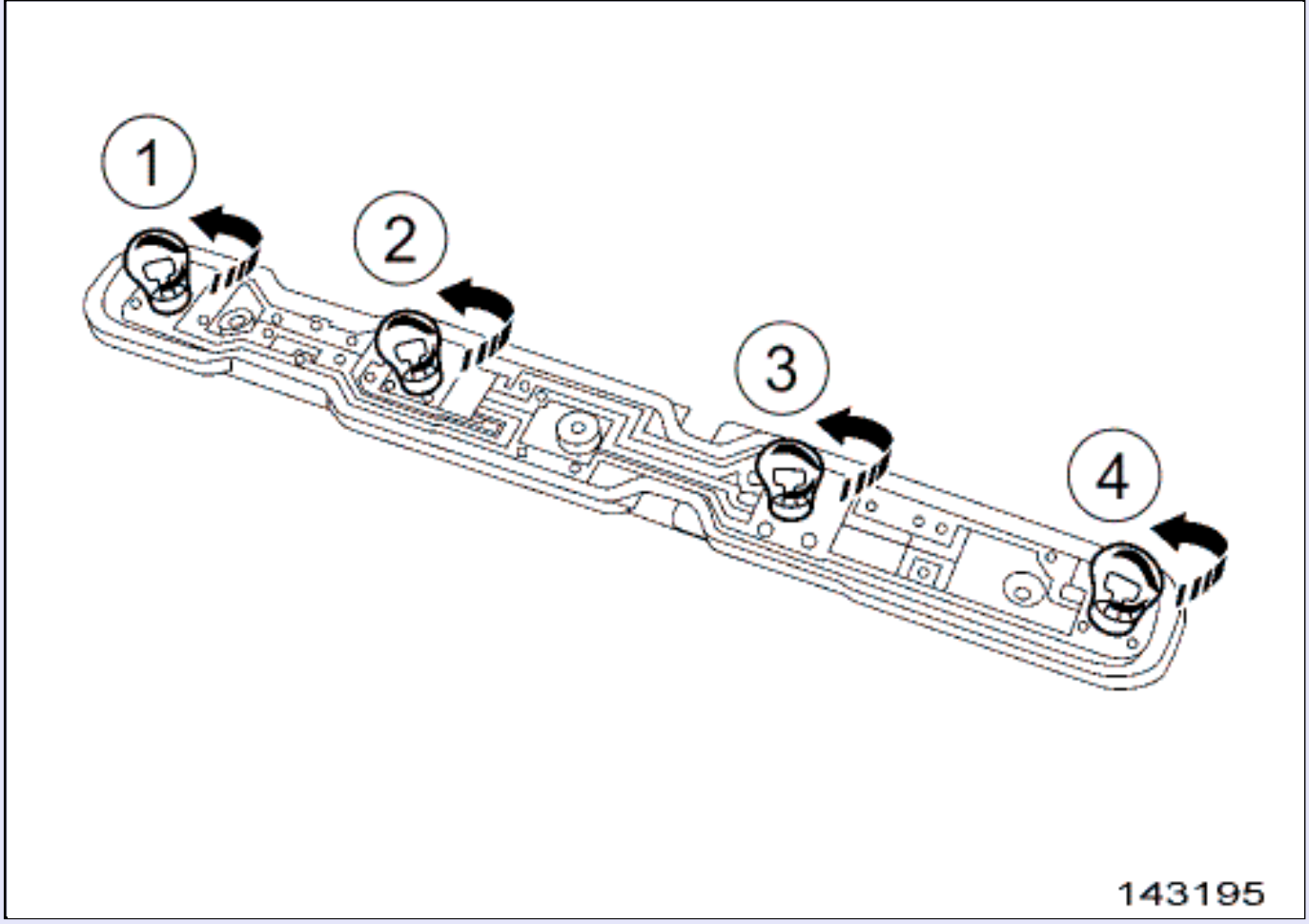
- rear light bulbs(see 81A, Rear lighting, Rear light bulb: Removal - Refitting) (see 81A,Rear lighting, Rear light bulb: Removal - Refitting)
- the number plate lights(see 81A, Rear lighting, Number plate light: Removal - Refitting) (see 81A,Rear lighting, Number plate light: Removal - Refitting)

2. LOCATION OF COMPONENTS

REAR LIGHTS ON THE WING



REAR LIGHT BULBS ON THE WING



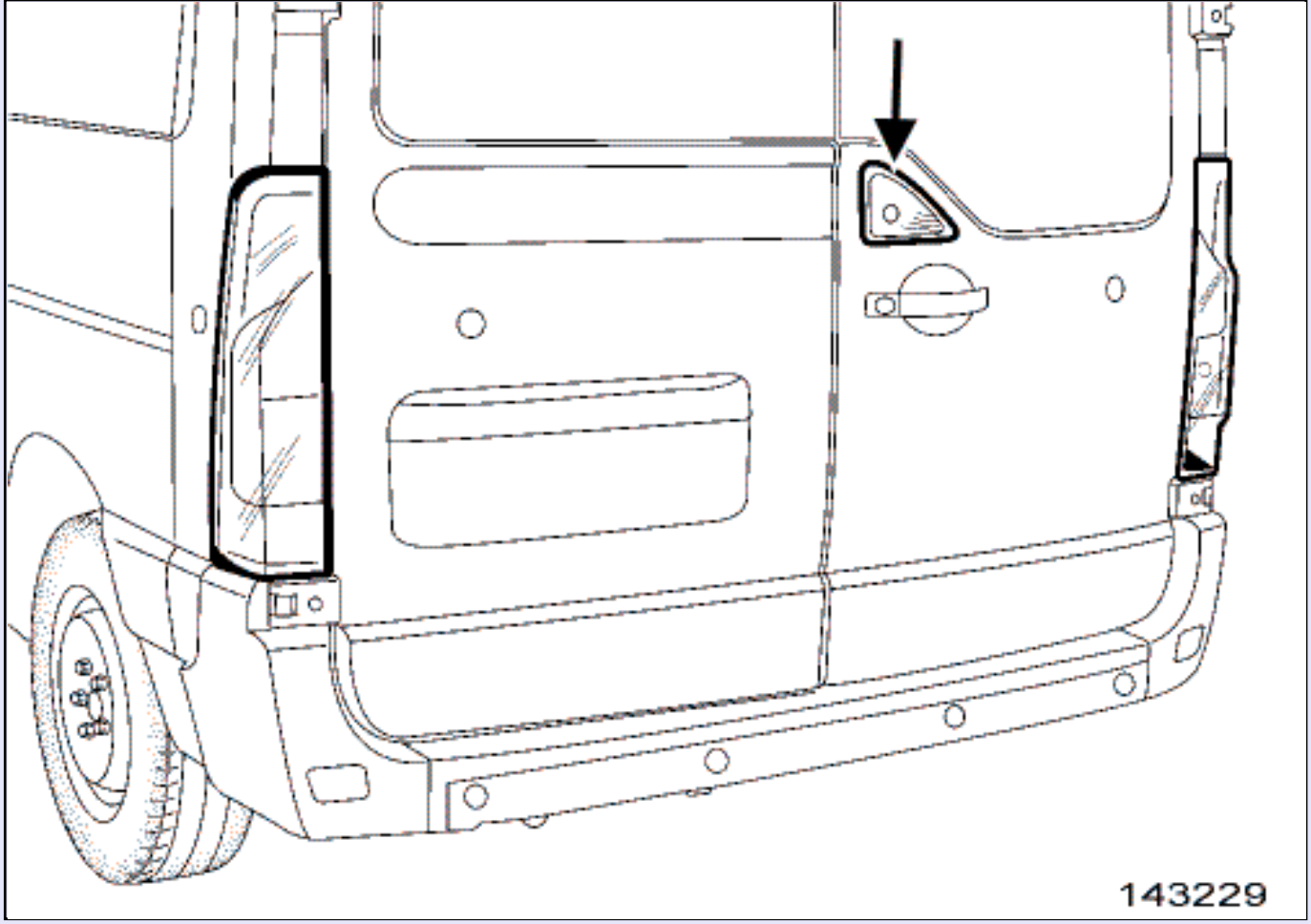
(1) Direction indicator bulb

(2) brake light and side light bulb

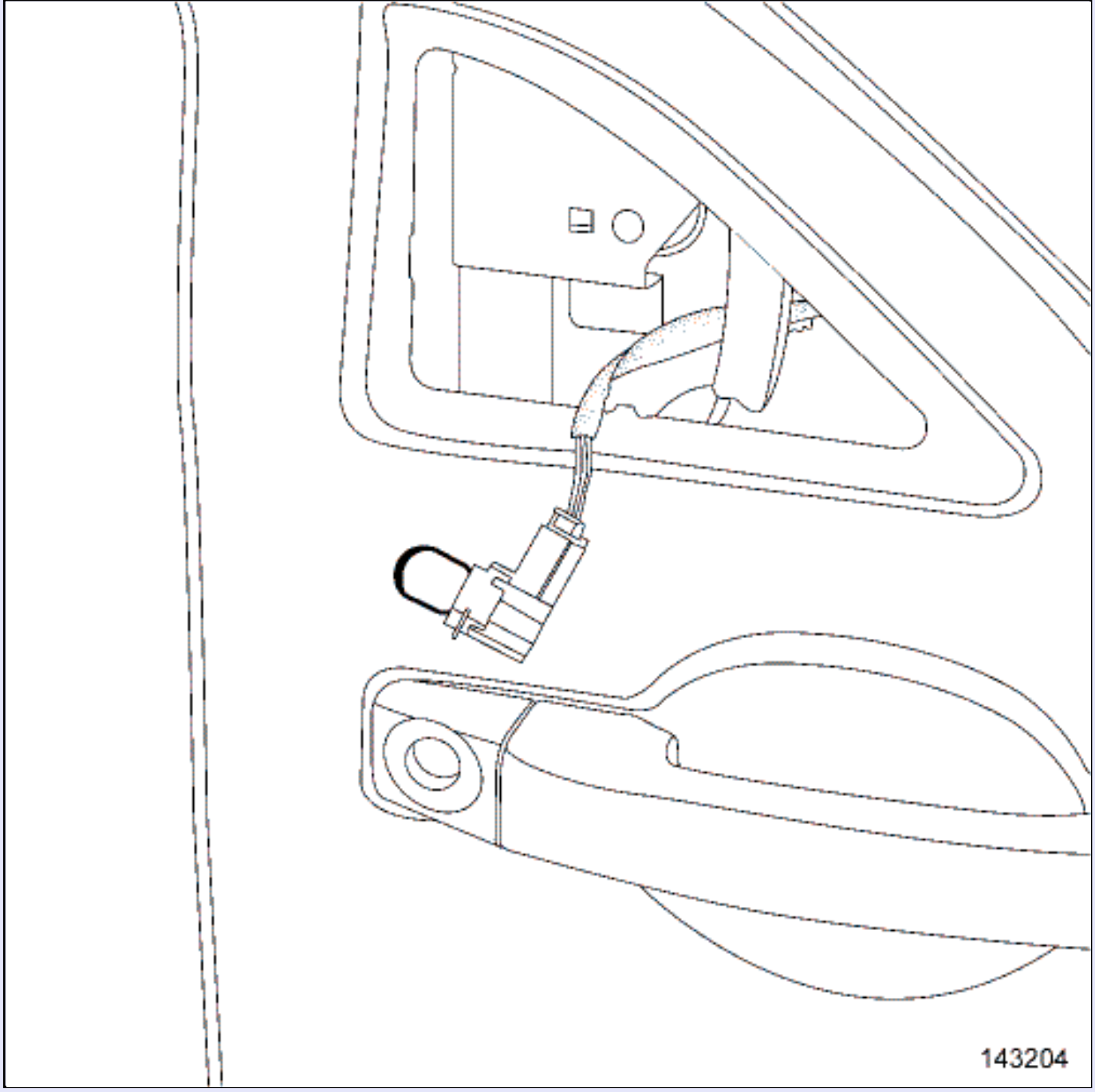
(3) reversing light bulb

(4) fog light bulb

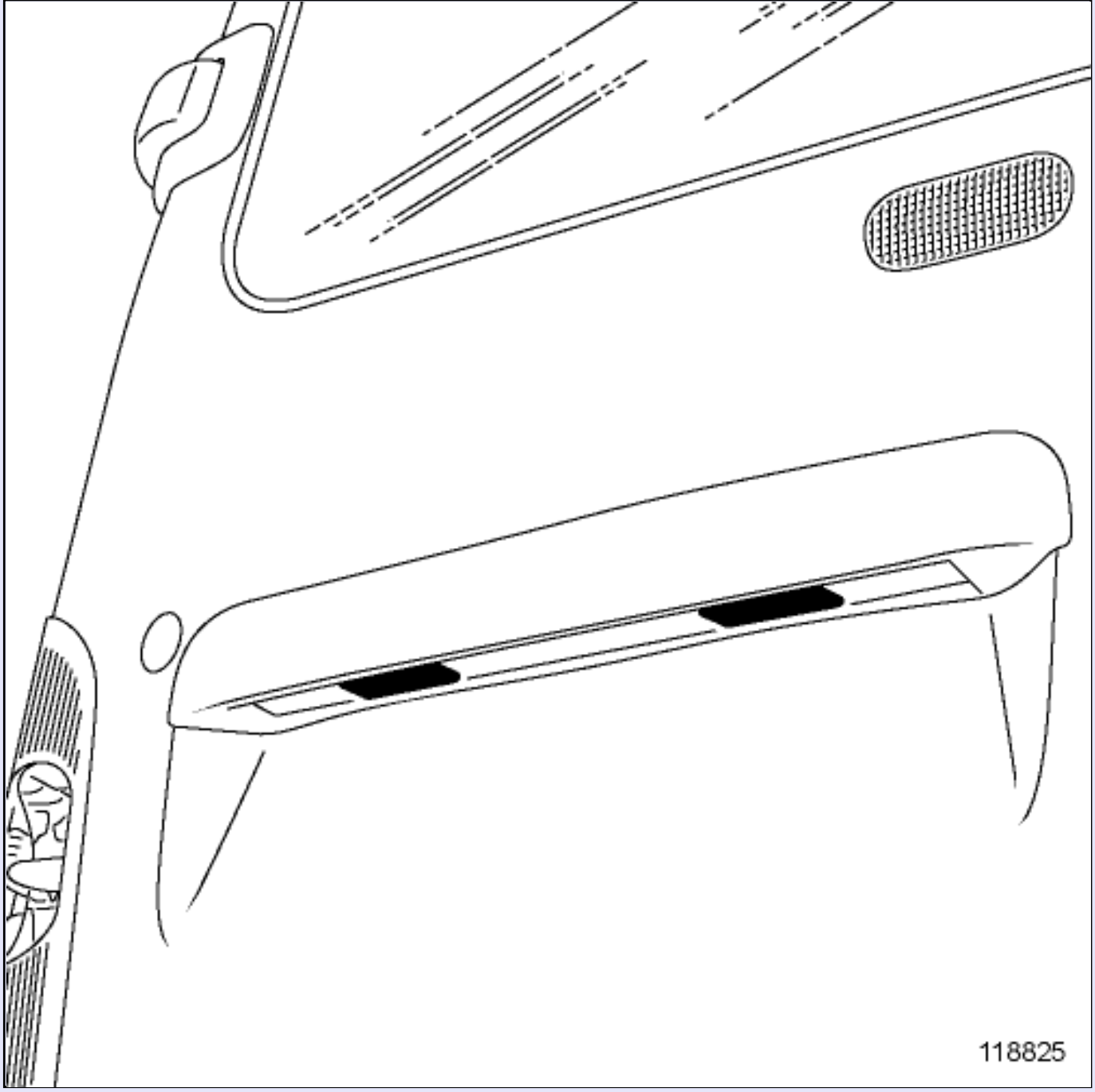
HIGH LEVEL BRAKE LIGHT



HIGH LEVEL BRAKE LIGHT BULB

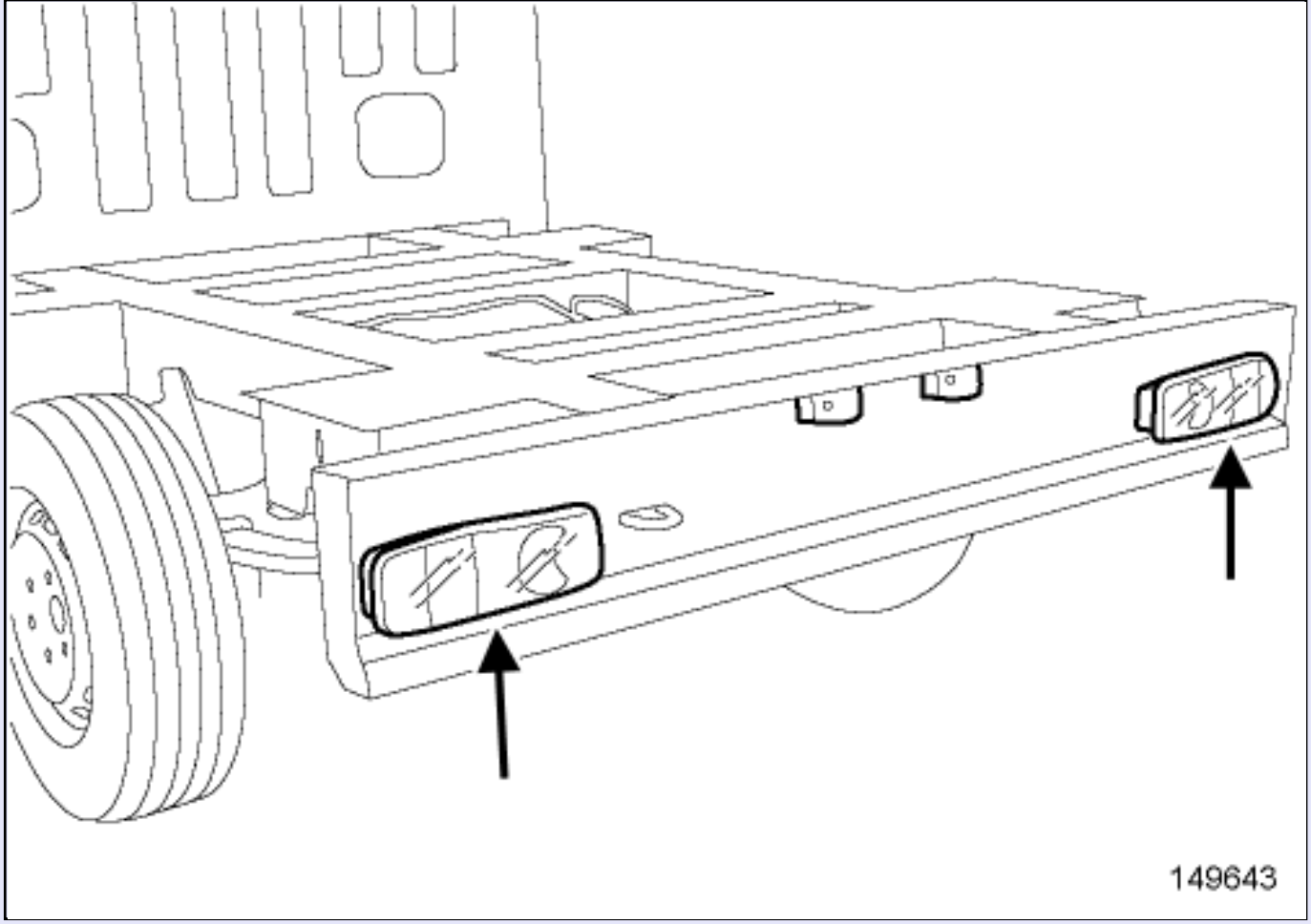


NUMBER PLATE LIGHTS

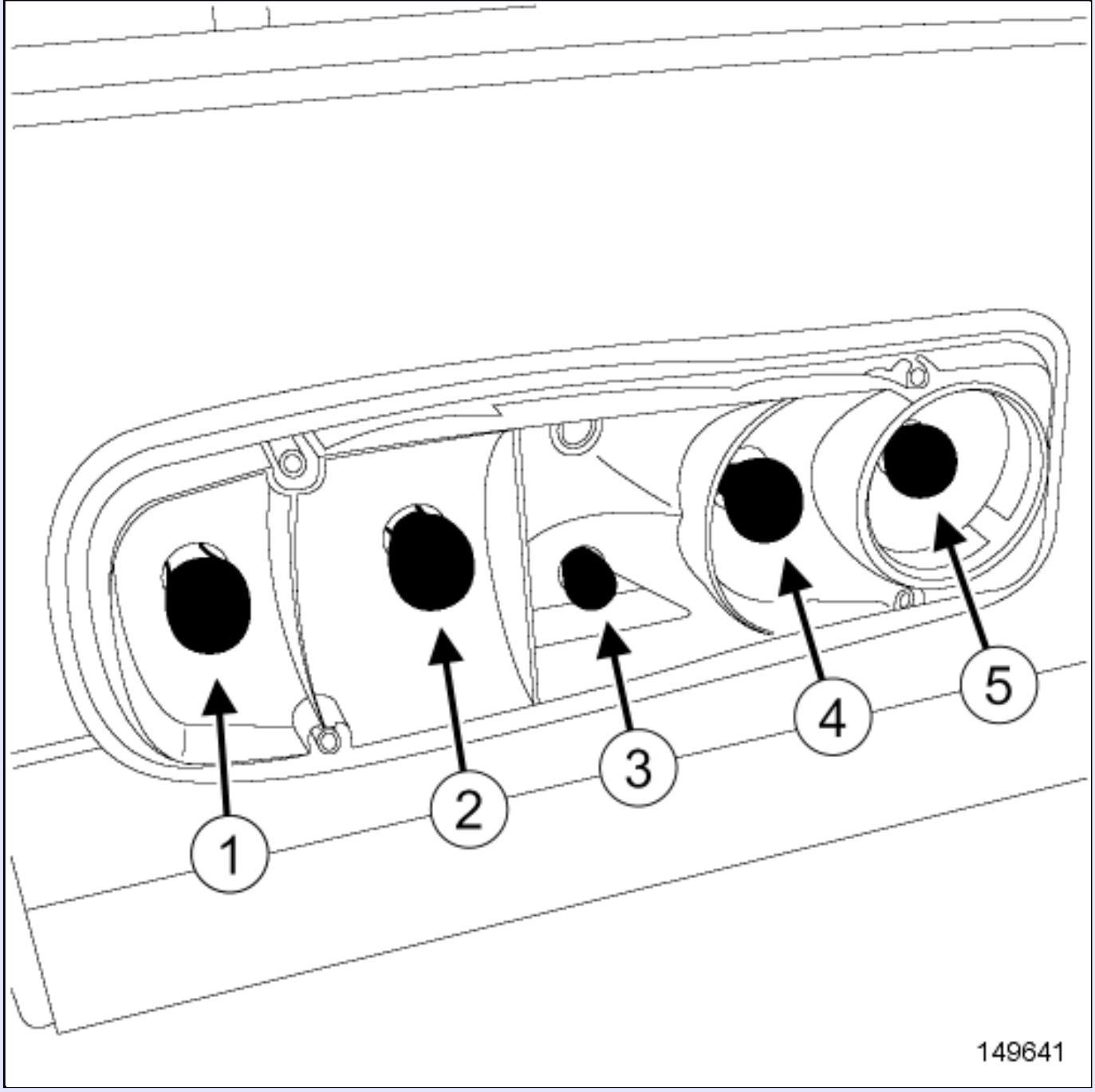


E62 H62 U62(E62 OR H62 OR U62)

REAR LIGHTS



REAR LIGHT BULBS



(1) Direction indicator bulb

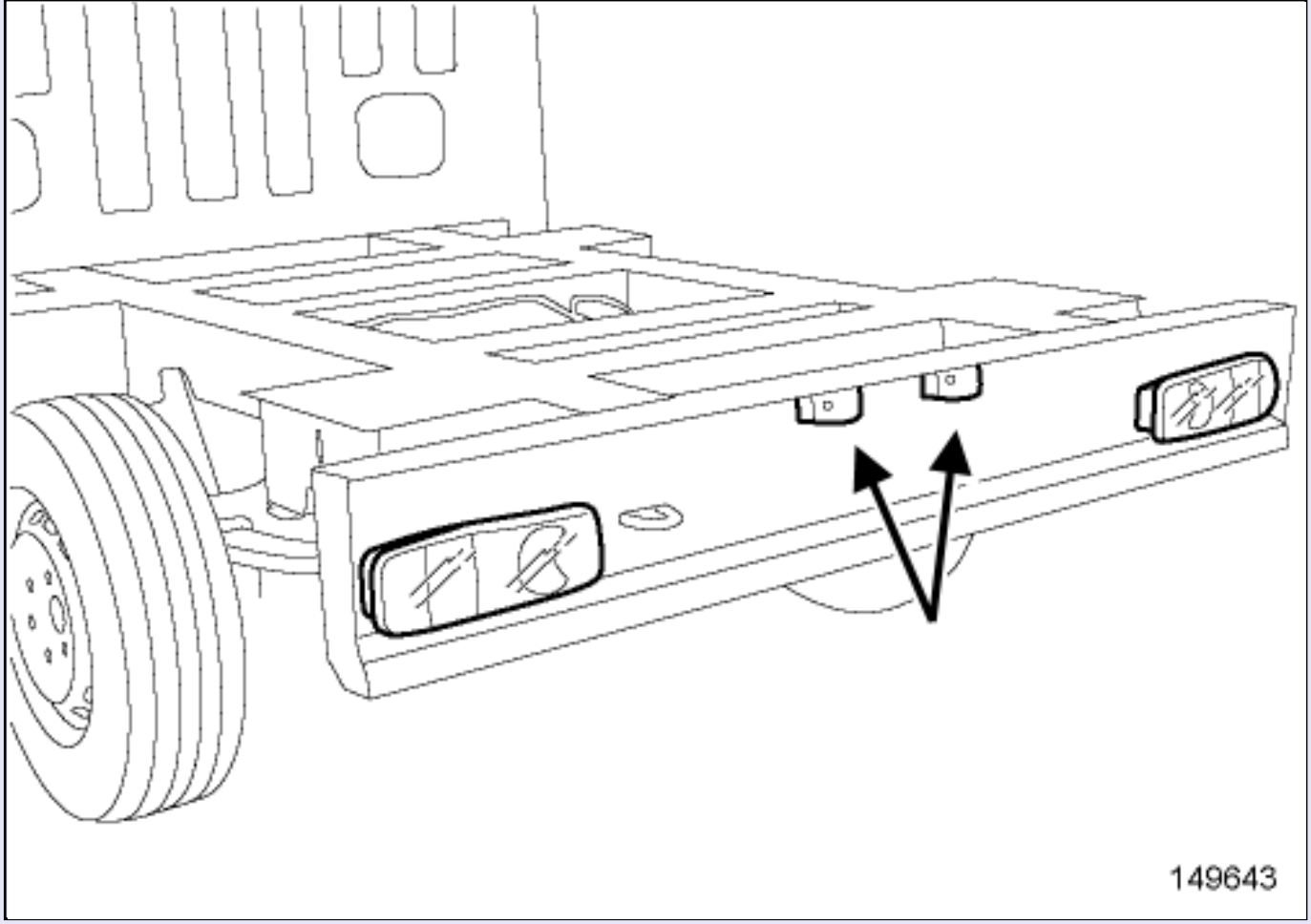
(2) Brake light bulb

(3) Side light bulb

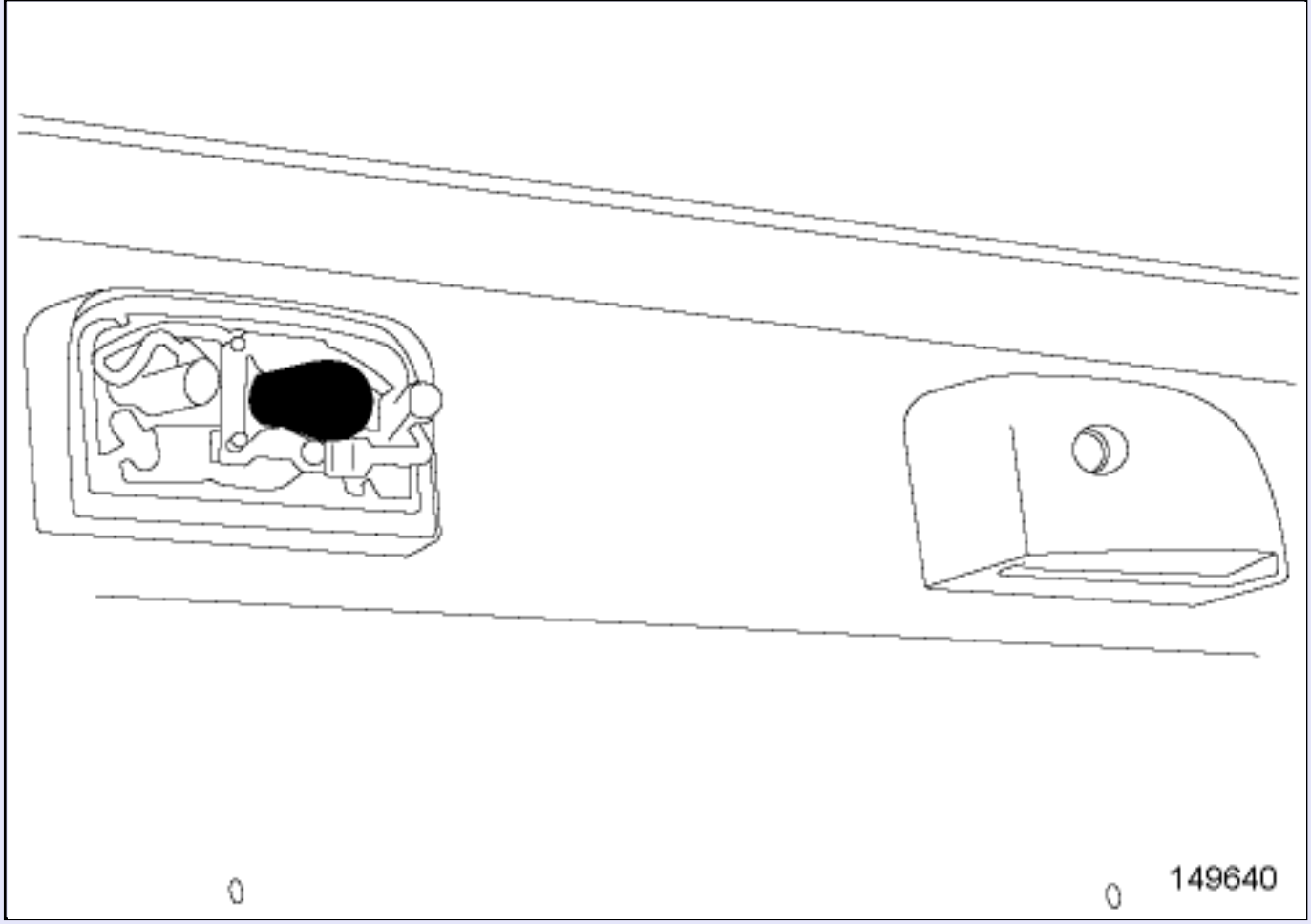
(4) Reversing light bulb

(5) Fog light bulb

NUMBER PLATE LIGHTS



LICENSE PLATE LIGHT BULB



Repair-80x02x06-02x51-1-13-1.xml

XSL version : 3.02 du 22/07/11

REAR LOADING DOOR HINGE: REMOVAL - REFITTING

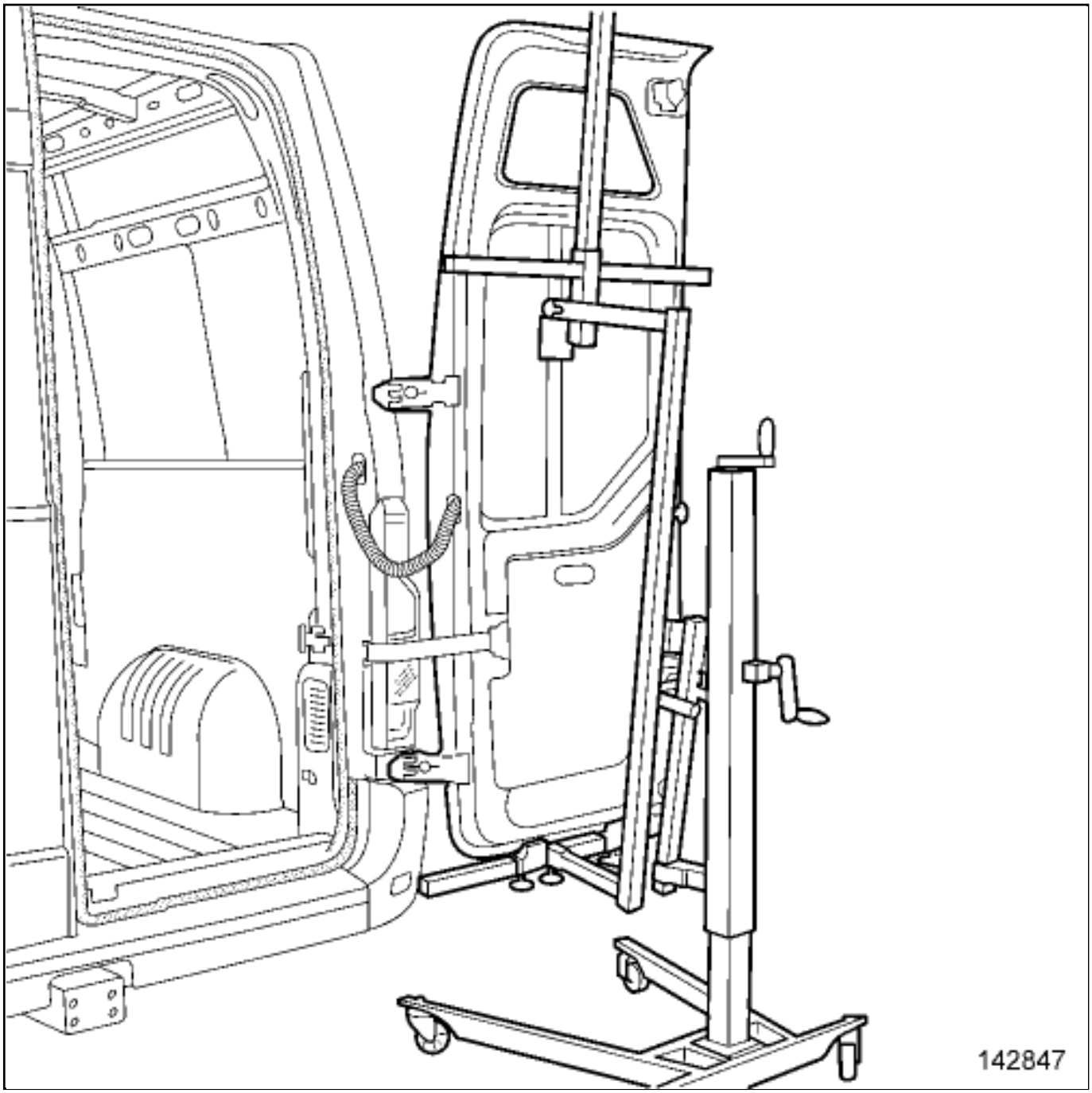
Location and specifications (tightening torques, parts always to be replaced, etc.)(see 52A, Non-side opening element mechanisms, Rear opening element box section internal assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove Rear opening element assembly on the passenger compartment side: Exploded view (73A, Non-side opening elements trim):
  - the rear right-hand loading door trim,
  - the rear left-hand loading door trim.

- Remove the blanking cover of the rear loading door upper hinge nut(see 52A, Non-side opening element mechanisms , Rear opening element box section internal assembly: Exploded view) .



- This operation can be carried out by one person using the DOOR SUPPORTtool. Otherwise this work requires two people.

- Number of Renault agreement: 661000

- Part no.: SUP 01

2. REMOVAL OPERATION

- Remove the door hinge(see 52A, Non-side opening element mechanisms, Rear opening element box section

internal assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

REAR LOADING DOOR: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear opening element box section internal assembly: Exploded view (52A, Non-side opening element mechanisms).

Note:

This operation can be carried out by one person using the DOOR SUPPORTtool. Otherwise two people are required.

Number of Renault agreement: 661000.

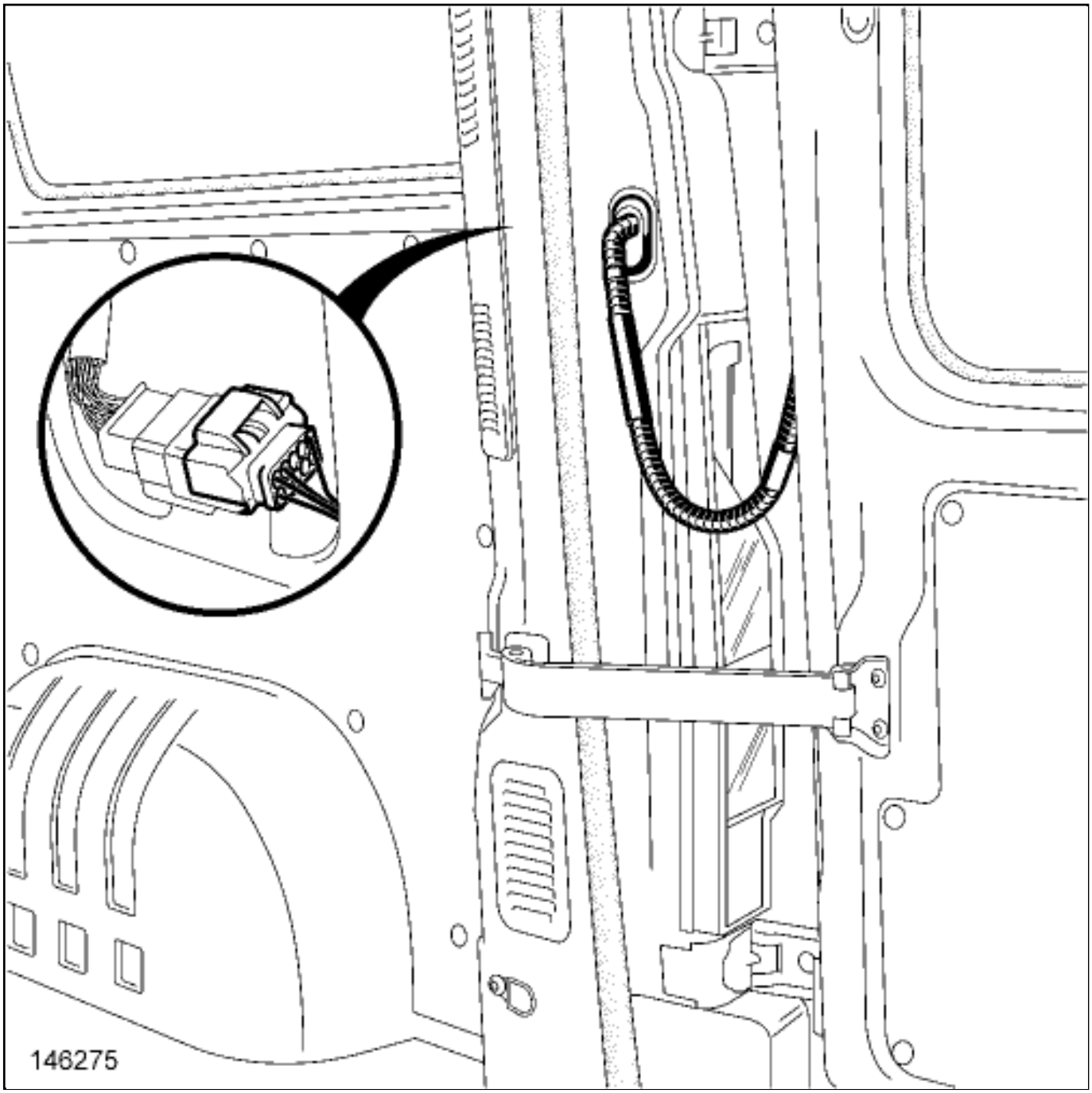
Part no.: SUP 01.

1. REMOVAL WITHOUT THE HINGES

1- REMOVAL PREPARATION OPERATION

- Remove the rear right-hand loading door trimRear right-hand loading door trim: Removal - Refitting or the rear left-hand loading door trimRear left-hand loading door trim: Removal - Refitting (73A, Non-side opening elements trim).

- Remove the blanking cover of the rear loading door upper hinge.



- Remove:
  - the blanking cover of the rear loading door upper hinge,
  - the C-pillar trim.

- Disconnect the connector from the rear loading door wiring.

- Unlock the rear loading door stop runner.

2- REMOVAL OPERATION

- Remove Rear opening element box section internal assembly: Exploded view (52A, Non-side opening element

mechanisms):

- the rear loading door hinge nuts on the door box section side,
- the rear loading door hinge bolts on the door box section side,
- the rear loading door (this operation requires two people).

2. REFITTING WITHOUT HINGES

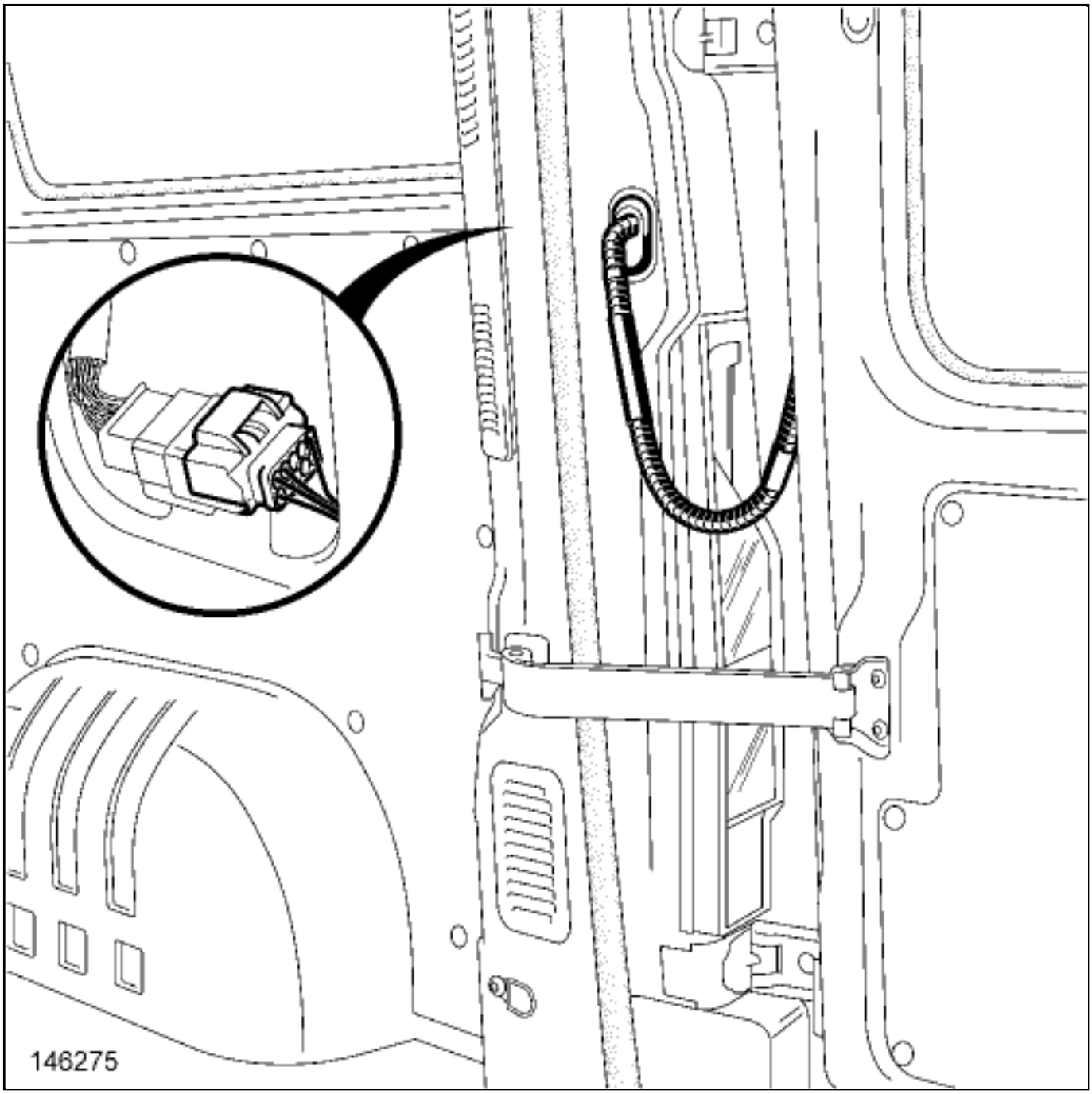
- Proceed in the reverse order to removal.

- Adjust the clearances and flush fitting of the rear loading door(see 48A, Non-side opening elements, Rear loading door: Adjustment) .

- Carry out a function test.

3. REMOVAL WITH HINGES

1- REMOVAL PREPARATION OPERATION



- Remove the C-pillar trim.
- Disconnect the connector from the rear loading door wiring.
- Unlock the rear loading door stop runner.

2- REMOVAL OPERATION

- Remove **Rear opening element box section internal assembly: Exploded view** (52A, Non-side opening element mechanisms):
  - the rear loading door bolts on the door box section,
  - the rear loading door (this operation requires two people).

4. REFITTING WITH HINGES

- Proceed in the reverse order to removal.

- Adjust the clearances and flush fitting of the rear loading door(see 48A, Non-side opening elements, Rear loading door: Adjustment) .

- Carry out a function test.

REAR OPENING ELEMENT ASSEMBLY ON THE PASSENGER COMPARTMENT SIDE: EXPLODED VIEW

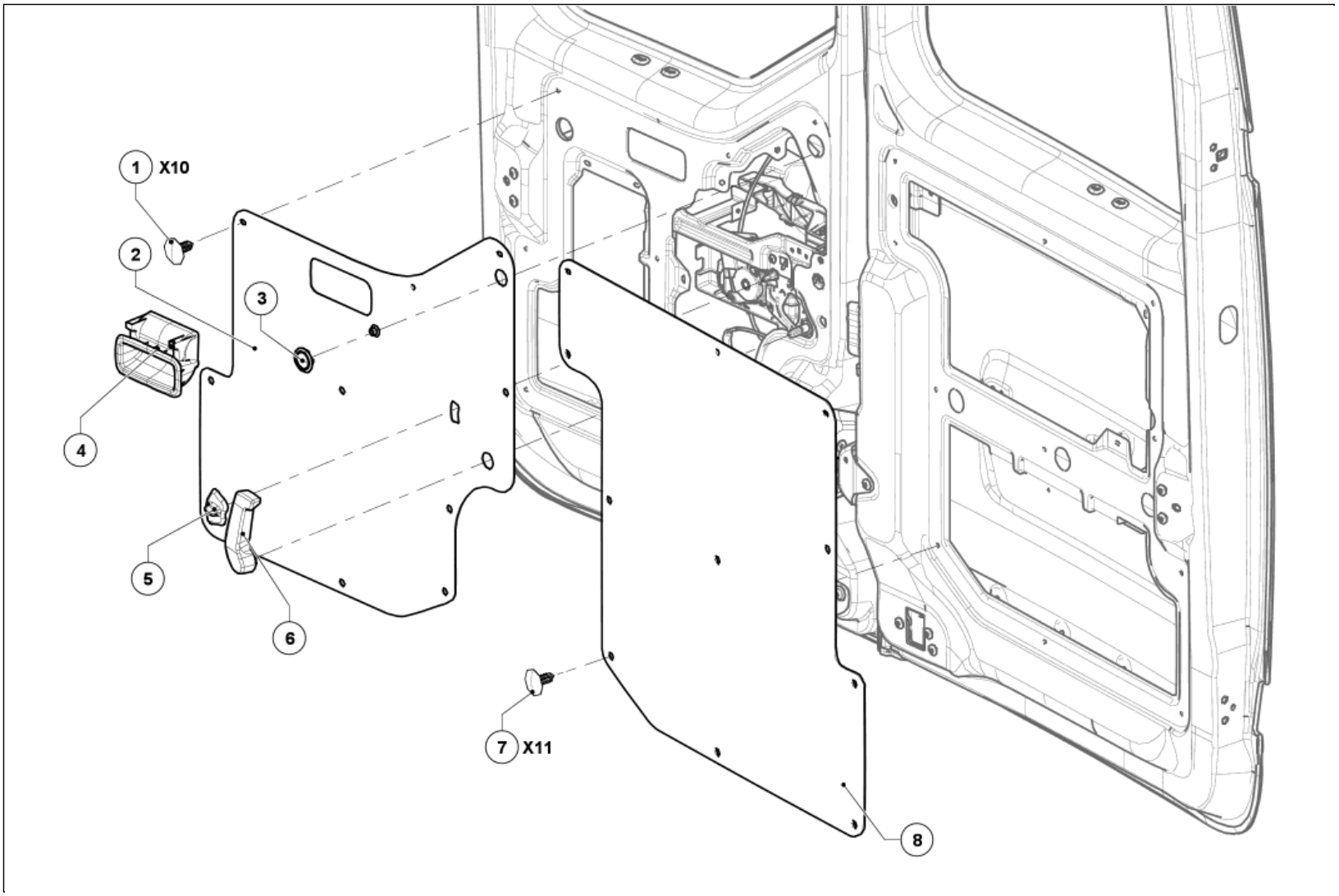


Illustration key: Description (01D, Mechanical introduction)

Mark	Description	Information
1	Rear right-hand loading door trim clip	
2	Rear right-hand loading door trim	(see 73A, Non-side opening elements trim, Rear right-hand loading door trim: Removal - Refitting) (71A, Body internal trim)
3	3rd brake light access blanking cover	
4	Rear loading door interior handle	
5	Rear loading door locking control	
6	Interior opening control of rear loading door	
7	Rear left-hand loading door trim clip	
8	Rear left-hand loading door trim	(see 73A, Non-side opening elements trim, Rear left-hand loading door trim: Removal - Refitting) (71A, Body internal trim)

REAR OPENING ELEMENT BOX SECTION INTERNAL ASSEMBLY: EXPLODED VIEW

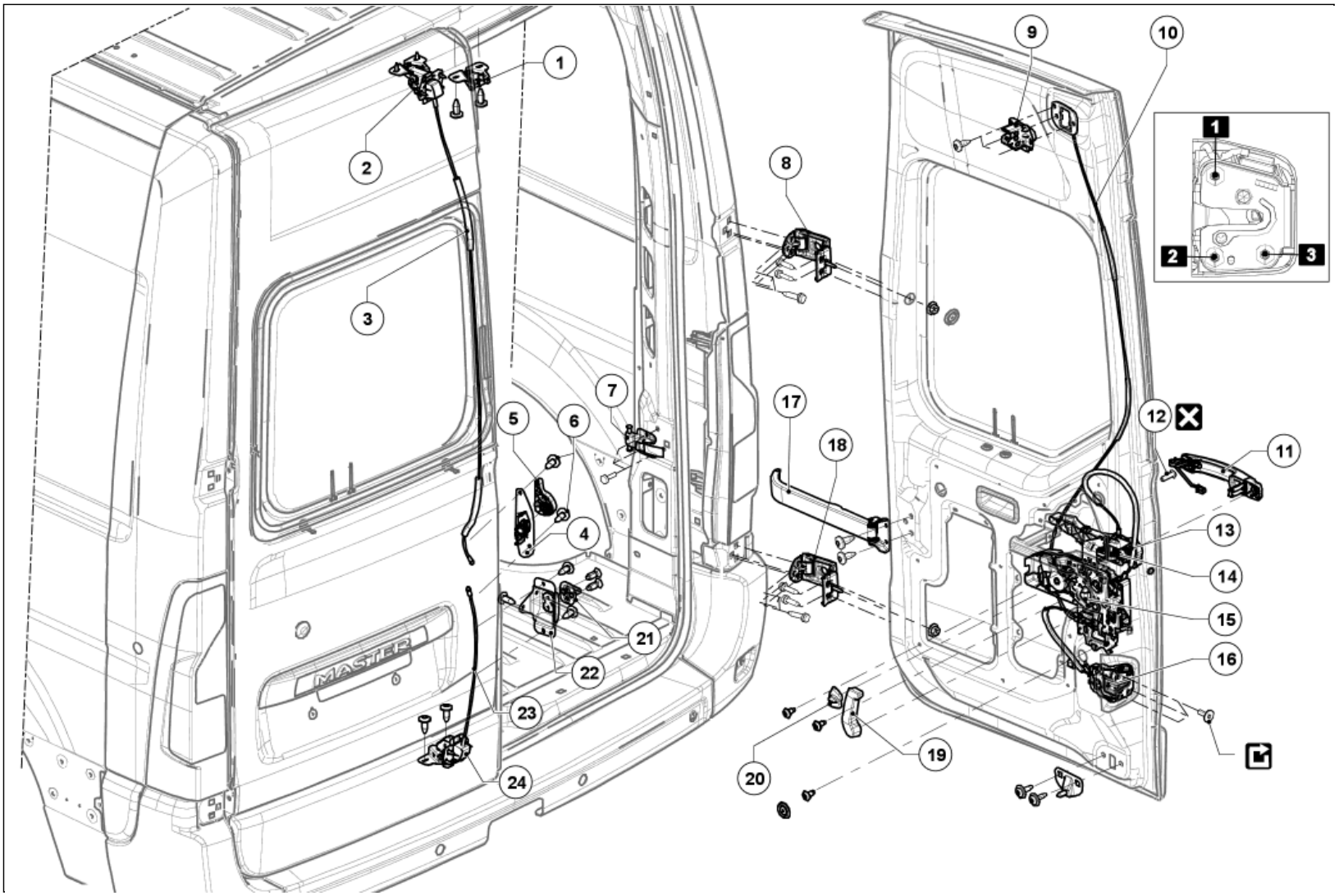


Illustration key: Description

Mark	Description	Information
1	Right-hand upper lock striker panel of rear loading door	
2	Left-hand upper lock of rear loading door	(see 52A, Non-side opening element mechanisms, Loading door lock: Removal - Refitting)
3	Left-hand upper lock control cable of rear loading door	
4	Internal opening control plate	
5	Internal opening control	
6	Bolt of internal opening control plate	
7	Rear loading door stop cam	
8	Rear loading door upper hinge	(see 52A, Non-side opening element mechanisms, Rear loading door hinge: Removal - Refitting)
9	Right-hand upper lock of rear loading door	(see 52A, Non-side opening element mechanisms, Loading door lock: Removal - Refitting)
10	Right-hand upper lock control cable of rear loading door	
11	Rear loading door exterior handle	(see **Rear loading door exterior handle: Removal - Refitting**)
12	Rivet of rear loading door exterior handle module	
13	Rear loading door exterior opening control cable	
14	Rear loading door exterior handle module	
15	Rear loading door control plate	
16	Rear loading door central lock	(see 52A, Non-side opening element mechanisms, Loading door lock: Removal - Refitting)
17	Rear loading door stop runner	
18	Rear loading door lower hinge	(see 52A, Non-side opening element mechanisms, Rear loading door hinge: Removal - Refitting)
19	Interior opening control of rear loading door	
20	Rear loading door locking control	
21	Rear loading door central striker panel	
22	Reinforcement of rear loading door central striker panel	
23	Left-hand lower lock control cable of rear loading door	
24	Left-hand lower lock of rear loading door	(see 52A, Non-side opening element mechanisms, Loading door lock: Removal - Refitting)

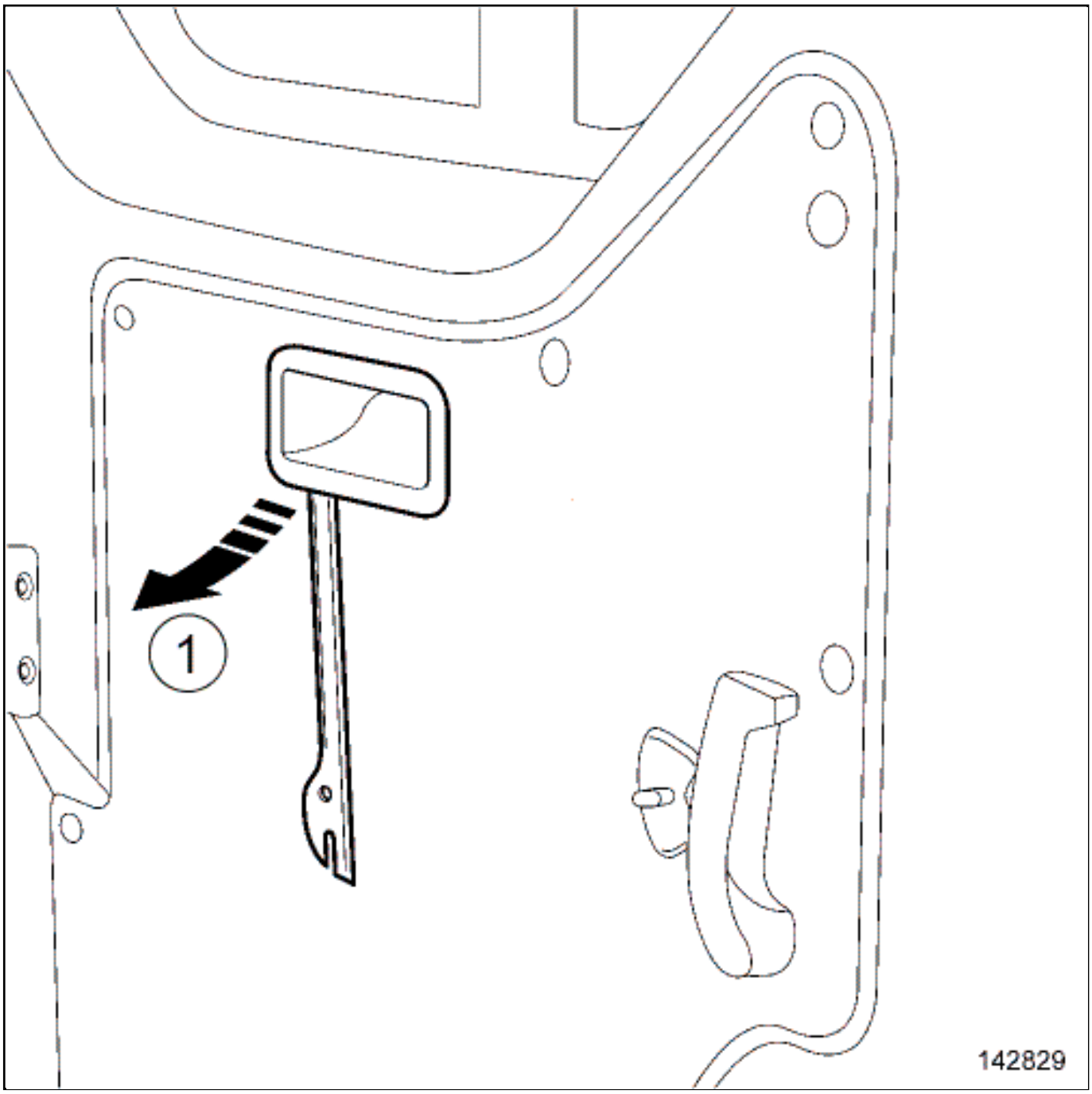
REAR RIGHT-HAND LOADING DOOR TRIM: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

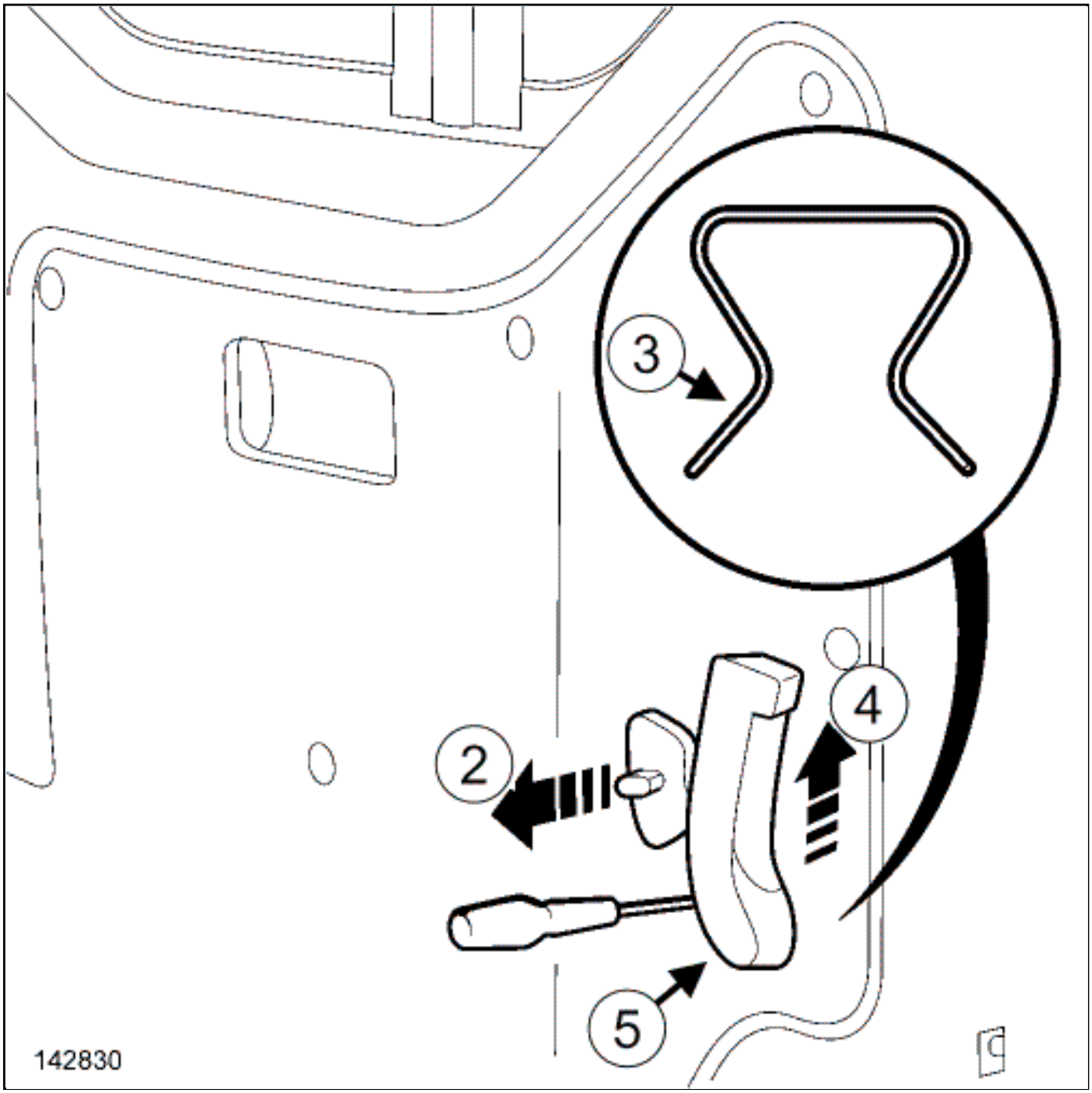
Location and specifications (tightening torques, parts always to be replaced, etc.)(see 73A, Non-side opening elements trim, Rear opening element assembly on the passenger compartment side: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION



Remove the interior handle of the rear right-hand loading door at(1) using the toolSet of trim removal levers. (Car. 1363) .



Remove:

- the loading door locking control at(2) ,
- the locking clip of the loading door interior opening control(3) at (4) using a flat-blade screwdriver,
- the interior opening control of the rear loading door(5) .

2. REMOVAL OPERATION

Remove the rear loading right-hand door trim(see 73A, Non-side opening elements trim, Rear opening element assembly on the passenger compartment side: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

Repair-70x04x02x04-01x37-1-5-1.xml

XSL version : 3.02 du 22/07/11

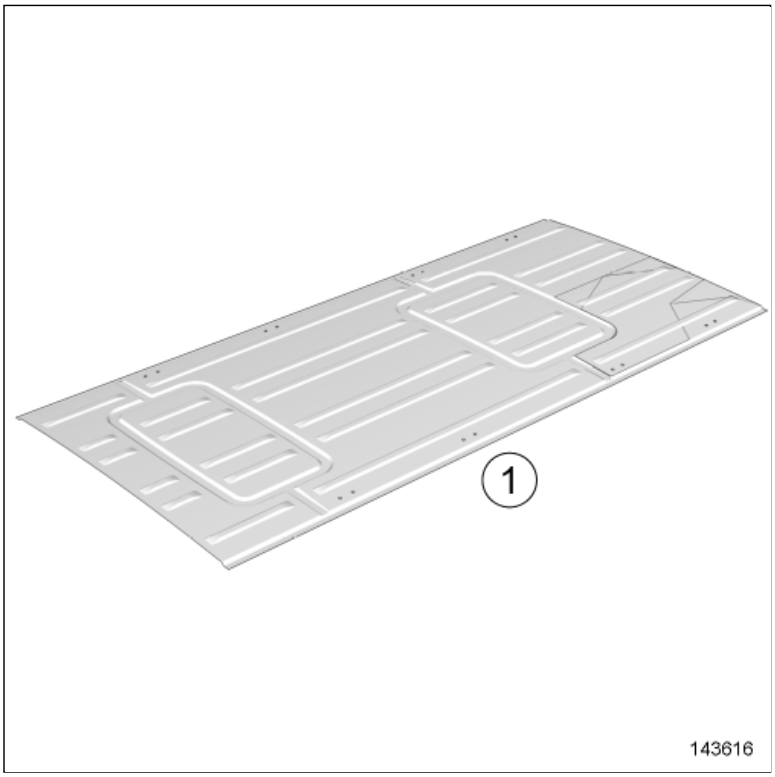
REARROOF:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Rear roof	Mild steel	0.75

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

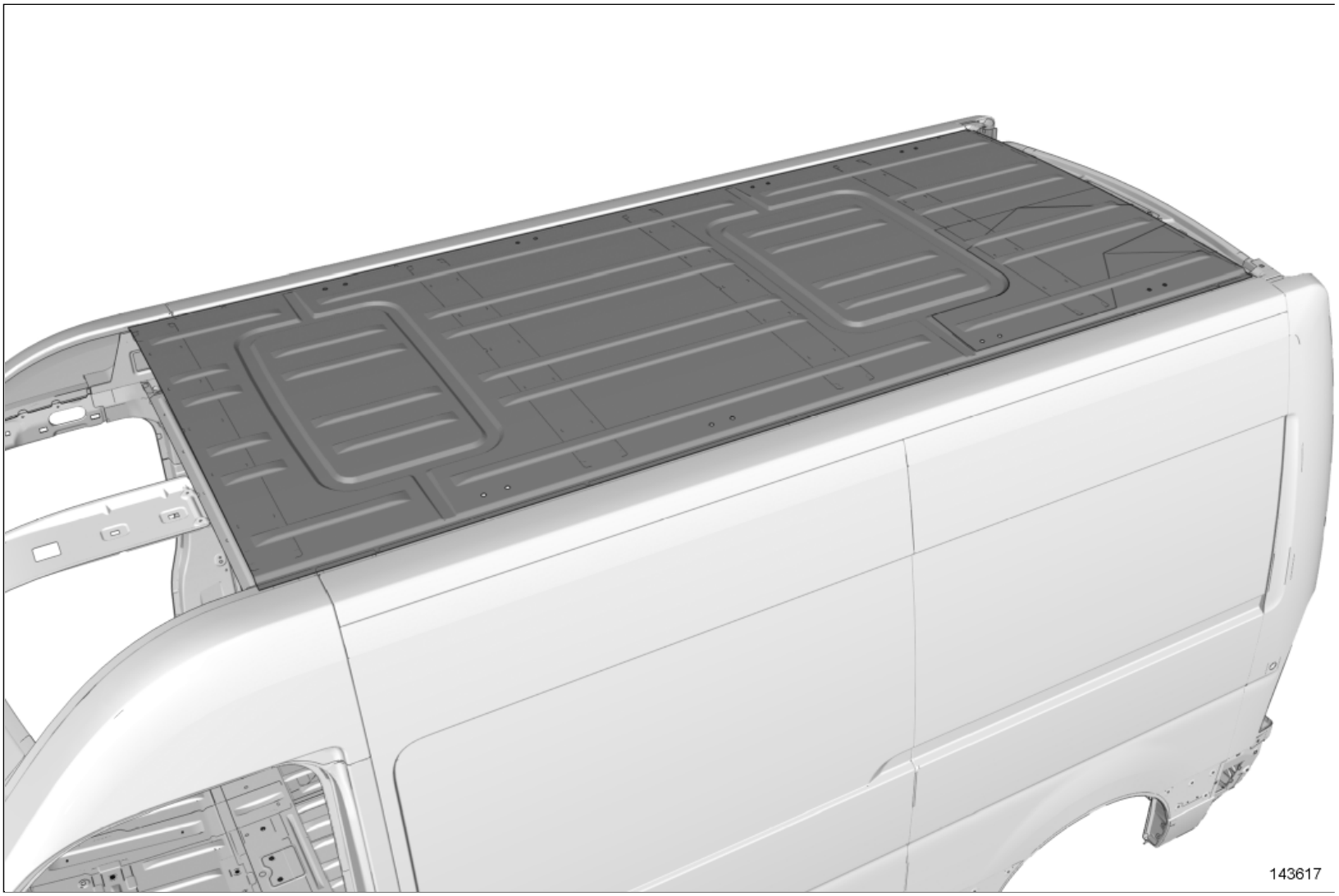
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

REAR SCREEN: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

F62(F62)

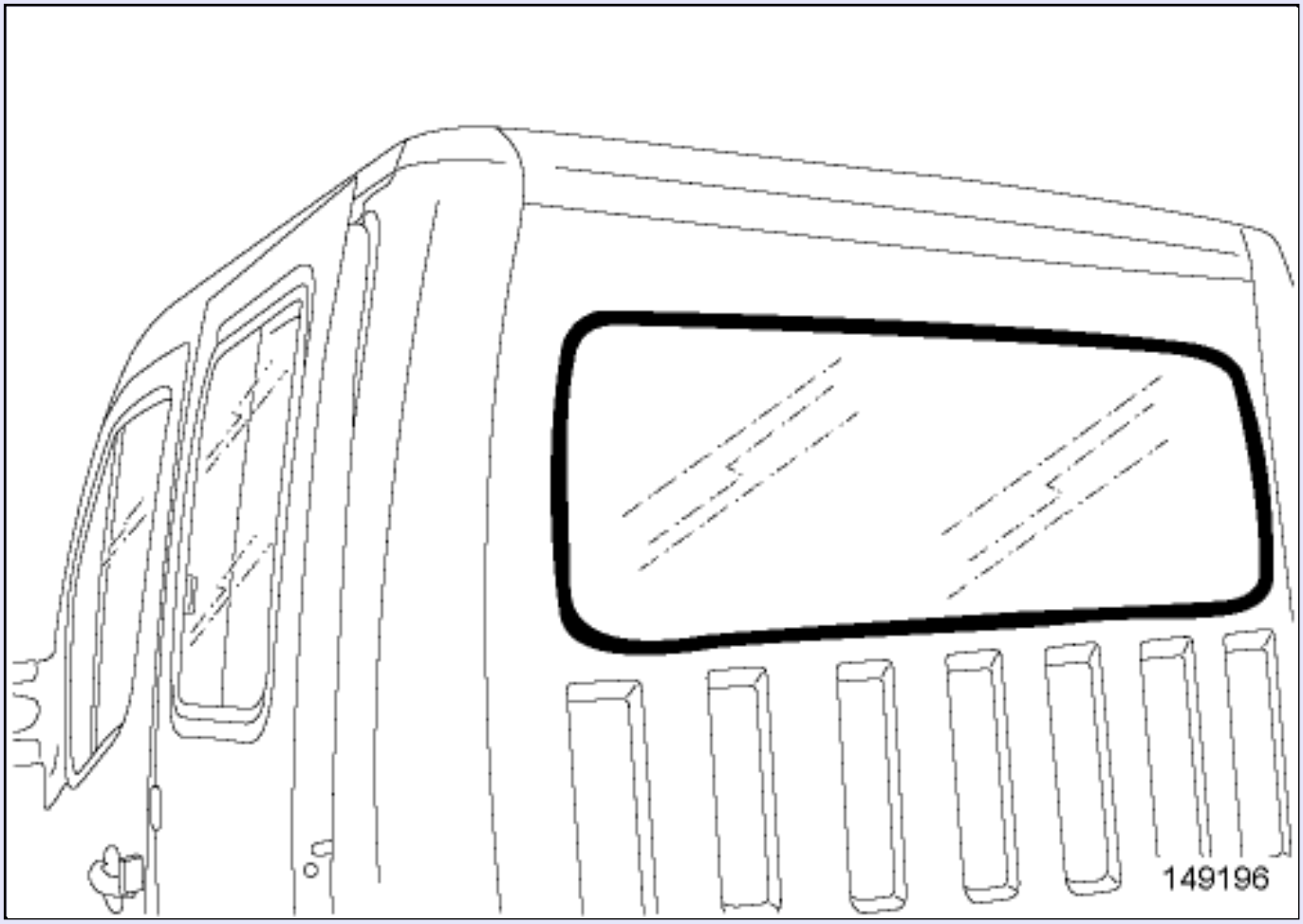
- Protect the area around the rear screen with masking tape.

2. REMOVAL OPERATION

F62(F62)

- Cut the cement bead Window detachment: Description (Technical Note 560A, 54A, Windows) (this operation requires two people).

H62 U62(H62 OR U62)



- Detach the rear screen (this operation requires two people).

- Remove the rear screen.

REFITTING

F62(F62)

1. REFITTING PREPARATION OPERATION

- For the preparation and the bonding Window bonding: Description (Technical Note 560A, 54A, Windows).

1. REFITTING OPERATION

F62(F62)

- Bond the rear screen (this operation requires two people).
- Secure the rear screen in position using masking tape.

- Proceed in the reverse order to removal.

1. FINAL OPERATION

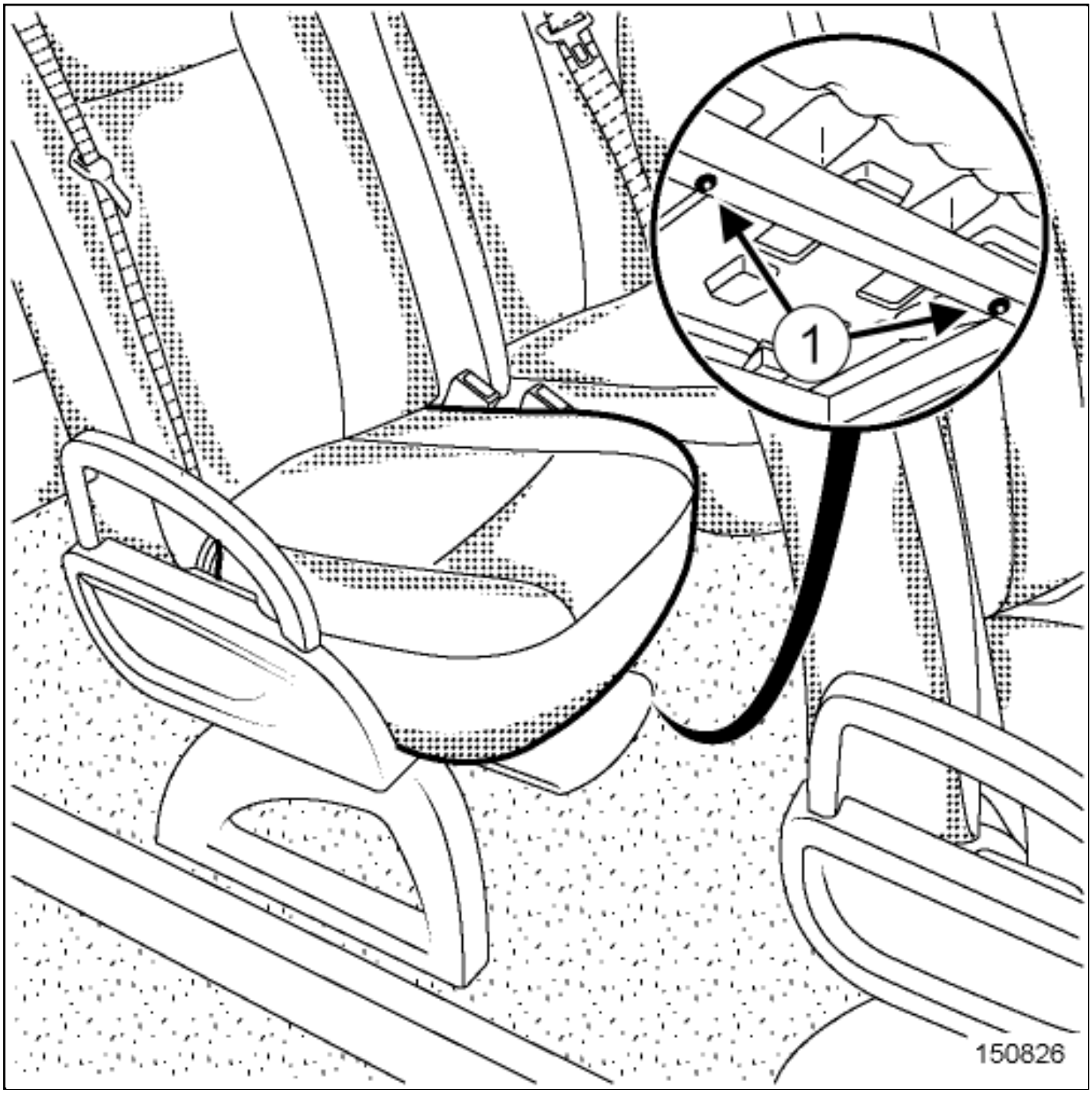
- Proceed in the reverse order to removal.

REAR SEAT BASE TRIM: REMOVAL - REFITTING

parts always to be replaced:
Seat trim clip

REMOVAL

1. REMOVAL PREPARATION OPERATION



Remove the bolts(1) .

2. REMOVAL OPERATION

Remove:

- the clips,
- the "foam and cover" assembly.

Detach the cover from the foam.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: Seat trim clip.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

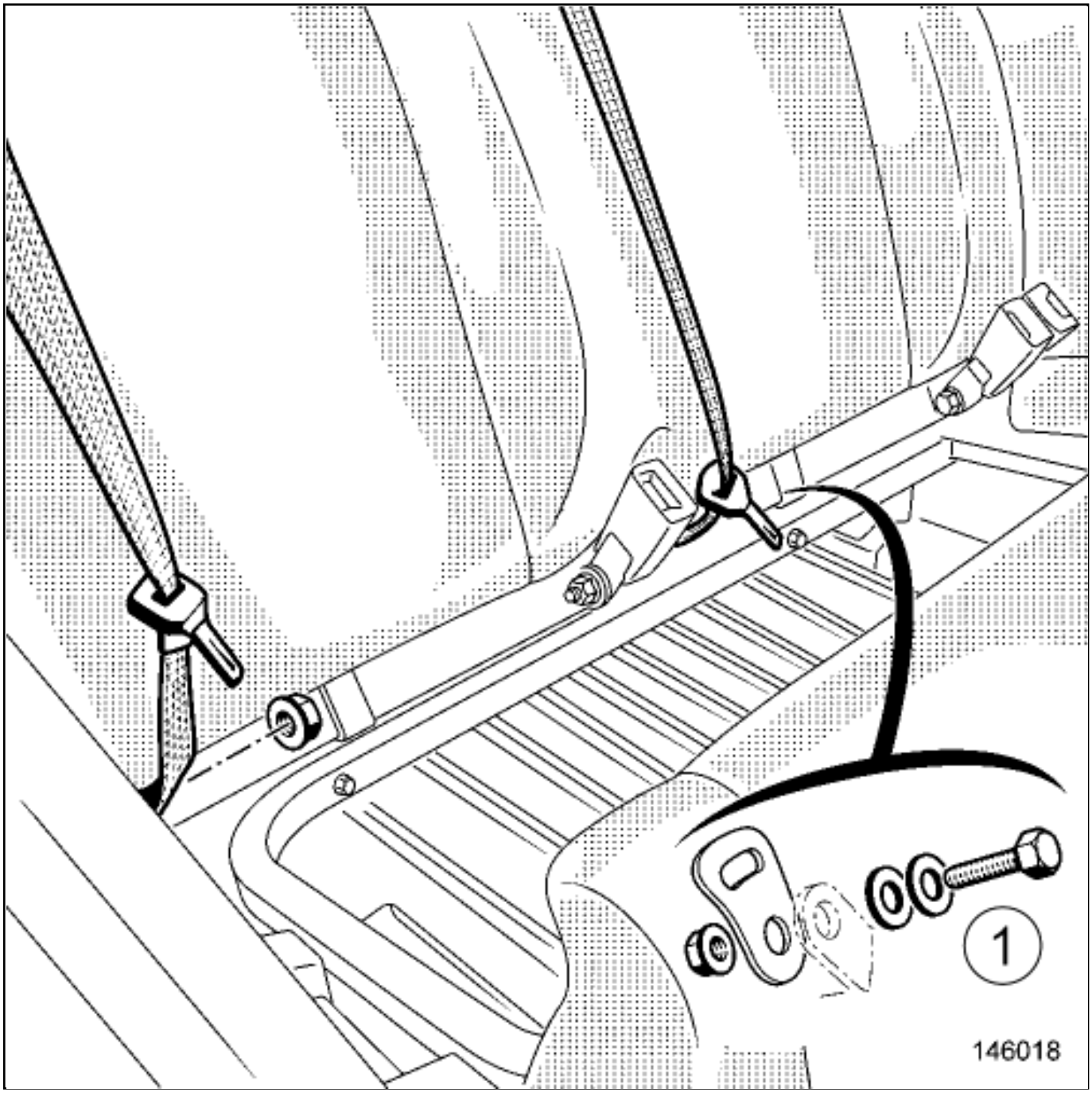
REAR SEAT BELT BUCKLE: REMOVAL - REFITTING

parts always to be replaced:
Rear seat belt buckle bolt
rear centre seat belt mounting

REMOVAL

1. REMOVAL PREPARATION OPERATION

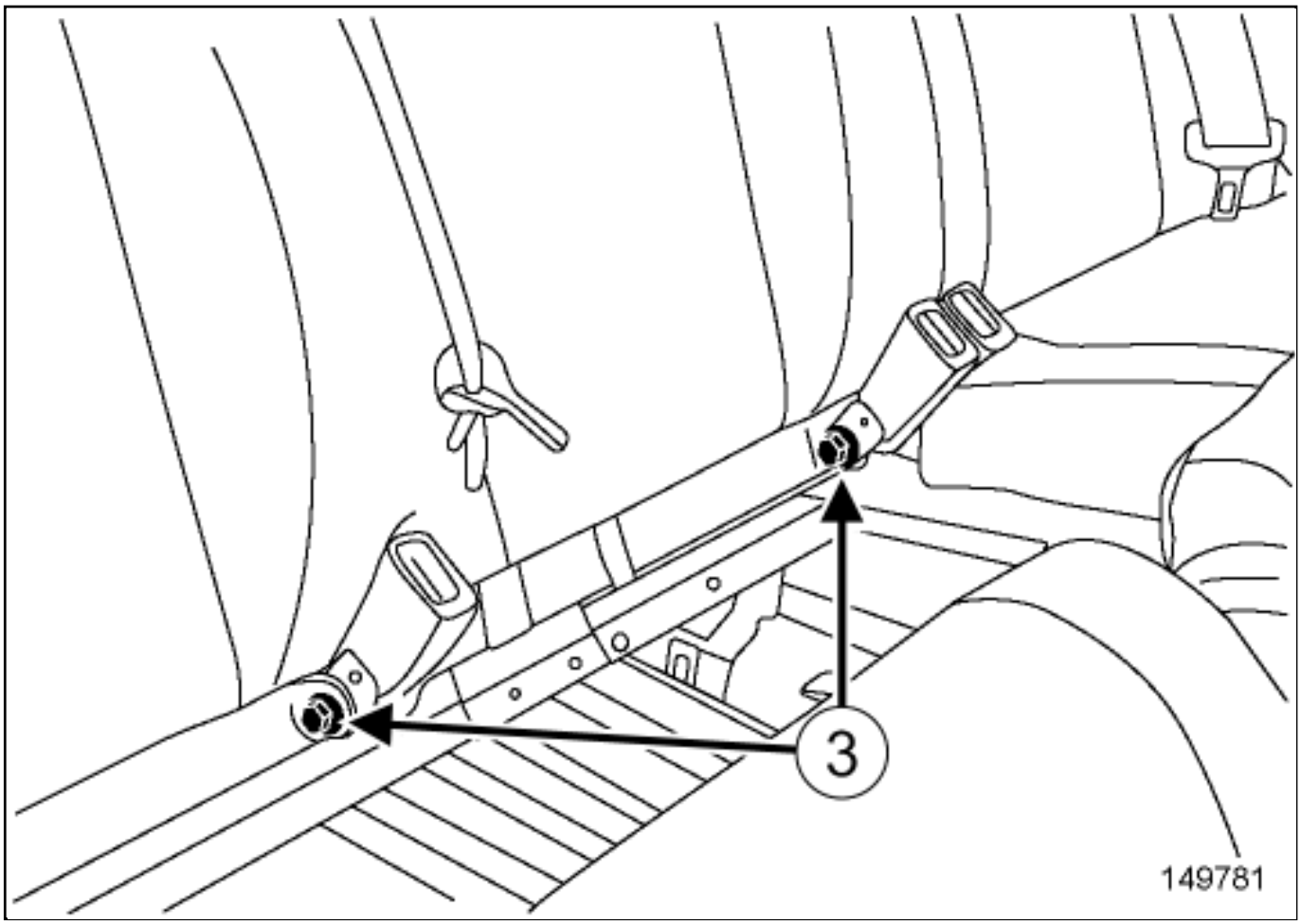
- Tilt the single unit rear bench seat base.



Remove:

- the stud(**1**) ,
- the rear centre seat belt lower mounting.

2. REMOVAL OPERATION



Remove:

- the nuts(3) ,
- the bolts,
- the rear seat belt buckles.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: Rear seat belt buckle bolt.

parts always to be replaced: rear centre seat belt mounting.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

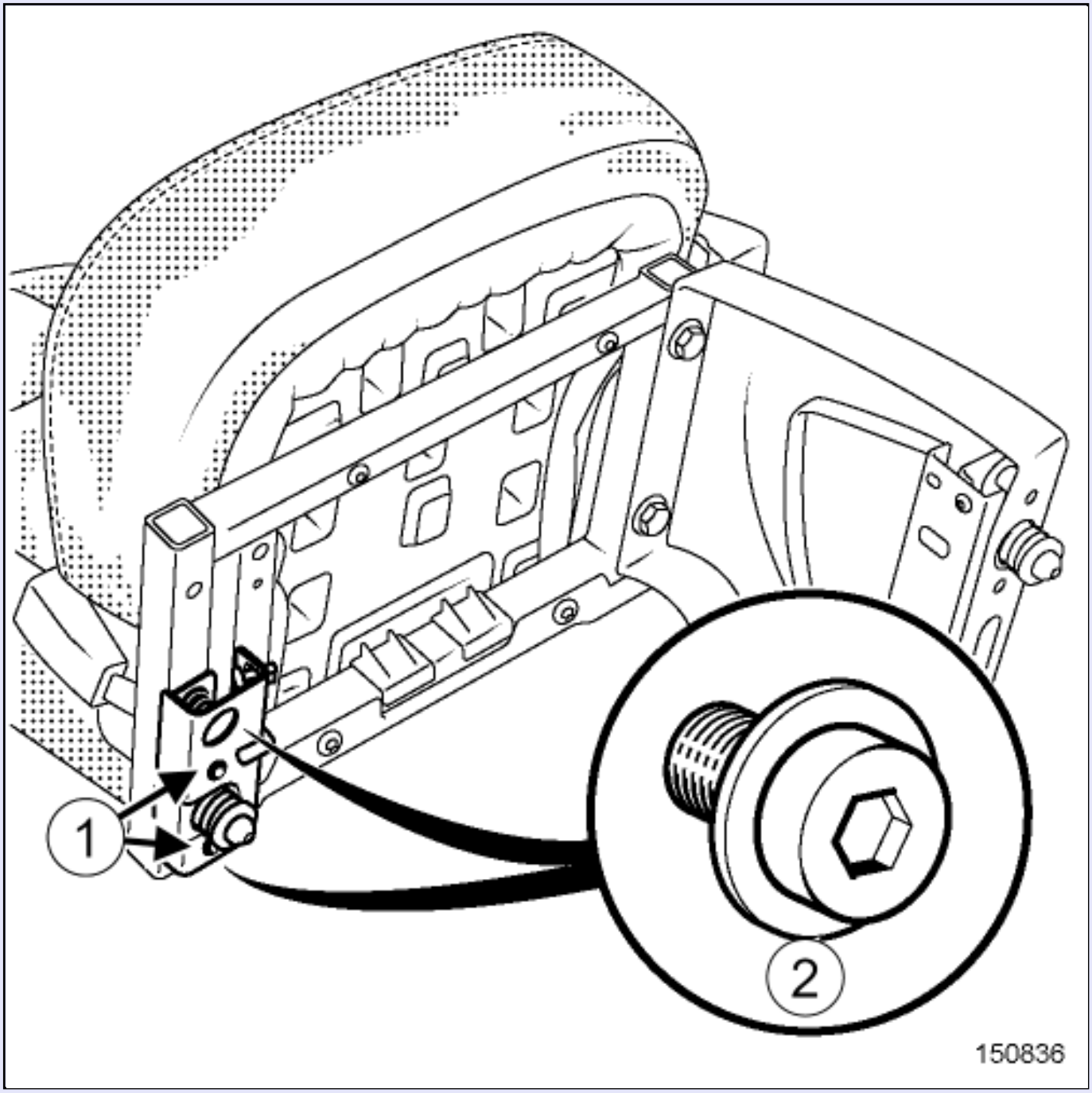
- Torque tighten:
  - the nuts of the rear seat belt buckles 27 N.m,
  - the lower mounting of the rear centre seat belt 30 N.m.

REAR SEAT HEIGHT ADJUSTER: REMOVAL - REFITTING

REMOVAL

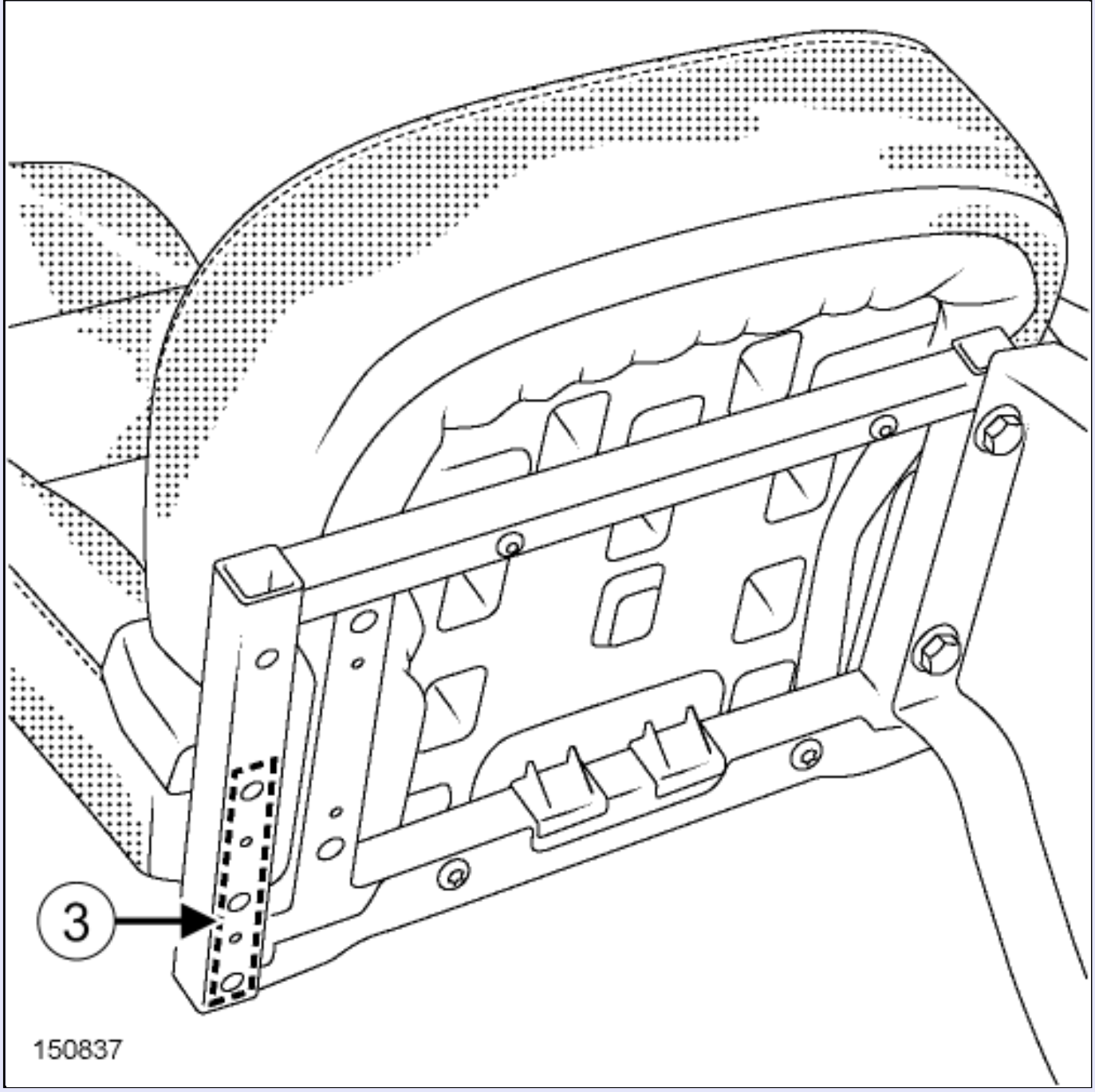
1. REMOVAL PREPARATION OPERATION

- Remove the complete rear bench seat(see 76A, Rear seat frames and mechanisms, Complete rear bench seat: Removal - Refitting) (see 76A,Rear seat frames and mechanisms, Complete rear bench seat: Removal - Refitting) or the complete rear seat(see 76A, Rear seat frames and mechanisms, Complete rear seat: Removal - Refitting) .

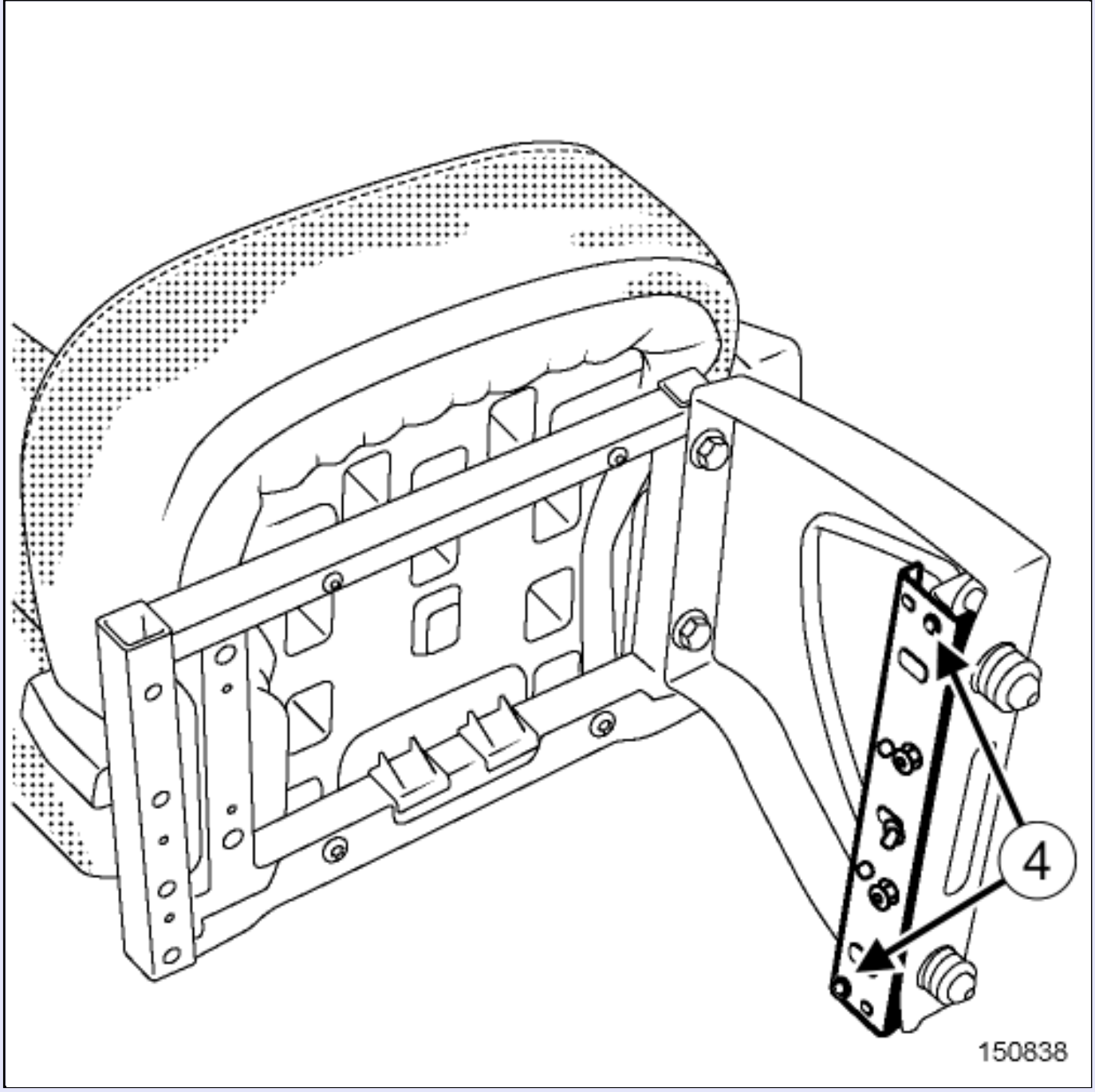


Remove:

- the bolts(1) and (2) ,
- the seat locking system.

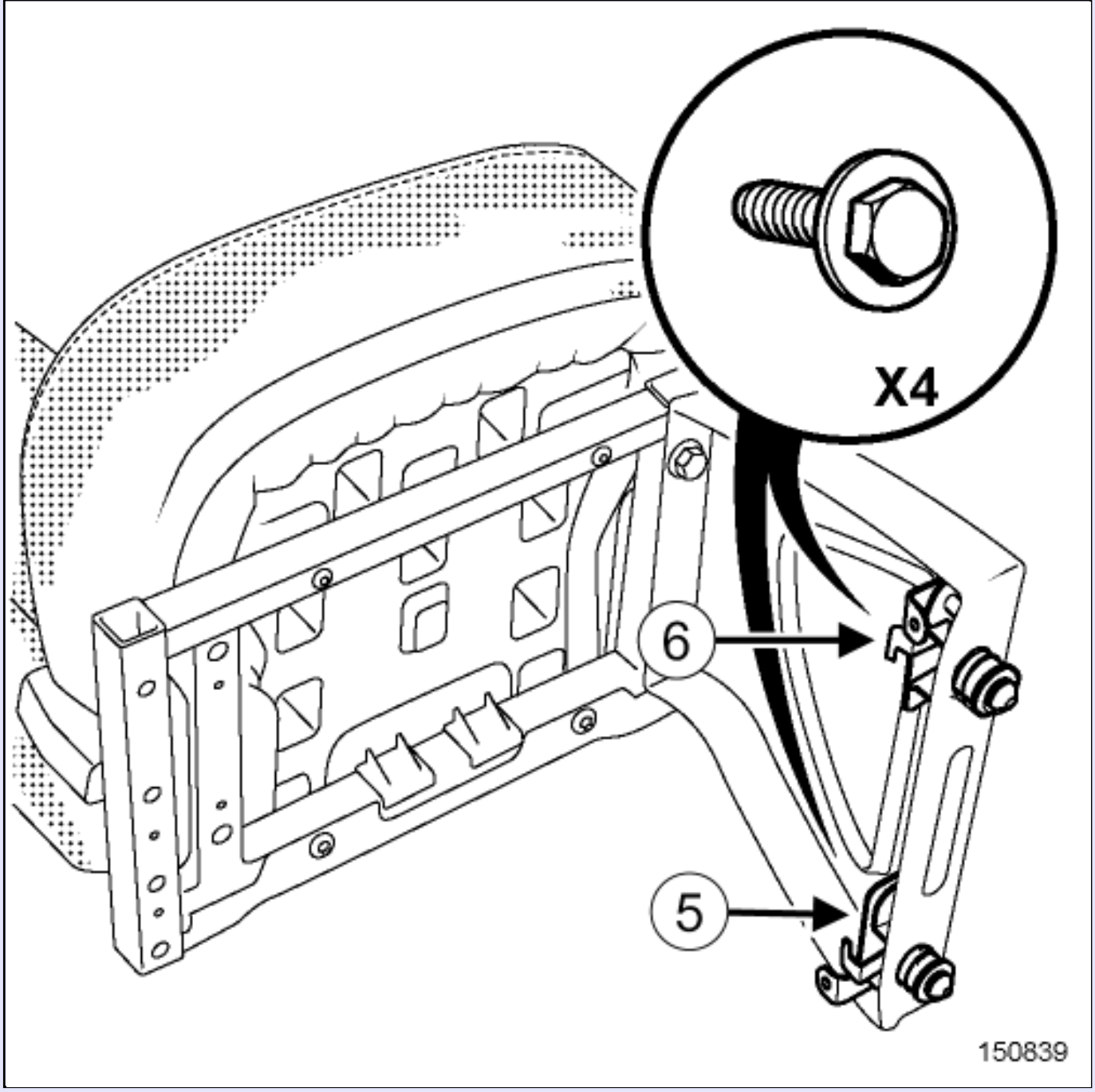


- Remove the mounting plate(3) .



Remove:

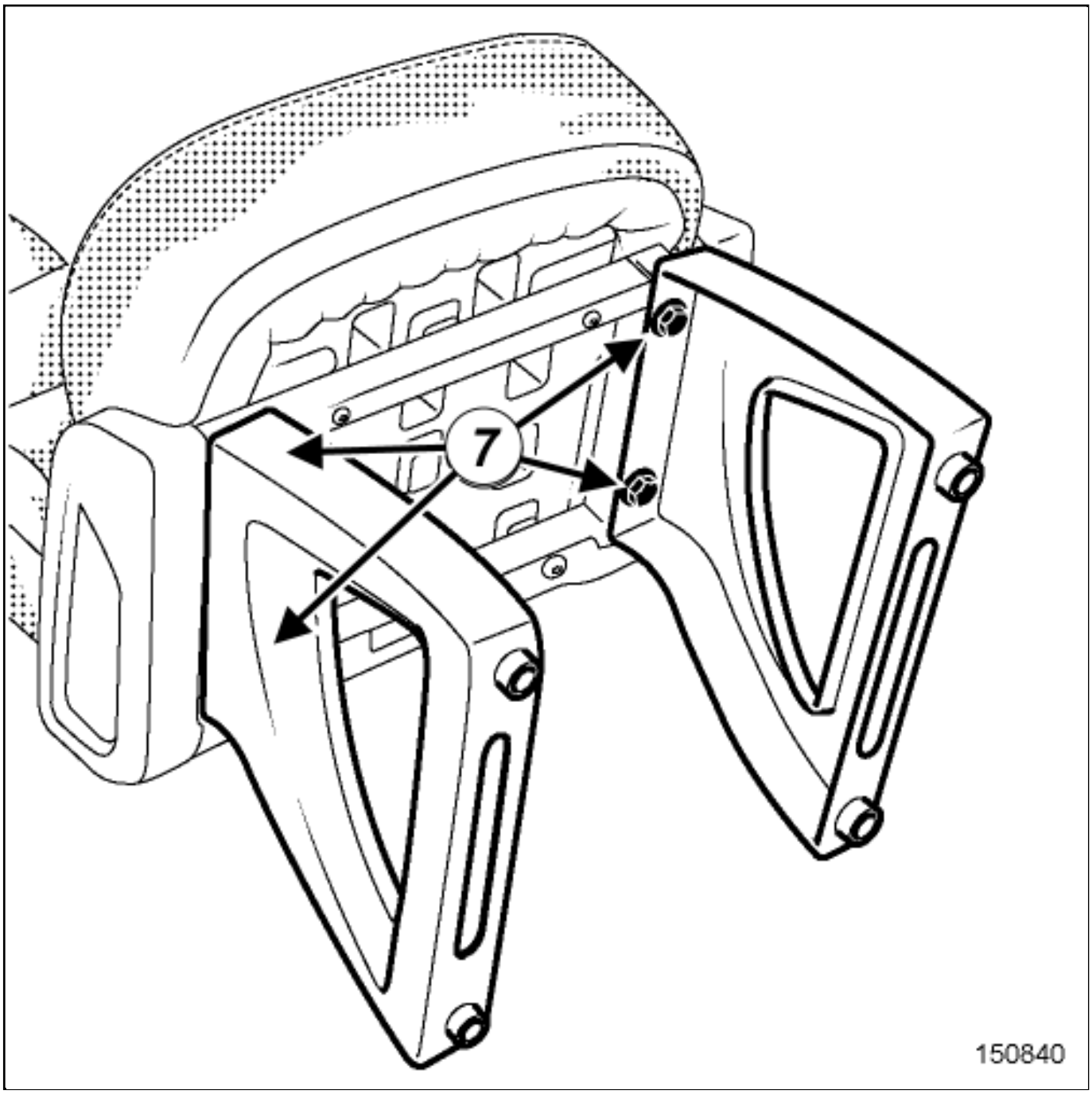
- the bolts(4) ,
- the locking assembly protector.



Remove:

- the bolts(5) and (6) ,
- the locking supports.

2. REMOVAL OPERATION



Remove:

- the bolts(7) ,
- the seat height adjuster.

REFITTING

Proceed in the reverse order to removal.

Tighten to torque:

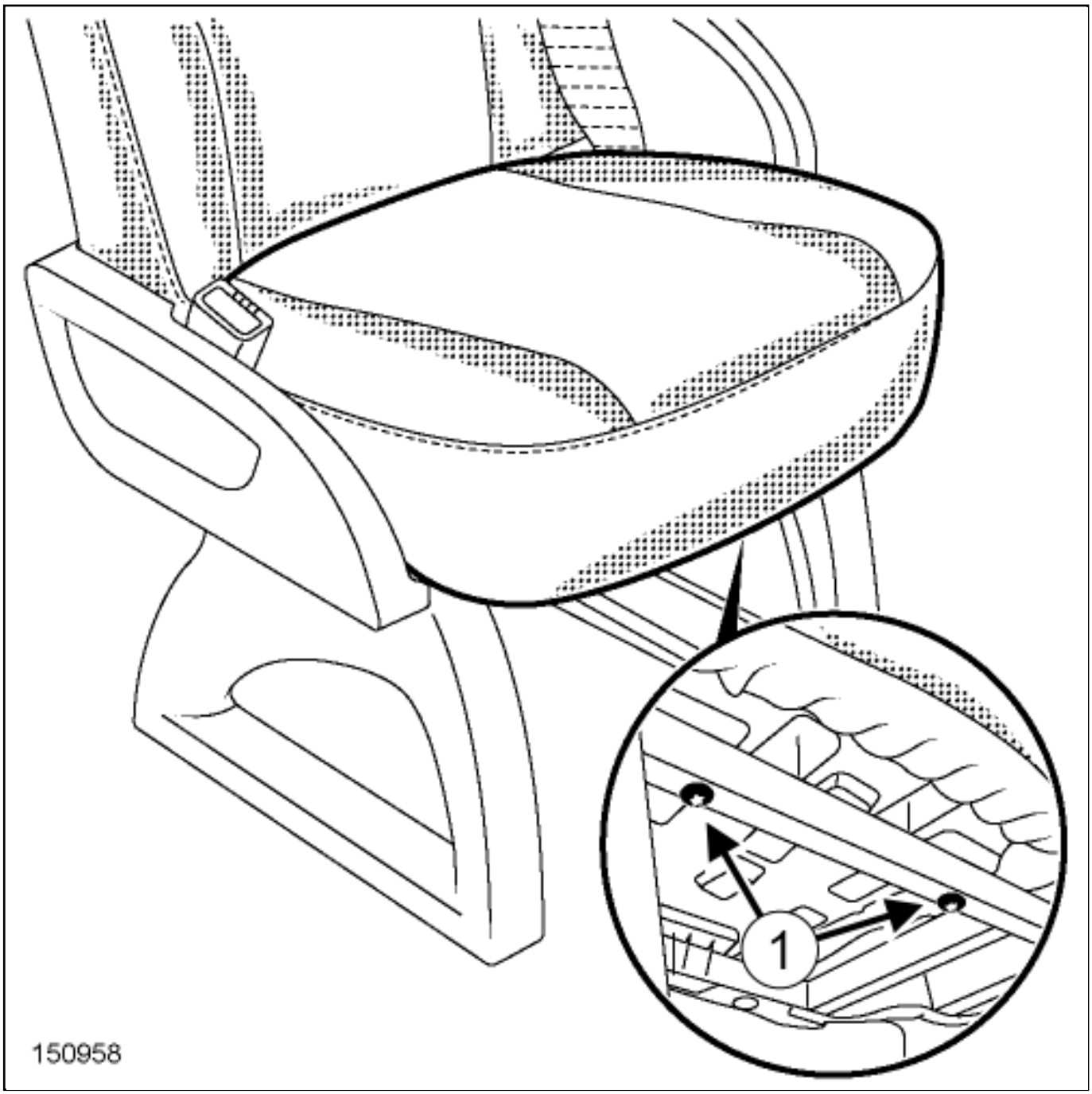
- the bolts of the seat height adjuster 64 N.m (7),
- the bolts of the locking supports 19 N.m (6),
- the bolts of the locking supports 6 N.m (5),
- the bolts of the locking assembly protector 8 N.m (4),
- the bolts of the seat locking system 37 N.m (2),
- the bolts of the seat locking system 7,5 N.m (1).

REAR SEATBACK TRIM: REMOVAL - REFITTING

REMOVAL

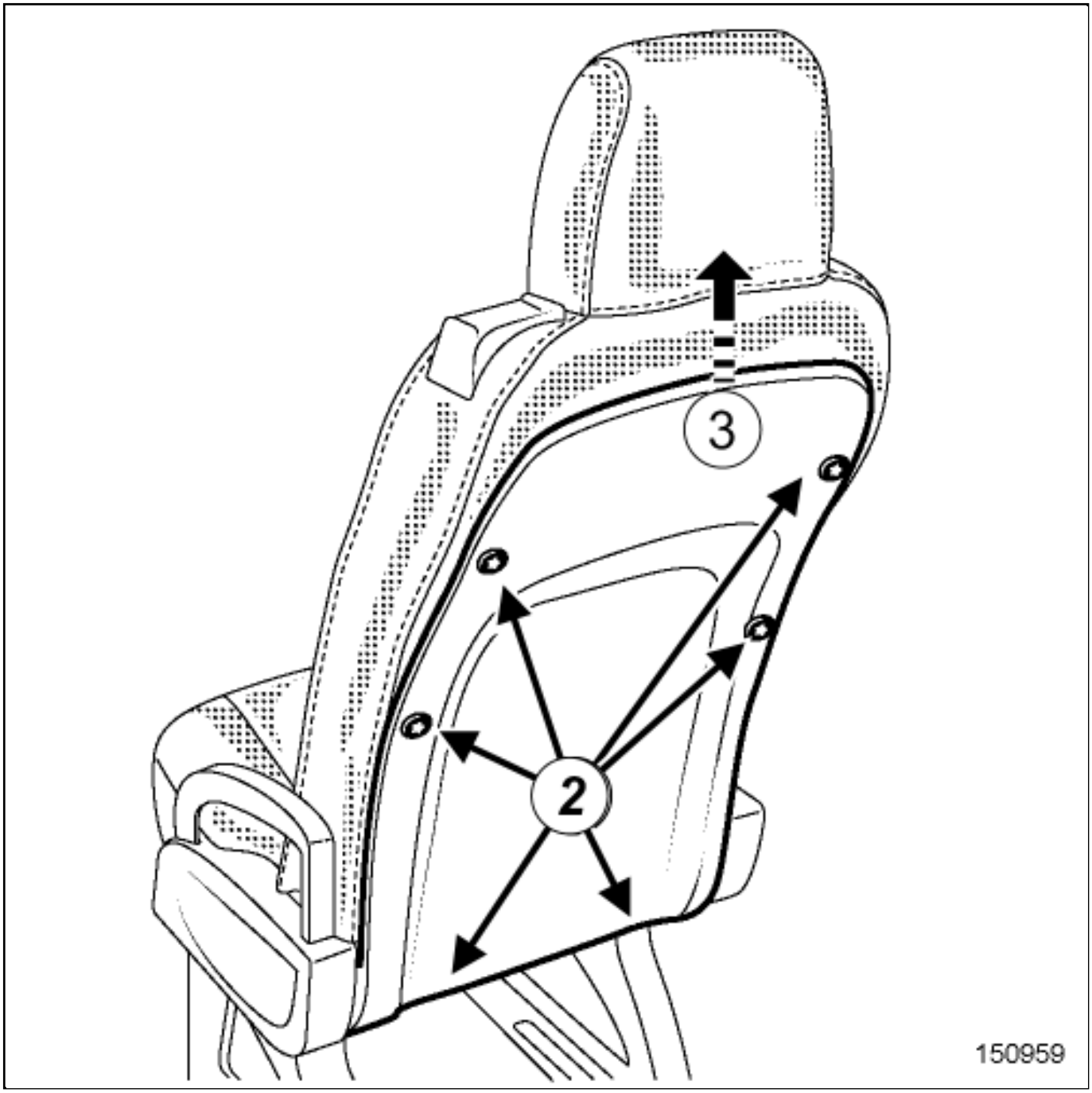
1. REMOVAL PREPARATION OPERATION

- Remove the complete rear bench seat Complete rear bench seat: Removal - Refitting or the complete rear seat Complete rear seat: Removal - Refitting .



- Remove:

- the bolts(1) ,
- the rear seat base.



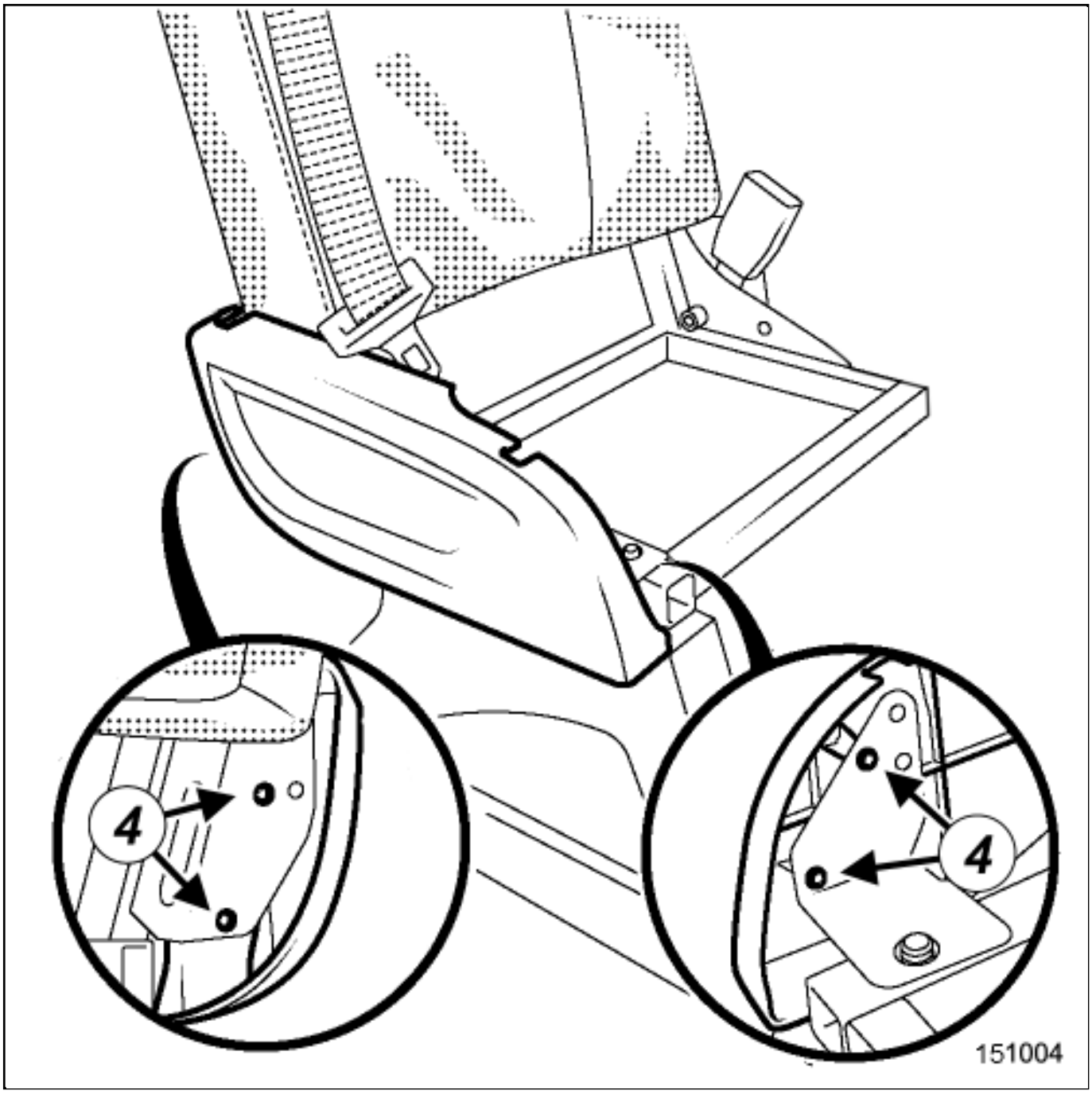
Unclip the blanking cover(2) .

Remove the bolts(2) .

Note:

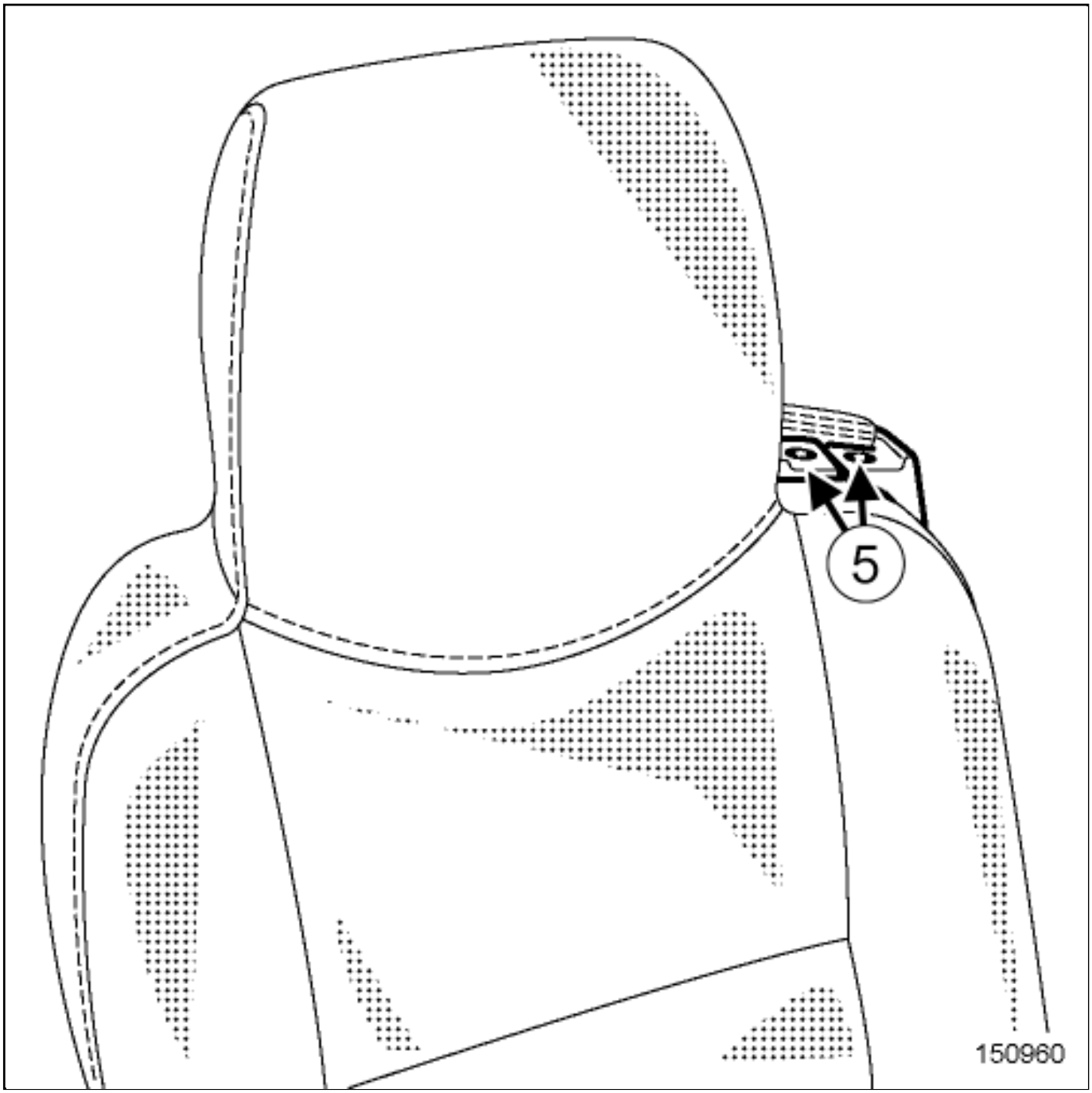
Mark the lenght of the mounting bolts when they are removed.

Remove the backrest assembly at(3) .



Remove:

- the bolts(4) ,
- the side housing.



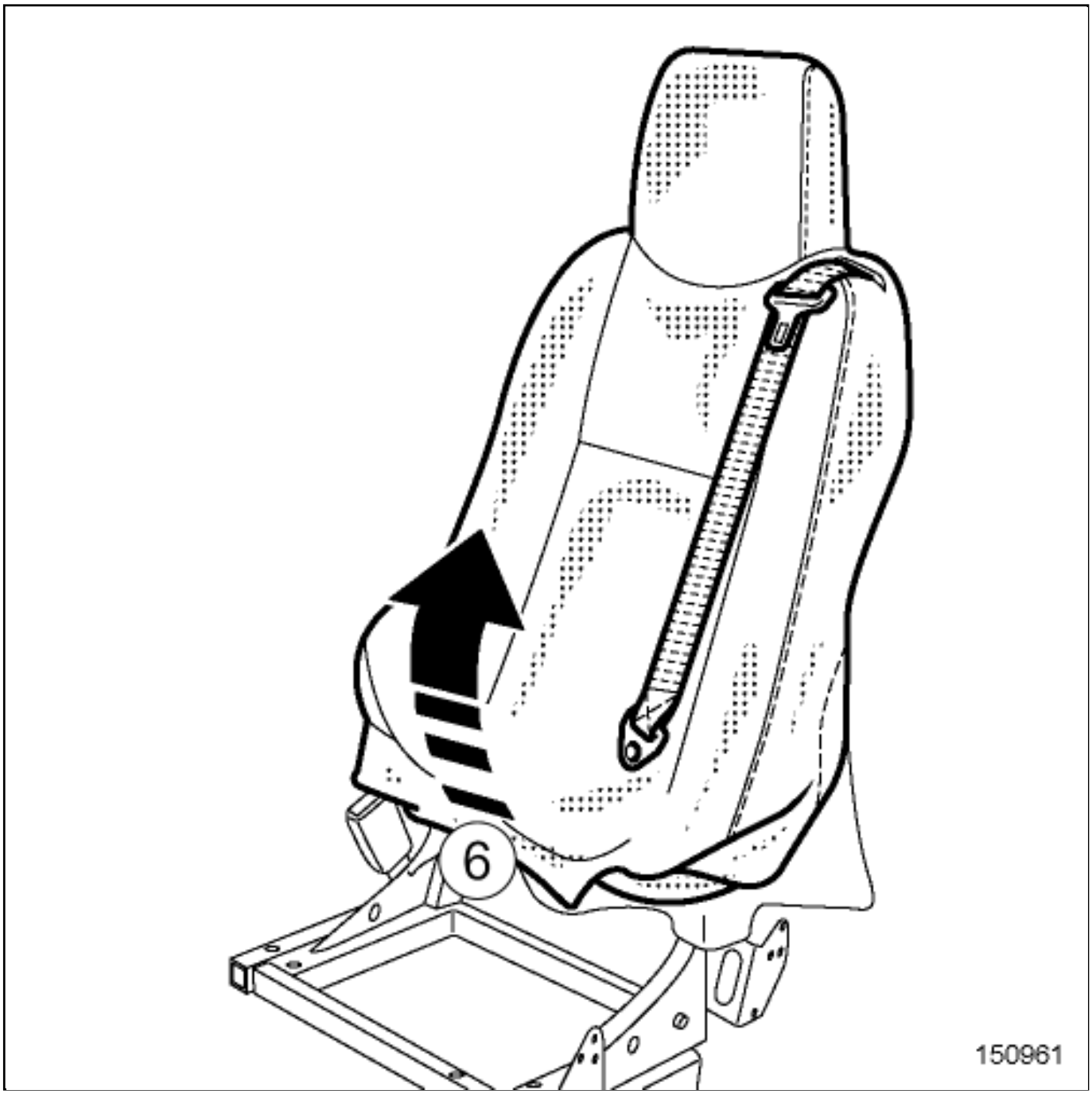
Remove:

- the bolts(5) ,
- the rear seat belt guide,
- the seat belt return mechanism bolt.

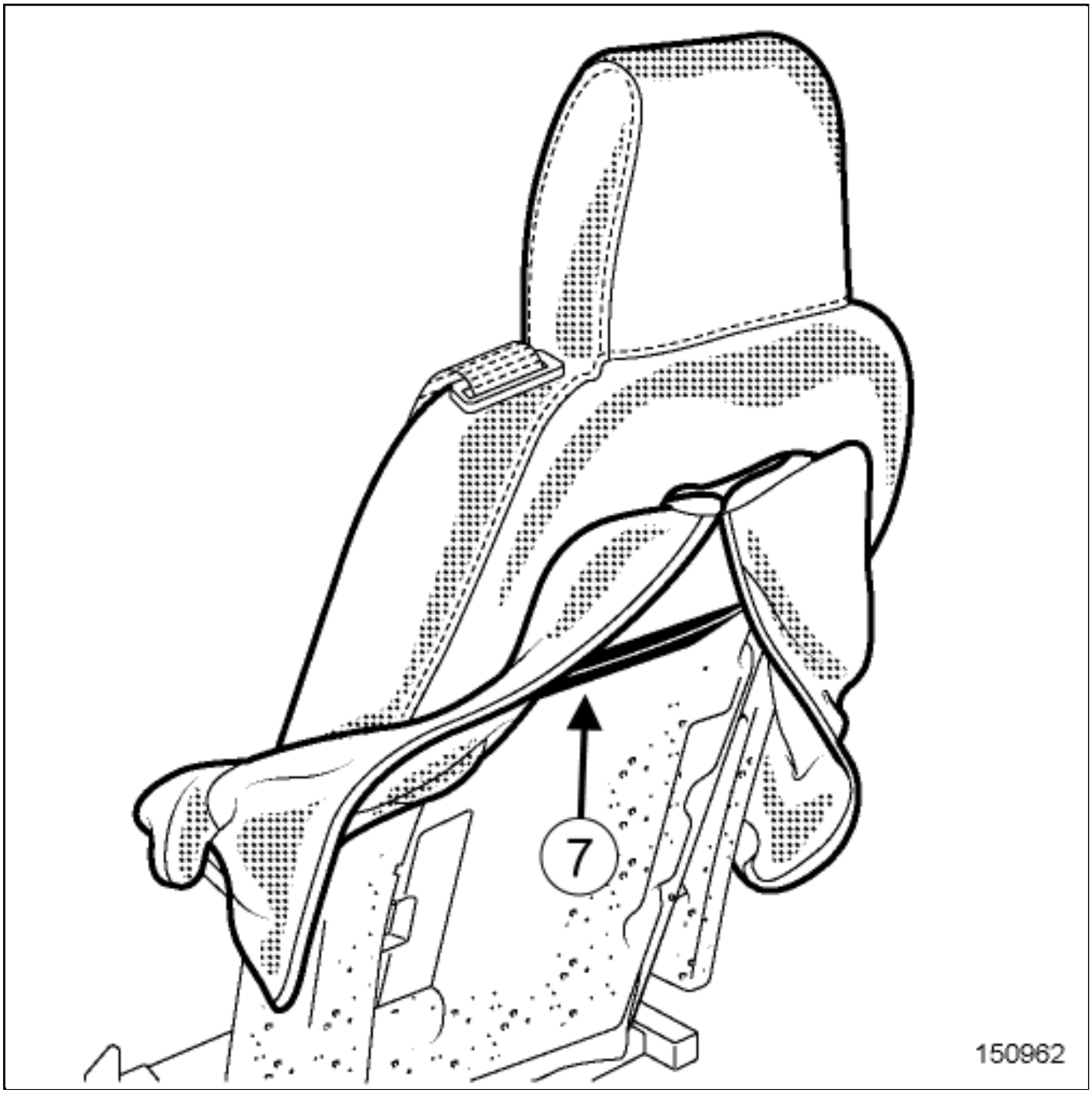
2. REMOVAL OPERATION

Unclip the rear retaining sections.

Open the zip fastener.



Lift the rear seatback cover at(6) .



Extract retaining strip(7) .

Remove the rear seatback cover.

REFITTING

1. REFITTING PREPARATION OPERATION

Always replace the bolt of the rear seat belt return mechanism.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Torque tighten the bolt of the rear seat belt return mechanism37 N.m.

Repair-70x16x02x04-01x37-1-11-1.xml

XSL version : 3.02 du 22/07/11

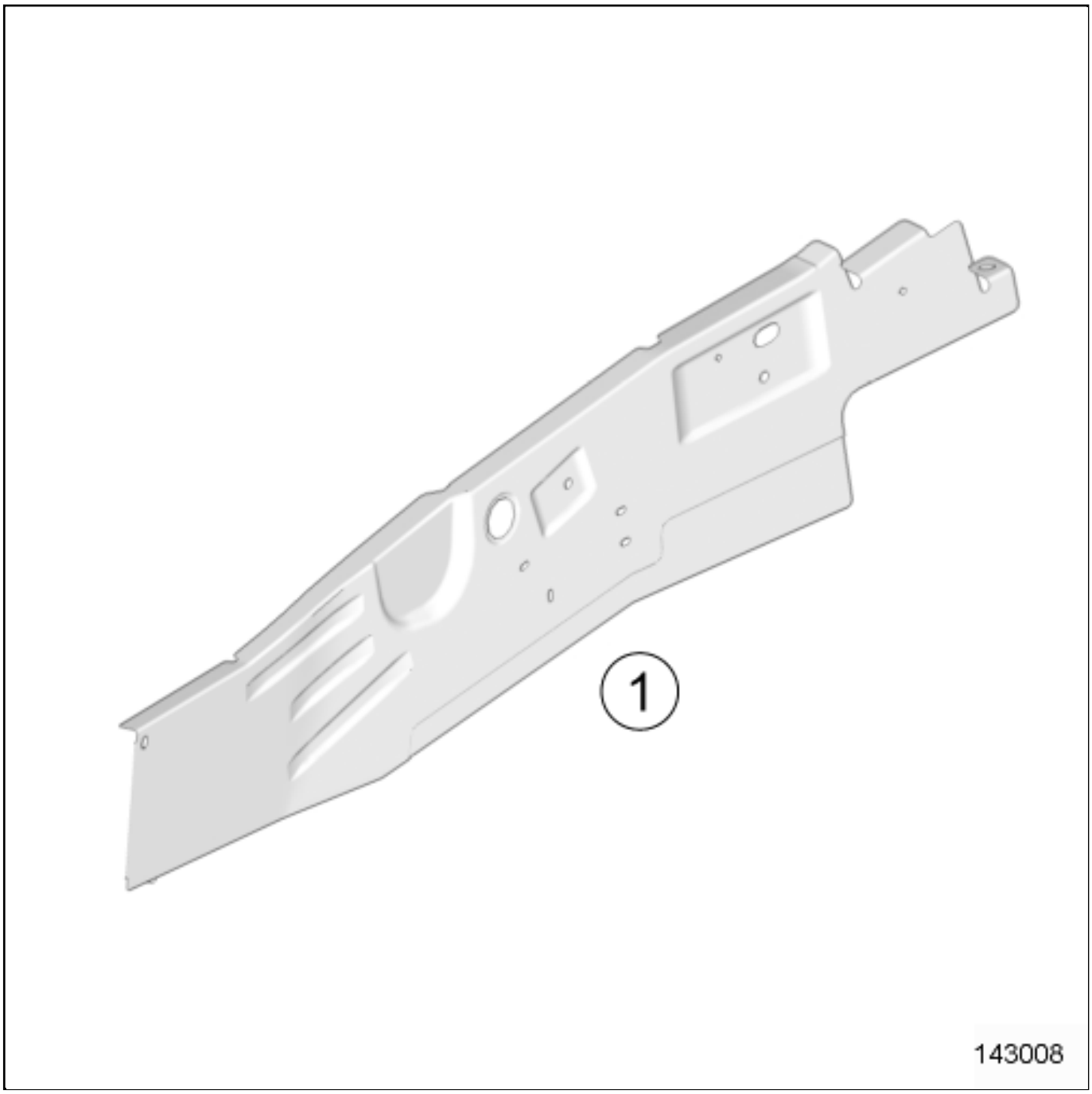
REAR SECTION OF FRONT SIDE MEMBER CLOSURE PANEL: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Front side member closure panel, rear section	THLE	1.5

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

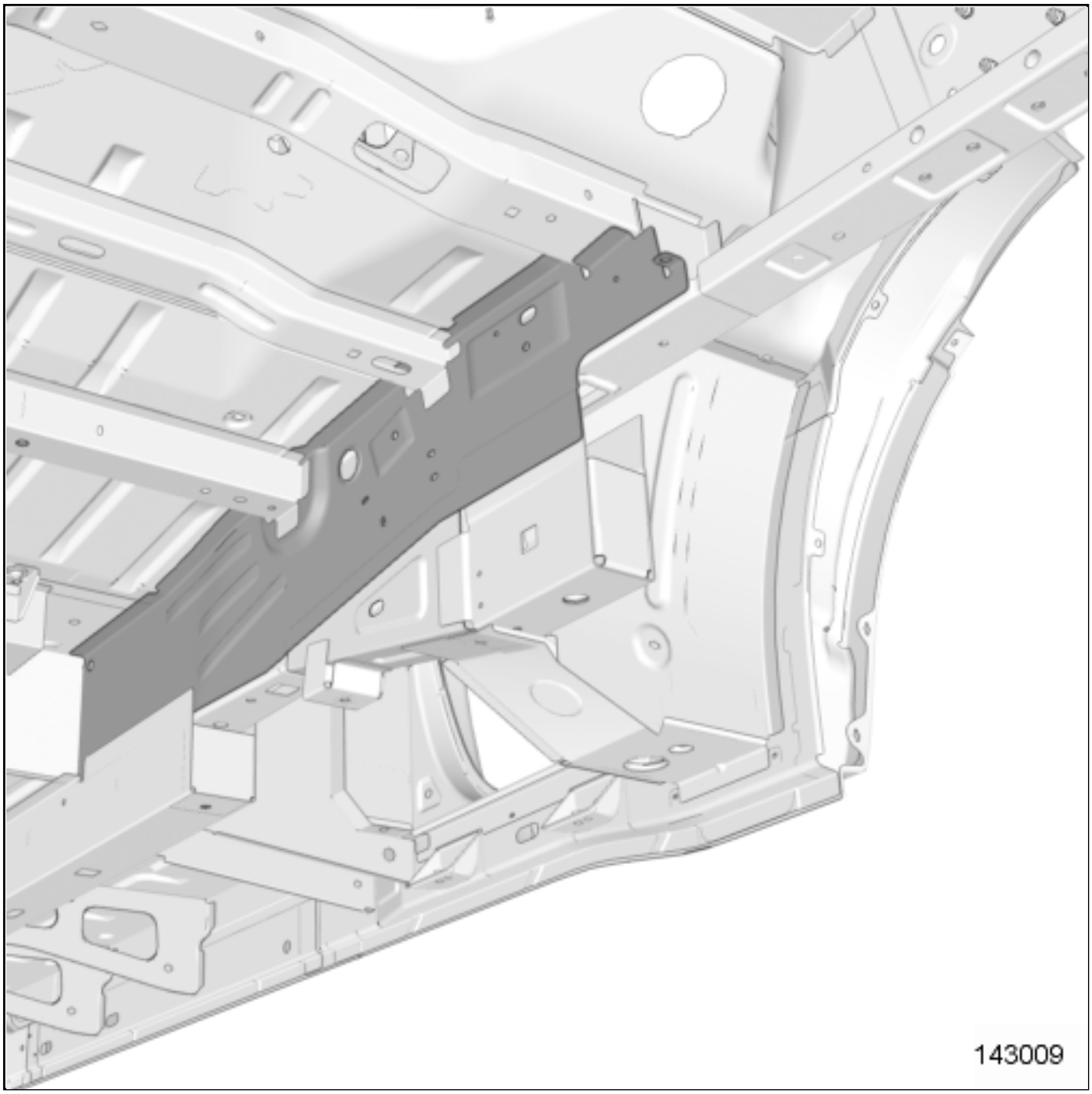
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

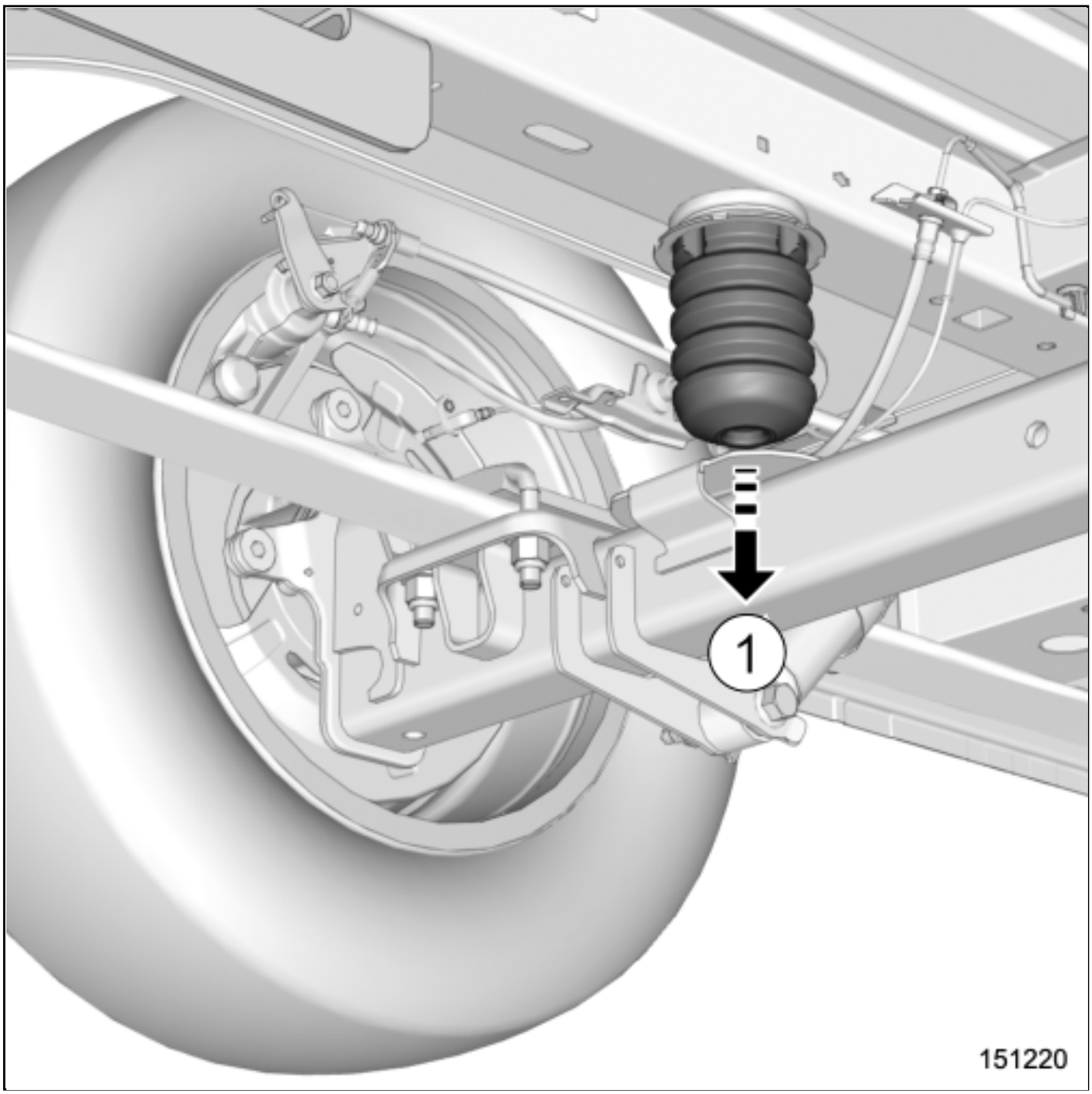
REAR SHOCK ABSORBER IMPACT STOP: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Place the vehicle on a two-post lift[Vehicle: Towing and lifting](#) (02A, Lifting equipment).

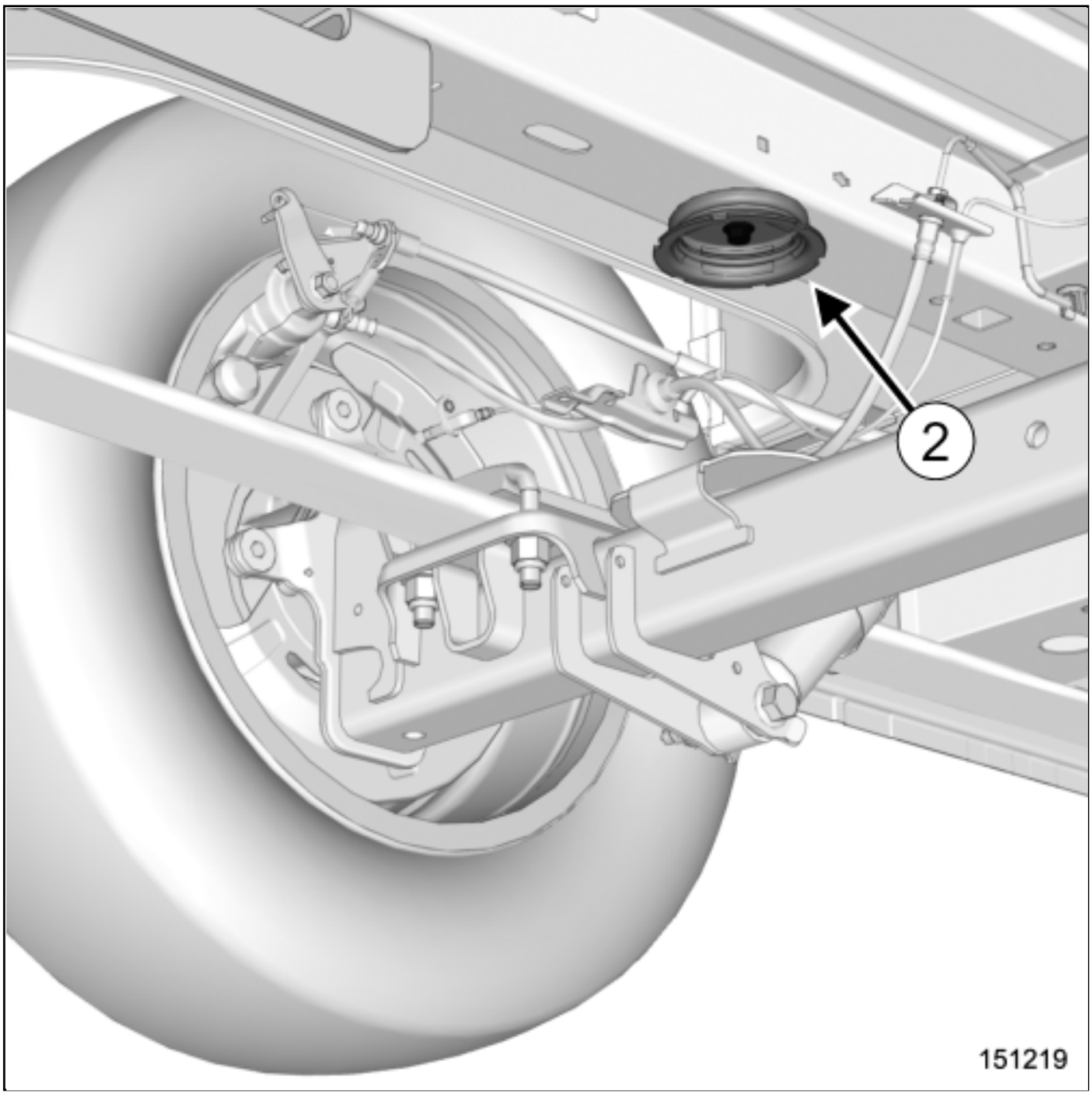
2. REMOVAL OPERATION



- Remove (1) the rear shock absorber impact stop.

Note:

Do not use sharp tool to avoid damaging the rear shock absorber impact stop.



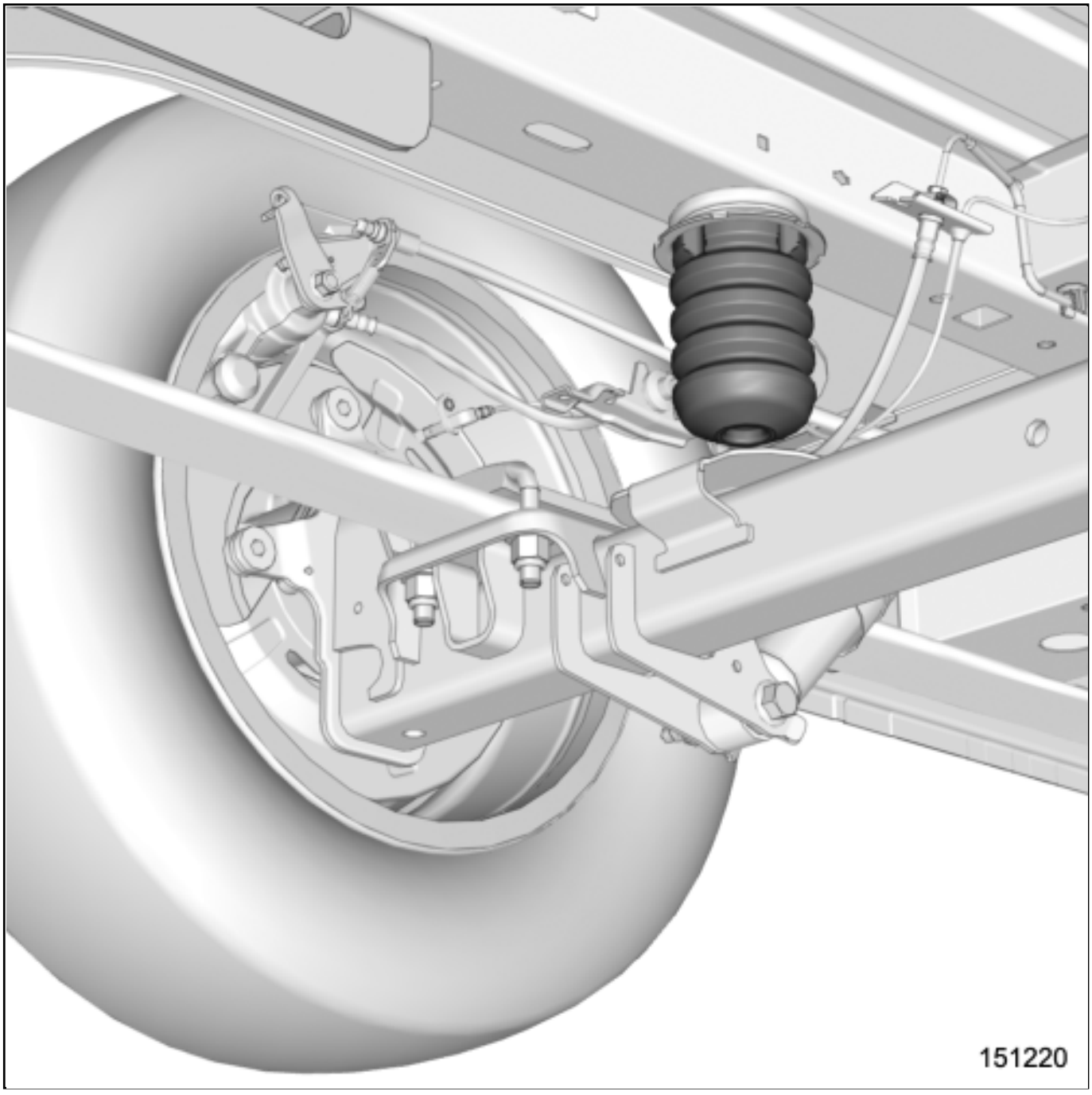
- Remove the rear shock absorber impact stop cup(2) .

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.
- Torque tighten the rear shock absorber impact stop cup bolt62 N.m.
- Refit the rear shock absorber impact stop until hearing the "clac" .

2. FINAL OPERATION



- Check the fitting of the rear shock absorber impact stop by turning and pulling it downward.

REAR SIDE DOOR LOCK: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the rear side door interior opening control(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .
- Remove the rear side door trim (72A, Side opening element trim).

2. REMOVAL OPERATION

- Remove the rear side door lock partially(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .
- Disconnect the connector of the rear side door lock.
- Unclip the rear side door exterior opening control cable(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .
- Remove the front side door lock(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

REAR SIDE DOOR SILL: REMOVAL - REFITTING

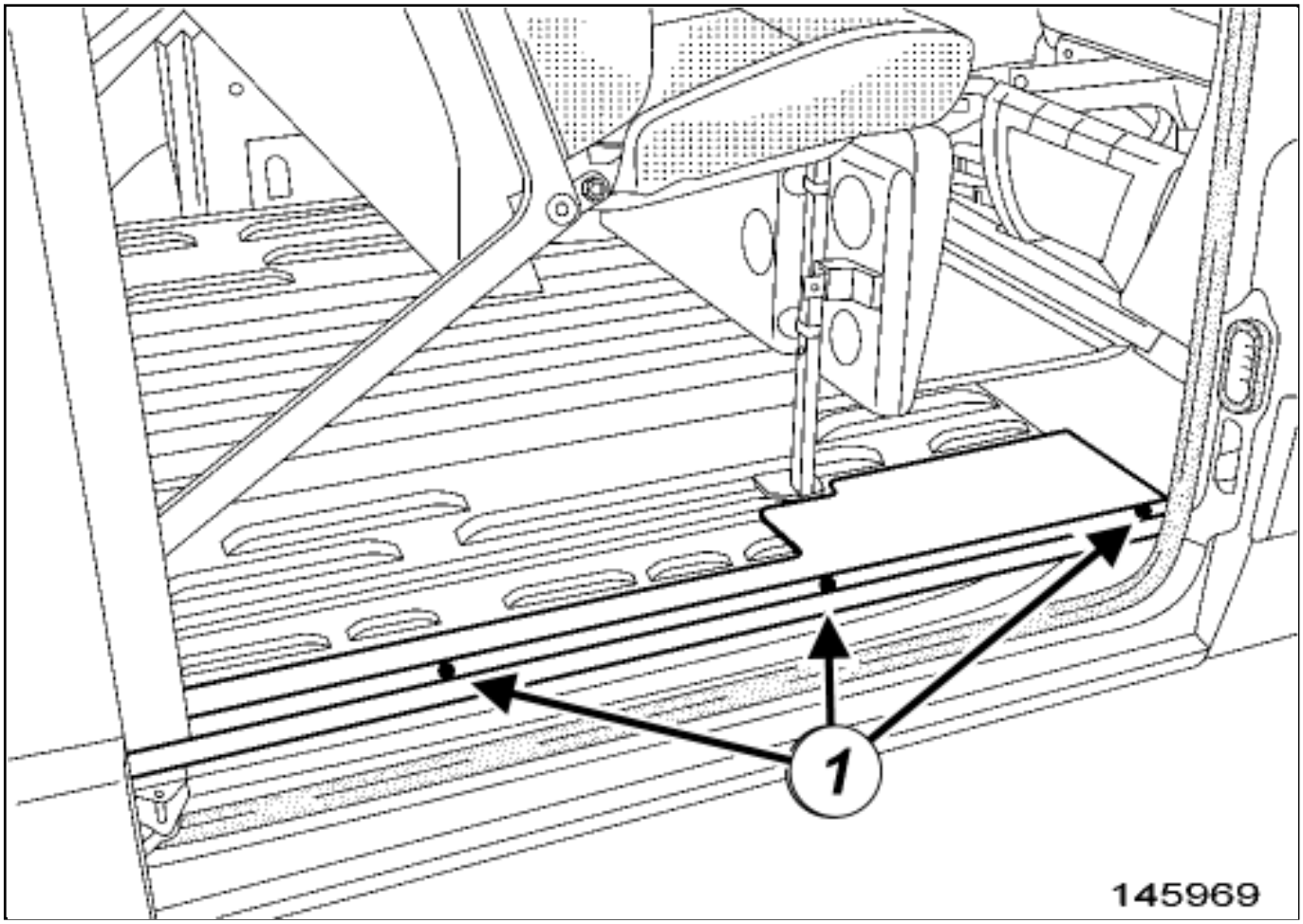
REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove:

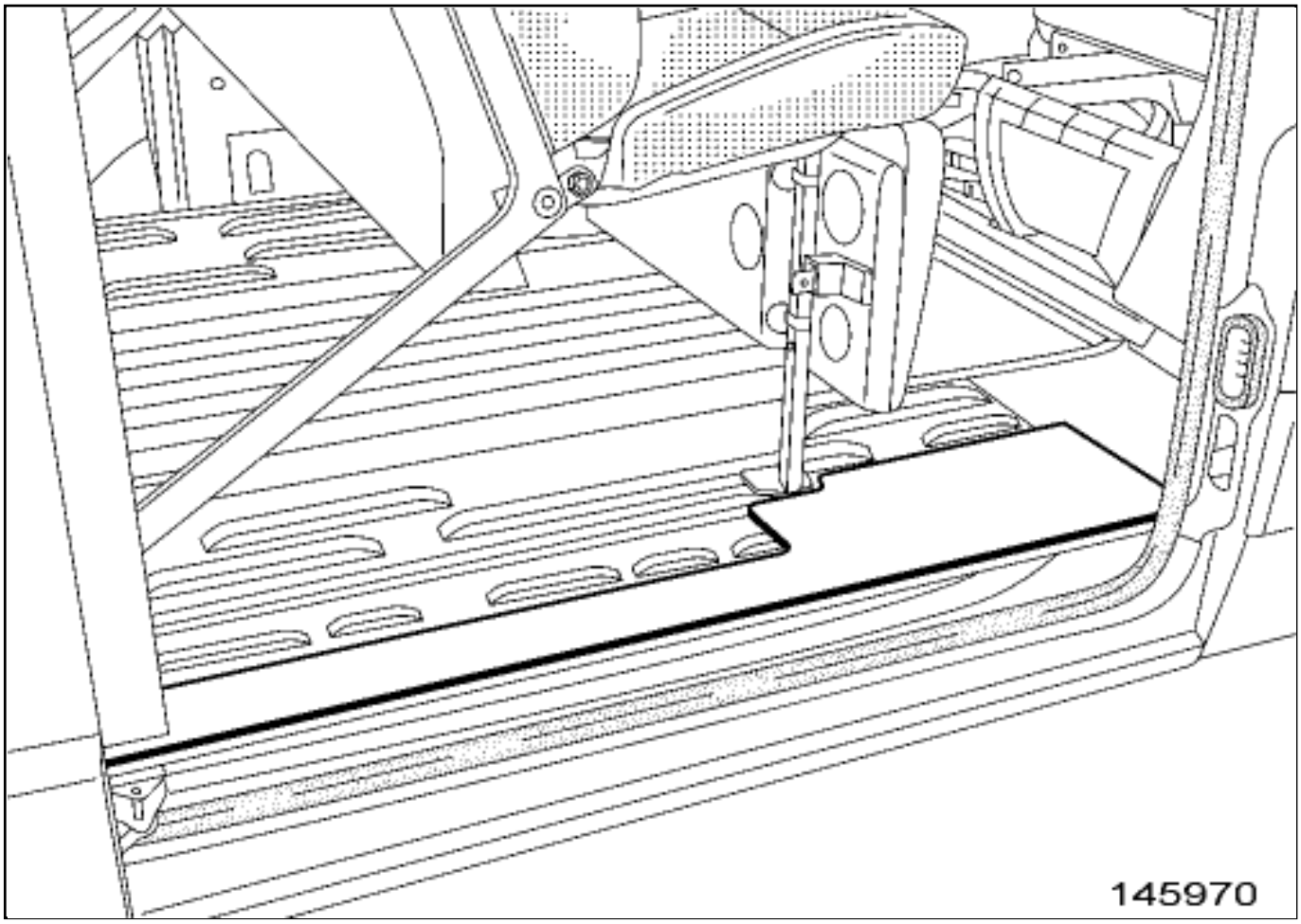
- the side trim of the passenger compartment partition (see 71A, Body internal trim, Passenger compartment partition trim: Removal - Refitting) ,
- the rear door sill lining (see 71A, Body internal trim, Rear door sill lining: Removal - Refitting) .

2. REMOVAL OPERATION



Remove:

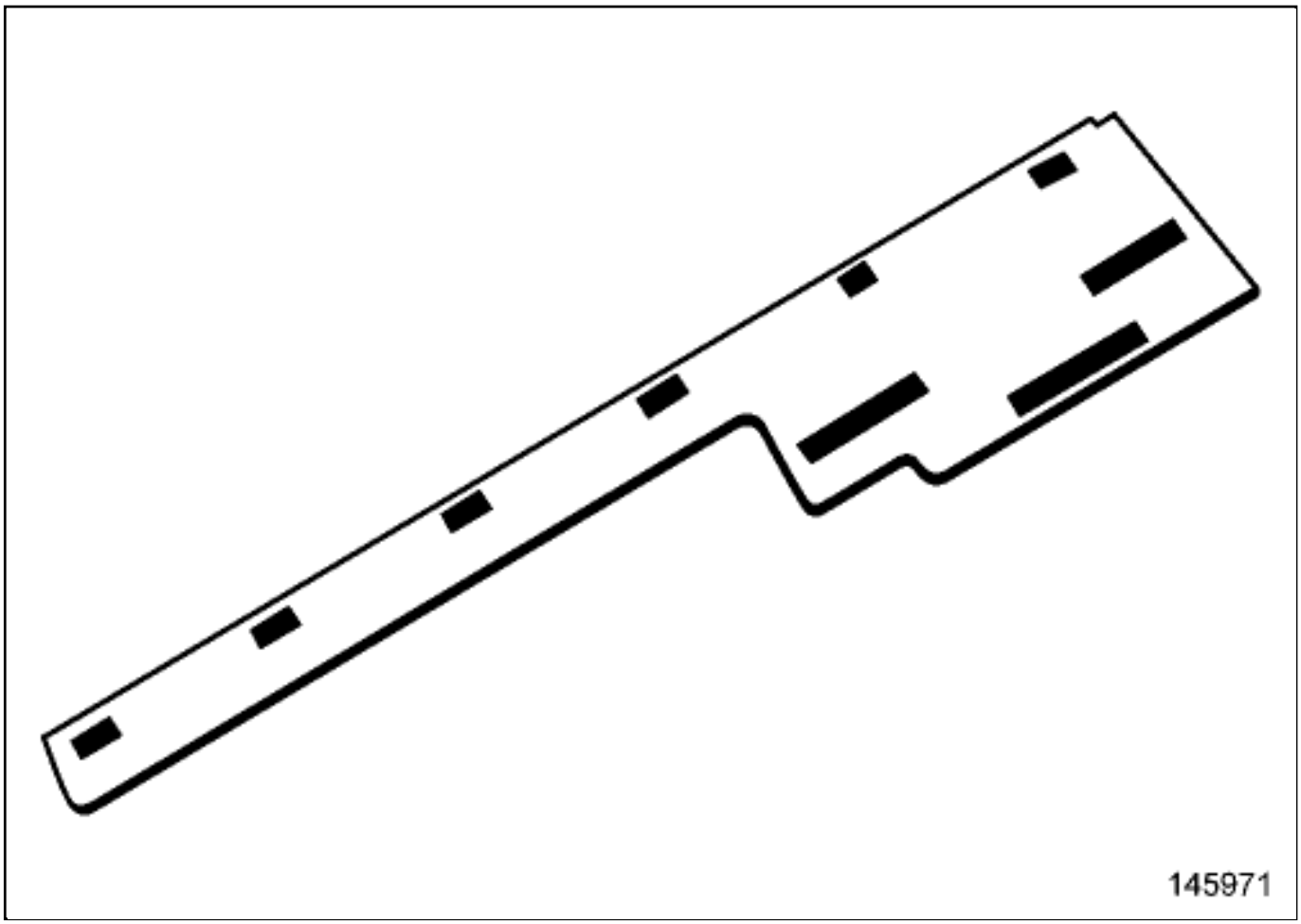
- the bolts(1) ,
- the retaining bar.

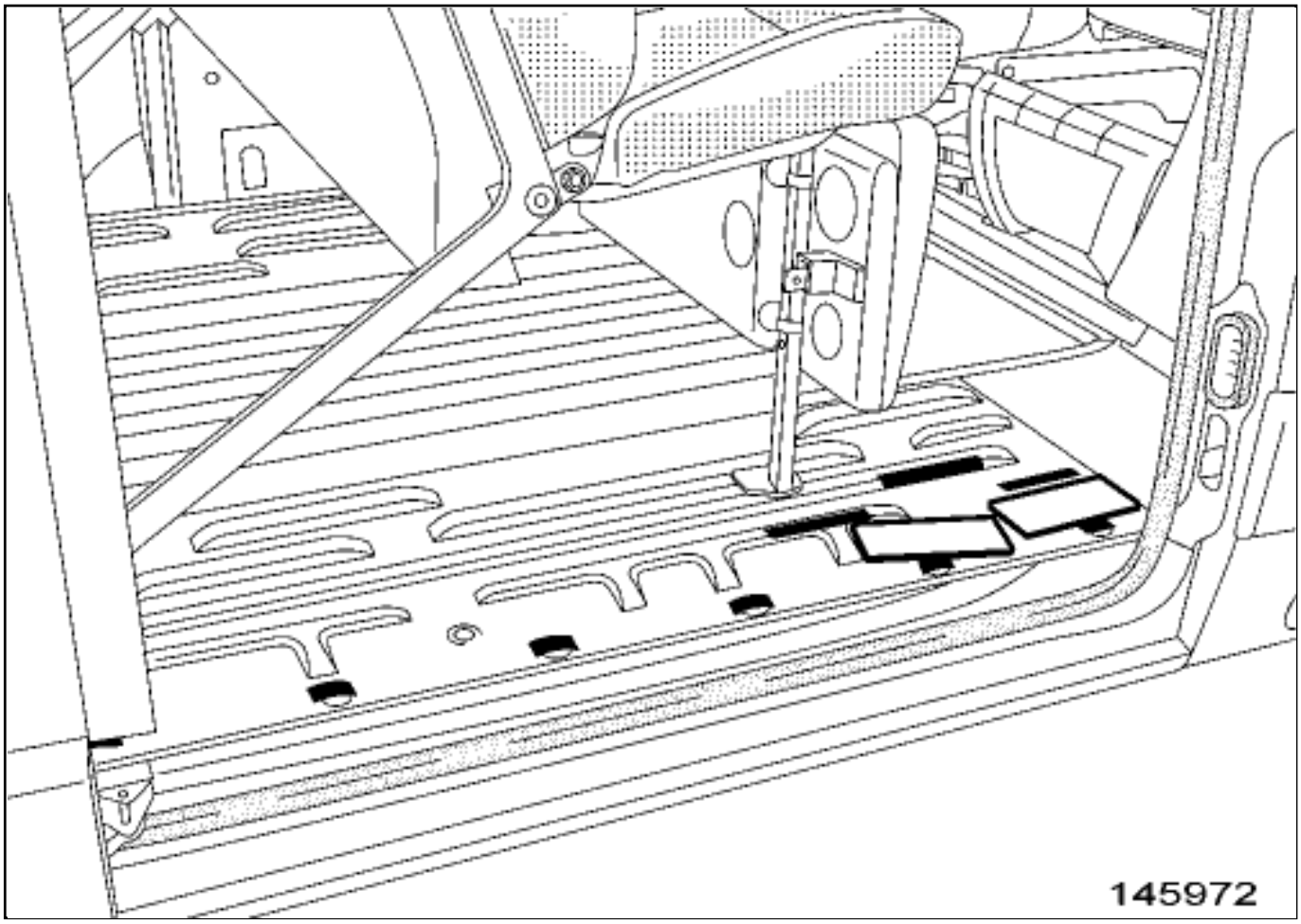


- Remove the rear side door sill.

REFITTING

1. REFITTING PREPARATION OPERATION


145971



Check the bonding and condition of the velcro strips, and replace them if necessary.

Check the positioning and bonding of the shims.

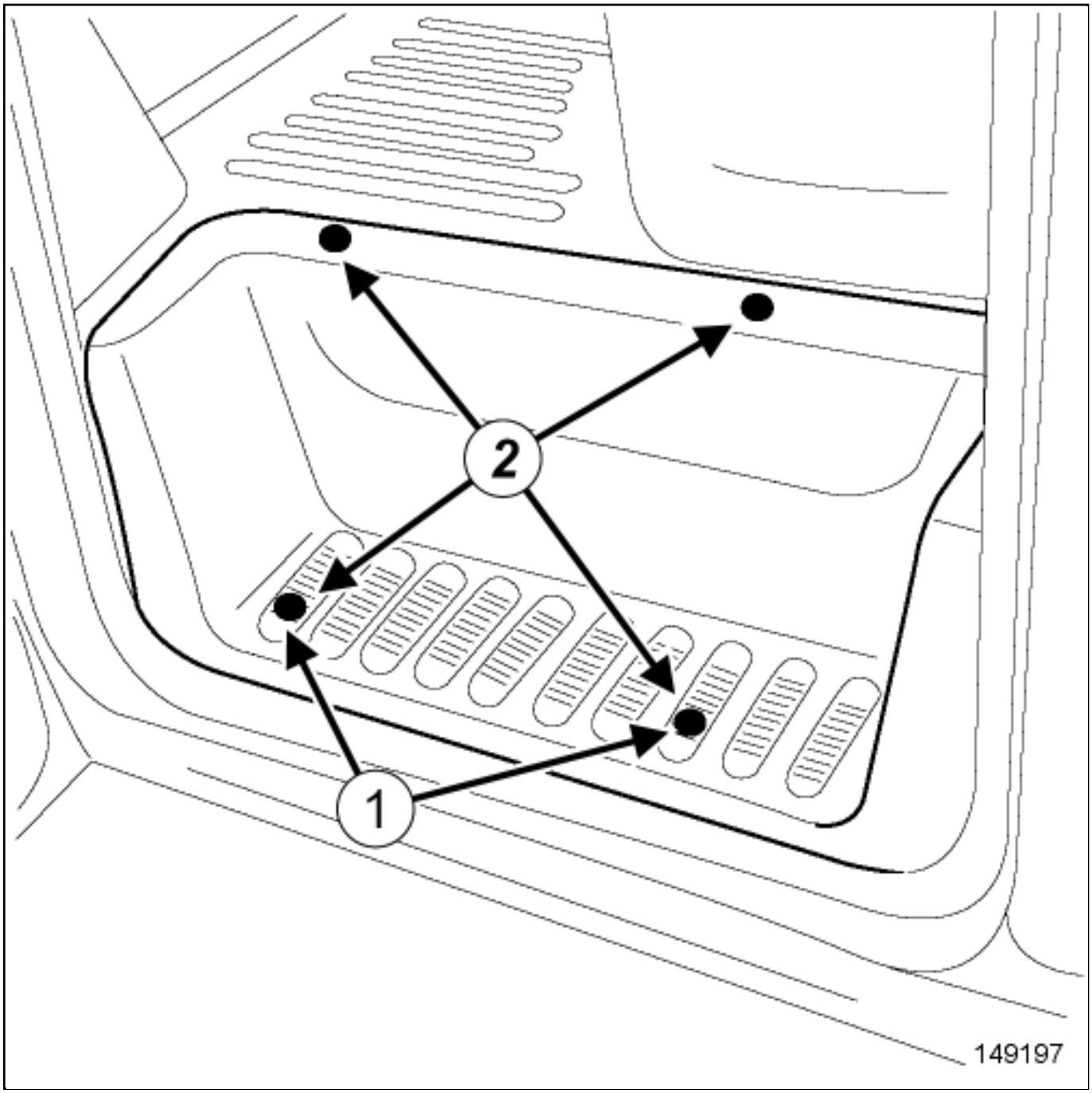
2. REFITTING OPERATION

Proceed in the reverse order to removal.

REAR SIDE DOOR SILL: REMOVAL - REFITTING

REMOVAL

1. REMOVAL OPERATION



Remove:

- the blanking covers(1) ,
- the bolts(2) ,
- the rear side door sill.

REFITTING

- Proceed in the reverse order to removal.

Repair-70x02x03x01-01x37-1-4-1.xml

XSL version : 3.02 du 22/07/11

REAR SIDE DOOR SLIDING WINDOW: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)Exterior rear side opening element assembly: Exploded view .

REMOVAL

1. REMOVAL OPERATION

- Detach the opening window assembly of the rear side doorExterior rear side opening element assembly: Exploded view .

REFITTING

1. REFITTING OPERATION

- Position the fitting cord in the groove of the frame of the opening window assembly of the rear side door.

- Fit the opening window assembly of the rear side door.

REAR SIDE DOOR TRIM: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 72A, Side opening element trim, Rear side opening element assembly on the passenger compartment side: Exploded view) (72A, Side opening elements trim).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the rear loading door interior opening control(see 72A, Side opening element trim, Rear side opening element assembly on the passenger compartment side: Exploded view) (72A, Side opening elements trim).

2. REMOVAL OPERATION

- Remove (see 72A, Side opening element trim, Rear side opening element assembly on the passenger compartment side: Exploded view) (72A, Side opening elements trim):
  - the clips of the rear loading door trim,
  - the rear loading door trim.

REFITTING

- Proceed in the reverse order to removal.

Repair-70x03x02x04-01x37-1-16-1.xml

XSL version : 3.02 du 22/07/11

REAR SIDE DOOR: REMOVAL - REFITTING

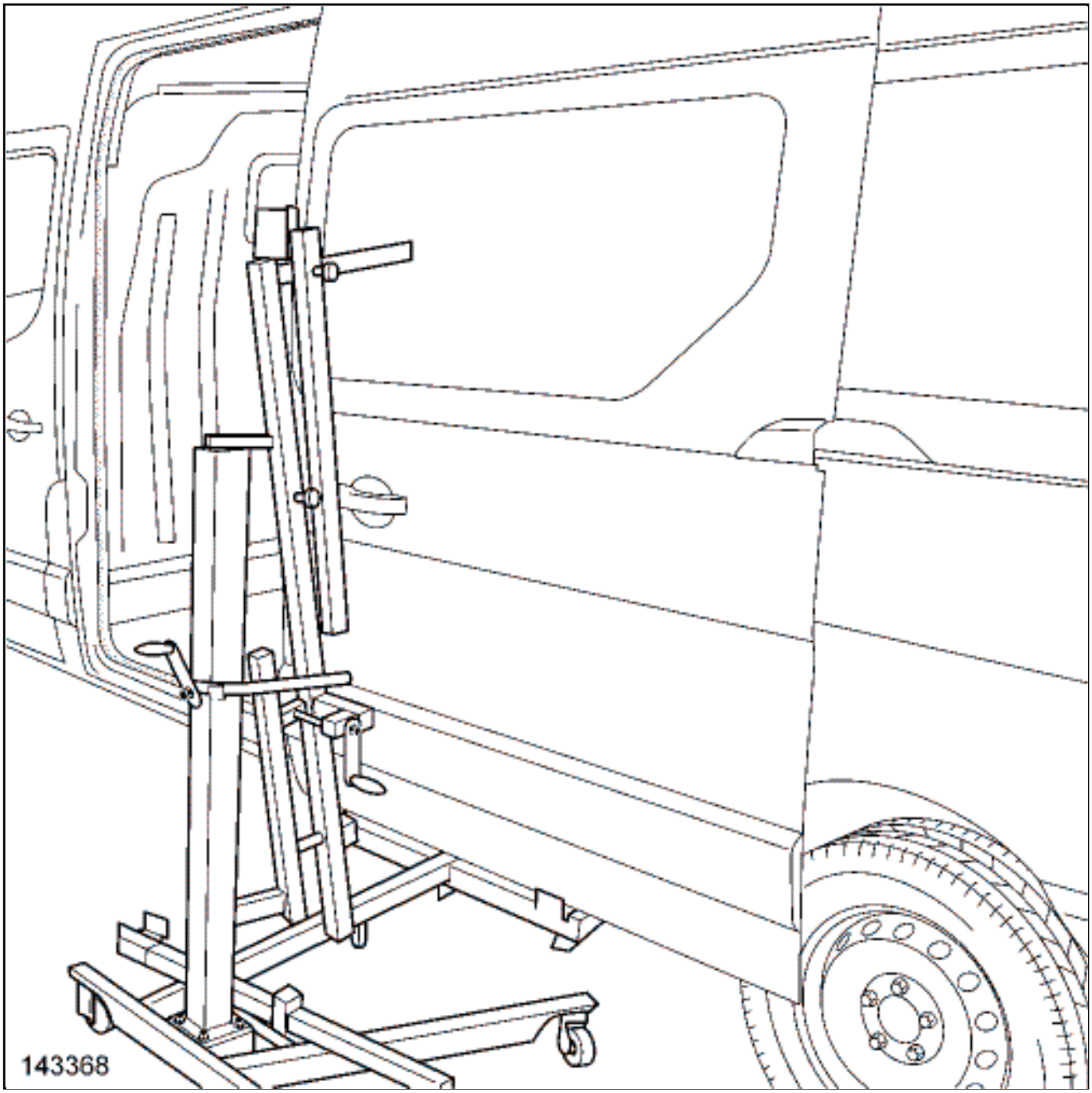
Location and specifications (tightening torques, parts always to be replaced, etc.)Exterior rear side opening element assembly: Exploded view (51A, Side opening element mechanisms).

Note:

This operation can be carried out by one person using the DOOR SUPPORTtool. Otherwise two people are required.

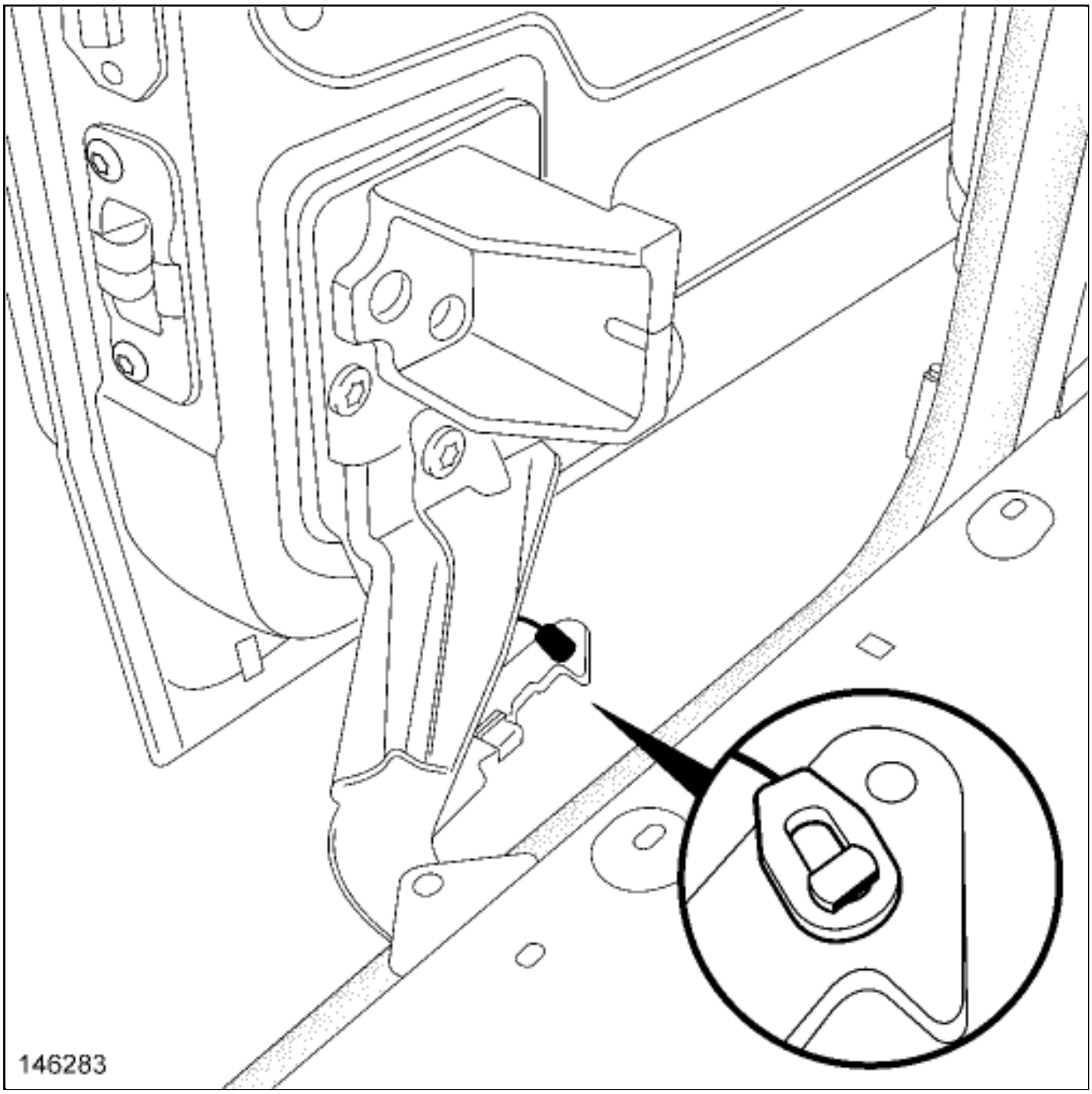
Number of Renault agreement: 661000.

Part no.: SUP 01.



REMOVAL

1. REMOVAL PREPARATION OPERATION



- Unclip the sheath stop of the rear side door lower unlocking cable.

- Unclip the stop of the rear side door lower unlocking cable.

- Remove the trim of the rear side door central runner Exterior rear side opening element assembly: Exploded view (51A, Side opening element mechanisms).

2. REMOVAL OPERATION

- Remove Rear side opening element box section internal assembly: Exploded view (51A, Side opening element mechanisms):

- the bolts of the rear side opening element upper slide,
- the bolts of the rear side opening element lower slide,
- the rear side door by sliding the central slide.

REFITTING

- Proceed in the reverse order to removal.

- Adjust the rear side door clearances and flush fittings(see 47A, Side opening elements, Rear side door: Adjustment) .

- Carry out a function test.

REAR SIDE OPENING ELEMENT ASSEMBLY ON THE PASSENGER COMPARTMENT SIDE: EXPLODED VIEW

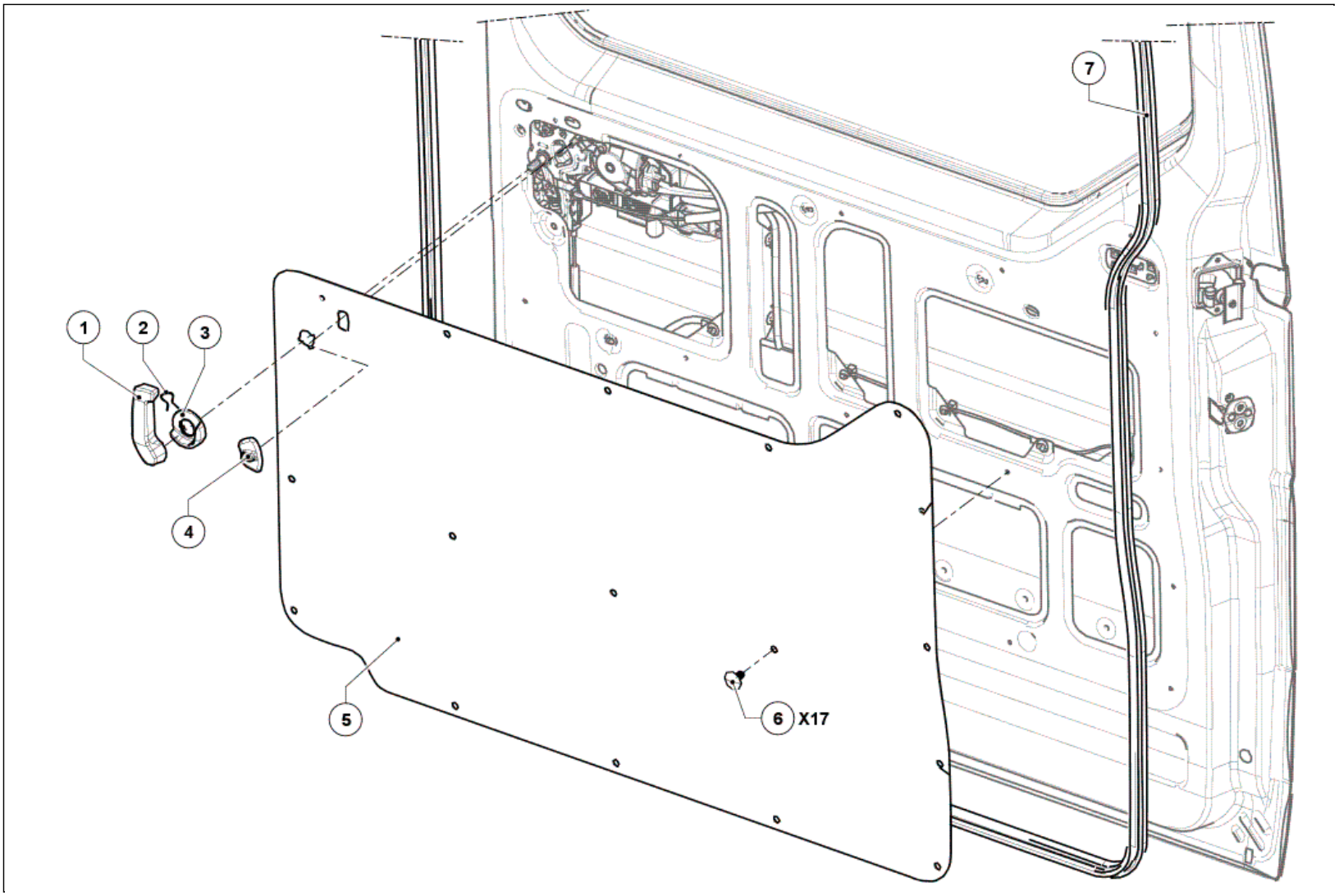


Illustration key: Description

Mark	Description	Information
1	Rear side door interior opening control	Sliding side door opening controls: Removal - Refitting
2	Clip of rear side door interior opening control	
3	Trim of rear side door interior opening control	
4	Rear side door locking control	
5	Rear side door trim	(see 72A, Side opening element trim, Sliding side door trim: Removal - Refitting)
6	Rear side door trim clip	
7	Rear side door seal	

Repair-70x03x02x26-02x50-1-1-1.xml

XSL version : 3.02 du 22/07/11

REAR SIDE OPENING ELEMENT BOX SECTION INTERNAL ASSEMBLY: EXPLODED VIEW

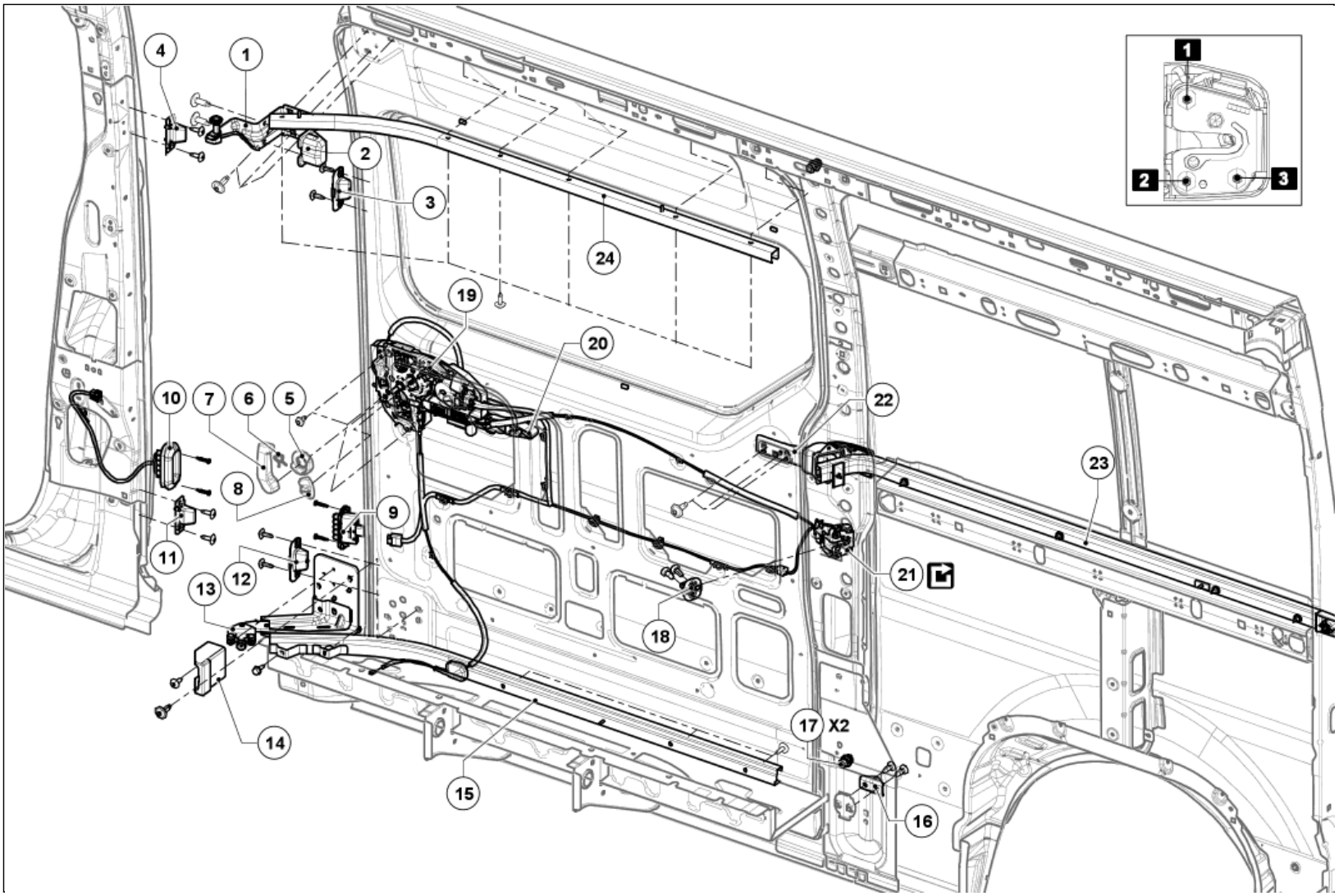


Illustration key: Description

Mark	Description	Information
1	Sliding side door upper drive mechanism	(see 51A, Side opening element mechanisms, Sliding side door carriage: Removal - Refitting)
2	Sliding side door upper stop	
3	Upper female centring device of sliding side door	
4	Upper male centring device of sliding side door	
5	Trim of rear side door interior opening control	
6	Clip of rear side door interior opening control	
7	Rear side door interior opening control	
8	Rear side door locking control	
9	Sliding side door male switch	
10	Sliding side door female switch	
11	Lower male centring device of sliding side door	
12	Lower female centring device of sliding side door	
13	Sliding side door lower drive mechanism	(see 51A, Side opening element mechanisms, Sliding side door carriage: Removal - Refitting)
14	Sliding side door lower stop	
15	Sliding side door lower runner	(see 51A, Side opening element mechanisms, Sliding side door runners: Removal - Refitting)
16	Sliding side door stop striker panel	
17	Sliding side door stop	
18	Striker panel of sliding side door centre lock	
19	Sliding side door control plate	(see **Sliding side opening element actuator: Removal - Refitting**)
20	Sliding side door exterior handle module	
21	Sliding side door centre lock	(see 51A, Side opening element mechanisms, Sliding side door lock: Removal - Refitting)
22	Sliding side door centre drive mechanism	(see 51A, Side opening element mechanisms, Sliding side door carriage: Removal - Refitting)
23	Sliding side door centre runner	(see 51A, Side opening element mechanisms, Sliding side door runners: Removal - Refitting)
24	Sliding side door upper runner	(see 51A, Side opening element mechanisms, Sliding side door runners: Removal - Refitting)

REAR SIDE OPENING ELEMENT DRIVE MECHANISM: REMOVAL - REFITTING

Note:

Apply the sliding side door initialisation procedure after carrying out work(see 51A, Side opening element mechanisms, Rear side opening element drive mechanism: Adjustment)

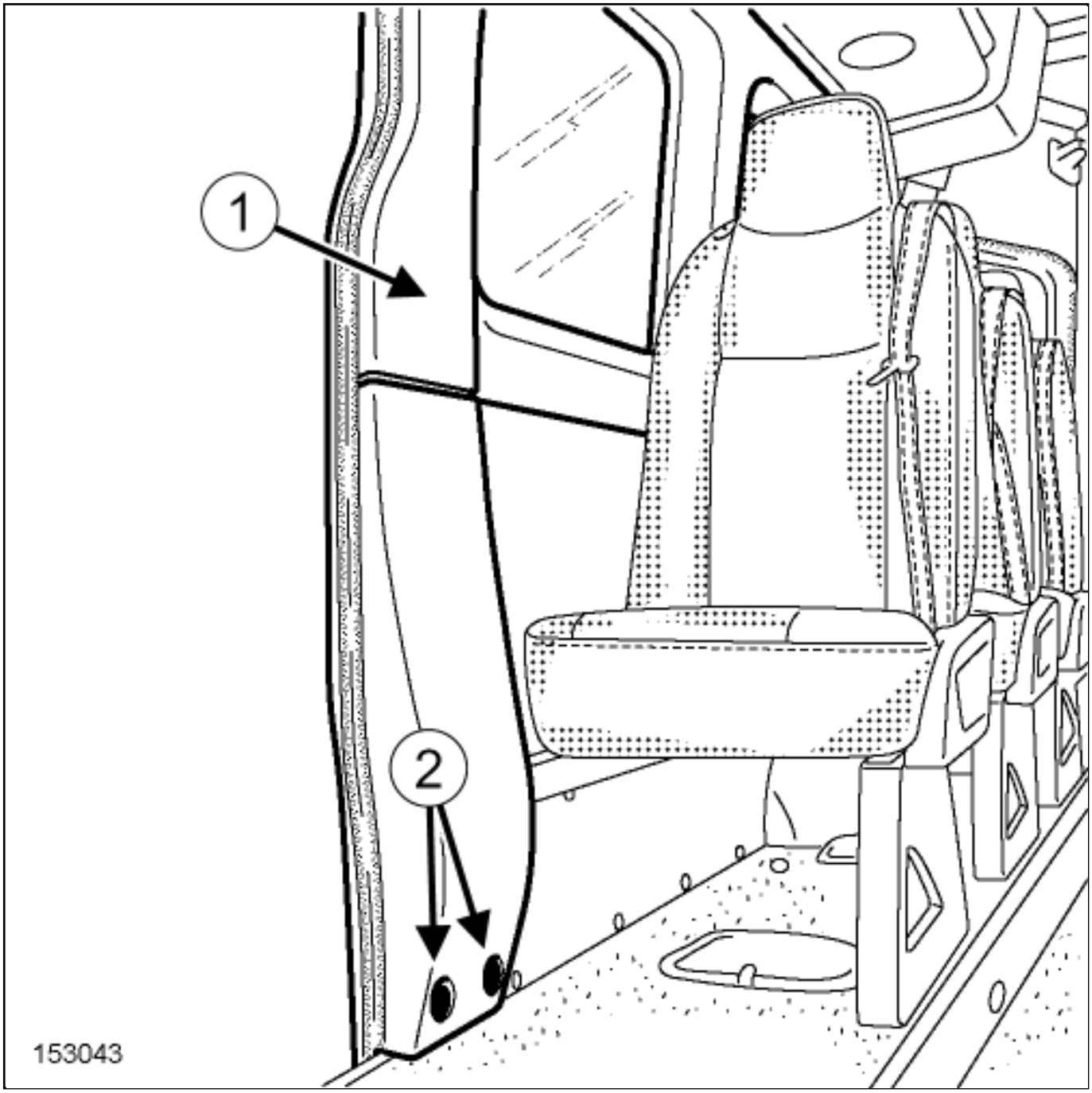
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the battery

Battery: Removal - Refitting .

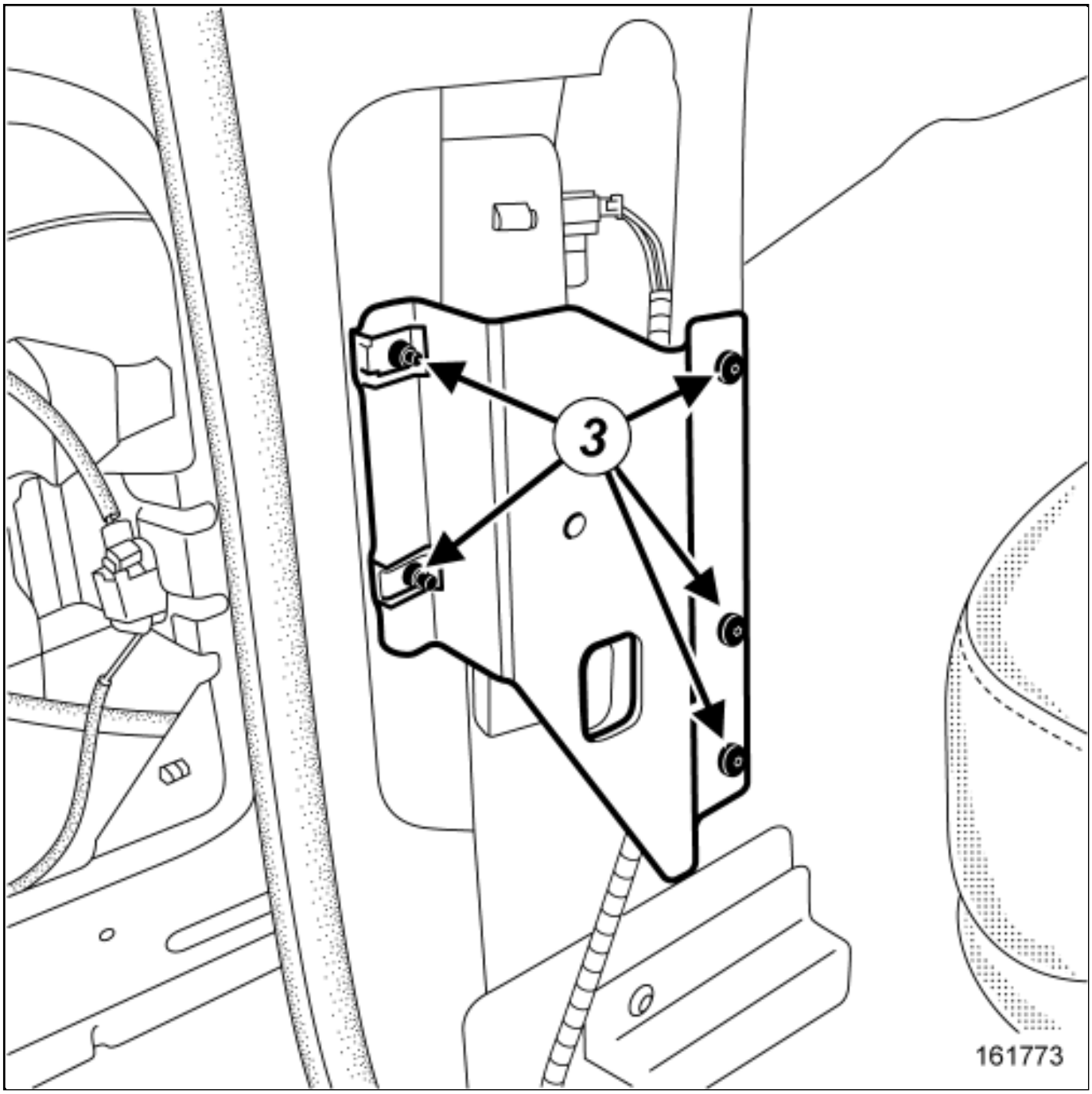
- Remove:
  - the complete rear seatComplete rear seat: Removal - Refitting ,
  - the side access railSide access rail: Removal - Refitting ,
  - the rear side opening element trimRear side opening element trim: Removal - Refitting .



- Partially remove the upper body rear trim(1) .
- Unclip the B-pillar lower trim(2) .

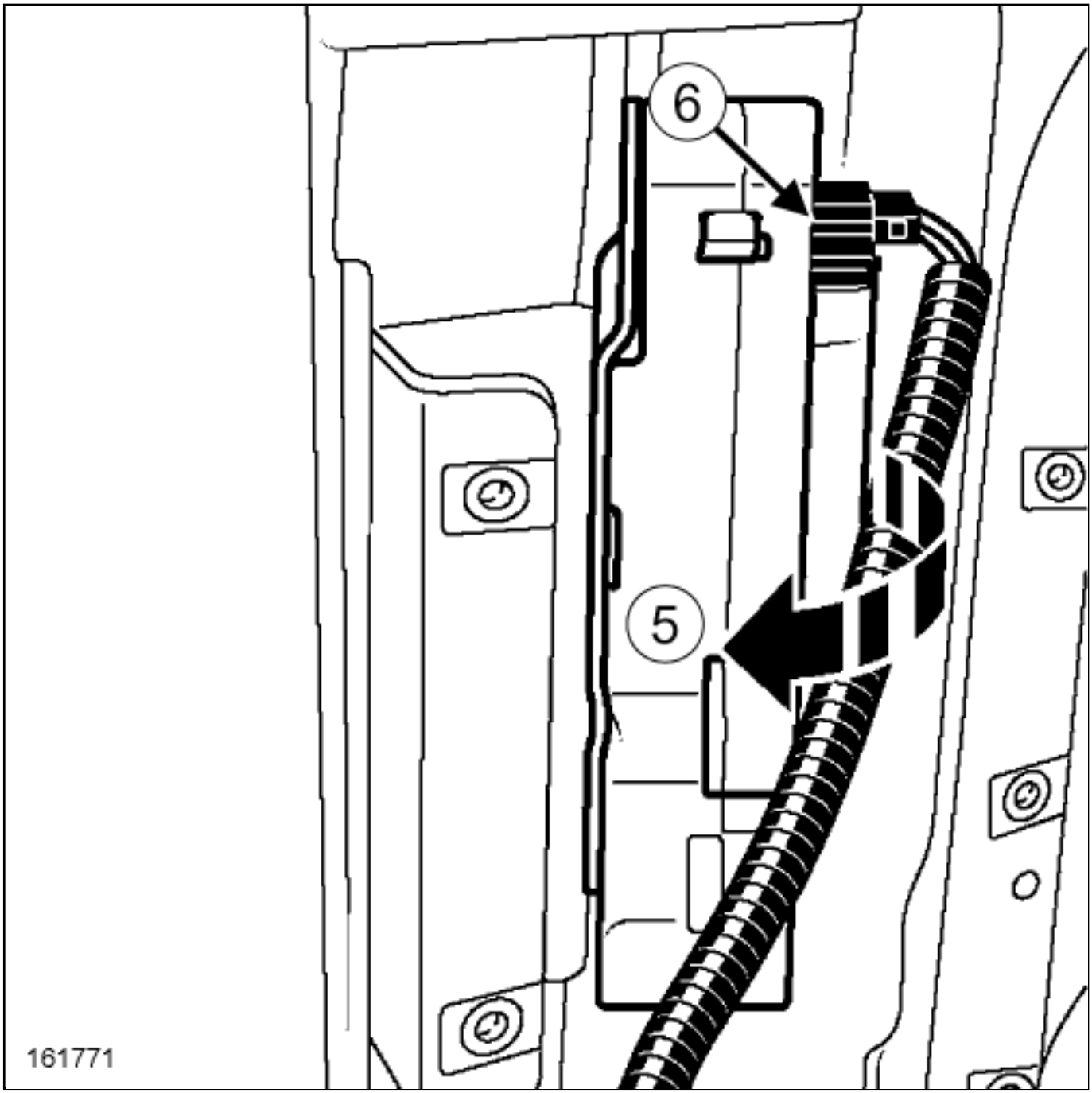
2. REMOVAL OPERATION

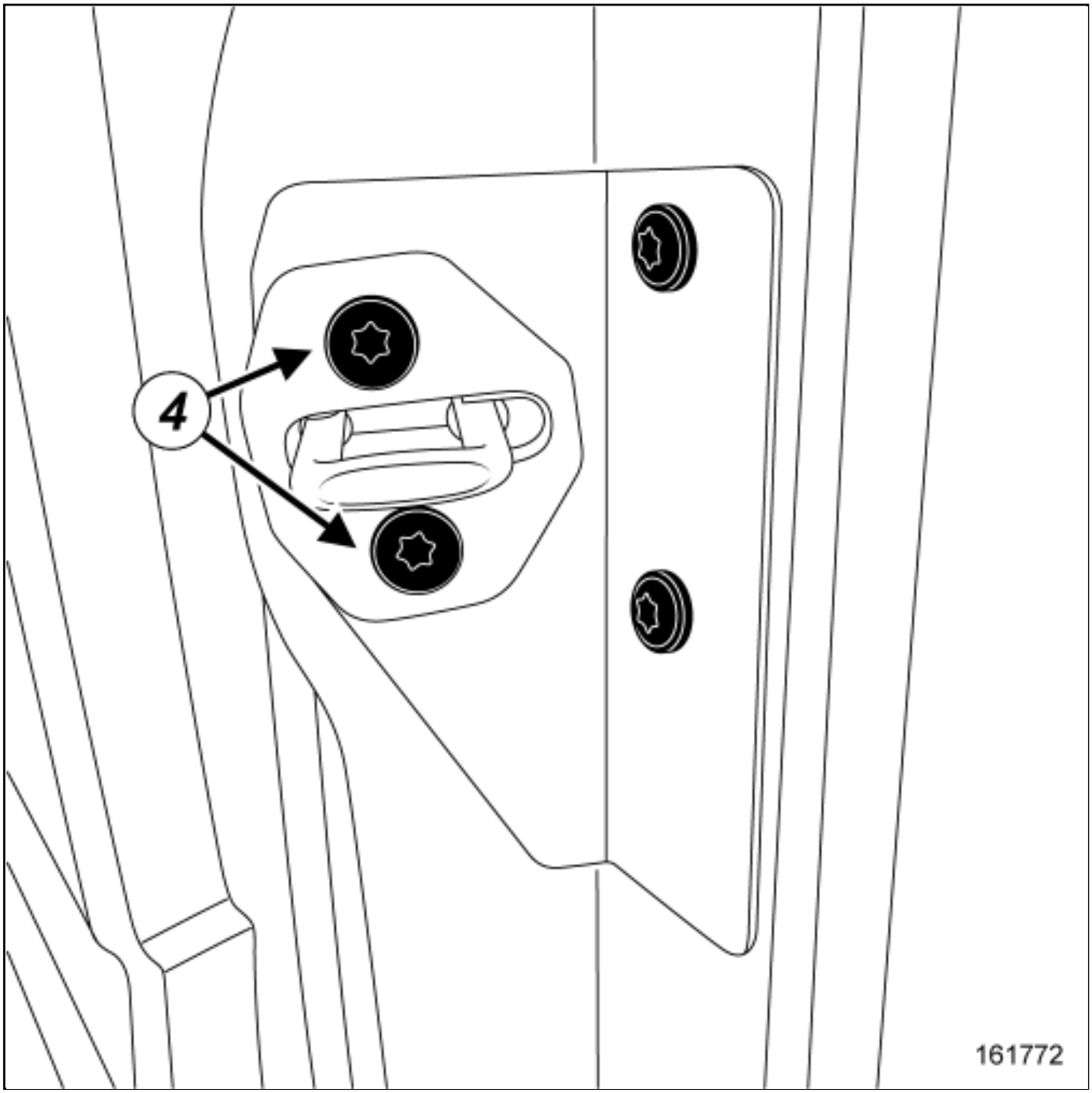
1- ELECTRIC LOCKING STRICKER PLATE



Remove:

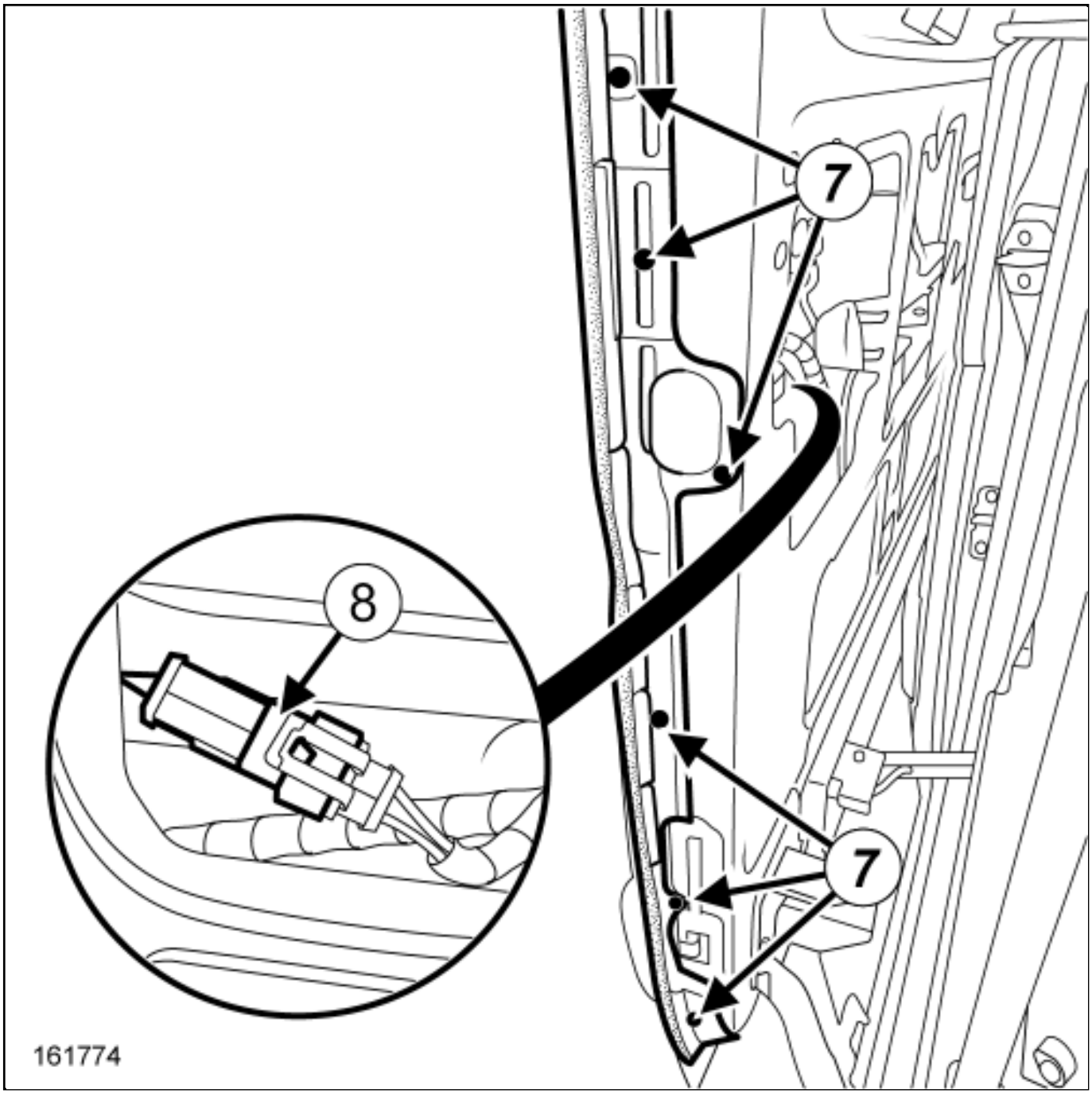
- the reinforcement pillar plate bolts(**3**) ,
- the reinforcement pillar plate.


6
5
161771



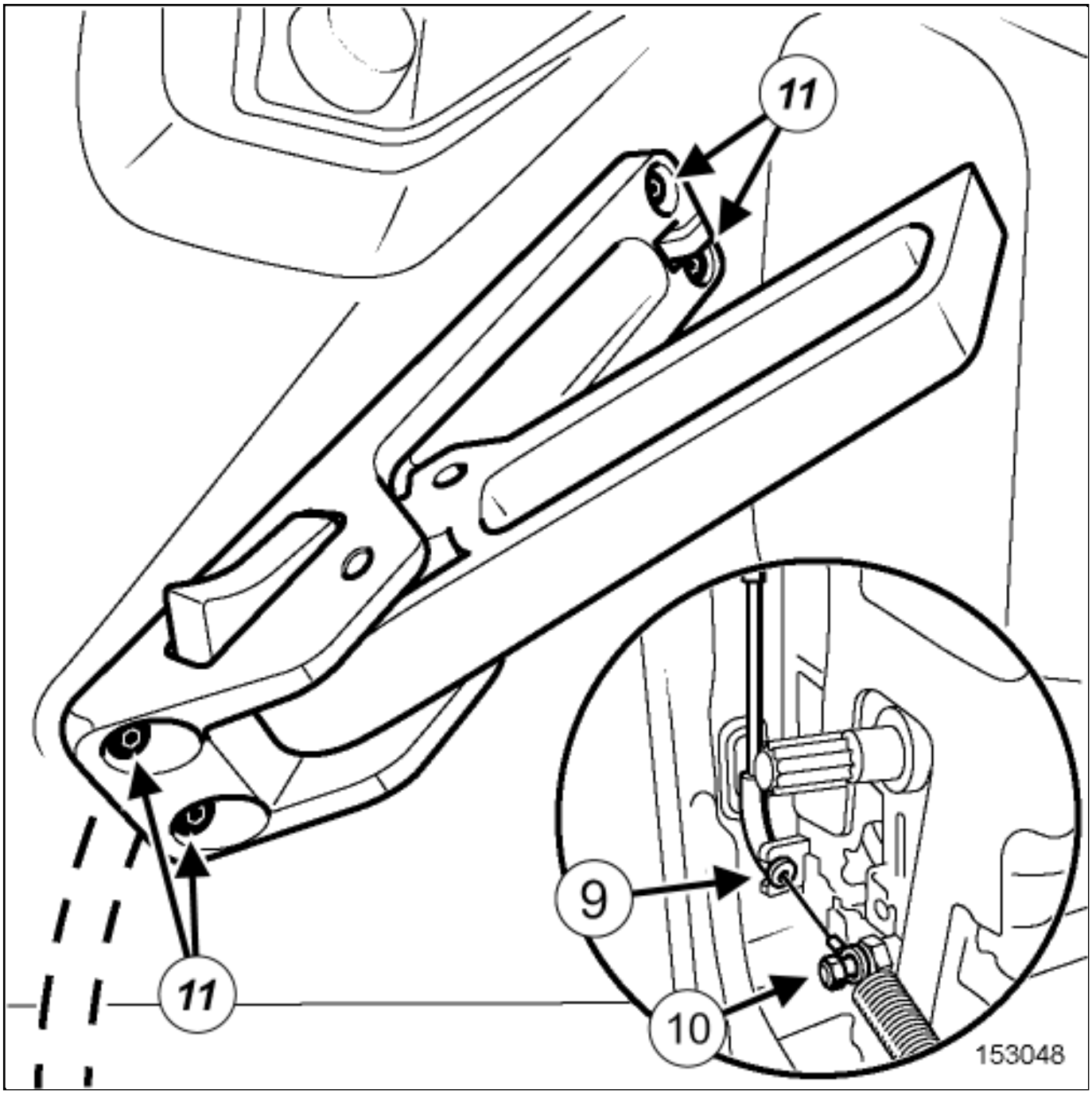
- Remove the electric locking stricker plate bolts(4) .
- Rotate the electric locking stricker plate actuator(5) to disconnect the actuator connector(6) .
- Remove the electric locking stricker plate.

2- ANTI-PINCH SENSOR



- Disconnect the anti-pinch sensor connector(8) .
- Remove the anti-pinch sensor rivets(7) .
- Remove the anti-pinch sensor.

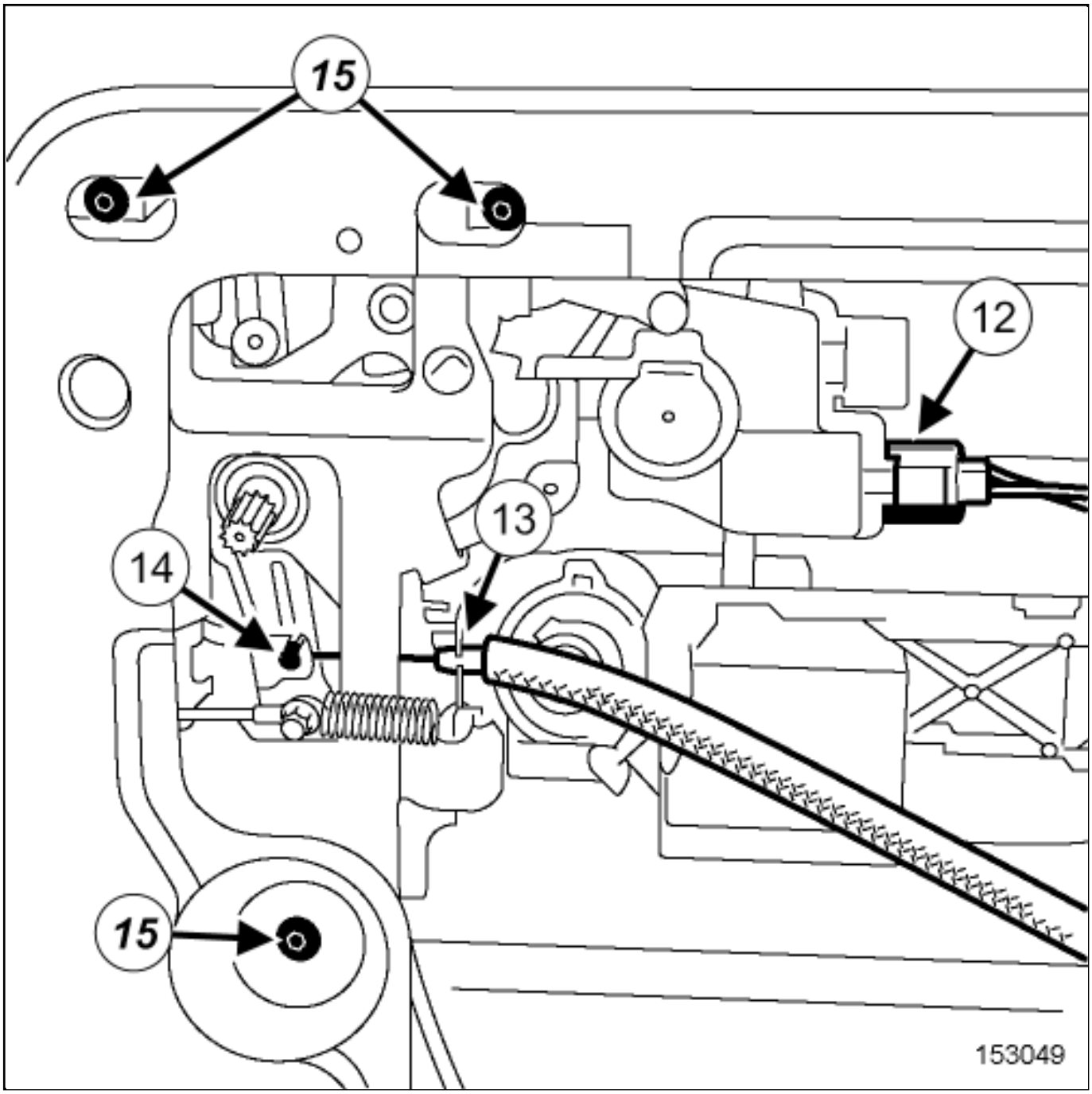
3- EMERGENCY INTERIOR HANDLE



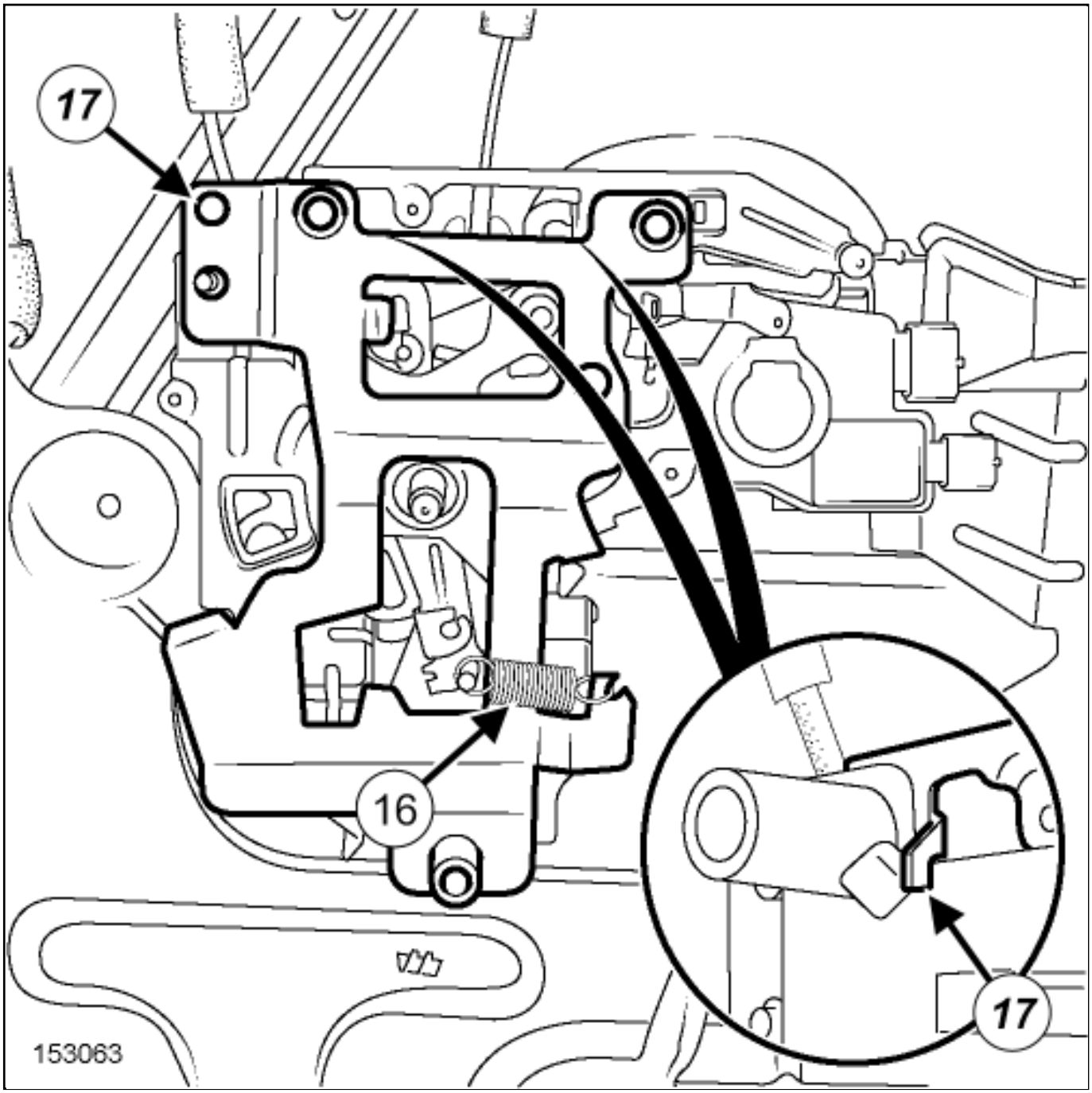
- Unclip the sheath stop(9) .

- Remove:
  - the cable stop(10) ,
  - the emergency handle bolts(11) ,
  - the emergency handle with its cable.

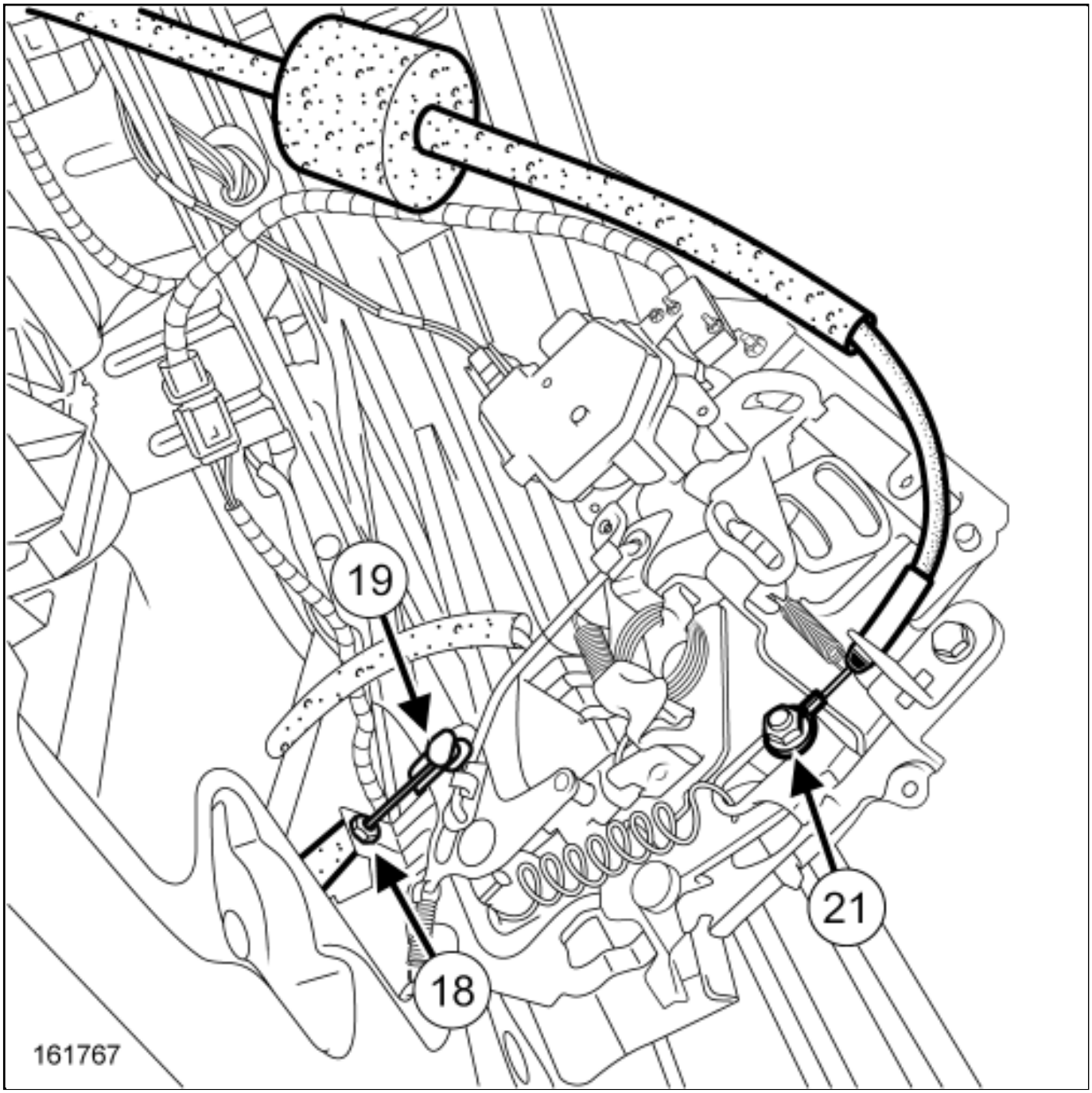
4- "CONTROL PLATE" ASSEMBLY



- Disconnect the side opening element lock connector(12) .
- Unclip the sheath stop(13) of the side opening element lock manual control cable.
- Remove:
  - the side opening element lock manual control cable stop(14) ,
  - the control plate bolts(15) .
- Move aside the control plate.

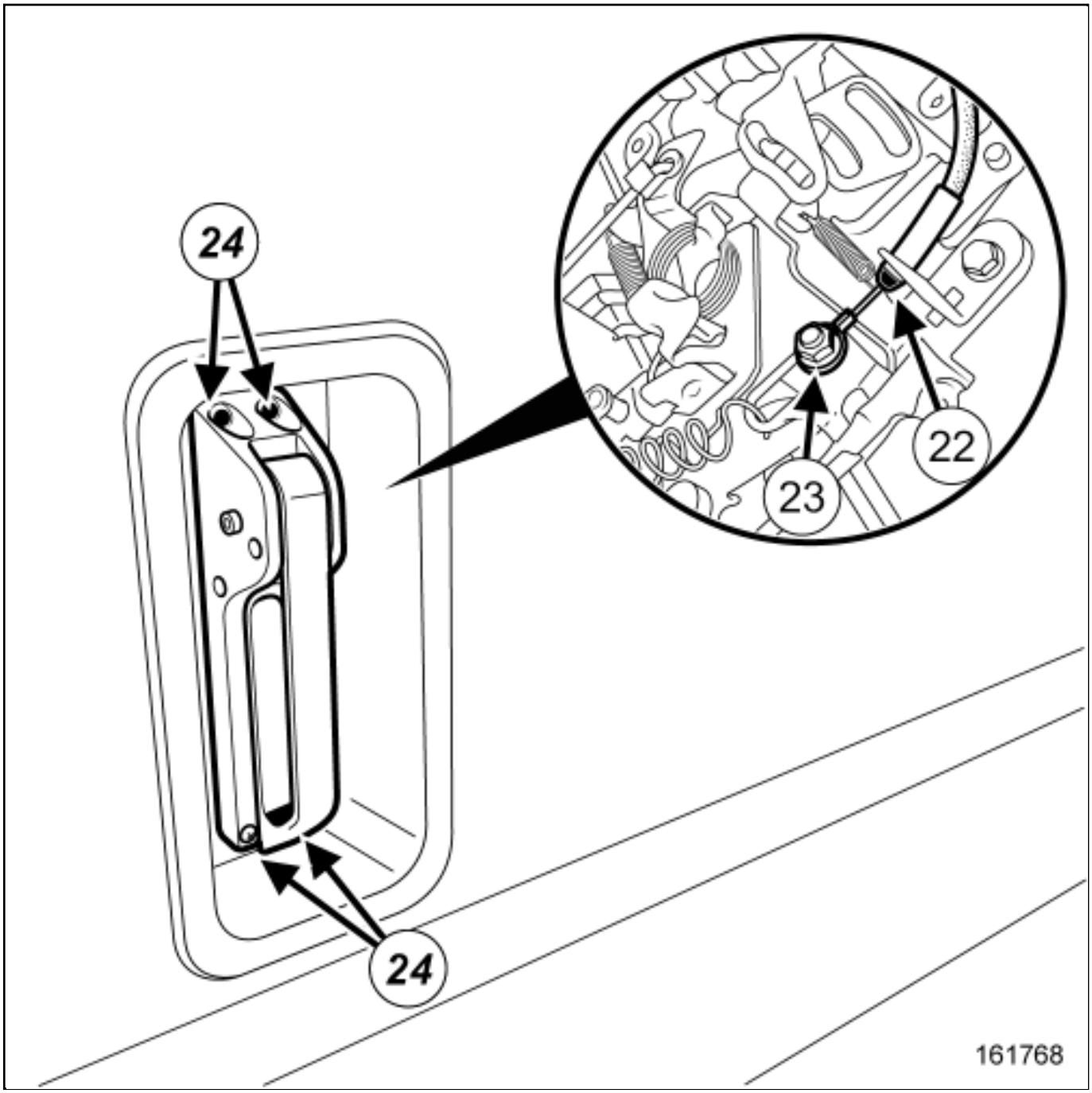


- Remove the spring(16) .
- Extract the reinforcement plate at(17) from the control plate.



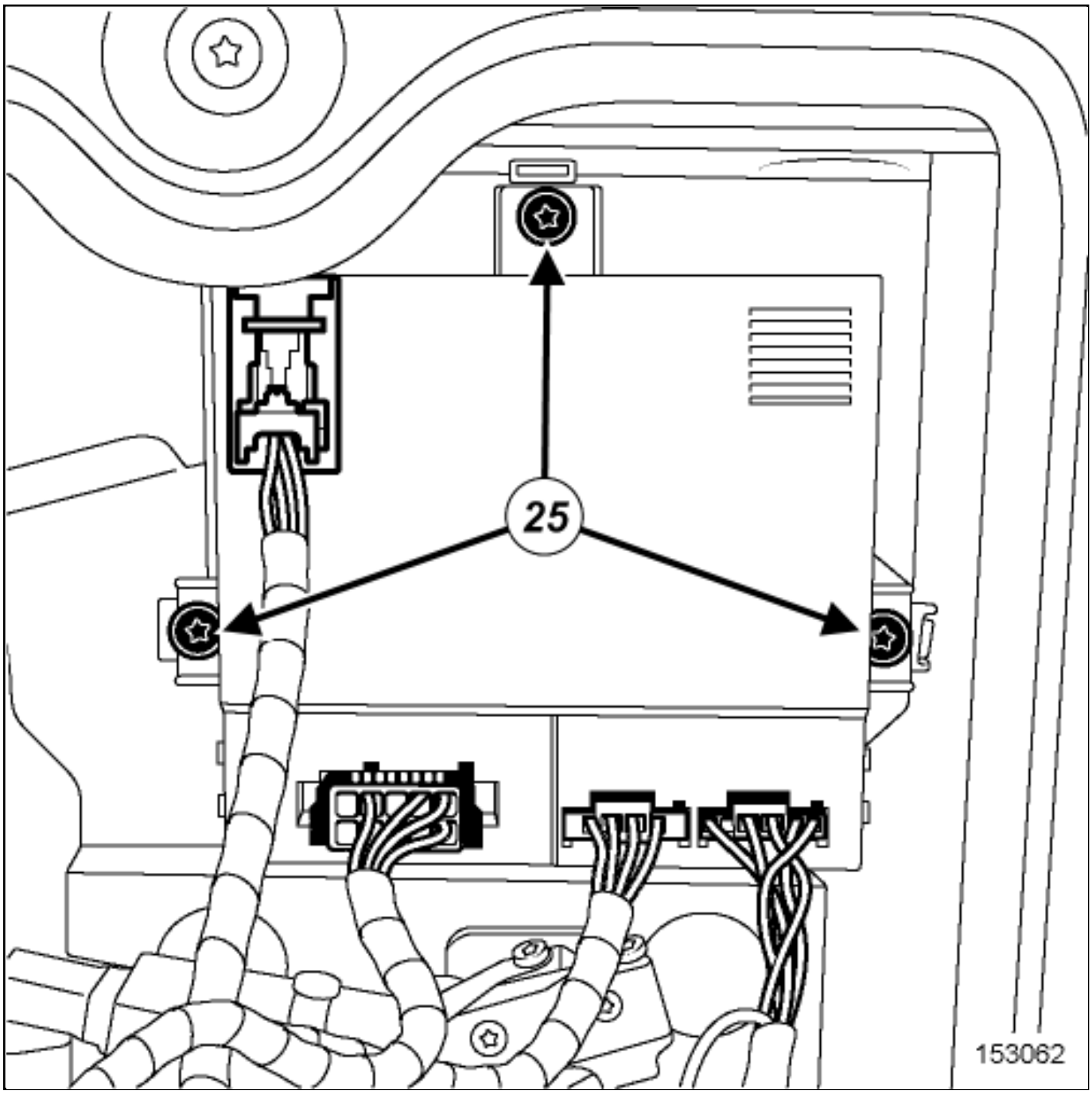
- Return the control plate to get access to the cables.
- Unclip the sheath stop(18) of the clutch motor cable.
- Remove the clutch motor cable stop(19) .
- Unclip the sheath stop of the exterior opening control cable.
- Remove the exterior opening control cable stop(21) .
- Remove the control plate.

5- EMERGENCY EXTERIOR HANDLE



- Move aside the "control plate" assembly
- Unclip the sheath stop(22) .
- Remove:
  - the cable stop(23) ,
  - the emergency handle bolts(24) ,
  - the emergency handle with its cable.

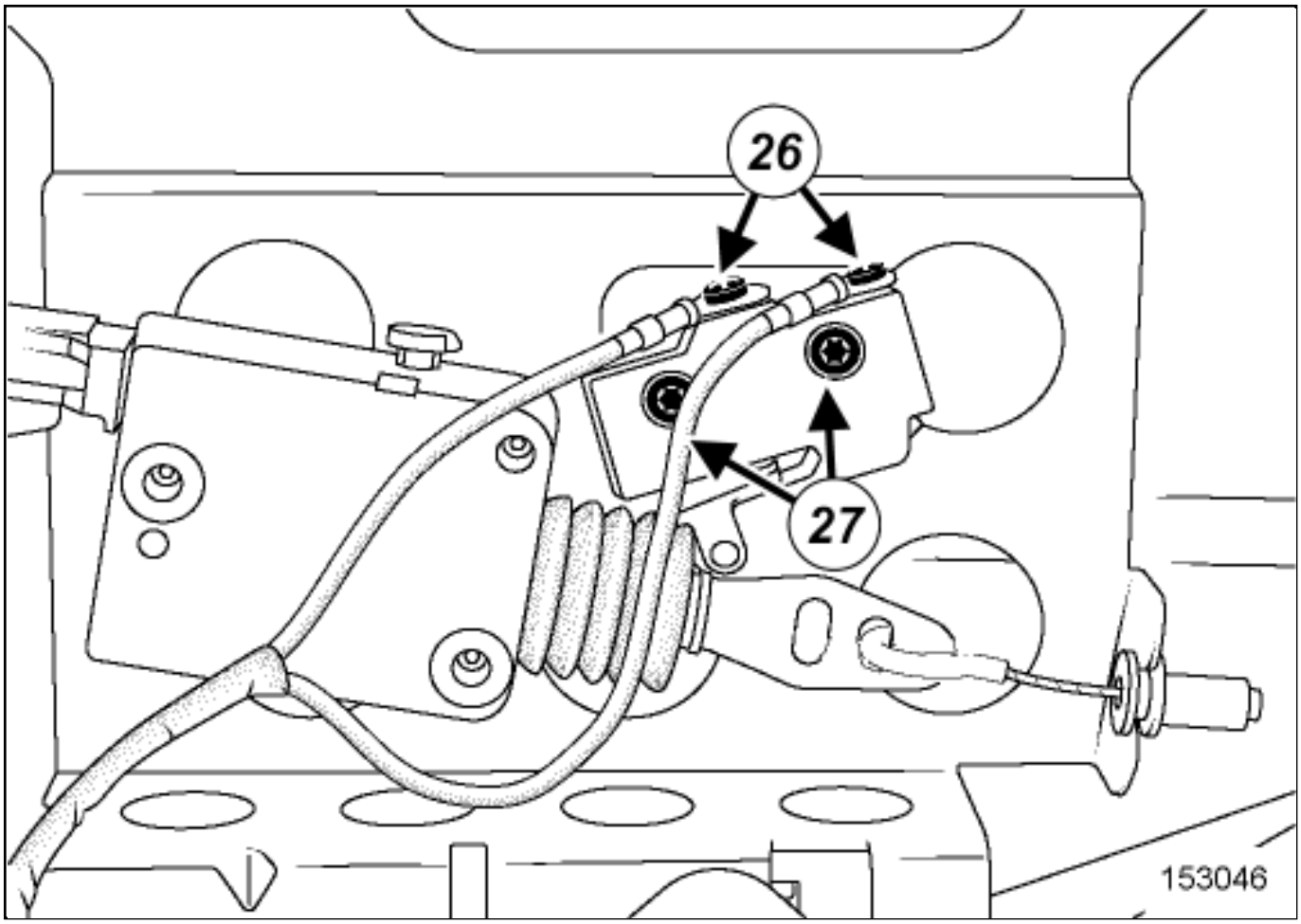
6- ELECTRIC SLIDING SIDE DOOR COMPUTER



- Disconnect the connectors.

- Remove:
  - the computer bolts(**25**) ,
  - the electric sliding side door computer.

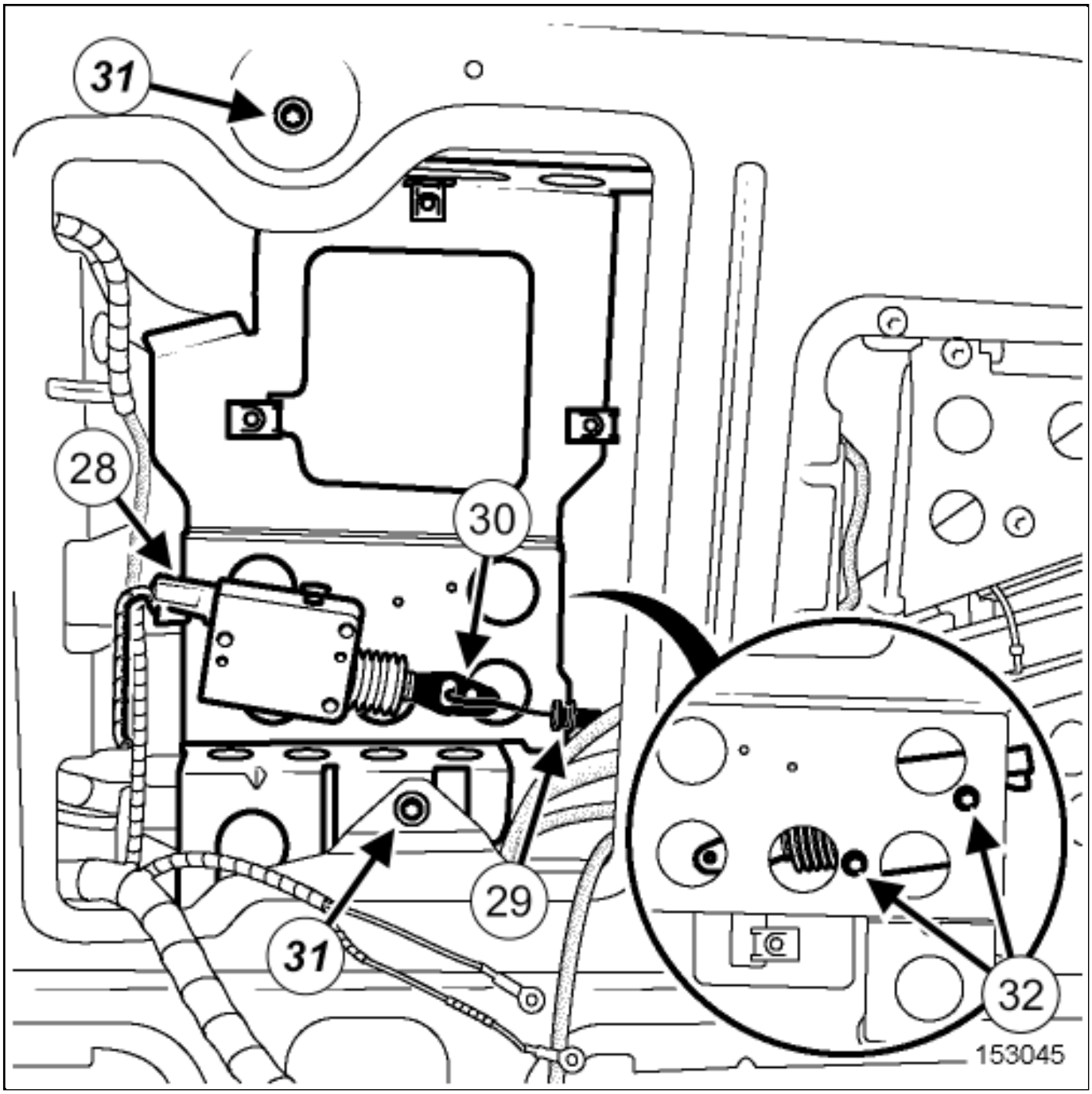
7- ROLLER SWITCH



Remove:

- the wiring bolts(26) ,
- the roller switch bolts(27) ,
- the roller swith.

8- ACTUATOR

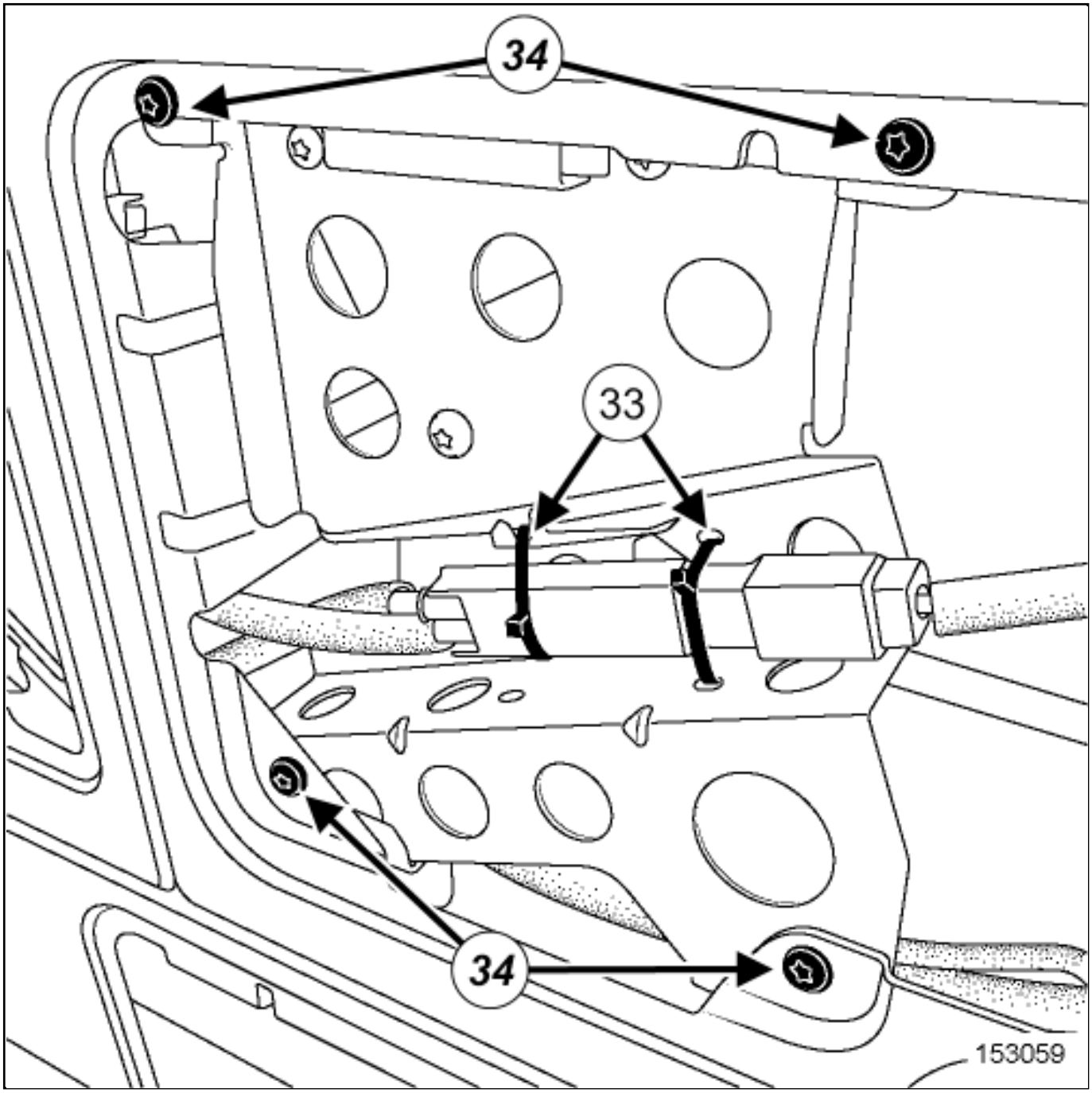


- Disconnect the actuator connector(28) .
- Unclip the sheath stop(29) of the actuator control cable.
- Remove:
  - the actuator control cable stop(30) ,
  - the electric door computer support plate bolts(31) .
- Extract and return the electric door computer support plate.
- Remove:

- the actuator bolts(32) ,

the actuator.

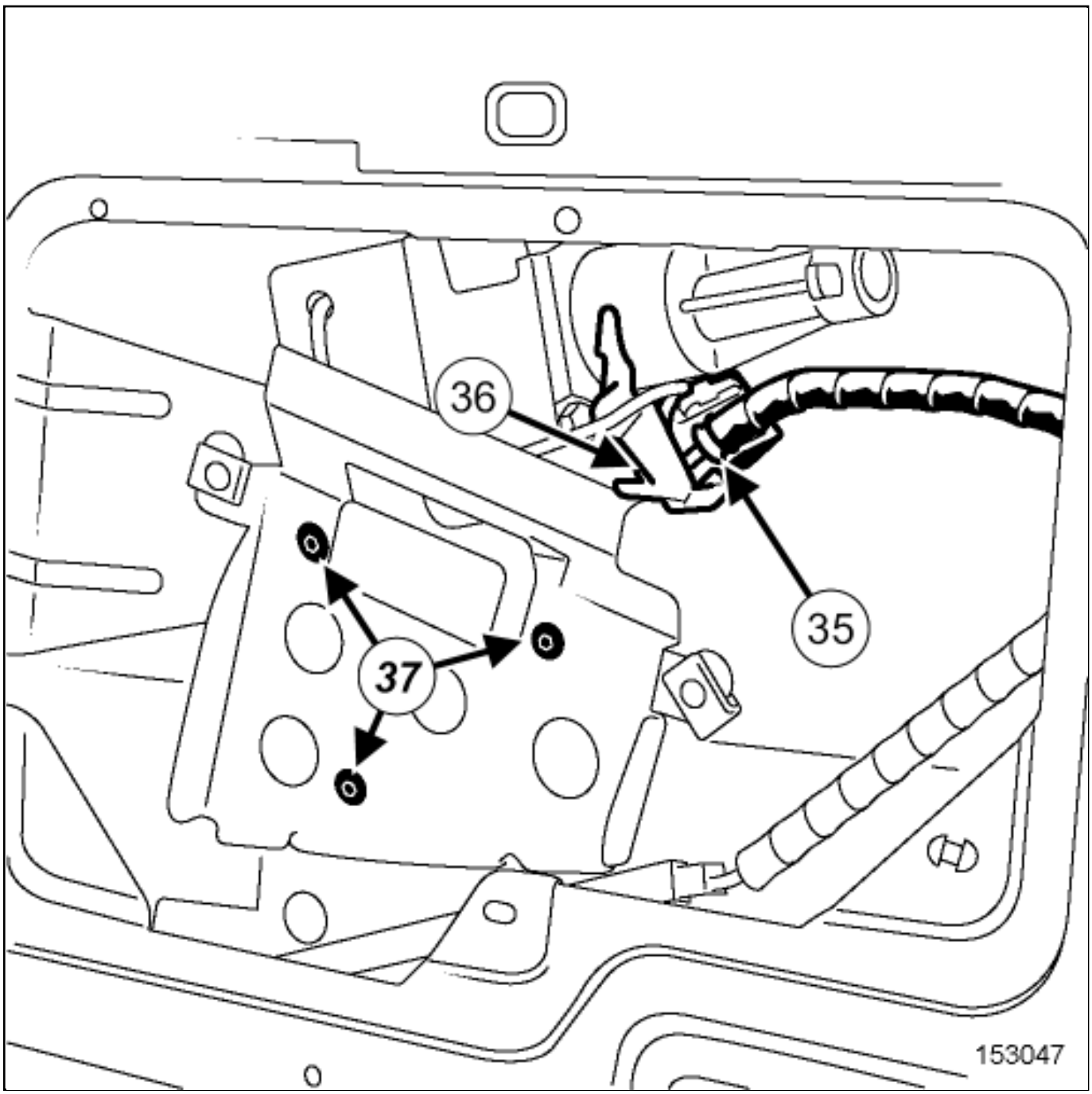
9- ELECTRIC DOOR MOTOR



Cut the retaining clips at(33) .

Remove the electric door motor support plate bolts(34) .

Lower the electric door motor support plate slightly.



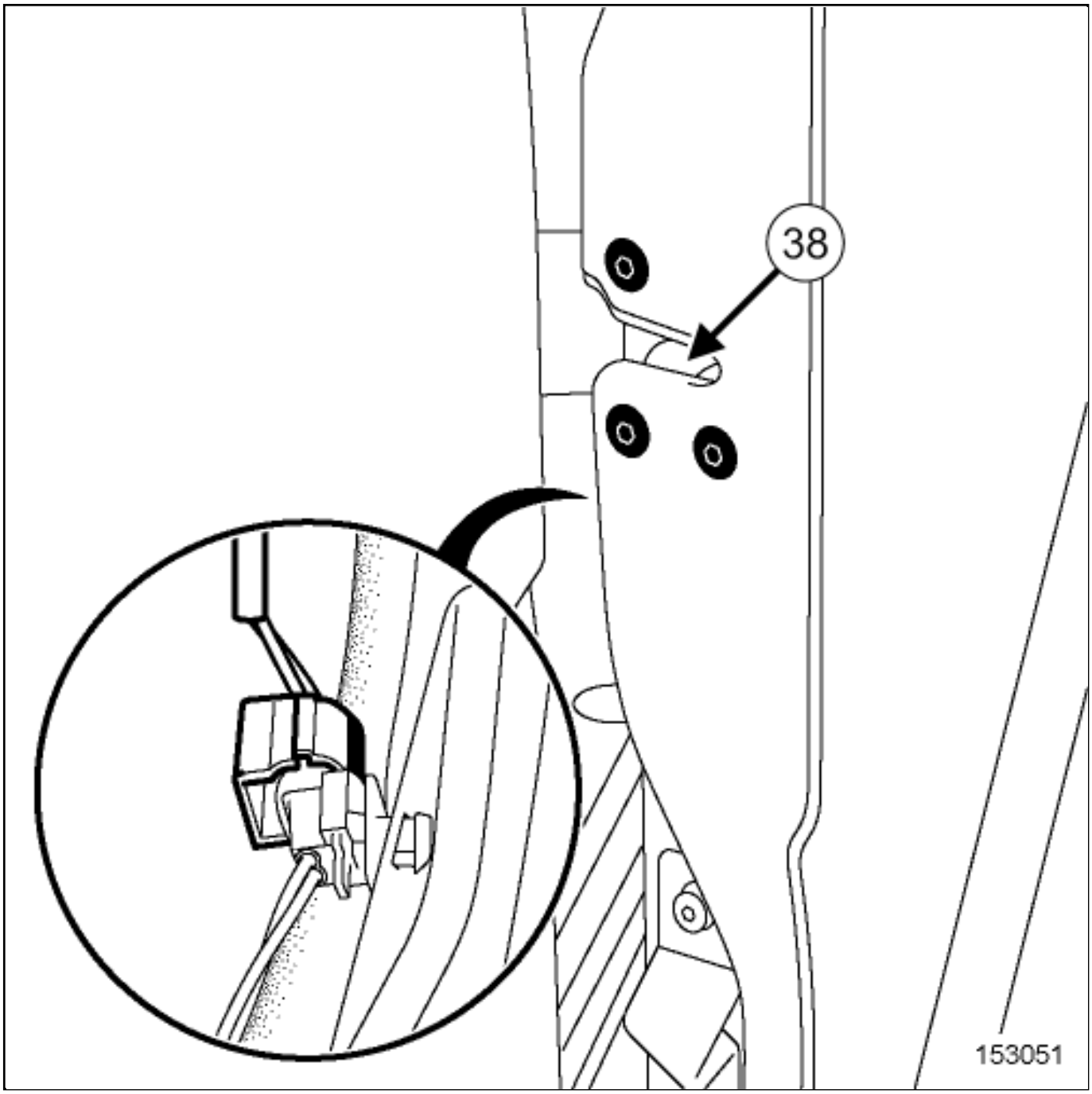
Unclip the sheath stop(35) of the electric door motor cable.

Remove the electric door motor cable stop from the lever(36) .

Remove:

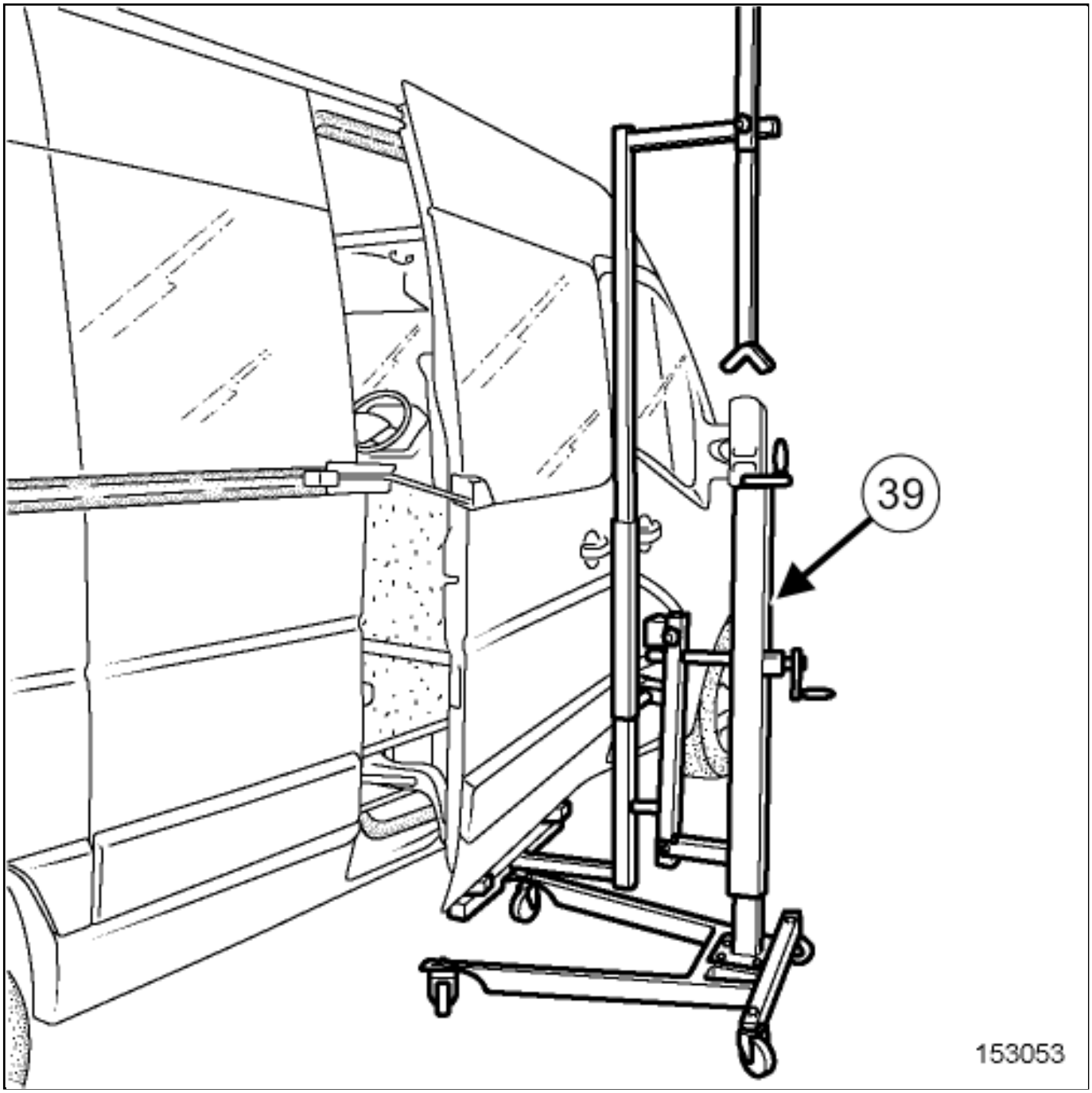
- the electric door motor bolts(37) ,
- the electric door motor.

10- REAR SIDE OPENING ELEMENT LOCK



Remove the rear side opening element lock(38) (see 51A, Side opening element mechanisms, Rear side opening element lock: Removal - Refitting) .

11- DOOR REMOVING TOOL



Fit the tool DOOR SUPPORT(39) .

Note:

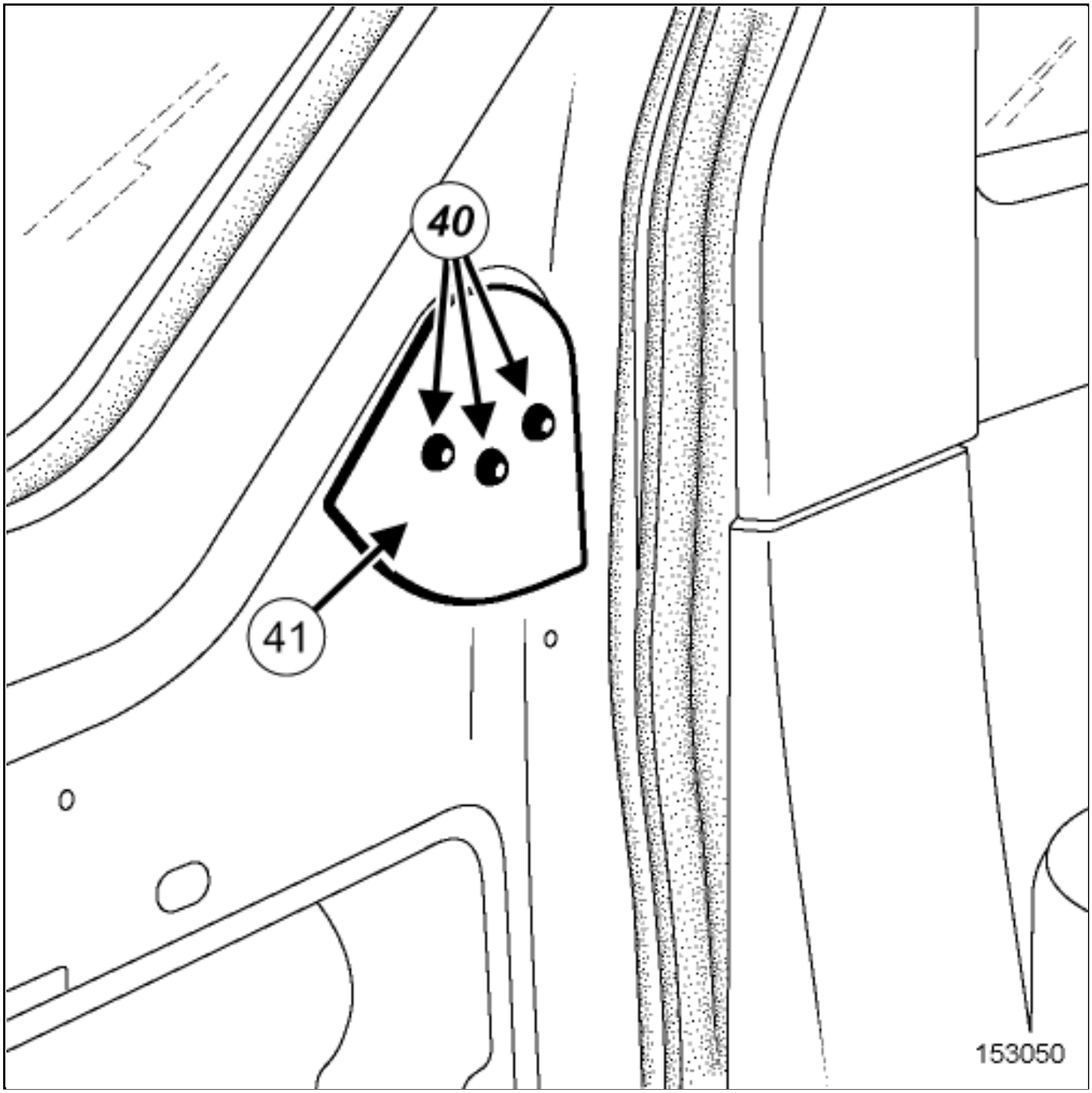
It is necessary to hold the sliding side door using the tool DOOR SUPPORT.

Number of Renault agreement: 661000.

Part no.: SUP 01.

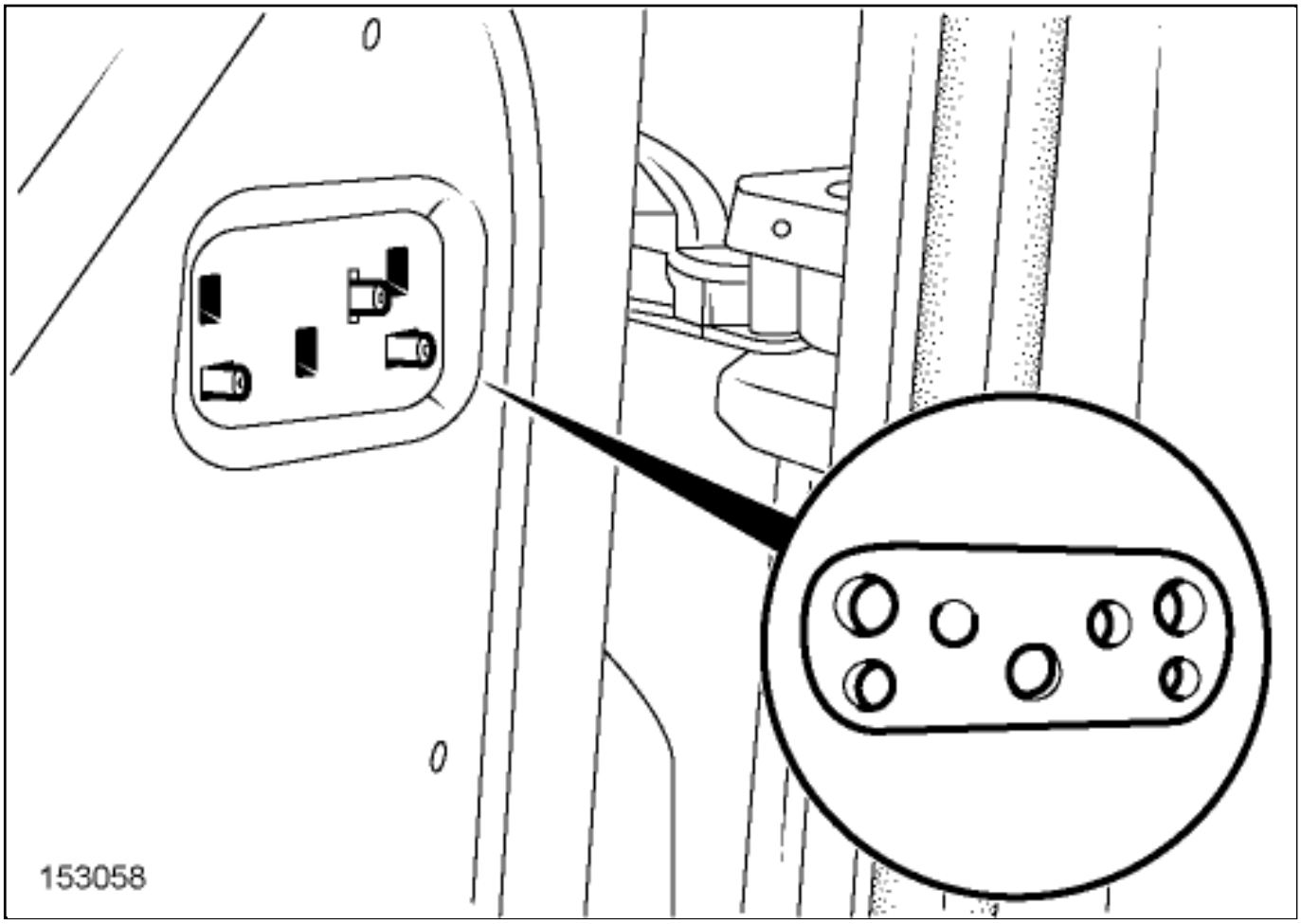
12- SLIDING SIDE DOOR CARRIAGE

Remove the end piece of sliding side door centre runner(see 51A, Side opening element mechanisms, Exterior rear side opening element assembly: Exploded view) .

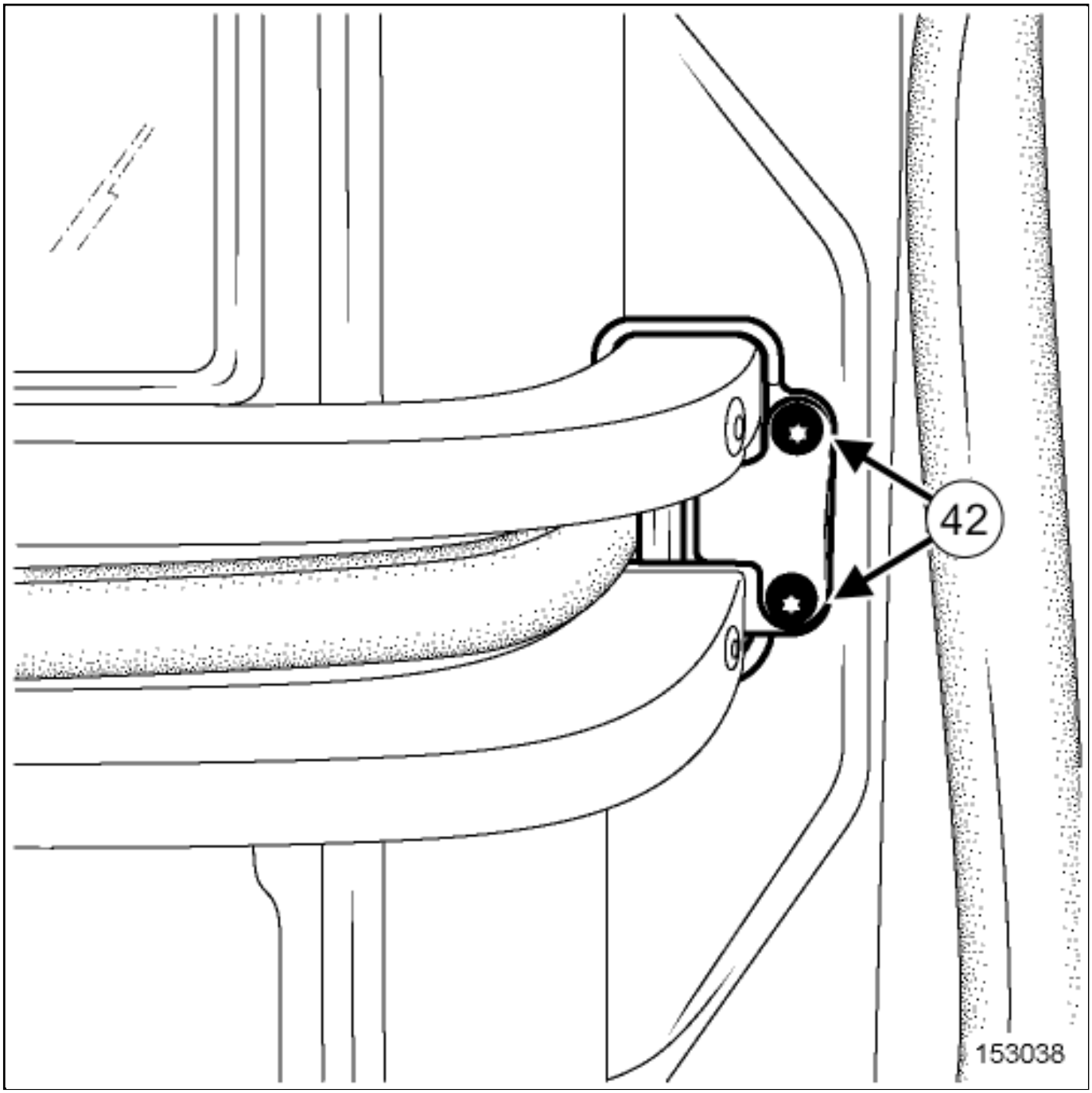


Remove:

- the reinforcement carriage plate bolts(**40**) ,
- the reinforcement carriage plate(**41**) .

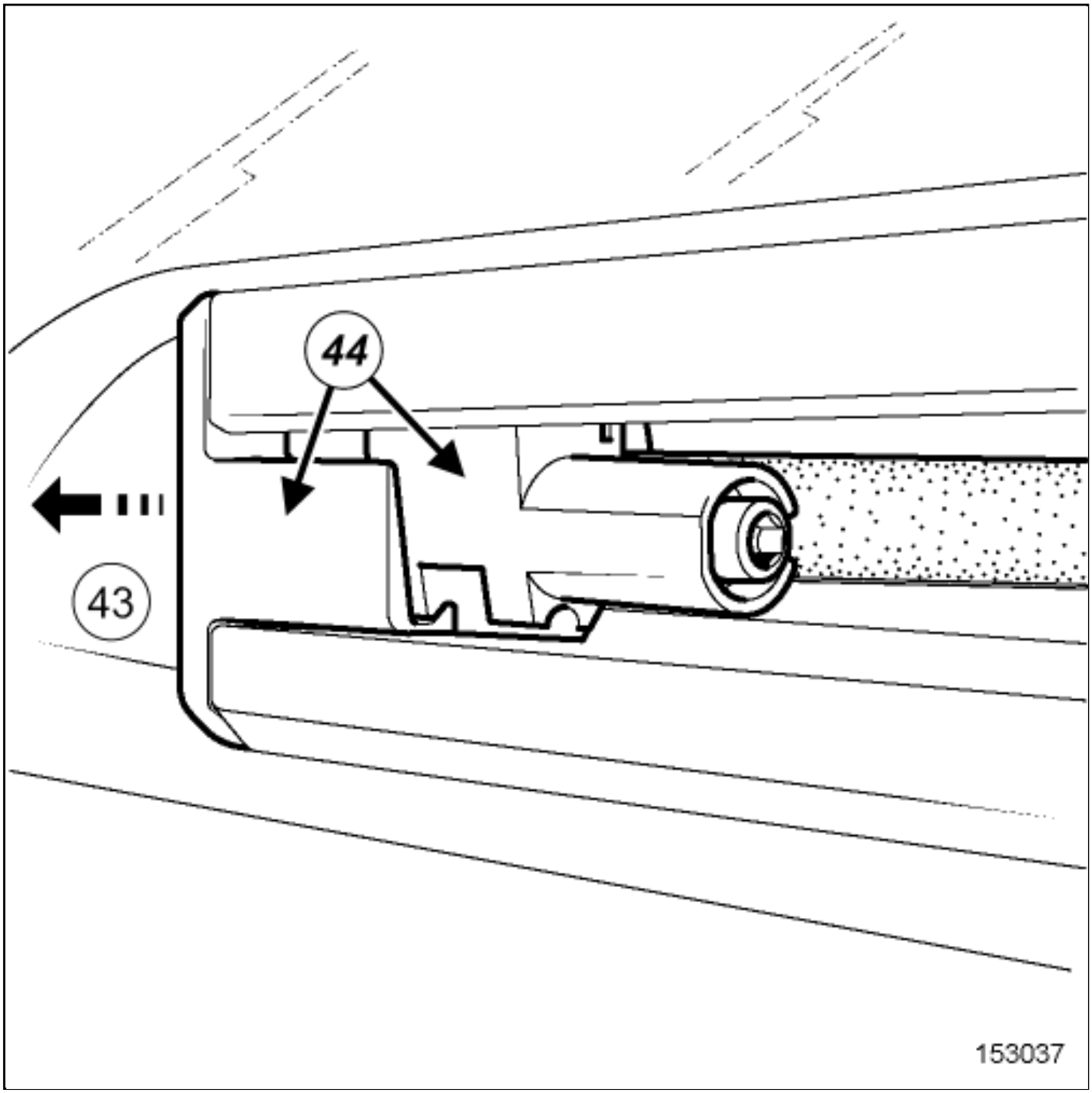


Remove the reinforcement carriage spacer.



Remove:

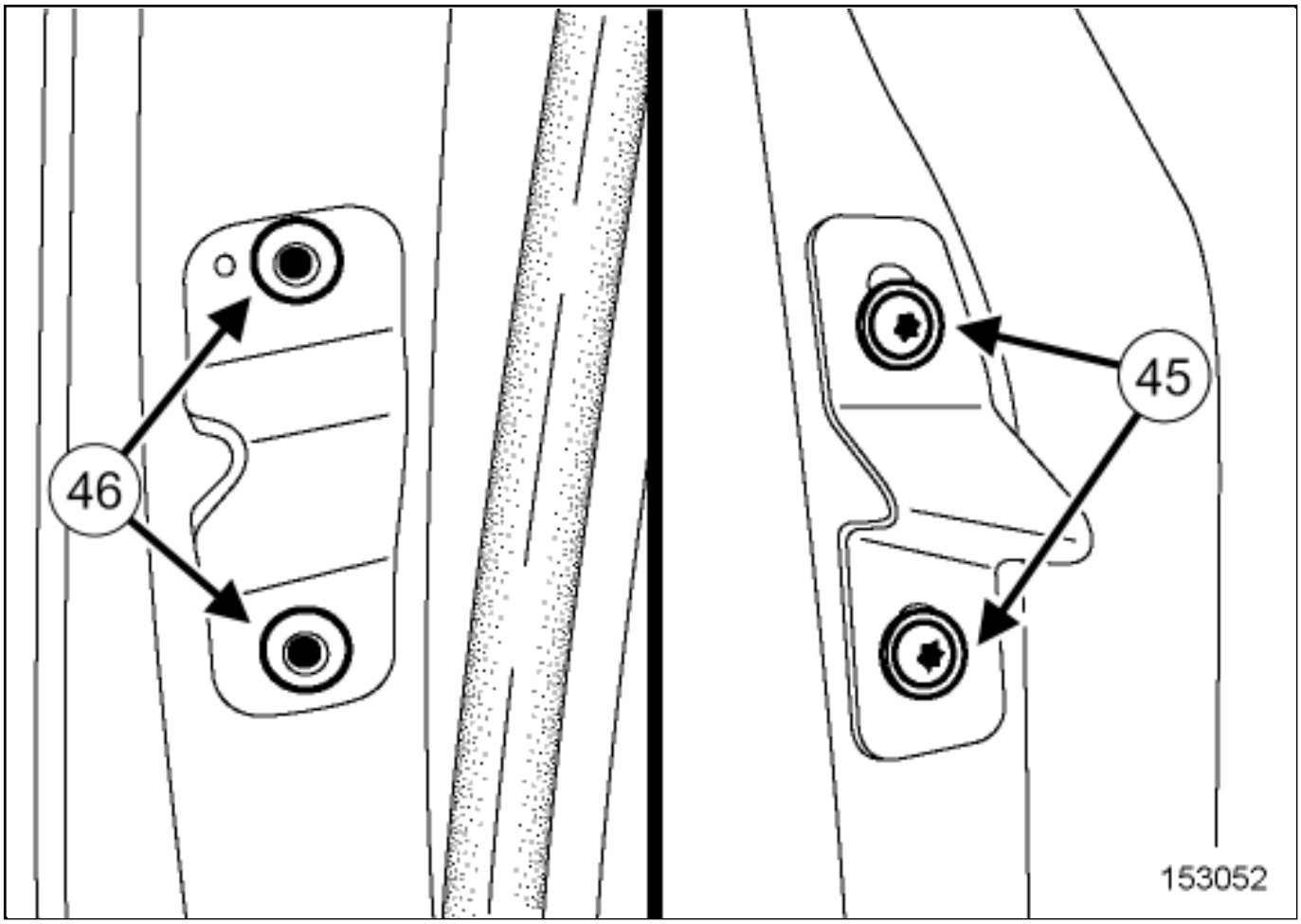
- the drive belt clip holder bolts(42) ,
- the drive belt clip holder.



Extract (43) from the runner the "drive belt rear mounting support" assembly(44) .

Slide the door carriage out of the runner.

13- SLIDING SIDE DOOR CENTERING PLATES



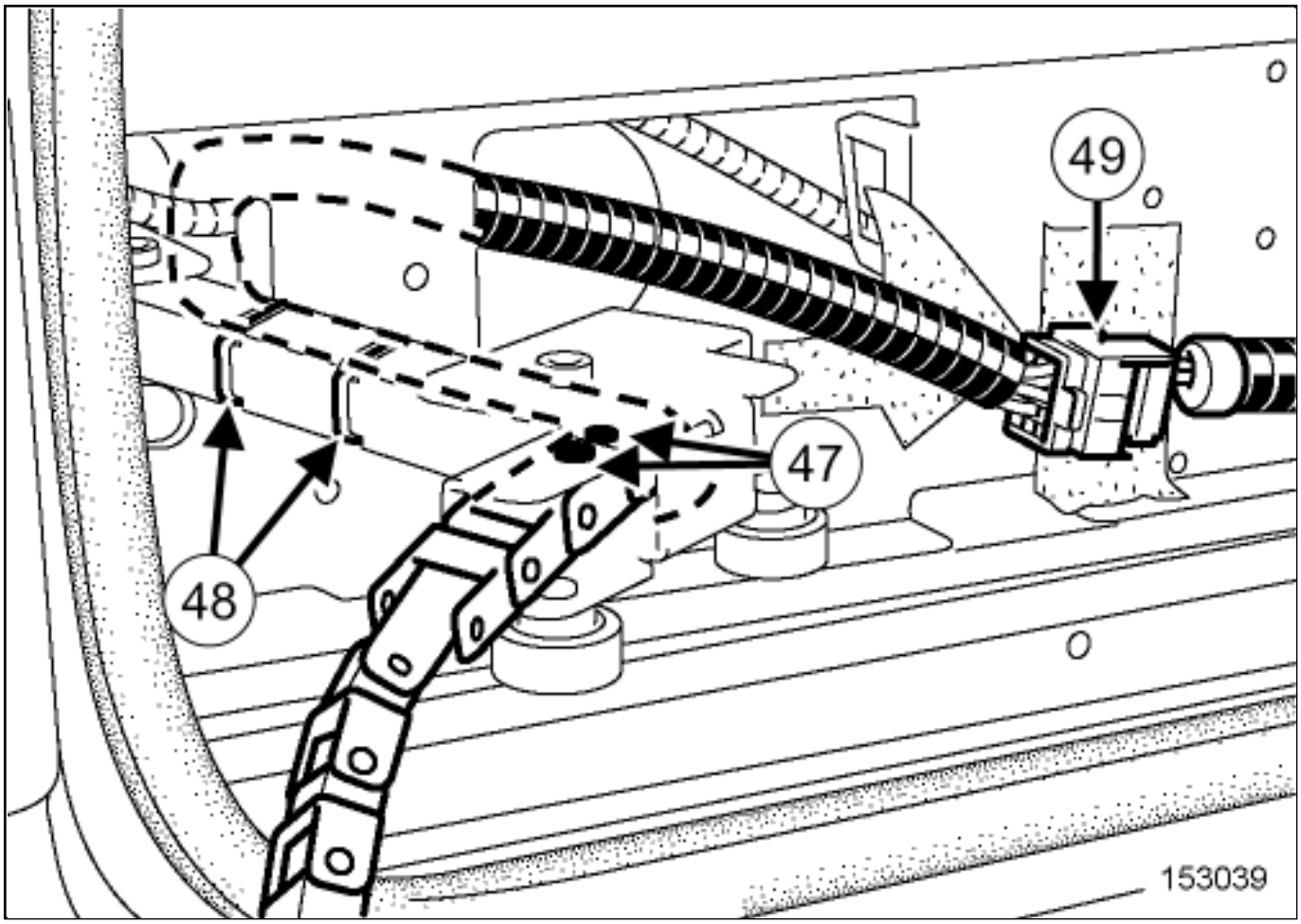
Remove:

- the centering plate bolts(**45**) ,
- the centering plate from the sliding side door.

Remove:

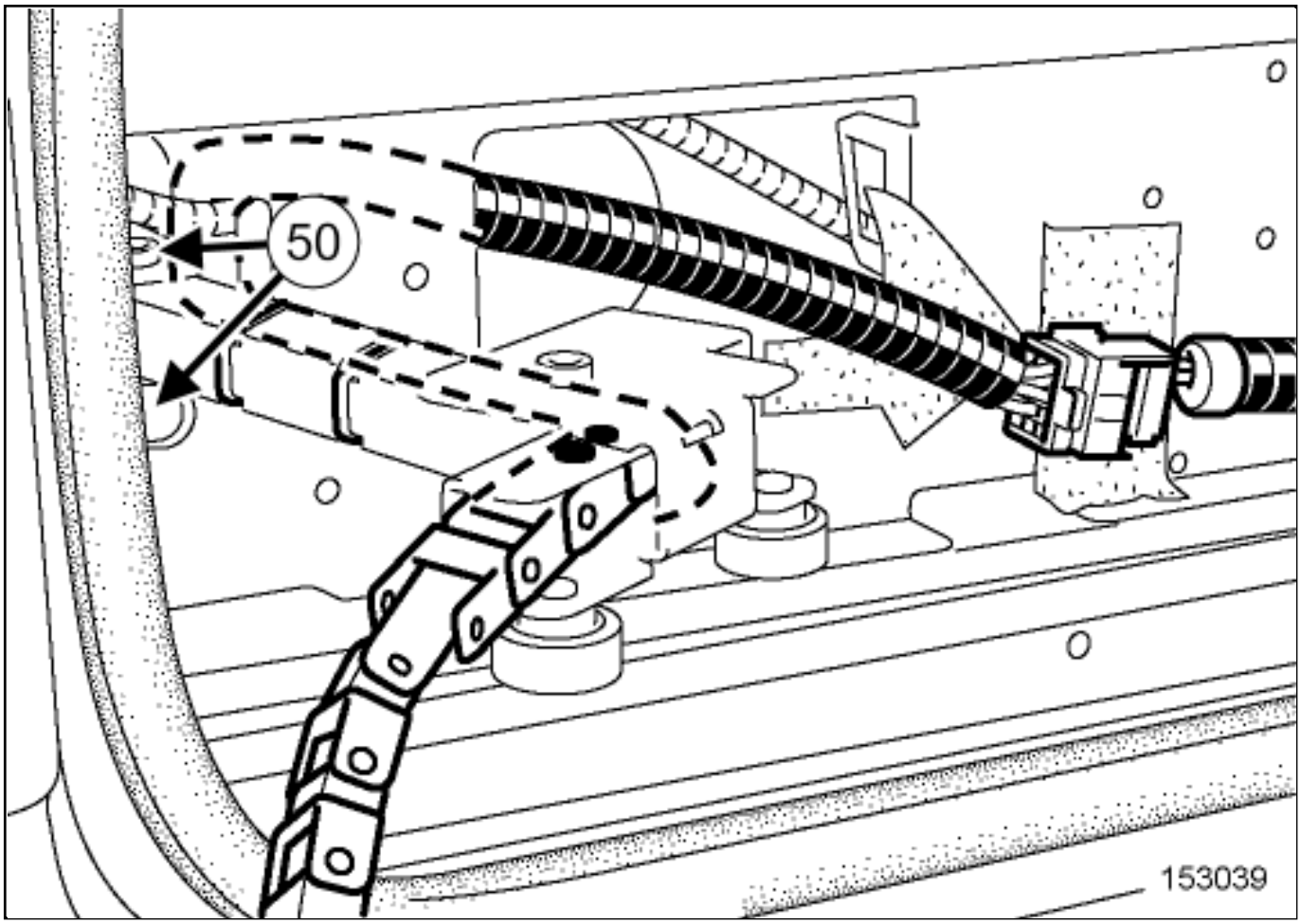
- the centering plate bolts(**46**) ,
- the centering plate from the body

14- SLIDING SIDE DOOR WIRING

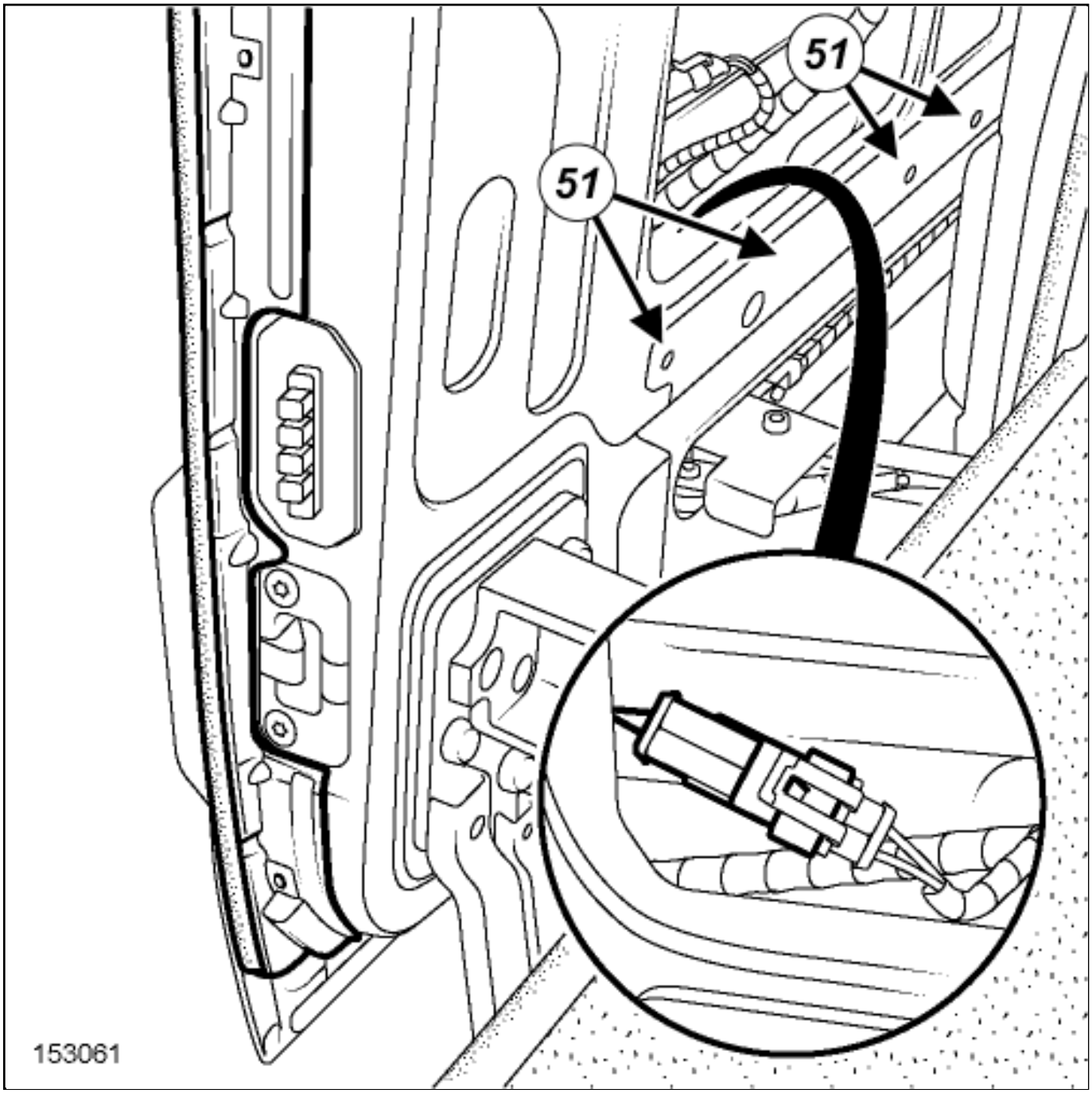


- Drill the rivets(47) .
- Cut the retaining clips(48) .
- Disconnect the sliding side door wiring connector(49) .

15- WIRING ROUTING TIE-BAR AND WIRING ROUTING PLATE



- Drill the rivets(50) .
- Move aside the wiring routing tie-bar.
- Extract the sliding side door wiring.

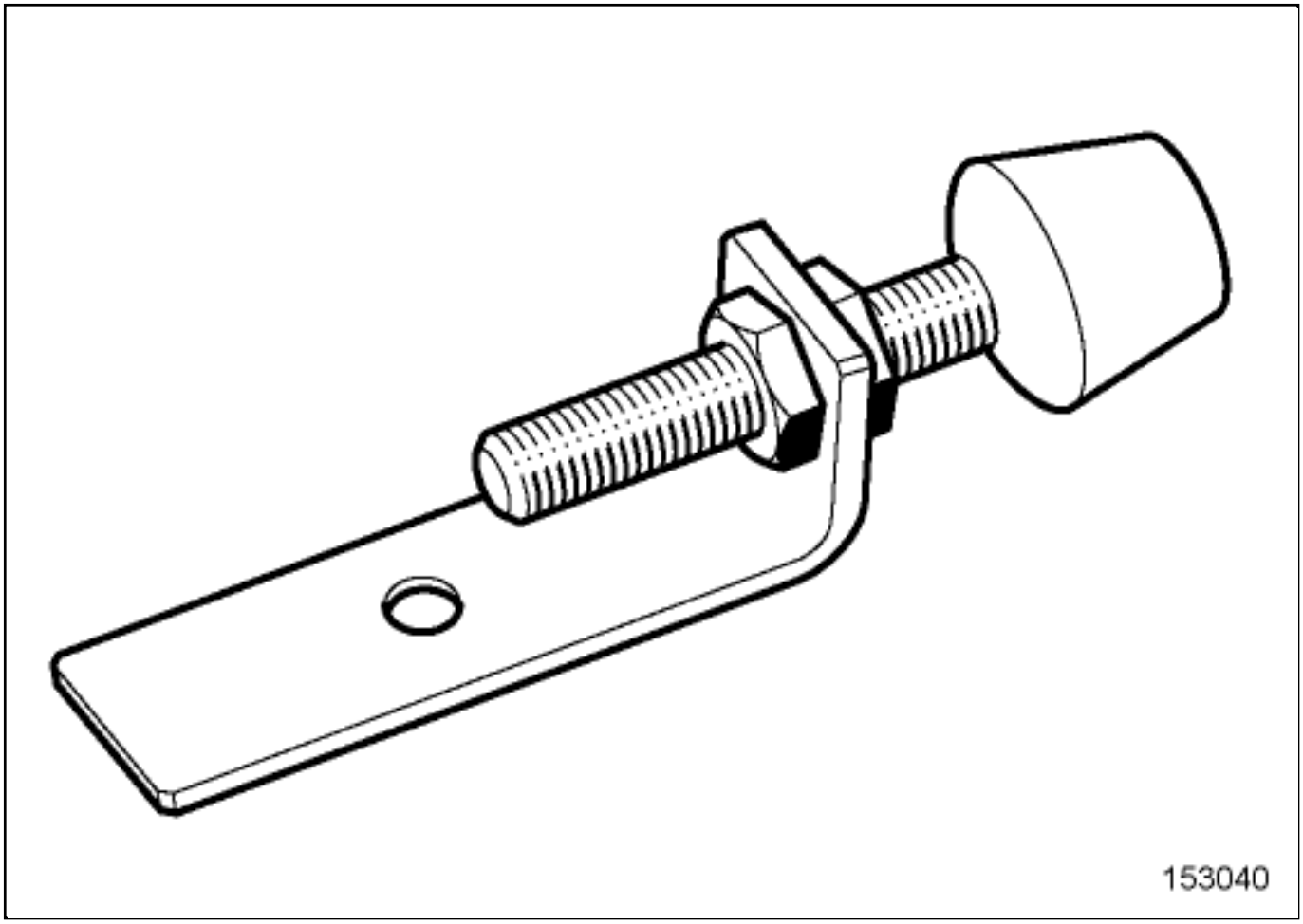


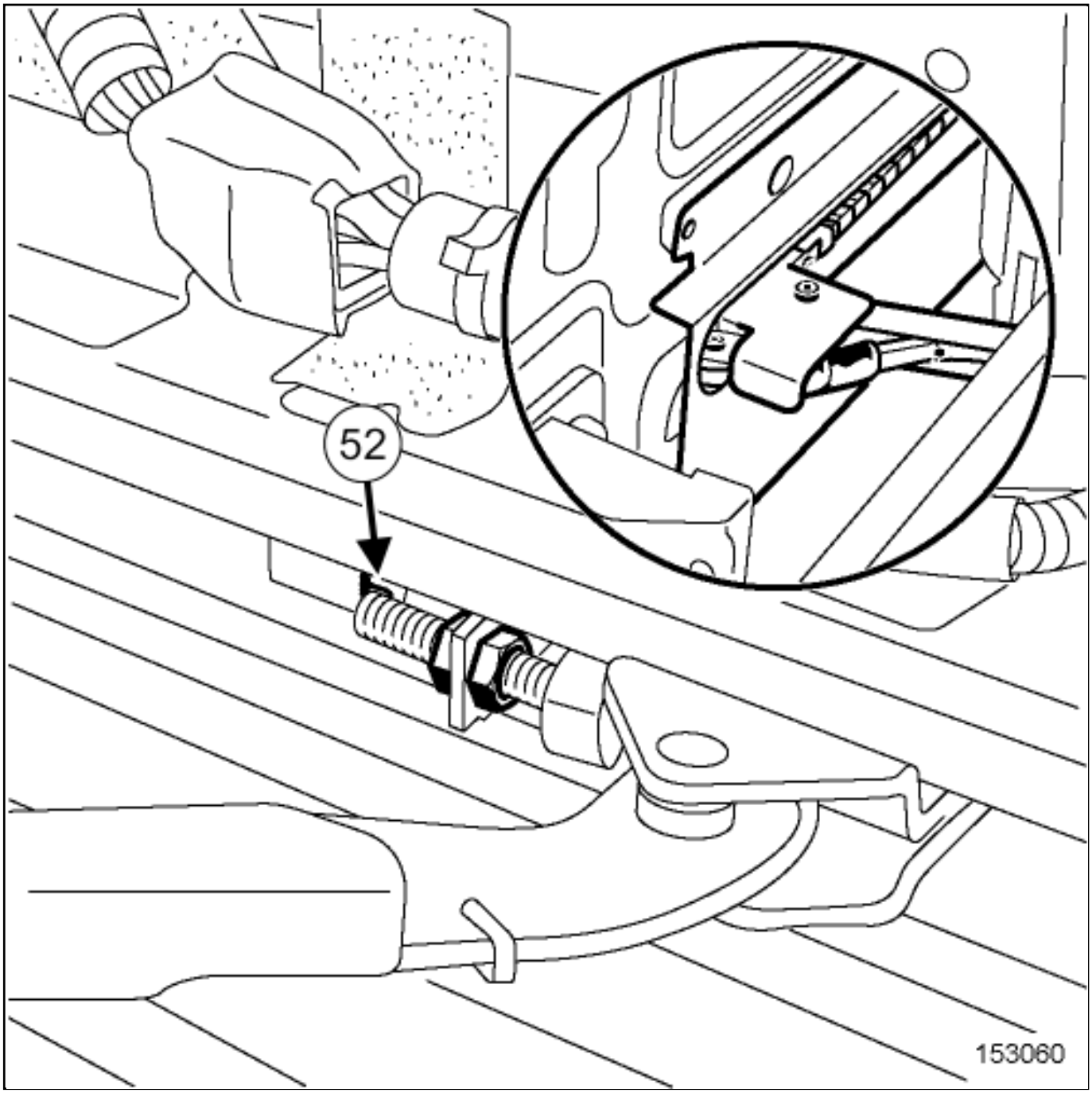
Unclip the wiring mountings in the door box section.

Remove:

- the wiring routing plate clips(51) ,
- the wiring routing plate.

16- SLIDING SIDE DOOR STOP





- Remove the sliding side door stop bolt(52) behind the threaded rod.

- Extract from the rail the sliding side door stop.

REFITTING

1. REFITTING PREPARATION OPERATION

1- ANTI-PINCH SENSOR

In the event of a replacement, bond the new anti-pinch sensor on the two mounting supports.

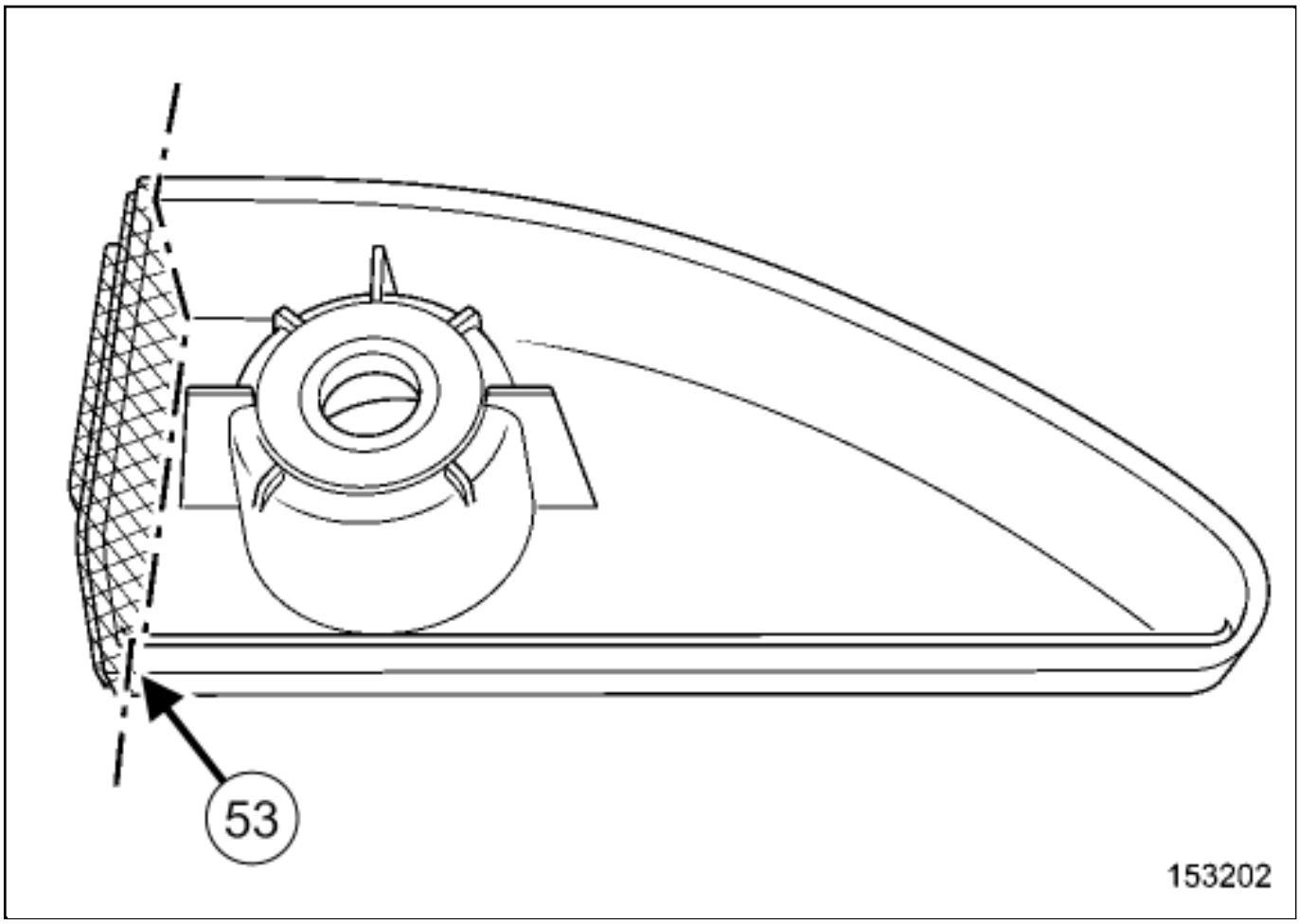
2- ELECTRIC DOOR COMPUTER

Replace the electric door computer after 100 000 cycles.

3- SLIDING SIDE DOOR CARRIAGE

Check all the 50 000 cycles the sliding side door carriage at the centre runner area, replace it if necessary.

1)END PIECE OF SLIDING SIDE DOOR CENTRE RUNNER REPLACEMENT



Cut the face(53) in contact with the centre runner.

Deburr the cutting area.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

1- ELECTRIC LOCKING STRICKER PLATE

Torque tighten:

- the electric locking stricker plate bolts15 N.m,
- the reinforcement pillar plate bolts9 N.m.

2- EMERGENCY HANDLE

Adjust the cable tension before refitting the emergency handle(see 51A, Side opening element mechanisms , Rear side opening element drive mechanism: Adjustment) .

Torque tighten the emergency handle bolts7 N.m.

3- "CONTROL PLATE" ASSEMBLY

Torque tighten the control plate bolts8 N.m.

4- ELECTRIC SLIDING SIDE DOOR COMPUTER

Torque tighten the computer bolts9 N.m.

5- ROLLER SWITCH

Torque tighten the roller switch bolts2 N.m.

6- ACTUATOR

Torque tighten the actuator bolts9 N.m.

7- ELECTRIC DOOR MOTOR

Torque tighten:

- the electric door motor bolts9 N.m,
- the electric door motor support plate bolts9 N.m.

8- SLIDING SIDE DOOR CARRIAGE

Torque tighten:

- the drive belt clip holder bolts2 N.m,
- the reinforcement carriage plate bolts22 N.m.

9- SLIDING SIDE DOOR CENTERING PLATES

Torque tighten the centering plate bolts on the sliding side door9 N.m.

Torque tighten the centering plate bolts on the body9 N.m.

3. FINAL OPERATION

Adjust the rear side opening element drive mechanism(see 51A, Side opening element mechanisms, Rear side opening element drive mechanism: Adjustment) .

Initialise the system (see 51A, Side opening element mechanisms, Rear side opening element drive mechanism: Adjustment) .

REAR SIDE SEAT BELT: REMOVAL - REFITTING

parts always to be replaced:
Rear seat belt inertia reel bolt

Note:

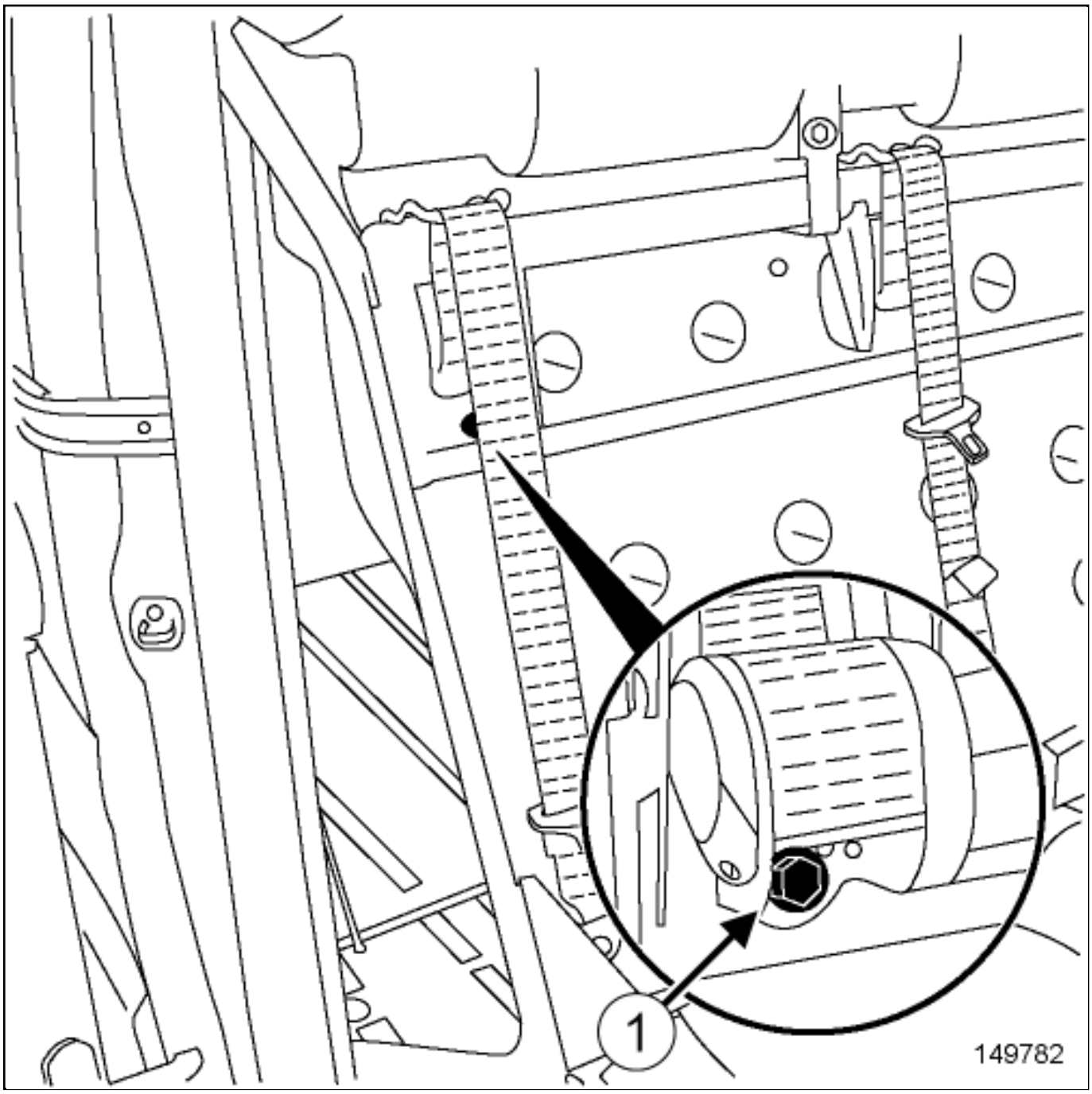
The rear seat belt must be handled by the inertia reel (risk of damaging the strap).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the trim of the single unit rear bench seatback Single unit rear bench seatback trim: Removal - Refitting (78A, Rear seat trim).

2. REMOVAL OPERATION



Remove:

- the bolt(1) of the rear side seat belt inertia reel,
- the rear side seat belt.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: Rear seat belt inertia reel bolt.

- Always replace the bolt of the rear side seat belt lower mounting.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Torque tighten the rear side seat belt inertia reel bolt30 N.m.

Note:

Ensure that the rear side seat belt strap is not twisted between the inertia reel and the lower mounting of the rear side seat belt.

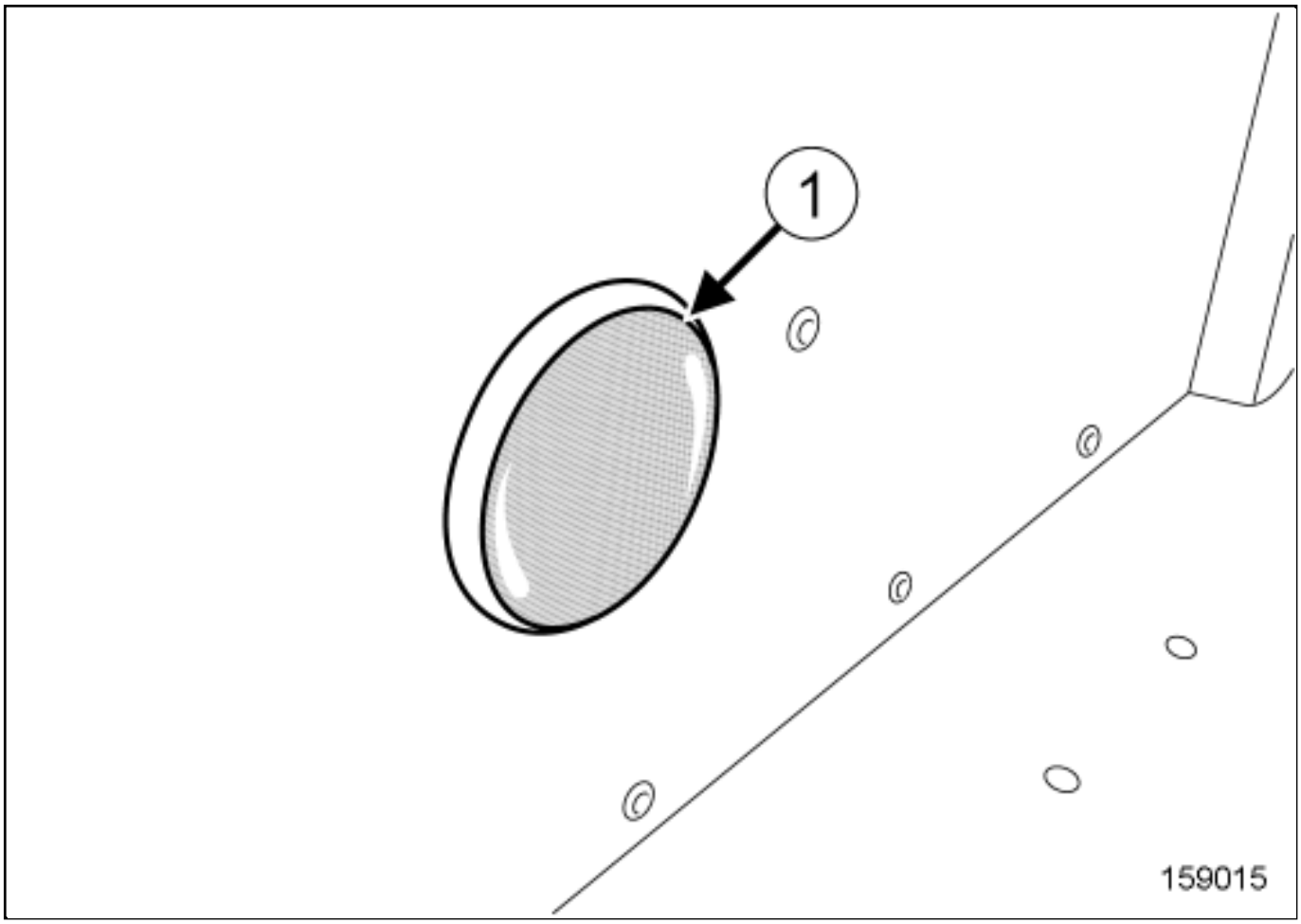
3. CHECKING AFTER REPAIR

- Check for correct operation twice by unreeling the rear side seat belt 300 mmand allowing it to return.

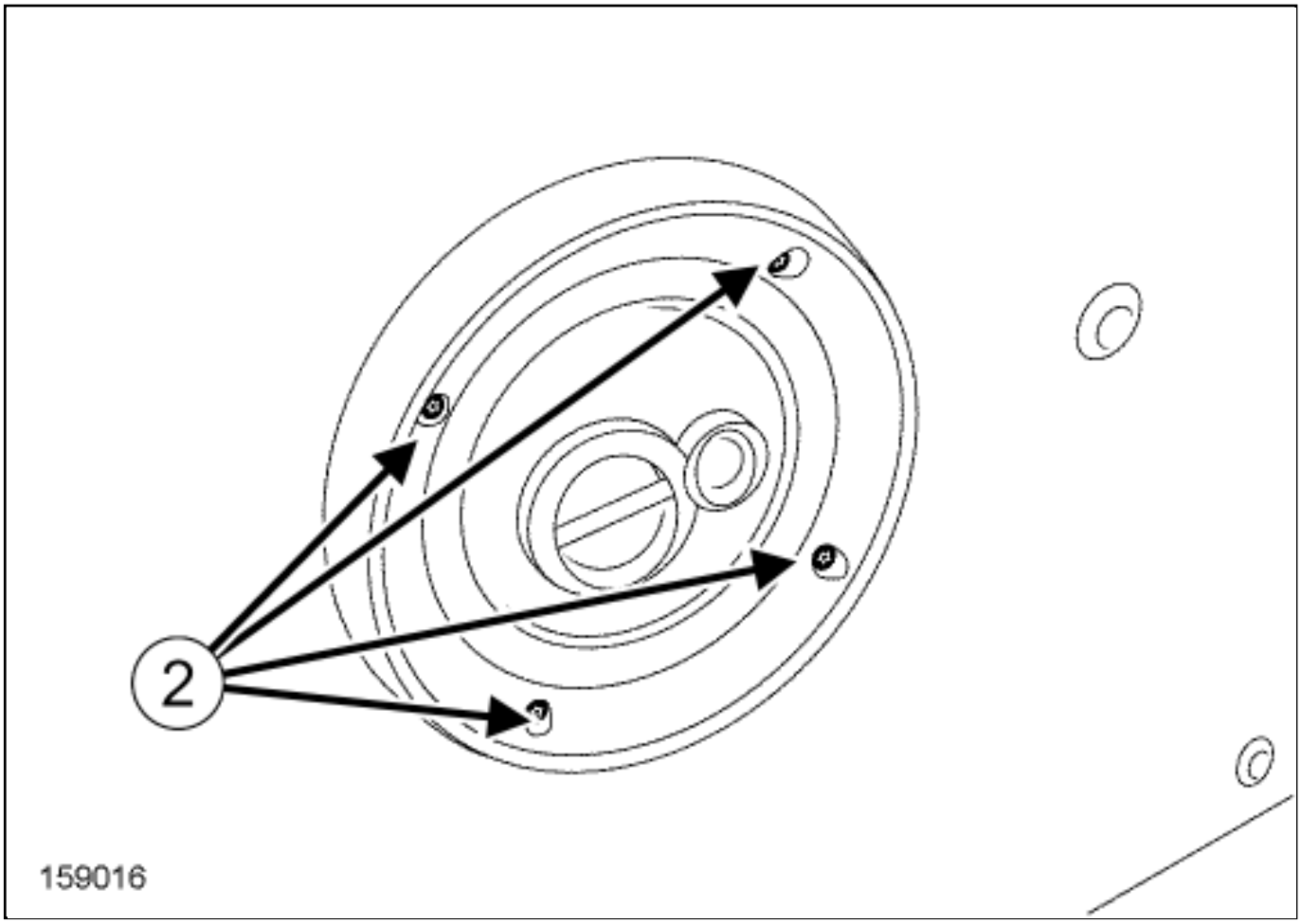
- Check that the rear side seat belt locks correctly by pulling the rear side seat belt with increasing speed 200 to 300 mmmaximum until the inertia reel locks.

REAR SPEAKERS: REMOVAL - REFITTING

REMOVAL



- Turn the rear speaker grille(1) a quarter turn clockwise.



- Remove the bolts(2) .
- Remove the speaker.
- Disconnect the connector.

REFITTING

- Proceed in the reverse order to removal.

REAR SUSPENSION SPRING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
component jack
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

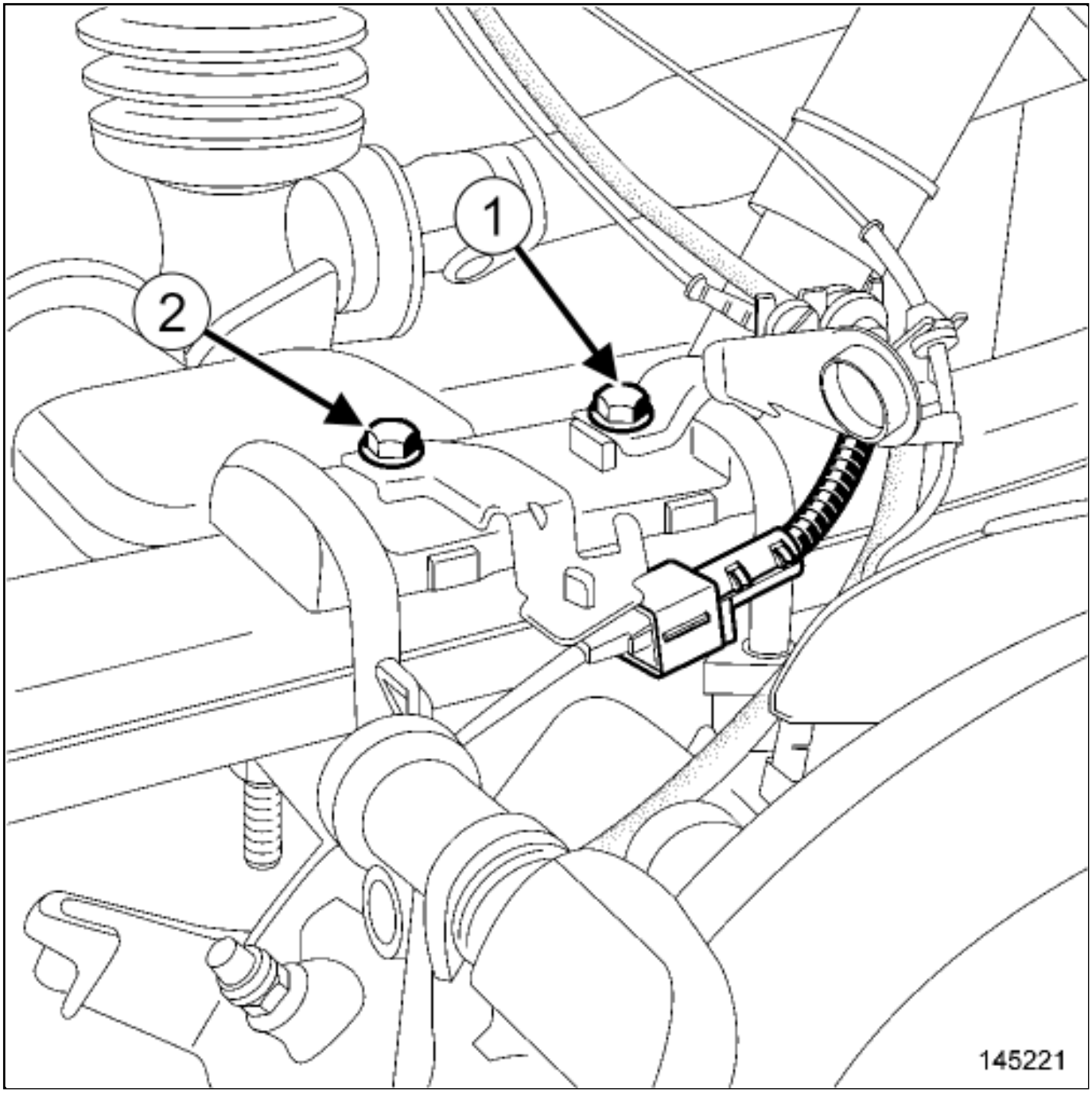
WARNING

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

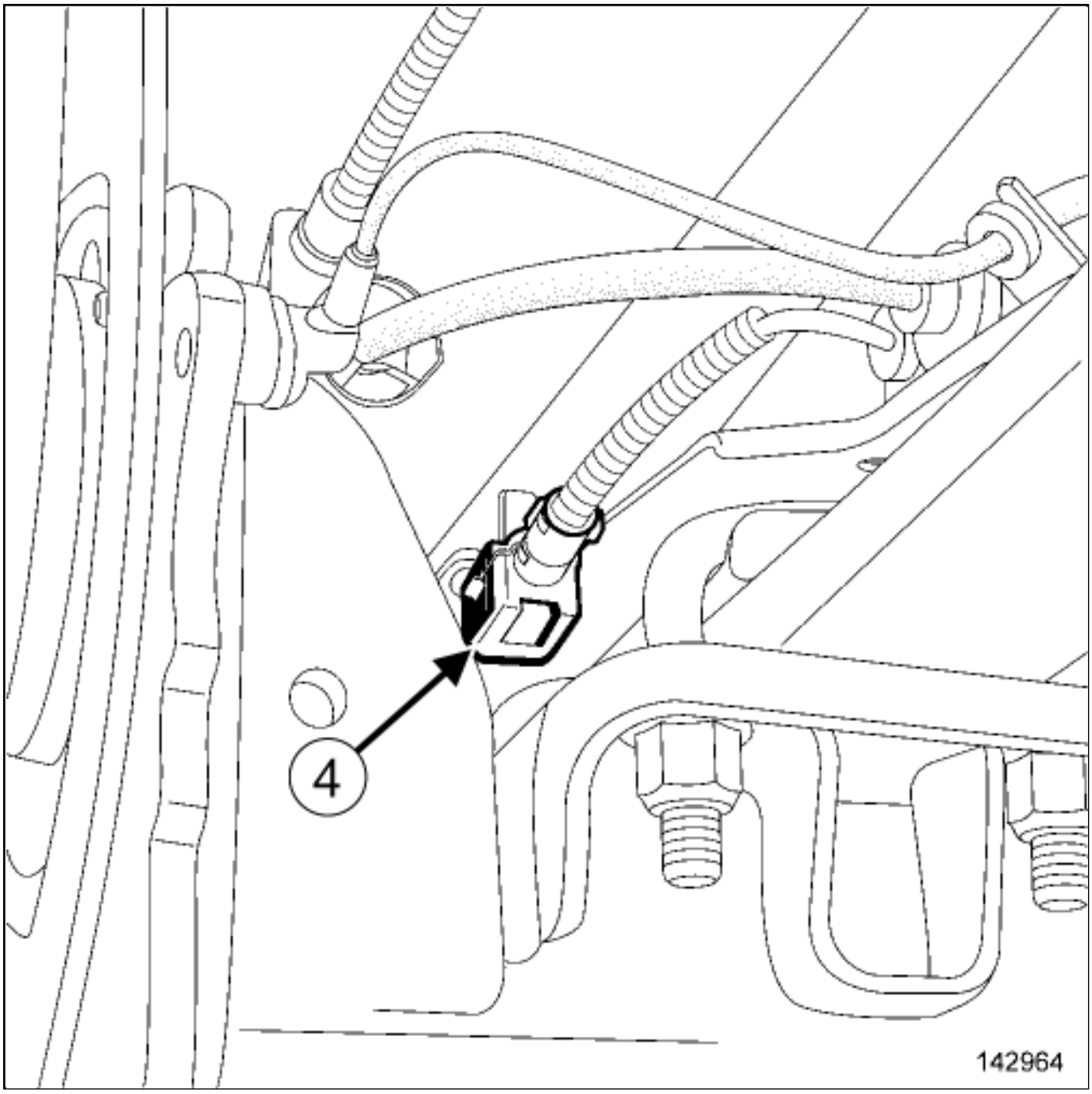
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting .

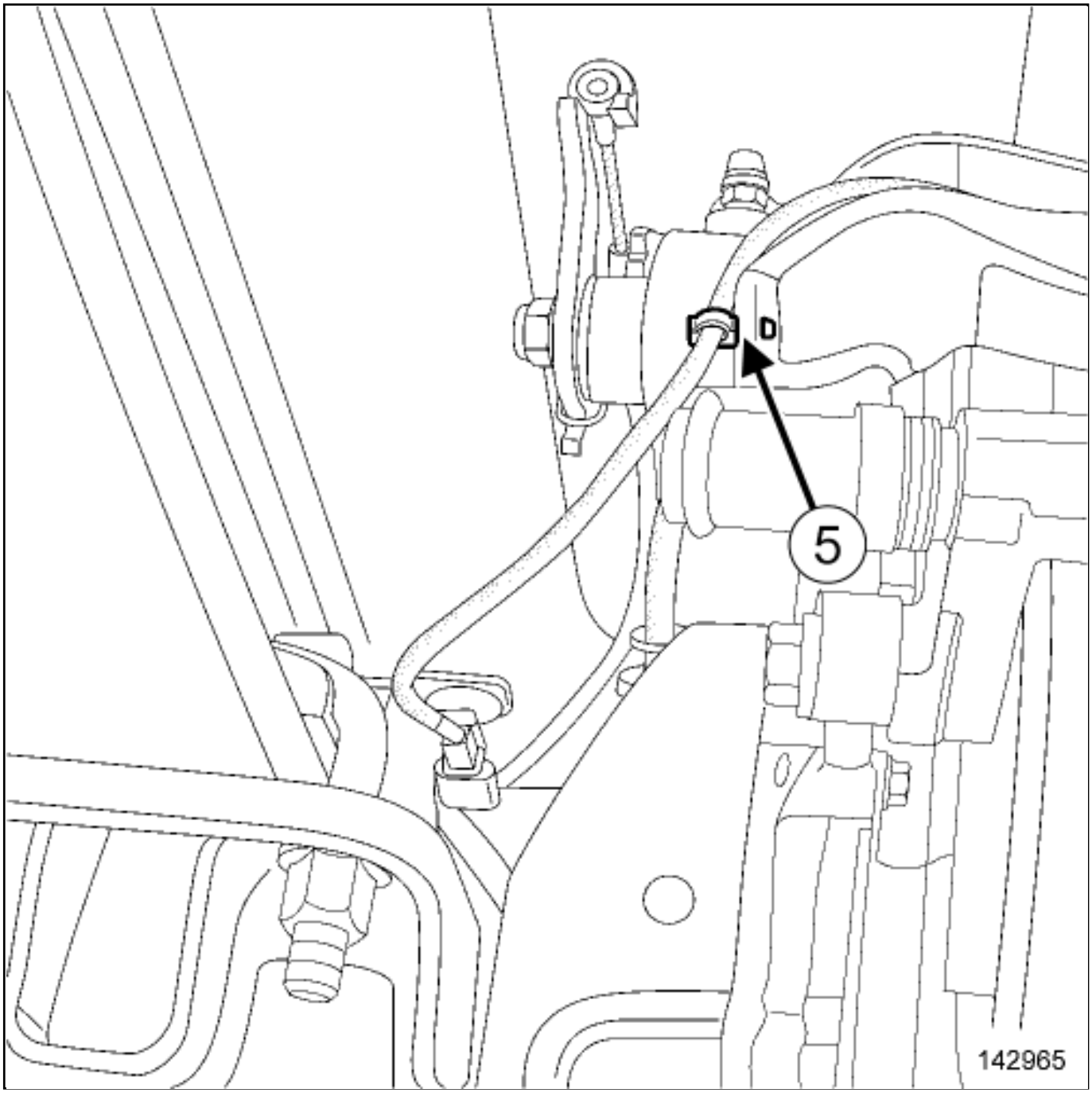


Remove:

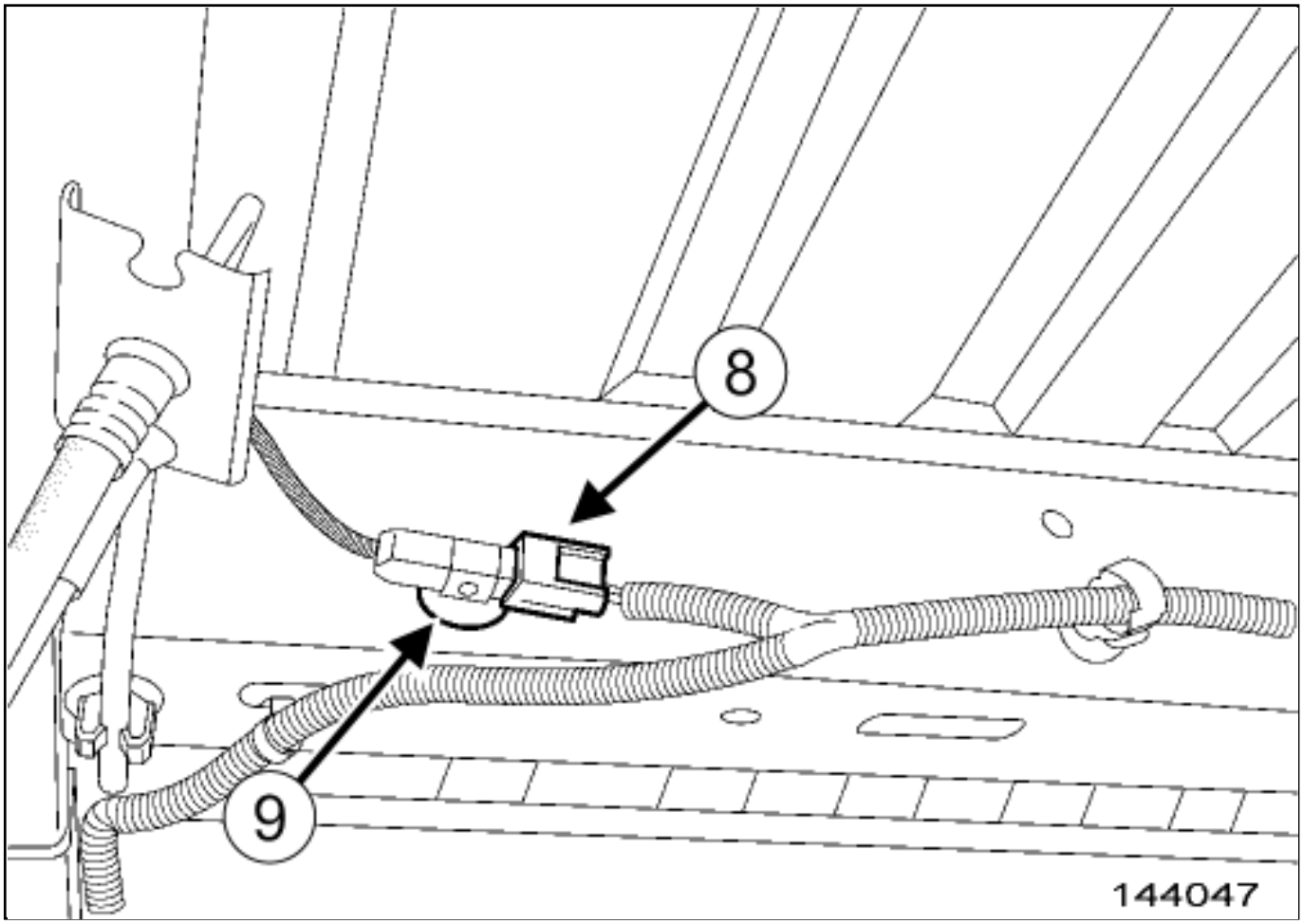
- the bolt(**1**) of the parking brake cable support,
- the bolt(**2**) of the brake pad warning light support.



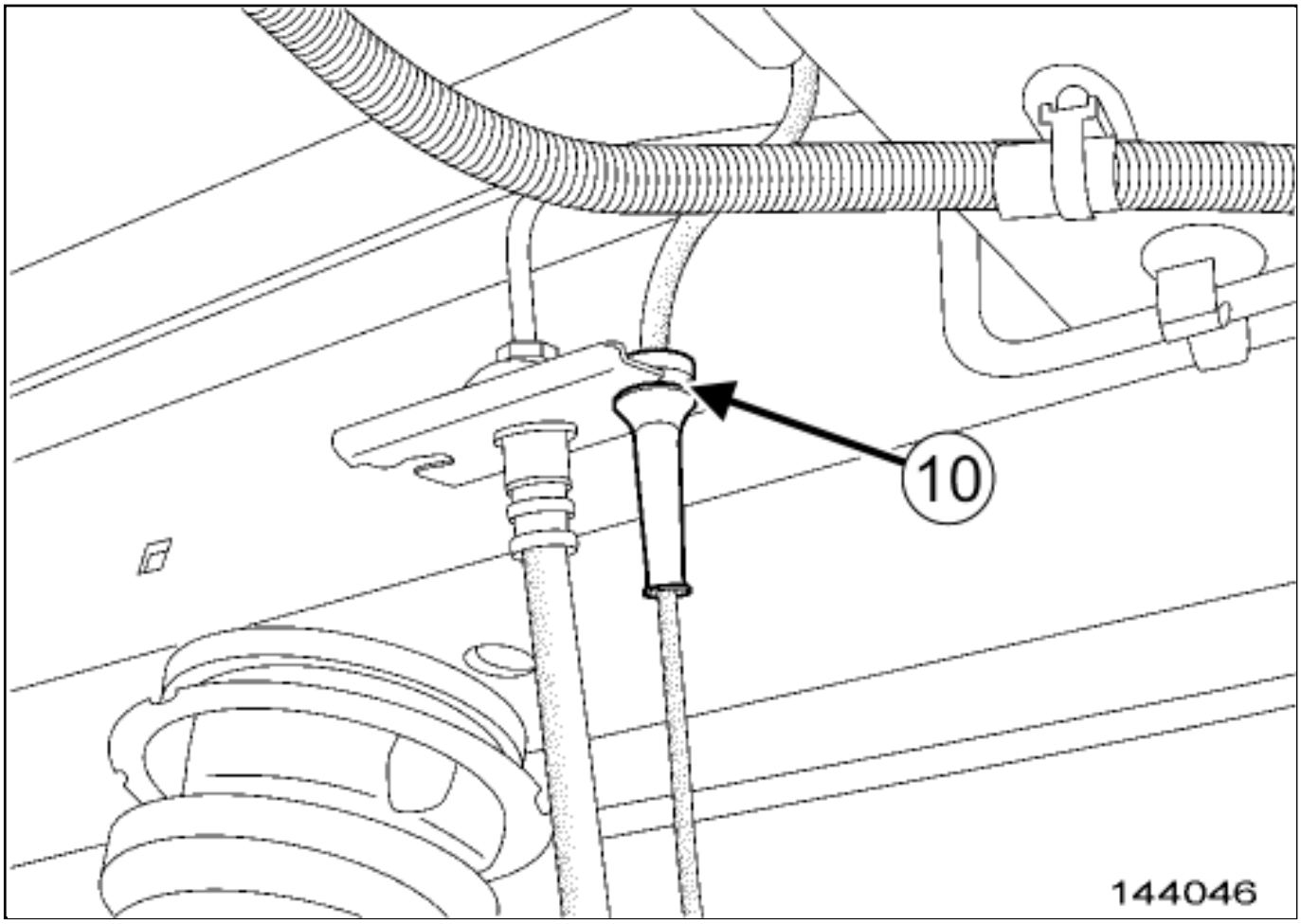
- Disconnect the connector(4) of the rear brake pad wear warning light.



- Unclip the wiring of the rear brake pad wear warning light from the brake calliper at(5) .



- Disconnect the connector(8) of the rear wheel speed sensor.
- Unclip the connector of the rear wheel speed sensor at(9) .



- Unclip the wiring of the rear wheel speed sensor from the body at(10) .

1- IF THE VEHICLE IS EQUIPPED WITH AN ANTI-ROLL BAR

- Remove the bolt of the rear anti-roll bar tie rod from the body(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

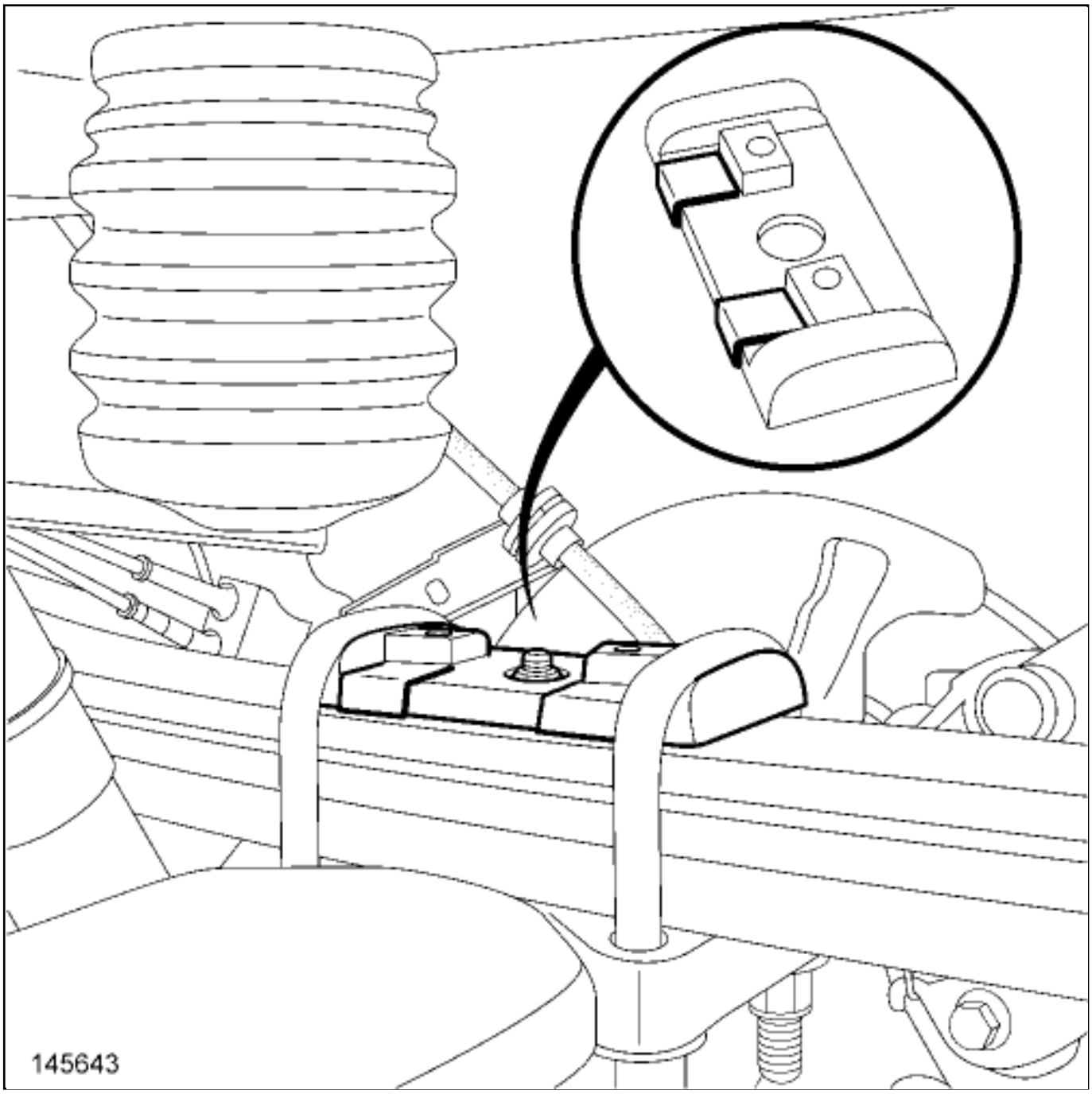
- Fit a component jackunder the rear axle.

- Strap the rear axle to the component jack.

- Remove the lower bolt of the rear shock absorber(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

- Loosen the upper bolt of the rear shock absorber(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

2. REMOVAL OPERATION



- Mark the position of the leaf spring clamp plates on the suspension springs using an indelible pencil.

- Remove (see 33A, Rear axle components, Rear axle assembly: Exploded view) :
  - the leaf spring U-bolts,
  - the leaf spring clamp.

- Lower the rear axle approximately 20 cm.

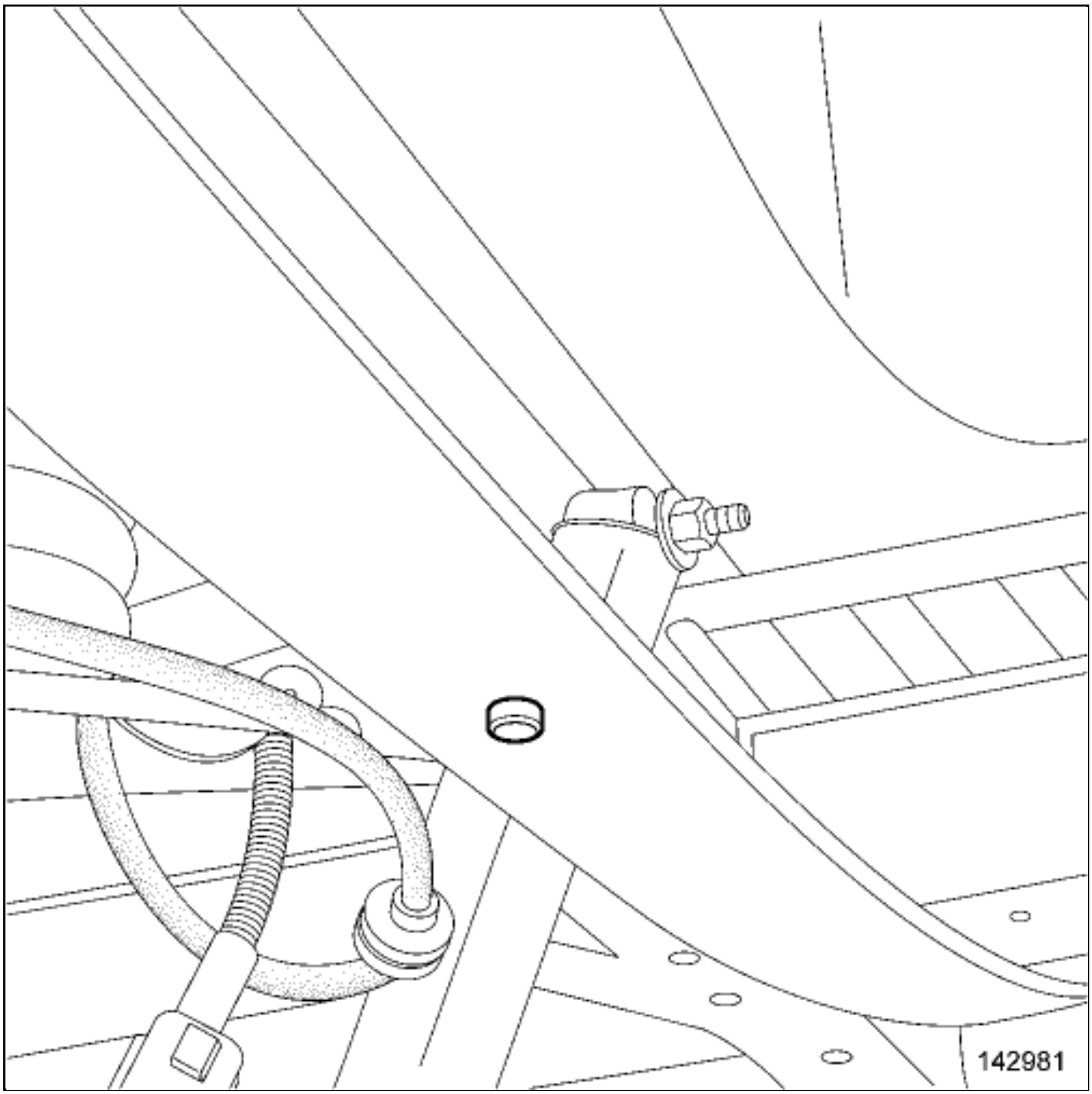
- Undo (see 33A, Rear axle components, Rear axle assembly: Exploded view) :
  - the bolts of the suspension leaf springs,
  - the suspension shackle bolt.

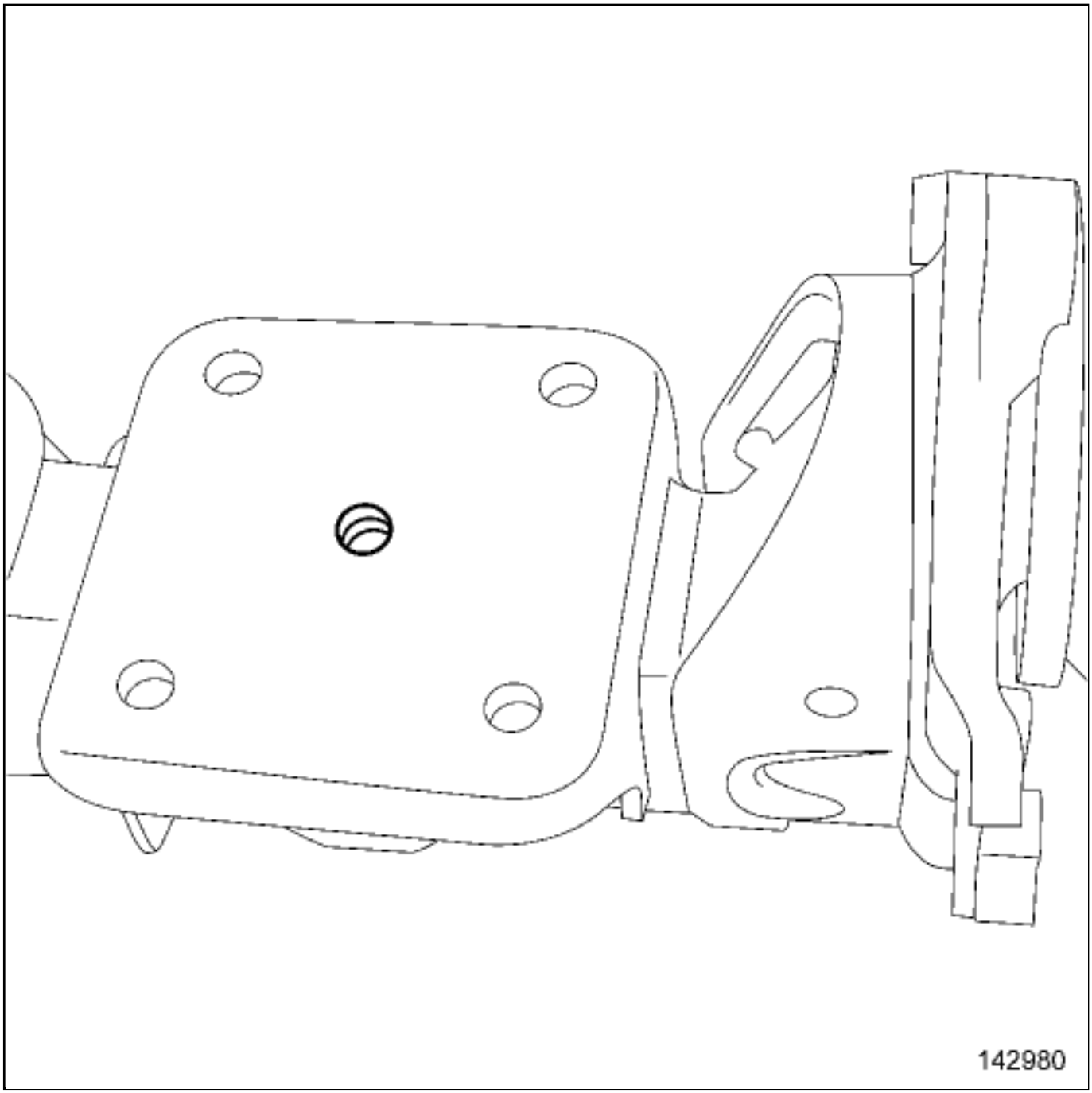
Remove (see 33A, Rear axle components, Rear axle assembly: Exploded view) :

- the suspension shackle,
- the suspension leaf springs.

REFITTING

Proceed in the reverse order to removal.





Note:

Correctly position the leaf spring centring pin on the rear axle.

- Refit the leaf spring clamp plates in the position marked during removal.

REAR SUSPENSION SPRING: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
component jack
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

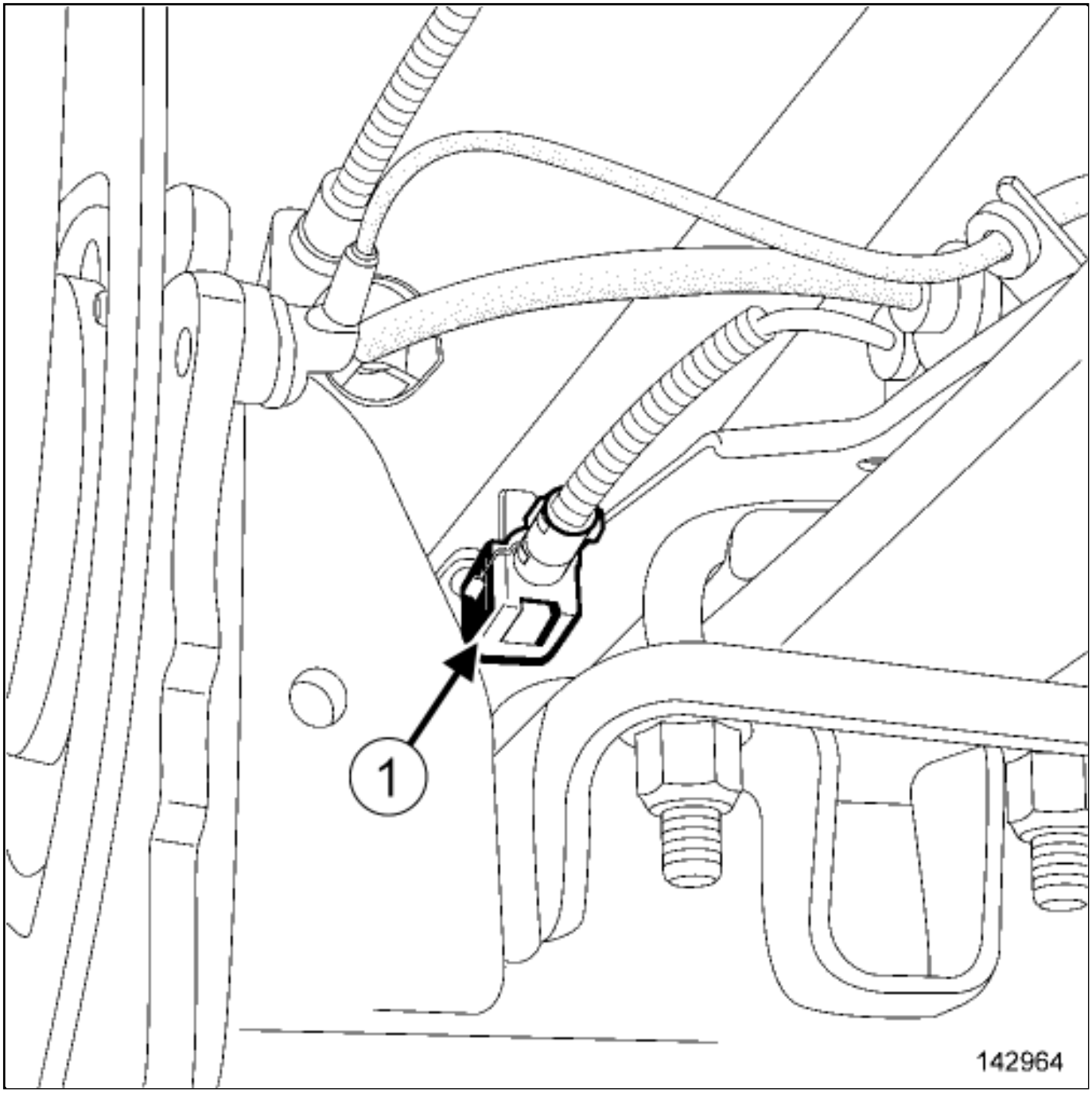
WARNING

- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

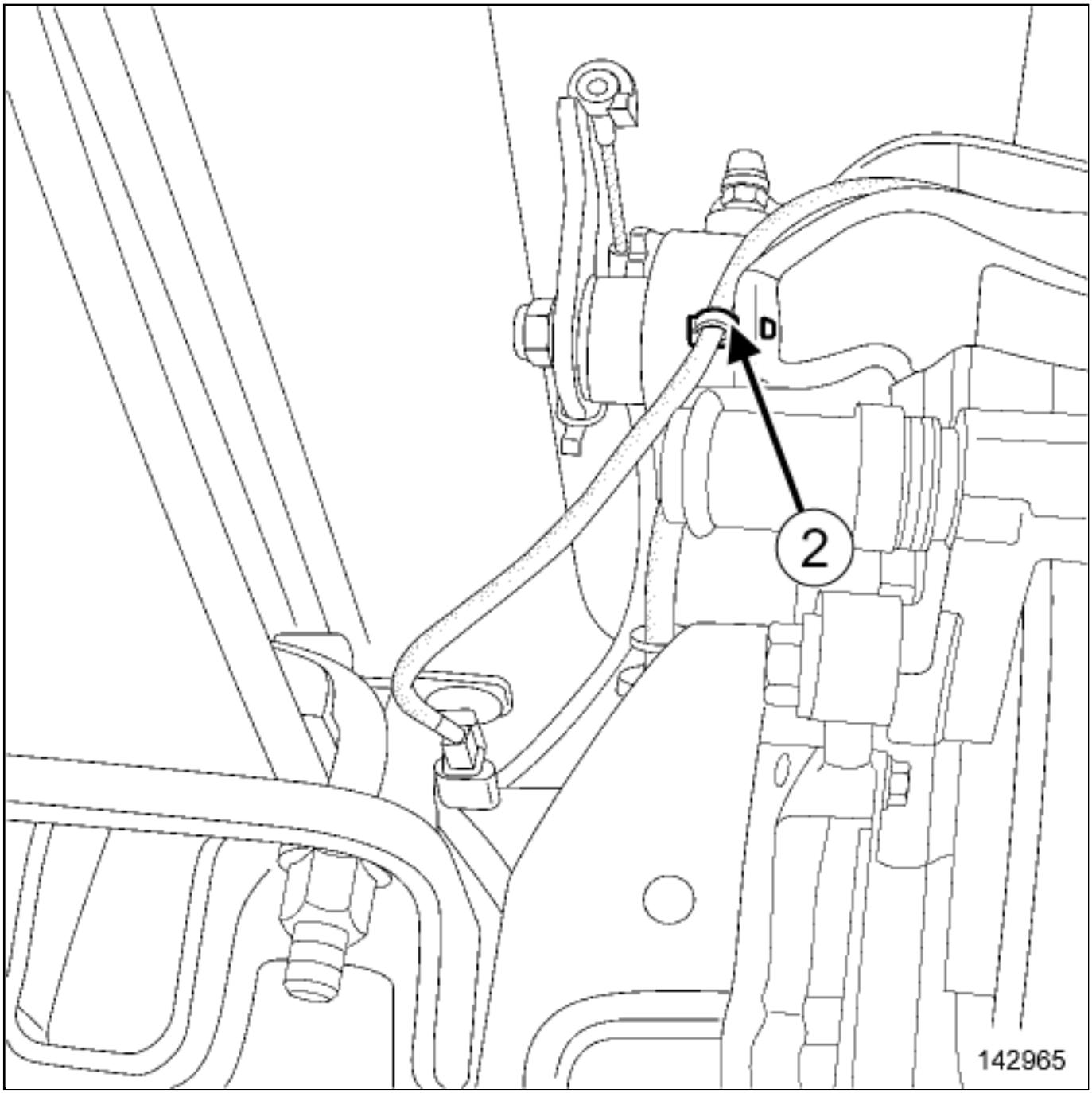
REMOVAL

1. REMOVAL PREPARATION OPERATION

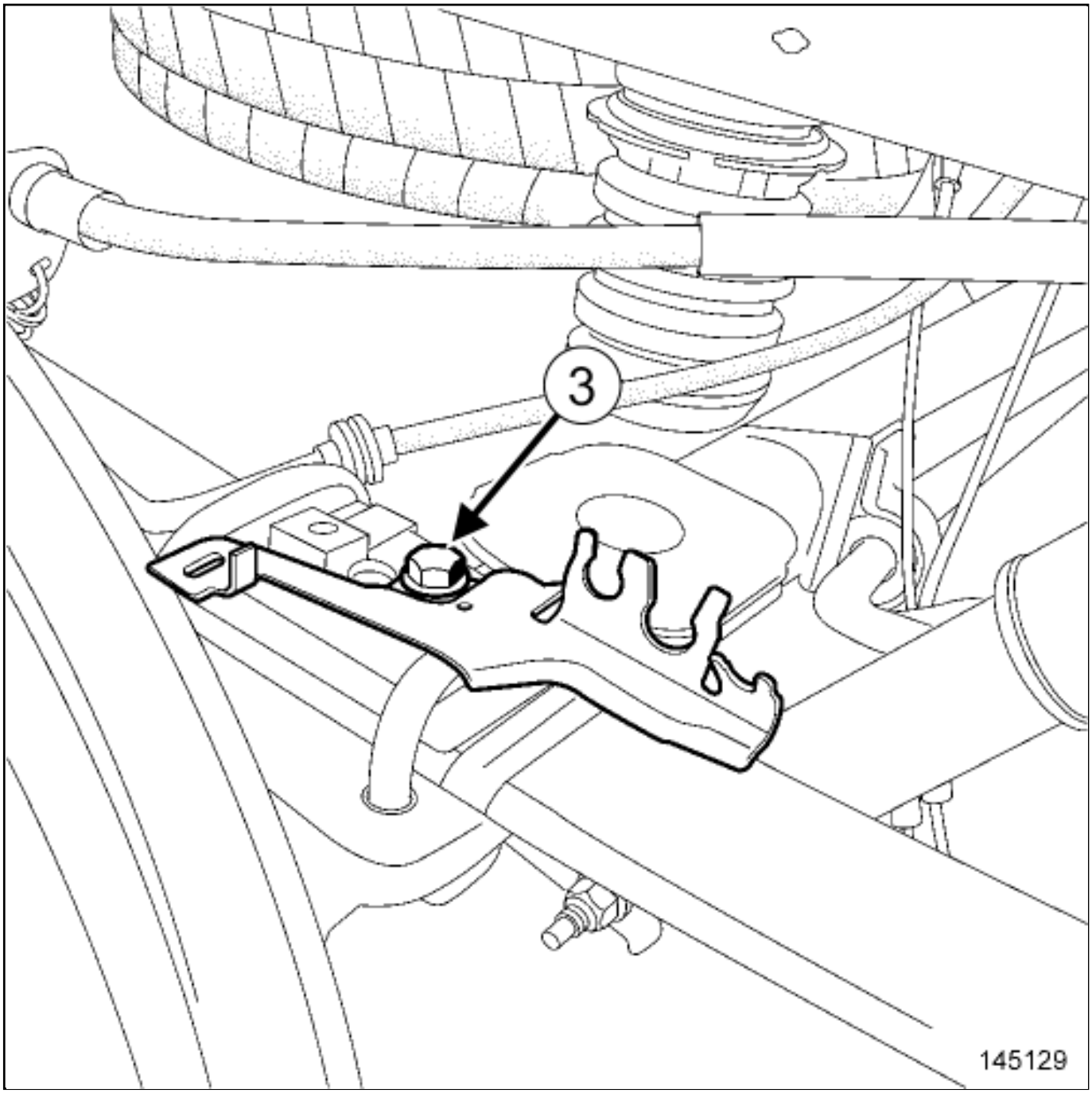
- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the rear wheelsWheel: Removal - Refitting .



- Disconnect the connector(1) of the rear brake pad wear warning light.

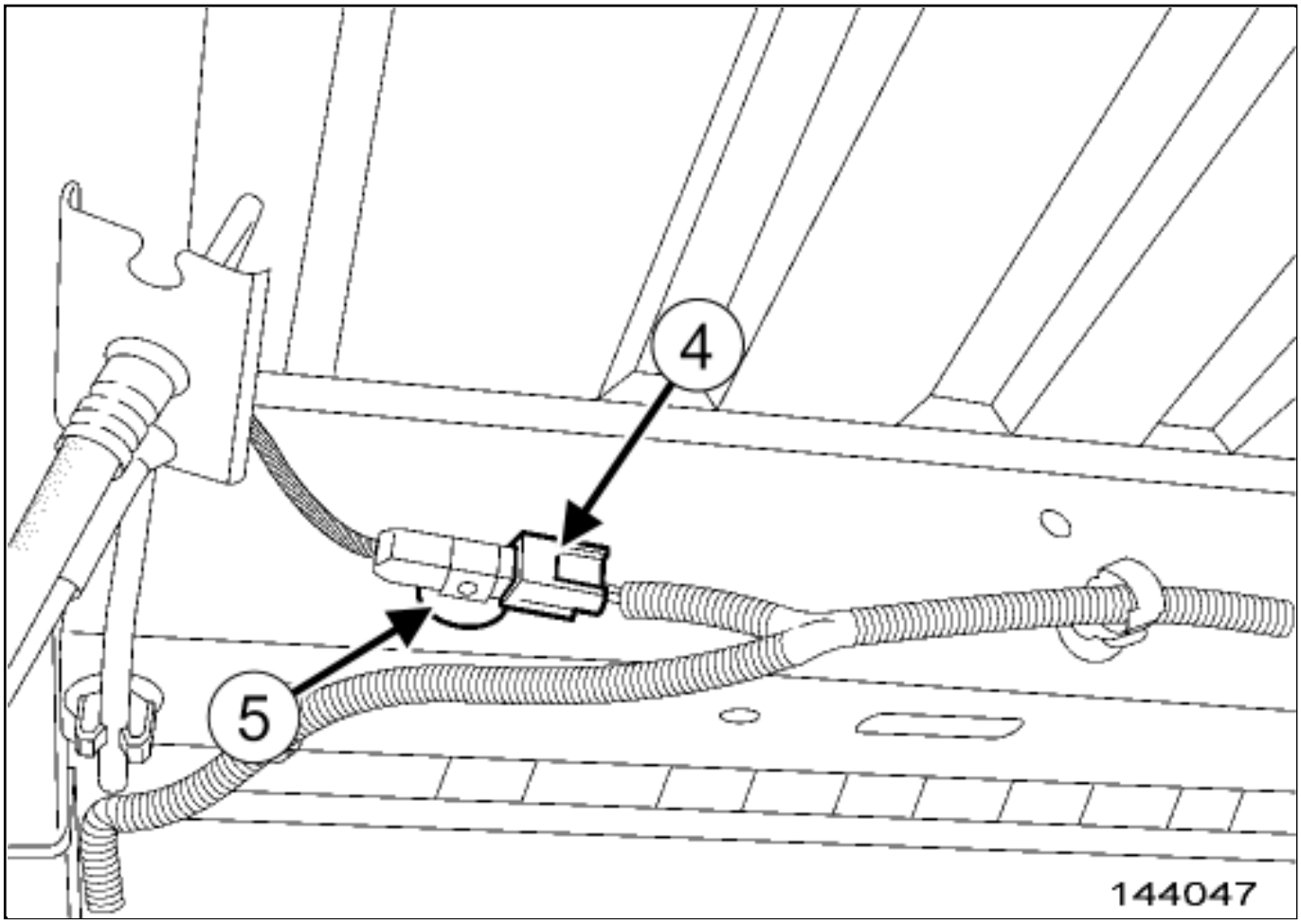


- Unclip the wiring of the rear brake pad wear warning light from the brake calliper at(2) .

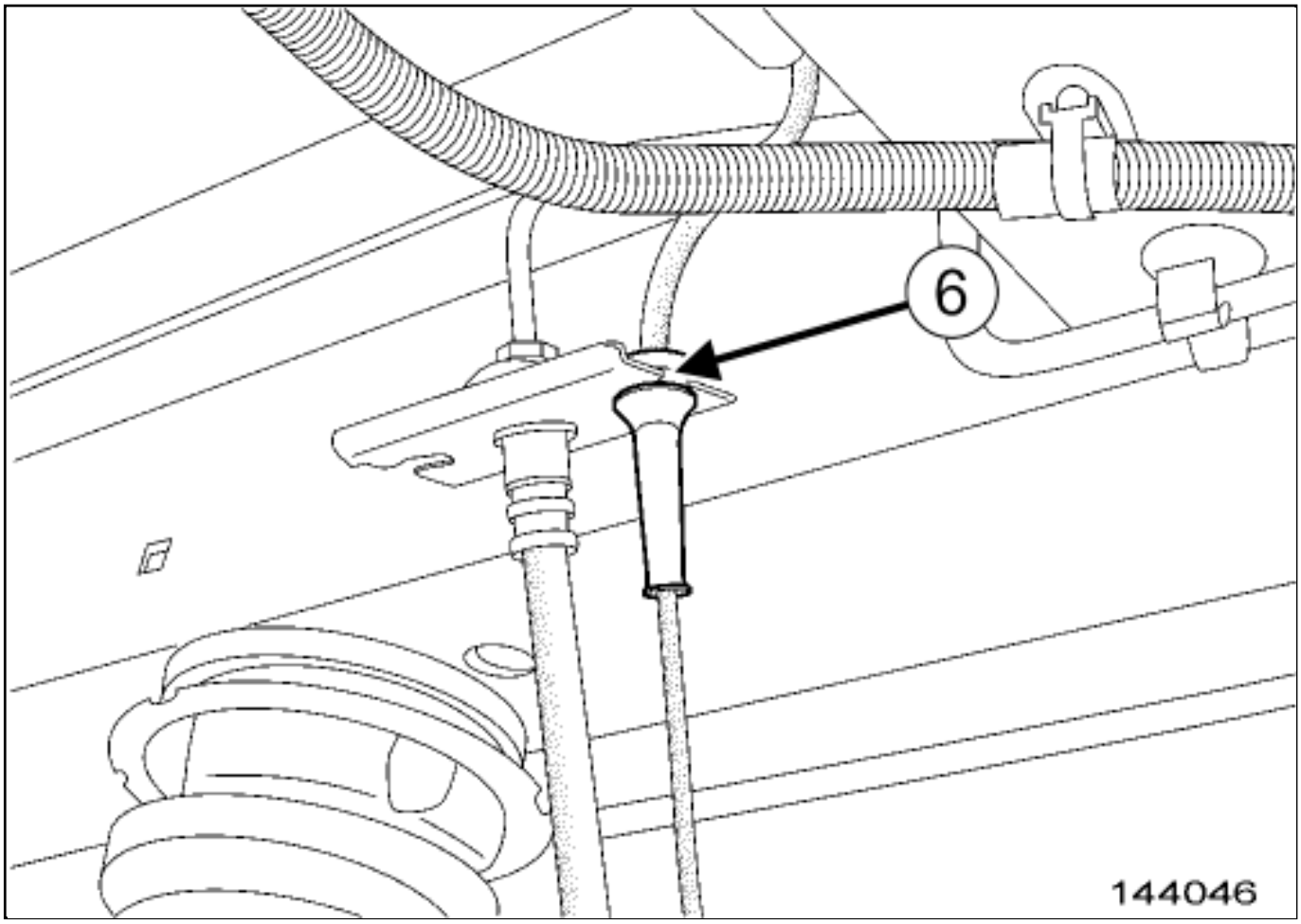


Remove:

- the support bolt(3) ,
- the support.

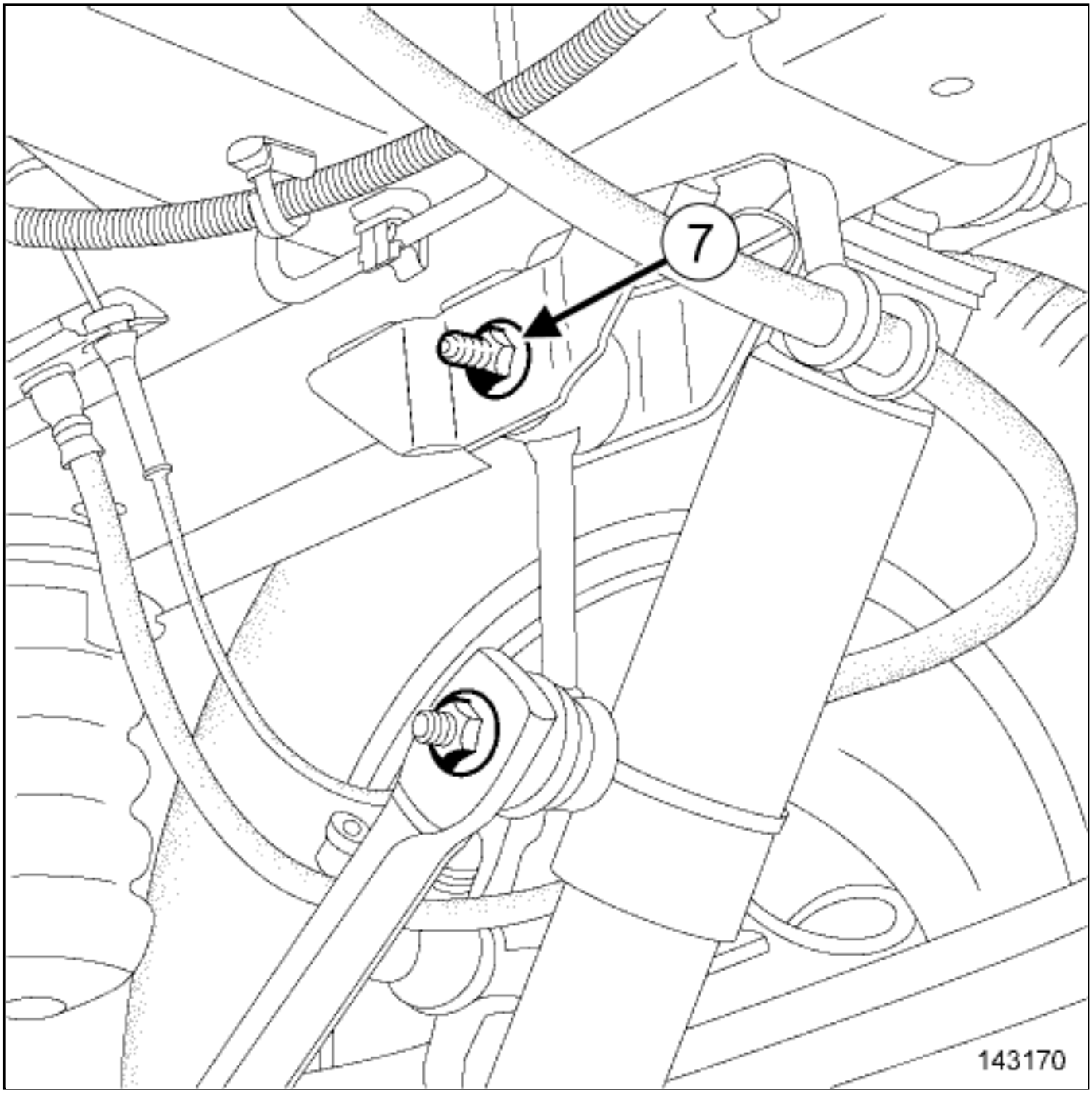


- Disconnect the connector(4) from the rear wheel speed sensor.
- Unclip the connector from the rear wheel speed sensor at(5) .



- Unclip the wiring of the rear wheel speed sensor from the body at(6) .

IF THE VEHICLE IS EQUIPPED WITH AN ANTI-ROLL BAR



- Remove the bolt(7) of the rear anti-roll bar tie rod from the body.

- Fit a component jackunder the rear axle.

- Strap the rear axle to the component jack.

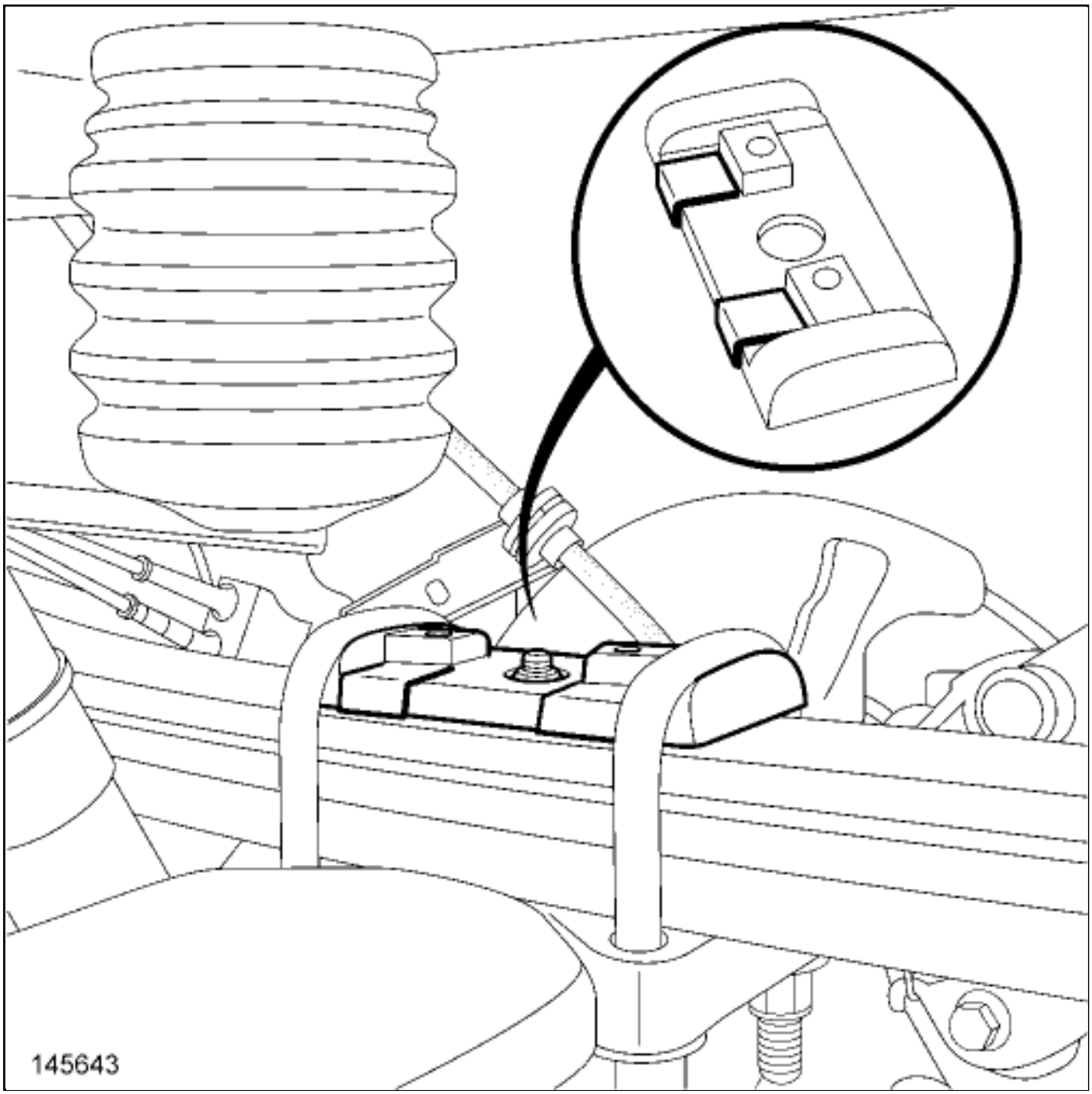
- Remove the lower bolt of the rear shock absorber(see 33A, Rear axle components, Rear axle assembly:

Exploded view) .

- Loosen the upper bolt of the rear shock absorber(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

- Lower the rear axle approximately 20 cm.

2. REMOVAL OPERATION



Mark the position of the leaf spring clamp plates on the suspension springs using an indelible pencil .

Remove (see 33A, Rear axle components, Rear axle assembly: Exploded view) :

- the leaf spring U-bolts,
- the leaf spring clamp.

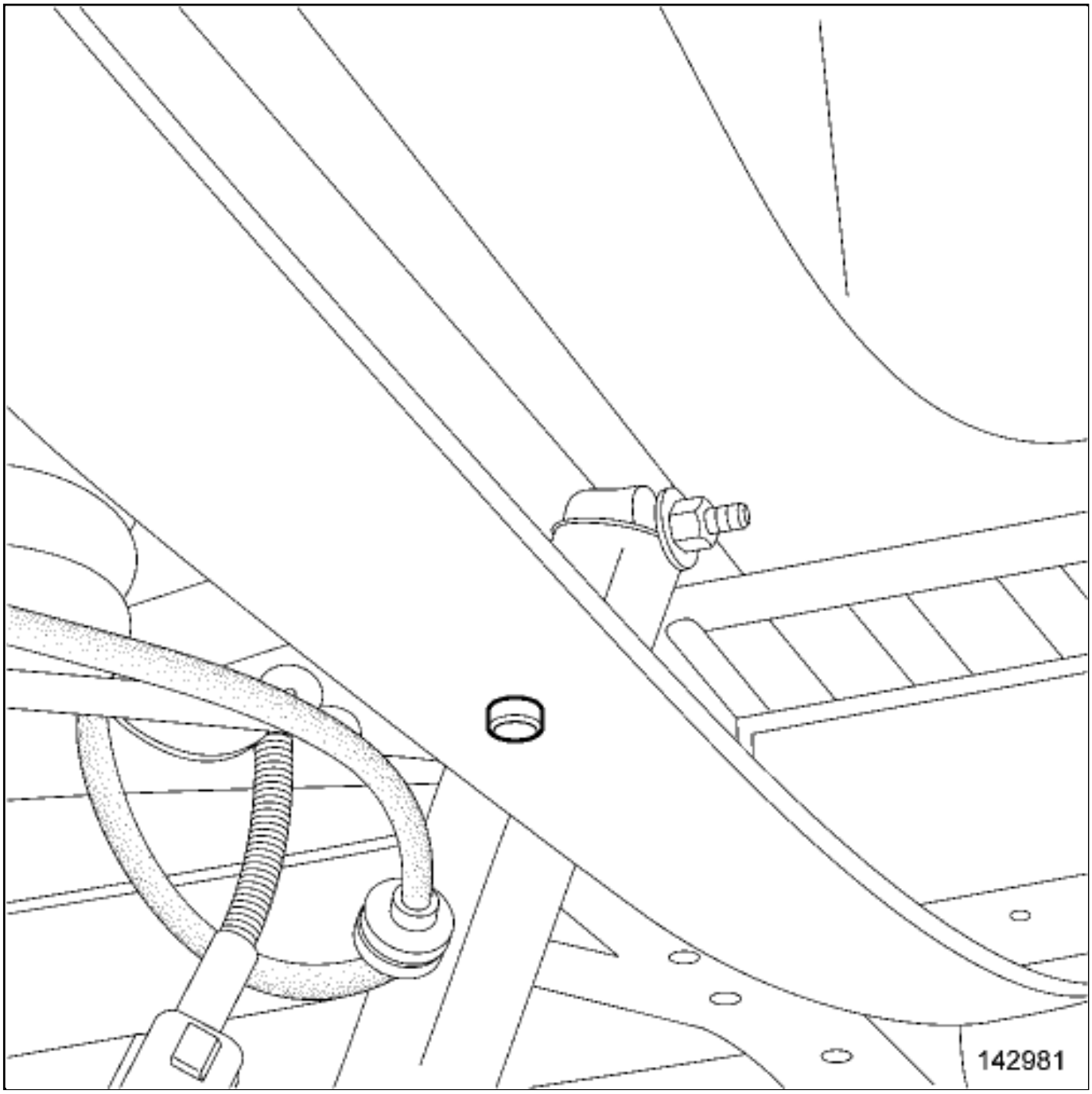
Undo (see 33A, Rear axle components, Rear axle assembly: Exploded view) :

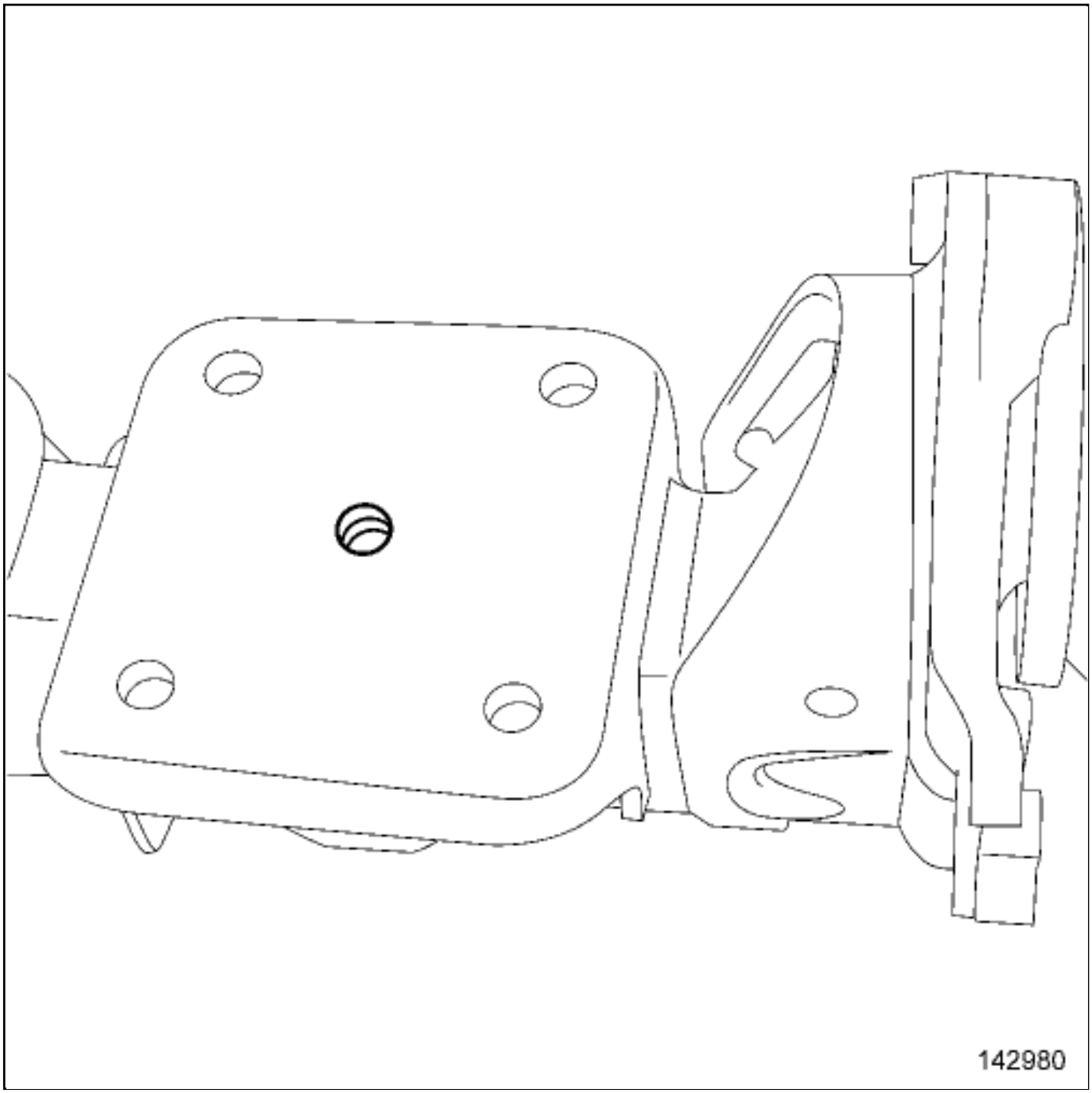
- the suspension leaf spring bolts,
- the suspension shackle bolt.

Remove the suspension leaf spring(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

REFITTING

Proceed in the reverse order to removal.


142981



Note:

Correctly position the leaf spring centring pin on the rear axle.

Refit the leaf spring clamp plates in the position marked during removal.

XSL version : 3.02 du 22/07/11

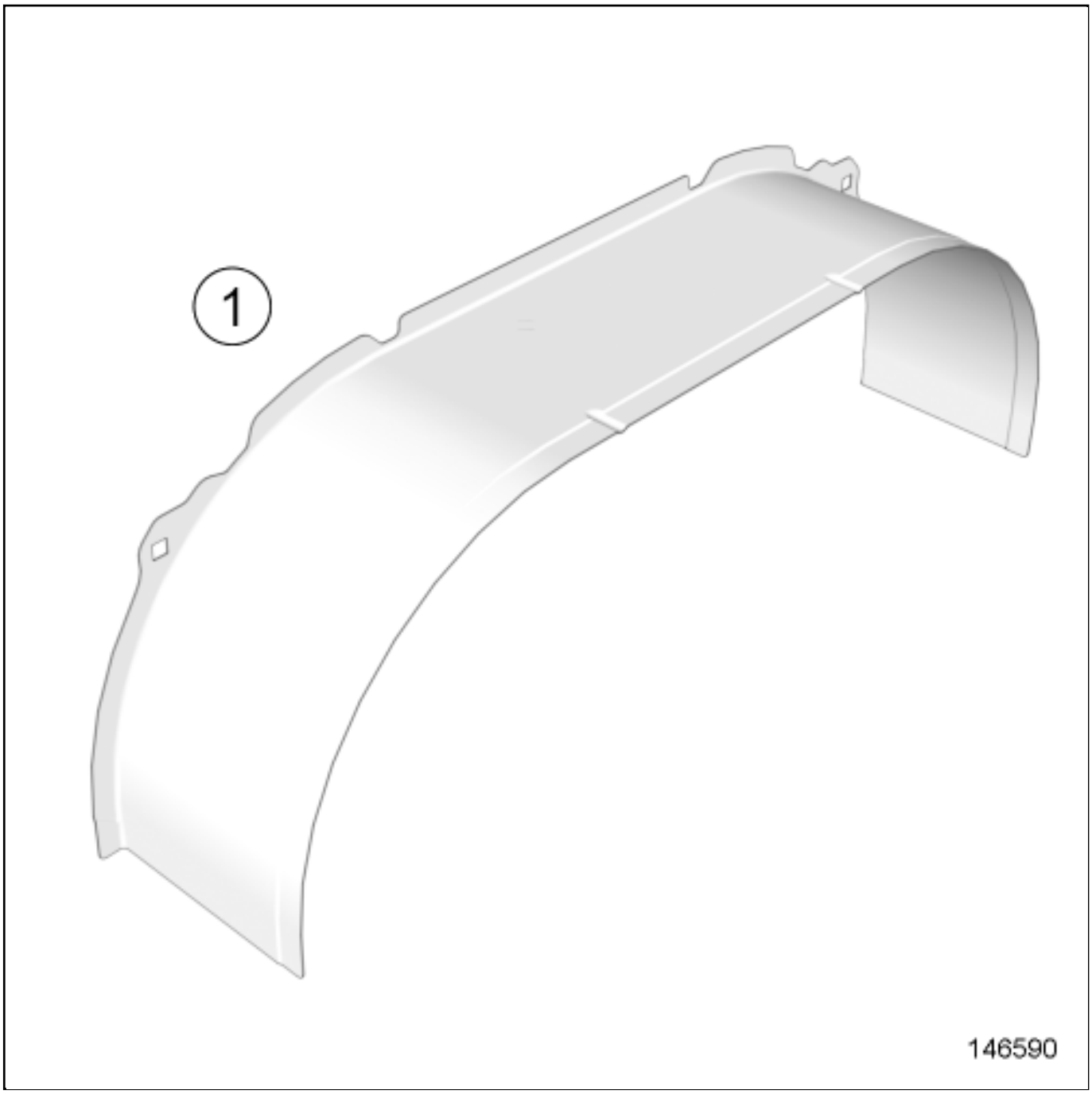
REAR WHEEL ARCH EXTENSION: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Rear wheel arch extension	Mild steel	1

2. IN THE EVENT OF REPLACEMENT

The option for replacing this part is as follows:

- complete replacement.

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld(see **Connections by arc welding under shielding gas: Description**) (MR 400, 40C, Gas metal arc welded connections (GMAW)).

1- POSITION OF ELECTRIC EARTHS

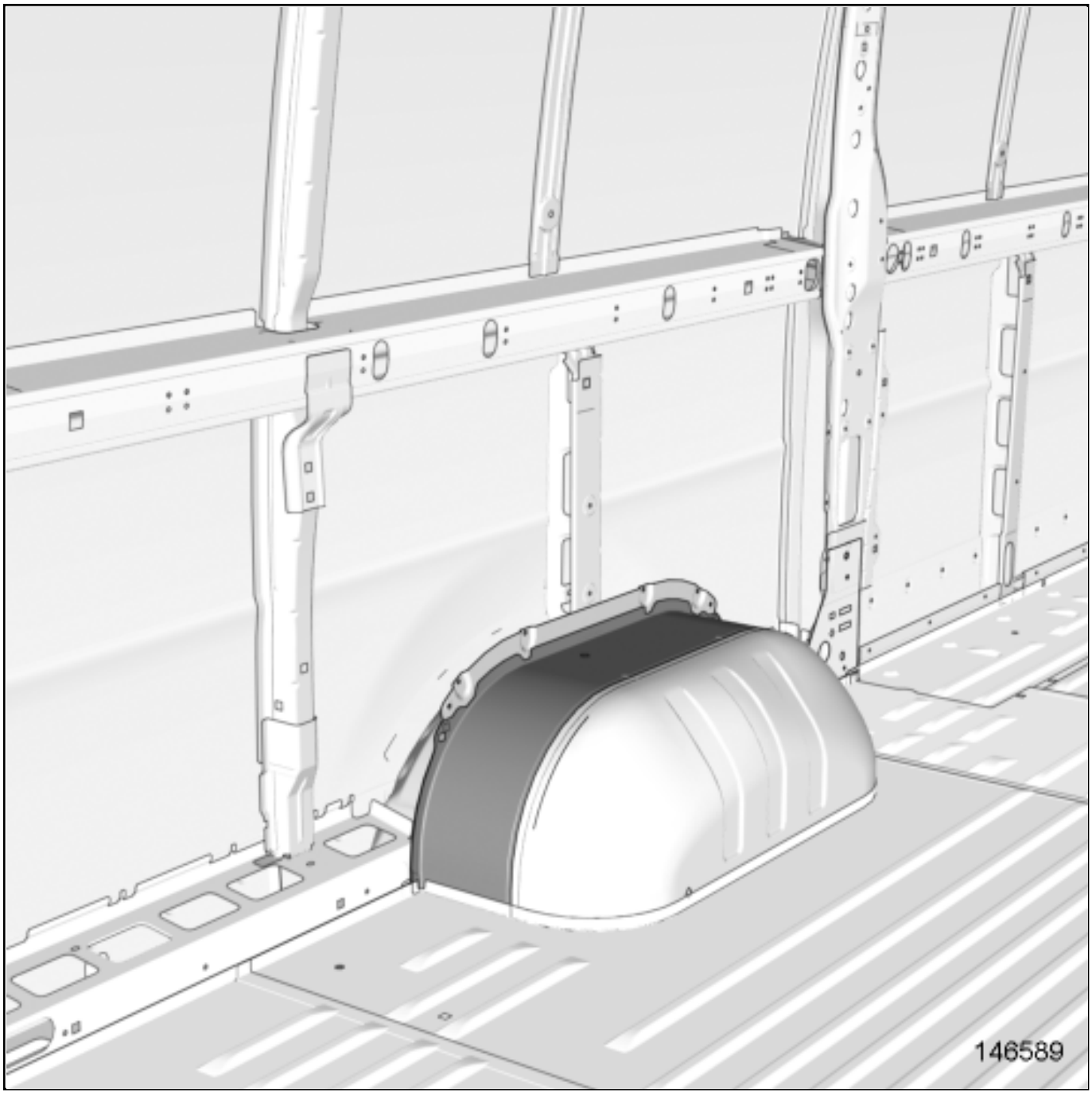
CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Earth screw connection: Description**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld areaAND (F62) F62.

2- COMPLETE REPLACEMENT


146589

REAR WHEEL HUB: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

WARNING

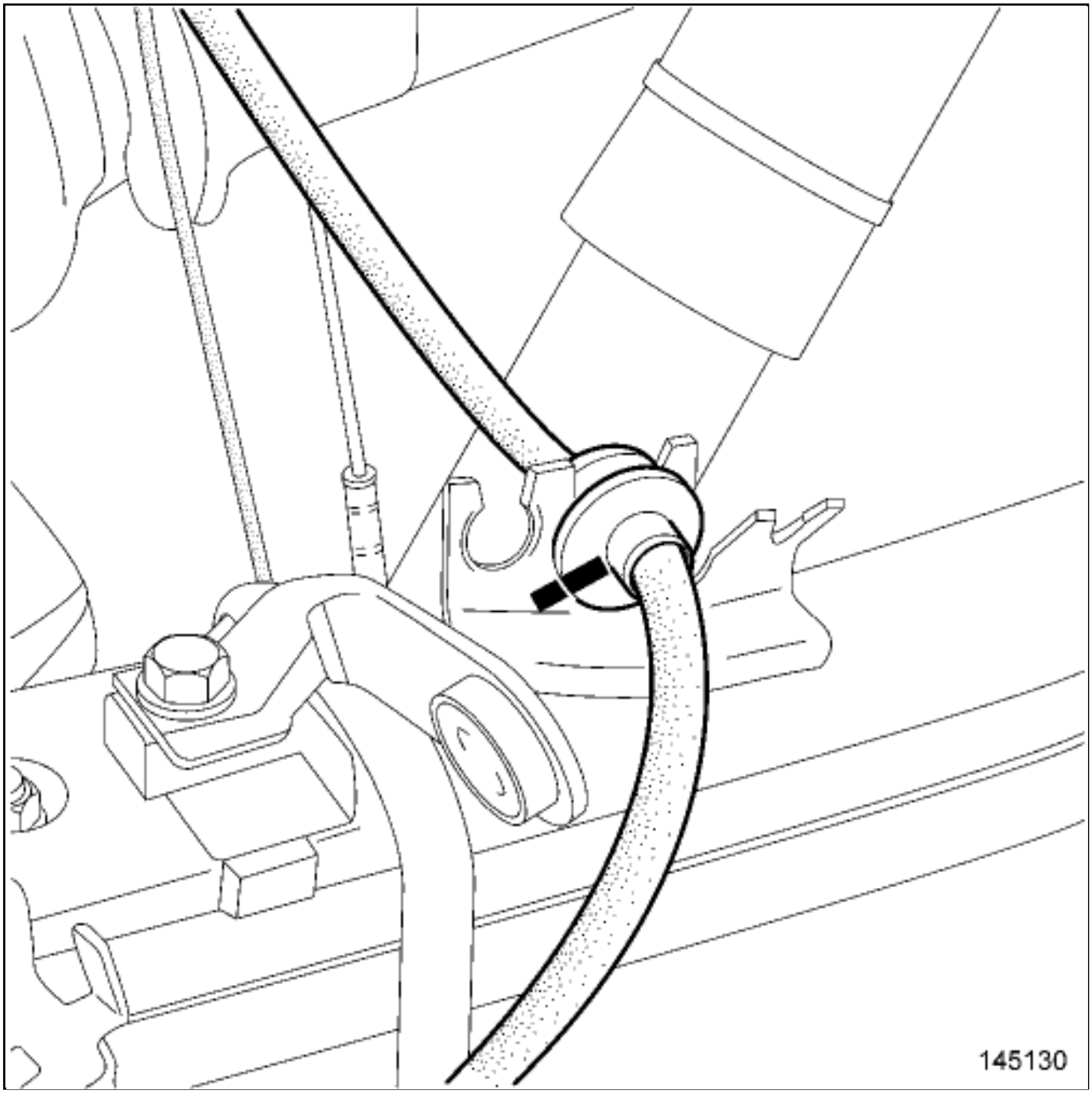
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

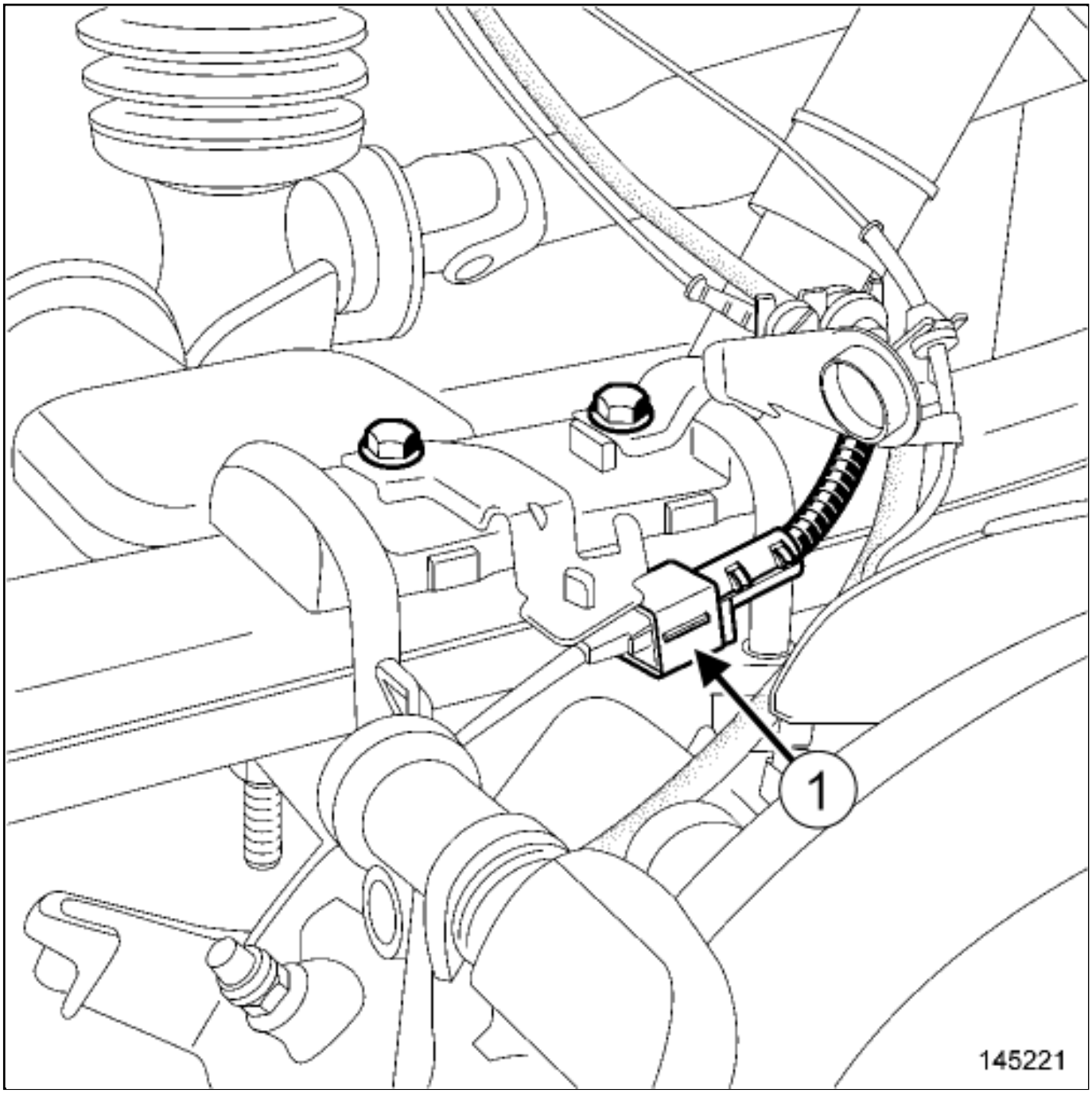
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

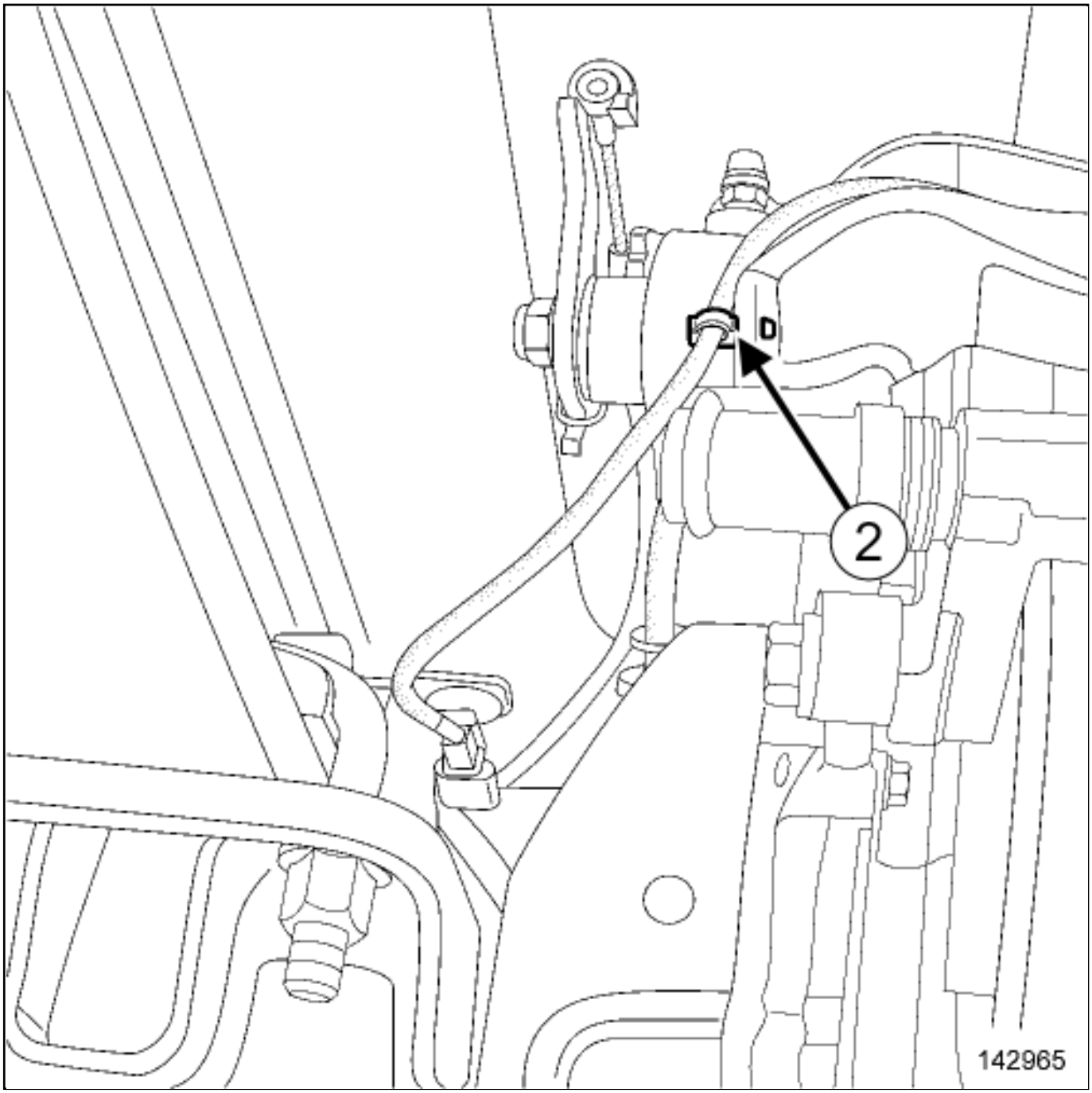
- Remove the rear wheelsWheel: Removal - Refitting .



- Mark the position of the rear brake hose cap on the rear axle using an indelible pencil.
- Unclip the rear brake hose cap from the rear axle.



- Disconnect the connector(1) from the rear brake pad wear warning light.



- Unclip the wiring of the rear brake pad wear warning light at(2) .

- Remove the rear brake calliper mounting bolts(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

- Move aside the "calliper mounting - brake calliper" assembly.

- Attach the "calliper mounting - brake calliper" assembly to the leaf springs.

- Remove the rear brake disc(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

2. REMOVAL OPERATION

- Remove (see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) :
  - the rear driveshaft,
  - the rear wheel hub equipped with the seal.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use SURFACE CLEANER Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean the rear hub.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Clip the rear brake hose cap onto the axle, aligning the marks made during removal.

REAR WHEEL HUB: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
indelible pencil

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

WARNING

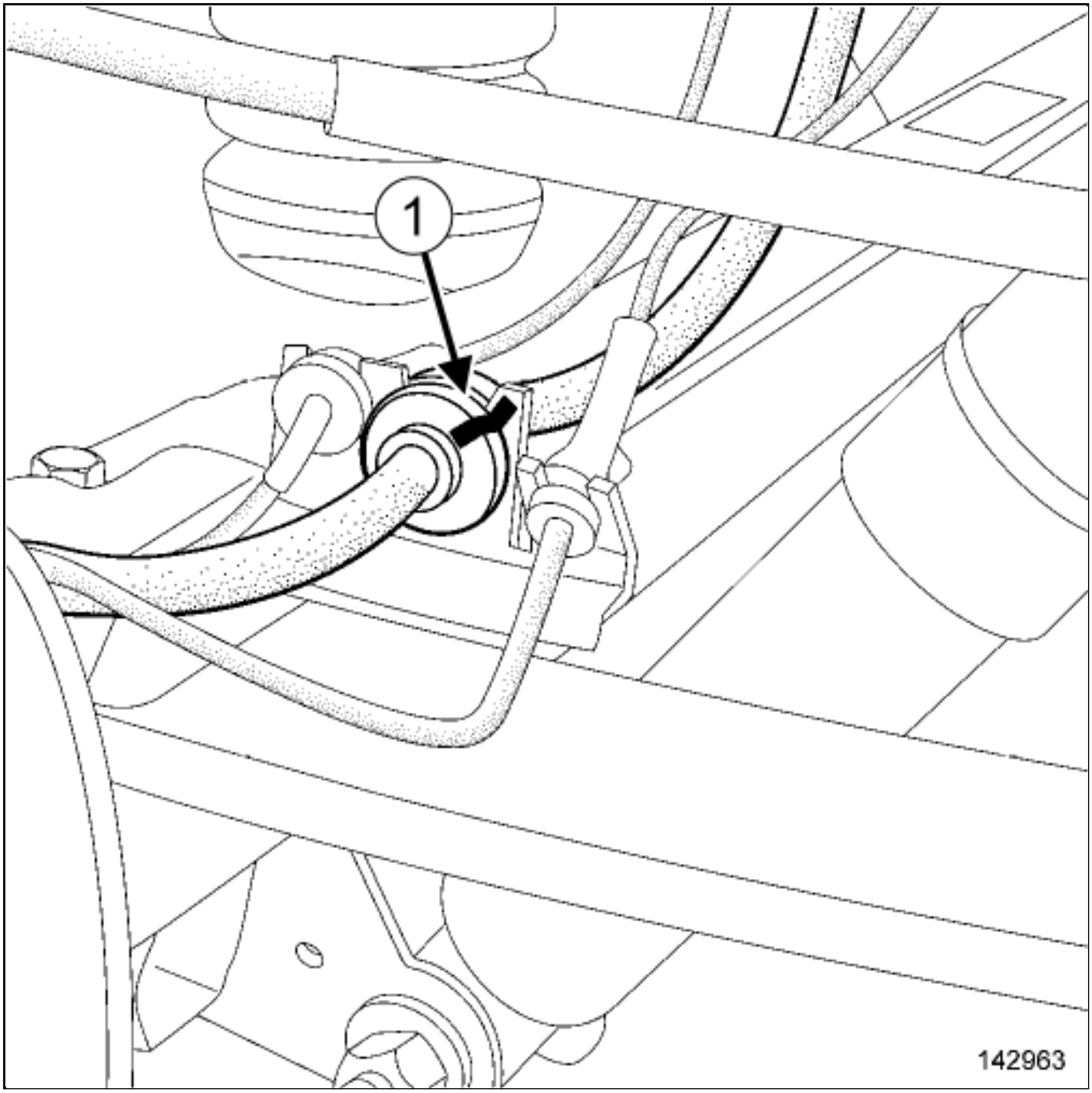
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

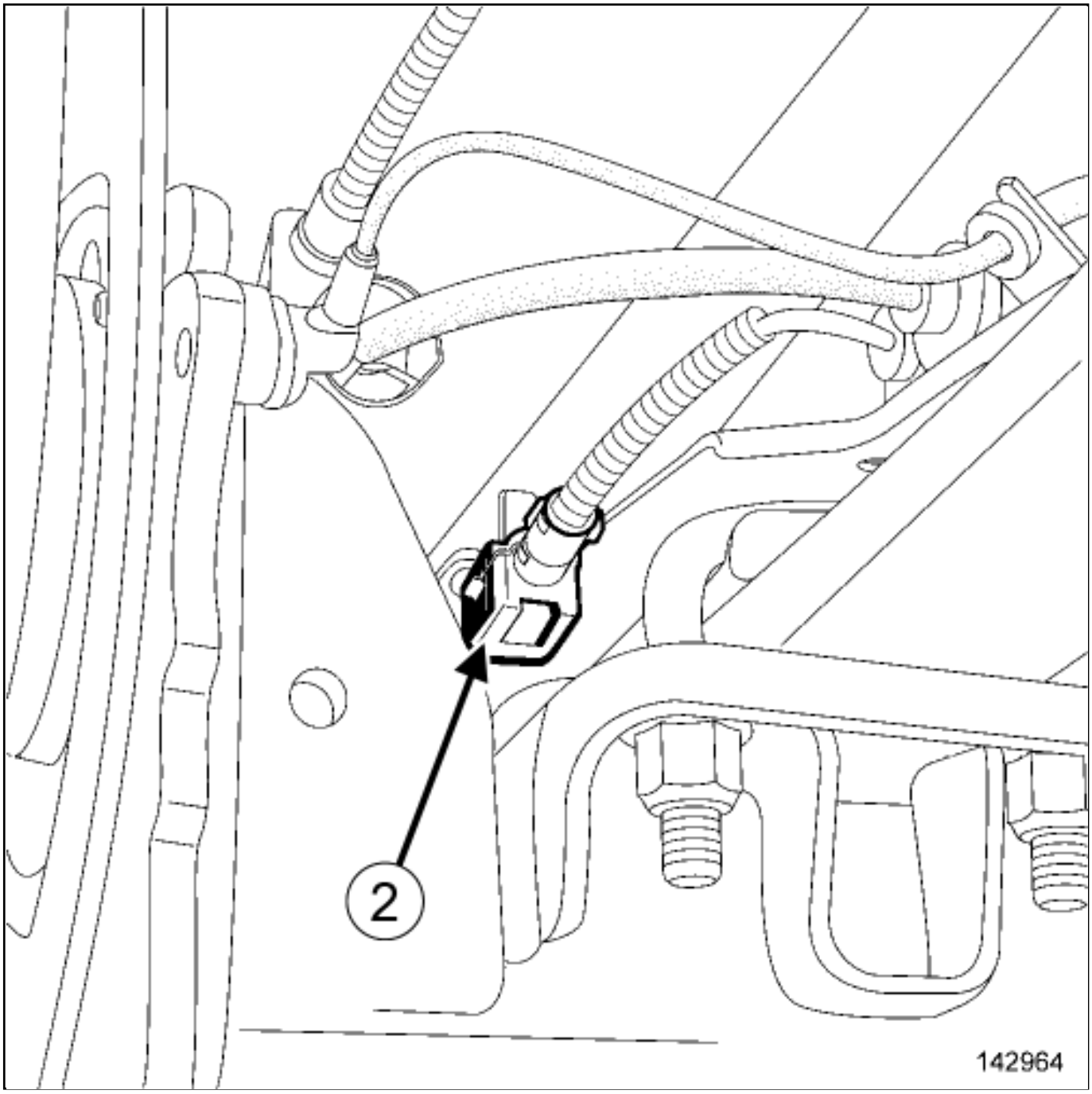
- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

- Remove the rear wheelsWheel: Removal - Refitting .

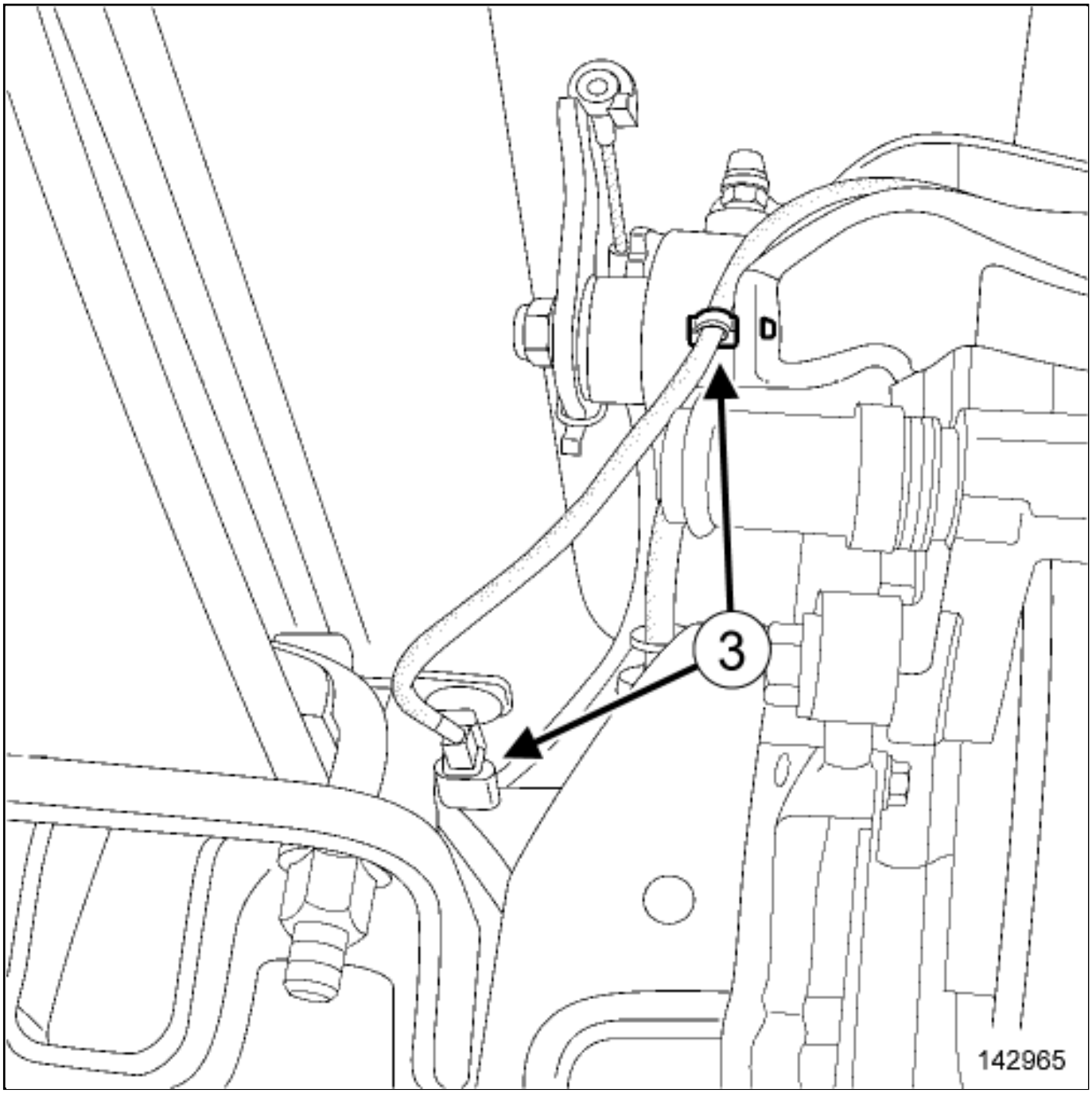


- Mark the position of the rear brake hose cap(1) on the rear axle using an indelible pencil.
- Unclip the rear brake hose cap(1) from the rear axle.

SPECIAL FEATURES OF THE RIGHT-HAND SIDE



- Disconnect the connector(2) from the rear brake pad wear warning light.



- Unclip the wiring of the rear brake pad wear warning light at(3) .

- Remove the rear brake calliper mounting bolts(see 33A, Rear axle components, Rear brake calliper assembly: Exploded view) .

- Move aside the "calliper mounting - brake calliper" assembly.

- Attach the "calliper mounting - brake calliper" assembly to the leaf springs.

- Remove the rear brake discs(see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) .

2. REMOVAL OPERATION

- Remove (see 33A, Rear axle components, Rear hub carrier assembly: Exploded view) :
  - the rear wheel hub cover plug,
  - the rear wheel hub nut,
  - the rear wheel hub.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use surface cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean the rear hub carrier.

2. REFITTING OPERATION

- Clip the rear brake hose cap onto the rear axle, aligning the marks made using an indelible pencil.
- Proceed in the reverse order to removal.

REAR WHEEL SPEED SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)Rear hub carrier assembly: Exploded view .

WARNING

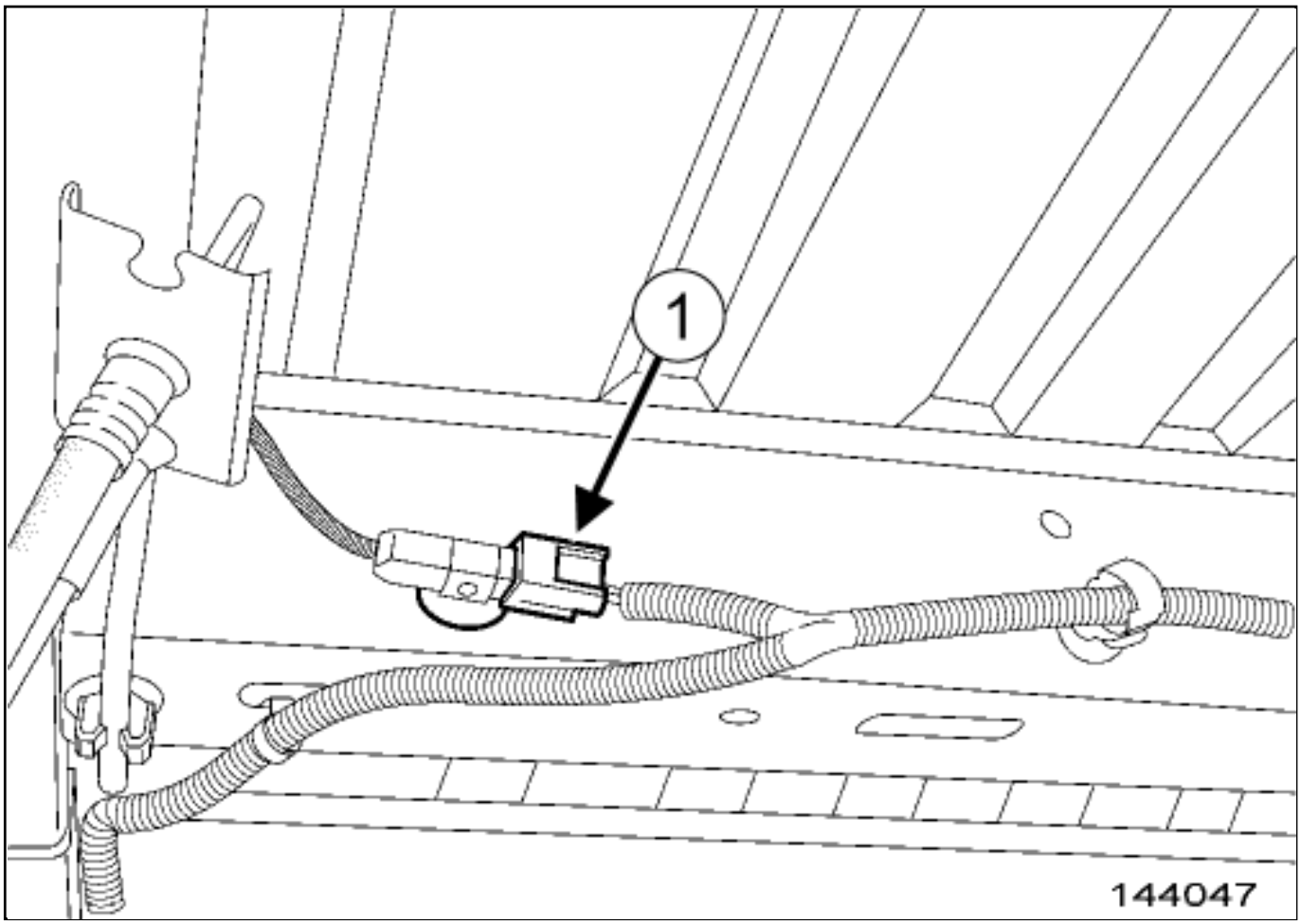
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 38C, Anti-lock braking system, ABS: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

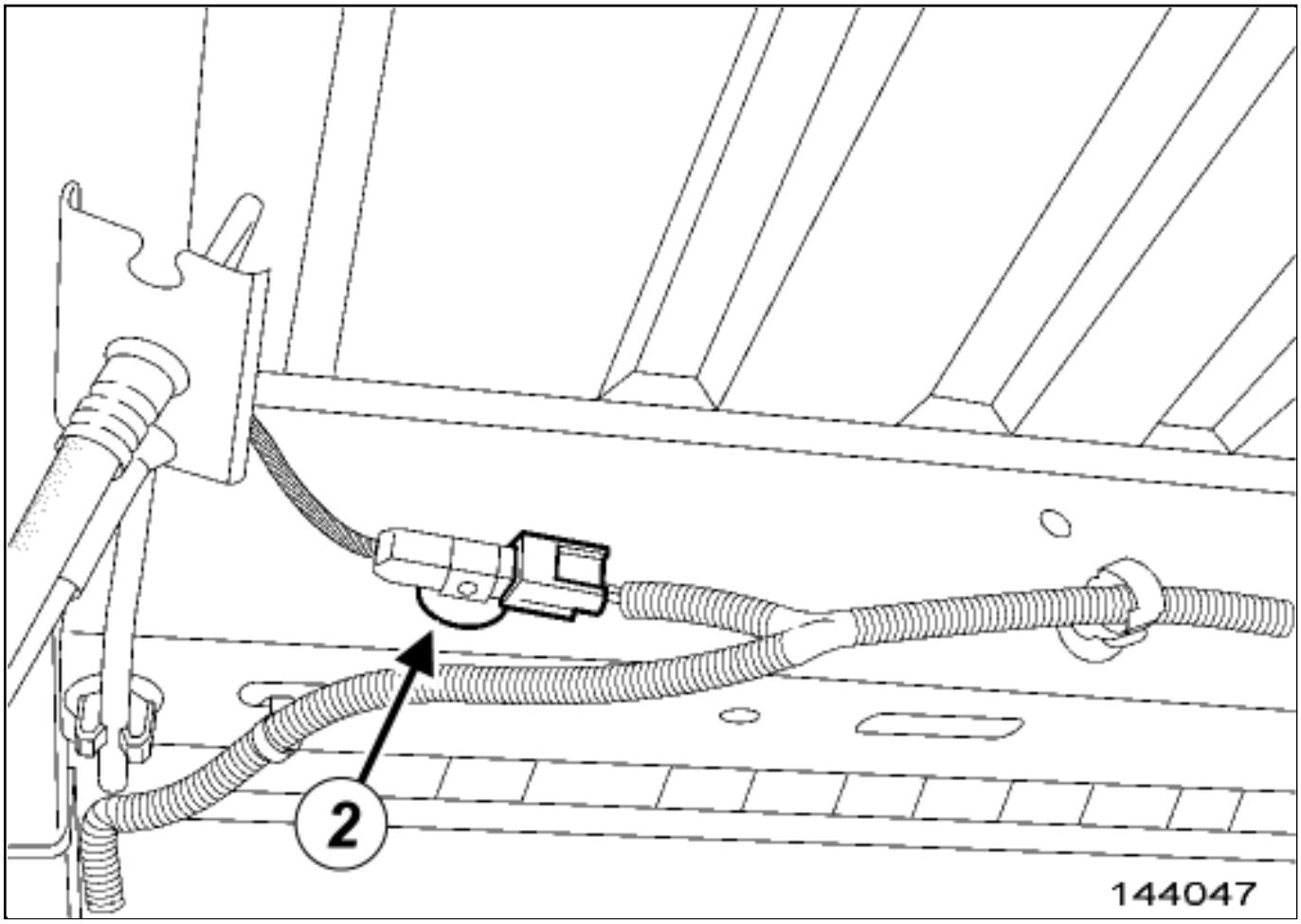
1. REMOVAL PREPARATION OPERATION

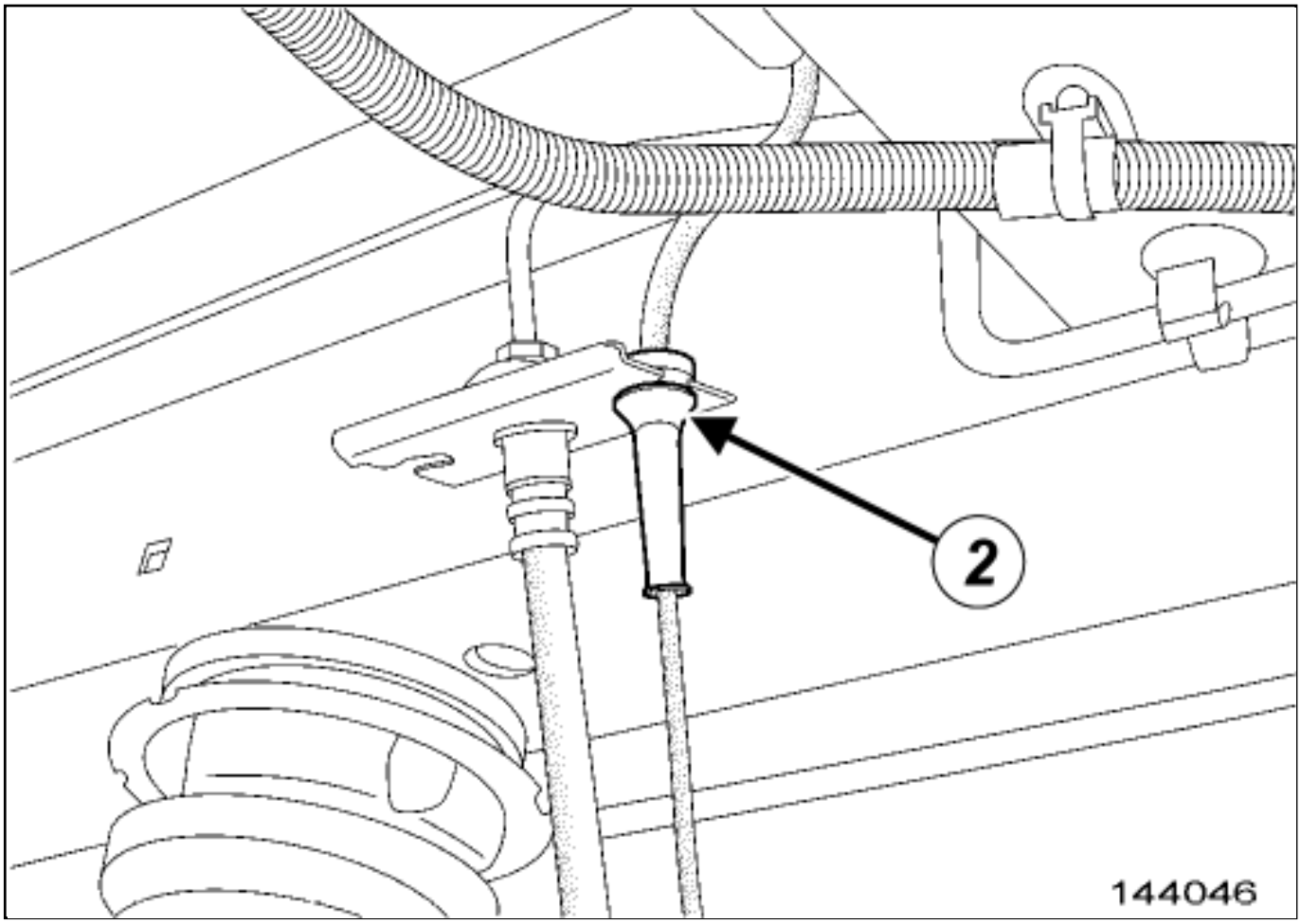
- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

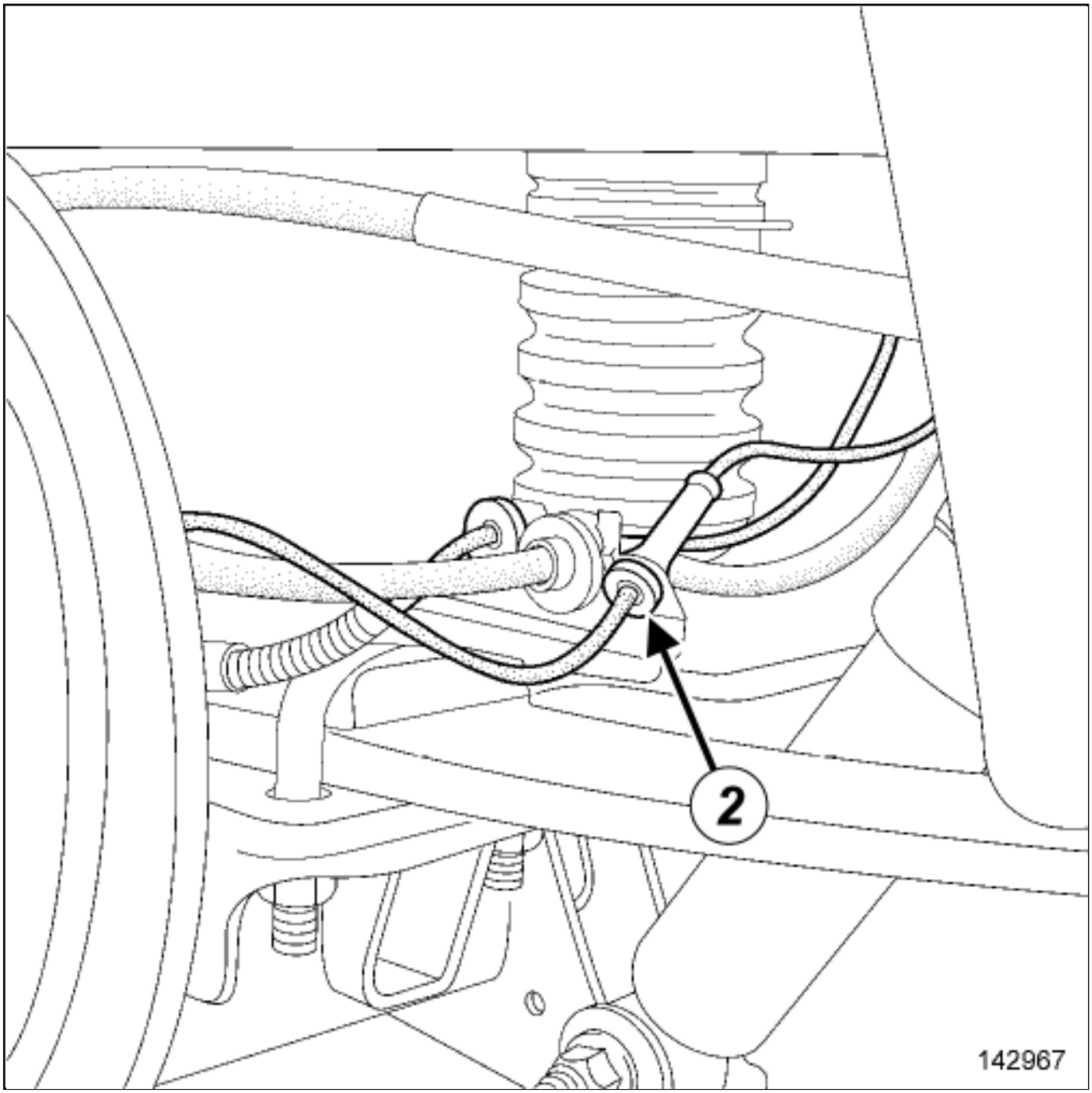
2. REMOVAL OPERATION



- Disconnect the connector(1) from the rear wheel speed sensor.


2
144047


2
144046



Unclip the wiring from the wheel speed sensor at(2) .

Remove Rear hub carrier assembly: Exploded view :

- the rear wheel speed sensor bolt,
- the rear wheel speed sensor.

REFITTING

Proceed in the reverse order to removal.

CAUTION

To avoid damaging the wheel speed sensor cable:

- Do not tension the cable,
- Do not twist the cable,
- Check that there is no contact with the surrounding components,
- Do not use tools that may damage the cable.

Repair-13x03x10x04-01x37-1-10-1.xml

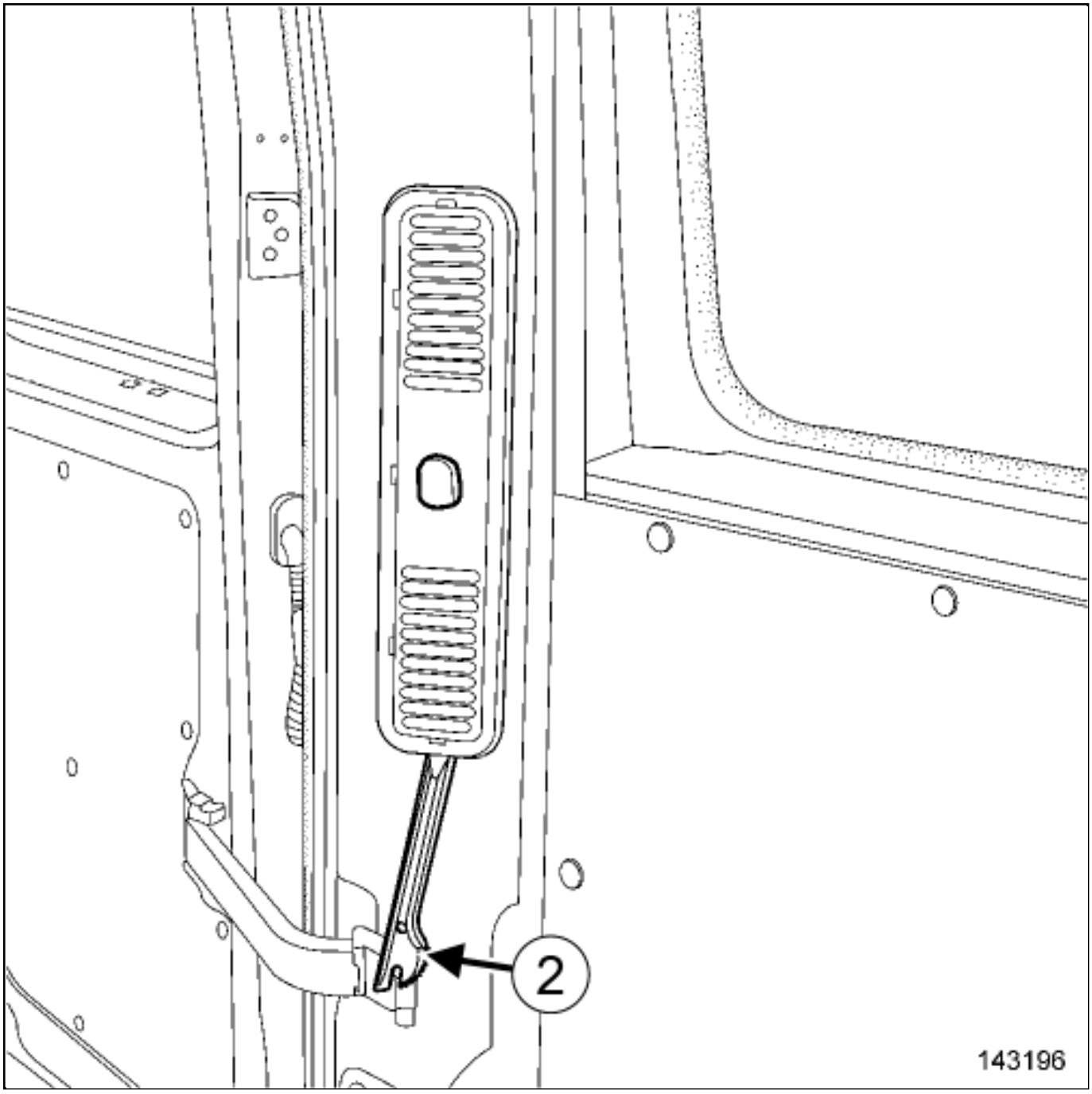
XSL version : 3.02 du 22/07/11

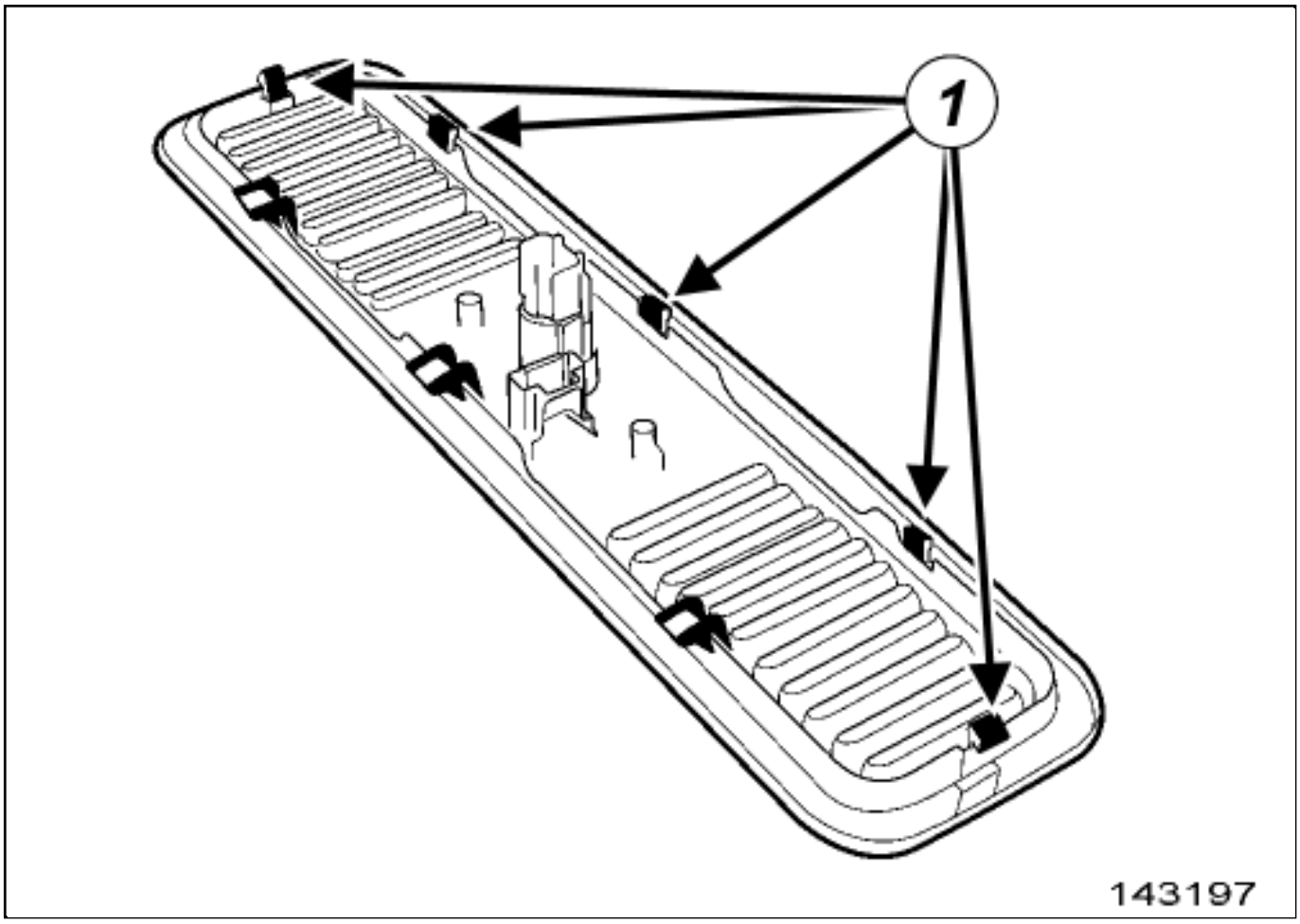
REAR WING LIGHT: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

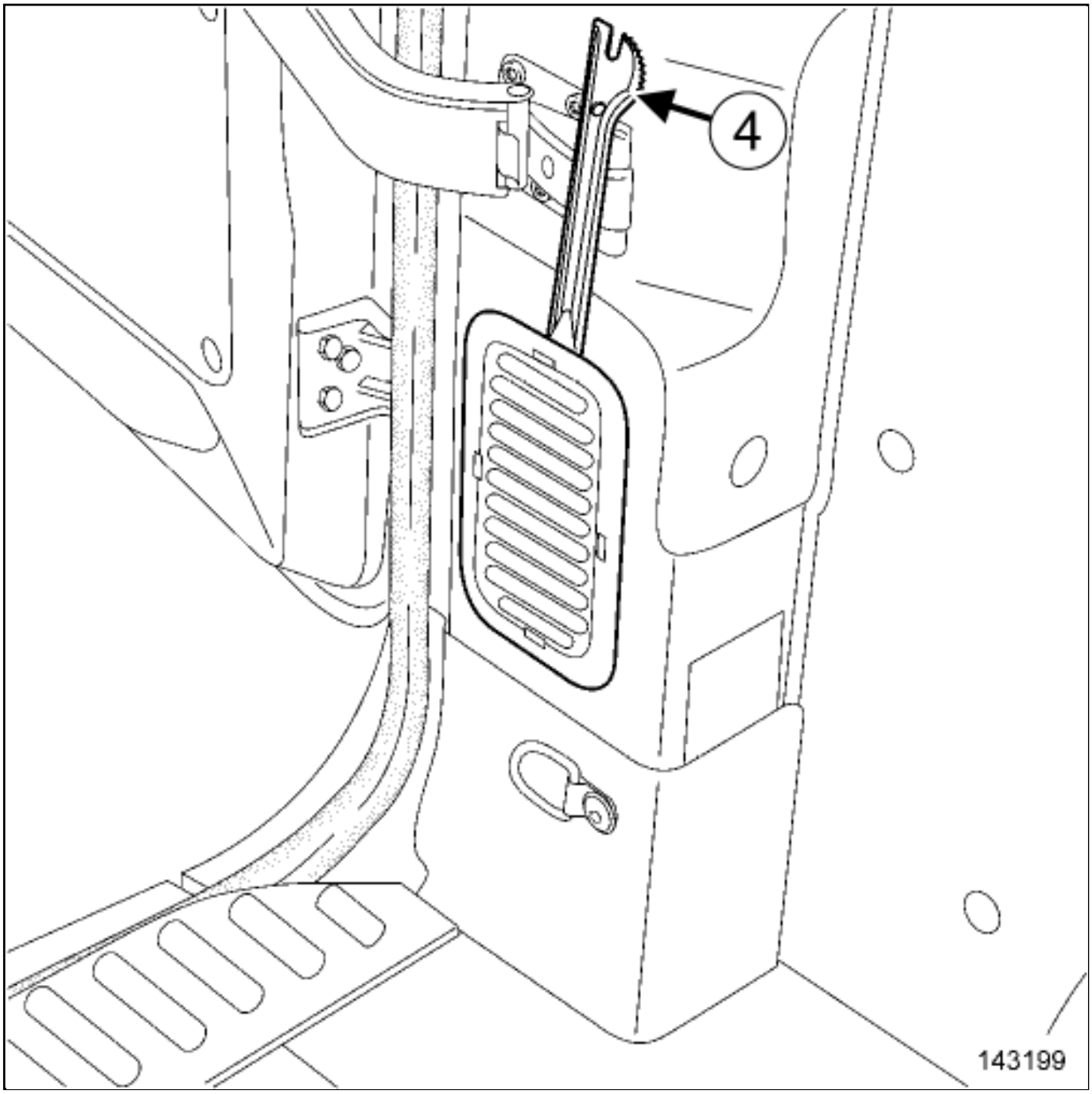
1. REMOVAL PREPARATION OPERATION

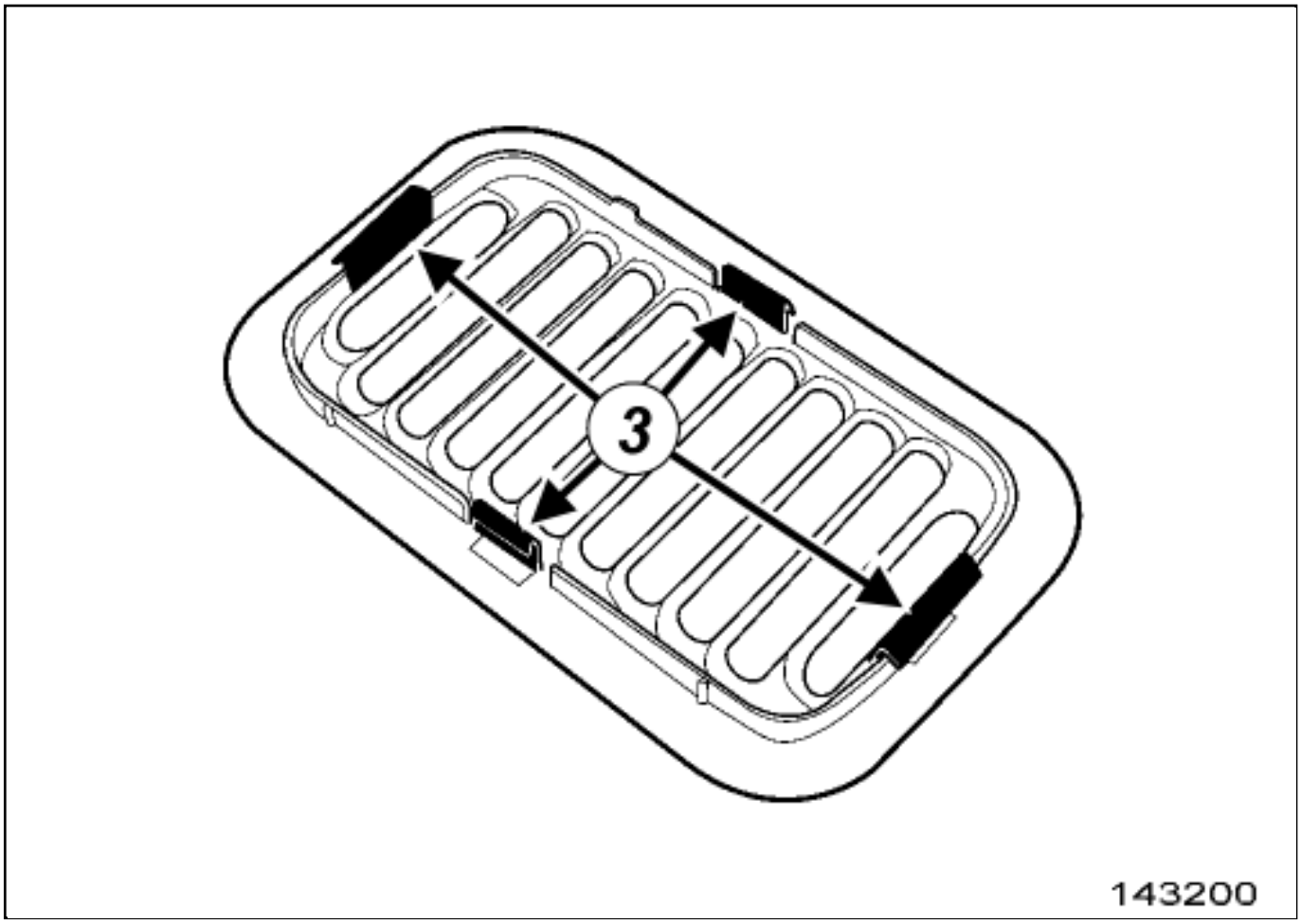




- Unclip the upper grille to access the rear wing light by pressing on the clips(1) using the toolSet of trim removal levers.(Car. 1363) (2) .

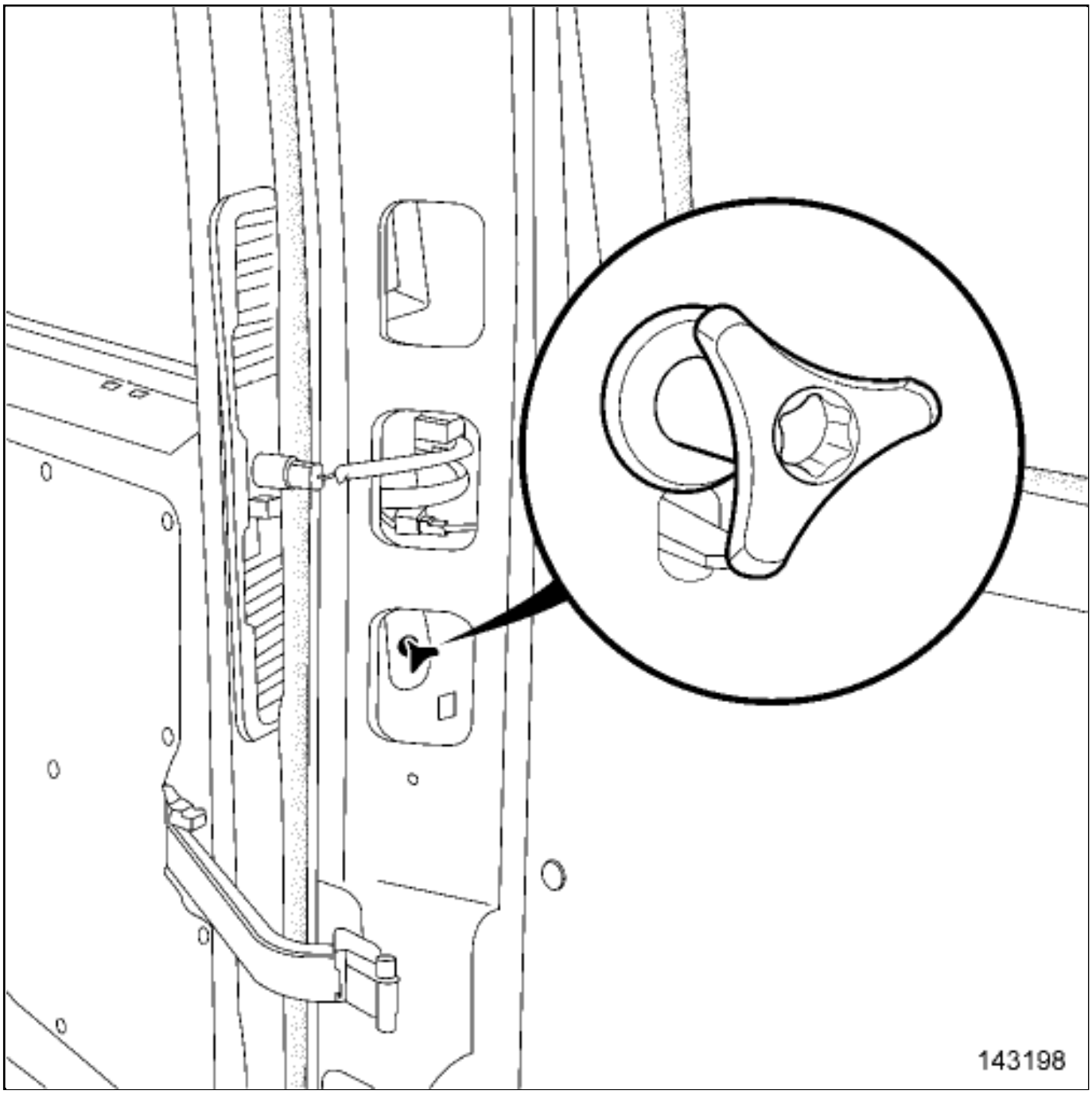
- Separate the upper grille to access the rear wing light.


4
143199

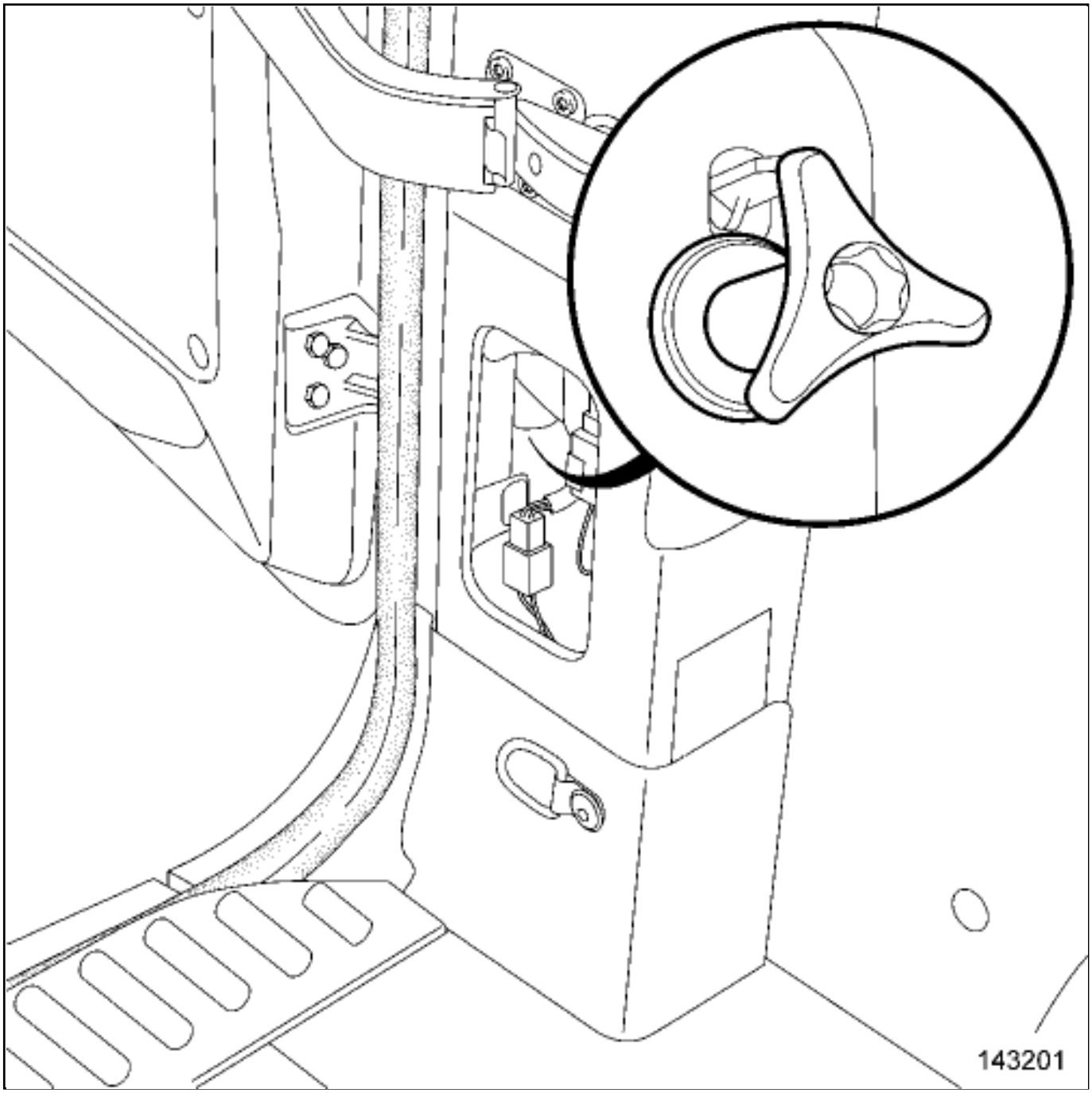


Remove the lower grille to access the rear wing light by pressing on the clips(3) using the tool Set of trim removal levers.(Car. 1363) (4) .

2. REMOVAL OPERATION



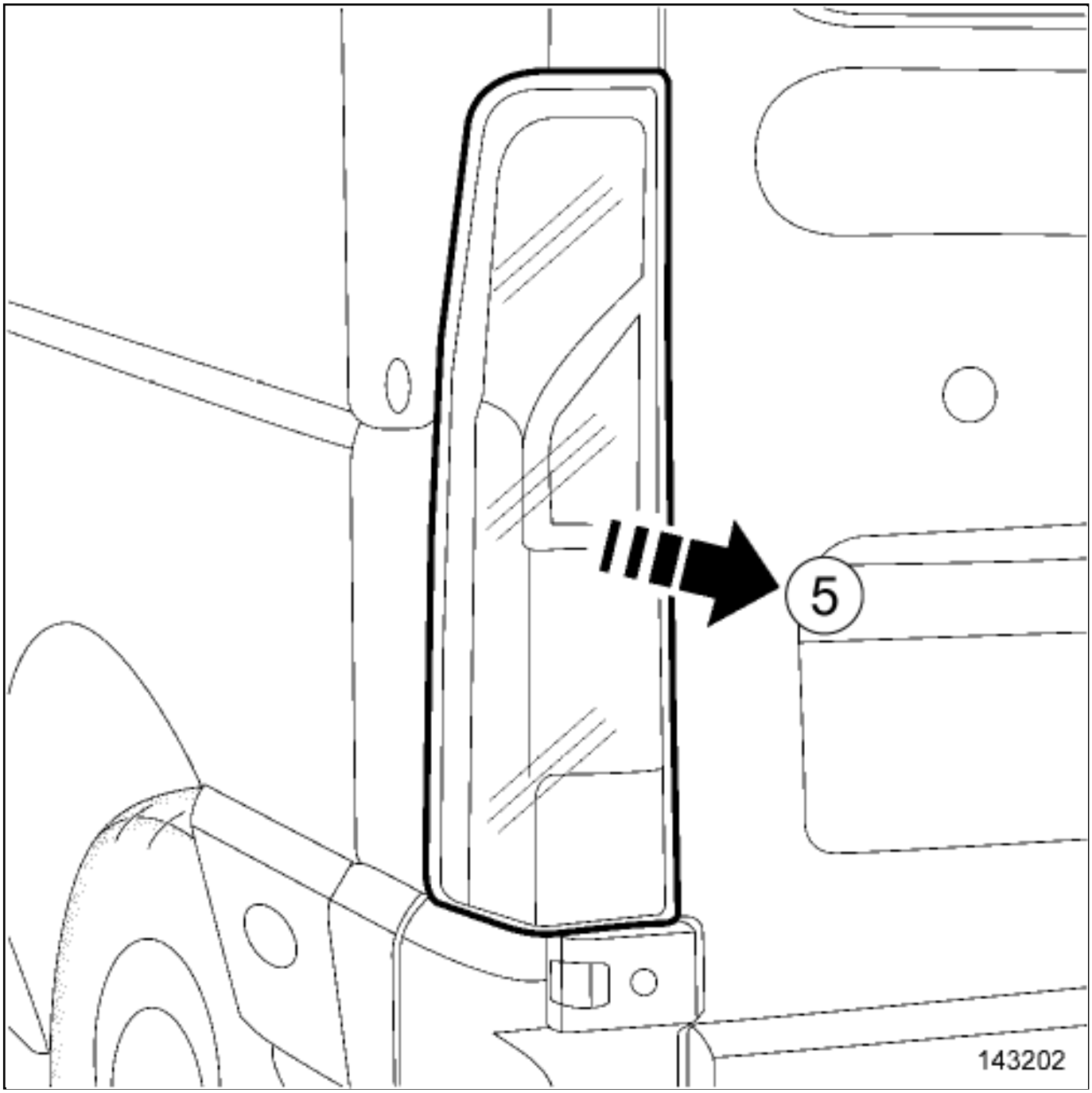
Remove the upper butterfly nut of the rear wing light.



Remove the lower butterfly nut of the rear wing light.

Note:

When extracting the rear light on the body wing, the loading door must be closed.



- Partially remove the rear wing light at(5) .
- Disconnect the connector from the rear light on the wing.
- Remove the rear light on the wing.

REFITTING

Proceed in the reverse order to refitting.

Repair-80x02x06x02-01x37-1-36-1.xml

XSL version : 3.02 du 22/07/11

RECIRCULATION MOTOR: REMOVAL - REFITTING

Equipment required
Diagnostic tool

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the gloveboxGlovebox: Removal - Refitting (57A, Interior equipment).

2. REMOVAL OPERATION

- Disconnect the recirculation motor connector.
- Remove the recirculation motor(see 61A, Heating, Passenger compartment heating and ventilation assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Place the recirculation flap in the open position.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.
- Apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Climate control computer" ,
  - go to repair mode,

- display the "before/after repair procedure" for the computer selected,
- select "Air recirculation flap actuator" in the "List of components controlled by this computer" section,
- carry out the operations described in the "After repair procedure" section.

REFRIGERANT CIRCUIT: DRAINING - FILLING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool
refrigerant charging station

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

WARNING

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair**(see 62A, Air conditioning, Air conditioning: Precautions for the repair)** .

CAUTION

Consult the device's operating manual to avoid incorrect use.

CAUTION

To avoid damaging the cold loop components (corrosions, etc.), do not use dye if the traces reveal that some product has already been injected.

Note:

A summary table gives the quantities of refrigerant in the system according to the engine type (see 62A, Air conditioning, Air conditioning: Parts and consumables for the repair) .

1. RECOVERING REFRIGERANT FLUID

Note:

- If the air conditioning circuit is fitted with a single filler valve, some filling equipment only requires the use of the high pressure pipe (refer to the filling station instructions).
- Depending on the situation, run the system for a few minutes before recovering the coolant to improve drainage.

Note:

It is essential to follow these procedures to prevent:

- gas escaping when the circuit is opened,

- pollution of the environment through the release of gas into the atmosphere when the circuit is opened or when a vacuum is created.

When draining or checking the refrigerant fill load, three scenarios are to be taken into account:

- the engine is running and the air conditioning is in operation (A),
- the engine is running but the air conditioning is not in operation (B),
- the engine is not running nor is the air conditioning in operation (C).

Scenario A:

- Operate the air conditioning until the cooling fan assembly is triggered twice,
- Switch off the engine,
- drain for the first time (note down the original value),
- wait 15 minutes,
- check that the relative pressure is no more than 0 bar,
- repeat the cycles until the relative pressure is equal to or less than 0 bar,
- add together the values of the various draining operations; the fill is confirmed as being correct if the volume of refrigerant fluid is the specified fill +35g or -100g.

Scenario B:

- run the engine until the cooling fan is triggered twice,
- Switch off the engine,
- drain for the first time (note down the value),

- wait 15 minutes,
- run the engine until the cooling fan is triggered twice,
- Switch off the engine,
- drain for the second time (note down the value),
- repeat the cycles until the relative pressure is equal to or less than 0 bar,
- add together the values of the various draining operations; the fill is confirmed as being correct if the volume of refrigerant fluid is the specified fill +35gor -100g.

Scenario C:

- drain for the first time (note down the value),
- wait 2 hours,
- repeat the cycles until the relative pressure is equal to or less than 0 bar,
- add together the values of the various draining operations; the fill is confirmed as being correct if the volume of refrigerant fluid is the specified fill +35gor -100g.

2. CREATING A VACUUM

It is essential to carry out vacuum extraction correctly before loading, otherwise the air conditioning will not work properly.

There are two scenarios to consider:

- vacuum created immediately after discharge (scenario A),
- vacuum created after an interval of several hours or days (scenario B).

Scenario A:

- creation of a vacuum takes 20 minutes.

Scenario B:

- creation of a vacuum takes 45 minutesto eliminate any trace of moisture.

Test the seal once the vacuum has been created (some stations do this automatically).

3. FILLING

Fill up the refrigerant circuit using the refrigerant charging station.

Top up the oil with the recommended type and volume of oil and refrigerant, depending on the work carried out **(see 62A, Air conditioning, Air conditioning: Parts and consumables for the repair)** .

Check there are no leaks using the electronic detector**(see 62A, Air conditioning, Refrigerant circuit: Check)** .

CAUTION

After injecting dye into the refrigerant, be sure to indicate this on a label (supplied with the dye capsule), and the date of the operation.

Position the label so it is visible near to the cold loop filler valve.

- Check that the air conditioning system is operating correctly(see 62A, Air conditioning, Air conditioning: Check) .

REFRIGERANT PIPE SEAL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

Equipment required
refrigerant charging station

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 62A, Air conditioning, Air conditioning: Precautions for the repair)
- Vehicle: Precautions for the repair .

REMOVAL

1. REMOVAL PREPARATION OPERATION

Drain the refrigerant circuit using the refrigerant charging station(see 62A, Air conditioning, Refrigerant circuit: Draining - Filling) .

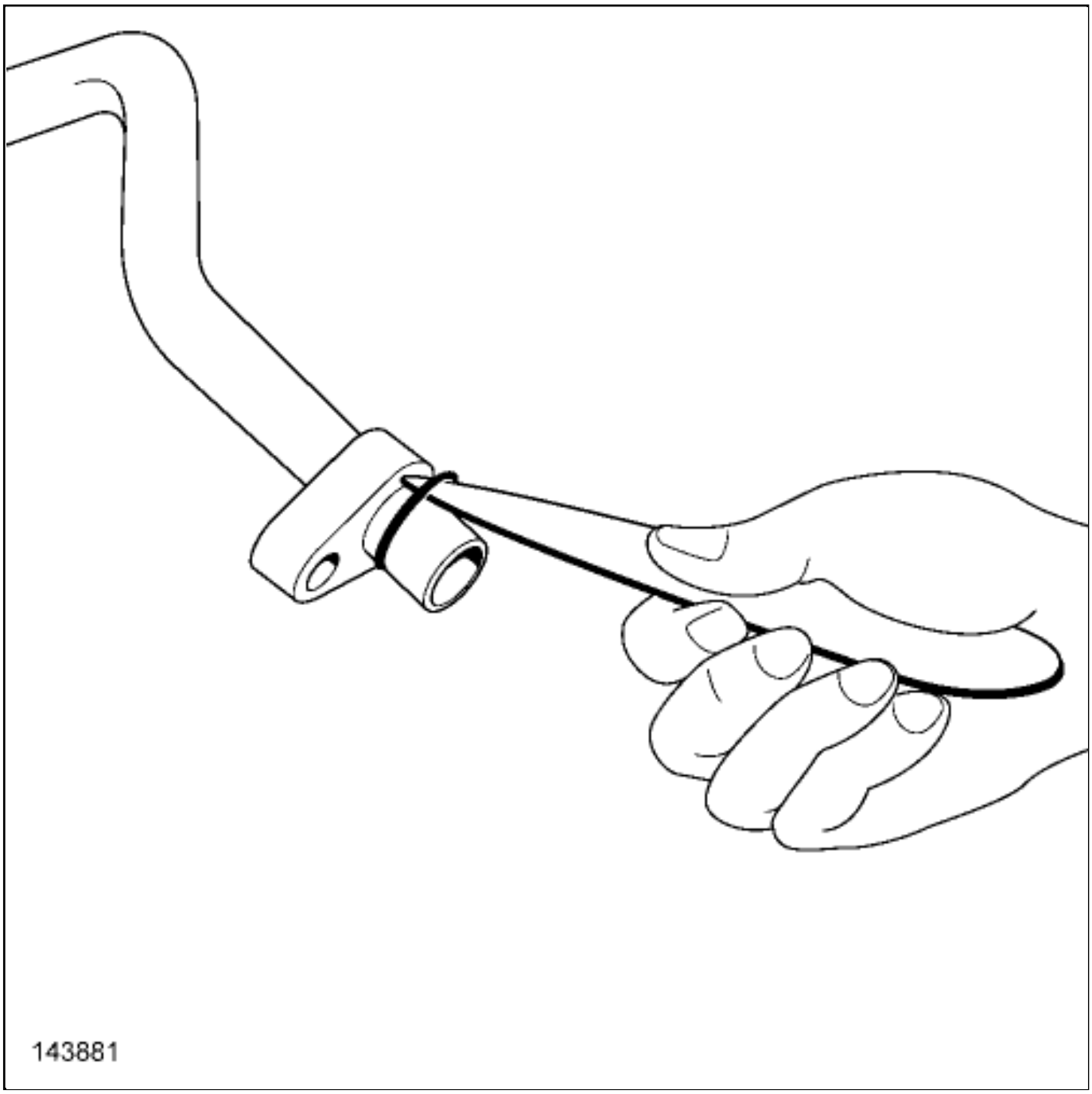
Disconnect the batteryBattery: Removal - Refitting .

Remove the connecting pipe concerned:

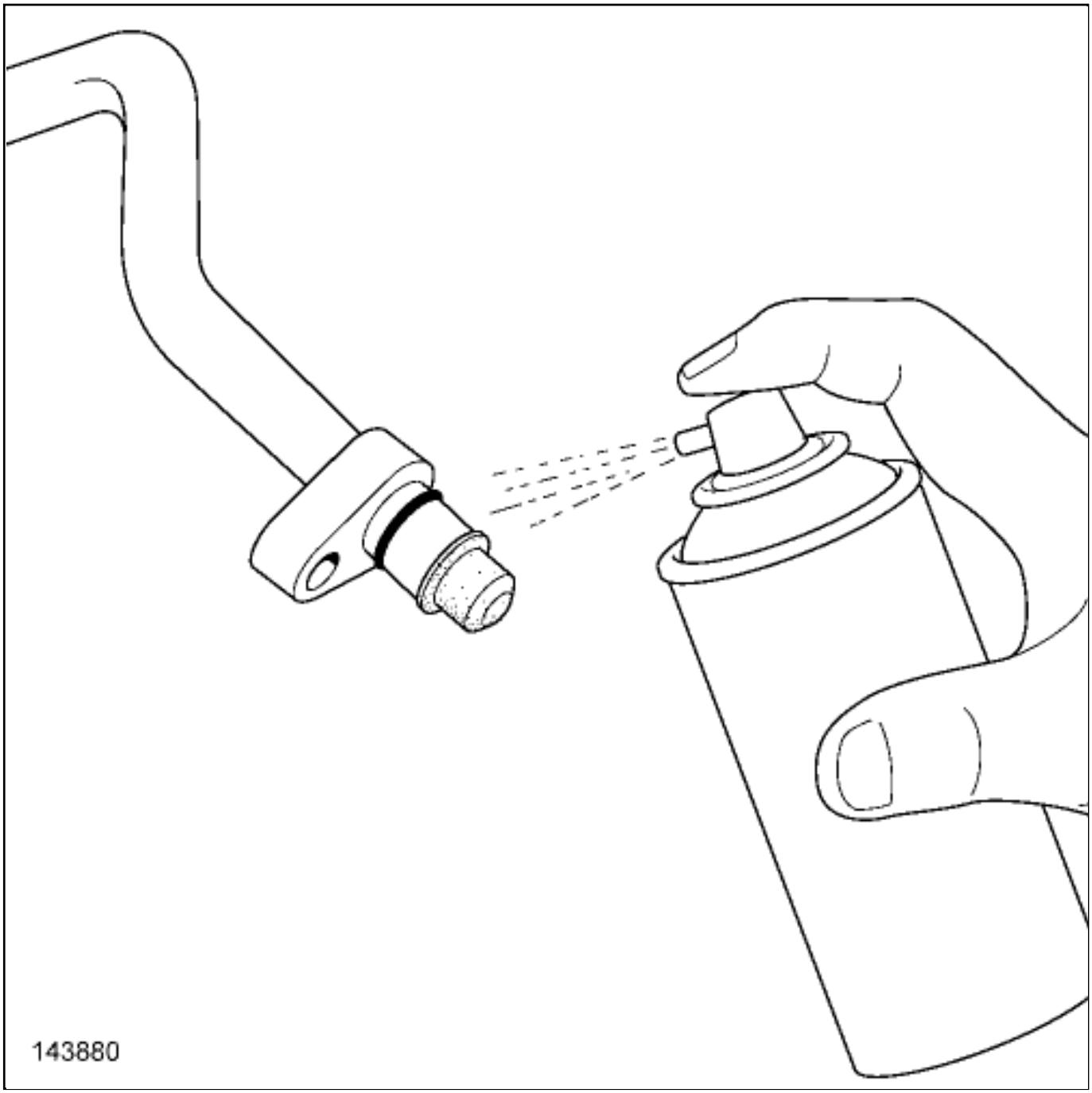
- (see **Condenser - evaporator connecting pipe: Removal - Refitting**)
- (see 62A, Air conditioning, Condenser - expansion valve connecting pipe: Removal - Refitting)

- (see 62A, Air conditioning, Rear condenser - front condenser connecting pipe: Removal - Refitting)
- (see **Evaporator - dehydrator reservoir connecting pipe: Removal - Refitting**)
- (see 62A, Air conditioning, Compressor - rear condenser connecting pipe: Removal - Refitting)
- (see **Condenser - evaporator connecting pipe: Removal - Refitting**)
- (see **Compressor - dehydrator reservoir connecting pipe: Removal - Refitting**)
- (see **Dehydrator reservoir - rear expansion valve connecting pipe: Removal - Refitting**)
- (see **Main expansion valve - additional expansion valve pipe: Removal - Refitting**)
- (see 62A, Air conditioning, Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting)
- (see **Dehydrator reservoir - expansion valve connecting pipe: Removal - Refitting**)
- (see **Condenser - dehydrator reservoir connecting pipe: Removal - Refitting**)
- (see **Expansion valve - compressor connecting pipe: Removal - Refitting**)
- (see 62A, Air conditioning, Expansion valve - rear expansion valve connecting pipe: Removal - Refitting)
- (see **Rear expansion valve - compressor connecting pipe: Removal - Refitting**)
- (see 62A, Air conditioning, Compressor - condenser connecting pipe: Removal - Refitting)
- (see 62A, Air conditioning, Compressor - intermediate pipe connecting pipe: Removal - Refitting)

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the seal from the connecting pipe using the toolSet of trim removal levers.(Car. 1363) .
- Fit blanking plugs.



- Clean the surface of the pipe(see 62A, Air conditioning, Refrigerant circuit pipe seal: Cleaning) .

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

- Refit the seal on the connecting pipe.

2. FINAL OPERATION

- Proceed in the reverse order to removal.

Note:

A summary table gives the quantities of refrigerant in the system according to the engine types **(see 62A, Air conditioning, Air conditioning: Parts and consumables for the repair)** .

- Connect the battery **Battery: Removal - Refitting** .

- Perform the following operations:
  - refill the refrigerant circuit using the refrigerant charging station **(see 62A, Air conditioning, Refrigerant circuit: Draining - Filling)** ,
  - check for leaks **(see 62A, Air conditioning, Refrigerant circuit: Check)** .

- Check that the air conditioning system is operating correctly **(see 62A, Air conditioning, Air conditioning: Check)** .

Repair-30x02x02x52-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

REMOTE HEADLIGHT BEAM ADJUSTMENT ACTUATOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

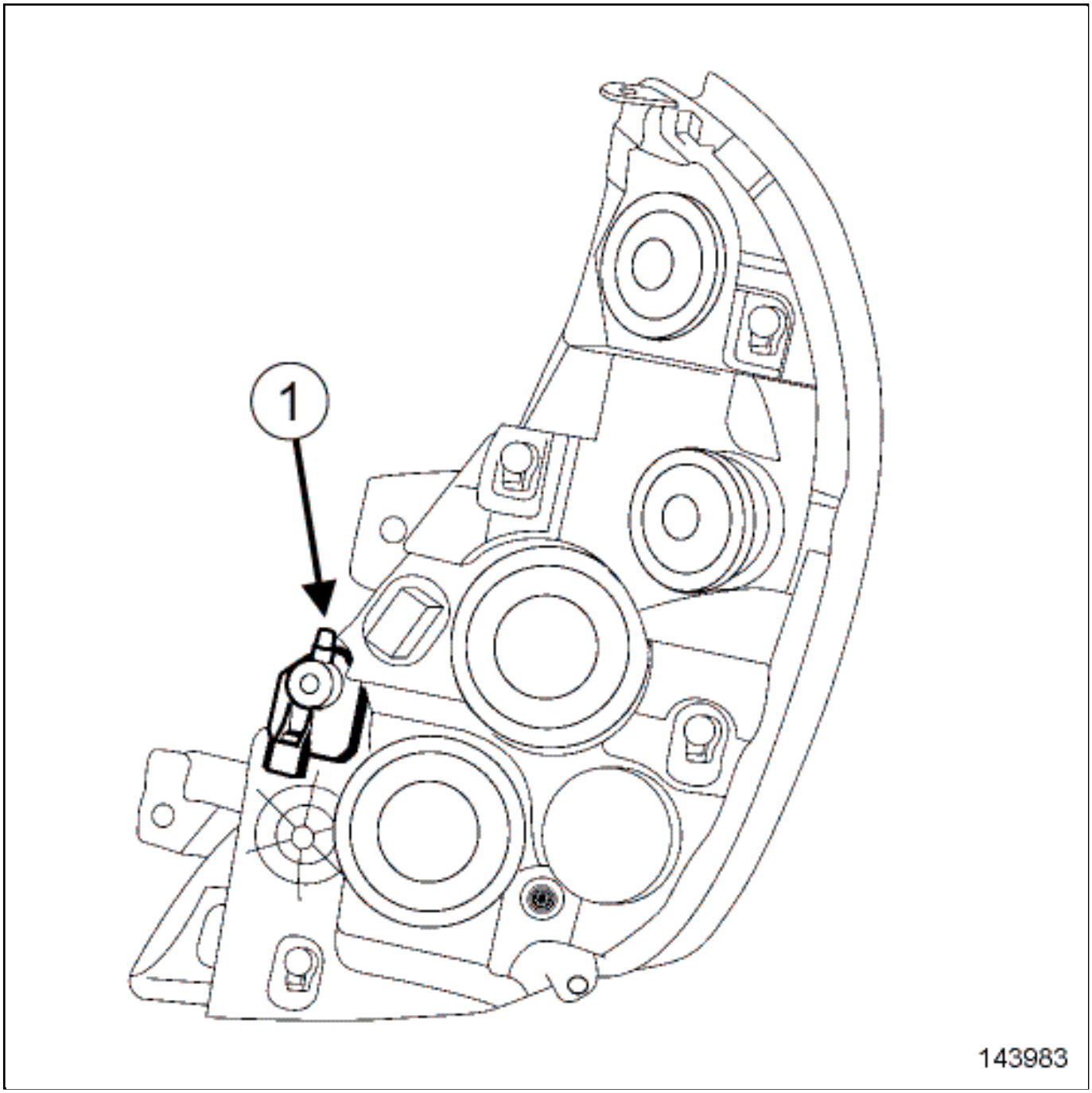
WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. OPERATION FOR REMOVAL OF PART CONCERNED

- Disconnect the headlight beam adjustment actuator connector.



- Tighten the beam adjustment bolt(1) by a few turns.

- Turn the headlight beam adjustment actuator an eighth of a turn clockwise.

- Disconnect the ball joint from the headlight reflector shell clip by gently tilting the headlight beam adjustment actuator upwards.

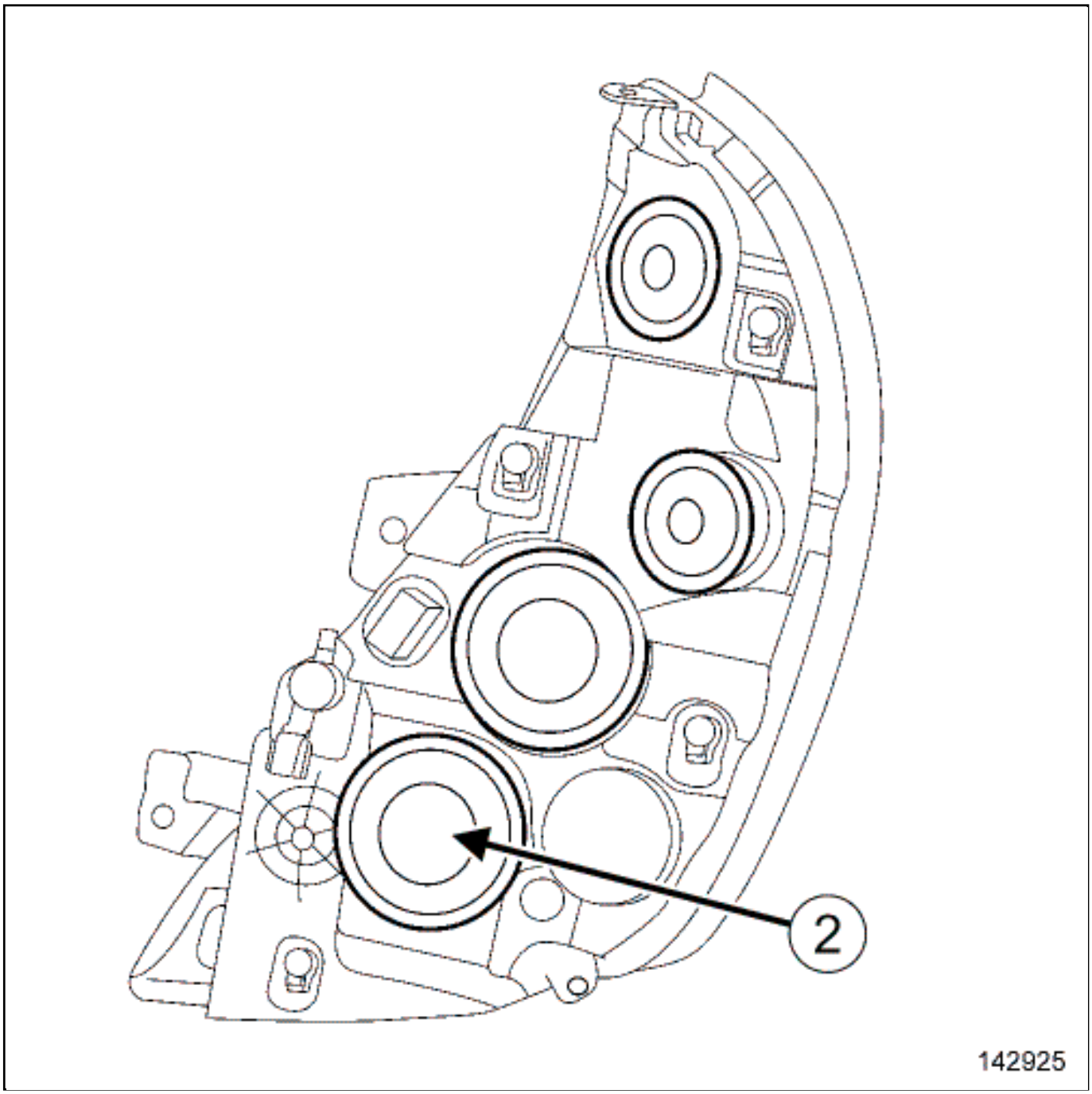
REFITTING

1. REFITTING PREPARATION OPERATION

Note:

When refitting a new headlight beam adjustment motor, tighten the beam adjustment bolt by a few turns.

2. REFITTING OPERATION FOR PART CONCERNED



- Remove the cover(2) of the dipped beam headlight bulb.

- Keep the reflector shell towards the rear of the lens unit.

- Connect the ball joint with the headlight reflector shell clip by gently tilting the headlight beam adjustment actuator downwards.

Note:

The ball joint should not just be in contact with the clip; it must be fitted into it.

- Refit the headlight beam adjustment actuator by turning it an eighth of a turn anti-clockwise.

- Refit the dipped beam headlight bulb cover.

- Connect the headlight beam adjustment motor connector.

- Check and inflate the tyresTyre pressure: Identification (35A, Wheels and tyres).

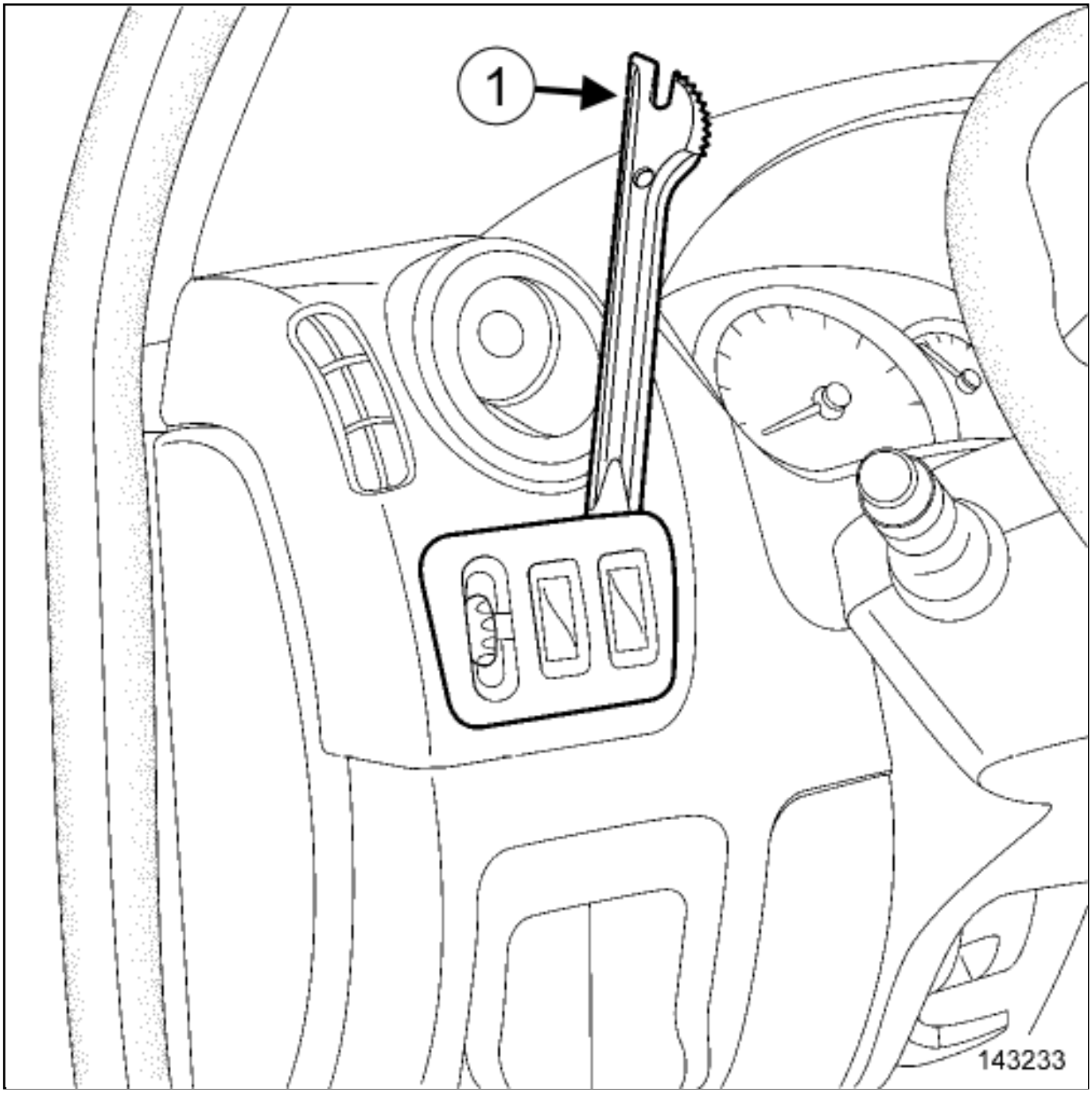
- Adjust the headlight beam(see 80B, Headlights, Headlight: Adjustment) .

REMOTE HEADLIGHT BEAM ADJUSTMENT CONTROL: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

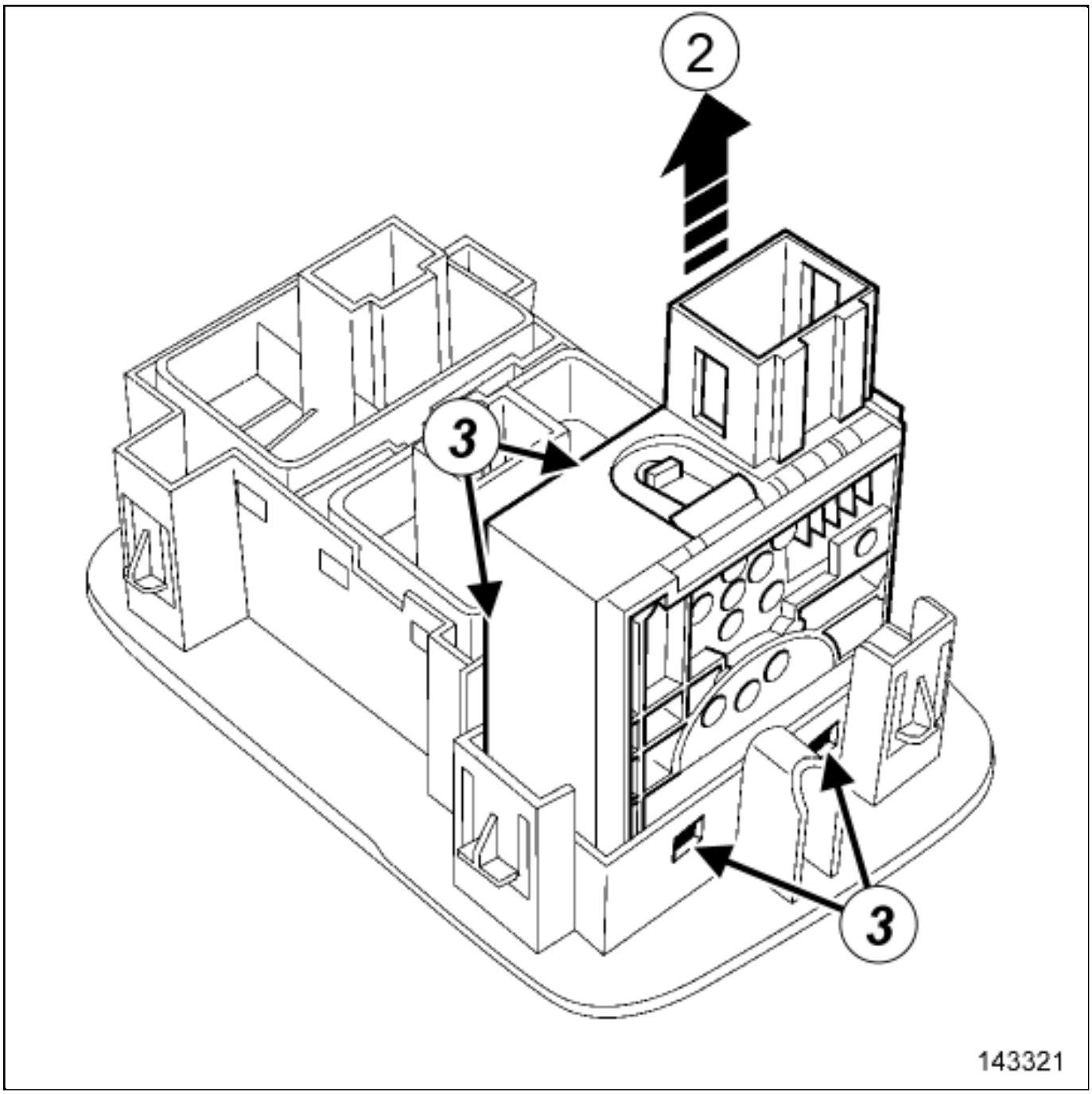
REMOVAL

1. REMOVAL PREPARATION OPERATION



- Unclip the plate using the toolSet of trim removal levers.(Car. 1363) (1) .
- Disconnect the connectors from the plate.

2. REMOVAL OPERATION



- Remove (2) the remote headlight beam adjustment control by pressing on the clips(3) .

REFITTING

- Proceed in the reverse order to removal.

Repair-30x04x03x14-01x37-1-18-1.xml

XSL version : 3.02 du 22/07/11

REVERSE GEAR SWITCH: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Socket for removing/refitting reverse gear switch	Bvi. 1934

WARNING

- Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

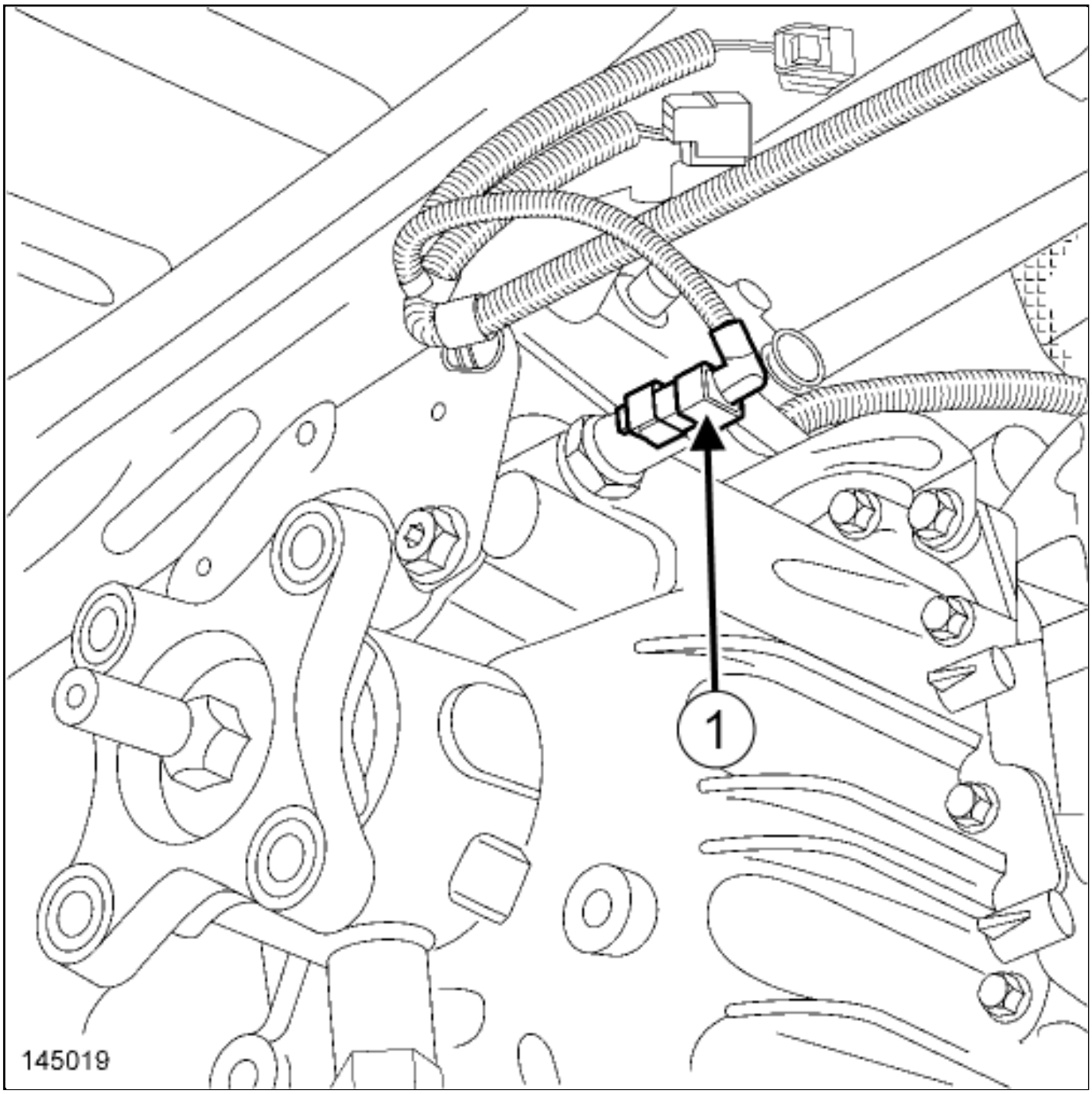
Location and specifications (tightening torques, parts always to be replaced, etc.) (see 21A, Manual gearbox, Gearbox assembly: Exploded view) .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

2. REMOVAL OPERATION



- Disconnect the connector(1) from the reverse gear switch.

- Remove the reverse gear switch using the toolSocket for removing/refitting reverse gear switch(Bvi. 1934) (see 21A, Manual gearbox , Gearbox assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

RIGHT-HAND SUSPENDED ENGINE MOUNTING: 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

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view)** .

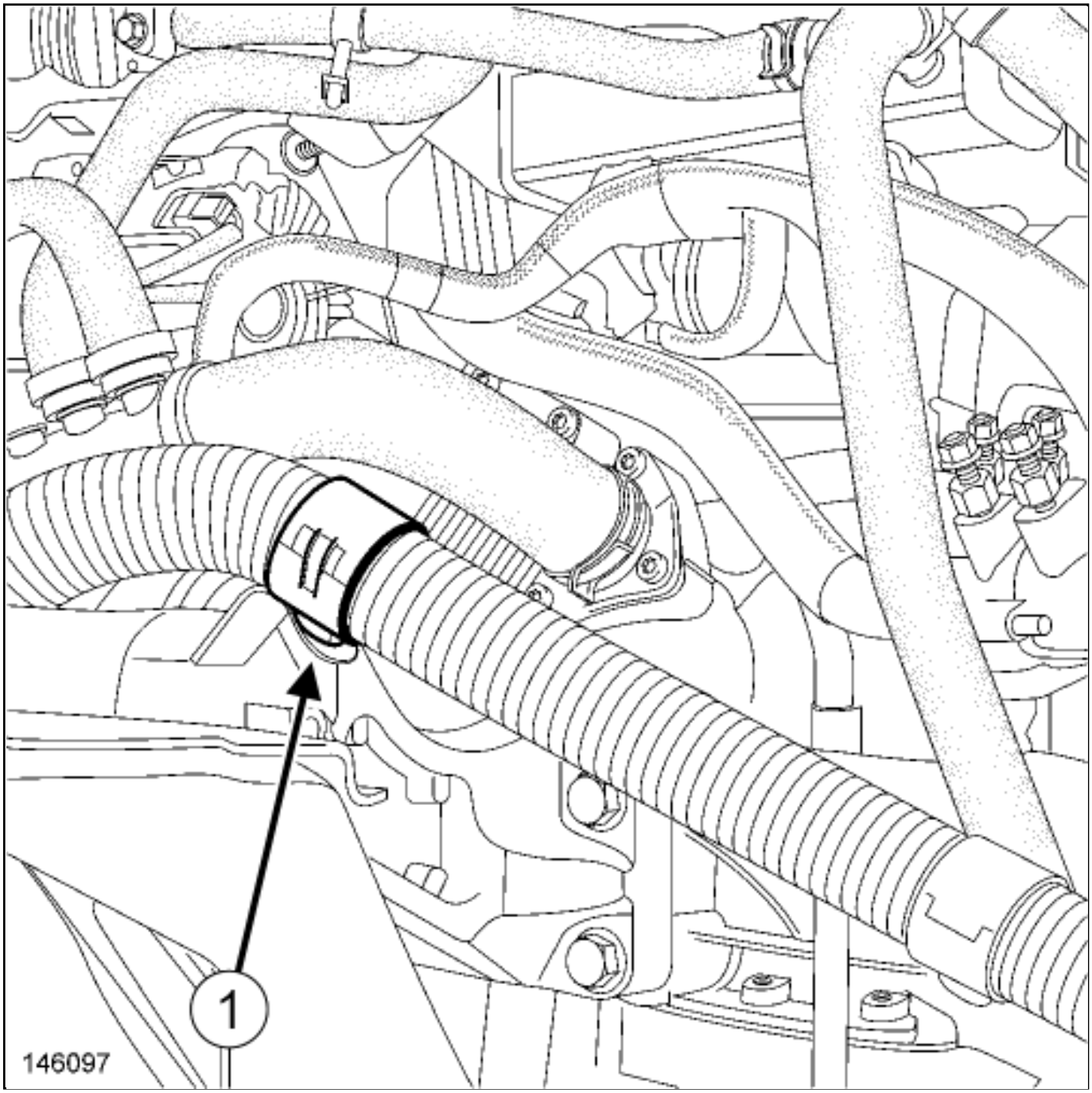
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

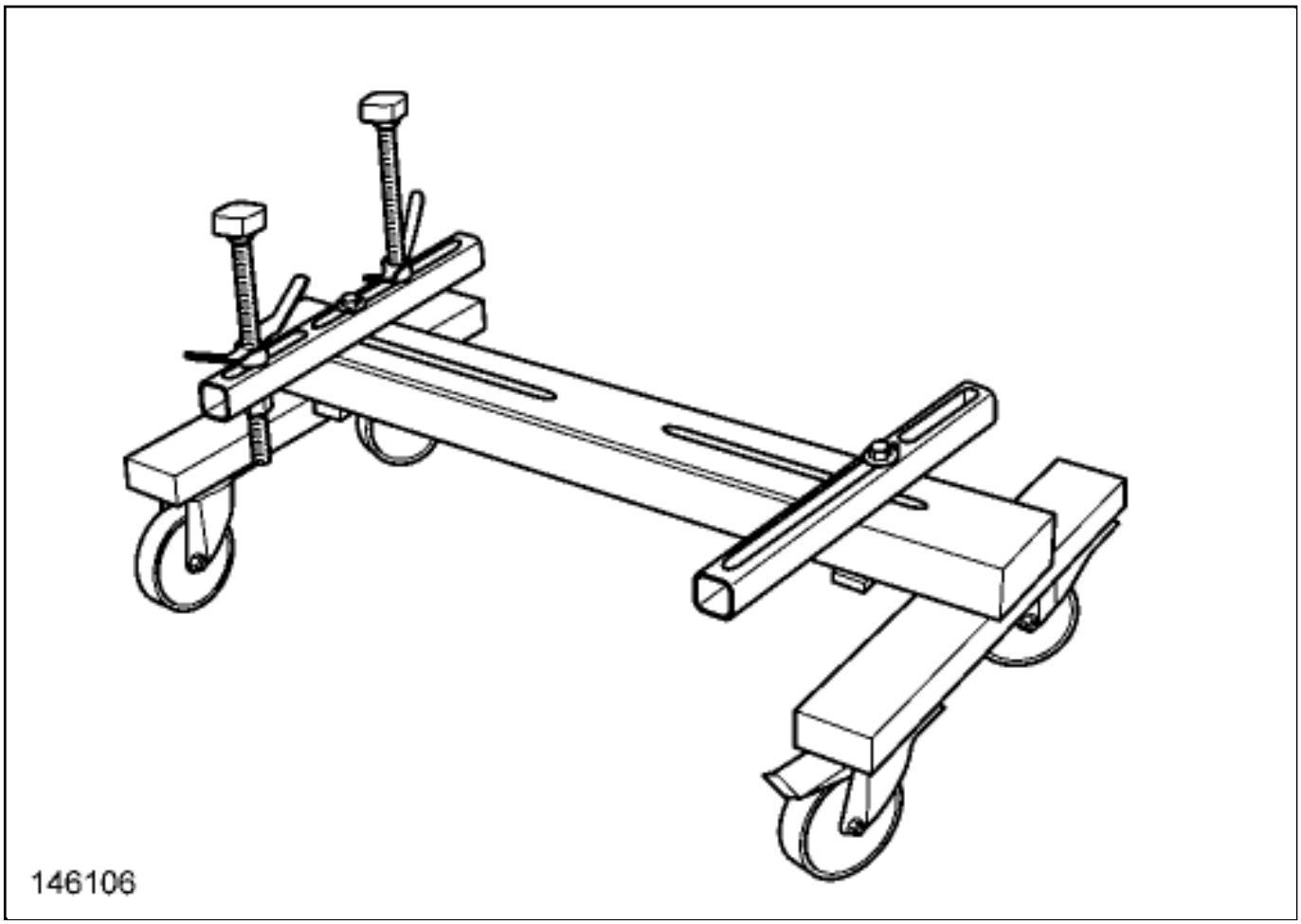
- Remove:
  - the engine undertray,
  - the nut from the electric coolant pump support at the turbocharger outlet**Coolant circuit assembly: Exploded view** .

- Move the electric coolant pump away from the turbocharger outlet.



- Unclip the wiring(1) from the engine mounting.

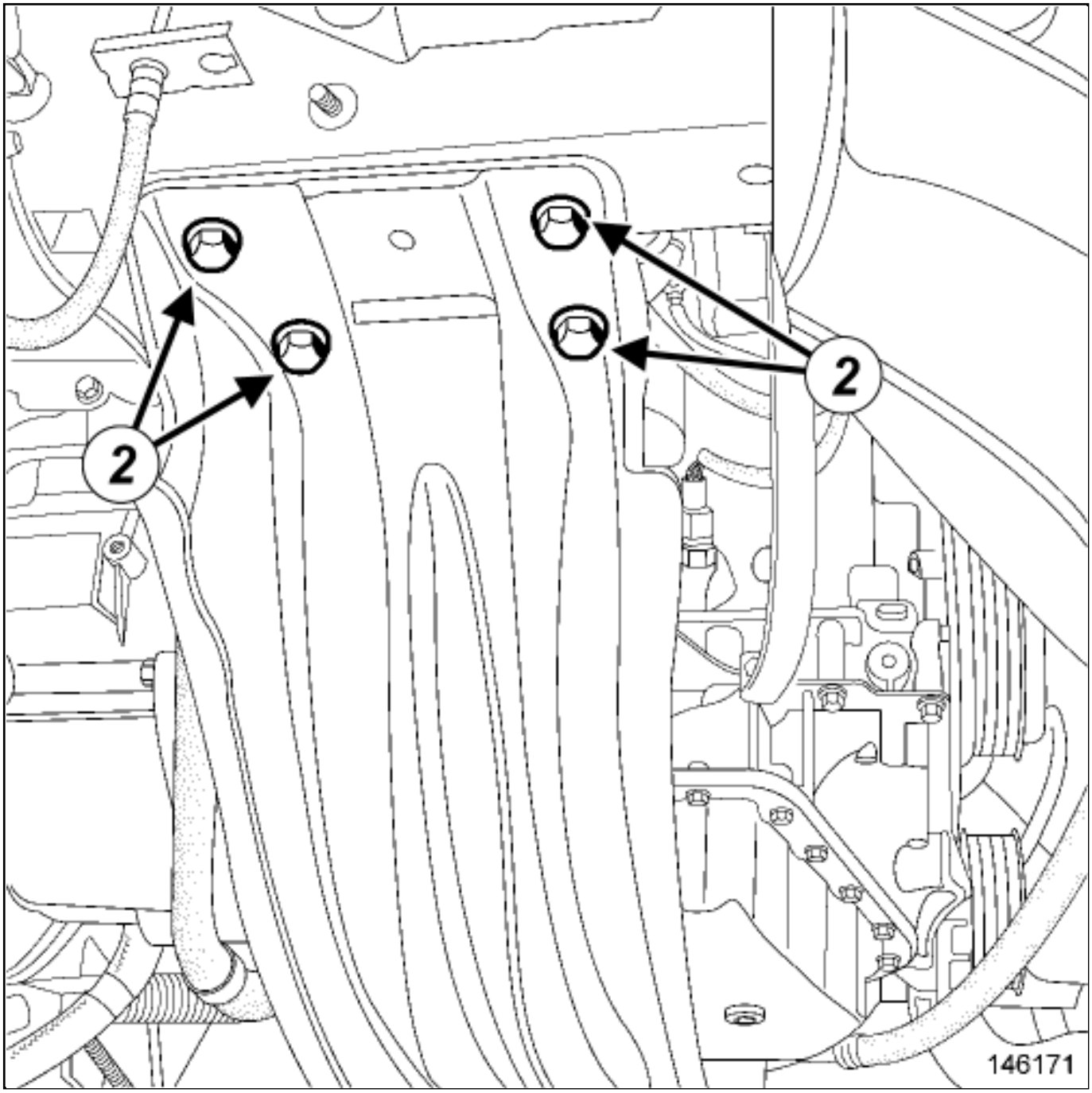
2. REMOVAL OPERATION



Position the Support for removal - refitting of engine - gearbox assembly(Mot. 1390) under the engine.

Remove the following from the engine mounting(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) :

- the bolt of the front left-hand rubber pad,
- the bolt of the front right-hand rubber pad.



- Remove the engine mounting bolts(2) .
- Move the engine mounting aside.
- Remove the front right-hand rubber pad(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view) .

REFITTING

- Proceed in the reverse order to removal.

- Torque tighten the engine mounting bolts62 N.m.

Repair-10x04x01x03-01x37-1-81-1.xml

XSL version : 3.02 du 22/07/11

RIGID BRAKE PIPE: REPAIR

Note, one or more warnings are present in this procedure

Equipment required
compressed air nozzle

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

This procedure applies to copper pipes diameter 4.7 mm.

Note:

- This procedure does not apply to:
  - hybrid pipes (pipe + hose),
  - pipes with diameters 6 mmand 8 mm.

The tightening torques specified in this method only apply to refitted pipes. In the case of factory-fitted pipes (pipes not refitted), refer to the tightening torque procedure(see 30A, General information, Brake circuit: Tightening torque) .

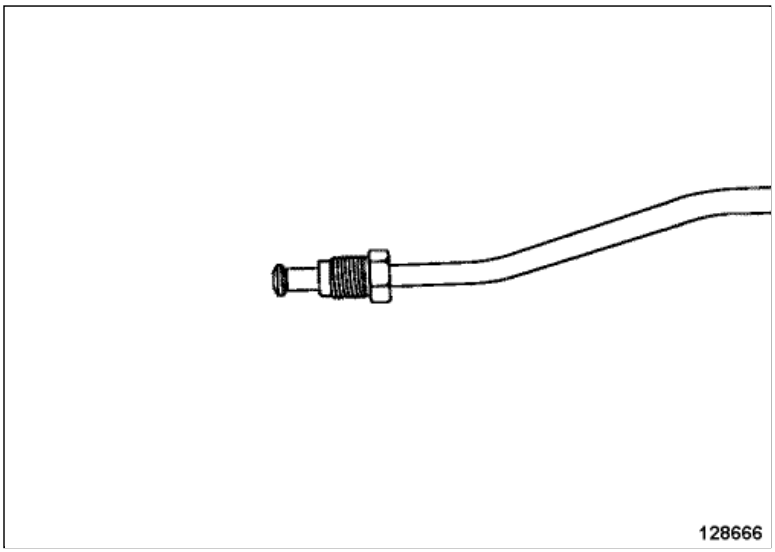
REPAIR

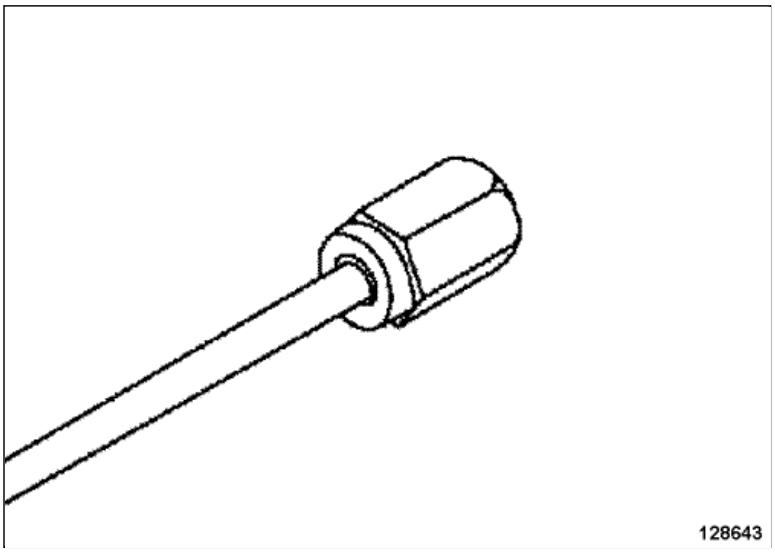
1. PIPE PREPARATION OPERATION

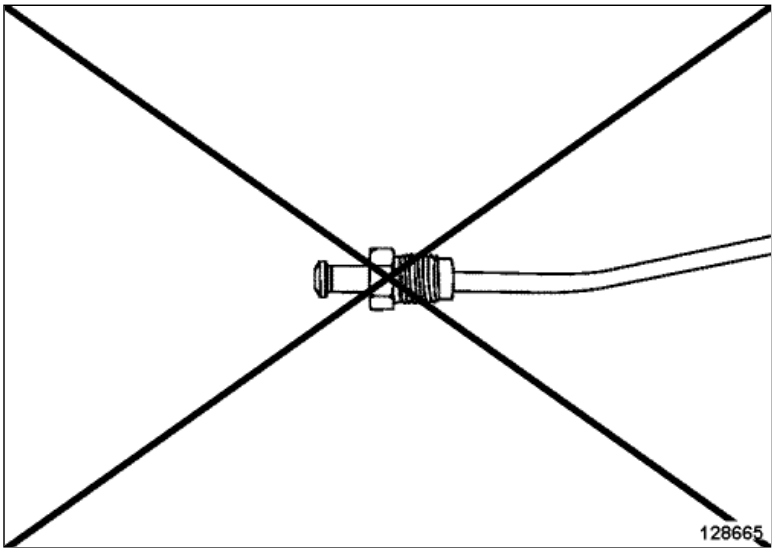
CAUTION

To avoid causing a breakdown in hydraulic brake circuit , do not squash or bend the rigid pipe when cutting.

- Cut the pipe at the desired length using a pipe cutter.







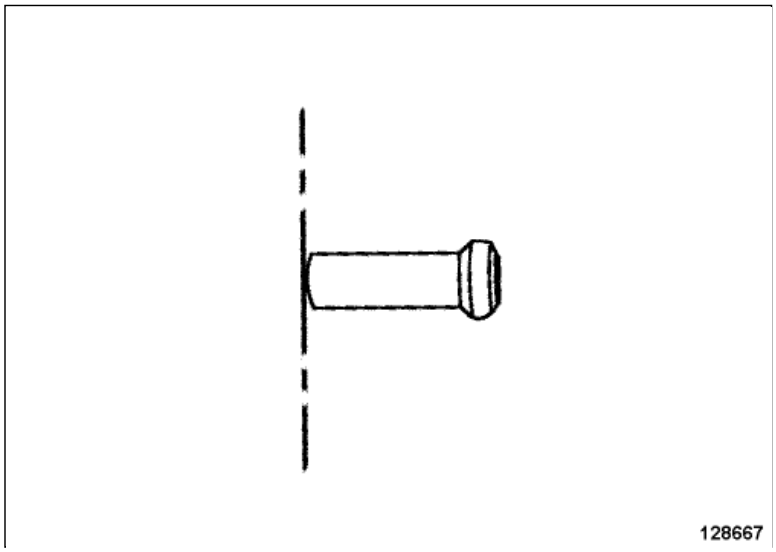
- Put the nuts or bolts on the pipe before forming the rivets.

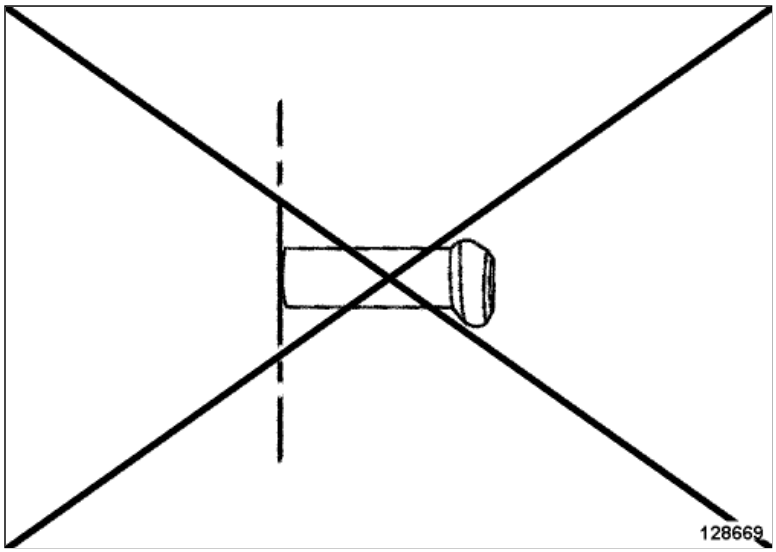
2. MAKING THE RIVETS

> Note:
>
> To make the rivets, fit the rivet press in a vice.

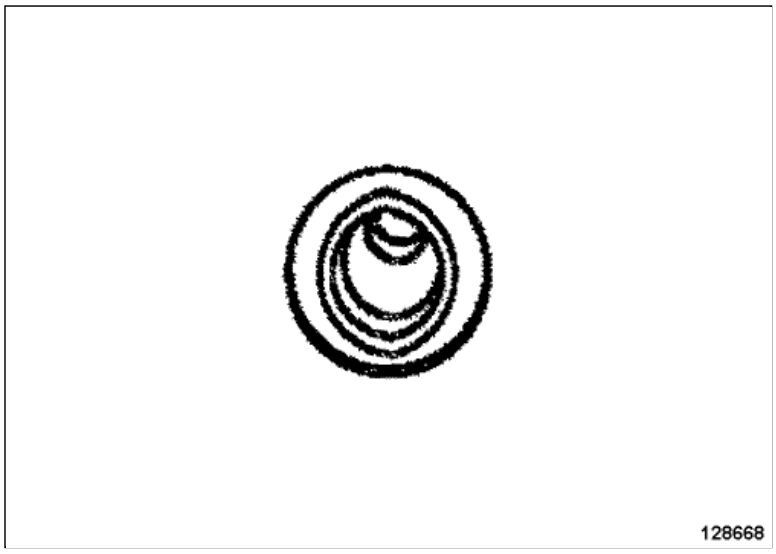
- Fit the pipe in the rivet press.
- Adjust the length of the pipe to be shaped.
- Torque tighten the press end piece (40 N.m).

3. CHECKING THE RIVETS

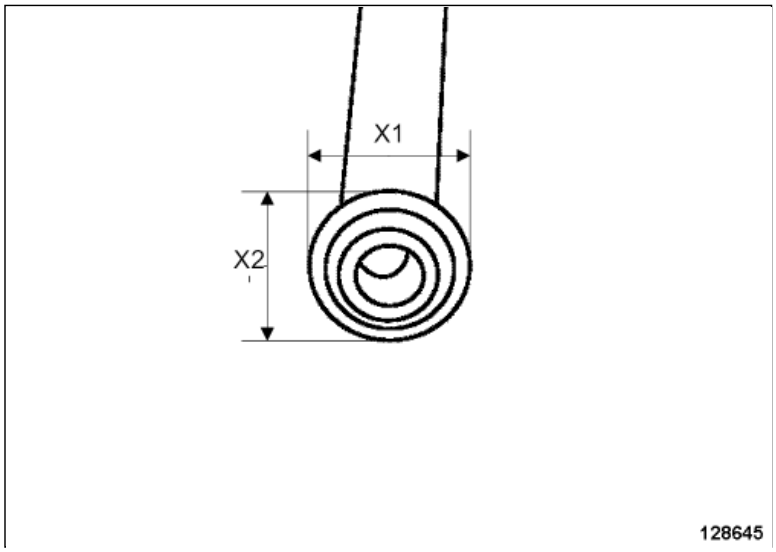




- Visually inspect:
  - the uniformity of the rivets' diameter,
  - the rivet centring in relation to the pipe shaft.



- Visually check that the internal diameter of the pipe is not oval-shaped.



- Check that the diameter of the end panel is not oval shaped using a sliding calliper.

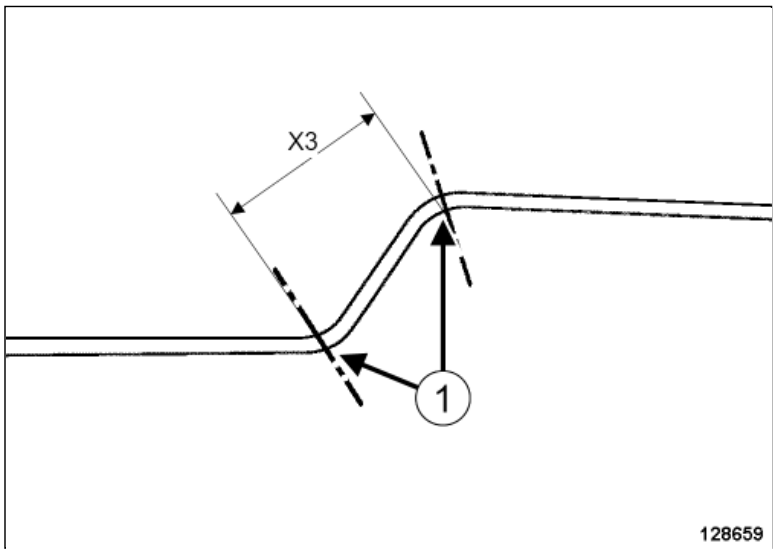
Correct diameter if(X1) = (X2)

4. PREPARATION OF THE PIPE BEFORE BENDING

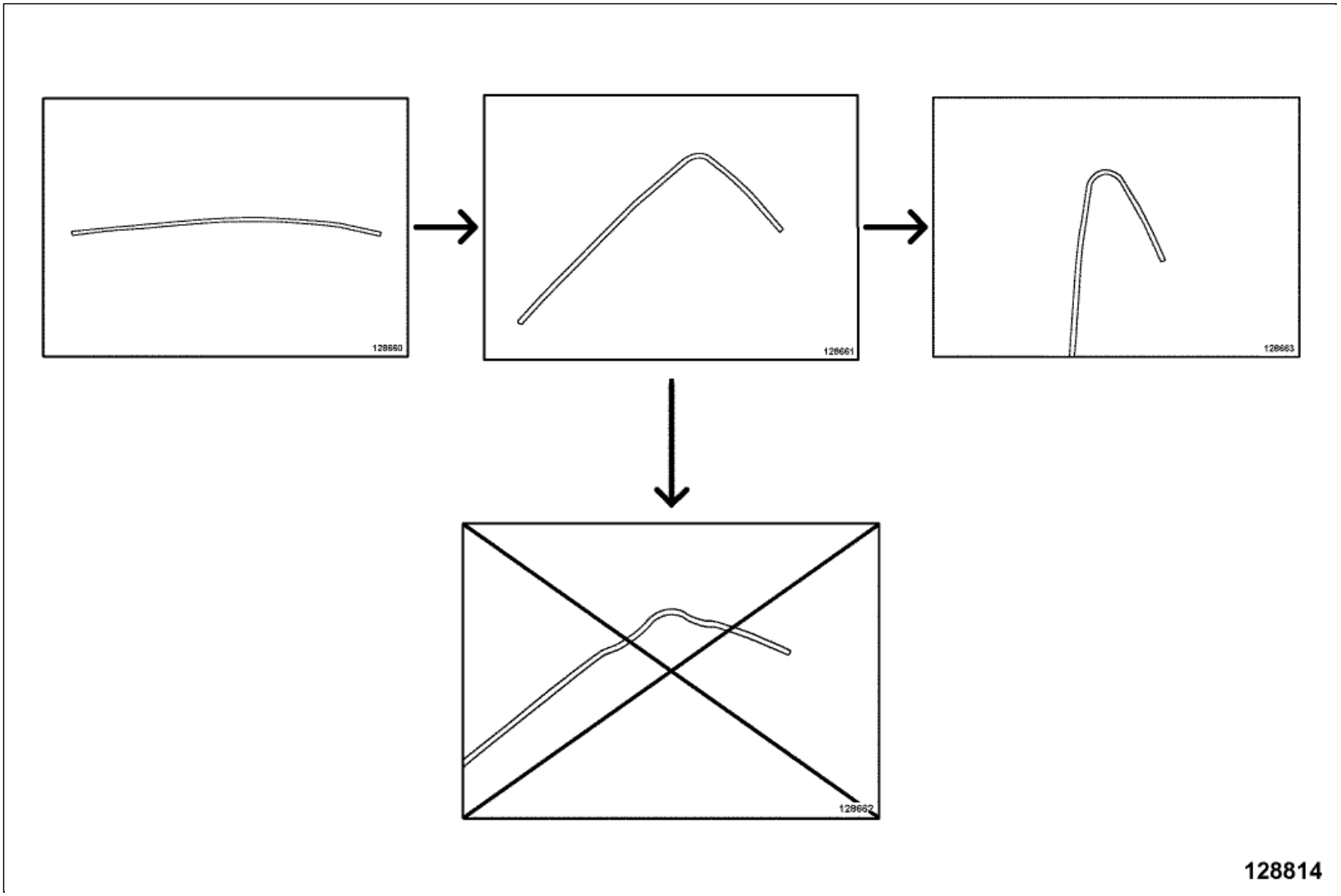
Note:

Impurities may spread inside the pipe while the rivets are being made.

- Blow inside the pipe in both directions using a compressed air nozzle.
- Put plugs on the bolts or nuts at the ends of the pipe.
- Put the original pipe on a flat base plate that is the length of the pipe.



- Measure the dimensions(X3) (in mm) curve after curve, between each curve radius "centre"(1) of the old pipe.



128814

CAUTION

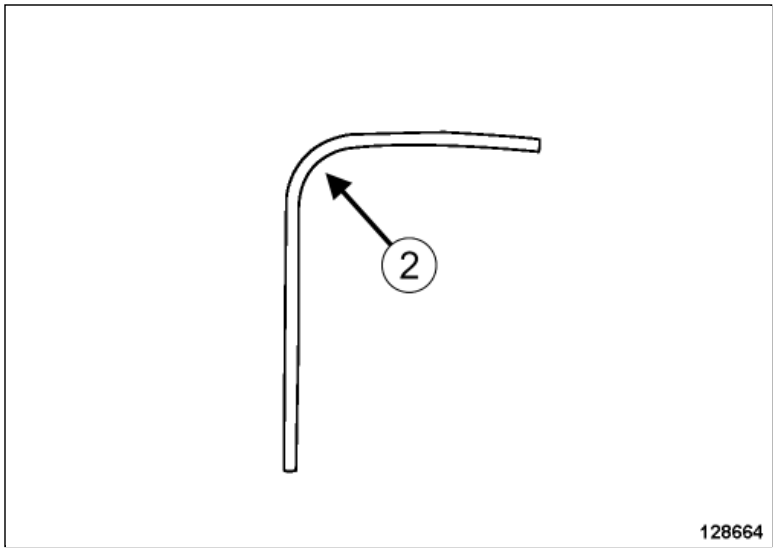
To avoid weakening the pipe, either bend once or bend progressively by increasing the bend (that is, by continually decreasing the curve radius). Do not install a rigid pipe on a vehicle that may have been bended and then unbended alternatively to reach the correct curve radius.

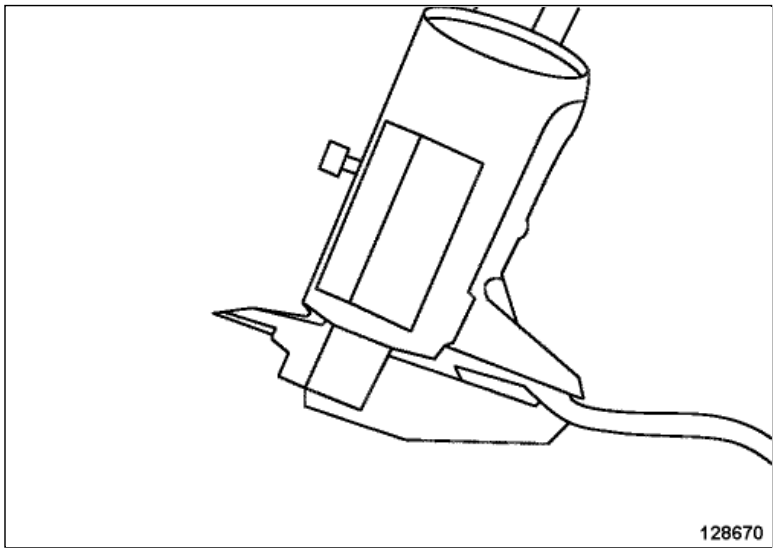
Note:

During the bending operation, the required angle should be passed slightly in order to compensate for material elasticity.

- Shape the pipe using a bender, curve after curve, while respecting the original shape of the pipe.

5. CHECKING BENDING





Check the out-of-roundness of the outer diameter at the centre of the curve radius(2) using a sliding calliper (the out-of-roundness of the outer diameter is correct if it is less than 10% flattening):

- nominal diameter of the pipe: 4.75 mm,
- minimum diameter after bending: 4.30 mm.

6. REFITTING THE PIPE

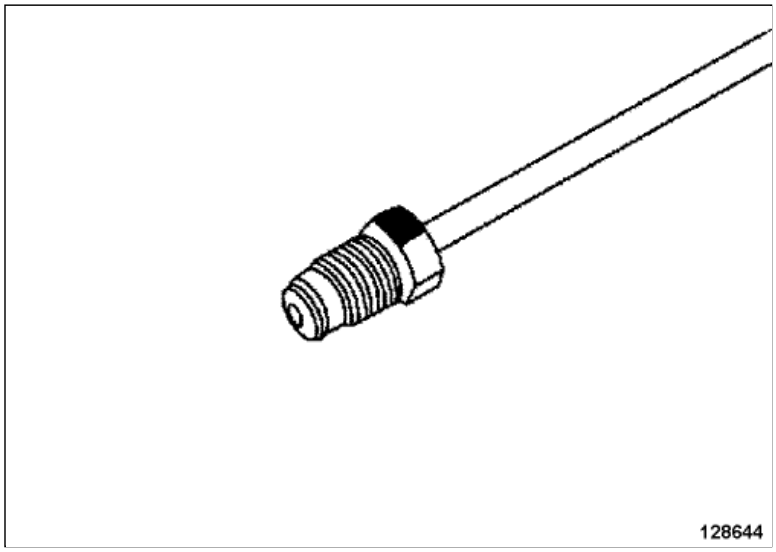
Note:

When refitting the rigid brake pipe:

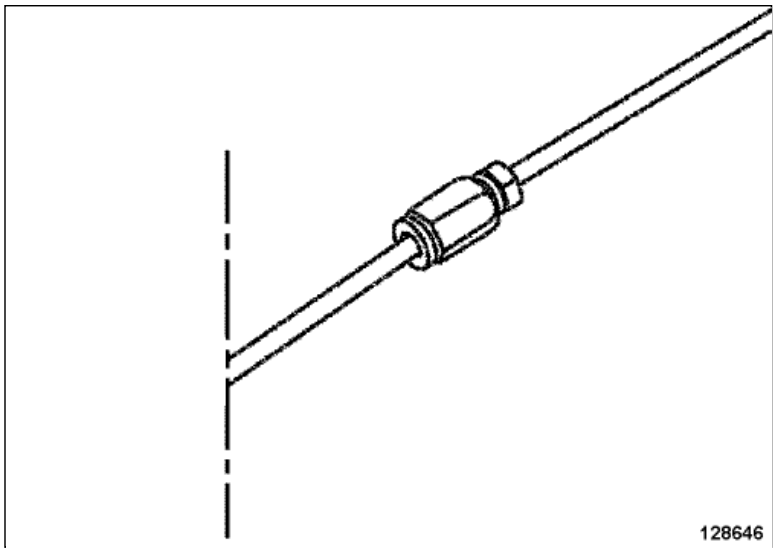
- respect the original routing as much as possible,
- adjust the pipe routing by hand when fitting inside the clips.

CAUTION

Contact points between the rigid brake pipe and the surrounding components could cause damage to the pipe. In order to avoid these contacts, adjust the pipe routing by hand.



- Torque tighten the brake pipe bolts14 N.m.



- Torque tighten the underbody unions (female/male)10 N.m.

ROCKER COVER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Top dead centre locating pin.	Mot. 1766

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

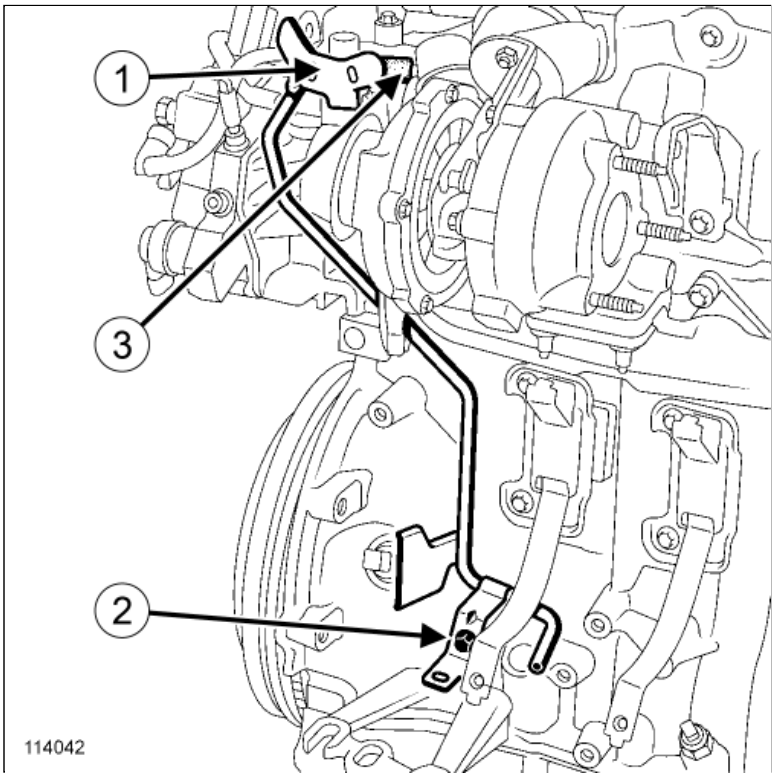
- Remove the engine - gearbox assembly.

- Remove the timing chain(see 11A, Top and front of engine, Timing chain: Removal - Refitting) .

EMISSION CONTROL EURO 05 WITH OBD(E05A-Euro 05 with OBD)

- Remove the exhaust gas pressure sensorExhaust gas pressure sensor: Removal - Refitting .

- Remove:
  - the vacuum pumpVacuum pump: Removal - Refitting (37A, Mechanical component controls),
  - the high pressure pipe between the pump and the rail(see **High pressure pipe between pump and rail: Removal - Refitting**) ,
  - the oil decanter(see 11A, Top and front of engine, Oil decanter: Removal - Refitting) ,
  - the diesel return railDiesel injector fuel return rail: Removal - Refitting ,
  - the high pressure pipes between the rail and the injectors(see **High pressure pipe between rail and injector: Removal - Refitting**) ,
  - the diesel injectorsDiesel injector: Removal - Refitting .

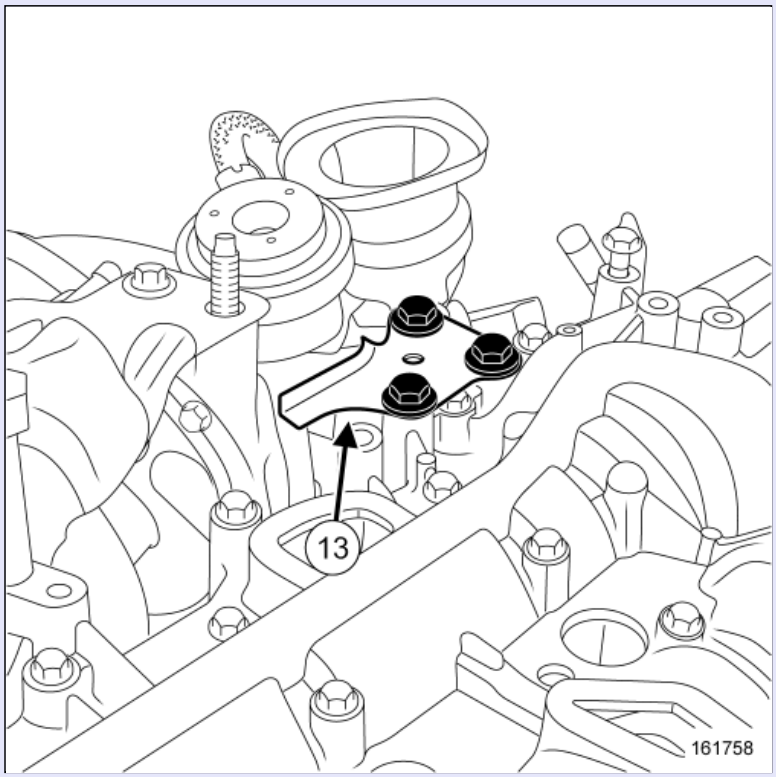


- Remove the bolts(1) and (2) of the fuel collector outlet pipe of the cylinder head.

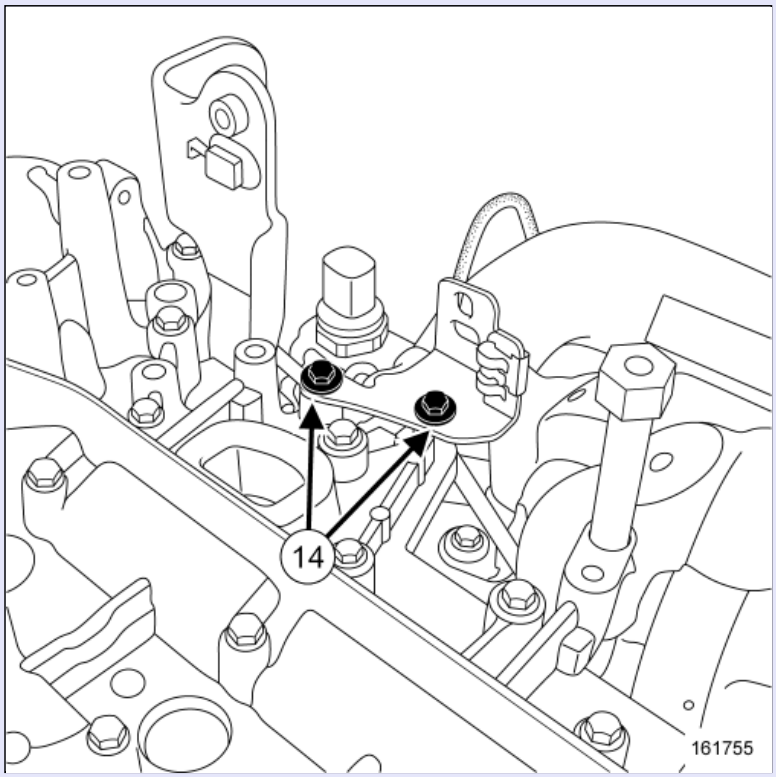
- Disconnect the fuel collector outlet pipe from the cylinder head at(3) .

- Move aside the fuel collector outlet pipe from the cylinder head.

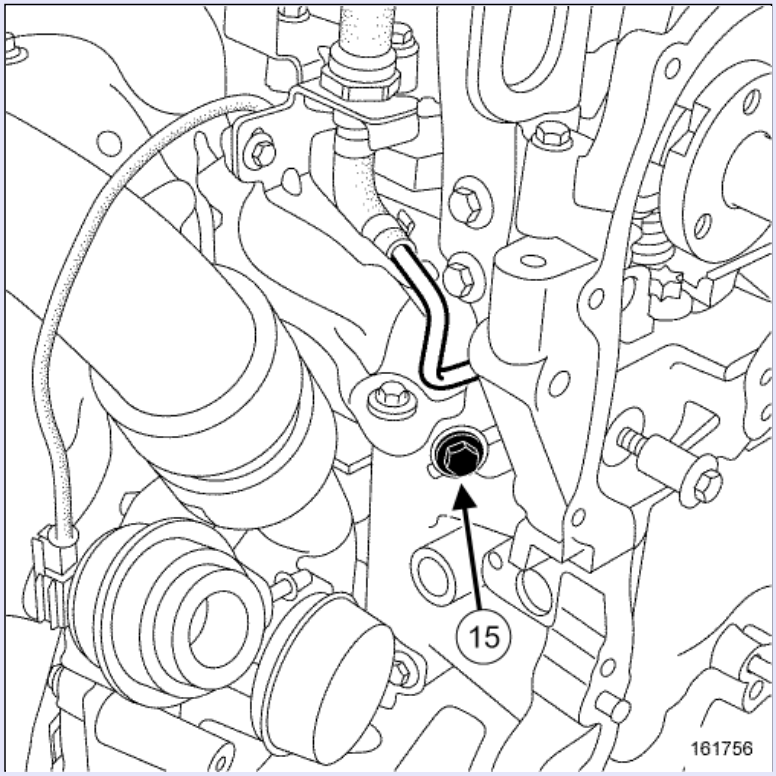
- Remove the high pressure pump .



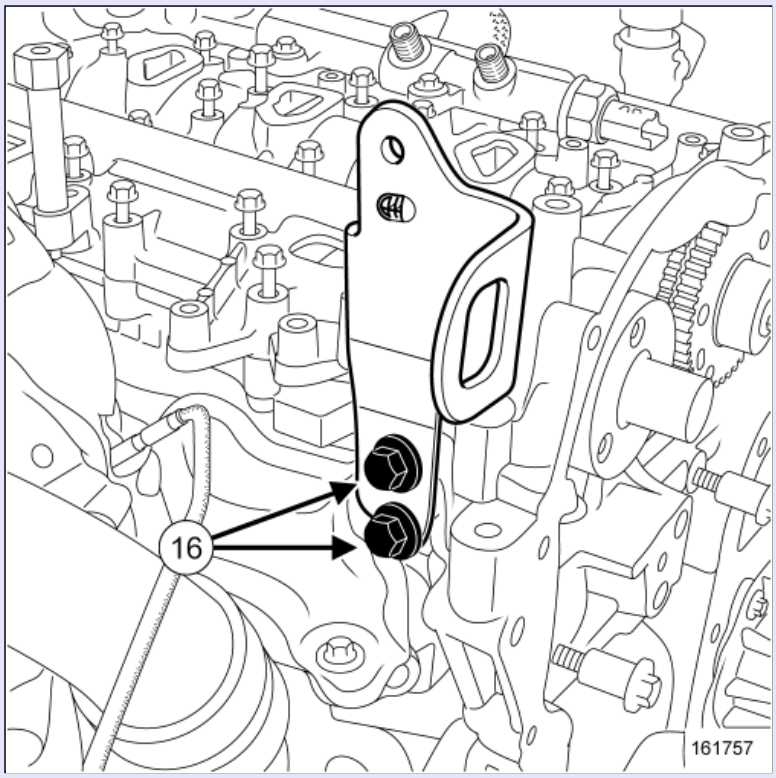
- Remove the turbocharger strut(13) .



- Remove the exhaust gas pressure sensor mounting bolt(14) .

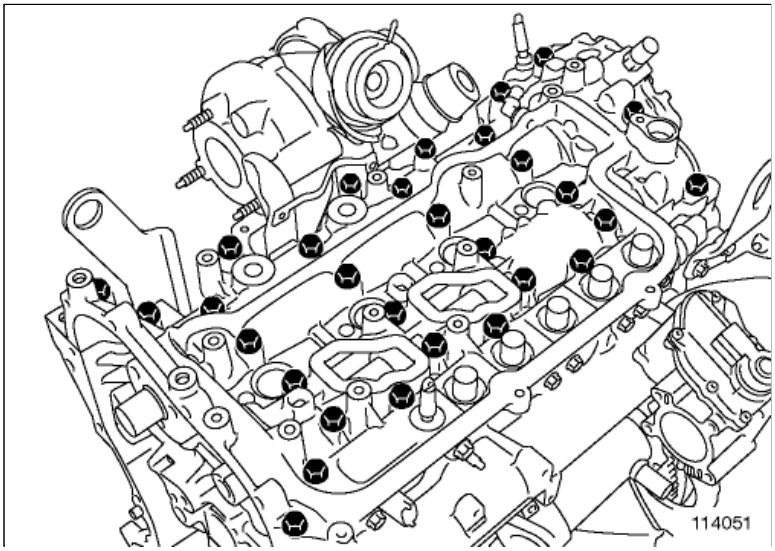


- Remove the pipe(15) from the exhaust manifold.
- Remove the exhaust gas pressure sensor.

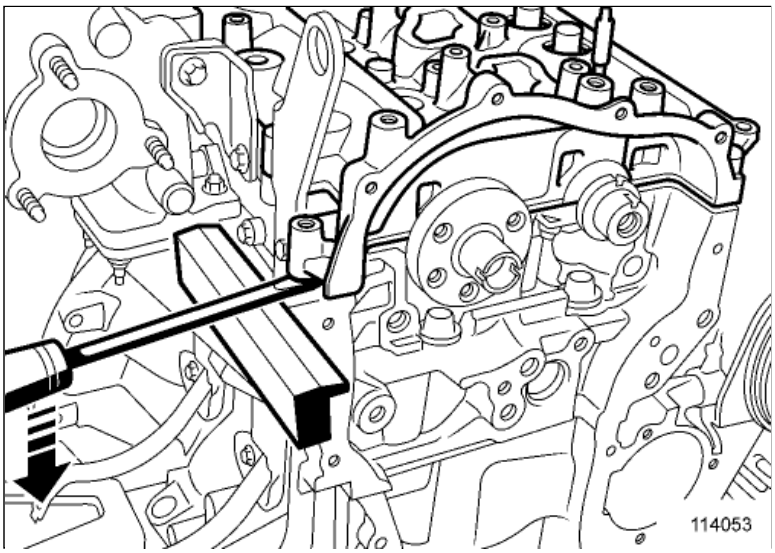


- Remove the lifting eye bolts(16) .
- Remove the lifting eye.

2. REMOVAL OPERATION



- Remove the rocker cover bolts.



- Position a protective shim on the cylinder head.
- Detach the rocker cover using a flat-blade screwdriver, using the shim for leverage.
- Remove the rocker cover - camshafts assembly.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use super cleaning agent for joint facesVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:
  - the rocker cover gasket face,
  - the cylinder head joint face.

CAUTION
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

CAUTION
Clean the cylinder head carefully to avoid any foreign bodies entering the oil return and supply pipes.

Failure to follow this advice could lead to the blocking of the various oil inlet galleries, which would quickly result in engine damage.

-

Remove the residue using a plastic spatula.

Finish cleaning the joint faces using a Grey Abrasive Pad Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

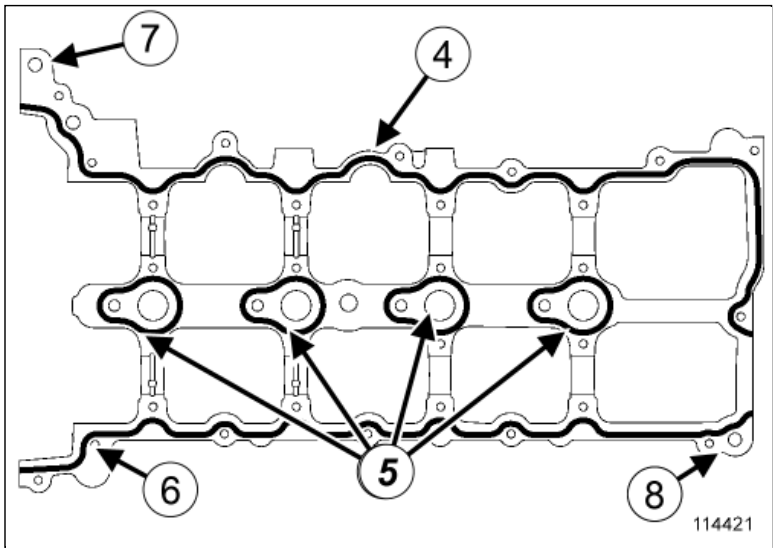
Use SURFACE CLEANER Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:

- the rocker cover gasket face,
- the cylinder head joint face.

CAUTION
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

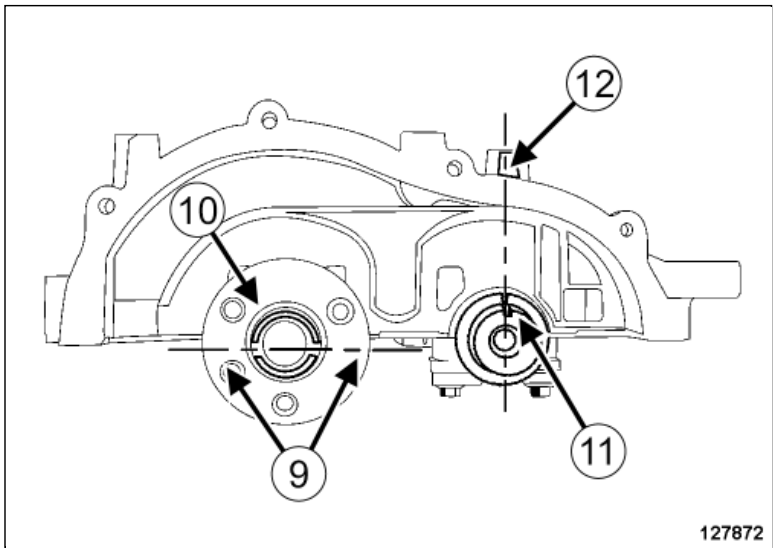
CAUTION
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

2. REFITTING OPERATION



Apply a bead of SILICONE ADHESIVE SEALANT (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of 1.5 ± 1 mm to the cylinder head at (4) , (5) , (6) .

Fit two studs (M6 - length 60 mm) into the holes (7) and (8) on the cylinder head to guide the rocker cover.

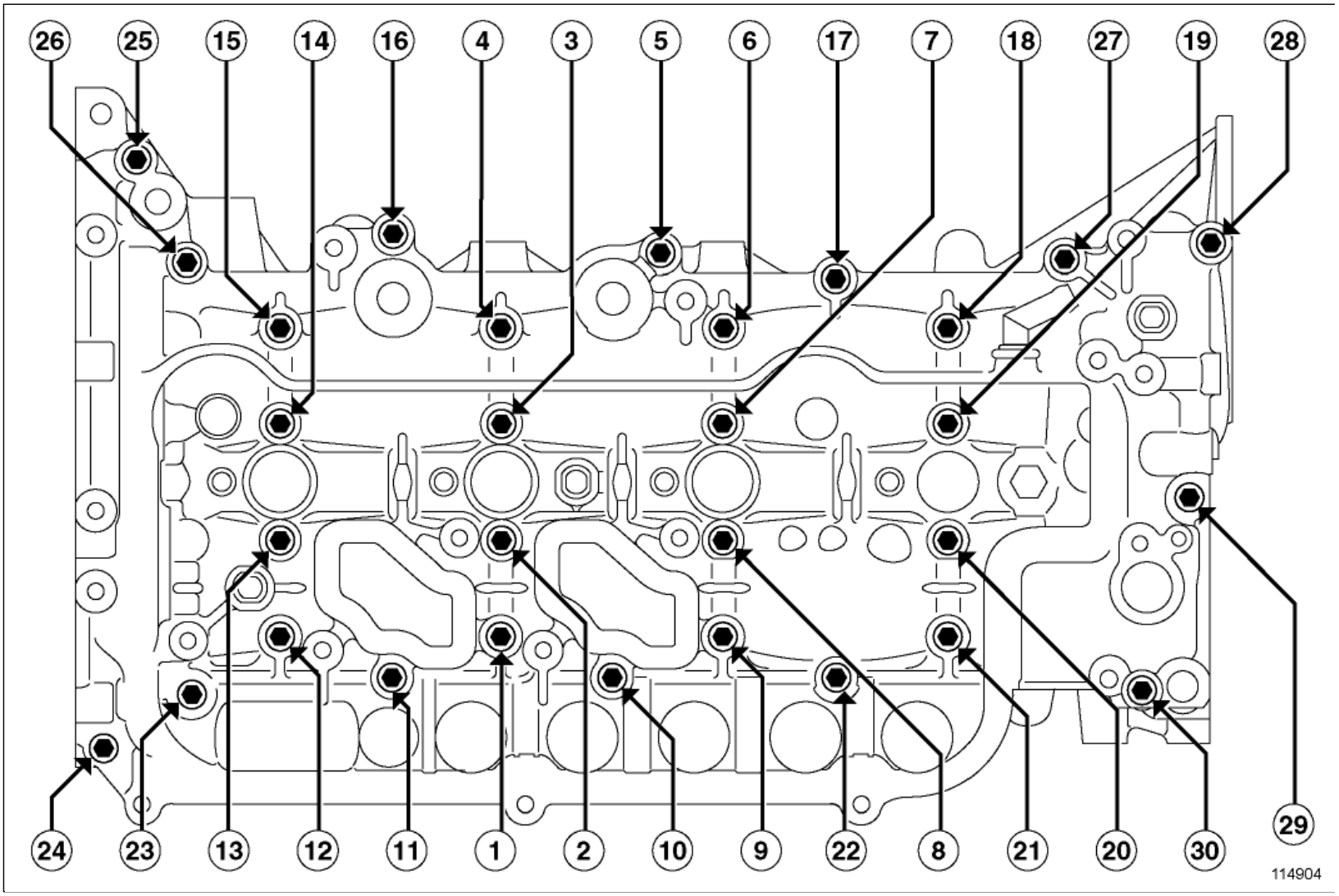


Position:

- the groove on the exhaust side of the camshaft(9) horizontally (large clearance(10) facing upwards),
- the groove on the inlet side of the camshaft(11) facing towards the rocker cover boss(12) .

Check that cylinders 1 and 4 are at Top Dead Centre using theTop dead centre locating pin.(Mot. 1766) (see 11A, Top and front of engine, Timing chain: Removal - Refitting) .

Refit the rocker cover - camshafts assembly.



- Tighten in order and successively, the rocker cover bolts (12), (15), (18)and (21)to gradually fit the rocker cover on the cylinder head.
- Remove the two rocker cover guide studs.
- Fit without tightening the remaining rocker cover bolts.
- Loosen bolts (12), (15), (18)and (21).
- Fit without tightening bolts (12), (15), (18)and (21).
- Tighten the rocker cover bolts in order.
- Clean the excess silicone adhesive sealant on the timing and coupling faces using a plastic spatula.

3. FINAL OPERATION

- Connect the fuel collector outlet pipe of the cylinder head.
- Tighten the bolts of the fuel collector outlet pipe of the cylinder head.
-

Refit:

- the diesel injectors Diesel injector: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors (see **High pressure pipe between rail and injector: Removal - Refitting**) ,
- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the oil decanter (see 11A, Top and front of engine, Oil decanter: Removal - Refitting) ,
- the high pressure pipe between the pump and the rail (see **High pressure pipe between pump and rail: Removal - Refitting**) ,
- the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls).

M9T, 700 702(700 OR 702)

Refit the hight pressure pump .

EMISSION CONTROL EURO 05 WITH OBD(E05A-Euro 05 with OBD)

Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

Refit the timing chain (see 11A, Top and front of engine, Timing chain: Removal - Refitting) .

Refit the engine and gearbox assembly.

ROCKER COVER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Top dead centre locating pin.	Mot. 1766

WARNING
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

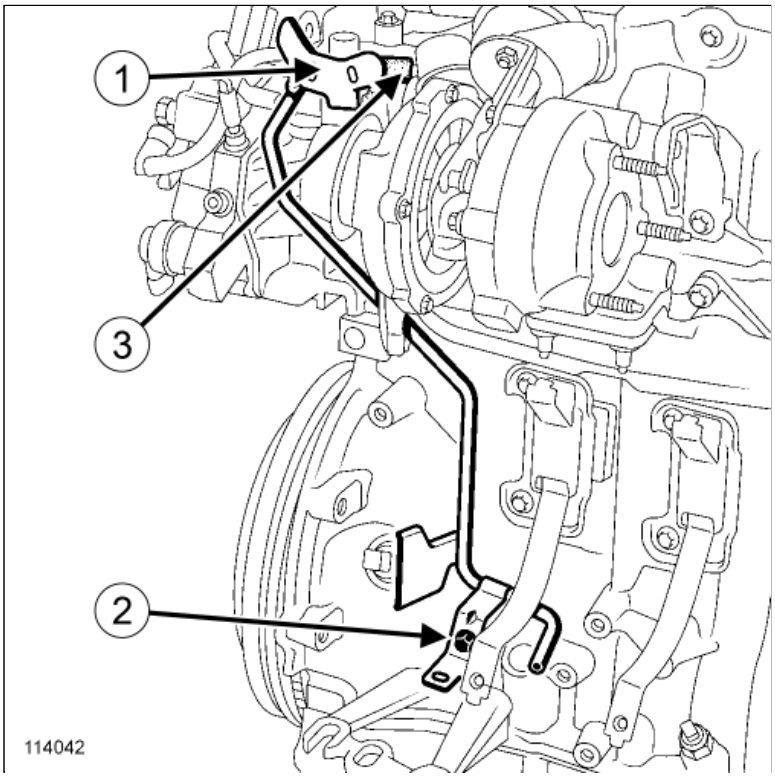
- Remove the engine - gearbox assembly.

- Remove the timing chain**(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting)** .

X74, M9R, 760(760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 845 OR 849 OR 858) AND (E05A-Euro 05 with OBD)

- Remove the exhaust gas pressure sensor**Exhaust gas pressure sensor: Removal - Refitting** .

- Remove:
  - the vacuum pump**Vacuum pump: Removal - Refitting** (37A, Mechanical component controls),
  - the high pressure pipe between the pump and the rail**High pressure pipe between pump and rail: Removal - Refitting** ,
  - the oil decanter**Oil decanter: Removal - Refitting** ,
  - the diesel return rail**Diesel injector fuel return rail: Removal - Refitting** ,
  - the high pressure pipes between the rail and the injectors**High pressure pipe between rail and injector: Removal - Refitting** ,
  - the diesel injectors**Diesel injector: Removal - Refitting** .

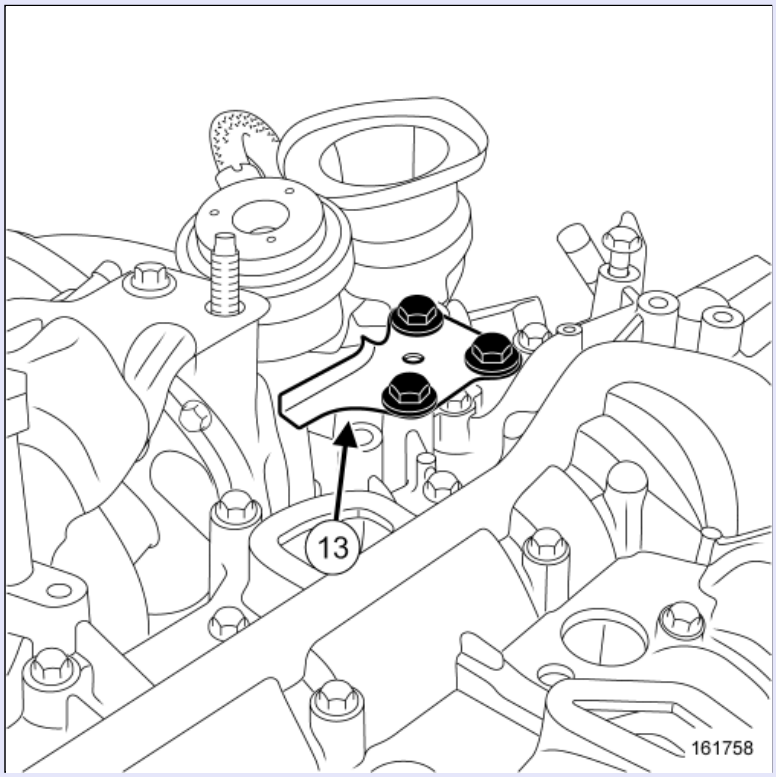


- Remove the bolts(1) and (2) of the fuel collector outlet pipe of the cylinder head.

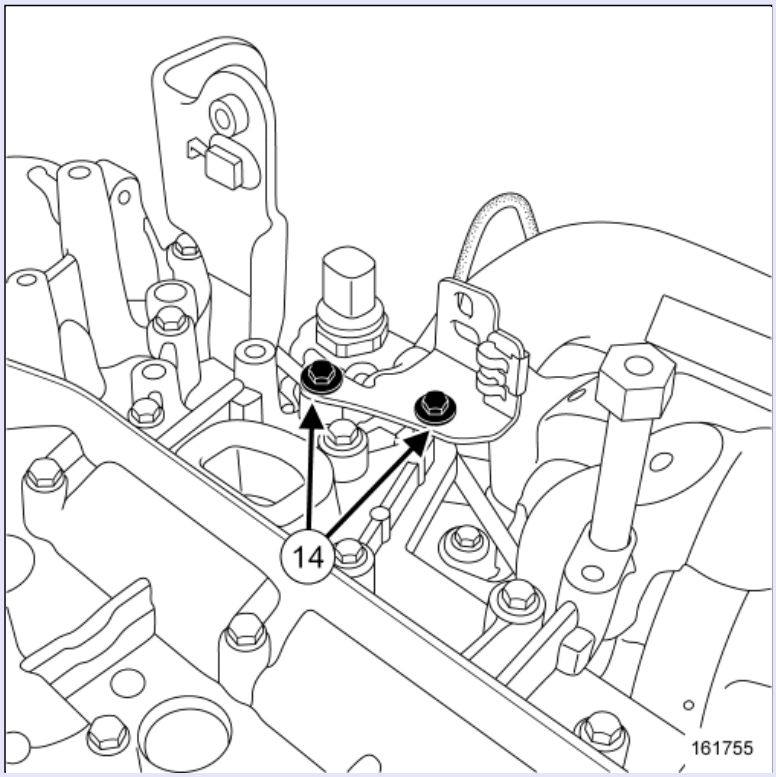
- Disconnect the fuel collector outlet pipe from the cylinder head at(3) .

- Move aside the fuel collector outlet pipe from the cylinder head.

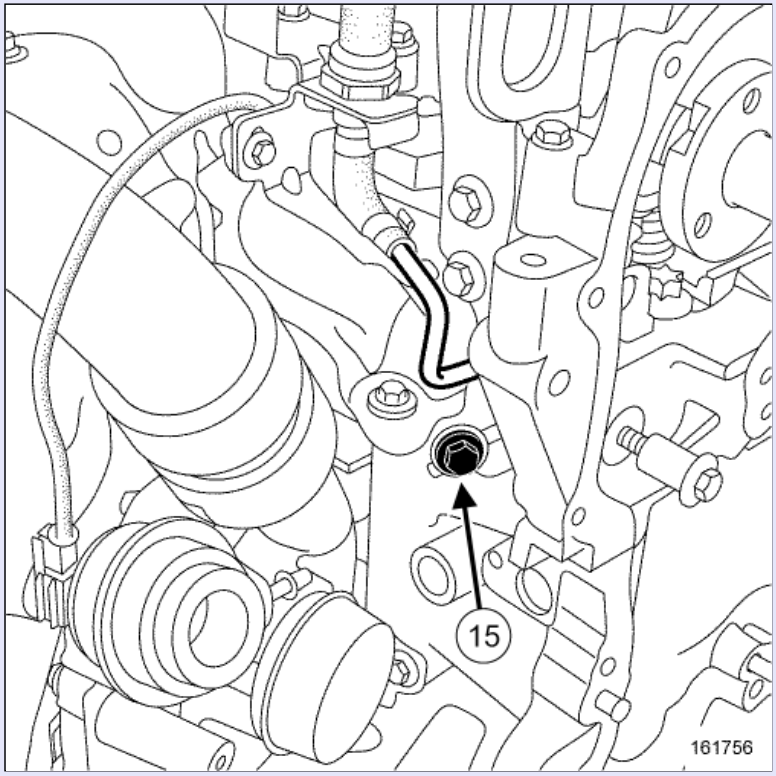
- Remove the high pressure pump .



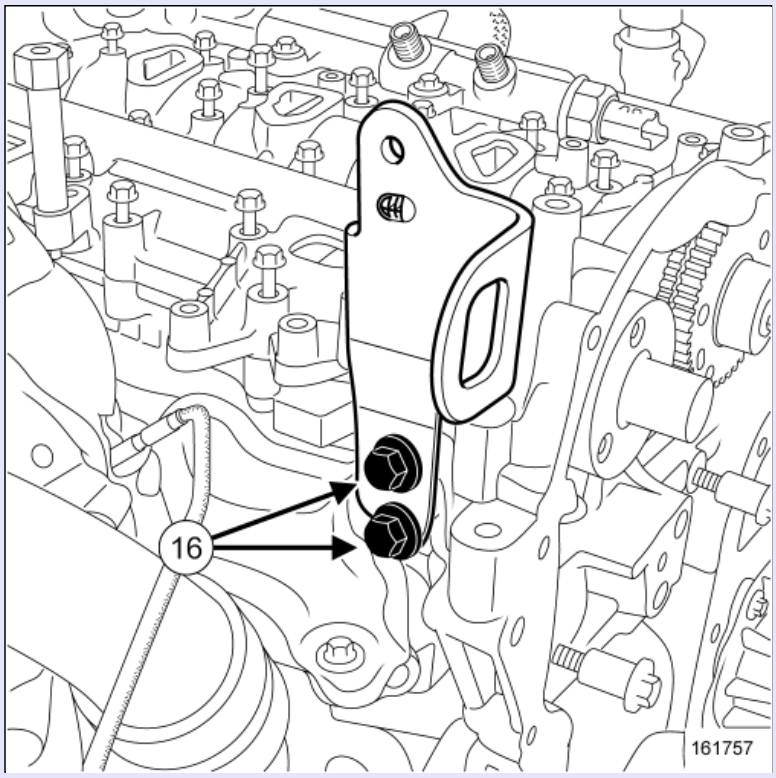
- Remove the turbocharger strut(13) .



- Remove the exhaust gas pressure sensor mounting bolt(14) .

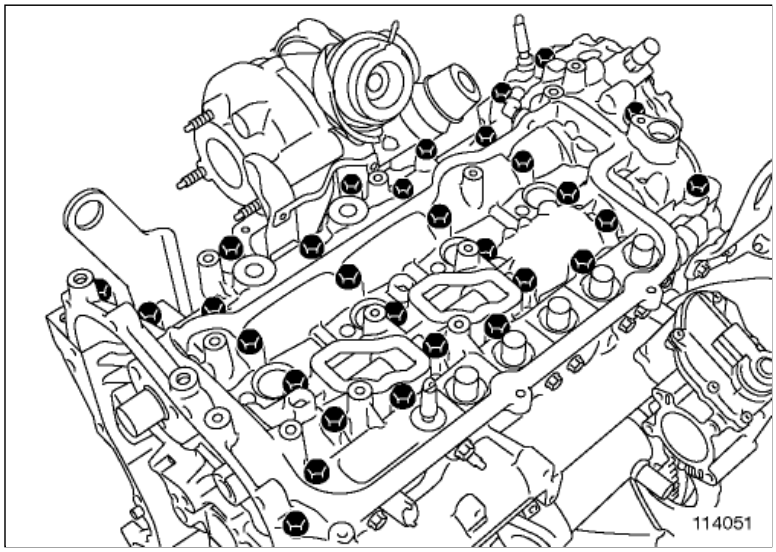


- Remove the pipe(15) from the exhaust manifold.
- Remove the exhaust gas pressure sensor.

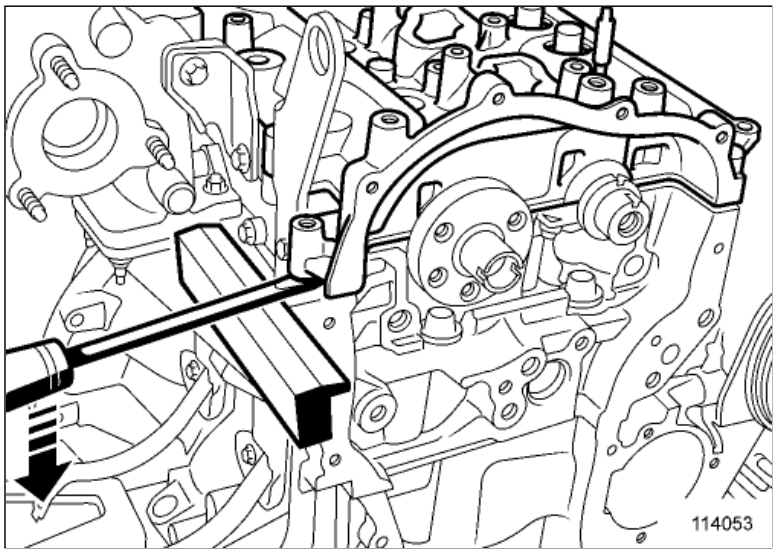


- Remove the lifting eye bolts(16) .
- Remove the lifting eye.

2. REMOVAL OPERATION



- Remove the rocker cover bolts.



- Position a protective shim on the cylinder head.
- Detach the rocker cover using a flat-blade screwdriver, using the shim for leverage.
- Remove the rocker cover - camshafts assembly.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use super cleaning agent for joint faces Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:
  - the rocker cover gasket face,
  - the cylinder head joint face.

CAUTION
Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

CAUTION
Clean the cylinder head carefully to avoid any foreign bodies entering the oil return and supply pipes.

Failure to follow this advice could lead to the blocking of the various oil inlet galleries, which would quickly result in engine damage.

Remove the residue using a plastic spatula.

Finish cleaning the joint faces using a Grey Abrasive PadVehicle: Parts and consumables for the repair (04B, Consumables - Products).

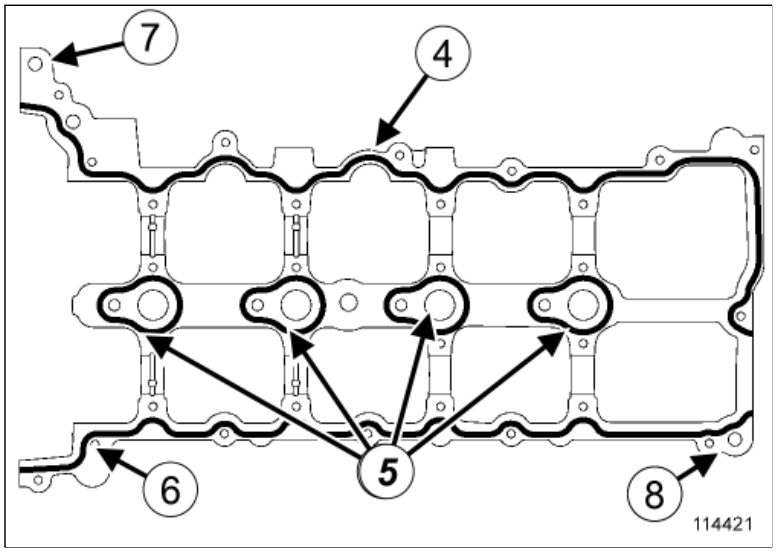
Use SURFACE CLEANERVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:

- the rocker cover gasket face,
- the cylinder head joint face.

CAUTION
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

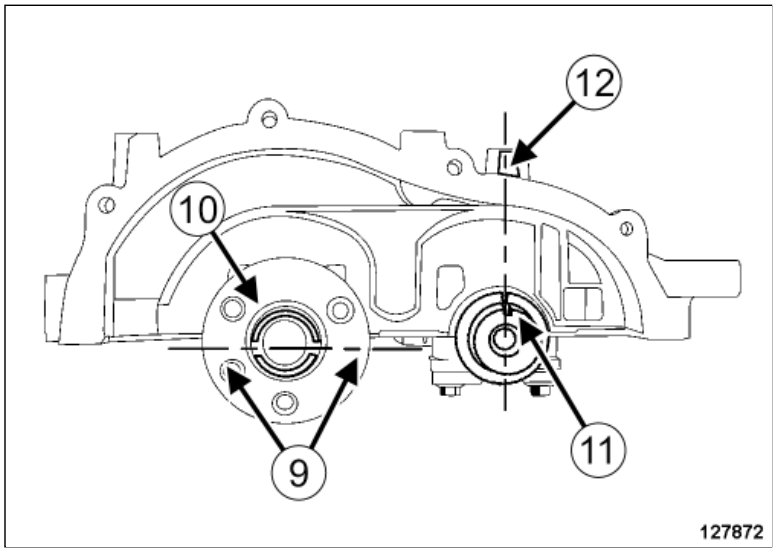
CAUTION
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

2. REFITTING OPERATION



Apply a bead of SILICONE ADHESIVE SEALANT(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of 1.5 ± 1 mmto the cylinder head at (4) , (5) , (6) .

Fit two studs (M6 - length 60 mm) into the holes(7) and (8) on the cylinder head to guide the rocker cover.

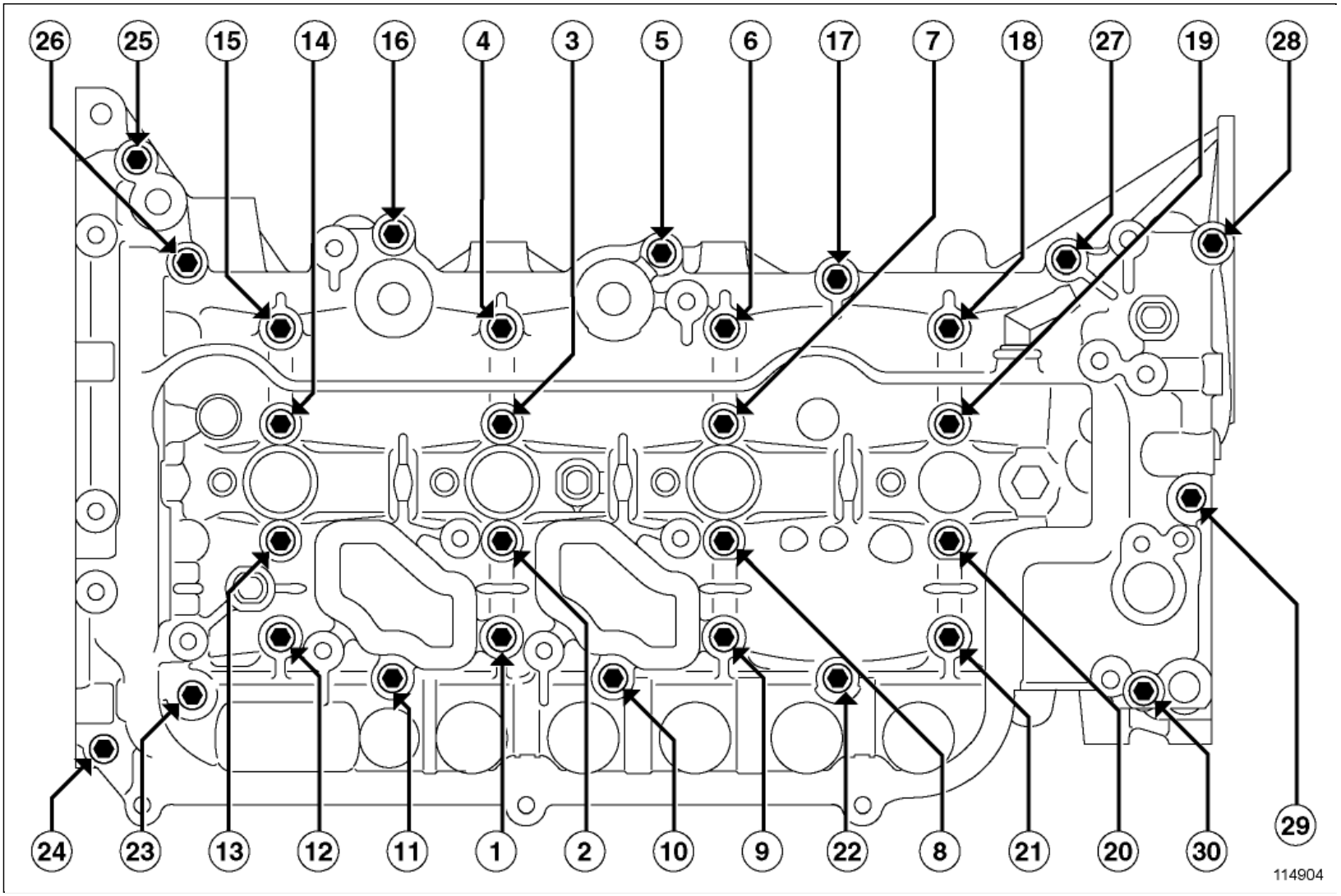


Position:

- the groove on the exhaust side of the camshaft(9) horizontally (large clearance(10) facing upwards),
- the groove on the inlet side of the camshaft(11) facing towards the rocker cover boss(12) .

Check that cylinders 1 and 4 are at Top Dead Centre using theTop dead centre locating pin.(Mot. 1766) (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

Refit the rocker cover - camshafts assembly.



- Tighten in order and successively, the rocker cover bolts (12), (15), (18)and (21)to gradually fit the rocker cover on the cylinder head.
- Remove the two rocker cover guide studs.
- Fit without tightening the remaining rocker cover bolts.
- Loosen bolts (12), (15), (18)and (21).
- Fit without tightening bolts (12), (15), (18)and (21).
- Tighten the rocker cover bolts in order.
- Clean the excess silicone adhesive sealant on the timing and coupling faces using a plastic spatula.

3. FINAL OPERATION

- Connect the fuel collector outlet pipe of the cylinder head.
- Tighten the bolts of the fuel collector outlet pipe of the cylinder head.
-

Refit:

- the diesel injectors Diesel injector: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the oil decanter Oil decanter: Removal - Refitting ,
- the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
- the vacuum pump Vacuum pump: Removal - Refitting (37A, Mechanical component controls).

X62, M9T, 700 702(700 OR 702)

Refit the hight pressure pump .

X74, M9R, 760(760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 845 OR 849 OR 858) AND (E05A-Euro 05 with OBD)

Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

Refit the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

Refit the engine and gearbox assembly.

FRONT BRAKE CALLIPER: REPAIR

Note, one or more warnings are present in this procedure

Equipment required
pedal press

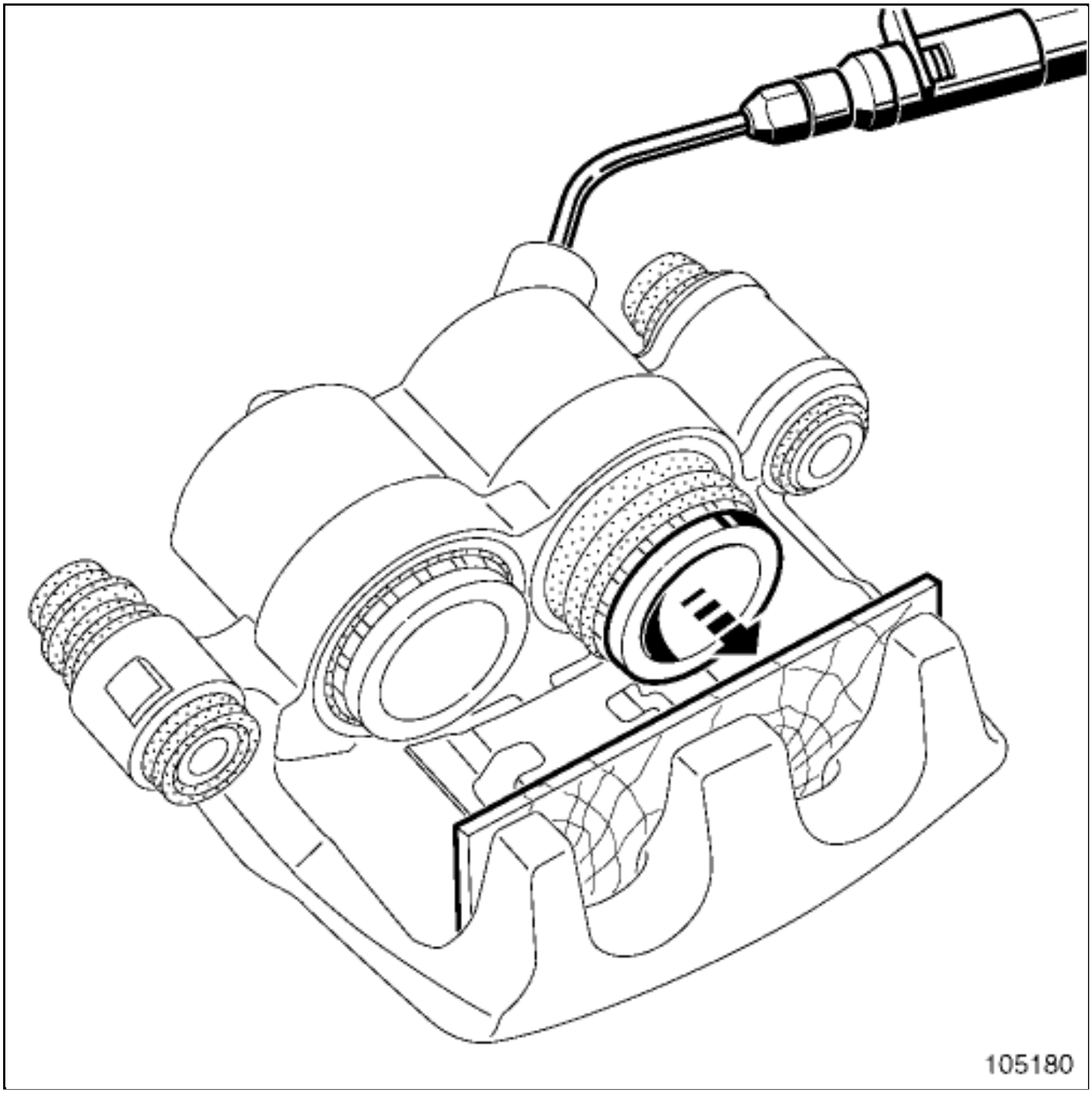
Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

CAUTION

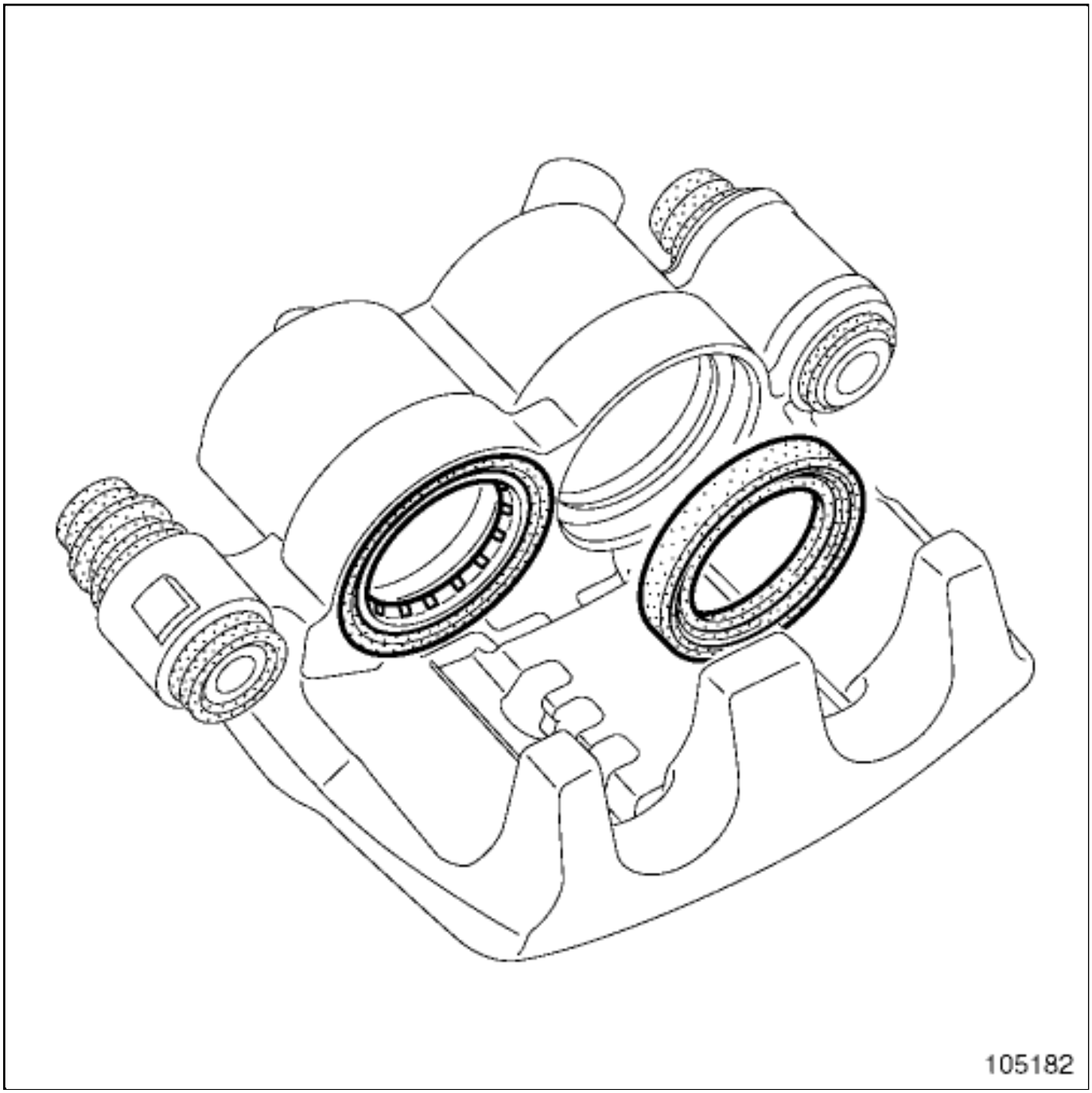
Prepare for brake fluid outflow to prevent damage to the mechanical parts and bodywork around the braking system.

REMOVAL

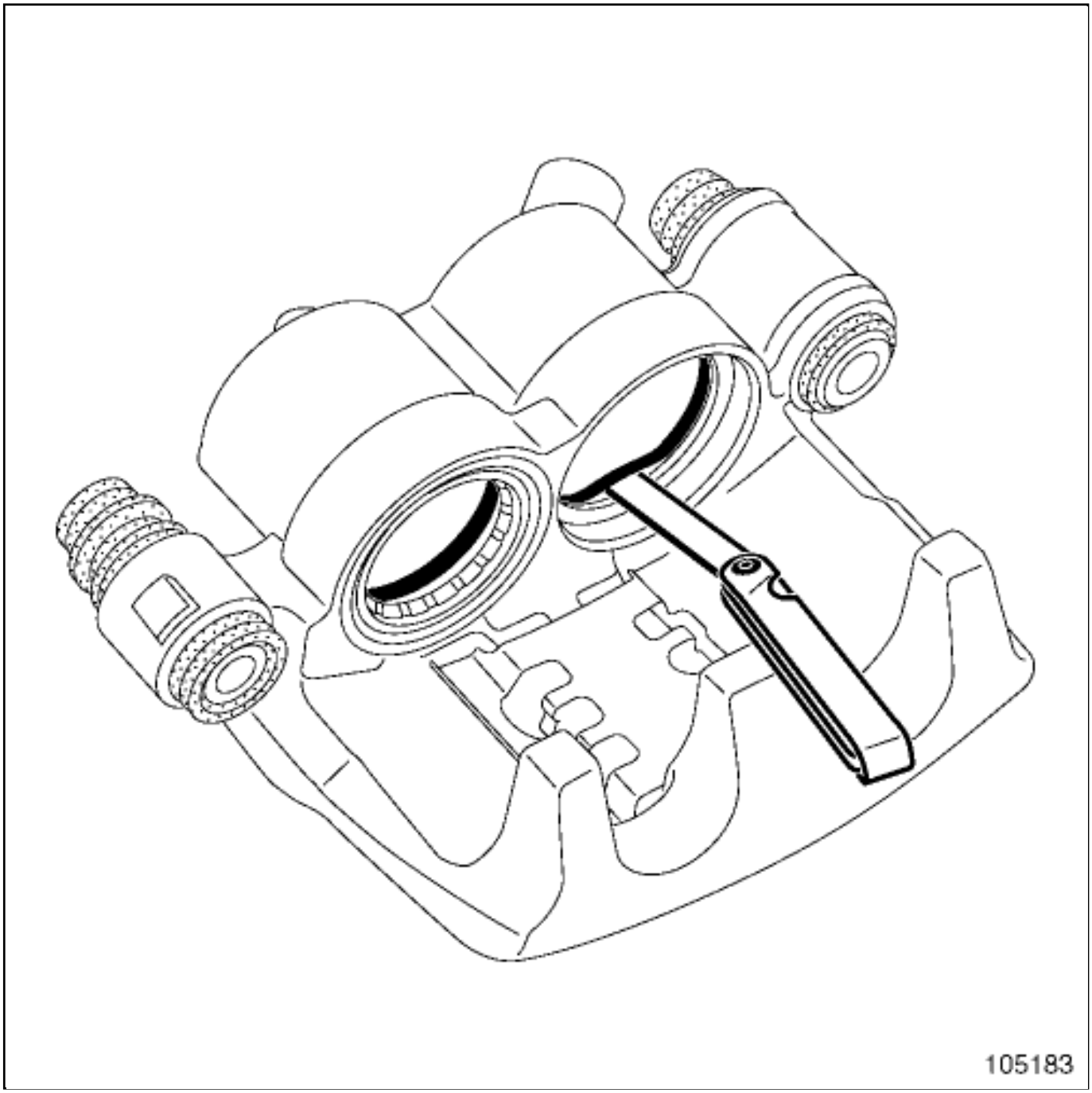
- Fit the pedal press to the brake pedal to limit the outflow of brake fluid.
- Remove the front wheel Wheel: Removal - Refitting .
- Remove the brake calliper Front brake calliper assembly: Exploded view .



- Remove the piston using compressed air, making sure to insert a wooden block between the calliper and the piston to prevent damage. Any trace of impact on the end panel will render it unusable.



- Remove the dust seal.



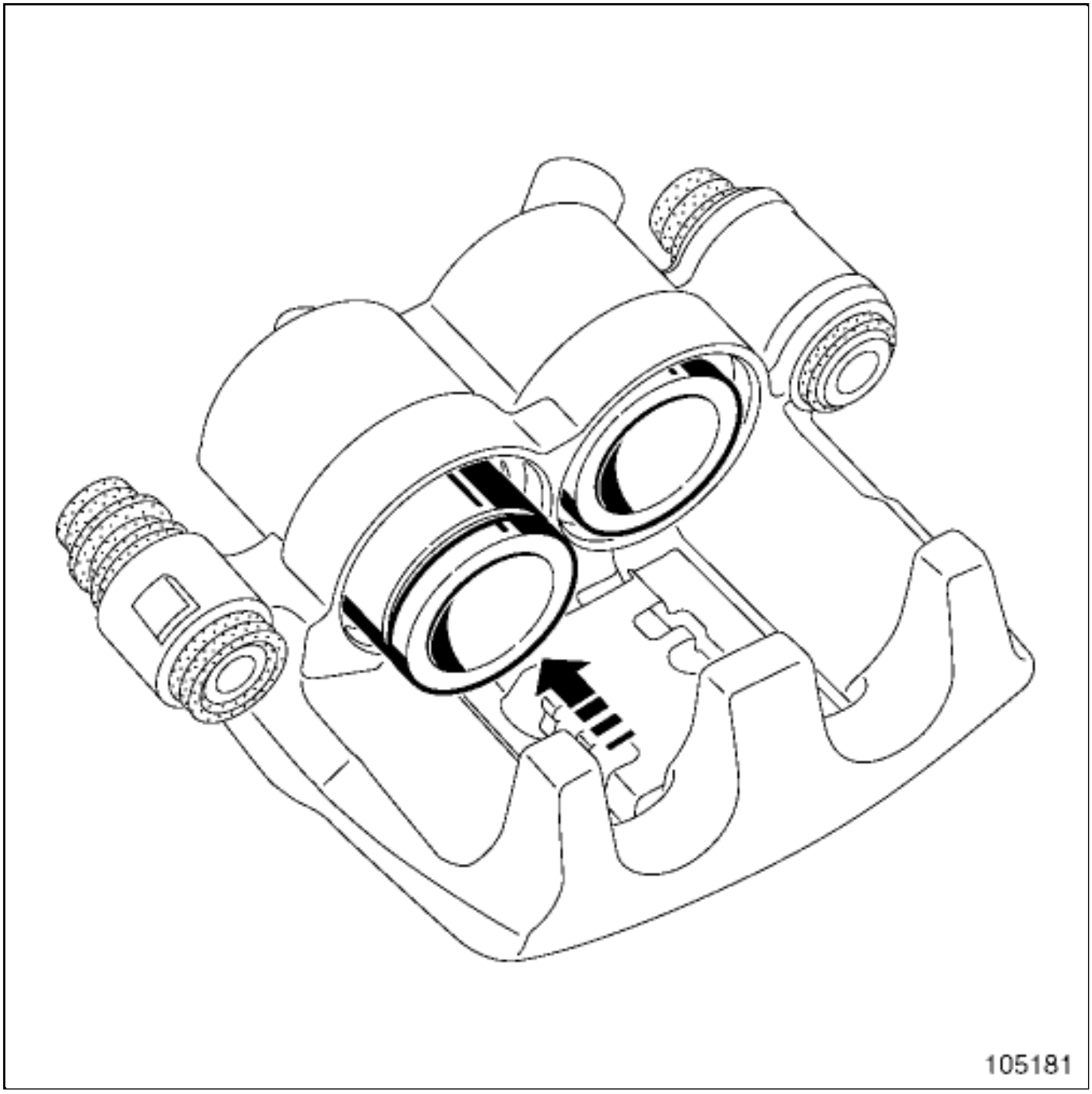
- Remove the rectangular section seal from the calliper groove with a round edged spring blade (feeler gauge).

CAUTION

The whole calliper must systematically be replaced if there are any scratches in the calliper bore.

Clean the parts using methylated spirit.

REFITTING



Refit:

- the rectangular section seal in the calliper groove,

- the piston after coating it with brake fluid,
- the dust seal.

Refit the brake calliper Front brake calliper assembly: Exploded view .

Refit the front wheel Wheel: Removal - Refitting .

CAUTION

Replace all faulty parts with new original parts.

Bleed the brake circuit Braking circuit: Bleed .

WARNING

To avoid any accident, bring the pistons, brake pads and brake discs into contact by depressing the brake pad several times.

ROOF: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Wire insertion tool for removing bonded mirror glass.	Car. 1033

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

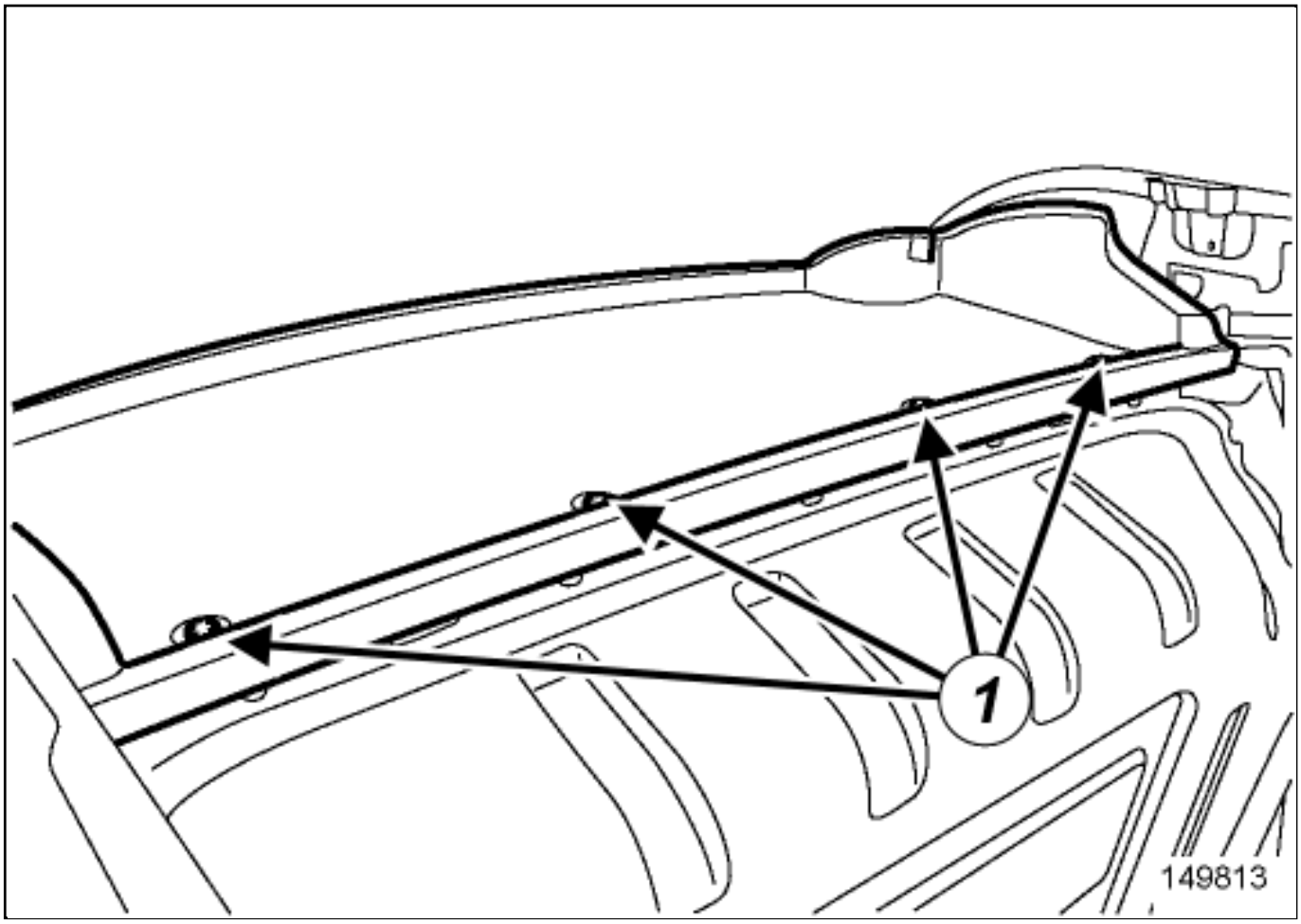
Remove:

- the windscreen pillar trims**Windscreen pillar trim: Removal - Refitting** (71A, Body internal trim),
- the B-pillar trim**B-pillar trim: Removal - Refitting** (71A, Bodywork interior trim),
- the sun visors**Sun visor: Removal - Refitting** (57A, Interior equipment),
- the front storage compartments under the roof**Front storage compartment under the roof: Removal - Refitting** (57A, Interior equipment) (depending on the equipment),
- the headlining light**Headlining light: Removal - Refitting** (81B, Interior lighting).

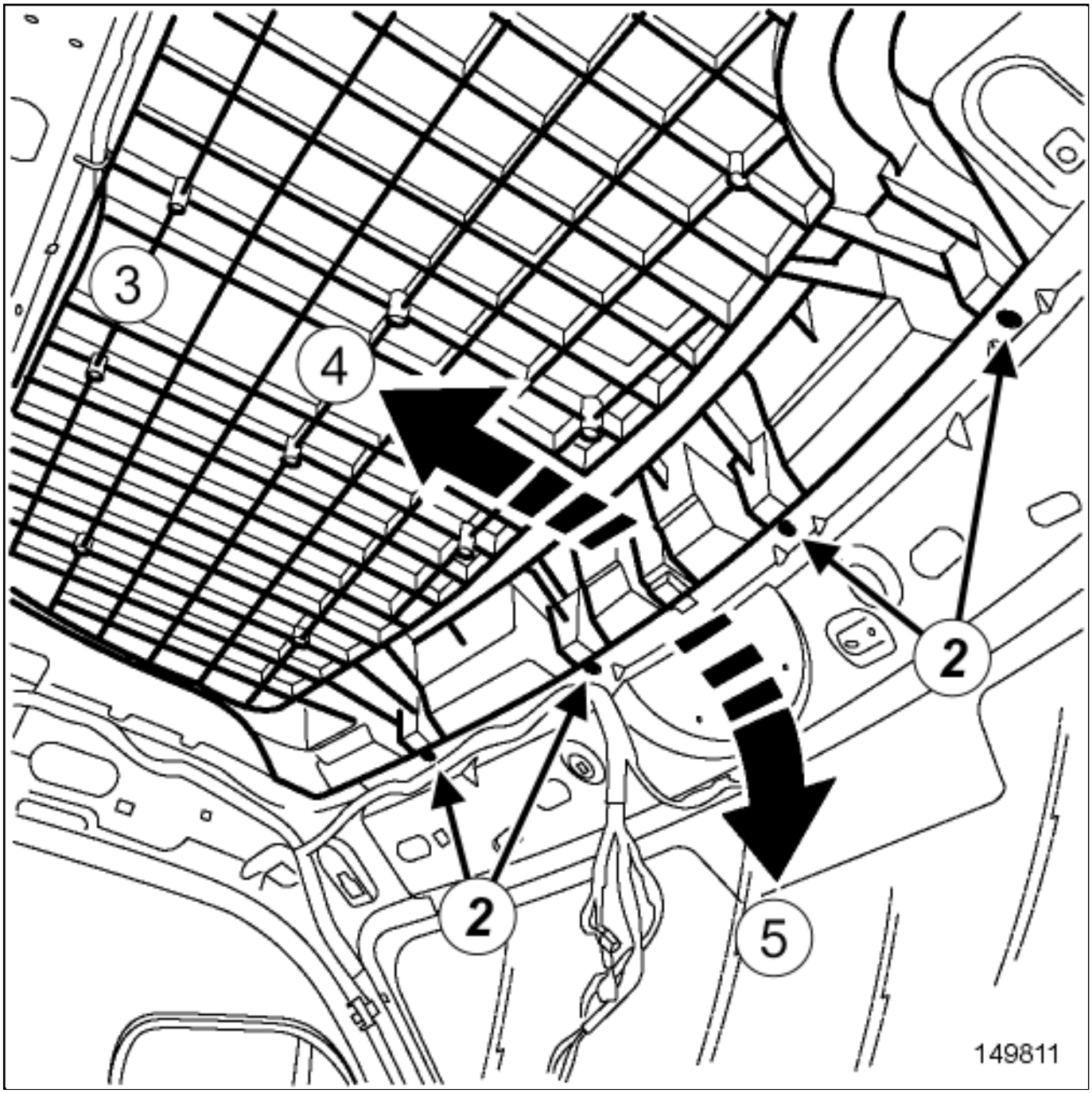
Remove the tachograph**Tachograph: Removal - Refitting** (83A, Instrument panel).

Remove:

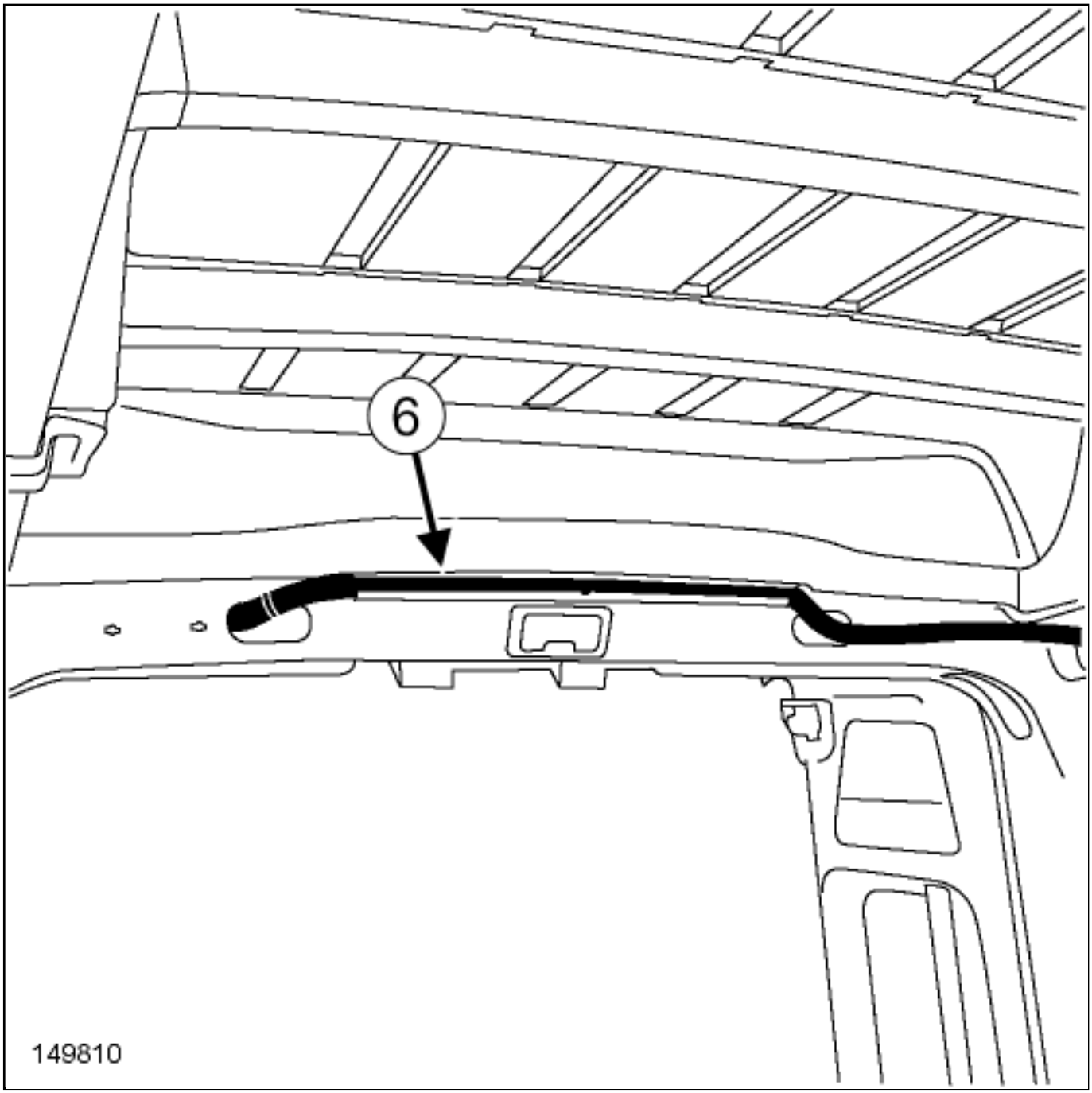
- the headlining (71A, Body internal trim),
- the cab roof stiffener**(see 45A, Top of body, Cab roof stiffener: Removal - Refitting)** .



- Remove the clips(1) .

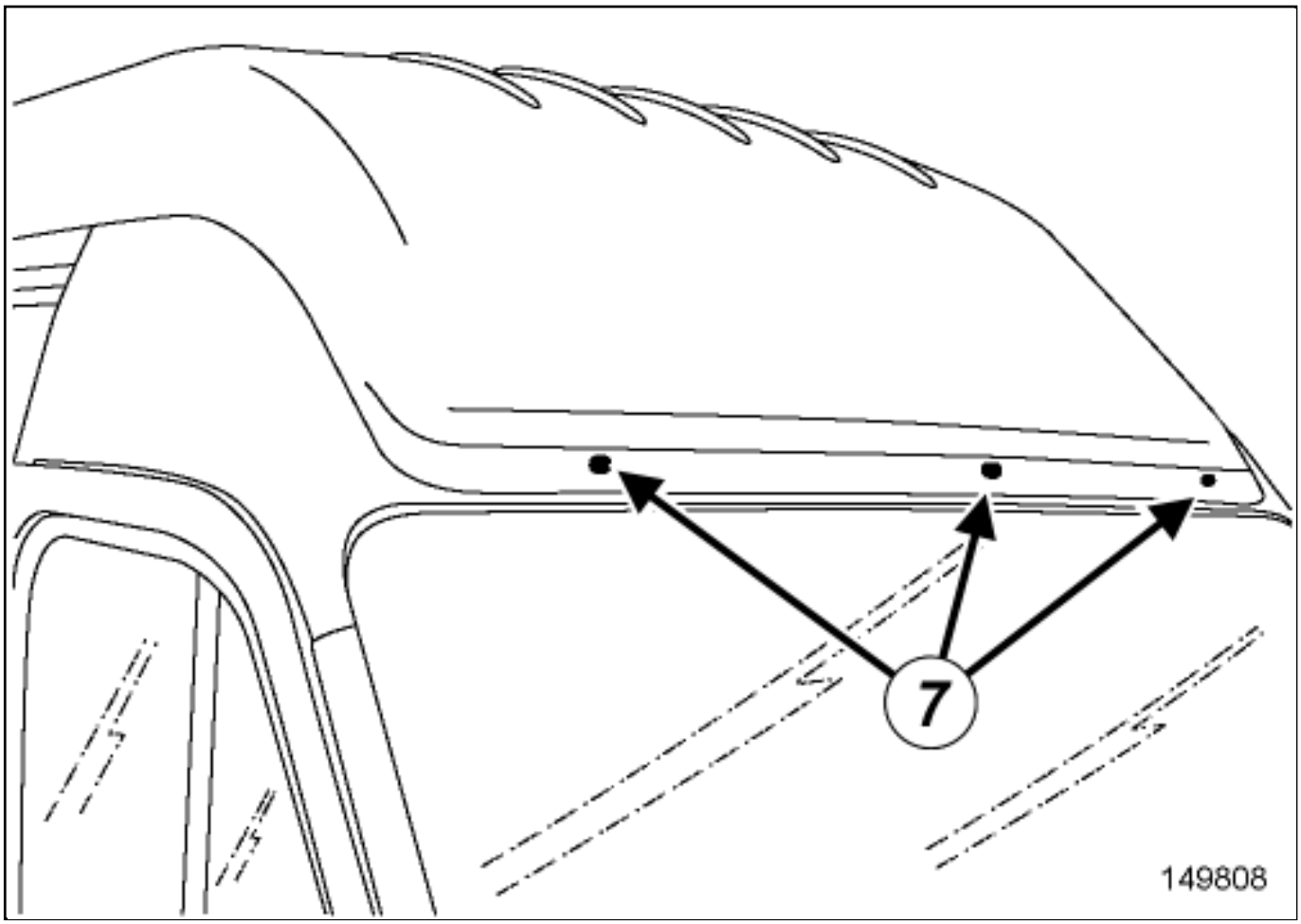


- Remove the bolts(2) .
- Raise the cab upper tray at(3) .
- Remove the cab upper tray at(4) and at (5) .

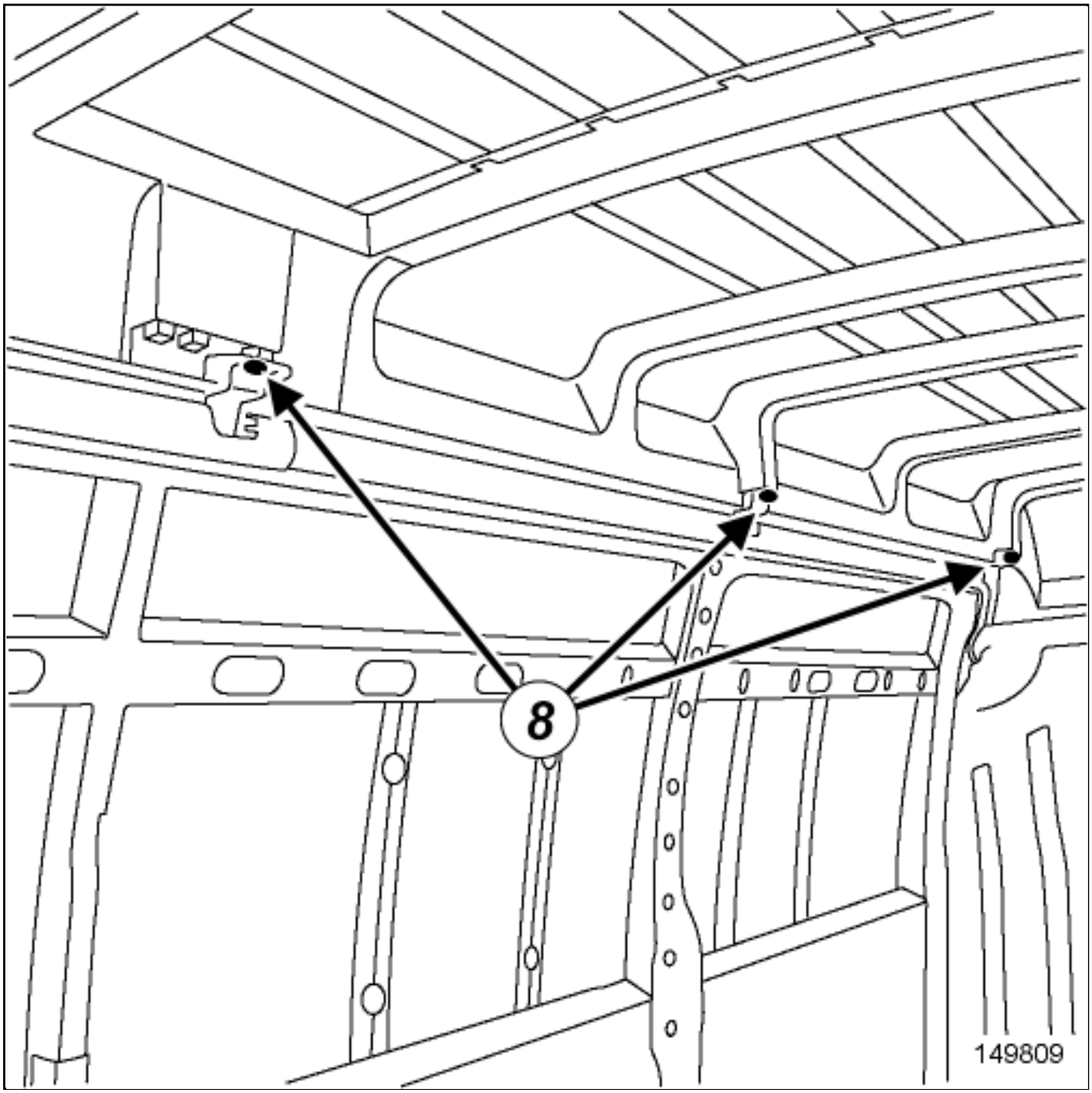


- Move the electrical wiring(6) to one side.
- Protect the edge of the roof with masking tape.

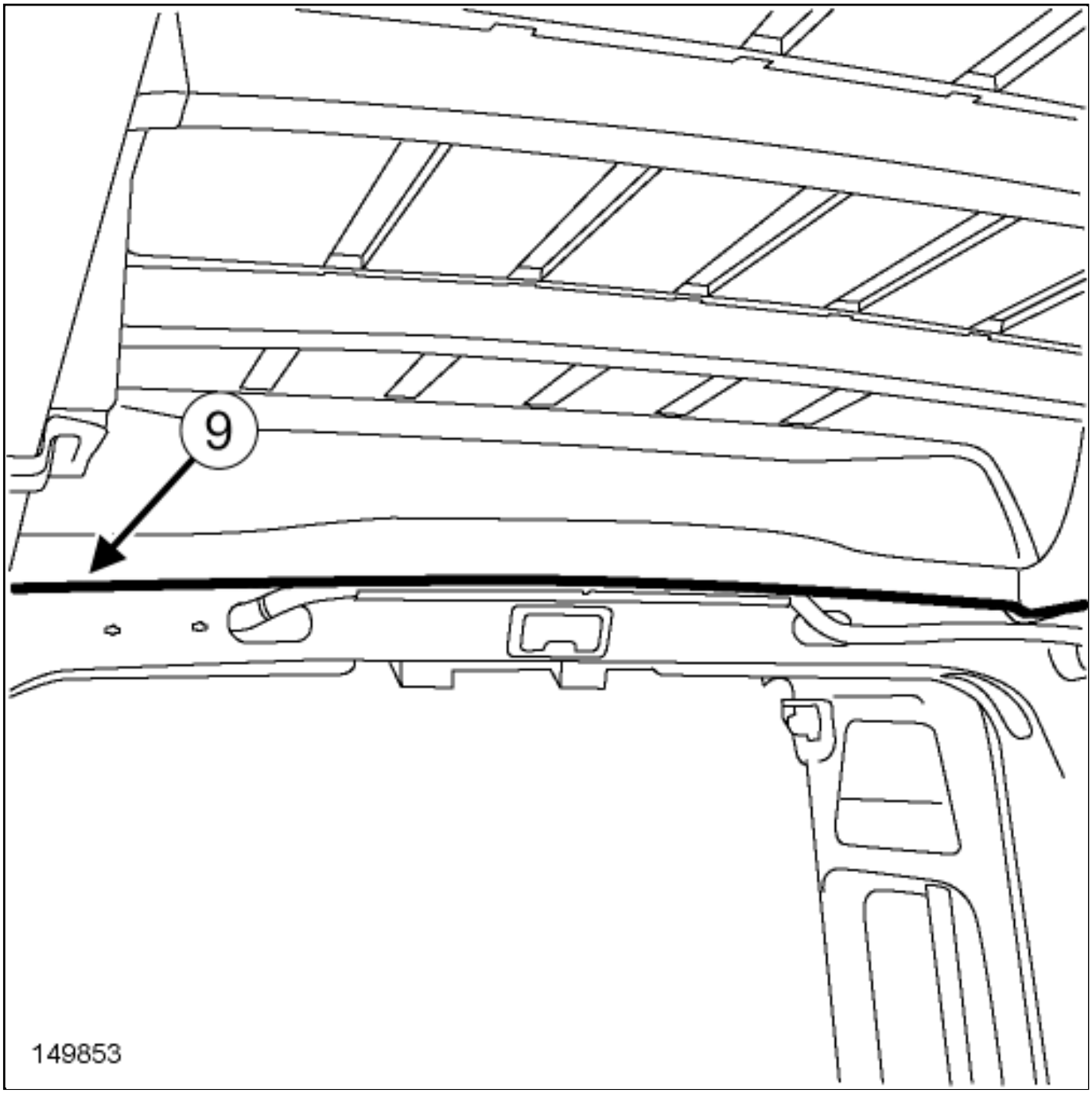
2. REMOVAL OPERATION



- Remove the bolts(7) .



- Remove the bolts(8) .

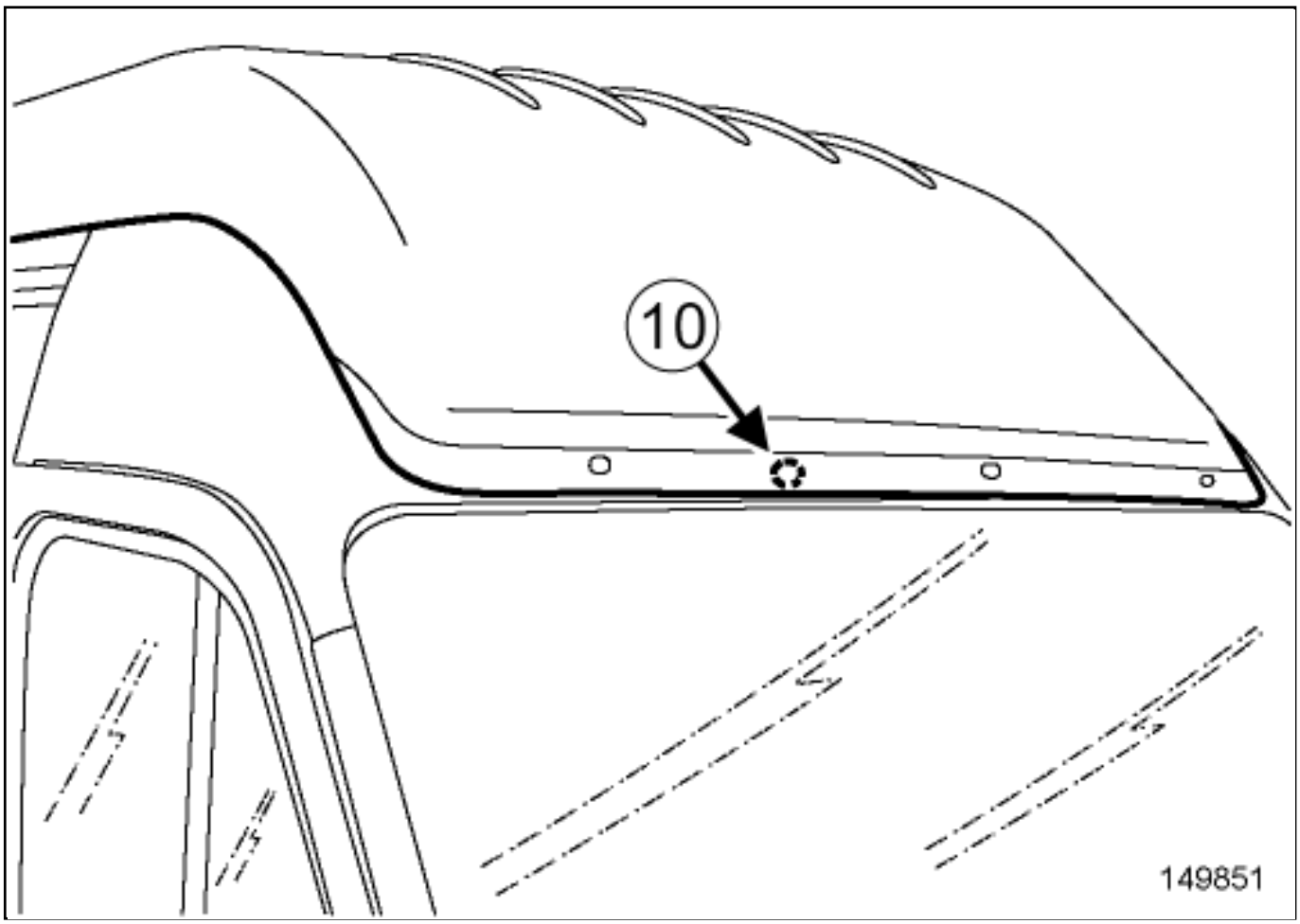


Pass:

- the toolWire insertion tool for removing bonded mirror glass.(**Car. 1033**) in the rear right-hand or left-hand section of the roof(**9**),
- the cutting wire in the toolWire insertion tool for removing bonded mirror glass.(**Car. 1033**).

Fit the cutting handles on the two sections of the cutting wire.

Cut the cement bead of the roof along the lengths and the rear, taking care to slide a protective shim between the panel and the roof progressively whilst cutting (this operation requires two operators).



Cut the front section cement bead using the pneumatic tool, taking care to bypass the indexing pin (10) .

Remove the roof (this operation requires 4 to 5 operators).

REFITTING

1. REFITTING PREPARATION OPERATION

Note:

Use 3 or 4 adhesive kits (part number: 60 25 170 306) depending on the length of the cement bead.

Note:

When replacing, use P 120 to sand the bonding area on the roof.

Level the cement bead on the roof and the top of the vehicle.

Blow and degrease the bonding line (see product technical sheet).

Prime the bonding areas (see product technical sheet).

Extrude a cement bead on the top of the vehicle (see product technical sheet).

2. REFITTING OPERATION

Refit:

- the front section of the roof (this operation requires 4 to 5 operators) using the indexing pin,
- the bolts.

3. FINAL OPERATION

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

ROTARYSWITCH:ADJUSTMENT

Note, one or more warnings are present in this procedure

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 84A, Control - Signals, Control - Signals: Precautions for repair) ,
  - Vehicle: Precautions for the repair .

This method is used to put the rotary switch in the neutral position.

1. PRELIMINARY CONDITIONS FOR THE ADJUSTMENTS

- The wheels are set straight ahead.
- The rotary switch is refitted on the steering column.
- The steering wheel is removed.

2. ADJUSTMENT

Note:

Certain rotary switch models are equipped with a locking device.

To perform the adjustment, it is essential to unlock the rotary switch when handling.

- Turn the movable part of the rotary switch fully to the left.
- Turn the movable part of the rotary switch fully to the right, counting the number of turns.
- Divide the number of turns counted by 2.
- Turn the movable part of the rotary switch to the left by the number of turns calculated.

- The rotary switch is now within the turn of its neutral position.

Example:

5 turns were counted between the full left and full right position of the rotary switch.

Turn the movable stop of the switch 2.5 turns to the left to find neutral again.

- Continue the rotation until the marks are aligned.

- The switch is now in the neutral position.

SCOOP UNDER THE SCUTTLE PANEL GRILLE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

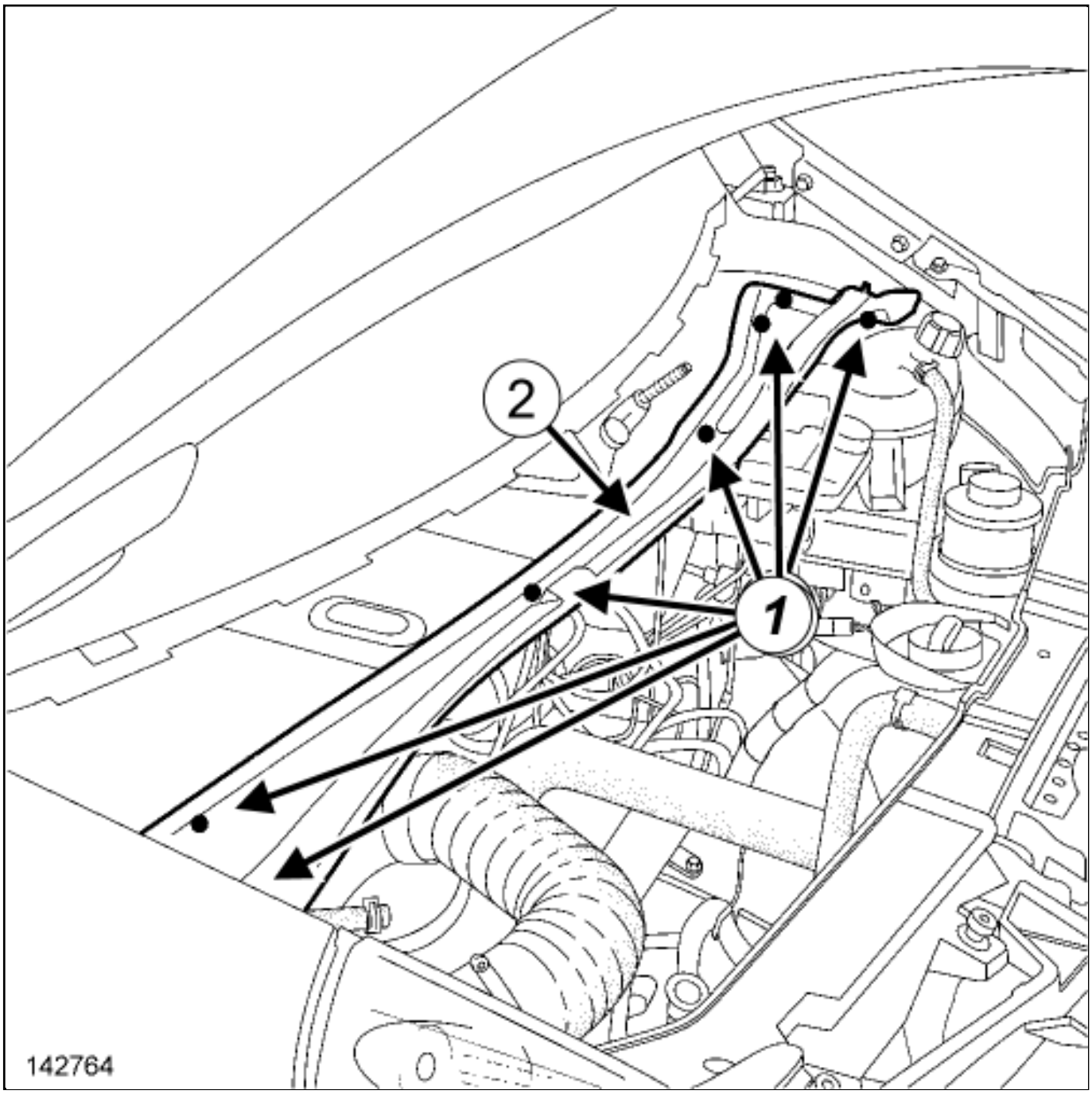
REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove:

- the windscreen wiper arms**Windscreen wiper arm: Removal - Refitting** (85A, Wiping - Washing),
- the scuttle panel grille**(see 56A, Exterior equipment, Scuttle panel grille: Removal - Refitting)** .

1. REMOVAL OPERATION



- Remove:
  - the bolts(1) ,
  - the scoop under the scuttle panel grille(2) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

SCREEN WASHER PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

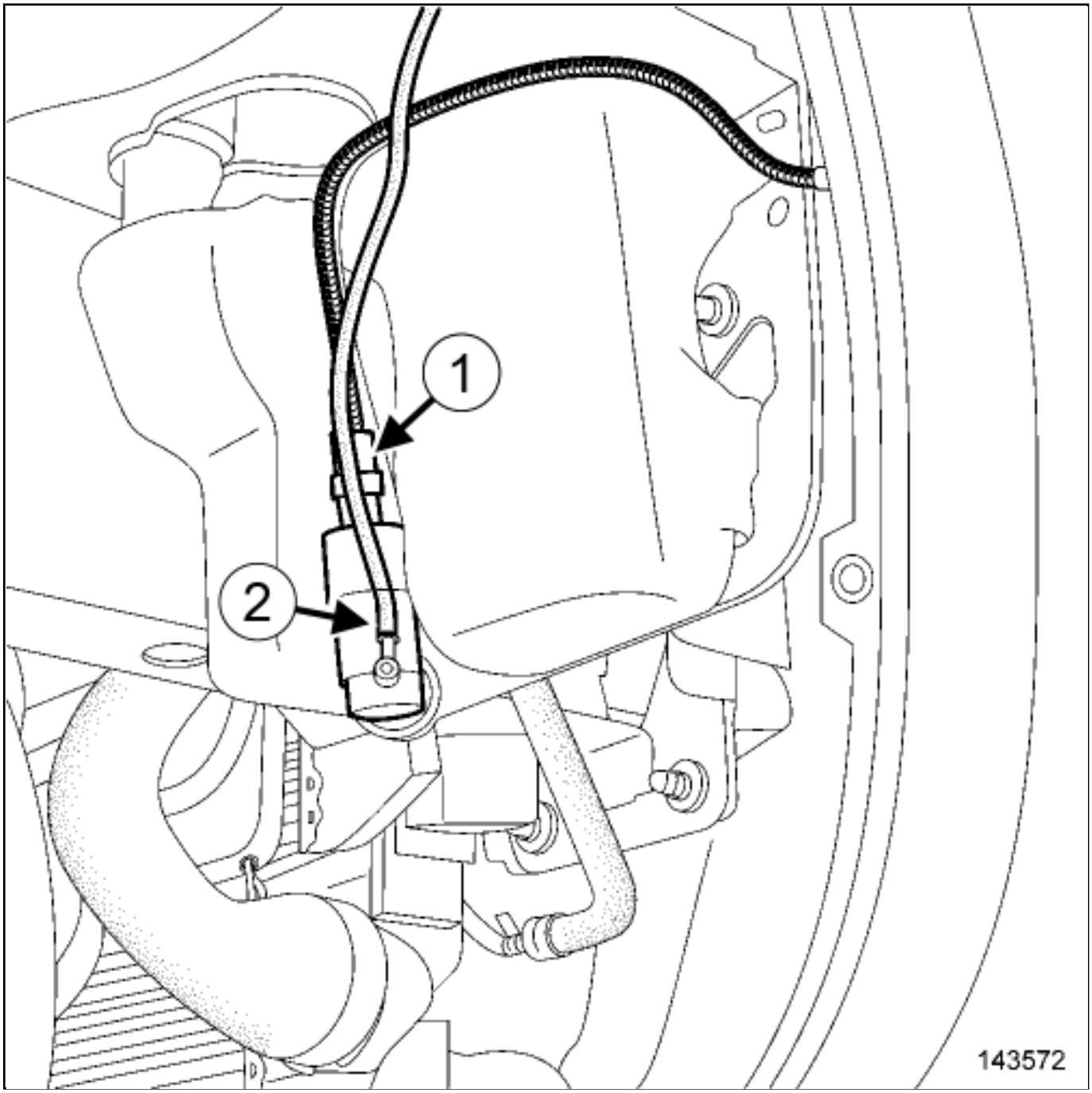
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the front section of the front right-hand wheel arch liner**Front wheel arch liner: Removal - Refitting** (55A, Exterior protection).

2. REMOVAL OPERATION

Note:

When disconnecting the front jet supply pipe, use a container to collect the windscreen washer fluid which will flow out of the bottle.



- Disconnect:
  - the connector(1) from the windscreen washer pump,
  - the front jet supply pipe(2) .

- Remove the windscreen washer pump.

REFITTING

- Proceed in the reverse order to removal.

- Fill up the windscreen washer bottle.

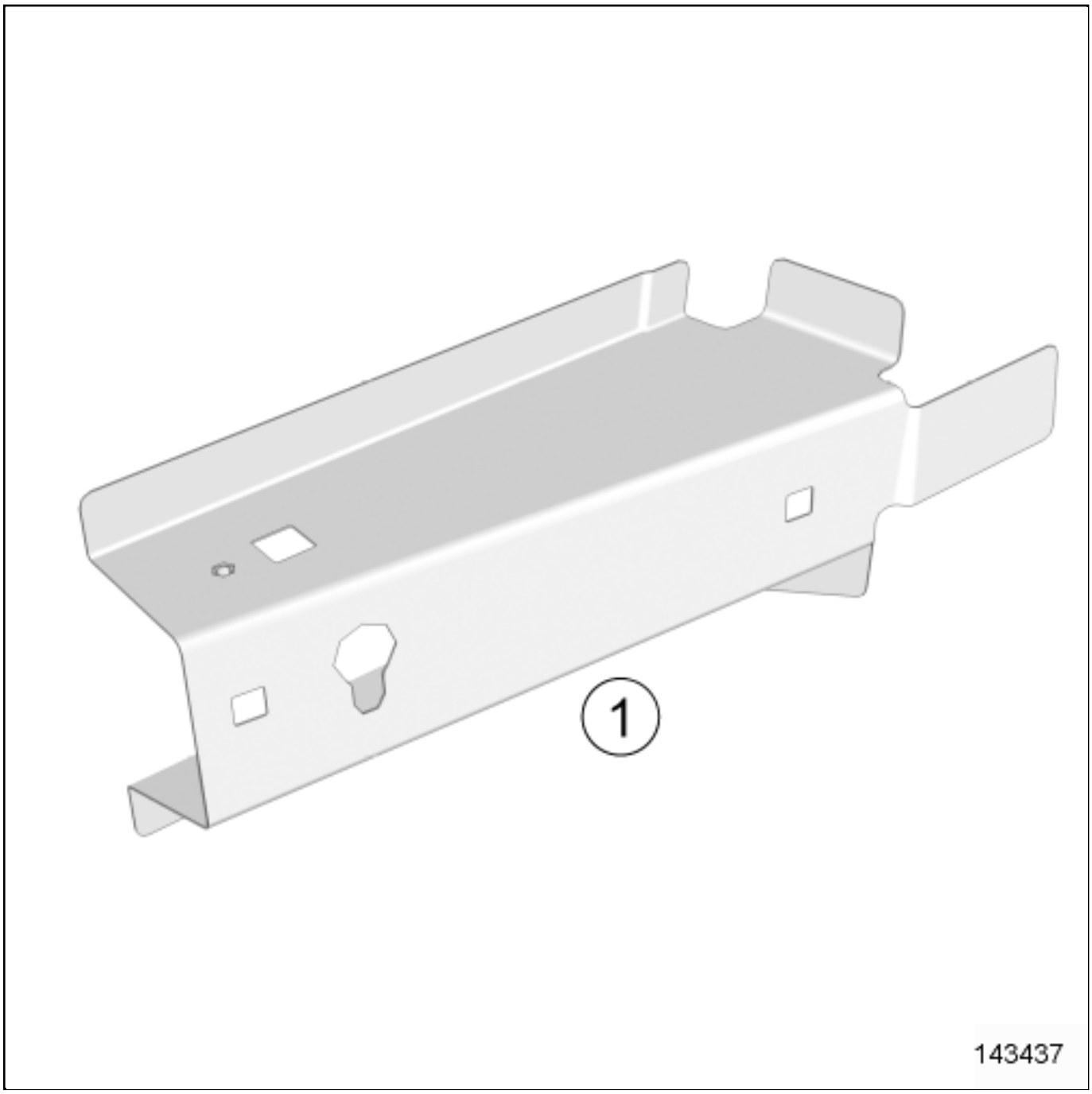
SCUTTLE SIDE PANEL UPPER REINFORCEMENT: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Scuttle side panel upper reinforcement	Mild steel	0.8

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

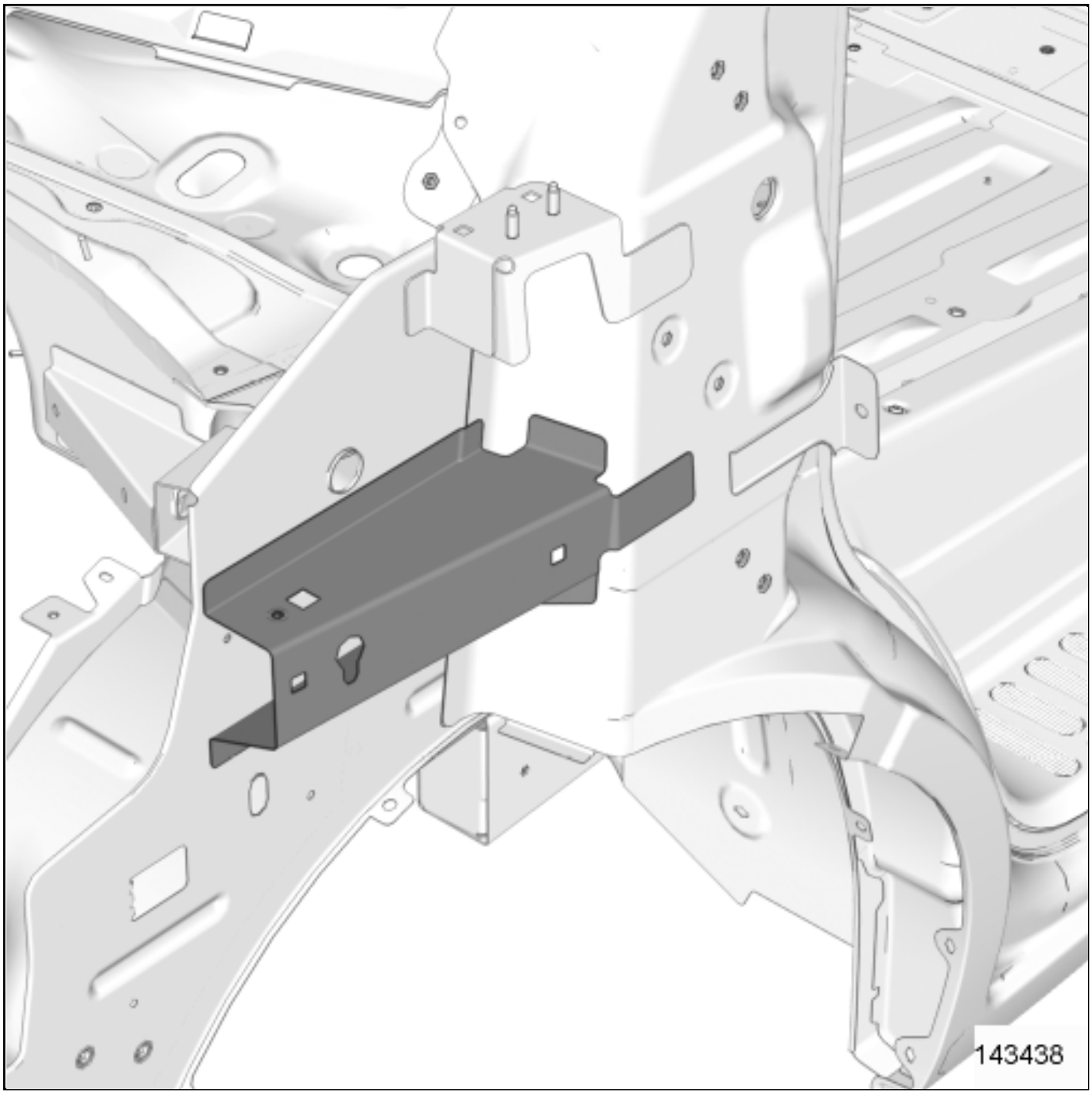
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

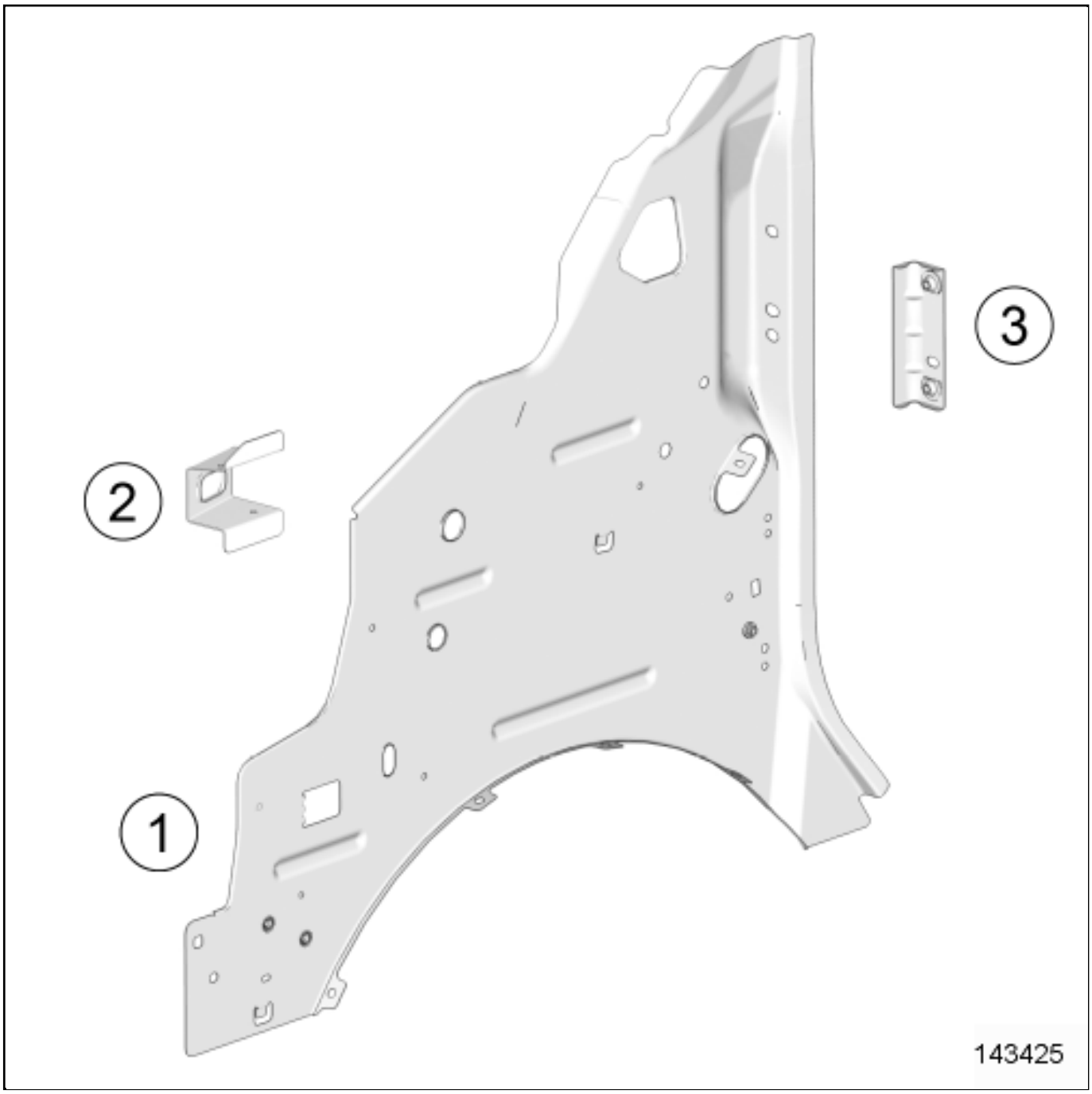
SCUTTLE SIDE PANEL: REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART

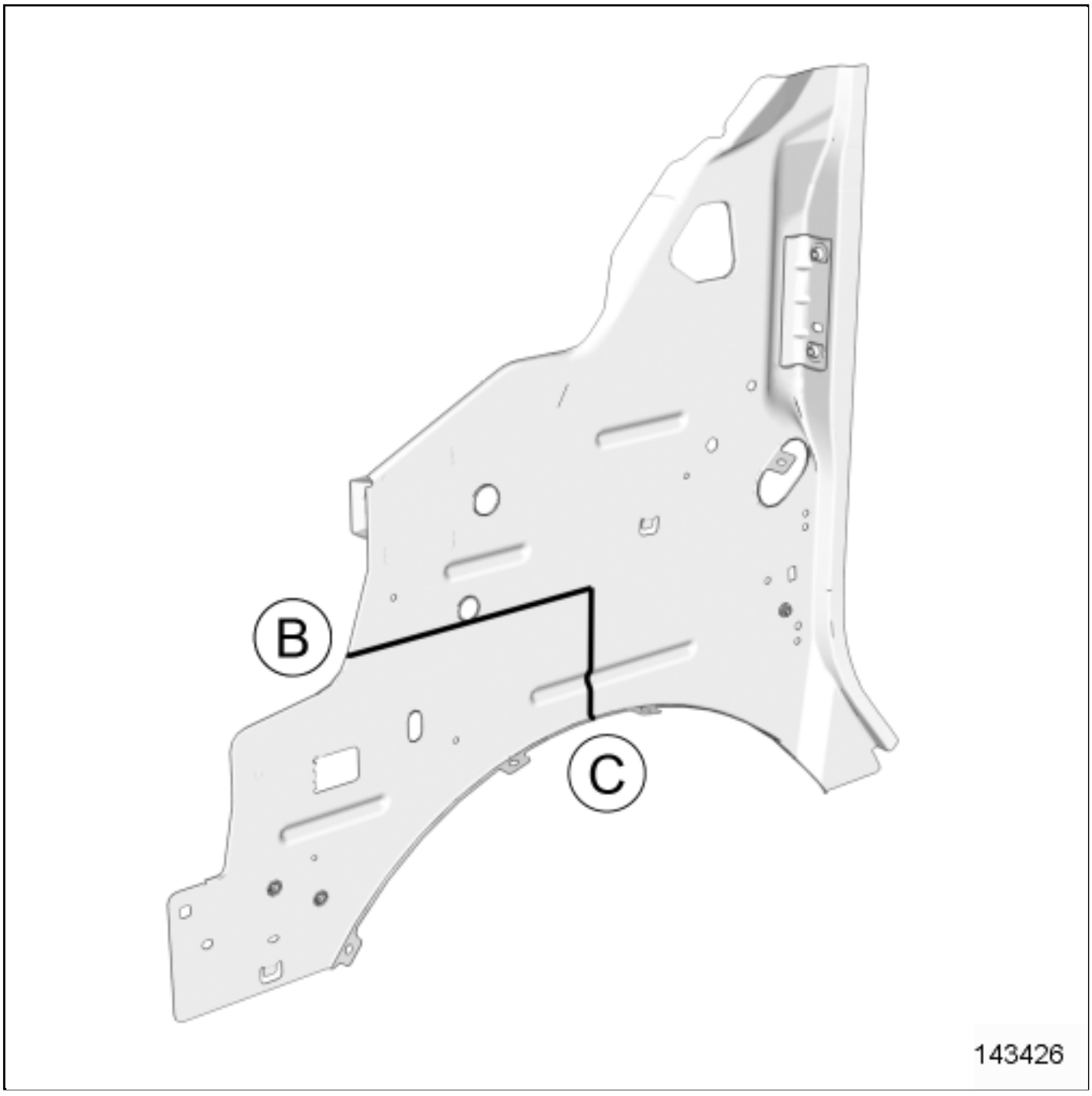


No.	Description	Type	Thickness (mm)
(1)	A-pillar lining	HLE	0.8
(2)	Degassing tank mounting support	Mild steel	1.5
(3)	Side mounting reinforcement of dashboard frame	Mild steel	1.2

2. IN THE EVENT OF REPLACEMENT

The options for replacing this part are as follows:

- Complete replacement
- replacement along cut B-C.



CAUTION

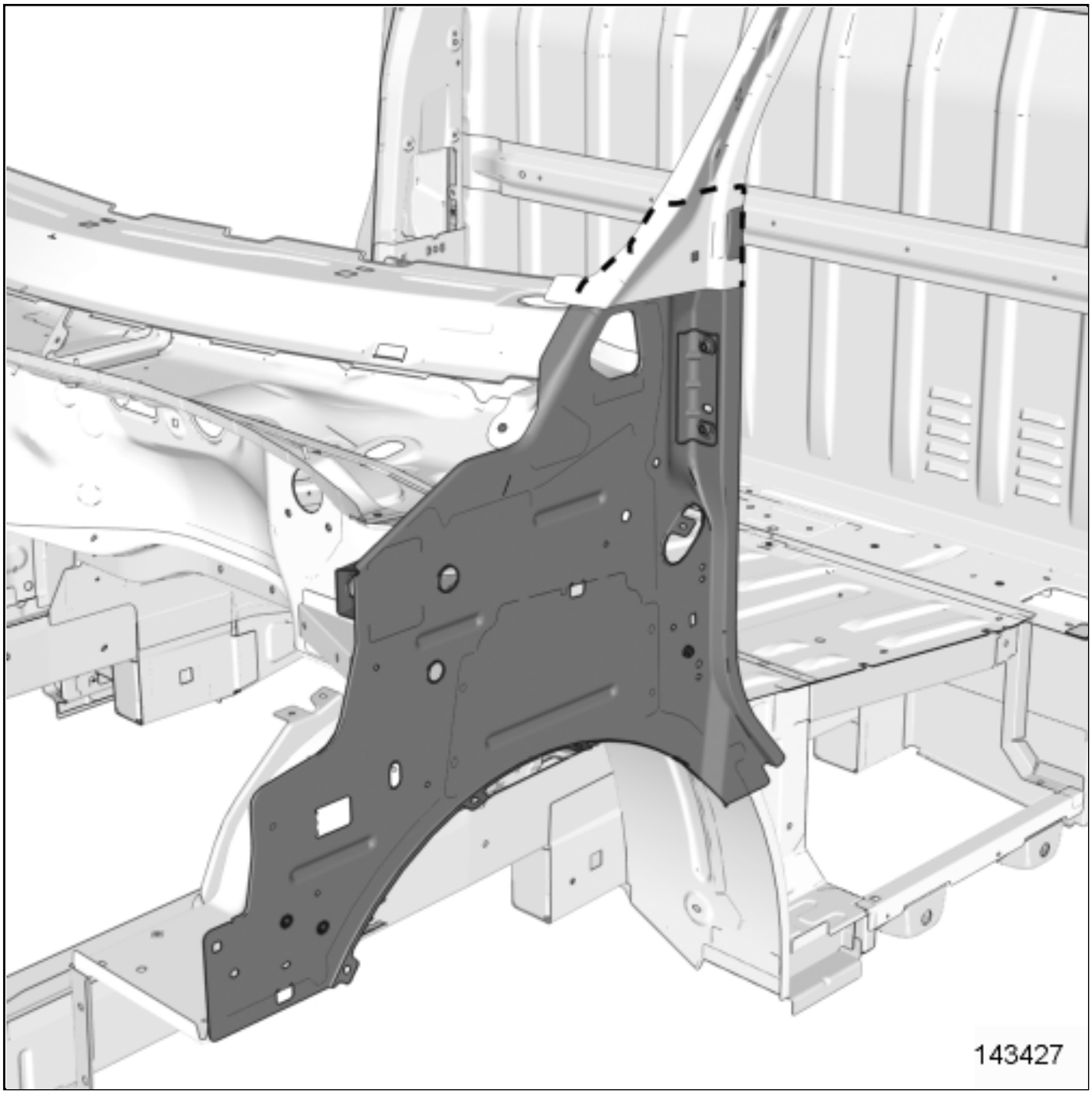
To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION



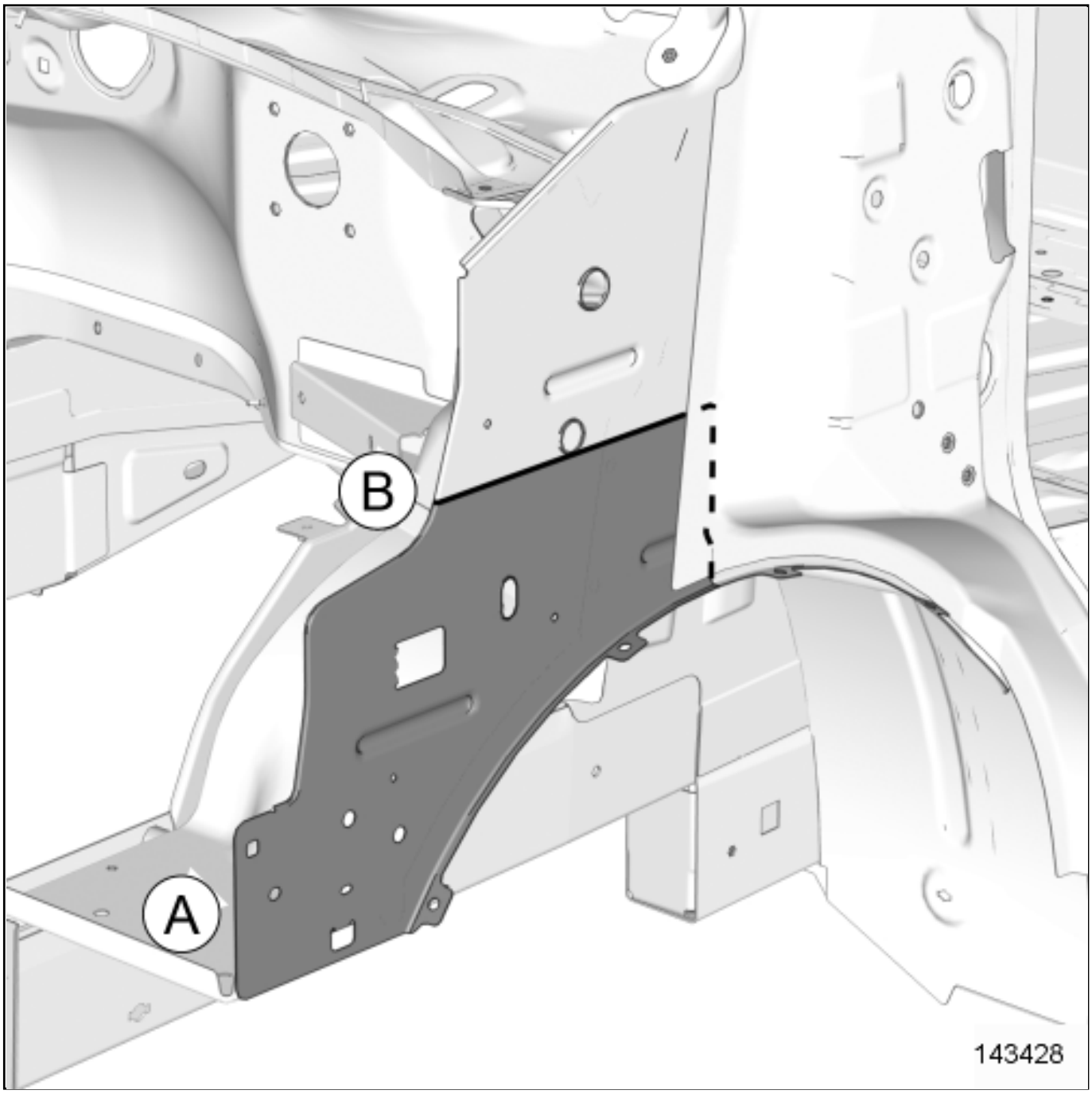
2)SPECIAL NOTES ON MATING

CAUTION

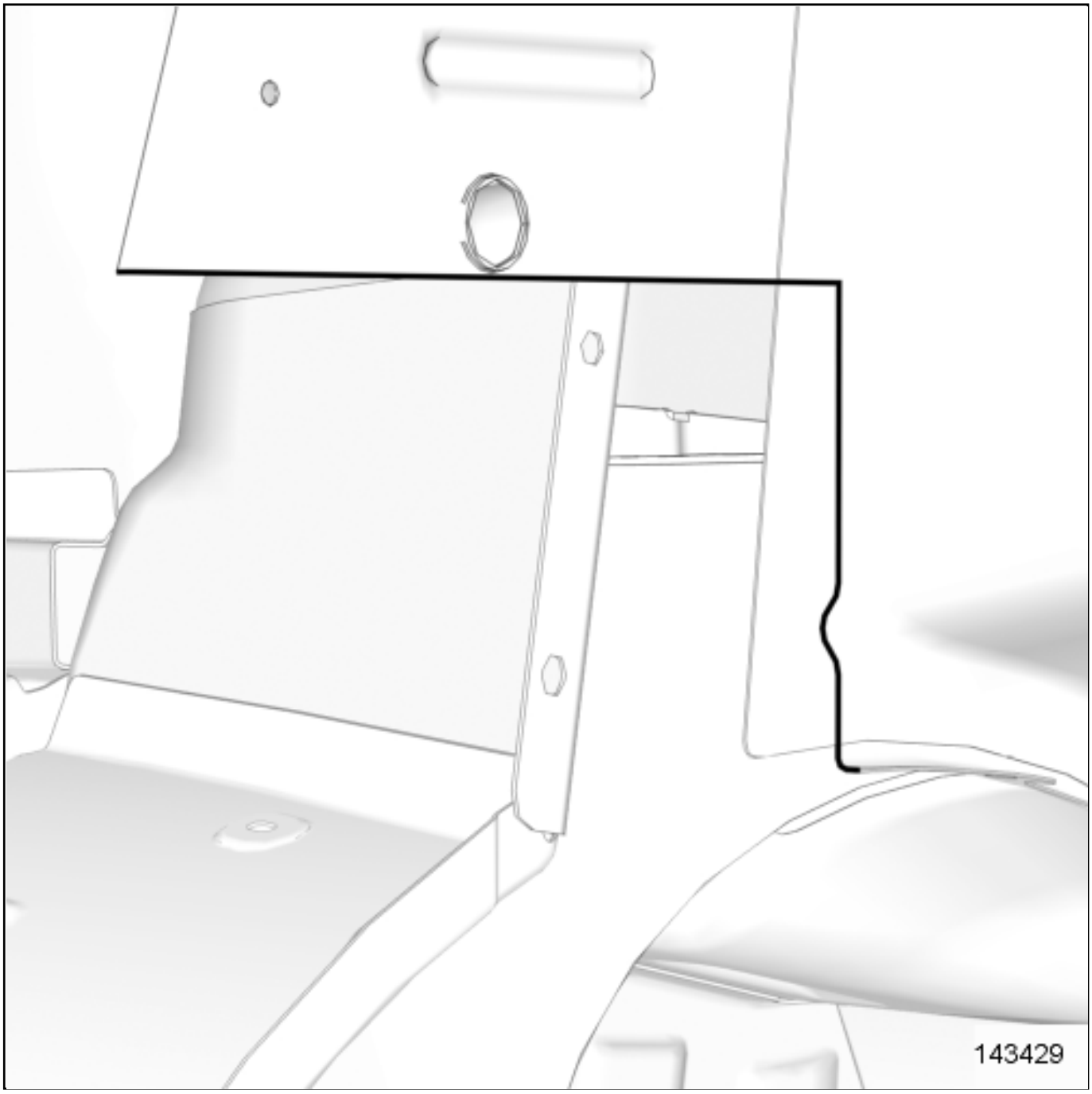
If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

2- PARTIAL REPLACEMENT A-B

1)PART IN POSITION



DETAILED VIEW B



2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

TECHNICAL NOTE
Edition Anglaise

77 11 199 769
MAY 1998

488A
Service 0422

All types

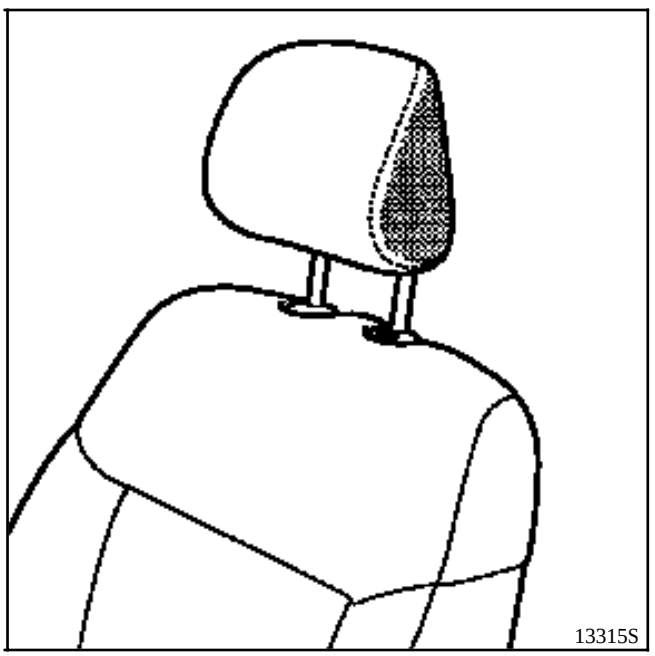
Type XXX X

S/Section 79

79 HEAD RESTRAINT FOR COMFORT AND SAFETY

INFORMATION

This note will provide you with all the information and instructions required to remove and replace the new head restraints and the special sleeves fitted on the front seatbacks.



"The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

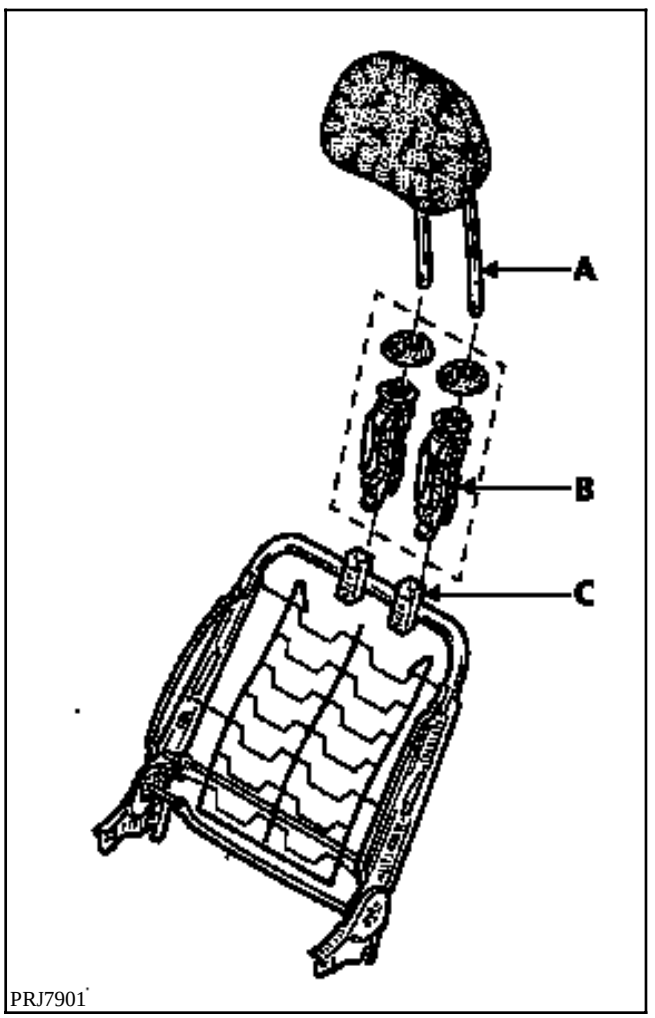
The methods may be modified as a result of changes by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed".

All copyrights reserved by Renault.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of RENAULT.

© Renault 1998

INTRODUCTION



This new type of head restraint will allow you:

- Height adjustment over a greater range so that it can be adjusted for passengers of all heights.

- A reduction in the distance between the head and the head restraint which will provide better support for the head if an impact occurs.

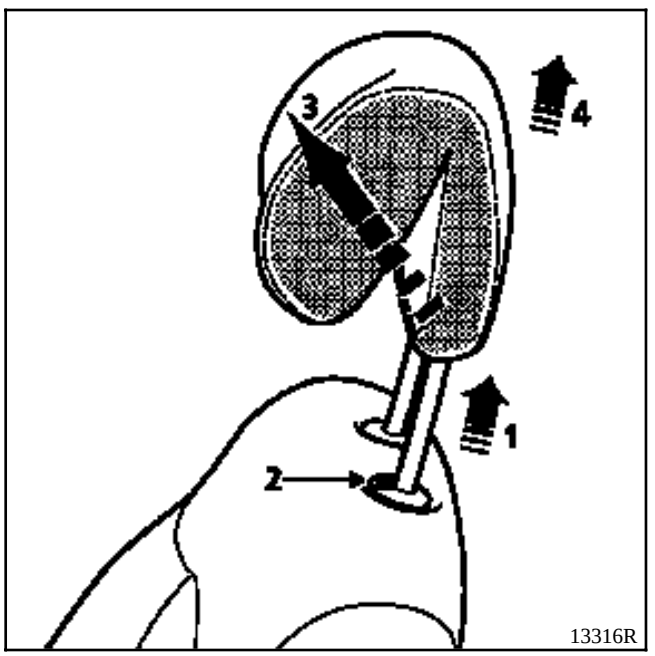
These head restraints consist of curved metal rods (A) fitted into plastic sleeves (B). These sleeves ensure that the restraint remains in place securely and that it can be adjusted.

NOTE: These sleeves must be removed and refitted with great care. This is to ensure that the head restraint retains its safety functions.

Each seat has a sleeve with a retention mechanism and a simple sleeve, mounted in dowels (C) in the seatback fittings.

IMPORTANT : In order to ensure that the sleeves are not damaged when the head restraint is removed, it is essential to follow the instructions given below.

REMOVING THE HEAD RESTRAINT



Sit on the back seat of the vehicle.

Tilt the seatback slightly.

Move the head restraint to its highest position (1), pushing it slightly towards the front.

Lift the plastic retention mechanism (2) and hold it in that position.

Raise the head restraint whilst pushing it firmly towards the front (3), in the same way as for adjusting the head restraint height.

Let go of the plastic retention mechanism (2) as soon as you feel the head restraint has been released.

Keep lifting the head restraint (4) until the rods have been completely released.

REFITTING

Position the two head restraint rods in the movable sleeve caps.

Press down on the head restraint to insert the sleeves but do not use force.

As soon as the sleeves have locked in position (a click will be heard), lower the head restraint, still keeping it pushed towards the front.

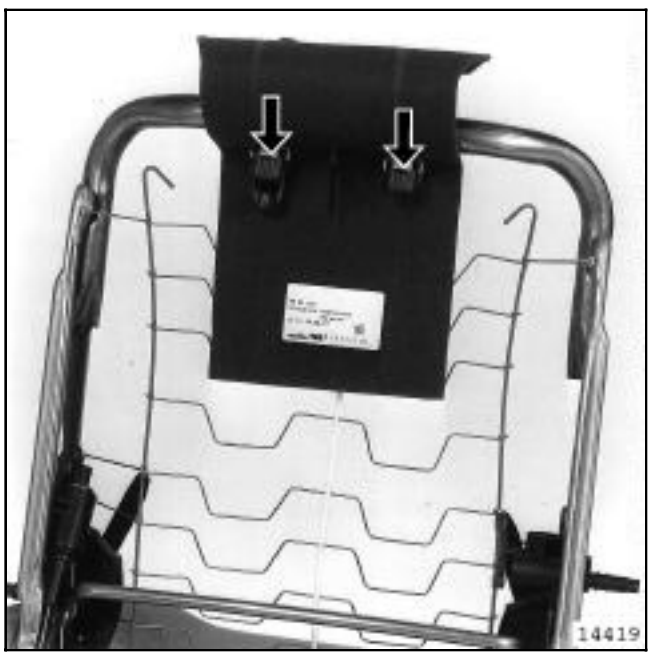
ATTENTION

When the rods have been taken out or inserted, be very careful how they are fitted into the sleeves until they lock in position.

When the ends of the rods are inserted, the movable tops of the sleeves must be aligned with the guides secured to the seatback fittings in such as way that the rods can be extracted or inserted.

If any force is applied during these dismantling or refitting operations it may damage the sleeves irreparably .

REMOVING THE SLEEVES



Remove:
- the head restraint (as specified above),
- the seat.

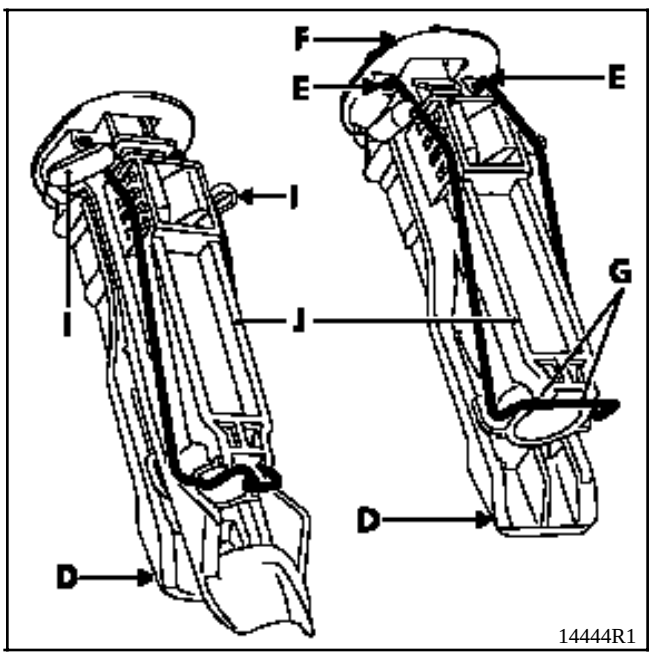
Unclip the upper caps on the sleeves.

Remove the seat back trim.

Apply pressure to the two retaining lugs (D) (see illustration in next column).

Release the sleeves from the metal dowels in the seat fittings by pushing them upwards

REFITTING THE SLEEVES



First make sure that the two arms of the spring (E) are properly fitted into the inner cap (F) and clipped onto the body of the sleeve at (G).

If this is not the case, push the inner cap (F), (moving hinged section) towards the front to fit the spring at (G).

When the assembly has been fitted, push the inner cap back towards the rear.

Insert each sleeve in the relevant dowel into the seatback fittings without using any tools and without applying any force.

NOTE: Each sleeve has locating rib (J) which will ensure that no mistake can be made when fitting the sleeves in the dowels.

Apply pressure until the retaining lugs (D) have clicked into the dowel.

Each sleeve must have tabs (I) which fit each side of the dowel along its entire length .

IMPORTANT : If one of the tabs (I) is broken, the sleeve **must** be replaced.

Refit the seat trim and fit the head restraint back into position.

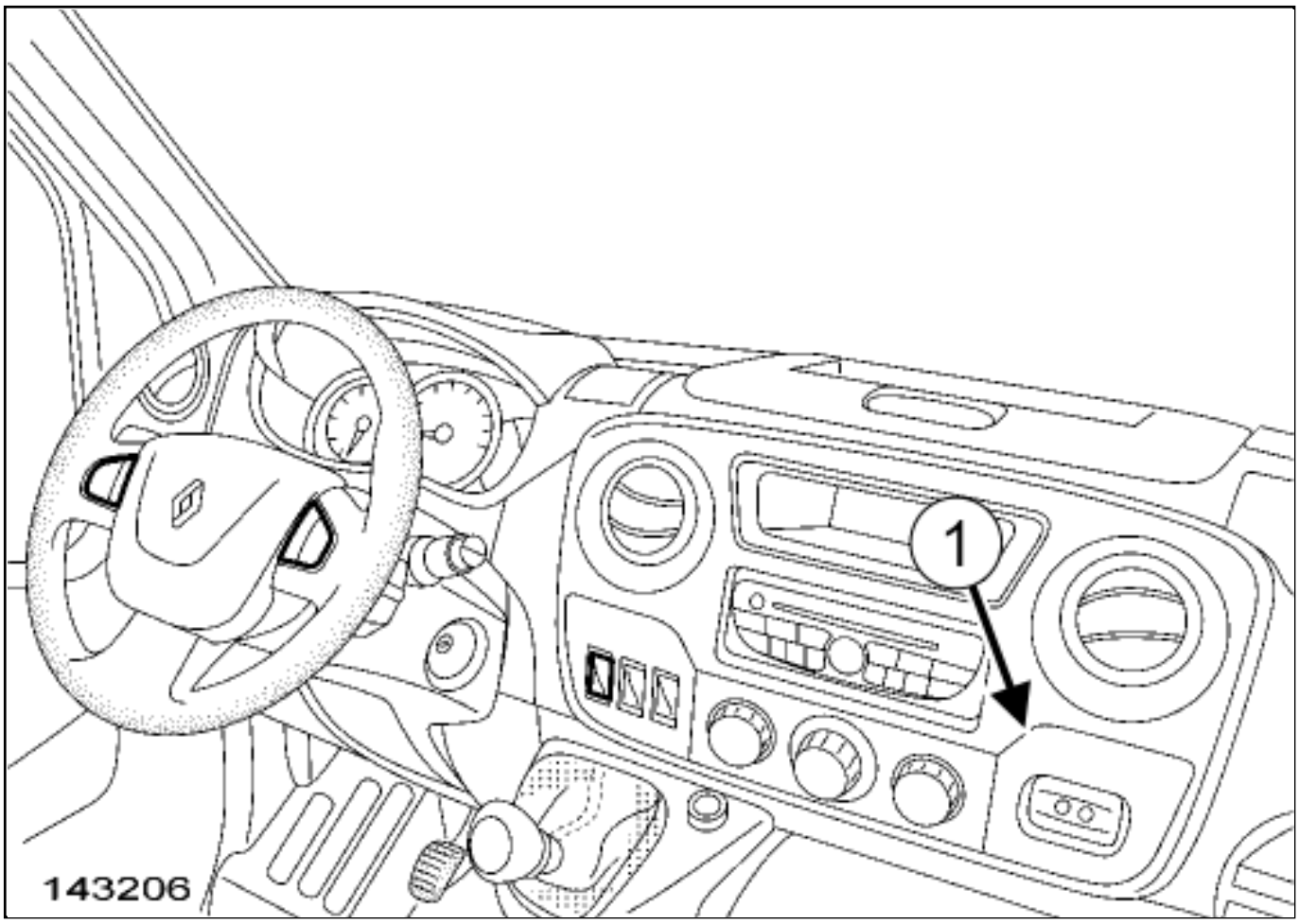
SEAT BELT REMINDER WARNING LIGHT: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

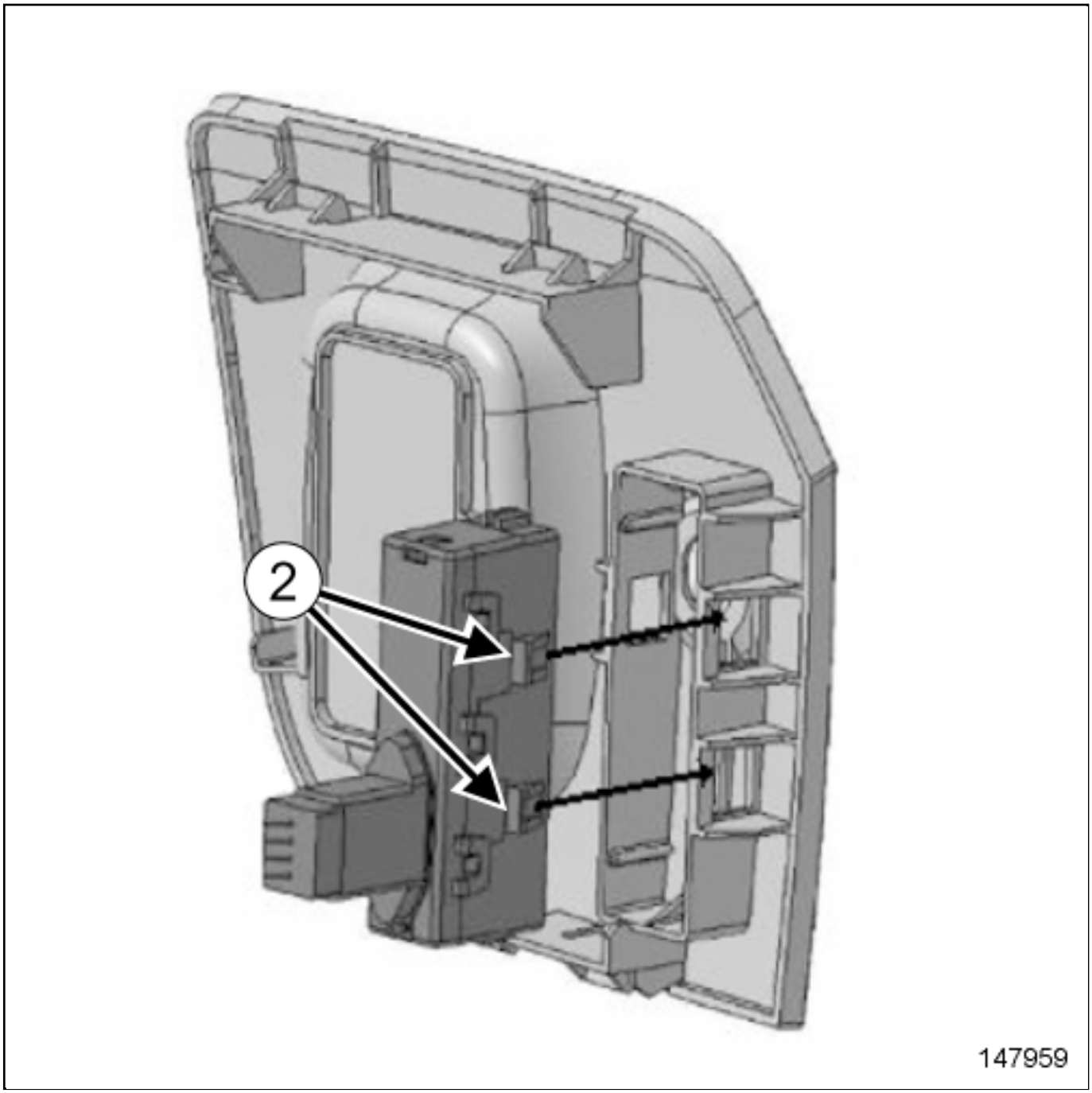
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.



- Unclip the switch plate(1) using the toolSet of trim removal levers.(Car. 1363) .
- Disconnect the connectors.

2. REMOVAL OPERATION



- Remove the seat belt reminder warning light by pressing on the clips(2) .

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

2. CHECKING AFTER REPAIR

- Switch on the ignition
- Check that the warning light on the display illuminates.
- Fasten the seat belts.
- Check that the warning light on the display goes out.

SELECTOR SHAFTS AND GEARBOX FORKS ASSEMBLY: EXPLODED VIEW

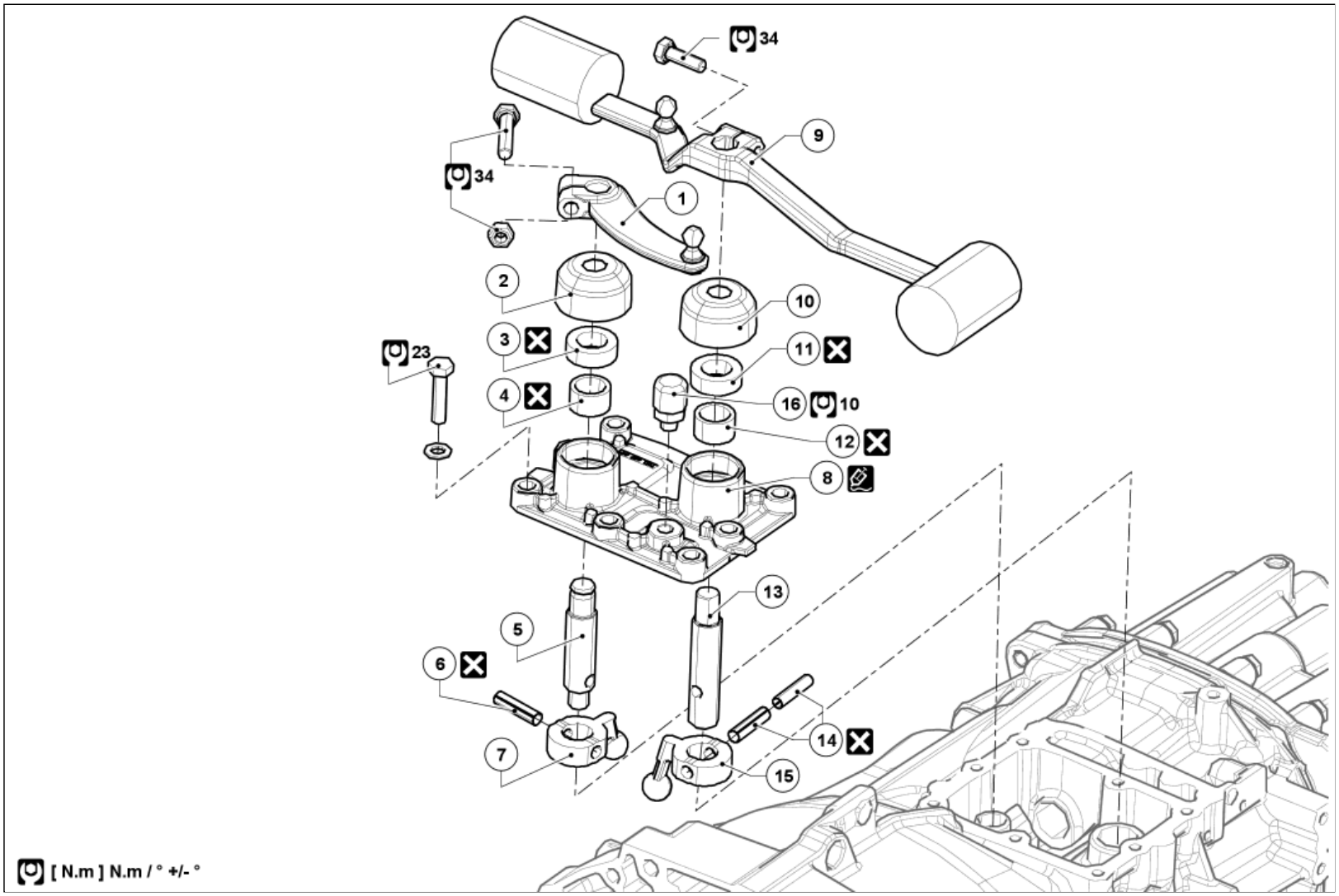


Illustration key: Description Key.

Mark	Description	Information
1	Selector lever	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
2	Selector shaft protective cap	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
3	Selector shaft sealing ring	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
4	Selector shaft needle bearing	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
5	Selector shaft	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
6	Selector shaft roll pin	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
7	Selector arm	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
8	Gearshift plate	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
9	Gearshift lever	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
10	Gearshift shaft protective cap	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
11	Gearshift shaft sealing ring	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
12	Gearshift shaft needle bearing	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
13	Gearshift shaft	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
14	Gearshift shaft roll pin	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
15	Gearshift arm	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)
16	Breather	(see 21A, Manual gearbox , Fork shaft bearing: Removal - Refitting)

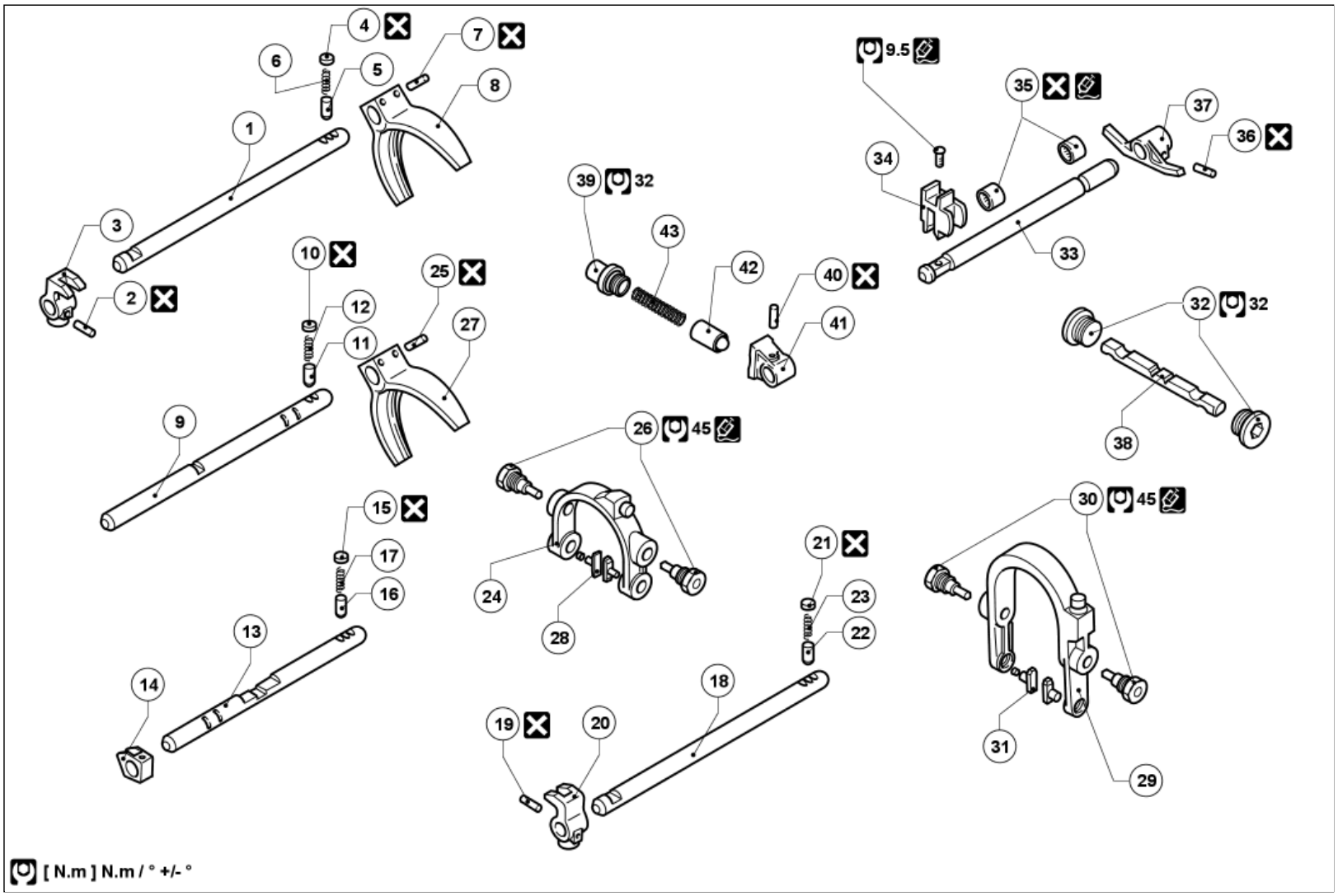


Illustration key: Description Key.

Mark	Description	Information
1	1st and 2nd fork shaft	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
2	1st and 2nd shift finger pin	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
3	1st and 2nd shift finger	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
4	Blanking plug of the 1st and 2nd fork shaft	(see **Input shaft: Removal - Refitting**)
5	Locking finger of the 1st and 2nd fork shaft	(see **Input shaft: Removal - Refitting**)
6	Locking spring of the 1st and 2nd fork shaft	(see **Input shaft: Removal - Refitting**)
7	1st and 2nd fork pin	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
8	1st and 2nd fork	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
9	Reverse gear selector fork shaft	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
10	Blanking plug of the reverse gear fork shaft	(see **Input shaft: Removal - Refitting**)
11	Locking finger of the reverse gear fork shaft	(see **Input shaft: Removal - Refitting**)
12	Locking spring of the reverse gear fork shaft	(see **Input shaft: Removal - Refitting**)
13	5th and 6th fork shaft	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
14	5th and 6th shift finger	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
15	Selector shaft blanking plug	(see **Input shaft: Removal - Refitting**)
16	Selector shaft locking finger	(see **Input shaft: Removal - Refitting**)
17	Selector shaft locking spring	(see **Input shaft: Removal - Refitting**)
18	3rd and 4th fork shaft	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
19	3rd and 4th shift finger pin	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
20	3rd and 4th shift finger	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
21	Blanking plug of the 3rd and 4th fork shaft	(see **Input shaft: Removal - Refitting**)
22	Locking finger of the 3rd and 4th fork shaft	(see **Input shaft: Removal - Refitting**)
23	Locking spring of the 3rd and 4th fork shaft	(see **Input shaft: Removal - Refitting**)
24	5th and 6th fork	(see **Input shaft: Removal - Refitting**)
25	Reverse gear fork pin	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
26	5th and 6th fork retaining bolt	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
27	Reverse gear fork	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
28	5th and 6th fork shoe	
29	3rd and 4th fork	(see **Output shaft: Removal - Refitting**)
30	3rd and 4th fork retaining bolt	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)

31	3rd and 4th fork shoe	
32	Locking rod plugs	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
33	Gear control shaft	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
34	Control selector	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
35	Control shaft bearings	(see 21A, Manual gearbox , Clutch housing bearing: Removal - Refitting)
36	Reverser pin	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
37	Reverser	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
38	Locking rod	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
39	Control shaft locking plug	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
40	Retaining clip pin	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
41	Retaining clip	(see 21A, Manual gearbox , Manual gearbox selector shaft: Removal - Refitting)
42	Control shaft locking finger	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)
43	Control shaft locking spring	(see 21A, Manual gearbox , Clutch housing: Removal - Refitting)

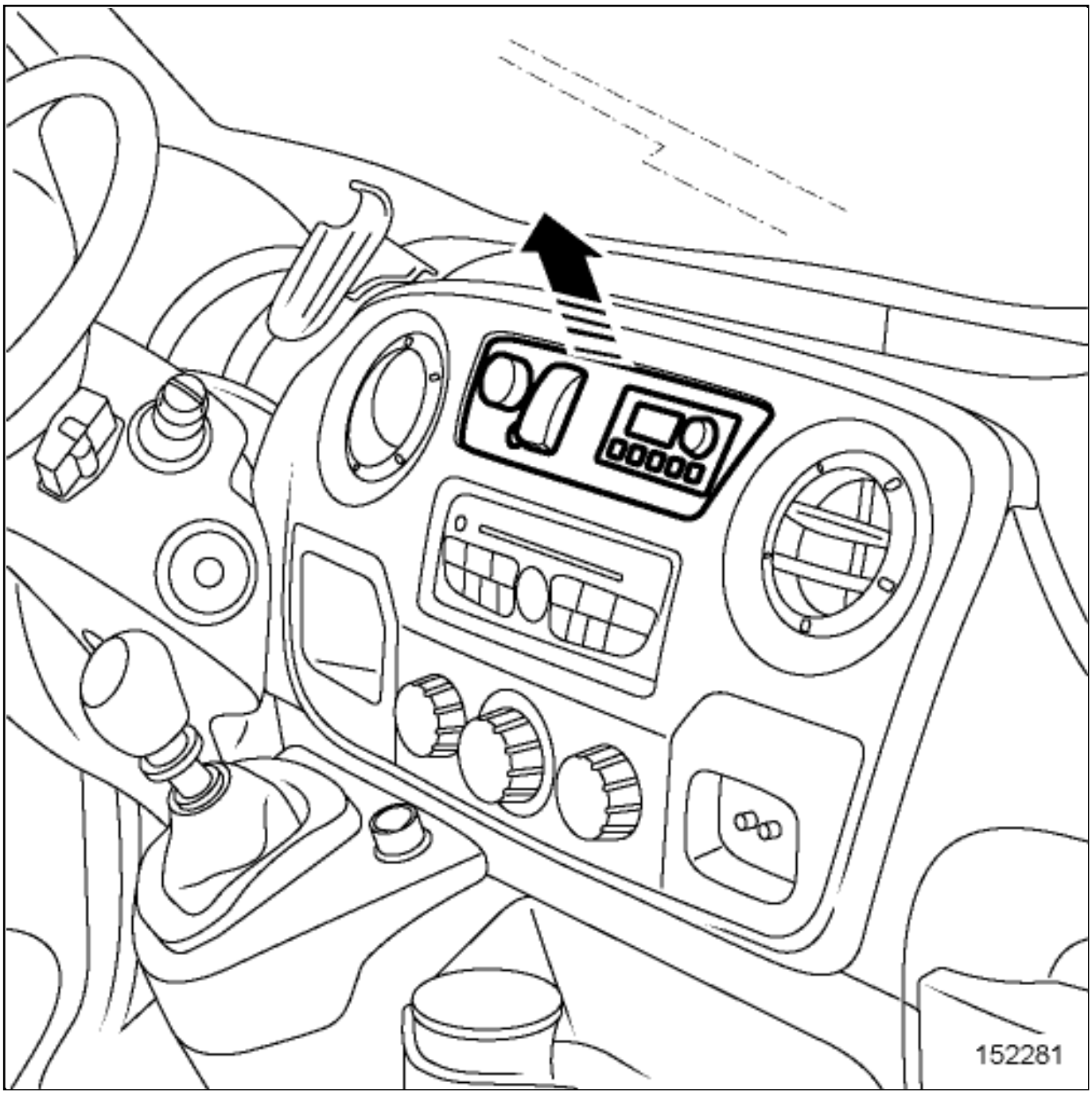
SELF-CONTAINED HEATER CONTROL PANEL: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL OPERATION

- Switch off the ignition.



- Unclip the self-contained heater control panel usingSet of trim removal levers.(Car. 1363) .
- Disconnect the self-contained heater control panel connector.
- Remove the self-contained heater control panel from the dashboard.

REFITTING

1. REFITTING OPERATION

- Connect the self-contained heater control panel connector.
- Fit the self-contained heater control panel to the dashboard.

TECHNICAL NOTE
EDITION ANGLAISE

77 11 301 842
DECEMBER 2011

3485A
Service 0422

All types

Type: **XXX X**

S/Section: 04

This note cancels and replaces Technical Note n°3452A

04 SERVICING PROGRAMME

- Engine: **XXX**
- Gearbox: **XXX**

Basic manual:
All Workshop Repair Manuals

NEW SERVICING PROGRAMME WITH EFFECT FROM 1 JANUARY 2012

From this date, the majority of vehicles in the range will have a service interval of 18 000 miles (30 000 kilometres) (petrol and diesel engines).

This note only describes the procedures linked to this new interval; for other vehicles, refer to Technical Note 3399E.

The new servicing programme will involve the use of high technology oil complying with ACEA standards, A1, A3 or A5 for petrol engines and B3 or B4 for diesel engines.

This servicing schedule (engine oil change) requires the engine oil level to be topped up carefully during services and safety checks.

The Servicing booklet is now separate from the Warranty booklet and will be placed in vehicles on the production line.

"The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All copyrights reserved by Renault.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of Renault.

© RENAULT 2000

A SERVICE INTERVAL (.... miles (... km))

Vehicles	Interval
TWINGO	**18 000 miles (30 000 km)**
CLIO (except CLIO 2L 16V, CLIO V6, CLIO 1.9D)	**18 000 miles (30 000 km)**
KANGOO (except 1.9D)	**18 000 miles (30 000 km)**
MEGANE (except 1.9D)	**18 000 miles (30 000 km)**
SCENIC (EXCEPT 1.9D)	**18 000 miles (30 000 km)**
LAGUNA	**18 000 miles (30 000 km)**
ESPACE	**18 000 miles (30 000 km)**
AVANTIME	**18 000 miles (30 000 km)**
MASTER (2.2 dCi)	**18 000 miles (30 000 km)**
CLIO (2L 16V and V6)	**12 000 miles (20 000 km)** (see Technical Note 3399E)
MASTER (1.9 dTi and 2.8 dTi)	**12 000 miles (20 000 km)** (see Technical Note 3399E)
CLIO (1.9D)	**9 000 miles (15 000 km)** (see Technical Note 3399E)
KANGOO (1.9D)	**9 000 miles (15 000 km)** (see Technical Note 3399E)
MEGANE (1.9D)	**9 000 miles (15 000 km)** (see Technical Note 3399E)
SCENIC (1.9D)	**9 000 miles (15 000 km)** (see Technical Note 3399E)

Or every 2 YEARS depending on which is reached first.

B SERVICE INTERVAL (.... miles (....km))

	Interval
ALL VEHICLE TYPES	**36 000 miles (60 000 km)**

THE RECOMMENDED SERVICE PLAN FOR THE NEW 18 000 mile (30 000 km) SERVICING POLICY IS AS FOLLOWS:

- A free Renault safety check after **6 000 miles (10 000 km)** or **6 months**.
- An A service after **18 000 miles (30 000 km)** or **2 years**.
- A free Renault safety check after **28 000 miles (45 000 km)** or **3 years**.
- A B service after **36 000 miles (60 000 km)** or **4 years**.
- A free Renault safety check after **45 000 miles (75 000 km)** or **5 years**.
- An A service after **55 000 miles (90 000 km)** or **6 years**.
- A free Renault safety check after **63 000 miles (105 000 km)** or **7 years**.
- A B service after **75 000 miles (120 000 km)** or **8 years**.

and so on...
Whichever deadline is reached first.

Renault safety checks (except the first) are only free if the preceding service was carried out by the Renault network.

Complete all the coupons in the Servicing booklet correctly to avoid any dispute.

The first visit to Renault (free)

This visit enables the Renault network to carry out various checks and top up various fluids (details on page 04-4).

The second and subsequent Renault visits (free)

This visit has the same principles as the first visit. It is carried out free by the Renault network **9 000 miles (15 000 km)** or **1 year** after the last service if it was carried out by the Renault network (the corresponding coupon must be filled in) (details on page 04-4).

The A service

During this service, service operations and parts replacement will be carried out, depending on the mileage of your vehicle.
The A service is based on a list of operations including an oil change, replacement of the oil filter, inspections and topping up the levels (details on page 04 - 5).
Added to this list are extra operations that are carried out at the appropriate times, as set out on page 04 - 6.

The B service

This service follows the same principles as the A service, but the operations list is longer as more checks are carried out. The list includes an oil change and a road test as well as specific checks and topping up (details on page 04 - 5).

Added to this list are extra operations that are carried out at the appropriate times, as set out on page 04 - 6.

OPERATIONS FOR THE 1st RENAULT SAFETY CHECK

Listed below are the operations carried out during the first (free) Renault safety check, scheduled for when the car has been driven **6 000 miles (10 000 km)** or after 6 months (whichever is reached first):

- Top up the engine oil (up to **2.l**).
- Top up the washer fluid (up to **2 l**).
- Check the coolant level.
- Check the brake fluid level.
- Check the power steering fluid level.
- Check the condition of the windscreen.
- Check the condition of the rear-view mirrors.
- Check the wiper blades.
- Check the indicator lights.
- Check the condition and pressure of the tyres.
- Visual inspection of shock absorbers.
- Computer fault finding.

OPERATIONS FOR THE 2nd AND SUBSEQUENT RENAULT SAFETY CHECKS

Listed below are operations carried out on any subsequent (free*) visits to Renault safety checks:

- Top up the engine oil (up to **2.l**).
- Top up the washer fluid (up to **2 l**).
- Check the coolant level.
- Check the brake fluid level.
- Check the power steering fluid level.
- Check the condition of the windscreen.
- Check the condition of the rear-view mirrors.
- Check the wiper blades.
- Check the indicator lights.
- Check the condition and pressure of the tyres.
- Check the brake pads.
- Visual inspection of shock absorbers.

* These checks are only free on the condition that the previous service was carried out by the Renault network.

SERVICE OPERATIONS (PETROL AND DIESEL ENGINES)

THE A * SERVICE	THE B * SERVICE	OPERATIONS
☐	☐	**Body** – Examination of underside of the car, wheel arches, doors and windows...
☐ ☐ ☐	☐ ☐ ☐	**Engine** – Oil change. – Replacement of oil filter. – Visual inspection of exhaust pipe
☐ ☐	☐ ☐ ☐ ☐	**Brakes** – Visual inspection of pads. – Circuit tightness. – Check the brake fluid level. – Check condition of trim and remove dust (including removal/refitting drums).
☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	**Check fluid levels and tightness of circuits** – Hydraulic clutch. – Power assisted steering. – Front/rear screen washers. – Coolant circuit. – Sequential gearbox hydraulic unit (TWINGO)
	☐	**Steering/front and rear axle geometry** – Check ball joint play - Condition of rubber gaiters.
☐ ☐	☐ ☐	**Tyres** – Check condition and pressure of tyres (including spare wheel). – Visual inspection and tightness check of front and rear shock absorbers.
☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	**Equipment** – Check bulbs (headlights, indicators, brakelights). – Check condition of the car battery (1). – Check the condition of the windscreen and rear-view mirrors. – Check condition of front and rear wiper blades.
☐	☐ ☐	**Delivery** – Check safety and service labels are in correct positions. – Road test.

*** N.B.: services are compulsory during the car's warranty period and for all cars under the Service Contract.**

(1) if possible, this battery check will be carried out using the MIDTRONICS tool.

OPERATIONS ADDITIONAL TO THE A AND B SERVICES

Components to be replaced (every ... miles/km)

PETROL engines	SPARK PLUG	AIR FILTER (1)	PARTICLE FILTER (if fitted)
TWINGO	36 000 miles (60 000 km)	18 000 miles (30 000 km)	-
CLIO (not 2L 16V or V6)	36 000 miles (60 000 km)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
KANGOO	36 000 miles (60 000 km)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
MEGANE (not 2L 16V IDE)	36 000 miles (60 000 km)	36 000 miles (60 000 km)	18 000 miles (30 000 km)
MEGANE 2L 16V IDE	18 000 miles (30 000 km)	36 000 miles (60 000 km)	18 000 miles (30 000 km)
SCENIC	36 000 miles (60 000 km)	36 000 miles (60 000 km)	18 000 miles (30 000 km)
LAGUNA (not V6 24V)	36 000 miles (60 000 km)	36 000 miles (60 000 km)	18 000 miles (30 000 km)
LAGUNA V6 24V	75 000 miles (120 000 km)	36 000 miles (60 000 km)	18 000 miles (30 000 km)
ESPACE (not V6 24V)	36 000 miles (60 000 km)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
ESPACE V6 24V	75 000 miles (120 000 km)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
AVANTIME 2L 16V	36 000 miles (60 000 km)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
AVANTIME V6 24V	75 000 miles (120 000 km)	18 000 miles (30 000 km)	18 000 miles (30 000 km)

Components to be replaced (every ... miles/km)

DIESEL engines	AIR FILTER (1)	PARTICLE FILTER (if fitted)
CLIO (not 1.9D)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
KANGOO (except 1.9D)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
MEGANE (except 1.9D)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
SCENIC (not 1.9D)	18 000 miles (30 000 km)	18 000 miles (30 000 km)
LAGUNA	36 000 miles (60 000 km)	18 000 miles (30 000 km)
ESPACE	18 000 miles (30 000 km)	18 000 miles (30 000 km)
MASTER 2.2 dCi	36 000 miles (60 000 km)	18 000 miles (30 000 km)

(1) or every **4 years** whichever is reached first.

OPERATIONS ADDITIONAL TO THE A AND B SERVICES

PETROL and DIESEL engines

Components to be replaced (every ...)

Timing belt (1)	petrol and diesel engines: 75 000 miles (120 000 km) or 5 years. N.B.: 45 000 miles (75 000 km) or 5 years for 1.9 dTi diesel engines
Accessories belt	petrol and diesel engines: 75 000 miles (120 000 km) or 5 years. N.B.: 45 000 miles (75 000 km) or 5 years for 1.9 dTi diesel engines
Fuel filters (petrol and diesel)	36 000 miles (60 000 km). N.B.: 95 000 miles (150 000 km) for the petrol engine Laguna and 75 000 miles (120 000 km) for the Avantime The diesel filter must have any water drained from it if it is not replaced during the course of the service
Brake fluid	75 000 miles (120 000 km) or every 4 years
Remote control door locking batteries *	Every 2 years
Air conditioning circuit *; check and top up refrigerant fluid	Every 4 years
Coolant	75 000 miles (120 000 km) or every 4 years
Tyre pressure monitoring system batteries *	Every 10 years
Air bags and pretensioners pyrotechnic system	Every 10 years

* if fitted

(1) Belts

The mileages and intervals for belt replacement listed above must be respected. The customer should consult his nearest Renault Dealer for advice on when a timing belt should be replaced depending on his individual driving style and how he uses the car. This is particularly important when the car is being used for:
– constant door to door journeys,
– urban driving,
– repeated short journeys, with cold engine at low temperatures, etc.

ADDITIONAL OPERATIONS TO BE CARRIED OUT DURING SERVICING

Servicing periods are the same for LPG-equipped cars as those for equivalent models with petrol engines.

Also:

All services must include:
– a check on the safety solenoid valve,
– a check for the presence of a blanking cover on the pressure relief valve.

All services must include:
– a gas filter change.

Every eight years:
– a hydraulic test must be performed on the LPG tank.

Vehicles	Replace spark plugs	Check/adjust the valve clearances
KANGOO - CLIO II - TWINGO - ESPACE	every 18 000 miles (30 000 km)	every 18 000 miles (30 000 km) except for 16V engines

CHECKING THE OIL LEVEL

Renault engines are designed and built to the highest technological standards, and naturally need a little oil for optimum running.

For this reason, and to avoid any potential engine failure, the engine oil level must be **regularly checked** in particular before long journeys.

It may be necessary to top up the oil once or twice between changes and especially during the running in period; **do this when the oil is level with the minimum mark on the gauge.**

The level should be checked with the car on a flat surface, with the engine stopped and cold (e.g.: before the engine is started for the first time of the day).

Let the oil settle after refilling (approximately **2 minutes**), (**15 minutes** for Master vehicles) before checking the level with the dipstick.

It is very important not to exceed the maximum mark on the gauge (in this case oil consumption is greater; it can also cause engine damage).

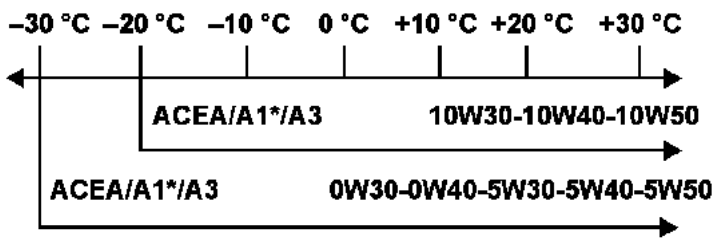
The service has been designed for regular use of your vehicle.

In the event of use in certain difficult conditions, such as:
– constant door to door journeys,
– urban driving,
– repeated short journeys, with cold engine at low temperatures, etc.
Renault recommends that your oil is changed every **9 000 miles (or 15 000 km)** or at least once a year.

Only ACEA standard oils may be used for an **18 000 mile (30 000 km)** change interval.

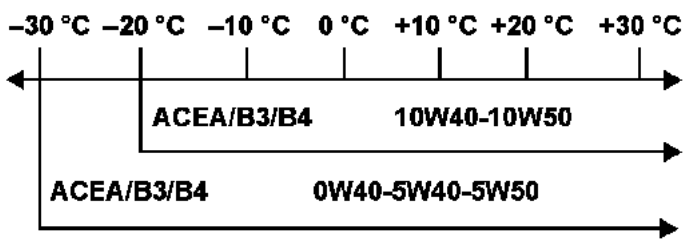
The tables below show the oil grades which must be used to ensure correct operation of the engine (for European Union countries and Turkey):

PETROL ENGINE



* Oil for fuel economy. This type of oil is not recommended for 2L 16V F4R Renault Sport engines.

DIESEL ENGINE



ACEA B1 (diesel) oils must not be used for diesel engines.

ACEA A1 oils (petrol) allow a reduction in fuel consumption, Renault recommends this oil for all engines with the exception of the 2L 16V Renault Sport.

Observe the recommendation on the label located on the engine for diesel vehicles with automatic gearboxes.

RENAULT

Technical Note 3867A

XXXX

Subsection concerned: 09A

Shock absorber noise fault finding

Fault finding on gurgling, banging, knocking and grating of shock absorbers.

77 11 332 262 **APRIL 2004** **EDITION ANGLAISE**

"The repair methods given by the Manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the Manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All copyrights reserved by RENAULT.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is forbidden without the prior written authority of RENAULT.

© RENAULT 2004

FOREWORD

1 - Replacing each shock absorber must be justified by the fault finding attached.

2 - Noises heard when descending a pavement ("Cannon shot") are linked to the shock absorber definition:

The shock absorber is compliant: do not replace the shock absorbers.

3 - Hissing noises (normal hydraulic noise of shock absorber) or cracking (micro-displacement of the tightened rear brake pads) caused when passengers get into or out of the vehicle are never linked to a shock absorber fault. Confirm the customer complaint in the same conditions **without tightening** the parking brake:

If the noise has disappeared, the shock absorber is not to blame.

4 - Noises heard during parking manoeuvres are never due to the shock absorber ->

Do not replace the shock absorbers.

5 - Before replacing any shock absorbers due to gurgling, make sure that the noise does not come from the end rubber pad, the stabiliser bar tie rods (and other ball joints) or shock absorber turret rubber mountings + check tightness of the turret and the shock absorber axle.

BEFORE WORK

➡ Ask the customer for information regarding the conditions in which the noise occurs as soon as the Repair Order is issued.

Description	Gurgling	Banging/Knocking	Grating
Noise similar to tapping on a small drum - beat caused by internal valves in the shock absorber	**X**		
Burst of small dry banging noises similar to metal impacts		**X**	
Noise caused by contact between a metal part and a rubber part			**X**
Noise appearing on a bad road or deformed road at low speed (**6-19 mph (10-30 km/h)**).	**X**	**X**	**X**

➡ Before any road tests, check the tightening and clearance of the shock absorber front and rear axle mountings, linkage, ball joints and bearing clearances.

GURGLING from shock absorbers

Origin: Noise caused by shock absorber piston valves reversing their direction.

Check tightness and clearance for all the mountings, linkage and ball joints of the front and rear axles and the shock absorbers as well as the state of the sub-frame rubber mountings.

Do a road test on a bad or deformed road at low speed (**6-19 mph (10-30 km/h)**).

Is the customer complaint reproduced?

- no → End of the operation.
- yes → Is the noise identified at the front?
  - yes → Can the noise be heard when starting the engine and/ or when stopping the engine warm?
    - yes → Consult the "engine mounting and exhaust" information.
    - no → Is there play in the stabiliser bar tie rod ball joints?
  - no → Is there play in the stabiliser bar tie rod ball joints?
    - yes → Replace the defective stabiliser bar tie rod.
    - no → Is there play in the lower ball joint or the steering rack?
      - yes → Replace the defective part.
      - no → Is there play in the bearings?
        - yes → Replace the defective part.
        - no → Check the state of the shock absorber turrets (shock absorber upper mounting).
          - yes → Replace the defective part.
          - no → Replace the front shock absorber on the noisy side.

End of the operation.

BANGING/KNOCKING from shock absorbers

Origin: Noise caused by a faulty component or incorrect assembly of the suspension.

Check tightness and clearance for all the mountings, linkage and ball joints from the front and rear axles and the shock absorbers as well as the state of the sub-frame rubber mountings.

Make sure that the spring is correctly positioned in upper and lower parts:

Is the spring positioned correctly?

- no → Reposition the spring.
- yes ↓

Are the stabiliser bar mountings and bearings in good condition?

- no → Replace the faulty bearings or mountings.
- yes ↓

Do a road test on a bad or deformed road at low speed (**6-19 mph (10-30 km/h)**).

Is the customer complaint reproduced?

- no → End of the operation.
- yes ↓

Is the noise identified at the front?

- yes → Can the noise also be heard when the rear axle passes over a vehicle retarder?
  - yes → Consult the "engine mounting and exhaust" information.
  - no ↓
- no ↓

Is there play in the lower ball joint or the steering rack?

- yes → Replace the defective part.
- no ↓

Is there play in the bearings?

- yes → Replace the defective part or carry out necessary adjustments.
- ↓

Check the state of the shock absorber turrets (shock absorber upper mounting).

- not OK → Replace the defective part or carry out necessary adjustments.
- OK ↓

Replace the front shock absorber on the noisy side.

↓

End of the operation.

GRATING of shock absorbers

Origin: Noise caused by contact between a metallic part and a rubber part.

Check tightness and clearance for all the mountings, linkage and ball joints from the front and rear axles and the shock absorbers as well as the state of the sub-frame rubber mountings.

STATIC

Can the noise be heard when static (engine start and/or stop, idle speed or at a specific engine speed)?

yes → Consult the "Exhaust noises" information, "Engine mounting".

Can the noise be heard when pressing the vehicle down on the noisy side?

yes → Check the position of the suspension spring.

Is it in place? Are there signs of jamming?

Do the necessary repairs and adjustments.

→ Check the gaiters, ball joints, stabiliser bar bearings.

OK → Replace the shock absorber.

not OK → Replace any faulty parts.

no

DYNAMIC

Do a road test on a bad or deformed road at low speed (**6-19 mph (10-30 km/h)**).

Is the customer complaint reproduced?

no → End of the operation.

yes

Do a test by uncoupling the stabiliser bar.

Has the noise disappeared?

yes → Replace the bearings or mountings on the defective stabiliser bar.

no

Check the position of the suspension spring.

Is it in place? Are there any signs of jamming or wear in the high and low protections?

Do the necessary repairs and adjustments.

Replace the front shock absorber on the noisy side.

End of the operation.

SHOCK ABSORBER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
component jack

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

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 33A, Rear axle components, Rear axle components: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

CAUTION

To prevent any suspension asymmetry, replace both of the shock absorbers on the same axle.

CAUTION

To prevent the components of the rear axle from deteriorating (rubber bushes, brake hoses, etc.) do not remove the two shock absorbers at the same time. Proceed one side at a time.

REMOVAL

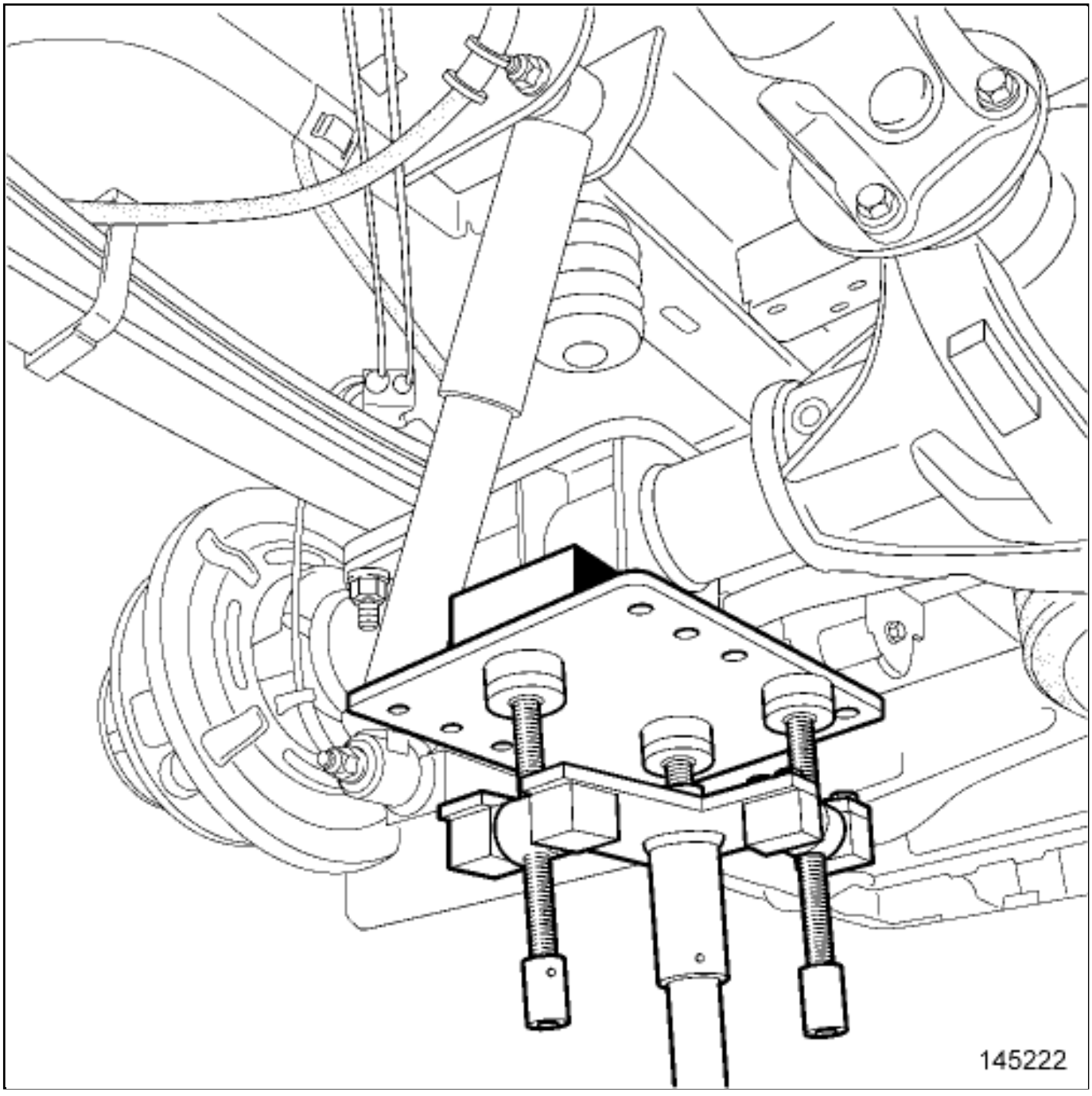
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).

1- IF THE VEHICLE IS EQUIPPED WITH AN ANTI-ROLL BAR

- Remove the bolt of the rear anti-roll bar tie rod from the body(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

2. REMOVAL OPERATION



- Fit a component jack under the rear axle.

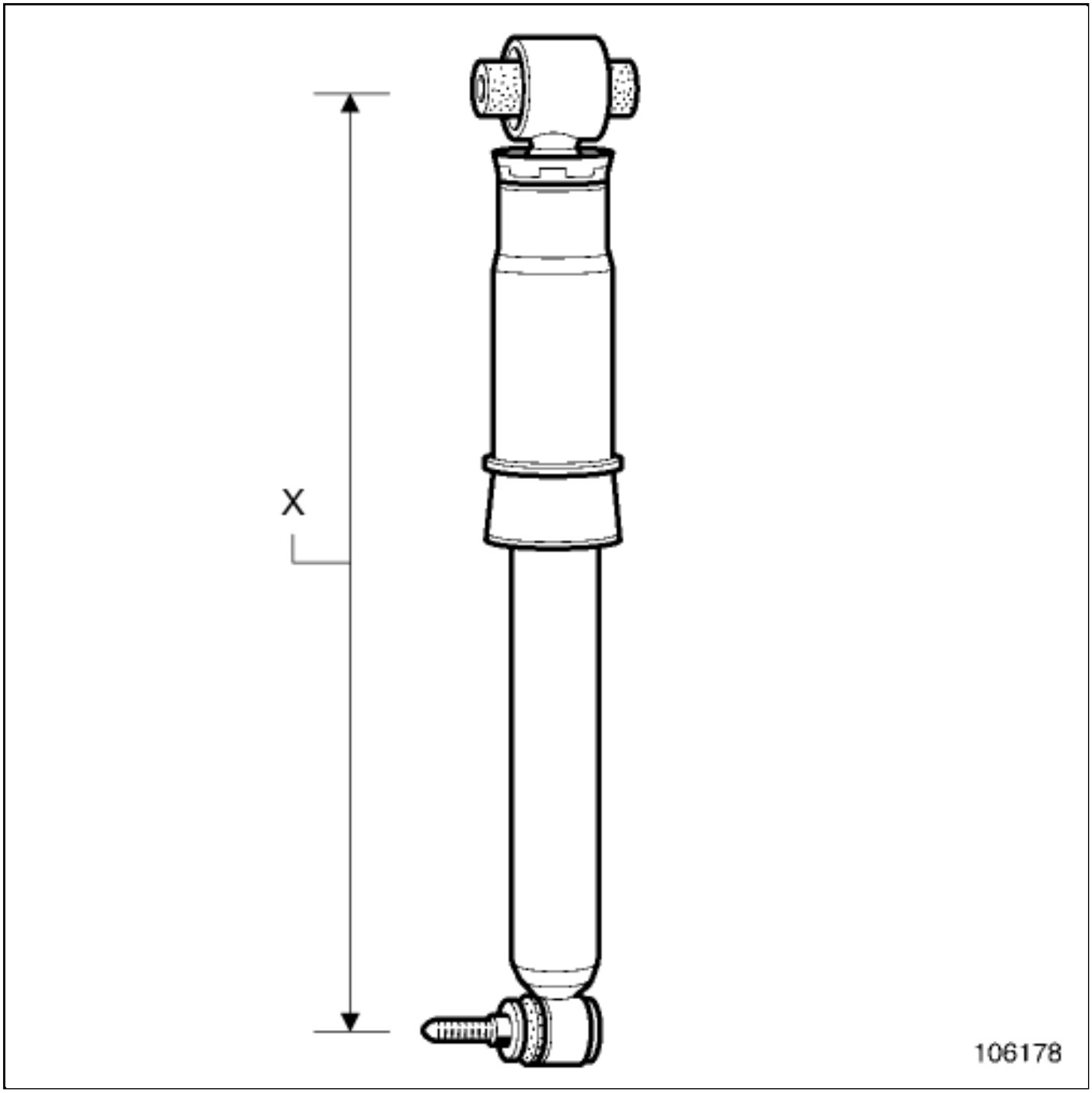
- Remove the rear shock absorber (see 33A, Rear axle components, Rear axle assembly: Exploded view) .

REFITTING

- Fit the rear shock absorber on the body.

- Fit without tightening the bolt of the shock absorber on the body.

- Fit a component jack under the rear axle.



- Adjust using the component jackthe dimension(x) 473 mm .

Note:

The vehicle must be in "half-empty - load" position when tightening the rubber bushes of the shock absorbers.

- Refit the rear shock absorber(see 33A, Rear axle components, Rear axle assembly: Exploded view) .

- Proceed in the reverse order to removal.

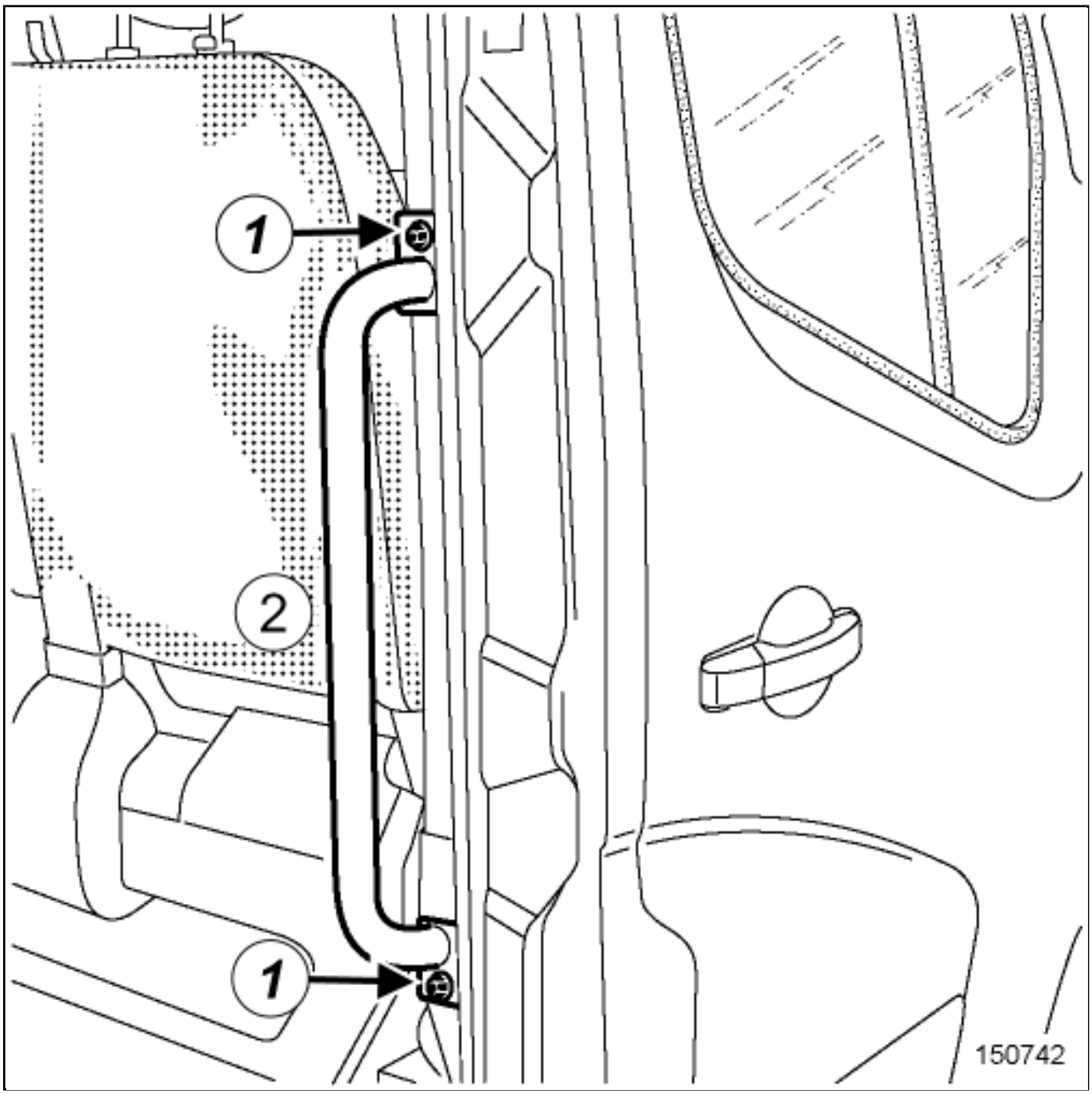
SIDE ACCESS HANDLE: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove B-pillar trim B-pillar trim: Removal - Refitting (71A, Body internal trim).

2. FITTING OPERATION



- Remove:
  - the bolts(1) ,
  - the side acces handle(2) .

REFITTING

- Refitting the side acces handle.
- Torque tighten the bolts of the side acces handle29 N.m.
- Proceed in the reverse order to removal.

SIDE IMPACT SENSOR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

parts always to be replaced:
Side impact sensors

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 88C, Airbags and pretensioners, Airbag and pretensioners: Precautions for the repair) ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

WARNING

To avoid any risk of triggering when working on or near a pyrotechnic component (airbags or pretensioners), lock the airbag computer using the diagnostic tool.

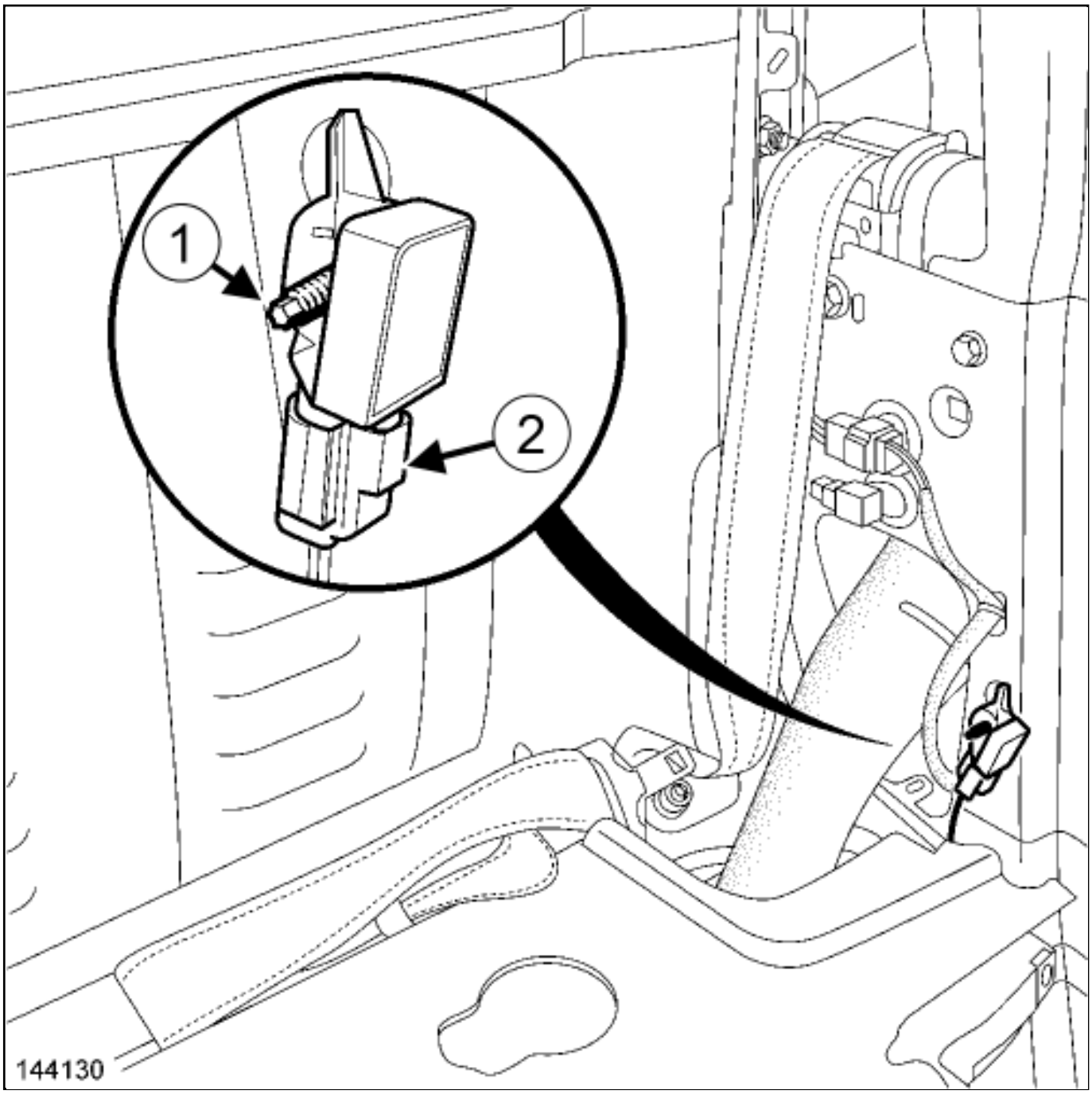
When this function is activated, all the trigger lines are inhibited and the airbag warning light on the instrument panel lights up continuously (ignition on).

- Lock the airbag computer by applying the "Before repair procedure" using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Airbag computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - carry out the operations described in the "Before repair procedure" section.

- Disconnect the battery Battery: Removal - Refitting .

- Remove the lower B-pillar trim B-pillar trim: Removal - Refitting (71A, Body internal trim).

2. REMOVAL OPERATION



- Undo the side impact sensor bolt(1) by six turns.
- Remove the side impact sensor from the slot on the B-pillar.
- Disconnect the connector(2) from the side impact sensor.

REFITTING

1. REFITTING PREPARATION OPERATION

parts always to be replaced: Side impact sensors.

2. REFITTING OPERATION

- Connect the side impact sensor connector.
- Refit the side impact sensor in the slot on the B-pillar.
- Torque tighten the side impact sensor bolt8 N.m.

3. FINAL OPERATION

- Proceed in the reverse order to removal.
- Connect the batteryBattery: Removal - Refitting .
- Unlock the airbag computer by applying the "After repair procedure" using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Airbag computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - carry out the operations described in the "After repair procedure" section.

SIDE INDICATOR: REMOVAL - REFITTING

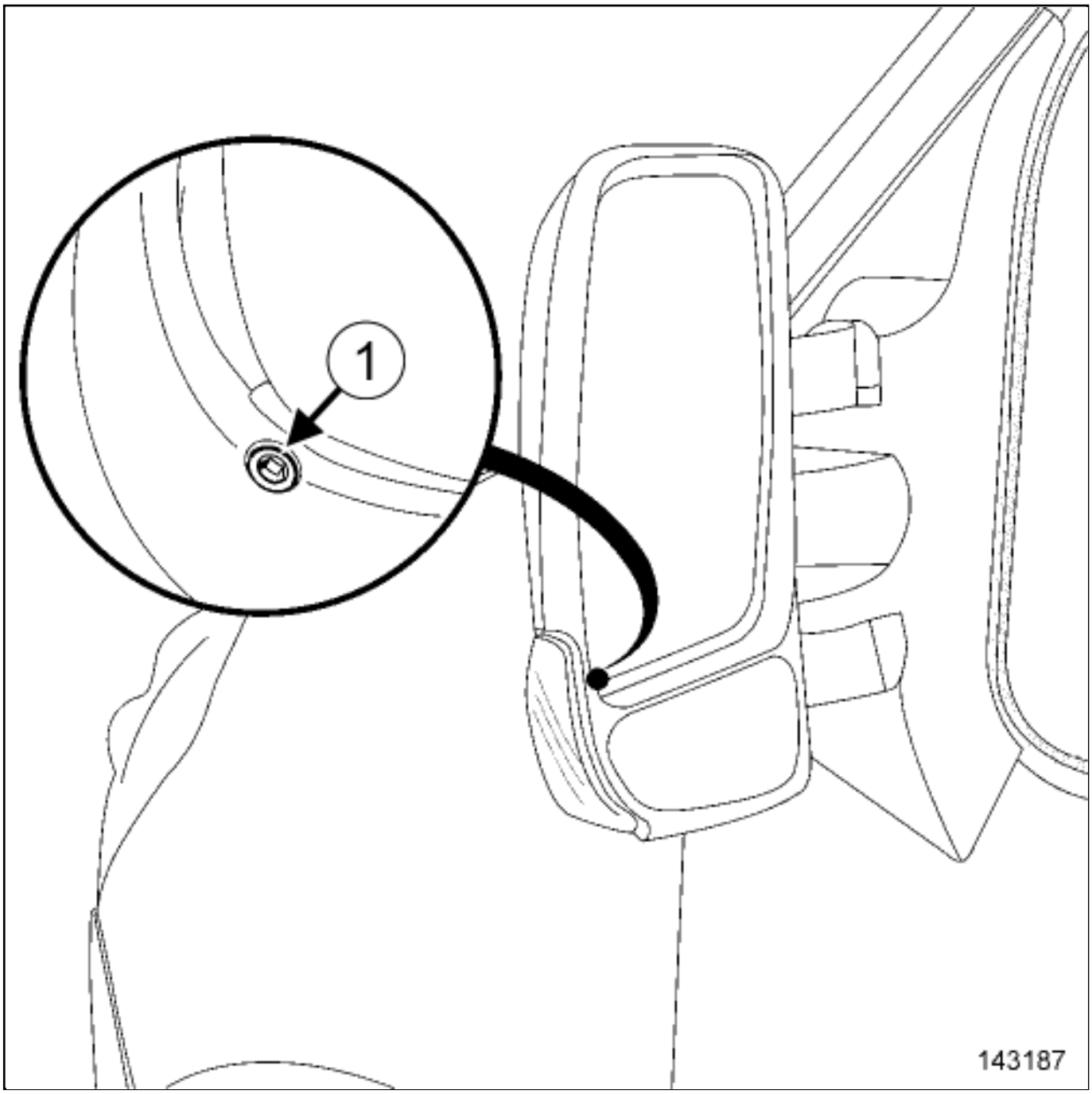
Location and specifications (tightening torque, parts always to be replaced, etc.)Exterior front side opening element assembly: Exploded view (51A, Side opening element mechanisms).

REMOVAL

1. REMOVAL PREPARATION OPERATION

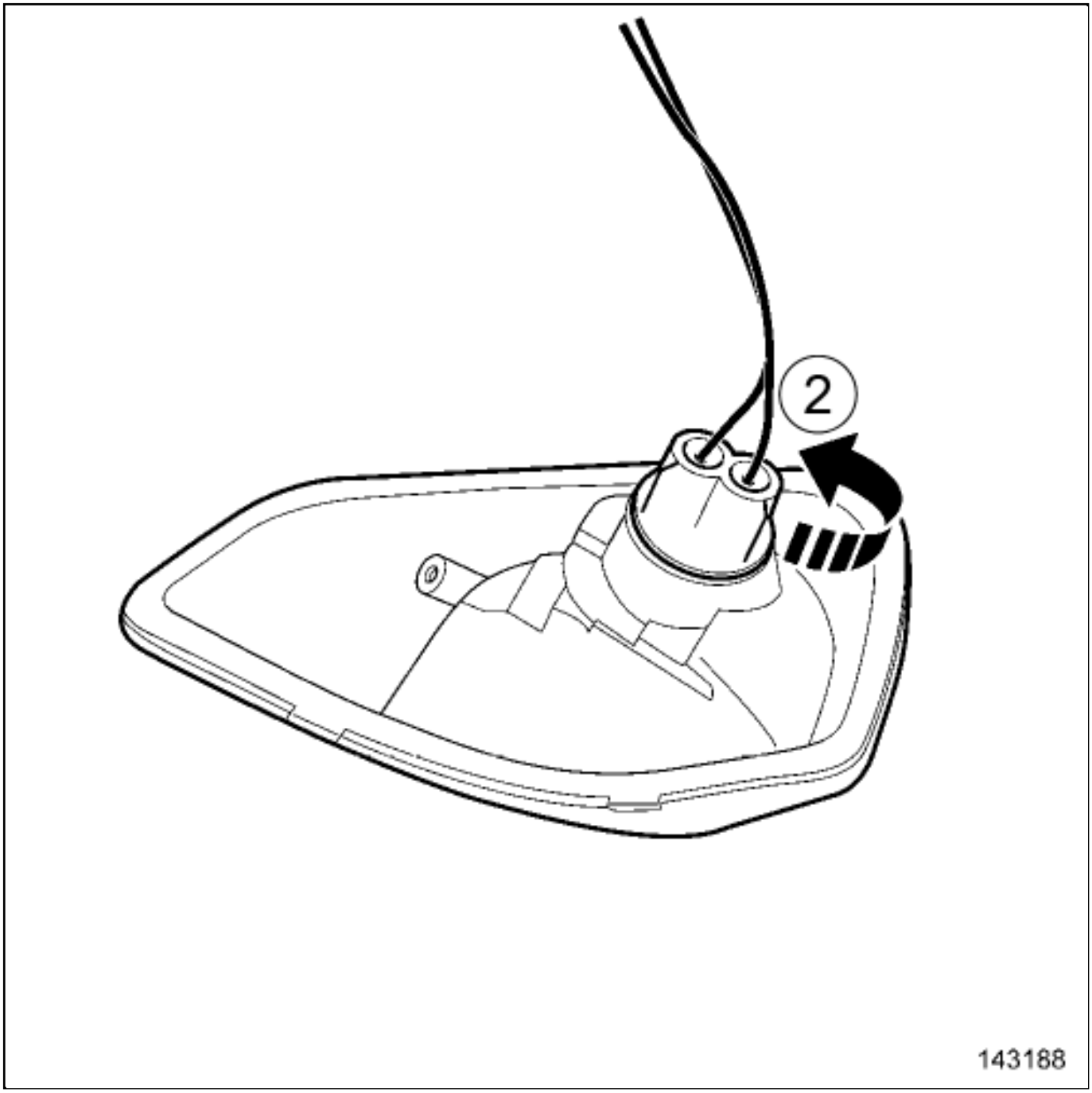
- Adjust the door mirror glass to access the side indicator bolt in the outer lower corner of the door mirror.

2. REMOVAL OPERATION



Remove:

- the side indicator bolt(1) ,
- partially the side indicator**Exterior front side opening element assembly: Exploded view** (51A, Side opening element mechanisms).



- Unlock the side indicator bulb holder by turning it a quarter of a turn anti-clockwise(2) .
- Remove the side indicator.

REFITTING

Note:

When replacing the bulb, only use an approved bulb.

- Proceed in the reverse order to removal.

SIDE LOADING DOOR EXTERIOR HANDLE: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Exterior rear side opening element assembly: Exploded view) .

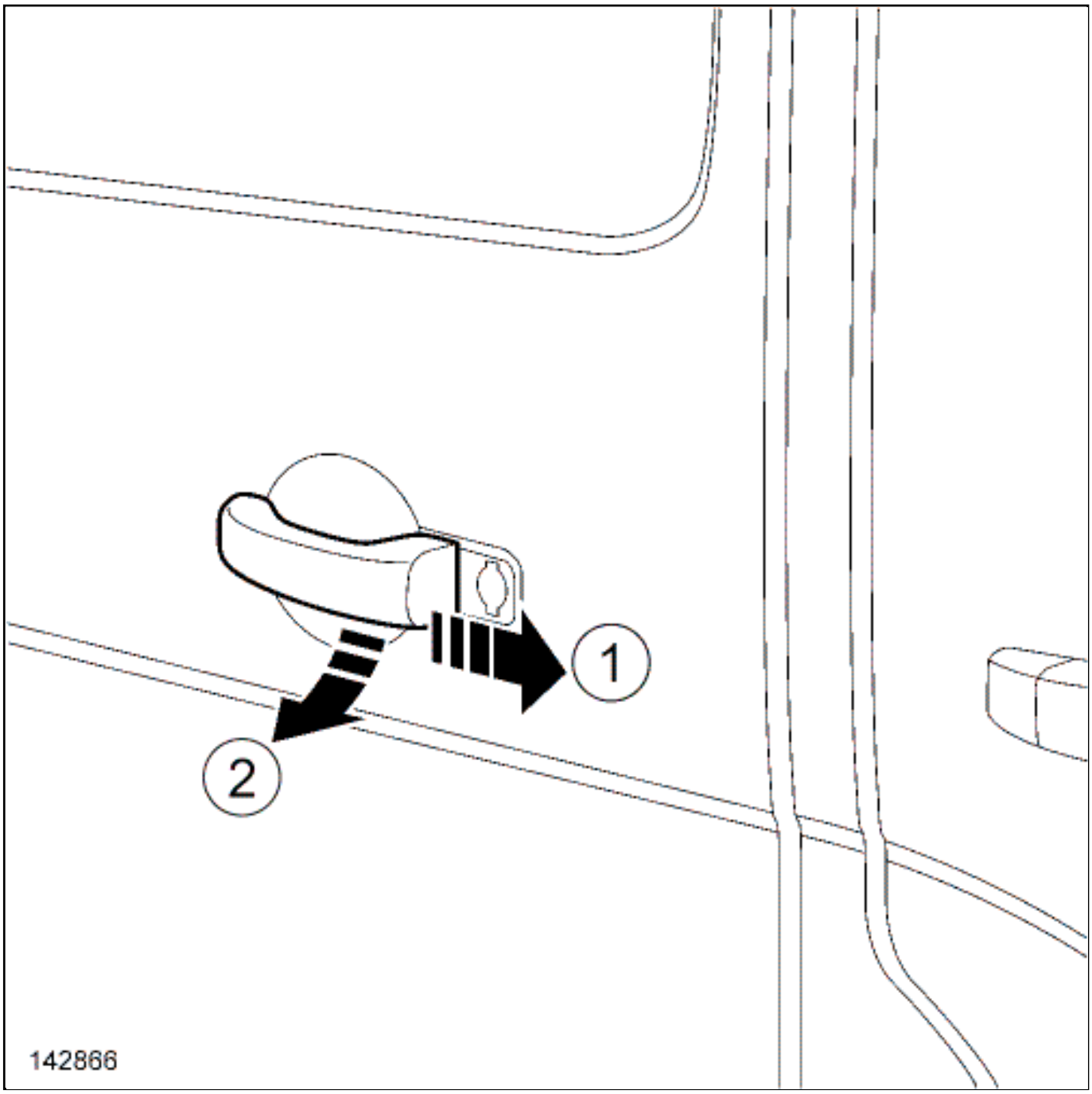
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove (72A, Side opening elements trim):
  - the rear side door interior handle,
  - the rear side door trim.

- Remove the side loading door lock barrel(see 51A, Side opening element mechanisms, Side loading door lock barrel: Removal - Refitting) .

2. REMOVAL OPERATION



- Remove the side loading door exterior handle by(1) and (2) .

REFITTING

1. REFITTING PREPARATION OPERATION

- Check the presence and condition of the seal, and replace it if necessary.

2. REFITTING OPERATION

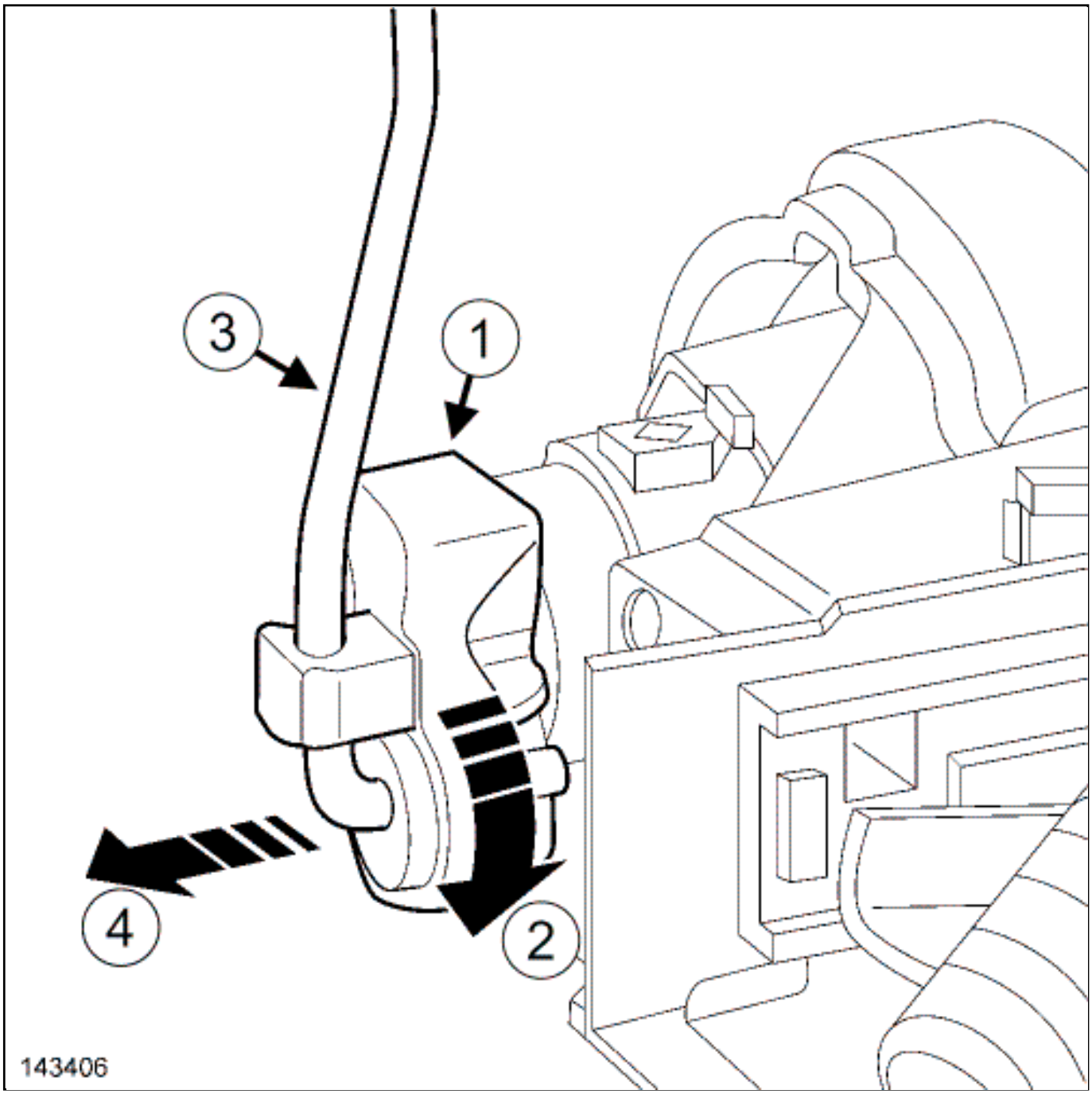
- Proceed in the reverse order to removal.

SIDE LOADING DOOR LOCK BARREL: REMOVAL - REFITTING

REMOVAL

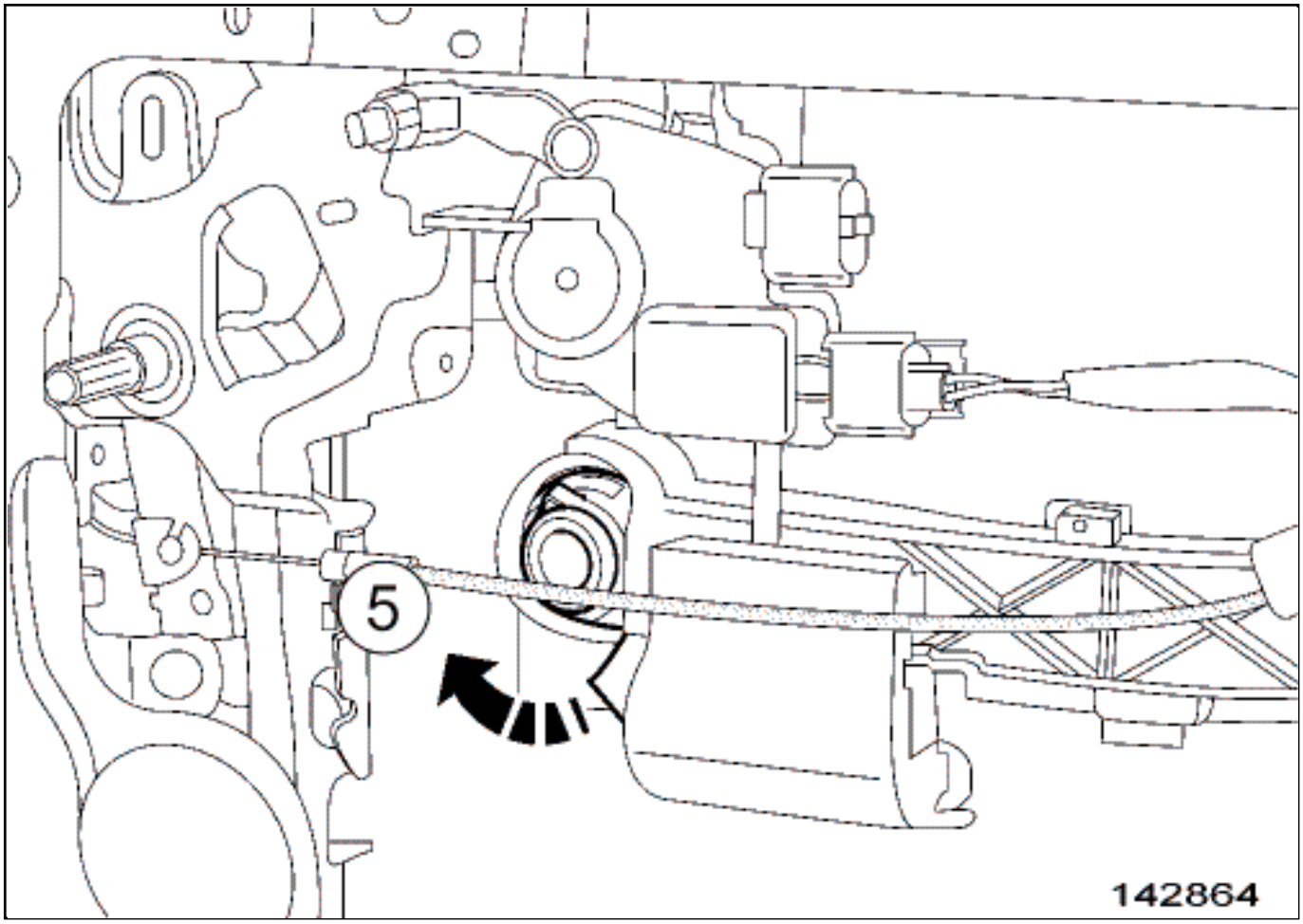
1. REMOVAL PREPARATION OPERATION

- Remove (72A, Side opening elements trim):
  - the rear side door interior handle,
  - the rear side door trim.



- Unlock the lock barrel locking ring(1) by (2) .
- Unclip the exterior locking linkage(3) of the lock barrel locking ring by(4) .
- Remove the lock barrel locking ring.

2. REMOVAL OPERATION



- Unlock the side loading door lock barrel by(5) .
- Remove the side loading door lock barrel.

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

SIDE OPENING ELEMENTS: ADJUSTMENT

1. HINGED SIDE DOOR

- Check that the peripheral components are adjusted correctly.

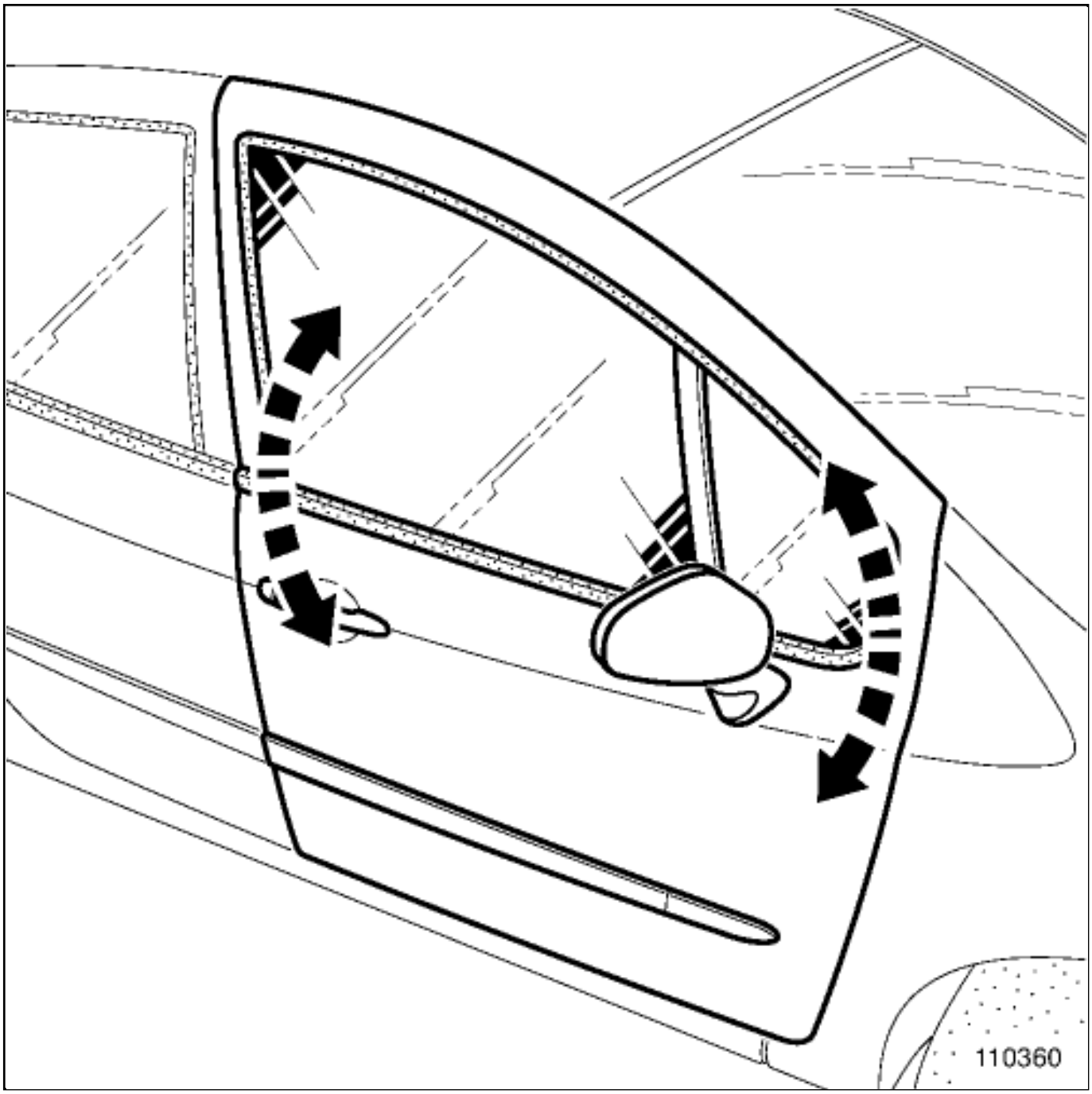
Refit the heavy door fittings (closing system, window winder system).

Before carrying out the adjustments, release the striker panel and fit the hinges, pre-tightening in the middle of the adjustment.

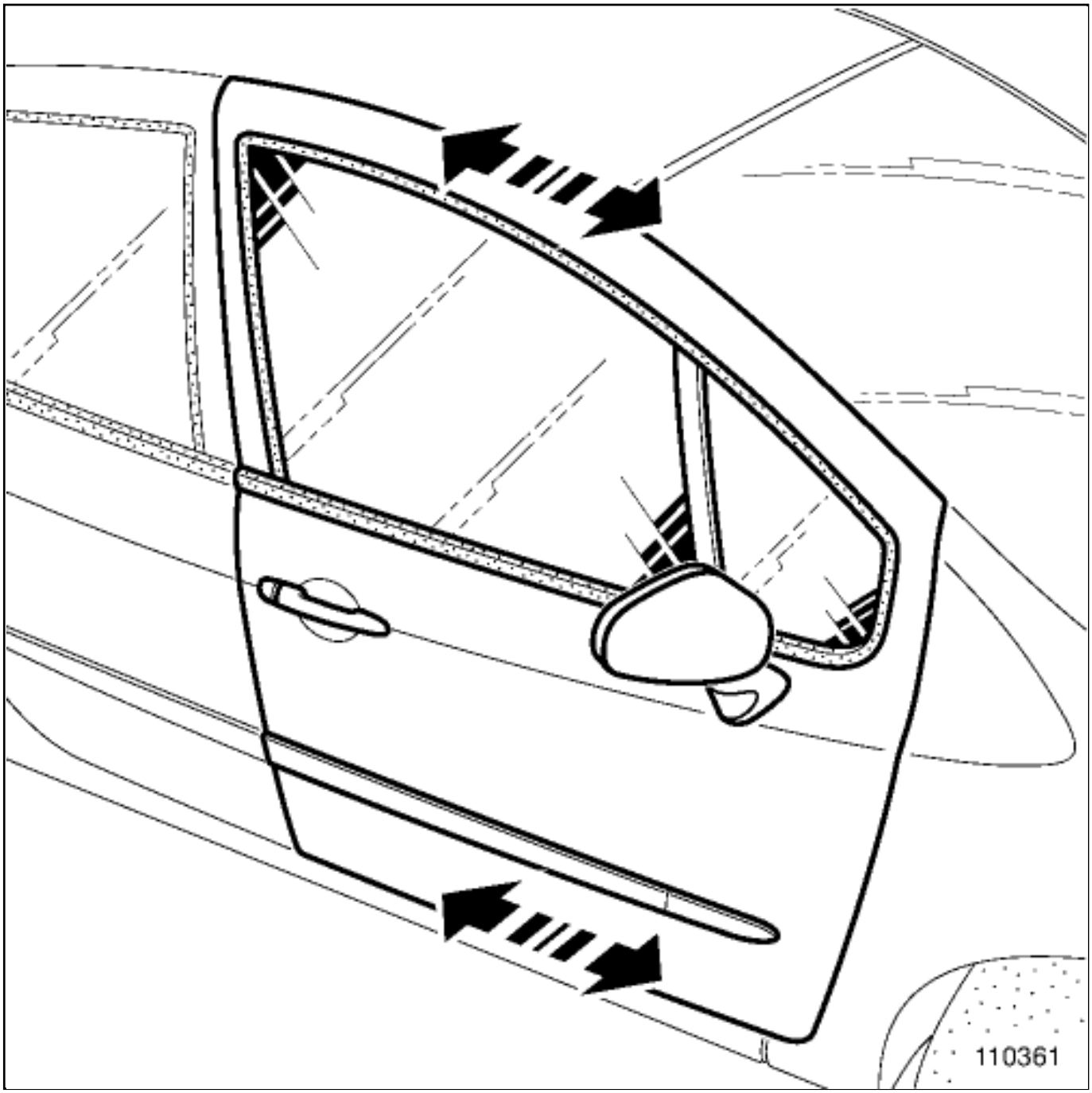
Note:

For information about the adjustment zones, refer to the MR for the vehicle concerned.

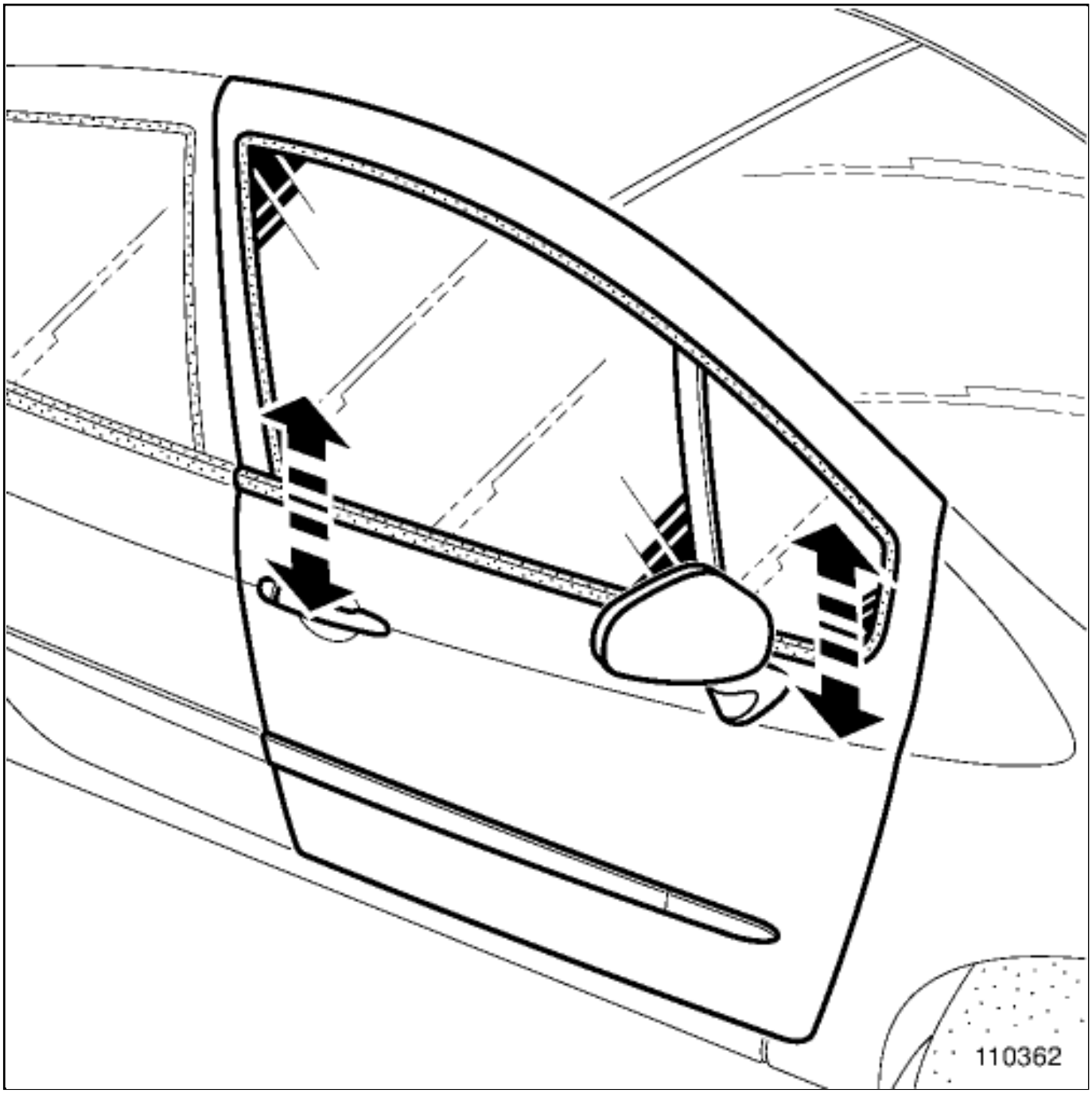
1- ADJUSTMENT CHRONOLOGY



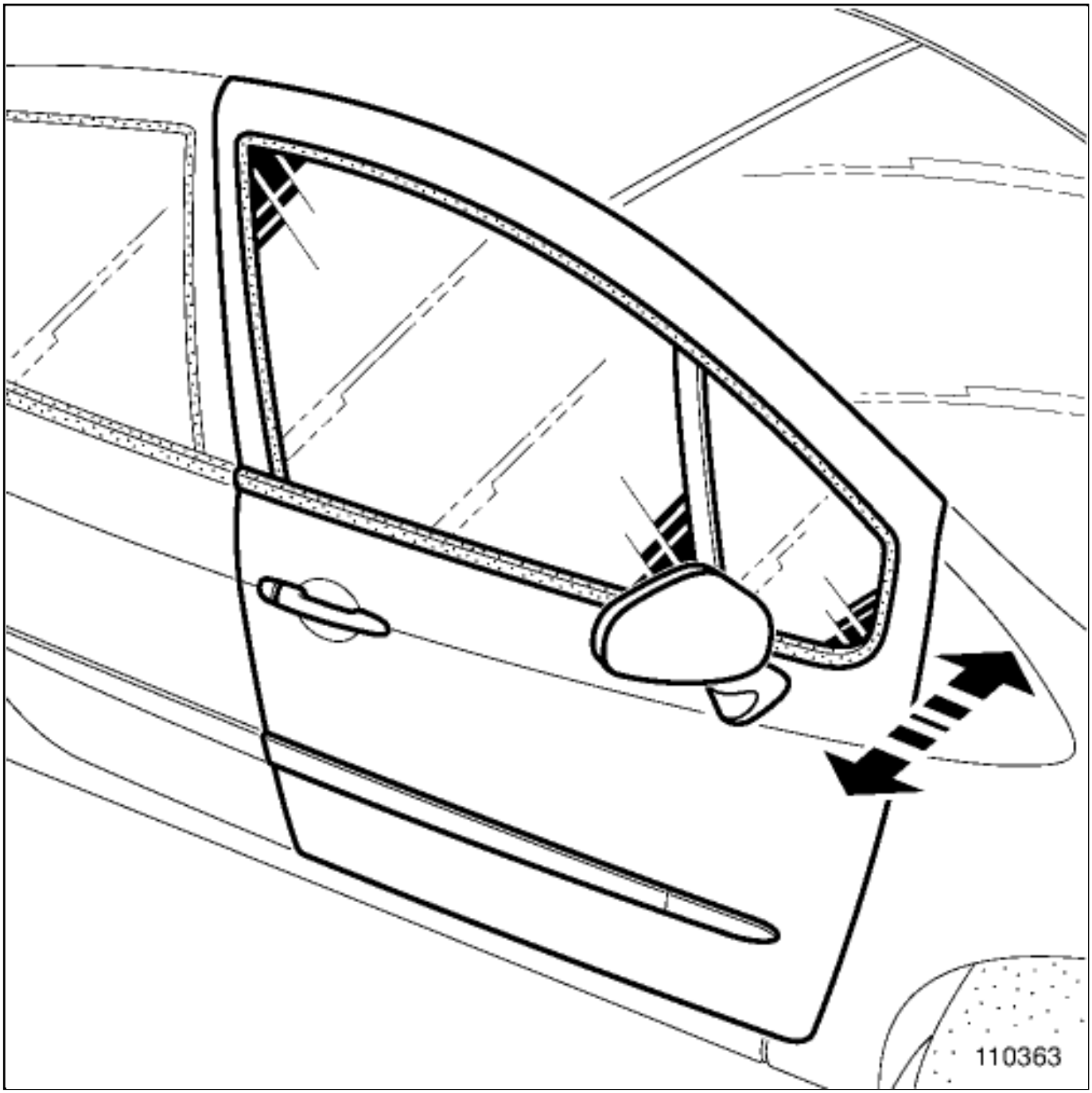
- Adjust the centring of the door.



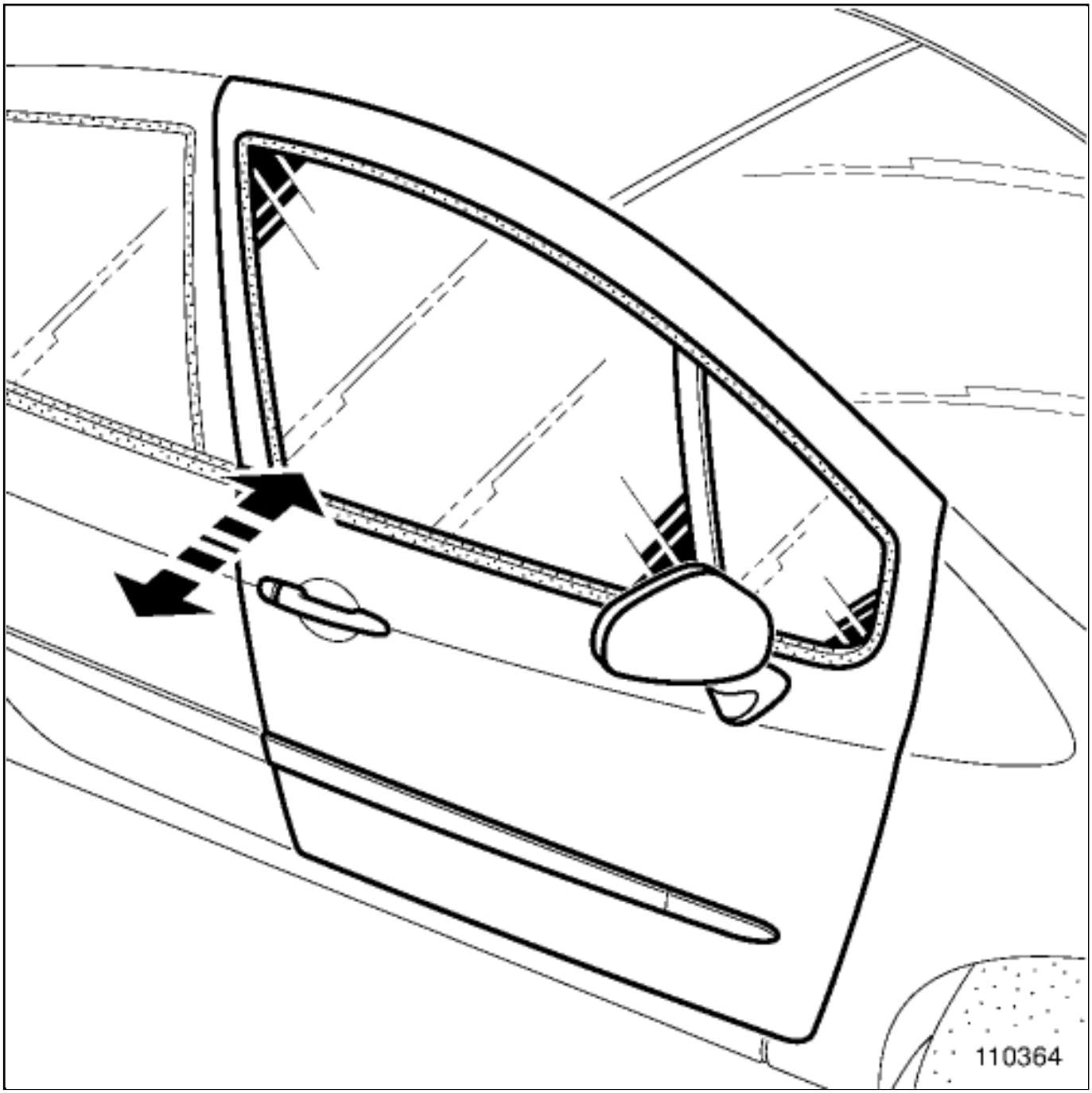
- Adjust the side alignment of the door.



- Adjust the alignment of the door height.



Adjust the front flush fitting of the door.



- Adjust the rear flush fitting of the door, as well as the contact and the closure firmness.
- Check the adjustment and the correct operation then tighten into position.

2. SLIDING SIDE DOOR

Check that the peripheral components are adjusted correctly.

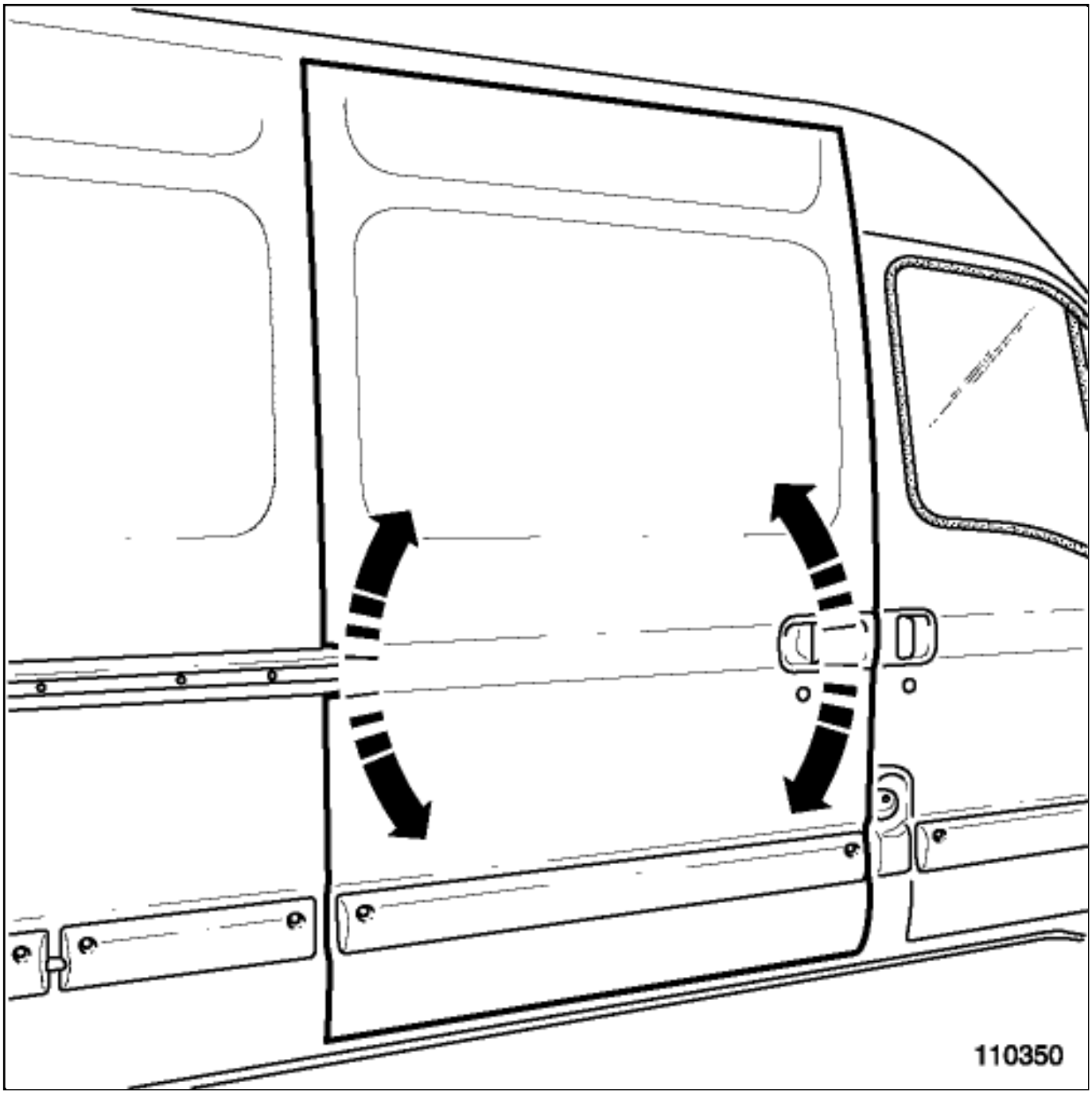
Refit the heavy door fittings (closing system, window winder system).

Before carrying out the adjustments, release the striker panel and fit the hinges, pre-tightening in the middle of the adjustment.

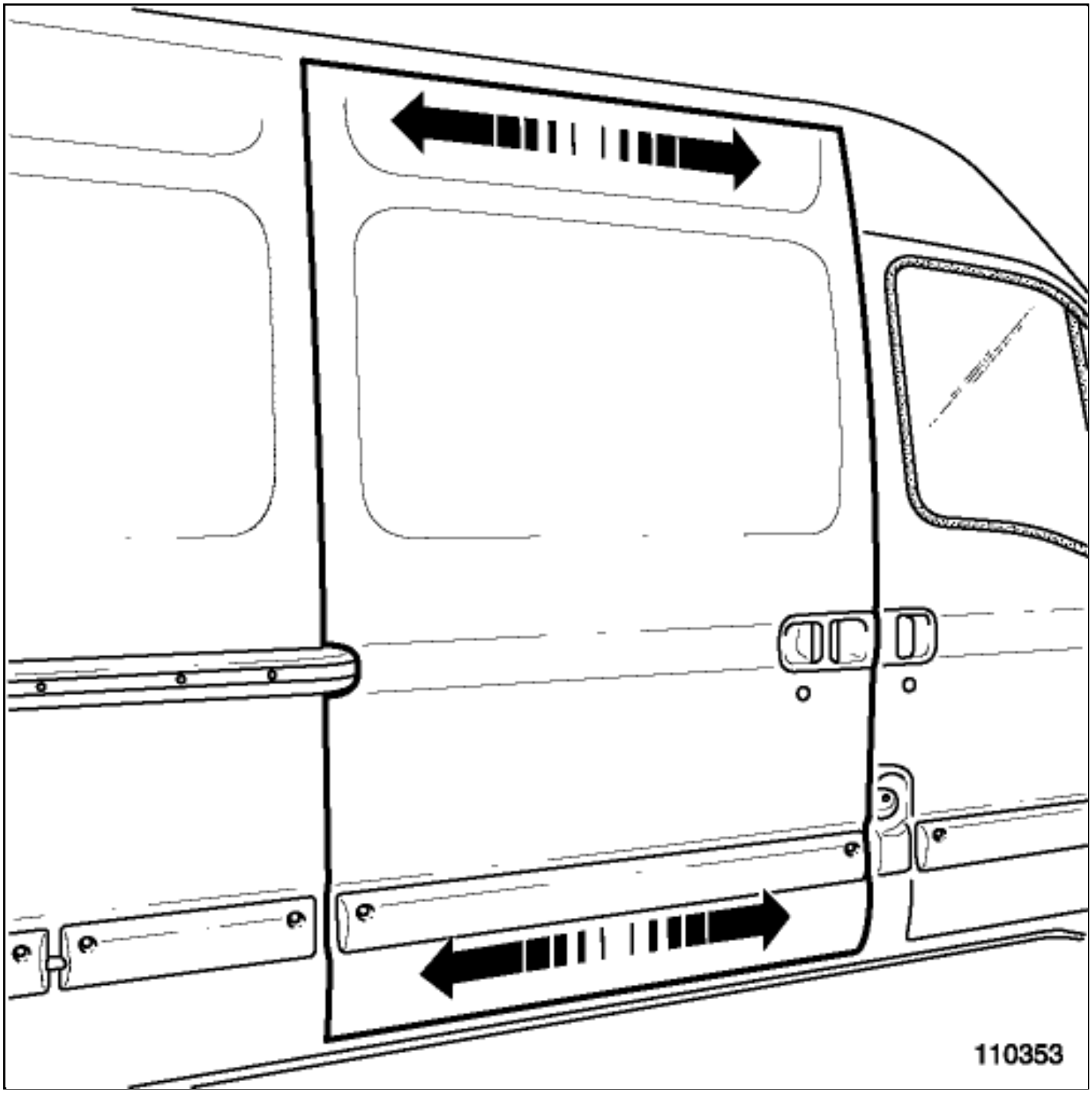
Note:

For information about the adjustment zones, refer to the MR for the vehicle concerned.

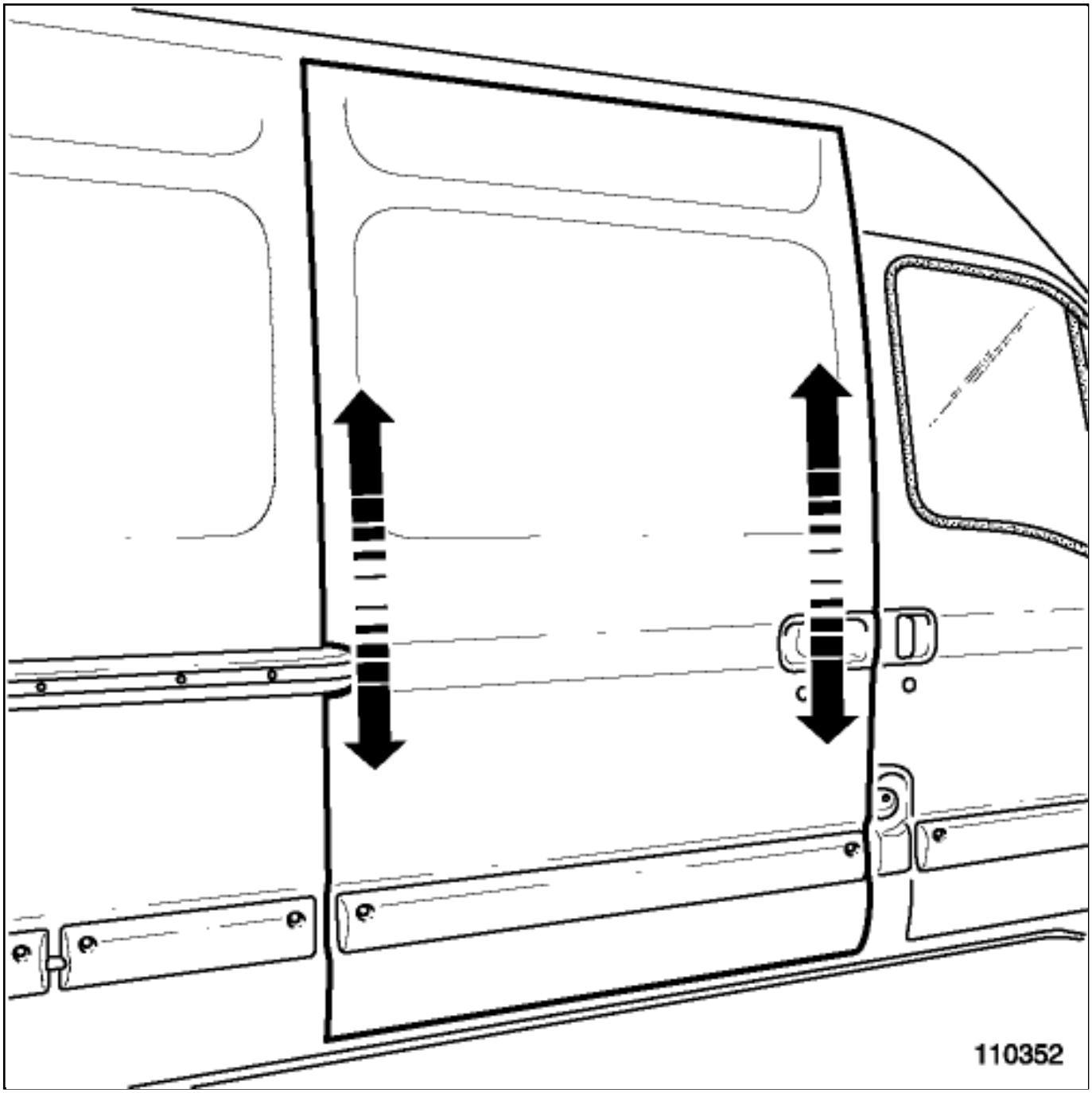
1- ADJUSTMENT CHRONOLOGY



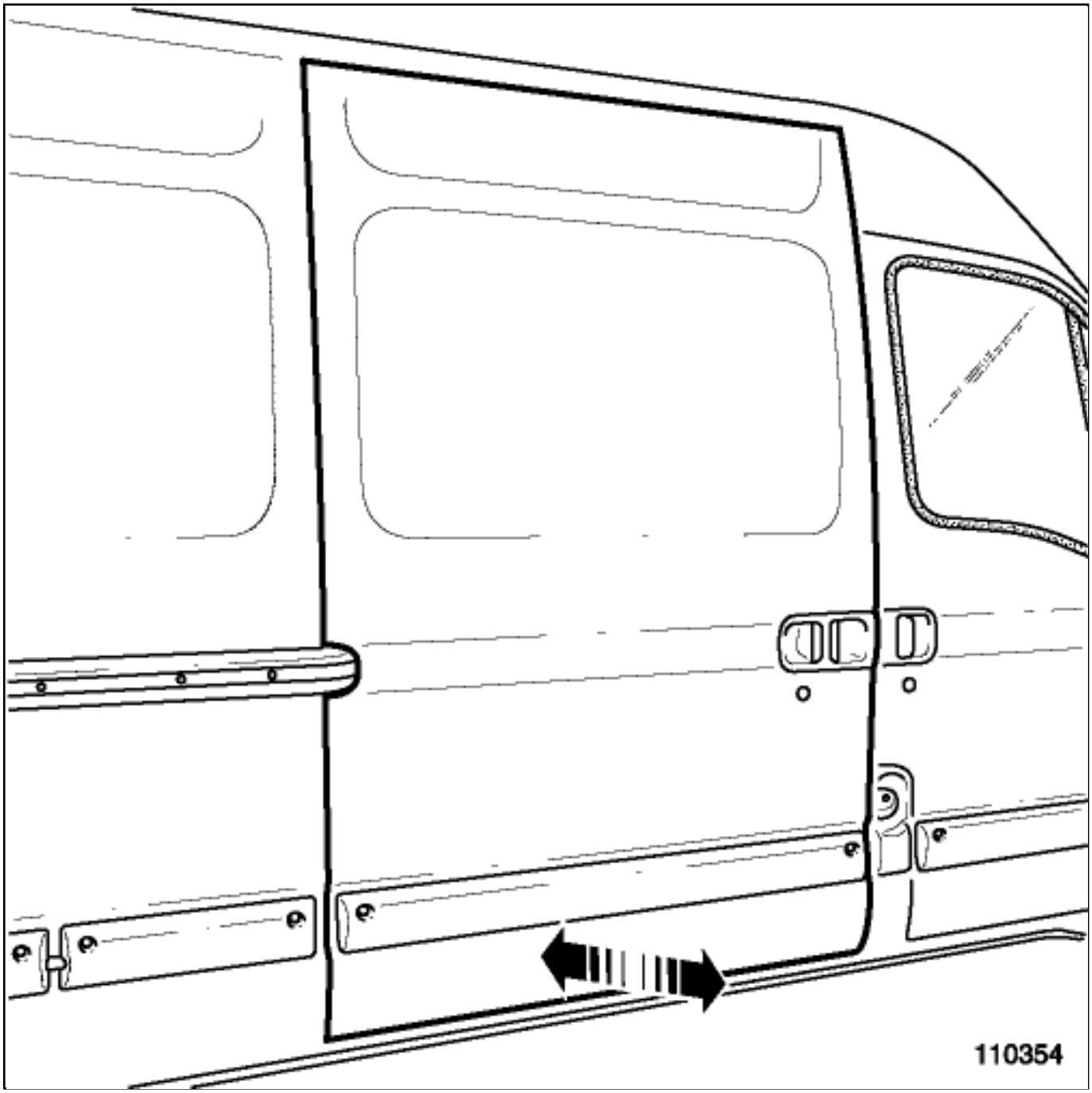
Adjust the centring of the door.



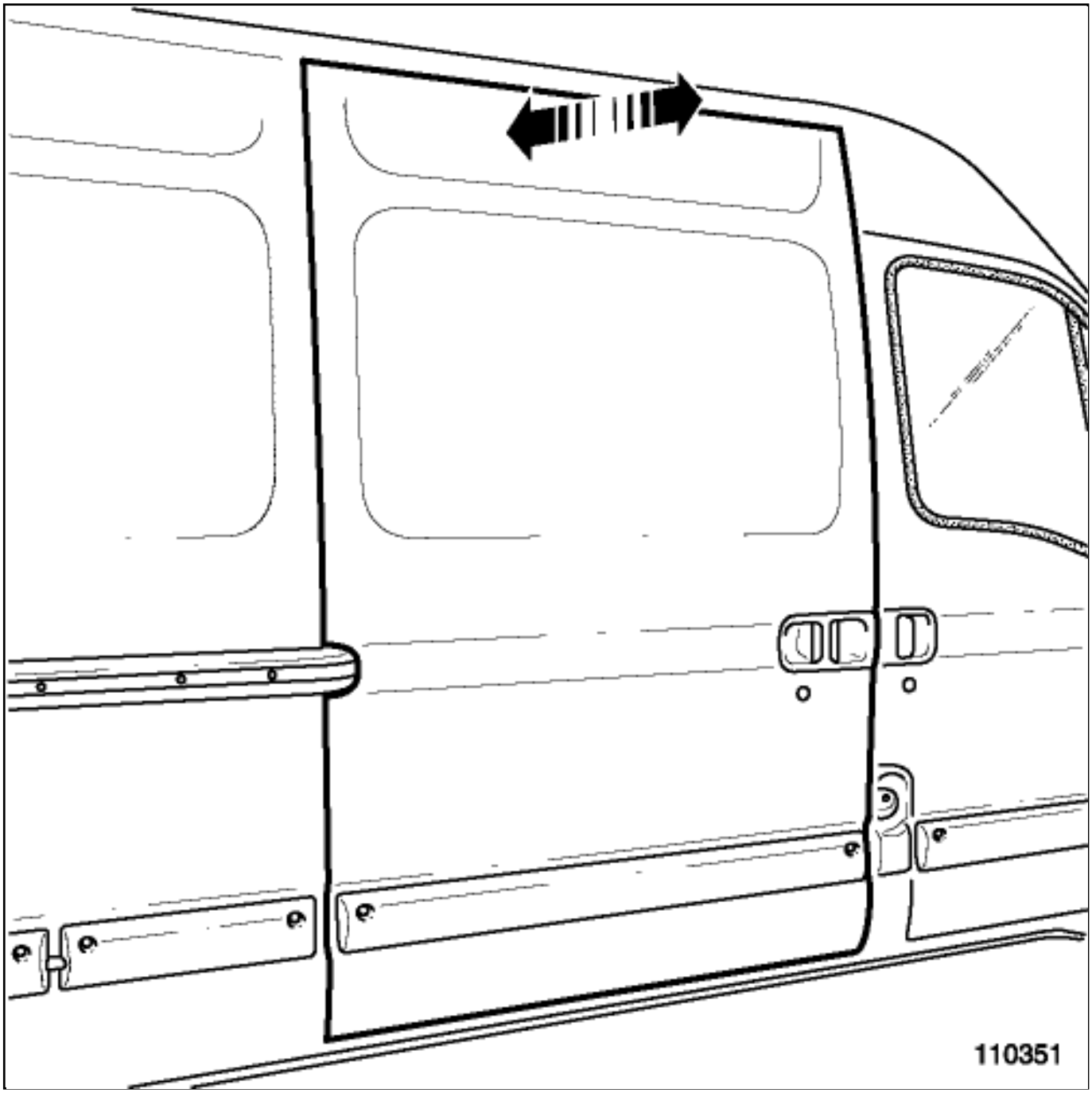
Adjust the side alignment of the door.



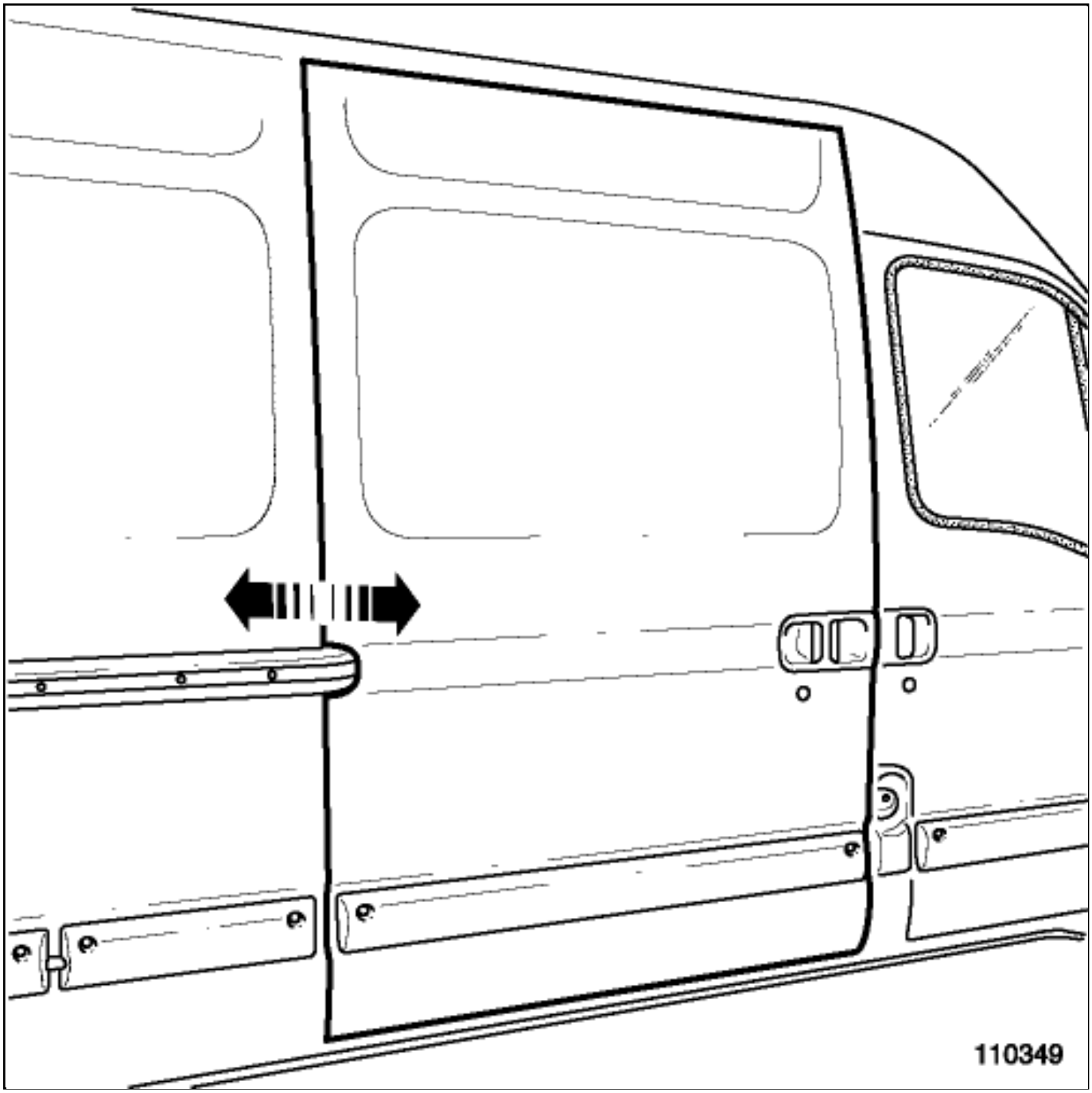
Adjust the alignment of the door height.



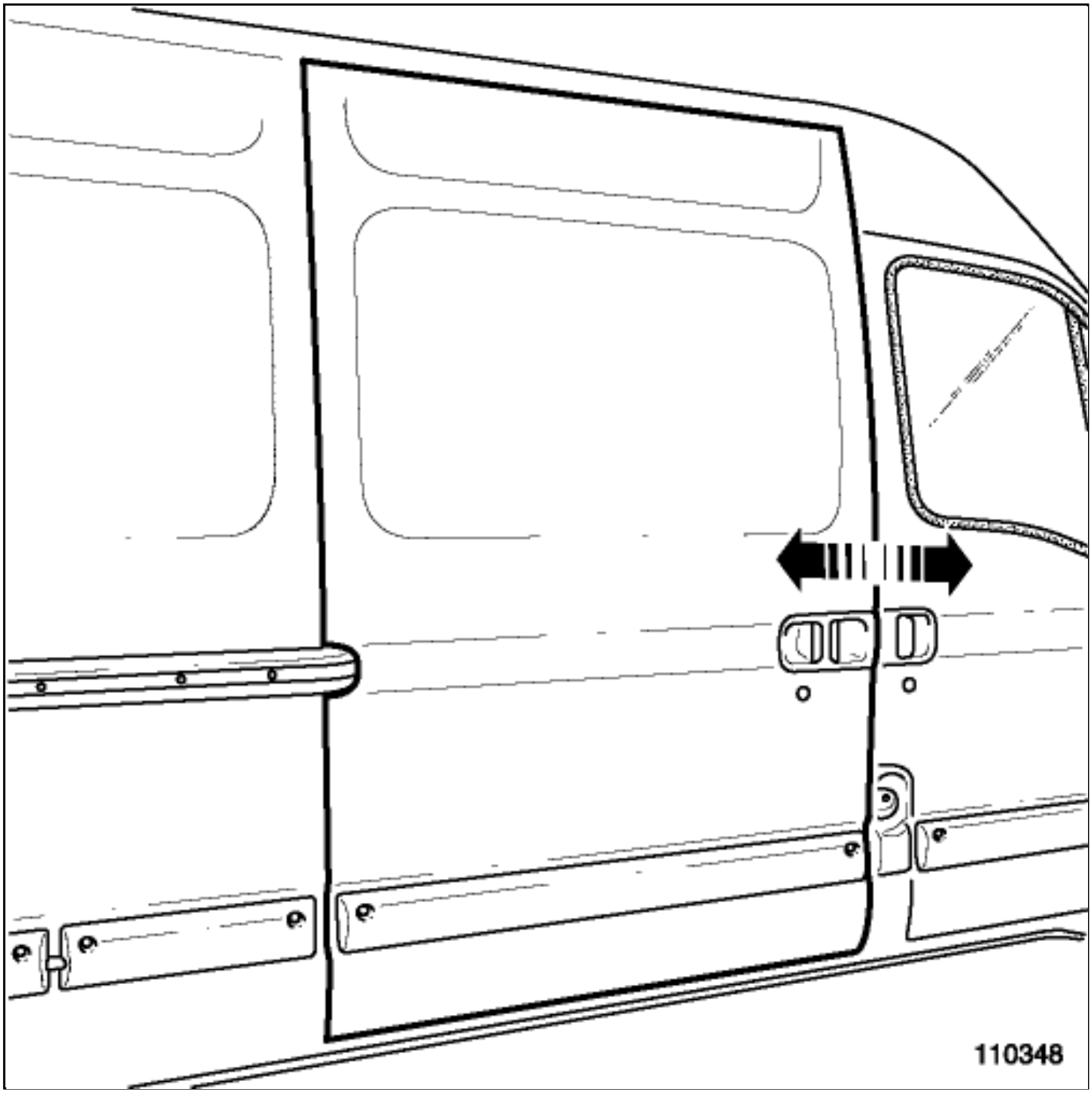
Adjust the flush fitting of the bottom section of the door.



Adjust the flush fitting of the top section of the door.



Adjust the rear flush fitting of the door.



- Adjust the front flush fitting of the door.

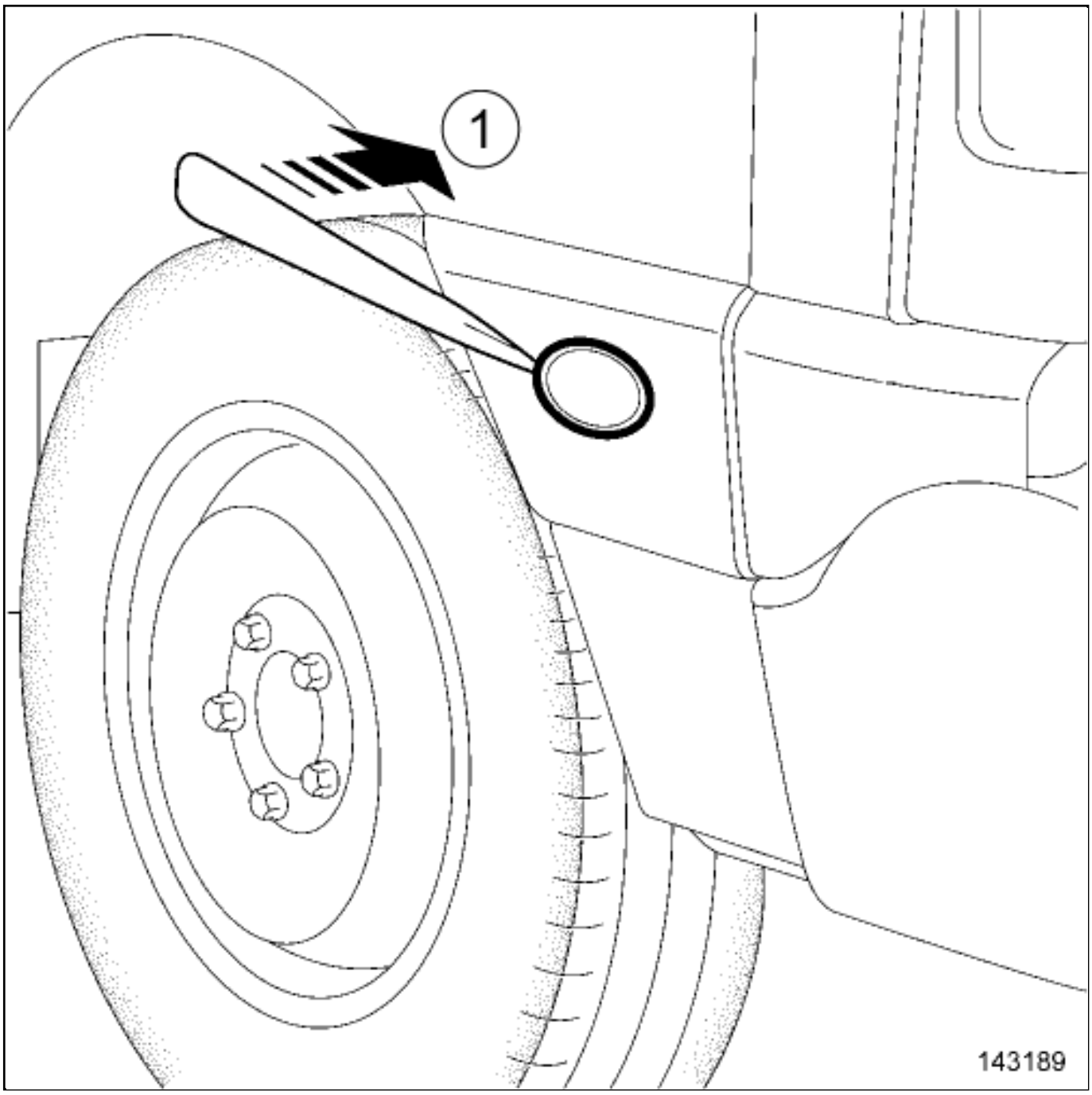
- Check the adjustment and the correct operation then tighten into position.

SIDE POSITION INDICATOR: REMOVAL - REFITTING

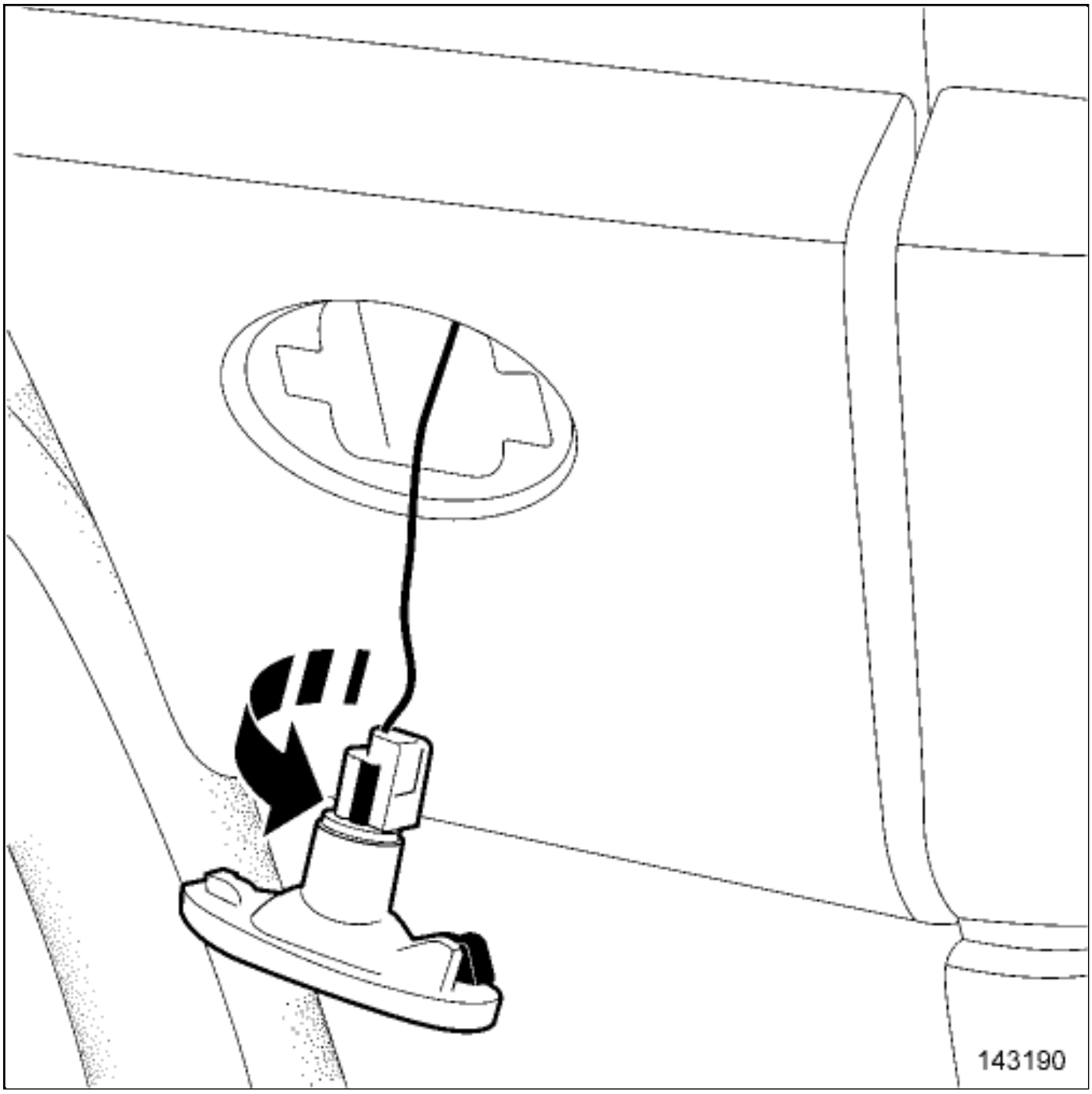
Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

1. REMOVAL OPERATION



- Partially remove the side position indicator using the toolSet of trim removal levers.(Car. 1363) by (1) .



- Unlock the side position indicator bulb holder by turning it a quarter of a turn anti-clockwise.

- Remove the side position indicator.

REFITTING

Note:

When replacing the bulb, only use an approved bulb.

- Proceed in the reverse order to removal.

SILENCER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Pliers for removing exhaust pipe rubber mounting bushes	Mot. 1857

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 19B, Exhaust, Exhaust assembly under body: Exploded view)** .

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 19B, Exhaust, Exhaust: Precautions for the repair)** ,
- **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

CAUTION

To prevent the surrounding components from overheating, do not damage (tear, pierce, bend, etc.) a heat shield.

Any damaged heat shields must be replaced.

WARNING

Wear heat protective gloves during the operation.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

2. REMOVAL OPERATION

- Remove (see 19B, Exhaust, Exhaust assembly under body: Exploded view) (see 19B,Exhaust, Exhaust assembly under body: Exploded view) :
  - the silencer clamp,
  - the silencer front rubber mounting bush from the body,
  - the silencer rear rubber mounting bushes from the body,
  - the silencer.

Note:

In case of difficulty removing the rubber mounting bushes, use the toolPliers for removing exhaust pipe rubber mounting bushes(Mot. 1857) .

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

- Check:
  - that there is no contact with the underbody,
  - that all exhaust pipe heat shields are present.

- Start the vehicle.

- Check that there are no leaks.

SILL PANEL CLOSURE PANEL: REPLACEMENT

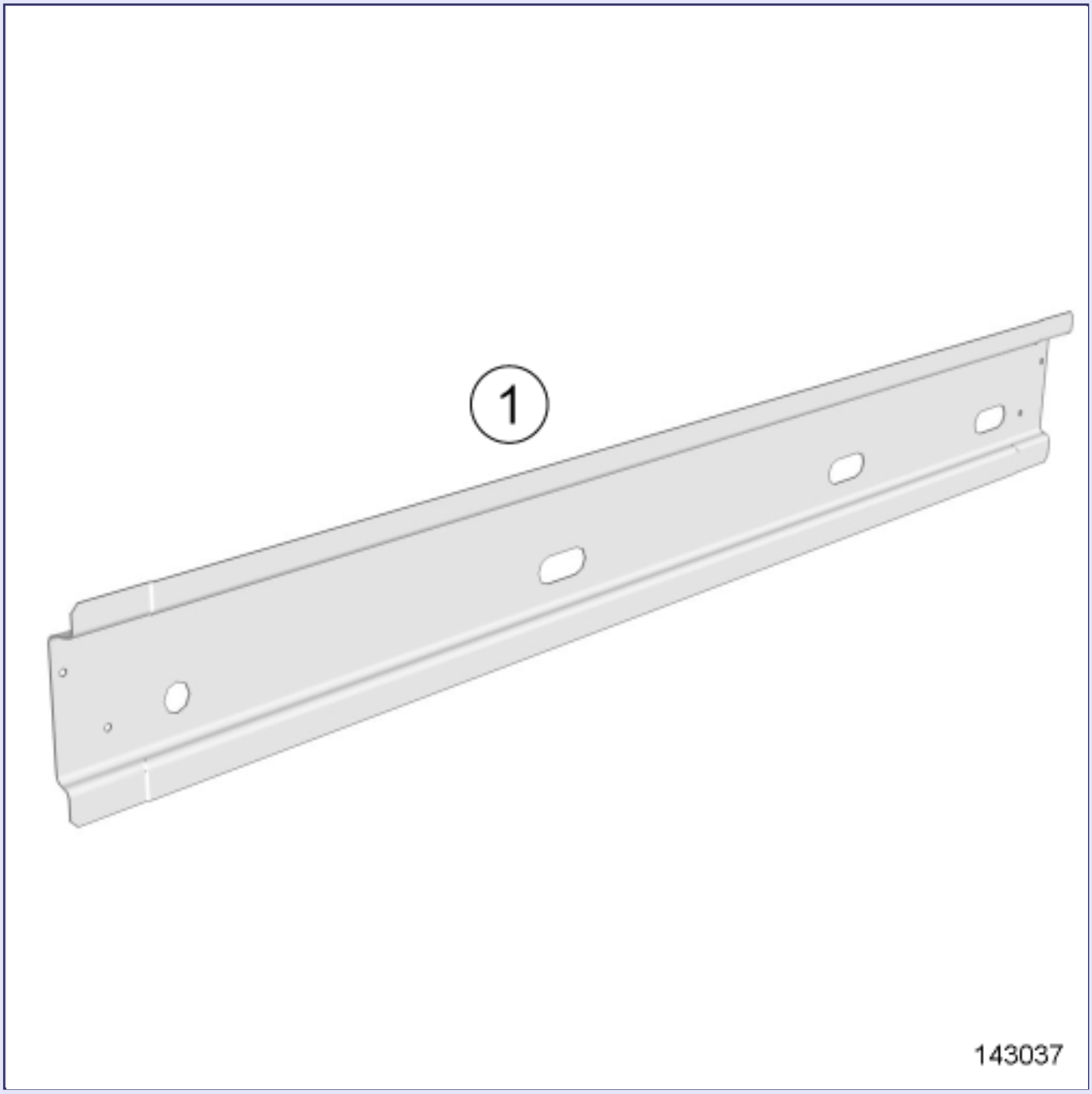
Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

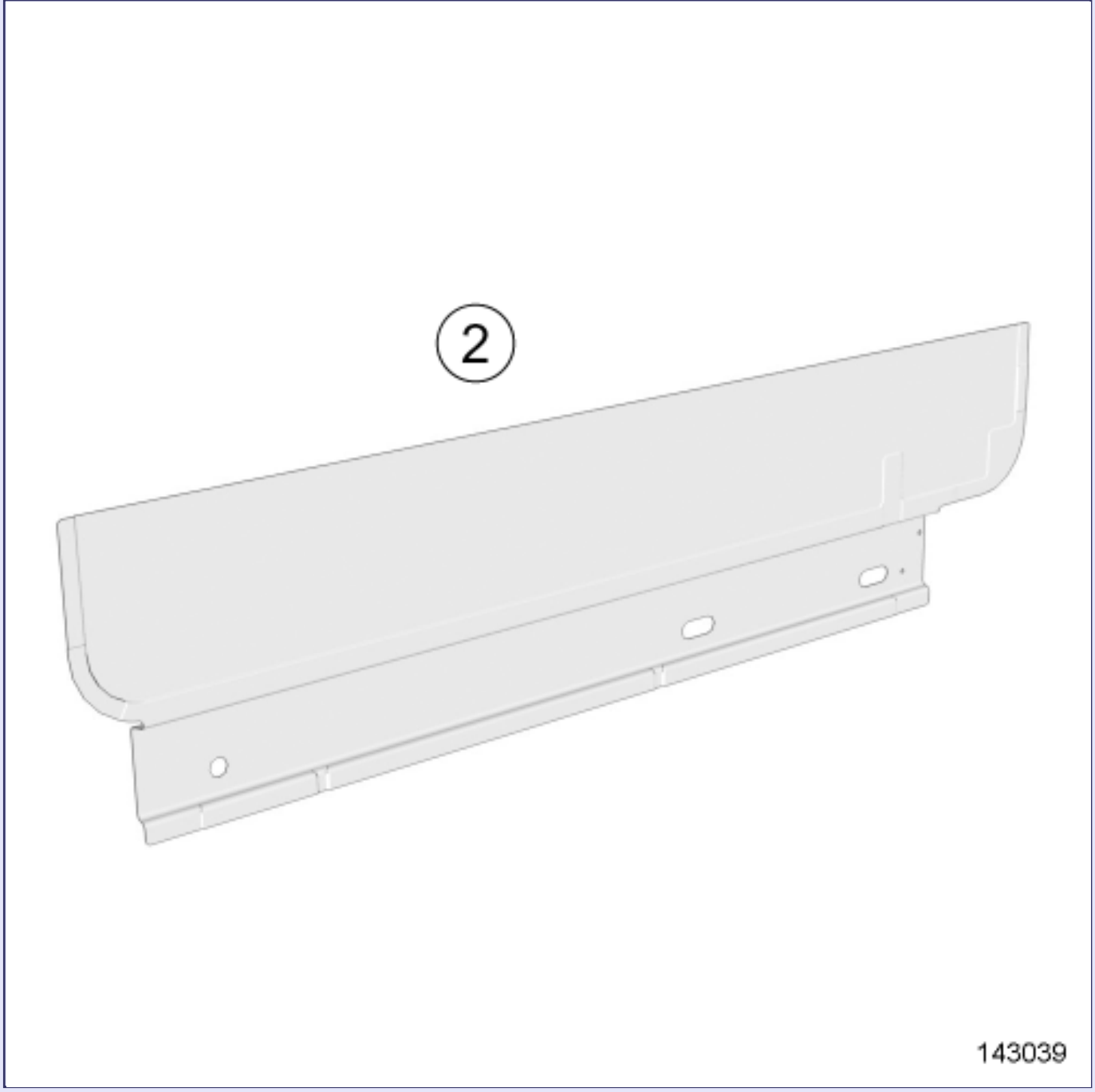
1. COMPOSITION OF THE SPARE PART

F62(F62) SLIDING SIDE DOOR VERSION



No.	Description	Type	Thickness (mm)
(1)	Sill panel closure panel	HLE	0.9

VERSION WITHOUT SLIDING SIDE DOOR



No.	Description	Type	Thickness (mm)
(2)	Sill panel closure panel	Mild steel	0.9

E62(E62)

No.	Description	Type	Thickness (mm)

(3)	Sill panel closure panel	Mild steel	0.9

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

- complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area Earth screw connection: Description (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area Earths on body: List and location of components .

CAUTION

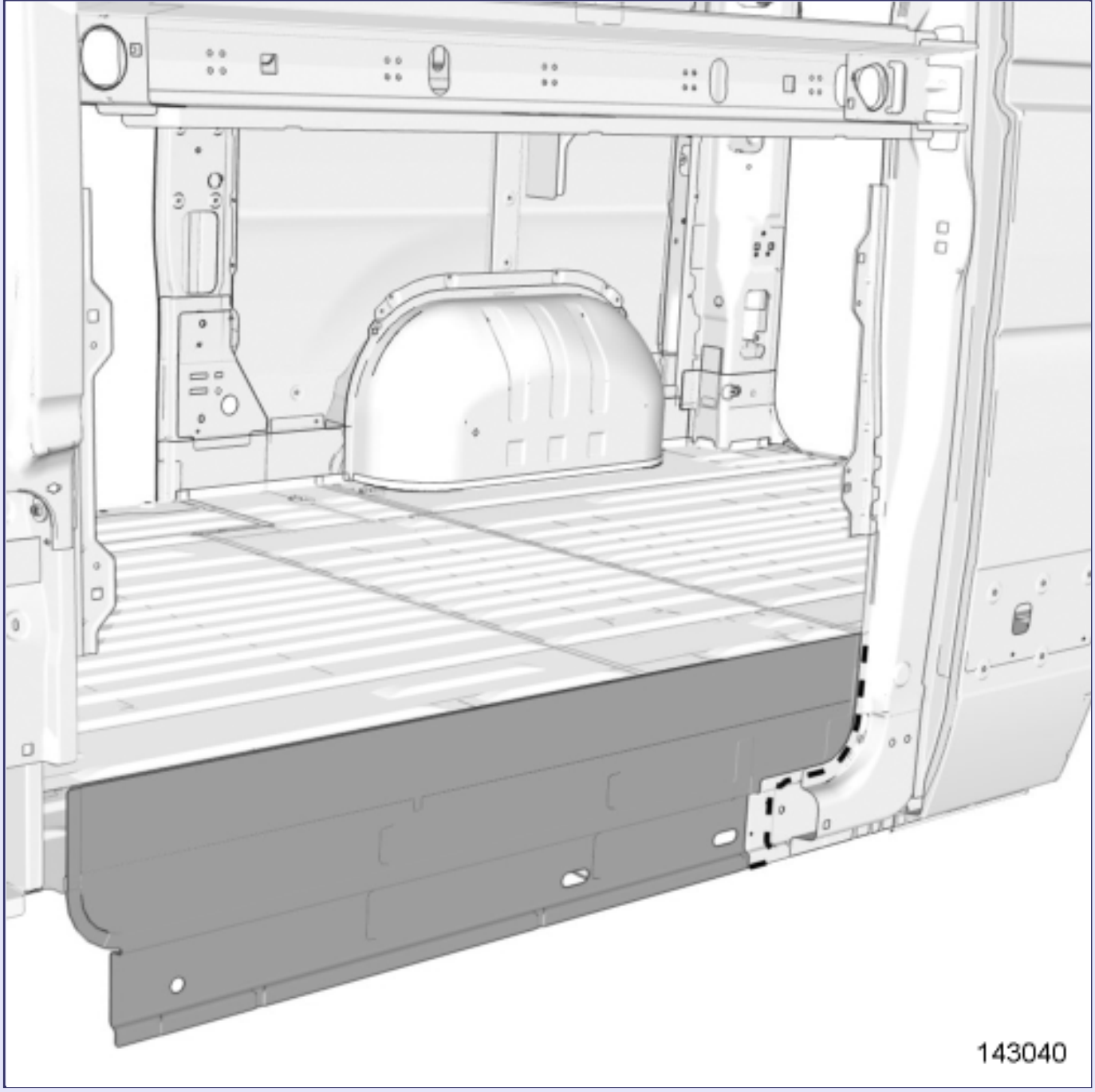
If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld **Electrical resistance spot welding connection with indirect access: Description** (MR 400, 40B, Electrical resistance welded connections).

1- COMPLETE REPLACEMENT

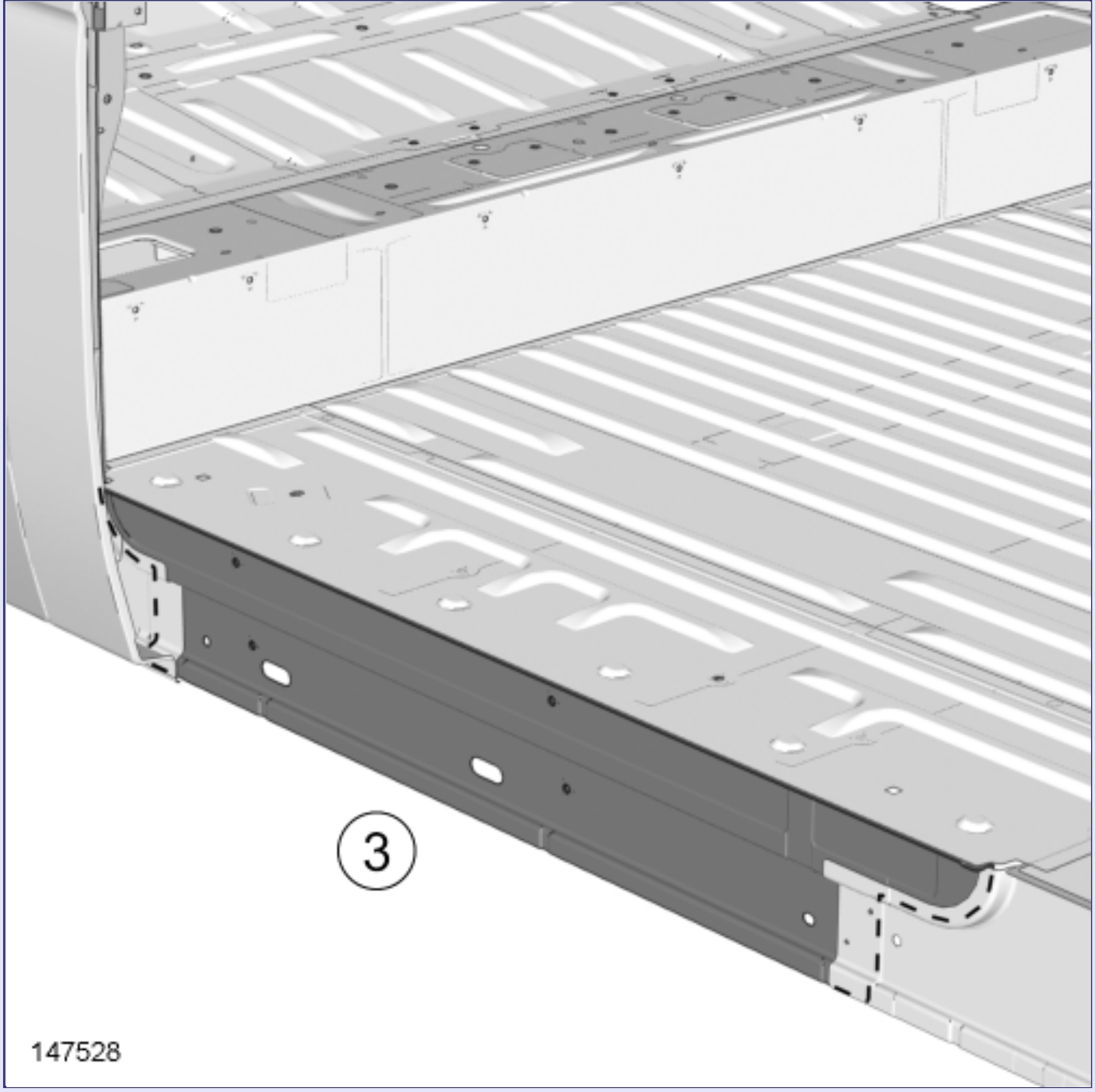
1)PART IN POSITION

F62(F62) SLIDING SIDE DOOR VERSION

VERSION WITHOUT SLIDING SIDE DOOR



E62(E62)


3
147528

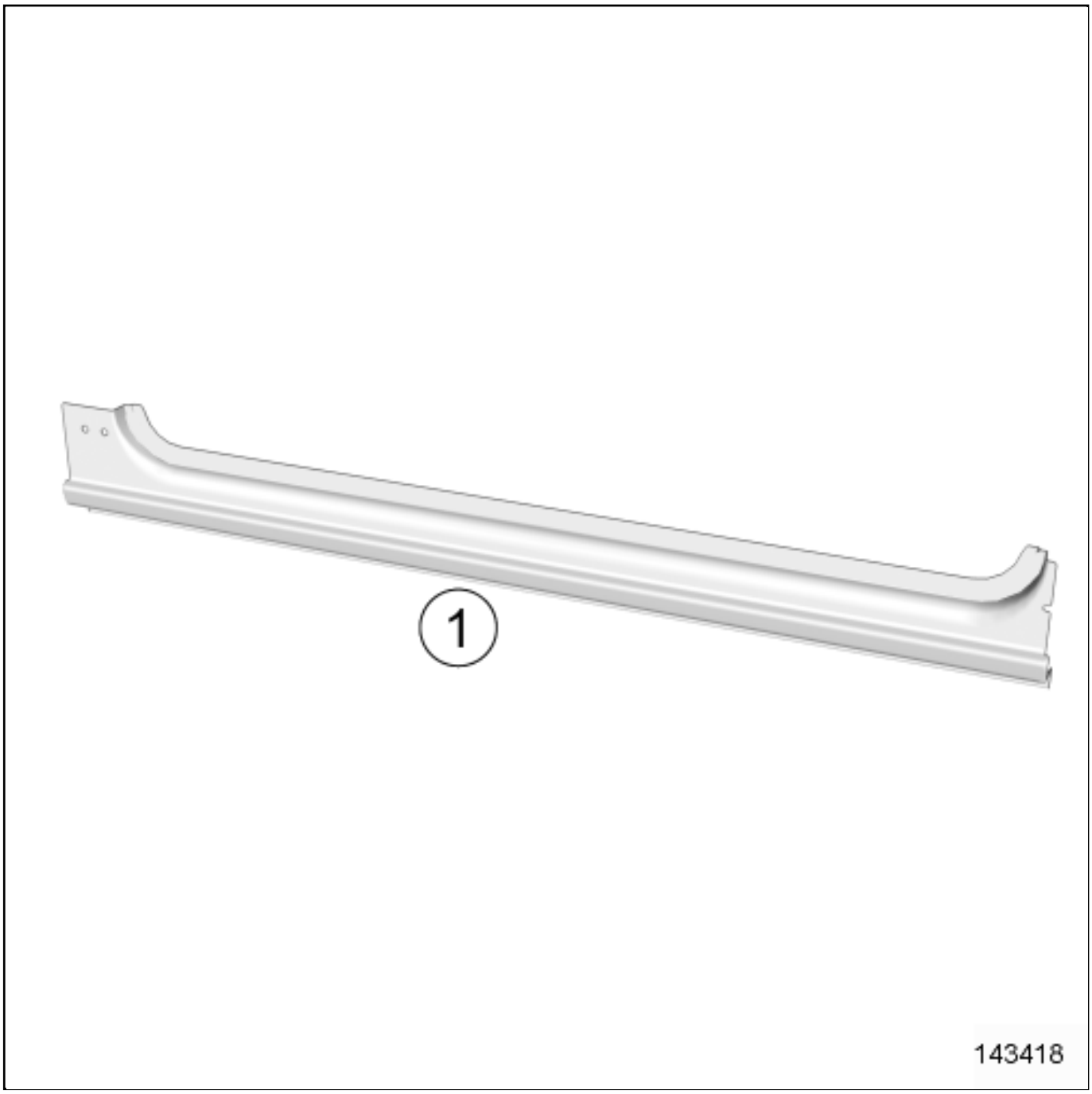
SILLPANEL:REPLACEMENT

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

1. COMPOSITION OF THE SPARE PART



No.	Description	Type	Thickness (mm)
(1)	Sill panel	Mild steel	0.9

2. IN THE EVENT OF REPLACEMENT

There is only one way of replacing this part:

■ complete replacement.

CAUTION

To avoid damaging the vehicles electric and electronic components, the earths of any wiring harness near the weld area must be disconnected.

Position the earth of the welding machine as close as possible to the weld area(see **Bolted connection for earth: Fitting**) (MR 400, 40H, Bolted connections).

Locate the earths located near to the weld area**Earths on body: List and location of components** .

1- COMPLETE REPLACEMENT

1)PART IN POSITION

2)SPECIAL NOTES ON MATING

CAUTION

If the mating faces of the parts to be welded are not accessible, use a GMAW plug weld in place of the original electrical resistance weld**Connections by arc welding under shielding gas: Description** (MR 400, 40C, Gas metal arc welded connections (GMAW)).

XSL version : 3.02 du 22/07/11

SLIDING SIDE DOOR RUNNERS: REMOVAL - REFITTING

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .

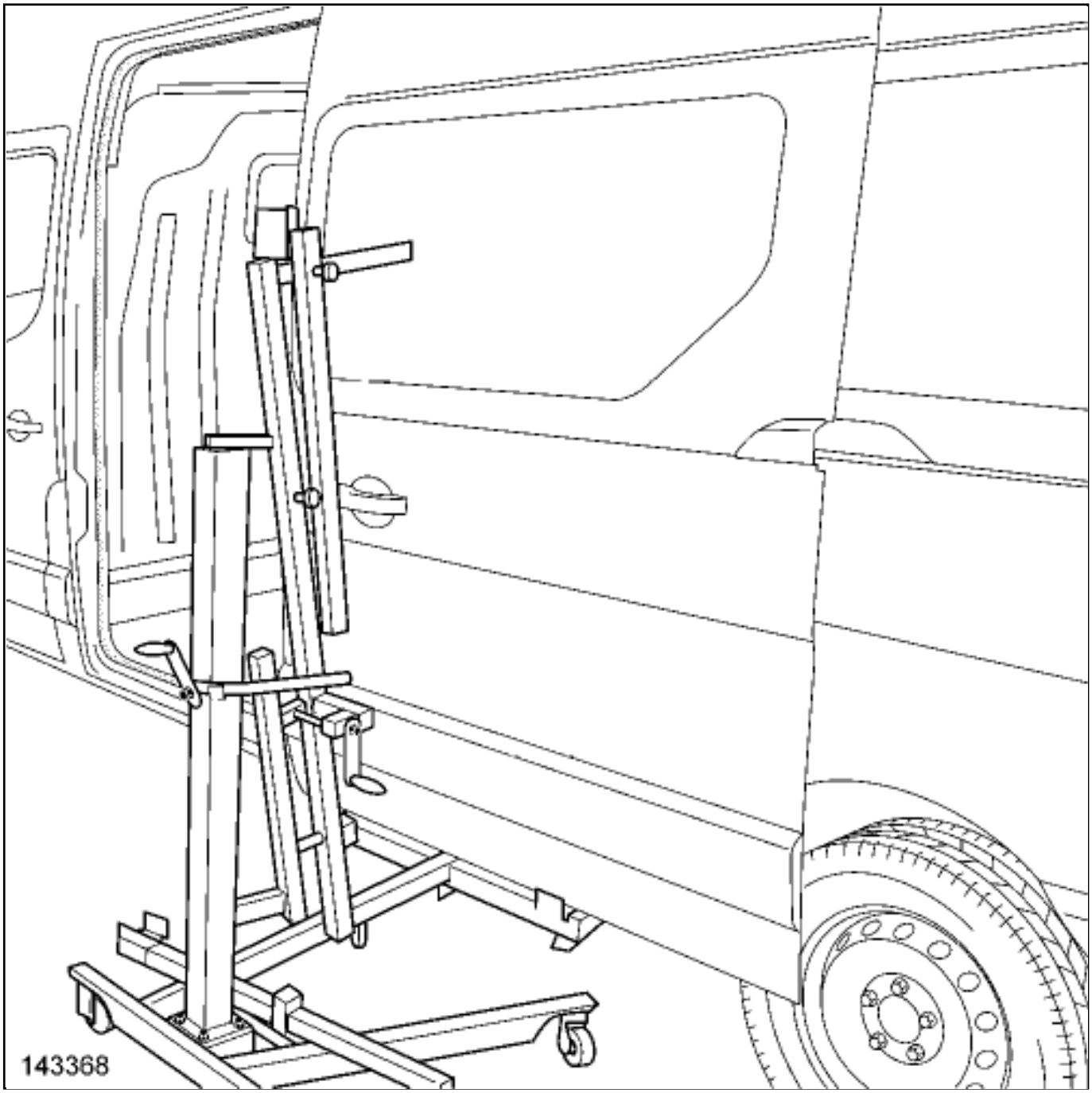
Note:

For partial removal of the sliding side door runners, it is not necessary to remove the sliding side door.

It is necessary to hold the sliding side door using the tool DOOR SUPPORT.

Number of Renault agreement: 661000.

Part no.: SUP 01.



REMOVAL

1. REMOVAL PREPARATION OPERATION

Remove:

- the sliding side door**Rear side door: Removal - Refitting** (47A, Side opening elements),
- the rear panel trim(71A, Body internal trim).

2. REMOVAL OPERATION

1- SLIDING SIDE DOOR LOWER RUNNER

Remove the sliding side door lower runner(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .

2- SLIDING SIDE DOOR CENTRE RUNNER

Remove the sliding side door centre runner(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .

3- SLIDING SIDE DOOR UPPER RUNNER

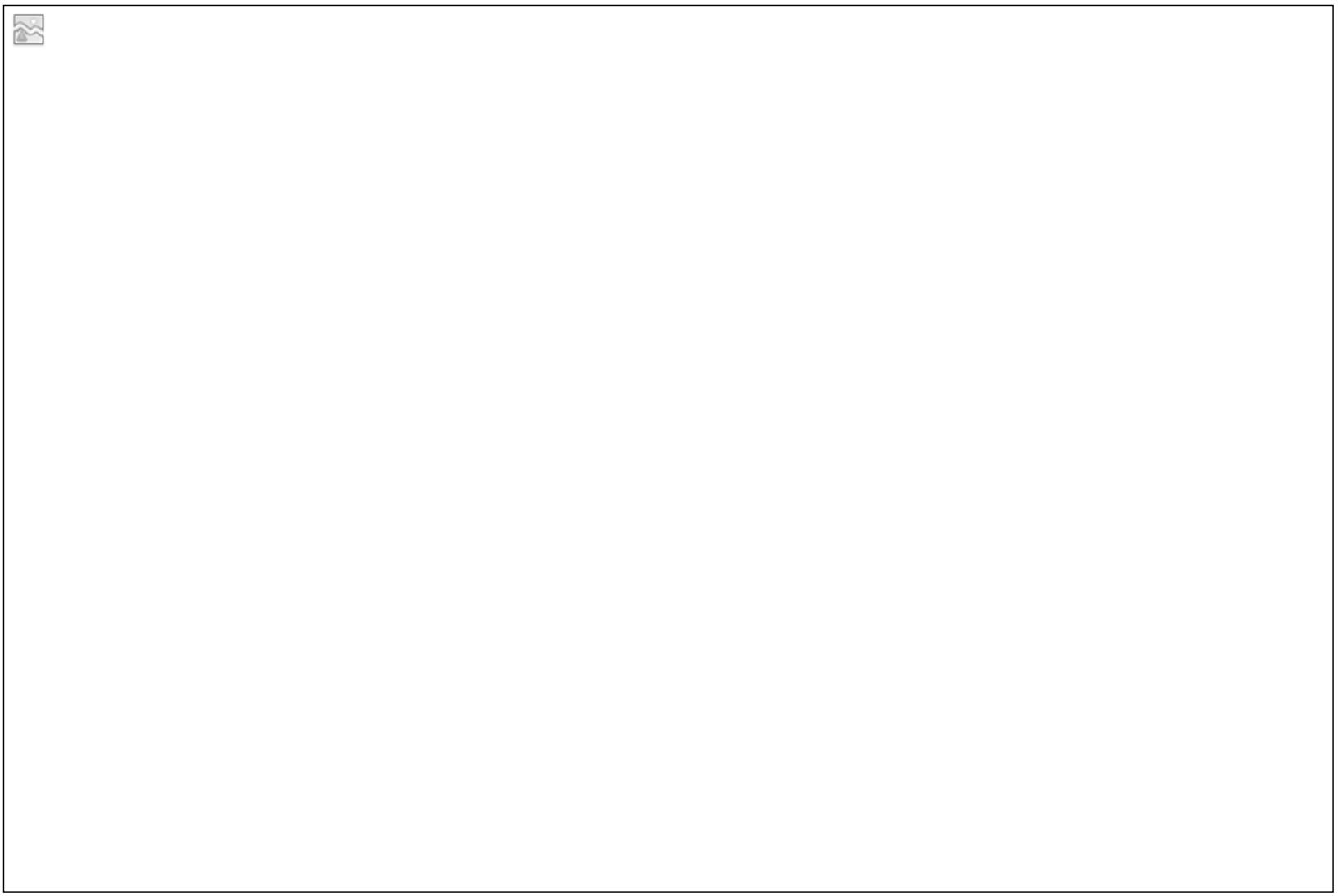
Remove the sliding side door upper runner(see 51A, Side opening element mechanisms, Rear side opening element box section internal assembly: Exploded view) .

REFITTING

Proceed in the reverse order to removal.

VEHICLE SPECIFICATIONS

1. VEHICLE MEASUREMENTS



F62, PROPULSION TRANSMISSION(F62)

DIMENSIONS IN METRES:

Rear Wheel Drive Van	Medium		Long
Type of rear wheels	Single wheels	Twin wheels	Twin wheels
(A)	0.842		
(B)	3.682		4.332
(C)	1.674		
(D)	6.198		6.848
(E)	1.750		
(F)	2.527	2.549	2.557
(G)	1.730	1.612	1.612
(H)	2.470		

E62(E62)

DIMENSIONS IN METRES:

Flat-bed truck	Front wheel drive L1	Front wheel drive L2		Front wheel drive L3	
Roof height	H1	H1	H2	H1	H2
(A)	0.842				
(B)	3.182	3.682		4.332	
(C)	1.006				
(D)	5.030	5.530		6.180	
(E)	1.750				
(F)	2.276	2.270	2.463	2.264	2.457
(G)	1.730				
(H)	2.470/2.654*				

*** with long door mirror arms**

E62(E62)

DIMENSIONS IN METRES:

Vehicle base	Front wheel drive L2	Front wheel drive L3
(A)	8.250	
(B)	3.682	4.332
(C)	1.006	

(D)	5.513	6.163
(E)	1.750	
(F)	1.687	1.685
(G)	1.730	
(H)	2.470/2.654*	

*** with long door mirror arms**

H62, PROPULSION TRANSMISSION(H62)

DIMENSIONS IN METRES:

Double cab chassis	Rear wheel drive L2 - Single wheels	Rear wheel drive L3 - Single wheels	Rear wheel drive L3 - Twin wheels	Rear wheel drive L4 - Twin wheels
(A)	0.842			
(B)	3.682	4.332	3.682	4.332
(C)	1.025		1.575	
(D)	5.643	6.293	6.193	6.843
(E)	1.750			
(F)	2.295	2.285	2.301	2.286
(G)	1.730		1.612	
(H)	2.470/2.654*			

*** with long door mirror arms**

U62, PROPULSION TRANSMISSION(U62)

DIMENSIONS IN METRES:

Cab chassis	Rear wheel drive L2 - Single wheels	Rear wheel drive L3 - Single wheels	Rear wheel drive L3 - Twin wheels	Rear wheel drive L4 - Twin wheels
(A)	0.842			
(B)	3.682	4.332	3.682	4.332
(C)	1.025		1.575	
(D)	5.643	6.293	6.193	6.843
(E)	1.750			
(F)	2.284	2.276	2.283	2.273
(G)	1.730		1.612	
(H)	2.470/2.654*			

*** with long door mirror arms**

2. VEHICLE IDENTIFICATION

Engine			Gearbox		Emissions standard
Engine type	Engine suffix	Cubic capacity (cm³)	Gearbox type	Gearbox suffix	
M9T	670	2298	PF6	017 018 019 020	EURO 5
			PA0	011 012	
	672		PF6	017 018	EURO 4
	676				
	678			019 020	
	680			017 018 019 020	EURO 5
			PA0	013 014	
	686		ZF4	000 001	EURO 4
	690				EURO 5
	692				EURO 4
	694				
	698				EURO 5
	696		ZA4	000	
	700		ZF4	006 007	
	702		PF6	055 056	
	870			032 034 035 036	
	872				

Engine			Gearbox		Emissions standard
Engine type	Engine suffix	Cubic capacity (cm³)	Gearbox type	Gearbox suffix	
M9T	876	2298	PF6	034 035 036 037	EURO 4
	880			036 037	EURO 5
	882			036 037	
	890		ZF4	000 001 002	
	892			000 001 002	EURO 4
	898			000 001 002	EURO 5

STARTER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

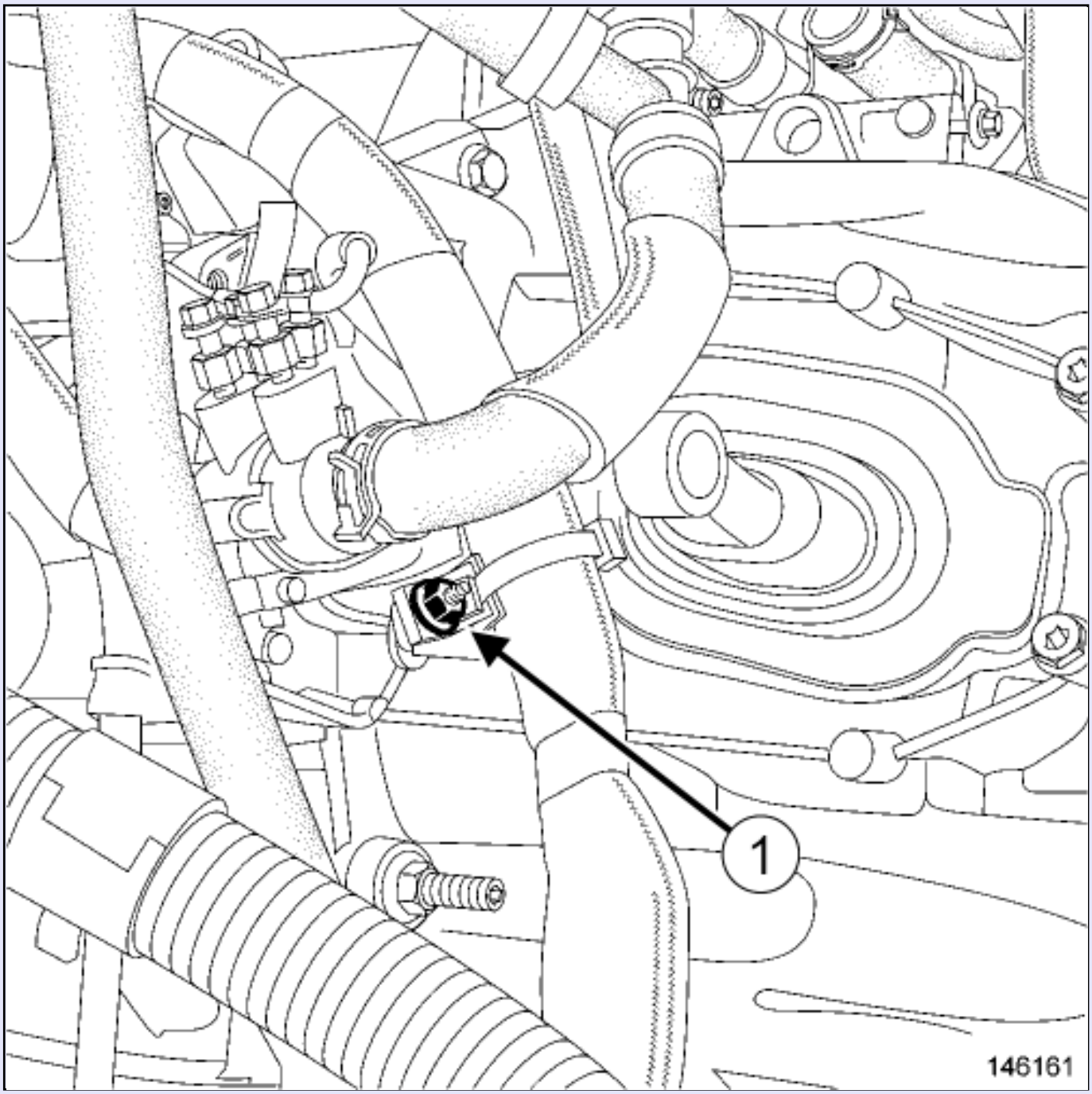
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**Cylinder block assembly: Exploded view** .

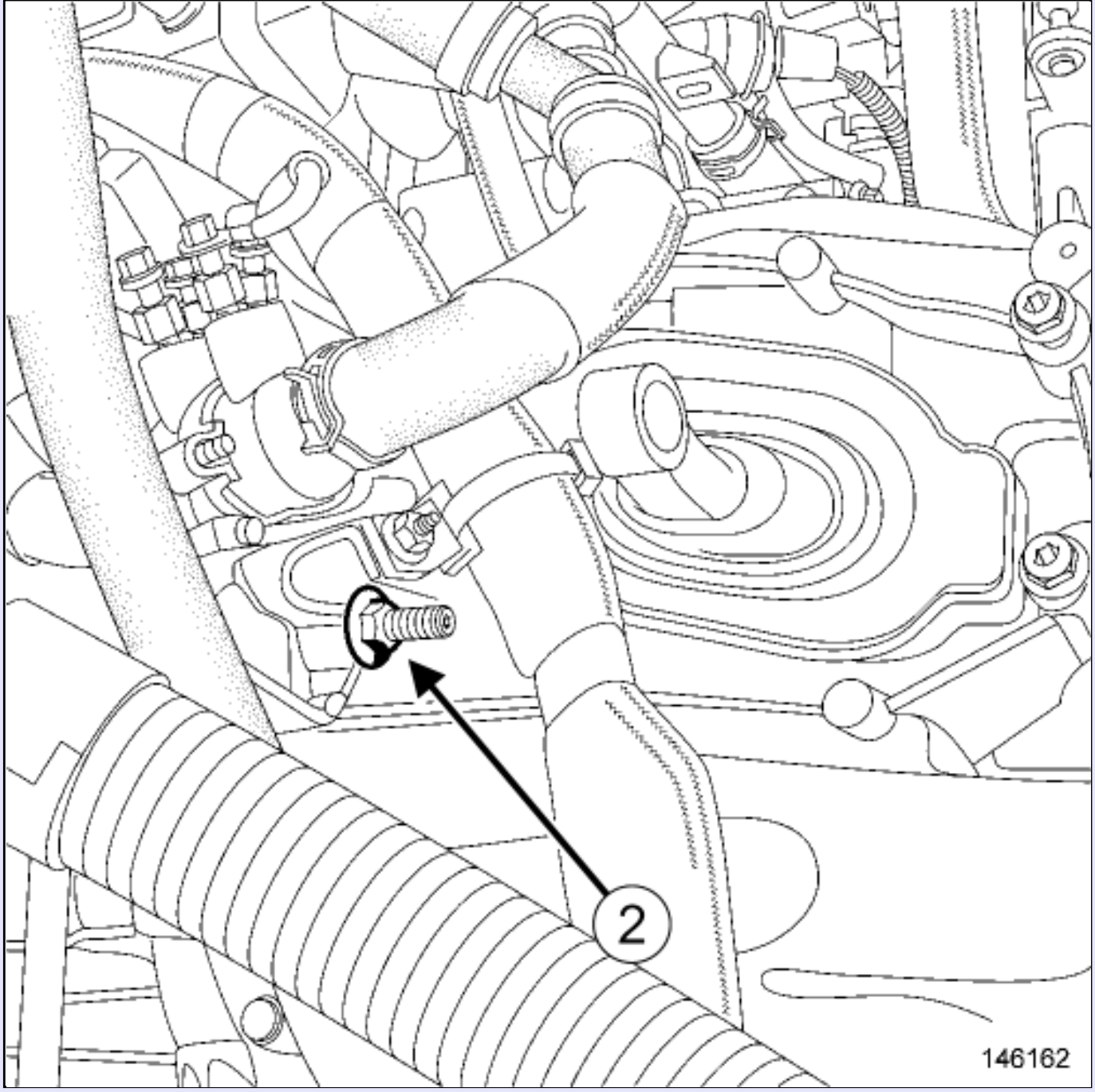
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).
- Remove the engine undertray.



- Remove the battery wiring nut(1) .
- Move aside the battery wiring.

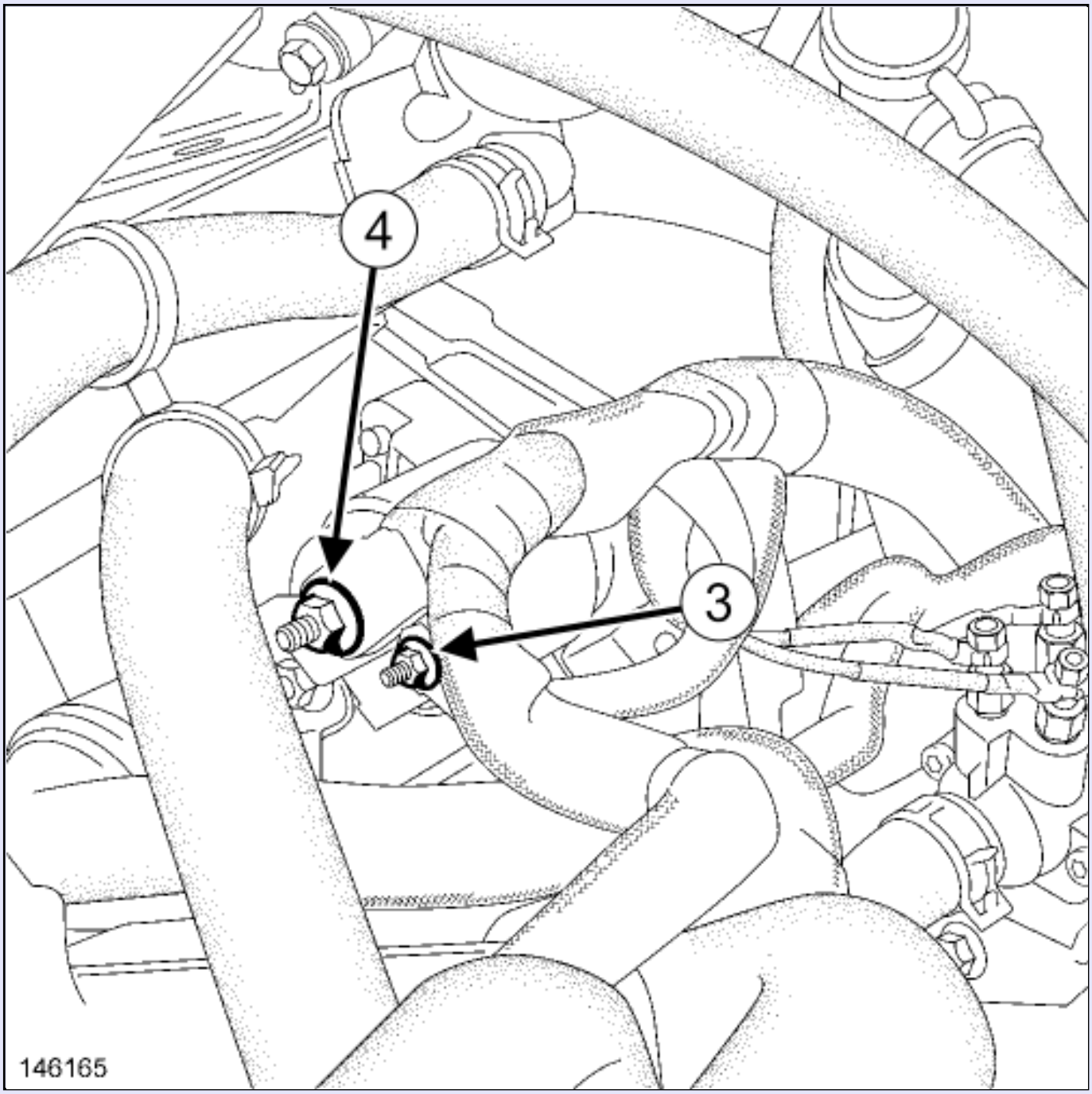


- Remove the nut(2) of the thermoplunger unit support.
- Move the heating element unitto one side.

M9T, 700(700)

- Remove the intercooler air outlet pipe .
- Remove :
  - the damper valve,
  - the exhaust gas recirculation rigid pipe at the exhaust gas cooler outlet,
  - the exhaust gas recirculation solenoid valve,
  - the exhaust gas circuit temperature sensor,
  - the inlet distributor.

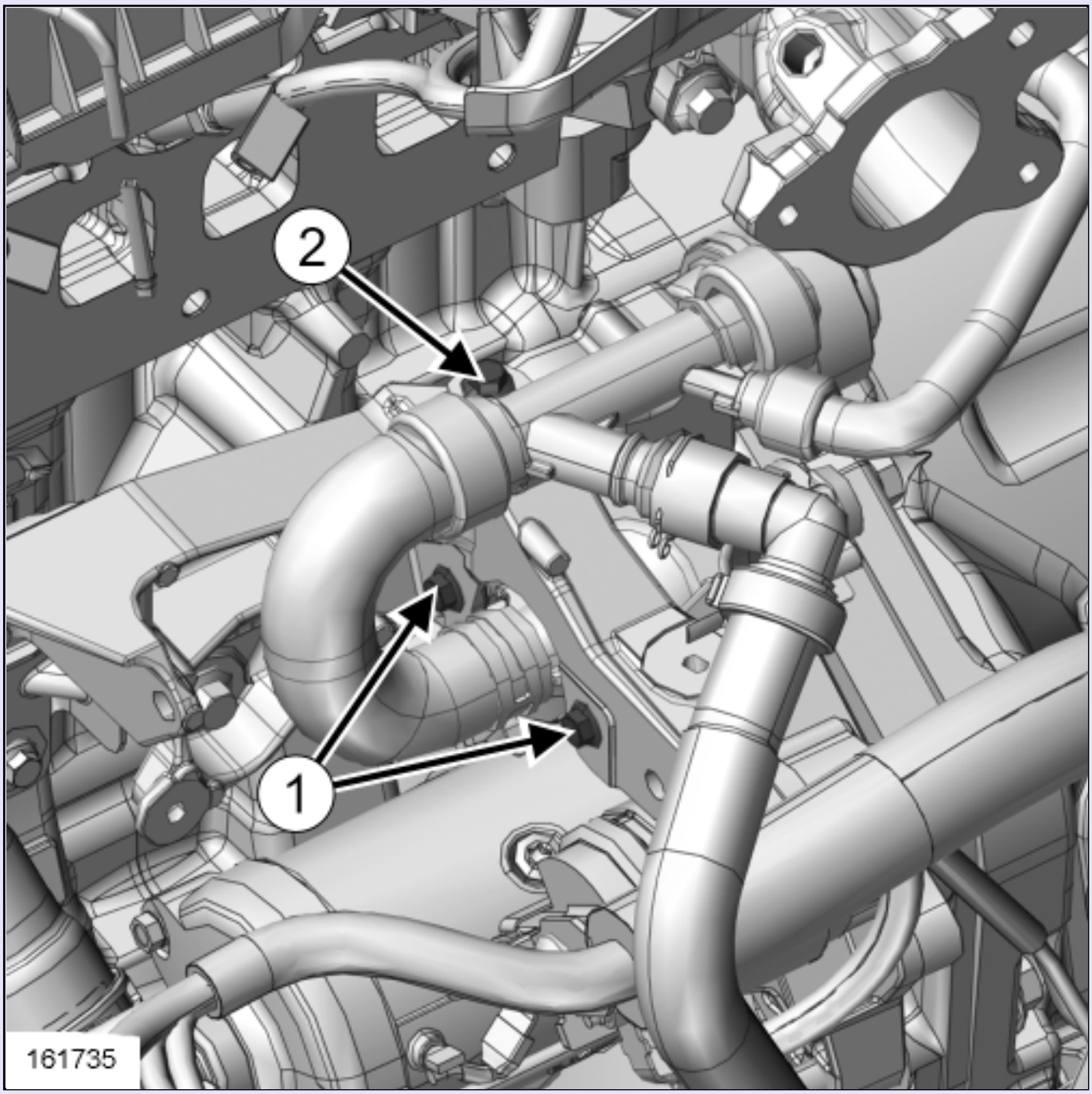
2. REMOVAL OPERATION



- Remove:
  - the nut(3) from the starter excitation terminal,
  - the nut on the positive terminal of the starter(4) .
- Move aside the engine wiring.
- Remove the starter Cylinder block assembly: Exploded view .

Unclip Coolant circuit assembly: Exploded view :

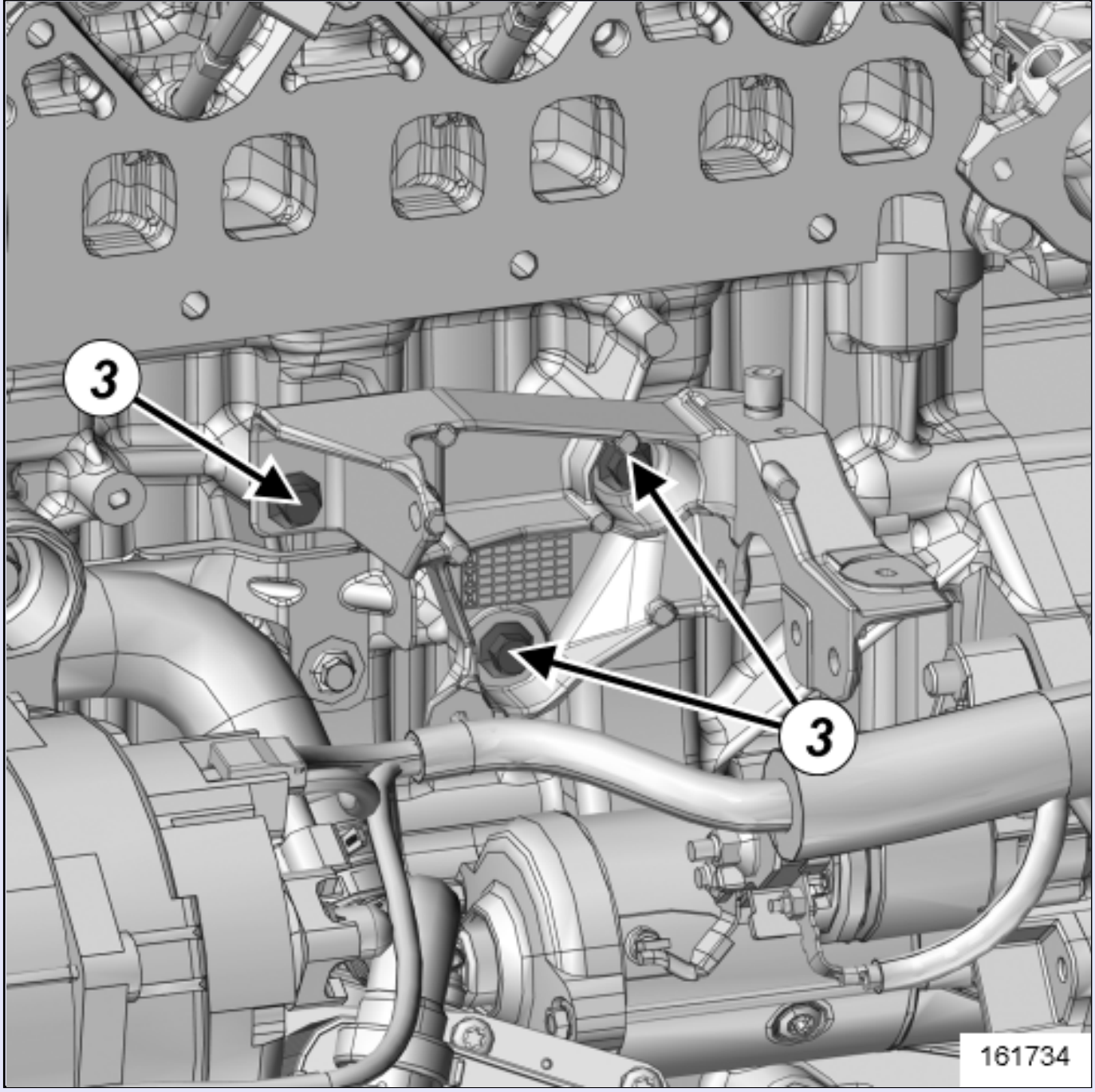
- the coolant pipes on the coolant pipes bracket,
- the coolant circuit switchover valve control pipe on the coolant circuit switchover valve support.



Remove:

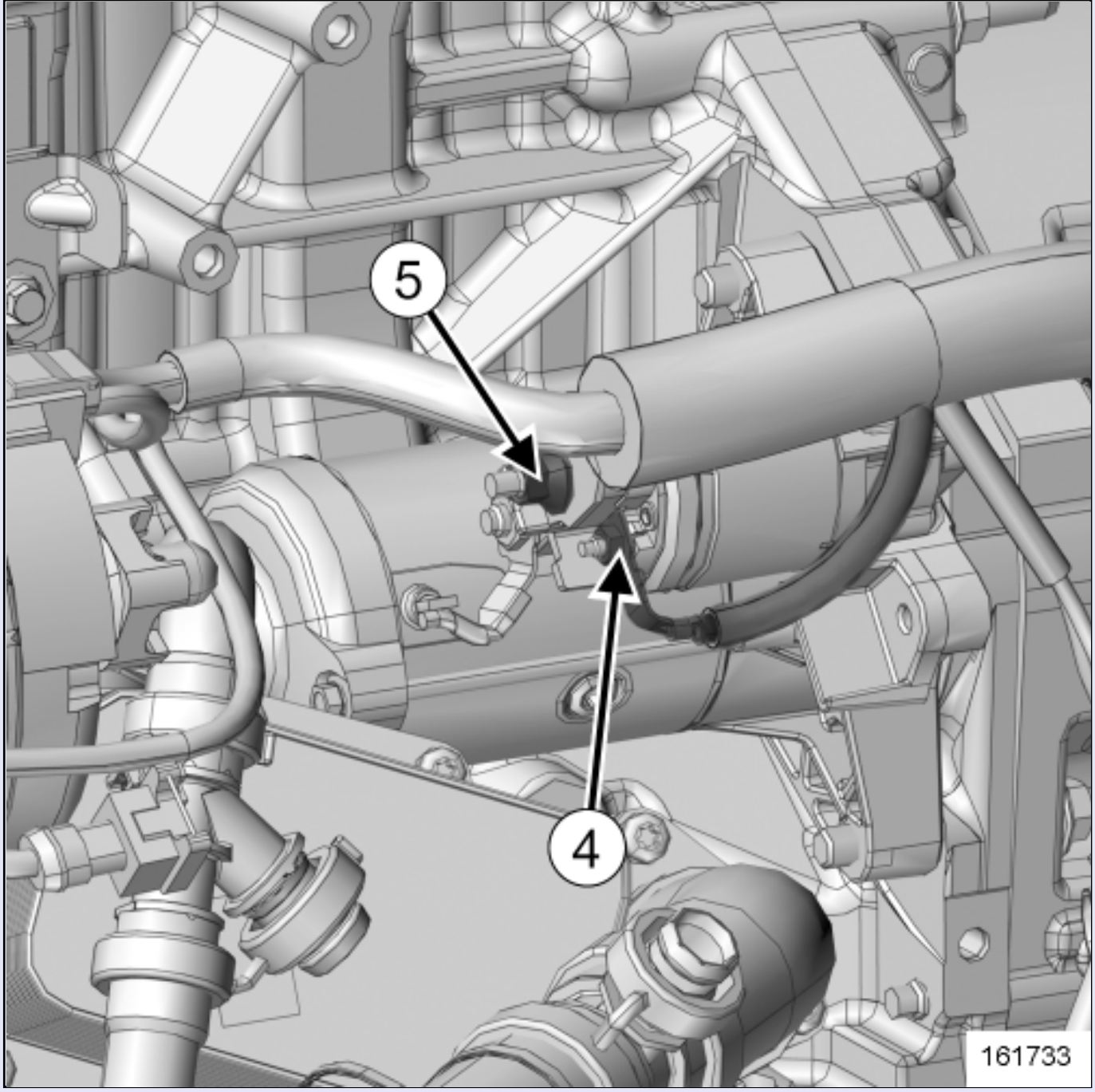
- the coolant circuit switchover valve pipe bolt on the coolant circuit switchover valve bracket(2) ,
- the coolant circuit switchover valve bolts(1) .

Move aside the coolant circuit switchover valve.



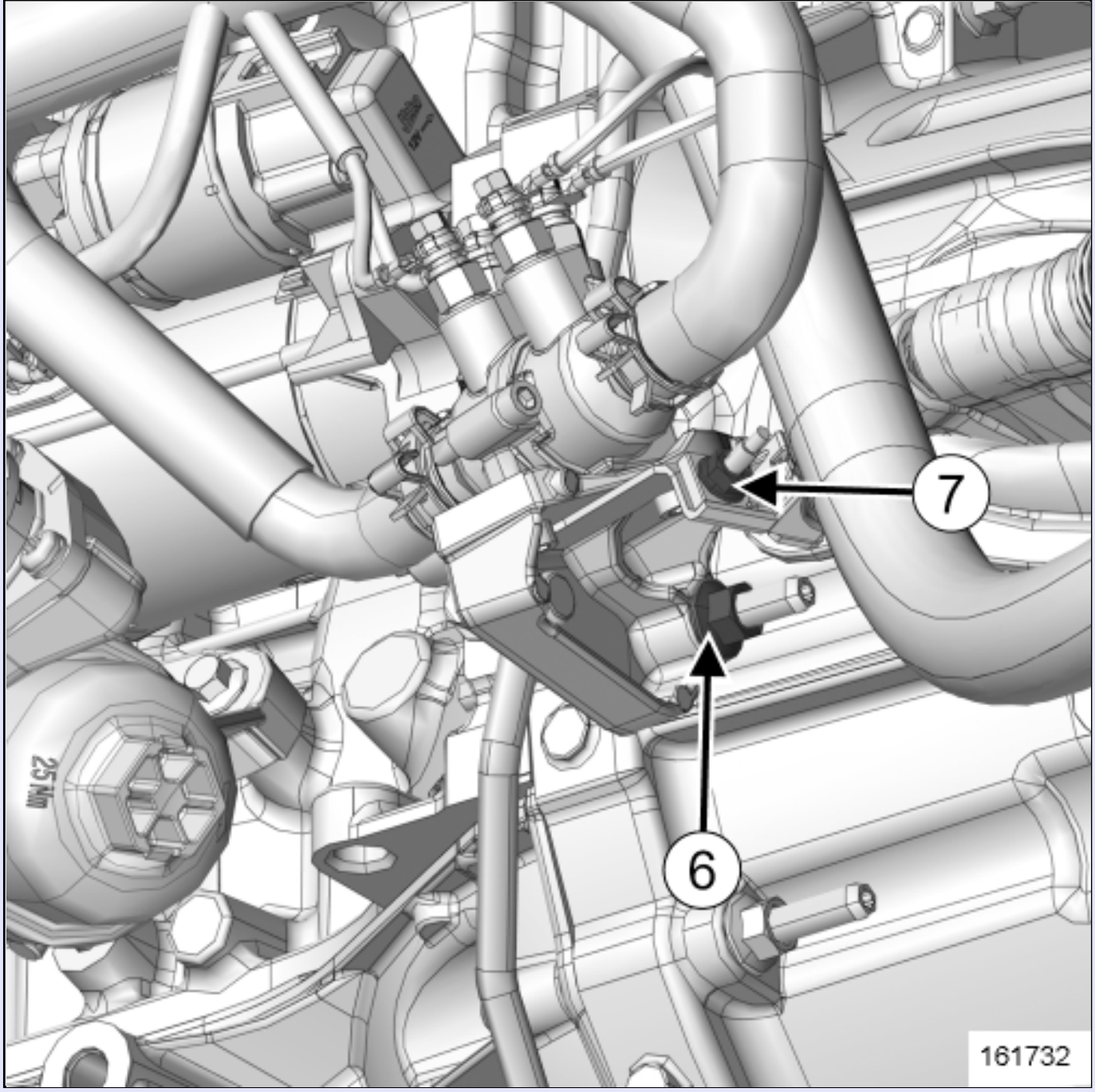
Remove:

- the coolant circuit switchover valve bracket bolts(3) ,
- the coolant circuit switchover valve bracket.



- Remove:
  - the starter excitation terminal nut(4) ,
  - the starter positive terminal nut(5) .

- Move aside the engine wiring.



Remove:

- the engine wiring nut(7) ,
- the thermoplunger unit support nut(6) .

Move aside:

- the engine wiring,

the thermoplunger unit with its bracket.

Remove Cylinder block assembly: Exploded view :

- the starter bolts,
- the starter.

REFITTING

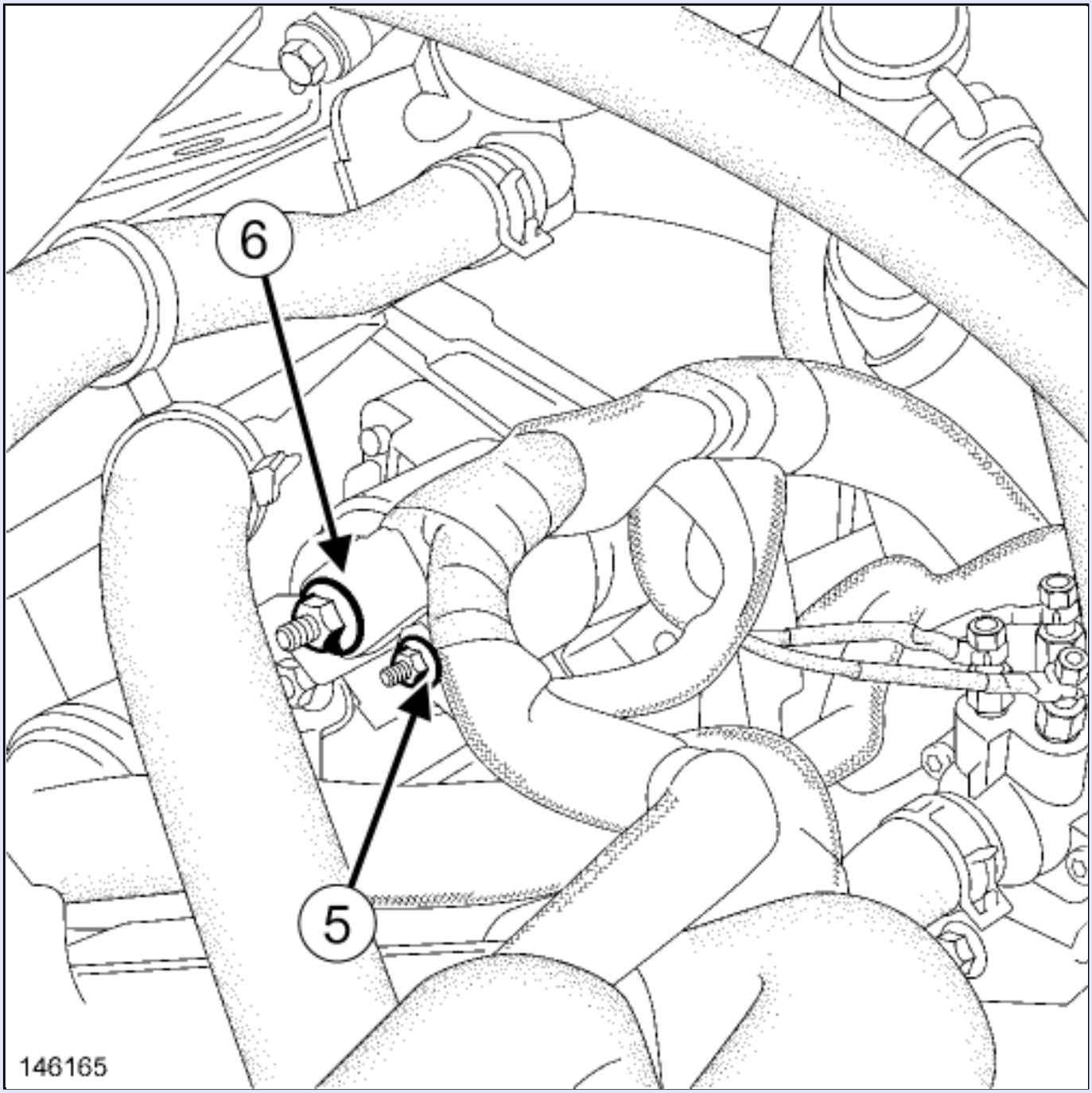
1. REFITTING PREPARATION OPERATION

Check that the starter centring dowel is in place.

2. REFITTING OPERATION

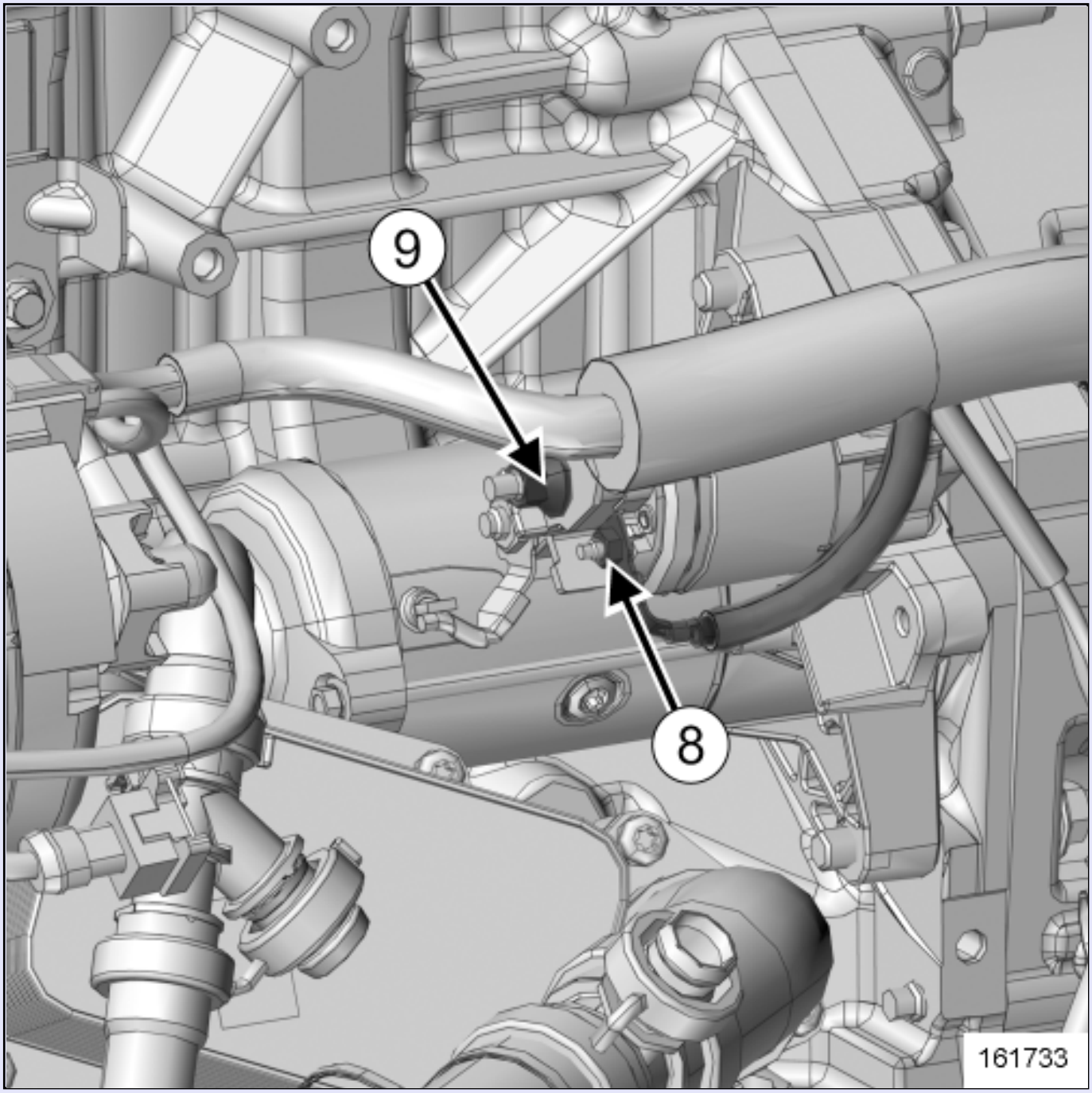
Refit Cylinder block assembly: Exploded view :

- the starter,
- the starter bolts.



Refit the starter cables in accordance with the positions above:

- the excitation cable terminal flange(5) to be aligned with the flange facing the solenoid,
- the starter cable terminal flange(6) to be aligned with the flange facing the solenoid.



Refit the starter cables in accordance with the positions above:

- the excitation cable terminal flange(**8**) to be aligned with the flange facing the solenoid,
- the starter cable terminal flange(**9**) to be aligned with the flange facing the solenoid.

Torque tighten:

- the starter bolts 44 N.m,
- the starter excitation terminal nut 5 N.m,
- the starter positive terminal nut 8 N.m.

Proceed in the reverse order to removal.

STEERING ASSEMBLY: EXPLODED VIEW

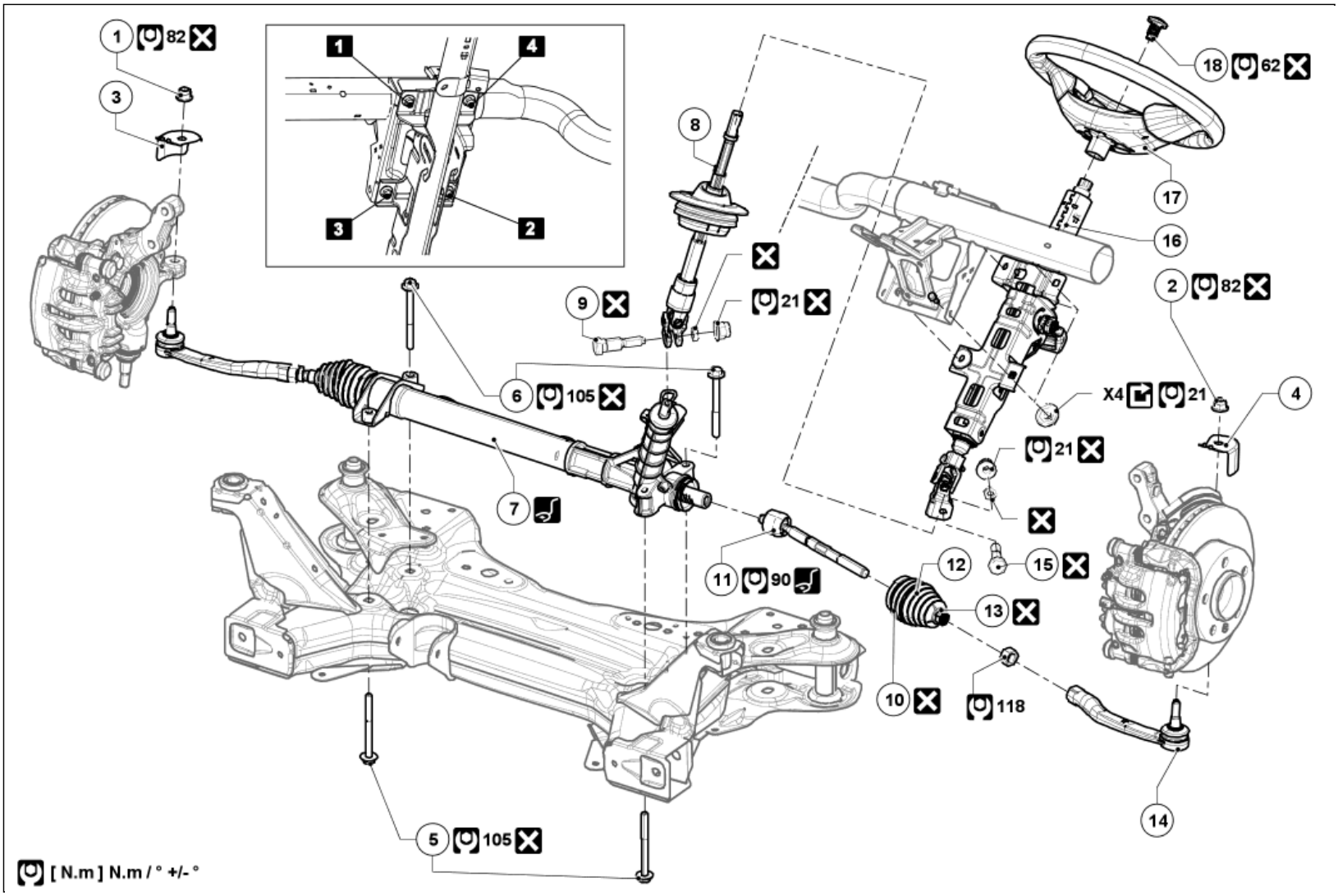


Illustration key: Description Key.

Mark	Description	Information
1	Track rod end nut	(see 36A, Steering assembly , Track rod: Removal - Refitting)
2	Track rod end nut	(see 36A, Steering assembly , Track rod: Removal - Refitting)
3	Track rod end protector	(see 36A, Steering assembly , Track rod: Removal - Refitting)
4	Track rod end protector	(see 36A, Steering assembly , Track rod: Removal - Refitting)
5	Steering box bolts	(see 36A, Steering assembly , Steering box: Removal - Refitting)
6	Steering box bolts	(see 36A, Steering assembly , Steering box: Removal - Refitting)
7	Steering box	(see 36A, Steering assembly , Steering box: Removal - Refitting)(DIR1926)
8	Intermediate shaft	(see **Intermediate shaft: Removal - Refitting**)
9	Universal joint bolt	
10	Steering gaiter clip	
11	Axial ball joint linkage	(see 36A, Steering assembly , Axial ball joint linkage: Removal - Refitting)(DIR1923)
12	Steering box gaiter	
13	Steering gaiter rubber clip	
14	Track rod	(see 36A, Steering assembly , Track rod: Removal - Refitting)
15	Upper yoke bolt	
16	Steering column	(see 36A, Steering assembly , Steering column: Removal - Refitting)
17	Steering wheel	(see 36A, Steering assembly , Steering wheel: Removal - Refitting)
18	Steering wheel bolt	

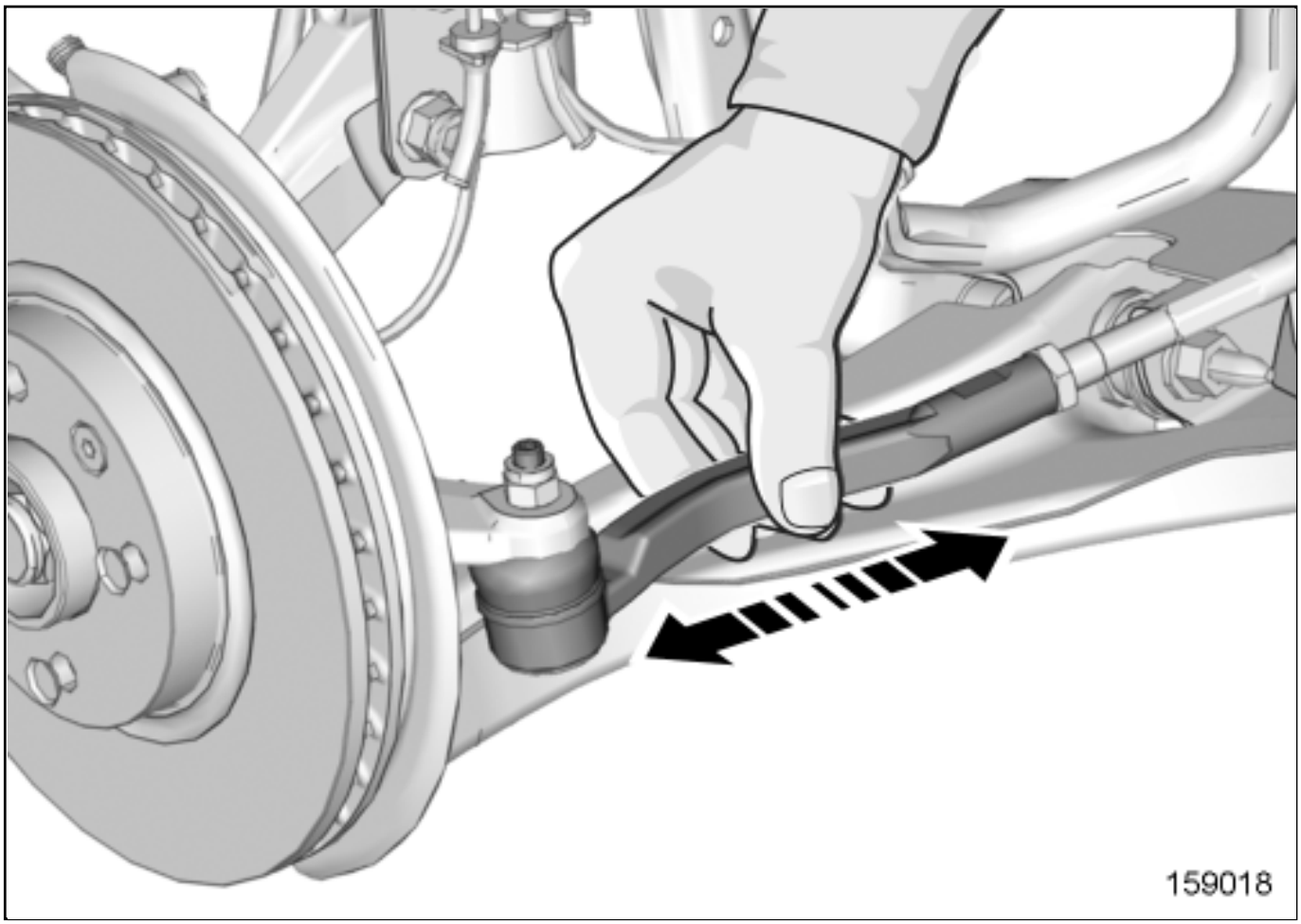
STEERING ASSEMBLY : CHECK

Equipment required
flywheel immobiliser

Note:

This steps are made two sides of the vehicle.

1. STEP NO.1



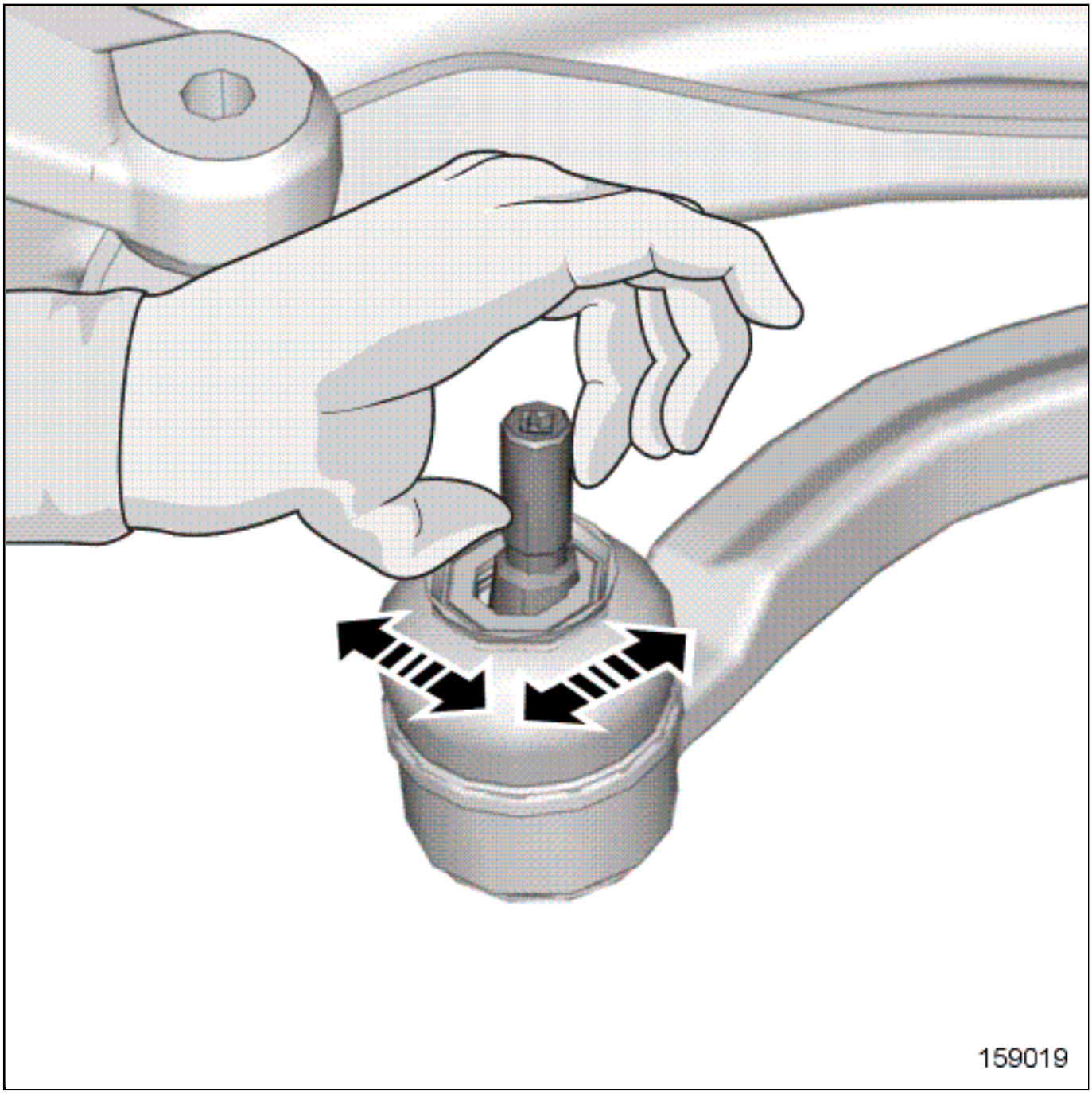
- Center the steering wheel and fit the flywheel immobiliser.
- Remove the wheel.

Control the clearance of the steering by exerting, on the track rod, translational movements at a high frequency in the direction of the arrow.

If a clearance is detected:

- remove the track rod nut,
- remove the gaiter clips,
- move the track rod gaiter to access at the axial ball joint.

2. STEP NO.2

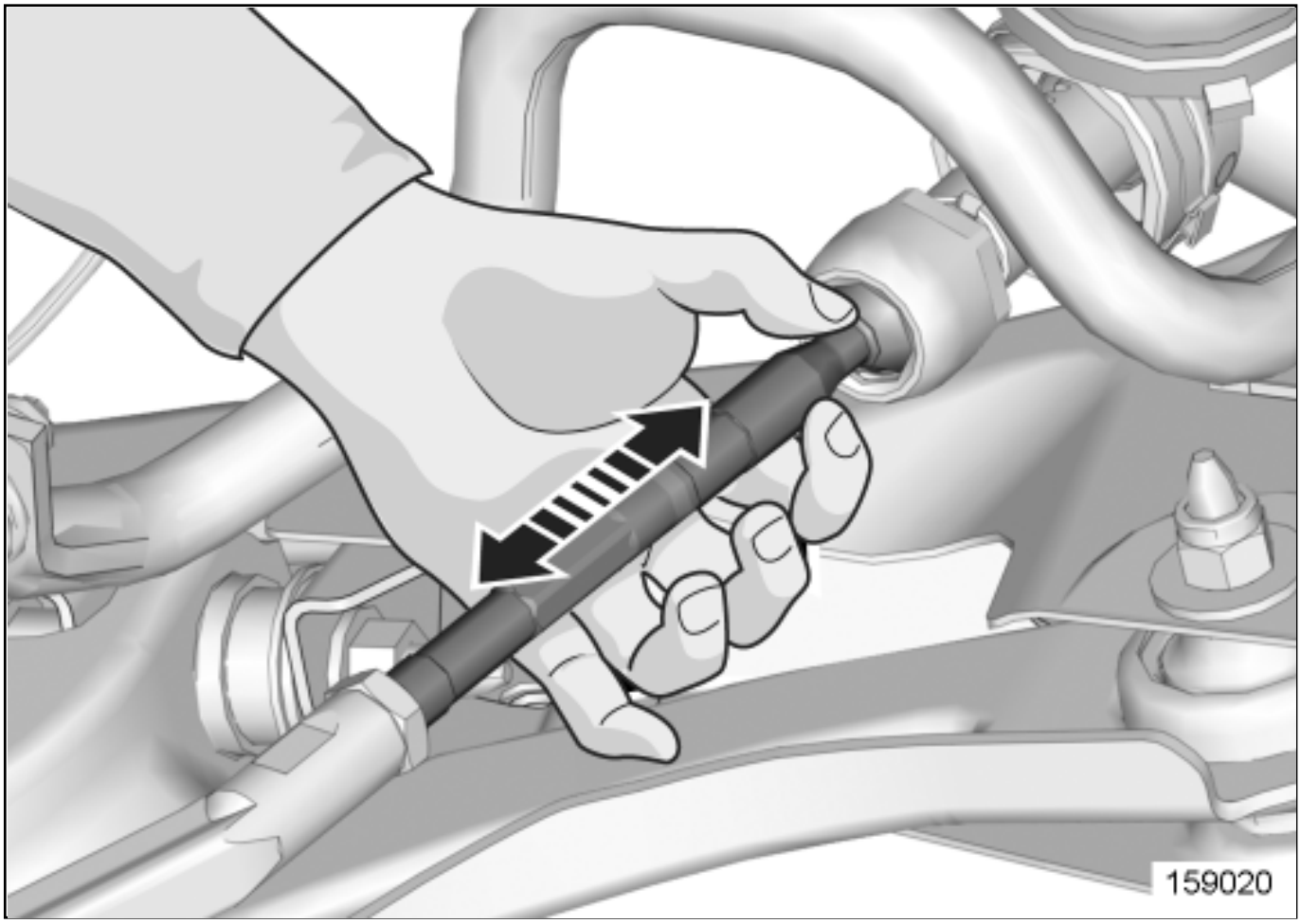


Pinch the ball joint.

Carry out movements in translation along the direction of arrows.

If a clearance in the ball joint is detected, remove the track rod(see 36A, Steering assembly , Track rod: Removal - Refitting) .

3. STEP NO.3



Check the clearance of the axial ball joint:

- fit the thumb in contact with the ball joint,
- tighten the rod in the hand,
- carry out movements in translation along the direction of arrows.

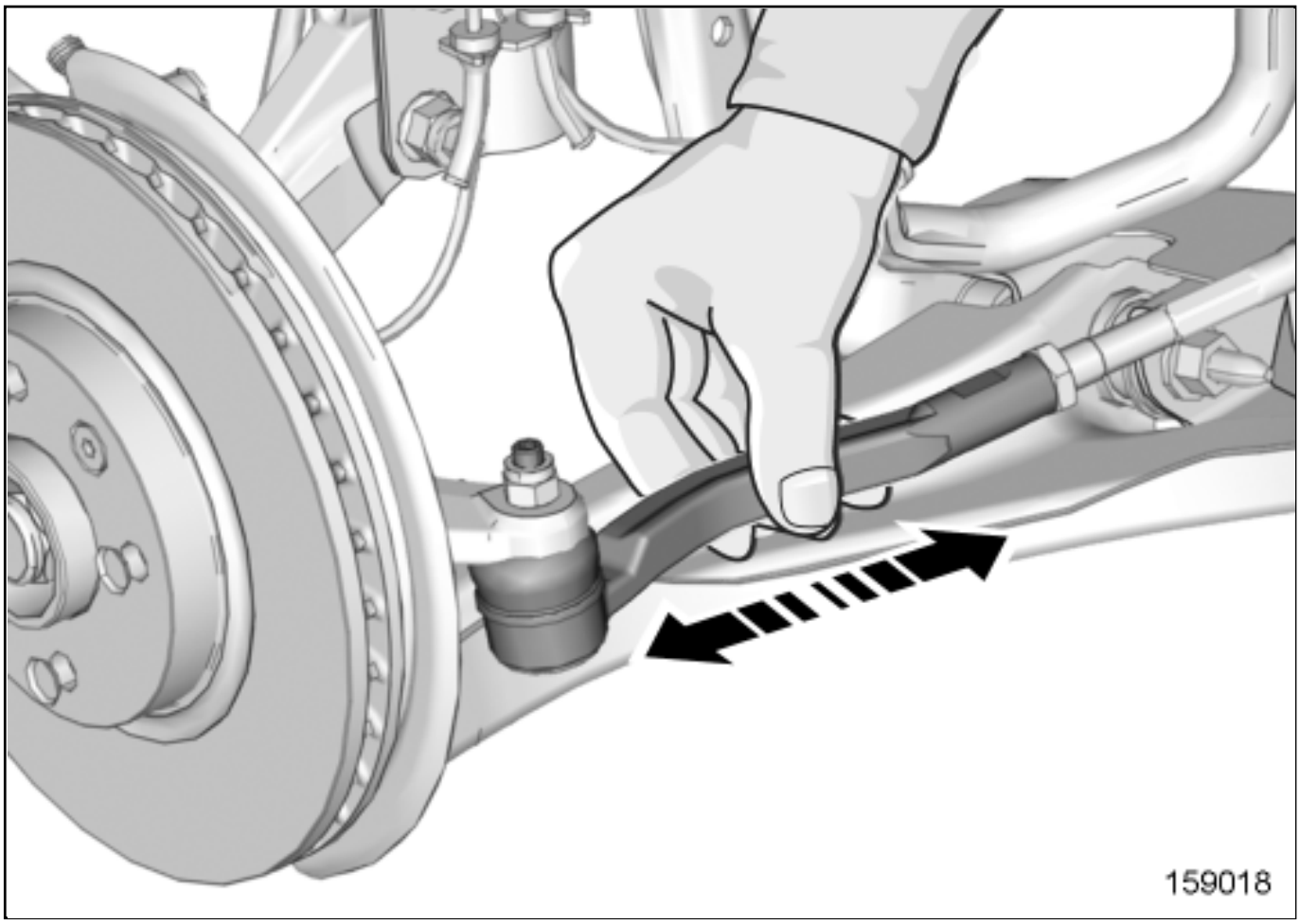
If no clearance is detected:

- refit the gaiter,
- refit new clips.

If a clearance in the ball joint are detected:

- replace the track rod axial ball jointAxial ball joint linkage: Removal - Refitting ,
- tighten the wheel alignment adjusting lock nut,
- tighten the track rod nut.

4. STEP NO.4



Control the clearance of the steering by exerting, on the track rod, translational movements at a high frequency in the direction of the arrow.

If a clearance are detected and that the track rod are not replace, replace the track rod.

Check the axle geometry**Axle assemblies: Check** .

STEERING BOX GAITER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 36A, Steering assembly, Steering assembly: Exploded view) .

WARNING

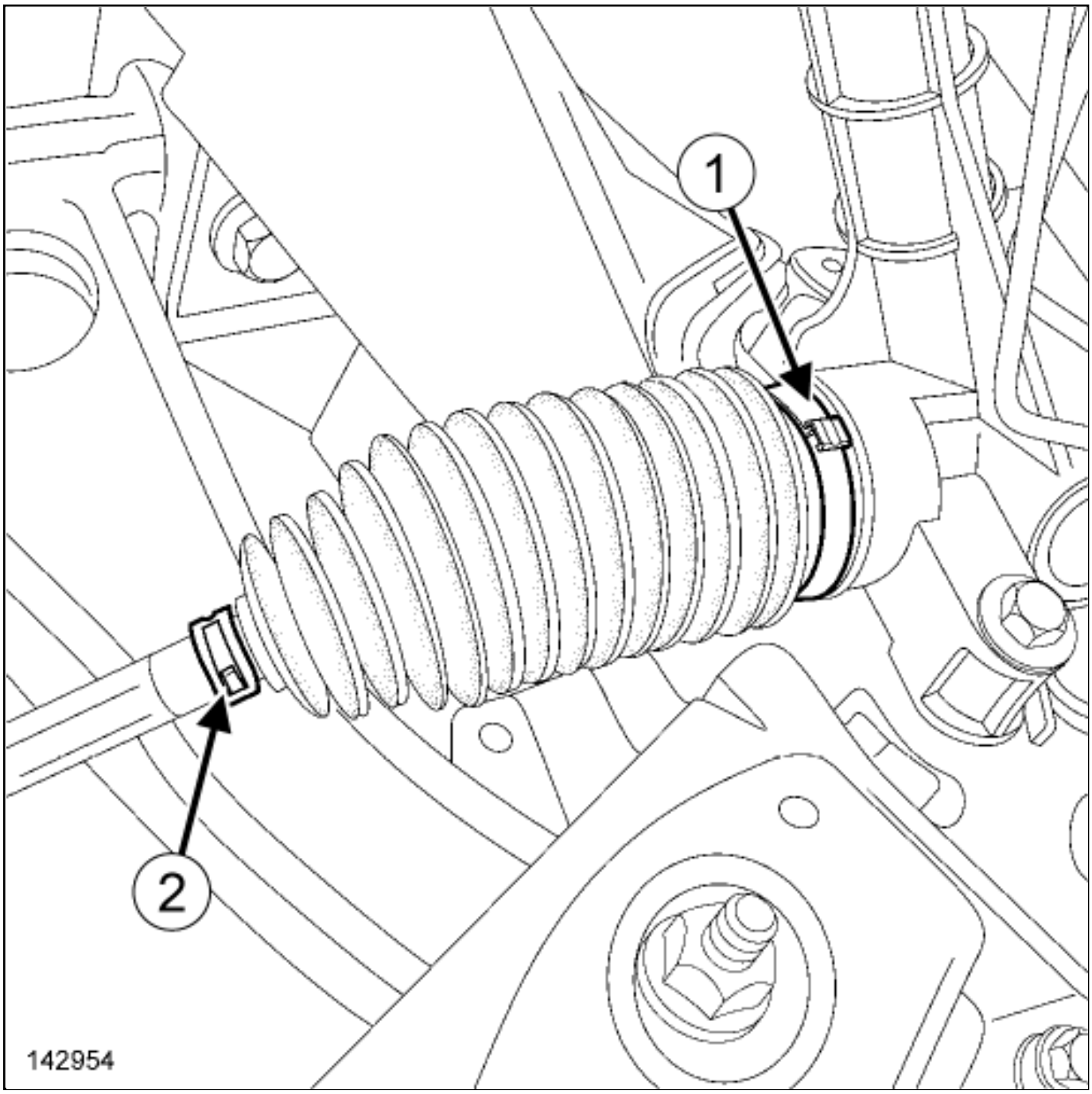
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - (see 36A, Steering assembly , Steering: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the front wheelWheel: Removal - Refitting .
- Remove (see 36A, Steering assembly , Steering assembly: Exploded view) :
  - the track rod,
  - the lock nut of the track rod.

2. REMOVAL OPERATION



- Cut off the steering rack gaiter securing clip(1) .

- Remove:
  - the steering box gaiter clip(2) ,
  - the steering box gaiter(see 36A, Steering assembly , Steering assembly: Exploded view) .

REFITTING

1. REFITTING PREPARATION OPERATION

Coat the bearing face of the steering box gaiter with silicone grease Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to facilitate fitting on the axial ball joint linkage.

Clean the "gaiter - steering box" contact surfaces using surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

Note:

Be sure to centre the steering to ensure the air in the gaiters is equalised.

Note:

Be careful not to damage the gaiters: risk of irreversible damage.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Adjust the front axle Front axle system: Adjustment .

STEERING BOX: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Ball joint extractor.	Tav. 476
Pipe clamps.	Ms. 583

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 36A, Steering assembly, Steering assembly: Exploded view)** .

WARNING

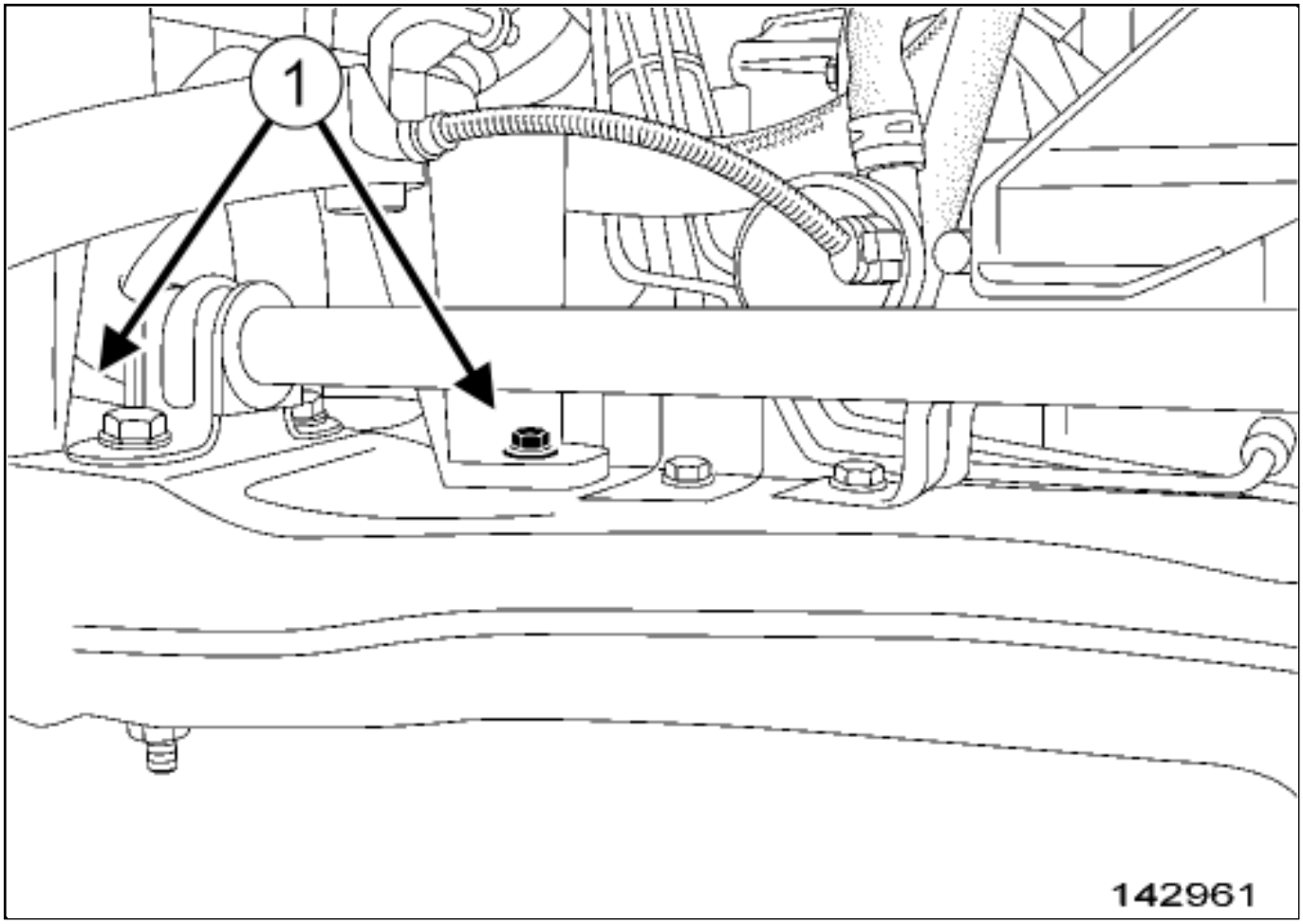
- To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:
  - **(see 36A, Steering assembly , Steering: Precautions for the repair)** ,
  - **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

REMOVAL

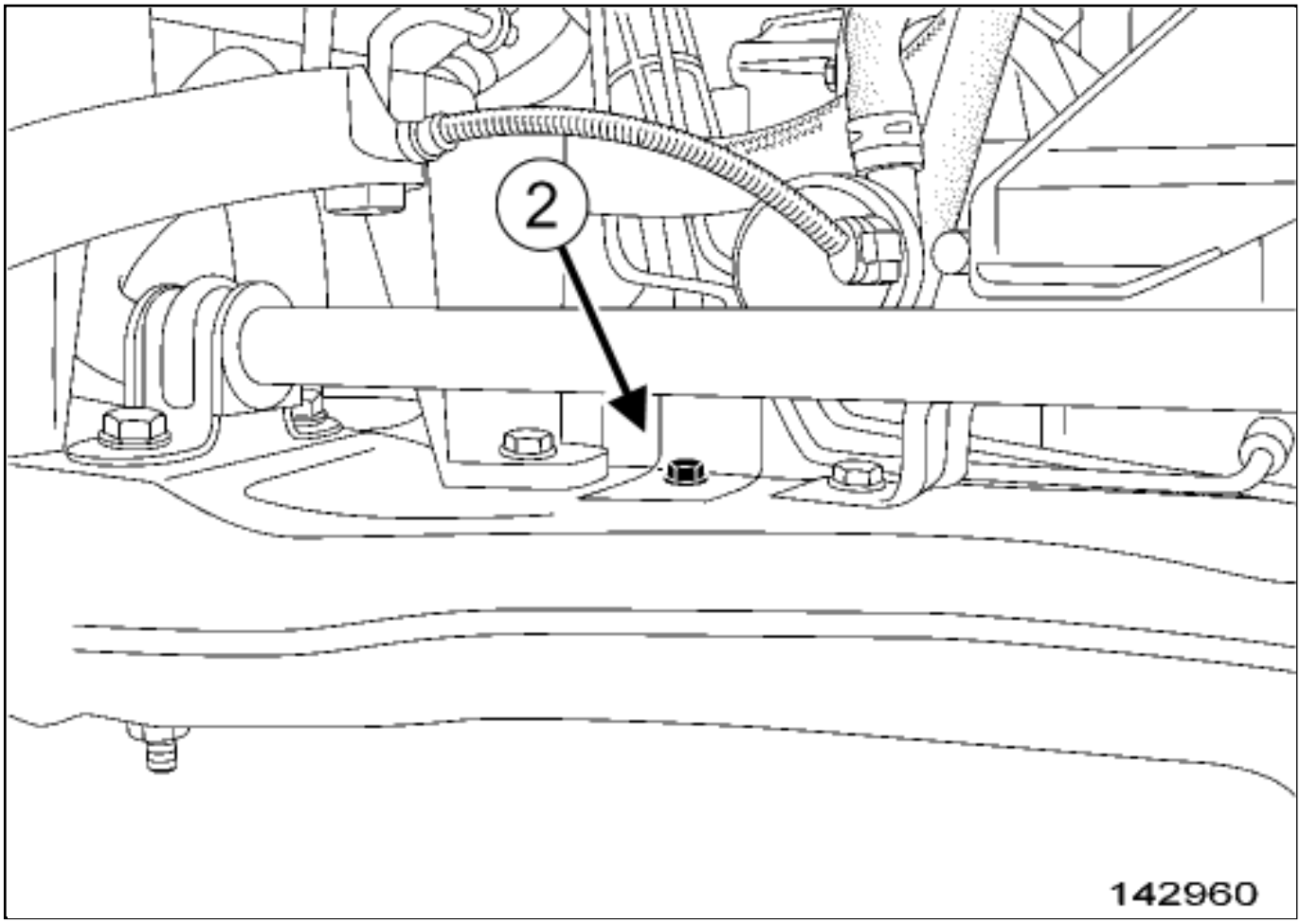
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the front wheels**Wheel: Removal - Refitting** ,
  - the engine undertray.



- Remove the wiring channel bolts(1) on the battery.
- Move aside the battery wiring channel.



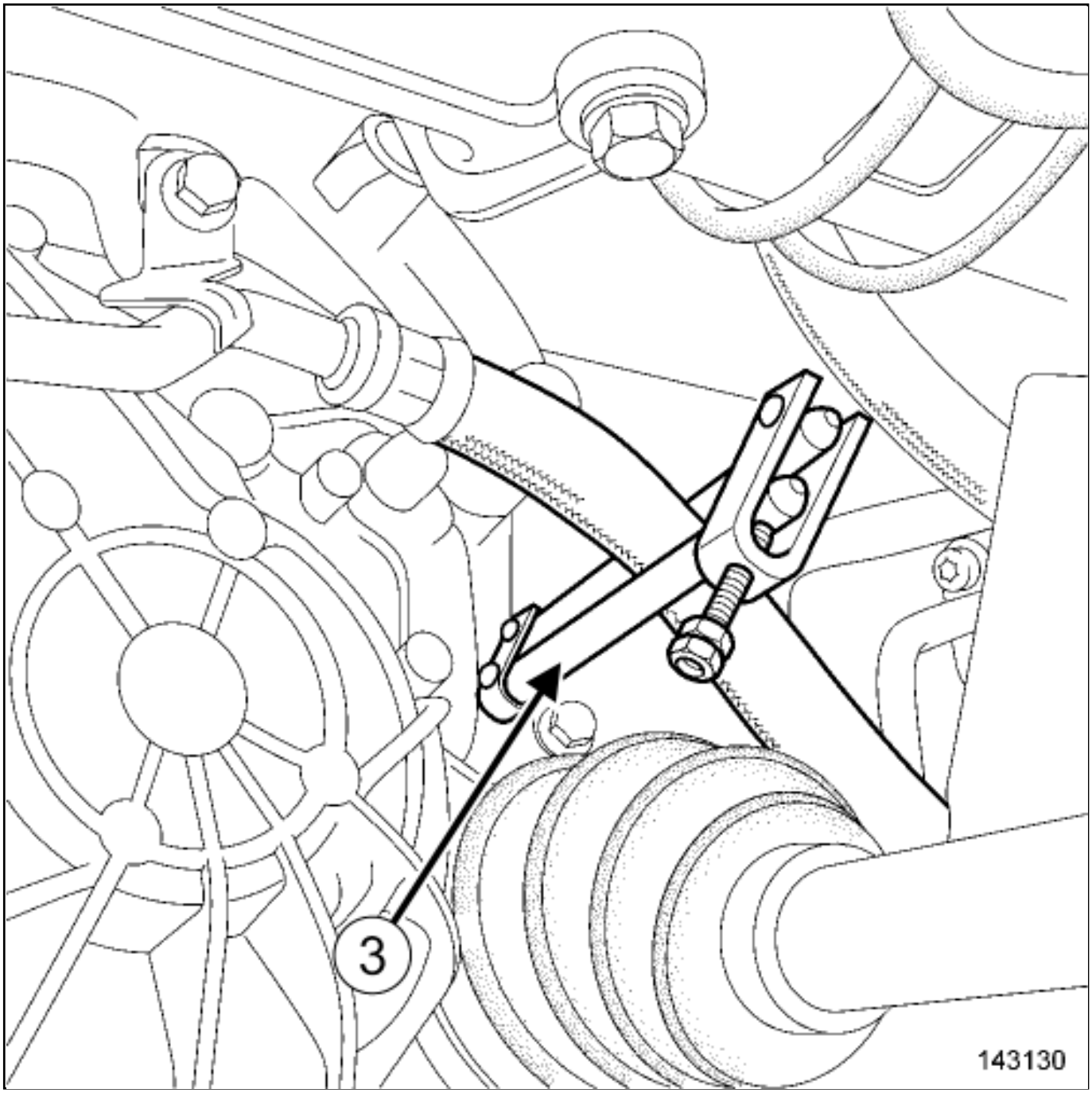
- Remove the bolt(2) from the electric coolant pump.
- Move aside the electric coolant pump.

M9T, 676(676)

- Remove the catalytic converter Catalytic converter: Removal - Refitting (19B, Exhaust).

M9T, 670(670)

- Remove the particle filter Particle filter: Removal - Refitting (19B, Exhaust).



- Fit a toolPipe clamps.(Ms. 583) on the power-assisted steering low pressure pipe(3) .

- Remove the bolt of the power-assisted steering pipe bracket from the steering boxPower-assisted steering assembly: Exploded view .

- Insert the blanking plugs.

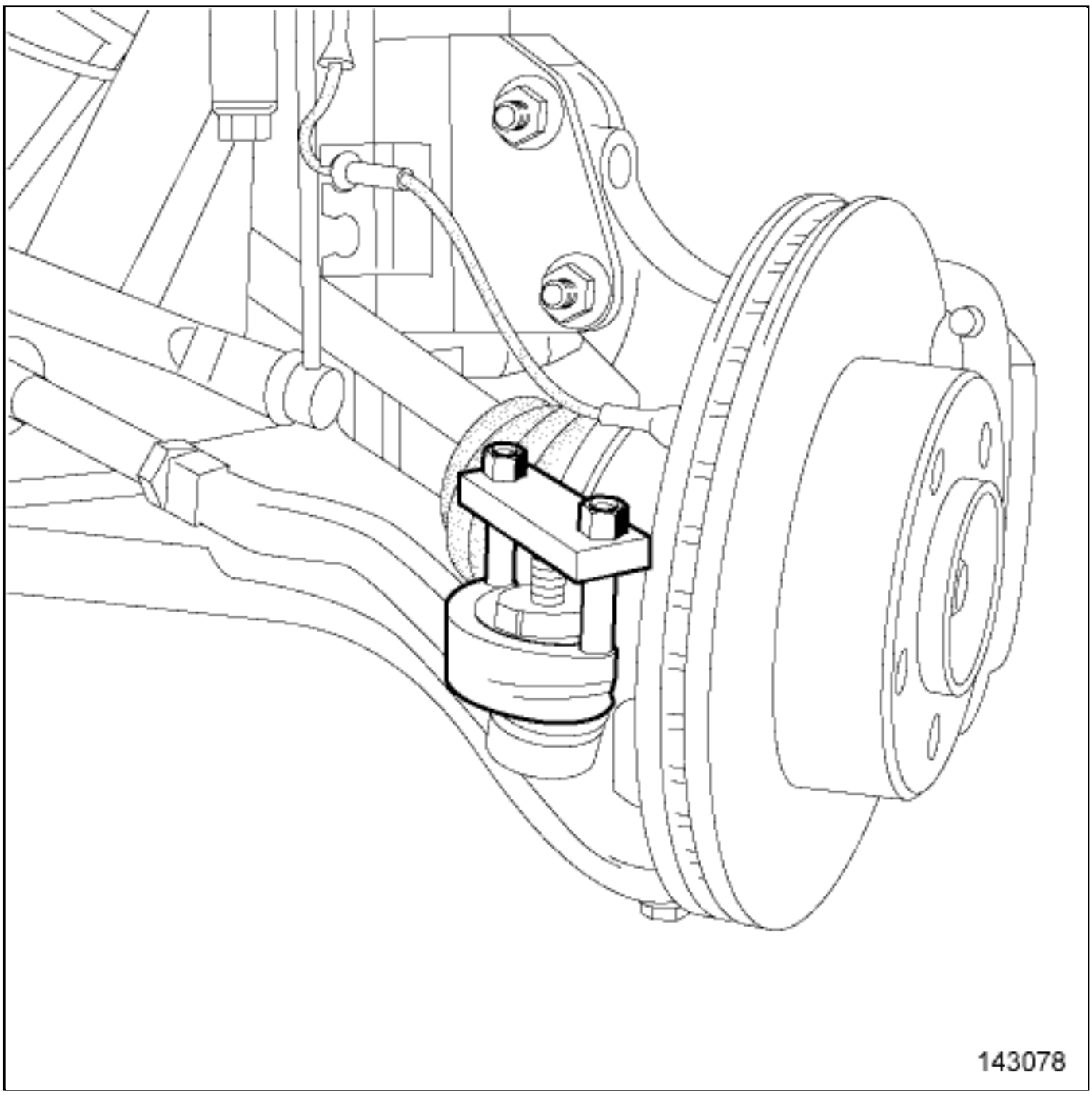
- Remove:
  - the bolt from the universal joint(see 36A, Steering assembly , Steering assembly: Exploded view) ,
  - the upper nuts from the anti-roll bar tie rodsFront axle assembly: Exploded view .

- Tilt the anti-roll bar towards the rear of the vehicle.

2. REMOVAL OPERATION

Remove (see 36A, Steering assembly , Steering assembly: Exploded view) :

- the track rod nuts,
- the track rod end protectors.



Extract the track rod ends using theBall joint extractor.(Tav. 476) .

Remove:

- the front axle sub-frame Front axle assembly: Exploded view ,
- the steering box.

REFITTING

1. REFITTING PREPARATION OPERATION

Use surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean the surfaces of the subframe in contact with the steering box.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Adjust the front axle Front axle system: Adjustment .

STEERING COLUMN: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 36A, Steering assembly, Steering assembly: Exploded view)** .

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 36A, Steering assembly , Steering: Precautions for the repair)** ,
  - **Vehicle: Precautions for the repair** (01D, Mechanical introduction).

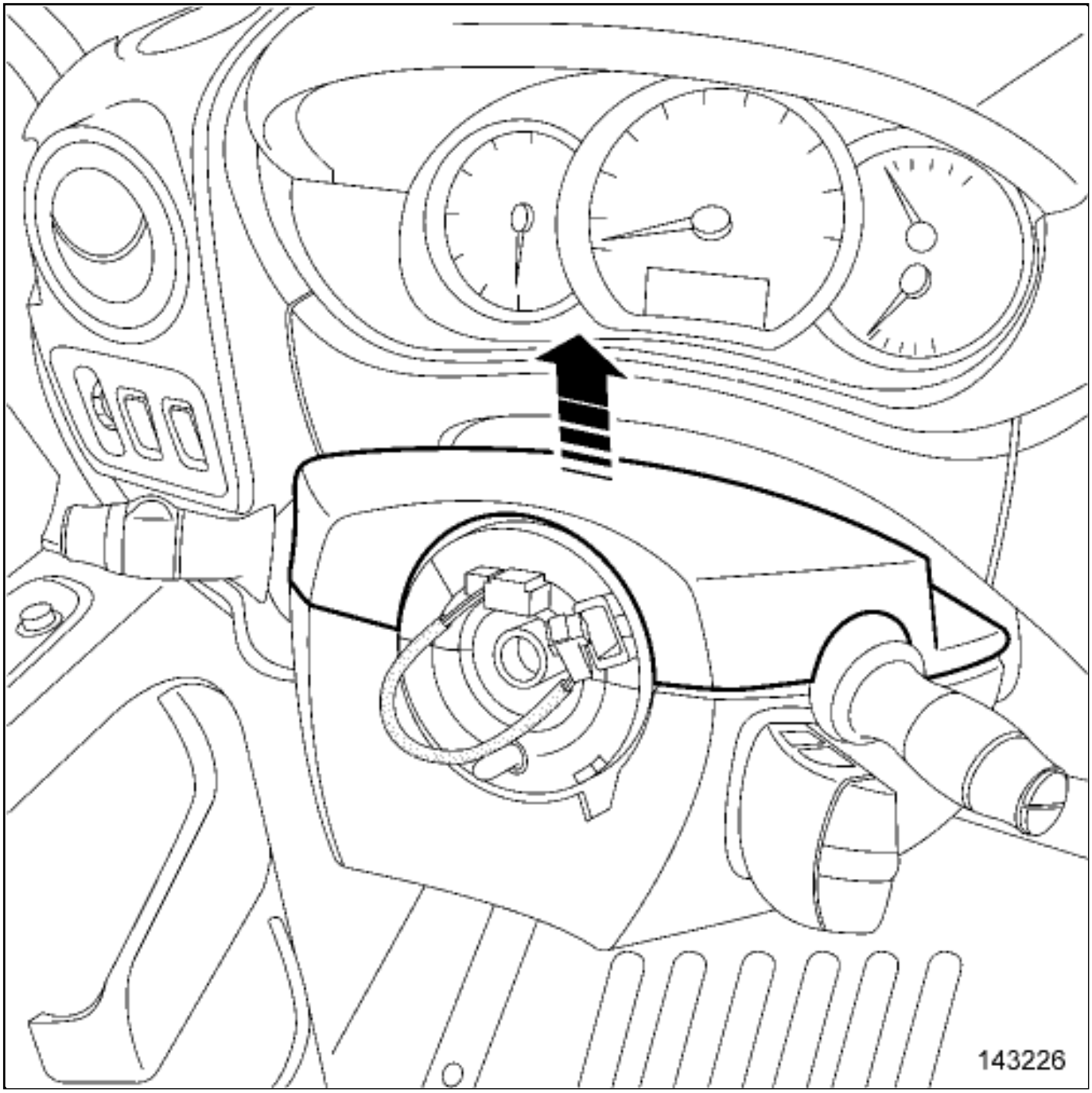
REMOVAL

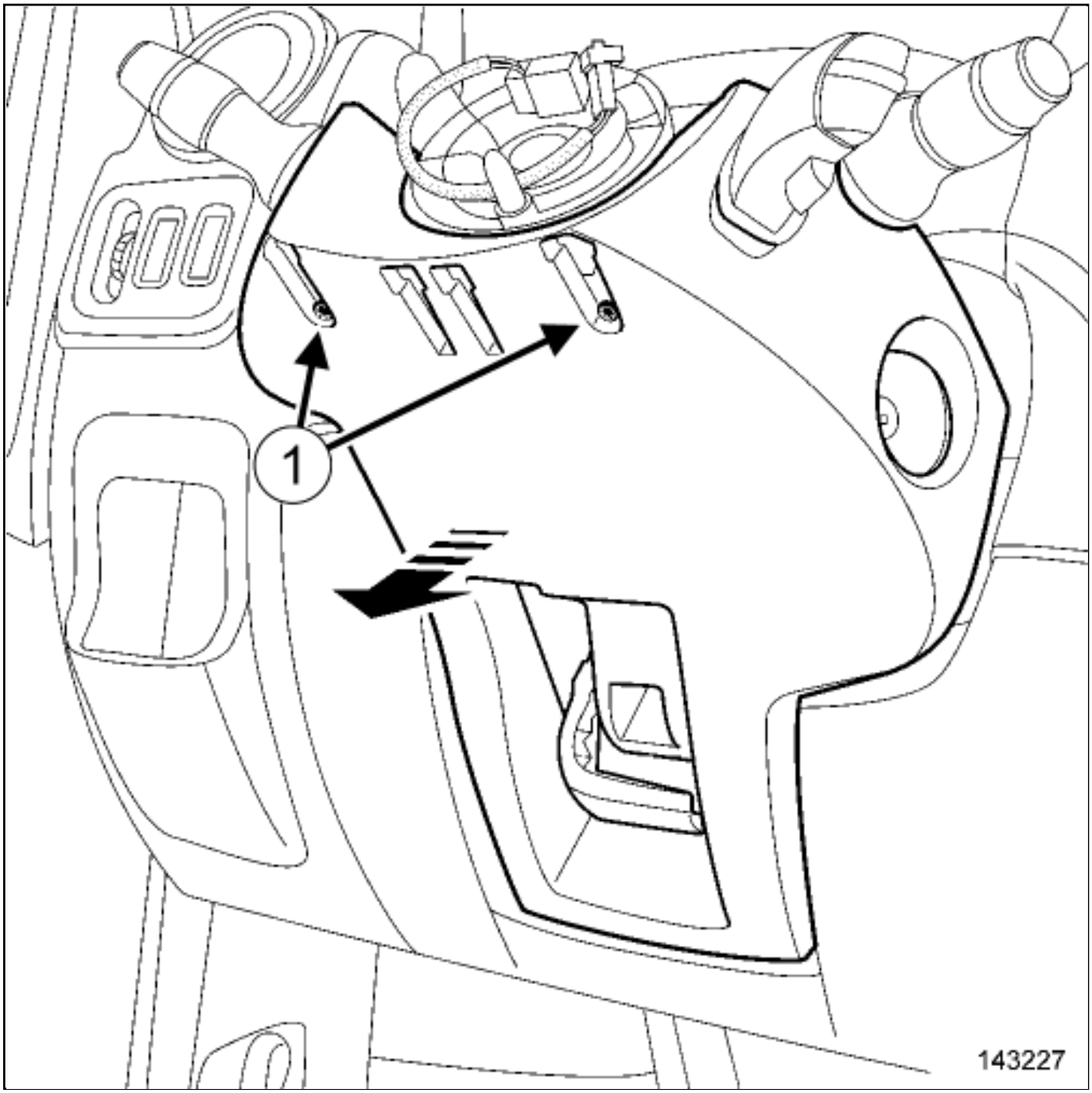
1. REMOVAL PREPARATION OPERATION

- Set the wheels straight ahead.

- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).

- Remove:
  - the driver's frontal airbag**Driver's frontal airbag: Removal - Refitting** (88C, Airbags and pretensioners),
  - the steering wheel**(see 36A, Steering assembly , Steering assembly: Exploded view)** .


143226

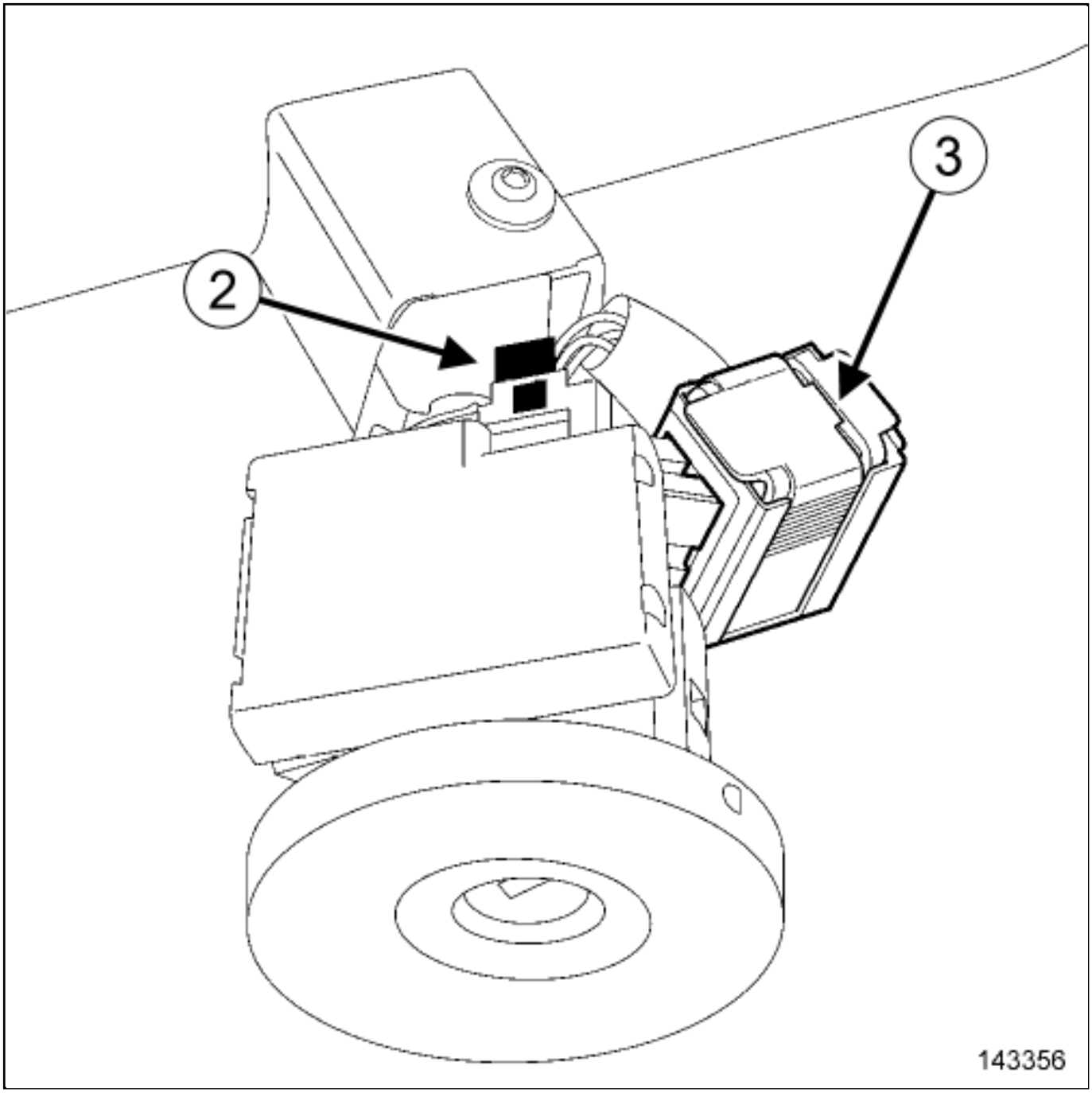


Remove:

- the bolts(1) of the cowlings under the steering wheel,
- the cowlings under the steering wheel,
- the steering column switch assemblySteering column switch assembly: Removal - Refitting (84A, Control - Signals),
- the A-pillar air ductAir distribution circuit assembly: Exploded view .

2. REMOVAL OPERATION

Remove the universal joint bolt(see 36A, Steering assembly , Steering assembly: Exploded view) .

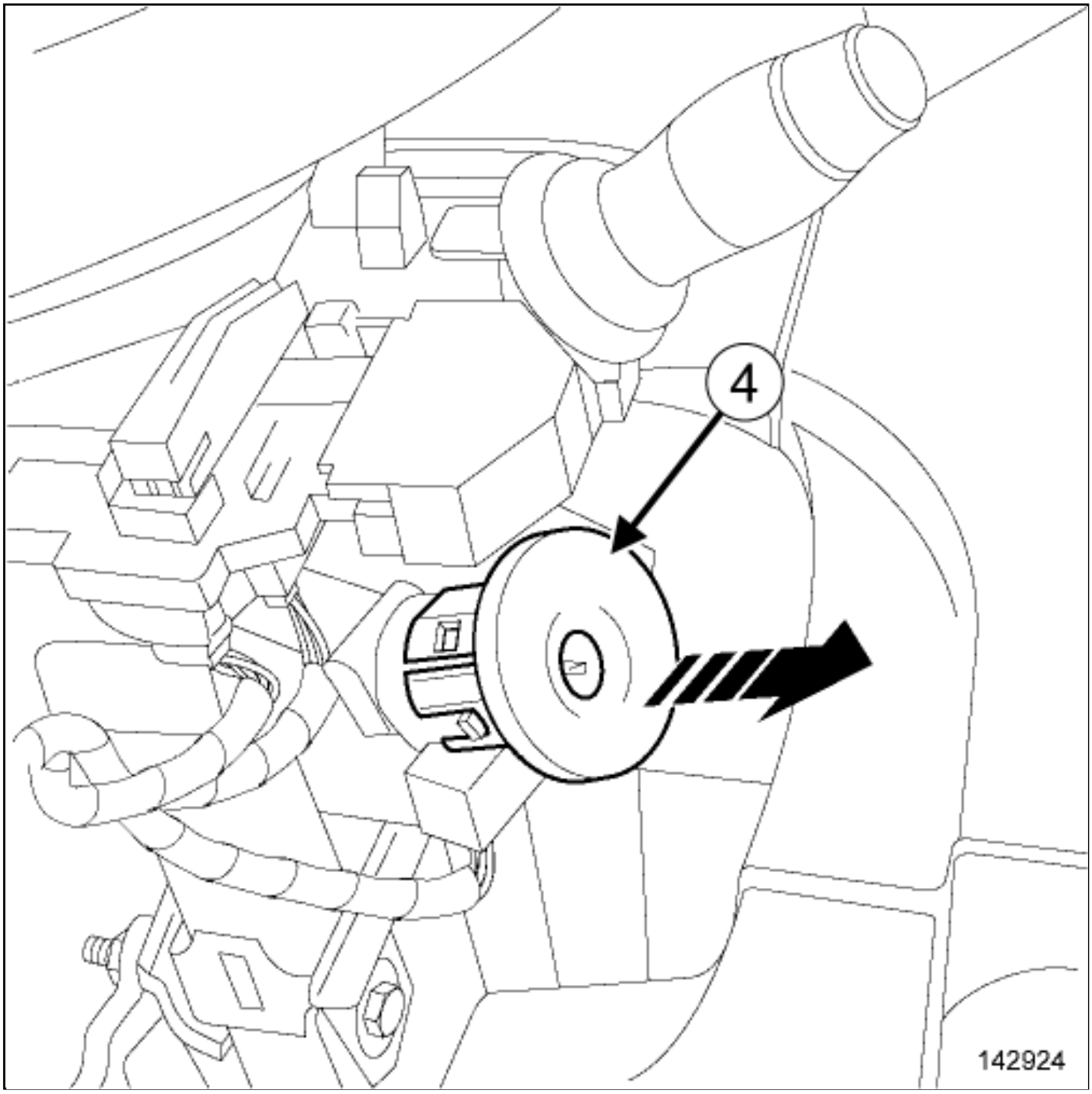


- Disconnect:
  - the transponder ring connector(2) ,
  - the ignition switch connector(3) .

- Unclip the steering column wiring.

- Remove the steering column(see 36A, Steering assembly , Steering assembly: Exploded view) .

IN THE EVENT OF REPLACEMENT



Remove the transponder ring from the steering column.

REFITTING

Proceed in the reverse order to removal.

Note:

Check that the secured locking system of the connectors is correctly engaged.

Check:

- that the steering wheel is properly aligned,
- the axle geometry **Axle assemblies: Check** .

Adjust the front axle, if necessary **Front axle system: Adjustment** .

STEERING COLUMN SWITCH ASSEMBLY: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Note:

- The steering column switch assembly comprises:
  - the windscreen wiper switch,
  - the signalling light switch,
  - the rotary switch,
  - the steering wheel angle sensor.

These parts cannot be separated.

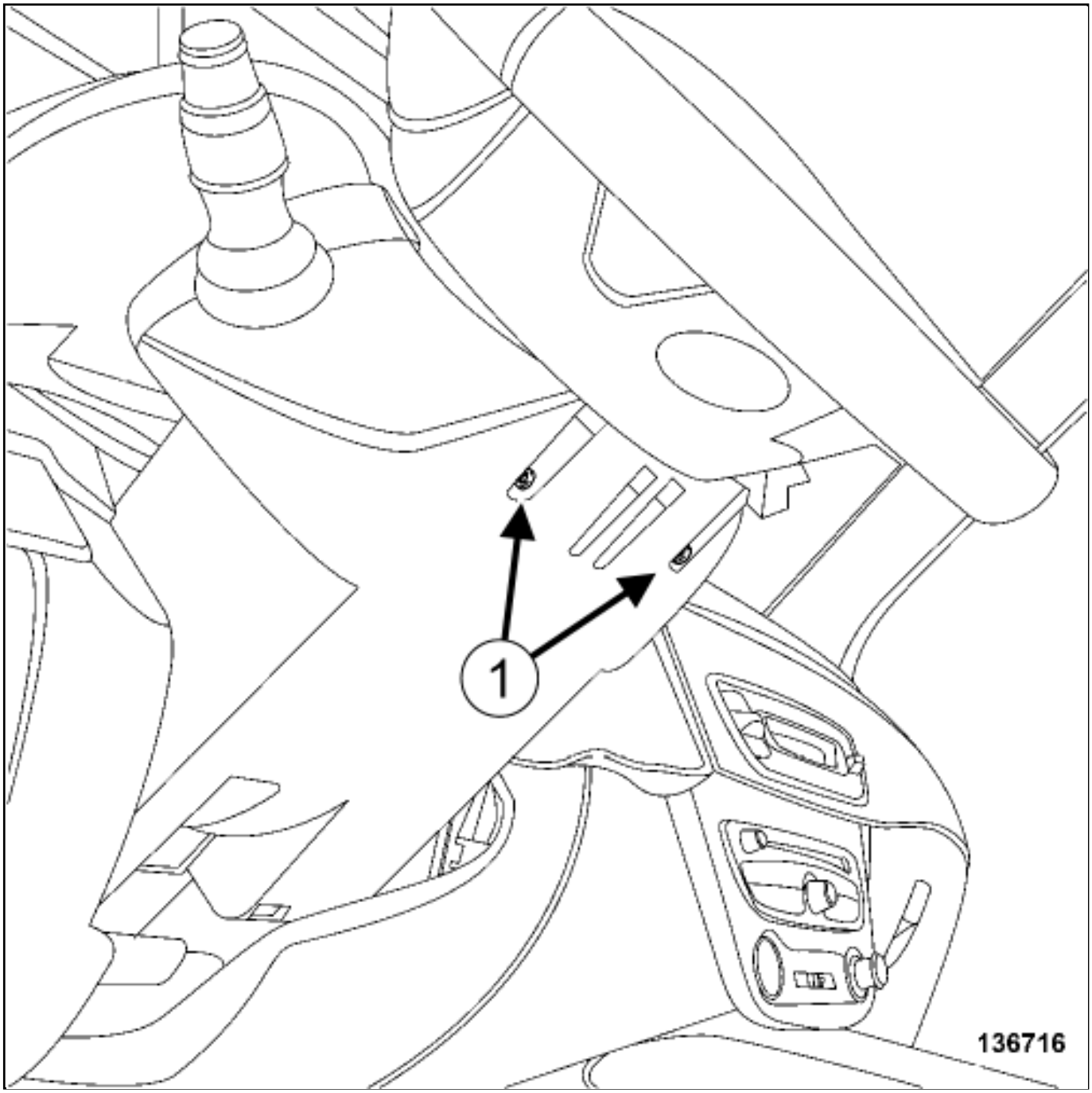
REMOVAL

1. REMOVAL PREPARATION OPERATION

CAUTION

Incorrect wheel alignment may damage the rotary switch.

- Set the wheels straight ahead.
- Disconnect the battery Battery: Removal - Refitting .



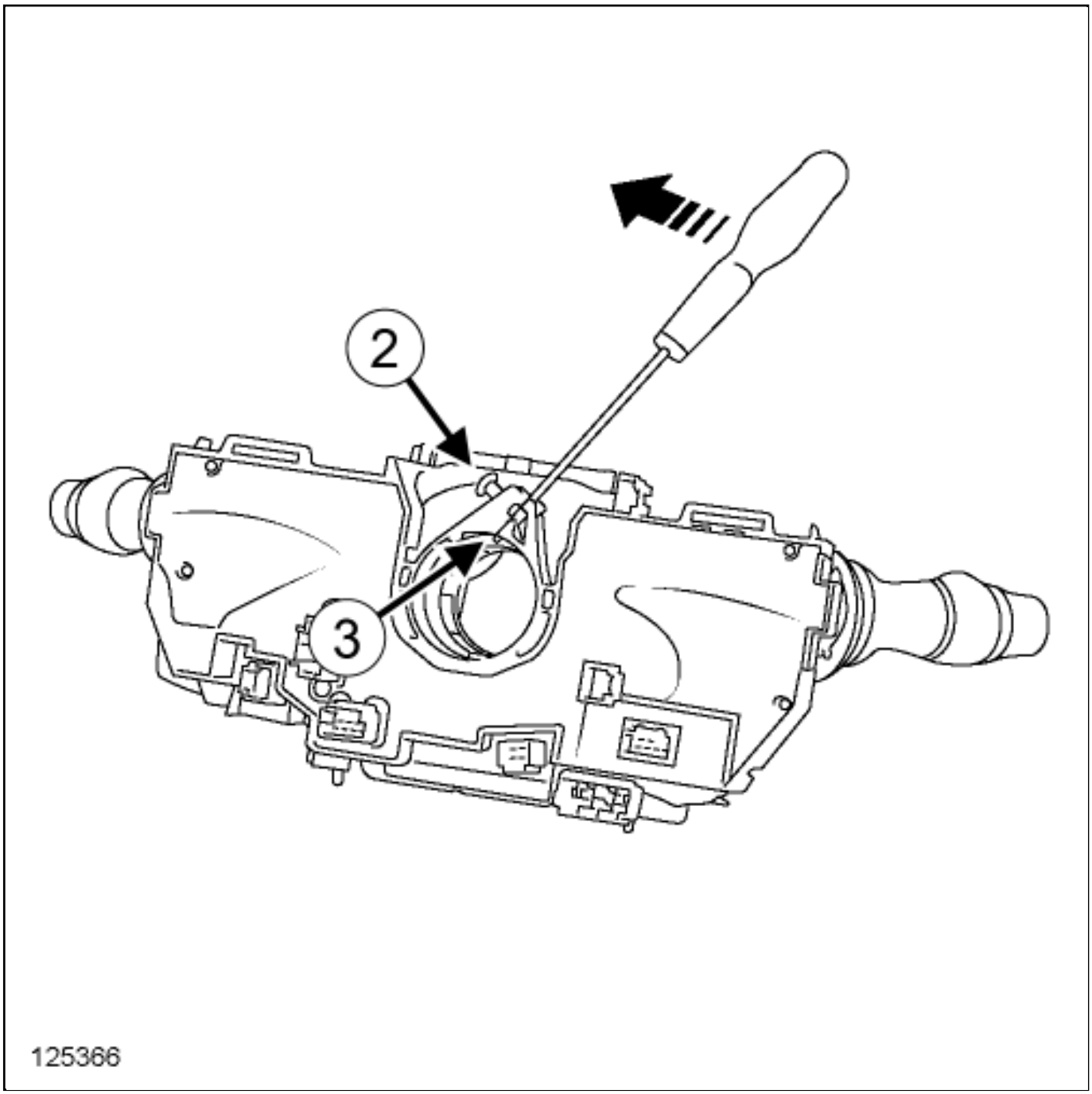
- Remove the bolts(1) from the shells under the steering wheel.
- Put the steering column into the lower position.
- Remove the upper cover.
- Place the steering column in the upper position.
- Remove the lower cover.
- Remove:
  - the driver's front airbag**Driver's frontal airbag: Removal - Refitting** ,

■ the steering wheelSteering wheel: Removal - Refitting (36B, Power-assisted steering).

CAUTION

To prevent damaging the rotary switch, do not turn the mobile section of the rotary switch.

2. OPERATION FOR REMOVAL OF PART CONCERNED

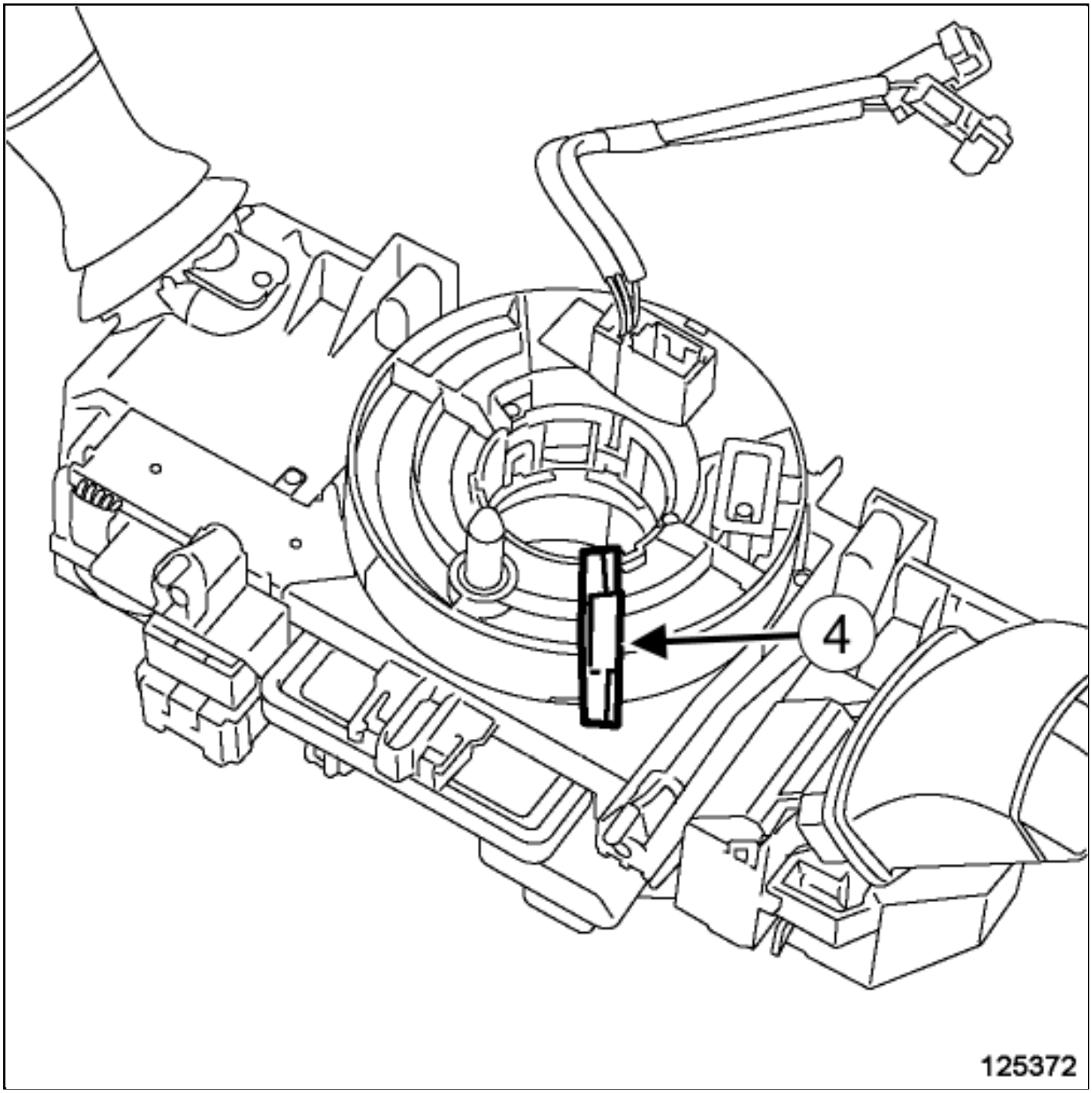


❑ Undo the bolt(2) without removing it.

- Use a flat-blade screwdriver at(3) to release the steering column switch assembly.
- Remove the steering wheel control assembly.
- Disconnect the steering column switch assembly connectors.

REFITTING

1. REFITTING PREPARATION OPERATION



- In the event of a replacement operation, do not remove the pin(4) from the steering column switch assembly.

CAUTION

Incorrect wheel alignment may damage the rotary switch.

- Ensure that the wheels are set straight ahead.

2. REFITTING OPERATION FOR PART CONCERNED

CAUTION

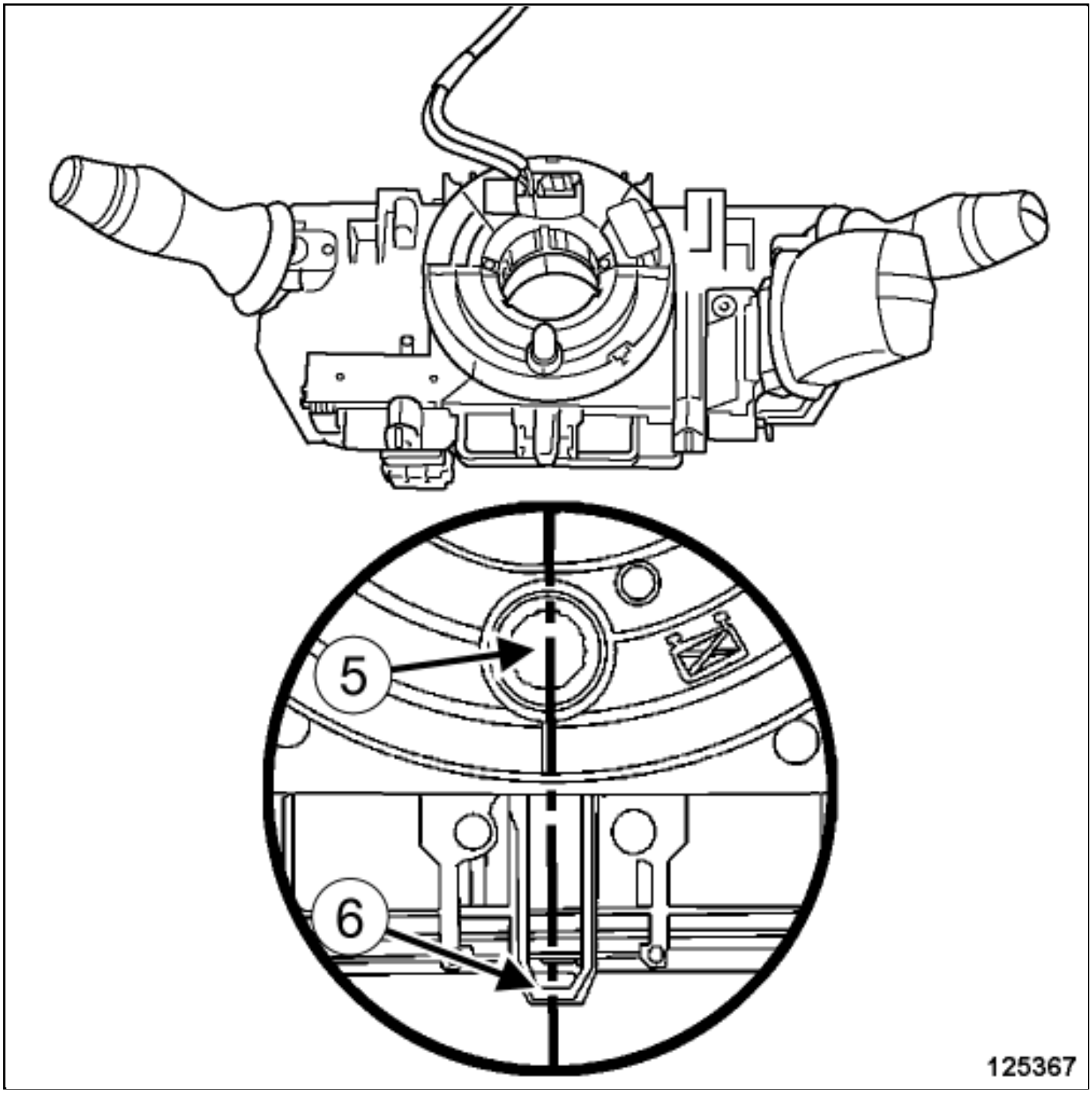
To prevent damaging the rotary switch, do not turn the mobile section of the rotary switch.

- Connect the steering column switch assembly connectors.
- Refit the steering column switch assembly on the steering column until the lock clicks.
- Secure the steering column switch assembly on the steering column using the built-in bolt(2) .

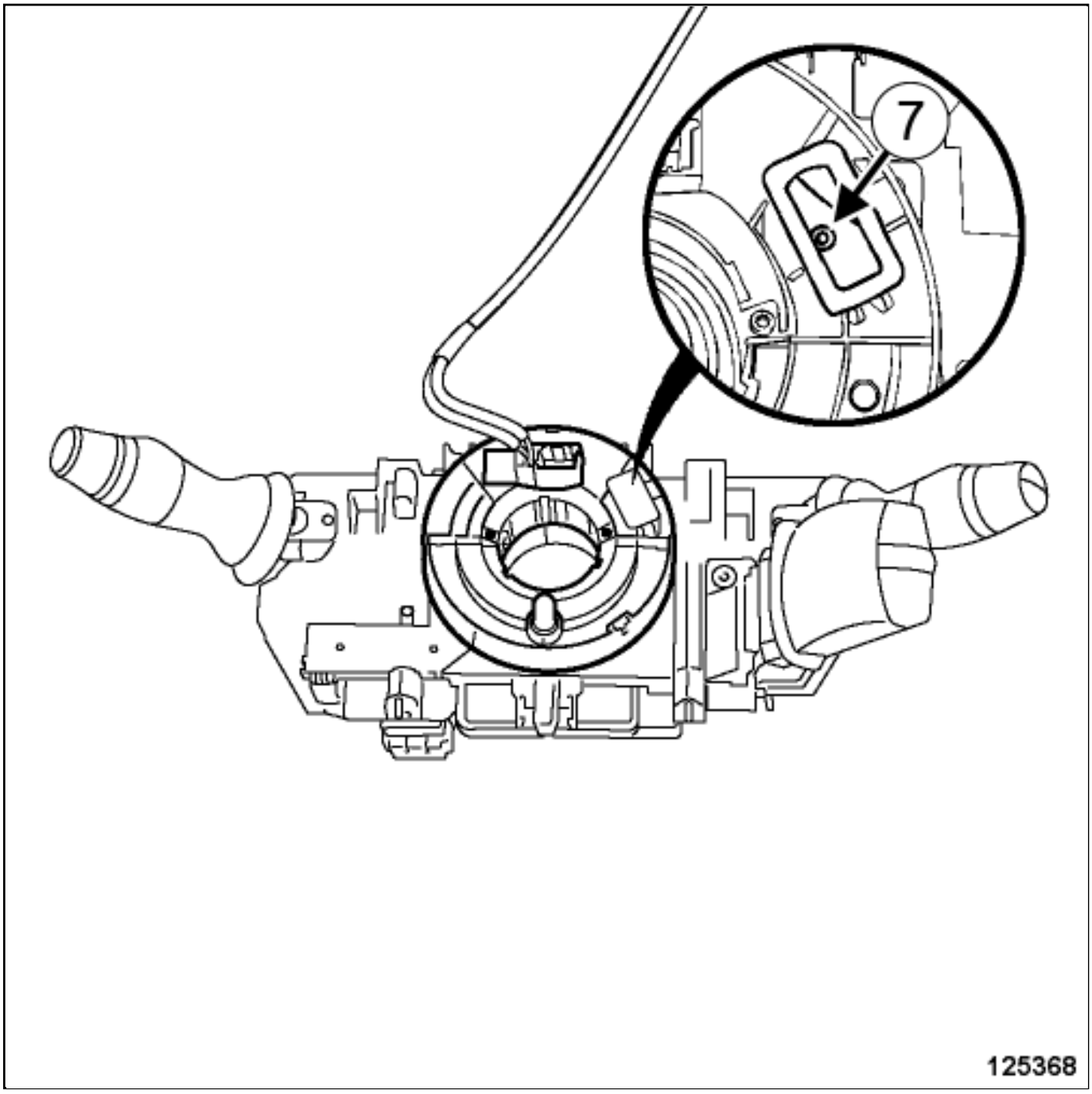
3. FINAL OPERATION

-

Clip on the steering column wiring.



Check that the index(5) is aligned with the clips(6) .



- Check that the index(7) appears in the little window.
- Place the steering column in the upper position.
- Refit the lower cover.

Put the steering column into the lower position.

Refit:

- the upper cover,
- the bolts to the covers under the steering wheel.

In the event of a replacement operation, remove the pin.

Check that the index(5) is aligned with the clips(6) .

Check that the index(7) appears in the little window.

Refit:

- the steering wheel**Steering wheel: Removal - Refitting** (36B, Power-assisted steering),
- the driver's front airbag**Driver's frontal airbag: Removal - Refitting** .

Connect the battery**Battery: Removal - Refitting** .

4. CHECKING AFTER REPAIR

Switch on the ignition.

Check the operation of the rotary switch:

- turn the steering wheel to the left until it stops,
- turn the steering wheel to the right until it stops,

- bring the steering wheel back to the central position,
- check that there are no faults on the instrument panel.

STEERING: PRECAUTIONS FOR THE REPAIR

Note, one or more warnings are present in this procedure

1. SAFETY

1- ADVICE TO BE FOLLOWED BEFORE ANY OPERATION

For an operation requiring the use of a lift, follow the safety advice Vehicle: Towing and lifting (02A, Lifting equipment).

2- INSTRUCTION TO BE FOLLOWED DURING THE OPERATION

WARNING

Wear cut-resistant gloves during the operation.

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

2. CLEANLINESS

1- ADVICE TO BE FOLLOWED BEFORE ANY OPERATION

Use a cover to protect any chassis elements that may be contaminated with power-assisted steering fluid.

2- INSTRUCTION TO BE FOLLOWED DURING THE OPERATION

Clean around the power-assisted steering system using BRAKE CLEANER Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

3. JOB GROUP RECOMMENDATIONS

To ensure correct operation and performance of the system, do not attempt to repair any components other than those supplied in After-Sales.

To ensure the quality of the repair, only use the tooling recommended by the manufacturer.

1- POWER ASSISTED STEERING CIRCUIT:

1)POWER-ASSISTED STEERING FLUID

Only use the fluid recommended by the manufacturer, in order to ensure correct system performance Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

2)BLANKING PLUGS

To prevent impurities from entering the power assisted steering circuit, use blanking plugs on the various dismantled parts.

2- SEALS

To ensure a sound power-assisted steering circuit seal, replace the power-assisted steering pipe seals each time a pipe is removed.

3- STEERING COLUMN

CAUTION

In order not to damage the steering wheel or steering column, the steering wheel-column foolproofing devices must be aligned.

Do not rest the steering column on the adjustment handle.

Do not handle the steering column by the adjustment handle or by the wiring.

Manoeuvre the "steering column - intermediate shaft" assembly by holding each section (one hand on the column and the other on the intermediate shaft). If the steering column is not handled correctly, there is a risk that the steering column or intermediate shaft could fall, which could destroy the system.

Always replace the steering column if it is dropped or in the event of an impact.

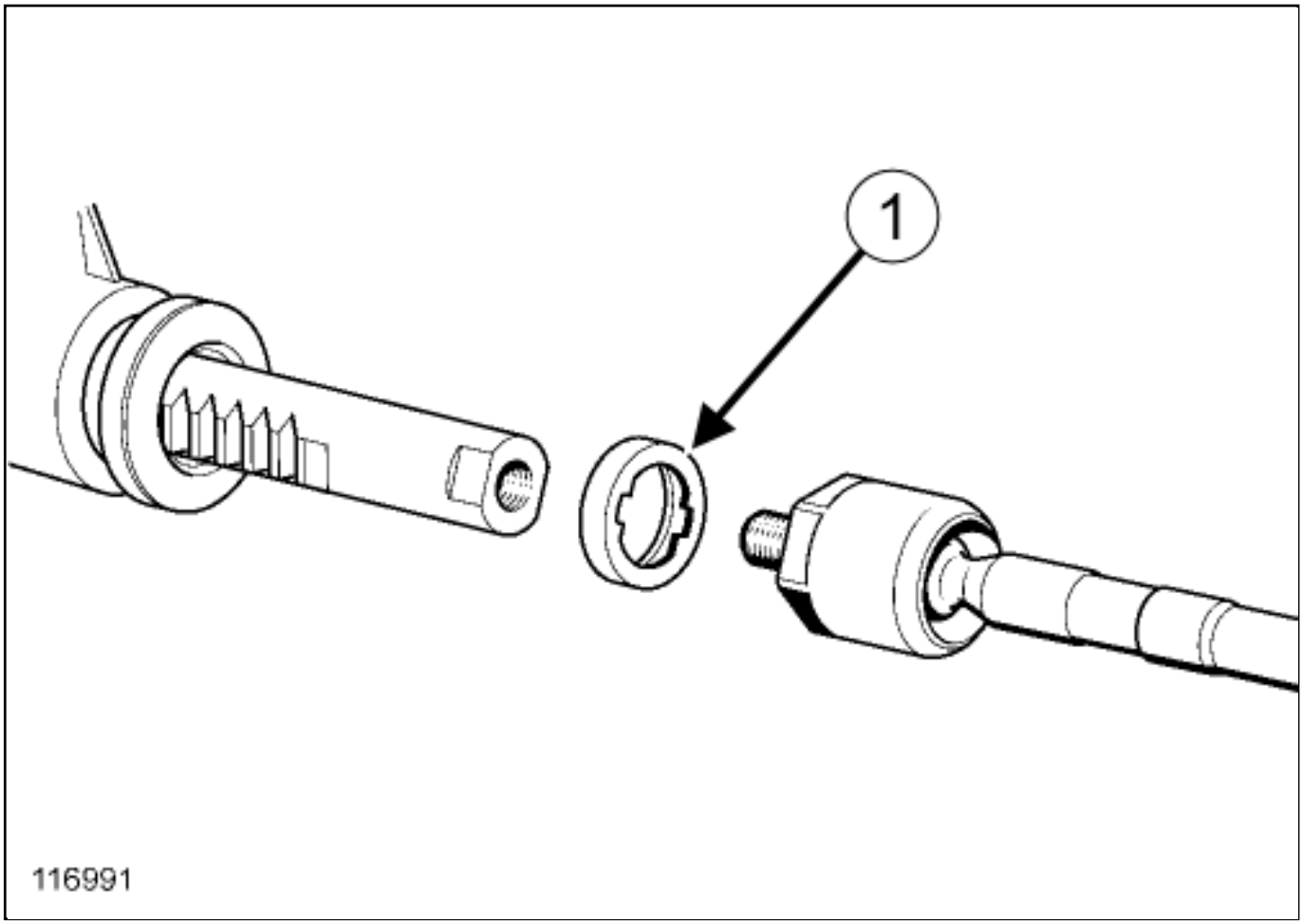
4- STEERING BOX

The steering box should not be carried by the gaiters or pipes, as this may damage them.

When the vehicle is positioned with the wheels suspended, the steering rack must not be subjected to violent movements from lock to lock.

Risks: Damage to the teeth of the steering rack and pinion may cause a safety riskrelating to the steering unexpectedly locking.

5- AXIAL BALL JOINT



The axial ball joint limiters(1) are colour coded for foolproofing purposes. When removing or replacing the axial ball joint, check that the limiter with the correct colour code is refitted.

6- POWER-ASSISTED STEERING PUMP

Do not run the engine without steering fluid in the circuit.

7- PUMP ASSEMBLY

Do not run the engine without steering fluid in the circuit.

8- WIRING HARNESSES

Ensure that the electrical wiring is clean and correctly routed.

STEERING: PRECAUTIONS FOR THE REPAIR

Note, one or more warnings are present in this procedure

1. SAFETY

1- ADVICE TO BE FOLLOWED BEFORE ANY OPERATION

For an operation requiring the use of a lift, follow the safety advice Vehicle: Towing and lifting (02A, Lifting equipment).

2- INSTRUCTION TO BE FOLLOWED DURING THE OPERATION

WARNING

Wear cut-resistant gloves during the operation.

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

2. CLEANLINESS

1- ADVICE TO BE FOLLOWED BEFORE ANY OPERATION

Use a cover to protect any chassis elements that may be contaminated with power-assisted steering fluid.

2- INSTRUCTION TO BE FOLLOWED DURING THE OPERATION

Clean around the power-assisted steering system using BRAKE CLEANER Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

3. JOB GROUP RECOMMENDATIONS

To ensure correct operation and performance of the system, do not attempt to repair any components other than those supplied in After-Sales.

To ensure the quality of the repair, only use the tooling recommended by the manufacturer.

1- POWER ASSISTED STEERING CIRCUIT:

1)POWER-ASSISTED STEERING FLUID

Only use the fluid recommended by the manufacturer, in order to ensure correct system performance Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

2)BLANKING PLUGS

To prevent impurities from entering the power assisted steering circuit, use blanking plugs on the various dismantled parts.

2- SEALS

To ensure a sound power-assisted steering circuit seal, replace the power-assisted steering pipe seals each time a pipe is removed.

3- STEERING COLUMN

CAUTION

In order not to damage the steering wheel or steering column, the steering wheel-column foolproofing devices must be aligned.

Do not rest the steering column on the adjustment handle.

Do not handle the steering column by the adjustment handle or by the wiring.

Manoeuvre the "steering column - intermediate shaft" assembly by holding each section (one hand on the column and the other on the intermediate shaft). If the steering column is not handled correctly, there is a risk that the steering column or intermediate shaft could fall, which could destroy the system.

Always replace the steering column if it is dropped or in the event of an impact.

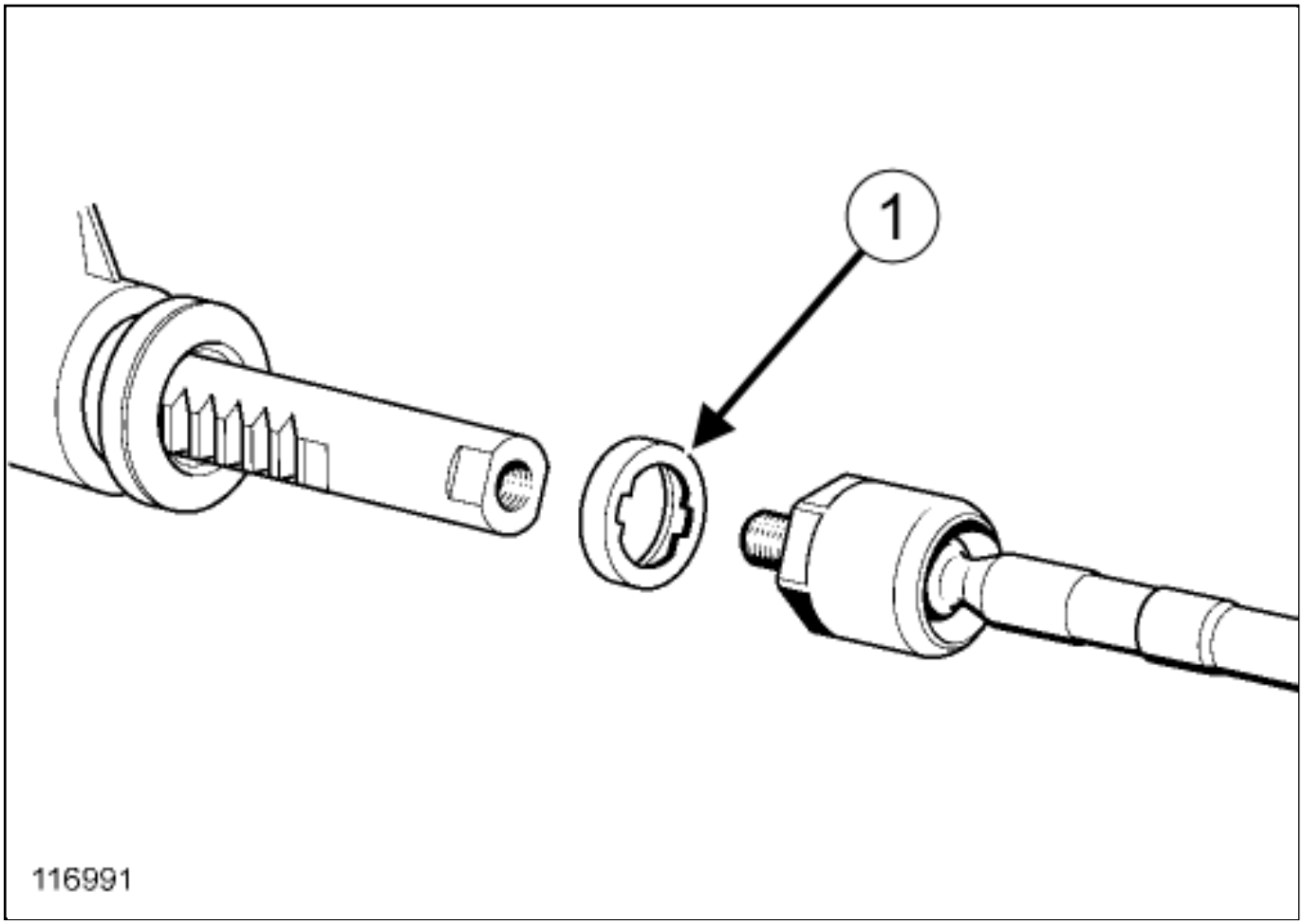
4- STEERING BOX

The steering box should not be carried by the gaiters or pipes, as this may damage them.

When the vehicle is positioned with the wheels suspended, the steering rack must not be subjected to violent movements from lock to lock.

Risks: Damage to the teeth of the steering rack and pinion may cause a safety riskrelating to the steering unexpectedly locking.

5- AXIAL BALL JOINT



The axial ball joint limiters(1) are colour coded for foolproofing purposes. When removing or replacing the axial ball joint, check that the limiter with the correct colour code is refitted.

6- POWER-ASSISTED STEERING PUMP

Do not run the engine without steering fluid in the circuit.

7- PUMP ASSEMBLY

Do not run the engine without steering fluid in the circuit.

8- WIRING HARNESSES

Ensure that the electrical wiring is clean and correctly routed.

STEERING WHEEL: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

parts always to be replaced:

Steering wheel bolt

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

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 36A, Steering assembly , Steering: Precautions for the repair) ,
- Control - Signals: Precautions for repair ,
- Vehicle: Precautions for the repair .

REMOVAL

1. REMOVAL PREPARATION OPERATION

Apply the procedure for deactivating the safety systemsAirbag and pretensioners: Precautions for the repair .

Remove the driver's frontal airbagDriver's frontal airbag: Removal - Refitting .

Set the wheels straight ahead.

Disconnect the connectors.

2. REMOVAL OPERATION

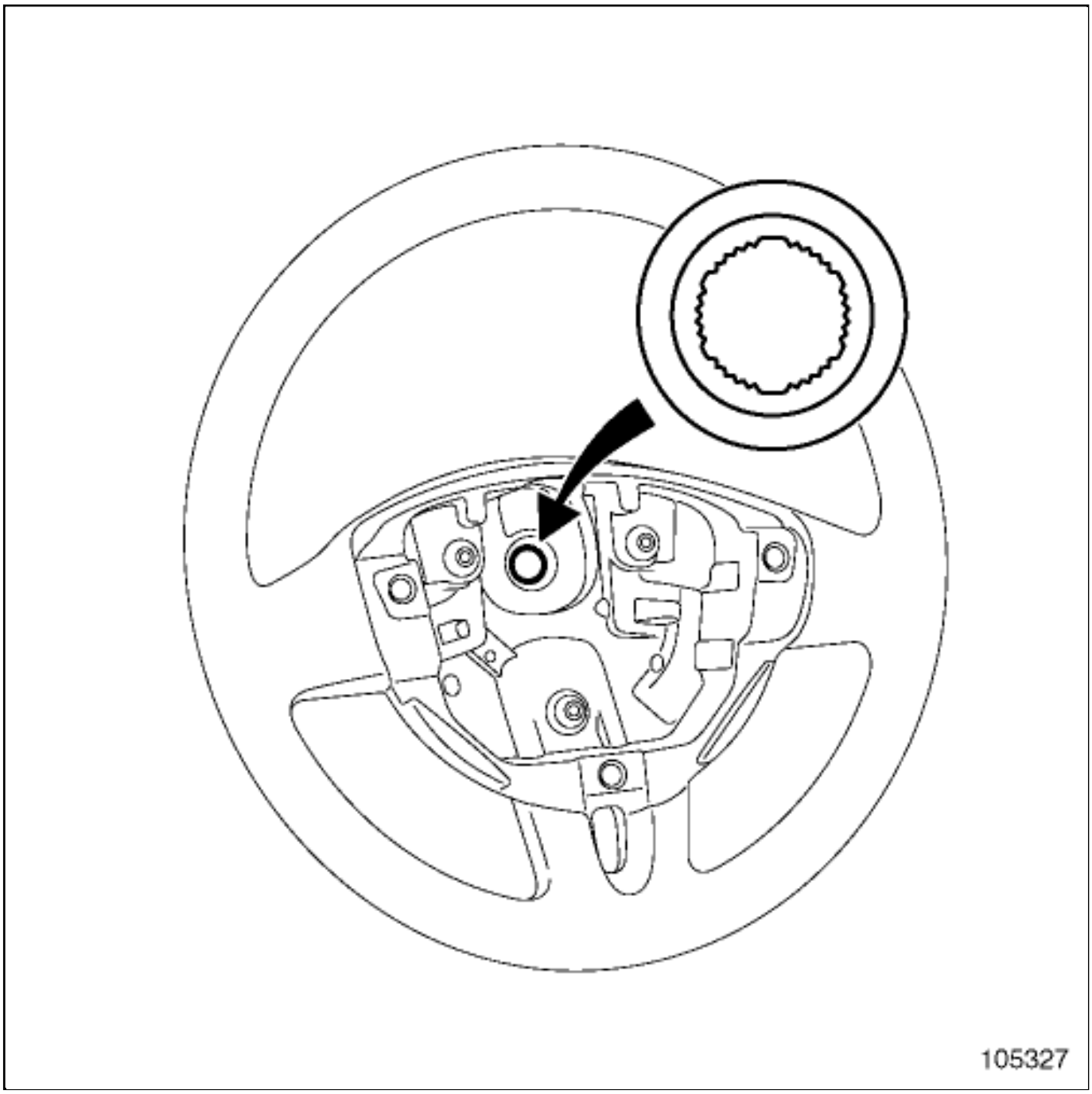
- Remove the steering wheel bolt.
- Remove the steering wheel.

REFITTING

1. REFITTING PREPARATION OPERATION

- parts always to be replaced: Steering wheel bolt.
- Check the alignment of the rotary switch Rotary switch: Adjustment .

2. REFITTING OPERATION



CAUTION

In order not to damage the steering wheel or steering column, the steering wheel-column foolproofing devices must be aligned.

- Refit the steering wheel.
- Connect the connectors.
- Refit a new steering wheel bolt.

- When replacing the steering wheel, torque tighten the steering wheel bolt (72 N.m).
- Loosen the bolt 180°.
- Torque tighten the steering wheel bolt(see 36A, Steering assembly , Steering assembly: Exploded view) .

3. FINAL OPERATION

- Refit the driver's front airbagDriver's frontal airbag: Removal - Refitting .
- Apply the procedure for activating the safety systemsAirbag and pretensioners: Precautions for the repair .

4. CHECKING AFTER REPAIR

- Switch on the ignition.
- Check the operation of the rotary switch:
  - turn the steering wheel to the left until it stops,
  - turn the steering wheel to the right until it stops,
  - check that there are no faults on the instrument panel.

STEERING WHEEL SWITCH: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Set of trim removal levers.	Car. 1363

Equipment required
Diagnostic tool

WARNING

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

- Airbag and pretensioners: Precautions for the repair ,
- Vehicle: Precautions for the repair (01D, Mechanical introduction).

WARNING

Never handle the pyrotechnic systems (pretensioners or airbags) near to a source of heat or naked flame - they may be triggered.

REMOVAL

1. REMOVAL PREPARATION OPERATION

Apply the before repair procedure using the Diagnostic tool:

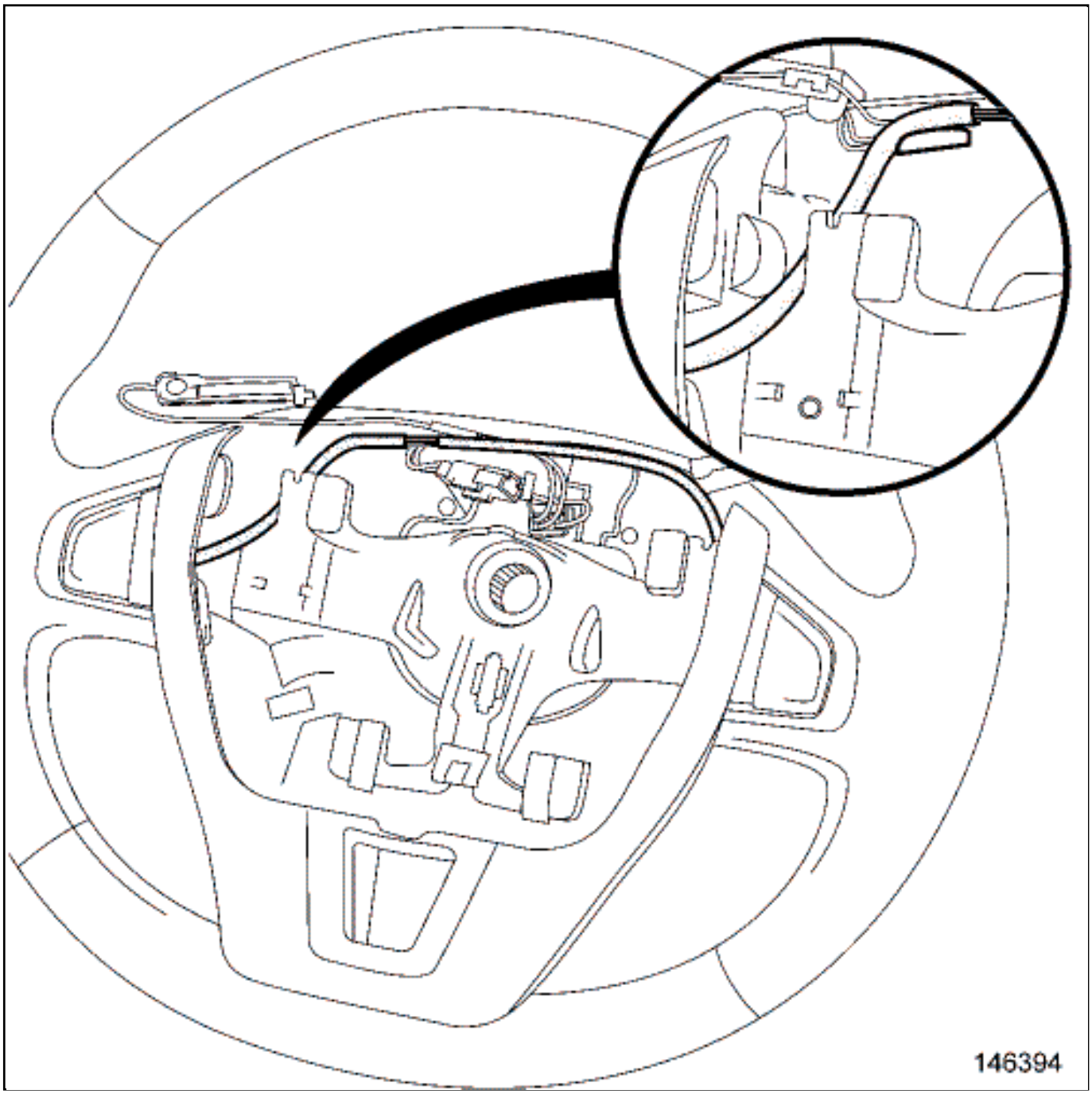
- connect the Diagnostic tool,
- select "Injection computer",
- go to repair mode,
- display the "Before/after repair procedure" for the computer selected,
- select "Cruise control and speed limiter switch" in the "List of components controlled by this computer" section,
- carry out the operations described in the "Before repair procedure" section.

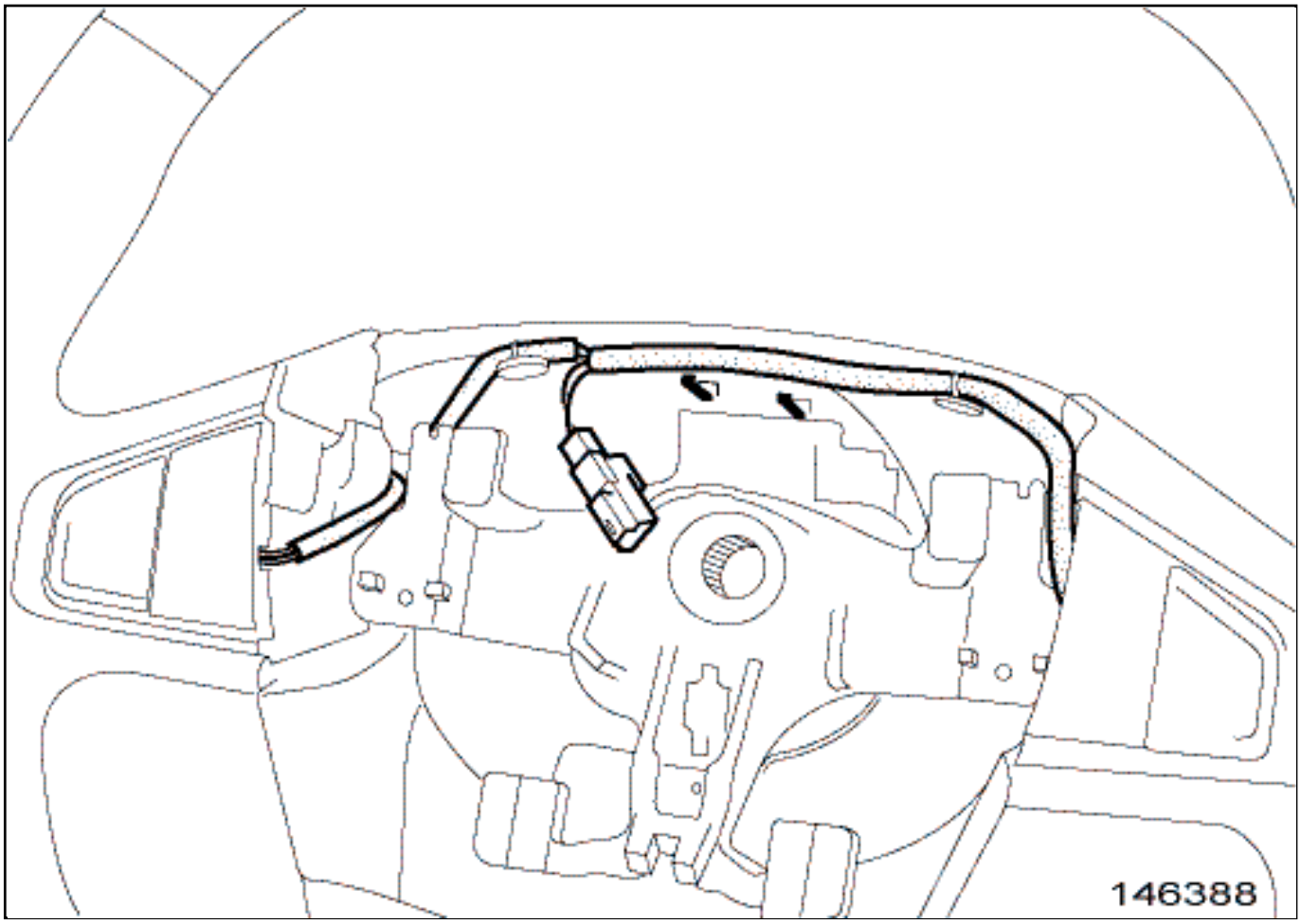
Switch off the ignition.

- Disconnect the battery Battery: Removal - Refitting .

- Remove the driver's frontal airbag Driver's frontal airbag: Removal - Refitting .

2. OPERATION FOR REMOVAL OF PART CONCERNED

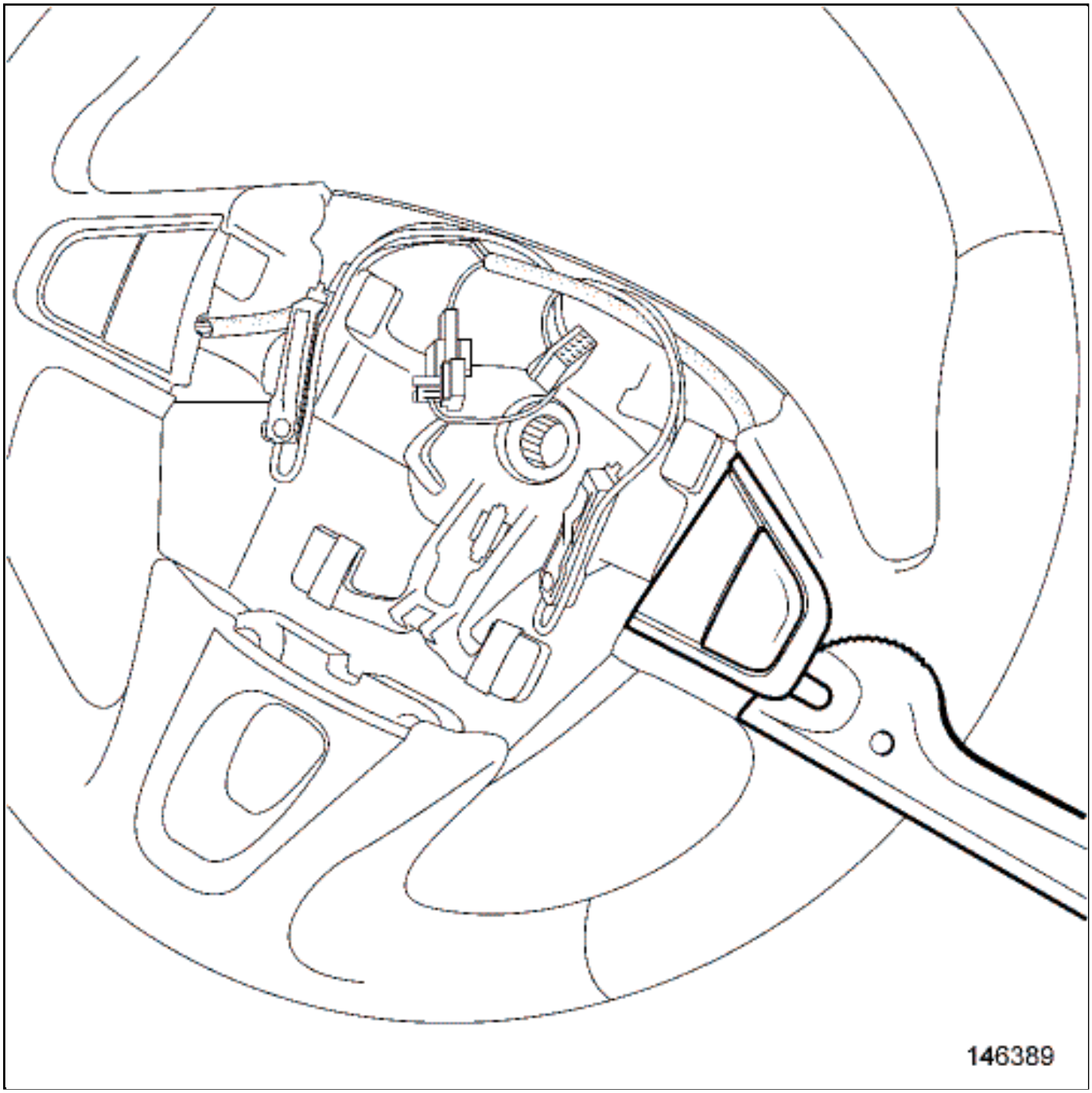




CAUTION

To prevent any risk of noise, premature wear, short circuits, etc. after the refitting operation, mark the wiring routing and how to connect the connectors.

- Mark the routing of the wiring of the cruise control and speed limiter switches in the steering wheel at (3) .
- Disconnect the connector(4) from the wiring of the cruise control and speed limiter switches.
- Unclip the wiring of the cruise control and speed limiter switches.



- Remove the cruise control and speed limiter switches using the toolSet of trim removal levers.(Car. 1363) by positioning it at(5) then at (6) .

REFITTING

1. REFITTING PREPARATION OPERATION

- If the bolts of the audible warning brackets were removed, it is necessary to clean them as well as the

thread holes in the steering wheel.

- It is necessary to:
  - clean the thread holes in the steering wheel to remove any swarf residues,
  - clean the threading of the audible warning bracket bolts,
  - apply threadlock to the bolt bodies Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

2. REFITTING OPERATION FOR PART CONCERNED

- Refit the cruise control and speed limiter switches on the steering wheel.

CAUTION

To prevent damage to the wiring harness when refitting, observe the original routing.

- Clip on the wiring of the cruise control and speed limiter switches in the position marked during removal.

- Connect the connector of the wiring of the cruise control and speed limiter switches.

3. FINAL OPERATION

- Refit the driver's frontal airbag Driver's frontal airbag: Removal - Refitting

- Connect the battery Battery: Removal - Refitting .

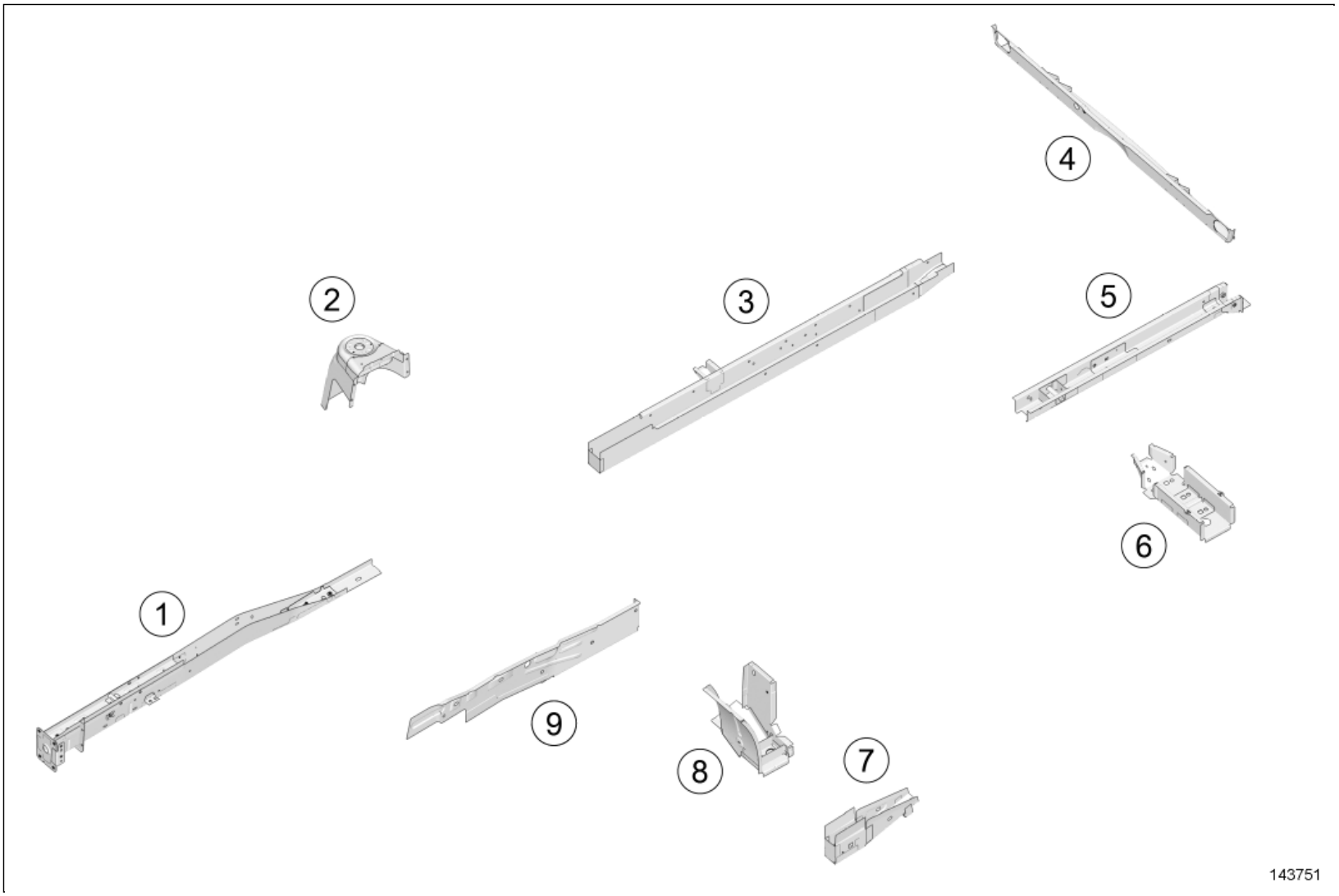
- Apply the after repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Injection computer",
  - go to repair mode,

- display the "Before/after repair procedure" for the computer selected,
- select "Cruise control and speed limiter switch" in the "List of components controlled by this computer" section,
- carry out the operations described in the "After repair procedure" section.

STRUCTURAL COMPONENTS TO BE POSITIONED ON THE REPAIR BENCH: DESCRIPTION

Note, one or more warnings are present in this procedure

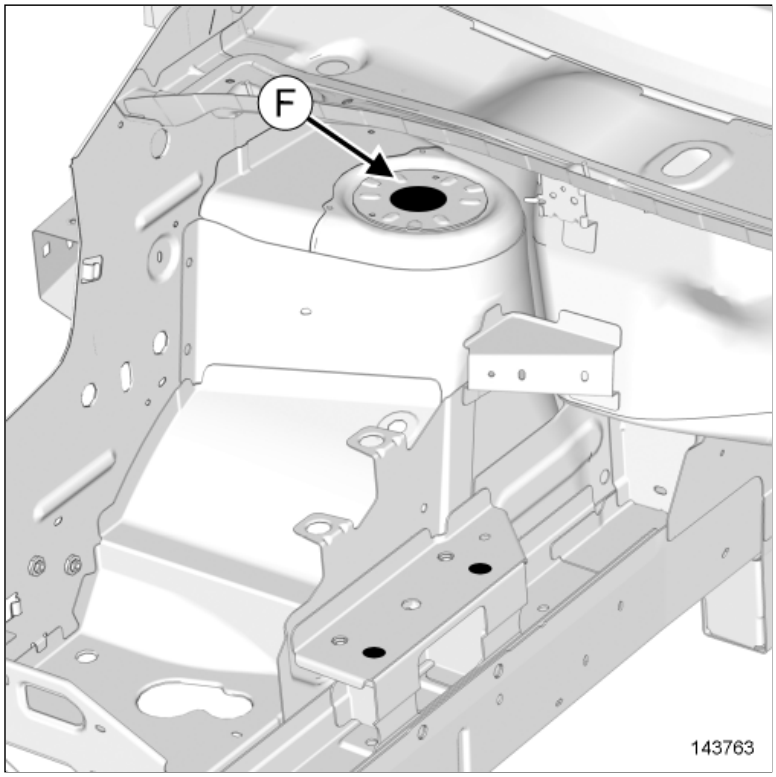
1. PARTS REQUIRING THE USE OF A BODY JIG BENCH



- (1) Front side member
- (2) Front wheel arch
- (3) Rear side member, front section
- (4) Rear floor rear cross member
- (5) Rear section of rear side member
- (6) Rear axle assembly mounting unit
- (7) Front subframe rear mounting unit
- (8) Front jacking point
- (9) Front side member rear part

2. REFERENCE POINTS FOR POSITIONING THE PARTS REPLACED

1- FRONT SHOCK ABSORBER UPPER MOUNTING



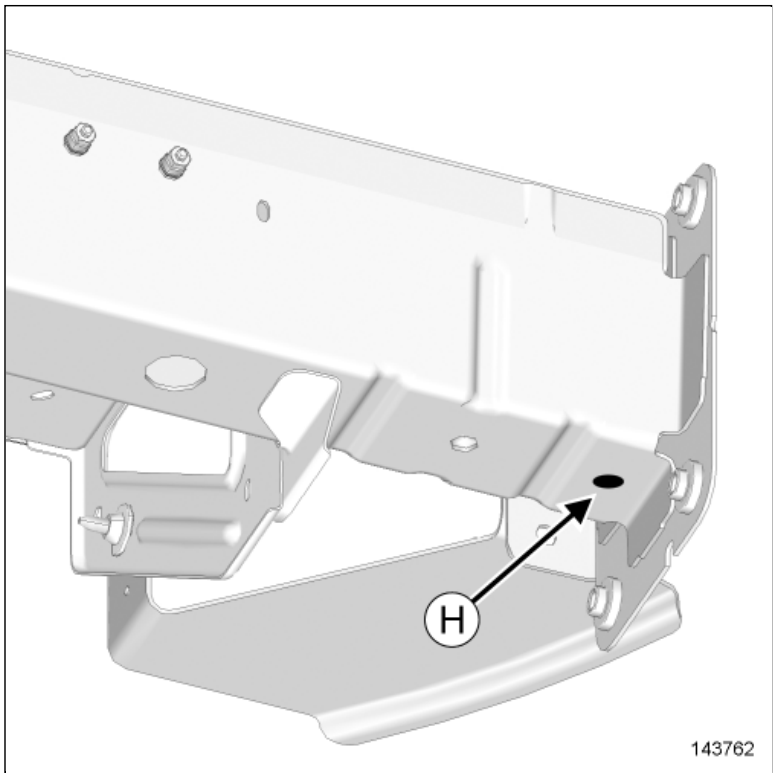
The jig rests under the shock absorber cup and is centred in the hole(F) of the shock absorber cup.

- It should be used with the mechanical components removed for replacement of:
  - the front wheel arch.

It is also used when straightening.

WARNING
This/these point(s) help to ensure the correct axle assembly geometry.

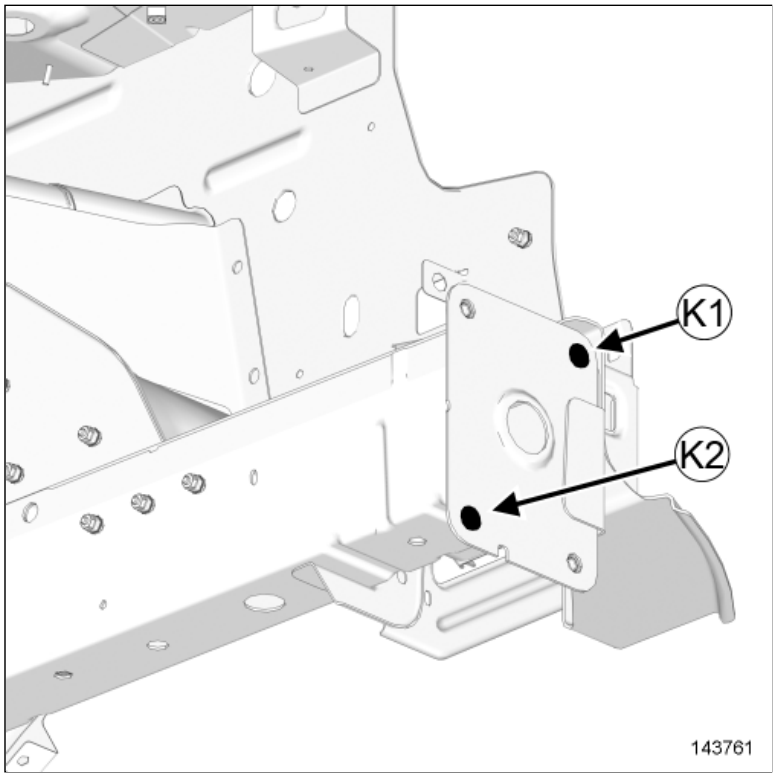
2- END OF FRONT SIDE MEMBER



The jig rests under the front side member and is centred in the hole(H) of the front side member front section.

- It should be used with the mechanical components removed for replacement of:
  - the front side member front section.

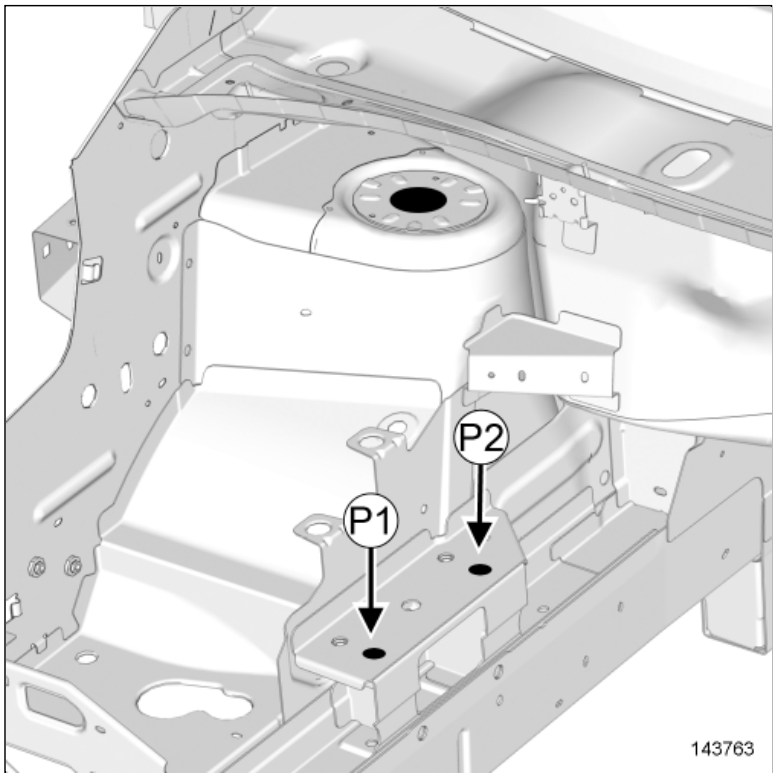
3- FRONT IMPACT CROSS MEMBER MOUNTING



The jig rests vertically against the closure panel component of the front impact absorber unit closure panel component of the front side member front section and is centred in the threaded holes (K1) and (K2) of the front impact cross member mounting.

- It should be used with the mechanical components removed for replacement of:
  - the front side member front section.

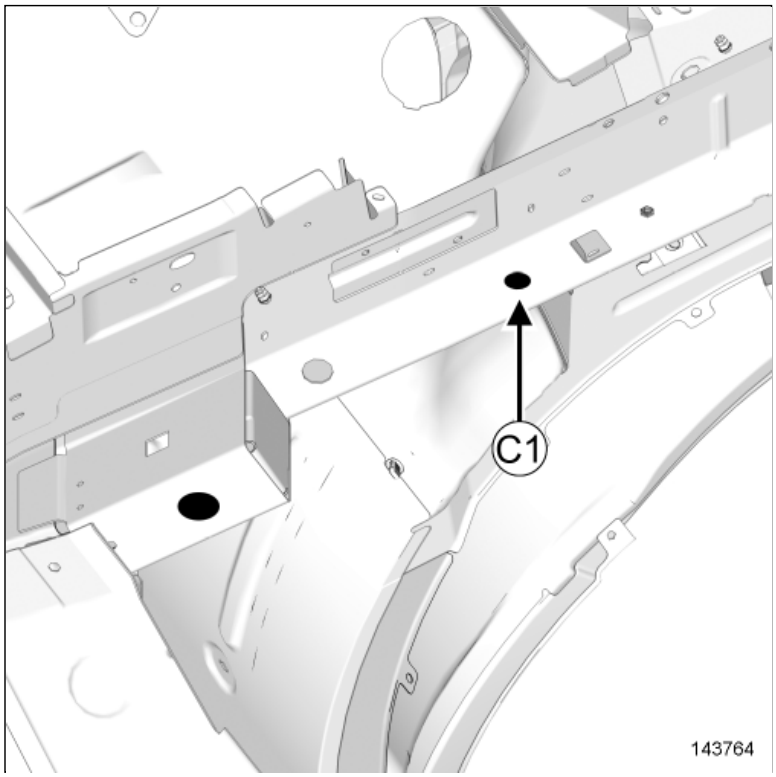
4- ENGINE MOUNTING



The jig rests against the engine mounting and is centred on the threaded holes(P1) and (P2) of the engine mounting.

It should be used with the mechanical components removed for replacement of:
- the front wheel arch liner.

5- FRONT SUB-FRAME FRONT MOUNTING

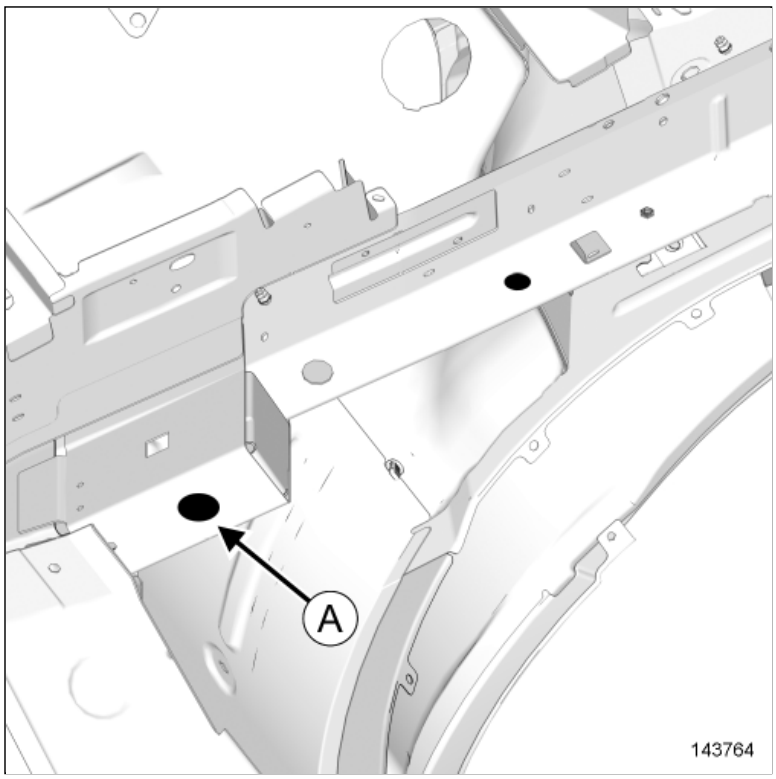


The jig rests under the front side member front section and is centred in the threaded hole(C1) of the front subframe mounting.

It should be used with the mechanical components removed for replacement of:
- the front side member front section.

WARNING
This/these point(s) help to ensure the correct axle assembly geometry.

6- SUBFRAME REAR MOUNTING



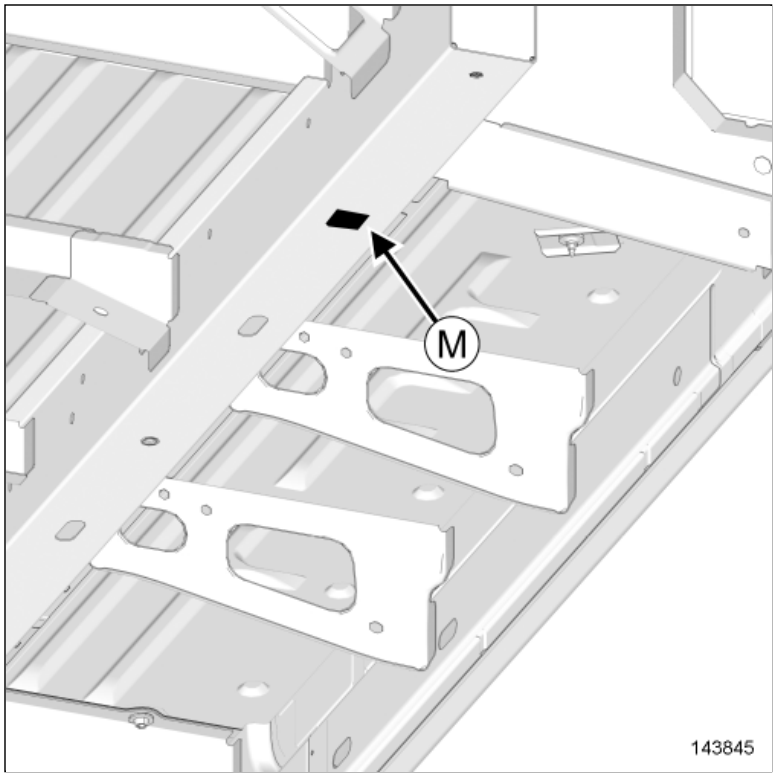
The jig rests against the front subframe rear mounting unit and is centred in the hole(A) .

It should be used with the mechanical components removed for replacement of:

- the front subframe rear mounting unit,
- front side member, rear section.

WARNING
This/these point(s) help to ensure the correct axle assembly geometry.

7- REAR END LEADER PIN OF REAR SIDE MEMBER FRONT SECTION



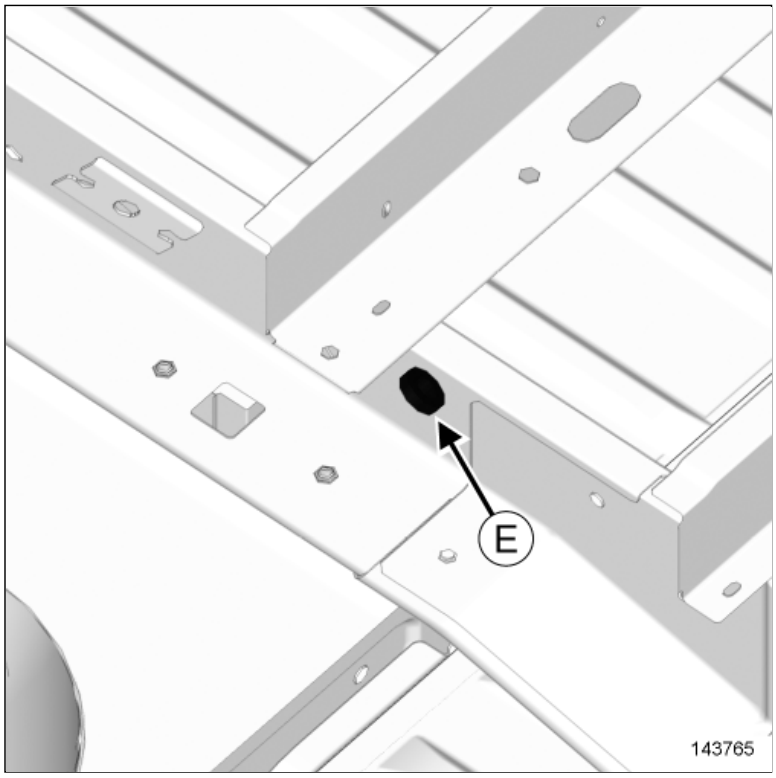
The jig rests against the rear side member front section and is centred in the square hole(M) .

It is to be used when replacing:

Rear side member, front section.

WARNING
This/these point(s) help to ensure the correct axle assembly geometry.

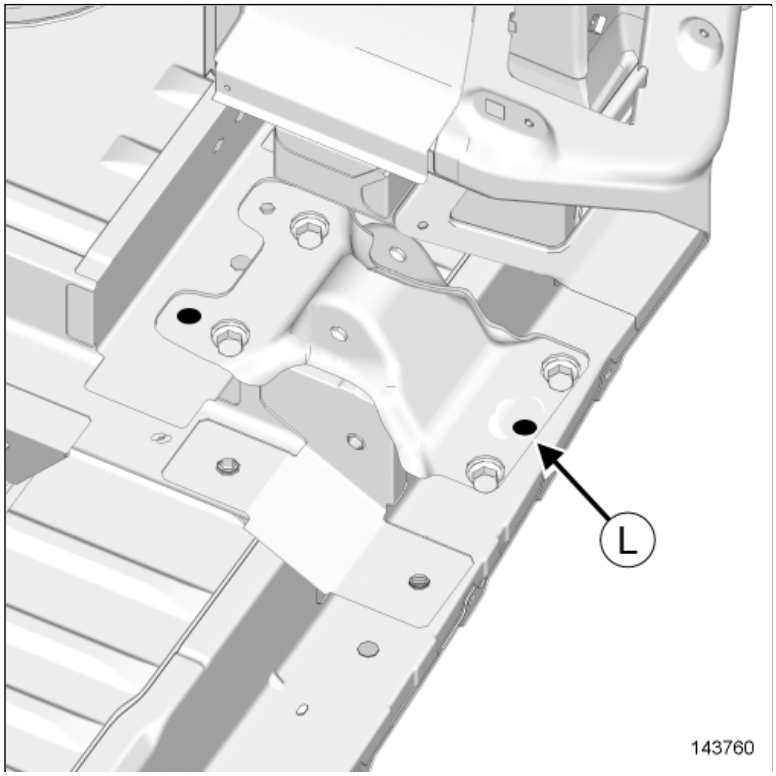
8- REAR SHOCK ABSORBER MOUNTING



The jig is centred and attached inside the shock absorber shaft(E) .

- It should be used with the mechanical components removed for replacement of:
  - the rear side member, rear section.

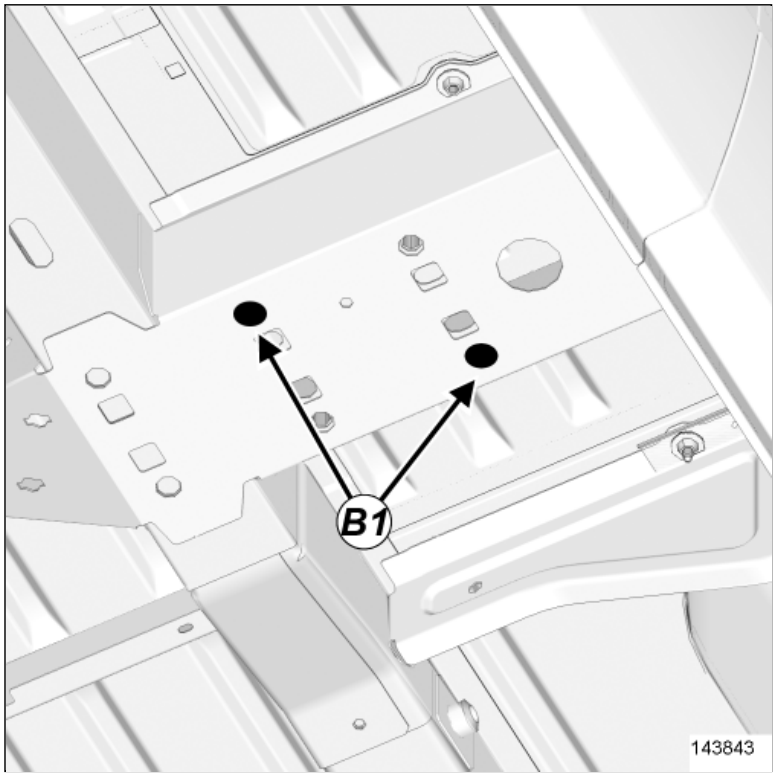
9- REAR IMPACT CROSS MEMBER MOUNTINGS



The jig rests under the rear floor rear cross member and is centred in the hole(L) .

- It is to be used when replacing:
  - the rear floor rear cross member.

10- REAR AXLE MOUNTINGS

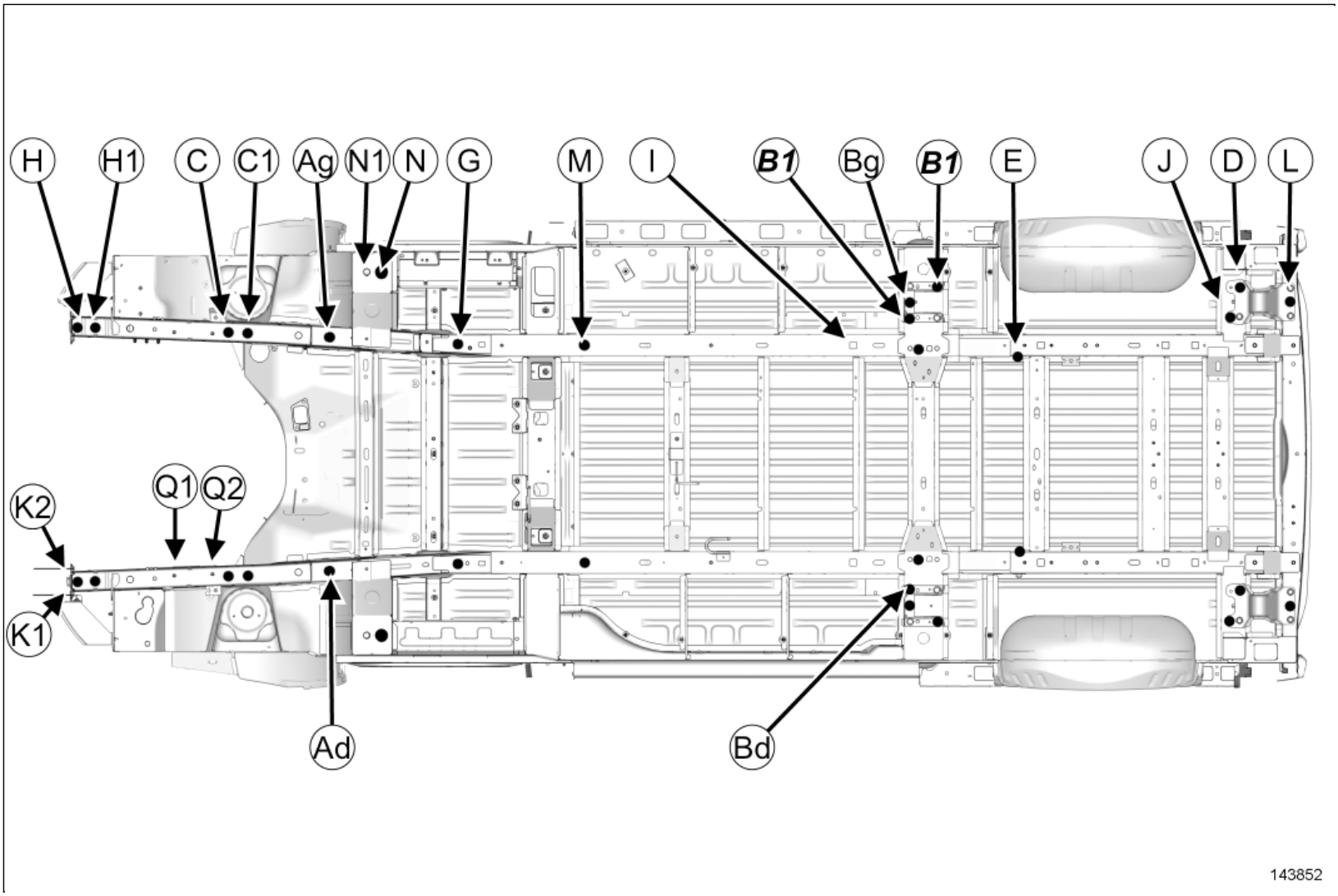


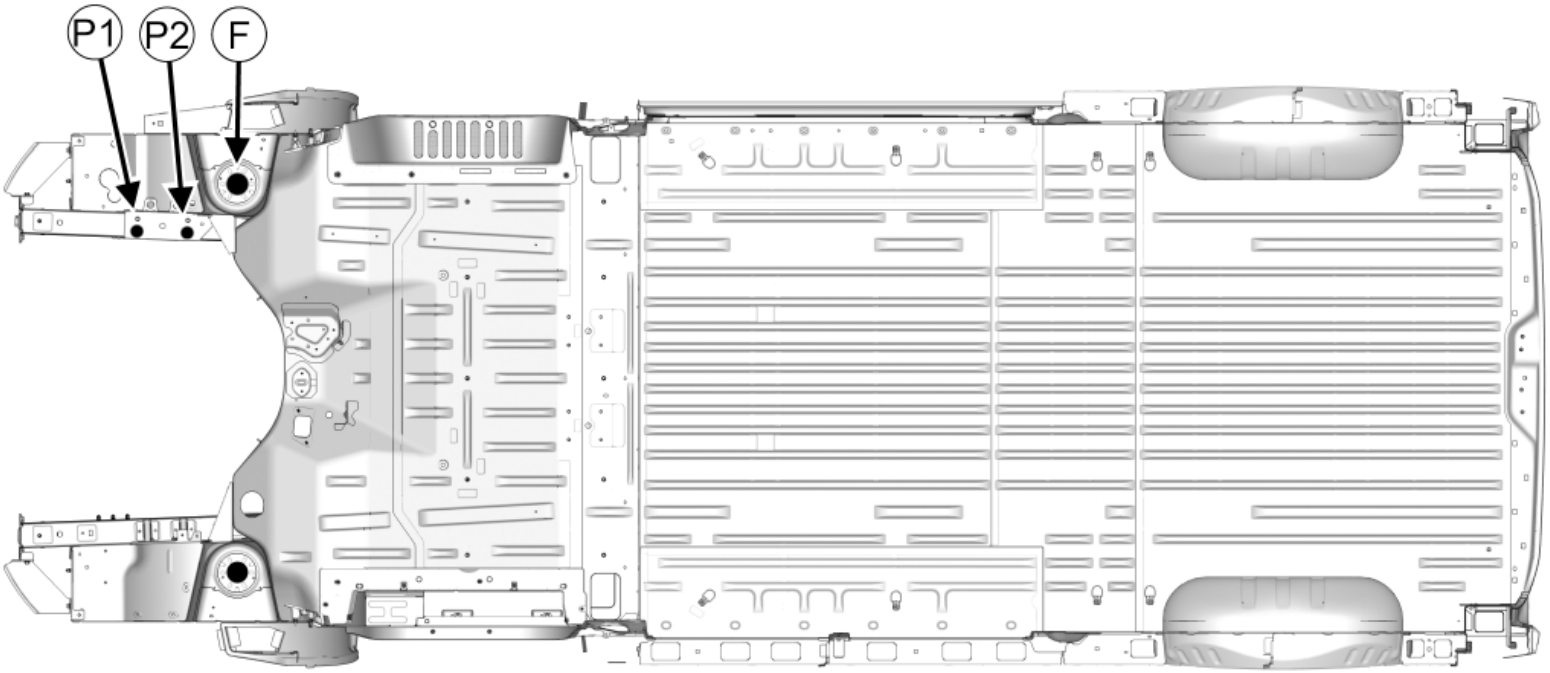
The jig rests under the rear axle assembly mounting unit and is centred in the threaded holes(B1) of the rear axle bearing mounting.

It should be used with the mechanical components removed for replacement of:

the rear axle assembly mounting unit.

WARNING
This/these point(s) help to ensure the correct axle assembly geometry.


H
H1
C
C1
Ag
N1
N
G
M
I
B1
Bg
B1
E
J
D
L
K2
Q1
Q2
K1
Ad
Bd
143852



143854

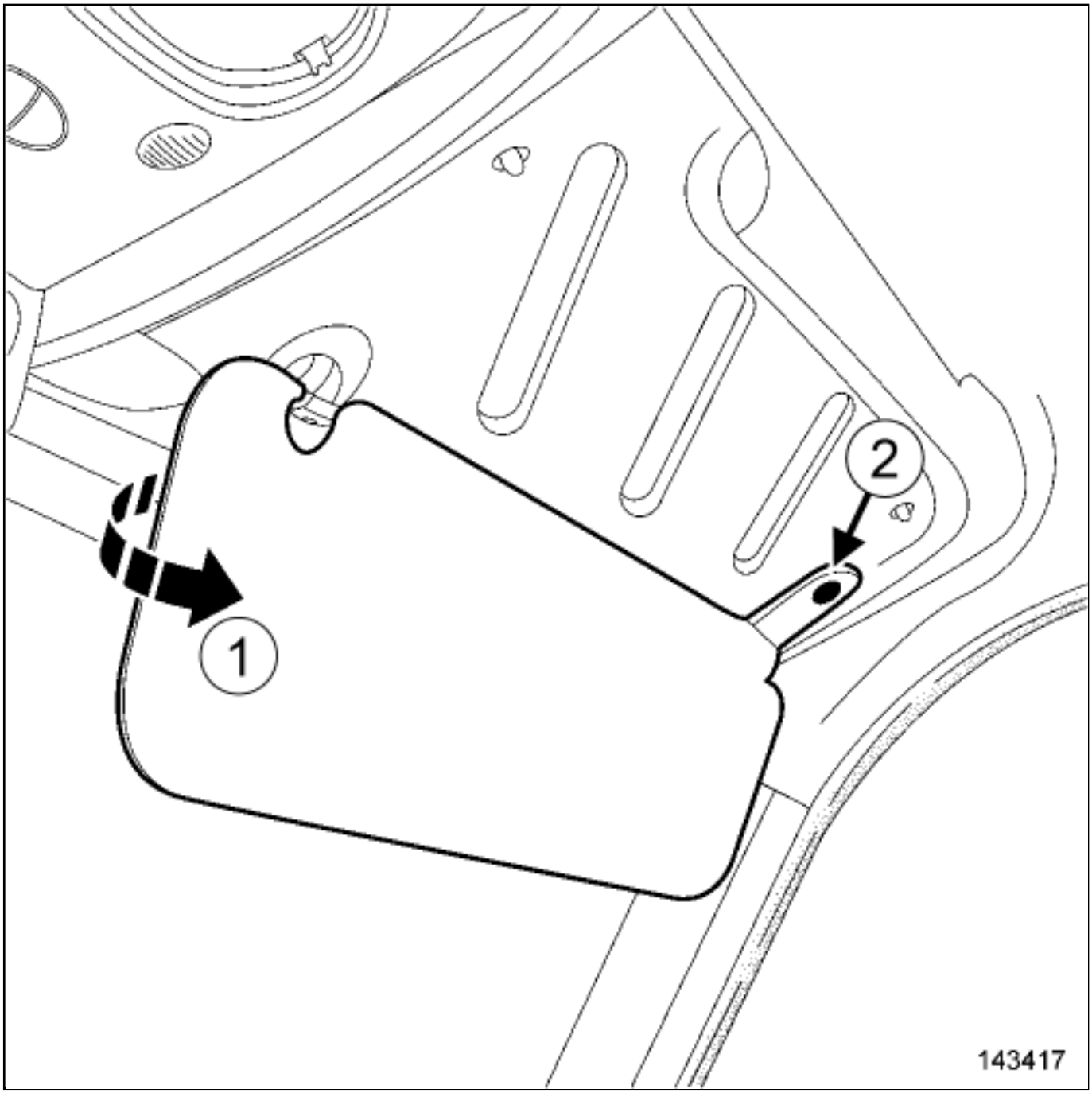
	Description	X (mm)	Y (mm)	Z (mm)	Diameter (mm)	Angle
(Ag)	Front subframe rear mounting, without mechanical components	402	-501	158	Ø28.5 / M16	0˚
(Ag)	Rear mounting of front subframe with mechanical components (against the cup)	402	-501	14	M16	0˚
(Ag)	Front subframe rear mounting with mechanical components (against the bolt head)	402	-501	5.4	M16	0˚
(Ad)	Front subframe rear mounting, without mechanical components	402	501	158	Ø28.5 x 35.5 / M16	0˚
(Ad)	Rear mounting of front subframe with mechanical components (against the cup)	402	501	14	M16	0˚
(Ad)	Front subframe rear mounting with mechanical components (against the bolt head)	402	501	5.5	M16	0˚
(C)	Front subframe leader pin	-30	520	284.5	30x30	0˚
(C1)	Front subframe front mounting without mechanical components	51.5	518	284.5	M14	0˚
(C1)	Front subframe front mounting with mechanical components	51.5	518	229.5	M14	0˚
(C1)	Front subframe front mounting with mechanical components (against the bolt head)	51.5	518	210.5	M14	0˚
(F)	Front shock absorber upper mounting	51.5	675	793	40.5	X: 4˚30 Y: 2˚45
(G)	Front side member rear end leader pin	949	469.5	228.5	30x30	0˚
(H)	Front side member front end leader pin	-677.5	544.75	284.5	10.2	0˚
(H1)	Front side member front end mounting	-601	540.5	284.5	M8	0˚
(K1)	Exterior upper mounting of front end cross member	-704	603.5	417	M10	90˚H
(K2)	Interior lower mounting of front end cross member	-704	492.2	253	M10	90˚H
(N)	Front side jacking point	622	775	87.5	50	0˚
(N1)	Cradle centring device	559.5	775	87.5	27	0˚
(Q1)	Engine and transmission assembly mounting	261.5	520	284.5	M12	0˚
(Q2)	Engine and transmission assembly mounting	97.5	514	284.5	M12	0˚

	Description	X (mm)	Y (mm)	Z (mm)	Diameter (mm)	Angle
(Bg)	Rear axle assembly front mounting, with mechanical components	2884	-649	10.5	21	0˚
(Bd)	Rear axle assembly front mounting, with mechanical components	2884	649	10.5	21	0˚
(B1)	Rear axle assembly front outer mounting, without mechanical components	2998	717	129.5	M14	0˚
(B1)	Rear axle assembly front interior mounting, without mechanical components	2883.5	581	129.5	M14	0˚
(E)	Rear shock absorber upper mounting	3345.5	410	214.5	13.8	90˚H
(D)	Rear axle assembly rear mounting	4289.5	711.5	169.5	M12	0˚
(I)	Centre side member rear leader pin	2640	464	131	30x30	0˚
(J)	Rear axle assembly rear mounting with mechanical components	4253	586.5	166	12	0˚
(J)	Rear axle rear mounting without mechanical components	4253	586.5	169.5	20x20	0˚
(L)	Rear end cross member leader pin	4508	649	125.5	12x16.2	0˚
(M)	Front end leader pin of centre side member	1490	464	131	30x30	0˚
(P1)	Front engine mounting	-296	511	508	M12	0˚
(P2)	Rear engine mounting	-120.5	511	508	M12	0˚

SUN VISOR: REMOVAL - REFITTING

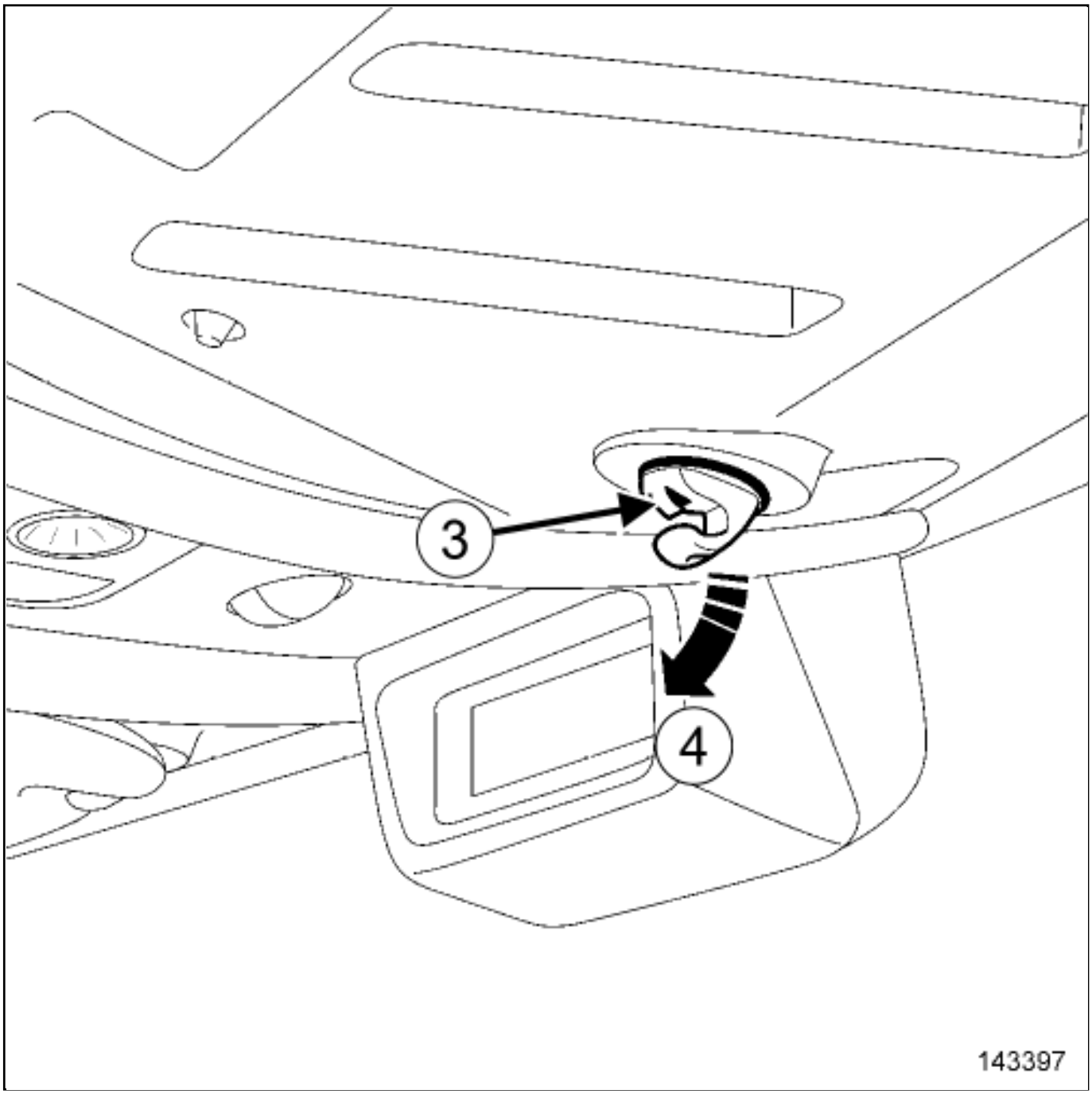
REMOVAL

1. REMOVAL OPERATION



- Unclip the sun visor at(1) .

- Remove:
  - the bolt(2) ,
  - the sun visor,



- Loosen the bolt(3) .
- Remove the sun visor mounting by(4) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

TACHOGRAPH: REMOVAL - REFITTING

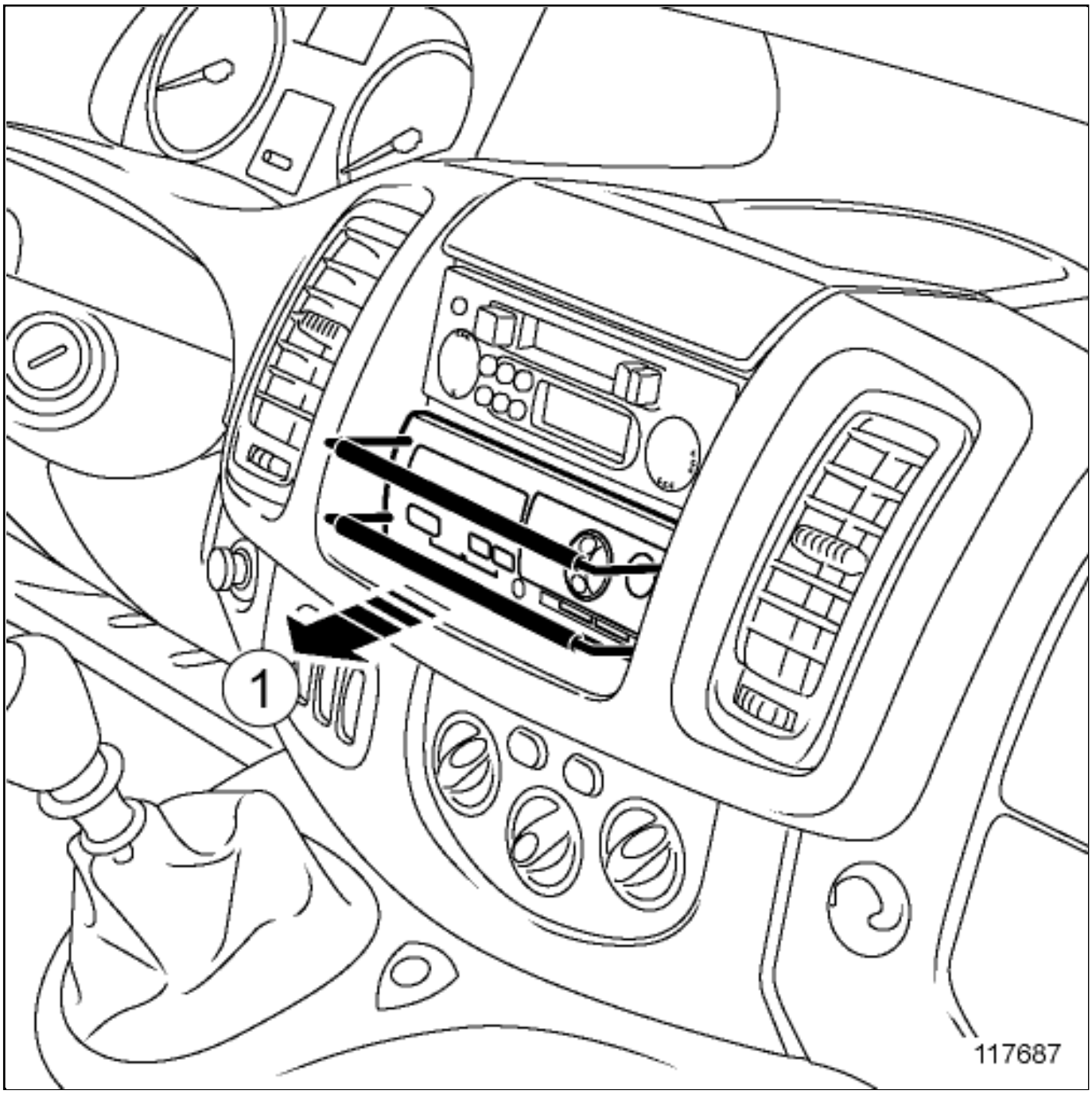
Special tooling required	
Tool for removing radios or chronotachographs.	

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.
- Disconnect the battery (see **Battery: Removal - Refitting**) .

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the tachograph(1) using the two toolsTool for removing radios or chronotachographs. .

- Disconnect the tachograph connectors starting with the supply connector.

Note:

The battery must be disconnected. To ensure that there is no supply, the supply connector must be disconnected first and reconnected last. If the gearbox sensor connector is disconnected first, a fault appears on the instrument panel.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

- Connect the tachograph connectors, leaving the supply connector until last.
- Refit the tachograph.

2. FINAL OPERATION

- Connect the battery(see **Battery: Removal - Refitting**) .

Note:

When replacing the tachograph, the vehicle must be taken to an approved centre to ensure the conformity of the vehicle.

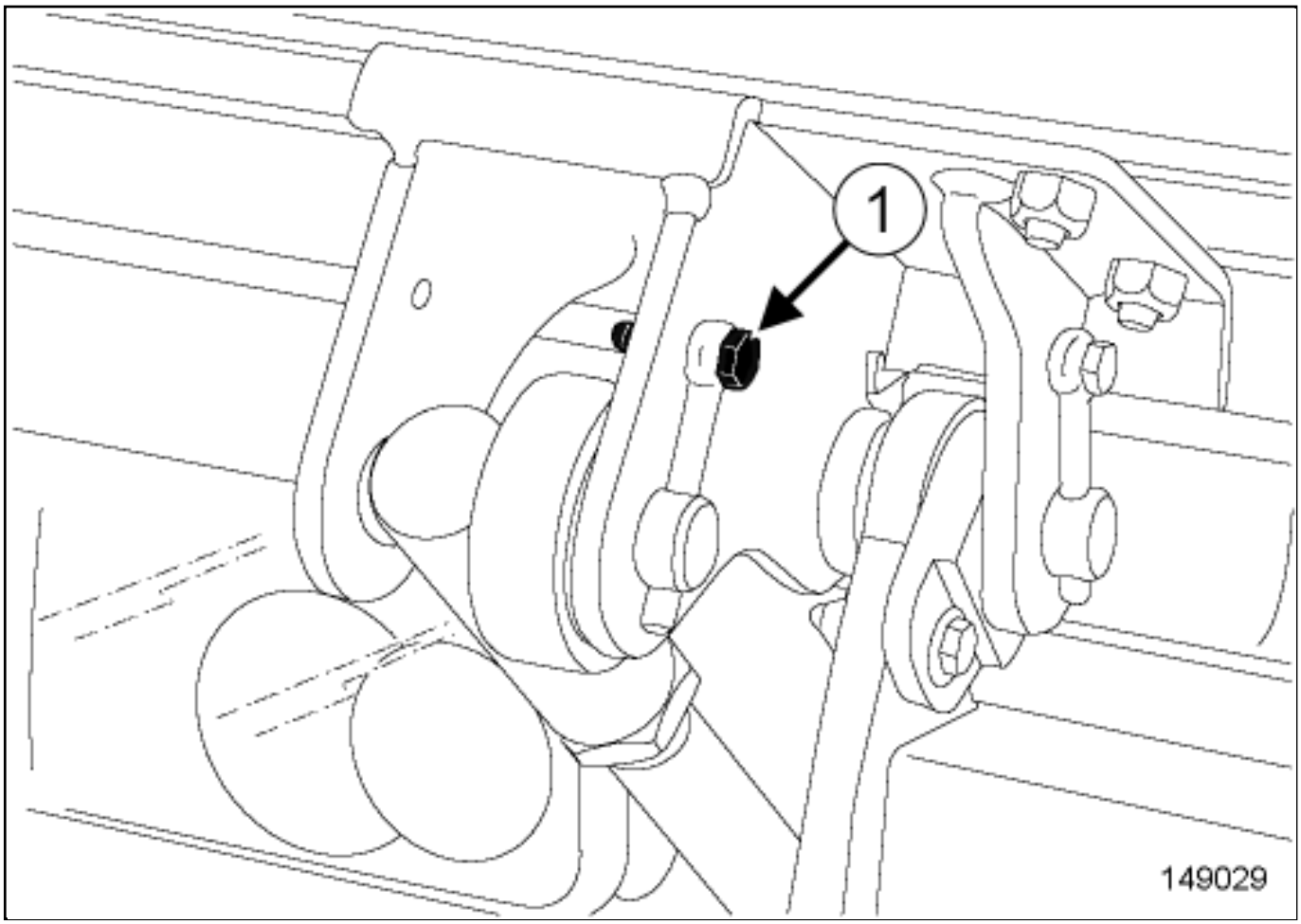
TAIL LIFT PLATFORM ROLLER: REMOVAL - REFITTING

REMOVAL

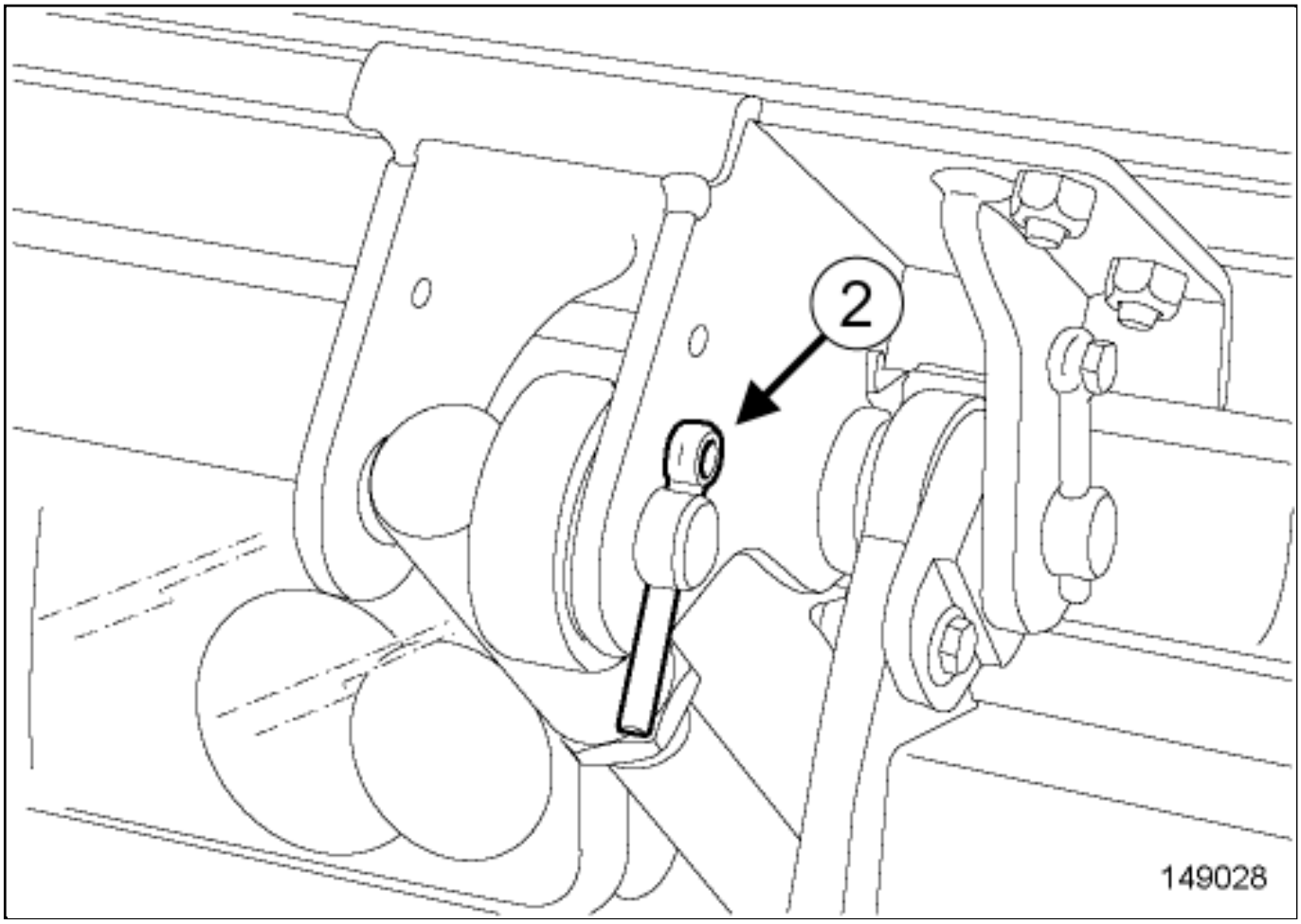
1. REMOVAL PREPARATION OPERATION

Note:

It is necessary to handle the tail lift in the "closed" position to release the shaft supporting the roller. There must be play and no strain.

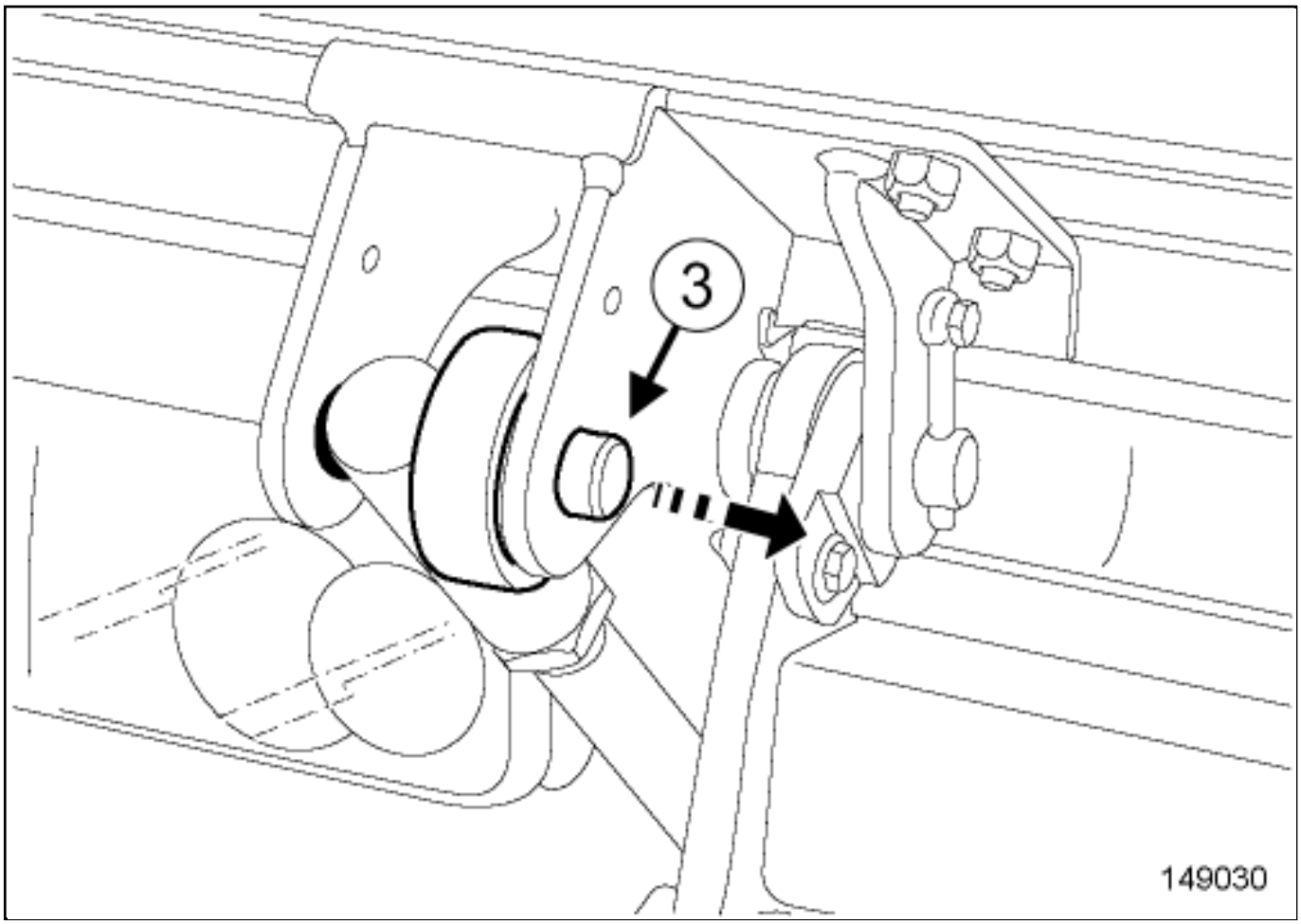


- Remove the bolt(1) .



- Remove the pin(2) .

2. REMOVAL OPERATION

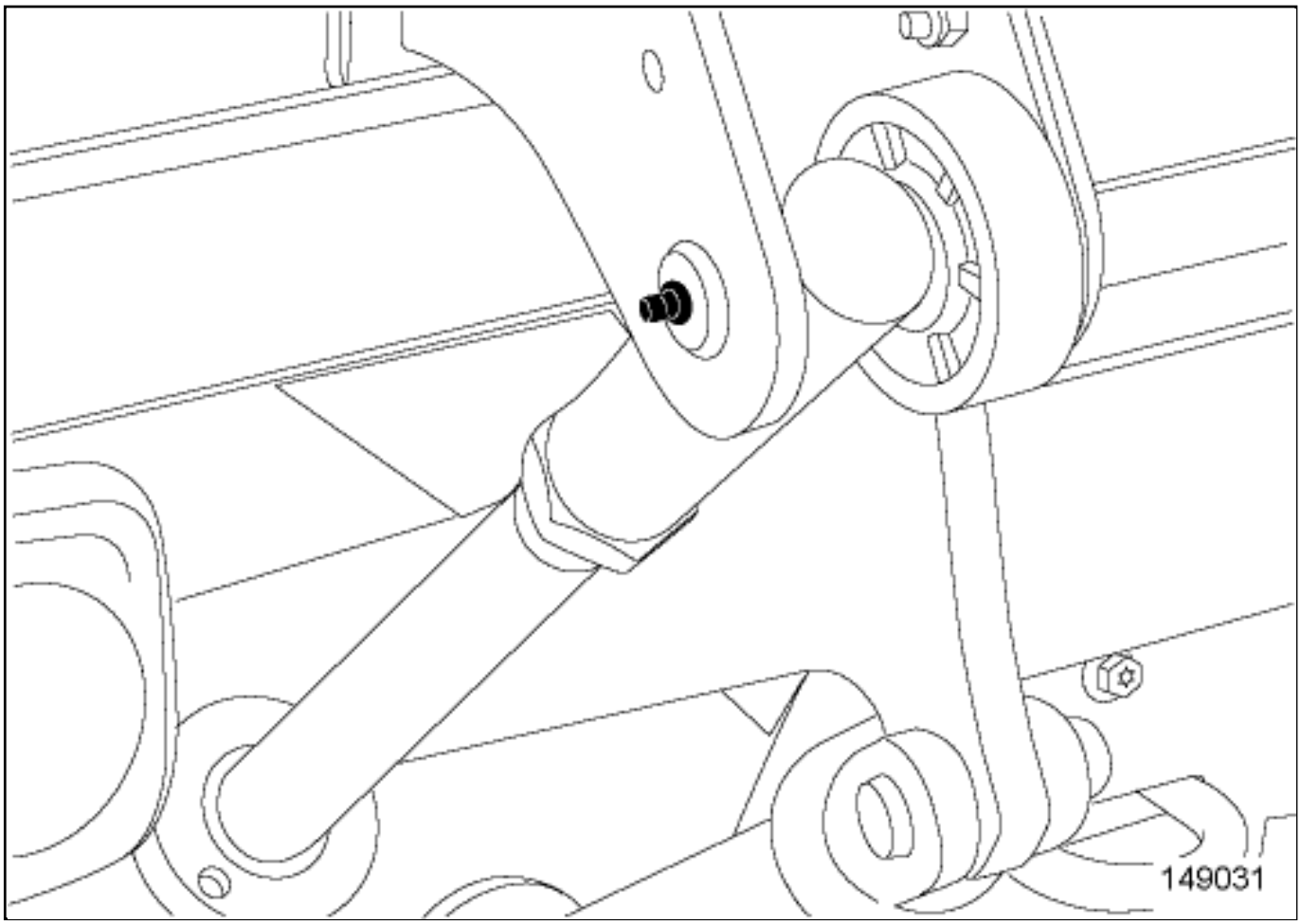


Remove:

- the pin(3) ,
- the tail lift platform roller.

REFITTING

1. REFITTING PREPARATION OPERATION



When refitting the shaft(3) , check that the grease fitting is positioned correctly.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Repair-50x03x23x10-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

TELEMATICS COMPUTER: REMOVAL - REFITTING

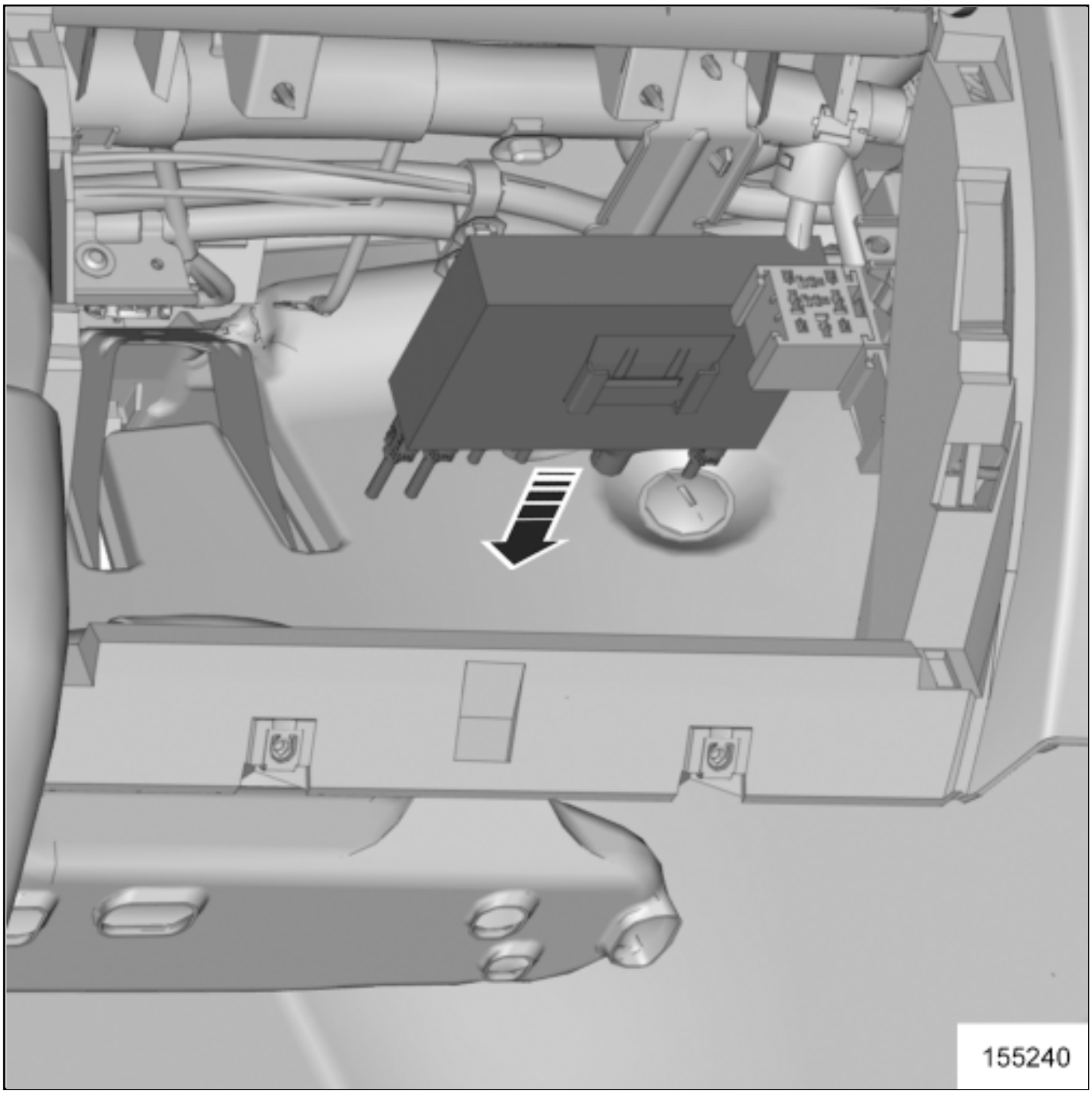
Equipment required
Diagnostic tool

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Disconnect the 12 V battery Battery: Removal - Refitting .
- Remove the glovebox Glovebox: Removal - Refitting .

2. REMOVAL OPERATION



- Disconnect the computer connectors.
- Remove the telematics computer.

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

2. FINAL OPERATION

Apply the after repair procedure using the Diagnostic tool**Diagnostic tool : Use** :

-Computer concerned by the after repair procedure:

■"Navigation computer" .

Repair-30x04x13x02-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

THERMOPLUNGER UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

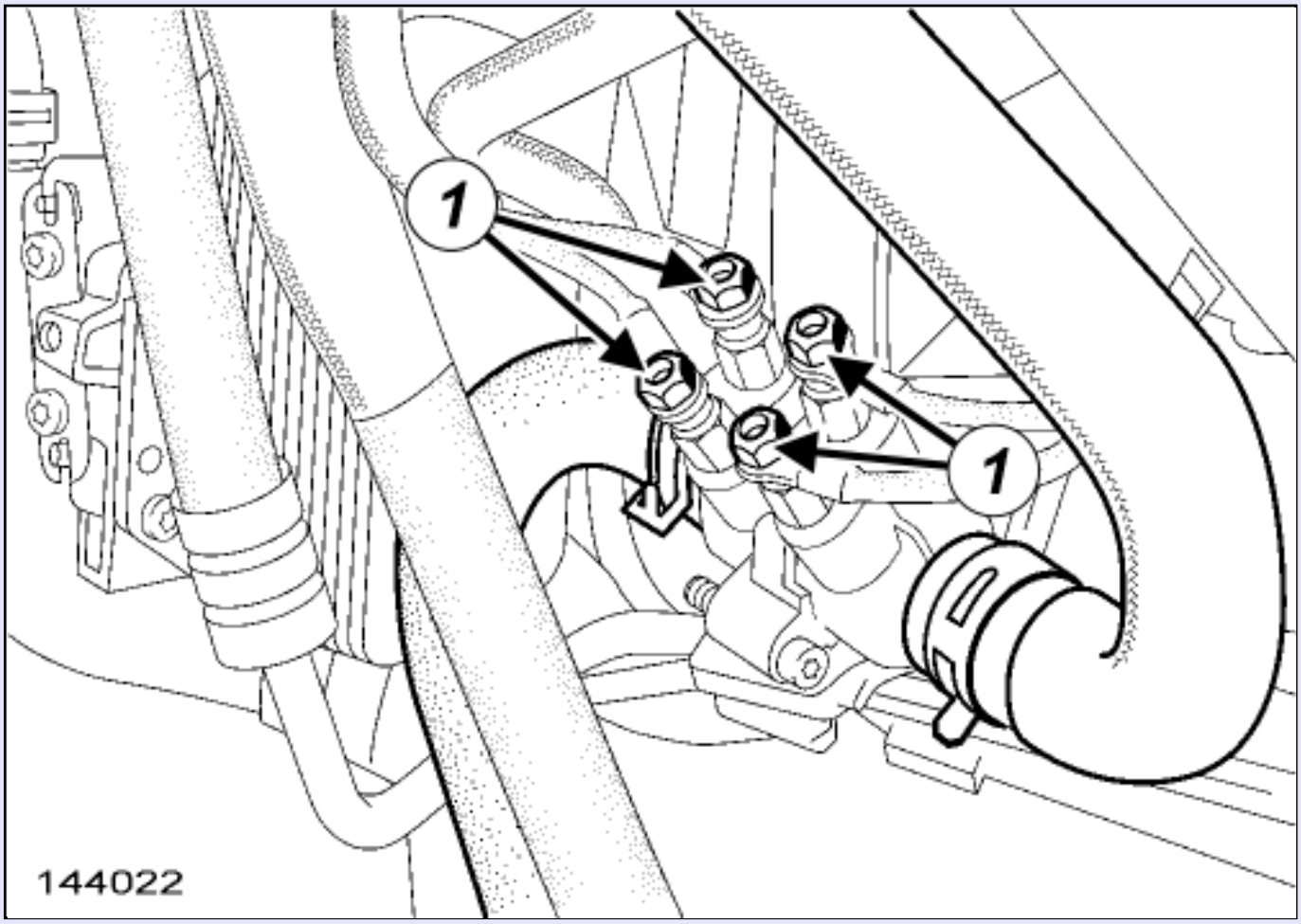
REMOVAL

1. REMOVAL PREPARATION OPERATION

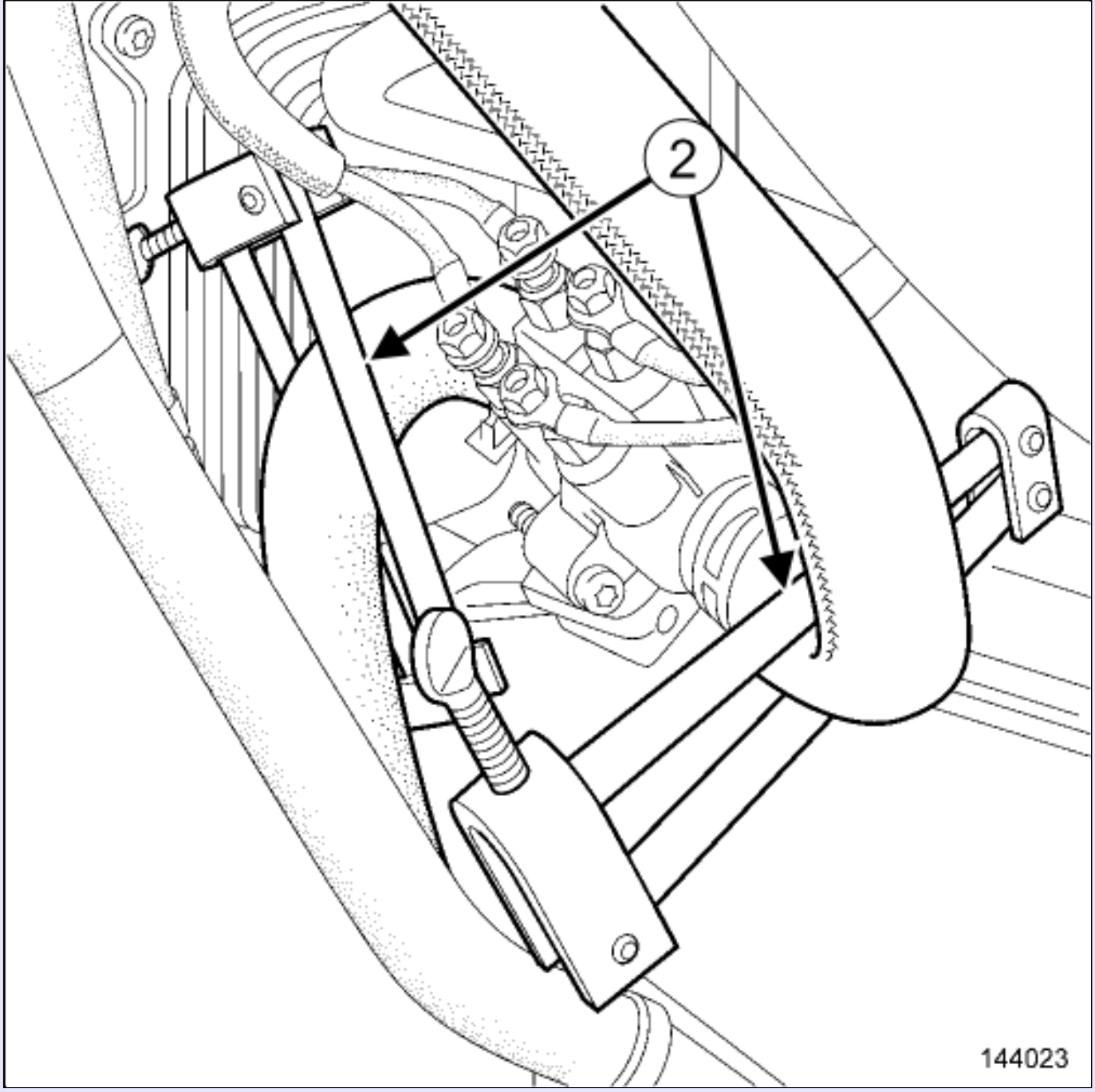
- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery(see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the engine undertray.

- Drain the cooling system (see 19A, Cooling, Cooling system: Draining - Refilling) .

2. REMOVAL OPERATION



- Remove the nuts(1) on the thermoplunger unit wiring.
- Move aside the thermoplunger unit wiring.



- Fit toolsPipe clamps.(Ms. 583) on the thermoplunger unit cooling pipes(2) .

- Move aside using the toolRemote operation pliers for hose clips.(Mot. 1448) (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the thermoplunger unit inlet cooling pipe clip,
  - the thermoplunger unit outlet cooling pipe clip.

- Disconnect (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the thermoplunger unit inlet cooling pipe,
  - the thermoplunger unit outlet cooling pipe.

- Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the thermoplunger unit bolts,
  - the thermoplunger unit.

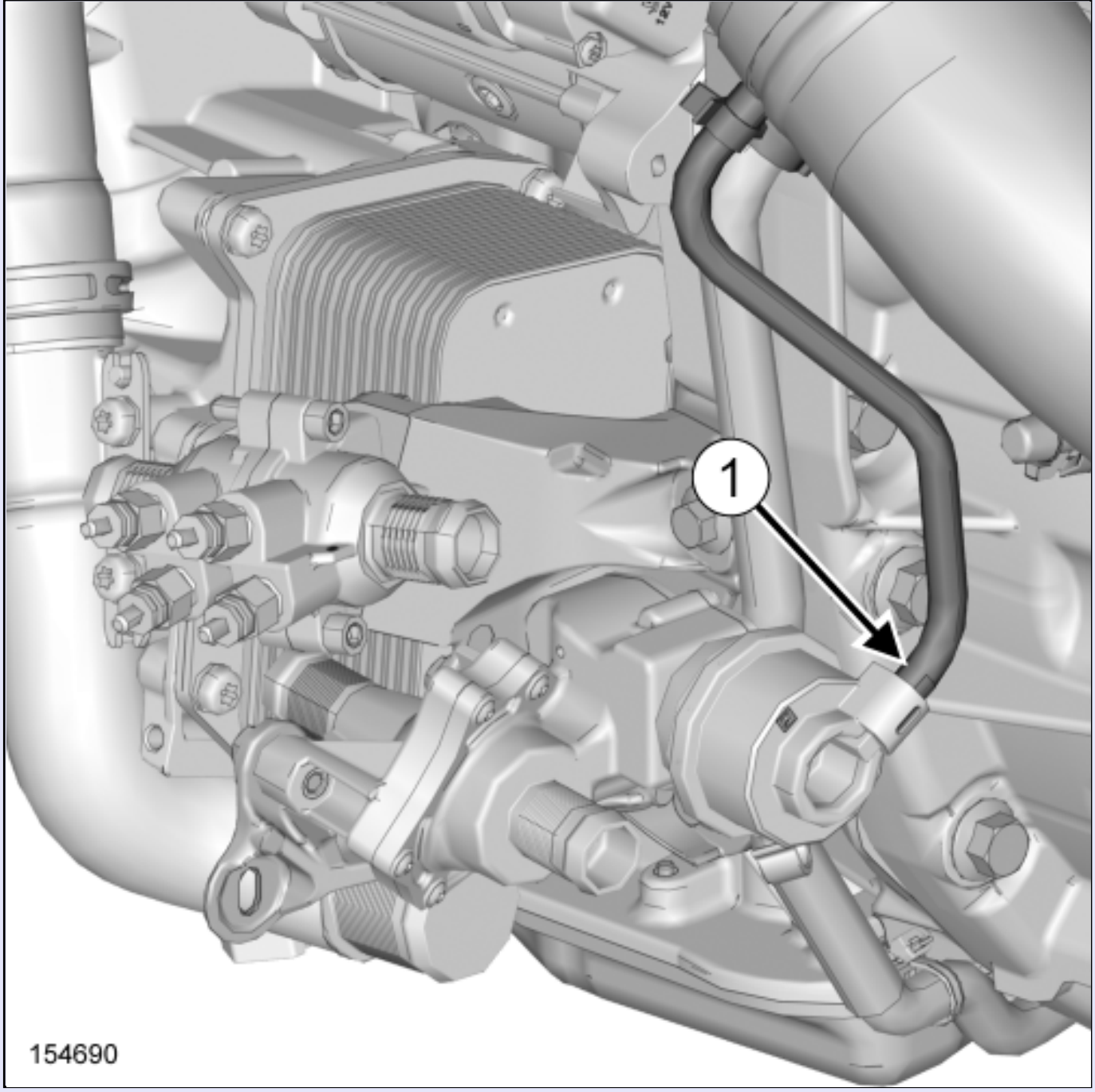
- Remove the thermoplunger unit wiring nuts.

- Move aside the thermoplunger unit wiring.

- Move aside using the toolRemote operation pliers for hose clips.(Mot. 1448) (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the thermoplunger unit inlet cooling pipe clip,
  - the thermoplunger unit outlet cooling pipe clip.

- Disconnect (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the thermoplunger unit inlet cooling pipe,
  - the thermoplunger unit outlet cooling pipe.

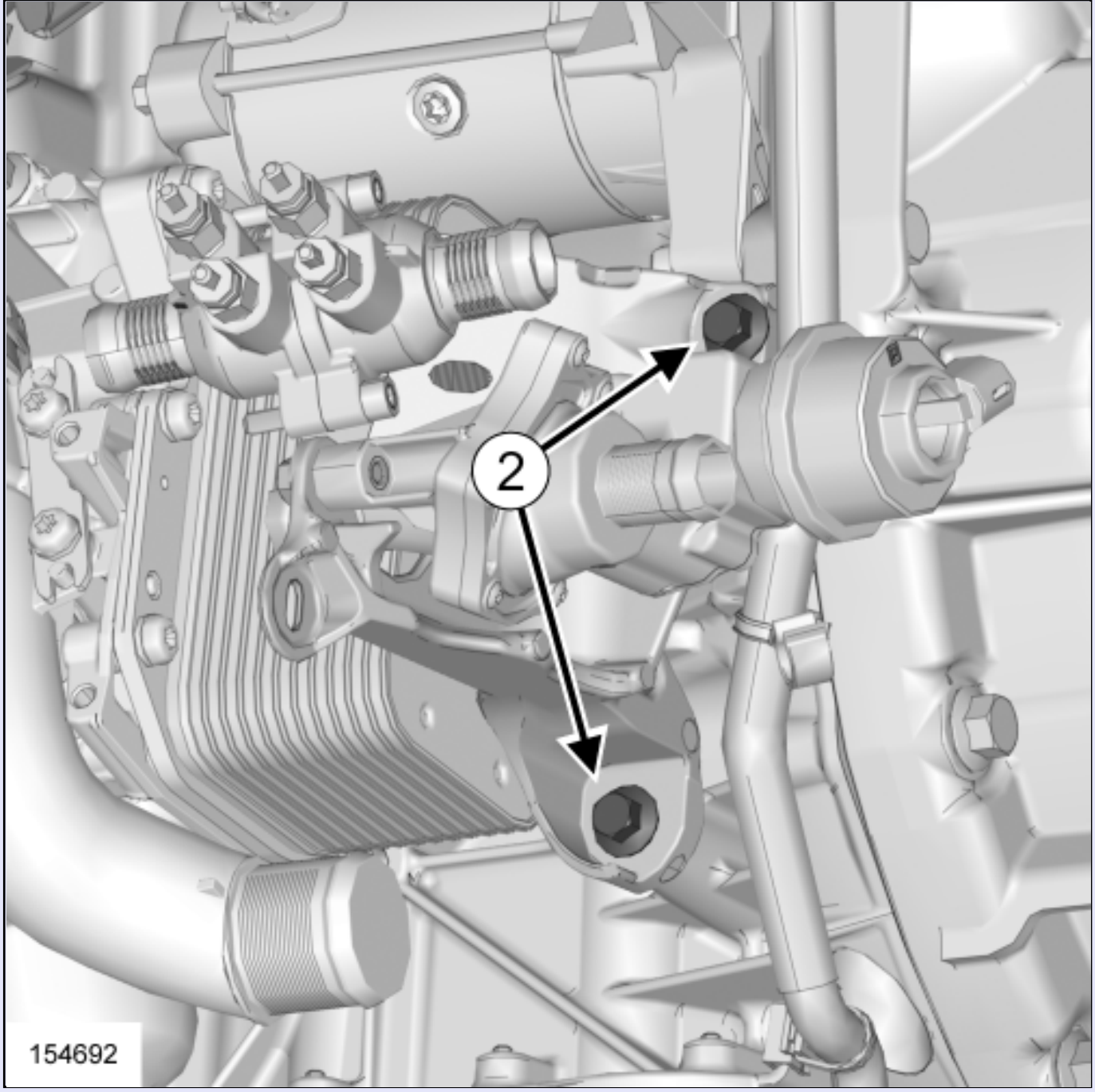
- Separate the following from the coolant circuit switchover valve using the toolRemote operation pliers for hose clips.(Mot. 1448) :
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe.



- Disconnect the following from the coolant circuit switchover valve:
  - the coolant circuit switchover valve inlet cooling pipe,
  - the coolant circuit switchover valve outlet cooling pipe,
  - the control pipe from the coolant circuit switchover valve(1) .

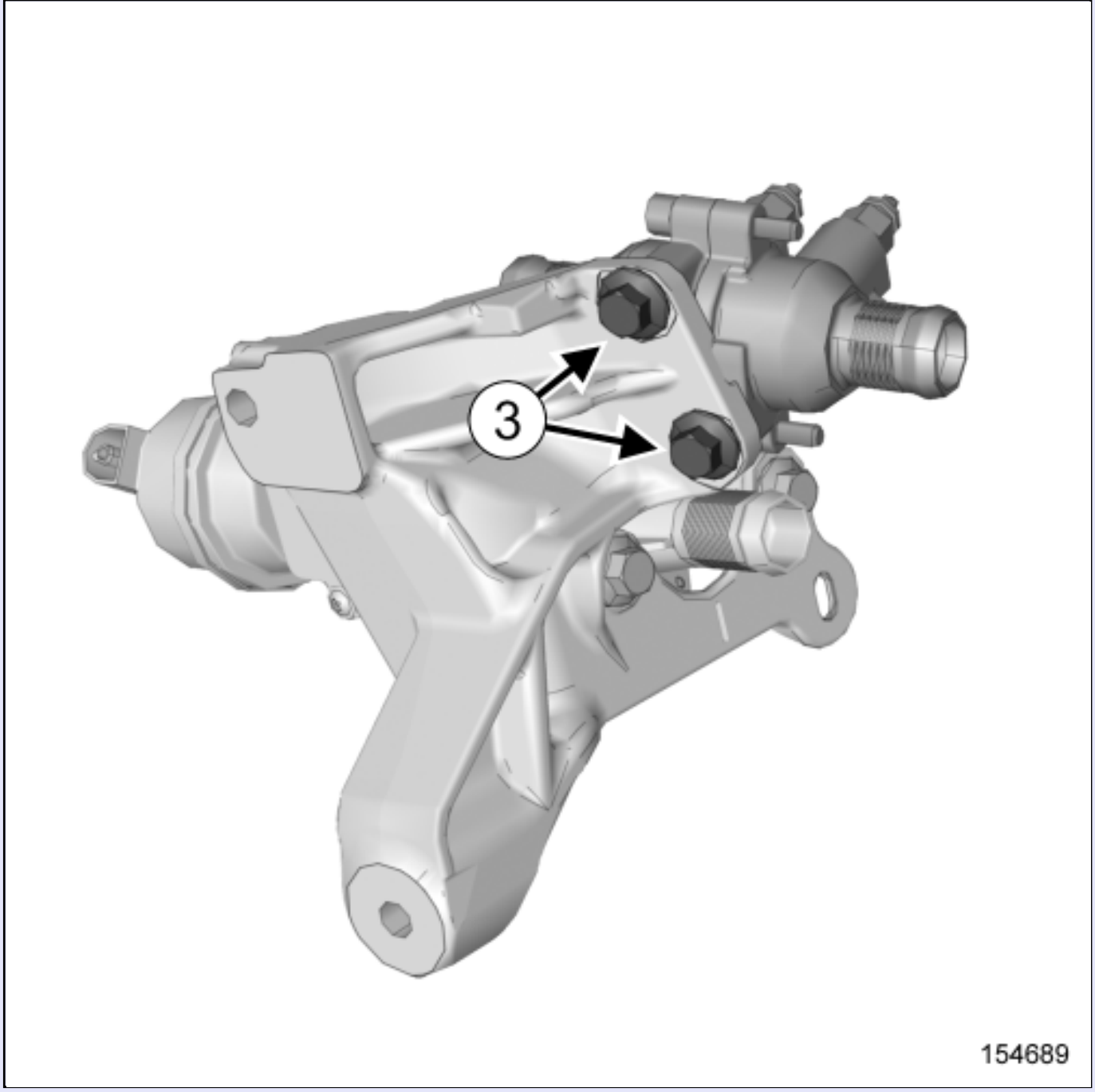
- Remove the retaining bolt of the hydraulic pipe.

- Move the hydraulic pipe.



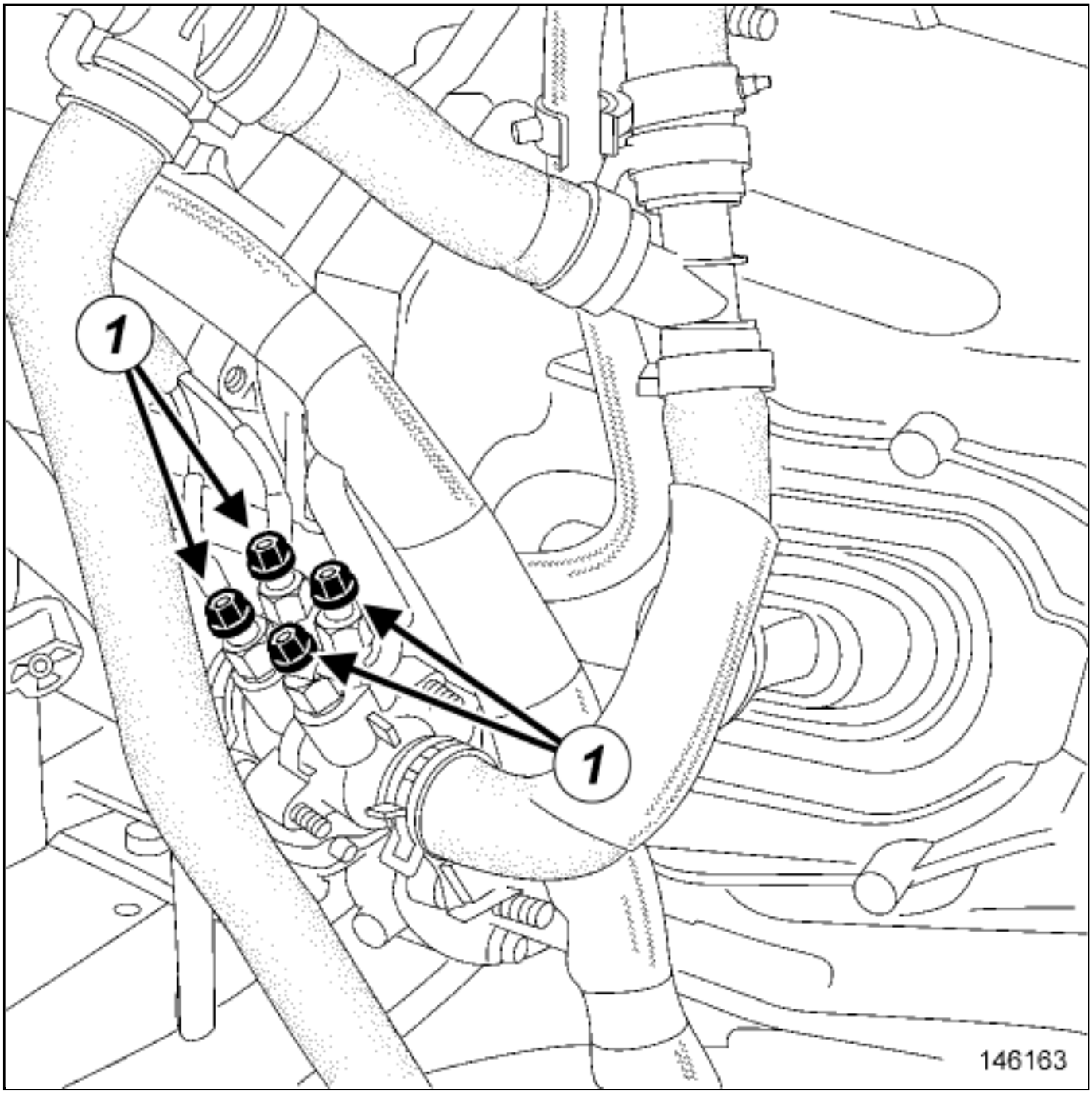
Remove:

- the "coolant circuit switchover valve - thermoplunger unit" assembly bolts(2) ,
- the "coolant circuit switchover valve - thermoplunger unit" assembly.

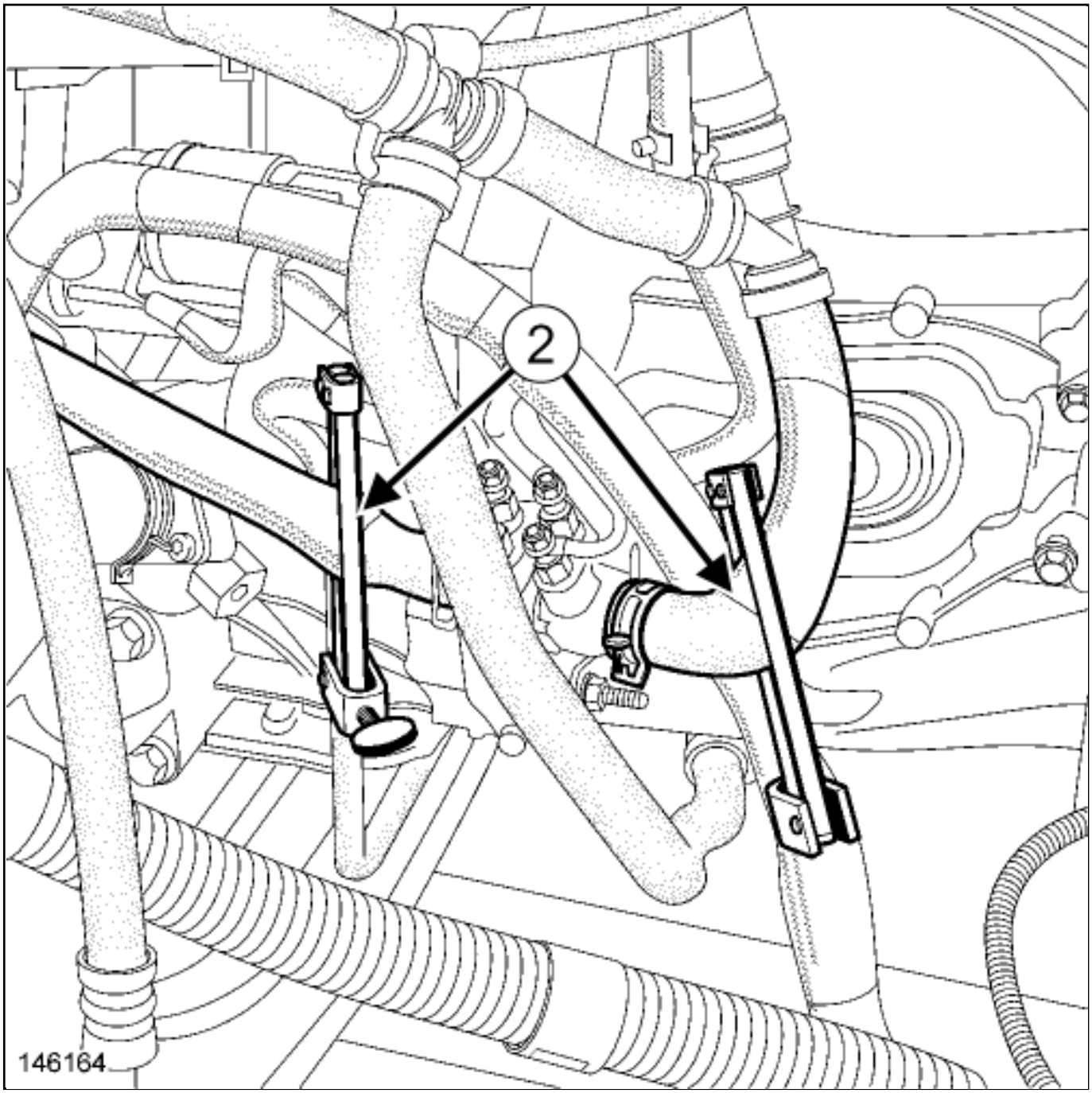


Remove:

- the thermoplunger unit bolts(3) ,
- the thermoplunger unit.



- Remove the nuts on the thermoplunger unit wiring.
- Move aside the thermoplunger unit wiring.



Fit toolsPipe clamps.(Ms. 583) on the thermoplunger unit cooling pipes(2) .

Move aside using the toolRemote operation pliers for hose clips.(Mot. 1448) (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

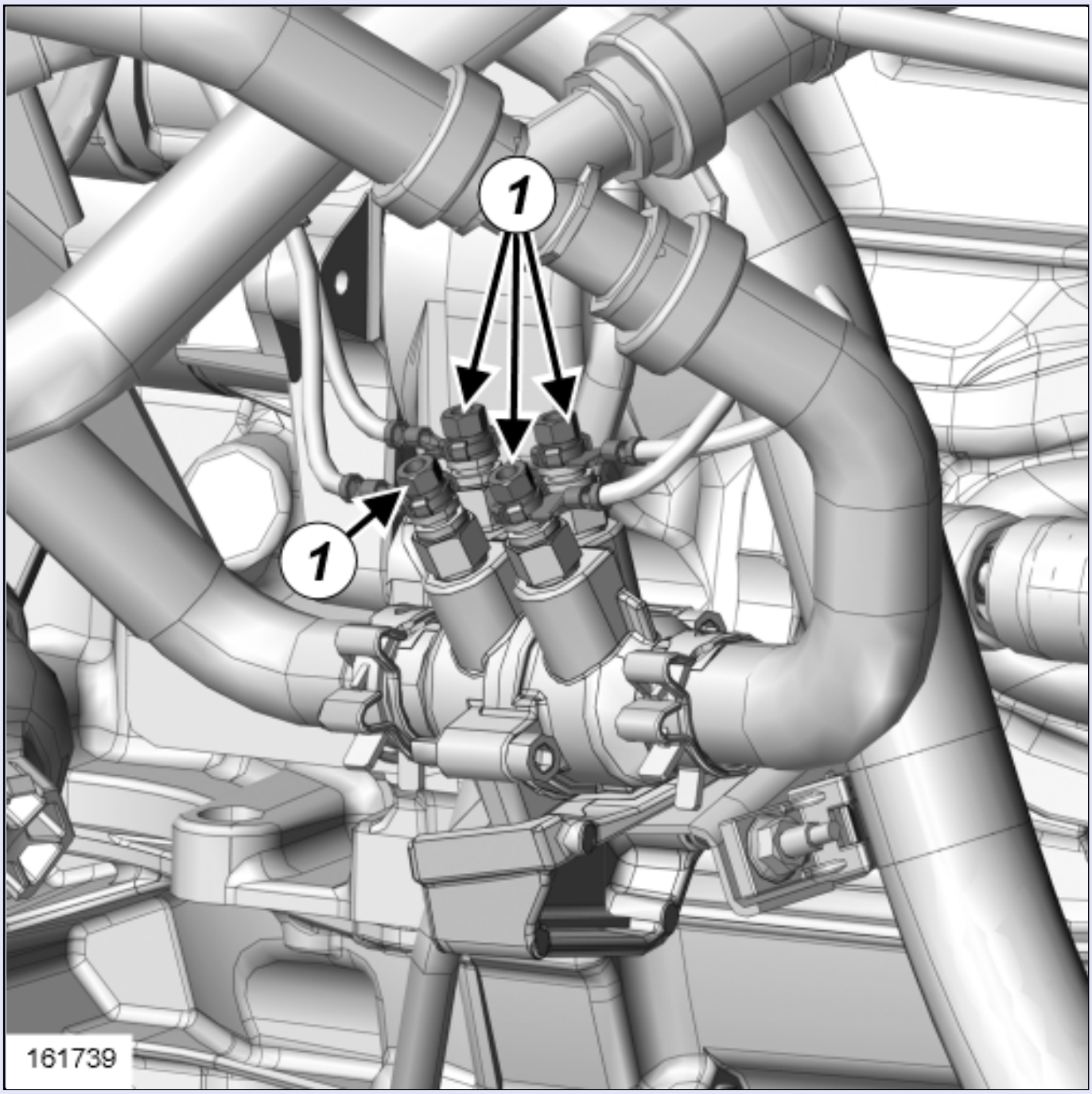
- the thermoplunger unit inlet cooling pipe clip,
- the thermoplunger unit outlet cooling pipe clip.

Disconnect (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

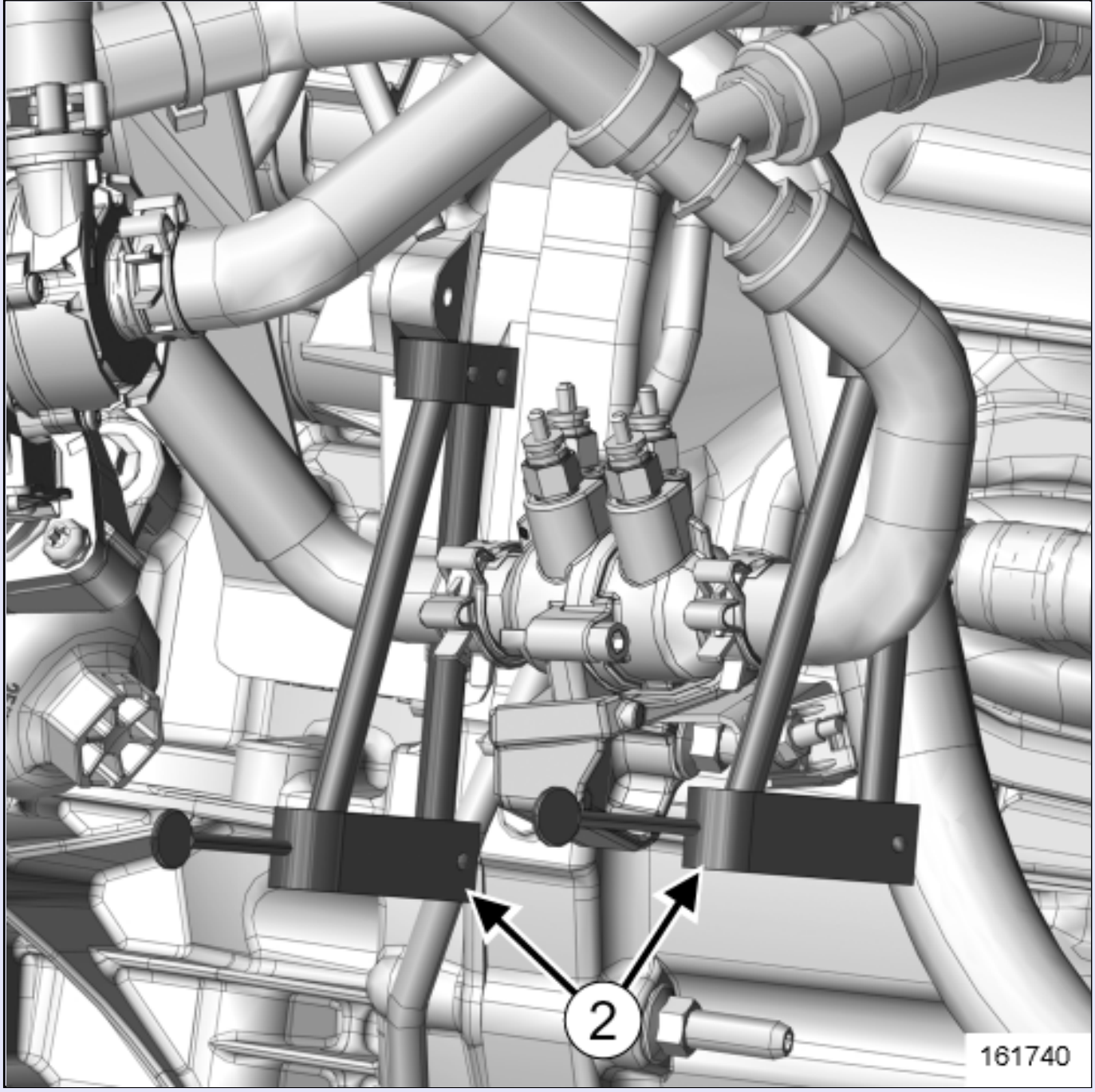
- the thermoplunger unit inlet cooling pipe,
- the thermoplunger unit outlet cooling pipe.

Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the thermoplunger unit bolts,
- the thermoplunger unit.



- Remove the thermoplunger unit wiring nuts(1) .
- Move aside the thermoplunger unit wiring.



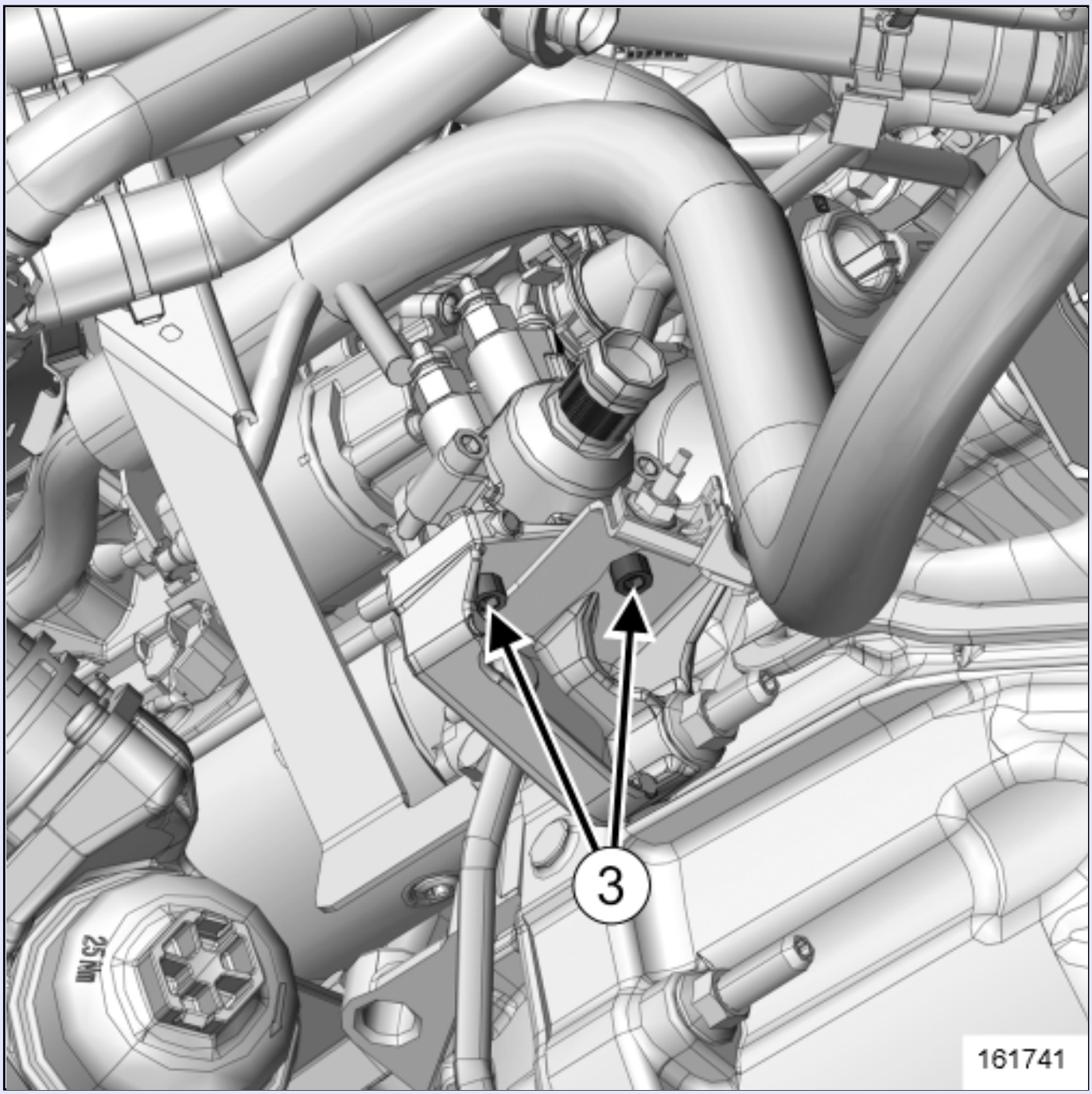
Fit toolsPipe clamps.(Ms. 583) on the thermoplunger unit cooling pipes(2) .

Move aside using the toolRemote operation pliers for hose clips.(Mot. 1448) (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the thermoplunger unit inlet cooling pipe clip,
- the thermoplunger unit outlet cooling pipe clip.

Disconnect (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the thermoplunger unit inlet cooling pipe,
- the thermoplunger unit outlet cooling pipe.



Remove:

- the thermoplunger unit bolts(3) ,

the thermoplunger unit.

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

Torque tighten the thermoplunger unit wiring nuts4 N.m.

2. FINAL OPERATION

M9T, 670 672 676 678 680 686 690 692 694 696 698 700 702(670 OR 672 OR 676 OR 678 OR 680 OR 686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 700 OR 702)

Perform the following operations:

- top up the coolant level,
- bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

M9T, 870(870)

Fill and bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

THERMOPLUNGER UNIT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 19A, Cooling, Coolant circuit assembly: Exploded view) .

IMPORTANT

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

WARNING

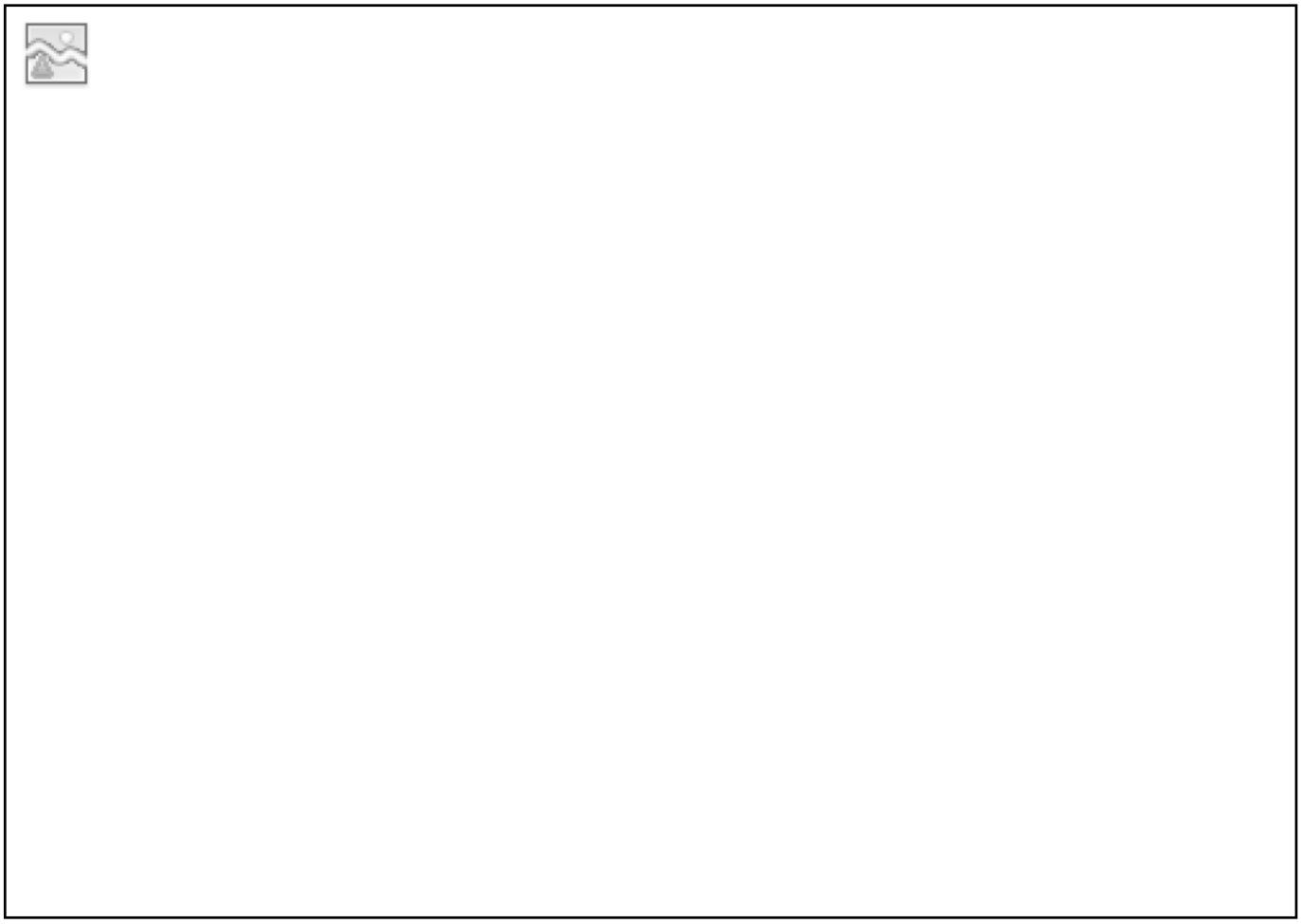
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

1. REMOVAL PREPARATION OPERATION

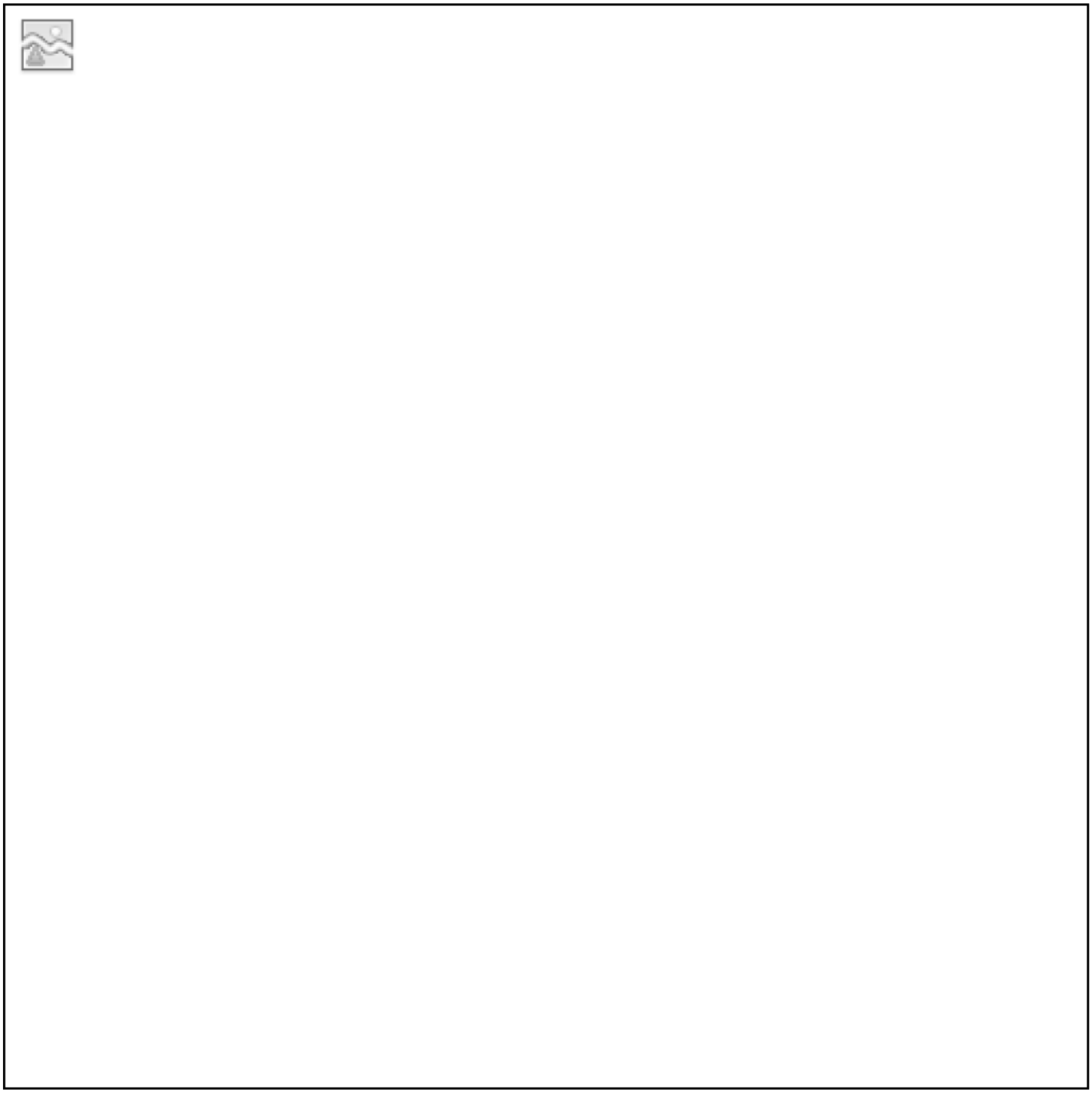
- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Remove the engine undertray.

2. REMOVAL OPERATION



- Remove the nuts(1) on the thermoplunger unit wiring.

- Move the thermoplunger unit wiring to one side.



- Fit toolsPipe clamps.(Ms. 583) on the cooling pipes of the thermoplunger unit(2) .

- Separate the following from the thermoplunger unit using the toolRemote operation pliers for hose clips.(Mot. 1448) (see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the clip of the thermoplunger unit inlet cooling pipe,
  - the clip of the thermoplunger unit outlet cooling pipe.

- Disconnect the following from the thermoplunger unit(see 19A, Cooling, Coolant circuit assembly: Exploded view) :
  - the thermoplunger unit inlet cooling pipe,
  - the thermoplunger unit outlet cooling pipe.

- Remove (see 19A, Cooling, Coolant circuit assembly: Exploded view) :

- the thermoplunger unit bolts,
- the thermoplunger unit.

REFITTING

- Proceed in the reverse order to removal.

- Torque tighten the thermoplunger unit wiring nuts4 N.m.

- Perform the following operations:
  - top up the coolant level,
  - bleed the cooling system(see 19A, Cooling, Cooling system: Draining - Refilling) .

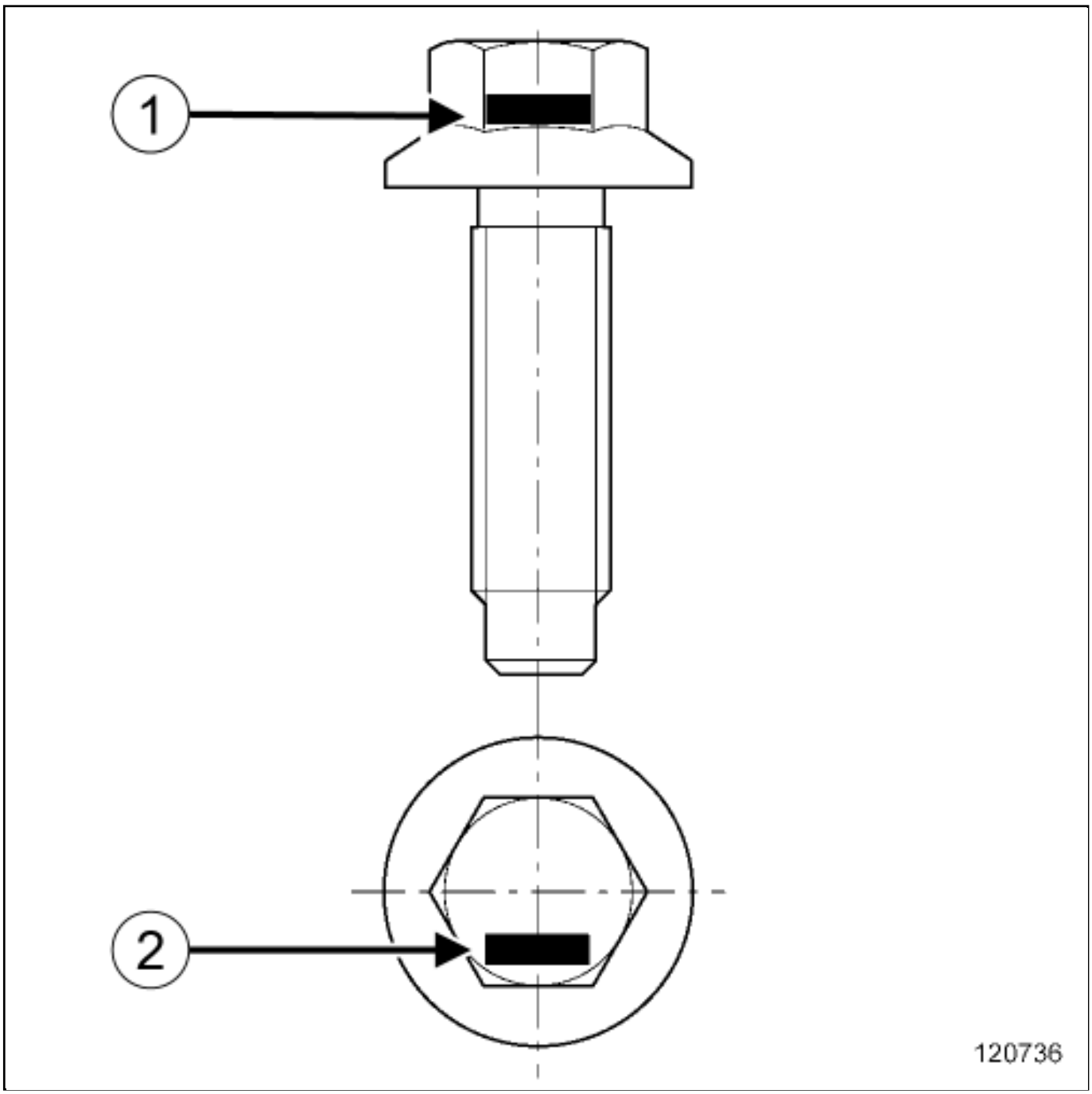
TIGHTENINGTORQUES:GENERALINFORMATION

1. TABLE OF STANDARD TORQUES

Fastenings		Standard tightening torque (N.m)
Diameter	Property class	
M6	8.8	10
M8	8.8	25
M10	8.8	50
M10	10.9	62
M12	10.9	105
M14	10.9	180
M16	10.9	280
M18	10.9	400

SPECIAL NOTES ON ELECTRICAL EARTHS

Fastenings Diameter	Standard tightening torque (N.m)
M6	8
M8	21
M10	44

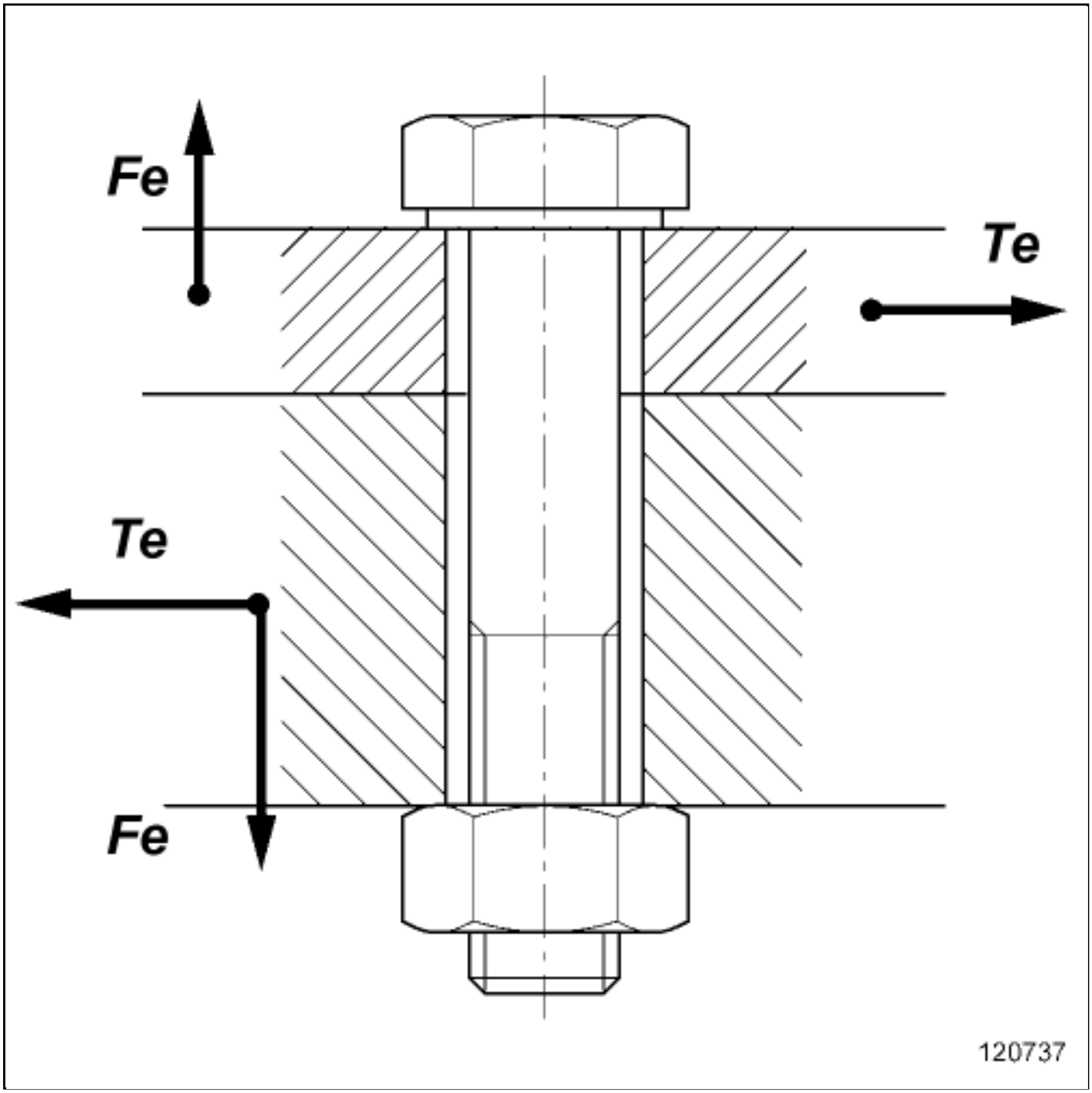


The property class is indicated on the bolt(1) or (2) .

2. FUNCTION OF A BOLTED ASSEMBLY

The bolting system connects parts of an assembly to prevent their separation or sliding when submitted to exterior forces.

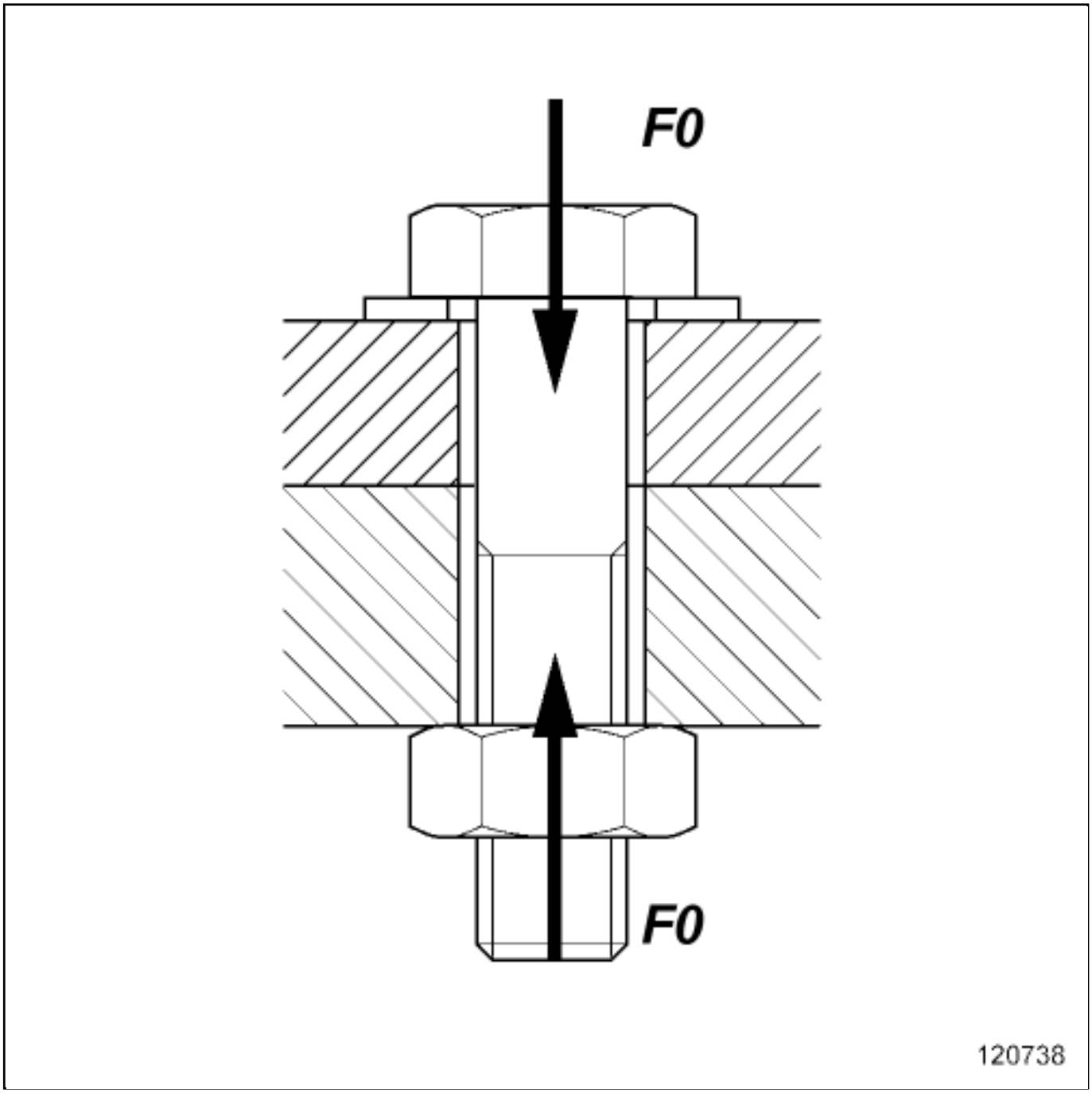
EXTERIOR FORCES



- The assembly is submitted to forces that are:
  - static and / or dynamic,
  - simple (e.g. simple traction),

- multiple (traction + flexion + torsion).

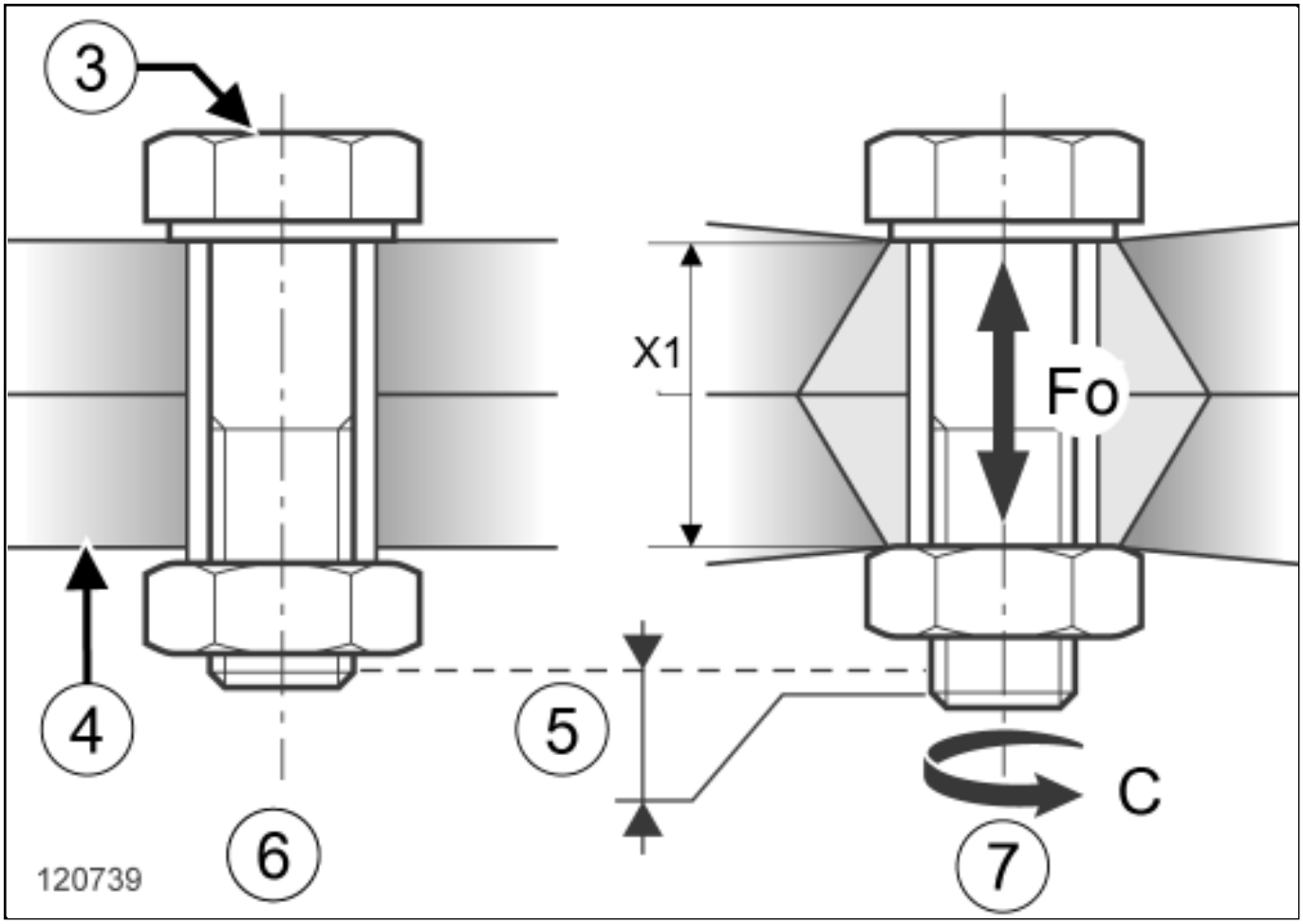
CREATING TENSION (OR PRELOAD) F0



The assembly is held together by the tension created in the bolt when it is tightened.

A reliable assembly is only possible if the correct tension is used:

- insufficient tension: risk of loosening,
- too much tension: risk of deformation of the parts to be assembled, or shearing of the bolt.



(3) Bolt

(4) Assembled components

(5) Extension of the bolt

(6) Non-tightened assembly

(7) Tightened assembly

(X1) Compression of the assembly

(Fo) Sensor

(C) Tightening torque

Customer complaints resulting from incorrect tightening may be, following assembly, a safety issue (fire, loss of control of the vehicle etc.), an immobilising fault or a noise.

3. TIGHTENING PROCEDURES

The two controlled tightening procedures adapted to automotive repairs because of their low cost and

simple operation are torque tightening and angle tightening (also called torque and angle).

1- TORQUE TIGHTENING

This is the most commonly used procedure. Is consists of tightening until a given resisting torque is reached, known as tightening torque.

The tightening torque is distributed in a large part as friction torque (under the head and in the thread) and in a small part as useful torque (to create the tension).

This practise spreads the tension significantly due to the variation in the friction coefficients from one assembly to another and the uncertainty of the tightening procedures and methods.

2- ANGLE TIGHTENING

The principle consists of putting the parts of the assembly in contact using a mating torque (approximately 25 to 30% of the final torque) then to tighten to a determined angle.

This method, which is not dependent on the friction of the tightened assembly, gives more precise results than torque tightening.

4. OBSERVING THE TIGHTENING TORQUES AND ANGLES

Bolted assemblies whose tightening torques and angles are explicitly specified in the removal / refitting procedures must be observed using the appropriate tools (torque wrench, angle measuring disc). Failure to observe this can lead to safety risks, immobilising faults or unwanted noises.

For other bolted assemblies, non-measured tightening (using standard spanners) is acceptable. Nevertheless, the corresponding tightening torque is indicated in the table of standard tightening torques.

5. RECOMMENDED TIGHTENING TOOLS

For measured tightening, the repairer must have available torque wrenches to tighten from 4 to 400 N.m as well as an angle measuring disc.

The torque wrenches used may be click type or electronic.

For example:

- 1 torque wrench 4 - 40 N.m,
- 1 torque wrench 20 - 100 N.m,
- 1 torque wrench 80 - 400 N.m,
- 1 angle measurement disc.

The torque wrenches used must comply with the ISO 6789standard. They must be calibrated regularly following the supplier's recommendations using the appropriate procedures.

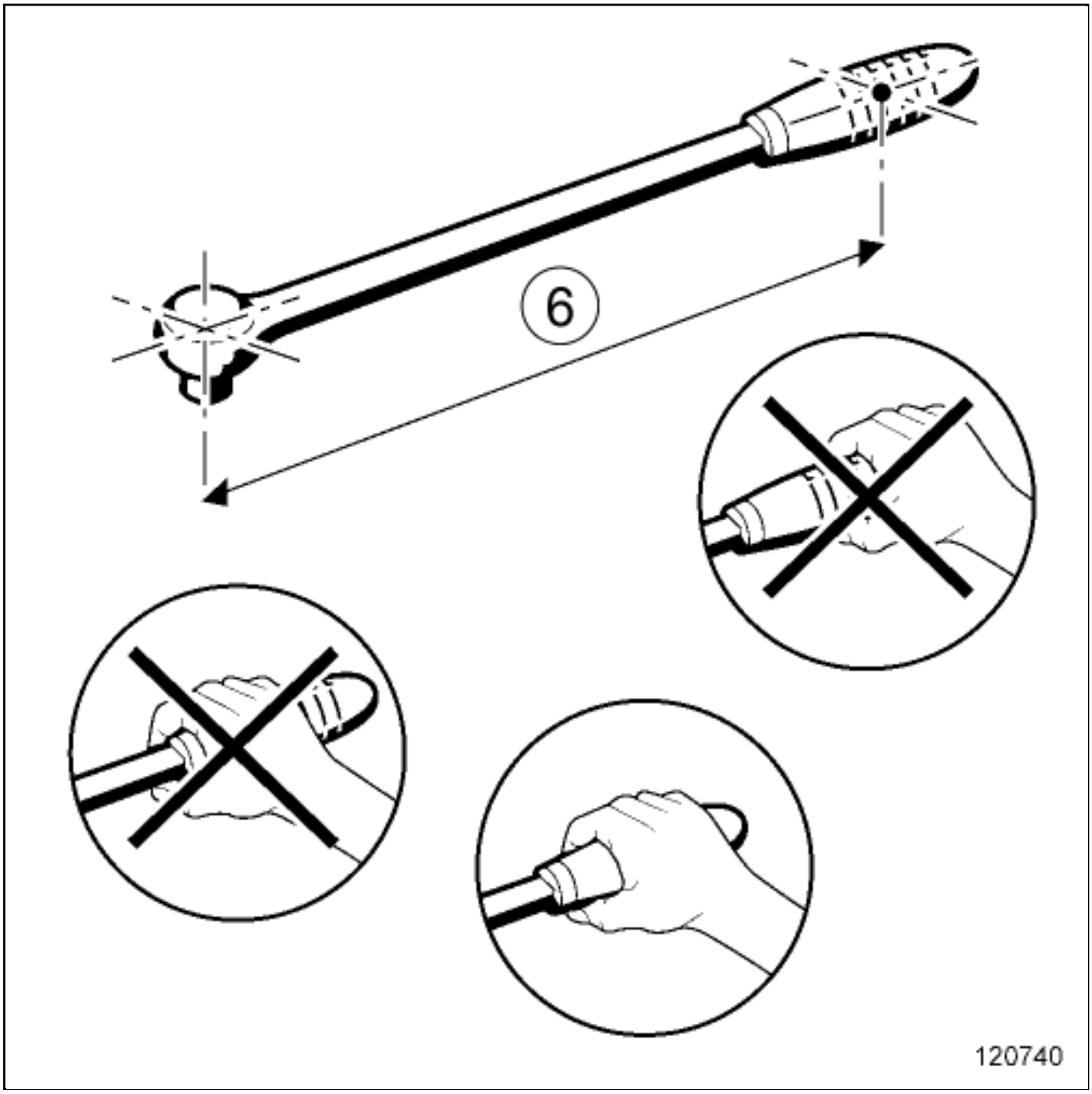
6. PRECAUTIONS WHEN USING A CLICK TYPE TORQUE WRENCH

A click type torque wrench is a manual tightening tool. The trigger mechanism causes a break or disengagement of the wrench past a force threshold.

This threshold depends on the setting of the wrench but also depends on the way the wrench is handled.

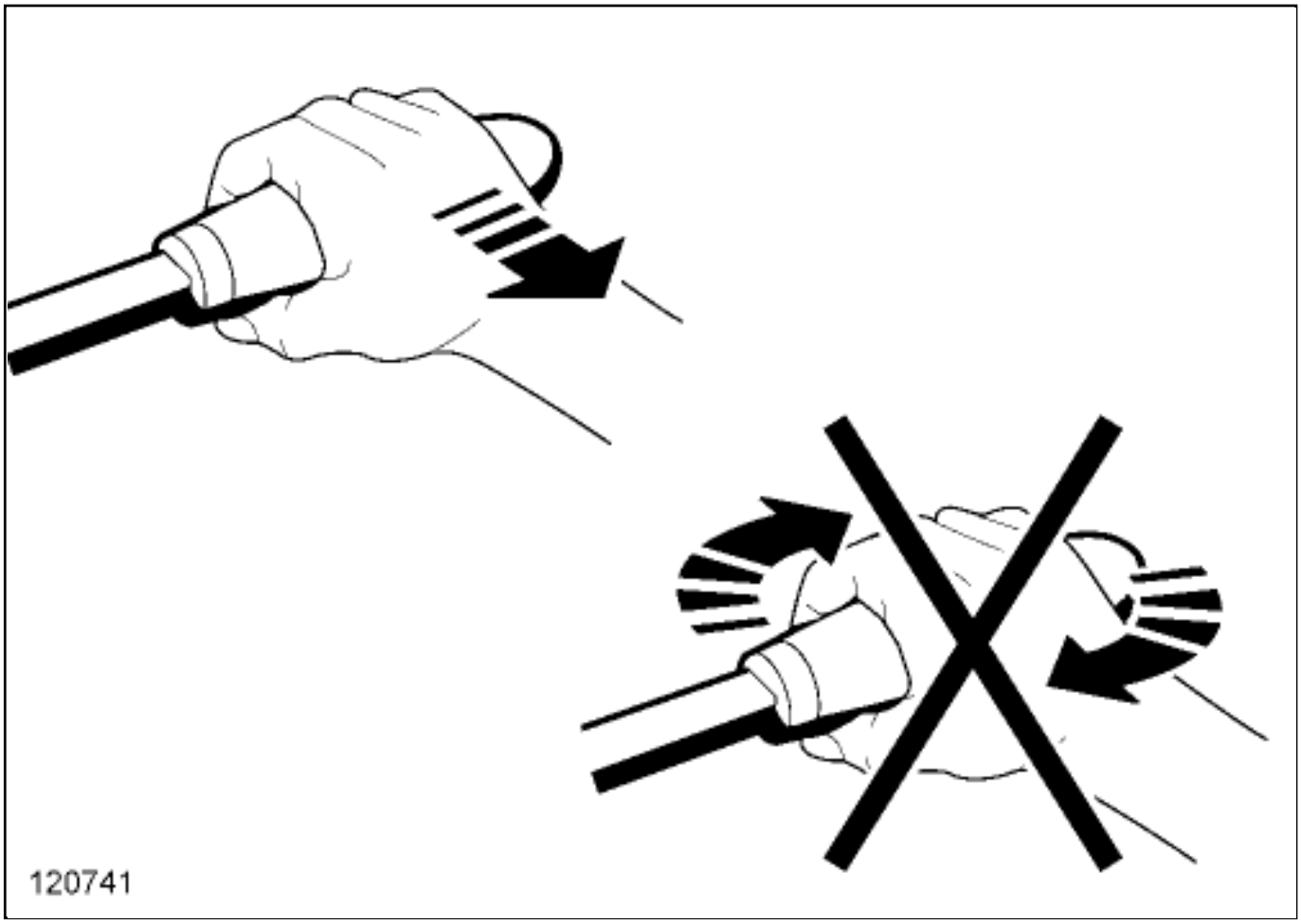
When used following best practises, the accuracy of the tightness when using a click type torque wrench is ± 15%.

The instructions to be observed are:



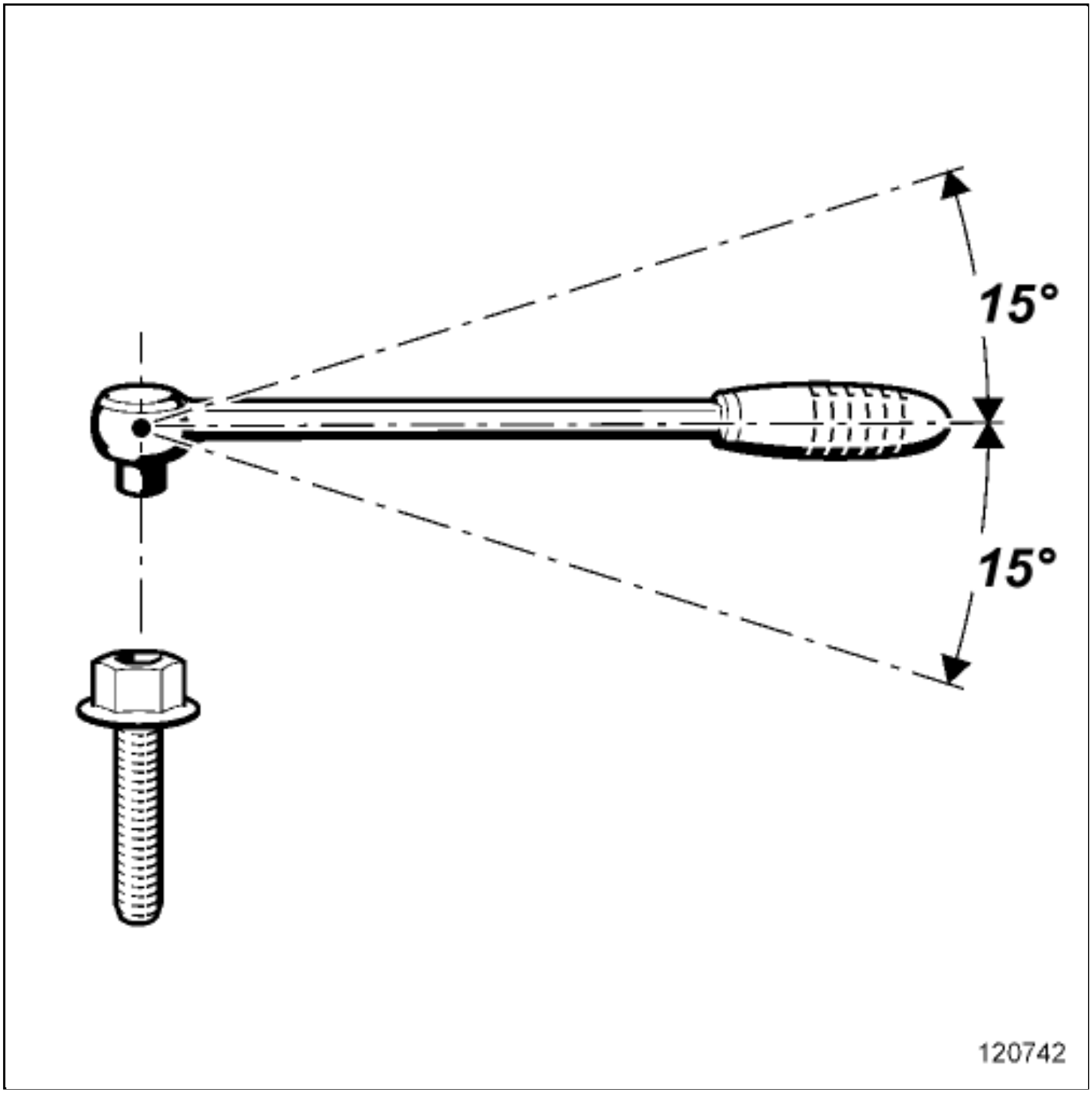
(6) lever arm

- Place the hand in the centre of the handle. An incorrectly positioned hand on the handle will alter the trigger threshold.



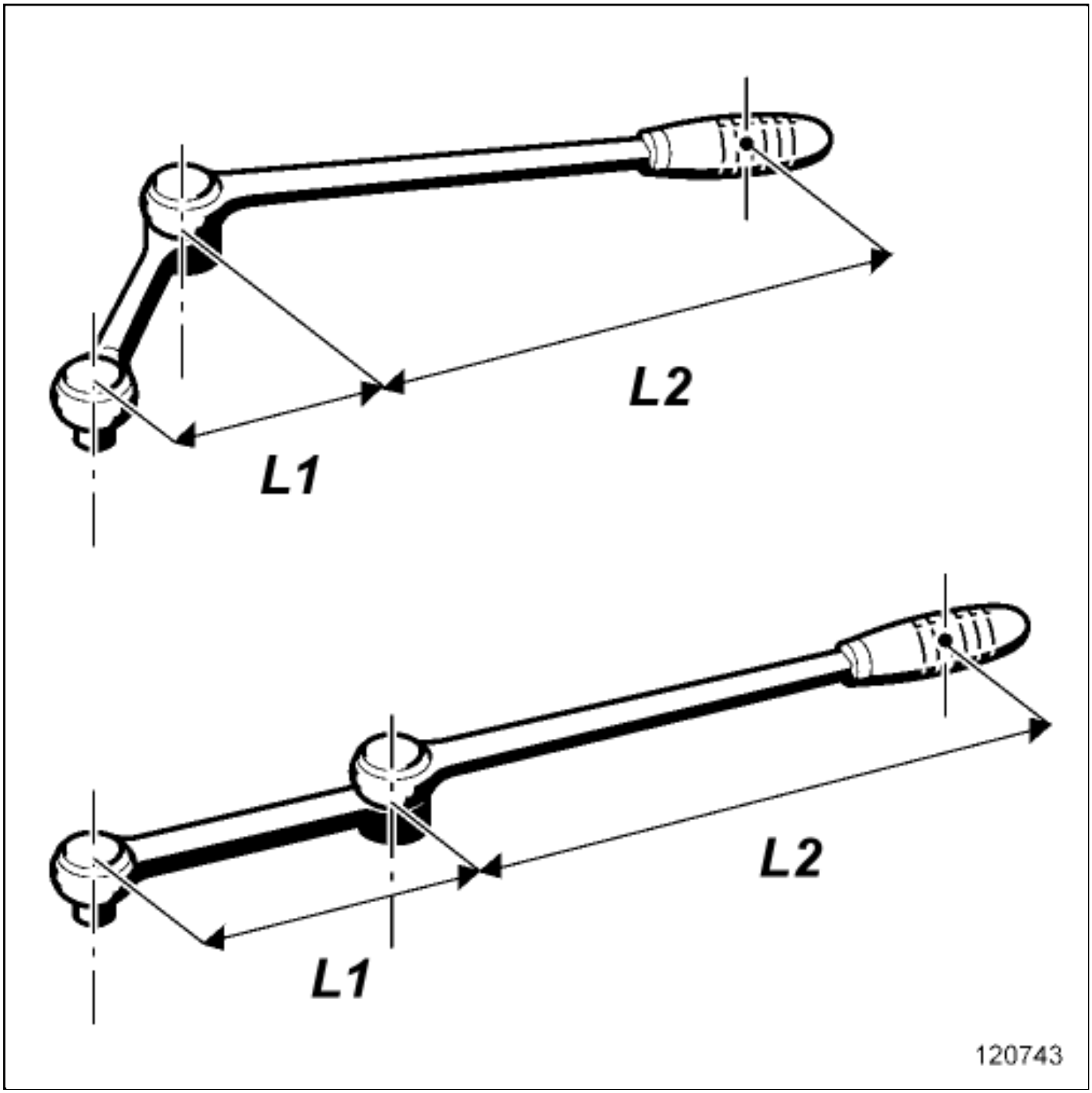
- Pull the wrench gently and steadily, without applying any torsion. Excessive tightening speed as well as jerkiness are major causes of overtightening. Any torsion applied to the wrench will alter the trigger threshold.

- Hold the wrench on the bolt using a minimum of effort. Any effort applied to the wrench head will alter the trigger threshold.



- Apply the tightening effort perpendicular to the mounting observing a tolerance of ± 15˚ relative to the perpendicularity. If the wrench is not perpendicular to the mounting axis, this will result in insufficient tightening.

- Stop tightening as soon as the wrench is triggered. Continued tightening after the wrench is triggered will lead to overtightening.



If the length of the wrench is modified (extending the handle, adapting an end piece) it is essential to recalibrate the wrench to its new configuration.

Modifying the length of the wrench will modify its trigger threshold.

- Use the formula: C1 = CO x L2 / (L1+L2)
  - CO: torque to apply,
  - C1: adjustment torque to be displayed on the wrench,
  - L1: length of the extension,
  - L2: length of the wrench.

Unless there are special instructions in the repair method, a universal joint (CARDAN joint type) should be used for measured tightening. Using a universal joint will result in a difference between the set torque

of the wrench and the actual torque applied.

Before storing the wrench, loosen the adjustment spring completely. A wrench stored with a spring under tension will lose its tightening accuracy.

7. PRECAUTIONS WHEN USING ELECTRONIC TORQUE WRENCHES

An electronic torque wrench is a manual tightening tool. The tightening torque and, depending on the model, the angle is read directly.

When used following best practises, the accuracy of the tightness when using an electronic torque wrench is ± 5%.

Electronic torque wrenches are not affected by the position of the operator's hand.

It is advisable to handle the wrench with care and to stop tightening when the required value is displayed on the wrench.

TIMING ASSEMBLY: EXPLODED VIEW

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions Vehicle: Precautions for the repair

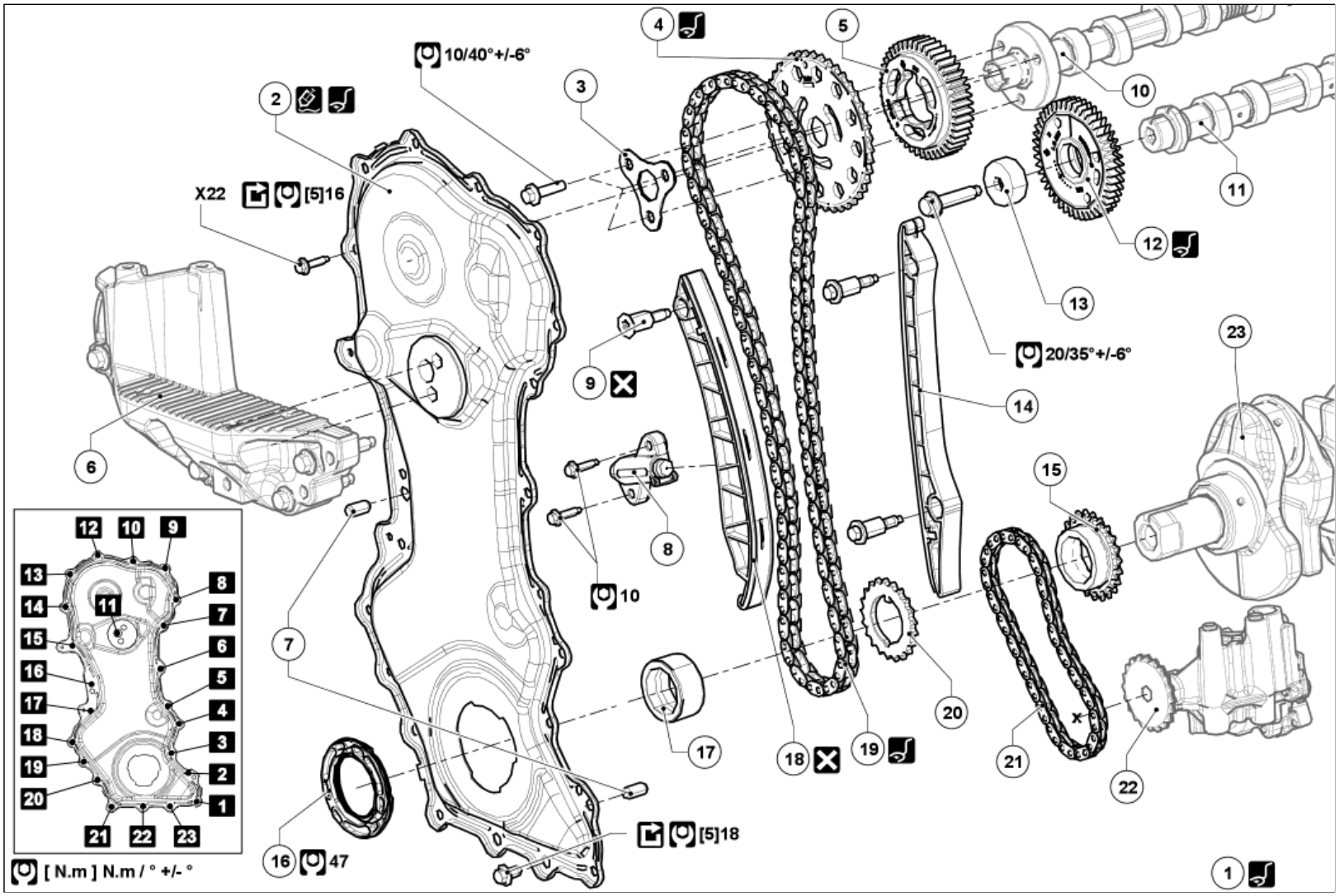


Illustration key: Description Key.

Mark	Description	Information
1	Timing assembly	(MOT1431)
2	Timing cover	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
3	Timing chain sprocket washer on camshaft side	
4	Timing chain sprocket on camshaft side	
5	Exhaust camshaft timing sprocket	Timing sprocket: Removal - Refitting
7	Timing cover centring pin	
8	Timing hydraulic tensioner	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
9	Timing chain guide bolt	
10	Exhaust camshaft	(see 11A, Top and front of engine, Cylinder head assembly: Exploded view)
11	Inlet camshaft	
12	Inlet camshaft timing sprocket	Timing sprocket: Removal - Refitting
13	Inlet camshaft timing sprocket spacer	
14	Timing chain guide	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
15	Oil pump drive sprocket	
16	Crankshaft seal on timing end	Crankshaft seal on timing end: Removal - Refitting
17	Timing chain sprocket spacer on crankshaft side	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
18	Chain tensioner guide	
19	Timing chain	
20	Timing chain sprocket on crankshaft side	
21	Oil pump chain	
22	Oil pump	
23	Crankshaft	Cylinder block assembly: Exploded view

TIMING ASSEMBLY: EXPLODED VIEW

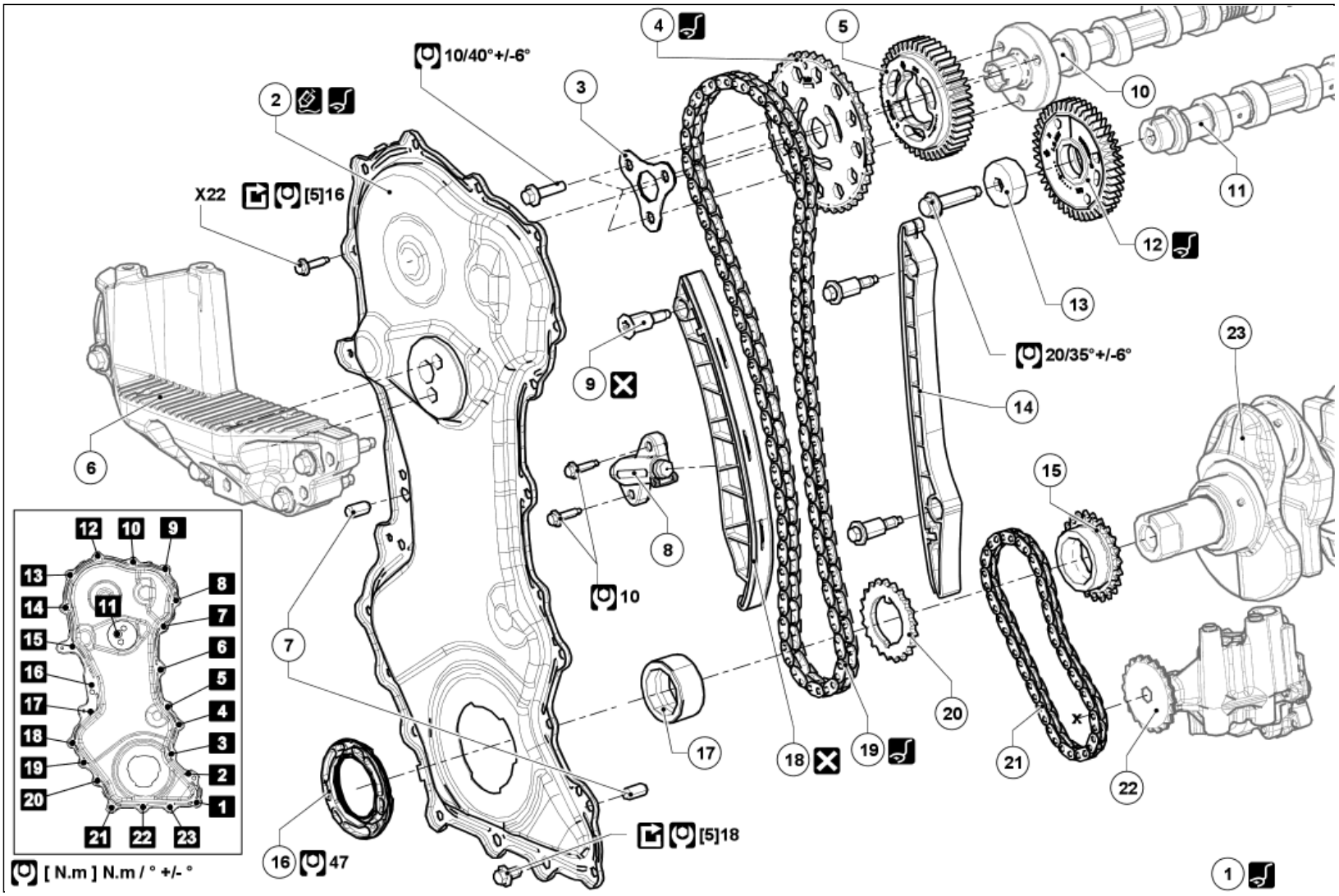


Illustration key: Description Key.

Mark	Description	Information
1	Timing assembly	(MOT1431)
2	Timing cover	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
3	Timing chain sprocket washer on camshaft side	
4	Timing chain sprocket on camshaft side	
5	Exhaust camshaft timing sprocket	Timing sprocket: Removal - Refitting
6	Cylinder head suspended mounting	(see 19D, Engine mounting, Engine-gearbox unit support assembly: Exploded view)
7	Timing cover centring pin	
8	Timing hydraulic tensioner	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
9	Timing chain guide bolt	
10	Exhaust camshaft	(see 11A, Top and front of engine, Cylinder head assembly: Exploded view)
11	Inlet camshaft	
12	Inlet camshaft timing sprocket	Timing sprocket: Removal - Refitting
13	Inlet camshaft timing sprocket spacer	
14	Timing chain guide	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
15	Oil pump drive sprocket	
16	Crankshaft seal on timing end	(see 10A, Engine and cylinder block assembly, Crankshaft seal on timing end: Removal - Refitting)
17	Timing chain sprocket spacer on crankshaft side	(see 11A, Top and front of engine, Timing chain: Removal - Refitting)
18	Chain tensioner guide	
19	Timing chain	
20	Timing chain sprocket on crankshaft side	
21	Oil pump chain	
22	Oil pump	Engine oil circuit assembly: Exploded view
23	Crankshaft	Cylinder block assembly: Exploded view

TIMING CHAIN: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Top dead centre locating pin.	Mot. 1766
Camshaft adjusting tool	Mot. 1769

Equipment required
refrigerant charging station

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

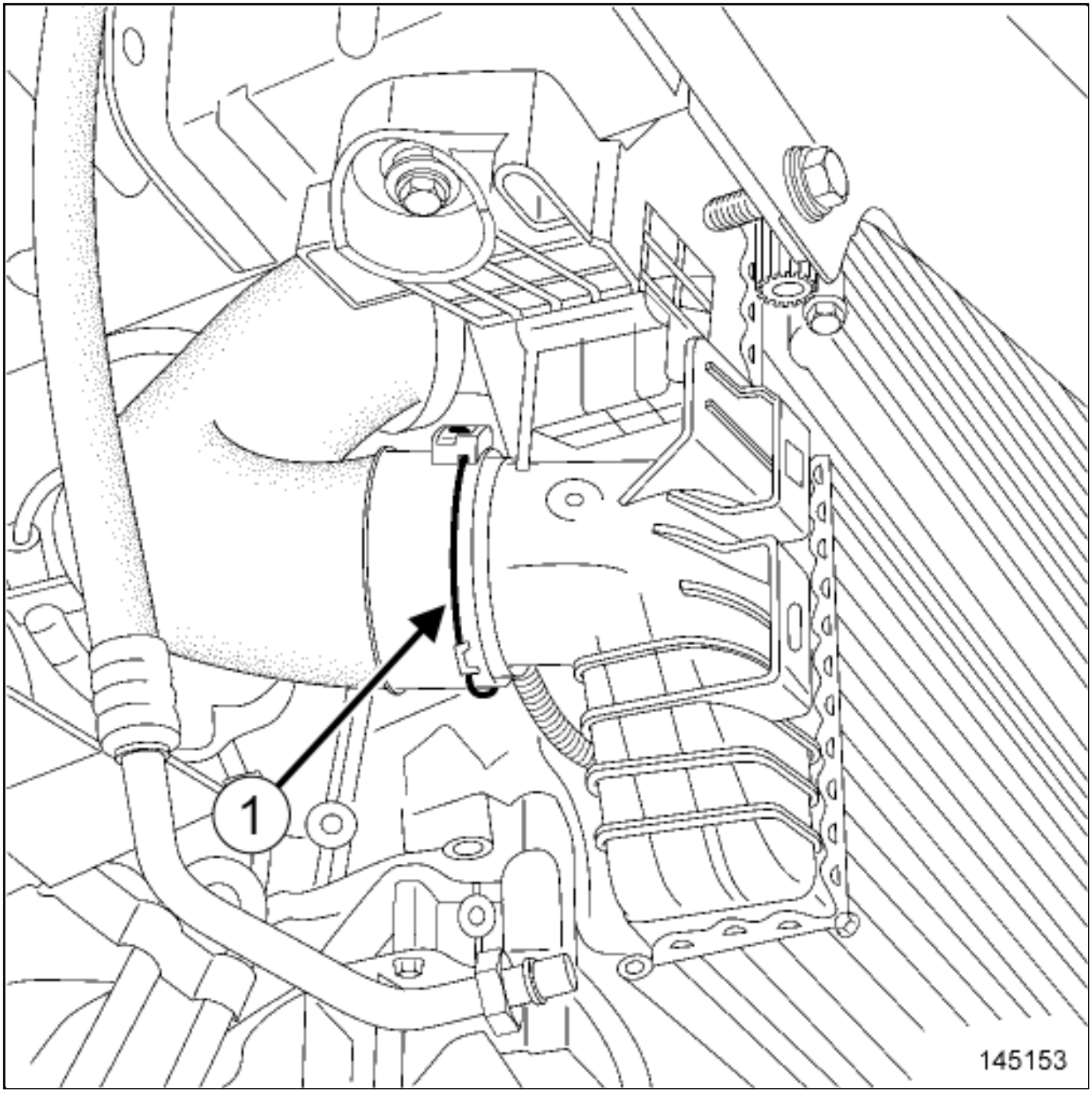
Location and specifications (tightening torques, parts always to be replaced, etc.)**(see 11A, Top and front of engine, Timing assembly: Exploded view)** .

REMOVAL

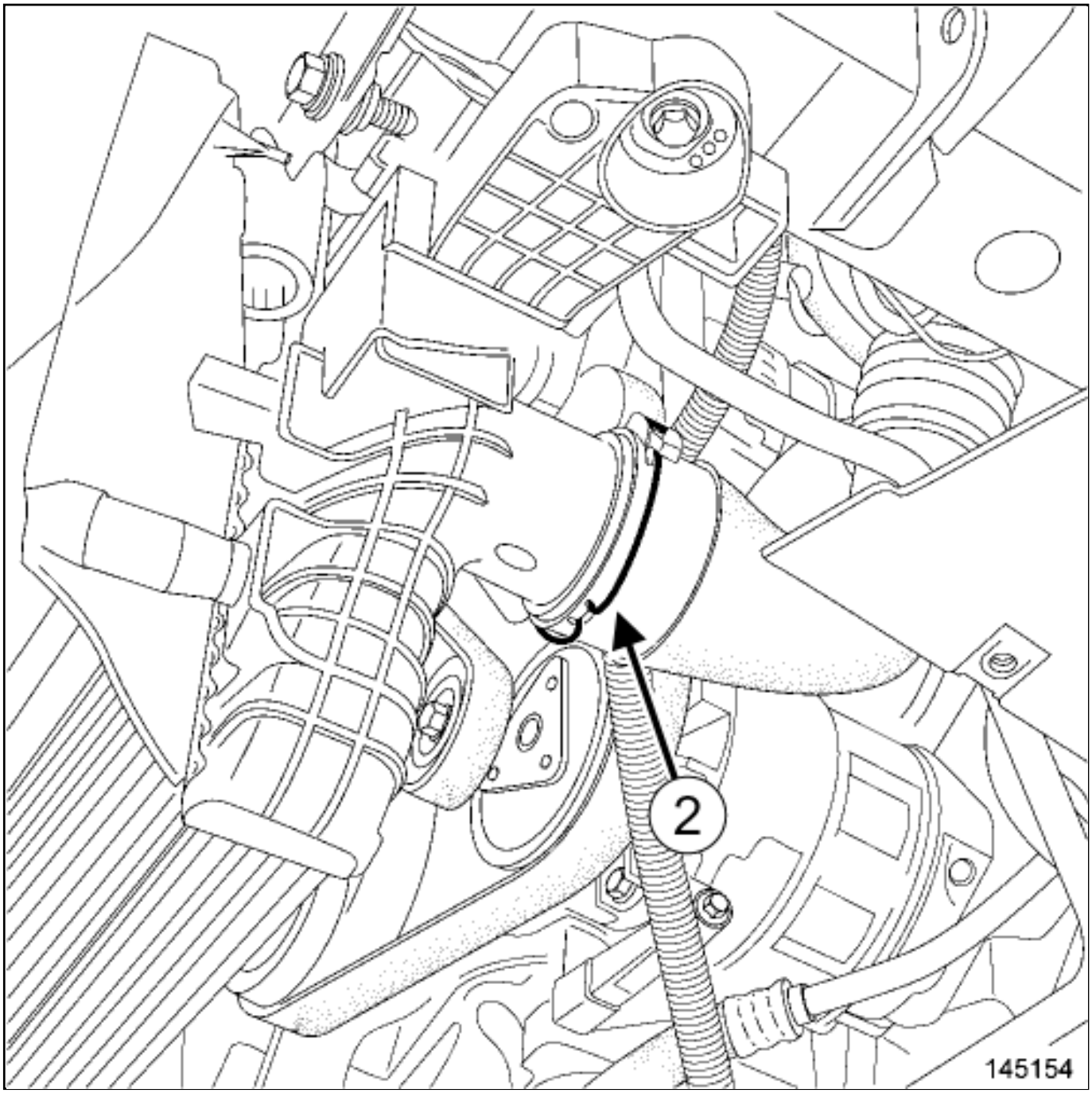
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Remove the engine undertray.
- Drain:
  - the engine**Engine oil: Draining - Refilling** ,
  - the cooling system**Cooling system: Draining - Refilling** .
- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection),
  - the front end panel**Front end panel: Removal - Refitting** (42A, Upper front structure),

- the engine cooling fan propeller(see Cylinder block assembly: Exploded view),
- the accessories belt(see 11A, Top and front of engine, Engine accessories assembly: Exploded view),
- the crankshaft accessories pulley(see 11A, Top and front of engine, Engine accessories assembly: Exploded view),
- the coolant pump pulley(see Cylinder block assembly: Exploded view).

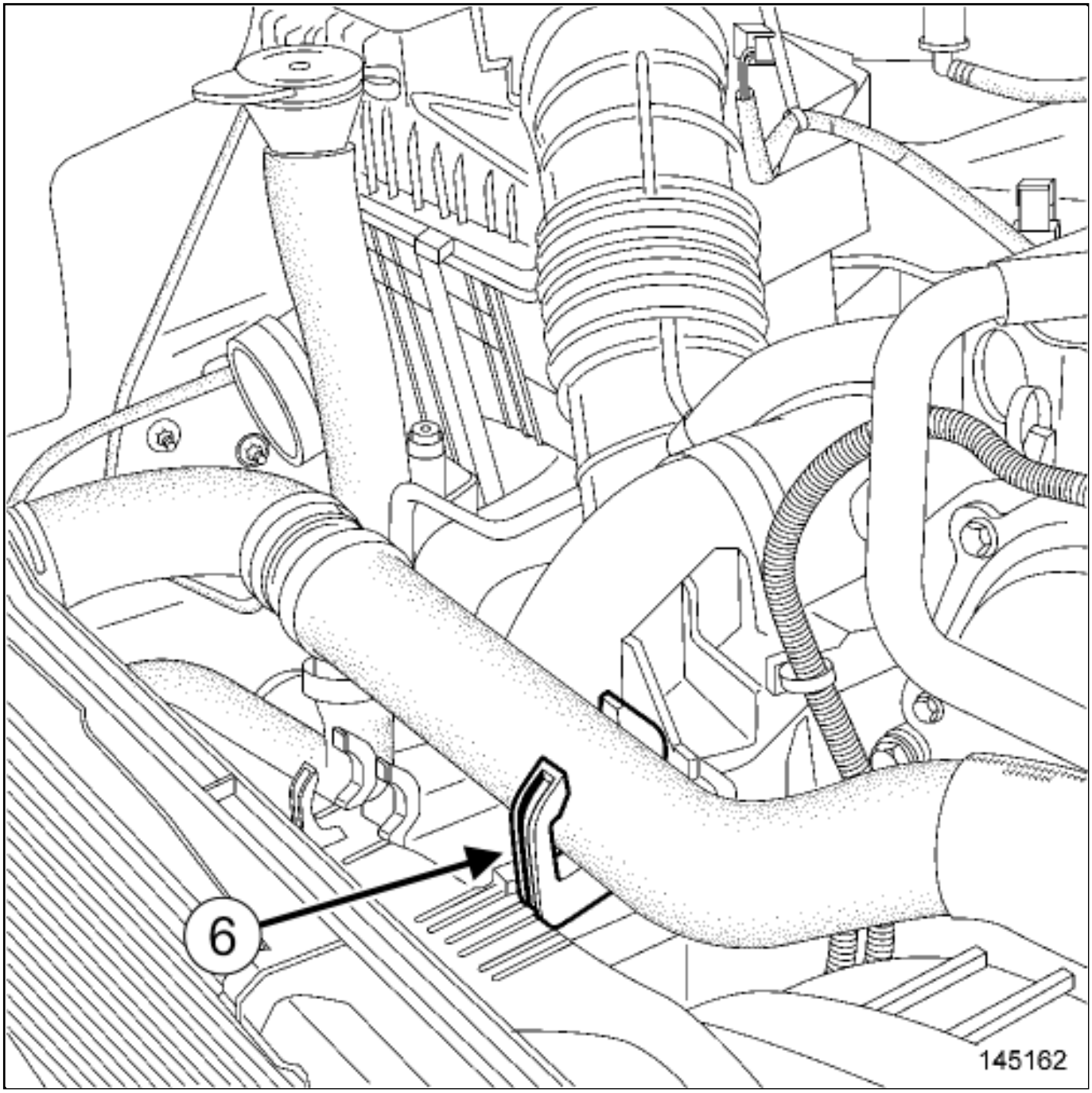


- Remove the clip(1) for the intercooler air inlet pipe.
- Disconnect the intercooler air inlet pipe.



- Move aside the clip(2) for the intercooler air outlet pipe.
- Disconnect the intercooler air outlet pipe.
- Using the toolRemote operation pliers for hose clips.(**Mot. 1448**), separate the following from the cooling radiator**Coolant circuit assembly: Exploded view** :
  - the cooling radiator outlet pipe clip,
  - the cooling radiator inlet pipe clip,
  - the cooling radiator degassing pipe clip.
- Disconnect the following from the cooling radiator**Coolant circuit assembly: Exploded view** :
  - the cooling radiator outlet pipe,

- the cooling radiator inlet pipe,
- the cooling radiator degassing pipe.



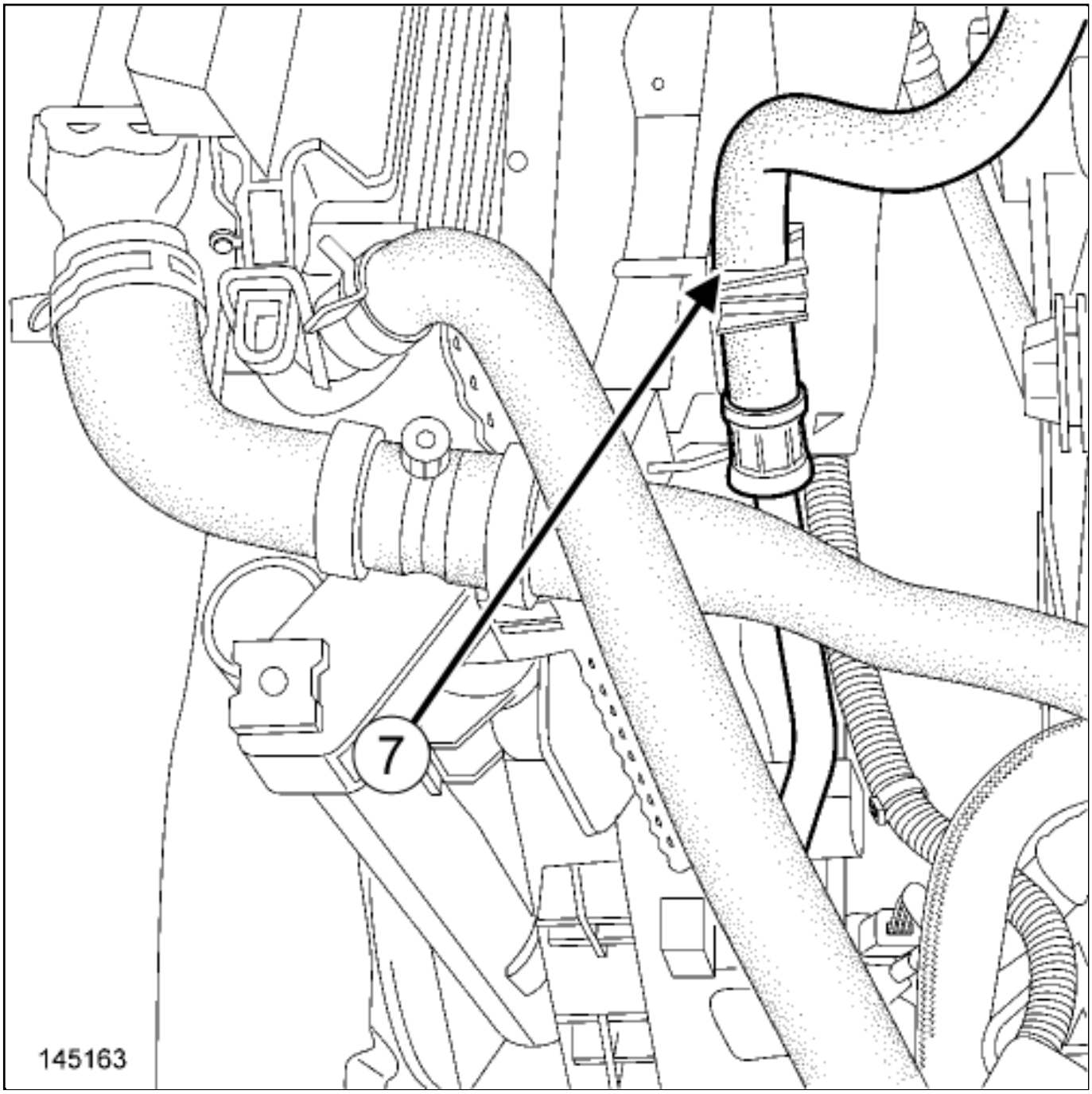
Unclip the cooling pipe(6) from the engine cooling fan assembly.

Using the toolRemote operation pliers for hose clips.(Mot. 1448), separate the following from the additional radiatorCoolant circuit assembly: Exploded view :

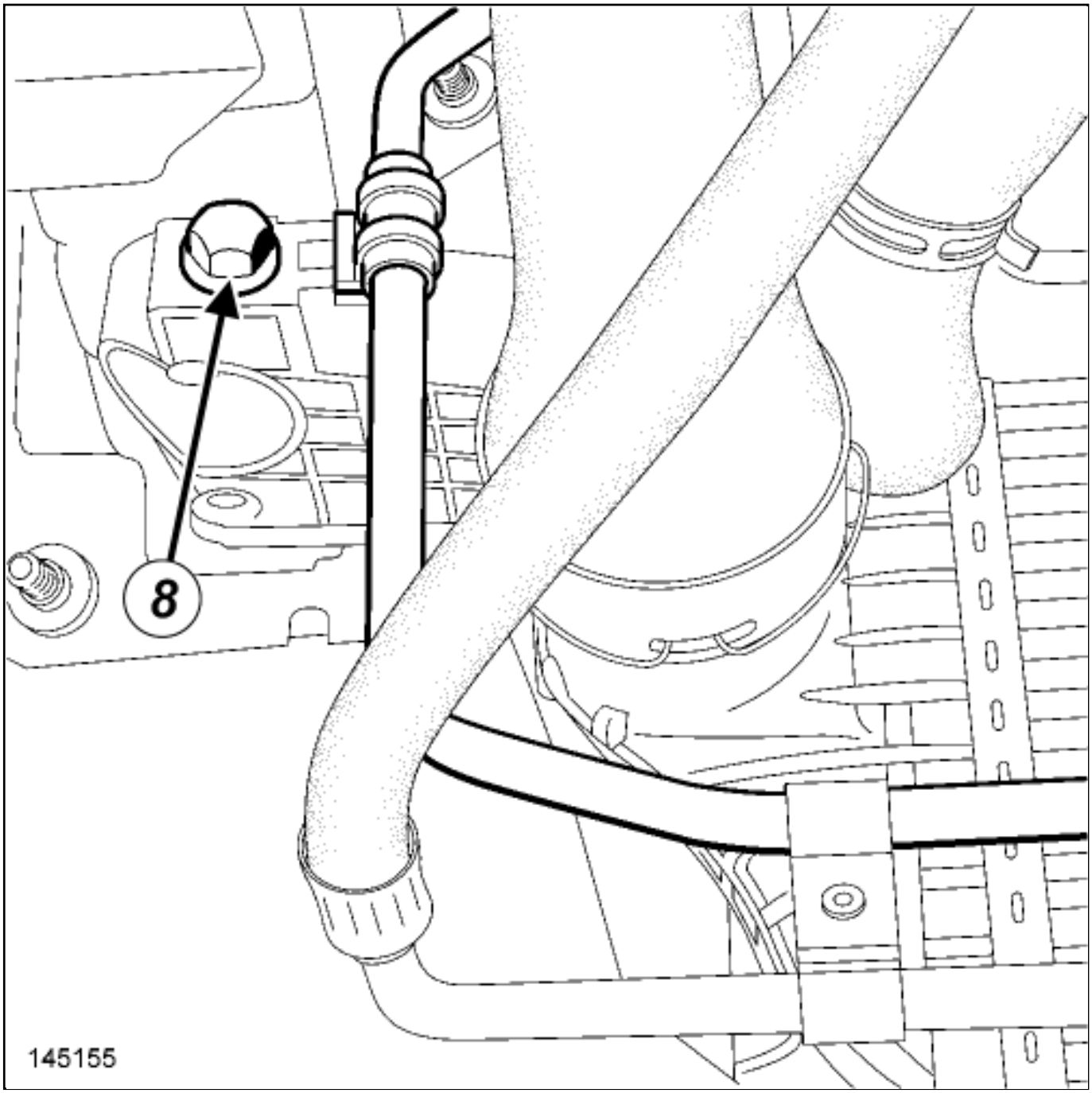
- the clip of the pipe between the cooling radiator and the additional cooling radiator,
- the additional cooling radiator outlet pipe clip.

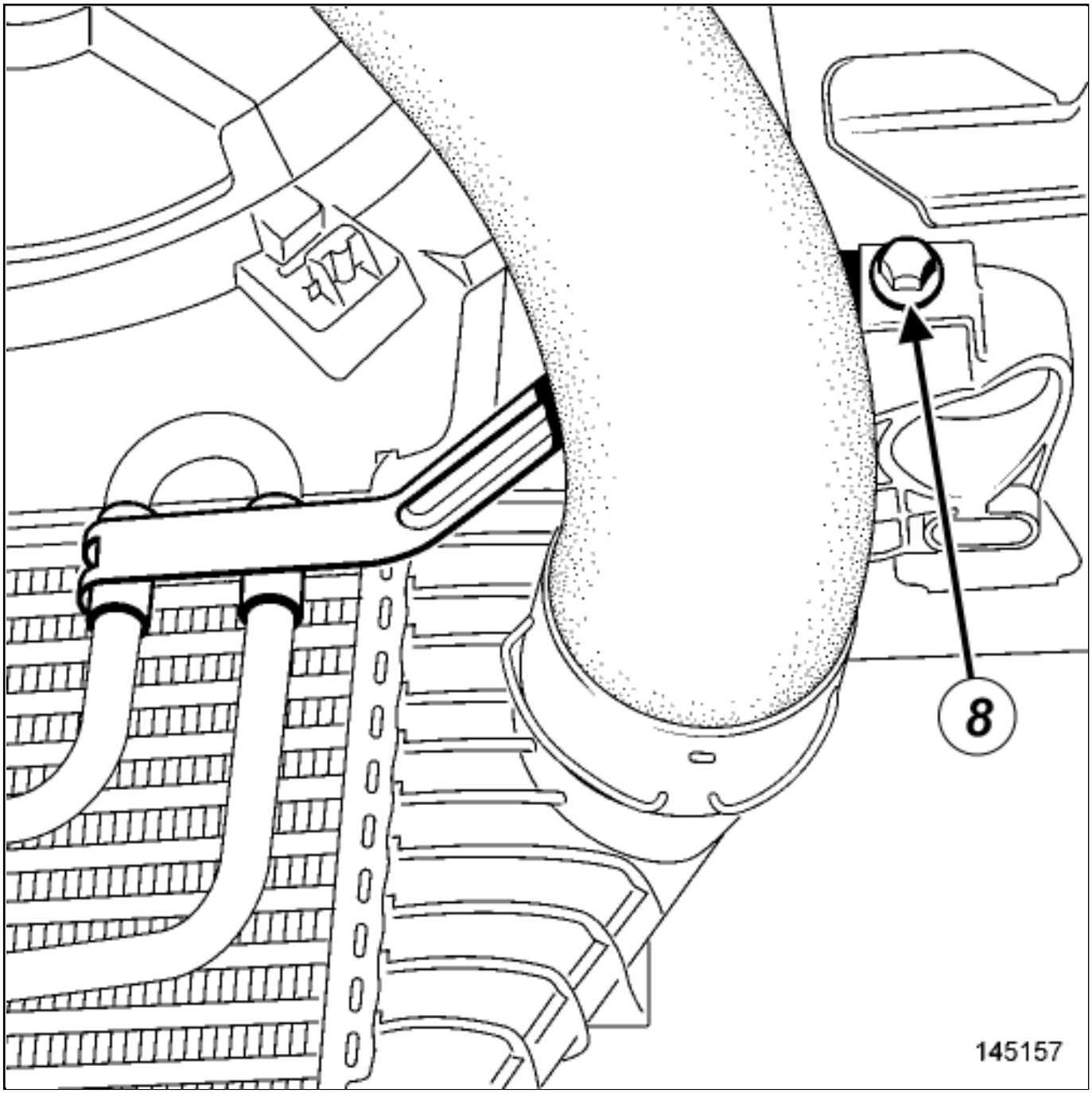
Disconnect the following from the additional cooling radiatorCoolant circuit assembly: Exploded view :

- the pipe between the cooling radiator and the additional cooling radiator,
- the additional cooling radiator outlet pipe.

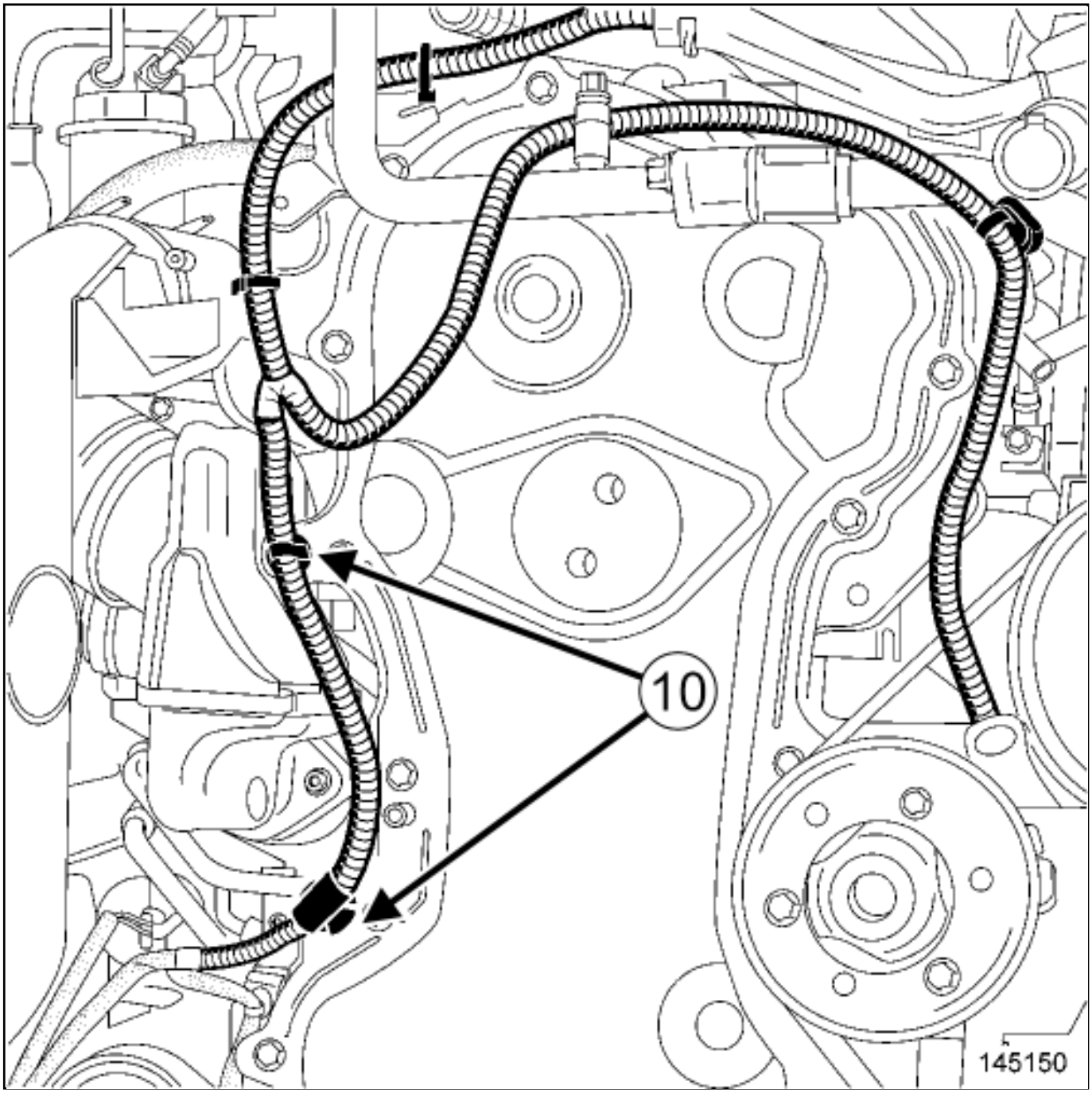


- Unclip the power-assisted steering pipe from the engine cooling fan assembly(7) .


8
145155



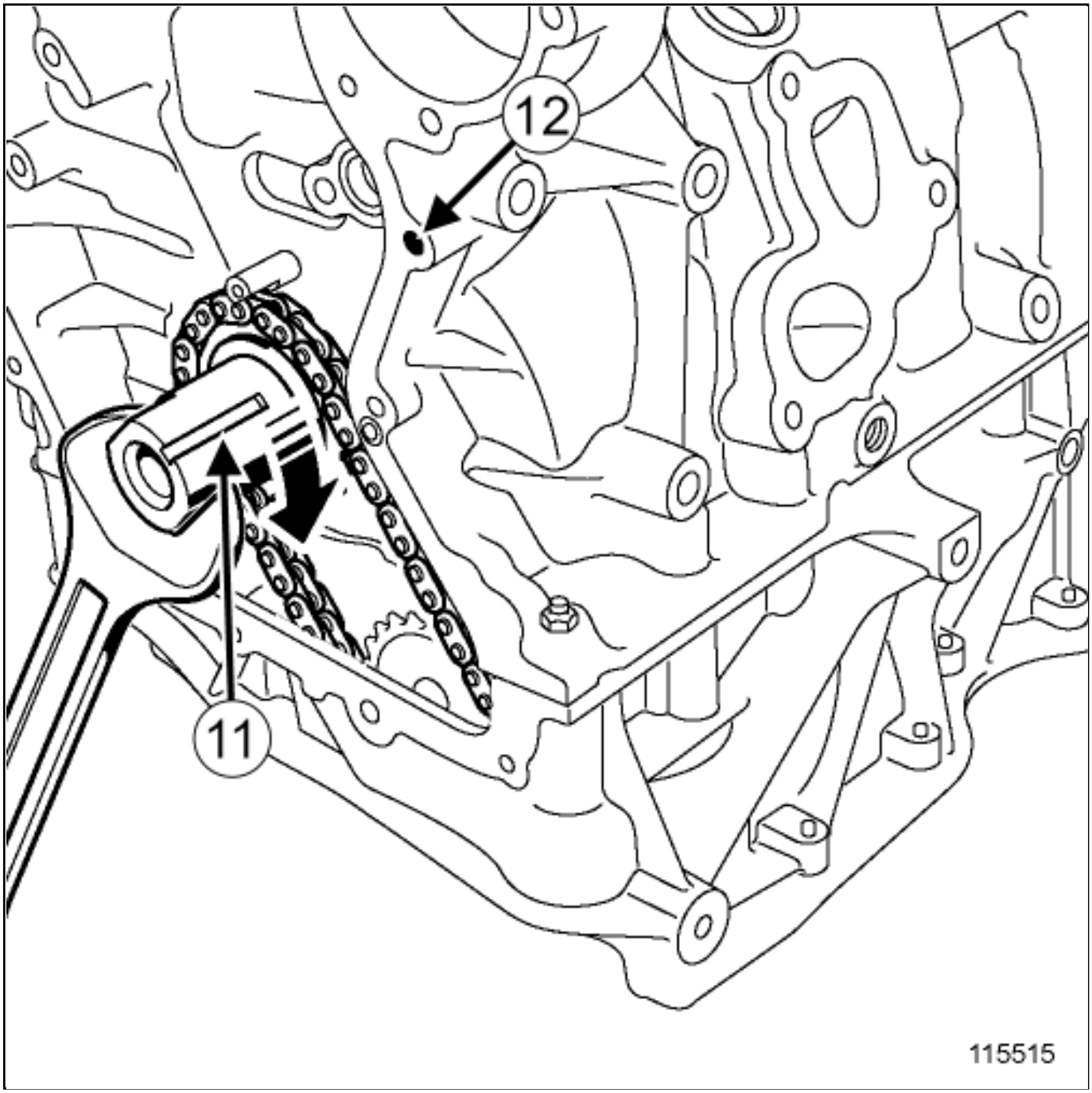
- Remove the bolts(8) from the power-assisted steering pipe.



- Unclip the air conditioning pressostat wiring at(10) .

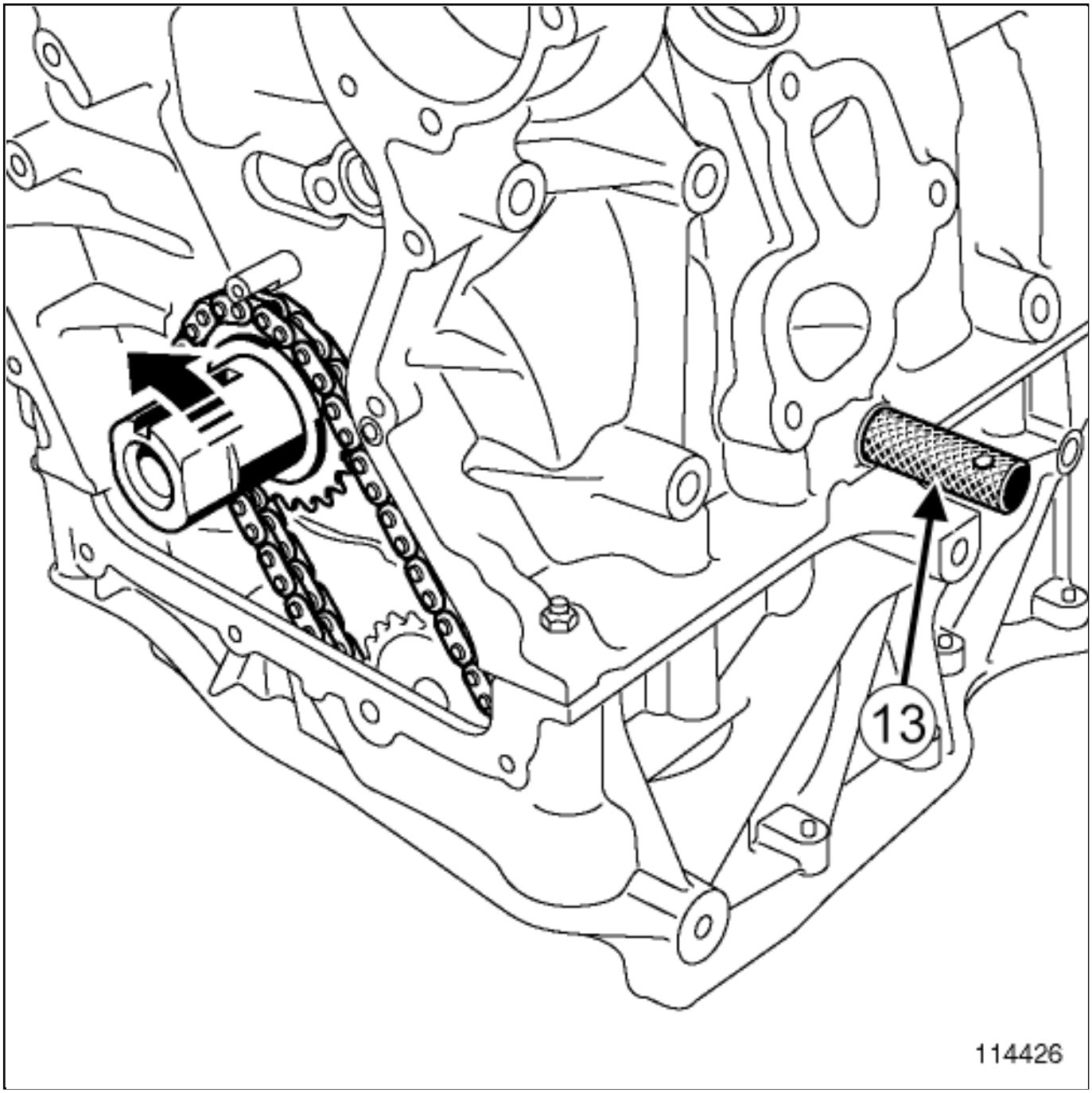
2. REMOVAL OPERATION

- Remove the timing cover(see 11A, Top and front of engine, Timing assembly: Exploded view) .



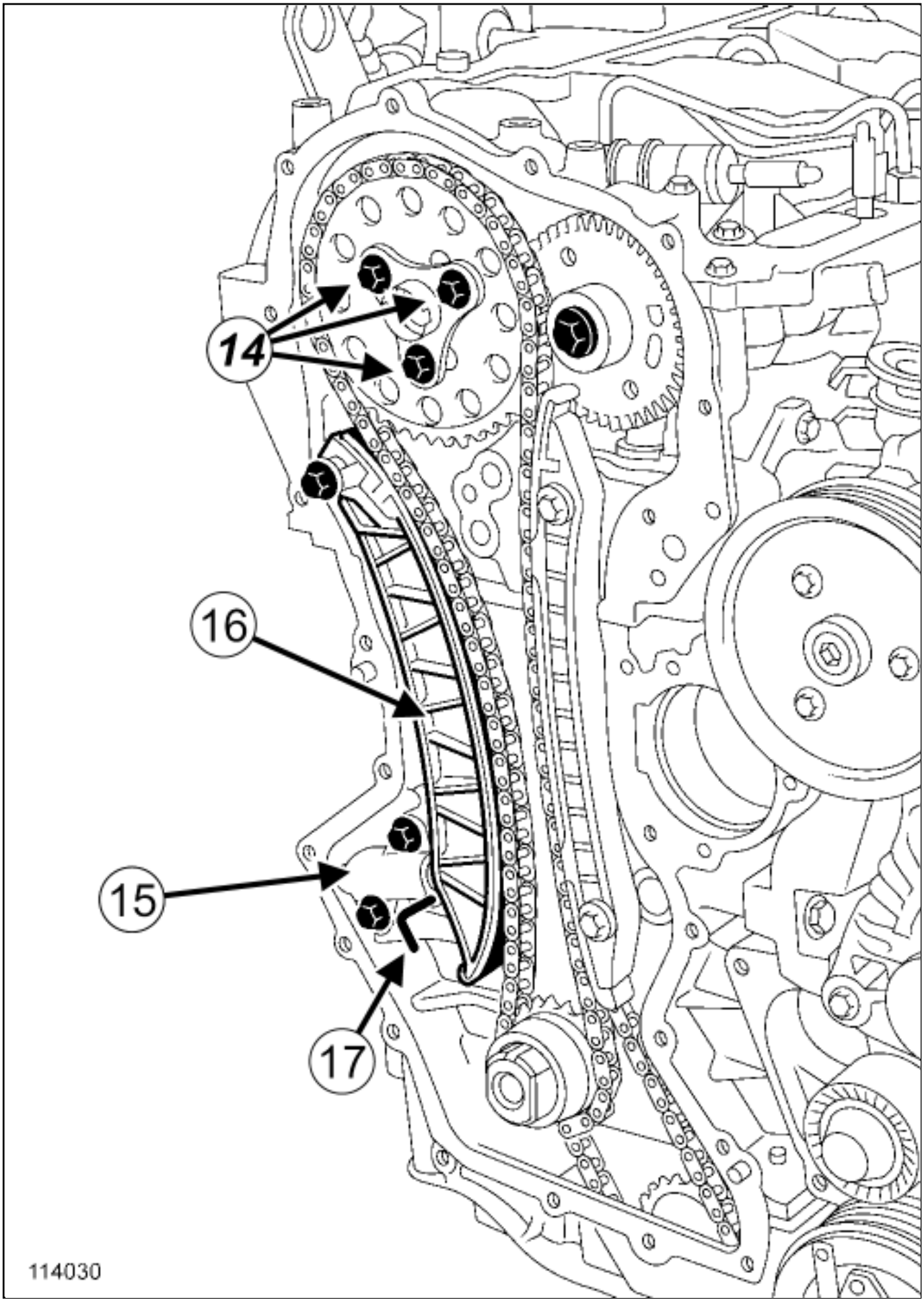
- Align the groove(11) on the crankshaft with the hole(12) on the cylinder block (pistons at mid-stroke).

- Remove the TDC plug Cylinder block assembly: Exploded view .



- Position the Top dead centre locating pin.(Mot. 1766) (13) .

- Turn the crankshaft anti-clockwise until it makes contact with the toolTop dead centre locating pin. (Mot. 1766) .


14
16
15
17
114030

Loosen the bolts(14) of the timing chain sprocket on the camshaft side.

Compress the timing hydraulic tensioner(15) with the chain tensioner guide(16) .

Lock the timing hydraulic tensioner using a 3 mmAllen key (17) .

Remove (see 11A, Top and front of engine, Timing assembly: Exploded view) :

- the timing tensioner,
- the chain tensioner guide,
- the timing chain guide,
- the washer of the timing chain sprocked on the camshaft side,
- the "timing chain sprocket on the camshaft side - timing chain - timing chain sprocket on the crankshaft side" assembly.

REFITTING

1. REFITTING PREPARATION OPERATION

Use super cleaning agent for joint facesVehicle: Parts and consumables for the repair (04B, Consumables - Products) to clean:

- the joint face of the timing cover on the cylinder block and on the cylinder head,
- the timing cover.

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

- Remove the residue using a plastic spatula.

- Finish cleaning the joint faces using a grey abrasive pad Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

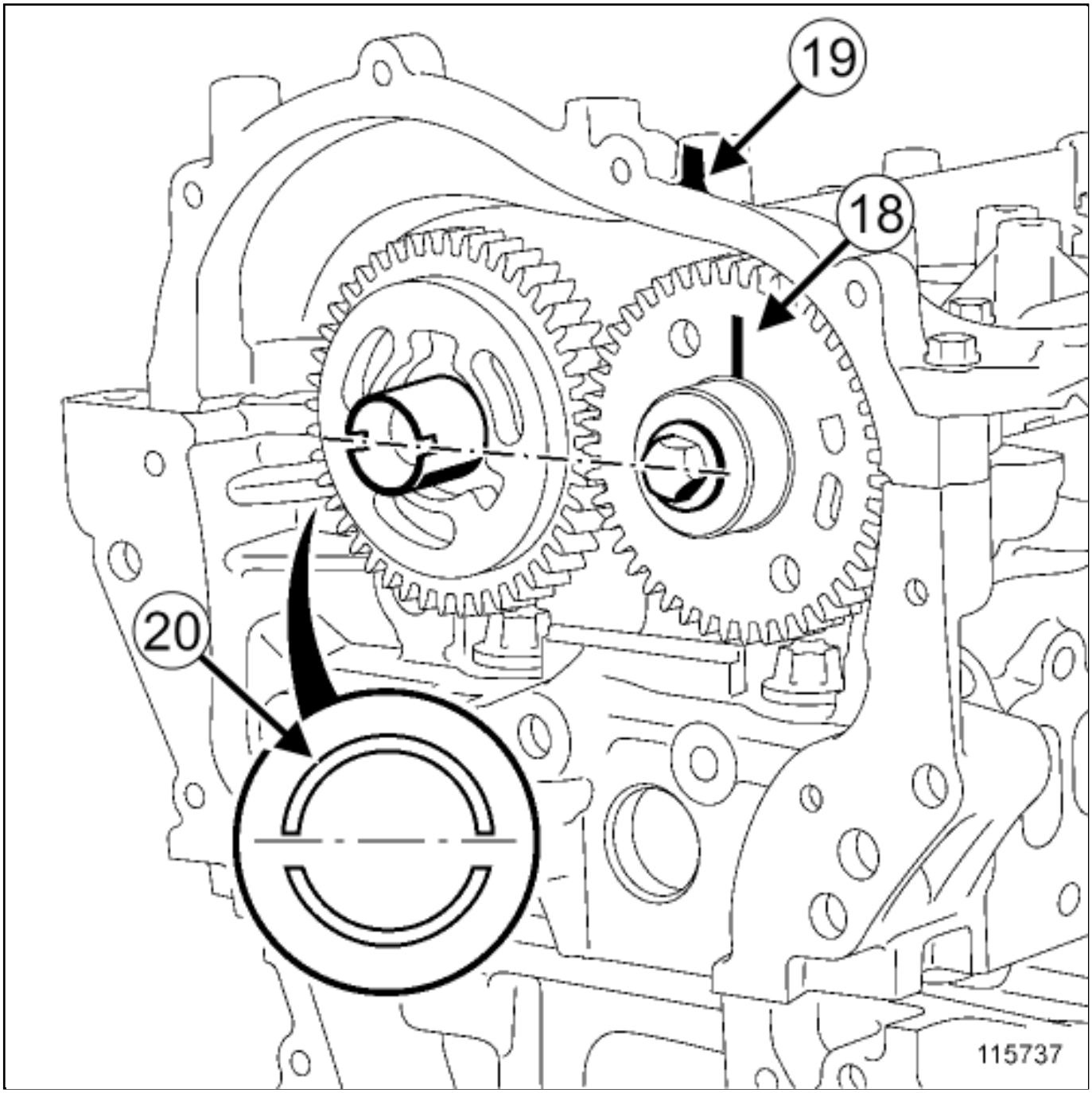
CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

2. REFITTING OPERATION

- Set the engine at Top Dead Centre.

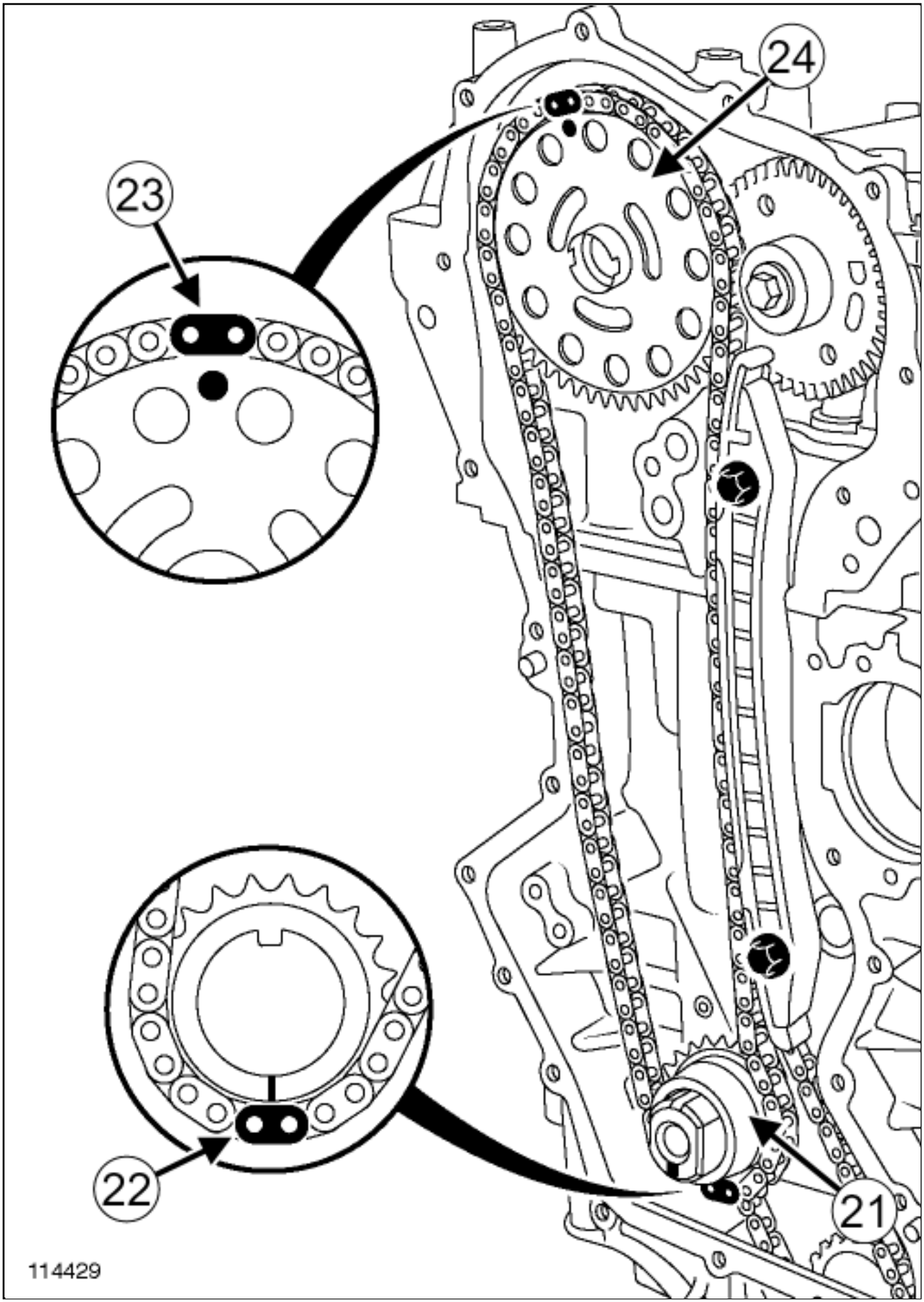
- Position the Top dead centre locating pin.(Mot. 1766) .



Check that:

- the mark(18) on the inlet camshaft sprocket is opposite the rocker cover boss(19) ,
- the groove on the exhaust camshaft is horizontal (large offset(20) facing upwards).

Refit the timing chain guide(see 11A, Top and front of engine, Timing assembly: Exploded view) .


24
23
22
21
114429

Fit the new timing chain sprocket on the crankshaft side(21) .

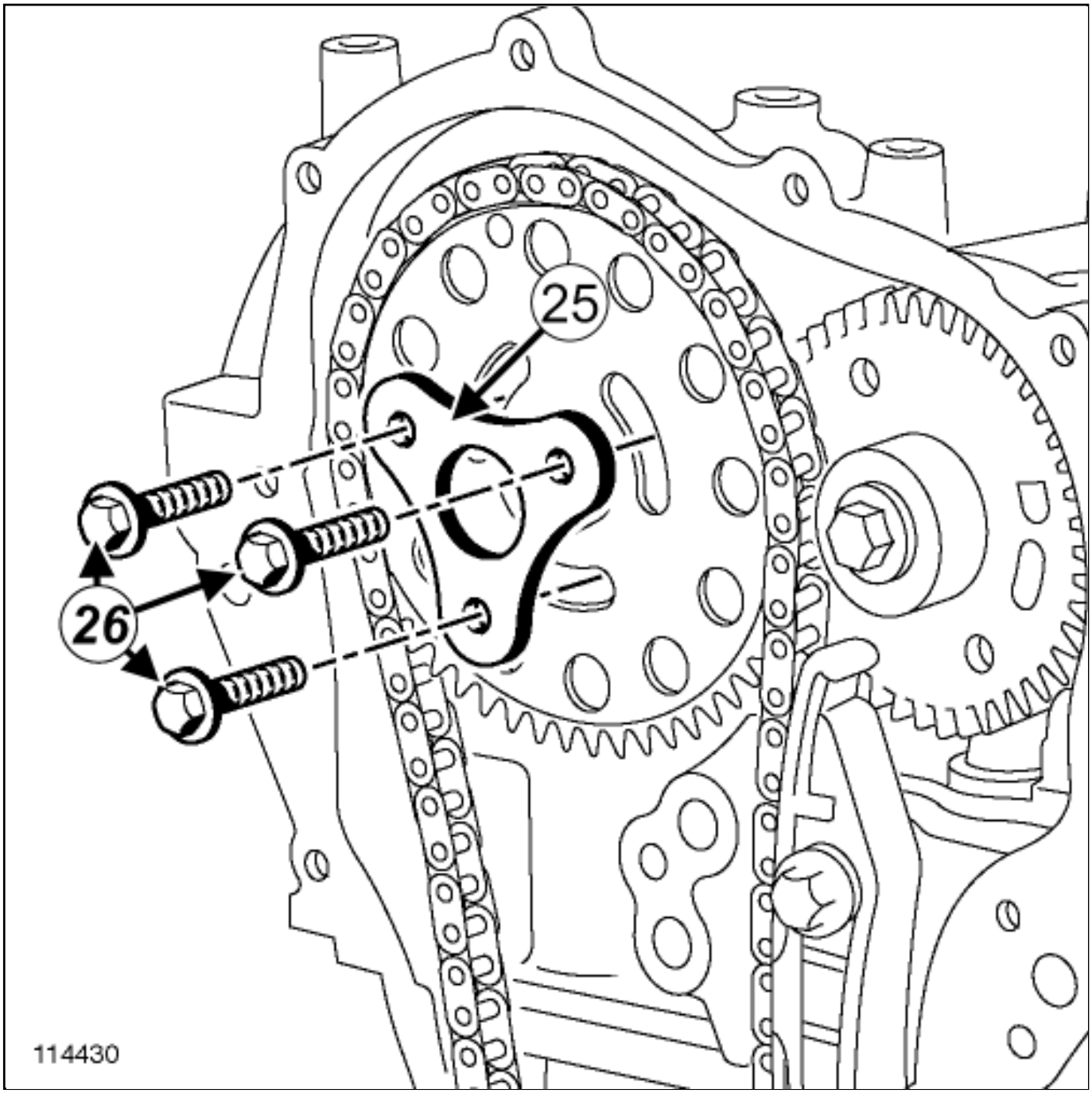
Note:

The timing chain does not have a direction of fitting.

Position:

- the new timing chain on the timing chain sprocket on the crankshaft side (align the sprocket mark with the copper chain link(22)),
- the timing chain sprocket on the new camshaft side(24) on the chain (align the sprocket mark with the copper chain link(23)).

Fit the timing sprocket on the camshaft side(24) .



- Fit a washer to the timing chain sprocket (camshaft side)(25) on the timing chain sprocket (camshaft side).

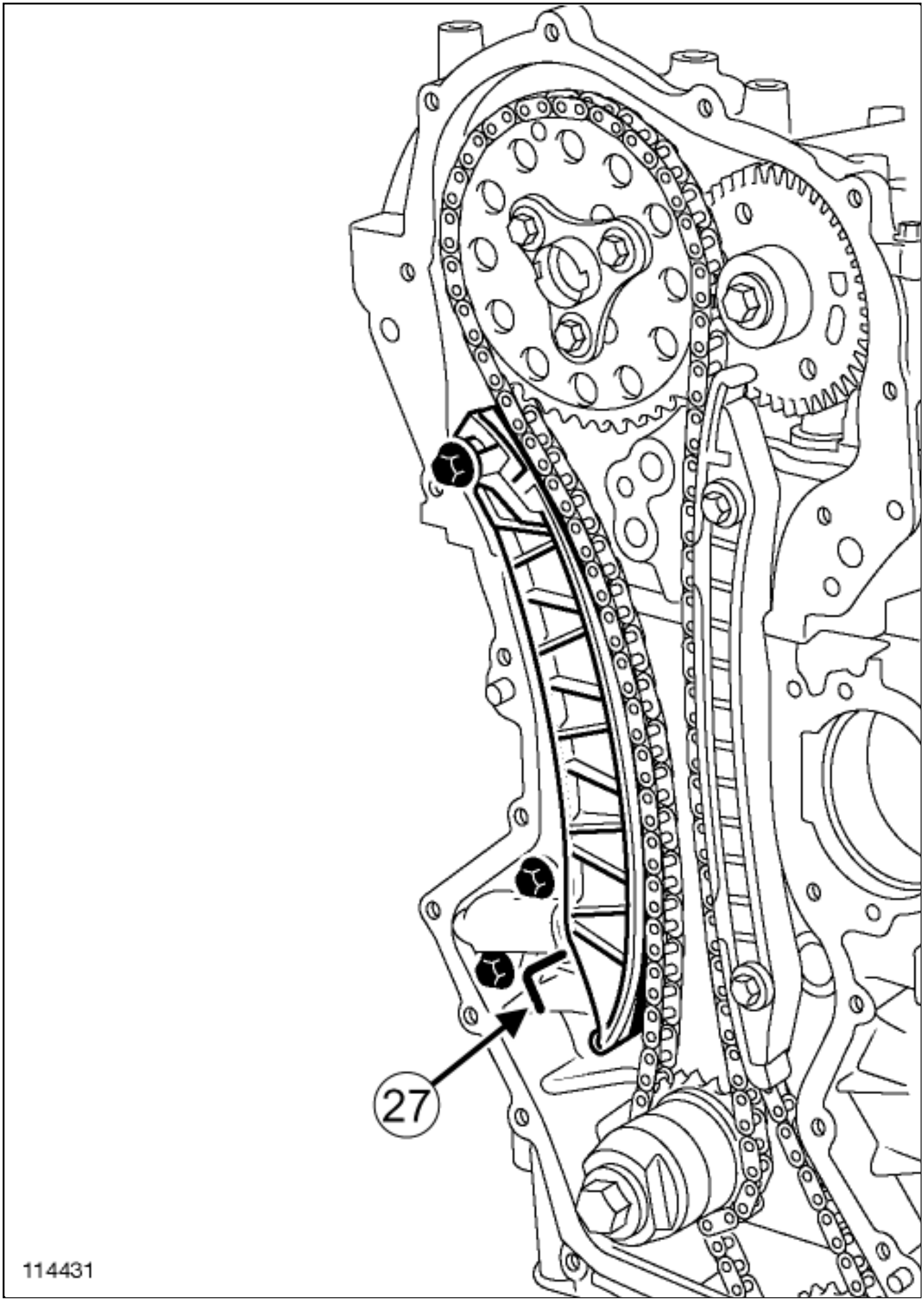
- Finger tighten the new bolts(26) of the timing chain sprocket on the camshaft side.

Note:

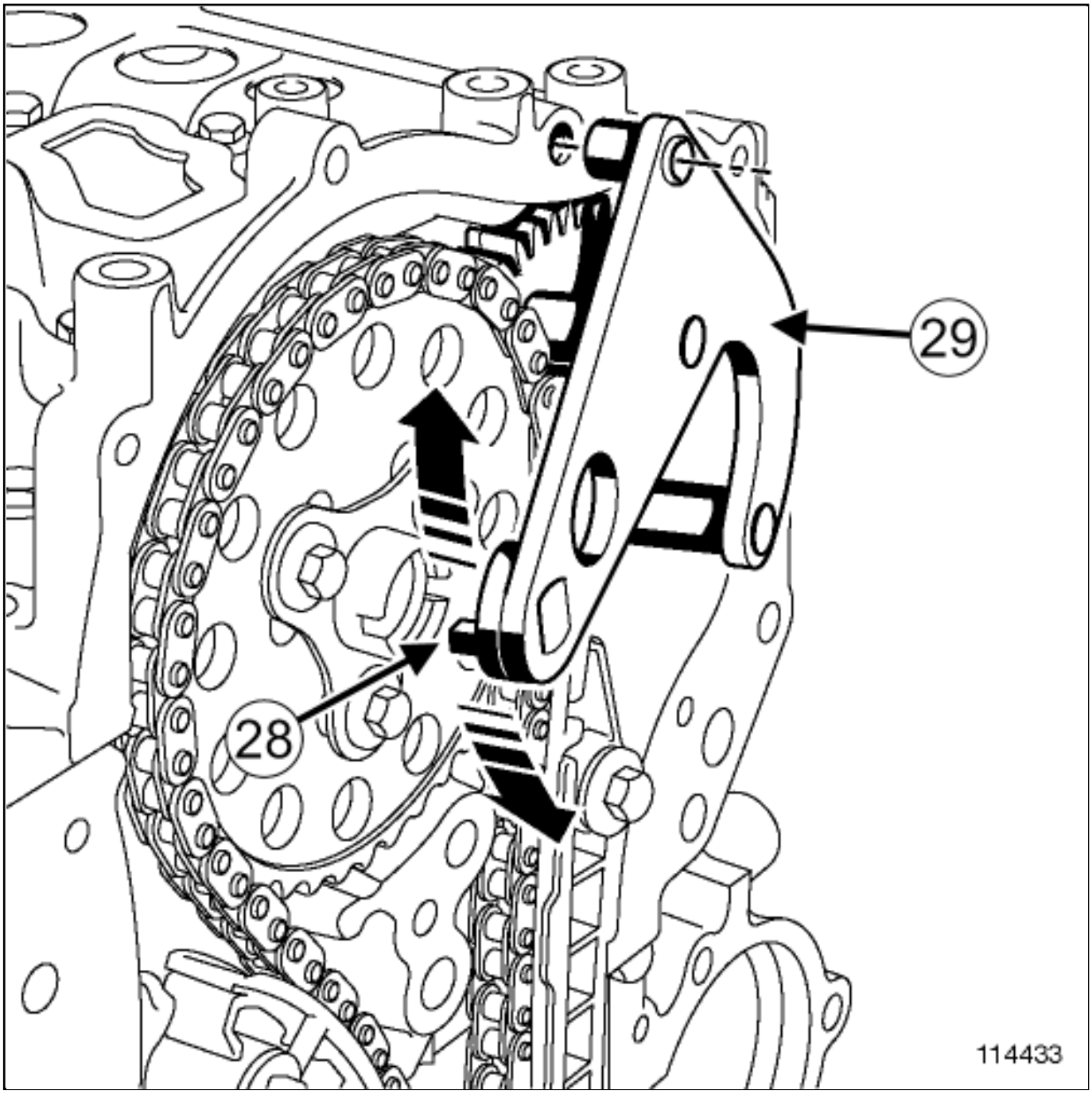
Allow the timing chain sprocket on the camshaft side to rotate freely.

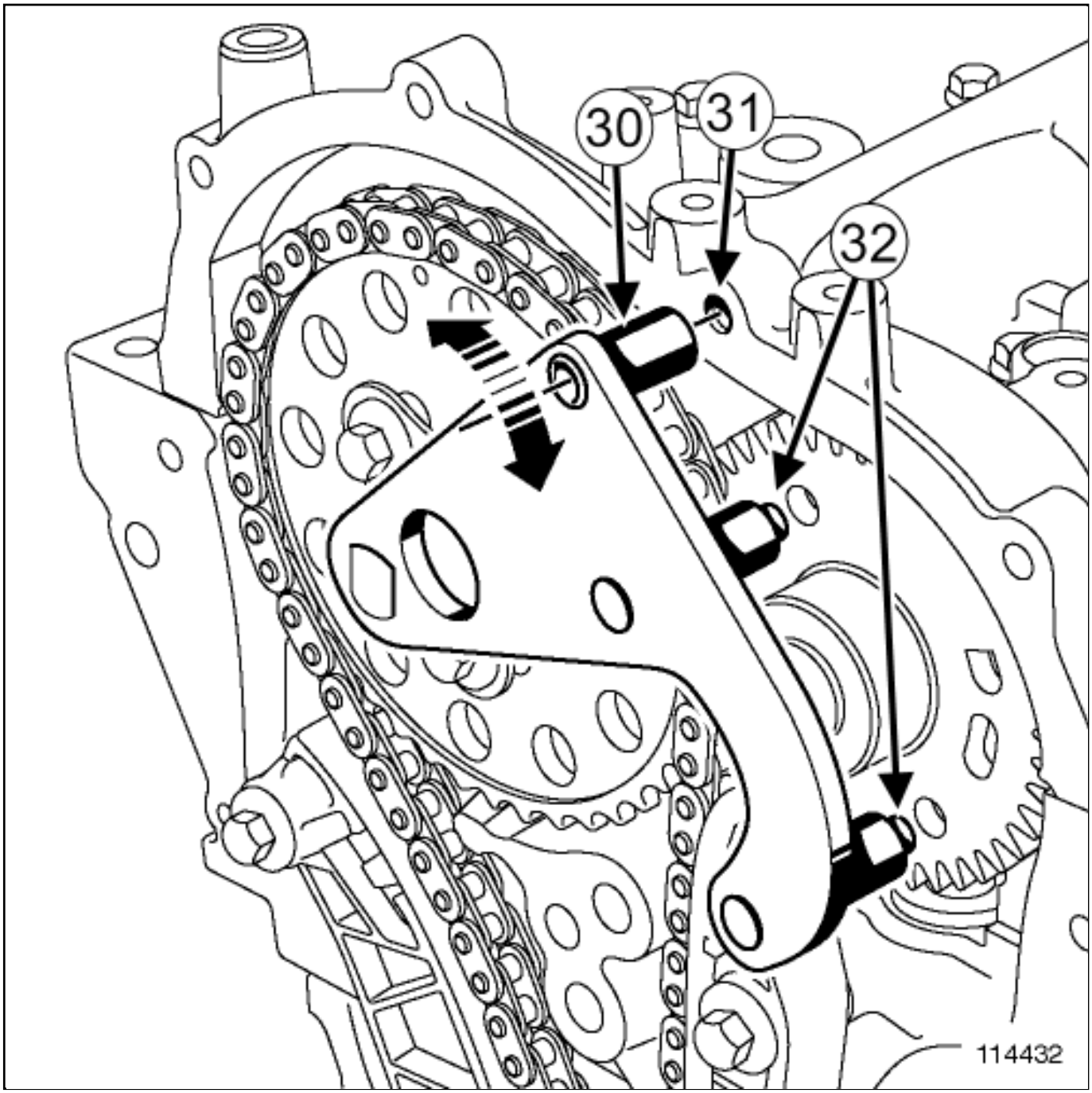
Refit (see 11A, Top and front of engine, Timing assembly: Exploded view) :

- the chain tensioner guide,
- the timing hydraulic tensioner.


27
114431

Remove the 3 mmAllen key (27) .





Engage the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) (29) into the camshaft groove.

Note:

Do not engage the pins(32) of the toolCamshaft adjusting tool(Mot. 1769) in the holes of the inlet camshaft timing sprocket.

Turn the toolCamshaft adjusting tool(Mot. 1769) to align the shafts on the spacer(30) and the hole (31) .

Detach the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) from the camshaft groove.

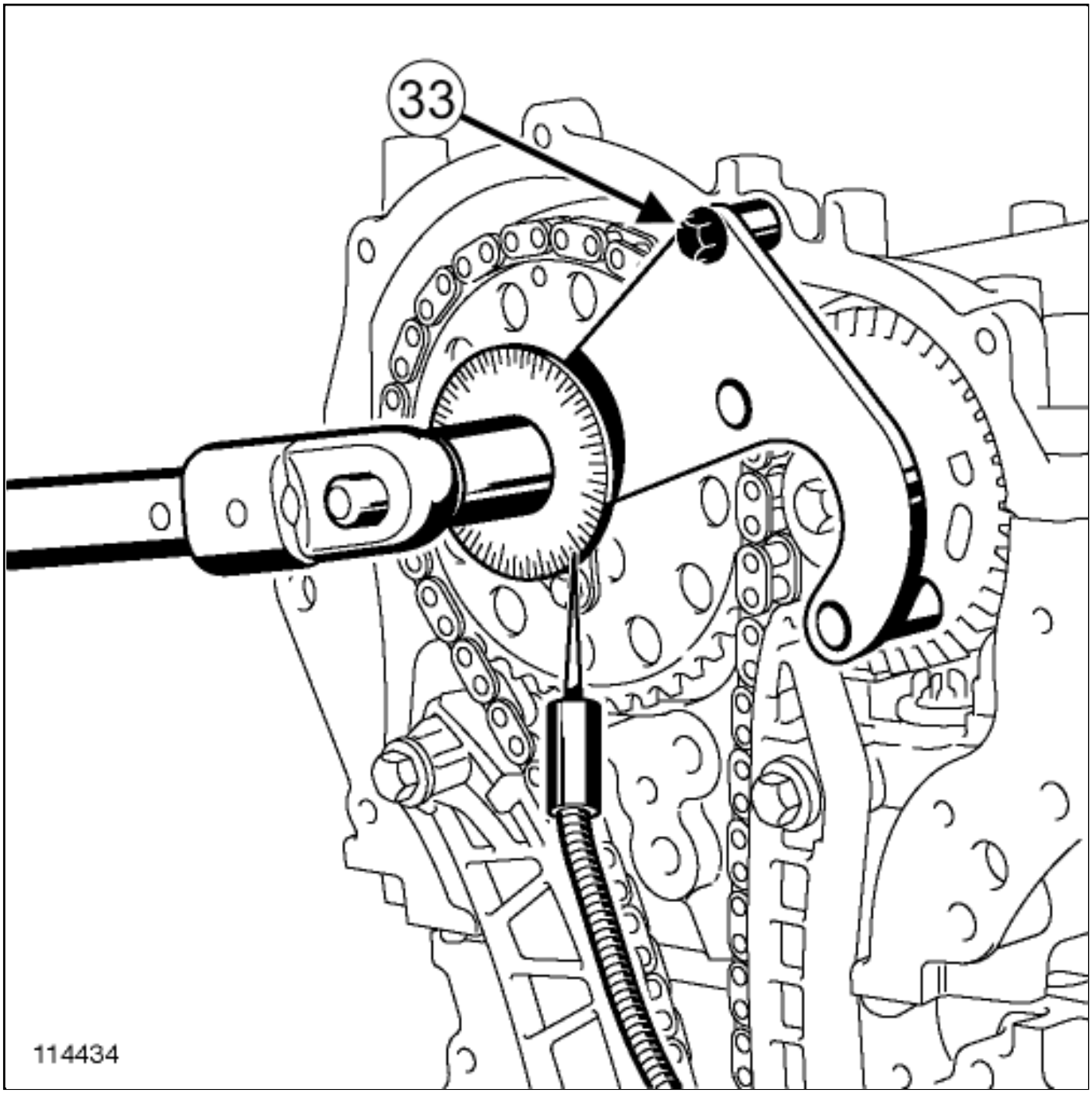
Engage the pins(32) of the toolCamshaft adjusting tool(Mot. 1769) in the holes of the inlet camshaft timing sprocket.

Note:

Do not fit the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) into the camshaft groove.

Turn the toolCamshaft adjusting tool(Mot. 1769) to align the shafts on the spacer(30) and the hole (31) .

Fit the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) (29) into the groove on the camshaft, without forcing it (if necessary, start the previous operations again).



Fit the bolt(33) (M6 - 50 mmlong) onto the toolCamshaft adjusting tool(Mot. 1769) .

Torque tighten the bolts of the timing chain sprocket on the camshaft side(see 11A, Top and front of engine, Timing assembly: Exploded view) .

Remove:

- theCamshaft adjusting tool(**Mot. 1769**) ,
- theTop dead centre locating pin.(**Mot. 1766**) .

Proceed in the reverse order to removal.

Perform the following operations:

- fill and bleed the cooling circuit**Cooling system: Draining - Refilling** ,
- fill up the engine**Engine oil: Draining - Refilling** .

TIMING CHAIN: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Top dead centre locating pin.	Mot. 1766
Camshaft adjusting tool	Mot. 1769

Equipment required
refrigerant charging station

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

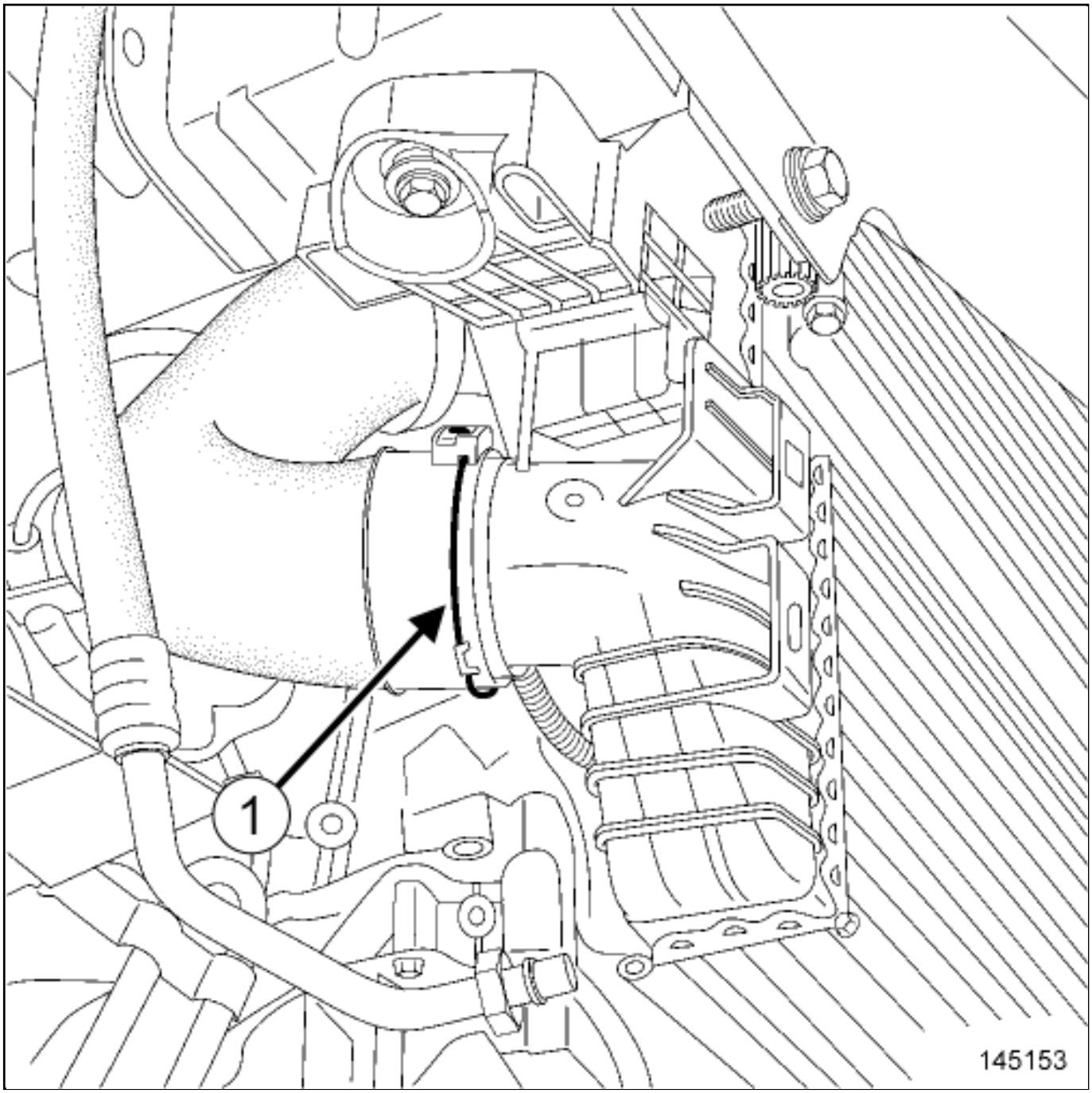
Location and specifications (tightening torques, parts always to be replaced, etc.)**Timing assembly: Exploded view** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

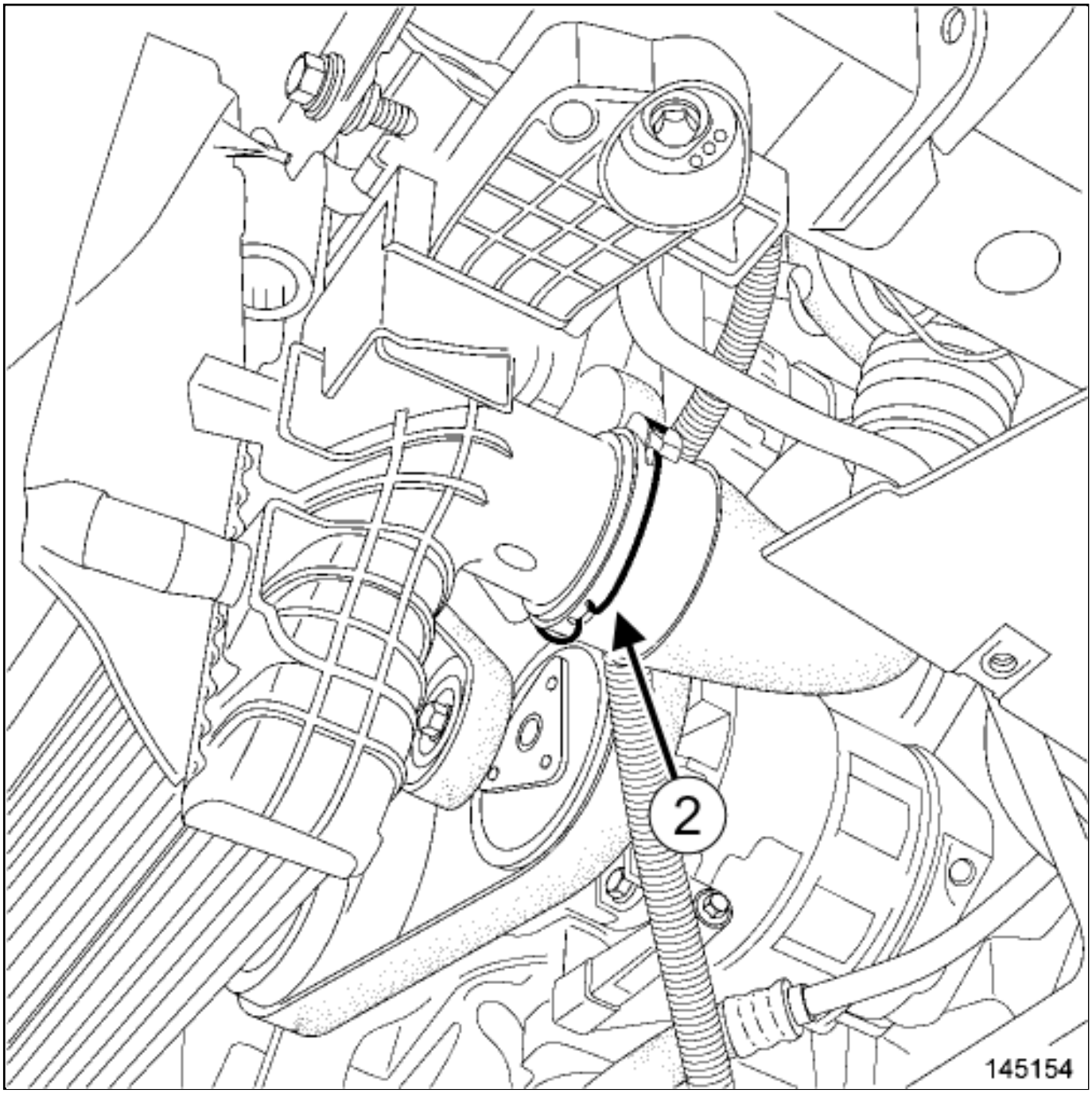
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Remove the engine undertray.
- Drain:
  - the engine**Engine oil: Draining - Refilling** ,
  - the cooling system**Cooling system: Draining - Refilling** .
- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection),
  - the front end panel**Front end panel: Removal - Refitting** (42A, Upper front structure),

- the engine cooling fan propeller Cylinder block assembly: Exploded view ,
- the accessories belt Engine accessories assembly: Exploded view ,
- the crankshaft accessories pulley,
- the coolant pump pulley Cylinder block assembly: Exploded view .



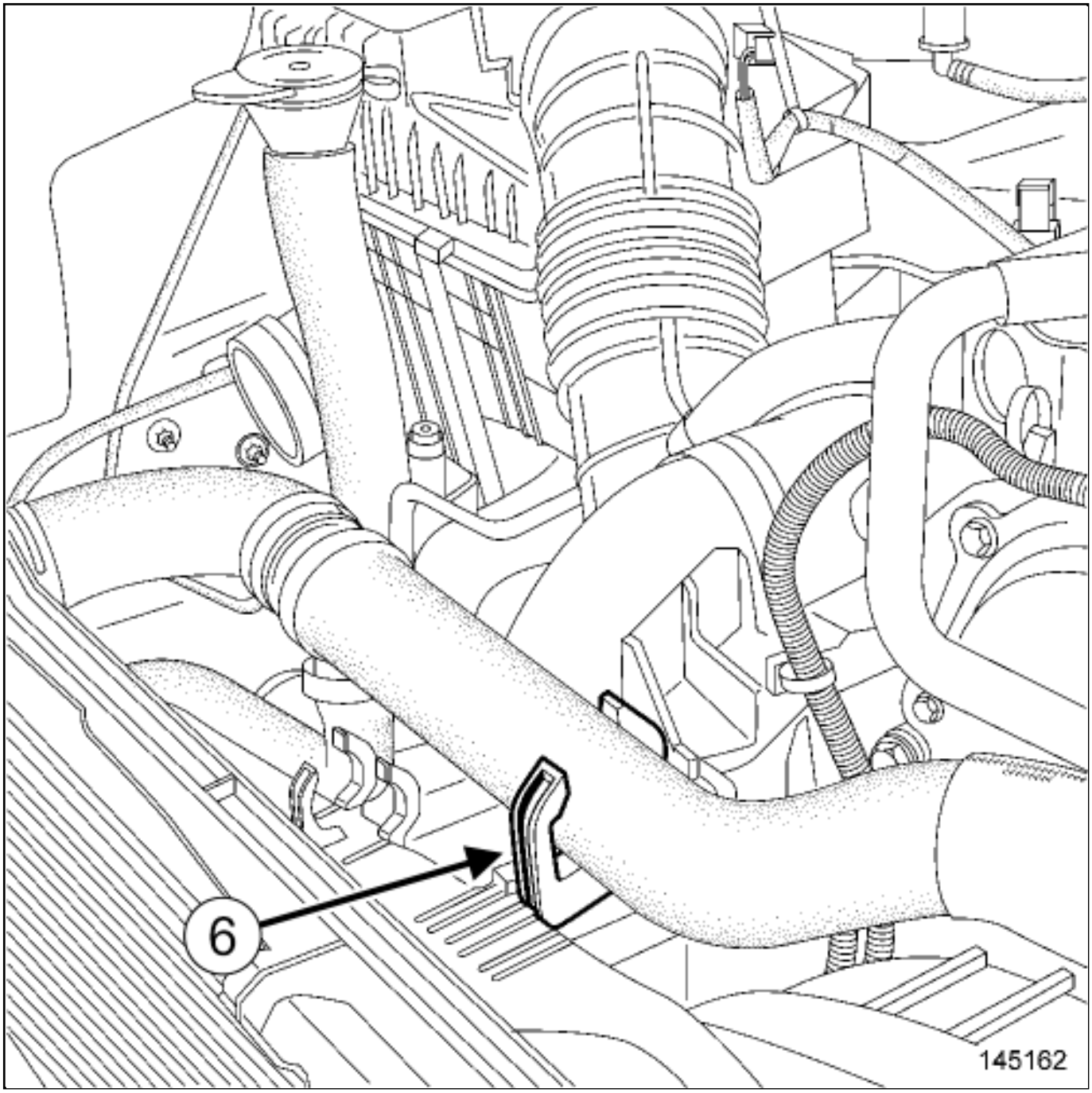
Remove the clip(1) for the intercooler air inlet pipe.

Disconnect the intercooler air inlet pipe.



- Move aside the clip(2) for the intercooler air outlet pipe.
- Disconnect the intercooler air outlet pipe.
- Using the toolRemote operation pliers for hose clips.(**Mot. 1448**), separate the following from the cooling radiator**Coolant circuit assembly: Exploded view** :
  - the cooling radiator outlet pipe clip,
  - the cooling radiator inlet pipe clip,
  - the cooling radiator degassing pipe clip.
- Disconnect the following from the cooling radiator**Coolant circuit assembly: Exploded view** :
  - the cooling radiator outlet pipe,

- the cooling radiator inlet pipe,
- the cooling radiator degassing pipe.



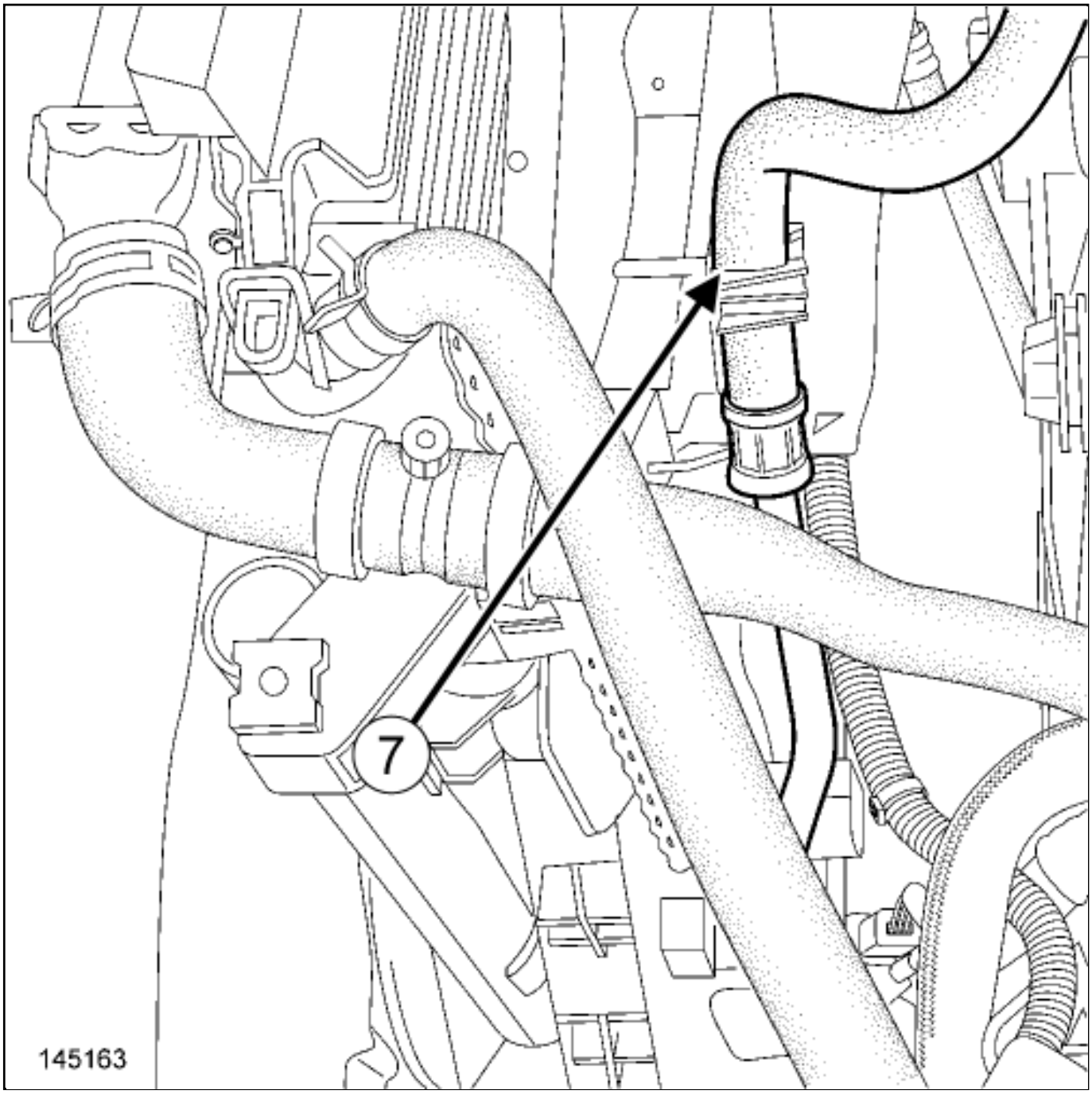
Unclip the cooling pipe(6) from the engine cooling fan assembly.

Using the toolRemote operation pliers for hose clips.(Mot. 1448), separate the following from the additional radiatorCoolant circuit assembly: Exploded view :

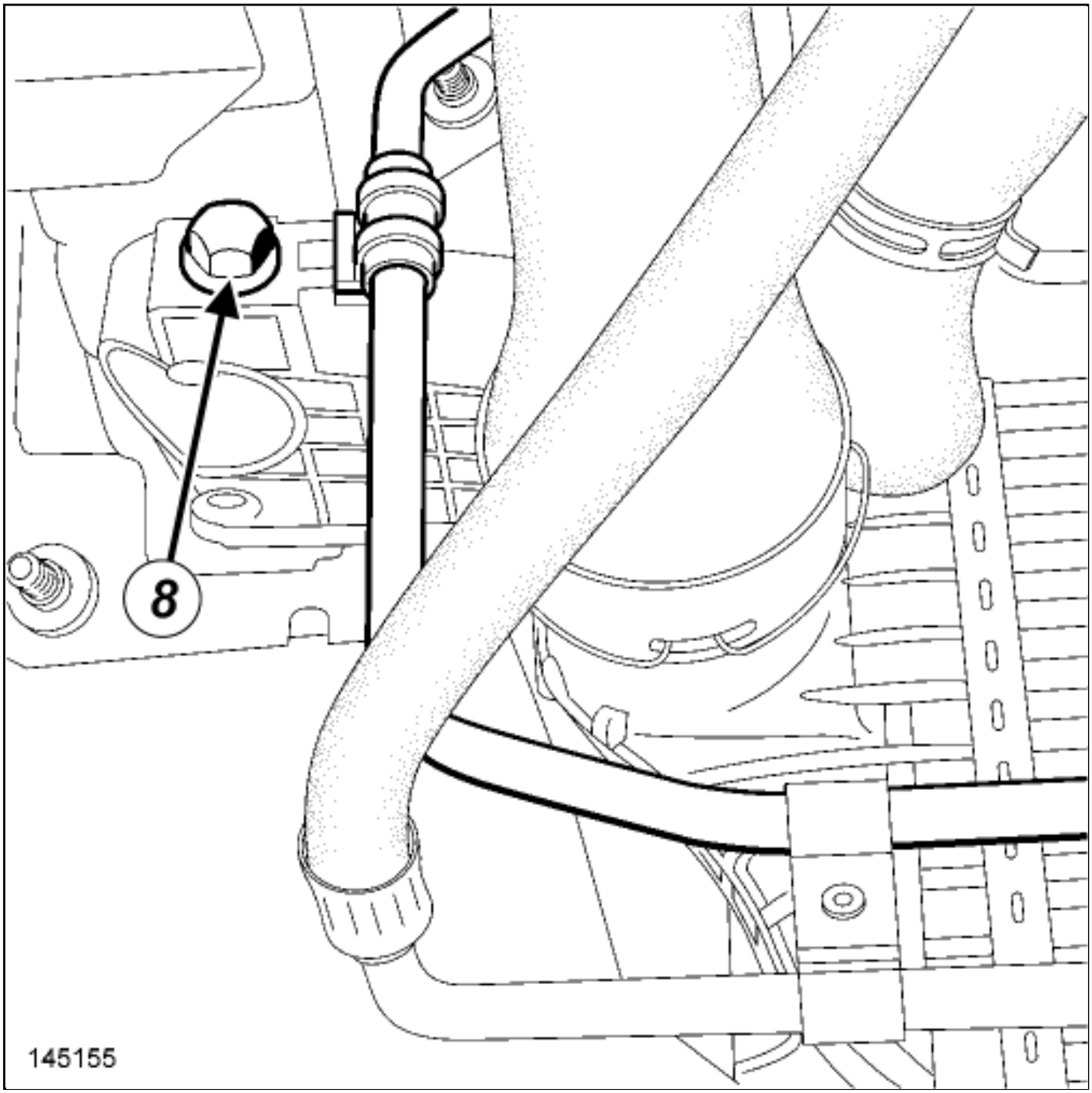
- the clip of the pipe between the cooling radiator and the additional cooling radiator,
- the additional cooling radiator outlet pipe clip.

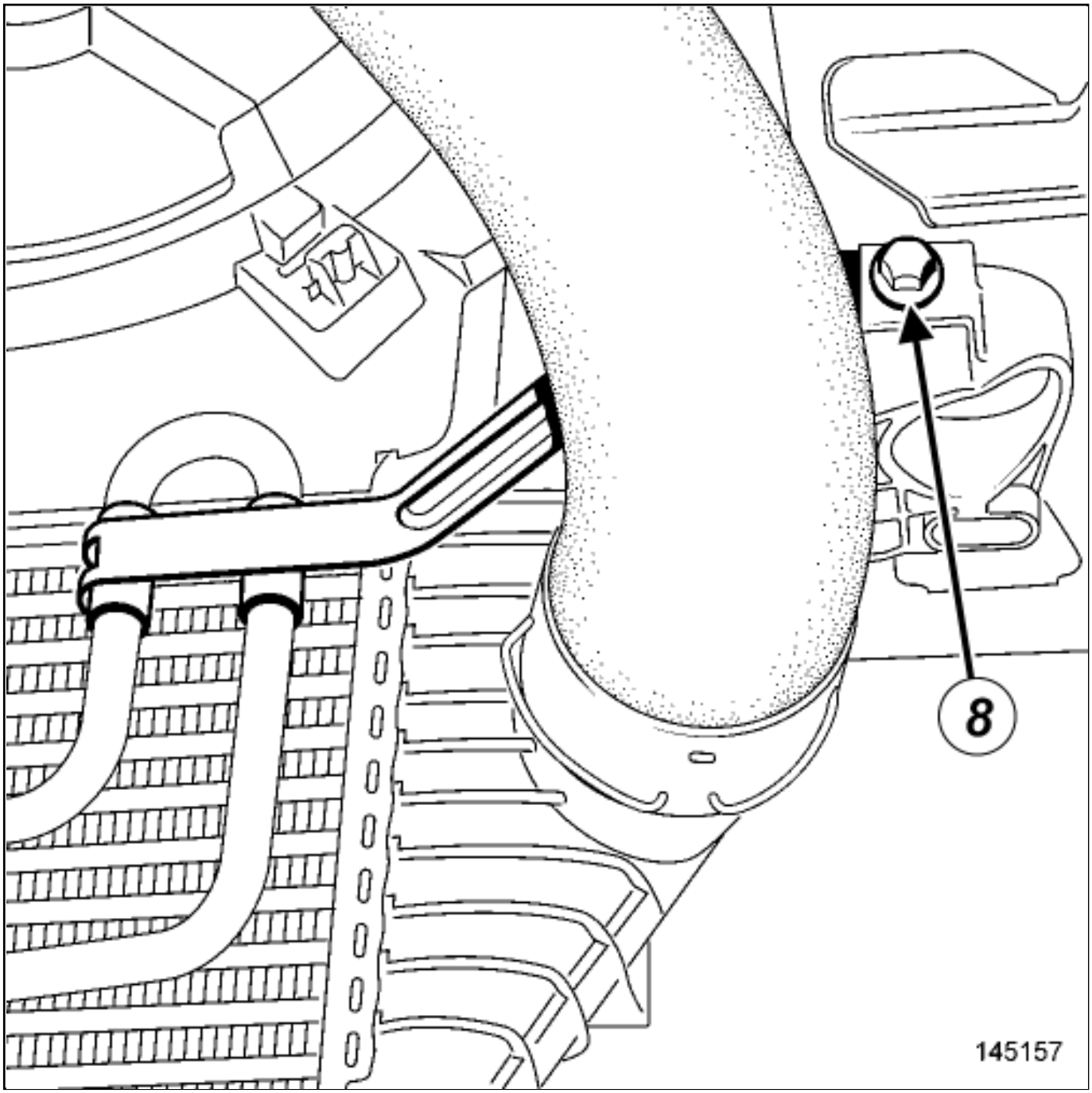
Disconnect the following from the additional cooling radiatorCoolant circuit assembly: Exploded view :

- the pipe between the cooling radiator and the additional cooling radiator,
- the additional cooling radiator outlet pipe.

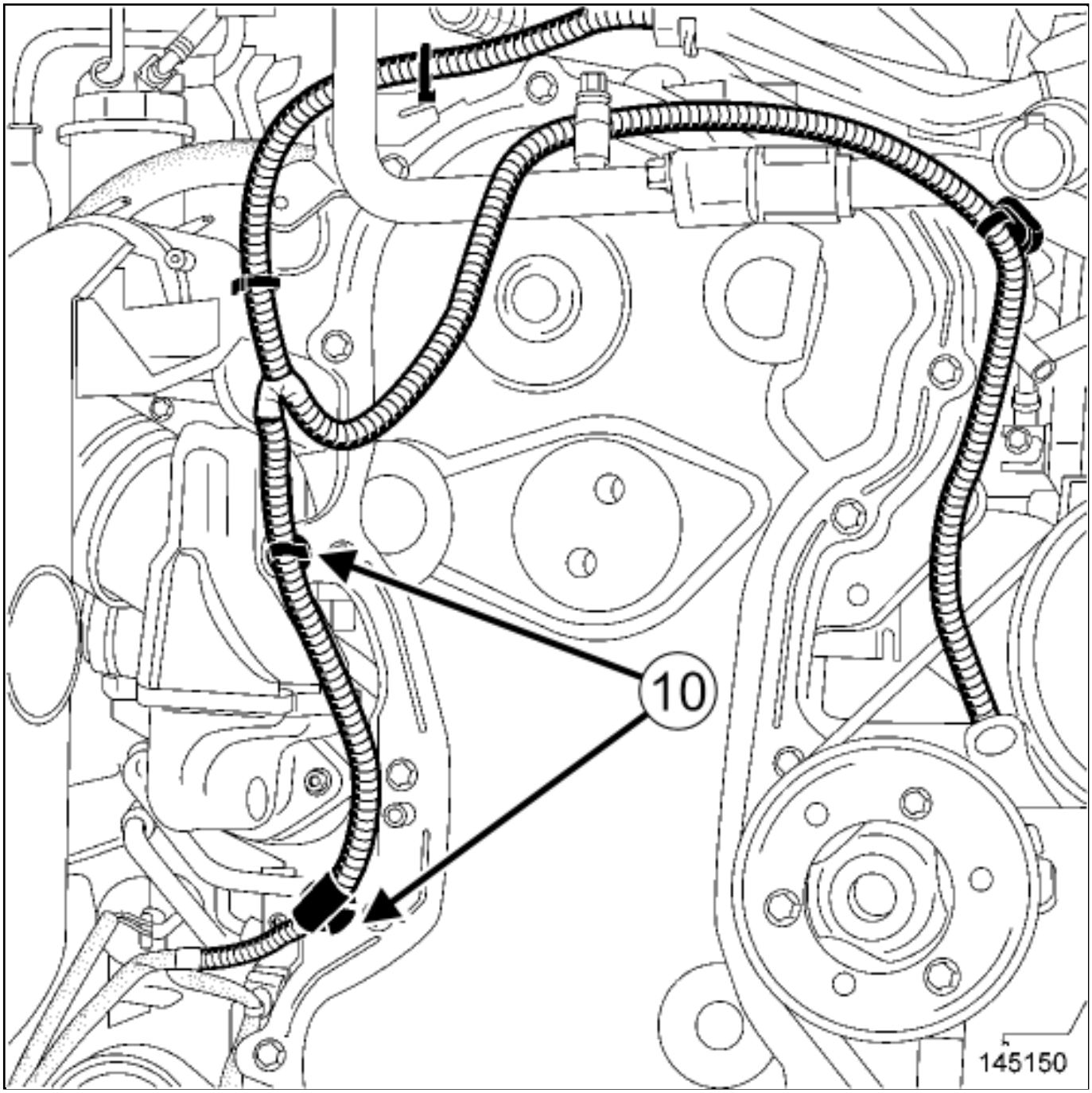


- Unclip the power-assisted steering pipe from the engine cooling fan assembly(7) .


8
145155



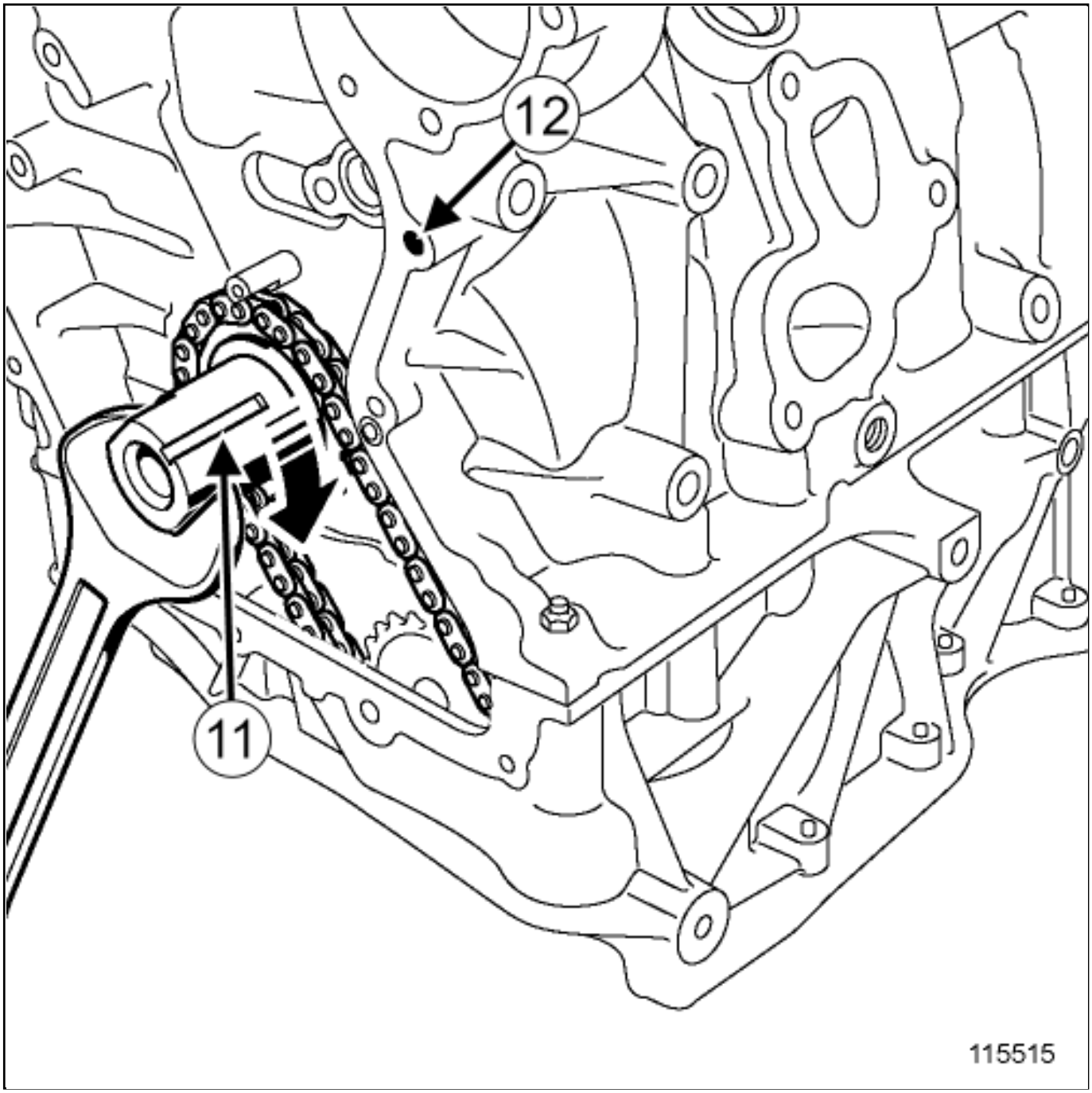
- Remove the bolts(8) from the power-assisted steering pipe.



- Unclip the air conditioning pressostat wiring at(10) .

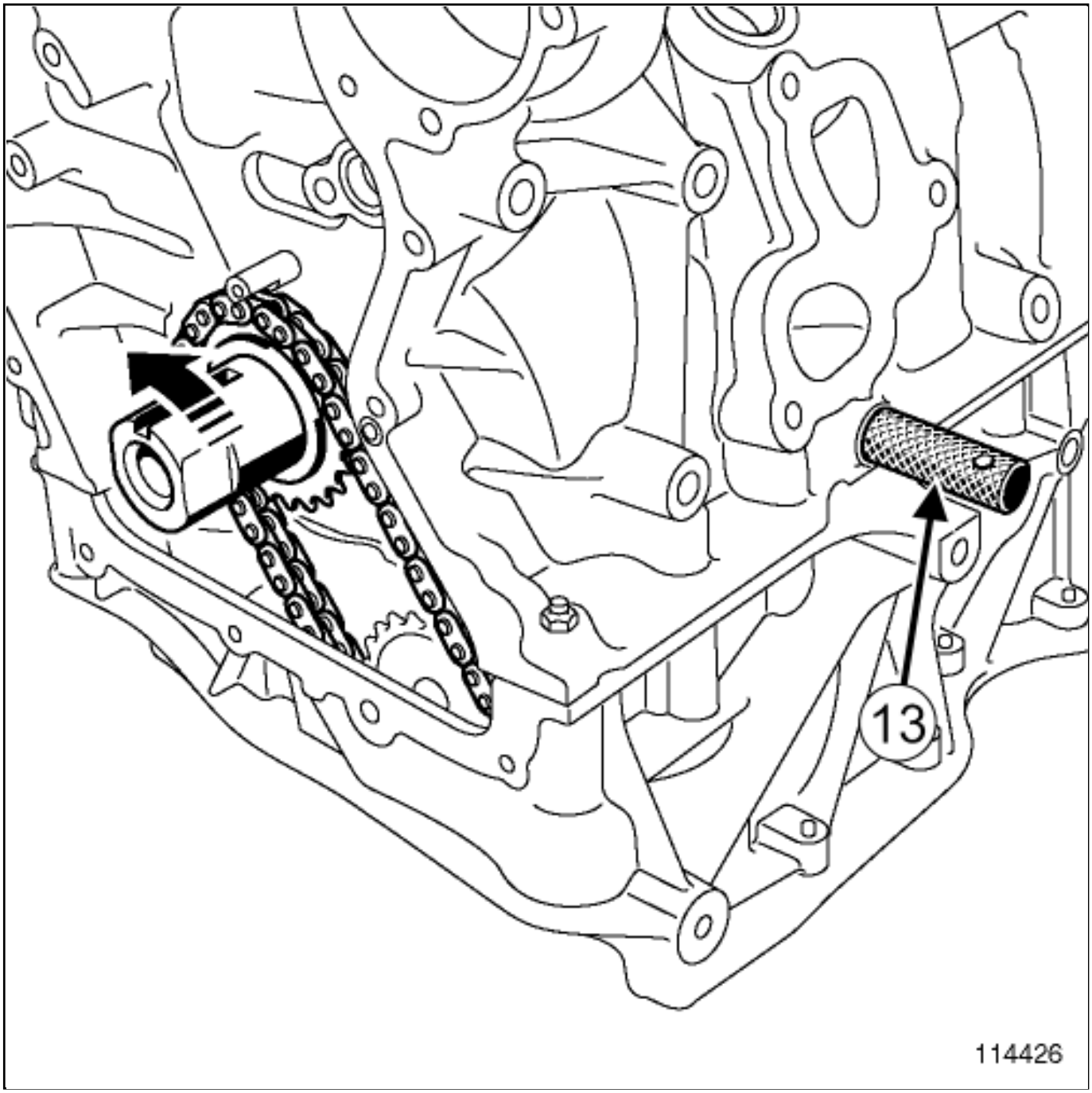
2. REMOVAL OPERATION

- Remove the timing cover Timing assembly: Exploded view .



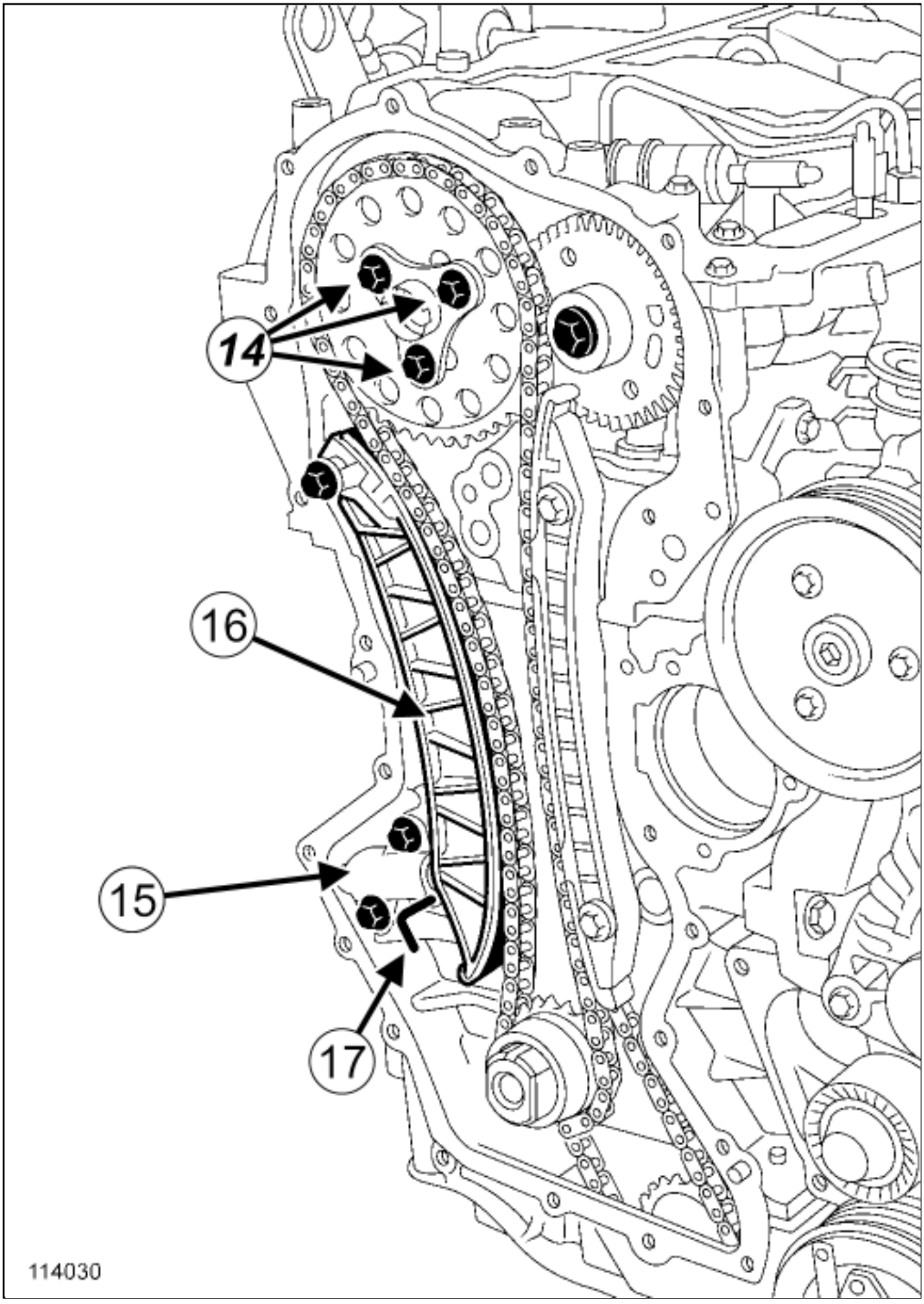
- Align the groove(11) on the crankshaft with the hole(12) on the cylinder block (pistons at mid-stroke).

- Remove the TDC plug Cylinder block assembly: Exploded view .



- Position the Top dead centre locating pin.(Mot. 1766) (13) .

- Turn the crankshaft anti-clockwise until it makes contact with the toolTop dead centre locating pin. (Mot. 1766) .


14
16
15
17
114030

Loosen the bolts(14) of the timing chain sprocket on the camshaft side.

Compress the timing hydraulic tensioner(15) with the chain tensioner guide(16) .

Lock the timing hydraulic tensioner using a 3 mmAllen key (17) .

Remove **Timing assembly: Exploded view** :

- the timing tensioner,
- the chain tensioner guide,
- the timing chain guide,
- the washer of the timing chain sprocked on the camshaft side,
- the "timing chain sprocket on the camshaft side - timing chain - timing chain sprocket on the crankshaft side" assembly.

REFITTING

1. REFITTING PREPARATION OPERATION

Use super cleaning agent for joint faces**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products) to clean:

- the joint face of the timing cover on the cylinder block and on the cylinder head,
- the timing cover.

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

- Remove the residue using a plastic spatula.

- Finish cleaning the joint faces using a grey abrasive pad Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

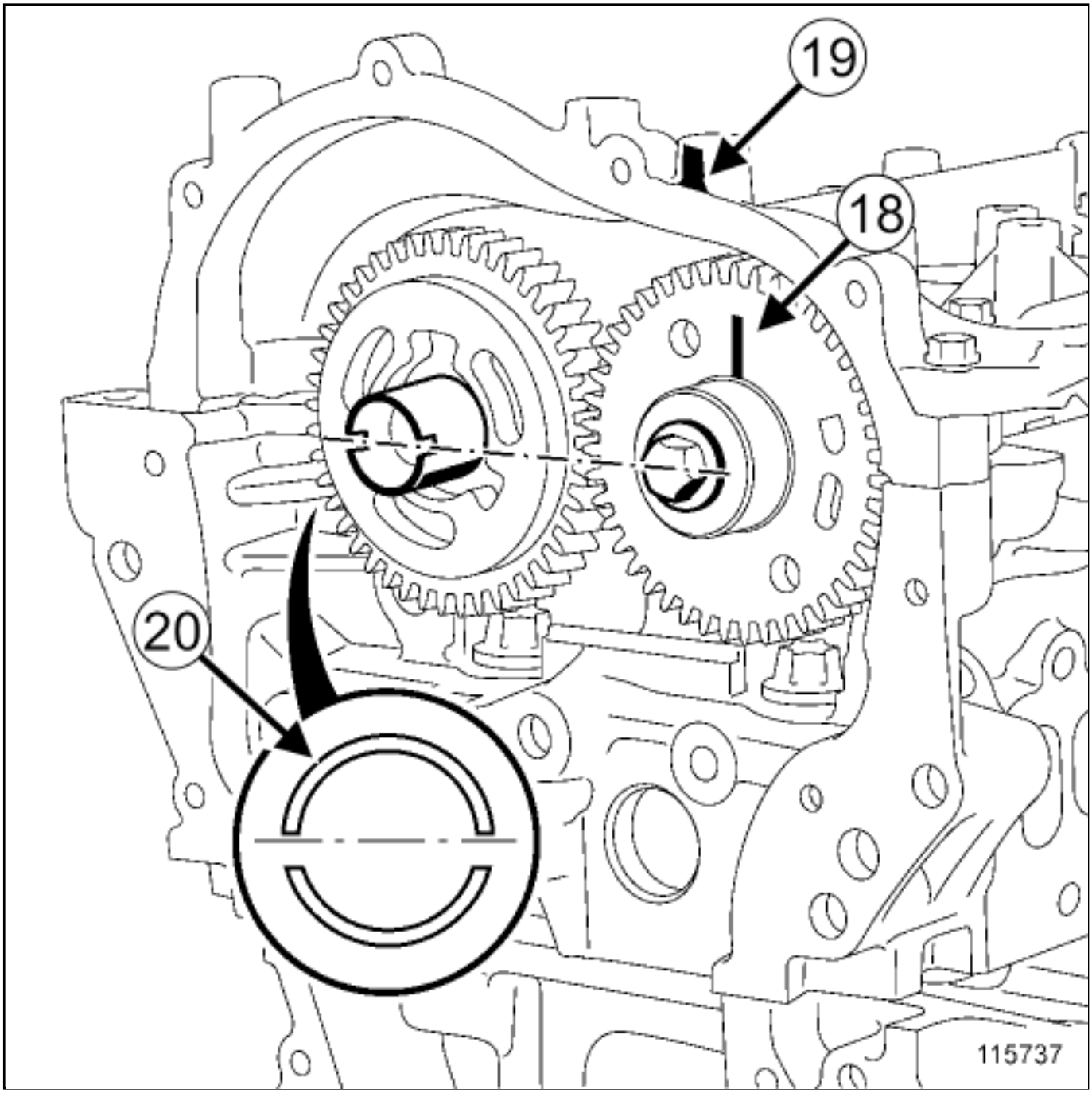
CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

2. REFITTING OPERATION

- Set the engine at Top Dead Centre.

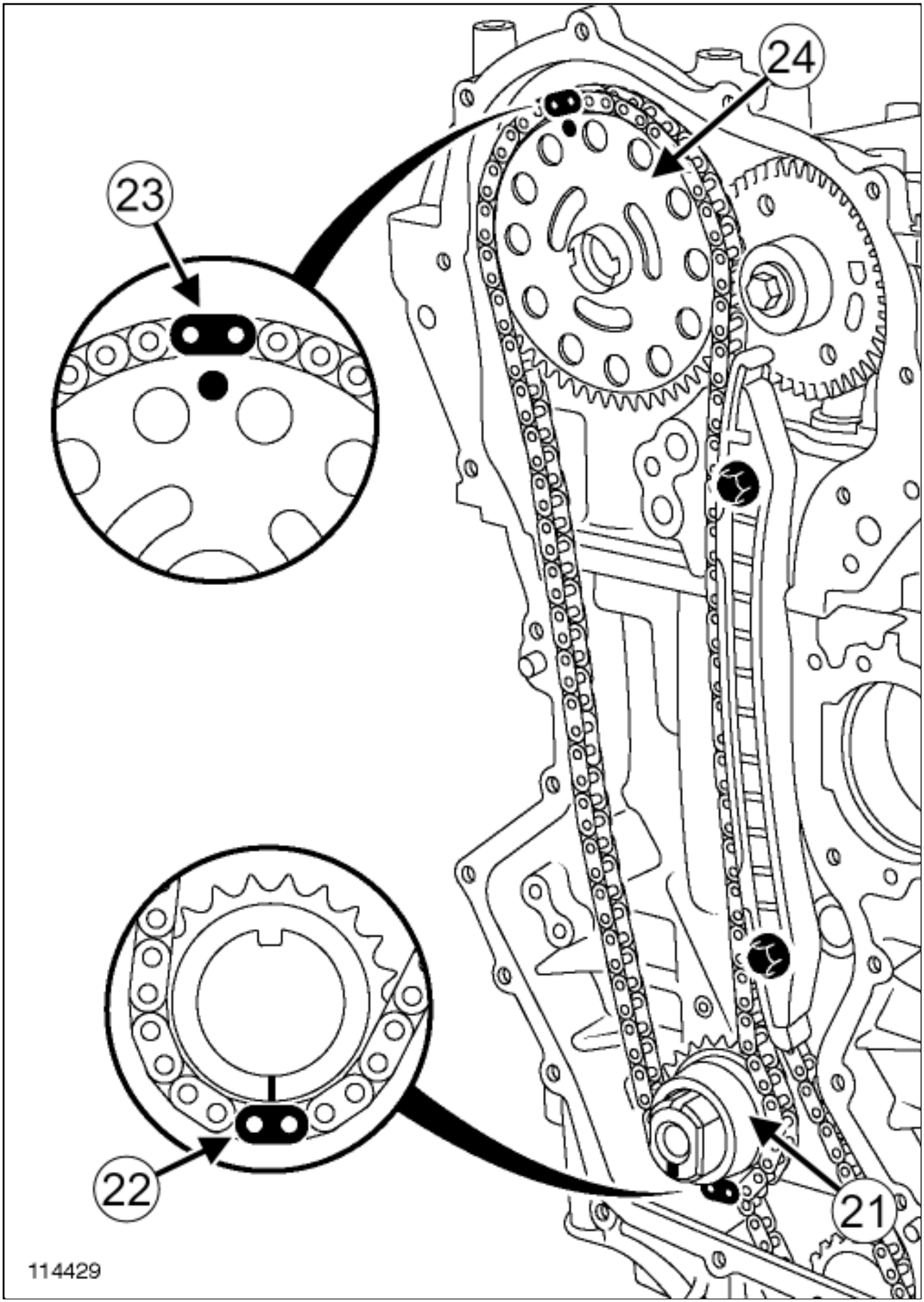
- Position the Top dead centre locating pin.(Mot. 1766) .



Check that:

- the mark(18) on the inlet camshaft sprocket is opposite the rocker cover boss(19) ,
- the groove on the exhaust camshaft is horizontal (large offset(20) facing upwards).

Refit the timing chain guide Timing assembly: Exploded view .


24
23
22
21
114429

Fit the new timing chain sprocket on the crankshaft side(21) .

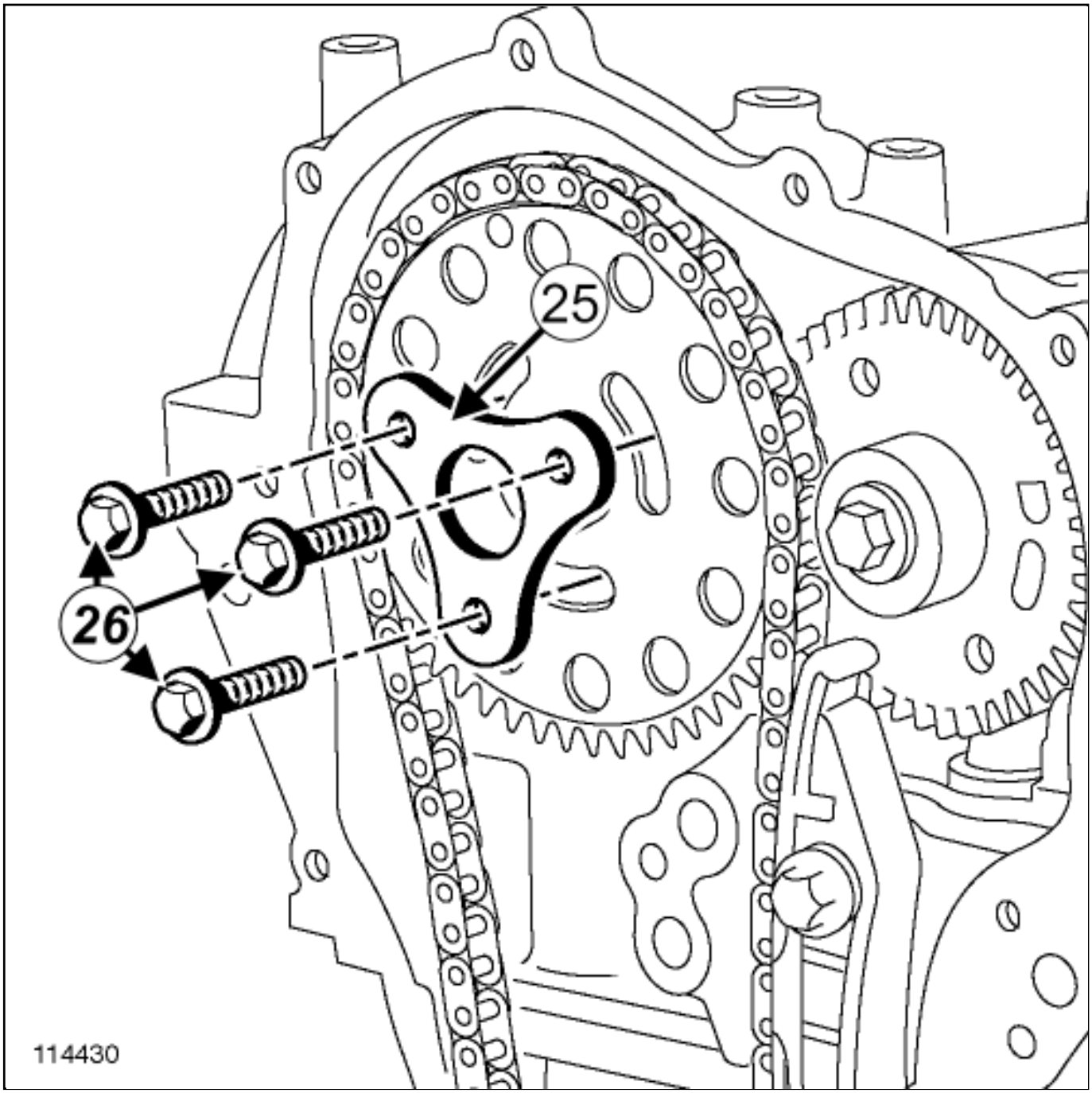
Note:

The timing chain does not have a direction of fitting.

Position:

- the new timing chain on the timing chain sprocket on the crankshaft side (align the sprocket mark with the copper chain link(22)),
- the timing chain sprocket on the new camshaft side(24) on the chain (align the sprocket mark with the copper chain link(23)).

Fit the timing sprocket on the camshaft side(24) .



- Fit a washer to the timing chain sprocket (camshaft side)(25) on the timing chain sprocket (camshaft side).

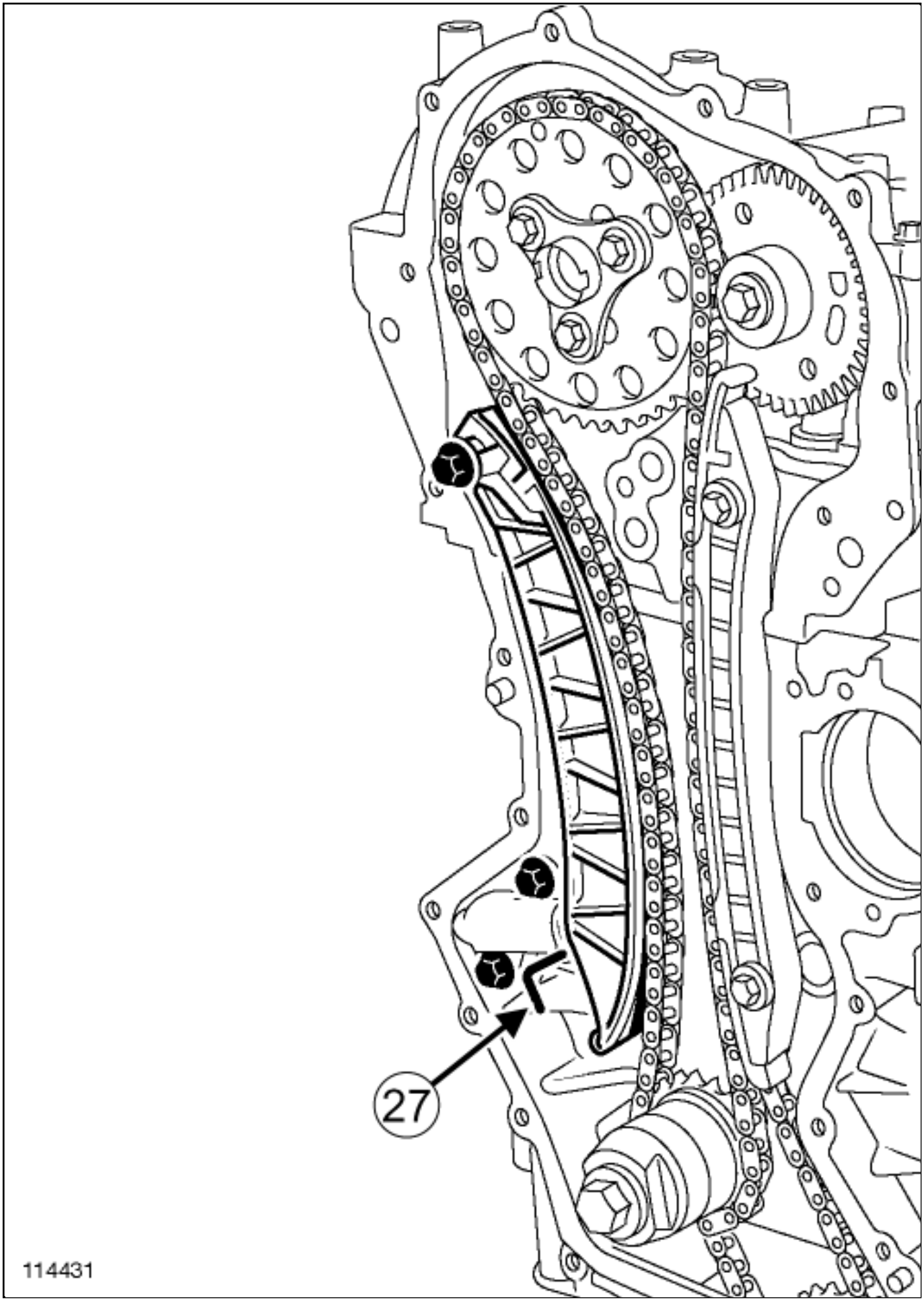
- Finger tighten the new bolts(26) of the timing chain sprocket on the camshaft side.

Note:

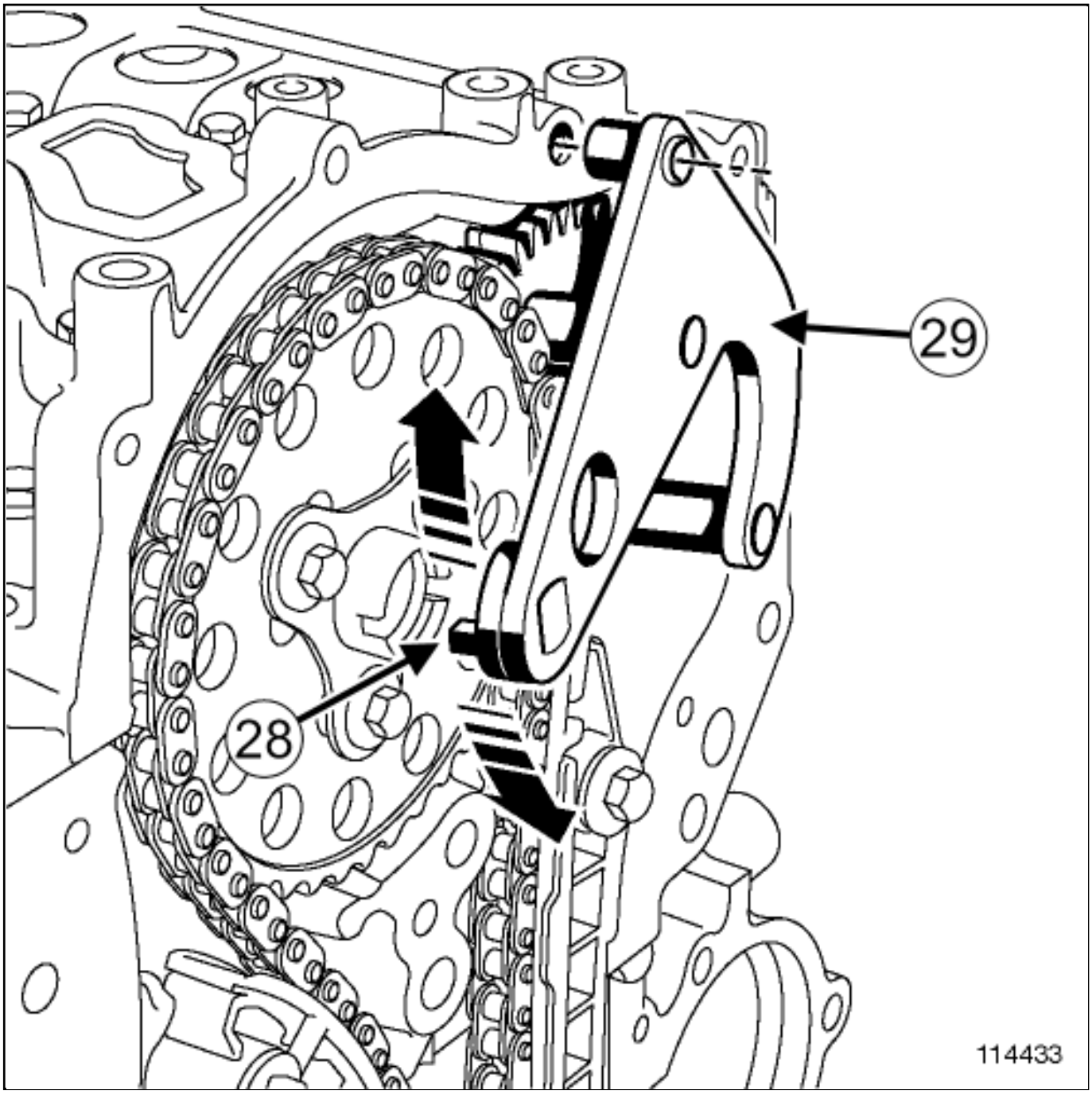
Allow the timing chain sprocket on the camshaft side to rotate freely.

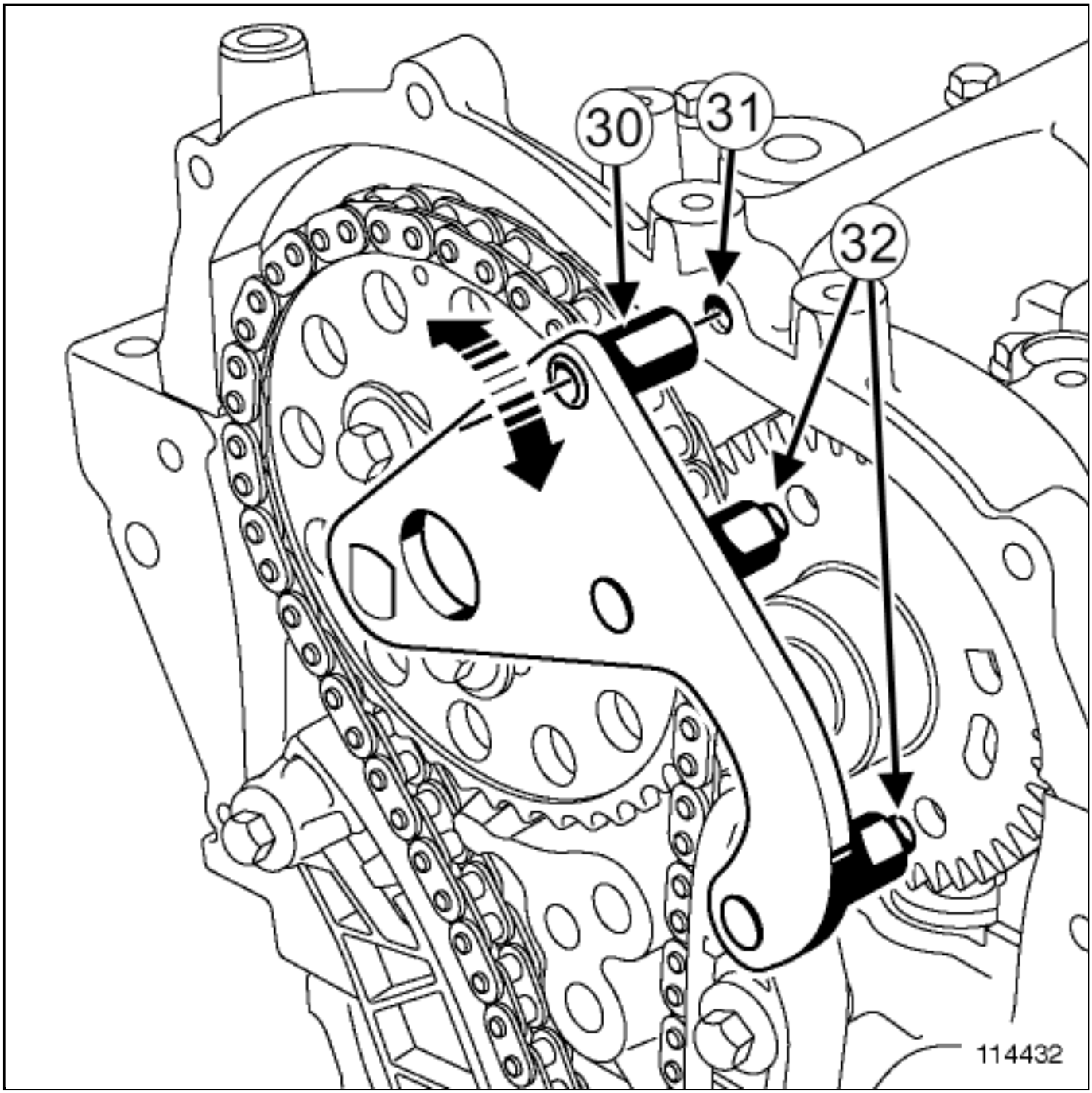
Refit **Timing assembly: Exploded view** :

- the chain tensioner guide,
- the timing hydraulic tensioner.


27
114431

Remove the 3 mmAllen key (27) .





Engage the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) (29) into the camshaft groove.

Note:

Do not engage the pins(32) of the toolCamshaft adjusting tool(Mot. 1769) in the holes of the inlet camshaft timing sprocket.

Turn the toolCamshaft adjusting tool(Mot. 1769) to align the shafts on the spacer(30) and the hole (31) .

Detach the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) from the camshaft groove.

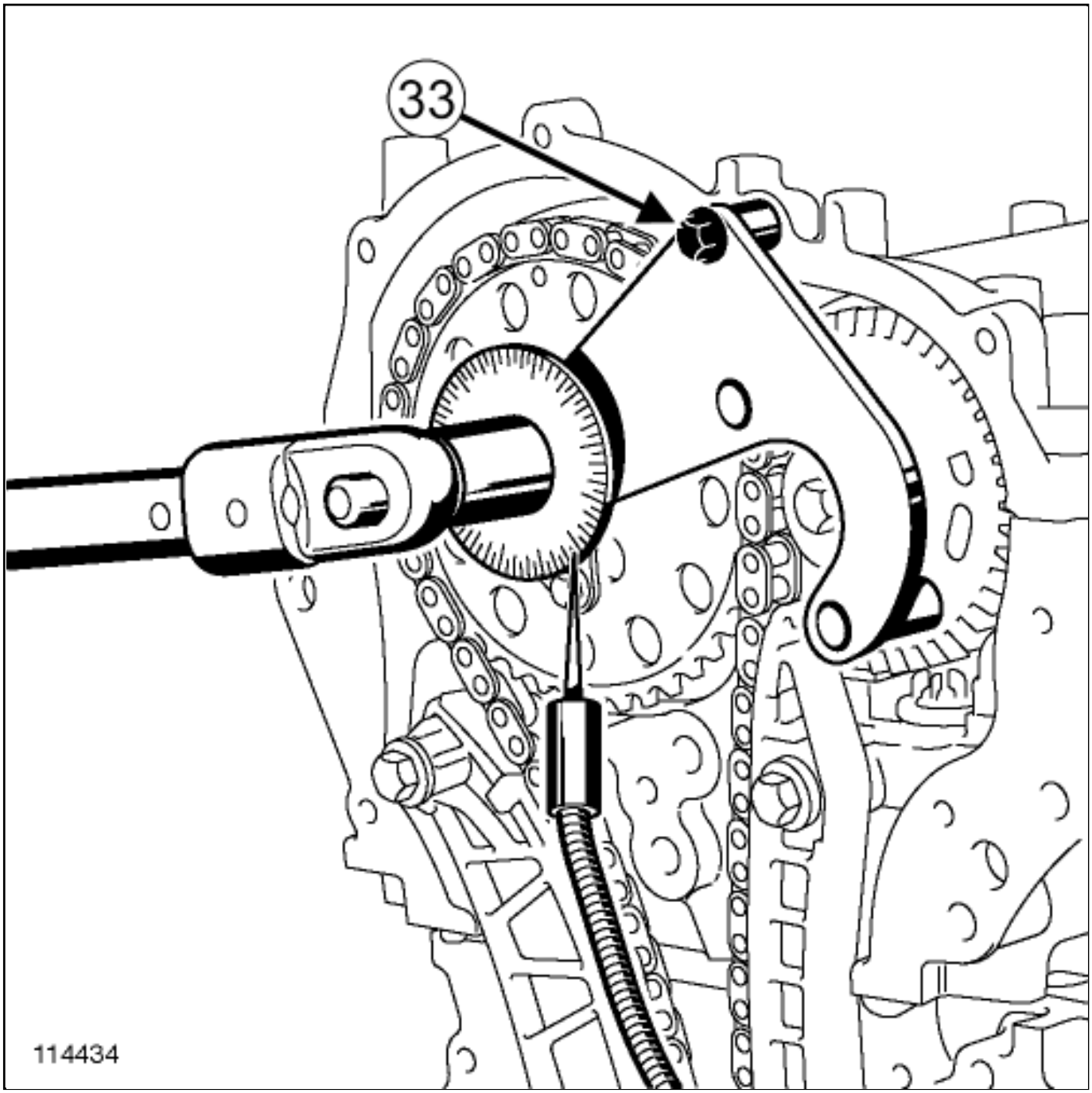
Engage the pins(32) of the toolCamshaft adjusting tool(Mot. 1769) in the holes of the inlet camshaft timing sprocket.

Note:

Do not fit the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) into the camshaft groove.

Turn the toolCamshaft adjusting tool(Mot. 1769) to align the shafts on the spacer(30) and the hole (31) .

Fit the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) (29) into the groove on the camshaft, without forcing it (if necessary, start the previous operations again).



Fit the bolt(33) (M6 - 50 mmlong) onto the toolCamshaft adjusting tool(Mot. 1769) .

Torque tighten the bolts of the timing chain sprocket on the camshaft sideTiming assembly: Exploded view .

Remove:

- theCamshaft adjusting tool(**Mot. 1769**) ,
- theTop dead centre locating pin.(**Mot. 1766**) .

Proceed in the reverse order to removal.

Perform the following operations:

- fill and bleed the cooling circuit**Cooling system: Draining - Refilling** ,
- fill up the engine**Engine oil: Draining - Refilling** .

TIMING CHAIN: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Top dead centre locating pin.	Mot. 1766
Camshaft adjusting tool	Mot. 1769

Equipment required
refrigerant charging station

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

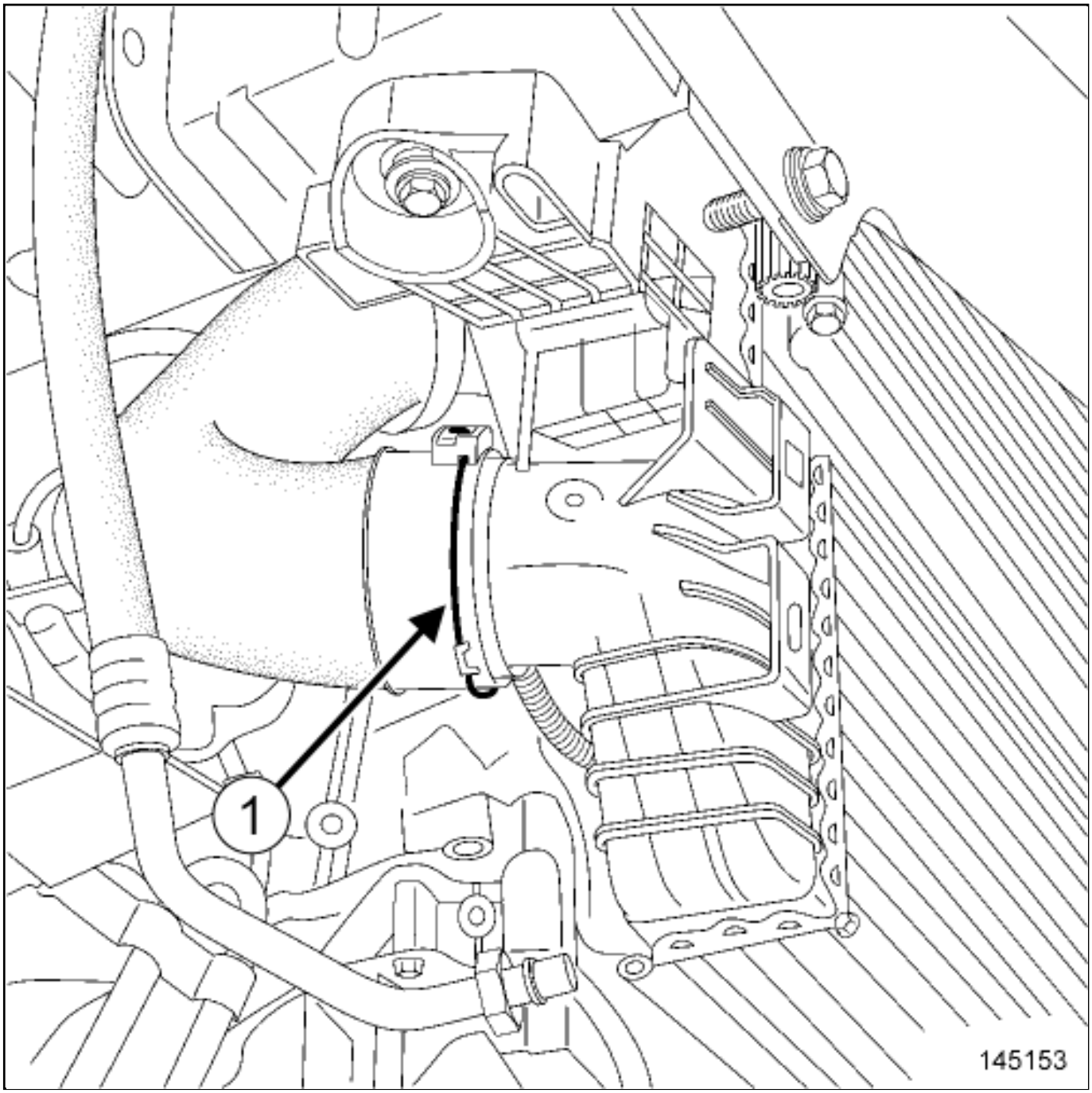
Location and specifications (tightening torques, parts always to be replaced, etc.)**Timing assembly: Exploded view** .

REMOVAL

1. REMOVAL PREPARATION OPERATION

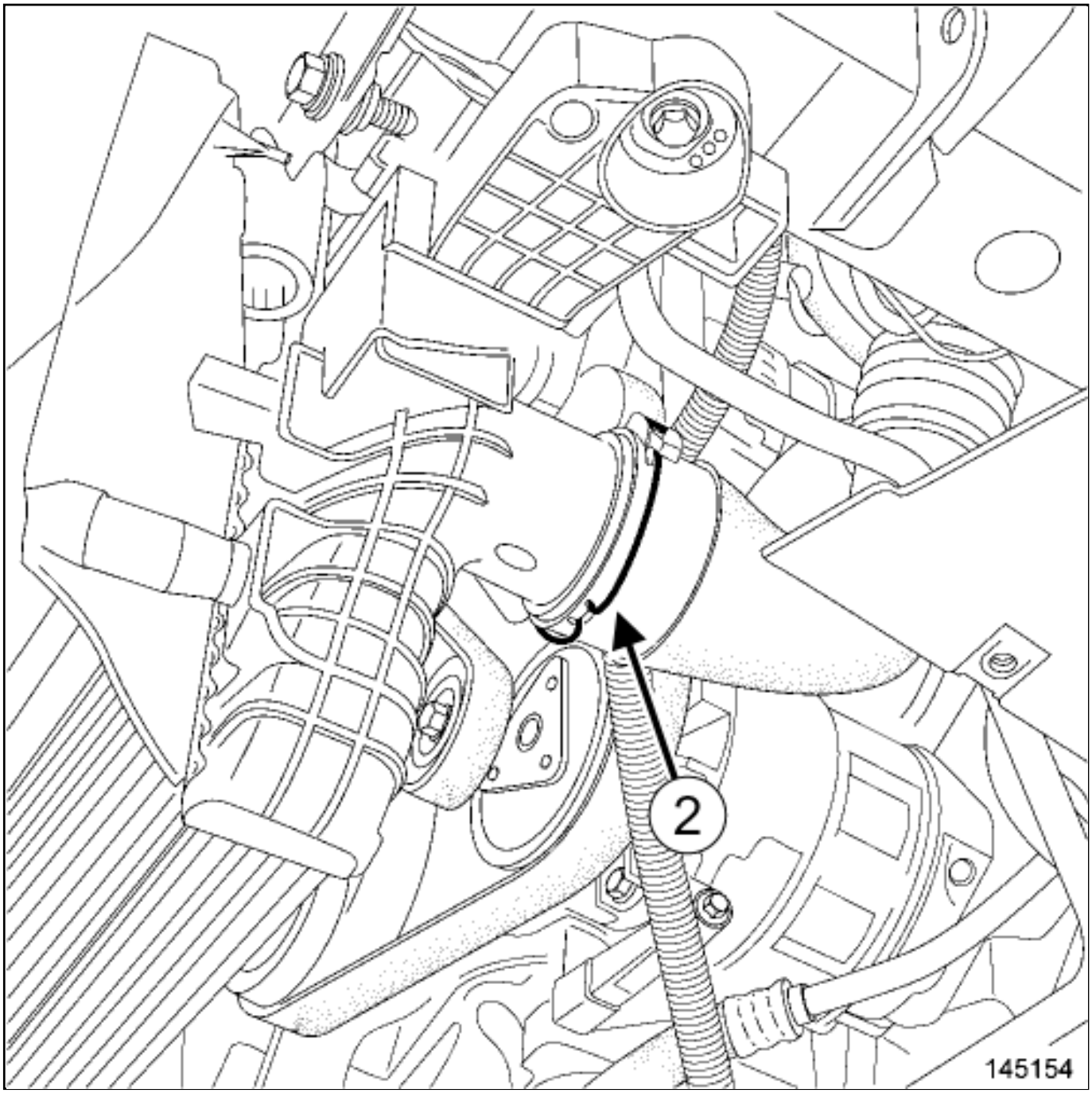
- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).
- Remove the engine undertray.
- Drain:
  - the engine**Engine oil: Draining - Refilling** ,
  - the cooling system**Cooling system: Draining - Refilling** .
- Remove:
  - the radiator grille**Radiator grille: Removal - Refitting** (56A, Exterior equipment),
  - the headlights**Headlight: Removal - Refitting** (80B, Headlights),
  - the front bumper**Front bumper: Removal - Refitting** (55A, Exterior protection),
  - the front end panel**Front end panel: Removal - Refitting** (42A, Upper front structure),

- the engine cooling fan propeller Cylinder block assembly: Exploded view ,
- the accessories belt Engine accessories assembly: Exploded view ,
- the crankshaft accessories pulley,
- the coolant pump pulley Cylinder block assembly: Exploded view .



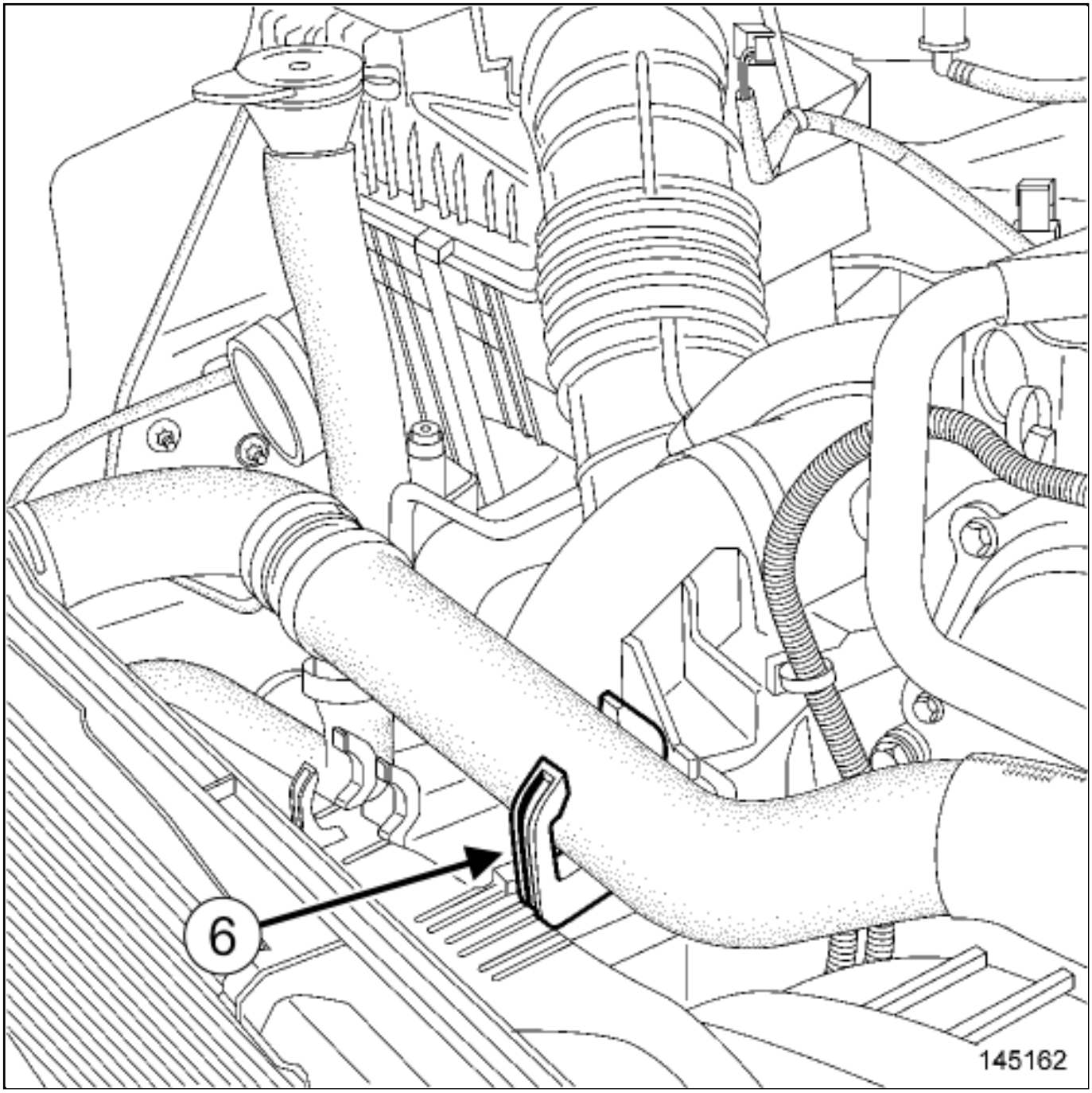
Remove the clip(1) for the intercooler air inlet pipe.

Disconnect the intercooler air inlet pipe.



- Move aside the clip(2) for the intercooler air outlet pipe.
- Disconnect the intercooler air outlet pipe.
- Using the toolRemote operation pliers for hose clips.(**Mot. 1448**), separate the following from the cooling radiator**Coolant circuit assembly: Exploded view** :
  - the cooling radiator outlet pipe clip,
  - the cooling radiator inlet pipe clip,
  - the cooling radiator degassing pipe clip.
- Disconnect the following from the cooling radiator**Coolant circuit assembly: Exploded view** :
  - the cooling radiator outlet pipe,

- the cooling radiator inlet pipe,
- the cooling radiator degassing pipe.



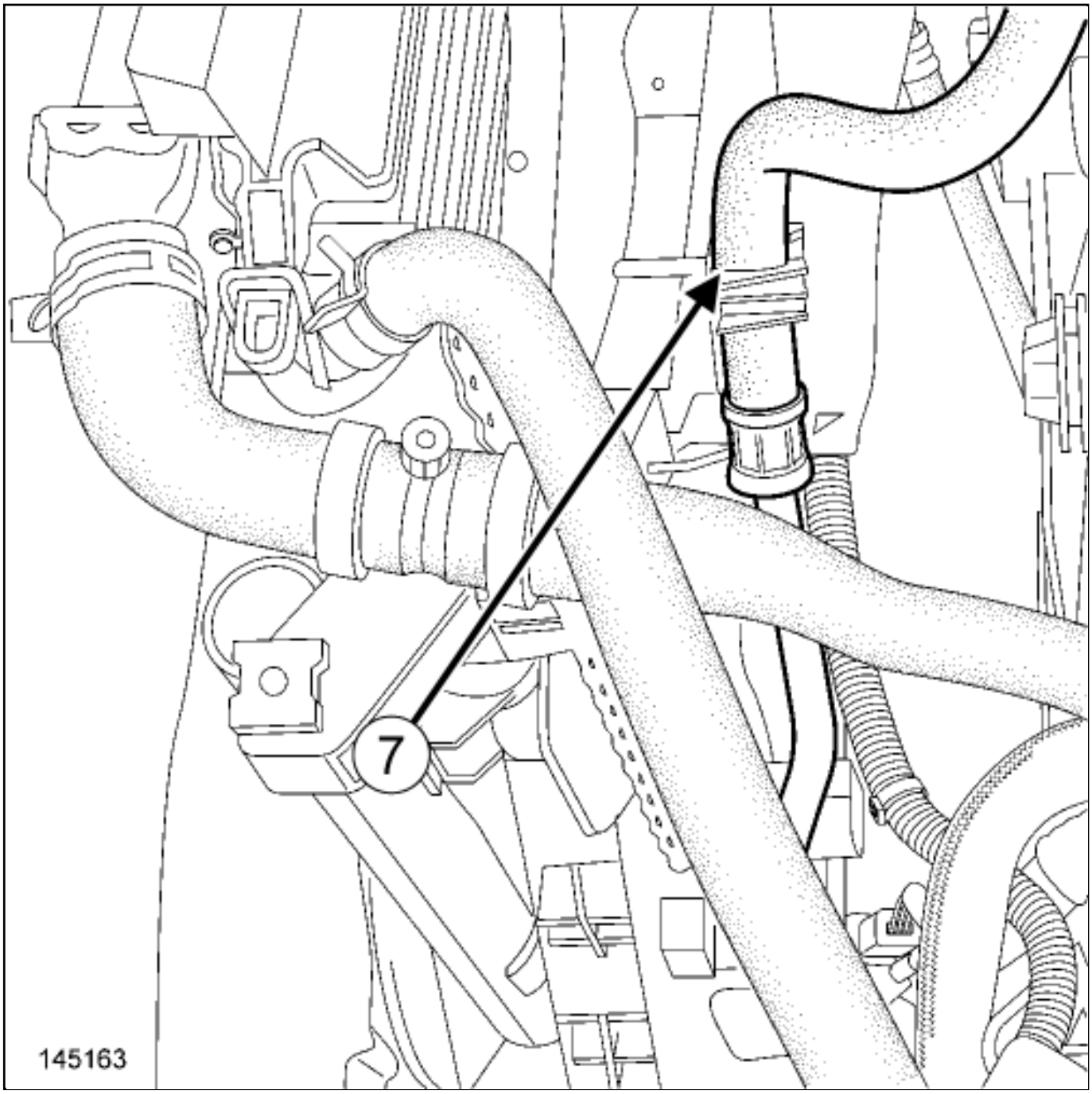
Unclip the cooling pipe(6) from the engine cooling fan assembly.

Using the toolRemote operation pliers for hose clips.(Mot. 1448), separate the following from the additional radiatorCoolant circuit assembly: Exploded view :

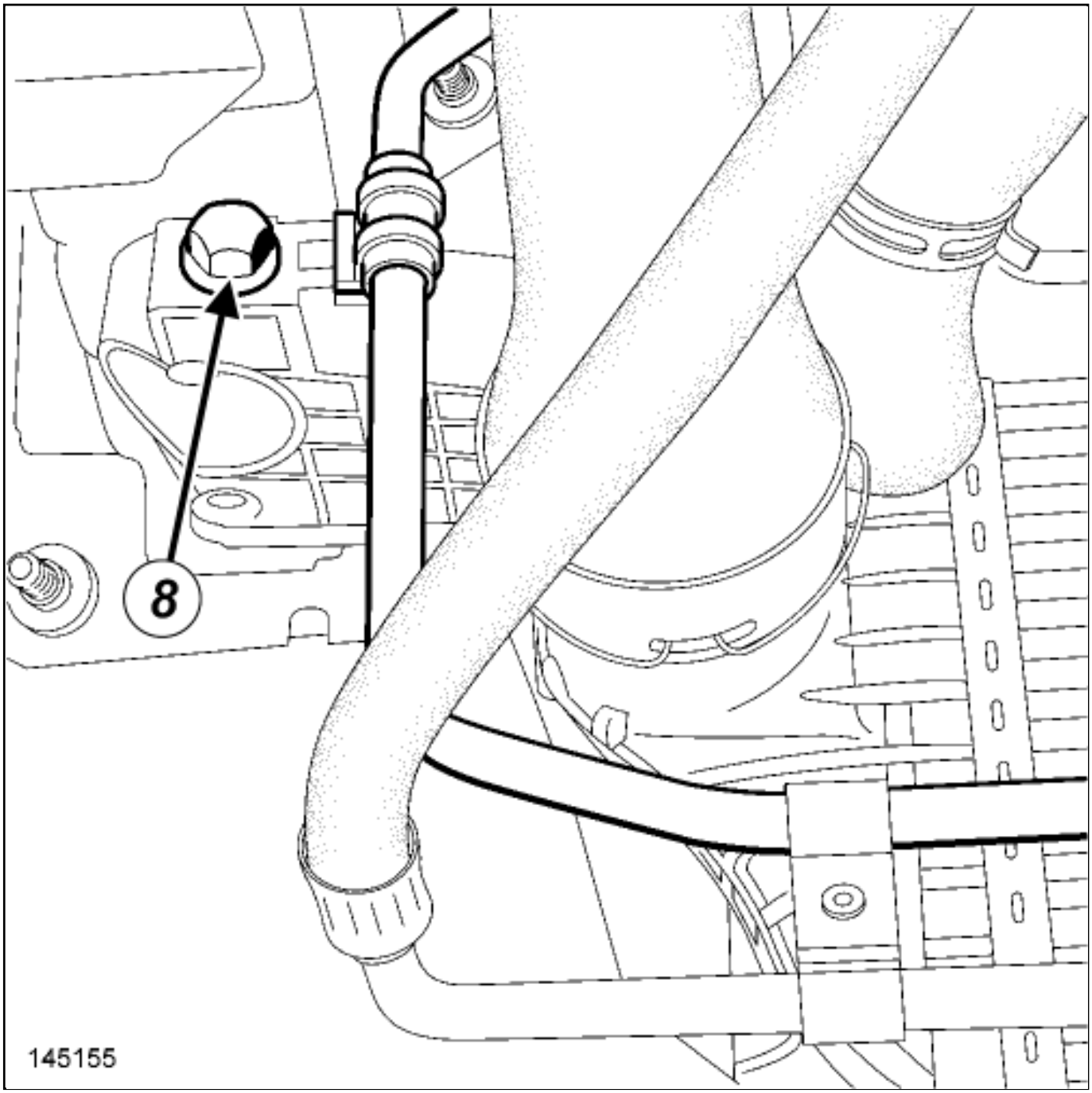
- the clip of the pipe between the cooling radiator and the additional cooling radiator,
- the additional cooling radiator outlet pipe clip.

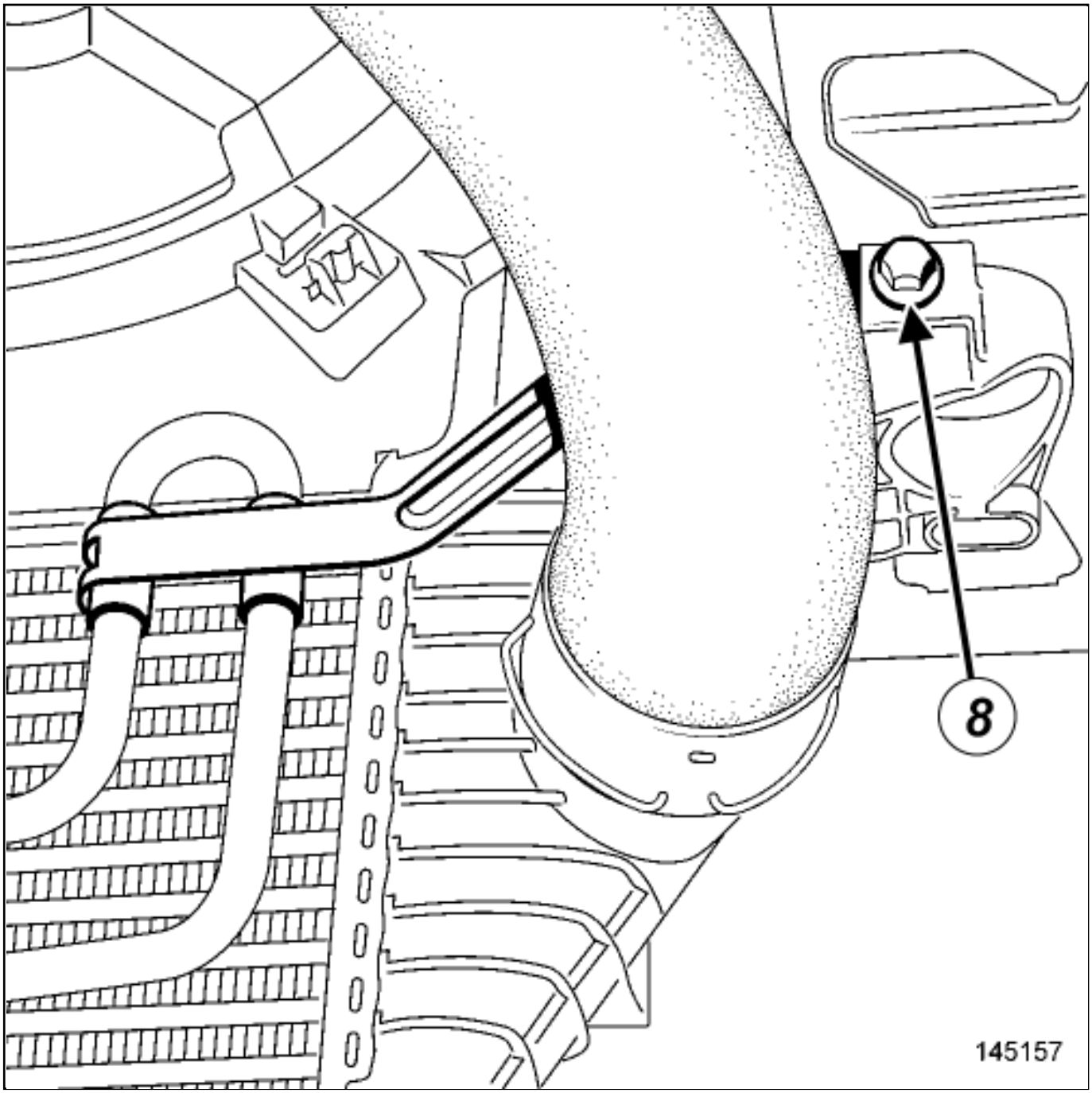
Disconnect the following from the additional cooling radiatorCoolant circuit assembly: Exploded view :

- the pipe between the cooling radiator and the additional cooling radiator,
- the additional cooling radiator outlet pipe.

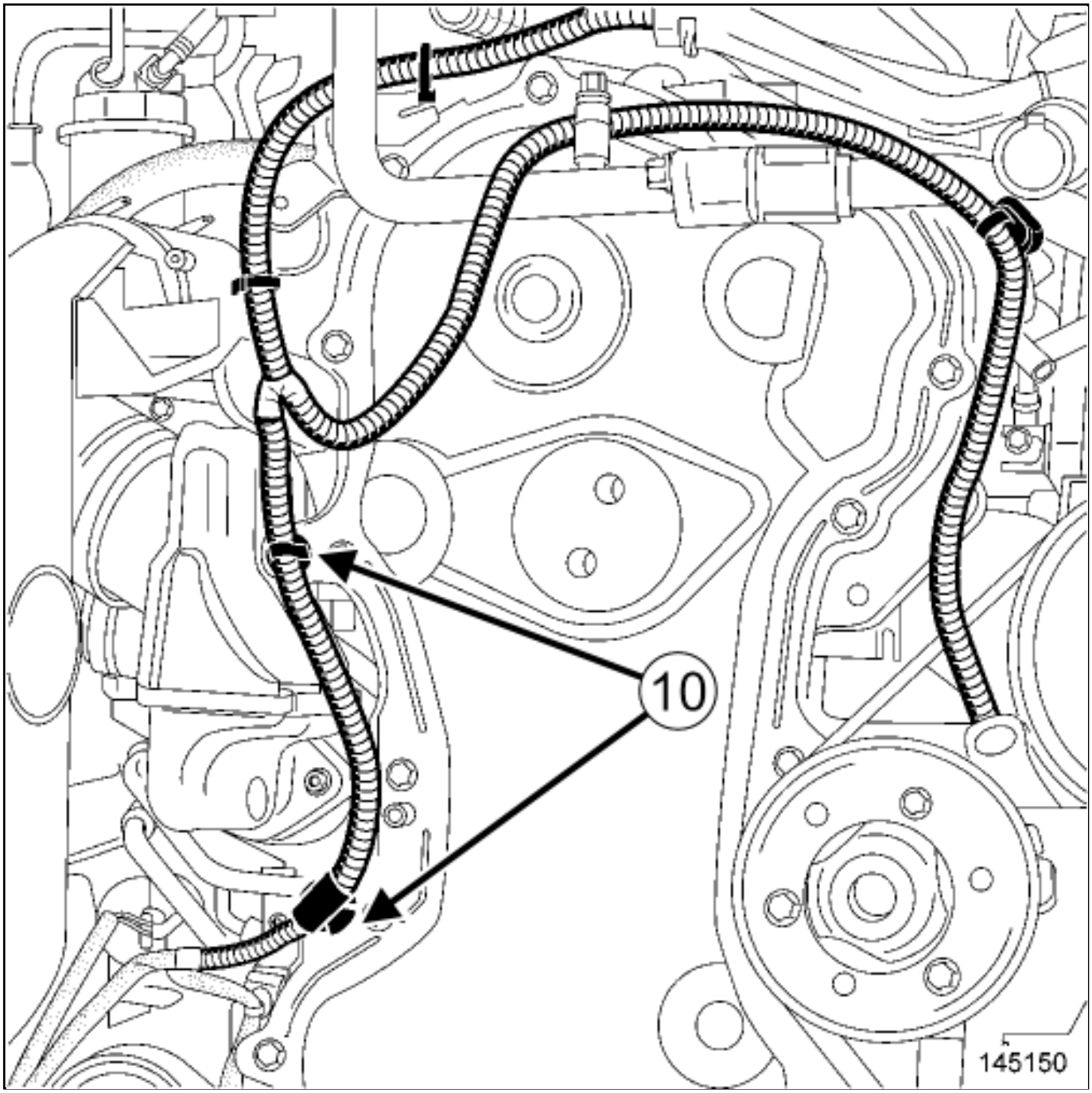


- Unclip the power-assisted steering pipe from the engine cooling fan assembly(7) .


8
145155



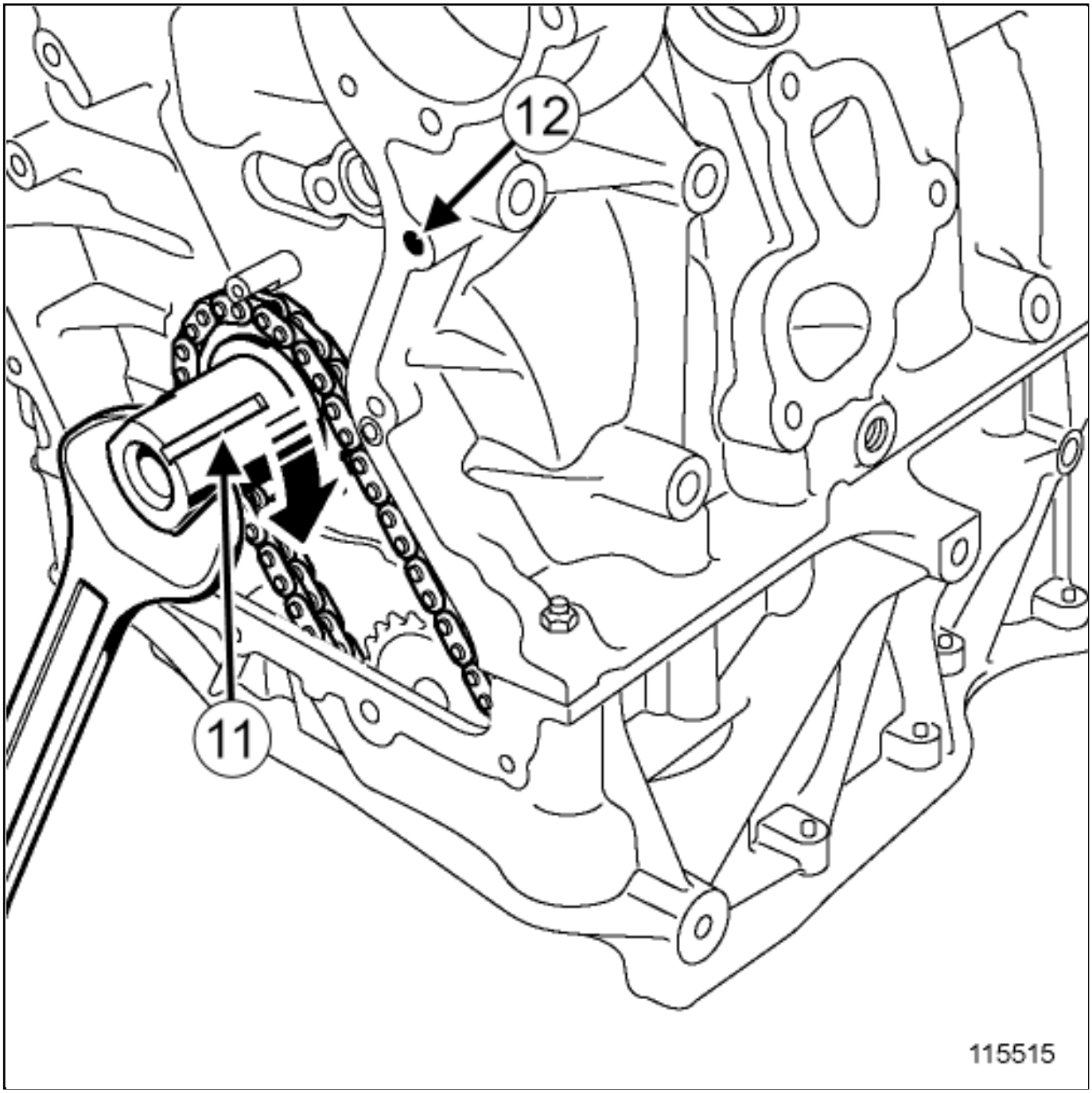
- Remove the bolts(8) from the power-assisted steering pipe.



- Unclip the air conditioning pressostat wiring at(10) .

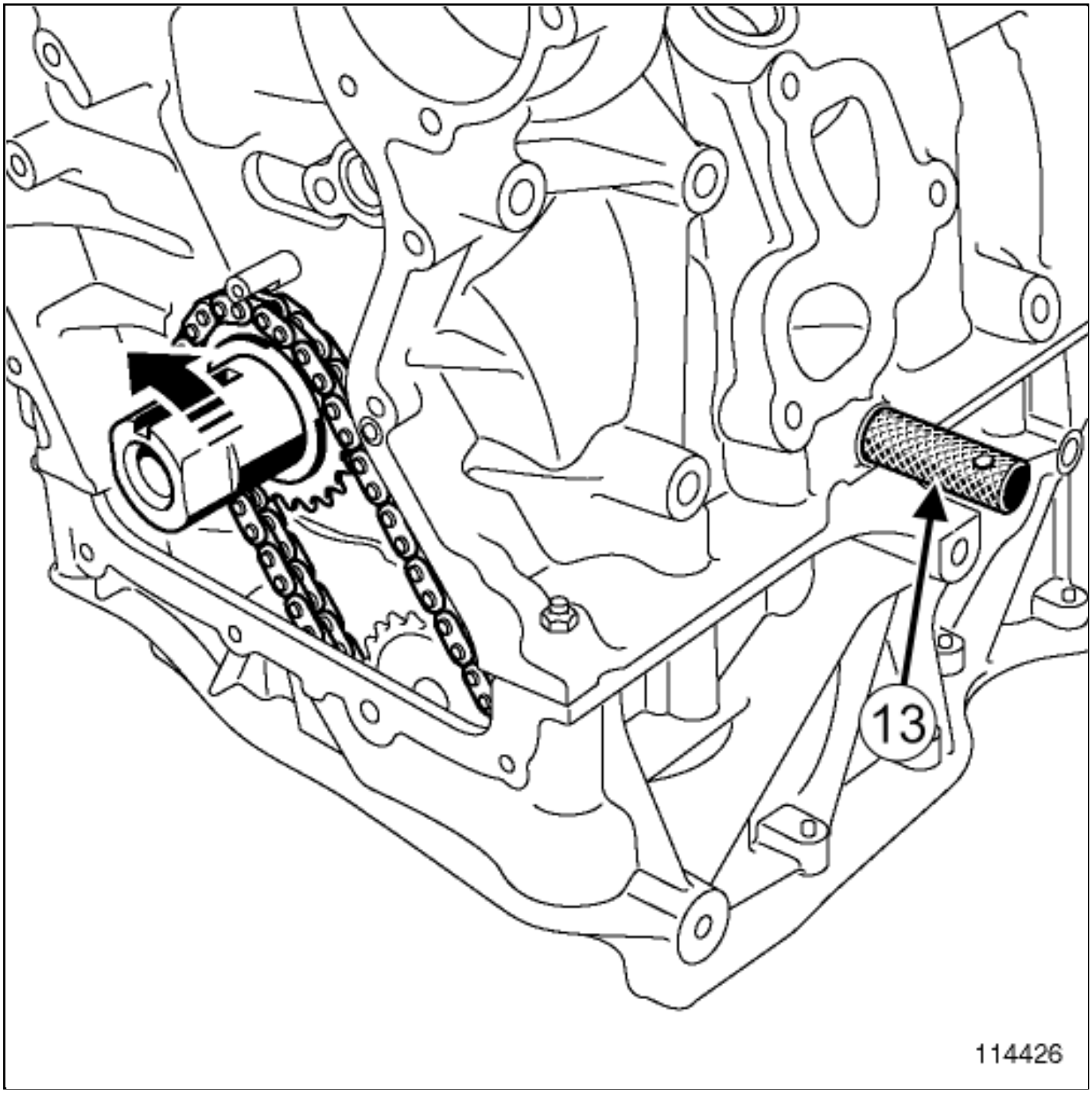
2. REMOVAL OPERATION

- Remove the timing cover Timing assembly: Exploded view .



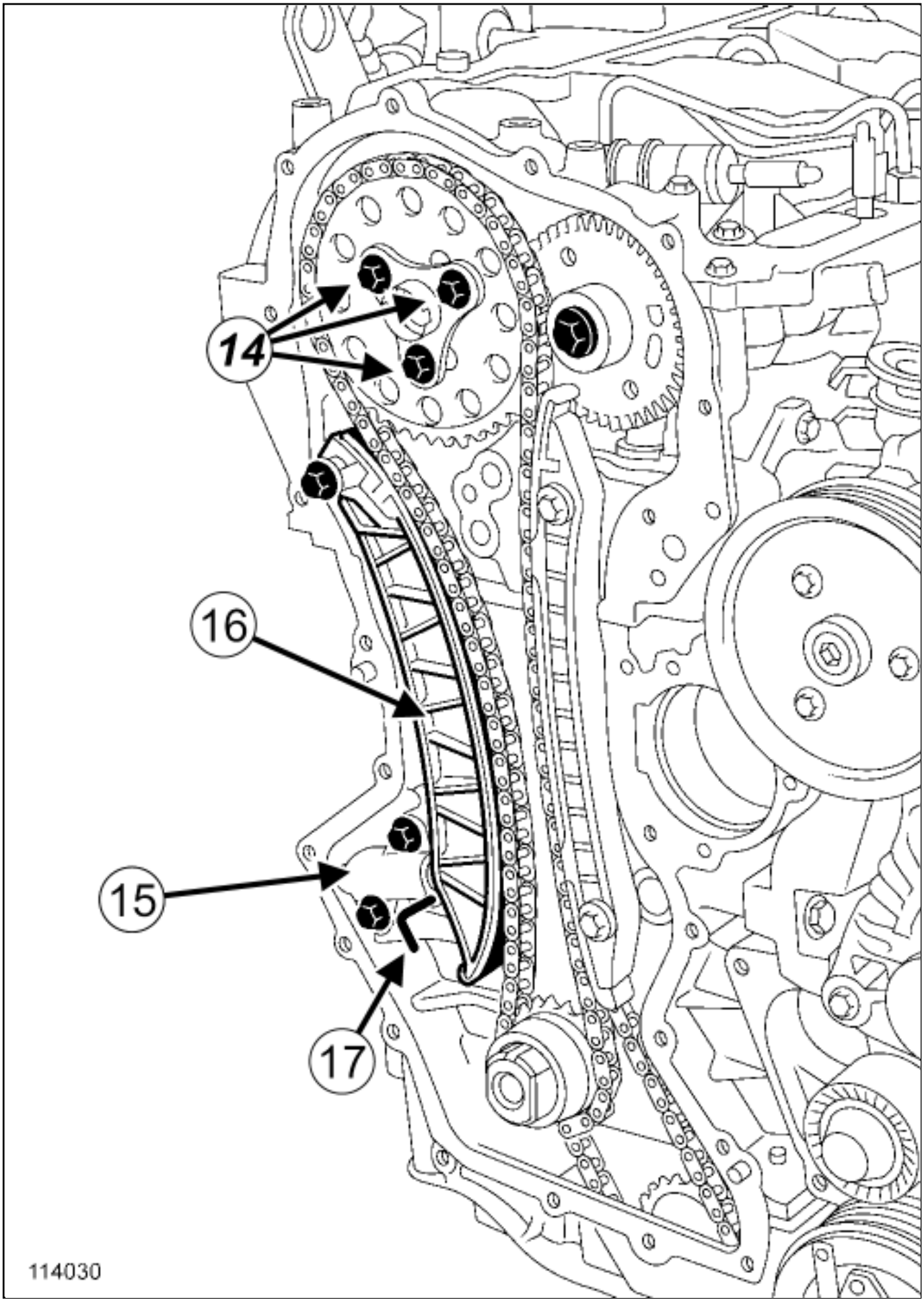
- Align the groove(11) on the crankshaft with the hole(12) on the cylinder block (pistons at mid-stroke).

- Remove the TDC plug Cylinder block assembly: Exploded view .



- Position the Top dead centre locating pin.(Mot. 1766) (13) .

- Turn the crankshaft anti-clockwise until it makes contact with the toolTop dead centre locating pin. (Mot. 1766) .


14
16
15
17
114030

Loosen the bolts(14) of the timing chain sprocket on the camshaft side.

Compress the timing hydraulic tensioner(15) with the chain tensioner guide(16) .

Lock the timing hydraulic tensioner using a 3 mmAllen key (17) .

Remove **Timing assembly: Exploded view** :

- the timing tensioner,
- the chain tensioner guide,
- the timing chain guide,
- the washer of the timing chain sprocked on the camshaft side,
- the "timing chain sprocket on the camshaft side - timing chain - timing chain sprocket on the crankshaft side" assembly.

REFITTING

1. REFITTING PREPARATION OPERATION

Use super cleaning agent for joint faces**Vehicle: Parts and consumables for the repair** (04B, Consumables - Products) to clean:

- the joint face of the timing cover on the cylinder block and on the cylinder head,
- the timing cover.

CAUTION

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

- Remove the residue using a plastic spatula.

- Finish cleaning the joint faces using a grey abrasive pad Vehicle: Parts and consumables for the repair (04B, Consumables - Products).

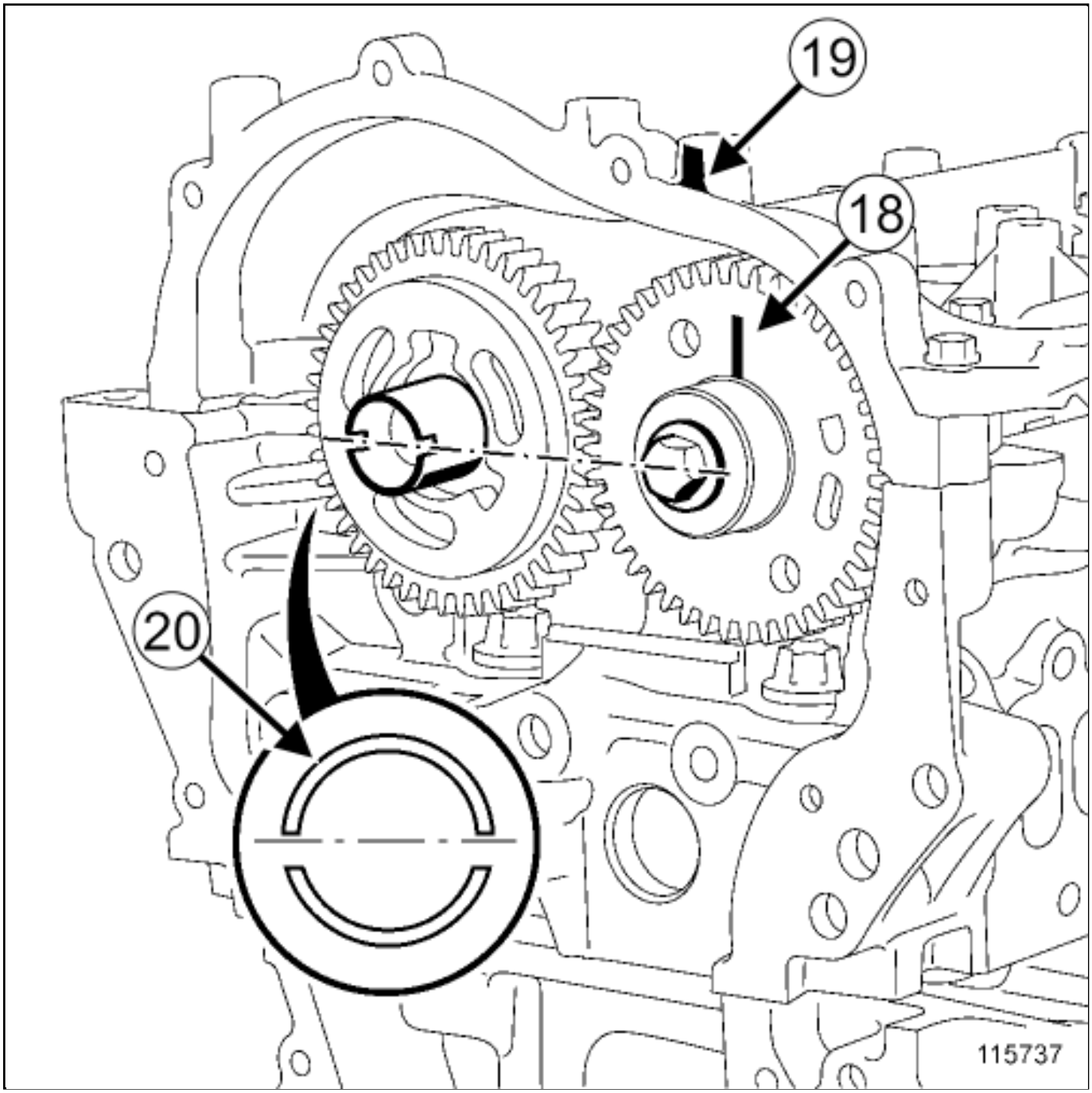
CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

2. REFITTING OPERATION

- Set the engine at Top Dead Centre.

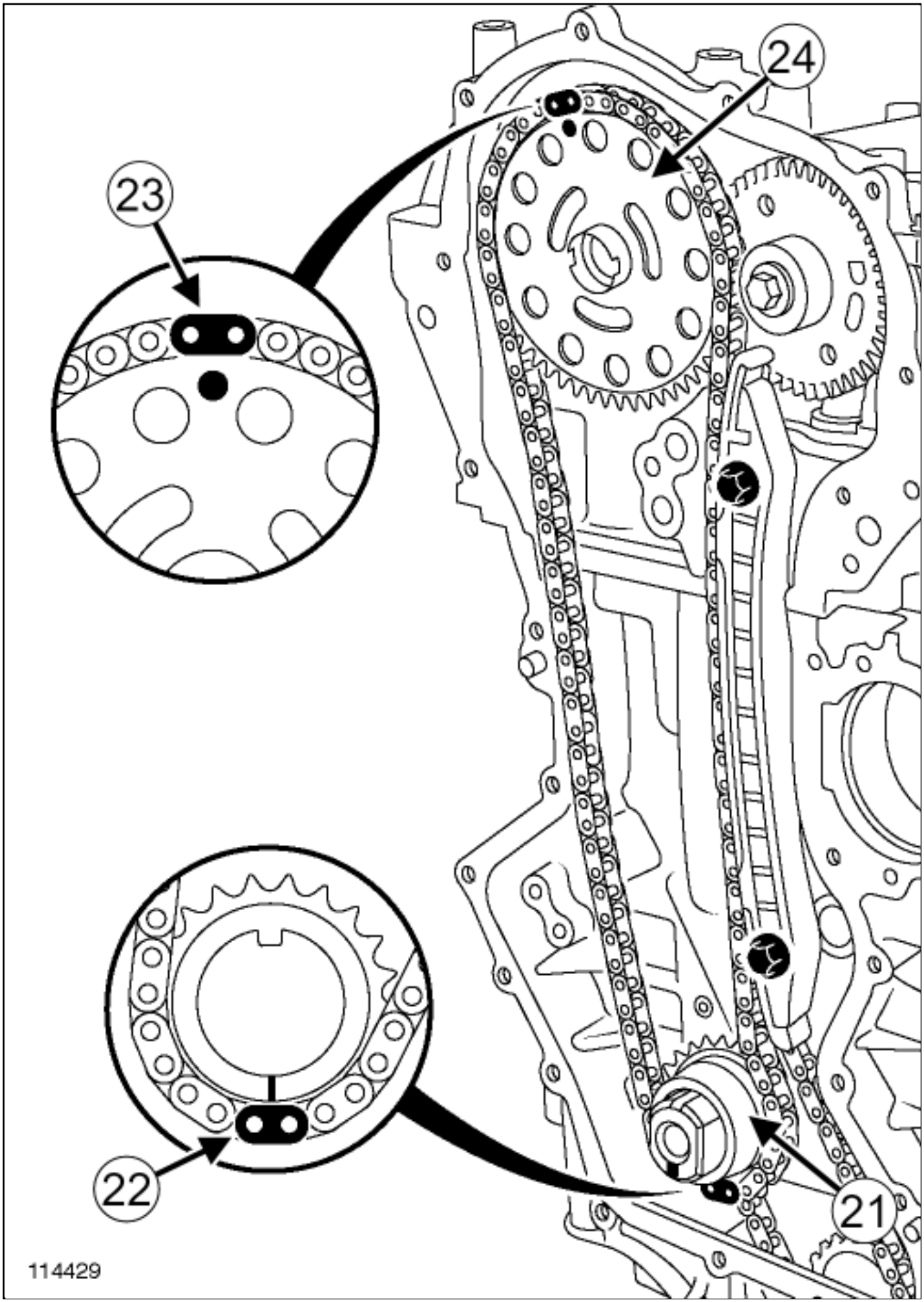
- Position the Top dead centre locating pin.(Mot. 1766) .



Check that:

- the mark(18) on the inlet camshaft sprocket is opposite the rocker cover boss(19) ,
- the groove on the exhaust camshaft is horizontal (large offset(20) facing upwards).

Refit the timing chain guide Timing assembly: Exploded view .


24
23
22
21
114429

Fit the new timing chain sprocket on the crankshaft side(21) .

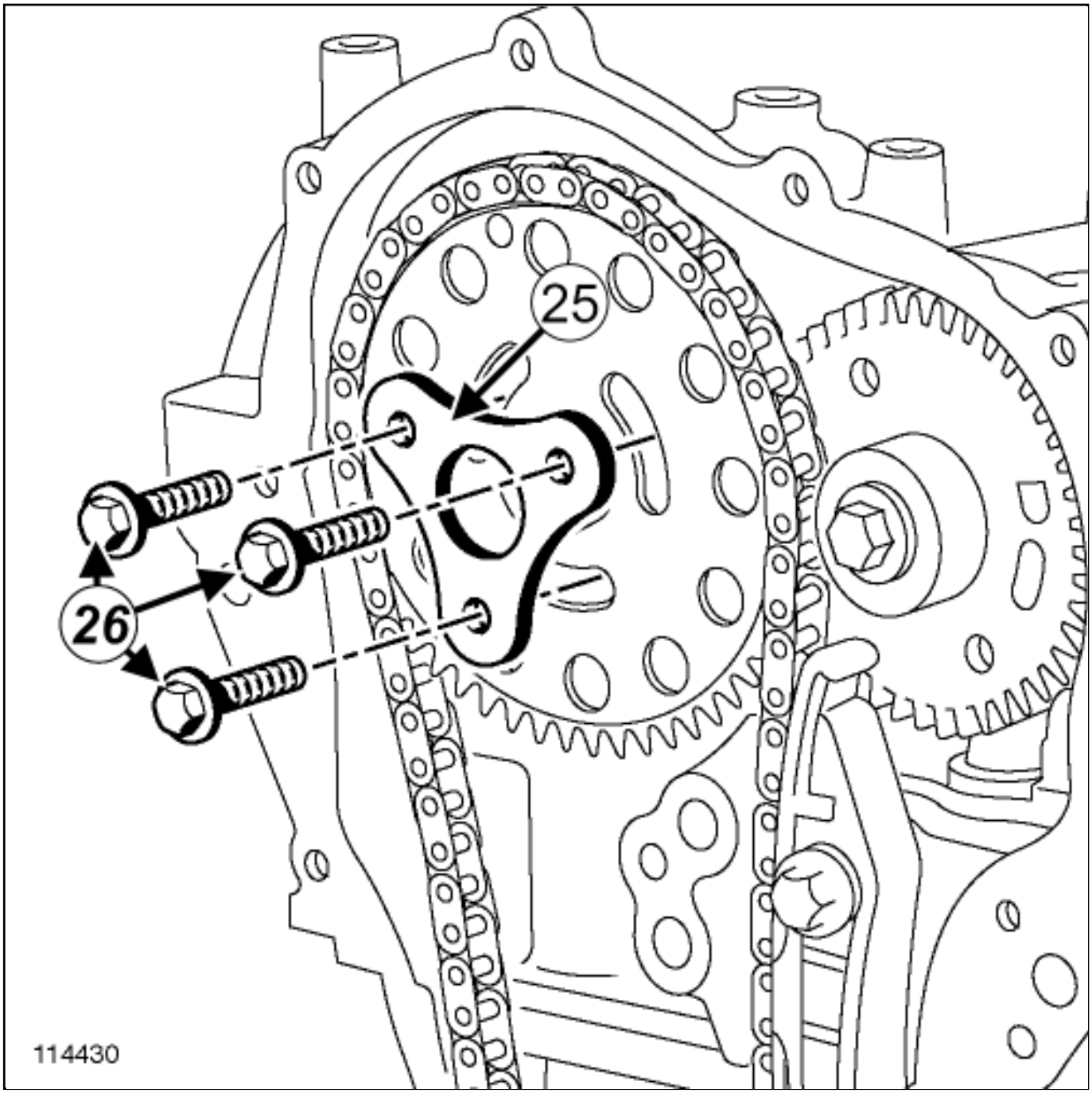
Note:

The timing chain does not have a direction of fitting.

Position:

- the new timing chain on the timing chain sprocket on the crankshaft side (align the sprocket mark with the copper chain link(22)),
- the timing chain sprocket on the new camshaft side(24) on the chain (align the sprocket mark with the copper chain link(23)).

Fit the timing sprocket on the camshaft side(24) .



- Fit a washer to the timing chain sprocket (camshaft side)(25) on the timing chain sprocket (camshaft side).

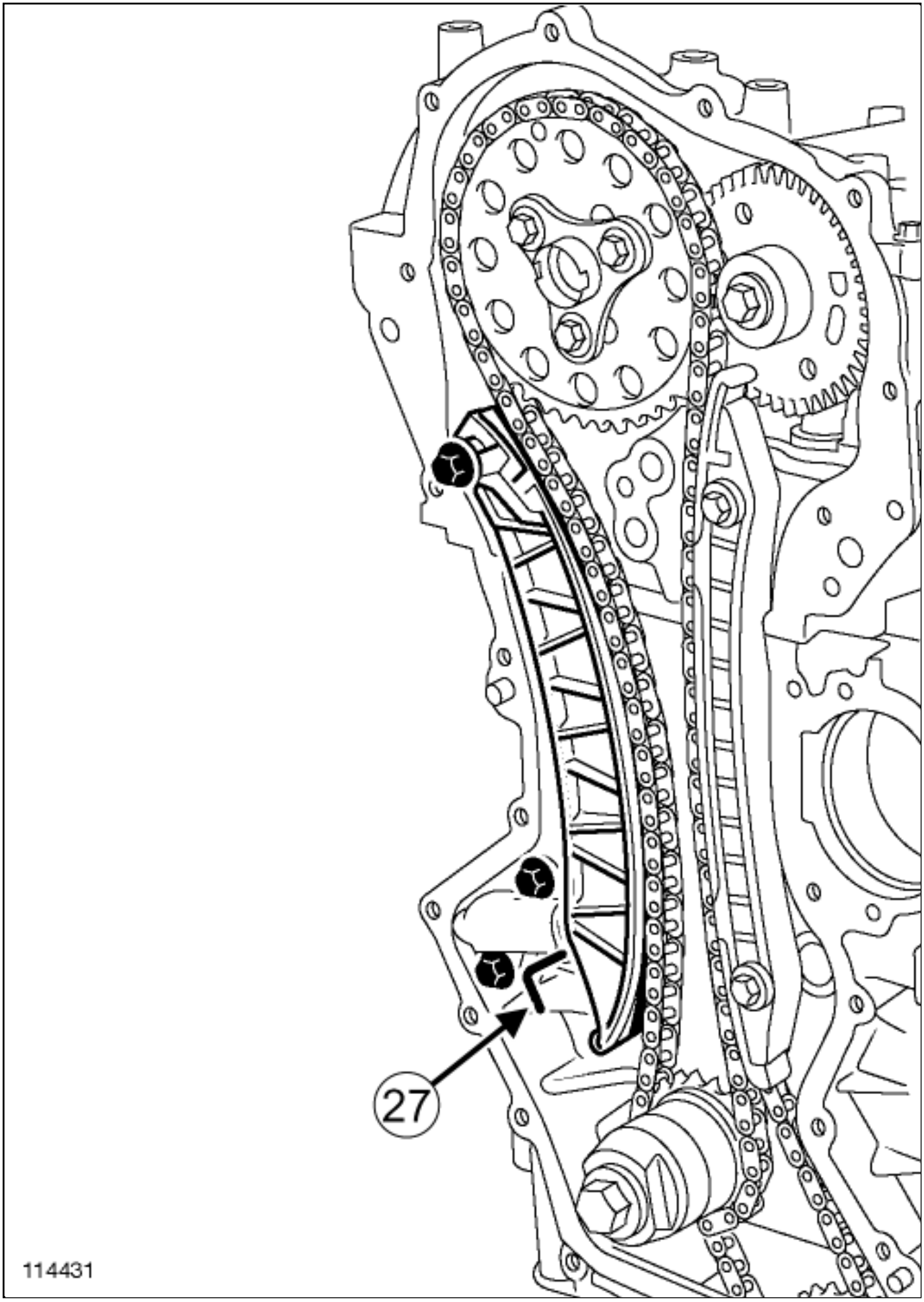
- Finger tighten the new bolts(26) of the timing chain sprocket on the camshaft side.

Note:

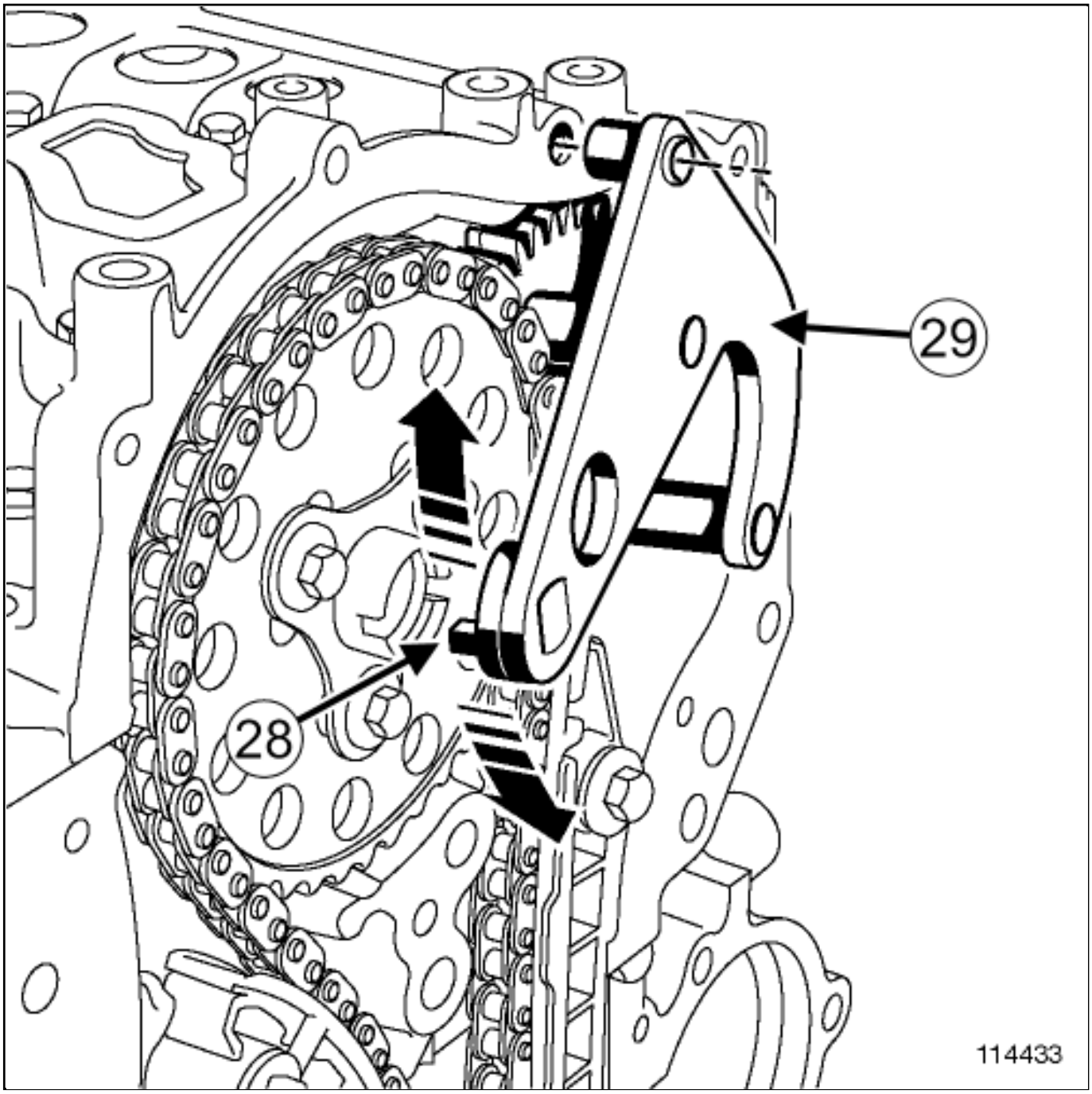
Allow the timing chain sprocket on the camshaft side to rotate freely.

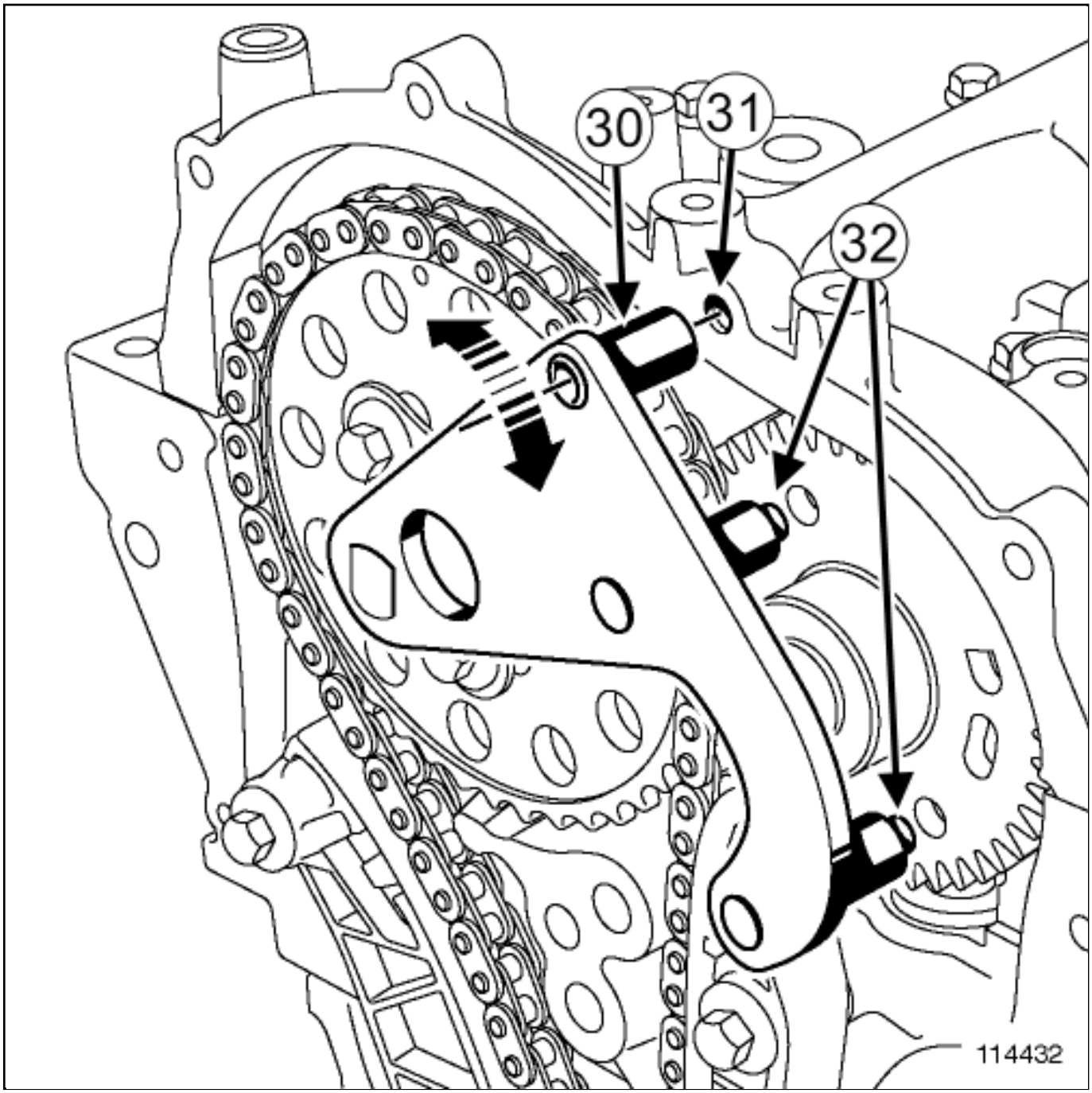
Refit **Timing assembly: Exploded view** :

- the chain tensioner guide,
- the timing hydraulic tensioner.


27
114431

Remove the 3 mmAllen key (27) .





Engage the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) (29) into the camshaft groove.

Note:

Do not engage the pins(32) of the toolCamshaft adjusting tool(Mot. 1769) in the holes of the inlet camshaft timing sprocket.

Turn the toolCamshaft adjusting tool(Mot. 1769) to align the shafts on the spacer(30) and the hole (31) .

Detach the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) from the camshaft groove.

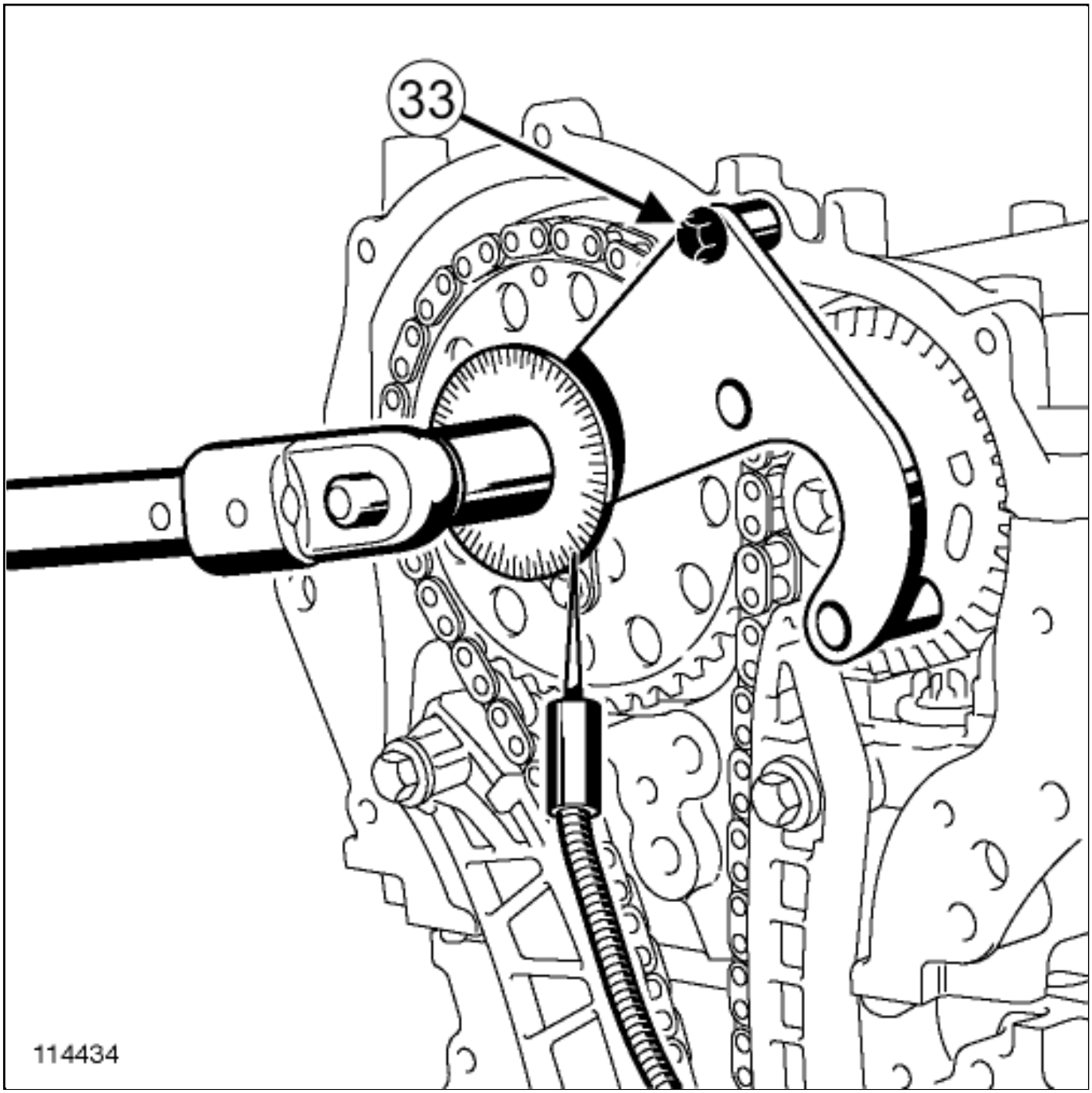
Engage the pins(32) of the toolCamshaft adjusting tool(Mot. 1769) in the holes of the inlet camshaft timing sprocket.

Note:

Do not fit the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) into the camshaft groove.

Turn the toolCamshaft adjusting tool(Mot. 1769) to align the shafts on the spacer(30) and the hole (31) .

Fit the collet(28) of the toolCamshaft adjusting tool(Mot. 1769) (29) into the groove on the camshaft, without forcing it (if necessary, start the previous operations again).



Fit the bolt(33) (M6 - 50 mmlong) onto the toolCamshaft adjusting tool(Mot. 1769) .

Torque tighten the bolts of the timing chain sprocket on the camshaft sideTiming assembly: Exploded view .

Remove:

- theCamshaft adjusting tool(**Mot. 1769**) ,
- theTop dead centre locating pin.(**Mot. 1766**) .

Proceed in the reverse order to removal.

Perform the following operations:

- fill and bleed the cooling circuit**Cooling system: Draining - Refilling** ,
- fill up the engine**Engine oil: Draining - Refilling** .

TIMING SPROCKET: REMOVAL - REFITTING

Special tooling required	
Camshaft adjusting tool	Mot. 1769
Tool for adjusting gear play take-up.	Mot. 1773

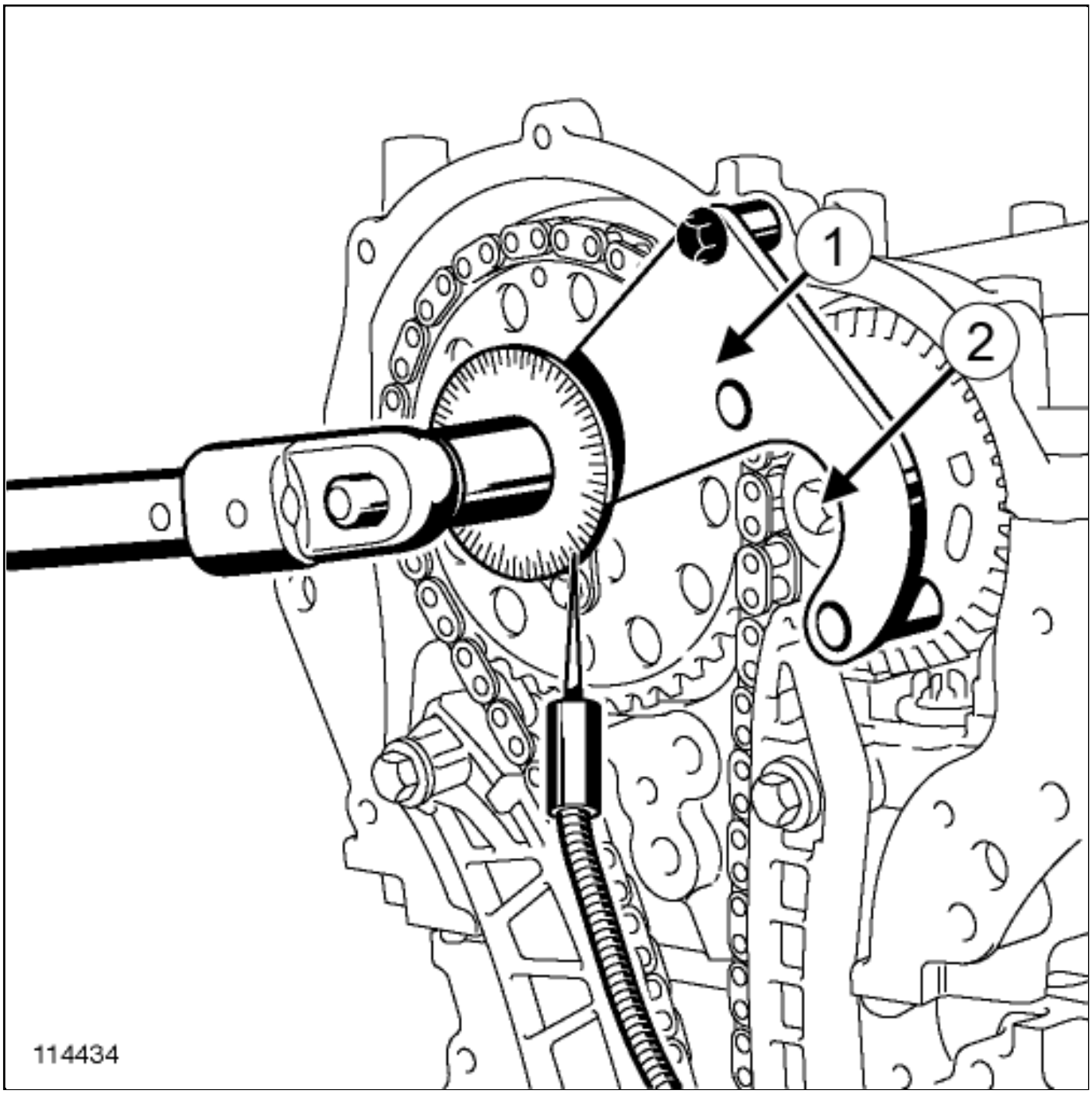
Equipment required
roll pin punch

REMOVAL

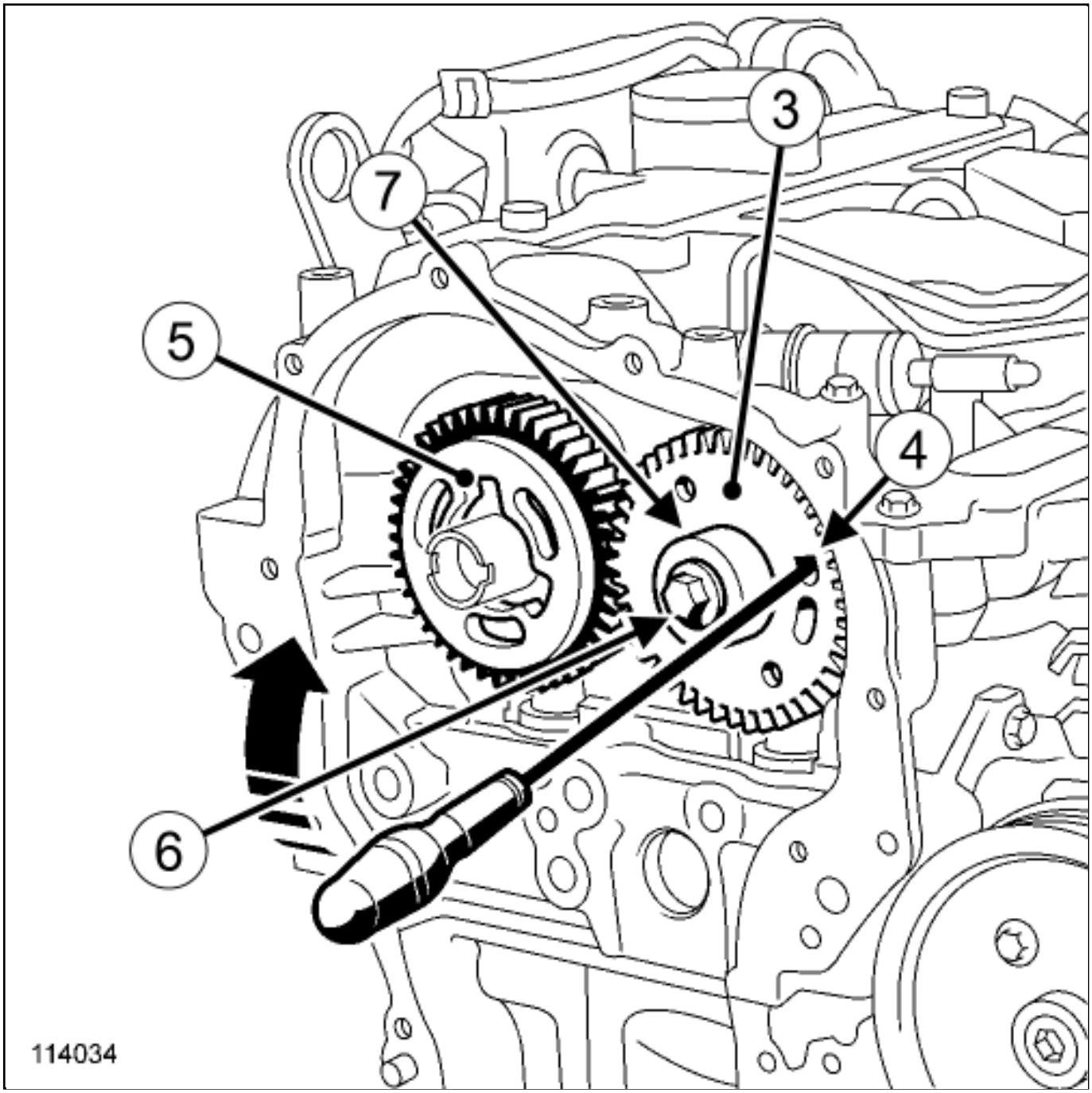
1. REMOVAL PREPARATION OPERATION

- Remove the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

2. REMOVAL OPERATION FOR THE TIMING SPROCKETS



- Immobilise the camshaft timing sprockets on the inlet side using toolCamshaft adjusting tool(Mot. 1769) (1) .
- Loosen the camshaft timing sprocket bolt(2) on the inlet side.
- Remove the toolCamshaft adjusting tool(Mot. 1769) .



Place a flat-blade screwdriver in the hole(4) , compress the spring of the inlet side camshaft timing sprocket (3) and remove the timing sprocket(5) .

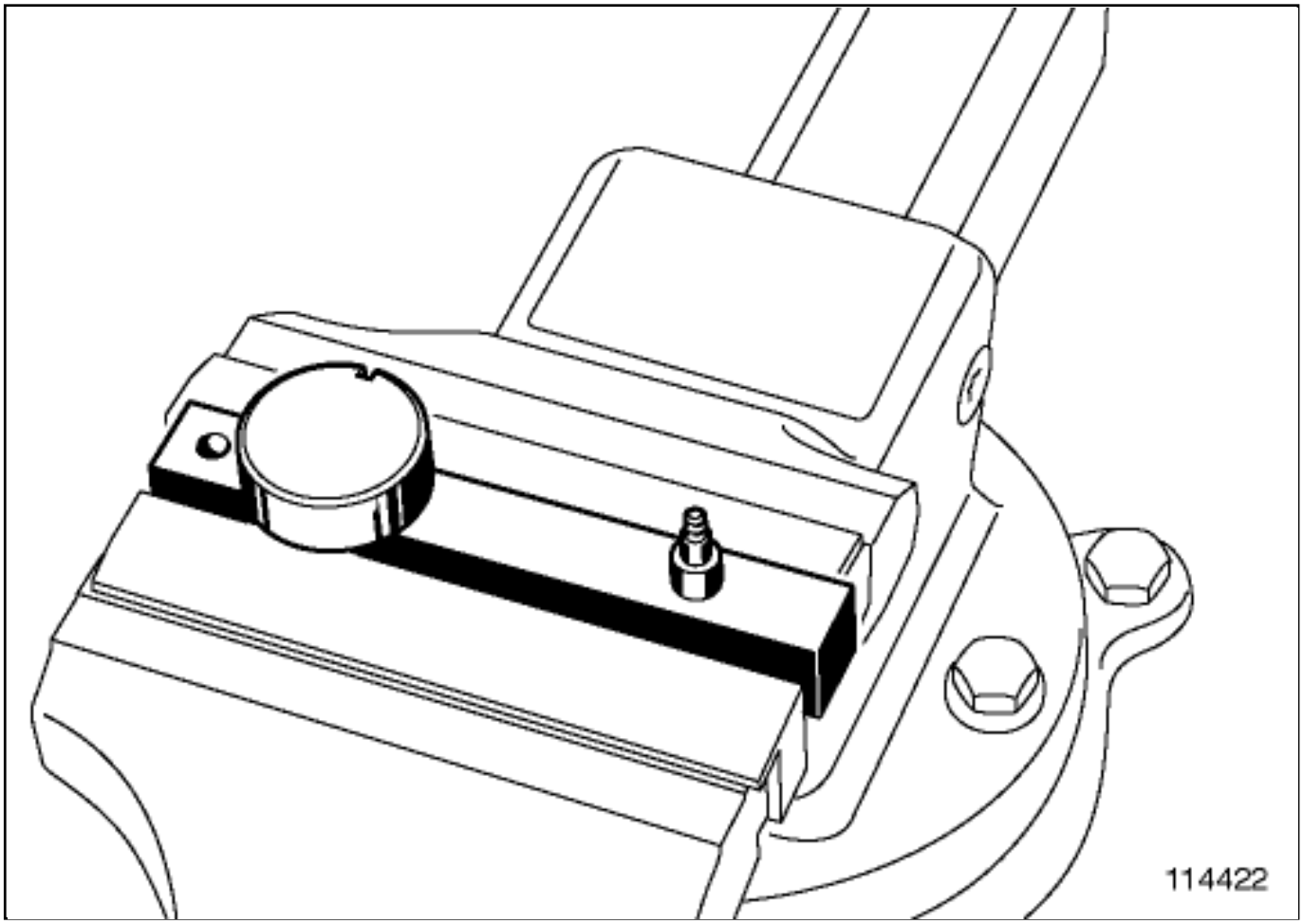
Remove:

- the camshaft timing sprocket bolt on the exhaust side(5) ,
- the flat-blade screwdriver,
- the camshaft timing sprocket bolt on the inlet side(6) ,
- the spacer(7) on the camshaft timing sprocket on the inlet side,
- the camshaft timing sprocket(3) on the inlet side.

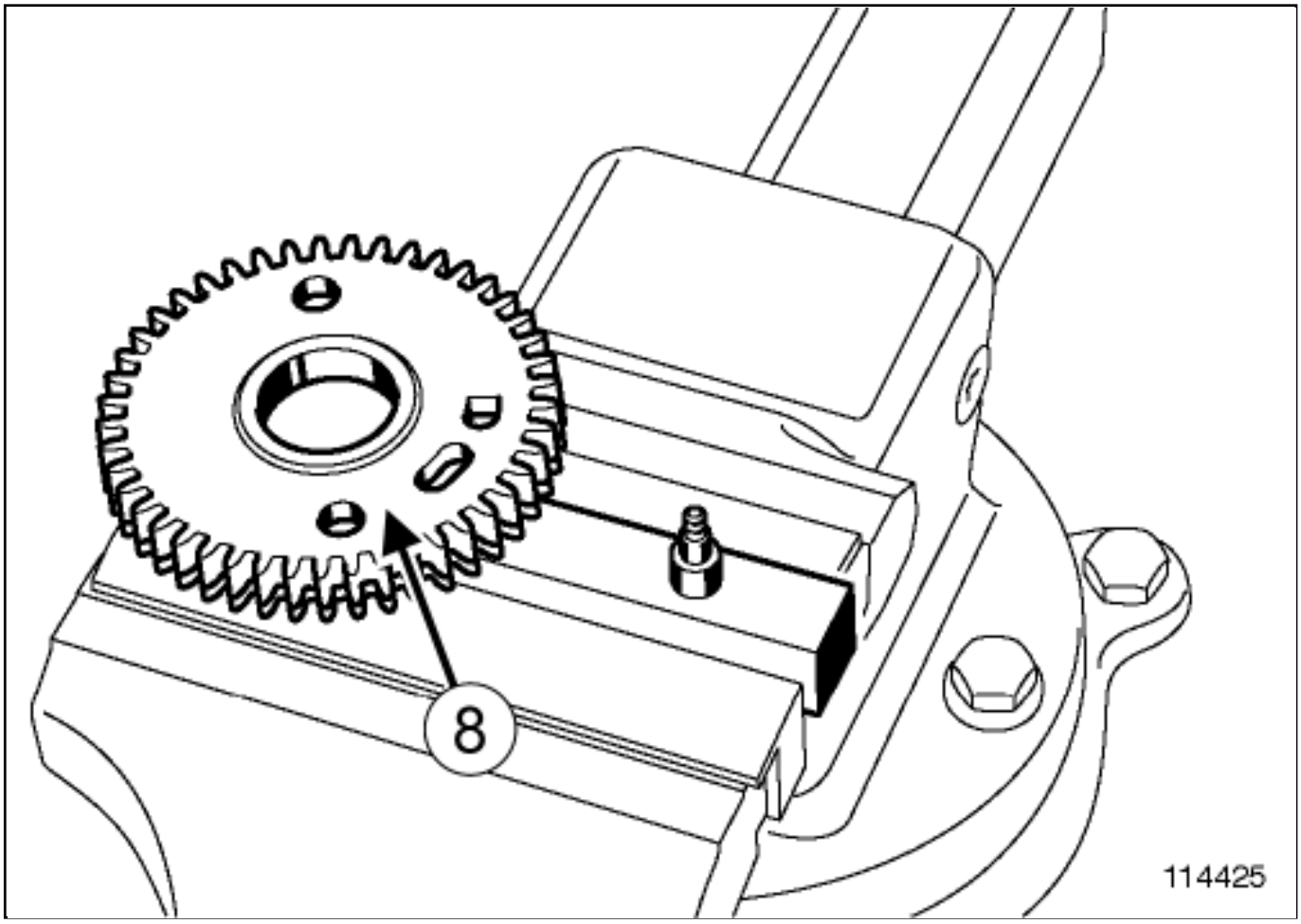
REFITTING

1. REFITTING PREPARATION OPERATION

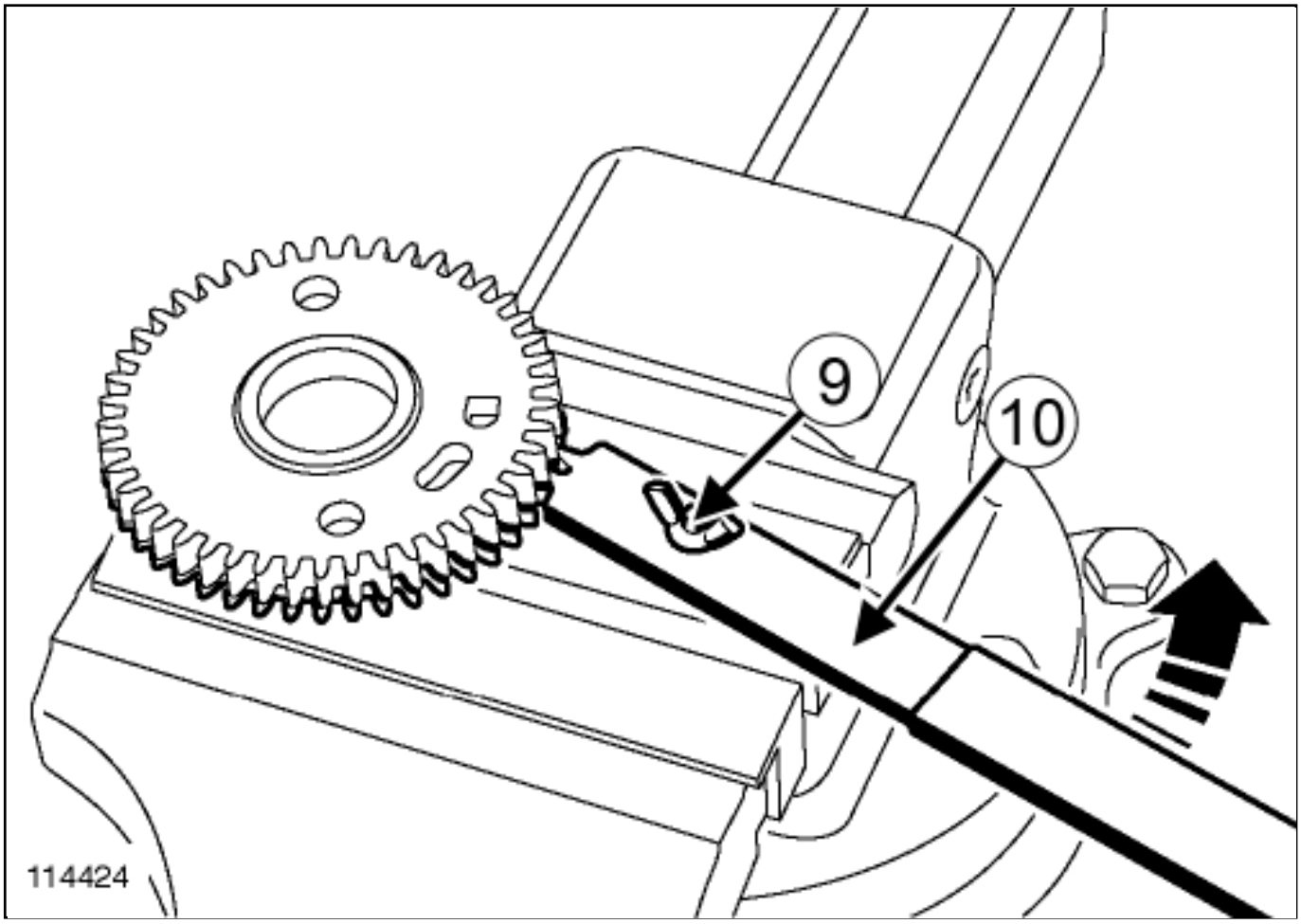
- Always replace the bolt on the camshaft sprocket on the inlet side.
- Clean the sprockets using surface cleaner Vehicle: Parts and consumables for the repair .
- Check that the teeth on the sprockets are not broken, chipped or scratched.



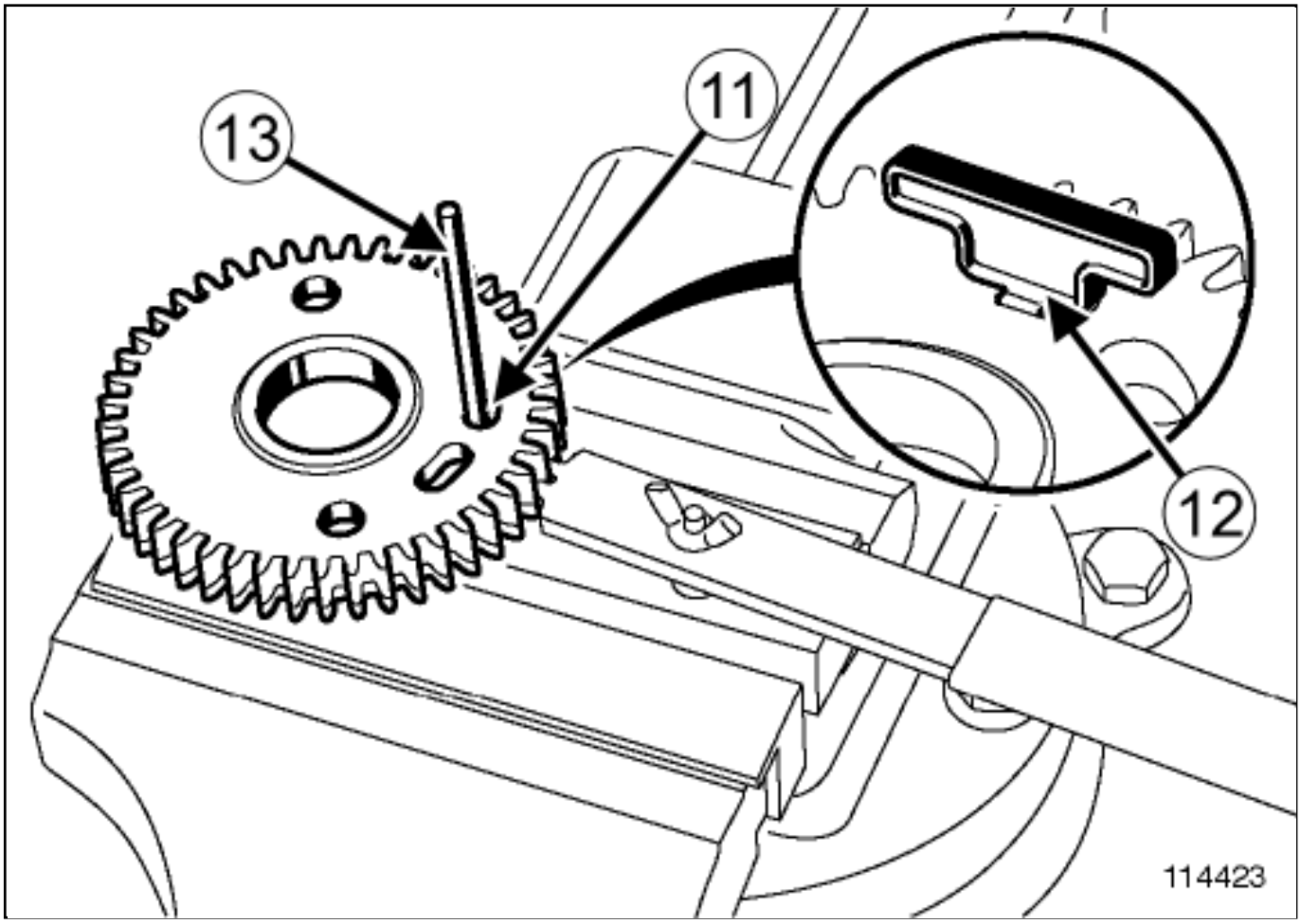
- Place the base plate of theTool for adjusting gear play take-up.(Mot. 1773) in a vice fitted with jaws.



- Fit the key of the camshaft sprocket on the inlet side(8) into the tool groove to stop the sprocket hub from rotating on the inlet side camshaft.



- Place the lever of theTool for adjusting gear play take-up.(Mot. 1773) onto the shaft(9) of the base plate.
- Fit the lever teeth(10) into the lower teeth of the camshaft sprocket on the inlet side.
- Tighten the butterfly nut of the toolTool for adjusting gear play take-up.(Mot. 1773) .
- Turn the lever(10) anti-clockwise to align the two pinion teeth.



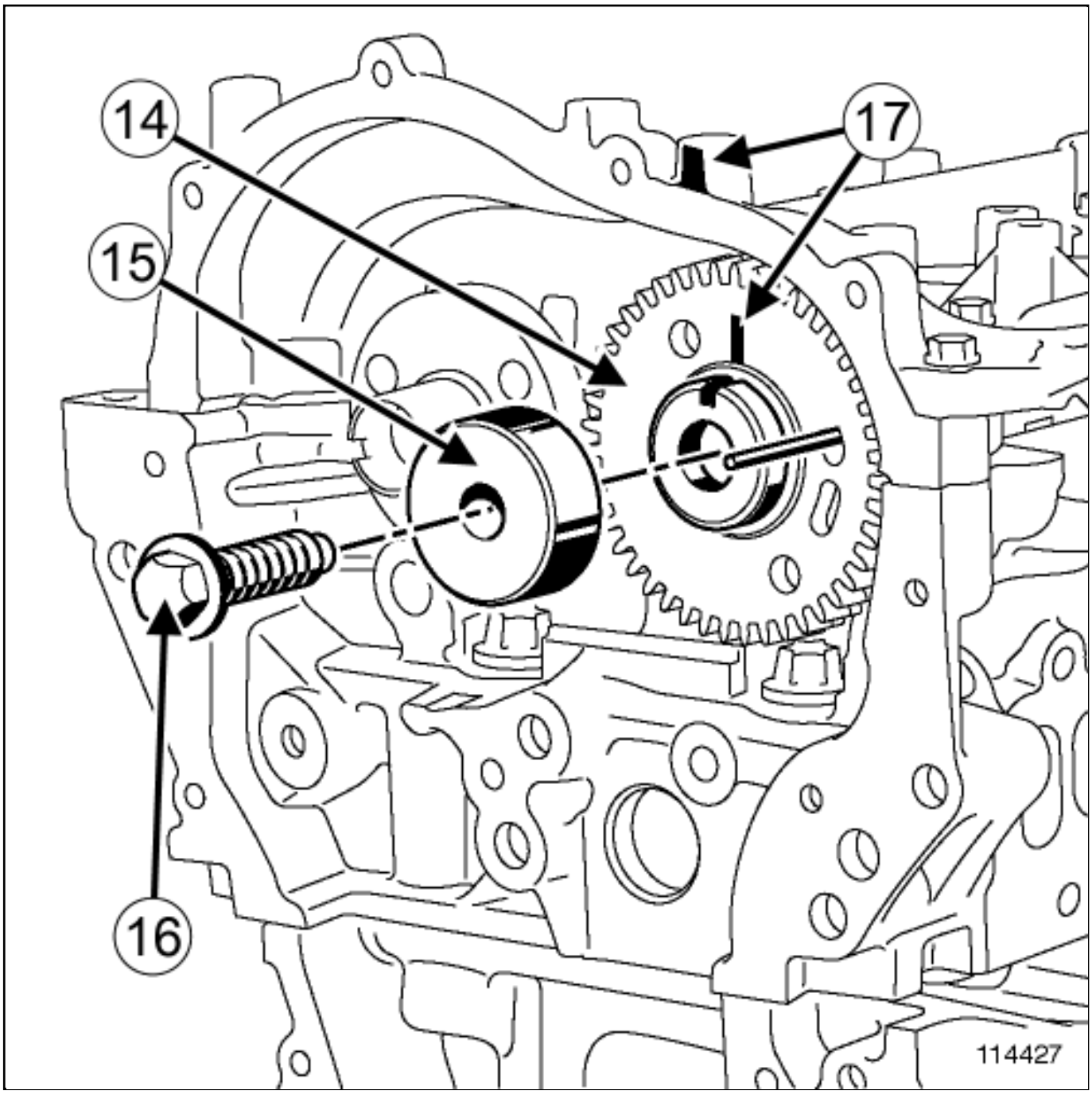
- Place a 4 mmdiameter pin (13) (or a roll pin punch) in the camshaft sprocket hole(11) on the inlet side.

Note:

The Parts Department supplies the new inlet side camshaft sprocket with a locking pin (12) .

- Release the lever to lock the pin.

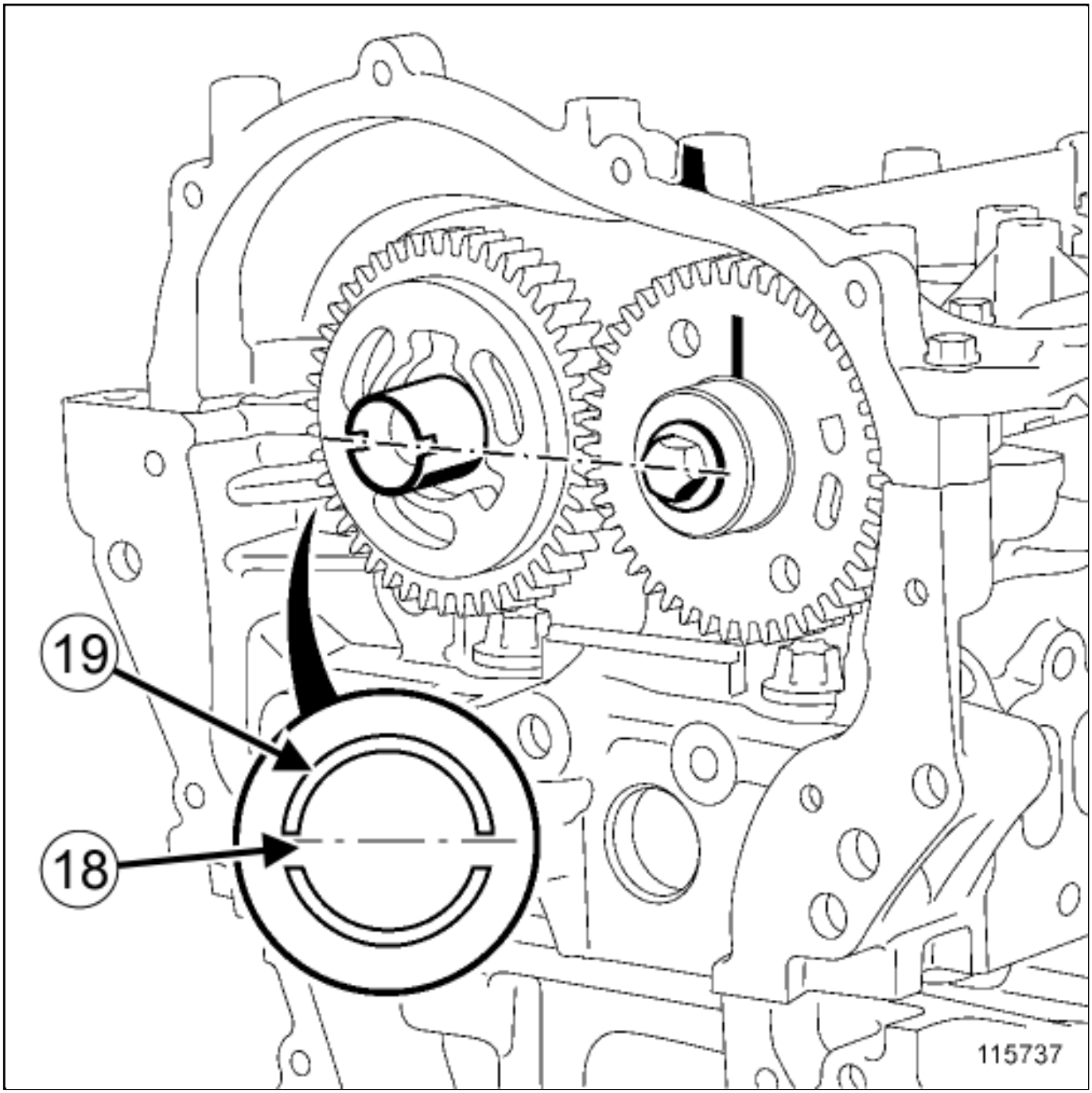
2. REFITTING OPERATION FOR THE TIMING SPROCKETS



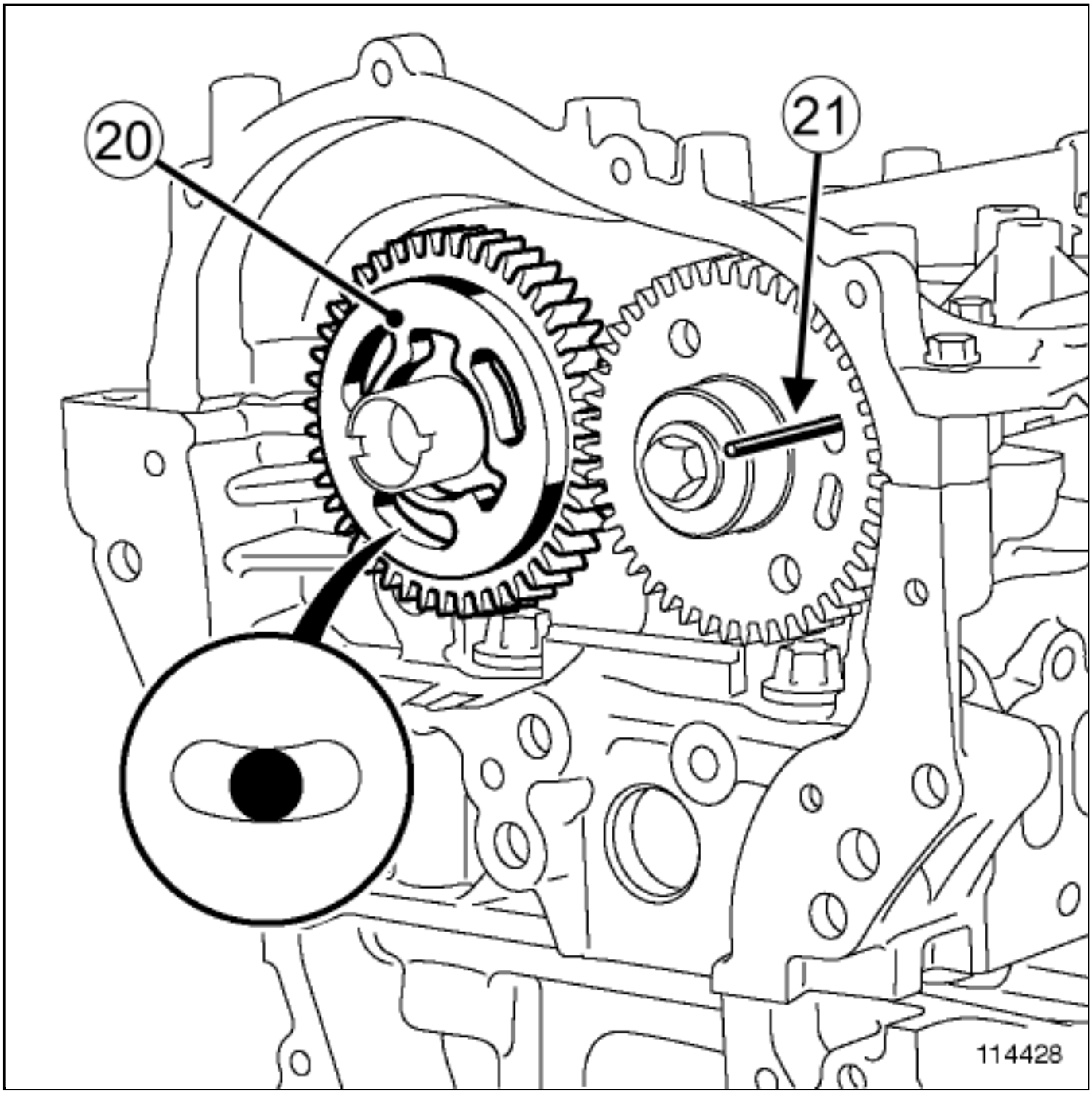
- Refit:
  - the camshaft sprocket(14) on the inlet side camshaft,
  - the pinion spacer(15) .

- Fit without tightening the new bolt(16) on the inlet side camshaft sprocket.

- Align the pinion mark with the rocker cover boss(17) .



- Check that the exhaust side camshaft groove(18) is horizontal (large ring(19) facing upwards).



- Centre the timing sprocket openings(20) on the camshaft hub holes.
- Fit the timing sprocket fully onto the camshaft hub.
- Remove the locking pin(21) .
- Refit the Camshaft adjusting tool(Mot. 1769) to immobilise the inlet side camshaft sprocket.
- Torque and angle tighten the bolt on the inlet side camshaft sprocket20 N.m. + 35˚ ± 6˚.
- Remove the toolCamshaft adjusting tool(Mot. 1769) .

3. FINAL OPERATION

- Refit the timing chain **(see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting)** .

Repair-10x02x04x11-01x37-1-1-1.xml

XSL version : 3.02 du 22/07/11

TIPPER ASSEMBLY: REMOVAL - REFITTING

Scattolini stake body

Note:

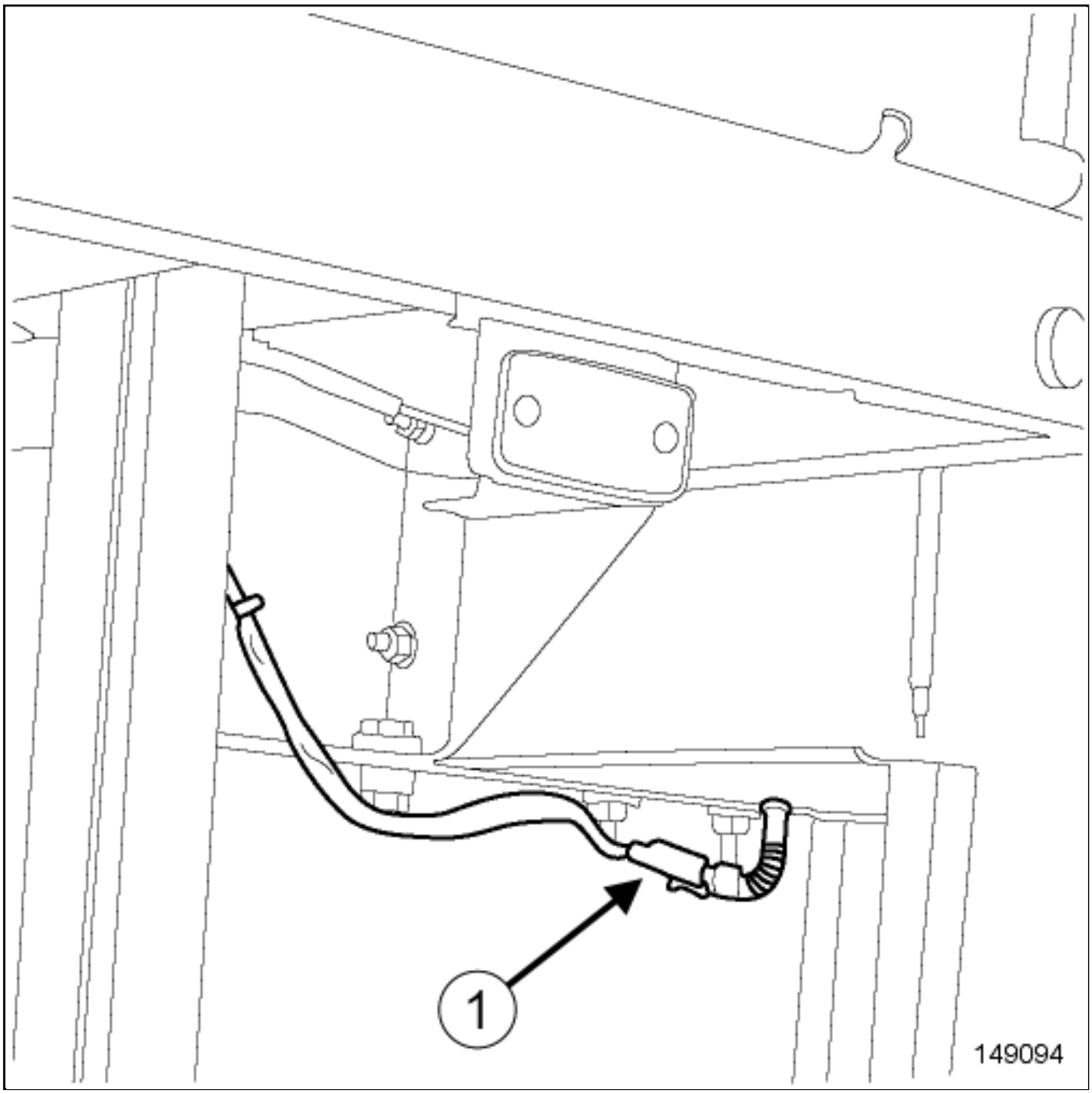
The stake body assembly is welded to the subframe, it is therefore impossible to separate them.

REMOVAL

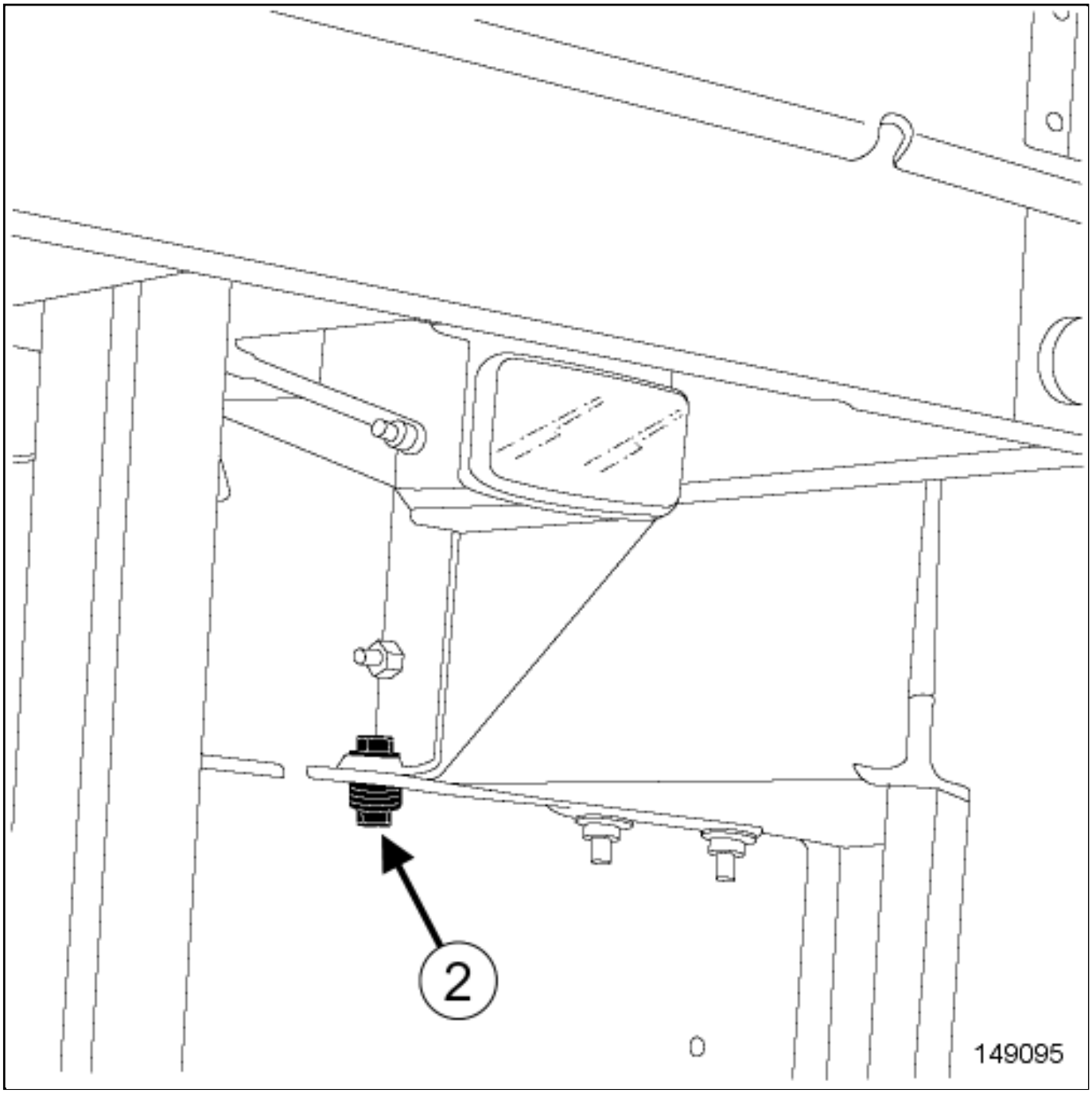
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Strap the vehicle to the lift Vehicle: Towing and lifting (02A, Lifting equipment).

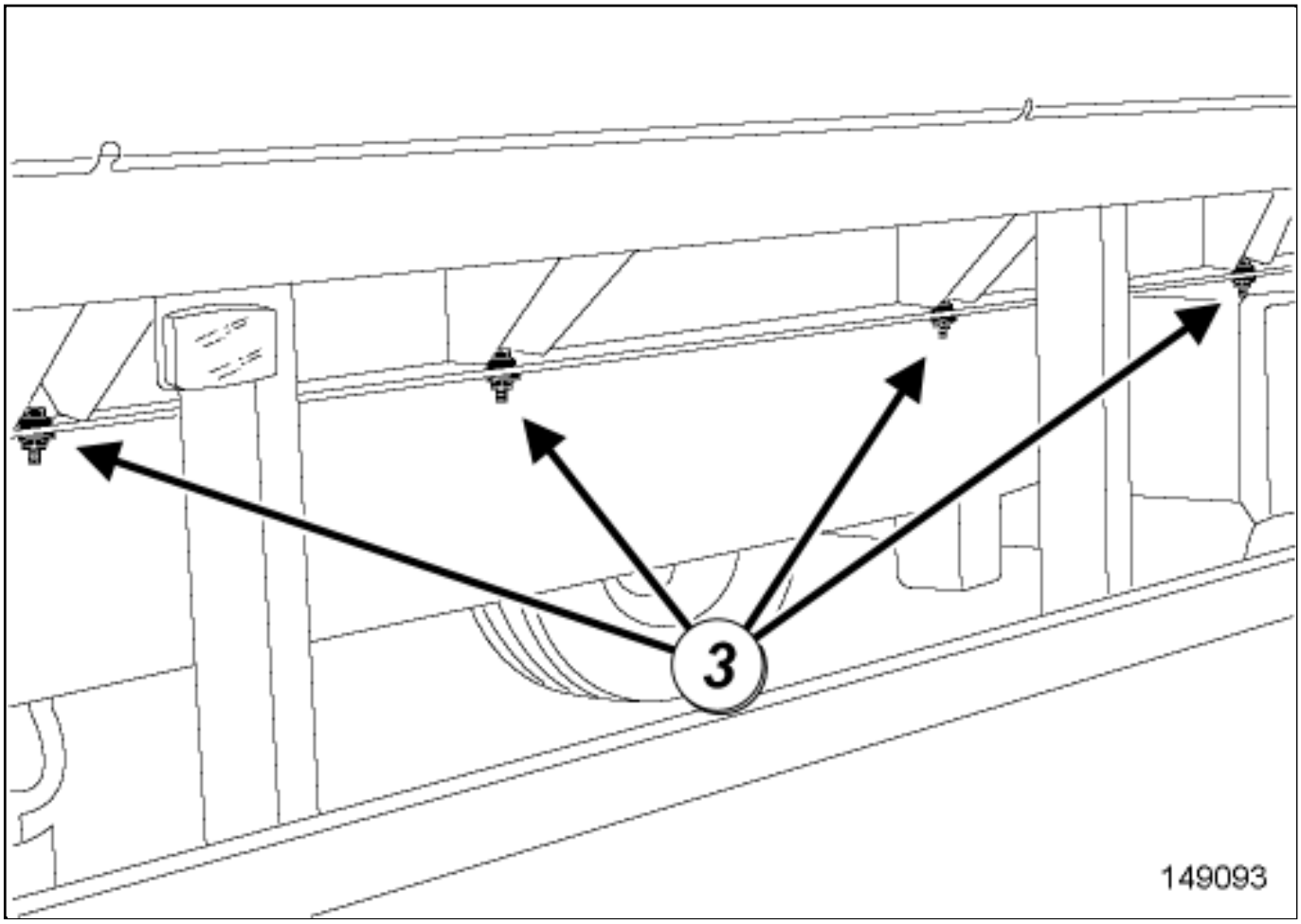
2. REMOVAL OPERATION

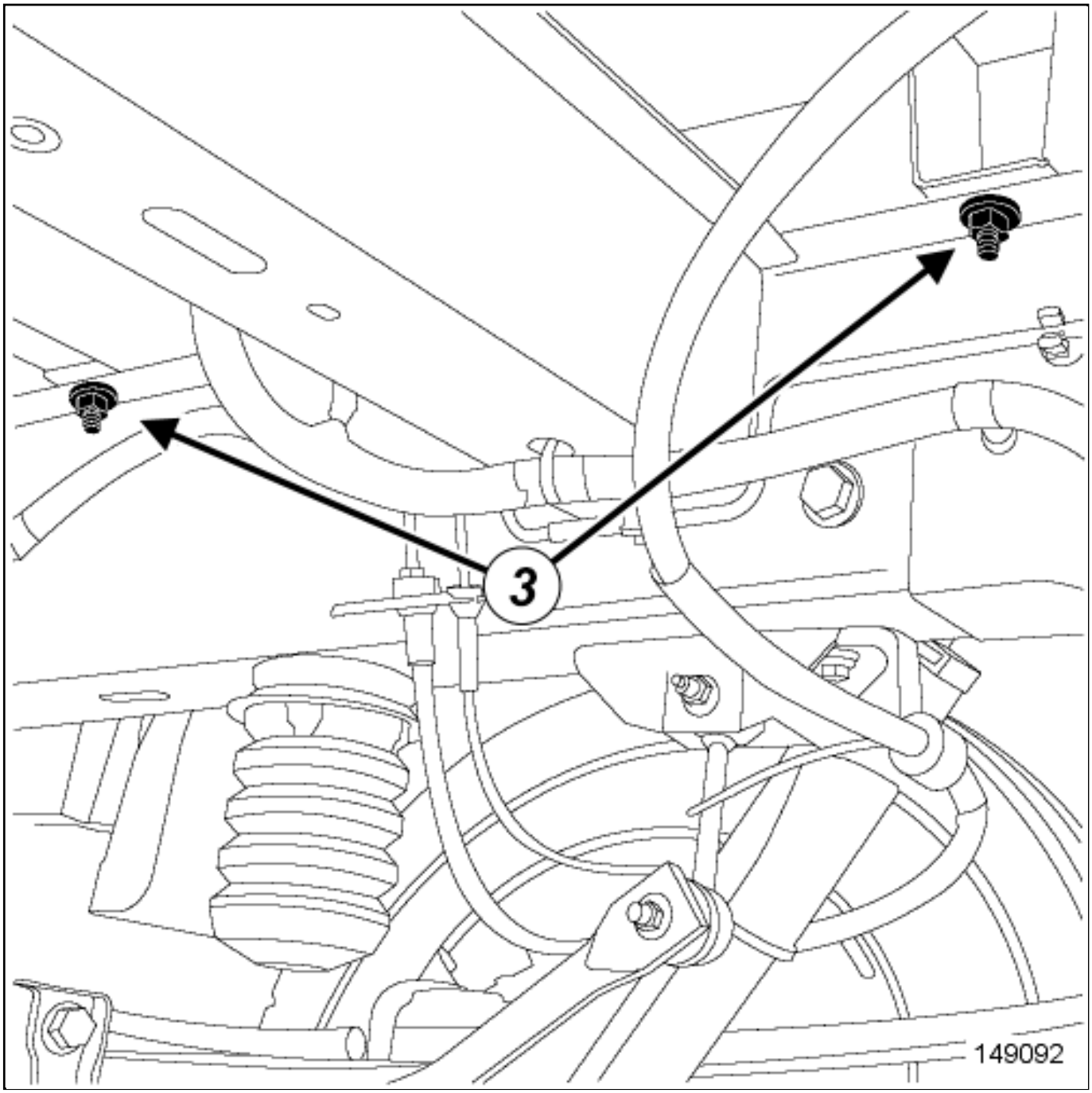


- Disconnect the connector(1) .



- Remove the rubber bolt(2) from the stake body.

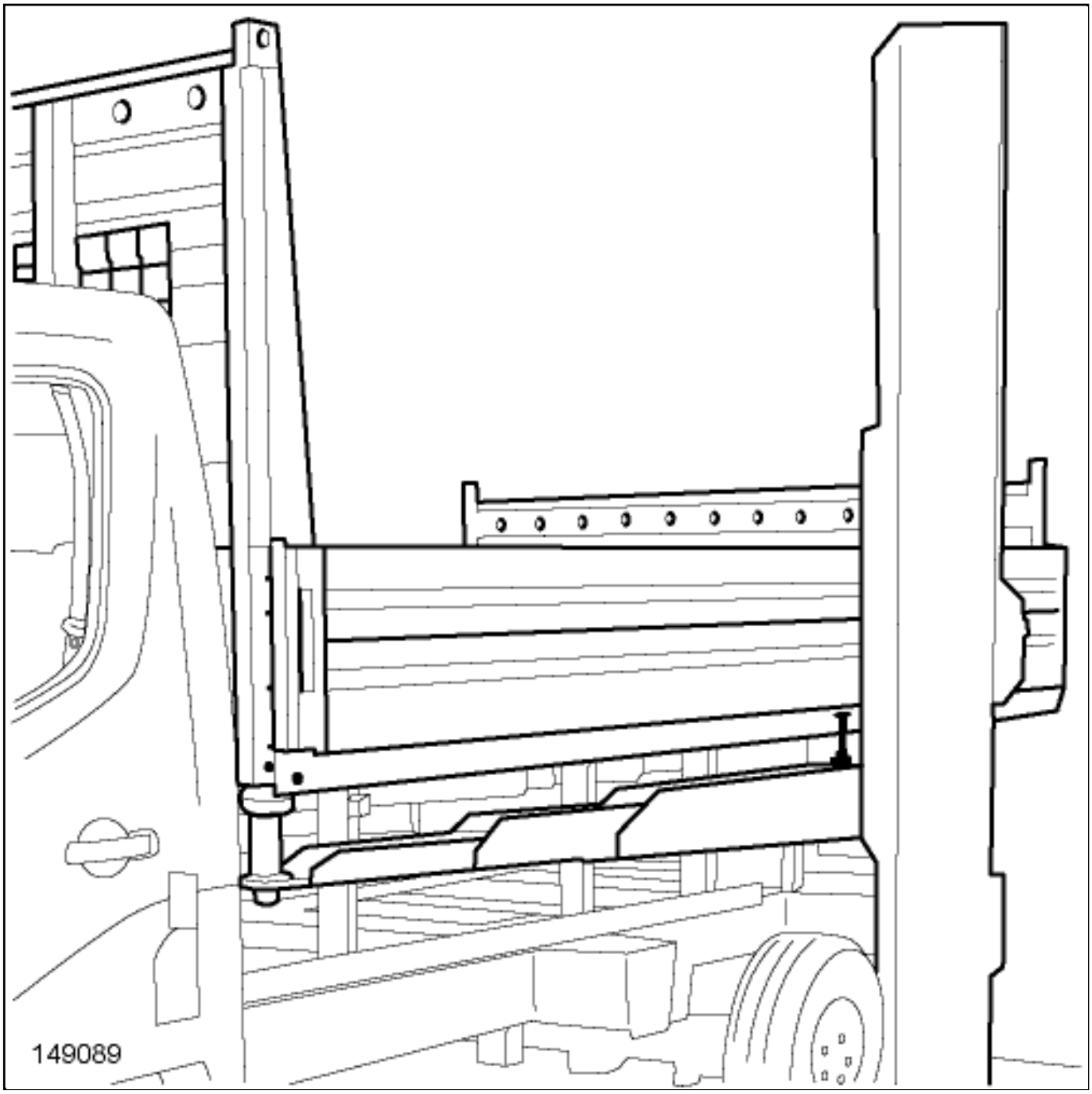

3
149093



- Remove the bolts from the stake body(3) .

- Lower the vehicle on the two-post lift.

- Unstrap the vehicle from the two-post lift.



- Place the arms of the two-post lift under the stake body.
- Remove the stake body.

Note:

Ensure that the stake body is stable when it is lifted using the lift.

REFITTING

1. REFITTING OPERATION

- Refit the stake body on the "cab chassis" .
- Align the mounting holes of the stake body with those of the "cab chassis."
- Refit:
  - the bolts of the stake body,
  - the rubber bolts of the stake body.
- Tighten the rubber bolts of the stake body20 N.m.
- Tighten the bolts of the stake body68 N.m.
- Proceed in the reverse order to removal.

TIPPER CIRCUIT BREAKER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Scattolini tipper

IMPORTANT

To avoid discharging the battery, operate the tipper with the engine running.

WARNING

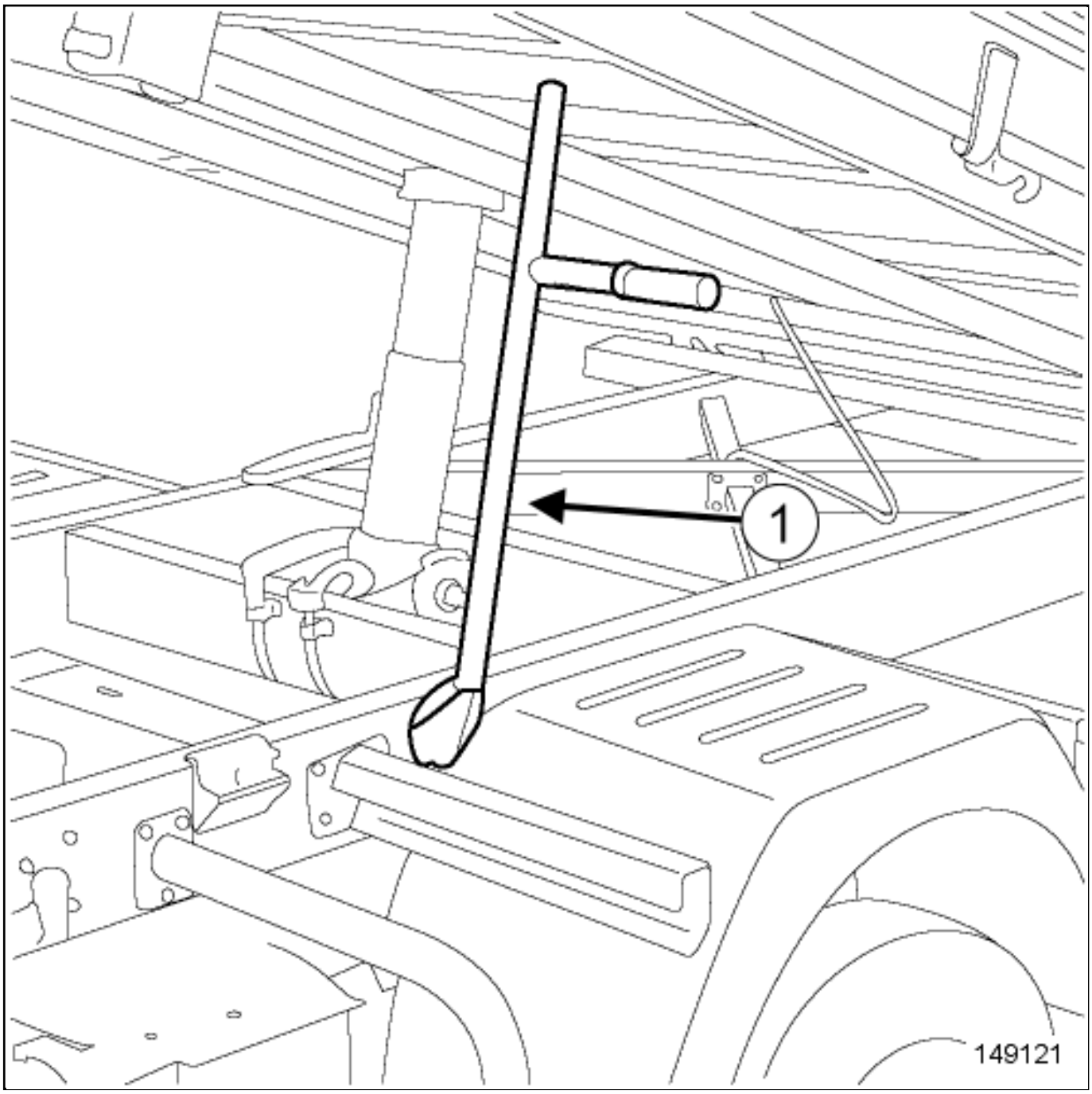
To avoid any accidents, the tipper must be emptied of its contents before any operations are carried out on it.

WARNING

To prevent the tipper from lowering once raised, use the safety strut.

REMOVAL

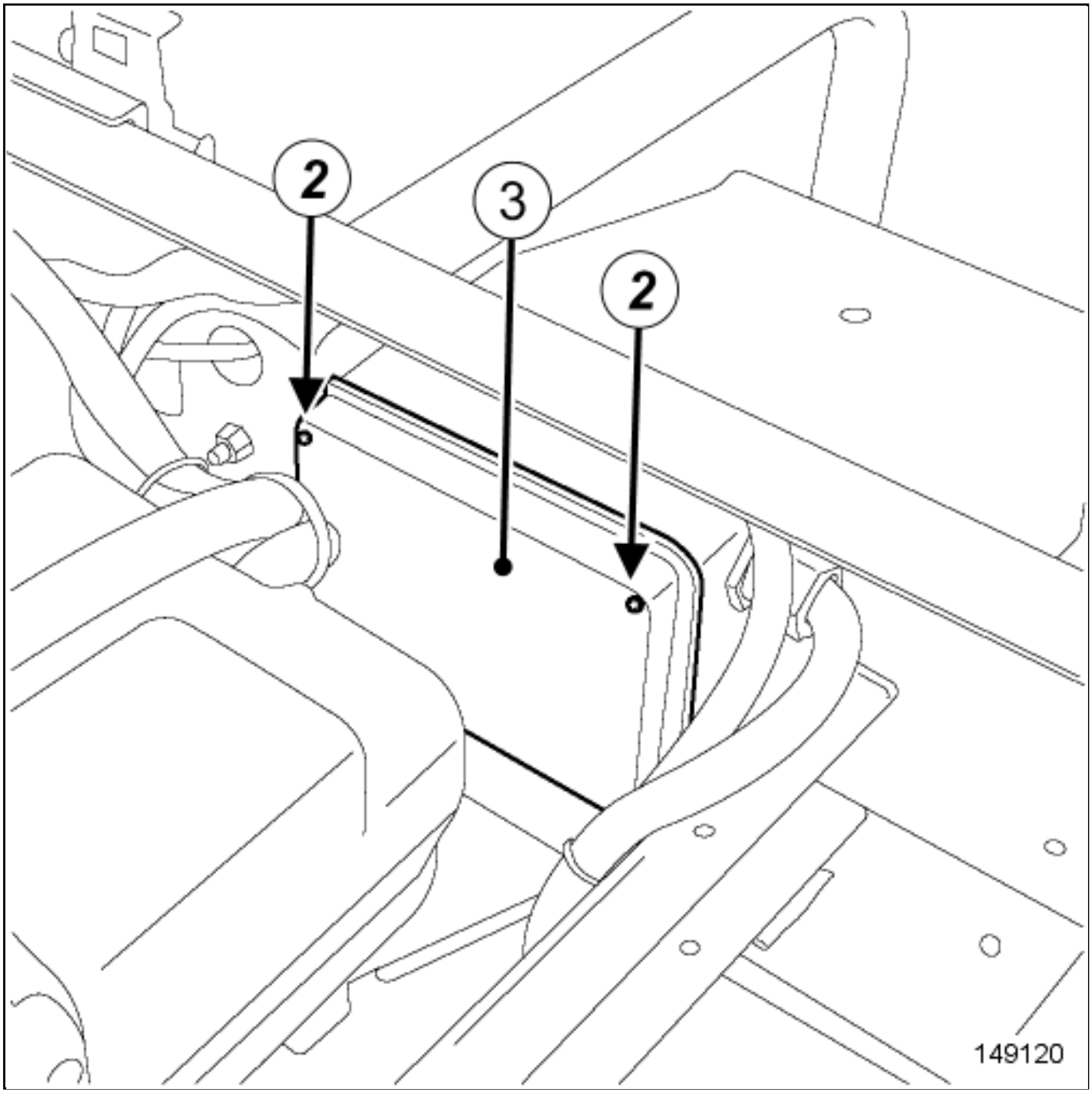
1. REMOVAL PREPARATION OPERATION



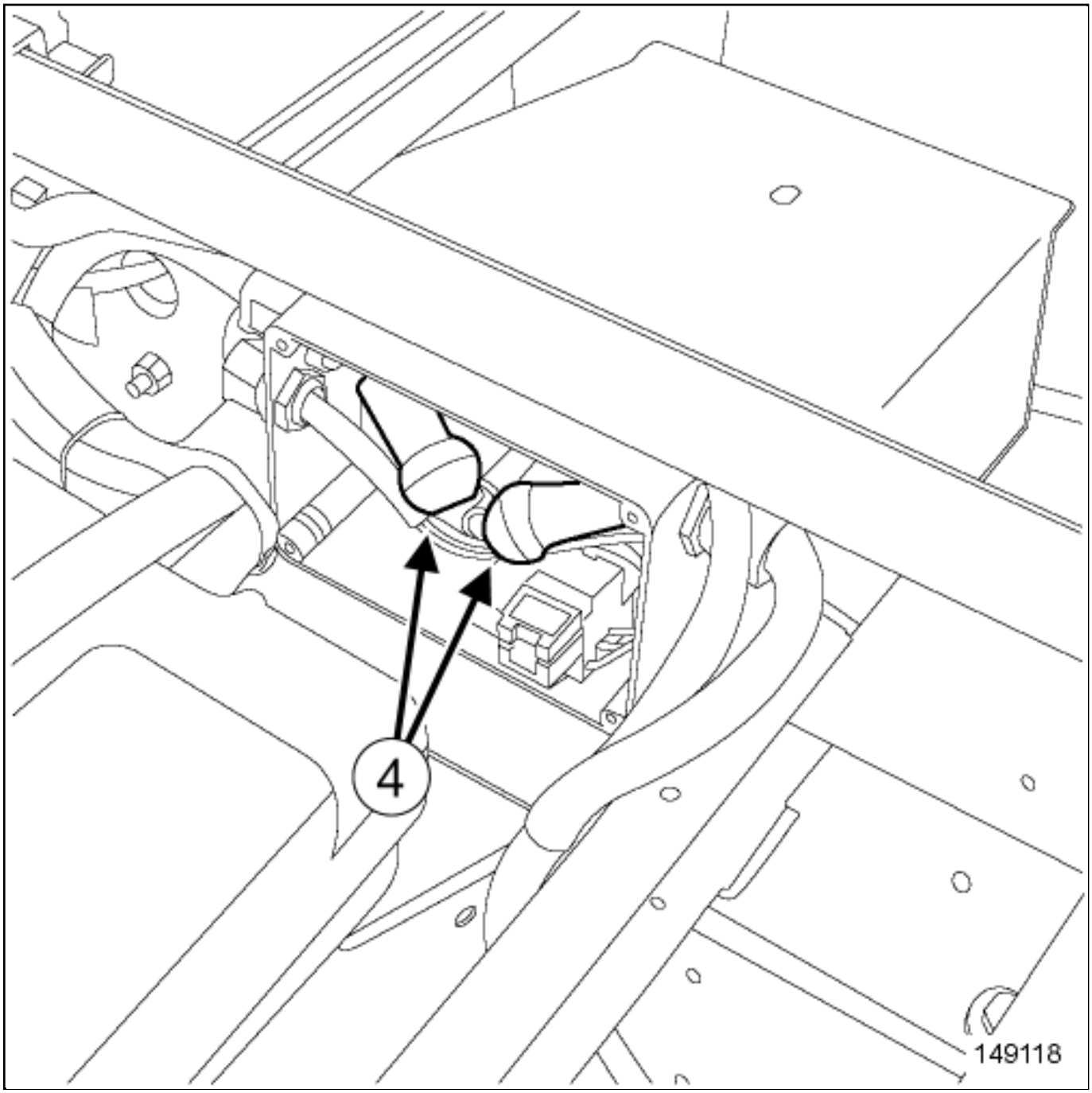
- Start the engine.
- Raise the tipper.
- Fit the safety bracket(1) .
- Switch off the engine.
- Remove the front left-hand door sill**Door sill: Removal - Refitting** (71A, Body internal trim).
- Disconnect the battery**Battery: Removal - Refitting** (80A, Battery).

2. REMOVAL OPERATION

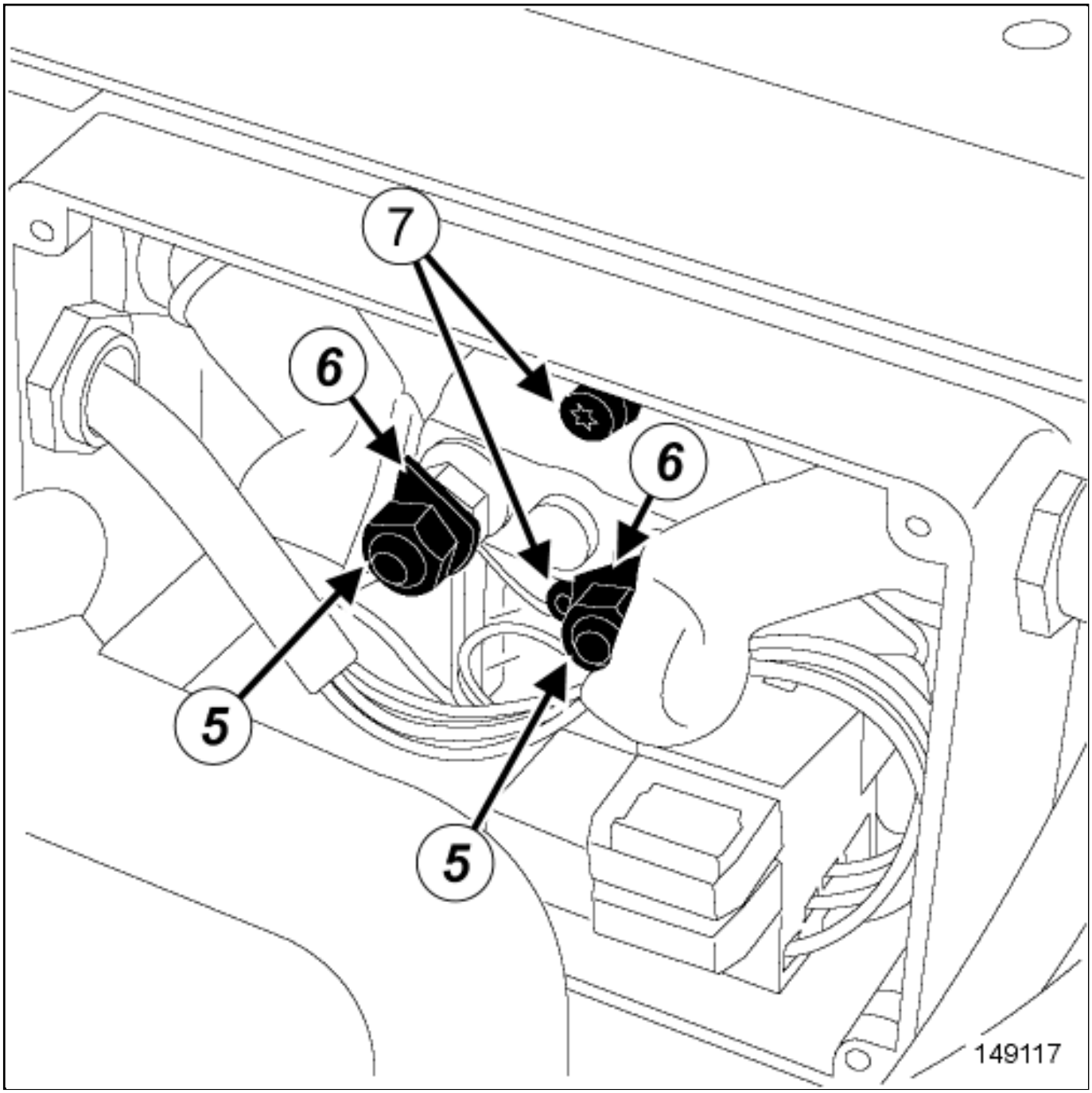
- Put the key of the circuit breaker in the "OFF" position.
- Remove the key from the circuit breaker.



- Remove:
  - the bolts of the electrical unit cover(2) ,
  - the electrical unit cover(3) .



- Partially remove the sealing covers(4) .



Remove the nuts(5) from the supply connectors of the tipper circuit breaker(6) .

WARNING

To prevent any risk of noise, premature wear, short circuits, etc. after the refitting operation, mark the wiring routing and how to connect the connectors.

Disconnect the supply connectors from the tipper circuit breaker.

Remove:

- the bolts of the tipper circuit breaker(7) ,
- the tipper circuit breaker.

REFITTING

1. REFITTING OPERATION

Refit:

- the tipper circuit breaker,
- the bolts of the tipper circuit breaker.

Connect the supply connectors of the tipper circuit breaker.

WARNING

Incorrect tightening could cause heating of contacts, starting or charging faults, sparking, or could cause the battery to explode**Battery: Precautions for the repair** (80A, Battery).

Refit the nuts(5) of the supply connectors for the tipper circuit breaker(6) .

Tighten the nuts of the supply connectors for the tipper circuit breaker8 N.m.

Proceed in the reverse order to removal.

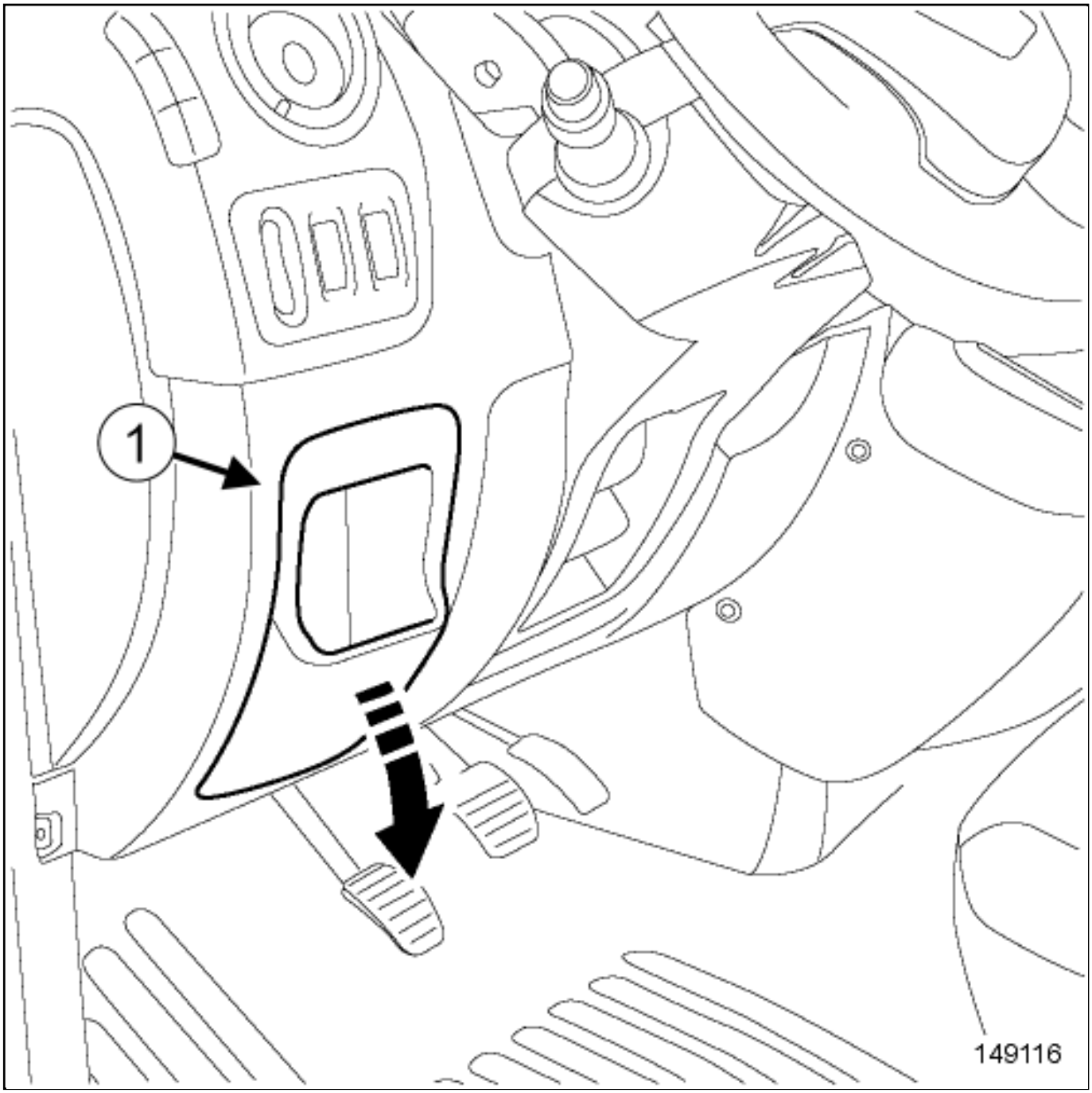
TIPPER ELECTRICAL CONTROL: REMOVAL - REFITTING

Scattolini tipper

REMOVAL

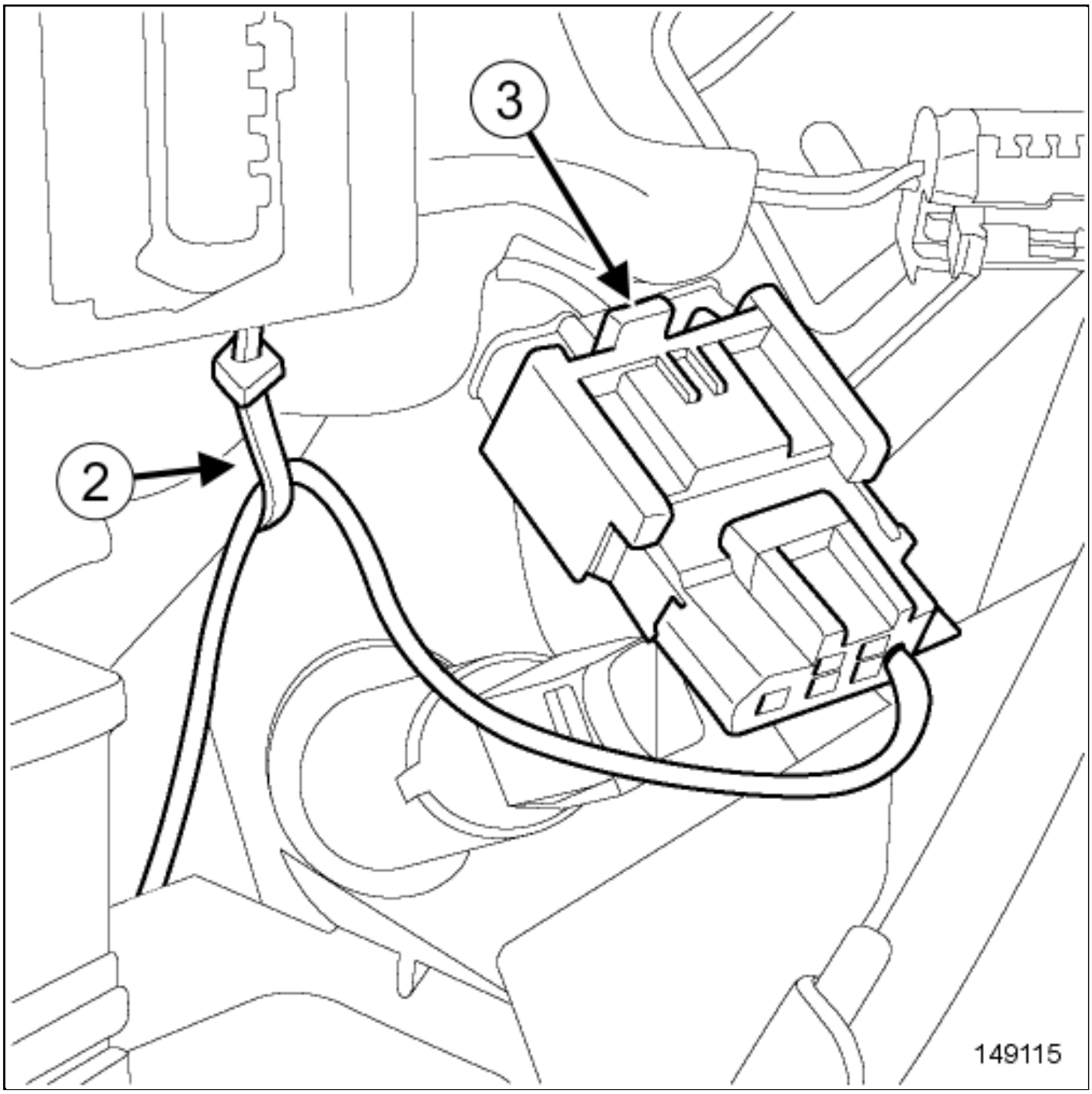
1. REMOVAL PREPARATION OPERATION

- Position the driver's seat as far forward as possible.
- Tilt the driver's seatback forward.
- Remove the front left-hand door sill Door sill: Removal - Refitting (71A, Body internal trim).
- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Remove the front left-hand door sill lining Front door sill lining: Removal - Refitting (71A, Body internal trim).
- Remove the bolt from the front seat belt (see **Front seat: Exploded view**) (75A, Front seat frames and mechanisms).
- Remove the left-hand B-pillar trim B-pillar trim: Removal - Refitting (71A, Body internal trim).

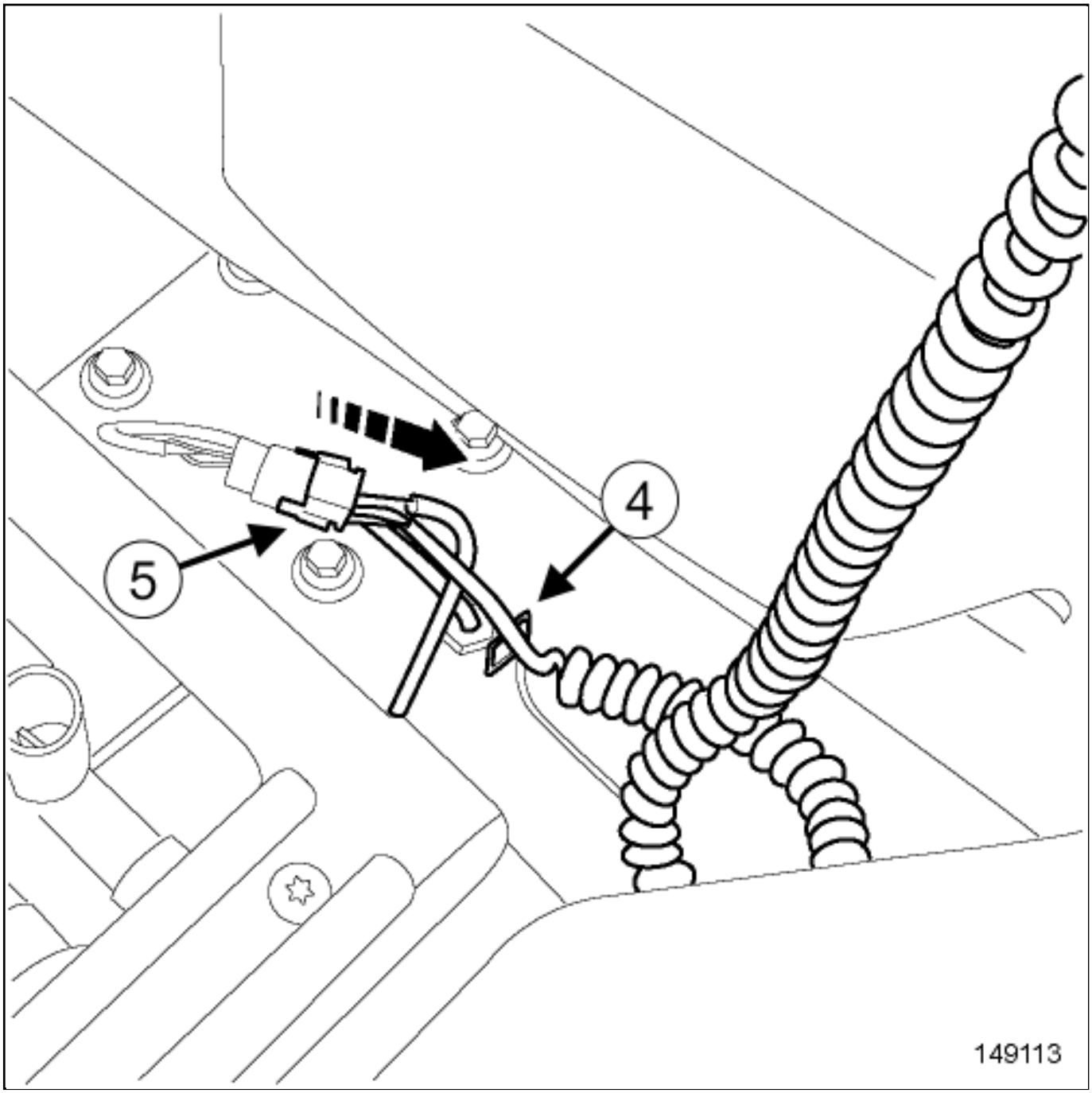


- Unclip the fuse flap(1) on the left-hand side.

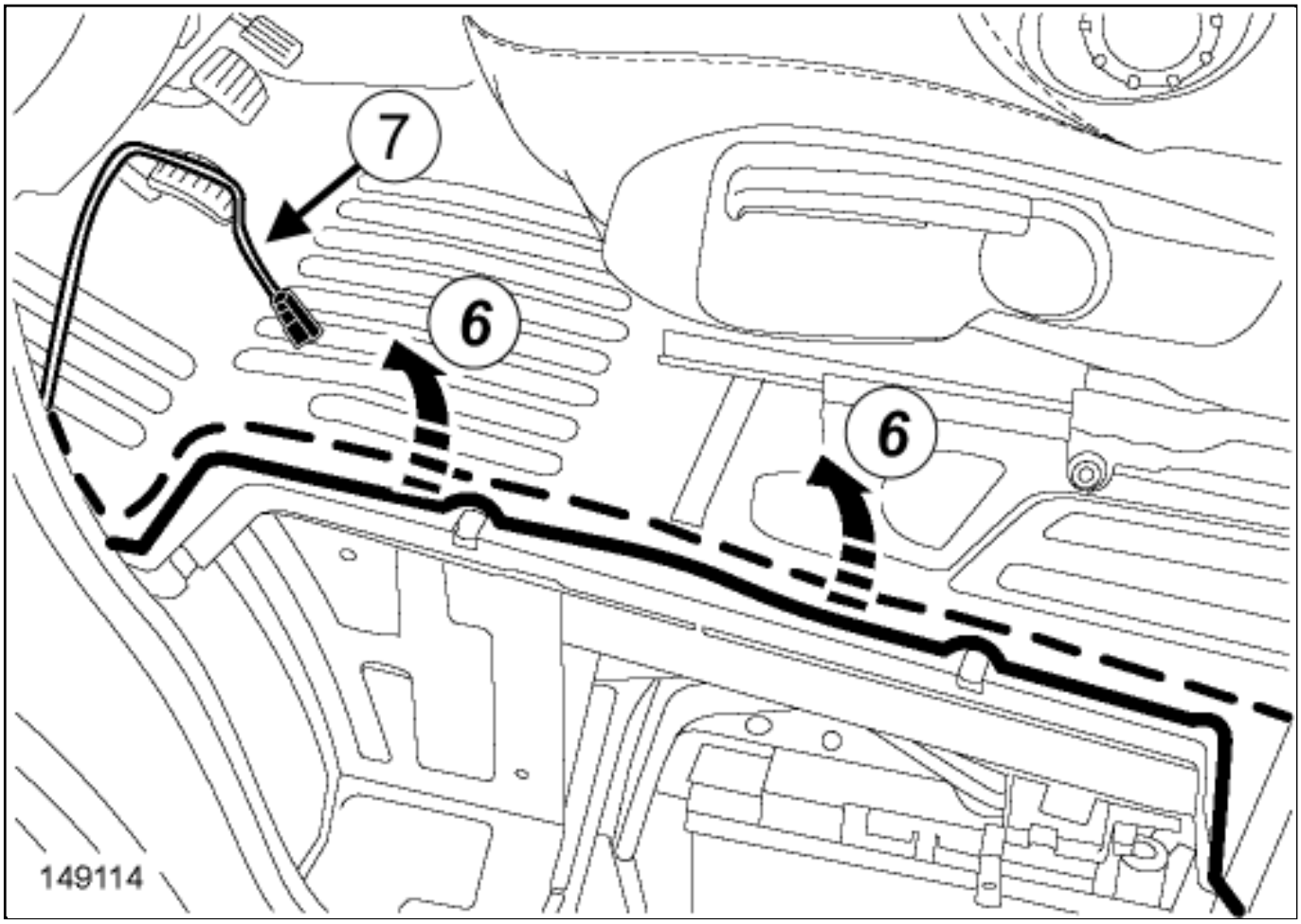
2. REMOVAL OPERATION



- Cut the clip(2) .
- Disconnect the connector(3) .



- Unclip the tipper control wiring(4) .
- Disconnect the connector from the tipper control wiring(5) .



- Move aside the front floor carpet at(6) .
- Detach the tipper control wiring(7) .
- Remove the tipper control.

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

TIPPER HYDRAULIC CIRCUIT: BLEEDING

Note, one or more warnings are present in this procedure

Scattolini tipper

IMPORTANT

To avoid any accidents, the tipper must be emptied of its contents before any operations are carried out on it.

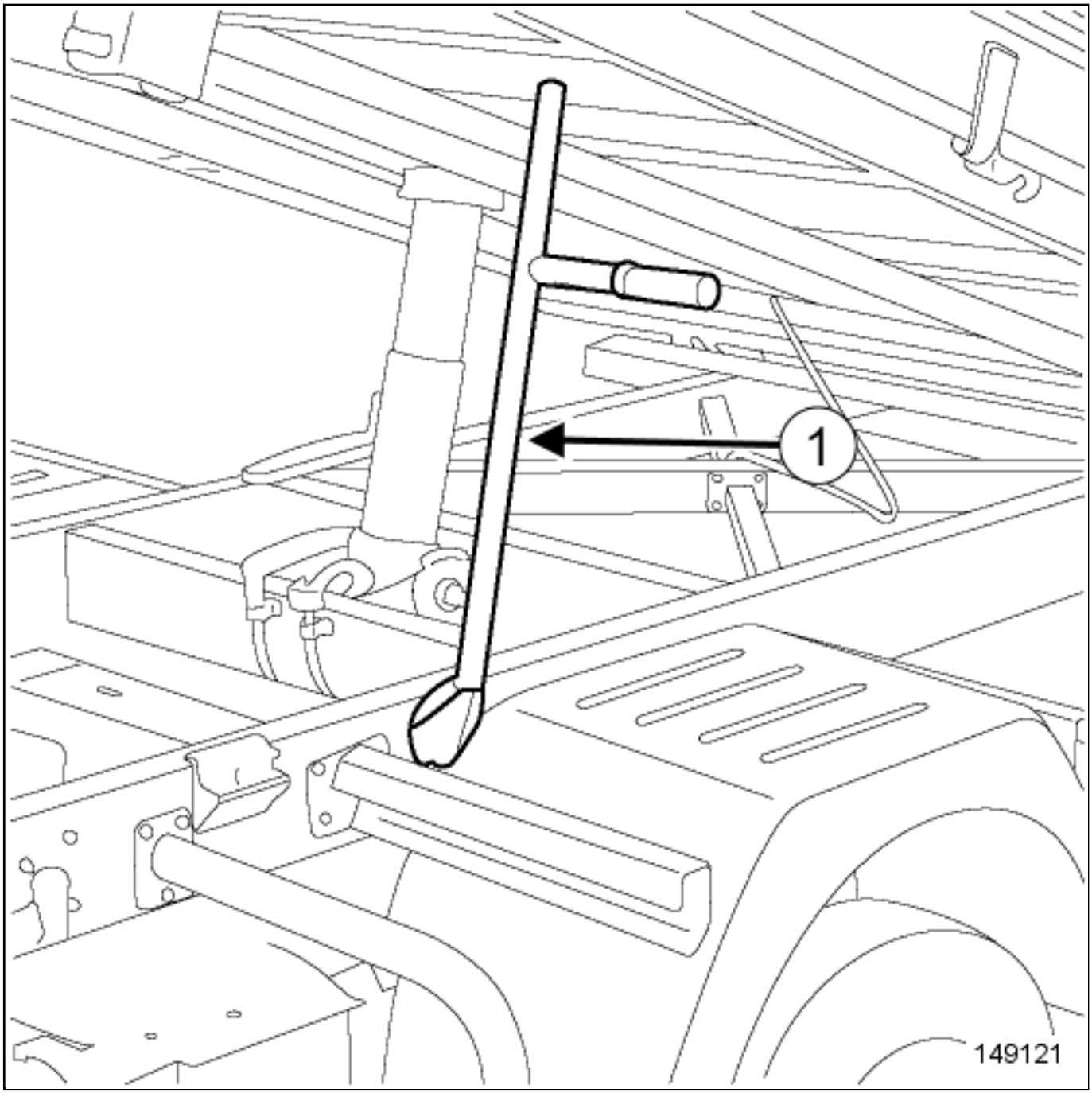
IMPORTANT

To prevent the tipper from lowering once raised, use the safety strut.

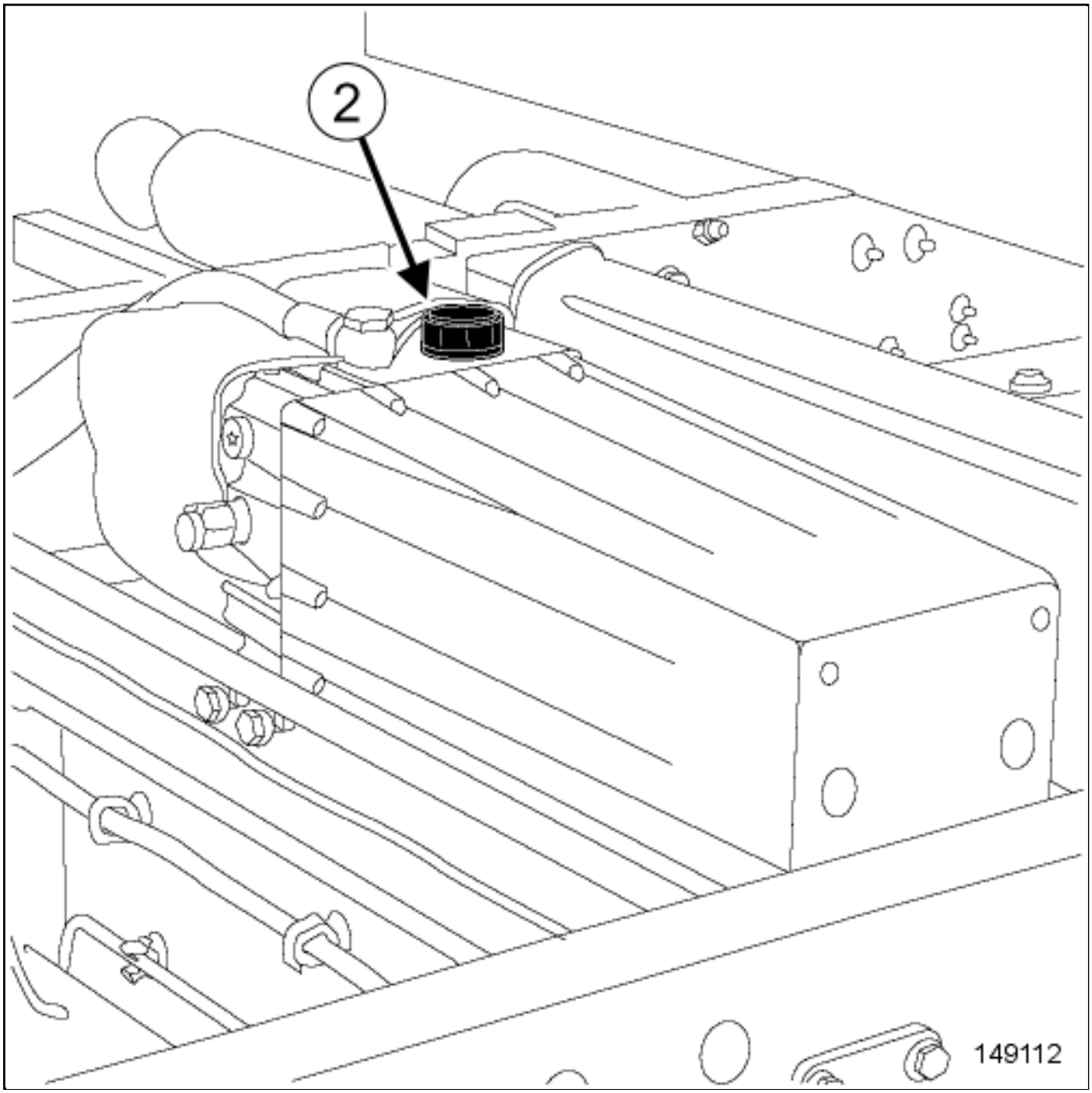
BLEEDING

Note:

The hydraulic circuit is bled automatically.



- Fit the safety bracket(1) .



- Undo the oil filler and level-setting cap(2) located on the oil reservoir.
- Check the oil level (between the two positions engraved on the filler cap rod).

WARNING

To avoid any risk of a hydraulic system component operating incorrectly (jack, pumps, hose, etc.), always use SAE 10 or Q8 ELI 1298Lhydraulic oil.

- Top up the oil level if necessary.

- Remove the safety bracket.
- Perform several cycles of "raising/lowering" the tipper.
- Fit the safety bracket(1) .

WARNING

To avoid any risk of a hydraulic system component operating incorrectly (jack, pumps, hose, etc.), always use SAE 10 or Q8 ELI 1298Lhydraulic oil.

- Top up the hydraulic pump oil level to the MAX mark.
- Remove the safety bracket.

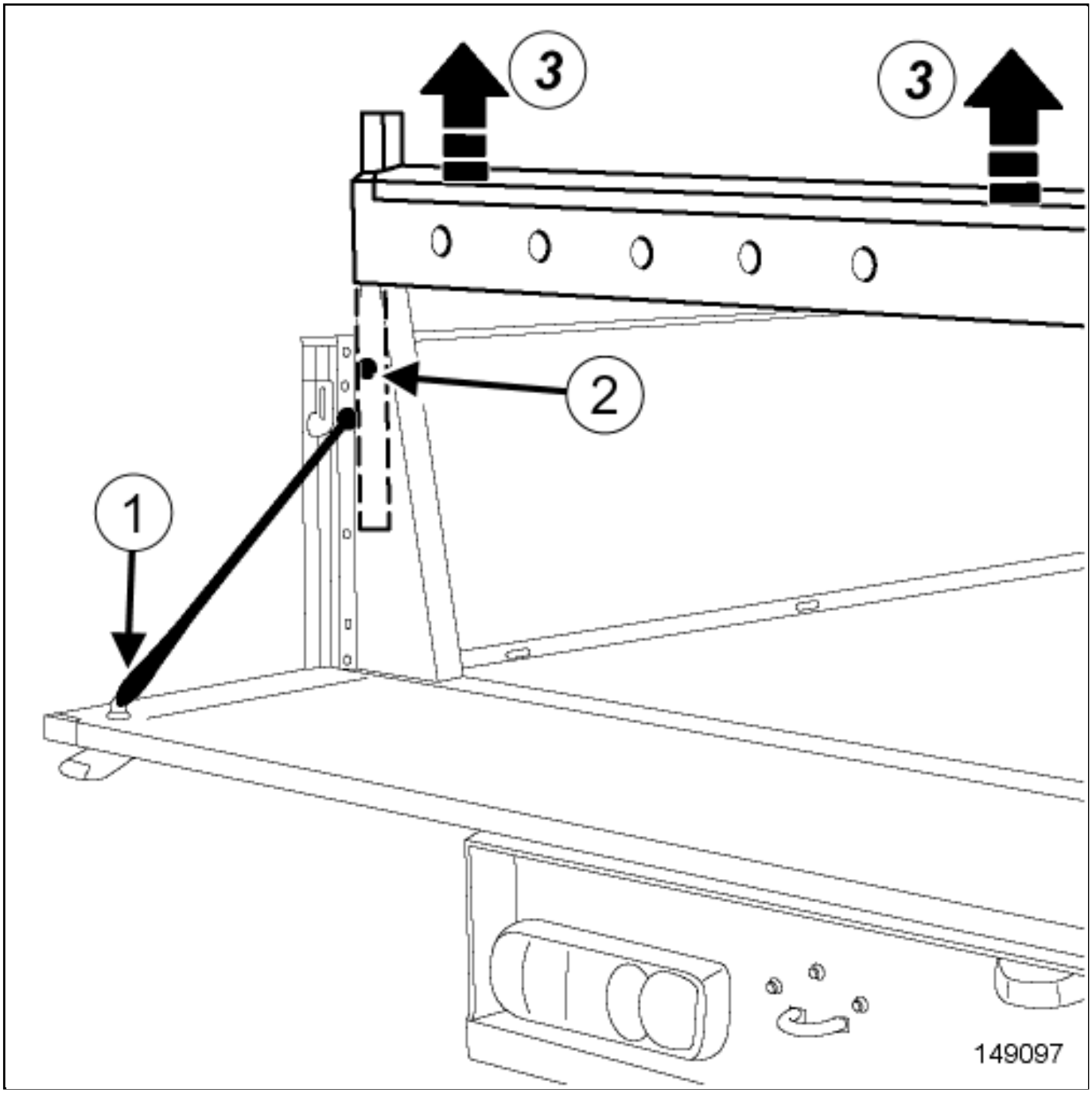
TIPPER LADDER RACK: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Open the rear board.

2. REMOVAL OPERATION



- Unlock the retaining cables of the rear board(1) .

- Remove:
  - the bolts of the platform ladder rack(2) ,
  - the ladder rack of the platform at(3) .

REFITTING

- Proceed in the reverse order to removal.

TIPPER REAR POST: REMOVAL - REFITTING

REMOVAL

1. REMOVAL PREPARATION OPERATION

DUMPER(BENBAS)

1- REAR POST OF THE THREE-WAY TIPPER

- Remove the rear board(see 52A, Non-side opening element mechanisms, Tipper side board: Removal - Refitting) .
- Open the side board.

STAKEBED(PLTRID)

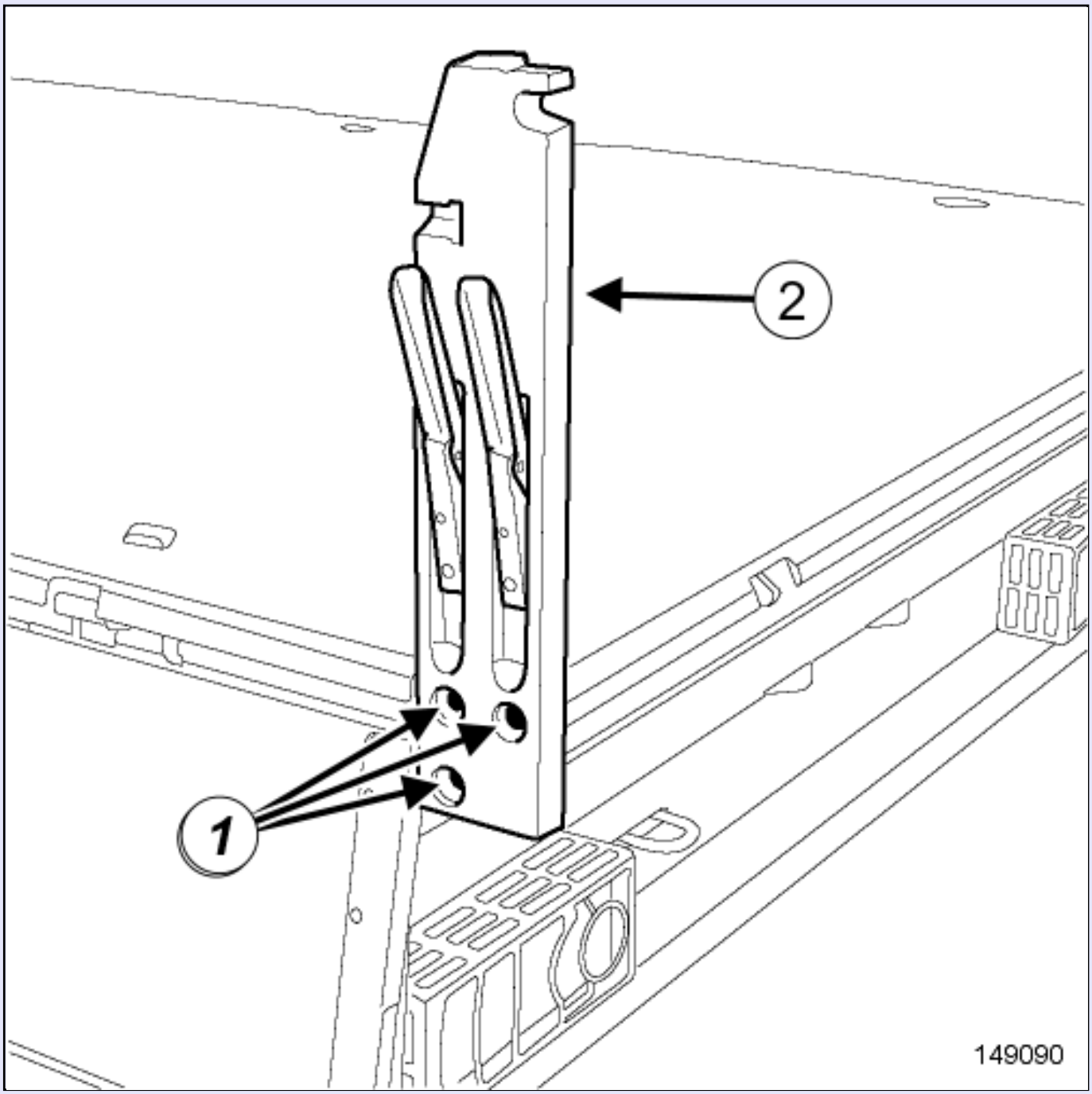
1- REAR POST OF THE STAKE BODY

- Open the rear board.
- Remove the ladder rack from the tipper(see 56A, Exterior equipment , Tipper ladder rack: Removal - Refitting) .

2. REMOVAL OPERATION

DUMPER(BENBAS)

1- REAR POST OF THE THREE-WAY TIPPER

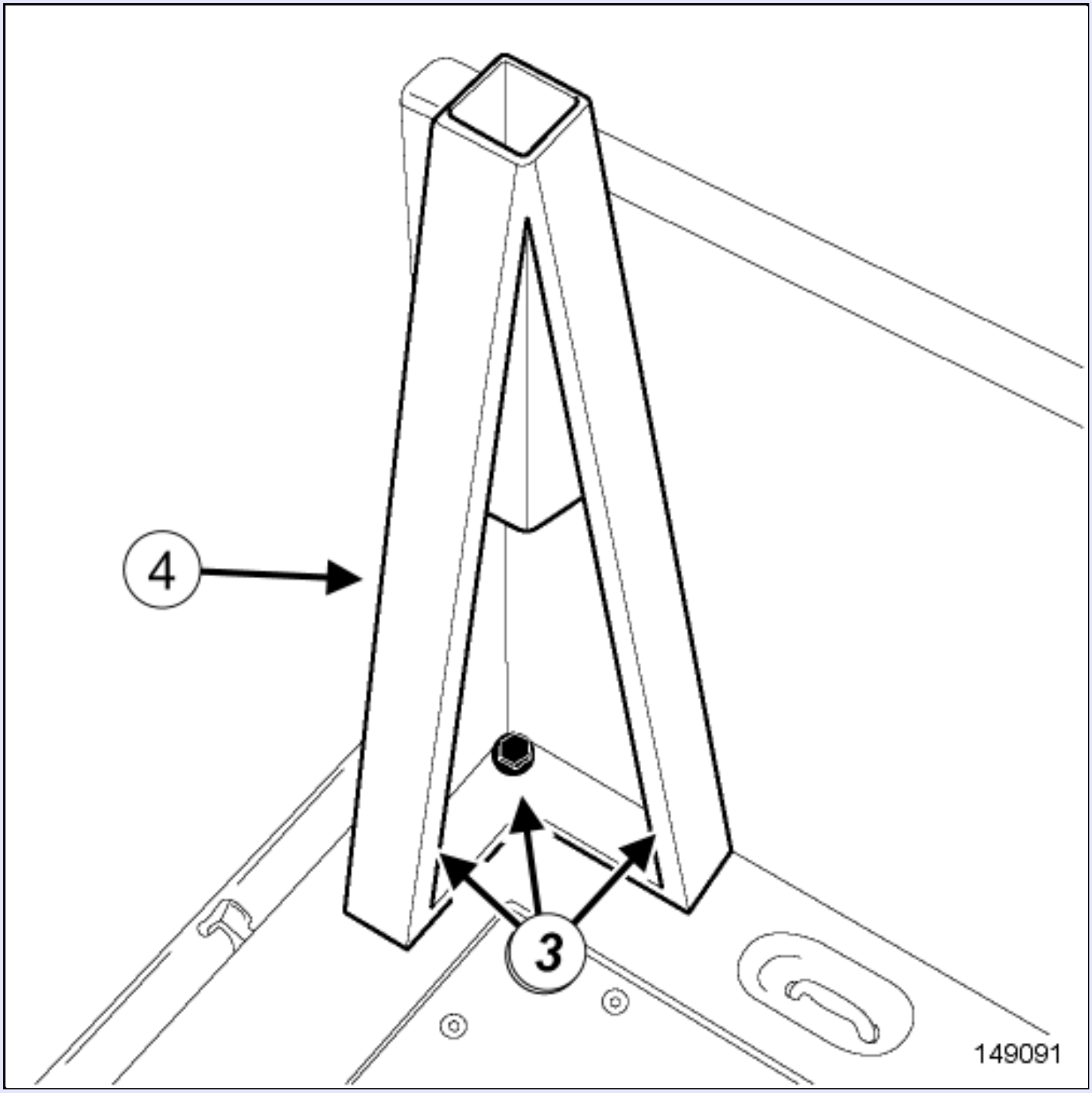


Remove:

- the bolts of the three-way tipper rear post(1) ,
- the rear post of the three-way tipper(2) .

STAKEBED(PLTRID)

1- REAR POST OF THE STAKE BODY



- Remove:
  - the bolts of the stake body rear post(3) ,
  - the rear post of the stake body(4) .

REFITTING

- Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

TIPPER SIDE BOARD: REMOVAL - REFITTING

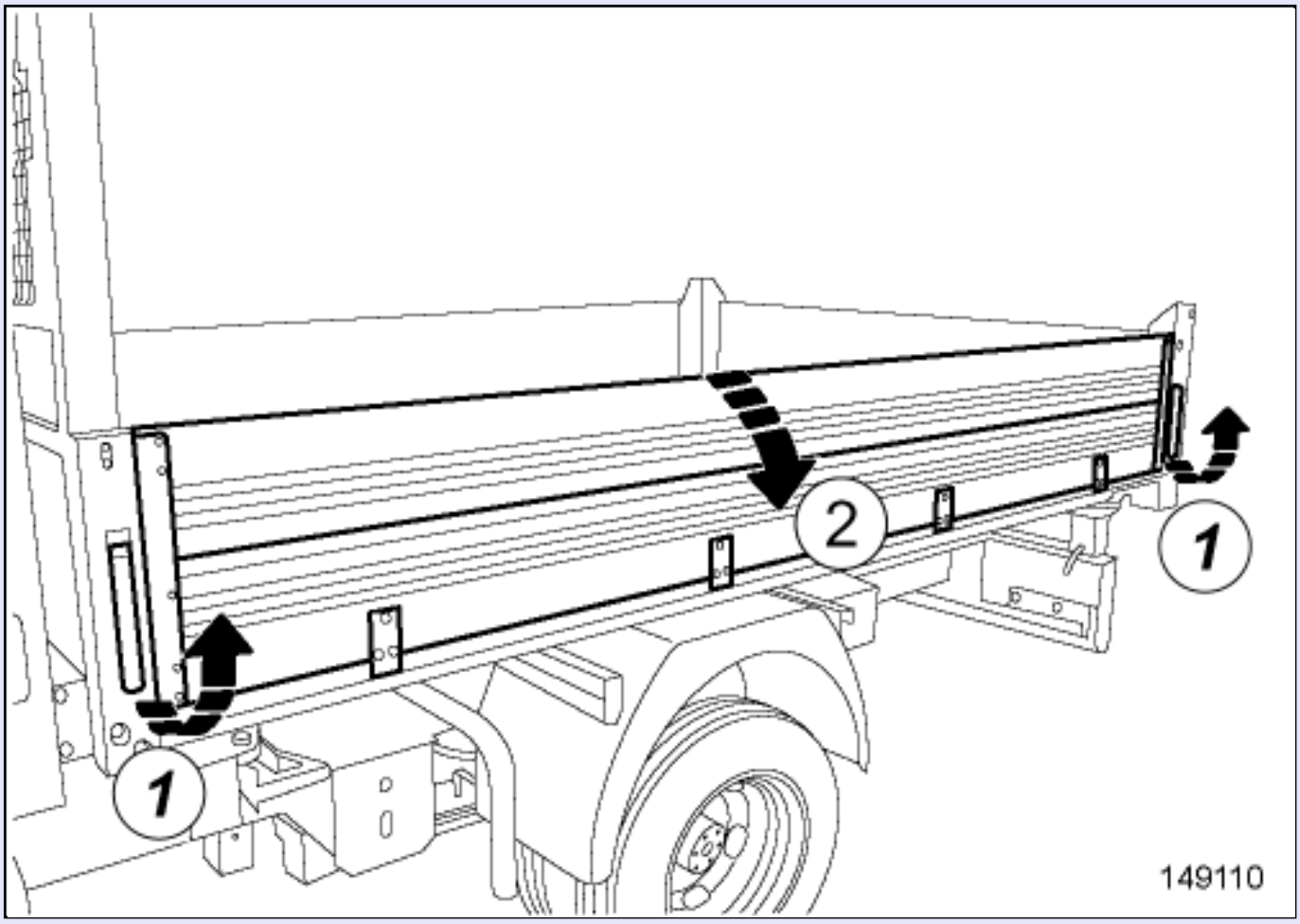
REMOVAL

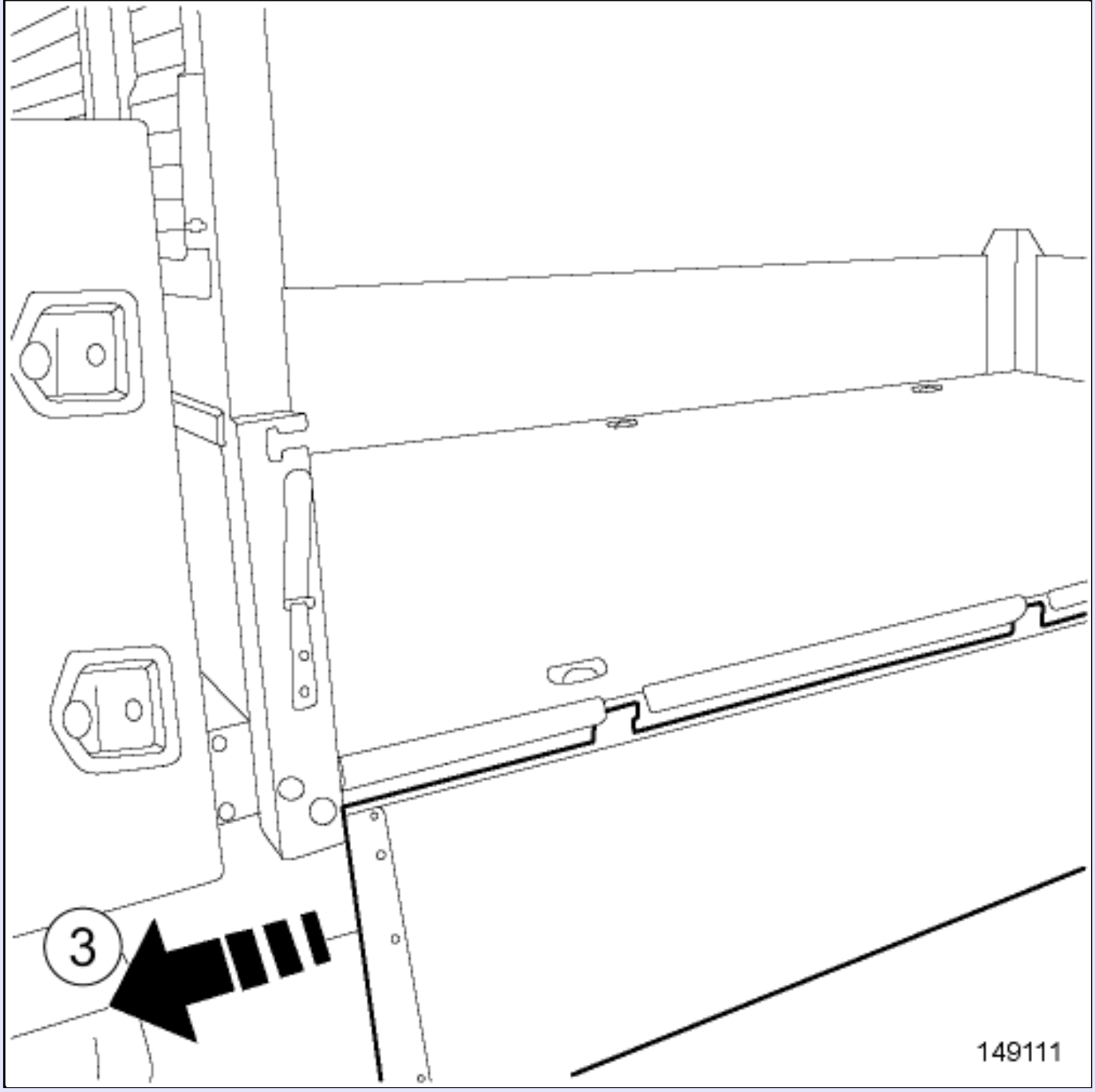
1. REMOVAL OPERATION

1- SIDE BOARD

DUMPER(BENBAS)

1)SIDE BOARD OF THREE-WAY TIPPER

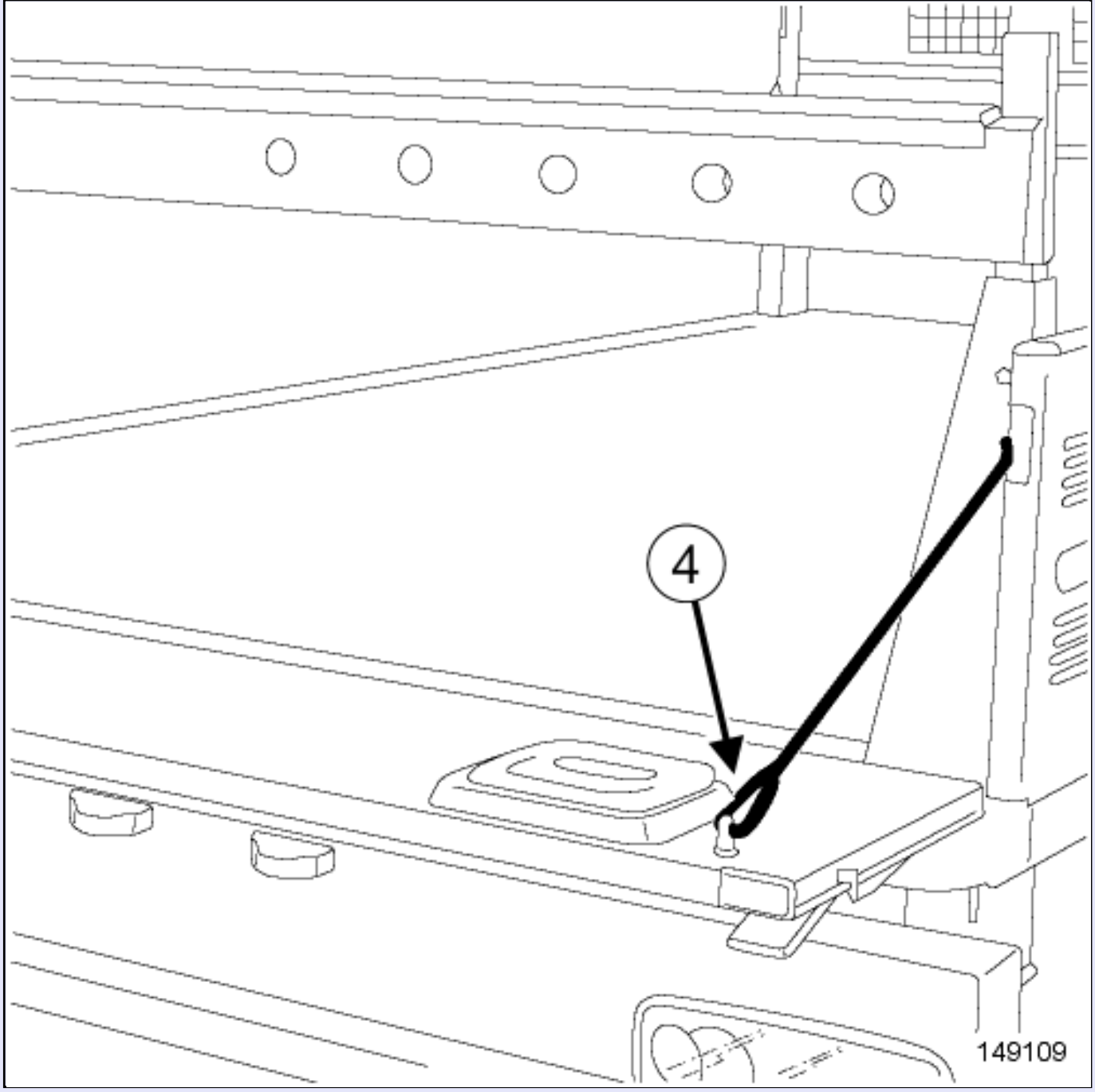




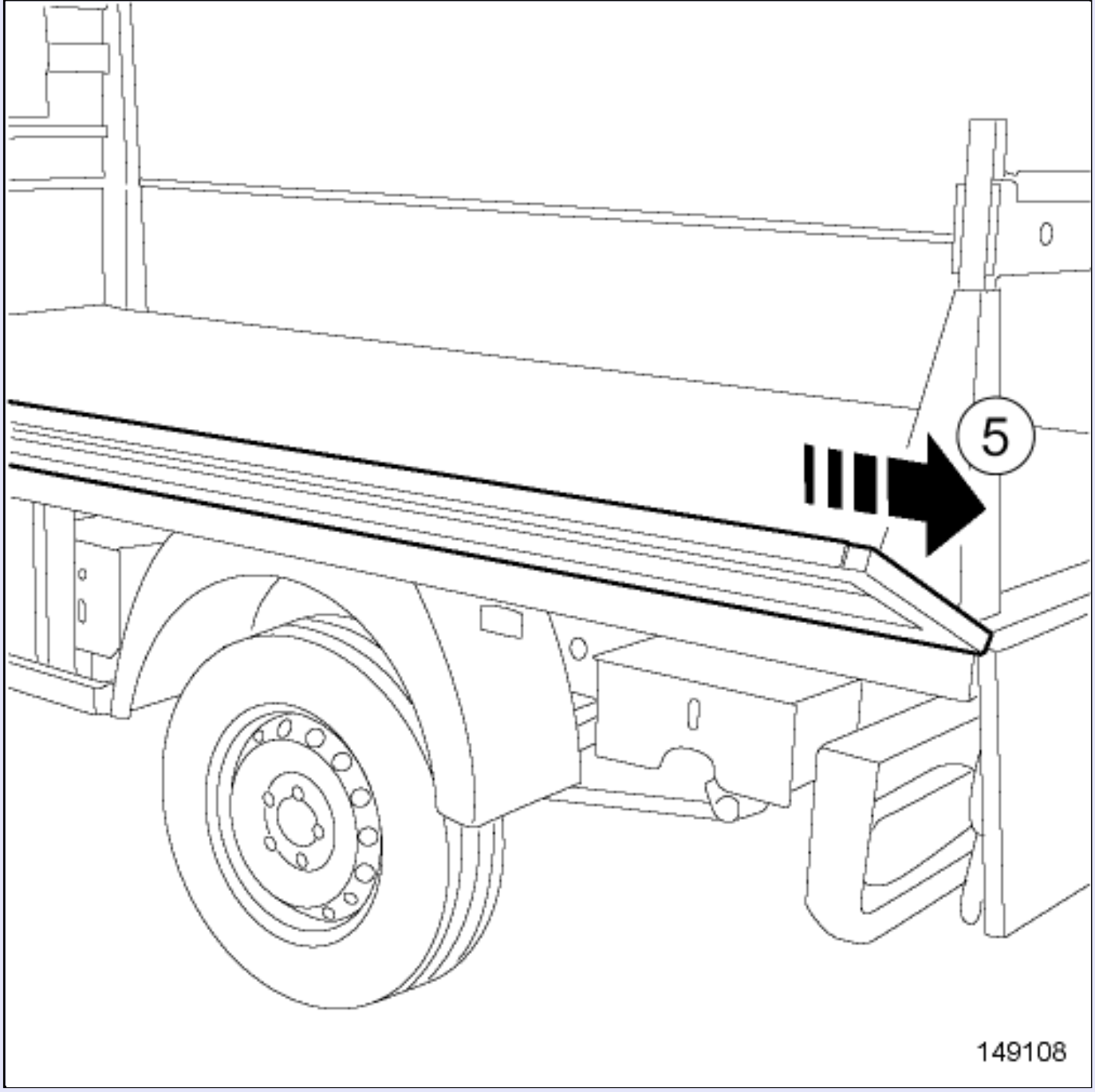
- Unlock the side board of the three-way tipper at(1) .
- Open the side board of the three-way tipper at(2) .
- Remove the side board of the three-way tipper at(3) with the help of a second operator.

STAKEBED(PLTRID)

1)PLATFORM SIDE BOARD



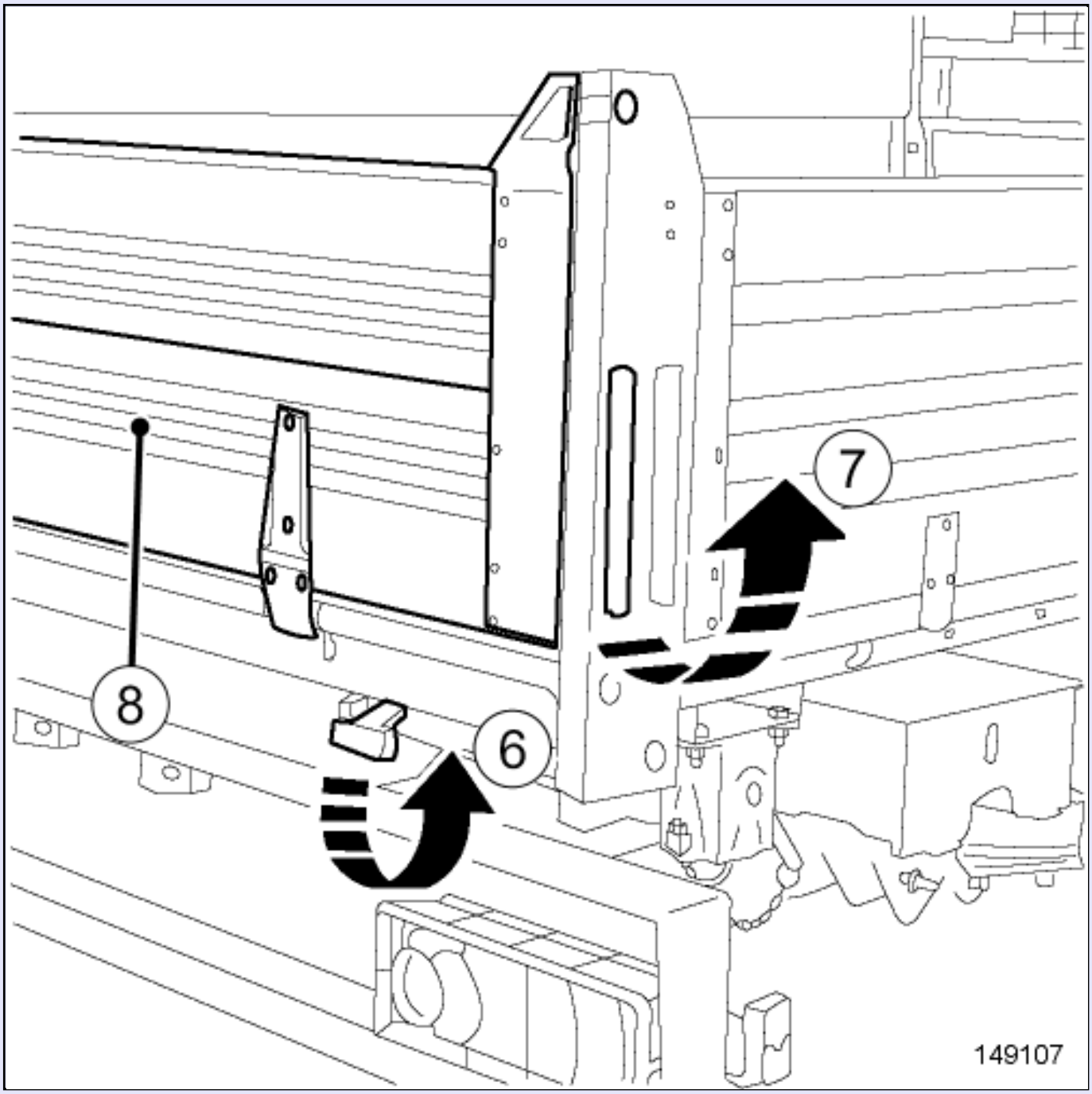
- Unlock the rear board of the platform.
- Open the rear board of the platform.
- Unlock the retaining cables of the rear board(4) .



- Unlock the front section of the platform side board.
- Open the side board of the platform half-way.
- Remove the side board of the platform at(5) with the help of a second operator.

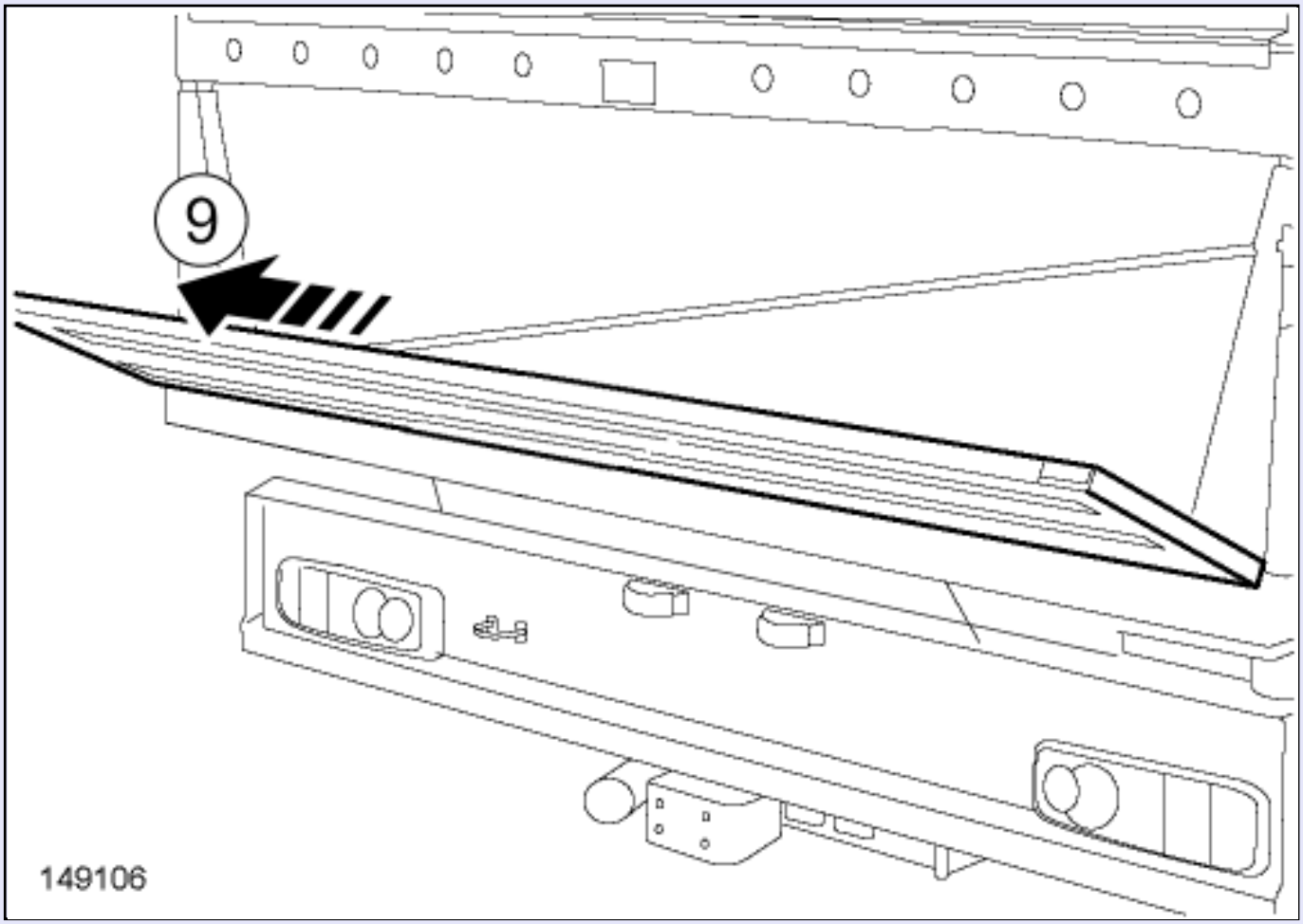
2- REAR BOARD

1)REAR BOARD OF THREE-WAY TIPPER



- Unlock the rear board of the three-way tipper at(6) and (7) .
- Remove the rear board of the three-way tipper(8) .

1)PLATFORM REAR BOARD

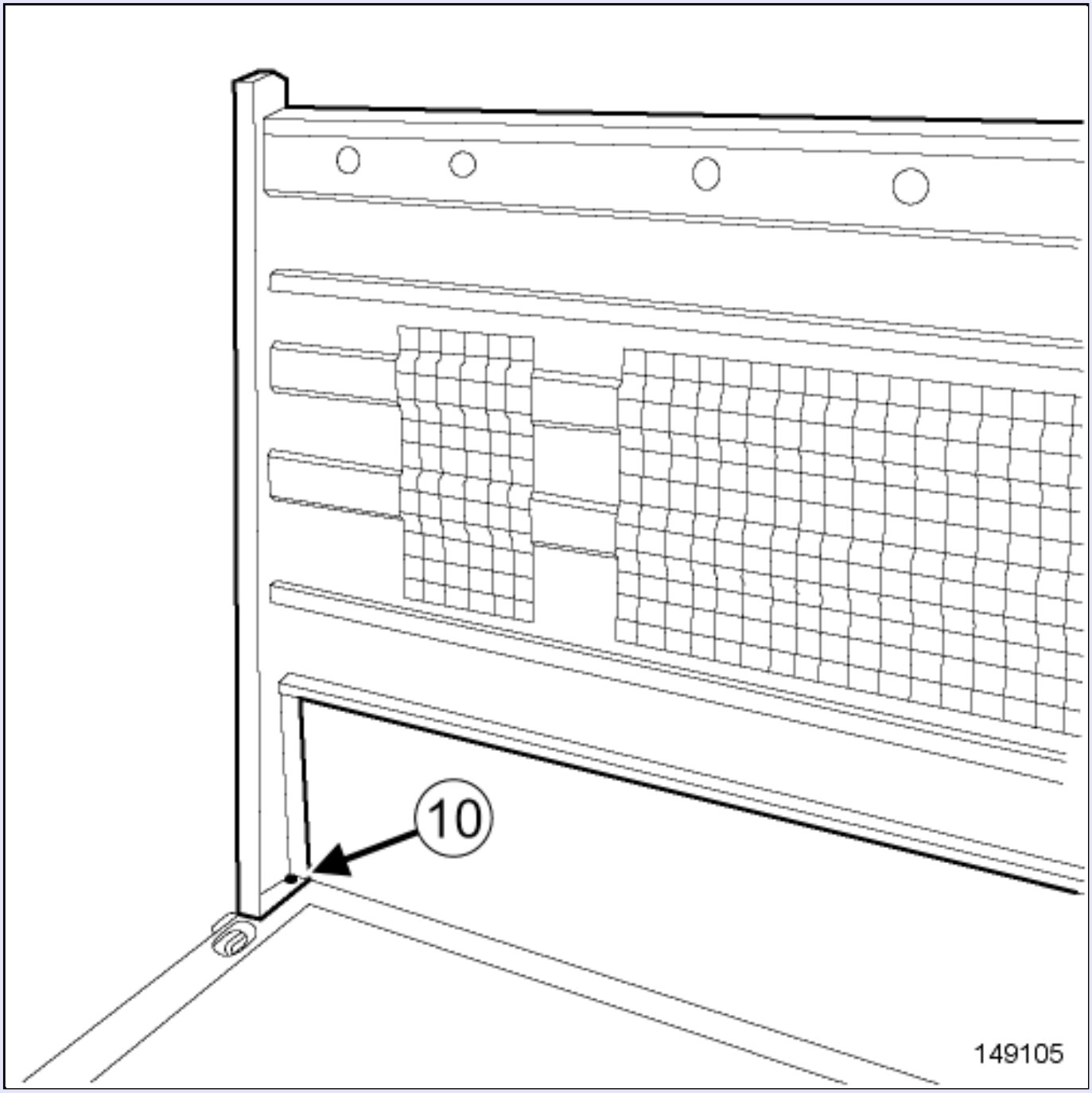


- Open the rear board of the platform half-way.
- Remove the platform rear board at(9) .

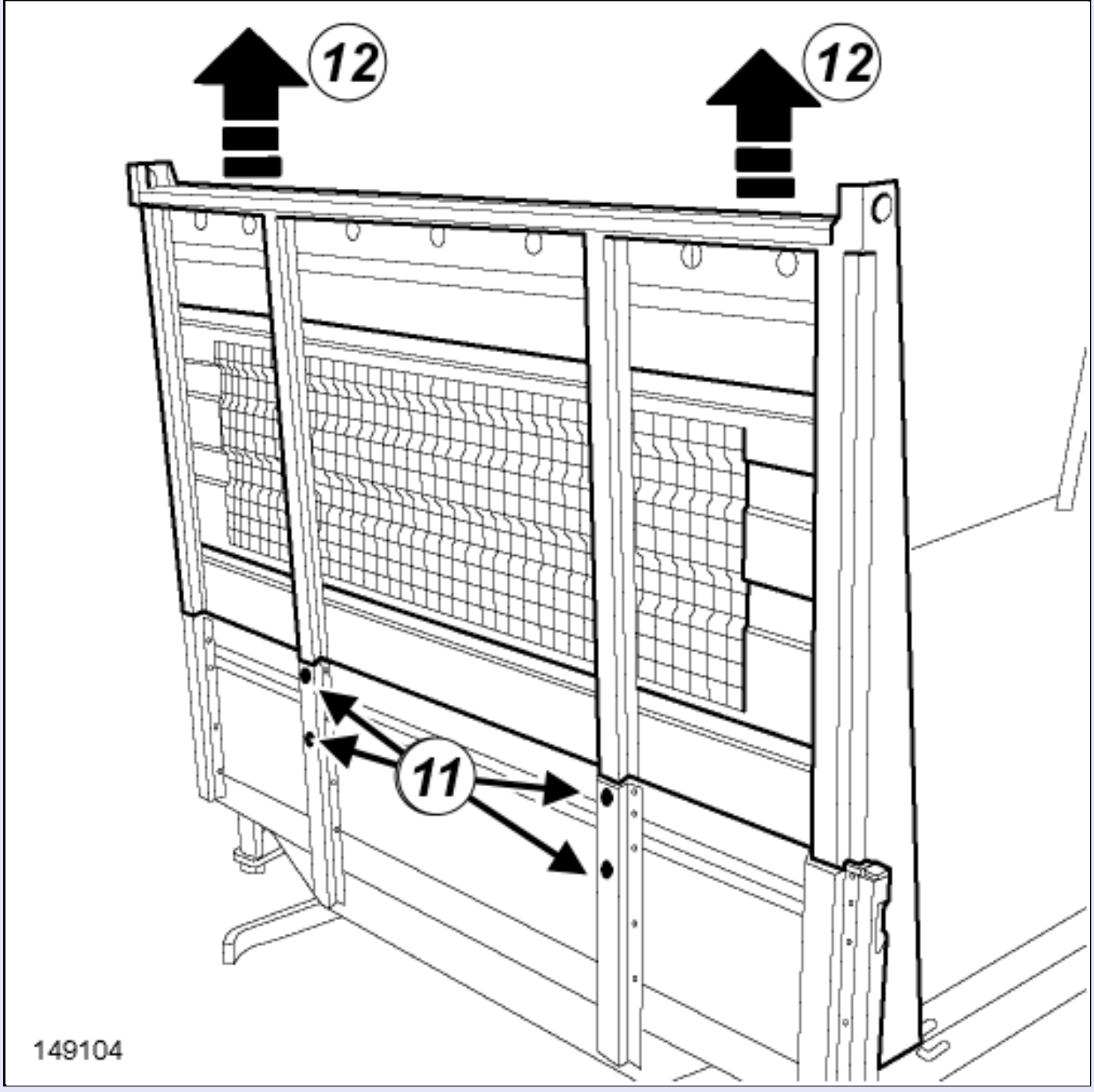
3- FIXED FRONT BOARD

1)FIXED FRONT BOARD OF PLATFORM

❑ Remove the platform assembly(see 52A, Non-side opening element mechanisms, Tipper assembly: Removal - Refitting) .

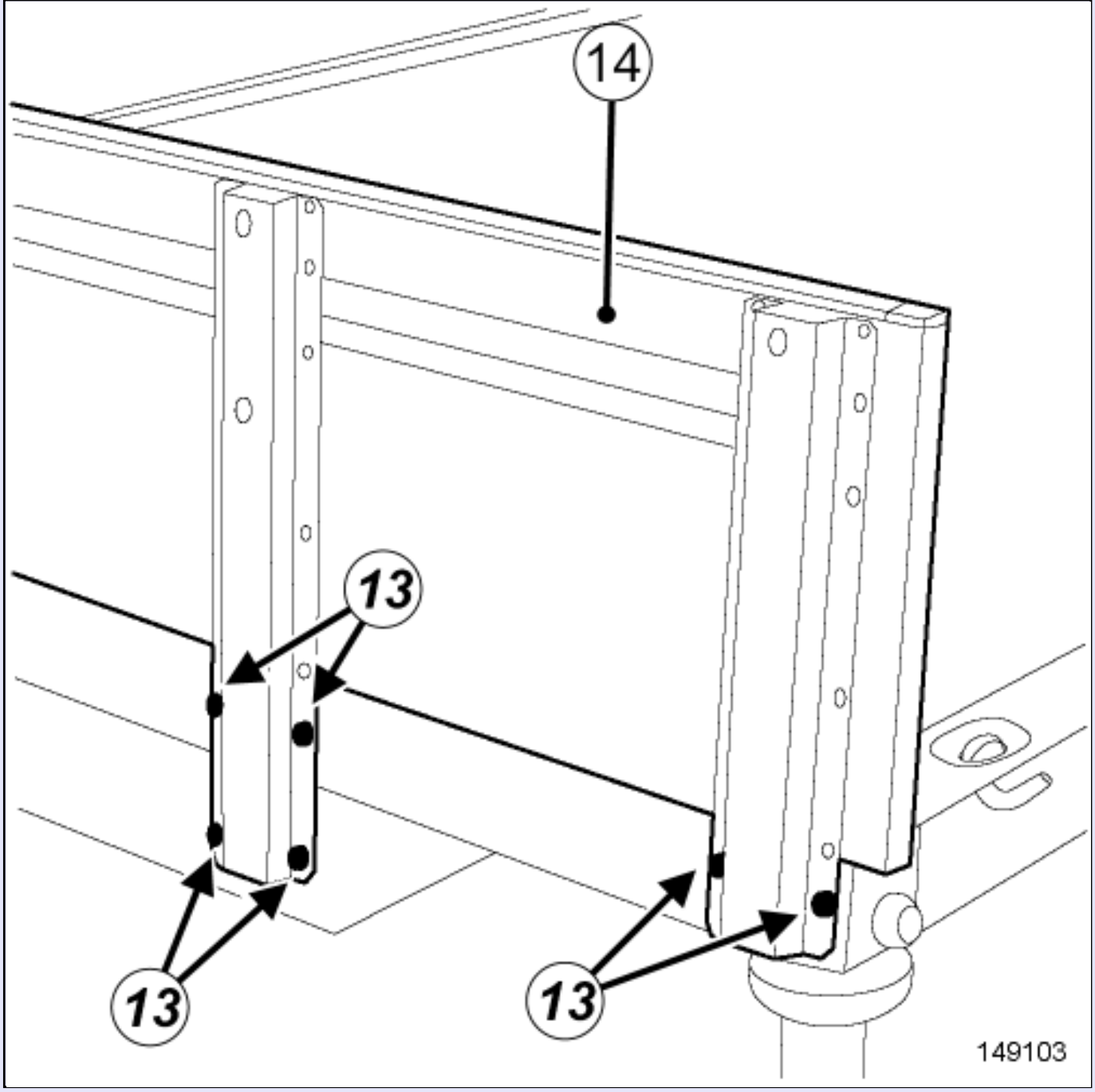


❑ Remove the bolt(10) .



Remove:

- the bolts(11) ,
- the cab protection at(12) with the help of a second operator.



Remove:

- the bolts(13) ,
- the fixed front board(14) with the help of a second operator.

REFITTING

Proceed in the reverse order to removal.

Repair-50x03x22x28-01x37-1-1-1.xml

XSL version : 3.02 du 22/07/11

TIPPER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Scattolini tipper

IMPORTANT

To avoid discharging the battery, operate the tipper with the engine running.

WARNING

To avoid any accidents, the tipper must be emptied of its contents before any operations are carried out on it.

WARNING

To prevent the tipper from lowering once raised, use the safety strut.

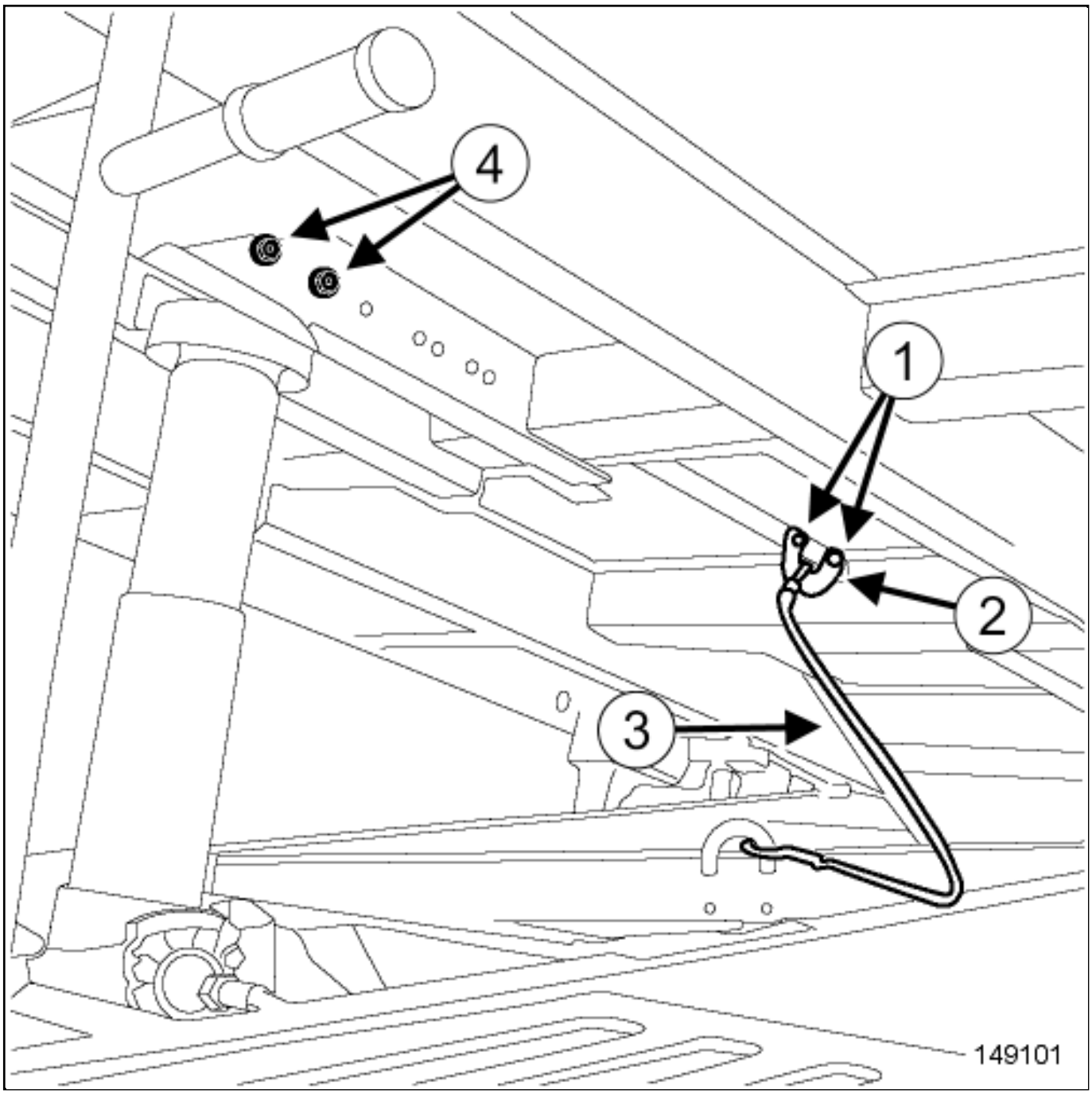
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Strap the vehicle to the lift Vehicle: Towing and lifting (02A, Lifting equipment).
- Remove the front left-hand door sill Door sill: Removal - Refitting (71A, Body internal trim).
- Disconnect the battery Battery: Removal - Refitting (80A, Battery).
- Remove the emergency spare wheel.

2. REMOVAL OPERATION

POSITION OF THE COMPONENTS



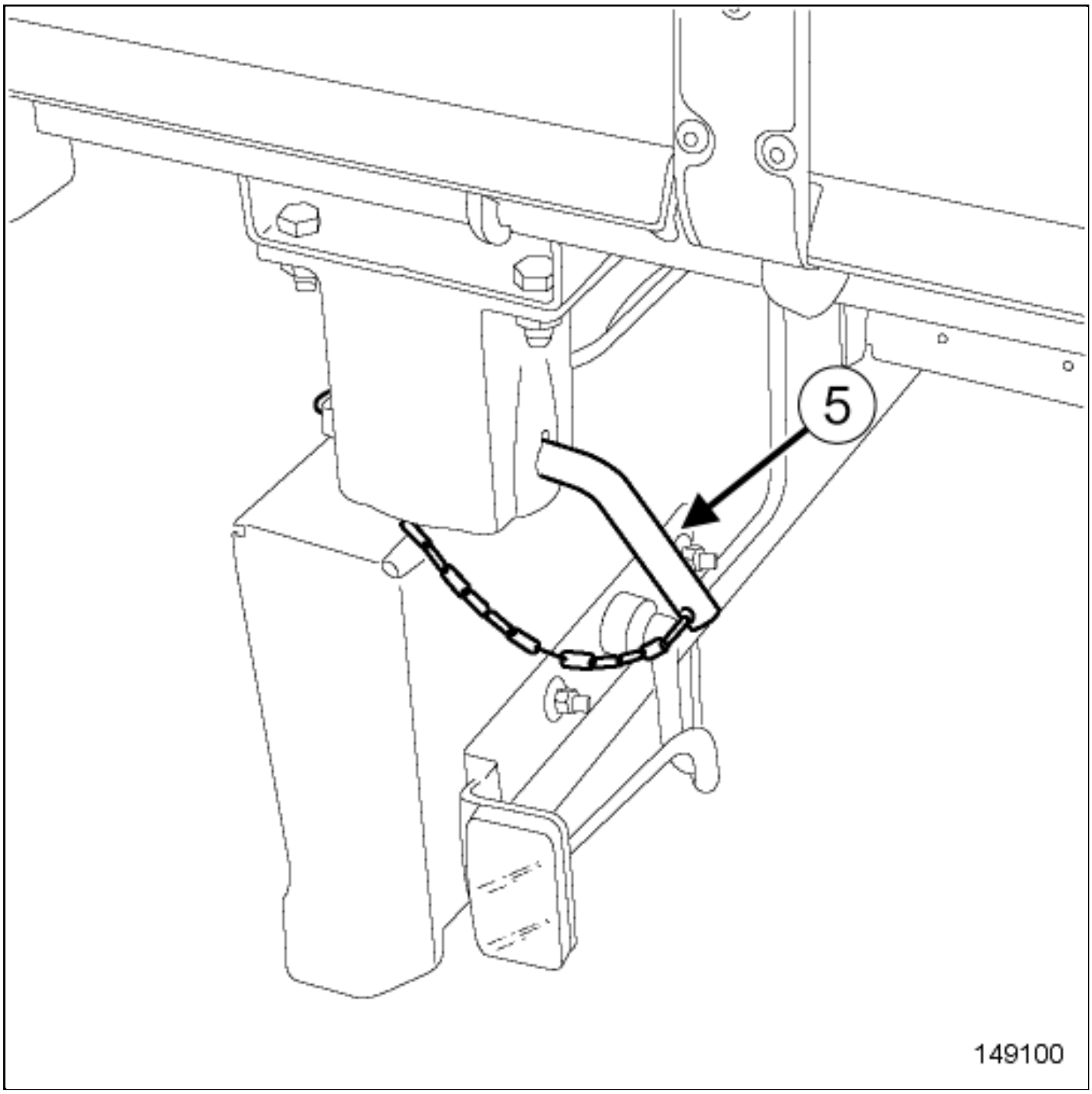
Note:

The following operations are to be carried out with the three-way tipper in the "lowest" position using the lift.

Remove:

- the mounting bolts of the three-way tipper safety ring(1) ,

- the safety ring of the three-way tipper(2) ,
- the safety cord(3) partially,
- the mounting bolts of the cylinder articulated clevis(4) .



Remove the two safety shafts(5) from the articulated balls.

Lower the vehicle on the two-post lift.

Unstrap the vehicle from the two-post lift.

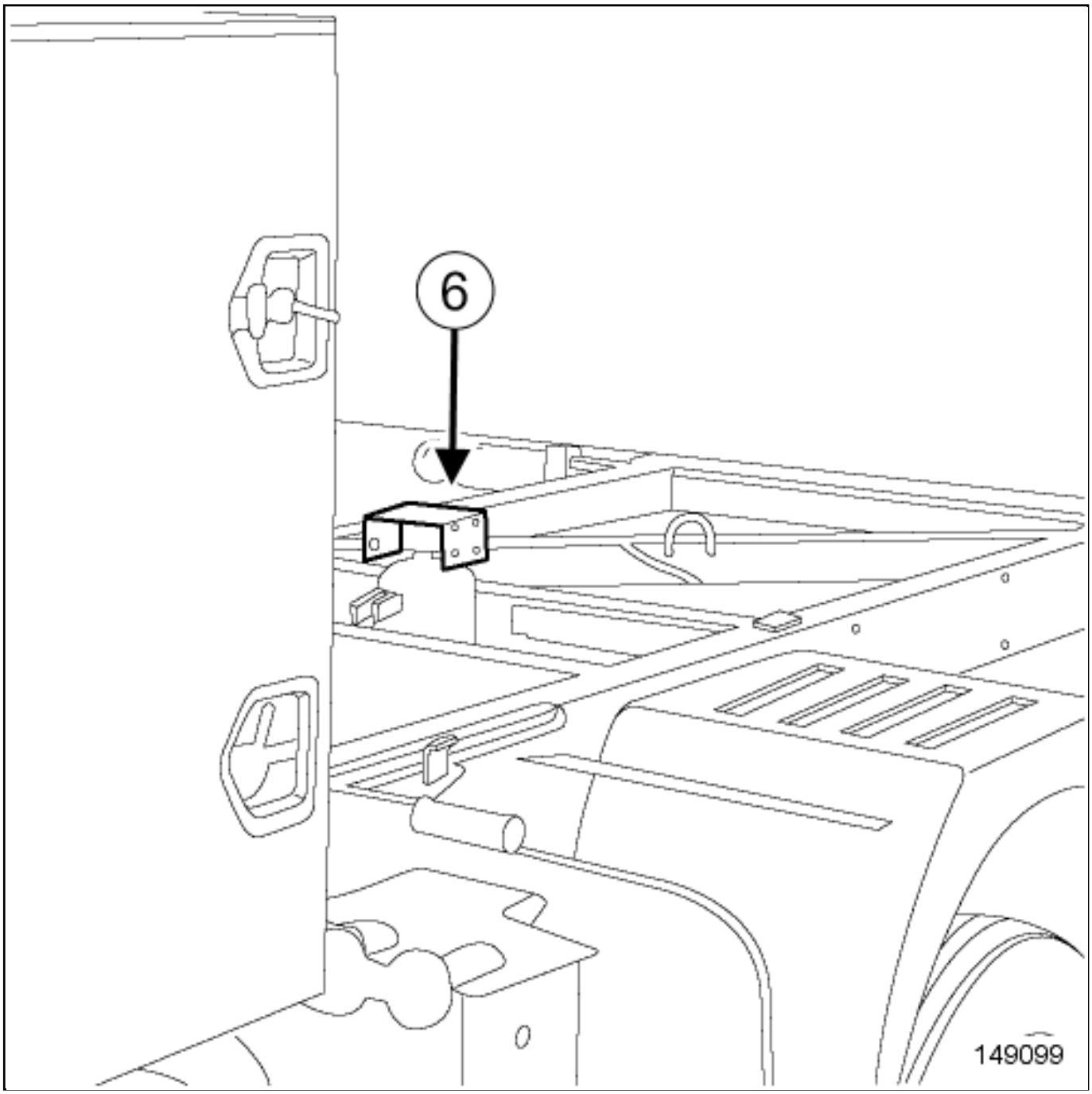
- Place the arms of the two-post lift under the three-way tipper.
- Remove the three-way tipper.

Note:

Ensure that the three-way tipper is stable when lifting using the lift.

REFITTING

1. REFITTING OPERATION



Refit the three-way tipper on its "subframe" .

Note:

When refitting the three-way tipper, check that the following are correctly positioned:

- the cylinder articulated clevis(6) in its housing,
- the articulated supports on the balls of the subframe.

Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

Strap the vehicle to the lift Vehicle: Towing and lifting (02A, Lifting equipment).

Refit:

- the two safety shafts of the articulated balls,
- the mounting bolts of the cylinder articulated clevis.

Tighten the mounting bolts of the cylinder articulated clevis 83 N.m.

Refit:

- the safety ring of the three-way tipper,
- the mounting bolts of the three-way tipper safety ring.

Tighten the mounting bolts of the three-way tipper safety ring 23 N.m.

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

TRACK ROD: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Ball joint extractor.	Tav. 476

Location and specifications (tightening torques, parts always to be replaced, etc.)(see 36A, Steering assembly, Steering assembly: Exploded view) .

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 36A, Steering assembly , Steering: Precautions for the repair) ,
  - Vehicle: Precautions for the repair (01D, Mechanical introduction).

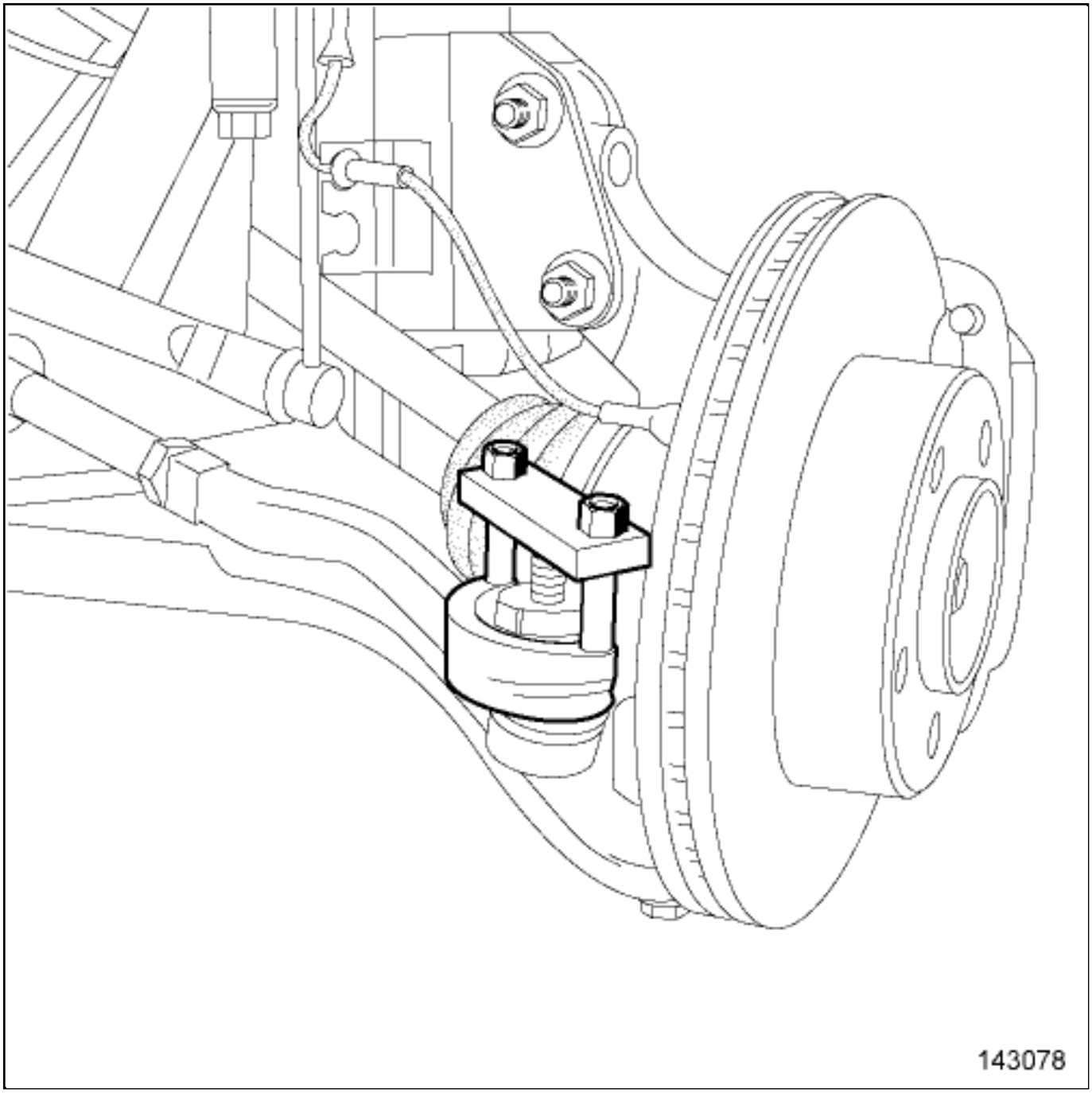
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting (02A, Lifting equipment).
- Remove the front wheelWheel: Removal - Refitting .

2. REMOVAL OPERATION

- Loosen the wheel alignment adjustment lock nut(see 36A, Steering assembly , Steering assembly: Exploded view) .
- Remove (see 36A, Steering assembly , Steering assembly: Exploded view) :
  - the track rod ball joint nut,
  - the track rod ball joint protector.



- Detach the ball joint from the track rod using the toolBall joint extractor.(Tav. 476) .
- Unscrew the track rod anti-clockwise and note the number of turns for refitting.
- Remove the track rod(see 36A, Steering assembly , Steering assembly: Exploded view) .

REFITTING

- Screw the track rod back in place by the number of turns noted during removal(see 36A, Steering assembly , Steering assembly: Exploded view) .

- Proceed in the reverse order to removal.

- Adjust the front axle **Front axle system: Adjustment** .

TRACKING UNIT: REMOVAL - REFITTING

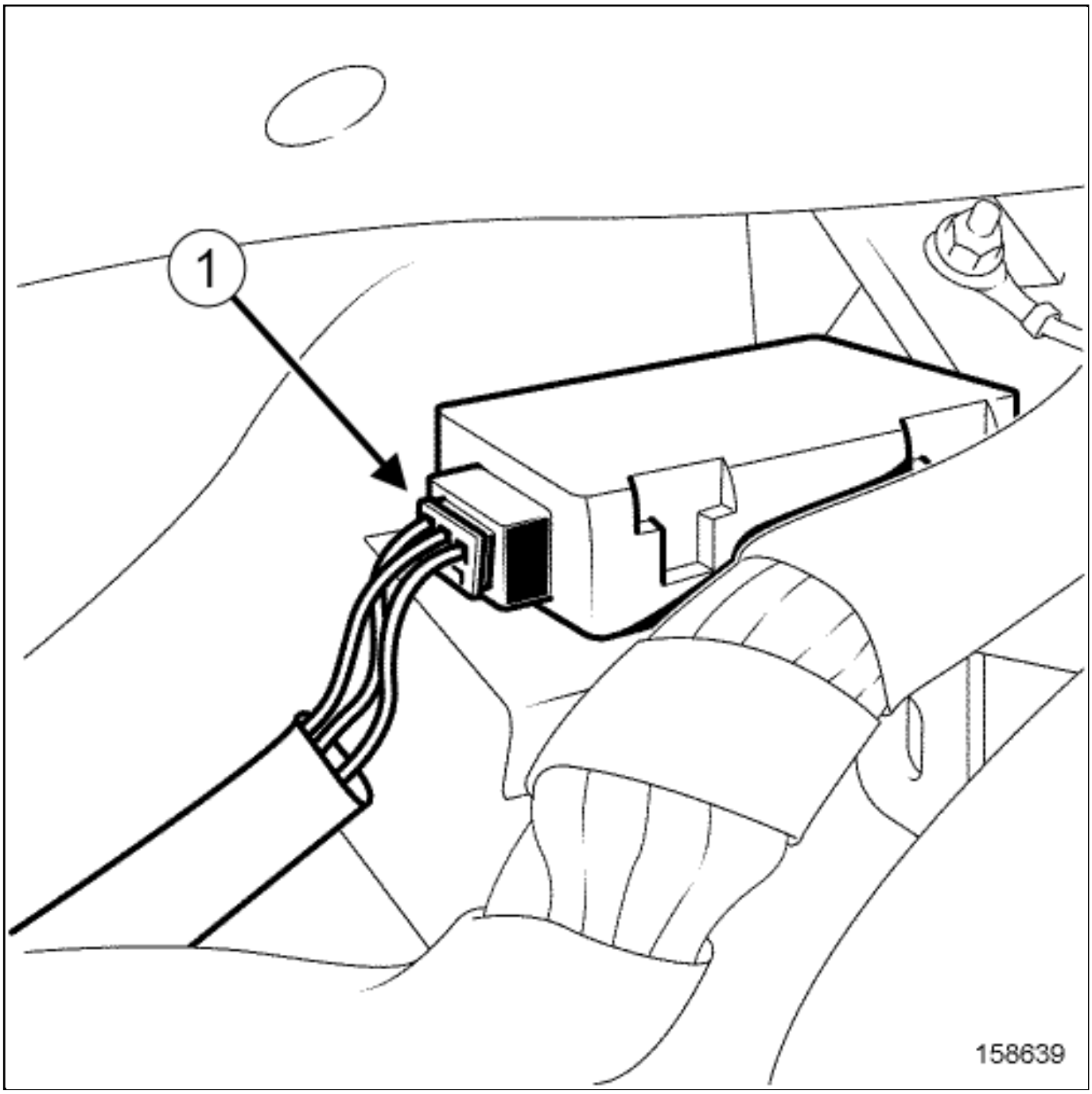
Equipment required
Diagnostic tool

REMOVAL

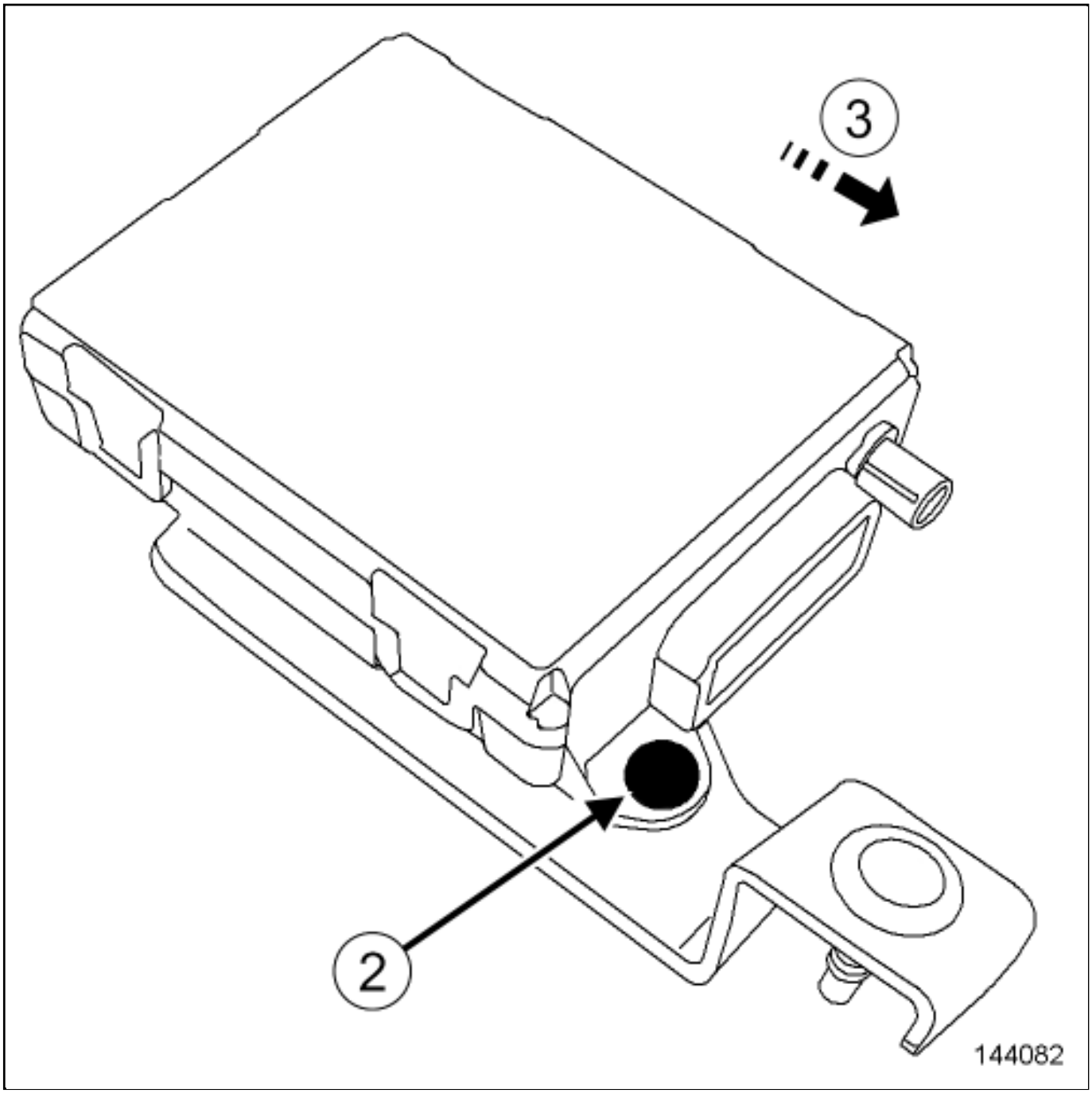
1. REMOVAL PREPARATION OPERATION

- Apply the "Before repair procedure" using the Diagnostic tool(see Fault finding - Replacement of components) (82A, Immobiliser).
- Switch off the ignition.
- Remove the gloveboxGlovebox: Removal - Refitting .

2. REMOVAL OPERATION



- Unclip the tracking unit connector(1) .



- Revome:
  - the tracking unit bolt(2) ,
  - the tracking unit at(3) ,

REFITTING

- Proceed in the reverse order to removal.

- Apply the "After repair procedure" using the Diagnostic tool(see Fault finding - Replacement of components) (82A, Immobiliser).

XSL version : 3.02 du 22/07/11

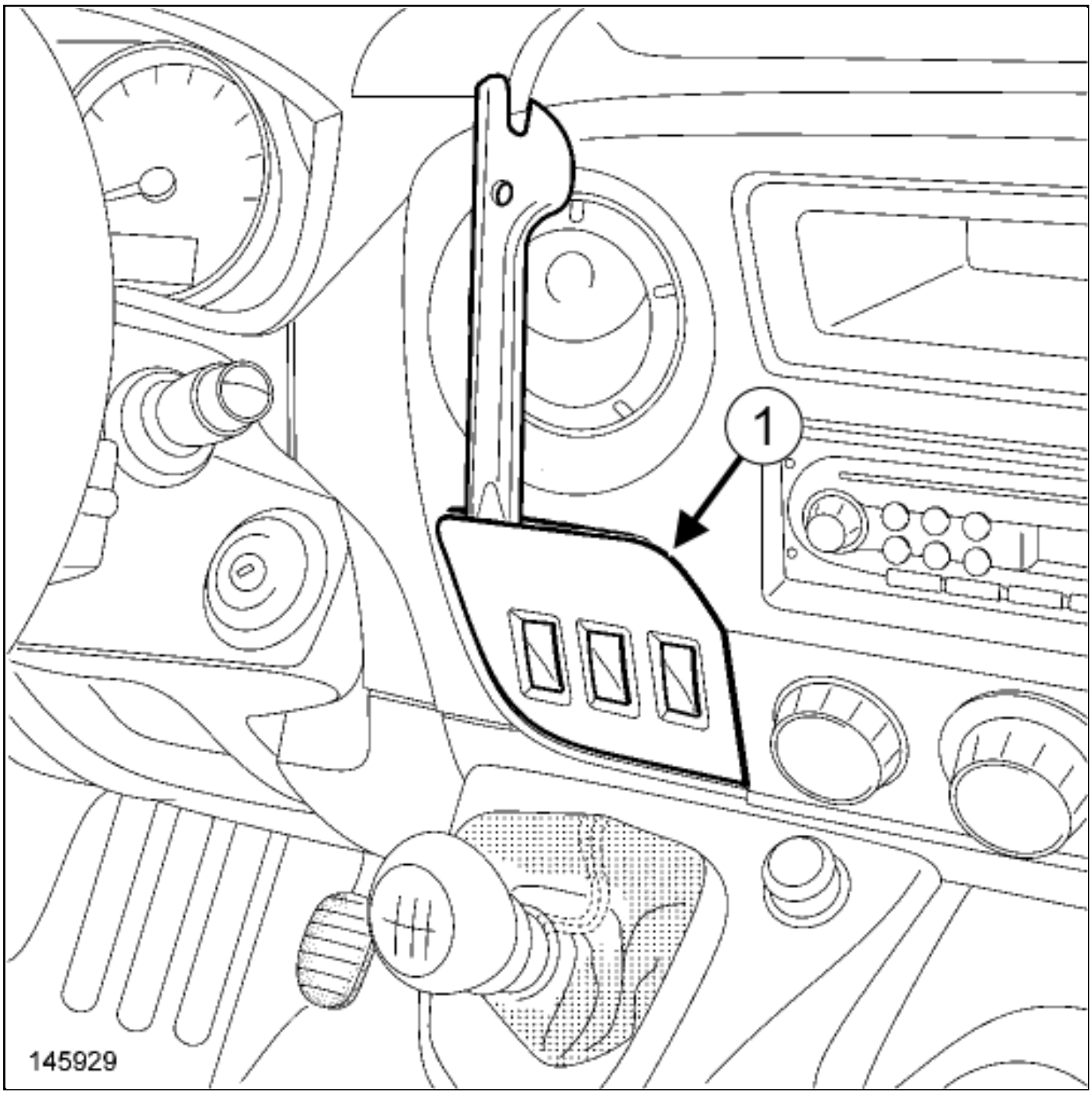
TRANSMISSION MODE MANAGEMENT CONTROL: REMOVAL - REFITTING

Special tooling required	
Set of trim removal levers.	Car. 1363

REMOVAL

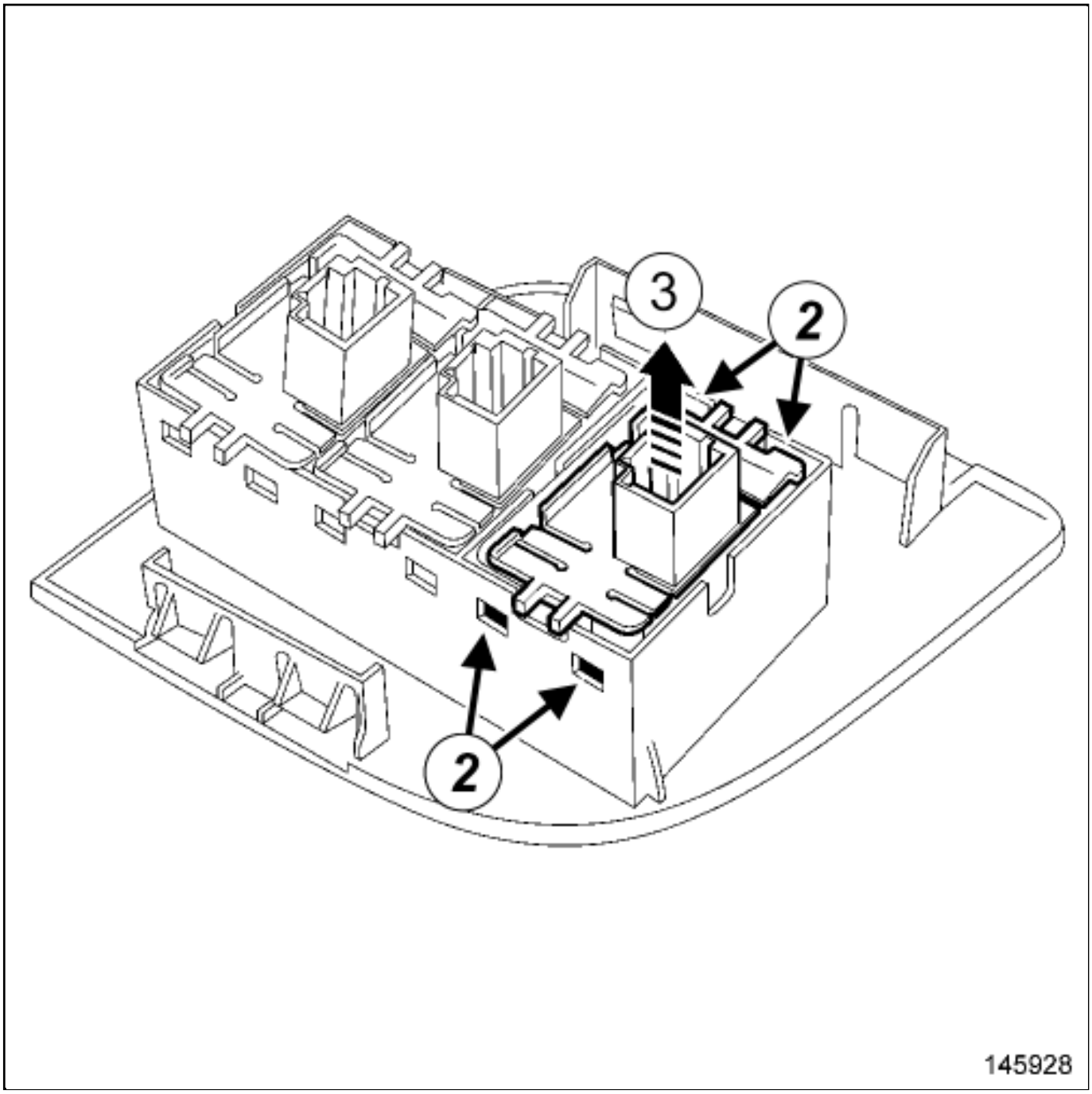
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.



- Remove the switch plate(1) using the toolSet of trim removal levers.(Car. 1363)
- Disconnect the switch plate connectors.

2. REMOVAL OPERATION



- Remove the transmission mode management switch(3) by pressing on the clips(2) .

REFITTING

- Proceed in the reverse order to removal.

Repair-30x04x03x38-01x37-1-2-1.xml

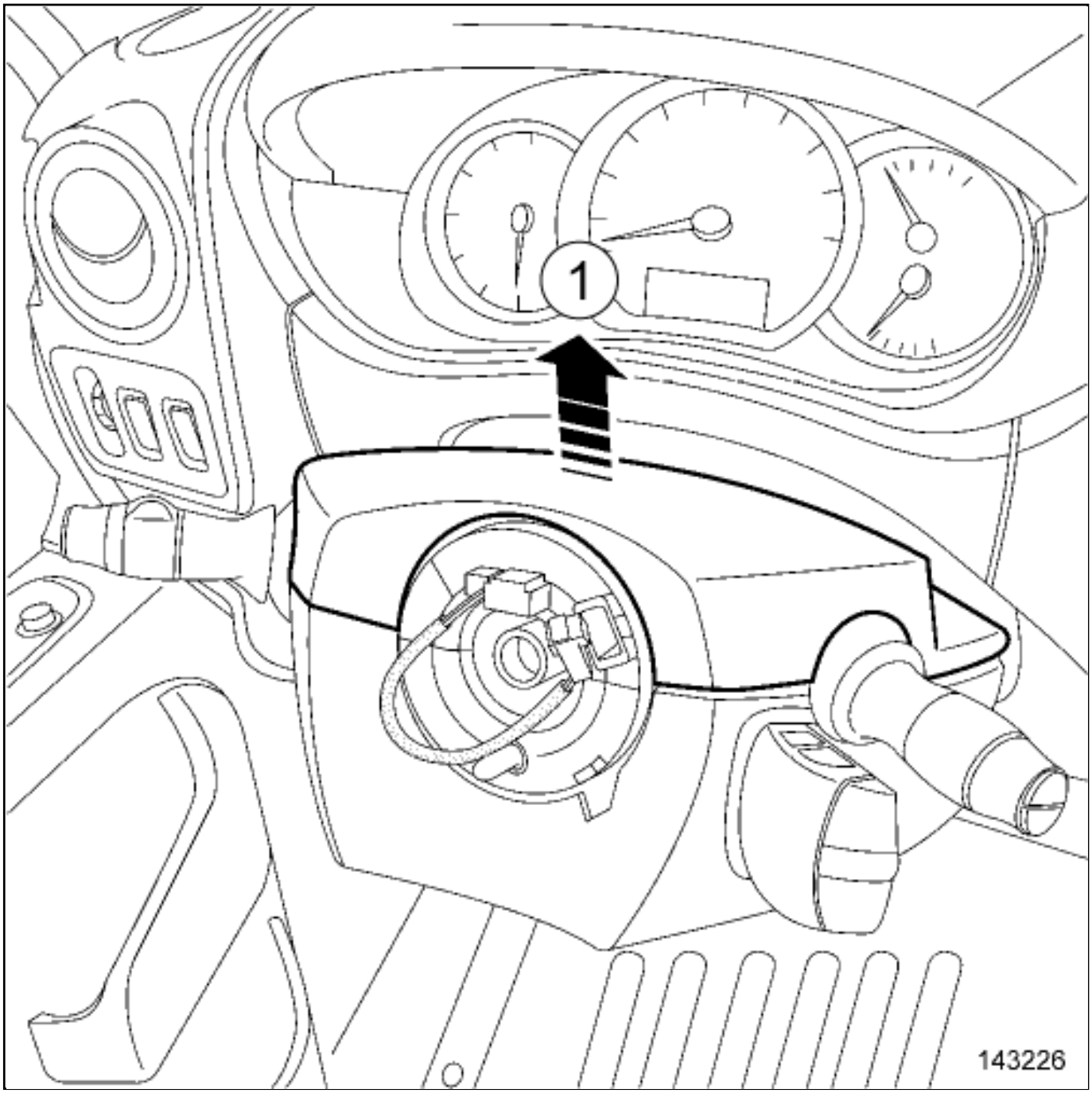
XSL version : 3.02 du 22/07/11

TRANSPONDER RING: REMOVAL - REFITTING

REMOVAL

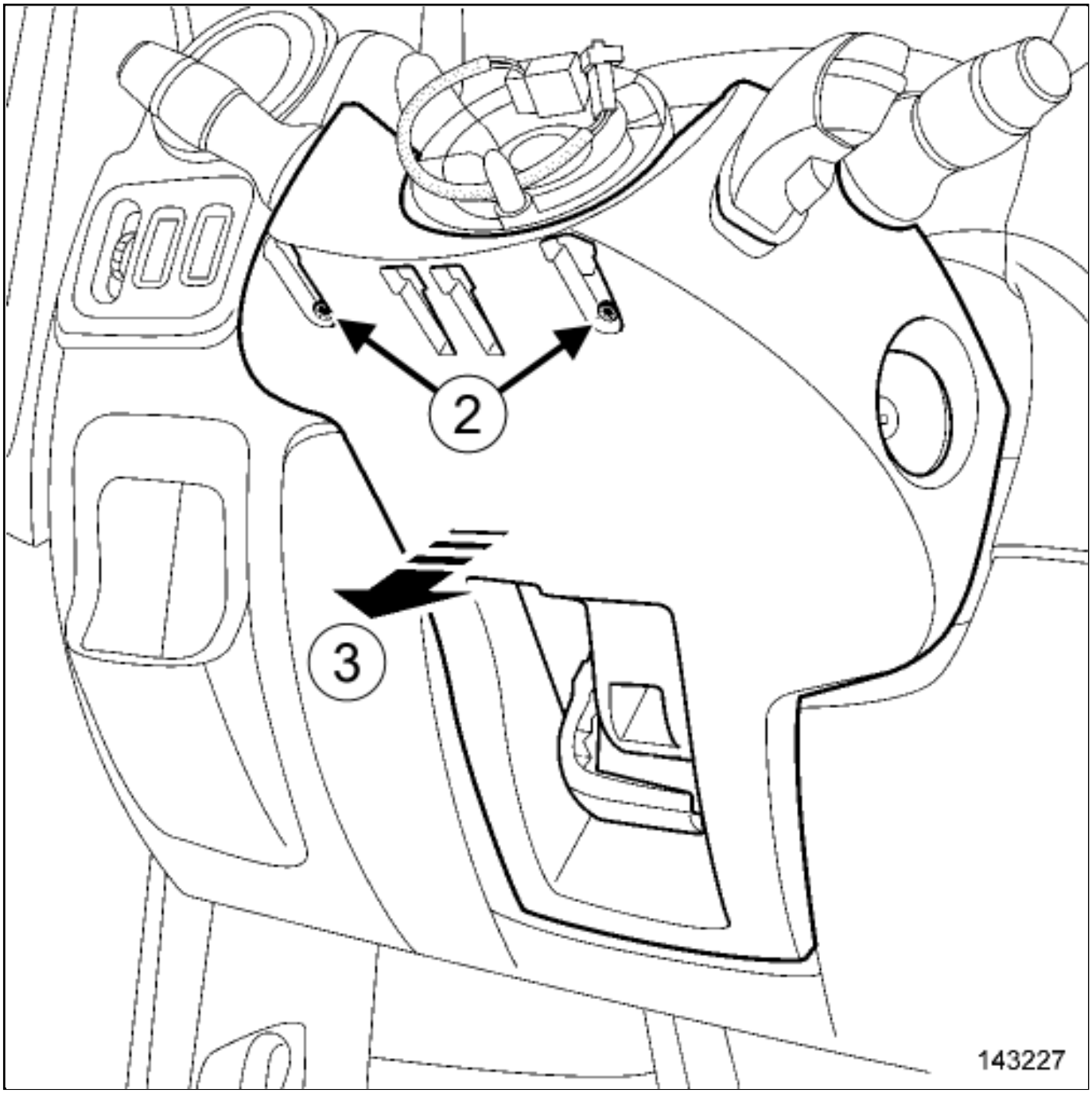
1. REMOVAL PREPARATION OPERATION

- Switch off the ignition.



- Put the steering column into the lower position.

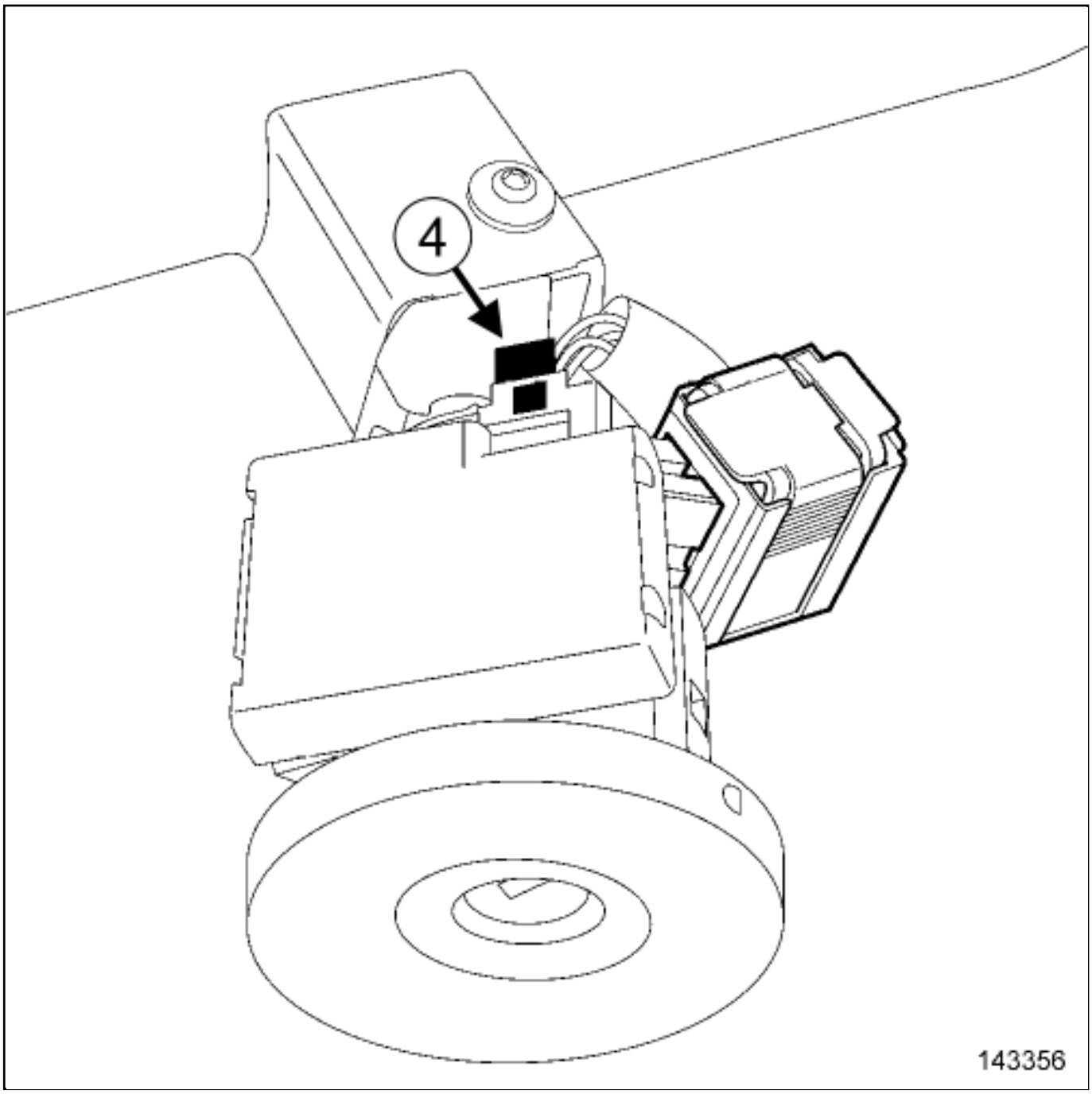
- Remove the upper steering column cover at(1) .



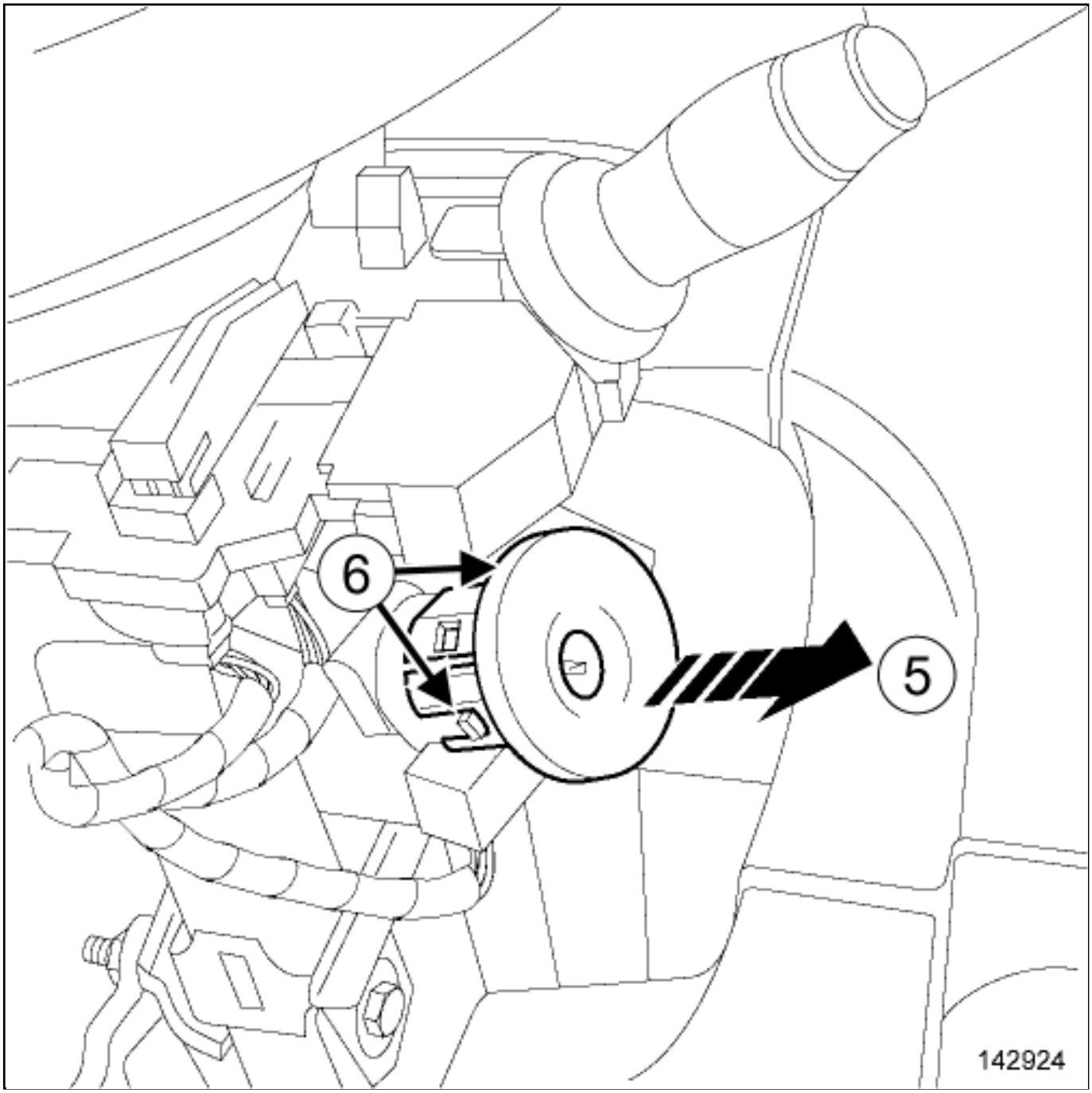
- Place the steering column in the upper position.

- Remove:
  - the bolts(2) on the lower steering column cover,
  - the lower steering column cover at(3) .

2. REMOVAL OPERATION



- Disconnect the connector(4) of the transponder ring.



Remove the transponder ring(5) by pressing on the clips(6) .

REFITTING

Proceed in the reverse order to removal.

XSL version : 3.02 du 22/07/11

TURBOCHARGER COOLANT PIPE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**Coolant circuit assembly: Exploded view** .

WARNING

Wear cut-resistant gloves during the operation.

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

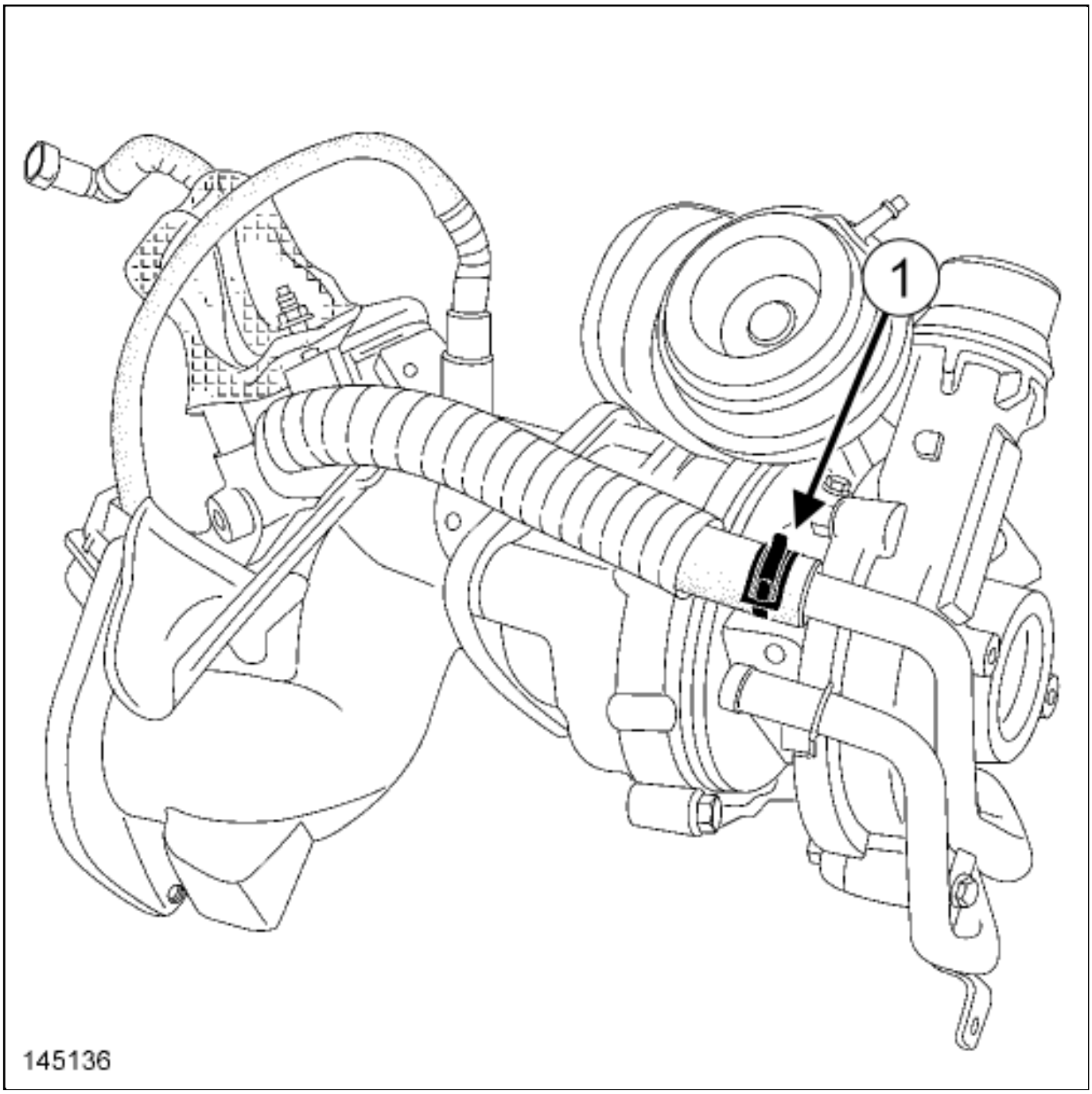
1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift **Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the turbocharger air inlet pipe,
  - the intercooler air inlet pipe,
  - the turbocharger **Exhaust assembly in engine compartment: Exploded view** .

- Fit the "turbocharger - turbocharger outlet exhaust gas duct" assembly in a vice equipped with jaws.

2. REMOVAL OPERATION



Separate the clip (1) using the toolRemote operation pliers for hose clips.(Mot. 1448) on the coolant pipe between exhaust fuel injector cooler and the turbocharger coolant pipe.

Disconnect the coolant pipe between the exhaust fuel injector cooler and the turbocharger coolant pipe from the turbocharger coolant pipe.

Remove Coolant circuit assembly: Exploded view :

- the turbocharger coolant pipe,
- the seal on the turbocharger coolant pipe.

REFITTING

1. REFITTING PREPARATION OPERATION

Using surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products), clean and degrease the bearing faces of:

- the turbocharger,
- the turbocharger coolant pipe.

2. FINAL OPERATION

Proceed in the reverse order to removal.

Top up and bleed the cooling system Cooling system: Draining - Refilling .

TURBOCHARGER OIL PIPE: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448

parts always to be replaced:
turbocharger oil pipe seal

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

Location and specifications (tightening torques, parts always to be replaced, etc.)Exhaust assembly in engine compartment: Exploded view .

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting .
- Remove the engine undertray.

M9T, 700 702(700 OR 702)

- Remove the low-pressure turbocharger(see 12B, Turbocharging, Turbocharger: Removal - Refitting) .

2. REMOVAL OPERATION

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

- Move aside the clip of the turbocharger oil return pipe using the toolRemote operation pliers for hose clips. (Mot. 1448) Exhaust assembly in engine compartment: Exploded view .

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the turbocharger oil pipe bolts,
  - the hollow bolt of the cylinder block oil supply pipe.

- Disconnect the cylinder block oil return pipe.

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the turbocharger oil pipe,
  - the turbocharger oil pipe seal on the turbocharger side.

M9T, 700 702(700 OR 702)

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the turbocharger oil pipe bolts,
  - the turbocharger oil pipe seal,
  - the turbocharger oil pipe.

REFITTING

1. REFITTING PREPARATION OPERATION

-

parts always to be replaced: turbocharger oil pipe seal

2. REFITTING OPERATION

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

- Refit Exhaust assembly in engine compartment: Exploded view :
  - the turbocharger oil pipe seal on the turbocharger side,
  - the turbocharger oil pipe.

- Proceed in the reverse order to removal.

- Torque tightenExhaust assembly in engine compartment: Exploded view :
  - the oil supply pipe bolts,
  - the hollow bolt of the cylinder block oil supply pipe.

M9T, 700 702(700 OR 702)

- Refit Exhaust assembly in engine compartment: Exploded view :
  - the new turbocharger oil pipe seal,
  - the new turbocharger oil pipe,
  - the turbocharger oil pipe bolts.

- Torque tighten the turbocharger oil pipe boltsExhaust assembly in engine compartment: Exploded view .

3. FINAL OPERATION

- Proceed in the reverse order to removal.

REMOVAL

M9T, 700 702(M9T) AND (700 OR 702)

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post liftVehicle: Towing and lifting .

- Remove the engine undertray.

- Remove the turbocharger(see 12B, Turbocharging, Turbocharger: Removal - Refitting) .

2. REMOVAL OPERATION

- remove Exhaust assembly in engine compartment: Exploded view :
  - the turbo-manifold oil supply pipe hollow bolts,
  - the turbo-manifold oil supply pipe.

REFITTING

M9T, 700 702(M9T) AND (700 OR 702)

1. REFITTING OPERATION

- Refit Exhaust assembly in engine compartment: Exploded view :
  - the new turbo-manifold oil supply pipe,
  - the turbo-manifold oil supply pipe hollow bolts.

- Torque tighten the turbo-manifold oil supply pipe hollow boltsExhaust assembly in engine compartment: Exploded view .

2. FINAL OPERATION

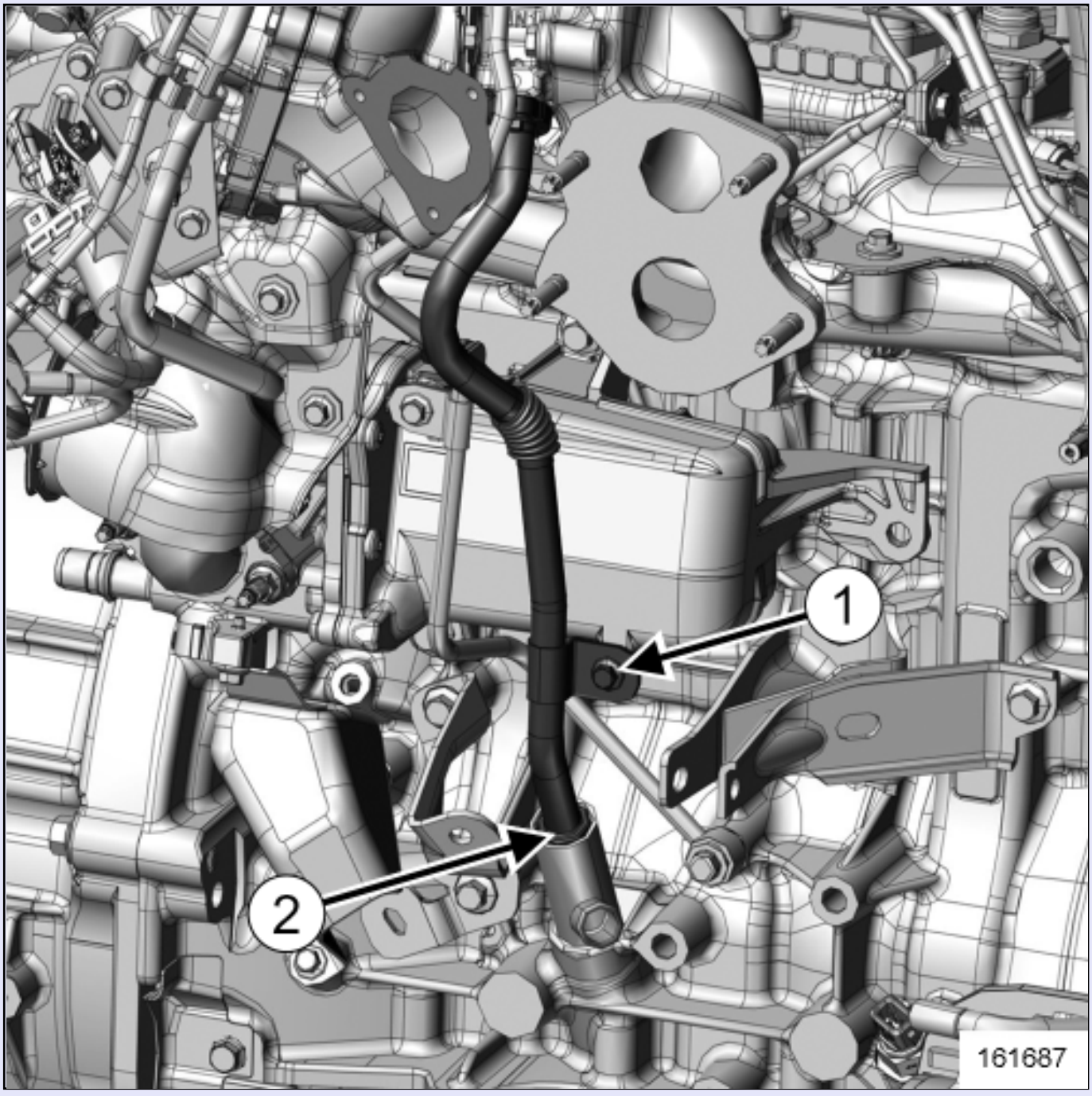
- Proceed in the reverse order to removal.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift Vehicle: Towing and lifting .
- Remove the engine undertray.
- Remove the turbocharger (see 12B, Turbocharging, Turbocharger: Removal - Refitting) .

2. REMOVAL OPERATION



- Remove the bolt(1) of the turbo-manifold oil return pipe bracket.

- Disconnect the turbo-manifold oil return pipe(2) to the cylinder block.

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the turbo-manifold oil return pipe bolts,
  - the turbo-manifold oil return pipe,
  - the turbo-manifold oil return pipe seals.

REFITTING

M9T, 700 702(M9T) AND (700 OR 702)

1. REFITTING PREPARATION OPERATION

- Parts always to be replaced: the turbo-manifold oil return pipe seals.Exhaust assembly in engine compartment: Exploded view

2. REFITTING OPERATION

- Refit Exhaust assembly in engine compartment: Exploded view :
  - the new turbo-manifold oil return pipe seals,
  - the new turbo-manifold oil return pipe,
  - the turbo-manifold oil return pipe bolts,
  - the bolt of the turbo-manifold oil return pipe bracket.

- Torque tightenExhaust assembly in engine compartment: Exploded view :
  - the turbo-manifold oil return pipe bolts,
  - the bolt of the turbo-manifold oil return pipe bracket.

3. FINAL OPERATION

- Proceed in the reverse order to removal.

TURBOCHARGER OUTLET EXHAUST GAS DUCT: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

WARNING

Wear cut-resistant gloves during the operation.

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

- To avoid any risk of serious burns when the engine is hot:
  - do not open the expansion bottle cap,
  - do not drain the cooling system,
  - do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

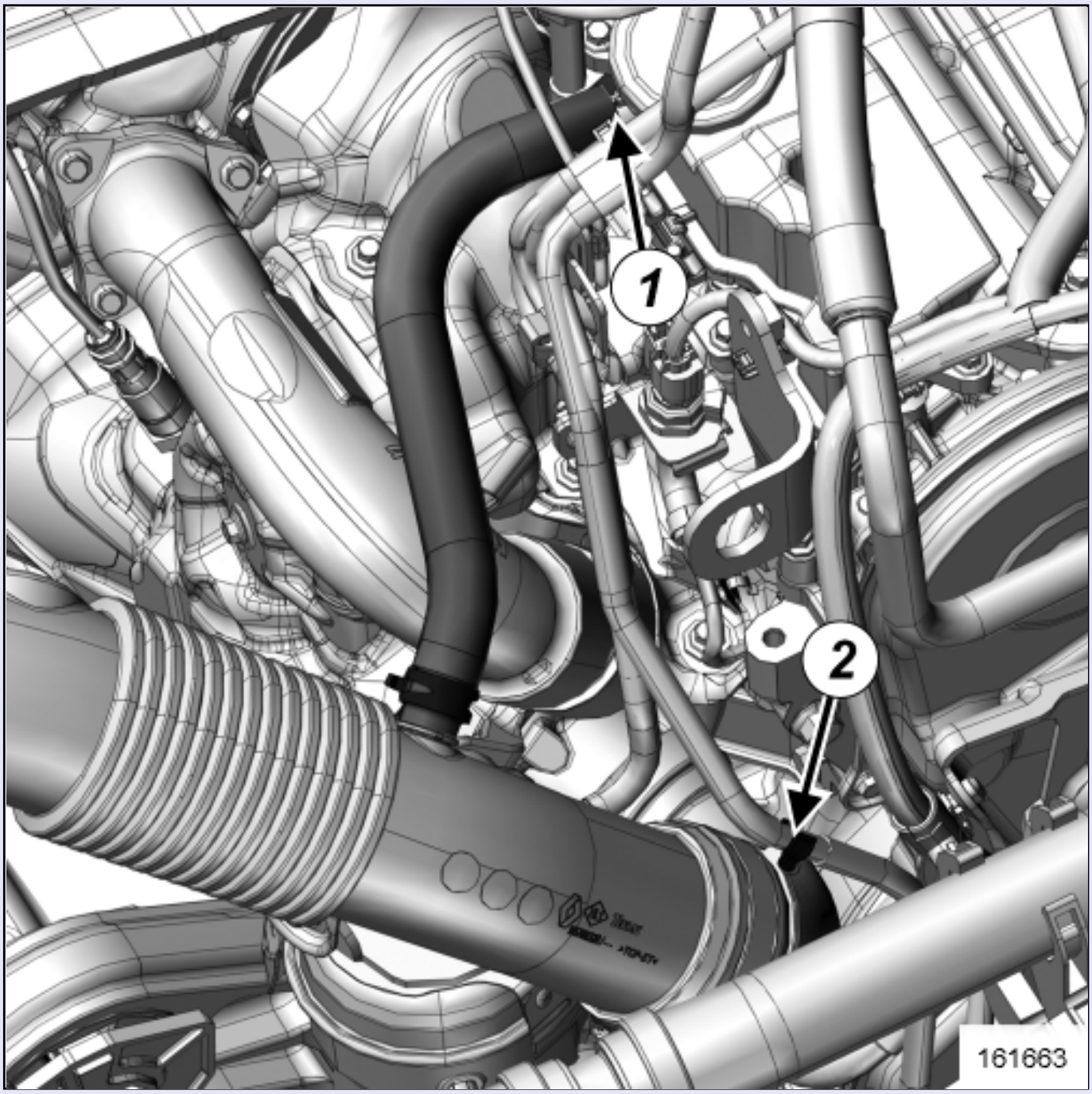
Location and specifications (tightening torques, parts always to be replaced, etc.)Exhaust assembly in engine compartment: Exploded view .

REMOVAL

1. REMOVAL PREPARATION OPERATION

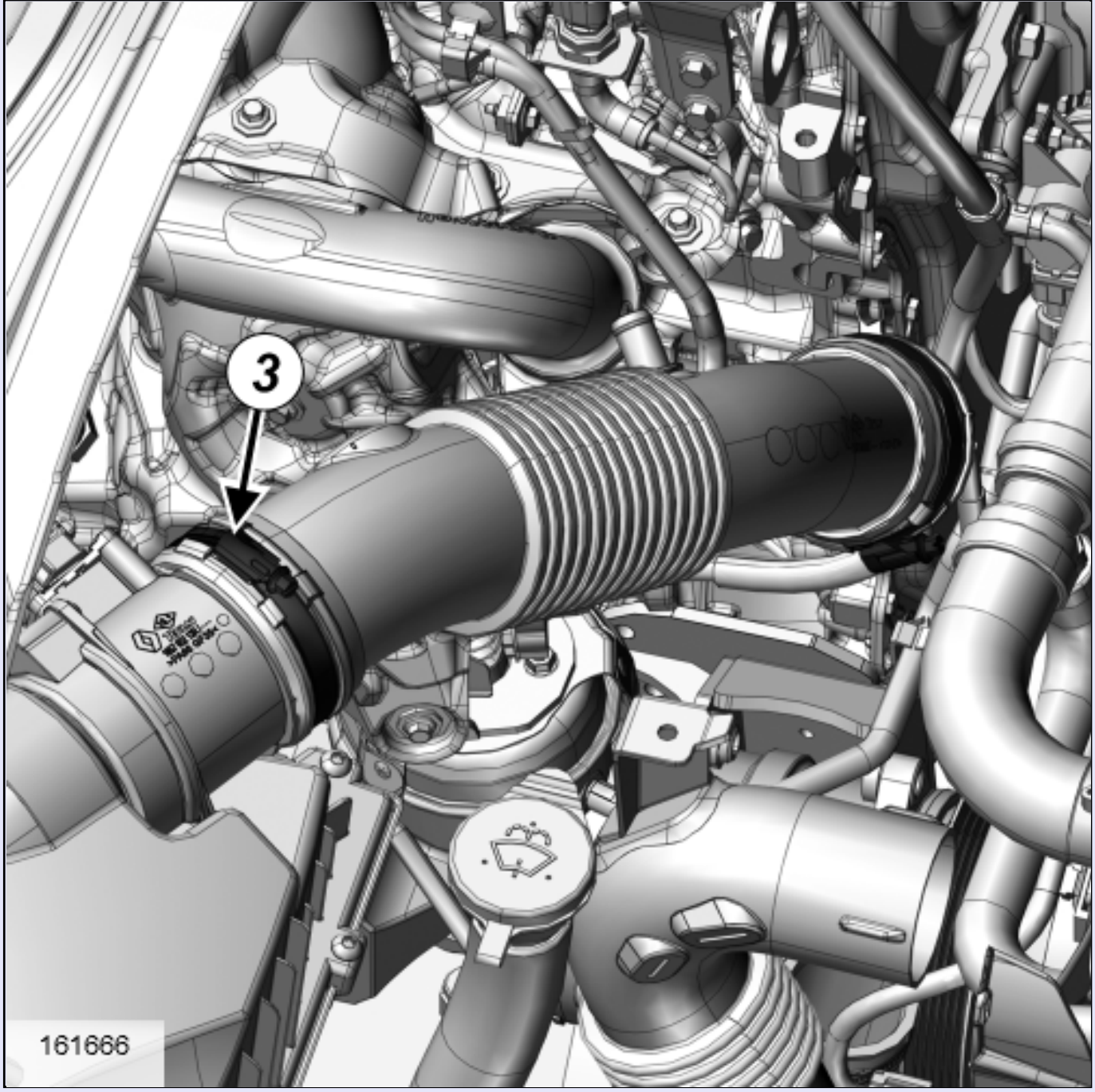
- Position the vehicle on a two-post liftVehicle: Towing and lifting .

Apply the before repair procedure using the Diagnostic tool[Diagnostic tool : Use] :
-computer concerned by the before repair procedure:
■"Injection computer"
-component affected by the before repair procedure:
■"Turbocharger"



Disconnect the oil vapour pipe(1) on the cylinder head side.

Unclip the engine wiring(2) from the turbocharger air inlet pipe.



- Loosen the clip(3) of the turbocharger air inlet pipe on the air flowmeter side.
- Disconnect the turbocharger air inlet pipe from the air flowmeter.
- Remove :
  - the turbocharger air inlet pipe bolts on the turbocharger side,
  - the turbocharger air inlet pipe,
  - the seal of the turbocharger air inlet pipe.
- Remove Exhaust assembly in engine compartment: Exploded view :
  - the oxygen sensor,
  - the turbocharger heat shield bolts,
  - the turbocharger heat shield,
  - the exhaust manifold upper heat shield bolts,

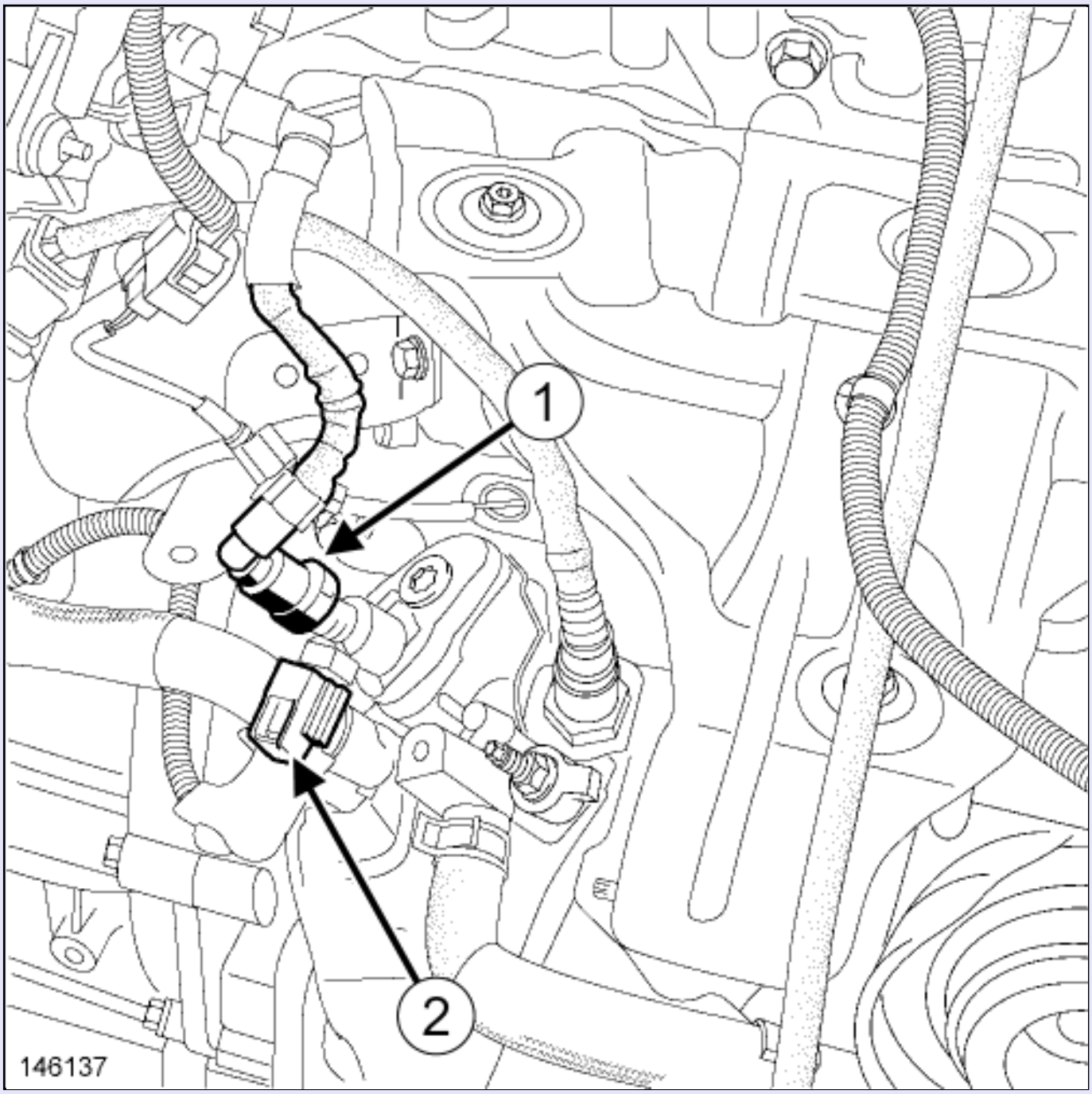
- the exhaust manifold upper heat shield.

M9T, 690 696 698 890 892 896 898(690 OR 696 OR 698 OR 890 OR 892 OR 896 OR 898)

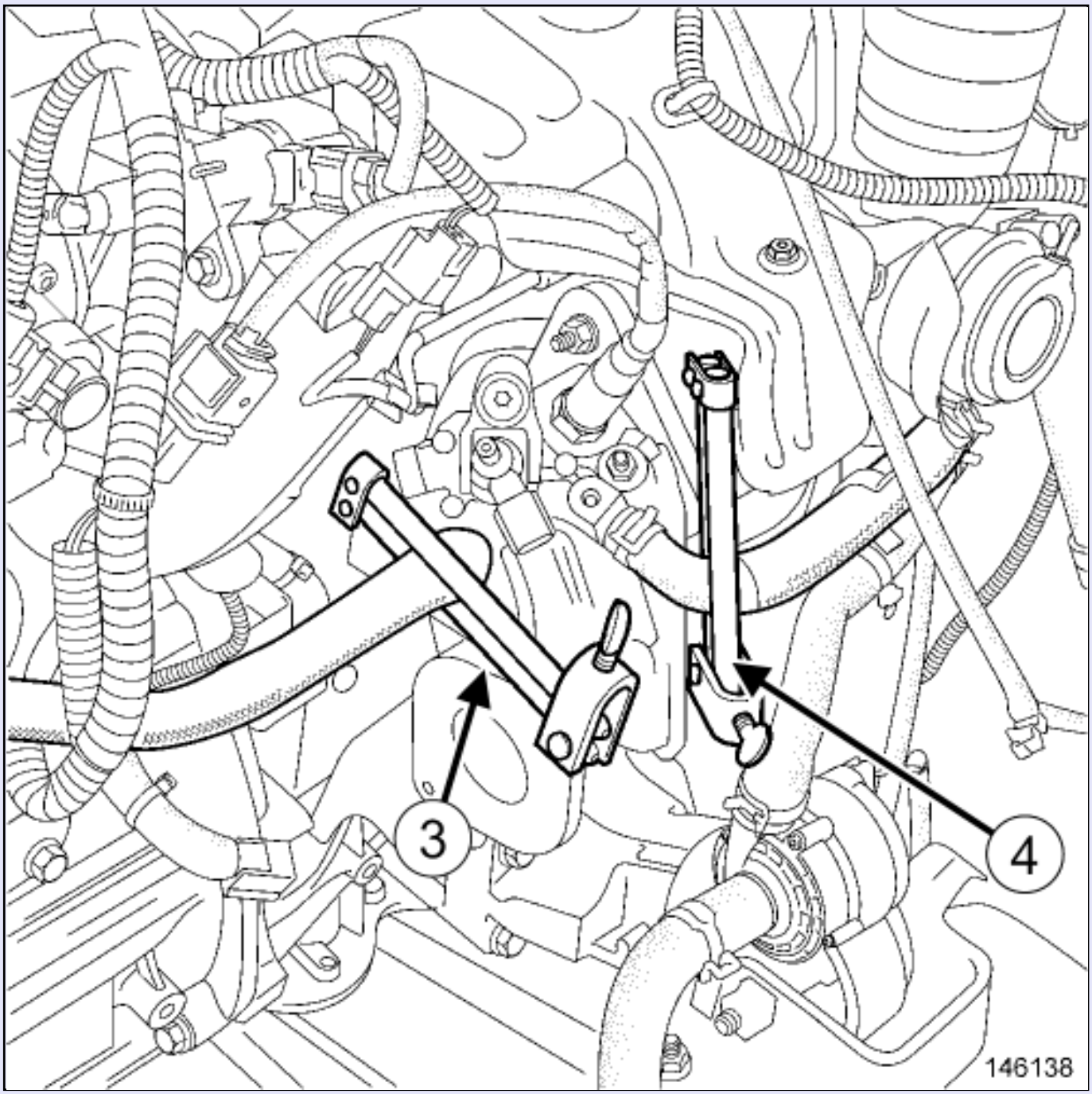
Apply the before repair procedure to discharge the pressure in the system using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Injection computer" ,
- go to repair mode,
- display the "Before repair procedure" for the computer selected,
- select "Exhaust fuel injection system" in the "List of components controlled by this computer" section,
- carry out the operations described in the "Before repair procedure" section.

Remove the protective screen of the exhaust fuel injector Exhaust assembly in engine compartment: Exploded view .



- Disconnect the fuel pipe(1) from the exhaust fuel injector.
- Insert the blanking plugs.
- Disconnect the exhaust fuel injector connector(2) .
- Remove the oxygen sensor Exhaust assembly in engine compartment: Exploded view .



- Fit a toolPipe clamps.(Ms. 583) :
  - on the heater matrix inlet coolant pipe(3) ,
  - on the coolant pipe between the exhaust fuel injector cooler and the turbocharger coolant pipe(4) .

- Using the toolRemote operation pliers for hose clips.(Mot. 1448) , separate the clip on:
  - the heater matrix coolant inlet pipe,
  - on the coolant pipe between the exhaust fuel injector cooler and the turbocharger coolant pipe.

- Disconnect:
  - the heater matrix coolant inlet pipe,
  - the coolant pipe between the exhaust fuel injector cooler and the turbocharger coolant pipe.

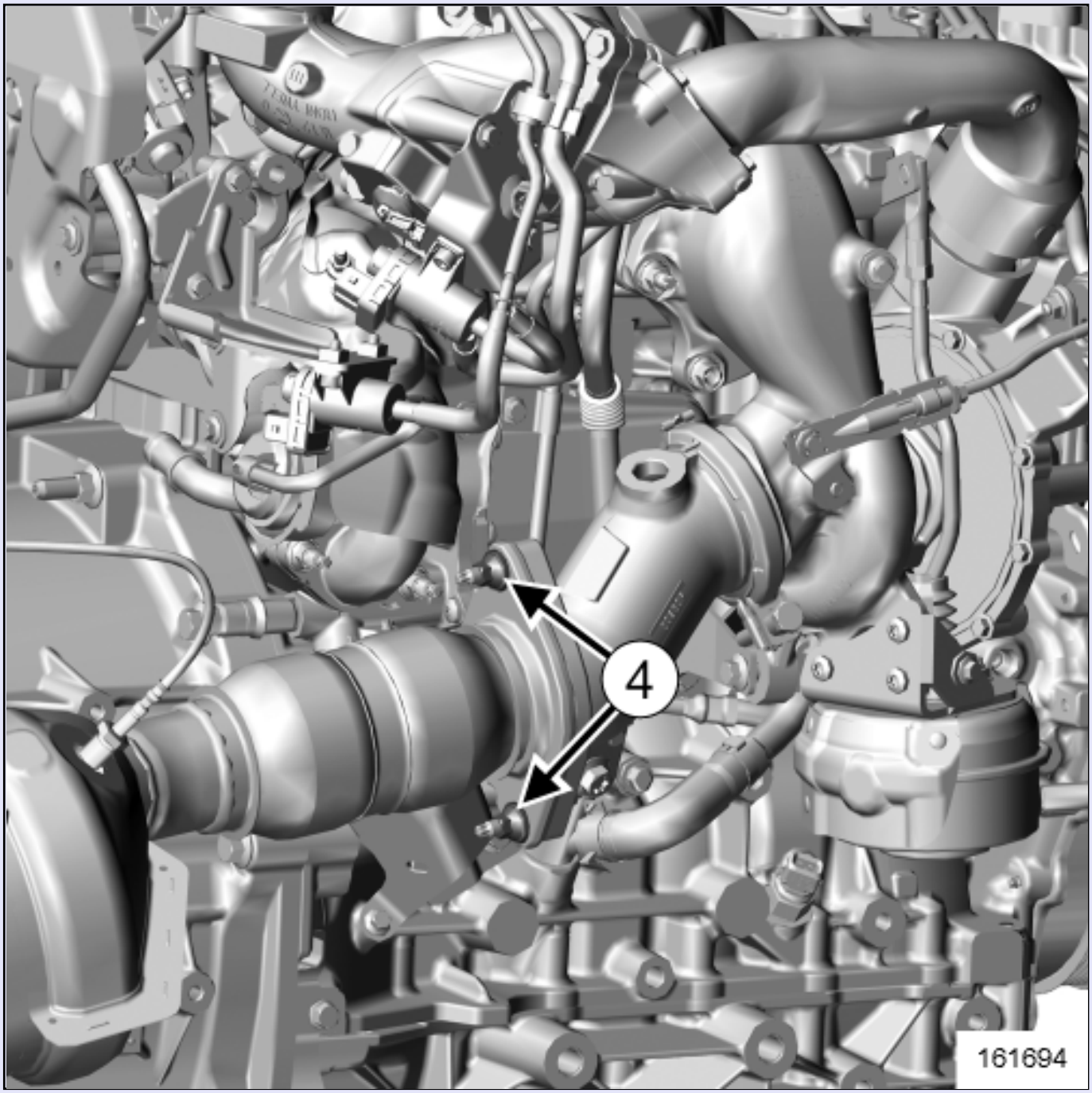
- Remove Exhaust assembly in engine compartment: Exploded view :
  - the nuts of the exhaust fuel injector cooler,
  - the "exhaust fuel injector cooler - exhaust fuel injector" assembly,
  - the seal of the exhaust fuel injector cooler.

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

- Remove :
  - the exhaust flange nuts,
  - the studs of the exhaust flange on the turbocharger outlet exhaust gas duct,
  - the seal at the turbocharger outlet exhaust gas duct outlet.

- Move the exhaust pipe to one side.

2. REMOVAL OPERATION



- Remove the nuts(4) of the turbocharger outlet exhaust gas duct.

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the bolt of the turbocharger outlet exhaust gas duct,
  - the jubilee clip of the turbocharger outlet exhaust gas duct,
  - the turbocharger outlet exhaust gas duct,
  - the turbocharger outlet exhaust gas duct seal.

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

Remove Exhaust assembly in engine compartment: Exploded view :

- the upper bolt on the bracket of the turbocharger outlet exhaust gas duct,
- the exhaust gas duct at the turbocharger outlet,
- the seal from the turbocharger outlet exhaust gas duct.

REFITTING

1. REFITTING PREPARATION OPERATION

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

Using surface cleanerVehicle: Parts and consumables for the repair clean and degrease the bearing faces of:

- the turbocharger,
- the turbocharger outlet exhaust gas duct,
- the exhaust flange.

M9T, 700(700)

Parts always to be replaced:

- turbocharger outlet exhaust gas duct jubilee clip,
- turbocharger outlet exhaust gas duct seal.

Clean and degrease using surface cleanerVehicle: Parts and consumables for the repair the joint face of:

- the outlet exhaust gas duct,
- the exhaust flange of the turbocharger

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

2. REFITTING OPERATION

- Refit Exhaust assembly in engine compartment: Exploded view :
  - the turbocharger outlet exhaust gas duct new seal.
  - the turbocharger outlet exhaust gas duct.
  - the bolt of the turbocharger outlet exhaust gas duct,
  - the new jubilee clip of the turbocharger outlet exhaust gas duct,

- Refit the turbocharger outlet exhaust gas duct nuts Exhaust assembly under body: Exploded view .

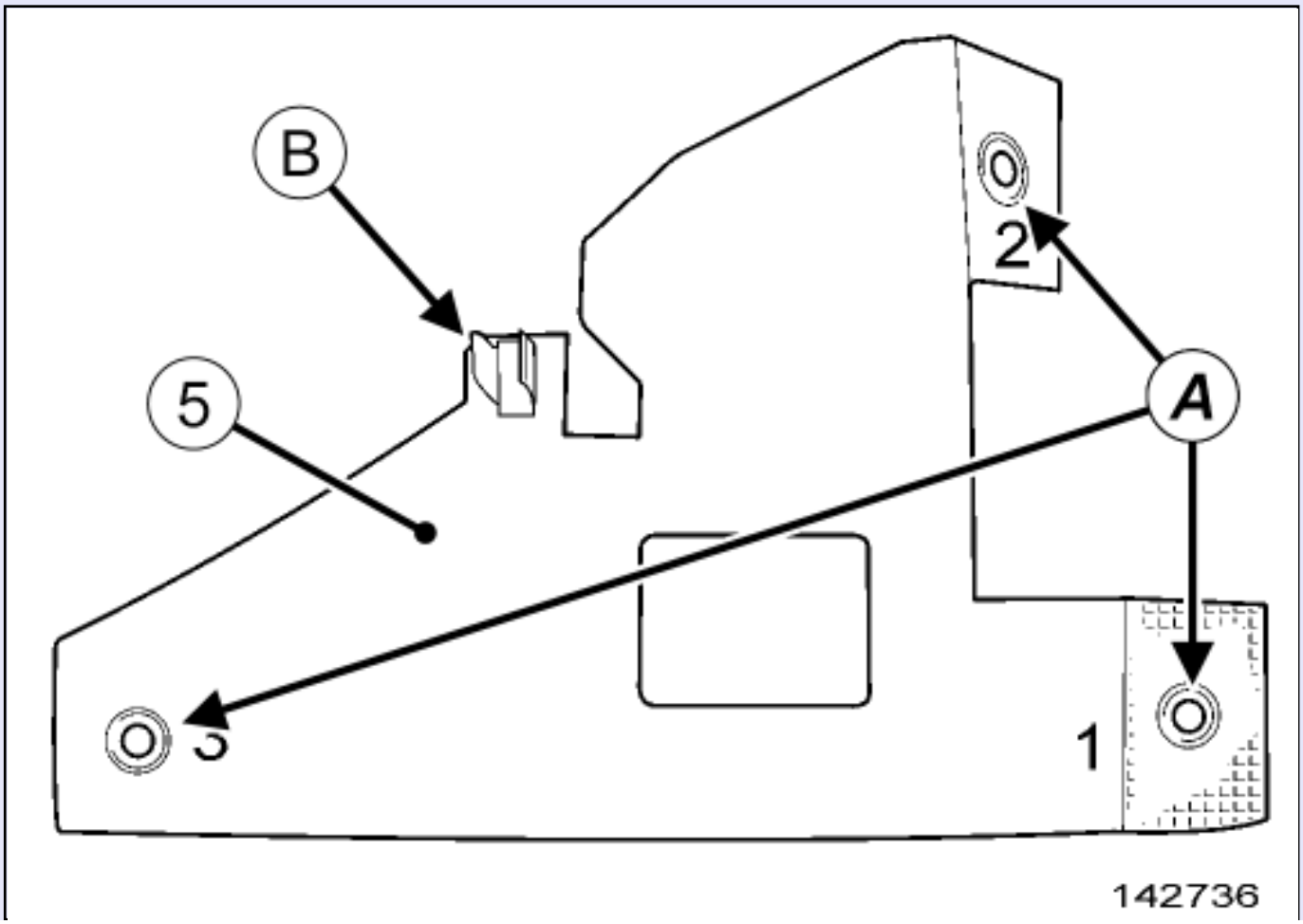
- Torque tighten Exhaust assembly in engine compartment: Exploded view :
  - the bolt of the jubilee clip,
  - the bolt of the turbocharger outlet exhaust gas duct.

- Torque tighten the turbocharger outlet exhaust gas duct nuts Exhaust assembly under body: Exploded view .

M9T, 686 690 692 694 696 698 882 890 892 896 898(686 OR 690 OR 692 OR 694 OR 696 OR 698 OR 882 OR 890 OR 892 OR 896 OR 898)

- Refit Exhaust assembly in engine compartment: Exploded view :
  - the seal from the turbocharger outlet exhaust gas duct.
  - the exhaust gas duct at the turbocharger outlet,
  - the upper bolt on the bracket of the turbocharger outlet exhaust gas duct,

M9T, 690 696 698 890 892 896 898(690 OR 696 OR 698 OR 890 OR 892 OR 896 OR 898)

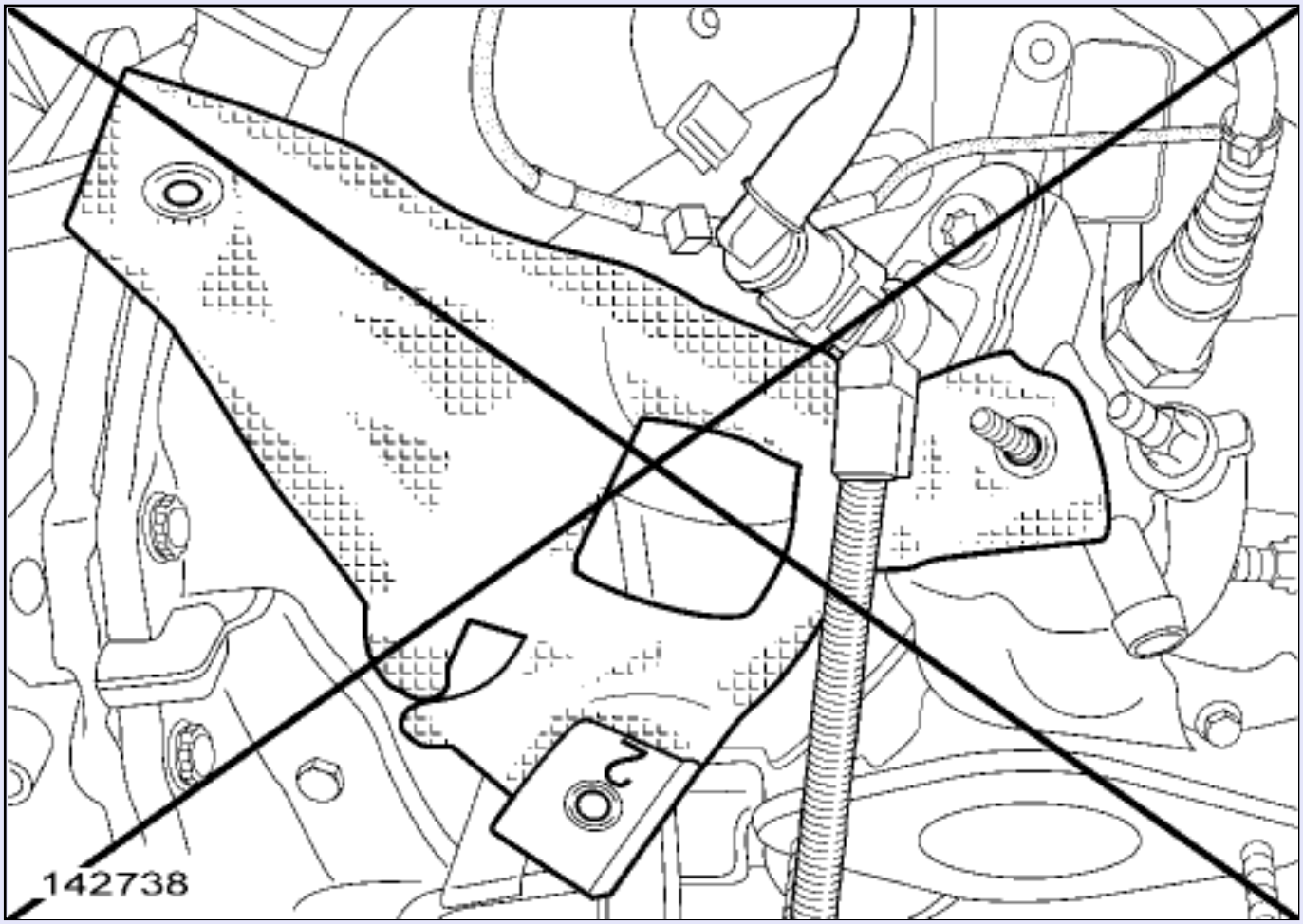


(5) Exhaust injector heat shield

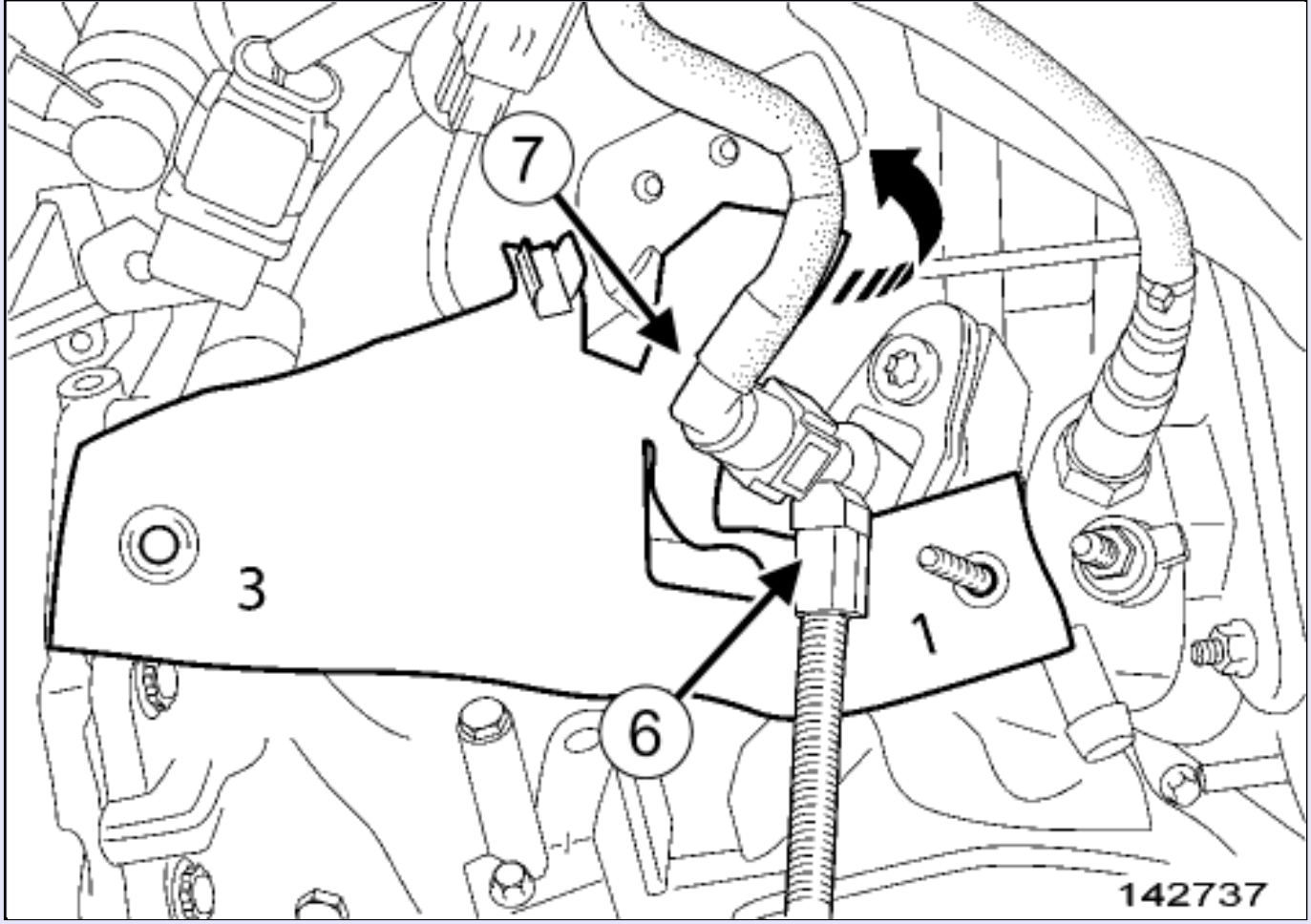
(A) Metal inserts (numbered 1 to 3)

(B) Clip

INCORRECT FITTING



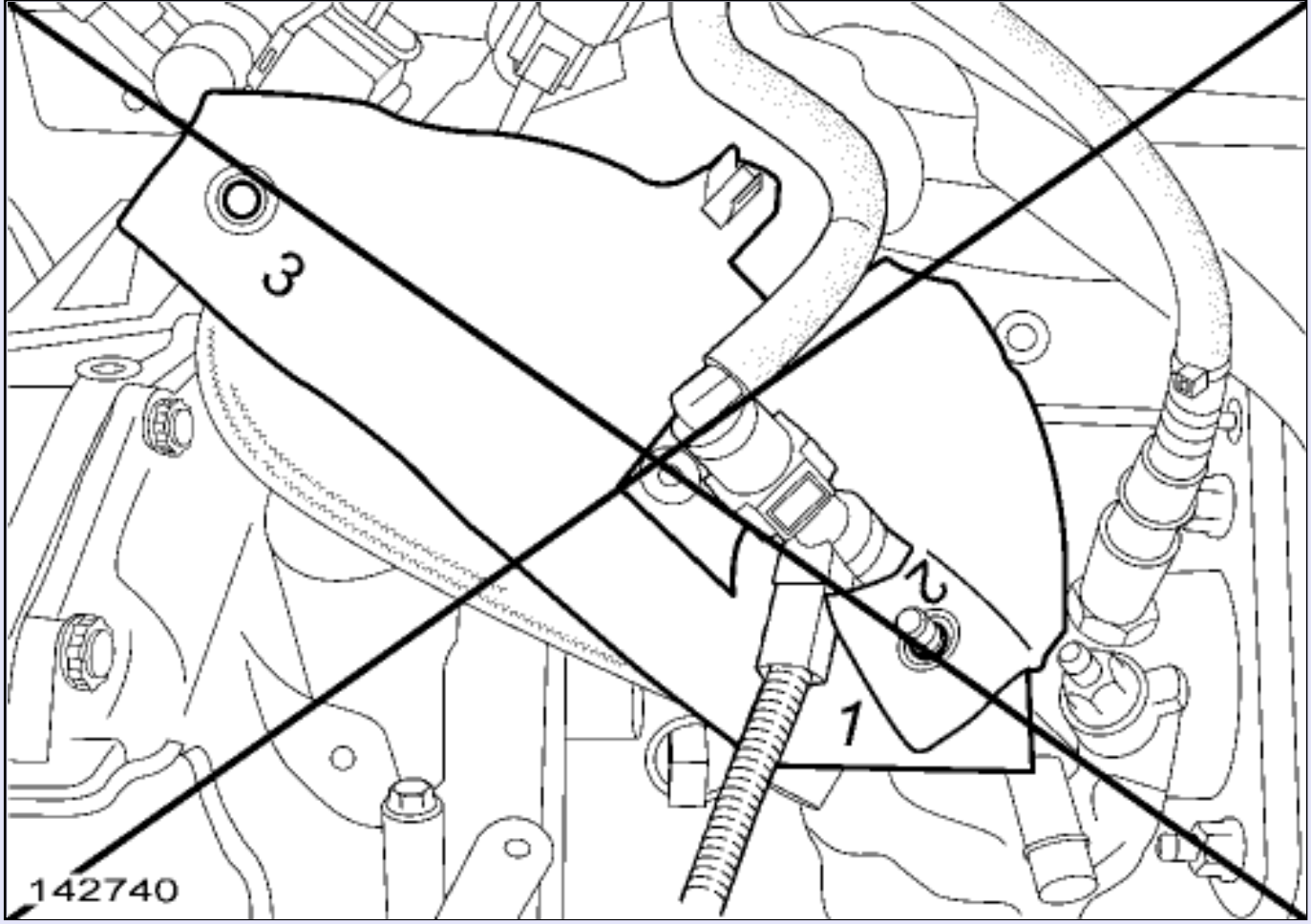
CORRECT FITTING



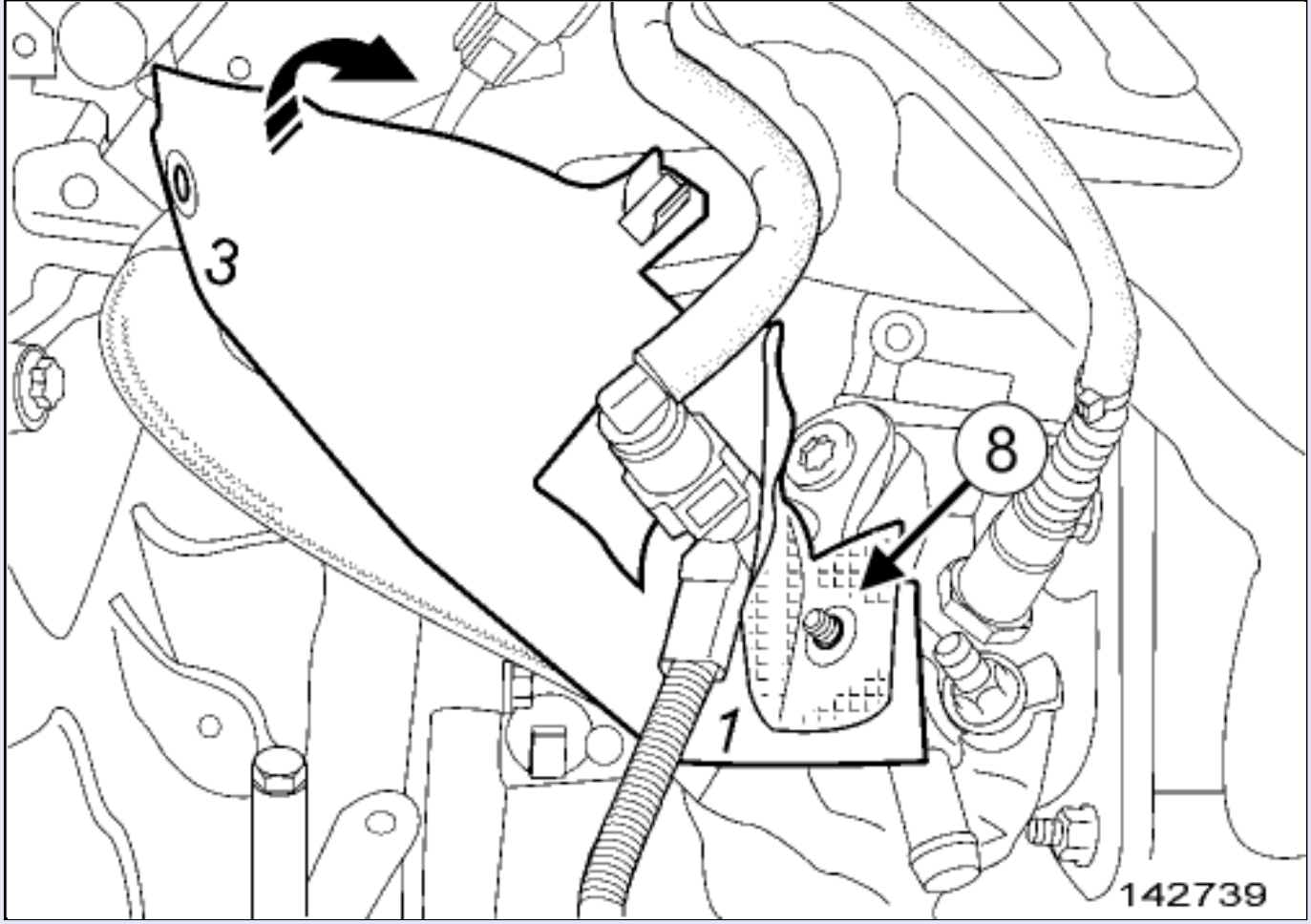
Pass:

- insert 1 under the connector(6) and pin it,
- insert 2 behind the fuel union(7) .

INCORRECT FITTING

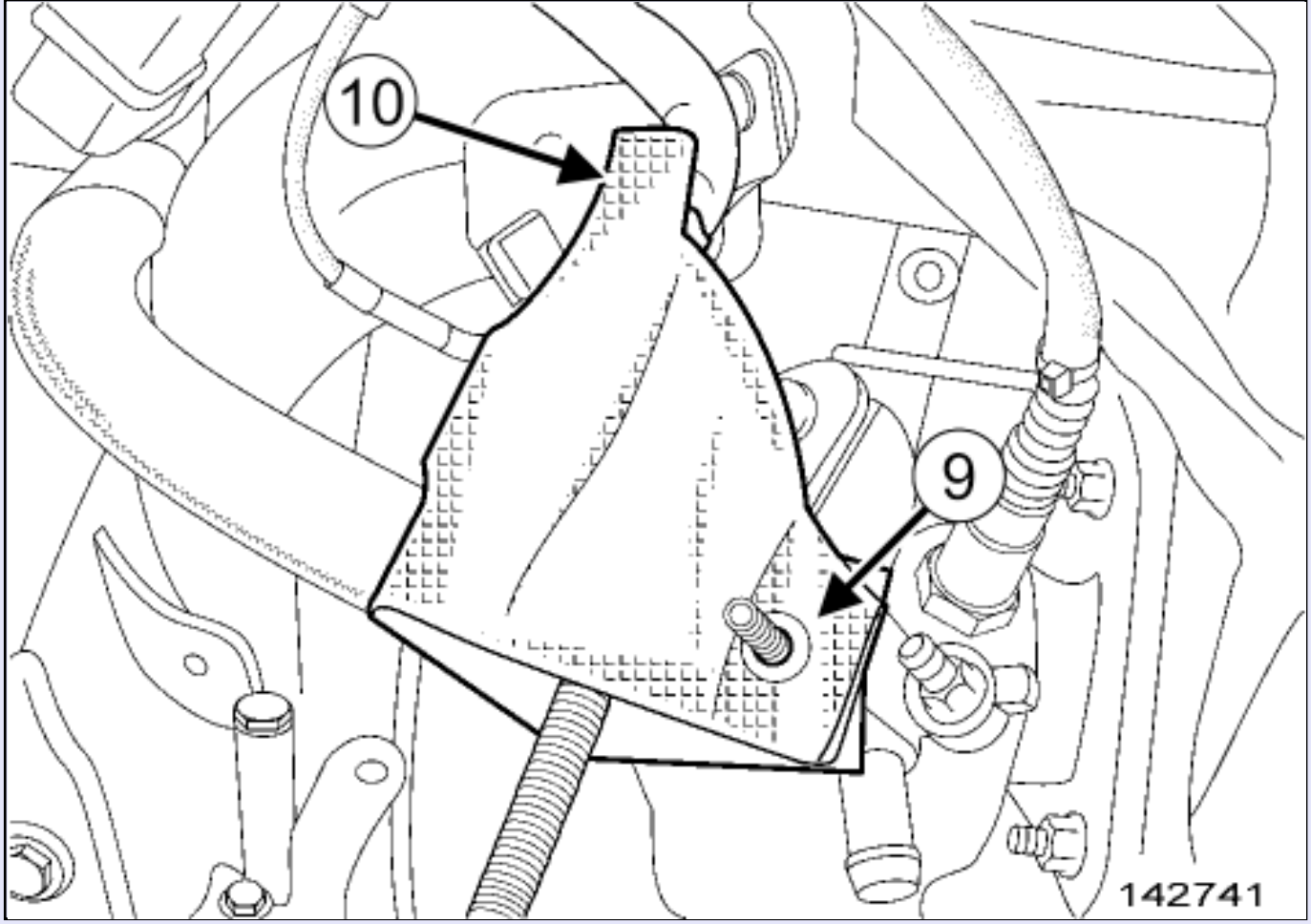


CORRECT FITTING



- Pin insert 2 with the flap(8) facing the outside.

- Pass insert 3 over the connectorand the fuel union.



- Pin insert 3 with the flap(9) facing the outside.
- Clip the heat shield on to the fuel pipe(10) .
- Screw the threads of the heat shield mounting nut fully.

3. FINAL OPERATION

- Apply the after repair procedure using the Diagnostic tool[Diagnostic tool : Use] :

-computer concerned by the after repair procedure:

"Injection computer"

-component affected by the after repair procedure:

"Turbocharger"

Top up and bleed the cooling system**Cooling system: Draining - Refilling** .

XSL version : 3.02 du 22/07/11

TURBOCHARGER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
Pipe clamps.	Ms. 583

Equipment required
Diagnostic tool

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

Location and specifications (tightening torques, parts always to be replaced, etc.)**Exhaust assembly in engine compartment: Exploded view** .

WARNING

Wear cut-resistant gloves during the operation.

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

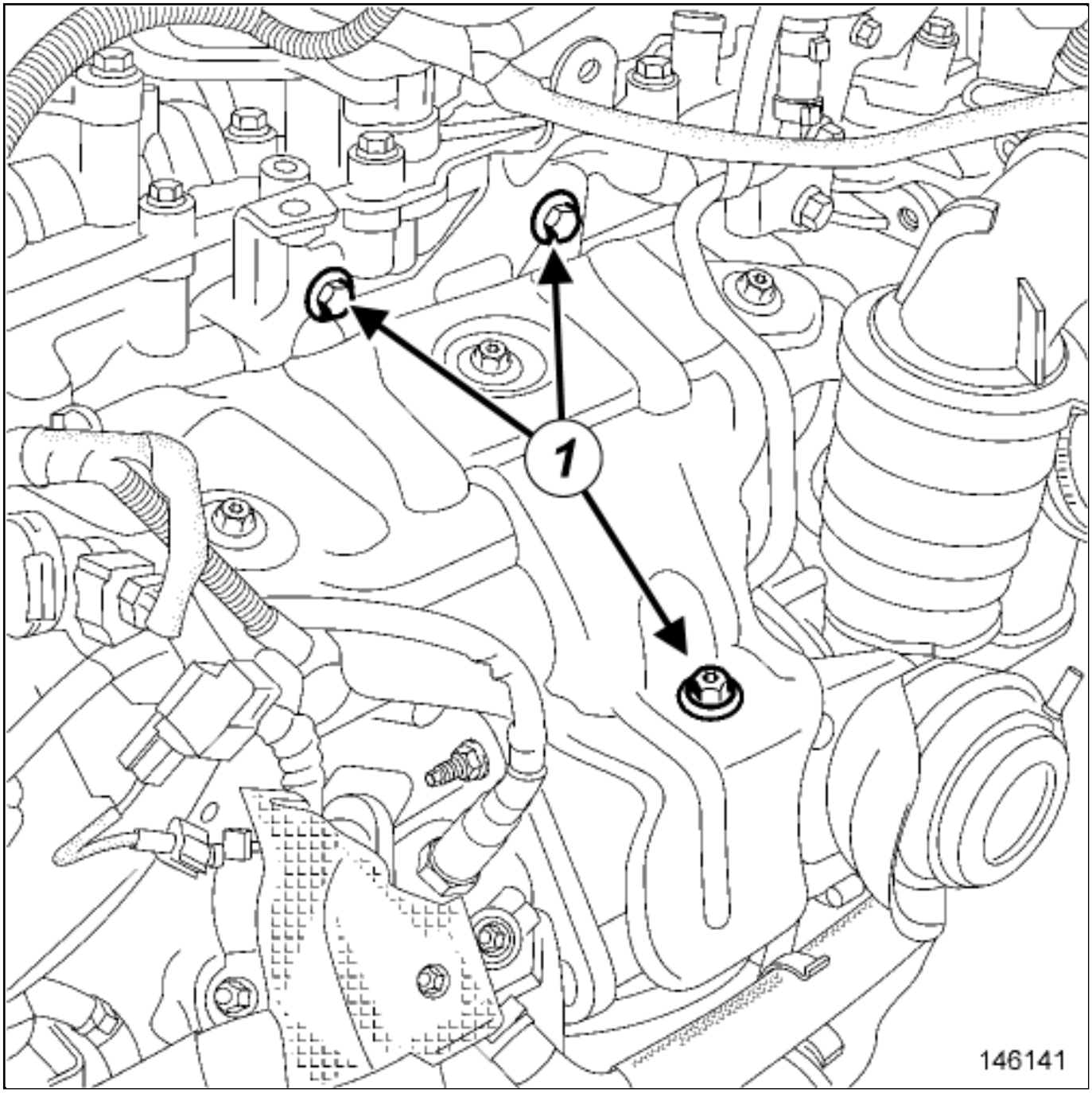
1. REMOVAL PREPARATION OPERATION

- Apply the before repair procedure to discharge the pressure in the system using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "Injection computer" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - select "Exhaust fuel injection system" in the "List of components controlled by this computer" section,
  - carry out the operations described in the "Before repair procedure" section.

- Position the vehicle on a two-post lift Vehicle: Towing and lifting (02A, Lifting equipment).

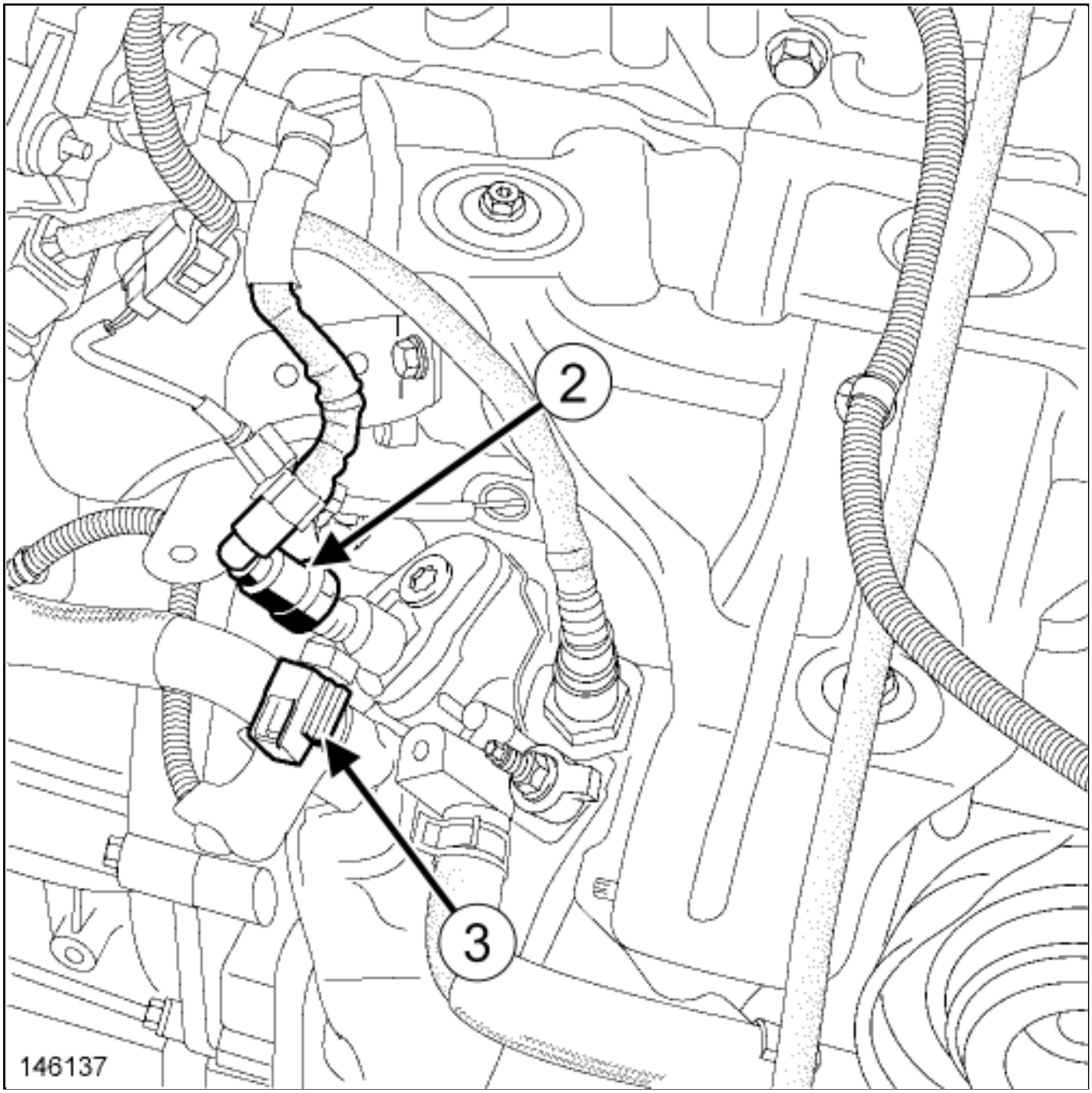
- Remove the engine undertray.

- Remove :
  - the turbocharger air inlet pipe,
  - the seal of the turbocharger air inlet pipe,
  - the intercooler air inlet pipe.

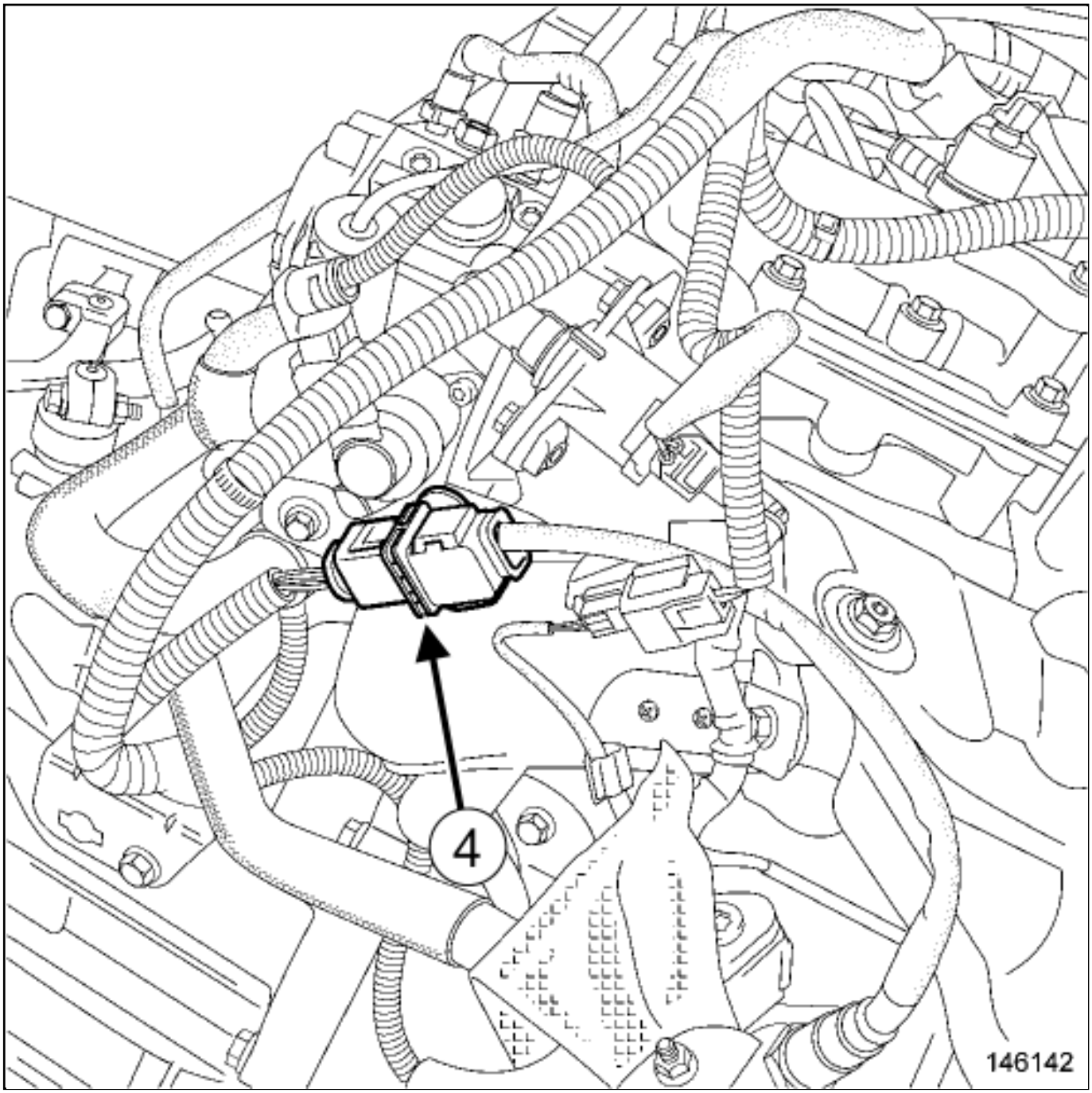


Remove:

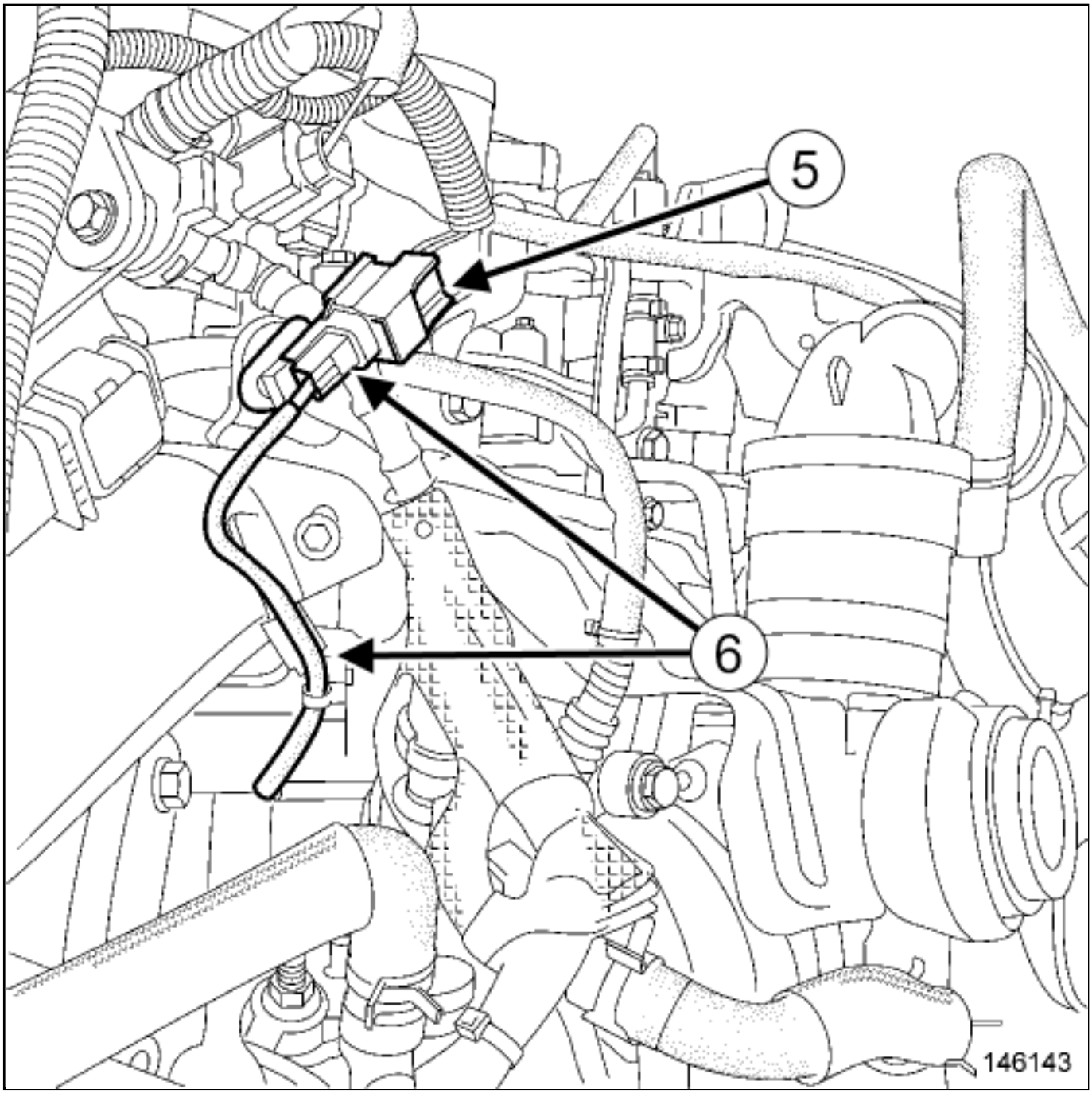
- the bolts(1) from the exhaust manifold heat shield,
- the exhaust manifold heat shield.



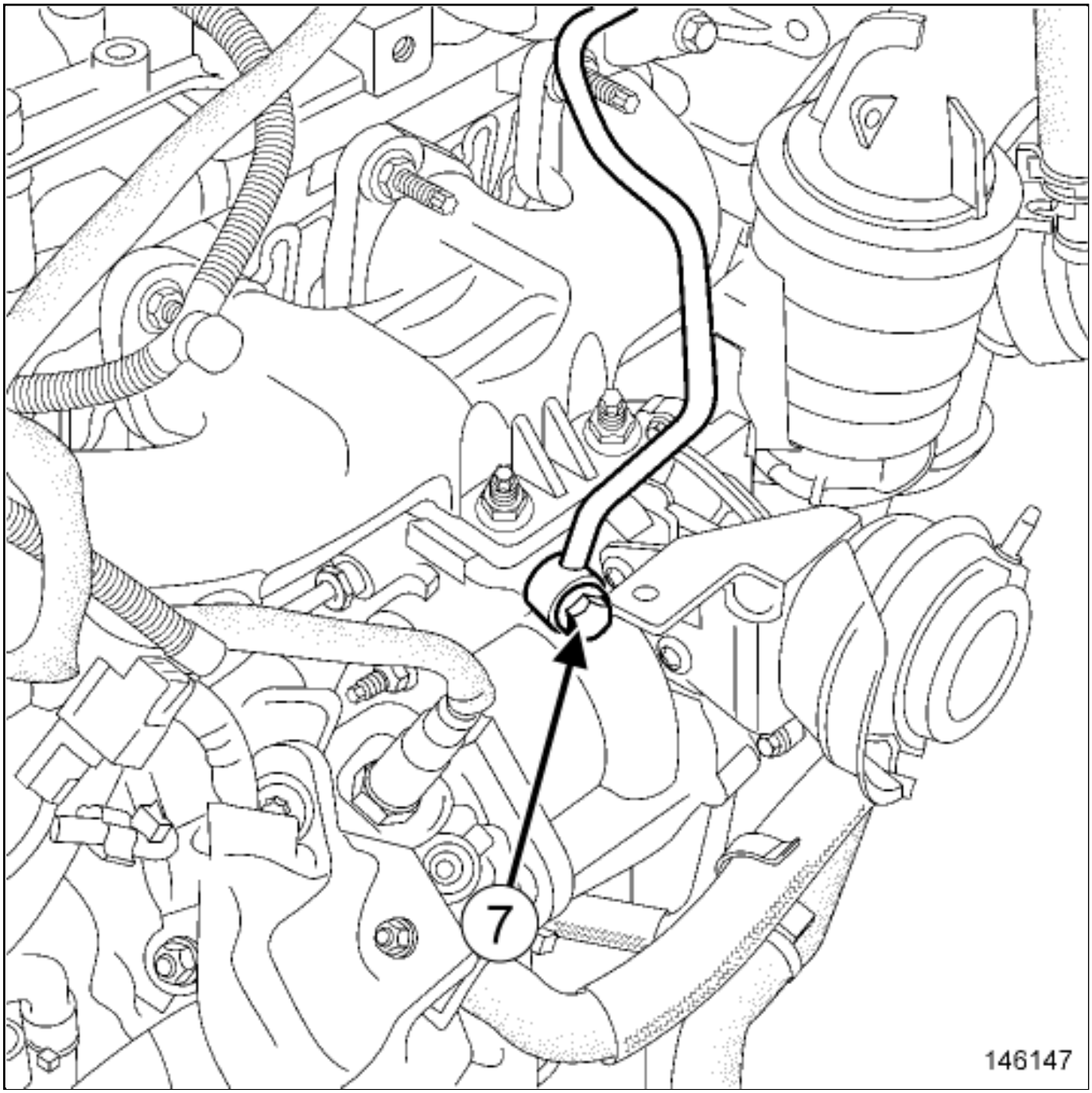
- Disconnect the exhaust fuel injector fuel pipe at(2) .
- Insert the blanking plugs.
- Disconnect the exhaust fuel injector connector(3) .



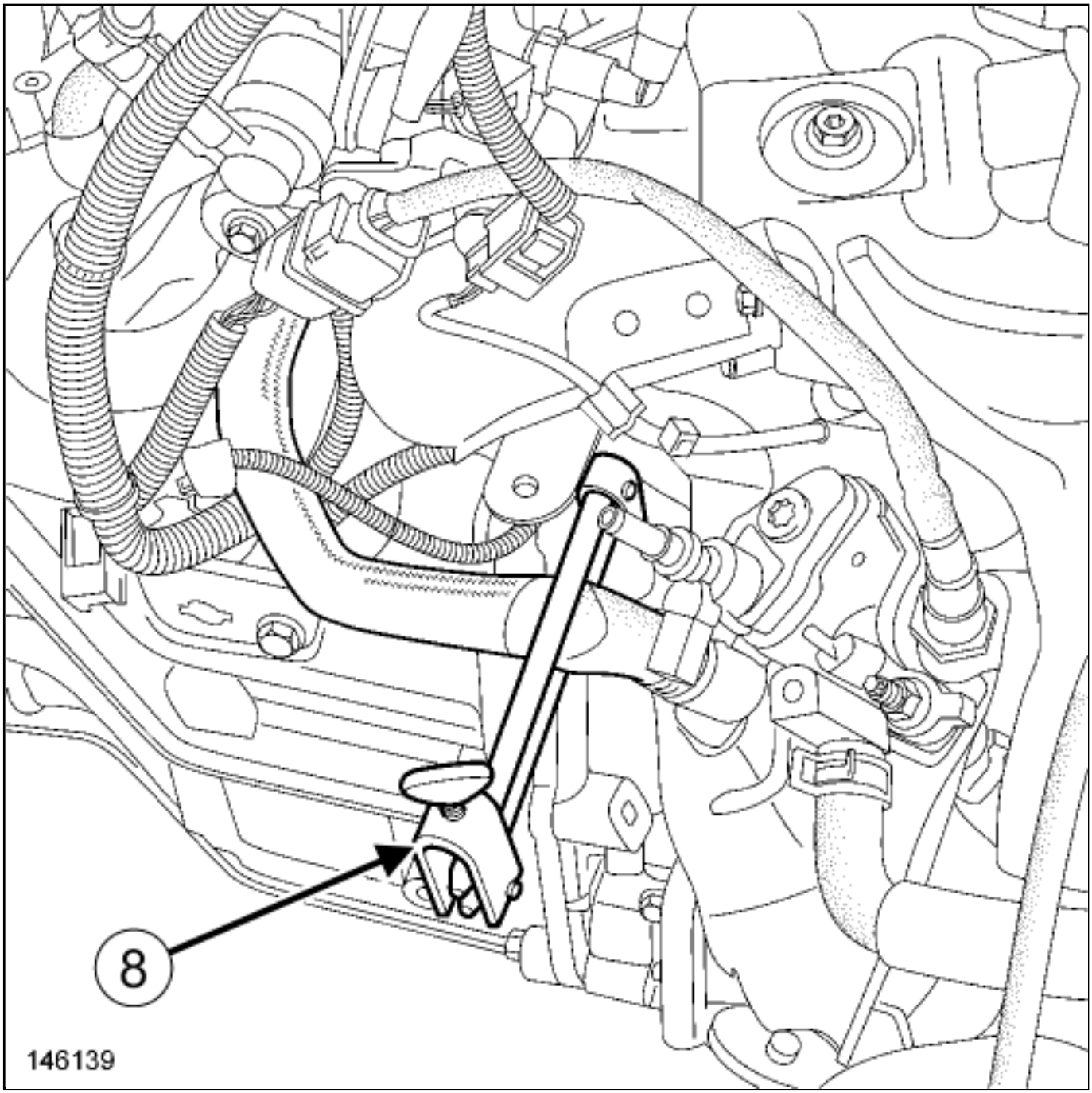
- Disconnect the oxygen sensor connector(4) .
- Unclip the oxygen sensor wiring.

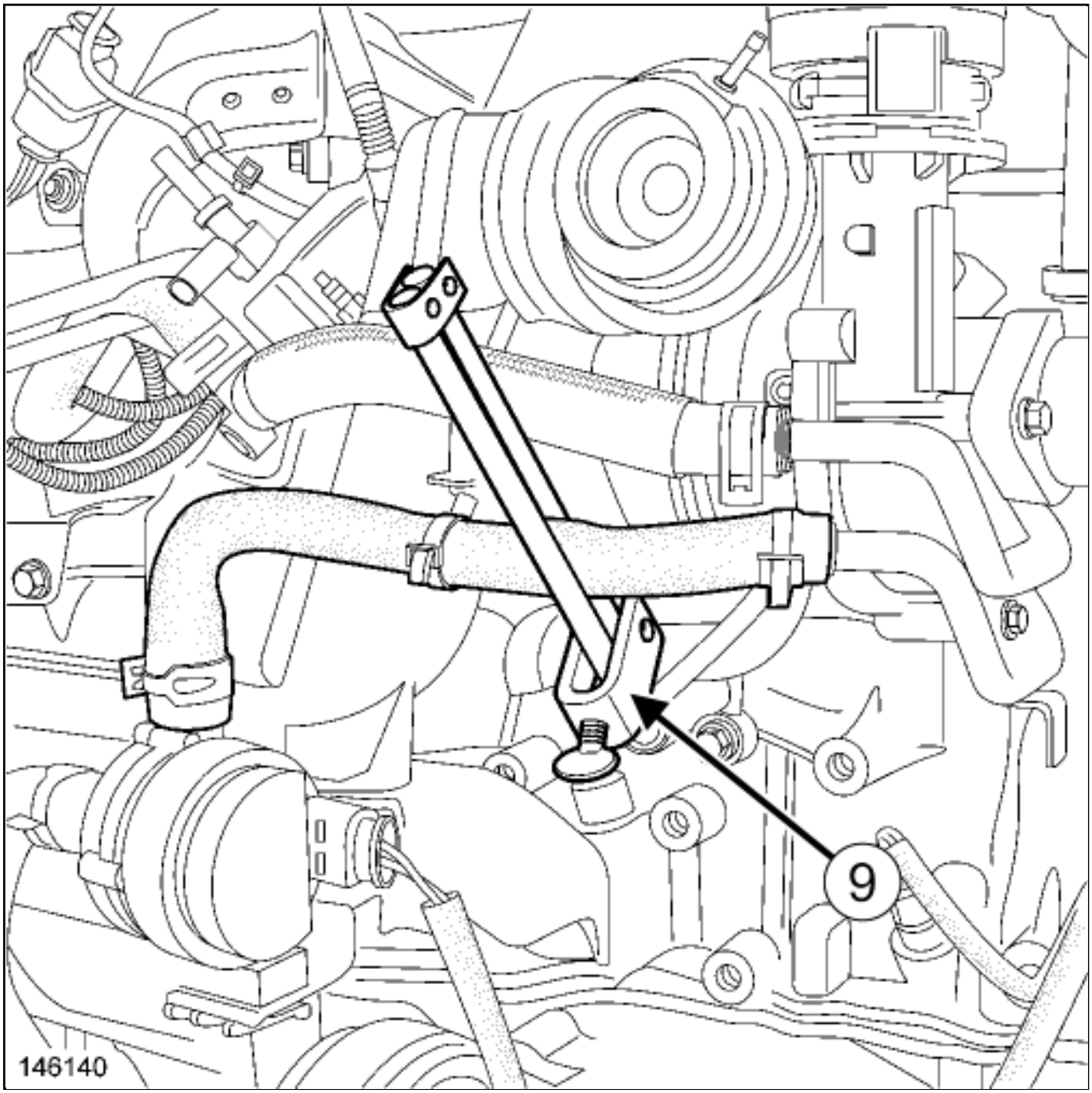


- Disconnect the exhaust gas temperature sensor connector(5) .
- Unclip the wiring harness from the exhaust gas temperature sensor at(6) .



- Remove the exhaust gas pressure sensor bolt(7) .

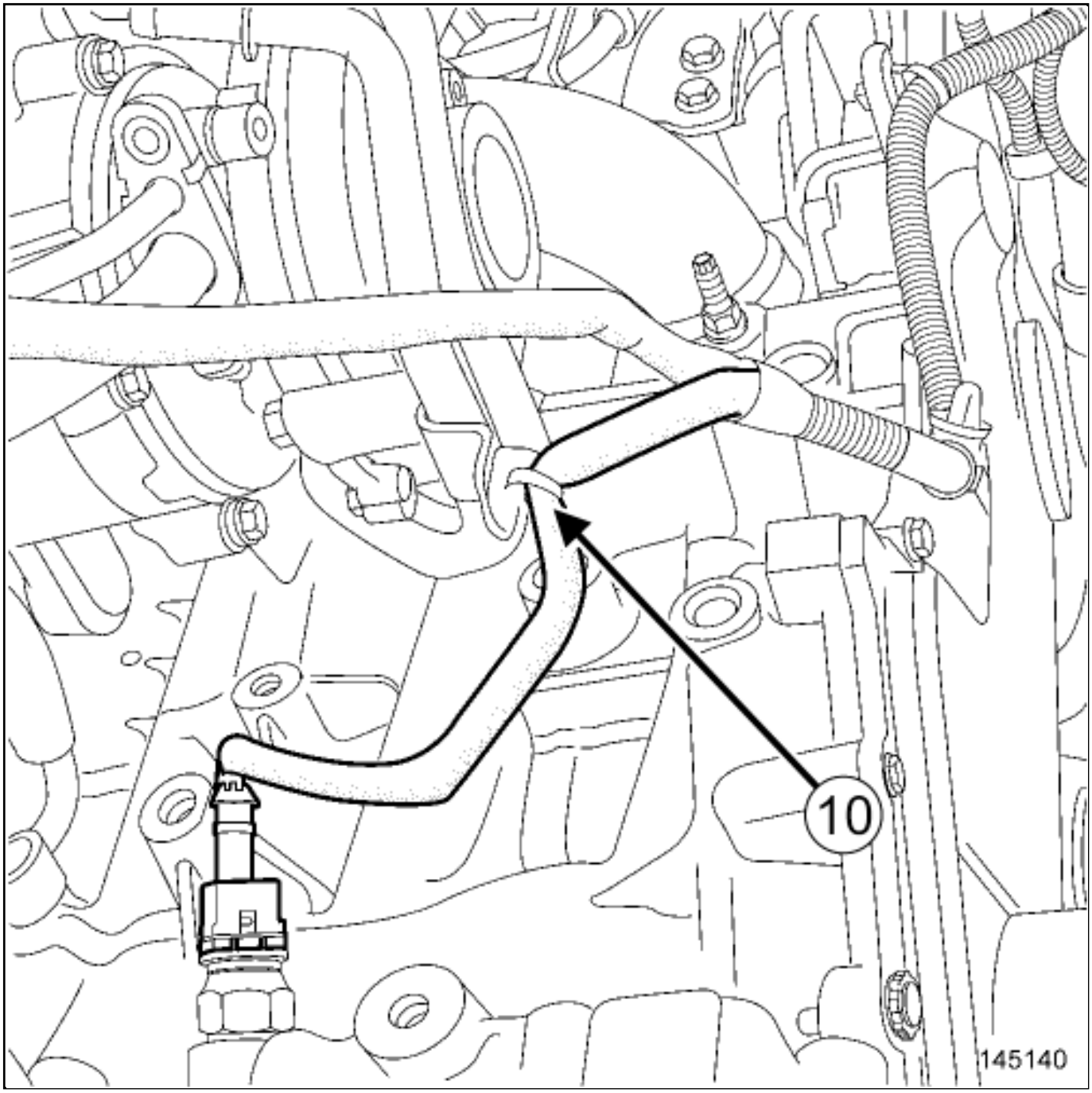

8
146139



- Fit the toolPipe clamps.(**Ms. 583**) on:
  - the heater matrix coolant inlet pipe(**8**) ,
  - the coolant pipe between the electric coolant pump and the turbocharger coolant pipe(**9**) .

- Using the toolRemote operation pliers for hose clips.(**Mot. 1448**) **Coolant circuit assembly: Exploded view** , separate the clip on:
  - the heater matrix coolant inlet pipe,
  - the coolant pipe between the electric coolant pump and the turbocharger coolant pipe.

- Disconnect **Coolant circuit assembly: Exploded view** :
  - the heater matrix coolant inlet pipe,
  - the coolant pipe between the electric coolant pump and the turbocharger coolant pipe.



Unclip the oil level sensor wiring from the turbocharger coolant pipe(10) .

Remove:

- the turbocharger oil pipe boltsExhaust assembly in engine compartment: Exploded view ,
- the turbocharger oil pipe sealExhaust assembly in engine compartment: Exploded view ,

the exhaust flange nuts.

Move the exhaust pipe to one side.

Remove the outlet seal of the turbocharger outlet exhaust gas duct.

2. REMOVAL OPERATION

Remove Exhaust assembly in engine compartment: Exploded view :

- the bracket of the turbocharger outlet exhaust gas duct,
- the turbocharger nuts,
- the "turbocharger - turbocharger outlet exhaust gas duct" assembly,
- the turbocharger seal on the exhaust manifold side.

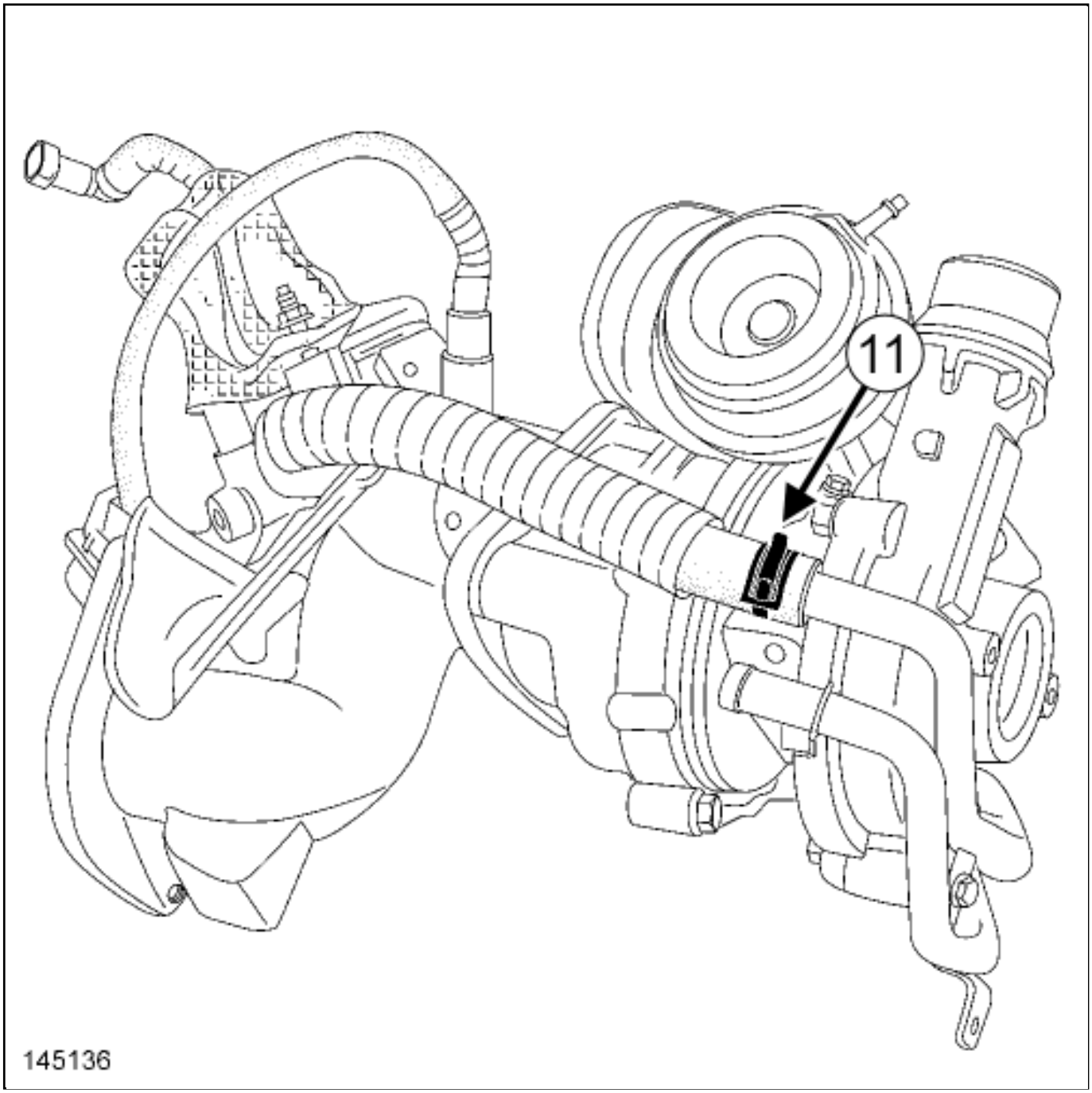
Note:

Apply super releasing agent Vehicle: Parts and consumables for the repair (04B, Consumables - Products) to the turbocharger studs to prevent the studs from breaking when the nuts are loosened.

1- IF REPLACING THE TURBOCHARGER

Fit the "turbocharger - turbocharger outlet exhaust gas duct" assembly in a vice equipped with jaws.

Remove the exhaust gas temperature sensor Exhaust assembly in engine compartment: Exploded view .



Separate the clip (11) on the coolant pipe between the exhaust fuel injector cooler and the turbocharger coolant pipe using the toolRemote operation pliers for hose clips.(Mot. 1448) .

Disconnect the coolant pipe between the exhaust fuel injector cooler and the turbocharger coolant pipe, from the exhaust fuel injector cooler.

Remove Exhaust assembly in engine compartment: Exploded view :

- the nuts of the turbocharger outlet exhaust gas duct,
- the seal of the turbocharger outlet exhaust gas duct.

REFITTING

1. REFITTING PREPARATION OPERATION

Using surface cleaner Vehicle: Parts and consumables for the repair (04B, Consumables - Products), clean and degrease the bearing faces of:

- the turbocharger,
- the exhaust manifold,
- the turbocharger outlet exhaust gas duct,
- the exhaust system.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

Apply the after repair procedure to check system sealing using the Diagnostic tool:

- connect the Diagnostic tool,
- select "Injection computer" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,

- select "Exhaust fuel injection system" in the "List of components controlled by this computer" section, carry out the operations described in the "After repair procedure" section.

Top up and bleed the cooling system **Cooling system: Draining - Refilling** .

TURBOCHARGER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Remote operation pliers for hose clips.	Mot. 1448
22 mm socket for removal - refitting of oxygen sensors.	Mot. 1495-01

Equipment required
Diagnostic tool

Location and specifications (tightening torques, parts always to be replaced, etc.)Exhaust assembly in engine compartment: Exploded view .

WARNING

Wear cut-resistant gloves during the operation.

WARNING

When working in the engine compartment, take care as the radiator fan(s) may start up unexpectedly (risk of being cut).

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

Note:

- This engine is equipped with two turbochargers:
  - low-pressure turbocharger,
  - high-pressure integrated turbo-manifold.

This document concerns the low-pressure turbocharger.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Apply the before repair procedure using the Diagnostic tool Diagnostic tool : Use :

-Computer concerned by the before repair procedure:

- "Injection computer" ,

-Component affected by the before repair procedure:

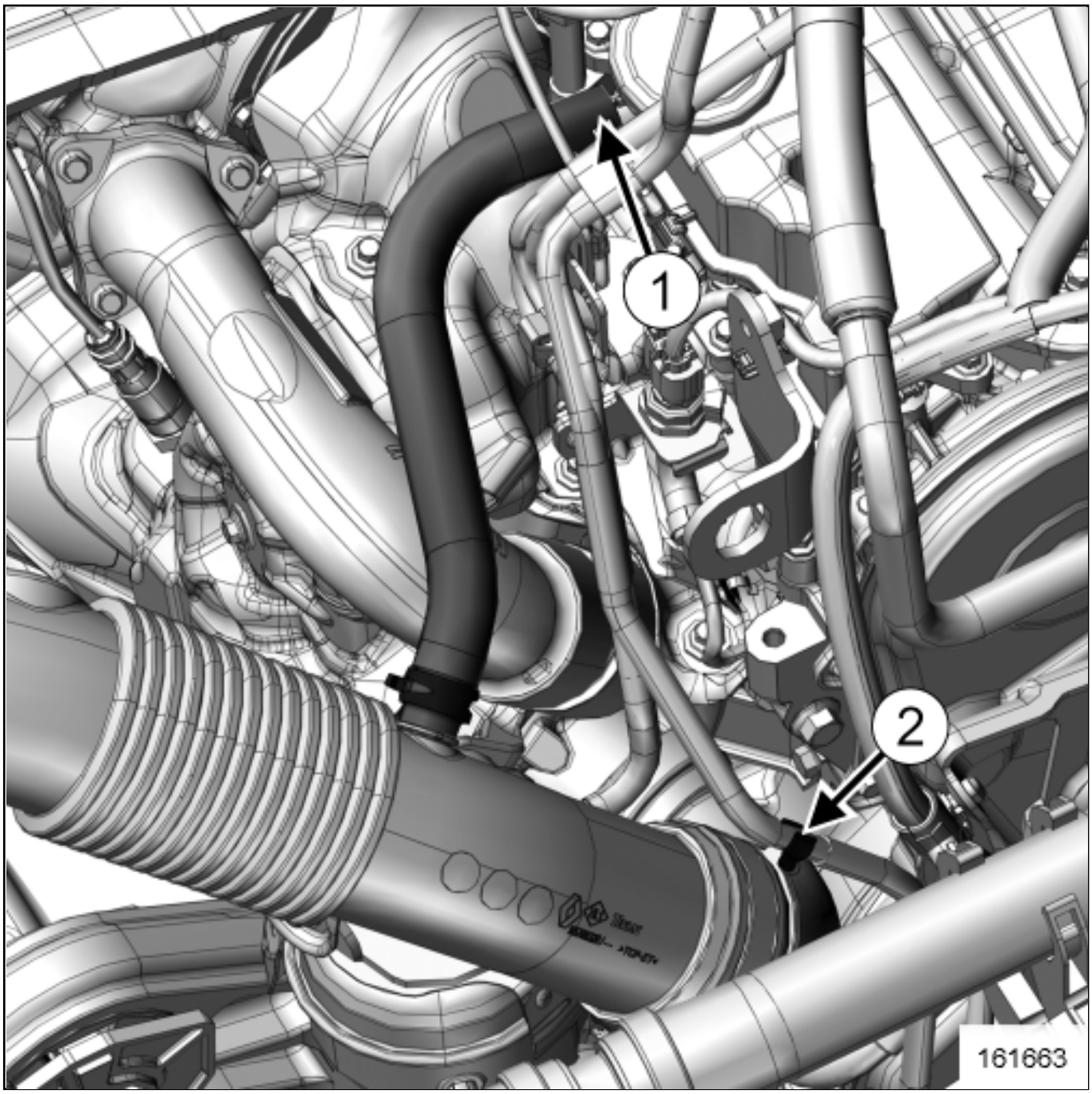
- "Injection computer" .

- Position the vehicle on a two-post lift Vehicle: Towing and lifting

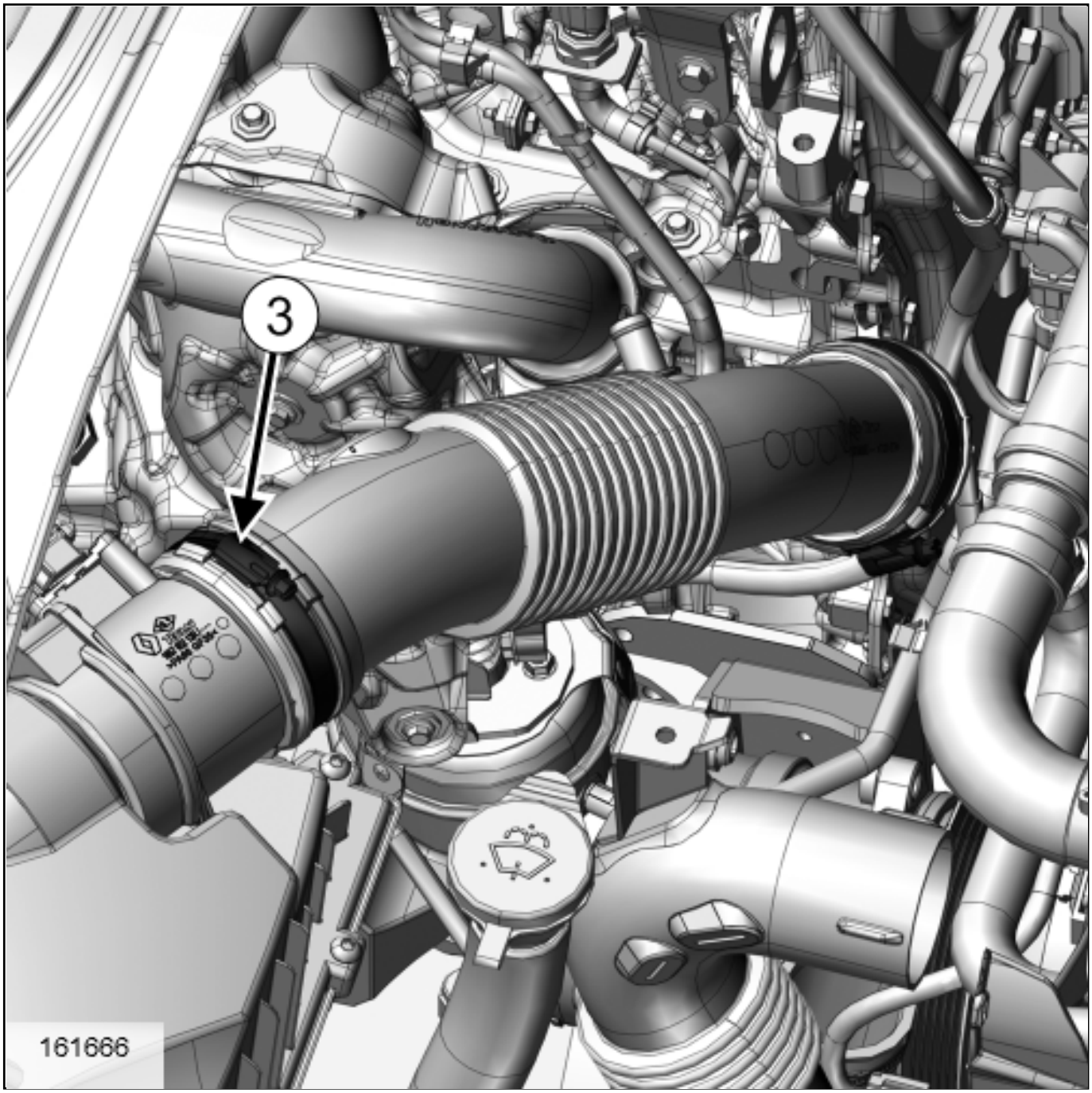
- Disconnect the battery Battery: Removal - Refitting .

- Remove:
  - the engine undertray,
  - the intercooler air inlet pipe,
  - the duct between the low pressure turbocharger and the turbo-manifold Exhaust assembly in engine compartment: Exploded view .

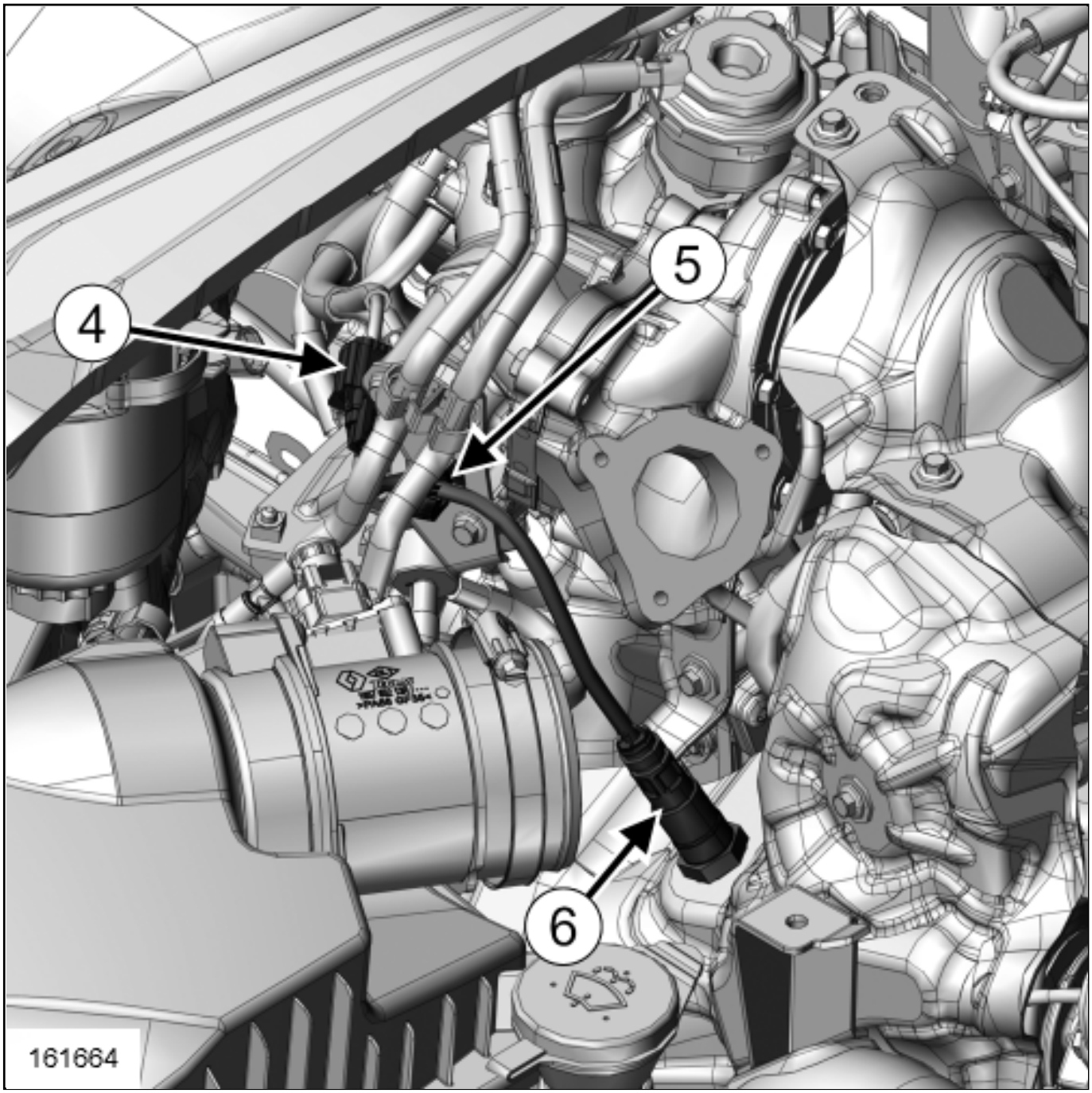
2. REMOVAL OPERATION



- Disconnect the oil vapour pipe(1) on the cylinder head side.
- Unclip the engine wiring(2) from the turbocharger air inlet pipe.

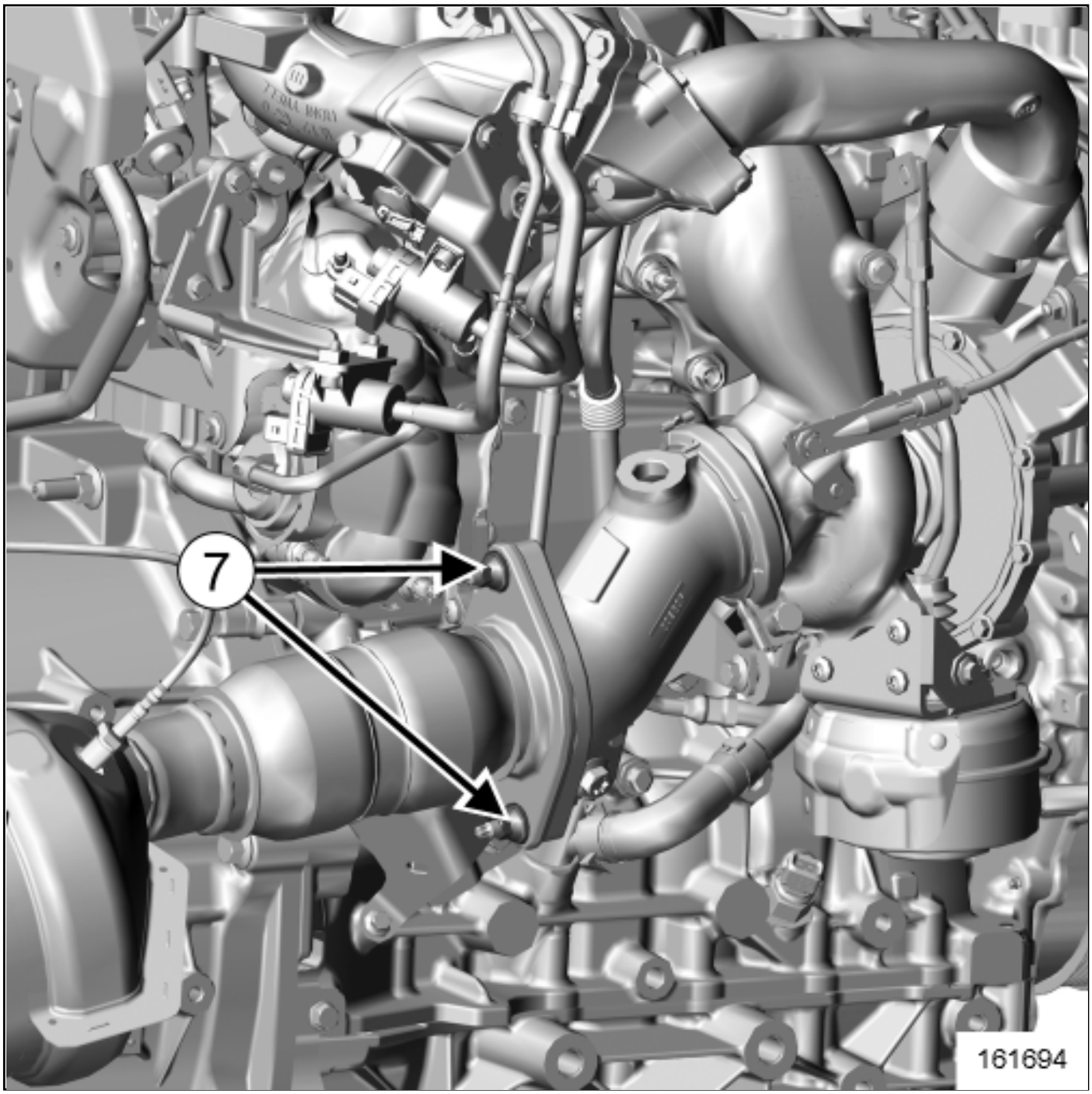


- Loosen the clip(3) of the turbocharger air inlet pipe on the air flowmeter side.
- Disconnect the turbocharger air inlet pipe from the air flowmeter.
- Remove :
  - the turbocharger air inlet pipe bolts on the turbocharger side,
  - the turbocharger air inlet pipe,
  - the seal of the turbocharger air inlet pipe.



- Disconnect the oxygen sensor connector(4) .
- Unclip the oxygen sensor wiring at(5) .
- Remove the oxygen sensor(6) using the tool22 mm socket for removal - refitting of oxygen sensors. (Mot. 1495-01) .
- Remove Exhaust assembly in engine compartment: Exploded view :
  - the turbocharger heat shield bolts,
  - the turbocharger heat shield,
  - the exhaust manifold upper heat shield bolts,
  - the exhaust manifold upper heat shield.

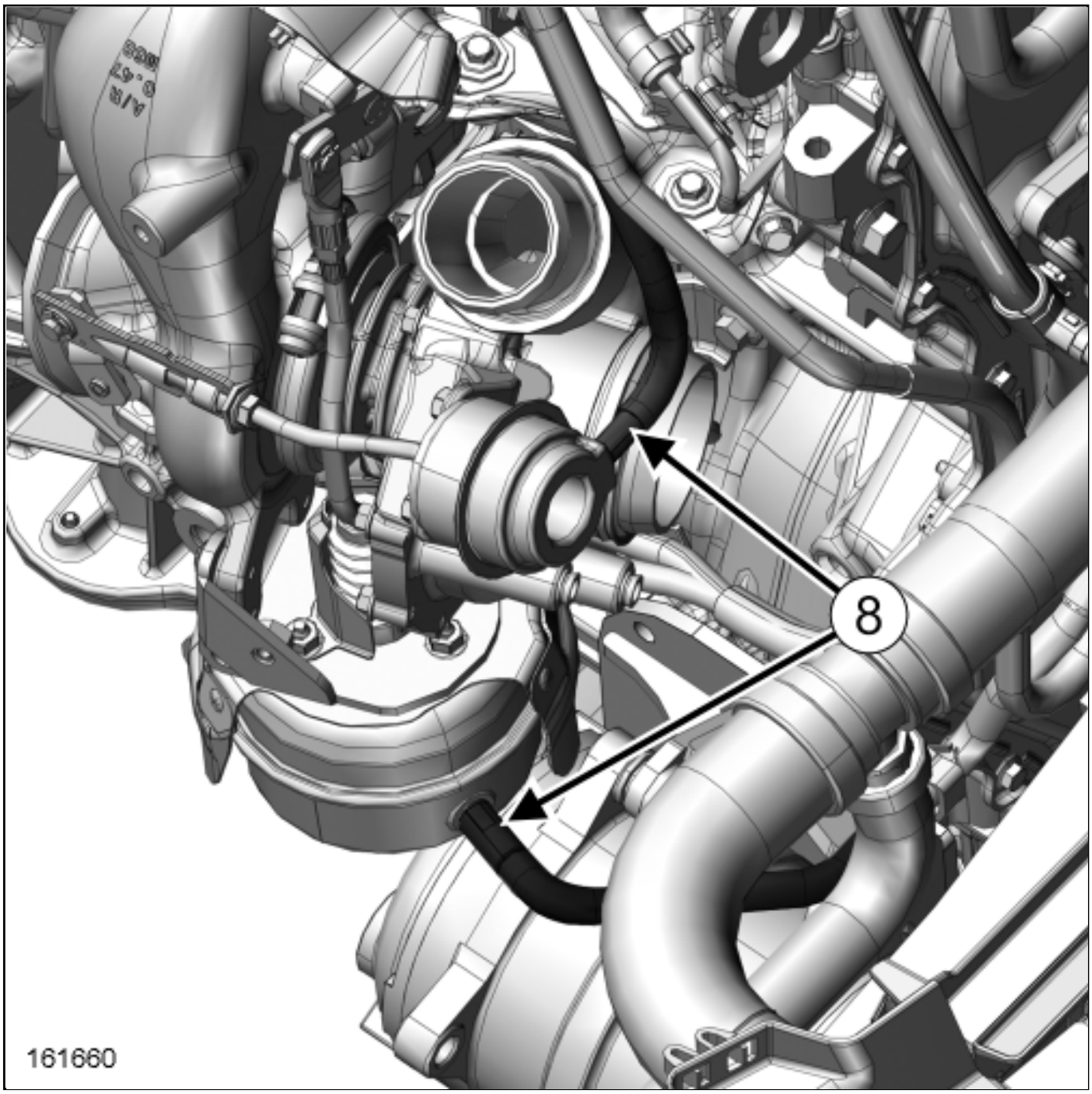
- Remove the particle filter Exhaust assembly under body: Exploded view .



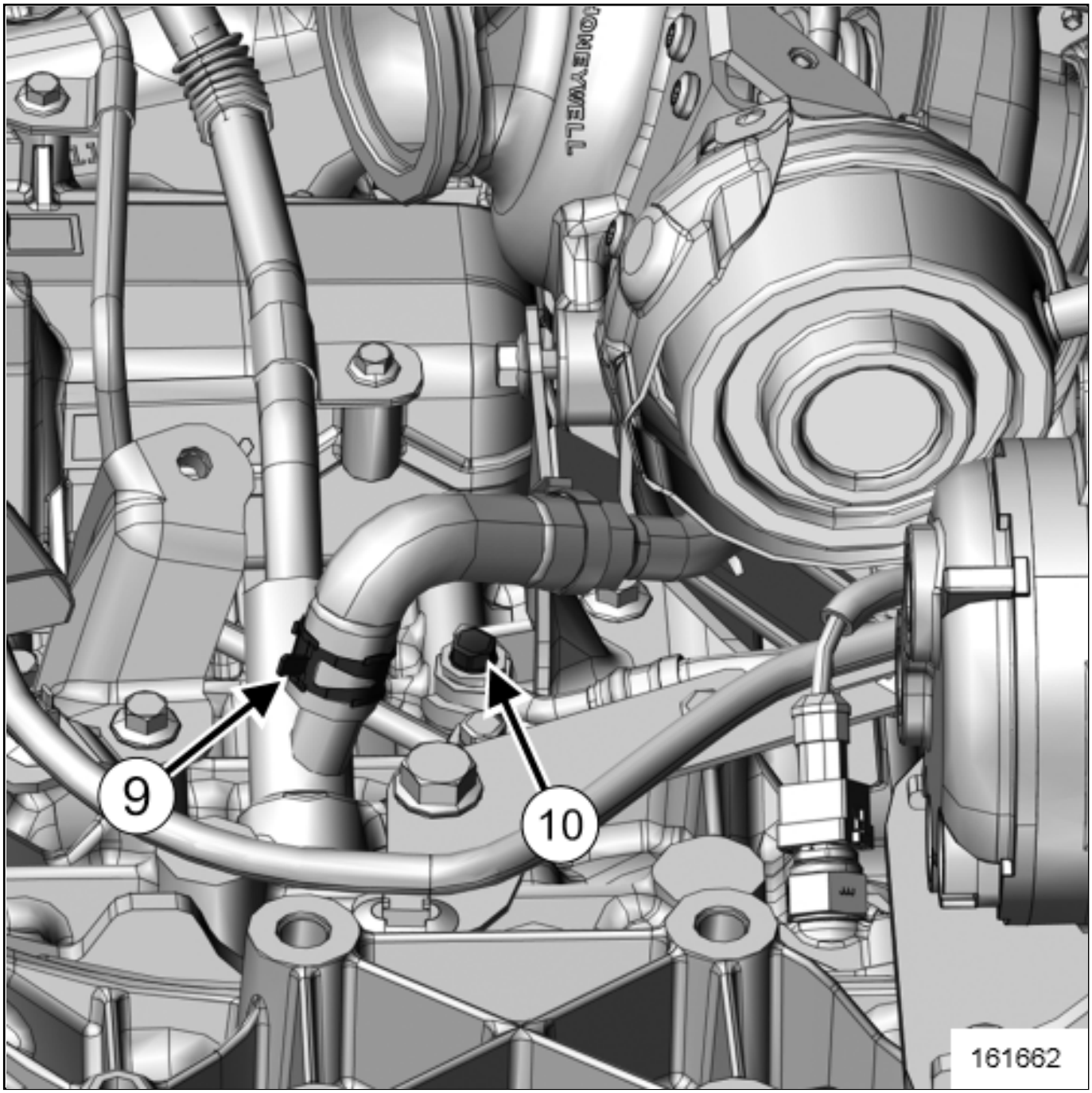
- Remove the nuts(7) of the turbocharger outlet exhaust gas duct.

- Remove Exhaust assembly in engine compartment: Exploded view :
  - the bolt of the turbocharger outlet exhaust gas duct,

- the jubilee clip of the turbocharger outlet exhaust gas duct,
- the turbocharger outlet exhaust gas duct.



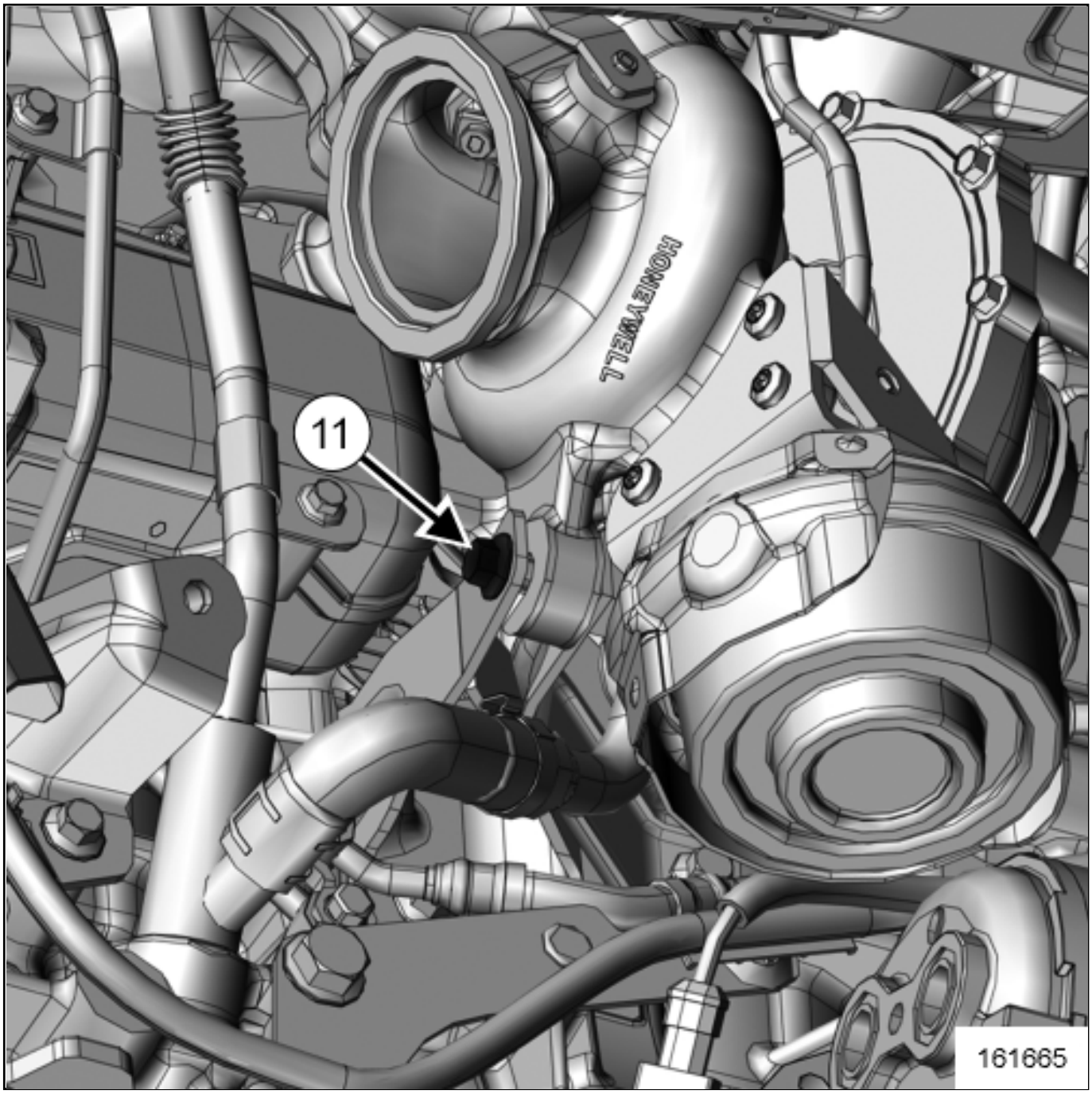
Disconnect the turbocharger control hoses at(8) .



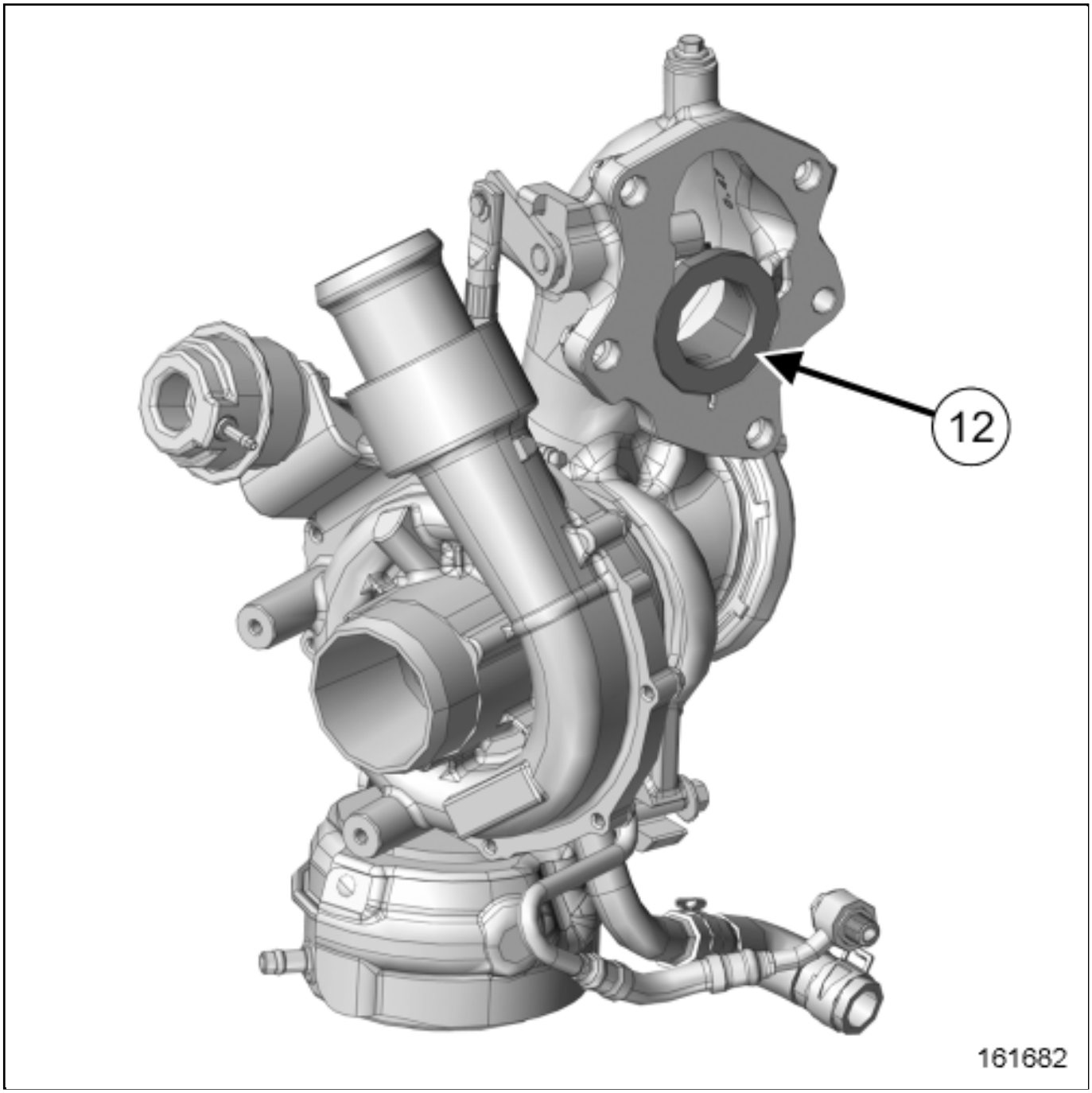
- Move aside the clip(9) of the turbocharger oil pipe using the toolRemote operation pliers for hose clips. (Mot. 1448) .

- Remove the hollow bolt of the turbocharger oil pipe(10) .

- Disconnect the turbocharger oil pipe.



Remove the bolt(11) of the turbocharger strut.



Lay out a clean cloth under the flange between the turbocharger and the integrated turbo-manifold to catch the ring(12) in case it falls off when removing the turbocharger.

Remove Exhaust assembly in engine compartment: Exploded view :

- the turbocharger nuts,
- the turbocharger,

the turbocharger seal.

CAUTION

Make sure to hold the ring(12) in its position when removing the turbocharger to avoid damaging it.

REFITTING

1. REFITTING PREPARATION OPERATION

Parts always to be replaced:

- seal between exhaust manifold and turbocharger,
- turbocharger nut,
- turbocharger oil pipe,
- turbocharger oil pipe seal,
- turbocharger outlet exhaust gas duct jubilee clip.

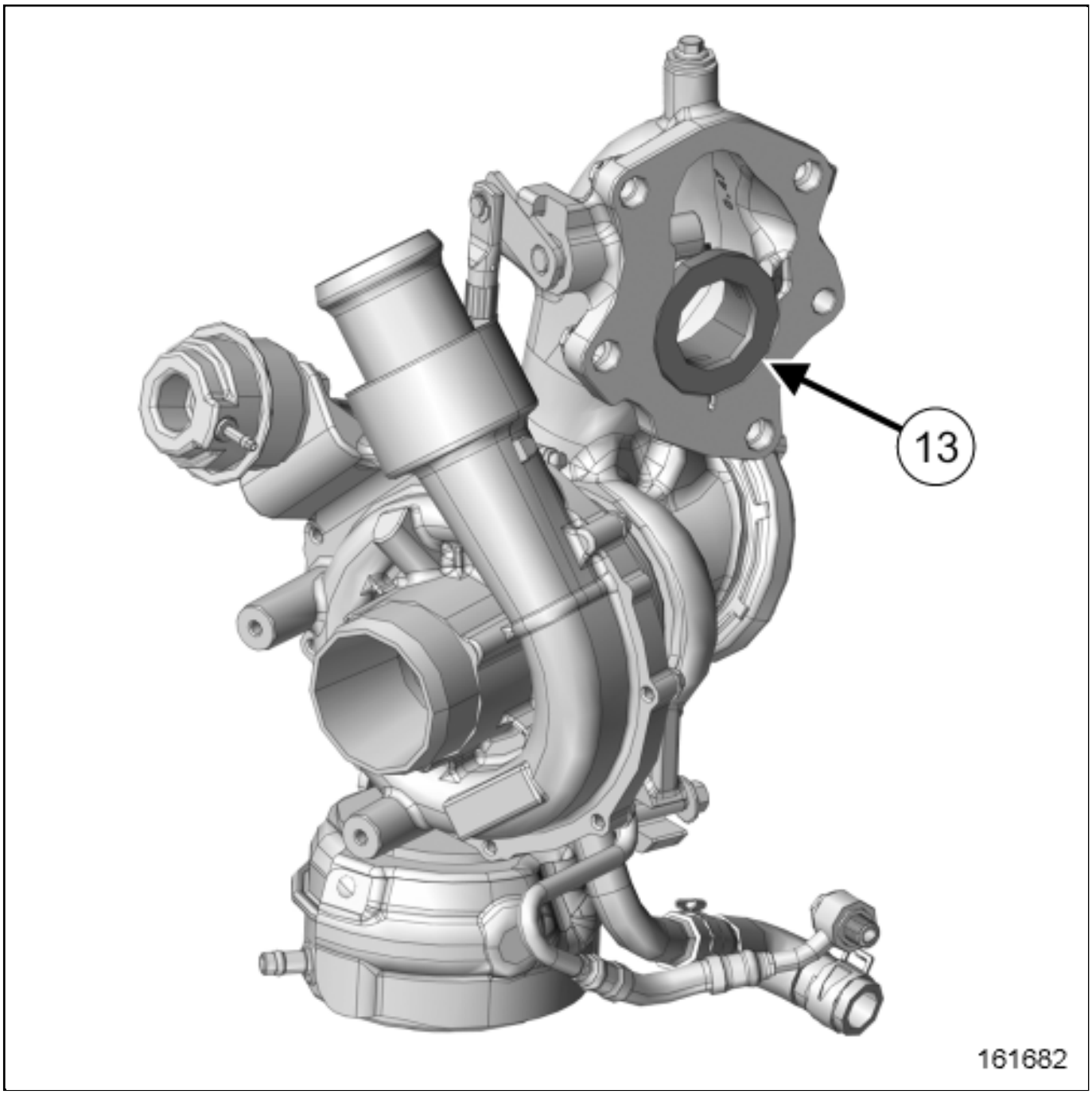
Clean and degrease using surface cleanerVehicle: Parts and consumables for the repair :

- the turbocharger joint face,
- the integrated manifold turbocharger joint face,
- the turbocharger outlet exhaust gas duct,
- the exhaust system.

CAUTION

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

2. REFITTING OPERATION



Refit the ring(13) if necessary.

CAUTION

Make sure that the ring is correctly positionned before refitting the turbocharger.

Refit Exhaust assembly in engine compartment: Exploded view

- the new turbocharger seal,
- the turboharger seal,
- the new turbocharger nuts.

Torque tighten the turbocharger nuts Exhaust assembly in engine compartment: Exploded view .

3. FINAL OPERATION

Proceed in the reverse order to removal.

Apply the after repair procedure using the Diagnostic tool Diagnostic tool : Use :

-Computer concerned by the after repair procedure:

- "Injection computer" ,

-Component affected by the after repair procedure:

- "Injection computer" .

RENAULT

Technical Note 3419A

Vehicles	Engine types	Engine suffixes
All vehicles	Petrol	All turbocharger engine suffixes
	Diesel	All turbocharger engine suffixes

TURBOCHARGER FAULT FINDING FOR PETROL AND DIESEL ENGINES

77 11 295 740 **Edition 4 - JANUARY 2011** **Edition Anglaise**

"The repair procedures given by the manufacturer in this document are based on the technical specifications current
when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which its
vehicles are constructed".

All copyrights reserved by Renault.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is prohibited without the prior written authority of RENAULT.

© Renault s.a.s. 2011

Contents

		Page
12B	**TURBOCHARGING**	
	Fault finding – Introduction	12B - 1
	Fault finding – Customer complaints	12B - 2
	Fault finding – Fault finding chart	12B - 3
	Fault finding – Test summary table	12B - 13
	Fault finding – Test	12B - 14

Fault finding – Introduction

This Technical Note provides an entire fault finding procedure which allows components of the turbocharging system to be either implicated or cleared.

NOTES	**Information about traces of gas on the turbocharger:** Gas leaks around the turbocharger are often normal. As long as they do not damage the components surrounding the turbocharger, they cause no customer complaints other than soiling of the surrounding parts. They appear when the pressure upstream of the turbocharger is high and do not provide an explanation for abnormal noises from the turbocharger as they are not located in the exhaust pipe which is conveying the noise. **Do not replace a turbocharger under the pretext that traces of gas appear on the body of the turbocharger.** **Note the fault finding chart which corresponds to the customer complaint in the table below.**

Oil leaks from the turbocharger	→	**ALP 1**
Whistling from the turbocharger	→	**ALP 2**
Noise when pedal released quickly on petrol engine	→	**ALP 3**
Poor performance or driving pleasure - Smoke from the exhaust	→	**ALP 4**

ALP 1	Oil leak from the turbocharger

NOTES	**This ALP concerns the oil leak problem around the turbocharger.**

Checking the area around the turbocharger
Note:
In 95% of cases, oil present on the turbocharger casings does not arise from a casing fault but relates to poor sealing between the interfaces.
First check the area around the turbocharger in order to ensure that oil was not simply poured over the turbocharger.
The presence of oil in the air ducts is normal; it does not prove that there is a turbocharger leak but is actually the natural path taken by rebreathing gas. The presence and consumption of oil does not justify removal of the turbocharger.

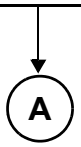
Without starting the engine, check the area around the turbocharger and identify the origin of the leaks.
Clean the traces of oil found on the turbocharger and surrounding area (ducts, pipes, etc.)

WARNING
If the air filter had been previously removed, refit it before starting the engine (risk of foreign bodies entering into the air inlet circuit).
If the turbocharger outlet ducts have been removed, it is important to refit them before starting the engine. Otherwise, (without outlet counter-pressure) oil will come out of the turbocharger outlet even if it is in perfect condition.

Start the engine and allow it to warm up for several minutes.

Accelerate several times with no load gradually, prolonging the accelerations before releasing the accelerator pedal.

Visually inspect the external condition of the oil supply and return pipes of the turbocharger as well as the air ducts upstream (including the rebreathing pipe) and downstream of the turbocharger.
Identify the origin of any leaks.



ALP 1 CONTINUED 1	

A

Are traces of oil present on the interfaces between the turbocharger and the air ducts?

YES

NO

B

Check the interface
Check that the defective interface (inlet or outlet), which is the origin of the oil leak, is correctly tightened.

Note:
It is normal to find oil inside the pipes at the turbocharger inlet and outlet, as the air passing through the compressor is loaded with oil from the engine rebreathing circuit.
Is the interface concerned correctly tightened?

NO → Tighten the interface or refit the pipe concerned (replace the seal if necessary).
End of procedure.

YES

Replace the pipe or seal concerned (see **Mechanical MR for the vehicle, 12B Turbocharging**). End of procedure.

ALP 1 CONTINUED 2	

B

Are traces of oil present on the oil supply or return of the turbocharger?

YES

Check the turbocharger oil supply inlet and outlet.
Check the tightness of the faulty interface (inlet or outlet) at the origin of the oil leak.
IMPORTANT: As oil is flammable and arrives under pressure, the oil supply must be perfectly sealed after the operation. (to avoid the increased risk of oil leaks on the exhaust manifold on petrol engines).
Is the interface concerned correctly tightened?

YES

C

NO

Retighten the pipe concerned.
End of procedure.

NO

The turbocharger is not the cause. The traces of oil are coming from another engine component and the oil is running into the turbocharger.
Note the component causing the oil leak and refer to the relevant repair manual. (see the **Mechanical MR for the vehicle, 10A Engine and cylinder block assembly**).
End of procedure.

ALP 1 CONTINUED 3	

C

YES

Replace the seal and if necessary the pipe of the part concerned (petrol engine).
Replace only the seal or the pipe of the part concerned for diesel engines.
(see **Mechanical MR for the vehicle, 12B, Turbocharging**)

IMPORTANT: The rigid sections of the oil pipes must not be folded during handling. Folded pipes must be replaced and not unfolded. Before refitting an oil pipe, check that it is not partially obstructed by sludge. Replace it if necessary.

End of procedure.

ALP 2	Whistling potentially due to the turbocharger

NOTES	**Using the MCS (Symptom Targeting Module) tool, choose the appropriate symptom, specifying the context, then check for applicable ACTIS solutions.** **Perform a road test with the customer to reproduce and confirm the symptom described by the customer** Check that the noise is independent of the environment (road profile and surface in particular).

Under what conditions (vehicle speed, gear, pedal depressed) does the customer hear the noise?

Whistling at low speeds, particularly when driving in town, on low or moderate accelerations (vehicle speed less than **30 mph (50 km/h)**, engine speed less than **2000 rpm**, second gear often engaged).

YES → **A**

NO

Whistling on heavy acceleration (pedal fully depressed) in third gear and on the upper gears when starting from an engine speed below **2000 rpm**.

YES → **B**

NO

Whistling when the engine is heavily loaded, with the accelerator pedal maintained at over half of its travel (engine speed greater than **2000 rpm**, in second gear or on the upper gears).

YES → **B**

NO

Whistling with the engine partly or heavily loaded, over a wide range of engine speeds (accelerator pedal maintained at over **25%** of its travel).

YES → **C**

ALP 2 CONTINUED 1	

A

Whistling at low speeds, particularly when driving in town, on low or moderate accelerations.

Does the noise change when playing with the accelerator pedal **or** is it audible when accelerating but not when stable?

AND

Can the noise be heard less or is it even inaudible during heavy acceleration when pulling away?

AND

Is the noise more pronounced with the engine cold than a warm engine?

NO → The turbocharger is not the source of the noise. Consider noises from the bearing, engine or kinematic chain.

YES

Perform **Test 1 Area surrounding the engine**.

Perform **Test 6 Turbocharger actuator check**.

Perform **Test 5 Acoustics at low load**.

Contact the Techline.

ALP 2 CONTINUED 2

B

Does lifting your foot off the pedal (without braking) cause the noise to disappear immediately?

NO → The turbocharger is not the source of the noise. Consider noises from the bearing, engine or kinematic chain.

YES

Perform **Test 1 Area surrounding the engine**.

Perform **Test 6 Turbocharger actuator check**.

Check the condition of the pulse damper and remove any oil in the ducts if necessary.
Check the sealing of the exhaust gas recirculation circuit; repair it if necessary.

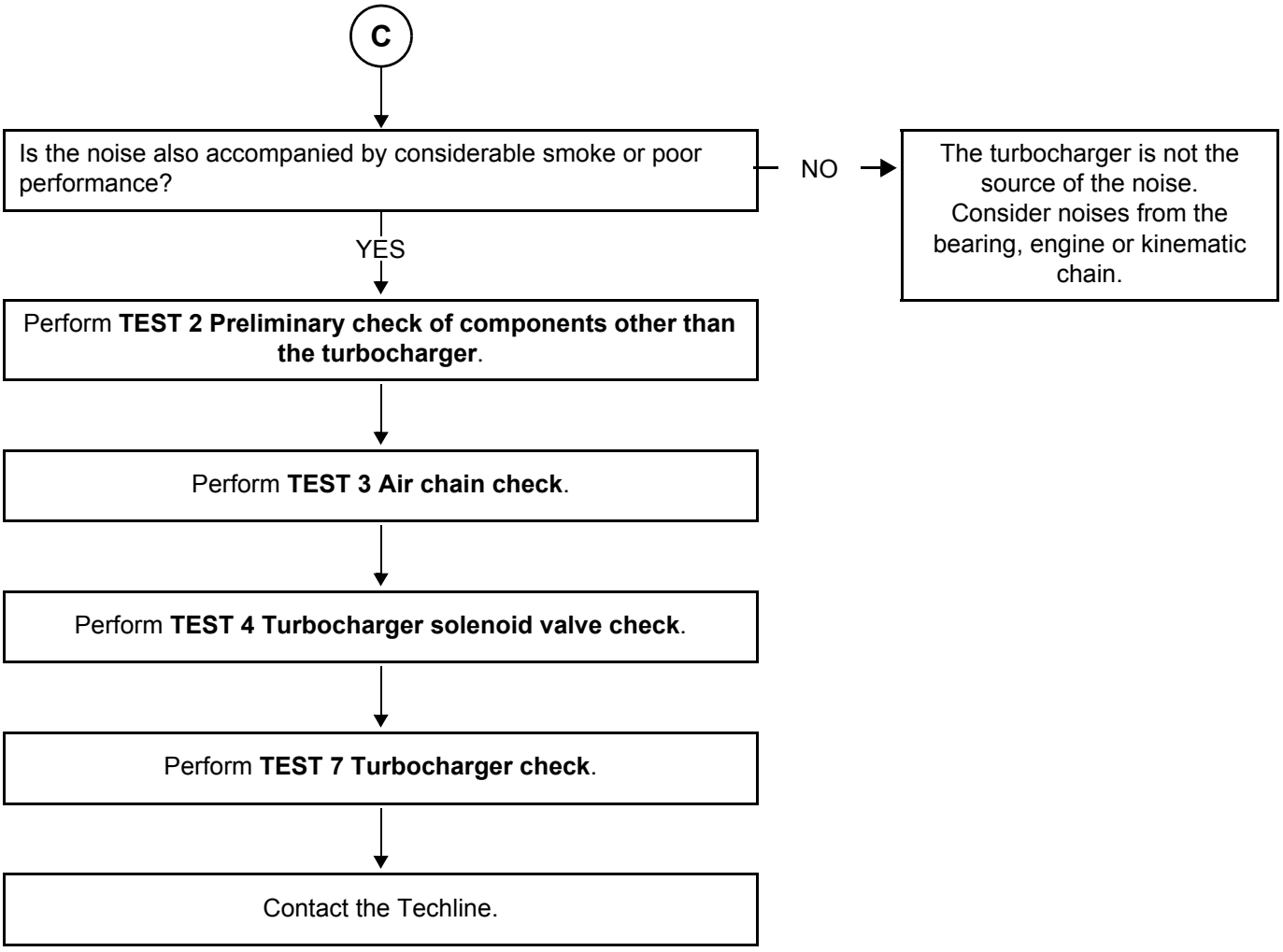
Has the noise disappeared?

YES → **End of procedure.**

NO

Perform **Test 7 Turbocharger check** and contact the Techline to make a recording of the noise.

ALP 2 CONTINUED 3	



ALP 3	**Noise when pedal released quickly on petrol engine**

NOTES	**Using the MCS (Symptom Targeting Module) tool, choose the appropriate symptom, specifying the context, then check for applicable ACTIS solutions.** **Perform a road test with the customer to reproduce and confirm the symptom described by the customer.** Only apply this ALP if the customer is complaining about a releasing noise (hissing or cannon noise etc.), when the accelerator pedal is released quickly after heavy acceleration.

Perform **TEST 1 Area surrounding the engine check**.

↓

Perform **TEST 6 Turbocharger actuator check**.

↓

Perform **TEST 3 Air chain check**.

Has the noise disappeared? — YES → **End of procedure.**

NO

↓

Contact the Techline to make a recording of the noise.

ALP 4	**Performance, consumption, driving pleasure, emission control and smoke from the exhaust**

NOTES	**Using the MCS (Symptom Targeting Module) tool, choose the appropriate symptom, specifying the context, then check for applicable ACTIS solutions.** **Perform a road test with the customer to reproduce and confirm the symptom described by the customer.**

Perform **TEST 2 Preliminary check of components other than the turbocharger**.

↓

Perform **TEST 3 Air chain check**.

↓

Perform **TEST 4 Turbocharger solenoid valve check**.

↓

Is the customer only complaining about the following problems:
Bad smells **or** Smoke from the exhaust?

YES ↓

Proceed to smoke fault finding.

NO ↓

Perform **TEST 7 Turbocharger check**.

Area around the engine check	TEST 1
Preliminary check of components other than the turbocharger	TEST 2
Air chain check	TEST 3
Turbocharger solenoid valve check	TEST 4
Acoustics at low load	TEST 5
Turbocharger actuator check	TEST 6
Turbocharger check	TEST 7

TEST 1	Area around the engine check

NOTES	None.

Switch on the vehicle + after ignition feed following the recommended procedure.
Use the CLIP tool to check for the presence of faults relating to the following components and depending on the vehicle equipment:
– computer,
– injectors,
– fuel pressure regulation system (pressure sensor, pressure regulator, flow regulator),
– turbocharger solenoid valve,
– EGR system (EGR valve, EGR bypass valve, damper valve),
– turbocharger pressure sensor,
– air temperature sensor,
– fuel temperature sensor,
– water in the diesel presence sensor.

If faults are present, access the corresponding fault finding procedures, using the **diagnostic tool interface** or referring to the repair manual (see **fault finding MR for the vehicle, 17B, Petrol injection** or **13B, Diesel injection**).
If not, move on to the next step.

If there are any doubts about the oil grade (maintenance booklet, noise changes according to the oil temperature), move on to the next step.
Otherwise, check the oil level and move on to **step A**.

TEST 1 CONTINUED	

Perform an engine oil change.
Perform a road test then leave the engine running when stationary until the fan assembly is triggered to homogenise the oil.
Return to the conditions under which the noise was perceived.
If the noise becomes more marked, replace the turbocharger (see **mechanical MR for the vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**).
If not, move on to **step A**.

Step A:
Start the engine before performing the following checks.
Check the sealing of the air line. Adjust the conformity if necessary.
Check the exhaust system tightness. Adjust the conformity if necessary.
Check that the exhaust pipe hooks underneath the body, that all the parts are correctly mounted, and that the brackets and screens are connected to the ducts. Adjust the conformity if necessary.

Return to the ALP.

TEST 2	Preliminary check of components other than the turbocharger

NOTES	None.

Check the engine oil level. The oil level must not exceed the maximum level.
If it is not correct, top up the oil level.
To confirm and reproduce the symptom, perform a road test**,** with accelerations under load by demanding the turbocharger.
If the customer complaint is "smoke from the exhaust", check it when driving.
Move on to the next step.

Use the CLIP tool to check for the presence of faults relating to the following components and depending on the vehicle equipment:
– computer,
– injectors,
– fuel pressure regulation system (pressure sensor, pressure regulator, flow regulator),
– turbocharger solenoid valve,
– EGR system (EGR valve, EGR bypass valve, damper valve),
– turbocharger pressure sensor,
– air temperature sensor,
– fuel temperature sensor,
– water in the diesel presence sensor.

If faults are present, access the corresponding fault finding procedures, using the **diagnostic tool** interface or referring to the repair manual (see **fault finding MR for the vehicle, 17B, Petrol injection** or **13B, Diesel injection**).
If not, move on to the next step.

TEST 2 CONTINUED	

Start the engine and let it run at idle speed for **1 min**. Check the battery voltage using the parameter **PR071 Computer feed voltage**. If the value is greater than **13 V**, **return to the ALP**. If not, move on to the next step.
Check the charge circuit. **Return to the ALP**.

TEST 3	Air chain check

NOTES	None.

Check the condition (pinching, bending, tearing, cut-off, piercing), fitting and sealing of the following components of the air and exhaust circuit:

Air filter
In particular, check the replacement interval, the direction of fitting and the condition of the filtering part.
For each operation,
– check that no foreign bodies (nuts and bolts, cloths etc.) entered the filter unit.
– take care not to pinch the seals when refitting.

Low pressure air circuit
– the fresh air inlet scoop on the front panel of the vehicle,
– the air inlet pipe to the air filter,
– the air pipes from the filter up to the compressor inlet,
– rebreathing pipes (separation),
– the air flowmeter mountings.

High pressure circuit
– compressor outlet pipe on the turbocharger air cooler,
– the turbocharging air cooler outlet pipe to the inlet manifold,
– the inlet manifold,
– pipes connected to the EGR valve or its cooler (DIESEL engine),
– the temperature and pressure sensors.

TEST 3 CONTINUED	

Exhaust circuit
– the exhaust manifold circuit to the turbocharger turbine,
– the turbine outlet pipe to the end of the exhaust pipe,
– the inlet manifold up to the EGR valve for DIESEL engines,
– the temperature and pressure sensors present.

If one or more of these components presents a non-conformity, **repair or replace the defective part(s)** and **return to the ALP**.
Otherwise, **return to the ALP**.

TEST 4	Turbocharger solenoid valve check

NOTES	None.

Is the engine a petrol engine?

NO → **Diesel solenoid valve**

YES

Visual inspection of the solenoid valve electrical connector

Note:
These checks are purely visual.

Check that the connector is properly connected and locked.
Check that the electrical wires at the end of the sheath are not damaged.
Disconnect the connector to continue the checks.
Check that there is no heat damage to the unit or mechanical damage to the lock.
Check that the contacts (clips and tabs) are not deformed.
Check that there is no water present in the connector and that the seals are in good condition.

Do the visual checks show any evidence of damage?

YES

Refer to **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**.
Move on to the next step.

→ B

NO → B

TEST 4 CONTINUED 1	

B

Check the electrical resistance of the petrol solenoid valve

Measure the resistance at the terminals of the solenoid valve.
For petrol engines equipped with an EATON solenoid valve (part numbers 77 00 115 002 and 82 00 702 990), the resistance must be between **25** Ω **< X < 45** Ω.
For petrol engines equipped with a PIERBURG solenoid valve (part number 82 00 603 558), the resistance must be between **15** Ω **< X < 35** Ω.

If the resistance measured is correct, **return to the ALP**.
Otherwise, replace the turbocharger solenoid valve (see **MR for vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**).

TEST 4 CONTINUED 2	

Diesel solenoid valve

Checking the battery voltage with the engine running

Start the engine and let it run at idle speed for **1 min**.
Check the battery voltage using the parameter **PR071 Computer feed voltage**.
Is the value **PR071** greater than **13 V**?

NO

Check the charging circuit and move on to the next step.

C

YES

C

TEST 4 CONTINUED 3	

C

Check the vacuum at the turbocharger inlet (diaphragm)

Start the engine and let it idle.
Check the engine temperature using **PR064 Coolant temperature**.
Allow the engine to warm up until it reaches a temperature of 80°C.
Disconnect the vacuum pipe connected to the actuator (diaphragm).
Connect a vacuum gauge to the end of the disconnected pipe and set it to **vacuum measurement** position.
Accelerate quickly by depressing the accelerator pedal completely and releasing it immediately.
The pedal must not be fully depressed for longer than **1 second**.
During this acceleration, the engine speed must reach more than **3000 rpm**.
Repeat the operation **3 times**.
Read the maximum vacuum displayed on the vacuum gauge during acceleration and deceleration and after returning to idle speed.

Vacuum value tolerance intervals to be respected (negative values):
-1 bar < CORRECT vacuum value < **- 0.4 bar**
- 0.4 bar < INCORRECT vacuum value < **0 bar**

Is the vacuum at the turbocharger actuator inlet correct?

YES

The solenoid valve is in order.
Return to the ALP.

NO

Diesel solenoid valve performance

TEST 4 CONTINUED 4	

Diesel solenoid valve performance

Checking the vacuum at the solenoid valve outlet

With the engine running at idle speed, disconnect the vacuum pipe from the end piece of the solenoid valve outlet. This pipe connects the solenoid valve to the turbocharger actuator (diaphragm).
Connect a vacuum gauge to the solenoid valve outlet and set it to the vacuum measurement position.
Accelerate quickly by depressing the accelerator pedal completely and releasing it immediately.
The pedal must not be fully depressed for longer than **1 second**.
During this acceleration, the engine speed must reach a speed greater than **3000 rpm**.
Repeat the operation 3 times.
Read the maximum vacuum displayed on the vacuum gauge during acceleration and deceleration and after returning to idle speed.

Vacuum value tolerance intervals to be respected (negative values):
-1 bar < CORRECT vacuum value < **- 0.4 bar**
- 0.4 bar < INCORRECT vacuum value < **0 bar**

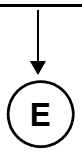
Is the vacuum displayed at the turbocharger actuator solenoid valve outlet correct?

YES

Replace the vacuum pipe between the solenoid valve and the turbocharger pressure regulator (see **MR for the vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**).

NO

Reconnect the vacuum pipe to the turbocharging pressure regulator and move on to the next step.



TEST 4 CONTINUED 5	

E

Visual inspection of the solenoid valve electrical connector

Note:
These checks are purely visual.

Check that the connector is properly connected and locked.
Check that the electrical wires at the end of the sheath are not damaged.
Disconnect the connector to continue the checks.
Check that there is no heat damage to the unit or mechanical damage to the lock.
Check that the contacts (clips and tabs) are not deformed.
Check that there is no water present in the connector and that the seals are in good condition.

Do the visual checks show any evidence of damage?

YES

Refer to **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**.

F

NO

F

TEST 4 CONTINUED 6	

F

Checking the vacuum at the solenoid valve inlet

Start the engine and let it idle.
Disconnect the vacuum pipe from the end piece of the solenoid valve inlet.
This pipe connects the vacuum pump to the turbocharger solenoid valve.
Connect a vacuum gauge to the end of the disconnected pipe and set it to vacuum measurement position.
Read the vacuum displayed by the vacuum gauge.
Vacuum value tolerance intervals to be respected (negative values):
-1 bar < CORRECT vacuum value < **-0.85 bar**
- 0.85 bar < INCORRECT vacuum value < **0 bar**

Is the vacuum displayed at the solenoid valve inlet correct?

YES

G

NO

Carry out the following operations.
– Reconnect the vacuum pipe to the turbocharger solenoid valve.
– Check that the connection of the vacuum pipe(s) is correct.
Visually check the condition of the vacuum pipes leaving the vacuum pump to the different supplied components.
Refer to the repair manual (see **Mechanical MR for the vehicle**).

TEST 4 CONTINUED 7	

G

Was the vacuum pump pipe correctly connected to the correct solenoid valve take-off pipe? (inversion noticed sometimes)

YES

Replace the solenoid valve (see **Mechanical MR for the vehicle, 12B, Turbocharging**).

NO

Reconnect the pipes correctly
Return to the ALP

TEST 5	Acoustics at low load

NOTES	None.

Acoustic check of the turbocharger with the original setting
Note:
These turbocharger noises that can be heard whilst driving can be reproduced in the workshop when accelerating in neutral.
The principle is to identify whether the noise depends on the turbocharger speed by testing 2 different engine speeds.

With the vehicle stationary, disengage and perform accelerations without allowing the oil to heat up (cold engine).
Record the original noise.
Move on to the next step.

If the engine is equipped with a regulation solenoid valve, move on to the next step.
If not, move on to **step A**.

Acoustic check involving forcing the setting under no vacuum
Note:
The principle of this test is to force the turbocharger actuator control setting to the minimum so that the turbine produces the least amount of energy possible.

Disconnect the pneumatic control of the turbocharger actuator.
Clamp the disconnected pipe using a clip.

With the vehicle stationary, disengage and perform accelerations without allowing the oil to heat up (cold engine).
Compare the noise with the original noise.

If the noise has changed in relation to the original noise, replace the turbocharger (see mechanical **MR for the vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**).
Otherwise, the turbocharger is not the source of the noise. **Return to the ALP**.

TEST 5 CONTINUED	

Step A:
Acoustic check involving forcing the setting under maximum pressure
Note:
The principle of this test is to force the turbocharger actuator control setting to the minimum so that the turbine produces the least amount of energy possible.

Disconnect the pneumatic control of the turbocharger actuator.
Clamp the disconnected pipe using a clip.
Connect a pressure pump to the diaphragm and apply the necessary pressure until complete opening (feel the start and end of movement by hand).

With the vehicle stationary, disengage and perform accelerations without allowing the oil to heat up (cold engine).
Compare the noise with the original noise.

If the noise has changed in relation to the original noise, replace the turbocharger (see mechanical **MR for the vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**).
Otherwise, the turbocharger is not the source of the noise. **Return to the ALP**.

TEST 6	Turbocharger actuator

NOTES	**Warning** Never touch the nuts for adjusting the diaphragm rod length.

Is the turbocharger actuator rod (diaphragm) perpendicular to the shaft of the turbocharger (shaft connecting the compressor wheel to the turbine wheel)?

YES (TGV: Variable Geometry Turbocharger) → **ADD**

NO (TGF: Fixed Geometry Turbocharger)

Is the engine a petrol engine?

YES → **AEP**

NO

Is the engine equipped with a turbocharger regulation solenoid valve?

YES

NO → **ADP**

Is the diesel engine type of the vehicle one of these:
1/ **G9T722 Euro 3**?
2/ **G9T750 Euro 3**?

YES → **ADP**

NO → **ADD**

TEST 6 CONTINUED 1	

ADD
Diesel
Vacuum Actuator

Check the vacuum regulated control system on the diesel engine

Note:
Depending on the vehicle type and accessibility, it may be preferable to connect the pump to the end of the diaphragm pipe rather than directly to the diaphragm take-off pipe.

Connect a manual vacuum pump to the diaphragm and apply a vacuum of **-300 mbar**.
Once this pressure is established, wait for **10 seconds**.
Read the vacuum variation on the pressure gauge.

Did the vacuum vary by more than 50 mbar?

YES

Check that the fault does not come from the connection or pipes of the vacuum pump.
If the turbocharger diaphragm alone is the cause, replace the turbocharger (see **mechanical MR of the vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**)

NO

D

TEST 6 CONTINUED 2	

D

To follow the check

Warning:
It is preferable to repeat the following tests several times.

Note:
In the rest position, depending on the engine type, the diaphragm rod may be in the inserted or withdrawn position. Depending on the case, the vacuum applied will cause the rod to be inserted or withdrawn.
It is preferable to repeat the following tests several times.

1/ Connect a manual vacuum pump to the diaphragm, apply a vacuum of **-300 mbar** and check that the rod left its initial position and has started to move.
2/ Apply **-650 mbar**, gradually increase the pressure to atmospheric pressure and check that the rod begins to return to its initial position when the pressure reaches **-350 mbar**.

Does the rod movement conform with the description?

YES

The turbocharger actuator is correct.
Return to the ALP.

NO

Replace the turbocharger (see **mechanical MR for vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**)

TEST 6 CONTINUED 3	

ADP
Diesel Pressure
Actuator

Check the autoregulated pressure control system on diesel TGF or special G9T engines

Note:
Depending on the vehicle type and accessibility, it may be preferable to connect the pump to the end of the diaphragm pipe rather than directly to the diaphragm take-off pipe.

Connect a manual pressure pump to the diaphragm and apply a pressure of **1500 mbar**.
Once this pressure is established, wait for **10 seconds**.
Read the pressure variation on the pressure gauge.

Did the pressure value vary by more than 50 mbar?

YES

Replace the turbocharger (see **mechanical MR for vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**)

NO

Is the engine a special G9T type engine?

YES

E

NO

Return to the ALP

TEST 6 CONTINUED 4	

E

Check the TGF type turbocharger control mechanism actuated under a vacuum

Warning:
Never apply a pressure greater than **2000 mbar**.
It is preferable to repeat the following tests several times.
Note:
In the rest position, depending on the engine type, the diaphragm rod may be in the inserted or withdrawn position.
Depending on the case, the pressure applied will cause the rod to be inserted or withdrawn.
It is preferable to repeat the following tests several times.

1/ Connect a manual pressure pump to the diaphragm and gradually apply an increasing pressure until the rod starts to move.
2/ Note this pressure value P and gradually add **300 mbar** and check that the rod continues to move.
3/ Gradually decrease the pressure to the value **P + 150** and check that the rod begins to return to its initial position.

Does the rod movement conform with the description?

YES

The turbocharger actuator is correct.
Return to the ALP.

NO

Replace the turbocharger (see **mechanical MR for vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**)

TEST 6 CONTINUED 5	

AEP
Petrol
Pressure Actuator

Check the petrol TGF type control system

Note:
Depending on the vehicle type and accessibility, it may be preferable to connect the pump to the end of the diaphragm pipe rather than directly to the diaphragm.

Connect a manual pressure pump to the diaphragm and apply a pressure of **650 mbar**.
Once this pressure is established, wait for **10 seconds**.
Read the pressure variation on the pressure gauge.

Did the pressure value vary by more than 50 mbar?

YES

Replace the turbocharger (see **mechanical MR for vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**)

NO

F

TEST 6 CONTINUED 6	

F

Check the TGF type turbocharger control mechanism actuated under a vacuum

Warning:
Never apply a pressure greater than **2000 mbar**.
It is preferable to repeat the following tests several times.
Note:
In the rest position, depending on the engine type, the diaphragm rod may be in the inserted or withdrawn position.
Depending on the case, the pressure applied will cause the rod to be inserted or withdrawn.
It is preferable to repeat the following tests several times.

1/ Connect a manual pressure pump to the diaphragm and gradually apply an increasing pressure until the rod starts to move.
2/ Note this pressure value P and gradually add **300 mbar** and check that the rod continues to move.
3/ Gradually decrease the pressure to the value **P + 150** and check that the rod begins to return to its initial position.

Does the rod movement conform with the description?

YES

The turbocharger actuator is correct.
Return to the ALP.

NO

Replace the turbocharger (see **mechanical MR for vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**)

TEST 7	Turbocharger check

NOTES	**IMPORTANT:** Perform these checks with the vehicle ignition switched off and without removing the turbocharger. **Warning:** Observe the following safety guidelines: – wear heat-protective gloves when the engine is hot, – do not wear baggy clothing or hanging jewellery during this operation, – watch out for possible triggering of the fan assembly and the operation of the accessories belt or belts.

After having disconnected the turbocharger inlet duct, visually inspect the condition of the compressor fins using a mirror and a lamp, or an endoscope or video assistance camera.
If the vanes are damaged (twisted or significantly damaged by a foreign body), replace the turbocharger (see **mechanical MR for the vehicle, 12B, Turbocharging, Turbocharger: Removal - Refitting**).
Otherwise, **return to the ALP**.

TURBOCHARGING: PRECAUTIONS FOR THE REPAIR

Note, one or more warnings are present in this procedure

Equipment required
parts washer

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

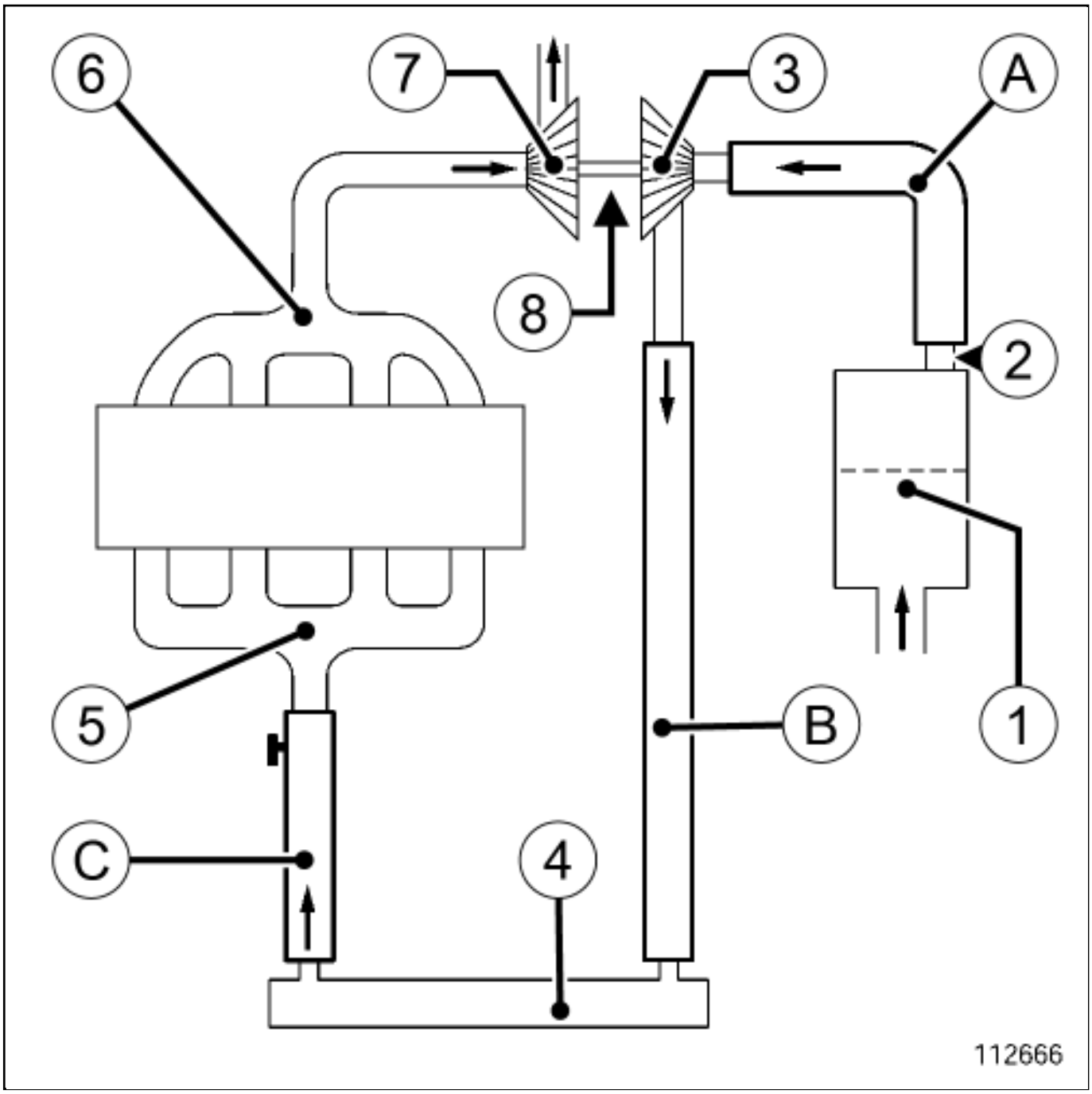
1. TURBOCHARGER: GENERAL INSTRUCTIONS

For the turbocharging pressure regulator check (see Fault finding - Tests) (TN 3419A, 12B, Turbocharging).

CAUTION

The turbocharger pressure regulator rod must not be adjusted.

2. TURBOCHARGER CIRCUIT DIAGRAM



(1) Air filter unit

(2) Air flowmeter

(3) Compressor wheel

(4) Intercooler

(5) Inlet distributor

(6) Exhaust manifold

(7) Turbine wheel

(8) Bearing system (bearing + wheel shaft)

(A) Air filter unit outlet pipe

(B) Turbocharger air outlet pipe

(C) Intercooler air outlet pipe

3. APPLICATION CONDITIONS OF INSTRUCTIONS

The instructions below must be followed when replacing a turbocharger due to mechanical damage:

- damage to the bearing system,
- broken shaft or turbine wheel,
- compressor wheel rubbing against the turbocharger casing,
- broken or damaged compressor wheel,
- extensive clogging of the turbine wheel casing (hard deposits).

FOR THE AIR CIRCUIT:

-Consequences:

■swarf or metal objects in the turbocharger inlet and outlet pipes,■oil in the air circuit (collected in the intercooler).

-Risks (after replacing the turbocharger):

■metal objects sucked in by the compressor wheel (destruction of the turbocharger).

FOR THE LUBRICATION CIRCUIT:

-Consequences:

■swarf found in the engine oil circuit,■circulation of swarf within the circuit.

-Risks (after replacing the turbocharger):

■premature wear on the bearing system (destruction of turbocharger).

CAUTION

Failure to observe the following instructions will lead to the turbocharger breaking again.

Metal objects may enter the oil and air circuits as a result of a broken turbocharger.

INSTRUCTIONS:

- Drain the engine oilEngine oil: Draining - Refilling
- Replace the oil filter.
- Replace the seals and fittings,

-Carry out the following only if the compressor wheel is broken or rubbing against the turbocharger casing:

■Drain the intercooler,■Clean the turbocharger air pipes.

Note:

When carrying out an operation on the air or lubrication circuit, it is necessary to plug the open holes to prevent any risk of foreign bodies entering the system.

4. AIR CIRCUIT*: INSTRUCTIONS FOLLOWING MECHANICAL DAMAGE TO THE TURBOCHARGER

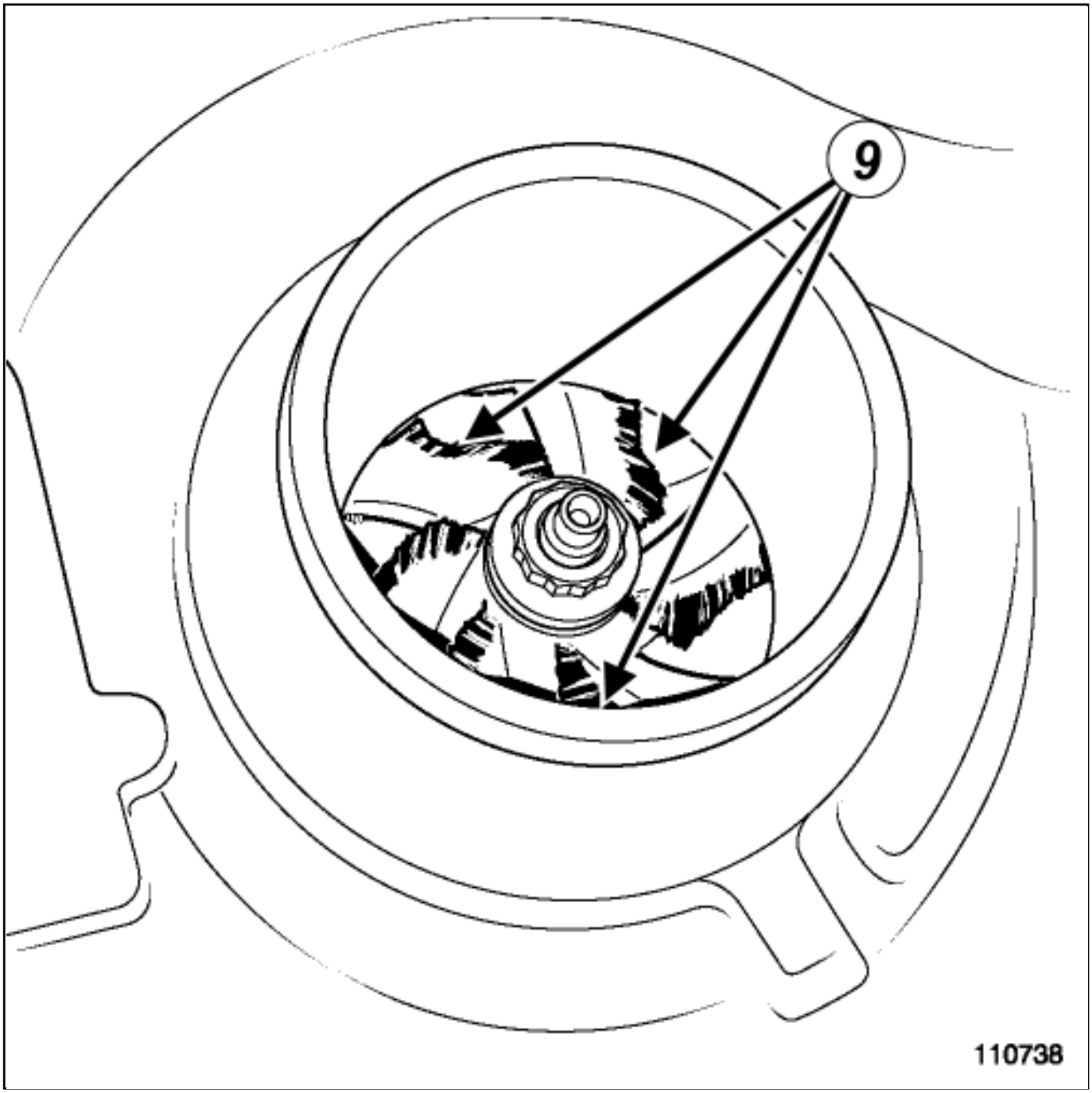
Note:

(*) These instructions for the air circuit are only to be followed in the case of:

- broken compressor wheel,
- compressor wheel rubbing against the turbocharger casing.

Remove the intercooler if fitted to the vehicle.

Turn the intercooler over and allow the oil inside to drain out.



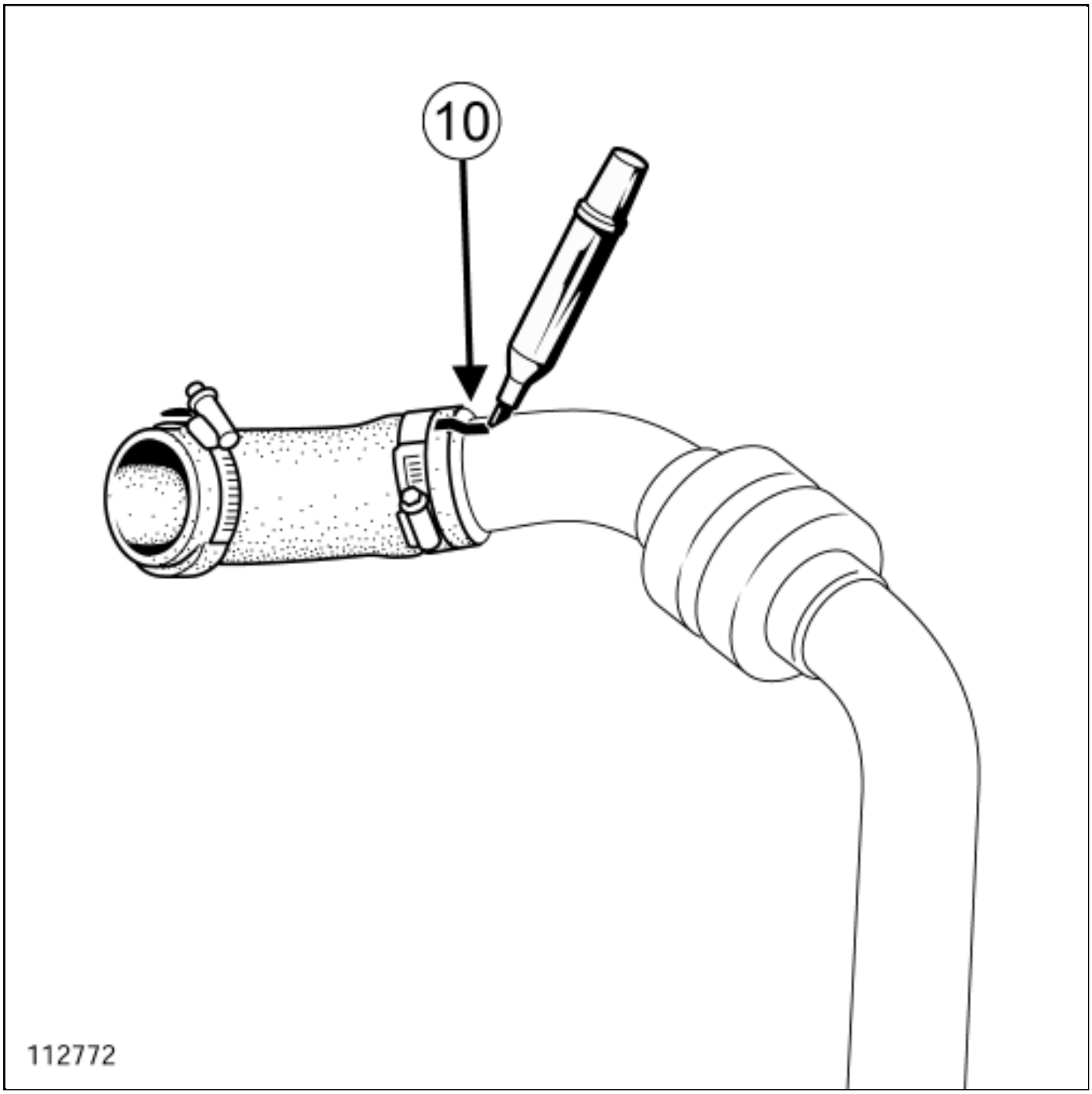
Note:

If the compressor wheel(9) is damaged, metal objects are ejected inside the air pipes.

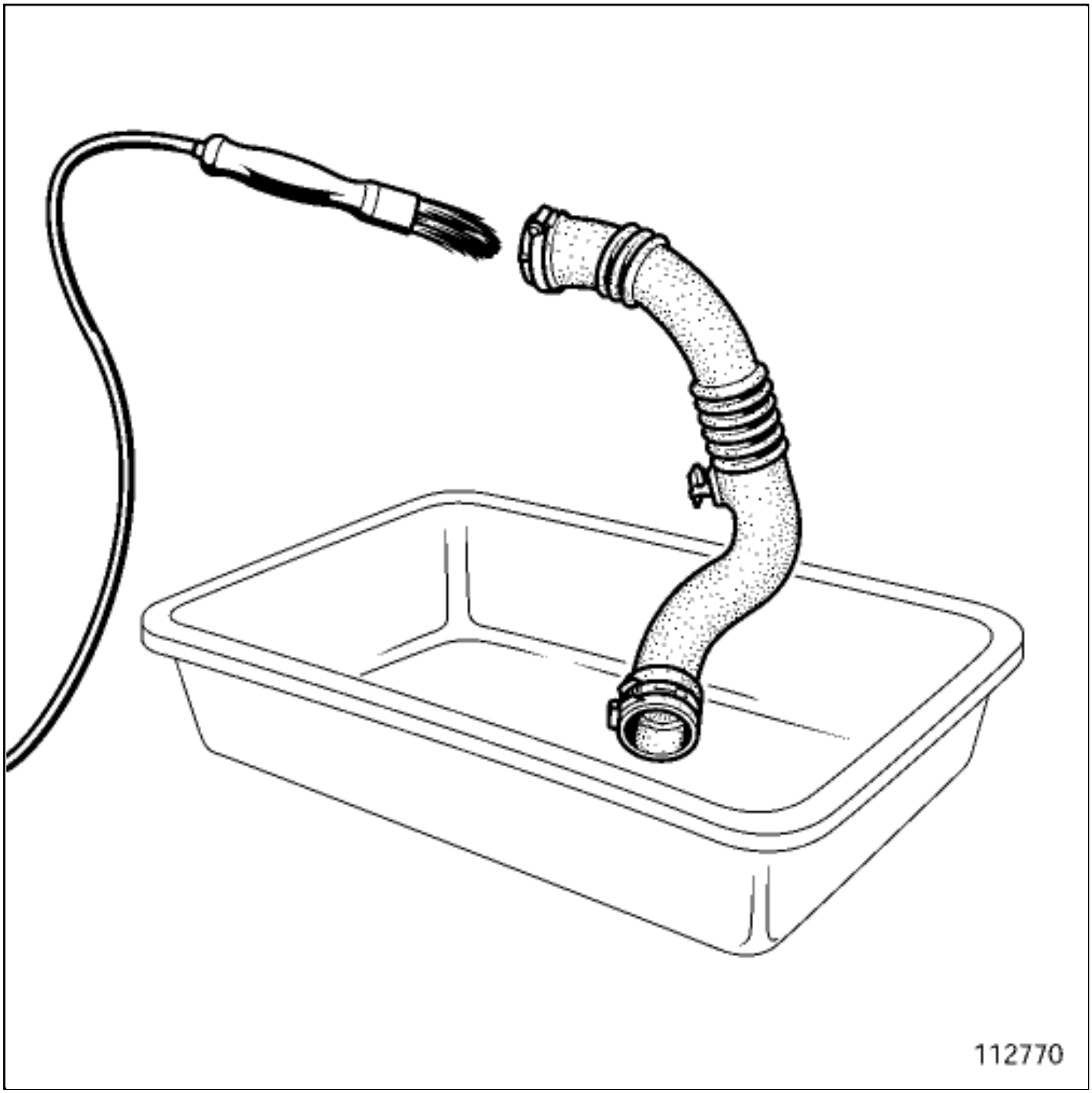
Check that there are no metal objects inside the air flowmeter(2) .

Remove:

- the air pipe (between the air filter unit and the turbocharger)(A) ,
- the air pipe(B) (between the turbocharger and the intercooler).

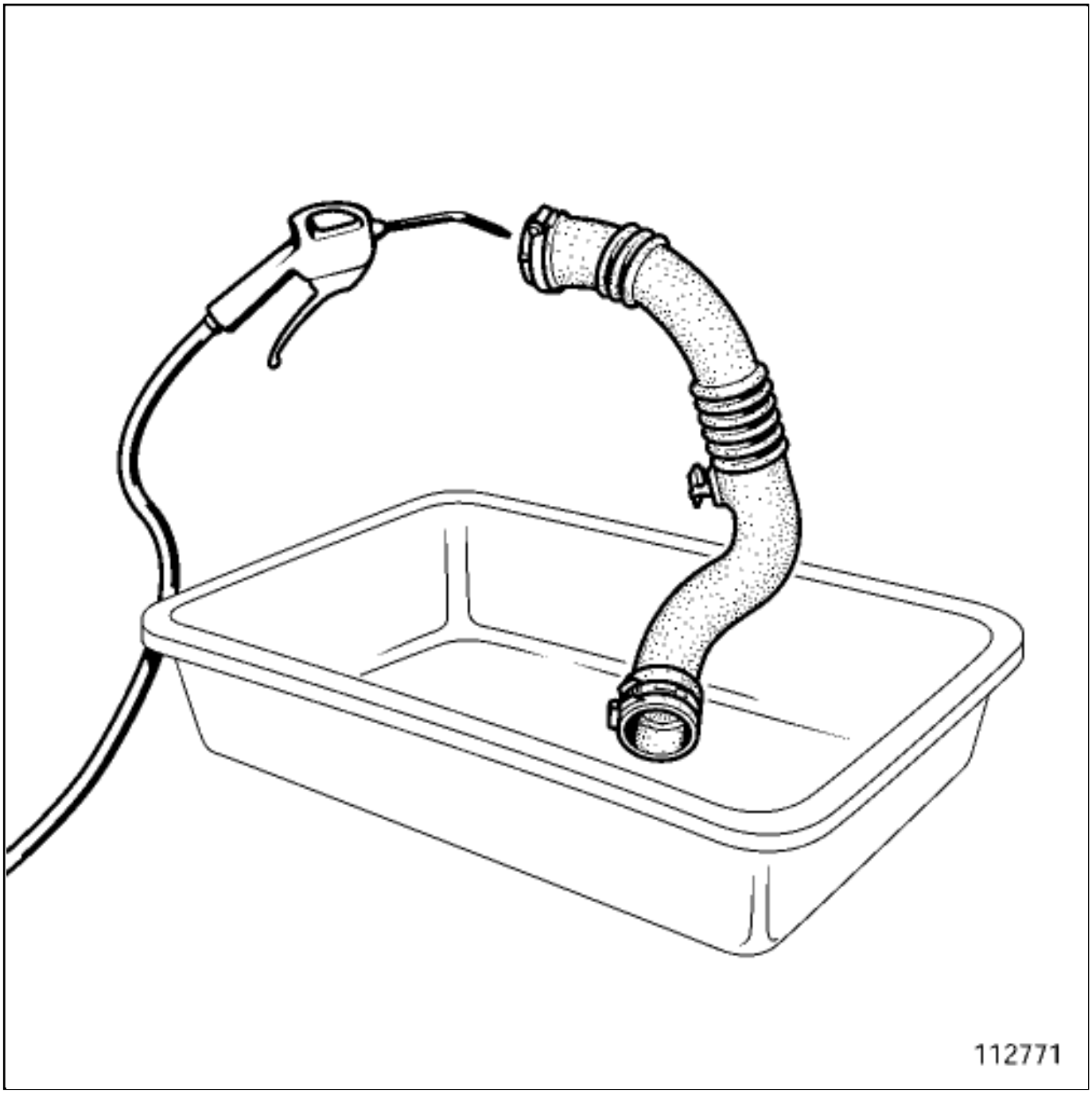


- For air pipes comprising several components:
  - mark(**10**) the fitting position of each component,
  - separate all the components.



One by one, clean the pipes removed with the parts washer:

- brush as much of the inside of the pipe as possible (only use brushes with plastic bristles),
- wash plenty of cleaning product from the cleaning station through the pipe,
- allow the cleaned pipe to drain by standing it upright,
- ensure the cleaning product has drained out completely (check areas where liquid may be retained, e.g. gaiters, resonators etc.).



Dry the pipes one by one using a compressed air spray gun.

- For pipes comprising several components:
  - assemble the components, taking note of their correct fitting position(**10**) .

- Refit:
  - the air pipe(between the air filter unit and the turbocharger)(**A**) ,
  - the air pipe(**B**) (between the turbocharger and the intercooler).

Refit the intercooler, if fitted to the vehicle.

5. LUBRICATION CIRCUIT**: INSTRUCTIONS FOLLOWING MECHANICAL DAMAGE TO THE TURBOCHARGER

Note:

(**) These instructions relating to the lubrication circuit must always be followed in all cases of mechanical damage as listed above.

Drain the engine oil Engine oil: Draining - Refilling .

Replace the oil filter.

Only fill the engine with a suitable oil type Engine oil: Specifications (TN 6013A, 04A, Lubricants).

6. GENERAL INSTRUCTIONS TO BE FOLLOWED WHEN REMOVING A TURBOCHARGER

Always replace:

- all seals that have been removed,
- all fittings that have been removed.

-the oil supply pipe:

■if the pipe is blocked, even partially (due to scale, carbonised oil etc.),■if the pipe is fitted with self-retaining seals.

-the oil return pipe:

■if the pipe is blocked, even partially (due to scale, carbonised oil etc.),■if the pipe is fitted with self-retaining seals.

CAUTION

Failure to observe the following instructions will lead to the turbocharger breaking again.

Metal objects may enter the oil and air circuits as a result of a broken turbocharger.

CAUTION

Failure to observe the following procedure may lead to destruction of the turbocharger.

When starting the engine:

- do not accelerate,
- allow the engine to run for 1 minute, the time taken for the oil circuit pressure to increase (until the oil pressure warning light on the instrument panel goes out),
- accelerate several times at no load,
- check the air circuit and the oil circuit for leaks.

XSL version : 3.02 du 22/07/11

TYRE PRESSURE MONITOR RECEIVER: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

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 **Tyre pressure monitor: Precautions for the repair**)
- Vehicle: Precautions for the repair

WARNING

To avoid an unintentional restart of the engine, before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions (see Vehicle: Precautions for repair).

REMOVAL

1. REMOVAL PREPARATION OPERATION

Disconnect the battery(see **Battery: Removal - Refitting**) .

Remove:

- the gloveboxGlovebox: Removal - Refitting ,
- the passenger front al airbagPassenger's frontal airbag: Removal - Refitting .

2. REMOVAL OPERATION

Disconnect the tyre pressure monitor receiver.

Unclip the tyre pressure monitor receiver by lifting it.

Remove the tyre pressure monitor receiver.

REFITTING

- Proceed in the reverse order to removal.

Repair-13x05x03x04-01x37-1-3-1.xml

XSL version : 3.02 du 22/07/11

TYRES: REMOVAL - REFITTING

parts always to be replaced:
Tyre valve

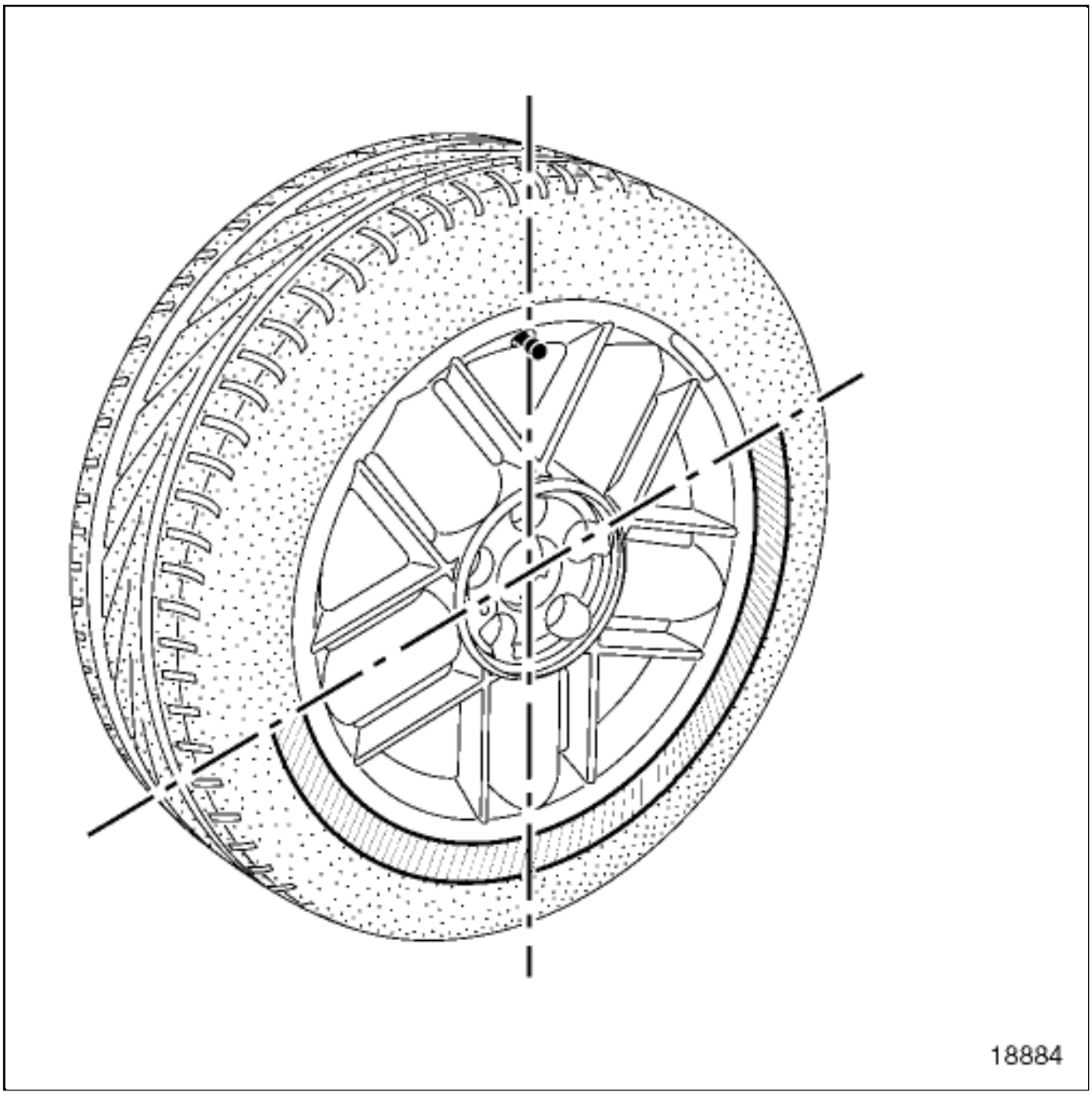
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

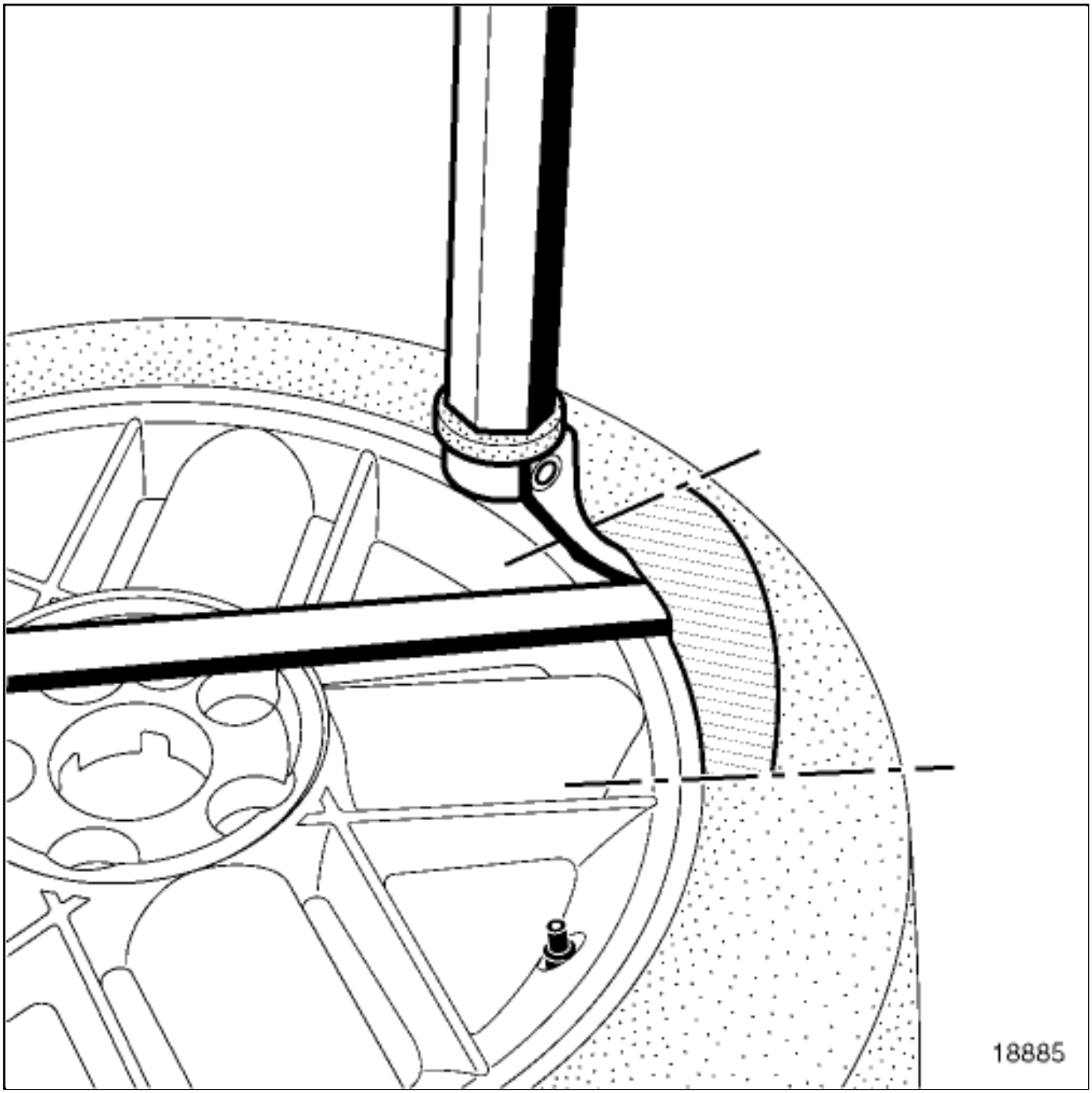
- Remove:
  - the wheel in question(see 35A, Wheels and tyres, Wheel: Removal - Refitting) ,
  - the balance weights,
  - the valve mechanism.

2. OPERATION FOR REMOVAL OF PART CONCERNED



Detach:

- the bead from the outside of the tyre, starting with the side opposite the valve,
- the bead from the inside of the tyre.



- Position the tyre lever approximately 15 cmfrom the valve on the outside of the wheel rim in order to remove the exterior bead from the tyre.

- Remove the exterior bead of the tyre, finishing at the valve.

- Position the tyre lever approximately 15 cmfrom the valve on the outside of the wheel rim in order to remove the bead from inside the tyre.

- Remove the interior bead of the tyre, finishing at the valve.

REFITTING

1. REFITTING PREPARATION OPERATION

- parts always to be replaced: Tyre valve .

- Lubricate the two tyre beads correctly using the tyre paste(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

2. REFITTING OPERATION FOR PART CONCERNED

- Engage the lower tyre bead approximately 15 cmafter the valve.
- Finish fitting the tyre at the valve.
- Fit the exterior bead approximately 15 cmafter the valve using the tyre lever.
- Inflate the tyre to 3.5 barto press the tyre beads against the wheel rim.

3. FINAL OPERATION

- Refit the valve mechanism.
- Inflate the tyre to the recommended pressure(see **Tyre pressure: Identification**) .

Note:

It is not necessary to drive the vehicle before and after a new wheel is balanced.

- Balance the wheel(see 35A, Wheels and tyres, Wheel: Balancing) .
- Refit the wheel in question(see 35A, Wheels and tyres, Wheel: Removal - Refitting) .

UCH: REMOVAL - REFITTING

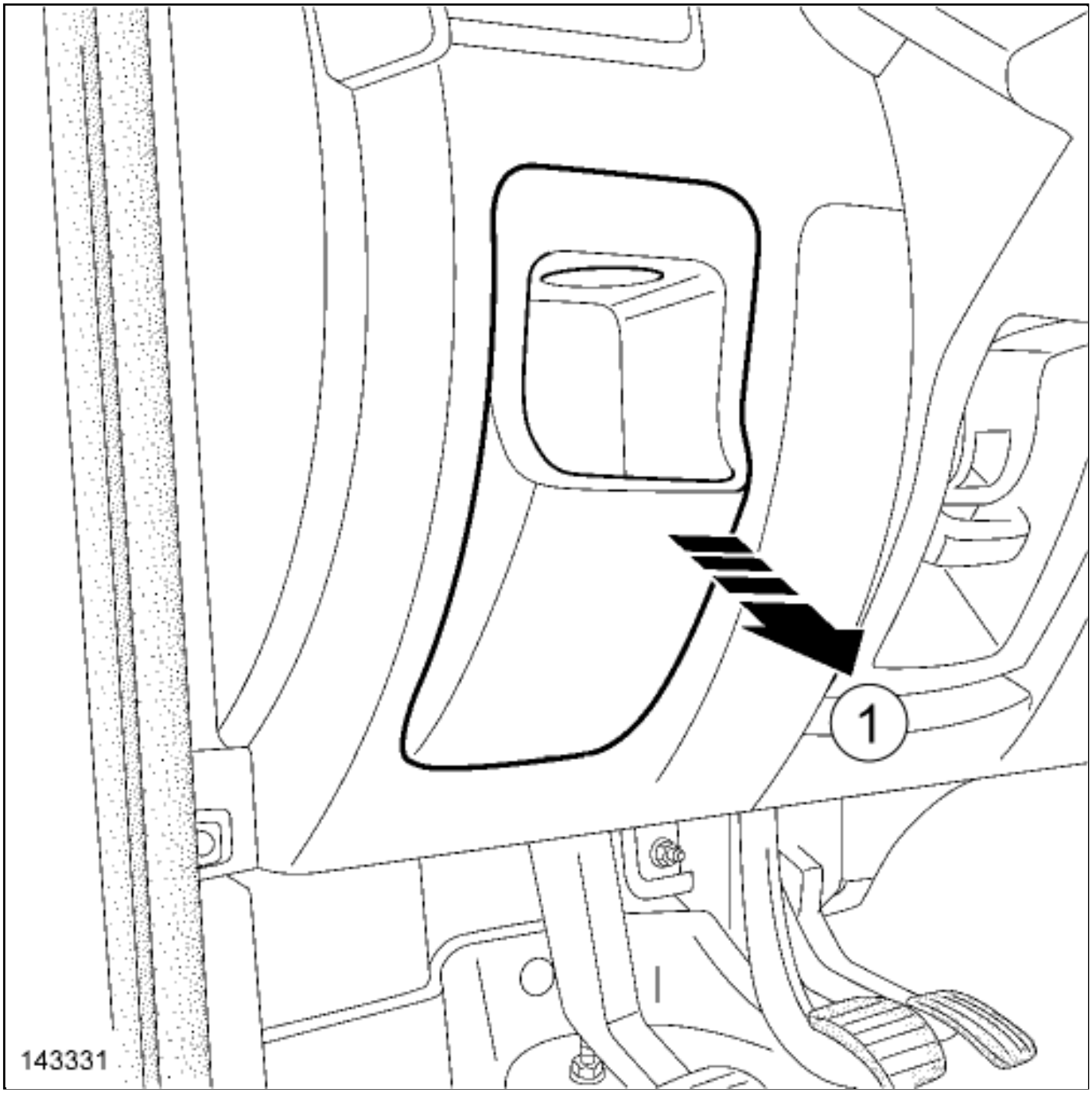
Note, one or more warnings are present in this procedure

Equipment required
Diagnostic tool

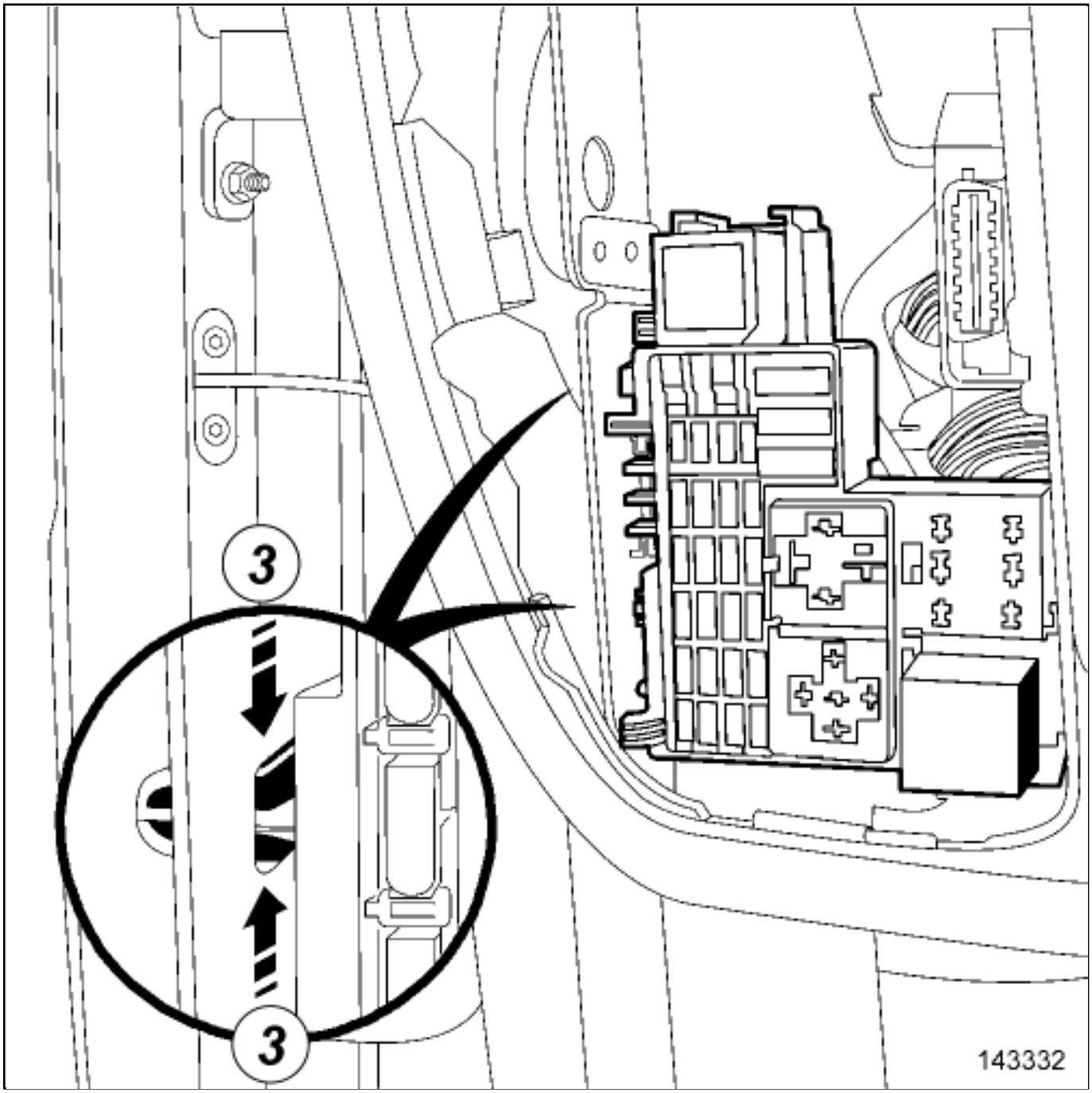
REMOVAL

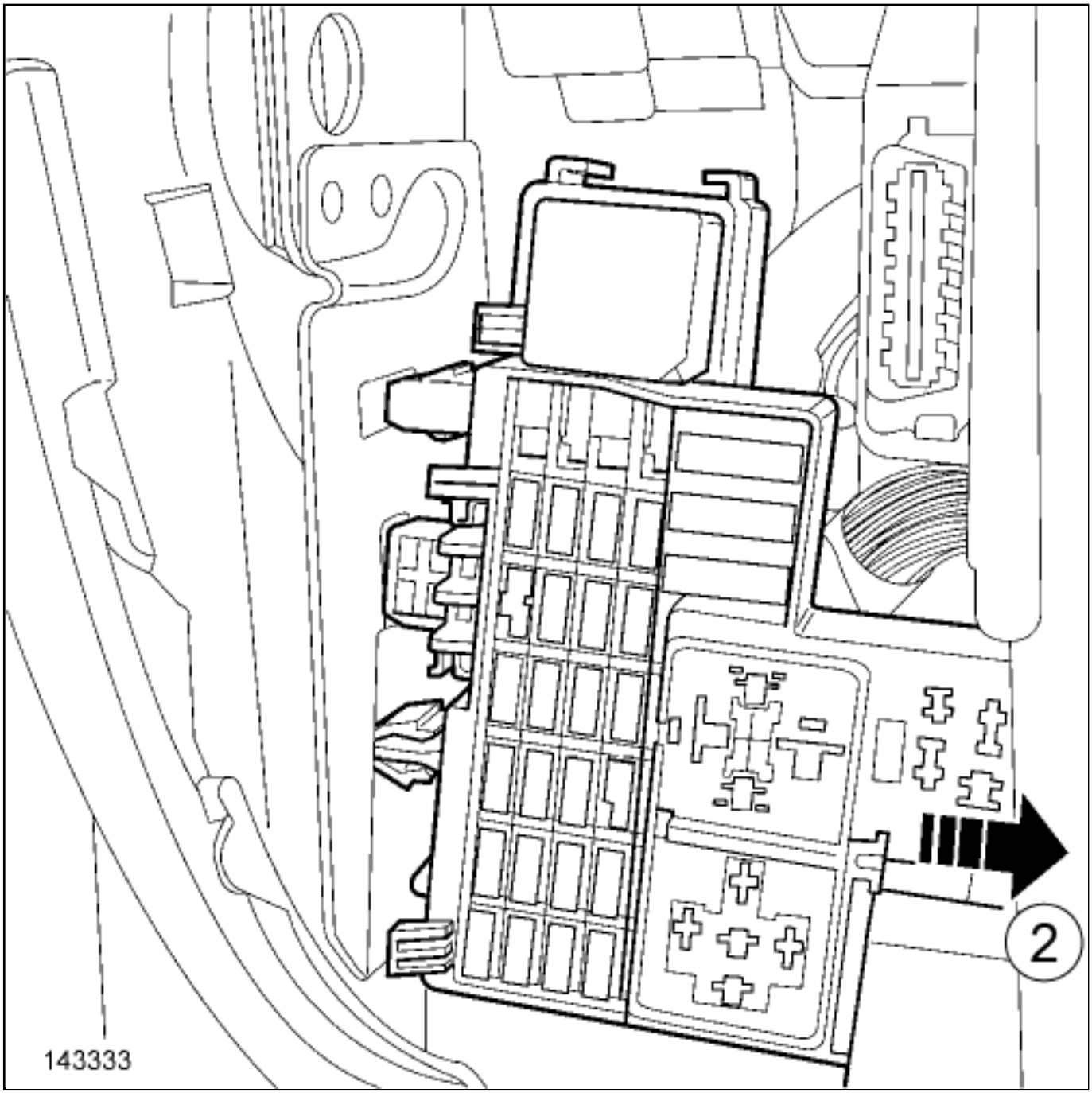
1. REMOVAL PREPARATION OPERATION

- In the event of replacement, apply the Before repair procedure using the Diagnostic tool:
  - connect the Diagnostic tool,
  - select "UCH" ,
  - go to repair mode,
  - display the "before/after repair procedure" for the computer selected,
  - carry out the operations described in the "Before repair procedure" section.
- Switch off the ignition.
- Disconnect the batteryBattery: Removal - Refitting .

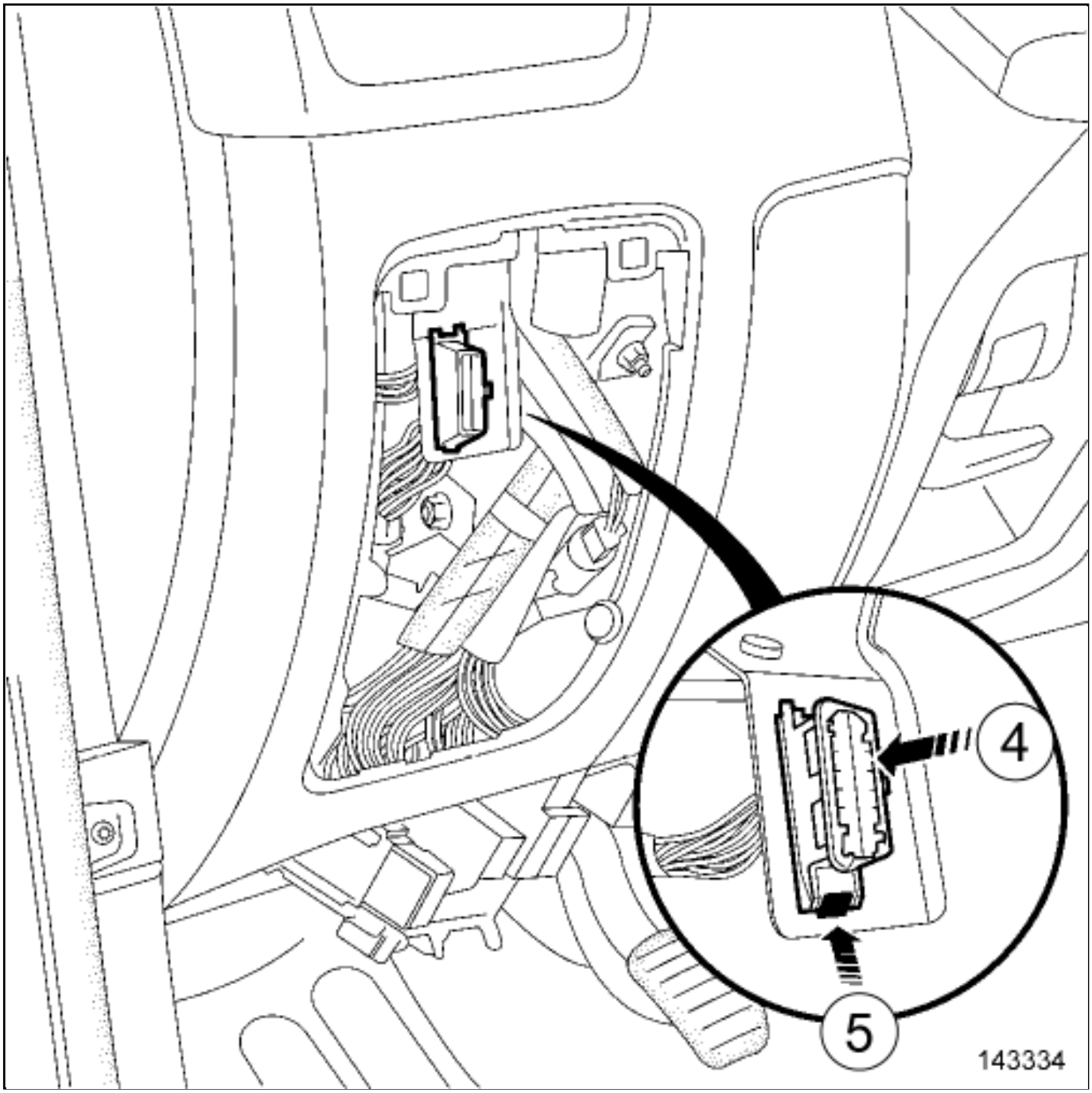


- Remove the access flap to the passenger compartment fuse and relay box by(1) .


3
3
143332



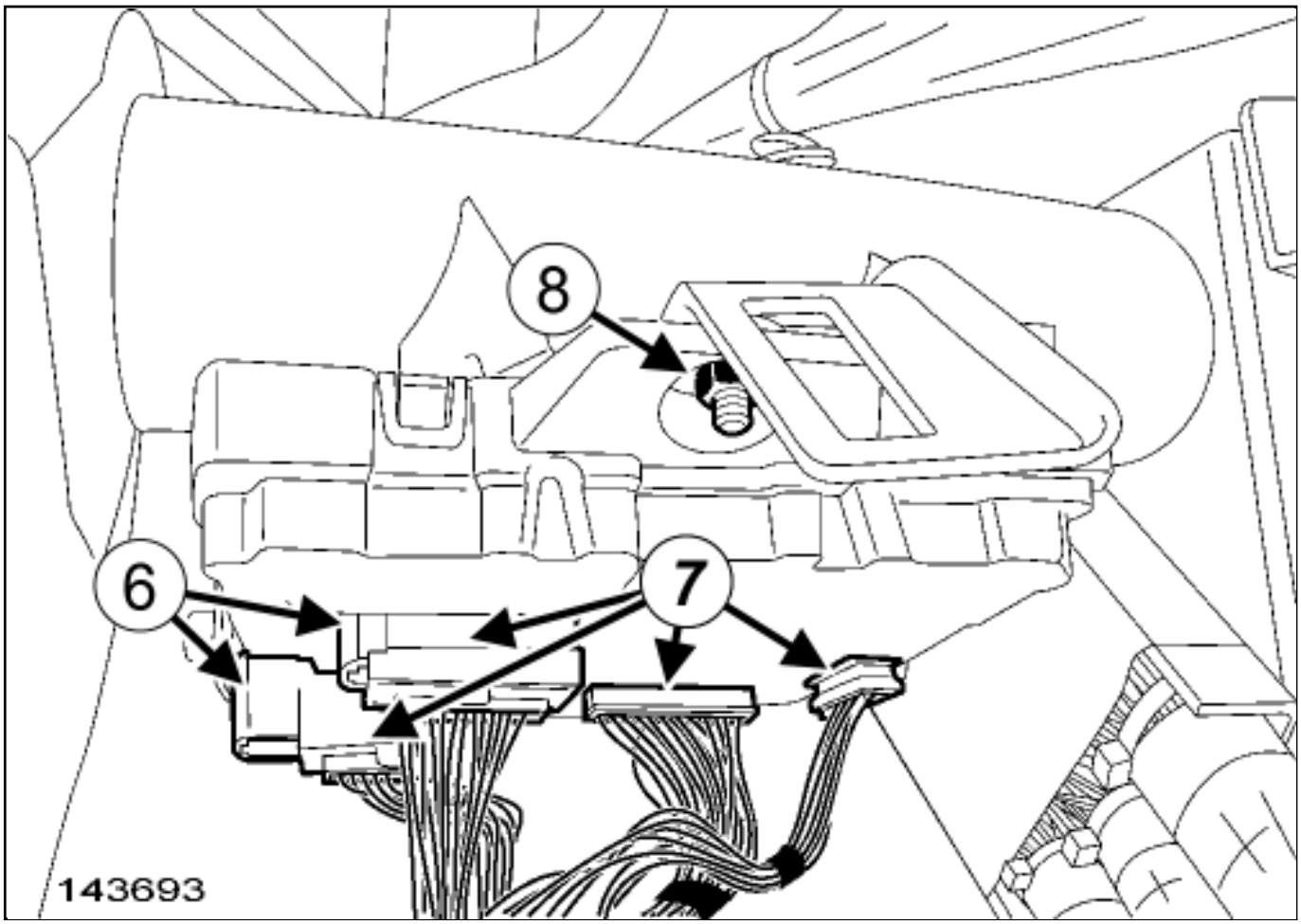
- Remove the passenger compartment fuse and relay box at(2) by pressing on the clips(3) .
- Move aside the passenger compartment fuse and relay box.



Remove the diagnostic socket at(4) by pressing on the clip(5) .

Move aside the diagnostic socket.

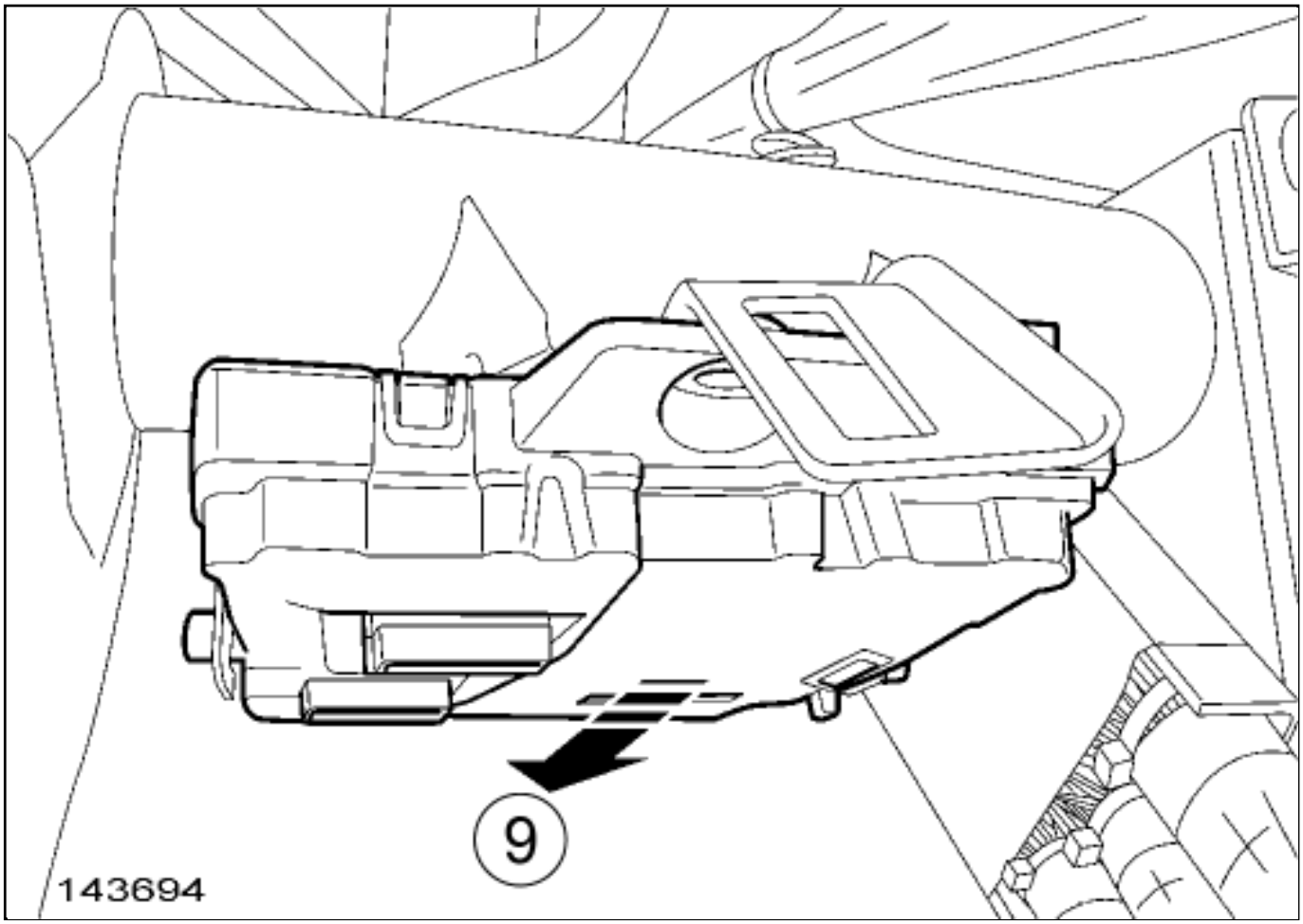
2. REMOVAL OPERATION



CAUTION

To prevent any risk of noise, premature wear, short circuits, etc. after the refitting operation, mark the wiring routing and how to connect the connectors.

- Mark the wiring routing.
- Unlock the connectors(6) .
- Disconnect the connectors(7) from the UCH.
- Remove the nut from the UCH.



Remove the UCH by(9) .

Extract the UCH through the access flap to the passenger compartment fuse and relay box.

REFITTING

1. REFITTING OPERATION

Proceed in the reverse order to removal.

CAUTION

To guarantee a good electrical connection, make sure that the wiring does not place any stress on the connectors or the surrounding components.

2. FINAL OPERATION

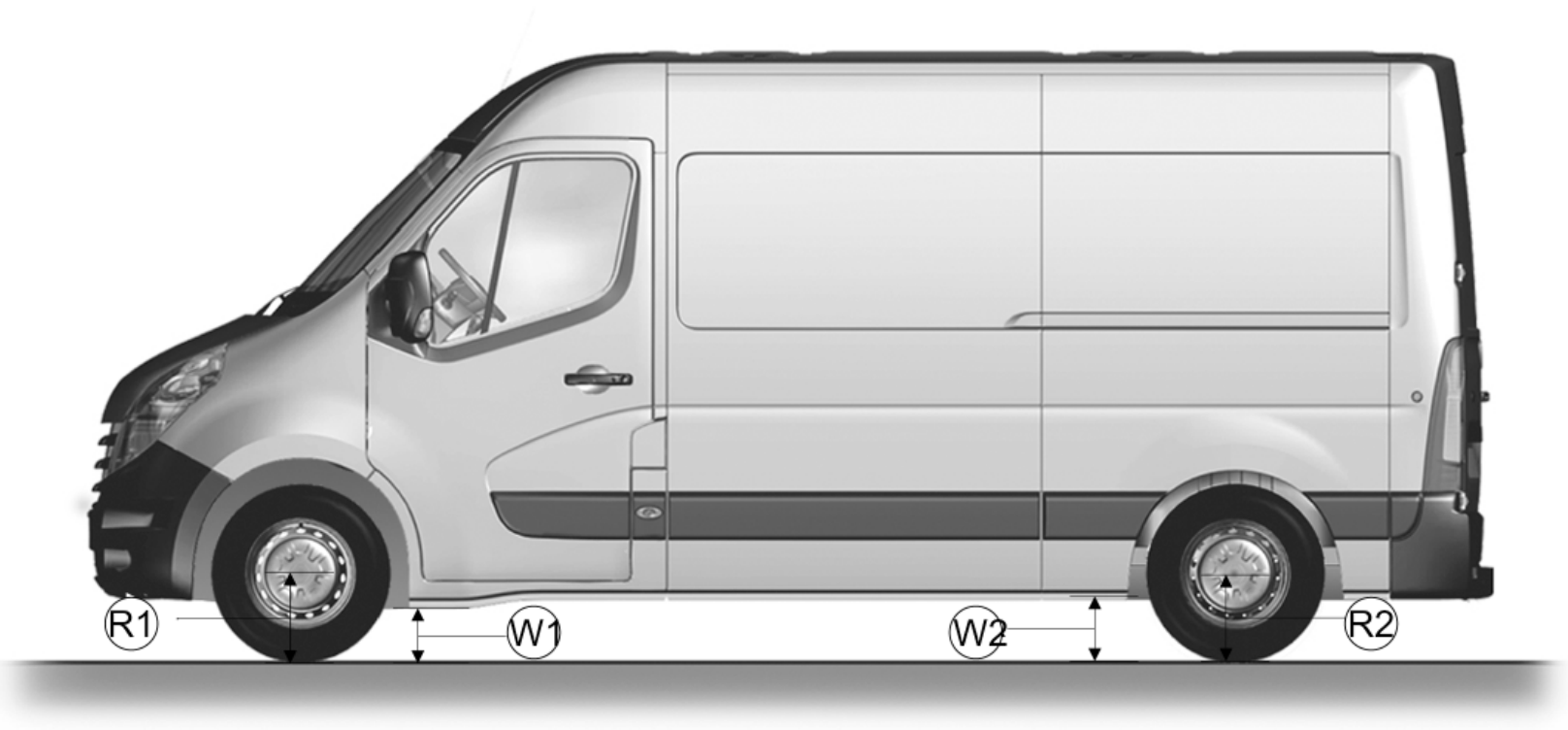
Connect the battery Battery: Removal - Refitting .

In the event of a replacement, apply the after repair procedure using the Diagnostic tool:

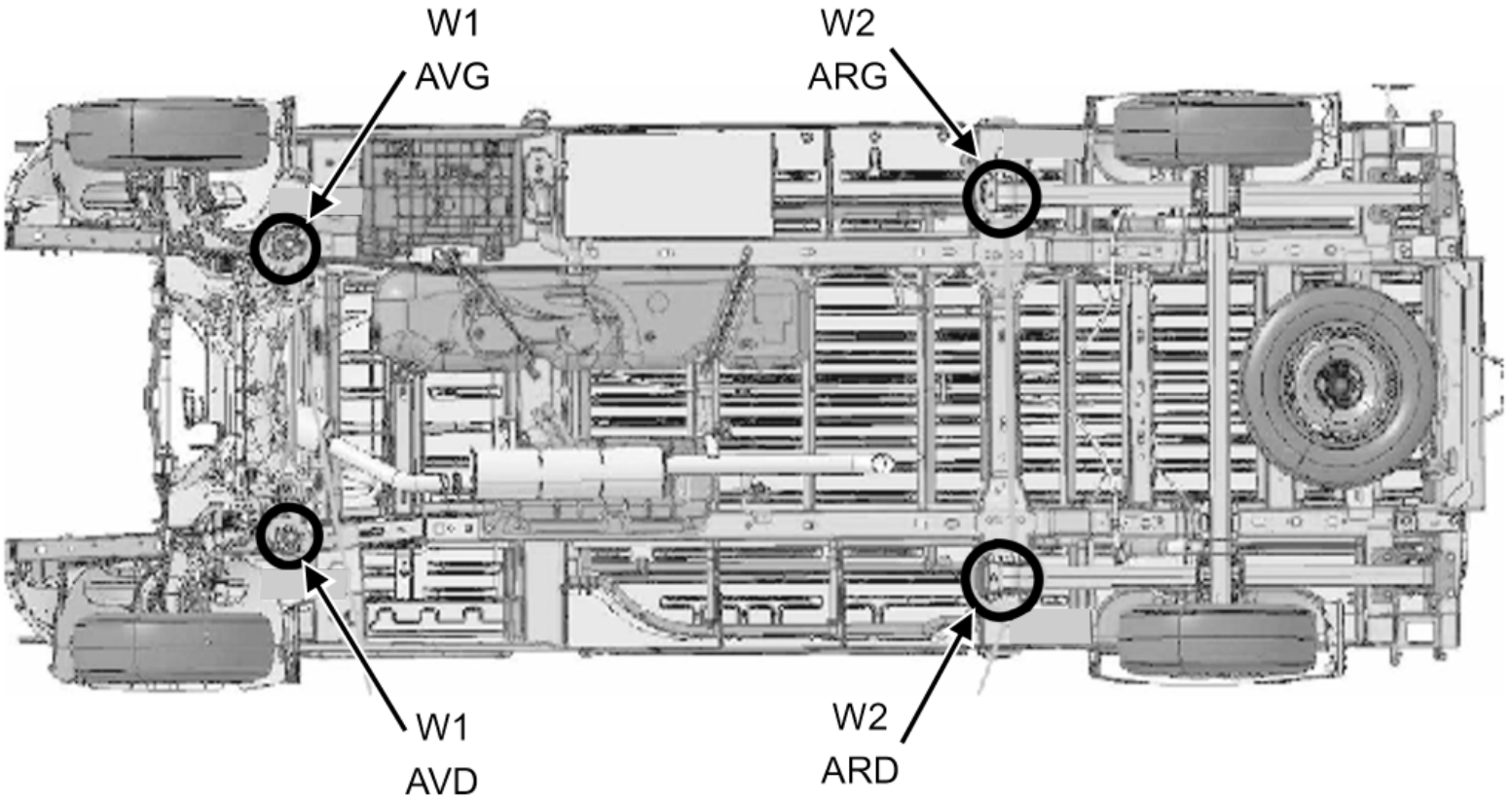
- connect the Diagnostic tool,
- select "UCH" ,
- go to repair mode,
- display the "before/after repair procedure" for the computer selected,
- carry out the operations described in the "After repair procedure" section.

UNDERBODYHEIGHTS:ADJUSTMENTVALUE

1. MEASURING POINTS



150119



150118

(R1) Distance between the ground and the front wheel shaft

(R2) Distance between the ground and the rear wheel shaft

(W1) Height between the ground and the bolt head of the front axle subframe

(W2) Height between the ground and the front bolt shaft of the suspension spring

2. MEASURING PROCEDURE

Note:

For measurements(W1) and (W2) , take into account the height difference between the plates and the lift.

Measure the heights:

- R1,
- R2,
- W1 right-hand and left-hand,
- W2 right-hand and left-hand.

Note:

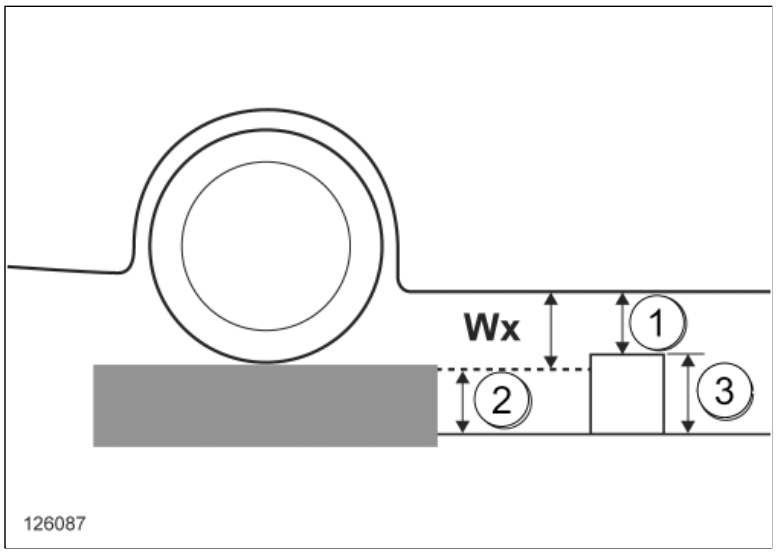
The value of Wx to be entered into the geometry bench is the average of the W1 heights, right-hand and left-hand and of the W2 heights, right-hand and left-hand.

Specific case:

Note:

If the measuring points are located in empty space (between the rails of the lift), use a bar.

1- PLATE HIGHER THAN THE LIFT:



Measure the heights(1), (2) and (3).

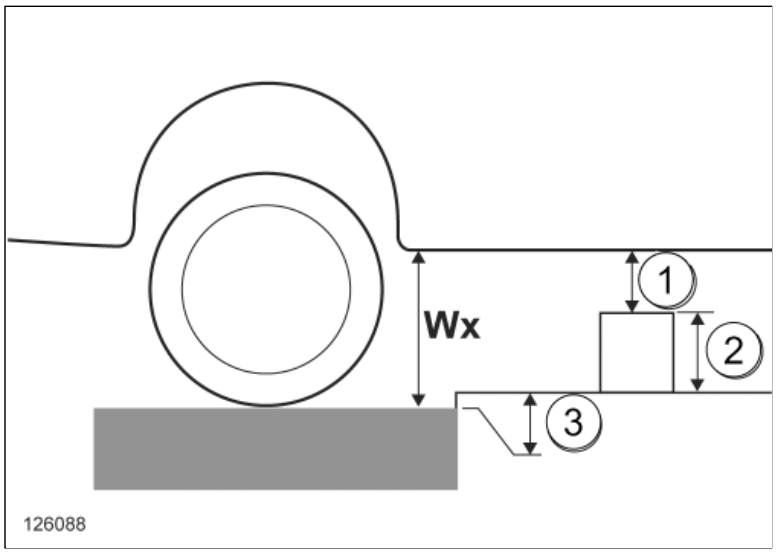
Example: (1) =13 cm, (2) =8 cm,(3) =10 cm.

Calculate the height Wx:

Wx = height(1) + height(3) - height(2),

Wx = 15 cm.

2- PLATE LOWER THAN THE LIFT:



Measure the heights(1), (2) and (3).

Example: (1) = 8 cm,(2) = 10 cm,(3) = 4 cm.

Calculate the height Wx:

Wx = height(1) + height(2) + height(3),

Wx = 22 cm.

3. VEHICLE IN RUNNING ORDER POSITION

VODM (Vehicle in working order) position:

- Tank full,
- Empty vehicle (without luggage, etc.).

1- WITH TYRE 235/65/R16

(W1) = 235 mm

(W2) = 406 mm

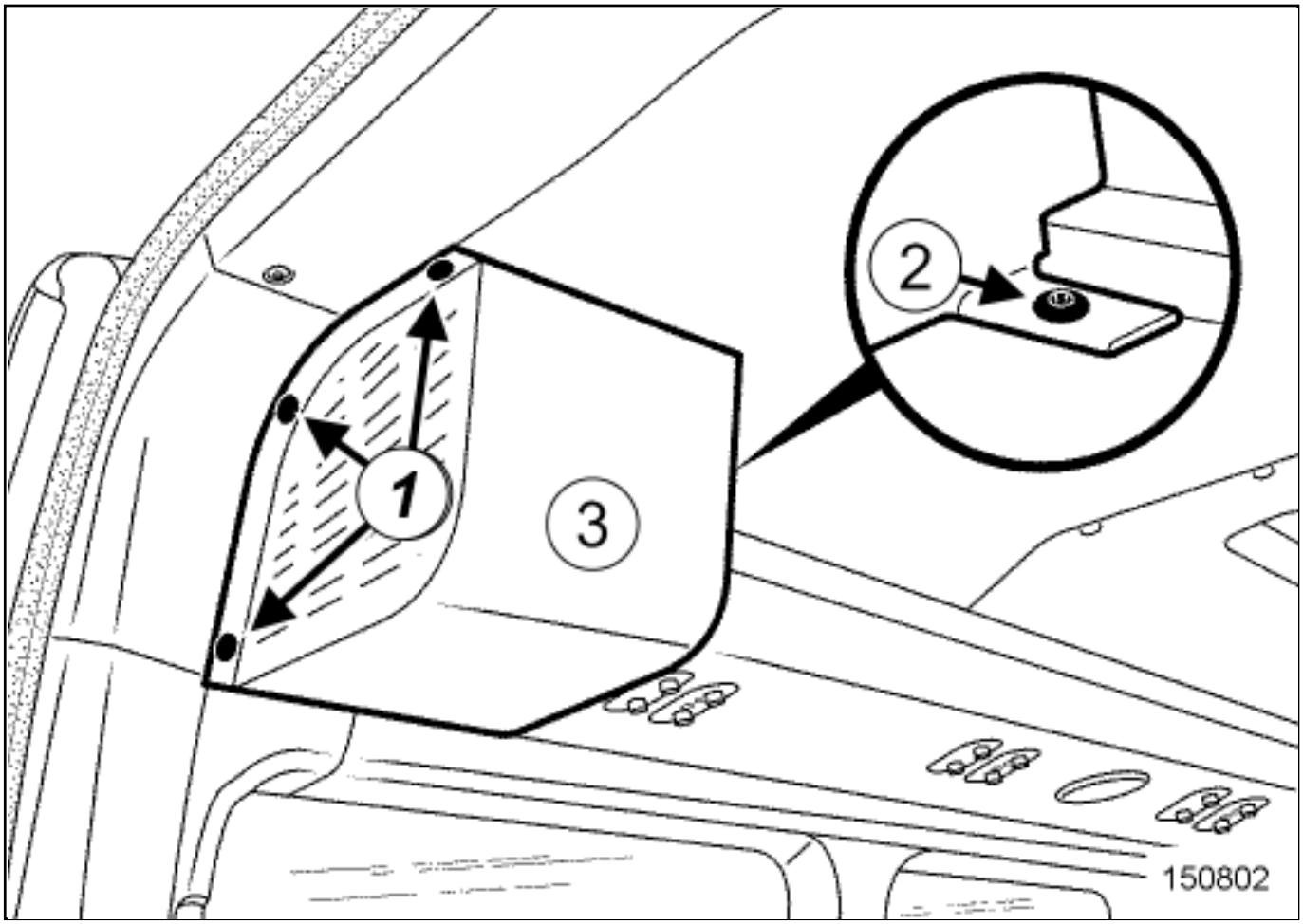
Repair-13x02x11-02x13-1-26-1.xml

XSL version : 3.02 du 22/07/11

UPPER BODY TRIM: REMOVAL - REFITTING

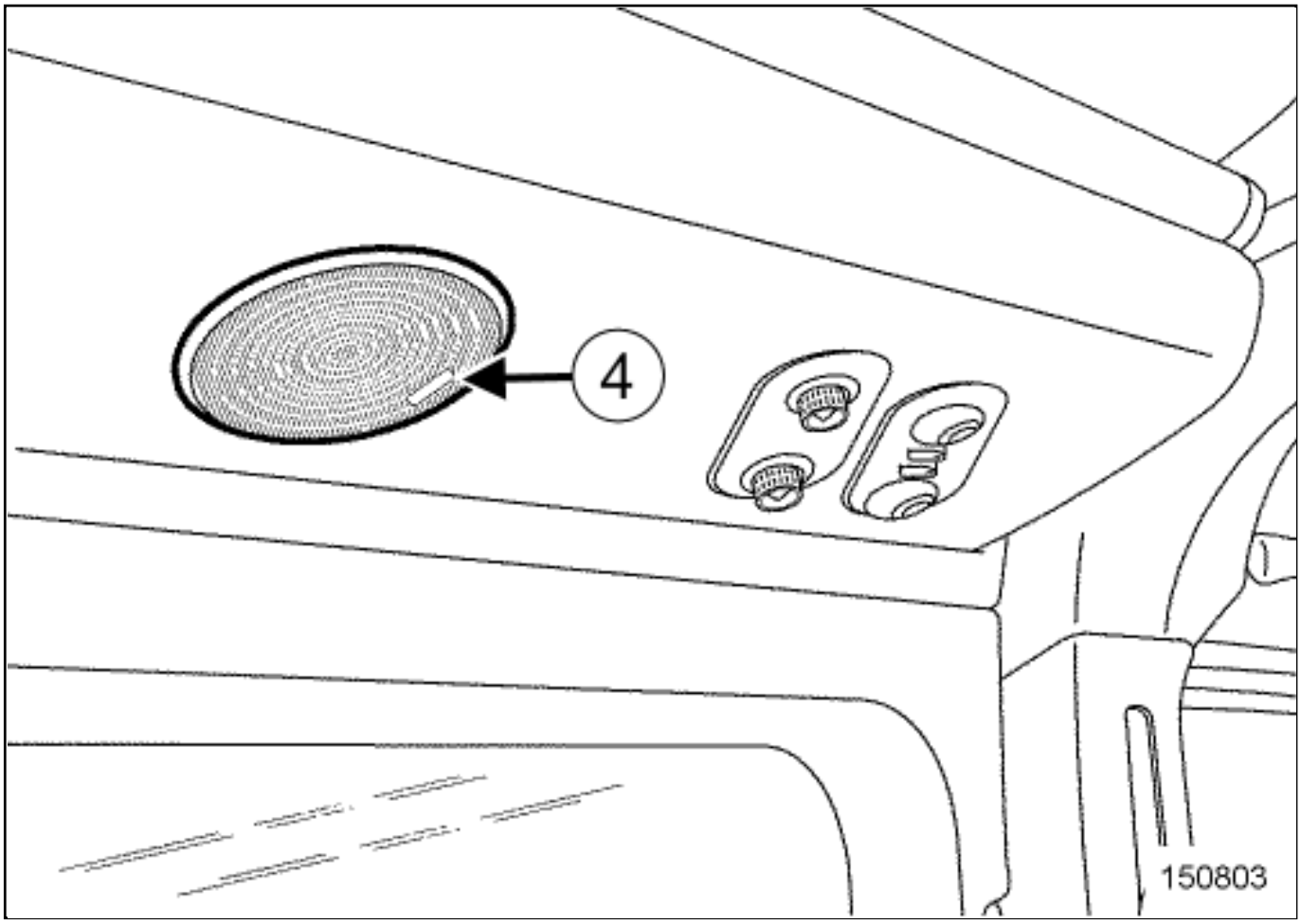
REMOVAL

1. REMOVAL PREPARATION OPERATION

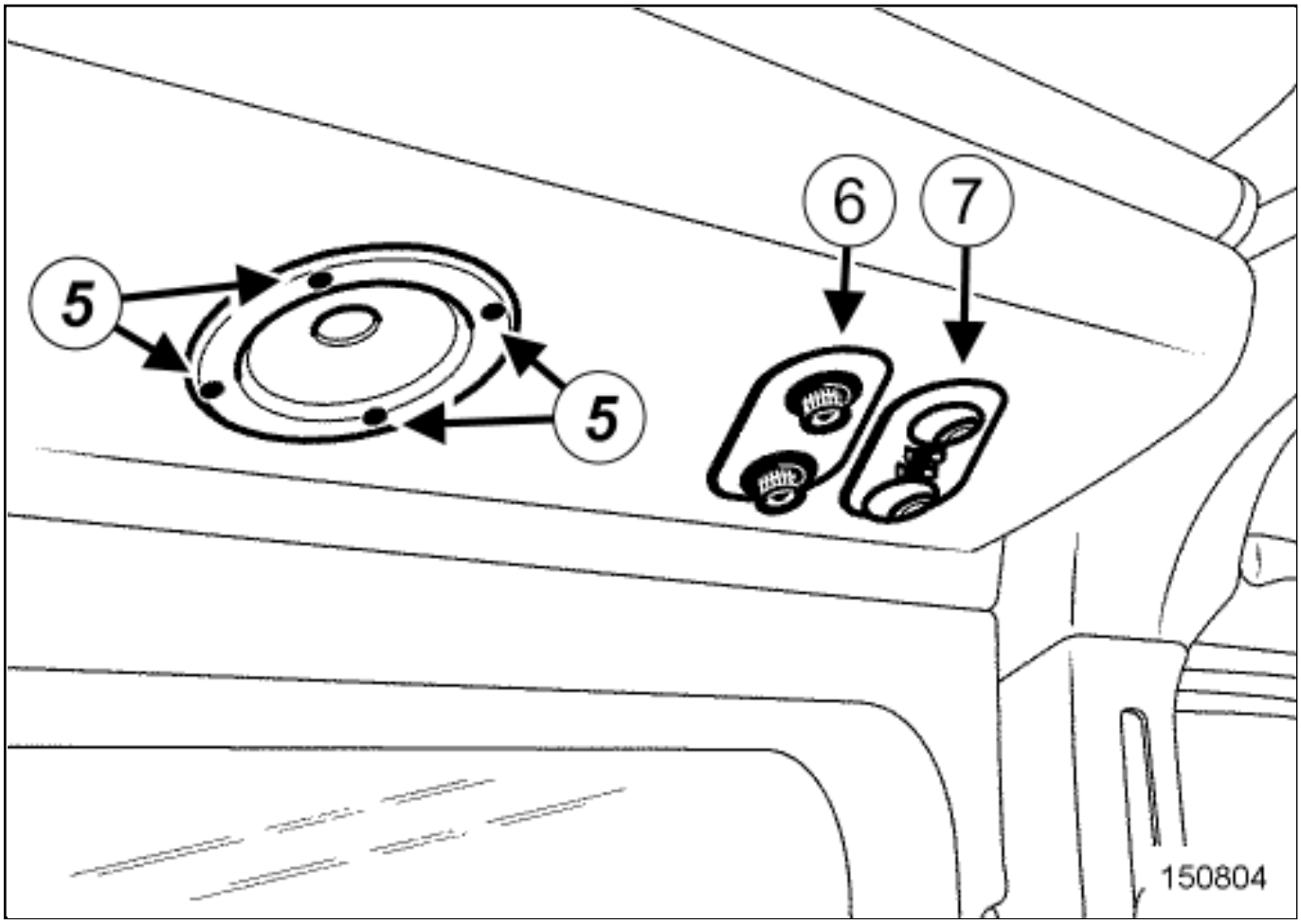


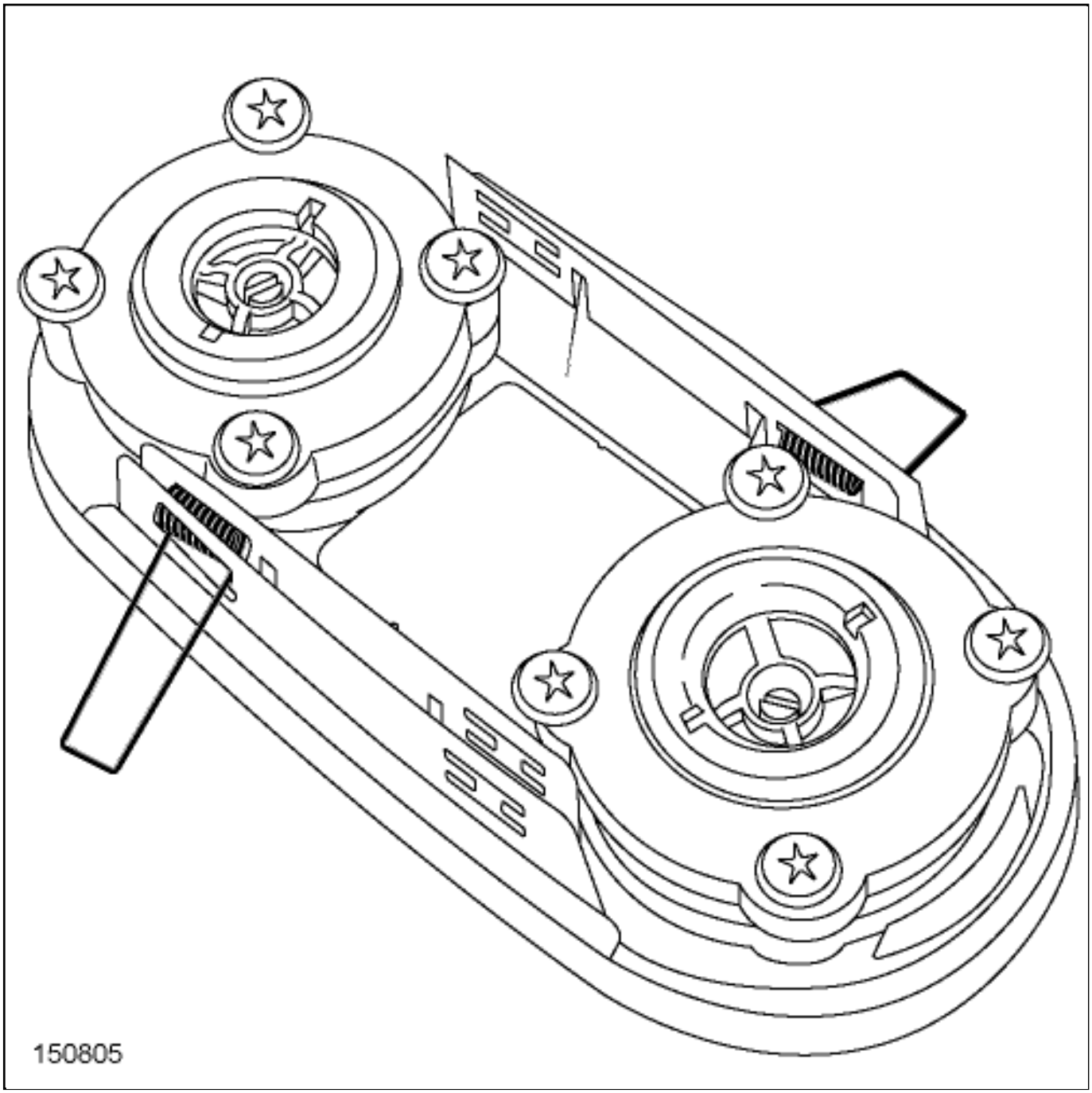
Remove:

- the clips(1) ,
- the bolt(2) ,
- the trim(3) ,
- the complete rear seatComplete rear seat: Removal - Refitting or the complete rear bench seat.



- Remove the speaker grilles(4) .

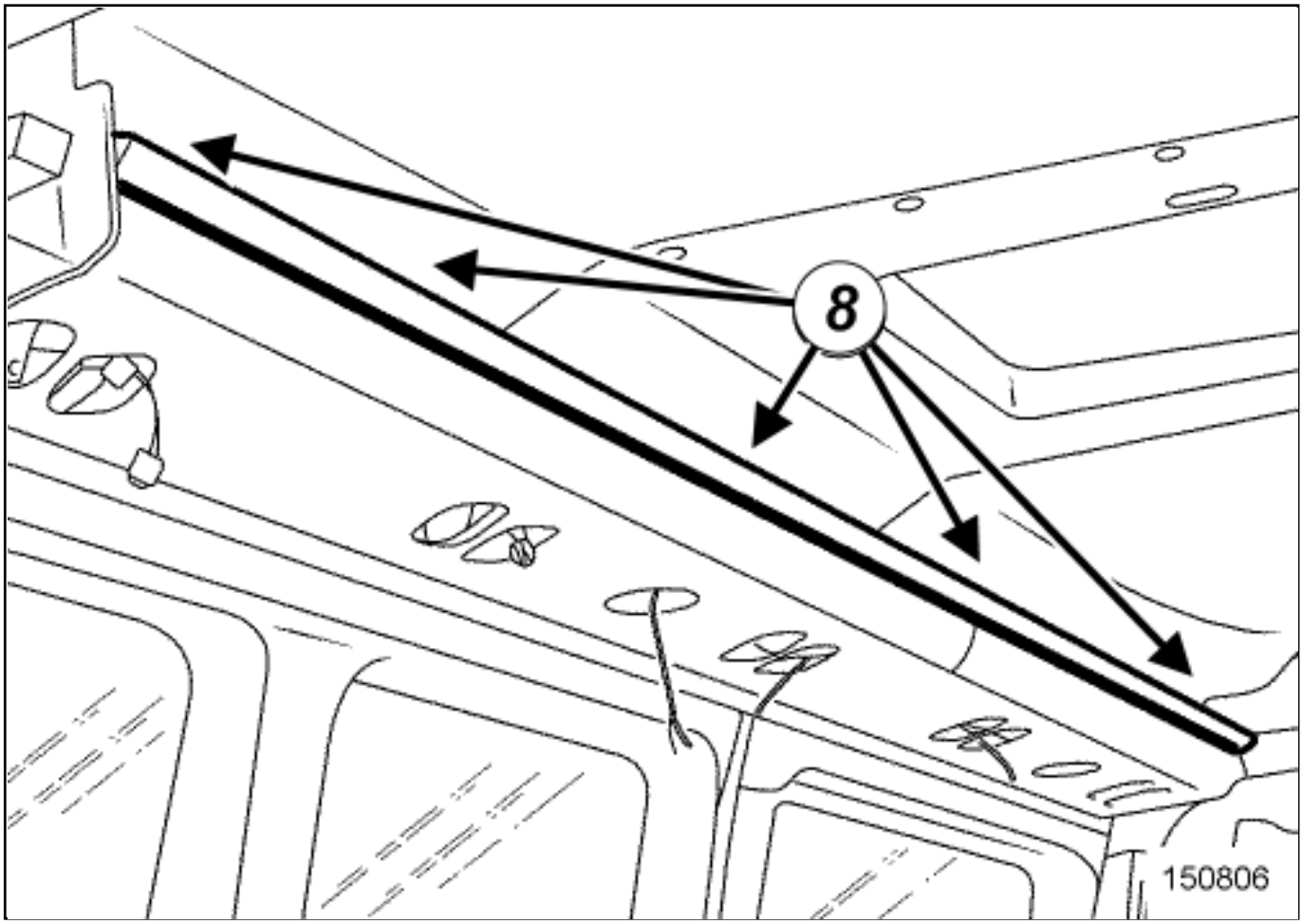

6
7
5
5
150804



Remove:

- the bolts(5) ,
- the speakers,
- the air vents(6) ,
- the light diffuser(7) .

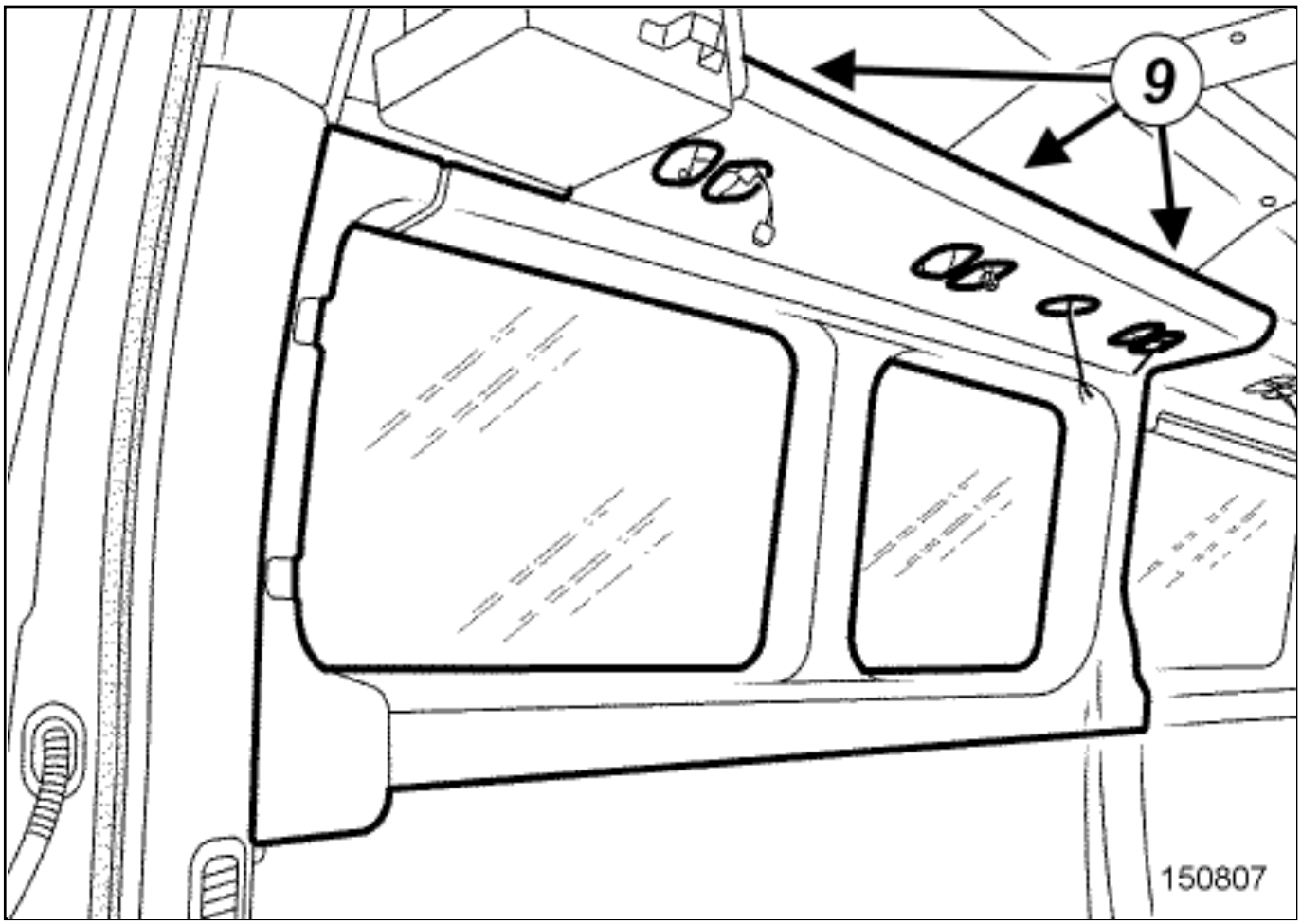
Disconnect the connectors.



Remove:

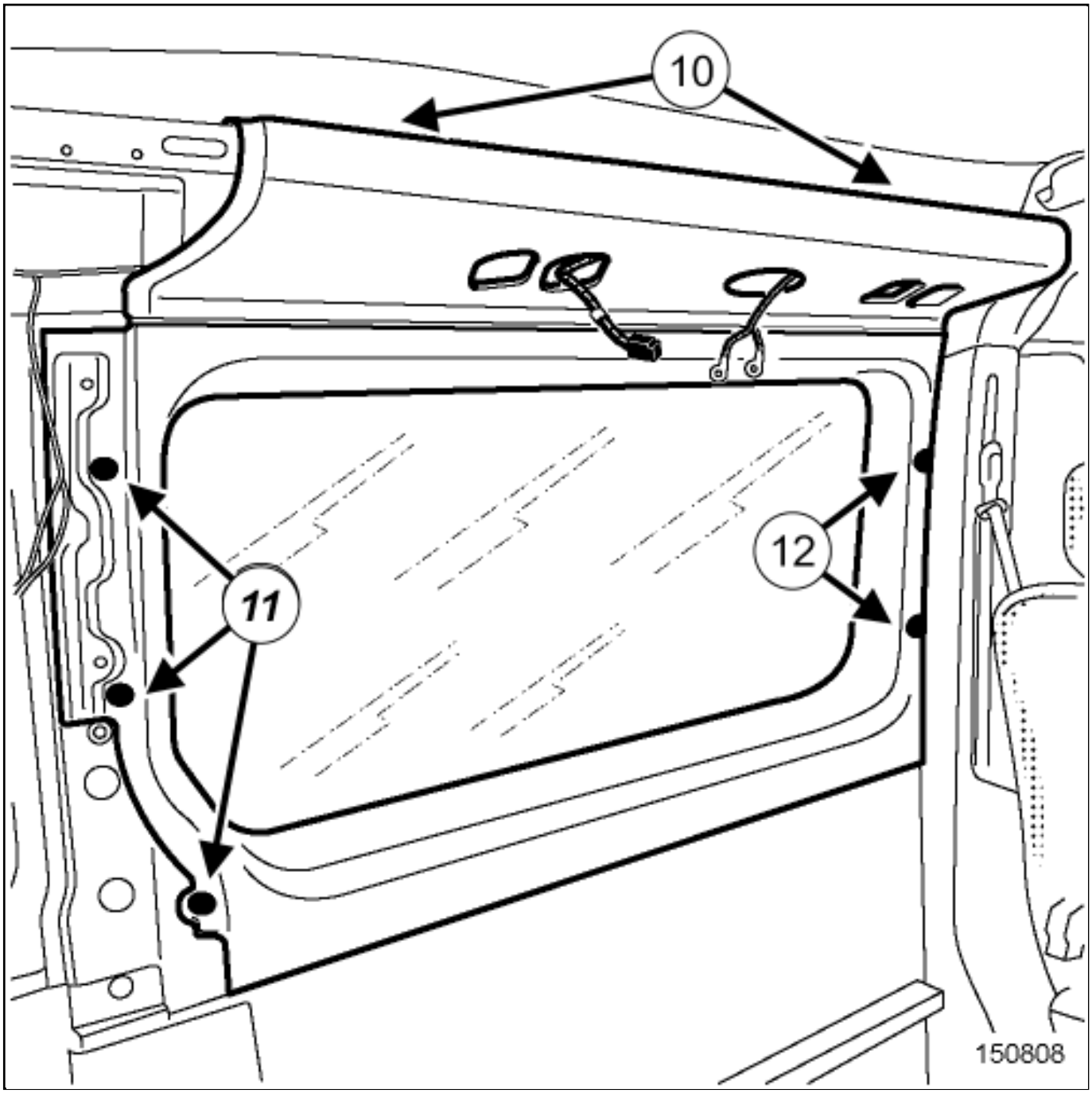
- the bolts(8) ,
- the clothes hook.

2. REMOVAL OPERATION



Remove the bolts(9) .

Unclip the upper body rear trim.

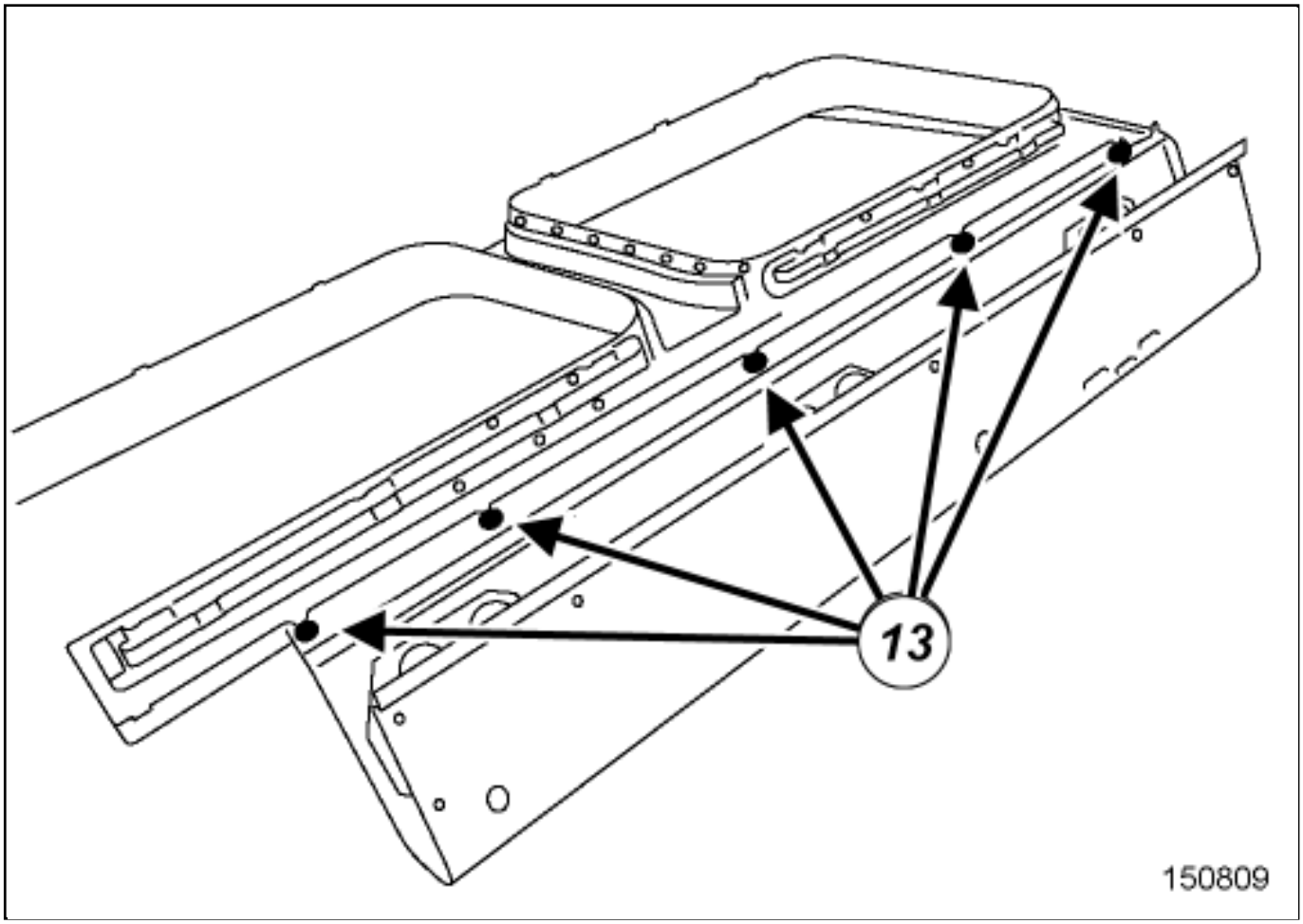


Remove:

- the bolts(10) ,
- the clips(11) .

Turn the clips(12) .

Unclip the upper body front trim.



Remove the bolts(13) .

Separate the upper body trims.

REFITTING

Proceed in the reverse order to removal.

VACUUM PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Cylinder head assembly: Exploded view**) (11A, Top and front of engine).

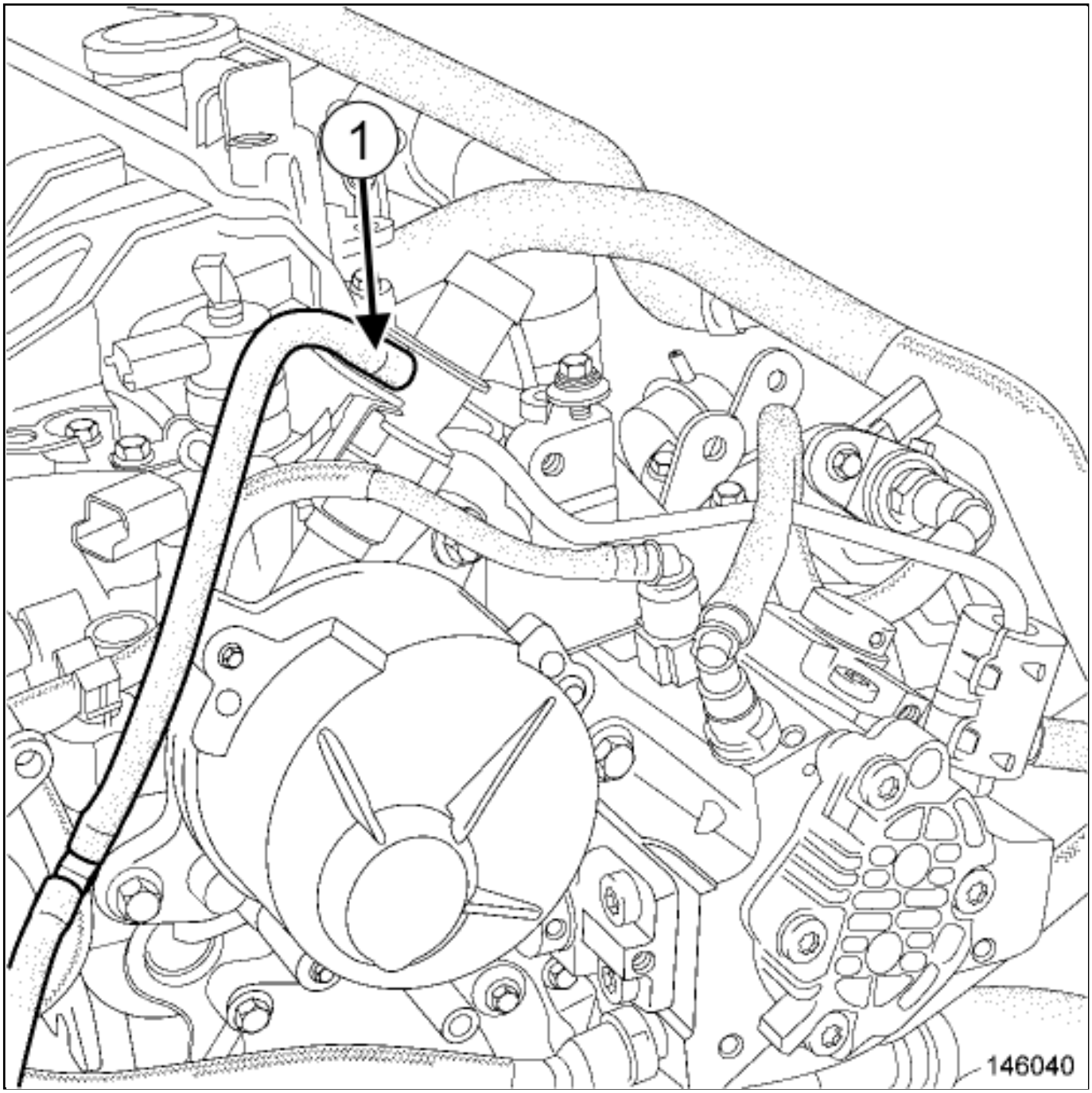
CAUTION

Prepare for the flow of fluid, and protect the surrounding components.

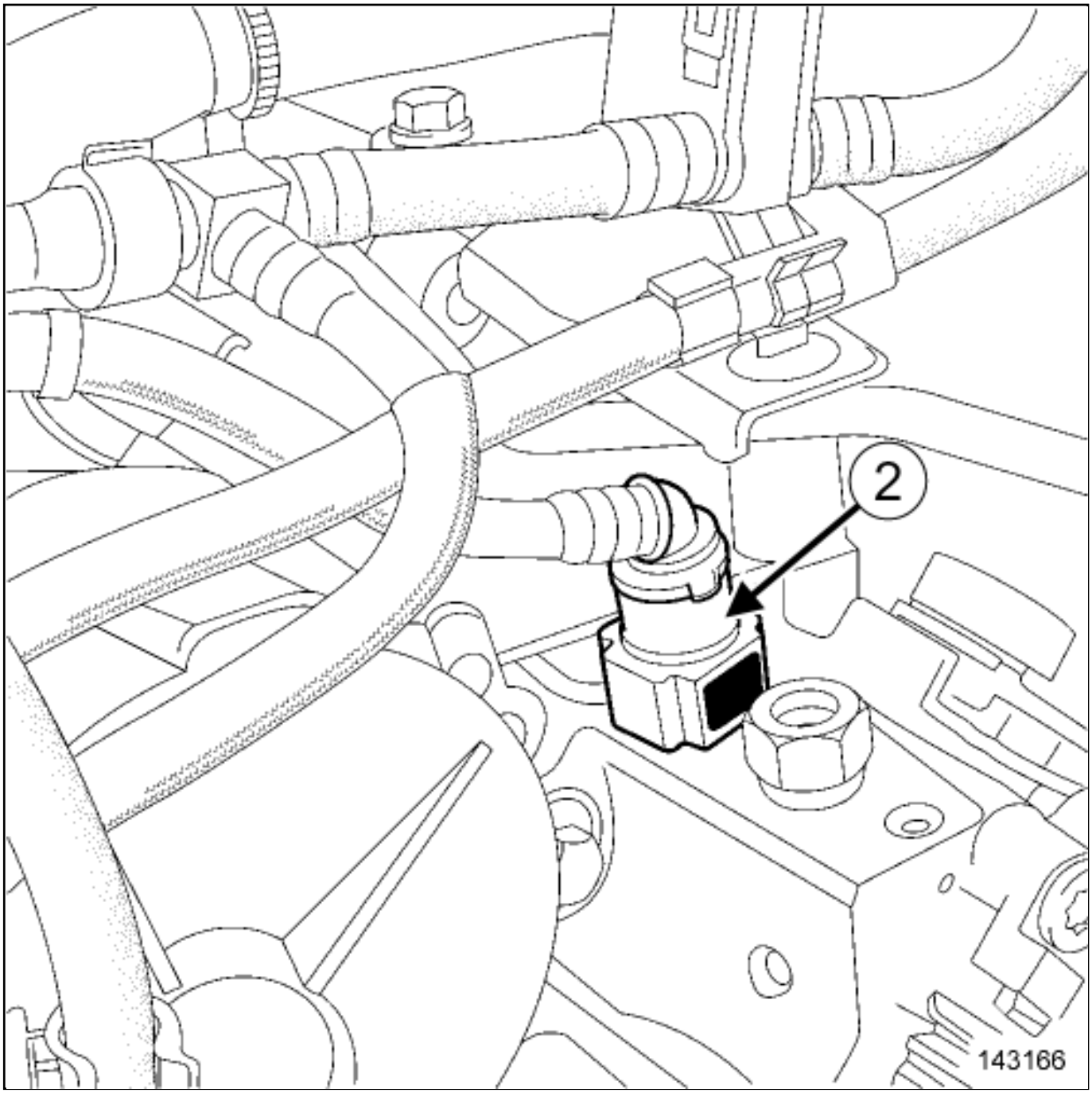
REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove the engine and gearbox assemblyAND (M9T) AND (PA0 OR PF6) M9T, PA0 PF6(10A, Engine and peripherals).
- Remove the high pressure pump protectorInjection assembly: Exploded view (13B, Diesel injection).



- Disconnect the vacuum pipe(1) from the vacuum pump.



- Disconnect the diesel return pipe(2) from the high pressure pump.

- Fit blanking plugs on the openings of:
  - the high pressure pump,
  - the diesel return pipe.

2. REMOVAL OPERATION

- Remove AND (M9T) M9T(11A, Top and front of engine):
  - the vacuum pump,
  - the vacuum pump seal.

REFITTING

1. REFITTING PREPARATION OPERATION

- Use SURFACE CLEANER(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the vacuum pump joint face on the cylinder head.

2. REFITTING OPERATION

- Proceed in the reverse order to removal.

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

VACUUM PUMP: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions(see **Vehicle: Precautions for the repair**)

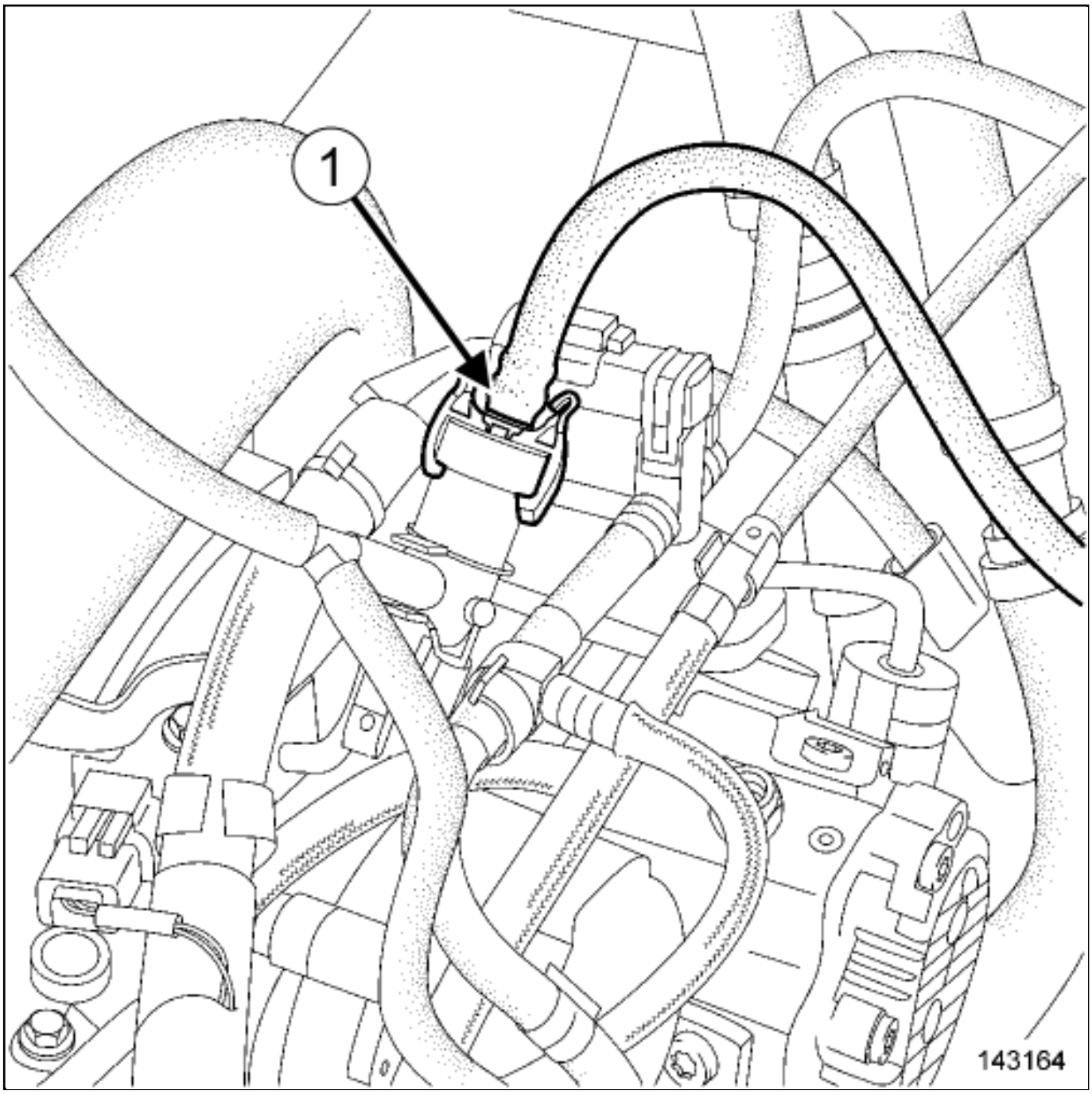
Location and specifications (tightening torques, parts always to be replaced, etc.)(see **Cylinder head assembly: Exploded view**) .

CAUTION

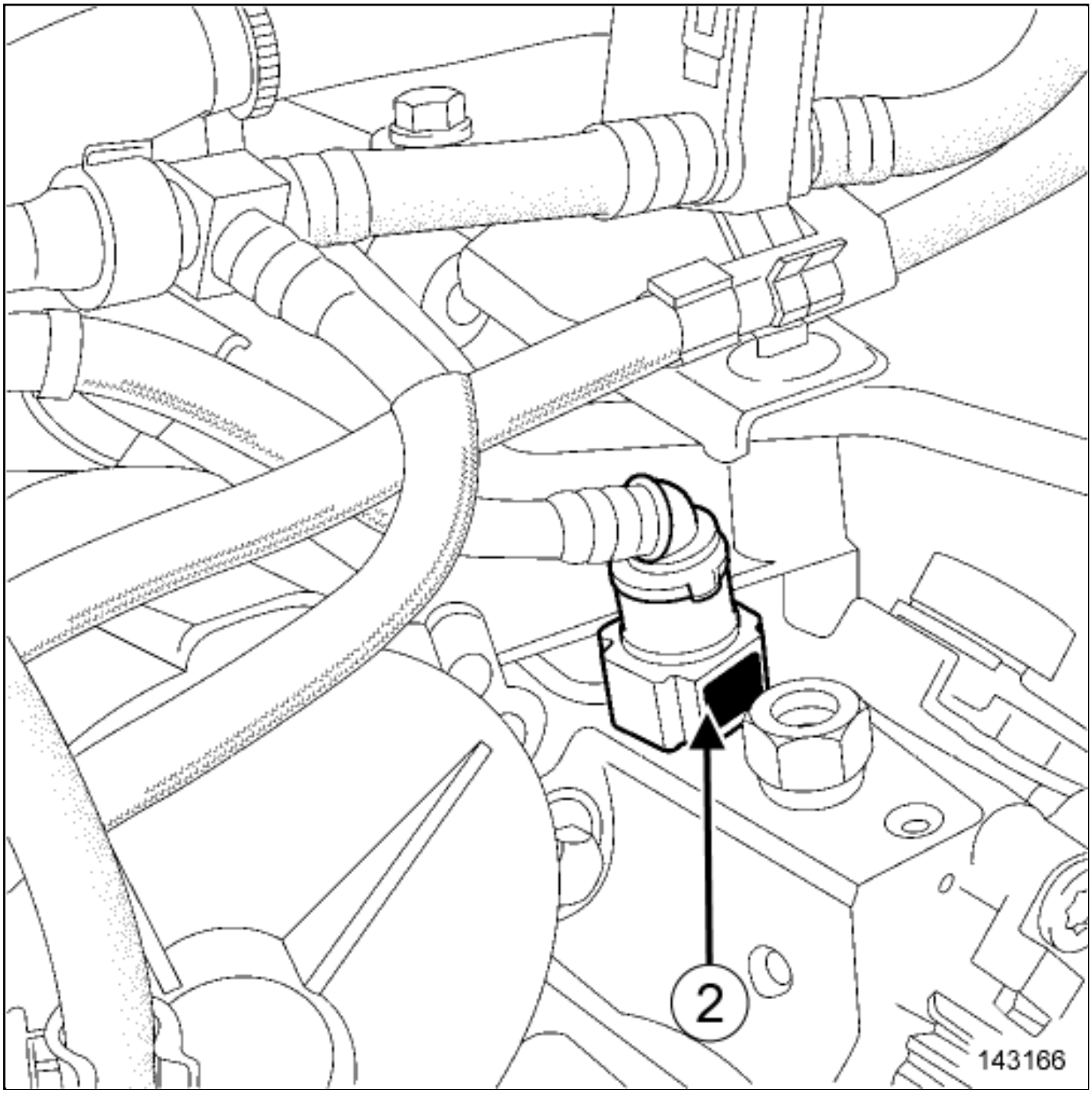
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

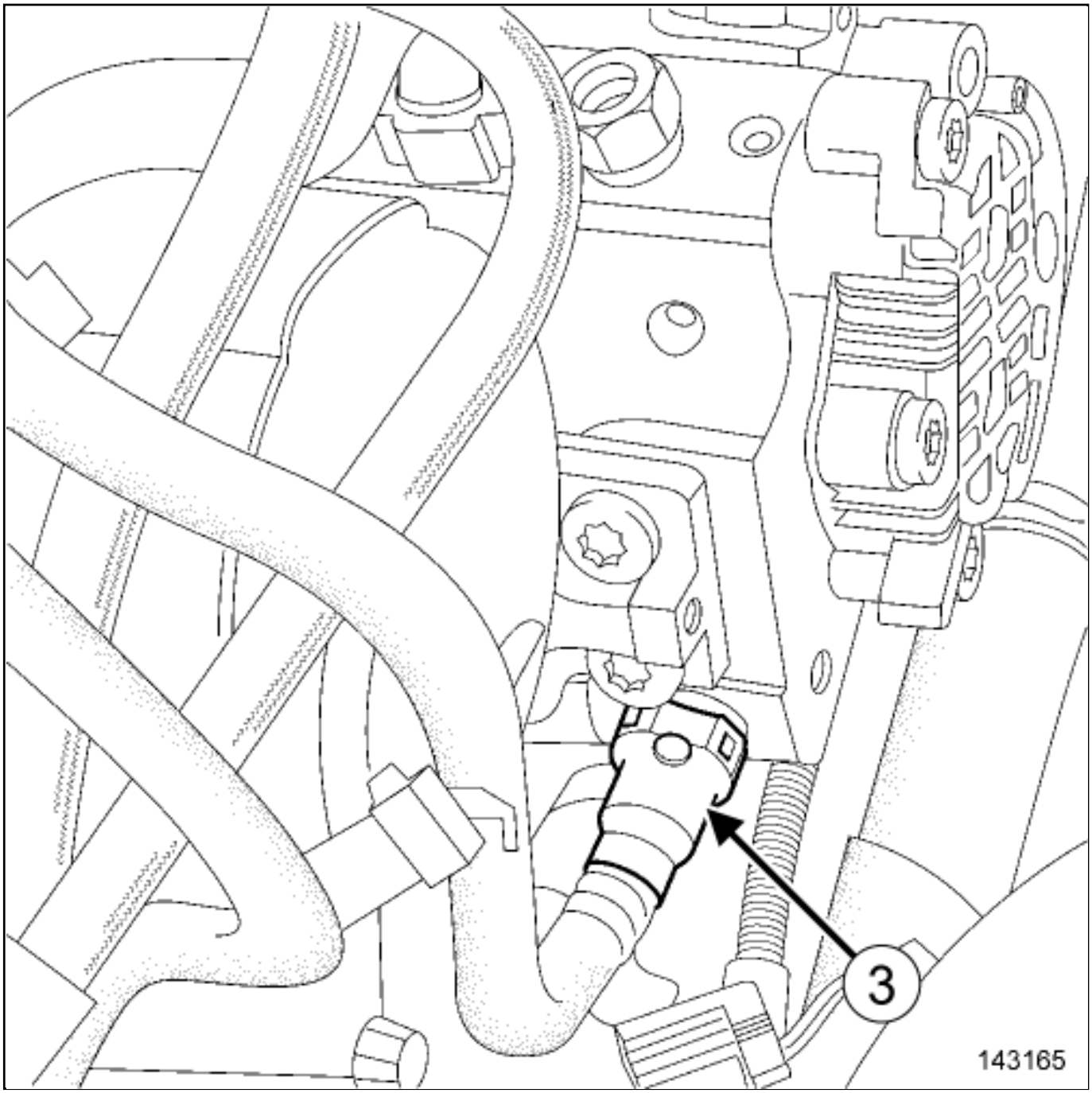
1. REMOVAL PREPARATION OPERATION



- Disconnect the non-return valve pipe(1) from the vacuum pump.



- Disconnect the diesel return pipe(2) from the high pressure pump.



- Disconnect the diesel supply pipe(3) from the high pressure pump.

- Fit blanking plugs on the openings of:
  - the high pressure pump,
  - the diesel return pipe,
  - the diesel supply pipe.

2. REMOVAL OPERATION

- Remove AND (M9T) M9T:
  - the vacuum pump,
  -

the vacuum pump seal.

REFITTING

1. REFITTING PREPARATION OPERATION

Use surface cleaner(see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the vacuum pump joint face on the cylinder head.

2. REFITTING OPERATION

Proceed in the reverse order to removal.

CAUTION

Do not remove the blanking plugs from each component until the last moment.

Also, do not remove the components from their packaging until they are to be fitted to the vehicle.

Lubricate the end piece of the non-return valve pipe.

Note:

Check that the non-return valve pipe is correctly clipped onto the vacuum pump and onto the brake servo.

Insert the connector until the locking click sound is heard (risk of poor connection).

VALVE: CHECK

Note, one or more warnings are present in this procedure

Special tooling required	
Dial gauge support.	Mot. 251-01
Pressure plate for measuring piston liner protrusion.	Mot. 252-01

Equipment required
component support
Dial gauge
dial gauge support
external micrometer
compressed air nozzle
internal micrometer
set of feeler gauges

1. PREPARATION OPERATION FOR CHECK

CAUTION

- It is strictly forbidden to apply any pressure to the engine oil sump. Damage to the sump will irreparably damage the engine by:
  - blocking the strainer,
  - raising the oil level above maximum, with a risk of engine racing.

Note:

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair(see 10A, Engine and cylinder block assembly, Engine: Precautions for the repair) .

Remove the engine - gearbox assembly.

Position the engine on the component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

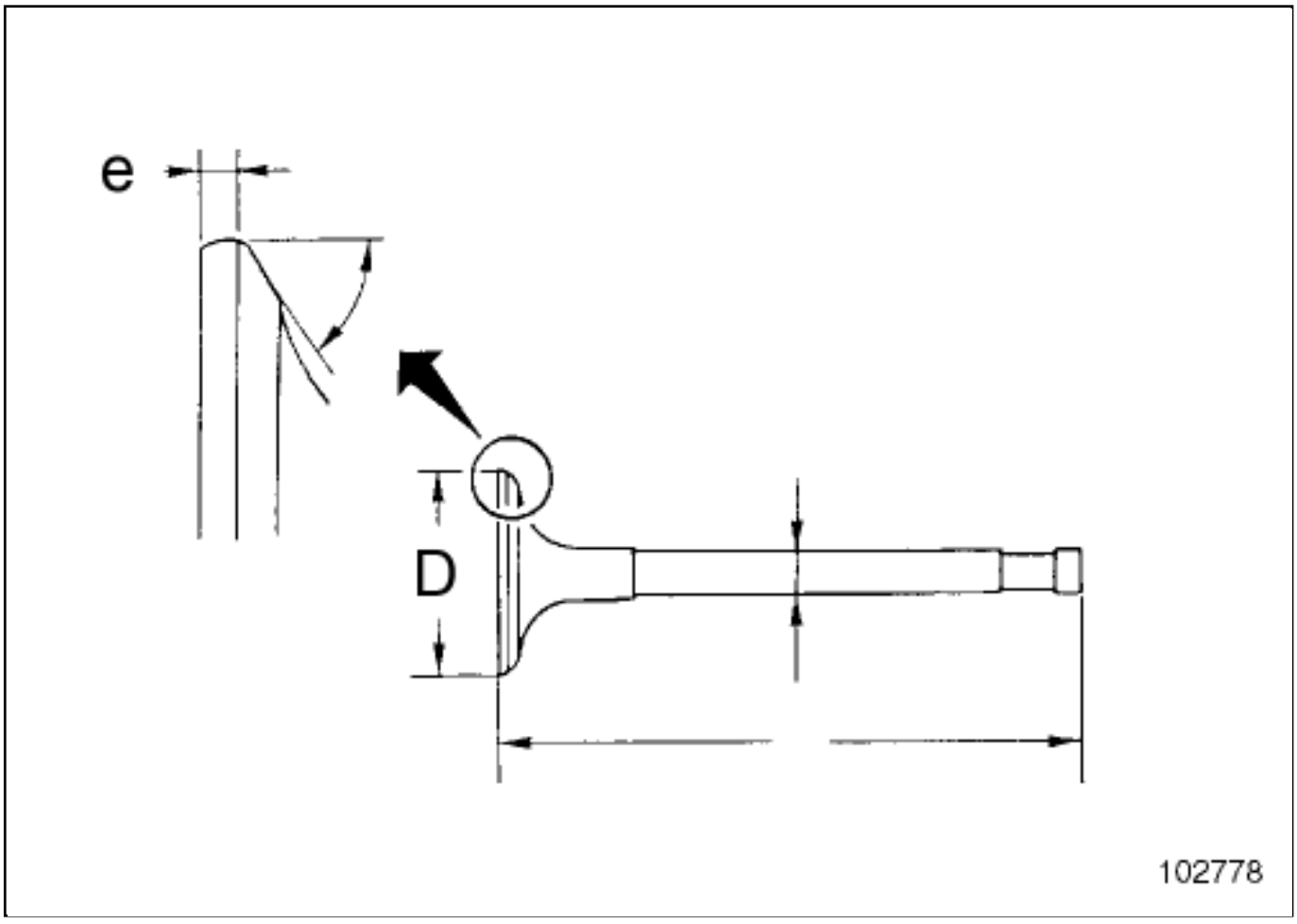
Remove the valves(see 10A, Engine and cylinder block assembly, Valve: Removal - Refitting) .

Before any checks:

- clean the parts to be checked with surface cleanerVehicle: Parts and consumables for the repair (04B, Consumables - Products) and dry them using a compressed air nozzle,
- check that the parts are not scratched and do not show signs of impact or abnormal wear (replace the part if necessary),
- check that the valve slides freely in the valve guide.

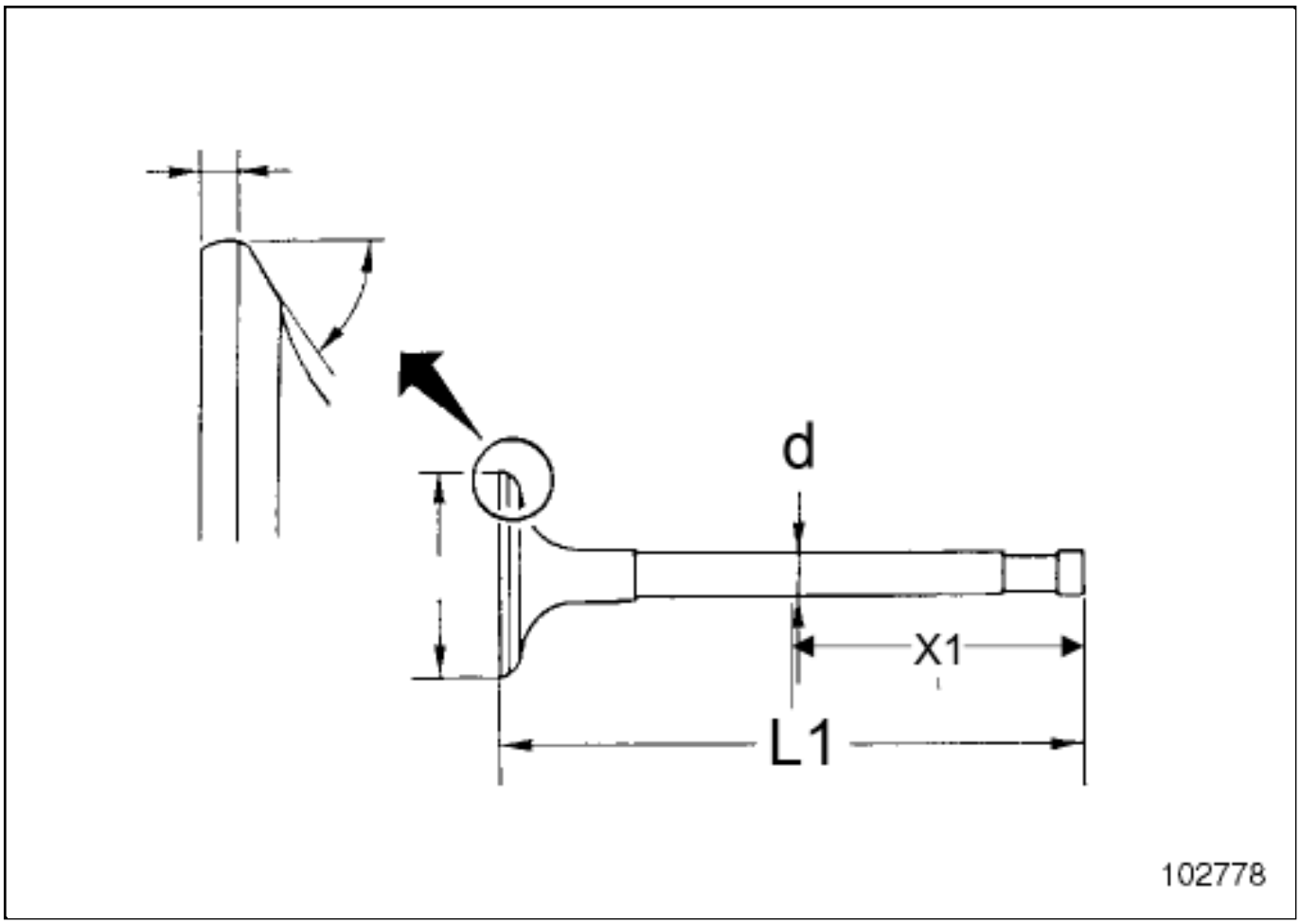
2. CHECKING THE VALVE

1- VALVE IDENTIFICATION



	Inlet valve	Exhaust valve
Diameter (D) of the valve face	27.7 ± 0.12 mm	26 ± 0.12 mm
Thickness (e) of the valve head	1.1 mm	0.94 mm

2- CHECKING THE VALVE SIZE

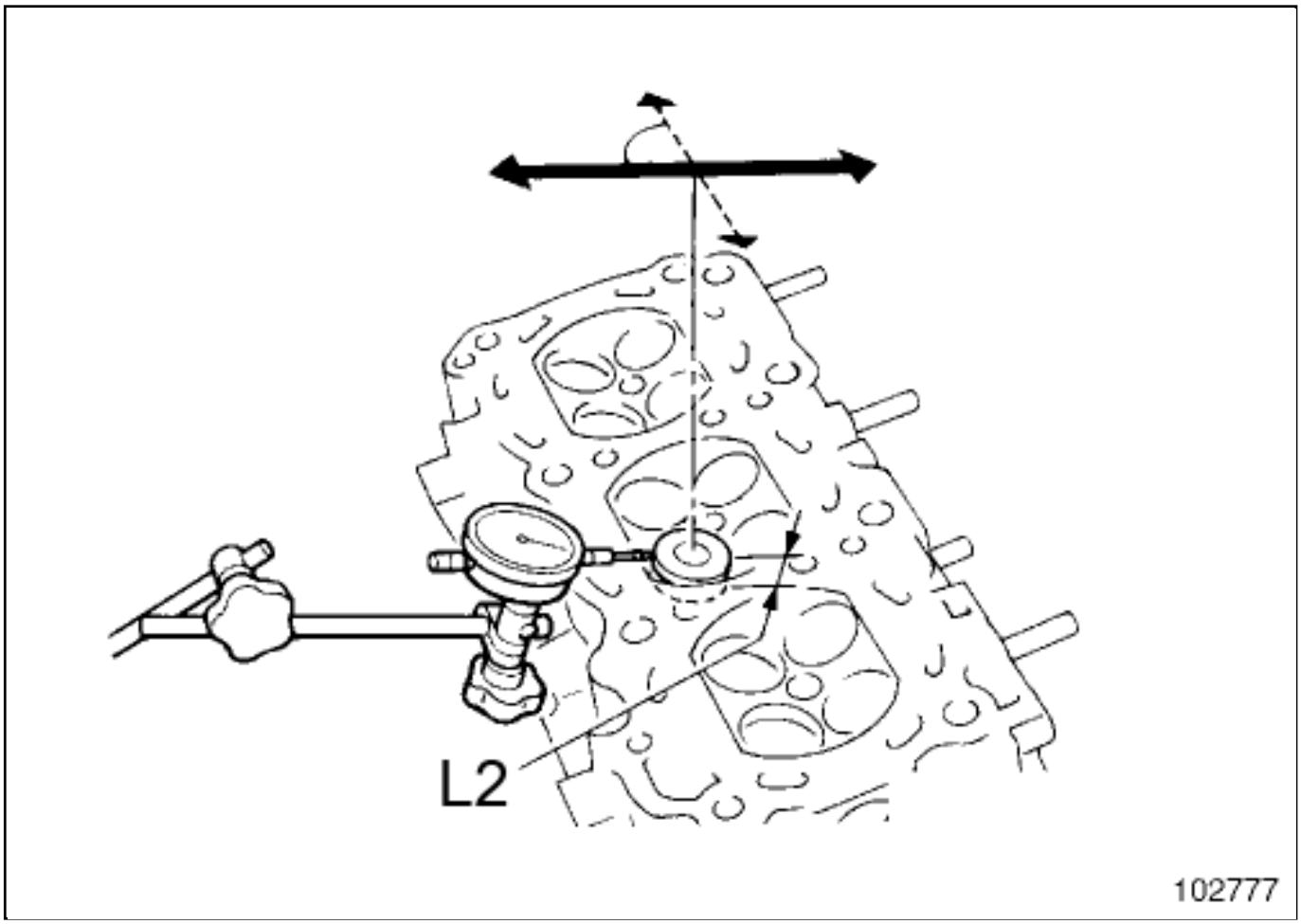


- Measure using a external micrometer:
  - the diameter(**d**) of the valve stem at(**X1**) = 35 mm,
  - the length of the valve(**L1**) .

	Inlet valve	Exhaust valve
Diameter (d) of the valve stem(X1)	from 5.97 to 5.99 mm	from 5.96 to 5.98 mm
Length (L1) of the valve	103.89 mm	103.78 mm

3- CLEARANCE CHECK BETWEEN THE VALVE AND THE VALVE GUIDE

The clearance between the valve and the guide can be checked in two ways.



Position the valve head at a distance of(L2) = 25 mmfrom the valve seat.

Fit:

- the dial gauge support,
- the Dial gaugeon the mounting.

Position the dial gauge feeler against the valve head at a 90˚angle in relation to the valve shaft.

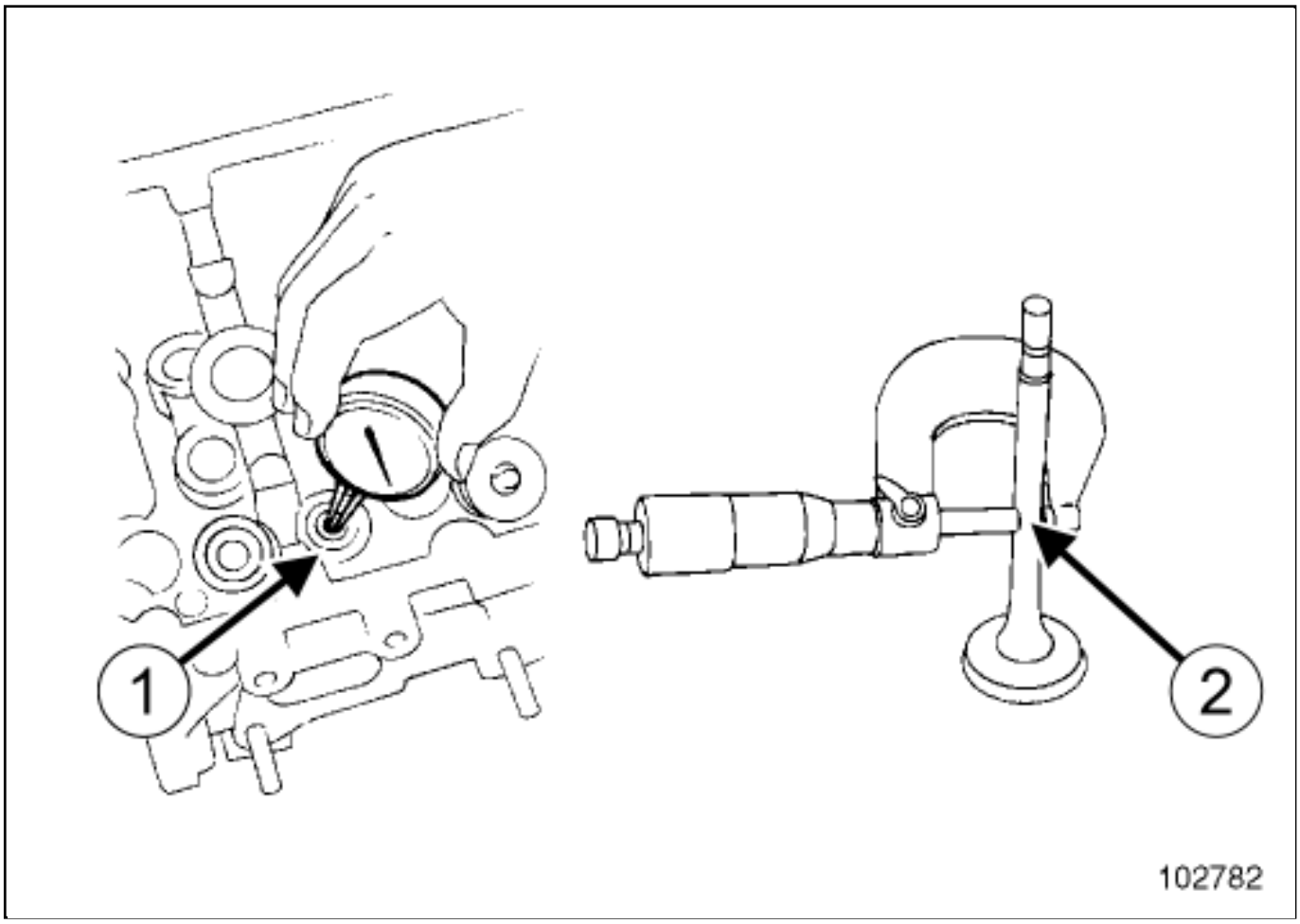
Push the valve head towards the dial gauge.

Calibrate the dial gauge to zero.

Push the valve head towards the side opposite the dial gauge.

Note the value displayed on the dial gauge.

Calculate the actual clearance between the valve and the valve guide by dividing the value measured on the dial gauge by two.



- Or measure:
  - using a internal micrometer, the internal diameter(1) of the valve guide,
  - using a external micrometer, the diameter(2) of the valve stem.

Calculate the actual clearance = internal diameter of the valve guide(1) - the diameter of the valve stem (2) .

- The clearance between the valve and the valve guide must be between:
  - 0.02 and 0.06 mmfor the inlet valve,

- 0.03 and 0.07 mm for the exhaust valve.

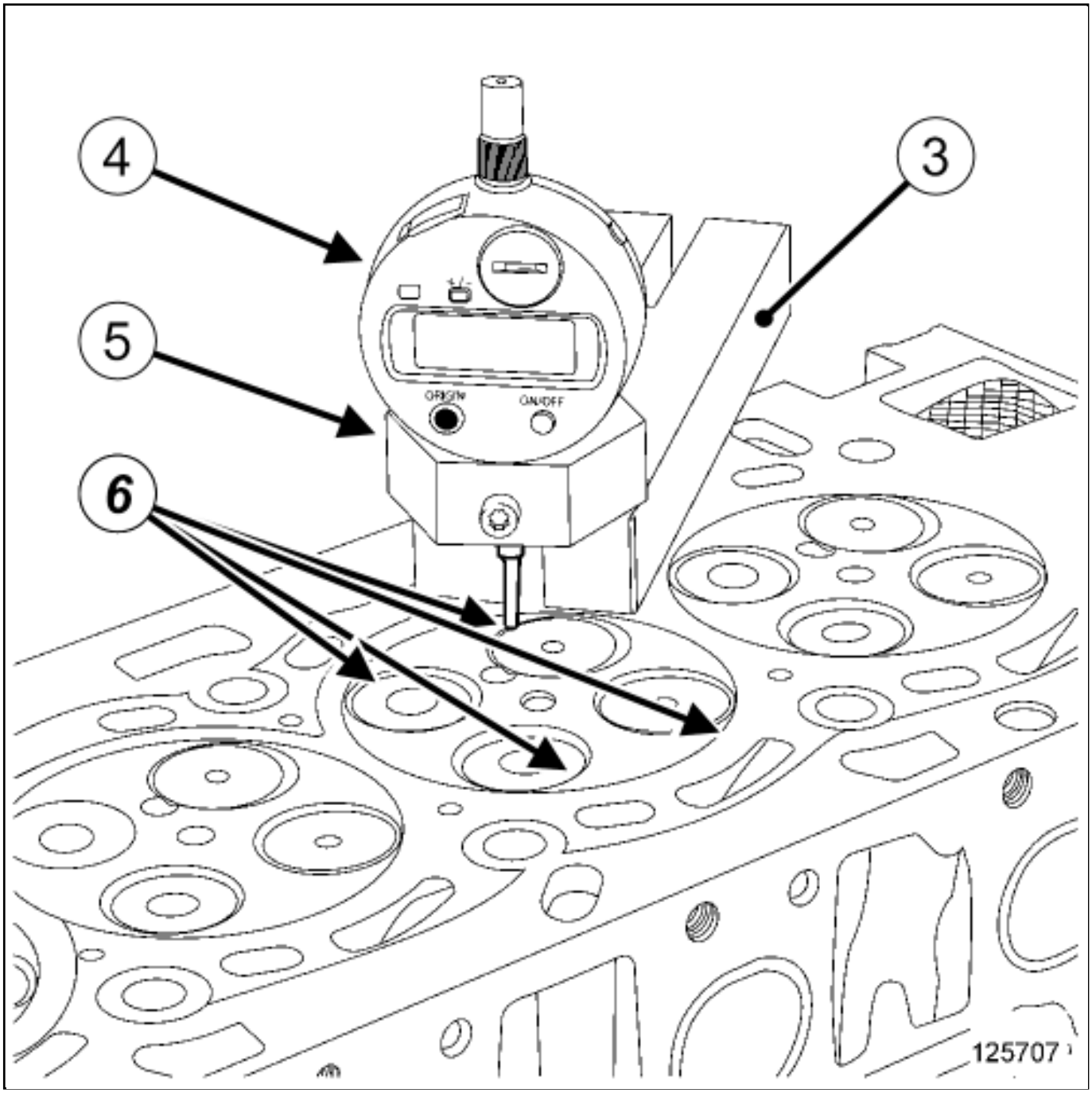
4- CHECKING VALVE PROTRUSION

Operation to be performed when replacing a valve.

Check that the position of the valve head in relation to the cylinder head joint face is within the tolerance values to ensure correct engine operation.

Note:

A valve head position that is outside the permitted tolerance values in relation to the cylinder head joint face may damage the engine.



- Fit the cylinder head with:
  - the rectified shimDial gauge support.(**Mot. 251-01**) (**3**) ,
  - a Dial gauge(**4**) on the supportPressure plate for measuring piston liner protrusion.(**Mot. 252-01**) (**5**) ,
  - the support - dial gauge assembly on the rectified shim.

Position the dial gauge on the cylinder head gasket face.

Calibrate the dial gauge to zero.

Note:

The face of the valve head is not parallel to the cylinder head gasket face (valve guide shaft at an 87˚ angle in relation to the cylinder head gasket face).

Find the highest point of the valve head in area(6) using the dial gauge.

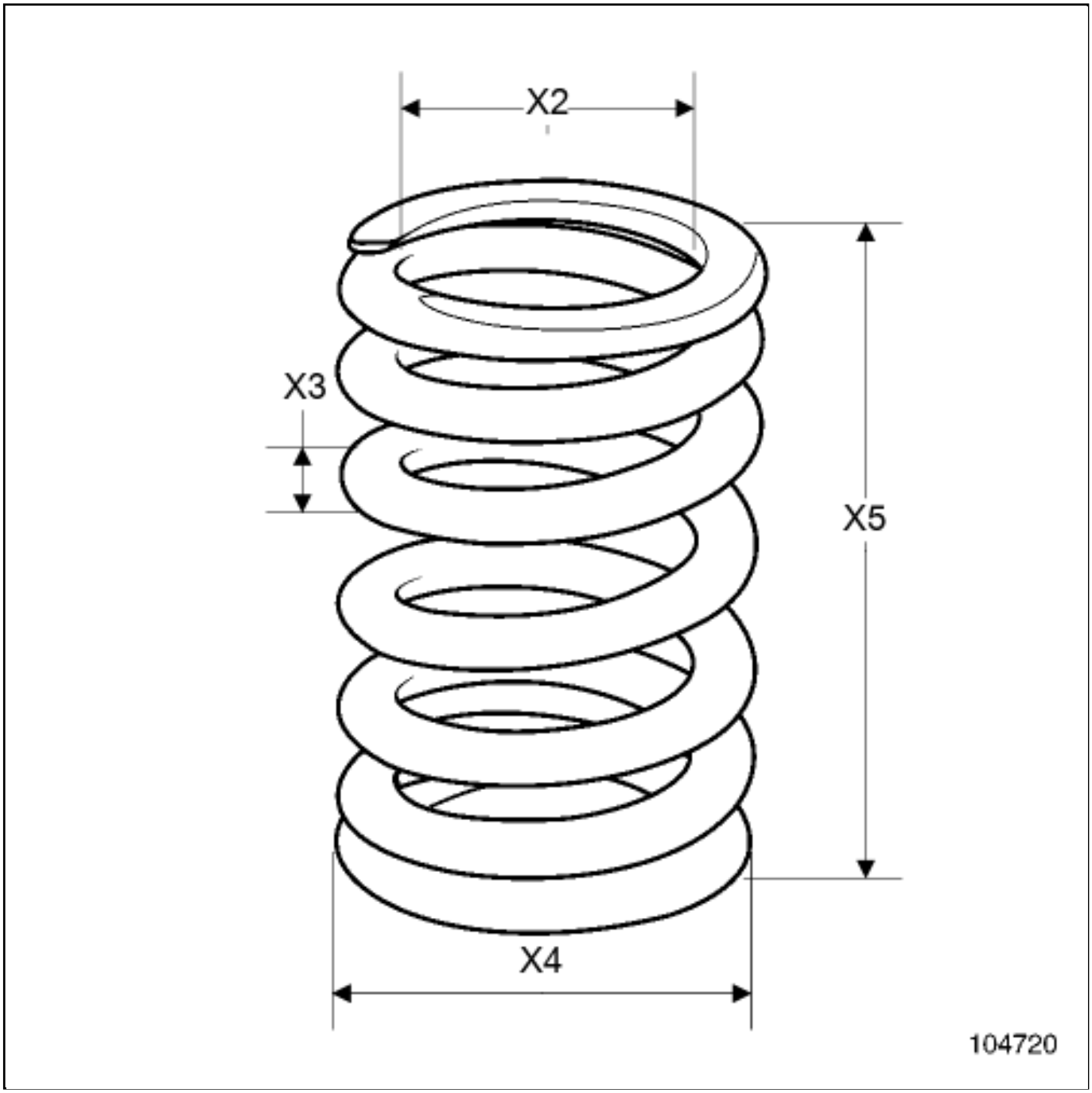
Record the value displayed.

- The value displayed must be between:
  - a maximum protrusion of + 0.08 mm and a maximum recess of - 0.03 mm for the inlet valve,
  - a minimum recess of - 0.08 mm and a maximum recess of - 0.38 mm for the exhaust valve.

3. CHECKING THE VALVE SPRING

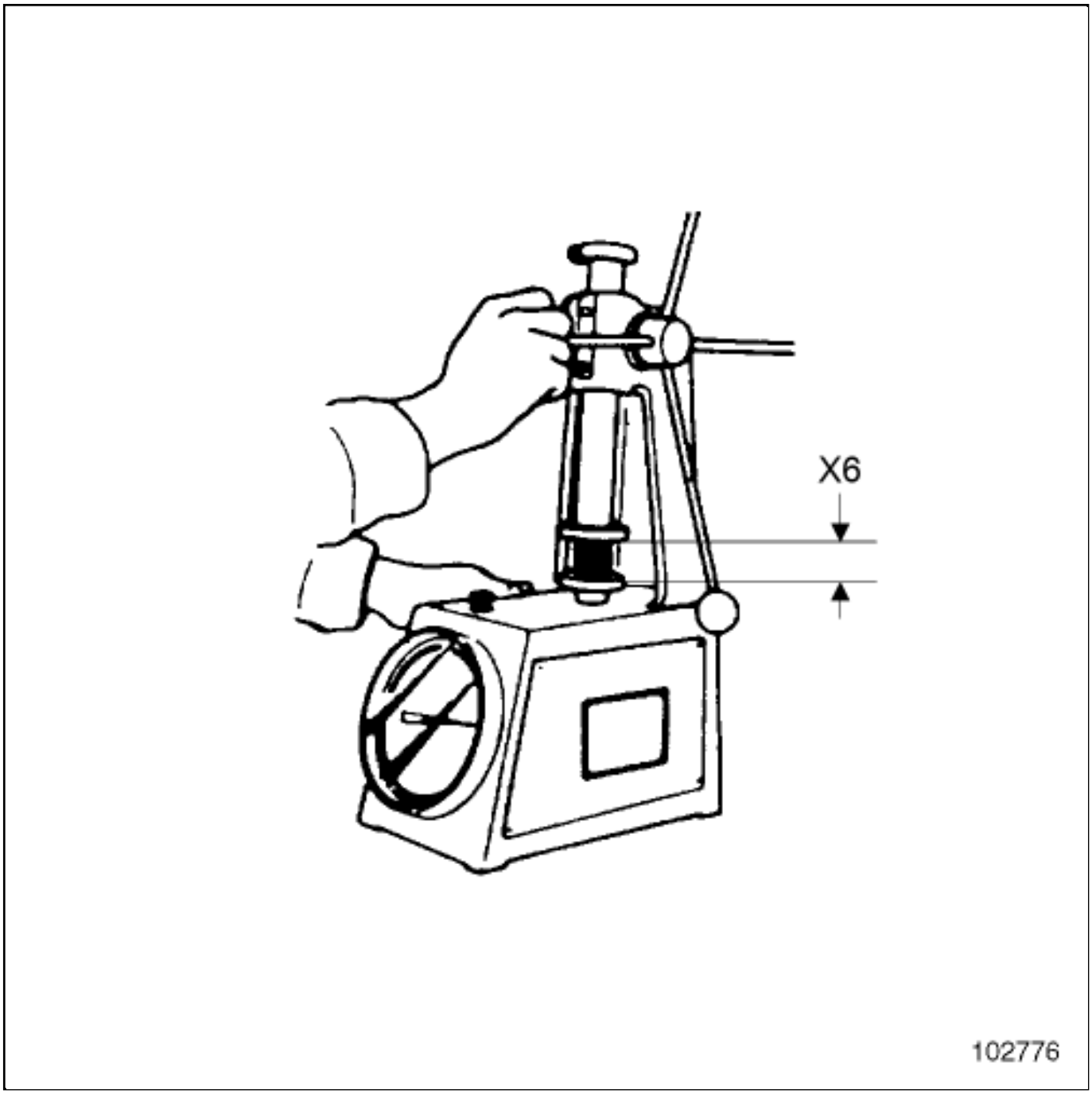
1- VALVE SPRING IDENTIFICATION

The inlet and exhaust valve springs are identical.


X2
X3
X5
X4
104720

Internal diameter (X_2)	14.10 ± 0.2 mm
Wire diameter(X_3)	2.80 ± 0.02 mm
Outer diameter(X_4)	19.70 ± 0.2 mm
Free length(X_5)	46.70 mm

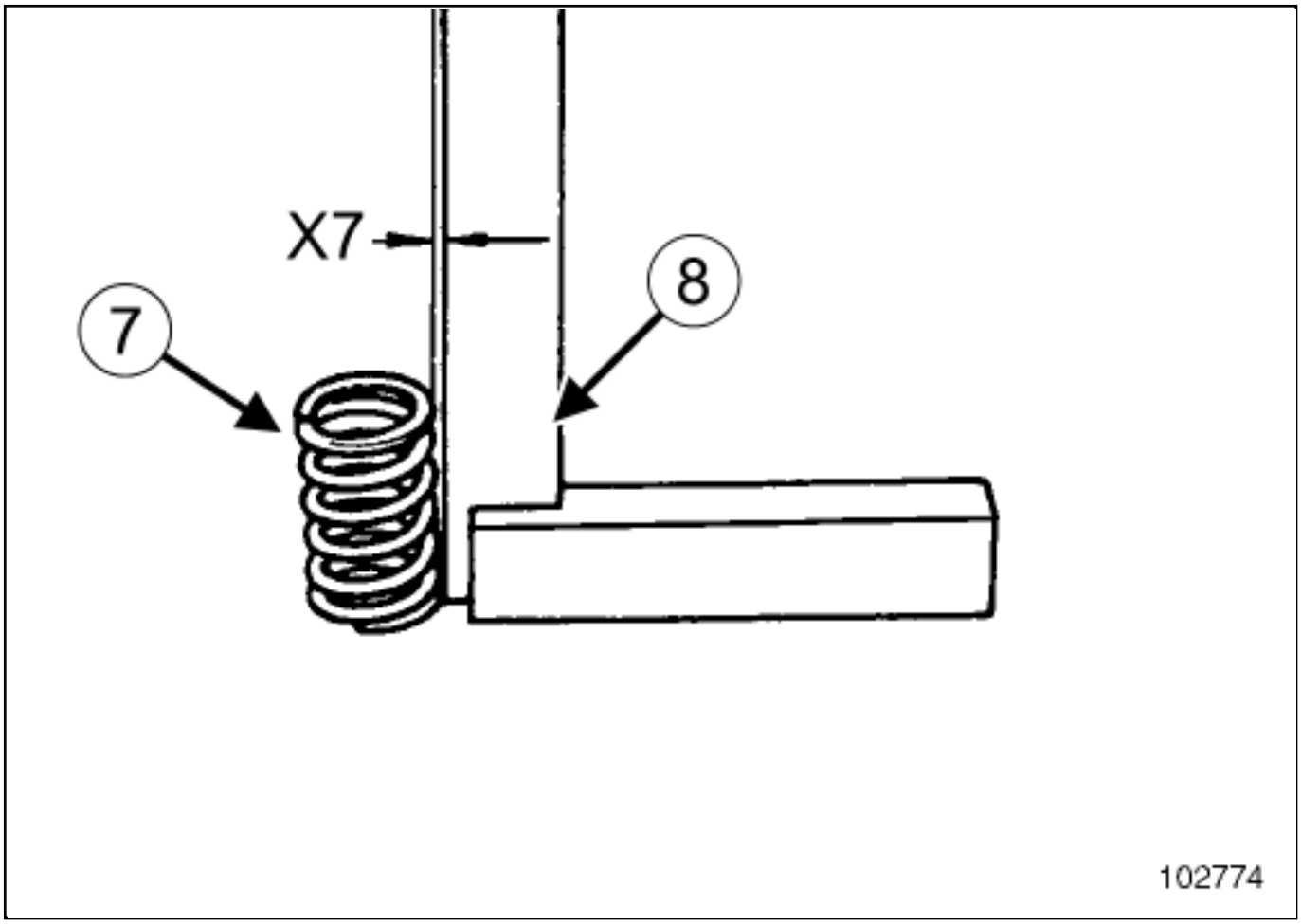
2- CHECKING VALVE SPRING WEAR



Use a dynamometer to check the spring wear by measuring the length(**X6**) which must be:

- 34.90 mm under a load of 210 ± 10 N,
- 26.90 mm under a load of 370 ± 17 N.

3- CHECKING VALVE SPRING PERPENDICULARITY



- On the body jig benchplace:
  - the valve spring(7) ,
  - the bracket(8) .

Use a set of feeler gaugesto check the play(X7) .

The play(X7) must be less than 1.4 mm.

4. FINAL OPERATION

Refit the valves(see 10A, Engine and cylinder block assembly, Valve: Removal - Refitting) .

Remove the engine from component support(see 10A, Engine and cylinder block assembly, Engine support equipment: Use) .

Refit the engine - gearbox assembly.

VALVE: REMOVAL - REFITTING

Special tooling required	
Tool for removing the pins from valve stems.	Mot. 1502
Pliers for removing valve stem seals.	Mot. 1335
Additional tool for fitting valve stem seals.	Mot. 1511-01
Slide hammer valve lifter.	Mot. 1849

Equipment required
tweezers

parts always to be replaced:
Valve stem seal

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove the engine - gearbox assembly.

- Remove the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

X43, M9R, 804 817 824 839 844 846(804 OR 817 OR 824 OR 839 OR 844 OR 846) AND (670 OR 678 OR 680 OR 690 OR 696 OR 698 OR 880 OR 896 OR 898) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 828 OR 845 OR 849 OR 854 OR 857 OR 858)

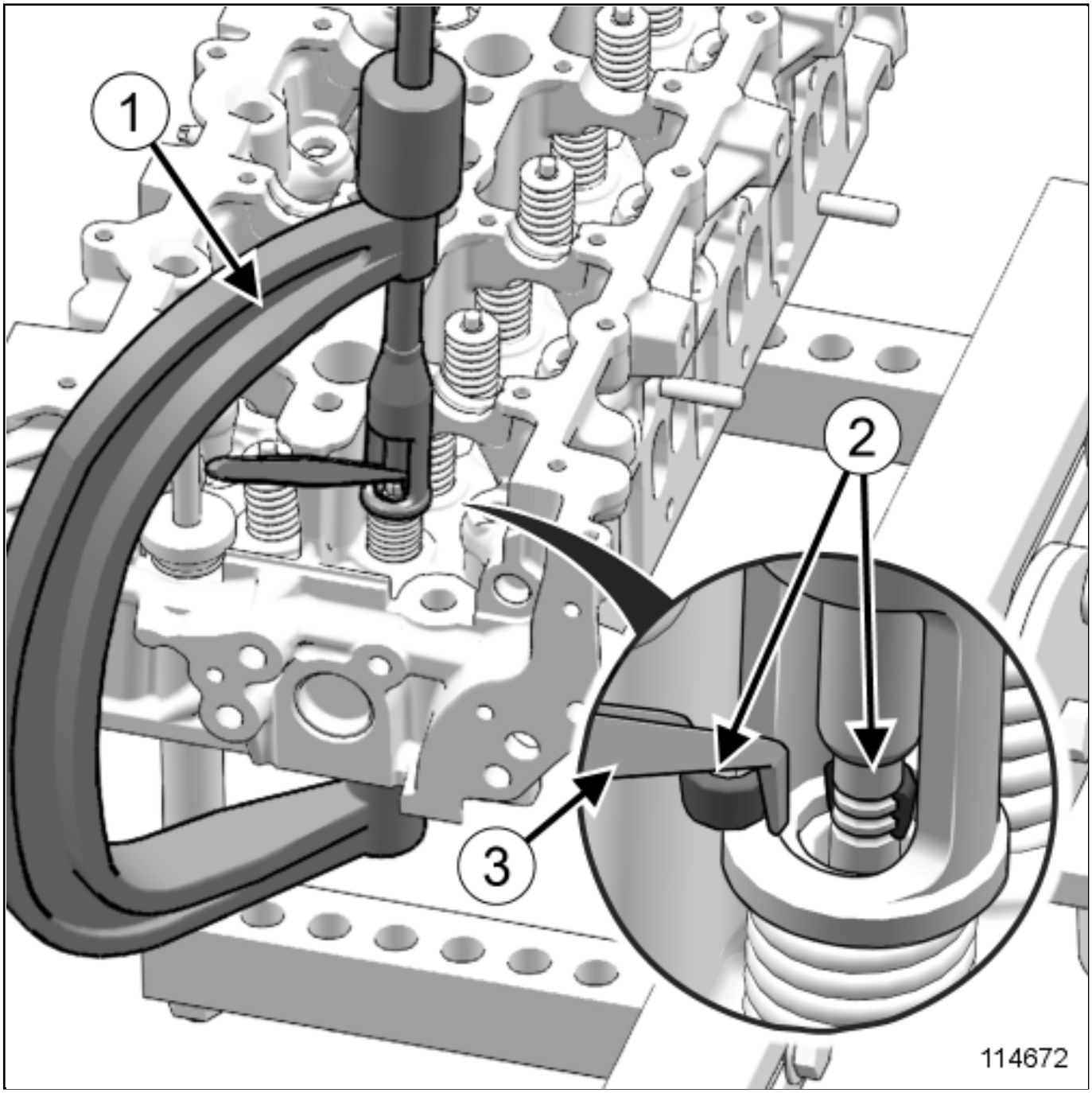
- Remove the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

- Remove:
  - the damper valve,
  - the EGR pipe at the EGR cooler inlet,
  - depending on version, the catalytic pre-converter Catalytic pre-converter: Removal - Refitting or the catalytic converter at the turbocharger outlet Catalytic converter: Removal - Refitting ,
  - the turbocharger oil pipes Turbocharger oil pipe: Removal - Refitting ,
  - the vacuum pump Vacuum pump: Removal - Refitting ,

- the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,
- the oil decanter Oil decanter: Removal - Refitting ,
- the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,
- the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,
- the diesel injectors Diesel injector: Removal - Refitting ,
- the rocker cover (see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the cylinder head (see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting) ,
- the turbocharger,
- the exhaust manifold,
- the EGR solenoid valve,
- the inlet distributor.

2. VALVE REMOVAL OPERATION

Mark the valve in relation to the cylinder head.



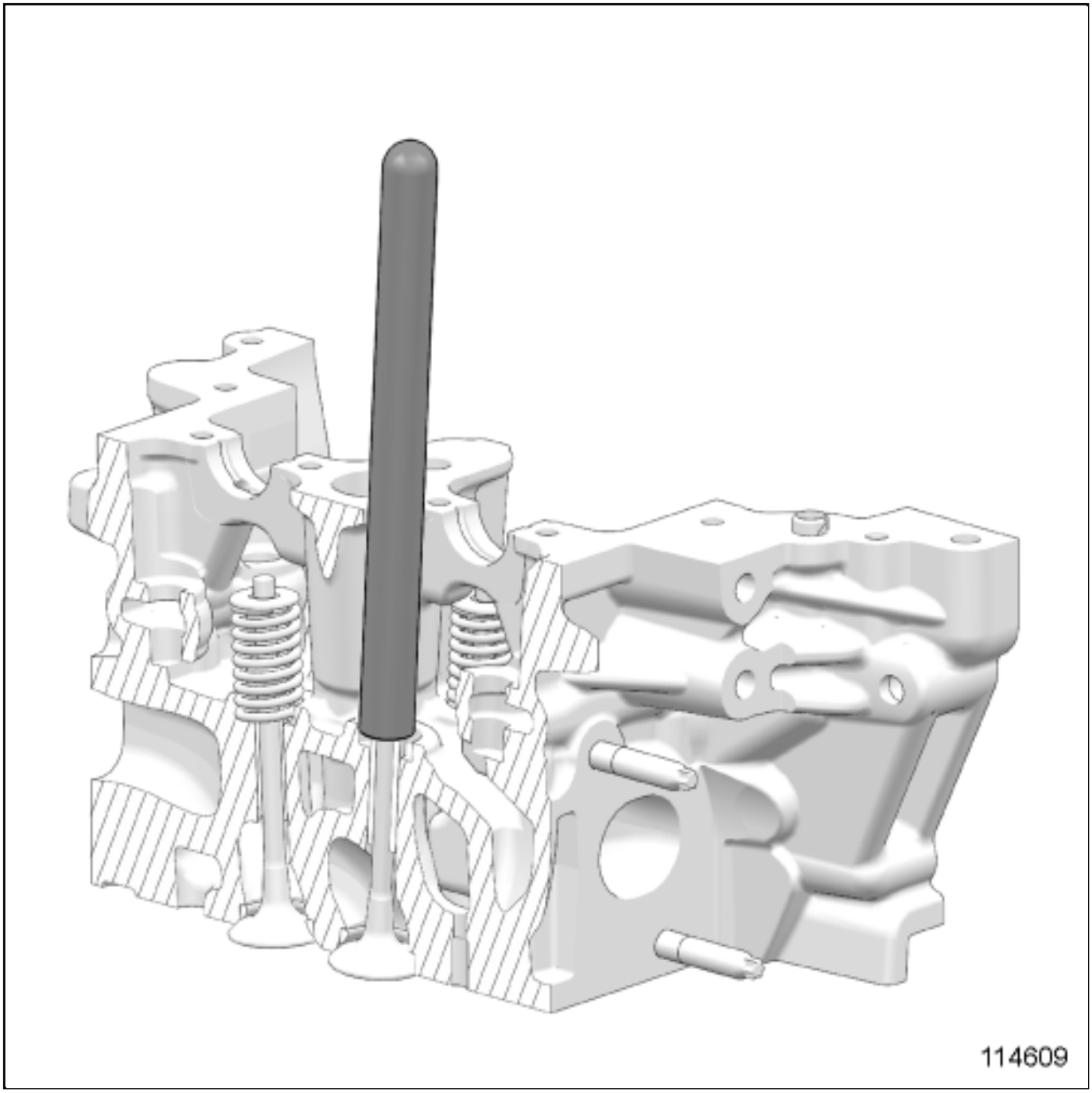
Compress the valve spring using theTool for removing the pins from valve stems.(Mot. 1502) or Slide hammer valve lifter.(Mot. 1849) (1) .

Remove:

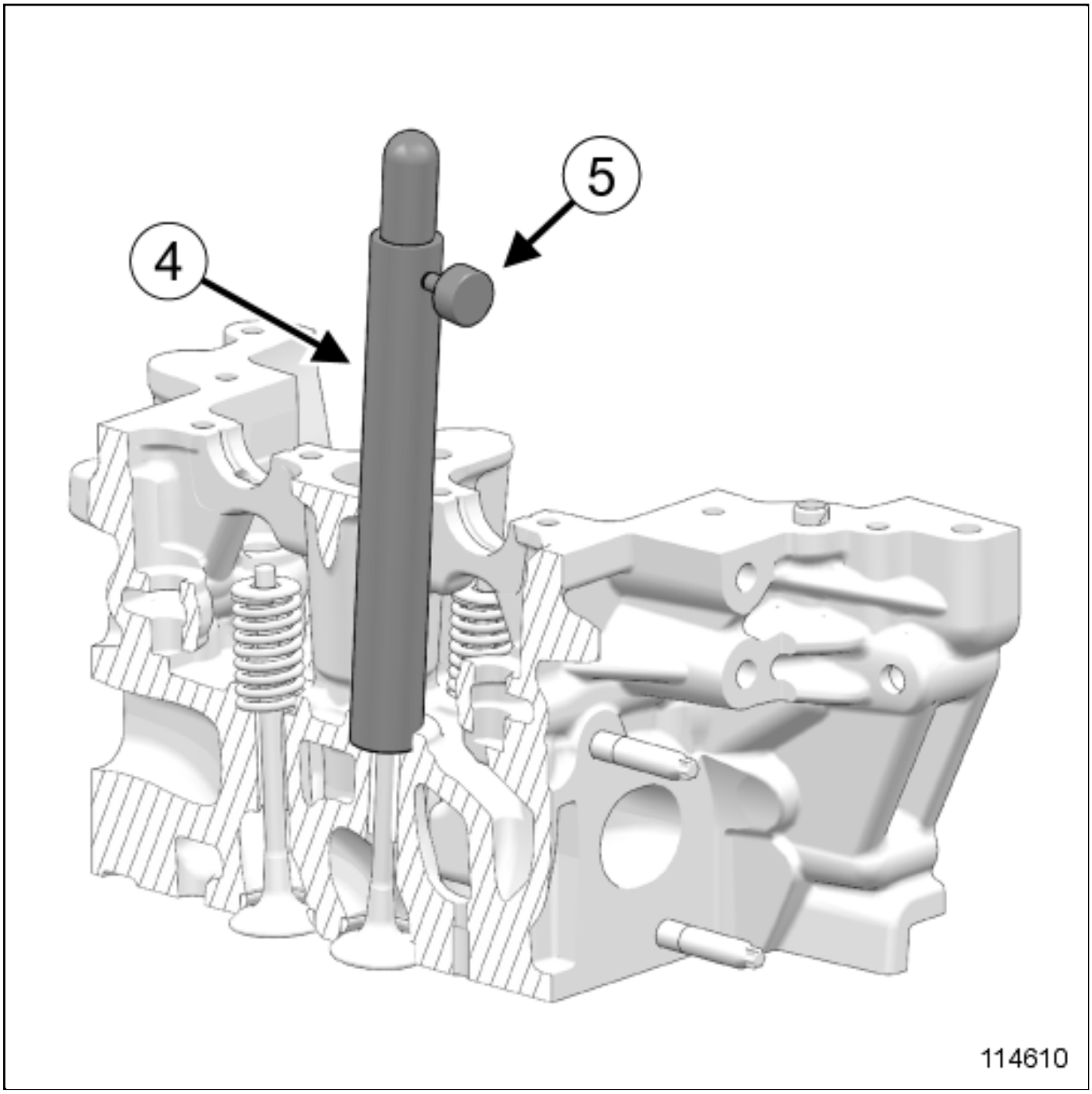
- the valve cotters(2) using tweezers(3) ,
- theTool for removing the pins from valve stems.(Mot. 1502) or Slide hammer valve lifter.(Mot. 1849) ,
- the valve spring cup,
- the valve spring.

Note:

Before removing the valve, adjust the valve stem seal refitting tool (Mot. 1511-01).



- Position the pushrod of theAdditional tool for fitting valve stem seals.(Mot. 1511-01) on the valve stem seal.

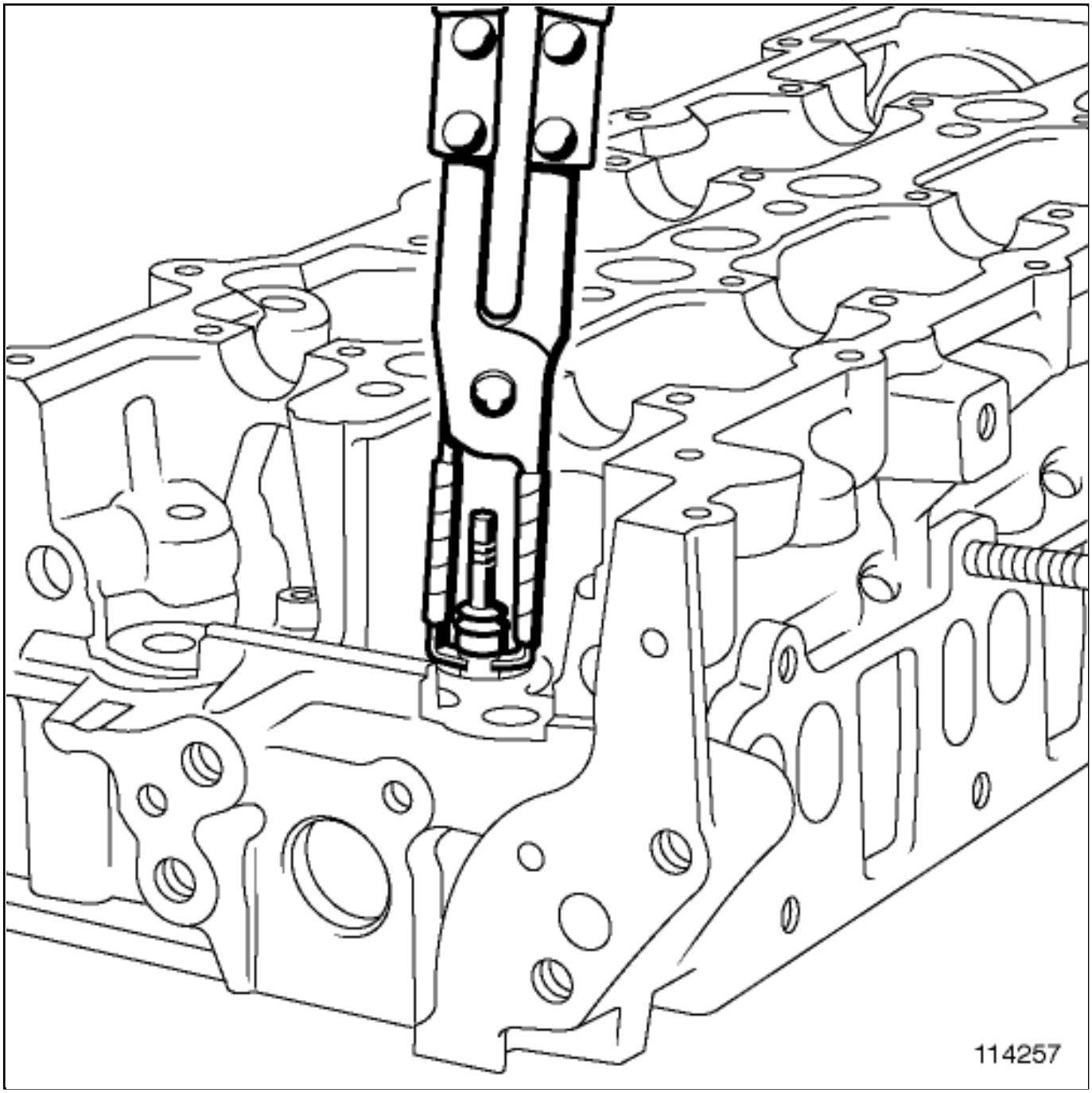


- Place the guide tube(4) of theAdditional tool for fitting valve stem seals.(Mot. 1511-01) on the pushrod until it comes into contact with the cylinder head.

- Lock the pushrod with the wheel(5) .

- Remove:
  - the pushrod - guide tube assembly,
  - the valve.

- Repeat the removal operation for the other valves.



- Remove the valve stem seals using thePliers for removing valve stem seals.(Mot. 1335) .

REFITTING

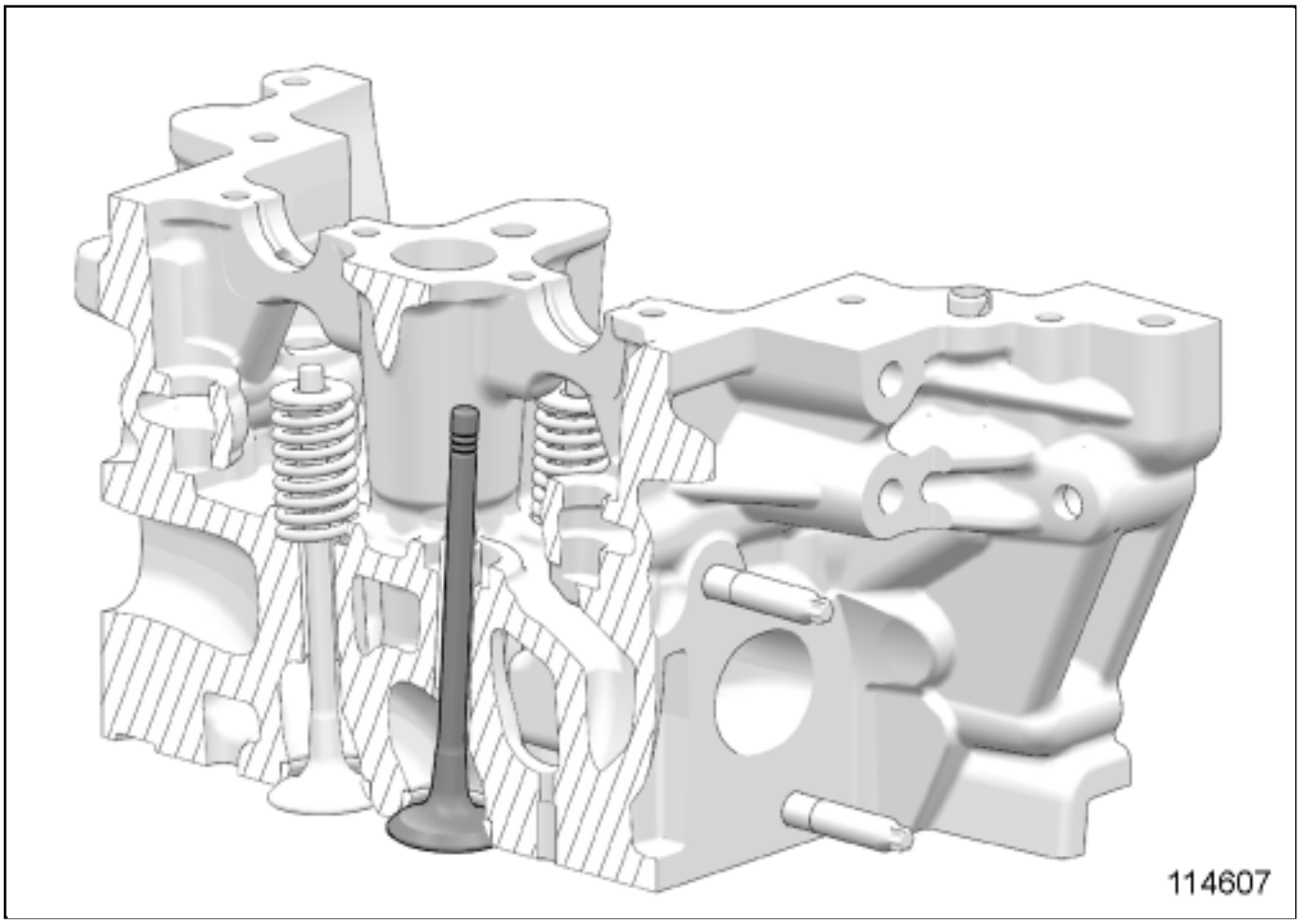
1. REFITTING PREPARATION OPERATION

-

parts always to be replaced: Valve stem seal

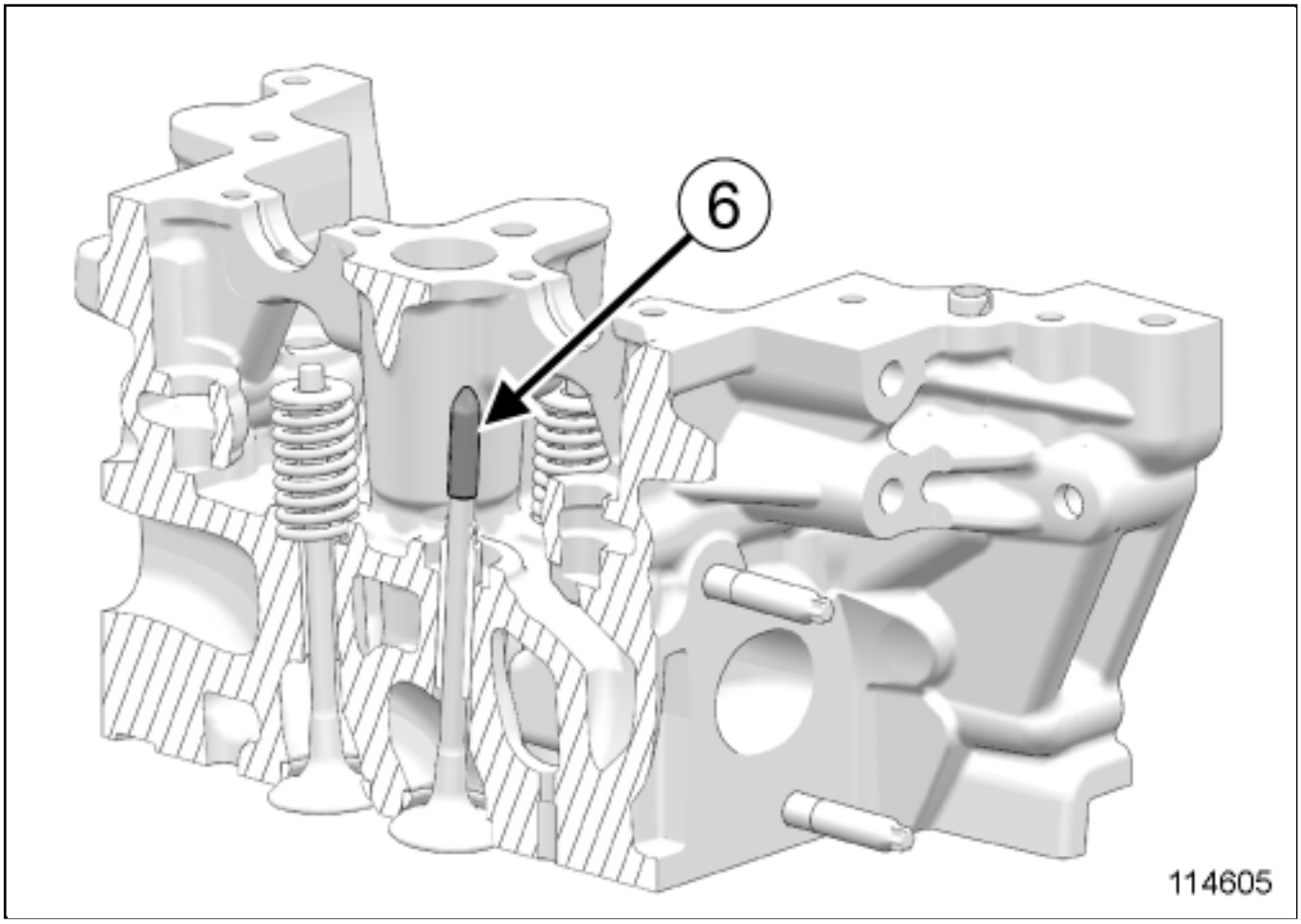
- Use surface cleaner Vehicle: Parts and consumables for the repair to clean:
  - the valves,
  - the valve springs,
  - the valve spring cups,
  - the valve collets,
  - the valve guides.

2. VALVE REFITTING OPERATION



- Refit the valve in the cylinder head according to the marking made on removal.

- Keep the valve pressed against its seat.

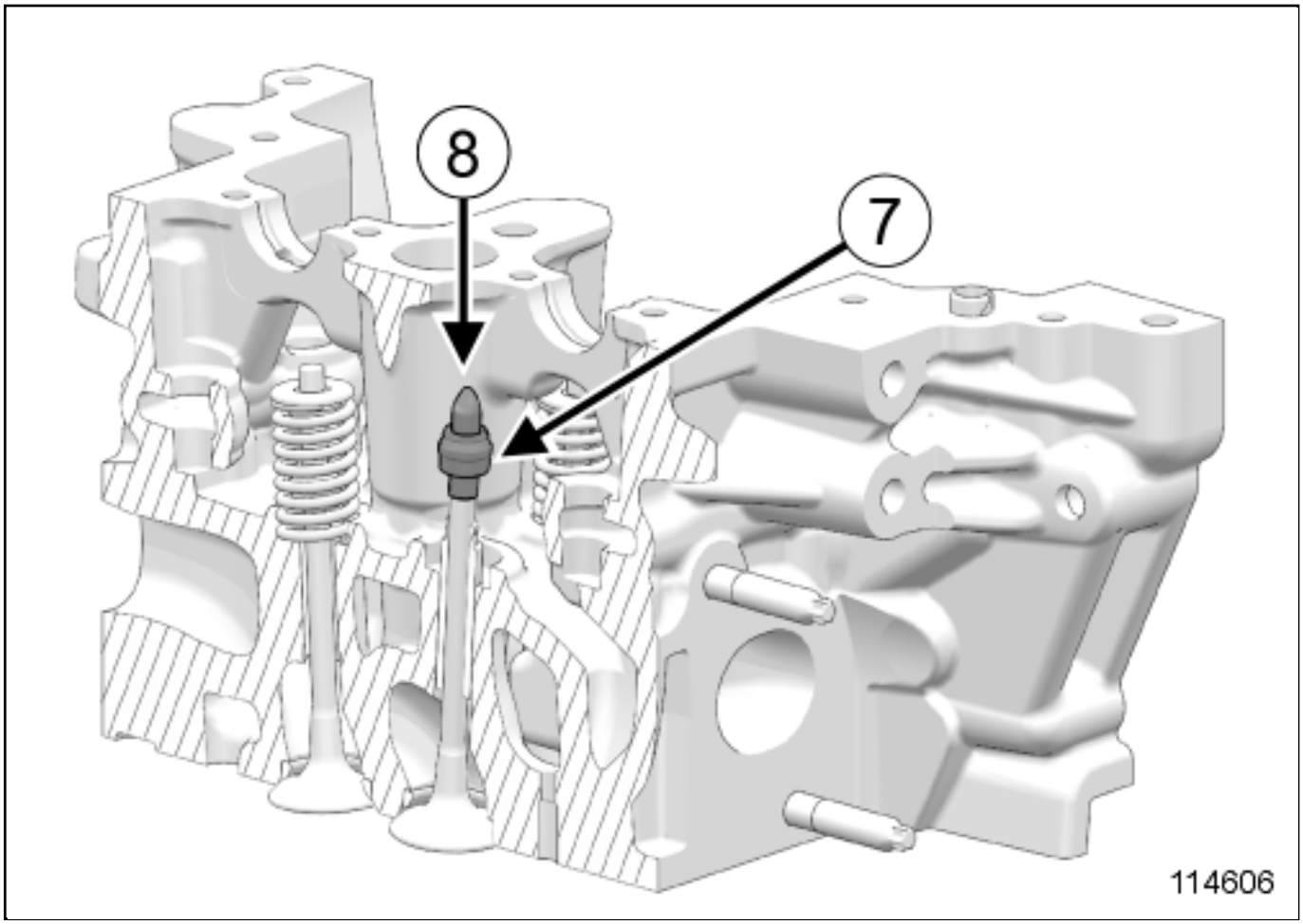


Note:

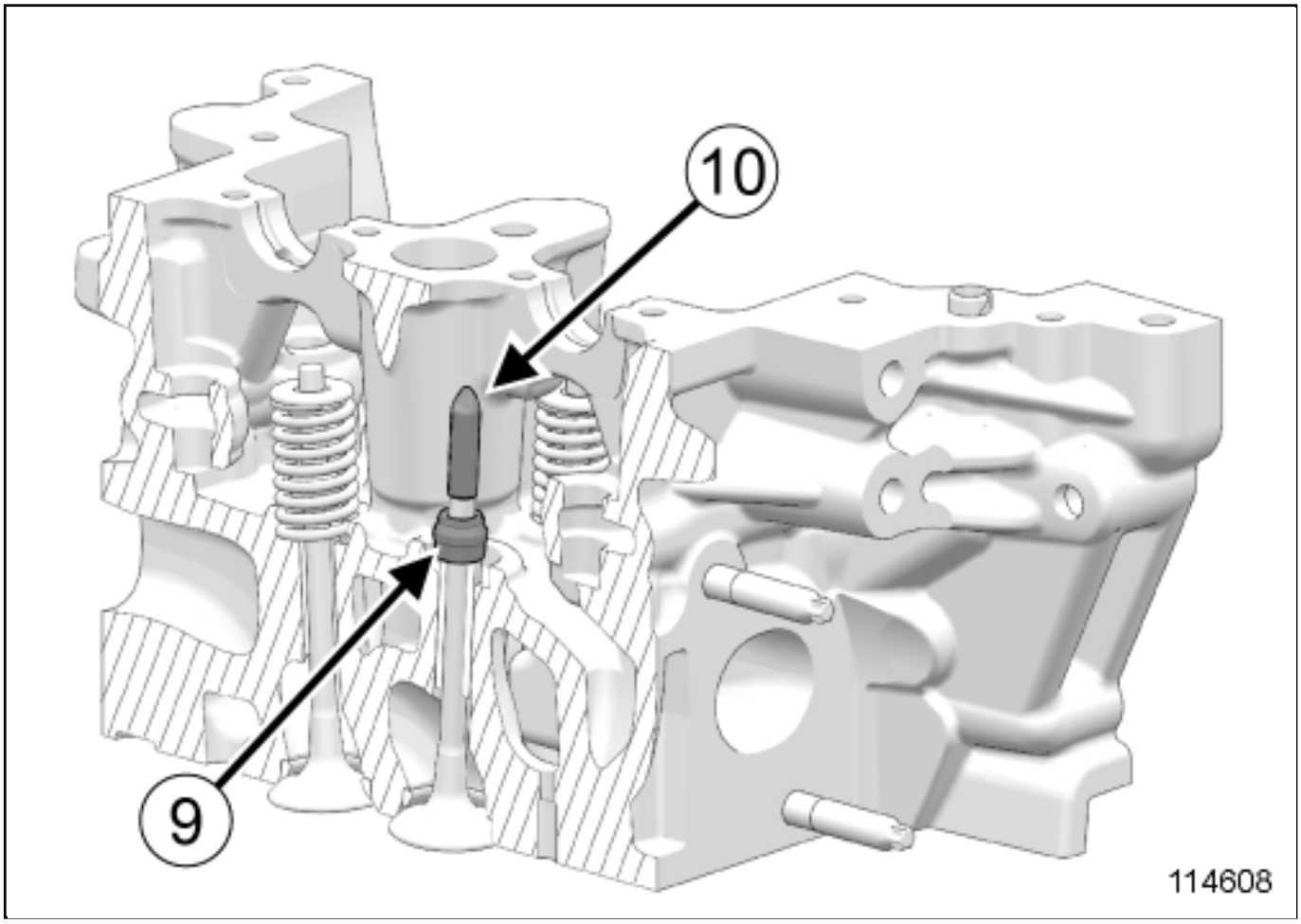
The diameter of the protector (6) must be the same as that of the valve stem.

Do not lubricate the valve stem seal.

- Place the valve stem seal protector(6) of toolAdditional tool for fitting valve stem seals.(Mot. 1511-01) on the valve.

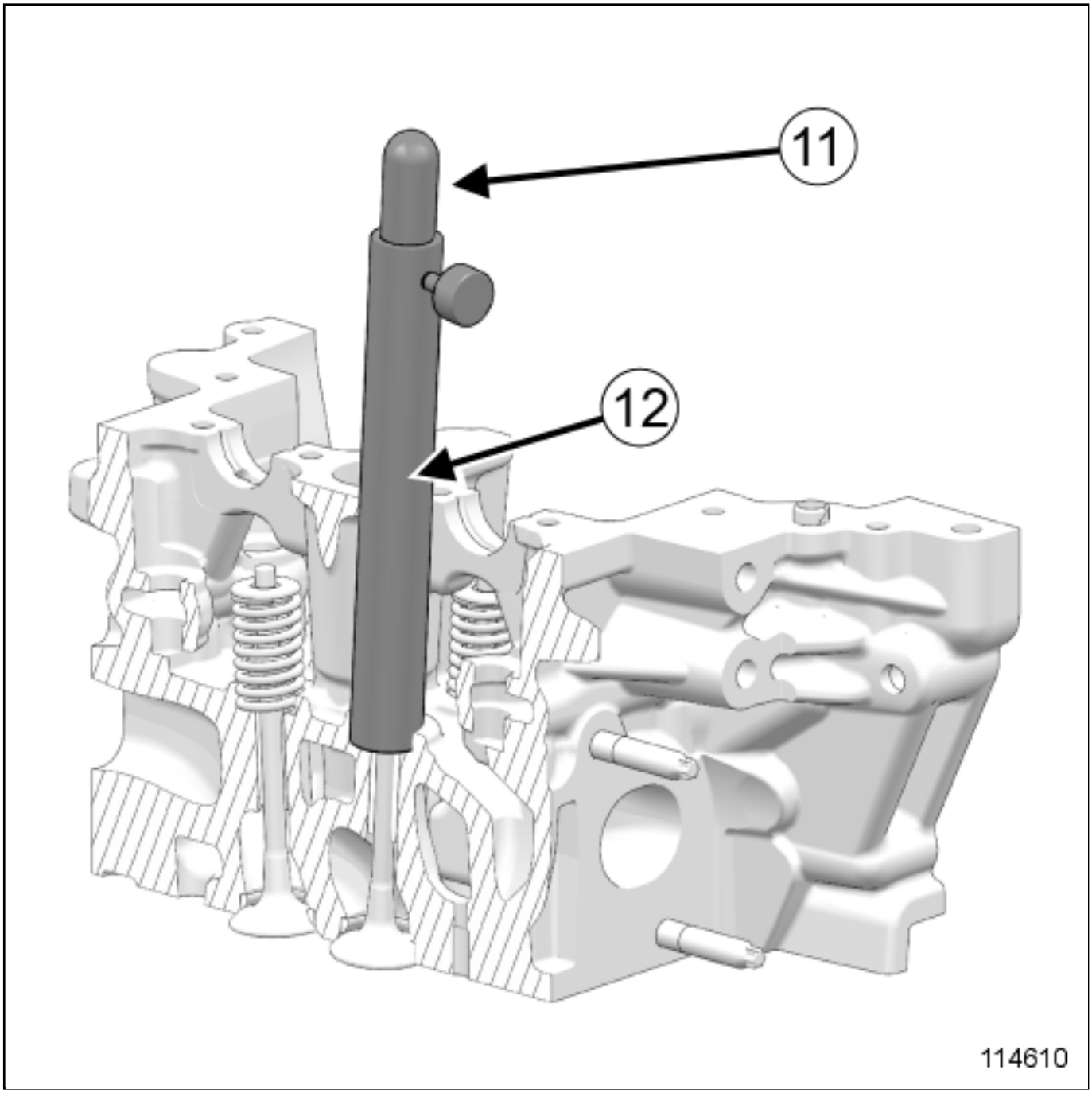


- Fit a new valve stem seal(7) on the fitting protector(8) .



- Move the valve stem seal(9) past the fitting protector(10).

- Remove the fitting protector(10).



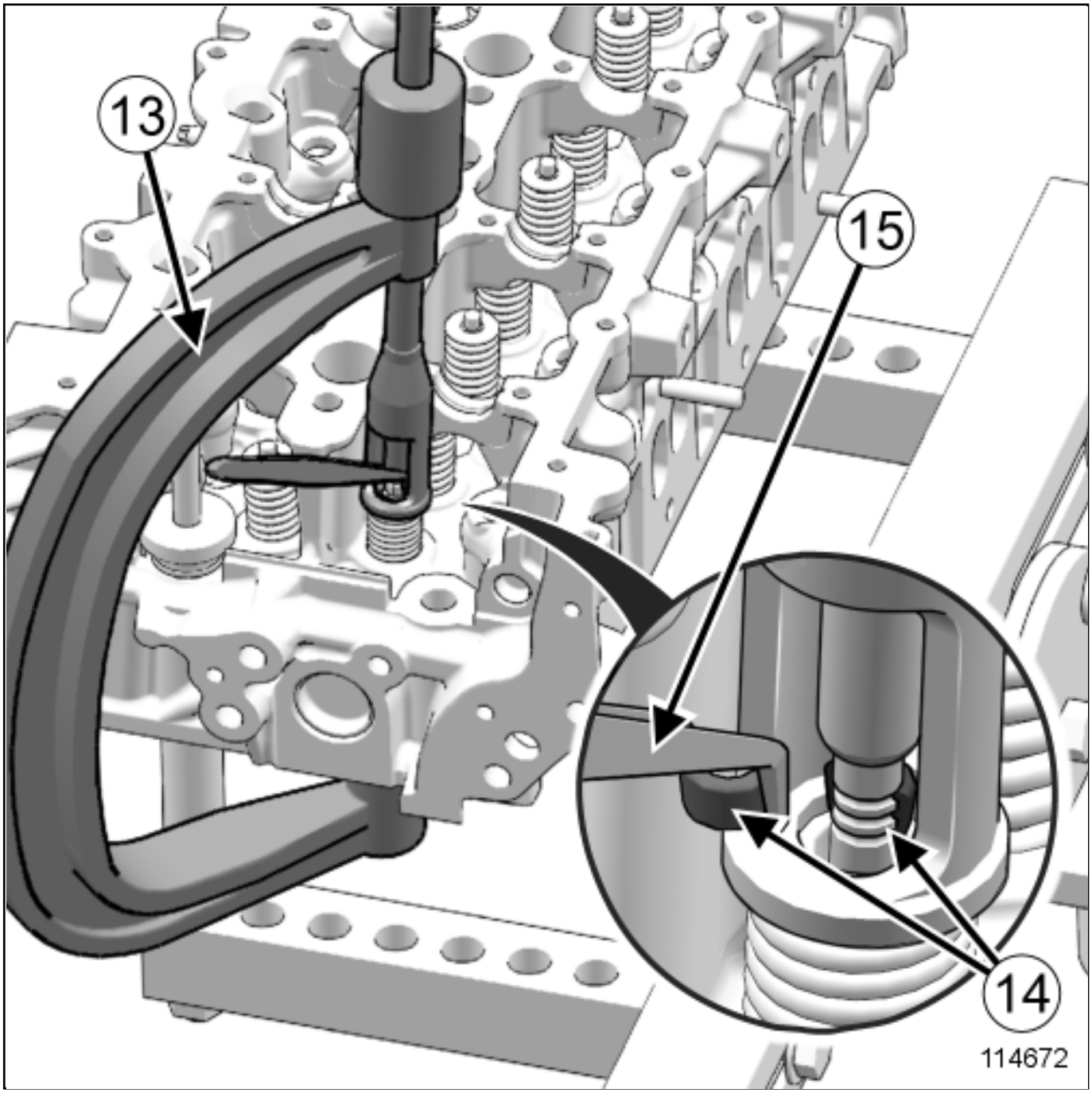
Place the pushrod(11) - guide tube(12) assembly of the Additional tool for fitting valve stem seals. (Mot. 1511-01) , which was pre-adjusted during valve removal.

Push the pushrod(11) in with the palm of your hand until the guide(12) comes into contact with the cylinder head.

Repeat these operations for all the valves.

Fit:

- the valve spring,
- the valve spring cup.



Compress the valve spring using theTool for removing the pins from valve stems.(Mot. 1502) or Slide hammer valve lifter.(Mot. 1849) (13) .

Place the collets(14) onto the valve using a tweezers(15) .

Remove the Additional tool for fitting valve stem seals.(Mot. 1511-01) or Slide hammer valve lifter. (Mot. 1849) (13) .

Repeat these operations for all the valves.

When replacing the valve, check that the position of the valve head in relation to the cylinder head joint face is within manufacturing tolerances(see 10A, Engine and cylinder block assembly, Valve: Check) .

Note:

A valve head position that is outside the permitted tolerance values in relation to the cylinder head joint face may damage the engine.

3. FINAL OPERATION

Refit:

- the inlet distributor,
- the EGR solenoid valve without tightening the bolts,
- the exhaust manifold,
- the turbocharger,
- the cylinder head(see 10A, Engine and cylinder block assembly, Cylinder head: Removal - Refitting)
- the rocker cover(see 10A, Engine and cylinder block assembly, Rocker cover: Removal - Refitting) ,
- the diesel injectorsDiesel injector: Removal - Refitting ,

the high pressure pipes between the rail and the injectors High pressure pipe between rail and injector: Removal - Refitting ,

the diesel return rail Diesel injector fuel return rail: Removal - Refitting ,

the oil decanter Oil decanter: Removal - Refitting ,

the high pressure pipe between the pump and the rail High pressure pipe between pump and rail: Removal - Refitting ,

the vacuum pump Vacuum pump: Removal - Refitting ,

the turbocharger oil pipes Turbocharger oil pipe: Removal - Refitting ,

depending on version, the catalytic pre-converter Catalytic pre-converter: Removal - Refitting or the catalytic converter at the turbocharger outlet Catalytic converter: Removal - Refitting ,

the EGR pipe at the EGR cooler inlet,

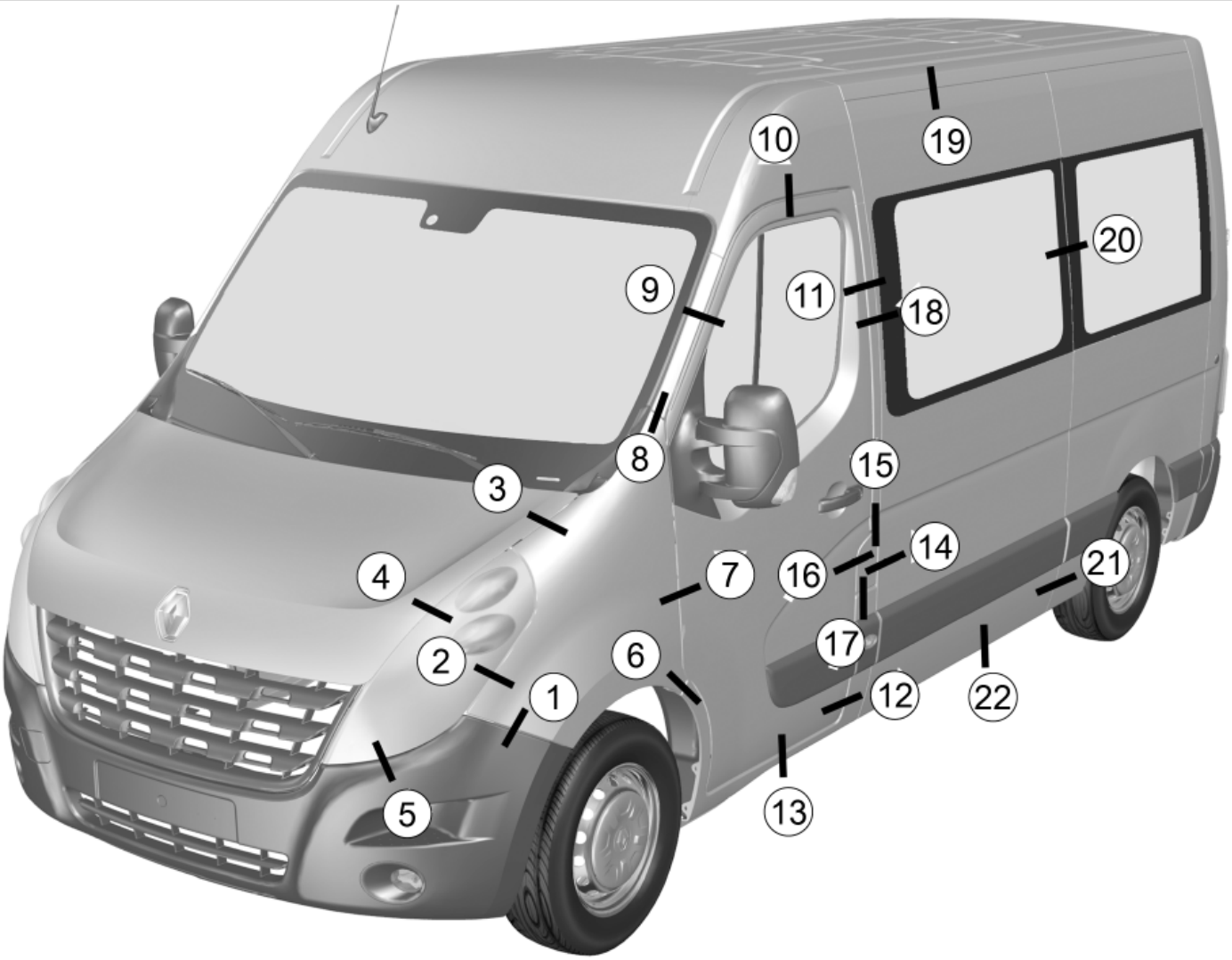
the damper valve.

X43, M9R, 804 817 824(804 OR 817 OR 824) AND (670 OR 678 OR 680 OR 690 OR 696 OR 698 OR 880 OR 896 OR 898) AND (760) AND (760 OR 761 OR 762 OR 763 OR 812 OR 814 OR 815 OR 858 OR 859) AND (721 OR 722 OR 724) AND (800 OR 802 OR 803 OR 805 OR 806 OR 808 OR 809 OR 814 OR 815 OR 816 OR 820 OR 845 OR 849 OR 858)

Refit the exhaust gas pressure sensor Exhaust gas pressure sensor: Removal - Refitting .

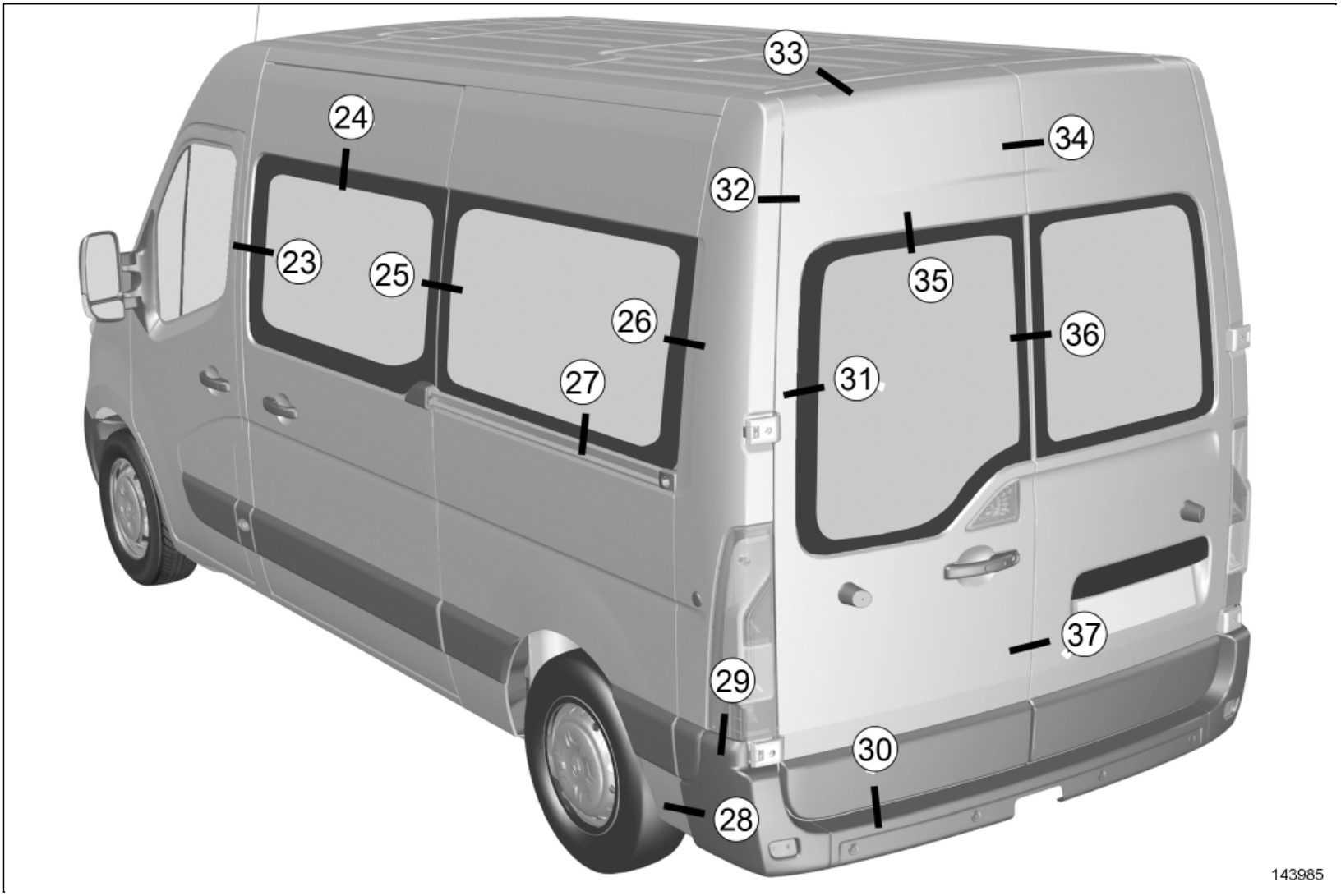
Refit the timing chain (see 10A, Engine and cylinder block assembly, Timing chain: Removal - Refitting) .

Refit the engine - gearbox assembly.



143984

	Location	Clearances (mm)
(1)	Front wing / front bumper	4.5 ± 2
(2)	Front wing / headlight	3 ± 2.5
(3)	Front wing / bonnet	4 ± 1.5
(4)	Bonnet / headlight	4 ± 2.5
(5)	Front bumper / headlight	3 ± 2.5
(6)	Front wing / wheel arch	5 ± 1.5
(7)	Front wing / front side door	5 ± 2
(8)	Front wing / windscreen pillar	2.5 ± 1.5
(9)	Front side door / Windscreen pillar	5 ± 1.5
(10)	Front side door / roof	5 ± 1.5
(11)	Front side door / B-pillar	5 ± 1.5
(12)	Front side door / sill panel	5 ± 1.5
(13)	Front side door / inner sill	5 ± 1.5
(14)	Fuel filler flap / Sliding side door	6 ± 2
(15)	Fuel filler flap / B-pillar upper section	5 ± 1.5
(16)	Fuel filler flap / front side door	5 ± 1.5
(17)	Fuel filler flap / B-pillar lower section	5 ± 1.5
(18)	Sliding side door / B-pillar	6 ± 2
(19)	Sliding side door / side roof rail	5 ± 1.5
(20)	Sliding side door / panelled rear side panel	7 ± 2
(21)	Sliding side door / sill panel	7 ± 2
(22)	Sliding side door / inner sill	5 ± 1.5


33
24
34
32
23
25
35
26
36
31
27
37
29
30
28
143985

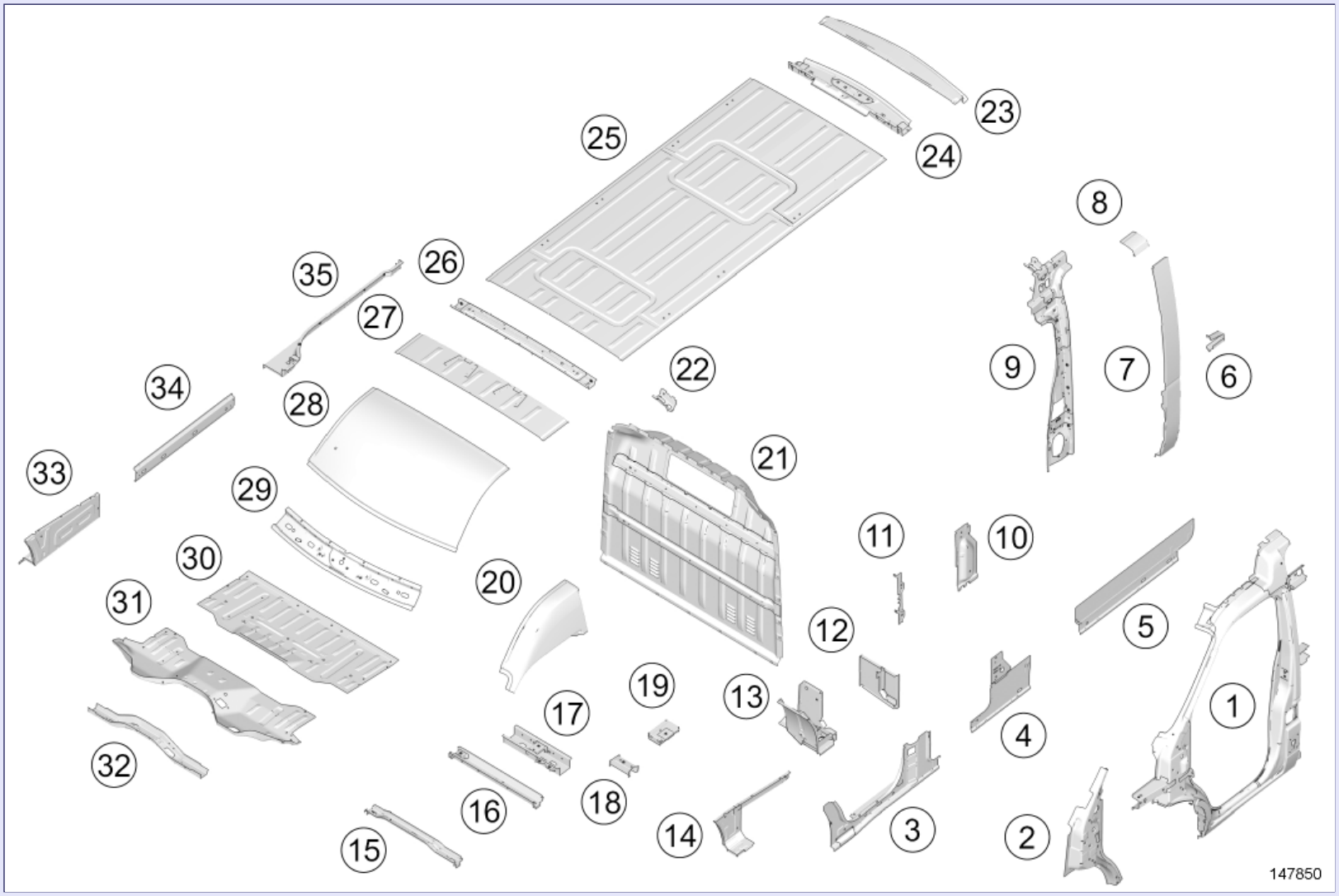
	Location	Clearances (mm)
(23)	Front clearance of sliding side door window	6 ± 2
(24)	Upper clearance of sliding side door window	6 ± 2
(25)	Rear clearance of sliding side door window	7 ± 2
(26)	Rear clearance of rear side panel window	5 ± 1.5
(27)	Sliding door rail / rear side panel window	4 ± 1.5
(27)	Sliding door rail / panelled rear side panel	5 ± 2
(28)	Rear bumper / sill panel	5 ± 2
(29)	Rear bumper / rear lights	3 ± 2
(30)	Rear loading door / rear bumper	9 ± 3
(31)	Side clearance of rear loading door window	4.5 ± 1.5
(32)	Rear loading door / body side	5 ± 2
(33)	Rear loading door / roof	8 ± 3.5
(34)	Upper clearance between rear loading doors	6 ± 2
(35)	Upper clearance of rear loading door fixed window	4.5 ± 1.5
(36)	Upper clearance between rear loading door window	6 ± 2
(37)	Lower clearance between rear loading doors	6 ± 2

VEHICLE STRUCTURE, CENTRE SECTION: DESCRIPTION

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**



E62(E62)

No.	Description	Classification	Type	Thickness (mm)
(1)	Body side	Body side: Replacement		
(2)	A-pillar reinforcement	A-pillar reinforcement: Replacement		
(3)	Sill panel closure panel, front section	Sill panel closure panel, front section: Replacement		
(4)	Sill panel closure panel, rear section	Sill panel closure panel, rear section: Replacement		
(5)	Sill panel closure panel	Sill panel closure panel: Replacement		
(6)	Loading extension mounting reinforcement	(see MR 400, 40A, General information)		
(7)	Rear side panel, front section	Rear side panel, front section: Replacement		
(8)	Upper body, rear section	Upper body, rear section: Replacement		
(9)	B-pillar lining	(see B-pillar lining: Replacement)		
(10)	B-pillar lower lining	(see B-pillar lower lining: Replacement)		
(11)	Trim mounting support	(see B-pillar lining: Replacement)		

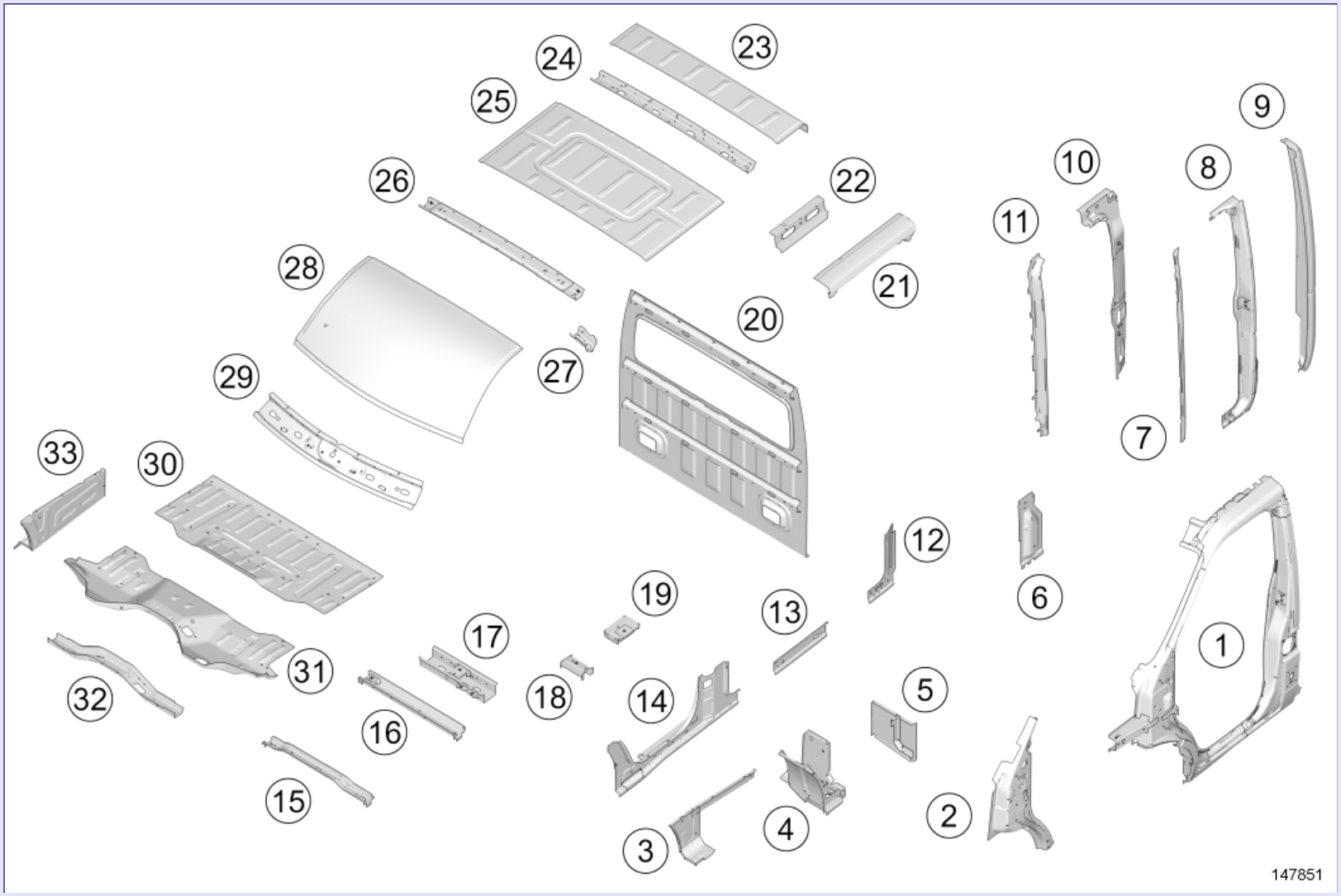
(12)	Rear side foot panel	(see Rear side foot panel: Replacement)
(13)	Front jacking point	Front jacking point: Replacement
(14)	Front side foot panel	Front side foot panel: Replacement
(15)	Central floor front cross member	Centre floor front cross member: Replacement
(16)	Front cross member under front seat	Front cross member under front seat: Replacement
(17)	Rear cross member under front seat	Rear cross member under front seat: Replacement
(18)	Centre floor front side cross member	Centre floor front side cross member: Replacement
(19)	Front seat rear exterior mounting unit	Front seat rear mounting exterior unit: Replacement
(20)	Front roof, side section	Front side section of roof: replacement
(21)	Passenger compartment partition	(see Passenger compartment partition: Replacement)
(22)	Roof cross member mounting	(see Roof cross member mounting: Replacement)
(26)	Roof centre cross member	(see Roof centre cross member: Replacement)
(27)	Rear roof	Rear roof: replacement
(28)	Front roof	Front roof: Replacement
(29)	Roof front cross member	Roof front cross member: Replacement
(30)	Centre floor	Centre floor: Replacement
(31)	Centre floor front extension	central floor front extension: replacement
(32)	Bulkhead lower cross member	Bulkhead lower cross member: Replacement
(33)	Foot panel	Foot panel: Replacement

F62(F62)

No.	Description	Classification	Type	Thickness (mm)
(1)	Body side	Body side: Replacement		
(2)	A-pillar reinforcement	A-pillar reinforcement: Replacement		
(3)	Sill panel closure panel, front section	Sill panel closure panel, front section: Replacement		
(4)	Sill panel closure panel, rear section	Sill panel closure panel, rear section: Replacement		
(5)	Sill panel closure panel (version without sliding side door)	Sill panel closure panel: Replacement		
(9)	B-pillar lining	B-pillar lining: Replacement		
(10)	B-pillar lower lining	B-pillar lower lining: Replacement		

(11)	Trim mounting support	B-pillar lining: Replacement
(12)	Rear side foot panel	Rear side foot panel: Replacement
(13)	Front jacking point	Front jacking point: Replacement
(14)	Front side foot panel	Front side foot panel: Replacement
(15)	Central floor front cross member	Centre floor front cross member: Replacement
(16)	Front cross member under front seat	Front cross member under front seat: Replacement
(17)	Rear cross member under front seat	Rear cross member under front seat: Replacement
(18)	Centre floor front side cross member	Centre floor front side cross member: Replacement
(19)	Front seat rear exterior mounting unit	Front seat rear mounting exterior unit: Replacement
(20)	Front roof, side section	Front side section of roof: replacement
(21)	Passenger compartment partition	Passenger compartment partition: Replacement
(22)	Roof cross member mounting	Roof cross member mounting: Replacement
(23)	Roof rear cross member	Roof rear cross member: Replacement
(24)	Roof rear cross member lining	Roof rear cross member lining: Replacement
(25)	Rear roof	Rear roof: replacement
(26)	Roof centre cross member	Roof centre cross member: Replacement
(28)	Front roof	Front roof: Replacement
(29)	Roof front cross member	Roof front cross member: Replacement
(30)	Centre floor	Centre floor: Replacement
(31)	Centre floor front extension	central floor front extension: replacement
(32)	Bulkhead lower cross member	Bulkhead lower cross member: Replacement
(33)	Foot panel	Foot panel: Replacement
(34)	Sill panel closure panel (sliding side door version)	Sill panel closure panel: Replacement
(35)	Rail unit	Rail unit: Replacement

H62 U62(H62 OR U62)



H62(H62)

No.	Description	Classification	Type	Thickness (mm)
(1)	Body side	Body side: Replacement		
(2)	A-pillar reinforcement	A-pillar reinforcement: Replacement		
(3)	Front side foot panel	Front side foot panel: Replacement		
(4)	Front jacking point	Front jacking point: Replacement		
(5)	Rear side foot panel	Rear side foot panel: Replacement		
(6)	B-pillar lower lining	(see B-pillar lower lining: Replacement)		
(7)	Rear B-pillar	Rear B-pillar: Replacement		
(8)	C-pillar	(see MR 400, 40A, General information)		
(9)	Rear side panel, front section	Rear side panel, front section: Replacement		
(10)	B-pillar lining	B-pillar lining: Replacement		
(11)	B-pillar closure panel	(see MR 400, 40A, General information)		

(12)	Sill panel closure panel, rear section	Sill panel closure panel, rear section: Replacement
(13)	Sill panel closure panel	Sill panel closure panel: Replacement
(14)	Sill panel closure panel, front section	Sill panel closure panel, front section: Replacement
(15)	Central floor front cross member	Centre floor front cross member: Replacement
(16)	Front cross member under front seat	Front cross member under front seat: Replacement
(17)	Rear cross member under front seat	Rear cross member under front seat: Replacement
(18)	Centre floor front side cross member	Centre floor front side cross member: Replacement
(19)	Front seat rear exterior mounting unit	Front seat rear mounting exterior unit: Replacement
(20)	Passenger compartment partition	Passenger compartment partition: Replacement
(21)	Upper body, rear section	Upper body, rear section: Replacement
(22)	Roof drip moulding lining	(see MR 400, 40A, General information)
(23)	Rear roof, rear section	(see Rear roof, rear section: Replacement)
(24)	Roof cross member	(see MR 400, 40A, General information)
(25)	Rear roof	Rear roof: replacement
(26)	Roof centre cross member	(see Roof centre cross member: Replacement)
(27)	Roof cross member mounting	(see Roof cross member mounting: Replacement)
(28)	Front roof	Front roof: Replacement
(29)	Roof front cross member	Roof front cross member: Replacement
(30)	Centre floor	Centre floor: Replacement
(31)	Centre floor front extension	central floor front extension: replacement
(32)	Bulkhead lower cross member	Bulkhead lower cross member: Replacement
(33)	Foot panel	Foot panel: Replacement

U62(U62)

No.	Description	Classification	Type	Thickness (mm)
(1)	Body side	Body side: Replacement		
(2)	A-pillar reinforcement	A-pillar reinforcement: Replacement		
(3)	Front side foot panel	Front side foot panel: Replacement		
(4)	Front jacking point	Front jacking point: Replacement		
(5)	Rear side foot panel	(see Rear side foot panel: Replacement)		
(6)	B-pillar lower lining	(see B-pillar lower lining: Replacement)		
(9)	Rear side panel, front section	Rear side panel, front section: Replacement		

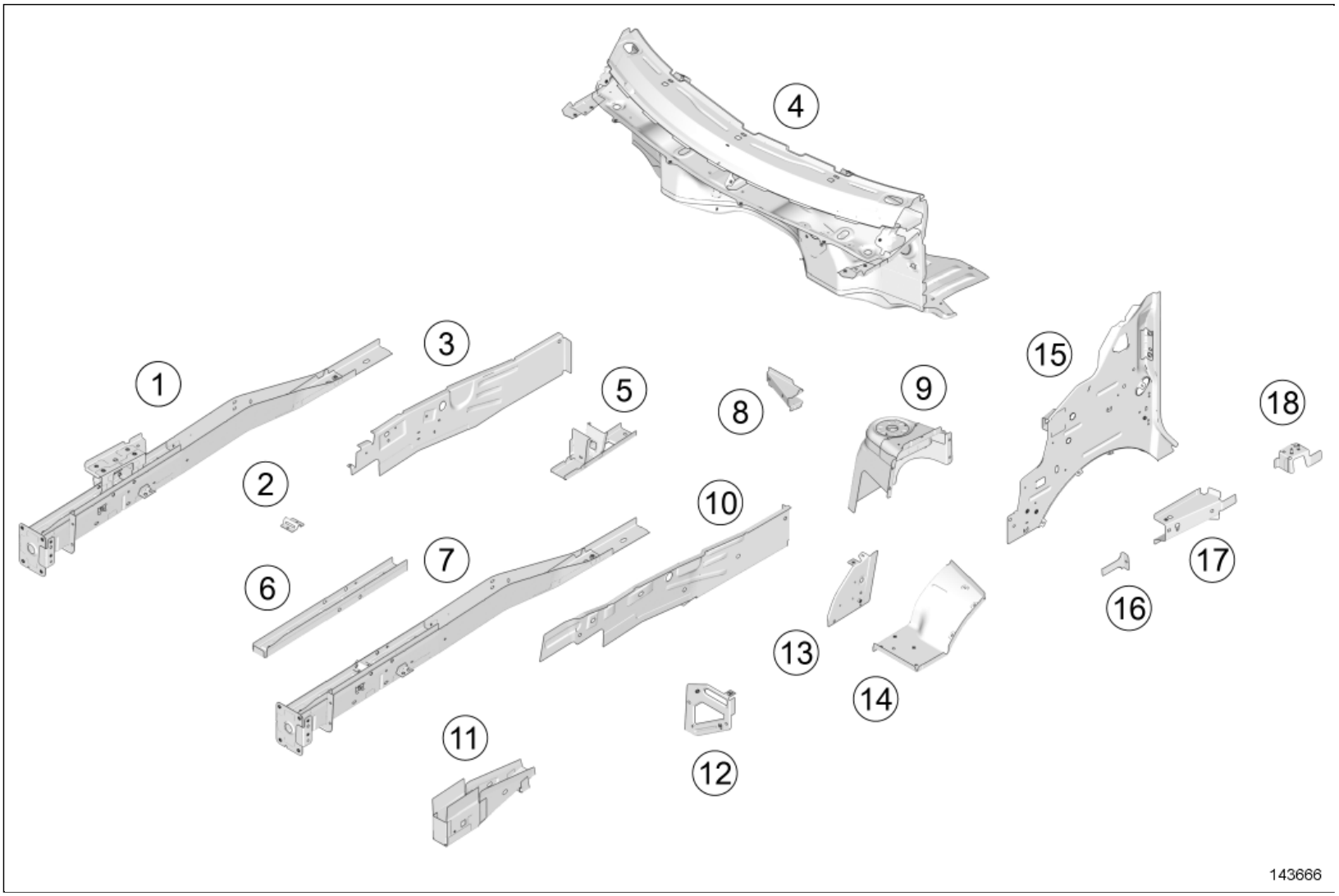
(10)	B-pillar lining	B-pillar lining: Replacement
(14)	Sill panel closure panel, front section	Sill panel closure panel, front section: Replacement
(15)	Central floor front cross member	Centre floor front cross member: Replacement
(16)	Front cross member under front seat	Front cross member under front seat: Replacement
(17)	Rear cross member under front seat	Rear cross member under front seat: Replacement
(18)	Centre floor front side cross member	Centre floor front side cross member: Replacement
(19)	Front seat rear exterior mounting unit	Front seat rear mounting exterior unit: Replacement
(20)	Passenger compartment partition	Passenger compartment partition: Replacement
(23)	Rear roof, rear section	(see Rear roof, rear section: Replacement)
(26)	Roof centre cross member	(see Roof centre cross member: Replacement)
(27)	Roof cross member mounting	(see Roof cross member mounting: Replacement)
(28)	Front roof	Front roof: Replacement
(29)	Roof front cross member	Roof front cross member: Replacement
(30)	Centre floor	Centre floor: Replacement
(31)	Centre floor front extension	central floor front extension: replacement
(32)	Bulkhead lower cross member	Bulkhead lower cross member: Replacement
(33)	Foot panel	Foot panel: Replacement

VEHICLE STRUCTURE, FRONT SECTION: DESCRIPTION

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**



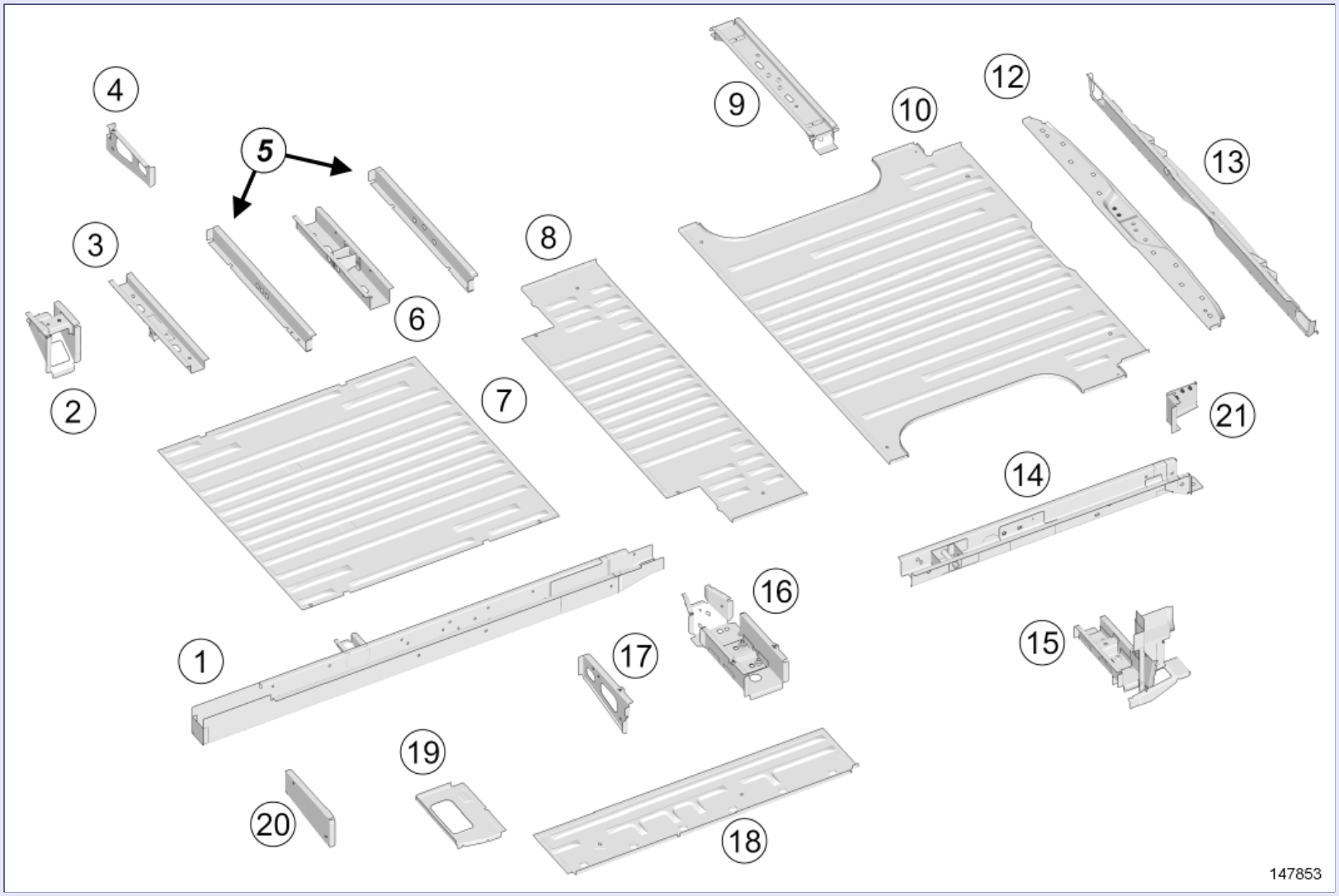
No.	Description	Classification	Type	Thickness (mm)
(1)	Front right-hand section of front side member	Front side member, front section: Replacement		
(2)	Spacer	Front side member: Conversion		
(3)	Front side member closure panel, rear section	rear section of front side member closure panel: replacement		
(4)	Bulkhead	Bulkhead: Replacement		
(5)	Front section of front side member rear closure panel	front section of front side member rear closure panel: replacement		
(6)	Front section of front side member closure panel	Front section of front side member closure panel: Replacement		
(7)	Front left-hand section of front side member	Front side member, front section: Replacement		
(8)	Bulkhead side reinforcement	Bulkhead side reinforcement: Replacement		
(9)	Front wheel arch	Front wheel arch: Replacement		
(10)	Front side member rear part	Front side member, rear section: Replacement		
(11)	Front subframe rear mounting unit	Front subframe rear mounting unit: Replacement		
(12)	Front end side cross member	Front end side cross member: Replacement		
(13)	Front wheel arch closure panel	Front wheel arch, front section: Replacement		
(14)	Front wheel arch, front section	Front wheel arch, front section: Replacement		
(15)	Scuttle side panel	Scuttle side panel: Replacement		
(16)	Front wing rear mounting support	Front wing rear mounting support: Replacement		
(17)	Scuttle side panel upper reinforcement	Scuttle side panel upper reinforcement: Replacement		
(18)	Bonnet hinge mounting	Bonnet hinge mounting: Replacement		

VEHICLE STRUCTURE, REAR SECTION: DESCRIPTION

Note, one or more warnings are present in this procedure

WARNING

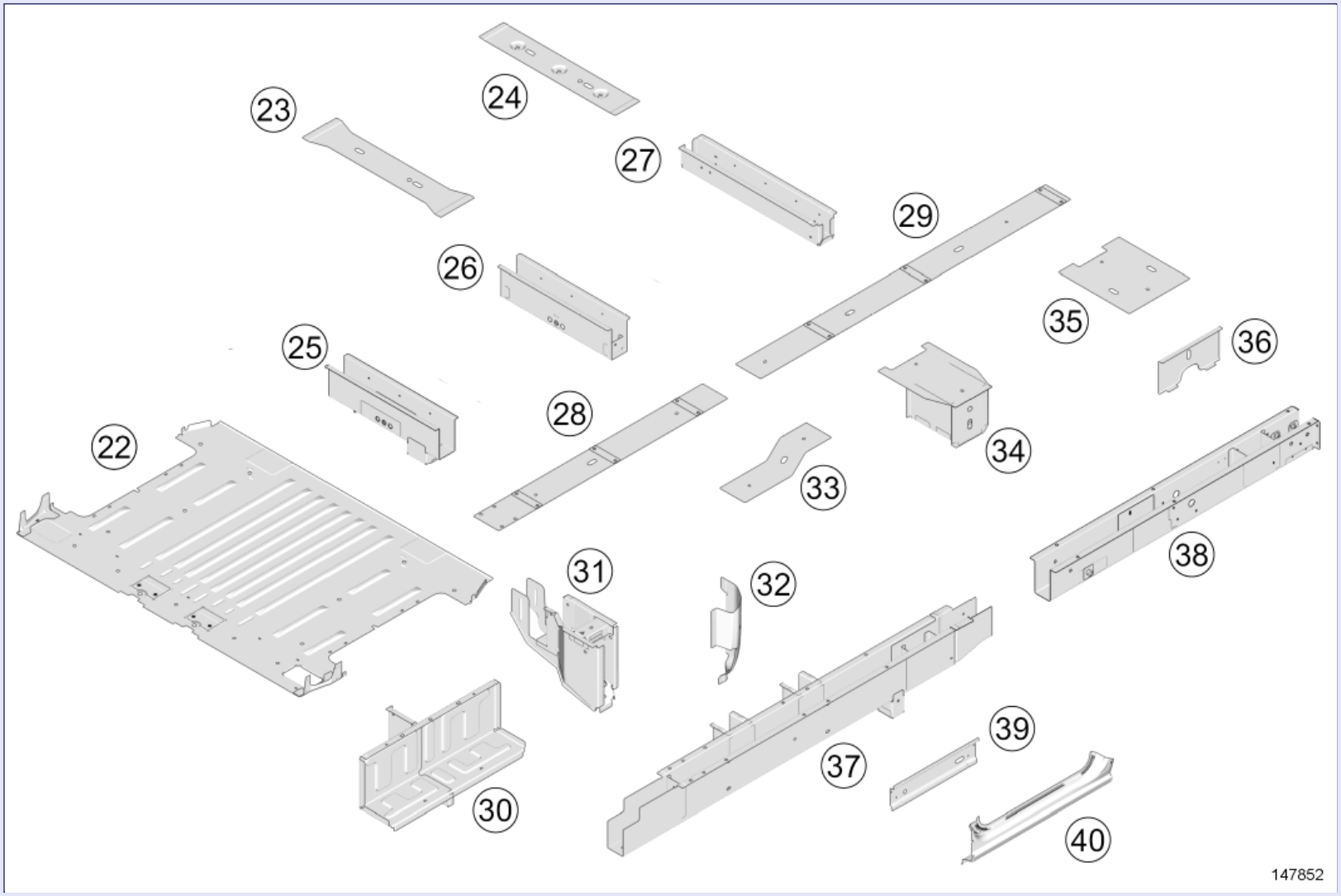
Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**



	Description	Classification	Type	Thickness (mm)
(1)	Rear side member, front section	Rear side member, front section: Replacement		
(2)	Rear floor middle cross member bracket	Rear floor middle cross member bracket: Replacement		
(3)	Front section of rear floor central cross member	Front section of rear floor central cross member: Replacement		
(4)	Rear side stiffener of rear floor front section (sliding side door version)	Front section of rear floor rear side stiffener: Replacement		
(5)	Rear floor stiffener	Rear floor stiffener: Replacement		
(6)	Rear floor centre cross member	Rear floor centre cross member: Replacement		
(7)	Rear floor, front section	Rear floor, front section: Replacement		
(8)	Rear floor extension, front section	front section of rear floor extension: Replacement		
(9)	Rear section of rear floor central cross member	Rear section of rear floor central cross member: Replacement		
(10)	Rear floor, rear section	Rear floor, rear section: Replacement		
(12)	Rear end lower cross member closure panel			
(13)	Rear floor rear cross member	Rear floor rear cross member: Replacement		

(14)	Rear section of rear side member	Rear side member, rear section: Replacement
(15)	Rear floor side cross member	Rear floor side cross member: Replacement
(16)	Rear axle assembly mounting unit	Rear axle mounting unit: Replacement
(17)	Rear side stiffener of rear floor front section (version without sliding side door)	Front section of rear floor rear side stiffener: Replacement
(18)	Rear floor, front side section	Rear floor, front side section: Replacement
(19)	Rear floor front cross member closure panel	Rear floor front cross member closure panel: Replacement
(20)	Front section of rear floor front side stiffener	Front section of rear floor front side stiffener: Replacement
(21)	Rear end pillar lower closure panel	

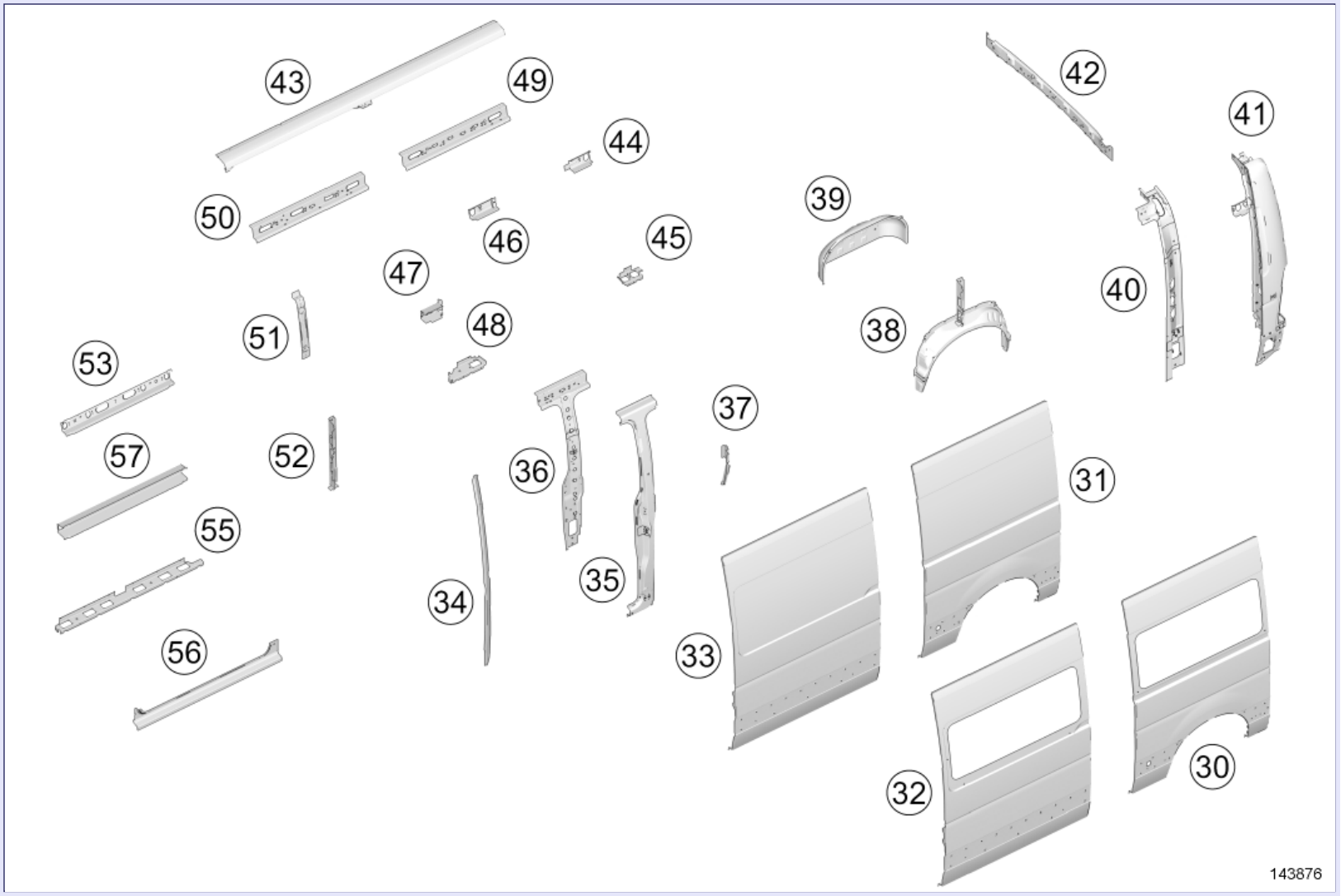
H62 U62(H62 OR U62)



	Description	Classification	Type	Thickness (mm)
(22)	Centre floor rear section	Centre floor rear section: Replacement		

(23)	Rear floor rear cross member closure panel	(see MR 400, 40A, General information)
(24)	Rear floor front cross member closure panel	Rear floor front cross member closure panel: Replacement
(25)	Front section of rear floor central cross member	Front section of rear floor central cross member: Replacement
(26)	Rear floor centre cross member	Rear floor centre cross member: Replacement
(27)	Rear section of rear floor central cross member	(see Rear section of rear floor central cross member: Replacement)
(28)	Rear side member closure panel	Rear side member closure panel: Replacement
(29)	Rear side member closure panel, rear section	Rear side member closure panel, rear section: Replacement
(30)	Rear side foot panel	Rear side foot panel: Replacement
(31)	Rear side foot panel rear closure panel	Rear side foot panel rear closure panel: Replacement
(32)	C-pillar lower reinforcement	(see MR 400, 40A, General information)
(33)	Rear side member closure panel, front section	(see MR 400, 40A, General information)
(34)	Rear axle assembly mounting unit	Rear axle mounting unit: Replacement
(35)	Rear axle assembly mounting unit closure panel	(see MR 400, 40A, General information)
(36)	Rear axle assembly mounting side closure panel	(see MR 400, 40A, General information)
(37)	Rear side member, front section	Rear side member, front section: Replacement
(38)	Rear section of rear side member	Rear side member, rear section: Replacement
(39)	Sill panel closure panel	Sill panel closure panel: Replacement
(40)	Sill panel	Sill panel: Replacement

F62(F62) UPPER REAR SECTION



	Description	Classification	Type	Thickness (mm)
(30)	Rear side panel rear section (glazed version)			
(31)	Rear side panel rear section (panelled version)	Rear side panel, rear section: Replacement		
(32)	Rear side panel front section (glazed version)	Rear side panel, front section: Replacement		
(33)	Rear side panel front section (panelled version)	Rear side panel, front section: Replacement		
(34)	C-pillar closure panel	C-pillar closure panel: Replacement		
(35)	C-pillar	C-pillar: Replacement		
(36)	C-pillar lining	Rear pillar lining: Replacement		
(37)	Rear end pillar lower closure panel	Rear end pillar lower closure panel: Replacement		

(38)	Outer rear wheel arch	Outer rear wheel arch: Replacement
(39)	Inner rear wheel arch	Inner rear wheel arch: Replacement
(40)	Rear end pillar lining	Rear end pillar lining: Replacement
(41)	Rear end pillar	Rear end pillar: Replacement
(42)	Rear end panel	Rear end panel: Replacement
(43)	Rear side roof rail	Rear side roof rail: Replacement
(44)	Rear side top of panel rear upper stiffener front connection component	Rear side top of panel rear upper stiffener front connecting component: Replacement
(45)	Rear side back of panel lower horizontal stiffener	Rear side back of panel lower horizontal stiffener: Replacement
(46)	Rear side top of panel front upper stiffener rear connection component	Rear side top of panel front upper stiffener rear connecting component: Replacement
(47)	Rear side bottom of panel front upper stiffener rear connection component	Rear side bottom of panel front upper stiffener rear connecting component: Replacement
(48)	Rear side centre of panel lower horizontal stiffener	Rear side centre of panel lower horizontal stiffener: Replacement
(49)	Rear side roof rail lining	Side roof rail rear lining: Replacement
(50)	Front side roof rail lining	Front side roof rail lining: Replacement
(51)	Rear side panel upper vertical stiffener	Rear side panel upper vertical stiffener: Replacement
(52)	Rear side panel lower vertical stiffener	Rear side panel lower vertical stiffener: Replacement
(53)	Rear side top of panel upper horizontal stiffener	Rear side top of panel upper horizontal stiffener: Replacement
(57)	Rear side bottom of panel upper horizontal stiffener	Rear side bottom of panel upper horizontal stiffener: Replacement
(55)	Rear side front of panel lower horizontal stiffener	Rear side front of panel lower horizontal stiffener: Replacement
(56)	Sill panel	Sill panel: Replacement

WHEEL:BALANCING

Note, one or more warnings are present in this procedure

1. PREREQUISITES FOR WHEEL BALANCING

- Wheel balancing is a measurement operation.

Several conditions must be met to achieve a reliable result in a single operation.

The wheel balancer must be installed in accordance with the manufacturer's instructions.

It is essential to calibrate the balancer according to the frequency recommended by the manufacturer.

Do not grease the threaded shaft.

Check the condition of the supports, centring components and mountings.

Replace any faulty parts (see manufacturer's instructions).

The wheel and the wheel balancer must be clean.

1- DRIVER'S PERCEPTION

- If the wheels are not correctly balanced this causes the steering wheel and/or the vehicle floor to vibrate.

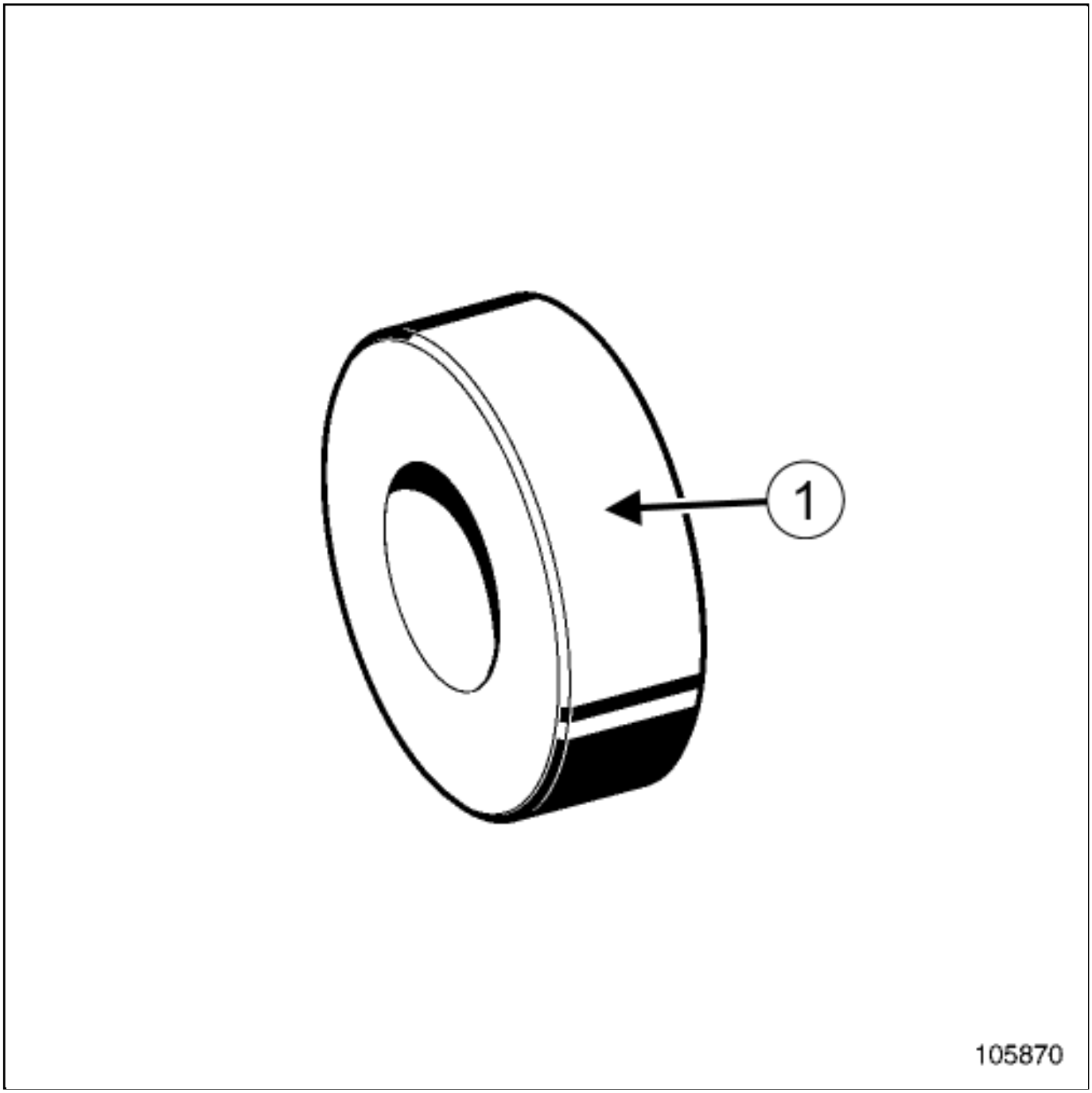
These vibrations appear between 54 mph (90 km/h)and 90 mph (150 km/h).

2. BALANCING PREPARATION OPERATION

- Adjust the tyre pressure Tyre pressure: Identification .

- Always carry out a road test for a minimum distance of 1 mile (2 km)before balancing the wheels, in order to remove any flat spots on the tread caused by the vehicle being immobilised.

- Actions to be carried out immediately after the test drive:
  - Position the vehicle on a two-post vehicle lift Vehicle: Towing and lifting ,
  - raise the vehicle,
  - leave the four wheels hanging free,
  - release the parking brake.



Note:

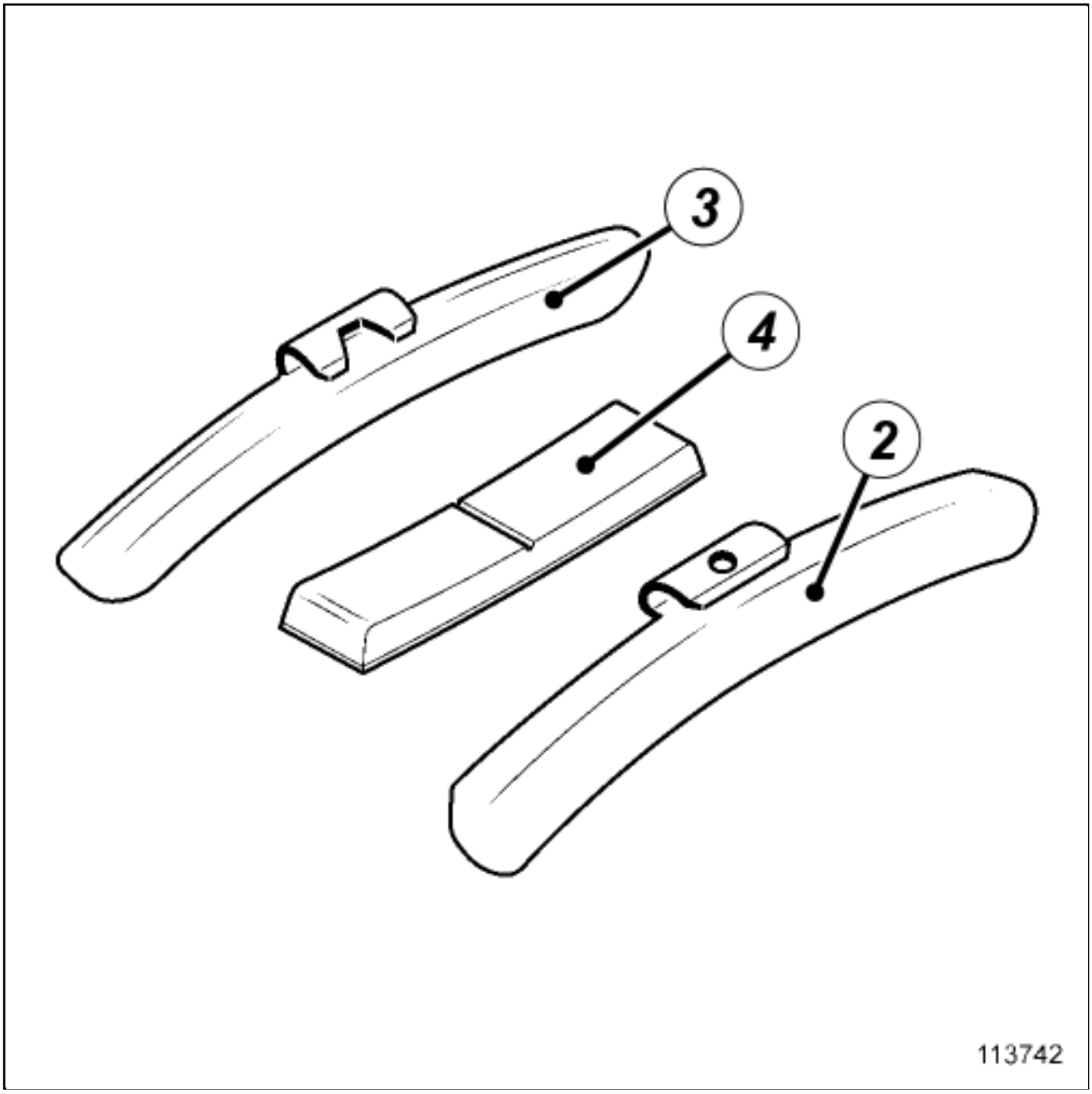
The ring is available from the supplier of the equipment used.

To reproduce the exact vehicle wheel assembly, use a ring(1) of diameter:

- 142 mm

- 89 mm

- There are three types of weight:



(2) Steel wheel with flange

(3) Alloy wheel with flange

(4) Alloy wheel without flange

- In some countries, the use of lead weights is forbidden; in this case it is recommended to use ZAMAK weights instead.

Only use weights provided by the Parts Department.

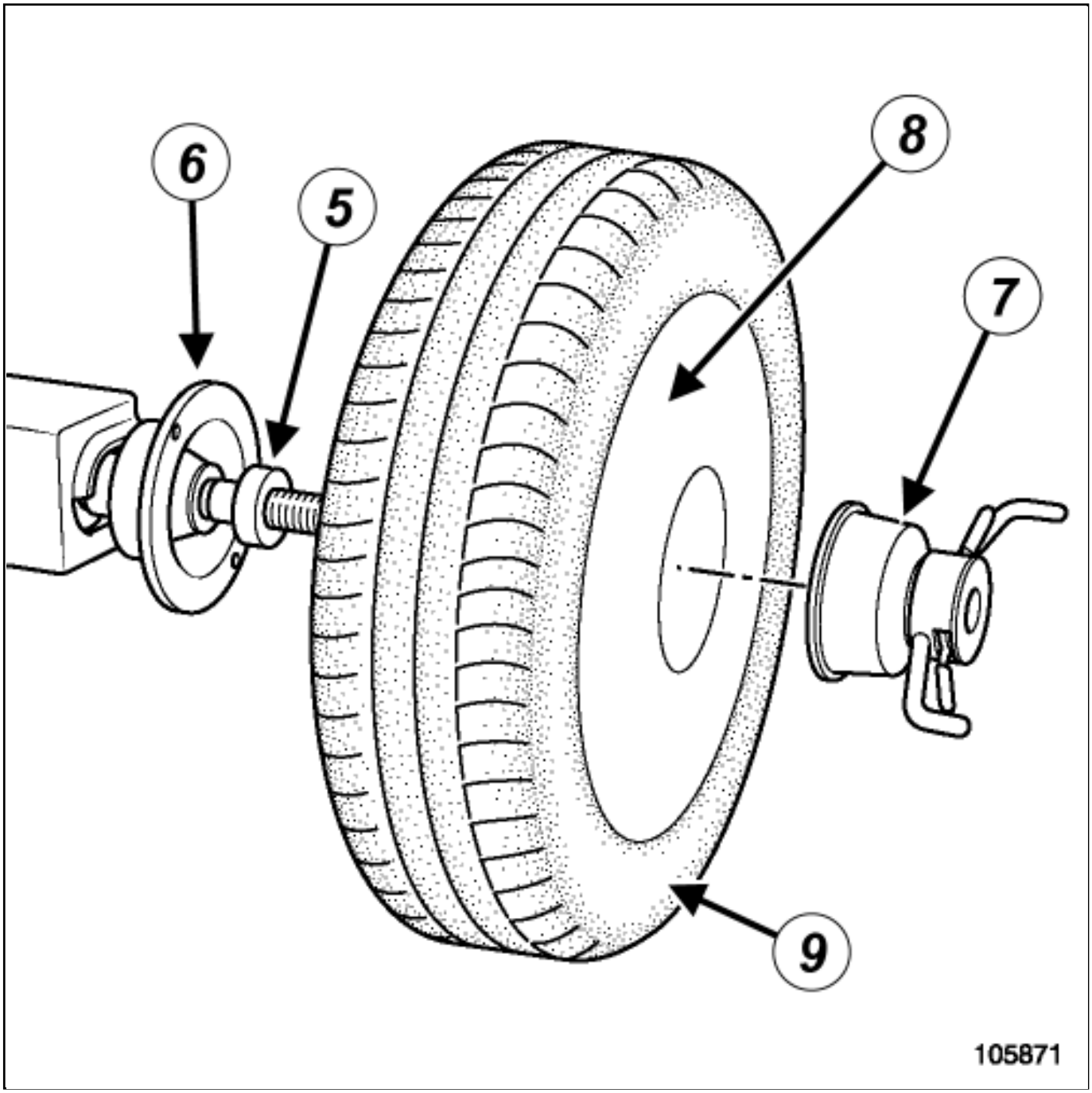
- Remove the wheels (see 35A, Wheels and tyres, Wheel: Removal - Refitting) .

- Always clean the wheel, disc, and hub bearing surfaces.

3. PROCEDURE FOR BALANCING THE WHEEL IN QUESTION

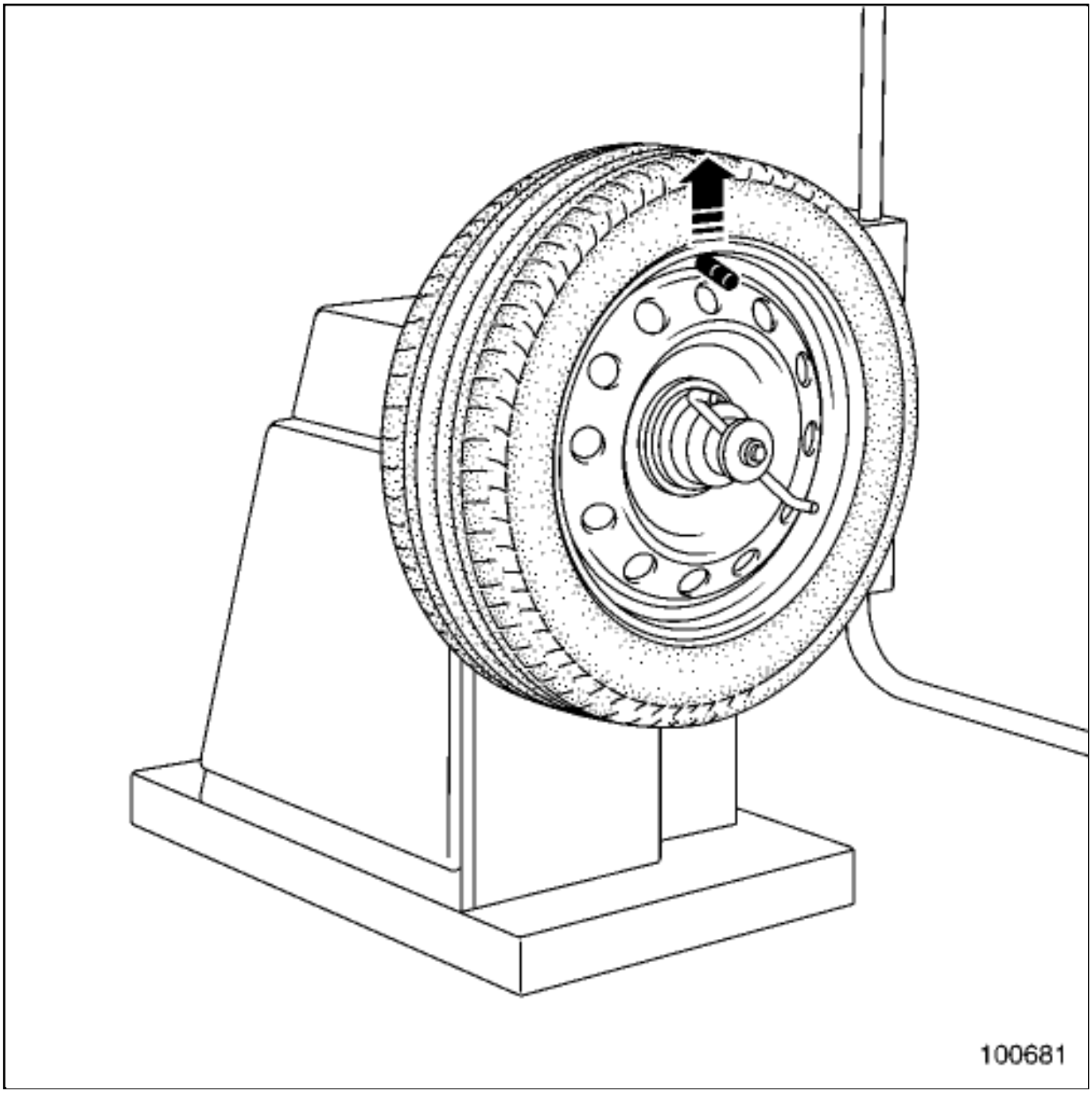
- Make sure that the wheel balancer bearing surface and all the centring equipment (ring, thrust plate, etc.) are kept clean.

- Try not to scratch the (alloy) wheel rim with the wheel tightening device.



The wheel is fitted on the wheel balancer as follows:

- (5) ring,
- (6) wheel balancer back-plate,
- (7) wheel tightening device (certain alloy wheels require a device 200 mm in diameter to ensure that the wheel has been correctly tightened),
- (8) outer wheel plane,
- (9) wheel.



- Place the wheel on the wheel balancer, with the valve at the top, then lock the wheel in place.

- Remove any stones trapped in the tyre tread.

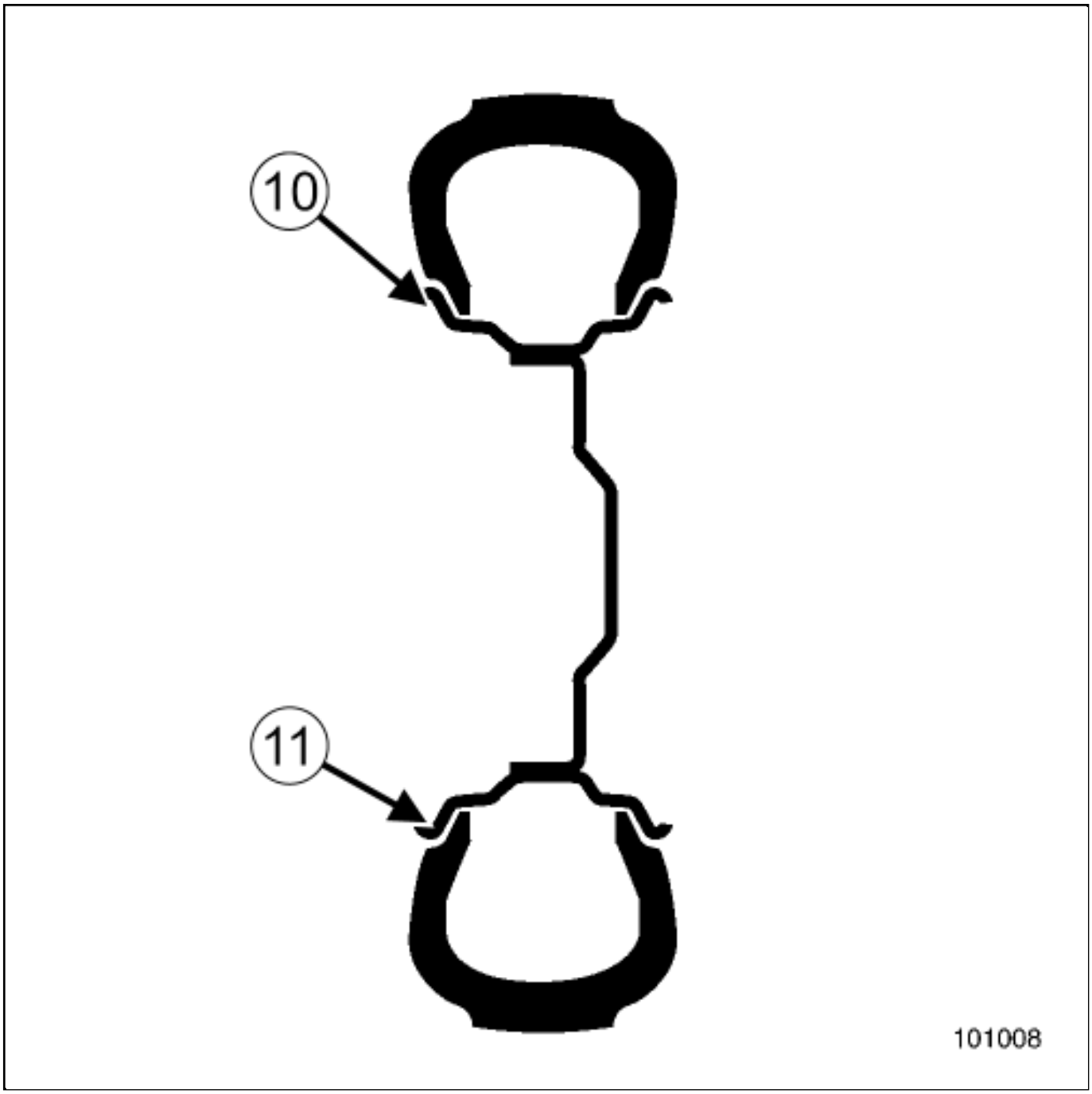
- Enter the specific wheel parameters when starting the wheel balancer.

- Start the wheel balancer and check the wheel balance, which should be 0 gon each plane of the wheel.

- If this is not the case, remove the old wheel balancing weights and repeat the wheel balancing procedure, checking that the wheel balance equals 0on each wheel plane.

CAUTION

To avoid detachment of the balance weights, use only weights which correspond to the vehicle wheel rims.



To ensure that the wheels are balanced correctly:

- Position a 10 g adhesive weight (10) on the interior of the wheel rim,

Repeat the wheel balancing procedure; the wheel balancer should indicate an equivalent weight (± 4 g) opposite the weight added(11) ,

Repeat the balancing method from the start if this is not the case.

Remove the adhesive weight.

4. FINAL OPERATION

Refit the wheel(see 35A, Wheels and tyres, Wheel: Removal - Refitting) .

WHEEL:BALANCING

Note, one or more warnings are present in this procedure

1. PREREQUISITES FOR WHEEL BALANCING

- Wheel balancing is a measurement operation.

Several conditions must be met to achieve a reliable result in a single operation.

The wheel balancer must be installed in accordance with the manufacturer's instructions.

It is essential to calibrate the balancer according to the frequency recommended by the manufacturer.

Do not grease the threaded shaft.

Check the condition of the supports, centring components and mountings.

Replace any faulty parts (see manufacturer's instructions).

The wheel and the wheel balancer must be clean.

1- DRIVER'S PERCEPTION

- If the wheels are not correctly balanced this causes the steering wheel and/or the vehicle floor to vibrate.

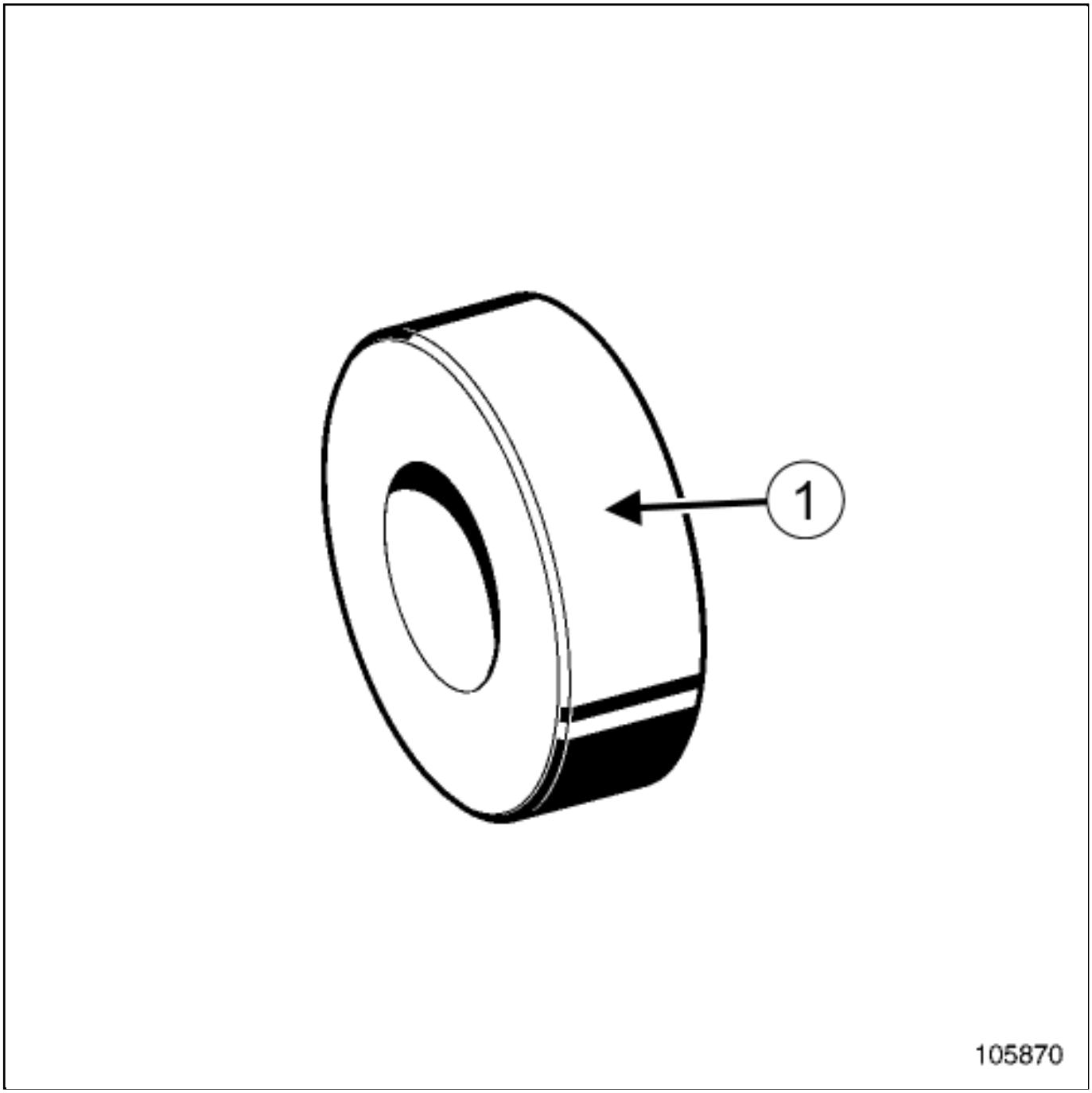
These vibrations appear between 54 mph (90 km/h)and 90 mph (150 km/h).

2. BALANCING PREPARATION OPERATION

- Adjust the tyre pressure(see **Tyre pressure: Identification**) .

- Always carry out a road test for a minimum distance of 1 mile (2 km)before balancing the wheels, in order to remove any flat spots on the tread caused by the vehicle being immobilised.

- Actions to be carried out immediately after the test drive:
  - Position the vehicle on a two-post vehicle lift(see **Vehicle: Towing and lifting**) ,
  - raise the vehicle,
  - leave the four wheels hanging free,
  - release the parking brake.



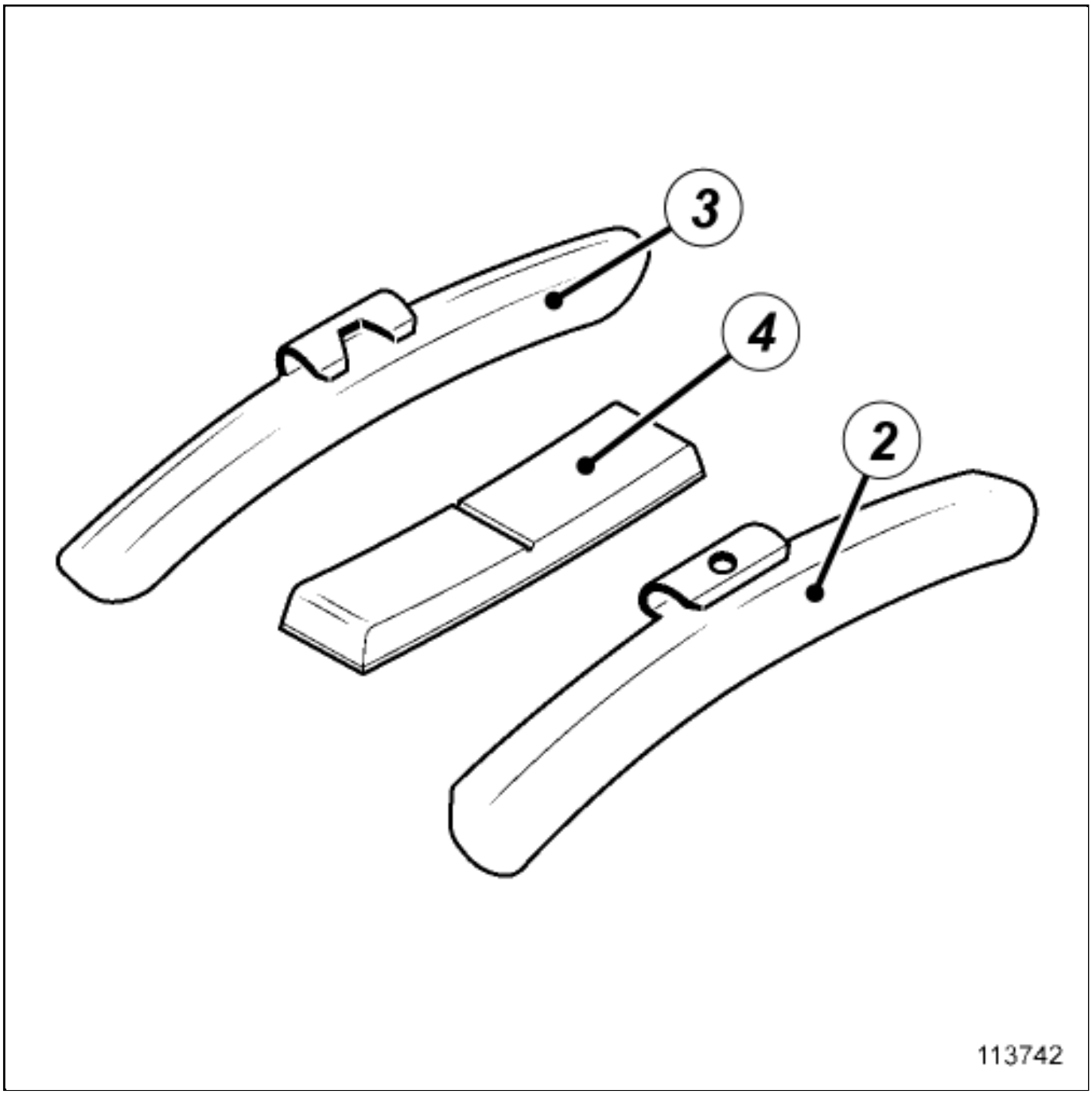
Note:

The ring is available from the supplier of the equipment used.

To reproduce the exact vehicle wheel assembly, use a ring(1) of diameter:

- 142 mm
- 89 mm

There are three types of weight:



(2) Steel wheel with flange

(3) Alloy wheel with flange

(4) Alloy wheel without flange

In some countries, the use of lead weights is forbidden; in this case it is recommended to use ZAMAK weights instead.

Only use weights provided by the Parts Department.

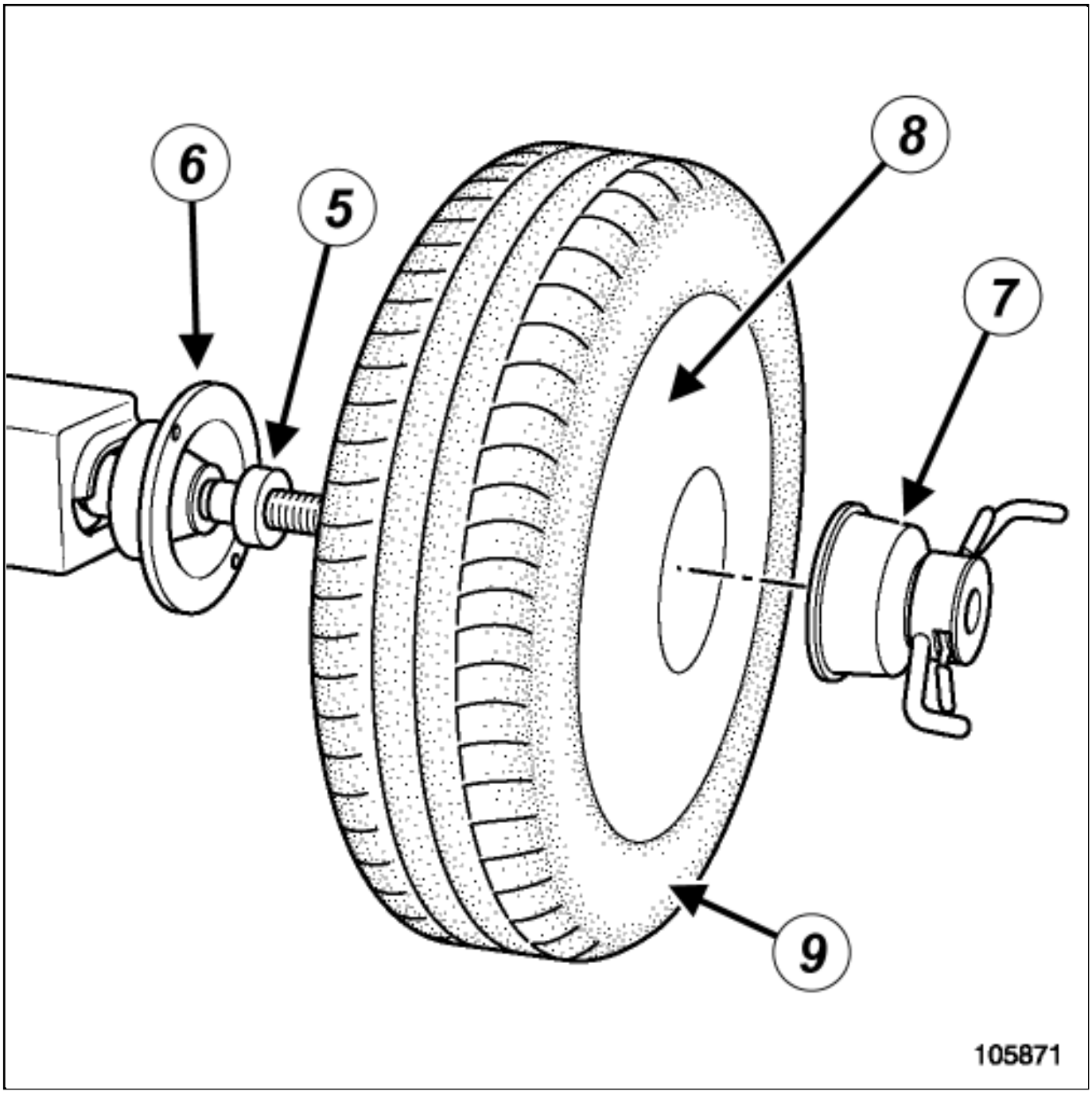
- Remove the wheels(see 35A, Wheels and tyres, Wheel: Removal - Refitting) .

- Always clean the wheel, disc, and hub bearing surfaces.

3. PROCEDURE FOR BALANCING THE WHEEL IN QUESTION

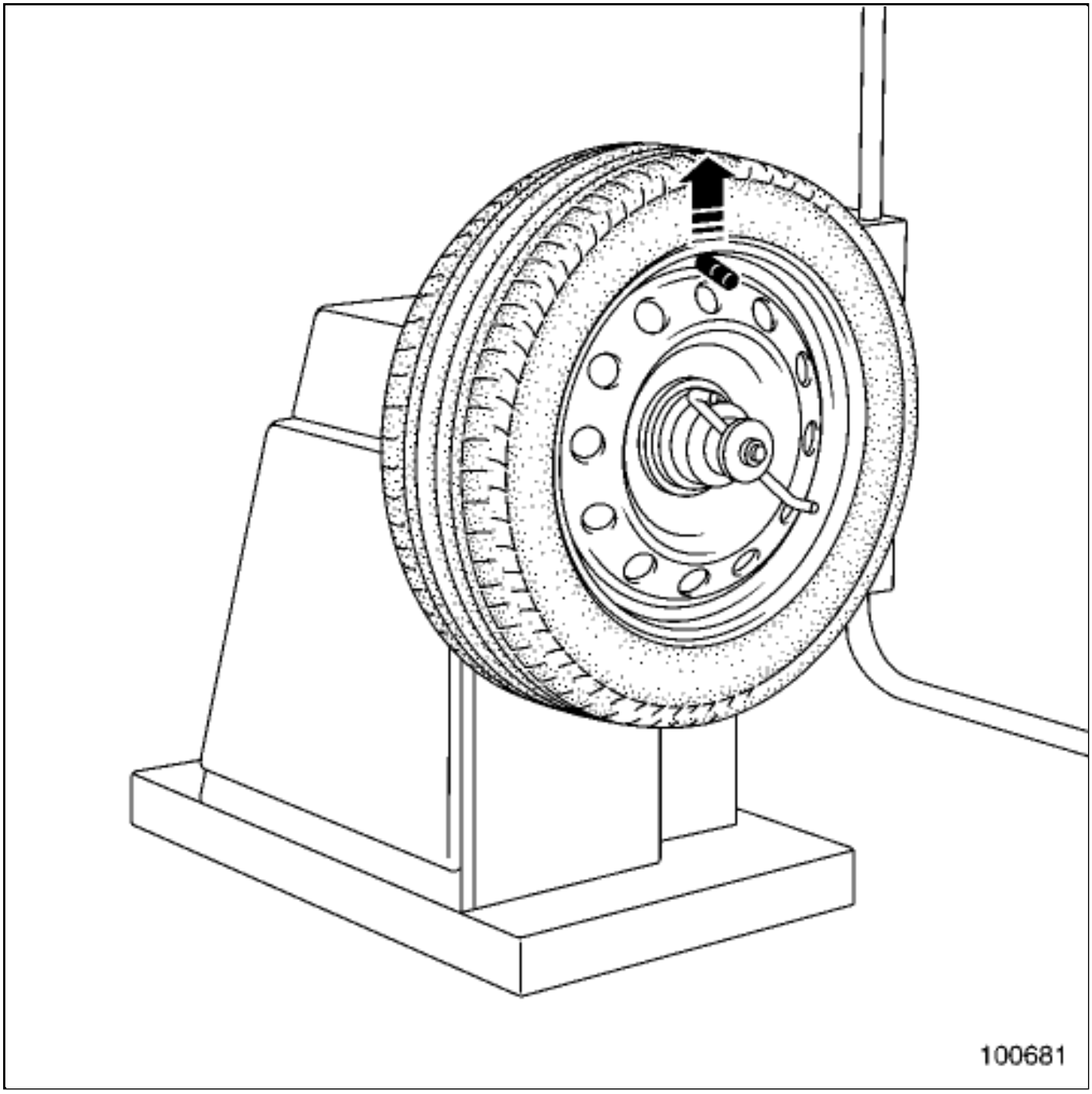
- Make sure that the wheel balancer bearing surface and all the centring equipment (ring, thrust plate, etc.) are kept clean.

- Try not to scratch the (alloy) wheel rim with the wheel tightening device.



The wheel is fitted on the wheel balancer as follows:

- (5) ring,
- (6) wheel balancer back-plate,
- (7) wheel tightening device (certain alloy wheels require a device 200 mm in diameter to ensure that the wheel has been correctly tightened),
- (8) outer wheel plane,
- (9) wheel.



Place the wheel on the wheel balancer, with the valve at the top, then lock the wheel in place.

Remove any stones trapped in the tyre tread.

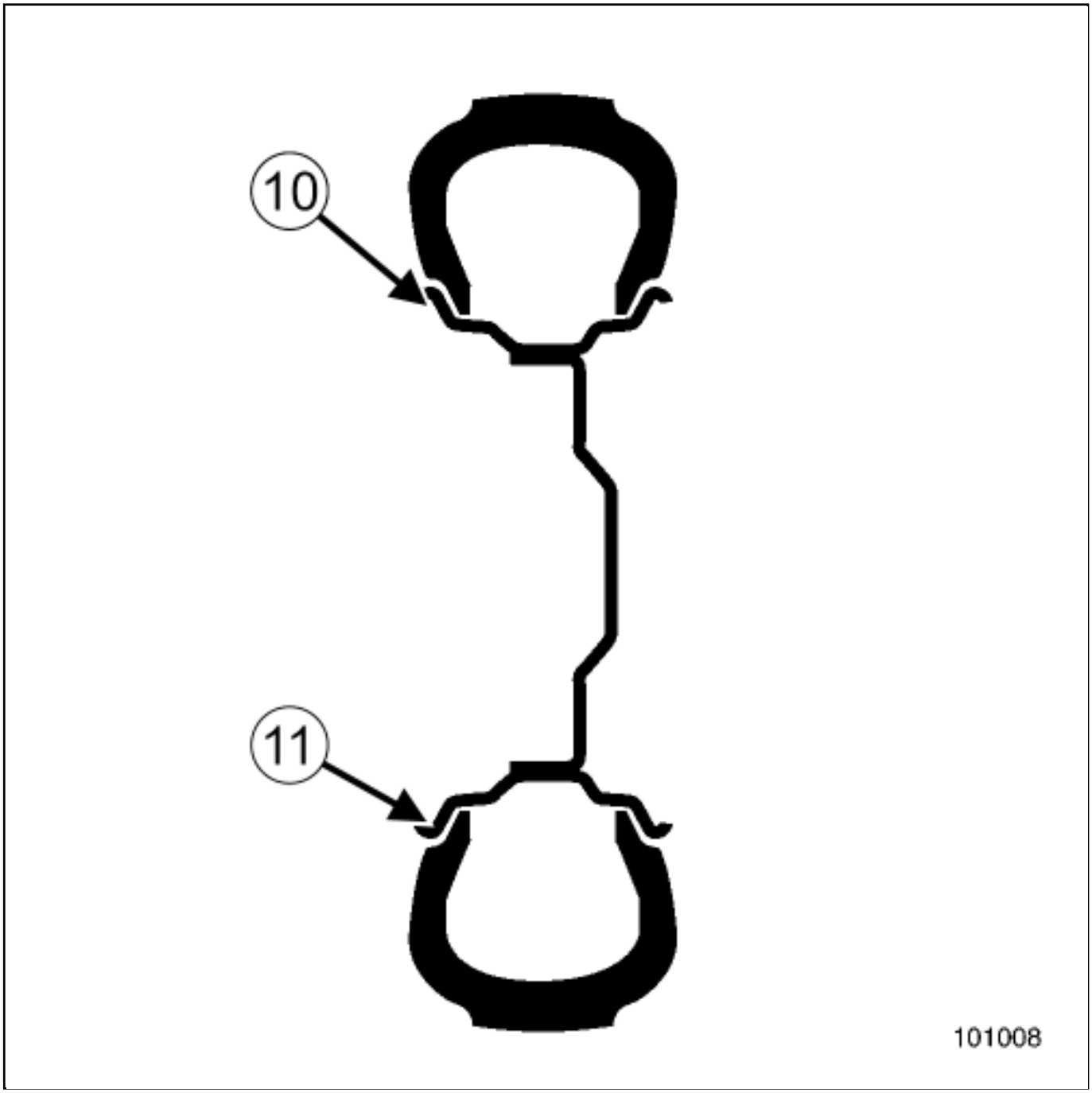
- Enter the specific wheel parameters when starting the wheel balancer.

- Start the wheel balancer and check the wheel balance, which should be 0 gon each plane of the wheel.

- If this is not the case, remove the old wheel balancing weights and repeat the wheel balancing procedure, checking that the wheel balance equals 0on each wheel plane.

CAUTION

To avoid detachment of the balance weights, use only weights which correspond to the vehicle wheel rims.



To ensure that the wheels are balanced correctly:

- Position a 10 g adhesive weight (10) on the interior of the wheel rim,
- Repeat the wheel balancing procedure; the wheel balancer should indicate an equivalent weight (± 4 g) opposite the weight added(11) ,
- Repeat the balancing method from the start if this is not the case.
- Remove the adhesive weight.

4. FINAL OPERATION

Refit the wheel(see 35A, Wheels and tyres, Wheel: Removal - Refitting) .

Repair-13x05x01-01x80-1-16-1.xml

XSL version : 3.02 du 22/07/11

WHEEL: REMOVAL - REFITTING

The removal - refitting procedure is the same for all wheels.

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift(see **Vehicle: Towing and lifting**) .
- Release the parking brake.
- Remove the trim .
- Position the wheel so that the valve is at the top.
- Mark the position of the wheel on the hub.

Note:

- This mark is required in order to:
  - Note the original position of the wheel on the hub,
  - perform the balancing operation.

2. REMOVAL OPERATION

- Loosen the wheel bolts with the wheel on the ground.

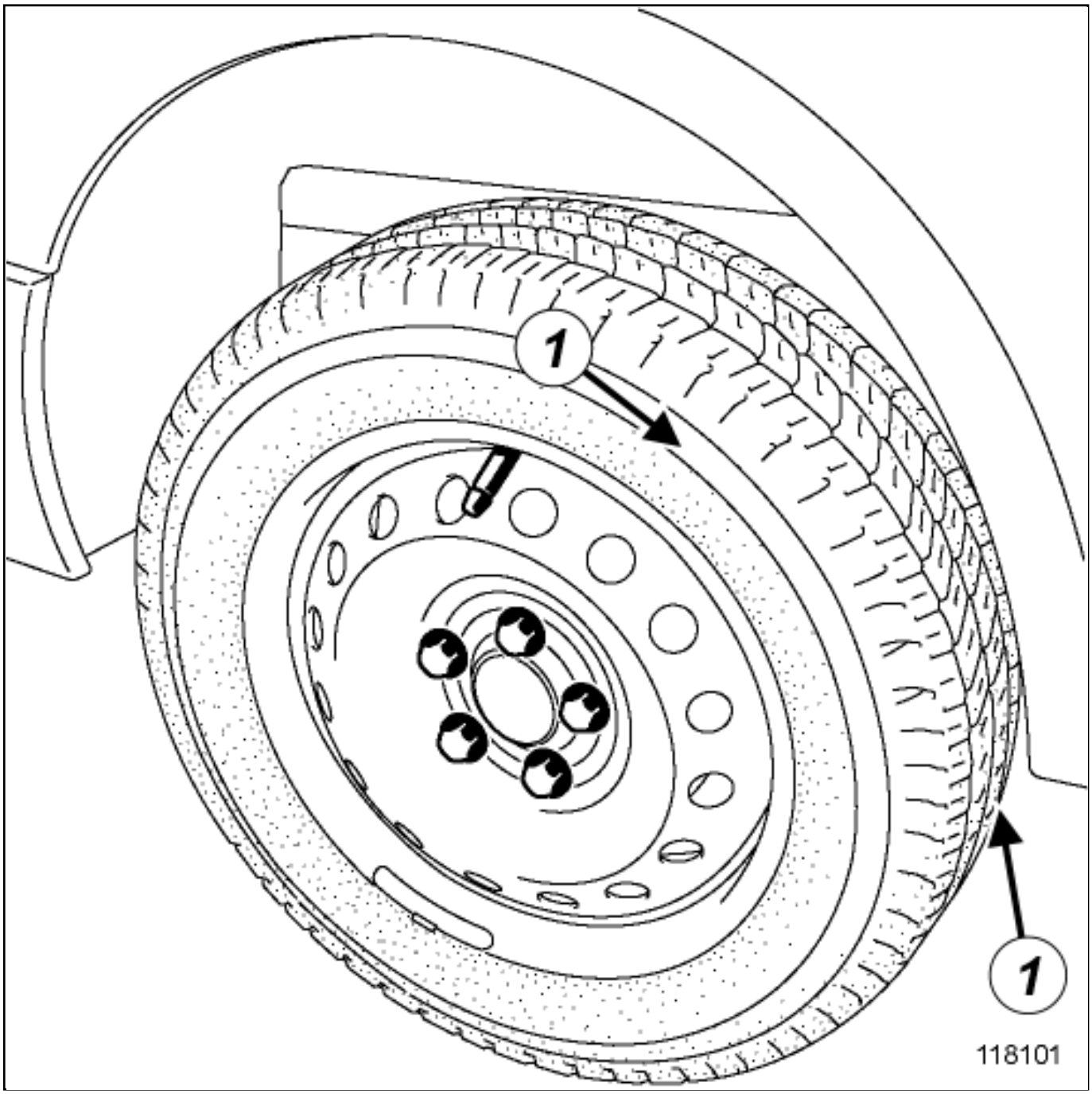
Note:

Use sockets with protective sheaths in order to avoid scratching the alloy wheel rims.

- Raise the lift.
- Remove:
  - the wheel bolts,
  - the wheel.

1- IF THE WHEEL CANNOT BE REMOVED AFTER THE BOLT HAS BEEN UNDONE:

- Position all the wheel bolts.
- Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.
- Undo the wheel bolts by one turn.

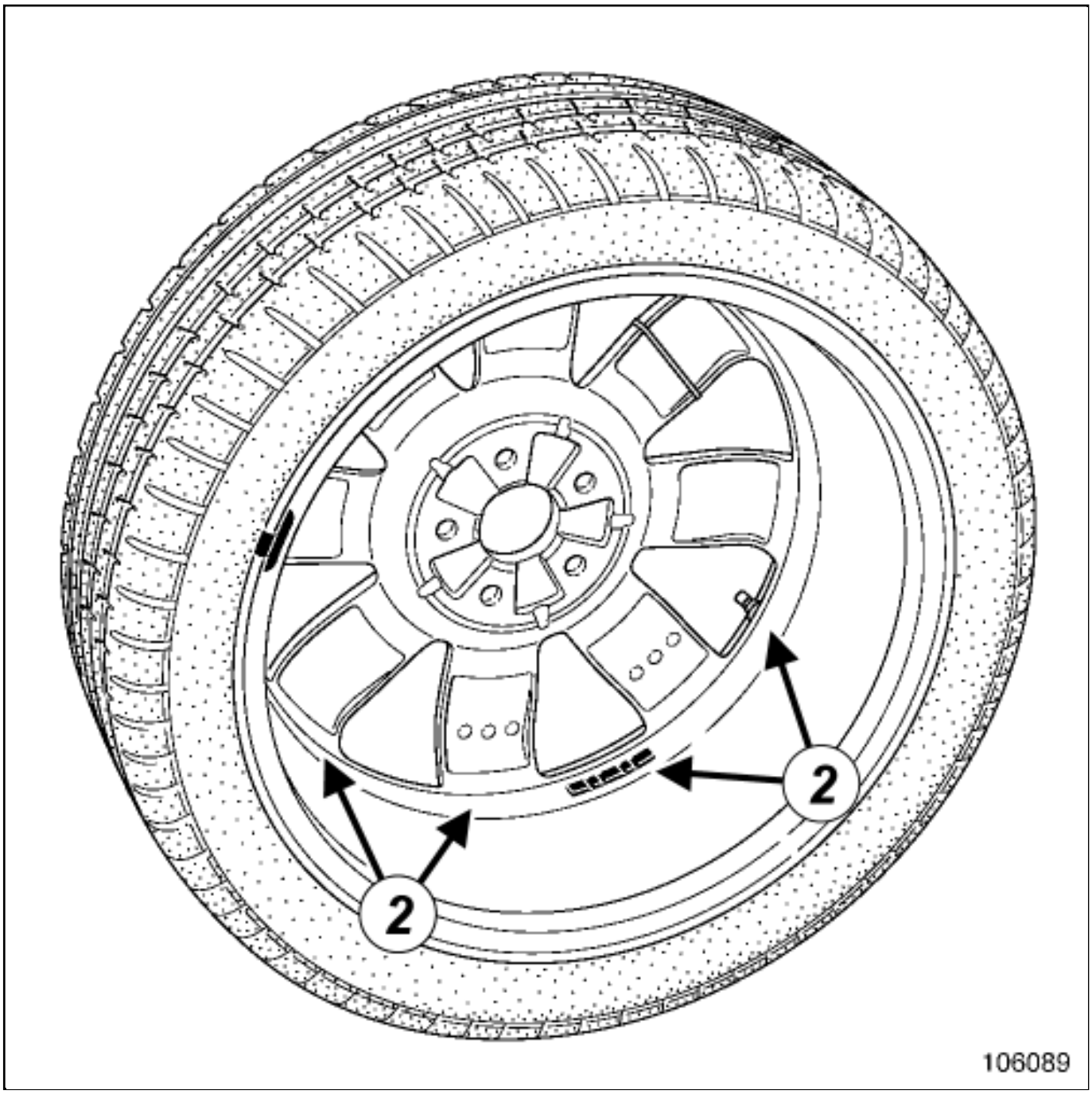


- Strike around the edge of the tyre walls(1) several times using a mallet on the inner and outer surfaces of the wheel to detach the wheel.

- Remove:

- the wheel bolts,
- the wheel.

1)IF THIS PROCEDURE DOES NOT WORK:



Strike the inner surface of the wheel(2) using a mallet and a wooden block to detach it.

Note:

Do not strike the surface of the wheel using excessive force as this may damage it.

- Remove:
  - the wheel bolts,
  - the wheel.

REFITTING

1. REFITTING PREPARATION OPERATION

- Clean the hub carrier using a wire brush.

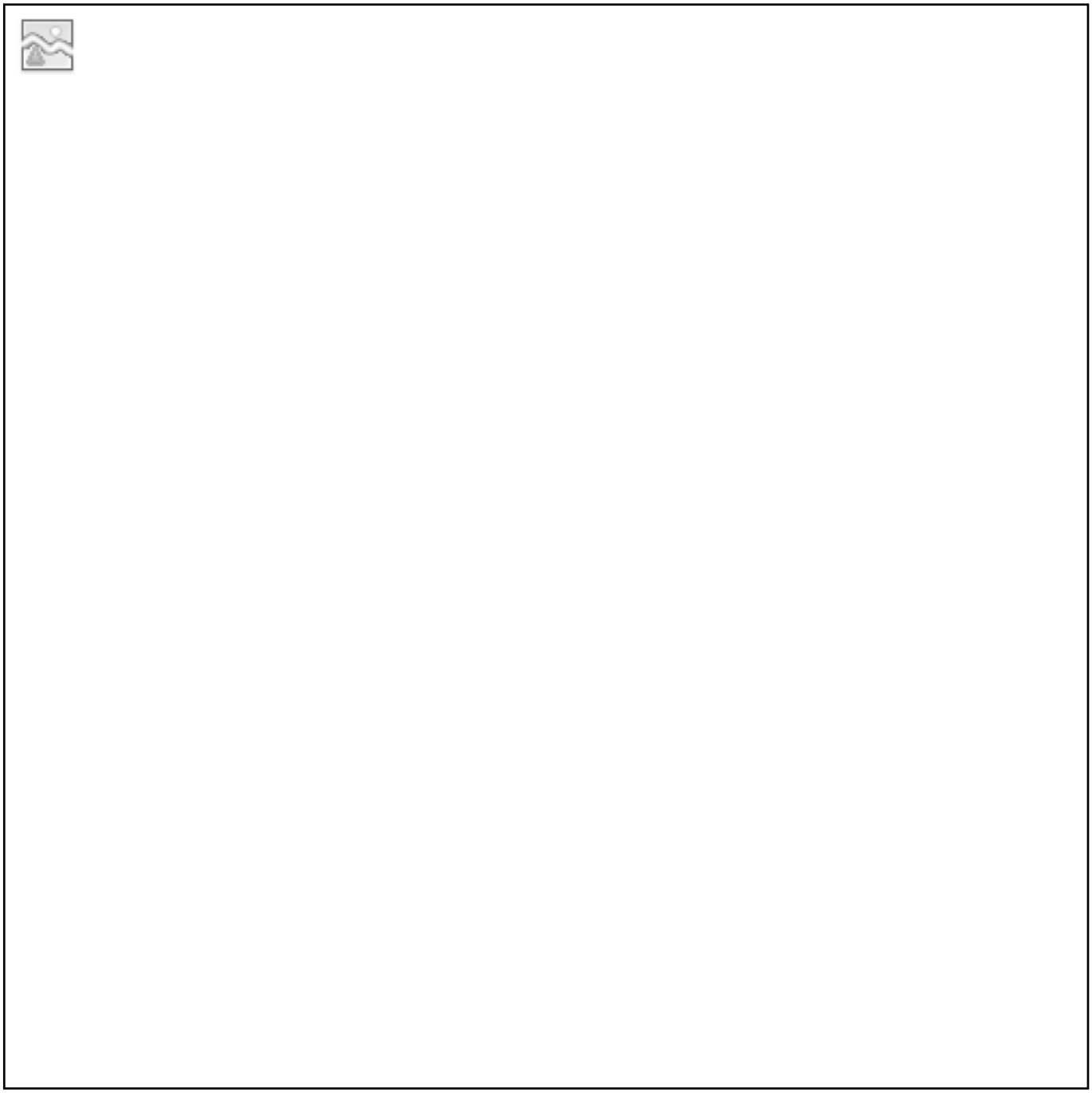
Note:

There are two types of wheel bolts for alloy and steel wheel rims; do not swap them.

- Check the condition of the tyre.
- Do not move or remove the balance weights.

2. REFITTING OPERATION

- Clean the mating surfaces between the wheel and the hub carrier using a wire brush.

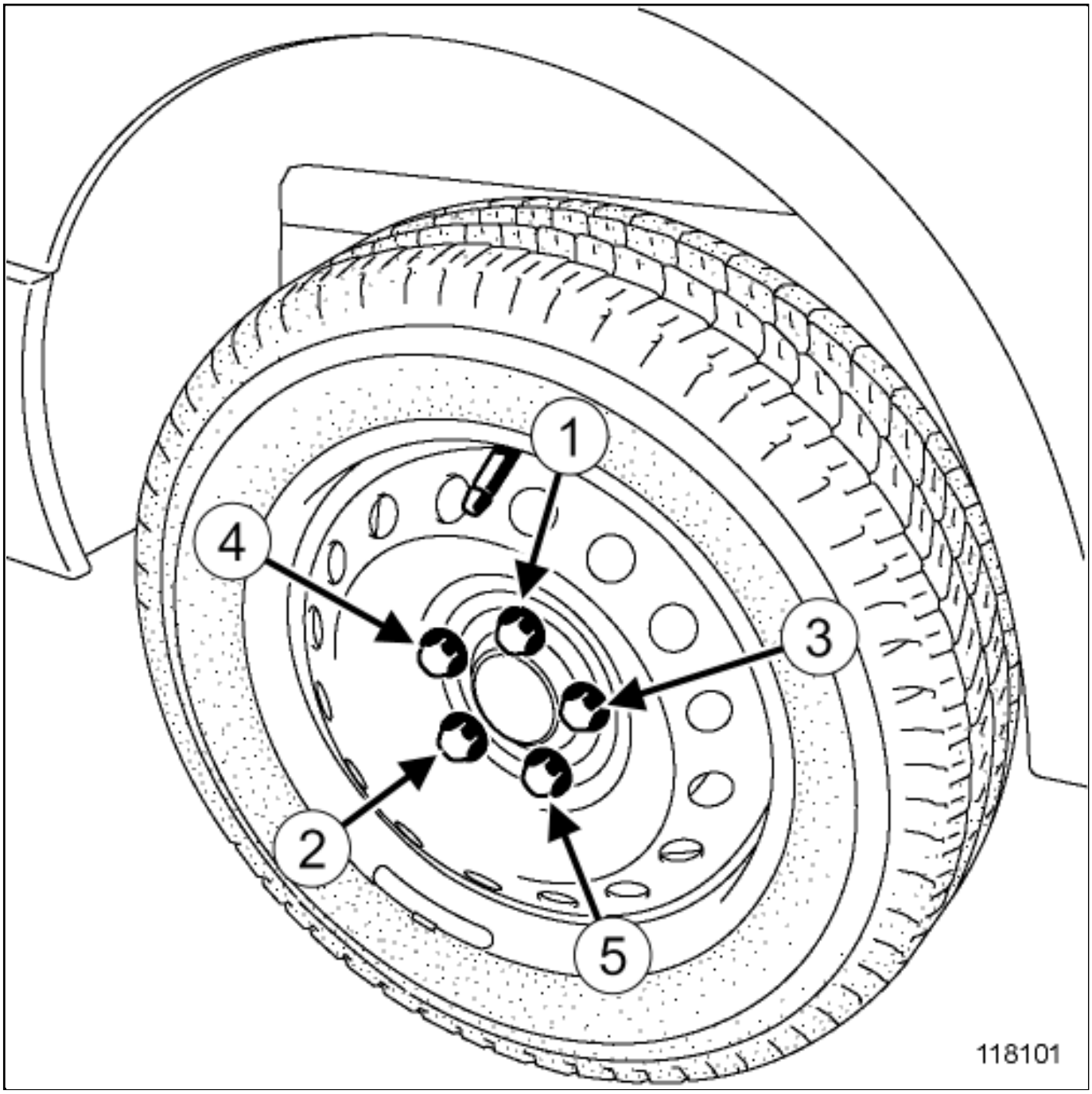


- Coat the wheel mating face(3) with COPPER ANTI-SEIZE GREASE(see **Vehicle: Parts and consumables for the repair**) .

- Align the mark on the wheel with the mark made on the hub when it was removed.

- Fit the wheel to the vehicle, positioning the valve at the top.

- Insert the wheel bolts.



- Tighten the wheel bolts to bring all the bolt heads into contact with the wheel.

- Pretighten the wheel bolts to 30 N.m, with the wheel suspended, starting with the bolts at the bottom.

- Rotate the wheel through 180˚to bring the valve into the bottom position.

- Position the vehicle on its wheels.

Note:

Use sockets with protective sheaths in order to avoid scratching the alloy wheel rims.

- Torque tighten the wheel bolts in order:
  - **Front hub carrier assembly: Exploded view** ,
  - (see **Rear hub carrier assembly: Exploded view**) .

- Refit the trim piece.

WHEELRIMIDENTIFICATION

1. IDENTIFICATION

1- MARKING

There are two types of identification marking on the wheel rims:

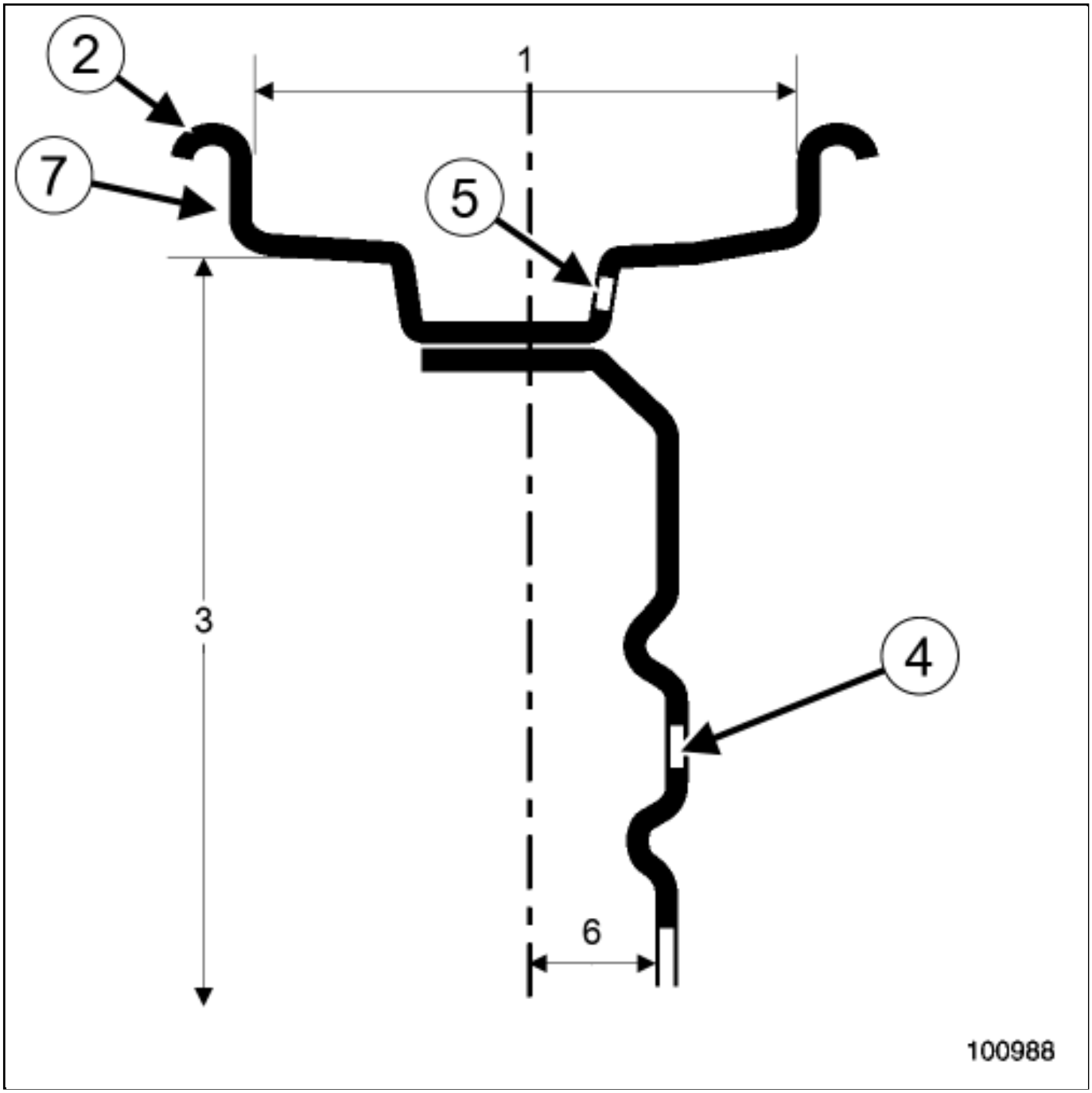
- engraved marking for steel wheel rims,
- cast marking for alloy wheel rims.

The marking gives the main dimensional specifications of the wheel rim.

This marking may be:

- complete, for example 6 J 15 5 CH 36,
- simplified, for example 6 J 15.

	Wheel type	6 J 15
1	Width (in inches)	6
2	Rim edge profile	J
3	Nominal diameter (in inches)	15
4	Number of holes	5
5	Anchorage profile of the tyre	CH
6	Offset (in mm)	36



There are 3 types of wheel rim edges(2) :

- those with two flat edges,
- those with two raised edges,
- those with one flat edge and one raised edge.

2- INSTALLATION DIAMETER FOR THE WHEEL BOLTS

3- RIM RUN-OUT

The maximum run-out is measured at the wheel rim edge(7) .

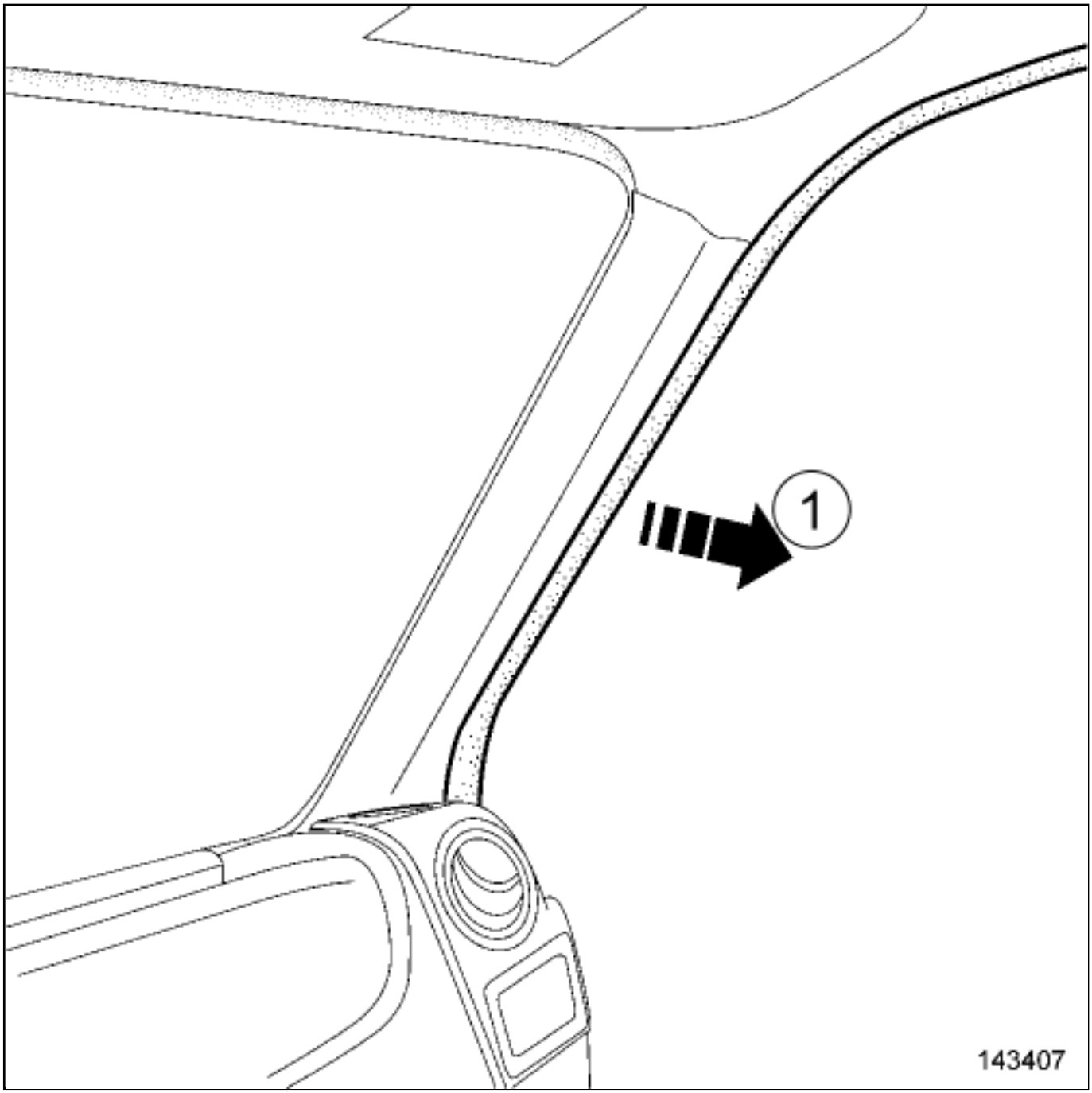
4- OUT-OF-ROUNDNESS

The maximum out-of-round value is measured on the tyre bead bearing surface.

WINDSCREEN PILLAR TRIM: REMOVAL - REFITTING

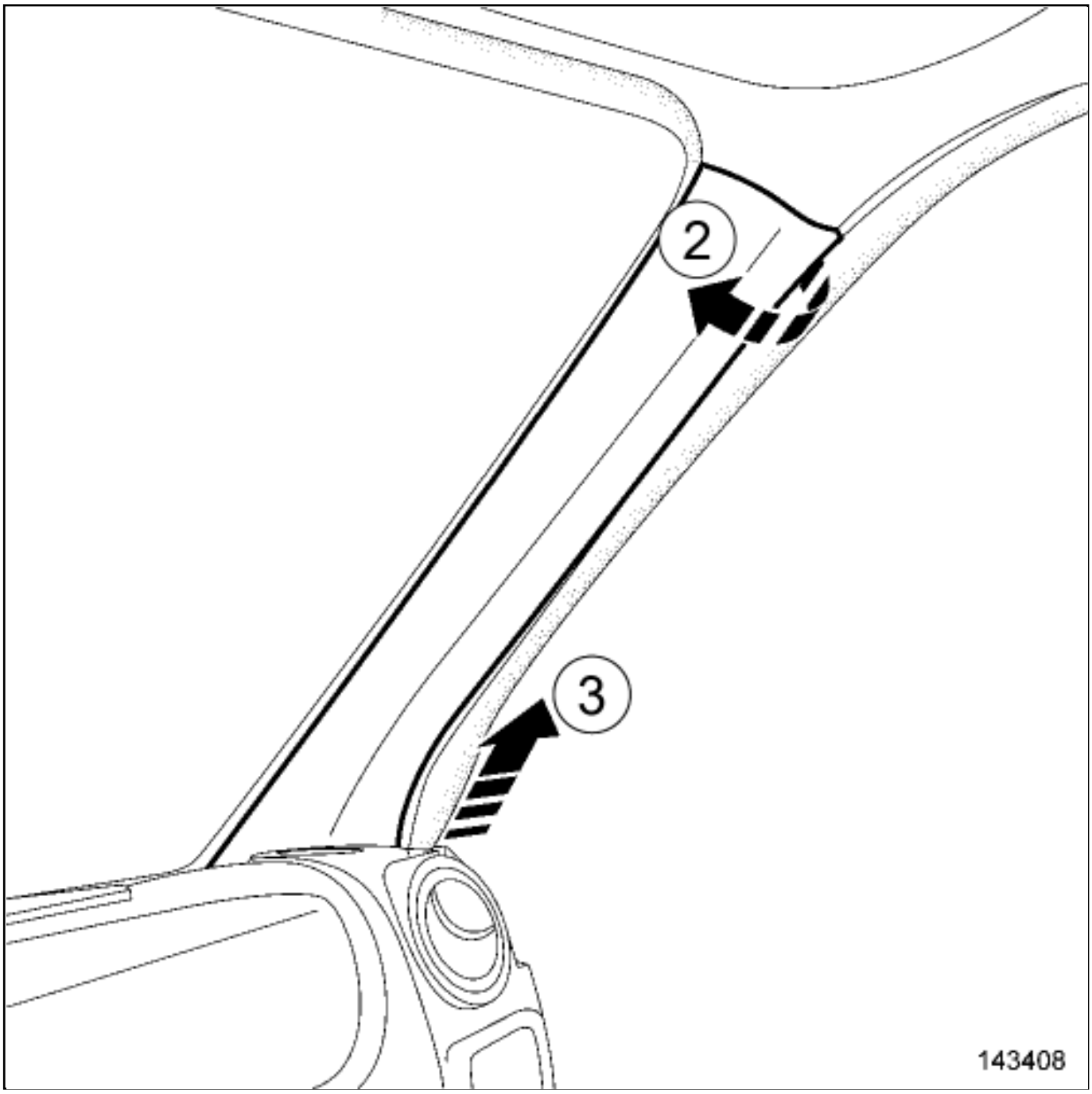
REMOVAL

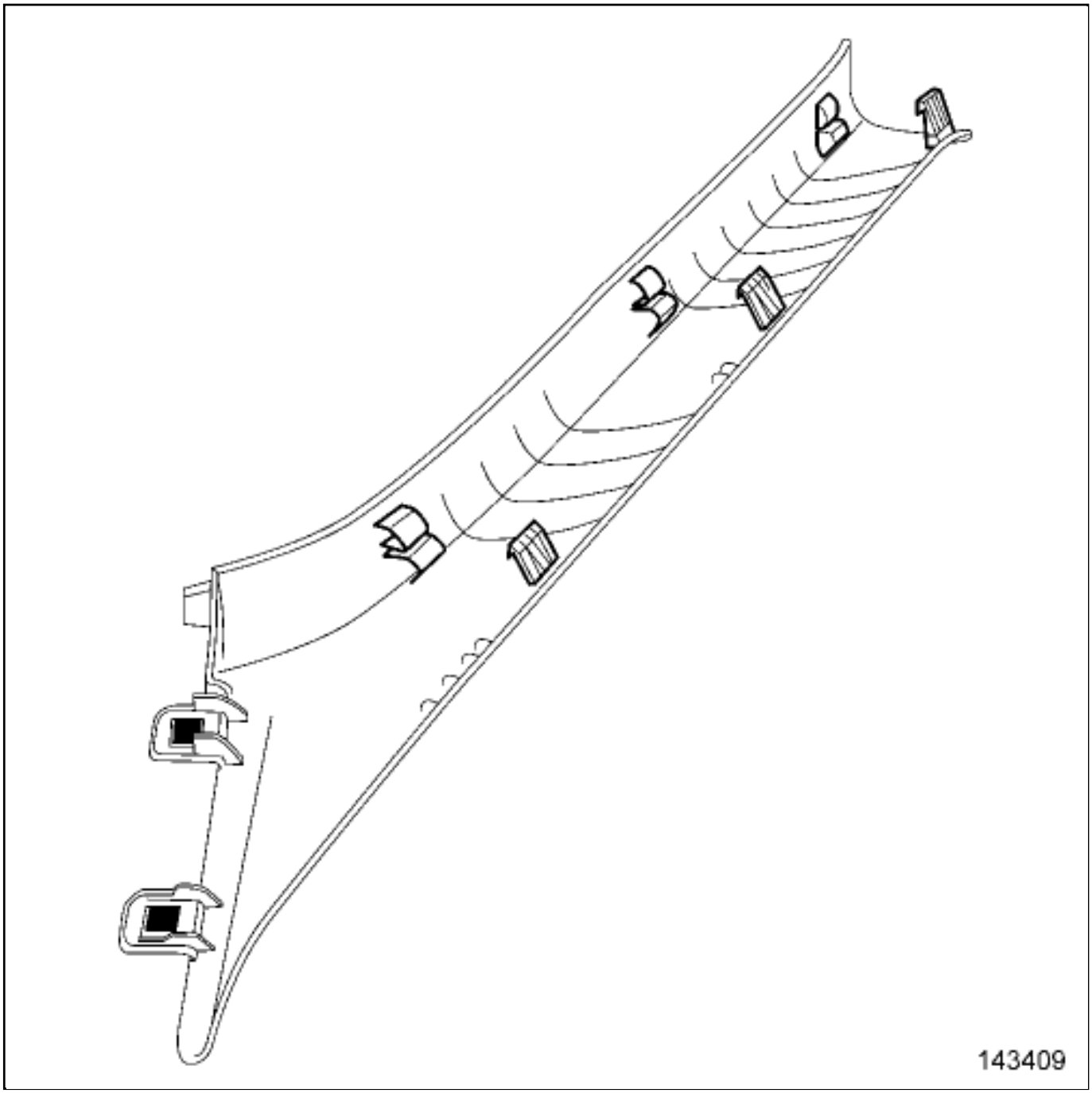
1. REMOVAL PREPARATION OPERATION



- Partially remove the seal at(1) .

2. REMOVAL OPERATION





- Separate the windscreen pillar trim at(2) .
- Remove the windscreen pillar trim at(3) .

REFITTING

- Proceed in the reverse order to removal.

WINDSCREEN WASHER RESERVOIR: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift**Vehicle: Towing and lifting** (02A, Lifting equipment).

- Remove:
  - the engine undertray,
  - the front section of the front right-hand wheel arch liner**Front wheel arch liner: Removal - Refitting** (55A, Exterior protection).

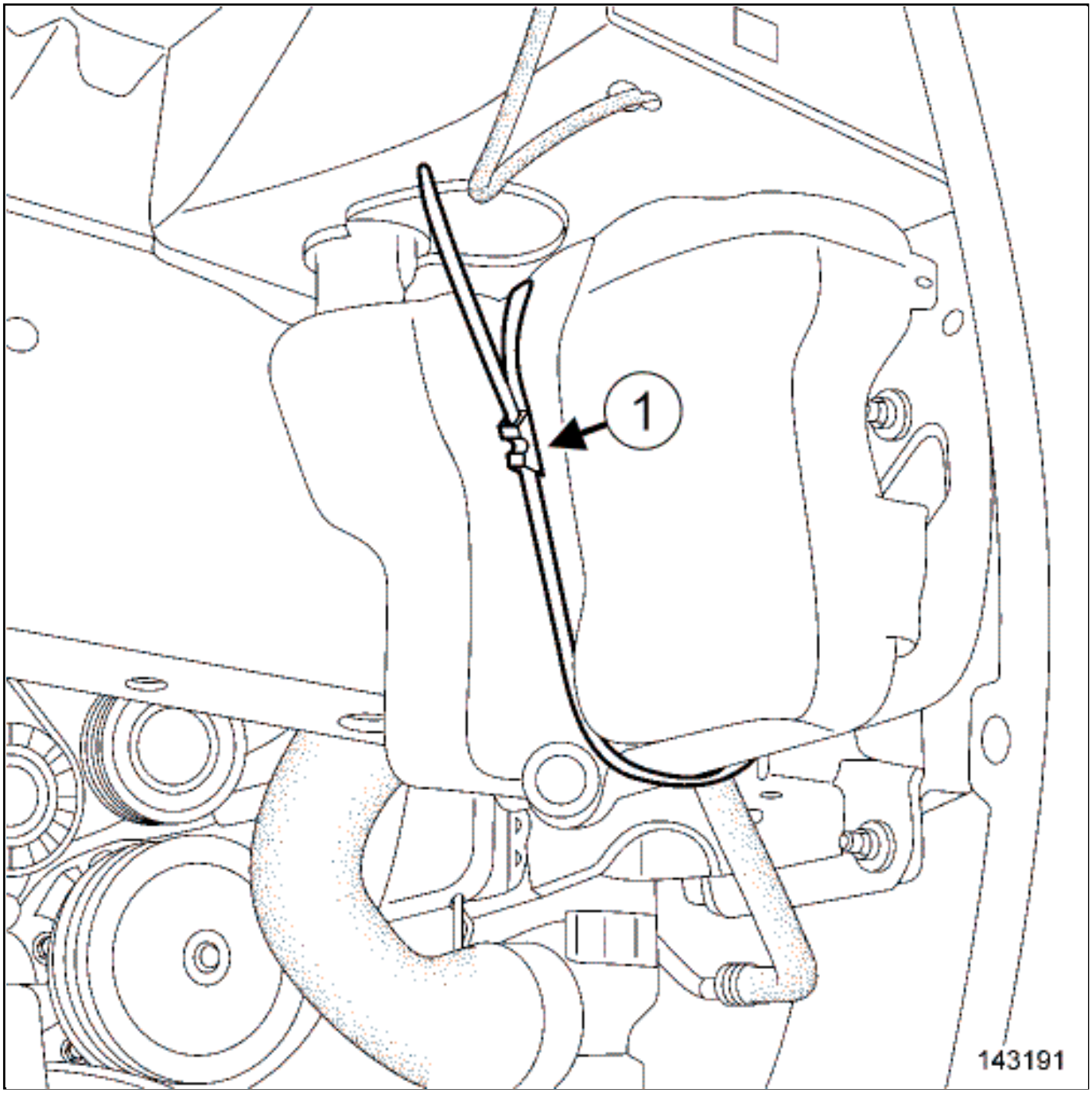
Note:

When removing the windscreen washer pump, use a container to collect the windscreen washer fluid which will flow out of the bottle.

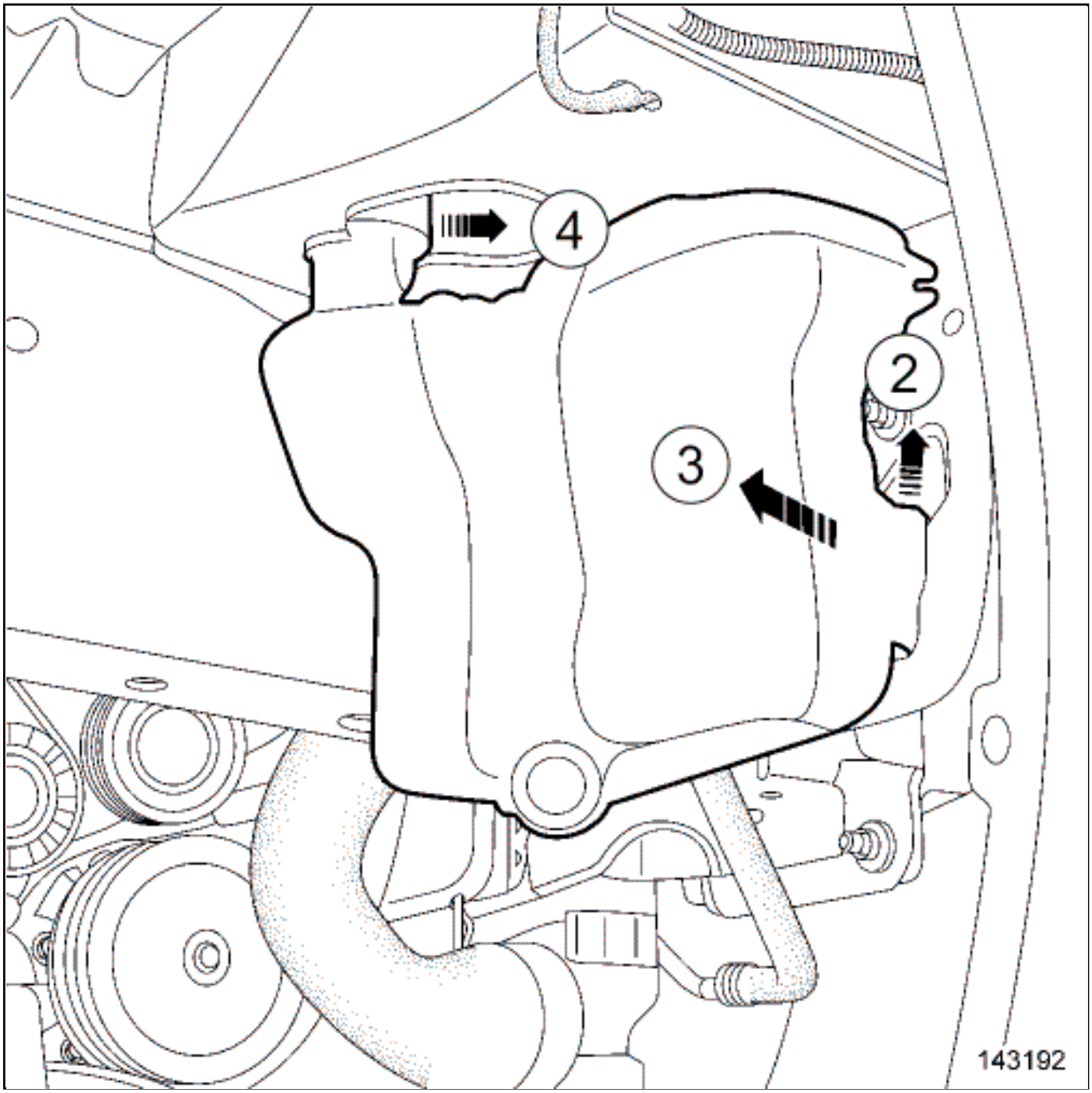
- Remove the windscreen washer pump**(see 85A, Wiping - Washing, Screen washer pump: Removal - Refitting)** .

2. REMOVAL OPERATION

- Cut the plastic clip surrounding the windscreen washer bottle.



- Cut the plastic clip(1) of the windscreen washer bottle.



- Unclip the windscreen washer bottle by(2) , (3) , then(4) .
- Remove the windscreen washer bottle from the bottom.

REFITTING

- Proceed in the reverse order to removal.
- Fill up the windscreen washer bottle.

WINDSCREEN WIPER ARM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Tool for removing wiper arms.	Ele. 1841

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

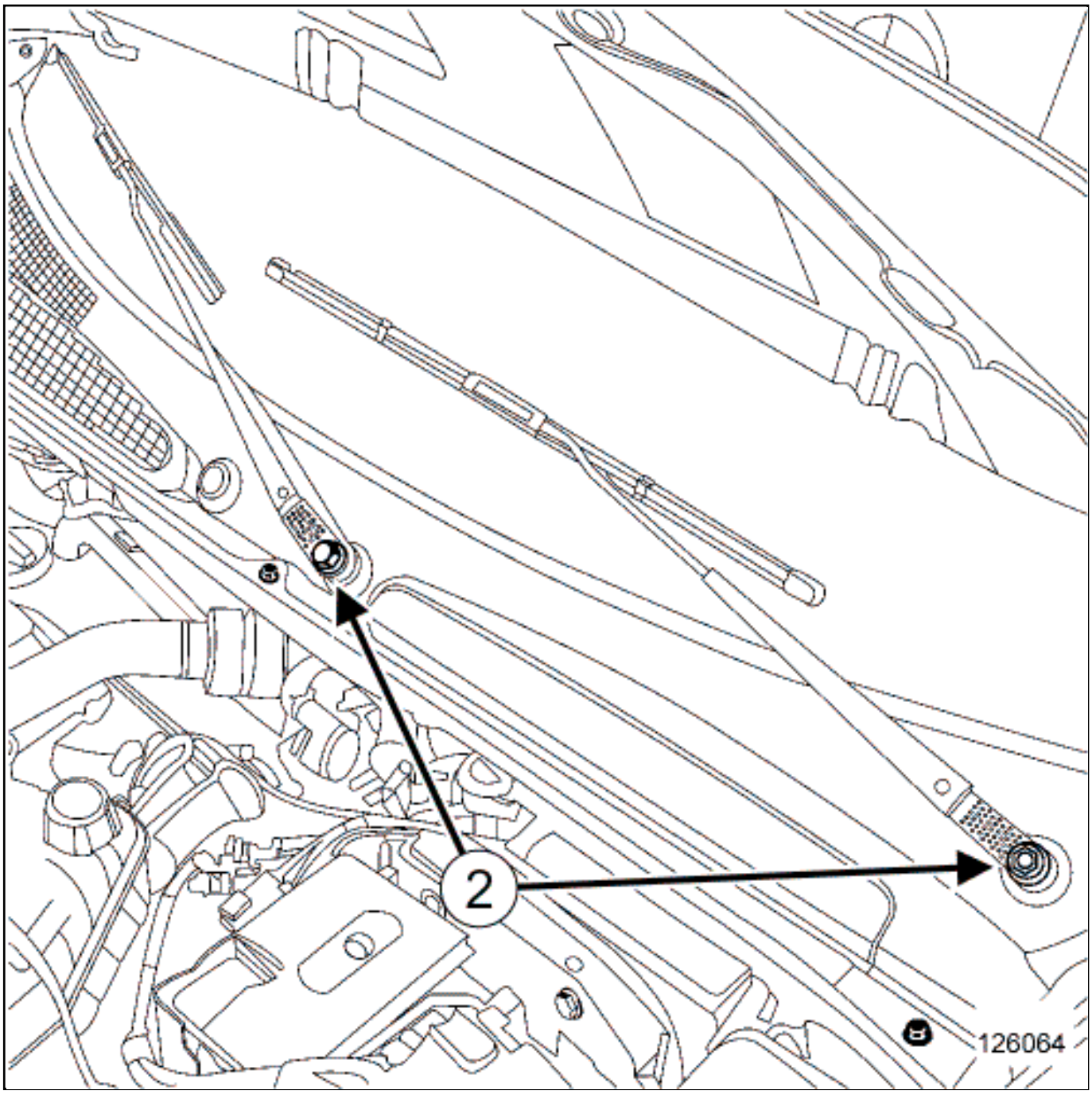
- Switch on the ignition.

CAUTION

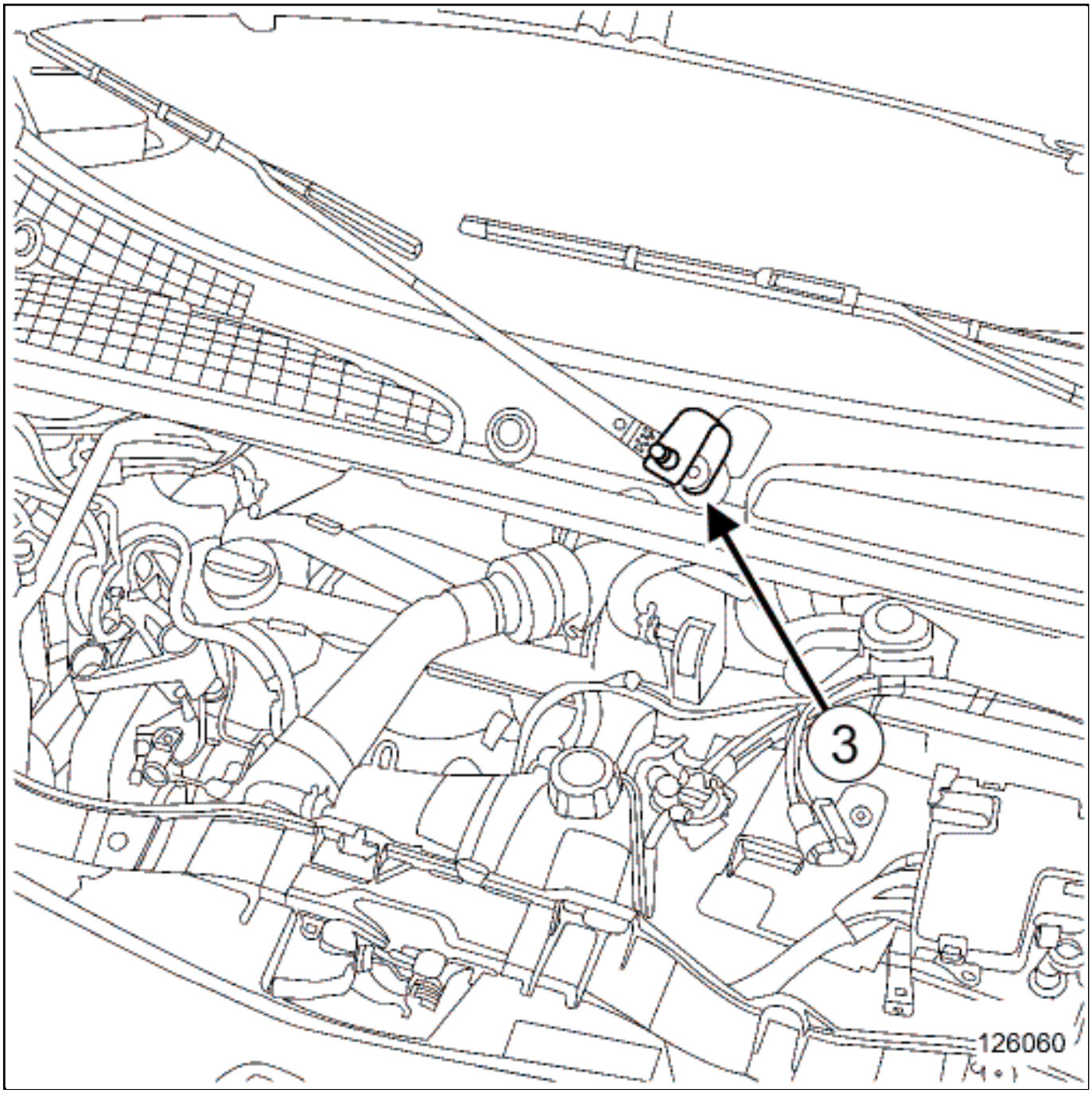
To ensure that the wiper arms can travel smoothly, the wiper motor must be initialised.

- Turn the wiper stalk from (0) to (1), and then from (1) to (0).
- Switch off the ignition.

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove the windscreen wiper arm nuts(2) .



- Remove the wiper arms using theTool for removing wiper arms.(Ele. 1841) (3) .

REFITTING

1. REFITTING PREPARATION OPERATION

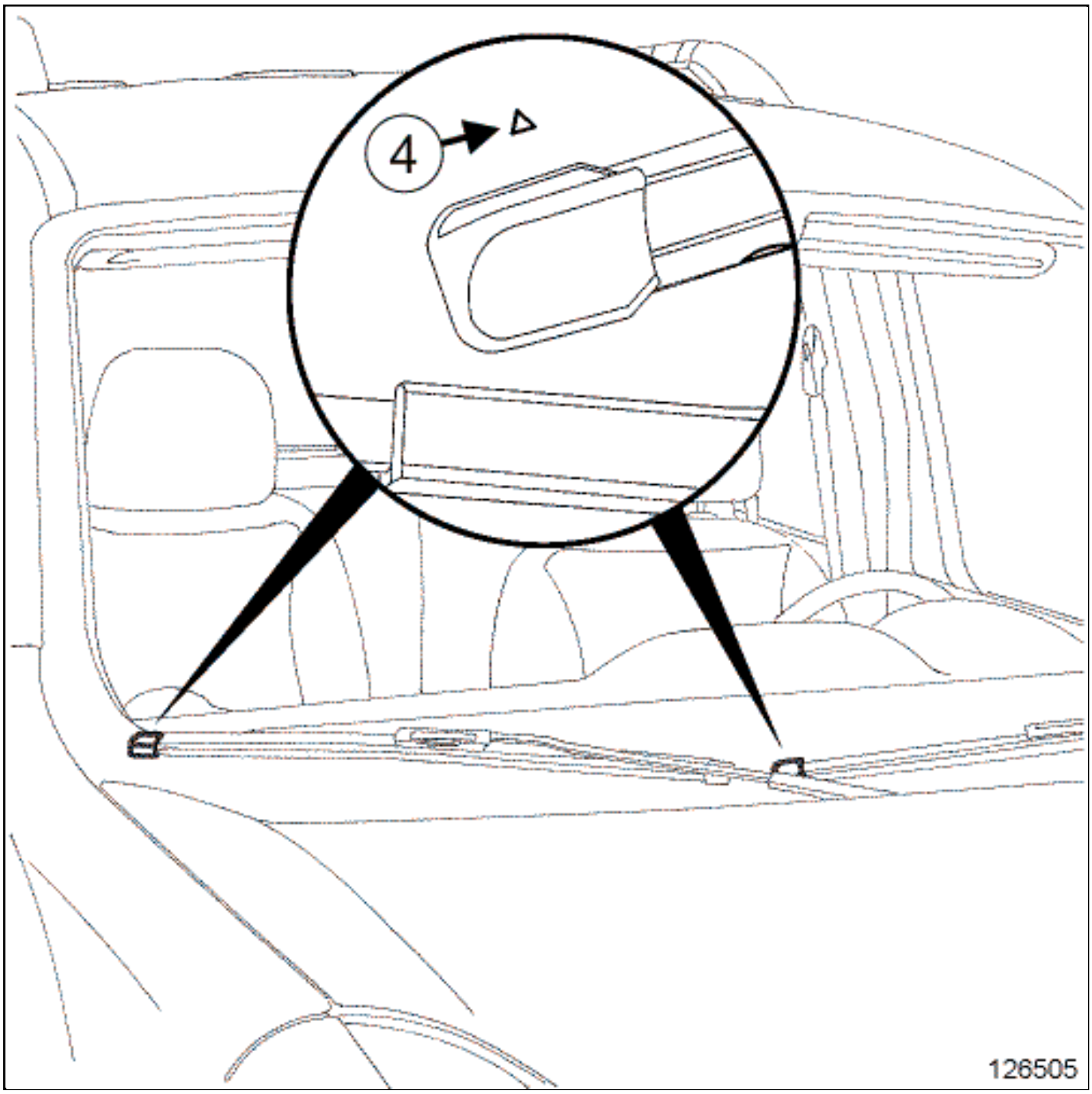
- Switch on the ignition.

CAUTION

To ensure that the wiper arms can travel smoothly, the wiper motor must be initialised.

- Turn the wiper stalk from (0) to (1), and then from (1) to (0).
- Switch off the ignition.

2. REFITTING OPERATION FOR PART CONCERNED



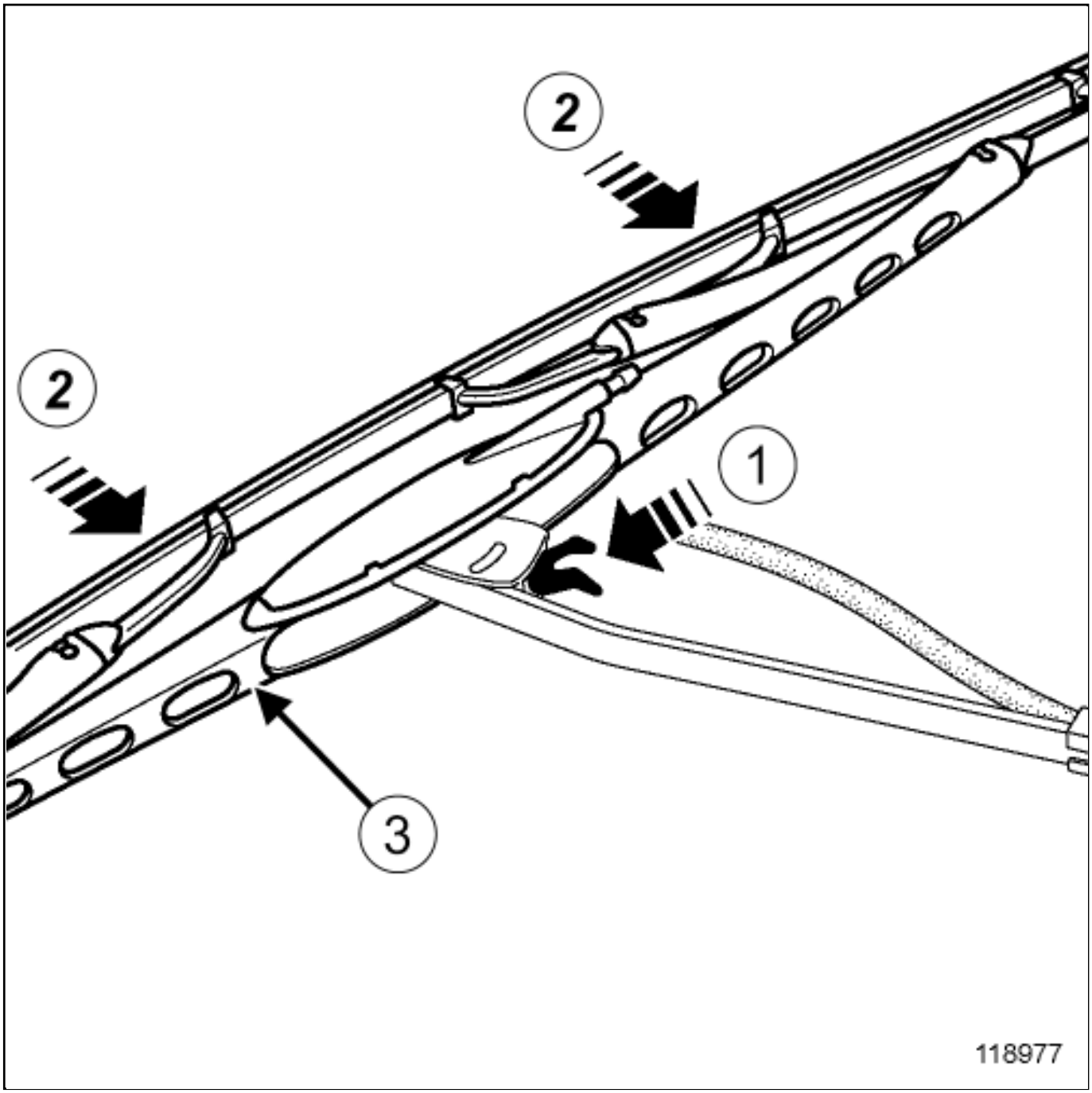
Fit the wiper arms, aligning them with the screen-printed mark(4) on the windscreen.

Torque tighten the wiper arm nuts21 N.m.

WINDSCREEN WIPER BLADE: REMOVAL - REFITTING

REMOVAL

1. OPERATION FOR REMOVAL OF PART CONCERNED



- Press the clip(1) and simultaneously push downwards(2) .
- Remove the blade(3) from the wiper arm.

REFITTING

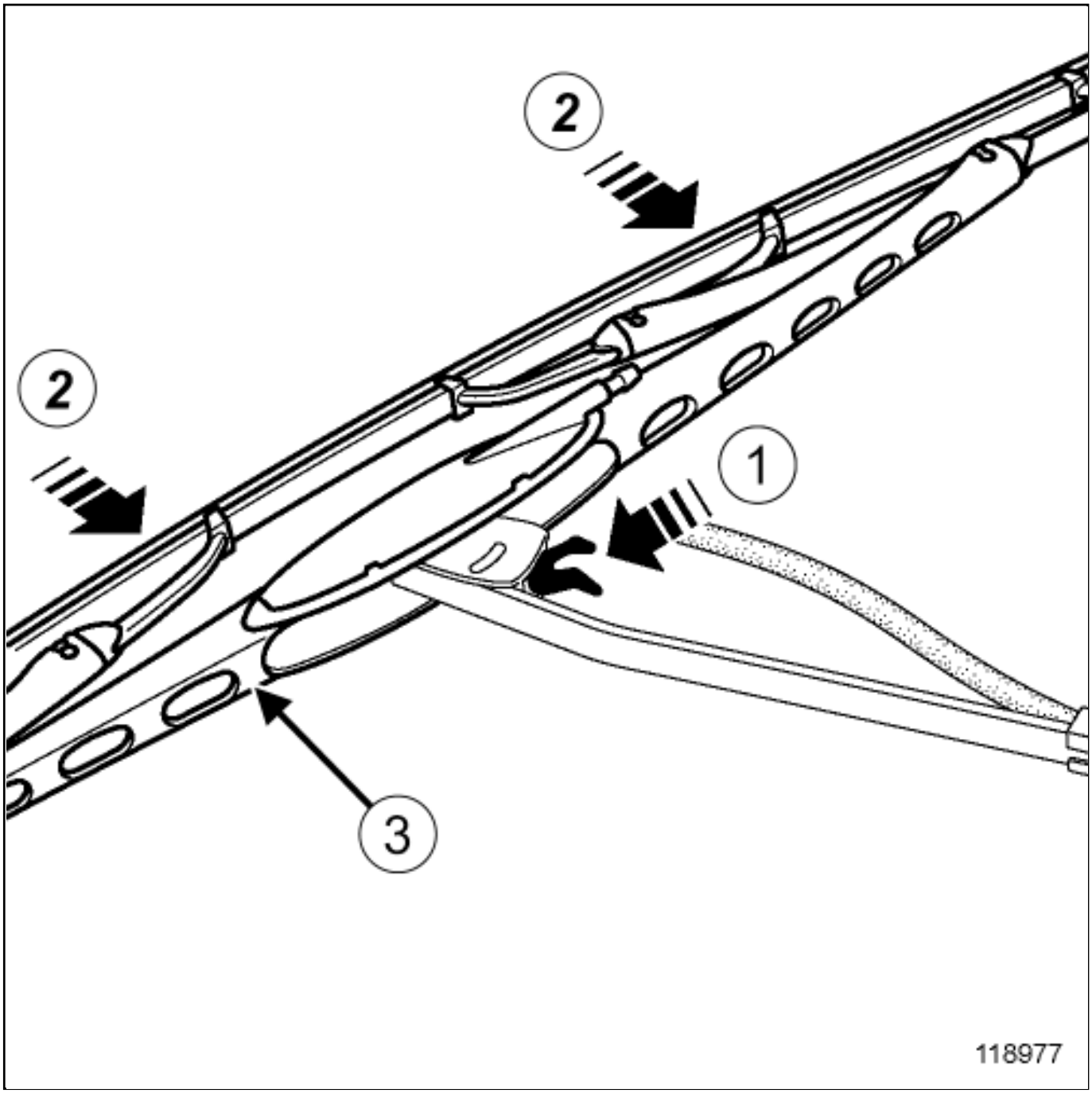
1. REFITTING OPERATION FOR PART CONCERNED

- Clip the blade onto the wiper arm.

WINDSCREEN WIPER BLADE: REMOVAL - REFITTING

REMOVAL

1. OPERATION FOR REMOVAL OF PART CONCERNED



- Press the clip(1) and simultaneously push downwards(2) .
- Remove the blade(3) from the wiper arm.

REFITTING

1. REFITTING OPERATION FOR PART CONCERNED

- Clip the blade onto the wiper arm.

WINDSCREEN WIPER MECHANISM: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

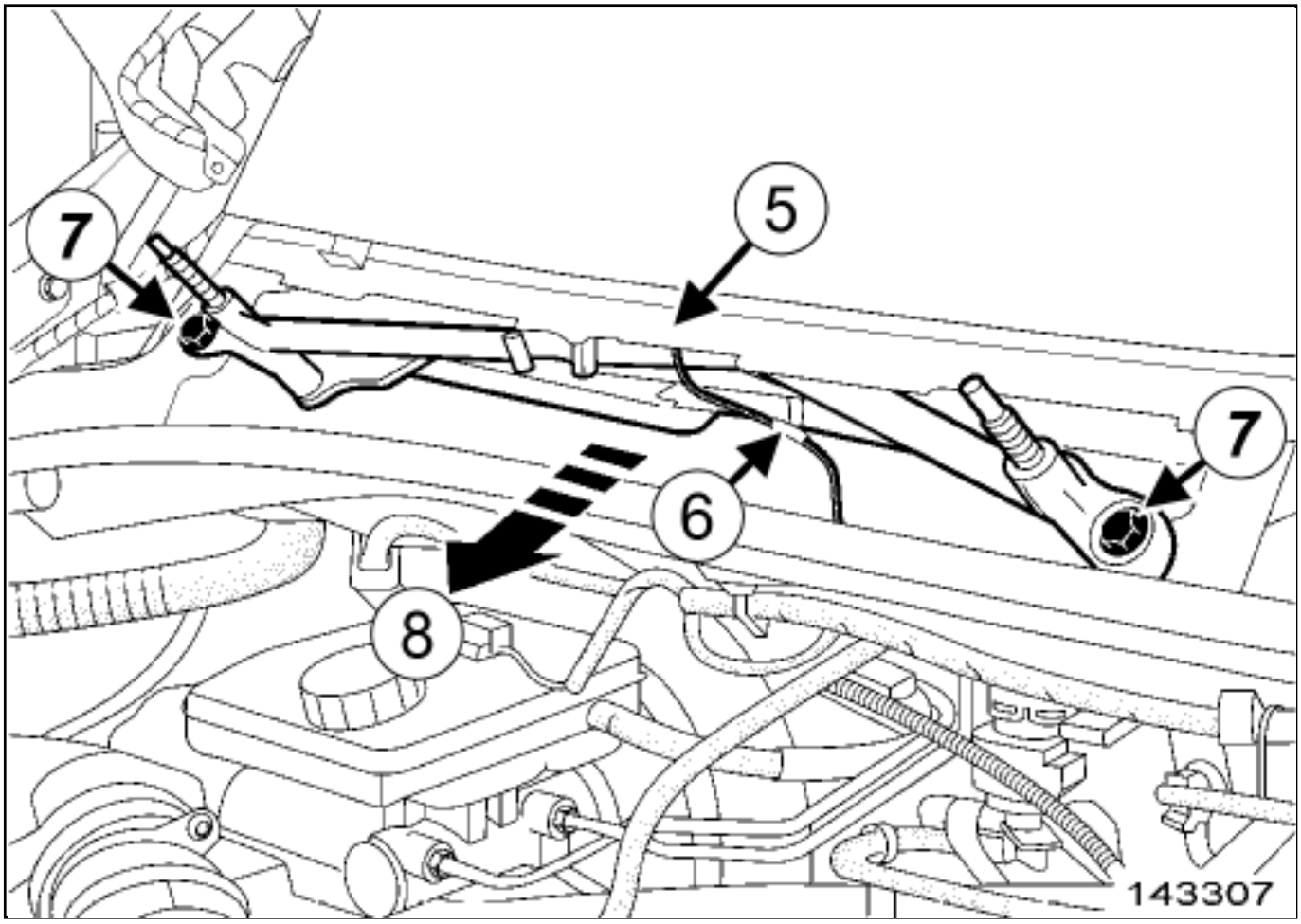
REMOVAL

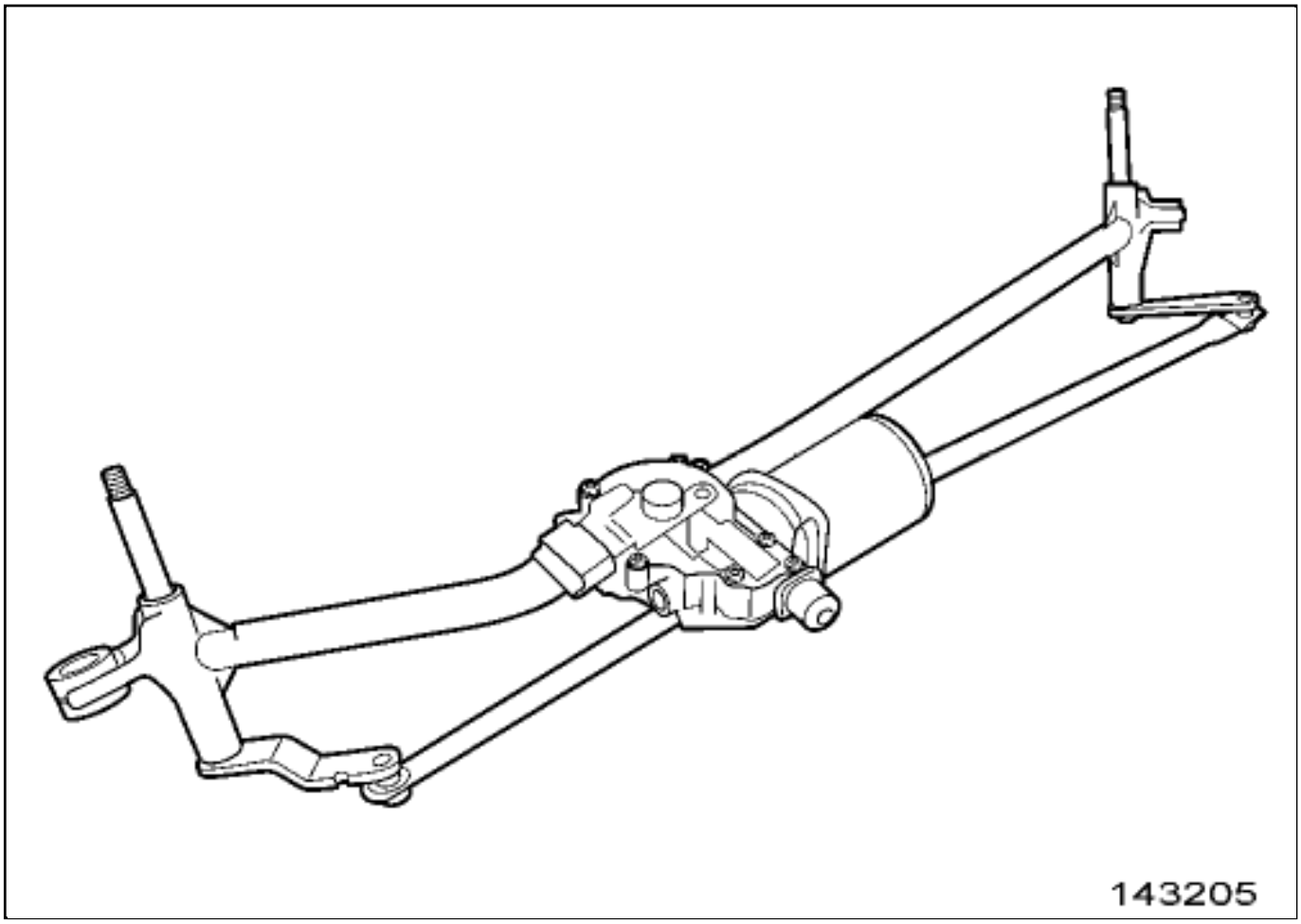
1. REMOVAL PREPARATION OPERATION

- Disconnect the battery**Battery: Removal - Refitting** .

- Remove:
  - the windscreen wiper arms**(see 85A, Wiping - Washing, Windscreen wiper arm: Removal - Refitting)** ,
  - the scuttle panel grille**Scuttle panel grille: Removal - Refitting** (56A, Exterior equipment).

2. REMOVAL OPERATION


7
5
7
6
8
143307



- Disconnect the windscreen wiper motor connector(5) .
- Unclip the windscreen wiper motor wiring(6) from the windscreen wiper mechanism.
- Remove:
  - the front windscreen wiper mechanism bolts(7) ,
  - the windscreen wiper mechanism by(8) .

REFITTING

1. REFITTING OPERATION

- Proceed in the reverse order to removal.

2. FINAL OPERATION

- Refit the scuttle panel grilleScuttle panel grille: Removal - Refitting (56A, Exterior equipment).

- Connect the battery Battery: Removal - Refitting .
- Switch on the ignition.

CAUTION

To ensure that the wiper arms can travel smoothly, the wiper motor must be initialised.

- Turn the wiper stalk from (0) to (1), and then from (1) to (0).
- Switch off the ignition.
- Refit the windscreen wiper arms (see 85A, Wiping - Washing, Windscreen wiper arm: Removal - Refitting) .

WINDSCREEN: REMOVAL - REFITTING

Note, one or more warnings are present in this procedure

Special tooling required	
Universal protector	Car. 1847

parts always to be replaced:
Windscreen adjusting shim
rain and light sensor base

WARNING

Before carrying out any operation on a vehicle fitted with the Stop & Start system, always follow the safety instructions**Vehicle: Precautions for the repair**

REMOVAL

1. REMOVAL PREPARATION OPERATION

- Remove:
  - the windscreen wiper arms**Windscreen wiper arm: Removal - Refitting** (85A, Wiping - Washing),
  - the scuttle panel grille**Scuttle panel grille: Removal - Refitting** ,
  - the interior rear-view mirror**Interior rear-view mirror: Removal - Refitting** ,
  - the windscreen pillar trims**Windscreen pillar trim: Removal - Refitting** (71A, Body internal trim).

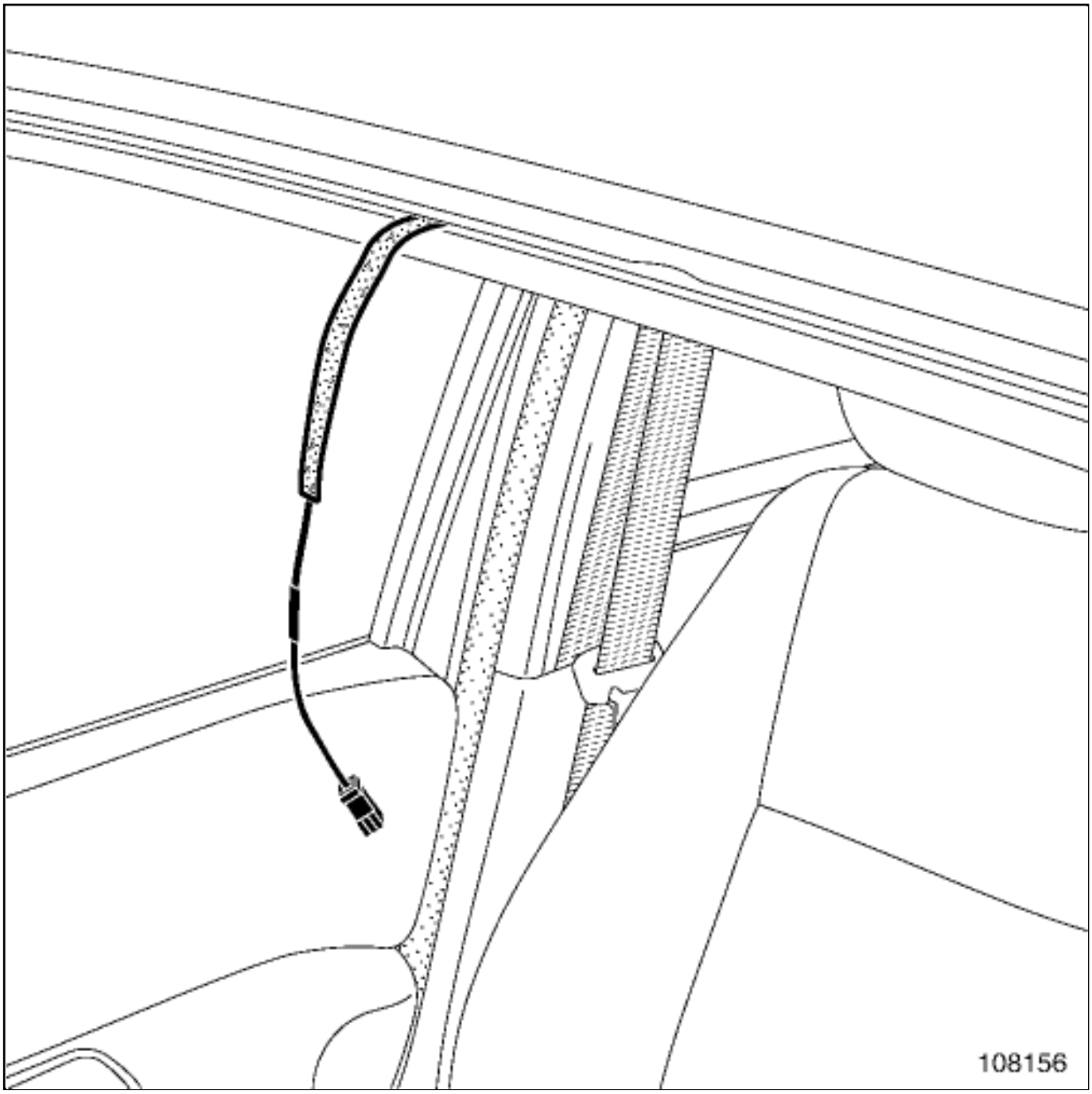
SAFETY ALARM(AVTSEC)

- Remove the front camera**Front camera : Removal - Refitting** .

- Protect the area around the windscreen with masking tape.

2. REMOVAL OPERATION

- Position the dashboard protectorUniversal protector (Car. 1847) .



CAUTION

When cutting the cement bead, take care not to cut the wiring harness.

- Cut the cement bead (see Technical Note 560A).

- Remove the windscreen (this operation requires two people).

REFITTING

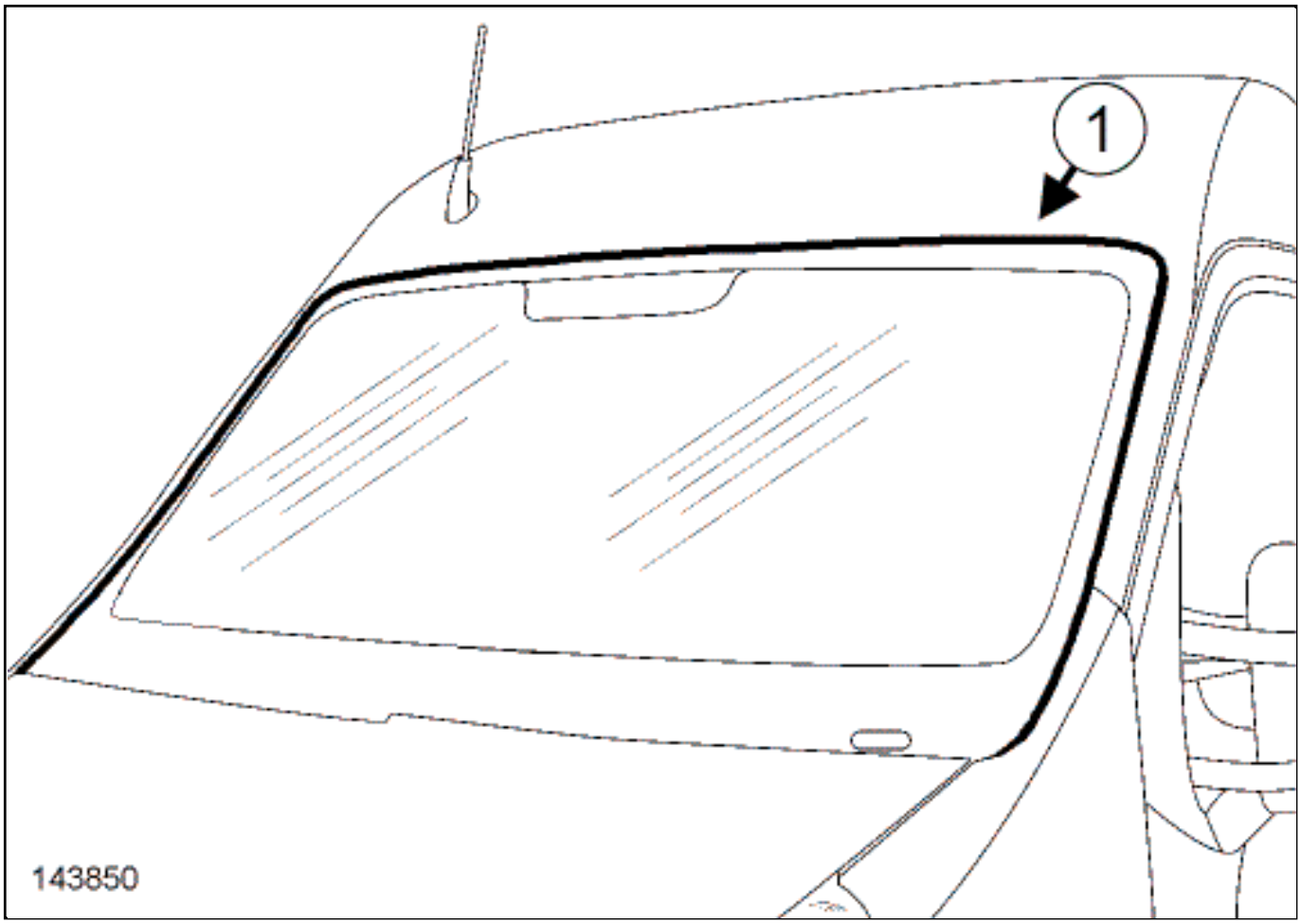
1. REFITTING PREPARATION OPERATION

-

parts always to be replaced: Windscreen adjusting shim.

SAFETY ALARM(AVTSEC)

- Refit the front camera Front camera : Removal - Refitting .



- Position the upper seal(1) on the windscreen.

- For preparation and bonding (see Technical Note 560A).

2. REFITTING OPERATION

- Bond the windscreen (this operation requires two people).

- Respect the following clearances and flush fitting:
  - "windscreen - roof panel" ,
  - "windscreen - windscreen aperture pillar" .

- Hold the windscreen in position with masking tape.

3. FINAL OPERATION

SAFETY ALARM(AVTSEC)

Note:

After any windscreen replacement ,it is recommended to calibrate the front camera **Front camera : Removal - Refitting** .

- Proceed in the reverse order to removal.

WIPING AND WASHING: LIST AND LOCATION OF COMPONENTS

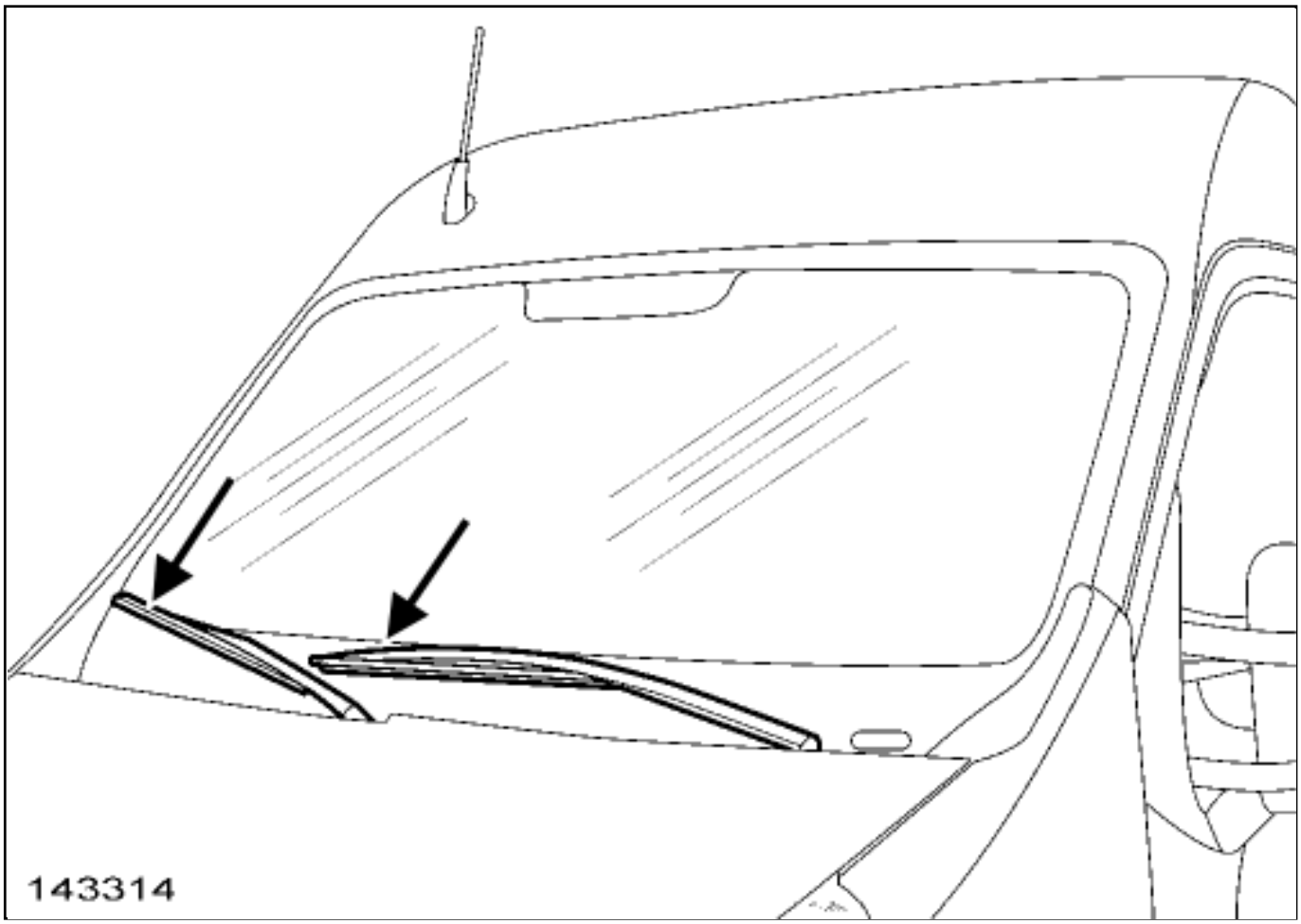
1. LIST OF COMPONENTS

The washing and wiping system comprises:

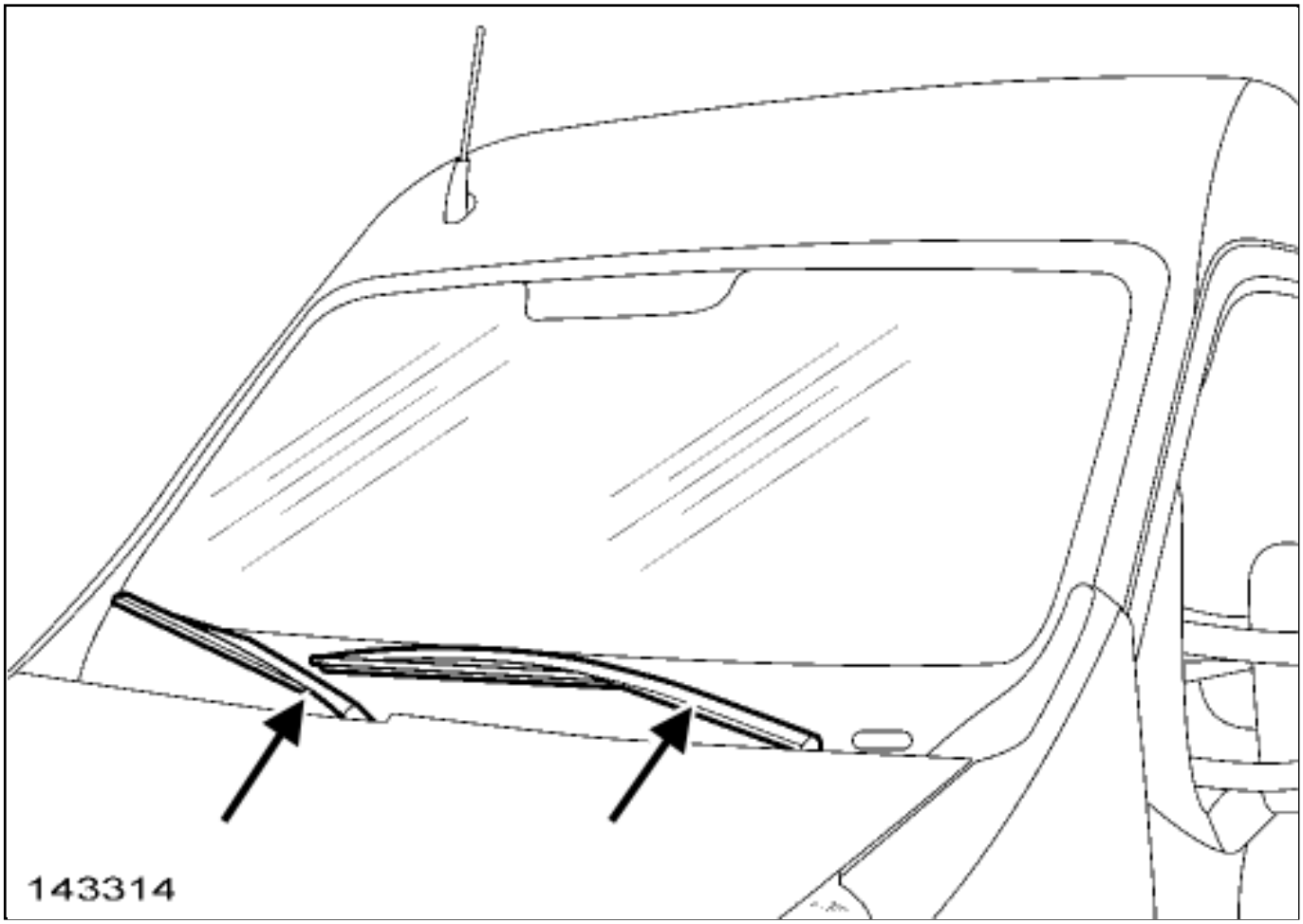
- windscreen wiper blades (see 85A, Wiping - Washing, Windscreen wiper blade: Removal - Refitting)
- windscreen wiper arms (see 85A, Wiping - Washing, Windscreen wiper arm: Removal - Refitting)
- a windscreen wiper mechanism (see 85A, Wiping - Washing, Windscreen wiper mechanism: Removal - Refitting)
- a windscreen washer pump (see 85A, Wiping - Washing, Screen washer pump: Removal - Refitting)
- windscreen washer jets (see 85A, Wiping - Washing, Front screen washer jet: Removal - Refitting)
- a windscreen washer bottle (see 85A, Wiping - Washing, Windscreen washer reservoir: Removal - Refitting)

2. LOCATION OF COMPONENTS

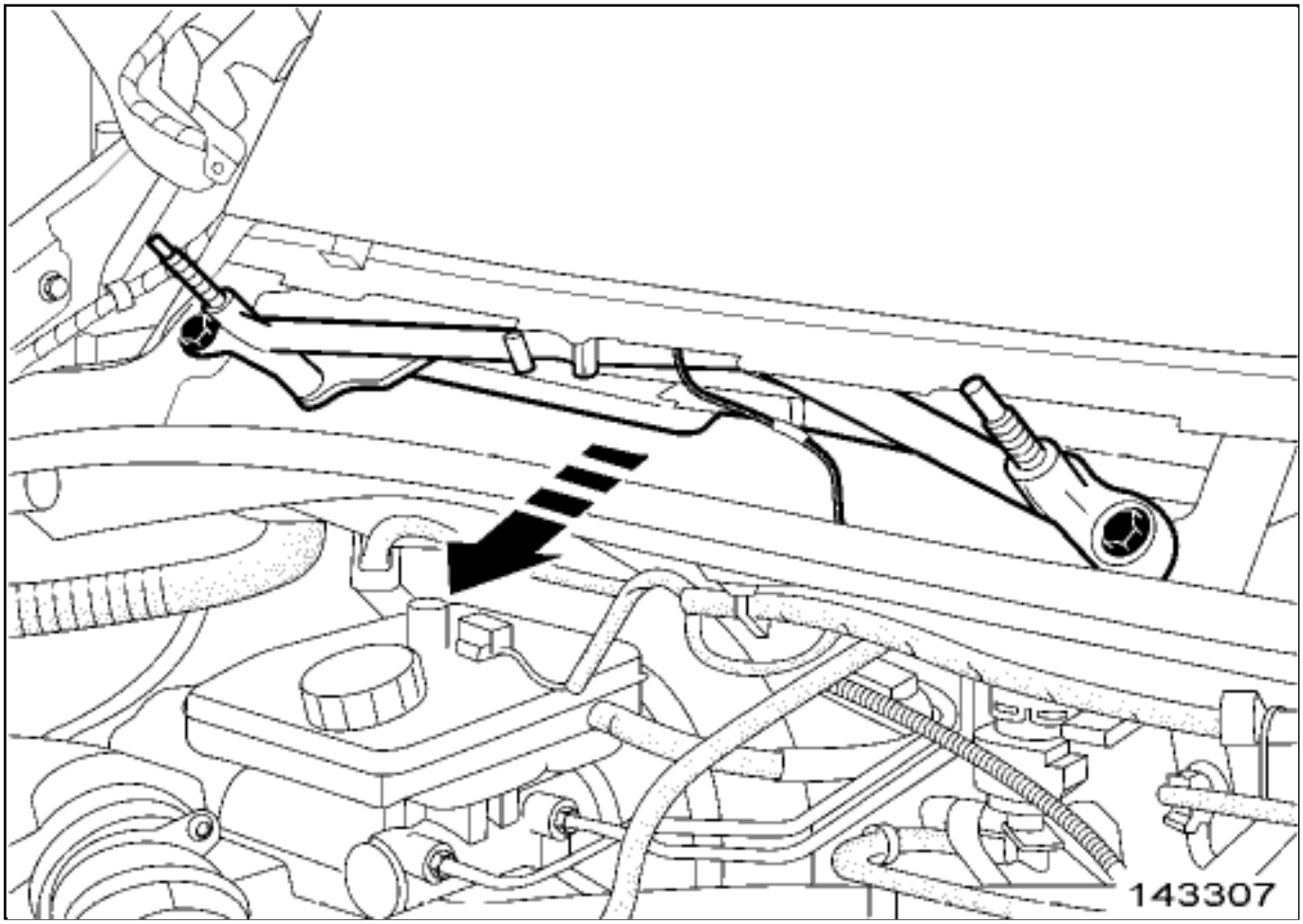
WINDSCREEN WIPER BLADES



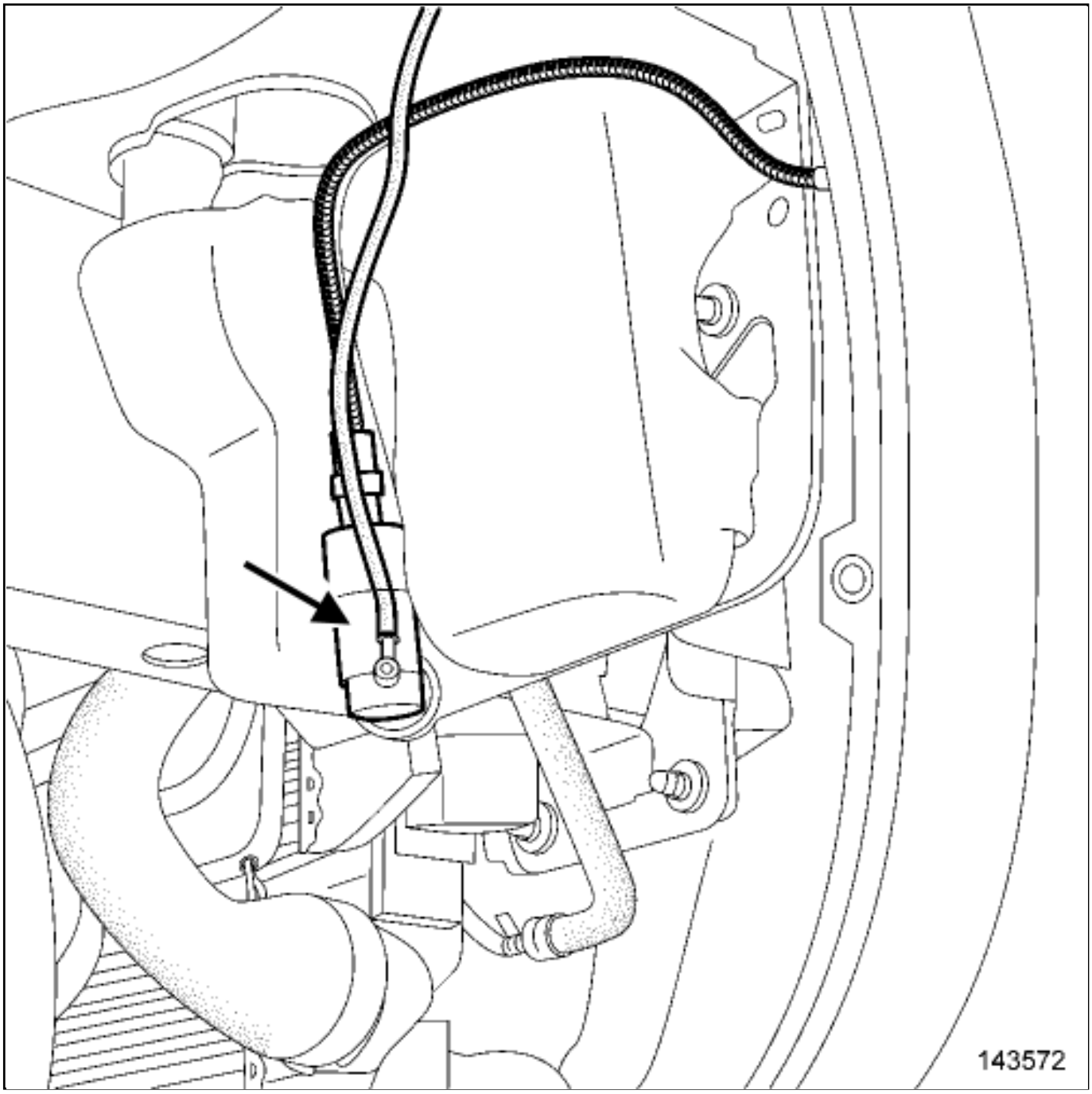
WINDSCREEN WIPER ARMS



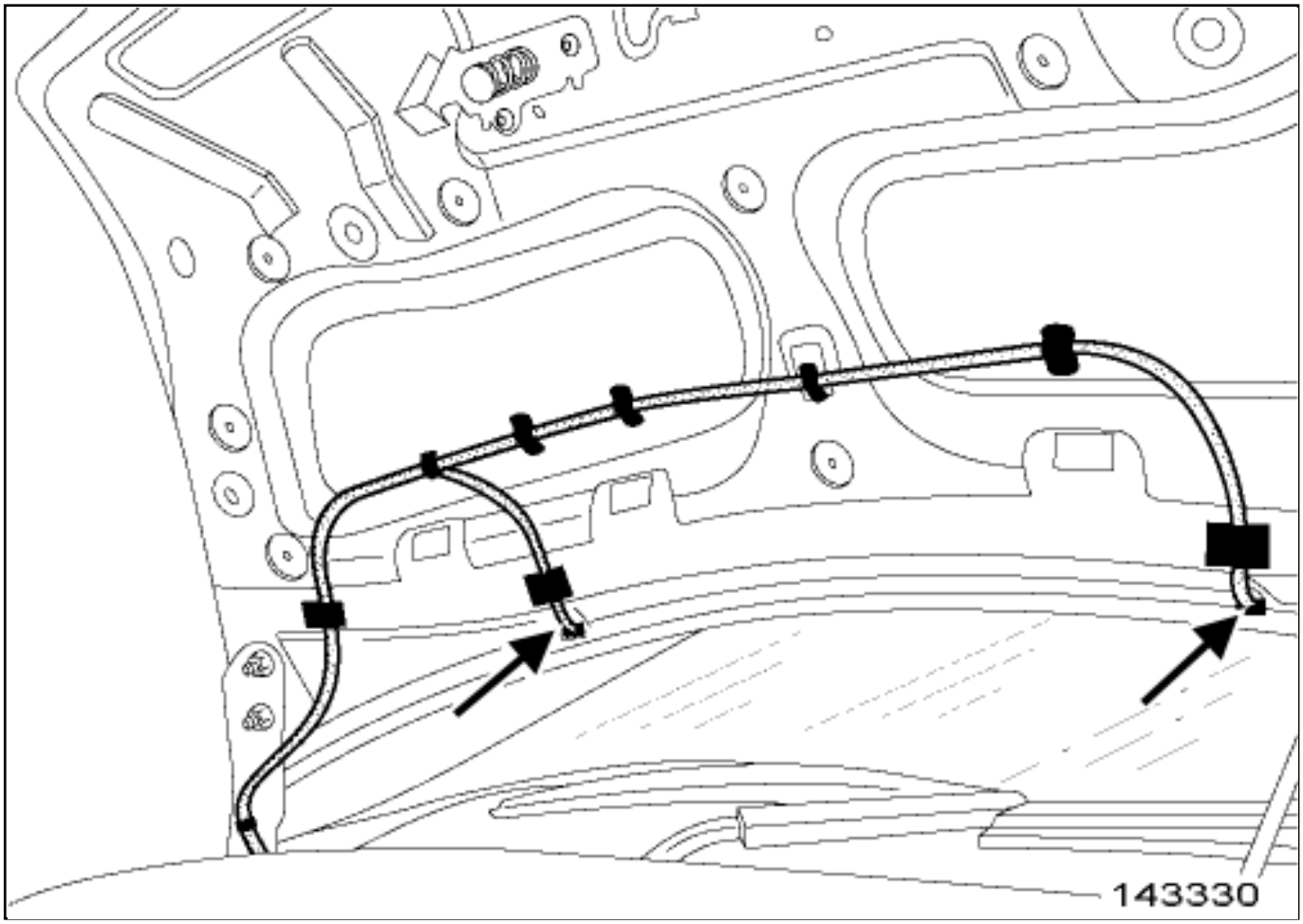
WINDSCREEN WIPER MECHANISM



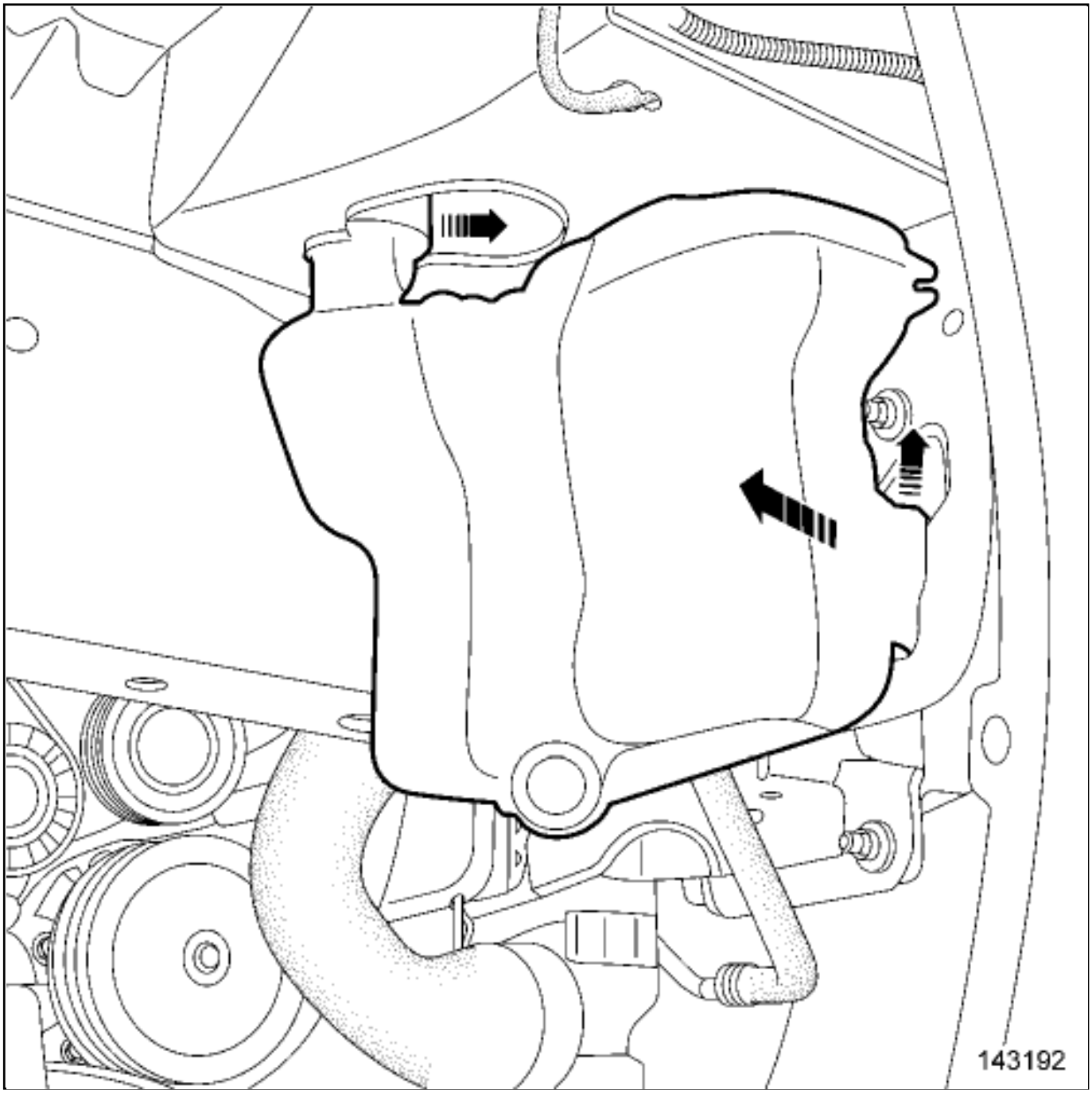
WINDSCREEN WASHER PUMP



WINDSCREEN WASHER JETS



WINDSCREEN WASHER BOTTLE


143192

RENAULT

Technical Note 6015A

All types

Sub-sections concerned: 88A - 88B - 88C

ELECTRICAL WIRING REPAIR

77 11 332 302 **Edition 7 - AUGUST 2011** **Edition Anglaise**

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

All rights reserved by RENAULT s.a.s.

Copying or translating, in part or in full, of this document or use of the service part reference numbering system is prohibited without the prior written authority of RENAULT s.a.s..

© Renault s.a.s. 2011

ELECTRICAL WIRING REPAIR

Contents

Page

88A WIRING

Wiring: Precautions for repair 88A-1
Wiring repair kit: General information 88A-8
Wiring repair kit: Description 88A-9
Wiring repair kit: Use 88A-12
Wiring: Repair 88A-18
Wiring: Check 88A-27
Connector: Repair 88A-30
Connector: Sealing and immobilisation 88A-34
Connector: Check 88A-36

88B

MULTIPLEXING

Multiplex network: Repair 88B-1

88C

AIRBAGS AND PRETENSIONERS

Airbag and pretensioner wiring: Repair 88C-1

WARNING
This note authorises the repair of electrical wiring in very specific cases only and under certain conditions.
Check that the repair in question is authorised and that the repair conditions are respected.

1 - Result of the fault finding procedure.

Note:
During repair, check that you have the most recently updated version of the technical note.

A preliminary fault finding procedure has enabled a wiring fault to be identified. Follow the investigation procedure below.

Disconnect the battery (see the **MR corresponding to the vehicle, 80A, Battery, Battery: Removal - Refitting**).

Remove the components necessary to access the area to be worked on. The operation area must allow the pliers and the heat gun to be used, without blocking visibility.

WARNING
If the damaged section is not sufficiently accessible, remove the wiring concerned and repair on the bench.

When the damaged section is sufficiently accessible, detach the wires to be repaired from the main wiring.

WARNING
Check if there is a sensitive line. These cases are listed in the specific procedures reference table in this section.
If there is a sensitive line, replace the defective wiring or apply the specific procedure, if one exists. These procedures are indicated in the specific procedures reference table in this section.

Check that the fault is located more than 10 cm from the connector.

WARNING
If the damaged section is located less than 10 cm from the connector, replace the defective wiring, unless a wiring-connector kit (connector with wires) exists. In this case, use the kit to replace the damaged section and the connector.

This note does not authorise operations directly on the connectors and electrical contacts. Only wiring-connector kits allow the replacement of a connector. These kits can have associated procedures.

Note:
To check whether there is a wiring-connector kit, consult DIALOGYS. These kits are generally linked to specific wiring or function diagrams.

Note:
If the fault is located at the electrical contact (in the connector) and if it is linked to a corrosion or heating fault, replace the wiring or fit the wiring-connector kit. Also check the connector complement.

Note:
In all cases, pay particular attention to supply and earth lines and their tightening (refer to the tightening torques in the MRs concerned).

After having carried out these checks (outlined in the **Summary flowchart of the operating procedure**), if the repair is authorised, and it does not require a specific procedure, carry out the generic procedure (see **Wiring: Repair**).

Note:
If you have been referred to this note by a MR, NT or removal-refitting procedure, apply the repair procedure adapted to the case in question.
Either the generic repair procedure (see **Wiring: Repair**), or a specific procedure listed in the specific procedures reference table in this section.

2 - Specific procedures reference table.

- **Guidelines for reading the tables below:**

  – If not otherwise stated, consider all components or electrical connections to have a link with the functions or equipment listed. For example: For the electric power assisted steering, the function is not specified. It is prohibited to carry out operations on any wire attached to the electric power assisted steering.

  – If one case can be found in both tables, give priority to the **Changing the wiring**, recommendations, and then to those for the specific cases:
    - Example 1: For a 22-track airbag connector where more than 10 wires are damaged, the specific cases refer you back to the airbag and pretensioner repair procedure, and the general cases recommend that the wiring is replaced (as there are more than 10 wires involved). Priority is given to **Changing the wiring**.
    - Example 2: For an operation on a pair of twisted wires (general case) for the airbag function (specific case), the specific case refers back to the repair procedure for Airbags and pretensioners, and the general cases refer back to the repair procedure for multiplex lines. Priority is given to the airbag and pretensioner repair procedure. The recommendations for the specific cases take precedent over the general cases.

● **General cases:**

Functions or equipment	Precisions	Instructions
Wiring harness	Number of damaged wires 10 or fewer	(see **Wiring: Repair**)
	Number of damaged wires more than 10	Change the wiring
Equipment and predispositions specific to commercial vehicles and conversions	/	Change the wiring
Electric vehicles	Wiring and power connectors	Change the wiring
Connections or associated components	/	(see **Connector: Repair**)
Splices	Splice with more than 3 wires	Change the wiring
	3-wire splice which does not need sealing	(see **Wiring: Repair**)
	Splice with 3 wires or more, which needs sealing (engine and underbody areas and damp areas of the doors and boot)	Change the wiring
Wires outside the loom	Sheathed wires	Change the wiring
	Shielded wires	Change the wiring
	Twisted wires	**If the wire cross-sections are 0.5 mm^2:** (see **Multiplex network: Repair**)
	Flat cable	Change the wiring
	Wires with specific thermal protection	Change the wiring
	Copper wires with cross-section less than 0.35 mm^2	Change the wiring
	Copper wires with cross-section greater than 6 mm^2	Change the wiring
	Damaged wires less than 10 cm from the connector	(see **88A, Wiring, Connector: Repair**)

● **Specific cases:**

Lines	Device	Instructions
4-wheel steering	/	Change the wiring
ABS	Other ABS lines	Change the wiring
ABS	ABS sensor	Change the wiring
Airbag	Other airbag lines	(see **Airbag and pretensioner wiring: Repair**)
Airbag	Airbag sensor	(see **Airbag and pretensioner wiring: Repair**)
Airbag	Airbag computer connector	(see **Airbag and pretensioner wiring: Repair**)
Airbag	Pretensioner (squib) connector	(see **Airbag and pretensioner wiring: Repair**)
Airbag	Under seat connector	(see **Airbag and pretensioner wiring: Repair**)
Airbag	Airbag trigger connectors (pyrotechnic lines)	(see **Airbag and pretensioner wiring: Repair**)
Preheating unit (Diesel)	Heater plug	Change the wiring
Injection computer (Petrol)	Petrol vapour absorber	Change the wiring
Injection computer	Variable camshaft	Change the wiring
Injection computer	Variable inlet camshaft	Change the wiring
Injection computer	Variable exhaust camshaft	Change the wiring
Injection computer (Petrol)	Pencil coil	Change the wiring
Injection computer (Petrol and Diesel)	Motorised throttle body	Change the wiring
Injection computer	Camshaft sensor	Change the wiring
Injection computer (Petrol and Diesel)	Inlet camshaft sensor	Change the wiring
Injection computer (Petrol and Diesel)	Exhaust camshaft sensor	Change the wiring
Injection computer	Camshaft sensor, row A, B	Change the wiring
Injection computer	Variable exhaust camshaft sensor	Change the wiring
Injection computer (Petrol and Diesel)	Pinking sensor	Change the wiring
Injection computer (Diesel)	Turbine upstream pressure sensor	Change the wiring

● **Specific cases (cont. 1):**

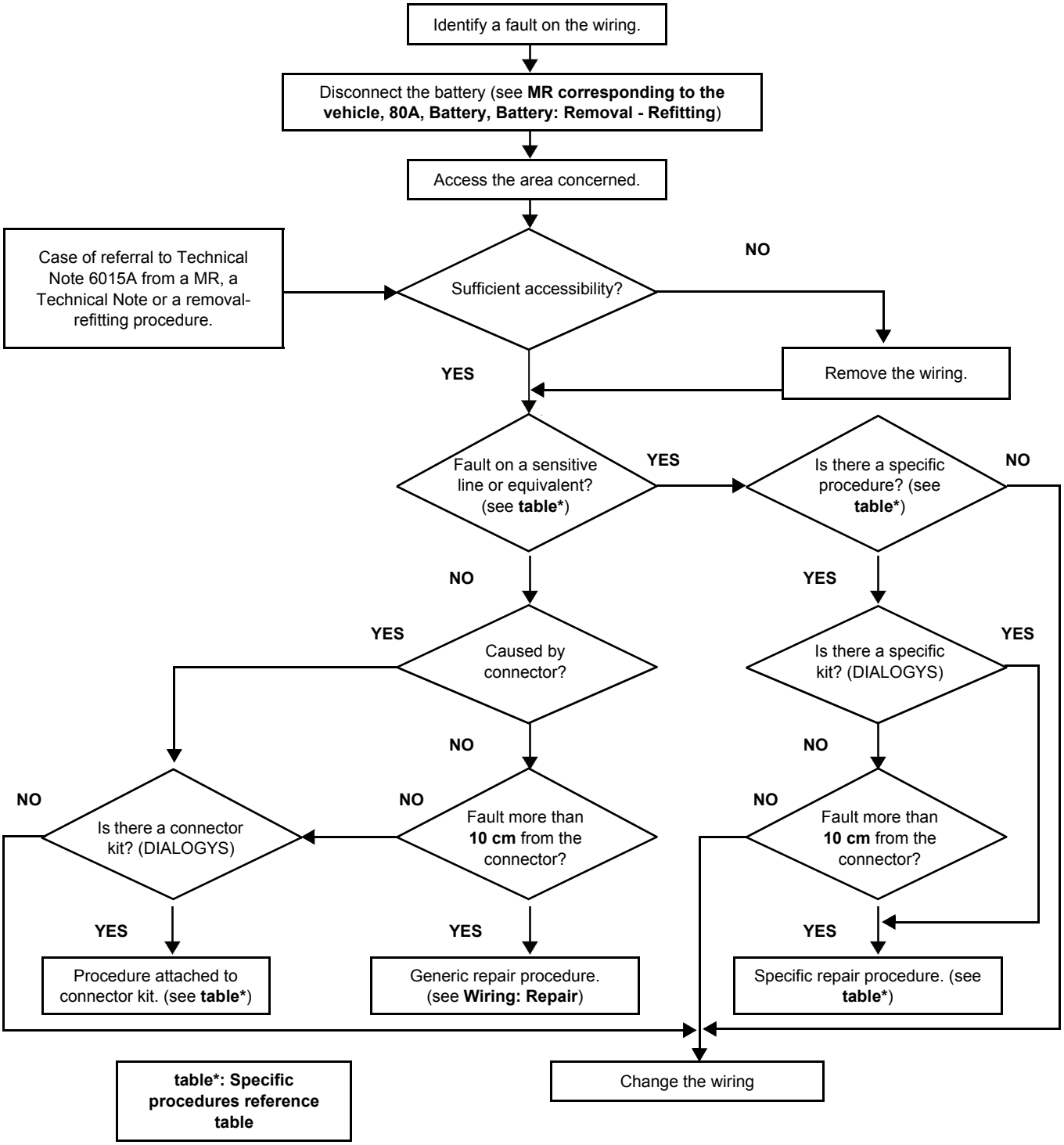
Lines	Device	Instructions
Injection computer (Petrol)	Manifold pressure sensor	Change the wiring
Injection computer (Diesel)	Particle filter differential pressure sensor	Change the wiring
Injection computer (Diesel)	Rail pressure sensor	Change the wiring
Injection computer (Petrol and Diesel)	Turbocharging pressure sensor	Change the wiring
Injection computer	Accelerator pedal sensor	Change the wiring, except for the connector on KANGOO (see **Connector: Repair**)
Injection computer (Petrol and Diesel)	TDC sensor	**See OTS***
Injection computer (Diesel)	Particle filter (downstream) output sensor	Change the wiring
Injection computer (Petrol and Diesel)	Air temperature sensor	Change the wiring
Injection computer (Petrol)	Turbine upstream temperature sensor	Change the wiring
Injection computer (Diesel)	Fuel temperature sensor	Change the wiring
Injection computer (Petrol and Diesel)	Coolant temperature sensor	Change the wiring
Injection computer (Diesel)	Particle filter inlet temperature sensor (upstream)	Change the wiring
Injection computer (Diesel)	Injection air flowmeter	Change the wiring
Injection computer	Camshaft shift, row A, B	Change the wiring
Injection computer (Diesel)	Turbocharger control solenoid valve	Change the wiring
Injection computer (Diesel)	Damper solenoid valve	Change the wiring
Injection computer (Petrol and Diesel)	Injectors	Change the wiring
Injection computer (Diesel)	Diesel heater	Change the wiring
Injection computer (Diesel)	Water in diesel sensor	Change the wiring

*OTS: Special Technical Operation

● **Specific cases (cont. 2):**

Lines	Device	Instructions
Injection computer (Diesel/particle filter)	Oil level and temperature sensor	Change the wiring
Injection computer (Diesel)	Nitrogen oxide (Nox)	Change the wiring
Injection computer (Petrol and Diesel)	Upstream oxygen sensor	Change the wiring
Injection computer (Petrol and Diesel)	Downstream oxygen sensor	Change the wiring
Injection computer (Diesel)	Proportional oxygen sensor	Change the wiring
Injection computer (Diesel)	EGR valve	Change the wiring
Injection computer (Diesel)	Heater plug	Change the wiring
EPAS	/	Change the wiring
ETC (4x4 torque distributor)	/	Change the wiring
GMV	GMV	Change the wiring
Multiplex network	CAN	(See Multiplex network: Repair)
UPC (Petrol and diesel)	Air conditioning compressor	Change the wiring
UPC (Petrol)	Oil level sensor	Change the wiring

3 - Summary flowchart of the operating procedure defined in this section.



1 - Purpose and applications.

Description of the content of the Wiring repair kit case as well as the procedure and the field of application.

The kit enables wiring which is damaged or has cut electrical wires to be repaired whilst ensuring that it will be fully functional.

It also allows wiring-connector kits to be used.

All electrical cables and wires with cross-sections between **0.35 mm^2** and **6 mm^2** except "sensitive lines" (defined in this document), are affected.

WARNING
Repair of sensitive lines is prohibited using the generic procedure alone. It can be authorised provided that there is an additional appropriate procedure (see **Wiring: Precautions for repair**).

The technical nature and the sensitivity of this type of operation requires the adapted equipment contained and described in the Wiring repair kit case.

WARNING
Using tools or components which have not been recommended is strictly forbidden when repairing wiring.

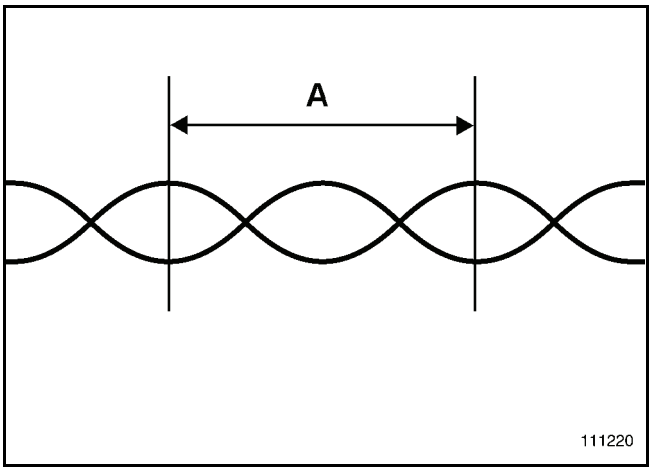
WARNING
For sensitive lines, only automotive electricians, technician agents or cotechs (Level 2 Electricity as a minimum) can carry out the repair described in this note.

2 - Terminology.

● **Wiring-connector kit.**
Kit usually made up of a connector the cells of which are populated with crimped wires along with sleeves for joining.

● **Multiplex lines or connections.**
Principal or secondary CAN network lines link the computers together and are made up of twisted pairs of stranded wires.

● **Turns or twists.**
For twisted pairs:
One turn (twist) = (**A**)



3 - Operation time (TM).

For each vehicle, an average repair time is given in the wiring section of the TM.

The corresponding codes are:
– **0500** for replacing a connector (using a connector kit).
– **0501** for repairing wiring.

This times do not include the time taken to access the area to be repaired. The time taken to remove and refit the wiring must be added.

1 - Case and label.

● **Case (77 11 420 544).**

Part no. 77 11 420 544 corresponds to the new electrical repair case. It replaces case part no. 77 11 229 893.
Both part numbers are authorised for electrical repair.

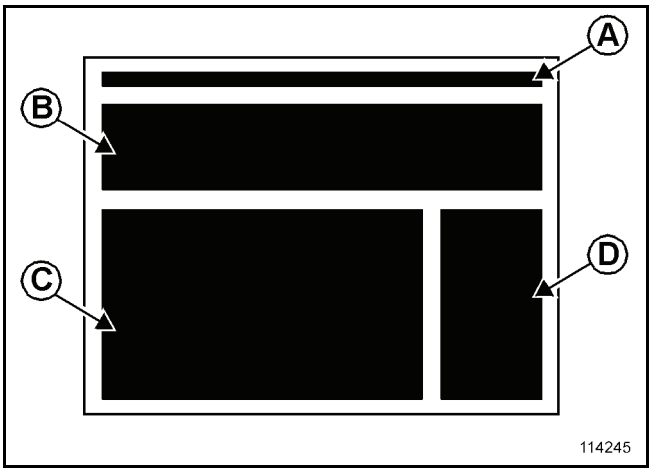
The case contains all the components described in this section. A label lists their part numbers.

● **Label.**

The label affixed inside the case is made up of 4 sections in English and French.

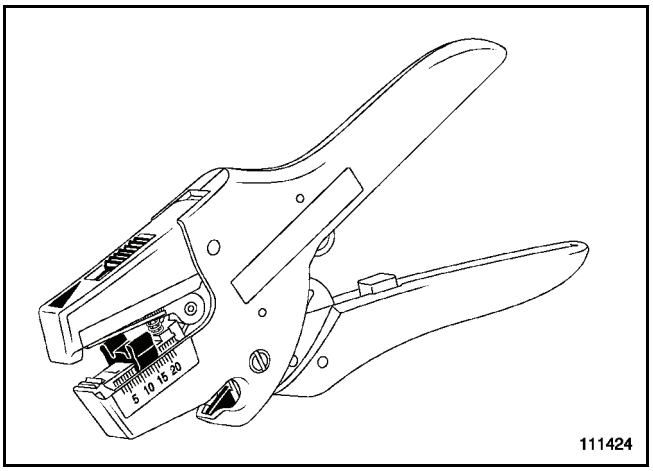
On the upper section, at (**A**) is the title and number of the note. At (**B**) are the After-Sales references (for the network) and MABEC code (for factories) which enables the kit to be restocked with consumables or new tools or a new kit to be ordered.

On the lower section, at (**C**) is a table (not exhaustive) which helps the right sleeve to be chosen, with a summary of the recommendations for each case. And at (**D**) are the recommendations for use.



2 - Tools.

● **Stripping pliers (77 11 230 416).**

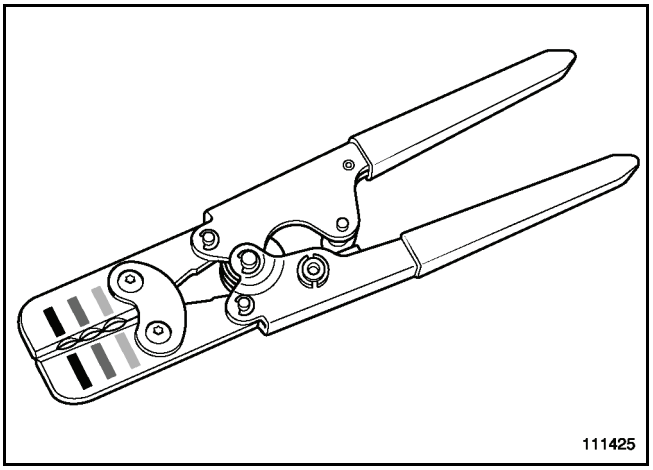


These are automatic stripping pliers which enable an electrical conductor up to a maximum cross-section of **6 mm^2** to be cut or stripped.
The length of the stripped section can be adjusted up to **20 mm**.

The operating instructions for this kit are described in this document (see **Wiring repair kit: Use**).

● **Crimping pliers (77 11 421 296).**

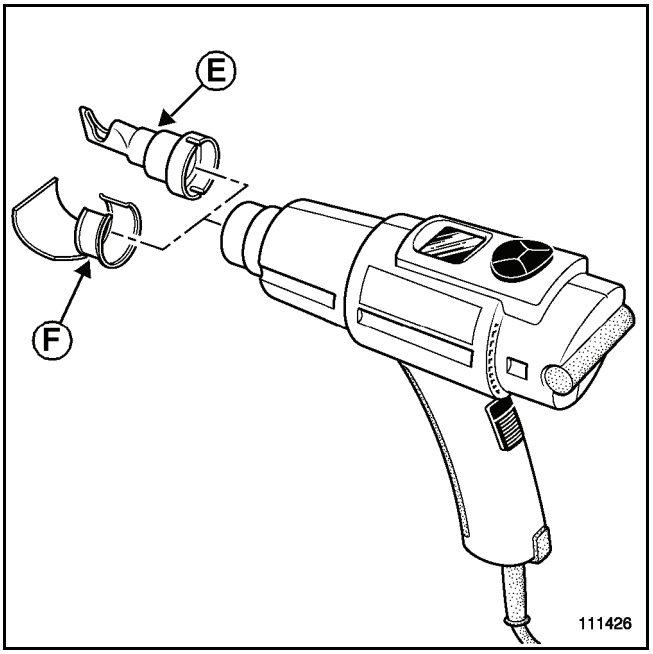
Part no. 77 11 421 296 corresponds to the new crimping pliers in the electrical repair kit. It replaces the crimping pliers with part no. 77 11 230 417.
Both part numbers are authorised for electrical repair.



The crimping pliers have three sizes of jaw (red, blue and yellow) which correspond to the crimping sleeves. These pliers are recommended for the crimping the sleeves provided in the kit.

The operating instructions for this kit are described in this document (see **Wiring repair kit: Use**).

- **Heat gun (77 11 230 415).**



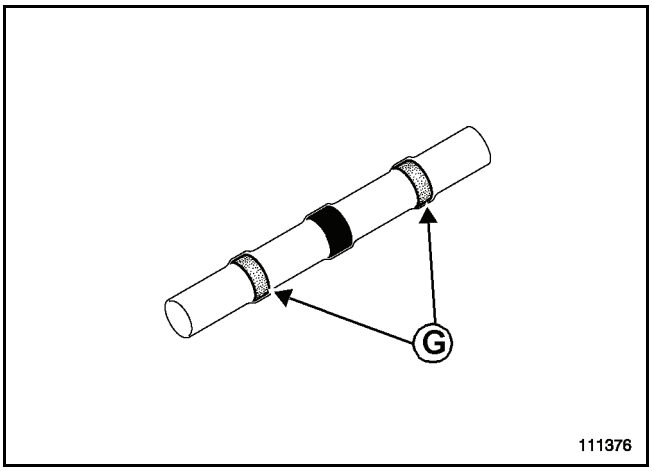
The heat gun is a hot air blower with 2 nozzles which enable it to be adapted for different needs:
- Concentrator nozzle **(E), (77 11 237 778)**.
- Heat shield nozzle **(F), (77 11 237 777)**.

It can be used to solder all self-solder sleeves and to contract the heat-shrinkable parts and sheaths on all sleeves
Its temperature and flow of air are adjustable and are indicated on the screen.
Temperature adjustment from **80°C** to **650°C** in increments of **5°C**.
Air flow adjustment from **200 l/min** to **550 l/min** at 5 levels displayed on the screen.

The operating instructions for this kit are described in this document (see **Wiring repair kit: Use**).

3 - Consumables.

- **Self-solder sleeves.**



There are three sizes of heat shrinkable self-solder sleeve differentiated by the colour of their rings (**G**):

- **Clear,** for a total copper section (sum of the 2 wires) between **0.3** and **0.8 mm^2** (packet of 20: **77 11 229 418**).

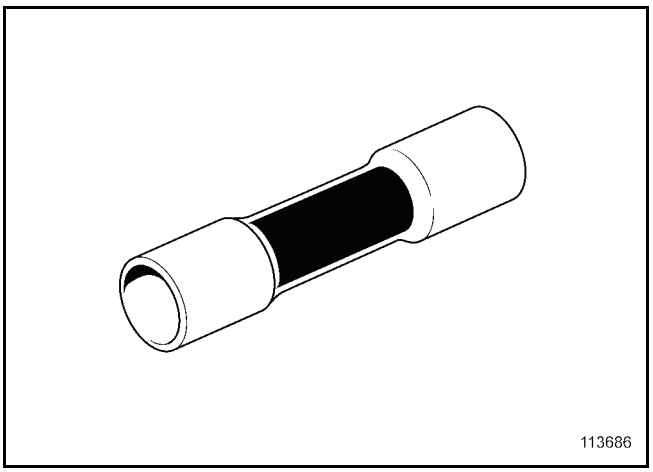
- **Red,** for a total copper section (sum of the 2 wires) between **0.8** and **2.0 mm^2** (packet of 20: **77 11 229 419**).

- **Blue,** for a total copper section (sum of the 2 wires) between **2.0** and **4.0 mm^2**(packet of 20: **77 11 229 420**).

These are sealing sleeves. The seal is formed when the rings are tightened around the wire when heated.

These sleeves are only to be used for connecting one wire with another wire (1-to-1).

● **Crimping sleeve.**



There are three sizes of heat shrinkable crimp sleeve differentiated by the colour of their rings:

– **Red,** for a copper section between **0.5** and **1.5 mm^2** (Packet of 20: **77 11 229 410**).

– **Blue,** for a copper section between **1.5** and **2.5 mm^2** (Packet of 20: **77 11 229 416**).

– **Yellow,** for a copper section between **3.0** and **6.0 mm^2** (Packet of 20: **77 11 229 417**).

These are sealing sleeves. The seal is formed by the inner wall which becomes adhesive when heated.

These sleeves can be used to join one wire with another wire (1-to-1) or two wires with another wire (2-to-1).

In the case where two wires are joined to one wire (2-to-1), the seal is no longer guaranteed. Do not use when a seal is required.

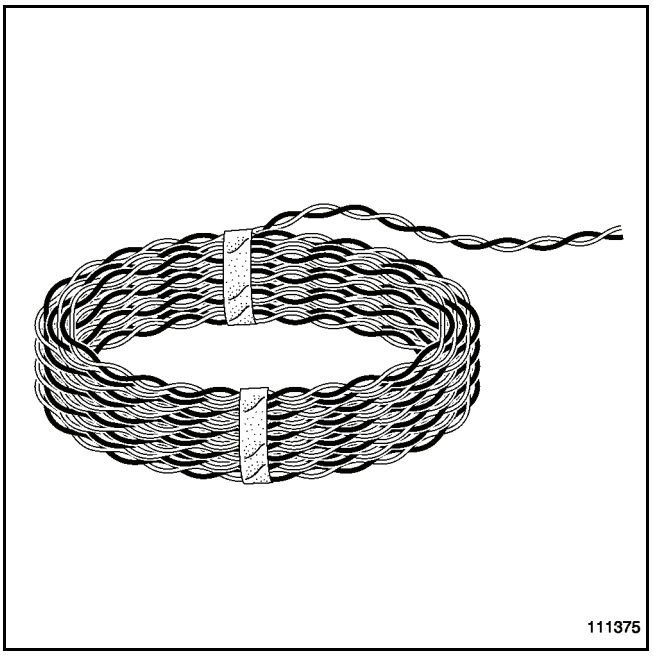
● **Thermal protection (77 11 229 424).**

The protective heat shield is a **250 mm** by **250 mm** square. It is intended to protect the surrounding area from the flow of hot air from the heat gun.

● **Adhesive PVC tape (77 11 170 331).**

Use the adhesive PVC tape for taping the wires. Do not use it to protect or insulate electrical parts.
It is a contact-adhesive high temperature tape.

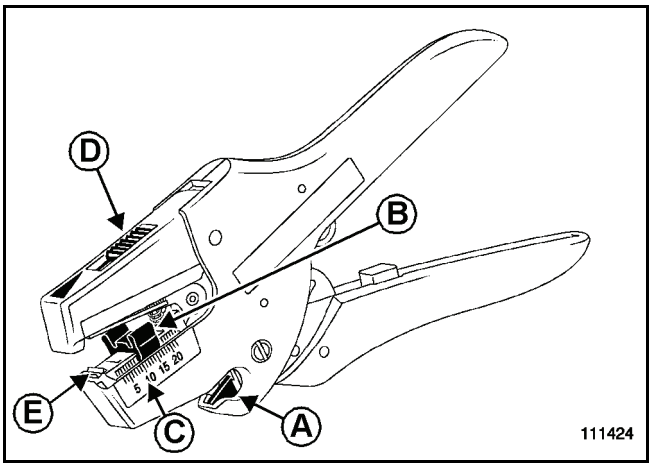
● **Coil of twisted wires (77 11 229 425).**



This is a coil of a pair of twisted wires (40 turns/linear m). Ensure these wires remain twisted. The 2 wires have a **0.5 mm^2** cross-section and are of temperature class T3. It is possible to fit them in all areas of the vehicle during repairs to twisted wires of the same cross-section.

Note:
This section is an abridged version of the instructions for use of the tools in the kit.

1 - Stripping pliers.



● **Description of the stripping pliers:**

(**A**) = Wire cutter.
(**B**) = Stop for adjusting the length to be stripped.
(**C**) = Scale (millimetre divisions).
(**D**) = Pressure adjustment.
(**E**) = Stripping jaws and cutting edges.

● **Cutting a wire:**

To cut electrical wires up to **6 mm^2**, insert the wire into slot **(A)** and press the handle.

● **Stripping a wire:**

This pair of stripping pliers is automatic. It does not need adjusting to the cross-section of wire to be stripped **(6 mm^2** maximum).

To strip a wire, adjust the length to be stripped by moving the stop (**B**). Press lightly on the ends to make it slide. The length to be stripped is read on the scale (**C**) in millimetres (mm).

Adjust the stripping pressure by moving the cursor (**D**). Press on the cursor to make it slide. The further forward the cursor is, the greater the force.

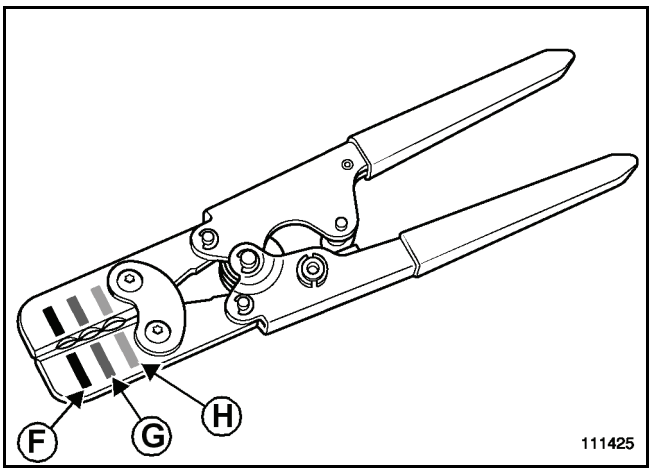
WARNING
If the pressure is too weak, the cutting edges will not grip the wire's insulation. If the pressure is too strong, the cutting edges can cut through the copper strands. Start with a medium setting and then adjust according to results.

Place the end of the wire against the stop (**B**) and bring it out through the jaws (**E**).

Press the handle. The jaws will grip the wire. The cutting edges will automatically adjust their position in relation to the section of wire and strip it.

WARNING
Check the quality of the stripped wire (insulation cleanly removed and no cut copper strands). Start again if necessary.

2 - Crimping pliers.



The crimping pliers are the only pliers recommended for crimping the crimp sleeves in the kit.

They are used on the 3 sizes of crimp sleeve:
- At (**F**) for crimping the **red** crimp sleeve.
- At (**G**) for crimping the **blue** crimp sleeve.
- At (**H**) for crimping the **yellow** crimp sleeve.

Before crimping a sleeve:
- choose the sleeve suitable for the cross-section of the wire (see **Wiring: Repair**),
- strip the recommended length of wire.

● **Crimping operation:**

Squeeze the handles fully together to unlock the pliers and open the jaws.

On the pliers, find the crimping jaws which correspond to the sleeve being used.

Insert the wire(s) into one end of the sleeve.

Position the pliers' jaws in the middle of the half of the metal shaft where the wire(s) are.

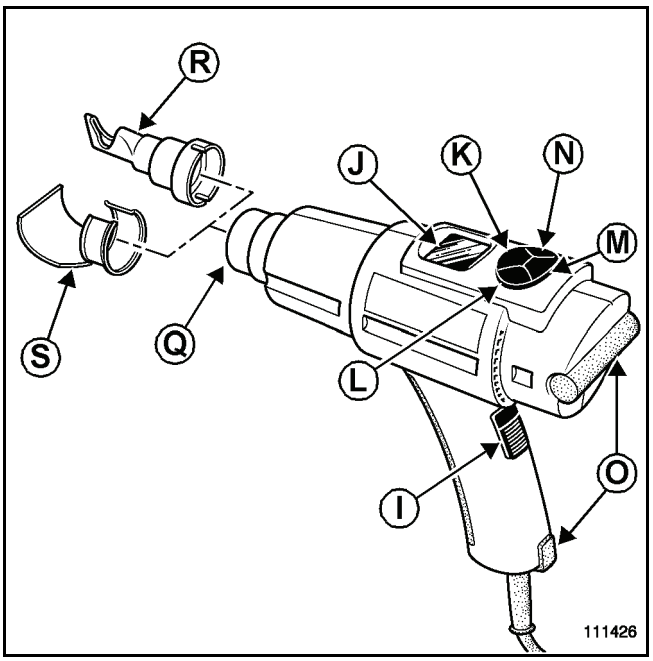
Squeeze the handles fully together to crimp the sleeve onto the wire(s). Crimping is complete once the pliers are opened again.

Check that the copper of the wire is correctly crimped and that the plastic part of the sleeve has not been cut.

Repeat the crimping operation on the other end of the sleeve.

Note:
If the wire is not correctly crimped, cut the wire at the sleeve and start the operation again with a new sleeve.

3 - Heat gun.



WARNING
Before using the gun, the user must familiarise themselves with the safety advice in the user's manual provided by the manufacturer.

● **Introduction to the gun:**

The heat gun is recommended for contracting heat shrinkable sleeves.
For other applications, the user must take the precautions and advice in the user's manual into account.

● **Description of the heat gun:**

(**I**) = On (1)/off (0) switch.
(**J**) = Display screen.
(**K**) = SELECT MENU button.
(**L**) = + button for setting parameters.
(**M**) = STANDBY button (pause/cooling).
(**N**) = - button for setting parameters.
(**O**) = Supports for resting the tool on a bench.
(**P**) = Tool air inlet.
(**Q**) = Tool air outlet.

● **Accessories:**

(**R**) = Concentrator nozzle.
(**S**) = Deflector nozzle.

Note:
The concentrator nozzle (**R**) is recommended when using the heat gun on the crimp or self-solder sleeves in the kit.

WARNING
The heat shield nozzle (S) can be used for contracting single heat shrinkable sheaths. Do not use it for contracting the crimp or self-solder sleeves in the kit.

● **General information on the setting parameters:**

When contracting the sleeves in the kit, use the FREE program and change the settings as recommended. A memory function recalls the program and settings from the last time the gun was used.

● **Switching on the gun:**

Connect the appliance to the mains electricity supply (**230 Vac** - **50 Hz** or **60 Hz**), respecting all precautions.
Push the switch (**I**) on (1).
The appliance will come on using the programs and settings most recently used.

WARNING
The gun starts heating immediately.

WARNING
Before putting the gun away in its case or anywhere else, leave it to cool down to ambient temperature.

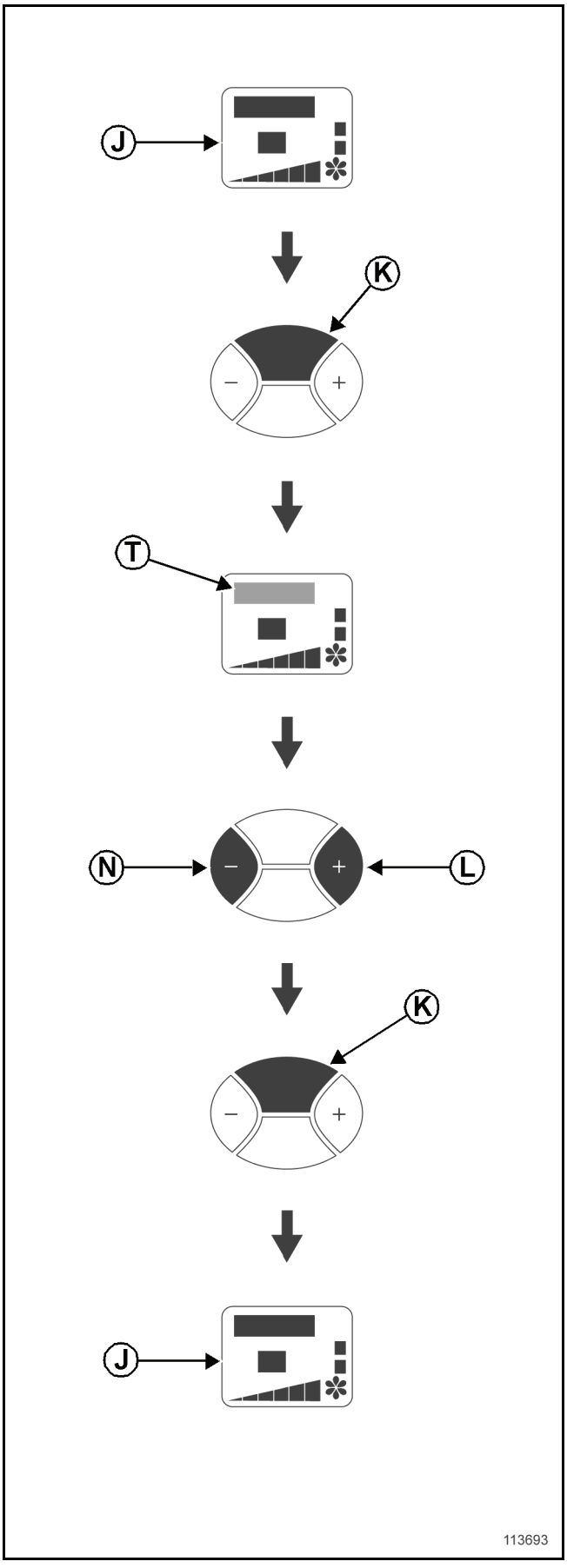
● **Operating instructions:**

The heat gun is used in two ways. It can either be held in the hand and used directly. Or it can be set down on its supports (**O**) on a clean and tidy bench. The latter has the advantage of leaving the user with both hands free.

● **Programs:**

Always work with the FREE program shown on the screen (**J**) at (**T**). If it is not shown, perform the following operation:

– press menu selection button (**K**) once,
– program field (**T**) on display field (**J**) flashes,
– select the free program using the + (**L**) or - (**N**) buttons,
– press the menu selection button (**K**) once, so that field (**T**) on display screen (**J**) stops flashing.

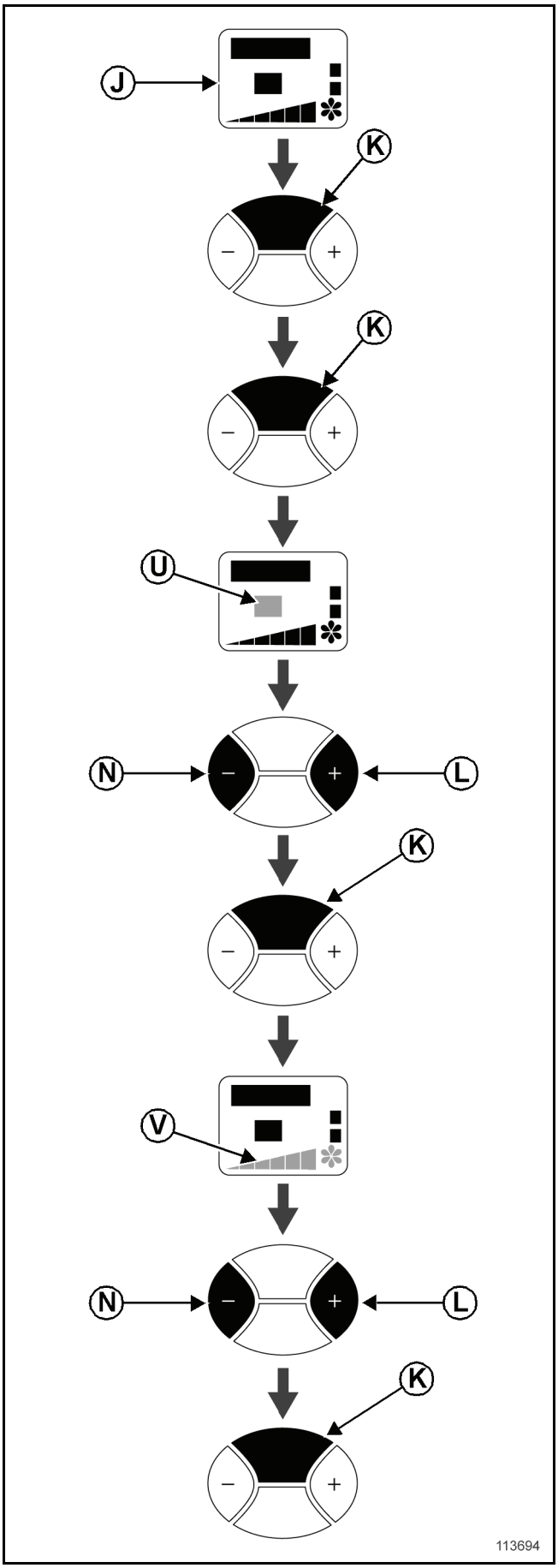


● **Temperature and air flow settings:**

To change the program settings (the FREE program is recommended), carry out the following operation:

– press menu selection button (**K**) twice,
– temperature field (**U**) on display field (**J**) flashes,
– adjust the temperature using the + (**L**) or - (**N**) buttons,
– press menu selection button (**K**) once,
– air flow field (**V**) on display field (**J**) flashes,
– adjust the air flow using the + (**L**) or - (**N**) buttons,
– press menu selection button (**K**) once, so that the fields on display screen (**J**) stop flashing.

Note:
When using the heat gun on crimp or self-solder sleeves, the air flow is always on the maximum setting, only the temperature varies.



● **Special modes (COOL/PAUSE):**

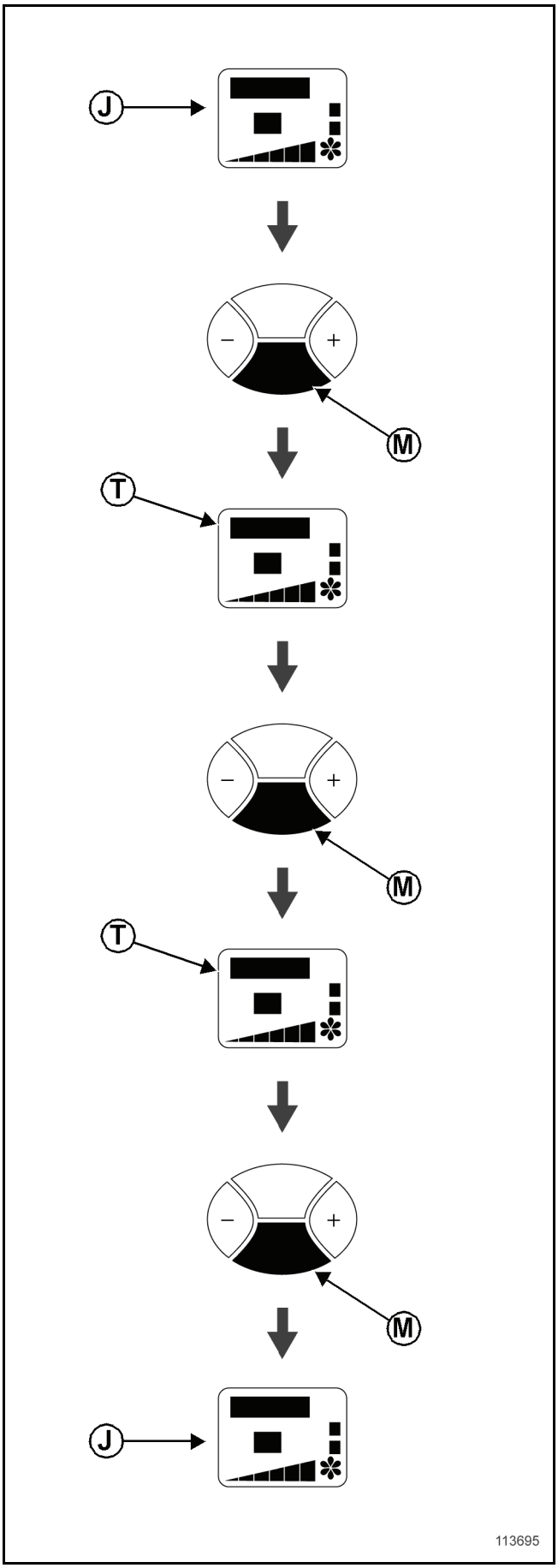
After use and before pushing switch (**A**) off (0), cool the gun. Similarly, during brief pauses or for lower power consumption, switch the gun to PAUSE mode by carrying out the following operation.

Before switching off the heat gun:

– press STANDBY button (**M**) once,
– program field (**T**) on display field (**J**) shows COOL,
– wait until the temperature goes down to **150**°**C** and push switch (**A**) off (0).

To switch to economy mode:

– press STANDBY button (**M**) once,
– program field (**T**) on display field (**J**) shows COOL,
– press STANDBY button (**M**) once,
– program field (**T**) on display field (**J**) shows WAIT,
– the gun is in economy mode,
– press STANDBY button (**M**) once to recover the previous settings and start heating again.



Note:
This relates to **the generic repair procedure**.

1 - Choosing the sleeve.

The are two possible techniques available:
- self-solder sleeves,
- crimp sleeves.

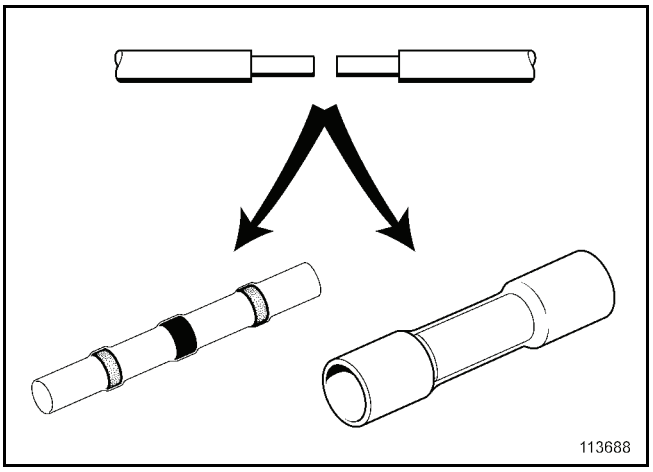
For each technique there are 3 sizes of sleeve.

The choice of sleeve depends on the following criteria:

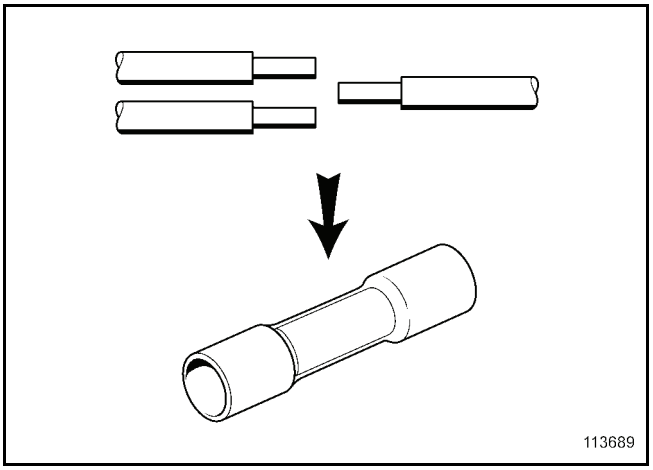
- **Type of operation.**

Note:
This is **stage 1** when using the label.

If wire to wire (1-to-1), use crimp sleeves or self-solder sleeves.



If 2 wires and 1 wire (2-to-1), **only** use crimp sleeves. In this case, the seal can no longer be guaranteed. Do not use this solution when a tight seal is needed (engine and underbody areas and damp areas of the doors and boot).



- **Wire cross-sections.**

Note:
This is **stage 2** when using the label.

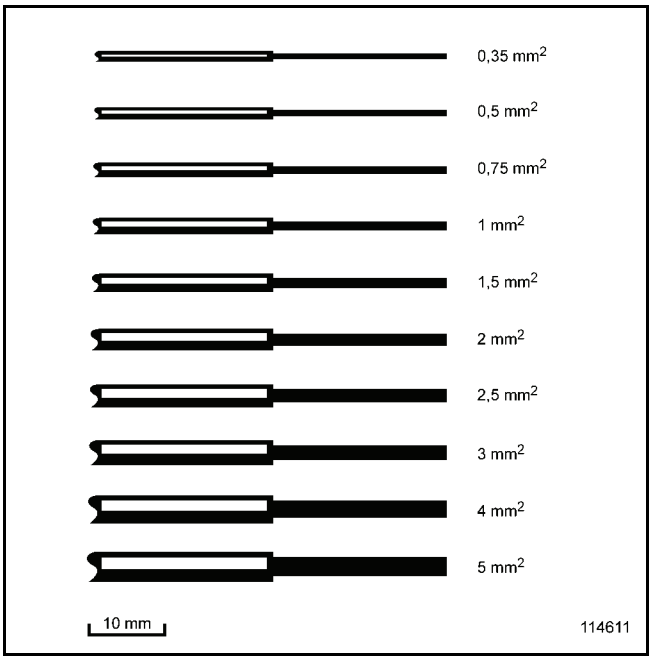
See the sleeve choice table taken from the label.

Note:
The columns corresponding to the wire cross-sections give a representative overview of the different cases.

Identify the cross-section of the wire which is the subject of the operation. Use the diagram which shows pictures of wires which correspond to the wire cross-sections.

Check that the diagram is at scale 1.

Find the stripped section of wire.



Refer to the columns of wire cross-sections to find your case.

Note:
If the case in question is not present, refer to the special cases.

Example 1.
Joining together 2 wires, each **0.5 mm²** (1-to-1 type operation). Look at the upper section of the columns (1-to-1).
Each wire (A and C) has a **0.5 mm²** cross-section.
Refer to the line where:

- column A shows **1 x 0.5 mm²**,
- and column C shows **1 x 0.5 mm²**.

Example 2.
Joining 3 wires together (2-to-1 type operation). Look at the lower section of the columns (2-to-1).
On one side, the 2 wires (A and B) both have a **1 mm²** cross-section. On the other side, wire C has a **2 mm²** cross-section. Refer to the line where:

- columns A & B show **2 x 1 mm²**,
- and column C shows **1 x 2 mm²**.

- **Identifying the settings.**

Note:
This is **stage 3** when using the label.

After having found your case in question, follow the corresponding line to find the setting parameters.
The settings correspond to the lengths to be stripped and the temperature of the heat gun.

The column corresponding to these parameters gives the recommended sleeve.

Note:
If several sleeves are possible for the same operation, choose the one best adapted for the number of wires to be repaired, the wiring layout and the vehicle layout (thickness of the harness, available room etc.).

As relates to the previous examples.

Example 1.
2 possible sleeves:
- Either the red self-solder sleeve.
- Or the red crimp sleeve.

Example 2.
- Only the blue crimp sleeve is possible.

- **Special cases.**

If the case in question is not shown in the selection table, apply the following rules to select a sleeve.

In all cases, identify the cross-section of each wire (copper strands).

● **Case of a wire joint between 1 wire and 1 wire (most common situation).**

Conditions for self-solder sleeves:

Add together the 2 wire cross-sections (copper strands):

If **0.3 mm²** ≤ (section 1 + section 2) ≤ **0.8 mm²**, use the self-solder sleeve with **clear rings**.
Strip **10 mm** from each wire.
The temperature setting is **300°C**.

If **0.8 mm²** ≤ (section 1 + section 2) ≤ **2 mm²**, use the self-solder sleeve with **red rings**.
Strip **12 mm** from each wire.
The temperature setting is **340°C**.

If **2 mm²** ≤ (section 1 + section 2) ≤ **3 mm²**, use the self-solder sleeve with **blue rings**.
Strip **15 mm** from each wire.
The temperature setting is **400°C**.

Conditions for crimp sleeves:

Consider the section of each wire separately.

If **0.5 mm²** ≤ each section ≤ **1.5 mm²**, use the **red** crimp sleeve.
Strip **7 mm** from each wire.
The temperature setting is **280°C**.

If **1.5 mm²** ≤ each section ≤ **2.5 mm²**, use the **blue** crimp sleeve.
Strip **7 mm** from each wire.
The temperature setting is **300°C**.

If **3 mm²** ≤ each section ≤ **6 mm²**, use the **yellow** crimp sleeve.
Strip **8 mm** from each wire.
The temperature setting is **320°C**.

● **Case of a wire joint between 2 wires and 1 wire (less common situation).**

Conditions for crimp sleeves:

Add together the 2 wire cross-sections (copper strands) found on one side of the sleeve to find ***Sum side 1***.

If **0.5 mm²** ≤ ***Sum sections side 1*** ≤ **1.5 mm²**.
And if **0.5 mm²** ≤ wire cross-section side 2 only ≤ **1.5 mm²**, use the **red crimp sleeve**.
The temperature setting is **280°C**.

If **1.5 mm²** ≤ ***Sum sections side 1*** ≤ **2.5 mm²**.
And if **1.5 mm²** ≤ wire cross-section only side 2 ≤ **2.5 mm²**, use the **blue crimp sleeve**.
The temperature setting is **300°C**.

If **3 mm²** ≤ ***Sum sections side 1*** ≤ **6 mm²**.
And if **3 mm²** ≤ wire cross-section only side 2 ≤ **6 mm²**, use the **yellow crimp sleeve**.
The temperature setting is **320°C**.

For stripping the wires:

7 mm is stripped from the single wire (side 2) for red and blue crimp sleeves and **8 mm** for the yellow sleeve.

If the two wires (side 1) have the same cross-section, strip **10 mm** from them for red and blue crimp sleeves and **11 mm** for the yellow sleeve.

If the 2 wires (side 1) have different cross-sections, then:
For red and blue crimp sleeves, strip **10 mm** from the smaller cross-section and **7 mm** from the larger cross-section.
For the yellow sleeve, strip **11 mm** from the smaller cross-section and **8 mm** from the larger cross-section.

WARNING
If no sleeve corresponds to the case in question, the operator cannot repair the wiring. Replace the wiring harness.

● **Settings table (taken from the label).**

	Sleeves / Wire cross-sections		Self-solder									Crimp								
			clear			red			blue			red			blue			yellow		
			$0.3^2 \leq A+C \leq 0.8^2$			$0.8^2 \leq A+C \leq 2^2$			$2^2 \leq A+C \leq 3^2$			$0.5^2 \leq A+B \leq 1.5^2$ & $0.5^2 \leq C \leq 1.5^2$			$1.5^2 \leq A+B \leq 2.5^2$ & $1.5^2 \leq C \leq 2.5^2$			$3^2 \leq A+B \leq 6^2$ & $3^2 \leq C \leq 6^2$		
	A	C	L (mm)		T (°C)	L (mm)		T (°C)	L (mm)		T (°C)	L (mm)		T (°C)	L (mm)		T (°C)	L (mm)		T (°C)
			A	C		A	C		A	C		A	C		A	C		A	C	
1→1	1x0.35 mm²	1x0.35 mm²	10	10	300															
	1x0.35 mm²	1x0.5 mm²	10	10	300	12	12	340												
	1x0.5 mm²	1x0.5 mm²				12	12	340				7	7	280						
	1x0.5 mm²	1x1 mm²				12	12	340				7	7	280						
	1x0.75 mm²	1x0.75 mm²				12	12	340				7	7	280						
	1x0.75 mm²	1x1 mm²				12	12	340				7	7	280						
	1x1 mm²	1x1 mm²				12	12	340	15	15	400	7	7	280						
	1x1 mm²	1x1.5 mm²							15	15	400	7	7	280						
	1x1.5 mm²	1x1.5 mm²							15	15	400	7	7	280	7	7	300			
	1x1.5 mm²	1x2 mm²													7	7	300			
	1x2 mm²	1x2 mm²													7	7	300			
	1x2 mm²	1x2.5 mm²													7	7	300			
	1x2.5 mm²	1x2.5 mm²													7	7	300			
	1x3 mm²	1x3 mm²																8	8	320
	1x3 mm²	1x4 mm²																8	8	320
	1x6 mm²	1x6 mm²																8	8	320

	A & B	C	L (mm)			T (°C)	L (mm)			T (°C)	L (mm)			T (°C)	L (mm)			T (°C)	L (mm)			T (°C)	L (mm)			T (°C)
			A	B	C		A	B	C		A	B	C		A	B	C		A	B	C		A	B	C	
2→1	2x0.5 mm²	1x1 mm²													10	10	7	280								
	1x0.5 mm² + 1x1 mm²	1x1.5 mm²													10	7	7	280	10	7	7	300				
	2x1 mm²	1x2 mm²																	10	10	7	300				
	1x0.5 mm² + 1x 1.5 mm²	1x2 mm²																	10	7	7	300				
	1x0.5 mm² + 1x3 mm²	1x3 mm²																					11	8	8	320
	2x2 mm²	1x6 mm²																					11	11	8	320
Stripping/Temperature			**mm**			**°C**	**mm**			**°C**	**mm**			**°C**	**mm**			**°C**	**mm**			**°C**	**mm**			**°C**

In the case of a 1-to-1 type operation, wires **A** and **C** denote the wires which are found at either side of the sleeve.

In the case of an operation where 2 wires are joined to 1 (2 to 1), wires **A** and **B** denote the 2 wires which are found at the same side of the sleeve (**A** is the smaller section). **C** denotes the single wire on the other side.

2 - Preparation.

To start the preparatory stage, check that the wiring is sufficiently accessible and that the sleeves have been chosen.

– Detach the wires from the wiring.

– Check that the operating area is sufficiently spacious and that the sleeves can be fitted staggered (if there is a number of wires).

– Mark the wires to be cut, particularly if there is a number of wires the same colour.

– Cut the damaged wire(s). Stagger the cuts if a lot of wires are marked so that the sleeves are not all on top of each other. The cut must be made at a distance of no less than **50 mm** from the damaged section and in an area where the sleeve will remain straight.

– Cut the replacement wire to length(s) identical to those removed from the harness. If the self-solder sleeves are being used, add **30 mm** for the wire joints.

WARNING
The cross-section of replacement wire must not be less than the original cross-section of wire.

WARNING
Use a 0.5 mm^2 wire to repair a 0.35 mm^2wire.

WARNING
The temperature class of the replacement wire must be greater than or equal to class T3. For the repair, use the wires recommended by the parts department network, checking that they are suitable for your requirements.

– Strip the ends by the lengths indicated in relation to the sleeve chosen, using the stripping pliers (see **Wiring repair kit: Use**).

– Protect sensitive areas close to the wiring with the heat shield.

3 - Self-solder sleeves.

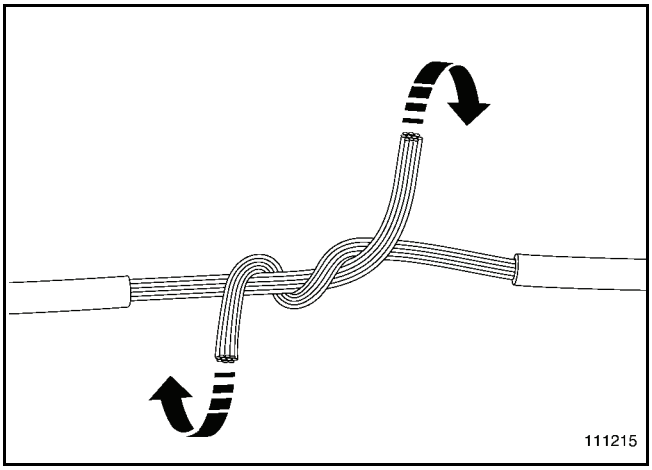
Note:
Fit the self-solder sleeves (connection and heating) line by line, sleeve by sleeve.

● **Connection.**

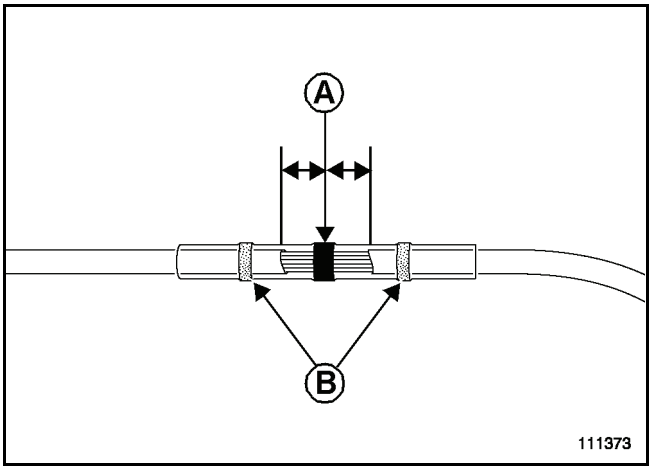
The equipment necessary and the wires are ready for the operation:

– Slip the self-solder sleeve onto one of the wires.

– Connect the wires by twisting the stripped sections around each other.



– Slide the sleeve over the stripped section. The ring of solder should end up in the centre of the stripped and twisted wires (**A**). The stripped and twisted section of the wires must be located between the 2 sealing rings (**B**).



WARNING
When twisting the wires, make sure that your hands are not greasy so that the solder adheres.

WARNING
When the sleeve is positioned, check that all the copper strands remain flat and subsequently are not at risk of perforating the sleeve. Start the operation to join the wires again if necessary.

WARNING
The sealing rings must be clearly located on the insulated section of the wires (B) and not on the copper or where the copper and the insulated section meet. Start the operation to join the wires again if necessary.

Once the wires are joined, start the heating operation.

- **Heating the self-solder sleeve.**

  – Switch on the heat gun fitted with the concentrator nozzle after familiarising yourself with the precautions for use (see **Wiring repair kit: Use**).

  – Adjust the temperature and the air flow to the values indicated (see **Wiring repair kit: Use**).

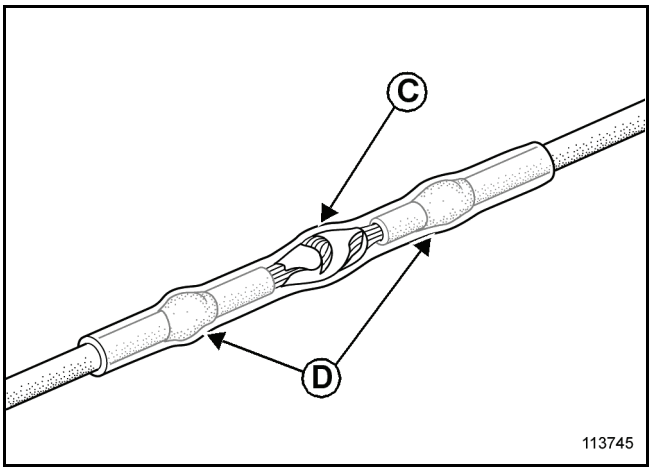
  – Check that the sensitive areas close to the sleeve and the other electrical wires are not at risk of damage.

  – Heat the sleeve starting at the centre, concentrating the heat on the ring of solder and the stripped section of the wires.

  – When the copper and the ring of solder become hot enough, the ring of solder melts and runs in between the copper strands (**C**).

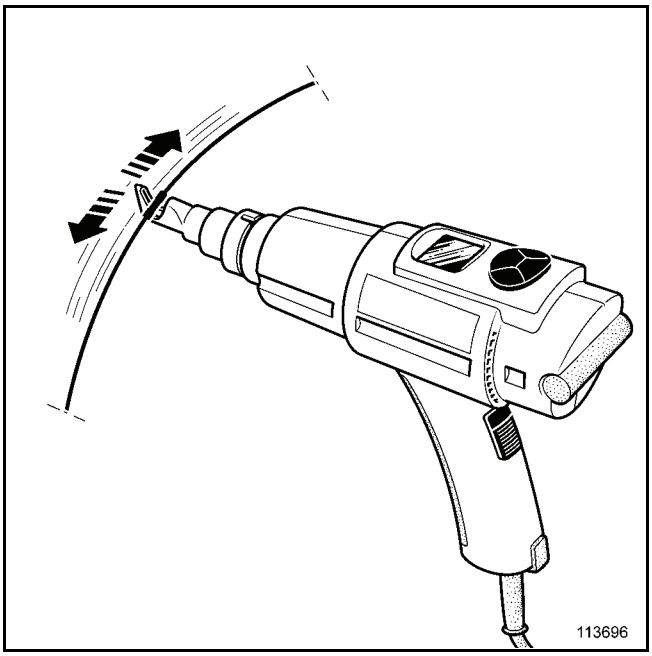
  – When the solder has completely melted, move the nozzle to the ends of the sleeve to finish shrinking the sheath.

  – The sealing rings of the sleeve tighten around the insulation of the wires (**D**).



Note:
Spend the majority of the recommended time on the ring of solder and the rest of the time on the ends of the sleeve.
The heating operation takes **30 s** ± **10**. This time is a guide only. It can be reduced or increased depending on how efficient the heating is.

WARNING
Do not try to heat the sheath too quickly, use a backwards and forwards motion to ensure it does not burn.
Do not direct the flow of hot air onto the insulation of the wires so as not to burn it.



WARNING
Wait for the sleeve to cool before manipulating it to maintain the quality of the solder (minimum waiting period: 1 minute).
Do not bend the sleeve (even when cool) so as to not damage the quality of the solder or the sealing properties of the sleeve.

Note:
– Do not move during installation.
– Do not overheat the sleeve.
– Do not move the sleeve or wires until they have cooled.

If several self-solder sleeves must be positioned, repeat the operation sleeve by sleeve.

When the heating operations have finished, move on to the checking operation (see **Wiring: Check**).

4 - Crimp sleeves.

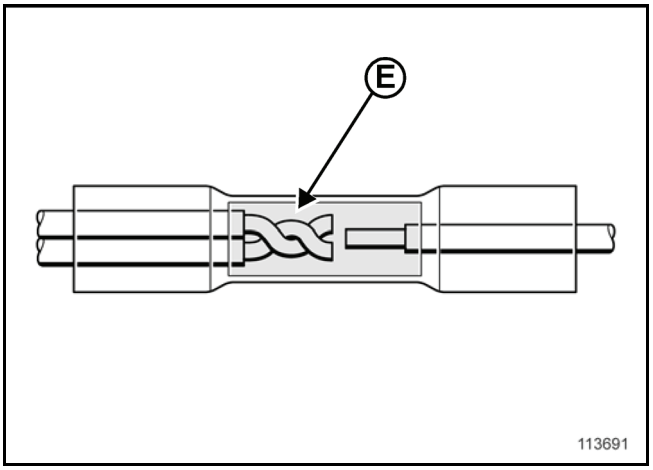
Note:
For a wire-to-wire join, go straight to the crimping operation.

● **Special notes for joining 2 wires to 1 wire.**

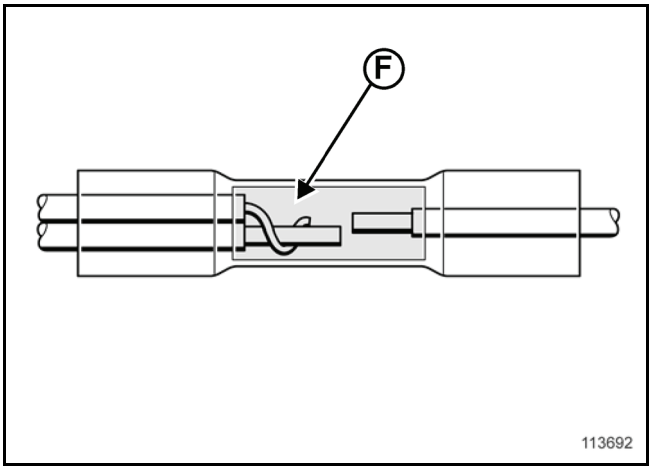
WARNING
Do not use if a tight seal is needed (engine and underbody areas and damp areas of the doors and boot).

When joining 2 wires to 1 wire, first connect the 2 wires from the same end in the following way:

– If the 2 wires have identical diameters, twist together the stripped section of the 2 wires (**E**), before putting them into the sleeve.



– If the 2 wires have different diameters, wind the stripped section of the smaller wire around that of the larger wire (**F**) before inserting them in the sleeve.



● **Crimping.**

The equipment necessary and the wires are ready for the crimping operation:

– Take the crimping pliers. Squeeze the handles fully together to unlock the pliers and open the jaws (see **Wiring repair kit: Use**).

– On the pliers, find the crimping jaws which correspond to the sleeve chosen.

– Insert the wire(s) into one end of the sleeve up to the stop located inside the metal barrel of the sleeve.

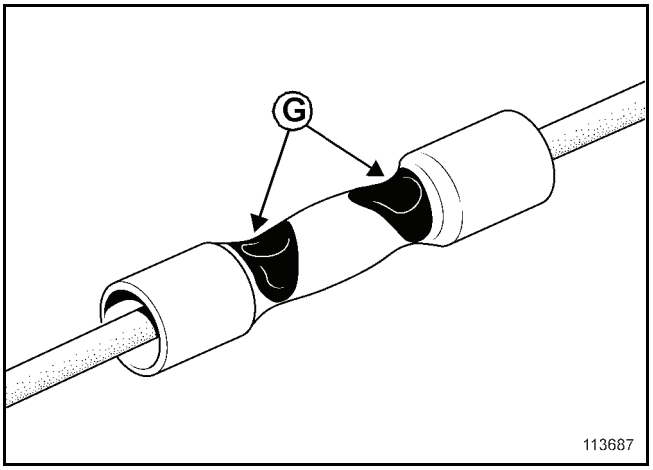
– Position the pliers' jaws around the middle of the section of the metal barrel where the wire(s) are.

– Squeeze the handles fully together to crimp the sleeve onto the wire(s). Crimping is complete once the pliers are opened again.

WARNING
Check that the copper of the wire is correctly crimped and that the plastic part of the sleeve has not been cut. If the wire has been stripped by the correct length and correctly inserted in the metal barrel, then the copper of the wire should barely jut out from the shaft.

Note:
If the wire is not correctly crimped, cut the wire before the sleeve and start the operation again with a new sleeve.

Repeat the crimping operation on the other end of the sleeve to obtain the result below.



The pliers have correctly crimped each wire on the halves of the metal barrel at (**G**) without damaging the plastic.

- **Heating the crimping sleeve.**

  – Switch on the heat gun fitted with the concentrator nozzle after familiarising yourself with the precautions for use (see **Wiring repair kit: Use**).

  – Set the temperature and the air flow to the values indicated, following the procedure in this note (see **Wiring repair kit: Use**).

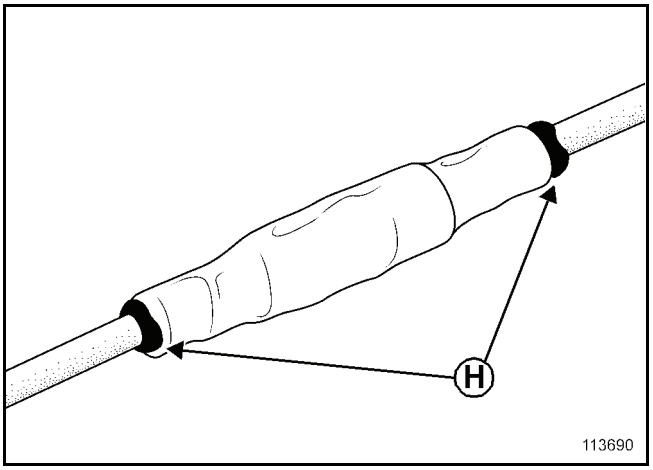
  – Check that the sensitive areas close to the sleeve and the other electrical wires are not at risk of damage.

  – Heat the sleeve starting at the centre.

  – When the sheath starts to contract, move the nozzle to one of the ends.

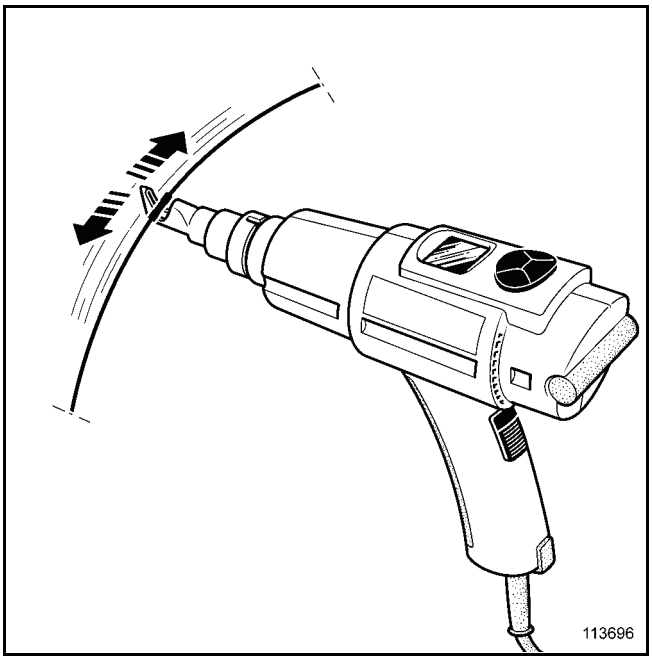
  – The sheath continues to contract and produces a glue.

  – When the end of the sleeve has completely contracted and the glue has correctly covered the opening of the sleeve, repeat the operation on the other end to obtain the result shown at (**H**).



Note:
Spend the majority of the recommended time on the metal barrel and the rest of the time on the ends of the sleeve.
The heating operation takes **30 s** ± **10**. This time is a guide only. It can be reduced or increased depending on how efficient the heating is.

WARNING
Do not try to heat the sheath too quickly, use a backwards and forwards motion to ensure it does not burn.
Do not direct the flow of hot air onto the insulation of the wires so as not to burn it.



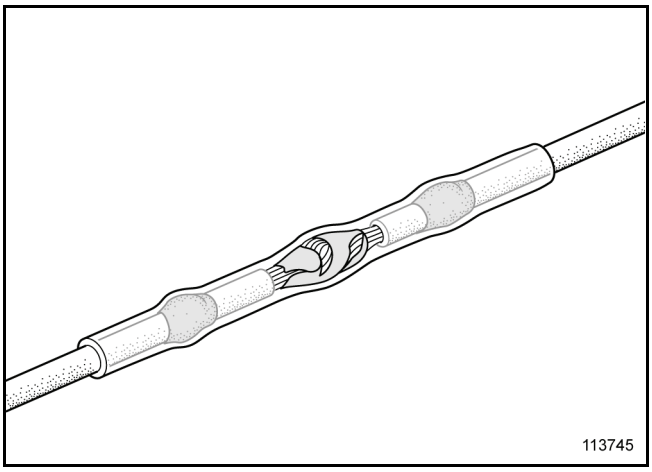
WARNING
Wait for the sleeve to cool before manipulating it to ensure that the sealing properties of the sleeve are not affected (minimum waiting period: 1 minute).
Do not bend the sleeve (even when cool) so as to not damage the sealing properties of the sleeve.

When the heating operations have finished, move on to the checking operation (see **Wiring: Check**).

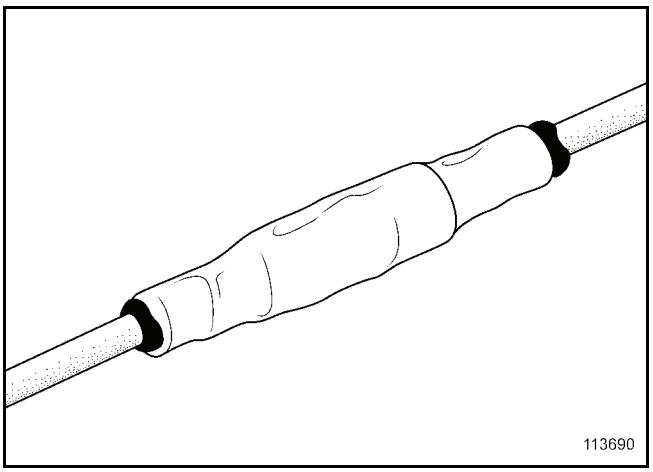
1 - Visual checks.

- The insulation of the wires is within the sleeve.
- (Self-solder sleeves) The sealing rings must be clearly located on the insulated section of the wires.
- (Self-solder sleeves) The solder has completely melted.
- (Crimp sleeves) The adhesive of the crimp sleeves forms a barrier at the ends of the sleeves.
- The sleeves has completely contracted around the insulation of the wires.
- The sleeve is not cut, slit, discoloured or pierced by a copper strand.
- The insulation of the wires does not show any sign of damage caused by overheating.
- The wiring and the area surrounding it have not been damaged by the heating operation.

Result of a correctly applied self-solder sleeve.

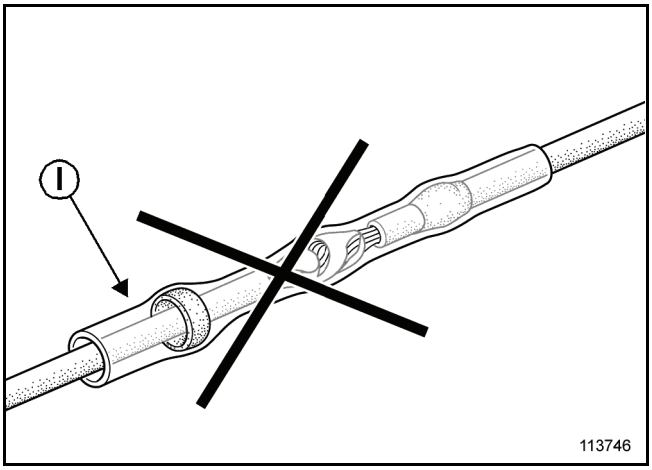


Result of a correctly applied crimp sleeve.

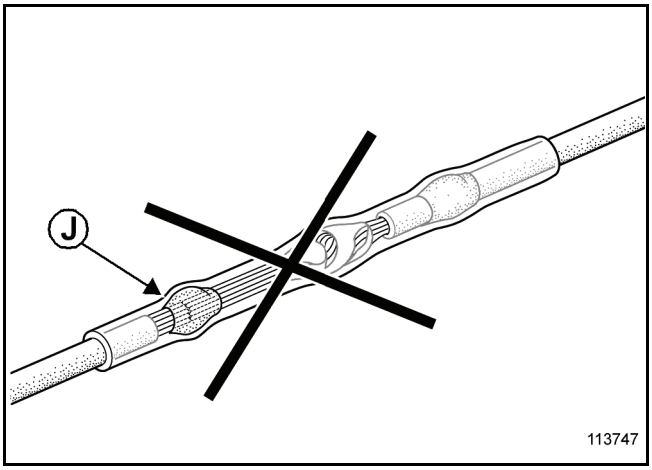


WARNING
The various struck-through cases are strictly forbidden.

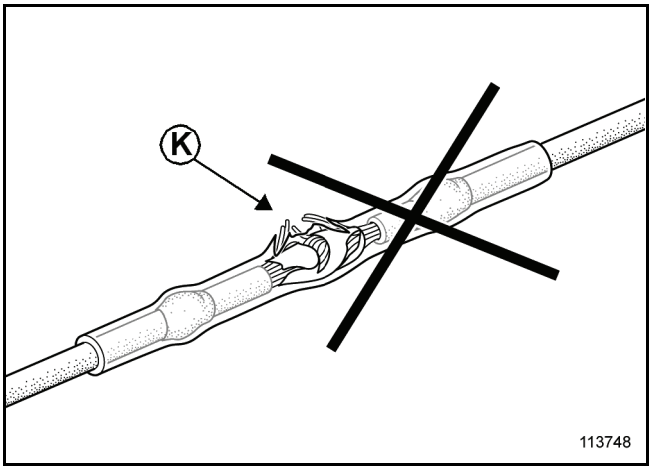
The self-solder sleeve has not been correctly shrunk. At (**I**), the sealing ring has not contracted around the insulation of the wire.



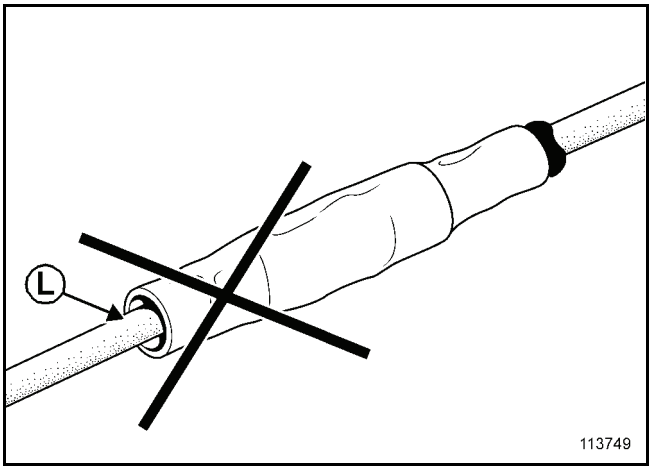
The sealing ring of the self-solder sleeve is directly on the copper of the wire at (**J**).



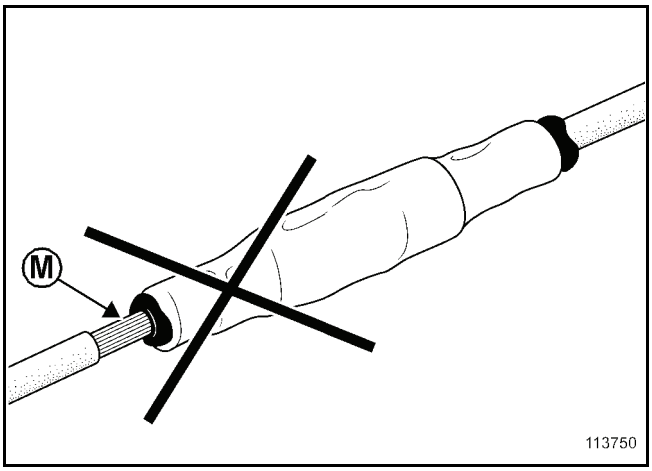
The protruding strands of the wire have pierced the self-solder sleeve at (**K**) during contraction.



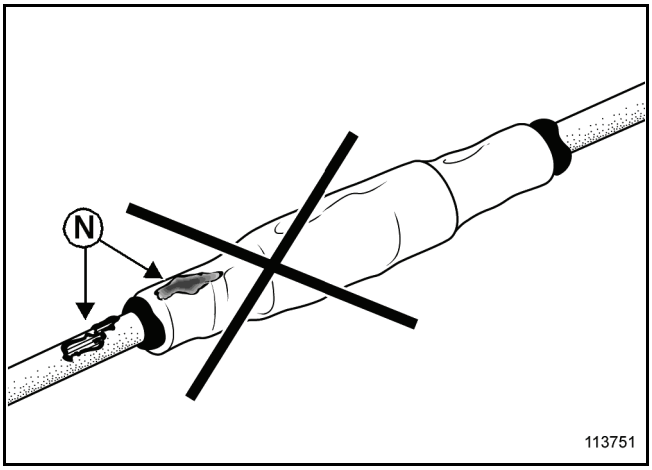
The crimp sleeve has not been correctly shrunk. At (**L**), the adhesive does not form a barrier at the end of the sleeve.



The adhesive of the crimp sleeve is directly on the copper of the wire at (**M**).



The sleeve and the insulation of the wire show signs of damage at (**N**) cause by overheating.



Note:
Reconnect the battery (see the **MR corresponding to the vehicle, 80A, Battery, Battery: Removal - Refitting**).

2 - Check with the diagnostic tool.

When a repaired line can be tested with the diagnostic tool, run this check.

3 - Function check.

Check that the component or the function of the repaired line is working correctly. If the case in question requires it, carry out a test drive.

Note:
Always check for faults after repair.

Refer to the fault finding procedure for the function concerned.

4 - Fitting and protections.

After the operation:

- reposition the wires concerned in the main harness,
- tape up the main harness using adhesive tape,
- protect the harness as it is was originally using equivalent (noise or anti-damage) or superior protection with the protections recommended by the Parts Store network.

The part numbers for the protections are as follows:
– **77 11 237 838** - Protective sheath for wiring, diameter **7 mm** (mechanical)
– **77 11 237 839 -** Protective sheath for wiring, diameter **18 mm** (mechanical)
– **77 11 237 840 -** Protective sheath for wiring, diameter **31 mm** (mechanical)
– **77 11 237 841** - Velour tape for wiring harness (sound insulation)

WARNING
Any repair which requires a specific heat shield for the wiring are forbidden. Replace the wiring harness.

WARNING
Check that the wiring is correctly maintained and protected to avoid any wear by rubbing and any noise disturbance.

5 - Final check.

After any operation on the wiring, check that there are no faults using the diagnostic tools (Clip).

Refer to the corresponding fault finding procedure.

If a fault is present, pass on the vehicle fault finding to a qualified operator: automotive electrician, technician agent or cotech (level 2 minimum).

WARNING
Apply this procedure when there is a connector - wiring kit or wire kit. Unless the kit is linked to one of the sensitive lines listed in the specific procedures reference table (see Wiring: Precautions for repair). In this case, apply the specific procedure for the sensitive line concerned.

1 - Wiring-Connector kit.

A wiring-connector kit enables repair to be carried out when the connector is faulty or when the fault is located less than **10 cm** from the connector.

A wiring-connector kit is generally made up of:

- at least 1 connector,
- crimped wires with corresponding contacts,
- sealing components if the connector is sealed,
- the self-solder or crimp sleeves necessary for the repair,
- other components specific to the function concerned (e.g. fuses).

Note:
if there is no kit, it is possible to create a wiring - connector kit if the following rules are respected:
– The connector affected by the repair must be taken from the **new wiring** provided as a spare part and intended for this repair.
– The function affected by the repair must not by covered by a special procedure.
– The connector should not be made up of more than **10 wires**.
– The wires are cut more than **10 cm** away from the connector.
– For each opening, the wires of the connector taken from the new wiring have a cross-section which is equal to or greater than that of the original connector.
– For each opening, the metal contacts of the connector taken from the new wiring are the same material (gilded or tinplated) as those of the original connector.
– The precautions set out in this note are respected (see **Wiring: Precautions for repair**).

2 - Using a wiring-connector kit.

Except in the specific outlined cases, use the wiring-connector kits as follows:

- check that the kit is complete,
- check that the conductor configuration (position of wires in the cells of the connector) corresponds to your needs,
- check that the wire cross-sections of the wiring-connector kit are equal to or larger than the cross-section of wires to be repaired,
- mark the wires to ensure that the tracks are not reversed,

WARNING
The colour of the wires cannot serve as a marker. In certain cases, wiring-connector kits can have different colours to those of the wiring to be repaired.

- Cut the connector wires to be replaced to a length greater than **100 mm** and stagger the cut wires,
- shorten the wiring-connector kit wires so as to provide wires the same lengths as those cut from the wiring to be repaired. For self-solder sleeves, add **30 mm** for the wire joints,
- apply the generic repair procedure for the joint (see **Wiring: Repair**).

3 - Wire kit.

A wire kit is used to perform a repair when the connector is not damaged.

A wire kit is generally comprised of:

- 3 crimp wires
- protection on the metal contacts.

4 - Applying a wire kit.

NOTE
Access the electric documentation for the vehicle on Infotech to obtain the part number of the wire kit required and the removal procedure for the connector.

Except in the specific outlined cases, use the wire kits as follows:

- check that the kit is complete,
- check for the presence of protection on the metal contacts,
- check that the wire cross-sections of the wire kit are equal to or larger than the cross-section of wires to be repaired,
- mark the wires to ensure that the tracks are not reversed,

WARNING
The colour of the wires cannot serve as a marker. Wiring-connector kits may be different colours to those of the wiring to be repaired.

- cut the connector wires to be replaced to a length greater than 100 mm and stagger the cut wires,
- shorten the kit wires so as to provide wires with the same lengths as those cut from the wiring to be repaired. For self-solder sleeves, add 30 mm for the splices,

Apply the generic repair procedure for the joint (see **Wiring: Repair**).

5 - Checking and fitting the repair with wiring-connector kits.

- Carry out the generic repair procedure check (see Wiring: Check) or that for the specific procedures if it is a specific case (see Wiring: Precautions for repair).
- Apply the recommendations from the generic repair procedure concerning the fitting and protection (see Wiring: Check).

6 - Final check.

After any operation on wiring, check for the absence of faults using the diagnostic tools (Clip, etc.).

Refer to the corresponding fault finding procedure.

If a fault is present, pass on the vehicle fault finding to a qualified operator: automotive electrician, technician agent or cotech (level 2 minimum).

This section deals with an electrical contact fault on the connector between the dashboard wiring and the pedal wiring on KANGOO.

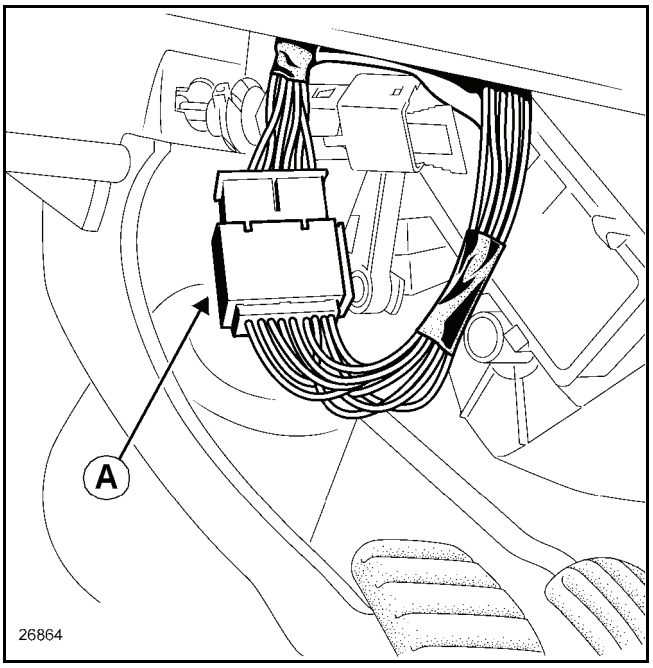
1 - Context.

Customer complaint:
Loss of engine power when driving, with the injection warning light illuminated on Kangoo vehicles with K4M, F9Q, D4F, D7F and K9K engines.

Possible cause:
Loss of contact on the 16-track **R181** connector (dashboard wiring harness and pedal connection).

2 - Description of the repair procedure.

Make the **R181** connector accessible and unclip it from its mounting (**A**).



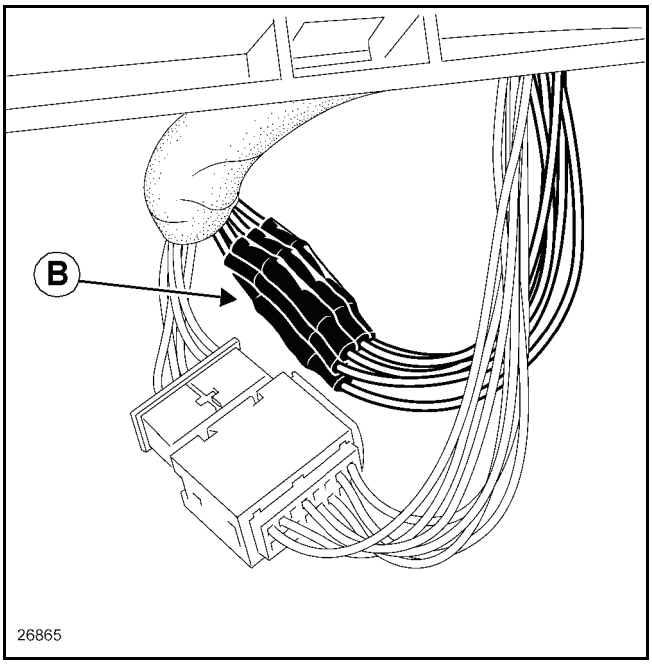
On the **R181** connector and using the Wiring Diagrams Technical Note corresponding to the vehicle, mark the gangs related to the accelerator potentiometer.

Note:
Using the Wiring Diagrams Technical Note or applying a continuity check, check that it concerns gangs B1, B2, B3, B4, B5 and B6.

WARNING
The colour of the wires is not same on either side of the R181 connector.

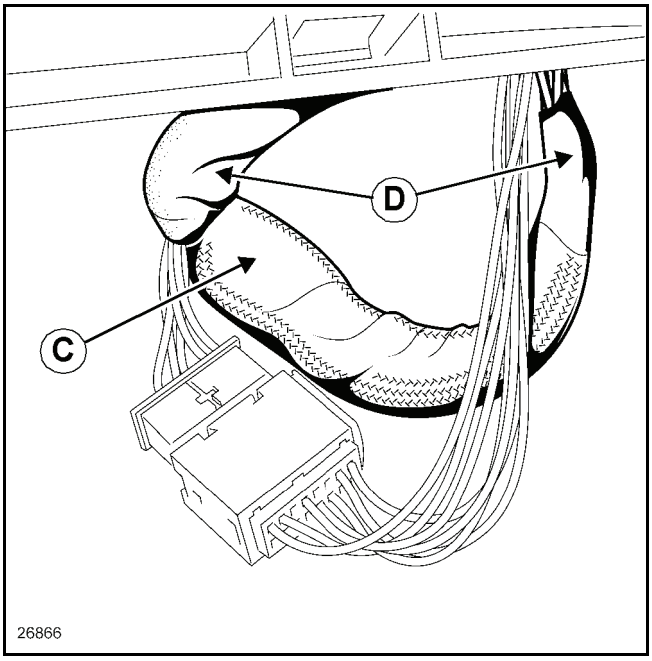
For each gang, proceed in the following manner:

- Cut the electrical wire either side of the connector.
- Make a wire joint with a **red self-solder sleeve** from the **wiring repair kit**, between the pedal electrical wire and the passenger compartment wiring electrical wire (**B**) (see **Wiring: Repair**).



After having shunted all of the wires concerned:

- Protect the shunted electrical wires (**C**) with wiring protective sheath with a diameter of **18 mm (77 11 237 839)**.
- Cover the ends of the protective sheath with **Adhesive PVC tape (D)**.
- Refit the **R181** connector on the mounting.
- Secure the shunted lines to the wiring using **Adhesive PVC Tape**.



3 - Repair check.

Continuity:

- Check the continuity of each of the shunted lines.

Function check:

- Clear the faults.
- Check the conformity of the pedal sensor parameters:
  - If it is a DDCR computer, see **Technical Note 3845A, Injection fault finding: DDCR VDIAG 04 - 08 - 10 - 0C - 14 - 18 - 20, Conformity check**.
  - If it is a DCM 1.2 computer, see **Technical Note 6500A, Fault finding - DCM 1.2 Injection Program 4C Vdiag 08, Conformity check**.
  - If it is a SIM 32 computer, see **Technical Note 3878A, Injection fault finding: SIM 32 SOFT D4 - Vdiag 04, Conformity check**.
  - If it is an EDC15 computer, see **Technical Note 3929A, Injection fault finding: DIESEL BOSCH EDC15C3 Vdiag 10 - 14 - 18, Conformity check** or **Technical Note 3930A, Injection fault finding: DIESEL BOSCH EDC15C3 Vdiag 0C, Conformity check** depending on the case.
  - If it is a SIRIUS 34 computer, see **Technical Note 3834A, Injection fault finding: SIRIUS 34-E932 - Vdiag 08, Conformity check**.
- Perform a road test.
- Check the status of the faults (present and stored).

Final check:

- Carry out a complete check with the **CLIP** tool and check that there are no faults.

This section explains how to insulate and immobilise an unused connector when changing the wiring.

2 cases are dealt with:
- Waterproof wiring in damp areas
- Non-waterproof wiring

Refer to the relevant section.

1 - For waterproof wiring in damp areas.

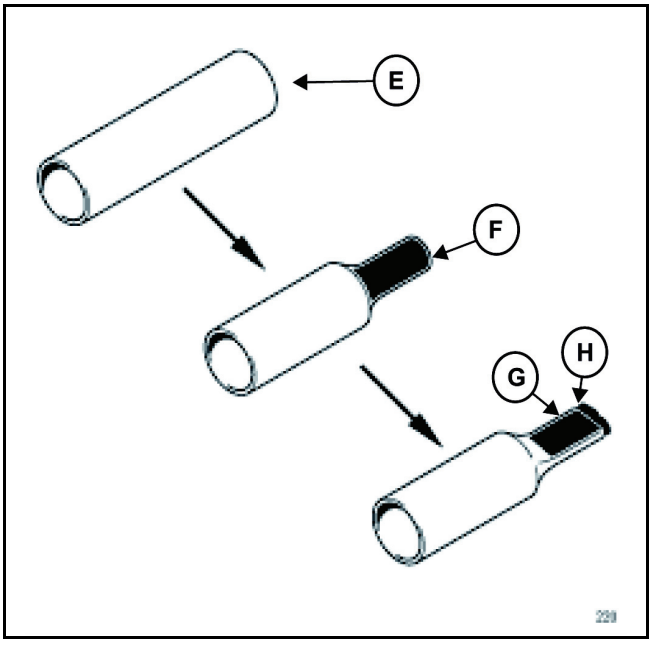
WARNING
This operation is compulsory for any wiring which is located in damp areas which needs to be waterproof (engine and underbody areas, and damp areas of the opening elements).
It applies to all of the unused connectors located on the wiring.

- **Equipment required.**

– Heat shrinkable waterproof sheath:

Part number of heat shrinkable waterproof sheath	Internal diameter (E) before contraction (mm)	Internal diameter (F) after contraction (mm)
7701 069 915	4 mm	1 mm
7701 033 055	8 mm	2 mm
7701 033 056	19 mm	4 mm

(E) < Diameter of electrical wire with insulation < **(F)**



– Adhesive **7703 397 035** (cracked cylinder of solid adhesive).
– Wiring repair kit (see **Wiring Repair Kit: Description**).

- **Description of the operation.**

Plug preparation:
– Mark the unused connector.
– Count the number of wires to be insulated and note their total diameter (copper and insulation).

Note:
The coupling of wires must be preserved.
If several wires are connected together in a connector opening, always preserve this connection.
The electric wires in the same opening will be connected together using self-solder sleeves or crimp sleeves from the wiring repair kit (See **Wiring repair kit: Description**).

– For every wire, remove **50 mm** of heat shrinkable sheath adapted to each wire diameter. The diameter of the wire must be less than the internal diameter of the sheath before contraction **(E)** and greater than the internal diameter of the sheath after contraction **(F)**.

– Heat the end **(G)** of the pre-cut sheath using the heat gun included in the wiring repair kit (See **Wiring Repair Kit: Description**) and contract it approximately 15 mm **(F)**.
The heat gun is equipped with the retraction nozzle and its temperature is adjusted to **120ºC**, with maximum air flow (See **Wiring Repair Kit: Description**).

WARNING
To avoid burns, always wear gloves during the following operation .

– When the end has been contracted, flatten it in order to bond the surfaces using the internal adhesive of the sheath **(G)**.
– Allow the sheath to cool for **1 min**.
– Check the prepared plug. The contracted length should not exceed **15 mm** and the adhesive should completely block the end at **(H)**.
Do not remove the surplus adhesive at **(H)**.

Fitting the plugs:

Note: When replacing the wiring, preferably carry out the operation before refitting the new wiring.

– Mark the unused connector.

– Mark the wire couplings on this connector (wires connected together in the same connector opening). Electric wires in the same opening will be connected together using the self-solder sleeves or crimp sleeves from the wiring repair kit (See **Wiring: Repair**).

– Cut the other wires of the connector equally.

– Fit a plug on each wire **(I)** and contract it using the heat gun included in the wiring repair kit (See **Wiring repair kit: Description**).
The heat gun is equipped with the deflector nozzle and its temperature is adjusted to **120°C**, with maximum air flow (See **Wiring repair kit: Use**).

WARNING
It is forbidden to place 2 wires of different connection codes in a single plug. There is a risk of a short circuit if the wires are live.

– Allow the assembly to cool down for **1 min**.

– Check that the sheath is sufficiently contracted on the wire **(J)**. Repeat the operation with a heat shrinkable sheath with a smaller diameter if necessary.

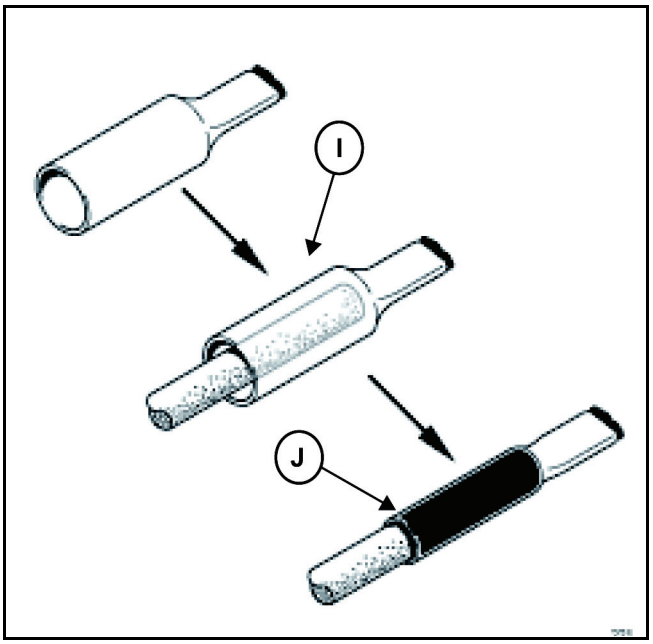
Note:
Do not remove the surplus adhesive.

WARNING
If there is not enough adhesive released by the heat shrinkable sheath, repeat the operation and add some adhesive (see Equipment required) inside the sheath.

– Tape all of the wires and sheaths using adhesive tape included in the wiring repair kit (See **Wiring repair kit: Description**).

– Fit a wiring protector which is equivalent or better than the original (See **Wiring: Check**).

– Secure the assembly to the main wiring using a Colson-type clip which will be fitted level with the sleeves. Use several clips if necessary.



2 - For non-waterproof wiring.

For non-waterproof wiring, only apply the immobilisation procedure.

– Mark the unused connector.

– Secure the connector on the main wiring using a Colson-type clip. Use several clips if necessary.

– Check that the assembly does not produce any interference noises, with the engine running and the vehicle moving. Fit an audible protector if necessary (See **Wiring: Check**).

This section describes how to visually inspect a connector.

Note:
Carry out each requested check visually. Do not remove a connector if it is not required.

Note:
Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

The check is carried out on the 2 parts of the connection. There may be two types of connections:
– Connector / Connector
– Connector / Device

1 - Visual inspection of the connection:

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

2 - Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

3 - Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

4 - Visual inspection of the metal contacts:

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). If the wire is slightly stressed, the contact will come out.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

5 - Visual inspection of the sealing:
(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
  – For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
  – For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
  – For gel seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
  – For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

WARNING
This procedure is relates to the repair of the multiplex network alone (twisted wires).

1 - Locating the fault.

Use the diagnostic tool (clip) to test the multiplex network (see the fault finding procedure corresponding to the vehicle).

The diagnostic tool can detect the following short circuits on the multiplex network:

- short circuit between CAN L and **+ 12 V**,
- short circuit between CAN H and **+ 12 V**,
- short circuit between CAN H and earth,
- short circuit between CAN L and earth,
- short circuit between CAN L and CAN H,
- open circuits.

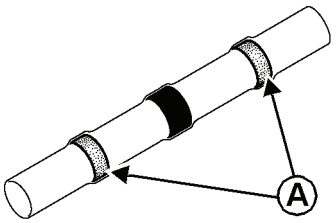
Note:
In the case of a short circuit between CAN-L and earth, communication between the different computers which make up the multiplex network is not interrupted. However, the multiplex network becomes sensitive to interference and can be the cause of an intermittent fault.

After having located the multiplex line fault, it is possible to repair it whilst applying all the necessary precautions outlined in this document.

2 - Necessary equipment.

For repairing the multiplex network, use the components of the wiring repair kit (see **Wiring repair kit: Description**).

Use the self-solder sleeves with red rings (**A**) for making the joints.



111376

3 - Repairing the multiplex line.

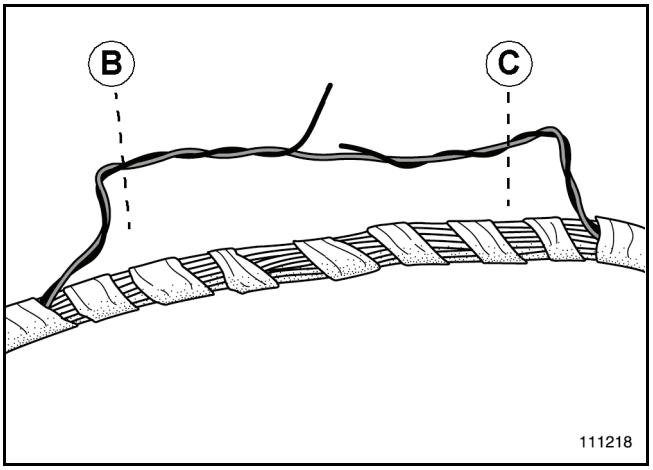
WARNING
Before starting to repair a multiplex line, it is necessary that you familiarise yourself with the use of the tools relating to this repair (see **Wiring repair kit: Use**).

Disconnect the battery (see the **MR corresponding to the vehicle, 80A, Battery, Battery: Removal - Refitting**).

Remove the components necessary to enable access to the wiring.

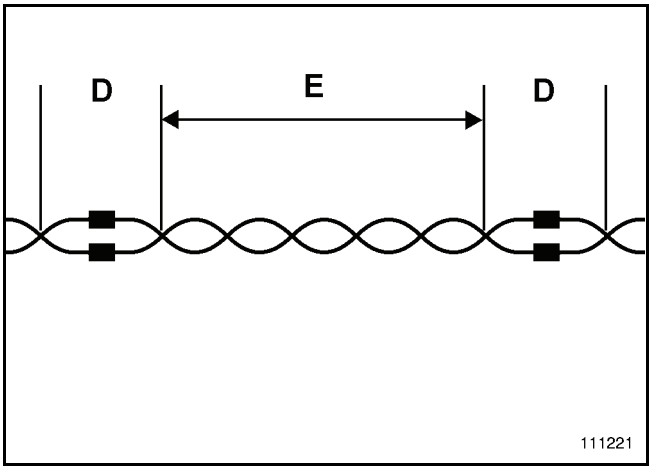
Detach the section of wire to be repaired from the main wiring.

Cut the wires at (**B**) and (**C**), **50 mm** on each side of the damage.

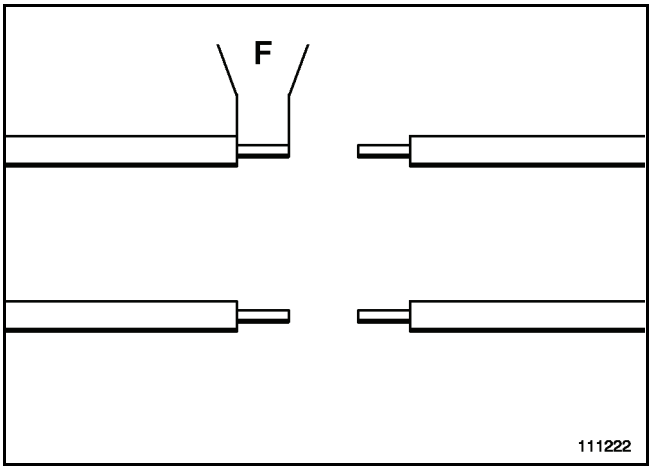


Take from the coil of twisted wires **(0.5 mm^2**, specific number of turns) to be used to repair the multiplexing, a length of wire the same as that removed from the harness, **plus 30 mm** for the wire joints (See **Wiring repair kit: Description**).

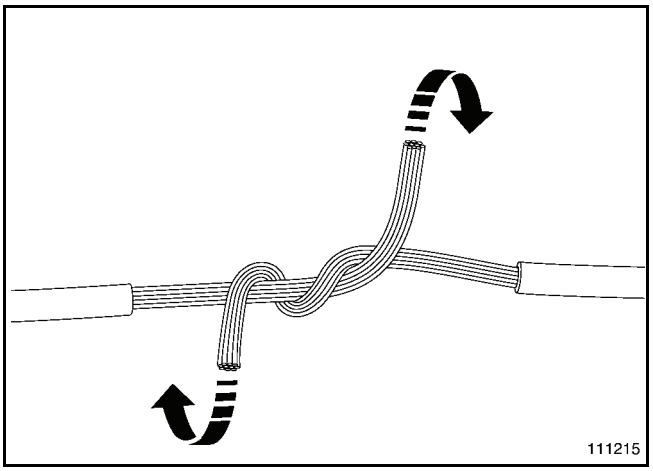
WARNING
Do not untwist the harness to be repaired more than 100 mm (D). The wires at (E) must be twisted uniformly along the repaired length.



Strip each end of the wires by **10 mm (F)** at each side.

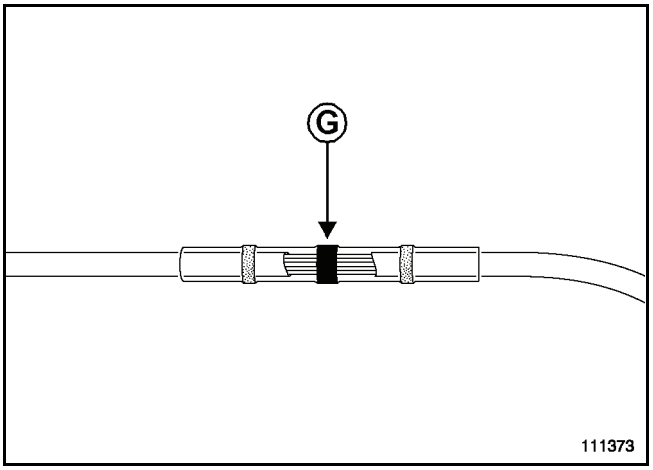


To join the wires, working wire by wire:
- slip the self-solder sleeve onto the wire,
- twist the end of the wires together.



WARNING
The colour of the wires (CAN H et CAN L) must be respected when they are being joined.

- Position the sleeve with its solder ring in the centre of the wire joint.



- Switch on the heat gun.
- Adjust the temperature of the tool to **340°C** with a ventilation speed set to maximum (See **Wiring repair kit: Use**).
- Heat the sleeve so that the solder ring melts (**G**) onto the wires until the heat shrinkable sheath contracts.

Refer to the precautions for use which relate to using self-solder sleeves (see **Wiring: Repair**).

WARNING
Do not try to heat the sheath too quickly, use a backwards and forwards motion to ensure that it does not burn.
Do not direct the flow of hot air onto the insulation of the wires so as not to burn it.

Note:
For the soldering to be complete and for the sheath to contract, the heating operation should last approximately **30 s** ± **10**.
Spend the majority of the recommended time on the ring of solder and the rest of the time on the ends of the sleeve.
The recommended time is given as a guide. It can be reduced or increased depending on how efficient the heating is.

WARNING
Wait for the sleeve to cool before manipulating it to maintain the quality of the solder (minimum waiting period: 1 minute).
Do not bend the sleeve (even when cool) so as to not damage the quality of the solder or the sealing properties of the sleeve.

4 - Checking the multiplex line.

WARNING
After repairing the multiplex line, always check the multiplex network using the diagnostic tool.

Note:
During the check with the diagnostic tool, move the lines forwards and backwards slightly. If a fault is recorded, start the operation again for the faulty line.

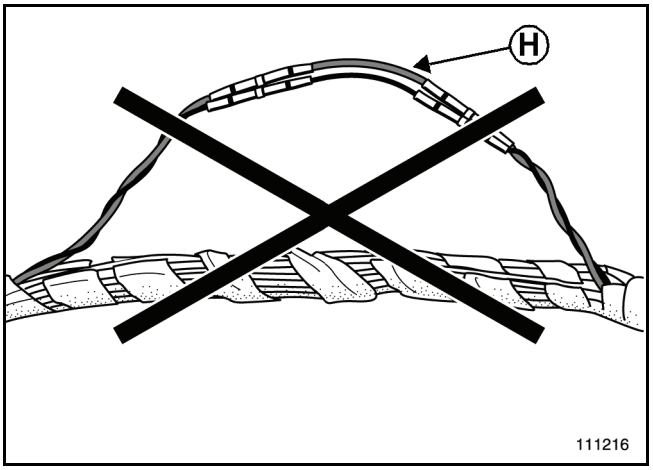
Refer to the fault finding procedure for the function concerned.

WARNING
After having checked the multiplex line:
- **refit it in the main harness,**
- **tape it up with adhesive tape.**

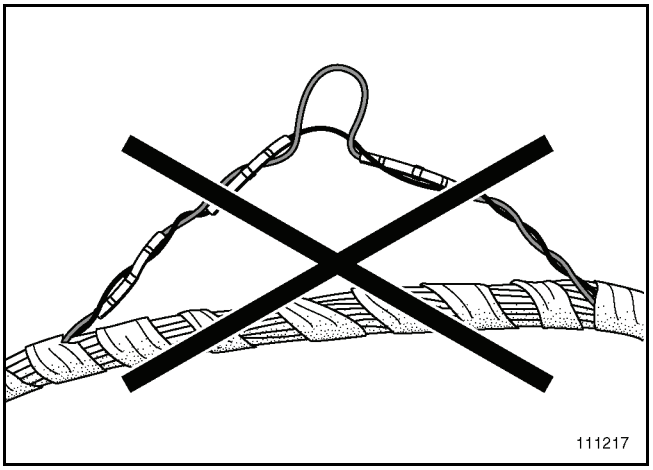
Apply the recommendations from the generic repair procedure concerning the fitting and fuses (see **Wiring: Check**).

WARNING
The various struck-through cases are strictly forbidden.

No turns (twists) at (**H**).



The two wires added are of a different length.



5 - Final check.

After any operation on the wiring, check that there are no faults using the diagnostic tools (Clip).

Refer to the corresponding fault finding procedure.

If a fault is present, pass on the vehicle fault finding to a qualified operator: automotive electrician, technician agent or cotech (level 2 minimum).

WARNING
This procedure relates repairing airbag and pretensioner wiring only.

Note: Apply all the precautions and recommendations shown in the MR.

WARNING
All work on airbag and pretensioner systems must be carried out by qualified trained personnel.

WARNING
The pyrotechnic systems (pretensioners or airbags) must not be handled near to a heat source or flame; there is a risk that they may be triggered.

WARNING
Before removing an electronic control unit (ECU) or before any operation on the safety systems or around them, the airbag computer must be locked using the diagnostic tool. When this function is activated all the trigger lines are inhibited, and the airbag warning light on the instrument panel is lit continuously.

WARNING
Before any operation on a pyrotechnic component connection (connector or wiring) found faulty during fault finding, disconnect the pyrotechnic component.

1 - Identify the solution.
The case in question must figure in the table below. Otherwise, replace the wiring.

Airbag and pretensioner components	Solutions
Under seat connector (Airbag warning light on)	● If the connector has more than 10 wires, no operation can be carried out. Replace the wiring unless there is a specific procedure (OTS*). ● If not, shunt the connector. See **Under seat connector** in this section.
Connector on seat runner	No operation. Replace the wiring unless there is a specific procedure (OTS*).
Pyrotechnic component connectors (squib) (airbag triggers, pretensioner, etc.)	Replace the connector using the airbag connectors kit. See **Pyrotechnic component connectors** in this section.
Airbag computer connector	No operation. Change the wiring harness except in the following cases: ● If there is a specific procedure (OTS*), its application is authorised. ● If the connector lock is broken, replacing the lock authorised.
Airbag and pretensioner harness damage	No operation except in specific conditions. See **Airbag and Pretensioner harness damage** in this section.

*OTS: Special Technical Operation

WARNING
Any repair linked to the airbag function necessitates a specific check using the network's diagnostic tools.

2 - Under seat connector.

Note:
For a connector on a seat runner, the wiring must be replaced.

When fault finding identifies a under seat connector fault, shunt the under seat connector following the procedure below:

Cut the electrical wires either side of the connector.

Apply the specific procedure for repairing multiplex lines (see **Multiplex network: Repair**), except the part on locating the fault, to shunt the connector.

Note:
Check that the length of replacement wire is the same as that removed from the harness, **plus 30 mm** for the wire joints.

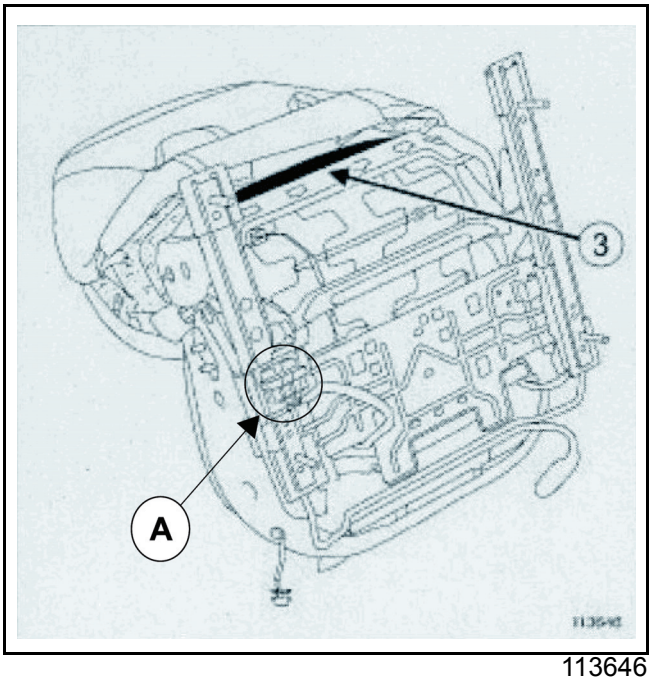
After the operation, check that the wire is not too taut or too long when the seat is furthest forward or back.

Protect the wires so that they are not damaged and this new branch is correctly maintained. Hanging loops are not allowed, regardless of the wires involved in the repair.

Carry out the specific airbag and pretensioner line repair checks. See **Airbag line repair check** and **Final check** in this section.

Note:
Check that the harness is correctly repositioned after the operation and that it is does not obstruct the seat adjusting mechanisms.

Example of a connector on a seat runner (A):



113646

3 - Pyrotechnic component connectors.

These are airbag and pretensioner trigger connectors.

Identify the connector concerned on the vehicle.

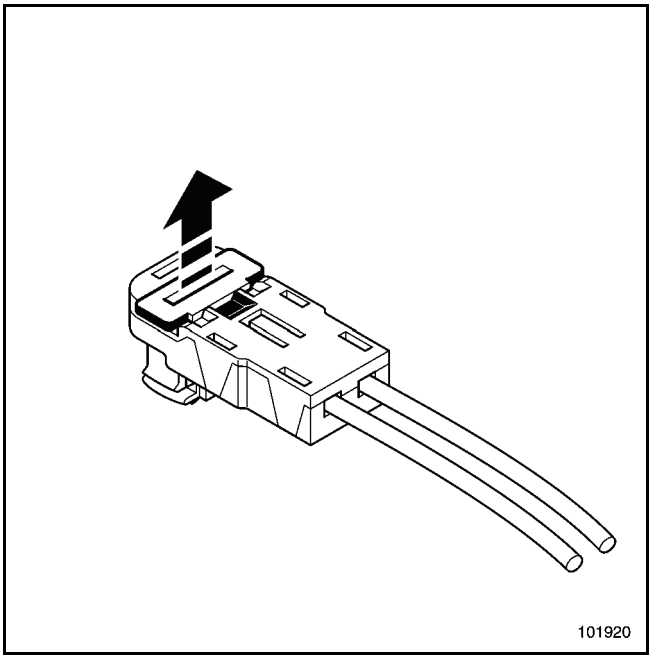
Repair is possible if it is a SQUIB connector.

Find the colour of the connector: Blue, green or orange.

Find the shape of the connector: Straight or angled.

Select the same connector (colour and shape) from the airbag connectors kit (see under DIALOGYS).

Example of an angled SQUIB connector.



Apply the specific procedure for repairing multiplex lines (see **Multiplex network: Repair**), except the section on locating the fault, to replace the connector.

Carry out the specific airbag and pretensioner line repair checks. See **Airbag line repair check** and **Final check** in this section.

4 - Airbag and Pretensioner harness damage.

WARNING
No operation is authorised unless it is possible to check the repair using the diagnostic tool.

Where the repair can be checked with the diagnostic tool:

- if it is a case of twisted wires with a cross-section less than or equal to **0.5 mm^2**, apply the specific procedure for repairing multiplex lines (see **Multiplex network: Repair**), except for the section on locating the fault, for the repair of the lines;
- if it does not concern twisted wires, apply the generic procedure for repairing the harness (see **Wiring: Check**).

Carry out the specific airbag and pretensioner line repair checks. See **Airbag line repair check** and **Final check** in this section.

5 - Airbag lines repair check.

Confirm the airbag line repair to ensure that the repair is correct:

- Check the quality of the operation by reading the impedance reading produced by the computer using the diagnostic tool.
- Unlock the airbag computer using the diagnostic tools.
- The warning light should no longer be on.

Note:
During the check with the diagnostic tool, move the lines forwards and backwards slightly.
The resistance measure should remain stable, if variations in resistance are noticed, start the repair operation again for the defective line.

Refer to the airbag and pretensioner function fault finding procedure for the vehicle concerned.

Apply the recommendations from the generic repair procedure concerning the fitting and fuses (see **Wiring: Check**).

6 - Final check.

After any operation on the wiring, check that there are no faults using the diagnostic tools (Clip).

Refer to the fault finding procedure for the airbag and pretensioner function concerned.

If a fault is present, pass on the vehicle fault finding to a qualified operator: automotive electrician, technician agent or cotech (level 2 minimum).