

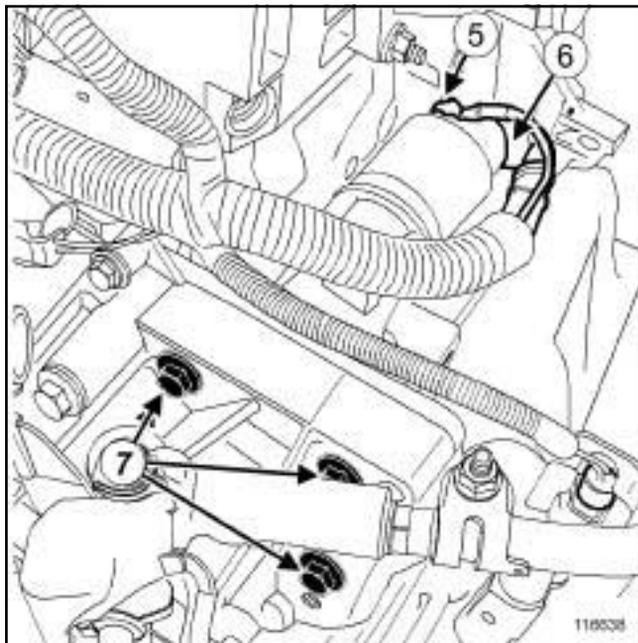
STARTING - CHARGING

Starter: Removal - Refitting

16A

K4M

II - REMOVAL OPERATION



Remove:

- the nut (5) on the starter solenoid lead,
- the nut (6) on the starter lead,
- the starter bolts (7) ,
- the starter from underneath the vehicle.

REFITTING

I - REFITTING PREPARATION OPERATION

- Check that the centring dowel is in place.

II - REFITTING OPERATION

Refit:

- the starter from underneath the vehicle,
- the starter bolts.

- Torque tighten the **starter bolts (44 N.m)**.

Refit:

- the starter leads,
- the starter lead nut,
- the nut on the starter solenoid lead.

Torque tighten:

- the **starter lead nut (8 N.m)**,
- the **nut on the starter solenoid lead (5 N.m)**.

III - FINAL OPERATION

JR5

Clip:

- the gearbox control cable sleeve stops on the gearbox,
- the control cables onto the gearbox.

- Refit the air resonator (see 12A, **Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .

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

STARTING - CHARGING

Alternator pulley: Removal - Refitting

16A

K4M

Equipment required

pneumatic or electric wrench

torque wrench

open-ended spanner for torque wrench

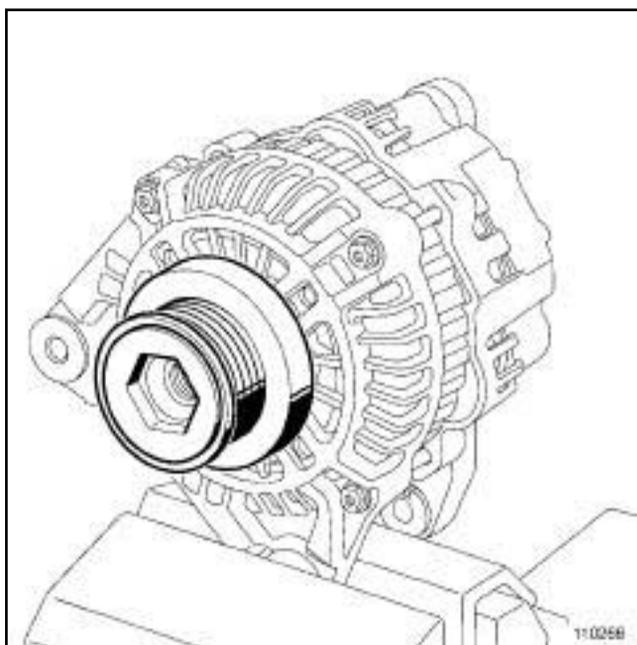
Tightening torques

alternator pulley	80 N.m
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I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) .
- Disconnect the battery (see **Battery: Removal - Refitting**) .
- Remove:
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting, page 11A-2**) ,
 - the alternator (see **16A, Starting - Charging, Alternator: Removal - Refitting, page 16A-1**) .

II - REMOVAL OPERATION FOR ALTERNATOR PULLEY



- Unclip the alternator pulley protector (if equipped).
- Place the alternator in a vice jaw.

STARTING - CHARGING

Alternator pulley: Removal - Refitting

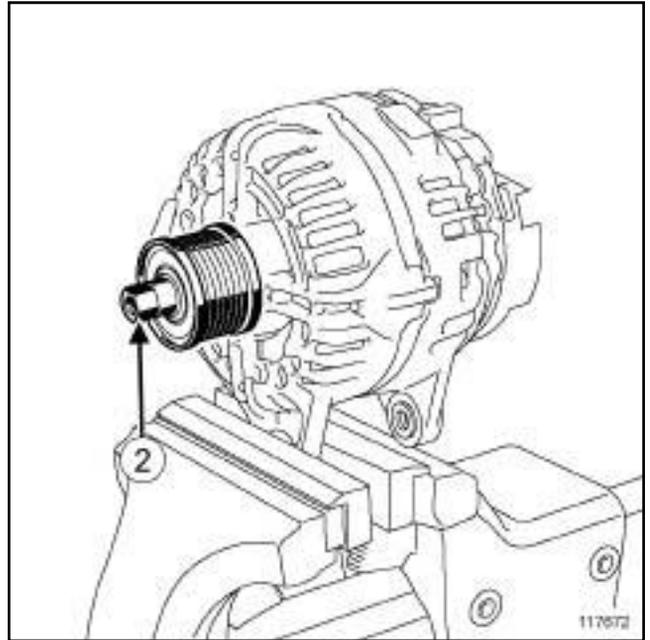
16A

K4M

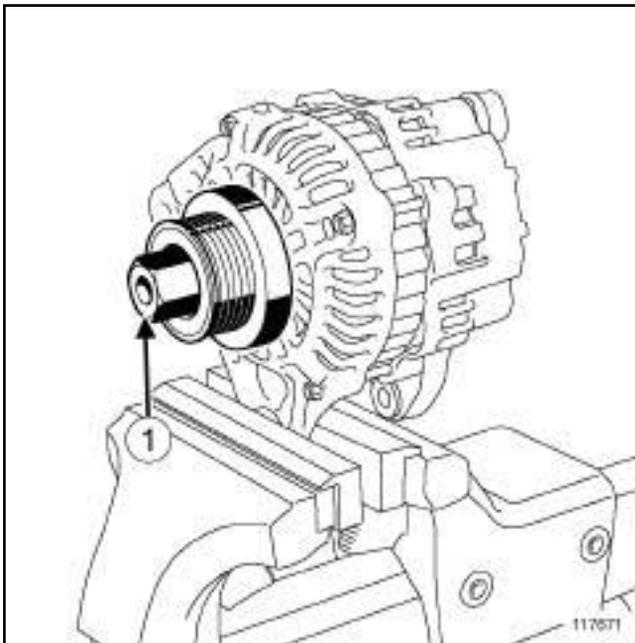
Mot. 1732



110276



117672



117671

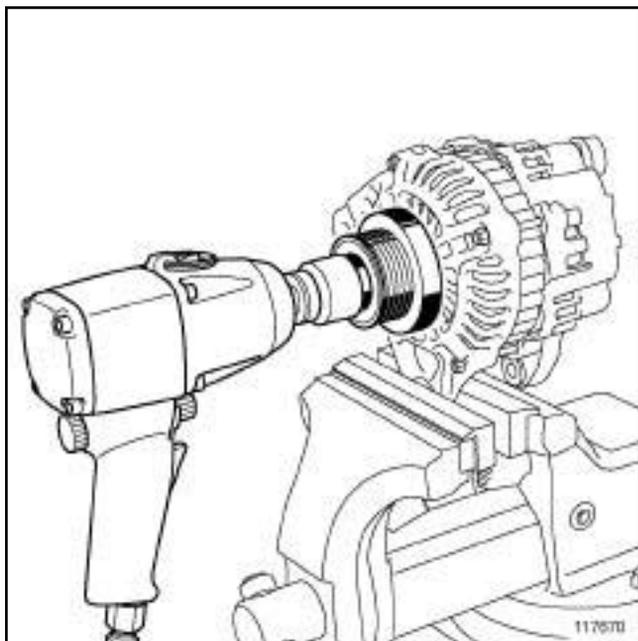
- Position the hexagonal socket (1) or the splined socket (2) from the kit in the alternator pulley (depending on the version).

STARTING - CHARGING

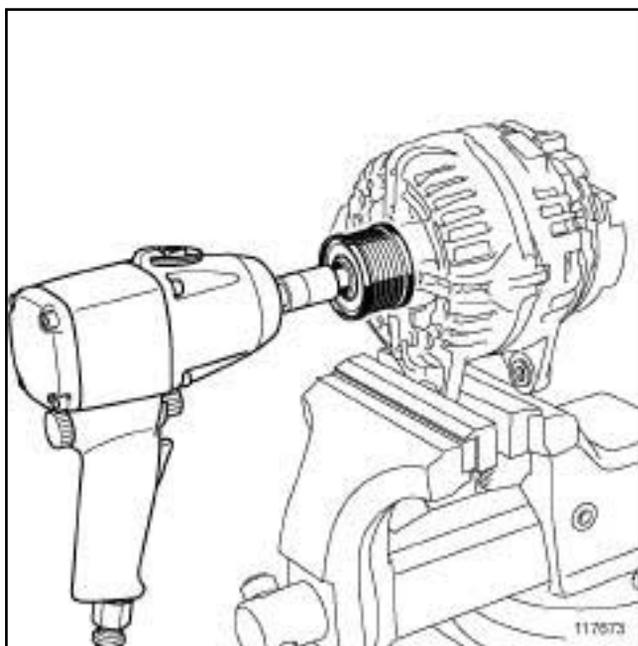
Alternator pulley: Removal - Refitting

16A

K4M



117670



117673

□

Note:

Always use a pneumatic or electric impact wrench to loosen the alternator pulley

Loosen the alternator pulley using a **pneumatic or electric wrench**.

□

Remove:

- the tools,

- the alternator pulley.

III - REFITTING PREPARATION OPERATION

□ parts always to be replaced: Accessories belt

parts always to be replaced: Accessories fixed roller

parts always to be replaced: Accessories belt tensioning roller

parts always to be replaced: Accessories tensioning roller bolt

parts always to be replaced: Alternator pulley

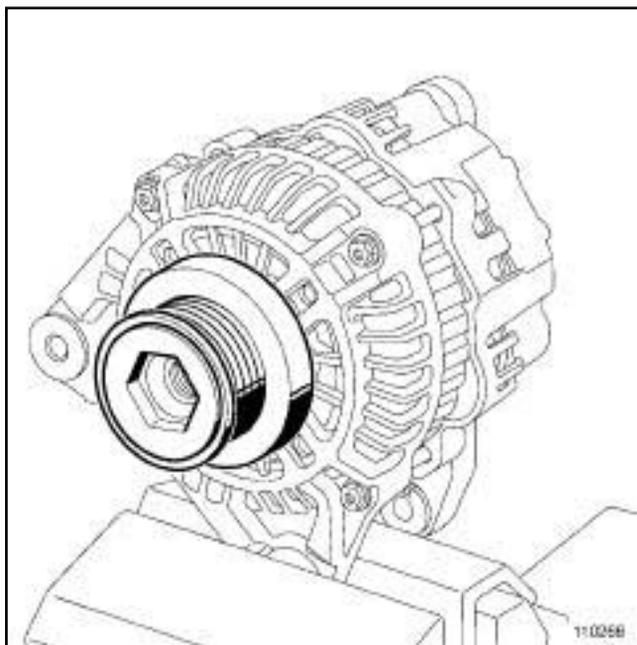
STARTING - CHARGING

Alternator pulley: Removal - Refitting

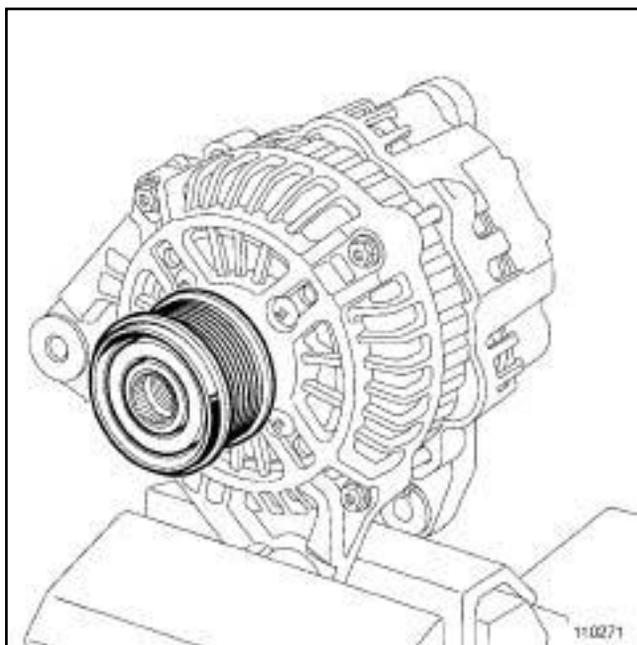
16A

K4M

IV - REFITTING OPERATION FOR THE ALTERNATOR PULLEY

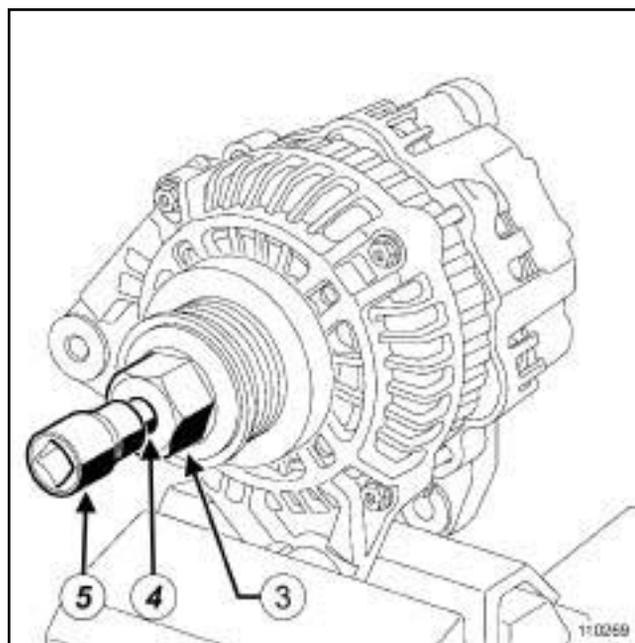


110266

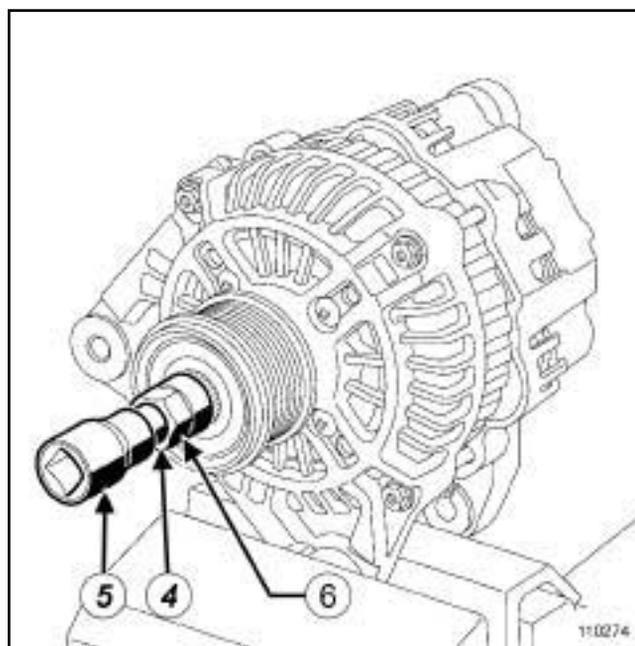


110271

- Tighten the new alternator pulley.



110269

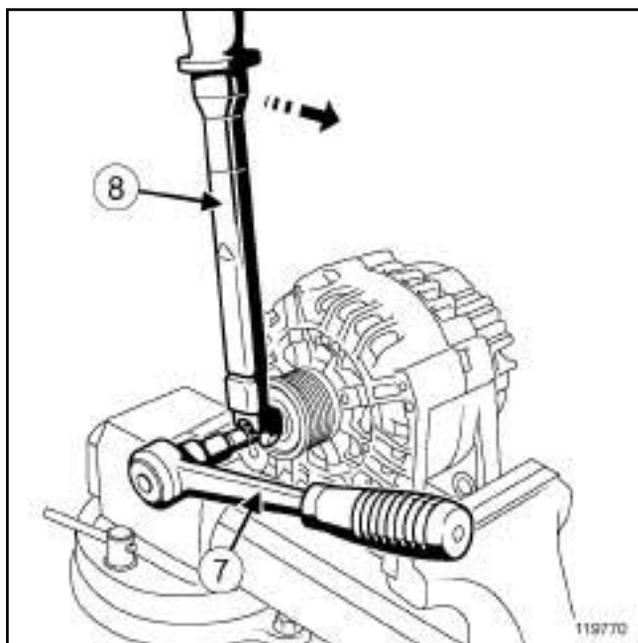


110274

□ Position:

- the hexagonal socket (3) or the splined socket (6) in the alternator pulley (depending on the version),
- the end piece (4) in the recess of the alternator rotor,
- the end piece holder (5) on the end piece.

K4M



119770

- Immobilise the alternator rotor using the spanner (7) .
- Torque tighten the **alternator pulley (80 N.m)** using the **torque wrench (8)** equipped with a **15mm open-ended spanner for torque wrench**.
- Remove the tools.
- Clip the new protector onto the alternator pulley (if equipped).

V - FINAL OPERATION

- Refit:
 - the alternator (see **16A, Starting - Charging, Alternator: Removal - Refitting**, page 16A-1) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-2) .
- Connect the battery (see **Battery: Removal - Refitting**) .

STARTING - CHARGING

Alternator pulley: Removal - Refitting

16A

K9K

Tightening torques

alternator pulley nut	80 N.m
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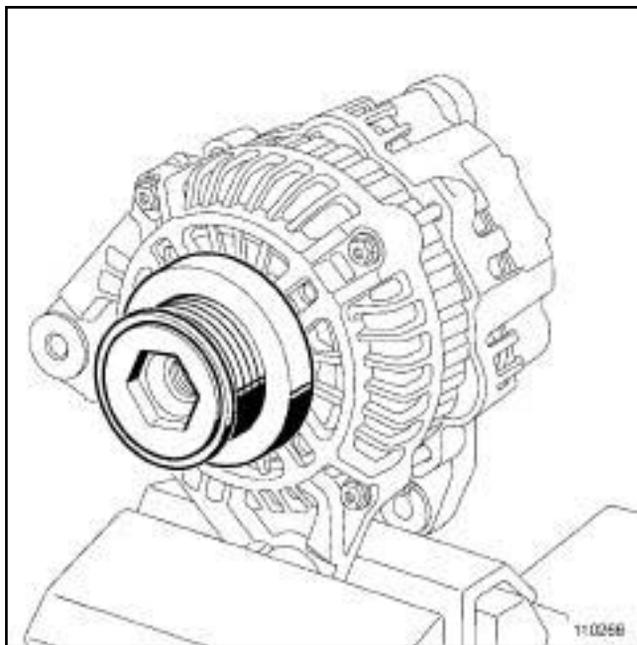
REMOVAL

I - REMOVAL PREPARATION OPERATION

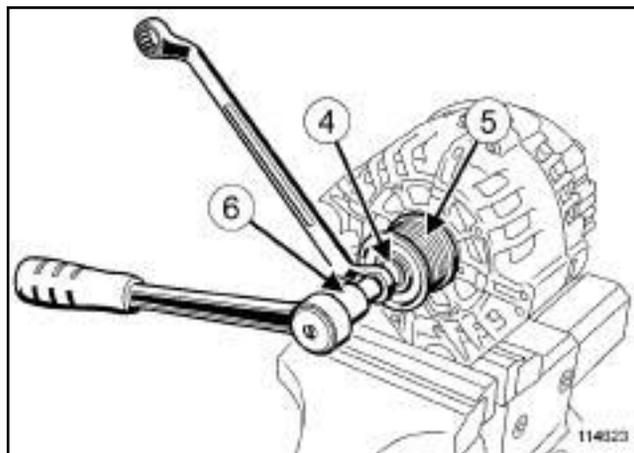
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-2) ,
 - the alternator (see **16A, Starting - Charging, Alternator: Removal - Refitting**, page 16A-1) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Unclip the alternator pulley protector (if equipped).



- Place the alternator in a vice jaw.



- Fit:
 - the splined socket (4) of the free wheel pulley (5) ,
 - the end piece and holder assembly (6) of the alternator shaft.
- Immobilise the splined socket (4) .
- Loosen the alternator shaft.
-

Note:

Do not use a screwdriver to remove or refit the pulley. A damaged or deformed front bearing can lead to damage to the alternator.

- Remove the free wheel pulley.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

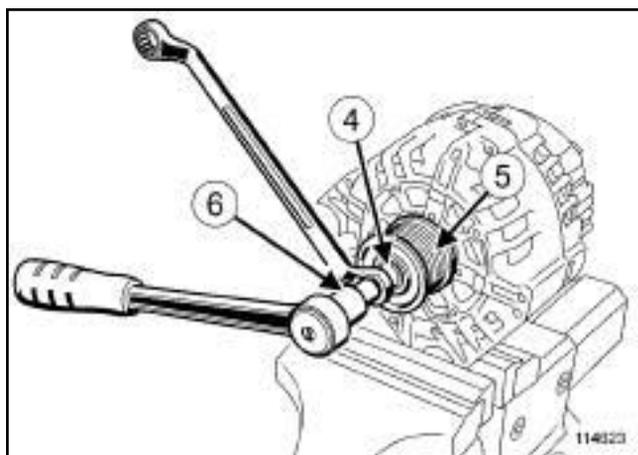
- Refit the pulley to the alternator shaft

STARTING - CHARGING

Alternator pulley: Removal - Refitting

16A

K9K



- Fit:
 - the splined socket (4) of the free wheel pulley (5) ,
 - the end piece and holder assembly (6) of the alternator shaft.
- Immobilise the splined socket (4) .
- Torque tighten the **alternator pulley nut (80 N.m)**.
- Turn the pulley by hand to check that the rotor turns easily.
- Clip on the alternator pulley protector (if equipped).

II - FINAL OPERATION

- Refit:
 - the alternator (see **16A, Starting - Charging, Alternator: Removal - Refitting**, page 16A-1) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-2) .
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

IGNITION

Coils: Removal - Refitting

17A

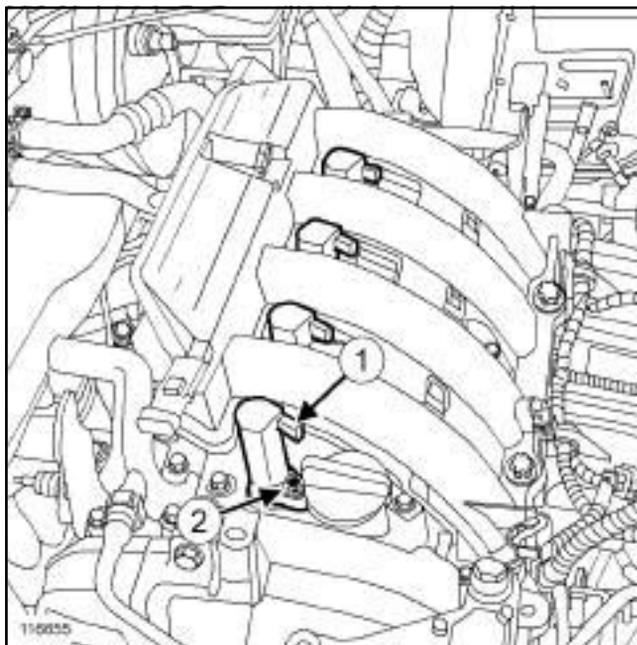
K4M

Tightening torques

ignition coil bolts	14 N.m
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REMOVAL

REMOVAL OPERATION



116655

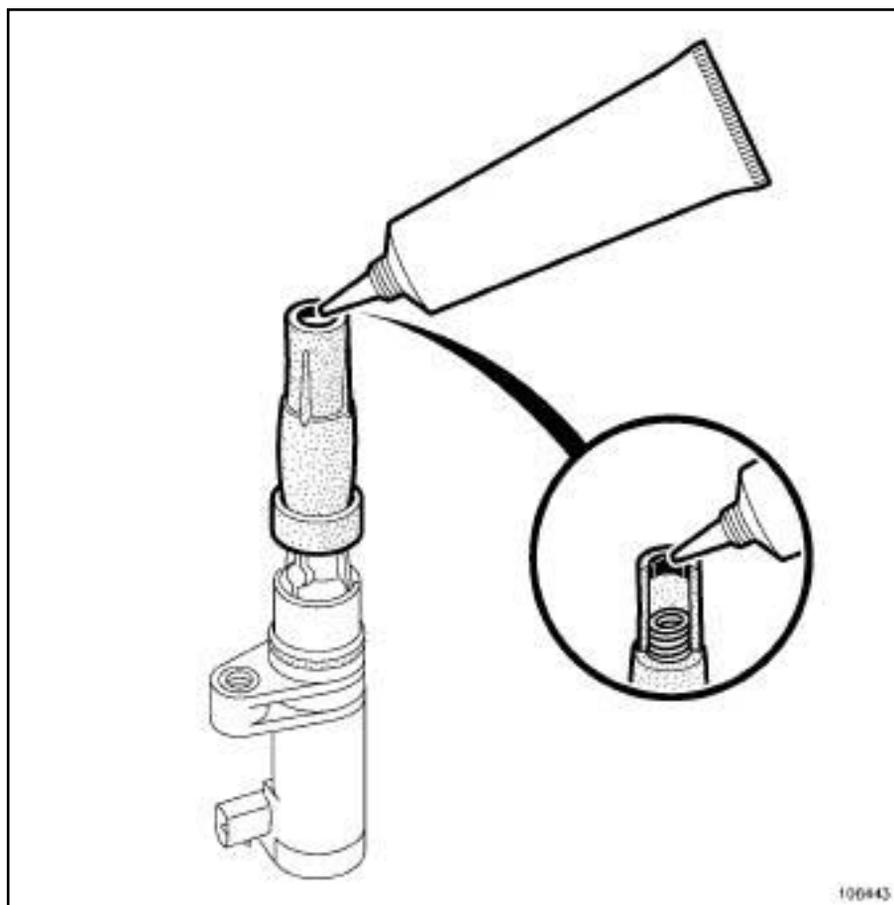
- Disconnect the connectors (1) from the ignition coils.
- Remove:
 - the ignition coil bolts (2) ,
 - the ignition coils.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the **ignition coil bolts**.
- If necessary, replace the ignition coil O-rings.

K4M



106443

106443

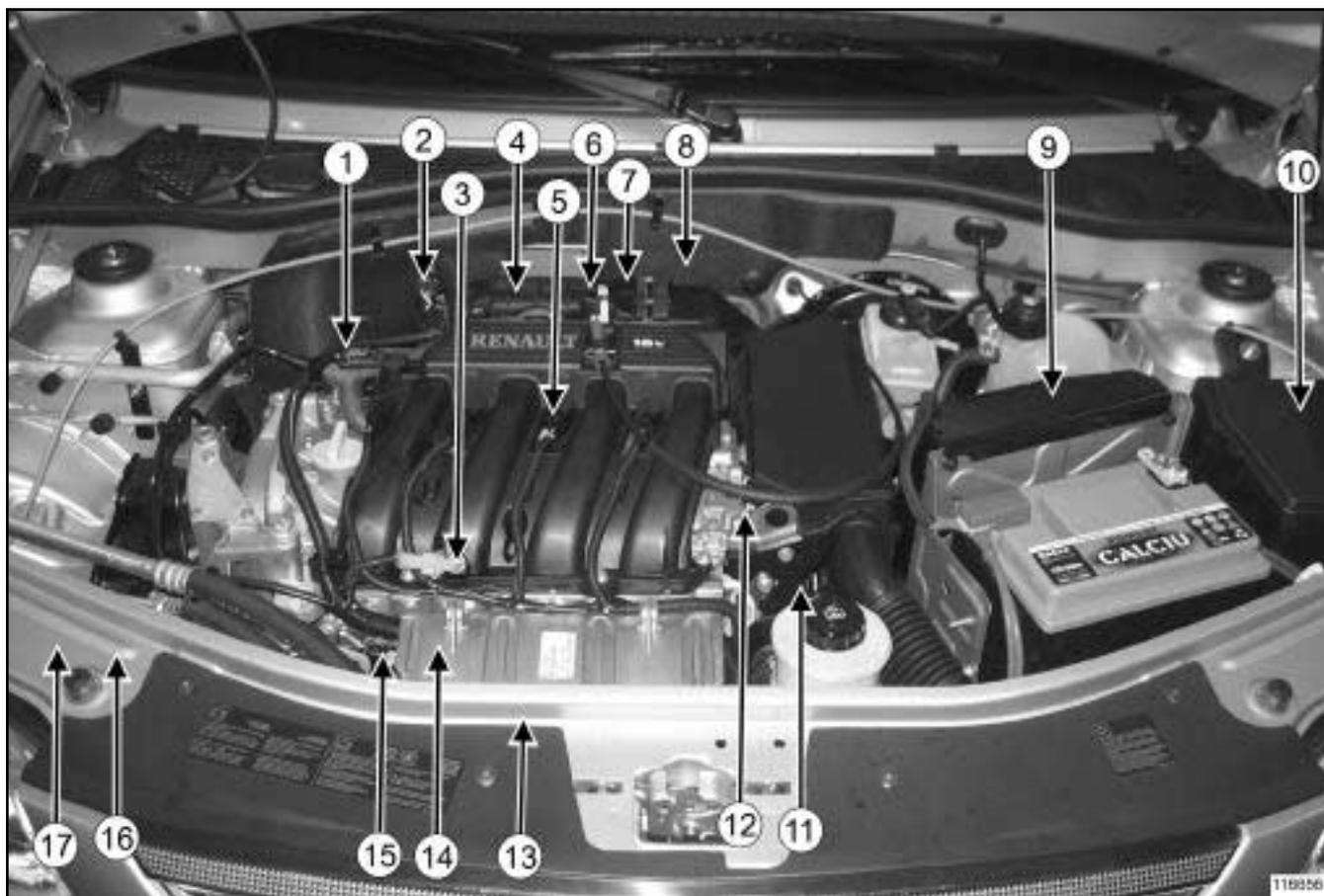
- When refitting the ignition harness, it is essential to apply a bead of **FLUOSTAR 2L 2 mm** in diameter around the inner edge of the high-tension caps on the side of the spark plugs and coil (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables-Products).

II - REFITTING OPERATION

- Refit:
 - the ignition coils,
 - the new ignition coil bolts.
- Torque tighten the **ignition coil bolts (14 N.m)**.
- Connect the ignition coil connectors.

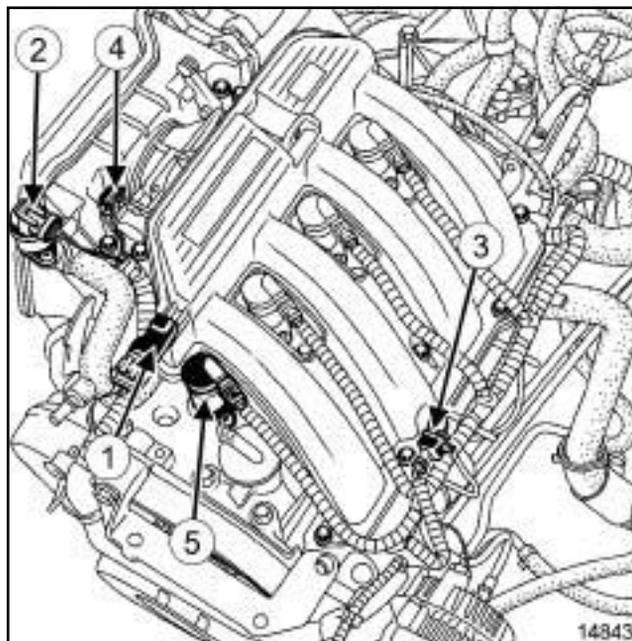
Petrol injection: List and location of components

K4M



116656

- (1) Air pressure sensor
- (2) Idle speed stepper motor
- (3) Air temperature sensor
- (4) Throttle position potentiometer
- (5) Ignition coil
- (6) Throttle valve
- (7) Upstream oxygen sensor
- (8) Downstream oxygen sensor
- (9) Injection computer
- (10) Relay unit
- (11) Crankshaft position sensor
- (12) Coolant temperature sensor
- (13) Pinking sensor
- (14) Injectors
- (15) Injector rail
- (16) Fuel vapour recirculation solenoid valve
- (17) Petrol vapour absorber



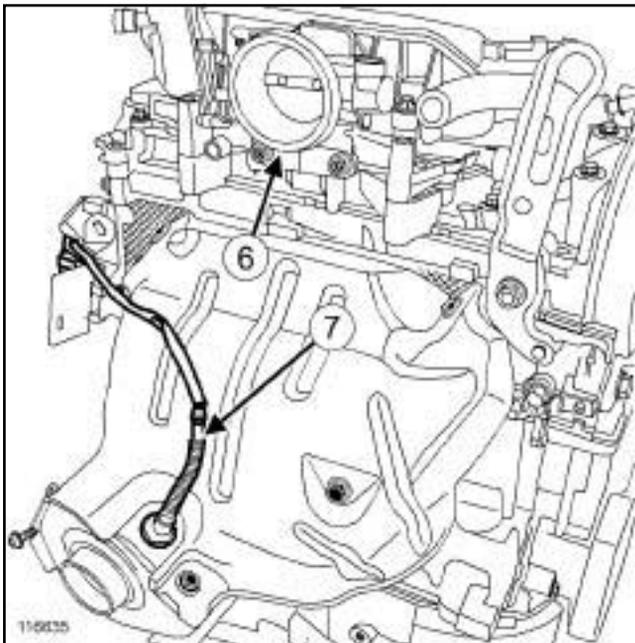
14843

- (1) Air pressure sensor
- (2) Idle speed stepper motor
- (3) Air temperature sensor

Petrol injection: List and location of components

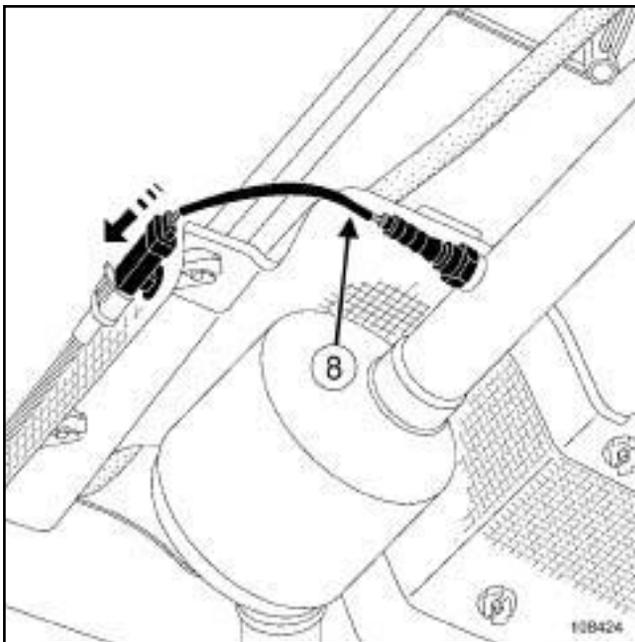
K4M

- (4) Throttle position potentiometer
- (5) Ignition coil



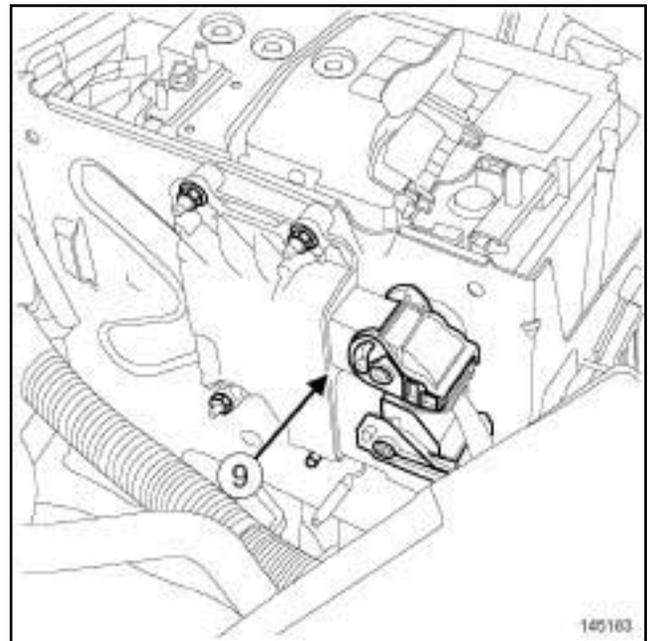
116635

- (6) Throttle valve
- (7) Upstream oxygen sensor



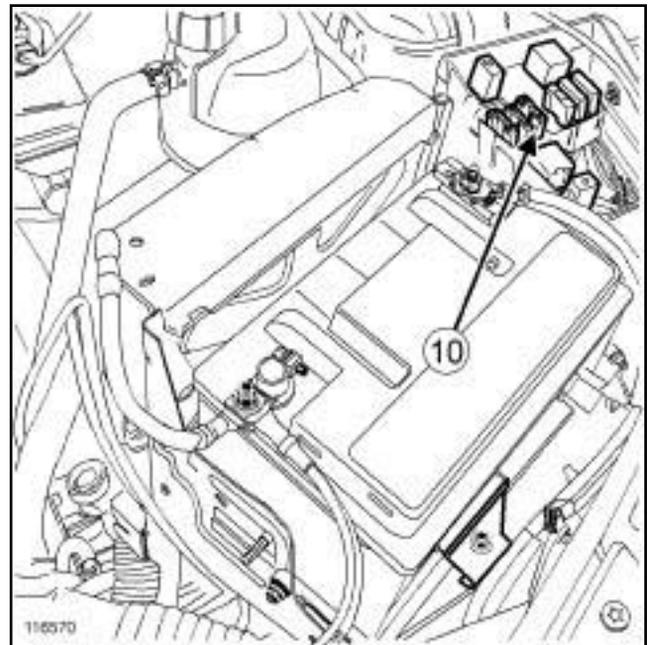
108424

- (8) Downstream oxygen sensor



145183

- (9) Injection computer

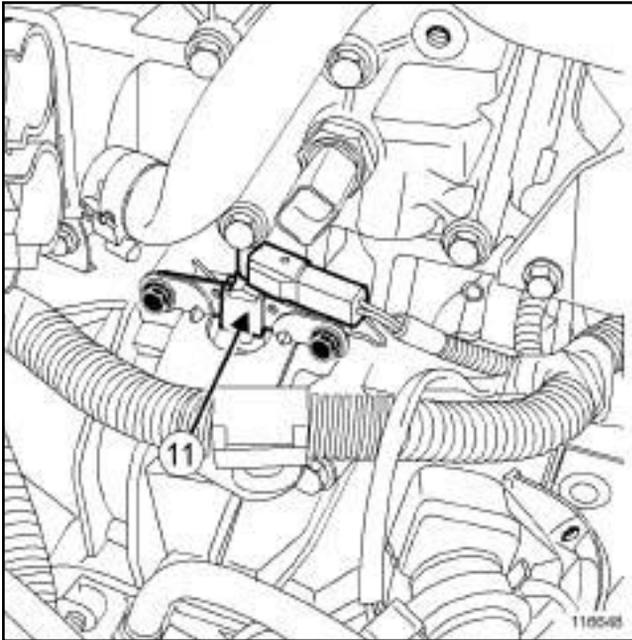


116570

- (10) Relay unit

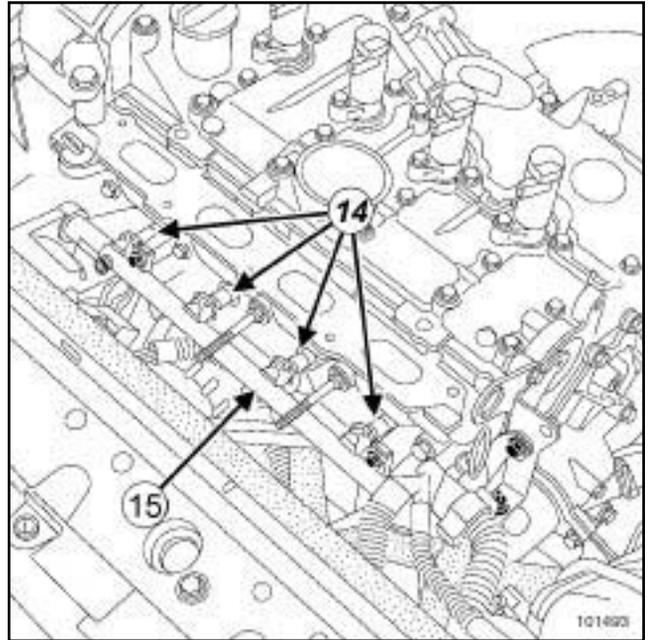
Petrol injection: List and location of components

K4M



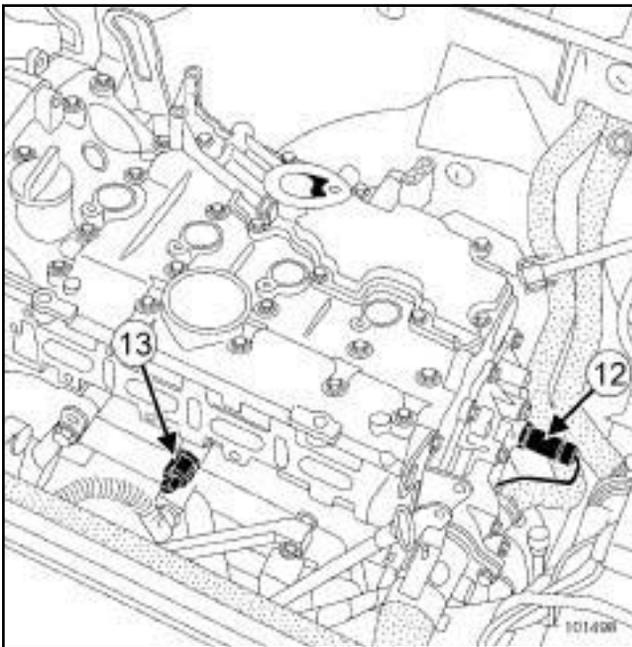
116648

(11) Crankshaft position sensor



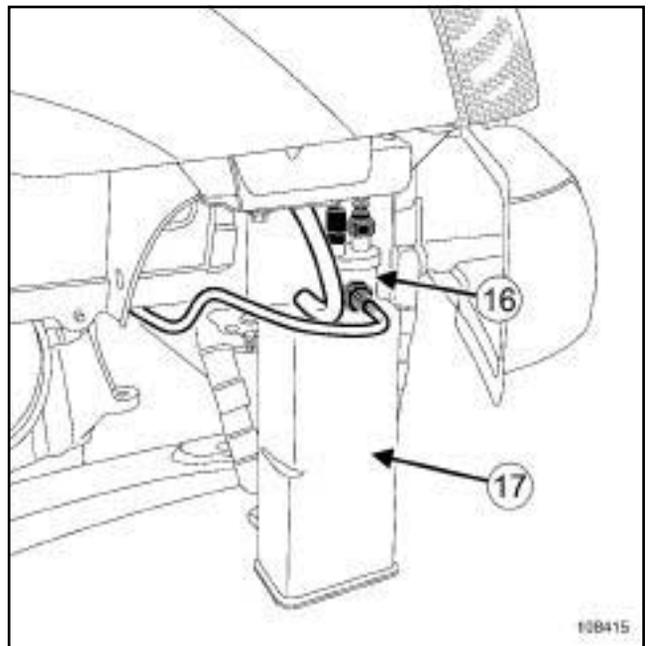
101493

(14) Injectors
(15) Injector rail



101498

(12) Coolant temperature sensor
(13) Pinking sensor



108415

(16) Fuel vapour recirculation solenoid valve
(17) Petrol vapour absorber

PETROL INJECTION

Oxygen sensors: Removal - Refitting

17B

K4M

Tightening torques

upstream oxygen sensor	45 N.m
downstream oxygen sensor	45 N.m

WARNING

Do not use any product designed to improve the electrical contact in the injection computer and oxygen sensor connectors or on the bodies of the oxygen sensors.

Failure to respect this advice causes the oxygen sensor to malfunction and results in failure to comply with the emission control standard.

WARNING

If the connections are corroded, repair the wiring (see **Wiring: Precautions for repair**) (Technical Note 6015A, 88A, Wiring).

REMOVAL

I - REMOVAL PREPARATION OPERATION

1 - Upstream oxygen sensor

Remove:

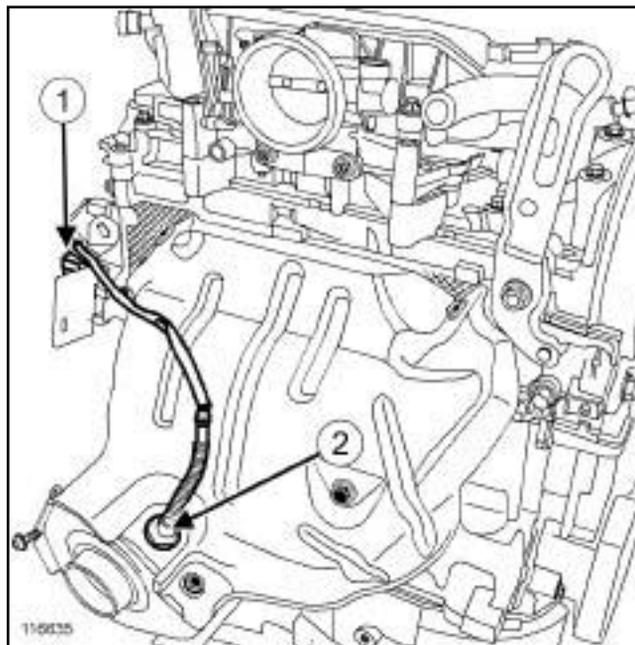
- the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2),
- the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-6).

2 - Downstream oxygen sensor

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

II - REMOVAL OPERATION

1 - Upstream oxygen sensor

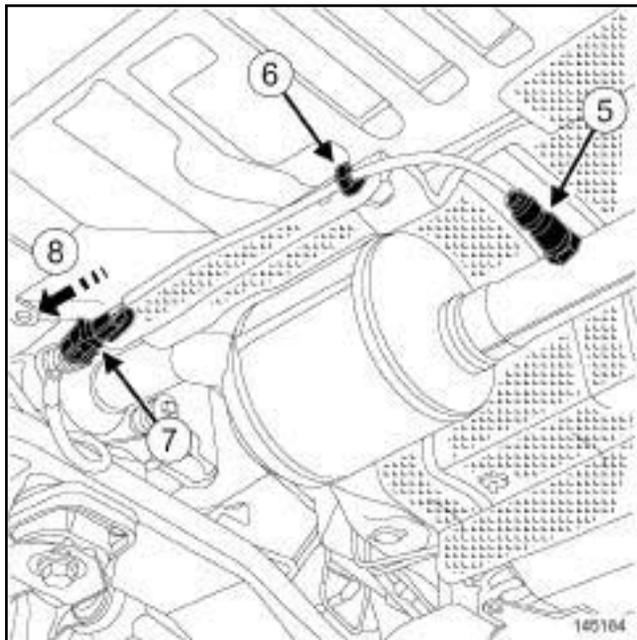


116635

- Disconnect the upstream oxygen sensor connector (1).
- Unclip the upstream oxygen sensor wiring.
- Remove the upstream oxygen sensor (2) using the.

K4M

2 - Downstream oxygen sensor



145184

- Unclip the wiring from the downstream oxygen sensor at (6) .
- Remove the downstream oxygen sensor connector (7) from its mounting by sliding it (8) .
- Disconnect the downstream oxygen sensor connector.
- Remove the downstream oxygen sensor (5) using the.

REFITTING

I - REFITTING OPERATION

1 - Upstream oxygen sensor

- Refit the upstream oxygen sensor.
- Torque tighten the **upstream oxygen sensor (45 N.m)** using the.
- Attach the upstream oxygen sensor wiring.
- Connect the upstream oxygen sensor connector.

2 - Downstream oxygen sensor

- Refit the downstream oxygen sensor.
- Torque tighten the **downstream oxygen sensor (45 N.m)** using the tool.
- Connect the downstream oxygen sensor connector.
- Refit the downstream oxygen sensor connector in its support.

- Clip on the downstream oxygen sensor wiring at (6) .

II - FINAL OPERATION

Upstream oxygen sensor

- Refit:
 - the air filter unit (see 12A, **Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-6) ,
 - the air resonator (see 12A, **Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .

Throttle valve potentiometer: Removal -Refitting

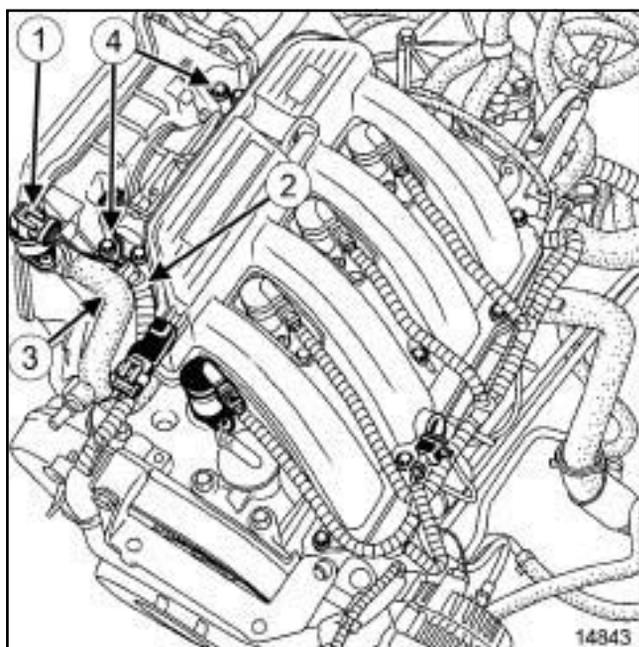
K4M

Tightening torques 	
throttle valve potentiometer bolts	2.4 N.m
air filter unit bolts	9 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

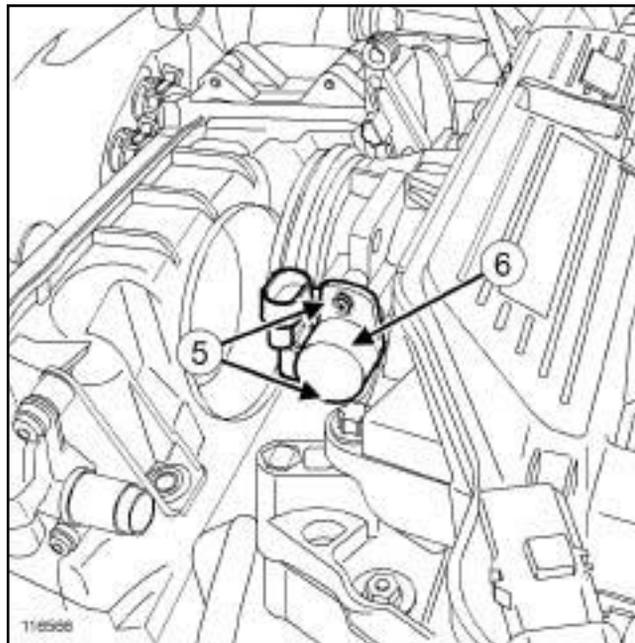
- Remove the air resonator (see 12A, **Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .



14843

- Disconnect:
 - the connector (1) from the idle speed regulation stepping motor,
 - the connector (2) from the throttle valve potentiometer,
 - the petrol vapour recirculation pipe (3) .
- Remove the two bolts (4) from the air filter unit.
- Remove the air filter unit from the throttle valve.

II - REMOVAL OPERATION



116566

- Remove:
 - the two bolts (5) from the throttle valve potentiometer,
 - the throttle valve potentiometer (6) .

REFITTING

I - REFITTING OPERATION

- Refit:
 - the throttle valve potentiometer,
 - the two throttle valve potentiometer bolts.
- Torque tighten the **throttle valve potentiometer bolts (2.4 N.m)** using the tool.

II - FINAL OPERATION

- Refit the air filter unit in place.
- Refit the two air filter unit bolts.
- Torque tighten the **air filter unit bolts (9 N.m)**.
- Connect:
 - the petrol vapour recirculation pipe,
 - the connector from the throttle valve potentiometer,
 - the idle speed regulation stepping motor connector.
- Refit the air resonator (see 12A, **Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .

Petrol injection computer: Removal - Refitting

K4M

Equipment required

Diagnostic tool

Tightening torques

injection computer nuts **8 N.m**

WARNING

Do not use any product designed to improve the electrical contact in the injection computer and oxygen sensor connectors or on the bodies of the oxygen sensors.

Failure to respect this advice causes the oxygen sensor to malfunction and results in failure to comply with the emission control standard.

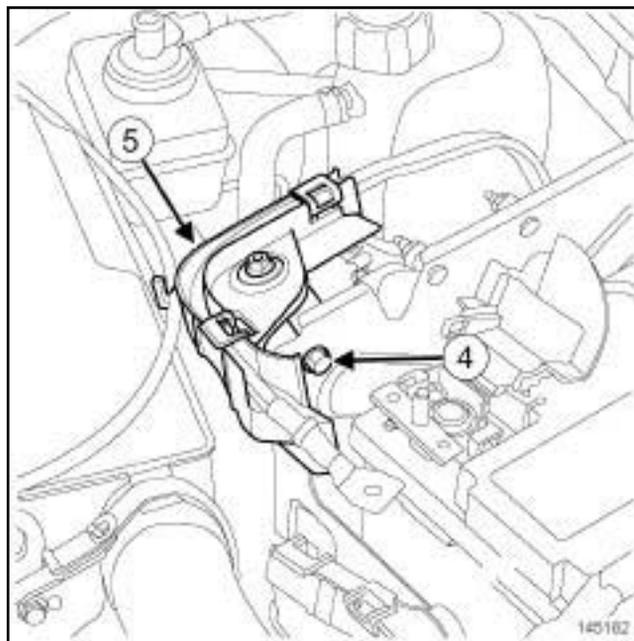
WARNING

If the connections are corroded, repair the wiring (see **Wiring: Precautions for repair**) (Technical Note 6015A, 88A, Wiring).

REMOVAL

I - REMOVAL PREPARATION OPERATION

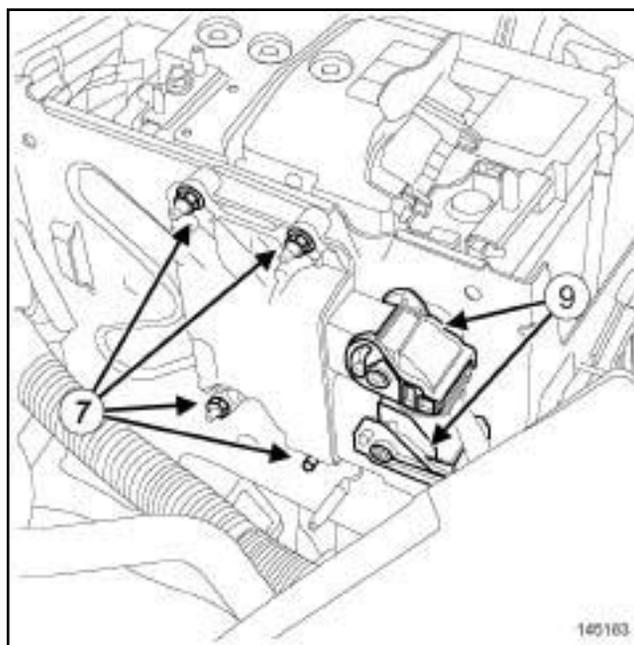
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).



145182

- Remove the bolt (4) from the channel (5) .
- Move aside the channel.

II - REMOVAL OPERATION



145183

- Disconnect the two injection computer connectors (9) .
- Remove:
 - the injection computer nuts (7) ,
 - the injection computer.

Petrol injection computer: Removal - Refitting

K4M

REFITTING

I - REFITTING OPERATION

- Refit the injection computer.
- Torque tighten the **injection computer nuts (8 N.m)**.
- Connect the two connectors of the injection computer.

II - FINAL OPERATION

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

III - WHEN REPLACING THE INJECTION COMPUTER

- The computer supplied as a spare part is not operational (also known as "blank").
- After replacing the injection computer, program it using the **Diagnostic tool** (see **Technical Note 9869A, Procedure for programming and reprogramming the computer**).
- Carry out the configuration and/or necessary programming (see **Fault finding - Replacement of components**) (17B, Petrol injection).

Crankshaft position sensor: Removal - Refitting

K4M

Equipment required

Diagnostic tool

Tightening torques

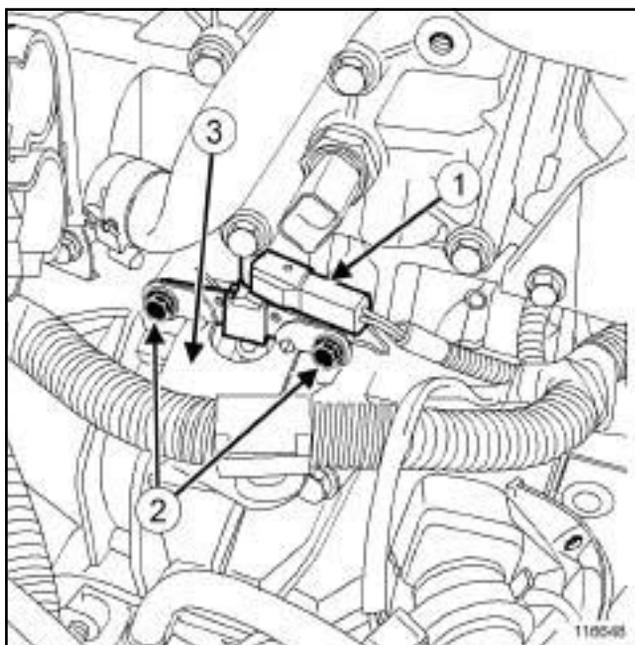
crankshaft position sensor bolts	8 N.m
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REMOVAL

I - REMOVAL PREPARATION OPERATION

- Remove the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .

II - REMOVAL OPERATION



116648

- Disconnect the crankshaft position sensor connector **(1)** .
- Remove the two bolts **(2)** from the crankshaft position sensor.
- Move aside the engine wiring harness mounting support **(3)** .
- Remove the crankshaft position sensor.

REFITTING

I - REFITTING OPERATION

- Refit the crankshaft position sensor.
- Refit the engine wiring harness mounting support.
- Refit the two bolts of the crankshaft position sensor.
- Torque tighten the **crankshaft position sensor bolts (8 N.m)**.

II - FINAL OPERATION

- Refit the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .

III - WHEN REPLACING THE CRANKSHAFT POSITION SENSOR

- Program the flywheel target:
 - perform a deceleration with injection cut-off in second, third, fourth or fifth gear between **3500** and **3000 rpm**, for at least **2 seconds**,
 - perform a deceleration with injection cut-off in second, third, fourth or fifth gear between **2400** and **2000 rpm**, for at least **3 seconds**.
- Use the **Diagnostic tool** to check that this programming has been successfully completed, **ET060 Fly-wheel signal with engine running**.
- Read the fault codes.
- Repair if necessary.
- Clear the fault codes.
- Check that the vehicle is working correctly.

Injector rail - Injectors: Removal - Refitting

K4M

Tightening torques

injector rail bolts	9 N.m
injector rail protector nuts	21 N.m

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

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.

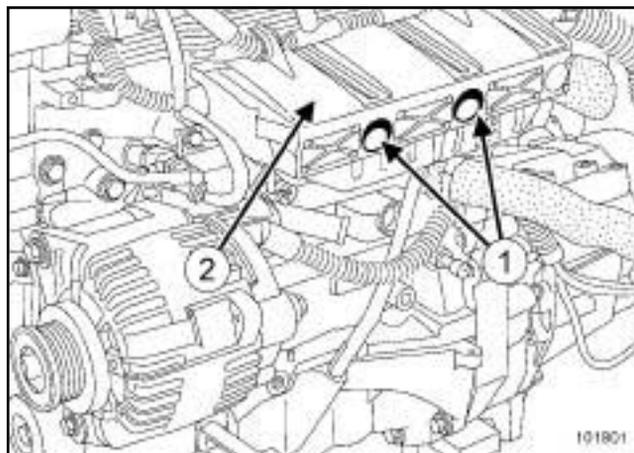
IMPORTANT

Be careful when removing the injectors or the injection rail as there will be a quantity of fuel in the rail and the union.

REMOVAL

I - REMOVAL PREPARATION OPERATION

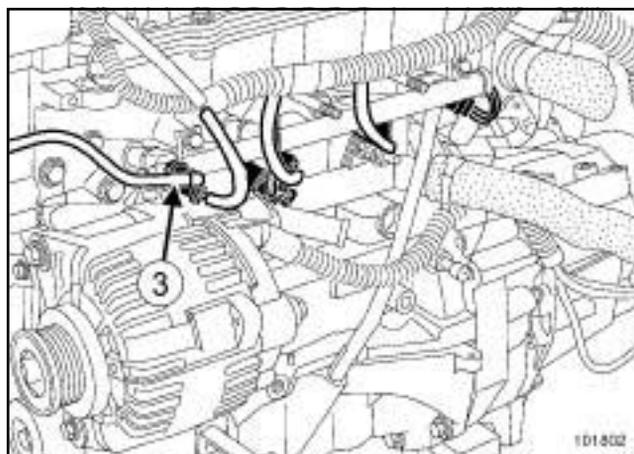
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).



101801

- Remove:

- the two nuts (1) from the injector rail protector,
- the injector rail protector (2) .



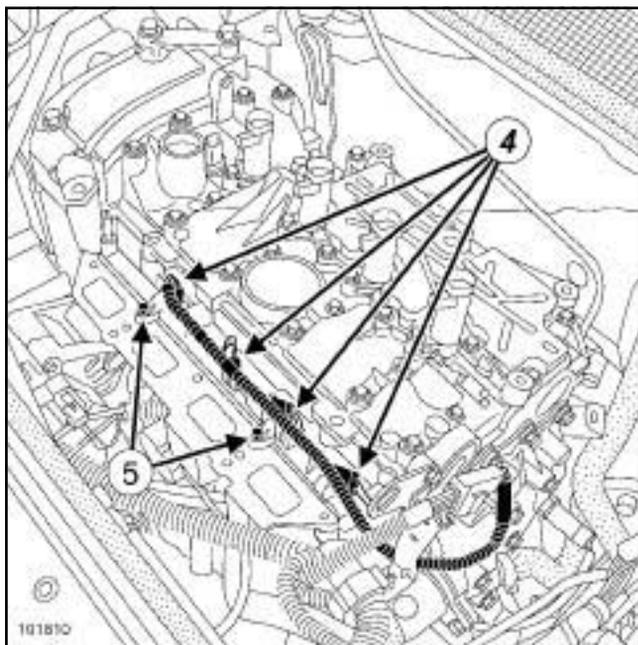
101802

- Disconnect the fuel supply pipe union (3) on the injector rail.
- Fit blanking plugs.

Injector rail - Injectors: Removal - Refitting

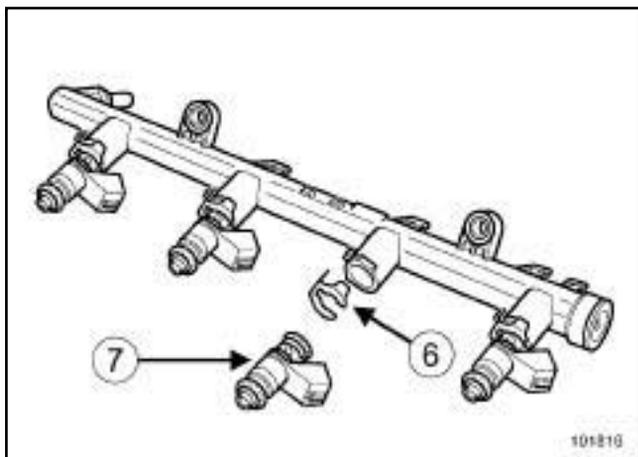
K4M

II - REMOVAL OPERATION



101810

- Disconnect the injector connectors (4) .
- Remove:
 - the injector rail bolts (5) ,
 - the « injector rail-injector » assembly by pulling it carefully towards the front of the vehicle.



101816

- Remove:
 - the retaining clips (6) from the injectors,
 - the injectors (7) .
- Insert the blanking plugs.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: injector clip on injector rail.
- parts always to be replaced: injector seal.
- Refit:
 - new seals on each injector,
 - the injectors on the injector rail,
 - a new clip on each injector.

II - REFITTING OPERATION

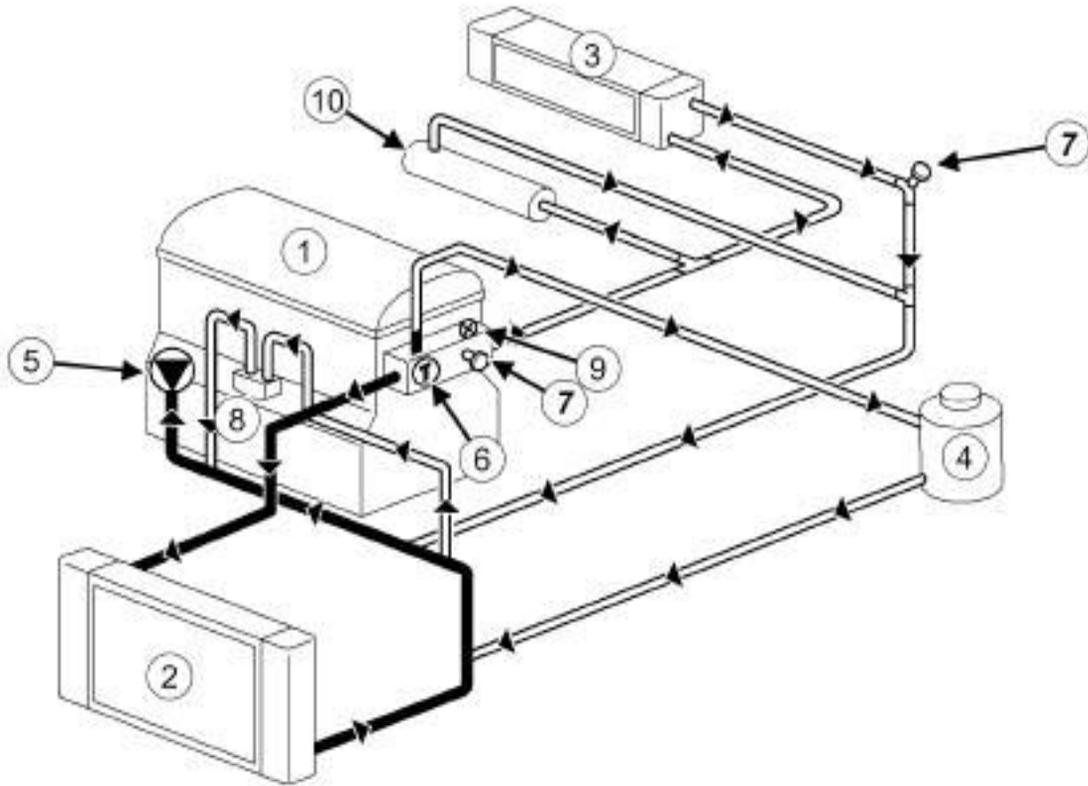
- Remove the blanking plugs.
- Fit the « injector rail-injector » assembly.
- Torque tighten the **injector rail bolts (9 N.m)**.

III - FINAL OPERATION

- Connect:
 - the injector connectors,
 - the fuel supply union onto the injector rail,
- Refit the injector rail protector.
- Torque tighten the two **injector rail protector nuts (21 N.m)**.
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

Engine cooling system: Operating diagram

K9K, and 796



133248

133248

- | | |
|------|--------------------------|
| (1) | Engine |
| (2) | Cooling radiator |
| (3) | Heater radiator |
| (4) | Expansion bottle |
| (5) | Water pump |
| (6) | Thermostat |
| (7) | Bleed screw |
| (8) | Oil-water heat exchanger |
| (9) | Temperature switch |
| (10) | EGR |

Engine cooling system: Specifications

Vehicles in the current range have cooling systems with the following basic specifications:

- hermetically-sealed pressurised circuit (expansion chamber valve),
- circuit using a type "D" coolant,
- passenger compartment heating system via a "heater matrix" type radiator under the dashboard.

I - GRADE AND QUANTITY OF COOLANT

Engine	Quantity (litres)	Grade
K4M	Approximately 5.45 (version with AC) Approximately 4.5 (version without AC)	GLACEOL RX (TYPE D) Use coolant only.
K9K		

Special notes:

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for very cold countries

II - THERMOSTAT

Engine	Start of opening (°C)	End of opening (°C)
K4M	89	99 ± 2
K9K		

Engine cooling system: Check

IMPORTANT

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

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

Note:

There are two procedures for checking the cooling system:

- the procedure using the
- the procedure using the

Expansion bottle cap valve rating:

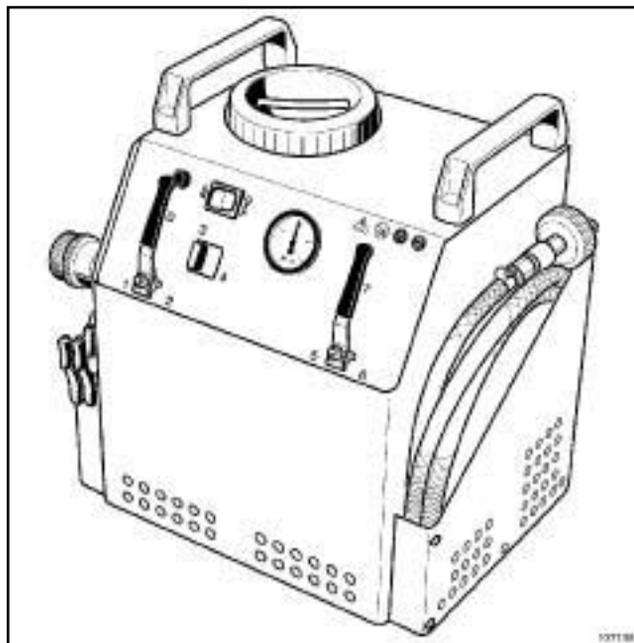
Expansion bottle cap with ...	Valve rating
... a brown circle	1.2 bar
... a yellow marking	1.4 bar
... a white marking	1.6 bar
... a grey marking	1.8 bar

I - CHECKING THE COOLING SYSTEM USING THE TOOL (MOT. 1700)

WARNING

If the coolant is leaking from the expansion bottle cap, replace the valve.

1 - Checking the expansion bottle cap valve



107138

- Use the cooling system filling and diagnostic tool. Consult the user's manual for this tool (see **Cooling system filling and diagnostic tool: Use**) (Technical Note 3857A, 19A, Cooling).

2 - Checking the sealing of the cooling circuit

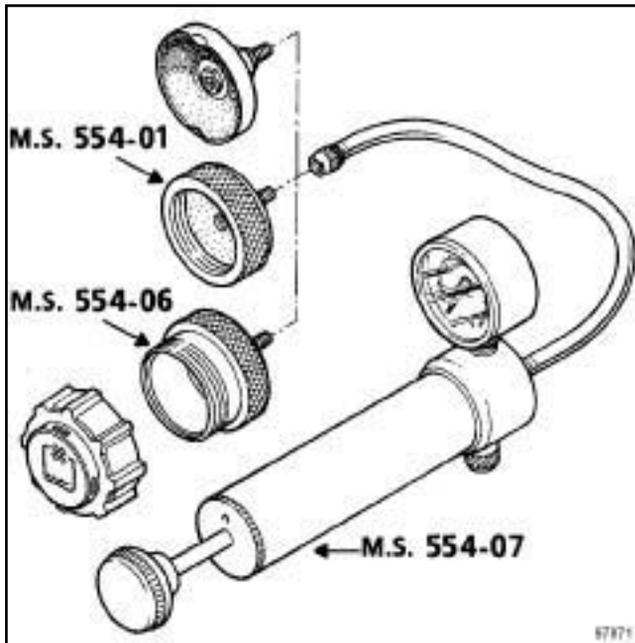
- Use the cooling system filling and diagnostic tool. Consult the user's manual for this tool (see **Cooling system filling and diagnostic tool: Use**) (Technical Note 3857A, 19A, Cooling).

II - CHECKING THE COOLING SYSTEM USING THE TOOL (MS. 554-07)

WARNING

If the coolant is leaking from the expansion bottle cap, replace the valve.

1 - Checking the expansion bottle cap valve



97871

- Fit onto the tester, the adapter (**Ms. 554-06**).
- Fit the expansion bottle cap to the adapter (**Ms. 554-06**).

Note:

The pressure should not drop; if it does, look for the leak.

- Pump with the, the pressure should stabilise at the expansion bottle cap valve rating with a test tolerance of ± 0.1 bar.

2 - Checking the sealing of the cooling circuit

- Replace the expansion bottle cap with the adapter (**Ms. 554-01**).
- Connect on the adapter (**Ms. 554-01**) the tool.
- Pump with the to put the cooling circuit under pressure.
- Stop pumping at **0.1 bar** below the valve rating for the expansion bottle cap valve.

Note:

The pressure should not drop; if it does, look for the leak.

- Gradually unscrew the union of the to decompress the cooling system then remove the adapter (**Ms. 554-01**) and refit the expansion bottle cap.

Engine cooling circuit: List and location of components

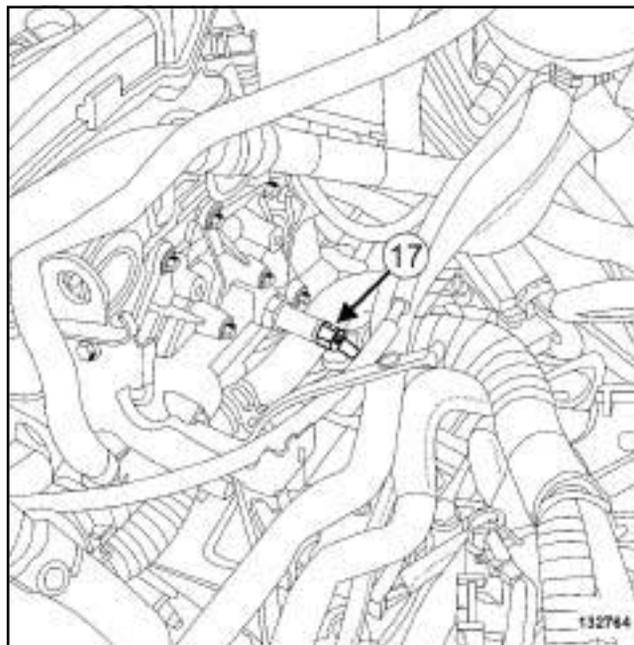
K4M

I - LIST OF COMPONENTS

The engine cooling system is composed of:

- an engine cooling fan assembly (see 19A, **Cooling, Engine cooling fan assembly: Removal - Refitting**, page 19A-27) ,
- a cooling radiator (see 19A, **Cooling, Cooling radiator: Removal - Refitting**, page 19A-9) ,
- a coolant pump (see 19A, **Cooling, Coolant pump: Removal - Refitting**, page 19A-13) ,
- a thermostat (see 19A, **Cooling, Thermostat: Removal - Refitting**, page 19A-19) ,
- a water chamber (see 19A, **Cooling, Water chamber: Removal - Refitting**, page 19A-22) ,
- a coolant pump inlet pipe (see 19A, **Cooling, Coolant pump inlet pipe: Removal - Refitting**, page 19A-34) ,
- an expansion bottle (see 19A, **Cooling, Expansion bottle: Removal - Refitting**, page 19A-38) ,
- a coolant temperature sensor (see 19A, **Cooling, Coolant temperature sensor: Removal - Refitting**, page 19A-40) .

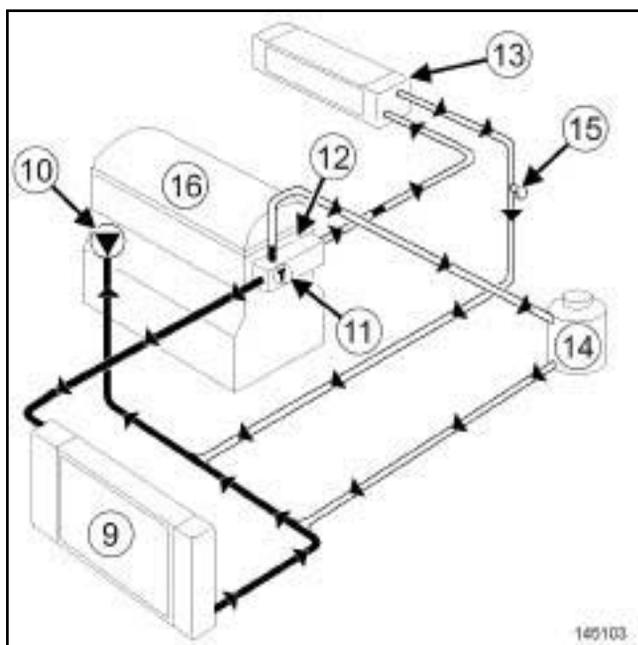
- (14) Expansion bottle
- (15) Bleed screw
- (16) Engine



132764

- (17) Coolant temperature sensor

II - LOCATION OF COMPONENTS



145103

- (9) Cooling radiator
- (10) Water pump
- (11) Thermostat
- (12) Water chamber
- (13) Heater radiator

Cooling system: Draining - Refilling

Special tooling required	
Mot. 1448	Remote operation pliers for hose clips.
Car. 1363	Set of trim removal levers.
Equipment required	
coolant recovery tray	
compressed air nozzle	

IMPORTANT

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

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

I - DRAINING

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the expansion bottle cap,
 - the engine undertray.
- Remove the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection).
- Position the **coolant recovery tray** under the vehicle.
- Remove the cooling radiator bottom hose clip using theoror (**Mot. 1448**).
- Open the cooling system by removing the cooling radiator bottom hose using the tool (**Car. 1363**).
- Use a **compressed air nozzle** to blow air into the system through the expansion bottle opening to remove as much coolant as possible.

II - CLEANING

- Fill the cooling system with water through the expansion bottle.
- Let the water run until the water collected from the cooling radiator bottom hose becomes clear.

- Use a **compressed air nozzle** to blow air into the system through the expansion bottle opening to remove as much coolant as possible.
- Refit the cooling radiator bottom hose.

III - FILLING

-

Note:

There are two procedures for filling the cooling system:

- the method using the tool, is recommended by Renault. It saves a considerable amount of time because it does not require the cooling system bleed screws to be opened,
- the procedure without a special tool.

1 - Filling procedure with the tool (Mot. 1700)

- Fill the cooling system with engine coolant recommended by the manufacturer (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) using the tool. Consult the user's manual for this tool (see) (Technical Note 3857A, 19A, Cooling).

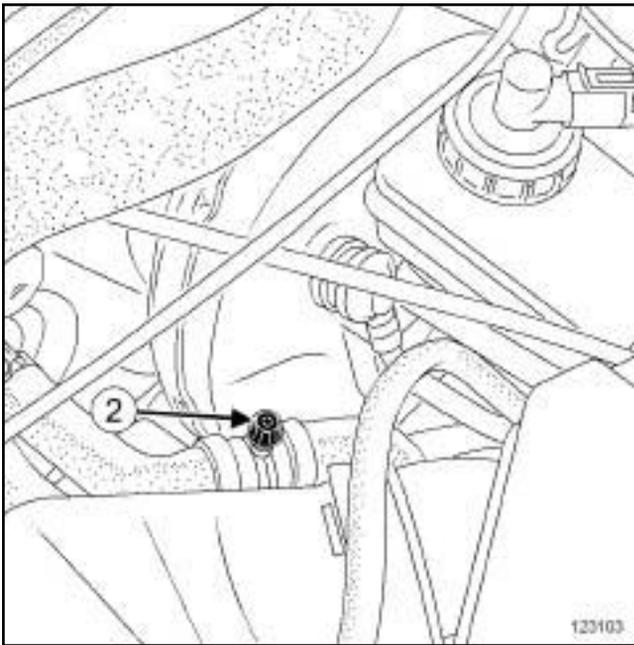
2 - Filling method without special tools

-

WARNING

It is essential to open all of the bleed screws to remove as much as air as possible in the cooling system. Failure to perform this procedure may prevent the cooling system from filling properly and may damage the engine.

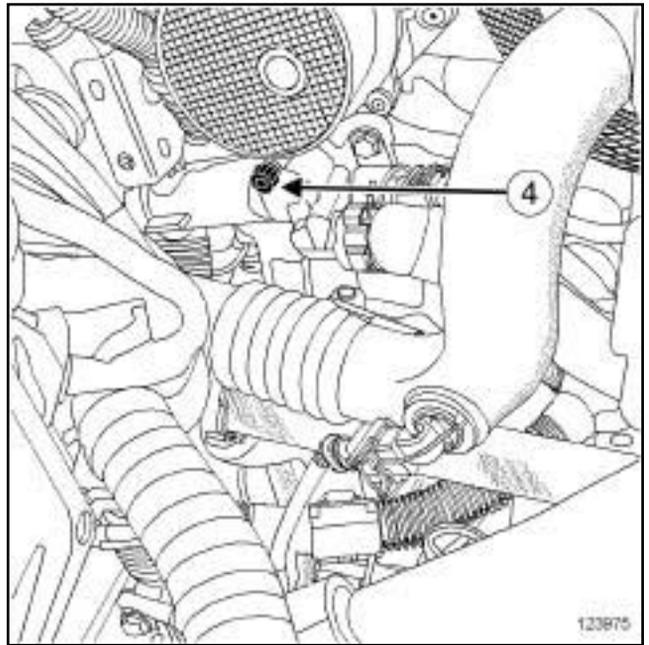
K4M



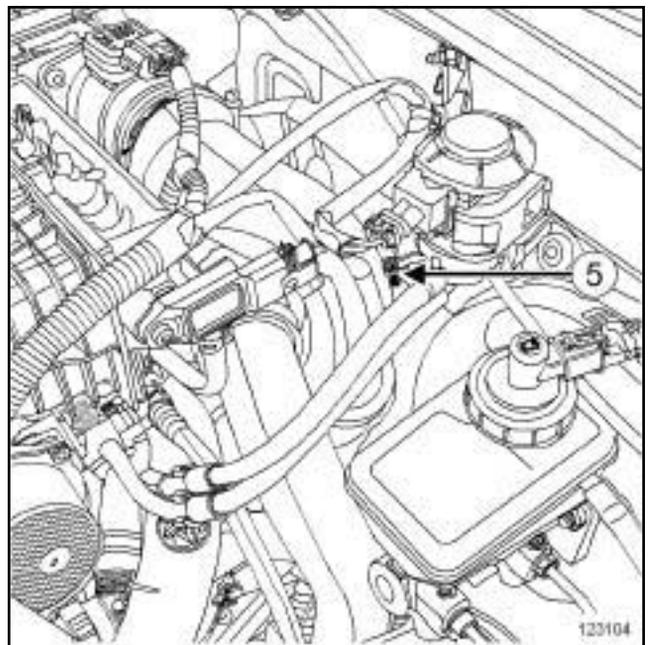
123103

- Open the bleed screw (2) .

K9K



123975



123104

- Open the bleed screws (4) and (5) .

- Fill the cooling system with engine coolant recommended by the manufacturer (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) via the expansion bottle until it overflows.
- Close all the bleed screws as soon as the coolant starts to flow in a continuous stream.

Cooling system: Draining - Refilling

- Pressurise the system using the tool to check that there are no leaks (see **19A, Cooling, Engine cooling system: Check**, page **19A-3**).
- Refit the expansion bottle cap.
- Clean any surfaces soiled by the coolant.

IV - BLEEDING**WARNING**

Do not open the bleed screw whilst the engine is running; this would damage the engine.

Start the engine.

K4M

- Maintain the engine speed at **2,500 rpm** until the engine cooling fan starts for the third time (time required for automatic degassing).

K9K

- Maintain the engine speed at **1500 rpm** varying the engine speed rapidly (until the maximum engine speed is reached) 2 to 3 times approximately every **2 minutes** until the engine cooling fan starts for the second time.

- Check that the heating is operating correctly.
- Let the engine cool until it reaches a coolant temperature below **50°C**.
- Make sure the coolant fluid level is at the « Maximum » mark.
- Refit the expansion bottle cap.

V - FINAL OPERATION

- Remove the **coolant recovery tray**.
- Refit the engine undertray.
- Refit the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection).

Cooling radiator: Removal - Refitting

K4M

Special tooling required

Mot. 1448	Remote operation pliers for hose clips.
Car. 1363	Set of trim removal levers.

IMPORTANT

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

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

WARNING

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

WARNING

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

The criteria to be met are:

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for "extreme cold" countries.

REMOVAL

I - REMOVAL PREPARATION OPERATION

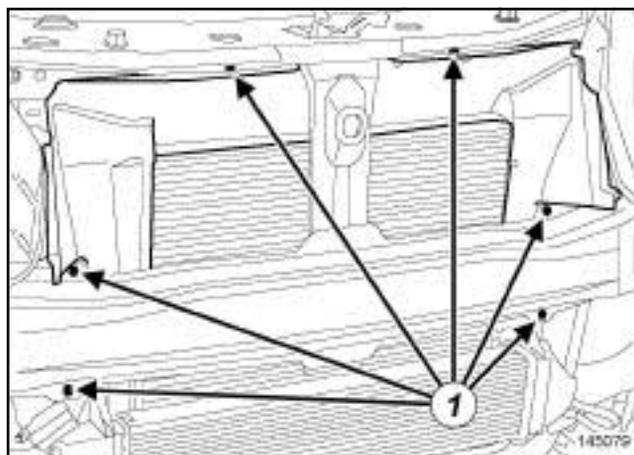
- Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the engine undertray,
 - the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection),

- the injector rail protector (see **13B, Diesel injection, Injector rail: Removal - Refitting**, page 13B-25) ,
- the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) ,
- the fan assembly (see **19A, Cooling, Engine cooling fan assembly: Removal - Refitting**, page 19A-27) .

- Drain the engine cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6)

II - REMOVAL OPERATION

AIR CONDITIONING

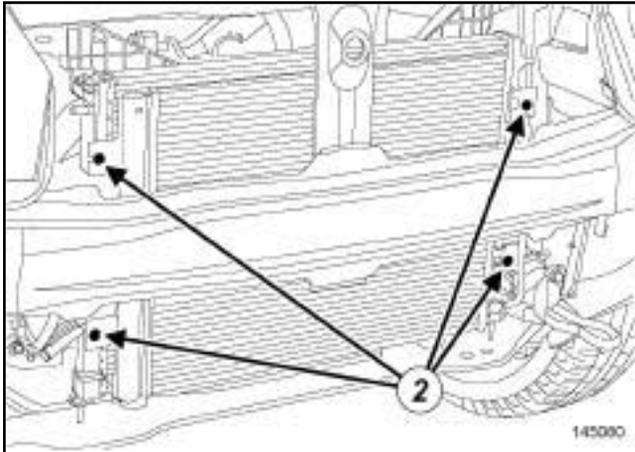


145079

- Remove:
 - the air deflector mounting pins (1) ,
 - the air deflector.
- Attach the condenser to the front impact cross member using a safety strap.

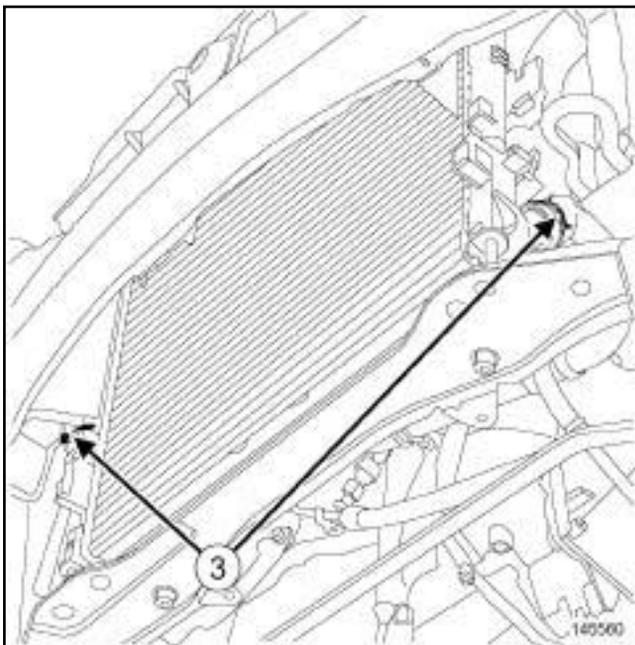
Cooling radiator: Removal - Refitting

K4M



145080

- Remove the condenser bolts (2) .



145560

- Remove the cooling radiator hose clips (3) using the tool (**Mot. 1448**).
- Disconnect the cooling radiator hoses using the (**Car. 1363**).
- Remove the engine cooling radiator from above the vehicle.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the cooling radiator hose clips.

II - REFITTING OPERATION

- Proceed in the reverse order to removal.
- Refill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page **19A-6**).
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

Cooling radiator: Removal - Refitting

K9K

Special tooling required

Mot. 1448	Remote operation pliers for hose clips.
Car. 1363	Set of trim removal levers.

IMPORTANT

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

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

WARNING

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

WARNING

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

The criteria to be met are:

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for "extreme cold" countries.

REMOVAL

I - REMOVAL PREPARATION OPERATION

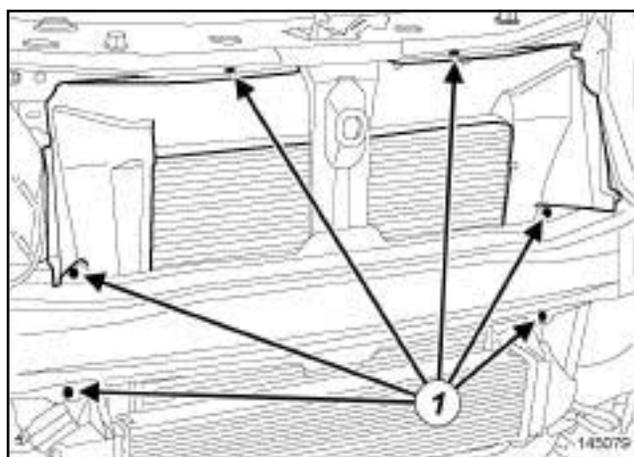
- Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the engine undertray,
 - the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection),

- the engine cover,
- the air intake sleeve,
- the intercooler (see **12B, Turbocharging, Intercooler: Removal - Refitting**, page 12B-8),
- the fan assembly (see **19A, Cooling, Engine cooling fan assembly: Removal - Refitting**, page 19A-27).

- Drain the engine cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6).

II - REMOVAL OPERATION

AIR CONDITIONING

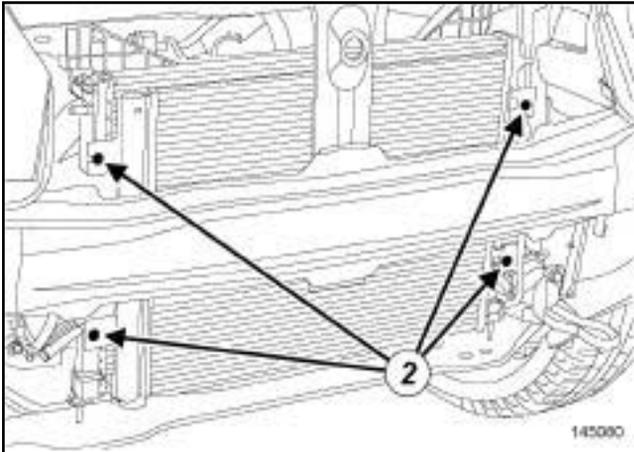


145079

- Remove:
 - the air deflector mounting pins (1),
 - the air deflector.
- Attach the condenser to the front impact cross member using a safety strap.

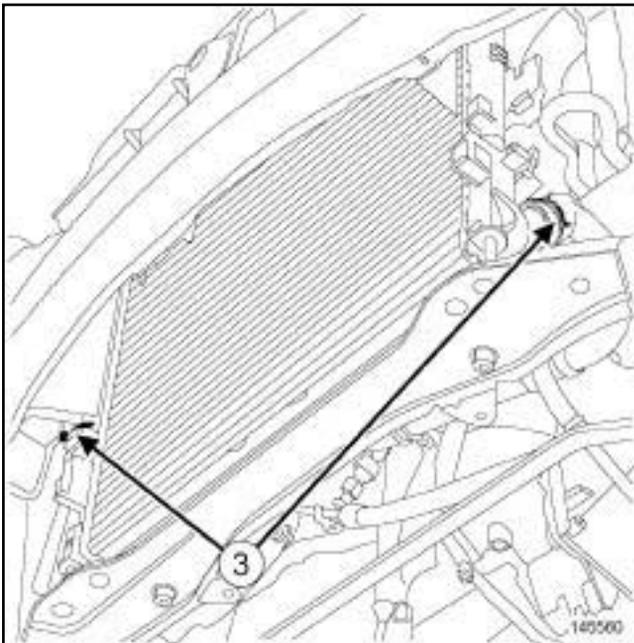
Cooling radiator: Removal - Refitting

K9K



145080

- Remove the condenser bolts (2) .



145560

- Remove the cooling radiator hose clips (3) using the tool (**Mot. 1448**).
- Disconnect the cooling radiator hoses using the (**Car. 1363**).
- Remove the engine cooling radiator from above the vehicle.

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the cooling radiator hose clips.

II - REFITTING OPERATION

- Proceed in the reverse order to removal.
- Refill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page **19A-6**).
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

Coolant pump: Removal - Refitting

K9K, and 796

Tightening torques 	
bolts of the coolant pump	10 N.m
inner timing cover bolts	9 N.m
alternator bolts	21 N.m

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

IMPORTANT

Wear heat protective gloves during the operation.

IMPORTANT

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

WARNING

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

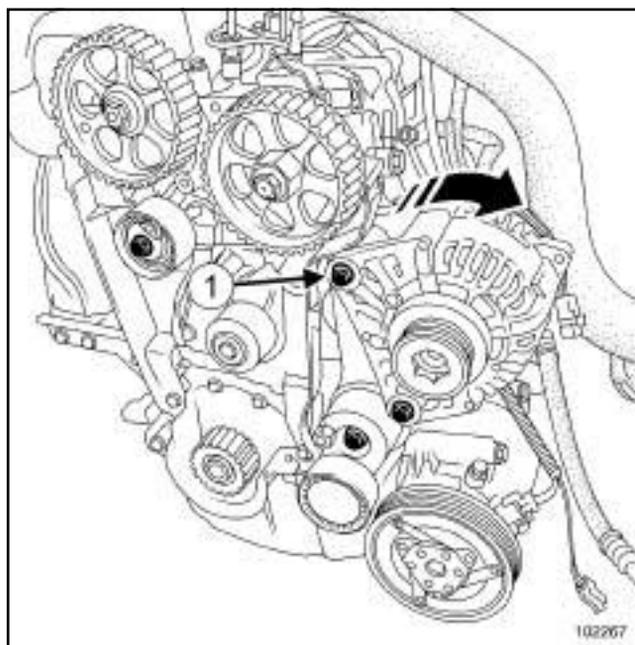
REMOVAL

I - REMOVAL PREPARATION OPERATION

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

- the engine undertray.

- Remove the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .
- Remove:
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-2) ,
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-17) .

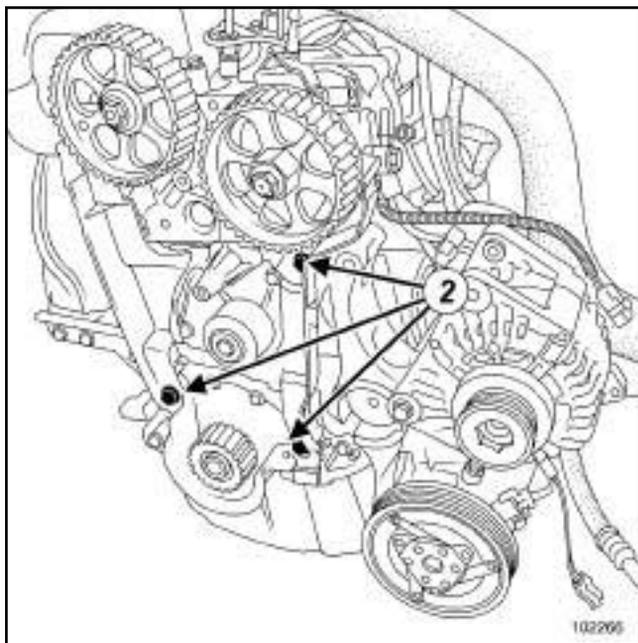


102267

- Disconnect the electrical connections from the alternator.
- Remove the alternator upper bolt (1) .
- Loosen the alternator lower bolt.
- Tilt the alternator forward.

Coolant pump: Removal - Refitting

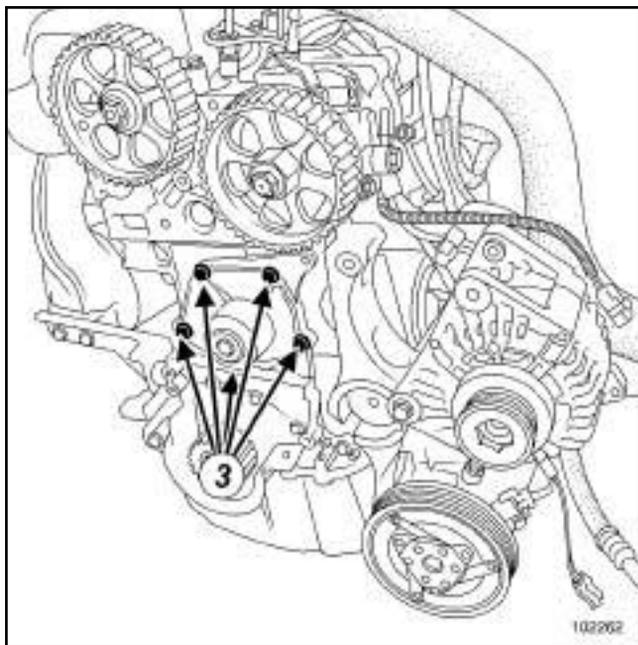
K9K, and 796



102266

- Remove:
 - the inner timing cover bolts (2) ,
 - the inner timing cover.

II - REMOVAL OPERATION



102262

- Remove:
 - the coolant pump bolts (3) ,
 - the coolant pump,
 - the coolant pump seal.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: coolant pump seal.
- Use **SURFACE CLEANER** (see) (04B, Consumables - Products) to clean and degrease:
 - the coolant pump sealing face if it is to be reused,
 - the cylinder block gasket face.

WARNING

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- Apply **SUPER CLEANER FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the areas to be cleaned.
- Leave for approximately ten minutes.
- Remove the residue using a wooden spatula.
- Complete the cleaning of the parts using an abrasive pad.

WARNING

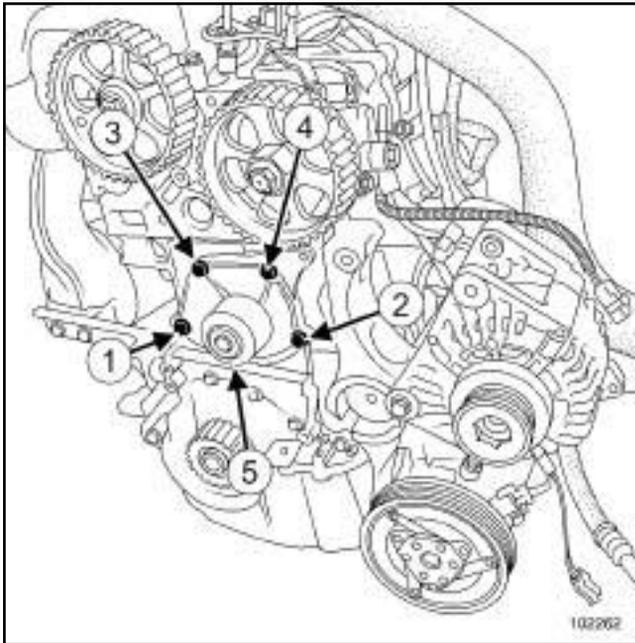
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the joint faces.
- Always replace the coolant pump seal.

Coolant pump: Removal - Refitting

K9K, and 796

II - REFITTING OPERATION



102262

- Refit:
 - the coolant pump fitted with a new seal,
 - the coolant pump bolts.
- Torque tighten in order (1) (2) (3) (4) (5) the bolts of the coolant pump (10 N.m).
- Apply one or two drops of FRENETANCHE (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the coolant pump bolts.

III - FINAL OPERATION

- Refit the inner timing cover.
- Tighten to torque the inner timing cover bolts (9 N.m).
- Refit the alternator.
- Torque tighten the alternator bolts (21 N.m).
- Connect the alternator electrical connections.
- Refit:
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-17) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-2) .
- Fill the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .
- Refit the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).

- Refit:
 - the engine undertray,
 - the engine undertray bolts,
 - the engine cover.
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Coolant pump: Removal - Refitting

K4M

Tightening torques

coolant pump M8 bolt	27 N.m
coolant pump M6 bolts	10 N.m

IMPORTANT

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

To avoid any risk of serious burns when the engine is hot:

- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

WARNING

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

WARNING

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

The criteria to be met are:

- protection down to **-25°C ± 2** for cold and temperate countries,
- protection down to **-40°C ± 2** for "extreme cold" countries.

REMOVAL

I - REMOVAL PREPARATION OPERATION

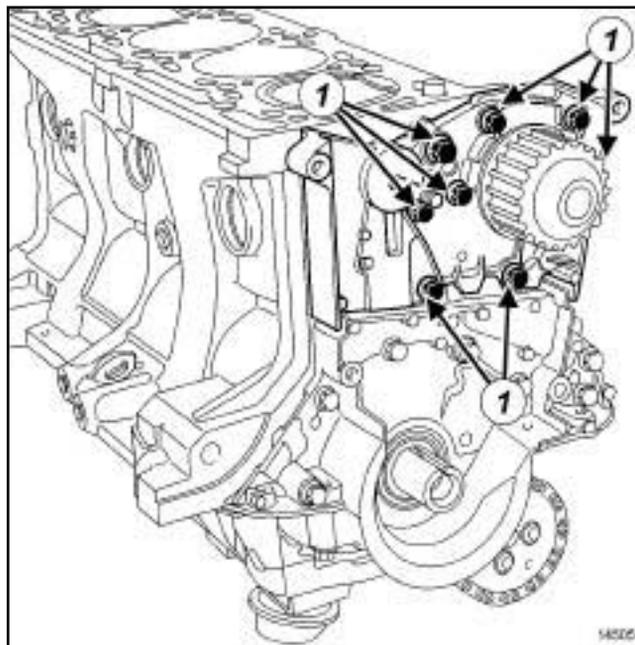
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),

- the accessories belt (see 11A, **Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-2) ,

- the timing belt (see 11A, **Top and front of engine, Timing belt: Removal - Refitting**, page 11A-17) .

- Drain the cooling system (see 19A, **Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

II - REMOVAL OPERATION



14505

- Remove:
 - the coolant pump bolts (1) ,
 - the coolant pump.

Coolant pump: Removal - Refitting

K4M

REFITTING

I - REFITTING PREPARATION OPERATION

□

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

IMPORTANT

Wear goggles with side protectors for this operation.

WARNING

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

- Use **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean:

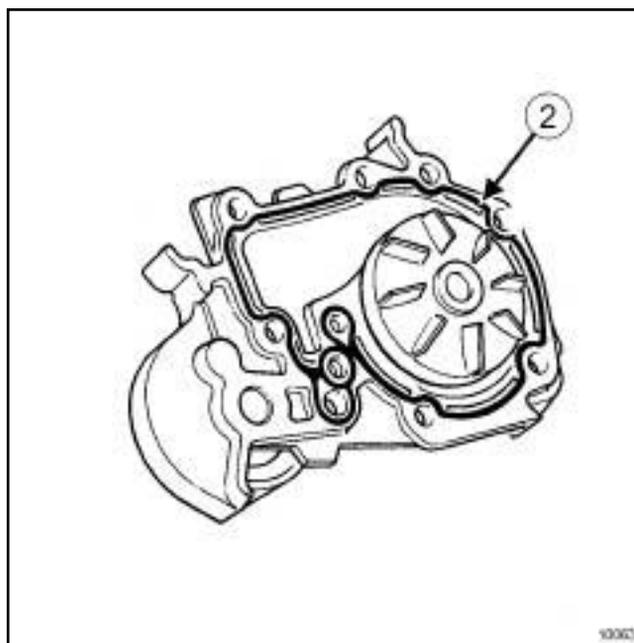
- the coolant pump sealing face if it is to be reused,
- the cylinder block gasket face.

- Apply the product to the surfaces to be cleaned.
- Leave for approximately ten minutes.
- Remove the residue using a wooden spatula.
- Complete the cleaning of the parts using an abrasive pad.

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

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



10063

□

WARNING

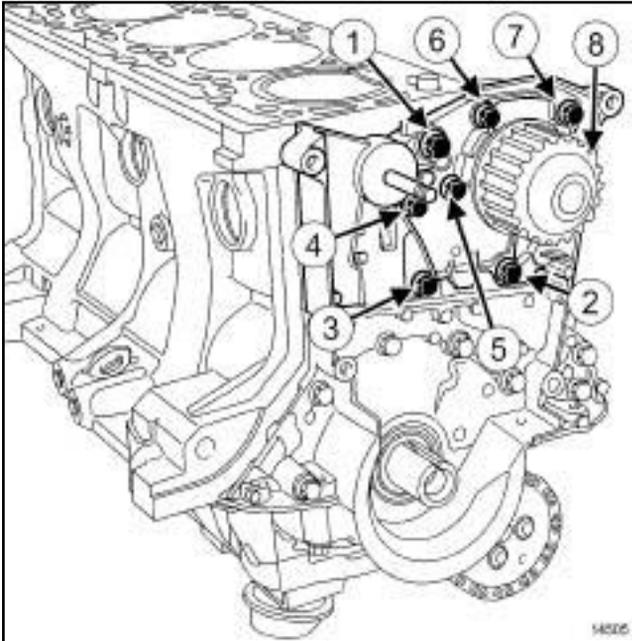
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

- Apply at (2) a bead of **RESIN ADHESIVE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) **0.6 to 1 mm** wide.

Coolant pump: Removal - Refitting

K4M

II - REFITTING OPERATION



14505

- Apply one to two drops of **FRENETANCHE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the coolant pump bolts (1) and (4) .
- Refit the coolant pump.
- Fit the coolant pump bolts in order until contact is made.
- Torque tighten in order:
 - the **coolant pump M8 bolt (27 N.m)** (1) .
 - the **coolant pump M6 bolts (10 N.m)** (2) to (8) .

III - FINAL OPERATION

- Refit:
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-17) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-2) ,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- Fill the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Thermostat: Removal - Refitting

K9K

- ❑ The thermostat is integral with the coolant outlet unit. The coolant outlet unit must be replaced to replace it (see **19A, Cooling, Water chamber: Removal - Refitting**, page **19A-22**).

K4M

Special tooling required

Mot. 1448 Remote operation pliers for hose clips.

IMPORTANT

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

To avoid any risk of serious burns when the engine is hot:

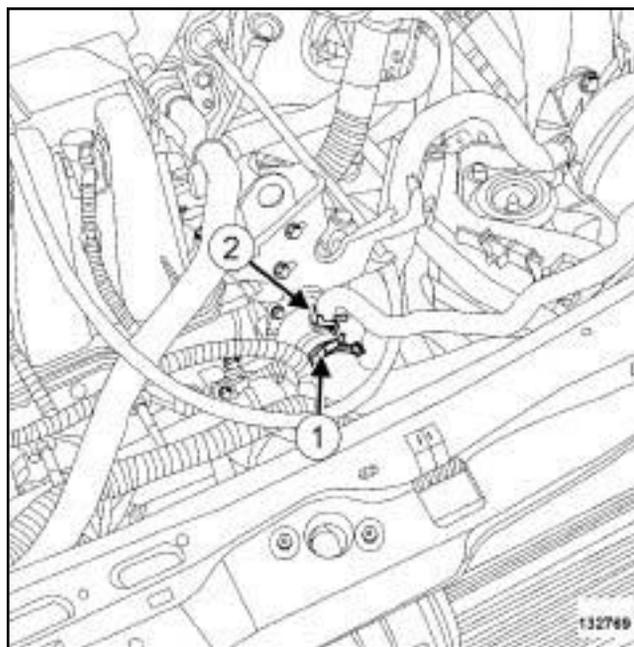
- do not open the expansion bottle cap,
- do not drain the cooling system,
- do not open the bleed screw(s).

REMOVAL

I - REMOVAL PREPARATION OPERATION

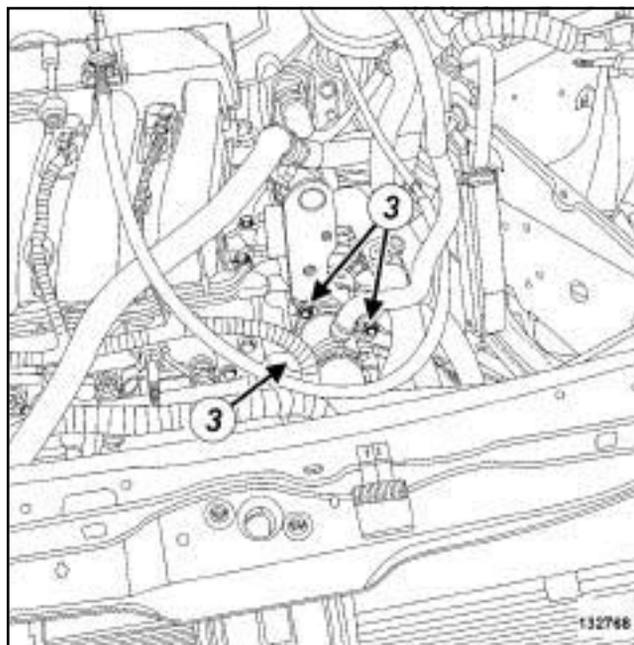
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) ,
 - the engine undertray bolts,
 - the engine undertray.
- Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132769

- Using the **(Mot. 1448)** or remove:
 - the cooling radiator top hose clip (1) ,
 - the clip (2) from the expansion bottle hose.
- Disconnect from the thermostat cover:
 - the cooling radiator top hose,
 - the expansion bottle hose.

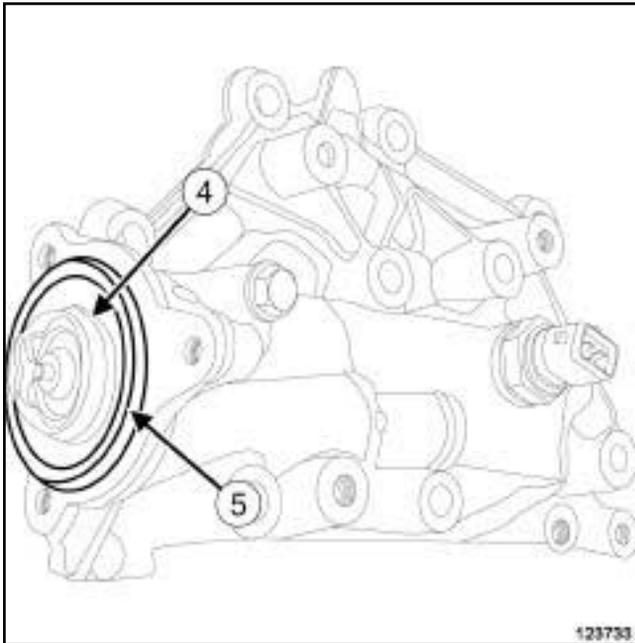


132768

- Remove:
 - the thermostat cover bolts (3) ,

K4M

- the thermostat cover.



Remove:

- the thermostat (4) ,
- the thermostat seal (5) .

REFITTING

I - REFITTING PREPARATION OPERATION

- Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease the thermostat housing.
- The thermostat seal must be replaced.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
 - a new seal on the thermostat,
 - the thermostat,
 - the thermostat cover.
- Connect the following to the thermostat cover:
 - the expansion bottle hose,
 - the cooling radiator top hose.
- Using the **(Mot. 1448)** ororfit:
 - the expansion bottle hose clip,
 - the cooling radiator top hose clip.

III - FINAL OPERATION

- Fill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page **19A-6**) .
- Refit:
 - the engine undertray,
 - the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page **12A-2**) .

Water chamber: Removal - Refitting

K9K, and 796

Tightening torques

water chamber bolts	11 N.m
expansion bottle nuts	8 N.m

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

IMPORTANT

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).
Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

WARNING

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

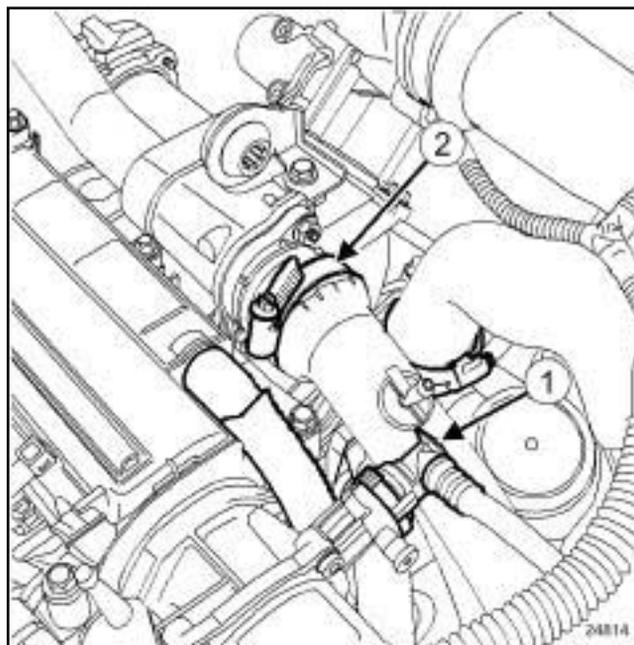
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the engine cover,
 - the engine undertray bolts,
 - the engine undertray.
- Remove the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .
- Remove:
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-6) ,

- the expansion bottle nuts.

- Move aside the expansion bottle.

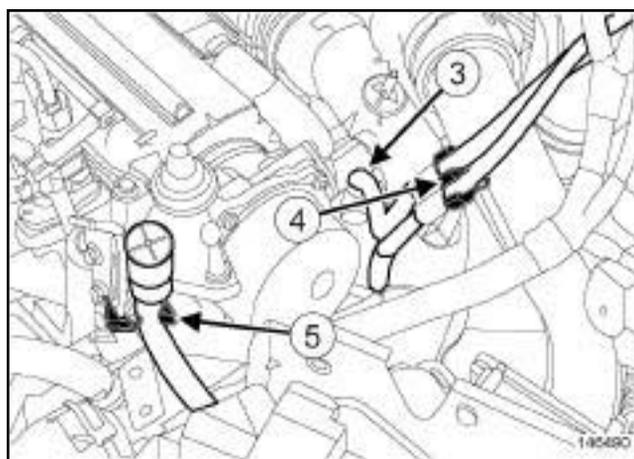


24814

- Disconnect:

- the union (1) on the vacuum pump,

- the air duct between the intercooler and the EGR assembly at (2) .



146490

- Disconnect the EGR solenoid valve pipe at (3) .

- Unclip:

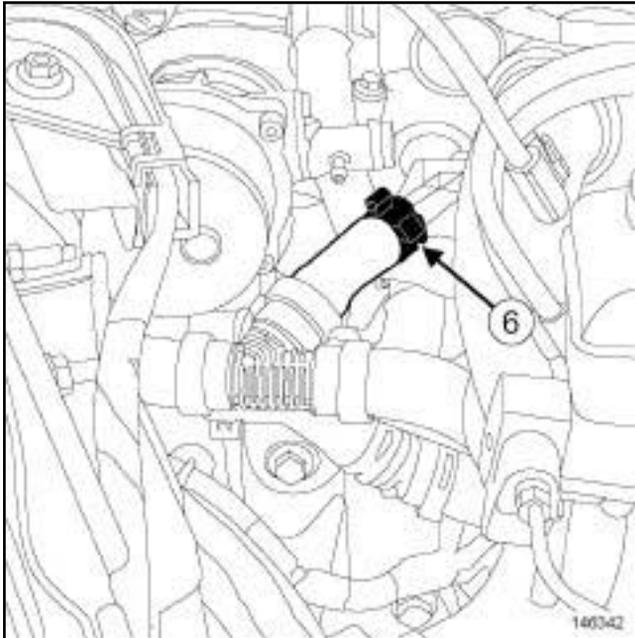
- the EGR solenoid valve pipes at (4) ,

- the gearbox breather pipe at (5) .

- Move aside the air duct between the intercooler and the EGR assembly.

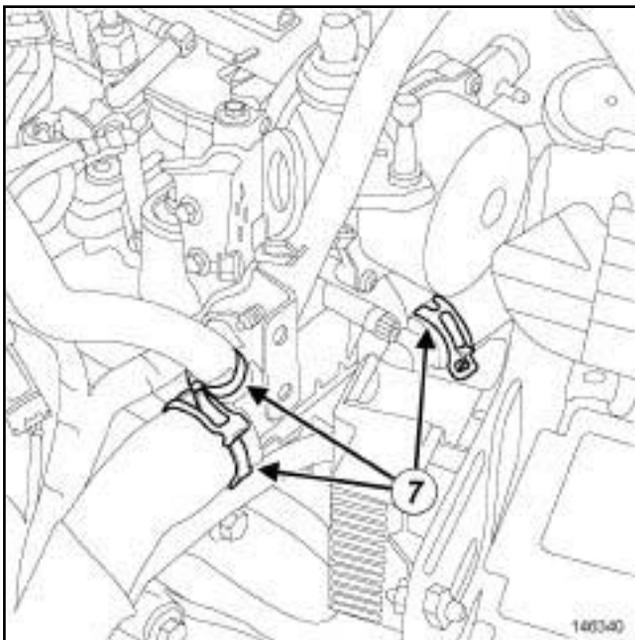
Water chamber: Removal - Refitting

K9K, and 796



146342

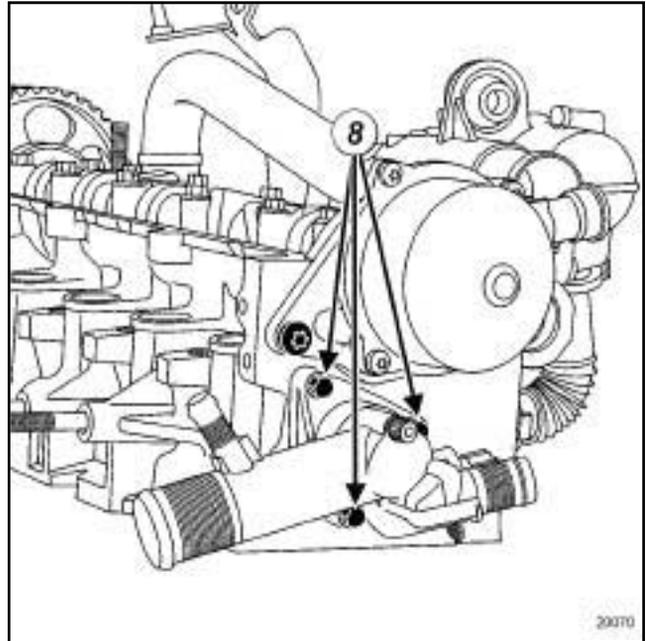
- Disconnect the EGR assembly outlet pipe at (6) .
- Move the EGR assembly outlet pipe aside.
- Disconnect the coolant temperature sensor connector.



146340

- Disconnect the cooling hoses on the water chamber at (7) .

II - REMOVAL OPERATION



20070

- Remove:
 - the water chamber bolts (8) ,
 - the water chamber,
 - the water chamber seal.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: Cylinder head coolant outlet unit seal.**
- Use **SURFACE CLEANER** (see) to clean and degrease:
 - the cylinder head joint face,
 - the water chamber seal housing if it is to be reused.

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

WARNING

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

Water chamber: Removal - Refitting

K9K, and 796

II - REFITTING OPERATION

- Refit:
 - a new water chamber seal in the water chamber housing,
 - the water chamber.
- Torque tighten the **water chamber bolts (11 N.m)**.
- Connect:
 - the cooling hoses to the water chamber,
 - the coolant temperature sensor connector,
 - the EGR assembly outlet pipe,
- Position the air duct between the intercooler and the EGR assembly.
- Connect:
 - the air duct on the EGR assembly,
 - the union to the vacuum pump.
- Connect the EGR solenoid valve pipe to the vacuum pump.
- Clip on:
 - the breather pipe from the gearbox,
 - the EGR solenoid valve pipes.
- Position the expansion bottle.
- Torque tighten the **expansion bottle nuts (8 N.m)**.

III - FINAL OPERATION

- Refit the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- Refit:
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-6) ,
 - the engine undertray,
 - the engine cover.
- Fill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Water chamber: Removal - Refitting

K4M

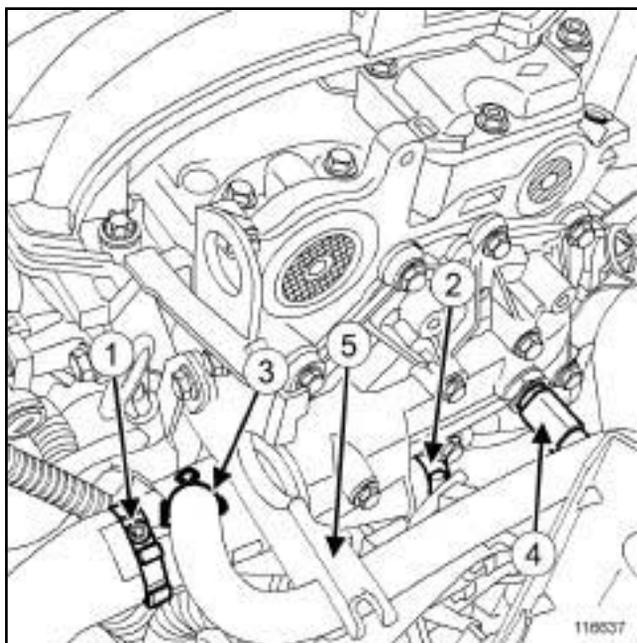
Tightening torques

coolant outlet unit bolts (initial torque)	4 N.m
water chamber bolts	12 N.m

REMOVAL

I - OPERATION FOR REMOVAL OF PART CONCERNED

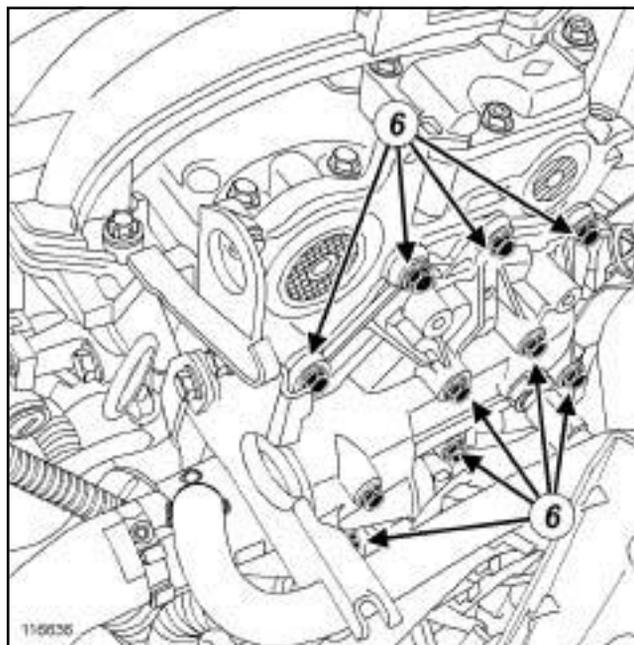
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .
- Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .



116637

- Disconnect:
 - the radiator top hose (1) from the water chamber,
 - the passenger compartment heater hose (2) ,
 - the expansion bottle hose (3) ,
 - the coolant temperature sensor (4) .
- Unclip the hoses from their support at (5) .

II - REMOVAL OPERATION



116636

- Remove:
 - the water chamber bolts (6) ,
 - the water chamber.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: Cylinder head coolant outlet unit seal

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

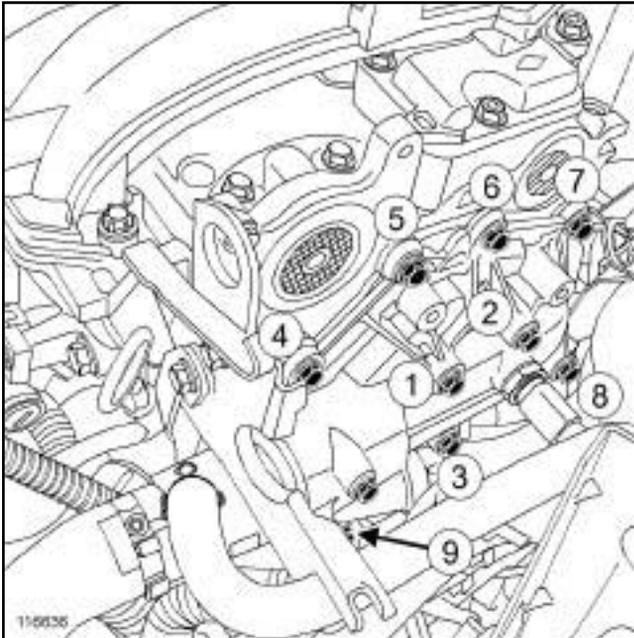
- Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:
 - the cylinder head joint face,
 - the water chamber joint face, if being reused.

II - REFITTING OPERATION

- Refit the water chamber.

Water chamber: Removal - Refitting

K4M



116636

- Screw on the water chamber bolts without tightening them.
- Torque tighten in order:
 - the **coolant outlet unit bolts (initial torque) (4 N.m)**,
 - the **water chamber bolts (12 N.m)**.

III - FINAL OPERATION

- Connect:
 - the coolant temperature sensor,
 - the expansion bottle hose,
 - the passenger compartment heater hose,
 - the top hose to the water chamber.
- Refit the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .
- Fill the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Engine cooling fan assembly: Removal - Refitting

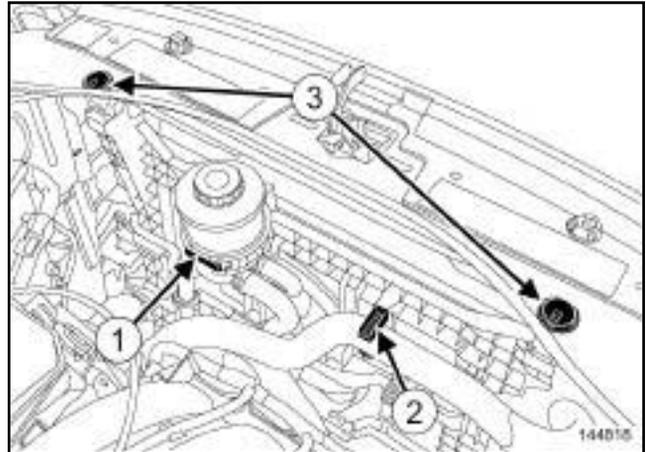
K4M

REMOVAL

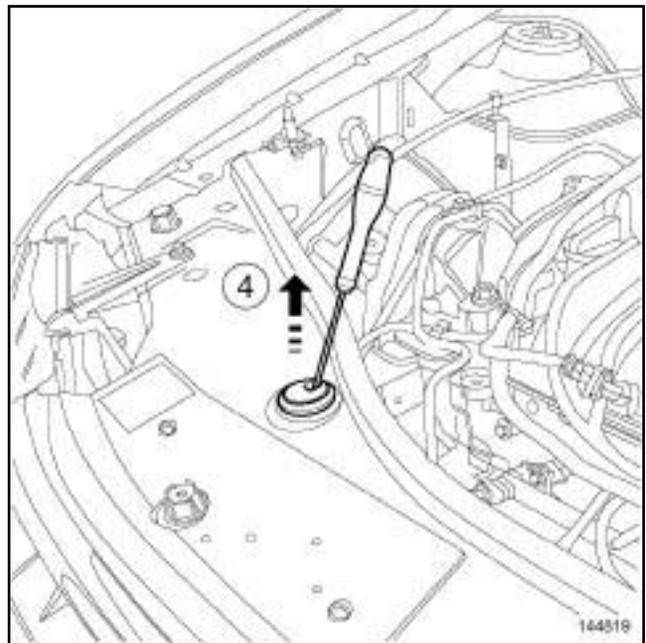
I - REMOVAL PREPARATION OPERATION

- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the injector rail protector (see **13B, Diesel injection, Injector rail: Removal - Refitting**, page 13B-25) ,
 - the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .

II - REMOVAL OPERATION



144818



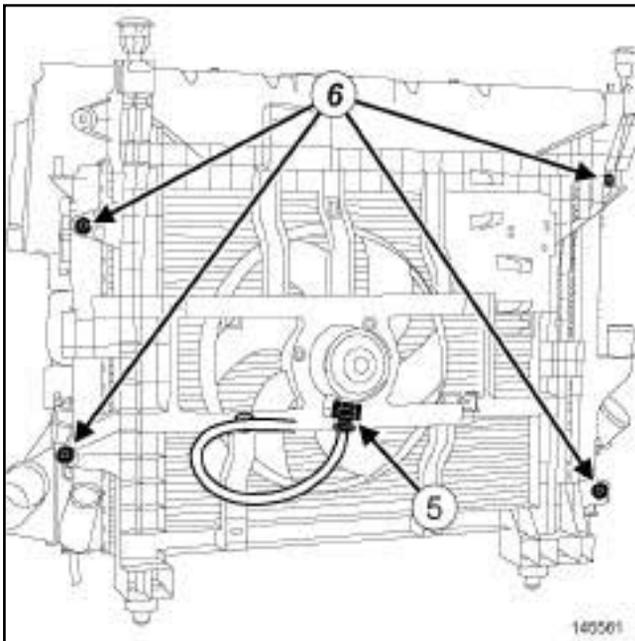
144819

- Unclip:
 - the power-assisted steering hoses on the fan assembly,
 - the power-assisted steering fluid reservoir from its support at (1) ,
 - the engine coolant hose at (2) .
- Press on the clips of the centring pins (3) on the engine cooling fan assembly using a screwdriver and pull them according to the direction of the arrow (4) .
- Secure the power-assisted steering fluid reservoir to the engine.
- Remove the power assisted steering fluid reservoir bracket.

Engine cooling fan assembly: Removal - Refitting

K4M

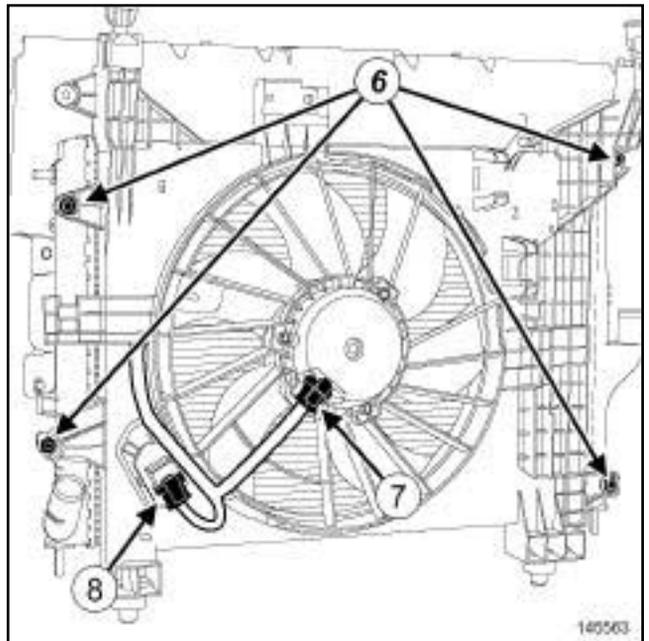
STANDARD HEATING RECIRCULATION



145561

- Disconnect the cooling fan assembly connector (5) .
- Unclip the engine cooling fan assembly wiring.
- Move aside the wiring of the engine cooling fan assembly.
- Remove the engine cooling radiator bolts (6) .

AIR CONDITIONING

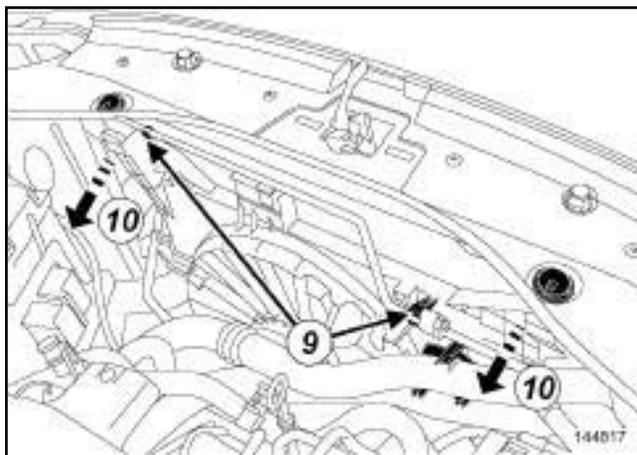


145563

- Disconnect:
 - the engine cooling fan assembly connector (7) ,
 - the engine cooling fan assembly resistor connector (8) .
- Unclip the engine cooling fan assembly wiring.
- Move aside the wiring of the engine cooling fan assembly.
- Remove the engine cooling radiator bolts (6) .

Engine cooling fan assembly: Removal - Refitting

K4M



- Unclip the « condenser - expansion valve » connecting pipe at (9) .

WARNING

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

- Pull the fan assembly according to the arrows (10) passing it under the « condenser - expansion valve » connecting pipe.

Note:

Do not damage the cooling unit vanes (radiator, condenser, etc.) during handling.

- Remove the engine cooling fan assembly from above the vehicle.

In the event of replacement

- Remove from the fan assembly:
 - the power-assisted steering hose clips,
 - the wiring clip.

REFITTING

I - REFITTING PREPARATION OPERATION

In the event of replacement

- Refit on the fan assembly:
 - the power-assisted steering hose clips,
 - the wiring clip.

II - REFITTING OPERATION

- Proceed in the reverse order to removal.
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

III - CHECKING THE OPERATION OF THE FAN UNIT

- Start the engine.
- Disconnect the coolant temperature sensor connector.
- Check the operation of the fan assembly.
- Connect the coolant temperature sensor connector.
- Switch off the engine.

Engine cooling fan assembly: Removal - Refitting

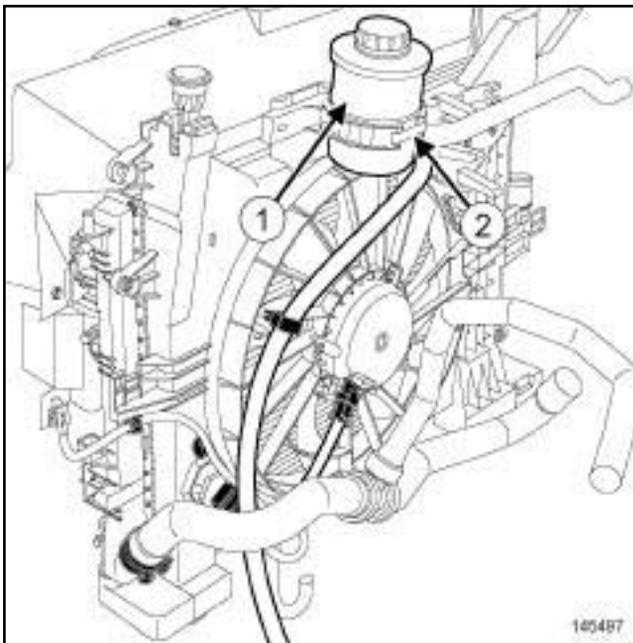
K9K

REMOVAL

I - REMOVAL PREPARATION OPERATION

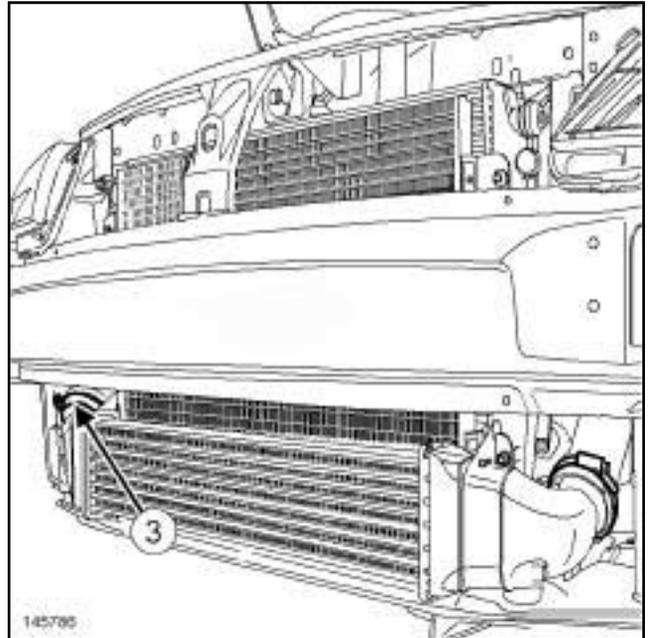
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove:
 - the engine cover,
 - the air intake sleeve,
 - the front bumper (see **Front bumper assembly: Exploded view**) (55A, Exterior protection).

STANDARD HEATING RECIRCULATION



145497

- Unclip:
 - the power-assisted steering hoses on the fan assembly,
 - the power-assisted steering fluid reservoir (1) from its support at (2) .
- Secure the power-assisted steering fluid reservoir to the engine.
- Remove the power assisted steering fluid reservoir bracket.



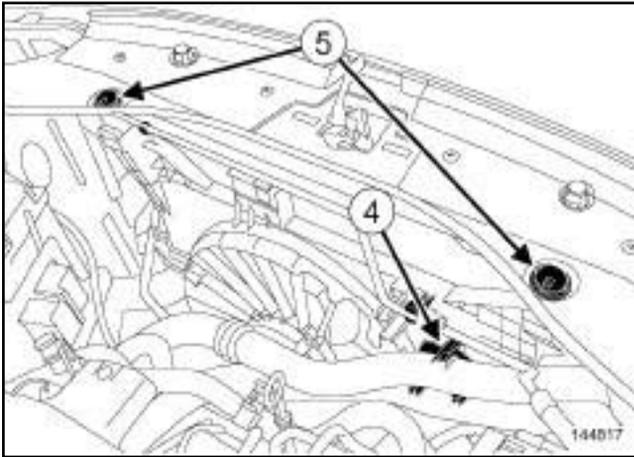
145786

- Disconnect the intercooler duct at (3) .

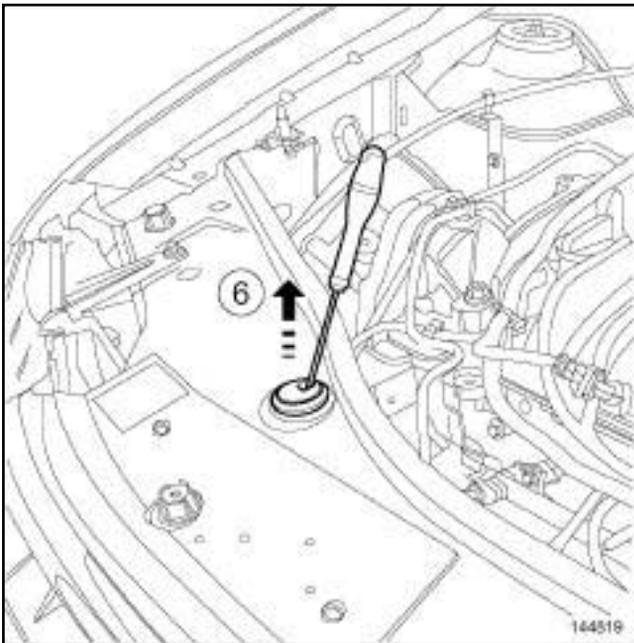
Engine cooling fan assembly: Removal - Refitting

K9K

II - REMOVAL OPERATION



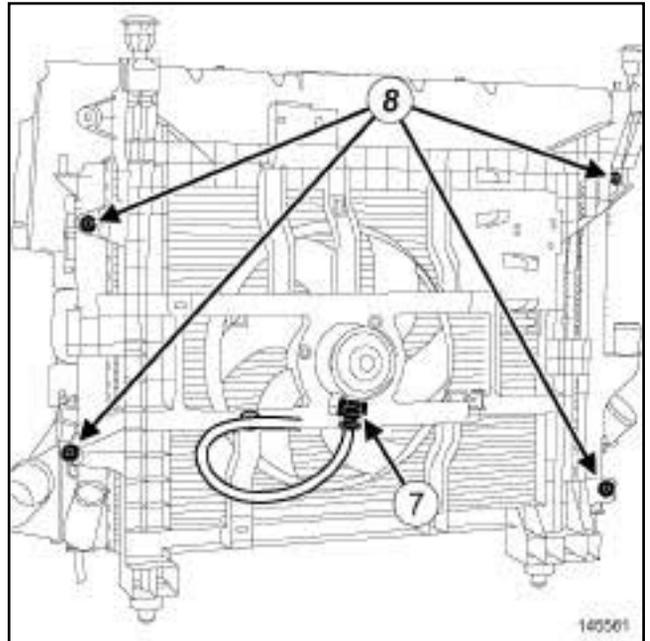
144817



144819

- Unclip the following from the support (4) :
 - the intercooler duct on the fan assembly,
 - the engine coolant hose.
- Press on the clips of the centring pins (5) on the engine cooling fan assembly using a screwdriver and pull them according to the direction of the arrow (6) .

STANDARD HEATING RECIRCULATION



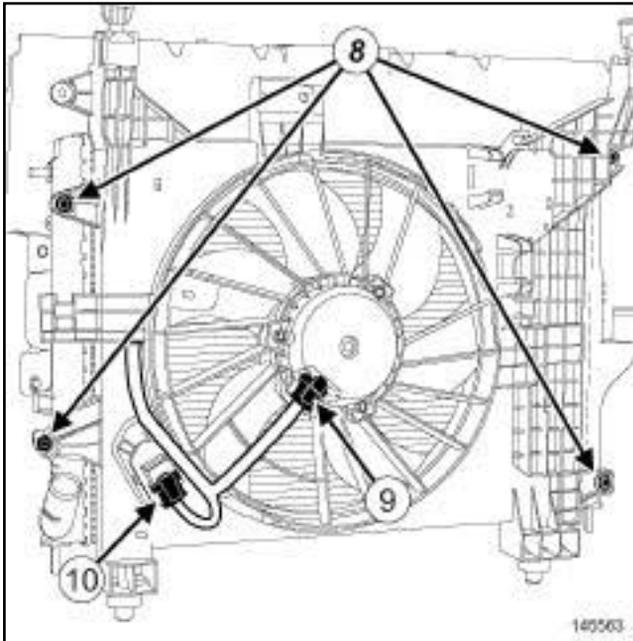
145561

- Disconnect the cooling fan assembly connector (7) .
- Unclip the engine cooling fan assembly wiring.
- Move aside the wiring of the engine cooling fan assembly.
- Remove the engine cooling radiator bolts (8) .

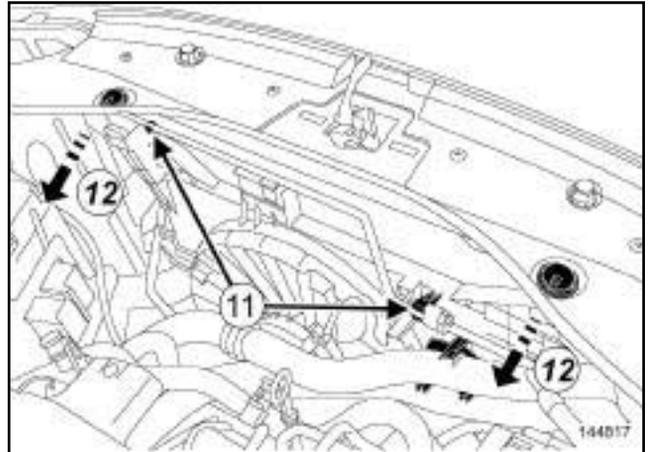
Engine cooling fan assembly: Removal - Refitting

K9K

AIR CONDITIONING



- Disconnect:
 - the engine cooling fan assembly connector (9) ,
 - the engine cooling fan assembly resistor connector (10) .
- Unclip the engine cooling fan assembly wiring.
- Move aside the wiring of the engine cooling fan assembly.
- Remove the engine cooling radiator bolts (8) .



- Unclip the « condenser - expansion valve » connecting pipe at (11) .

WARNING

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

- Pull the fan assembly according to the arrows (12) passing it under the « condenser - expansion valve » connecting pipe.

Note:

Do not damage the cooling unit vanes (radiator, condenser, etc.) during handling.

- Remove the engine cooling fan assembly from above the vehicle.

In the event of replacement

- Remove from the fan assembly:
 - the power-assisted steering hose clips,
 - the wiring clip,
 - the support of the intercooler duct and coolant hose on the fan assembly.

Engine cooling fan assembly: Removal - Refitting

K9K

REFITTING**I - REFITTING PREPARATION OPERATION****In the event of replacement**

- Refit on the fan assembly:
 - the power-assisted steering hose clips,
 - the wiring clip,
 - the support of the intercooler duct and coolant hose on the fan assembly.

II - REFITTING OPERATION

- Proceed in the reverse order to removal.
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).

III - CHECKING THE OPERATION OF THE FAN UNIT

- Start the engine.
- Disconnect the coolant temperature sensor connector.
- Check the operation of the fan assembly.
- Connect the coolant temperature sensor connector.
- Switch off the engine.

Coolant pump inlet pipe: Removal - Refitting

K9K, and 796

Tightening torques 	
coolant pump inlet pipe bolt	22 N.m
accelerometer	20 N.m

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

IMPORTANT

Wear heat protective gloves during the operation.

IMPORTANT

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

WARNING

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

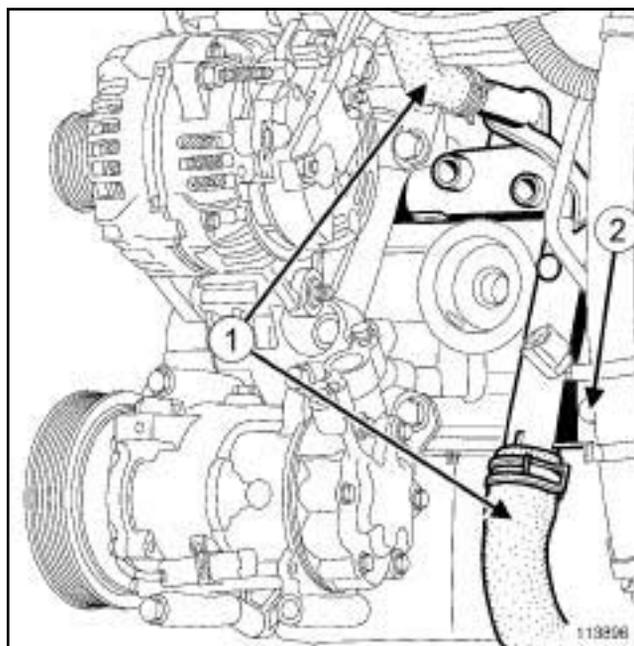
REMOVAL

I - REMOVAL PREPARATION OPERATION

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

- Remove the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- Drain the engine cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6).
- Remove the oil-water heat exchanger (see **10A, Engine and cylinder block assembly, Oil-coolant heat exchanger: Removal - Refitting**, page 10A-37).

II - REMOVAL OPERATION



113896

- Disconnect:
 - the coolant hoses (1) from the coolant pump inlet pipe,
 - the accelerometer connector.
- Remove the accelerometer using.
- Remove:
 - the water pump inlet pipe bolt (2),
 - the coolant pump inlet pipe.
 - the coolant pump inlet pipe seal.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: seal between coolant pump inlet pipe and coolant pump**

Coolant pump inlet pipe: Removal - Refitting

K9K, and 796

- Use **SURFACE CLEANER** (see) (04B, Consumables - Products) to clean and degrease:
 - the coolant pump inlet pipe seal housing if it is being reused,
 - the seal housing in the cylinder block.

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

WARNING

Do not scrape the joint faces of the aluminium, any damage caused to the joint face will result in a risk of leaks.

- Replace the removed clips.

II - REFITTING OPERATION

- Refit the coolant pump inlet pipe to the cylinder block.
- Torque tighten the **coolant pump inlet pipe bolt (22 N.m)**.
- Refit the accelerometer using the tool.
- Tighten to torque the **accelerometer (20 N.m)**.
- Connect:
 - the accelerometer connector,
 - the coolant hoses onto the coolant pump inlet pipe.

III - FINAL OPERATION

- Refit the oil-water heat exchanger (see **10A, Engine and cylinder block assembly, Oil-coolant heat exchanger: Removal - Refitting**, page 10A-37) .
- Fill the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .
- Refit the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection).
- Refit:
 - the engine undertray,
 - the engine undertray bolts,
 - the engine cover.
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Coolant pump inlet pipe: Removal - Refitting

K4M

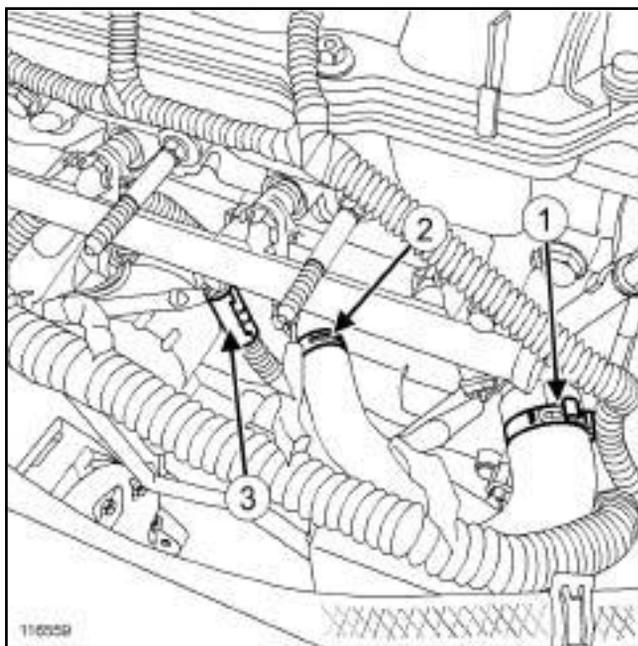
Tightening torques

coolant pump inlet pipe bolt	22 N.m
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REMOVAL

I - REMOVAL PREPARATION OPERATION

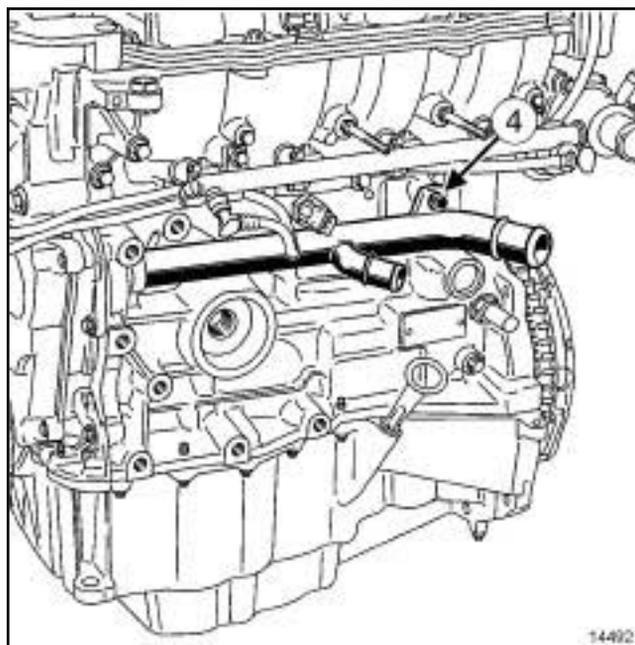
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Remove the injector rail protector.
- Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6).



116559

- Disconnect:
 - the cooling radiator bottom hose (1),
 - the heater hose (2).
- Unclip the wiring on the coolant pump inlet pipe at (3).
- Disconnect the connector from cylinder injector no. 3.

II - OPERATION FOR REMOVAL OF PART CONCERNED



14492

14492

- Remove:
 - the bolt (4) from the coolant pump inlet pipe,
 - the coolant pump inlet pipe,
 - the coolant pump inlet pipe seal.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: seal between coolant pump inlet pipe and coolant pump**
- Always replace the cooling hose clips.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the coolant pump inlet pipe fitted with a new seal.
- Torque tighten the **coolant pump inlet pipe bolt (22 N.m)**.

III - FINAL OPERATION

- Connect:
 - the connector to cylinder injector no. 3.
 - the heater hose on the coolant pump inlet pipe,
 - the cooling radiator bottom hose.
- Clip the wiring onto the coolant pump inlet pipe.

Coolant pump inlet pipe: Removal - Refitting

K4M

- Refit the injector rail protector.
- Fill the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .
- Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Expansion bottle: Removal - Refitting

Special tooling required

Ms. 583	Pipe clamps.
Mot. 1448	Remote operation pliers for hose clips.

Tightening torques

expansion bottle nuts	8 N.m
-----------------------	--------------

IMPORTANT

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

WARNING

The coolant helps to keep the engine running properly (heat exchange).

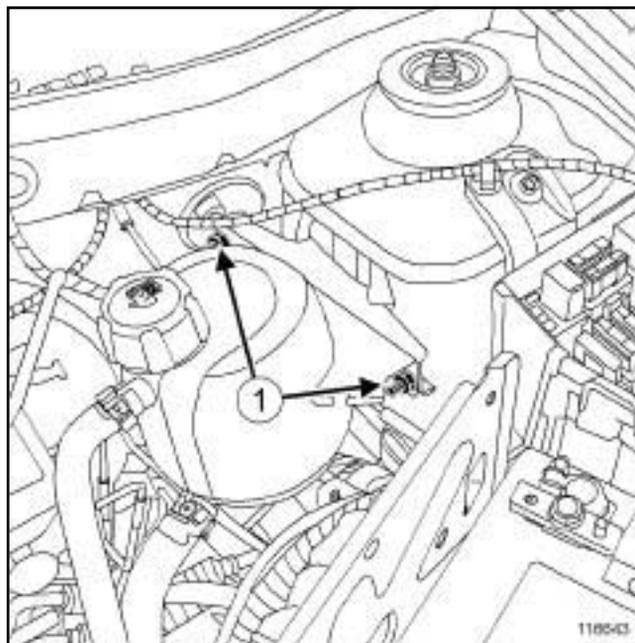
The system does not operate using pure water.

WARNING

If the coolant is leaking from the expansion bottle cap, replace the valve.

REMOVAL

REMOVAL OPERATION



116643

- Remove the expansion bottle nuts (1) .
- Move aside the expansion bottle.
- Position hose clamps (**Ms. 583**) on the expansion bottle hoses.
- Remove the expansion bottle cap.
- Drain the coolant from the expansion bottle.
- Remove the following using the tool (**Mot. 1448**) or « CLIC » clip pliers:
 - the clamp of the top hose of the expansion bottle,
 - the clamp of the bottom hose of the expansion bottle.
- Disconnect:
 - the expansion bottle bottom hose,
 - the expansion bottle top hose.
- Remove the expansion bottle .

REFITTING

I - REFITTING PREPARATION OPERATION

- Always replace the « CLIC » type clips.

II - REFITTING OPERATION

- Connect:
 - the expansion bottle top hose,

Expansion bottle: Removal - Refitting

- the expansion bottle bottom hose.

- Refit the following using the tool (**Mot. 1448**) or « CLIC » clip pliers:

- the clamp of the top hose of the expansion bottle,

- the clamp of the bottom hose of the expansion bottle.

- Fill the expansion bottle with coolant.
- Remove the hose clamps (**Ms. 583**).
- Refit the expansion bottle.
- Torque tighten the **expansion bottle nuts (8 N.m)**.

III - FINAL OPERATION

- Top up the coolant level in the expansion bottle.
- Refit the expansion bottle cap.
- Bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Coolant temperature sensor: Removal - Refitting

K9K

Tightening torques

expansion bottle nuts	8 N.m
-----------------------	-------

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

IMPORTANT

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

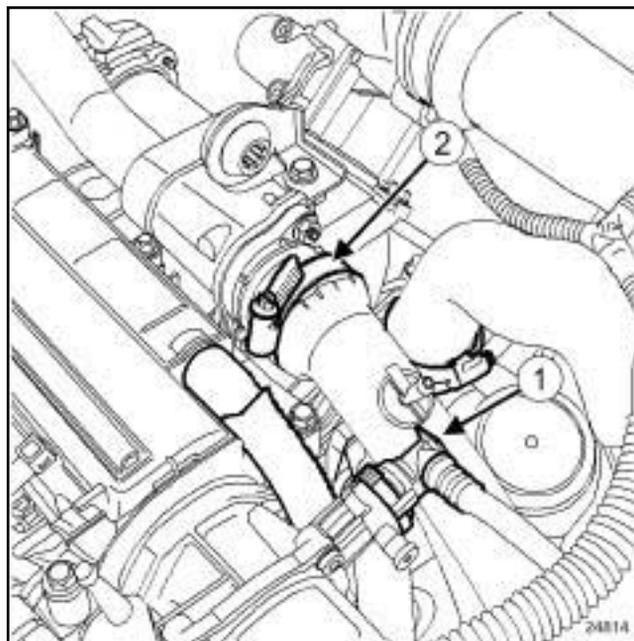
WARNING

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**) .
- Remove:
 - the engine cover,
 - the engine undertray bolts,
 - the engine undertray,
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-6) ,
 - the expansion bottle nuts.
- Move aside the expansion bottle.

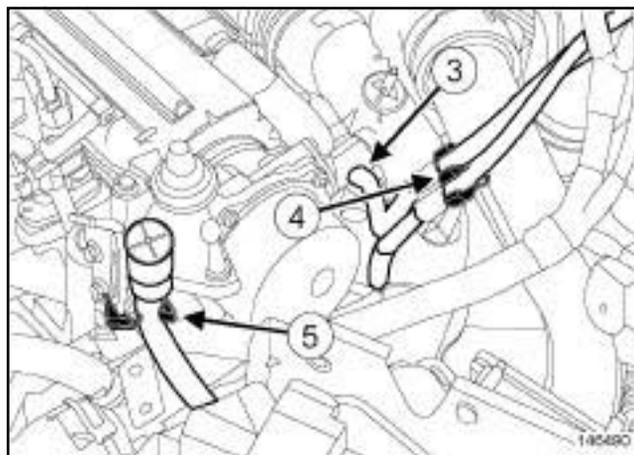


24814

Disconnect:

- the union (1) on the vacuum pump,
- the air duct between the intercooler and the EGR assembly at (2) .

K9K, and 796



146490

Disconnect the EGR solenoid valve pipe at (3) .

Unclip:

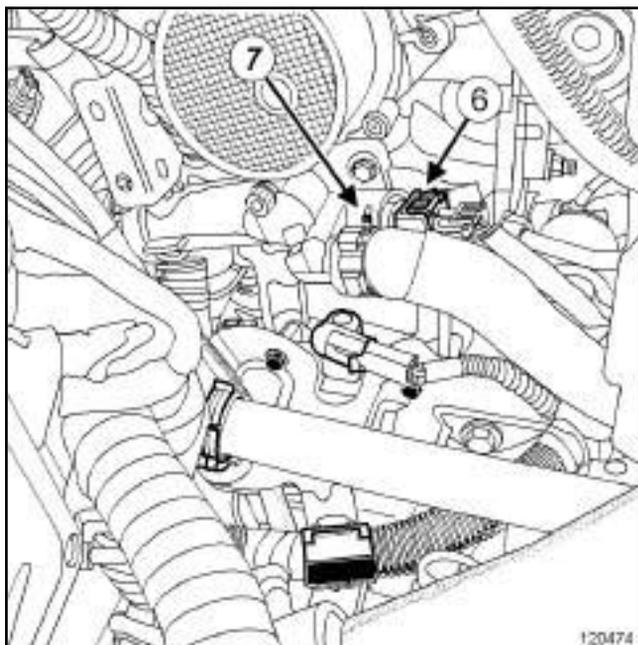
- the EGR solenoid valve pipes at (4) ,
- the gearbox breather pipe at (5) .

- Move aside the air duct between the intercooler and the EGR assembly.

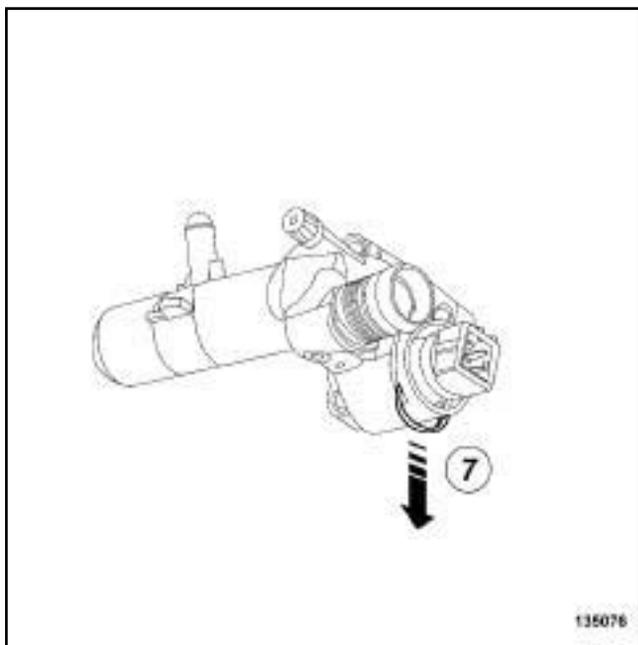
Coolant temperature sensor: Removal - Refitting

K9K

II - REMOVAL OPERATION



120474



135076

- Disconnect the coolant temperature sensor connector (6) .
- Remove:
 - the coolant temperature sensor retaining clip (7) ,
 - the coolant temperature sensor,
 - the coolant temperature sensor O-ring.

REFITTING

I - REFITTING PREPARATION OPERATION

- parts always to be replaced: coolant temperature sensor seal.
- Use **SURFACE CLEANER** (see) to clean and degrease:
 - the mating face of the coolant temperature sensor if it is to be reused,
 - the coolant outlet unit.

II - REFITTING OPERATION

- Refit:
 - a new coolant temperature sensor seal on the coolant temperature sensor,
 - the coolant temperature sensor,
 - the coolant temperature sensor clip.
- Connect the coolant temperature sensor connector.

III - FINAL OPERATION

- Position the air duct between the intercooler and the EGR assembly.
- Connect:
 - the air duct on the EGR assembly,
 - the union to the vacuum pump.

K9K, and 796

- Connect the EGR solenoid valve pipe to the vacuum pump.
- Clip on:
 - the breather pipe from the gearbox,
 - the EGR solenoid valve pipes.
- Position the expansion bottle.
- Torque tighten the **expansion bottle nuts (8 N.m)**.
- Refit:
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page **12A-6**) ,
 - the engine undertray,
 - the engine undertray bolts,
 - the engine cover.

Coolant temperature sensor: Removal - Refitting

K9K

- Perform the following operations:
 - top up the cooling system,
 - bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

Coolant temperature sensor: Removal - Refitting

K4M

Tightening torques

coolant temperature sensor	30 N.m
----------------------------	--------

IMPORTANT

The circuits are designed to be pressurised, so be careful at high temperatures (risk of serious burns).

Do not remove the cap from the expansion bottle while the engine is hot.

Take care when carrying out a repair under the bonnet, as the radiator fan(s) may start to operate without warning.

Do not open the bleed screw(s) with the engine running.

WARNING

Before the operation, protect the electrical accessories to prevent any risk of short circuiting and protect the belts to avoid damaging them.

WARNING

The coolant helps to keep the engine running properly (heat exchange).

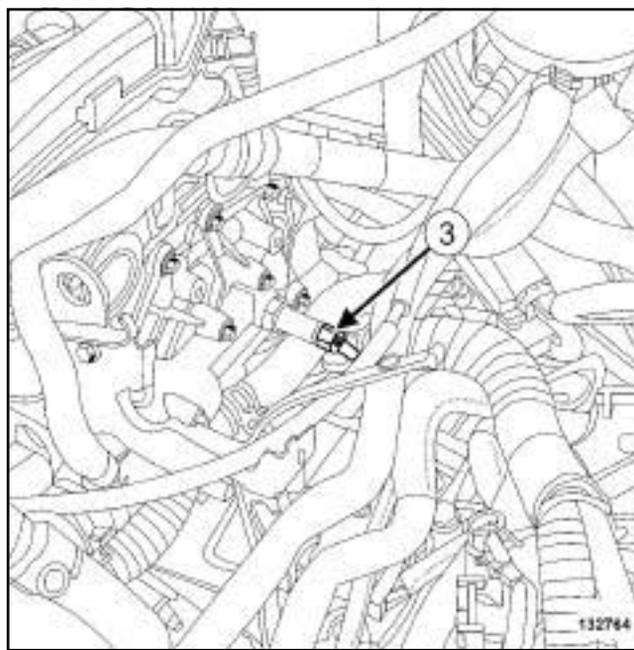
The system does not operate using pure water.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Remove the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page **12A-2**).

II - OPERATION FOR REMOVAL OF PART CONCERNED



132764

- Disconnect the coolant temperature sensor connector (3).
- Remove the coolant temperature sensor.

REFITTING

I - REFITTING PREPARATION OPERATION

-

Note:

Apply 1 to 2 drops of **FRENETANCHE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to the coolant temperature sensor thread (only if the sensor is to be reused).

- Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease the mating face of the coolant temperature sensor on the water chamber.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit the coolant temperature sensor.
- Torque tighten the **coolant temperature sensor (30 N.m)**.
- Connect the coolant temperature sensor connector.

Coolant temperature sensor: Removal - Refitting

K4M

III - FINAL OPERATION

- Refit the air resonator (see **12A, Fuel mixture, Air resonator: Removal - Refitting**, page 12A-2) .
- Perform the following operations:
 - top up the coolant level,
 - bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-6) .

EXHAUST

Exhaust: List and location of components

19B

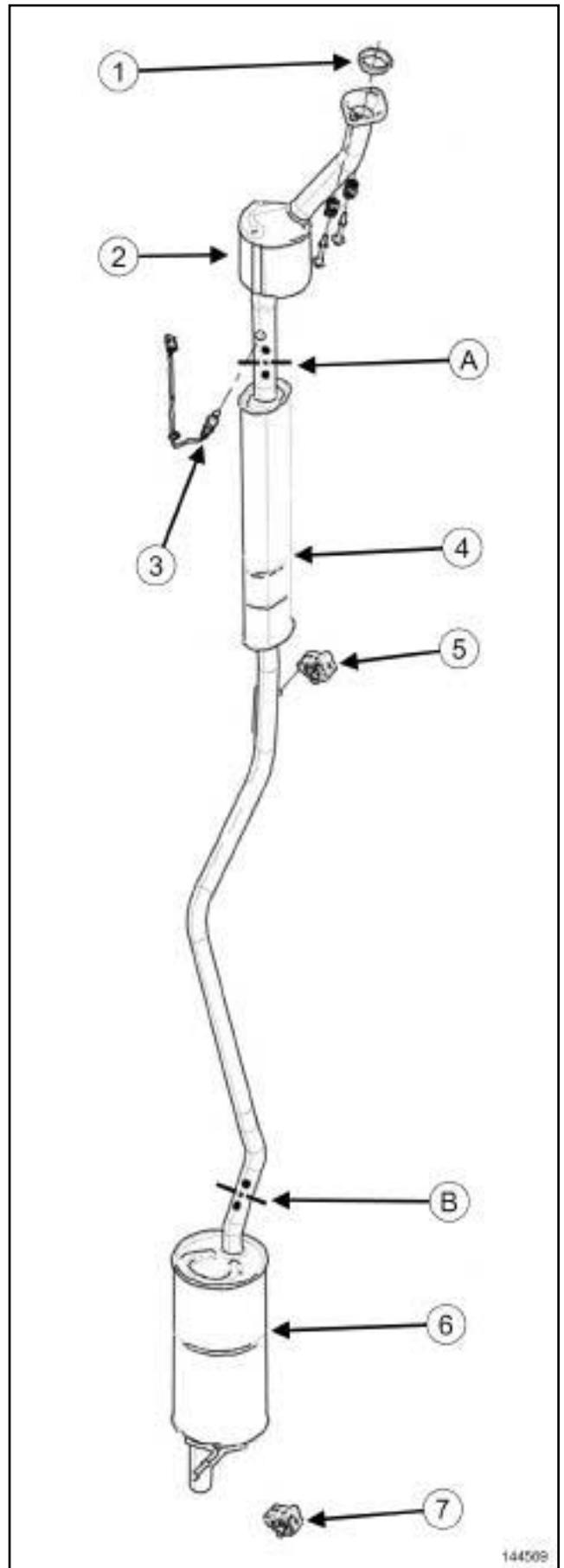
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EXHAUST

Exhaust: List and location of components

19B

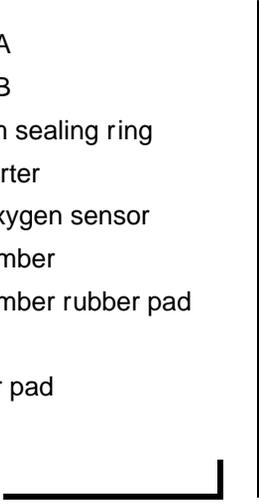
K4M



144509

144569

Exhaust: List and location of components

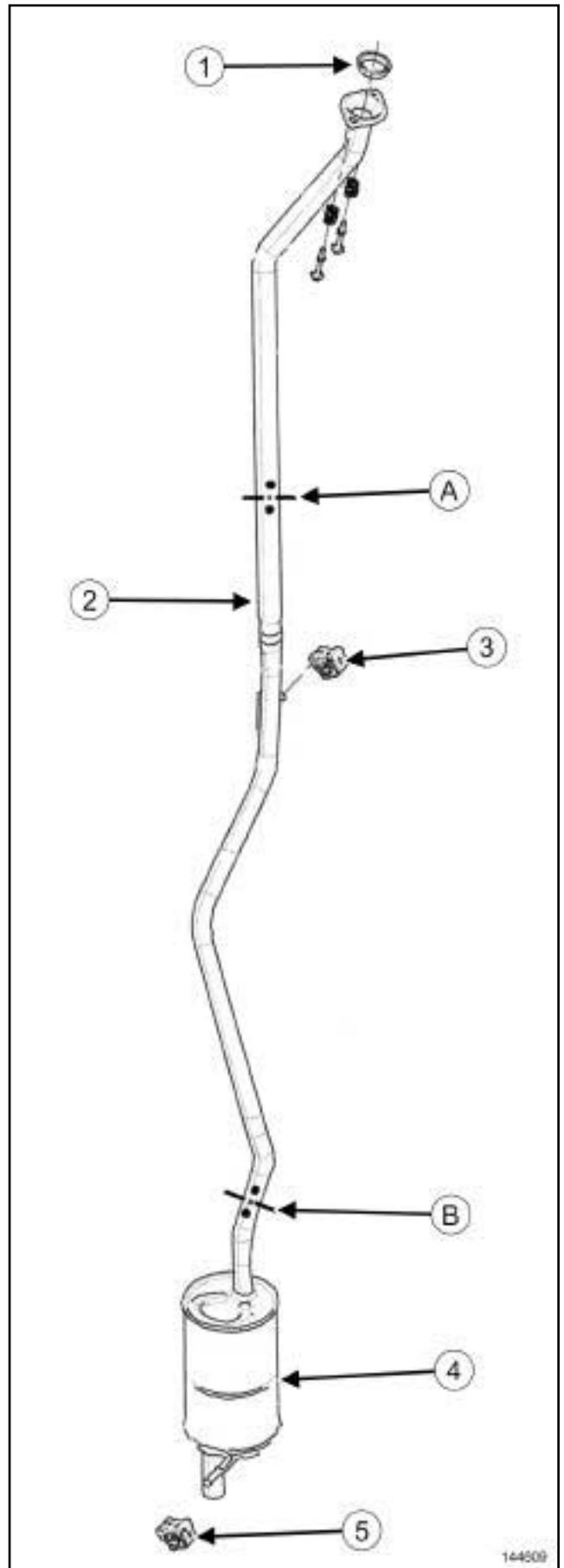
- (A) Area to be cut A
 - (B) Area to be cut B
 - (1) Exhaust system sealing ring
 - (2) Catalytic converter
 - (3) Downstream oxygen sensor
 - (4) Expansion chamber
 - (5) Expansion chamber rubber pad
 - (6) Silencer
 - (7) Silencer rubber pad
- 

EXHAUST

Exhaust: List and location of components

19B

K9K



144509

144609

Exhaust: List and location of components

- (A) Area to be cut A
- (B) Area to be cut B
- (1) Exhaust system sealing ring
- (2) Intermediate pipe
- (3) Intermediate pipe rubber pad
- (4) Silencer
- (5) Silencer rubber pad



Exhaust: Precautions for the repair

Special tooling required

Mot. 1199-01	Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case.
---------------------	---

Equipment required

component jack

I - PARTS AND CONSUMABLES FOR THE REPAIR

1 - Parts always to be replaced:

- the exhaust sleeve (if fitted)
- the seal or sealing ring on the connection between the catalytic converter or catalytic pre-converter and the rest of the exhaust system
- the exhaust clip(s) (if fitted)

2 - Consumables (see Part number in Technical Note 5068, 04B, Consumables - Products):

- exhaust mastic
- surface cleaner
- grey abrasive pads

II - ADVICE TO OBSERVE

IMPORTANT

Do not park and run the engine in a place where combustible substances and materials such as grass or leaves can come into contact with the hot exhaust system.

IMPORTANT

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

1 - During removal and refitting, the catalytic converter or catalytic pre-converter must not receive any knocks or impacts as this could damage it.

2 - The whole exhaust pipe is made of stainless steel.

3 - After working on the bracket between the catalytic converter or catalytic pre-converter and the rest of the exhaust system, ensure that the connection is perfectly sealed.

To do this:

- clean the bearing faces of the connection using **GREY ABRASIVE PADS**,
- degrease the bearing faces of the connection using **SURFACE CLEANER** and clean cloths,
- always replace the seal or sealing ring on the connection.

III - SPECIAL NOTES ON THE SINGLE UNIT EXHAUST PIPE

1 - Cutting the single unit exhaust pipe

The exhaust pipe is a « single unit type » .

To replace different parts of the exhaust system it must be cut.

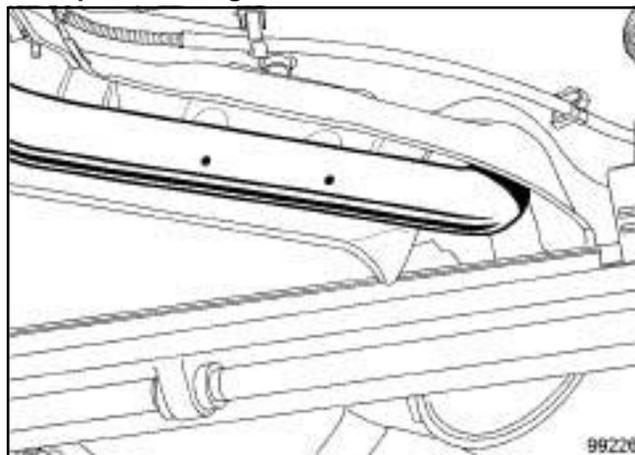
To do this be sure to carry out these precautions in the following order:

- correctly identify the area to be cut, as explained below,
- use the cutting tool correctly (**Mot. 1199-01**),
- position the exhaust sleeve correctly.

2 - Identifying the area of the exhaust system to be cut

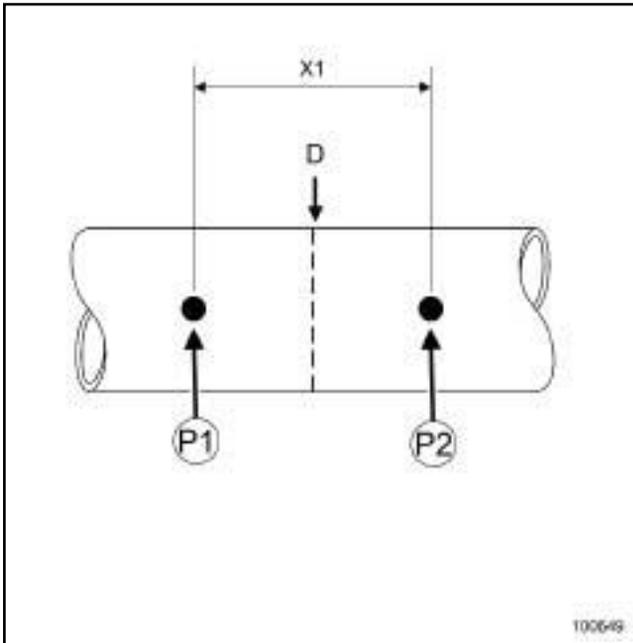
Two marks made on the exhaust system define the area to be cut (see **Exhaust: Parts and consumables for the repair**) (see MR for vehicle concerned, 19B, Exhaust).

Example of cutting area



99226

Exhaust: Precautions for the repair

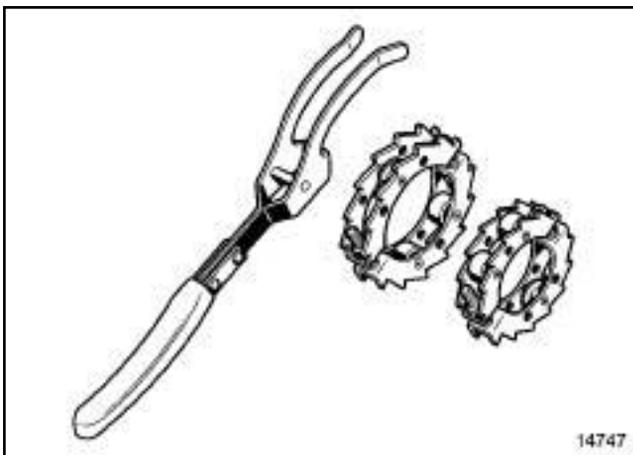


100649

Before cutting the exhaust system, draw a line (D) between the two marks (P1) and (P2) .

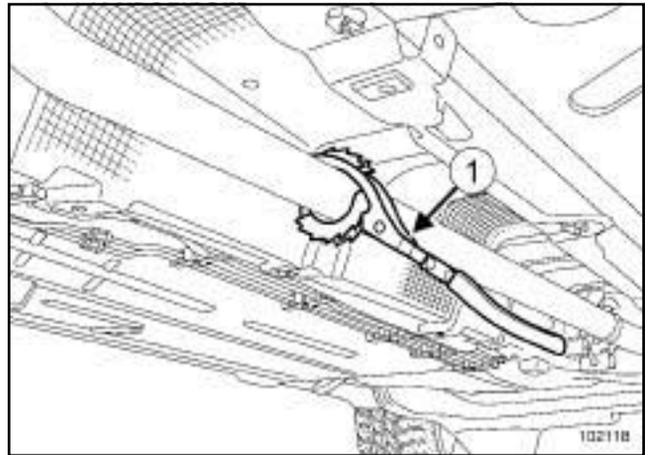
The distance between the two marks on the exhaust pipe is (X1) : 80 mm.

3 - Operate tool Mot. 1199-01



14747

14747



102118

Fit the (Mot. 1199-01) (1) on the exhaust pipe.

Tighten the two bolts on the tool until they touch the pipe in order to clamp the tool onto the pipe.

Turn the cutting tool using the handle and pressing it against the pipe (as indicated in the diagram above).

Tighten the two bolts on the tool whilst cutting, until the pipe is completely cut.

Note:

Do not over-tighten the tool onto the pipe to avoid deforming it.

Once the pipe is cut, file and deburr the end of the pipe to be used on the vehicle again.

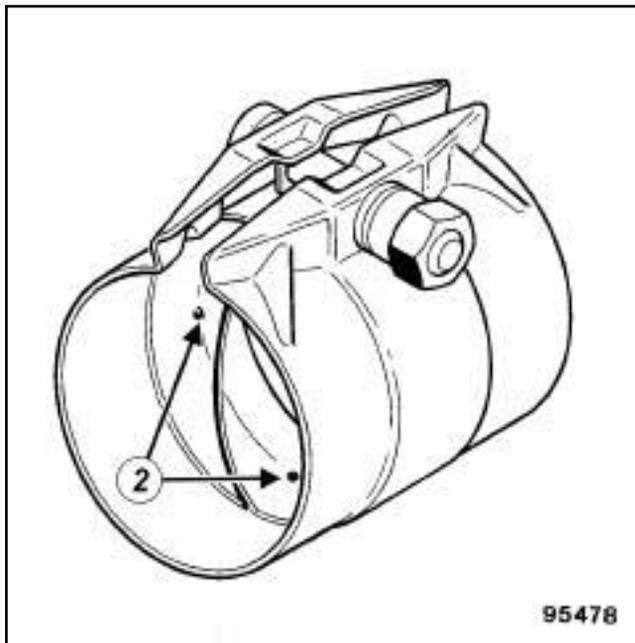
4 - Positioning the exhaust sleeve

WARNING

Do not reuse an old exhaust sleeve.

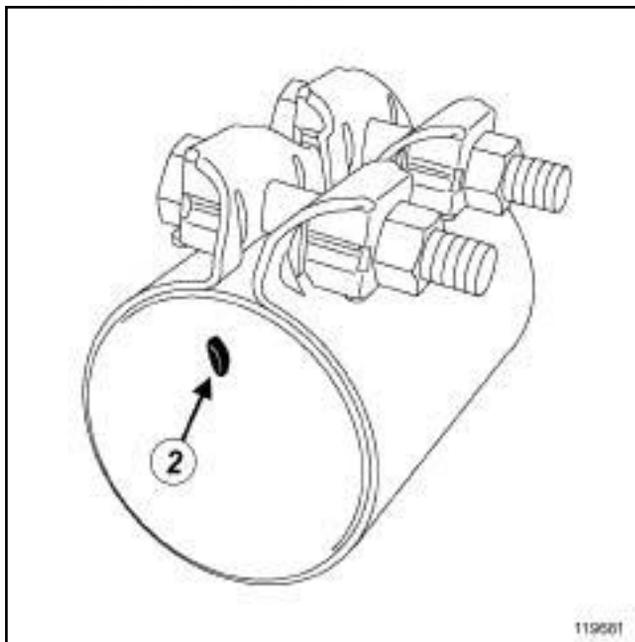
Exhaust: Precautions for the repair

Exhaust sleeve with 1 bolt



95478

Exhaust sleeve with 2 bolts



119681

Fit the exhaust sleeve onto the part of the exhaust system fitted to the vehicle.

Position the pipe onto the lugs (2) inside the exhaust sleeve.

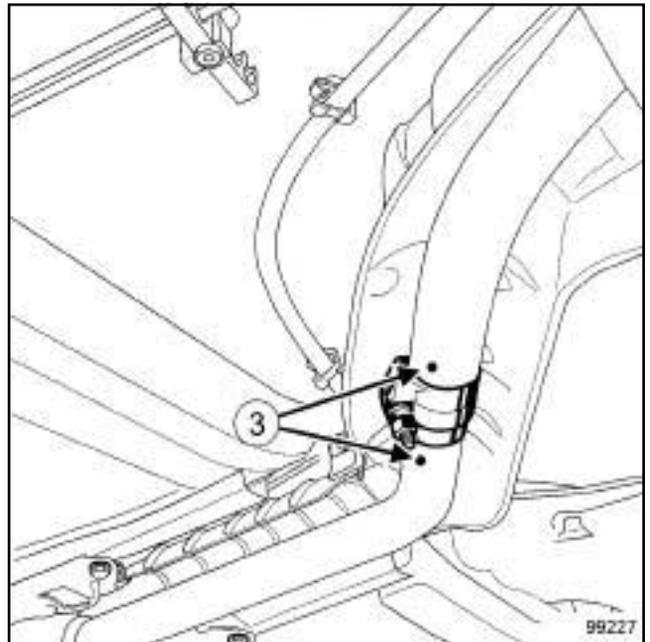
Tighten the exhaust sleeve bolt(s) slightly (depending on the version).

Position the second part of the exhaust system under the vehicle, fitting it in the exhaust sleeve.

Note:

If necessary, use a **component jack** to lift and hold the heavy and bulky components of the exhaust system.

Position the second exhaust pipe onto the lugs inside the exhaust sleeve.



99227

Check that the two cut marks (3) are aligned (if applicable).

Position the sleeve so that there is no risk of contact between its bolt or bolts and the heat shields.

Torque tighten:

- the **exhaust sleeve nut with 1 bolt (25 N.m)** (if fitted),
- the **exhaust sleeve nuts with 2 bolts (18 N.m)** (if fitted).

Check the following and deal with if necessary:

- no underbody contact between the exhaust system and the heat shields,
- all of the heat shields are present and secure.

Note:

Any damaged heat shields must be replaced.

Start the engine.

Check that there are no leaks: deal with any leaks.

Exhaust: Precautions for the repair

Note:

If there are leaks from the **EXHAUST SLEEVES WITH 1 BOLT**, apply **EXHAUST MASTIC** to the sleeve (see part no. in Technical Note 5068, 04B, Consumables - Products).

If the application of exhaust mastic does not fix the leak:

- remove and replace the used exhaust sleeve,
- check the condition of the exhaust pipes (condition of the pipe surface, deburring of the area cut, damage to the pipes).
- fit the new sleeve in accordance with the instructions given before.

Catalytic converter: Removal - Refitting

K9K, and 796

Tightening torques 	
turbocharger output studs	9 N.m
catalytic converter nuts on the turbocharger	28 N.m
upstream strut bolts on the engine	44 N.m
downstream strut bolt and nut on the gearbox	21 N.m
upstream strut bolts on the catalytic converter	26 N.m
downstream strut bolt on the catalytic converter	21 N.m
exhaust flange bolts	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 **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**).

IMPORTANT

Wear cut-resistant gloves during the operation.

IMPORTANT

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

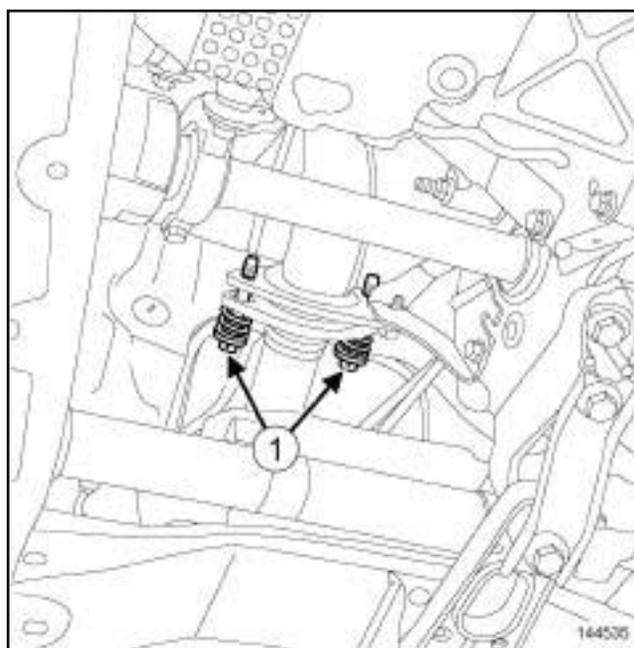
WARNING

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 air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page **12A-6**).

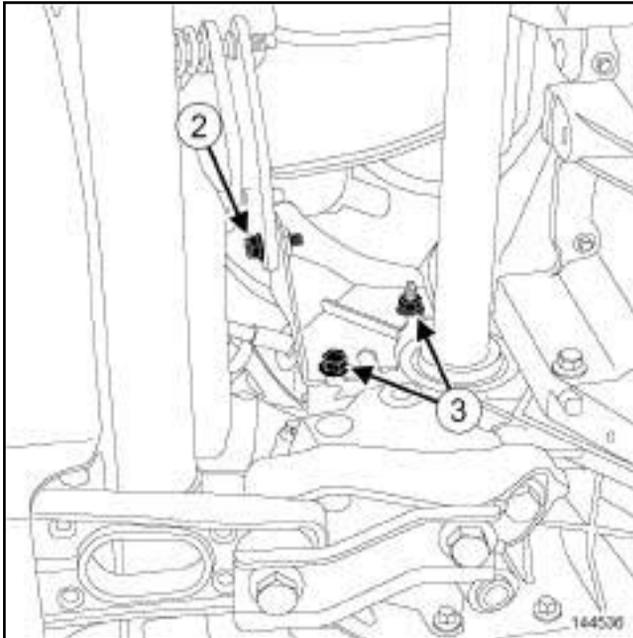
II - REMOVAL OPERATION

144535

- Remove the exhaust flange bolts (1).
- Withdraw the exhaust pipe.
- Attach the exhaust pipe to the front left-hand lower arm.

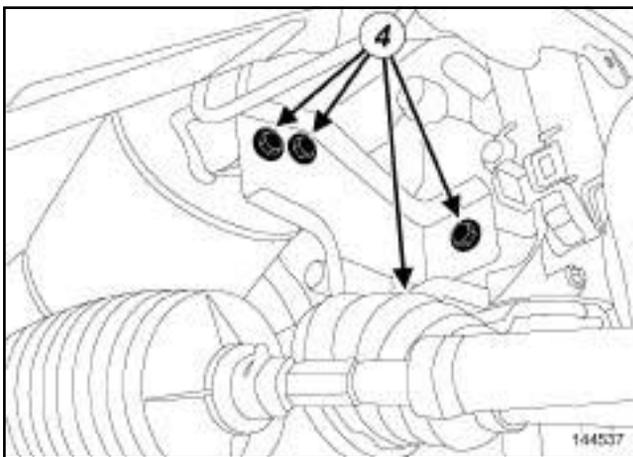
Catalytic converter: Removal - Refitting

K9K, and 796



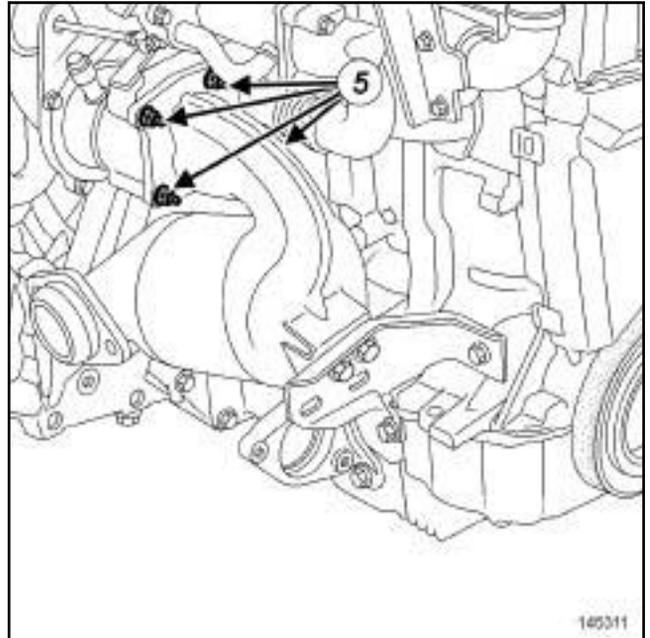
144536

- Remove the bolt from the downstream strut on the catalytic converter (2) .
- Loosen the downstream strut bolt and nut on the gearbox (3) .
- Remove the downstream strut.



144537

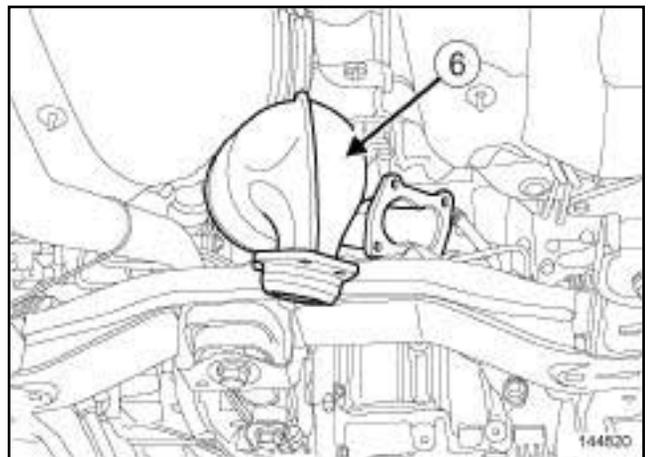
- Remove:
 - the bolts of the upstream strut (4) ,
 - the upstream strut.



145311

145311

- Remove the catalytic converter nuts on the turbocharger (5) .



144820

- Remove:
 - the catalytic converter (6) ,
 - the seal between the turbocharger and the catalytic converter,
 - the exhaust flange sealing ring.

Catalytic converter: Removal - Refitting

K9K, and 796

REFITTING

I - REFITTING PREPARATION OPERATION

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- Use **ABRASIVE PADS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the joint face of:

- the intermediate pipe,
- the catalytic converter in case of reuse,
- the turbocharger.

- Use **SURFACE CLEANER** and **CLEAN CLOTHS** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the joint face of:

- the intermediate pipe,
- the catalytic converter in case of reuse,
- the turbocharger.



109399

- Always replace the exhaust flange sealing ring.
- parts always to be replaced: seal between turbocharger and catalytic converter**

II - REFITTING OPERATION

Note:

If a stud loosens during this operation, coat it with **HIGH STRENGTH THREAD LOCK** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

Torque tighten the **turbocharger output studs (9 N.m)**.

- Fit:

- a new seal between the turbocharger and the catalytic converter,
- the catalytic converter on the turbocharger.

- Pretighten in order:

- the bolt and nut of the upstream strut on the engine,
- the downstream strut bolt and nut on the gearbox,
- the upstream strut bolts on the catalytic converter,
- the downstream strut bolt on the catalytic converter,
- the catalytic converter nuts on the turbocharger.

- Torque tighten in order:

- the **catalytic converter nuts on the turbocharger (28 N.m)**,
- the **upstream strut bolts on the engine (44 N.m)**,
- the **downstream strut bolt and nut on the gearbox (21 N.m)**,
- the **upstream strut bolts on the catalytic converter (26 N.m)**,
- the **downstream strut bolt on the catalytic converter (21 N.m)**.

- Make sure there is no contact between the catalytic converter and the turbocharger oil return pipe.

- Proceed in the reverse order to removal.

- Torque tighten the **exhaust flange bolts (21 N.m)**.

III - FINAL OPERATION

- Check:

- that all the exhaust pipe heat shields are in place and properly attached,
- that there is no contact with the underbody.

- Start the vehicle.

Catalytic converter: Removal - Refitting

K9K, and 796

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

Catalytic converter: Removal - Refitting

K4M, and 4X2 TRANSMISSION

Special tooling required

Mot. 1199-01 Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case.

Equipment required

component jack

Tightening torques 

bolt of the exhaust flange	21 N.m
oxygen sensor	45 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 **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**).

IMPORTANT

Wear cut-resistant gloves during the operation.

IMPORTANT

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

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.

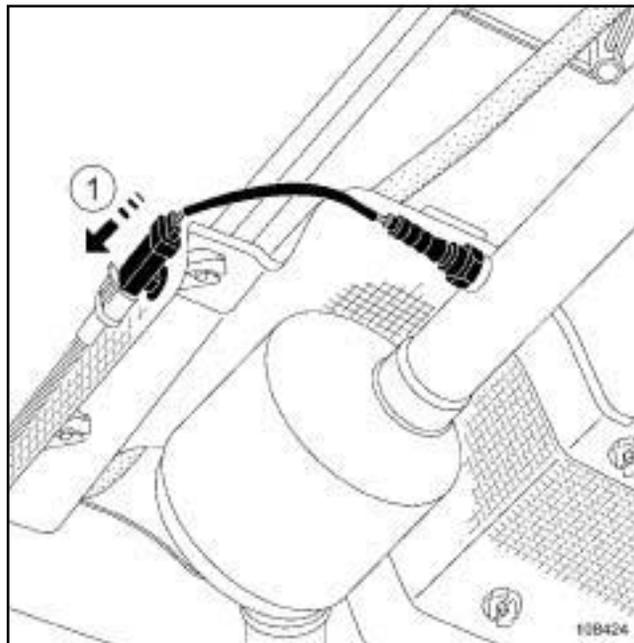
REMOVAL

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).

II - REMOVAL OPERATION

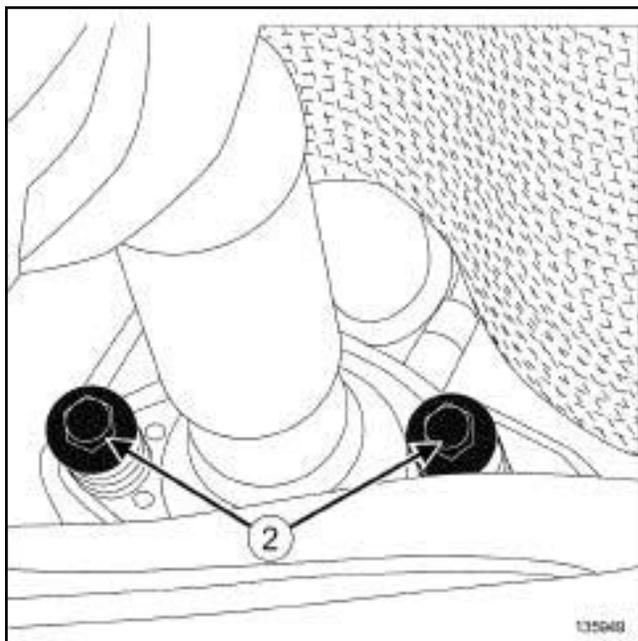


108424

- Remove the downstream oxygen sensor connector from its mounting by sliding it (1).
- Disconnect the downstream oxygen sensor connector.
- Put a **component jack** under the catalytic converter.
- Locate the area of the catalytic converter to be cut (see **19B, Exhaust, Exhaust: List and location of components**, page **19B-1**).
- Use the tool (**Mot. 1199-01**) to cut the exhaust pipe in the area to be cut (see **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**).

Catalytic converter: Removal - Refitting

K4M, and 4X2 TRANSMISSION



135949

 Remove:

- the exhaust flange bolts (2) ,
- the catalytic converter,
- the exhaust flange ring.

IF REPLACING THE CATALYTIC CONVERTER

-
- Remove the downstream oxygen sensor on the catalytic converter (see) .

REFITTING

I - REFITTING PREPARATION OPERATION

WARNING

To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

-
- Clean the bearing faces of the catalytic converter using
- ABRASIVE PADS**
- (see
- Vehicle: Parts and consumables for the repair**
-) (04B, Consumables - Products).

-
- Degrease the bearing faces of the catalytic converter using
- SURFACE CLEANER**
- and clean cloths (see
- Vehicle: Parts and consumables for the repair**
-) (04B, Consumables - Products).



109399

-
- parts always to be replaced: ring between exhaust manifold and catalytic converter

II - REFITTING OPERATION

 Refit:

- the downstream oxygen sensor (if replacing the catalytic converter),
- the catalytic converter.

-
- Fit a new After-Sales sleeve between the catalytic converter and the expansion chamber (see
- 19B, Exhaust, Exhaust: Precautions for the repair**
- , page
- 19B-6**
-) .

IMPORTANT

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

-
- Tighten the sleeve bolt while guiding the exhaust pipe to ensure correct alignment.

 Torque tighten:

- the **bolt of the exhaust flange (21 N.m)**,
- the **oxygen sensor (45 N.m)**.

III - FINAL OPERATION

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

 Check:

- that all the exhaust pipe heat shields are in place and properly attached,
- that there is no contact with the underbody.

-
- Start the vehicle.

Catalytic converter: Removal - Refitting

K4M, and 4X2 TRANSMISSION

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

Expansion chamber: Removal - Refitting

K4M, and 4X2 TRANSMISSION

Special tooling required

Mot. 1199-01	Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case.
Mot. 1857	Pliers for removing exhaust pipe rubber mounting bushes

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 **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**) .

WARNING

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

Any damaged heat shields must be replaced.

IMPORTANT

Wear heat protective gloves during the operation.

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

II - REMOVAL OPERATION

- Locate the areas of the expansion chamber to be cut (see **19B, Exhaust, Exhaust: List and location of components**, page **19B-1**) .
- Cut the exhaust pipe using the tool (**Mot. 1199-01**) in the designated areas to be cut (see **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**)

- Remove the rubber pad from the expansion chamber using the tool (**Mot. 1857**).

Note:

If the rubber pad is damaged, replace the rubber pad.

- Remove the expansion chamber.

REFITTING

I - REFITTING OPERATION

- Refit:
 - the expansion chamber,
 - the expansion chamber rubber pad.
- Fit new after-sales sleeves (see **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**) .

IMPORTANT

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

- Torque tighten the sleeve bolts while supporting the exhaust pipe to ensure alignment.

II - FINAL OPERATION

- Check:
 - all the exhaust pipe heat shields are in place and properly attached.
 - that there is no contact with the underbody,
- Start the vehicle.
- Check that there are no leaks and deal with them if necessary.

Intermediate pipe: Removal - Refitting

K9K

Special tooling required

Mot. 1199-01	Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case.
Mot. 1857	Pliers for removing exhaust pipe rubber mounting bushes

Equipment required

component jack

Tightening torques

exhaust sleeve bolts **25 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 **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**)

WARNING

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

Any damaged heat shields must be replaced.

IMPORTANT

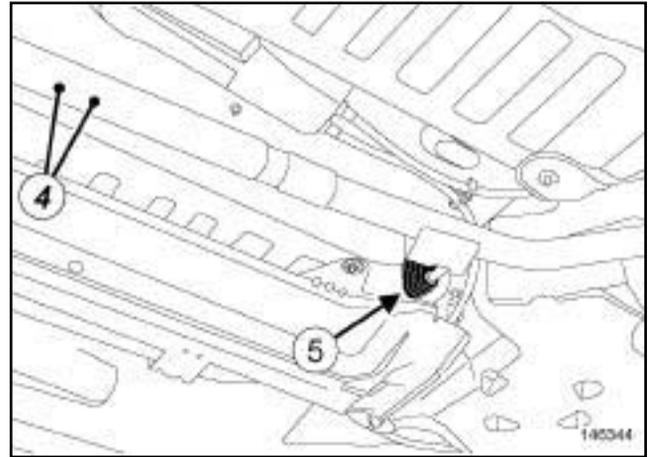
Wear heat protective gloves during the operation.

REMOVAL

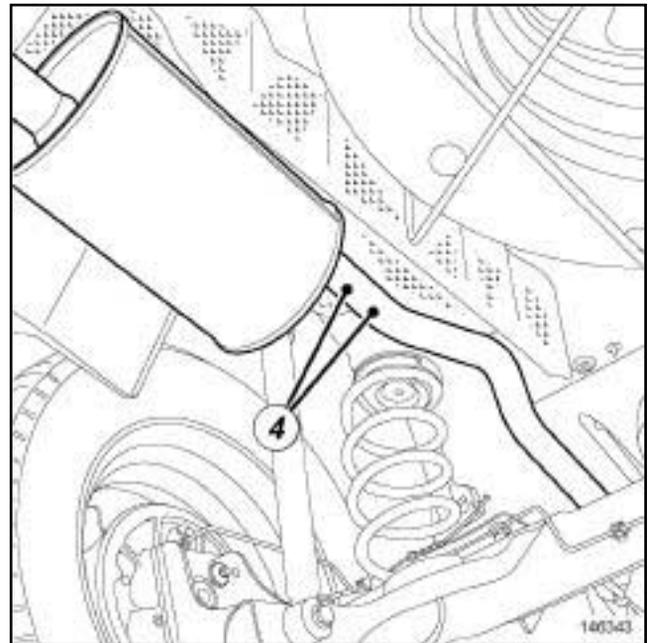
I - REMOVAL PREPARATION OPERATION

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

II - REMOVAL OPERATION



146344



146343

- Cut the exhaust pipe using the tool (**Mot. 1199-01**) in the centre of the areas to be cut (**4**) (see **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**).
- Remove the rubber mounting bush (**5**) from the intermediate pipe using the tool (**Mot. 1857**).

Note:

If the rubber mounting bush is damaged, it must always be replaced.

- Remove the intermediate pipe.

Intermediate pipe: Removal - Refitting

K9K

REFITTING

I - REFITTING OPERATION

- Refit the intermediate pipe.
- Refit the exhaust sleeves (see **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**) .

WARNING

Make sure:

- that the sleeve nut-bolt tightening assembly is vertical, with the nut facing downwards, to prevent any risk of underbody contact,
- that you position the new component in a way that the cutting area marks are aligned,
- that the two marks are flush with the two ends of the sleeve,
- that an old sleeve is not reused.

- Torque tighten the **exhaust sleeve bolts (25 N.m)**.
- Refit the rubber mounting bush of the intermediate pipe.

II - FINAL OPERATION

- Check:
 - that all the exhaust pipe heat shields are in place and properly attached,
 - that there is no contact with the underbody.

EXHAUST

Silencer: Removal - Refitting

19B

4X2 TRANSMISSION

Special tooling required

Mot. 1199-01	Exhaust pipe cutter (diameter 35/50 mm and diameter 50/65mm). Complete kit in a case.
Mot. 1857	Pliers for removing exhaust pipe rubber mounting bushes

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 **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**) .

WARNING

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

Any damaged heat shields must be replaced.

IMPORTANT

Wear heat protective gloves during the operation.

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

II - REMOVAL OPERATION

- Locate the area of the silencer to be cut (see **19B, Exhaust, Exhaust: List and location of components**, page **19B-1**) .
- Use the tool (**Mot. 1199-01**) to cut the exhaust pipe in the area to be cut (see **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**) .

- Remove the rubber pad from the silencer using the tool (**Mot. 1857**).

Note:

If the rubber pad is damaged, replace the rubber pad.

- Remove the silencer.

REFITTING

I - REFITTING OPERATION

- Refit:
 - the silencer,
 - the silencer rubber pad.
- Fit a new After-Sales exhaust sleeve (see **19B, Exhaust, Exhaust: Precautions for the repair**, page **19B-6**) .

IMPORTANT

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

- Tighten the sleeve while relieving the exhaust to ensure alignment.

II - FINAL OPERATION

- Check:
 - that all the exhaust pipe heat shields are in place and properly attached,
 - that there is no contact with the underbody.
- Start the vehicle.
- Check that there are no leaks and deal with them if necessary.

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

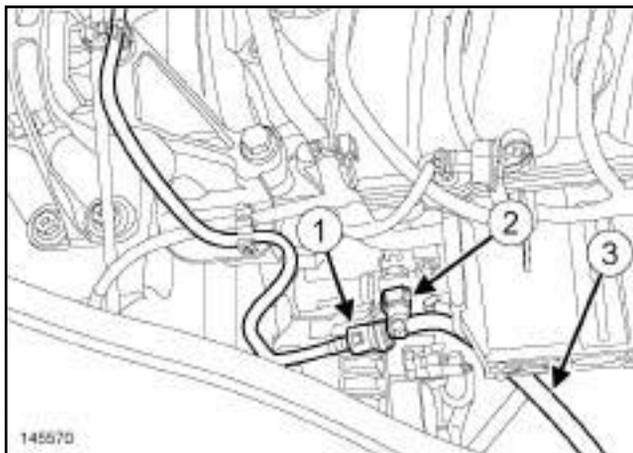
I - DRAINING PREPARATION OPERATION

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

II - DRAINING OPERATION

K4M

- Disconnect the fuel supply union from the injector rail (1).



145570

- Fit a T-union (**Mot. 1311-08**) at (2).
- Connect a **pneumatic transfer pump for fuels** to the T-union outlet (3).

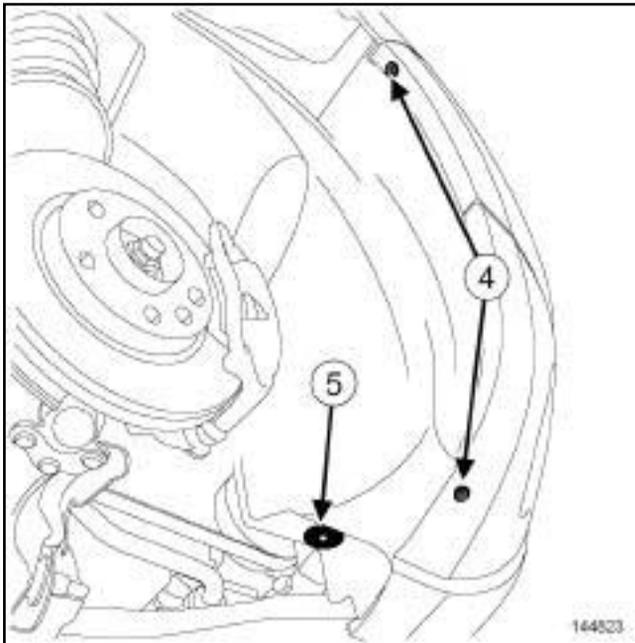
K9K

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

TANK

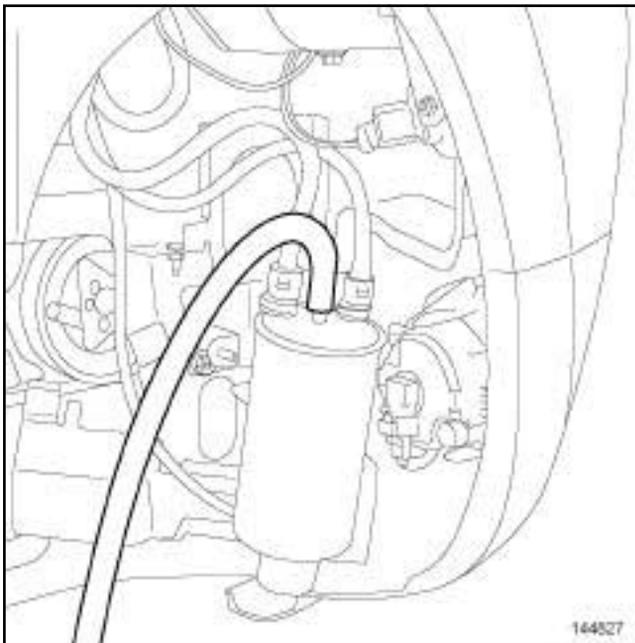
Fuel tank: Draining

19C



144823

- Remove:
 - the front right-hand wheel arch liner bolts (4) ,
 - the clip of the wheel arch liner (5) ,
 - the diesel filter protector (see) .
- Disconnect the fuel outlet pipe from the fuel filter.



144827

- Connect a **pneumatic transfer pump for fuels** to the fuel filter.
-
- Prepare for fuel outflow.

- Drain the fuel tank.

REFITTING

- Proceed in the reverse order to removal.

TANK

Fuel tank: Removal - Refitting

19C

4X2 TRANSMISSION

Tightening torques 	
fuel tank bolts	21 N.m
exhaust pipe bolts on the catalytic converter	21 N.m
catalytic converter bolts on the exhaust manifold	21 N.m
earth cable nut on the body	8 N.m

This method describes the removal - refitting procedure for the plastic tank

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.

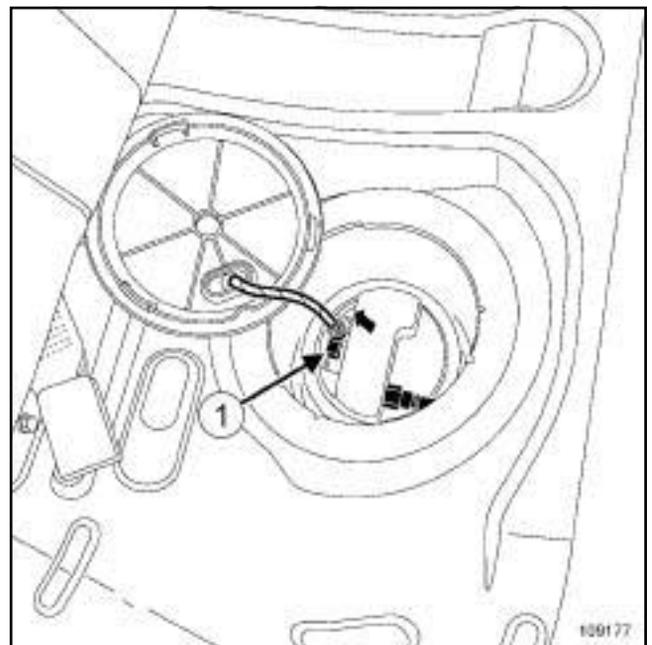
WARNING

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).
- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Drain the tank (see **19C, Tank, Fuel tank: Draining**, page **19C-1**).
- Tilt the rear bench seat base (see) (76A, Rear seat frames and runners).



109177

- Remove the access flap to the fuel level sensor module on the floor.
- Disconnect the connector (1) from the fuel pump.

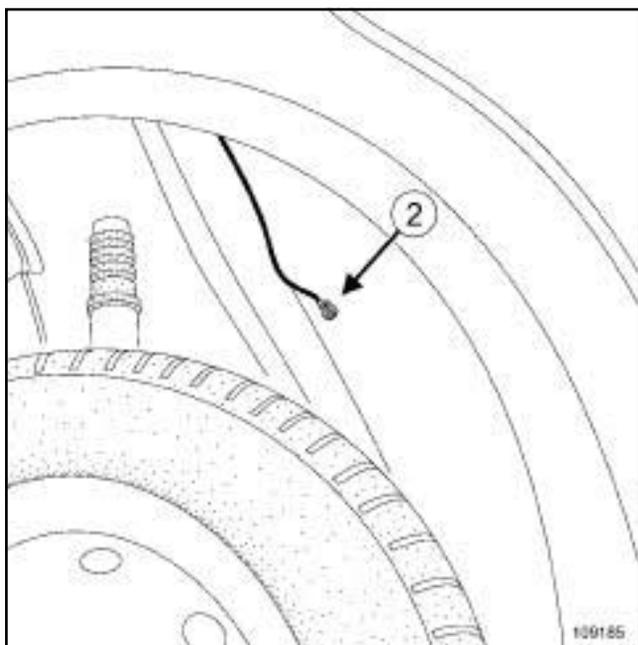
TANK

Fuel tank: Removal - Refitting

19C

4X2 TRANSMISSION

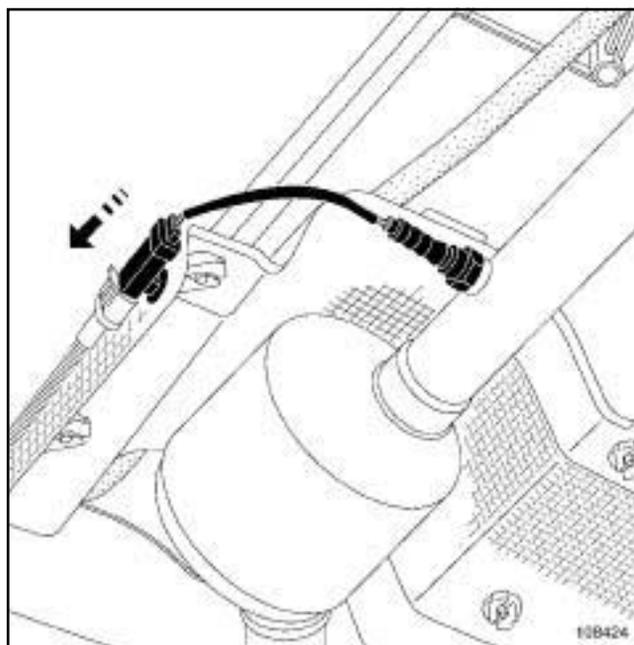
K4M



109185

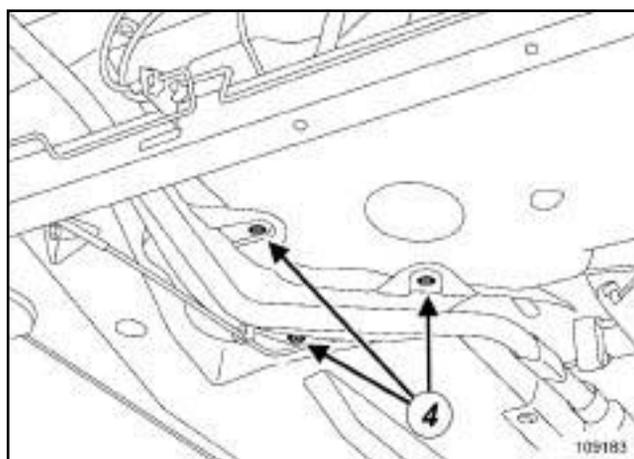
- Remove the body earth cable at (2) .

K4M



108424

- Remove the oxygen sensor connector by sliding it from its support (in the direction of the arrow).
- Disconnect the oxygen sensor connector.



109183

- Remove:
 - the heat shield pins (4) ,
 - the fuel tank heat shield.

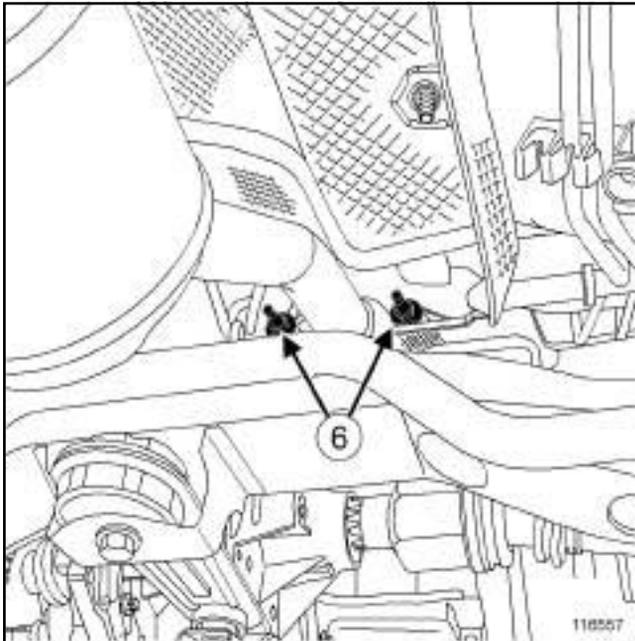
TANK

Fuel tank: Removal - Refitting

19C

4X2 TRANSMISSION

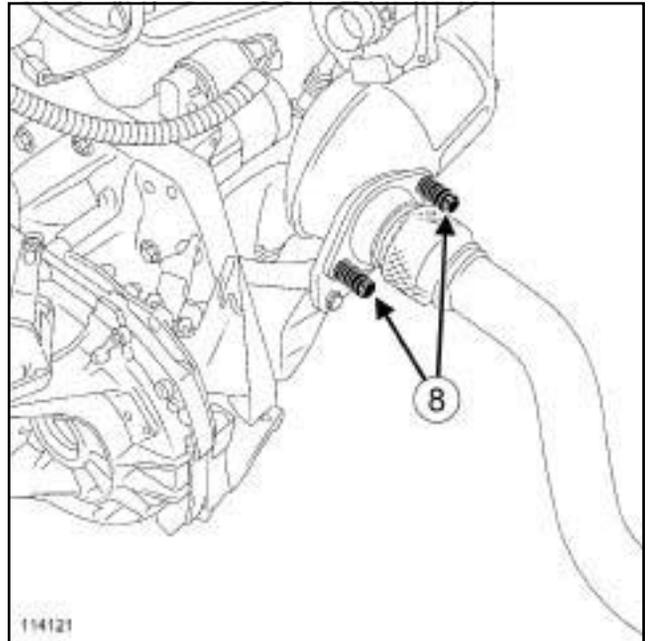
K4M



116557

- Remove the catalytic converter mountings (6) on the exhaust manifold.
- Detach the exhaust line assembly on the left-hand side.
- Attach the front section of the exhaust line assembly to the front lower arm on the left-hand side.

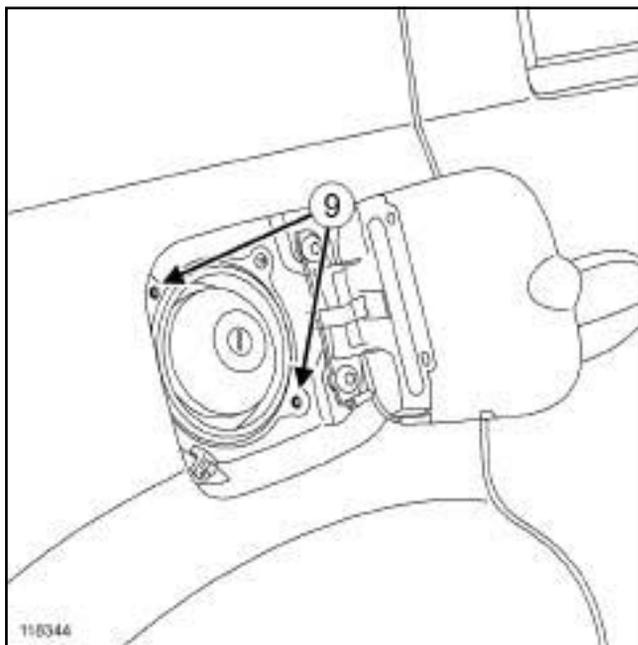
K9K



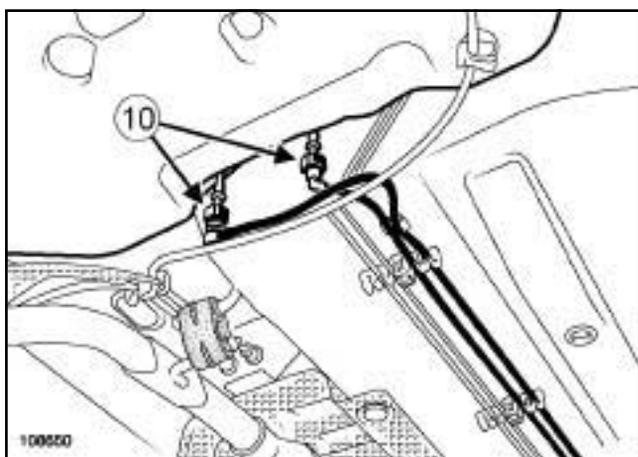
114121

- Remove the exhaust pipe mountings (8) from the catalytic converter.
- Place the exhaust line assembly on the left-hand side.
- Attach the front section of the exhaust line assembly to the front lower arm on the left-hand side.
- Unclip the parking brake cables from:
 - the fuel tank,
 - on the body.

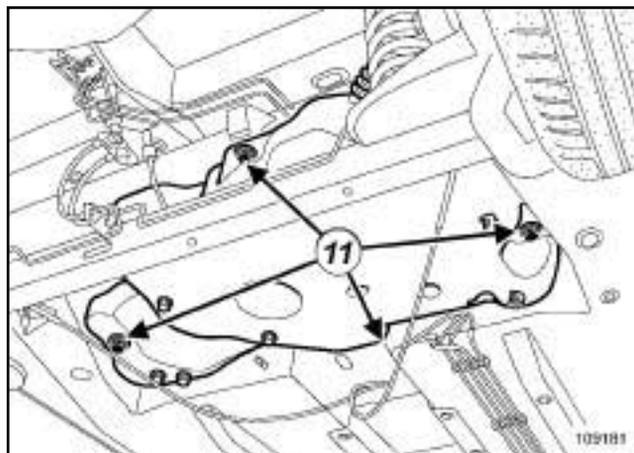
4X2 TRANSMISSION

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the bolts (9) from the filler neck.



- Disconnect the snap-on unions (10) from the tank outlet pipes.
- Remove the external fuel filter (if fitted to the vehicle) (see **Fuel filter: Removal - Refitting**).



Note:

This operation requires two people.

- Remove the bolts (11) from the fuel tank.
- Lower the tank slightly.
- Remove the fuel tank.

REFITTING**I - REFITTING PREPARATION OPERATION**

- It is essential to replace the sealing ring between the exhaust manifold and the catalytic converter.

II - REFITTING OPERATION FOR PART CONCERNED

Note:

This operation requires two people.

Fuel tank: Removal - Refitting

4X2 TRANSMISSION

- Refit the fuel tank.
- Refit the fuel tank bolts.
- Torque tighten the **fuel tank bolts (21 N.m)**.
- Refit the external fuel filter (if fitted to the vehicle) (see **Fuel filter: Removal - Refitting**) .
- Reconnect the snap-on unions to the tank outlet fuel pipes.
- Refit the filler neck bolts.

III - FINAL OPERATION

- Clip the parking brake cables:
 - onto the body,
 - onto the fuel tank.

K9K

- Refit the exhaust system assembly onto the catalytic converter.
- Torque tighten the **exhaust pipe bolts on the catalytic converter (21 N.m)**.

K4M

- Refit the exhaust system assembly onto the exhaust manifold.
- Torque tighten the **catalytic converter bolts on the exhaust manifold (21 N.m)**.
- Connect the oxygen sensor connector.
- Refit:
 - the oxygen sensor connector to its support,
 - the earth cable on the body.
- Torque tighten the **earth cable nut on the body (8 N.m)**.
- Refit:
 - the fuel tank heat shield,
 - the heat shield pins.
- Reconnect the fuel level sensor module connector.
- Refit the access flap for the fuel level sensor module on the floor.
- Refit the rear bench seat base (see) (76A, Rear seat frames and runners).

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

Fuel level sensor module: Removal - Refitting

K4M or K9K

Special tooling required

Car. 1363	Set of trim removal levers.
Mot. 1397	Universal spanner for removing fuel gauge nuts.

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**

- Disconnect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- Tilt the rear bench seat base.

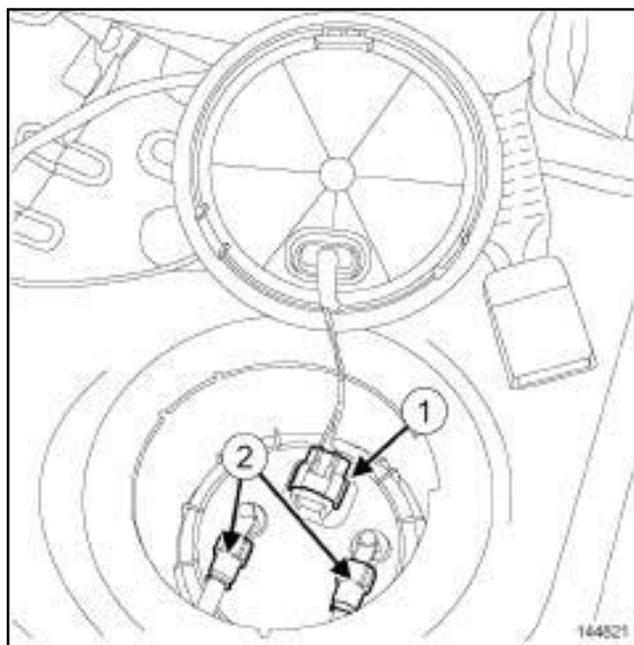
II - REMOVAL OPERATION

- Remove the blanking cover from the inspection flap using the tool (**Car. 1363**).

Note:

Make provisions for the flow of fuel from the fuel supply and return pipes.

K9K



144821

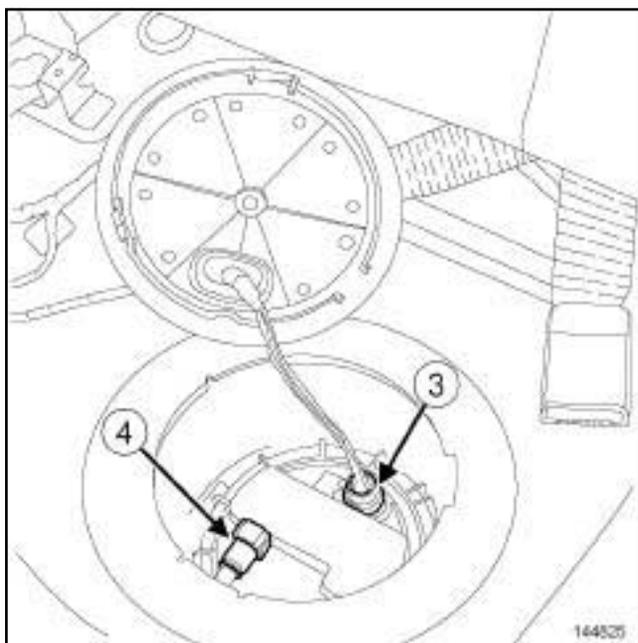
 Disconnect:

- the connector (1) ,
- the unions (2) .

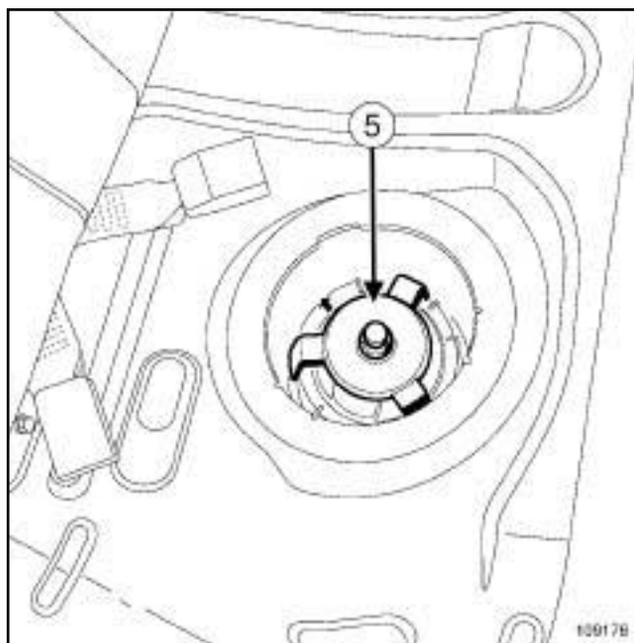
Fuel level sensor module: Removal - Refitting

K4M or K9K

K4M



- Disconnect:
 - the connector (3) ,
 - union (4) .



- Remove the nut from the fuel level sensor module using the tool (**Mot. 1397**) (5) ,
- Let the fuel drain from the fuel level sensor module.
- Remove:
 - the fuel level sensor module, taking care not to damage the float,
 - the fuel level sensor module seal.

WARNING

To prevent the tank from deforming, refit the fuel sender unit nut to the tank well immediately.

REFITTING**I - REFITTING PREPARATION OPERATION**

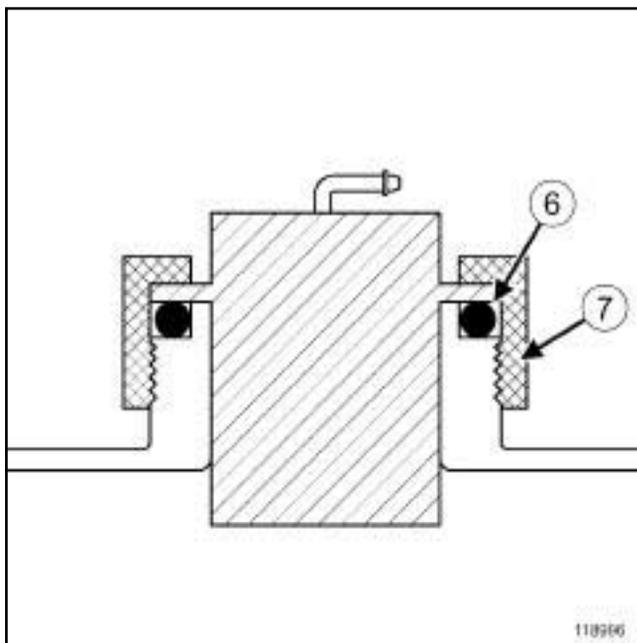
- parts always to be replaced: Fuel level sensor module nut
- parts always to be replaced: Fuel level sensor module seal

Fuel level sensor module: Removal - Refitting

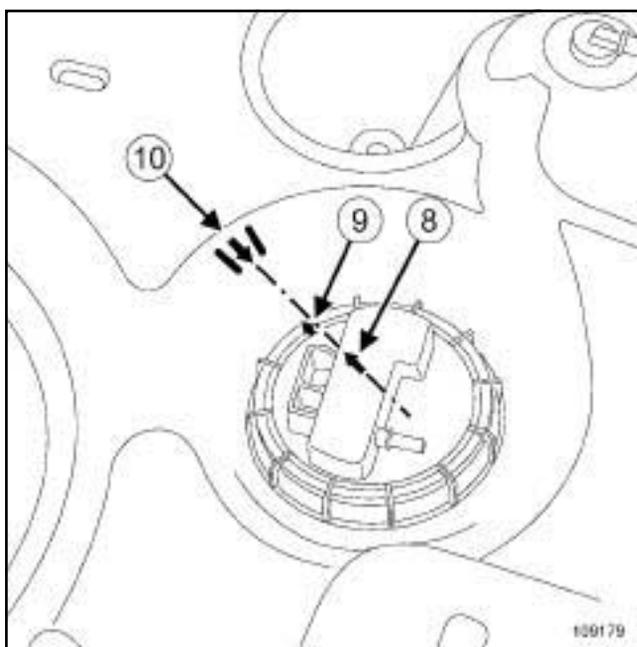
K4M or K9K

II - REFITTING OPERATION

K4M



118996



109179

 Position:

- the new seal (6) in the neck correctly,
- the fuel level sensor module on the fuel tank. A lug on the fuel level sensor module and a recess in the fuel tank ensure correct positioning in the fuel tank;

the mark (8) on the fuel level sensor module must be positioned opposite the mark on the fuel tank (10).

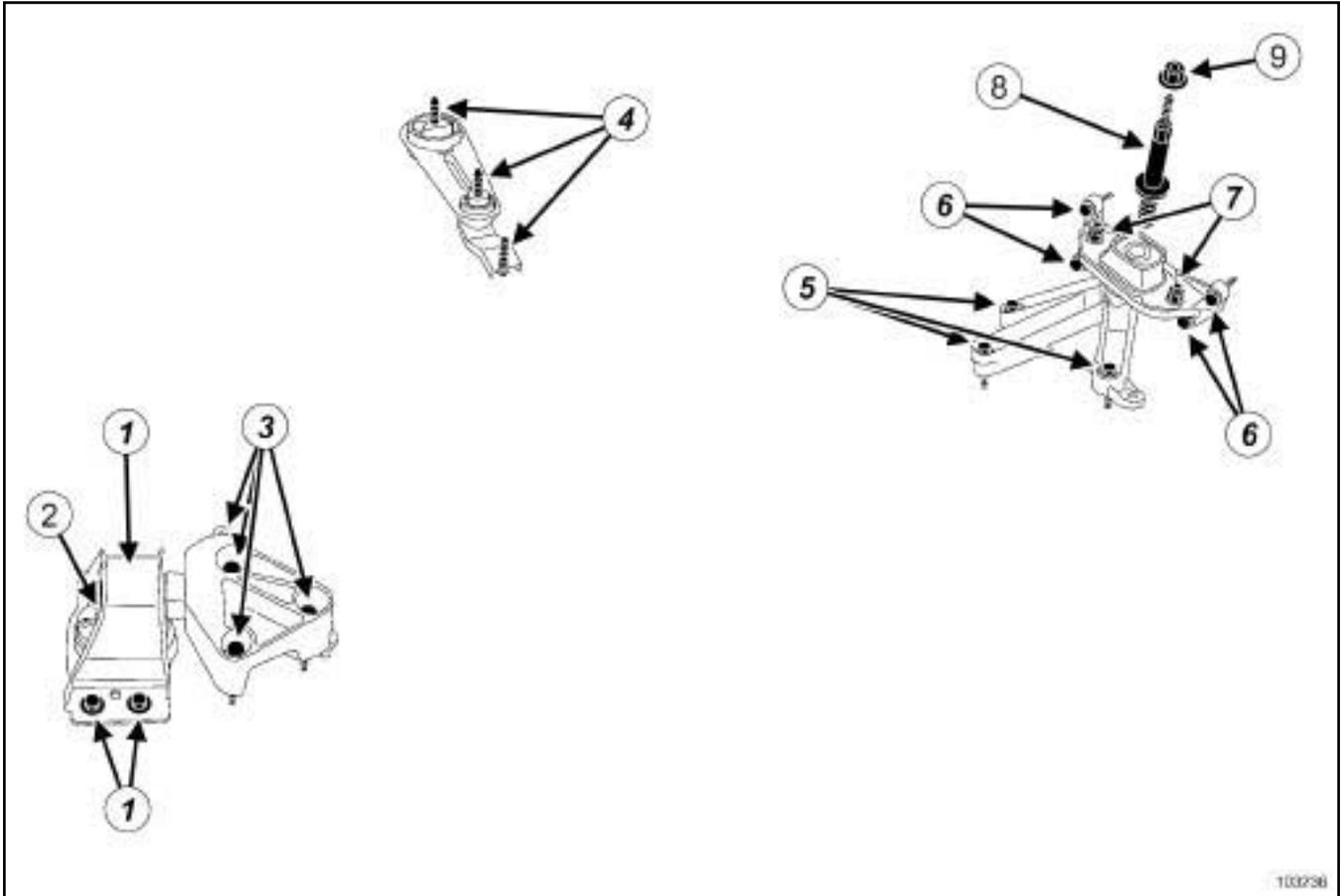
- Press the fuel level sensor module by hand (to prevent the seal from moving) and finger tighten the nut on the fuel tank.
- Then use the tool (**Mot. 1397**) to tighten the nut of the fuel level sensor module to the mark on the fuel tank.

K4M

- Tighten the nut (7) until the mark (9) on the nut is located opposite the mark (10) on the fuel tank using the tool (**Mot. 1397**).

- Proceed in the reverse order to removal.

K9K



103236

103236

No.	Description	Tightening torque (N.m)
(1)	Right-hand suspended mounting support bolt on the body	62
(3)	Right-hand suspended mounting support bolt on the engine	62
(5)	Left-hand mounting bolt on the gearbox	62
(6)	Left-hand rubber pad mounting bolt on the body	21
(7)	Left-hand rubber pad bolt on the mounting	105
(8)	Stud on the gearbox mounting	180
(9)	Gearbox mounting nut on the rubber pad	62

No.	Description	Tightening torque (N.m)
(4)	Engine tie-bar bolt	180

Special tooling required

Mot. 1453	Engine anchorage support with multiple adjustments and retaining straps.
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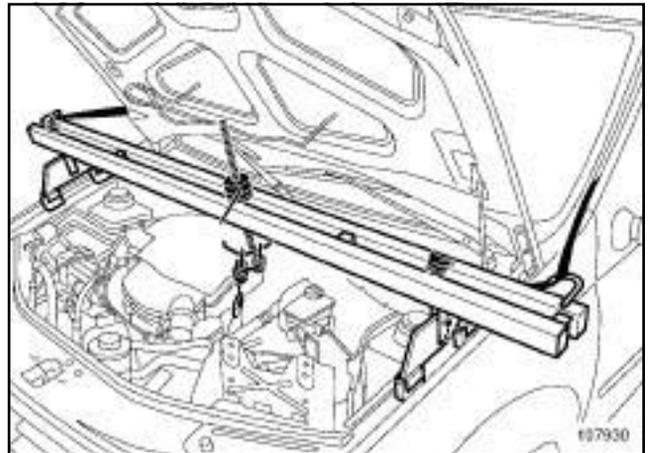
Tightening torques

bolts mounting the left-hand suspended mounting on the gearbox	62 N.m
bolt of the power-assisted steering pipe on the left-hand suspended mounting	21 N.m
stud on the gearbox support	180 N.m
left-hand rubber pad mounting bolts on the body	21 N.m
rubber pad nuts on the left-hand suspended mounting	105 N.m
nut of the gearbox support on the rubber pad	62 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

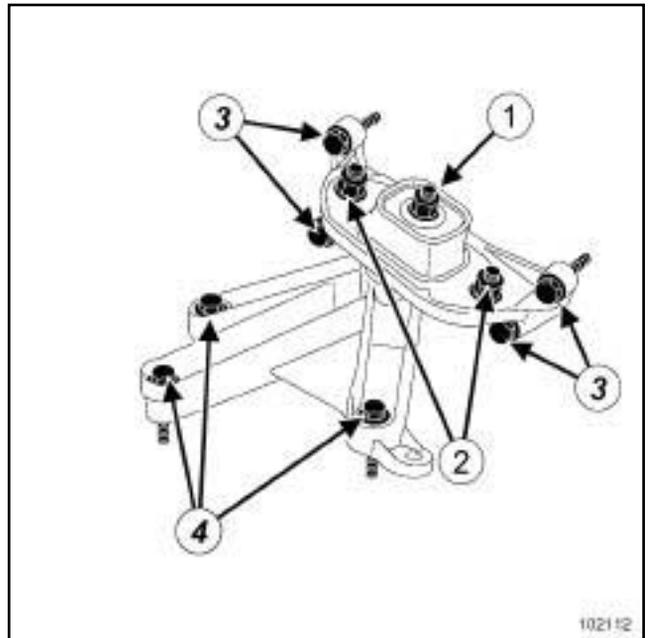
- Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- Remove:
 - the air inlet sleeve,
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray,
 - the injection computer (see **17B, Petrol injection, Petrol injection computer: Removal - Refitting**, page **17B-7**),
 - the engine undertray.



107930

- Fit the engine support tool (**Mot. 1453**) with the retaining belt, taking the flywheel end lifting eye as an anchoring point.
- Mark the position of the left-hand suspended engine mounting on the body.

II - REMOVAL OPERATION



102112

- Remove the nut (1) from the gearbox support on the rubber pad.
- Strike the gearbox stud with a copper hammer to separate the engine and gearbox assembly from the body.
- Remove:
 - the nuts (2) from the rubber pad,
 - the rubber pad,

Left-hand suspended engine mounting: Removal - Refitting

- the bolts (3) from the left-hand rubber pad mounting on the body,
- the left-hand rubber pad mounting,
- the power-assisted steering pipe bolt on the suspended mounting (if fitted to the vehicle),
- the left-hand suspended mounting bolts (4) on the gearbox,
- the left-hand suspended mounting on the gearbox.

- the battery tray,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the air intake sleeve.

REFITTING**I - REFITTING PREPARATION OPERATION**

- Always replace the self-locking nuts.

II - REFITTING OPERATION

- Refit:

- the left-hand suspended mounting on the gearbox,
- the power-assisted steering pipe bolt on the suspended mounting (if fitted to the vehicle),
- the left-hand rubber pad mounting,
- the rubber pad,
- the rubber pad nuts on the left-hand suspended mounting,
- the gearbox support nut on the rubber pad.

- Torque tighten:

- the **bolts mounting the left-hand suspended mounting on the gearbox (62 N.m)**,
- the **bolt of the power-assisted steering pipe on the left-hand suspended mounting (21 N.m)**,
- the **stud on the gearbox support (180 N.m)**,
- the **left-hand rubber pad mounting bolts on the body (21 N.m)**,
- the **rubber pad nuts on the left-hand suspended mounting (105 N.m)**,
- the **nut of the gearbox support on the rubber pad (62 N.m)**.

III - FINAL OPERATION

- Remove the engine support tool (**Mot. 1453**).

- Refit:

- the engine undertray,
- the injection computer (see **17B, Petrol injection, Petrol injection computer: Removal - Refitting, page 17B-7**),

K9K

Special tooling required

Mot. 1453 Engine anchorage support with multiple adjustments and retaining straps.

Tightening torques

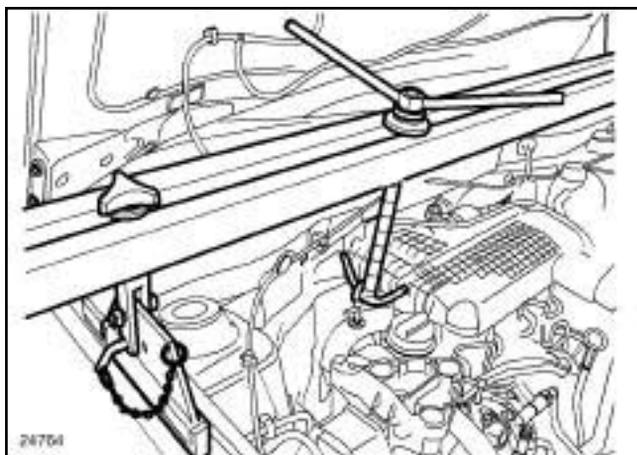
right-hand suspended engine mounting bolts on the engine	62 N.m
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right-hand suspended engine mounting bolts on the body	62 N.m
--	---------------

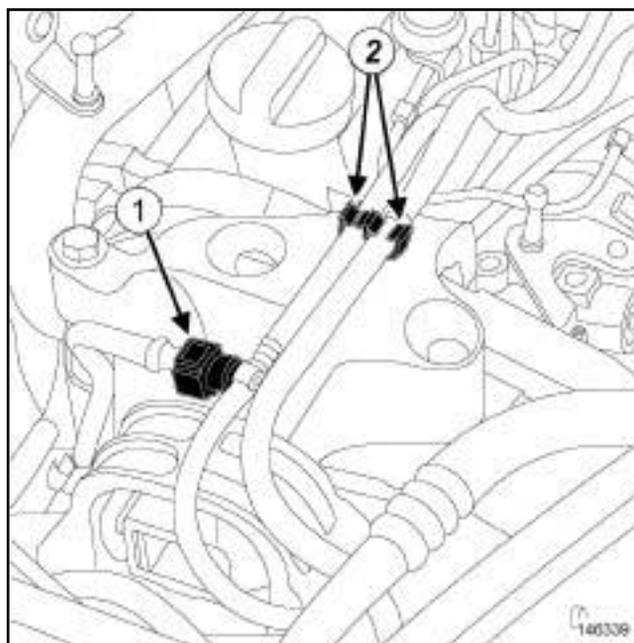
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Remove the front engine cover.



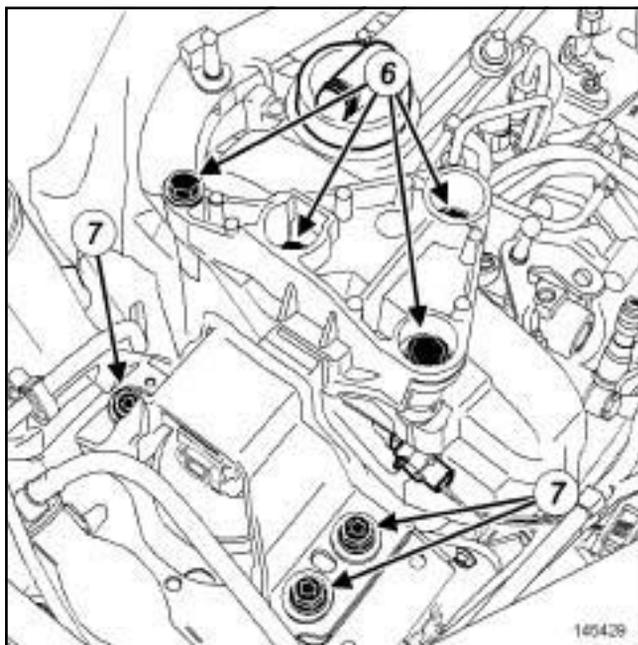
- Fit the engine support tool (**Mot. 1453**) with the retaining belt, taking the timing end lifting eye as an anchoring point.



- Disconnect the fuel pipe at (1) ,
- Insert the blanking plugs.
- Unclip the fuel pipes at (2) ,
- Move the fuel pipes aside.

K9K

II - REMOVAL OPERATION

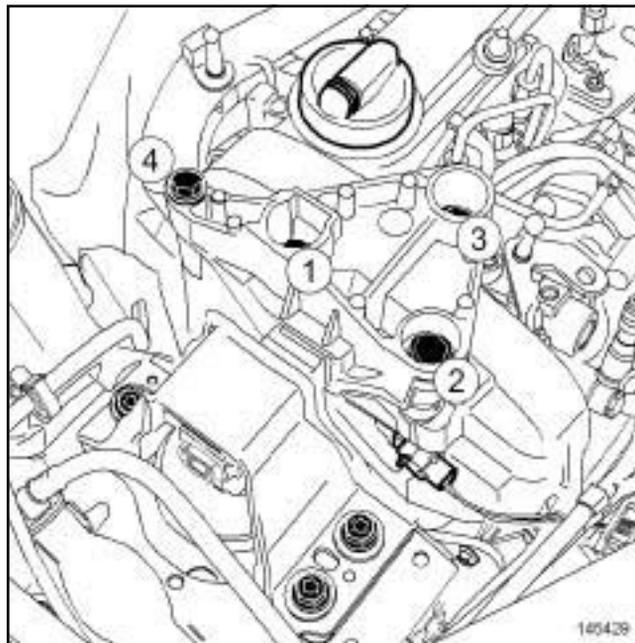


145429

- Mark the position of the right-hand suspended engine mounting on the body.
- Remove:
 - the bolts (6) from the right-hand suspended engine mounting on the engine,
 - the right-hand suspended engine mounting bolts (7) on the body,
 - the right-hand suspended engine mounting.

REFITTING

I - REFITTING OPERATION



145429

- Refit:
 - the right-hand suspended engine mounting observing the marks made on the body during removal,
 - the right-hand suspended engine mounting bolts on the engine,
 - the right-hand suspended engine mounting bolts on the body.
- Torque tighten in order the **right-hand suspended engine mounting bolts on the engine (62 N.m)**.
- Torque tighten the **right-hand suspended engine mounting bolts on the body (62 N.m)**.

II - FINAL OPERATION

- Position the fuel pipes.
- Clip on the fuel pipes at (2) .
- Remove the blanking plugs.
- Connect the fuel pipe at (1) .
- Remove the engine support tool (**Mot. 1453**) and the retaining strap.
- Refit the engine cover.

K4M

Special tooling required

Mot. 1453 Engine anchorage support with multiple adjustments and retaining straps.

Tightening torques

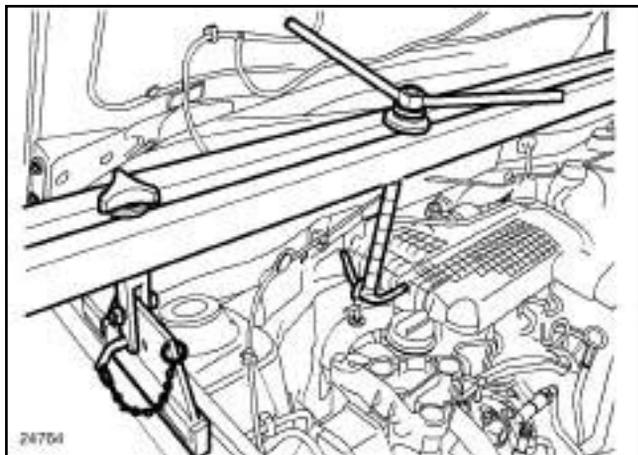
right-hand suspended engine mounting bolts on the engine **62 N.m**

right-hand suspended engine mounting bolts on the body **62 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

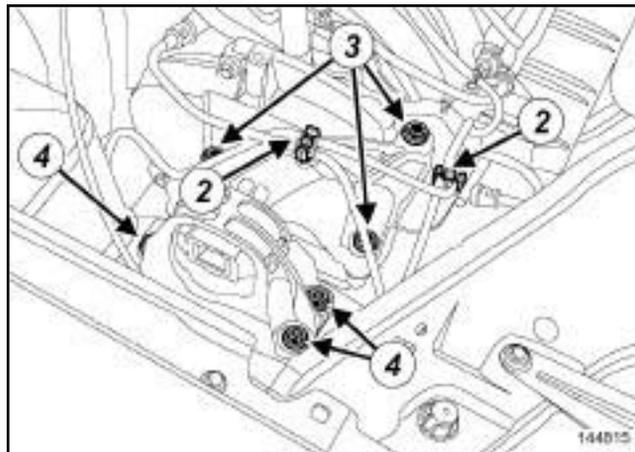
- Remove the front engine cover.



24764

- Fit the engine support tool (**Mot. 1453**) with the retaining belt, taking the timing end lifting eye as an anchoring point.

II - REMOVAL OPERATION



144815

- Detach at (2) :
 - the fuel supply pipe,
 - the petrol vapour recirculation pipe.
- Mark the position of the right-hand suspended engine mounting on the body.
- Remove:
 - the bolts (3) from the right-hand suspended engine mounting on the engine,
 - the right-hand suspended engine mounting bolts (4) on the body,
 - the right-hand suspended engine mounting.

REFITTING

I - REFITTING OPERATION

- Refit:
 - the right-hand suspended engine mounting observing the marks made on the body during removal,
 - the right-hand suspended engine mounting bolts on the engine,
 - the right-hand suspended engine mounting bolts on the body.
- Torque tighten:
 - the **right-hand suspended engine mounting bolts on the engine (62 N.m)**,
 - the **right-hand suspended engine mounting bolts on the body (62 N.m)**.
- Clip:
 - the fuel supply pipe,
 - the petrol vapour recirculation pipe.

ENGINE MOUNTING

Right-hand suspended engine mounting: Removal - Refitting

19D

K4M

II - FINAL OPERATION

- Remove the engine support tool (**Mot. 1453**).
- Refit the engine cover.

ENGINE MOUNTING

Lower engine tie-bar: Removal - Refitting

19D

Tightening torques

rear suspended engine mounting bolt on the subframe	105 N.m
rear suspended engine mounting bolts on the gearbox	105 N.m

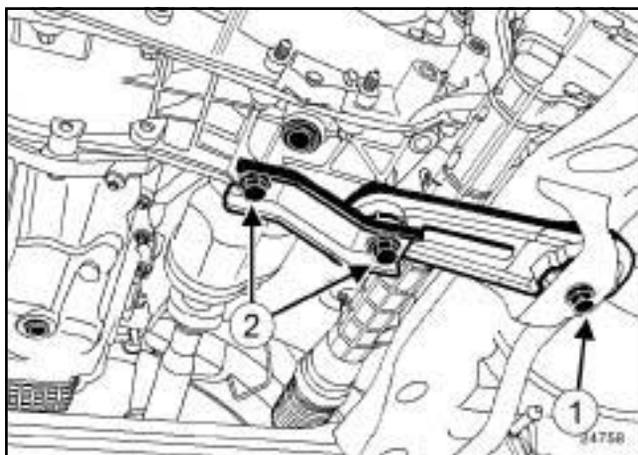
REMOVAL

I - REMOVAL PREPARATION OPERATION

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

II - REMOVAL OPERATION

JR5



24758

- Remove:
 - the rear suspended engine mounting bolt (1) from the subframe,
 - the rear suspended engine bolts (2) from the gearbox,
 - the rear suspended engine mounting.

REFITTING

I - REFITTING OPERATION

- Refit:
 - the rear suspended engine mounting,
 - the rear suspended engine mounting bolts.
- Torque tighten:
 - the rear suspended engine mounting bolt on the subframe (105 N.m),
 - the rear suspended engine mounting bolts on the gearbox (105 N.m).

II - FINAL OPERATION

- Refit the engine undertray.
- Tighten the engine undertray bolts.