

RENAULT

Technical Note5388A

X95, and B95, and F4R, and 874, and EQUIPMENT LEVEL SPORT

Mégane III Renault Sport

JUNE 2009

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 the vehicles are constructed".

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Mégane III Renault Sport

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ENGINE AND CYLINDER BLOCK ASSEMBLY

Engine - gearbox assembly: Removal - Refitting

10A

Special tooling required	
Mot. 1448	Remote operation pliers for hose clips.
Ms. 583	Pipe clamps.
Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required	
refrigerant charging station	
indelible pencil	

Tightening torques 	
left-hand suspended engine mounting rubber pad support bolts	62 N.m
bolt of the left-hand suspended engine mounting support on the gearbox	105 N.m
bolt of the connecting pipe between the « intermediate pipe - compressor »	8 N.m
earth cable nut on the body	8 N.m
bolt of the connecting pipe between the « condenser - expansion valve »	8 N.m
bolt of the connecting pipe between the « compressor - condenser »	8 N.m

WARNING

In order to avoid any refrigerant leaks, do not damage (deform, twist, etc.) the pipe.

WARNING

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

IMPORTANT

Wear protective gloves during the operation.

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

☐ Remove:

- the engine cover,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the air filter unit (see **Air filter unit: Removal - Refitting**) ,
- the engine undertray,
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

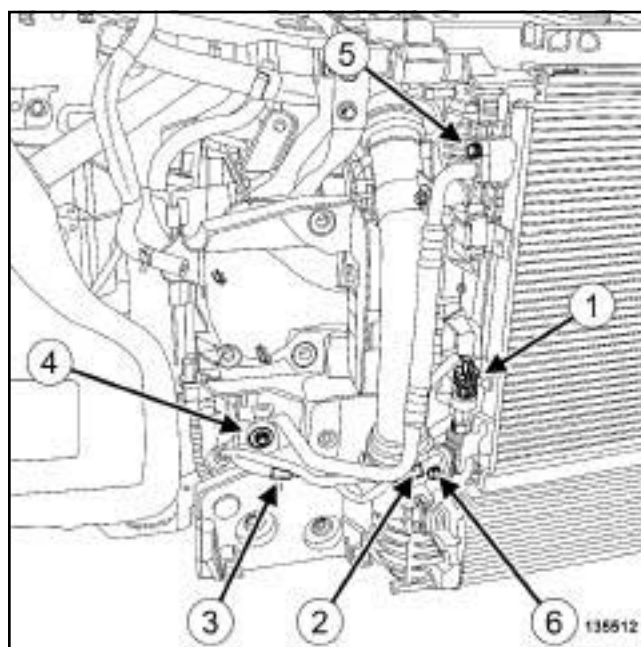
☐ Drain:

- the refrigerant circuit using a **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning),
- the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox).
- the cooling system (see **Cooling system: Draining - Refilling**) ,
- the engine oil (if necessary) (see **Engine oil: Draining - Refilling**) .

☐ Remove:

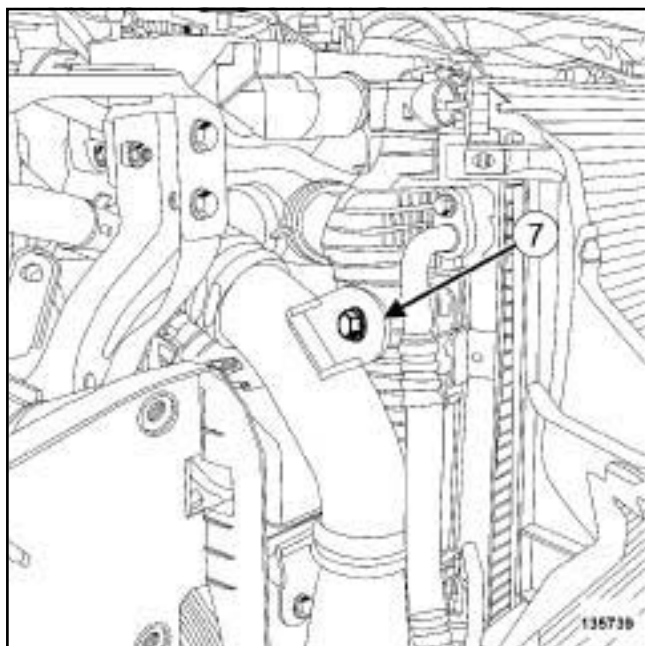
- the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page **29A-20**) (29A, Driveshafts),
- the front left-hand wheel driveshaft (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page **29A-1**) (29A, Driveshafts),
- the differential output seals (see **Differential output seal: Removal - Refitting**) (21A, Manual gearbox),

- the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
- the connecting hose (see **Connecting hose: Removal - Refitting**) ,
- the front impact cross member (see **Front impact cross member: Removal - Refitting**) (41A, Front lower structure),
- the top air deflector,
- the side air deflectors,
- the audible warning (see **Audible warning: Removal - Refitting**) (82B, Horn),
- the headlights (see **Headlight: Removal - Refitting**) (80B, Headlights),
- the front bumper supports (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure),
- the bonnet catch (see **Bonnet lock: Removal - Refitting**) (52A, Non-side opening element mechanisms).



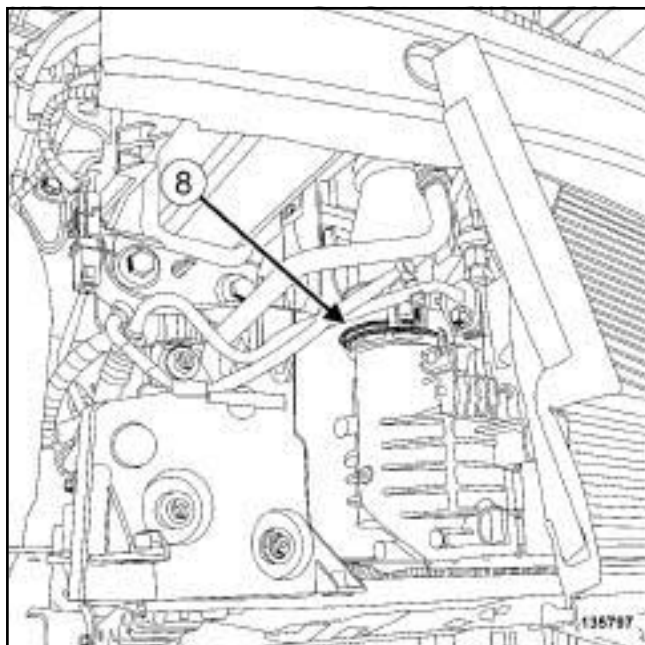
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- ☐ Disconnect the connector (1) from the refrigerant circuit pressure sensor.
- ☐ Unclip:
 - the refrigerant circuit pressure sensor wiring from the « condenser - expansion valve » connecting pipe at (2) ,
 - the refrigerant circuit pressure sensor wiring from the front end panel at (3) .
- ☐ Move aside the refrigerant circuit pressure sensor wiring.
- ☐ Remove:
 - the retaining bolt (4) of the « compressor - condenser » connecting pipe,
 - the bolt (5) for the « compressor - condenser » connecting pipe bracket.
- ☐ Disconnect the « compressor - condenser » connecting pipe from the condenser.
- ☐ Insert the blanking plugs.
- ☐ Remove the bolt (6) from the « condenser - expansion valve » connecting pipe.
- ☐ Disconnect the « condenser - expansion valve » connecting pipe from the condenser.
- ☐ Insert the blanking plugs.



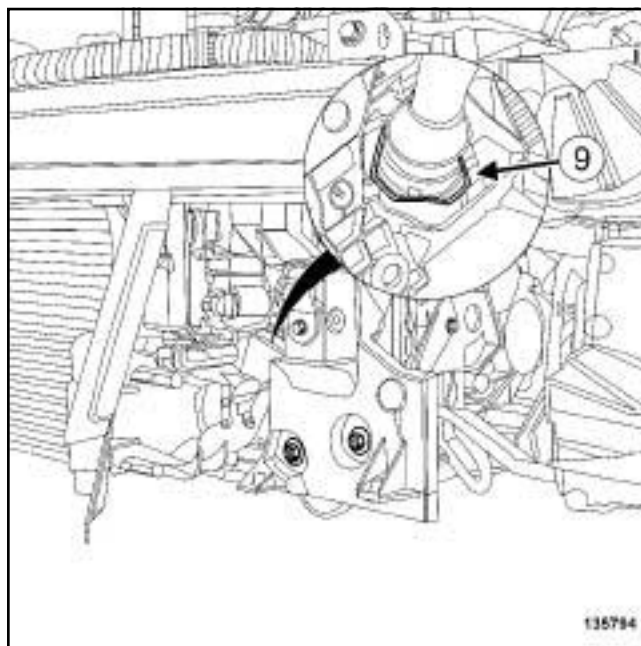
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- ❑ Remove the bolts (7) from the intercooler air outlet pipe.



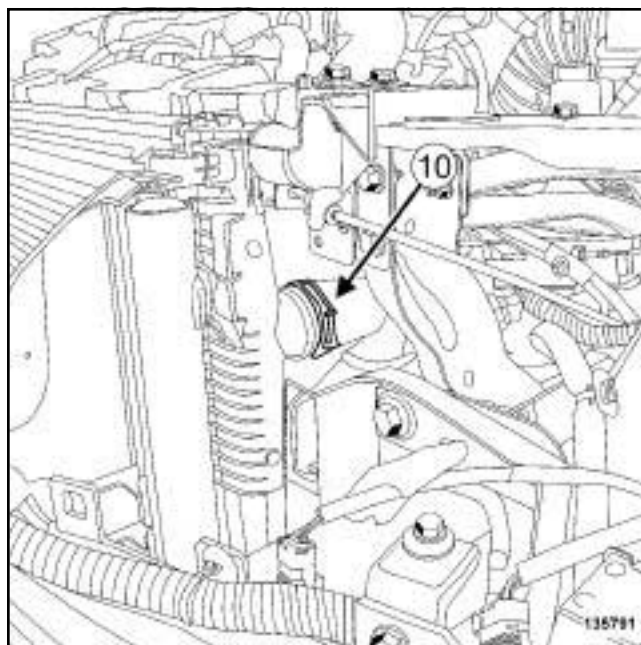
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- ❑ Pull the clip (8) of the intercooler air outlet pipe.
- ❑ Disconnect the intercooler air outlet pipe.
- ❑ Move the intercooler air outlet pipe to one side.



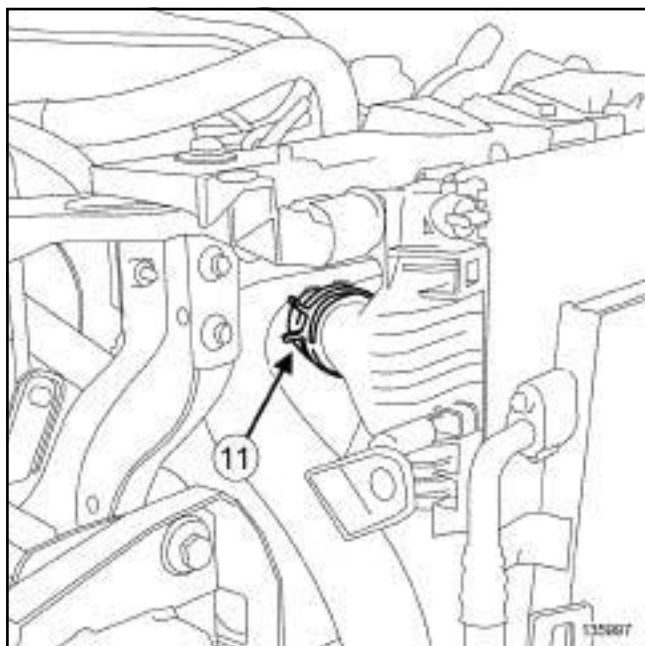
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- ❑ Pull the clip (9) of the intercooler air inlet pipe.
- ❑ Disconnect the intercooler air inlet pipe.
- ❑ Move the intercooler air outlet pipe to one side.



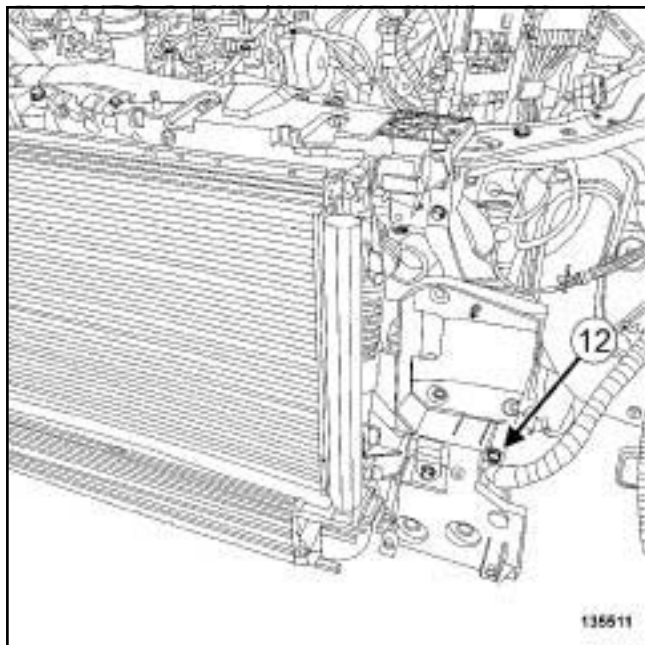
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- ❑ Separate the clip (10) on the bottom cooling hose clip using the tool (**Mot. 1448**).
- ❑ Disconnect the bottom cooling hose from the cooling radiator.



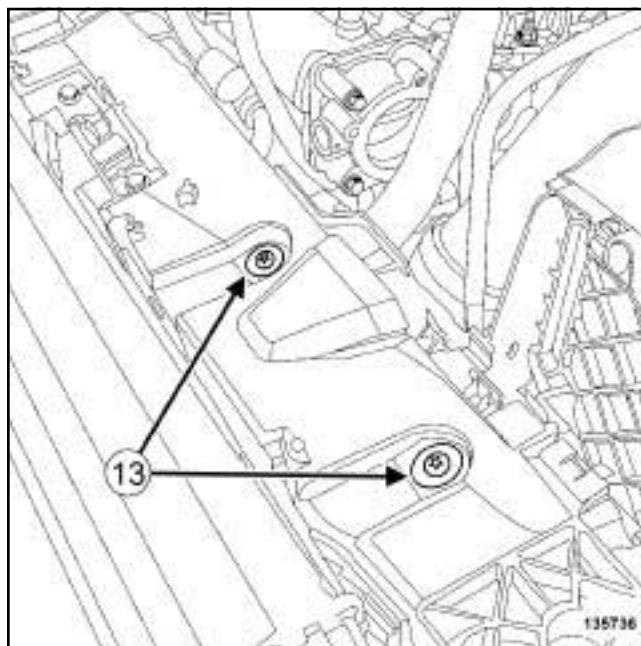
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- ❑ Separate the clip (11) on the top cooling hose of the cooling radiator using the tool (**Mot. 1448**).
- ❑ Disconnect the top cooling hose from the radiator.



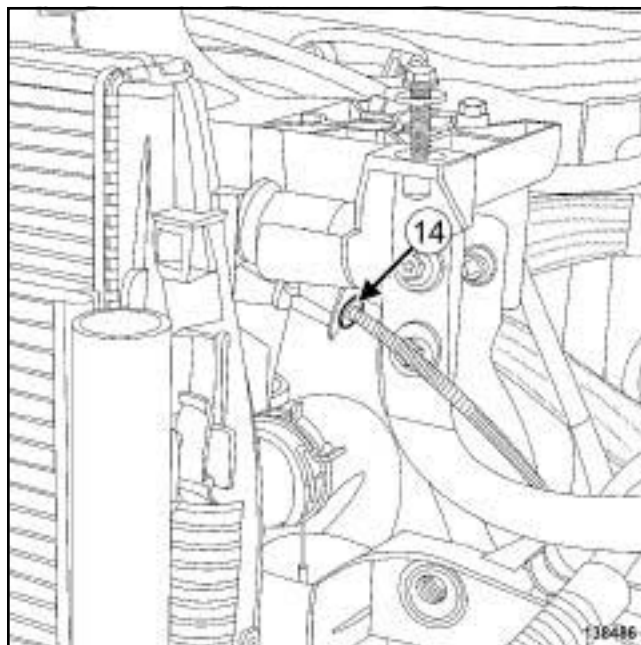
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- ❑ Unclip from the front end panel:
 - the wiring at (12) ,
 - the expansion bottle top cooling hose.



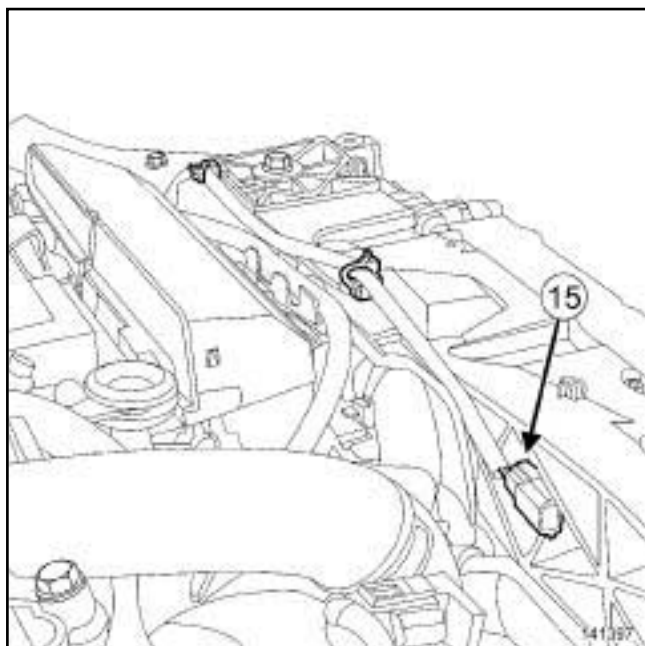
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- ❑ Remove the bolts (13) from the fan assembly wiring channel.



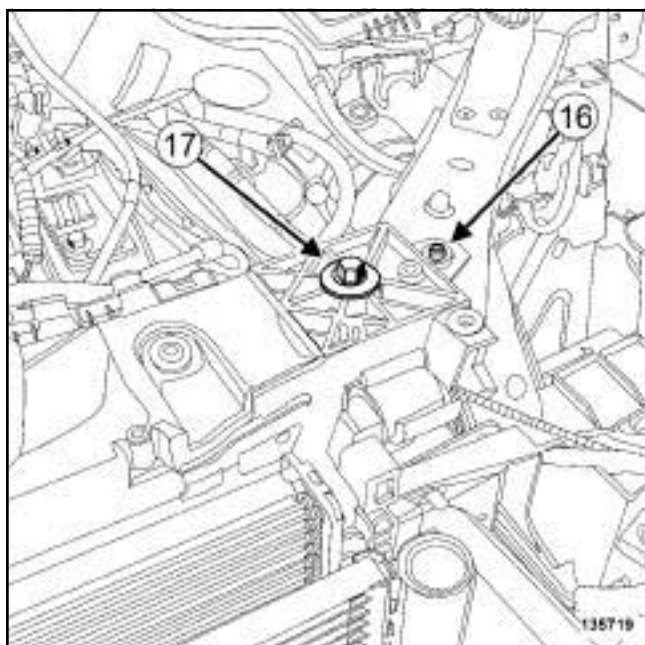
138486

- ❑ Unclip the bonnet catch cable (14) on the front end panel.
- ❑ Move aside the bonnet catch cable.



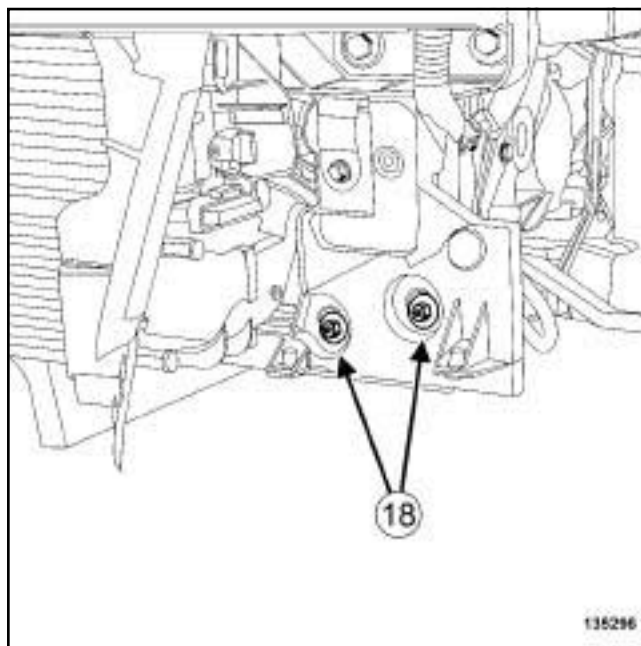
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- ❑ Disconnect the connector (15) from the bonnet catch.
- ❑ Unclip the wiring of the bonnet catch from the front end panel.



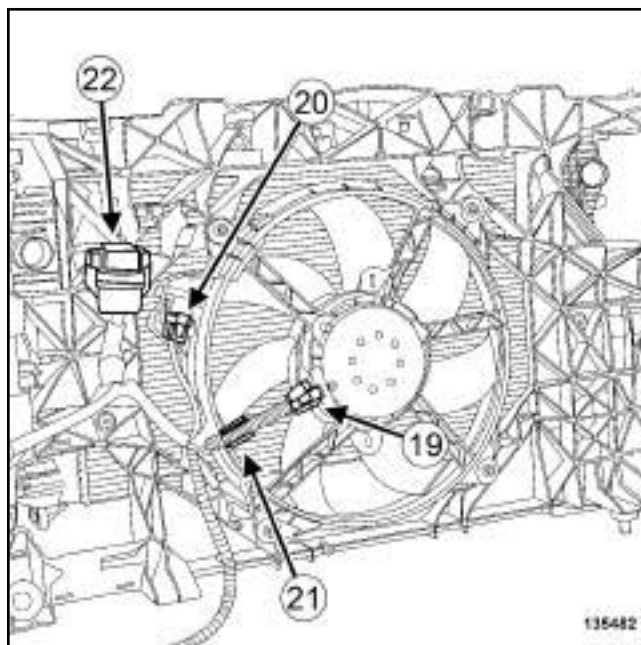
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- ❑ Remove:
 - the front end panel clips (16) ,
 - the front end panel upper bolts (17) .



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- ❑ Remove the lower bolts (18) from the front end panel.



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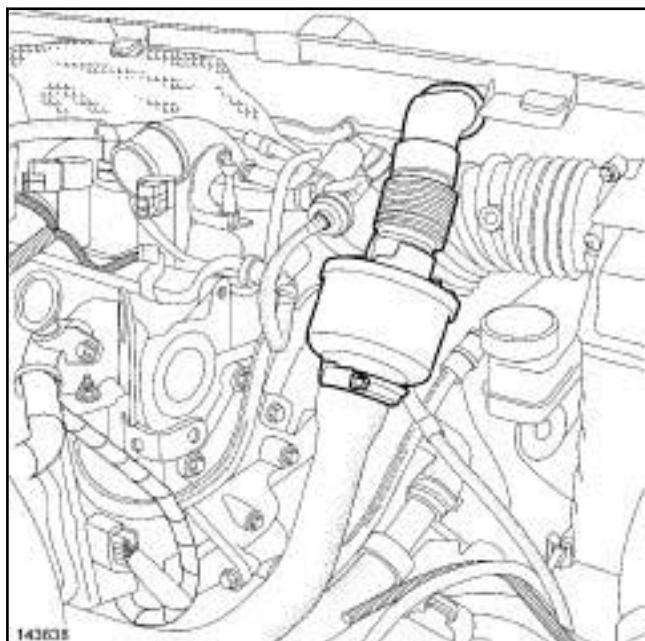
- ❑ Disconnect:
 - the fan assembly connector (19) ,
 - the fan assembly resistor connector (20) .
- ❑ Unclip:
 - the fan assembly wiring from the fan assembly at (21) ,
 - the relay unit (22) from the front end panel,
 - the bottom cooling hose from the front end panel.

ENGINE AND CYLINDER BLOCK ASSEMBLY

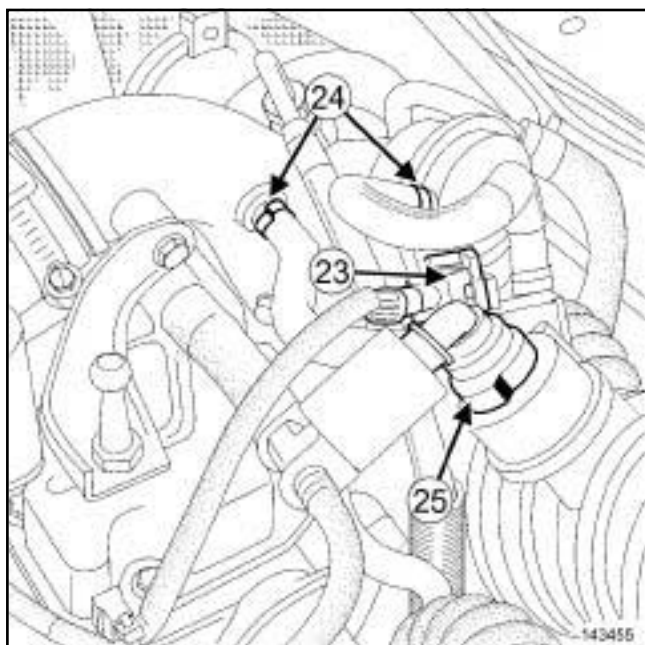
Engine - gearbox assembly: Removal - Refitting

10A

- ☐ Move aside the fan assembly wiring.
- ☐ Remove the front end panel.

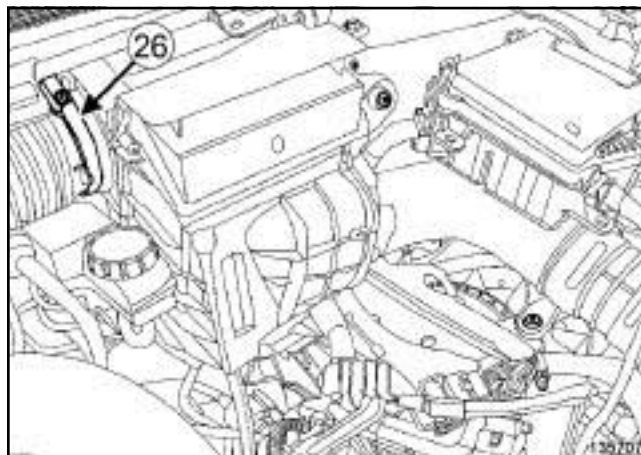


- ☐ Unclip the sound pipe from the scoop under the scuttle panel grille.

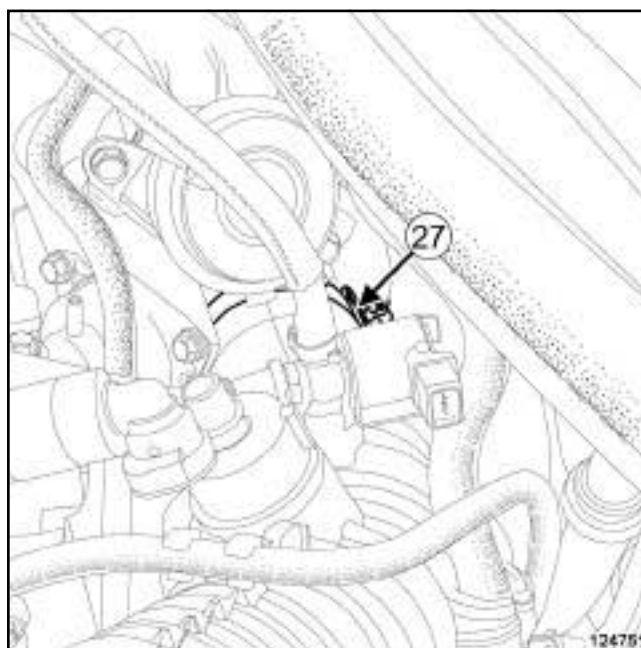


- ☐ Disconnect the connector (23) from the turbocharging pressure regulation control solenoid valve.
- ☐ Separate the clips (24) on the pipes of the turbocharging pressure regulation control solenoid valve on the turbocharger.
- ☐ Disconnect:
 - the pipes of the turbocharging pressure regulation control solenoid valve from the turbocharger,

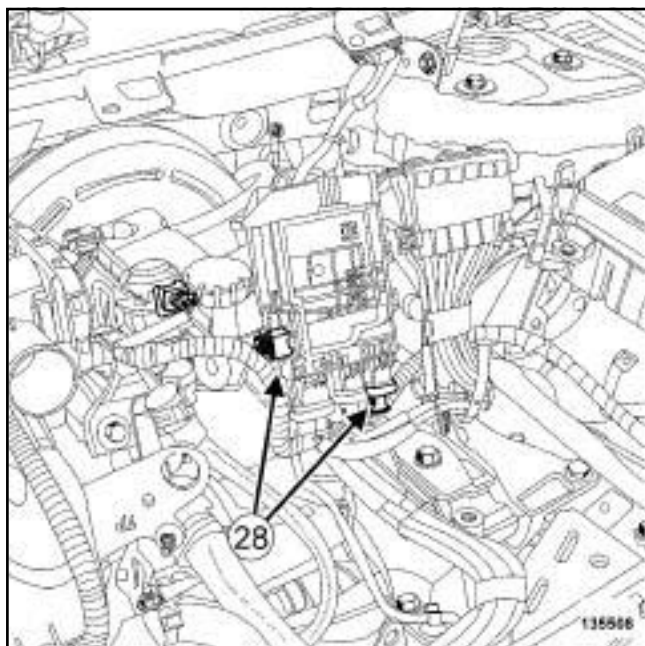
- the petrol vapour rebreathing pipe (25) from the air filter unit air outlet pipe.



- ☐ Loosen the air filter unit air outlet pipe clip (26) on the air filter unit end.

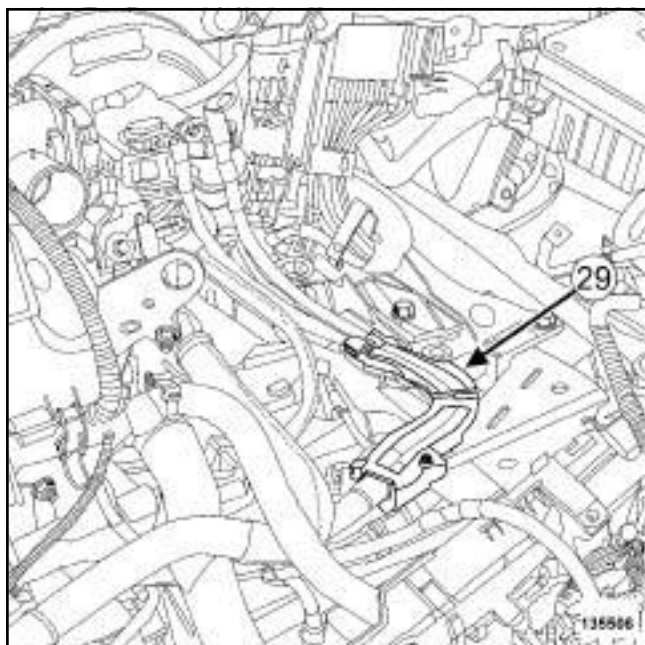


- ☐ Undo the clip (27) for the air pipe at the outlet of the air filter box on the turbocharger side.
- ☐ Remove the air outlet pipe from the air filter box.



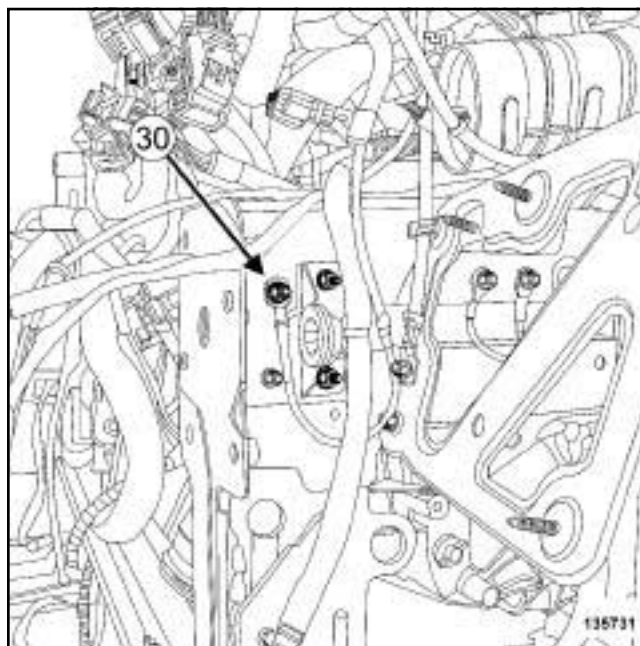
135508

- ☐ Disconnect the connectors (28) from the battery disconnection unit.
- ☐ Unclip the wiring of the battery disconnection unit.



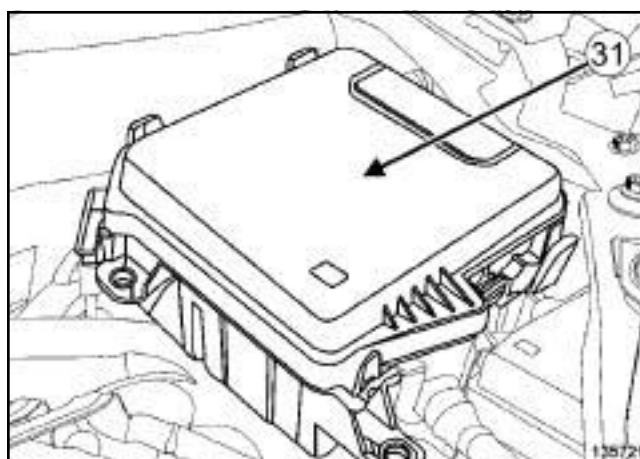
135506

- ☐ Unclip the power wiring channel (29) from the left-hand suspended engine mounting.
- ☐ Remove the air resonator (see 12A, **Fuel mixture, Air resonator: Removal - Refitting**, page 12A-1) .



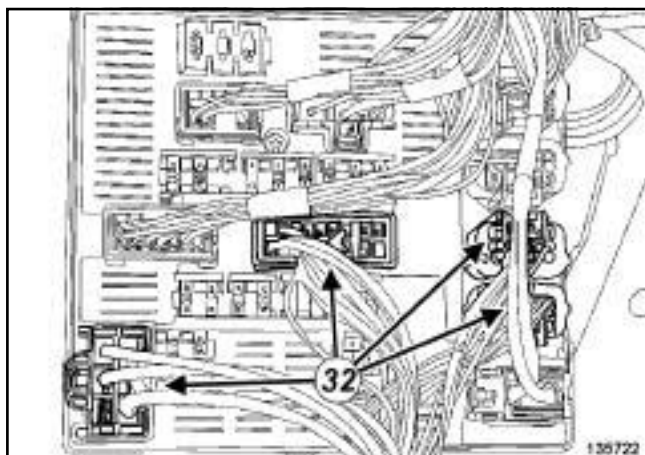
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- ☐ Remove the earth cable nut (30) on the body.



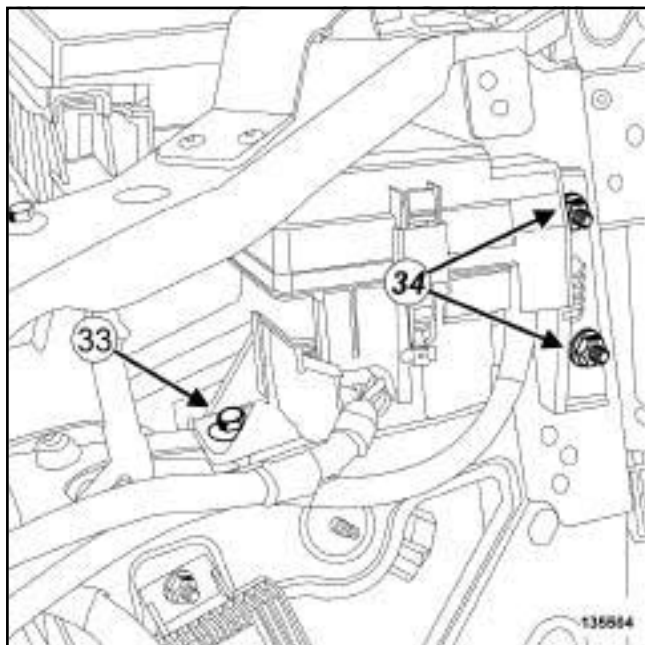
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- ☐ Remove the cover (31) from the Protection and Switching Unit.



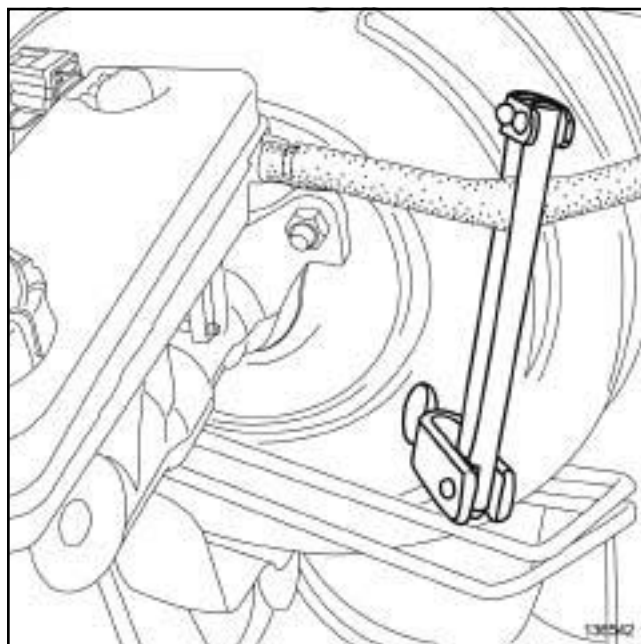
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- ❑ Disconnect the connectors (32) from the Protection and Switching Unit.
- ❑ Remove:
 - the Protection and Switching Unit,
 - the engine wiring.



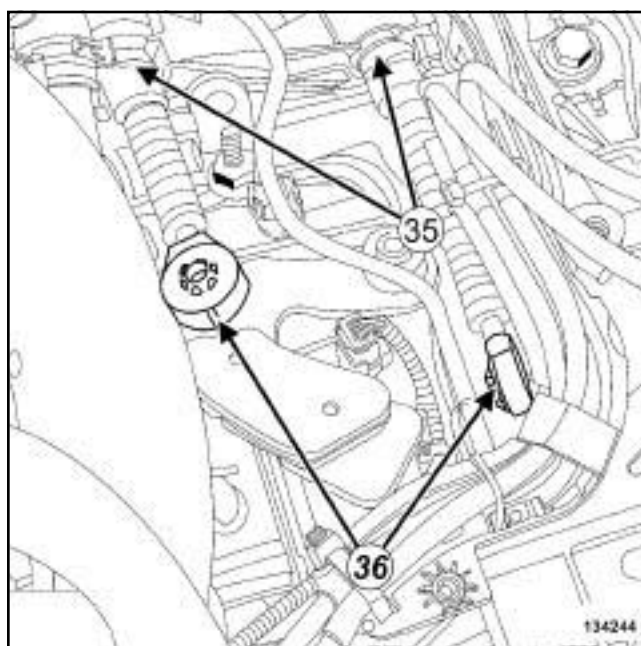
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- ❑ Remove:
 - the bolt (33) from the engine fuse box,
 - the nuts (34) from the engine fuse box.
- ❑ Move aside the engine fuse box.



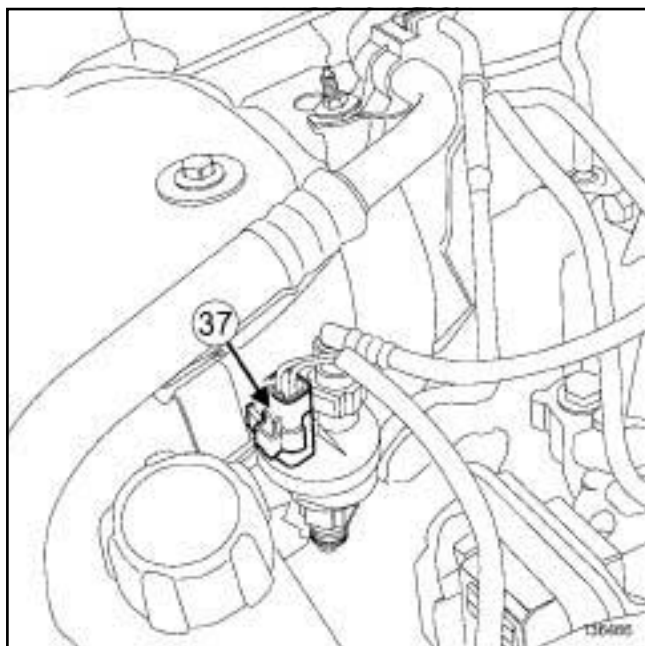
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- ❑ Fit the tool (**Ms. 583**) between the brake fluid reservoir and the clutch master cylinder.
- ❑ Remove the hydraulic clutch pipe (see **Clutch circuit: Removal - Refitting**) (37A, Mechanical component controls).

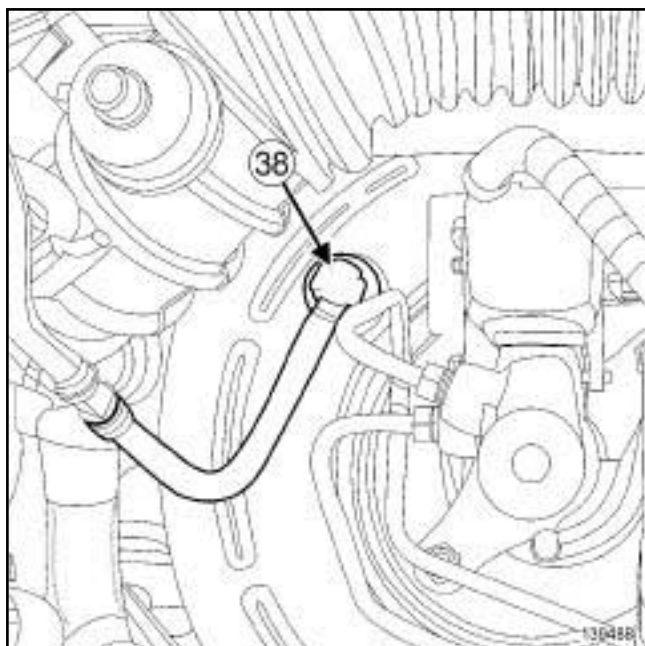


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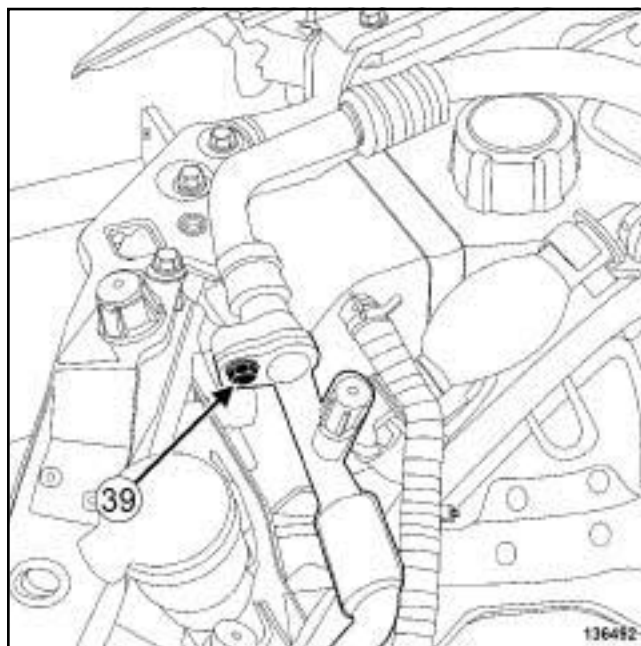
- ❑ Unclip:
 - the manual gearbox control cables from the selector ball joints (36) using an open-jawed spanner,
 - the manual gearbox control cables from their support (35) .



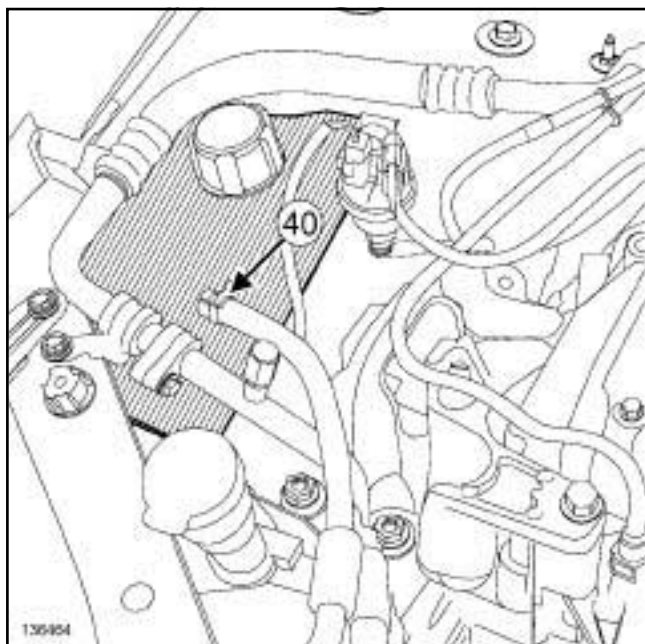
- ☐ Disconnect the connector (37) from the fuel vapour absorber solenoid valve.
- ☐ Unclip the wiring of the fuel vapour absorber solenoid valve from:
 - the expansion bottle,
 - the body.
- ☐ Move aside the wiring of the fuel vapour absorber solenoid valve



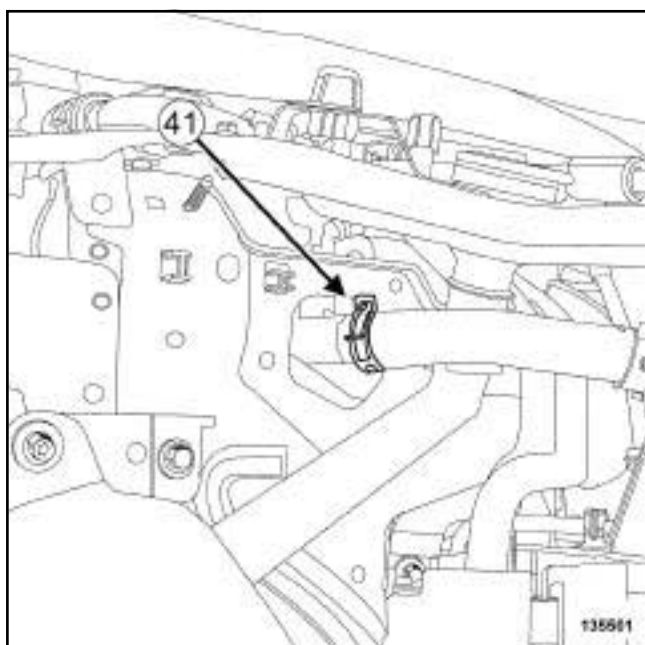
- ☐ Unclip the vacuum pipe (38) from the brake servo.
- ☐ Move the brake servo vacuum pipe to one side.



- ☐ Remove the bolt (39) from the « intermediate pipe - compressor » connecting pipe.
- ☐ Uncouple the « intermediate pipe - compressor » connecting pipe from the intermediate pipe.
- ☐ Insert the blanking plugs.

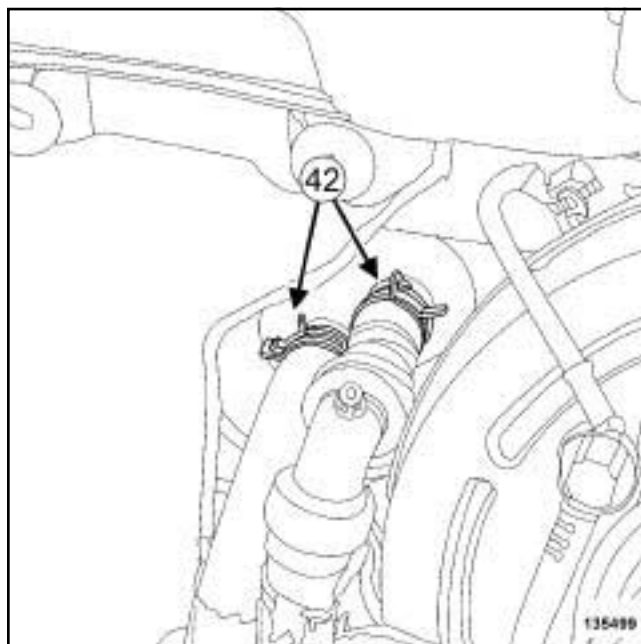


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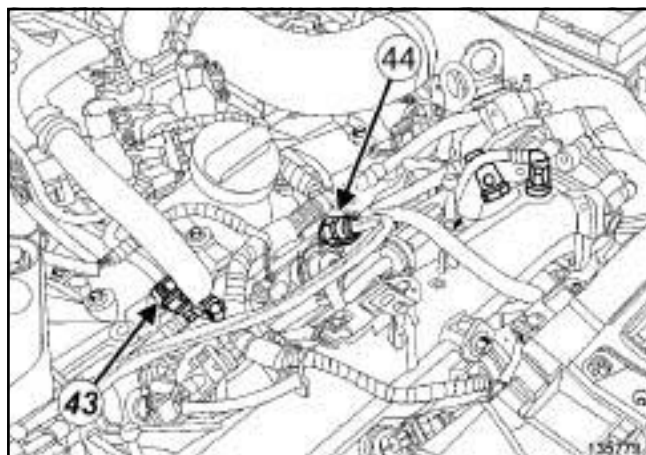
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- ☐ Remove using the **(Mot. 1448)** :
 - the degassing hose clip **(40)** from the expansion bottle,
 - the clip **(41)** from the expansion bottle bottom hose.
- ☐ Disconnect:
 - the degassing hose from the expansion bottle,
 - the expansion bottle bottom hose.

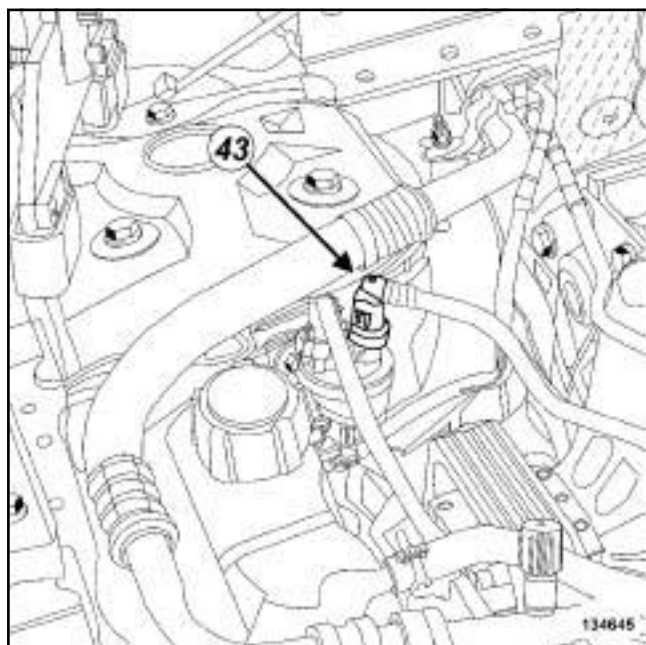


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- ☐ Separate the heater matrix hose clips **(42)** using the tool **(Mot. 1448)**.
- ☐ Disconnect the heater matrix hoses.



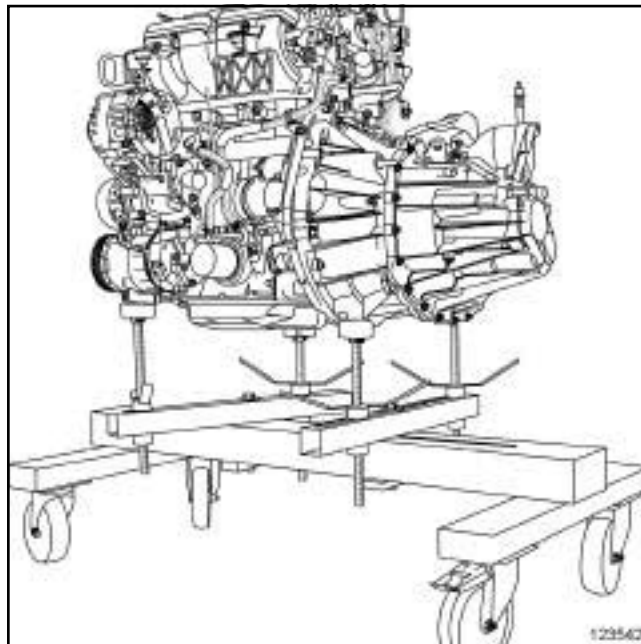
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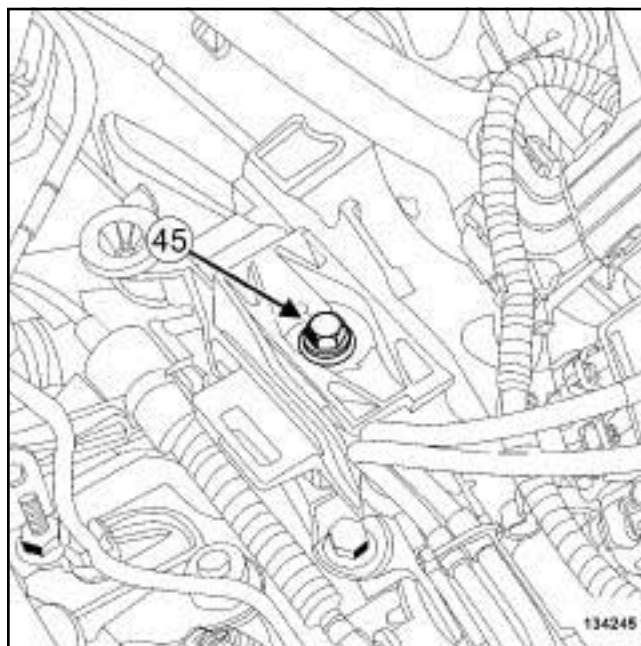
- ☐ Disconnect the petrol vapour rebreathing pipe (43) .
- ☐ Remove the petrol vapour rebreathing pipe.
- ☐ Disconnect the fuel supply pipe (44) on the injector rail.
- ☐ Move aside the fuel supply pipe on the injector rail.
- ☐ Remove the radiator mounting cross member (see **Radiator mounting cross member: Removal - Refitting**) (31A, Front axle components).

II - OPERATION FOR REMOVAL OF PART CONCERNED



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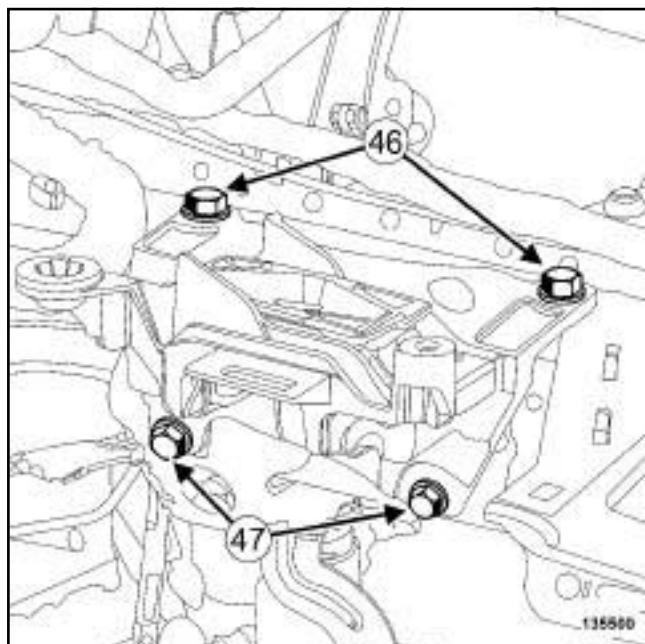
- ☐ Position the tool (**Mot. 1390**) under the « engine - gearbox » assembly.
- ☐ Remove the right-hand suspended engine mounting (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page 19D-5) .



134245

- ☐ Remove the bolt (45) from the left-hand suspended engine mounting support on the gearbox.
- ☐ Detach the left-hand suspended engine mounting support on the gearbox from the left-hand suspended engine mounting rubber pad.

- ❑ Mark the position of the left-hand suspended engine mounting support on the vehicle body using an **indelible pencil**.



135500

- ❑ Remove the bolts (46) from the left-hand suspended engine mounting rubber pad support on the body.
- ❑ Loosen the bolts (47) of the left-hand suspended engine mounting rubber pad support on the body.
- ❑ Remove the rubber pad support from the left-hand suspended engine mounting.
- ❑ Lift the vehicle to remove the «engine-gearbox» assembly.

Note:

Check that no component obstructs the movement of the body around the «engine - gearbox» assembly.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ For standard engine replacements (see **Engine: Standard replacement**) (Technical Note 6027A, 10A, Engine and peripherals).

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Position the « engine-gearbox » assembly in the vehicle.
- ❑ Refit the rubber pad support for the left-hand suspended engine mounting.

- ❑ Torque tighten the **left-hand suspended engine mounting rubber pad support bolts (62 N.m)**.
- ❑ Refit the support on the left-hand suspended engine mounting according to the marks made during removal.
- ❑ Torque tighten the **bolt of the left-hand suspended engine mounting support on the gearbox (105 N.m)**.
- ❑ Refit the right-hand suspended engine mounting (see 19D, **Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page 19D-5) .
- ❑ Remove the (**Mot. 1390**).
- ❑ Refit the radiator mounting cross member (see **Radiator mounting cross member: Removal - Refitting**) (31A, Front axle components).

III - FINAL OPERATION

- ❑ Fit the fuel supply pipe on the injector rail.
- ❑ Refit the petrol vapour rebreathing pipe.
- ❑ Connect:
 - the fuel supply pipe to the injector rail,
 - the petrol vapour rebreathing pipe,
 - the cooling hoses to the heater matrix,
 - the bottom cooling hose to the expansion bottle,
 - the degassing hose to the expansion bottle.
- ❑ Using the (**Mot. 1448**), fit:
 - the clips on the heater matrix cooling hoses,
 - the clip on the bottom cooling hoses of the expansion bottle,
 - the clip on the degassing hose of the expansion bottle.

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.

WARNING

Check that the surface of the pipe is in good condition to prevent leaks. The surface must be clean and scratch free.

- ❑ Remove the blanking plugs.

- ☐ Couple the « intermediate pipe - compressor » connecting pipe.
- ☐ Refit the bolt of the «intermediate pipe - compressor » connecting pipe.
- ☐ Torque tighten the **bolt of the connecting pipe between the « intermediate pipe - compressor» (8 N.m)**.
- ☐ Fit the brake servo vacuum pipe.
- ☐ Clip the vacuum pipe onto the brake servo.
- ☐ Fit the wiring of the fuel vapour absorber solenoid valve
- ☐ Clip the wiring of the fuel vapour absorber solenoid valve:
 - onto the body,
 - onto the expansion bottle.
- ☐ Connect the connector of the fuel vapour absorber solenoid valve.
- ☐ Clip the manual gearbox control cables.
- ☐ Refit the hydraulic clutch pipe (see **Clutch circuit: Removal - Refitting**) (37A, Mechanical component controls).
- ☐ Remove the tool (**Ms. 583**) between the brake fluid reservoir and the clutch master cylinder.
- ☐ Bleed the clutch circuit (see **Clutch circuit: Bleed**) .
- ☐ Fit:
 - the engine fuse box,
 - the engine wiring.
- ☐ Connect the Protection and Switching Unit connectors.
- ☐ Fit the protection and switching unit.
- ☐ Refit:
 - the Protection and Switching Unit cover,
 - the earth cable nut on the body.
- ☐ Torque tighten the **earth cable nut on the body (8 N.m)**.
- ☐ Refit the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-1) .
- ☐ Clip the power wiring channel on the left-hand suspended engine mounting.
- ☐ Clip on the wiring of the battery disconnection unit.
- ☐ Connect the connectors of the battery disconnection unit.
- ☐ Refit the air outlet pipe onto the air filter unit.

- ☐ Connect:
 - the pipes of the turbocharging pressure regulation control solenoid valve to the turbocharger,
 - the petrol vapour rebreathing pipe to the air filter unit air outlet pipe.
- ☐ Fit the clips on the pipes of the turbocharging pressure regulation control solenoid valve on the turbocharger.
- ☐ Connect the connector of the turbocharging pressure regulation control solenoid valve.

F4R, and 874

- ☐ Clip the sound pipe onto the scoop under the scuttle panel grille.

- ☐ Refit the front end panel.
- ☐ Clip the following onto the front end panel:
 - the relay unit on the front end panel,
 - the fan assembly wiring,
 - the bottom cooling hose.
- ☐ Connect:
 - the fan assembly resistor connector,
 - the fan assembly connector.
- ☐ Refit:
 - the lower bolts from the front end panel,
 - the front end panel upper bolts,
 - the front end panel clips,
 - the bolts of the fan assembly wiring channel.

F4R, and 874

- ☐ Clip the bonnet catch wiring onto the front end panel.
- ☐ Connect the connector for the bonnet catch.

- ☐ Position the bonnet catch cable.
- ☐ Clip:
 - the bonnet catch cable onto the front end panel,
 - the wiring to the front end panel,
 - the expansion bottle top cooling hose.
- ☐ Connect:
 - the radiator bottom cooling hose,

- the cooling radiator top cooling hose.

☐ Fit:

- the clip of the bottom cooling hose on the cooling radiator using the tool (**Mot. 1448**),
- the clip of the top cooling hose clip on the cooling radiator using the tool (**Mot. 1448**),
- the intercooler air inlet pipe.

☐ Connect the intercooler air inlet pipe.

☐ Clip the intercooler air inlet pipe.

☐ Fit the intercooler air outlet pipe.

☐ Connect the intercooler air outlet pipe.

☐ Clip on the intercooler air outlet pipe.

☐ Refit the bolt for the intercooler air outlet pipe.

WARNING

Check that the surface of the pipe is in good condition to prevent leaks. The surface must be clean and scratch free.

☐ Remove the blanking plugs.

☐ Couple the « condenser - expansion valve » connecting pipe to the condenser.

☐ Refit the bolt of the « condenser - expansion valve » connecting pipe bracket on the condenser side.

☐ Torque tighten the **bolt of the connecting pipe between the « condenser - expansion valve » (8 N.m)**.

☐ Remove the blanking plugs.

☐ Couple the « compressor - condenser » connecting pipe on the condenser.

☐ Refit the bolt to the « compressor - condenser » connecting pipe bracket on the condenser side.

☐ Torque tighten the **bolt of the connecting pipe between the « compressor - condenser » (8 N.m)**.

☐ Refit the retaining bolt of the « compressor - condenser » connecting pipe

☐ Fit the refrigerant circuit pressure sensor wiring.

☐ Clip on the wiring of the refrigerant circuit pressure sensor.

☐ Connect the connector of the refrigerant circuit pressure sensor.

☐ Refit:

- the bonnet catch (see **Bonnet lock: Removal - Refitting**) (52A, Non-side opening element mechanisms),

- the front bumper supports (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure),

- the headlights (see **Headlight: Removal - Refitting**) (80B, Headlights),

- the side air deflectors,

- the top air deflector,

- the front impact cross member (see **Front impact cross member: Removal - Refitting**) (41A, Front lower structure),

- the audible warning (see **Audible warning: Removal - Refitting**) (82B, Horn),

- the connecting hose (see **Connecting hose: Removal - Refitting**),

- the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**),

- new differential output seals (see **Differential output seal: Removal - Refitting**) (21A, Manual gearbox),

- the front left-hand wheel driveshaft (see **29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting**, page **29A-1**) (29A, Driveshafts),

- the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page **29A-20**) (29A, Driveshafts),

- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),

- the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),

- the engine undertray,

- the air filter unit (see **Air filter unit: Removal - Refitting**),

- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),

- the battery (see **Battery: Removal - Refitting**) (80A, Battery).

☐ Refill:

- the engine oil (if necessary) (see **Engine oil: Draining - Refilling**),

- and bleed the cooling system (see **Cooling system: Draining - Refilling**),

- the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox),

ENGINE AND CYLINDER BLOCK ASSEMBLY

Engine - gearbox assembly: Removal - Refitting

10A

- the refrigerant circuit using a **refrigerant charging station** (62A, Air conditioning).

☐ Refit the engine cover.

TOP AND FRONT OF ENGINE

Accessories belt: Removal - Refitting

11A

Tightening torques

accessories belt tensioning roller bolt	55 N.m
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WARNING

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

IMPORTANT

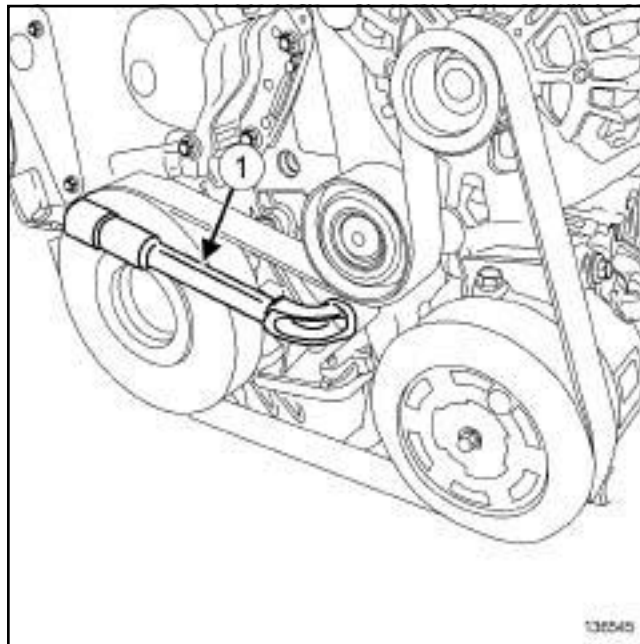
Wear protective gloves during the operation.

REMOVAL

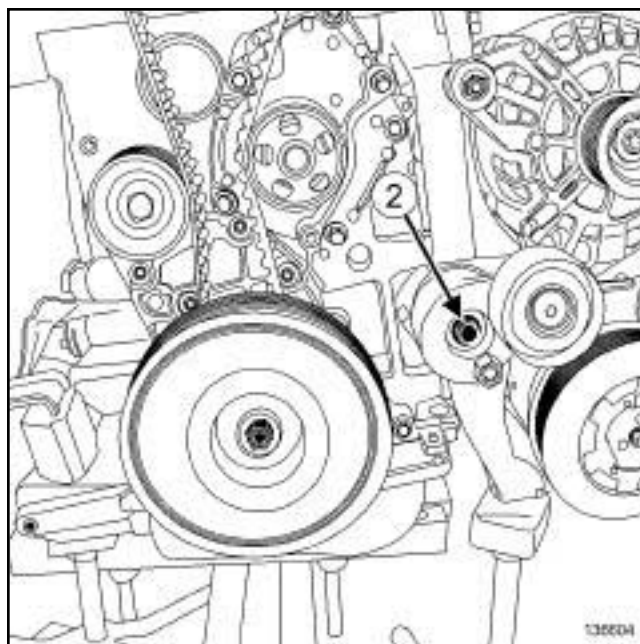
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the engine undertray bolts,
 - the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Turn the accessories belt tensioning roller clockwise at (1) using a **16 mm** spanner.
- ☐ Remove the accessories belt.



- ☐ Remove:
 - the accessories belt tensioning roller bolt (2) ,
 - the accessories belt tension wheel.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Accessories belt (10,10,01,03).
- ☐ parts always to be replaced: Accessories belt tensioning roller (10,10,01,04).

WARNING

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

- ☐ Use a brush to remove any deposits from the crankshaft accessories pulley V-grooves.

II - REFITTING OPERATION FOR PARTS CONCERNED

- ☐ Refit:
 - a new accessories belt tensioning roller,
 - a new accessories belt tensioning roller bolt.
- ☐ Torque tighten the **accessories belt tensioning roller bolt (55 N.m)**.
- ☐ Turn the accessories belt tensioning roller clockwise using a **16 mm** spanner.
- ☐ Refit a new accessories belt.
- ☐ Rotate the crankshaft clockwise twice to balance the accessories belt tension on every pulley.

III - FINAL OPERATION

- ☐ Refit:
 - the engine undertray,
 - the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

TOP AND FRONT OF ENGINE

Crankshaft accessories pulley: Removal - Refitting

11A

Tightening torques

crankshaft accessories pulley bolt	40 N.m + 110° ± 10
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IMPORTANT

Wear protective gloves during the operation.

WARNING

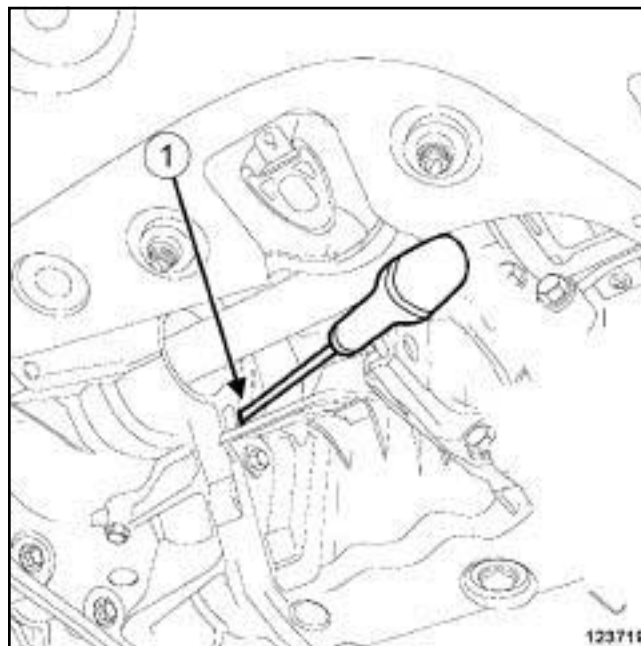
Do not run the engine without the accessories belt to avoid damaging the crankshaft accessories pulley.

REMOVAL

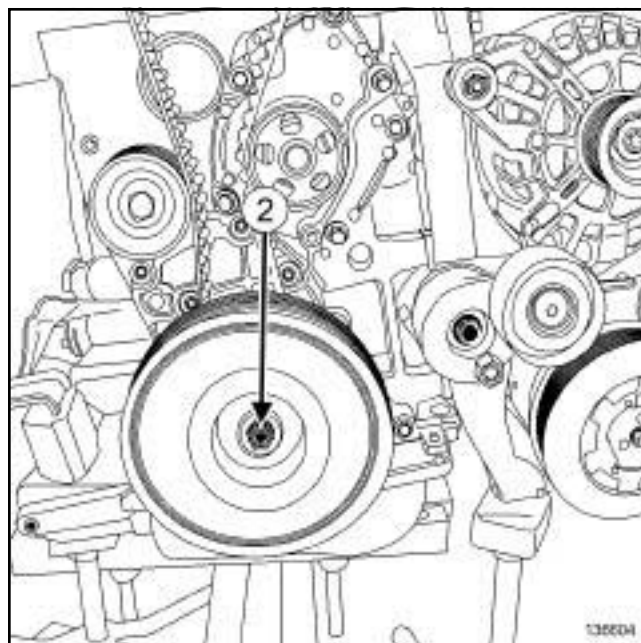
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-1**),
 - the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Immobilise the flywheel using a screwdriver or a male offset BTR wrench at (1) .



- ☐ Remove:
 - the crankshaft accessories pulley bolt (2) ,
 - the crankshaft accessories pulley.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Crankshaft accessories pulley bolts (10,03,03,10).
- ☐ parts always to be replaced: Crankshaft accessories pulley (10,03,03,07).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - a new crankshaft accessories pulley,
 - a new bolt on the crankshaft accessories pulley by immobilising the engine using a screwdriver or a male offset BTR wrench.
- ☐ Torque tighten the **crankshaft accessories pulley bolt (40 N.m + 110° ± 10)**.

III - FINAL OPERATION

- ☐ Refit:
 - the engine undertray,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting, page 11A-1**),
 - the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

FUEL MIXTURE

Air resonator: Removal - Refitting

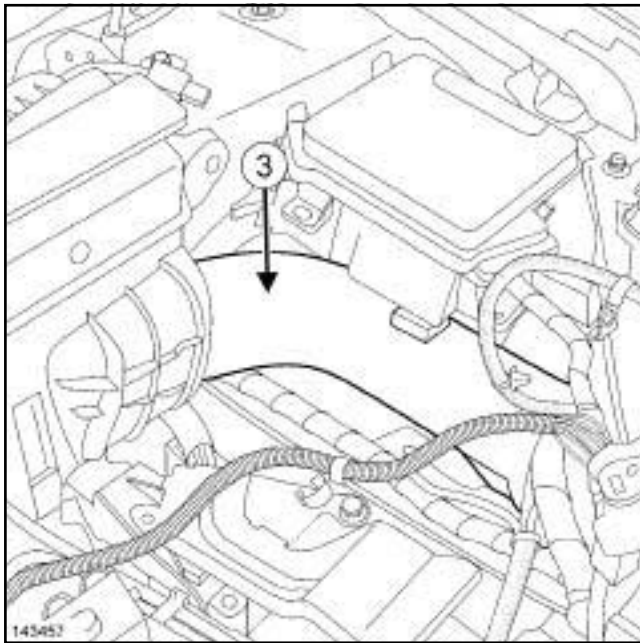
12A

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Disconnect the air filter unit air inlet pipe from the air filter unit (3) .
- ☐ Remove the air pipe at the air filter unit inlet.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the air filter unit air inlet pipe.
- ☐ Connect the air filter unit air inlet pipe onto the air filter unit.

II - FINAL OPERATION


- ☐ Refit:
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),

- the battery (see **Battery: Removal - Refitting**) (80A, Battery).

TURBOCHARGING

Turbocharger: Removal - Refitting

12B

Tightening torques 	
turbocharger studs	8.5 N.m
turbocharger cooling duct bolts	12 N.m
turbocharger upper nut	15 N.m + 75° ± 6
turbocharger lower nuts	15 N.m + 75° ± 6
clip for the air filter unit air outlet pipe at the air filter unit end	6 N.m
clip for the air filter unit air outlet pipe at the throttle unit end	6 N.m
clip for the intercooler air inlet pipe	6 N.m

IMPORTANT

Wear heat protective gloves during the operation.

WARNING

The turbocharger pressure regulator rod must not be adjusted.

WARNING

Metal objects may enter the oil and air circuits as a result of a broken turbocharger.

Failure to observe the following instructions will lead to the turbocharger breaking again.

WARNING

Following a turbocharger fault, check that the intercooler and air circuit assembly are not full of oil. If they are, remove them and clean them with a cleaning tray or station and dry them with a compressed air gun.

REMOVAL

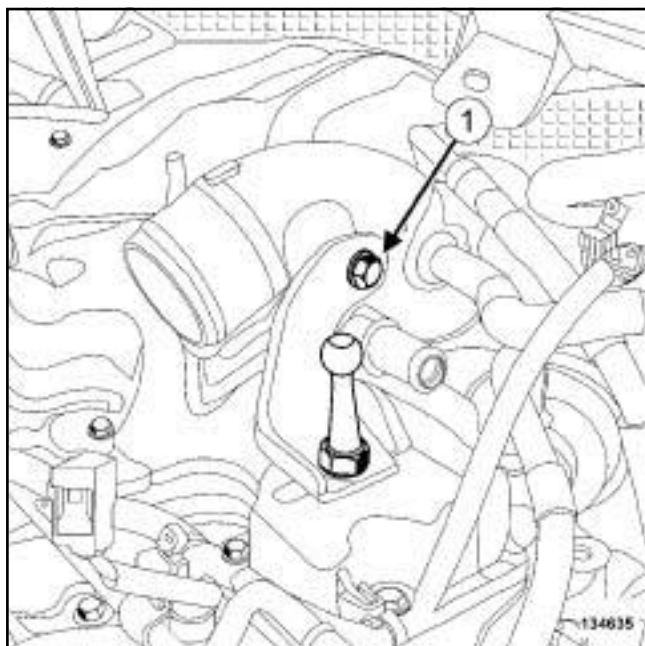
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the engine cover.
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Remove:
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) ,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox).
- ☐ Remove:
 - the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page **29A-20**) (29A, Driveshafts),
 - the right-hand differential output seal (see **Differential output seal: Removal - Refitting**) (21A, Manual gearbox),
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
 - the connecting hose (see **Connecting hose: Removal - Refitting**) ,
 - the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page **19B-1**) ,
 - the turbocharger oil pipes (see **Turbocharger oil pipe: Removal - Refitting**) .

TURBOCHARGING

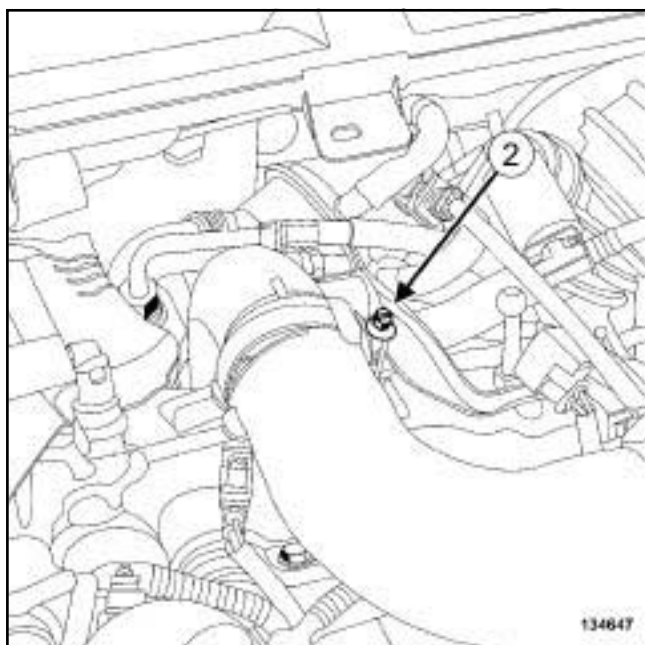
Turbocharger: Removal - Refitting

12B



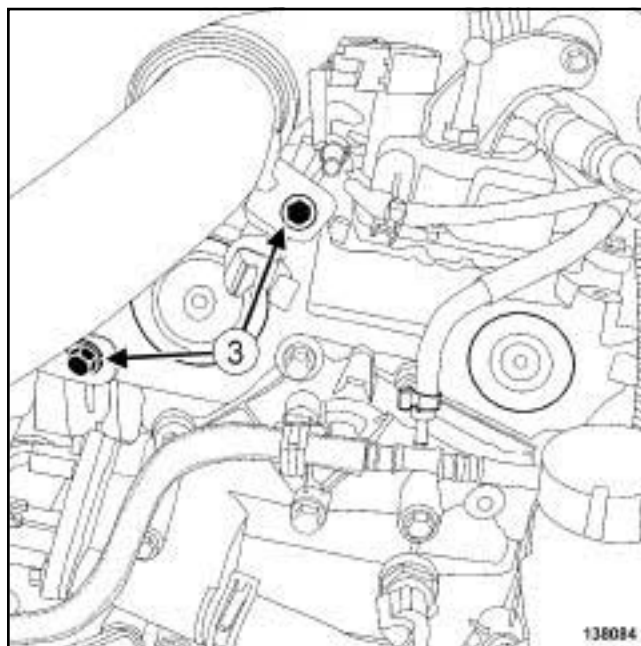
134635

- ❑ Remove the bolt (1) from the turbocharger retaining bracket.



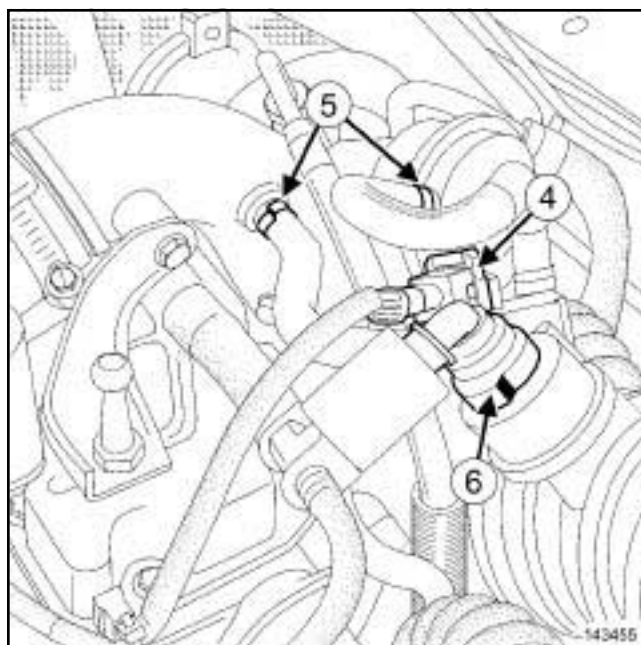
134647

- ❑ Loosen the clip (2) on the intercooler air inlet pipe.



138084

- ❑ Remove the air pipe bolts (3) at the intercooler inlet.
- ❑ Move the intercooler air outlet pipe to one side.



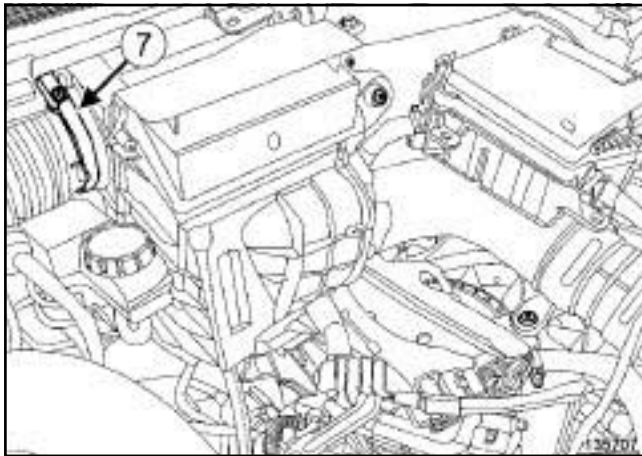
143455

- ❑ Disconnect the connector (4) from the turbocharging pressure regulation control solenoid valve.
- ❑ Separate the clips (5) on the pipes of the turbocharging pressure regulation control solenoid valve.
- ❑ Disconnect:
 - the pipes of the turbocharging pressure regulation control solenoid valve,
 - the petrol vapour rebreathing pipe (6) from the air filter unit air outlet pipe.

TURBOCHARGING

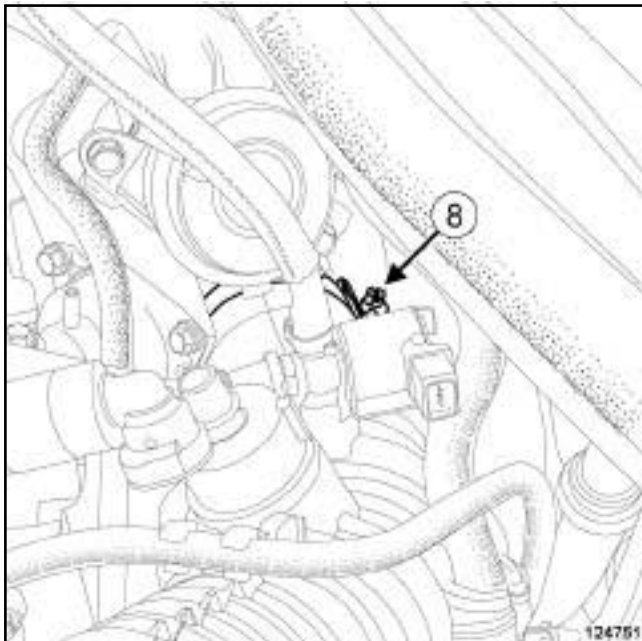
Turbocharger: Removal - Refitting

12B



135707

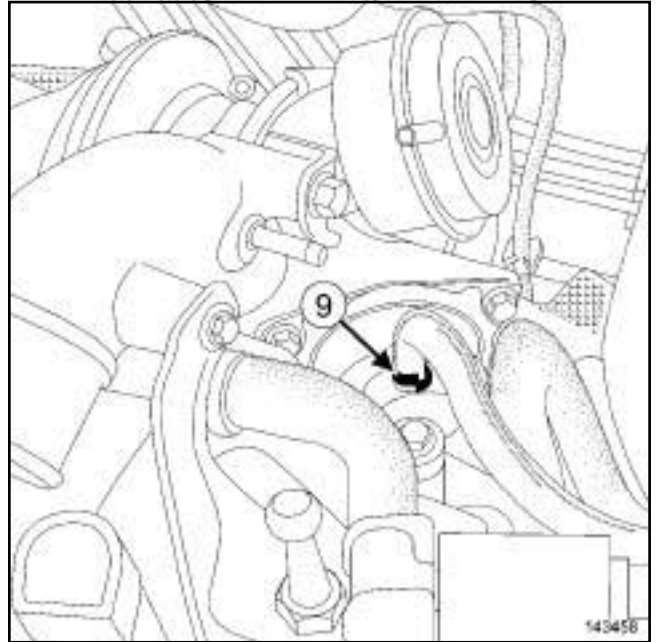
- ❑ Loosen the air filter unit air outlet pipe clip (7) on the air filter unit end.



124751

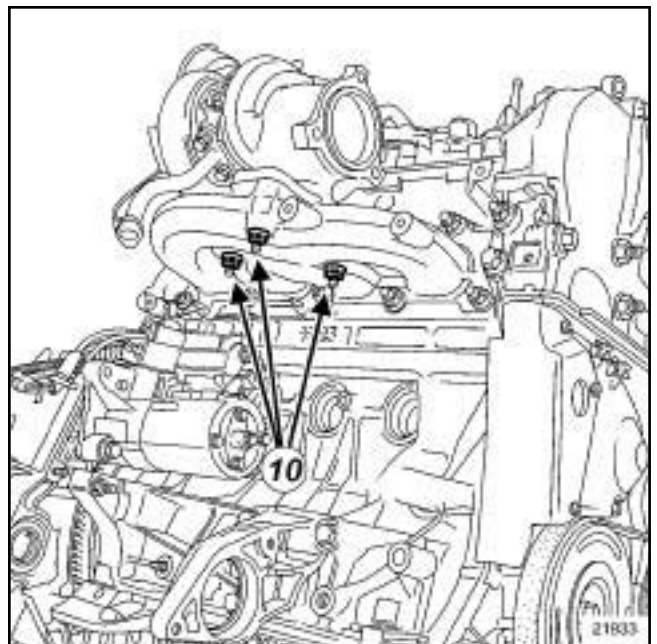
- ❑ Undo the clip (8) of the air pipe at the outlet of the air filter unit on the turbocharger side.
- ❑ Remove the air outlet pipe from the air filter unit.

II - OPERATION FOR REMOVAL OF PART CONCERNED



143458

- ❑ Move the vacuum pipe (9) away from the turbocharger.
- ❑ Disconnect the vacuum pipe from the turbocharger.



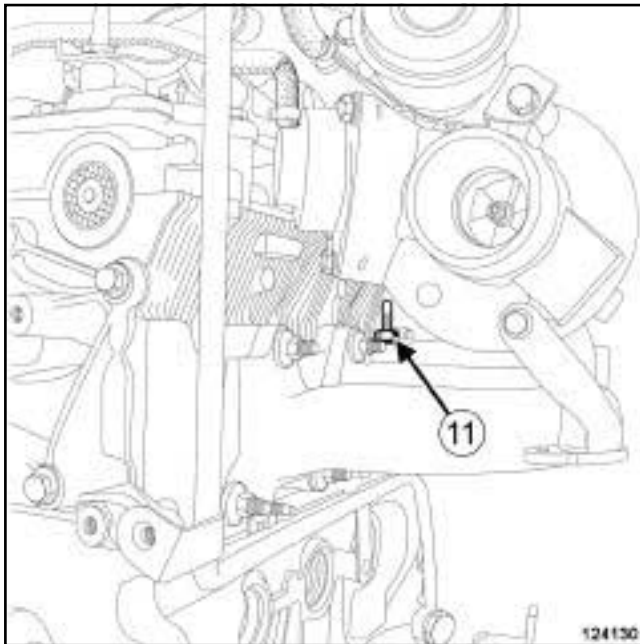
21933

- ❑ Remove the turbocharger lower nuts (10) .

TURBOCHARGING

Turbocharger: Removal - Refitting

12B



124130

☐ Remove:

- the turbocharger upper nut (11) ,
- the turbocharger,
- the turbocharger seal on the exhaust manifold.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: seal between exhaust manifold and turbocharger (10,09,01,07).
- ☐ parts always to be replaced: Turbocharger nut (10,09,01,03).

- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the exhaust manifold joint face,
- the turbocharger gasket face if reused.

Note:

If a stud loosens during removal, coat it with **HIGH RESISTANCE THREADLOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

Torque tighten the **turbocharger studs (8.5 N.m)**.

WARNING

Ensure that no foreign bodies enter the turbine or compressor during the refitting operation.

Check that the turbocharger oil return pipe is not partially or completely blocked due to scale. Check that there are no leaks. If there are, replace the part.

If replacing the turbocharger

☐ Remove:

- the bolts from the turbocharger cooling duct,
- the turbocharger cooling duct,

- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease the joint face of the turbocharger cooling duct.

☐ Refit:

- the turbocharger cooling duct,
- the turbocharger cooling duct retaining bolts.

- ☐ Torque tighten the **turbocharger cooling duct bolts (12 N.m)**.

II - REFITTING OPERATION FOR PART CONCERNED

☐ Refit:

- a new seal between the turbocharger and the exhaust manifold,
- the turbocharger,
- a new upper nut to the turbocharger,
- new lower nuts to the turbocharger.

TURBOCHARGING

Turbocharger: Removal - Refitting

12B

- ☐ Torque and angle tighten:
 - the **turbocharger upper nut (15 N.m + 75° ± 6)**,
 - the **turbocharger lower nuts (15 N.m + 75° ± 6)**.
- ☐ Connect the vacuum pipe to the turbocharger.
- ☐ Fit the vacuum pipe on the turbocharger.

III - FINAL OPERATION

- ☐ Refit the air outlet pipe onto the air filter unit.
- ☐ Torque tighten:
 - the **clip for the air filter unit air outlet pipe at the air filter unit end (6 N.m)**,
 - the **clip for the air filter unit air outlet pipe at the throttle unit end (6 N.m)**.
- ☐ Connect:
 - the pipes of the turbocharging pressure regulation control solenoid valve,
 - the petrol vapour rebreathing pipe to the air filter unit air outlet pipe.
- ☐ Fit the clips on the pipes of the turbocharging pressure regulation control solenoid valve.
- ☐ Connect the connector of the turbocharging pressure regulation control solenoid valve.
- ☐ Fit the intercooler air inlet pipe.
- ☐ Refit the bolts on the intercooler air inlet pipe.
- ☐ Torque tighten the **clip for the intercooler air inlet pipe (6 N.m)**.
- ☐ Refit the bolt for the turbocharger retaining bracket.
- ☐ Refit:
 - the turbocharger oil pipes (see **Turbocharger oil pipe: Removal - Refitting**) ,
 - the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page **19B-1**) ,
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
 - a new right-hand differential output seal (see **Differential output seal: Removal - Refitting**) (21A, Manual gearbox),
 - the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page **29A-20**) (29A, Driveshafts).
- ☐ Fill the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox).
- ☐ Refit:
 - the connecting hose (see **Connecting hose: Removal - Refitting**) ,

- the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the windscreen wiper arms (see **Rear screen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Refit:
 - the engine undertray,
 - the engine cover.

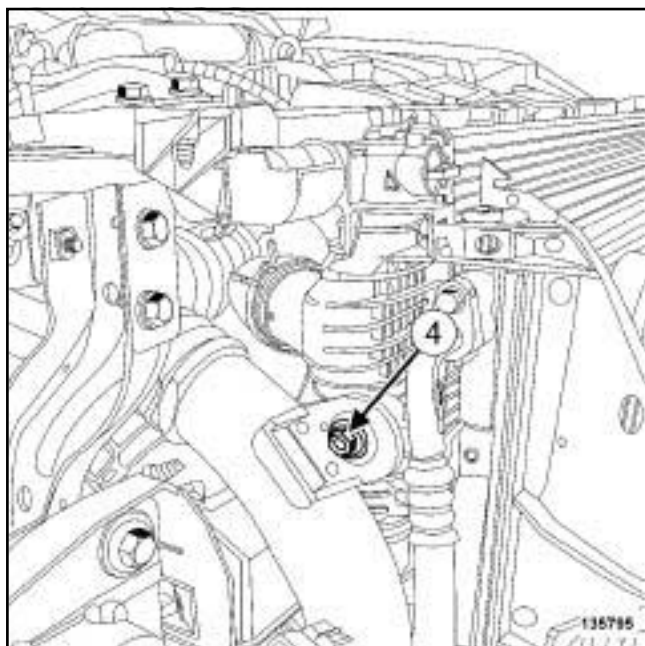
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray,
 - the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- ☐ Remove:
 - the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the front right-hand bumper support (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure).

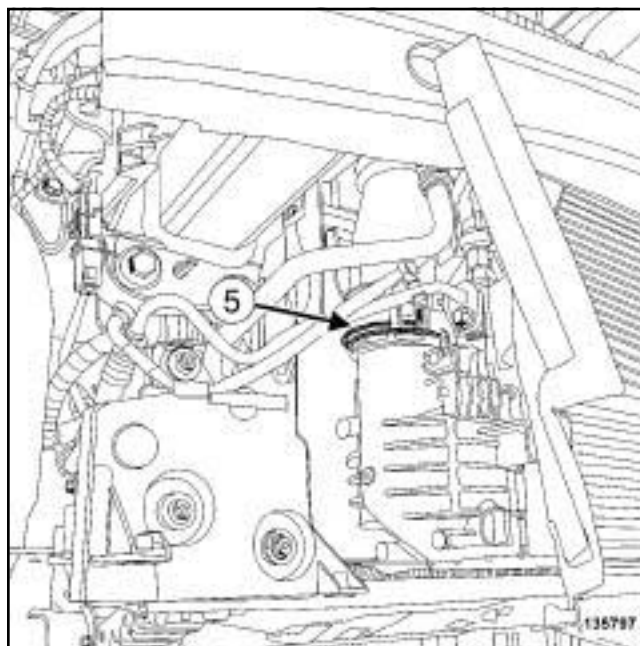
II - OPERATION FOR REMOVAL OF PART CONCERNED

- ☐ Remove:
 - the top air deflector,
 - the side air deflectors.



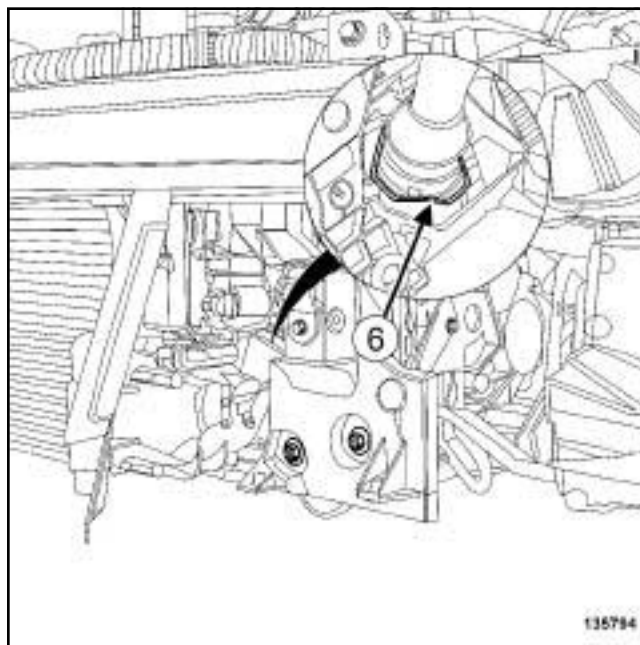
135795

- ☐ Remove the bolts (4) from the intercooler air outlet pipe.



135797

- ☐ Remove:
 - the clip (5) on the intercooler air outlet pipe,
 - the intercooler air outlet pipe.



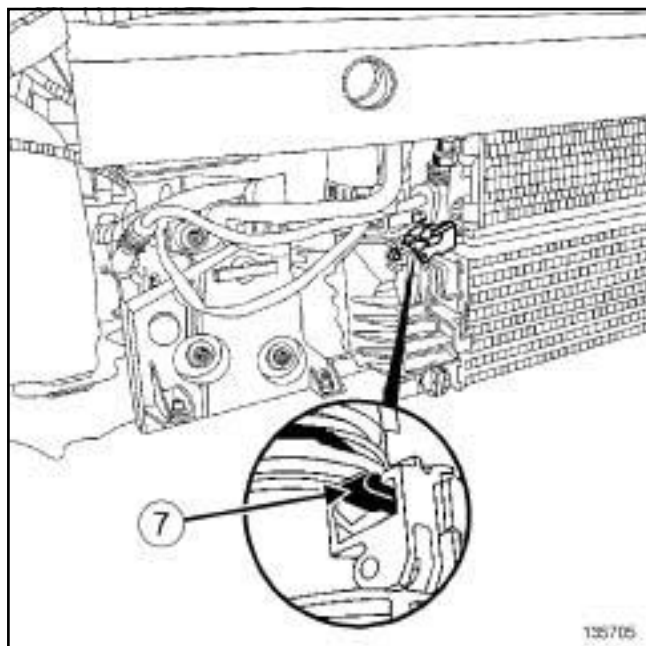
135794

- ☐ Remove:
 - the clip (6) from the intercooler air inlet pipe,
 - the intercooler air inlet pipe.
- ☐ Remove:
 - the intercooler air inlet pipe seal,
 - the intercooler air outlet pipe seal.

TURBOCHARGING

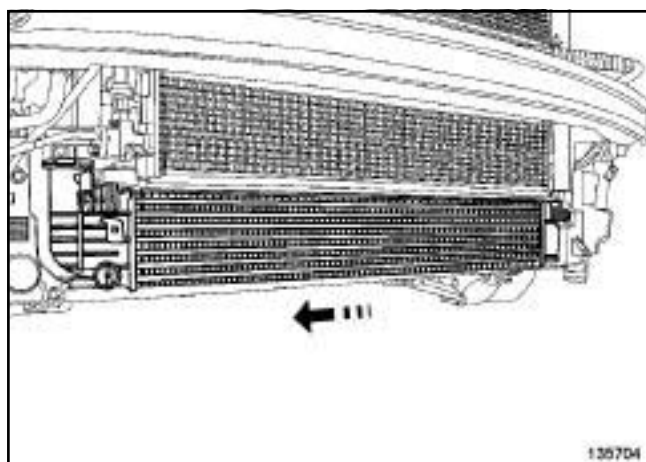
Intercooler: Removal - Refitting

12B



135705

- ❑ Press on the intercooler clip (7) .



135704

- ❑ Unclip the intercooler in the direction of the arrow.
- ❑ Remove the intercooler.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ parts always to be replaced: turbocharger air cooler air inlet pipe seal (10,09,04,04).
- ❑ parts always to be replaced: turbocharger air cooler air outlet pipe seal (10,09,04,05).

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the intercooler.

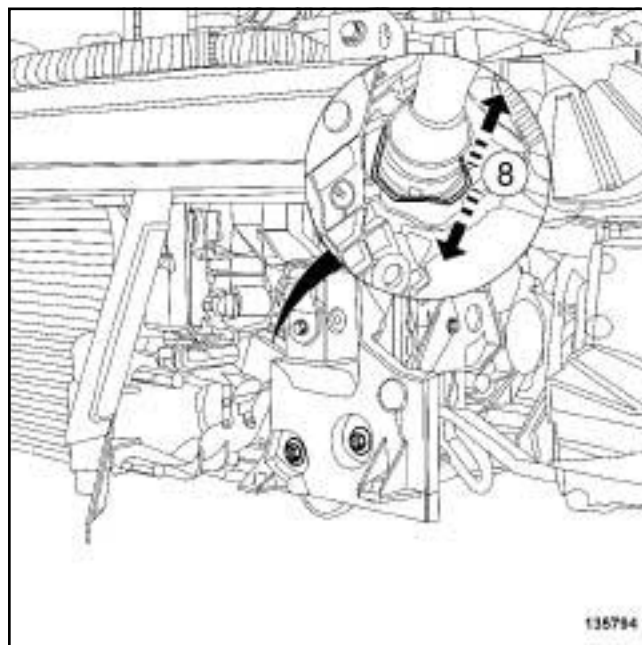
❑ Refit:

- a new seal to the intercooler air outlet pipe,
- a new seal to the intercooler air inlet pipe.

❑ Connect:

- the intercooler air outlet pipe,
- the intercooler air inlet pipe.

❑ Clip on the intercooler air pipe clips.



135794

- ❑ Always perform a "push-pull" test to ensure that the air pipes are correctly clipped (8) .

- ❑ Refit the bolt for the intercooler air outlet pipe.

❑ Refit:

- the side air deflectors,
- the top air deflector.

III - FINAL OPERATION

❑ Refit:

- the front right-hand bumper support (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure),
- the right-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights).

❑ Refit:

- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
- the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

TURBOCHARGING

Intercooler: Removal - Refitting

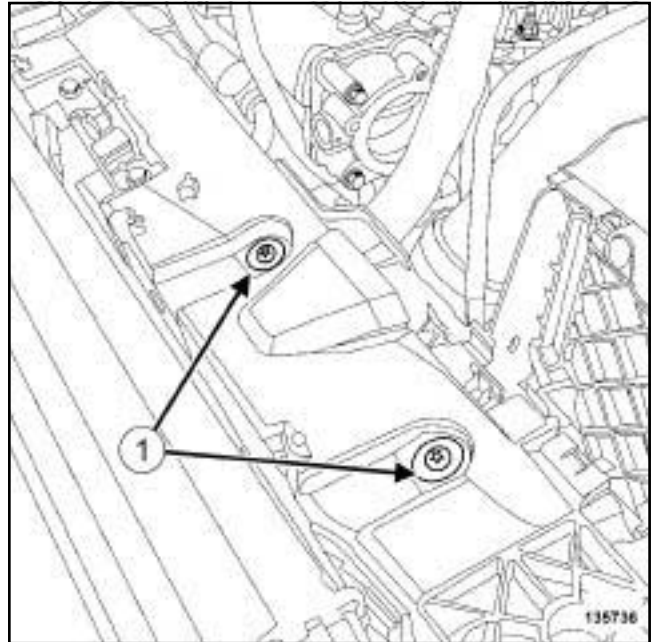
12B

- the engine undertray,
- the front wheels (see **Wheel: Removal - Refitting**)
(35A, Wheels and tyres).

REMOVAL

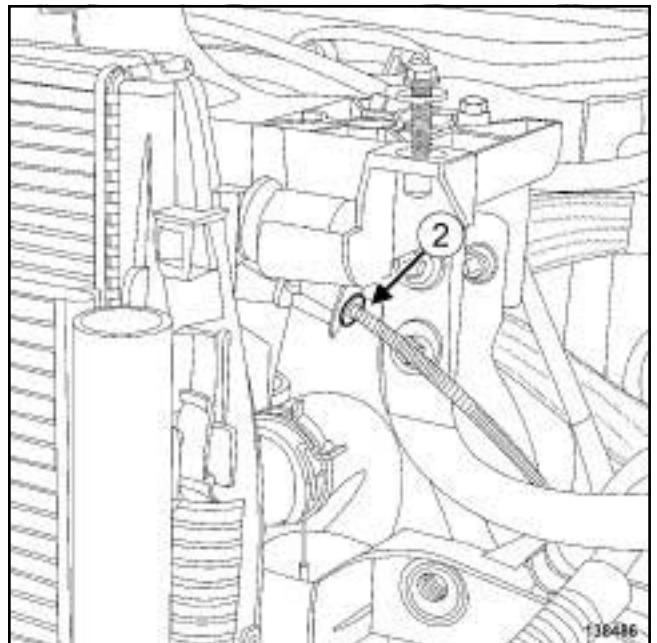
I - REMOVAL PREPARATION OPERATION

- ☐ 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 cover,
 - the engine undertray,
 - the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the top air deflector,
 - the side air deflectors,
 - the headlights (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the front bumper supports (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure),
 - the front impact cross member (see **Front impact cross member: Removal - Refitting**) (41A, Front lower structure),
 - the bonnet catch (see **Bonnet lock: Removal - Refitting**) (52A, Non-side opening element mechanisms).



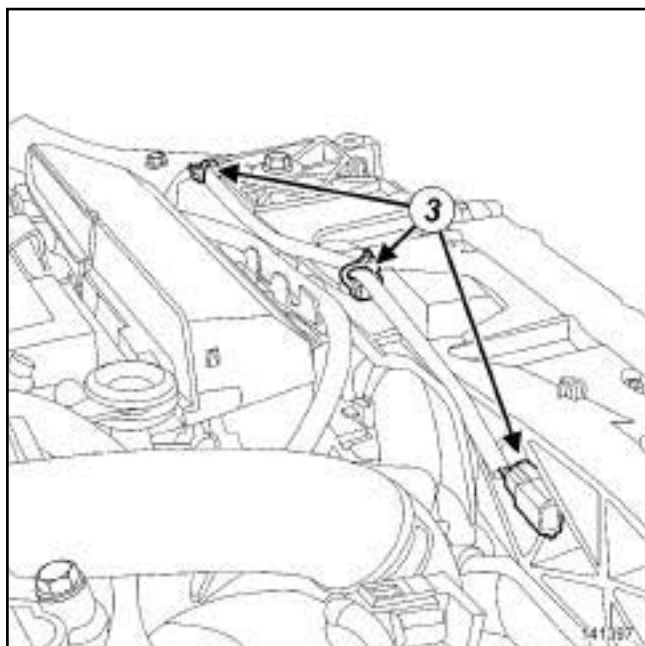
135736

- ☐ Remove the bolts (1) from the engine wiring harness channel.



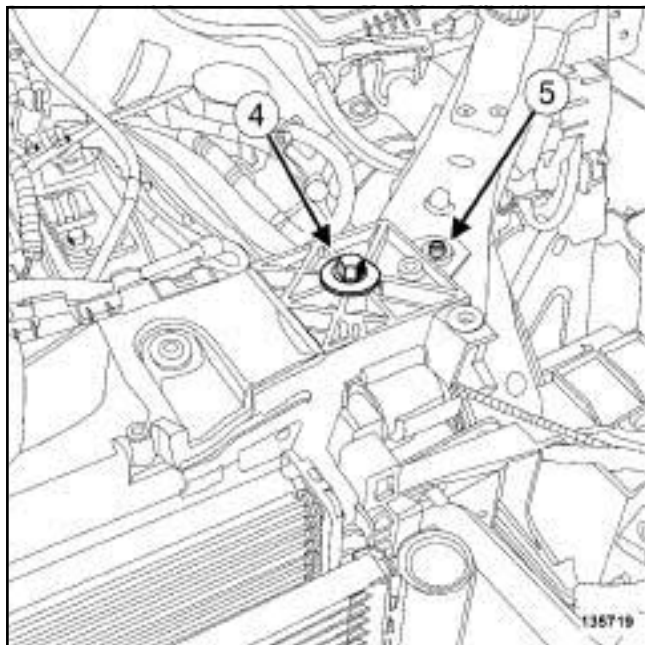
138486

- ☐ Unclip the bonnet catch cable (2) on the front end panel.
- ☐ Move aside the bonnet catch cable.



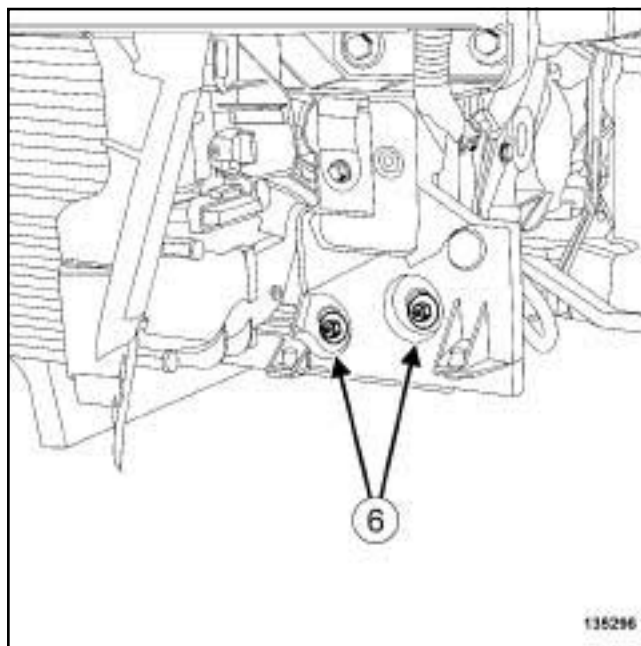
141397

- ☐ Disconnect the bonnet catch connector.
- ☐ Unclip the wiring of the bonnet catch from the front panel at (3) .



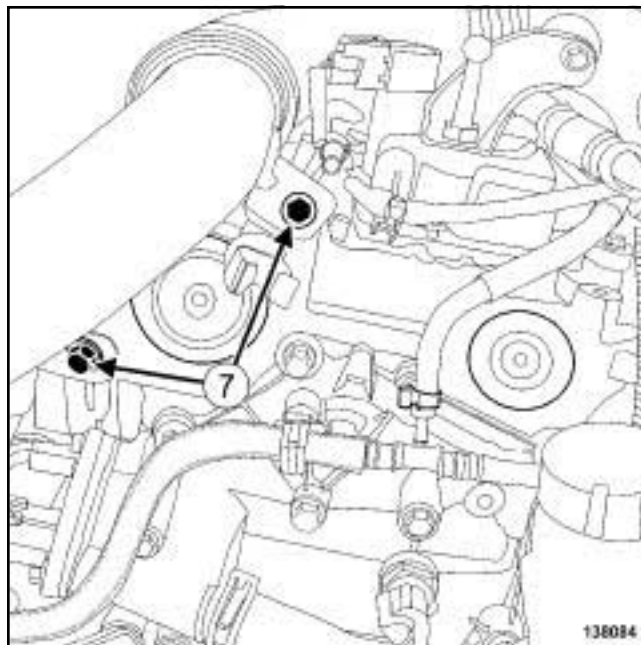
135719

- ☐ Remove:
 - the upper bolts (4) from the front end panel,
 - the front end panel clips (5) .



135296

- ☐ Remove the lower bolts (6) from the front end panel.
- ☐ Tilt the front end panel slightly towards the front of the vehicle.

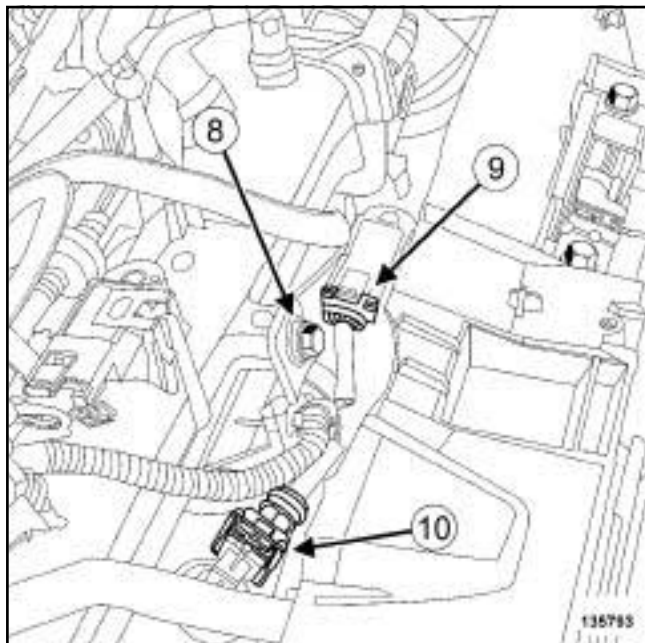


138084

- ☐ Remove the bolts (7) from the intercooler air inlet pipe.

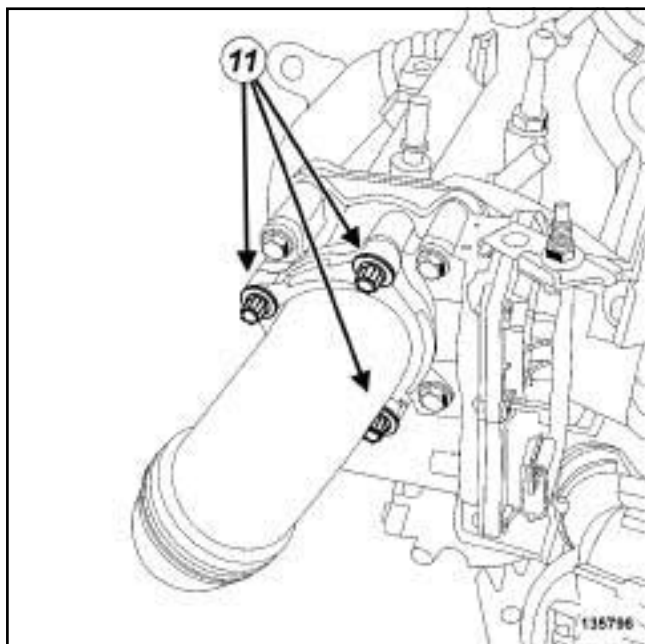
Intercooler air outlet pipe: Removal - Refitting

II - OPERATION FOR REMOVAL OF PART CONCERNED



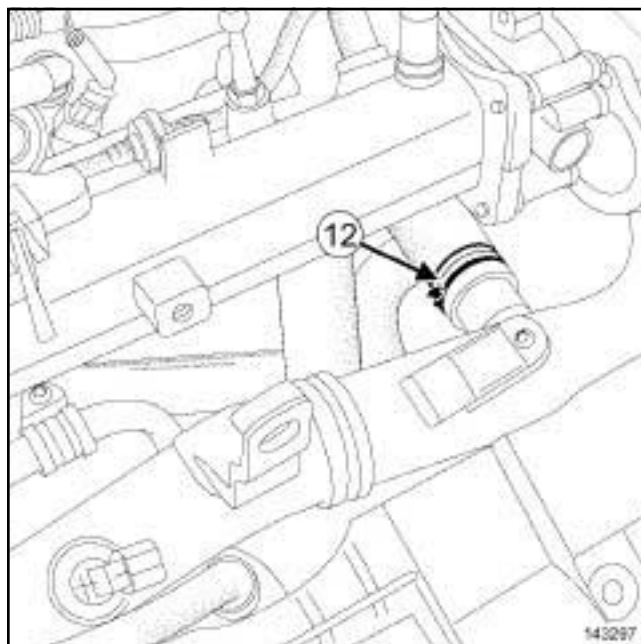
135793

- ☐ Remove the bolt (8) from the intercooler air outlet pipe on the inlet distributor.
- ☐ Disconnect:
 - the turbocharger pressure sensor connector (9) ,
 - the air temperature sensor connector (10) .
- ☐ Unclip the wiring from the intercooler outlet air pipe.



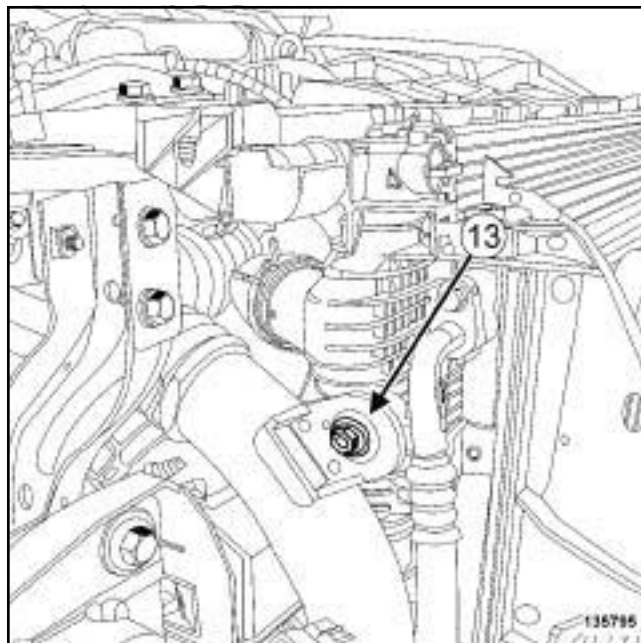
135796

- ☐ Remove the intercooler outlet pipe bolts (11) from the throttle unit.



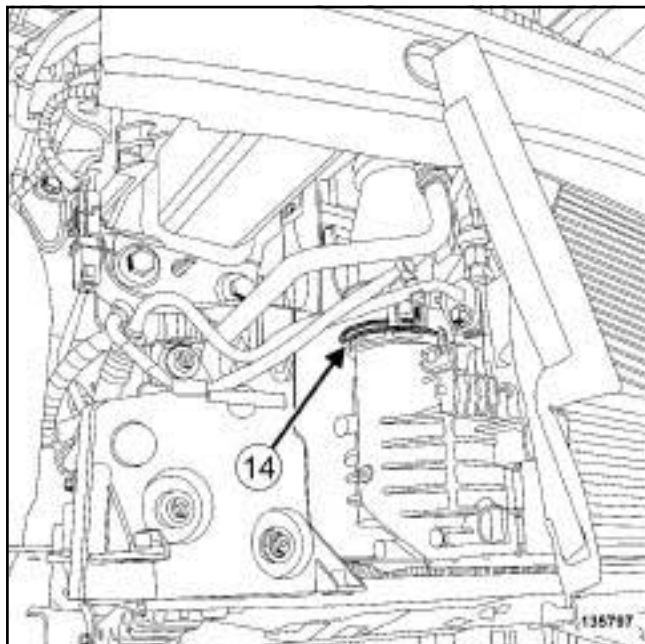
143297

- ☐ Separate the clip (12) on the sound pipe.
- ☐ Disconnect the sound pipe from the intercooler air outlet pipe.



135795

- ☐ Remove the bolt (13) from the intercooler air outlet pipe on the cooling radiator.



135797

- ☐ Move aside the clip (14) for the intercooler air outlet pipe.
- ☐ Remove:
 - the intercooler air outlet pipe,
 - the intercooler air outlet pipe seals.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ **parts always to be replaced: turbocharger air cooler air outlet pipe seal (10,09,04,05).**

II - REFITTING OPERATION FOR PART CONCERNED


- ☐ Fit the intercooler air outlet pipe equipped with a new seal.
- ☐ Clip the intercooler air outlet pipe onto the intercooler.
- ☐ Refit the bolt for the intercooler air outlet pipe onto the cooling radiator.
- ☐ Connect the sound pipe to the intercooler air outlet pipe.
- ☐ Fit the sound pipe clip.
- ☐ Refit the bolts of the intercooler outlet pipe on the throttle valve.
- ☐ Clip the wiring onto the intercooler air outlet pipe.
- ☐ Connect:
 - the air temperature sensor connector,

- the turbocharging pressure sensor connector.

- ☐ Refit the bolt of the intercooler air outlet pipe on the inlet distributor.

III - FINAL OPERATION

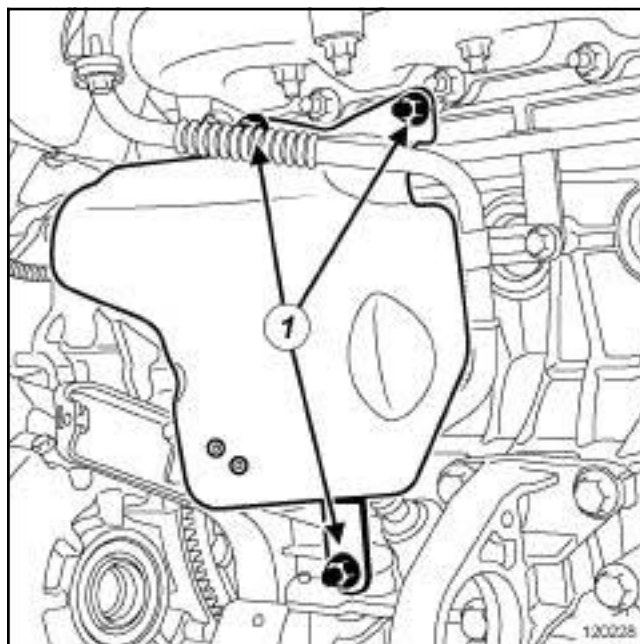
- ☐ Refit the bolts on the intercooler air inlet pipe.
- ☐ Fit the front end panel.
- ☐ Refit:
 - the lower bolts from the front end panel,
 - the front end panel upper bolts,
 - the upper clips on the front end panel.
- ☐ Clip the bonnet catch wiring onto the front end panel.
- ☐ Connect the bonnet catch connector.
- ☐ Fit the bonnet catch cable.
- ☐ Clip the bonnet catch cable on the front end panel.
- ☐ Refit:
 - the engine wiring channel bolts,
 - the bonnet catch (see **Bonnet lock: Removal - Refitting**) (52A, Non-side opening element mechanisms),
 - the front impact cross member (see **Front impact cross member: Removal - Refitting**) (41A, Front lower structure),
 - the front bumper supports (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure),
 - the headlights (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the side air deflectors,
 - the top air deflector,
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray,
 - the engine cover.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

Tightening torques 	
nut on the positive terminal of the starter	8 N.m
nut on the starter excitation terminal	7 N.m

REMOVING THE 3-MOUNTING POINT STARTER WITH THE HEAT SHIELD

I - REMOVAL PREPARATION OPERATION

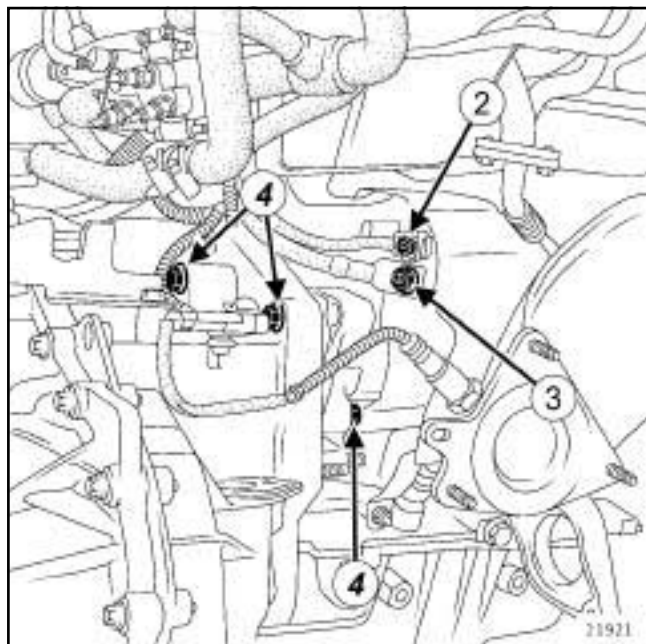
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Remove:
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the timing end lifting eye bolt,
 - the lifting eye on the timing end,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
 - the connecting hose (see **Connecting hose: Removal - Refitting**) ,
 - the engine undertray bolts,
 - the engine undertray,
 - the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page 19B-1) .



120228

- ☐ Remove:
 - the nuts (1) from the starter heat shield,
 - the starter heat shield.

II - OPERATION FOR REMOVAL OF PART CONCERNED

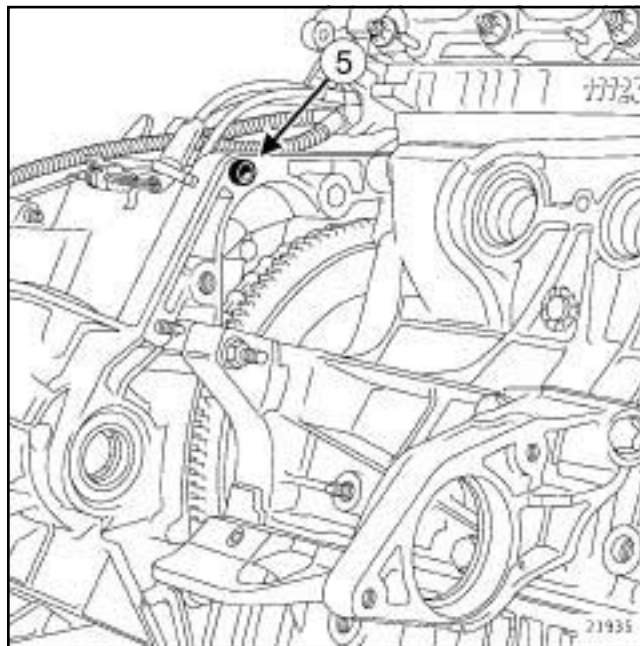


21921

- ☐ Remove:
 - the nut on the starter excitation terminal (2) ,
 - the nut on the positive terminal of the starter (3) .
- ☐ Move the starter wiring aside.
- ☐ Remove:
 - the starter bolts (4) ,
 - the starter.

REFITTING THE 3-MOUNTING POINT STARTER WITH THE HEAT SHIELD

I - REFITTING PREPARATION OPERATION



21935

- ☐ Check that the centring dowel (5) is in place.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the starter.
- ☐ Fit the starter wiring.
- ☐ Torque tighten:
 - the **nut on the positive terminal of the starter (8 N.m)**,
 - the **nut on the starter excitation terminal (7 N.m)**.

III - FINAL OPERATION

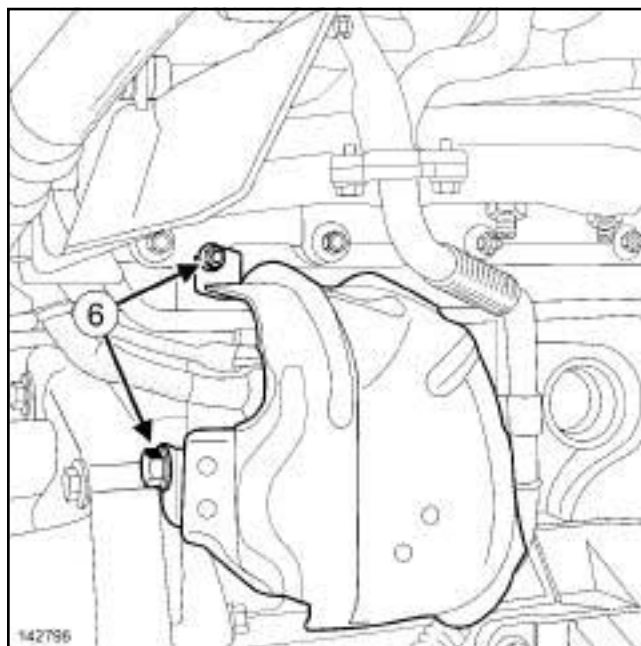
- ☐ Refit:
 - the heat shield to the starter,
 - the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page 19B-1) ,
 - the connecting hose (see **Connecting hose: Removal - Refitting**) ,
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
 - the engine undertray,

- the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the lifting eye on the timing end,
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

REMOVING THE 2-MOUNTING POINT STARTER WITH THE HEAT SHIELD

I - REMOVAL PREPARATION OPERATION

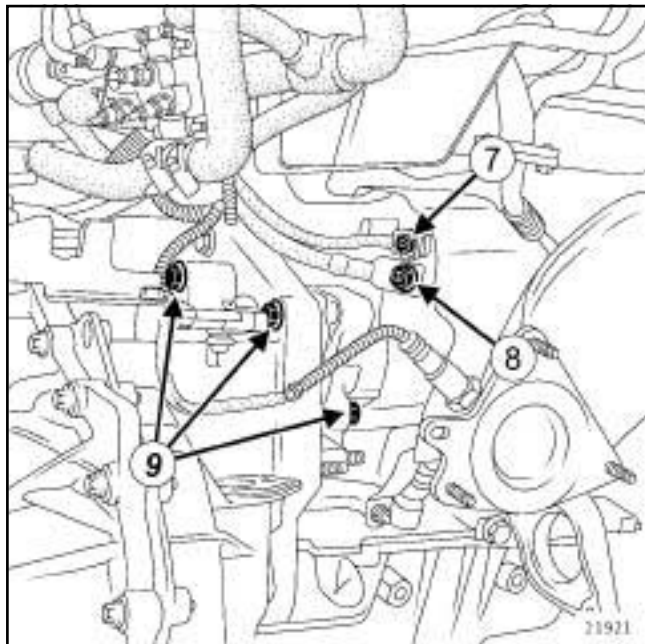
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
- the engine cover,
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery: Removal - Refitting**) (80A, Battery),
 - the air filter unit (see **Air filter unit: Removal - Refitting**) ,
 - the downstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) .



142796

- ☐ Remove:
- the bolt and nut (6) from the starter heat shield,
 - the starter heat shield.

II - OPERATION FOR REMOVAL OF PART CONCERNED

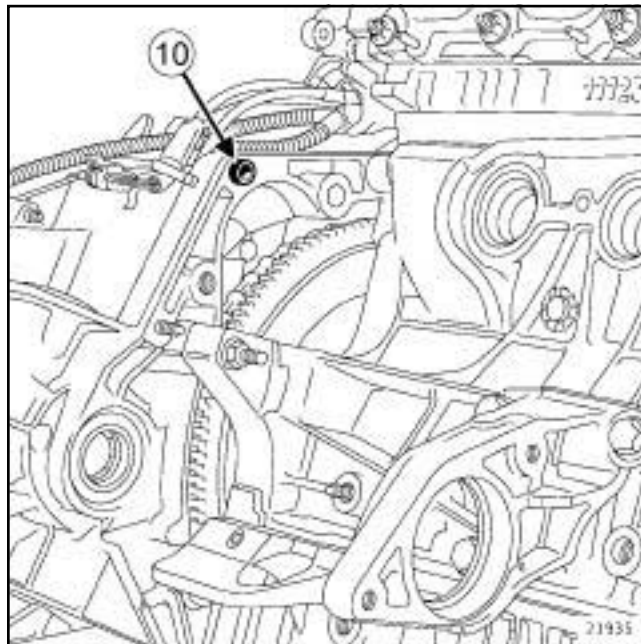


21921

- ☐ Remove:
 - the nut on the starter excitation terminal (7) ,
 - the nut on the positive terminal of the starter (8) .
- ☐ Move the starter wiring aside.
- ☐ Remove:
 - the starter bolts (9) ,
 - the starter.

REFITTING THE 2-MOUNTING POINT STARTER WITH THE HEAT SHIELD

I - REFITTING PREPARATION OPERATION



21935

- ☐ Check that the centring dowel (10) is in place.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the starter.
- ☐ Fit the starter wiring.
- ☐ Torque tighten:
 - the **nut of the positive terminal on the starter (8 N.m)**,
 - the **nut of the excitation terminal on the starter (7 N.m)**.

III - FINAL OPERATION

- ☐ Refit:
 - the heat shield to the starter,
 - the bolt and nut of the starter heat shield.
- ☐ Refit:
 - the downstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) ,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) ,
 - the battery tray (see **Battery: Removal - Refitting**) (80A, Battery),

STARTING - CHARGING

Starter: Removal - Refitting

16A

- the battery (see **Battery: Removal - Refitting**)
(80A, Battery),
- the engine cover.

IGNITION

Coils: Removal - Refitting

17A

Tightening torques

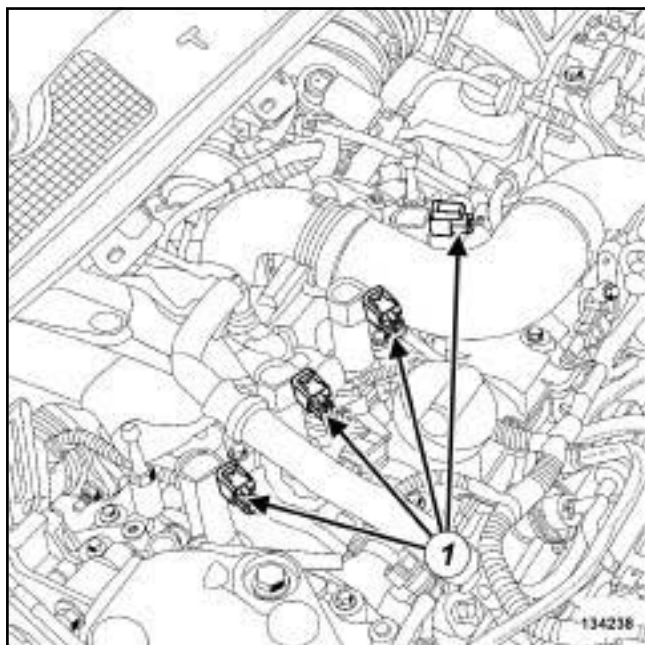
coil bolts	12 N.m
------------	--------

REMOVAL

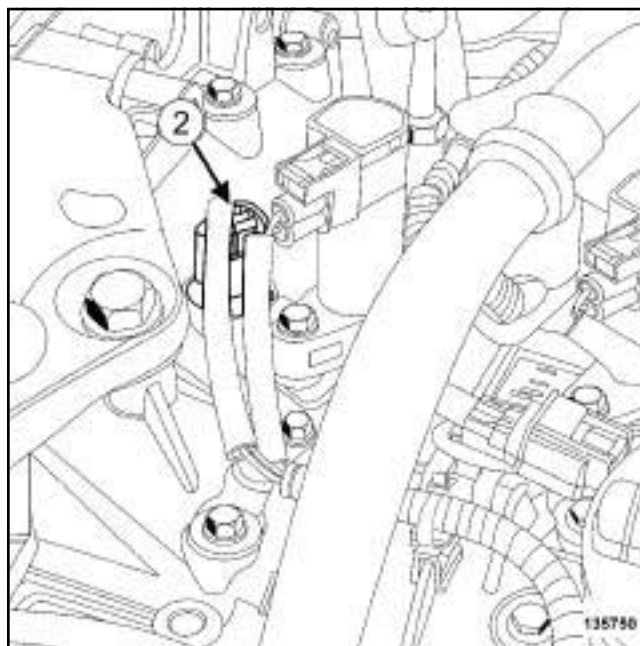
I - REMOVAL PREPARATION OPERATION

- ☐ Remove the front engine cover.

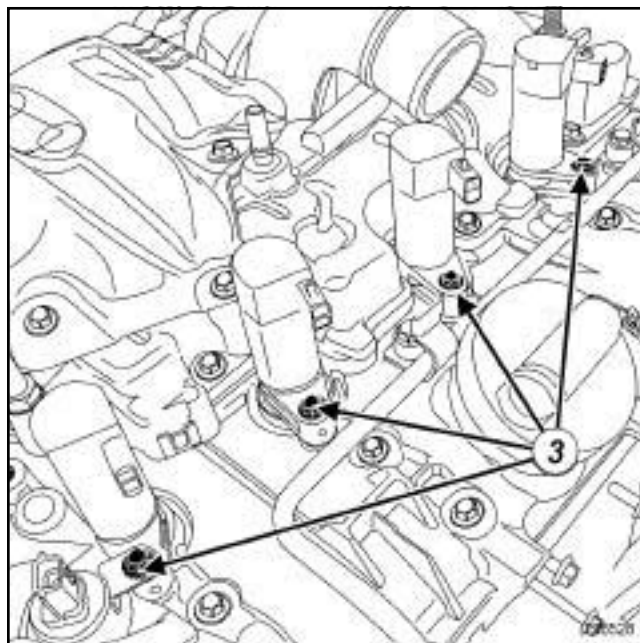
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Disconnect the coil connectors (1) .



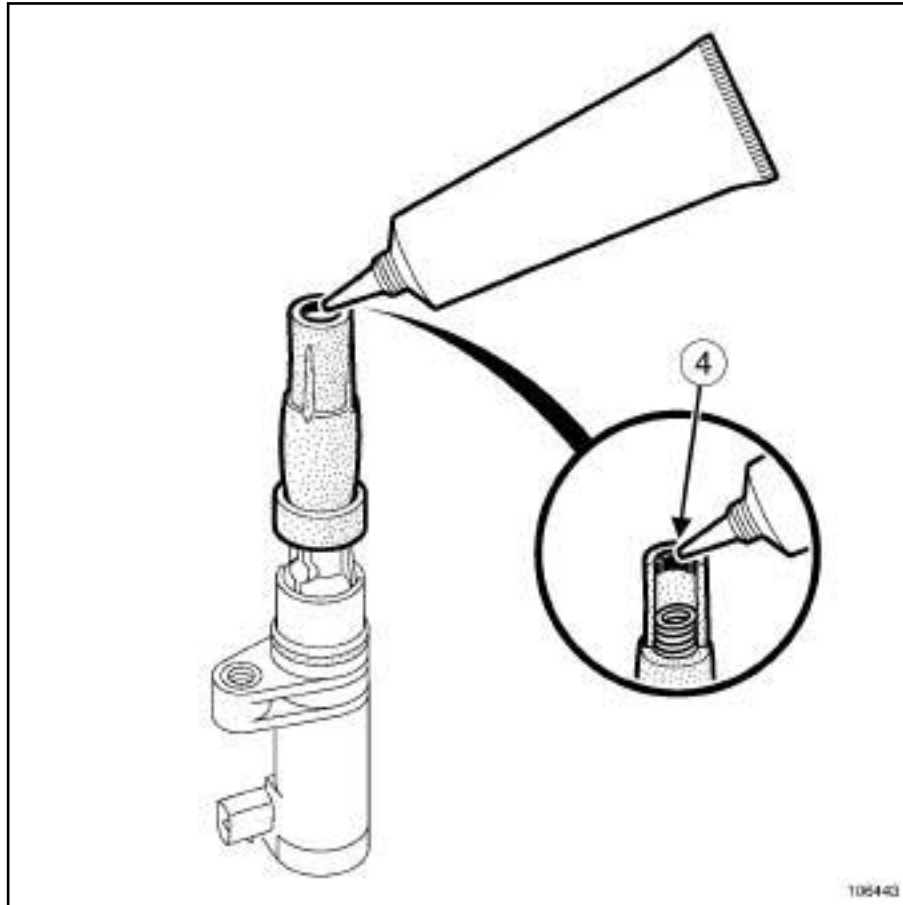
- ☐ Disconnect the connector (2) from the camshaft dephaser solenoid valve.



- ☐ Remove the coil bolts (3) .
- ☐ Move aside the camshaft dephaser solenoid valve.
- ☐ Remove the coils.

REFITTING

I - REFITTING PREPARATION OPERATION



106443

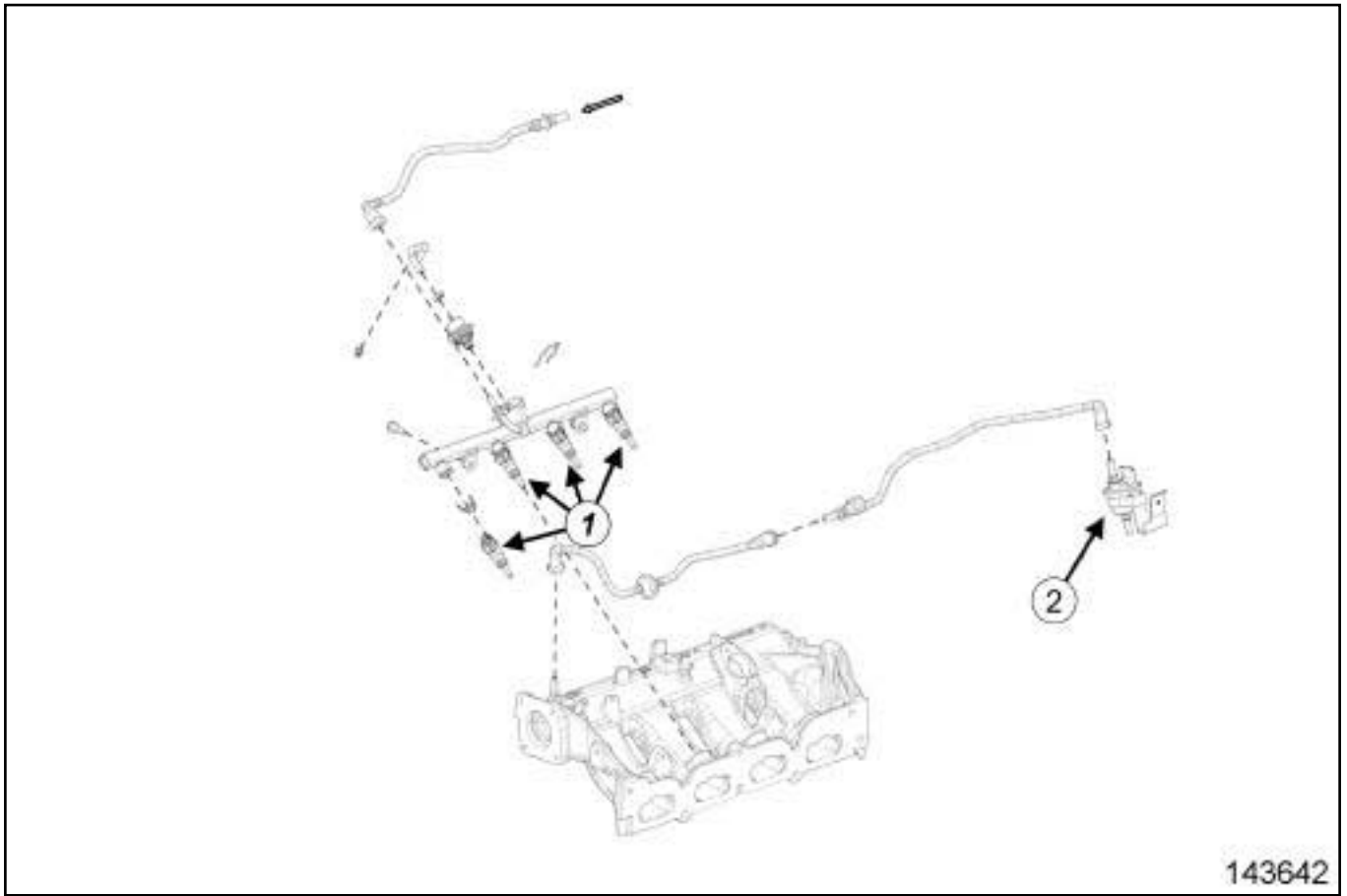
- ☐ Apply a bead of **FLUOSTAR 2L** grease (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) **2 mm** in diameter at **(4)** on the internal perimeter of the high tension caps on the four coils.

II - REFITTING OPERATION FOR PARTS CONCERNED

- ☐ Refit the coils.
- ☐ Position the camshaft dephaser solenoid valve.
- ☐ Always replace the ignition coil bolts
- ☐ Torque tighten the **coil bolts (12 N.m)**.
- ☐ Connect:
 - the camshaft dephaser solenoid valve connector,
 - the coil connectors.

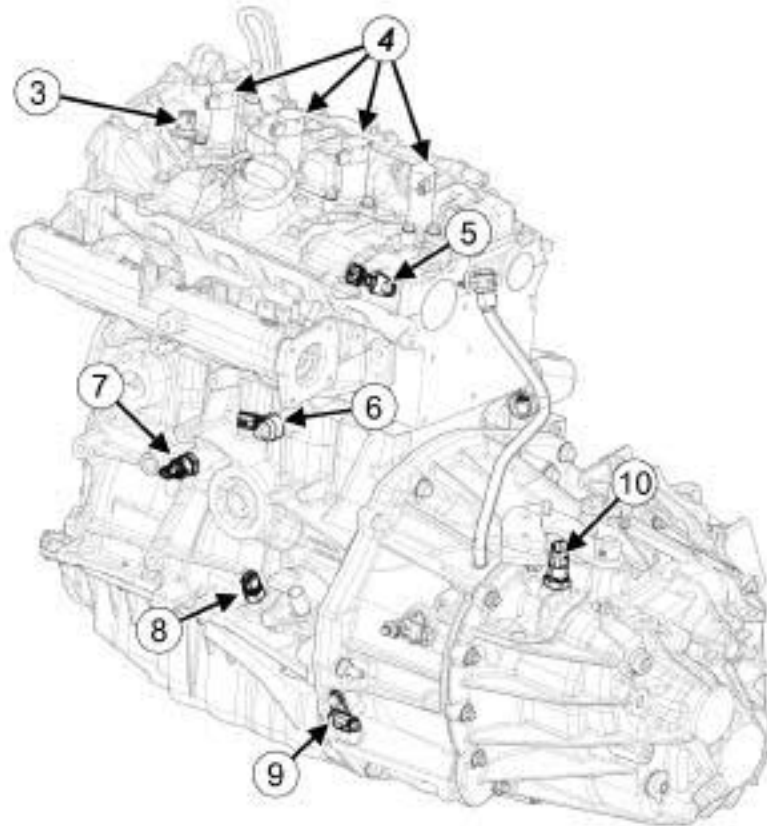
III - FINAL OPERATION

- ☐ Refit the engine cover.



143642

- | | |
|-----|----------------------------------------|
| (1) | Petrol injectors |
| (2) | Fuel vapour rebreathing solenoid valve |




143641

143641

- | | |
|------|----------------------------------|
| (3) | Camshaft dephaser solenoid valve |
| (4) | Coil |
| (5) | Camshaft position sensor |
| (6) | Pinking sensor |
| (7) | Oil pressure sensor |
| (8) | Oil level sensor |
| (9) | Crankshaft position sensor |
| (10) | Reverse gear switch |

Catalytic converter: Removal - Refitting

Tightening torques 	
catalytic converter studs on the turbocharger	9 N.m
catalytic converter upstream strut bolts on the cylinder block	50 N.m
catalytic converter upstream strut bolts on the catalytic converter	11 N.m
catalytic converter upper bracket bolt on the catalytic converter	11 N.m
catalytic converter nuts	40 N.m
catalytic converter strut bolt	8 N.m
catalytic converter strut nut	44 N.m
engine tie-bar support bolts	62 N.m

IMPORTANT

Catalytic converters contain ceramic fibres, these are contained within a closed unit, and cannot disperse. Drilling or cutting catalytic converters is prohibited.

IMPORTANT

Wear protective gloves during the operation.

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.

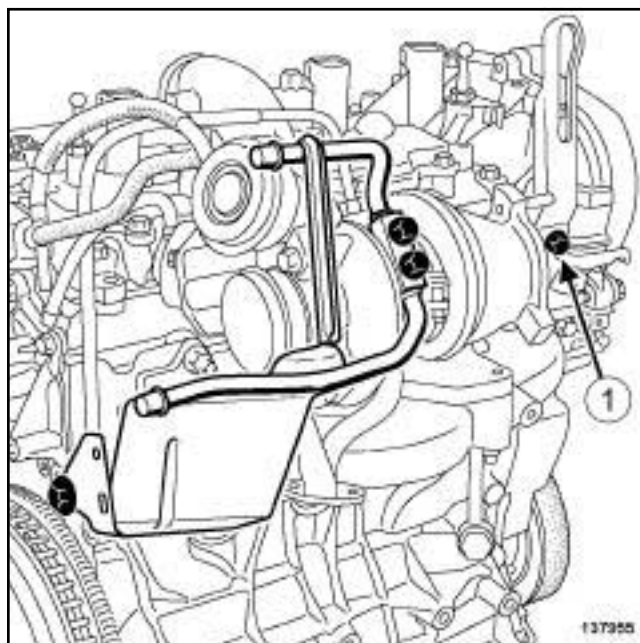
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- ☐ 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 cover,
- the engine undertray,
- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) .



137955

- ☐ Remove:

- the timing end lifting eye bolt (1) ,
- the lifting eye on the timing end,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

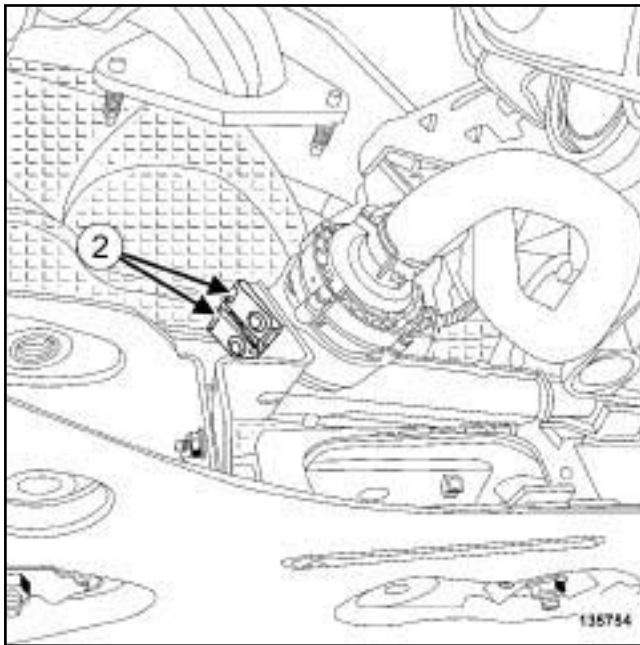
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox).

- ☐ Remove:

- the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page 29A-20) (29A, Driveshafts),

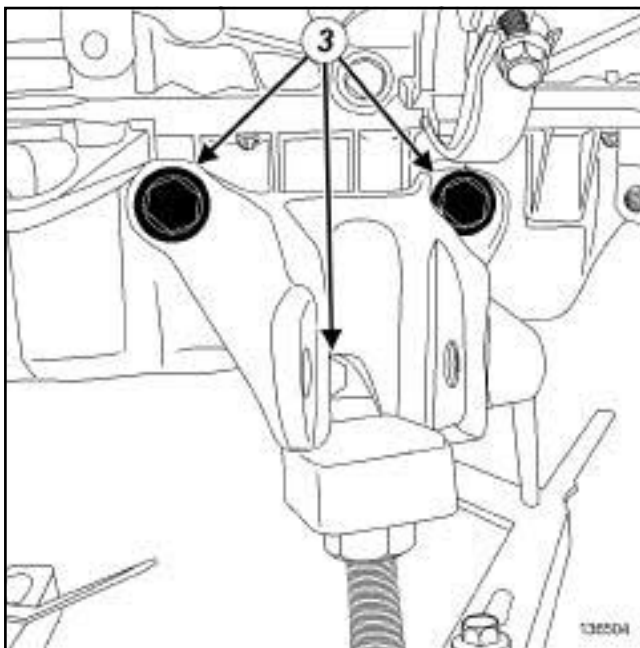
Catalytic converter: Removal - Refitting

- the right-hand differential output seal (see **Differential output seal: Removal - Refitting**) (21A, Manual gearbox),
- the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**),
- the connecting hose (see **Connecting hose: Removal - Refitting**).



135754

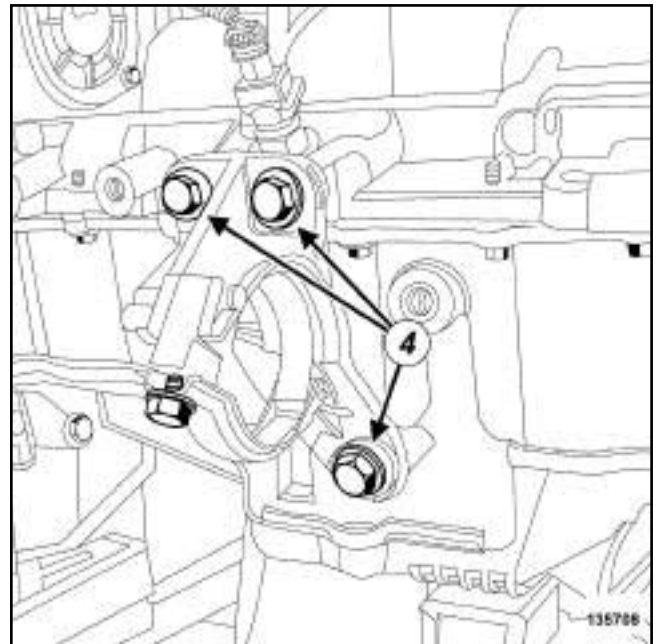
- ☐ Remove the clips (2) from the electric coolant pump.
- ☐ Move aside the electric coolant pump.



136504

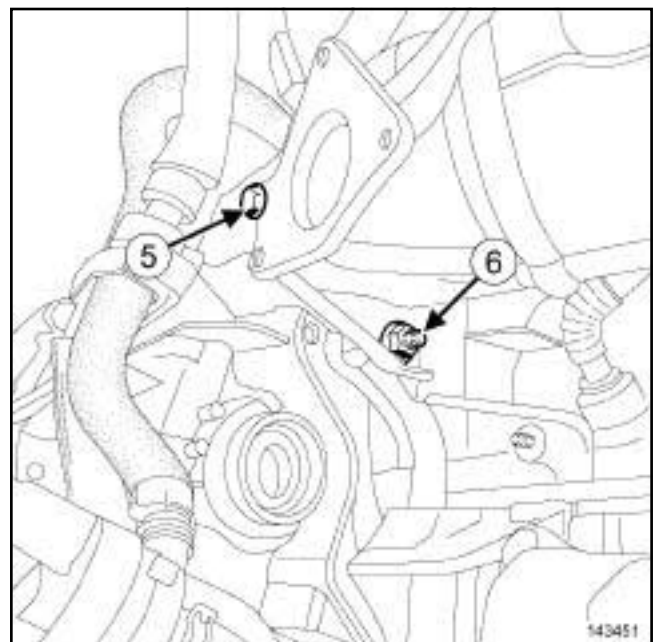
- ☐ Remove:
 - the lower engine tie-bar support bolts (3),

- the lower engine tie-bar support.



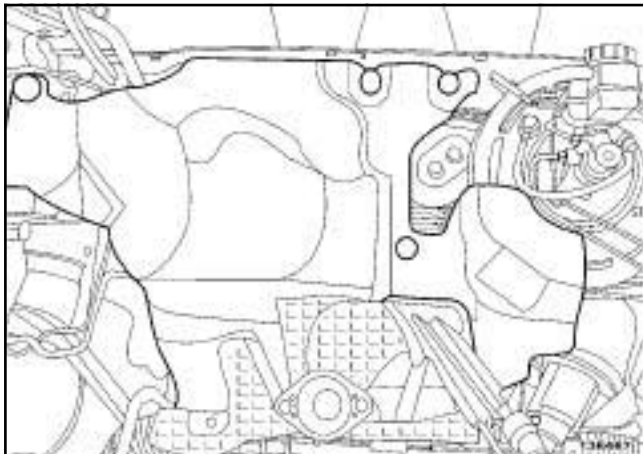
135708

- ☐ Remove:
 - the bolts (4) from the driveshaft relay bearing,
 - the driveshaft relay bearing.



143451

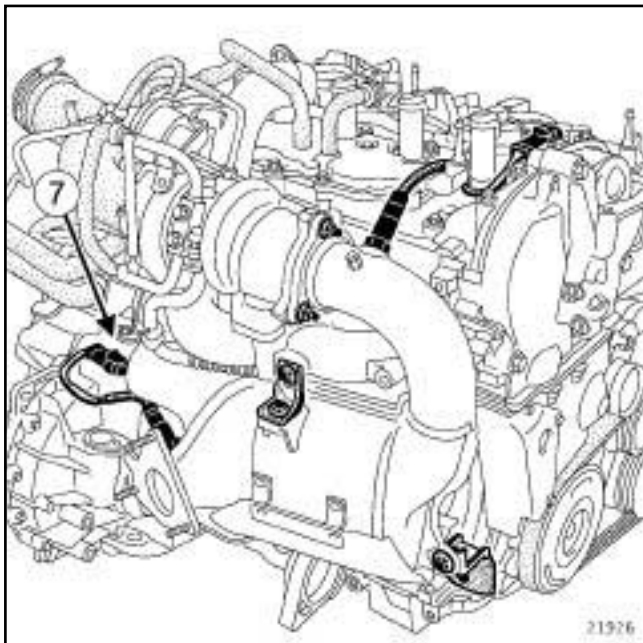
- ☐ Remove
 - the bolt (5) from the catalytic converter strut,
 - the catalytic converter strut nut (6),
 - the catalytic converter strut.



136467

❑ Remove:

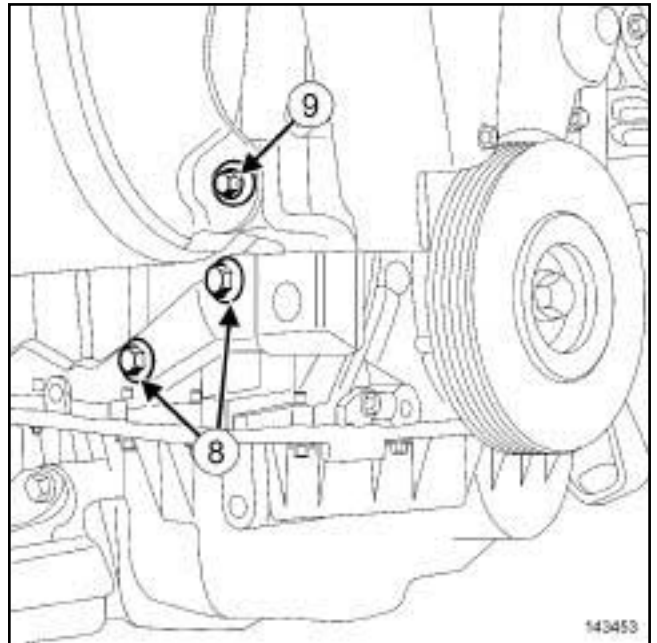
- the bulkhead heat shield bolts,
- the bulkhead heat shield.



21926

- ❑ Disconnect the downstream oxygen sensor connector (7) .
- ❑ Unclip the downstream oxygen sensor wiring.

II - OPERATION FOR REMOVAL OF PART CONCERNED

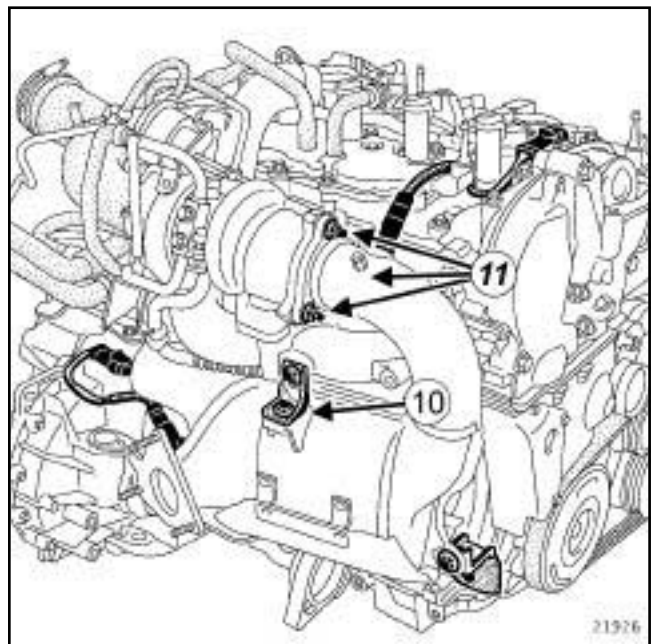


143453

143453

❑ Remove:

- the catalytic converter upstream strut bolts (8) from the cylinder block,
- the bolt (9) from the catalytic converter upstream strut,
- the catalytic converter upstream strut.



21926

❑ Remove:

- the bolt (10) from the catalytic converter upper bracket on the catalytic converter,

Catalytic converter: Removal - Refitting

- the catalytic converter nuts (11) ,
- the catalytic converter,
- the seal between the catalytic converter and the turbocharger.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: seal between turbocharger and catalytic converter (10,09,01,08).
- ☐ parts always to be replaced: catalytic converter stud on the turbocharger (if loosened) (10,09,01,04).
- ☐ Use **GREY ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the bearing faces of the catalytic converter.
- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the bearing faces of the catalytic converter.

Note:

If a stud loosens during removal, coat it with **HIGH RESISTANCE THREADLOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

Torque tighten the **catalytic converter studs on the turbocharger (9 N.m)**.

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.

If replacing the catalytic converter

- ☐ Remove the downstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) .
- ☐ Remove the downstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) .

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - a new seal between the turbocharger and the catalytic converter,

- the catalytic converter.

☐ Fit without tightening:

- the catalytic converter upstream strut bolt on the catalytic converter,
- the catalytic converter upper bracket bolt on the catalytic converter,
- the catalytic converter nuts.

☐ Torque tighten:

- the **catalytic converter upstream strut bolts on the cylinder block (50 N.m)**,
- the **catalytic converter upstream strut bolts on the catalytic converter (11 N.m)**,
- the **catalytic converter upper bracket bolt on the catalytic converter (11 N.m)**,
- the **catalytic converter nuts (40 N.m)**.

III - FINAL OPERATION

- ☐ Clip on the downstream oxygen sensor wiring.
- ☐ Connect the downstream oxygen sensor connector.
- ☐ Refit:
 - the bulkhead heat shield.
 - the connecting hose (see **Connecting hose: Removal - Refitting**) ,
 - the catalytic converter strut.
- ☐ Fit without tightening:
 - the catalytic converter strut nut,
 - the catalytic converter strut bolt.
- ☐ Torque tighten:
 - the **catalytic converter strut bolt (8 N.m)**,
 - the **catalytic converter strut nut (44 N.m)**.
- ☐ Refit:
 - the driveshaft relay bearing.
 - the lower engine tie-bar support,
- ☐ Torque tighten the **engine tie-bar support bolts (62 N.m)**.
- ☐ Fit the electric coolant pump.
- ☐ Refit:
 - the electric coolant pump clips,
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
 - a new right-hand differential output seal (see **Differential output seal: Removal - Refitting**) (21A, Manual gearbox),

Catalytic converter: Removal - Refitting

- the front right-hand wheel driveshaft (see **29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting**, page **29A-20**) (29A, Driveshafts).
- ☐ Fill the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox).
- ☐ Refit:
 - the front section of the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the lifting eye on the timing end,
 - the upstream oxygen sensor (see **Oxygen sensors: Removal - Refitting**) ,
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the engine undertray,
 - the engine cover.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

EXHAUST

Silencer: Removal - Refitting

19B

Equipment required

component jack

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

IMPORTANT

Wear heat protective gloves during the operation.

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.

REMOVAL

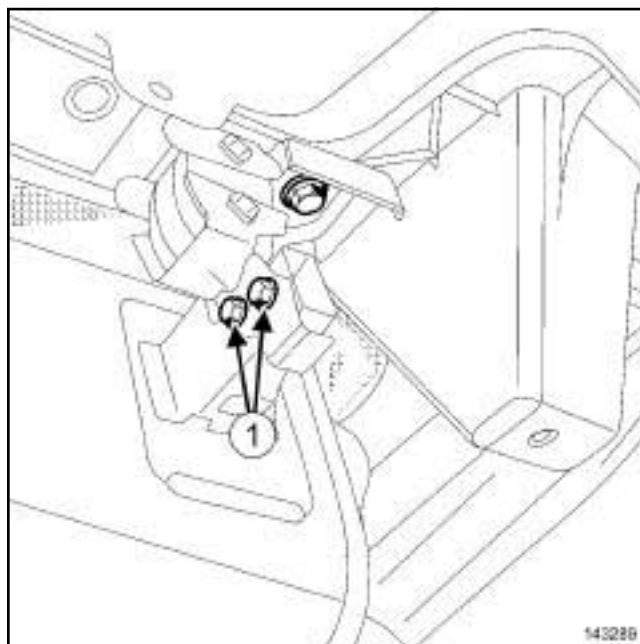
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the rear wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the rear wheel arch liners (see **Rear wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the rear wing lights (see **Rear wing light: Removal - Refitting**) (81A, Rear lighting),
 - the rear bumper (see **Rear bumper: Removal - Refitting**) (55A, Exterior protection).

II - OPERATION FOR REMOVAL OF PART CONCERNED

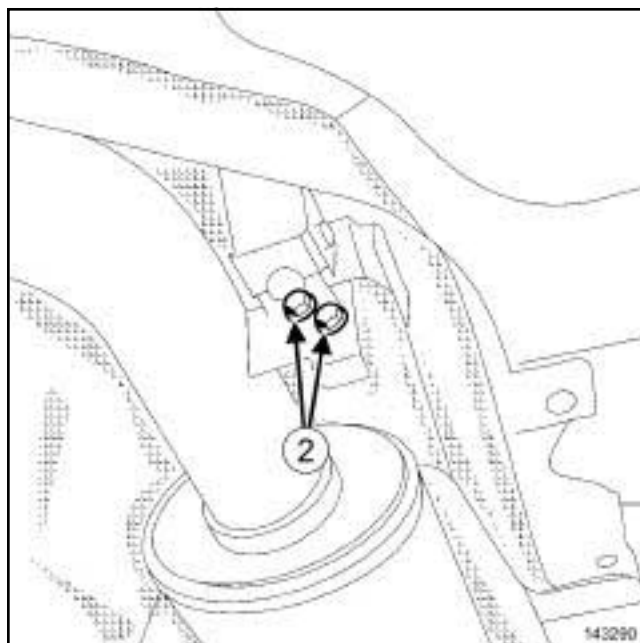
- ☐ Fit a **component jack** underneath the exhaust silencer.

- ☐ Cut the exhaust pipe (see **Exhaust: Precautions for the repair**) in the designated area to be cut (see **Exhaust: Parts and consumables for the repair**) .



143289

- ☐ Remove the exhaust silencer bolts (1) .



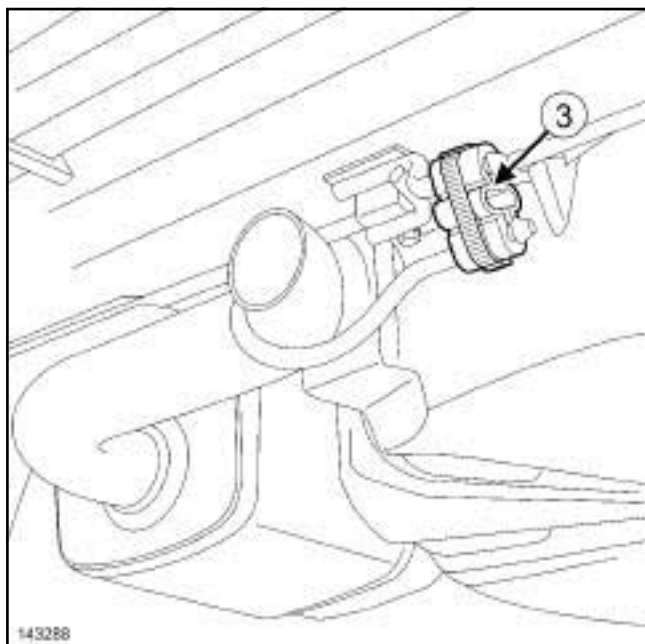
143290

- ☐ Remove the expansion chamber bolts (2) .

EXHAUST

Silencer: Removal - Refitting

19B



- ☐ Remove the retaining rubber mounting bush (3) from the silencer using the tool.
- ☐ Remove the silencer.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the exhaust silencer using a **component jack**.
- ☐ If the rubber mounting bush support is removed, fit without tightening the bolts of the rubber mounting bush support on the body.
- ☐ Fit the retaining rubber mounting bushes of the silencer.

Note:

Lubricate inside the holes of the retaining rubber mounting bush of the silencer in order to fit it more easily on the support and on the body.

- ☐ Refit:
 - the rubber mounting bush on the silencer,
 - the expansion chamber bolts,
 - the silencer bolts.

- ☐ Fit an After-Sales sleeve between the expansion chamber and the exhaust silencer (see **Exhaust: Precautions for the repair**) .

IMPORTANT

Position the « nut and bolt securing the sleeve » assembly so that the assembly cannot come into contact with the underbody.

IMPORTANT

Wear protective gloves during the operation.

- ☐ Refit the rear bumper (see **Rear bumper: Removal - Refitting**) (55A, Exterior protection).
- ☐ Adjust the silencer in relation to the rear bumper.
- ☐ Tighten the sleeve while supporting the exhaust pipe to ensure they are aligned.
- ☐ Bond an aluminium adhesive to the fog light casing.

Note:

This adhesive protects the fog light from the heat.

II - FINAL OPERATION

- ☐ Refit:
 - the rear wing lights (see **Rear wing light: Removal - Refitting**) (81A, Rear lighting),
 - the rear wheel arch liners (see **Rear wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the rear wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Check:
 - that all the exhaust pipe heat shields are in place and properly attached,
 - that there is no contact with the underbody,
 - that there are no leaks.

TANK

Fuel tank: Draining

19C

Special tooling required

Mot. 1311-08 Union for taking fuel pressure measurements.

Equipment required

pneumatic transfer pump for fuels

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.

IMPORTANT

Wear goggles with side protectors for this operation.

WARNING

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

WARNING

To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

DRAINING

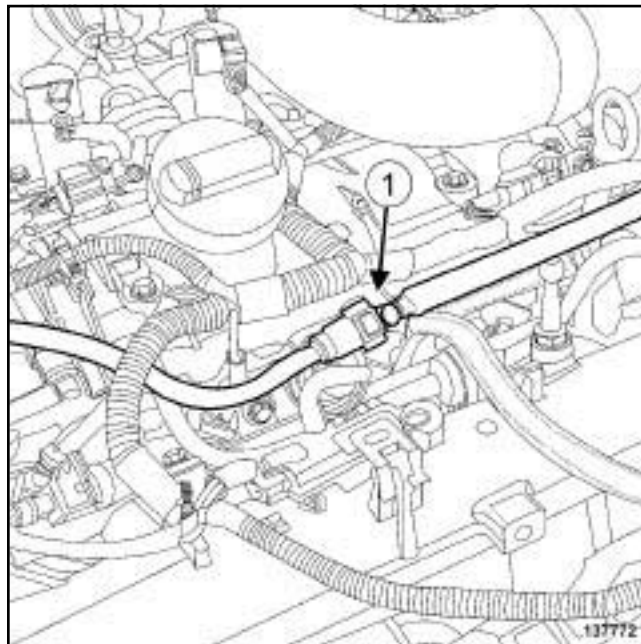
I - DRAINING PREPARATION OPERATION

- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

II - DRAINING OPERATION

- ☐ Remove the front engine cover.

- ☐ Disconnect the fuel supply pipe union from the injector rail.



137772


- ☐ Fit a « T » (**Mot. 1311-08**) union at (1) .
- ☐ Connect a **pneumatic transfer pump for fuels** to the « T » union outlet.
- ☐ Drain the fuel tank.

REFITTING

- ☐ Disconnect the **pneumatic transfer pump for fuels** from the « T » union outlet.
- ☐ Remove the « T » union (**Mot. 1311-08**).
- ☐ Connect the fuel supply union on the injector rail.
- ☐ Refit the engine cover.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

Special tooling required	
Mot. 1672	Lower engine support.
Mot. 1720	Engine stand.
Mot. 1913	Conversion support stud for Mot. 1720 tool

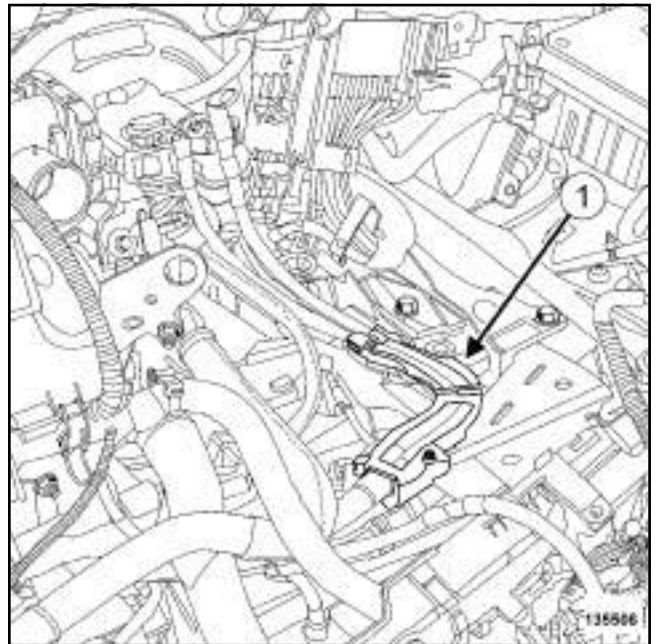
Equipment required
indelible pencil

Tightening torques 	
support bolts for the left-hand suspended engine mounting on the gear-box	62 N.m
support bolts for the left-hand suspended engine mounting on the vehicle body	62 N.m
support bolt for the left-hand suspended engine mounting on the gear-box	105 N.m

REMOVAL

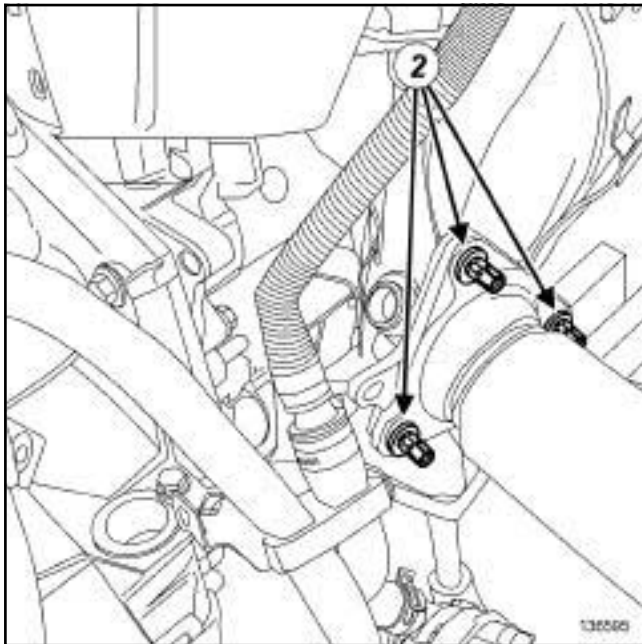
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine cover,
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the air filter unit (see **Air filter unit: Removal - Refitting**) .

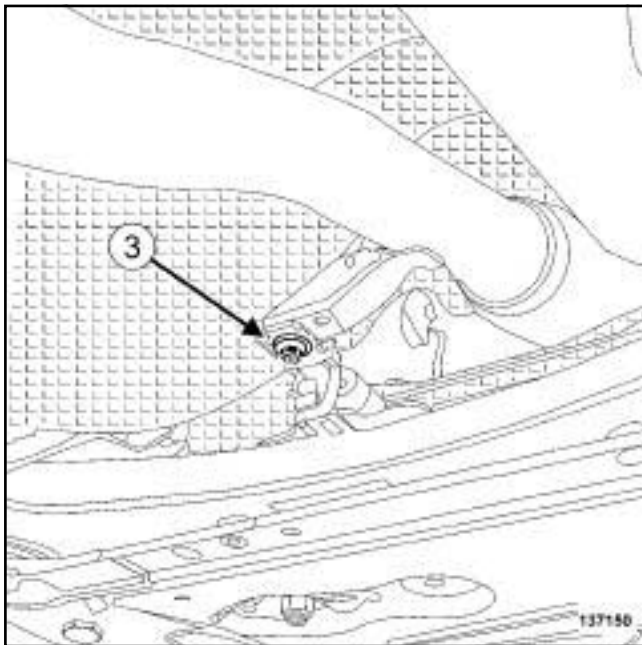


135506

- ☐ Unclip the battery wiring channel (1)
- ☐ Remove:
 - the engine undertray,
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) .



136595



137150

❑ Remove:

- the exhaust connecting hose nuts (2) ,
- the bolt (3) for the exhaust connecting hose rubber mounting bush,
- the exhaust connecting hose seal.

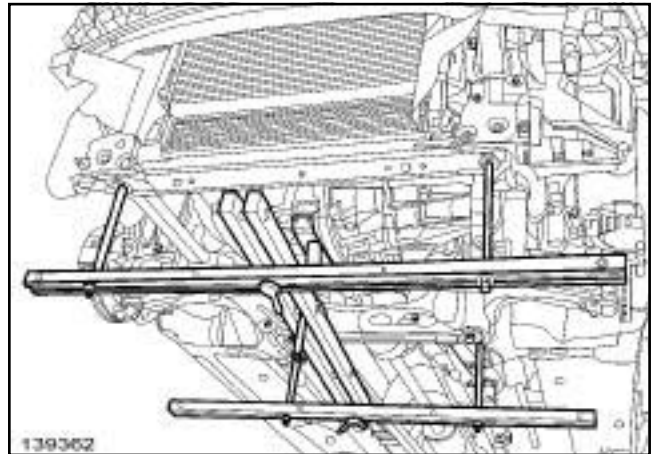
❑ Remove the exhaust connecting hose.

❑ Remove:

- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),

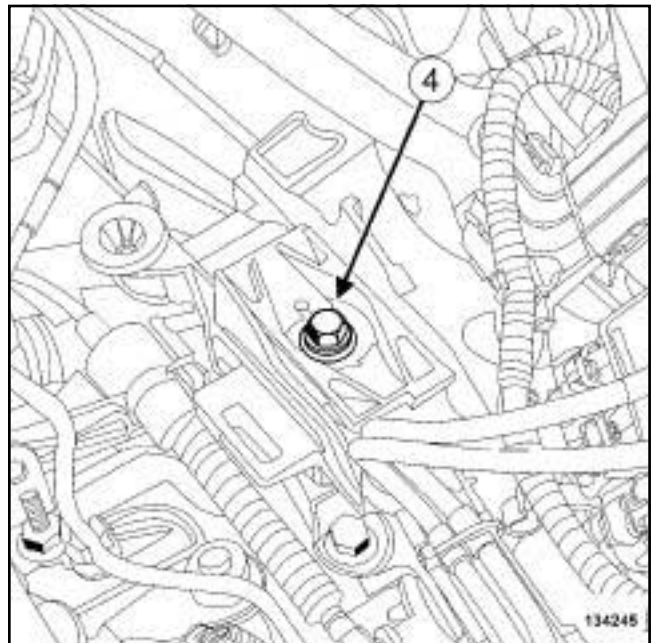
- the front section of the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

II - OPERATION FOR REMOVAL OF PART CONCERNED



139362

- ❑ Fit the tool (**Mot. 1672**) equipped with the (**Mot. 1720**) and (**Mot. 1913**).

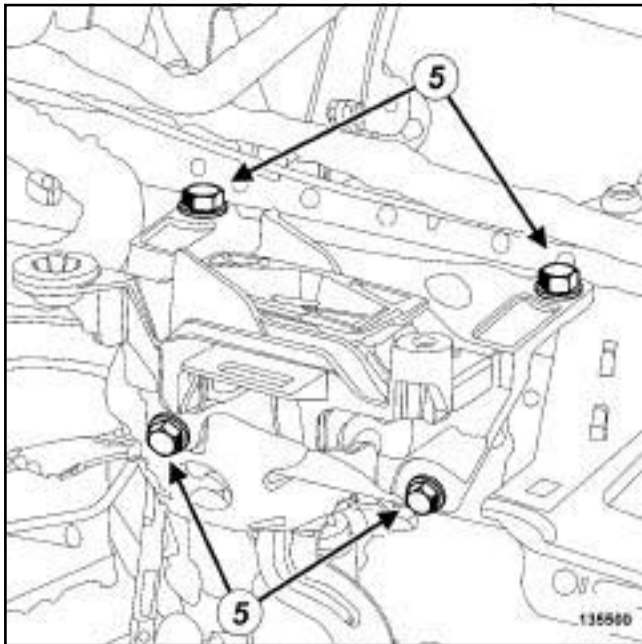


134245

- ❑ Remove the bolt (4) for the support on the manual gearbox from the left-hand suspended engine mounting.

- ❑ Detach the support on the gearbox from the left-hand suspended engine mounting rubber pad.

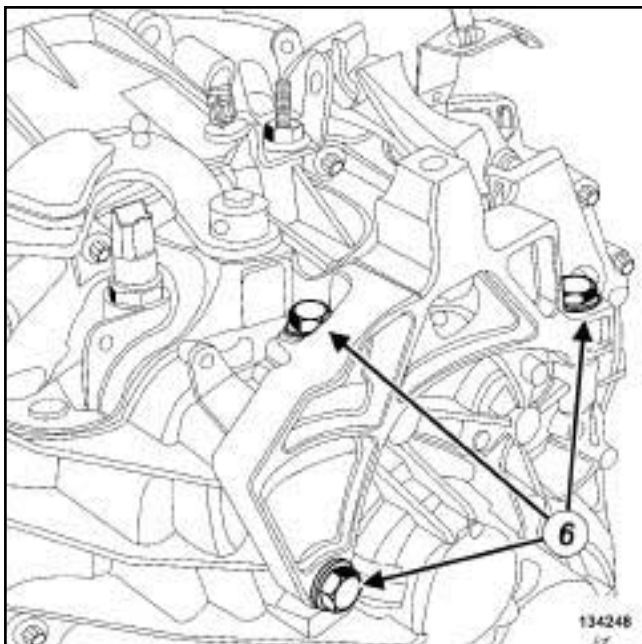
- ❑ Mark the position of the left-hand suspended engine mounting support on the vehicle body using a **indelible pencil**.



135500

Remove:

- the bolts (5) from the left-hand suspended engine mounting support on the body,
- the left-hand suspended engine mounting support on the body.



134248

Remove:

- the left-hand suspended engine mounting support bolts (6) on the gearbox,
- the left-hand suspended engine mounting support on the gearbox.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ parts always to be replaced: seal between catalytic converter and exhaust downpipe hose (10, 08,02,21).

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the left-hand suspended engine mounting support on the gearbox.
- ❑ Torque tighten the **support bolts for the left-hand suspended engine mounting on the gearbox (62 N.m)**.
- ❑ Fit the left-hand suspended engine mounting support on the body.
- ❑ Position the support on the left-hand suspended engine mounting according to the marks made during removal.
- ❑ Torque tighten:
 - the **support bolts for the left-hand suspended engine mounting on the vehicle body (62 N.m)**,
 - the **support bolt for the left-hand suspended engine mounting on the gearbox (105 N.m)**.
- ❑ Remove the tool (Mot. 1672) equipped with the tools (Mot. 1720) and (Mot. 1913).

III - FINAL OPERATION


- ❑ Refit:
 - the front section of the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- ❑ Fit the exhaust connecting hose.
- ❑ Refit:
 - a seal to the new exhaust connecting hose,
 - the exhaust connecting hose nuts,
 - the bolt for the exhaust connecting hose rubber mounting bush,
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
 - the engine undertray.
- ❑ Clip on the battery wiring channel.

□ Refit:

- the air filter unit (see **Air filter unit: Removal - Refitting**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the engine cover.

Special tooling required	
Mot. 1672	Lower engine support.
Mot. 1720	Engine stand.
Mot. 1913	Conversion support stud for Mot. 1720 tool

Equipment required	
indelible pencil	

Tightening torques 	
upper engine tie-bar bolts	115 N.m
bolts for the right-hand suspended engine mounting rubber pad	62 N.m
bolts for the right-hand suspended engine mounting cover	62 N.m

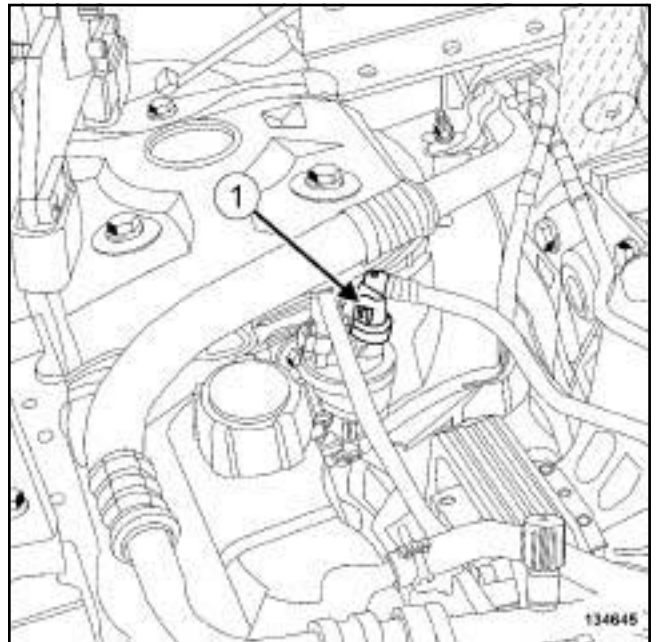
WARNING

To prevent impurities from entering the circuit, place protective plugs on all fuel circuit components exposed to the open air.

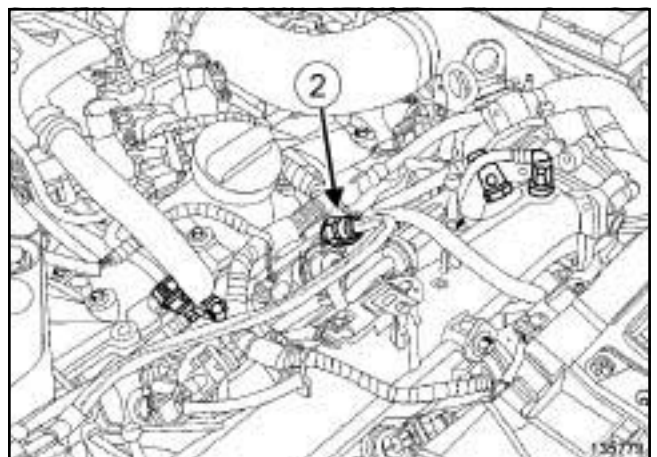
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine cover,
 - the engine undertray,
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) .

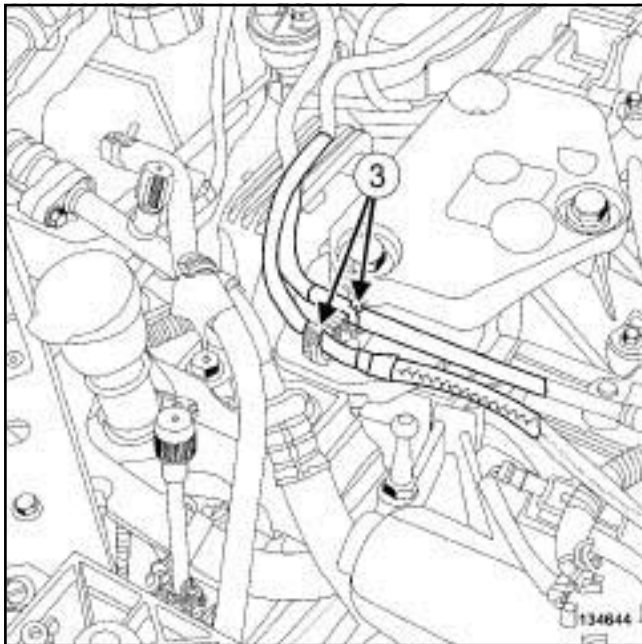


134645



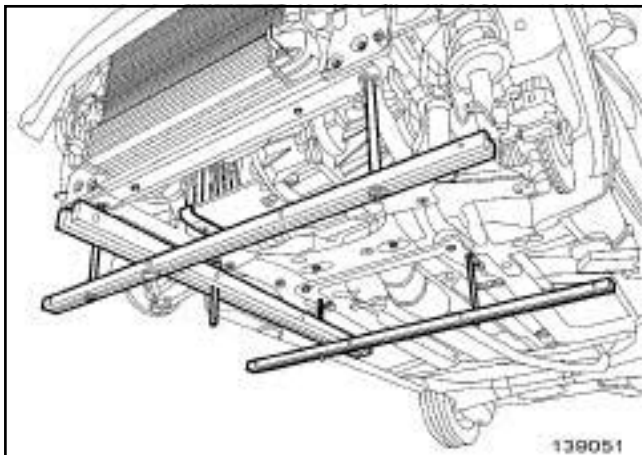
135779

- ☐ Disconnect:
 - the petrol vapour rebreathing solenoid valve pipe (1) ,
 - the fuel supply pipe (2) on the injector rail,
- ☐ Insert the blanking plugs.



134644

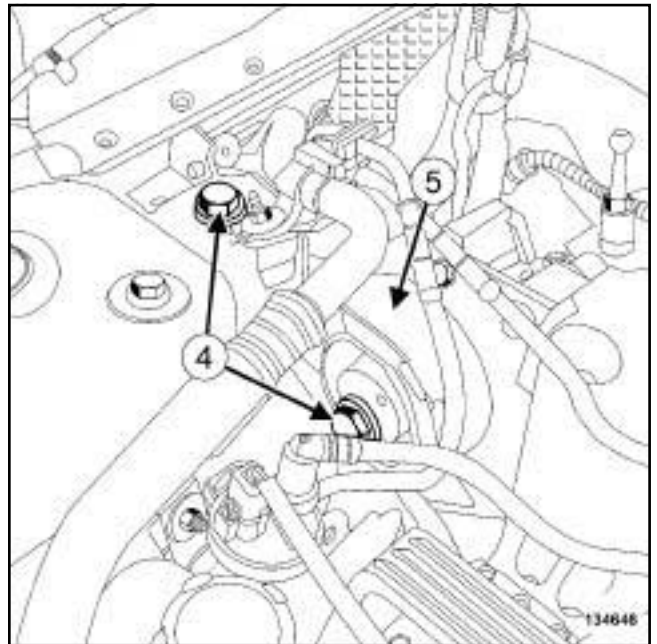
- ❑ Unclip the fuel pipes from the cover of the right-hand suspended engine mounting at (3) .



139051

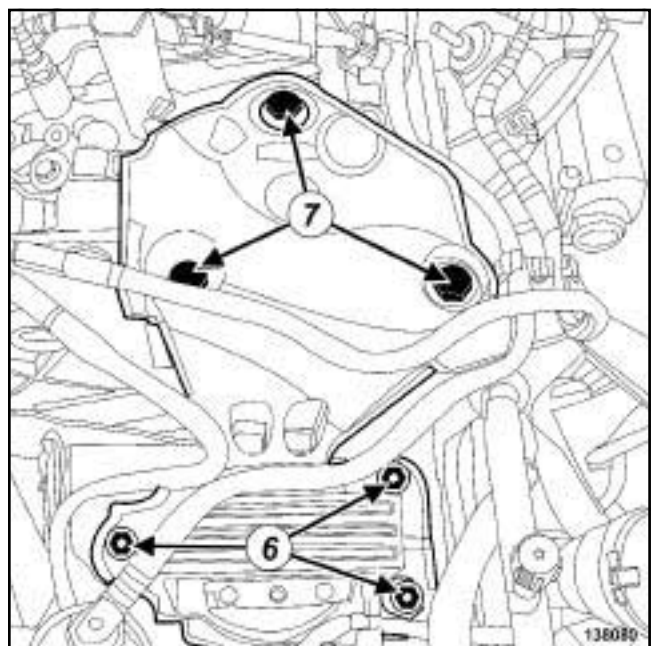
- ❑ Fit the tool (**Mot. 1672**) equipped with the (**Mot. 1720**) and (**Mot. 1913**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



134646

- ❑ Remove:
 - the upper engine tie-bar bolts (4) ,
 - the upper engine tie-bar (5) .



138080

- ❑ Mark the position of the right-hand suspended engine mounting on the body using a **indelible pencil**.
- ❑ Remove:
 - the bolt (6) from the rubber pad on the right-hand suspended engine mounting,

Right-hand suspended engine mounting: Removal - Refitting

- the bolts (7) from the right-hand suspended engine mounting cover,
- the right-hand suspended engine mounting « cover - rubber pad » assembly.

REFITTING**I - REFITTING OPERATION FOR PART CONCERNED**

- ☐ Position the right-hand suspended engine mounting « cover - rubber pad » assembly in relation to the markings made during removal.
- ☐ Fit without tightening:
 - the bolts for the right-hand suspended engine mounting cover,
 - the bolts for the right-hand suspended engine mounting rubber pad.
- ☐ Refit the upper engine tie-bar.
- ☐ Torque tighten:
 - the **upper engine tie-bar bolts (115 N.m)**,
 - the **bolts for the right-hand suspended engine mounting rubber pad (62 N.m)**,
 - the **bolts for the right-hand suspended engine mounting cover (62 N.m)**.

II - FINAL OPERATION

- ☐ Remove the tool (**Mot. 1672**) equipped with the tools (**Mot. 1720**) and (**Mot. 1913**).
- ☐ Clip the fuel pipes onto the cover of the front right-hand suspended engine mounting.
- ☐ Remove the blanking plugs.
- ☐ Connect:
 - the fuel supply pipe to the injector rail,
 - the pipe to the fuel vapour rebreathing solenoid valve.
- ☐ Refit:
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) ,
 - the engine undertray,
 - the engine cover.

AUTOMATIC GEARBOX

Automatic gearbox: Removal - Refitting

23A

FK0

Special tooling required

Mot. 1448	Remote operation pliers for hose clips.
Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required

workshop hoist

Diagnostic tool

Tightening torques

automatic gearbox bell housing bolts	62 N.m
converter nuts	44 N.m

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 goggles with side protectors for this operation.

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

WARNING

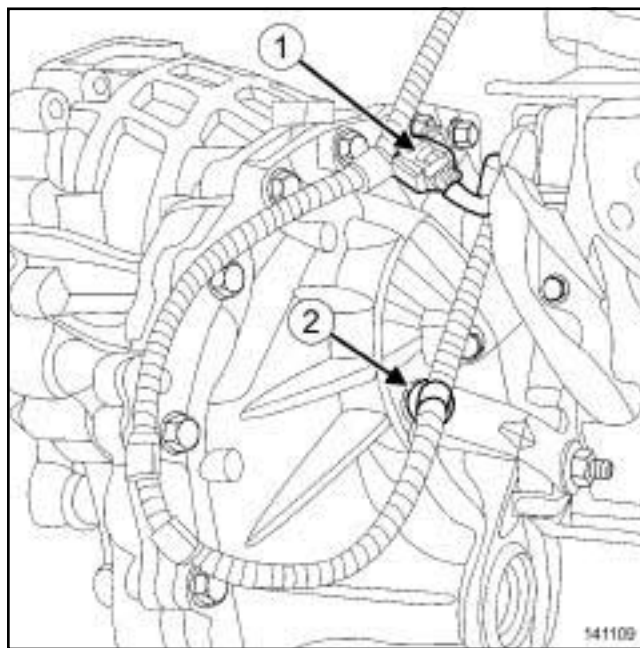
To avoid any corrosion or damage, protect the areas on which fuel is likely to run.

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

- ☐ Remove the « engine - automatic gearbox » assembly (see **10A, Engine and cylinder block assembly, Engine - gearbox assembly: Removal - Refitting**, page **10A-1**) (10A, Engine and cylinder block assembly).



141109

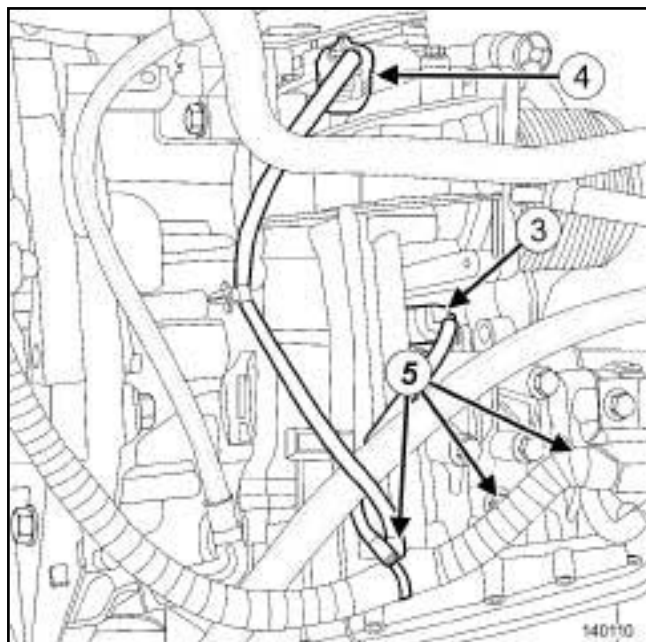
- ☐ Disconnect the output speed sensor connector (1) from the automatic gearbox.
- ☐ Unclip the wiring at (2) .

AUTOMATIC GEARBOX

Automatic gearbox: Removal - Refitting

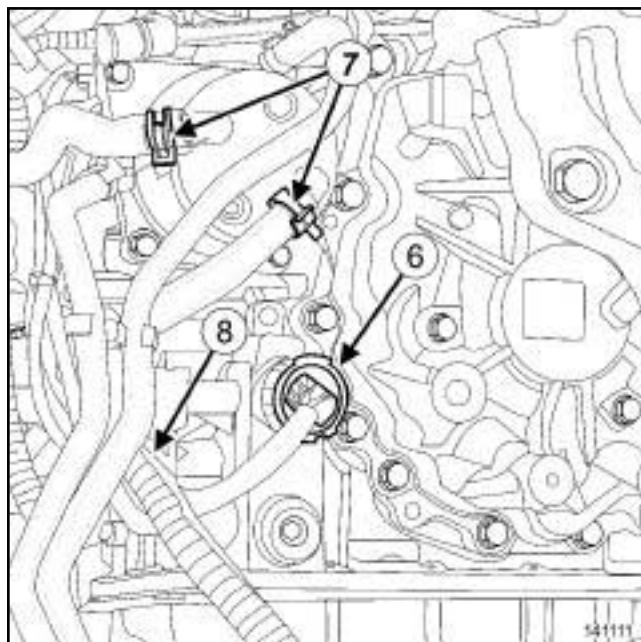
23A

FK0



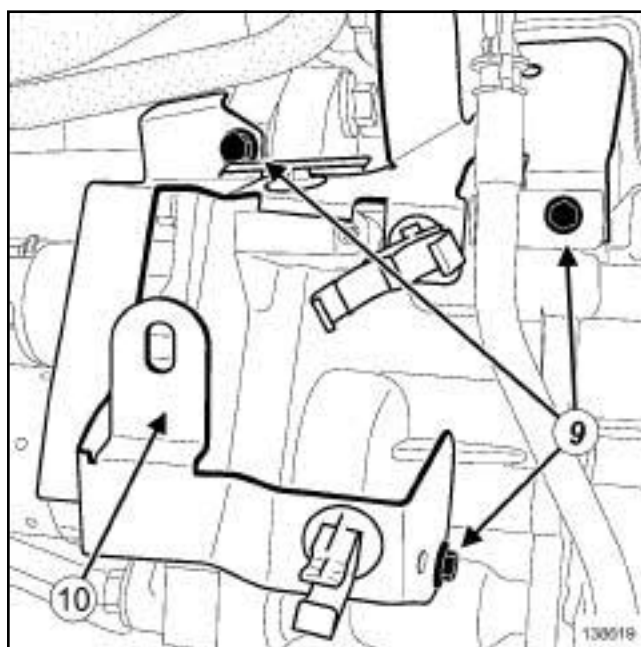
140110

- ❑ Disconnect:
 - the input speed sensor connector (3) from the automatic gearbox,
 - the multifunction switch connector (4) .
- ❑ Unclip the automatic gearbox wiring at (5) .



141111

- ❑ Disconnect the automatic gearbox hydraulic distributor connector (6) .
- ❑ Remove:
 - the automatic gearbox electrical wiring at (8) ,
 - the automatic gearbox oil cooler hose clips (7) using the (Mot. 1448).
- ❑ Disconnect the coolant hoses from the automatic gearbox oil cooler.



138619

- ❑ Remove:
 - the bolts (9) from the automatic gearbox oil cooler hose mounting,

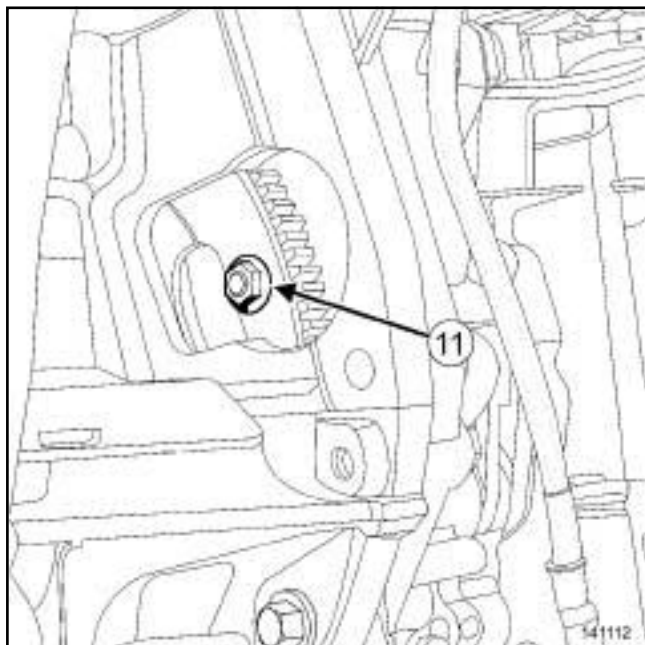
AUTOMATIC GEARBOX

Automatic gearbox: Removal - Refitting

23A

FK0

- the automatic gearbox oil cooler hose mounting (10) ,
- the automatic gearbox oil gauge,
- the starter (see **16A, Starting - Charging, Starter: Removal - Refitting**, page **16A-1**) (16A, Starting - Charging).



141112

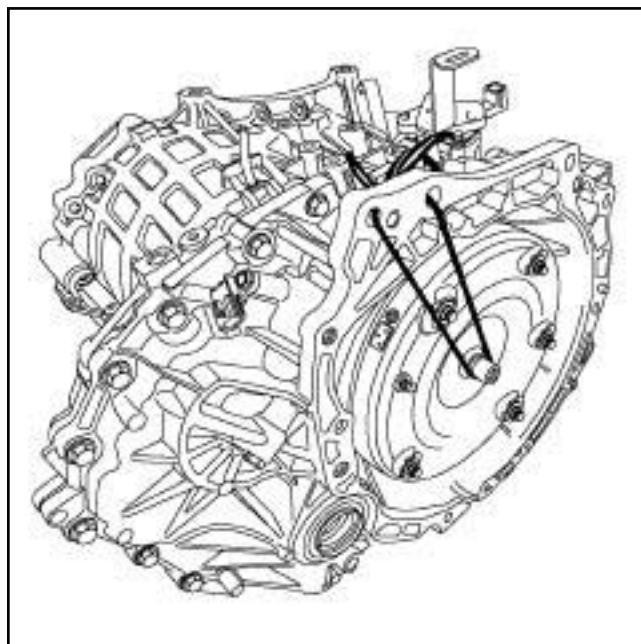
❑ Remove:

- the converter nuts (11) by rotating the crankshaft clockwise,
- the « engine - automatic gearbox » assembly from the (**Mot. 1390**) using a **workshop hoist**.

II - OPERATION FOR REMOVAL OF PART CONCERNED

❑ Remove:

- the automatic gearbox bell housing bolts,
- the automatic gearbox.



130021

- ❑ Secure the converter with string to prevent it from being dislodged.

REFITTING

I - REFITTING PREPARATION OPERATION

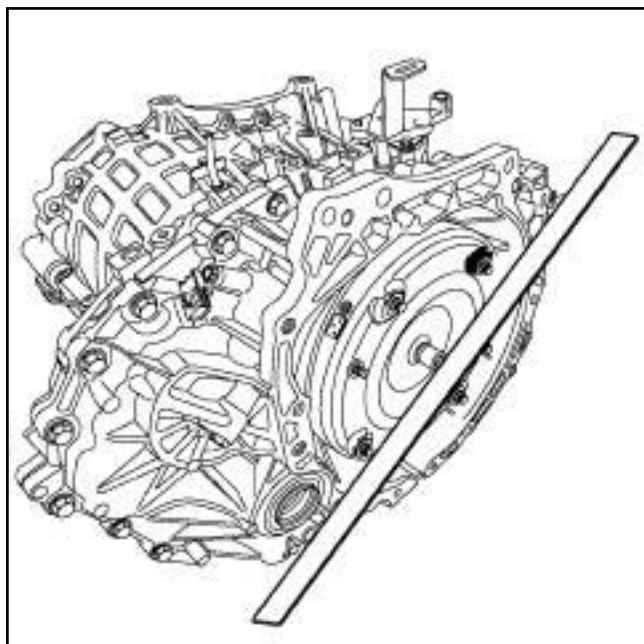
- ❑ Check that the drive plate is not damaged or runout (**0.2 mm** permitted runout).
- ❑ Always replace the converter nuts.
- ❑ Check that the centring dowels are in place.
- ❑ Remove the string immobilising the converter.

AUTOMATIC GEARBOX

Automatic gearbox: Removal - Refitting

23A

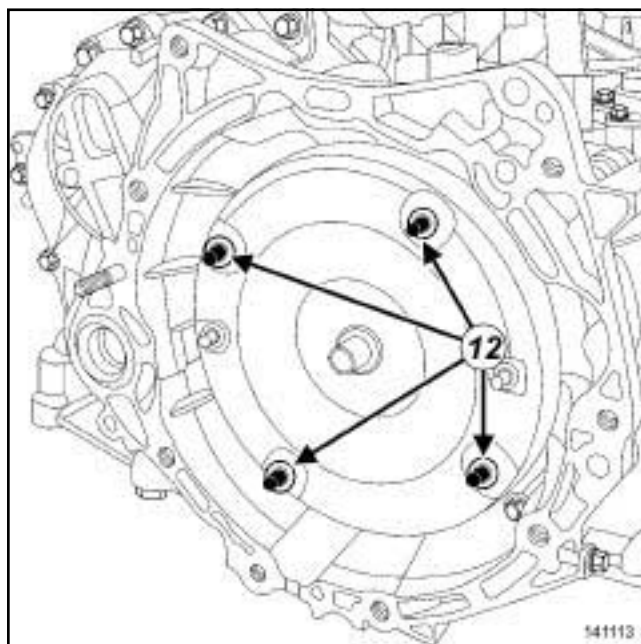
FK0



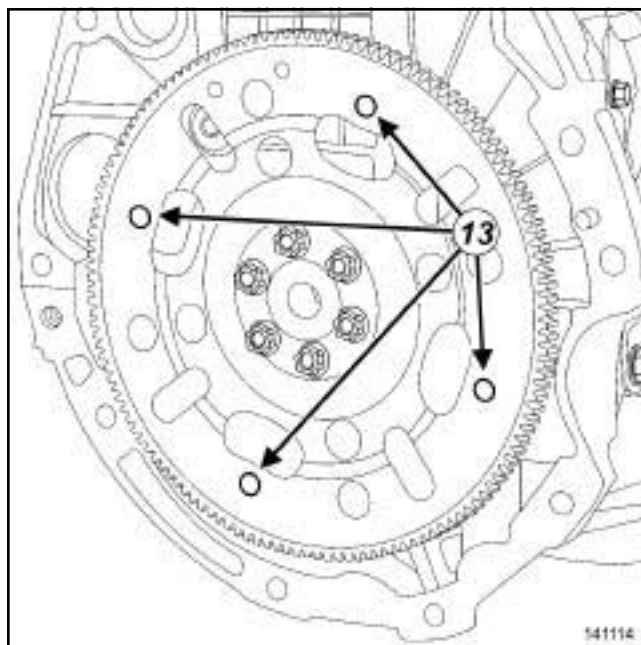
130023

- ❑ Check that torque converter is correctly coupled to the continuously variable gearbox using a rule and a straightedge. The distance between the converter retaining bolt bead and the housing must be at least **14.4 mm**.

II - REFITTING OPERATION FOR PART CONCERNED



141113



141114

- ❑ Position the converter bolts (12) opposite the holes (13) in the drive plate.
- ❑ Refit:
 - the automatic gearbox,
 - the automatic gearbox bell housing bolts.
- ❑ Torque tighten the **automatic gearbox bell housing bolts (62 N.m)**.

AUTOMATIC GEARBOX

Automatic gearbox: Removal - Refitting

23A

FK0

III - FINAL OPERATION

☐ Refit:

- the « engine - automatic gearbox » assembly on the **(Mot. 1390)** using a **workshop hoist**,
- the new converter nuts by rotating the crankshaft clockwise.

☐ Torque tighten the **converter nuts (44 N.m)**.

☐ Refit:

- the starter (see **16A, Starting - Charging, Starter: Removal - Refitting**, page **16A-1**) (16A, Starting - Charging),
- the automatic gearbox oil cooler hose mounting,
- the automatic gearbox oil gauge.

☐ Clip the coolant hoses on the automatic gearbox oil cooler hose mounting.

☐ Connect the coolant hoses to the automatic gearbox oil cooler.

☐ Fit the cooling hose clips on the automatic gearbox oil cooler using the **(Mot. 1448)**.

☐ Connect the automatic gearbox hydraulic distributor connector.

☐ Clip the automatic gearbox wiring in place.

☐ Connect:

- the multifunction switch connector,
- the input speed sensor connector to the automatic gearbox,
- the output speed sensor connector to the automatic gearbox.

☐ Refit the « engine - automatic gearbox » assembly (see **10A, Engine and cylinder block assembly, Engine - gearbox assembly: Removal - Refitting**, page **10A-1**) (10A, Engine and cylinder block assembly).

If replacing the component:

☐ Apply the after repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select « Gearbox 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.

AUTOMATIC GEARBOX

Hydraulic distributor: Removal - Refitting

23A

FK0

Equipment required

Diagnostic tool

Tightening torques

hydraulic distributor bolts	8 N.m
control lever nut	22 N.m
mounting bracket bolts on the control valve unit	8 N.m
bolts of the oil strainer	8 N.m

IMPORTANT

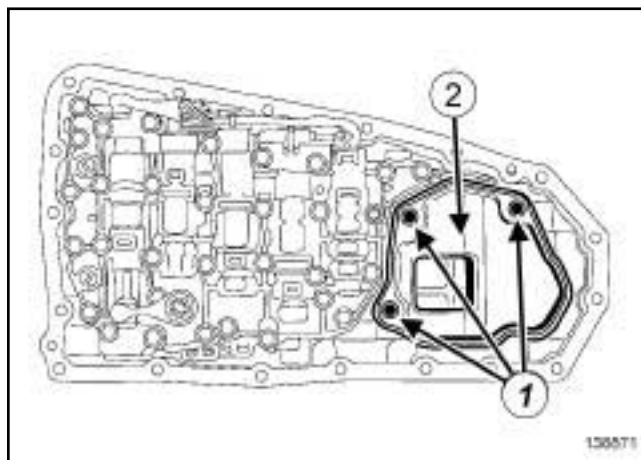
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Automatic gearbox: Precautions for the repair**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

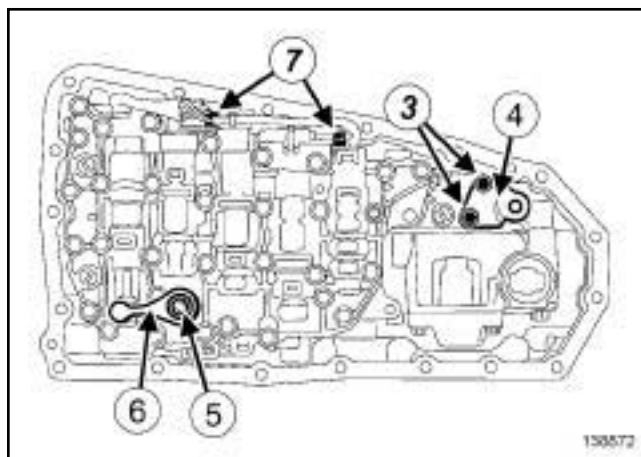
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).
- ☐ Drain the automatic gearbox oil (see **Automatic gearbox oil: Draining - Filling**) .
- ☐ Remove the gearbox oil sump (see **Gearbox oil sump: Removal - Refitting**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



☐ Remove:

- the bolts (1) from the oil strainer,
- the oil strainer (2) ,
- the oil strainer O-ring.



☐ Remove:

- the mounting bracket bolts (3) from the control valve unit,
- the mounting bracket (4) from the control valve unit,
- the control lever nut (5) ,
- the control lever (6) .

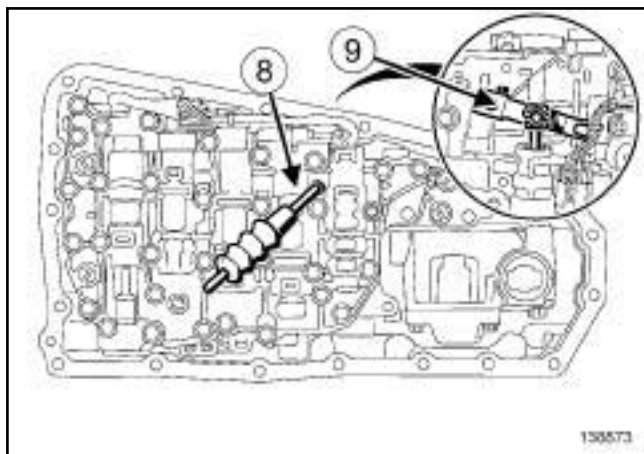
- ☐ Disconnect the connectors (7) .

AUTOMATIC GEARBOX

Hydraulic distributor: Removal - Refitting

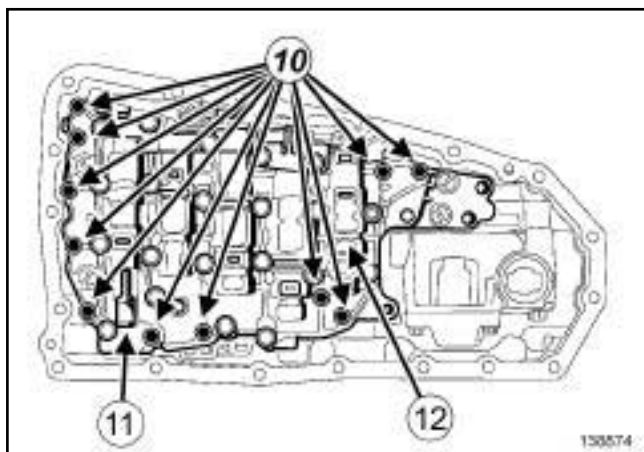
23A

FK0



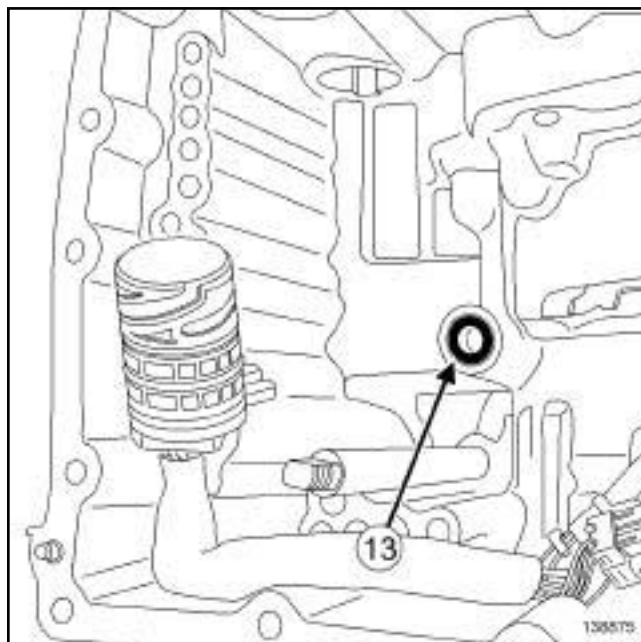
138873

- ❑ Fit a round rod (8) with a **3 mm** diameter (minimum length **5 mm**) in the stop hole of the control valve unit linkage to immobilise the pulley ratio linkage (9)



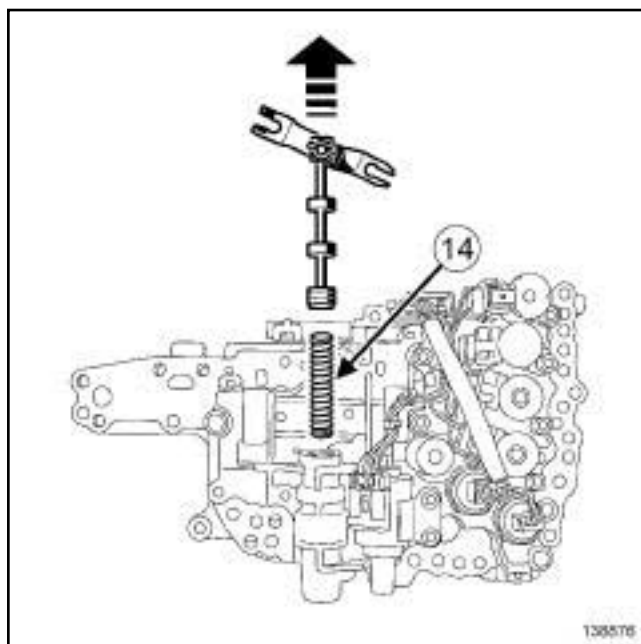
138874

- ❑ Remove:
 - the hydraulic distributor bolts (10) ,
 - the hydraulic distributor (11) ,
 - the selector shaft ring,
 - the slide valve (12) .



138875

- ❑ Remove:
 - the seal (13) between the housing and the hydraulic distributor,
 - the round rod with a **3 mm** diameter (minimum length **55 mm**) from the stop hole of the control valve unit linkage.



138876

- ❑ Remove:
 - the control valve unit linkage by lifting it upwards,
 - the return spring (14) in the valve unit.

AUTOMATIC GEARBOX

Hydraulic distributor: Removal - Refitting

23A

FK0

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean the joint faces using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) on the automatic gearbox and on the hydraulic distributor housing, taking care not to damage the contact surfaces.
- ☐ Always replace:
 - the hydraulic distributor housing seal.
 - the hydraulic distributor O-ring,
 - the wiring O-ring.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the hydraulic distributor internal wiring (see **Hydraulic distributor internal wiring: Removal - Refitting**)
- ☐ Refit:
 - the return spring in the valve unit,
 - the control valve unit linkage.
- ☐ Fit a round rod with a **3 mm** diameter (minimum length **55 mm**) in the stop hole of the control valve unit linkage to immobilise the pulley ratio linkage.
- ☐ Refit:
 - the seal between the housing and the hydraulic distributor,
 - the slide valve,
 - the hydraulic distributor,
 - the hydraulic distributor bolts.
- ☐ Torque tighten the **hydraulic distributor bolts (8 N.m)**.
- ☐ Connect the connectors.
- ☐ Refit:
 - the selector shaft ring,
 - the control lever,
 - the control lever nut.
- ☐ Torque tighten the **control lever nut (22 N.m)**.
- ☐ Refit:
 - the mounting bracket on the control valve unit,
 - the mounting bracket bolts on the control valve unit.

- ☐ Torque tighten the **mounting bracket bolts on the control valve unit (8 N.m)**.
- ☐ Refit:
 - the new oil strainer O-ring,
 - the oil strainer,
 - the bolts of the oil strainer.
- ☐ Torque tighten the **bolts of the oil strainer (8 N.m)**.
- ☐ Remove the round rod with a **3 mm** diameter (minimum length **55 mm**) from the stop hole of the control valve unit linkage.
- ☐ Remove the gearbox oil sump (see **Gearbox oil sump: Removal - Refitting**)
- ☐ Fill the automatic transmission (see **Automatic gearbox oil: Draining - Filling**) .

If replacing the component:

- ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Gearbox 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.

III - FINAL OPERATION

- ☐ Refit:
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

AUTOMATIC GEARBOX

Additional gearbox oil cooler: Removal - Refitting

23A

FK0

Tightening torques

oil hose clips	2 N.m
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IMPORTANT

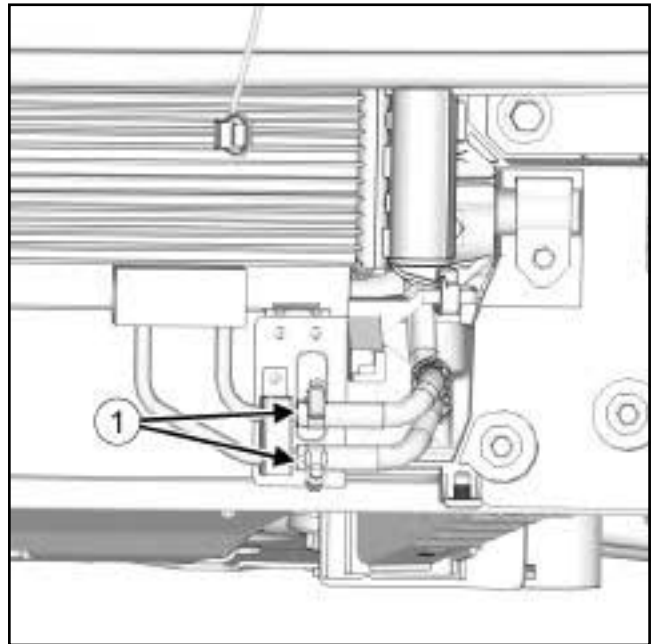
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Engine cooling: Precautions for the repair**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery)
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),

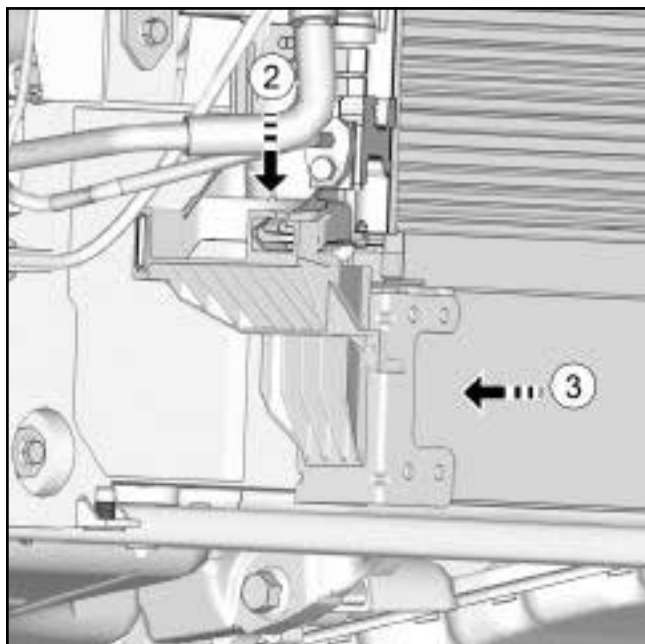
II - REMOVAL OPERATION FOR THE ADDITIONAL COOLER



141305

- ☐ Loosen the 2 hose clips (1) on the automatic gearbox additional oil cooler end.
- ☐ Prepare for the outflow of automatic gearbox oil.
- ☐ Disconnect the two hoses on the automatic gearbox additional oil cooler end.
- ☐ Fit a blanking plug on either end of the automatic gearbox additional oil cooler.
- ☐ Wipe the excess oil off the ends of the automatic gearbox additional oil cooler.

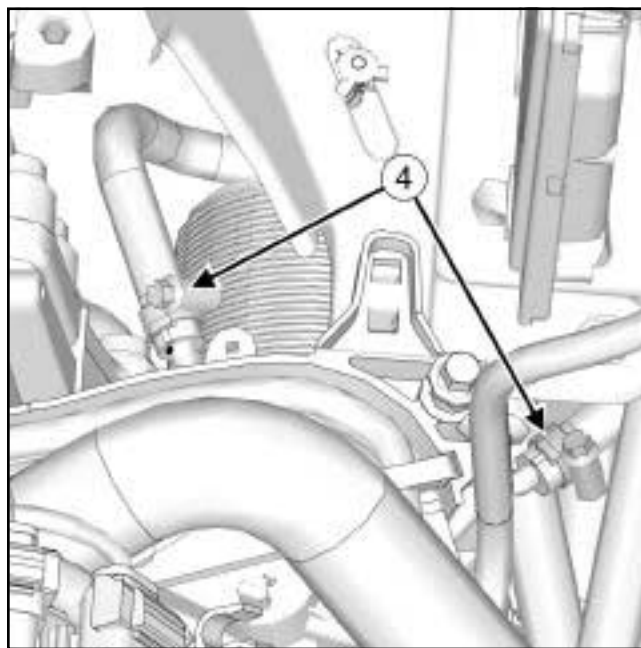
FK0



141304

- ☐ Unclip (2) the automatic gearbox additional oil cooler.
- ☐ Remove (3) the automatic gearbox additional oil cooler.

III - REMOVAL OPERATION FOR THE ADDITIONAL COOLER HOSES



141309

- ☐ Loosen the 2 hose clips (4) on the automatic gearbox oil cooler end.
- ☐ Prepare for the outflow of automatic gearbox oil.
- ☐ Disconnect the two hoses on the automatic gearbox oil cooler end.
- ☐ Fit a blanking plug on either end of the automatic gearbox oil cooler, and on the automatic gearbox oil hoses.
- ☐ Remove the two automatic gearbox oil hoses.
- ☐ Wipe the excess oil off the ends of the automatic gearbox oil cooler.

AUTOMATIC GEARBOX

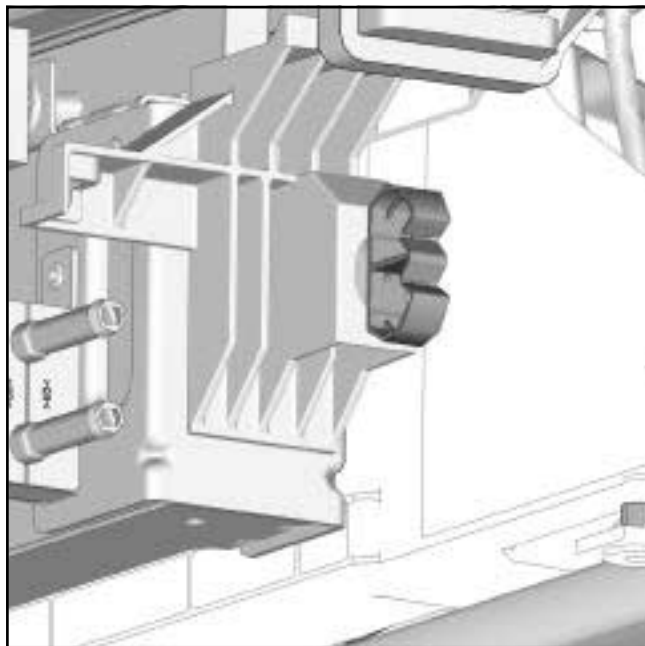
Additional gearbox oil cooler: Removal - Refitting

23A

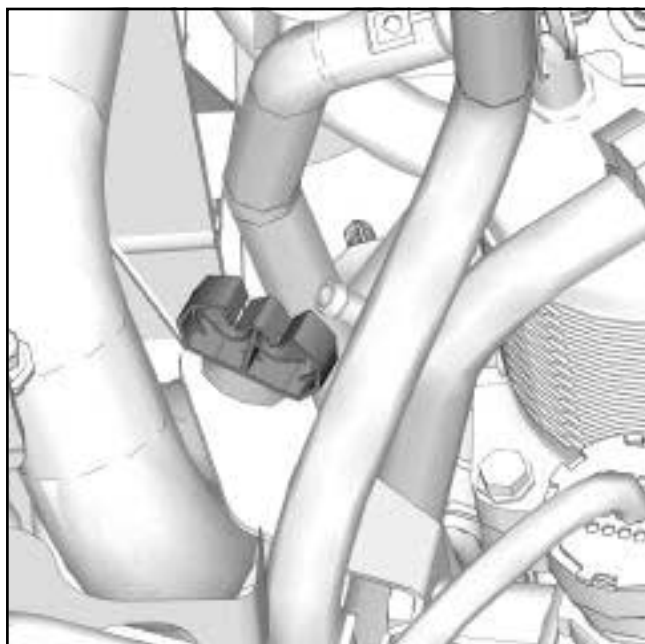
FK0

REFITTING

I - REFITTING PREPARATION OPERATION



141310



141311

- ☐ Check the presence and condition of the two double retaining clips on the two automatic gearbox oil hoses.
- ☐ Always replace:
 - the tightening clips on the two automatic gearbox oil hoses.

II - REFITTING OPERATION FOR THE ADDITIONAL COOLER HOSES



WARNING

Failure to observe the following procedure could cause irreparable damage to the automatic gearbox.

Note:

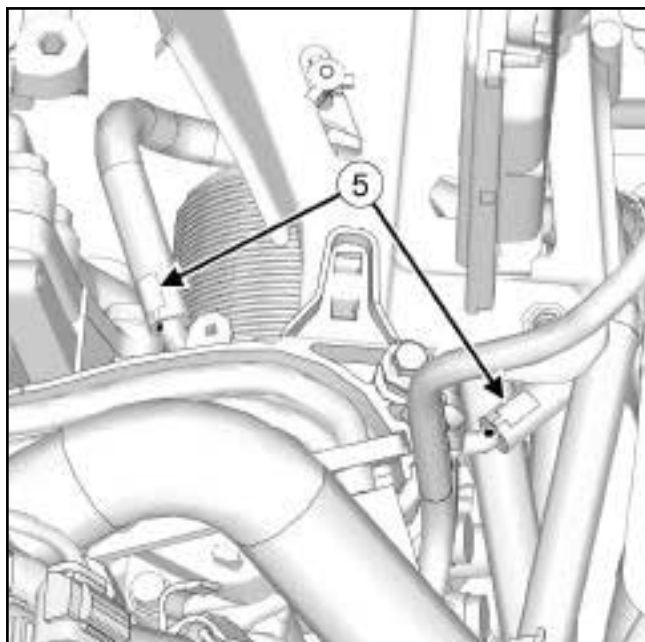
Oil hoses must be fitted in a given direction. Consequently, the hoses are marked with their correct fitting direction.

AUTOMATIC GEARBOX

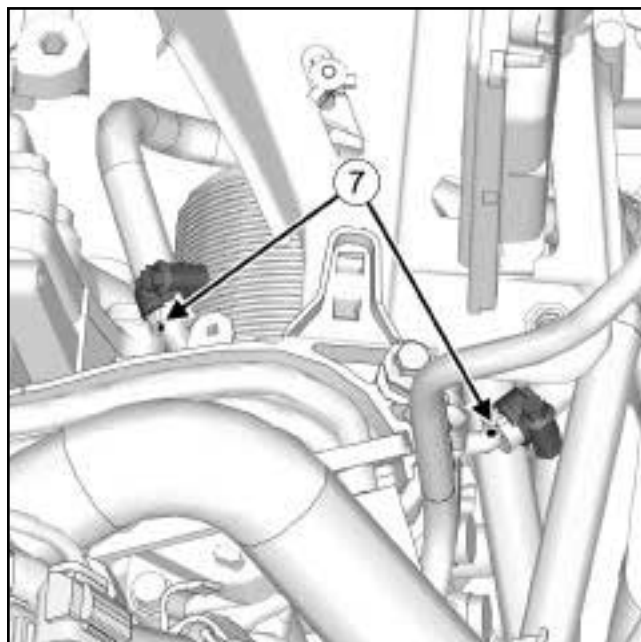
Additional gearbox oil cooler: Removal - Refitting

23A

FK0

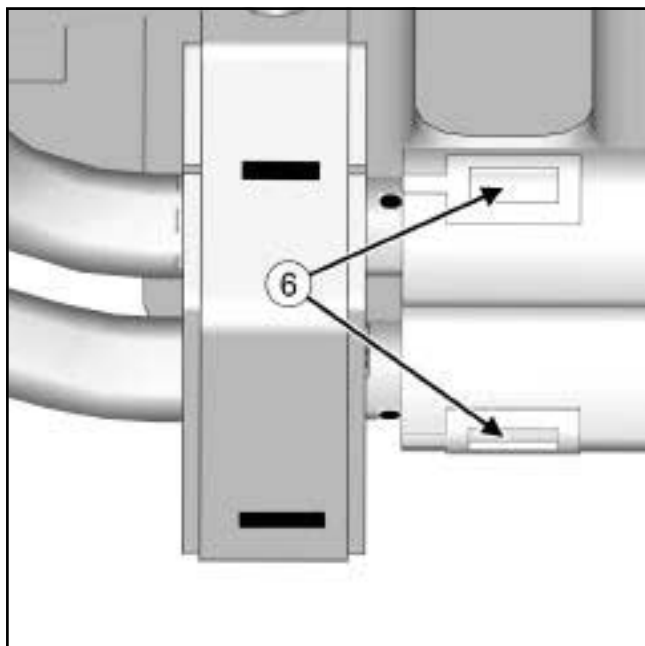


141308



141307

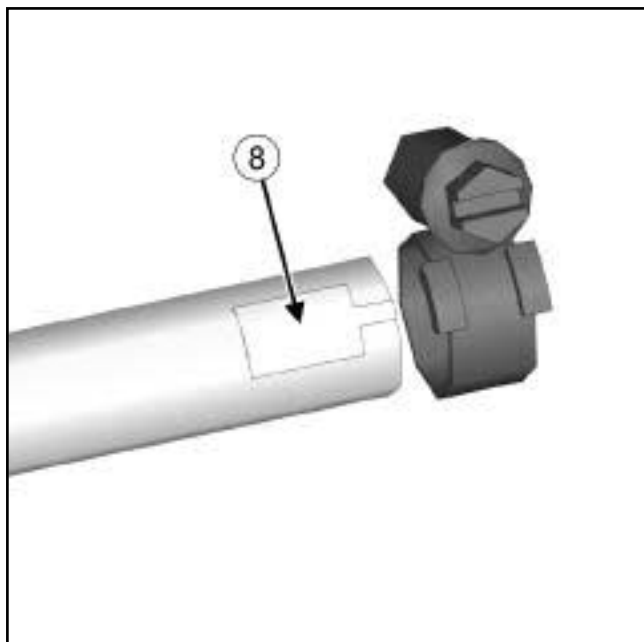
- ❑ Fit the hoses up to the marks (7) on the two oil cooler pipes on the automatic gearbox end and align them (7) .



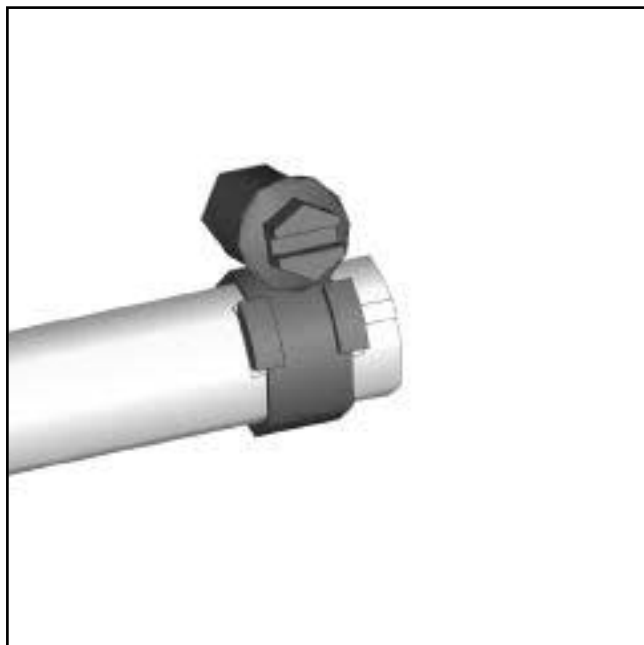
141296

- ❑ Identify the oil hose fitting direction:
 - The full rectangles (5) drawn on the hoses are fitted on the oil cooler end.
 - The empty rectangles (6) drawn on the hoses are fitted on the additional oil cooler end.
- ❑ Fit new clips on both hoses, taking into account the final fitting direction of the clips (4) .
- ❑ Remove the blanking plugs from the gearbox oil cooler.

FK0

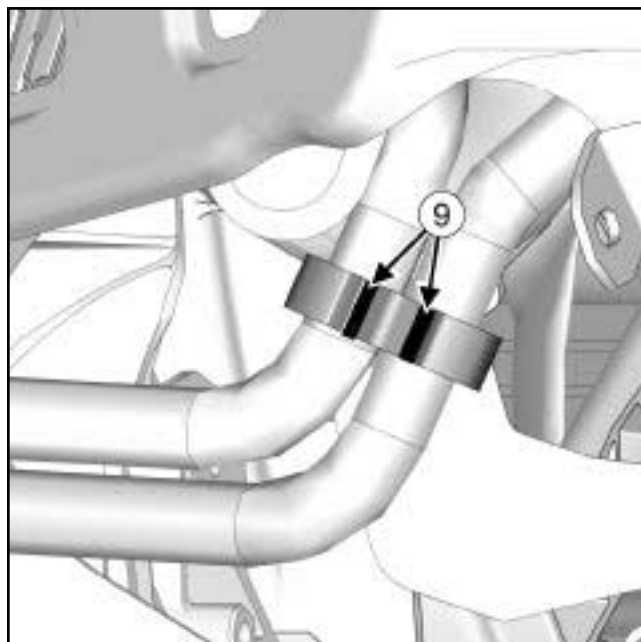


141302



141303

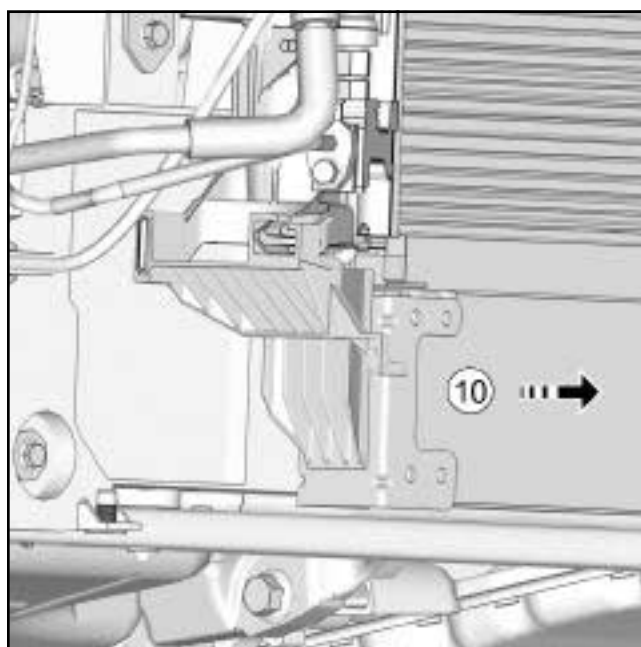
- ❑ Position the clips in relation to the mark (8) on the cooler oil hoses on the automatic gearbox end.



141298

- ❑ Clip the two hoses in the double retaining clip in line with the marks (9) on the hoses.

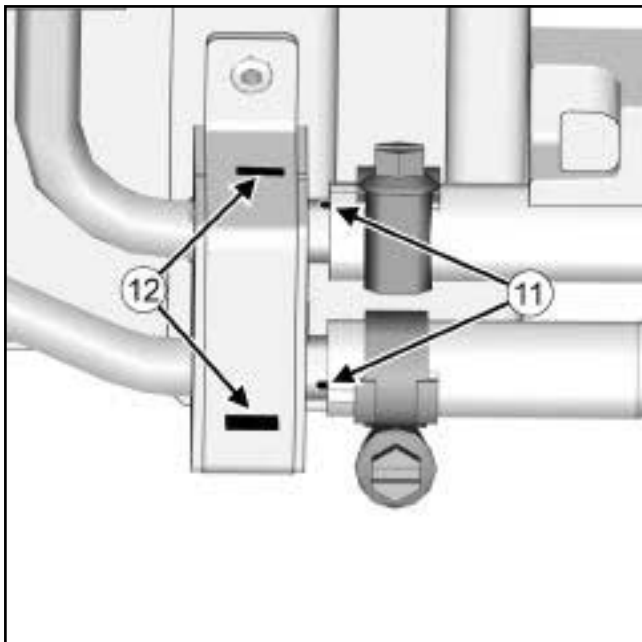
III - REFITTING OPERATION FOR THE ADDITIONAL COOLER



141304

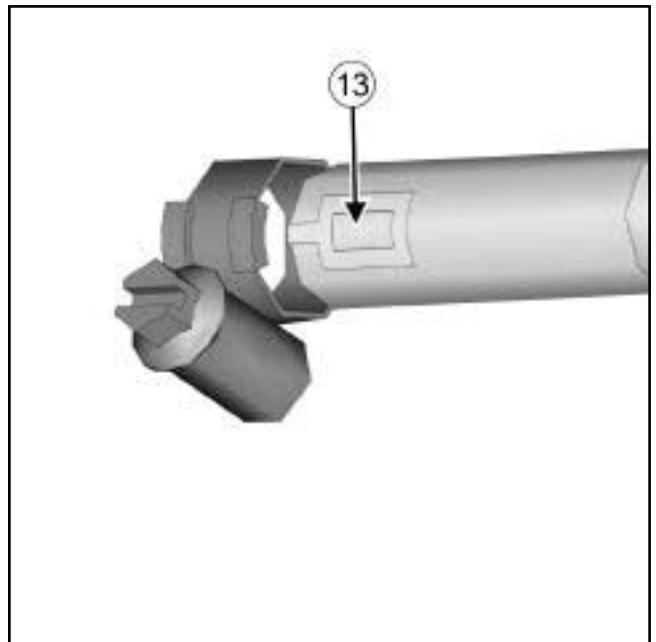
- ❑ Refit (10) the gearbox additional oil cooler.
- ❑ Fit new clips on both hoses, taking into account the final fitting direction of the clips.
- ❑ Remove the blanking plugs from the gearbox additional oil cooler.

FK0

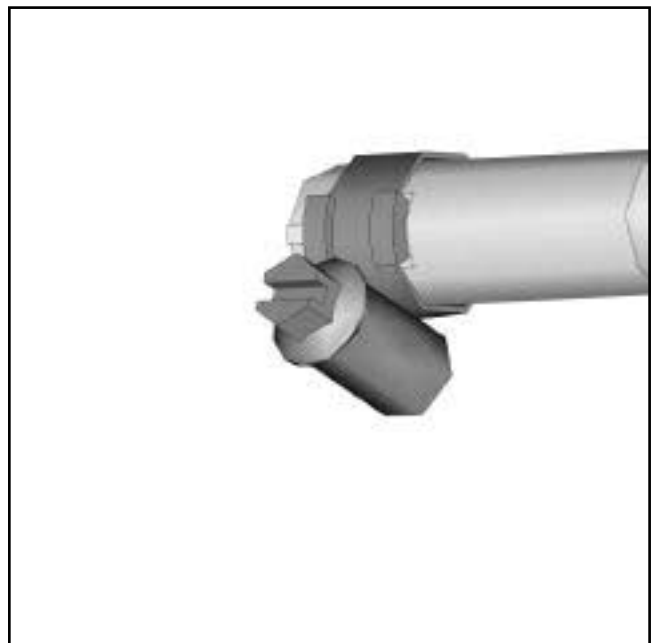


141306

- Fit the hoses up to the marks (11) on the two automatic gearbox additional oil cooler pipes and align them (12) .



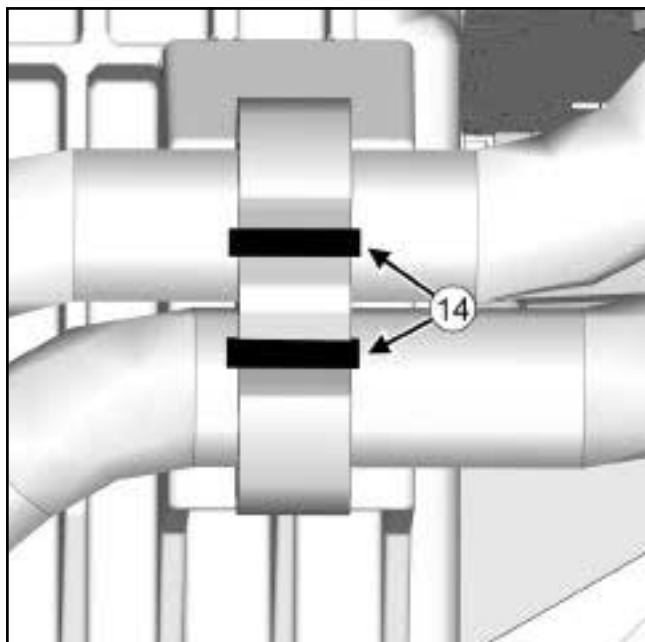
141300



141301

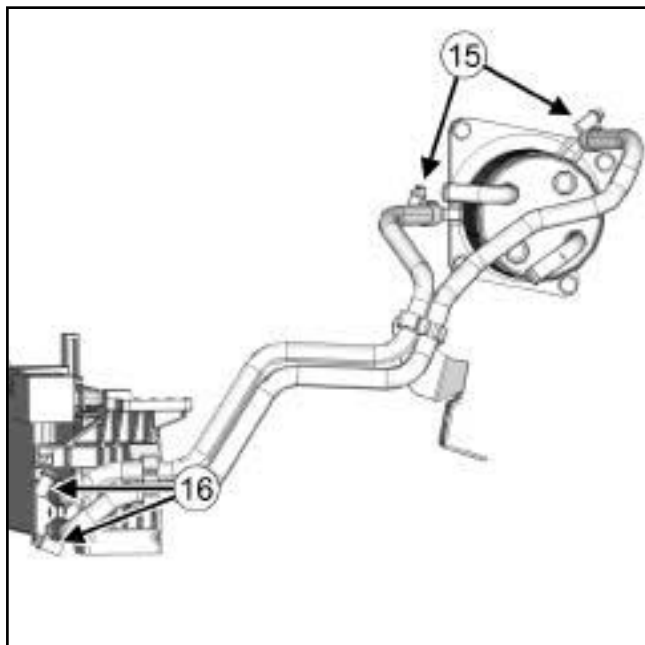
- Position the clips in relation to the mark (13) on the automatic gearbox additional oil cooler hoses.

FK0



141299

- ☐ Clip the two hoses on the additional cooler end in the double retaining clip in line with the marks (14) on the hoses.



141312

- ☐ Check the cleanliness of the hoses after fitting the hose and automatic gearbox additional oil cooler assembly.
- ☐ Torque tighten the **oil hose clips (2 N.m)** on the gearbox oil cooler (15) and on the gearbox additional oil cooler (16) .

IV - FINAL OPERATION

☐ Refit:

- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the engine undertray,
- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery)
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),

- ☐ Top up the automatic gearbox oil (see **Automatic gearbox oil: Draining - Filling**) .

- ☐ Remove the vehicle from the two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

FK0

Equipment required

Diagnostic tool

IMPORTANT

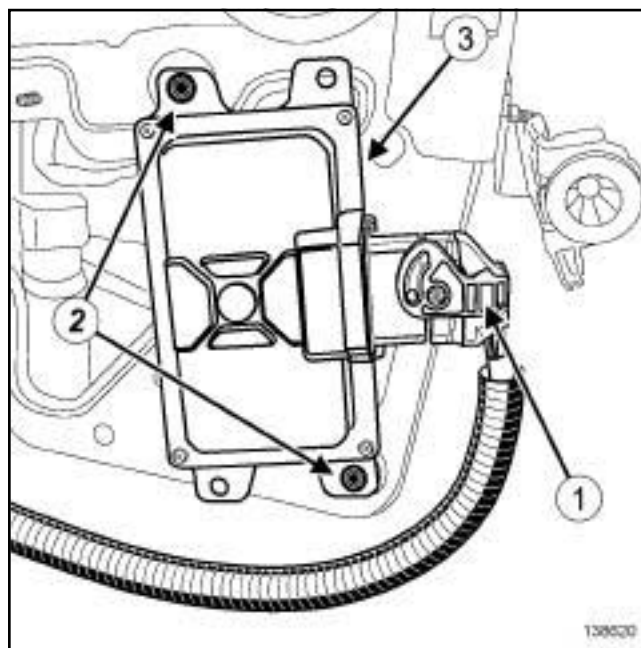
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **Automatic gearbox: Precautions for the repair**) .

REMOVAL

I - 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 front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

II - OPERATION FOR REMOVAL OF PART CONCERNED



138620

- ☐ Disconnect the connector (1) from the automatic transmission computer.
- ☐ Remove:
 - the automatic transmission computer nuts (2) ,
 - the automatic transmission computer (3) .

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the automatic transmission computer,
 - the automatic transmission computer nuts.
- ☐ Connect the automatic transmission computer connector.

If replacing the component:

- ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Gearbox computer » ,
 - go to repair mode,
 - display the « Before/After repair procedure » for the computer selected,

Automatic gearbox converter: Removal - Refitting

FK0

- carry out the operations described in the « After repair procedure » section.

II - FINAL OPERATION☐ Refit:

- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

AJ0

Equipment required

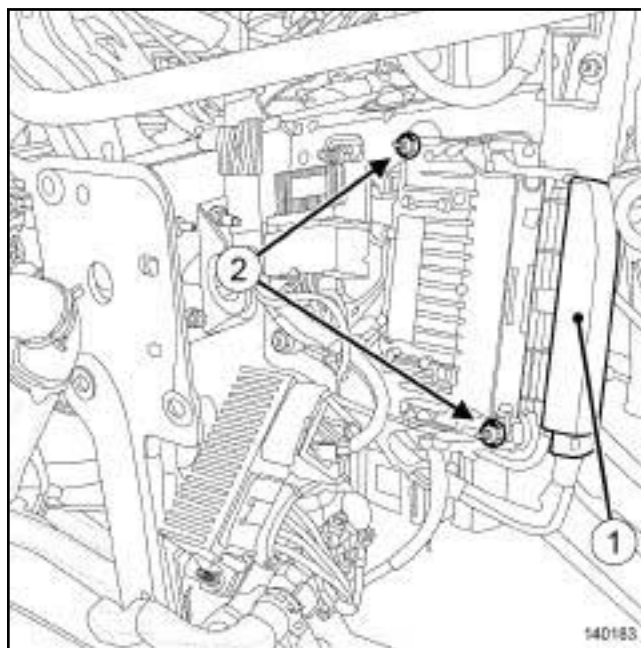
Diagnostic tool

REMOVAL

I - 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 front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the left-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-1) (12A, Fuel mixture).

II - REMOVAL OPERATION FOR THE PART CONCERNED



140183

- ☐ Disconnect the connector (1) from the automatic transmission computer.
- ☐ Remove:
 - the automatic transmission computer nuts (2) ,
 - the automatic transmission computer.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the automatic transmission computer.
- ☐ Connect the automatic transmission computer connector.

II - FINAL OPERATION

- ☐ Refit:
 - the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-1) (12A, Fuel mixture),
 - the left-hand headlight (see **Headlight: Removal - Refitting**) (80B, Headlights),
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),

Automatic gearbox converter: Removal - Refitting

AJ0


- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Gearbox 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 left-hand driveshaft: Removal - Refitting

PK4

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).
Emb. 880	Pin extractor tool.
Tav. 1813	Extraction claw for clip secured type driveshafts

Equipment required
component jack

Tightening torques 	
shock absorber base nuts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the brake hose and wheel speed sensor wiring support	8 N.m
pivot support bolts	120 N.m
hub carrier lower ball joint bolt	27.5 N.m
lower ball joint nut	62 N.m
anti-rotation linkage nuts	80 N.m
calliper hose retaining bolt	21 N.m
track rod end nut	37 N.m
hub nut	280 N.m

WARNING

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

I - REMOVAL PREPARATION OPERATION

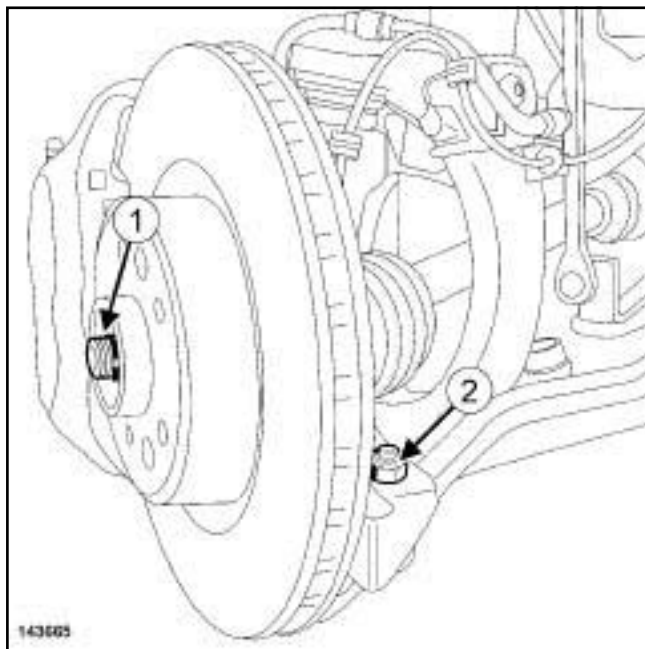
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

Front left-hand driveshaft: Removal - Refitting

PK4

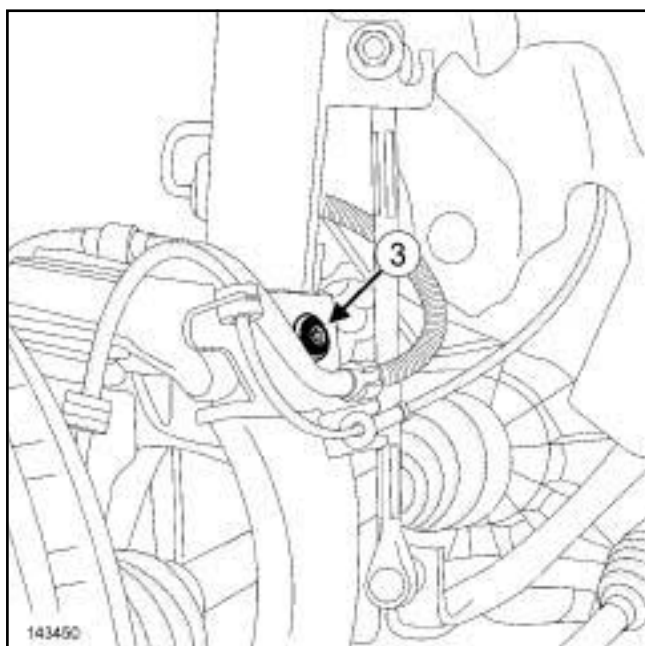
II - OPERATION FOR REMOVAL OF PART CONCERNED

PK4, and 018 or 019

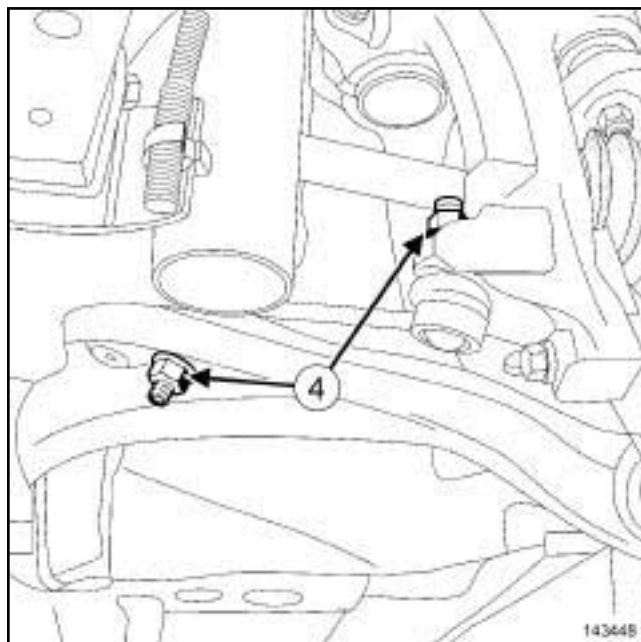


❑ Remove:

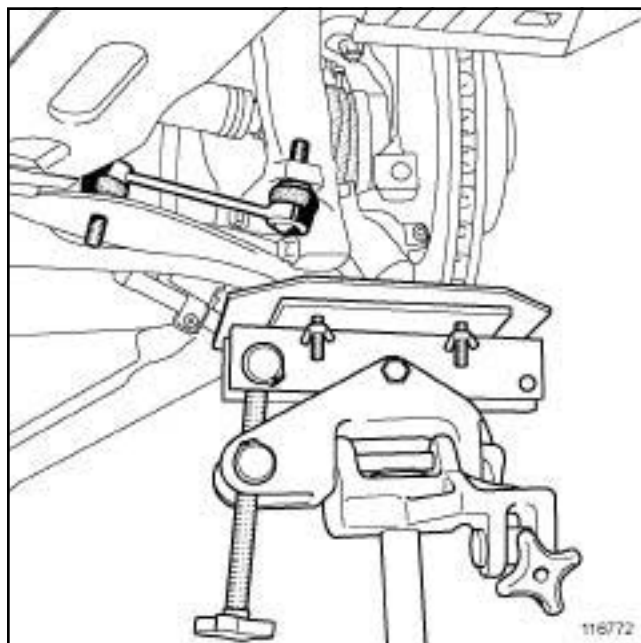
- the hub nut (1) by immobilising the hub using the tool (**Rou. 604-01**),
- the nut (2) from the track rod end,
- the track rod end from the hub carrier using the tool (**Tav. 476**).



- ❑ Remove the calliper hose retaining bolt (3) .



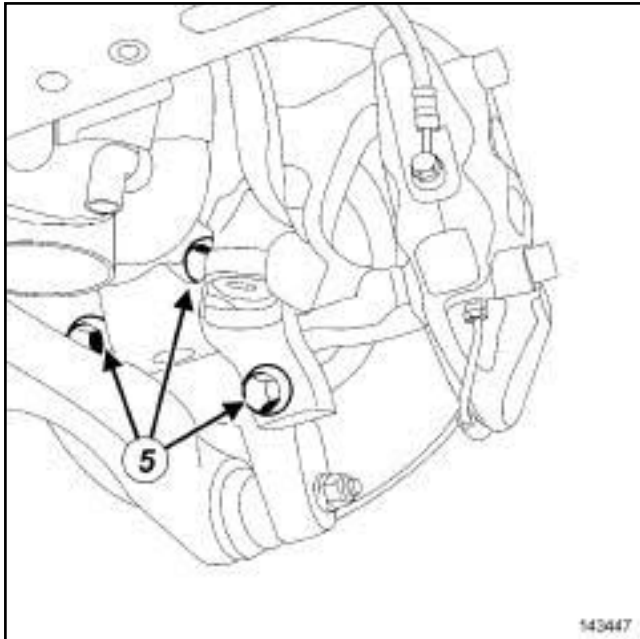
- ❑ Remove the nuts (4) from the anti-rotation linkage.



- ❑ Fit a **component jack** to compress the suspension.
- ❑ Remove the anti-rotation linkage.
- ❑ Remove the **component jack**.

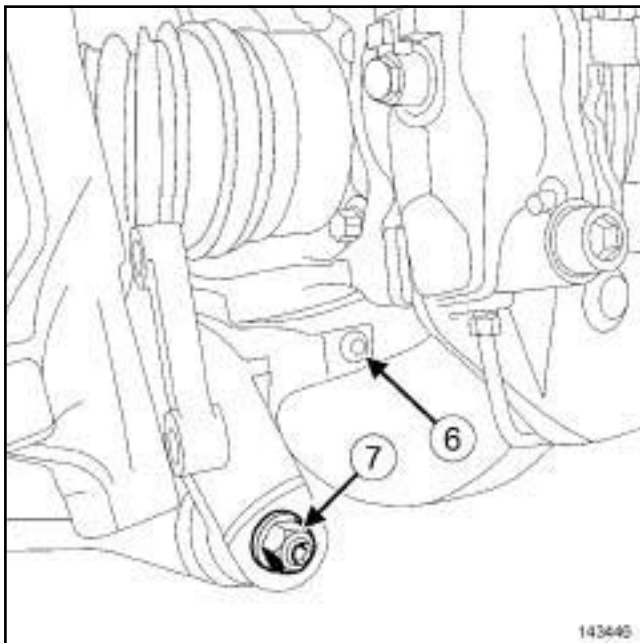
Front left-hand driveshaft: Removal - Refitting

PK4



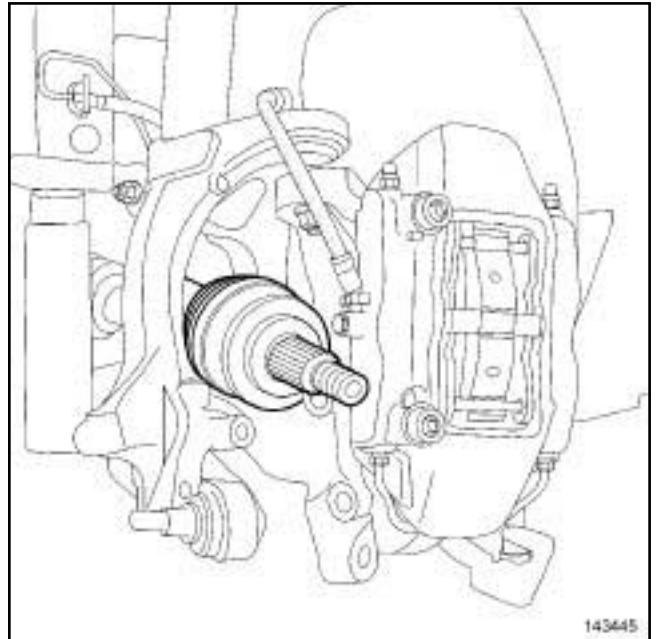
143447

- ❑ Remove the bolts (5) from the pivot support.



143446

- ❑ Remove:
 - the bolt (6) of the hub carrier lower ball joint.
 - the lower ball joint nut (7) ,
 - the lower ball joint from the lower wishbone using the tool (Tav. 476),
 - the pivot support.
- ❑ Separate the « spring - shock absorber - pivot » assembly.

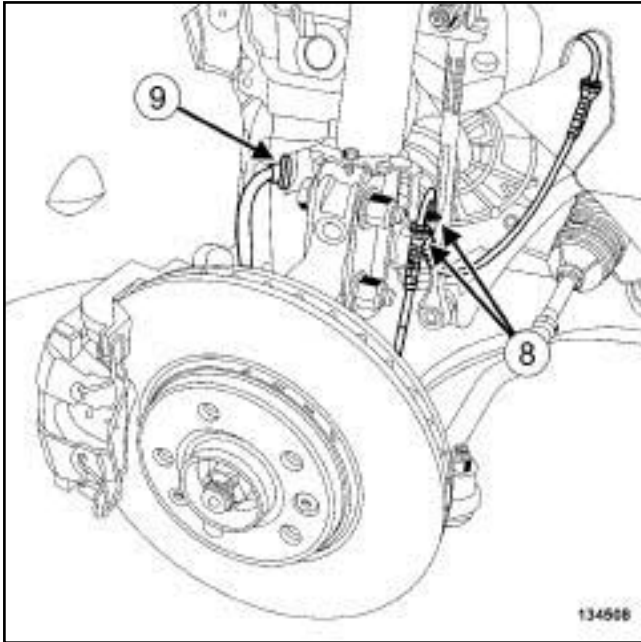


143445

- ❑ Push back the front left-hand driveshaft from the hub carrier using the assembled tools (Tav. 1420-01) and (Tav. 1050-04).
- ❑ Extract the driveshaft from the gearbox.
- ❑ Remove:
 - the front left-hand driveshaft.
 - the left-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

PK4

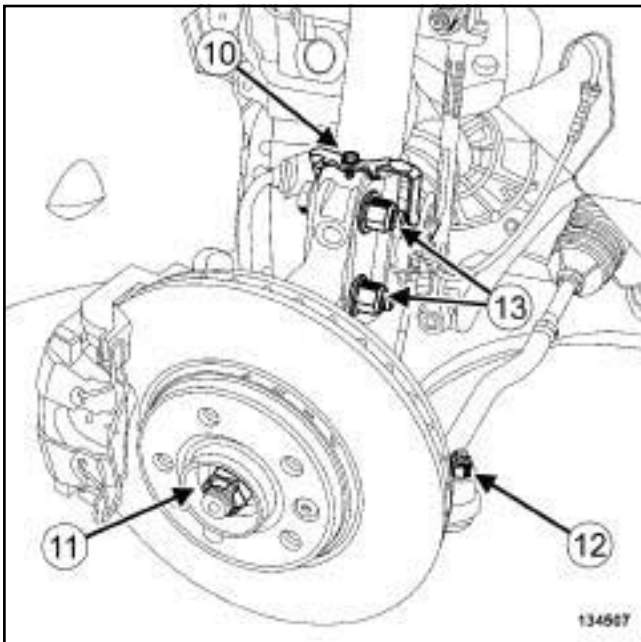
PK4, and 014 or 015 or 017



134508

❑ Unclip:

- the wheel speed sensor wiring at (8) ,
- the front brake hose at (9) .

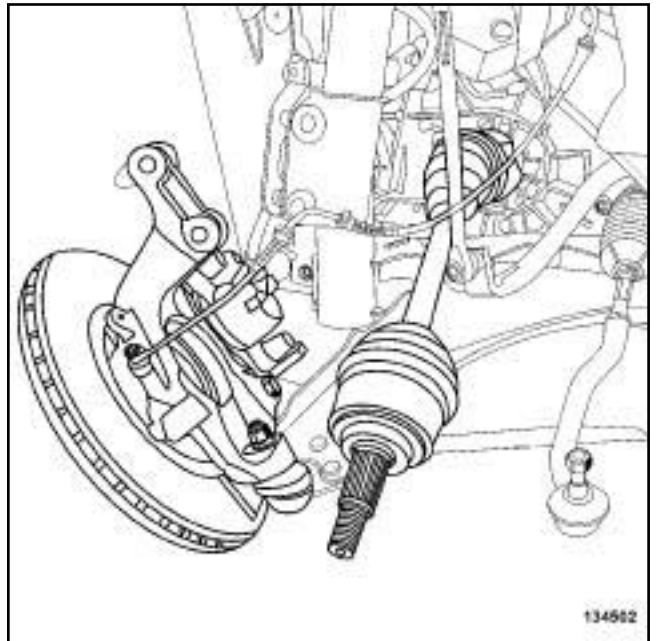


134507

❑ Remove:

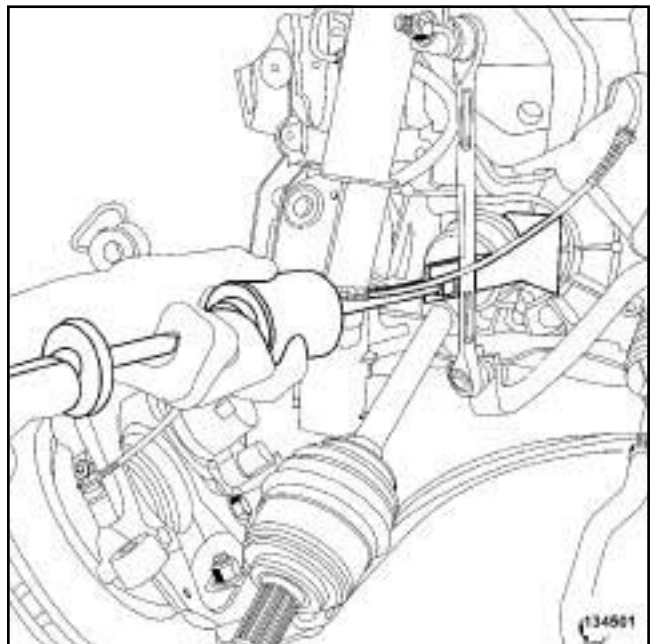
- the bolt (10) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,

- the nut (11) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the nut (12) from the track rod end,
- the track rod end from the hub carrier using the tool (**Tav. 476**),
- the shock absorber base studs (13) .



134502

- ❑ Push back the front left-hand driveshaft from the hub carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).



134501

- ❑ Detach the front left-hand driveshaft on the gearbox side using the tool (**Emb. 880**) fitted with the tool (**Tav. 1813**).

Front left-hand driveshaft: Removal - Refitting

PK4

Remove:

- the front left-hand driveshaft.
- the left-hand differential output seal (see **Differential output seal: Removal - Refitting**).

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ **parts always to be replaced: Front wheel hub nut (13,02,03,20).**

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit a new left-hand differential output seal (see **Differential output seal: Removal - Refitting**).

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

- ☐ Fit the front left-hand driveshaft into the gearbox as horizontally as possible.
- ☐ Engage the driveshaft into the hub carrier.

Note:

The driveshaft must fit freely into the hub carrier until it protrudes enough for the hub nut to be fitted.

PK4, and 014 or 015 or 017

- ☐ Refit the shock absorber base bolts.
- ☐ Torque tighten the **shock absorber base nuts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using the tool (**Rou. 604-01**).
- ☐ Refit the brake hose and wheel speed sensor wiring support.
- ☐ Torque tighten the **bolt of the brake hose and wheel speed sensor wiring support (8 N.m)**.
- ☐ Clip:
 - the wheel speed sensor wiring,
 - the brake hose.

Front left-hand driveshaft: Removal - Refitting

PK4

PK4, and 018 or 019

- ☐ Fit the « spring - shock absorber - pivot » assembly.
- ☐ Position the pivot support.
- ☐ Refit:
 - the bolts of the pivot support,
 - the bolt of the hub carrier lower ball joint.
- ☐ Torque tighten:
 - the **pivot support bolts (120 N.m)**,
 - the **hub carrier lower ball joint bolt (27.5 N.m)**.
- ☐ Refit the lower ball joint on the lower wishbone.
- ☐ Torque tighten the **lower ball joint nut (62 N.m)**.
- ☐ Fit a **component jack** to compress the suspension.
- ☐ Refit the anti-rotation linkage.
- ☐ Remove the **component jack**.
- ☐ Torque tighten the **anti-rotation linkage nuts (80 N.m)**.
- ☐ Refit the calliper hose retaining bolt.
- ☐ Torque tighten the **calliper hose retaining bolt (21 N.m)**
- ☐ Refit the track rod end on the hub carrier.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut, immobilising the hub using the tool (**Rou. 604-01**).
- ☐ Torque tighten the **hub nut (280 N.m)**.


III - FINAL OPERATION

- ☐ Fill up the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .
- ☐ Refit:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front left-hand driveshaft: Removal - Refitting

TL4

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).
Emb. 880	Pin extractor tool.
Tav. 1813	Extraction claw for clip secured type driveshafts

Tightening torques 	
shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the brake hose and wheel speed sensor wiring support	8 N.m

WARNING

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

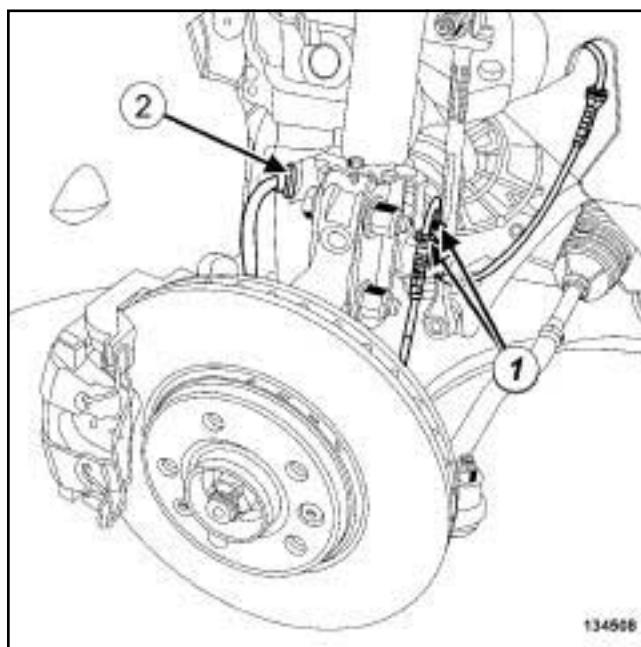
I - REMOVAL PREPARATION OPERATION

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

- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

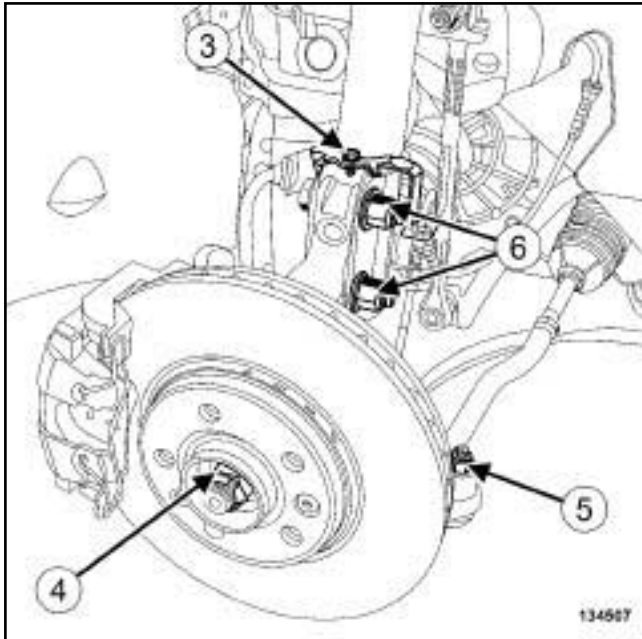
II - OPERATION FOR REMOVAL OF PART CONCERNED



134508

- ☐ Unclip:
 - the wheel speed sensor wiring at (1) ,
 - the front brake hose at (2) .

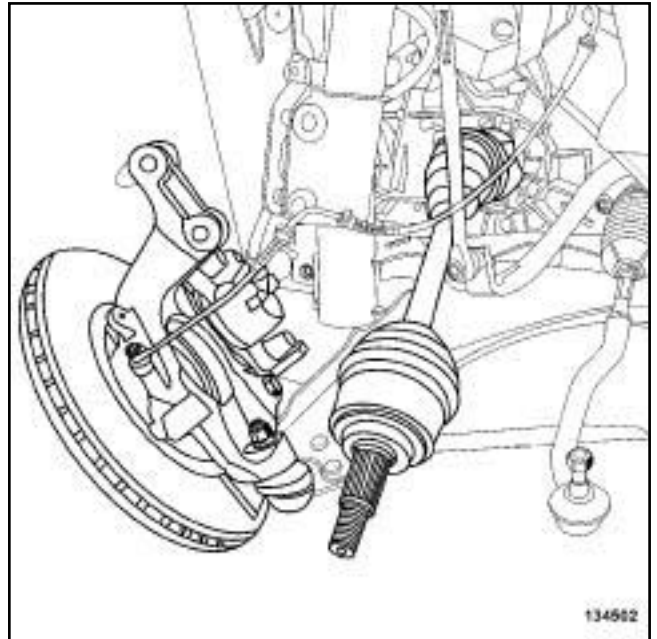
TL4



134507

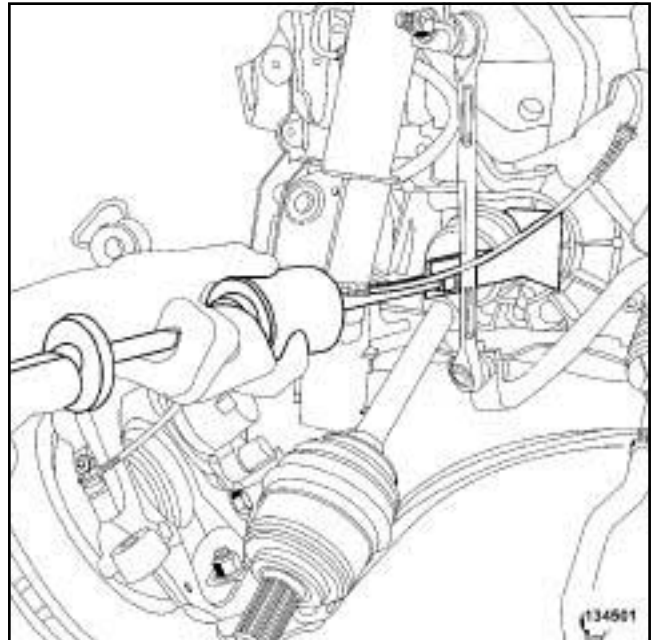
❑ Remove:

- the bolt (3) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,
- the nut (4) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the nut (5) from the track rod end,
- the track rod end from the hub carrier using the tool (**Tav. 476**),
- the shock absorber base studs (6) .



134502

- ❑ Push back the front left-hand driveshaft from the stub axle carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).



134501

- ❑ Detach the front left-hand driveshaft on the gearbox side using the tool (**Emb. 880**) fitted with the tool (**Tav. 1813**).
- ❑ Remove the front left-hand driveshaft.
- ❑ Remove the left-hand side differential output seal (see **Differential output seal: Removal - Refitting**) .

Front left-hand driveshaft: Removal - Refitting

TL4

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Front wheel hub nut (13,02,03,20).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit a new left-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

- ☐ Fit the front left-hand driveshaft into the gearbox as horizontally as possible.
- ☐ Insert the front left-hand driveshaft into the hub carrier.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Refit the shock absorber base bolts
- ☐ Torque tighten the **shock absorber base bolts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool (**Rou. 604-01**).
- ☐ Refit:
 - the brake hose and wheel speed sensor wiring support,
 - the bolt of the brake hose and wheel speed sensor wiring support.
- ☐ Torque tighten the **bolt of the brake hose and wheel speed sensor wiring support (8 N.m)**.
- ☐ Clip:
 - the wheel speed sensor wiring,
 - the brake hose.

III - FINAL OPERATION

- ☐ Fill up the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .
- ☐ Refit:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front left-hand driveshaft: Removal - Refitting

ND4

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Tightening torques

shock absorber base nuts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the the brake hose and wheel speed sensor wiring support	8 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

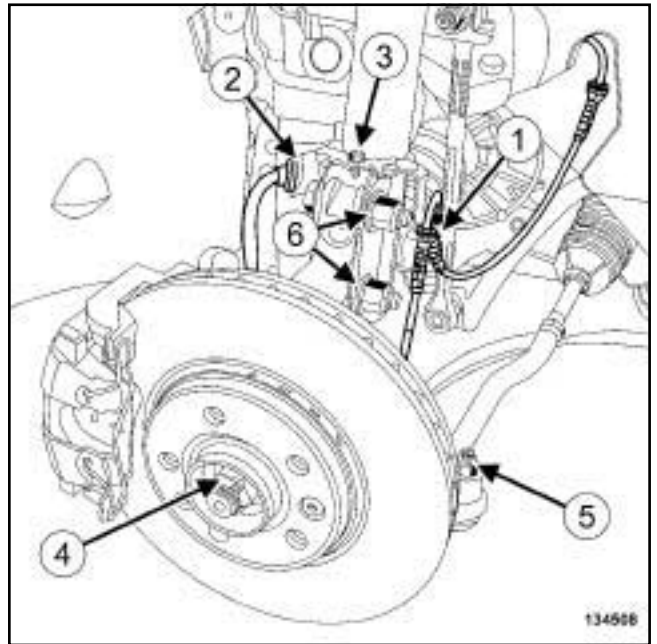
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

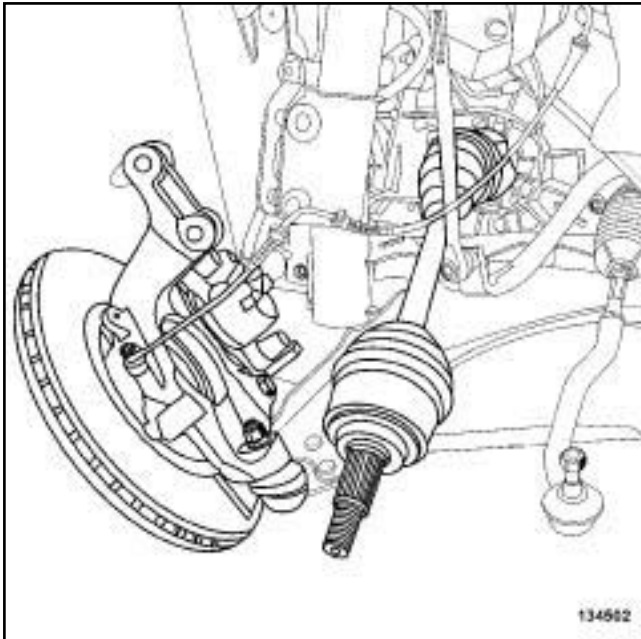
II - REMOVAL OPERATION FOR PART CONCERNED



- ☐ Unclip:
 - the wheel speed sensor wiring (1) ,
 - the brake hose (2) .
- ☐ Remove:
 - the bolt (3) of the brake hose and wheel speed sensor wiring support,
 - the brake hose and wheel speed sensor wiring support,
 - the nut (4) from the hub, immobilising the hub using the (**Rou. 604-01**),
 - the nut (5) from the track rod end,
 - the track rod end from the stub axle carrier using the (**Tav. 476**),
 - the shock absorber base bolts (6) .

Front left-hand driveshaft: Removal - Refitting

ND4



134502

- ☐ Push back the front left-hand driveshaft from the stub axle carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).
- ☐ Remove:
 - the front left-hand driveshaft.
 - the left-hand differential output seal (see **Differential output seal: Removal - Refitting**).

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ **parts always to be replaced: Front wheel hub nut (13,02,03,20).**

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the left-hand differential output seal (see **Differential output seal: Removal - Refitting**).

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

- ☐ Fit the driveshaft into the gearbox as horizontally as possible.

- ☐ Engage the driveshaft into the stub axle carrier.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Refit:
 - the shock absorber base bolts,
 - the shock absorber base nuts.
- ☐ Torque tighten the **shock absorber base nuts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool (**Rou. 604-01**).
- ☐ Refit the brake hose and wheel speed sensor wiring support.
- ☐ Tighten the **bolt of the the brake hose and wheel speed sensor wiring support (8 N.m)**.
- ☐ Clip:
 - the brake hose,
 - the wheel speed sensor wiring.


III - FINAL OPERATION

- ☐ Fill up the manual gearbox (see **Manual gearbox oils: Draining - Filling**).
- ☐ Refit:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front left-hand driveshaft: Removal - Refitting

JH3 or JR5

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).
Emb. 880	Pin extractor tool.
Tav. 1813	Extraction claw for clip secured type driveshafts

Tightening torques 	
shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
brake hose retaining bracket bolt8	N.m

WARNING

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.

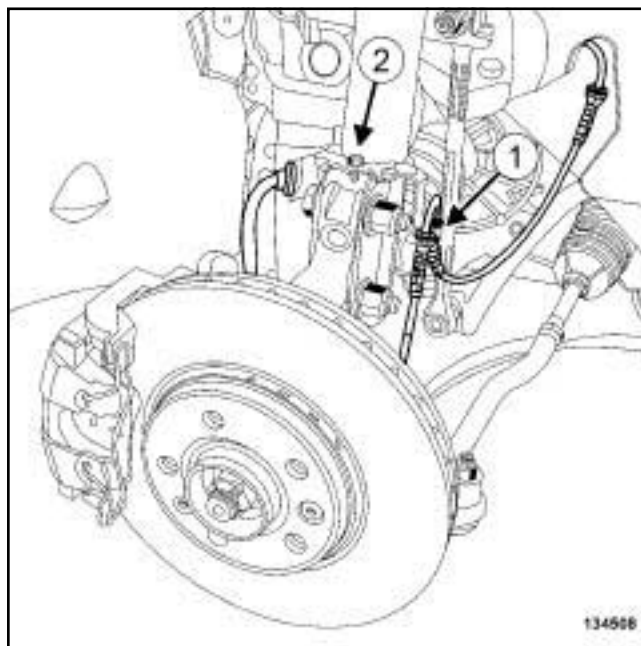
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

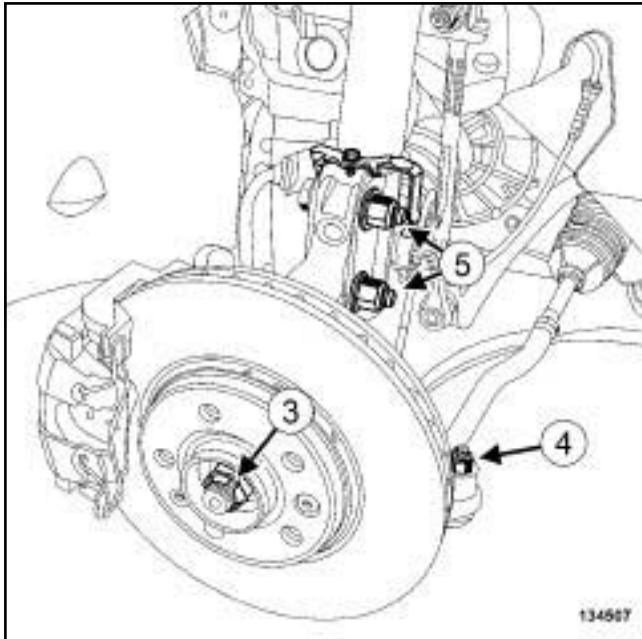


134508

- ☐ Unclip the wiring from the wheel speed sensor at (1) .
- ☐ Remove the bolt (2) from the brake hose retaining bracket.
- ☐ Move aside the brake hose retaining bracket.

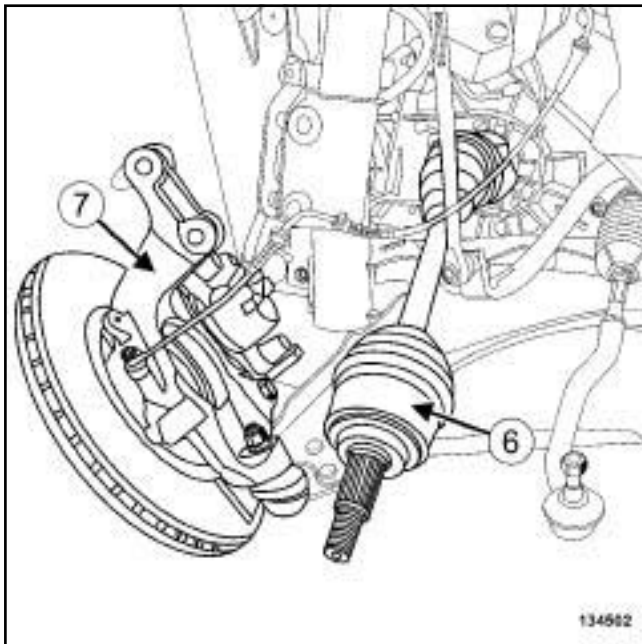
Front left-hand driveshaft: Removal - Refitting

JH3 or JR5



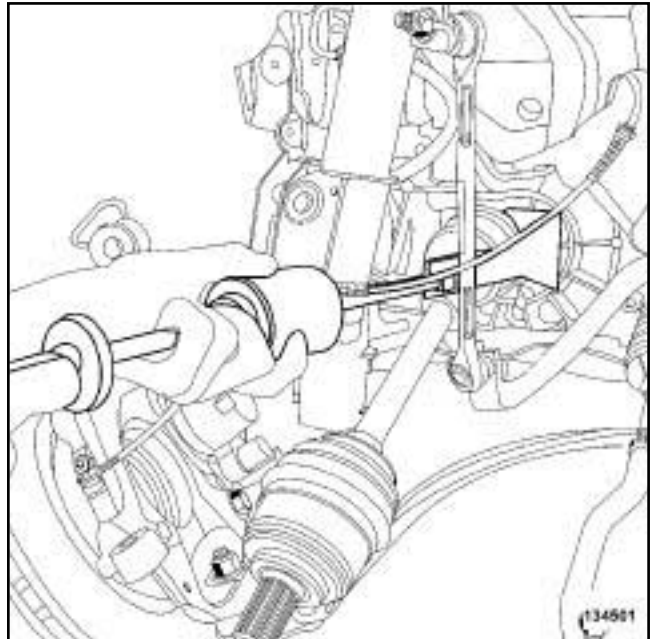
134507

- ❑ Remove:
 - the hub nut (3) by immobilising the hub using the tool (**Rou. 604-01**),
 - the track rod end nut (4) .
- ❑ Detach the track rod end using the (**Tav. 476**).
- ❑ Remove the shocker absorber base bolts (5) .



134502

- ❑ Push back the front left-hand driveshaft (6) from the stub axle carrier (7) (**Tav. 1420-01**) and (**Tav. 1050-04**).
- ❑ Remove the front left-hand driveshaft, on the wheel side.



134501

- ❑ Extract the front left-hand driveshaft from the manual gearbox using the tool (**Emb. 880**) fitted with the tool (**Tav. 1813**).
- ❑ Remove:
 - the front left-hand driveshaft.
 - the left-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ parts always to be replaced: Front wheel hub nut (13,02,03,20).

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit a left-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

Front left-hand driveshaft: Removal - Refitting

JH3 or JR5

- ☐ Insert the front left-hand driveshaft into the gearbox, moving it straight in horizontally until it clips.

Note:

Pull on the driveshaft slightly to verify that it is properly clipped into the gearbox.

- ☐ Insert the front left-hand driveshaft into the stub axle carrier.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Refit the shock absorber base bolts.
- ☐ Torque tighten the **shock absorber base bolts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool **(Rou. 604-01)**.
- ☐ Fit the retaining bracket of the brake hose.
- ☐ Refit the bolt of the brake hose retaining bracket.
- ☐ Torque tighten the **brake hose retaining bracket bolt 8 (N.m)**.
- ☐ Clip on the wheel speed sensor wiring harness.

III - FINAL OPERATION

- ☐ Fill up the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .
- ☐ Refit:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front left-hand driveshaft: Removal - Refitting

FK0

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).
Tav. 1813	Extraction claw for clip secured type driveshafts
Emb. 880	Pin extractor tool.

Equipment required

oil recovery tray

Tightening torques

shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the brake hose and wheel speed sensor wiring support	8 N.m

WARNING

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

I - REMOVAL PREPARATION OPERATION

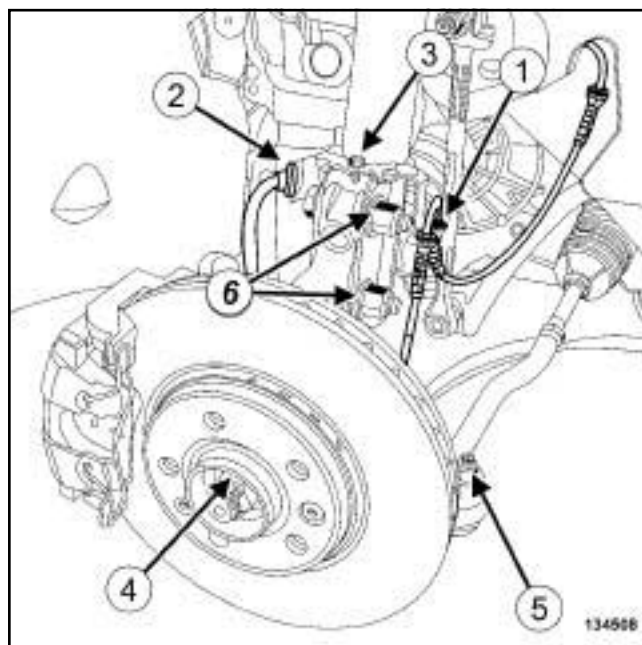
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

☐ Remove:

- the engine undertray,
- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

- ☐ Fit a **oil recovery tray**.

II - OPERATION FOR REMOVAL OF PART CONCERNED



134508

☐ Unclip:

- the wheel speed sensor wiring (1) ,
- the brake hose (2) .

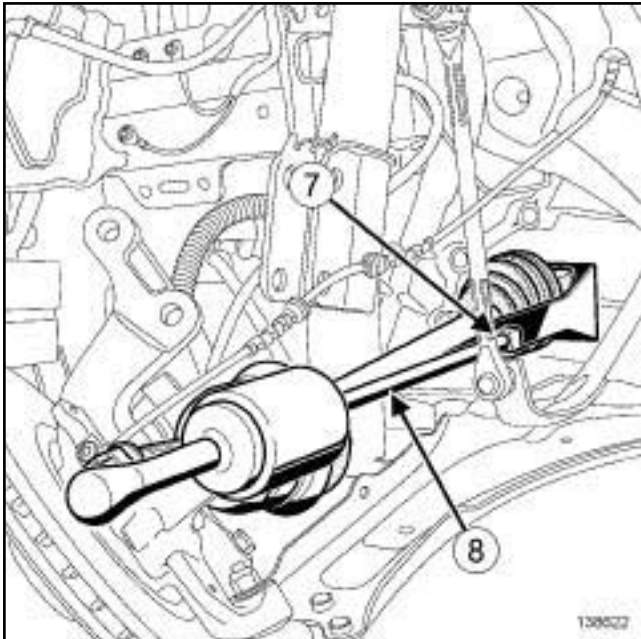
☐ Remove:

- the bolt (3) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,
- the nut (4) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the nut (5) from the track rod end,
- the track rod end from the stub axle carrier using the tool (**Tav. 476**),
- the bolts and the nuts (6) from the shock absorber base.

- ☐ Push back the driveshaft from the stub axle carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).

Front left-hand driveshaft: Removal - Refitting

FK0



138622

- ☐ Remove the front left-hand driveshaft from the automatic gearbox using the assembled tools (**Tav. 1813**) (7) and (**Emb. 880**) (8)

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace:
 - the universal joint nut,
 - the differential output seal (see **Differential output seal: Removal - Refitting**) .

II - REFITTING OPERATION FOR PART CONCERNED

☐

Note:

During removal, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and universal joint nut when refitting.

- ☐ Fit the driveshaft into the gearbox as horizontally as possible.
- ☐ Engage the driveshaft into the stub axle carrier.

Note:

The driveshaft must fit freely into the stub axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Refit:
 - the shock absorber base bolts,
 - the shock absorber base nuts.
- ☐ Torque tighten the **shock absorber base bolts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit the hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using the tool (**Rou. 604-01**).
- ☐ Refit the brake hose and wheel speed sensor wiring support.
- ☐ Tighten the **bolt of the brake hose and wheel speed sensor wiring support (8 N.m)**.
- ☐ Clip:
 - the brake hose,
 - the wheel speed sensor wiring.

III - FINAL OPERATION

- ☐ Refit the front left-hand wheel (see **Wheel: Removal - Refitting**) .
- ☐ Top up the automatic transmission (see **Automatic gearbox oil: Draining - Filling**) . (Put back the quantity equivalent to the quantity recovered).
- ☐ Refit the engine undertray.

Front left-hand driveshaft: Removal - Refitting

AJ0

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques

shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the brake hose and wheel speed sensor wiring support	8 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

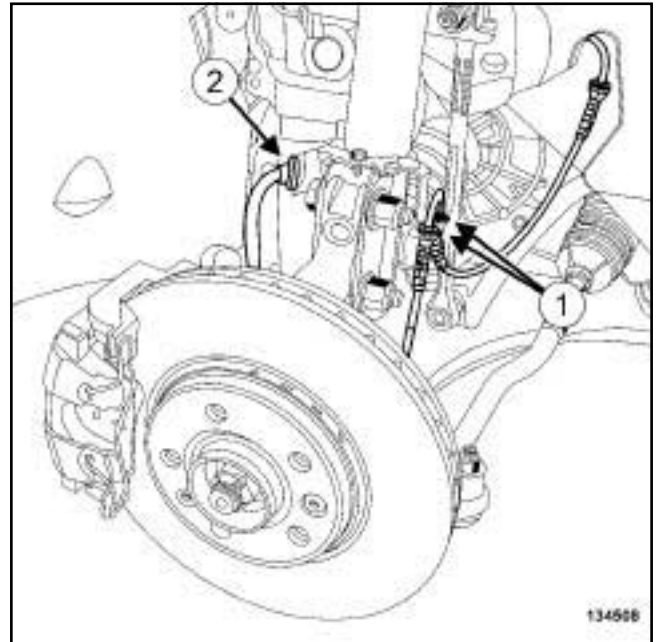
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray bolts,
 - the engine undertray.

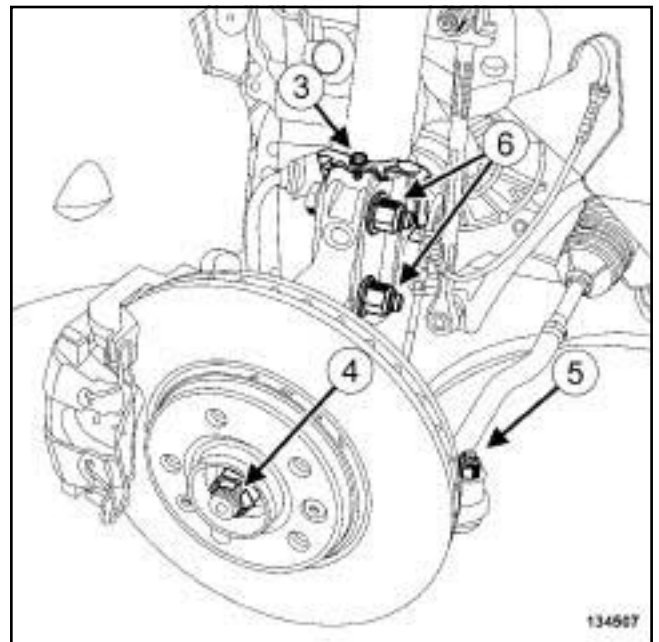
II - OPERATION FOR REMOVAL OF PART CONCERNED



134508

☐ Unclip:

- the wheel speed sensor wiring at (1) ,
- the front brake hose at (2) .



134507

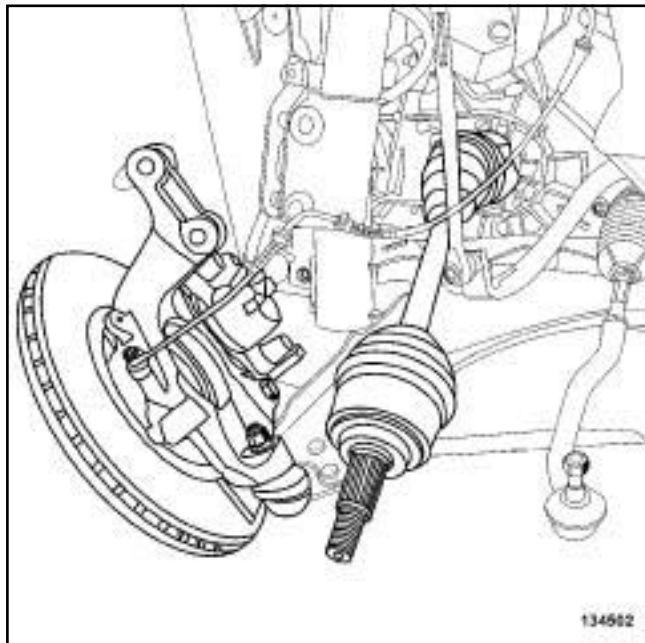
☐ Remove:

- the bolt (3) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,

Front left-hand driveshaft: Removal - Refitting

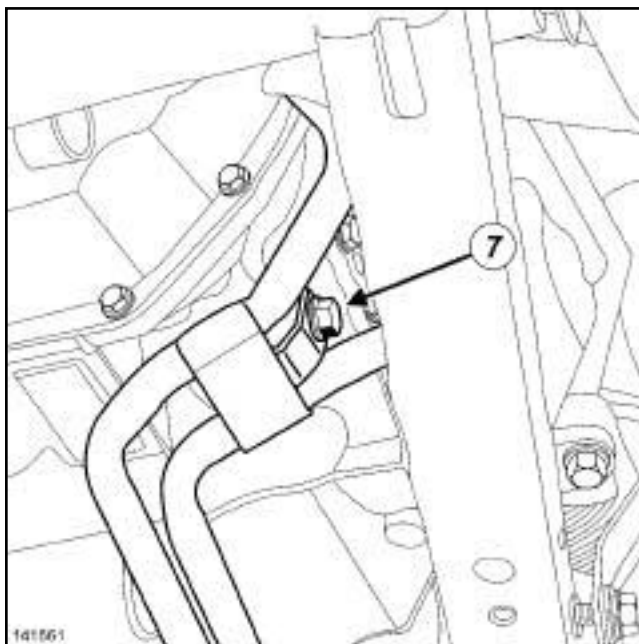
AJ0

- the nut (4) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the nut (5) from the track rod end,
- the track rod end from the hub carrier using the tool (**Tav. 476**),
- the shock absorber base studs (6) .

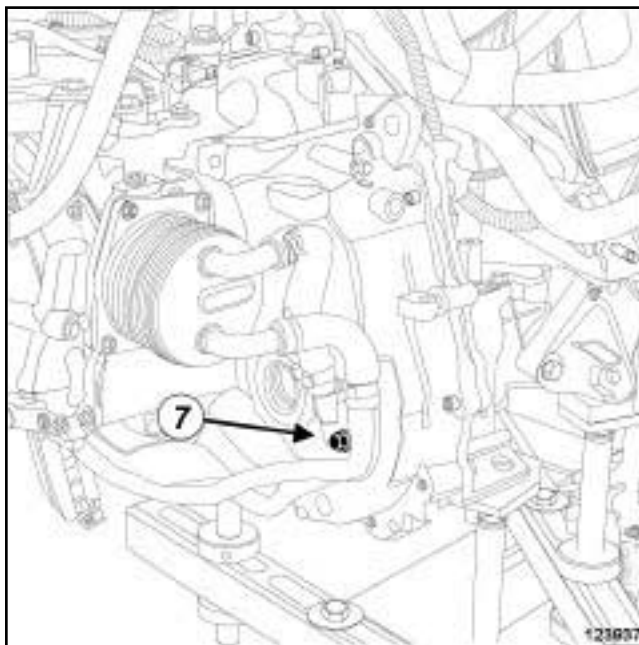


134502

- ☐ Push the front left-hand driveshaft back from the hub carrier by pivoting the hub carrier.



141561

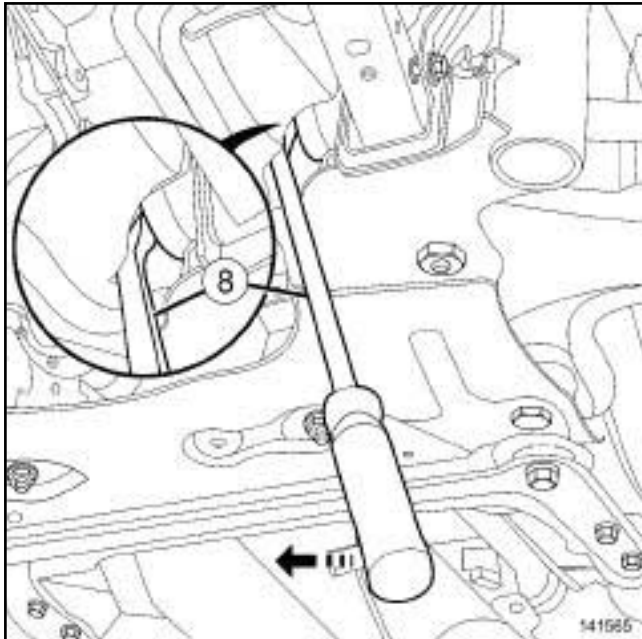


123937

- ☐ Remove the bolts (7) from the gearbox oil coolant pipes.
- ☐ Move aside the gearbox oil coolant pipes.

Front left-hand driveshaft: Removal - Refitting

AJ0



141565

□

Note:

Do not apply pressure to the gearbox oil coolant pipes.

- Disengage the front left-hand driveshaft from the gearbox using a lever (8) .
- Remove the front left-hand driveshaft.

REFITTING

I - REFITTING PREPARATION OPERATION

- **parts always to be replaced: Front wheel hub nut (13,02,03,20)**

II - REFITTING OPERATION FOR PART CONCERNED

- Fit the front left-hand driveshaft into the gearbox as horizontally as possible.
- Fit the gearbox oil coolant pipes.
- Refit the bolts on the gearbox oil coolant pipes.

Note:

The driveshaft must fit freely into the hub carrier until it protrudes enough for the hub nut to be fitted.

- Engage the driveshaft into the hub carrier.
- Refit the shock absorber base bolts.

- Torque tighten the **shock absorber base bolts (180 N.m)**.
- Position the track rod.
- Torque tighten the **track rod end nut (37 N.m)**.
- Refit the hub nut.
- Torque tighten the **hub nut (280 N.m)** while immobilising the hub using the tool (**Rou. 604-01**).
- Refit:
 - the brake hose and wheel speed sensor wiring support,
 - the bolt of the brake hose and wheel speed sensor wiring support.
- Torque tighten the **bolt of the brake hose and wheel speed sensor wiring support (8 N.m)**.
- Clip:
 - the wheel speed sensor wiring,
 - the brake hose.

III - FINAL OPERATION

- Refit:
 - the engine undertray,
 - the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

Front right-hand driveshaft: Removal - Refitting

PK4

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Equipment required

component jack

Tightening torques 

relay bearing bolt	21 N.m
shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
wheel speed sensor wiring support bolt	8 N.m
pivot support bolts	120 N.m
hub carrier lower ball joint bolt	27.5 N.m
lower ball joint nut	62 N.m
anti-rotation linkage nuts	80 N.m
calliper hose retaining bolt	21 N.m
track rod end nut	37 N.m
hub nut	280 N.m

WARNING

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

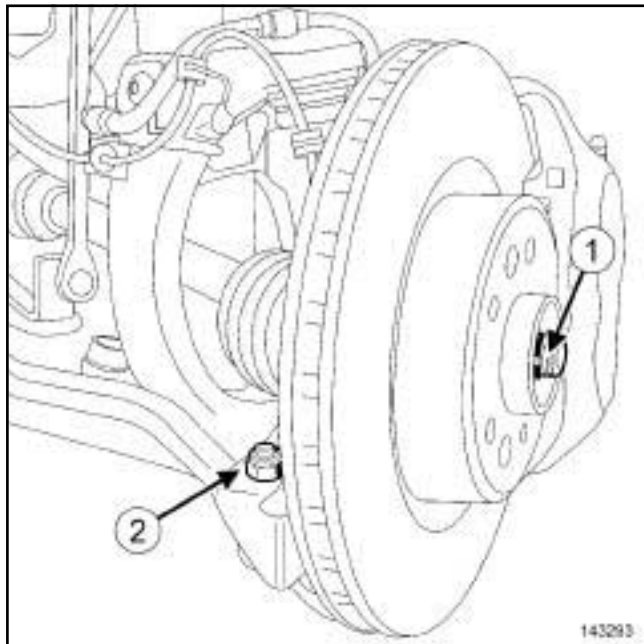
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

PK4

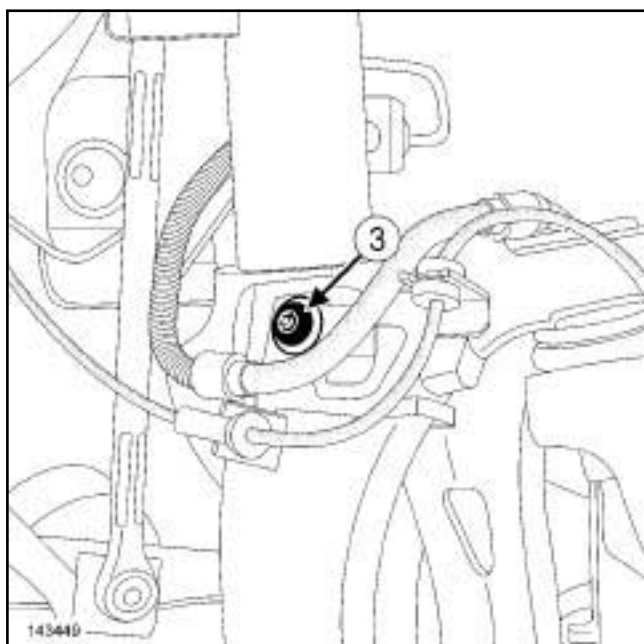
II - OPERATION FOR REMOVAL OF PART CONCERNED

PK4, and 018 or 019

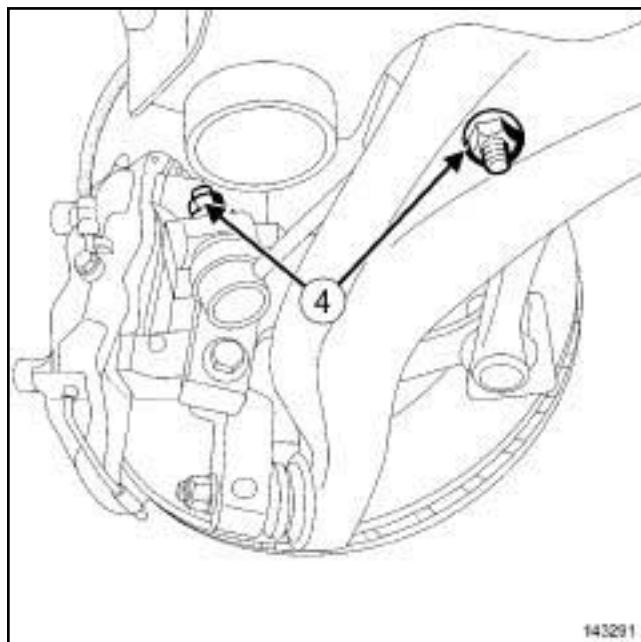


❑ Remove:

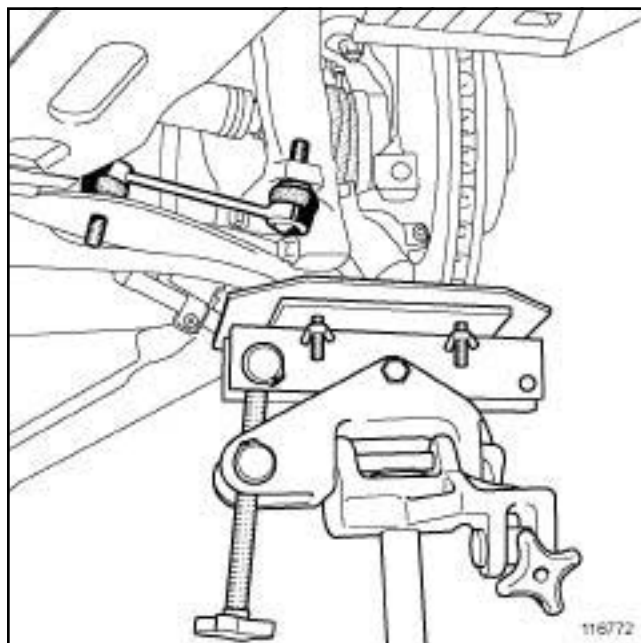
- the nut (1) from the hub, immobilising the hub using the **(Rou. 604-01)**,
- the nut (2) from the track rod end,
- the track rod end from the hub carrier using the tool **(Tav. 476)**.



- ❑ Remove the calliper hose retaining bolt (3) .

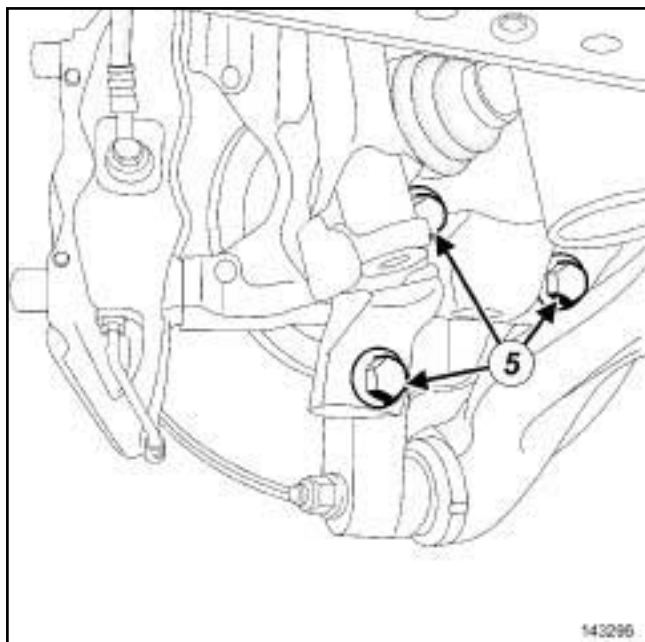


- ❑ Remove the nuts (4) from the anti-rotation linkage.



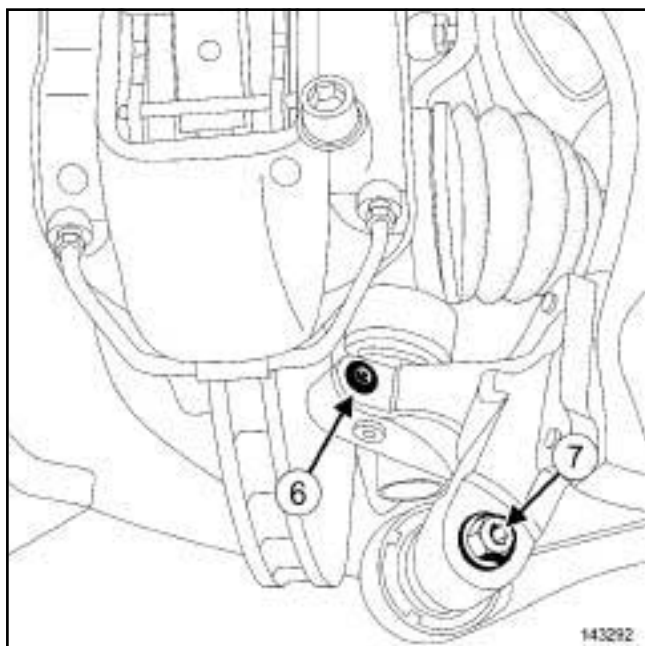
- ❑ Fit a **component jack** to compress the suspension.
- ❑ Remove the anti-rotation linkage.
- ❑ Remove the **component jack**.

PK4



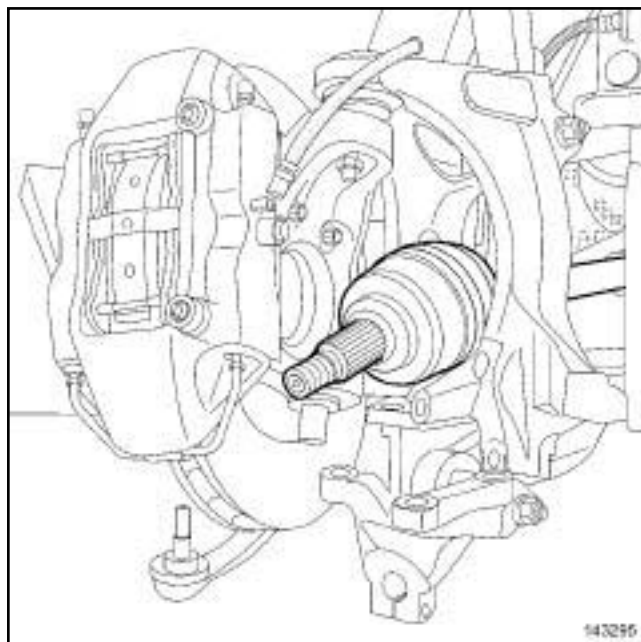
143296

- ❑ Remove the bolts (5) from the pivot support.



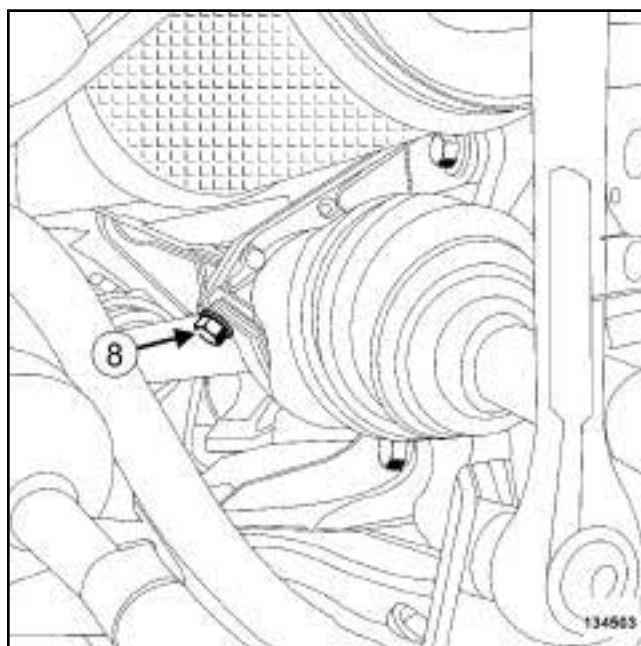
143292

- ❑ Remove:
 - the bolt (6) of the hub carrier lower ball joint,
 - the lower ball joint nut (7) ,
 - the lower ball joint from the lower wishbone using the tool (Tav. 476),
 - the pivot support.
- ❑ Separate the « spring - shock absorber - pivot » assembly.



143295

- ❑ Push back the front right-hand driveshaft from the hub carrier using the assembled tools (Tav. 1420-01) and (Tav. 1050-04).



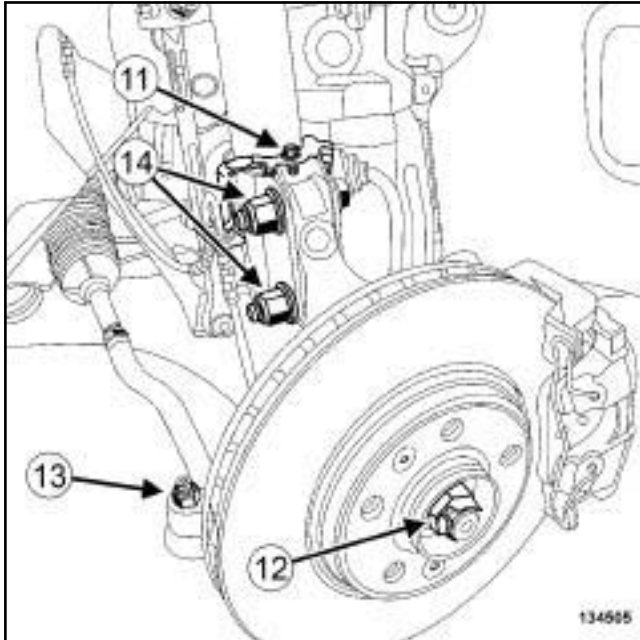
134503

- ❑ Remove the driveshaft bearing bolt (8) .
- ❑ Extract the driveshaft from the gearbox.
- ❑ Remove:
 - the front right-hand driveshaft.

PK4

- the right-hand differential output seal (see **Differential output seal: Removal - Refitting**).

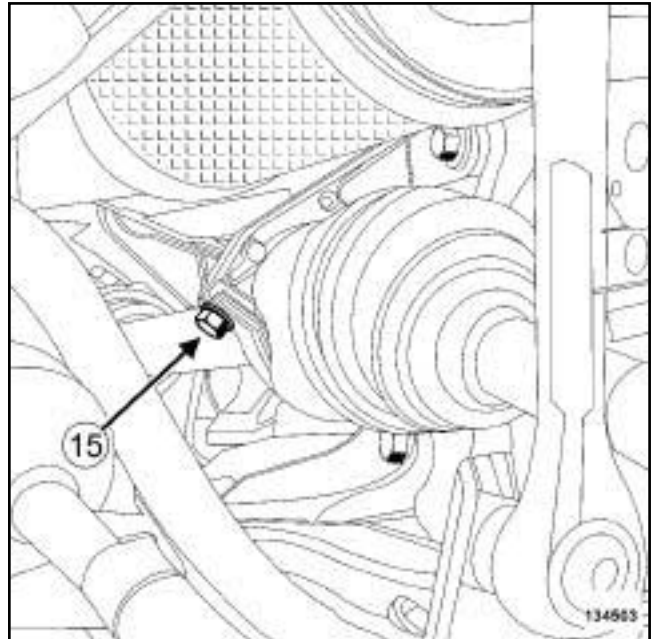
PK4, and 014 or 015 or 017



134505

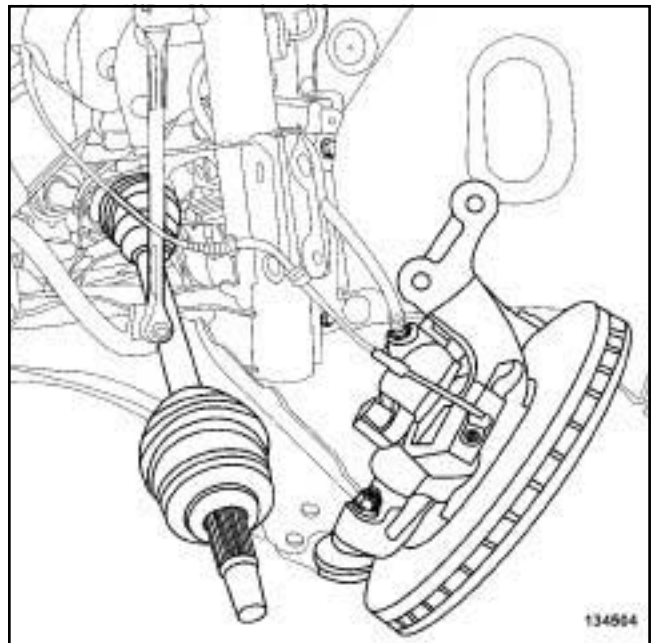
❑ Remove:

- the bolt (11) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,
- the nut (12) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the nut (13) from the track rod end,
- the track rod end from the hub carrier using the tool (**Tav. 476**),
- the shock absorber base studs (14).



134503

❑ Remove the driveshaft relay bearing bolt (15).



134504

❑ Push back the front right-hand driveshaft from the hub carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).

❑ Remove:

- the front right-hand driveshaft.
- the right-hand differential output seal (see **Differential output seal: Removal - Refitting**).

PK4

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ **parts always to be replaced: Front wheel hub nut (13,02,03,20).**
- ☐ **parts always to be replaced: relay bearing bracket bolt (13,01,01,11).**

Note:

Always replace the relay bearing self-threading bolt with a classic tapered-end bolt or a cylindrical-pilot bolt every time the right-hand driveshaft is removed (except if the entire relay bearing is replaced, in which case it is supplied with a self-threading bolt).

- ☐ Clean the bore of the driveshaft relay bearing into which the bearing will be fitted using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ☐ Clean and lubricate the bore of the driveshaft relay bearing into which the bearing will be fitted using **BR2+GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit a new right-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

- ☐ Fit the front right-hand driveshaft into the gearbox as horizontally as possible.
- ☐ Refit:
 - the front right-hand driveshaft into the relay bearing,
 - a new relay bearing bolt.
- ☐ Torque tighten the **relay bearing bolt (21 N.m)**.

- ☐ Insert the front right-hand driveshaft into the hub carrier.

Note:

The driveshaft must fit freely into the hub carrier until it protrudes enough for the hub nut to be fitted.

PK4, and 014 or 015 or 017

- ☐ Refit the shock absorber base bolts.
- ☐ Torque tighten the **shock absorber base bolts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool (**Rou. 604-01**).
- ☐ Refit:
 - the brake hose and wheel speed sensor wiring support,
 - the bolt of the brake hose and wheel speed sensor wiring support.
- ☐ Torque tighten the **wheel speed sensor wiring support bolt (8 N.m)**.
- ☐ Clip:
 - the wheel speed sensor wiring,
 - the brake hose.

Front right-hand driveshaft: Removal - Refitting

PK4

PK4, and 018 or 019

- ☐ Fit the « spring - shock absorber - pivot » assembly.
- ☐ Position the pivot support.
- ☐ Refit:
 - the bolts of the pivot support,
 - the bolt of the hub carrier lower ball joint.
- ☐ Torque tighten:
 - the **pivot support bolts (120 N.m)**,
 - the **hub carrier lower ball joint bolt (27.5 N.m)**.
- ☐ Refit the lower ball joint on the lower wishbone.
- ☐ Torque tighten the **lower ball joint nut (62 N.m)**.
- ☐ Fit a **component jack** to compress the suspension.
- ☐ Refit the anti-rotation linkage.
- ☐ Remove the **component jack**.
- ☐ Torque tighten the **anti-rotation linkage nuts (80 N.m)**.
- ☐ Refit the calliper hose retaining bolt.
- ☐ Torque tighten the **calliper hose retaining bolt (21 N.m)**.
- ☐ Refit the track rod end on the hub carrier.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut, immobilising the hub using the tool (**Rou. 604-01**).
- ☐ Torque tighten the **hub nut (280 N.m)**.


III - FINAL OPERATION

- ☐ Fill up the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .
- ☐ Refit:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front right-hand driveshaft: Removal - Refitting

TL4

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Tightening torques 	
relay bearing bolt	21 N.m
shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
wheel speed sensor support bolt	8 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

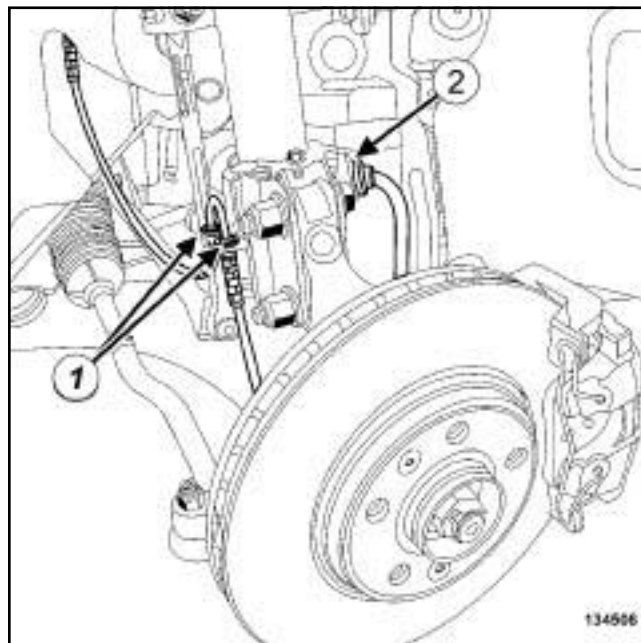
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

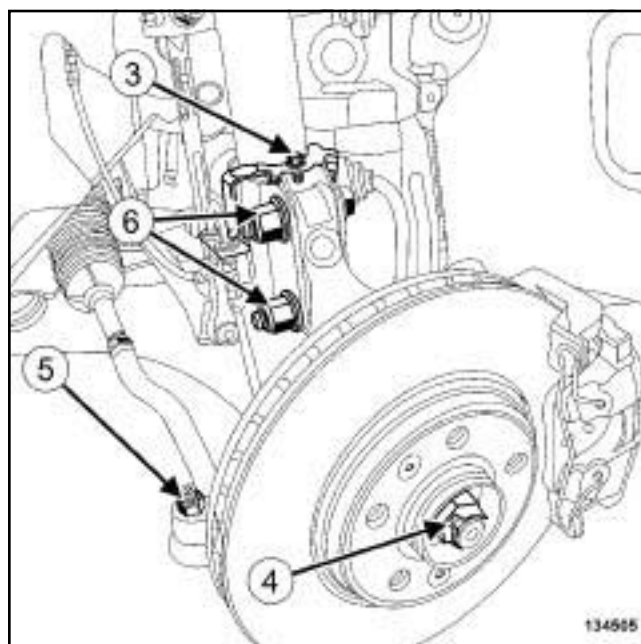
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



☐ Unclip:

- the wheel speed sensor wiring at (1) ,
- the brake hose at (2)



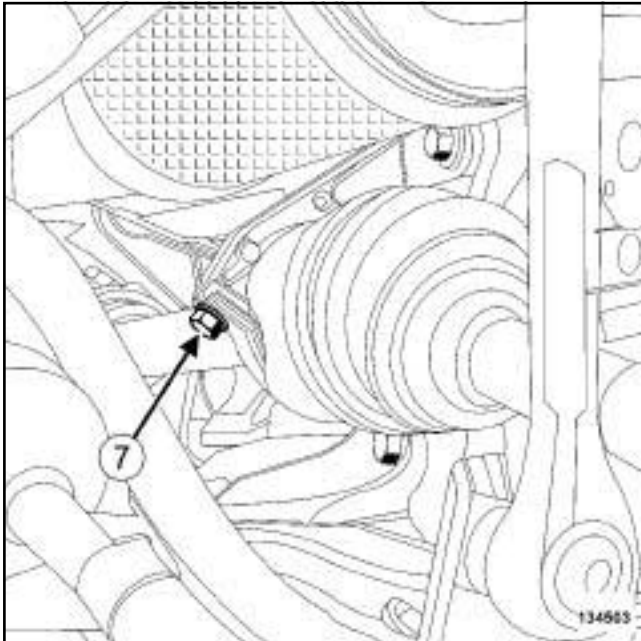
☐ Remove:

- the bolt (3) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,

Front right-hand driveshaft: Removal - Refitting

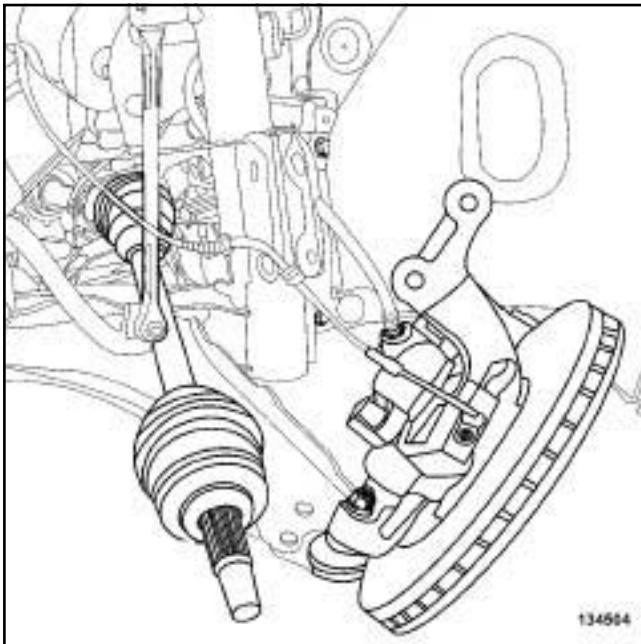
TL4

- the nut (4) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the nut (5) from the track rod end,
- the track rod end from the hub carrier using the tool (**Tav. 476**),
- the shock absorber base studs (6) .



134503

- ☐ Remove the driveshaft relay bearing bolt (7) .



134504

- ☐ Push back the front right-hand driveshaft from the stub axle carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).

- ☐ Remove:

- the front right-hand driveshaft,
- the right-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Front wheel hub nut (13,02,03,20).
- ☐ parts always to be replaced: relay bearing bracket bolt (13,01,01,11).

Note:

Always replace the relay bearing self-threading bolt with a classic tapered-end bolt or a cylindrical-pilot bolt every time the right-hand driveshaft is removed (except if the entire relay bearing is replaced, in which case it is supplied with a self-threading bolt).

- ☐ Clean and grease the driveshaft relay bearing bore into which the bearing is inserted with **BR2+ GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the new right-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

- ☐ Fit the front right-hand driveshaft into the gearbox as horizontally as possible.
- ☐ Refit:
 - the front right-hand driveshaft into the relay bearing,
 - a new relay bearing bolt.
- ☐ Torque tighten the **relay bearing bolt (21 N.m)**.

Front right-hand driveshaft: Removal - Refitting

TL4

- ☐ Insert the front right-hand driveshaft into the hub carrier.

Note:

The driveshaft must fit freely into the hub carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Refit the shock absorber base bolts.
- ☐ Torque tighten the **shock absorber base bolts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool **(Rou. 604-01)**.
- ☐ Refit:
 - the brake hose and wheel speed sensor wiring support,
 - the bolt of the brake hose and wheel speed sensor wiring support.
- ☐ Torque tighten the **wheel speed sensor support bolt (8 N.m)**.
- ☐ Clip:
 - the wheel speed sensor wiring,
 - the brake hose.


III - FINAL OPERATION

- ☐ Fill up the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .
- ☐ Refit:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front right-hand driveshaft: Removal - Refitting

ND4

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Tightening torques 	
relay bearing bolt	21 N.m
shock absorber base nuts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the wheel speed sensor wiring support	8 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

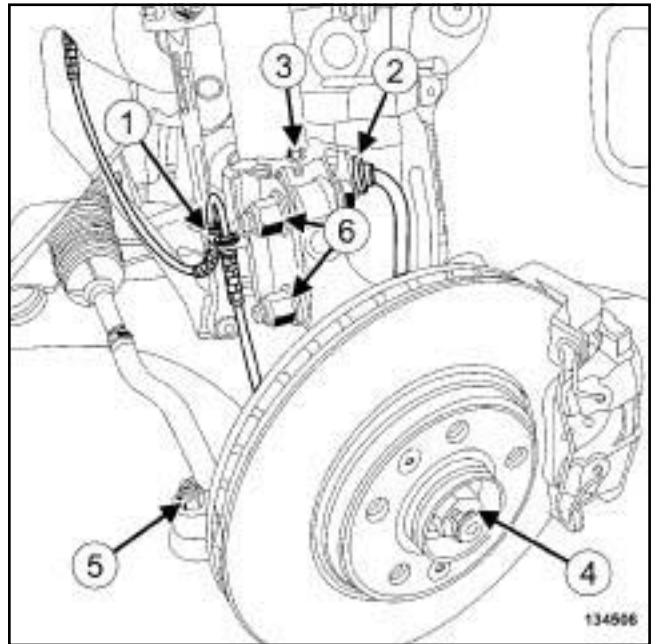
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



134506

☐ Unclip:

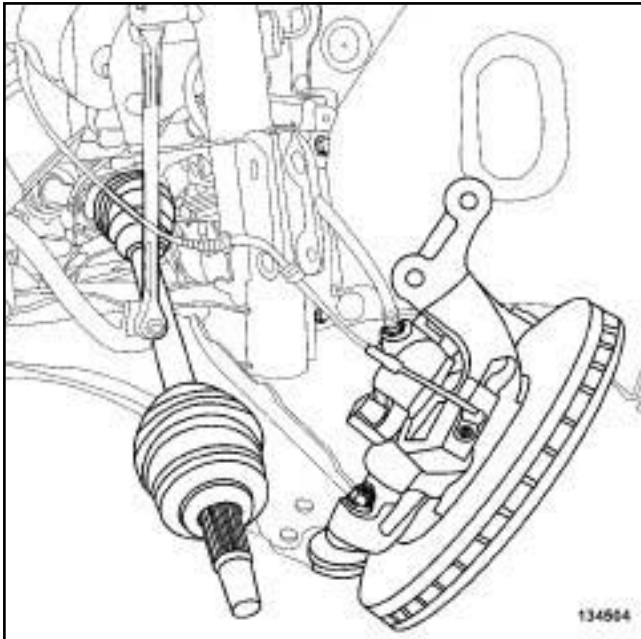
- the wheel speed sensor wiring (1) ,
- the brake hose (2) .

☐ Remove:

- the bolt (3) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,
- the nut (4) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the track rod end nut (5) ,
- the track rod end from the stub axle carrier using the (**Tav. 476**),
- the shock absorber base bolts (6) .

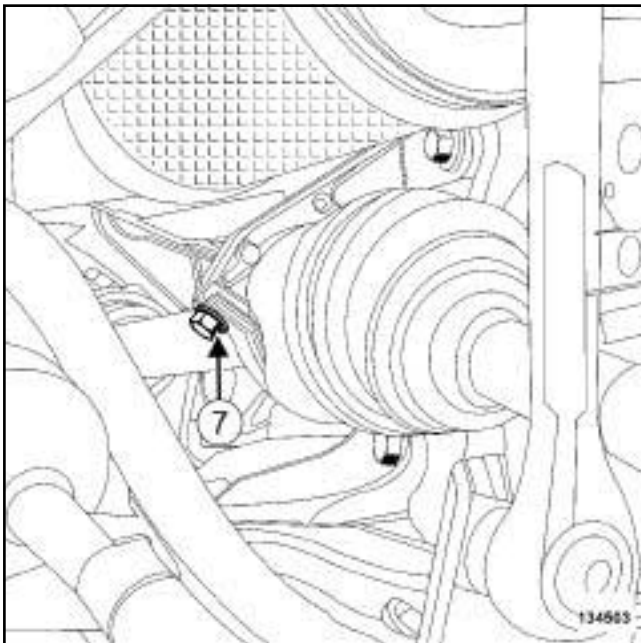
Front right-hand driveshaft: Removal - Refitting

ND4



134504

- ☐ Push back the front right-hand driveshaft from the stub axle carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).



134503

- ☐ Remove:
 - the bolt (7) for the driveshaft relay bearings,
 - the front right-hand driveshaft,
 - the right-hand differential output seal (see **Differential output seal: Removal - Refitting**).

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: relay bearing bracket bolt (13,01,01,11).
- ☐ parts always to be replaced: Front wheel hub nut (13,02,03,20).

Note:

Always replace the relay bearing self-tapping bolt with a classic tapered-end bolt or a cylindrical-pilot bolt every time the right-hand driveshaft is removed (except if the entire relay bearing is replaced, in which case it is supplied with a self-tapping bolt).

- ☐ Clean the bore of the driveshaft relay bearing into which the bearing will be fitted using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ☐ Lubricate the bore of the driveshaft relay bearing into which the bearing is fitted using **BR2+GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the right-hand differential output seal (see **Differential output seal: Removal - Refitting**).

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

- ☐ Fit the driveshaft into the gearbox as horizontally as possible.
- ☐ Refit:
 - the driveshaft into the relay bearing,
 - a new relay bearing bolt.
- ☐ Torque tighten the **relay bearing bolt (21 N.m)**
- ☐ Engage the driveshaft into the stub axle carrier.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

Front right-hand driveshaft: Removal - Refitting

ND4

- ☐ Refit:
 - the shock absorber base bolts,
 - the shock absorber base nuts.
- ☐ Torque tighten the **shock absorber base nuts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool (**Rou. 604-01**).
- ☐ Refit the brake hose and wheel speed sensor wiring support.
- ☐ Torque tighten the **bolt of the wheel speed sensor wiring support (8 N.m)**.
- ☐ Clip:
 - the brake hose,
 - the wheel speed sensor wiring.


III - FINAL OPERATION

- ☐ Top up the gearbox (see **Manual gearbox oils: Draining - Filling**) .
- ☐ Refit:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front right-hand driveshaft: Removal - Refitting

JH3 or JR5

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Tightening torques 	
relay bearing bolt	21 N.m
shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
brake hose retaining bracket bolt8	N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

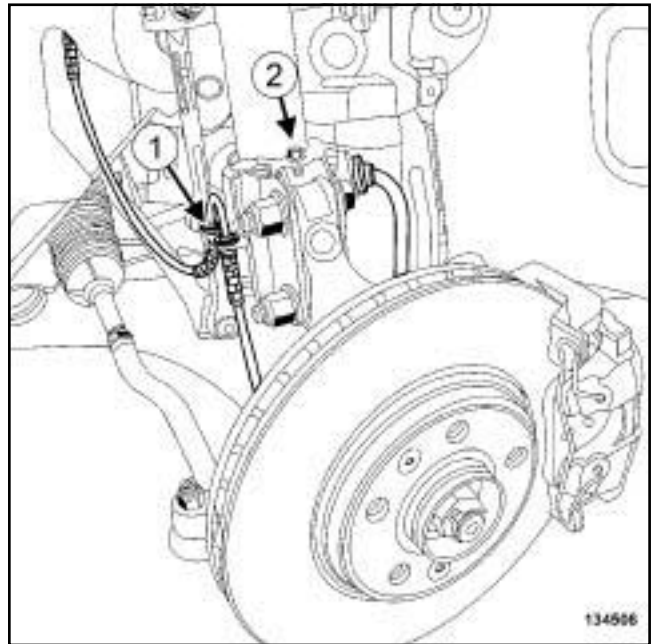
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Drain the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .

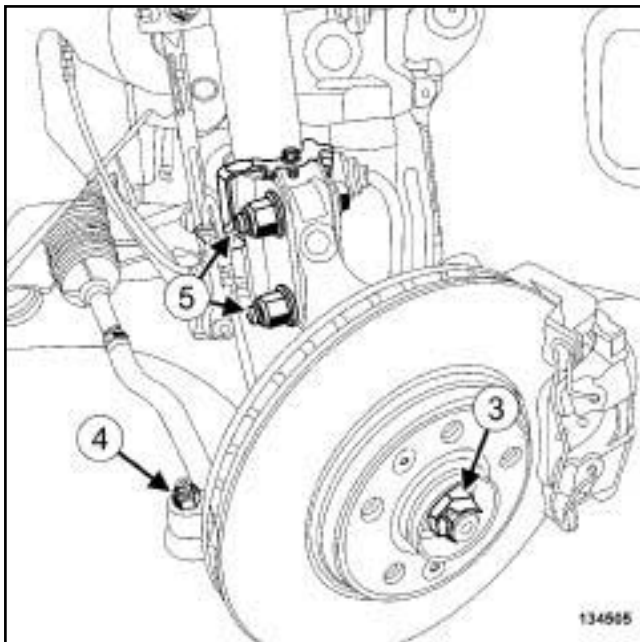
II - OPERATION FOR REMOVAL OF PART CONCERNED



134506

- ☐ Unclip the wiring from the wheel speed sensor at (1) .
- ☐ Remove the bolt (2) from the brake hose retaining bracket.
- ☐ Move aside the brake hose retaining bracket.

JH3 or JR5



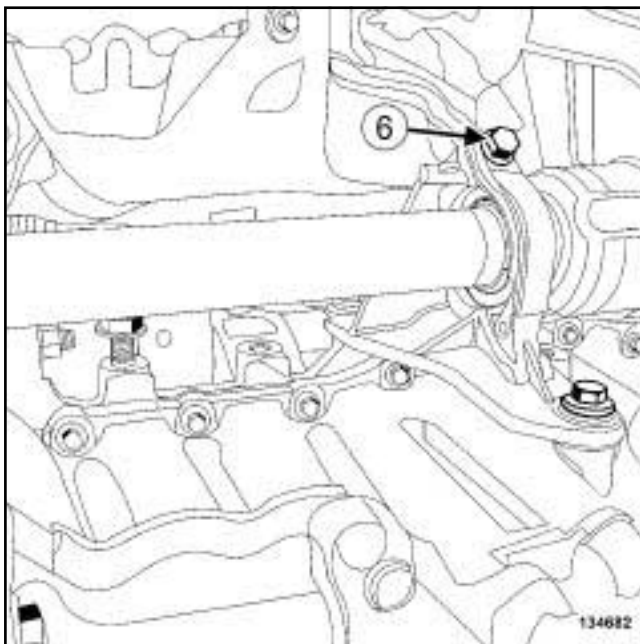
134505

☐ Remove:

- the hub nut (3) by immobilising the hub using the tool (**Rou. 604-01**),
- the track rod end nut (4) .

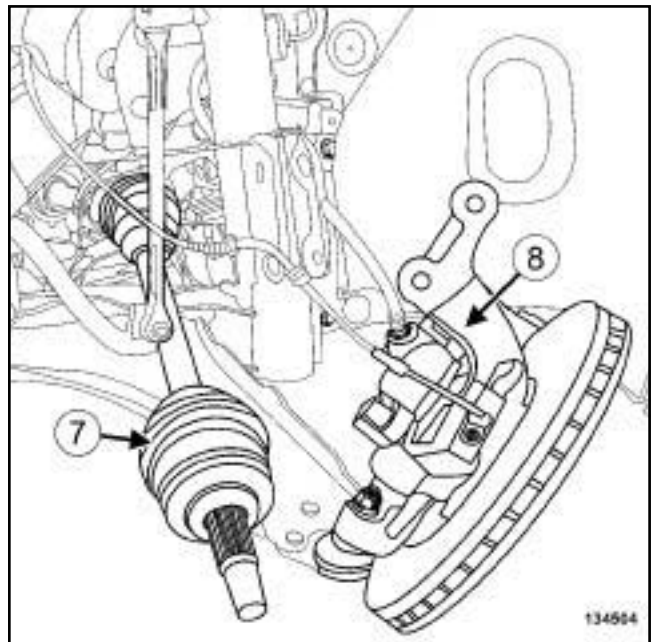
☐ Detach the track rod end using the (**Tav. 476**).

☐ Remove the shocker absorber base bolts (5) .



134682

☐ Remove the bolt (6) from the front right-hand driveshaft relay bearing.



134504

☐ Push back the front right-hand driveshaft (7) from the stub axle carrier (8) using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).

☐ Remove:

- the front right-hand driveshaft from the gearbox,
- the front right-hand driveshaft.
- the right-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Front wheel hub nut (13,02,03,20).
- ☐ parts always to be replaced: relay bearing bracket bolt (13,01,01,11).
- ☐ Clean and grease the relay bearing hole on the front right-hand driveshaft into which the bearing is inserted with **BR2 + GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

Front right-hand driveshaft: Removal - Refitting

JH3 or JR5

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit a new right-hand differential output seal (see **Differential output seal: Removal - Refitting**) .

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and the universal joint nut when refitting.

- ☐ Position and fit the front right-hand driveshaft into the gearbox.
- ☐ Refit the front right-hand driveshaft in the relay bearing equipped with a new bolt.
- ☐ Torque tighten the **relay bearing bolt (21 N.m)**.
- ☐ Insert the front right-hand driveshaft into the stub axle carrier.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Refit the shock absorber base bolts.
- ☐ Torque tighten the **shock absorber base bolts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit a new hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool (**Rou. 604-01**).
- ☐ Fit the retaining bracket of the brake hose.
- ☐ Refit the brake hose retaining bracket.
- ☐ Torque tighten the **brake hose retaining bracket bolt8 (N.m)**.
- ☐ Clip on the wheel speed sensor wiring harness.

III - FINAL OPERATION

- ☐ Fill up the manual gearbox (see **Manual gearbox oils: Draining - Filling**) .
- ☐ Refit:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray.

Front right-hand driveshaft: Removal - Refitting

FK0

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Equipment required

oil recovery tray

Tightening torques

relay bearing bolt	21 N.m
shock absorber base nuts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the brake hose and wheel speed sensor wiring support	8 N.m

WARNING

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

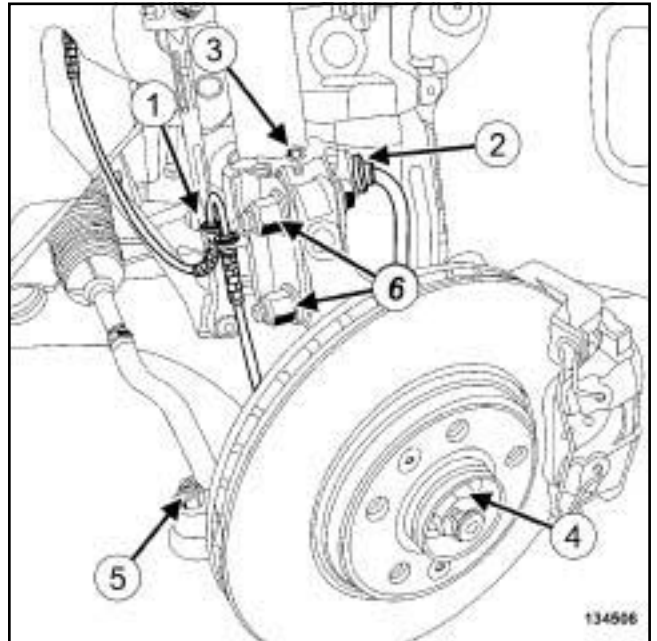
I - REMOVAL PREPARATION OPERATION

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

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

- ☐ Fit a **oil recovery tray**.

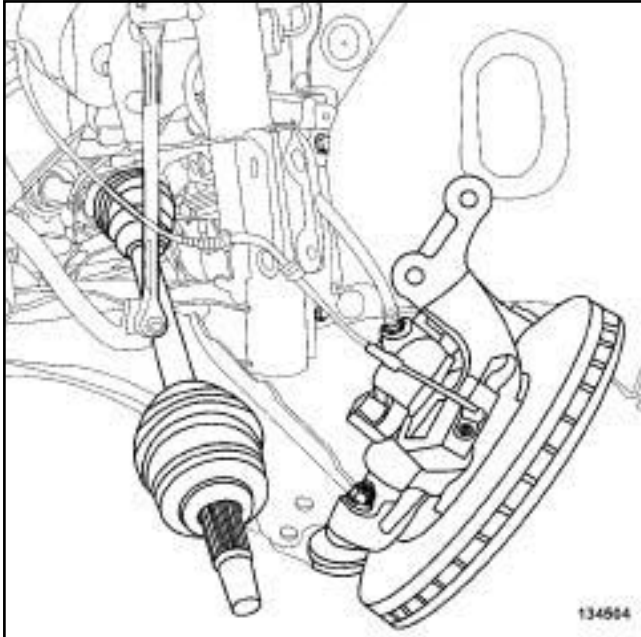
II - OPERATION FOR REMOVAL OF PART CONCERNED



134506

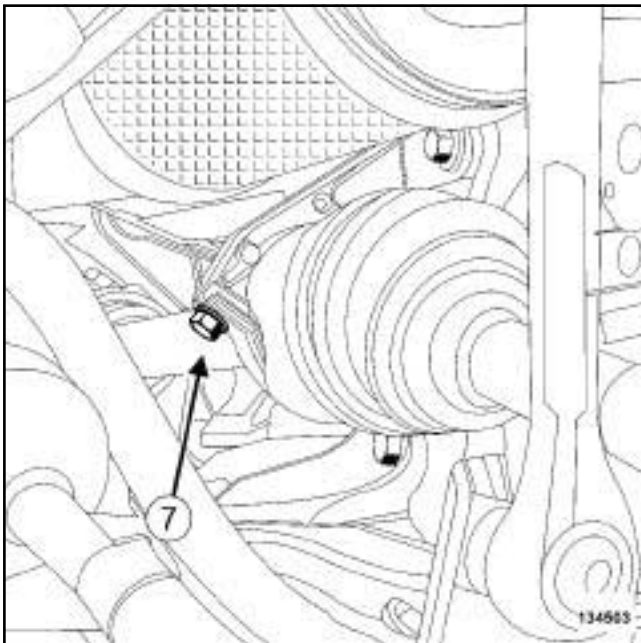
- ☐ Unclip:
 - the wheel speed sensor wiring (1) ,
 - the brake hose (2) .
- ☐ Remove:
 - the bolt (3) of the brake hose and wheel speed sensor wiring support,
 - the brake hose and wheel speed sensor wiring support,
 - the nut (4) from the hub, immobilising the hub using the **(Rou. 604-01)**,
 - the track rod end nut (5) ,
 - the track rod end from the stub axle carrier using the **(Tav. 476)**,
 - the bolts and the nuts (6) from the shock absorber base.

FK0



134504

- ☐ Push back the driveshaft from the stub-axle carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).



134503

- ☐ Remove:
 - the driveshaft relay bearing bolt (7) ,
 - the front right-hand driveshaft.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace:
 - the universal joint nut,
 - the relay bearing bracket bolt,
 - the differential output seal (see **Differential output seal: Removal - Refitting**) .

Note:

Always replace the self-tapping bolt on the relay bearing with a standard ogival ended bolt or a cylindrical pilot point bolt whenever the right-hand driveshaft is removed (except for a complete replacement of the relay bearing as it is supplied with a self-tapping bolt).

- ☐ Clean the bore of the driveshaft relay bearing into which the bearing will be fitted using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ☐ Lubricate the bore of the driveshaft relay bearing into which the bearing is fitted using **BR2+ GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

☐

Note:

When removing, if there is threadlock on the splines of the universal joint and the universal joint nut, apply threadlock to the splines of the universal joint and universal joint nut when refitting. (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

- ☐ Fit the driveshaft into the gearbox as horizontally as possible.
- ☐ Refit:
 - the driveshaft into the relay bearing,
 - the new bearing bolt.
- ☐ Torque tighten the **relay bearing bolt (21 N.m)**.

Front right-hand driveshaft: Removal - Refitting

FK0

- ☐ Insert the driveshaft in the stub-axle carrier.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.


- ☐ Refit:
 - the shock absorber base bolts,
 - the shock absorber base nuts.
- ☐ Torque tighten the **shock absorber base nuts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit the hub nut.
- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool **(Rou. 604-01)**.
- ☐ Refit:
 - the brake hose and wheel speed sensor wiring support,
 - the bolt of the brake hose and wheel speed sensor wiring support.
- ☐ Torque tighten the **bolt of the brake hose and wheel speed sensor wiring support (8 N.m)**.
- ☐ Clip:
 - the brake hose,
 - the wheel speed sensor wiring.

III - FINAL OPERATION

- ☐ Refit the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Fill up the manual gearbox (see **Automatic gearbox oil: Draining - Filling**) . (Put back the quantity equivalent to the quantity recovered)
- ☐ Refit the engine undertray.

AJ0

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1420-01	Screw jack for tools Tav. 1420, Tav.1050-04 , Tar. 1454, Tar. 1850.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Tightening torques 	
relay bearing bolt	21 N.m
shock absorber base bolts	180 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the brake hose and wheel speed sensor wiring support	8 N.m

WARNING

In order to prevent irreversible damage to the front hub bearing:

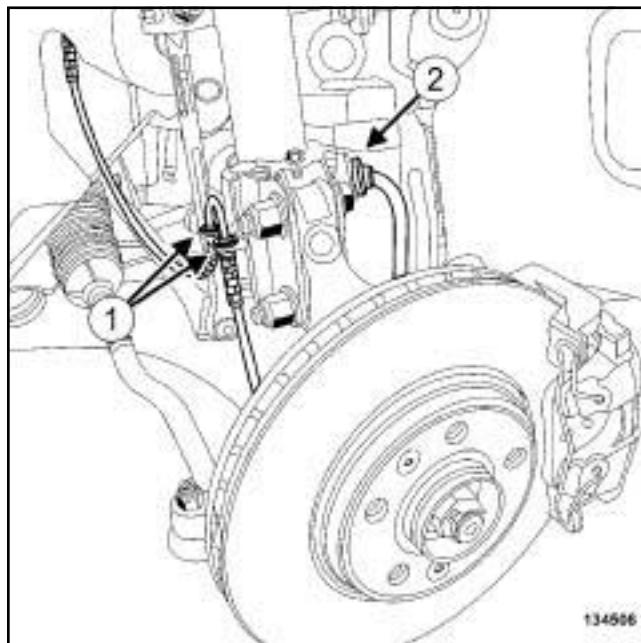
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

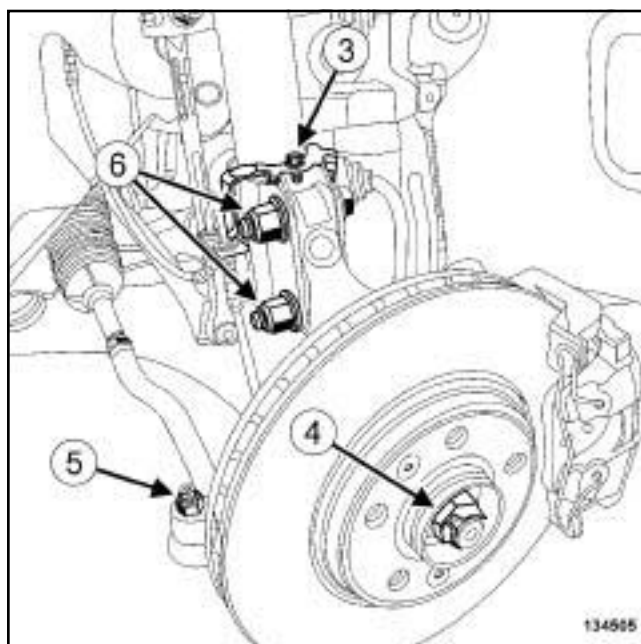
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray bolts,
 - the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED



☐ Unclip:

- the wheel speed sensor wiring (1) ,
- the brake hose (2) .

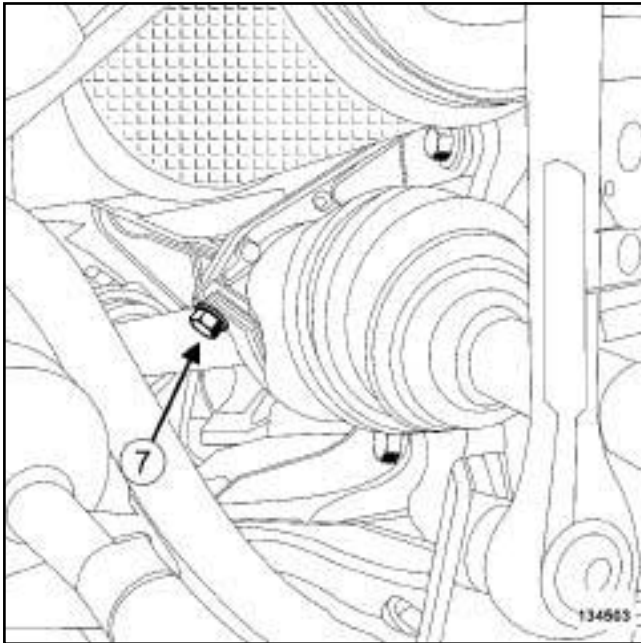


☐ Remove:

- the bolt (3) of the brake hose and wheel speed sensor wiring support,
- the brake hose and wheel speed sensor wiring support,

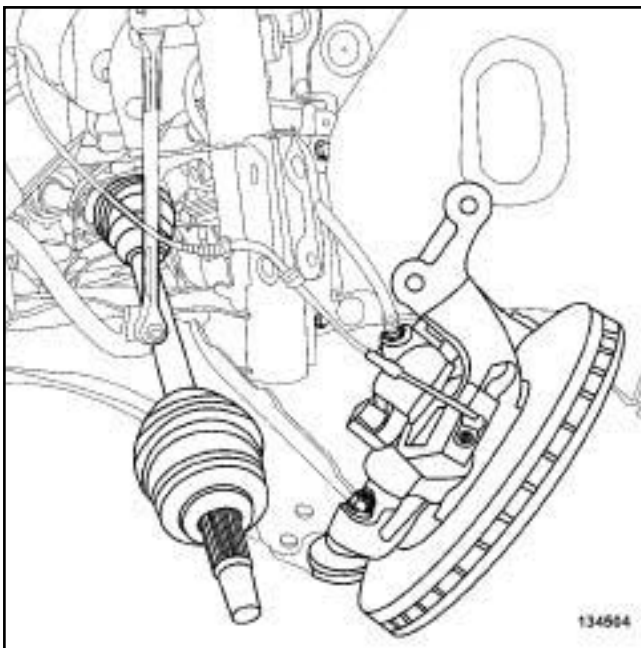
AJ0

- the nut (4) from the hub, immobilising the hub using the (**Rou. 604-01**),
- the track rod end nut (5) ,
- the track rod end from the hub carrier using the tool (**Tav. 476**),
- the shock absorber base studs (6) .



134503

- ☐ Remove the driveshaft relay bearing bolt (7) .



134504

- ☐ Push back the driveshaft from the hub carrier using the assembled tools (**Tav. 1420-01**) and (**Tav. 1050-04**).
- ☐ Remove the front right-hand driveshaft.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Front wheel hub nut (13,02,03,20)
- ☐ parts always to be replaced: relay bearing bracket bolt (13,01,01,11)

Note:

Always replace the relay bearing self-threading bolt with a classic tapered-end bolt or a cylindrical-pilot bolt every time the right-hand driveshaft is removed (except if the entire relay bearing is replaced, in which case it is supplied with a self-threading bolt).

- ☐ Clean the bore of the driveshaft relay bearing into which the bearing will be fitted using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ☐ Lubricate the bore of the driveshaft relay bearing into which the bearing is fitted using **BR2+ GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the driveshaft into the gearbox as horizontally as possible.
- ☐ Refit:
 - the front right-hand driveshaft into the relay bearing,
 - a new relay bearing bolt.
- ☐ Torque tighten the **relay bearing bolt (21 N.m)**.
- ☐ Insert the front right-hand driveshaft into the hub carrier.

Note:

The driveshaft must fit freely into the hub carrier until it protrudes enough for the hub nut to be fitted.

- ☐ Refit the shock absorber base bolts.
- ☐ Torque tighten the **shock absorber base bolts (180 N.m)**.
- ☐ Position the track rod.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Refit the hub nut.

Front right-hand driveshaft: Removal - Refitting

AJ0

- ☐ Torque tighten the **hub nut (280 N.m)** while immobilising the hub using tool (**Rou. 604-01**).
- ☐ Refit:
 - the brake hose and wheel speed sensor wiring support,
 - the bolt of the brake hose and wheel speed sensor wiring support.
- ☐ Torque tighten the **bolt of the brake hose and wheel speed sensor wiring support (8 N.m)**.
- ☐ Clip:
 - the brake hose,
 - the wheel speed sensor wiring.

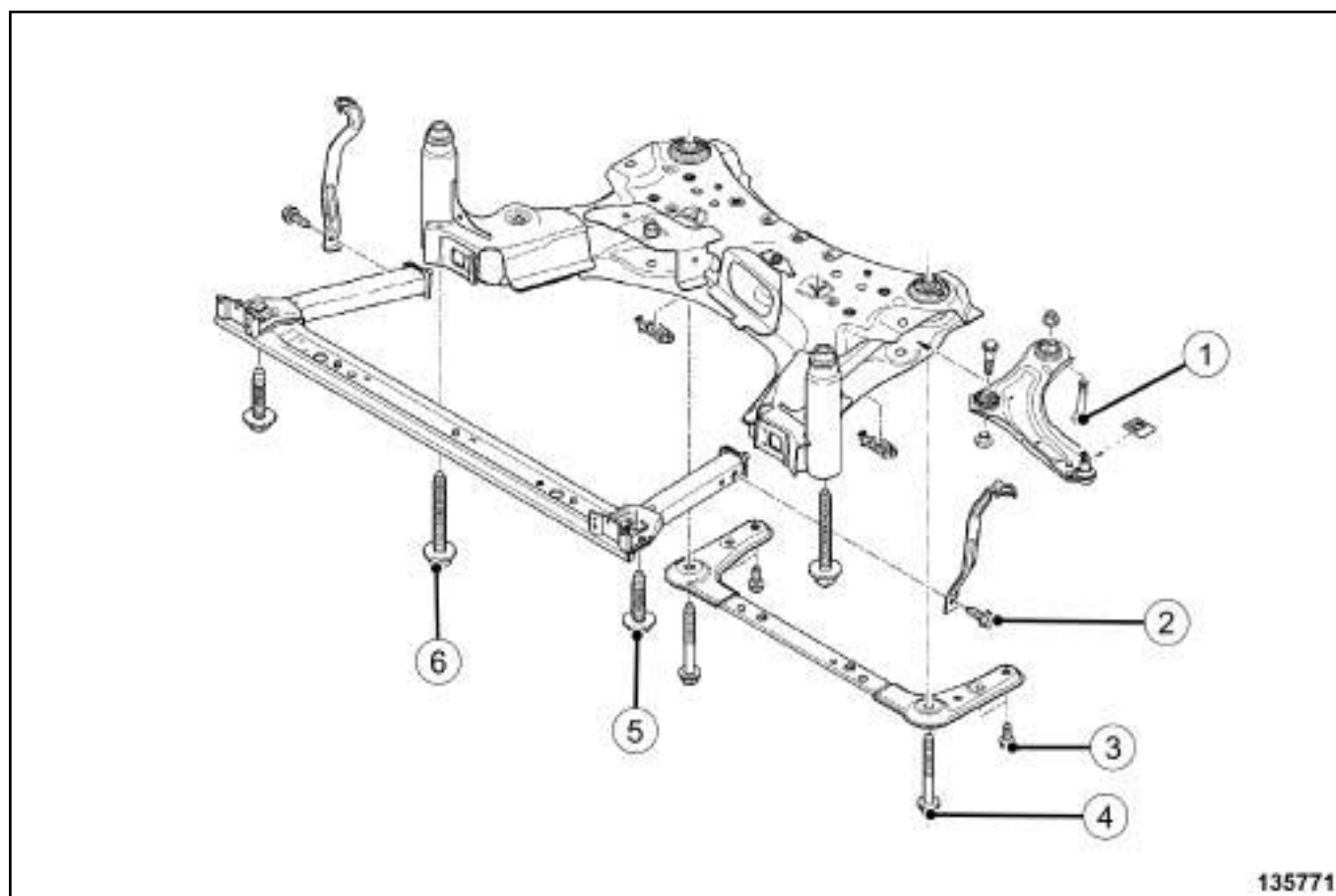
III - FINAL OPERATION

- ☐ Refit:
 - the engine undertray,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

GENERAL INFORMATION

Front axle system: Tightening torque

30A



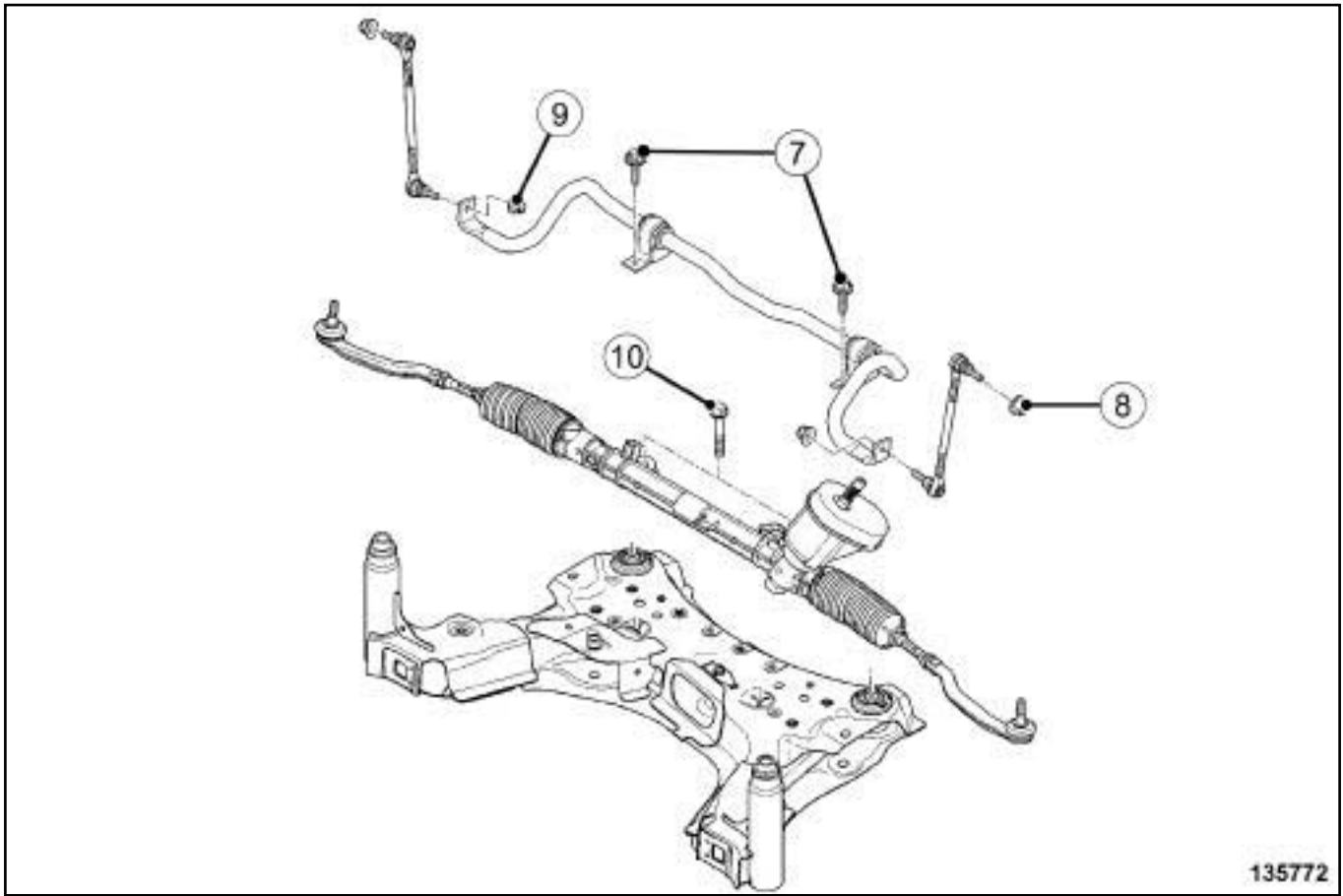
135771

135771

No.	Description	Tightening torque (N.m)
(1)	Lower arm nuts	21
(2)	Tie rod bolt	21
(3)	Rear cross member bolt	62
(4)	Rear subframe bolt	180
(5)	Radiator mounting cross member bolt	180
(6)	Subframe front bolt	105

GENERAL INFORMATION
Front axle system: Tightening torque

30A



135772

135772

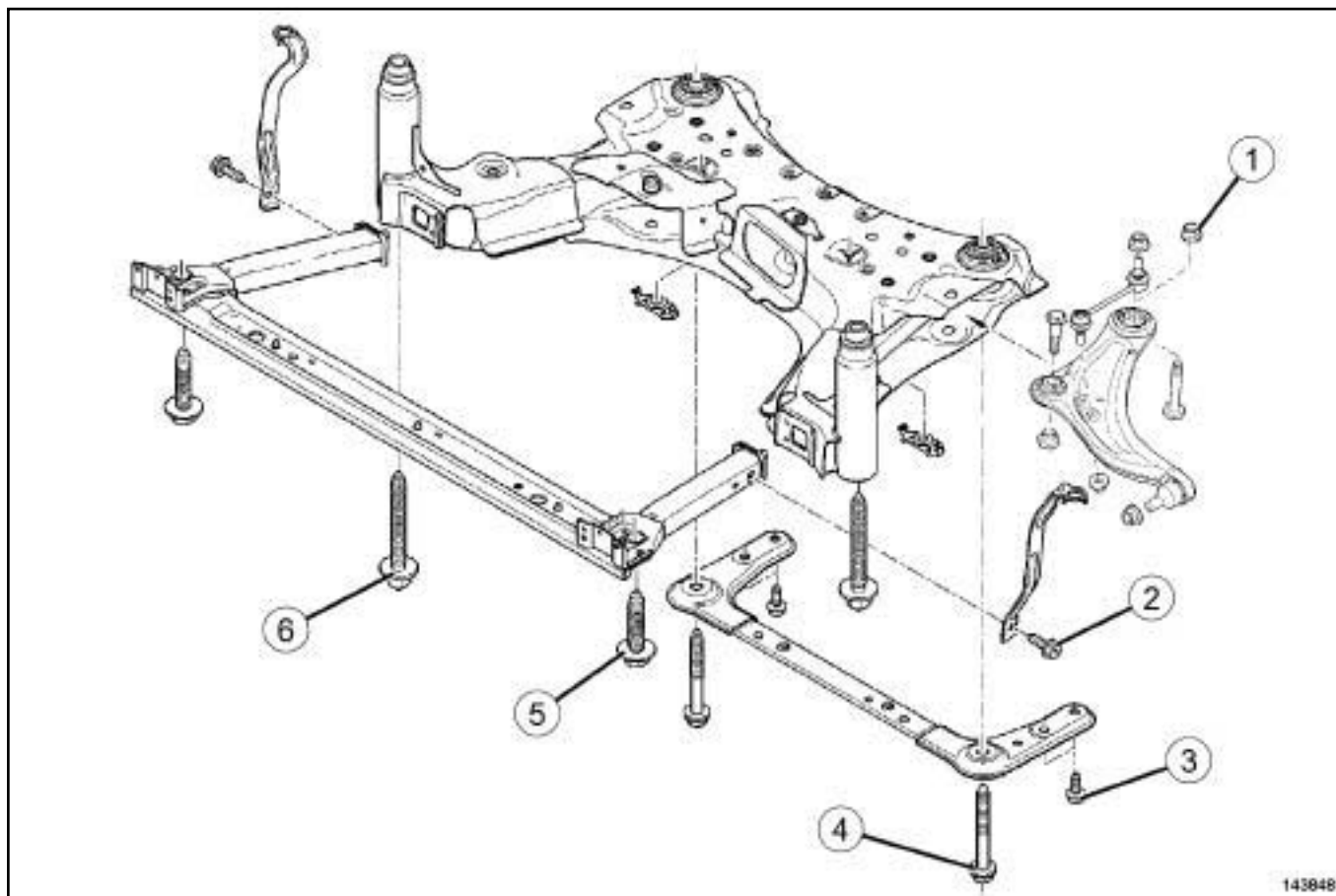
I

No.	Description	Tightening torque (N.m)
(7)	Anti-roll bar bolts	180
(8)	Anti-roll bar tie rod nut on the base of the shock absorber	44
(9)	Anti-roll bar tie rod nut on the anti-roll bar	44
(10)	Steering box bolt	180

GENERAL INFORMATION

Front axle system: Tightening torque

30A

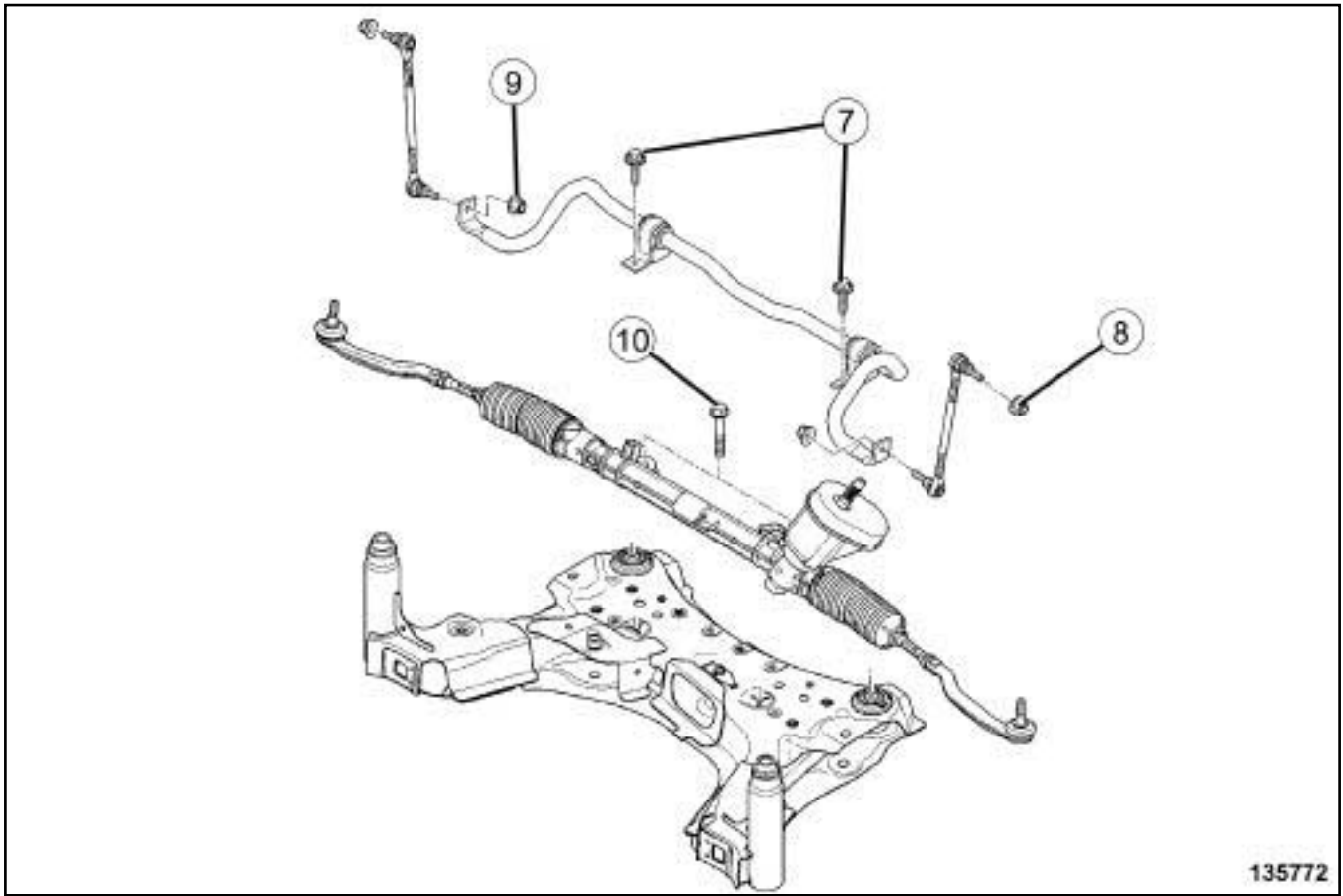


143848

No.	Description	Tightening torque (N.m)
(1)	Lower arm nut	180
(2)	Tie rod bolt	21
(3)	Rear cross member bolt	62
(4)	Subframe rear bolt	180
(5)	Radiator mounting cross member bolt	180
(6)	Subframe front bolt	105

GENERAL INFORMATION
Front axle system: Tightening torque

30A



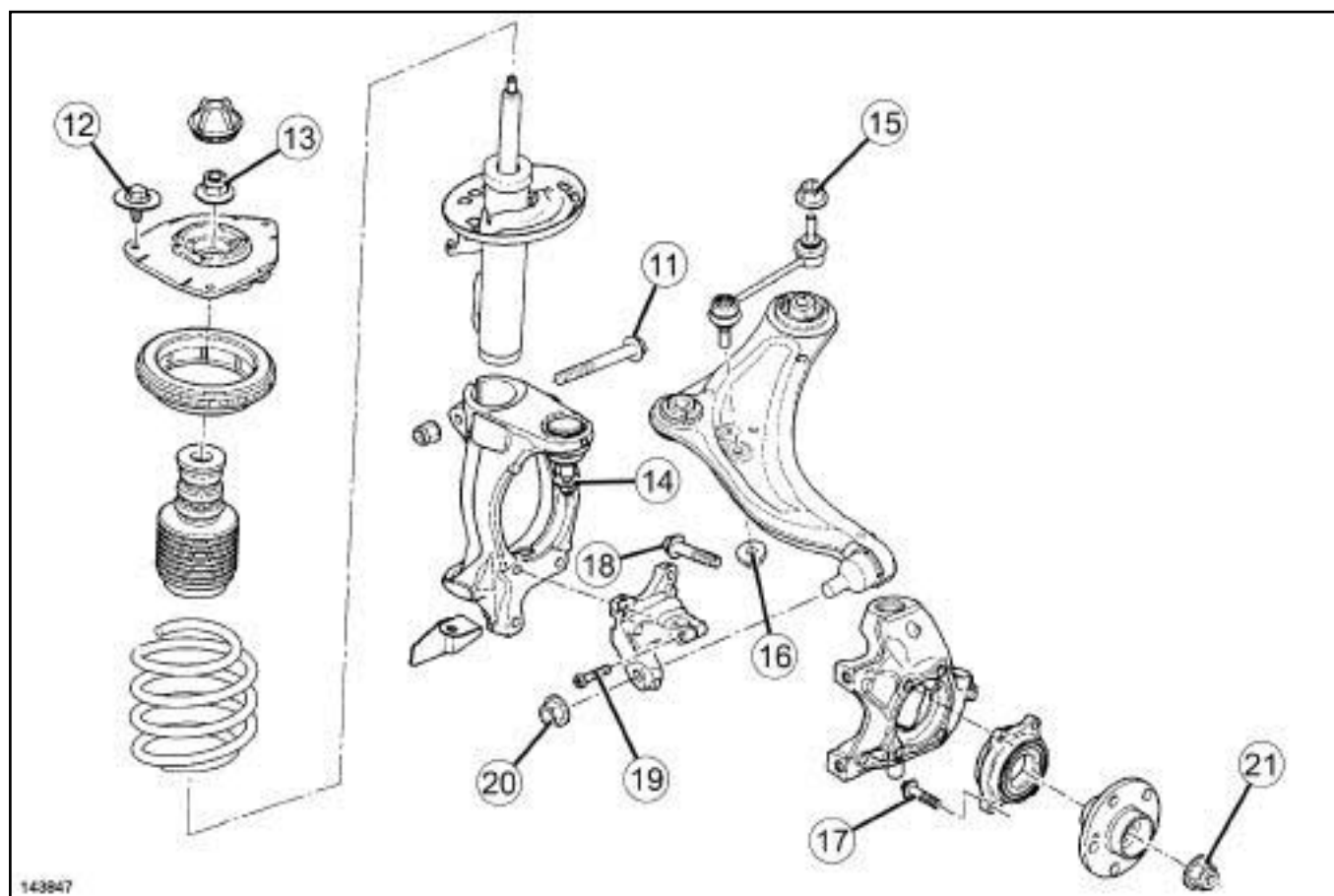
135772

No.	Description	Tightening torque (N.m)
(7)	Anti-roll bar bolts	21
(8)	Anti-roll bar tie rod nut on the base of the shock absorber	44
(9)	Anti-roll bar tie rod nut on the anti-roll bar	44
(10)	Steering box bolt	180

GENERAL INFORMATION

Front axle system: Tightening torque

30A



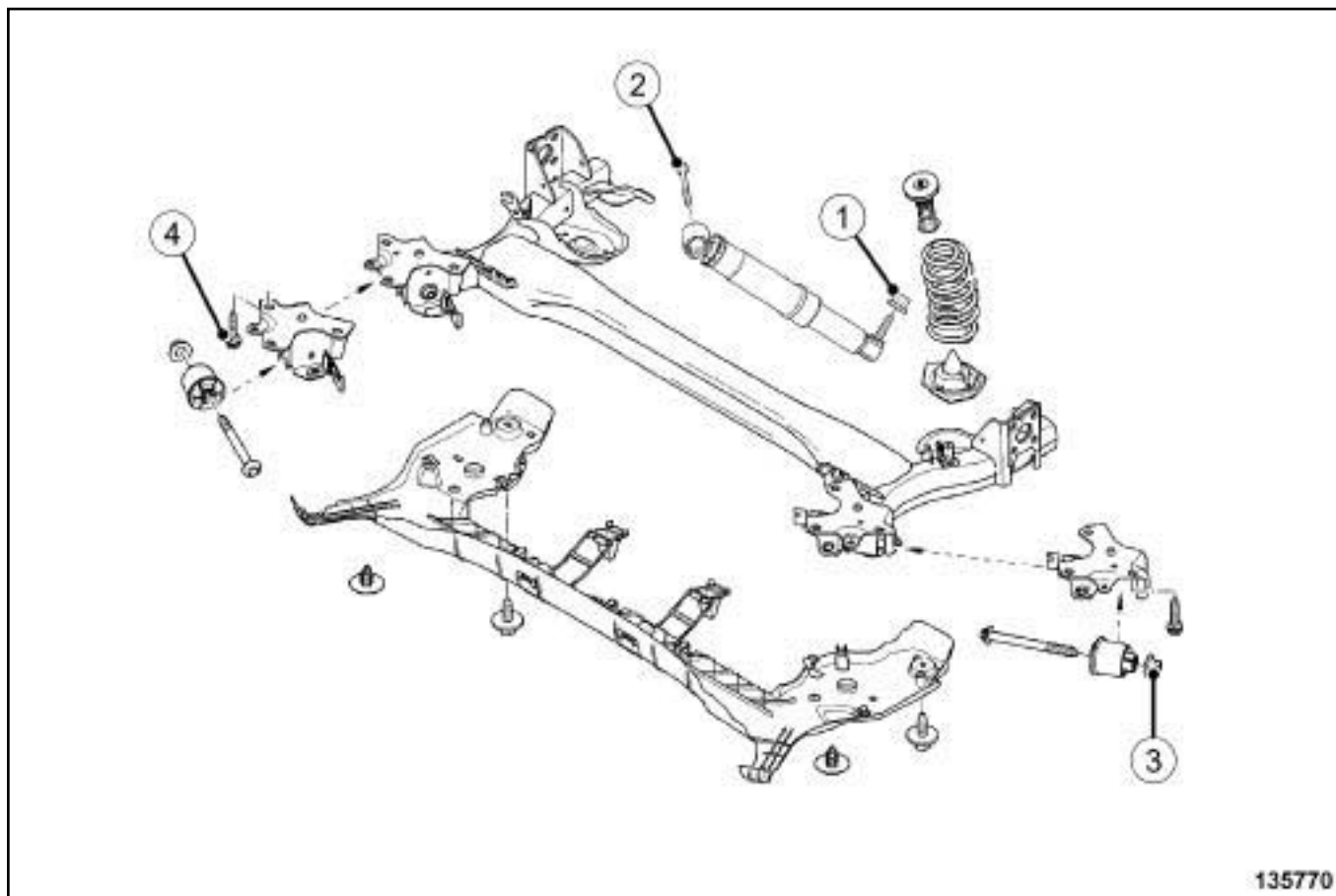
143847

No.	Description	Tightening torque (N.m)
(11)	Shock absorber lower bolt	105
(12)	Damper unit bolts on body	21
(13)	Shock absorber rod bolt	62
(14)	Hub carrier upper ball joint nut	80
(15)	Anti-rotation linkage nut on pivot holder	80
(16)	Anti-rotation linkage nut on the lower arm	80
(17)	Bearing bolt on hub carrier	120
(18)	Support bolt	120
(19)	Hub carrier lower ball joint bolt	28
(20)	Lower arm ball joint nut	62
(21)	Wheel hub nut	280

GENERAL INFORMATION

Rear axle system: Tightening torque

30A



135770

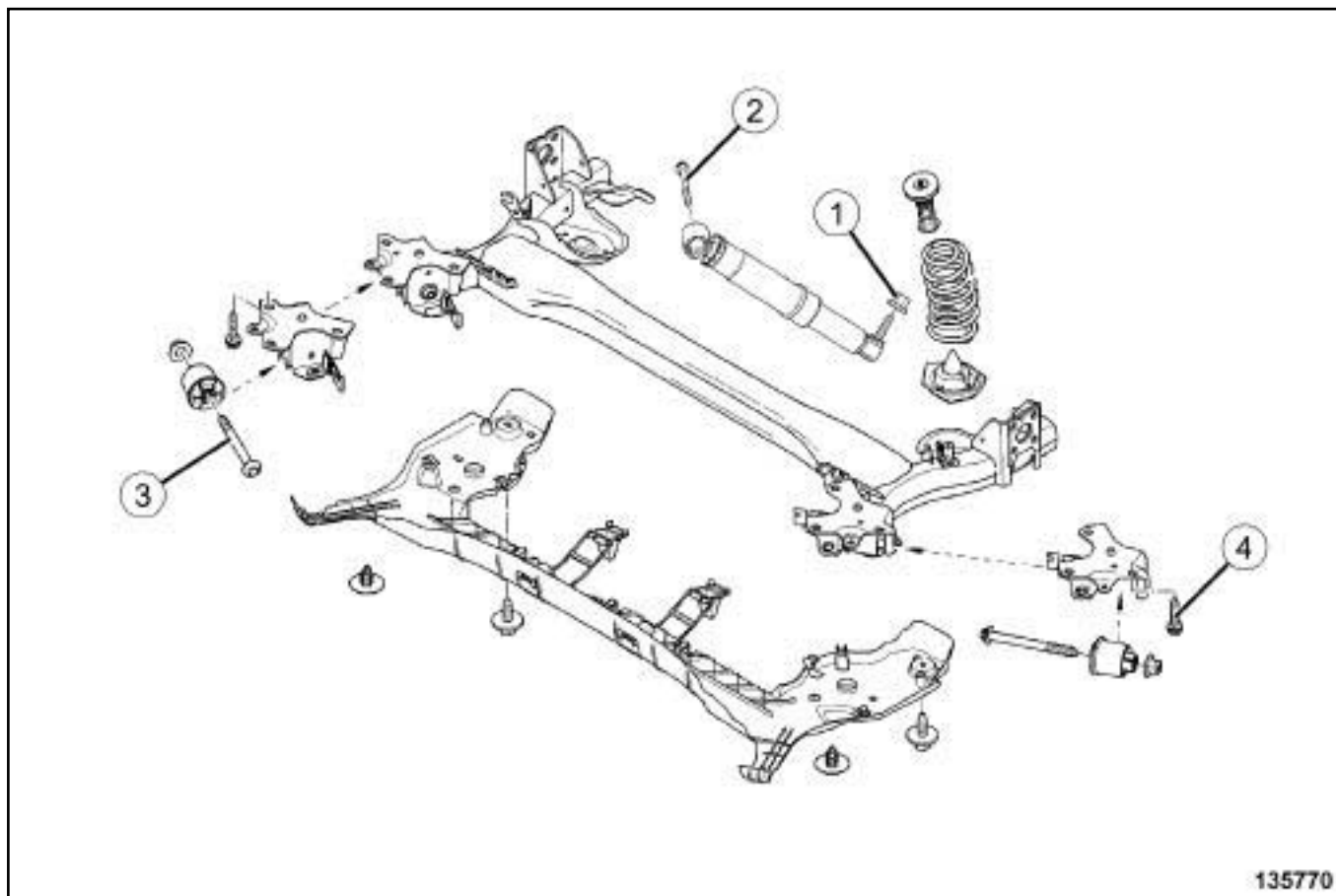
135770

No.	Description	Tightening torque (N.m)
(1)	Shock absorber bolt on rear axle	105
(2)	Shock absorber bolt on body	62
(3)	Rubber bearing nut	125
(4)	Rear axle bolt	105

GENERAL INFORMATION

Rear axle system: Tightening torque

30A



135770

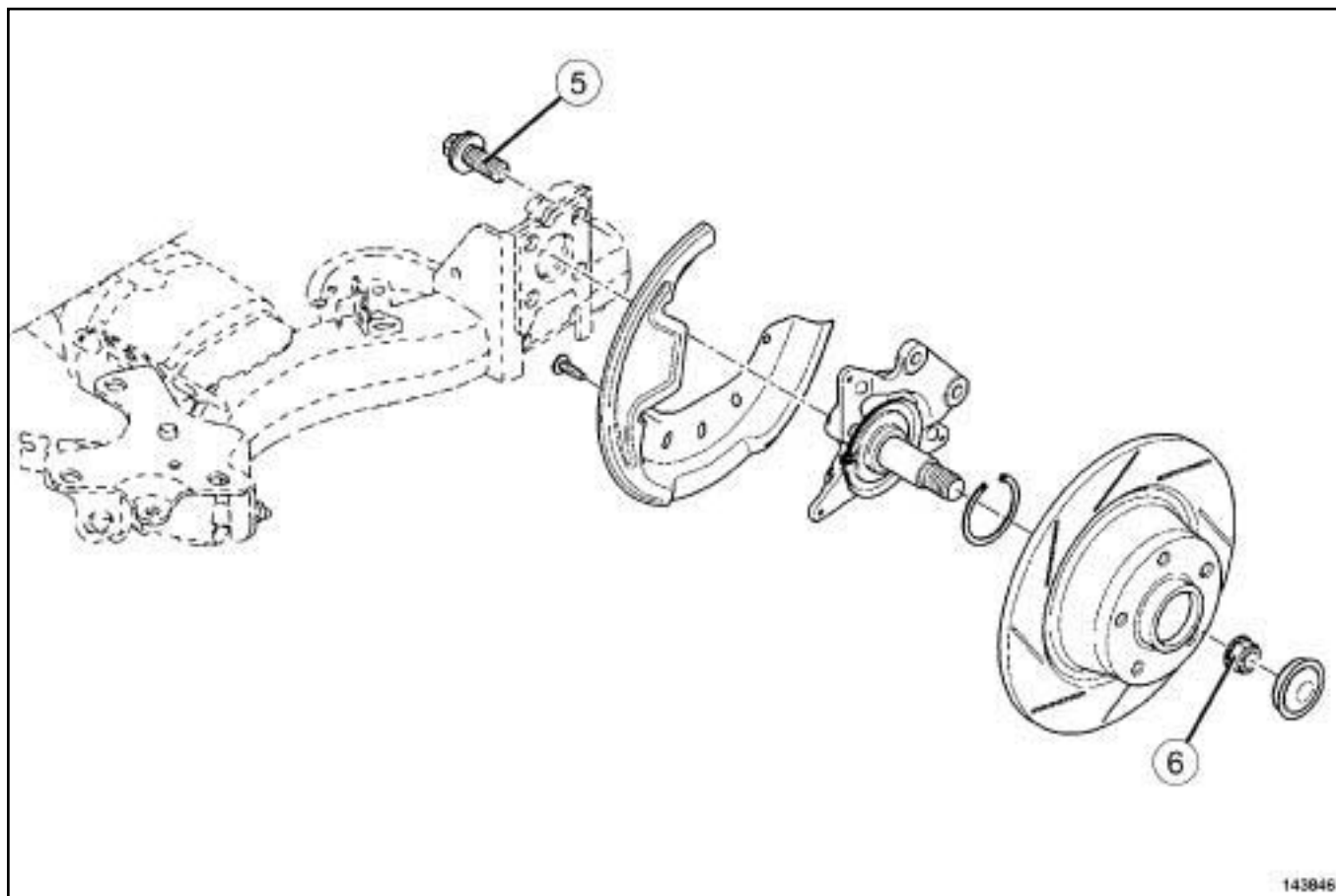
135770

No.	Description	Tightening torque (N.m)
(1)	Shock absorber bolt on rear axle	105
(2)	Shock absorber bolt on body	62
(3)	Rubber bearing nut	125
(4)	Rear axle bolt on body	105

GENERAL INFORMATION

Rear axle system: Tightening torque

30A



143846

No.	Description	Tightening torque (N.m)
(5)	Hub carrier bolt	185
(6)	Hub nut	280

FRONT AXLE COMPONENTS

Front brake pads: Removal - Refitting

31A

IMPORTANT

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

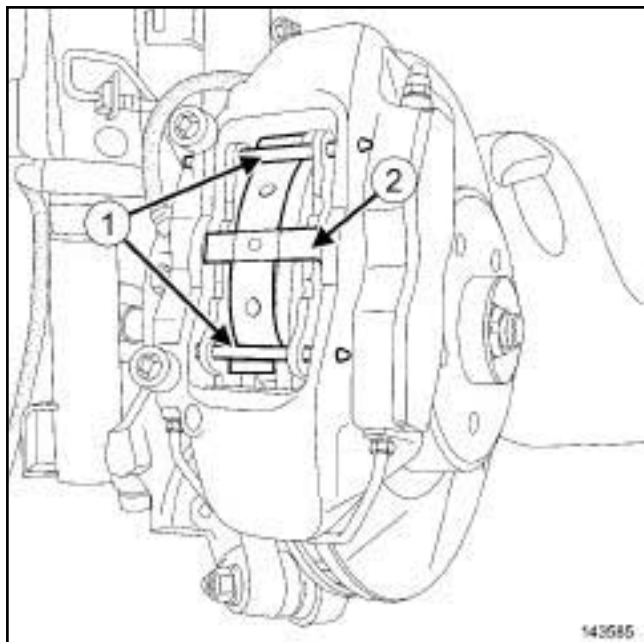
- (see **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Set the wheels straight ahead.
- ☐ Remove the front wheels (see **Wheel: Removal - Refitting**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



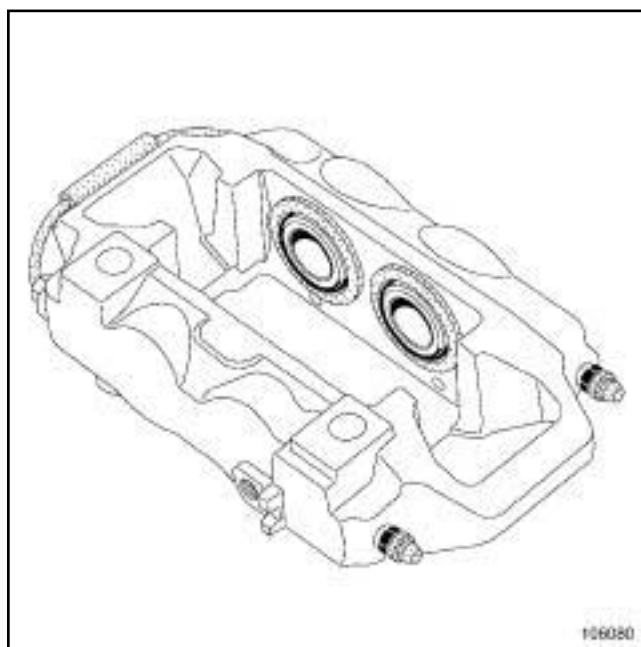
143585

- ☐ Remove:
 - the brake pad retaining pins (1) ,
 - the spring (2) ,
 - the brake pads.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Measure the thickness of the pads and then compare them to 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 the callipers using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).



106080

- ☐ Push the pistons back until they are at the end of their bores.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the new brake pads starting from the inside.
- ☐ Refit:
 - the spring,
 - the brake pad retaining pins.

III - FINAL OPERATION

- ☐ Refit the front wheels (see **Wheel: Removal - Refitting**) .

WARNING

Depress the brake pedal several times to bring the pistons, brake pads and discs into contact.

FRONT AXLE COMPONENTS

Front brake hose: Removal - Refitting

31A

Equipment required

pedal press

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **Front axle components: Precautions for the repair**) .

WARNING

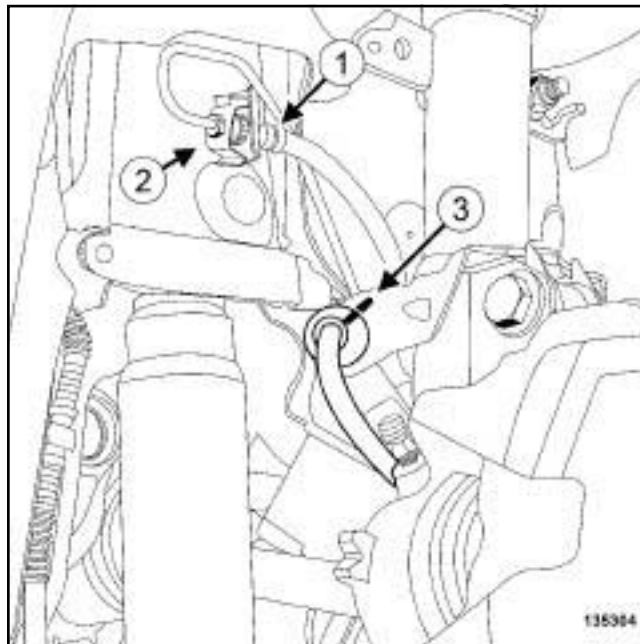
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .
- ☐ Set the wheels straight ahead.
- ☐ Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Remove the front wheel (see **Wheel: Removal - Refitting**) .

II - 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.
- ☐ 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

I - REFITTING OPERATION FOR PART CONCERNED

☐

WARNING

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.

FRONT AXLE COMPONENTS

Front brake hose: Removal - Refitting

31A

- ☐ Set the wheels straight ahead.
- ☐ Refit the brake hose at the calliper end.
- ☐ Torque tighten the brake hose (see **Brake circuit: Tightening torque**)
- ☐ Clip the brake hose cap on to the base of the shock absorber, aligning the marks made using a permanent marker.
- ☐ Refit:
 - the brake hose on the rigid pipe union,
 - the hose retaining fork.
- ☐ Torque tighten the brake hose union on the rigid pipe union. (see **Brake circuit: Tightening torque**)

II - FINAL OPERATION

- ☐ Refit the front wheel (see **Wheel: Removal - Refitting**) .
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**)

FRONT AXLE COMPONENTS

Front brake hose: Removal - Refitting

31A

Equipment required

pedal press

Tightening torques

brake hose union on the calliper	27 N.m
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brake hose union on the rigid pipe	17 N.m
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bolt of the brake hose mounting on the pivot holder	21 N.m
-----------------------------------------------------	--------

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

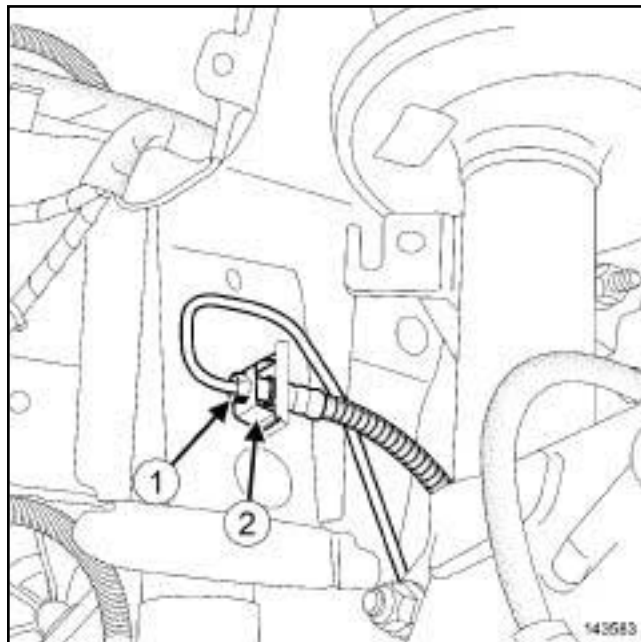
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

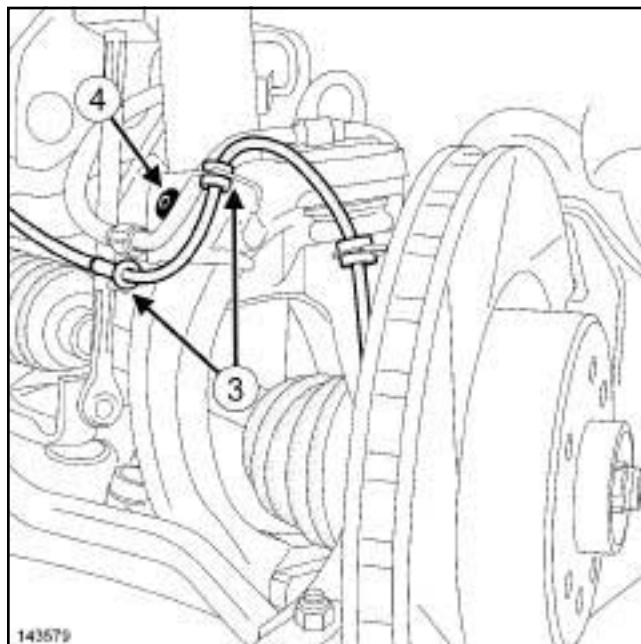
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Set the wheels straight ahead.
- ☐ Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Remove the front wheel (see **Wheel: Removal - Refitting**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Undo the brake hose union (1) from the rigid pipe.
- ☐ Remove the retaining fork (2) from the hose.

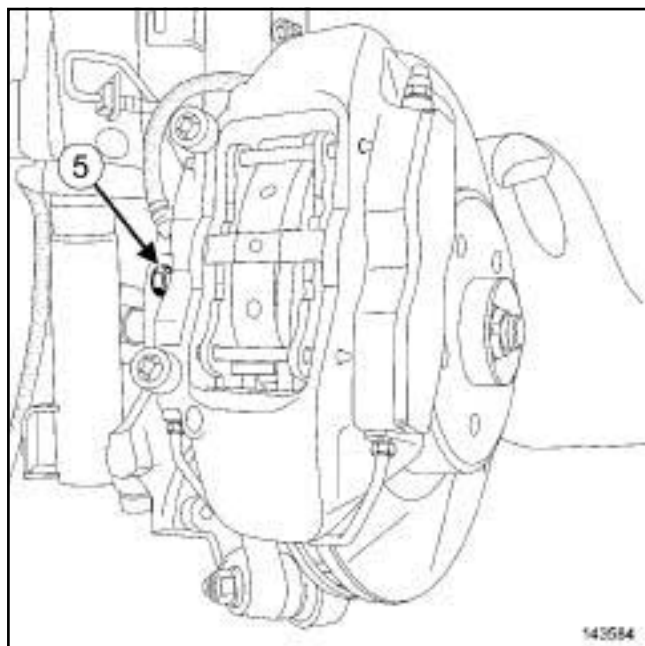


- ☐ Unclip the wiring of the wheel speed sensor at (3) from the brake hose mounting.
- ☐ Remove:
 - the bolt (4) of the brake hose mounting,
 - the brake hose mounting from the pivot holder.

FRONT AXLE COMPONENTS

Front brake hose: Removal - Refitting

31A



143584

- ☐ Remove:
 - the bolt (5) from the brake hose on the brake calliper,
 - the brake hose.
- ☐ Fit blanking plugs on the openings of the brake hose and brake calliper.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Set the wheels straight ahead.

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.

WARNING

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.

- ☐ Remove the blanking plugs from the brake hose and brake calliper.
- ☐ Refit:
 - the brake hose at the calliper end.
 - the brake hose mounting on the pivot holder,
 - the brake hose retaining fork,
 - the brake hose on the rigid pipe.
- ☐ Torque tighten:
 - the **brake hose union on the calliper (27 N.m)**,
 - the **brake hose union on the rigid pipe (17 N.m)**,
 - the **bolt of the brake hose mounting on the pivot holder (21 N.m)**.
- ☐ Clip the wiring of the wheel speed sensor onto the brake hose mounting.

II - FINAL OPERATION

- ☐ Refit the front wheel (see **Wheel: Removal - Refitting**) .
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**) .

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A

Special tooling required

Fre. 1190-01 Brake calliper piston return tool.

Equipment required

pedal press

Tightening torques

brake hose union **14 N.m**

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 **Front axle components: Precautions for the repair**) .

WARNING

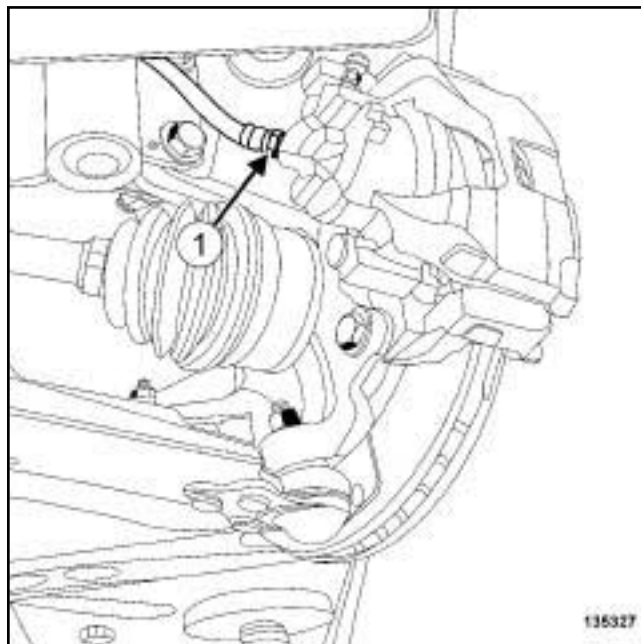
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front wheel (see **Wheel: Removal - Refitting**) .
- ☐ Fit a **pedal press** on the brake pedal to limit the out-flow of brake fluid.

II - OPERATION FOR REMOVAL OF PART CONCERNED



135327

- ☐ Undo the brake hose union (1) slightly on the brake calliper.
- ☐ Remove:
 - the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**) ,
 - the brake hose union on the brake calliper.
- ☐ Fit blanking plugs on the ends of the openings.
- ☐ Remove the brake calliper.

REFITTING

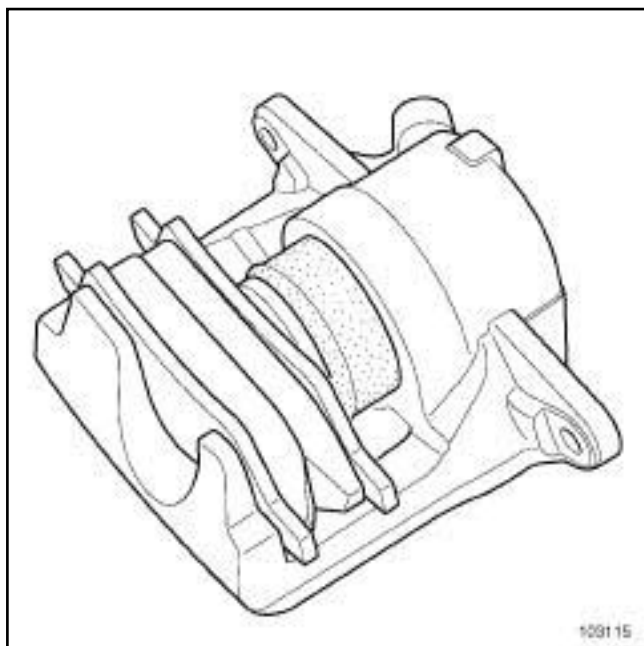
I - REFITTING PREPARATION OPERATION

- ☐ Check:
 - the condition of the calliper gaiter,
 - the condition of the calliper piston; replace it if there are deep scratches or cracks.
- ☐ Replace any faulty parts (see **Front brake calliper: Repair**) .
- ☐ Clean using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products):
 - the calliper mounting,
 - the calliper.

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A



103115

- ☐ Push the piston fully into its housing using the tool (Fre. 1190-01) part number 77 11 223 715.

II - REFITTING OPERATION FOR PART CONCERNED

☐

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.

WARNING

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.

- ☐ Screw the brake hose union onto the calliper.
- ☐ Refit the brake pads (see 31A, **Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) .
- ☐ Torque tighten the **brake hose union (14 N.m)**.
- ☐ Clean the drips using **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

III - FINAL OPERATION

- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Refit the front wheel (see **Wheel: Removal - Refitting**) .
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**) .

IMPORTANT

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

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A

Equipment required

pedal press

Tightening torques

brake calliper bolts	160 N.m
brake hose bolt on the calliper	27 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

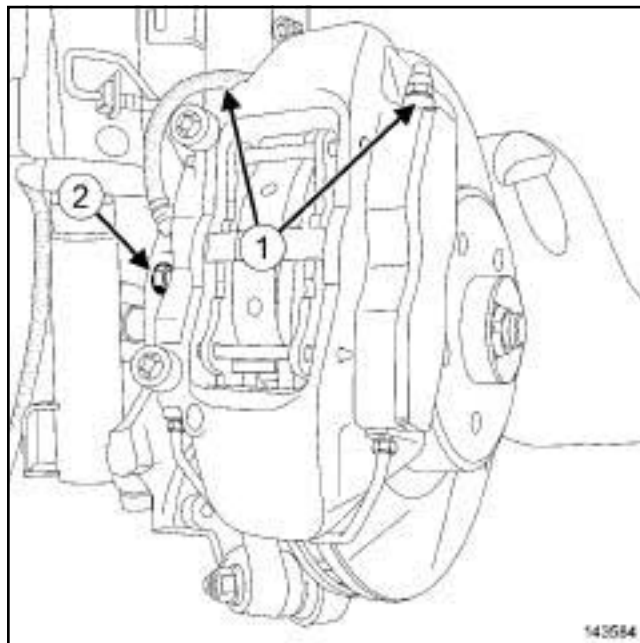
Prepare for the flow of fluid, and protect the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **Wheel: Removal - Refitting**) ,
 - the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**) .
- ☐ Fit a **pedal press** on the brake pedal to limit the out-flow of brake fluid.

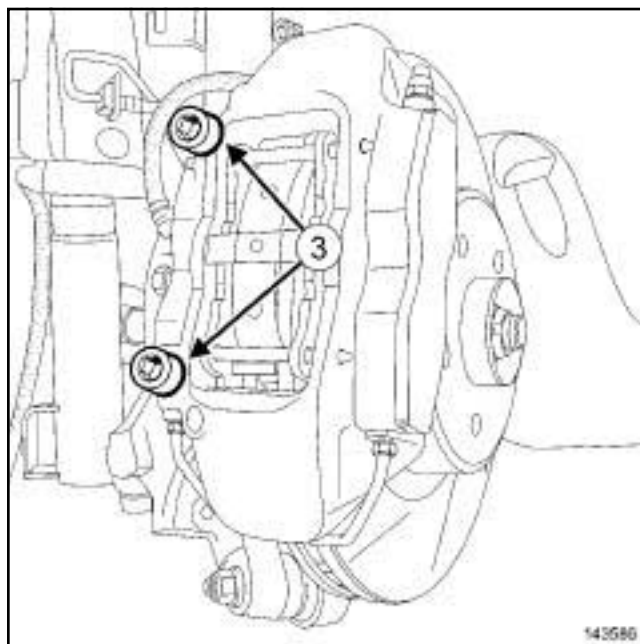
II - OPERATION FOR REMOVAL OF PART CONCERNED



143584

143584

- ☐ Open the bleed screws at (1) .
- ☐ Remove the bolt (2) from the brake hose on the calliper.
- ☐ Fit a blanking plug on the opening of the hose and calliper.



143586

143586

- ☐ Remove:
 - the brake calliper bolts (3) ,
 - the brake calliper.

FRONT AXLE COMPONENTS

Front brake calliper: Removal - Refitting

31A

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean the calliper using a wire brush and **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

☐

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.

WARNING

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 brake calliper,
 - the brake calliper bolts.
- ☐ Torque tighten the **brake calliper bolts (160 N.m)**.
- ☐ Remove the blanking plugs from the brake calliper and from the brake hose.
- ☐ Refit the brake hose on the calliper.
- ☐ Torque tighten the **brake hose bolt on the calliper (27 N.m)**.
- ☐ Clean the drips using **BRAKE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

III - FINAL OPERATION

- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Refit:
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**) ,
 - the front wheel (see **Wheel: Removal - Refitting**) .

- ☐ 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 AXLE COMPONENTS

Front brake disc: Removal - Refitting

31A

Equipment required

parts washer

Brake discs cannot be reground. If there is excessive scoring or wear, they will need to be replaced (see **Brake: Specifications**) .

IMPORTANT

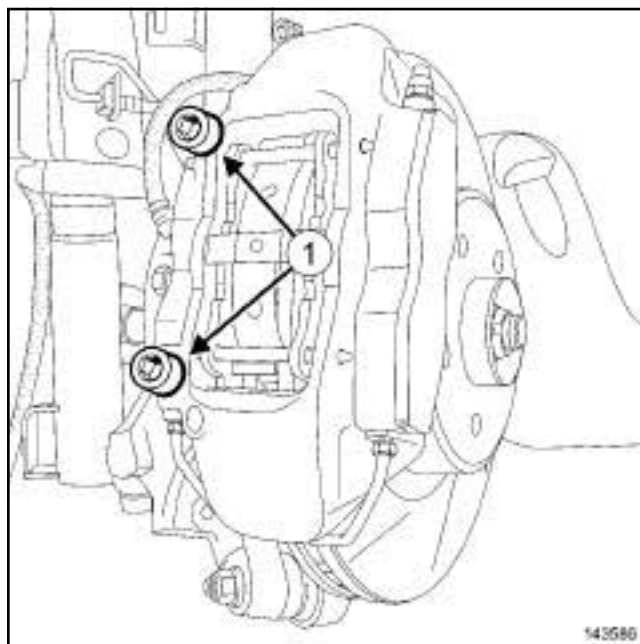
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair:

- (see **Brake circuit: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

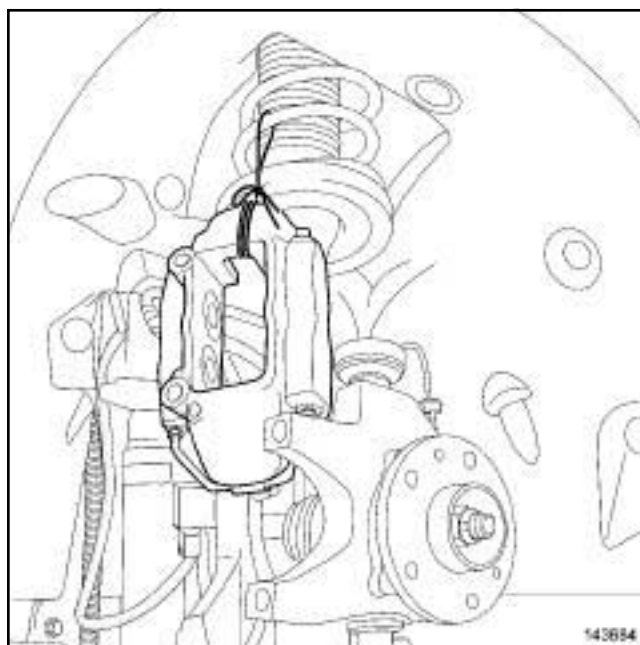
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheels (see **Wheel: Removal - Refitting**) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**) .



143586

- ☐ Remove the bolts (1) from the front brake callipers.



143684

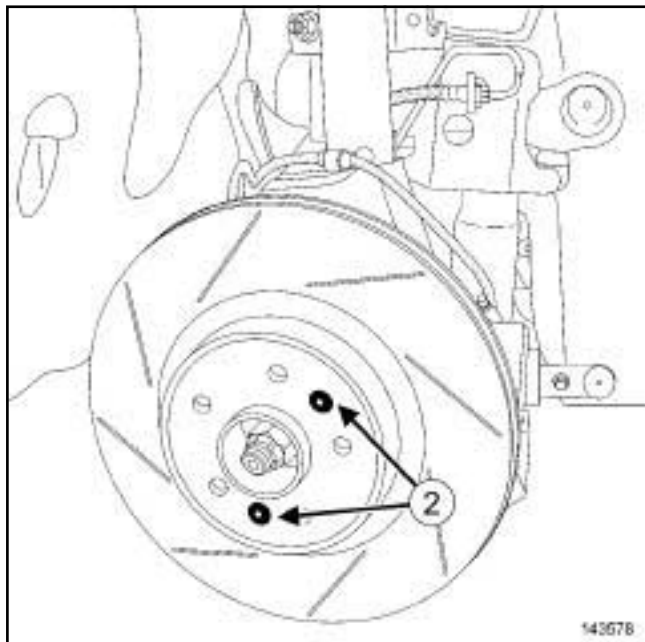
- ☐ Suspend the brake callipers from the suspension springs.

FRONT AXLE COMPONENTS

Front brake disc: Removal - Refitting

31A

II - OPERATION FOR REMOVAL OF PART CONCERNED



143578

☐ Remove:

- the brake disc bolts (2) ,
- the brake discs.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Clean the brake discs using a **parts washer**.
- ☐ 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).
- ☐ **parts always to be replaced: Front brake disc bolt (13,03,03,11).**

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the brake discs with new bolts.

III - FINAL OPERATION

☐ Refit:

- the brake callipers,
- the brake calliper bolts.

- ☐ Torque tighten the bolts of the front brake callipers (see **Brake circuit: Tightening torque**) .

☐ Refit:


- the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**) ,
- the front wheels (see **Wheel: Removal - Refitting**) .

WARNING

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

- ☐ Advise the customer to run-in the brake pads (no harsh braking).

Equipment required	
pedal press	
refrigerant charging station	
safety strap(s)	

Tightening torques 	
brake pipe unions on the hydraulic unit	13 N.m
brake pipe unions on the master cylinder	13 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

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

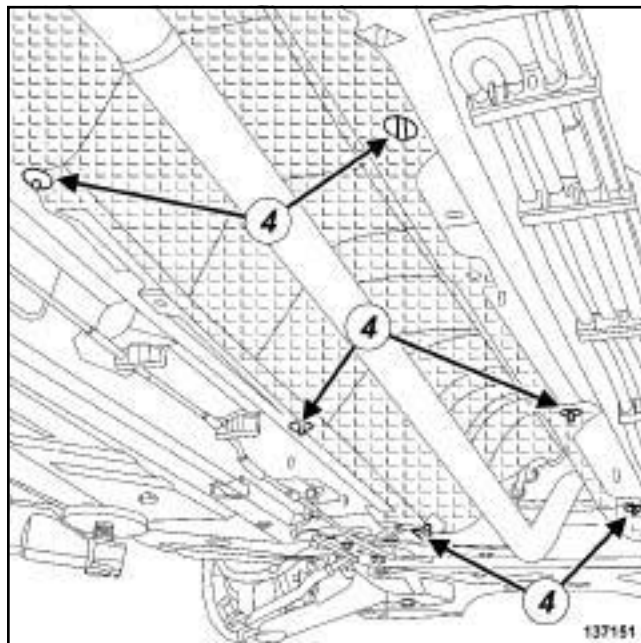
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Position a **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Drain the refrigerant fluid circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

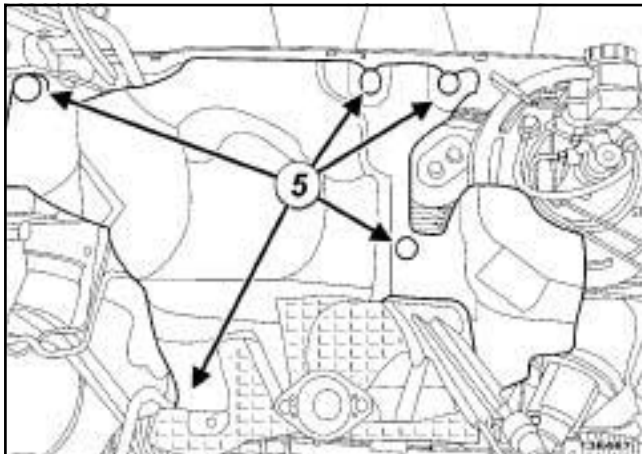
☐ Remove:

- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the front wheels (see **Wheel: Removal - Refitting**) ,
- the engine undertray bolts,
- the engine undertray,
- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-58) ,
- the exhaust connecting hose nuts.



137151

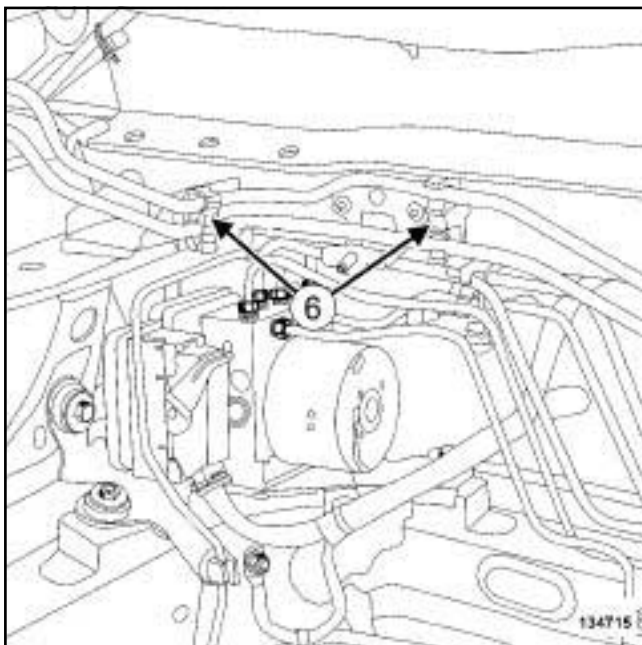
- ☐ Remove the clips (4) from the tunnel heat shield.
- ☐ Move the heat shield of the tunnel towards the rear of the vehicle.
- ☐ Support the exhaust pipe using a **safety strap(s)**.
- ☐ Move the exhaust pipe to one side.



136467

❑ Remove:

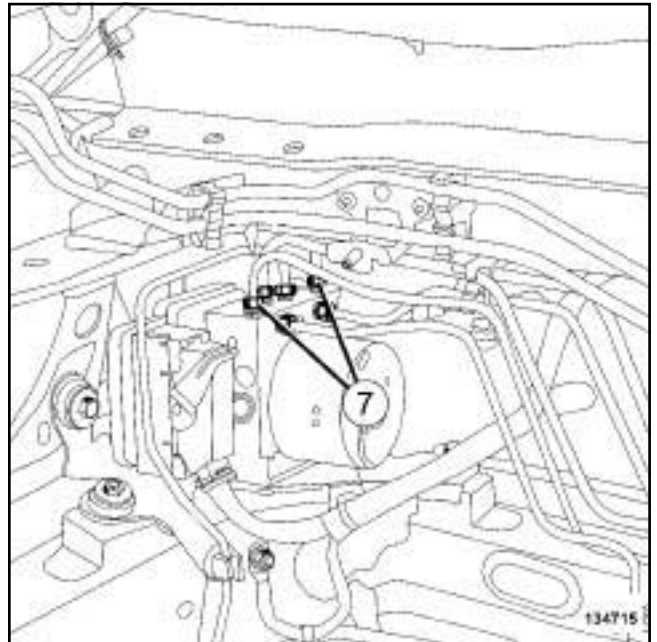
- the bulkhead heat shield clips (5) ,
- the bulkhead heat shield.



134715

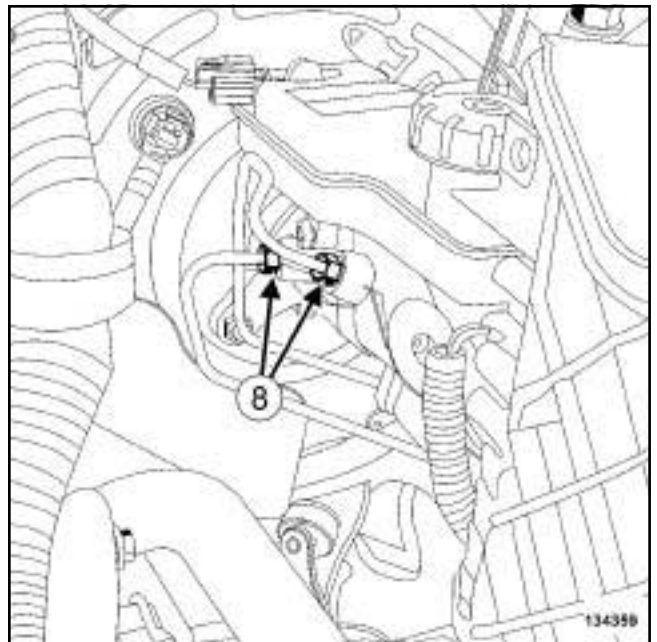
- ❑ Unclip the fuel pipes from the bulkhead at (6) .
- ❑ Remove the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning).

II - OPERATION FOR REMOVAL OF PART CONCERNED



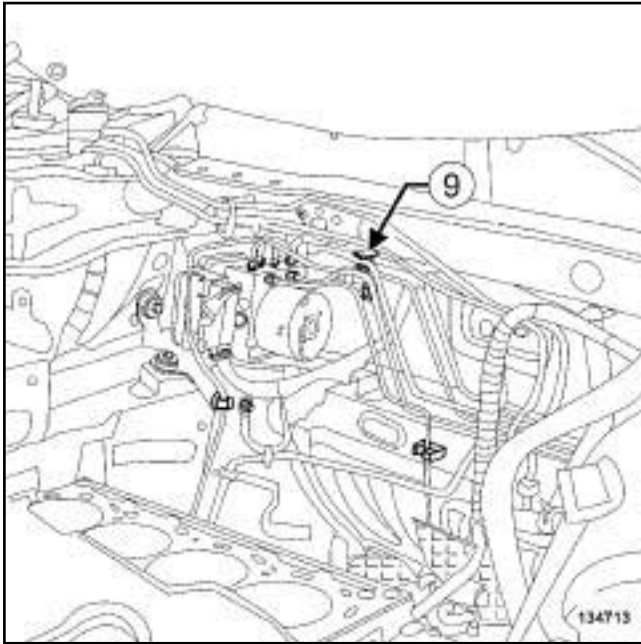
134715

- ❑ Undo the brake pipe unions (7) on the hydraulic unit.



134359

- ❑ Undo the brake pipe unions (8) on the master cylinder.
- ❑ Fit blanking plugs on the openings of the hydraulic unit and brake pipes.



134713

- ☐ Unclip the brake pipes from the bulkhead at (9) .
- ☐ Remove the brake pipes.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

☐

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.

- ☐ Refit the brake pipes.
- ☐ Clip the brake pipes onto the bulkhead.

WARNING

To prevent any premature wear, ensure that there is no contact between the rigid pipe and the body.


- ☐ Screw on:
 - the brake pipe unions on the hydraulic unit,
 - the brake pipe unions on the master cylinder.
- ☐ Torque tighten:
 - the **brake pipe unions on the hydraulic unit (13 N.m)**,

- the **brake pipe unions on the master cylinder (13 N.m)**.

II - FINAL OPERATION

- ☐ Clip on the fuel pipes.
- ☐ Refit:
 - the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning),
 - the bulkhead heat shield,
 - the tunnel heat shield,
 - the exhaust pipe,
 - the exhaust connecting hose,
 - the sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page **31A-58**) ,
 - the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).
- ☐ Refit:
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the braking circuit (see **Braking circuit: Bleed**) .
- ☐ Refit the front wheels (see **Wheel: Removal - Refitting**) .
- ☐ Perform the following operations:
 - fill the refrigerant circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning),
 - a leak test (see **Refrigerant circuit: Check**) (62A, Air conditioning).
- ☐ Check that the air conditioning is working correctly (see **Air conditioning: Check**) (62A, Air conditioning).
- ☐ Refit the engine undertray.

Equipment required	
pedal press	
refrigerant charging station	
safety strap(s)	

Tightening torques 	
brake pipe union on the hydraulic unit	13 N.m
brake pipe union on the front left-hand brake hose	13 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

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

REMOVAL

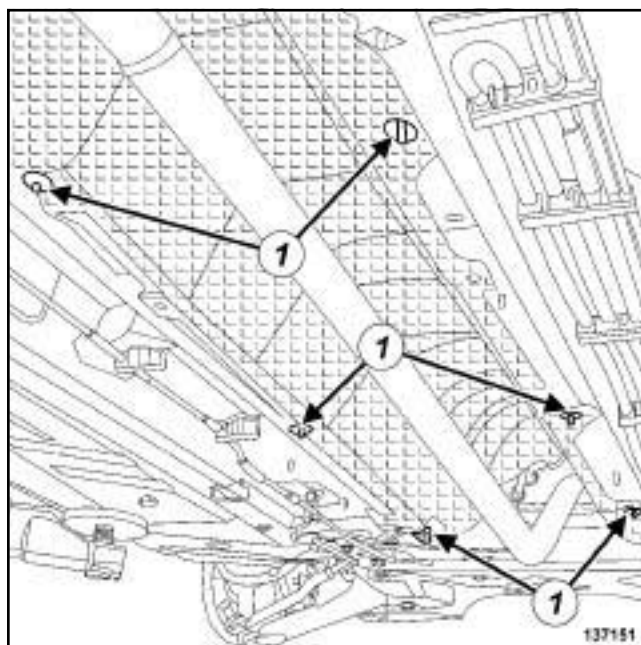
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Drain the refrigerant fluid circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),

- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the front wheels (see **Wheel: Removal - Refitting**) ,
- the engine undertray bolts,
- the engine undertray,
- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-58) ,
- the nuts of the exhaust connecting hose.

☐ Move the exhaust pipe to one side.

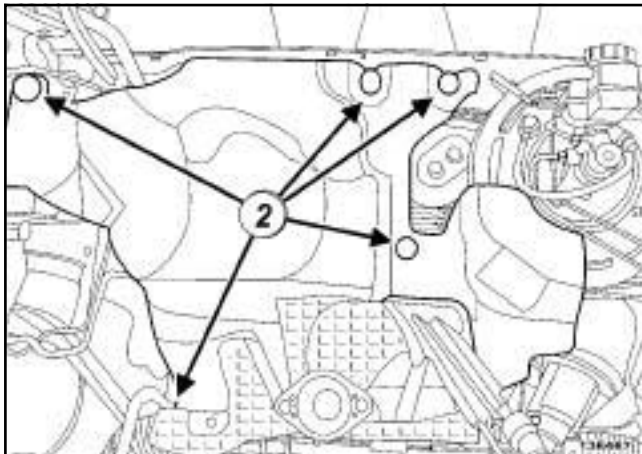
☐ Support the exhaust pipe using a **safety strap(s)**.



137151

☐ Remove the clips (1) from the tunnel heat shield.

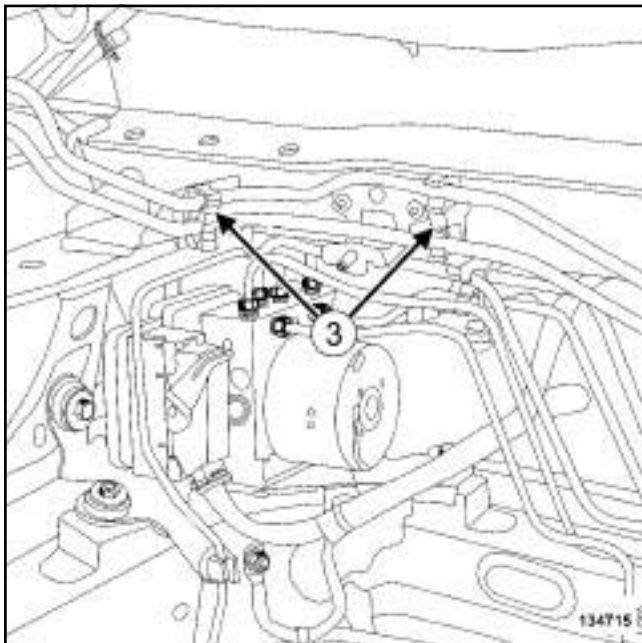
☐ Move the heat shield of the tunnel towards the rear of the vehicle.



136467

❑ Remove:

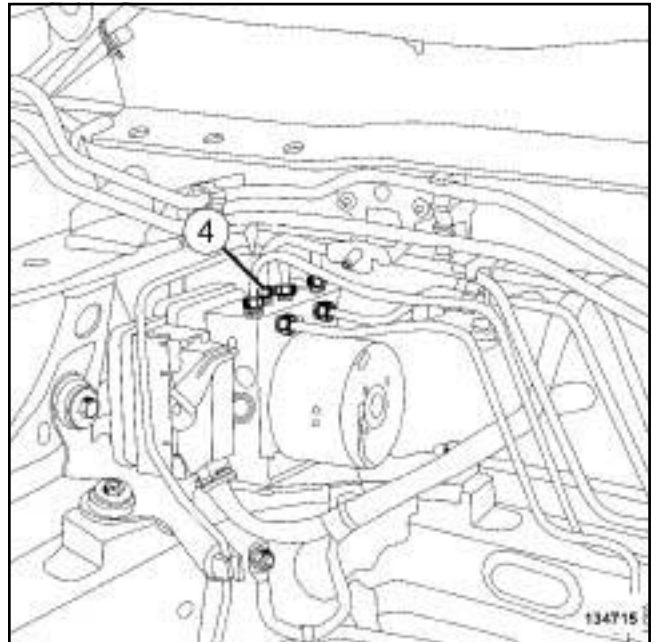
- the bulkhead heat shield clips (2) ,
- the bulkhead heat shield.



134715

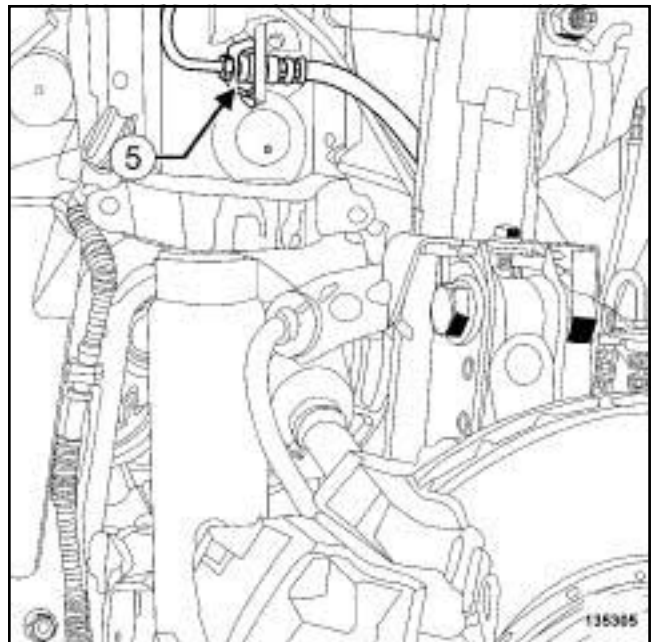
- ❑ Unclip the fuel pipes (3) from the bulkhead.
- ❑ Remove the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning).

II - OPERATION FOR REMOVAL OF PART CONCERNED



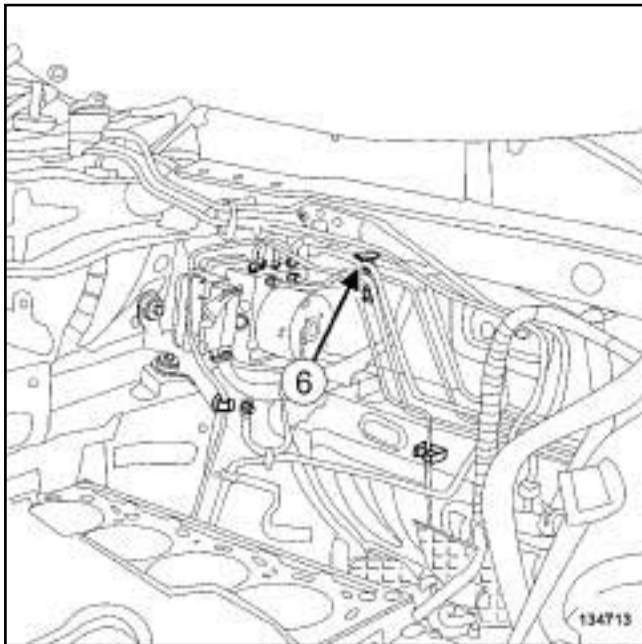
134715

- ❑ Undo the brake pipe union (4) on the hydraulic unit.



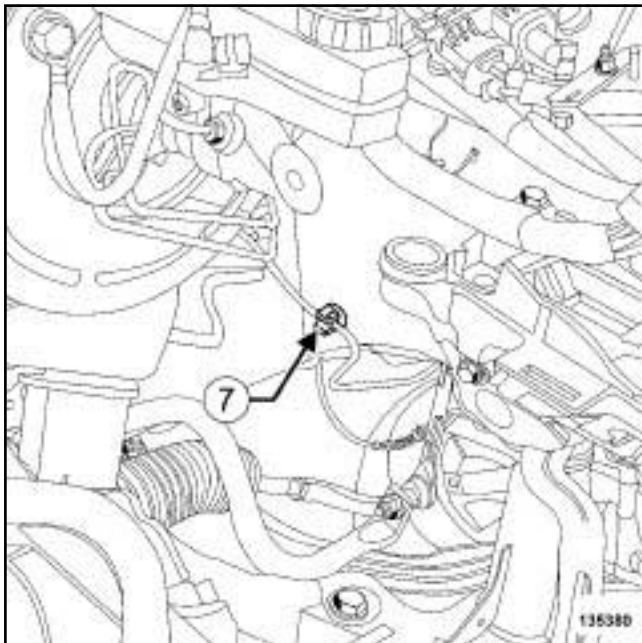
135305

- ❑ Undo the brake pipe union (5) on the front left-hand brake hose.



134713

- ☐ Unclip the brake pipe from the bulkhead at (6) .



135380

- ☐ Unclip the brake pipe from the left-hand side member at (7) .
- ☐ Fit plugs on the openings of the following:
 - the hydraulic unit,
 - the brake pipe,
 - the front left-hand brake hose.
- ☐ Remove the brake pipe.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



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.

- ☐ Refit the brake pipe.
- ☐ Screw on:
 - the brake pipe union on the hydraulic unit,
 - the brake pipe union on the front left-hand brake hose.
- ☐ Torque tighten:
 - the **brake pipe union on the hydraulic unit (13 N.m)**,
 - the **brake pipe union on the front left-hand brake hose (13 N.m)**.
- ☐ Clip the brake pipe onto the bulkhead.

WARNING


To prevent any premature wear, ensure that there is no contact between the rigid pipe and the body.

II - FINAL OPERATION

- ☐ Clip on the fuel pipes.
- ☐ Refit:
 - the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning),
 - the bulkhead heat shield,
 - the tunnel heat shield,
 - the exhaust pipe,
 - the exhaust connecting hose,
 - the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-58) ,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),

- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**) .
- ☐ Refit the front wheels (see **Wheel: Removal - Refitting**) .
- ☐ Perform the following operations:
 - fill the refrigerant circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning),
 - a leak test (see **Refrigerant circuit: Check**) (62A, Air conditioning).
- ☐ Check that the air conditioning is working correctly (see **Air conditioning: Check**) (62A, Air conditioning).
- ☐ Refit the engine undertray.

Equipment required	
pedal press	
refrigerant charging station	
safety strap(s)	

Tightening torques 	
brake pipe union on the hydraulic unit	13 N.m
brake pipe union on the front brake hose	13 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

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

REMOVAL

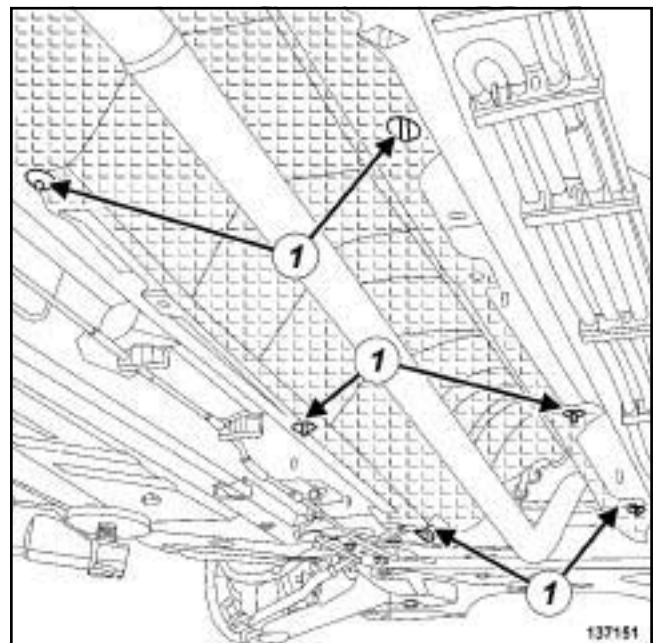
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.
- ☐ Drain the refrigerant fluid circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),

- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the front wheels (see **Wheel: Removal - Refitting**) ,
- the engine undertray bolts,
- the engine undertray,
- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-58) ,
- the nuts of the exhaust connecting hose.

☐ Move the exhaust pipe to one side.

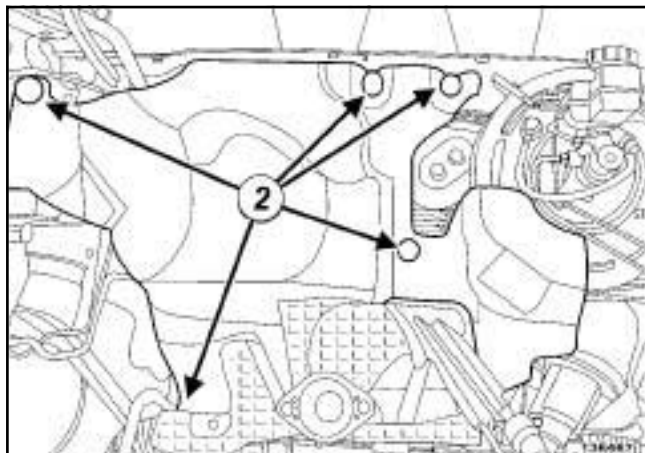
☐ Support the exhaust pipe using a **safety strap(s)**.



137151

☐ Remove the clips (1) from the tunnel heat shield.

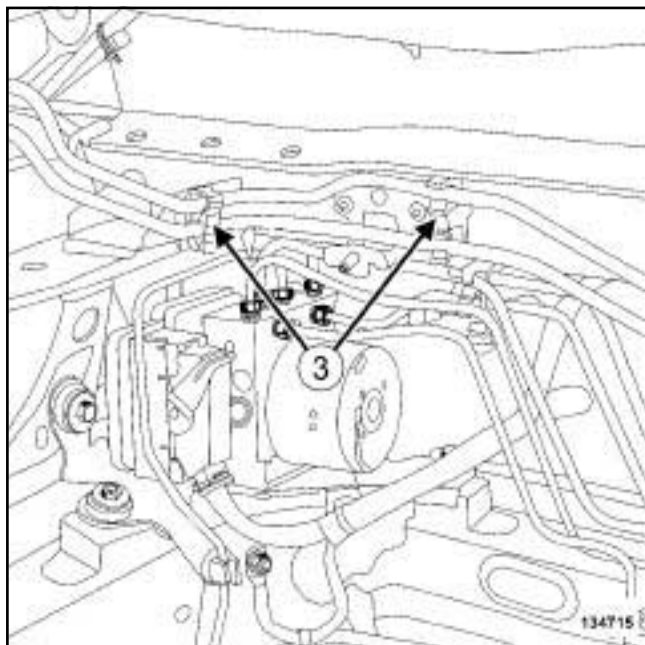
☐ Move the heat shield of the tunnel towards the rear of the vehicle.



136467

❑ Remove:

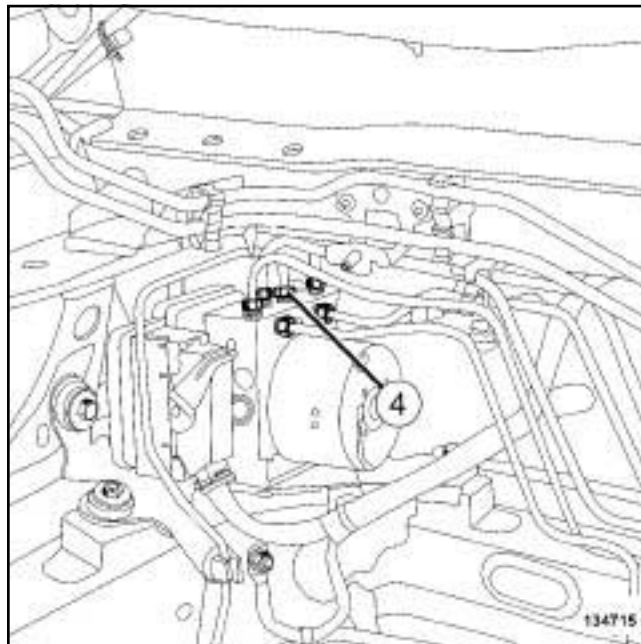
- the bulkhead heat shield clips (2) ,
- the bulkhead heat shield.



134715

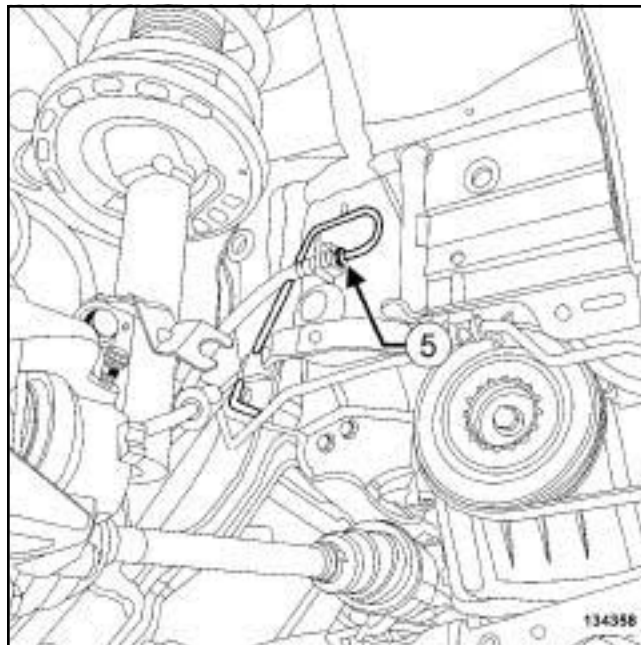
- ❑ Unclip the fuel pipes from the bulkhead at (3) .
- ❑ Remove the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning).

II - OPERATION FOR REMOVAL OF PART CONCERNED



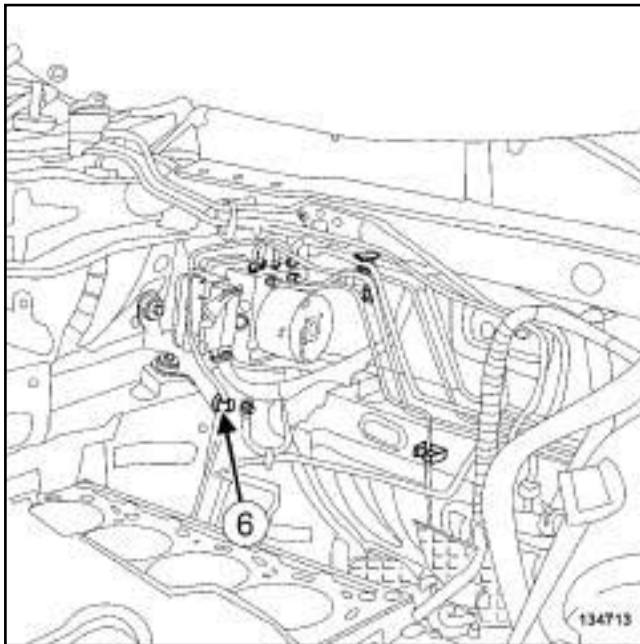
134715

- ❑ Undo the brake pipe union (4) on the hydraulic unit.



134358

- ❑ Undo the brake pipe union (5) on the front right-hand brake hose.



134713

- ☐ Unclip the brake pipe from the hydraulic unit support at (6) .
- ☐ Fit blanking plugs on the openings:
 - the hydraulic unit,
 - the brake pipe,
 - the front right-hand brake hose.
- ☐ Remove the brake pipe.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

☐

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.

- ☐ Refit the brake pipe.
- ☐ Clip the brake pipe onto the hydraulic unit support.

WARNING

To prevent any premature wear, ensure that there is no contact between the rigid pipe and the body.

- ☐ Screw on:
 - the brake pipe union on the hydraulic unit,
 - the brake pipe union on the front right-hand brake hose.
- ☐ Torque tighten:
 - the **brake pipe union on the hydraulic unit (13 N.m)**,
 - the **brake pipe union on the front brake hose (13 N.m)**.

II - FINAL OPERATION

- ☐ Clip the fuel pipes onto the bulkhead.
- ☐ Refit:
 - the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning),
 - the bulkhead heat shield,
 - the tunnel heat shield,
 - the exhaust pipe,
 - the exhaust connecting hose,
 - the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-58) ,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**) .
- ☐ Refit the front wheels (see **Wheel: Removal - Refitting**) .
- ☐ Perform the following operations:
 - fill the refrigerant circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning),
 - a leak test (see **Refrigerant circuit: Check**) (62A, Air conditioning).
- ☐ Check that the air conditioning is working correctly (see **Air conditioning: Check**) (62A, Air conditioning).
- ☐ Refit the engine undertray.

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.
Tav. 1050-04	Universal driveshaft push back tool (plate and claws without ram).

Tightening torques

lower shock absorber bolts	180 N.m
lower arm ball joint nut	62 N.m
track rod end nut	37 N.m
hub nut	280 N.m
bolt of the ABS wiring support	8 N.m

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 **Front axle components: Precautions for the repair**) .

WARNING

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.

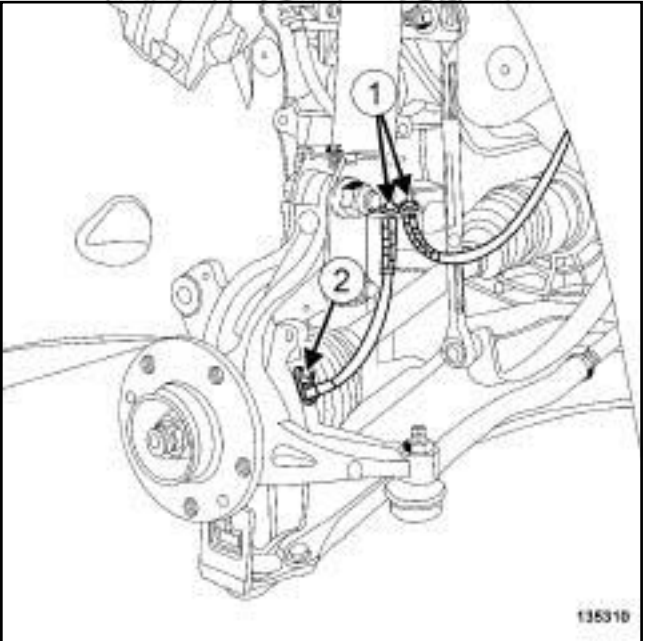
REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **Wheel: Removal - Refitting**) ,
 - the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**) ,

- the brake calliper mounting (see **Front brake calliper mounting: Removal - Refitting**) ,
- the brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-10**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



135310

- ☐ Detach the wiring (1) from the wheel speed sensor.
- ☐ Remove the wheel speed sensor bolt (2) .
- ☐ Remove the wheel speed sensor from its housing.

WARNING

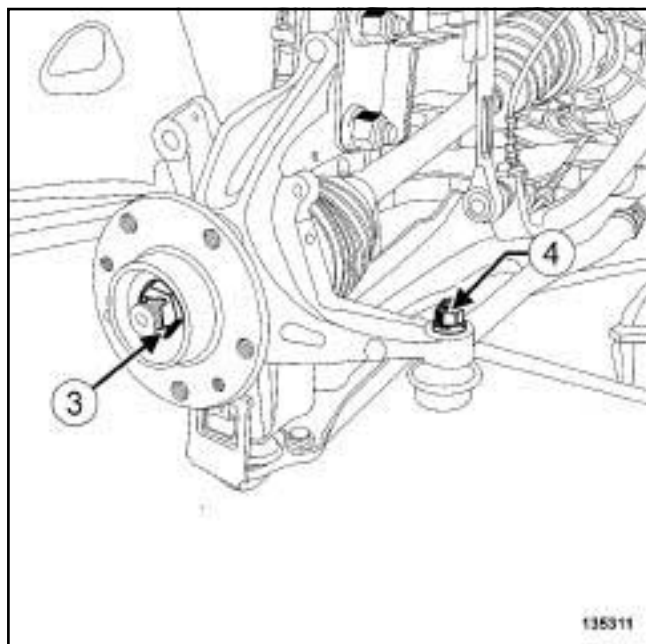
In order to prevent irreversible damage to the front hub bearing:

- 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.

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A



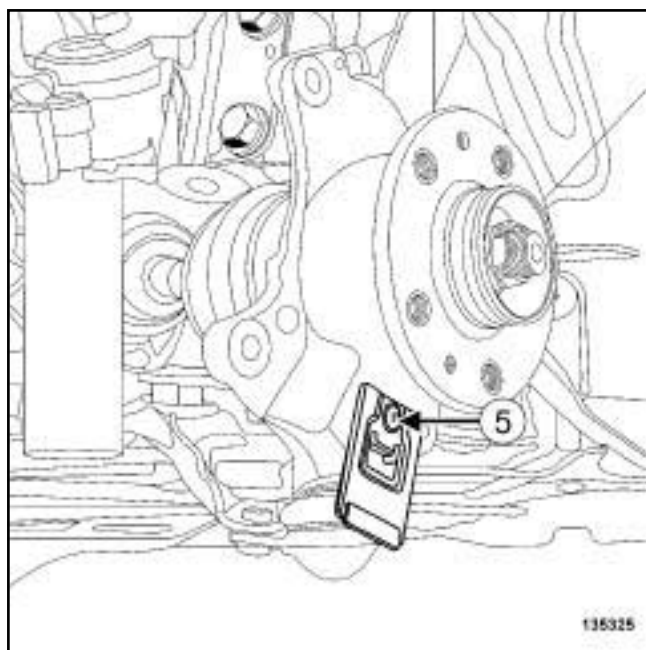
135311

❑ Remove:

- the hub nut (3) using a wheel hub locking tool (**Rou. 604-01**),
- the track rod end nut (4) .

❑ Detach the track rod end using the tool (**Tav. 476**).

WITHOUT WHEEL DISC PROTECTOR



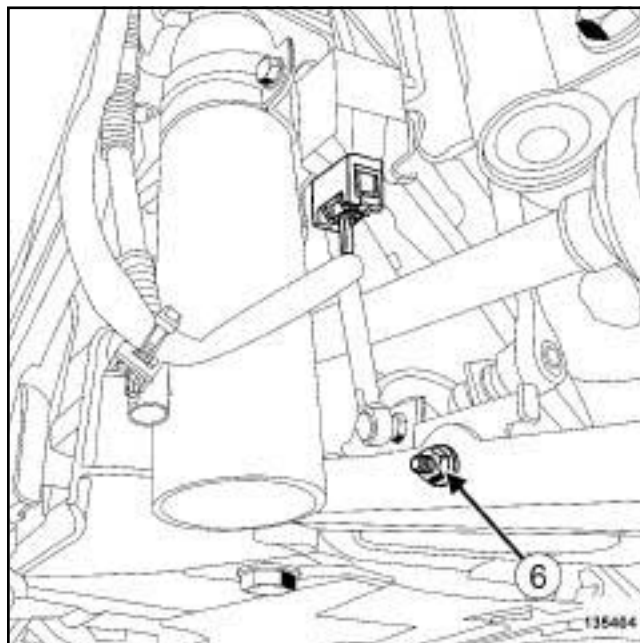
135325

❑ Remove:

- the ball joint protector bolt (5) ,

- the ball joint protector.

DISCHARGE LAMPS



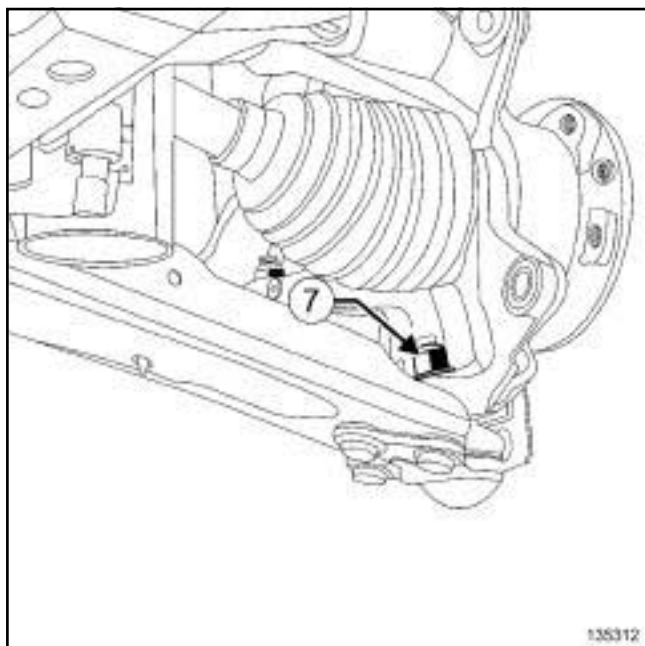
135404

- ❑ Remove the nut (6) from the mounting of the headlight beam adjustment sensor linkage ball joint.

FRONT AXLE COMPONENTS

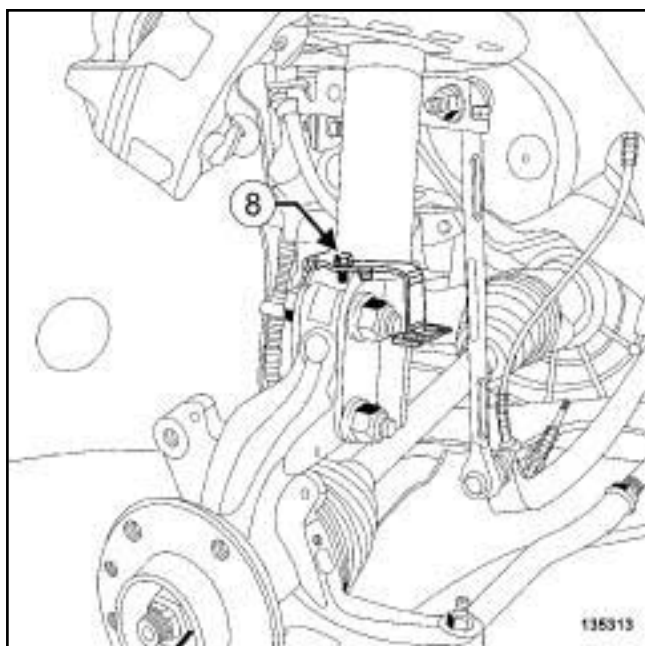
Front driveshaft hub carrier: Removal - Refitting

31A



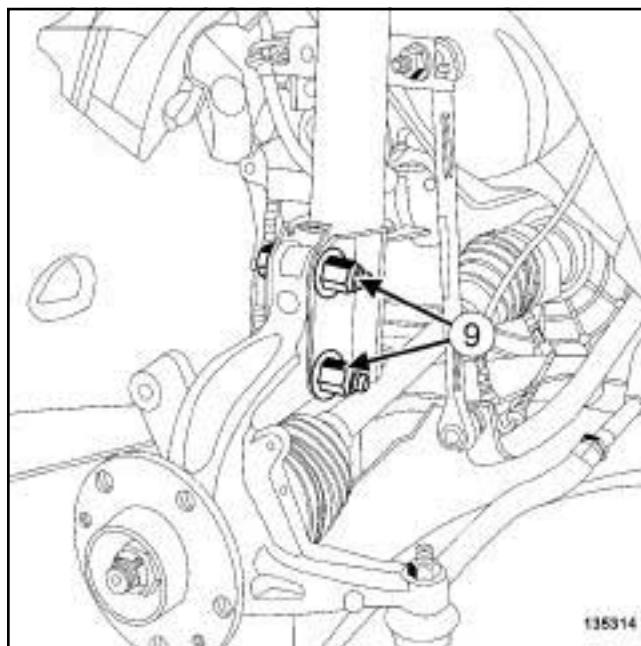
135312

- ☐ Remove the lower ball joint nut (7) .
- ☐ Detach:
 - the lower ball joint from the hub carrier,
 - the driveshaft from the hub carrier using the tool (Tav. 1050-04).



135313

- ☐ Remove the bolt (8) from the ABS wiring support on the base of the shock absorber.



135314

- ☐ Remove:
 - the shock absorber base nuts (9) ,
 - the hub carrier.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Track rod end nut (13,04,02,03).
- ☐ parts always to be replaced: Front driveshaft lower arm ball joint nut (13,02,03,19).
- ☐ parts always to be replaced: Front wheel hub nut (13,02,03,20).
- ☐ parts always to be replaced: front shock absorber lower nut (13,02,04,11).

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the hub carrier,
 - the driveshaft in the hub carrier,
 - the lower arm ball joint on the hub carrier,
 - the track rod end.

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

☐ Torque tighten:

- the **lower shock absorber bolts (180 N.m)**,
- the **lower arm ball joint nut (62 N.m)**,
- the **track rod end nut (37 N.m)**,
- the **hub nut (280 N.m)** using a wheel hub locking tool (**Rou. 604-01**).

WARNING

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.

WITHOUT WHEEL DISC PROTECTOR

- ☐ Refit the ball joint protector.

DISCHARGE LAMPS

- ☐ Refit the mounting nut of the headlight beam adjustment sensor linkage ball joint.

☐ Refit:

- the ABS wiring support on the base of the shock absorber,
- the wheel speed sensor.

- ☐ Torque tighten the **bolt of the ABS wiring support (8 N.m)**.

III - FINAL OPERATION

☐ Refit:

- the brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page 31A-10) ,
- the brake calliper mounting (see **Front brake calliper mounting: Removal - Refitting**) ,
- the brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) ,
- the front wheel (see **Wheel: Removal - Refitting**) .

IMPORTANT

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

- ☐ Check the axle geometry (see **Axle assemblies: Check**) .

- ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .


FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Equipment required
component jack

Tightening torques 	
bolts of the «hub - bearing» assembly on the hub carrier	120 N.m
nut of the hub carrier upper ball joint	80 N.m
bolt of the lower ball joint on the support	28 N.m
lower ball joint nut	62 N.m
track rod end nut	37 N.m
nut of the wheel hub	280 N.m
support bolts on the pivot holder	120 N.m
anti-rotation linkage nuts	80 N.m
bolt of the brake hose mounting on the pivot holder	21 N.m
brake calliper bolts	160 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

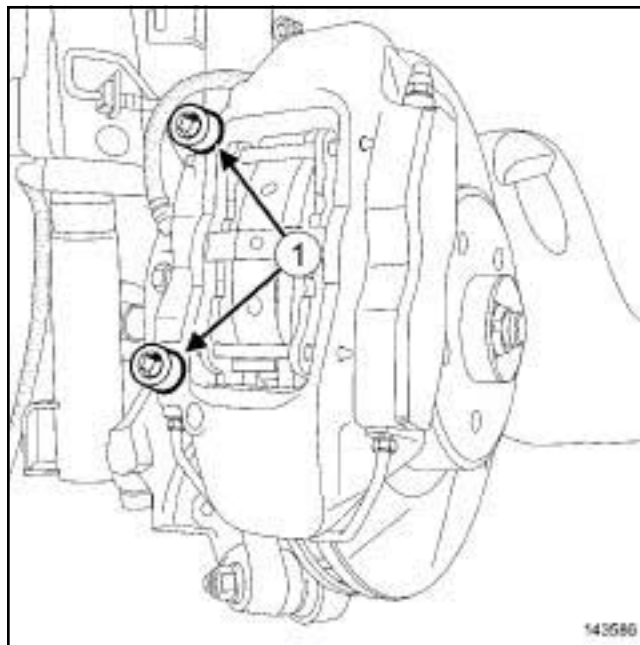
In order not to damage the brake hose:

- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **Wheel: Removal - Refitting**)
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) .



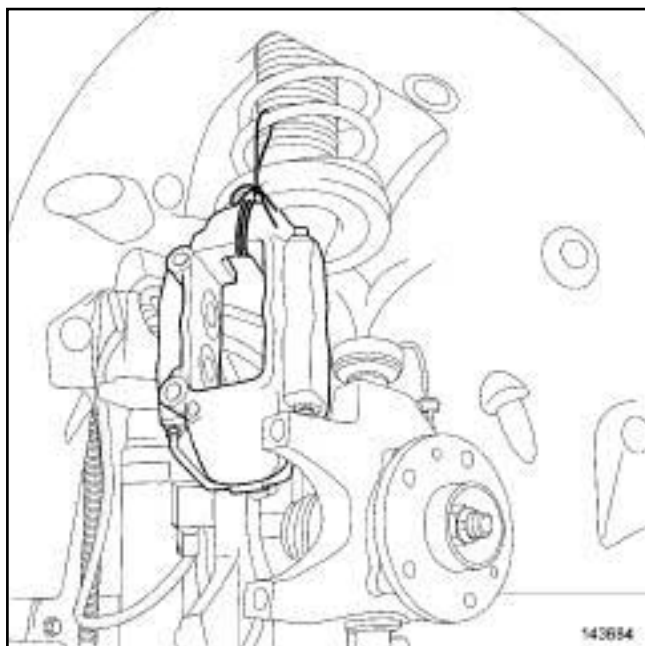
143586

- ☐ Remove the front brake calliper bolts (1) .

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

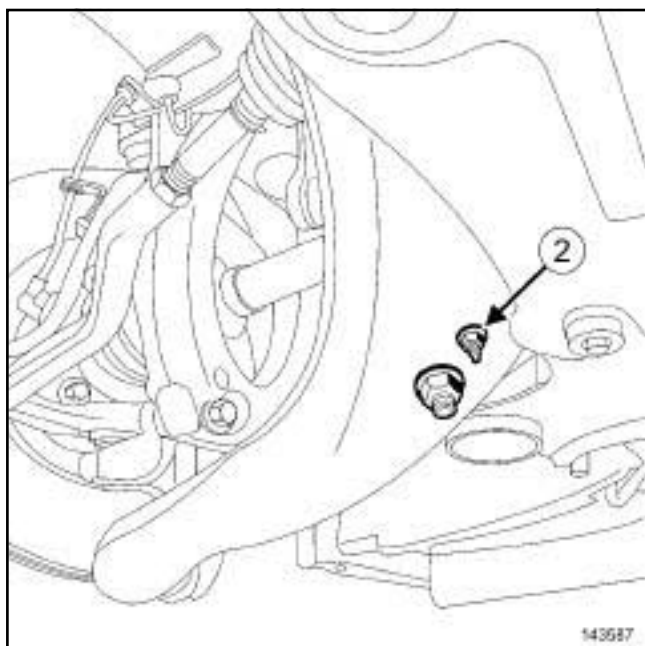
31A



143684

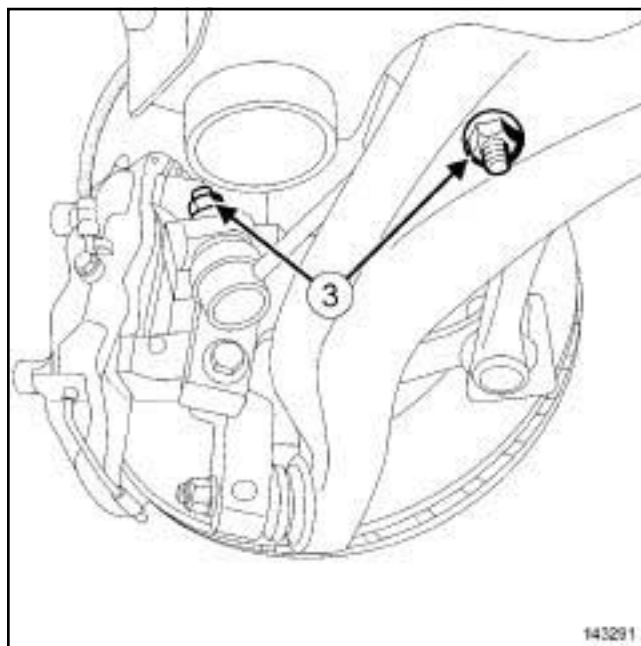
- ☐ Attach the brake calliper to the shock absorber spring.
- ☐ Remove the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-10**).

DISCHARGE LAMPS



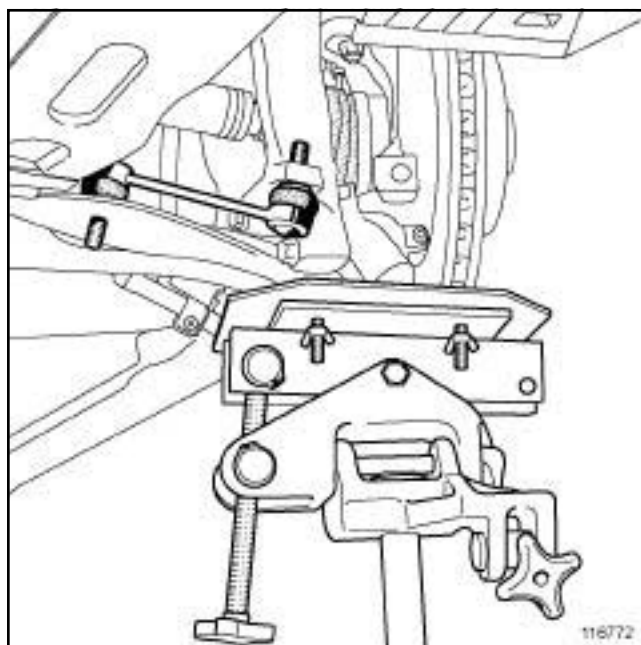
143587

- ☐ Remove the nut (2) from the support of the headlight beam adjustment sensor ball joint on the lower arm.



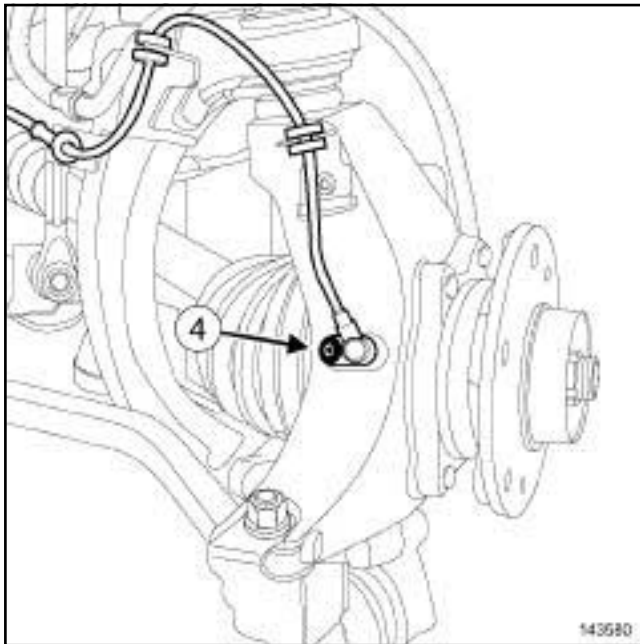
143291

- ☐ Remove the nuts (3) from the anti-rotation ball joint.



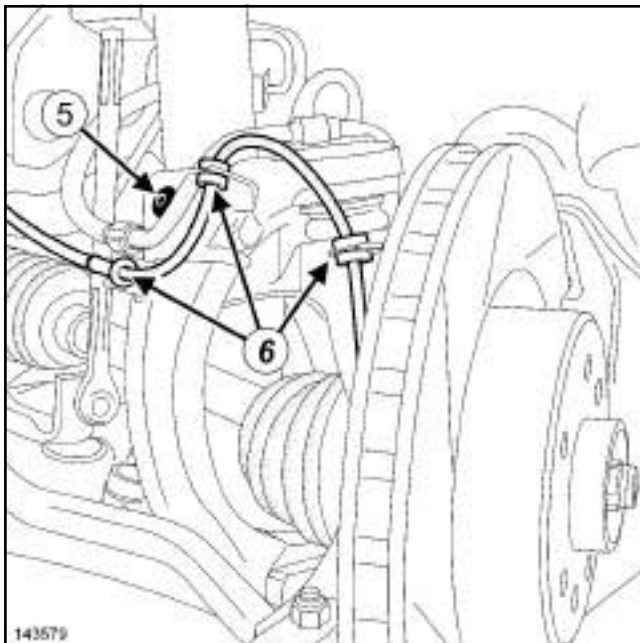
116772

- ☐ Fit a **component jack** to compress the suspension.
- ☐ Remove:
 - the anti-rotation ball joint,
 - the **component jack**.



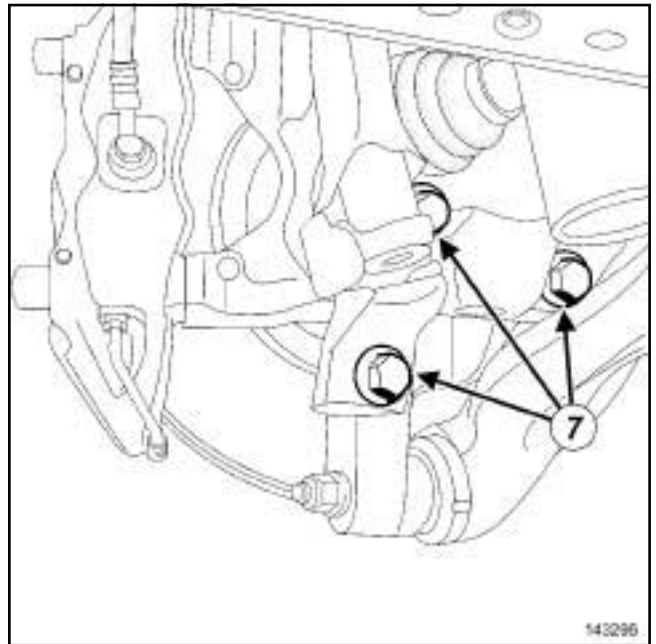
143580

- ☐ Remove the wheel speed sensor bolt (4) .
- ☐ Remove the wheel speed sensor from its housing.



143579

- ☐ Remove the bolt (5) from the brake hose mounting on the pivot holder.
- ☐ Unclip the wiring of the wheel speed sensor from the brake hose mounting at (6) .
- ☐ Separate the brake hose mounting from the pivot holder.



143296

- ☐ Remove the bolts (7) from the support of the pivot holder.

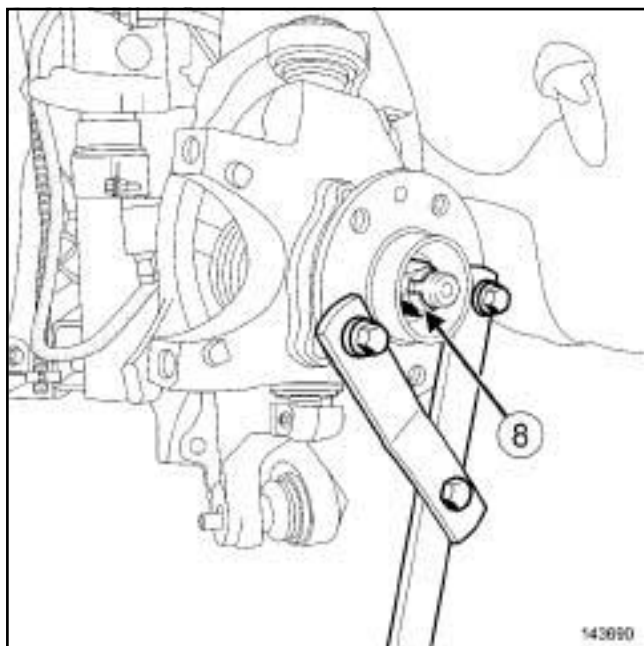
II - OPERATION FOR REMOVAL OF PART CONCERNED



WARNING

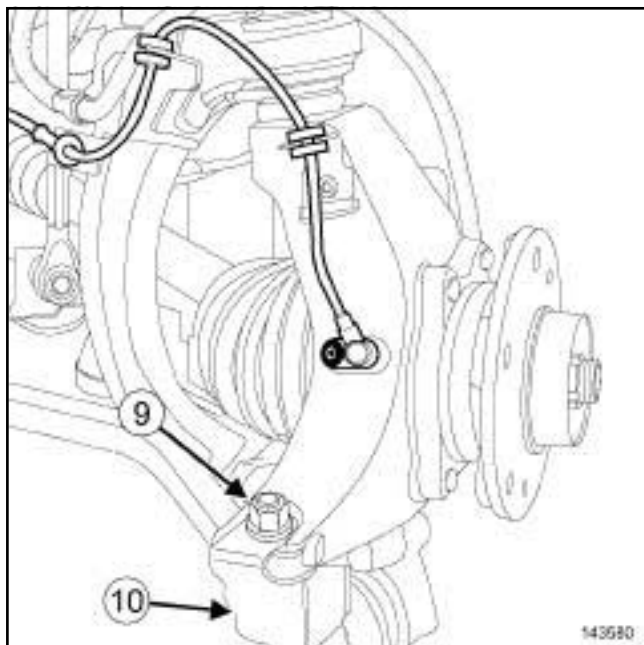
In order to prevent irreversible damage to the front hub bearing:

- 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.



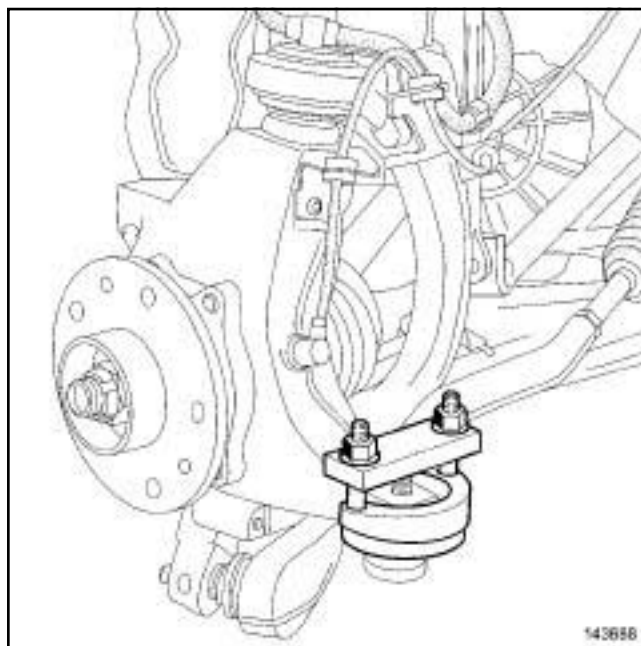
143690

- ❑ Remove the nut from the hub (8) using a tool (**Rou. 604-01**).



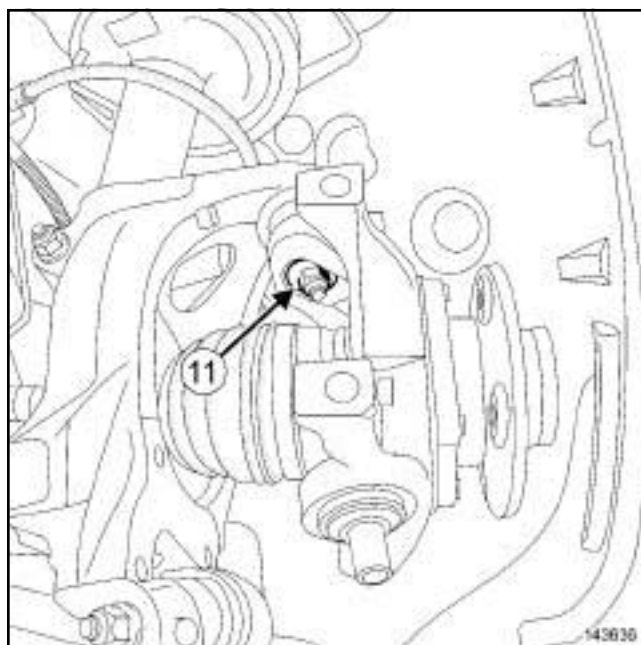
143580

- ❑ Remove:
 - the nut (9) from the track rod end,
 - the gaiter protection (10) from the track rod end.



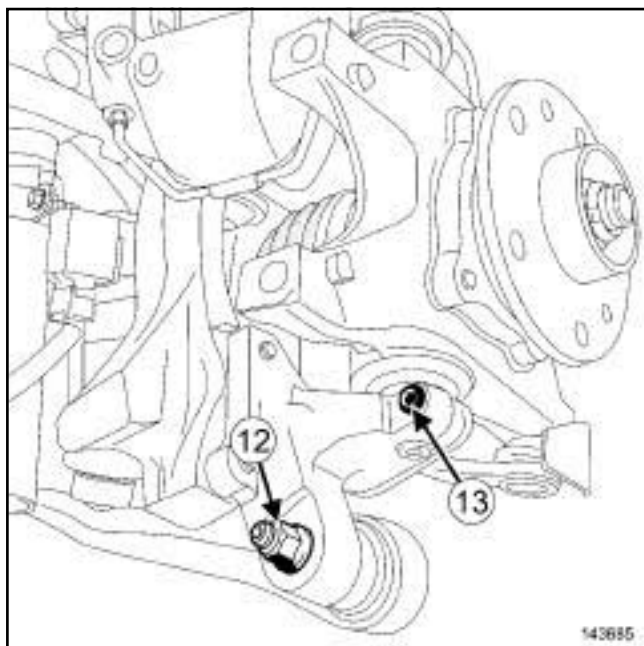
143688

- ❑ Detach the track rod end using the tool (**Tav. 476**).



143636

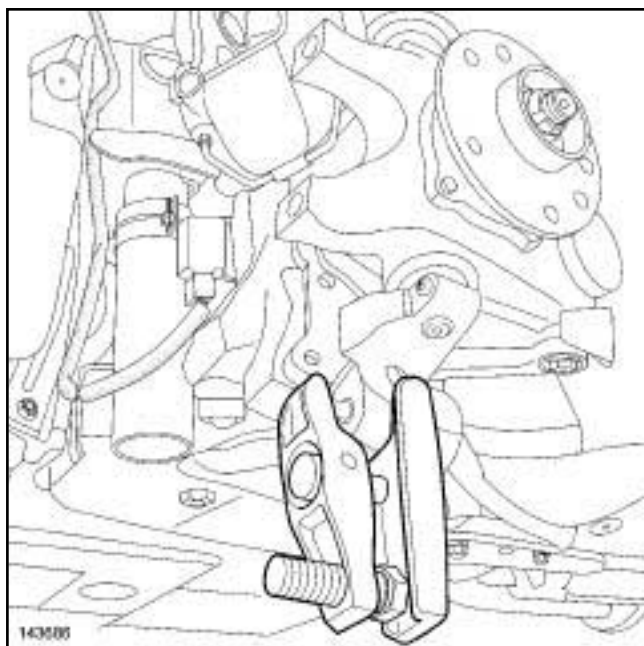
- ❑ Remove the nut (11) from the hub carrier upper ball joint.



143685

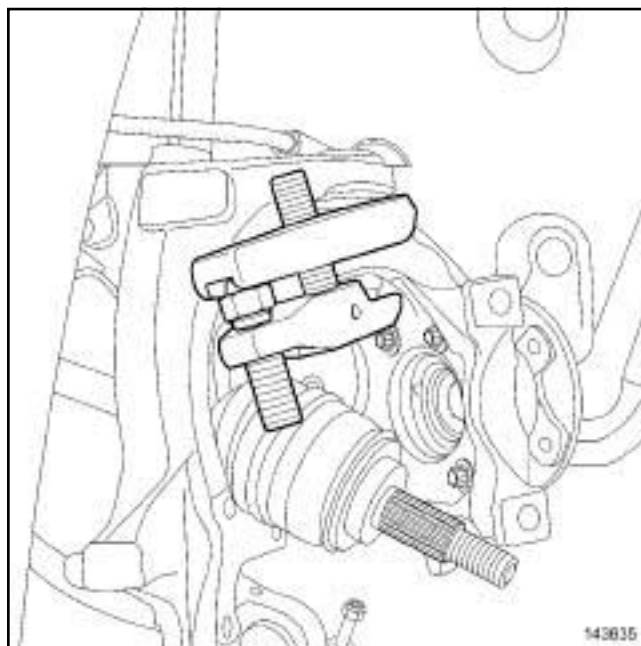
❑ Remove:

- the nut (12) of the lower arm ball joint on the support,
- the bolt (13) of the hub carrier lower ball joint on the support.



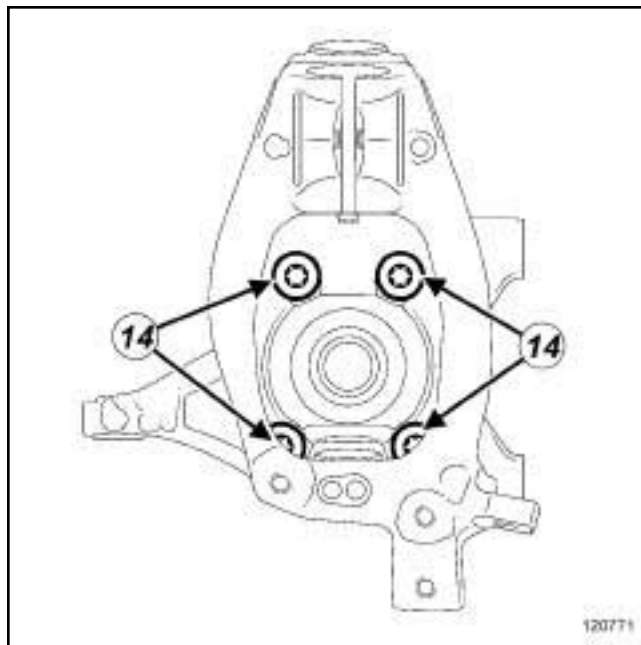
143686

- ❑ Detach the ball joint from the lower arm using a ball joint extractor.
- ❑ Separate the driveshaft from the hub carrier.



143635

- ❑ Detach the ball joint from the hub carrier using a ball joint extractor.
- ❑ Remove the « hub carrier - bearing » assembly.



120771

- ❑ Fit the hub carrier in a vice equipped with jaws.
- ❑ Remove:
 - the bolts (14) from the hub carrier « hub - bearing » assembly,
 - the « hub - bearing » assembly of the hub carrier.

FRONT AXLE COMPONENTS

Front driveshaft hub carrier: Removal - Refitting

31A

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ **parts always to be replaced: Track rod end nut (13,04,02,03).**
- ☐ Always replace:
 - the support bolts,
 - the nuts of the anti-rotation linkage,
 - the nut of the hub carrier upper ball joint,
 - the bolt of the hub carrier lower ball joint.
- ☐ **parts always to be replaced: Front wheel hub nut (13,02,03,20).**

WARNING

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.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the « hub - bearing » assembly.
- ☐ Torque tighten the **bolts of the « hub - bearing » assembly on the hub carrier (120 N.m).**
- ☐ Refit the « hub carrier - bearing » assembly.
- ☐ Torque tighten the **nut of the hub carrier upper ball joint (80 N.m).**
- ☐ Position the driveshaft.
- ☐ Refit:
 - the support on the hub carrier lower ball joint.
 - the bolt of the hub carrier lower ball joint,
 - the wheel hub nut,
 - the lower arm ball joint,
 - the track rod end protection,
 - the track rod end nut.
- ☐ Torque tighten:
 - the **bolt of the lower ball joint on the support (28 N.m),**
 - the **lower ball joint nut (62 N.m),**

- the **track rod end nut (37 N.m),**
- the **nut of the wheel hub (280 N.m)** using a (**Rou. 604-01**).

III - FINAL OPERATION

- ☐ Refit:
 - the support bolts on the pivot holder,
 - the lower arm ball joint on the support.
- ☐ Torque tighten the **support bolts on the pivot holder (120 N.m).**
- ☐ Fit a **component jack** to compress the suspension.
- ☐ Refit the anti-rotation linkage, starting with the exterior ball joint.
- ☐ Torque tighten the **anti-rotation linkage nuts (80 N.m).**

DISCHARGE LAMPS

- ☐ Refit the ball joint support of the headlight beam adjustment sensor on the lower arm.
- ☐ Refit:
 - the wheel speed sensor,
 - the brake hose mounting on the pivot holder,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-10**).
- ☐ Torque tighten the **bolt of the brake hose mounting on the pivot holder (21 N.m).**
- ☐ Clip the wiring of the wheel speed sensor onto the brake hose mounting.
- ☐ Refit the brake calliper.
- ☐ Torque tighten the **brake calliper bolts (160 N.m).**
- ☐ Refit:
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**),
 - the front wheel (see **Wheel: Removal - Refitting**).
- ☐ Check the axle geometry (see **Axle assemblies: Check**).
- ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**).

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 **Front axle components: Precautions for the repair**) .

WARNING

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.

WARNING

In order to prevent irreversible damage to the front hub bearing:

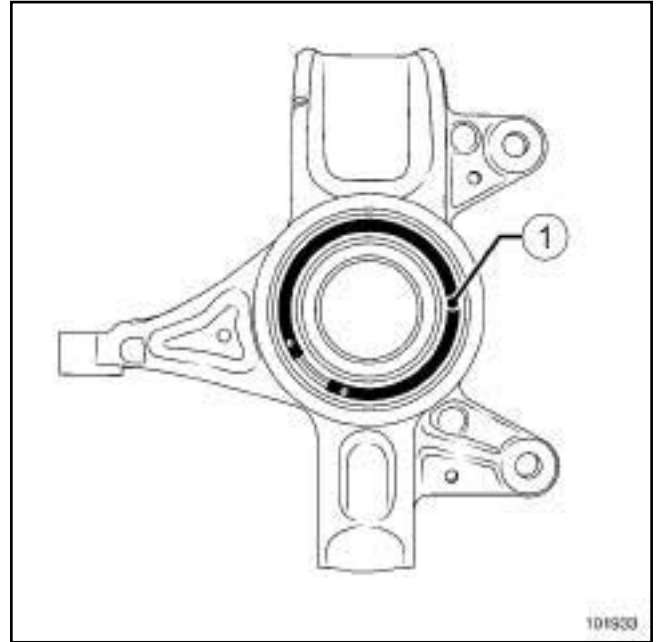
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.

REMOVAL

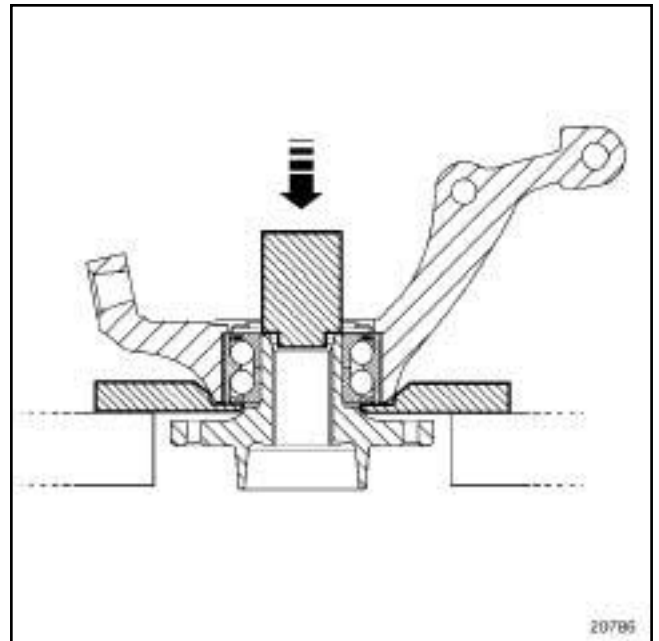
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the front wheel (see **Wheel: Removal - Refitting**)
 - the front wheel speed sensor (see **Front wheel speed sensor: Removal - Refitting**) ,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-10**) ,
 - the front driveshaft hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page **31A-22**) .

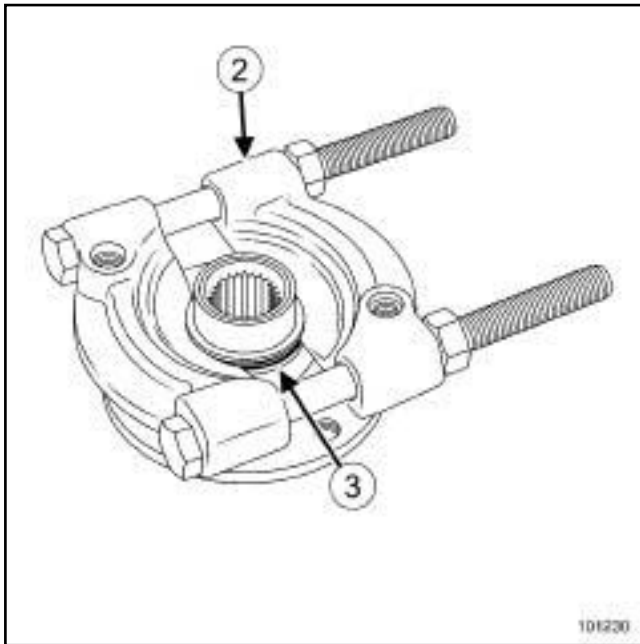
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Remove the elastic ring (1) from the front driveshaft hub carrier.

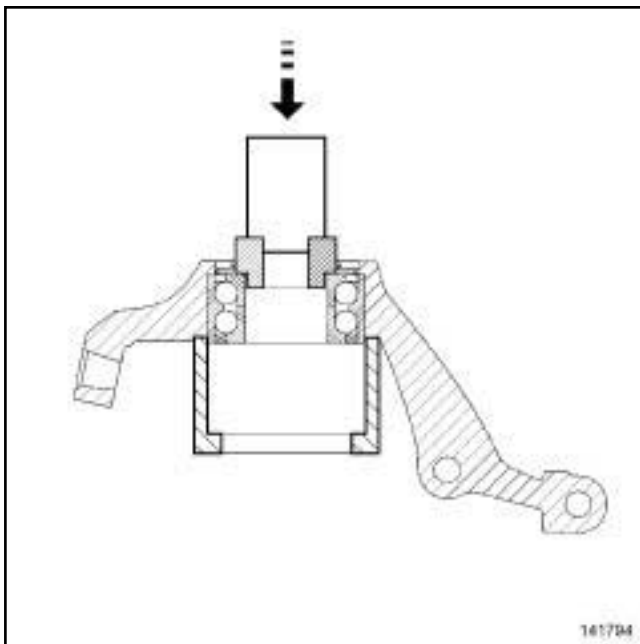


- ☐ Remove the hub with a press, applying pressure with a tube with an external diameter of **42 mm**.



101230

- ☐ Place the extractor jaws (2) in the groove of the internal bush (3) .
- ☐ Remove the internal bush from the hub, applying pressure on the hub with a tube with an external diameter of **42 mm**.



141794

- ☐ Remove the bearing from the front hub carrier by applying pressure to the inner bush with a tube with an external diameter of **75 mm**.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Front hub carrier bearing (13,02,03,15).
- ☐ parts always to be replaced: Front stub axle carrier bearing rubber ring (13,02,03,17).

WARNING

To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

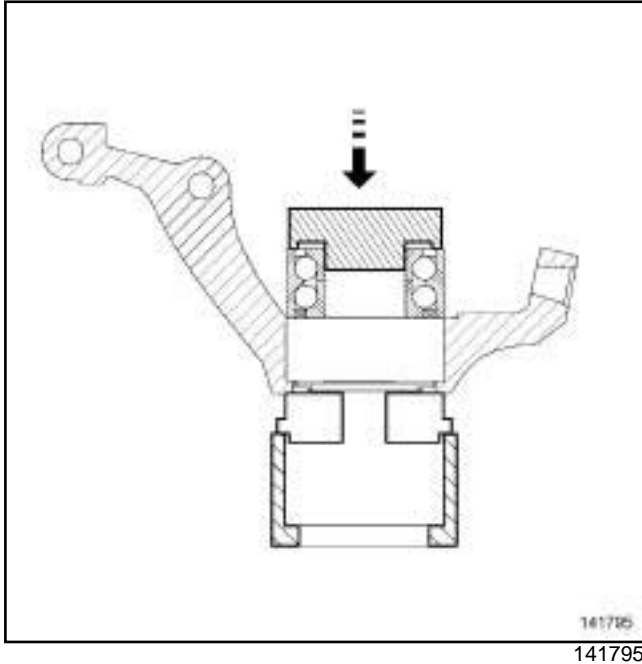
WARNING

Do not press the bearing's internal bush so as to avoid damaging the bearing (very high shrink-fitting force).

- ☐ 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.
- ☐ 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.

Front hub carrier bearing: Removal - Refitting

II - REFITTING OPERATION FOR PART CONCERNED



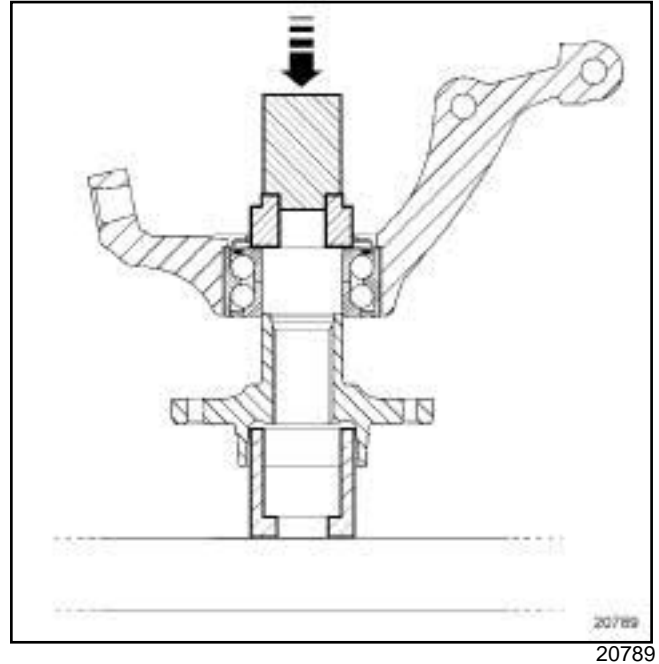
❑

WARNING

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 bearing on the vehicle interior.
- ❑ Apply pressure to the external bush with a tube with an outer diameter of **75 mm** and an inner diameter of **80 mm** (old bearing).

- ❑ Apply a fitting force of **50,000 N** to ensure that the bearing is correctly fitted on the hub carrier shoulder.



❑ Refit:

- the hub using a tube with an external diameter of **55 mm**,
- the elastic ring on the front driveshaft hub carrier.

III - FINAL OPERATION

❑ Refit:

- the front driveshaft hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page 31A-22) ,
- the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page 31A-10) ,
- the front wheel speed sensor (see **Front wheel speed sensor: Removal - Refitting**) ,
- the front wheel (see **Wheel: Removal - Refitting**) .

IMPORTANT

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

FRONT AXLE COMPONENTS

Front hub carrier bearing: Removal - Refitting

31A

Special tooling required

Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Equipment required

Diagnostic tool

Tightening torques

« hub - bearing » assembly bolts	120 N.m
track rod end nut	37 N.m
hub nut	280 N.m
front brake calliper bolts	160 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

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.

WARNING

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

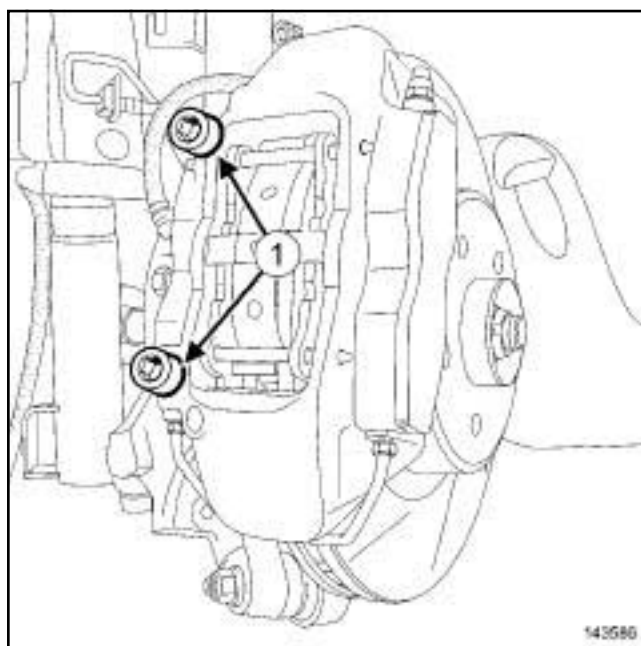
I - REMOVAL PREPARATION OPERATION

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

Note:

It is necessary to lock the airbag computer in order to unlock the steering column.

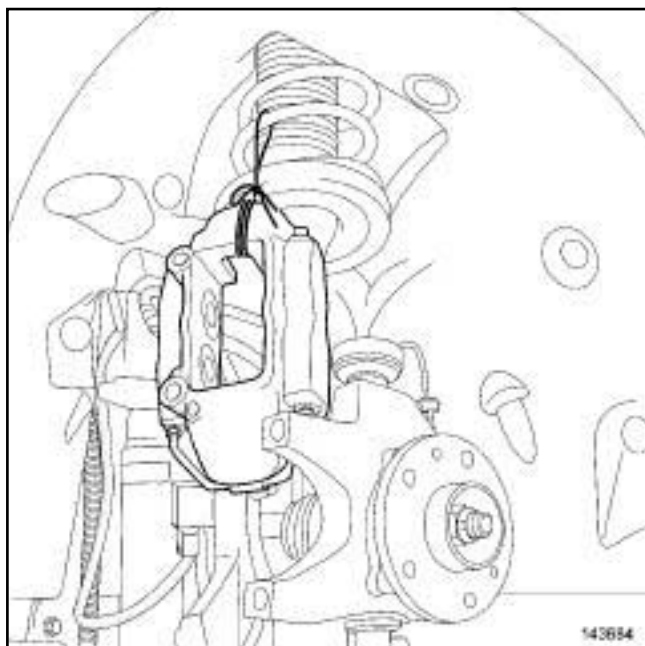
- ☐ Apply the procedure before repair using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select the "Airbag computer",
 - go to repair mode,
 - display the "Before/after repair procedure" for the computer selected,
 - carry out the operations described in the "Before repair procedure" section.
- ☐ Remove:
 - the front wheel (see **Wheel: Removal - Refitting**) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**) .



143586

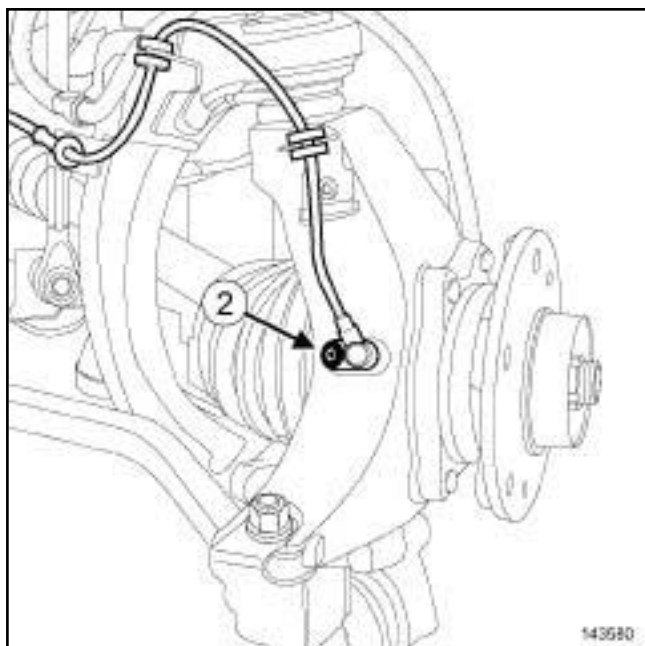
143586

- ☐ Remove the front brake calliper bolts.



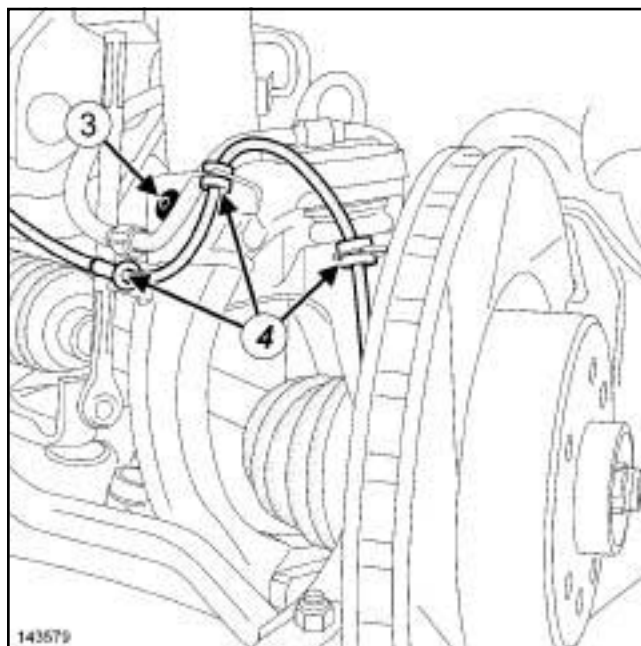
143684

- ❑ Attach the brake calliper to the shock absorber spring.
- ❑ Remove the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-10**).



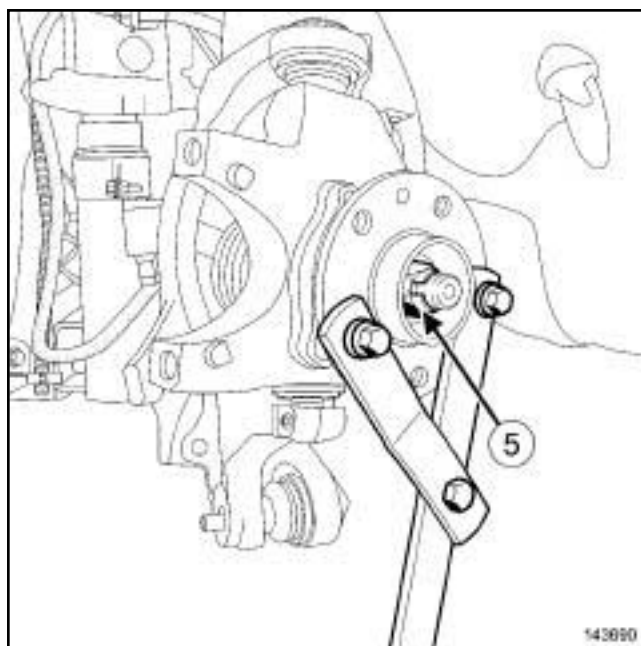
143680

- ❑ Remove the wheel speed sensor bolt (2).
- ❑ Remove the wheel speed sensor from its housing.



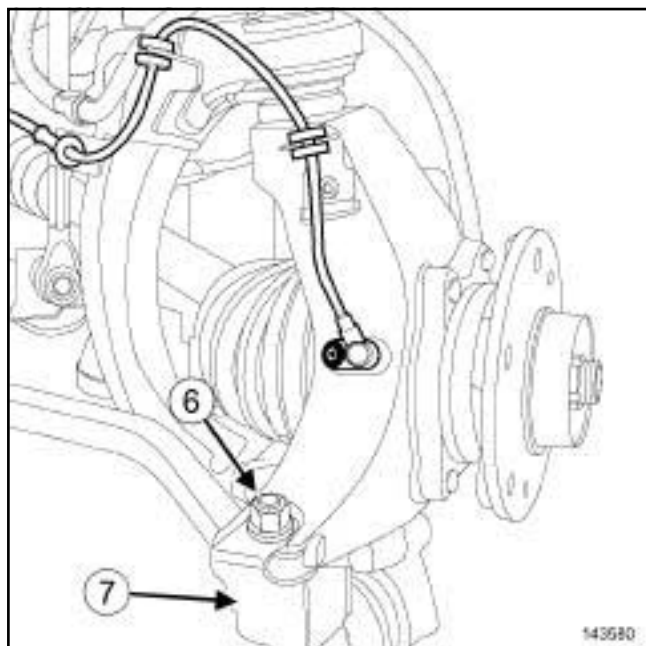
143579

- ❑ Remove the bolt (3) from the brake hose mounting on the pivot holder.
- ❑ Unclip the wiring of the wheel speed sensor from the brake hose mounting at (4).
- ❑ Separate the brake hose mounting from the pivot holder.



143690

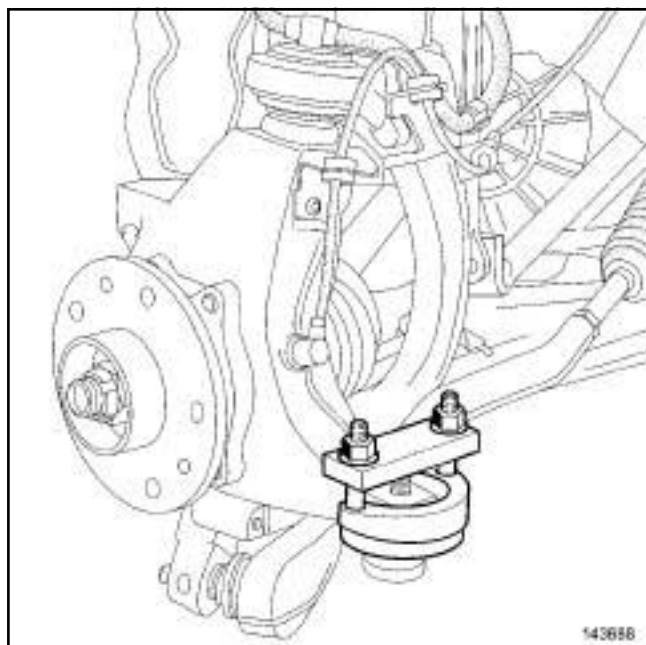
- ❑ Remove the nut from the hub (5) using a tool (**Rou. 604-01**).



143580

Remove:

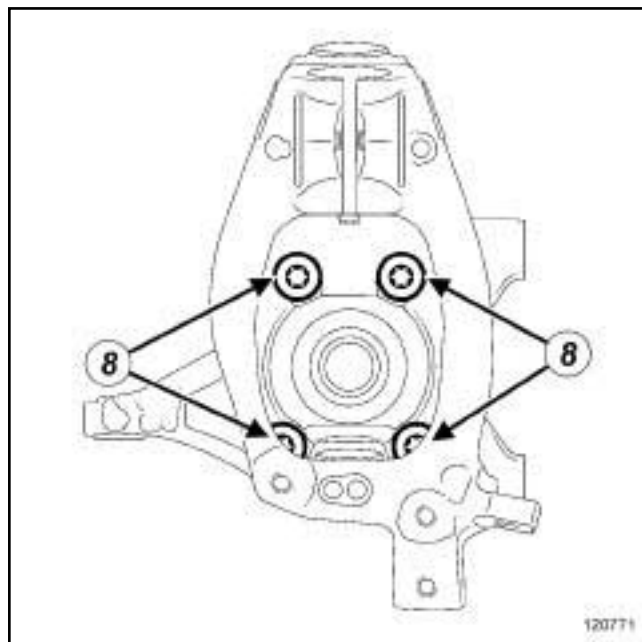
- the nut (6) from the track rod end,
- the gaiter protection (7) from the track rod end.



143688

Detach the track rod end using the tool (Tav. 476).

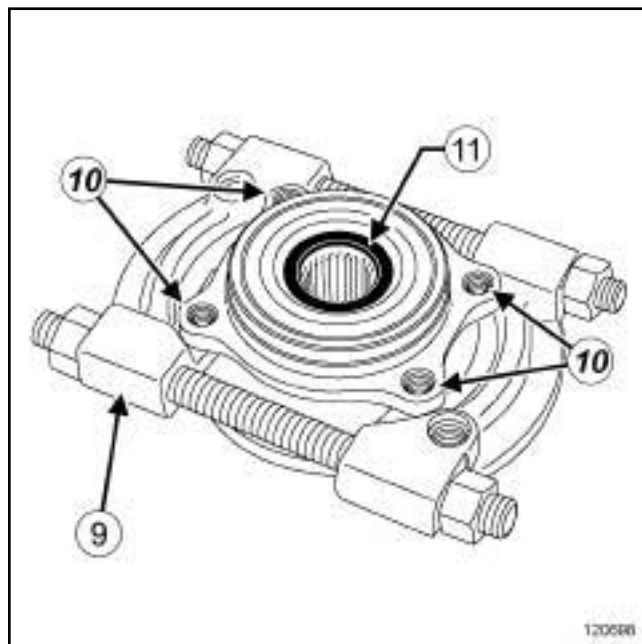
II - OPERATION FOR REMOVAL OF PART CONCERNED



120771

Remove:

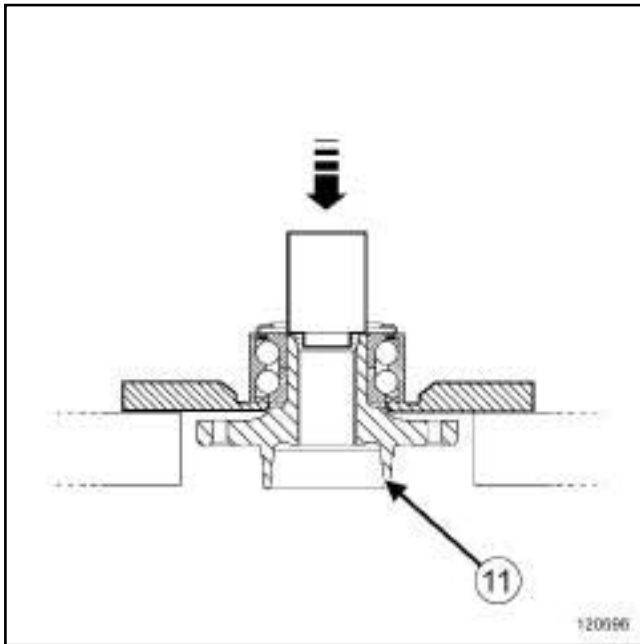
- the bolts (8) from the hub carrier « hub - bearing » assembly,
- the « hub - bearing » assembly.



120698

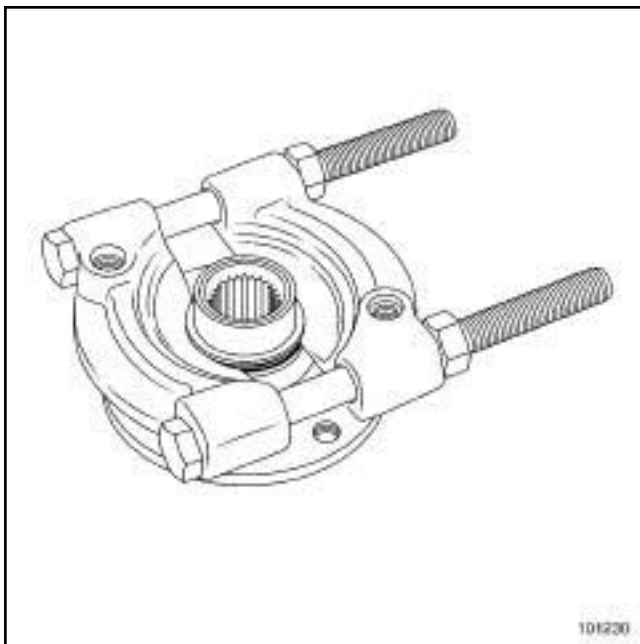
Fit an extractor with jaws (9) to the « hub - bearing » assembly.

Refit the ears (10) of the bearing section of the « hub - bearing » assembly to the jaws of the extractor.



120696

- ☐ Refit the hub (11) , using the press, by applying pressure to the hub (11) using a tube with an outer diameter of between **40** and **42 mm**.
- ☐ Activate the hydraulic jack to separate the hub from the bearing.



101230

- ☐ Extract the internal bush from the hub using an extractor with jaws and a press.
- ☐ Place the extractor jaws in the groove of the internal bush.

REFITTING

I - REFITTING PREPARATION OPERATION

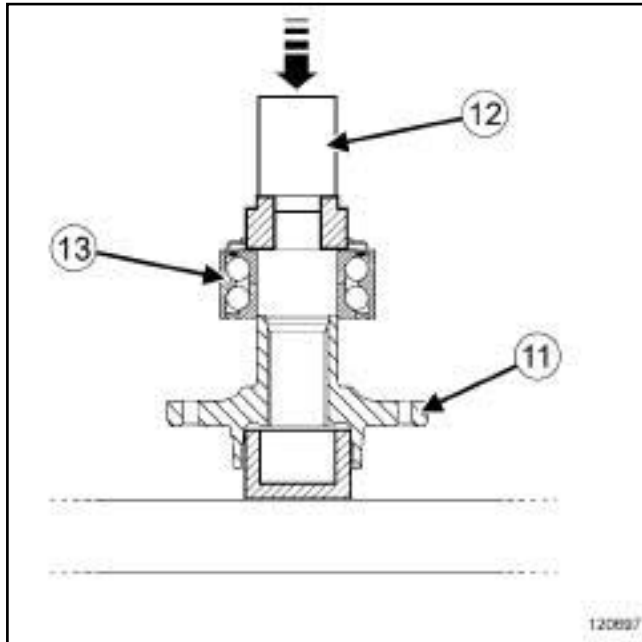
- ☐ **parts always to be replaced: Track rod end nut (13,04,02,03).**
- ☐ Always replace the bolts of the « hub - bearing » assembly.
- ☐ It is essential to check the condition of the hub surface before refitting the bearing.
- ☐ Replace the hub if it has deep scratches or cracks.
- ☐ Clean the hub surfaces in contact with the new bearing using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

WARNING

To ensure that the wheel speed sensor works properly, do not mark the sensor target on the bearing.

Front hub carrier bearing: Removal - Refitting

II - REFITTING OPERATION FOR PART CONCERNED



120697

- ☐ Position the hub (11) on the press body and offer up the new bearing (13) to the hub.
- ☐ Apply pressure to the inner bearing bush using a tube (12) with an outer diameter of between **60** and **62 mm**, ensuring that the assembly is correctly centred.

Note:

It is essential that the assembly is centred correctly to prevent the hub or bearing from being damaged.

- ☐ Activate the hydraulic jack to fit the bearing onto the hub
- ☐ Refit:
 - the « hub - bearing » assembly to the hub-carrier,
 - the « hub - bearing » assembly bolts.
- ☐ Torque tighten the «**hub - bearing**» **assembly bolts (120 N.m)**.

III - FINAL OPERATION

- ☐ Refit:
 - the track rod end,
 - the gaiter protection on the track rod end,
 - the hub nut.
- ☐ Torque tighten:
 - the **track rod end nut (37 N.m)**,

- the **hub nut (280 N.m)** using a tool (**Rou. 604-01**).

☐ Refit:

- the brake hose mounting on the pivot holder,
- the wheel speed sensor.

- ☐ Clip the wiring of the wheel speed sensor onto the brake hose mounting.

☐ Refit:

- the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting, page 31A-10**),
- the front brake calliper.

- ☐ Torque tighten the **front brake calliper bolts (160 N.m)**.

☐ Refit:

- the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting, page 31A-1**),
- the front wheel (see **Wheel: Removal - Refitting**).

Note:

It is necessary to unlock the airbag computer in order to lock the steering column.

- ☐ Apply the after repair procedure using the **Diagnostic tool** :

- connect the **Diagnostic tool**,
- select the "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.

- ☐ Check the axle geometry (see **Axle assemblies: Check**) .

- ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .

FRONT AXLE COMPONENTS

Front shock absorber and spring: Removal - Refitting

31A

Equipment required

indelible pencil
spring compressor
spanner for shock absorber rod nut

Tightening torques

new shock absorber rod nut	62 N.m
filter block bolts on the body	21 N.m
shock absorber base bolts	180 N.m
track rod nut	37 N.m
brake hose mounting	8 N.m

IMPORTANT

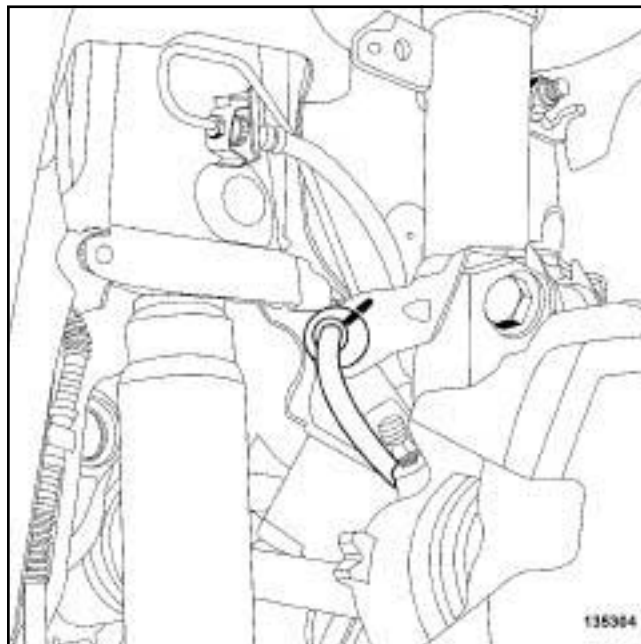
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Front axle components: Precautions for the repair**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

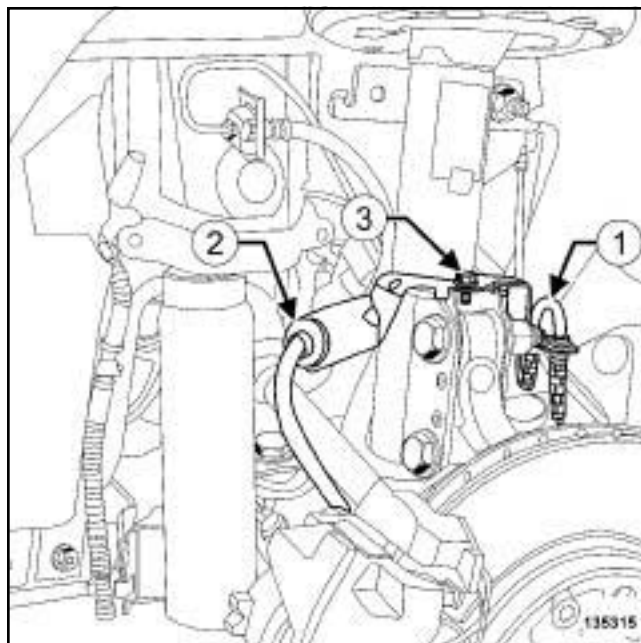
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the front wheel (see **Wheel: Removal - Refitting**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



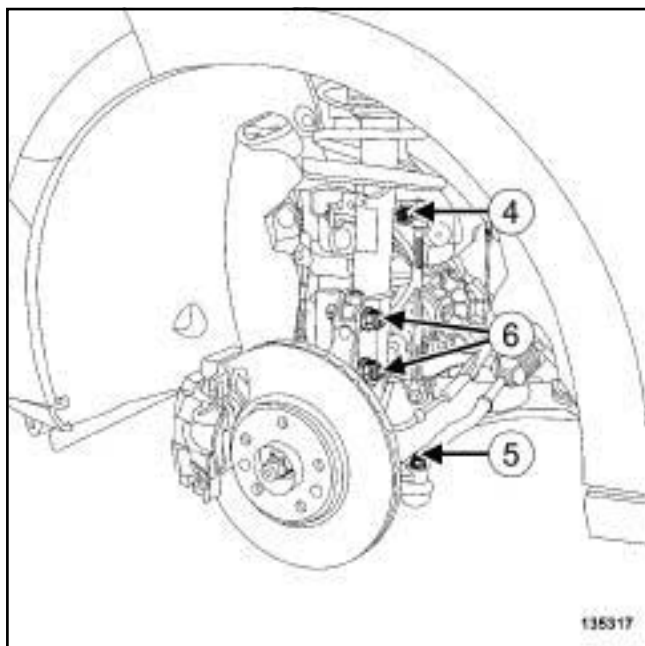
135304

- ☐ Mark the position of the cap on the base of the shock absorber using a **indelible pencil**.



135315

- ☐ Unclip:
 - the wiring (1) of the wheel speed sensor from the brake hose mounting,
 - the cap (2) of the brake hose mounting.
- ☐ Remove:
 - the bolt (3) of the brake hose mounting,
 - the brake hose mounting.

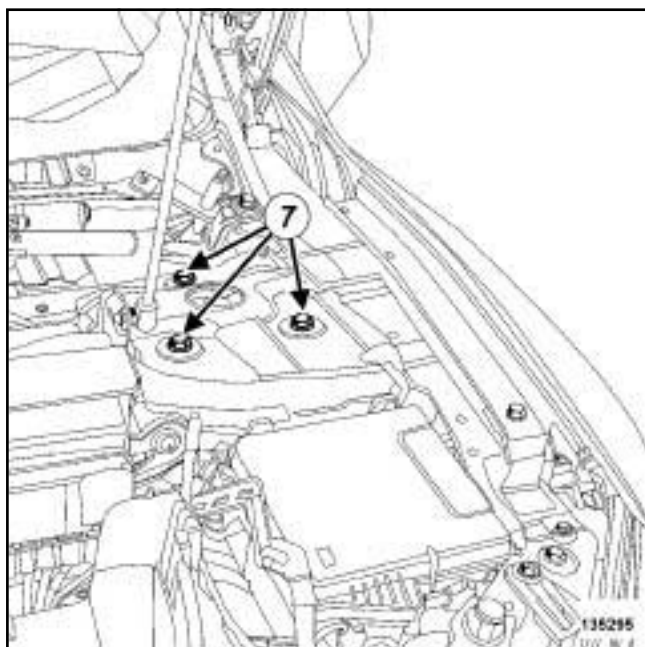


135317

❑ Remove:

- the nut (4) of the anti-roll bar tie rod on the base of the shock absorber,
- the track rod nut (5) ,
- the shock absorber base studs (6) .

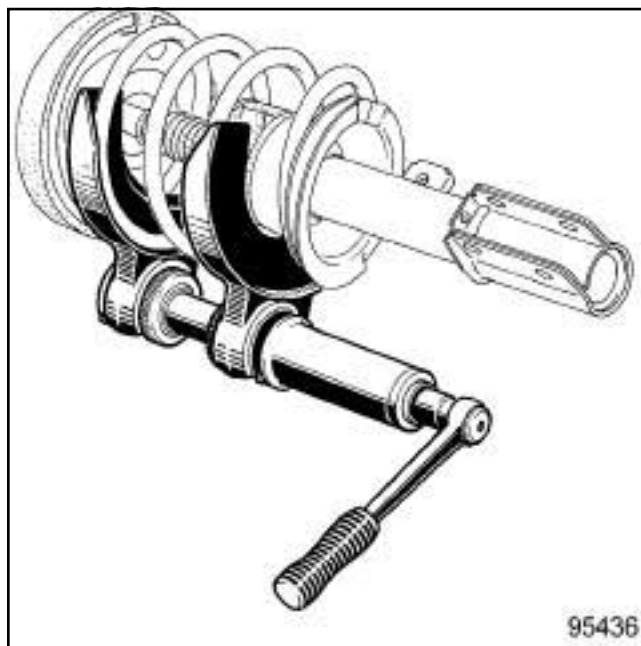
❑ Attach the hub carrier to the subframe.



135295

❑ Remove:

- the filter block bolts (7) on the body,
- the « spring - shock absorber » assembly.



95436

❑ Position the appropriate cups on the **spring compressor**.

❑ Position the spring compressor on the spring.

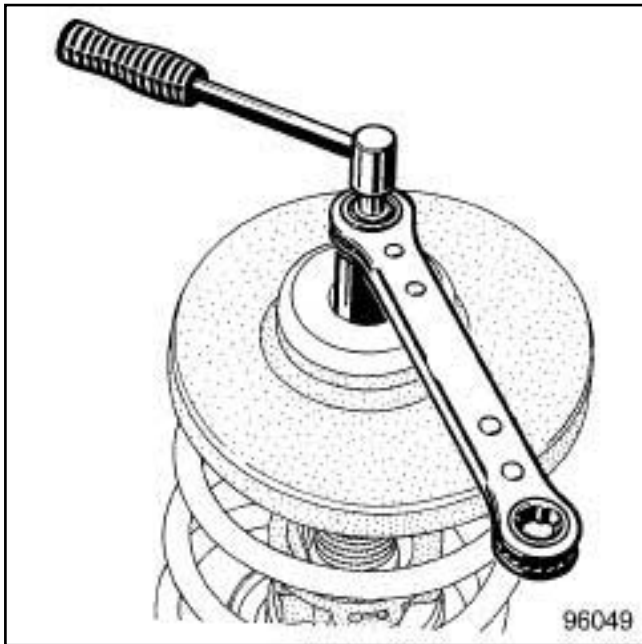
❑ Put the « spring compressor - spring » assembly in a vice equipped with jaws.

❑ Compress the spring using the spring compressor until the spring detaches.



135318

❑ Remove the nut cover (8) .

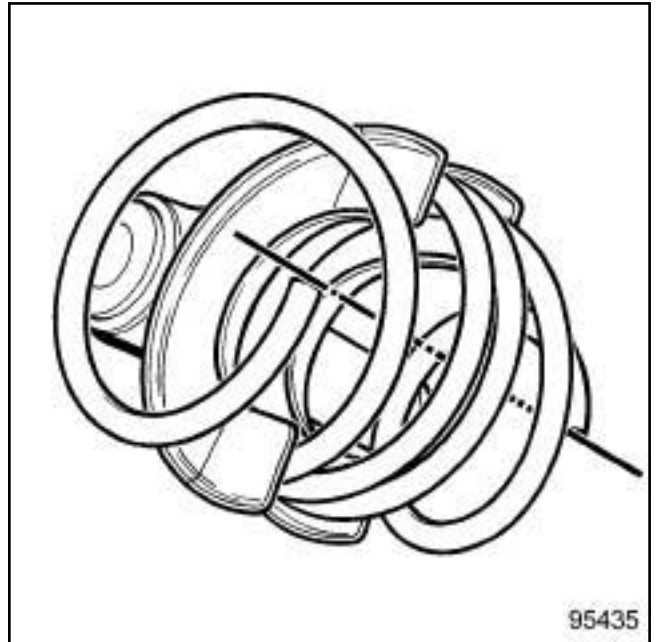


96049

- ☐ 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

I - REFITTING PREPARATION OPERATION

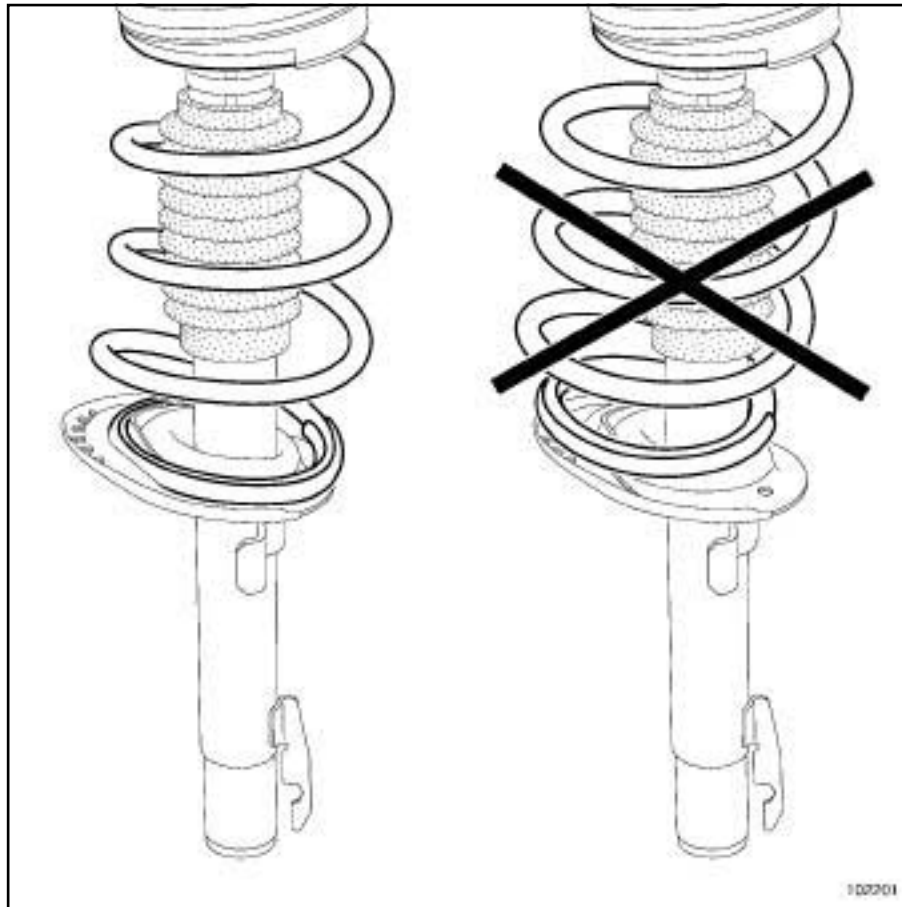


95435

- ☐ If necessary, replace any faulty filter unit components (see **Filter unit assembly: Removal - Refitting**).
- ☐ **parts always to be replaced: front shock absorber rod nut (13,02,04,10).**

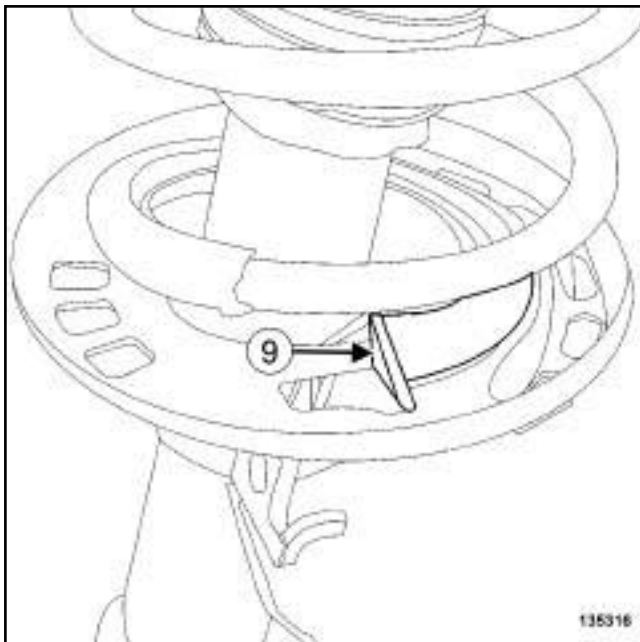
II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Place the spring compressor in a vice equipped with jaws.
- ☐ Compress the spring.



102201

- ❑ Insert the spring in the neck of the cup.



135316

- ❑ Check that the spring is in contact against the stop (9) .



101939

- ☐ Respect the order and direction of fitting for the constituent parts.
- ☐ Torque tighten the **new shock absorber rod nut (62 N.m)**.
- ☐ Decompress the spring.
- ☐ Remove the spring compressor.
- ☐ Detach the hub carrier from the subframe.
- ☐ Refit the « spring - shock absorber » assembly.
- ☐ Torque tighten:
 - the **filter block bolts on the body (21 N.m)**,
 - the **shock absorber base bolts (180 N.m)**.
- ☐ Refit:
 - the nut of the anti-roll bar linkage on the base of the shock absorber,
 - the track rod,
 - the brake hose mounting.
- ☐ Torque tighten:
 - the **track rod nut (37 N.m)**,
 - the **brake hose mounting (8 N.m)**.
- ☐ Clip:
 - the wiring of the wheel speed sensor on the brake hose mounting,
 - the brake hose on the brake hose mounting.

III - FINAL OPERATION

- ☐ Refit:
 - the front wheel (see **Wheel: Removal - Refitting**) ,
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).
- ☐ Check the axle geometry (see **Axle assemblies: Check**) .
- ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .

Special tooling required

Sus. 1925	Tool for removing the front shock absorber
------------------	--------------------------------------------

Equipment required

spring compressor
spanner for shock absorber rod nut

Tightening torques

new shock absorber rod nut	62 N.m
shock absorber lower bolt	105 N.m
filter block bolts on the body	21 N.m
anti-roll bar tie rod nut	44 N.m
bolt of the brake hose mounting	21 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

In order not to damage the brake hose:

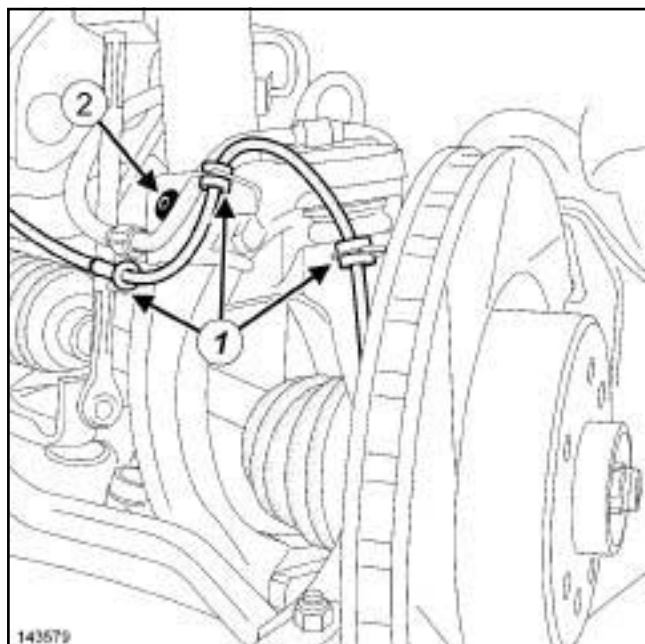
- do not tension the hose,
- do not twist the hose,
- check that there is no contact with the surrounding components.

REMOVAL

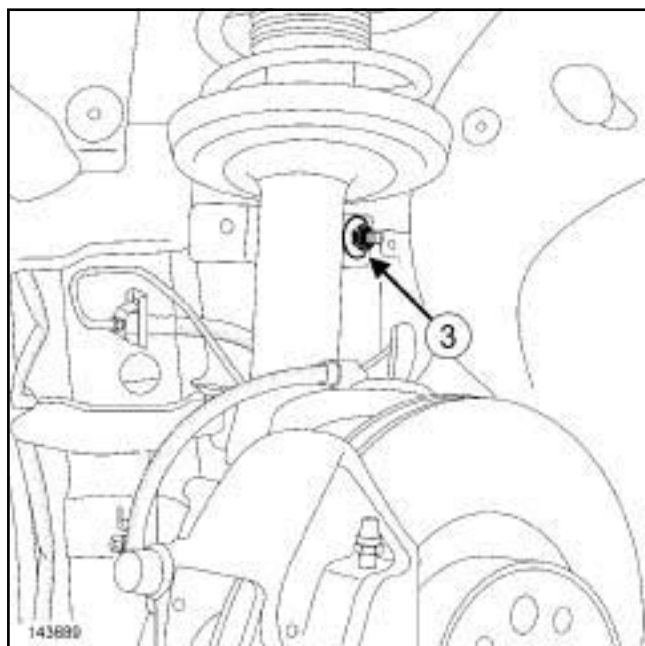
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the front wheel (see **Wheel: Removal - Refitting**) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page **31A-1**) ,
 - the front brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting**, page **31A-6**) ,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page **31A-10**) ,
 - the driveshaft hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page **31A-22**) .

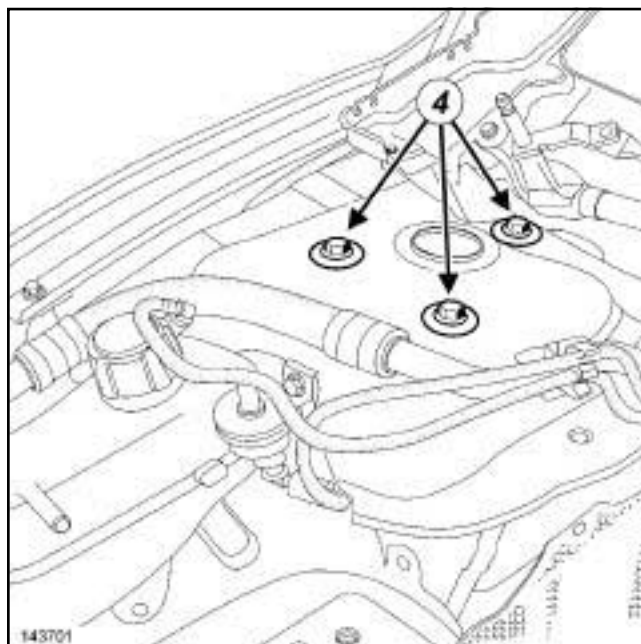
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Unclip the wiring of the wheel speed sensor from the brake hose mounting at (1) .
- ☐ Remove the bolt (2) from the brake hose mounting on the pivot holder.
- ☐ Separate the brake hose mounting from the pivot holder.

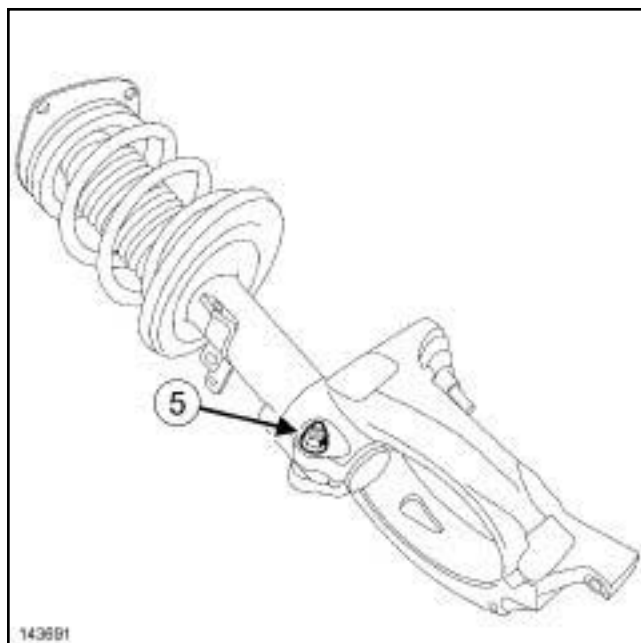


- ☐ Remove the nut (3) of the anti-roll bar linkage on the base of the shock absorber.



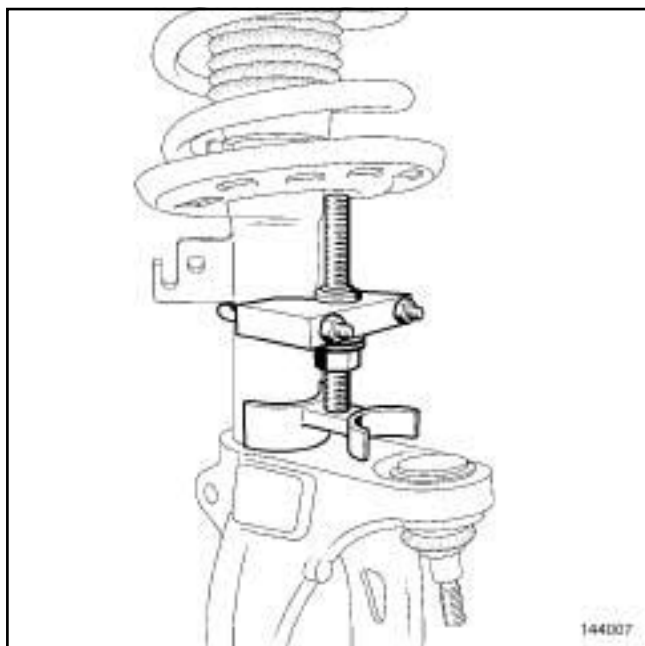
143701

- ☐ Remove:
 - the filter block bolts (4) on the body,
 - the « pivot holder - shock absorber » assembly.



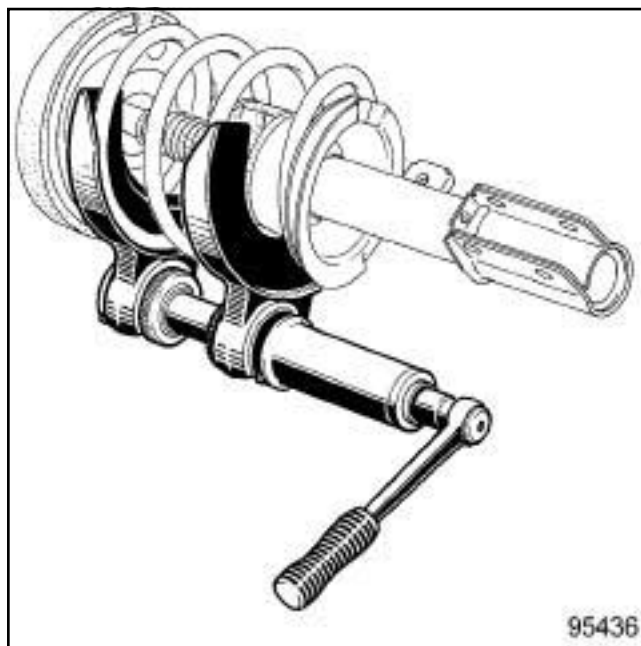
143691

- ☐ Remove the shock absorber lower bolt (5) from the pivot holder.



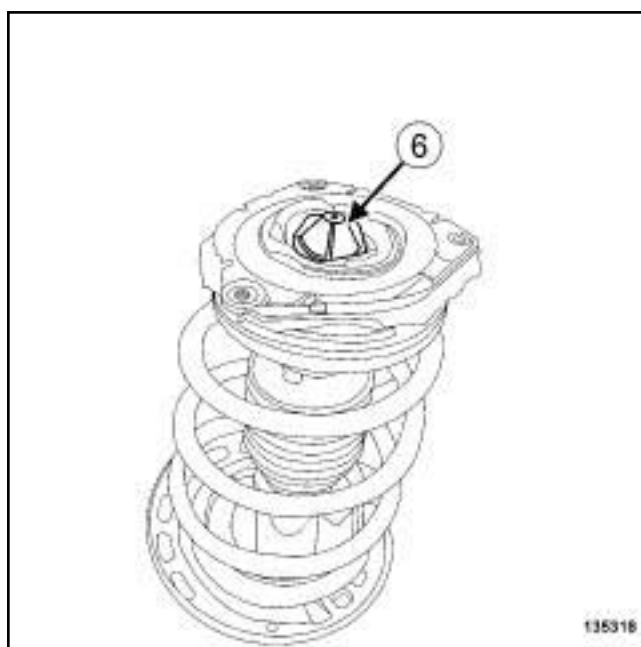
144007

- ❑ Fit the tool (**Sus. 1925**) for separating the shock absorber from the pivot holder.
- ❑ Remove:
 - the shock absorber from the pivot holder,
 - the tool (**Sus. 1925**) from the front shock absorber.



95436

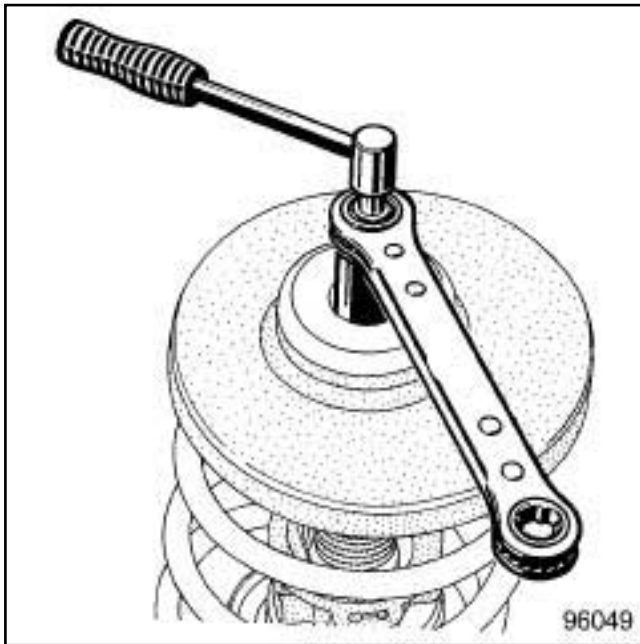
- ❑ Position the appropriate cups on the **spring compressor**.
- ❑ Position the spring compressor on the suspension spring.
- ❑ Put the « spring compressor - spring » assembly in a vice equipped with jaws.
- ❑ Compress the spring using the spring compressor until the spring detaches.



135318

135318

- ❑ Remove the nut cover (6) .

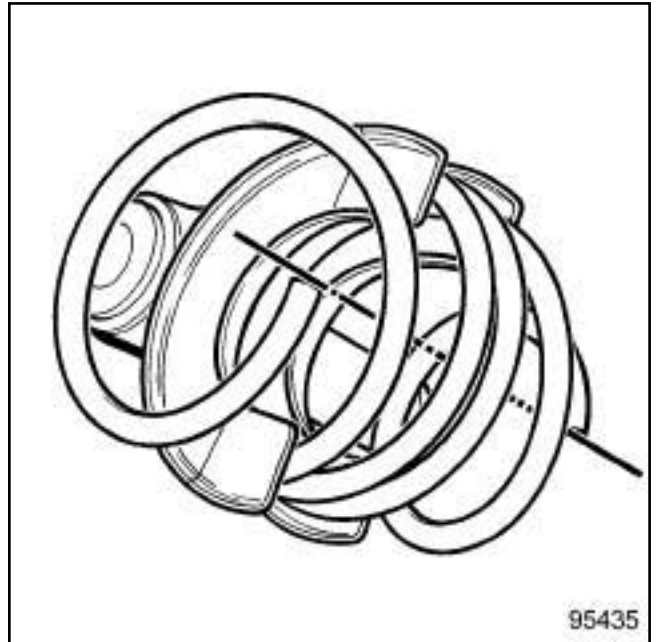


96049

- ☐ 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

I - REFITTING PREPARATION OPERATION



95435

- ☐ If necessary, replace any faulty filter unit components (see **Filter unit assembly: Removal - Refitting**).
- ☐ **parts always to be replaced: front shock absorber rod nut (13,02,04,10).**
- ☐ **parts always to be replaced: Track rod end nut (13,04,02,03).**
- ☐ **parts always to be replaced: Front wheel hub nut (13,02,03,20).**
- ☐ **parts always to be replaced: Front driveshaft lower arm ball joint nut (13,02,03,19).**

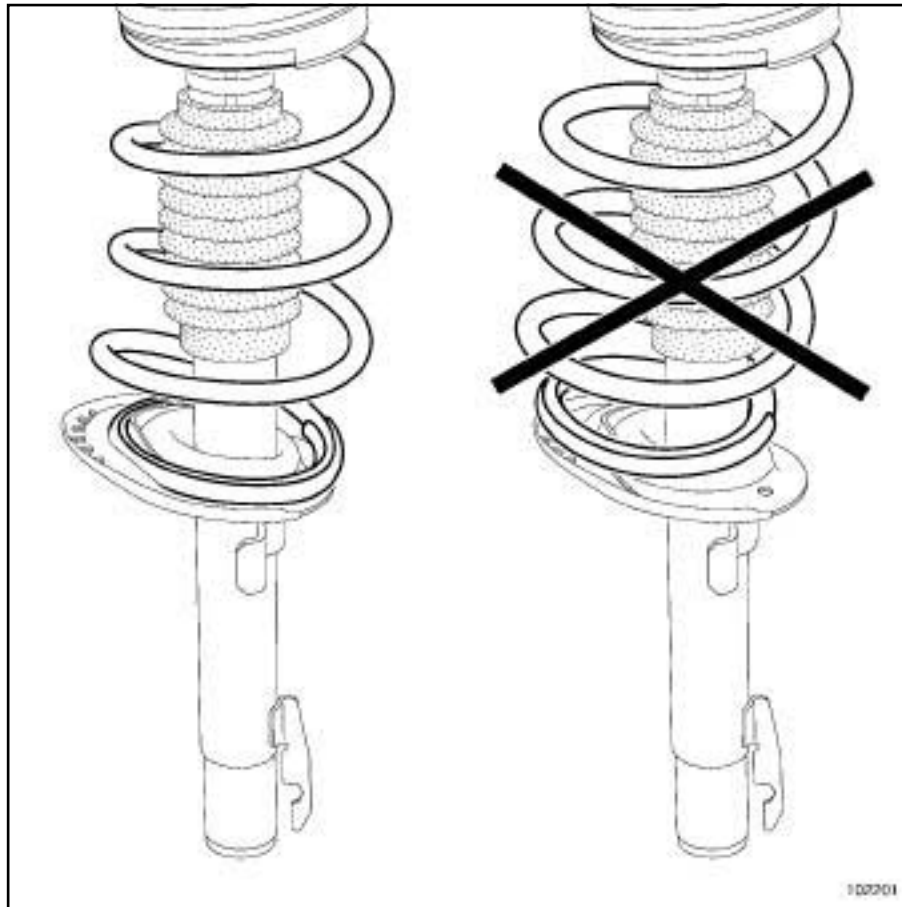
WARNING

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.

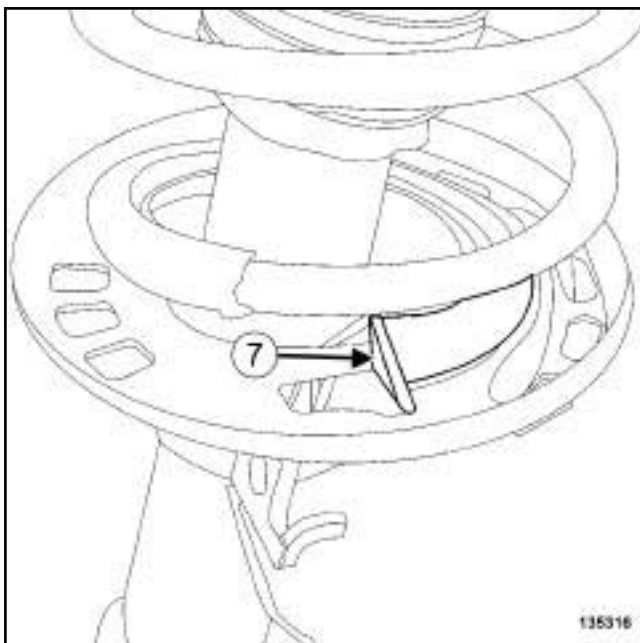
II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Place the spring compressor in a vice equipped with jaws.
- ☐ Compress the spring.



102201

- ❑ Insert the spring in the neck of the cup.



135316

- ❑ Check that the spring is in contact against the stop (7) .



101939

101939

- ❑ Respect the order and direction of fitting for the constituent parts.
- ❑ Torque tighten the **new shock absorber rod nut (62 N.m)**.

- ☐ Decompress the spring.
- ☐ Remove the spring compressor.
- ☐ Refit the front shock absorber on the pivot holder.
- ☐ Torque tighten the **shock absorber lower bolt (105 N.m)**.
- ☐ Refit:
 - the « pivot holder - shock absorber » assembly,
 - the nut of the anti-roll bar linkage on the base of the shock absorber,
 - the brake hose mounting on the pivot holder.
- ☐ Torque tighten:
 - the **filter block bolts on the body (21 N.m)**,
 - the **anti-roll bar tie rod nut (44 N.m)**,
 - the **bolt of the brake hose mounting (21 N.m)**.
- ☐ Clip the wiring of the wheel speed sensor onto the brake hose mounting.

III - FINAL OPERATION

- ☐ Refit:
 - the driveshaft hub carrier (see **31A, Front axle components, Front driveshaft hub carrier: Removal - Refitting**, page 31A-22) ,
 - the front brake disc (see **31A, Front axle components, Front brake disc: Removal - Refitting**, page 31A-10) ,
 - the front brake calliper (see **31A, Front axle components, Front brake calliper: Removal - Refitting**, page 31A-6) ,
 - the front brake pads (see **31A, Front axle components, Front brake pads: Removal - Refitting**, page 31A-1) ,
 - the front wheel (see **Wheel: Removal - Refitting**) ,
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing).
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**) .
- ☐ Check the axle geometry (see **Axle assemblies: Check**) .
- ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .

FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

Special tooling required

Tav. 476 Ball joint extractor.

Tightening torques

driveshaft lower arm studs	180 N.m
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lower ball joint nut	62 N.m
----------------------	---------------

track rod nut	37 N.m
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IMPORTANT

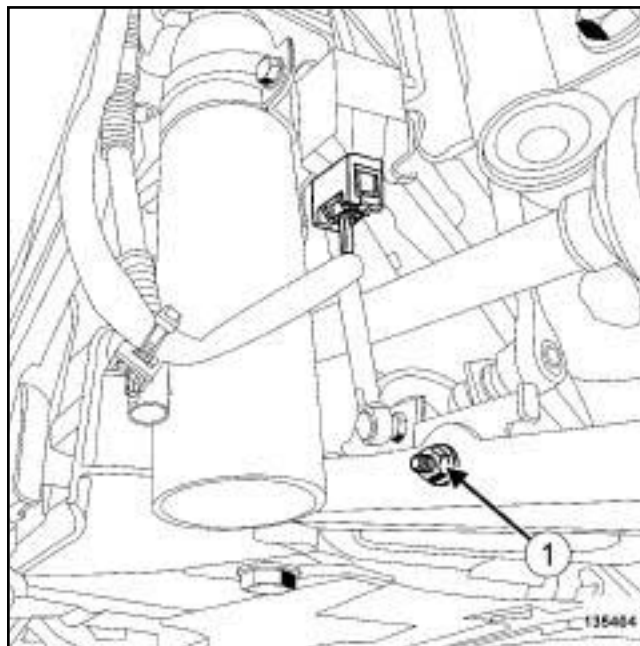
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Front axle components: Precautions for the repair**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front wheel (see **Wheel: Removal - Refitting**) .

DISCHARGE LAMPS



135404

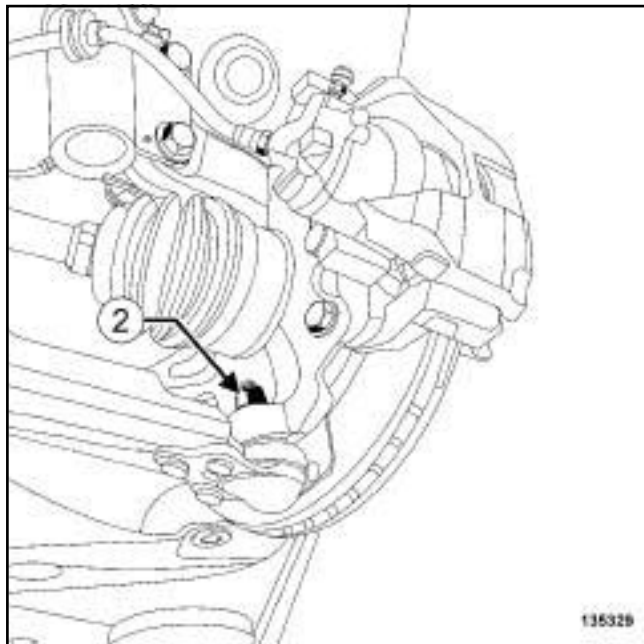
- ☐ Remove the nut (1) from the mounting of the headlight beam adjustment sensor linkage ball joint.

FRONT AXLE COMPONENTS

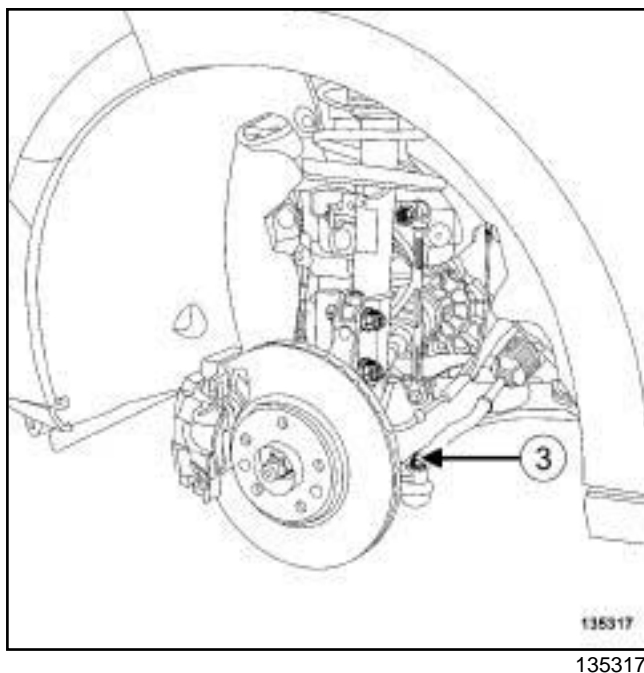
Front driveshaft lower arm: Removal - Refitting

31A

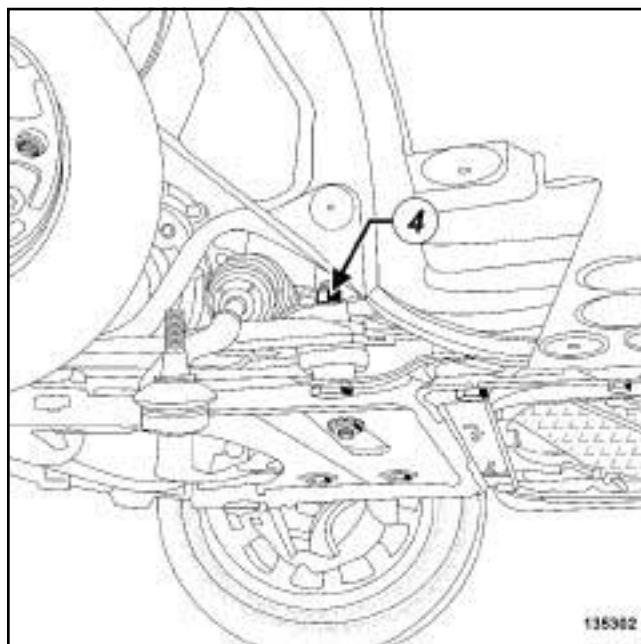
II - OPERATION FOR REMOVAL OF PART CONCERNED



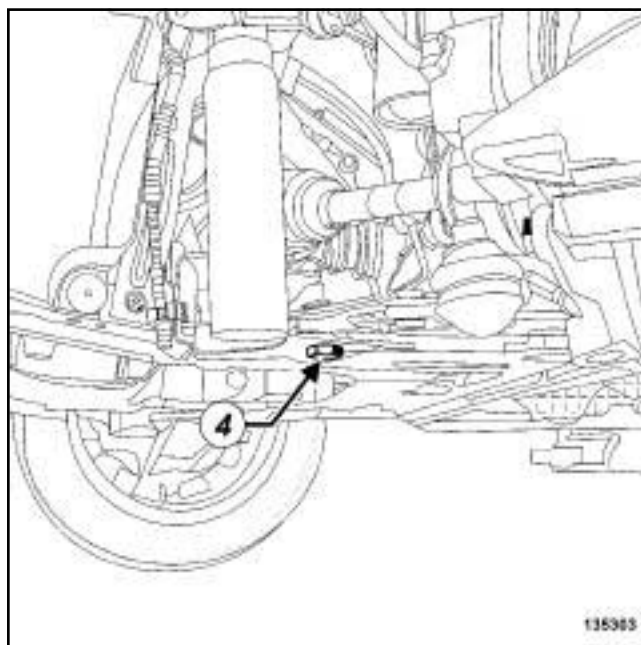
- ☐ Remove the lower arm ball joint nut (2) .
- ☐ Detach the lower ball joint from the hub carrier.
- ☐ Extract the lower arm ball joint from the hub carrier.



- ☐ Remove the track rod nut (3) .
- ☐ Detach the track rod from the hub carrier using the tool (Tav. 476).



135302



135303

- ☐ Remove:
 - the bolts (4) from the driveshaft lower arm,
 - the driveshaft lower arm.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Front driveshaft lower arm bolt (13,02,03,18)
- ☐ Always replace the nuts of the driveshaft lower arm.

FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the driveshaft lower arm.
- ☐ Torque tighten the **driveshaft lower arm studs (180 N.m)**.
- ☐ Refit the lower ball joint into the hub carrier.
- ☐ Torque tighten the **lower ball joint nut (62 N.m)**.
- ☐ Refit the track rod in the hub carrier.
- ☐ Torque tighten the **track rod nut (37 N.m)**.

III - FINAL OPERATION

DISCHARGE LAMPS

- ☐ Refit the mounting nut of the headlight beam adjustment sensor linkage ball joint.
- ☐ Refit the front wheel (see **Wheel: Removal - Refitting**) .

FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

Special tooling required

Tav. 476 Ball joint extractor.

Equipment required

component jack

Tightening torques

driveshaft lower arm studs	180 N.m
----------------------------	----------------

lower ball joint nut	62 N.m
----------------------	---------------

track rod end nut	37 N.m
-------------------	---------------

nut of the anti-rotation linkage ball joint	80 N.m
---------------------------------------------	---------------

IMPORTANT

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

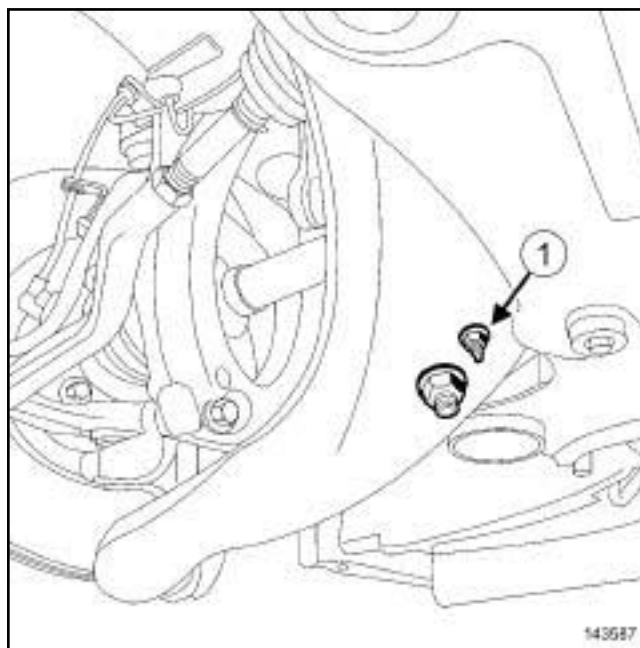
- (see **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

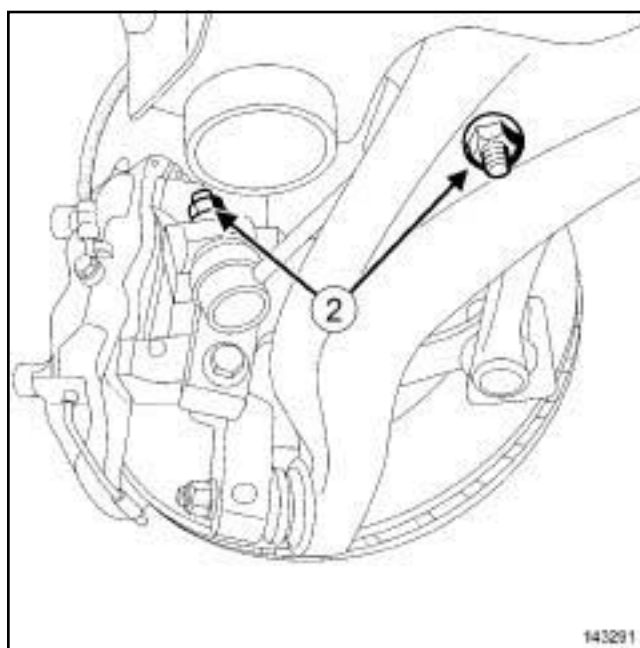
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the front wheel (see **Wheel: Removal - Refitting**) .

DISCHARGE LAMPS



- ☐ Remove the nut (1) from the support of the headlight beam adjustment sensor linkage on the lower arm.

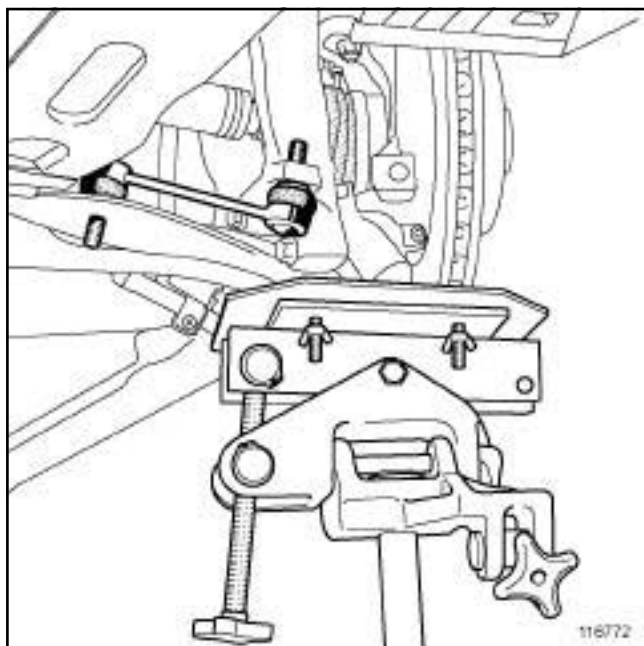


- ☐ Remove the nuts (2) from the anti-rotation linkage.

FRONT AXLE COMPONENTS

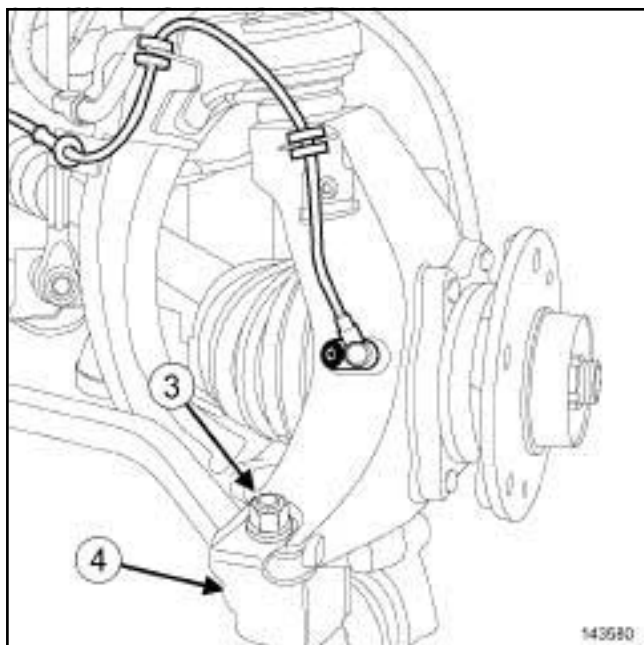
Front driveshaft lower arm: Removal - Refitting

31A



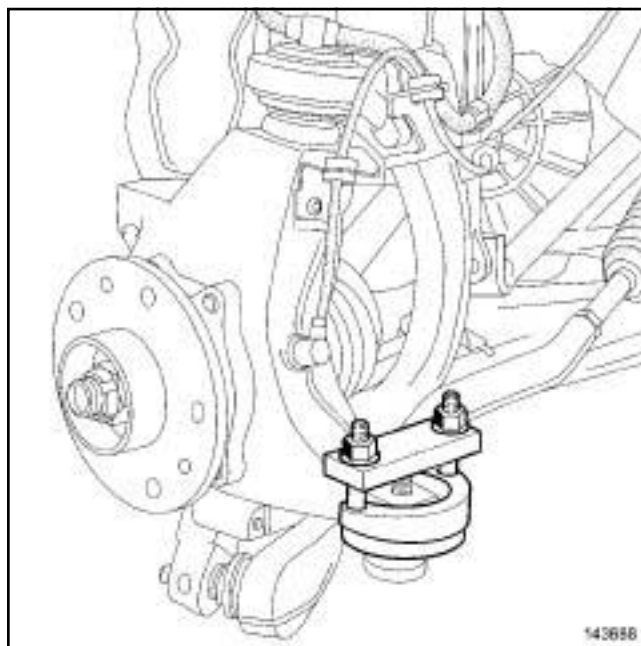
116772

- ☐ Fit a **component jack** to compress the suspension.
- ☐ Remove the anti-rotation linkage.
- ☐ Remove the **component jack**.



143580

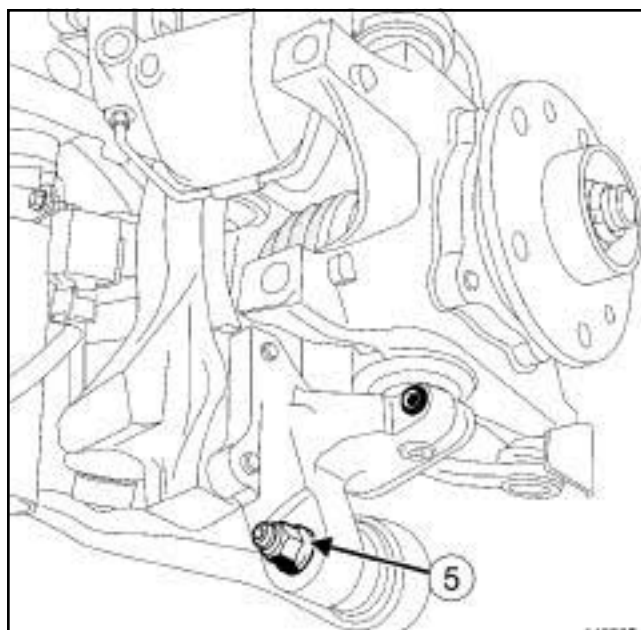
- ☐ Remove:
 - the nut (3) from the track rod end,
 - the gaiter protection (4) from the track rod end.



143688

- ☐ Detach the track rod end using the tool (**Tav. 476**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



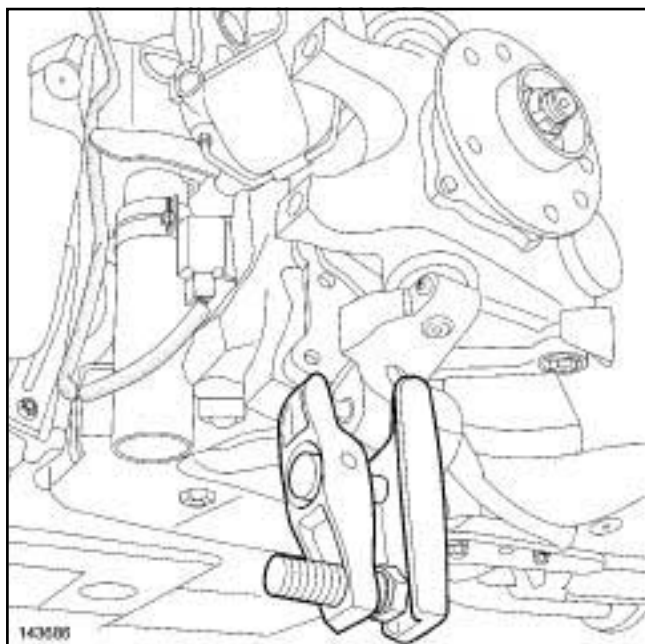
143685

- ☐ Remove the lower arm ball joint nut (5) .

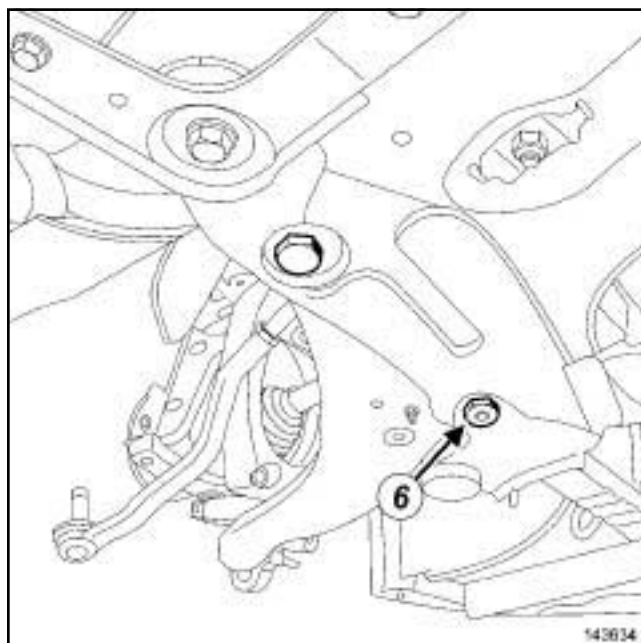
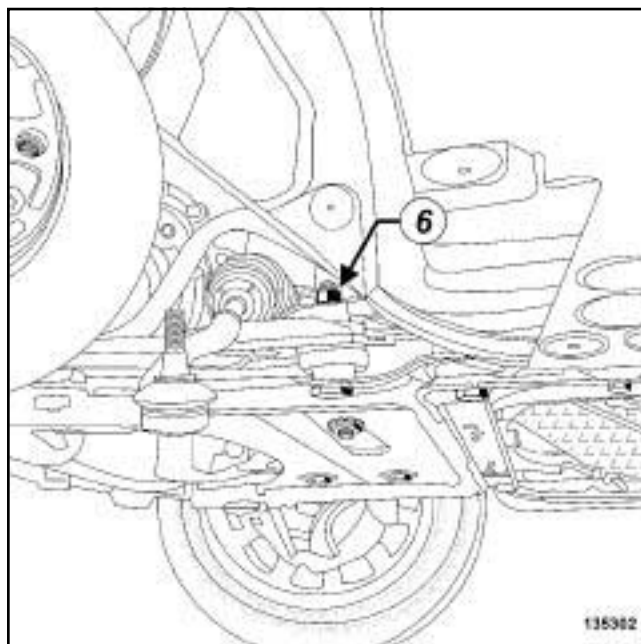
FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A



- ☐ Detach the lower ball joint from the support.
- ☐ Extract the lower arm ball joint from the support.



- ☐ Remove:
 - the bolts (6) from the driveshaft lower arm,
 - the driveshaft lower arm.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Front driveshaft lower arm bolt (13,02,03,18).
- ☐ Always replace the nuts of the driveshaft lower arm.

FRONT AXLE COMPONENTS

Front driveshaft lower arm: Removal - Refitting

31A

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the driveshaft lower arm.
- ☐ Torque tighten the **driveshaft lower arm studs (180 N.m)**.
- ☐ Refit the lower ball joint in the support.
- ☐ Torque tighten the **lower ball joint nut (62 N.m)**.

III - FINAL OPERATION

- ☐ Refit:
 - the track rod end on the hub carrier,
 - the gaiter protection on the track rod end.
- ☐ Torque tighten the **track rod end nut (37 N.m)**.
- ☐ Fit a **component jack** to compress the suspension.
- ☐ Refit the ball joint of the anti-rotation linkage.
- ☐ Torque tighten the **nut of the anti-rotation linkage ball joint (80 N.m)**.

DISCHARGE LAMPS

- ☐ Refit the ball joint support of the headlight beam adjustment sensor on the lower arm.
-
- ☐ Refit the front wheel (see **Wheel: Removal - Refitting**) .
 - ☐ Check the axle geometry (see **Axle assemblies: Check**) .
 - ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

Special tooling required

Tav. 476 Ball joint extractor.

Equipment required

flywheel immobiliser

indelible pencil

component jack

Diagnostic tool

Tightening torques

subframe front bolts **105 N.m**

subframe rear bolts **180 N.m**

rear cross member bolts **62 N.m**

lower arm ball joint nuts **62 N.m**

track rod end nuts **37 N.m**

universal joint bolt **62 N.m**

IMPORTANT

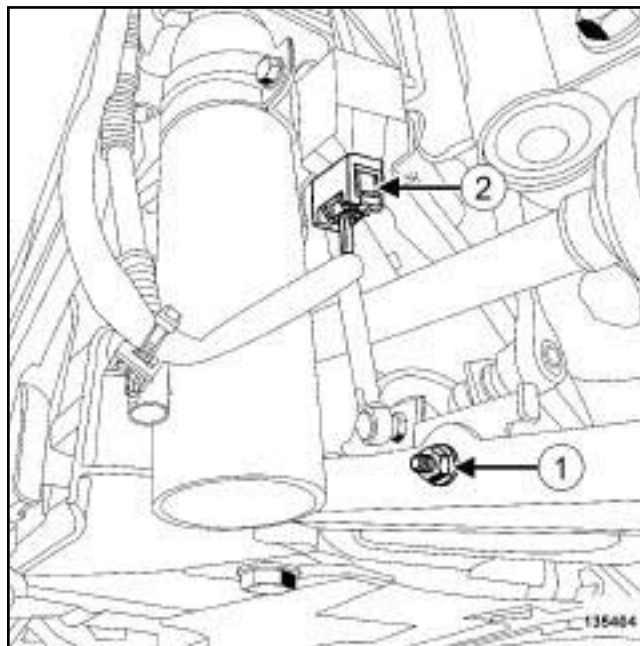
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Front axle components: Precautions for the repair**) .

REMOVAL

I - 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 bolts,
 - the engine undertray,
 - the front wheels (see **Wheel: Removal - Refitting**) ,
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

DISCHARGE LAMPS



135404

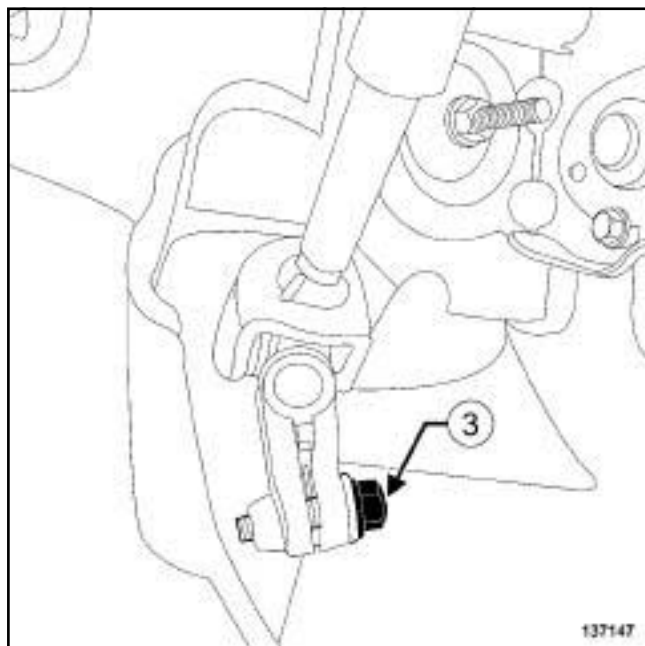
- ☐ Remove the nut (1) from the mounting of the headlight beam adjustment sensor linkage ball joint.
- ☐ Disconnect the connector (2) from the headlight beam adjustment sensor.

FRONT AXLE COMPONENTS

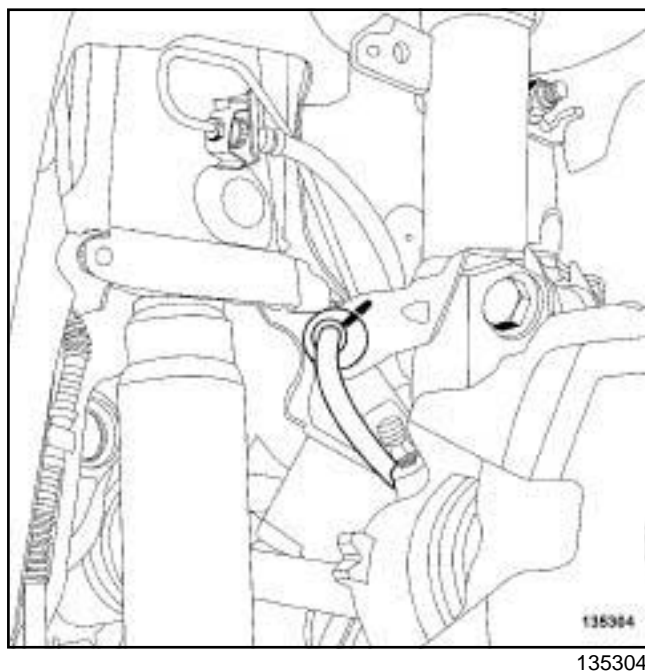
Front axle subframe: Removal - Refitting

31A

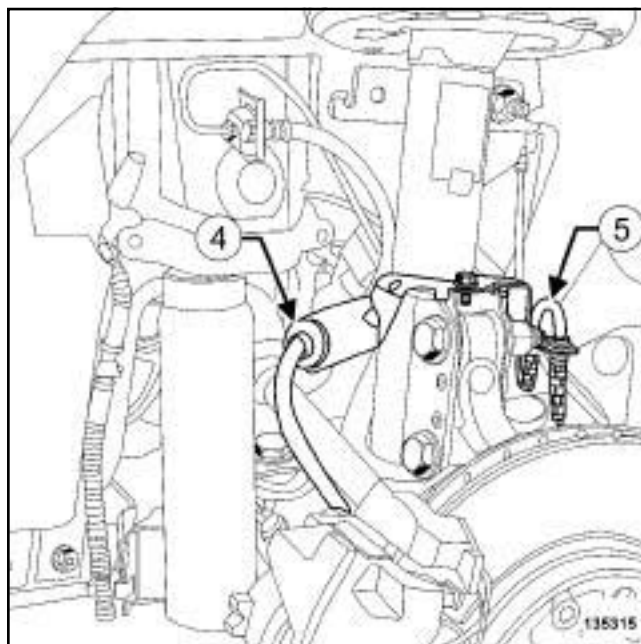
II - OPERATION FOR REMOVAL OF PART CONCERNED



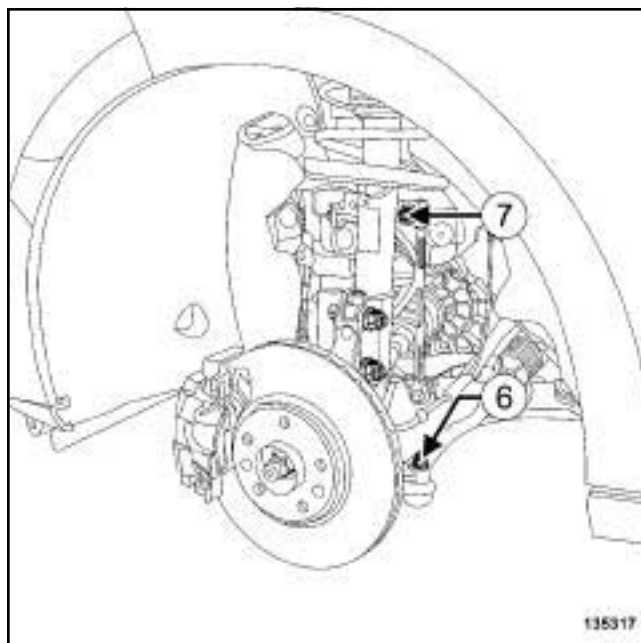
- ☐ Move the floor carpet on the driver's side to access the universal joint.
- ☐ Remove the bolt (3) from the universal joint.
- ☐ Fit the **flywheel immobiliser**.
- ☐ Remove the universal joint.



- ☐ Mark the position of the cap on the brake hose mounting using a **indelible pencil**.



- ☐ Unclip:
 - the cap (4) of the brake hose mounting,
 - the ABS wiring (5) of the brake hose mounting.

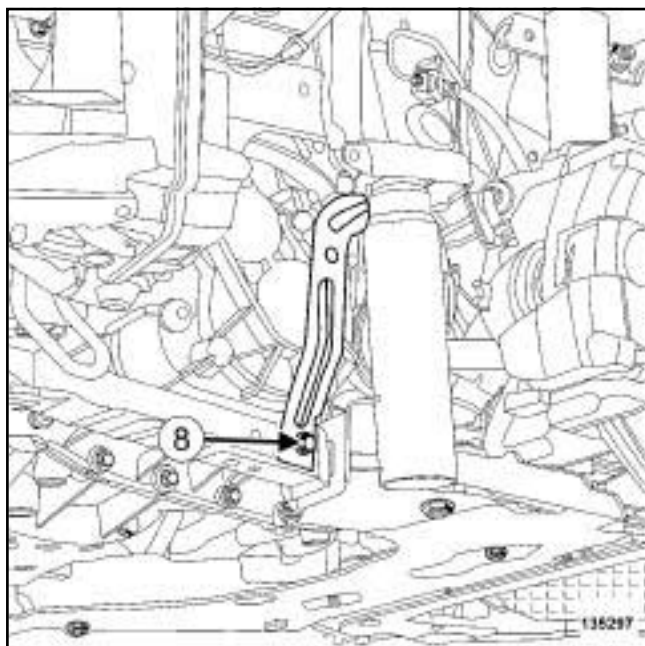


- ☐ Remove the track rod end nut (6) .
- ☐ Detach the track rod end using the tool (**Tav. 476**).
- ☐ Remove the nut (7) from the anti-roll bar tie rod on the base of the shock absorber.

FRONT AXLE COMPONENTS

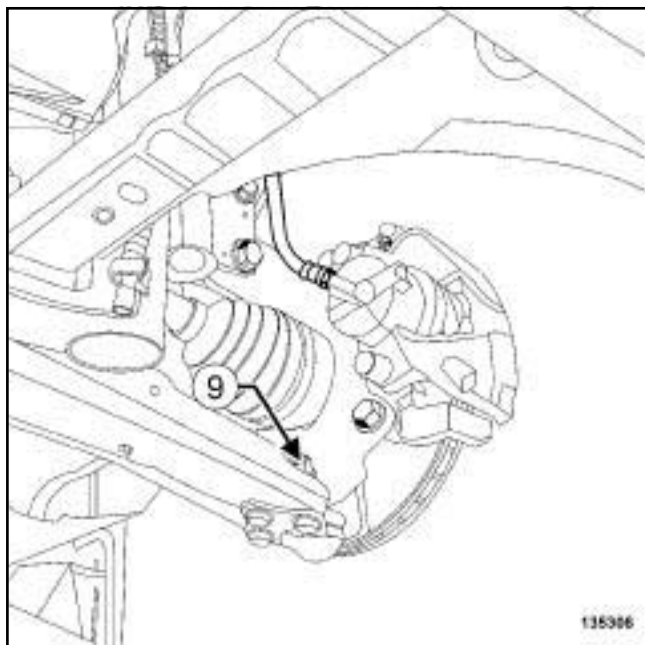
Front axle subframe: Removal - Refitting

31A



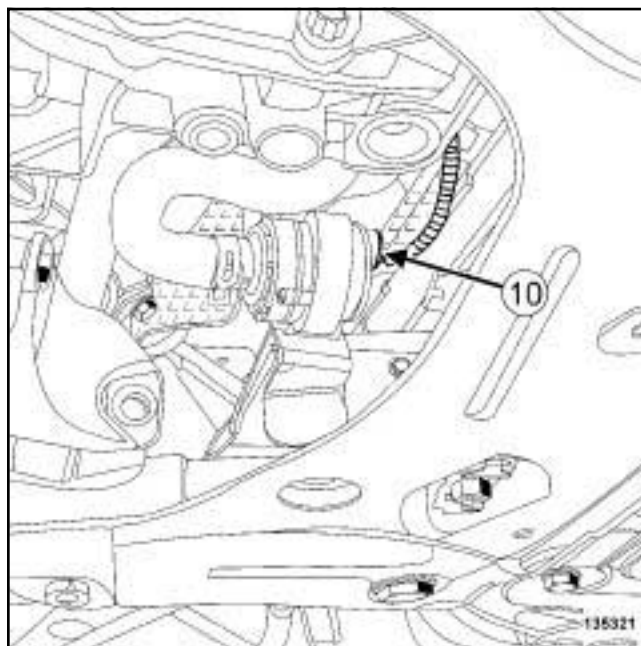
135297

- ❑ Remove the bolt (8) from the tie rod on the radiator mounting cross member.



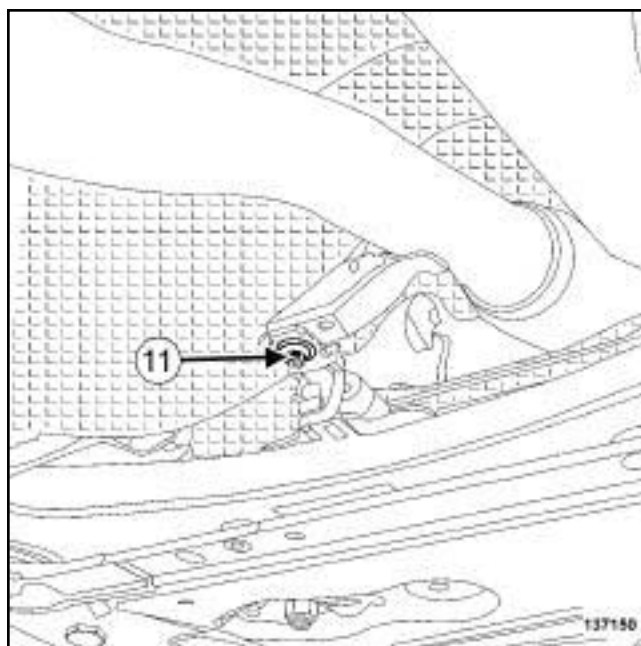
135306

- ❑ Remove the lower ball joint nut (9) .
- ❑ Detach the lower ball joint from the hub carrier.
- ❑ Remove the engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).



135321

- ❑ Disconnect the connector (10) from the electric coolant pump.
- ❑ Remove the electric coolant pump from its rubber mounting.
- ❑ Unclip the electric coolant pump wiring from the sub-frame.



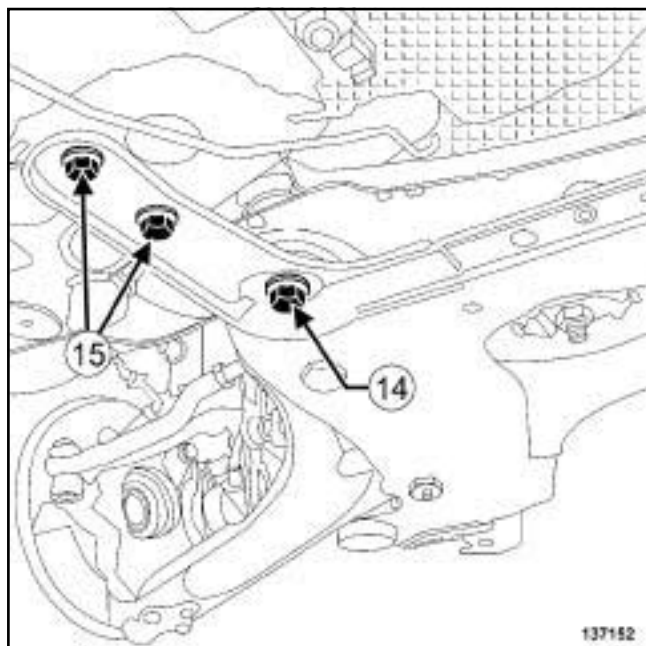
137150

- ❑ Remove the bolt (11) from the exhaust pipe on the subframe rubber mounting bush.

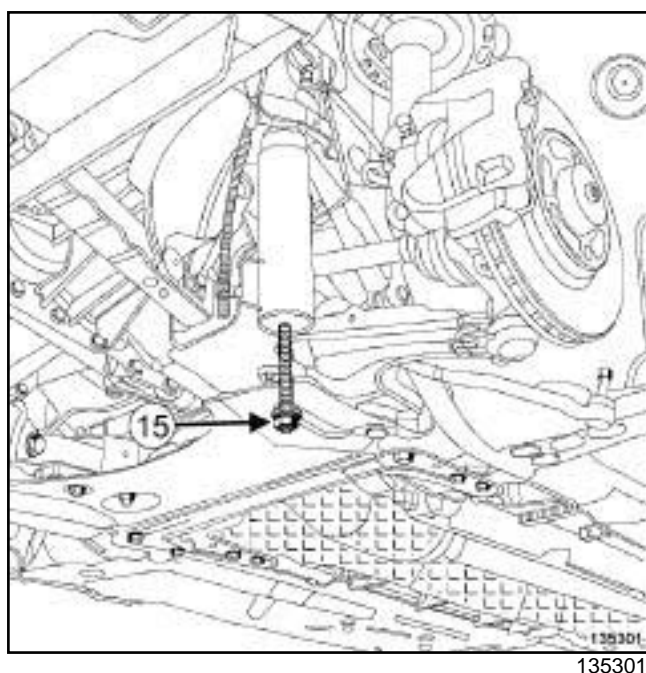
FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

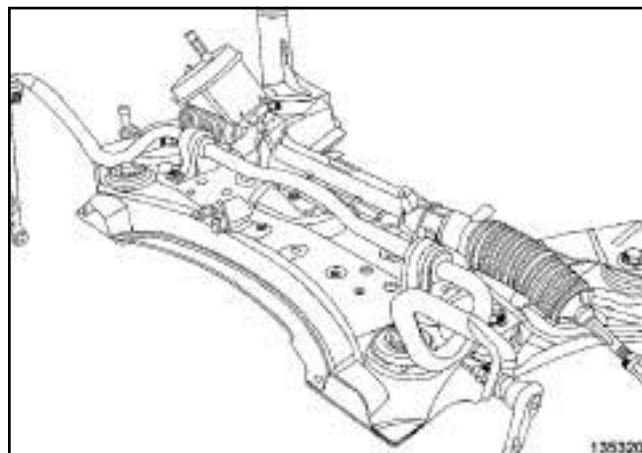


- ❑ Position a **component jack** under the subframe.
- ❑ Remove:
 - the rear bolts (13) from the subframe,
 - the rear cross member bolts (14) from the subframe,
 - the rear cross member from the subframe.
- ❑ Strap the subframe to the component jack.



- ❑ Remove:
 - the subframe front bolts (15) ,
 - the subframe.

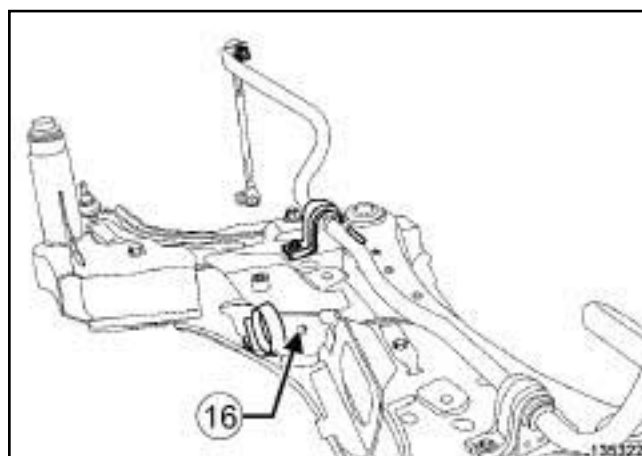
III - STRIPPING THE PART CONCERNED



- ❑ Remove:
 - the steering box (see **Steering box: Removal - Refitting**) ,
 - the anti-roll bar (see **Front anti-roll bar: Removal - Refitting**) .

DISCHARGE LAMPS

- ❑ Remove the headlight beam adjustment sensor (see **Headlight beam adjustment front sensor: Removal - Refitting**) (80B, Headlights).

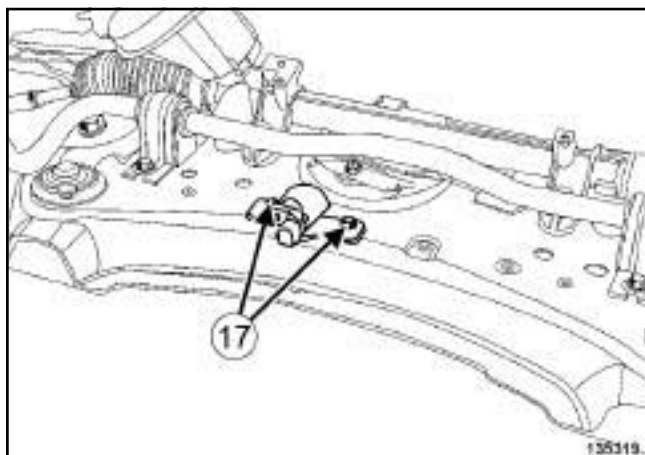


- ❑ Remove:
 - the electric coolant pump support bolt (16) ,
 - the support of the electric coolant pump.

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A



135319

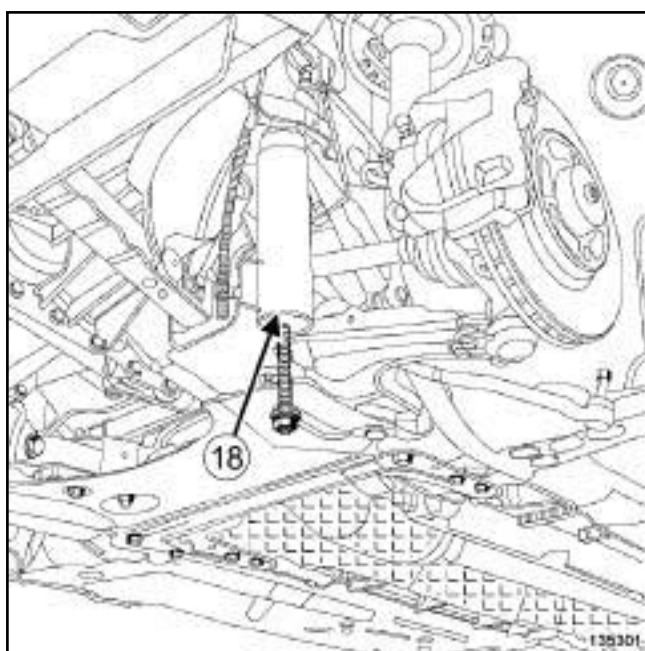
❑ Remove:

- the rubber mounting bush bolt (17) on the subframe,
- the rubber mounting bush.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Degrease the body surfaces that make contact with the sub-frame and cross member using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).



135301

- ❑ Check for the presence of the upper mounting washer (18) on the subframe before refitting the bolt.
- ❑ **parts always to be replaced: Steering shaft yoke bolt (13,04,01,07).**

- ❑ **parts always to be replaced: Track rod end nut (13,04,02,03).**

- ❑ **parts always to be replaced: Front driveshaft lower arm ball joint nut (13,02,03,19).**

- ❑ **parts always to be replaced: Front sub-frame bolt (13,02,02,03).**

II - REBUILDING THE PART CONCERNED

- ❑ Refit the rubber mounting bush on the subframe.
- ❑ Refit the electric coolant pump support.

DISCHARGE LAMPS

- ❑ Refit the headlight beam adjustment sensor (see **Headlight beam adjustment front sensor: Removal - Refitting**) (80B, Headlights).

❑ Refit:

- the anti-roll bar (see **Front anti-roll bar: Removal - Refitting**) ,
- the steering box (see **Steering box: Removal - Refitting**) .

III - REFITTING OPERATION FOR PART CONCERNED

- ❑ Fit the radiator mounting cross member tie rods on the subframe.
- ❑ Refit the subframe using a **component jack**.
- ❑ Remove:
 - the subframe strap,
 - the component jack.
- ❑ Refit the subframe rear cross member.
- ❑ Torque tighten:
 - the **subframe front bolts (105 N.m)**,
 - the **subframe rear bolts (180 N.m)**,
 - the **rear cross member bolts (62 N.m)**.

F9Q

- ❑ Refit the exhaust pipe on the rubber mounting bushes.

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

K4M

- ❑ Clip the downstream oxygen sensor wiring onto the subframe.

F4R or K4M

- ❑ Refit the exhaust pipe on the rubber mounting bush.

F4R

- ❑ Refit the electric coolant pump into its rubber support.
- ❑ Connect the electric coolant pump connector.
- ❑ Clip on the electric coolant pump wiring.

❑ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the lower arm ball joints,
- the anti-roll bar tie rods,
- the track rod ends.

❑ Torque tighten:

- the **lower arm ball joint nuts (62 N.m)**,
- the **track rod end nuts (37 N.m)**.

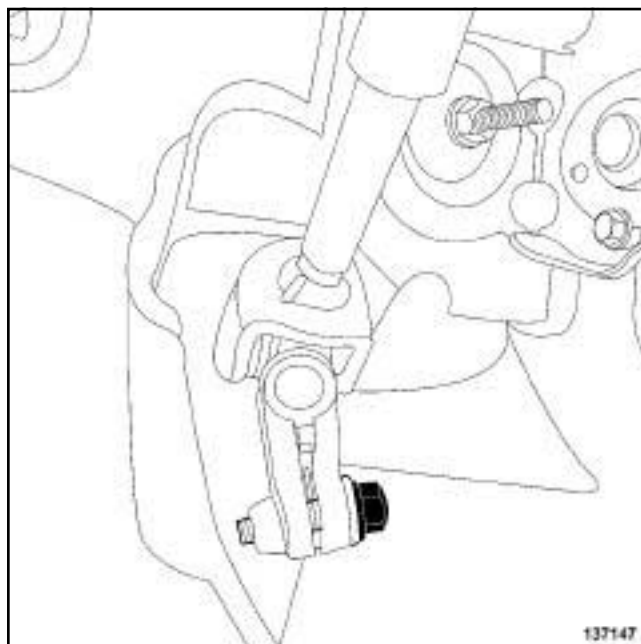
❑ Clip:

- the ABS wiring on the brake hose mounting,
- the cap on the brake hose mounting, aligning the marks made using the permanent marker pen.

WARNING

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.



137147

- ❑ Refit the universal joint on the steering box.
- ❑ Torque tighten the **universal joint bolt (62 N.m)**.
- ❑ Remove the **flywheel immobiliser**.

IV - FINAL OPERATION

❑ Refit:

- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the engine undertray,
- the front wheels (see **Wheel: Removal - Refitting**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Adjust the front axle (see **Front axle system: Adjustment**) .

❑ Apply the after repair procedure using the **Diagnostic tool** :

- connect the diagnostic tool,
- select the "Power-assisted steering computer",
- go to repair mode,
- apply the "Before/after repair procedure" for the computer selected,
- select "Power-assisted steering assembly" under "List of components stored in this computer",
- carry out the operations described in the "After repair procedure" section.

DISCHARGE LAMPS

- ☐ Connect the headlight beam adjustment sensor connector.
 - ☐ Refit the mounting nut of the headlight beam adjustment sensor linkage ball joint.
 - ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the diagnostic tool,
 - select "Headlight adjustment computer",
 - go to repair mode,
 - apply the "Before/after repair procedure" for the computer selected,
 - select "Headlight beam adjustment front sensor" in the "List of components controlled by this computer" section,
 - carry out the operations described in the "After repair procedure" section.
-
- ☐ Check the axle geometry (see **Axle assemblies: Check**) .
 - ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .


FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

Special tooling required	
Tav. 476	Ball joint extractor.

Equipment required	
flywheel immobiliser	
component jack	
safety strap(s)	
Diagnostic tool	

Tightening torques 	
subframe front bolts	105 N.m
subframe rear bolts	180 N.m
rear cross member bolts	62 N.m
lower arm ball joint nuts	62 N.m
track rod end nuts	37 N.m
nuts on the ball joints of the anti-rotation linkages	80 N.m
universal joint bolt	62 N.m

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 **Front axle components: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

REMOVAL

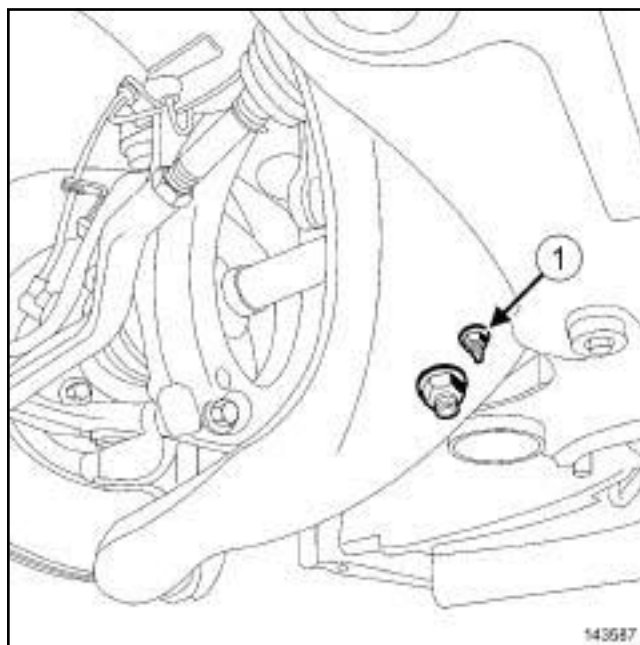
I - REMOVAL PREPARATION OPERATION

- ☐ 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 front wheels (see **Wheel: Removal - Refitting**) ,
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

DISCHARGE LAMPS



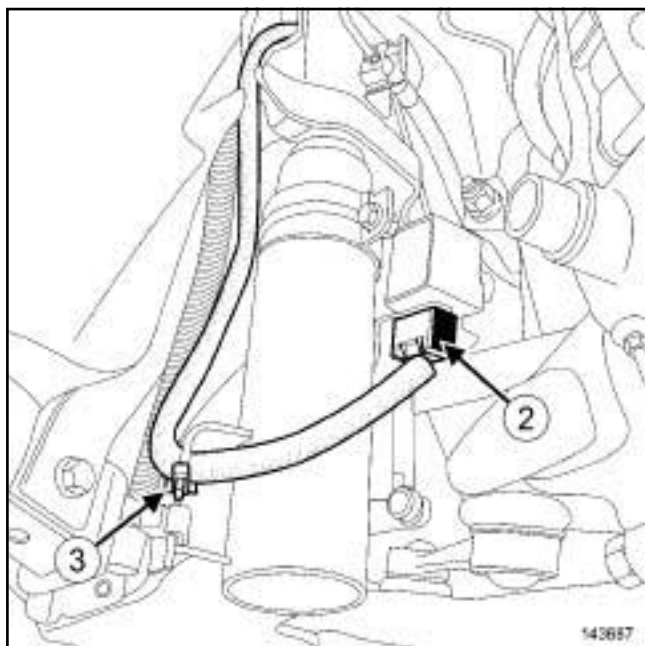
143587

- ☐ Remove the nut (1) from the ball joint support of the headlight beam adjustment sensor linkage on the lower arm.

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

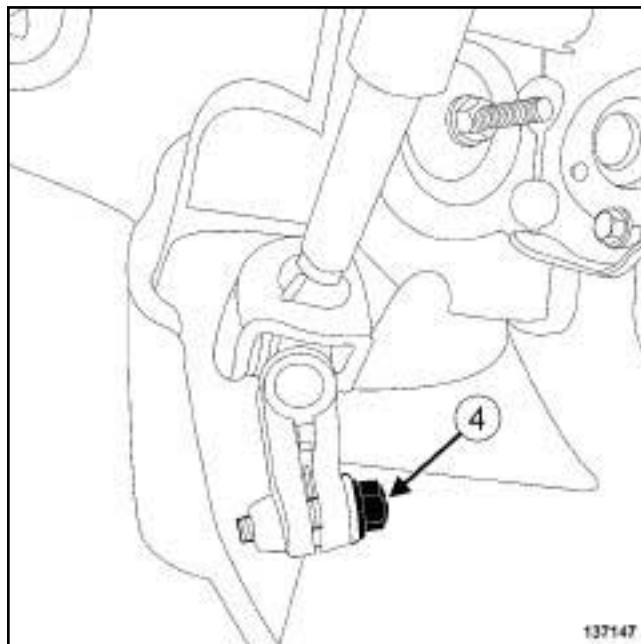
31A



143687

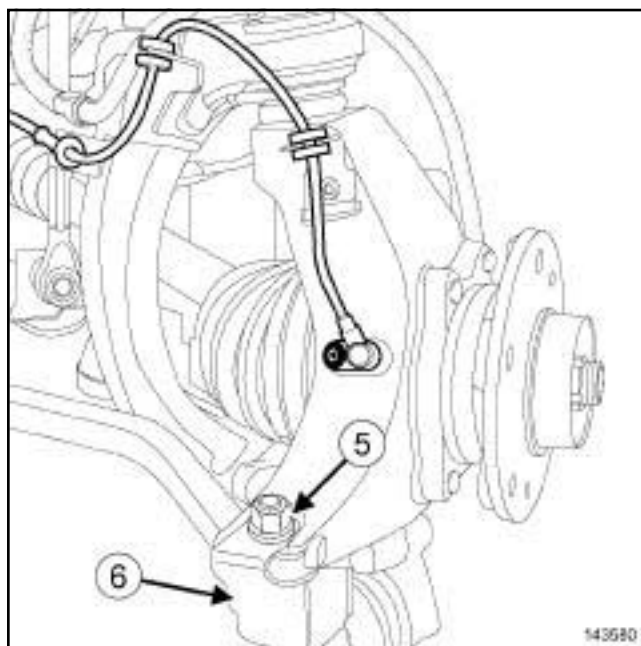
- ❑ Disconnect the connector (2) from the headlight beam adjustment sensor.
- ❑ Unclip the wiring of the headlight beam adjustment sensor at (3) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



137147

- ❑ Move the floor carpet on the driver's side to access the universal joint.
- ❑ Remove the bolt (4) from the universal joint.
- ❑ Fit the **flywheel immobiliser**.
- ❑ Remove the universal joint.



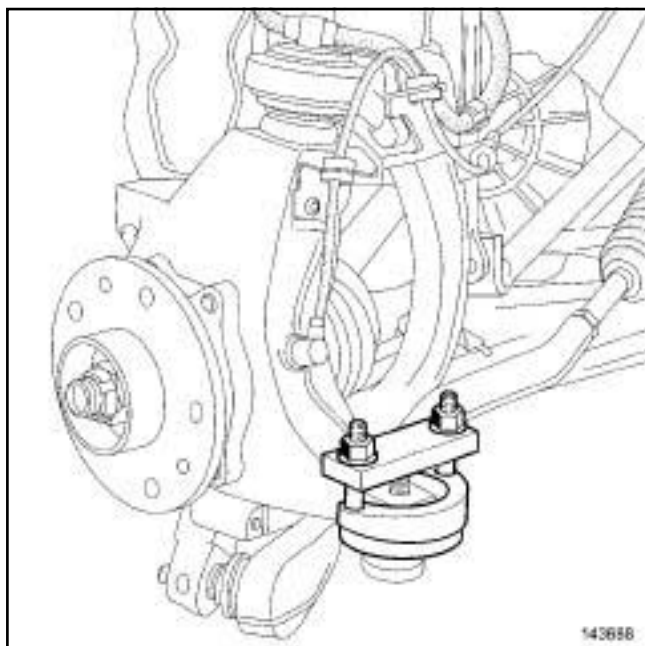
143580

- ❑ Remove:
 - the nut (5) from the track rod end,
 - the gaiter protector from the track rod end (6) .

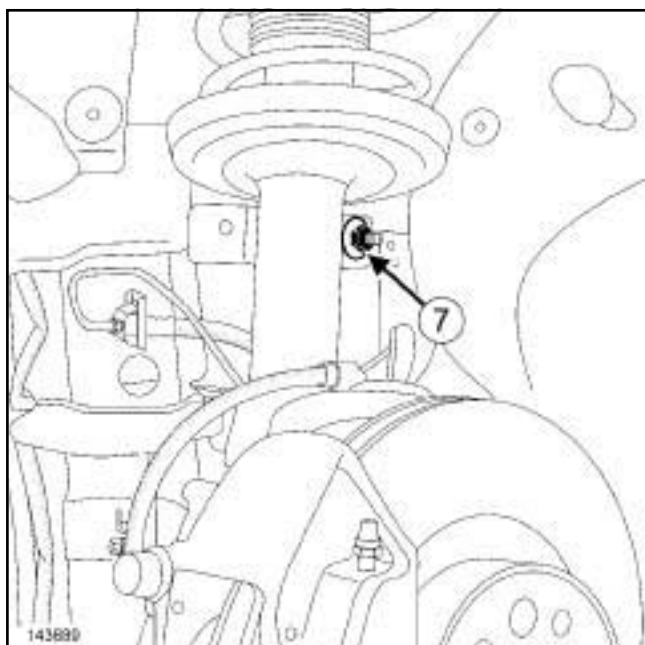
FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

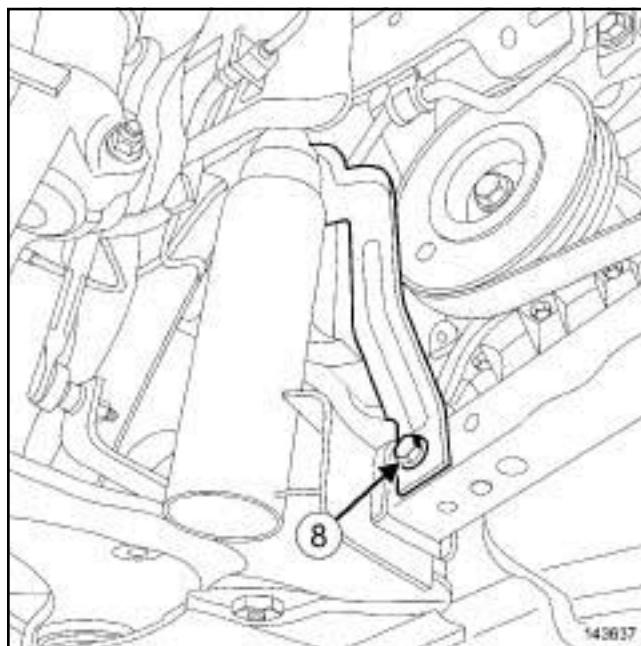
31A



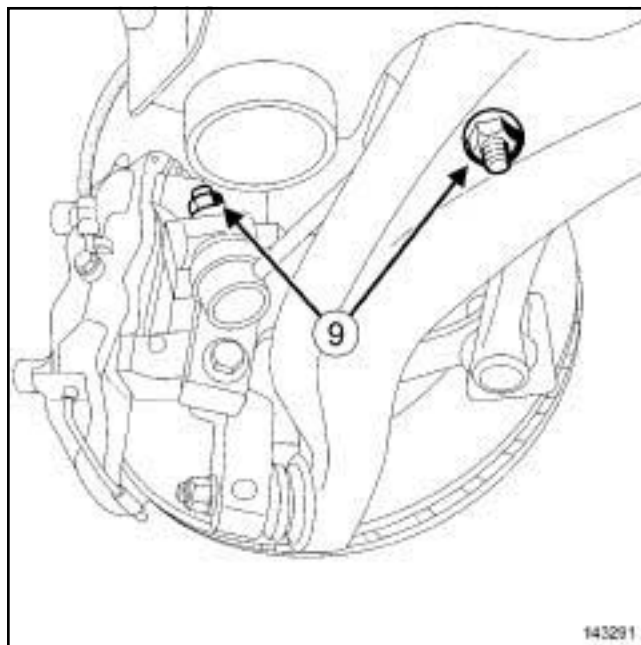
- Detach the track rod end using the tool (**Tav. 476**).



- Remove the nut (**7**) from the anti-roll bar tie rod on the base of the shock absorber.



- Remove the bolt (**8**) from the tie rod on the radiator mounting cross member.

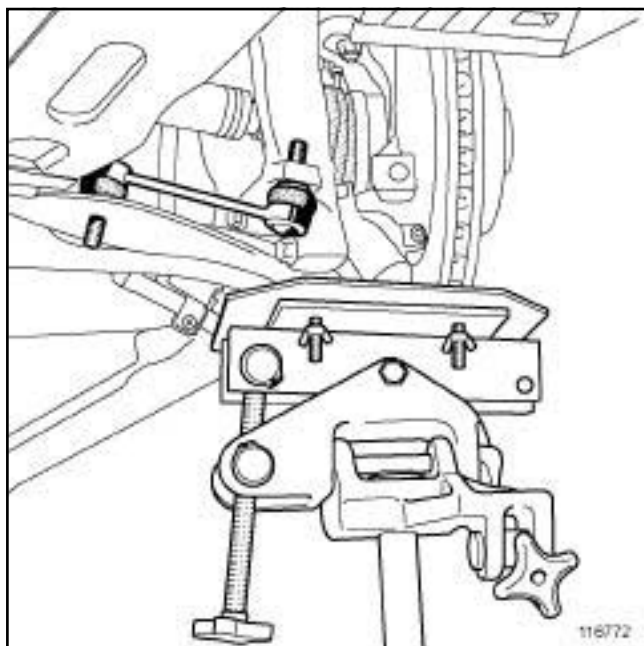


- Remove the nuts (**9**) from the anti-rotation linkage.

FRONT AXLE COMPONENTS

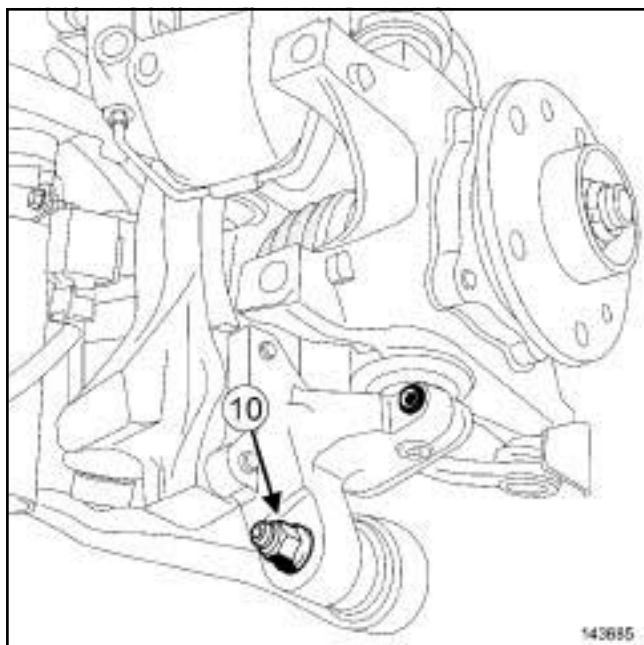
Front axle subframe: Removal - Refitting

31A



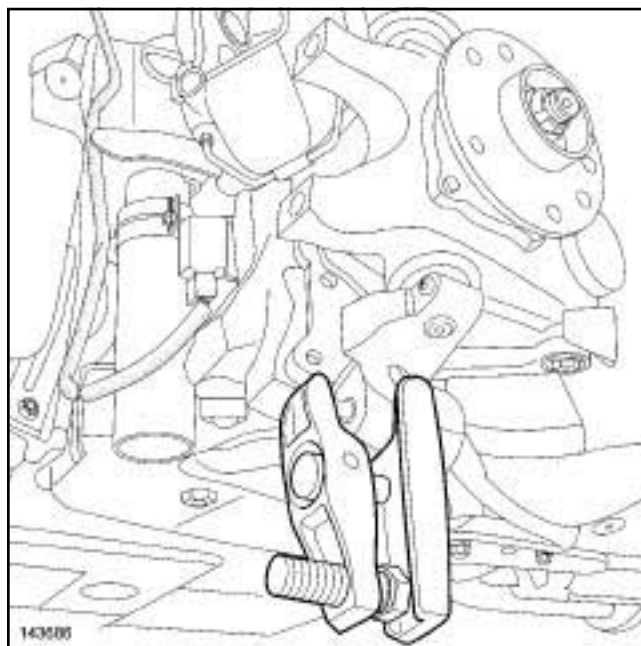
116772

- ❑ Fit a **component jack** to compress the suspension.
- ❑ Remove the anti-rotation linkage.
- ❑ Remove the **component jack**.



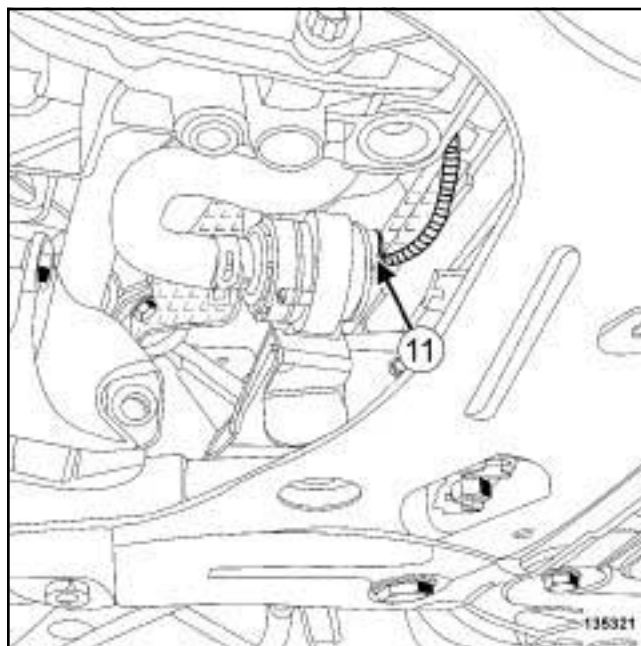
143685

- ❑ Remove the lower ball joint nut (10) .



143686

- ❑ Detach the lower ball joint from the support using a ball joint extractor.
- ❑ Remove the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).



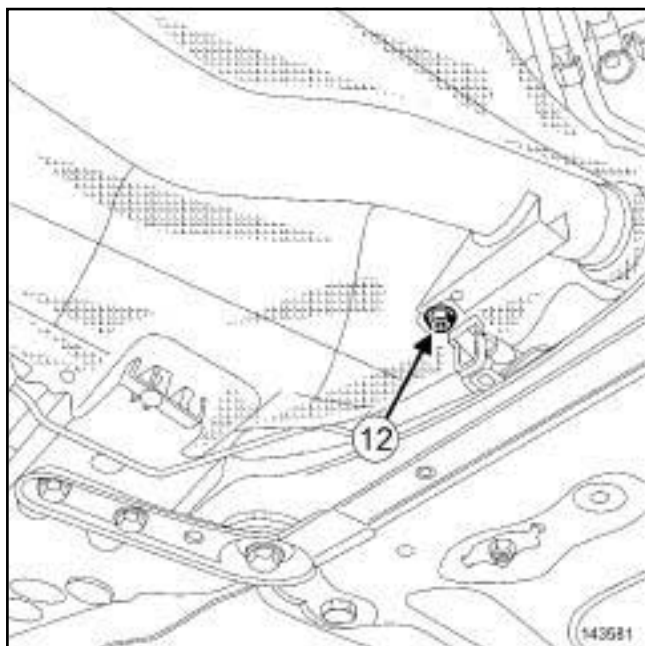
135321

- ❑ Disconnect the connector (11) from the electric coolant pump.
- ❑ Remove the electric coolant pump from its rubber mounting.
- ❑ Unclip the electric coolant pump wiring from the sub-frame.

FRONT AXLE COMPONENTS

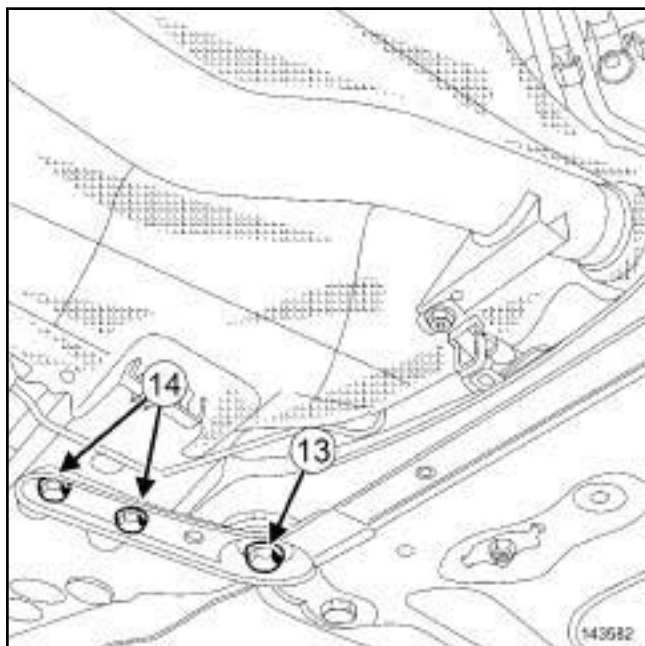
Front axle subframe: Removal - Refitting

31A



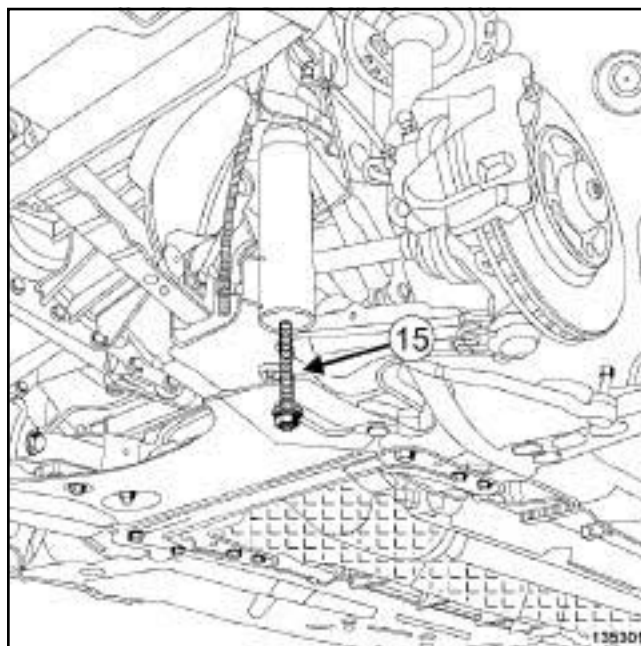
143581

- ❑ Remove the bolt (12) from the exhaust pipe on the subframe rubber mounting bush.



143582

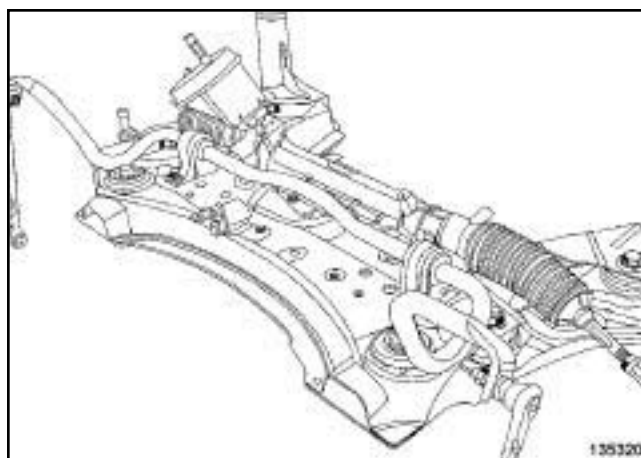
- ❑ Position a **component jack** under the subframe.
- ❑ Remove:
 - the rear bolts (13) of the subframe,
 - the rear cross member bolts (14) from the subframe,
 - the rear cross member from the subframe.
- ❑ Strap the subframe to the component jack using a **safety strap(s)**.



135301

- ❑ Remove:
 - the subframe front bolts (15) ,
 - the subframe.

III - STRIPPING THE PART CONCERNED



135320

- ❑ Remove:
 - the steering box (see **Steering box: Removal - Refitting**) ,
 - the anti-roll bar (see **Front anti-roll bar: Removal - Refitting**) .

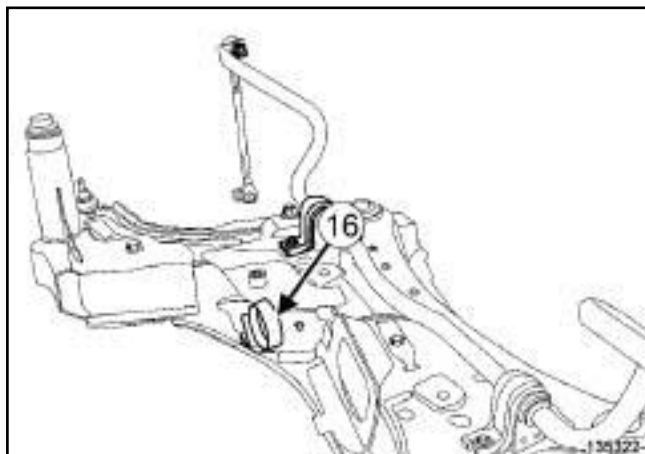
FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

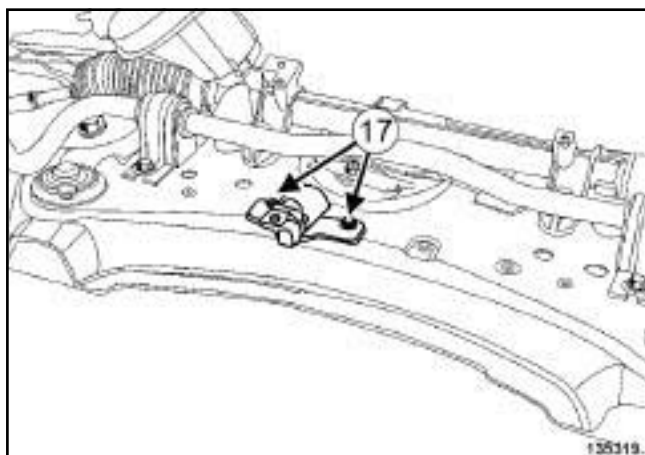
31A

DISCHARGE LAMPS

- ❑ Remove the headlight beam adjustment sensor (see **Headlight beam adjustment front sensor: Removal - Refitting**) (80B, Headlights).



- ❑ Remove:
 - the electric coolant pump support bolt,
 - the support (16) of the electric coolant pump.



- ❑ Remove:
 - the rubber mounting bush bolts (17) on the subframe,
 - the rubber mounting bush of the subframe.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ Degrease the body surfaces that make contact with the subframe and cross member using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).
- ❑ parts always to be replaced: **Steering shaft yoke bolt (13,04,01,07).**
- ❑ parts always to be replaced: **Track rod end nut (13,04,02,03).**
- ❑ parts always to be replaced: **Front driveshaft lower arm ball joint nut (13,02,03,19).**
- ❑ parts always to be replaced: **Front sub-frame bolt (13,02,02,03).**

II - REBUILDING THE PART CONCERNED

- ❑ Refit:
 - the rubber mounting bush on the subframe,
 - the support of the electric coolant pump.

DISCHARGE LAMPS

- ❑ Refit the headlight beam adjustment sensor (see **Headlight beam adjustment front sensor: Removal - Refitting**) (80B, Headlights).

- ❑ Refit:
 - the anti-roll bar (see **Front anti-roll bar: Removal - Refitting**) ,
 - the steering box (see **Steering box: Removal - Refitting**) .

III - REFITTING OPERATION FOR PART CONCERNED

- ❑ Fit the radiator mounting cross member tie rods on the subframe.
- ❑ Refit the subframe using a **component jack**.
- ❑ Remove:
 - the subframe strap,
 - the component jack.
- ❑ Refit the subframe rear cross member.
- ❑ Torque tighten:
 - the **subframe front bolts (105 N.m)**,
 - the **subframe rear bolts (180 N.m)**,

FRONT AXLE COMPONENTS

Front axle subframe: Removal - Refitting

31A

- the **rear cross member bolts (62 N.m)**.
- ☐ Fit the exhaust pipe on the rubber mounting bush.
- ☐ Refit the electric coolant pump on its rubber support.
- ☐ Connect the electric coolant pump connector.
- ☐ Clip the wiring of the electric coolant pump onto the steering box.
- ☐ Refit:
 - the lower engine tie-bar (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
 - the lower arm ball joints,
 - the anti-roll bar tie rods,
 - the track rod ends,
 - the gaiter protection on the track rod ends.
- ☐ Torque tighten:
 - the **lower arm ball joint nuts (62 N.m)**,
 - the **track rod end nuts (37 N.m)**.
- ☐ Fit a **component jack** to compress the suspension.
- ☐ Refit the anti-rotation linkage.
- ☐ Torque tighten the **nuts on the ball joints of the anti-rotation linkages (80 N.m)**.

WARNING

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 universal joint on the steering box.
- ☐ Torque tighten the **universal joint bolt (62 N.m)**.
- ☐ Remove the **flywheel immobiliser**.

IV - FINAL OPERATION

- ☐ Refit:
 - the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front wheels (see **Wheel: Removal - Refitting**)
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

- ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select the "Power-assisted steering computer",
 - go to repair mode,
 - apply the "Before/after repair procedure" for the computer selected,
 - select "Power-assisted steering assembly" under "List of components stored in this computer",
 - carry out the operations described in the "After repair procedure" section.

DISCHARGE LAMPS

- ☐ Refit the ball joint support of the headlight beam adjustment sensor on the lower arm.
 - ☐ Connect the headlight beam adjustment sensor connector.
 - ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select "Headlight adjustment computer",
 - go to repair mode,
 - apply the "Before/after repair procedure" for the computer selected,
 - select "Headlight beam adjustment sensor" in the "List of components controlled by this computer" section,
 - carry out the operations described in the "After repair procedure" section.
-
- ☐ Check the axle geometry (see **Axle assemblies: Check**) .
 - ☐ Adjust the front axle, if necessary (see **Front axle system: Adjustment**) .

REAR AXLE COMPONENTS

Shock absorber: Removal - Refitting

33A

Equipment required

component jack

Diagnostic tool

Tightening torques

the shock absorber nut **105 N.m**

shock absorber bolt **62 N.m**

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

WARNING

To prevent any suspension asymmetry, replace both of the shock absorbers on the same axle.

WARNING

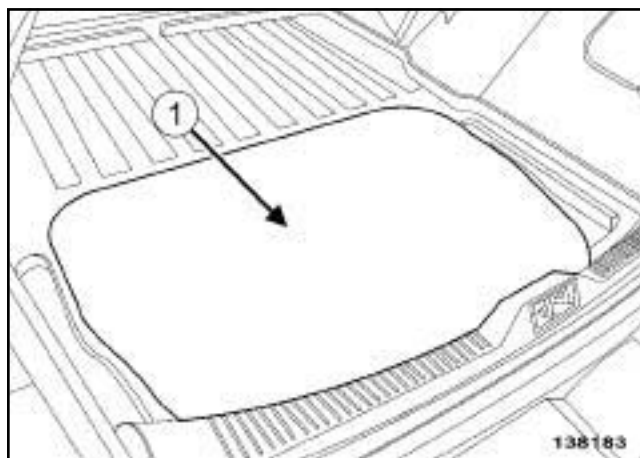
To prevent the components of the rear axle from deteriorating (rubber bushes, brake hoses, etc.) do not remove the two shock absorbers at the same time. Proceed one side at a time.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the rear wheels (see **Wheel: Removal - Refitting**) ,
 - the rear axle guard clips,
 - the rear axle guard bolts,
 - the rear axle guard.

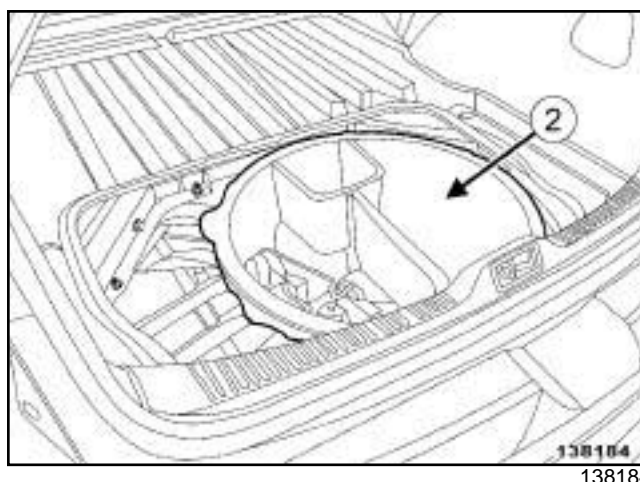
UTILITY



- ☐ Remove the emergency spare wheel cover (1) .

STANDARD

- ☐ Remove the luggage compartment carpet.



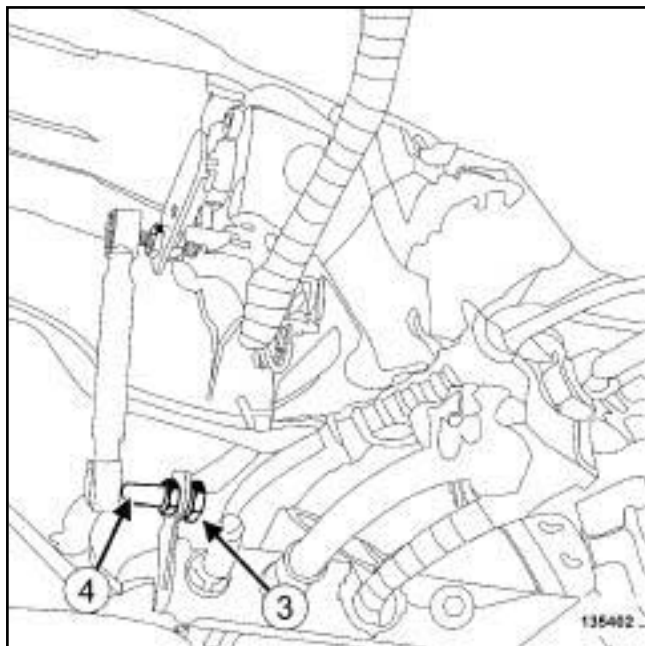
- ☐ Remove the emergency spare wheel compartment (2) .

REAR AXLE COMPONENTS

Shock absorber: Removal - Refitting

33A

DISCHARGE LAMPS

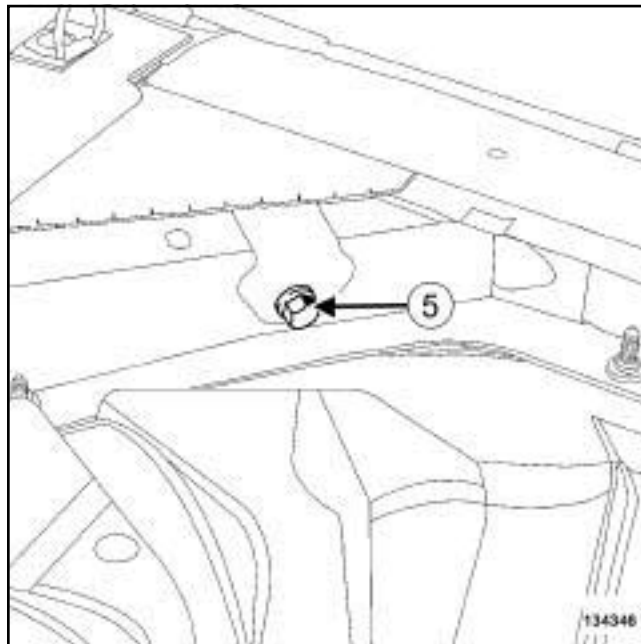


135402

❑ Remove:

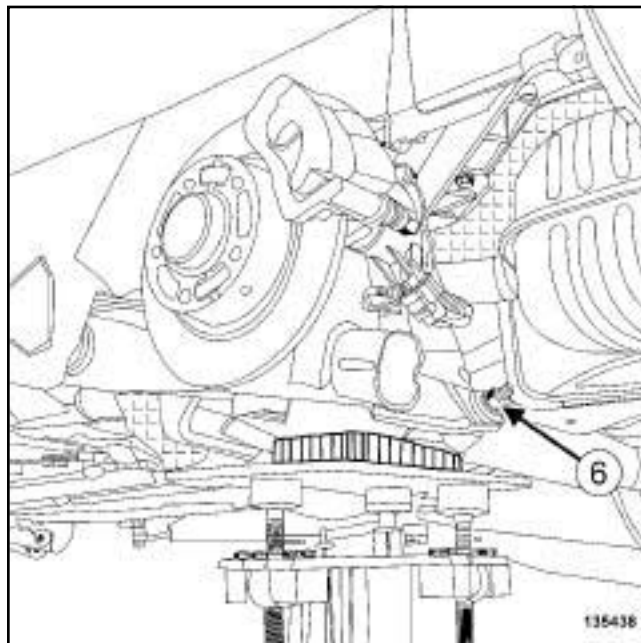
- the nut (3) from the ball joint of the headlight beam adjustment rear sensor linkage,
- the ball joint (4) of the headlight beam adjustment rear sensor linkage from its mounting.

II - OPERATION FOR REMOVAL OF PART CONCERNED



134346

- ❑ Undo the shock absorber bolt (5) on the body.



135438

- ❑ Fit a **component jack** under the lower suspension spring cup.
- ❑ Remove the shock absorber nut (6) on the rear axle.
- ❑ Move the shock absorber away from the rear axle.
- ❑ Remove:
 - the component jack,
 - the shock absorber bolt on the body,
 - the shock absorber.

REAR AXLE COMPONENTS

Shock absorber: Removal - Refitting

33A

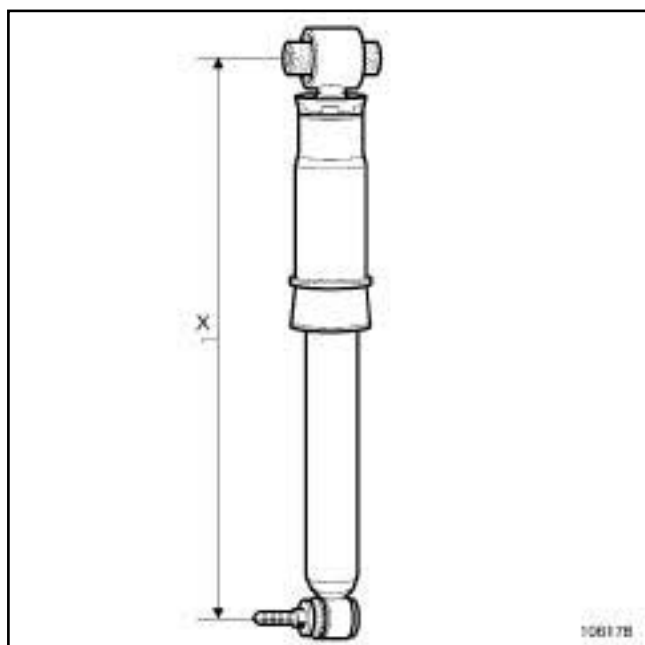
REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ Always replace:
 - the shock absorber lower nut,
 - the shock absorber upper bolt.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit the shock absorber head on the body.
- ☐ Fit without tightening the shock absorber upper bolt.



106178

- ☐ Fit a **component jack** under the shock absorber spring cup.
- ☐ Use the component jack to adjust the dimension (X) to **432.5 mm**.

Note:

The vehicle must be in the « half-empty - load » position when tightening the rubber bushes on the shock absorbers (shock absorber length of **432.5 mm**).

- ☐ Torque tighten the **shock absorber nut (105 N.m)**.
- ☐ Remove the workshop jack.
- ☐ Torque tighten the **shock absorber bolt (62 N.m)**.
- ☐ Repeat these operations on the shock absorber on the opposite side.

III - FINAL OPERATION

DISCHARGE LAMPS

- ☐ Refit the ball joint of the headlight beam adjustment rear sensor linkage on its mounting.
- ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « Headlight adjustment computer » ,
 - go to repair mode,
 - apply the « before/after repair procedure » for the computer selected,
 - select « Headlight beam adjustment rear sensor » in the « List of components controlled by this computer » section,
 - carry out the operations described in the « After repair procedure » section.

- ☐ Refit the emergency spare wheel compartment.

STANDARD

- ☐ Refit the luggage compartment carpet.

UTILITY

- ☐ Refit the emergency spare wheel cover.
- ☐ Refit:
 - the rear axle guard,
 - the rear wheels (see **Wheel: Removal - Refitting**)

Tyre pressure monitor: Precautions for the repair

I - CLEANLINESS

Clean the bearing faces on the tyre pressure monitor valve.

II - GENERAL RECOMMENDATIONS

Do not swap the wheels if they have been removed.

WARNING

Hold the sensor in position on the wheel to prevent it from turning during tightening.

WARNING

To avoid any damage to the sensor, make sure the tyre bead never presses on the sensor.

TYRE PRESSURE MONITOR

Pressure sensor: Removal - Refitting

35B

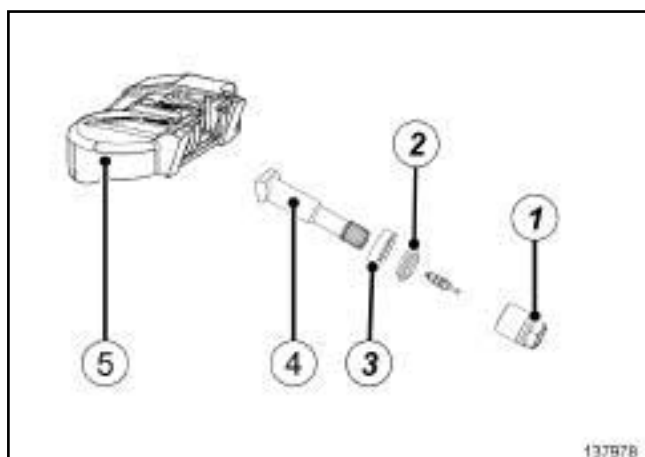
TYRE PRESSURE SENSOR

Tightening torques

pressure sensor nut	8 N.m
---------------------	-------

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 **35B, Tyre pressure monitor, Tyre pressure monitor: Precautions for the repair, page 35B-1**).



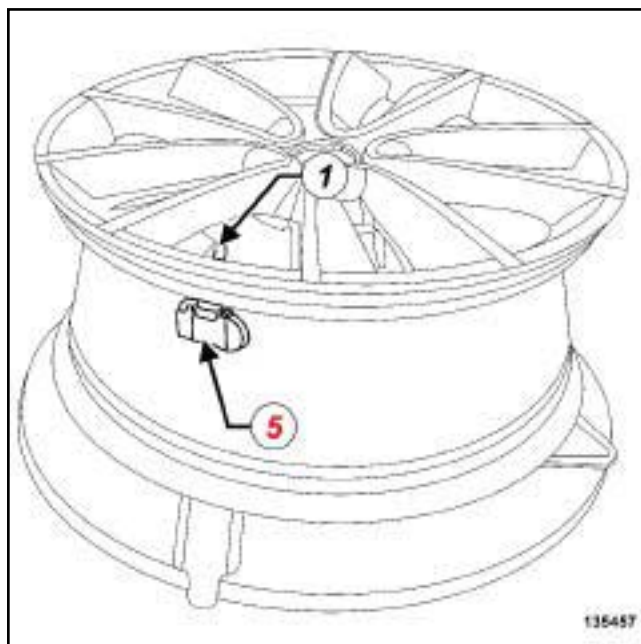
- (1) Retaining nut
- (2) Valve seal
- (3) Cup
- (4) Valve
- (5) Pressure sensor

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the wheels (see **Wheel: Removal - Refitting**),
 - the tyres (see **Tyres: Removal - Refitting**).

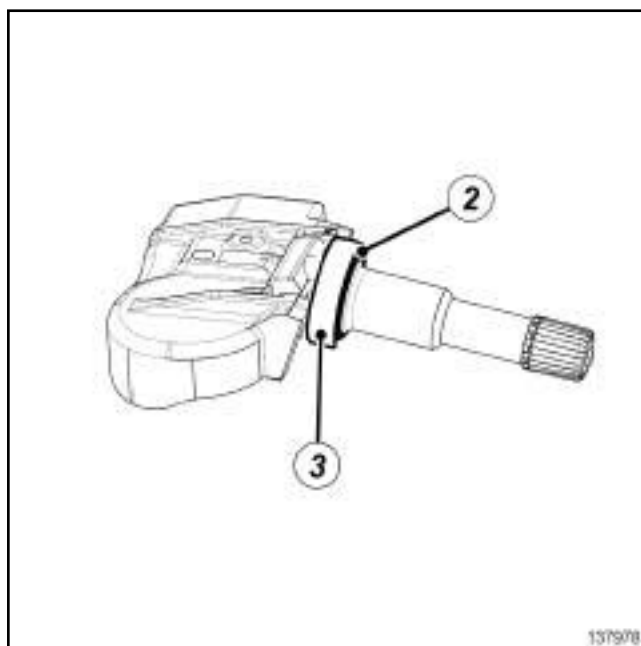
II - OPERATION FOR REMOVAL OF PART CONCERNED



☐ Remove:

- the nut (1) whilst holding the pressure sensor on the wheel rim,
- the pressure sensor (5).

When replacing the valve only



☐ Remove:

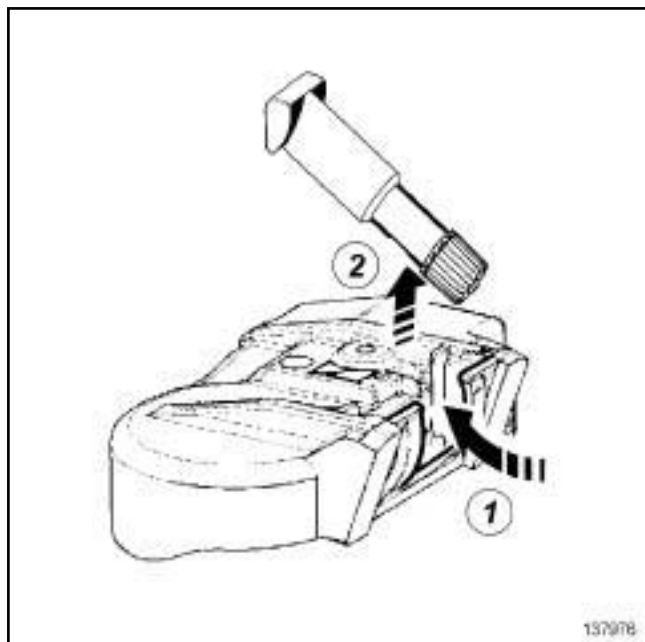
- the seal (2),
- the cup (3).

TYRE PRESSURE MONITOR

Pressure sensor: Removal - Refitting

35B

TYRE PRESSURE SENSOR



137976

- ☐ Disconnect the valve from the pressure sensor according to the order of the arrows.

REFITTING

I - REFITTING PREPARATION OPERATION

1 - When replacing the valve only

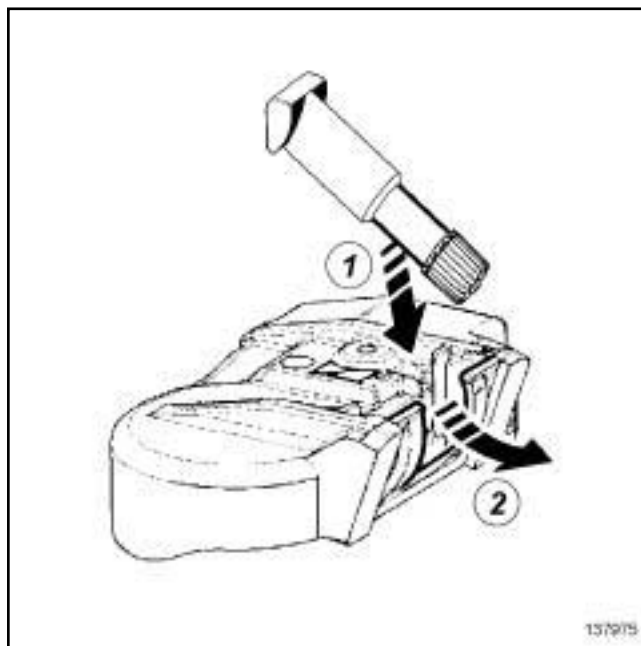
- ☐ Always replace the pressure sensor valve.
- ☐ parts always to be replaced: tyre pressure monitor valve seal (13,05,03,05).

2 - When replacing the pressure sensor

- ☐ parts always to be replaced: Pressure sensor (13,05,03,01).
- ☐ parts always to be replaced: tyre pressure monitor valve seal (13,05,03,05).

II - REFITTING OPERATION FOR PART CONCERNED

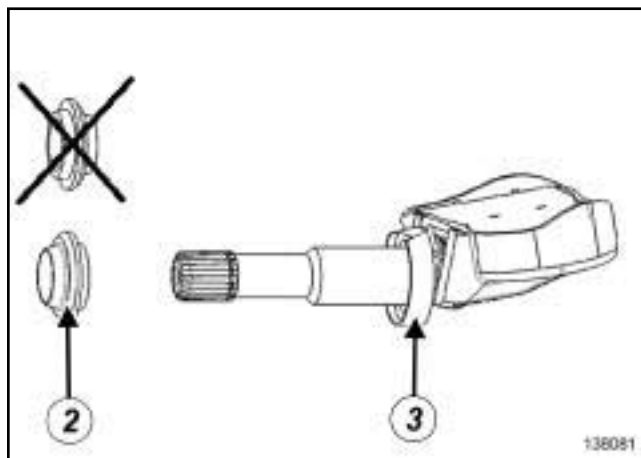
1 - When replacing the valve only



137975

- ☐ Refit the new valve in accordance with the order of the arrows.

2 - Refitting the pressure sensor



138081

- ☐ Refit:

- the cup (3) on the pressure sensor, ensuring that the bevel of the cup is facing towards the bottom of the wheel,
- the seal (2) on the cup by placing the conical face on the wheel rim side,
- the pressure sensor on the wheel rim.

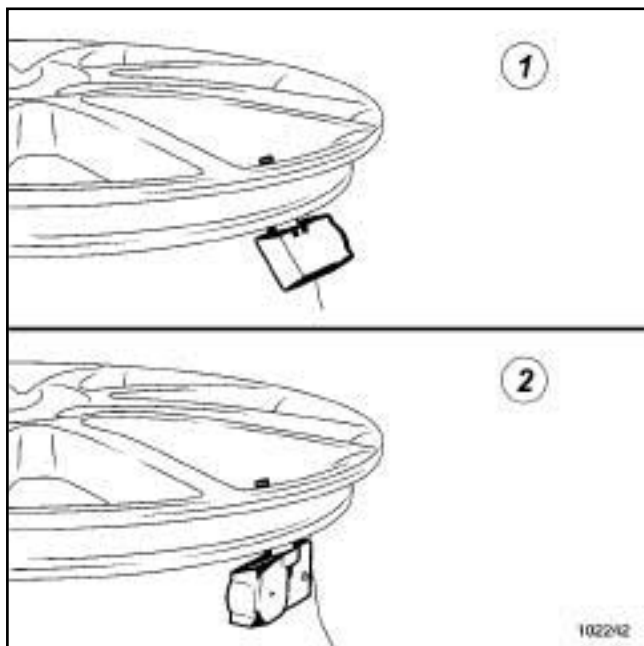
TYRE PRESSURE MONITOR

Pressure sensor: Removal - Refitting

35B

TYRE PRESSURE SENSOR

- ☐ Make sure that the sensor is correctly positioned on the wheel rim:
 - (1) : incorrectly fitted,
 - (2) : correctly fitted.



102242

- ☐ Check that the cup is completely pressed around the wheel hole.
- ☐ Pretighten the nut of the pressure sensor while keeping the sensor in contact on the bottom of the wheel rim.
- ☐ Torque tighten the **pressure sensor nut (8 N.m)**.

III - FINAL OPERATION

- ☐ Refit the tyres (see **Tyres: Removal - Refitting**) .
- ☐ Balance the wheels (see **Wheel: Balancing**) .
- ☐ Refit the wheels (see **Wheel: Removal - Refitting**) .

LEFT-HAND DRIVE

Tightening torques 

nuts of the «brake servo - height adjuster » assembly	21 N.m
-------------------------------------------------------	---------------

WARNING

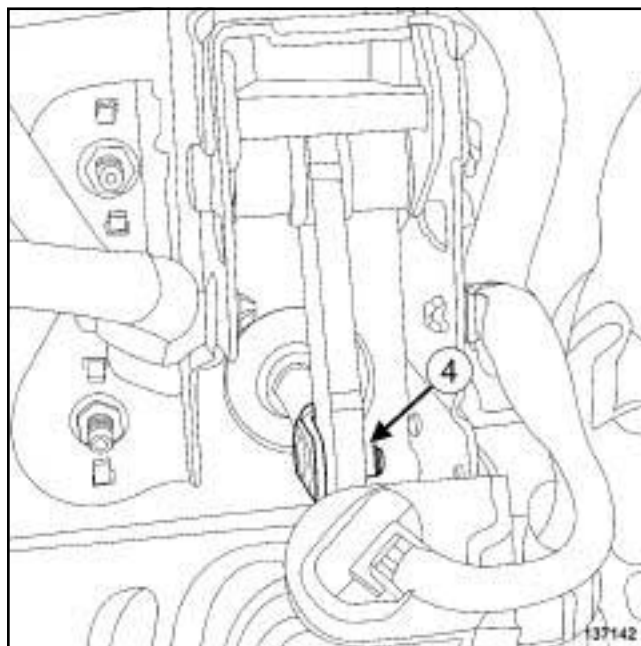
Prepare for the flow of fluid, and protect the surrounding components.

IMPORTANT

To avoid a loss of braking efficiency, do not bend the brake servo pipe.

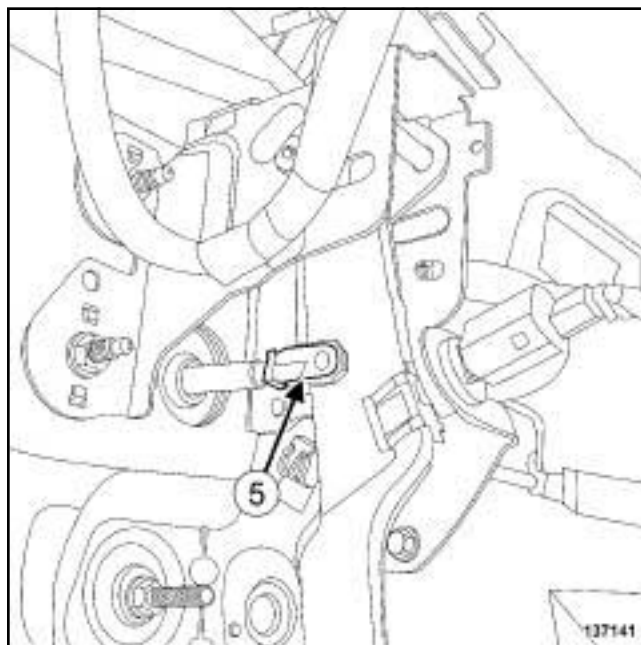
REMOVAL**I - REMOVAL PREPARATION OPERATION**

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).
- ☐ Remove:
 - the air filter unit (see **Battery: Removal - Refitting**) (12A, Fuel mixture),
 - the master cylinder (see **Master cylinder: Removal - Refitting**) ,
 - the brake servo non-return valve (see **Brake servo non-return valve: Removal - Refitting**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

137142

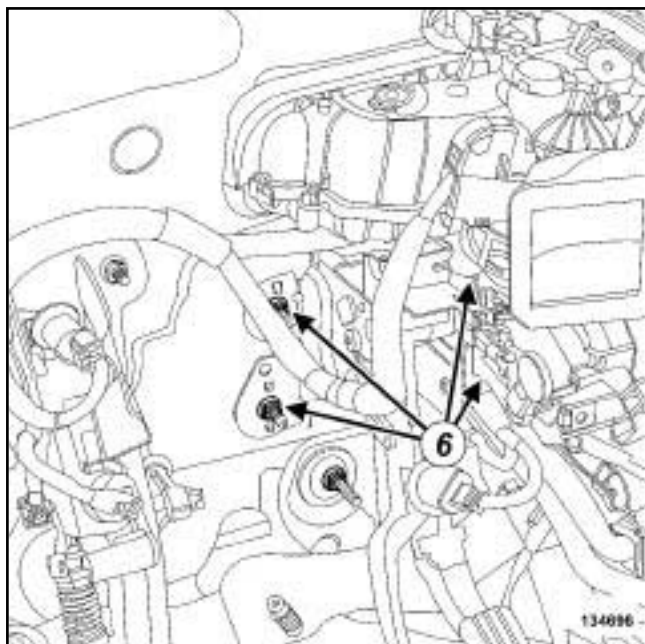
- ☐ Remove the rubber ring (4) from the dual safety connecting shaft.



137141

- ☐ Remove the dual safety connecting shaft (5) .

LEFT-HAND DRIVE



134696

☐ Remove:

- the nuts (6) of the brake servo height adjuster from the brake pedal,
- the « brake servo - height adjuster » assembly,
- the nuts of the brake servo height adjuster,
- the brake servo.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Connecting shaft between the brake pedal and the brake servo pushrod (30,03,02,07).
- ☐ Always replace the rubber ring of the dual safety connecting shaft.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit the « brake servo - height adjuster » assembly on the vehicle.
- ☐ Torque tighten the nuts of the « brake servo - height adjuster » assembly (21 N.m).
- ☐ Refit:
 - the dual safety connecting shaft between the brake servo rod and the brake pedal,
 - the dual safety connecting shaft rubber ring.

III - FINAL OPERATION

☐ Refit:

- the brake servo non-return valve (see **Brake servo non-return valve: Removal - Refitting**) ,
- the master cylinder (see **Master cylinder: Removal - Refitting**) ,
- the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).

☐ Refit:

- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery).

- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**)

RIGHT-HAND DRIVE

Tightening torques 

nuts of the brake servo height adjuster	21 N.m
-----------------------------------------	--------

WARNING

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

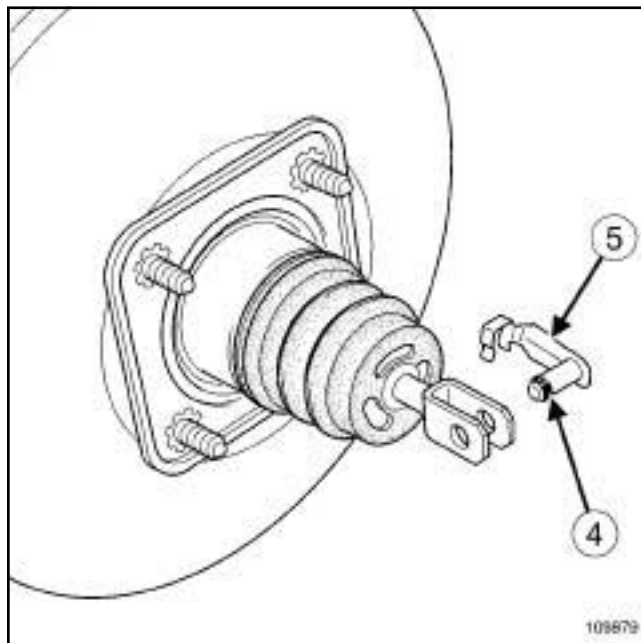
REMOVAL**I - REMOVAL PREPARATION OPERATION**

❑ Remove:

- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery).

❑ Remove:

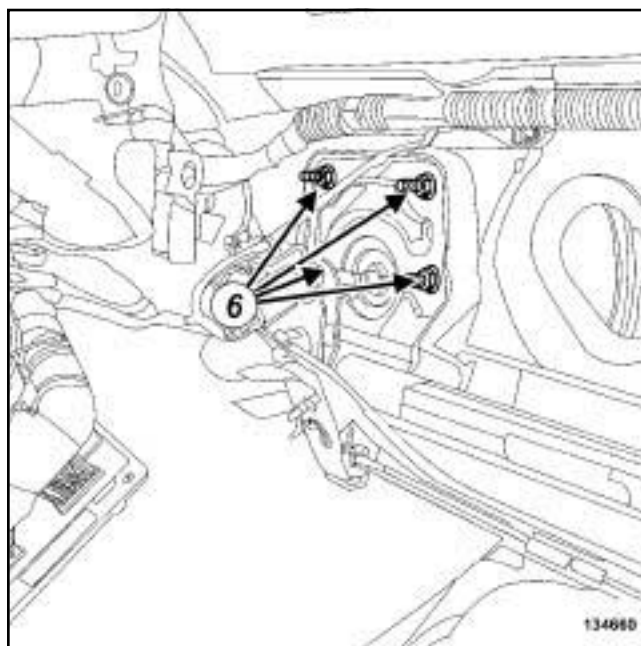
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the master cylinder (see **Master cylinder: Removal - Refitting**),
- the non-return valve (see **Brake servo non-return valve: Removal - Refitting**),
- the glovebox (see **Glovebox: Removal - Refitting**) (57A, Interior equipment),
- the brake light switch (see **Brake pedal switch: Removal - Refitting**).

II - OPERATION FOR REMOVAL OF PART CONCERNED

109879

❑ Remove:

- the rubber ring (4) from the dual safety connecting shaft,
- the dual safety connecting shaft (5) between the brake servo rod and the link rod.



134660

❑ Remove:

- the nuts (6) of the brake servo height adjuster,
- the "brake servo - height adjuster" assembly.

Brake servo: Removal - Refitting

RIGHT-HAND DRIVE

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the "brake servo - height adjuster" assembly,
 - the nuts of the brake servo height adjuster.
- ☐ Torque tighten the **nuts of the brake servo height adjuster (21 N.m)**.
- ☐ Refit:
 - the dual safety connecting shaft between the brake servo rod and the link rod,
 - the rubber ring.

II - FINAL OPERATION

- ☐ Refit:
 - the brake light switch (see **Brake pedal switch: Removal - Refitting**) ,
 - the glovebox (see **Glovebox: Removal - Refitting**) (57A, Interior equipment),
 - the non-return valve (see **Brake servo non-return valve: Removal - Refitting**) ,
 - the master cylinder (see **Master cylinder: Removal - Refitting**) ,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture).
- ☐ Refit:
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**)
 - .

ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

Equipment required

pedal press

refrigerant charging station

safety strap(s)

Diagnostic tool

Tightening torques

hydraulic unit bolts on its support	8 N.m
-------------------------------------	-------

hydraulic unit support bolts	8 N.m
------------------------------	-------

rigid brake pipe unions on the hydraulic unit	13 N.m
-----------------------------------------------	--------

hydraulic unit earth wire nut	8 N.m
-------------------------------	-------

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 **ABS: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

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

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Position the **pedal press** on the brake pedal to limit the outflow of brake fluid.

AIR CONDITIONING or CLIMATE CONTROL

- ☐ Drain the refrigerant fluid circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

- ☐ Remove:

- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the front wheels (see **Wheel: Removal - Refitting**) ,
- the engine undertray bolts,
- the engine undertray,
- the front axle sub-frame (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-58) ,
- the exhaust connecting hose nuts.

- ☐ Move the exhaust pipe to one side.

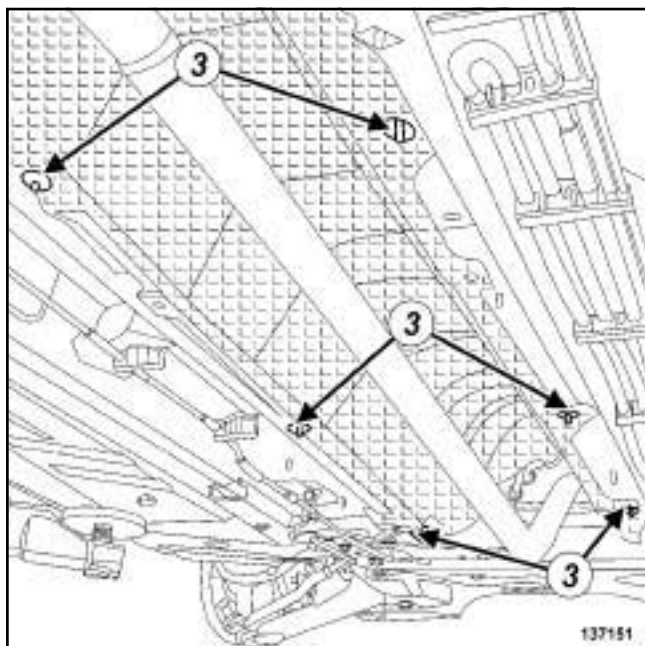
- ☐ Support the exhaust pipe using a **safety strap(s)**.

- ☐ Remove the front catalytic pre-converter (see **Front catalytic pre-converter: Removal - Refitting**) (19B, Exhaust).

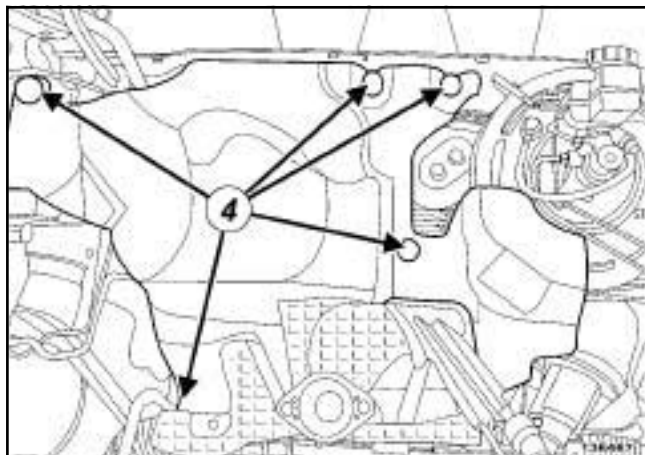
ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

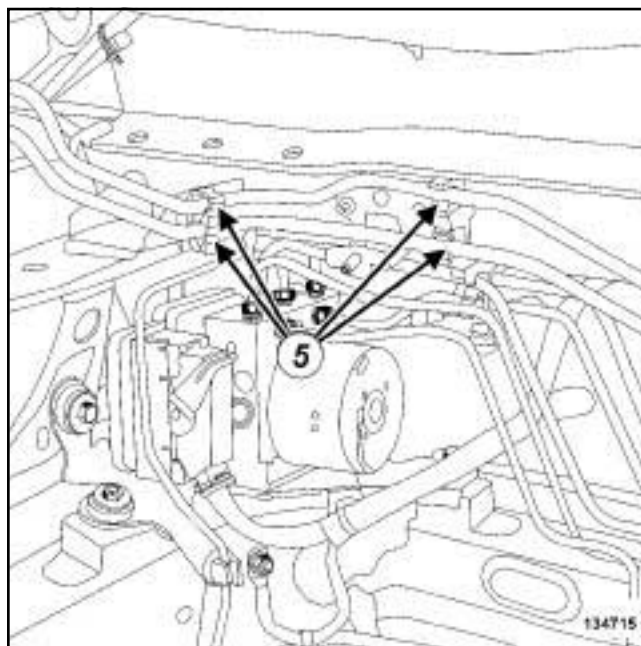
38C



- ☐ Remove the heat shield clips (3) from the tunnel.
- ☐ Move the heat shield of the tunnel towards the rear of the vehicle.



- ☐ Remove:
 - the bulkhead heat shield clips (4) ,
 - the heat shield from the bulkhead.



- ☐ Unclip the fuel pipes from the bulkhead at (5) .

AIR CONDITIONING or CLIMATE CONTROL

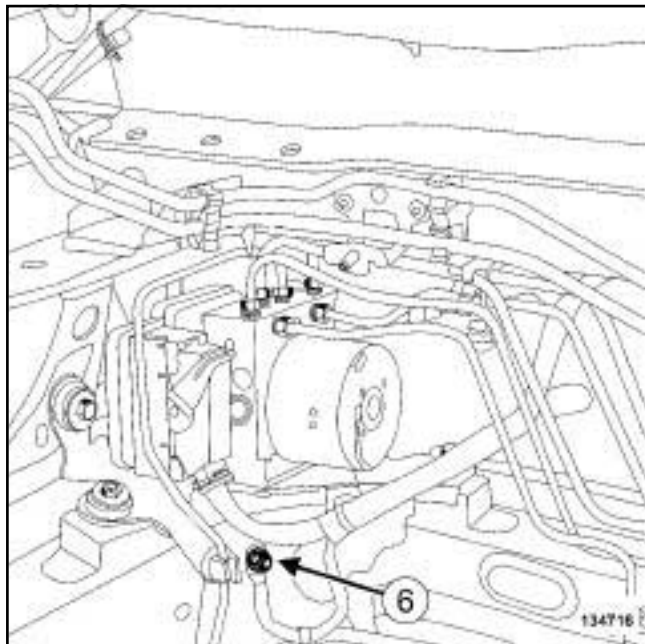
- ☐ Remove the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning).

ANTI-LOCK BRAKING SYSTEM

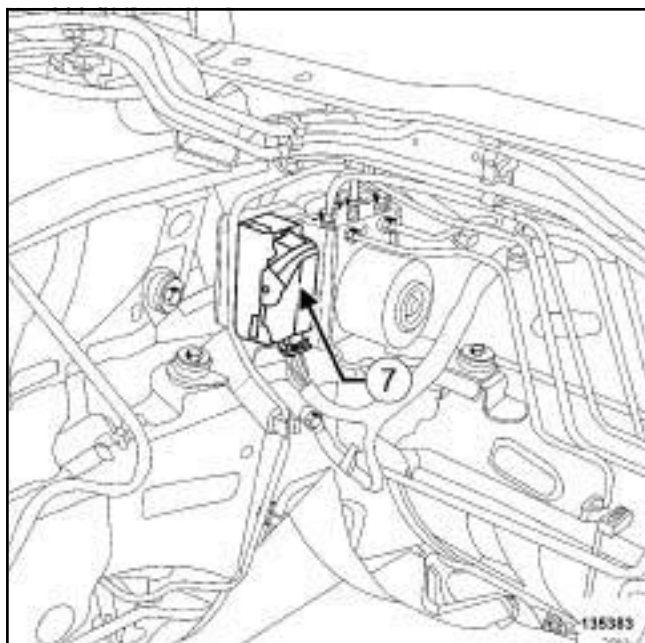
Hydraulic brake unit: Removal - Refitting

38C

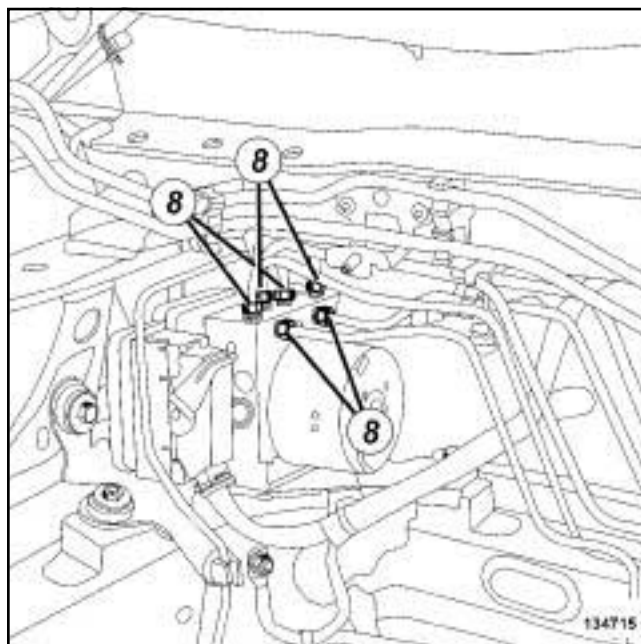
II - OPERATION FOR REMOVAL OF PART CONCERNED



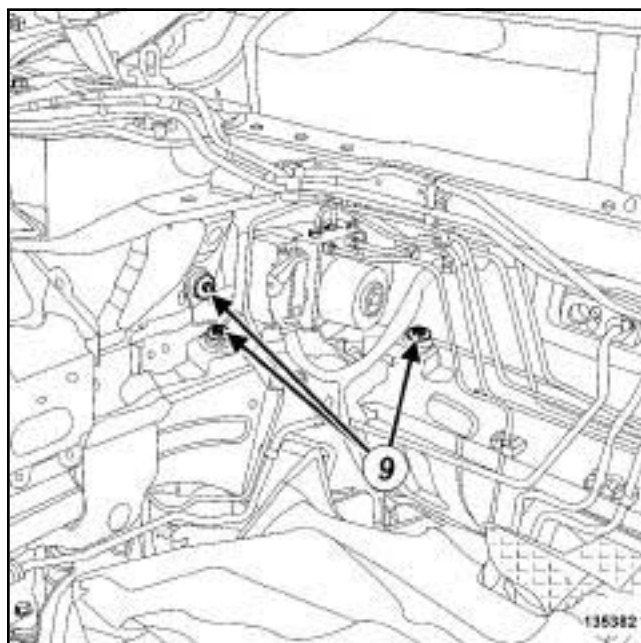
- ❑ Remove the nut (6) from the hydraulic unit earth wire.



- ❑ Disconnect the connector (7) from the hydraulic unit.



- ❑ Undo the hydraulic unit pipe unions (8) .
- ❑ Fit blanking plugs on the openings of the hydraulic unit and brake pipes.



- ❑ Remove:
 - the bolts (9) of the hydraulic unit support,
 - the "hydraulic unit - support" assembly,
 - the hydraulic brake unit bolts from its mounting,
 - the hydraulic brake unit.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



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.

- ☐ Refit:
 - the hydraulic brake unit,
 - the hydraulic unit bolts on its support.
- ☐ Torque tighten the **hydraulic unit bolts on its support (8 N.m)**.
- ☐ Refit:
 - the "hydraulic unit - support" assembly,
 - the bolts of the hydraulic unit support.
- ☐ Torque tighten the **hydraulic unit support bolts (8 N.m)**.
- ☐ Refit the brake pipe unions on the hydraulic unit.
- ☐ Clip on hydraulic unit pipes.

WARNING

To prevent any premature wear, ensure that there is no contact between the rigid pipe and the body.

- ☐ Torque tighten the **rigid brake pipe unions on the hydraulic unit (13 N.m)**.
- ☐ Connect the hydraulic unit connector.
- ☐ Refit the nut of the hydraulic unit earth wire.

WARNING

Position the terminal wire towards downwards to optimise the sealing on the hydraulic unit computer connector.

- ☐ Torque tighten the **hydraulic unit earth wire nut (8 N.m)**.

II - FINAL OPERATION

- ☐ Clip the fuel pipes onto the bulkhead.

AIR CONDITIONING or CLIMATE CONTROL

- ☐ Refit the "expansion valve - intermediate pipe" connecting pipe (see **Expansion valve - intermediate pipe connecting pipe at the expansion valve outlet: Removal - Refitting**) (62A, Air conditioning).
- ☐ Refit:
 - the bulkhead heat shield,
 - the tunnel heat shield.
- ☐ Refit the front catalytic pre-converter (see **Front catalytic pre-converter: Removal - Refitting**) (19B, Exhaust).
- ☐ Refit:
 - the exhaust pipe,
 - the exhaust connecting hose,
 - the front axle subframe (see **31A, Front axle components, Front axle subframe: Removal - Refitting**, page 31A-58) .
- ☐ Remove the **pedal press** from the brake pedal.
- ☐ Bleed the brake circuit (see **Braking circuit: Bleed**) .
- ☐ Refit:
 - the front wheels (see **Wheel: Removal - Refitting**) ,
 - the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
 - the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery).

AIR CONDITIONING or CLIMATE CONTROL

- ☐ Perform the following operations:
 - fill the refrigerant circuit using the **refrigerant charging station** (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning),
 - a leak test (see **Refrigerant circuit: Check**) (62A, Air conditioning).
- ☐ Check that the air conditioning is working correctly (see **Air conditioning: Check**) (62A, Air conditioning).

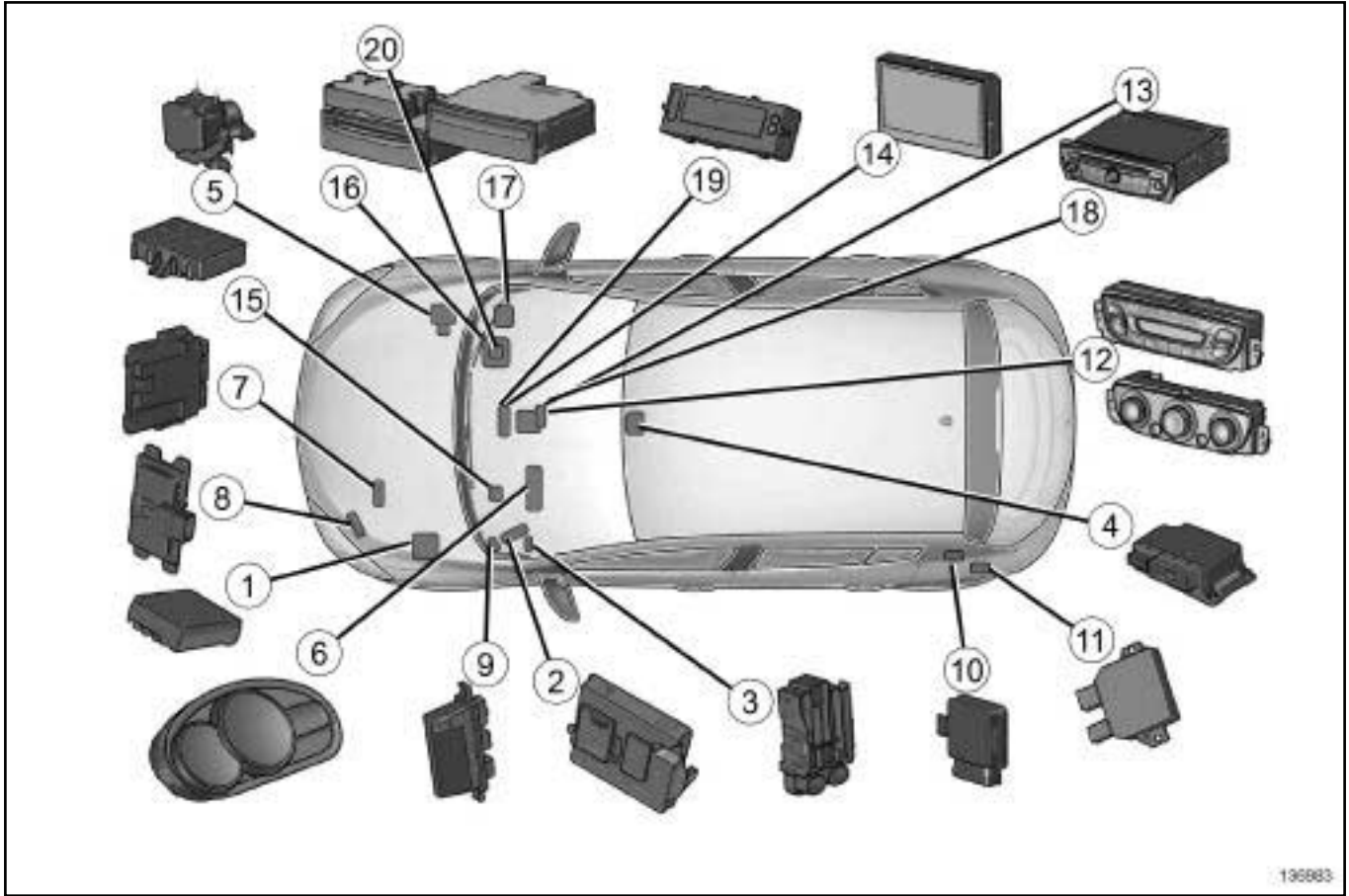
ANTI-LOCK BRAKING SYSTEM

Hydraulic brake unit: Removal - Refitting

38C

- ☐ Apply the after repair procedure using the **Diagnostic tool** :
 - connect the **Diagnostic tool**,
 - select « ABS- ESP computer » ,
 - go to repair mode,
 - display the « After repair procedure » for the selected computer,
 - 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.
- ☐ Refit the engine undertray.

LEFT-HAND DRIVE



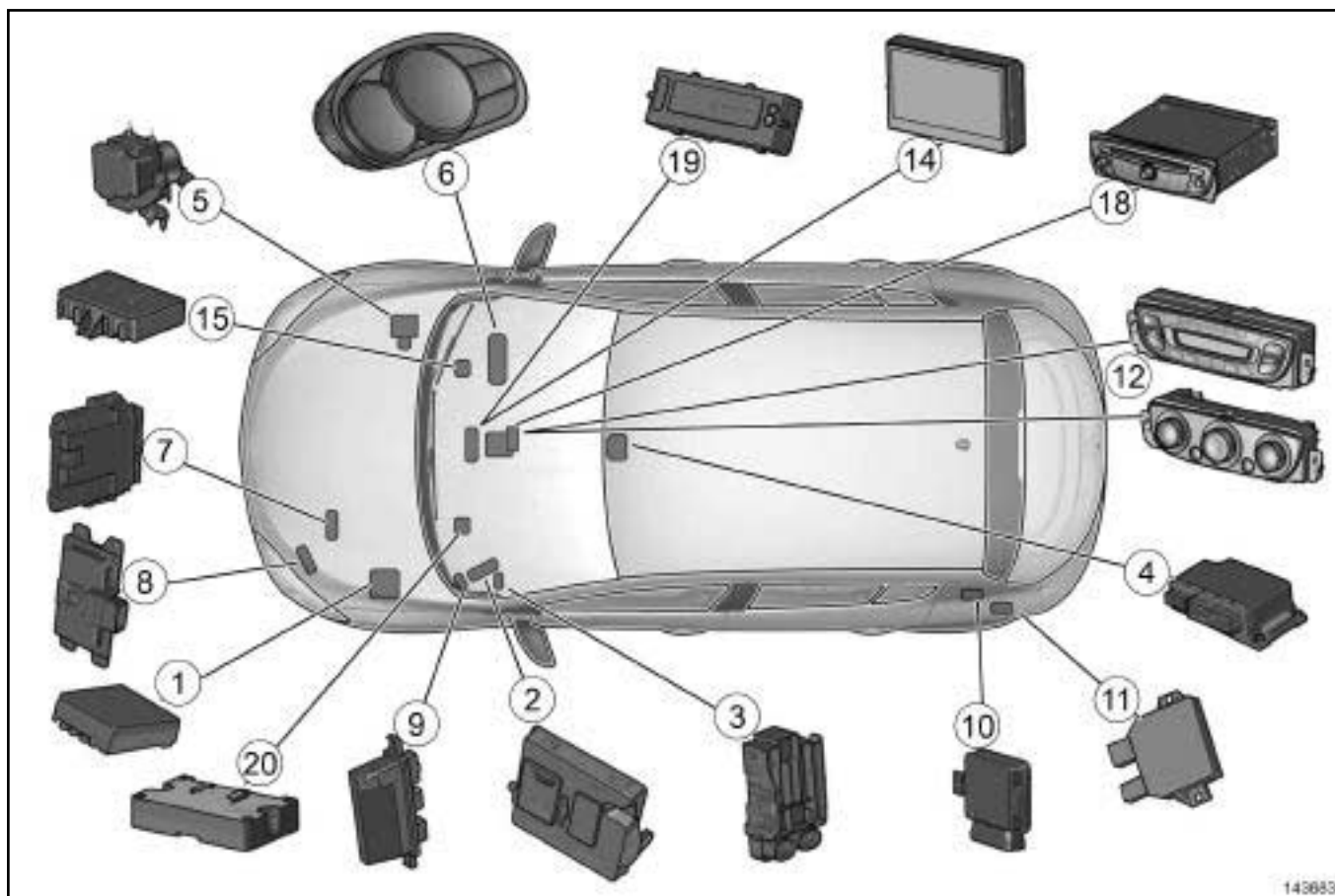
136983

WIRING HARNESS

Computers: List and location of components

88A

RIGHT-HAND DRIVE



143683

143683

The vehicle is fitted with:

- a UPC (see **Protection and Switching Unit: Removal - Refitting**) (1)
- a UCH (see **UCH: Removal - Refitting**) (2)
- a passenger compartment fuse and relay box (see **Dashboard wiring: Removal - Refitting**) (3)
- an airbag computer (see **Airbag computer: Removal - Refitting**) (4)
- a brake hydraulic unit (see **38C, Anti-lock braking system, Hydraulic brake unit: Removal - Refitting**, page **38C-1**) (38C, Anti-lock braking system) (5)
- an instrument panel (see **Instrument panel: Removal - Refitting**) (6)
- a petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection) (7)

6-SPEED AUTOMATIC GEARBOX

- an automatic transmission computer (see **23A, Automatic gearbox, Automatic gearbox converter: Removal - Refitting**, page **23A-16**) (23A, Automatic transmission) (8)

DISCHARGE LAMPS

- a front lighting computer (see **Front lighting computer: Removal - Refitting**) (9)

ELECTRONIC PARKING BRAKE

- an electronic parking brake control unit (see **Control unit: Removal - Refitting**) (37B, Electronic parking brake) (10)

FRONT AND REAR PROXIMITY RADAR or REAR PROXIMITY RADAR

- a parking distance control computer (see **Parking distance control computer: Removal - Refitting**) (11)

AIR CONDITIONING or CLIMATE CONTROL

- an air conditioning control panel (see **Control panel: Removal - Refitting**) (61A, Heating system) (12)

NAVIGATION AID 1 LEVEL or NAVIGATION AID 1 LEVEL or NAVIGATION AID 2 LEVEL

- a radionavigation system (see **Radio navigation: Removal - Refitting**) (13)

NAVIGATION AID 1 LEVEL or NAVIGATION AID 1 LEVEL or NAVIGATION AID 1 LEVEL or NAVIGATION AID 2 LEVEL

- a navigation screen (see **Navigation screen: Removal - Refitting**) (14)
- a multimedia network interface unit (see **Multimedia network interface unit: Removal - Refitting**) (15)

LEFT-HAND DRIVE, and NAVIGATION AID 1 LEVEL

- a navigation computer (see **Navigation computer: Removal - Refitting**) (16)

RADIO NO. 07

- a receiver (see **Receiver: Removal - Refitting**) (17)

RADIO NO. 01 or RADIO NO. 02 or RADIO NO. 03 or RADIO NO. 04 or RADIO NO. 05

- a radio (see **Radio: Removal - Refitting**) (18)

RADIO NO. 01 or RADIO NO. 02 or RADIO NO. 03 or RADIO NO. 04 or RADIO NO. 05 or VEHICLE WITHOUT RADIO

- a display (see **Display: Removal - Refitting**) (19)

RADIO NO. 04 or RADIO NO. 05

- an offset multimedia socket computer (see **Offset multimedia socket computer: Removal - Refitting**) (20)

WIRING HARNESS

Engine wiring: Removal - Refitting

88A

Equipment required

indelible pencil

Diagnostic tool

Tightening torques

earth terminal bolt on the gearbox casing	24 N.m
-------------------------------------------	--------

earth nut on the front left-hand side member	8 N.m
----------------------------------------------	-------

starter supply cable nut	8 N.m
--------------------------	-------

starter excitation cable nut	7 N.m
------------------------------	-------

nut of the alternator supply cable	8 N.m
------------------------------------	-------

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 **Wiring: Precautions for the repair**) ,
- (see **Vehicle: Precautions for the repair**) (01D, Mechanical introduction).

WARNING

To prevent any damage to the connectors, consult the disconnection procedures (see **Connectors: Disconnection and reconnection**) (Technical Note 6015A, 88A, Wiring).

REMOVAL

I - REMOVAL PREPARATION OPERATION

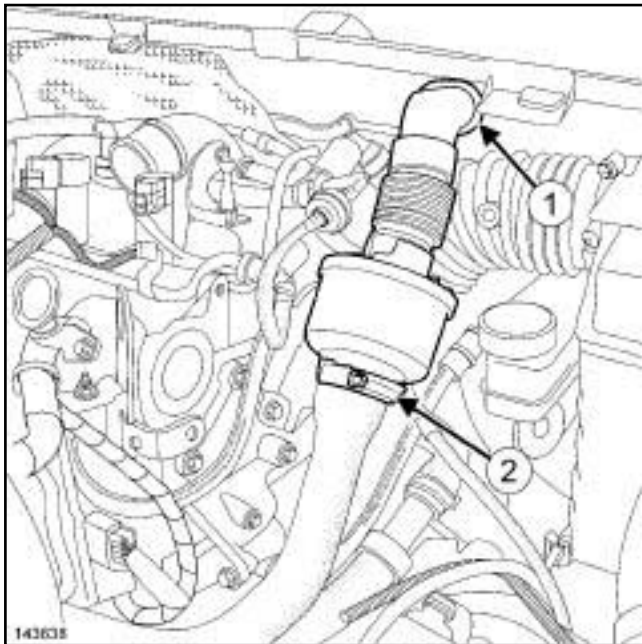
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Switch off the ignition.
- ☐ Remove:
 - the battery (see **Battery: Removal - Refitting**) ,
 - the battery tray (see **Battery tray: Removal - Refitting**) ,

- the engine cover,
- the engine undertray bolts,
- the engine undertray,
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
- the front headlights (see **Headlight: Removal - Refitting**) ,
- the front bumper supports (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure),
- the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-1) (12A, Fuel mixture),
- the air deflectors,
- the intercooler air inlet pipe (see **Intercooler air inlet pipe: Removal - Refitting**) (12B, Turbocharging),
- the audible warning (see **Audible warning: Removal - Refitting**) ,
- the front impact cross member (see **Front impact cross member: Removal - Refitting**) (41A, Front lower structure),
- the bonnet catch (see **Bonnet lock: Removal - Refitting**) (52A, Non-side opening element mechanisms).

WIRING HARNESS

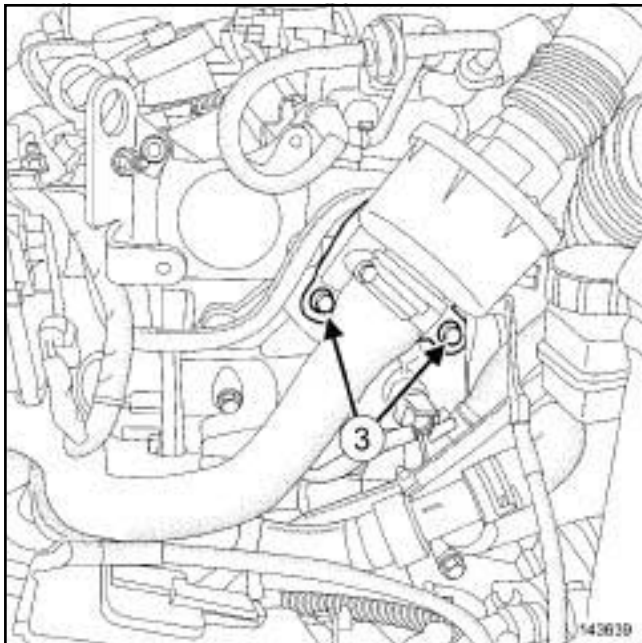
Engine wiring: Removal - Refitting

88A



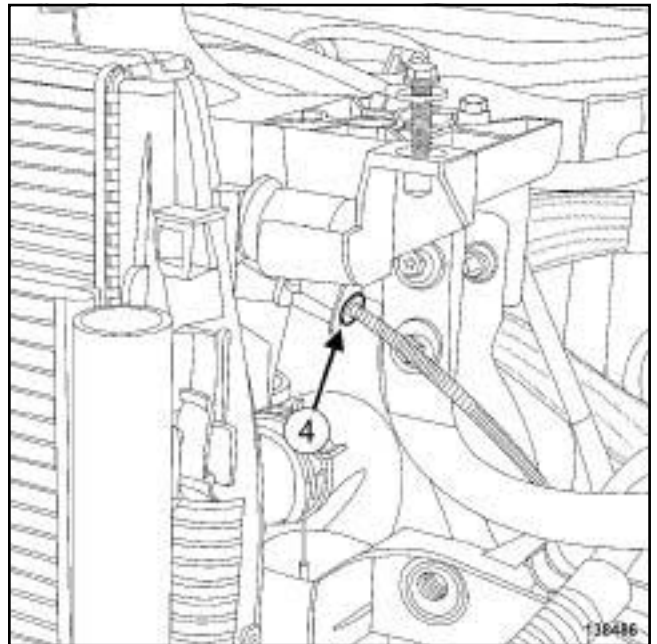
143638

- ☐ Unclip the sound pipe from the scoop under the scuttle panel grille at (1) .
- ☐ Loosen the clip (2) of the air duct on the sound pipe.



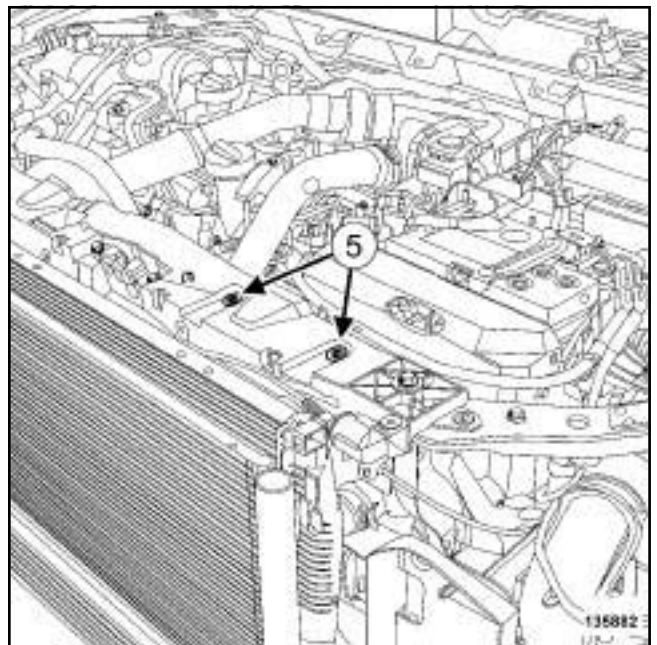
143639

- ☐ Remove:
 - the sound pipe bolts (3) from the water chamber,
 - the sound pipe.



138486

- ☐ Unclip the bonnet catch cable at (4) .



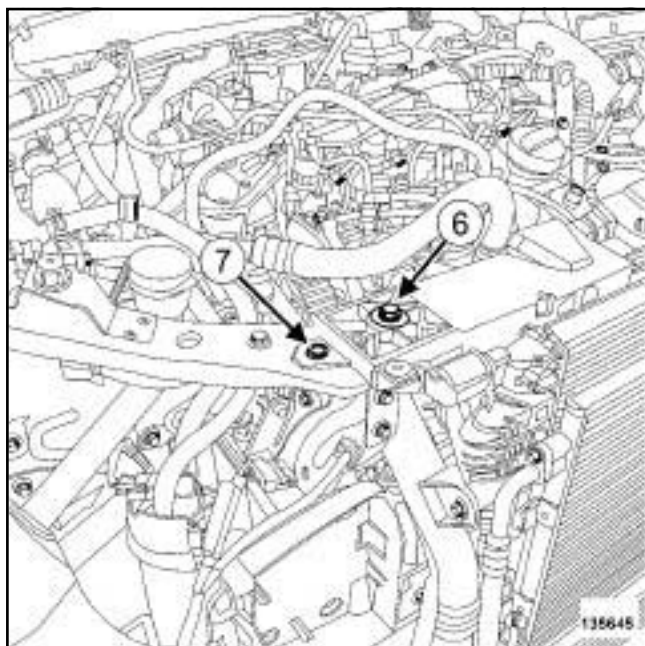
135882

- ☐ Remove the bolts (5) from the engine wiring channel.

WIRING HARNESS

Engine wiring: Removal - Refitting

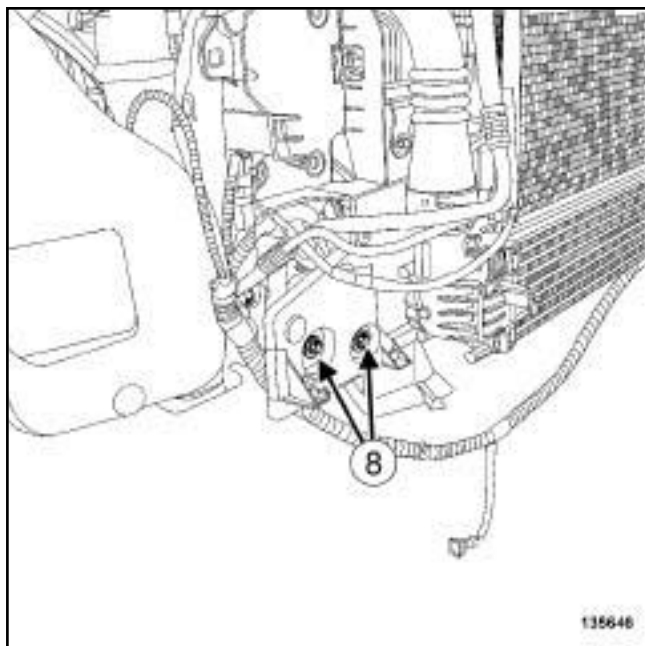
88A



135645

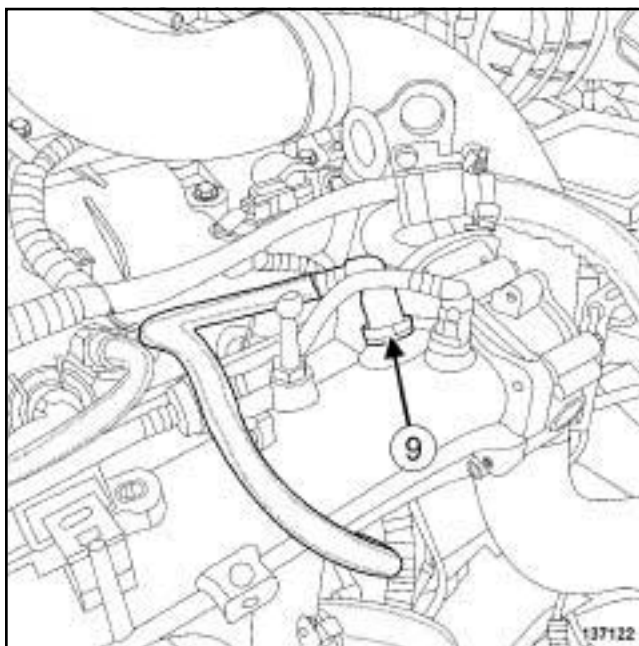
❑ Remove:

- the upper bolts (6) from the front end panel,
- the front end panel clips (7) .



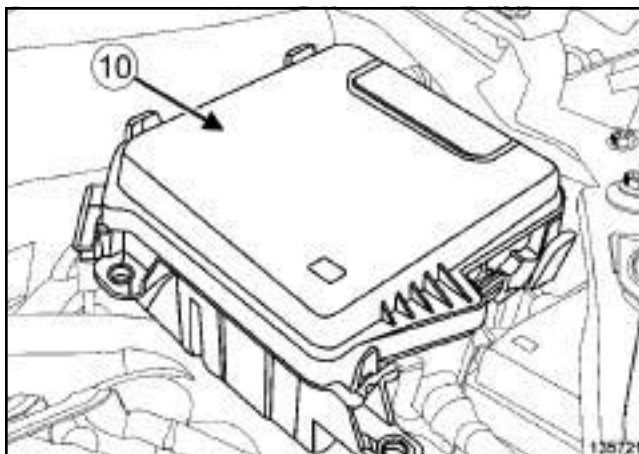
135646

- ❑ Remove the lower bolts (8) from the front end panel.
- ❑ Tilt the front end panel towards the front of the vehicle.
- ❑ Remove the intercooler air outlet pipe (see **12B, Turbocharging, Intercooler air outlet pipe: Removal - Refitting**, page **12B-9**) (12B, Turbocharging).



137122

- ❑ Unclip the brake servo vacuum pipe (9) from the inlet distributor.
- ❑ Move the brake servo vacuum pipe to one side.



135721

- ❑ Remove the cover (10) from the Protection and Switching Unit.
- ❑ Unclip the Protection and Switching Unit.

II - OPERATION FOR REMOVAL OF PART CONCERNED

❑

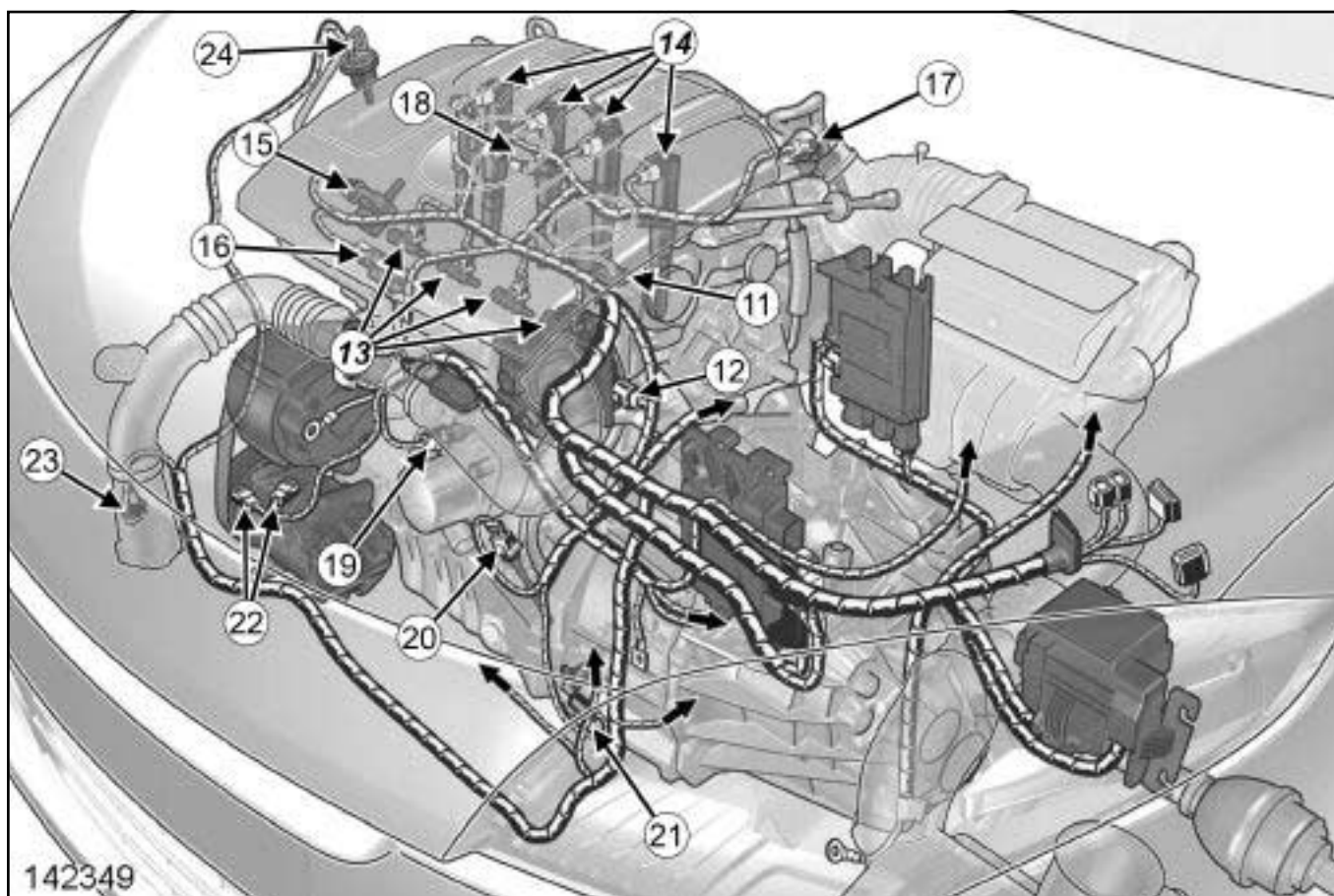
WARNING

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.

WIRING HARNESS

Engine wiring: Removal - Refitting

88A

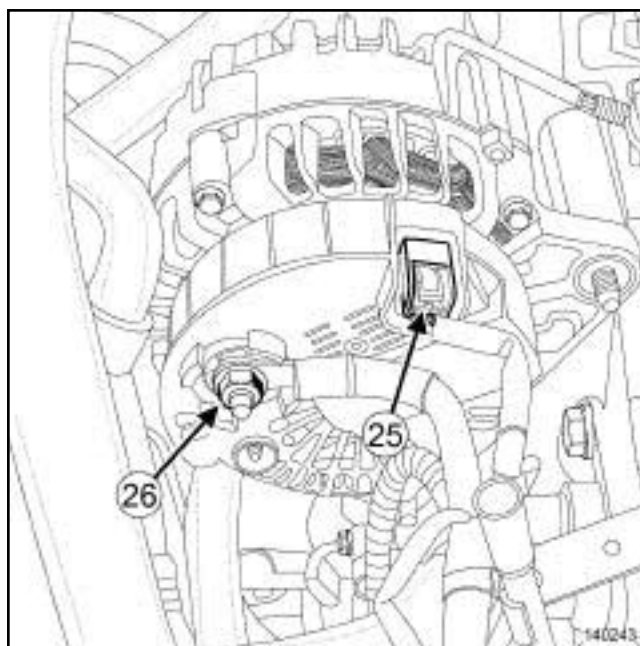


142349

☐ Disconnect the following connectors :

- the camshaft position sensor (11) ,
- the throttle valve (12) ,
- the injectors (13) ,
- the ignition coils (14) ,
- the oil vapour recirculation pipe heater (15) ,
- the turbocharger pressure regulation solenoid valve (16) ,
- the turbocharging pressure sensor (17) ,
- the upstream oxygen sensor (18) ,
- the oil pressure sensor (19) ,
- the oil level sensor (20) ,
- the crankshaft position sensor (21) ,
- the air conditioning compressor (22) ,
- the refrigerant circuit pressure sensor (23) ,
- the fuel vapour absorber bleed solenoid valve (24) .

☐ Unclip the inlet distributor wiring.



140243

☐ Disconnect the alternator connector (25) ,

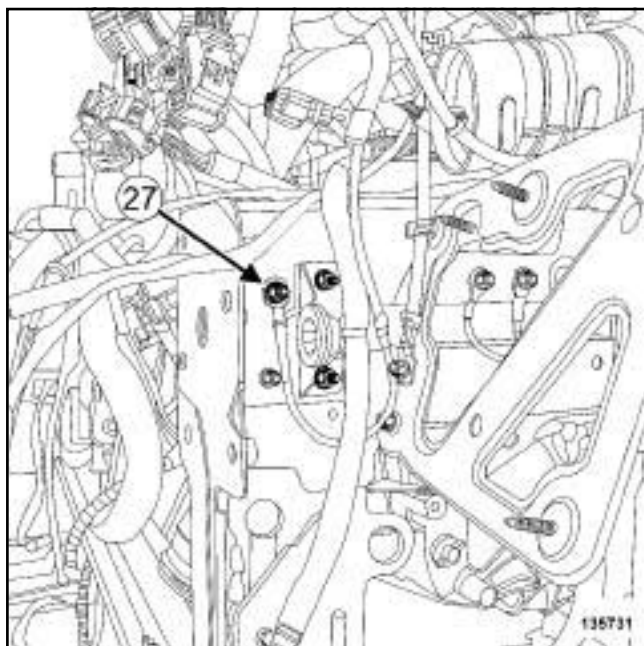
- ☐ Remove the nut (26) from the alternator supply cable.

☐ Unclip the wiring.

WIRING HARNESS

Engine wiring: Removal - Refitting

88A



135731

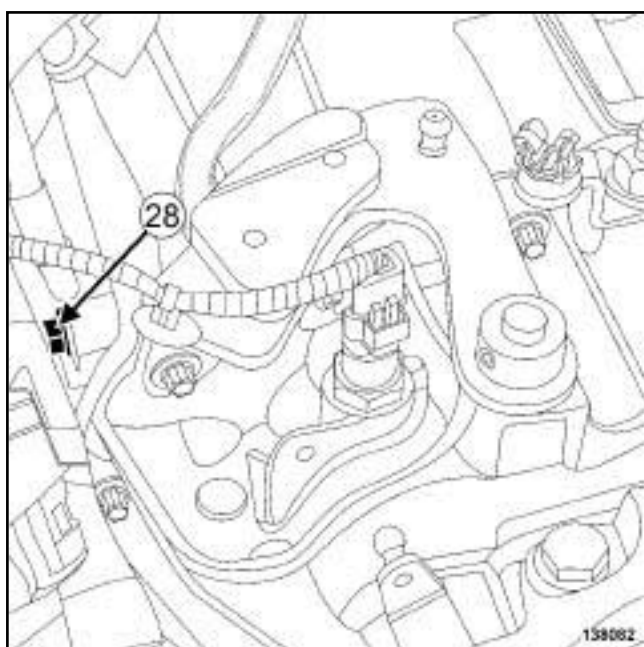


Note:

Before removing the earth terminal, mark its position using a **indelible pencil** by drawing a line on the earth terminal and on the gearbox.

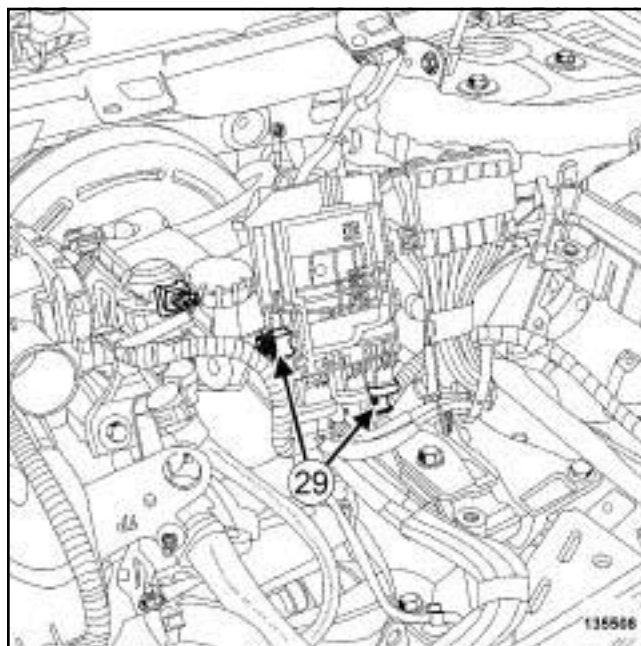
When refitting, improper positioning of the earth could result in damage to the earth terminal or earth wiring.

- ❑ Remove the earth wiring nut (27) from the front left-hand side member.



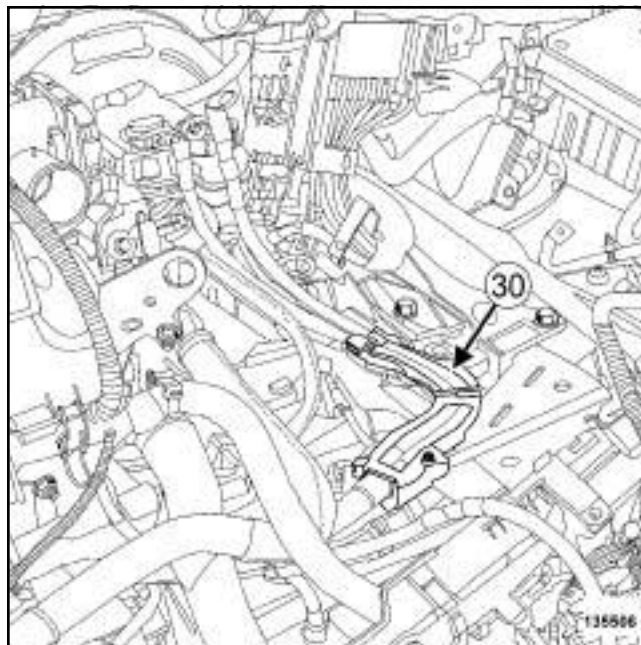
138082

- ❑ Remove the bolt (28) from the gearbox earth.



135508

- ❑ Disconnect the connectors (29) from the battery disconnection unit.
- ❑ Unclip the wiring of the battery disconnection unit.



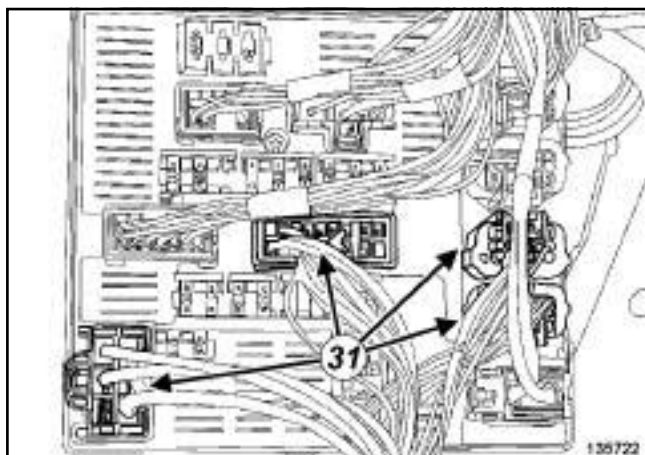
135506

- ❑ Unclip the power cable channel (30) from the left-hand suspended engine mounting.

WIRING HARNESS

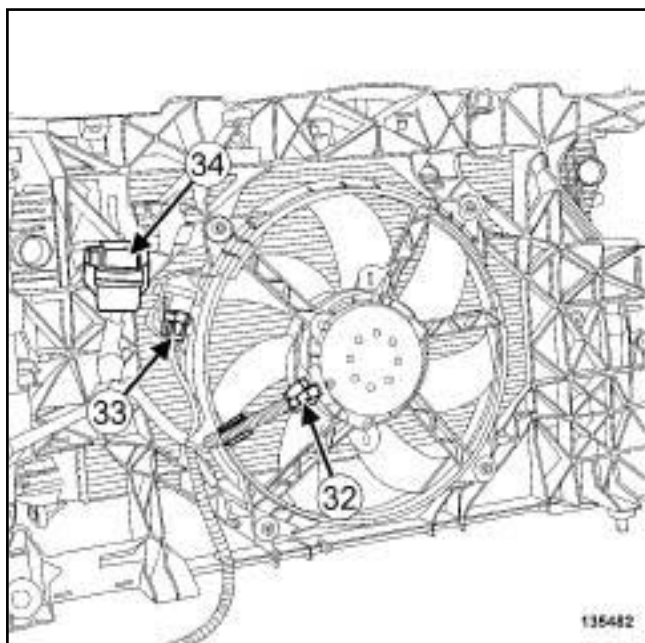
Engine wiring: Removal - Refitting

88A



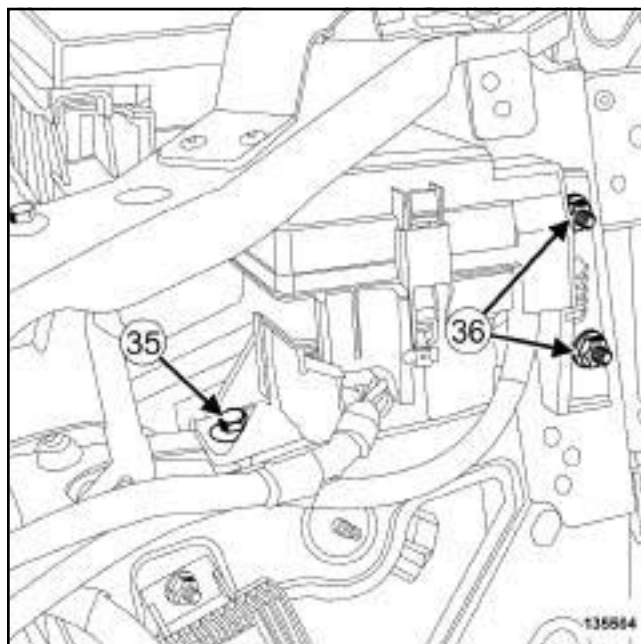
135722

- ❑ Disconnect the connectors (31) from the Protection and Switching Unit.



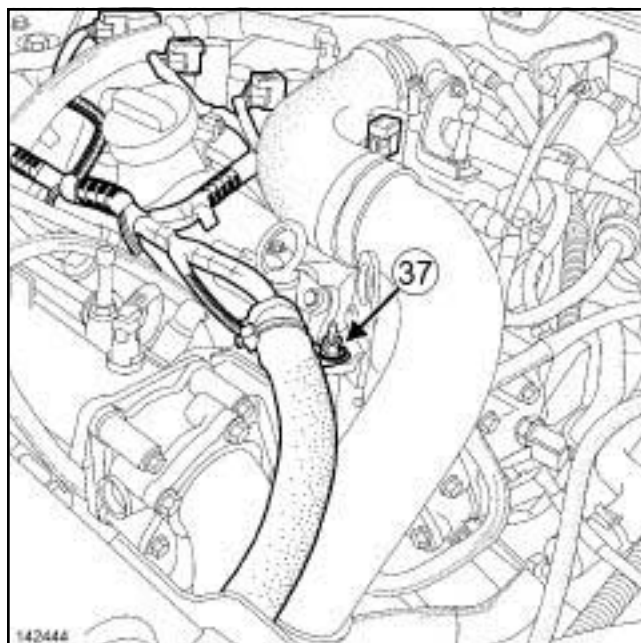
135482

- ❑ Disconnect the following connectors:
 - the fan assembly (32) ,
 - the fan assembly resistor (33) .
- ❑ Unclip the relay unit (34) from the front end panel.



135504

- ❑ Remove:
 - the bolt (35) from the engine fuse box,
 - the nuts (36) from the engine fuse box.



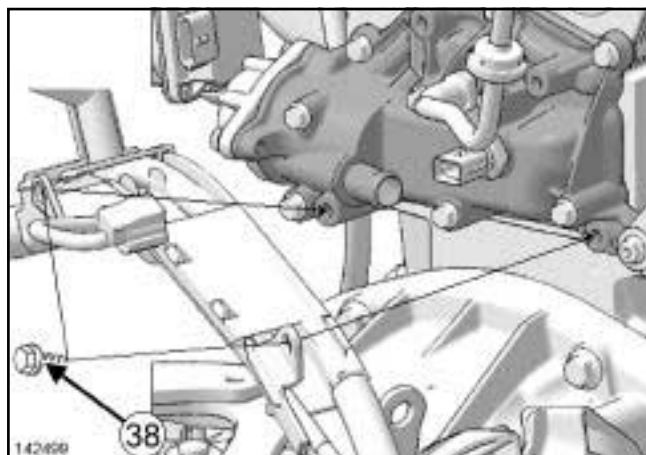
142444

- ❑ Remove the nut (37) from the mounting clip on the engine wiring.
- ❑ Move the engine wiring away from its mounting point.

WIRING HARNESS

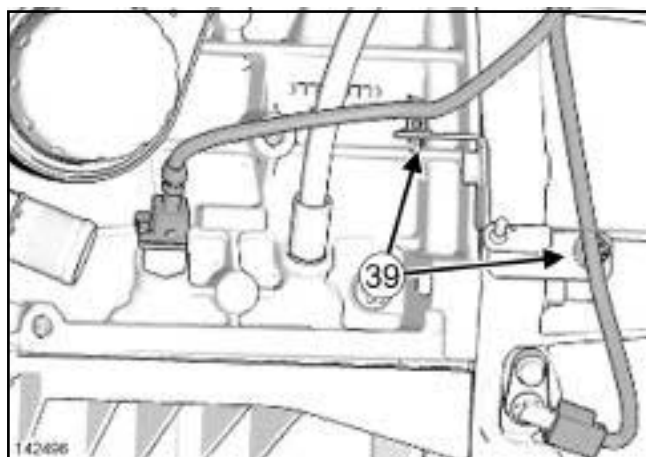
Engine wiring: Removal - Refitting

88A



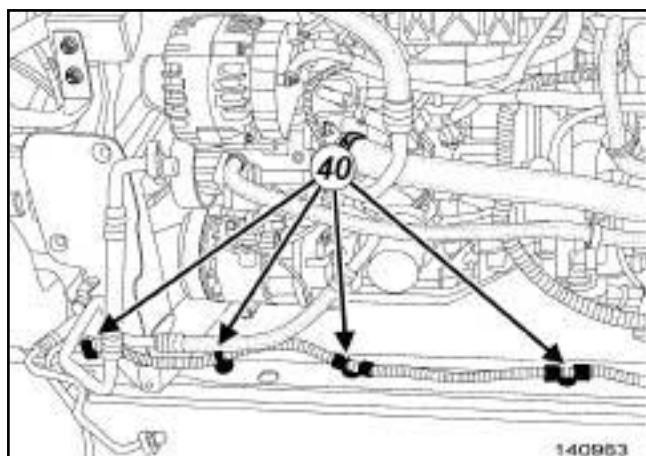
142499

- ❑ Remove the bolts (38) of the engine wiring channel from the water chamber.



142498

- ❑ Unclip the engine wiring from the gearbox at (39) .



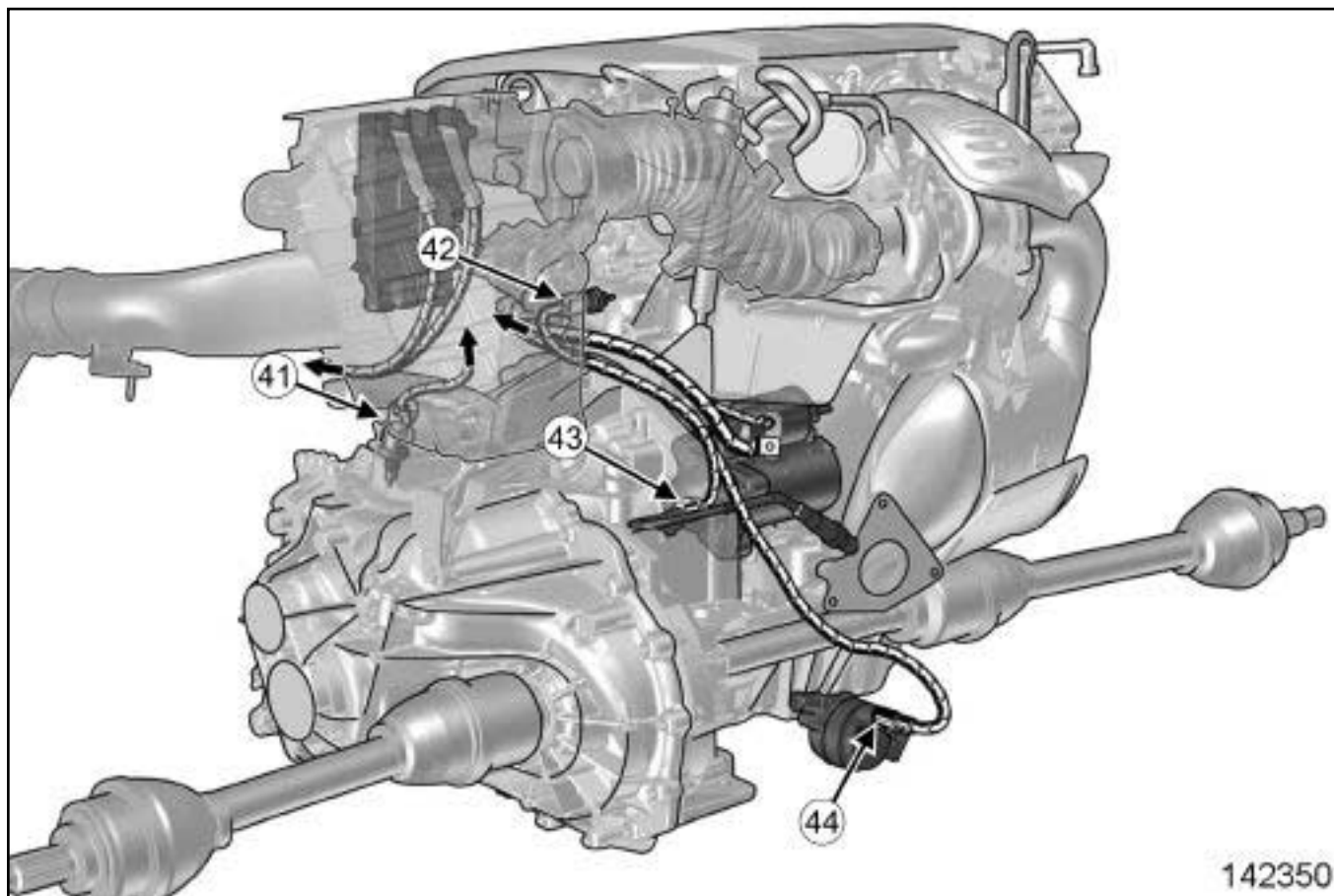
140963

- ❑ Unclip the wiring of the radiator mounting cross member at (40) .

WIRING HARNESS

Engine wiring: Removal - Refitting

88A



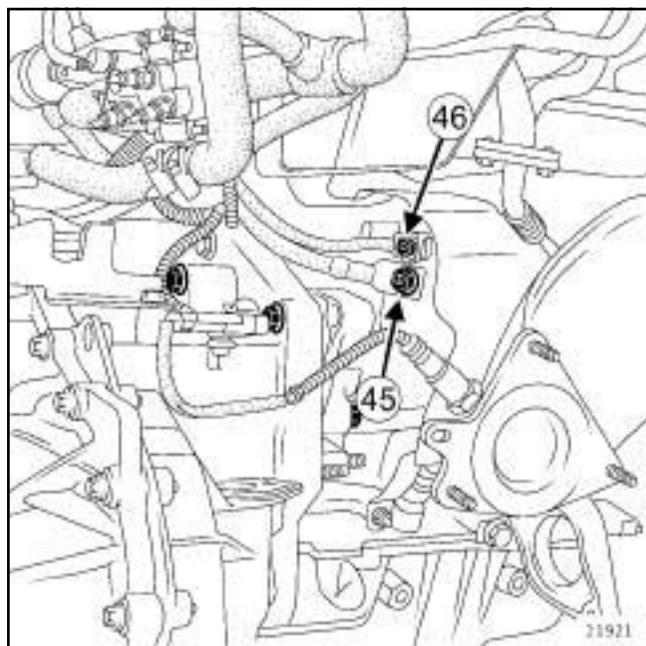
142350

- ❑ Disconnect the following connectors :
- the reverse gear switch (41) ,
 - the coolant temperature sensor (42) ,
 - the downstream oxygen sensor (43) ,
 - the electric coolant pump (44) .

WIRING HARNESS

Engine wiring: Removal - Refitting

88A



21921

❑ Remove:

- the starter supply cable nut (45) ,
- the starter excitation cable nut (46) .

WARNING

To prevent any damage during the removal operation, check that the wiring is free from its mountings (retaining clip, plastic clip, adhesive tape, connector, etc.).

❑ Remove the engine wiring.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ If replacing with a complete wiring harness, lock the unused connectors (see **Connectors: Sealing and locking**) (Technical Note 6015A, 88A, Wiring).

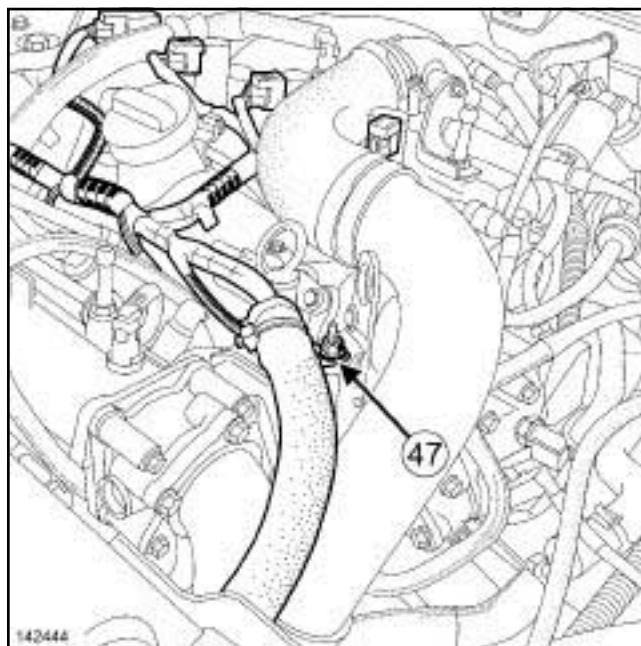
II - REFITTING OPERATION FOR PART CONCERNED

❑

WARNING

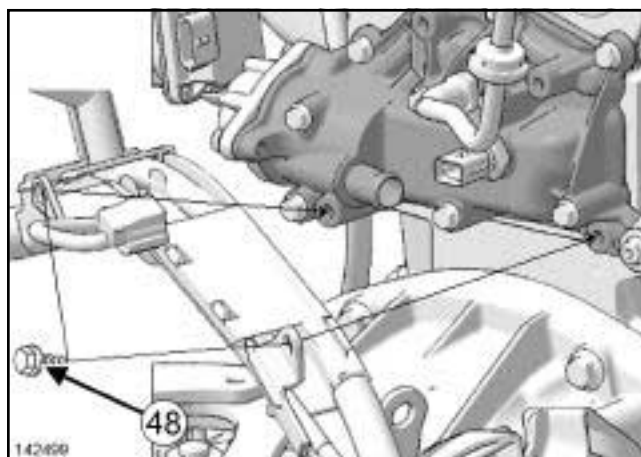
To prevent damage to the wiring harness when refitting, observe the original routing.

❑ Refit the engine wiring.



142444

❑ Refit the wiring clip on the mounting bracket (47) .



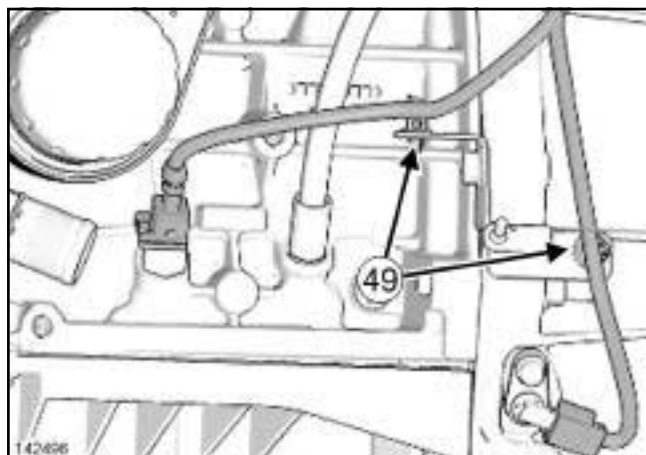
142499

❑ Refit the bolts (48) of the engine wiring channel on the water chamber.

WIRING HARNESS

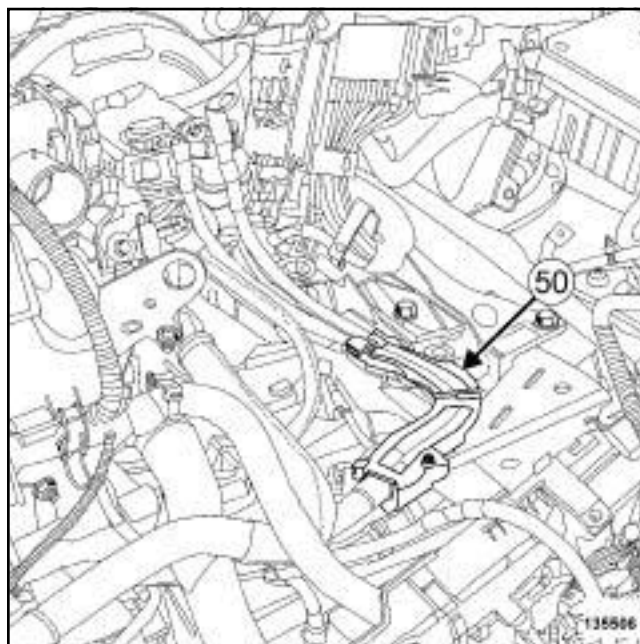
Engine wiring: Removal - Refitting

88A



142498

- ❑ Clip the engine wiring on the gearbox at (49) .



135506

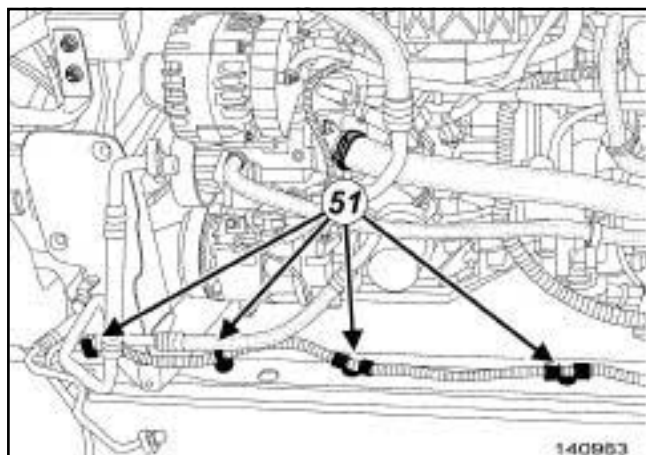
- ❑ Clip the power cable channel (50) on the left-hand suspended engine mounting.
- ❑ Fit:
 - the engine fuse box,
 - the wiring on the front end panel.
- ❑ Fit the earth terminal on the gearbox casing.

Note:

Refit the earth terminal, at the mark made using a **indelible pencil** on the earth terminal and on the gearbox casing.

When reassembling, improper positioning of the earth terminal on the gearbox casing could result in damage to the earth terminal or earth wiring.

- ❑ Torque tighten the **earth terminal bolt on the gearbox casing (24 N.m)**.



140963

- ☐ Clip the wiring onto the radiator mounting cross member at (51) .
- ☐ Fit the earth cable on the front left-hand side member.
- ☐ Torque tighten the **earth nut on the front left-hand side member (8 N.m)**.
- ☐ Connect the connectors of:
 - the electric coolant pump,
 - the downstream oxygen sensor,
 - the coolant temperature sensor,
 - the reverse gear switch.
- ☐ Refit:
 - the starter supply cable,
 - the starter excitation cable.
- ☐ Torque tighten:
 - the **starter supply cable nut (8 N.m)**,
 - the **starter excitation cable nut (7 N.m)**.
- ☐ Clip the relay unit on to the front end panel.
- ☐ Connect the connectors of:
 - the fan assembly,
 - the fan assembly resistor,
 - the Protection and Switching Unit,
 - the battery disconnection unit,
 - the alternator.
- ☐ Fit the alternator supply cable.
- ☐ Torque tighten the **nut of the alternator supply cable (8 N.m)**.
- ☐ Clip the wiring onto the inlet distributor.

- ☐ Connect the connectors of:
 - the fuel vapour absorber bleed solenoid valve,
 - the coolant circuit pressure sensor,
 - the air conditioning compressor,
 - the crankshaft position sensor,
 - the oil level sensor,
 - the oil pressure sensor,
 - the turbocharger pressure sensor,
 - the upstream oxygen sensor,
 - the turbocharger pressure regulation solenoid valve,
 - the oil vapour recirculation pipe heater,
 - the ignition coils,
 - the injectors,
 - the throttle valve,
 - the camshaft position sensor.

III - FINAL OPERATION

- ☐ Clip on the Protection and Switching Unit.
- ☐ Refit the Protection and Switching Unit cover.
- ☐ Clip the brake servo vacuum pipe on to the inlet distributor.
- ☐ Refit the intercooler air outlet pipe (see **12B, Turbocharging, Intercooler air outlet pipe: Removal - Refitting**, page **12B-9**) (12B, Turbocharging).
- ☐ Refit:
 - the sound pipe,
 - the bolts of the sound pipe on the water chamber.
- ☐ Tighten the clip of the air duct on the sound pipe.
- ☐ Clip the sound pipe onto the scoop under the scuttle panel grille.
- ☐ Fit the front end panel.
- ☐ Refit:
 - the front end panel upper bolts,
 - the lower bolts of the front end panel,
 - the bolts of the engine wiring channel on the front end panel.
- ☐ Clip the bonnet cable onto the front end panel.
- ☐ Refit:
 - the air deflectors,

- the bonnet catch (see **Bonnet lock: Removal - Refitting**) (52A, Non-side opening element mechanisms).
- the front impact cross member (see **Front impact cross member: Removal - Refitting**) (41A, Front lower structure),
- the audible warning (see **Audible warning: Removal - Refitting**) ,
- the intercooler air inlet pipe (see **Intercooler air inlet pipe: Removal - Refitting**) (12B, Turbocharging),
- the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page **12A-1**) (12A, Fuel mixture),
- the front bumper supports (see **Front bumper mounting: Removal - Refitting**) (42A, Front upper structure),
- the front headlights (see **Headlight: Removal - Refitting**) ,
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
- the front section of the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the battery tray (see **Battery tray: Removal - Refitting**) ,
- the battery (see **Battery: Removal - Refitting**) ,
- the engine cover,
- the engine undertray.

IV - CHECKING AFTER REPAIR

- ☐ Switch on the ignition.
- ☐ Connect the **Diagnostic tool**.
- ☐ Check that there are no faults.