

High pressure pipe between rail and injector: Removal - Refitting

K9K, and 750 or 752 or 766 or 768

- ☐ Insert the high-pressure pipe olive in the rail high-pressure outlet taper.
- ☐ Fit the high pressure pipe nuts without tightening them, starting with the nut on the injector end.
- ☐ Slightly pretighten the high-pressure pipe nuts.

Note:

The order of fitting of the rail - injector high pressure pipes is not important.

- ☐ Mount a new clip provided with the new high pressure pipe.
- ☐ If replacing the four high pressure pipes, torque tighten the **injector rail nuts (28 N.m)**.
- ☐ Tighten to torque and in order the **pump-rail high pressure pipe nuts (24 N.m)**.
 - pump end,
 - rail end.
- ☐ Tighten to torque and in order the **rail-injector high pressure pipe nuts (24 N.m)**.
 - injectors end,
 - rail end.

Note:

Tighten each pipe fully before moving on to the next pipe.

III - FINAL OPERATION

- ☐ Refit the neck on the injector rail and torque tighten the **nuts of the neck on the rail (21 N.m)**.
- ☐ Connect the connectors of:
 - the accelerometer,
 - the injectors,
 - the heater plugs.
- ☐ Refit the injector rail protector cover.
- ☐ Insert the dipstick.
- ☐ Refit the dipstick bolts.
- ☐ Refit the inlet duct and tighten its clip.
- ☐ Connect the inlet air pressure sensor.

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- ☐ Loosen the intercooler inlet air pipe nut on the alternator.
- ☐ Fit the air duct between the turbocharger and the intercooler air inlet pipe.
- ☐ Lock the air duct onto the turbocharger and the intercooler inlet air pipe.
- ☐ Tighten the bolt of the air duct on the rocker cover.
- ☐ Torque tighten the **nut mounting the intercooler inlet air pipe on the alternator (8 N.m)**.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) 392, 80A, Battery).
- ☐ Prime the diesel circuit using the priming pump.

WARNING

Check that there are no diesel leaks:

- check the sealing after repair (see **13B, Diesel injection, High pressure pipe: Check**, page **13B-99**) ,
- let the engine run at idle speed until the engine cooling fan starts to operate,
- accelerate several times at no load,
- carry out a road test,
- switch off the ignition,
- confirm that there is no diesel fuel leakage.

DIESEL INJECTION

Injector rail: Removal - Refitting

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Special tooling required

Mot. 1746	Offset wrench for tightening High Pressure pump pipes.
Mot. 1566	Tool for removing high pressure pipes.

Equipment required

Diagnostic tool

Tightening torques

injector rail mounting nuts	28 Nm
high pressure pipe nuts between the injector rail and the injectors	24 Nm
high pressure pipe nuts between the injector rail and the high pressure pump	24 Nm
nut mounting the inter-cooler air inlet pipe on the alternator	8 Nm

WARNING

Before starting work on the vehicle, have to hand:

- a new blanking plug kit (**part no. 77 01 476 857**),
- cleaning wipes (**part no. 77 11 211 707**),
- cleaning product (**part no. 77 11 224 188**).

WARNING

Parts always to be replaced:

- all the high pressure pipes which have been removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (MR 392, 02A, Lifting equipment).

- ☐ Switch off the ignition and wait **30 seconds** before starting work on the injection system.

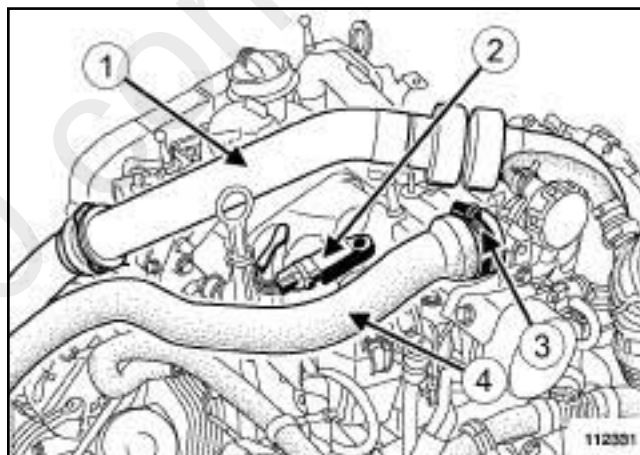
IMPORTANT

Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the rail is not under pressure,
- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system (see **13B, Diesel injection, Diesel injection: Precautions for the repair**, page **13B-1**) .

- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).
- ☐ Remove the engine cover.



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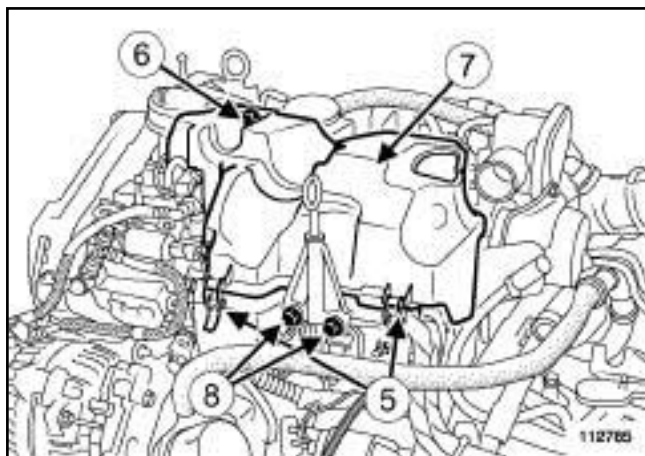
- ☐ Remove the upper section (1) of the turbocharging duct.
- ☐ Disconnect the inlet air pressure sensor (2)
- ☐ Loosen the clip (3) .
- ☐ Move the inlet duct to one side (4) .

DIESEL INJECTION

Injector rail: Removal - Refitting

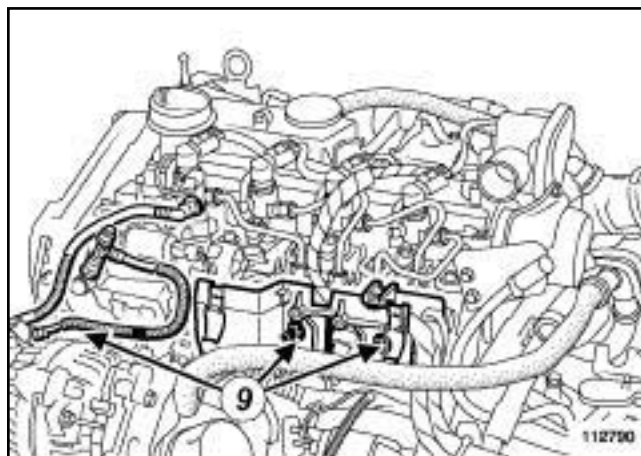
13B

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- ☐ Unclip the clips (5) from the injector rail protector cover.
- ☐ Remove:
 - the injector rail protector cover mounting bolt (6) ,
 - the injection rail protector cover (7) ,
 - the dipstick,
 - the dipstick tube (8) mounting bolts.
- ☐ Move the dipstick duct to one side.



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- ☐ Remove:
 - the injector rail protector support mounting bolts (9)
 - the injector rail protector mounting.
- ☐ Protect the alternator from fuel outflow.
- ☐ Pour cleaning product into a container.

IMPORTANT

Wear protective gloves when using cleaning product.

- ☐ Soak the brush with cleaning product, then clean the unions:
 - of the high pressure pipes between the injector rail and the injectors
 - of the high pressure pipe between the pump and the injection rail.
- ☐ Blast the cleaned areas with compressed air, then wipe them with new cleaning cloths.

IMPORTANT

Wear protective glasses.

WARNING

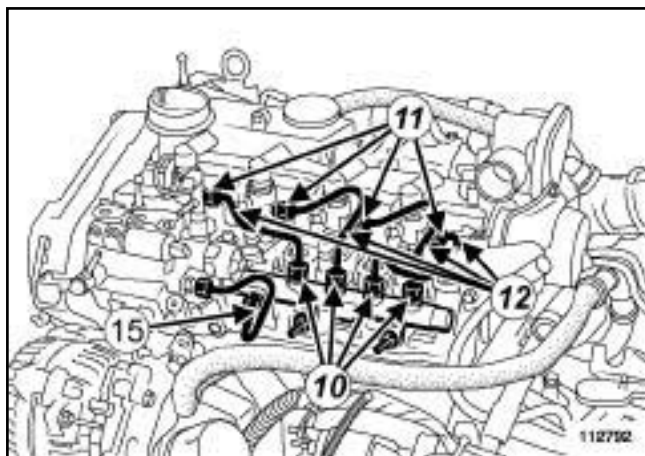
Do not blow compressed air once the fuel circuit is open, otherwise impurities may enter the system. Use wipes if necessary.

DIESEL INJECTION

Injector rail: Removal - Refitting

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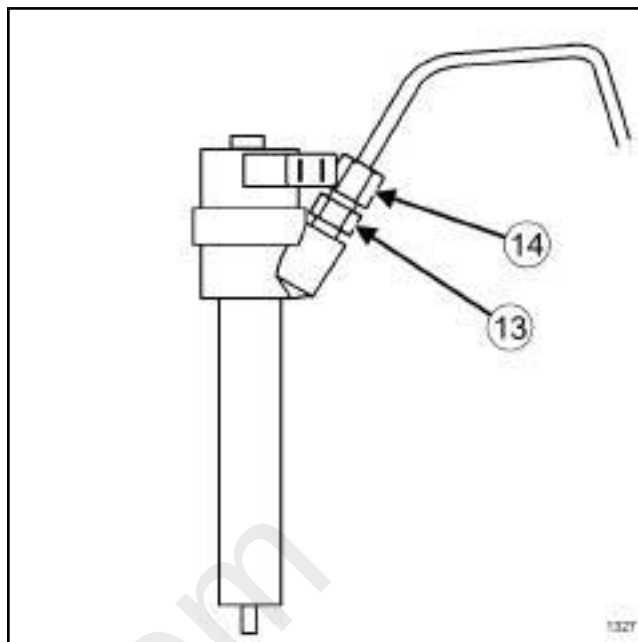
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□ Undo:

- the nut securing the four high pressure pipes between the injection rail and the injector at the rail end (**10**) ,
- the nut securing the high pressure pipes between the injection rail and the injector at the injector end (**11**) ,



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□

WARNING

When the high pressure pipe unions (**14**) on the injector holder have been loosened, always hold the rod filter retaining nut (**13**) with a lock wrench.

- Remove the four high pressure pipes (**12**) and discard them.

Note:

Make preparations for fuel outflow. Clean with new cloths.

- Fit the blanking plugs.
- Remove the high pressure pipe between the high pressure pump and the injection rail and discard it.

Note:

Hold the intermediate nut between the pump-rail pipe and the high pressure pump using a lock wrench.

Note:

Make preparations for fuel outflow. Clean with new cloths.

Insert the correct blanking plugs.

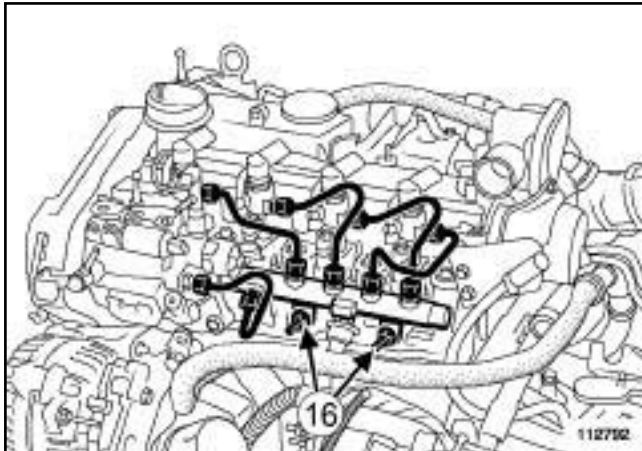
DIESEL INJECTION

Injector rail: Removal - Refitting

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II - REMOVAL OF PART CONCERNED



- ☐ Remove:
 - the injector rail mounting nuts (16) ,
 - the injector rail.

WARNING

If the injection rail is to be reused, keep it in a sealed plastic bag all the time it is disconnected.

REFITTING

I - REFITTING PREPARATION OPERATION

☐

WARNING

Remove the blanking plugs only before reconnecting the fuel circuit pipes.

The plugs are single-use only. Do not reuse them, and discard the kit once opened.

- ☐ Take the injector rail out of its plastic bag.

WARNING

If an injector rail is being replaced, only remove the new one from its original packaging when it is about to be fitted.

II - REFITTING PART CONCERNED

- ☐ Fit the injector rail.
- ☐ Finger tighten the injection rail mounting bolts (the injection rail should be loose).

III - FINAL OPERATION.

- ☐ Remove the blanking plugs from:
 - the high pressure pump,
 - the injection rail fuel inlet opening.
- ☐ Fit a new high pressure pipe between the injector rail and the high pressure pump.

Note:

If the new pipe kit does not contain an applicator, lubrication of the pipe threads will be unnecessary (as they are self-lubricating pipes).

- ☐ Finger tighten the high pressure pipe nuts until they make contact.
- ☐ Remove the blanking plugs from:
 - the rail injector fuel return openings,
 - the injector fuel inlet.
- ☐ Fit the new high pressure pipes between the rail and the injectors.

Note:

If the new pipe kit does not contain an applicator, lubrication of the pipe threads will be unnecessary (as they are self-lubricating pipes).

- ☐ Finger tighten the high pressure pipe nuts until they make contact.
- ☐ Torque tighten:
 - the **injector rail mounting nuts (28 Nm)**,
 - the **high pressure pipe nuts between the injector rail and the injectors (24 Nm)** using the **(Mot. 1746)** or **(Mot. 1566)**, starting on the injector side,
 - the **high pressure pipe nuts between the injector rail and the high pressure pump (24 Nm)** using the **(Mot. 1746)** or **(Mot. 1566)**, starting on the high pressure pump side.
- ☐ Refit:
 - the injector rail protector mounting,
 - the mounting bolts from the injection rail protector mounting,
 - the dipstick duct mounting bolts.
 - the dipstick,
 - the injector rail protector cover,
 - injection rail protector cover mounting bolts,
- ☐ Refit the air inlet duct and tighten the mounting clip.

DIESEL INJECTION

Injector rail: Removal - Refitting

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- ☐ Connect the inlet air pressure sensor
- ☐ Loosen the mounting nut securing the intercooler air inlet pipe to the alternator,
 - fit the air duct between the turbocharger and the intercooler air inlet pipe,
 - lock the air duct onto the turbocharger and the intercooler air inlet pipe.
 - tighten the air duct bolt on the rocker cover,
 - torque tighten the **nut mounting the intercooler air inlet pipe on the alternator (8 Nm)**.
- ☐ Reprime the fuel circuit.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).
- ☐ Confirm that there is no diesel fuel leak:
 - check the sealing after repair (see **13B, Diesel injection, High pressure pipe: Check**, page **13B-99**),
 - let the engine run at idle speed until the engine cooling fan starts to operate,
 - accelerate several times at no load,
 - check that there are no diesel leaks.
- ☐ Use the **Diagnostic tool** to check for stored faults. Clear them if necessary.

DIESEL INJECTION

Injector rail: Removal - Refitting

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Special tooling required

Mot. 1746	Offset wrench for tightening High Pressure pump pipes.
Mot. 1566	Tool for removing high pressure pipes.

Equipment required

Diagnostic tool

Tightening torques

injector rail nuts	28 Nm
high pressure pipe nuts between the injector rail and the injectors	24 Nm
high pressure pipe nuts between the injector rail and the high pressure pump	24 Nm
nut mounting the inter-cooler air inlet pipe on the alternator	8 Nm

WARNING

Before starting work on the vehicle, have to hand:

- a new blanking plug kit (**part no. 77 01 206 804**),
- cleaning wipes (**part no. 77 11 211 707**),
- cleaning product (**part no. 77 11 224 188**).

WARNING

Parts always to be replaced:

- all the high pressure pipes which have been removed.

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a lift (see **Vehicle: Towing and lifting**) (MR 392, 02A, Lifting equipment).

- ☐ Switch off the ignition and wait **30 seconds** before starting work on the injection system.

IMPORTANT

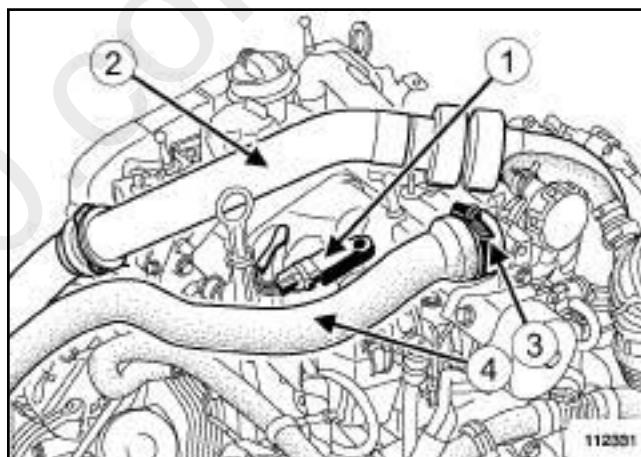
Before carrying out any work on the injection system, check using the **Diagnostic tool** :

- that the rail is not under pressure,
- that the fuel temperature is not too high.

It is essential to respect the safety and cleanliness advice whenever work is carried out on this system (see **13B, Diesel injection, Diesel injection: Precautions for the repair, page 13B-1**).

- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).

- ☐ Remove the front engine cover.



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- ☐ Disconnect the inlet air pressure sensor (1)

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- ☐ Remove the upper section (2) of the turbocharging duct.
- ☐ Loosen the clip (3).
- ☐ Move the inlet duct to one side (4).

- ☐ Remove:

- the dipstick,
- the dipstick tube bolts.

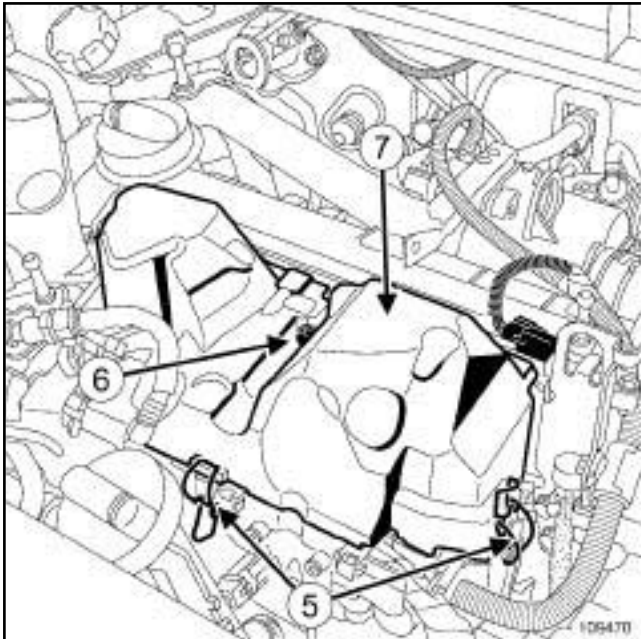
- ☐ Move the dipstick duct to one side.

DIESEL INJECTION

Injector rail: Removal - Refitting

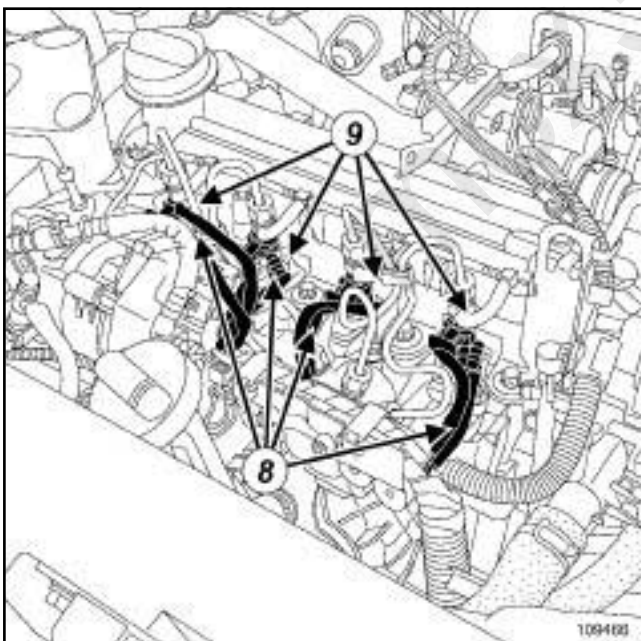
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- ☐ Unclip the clips (5) from the injector rail protector cover.
- ☐ Remove:
 - the injector rail protector cover bolt (6) ,
 - the injection rail protector cover (7) ,



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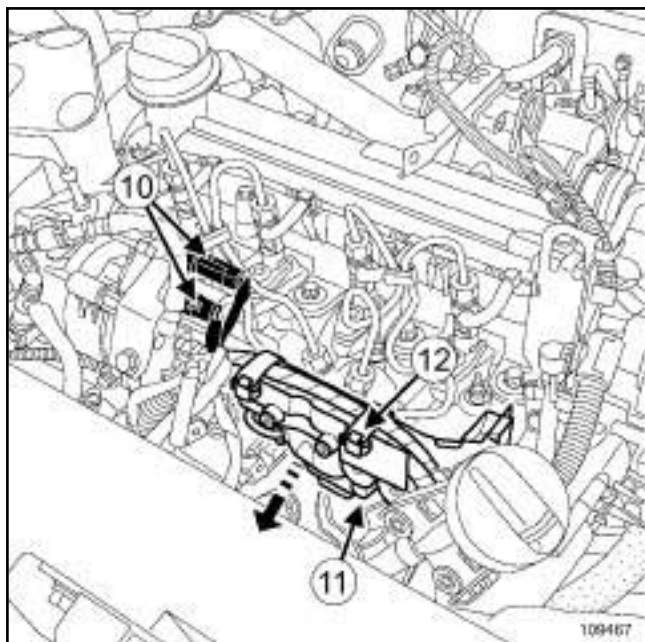
- ☐ Disconnect the connectors from the injectors (8) and the heater plugs (9) .

DIESEL INJECTION

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- ☐ Disconnect:
 - the connectors (10) from the fuel flow actuator and the diesel temperature sensor,
 - the pressure sensor (11) from the spherical injector rail,
- ☐ Move the electric wiring harness and neck to the side as shown by the arrow.
- ☐ Remove the mountings from the neck (12) fixed on the spherical rail.
- ☐ Protect the alternator from fuel outflow.
- ☐ Pour cleaning product into a container.

IMPORTANT

Wear protective gloves when using cleaning product.

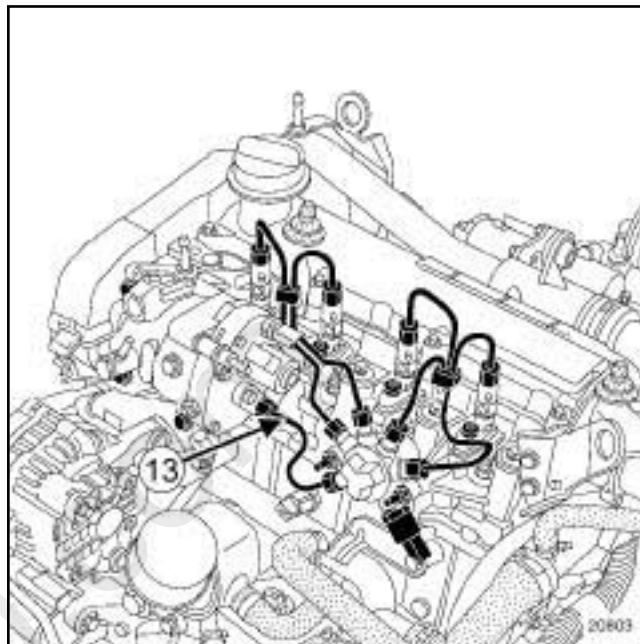
- ☐ Soak the brush with cleaning product, then clean the unions:
 - of the high pressure pipes between the injector rail and the injectors
 - of the high pressure pipe between the pump and the injection rail.
- ☐ Blast the cleaned areas with compressed air, then wipe them with new cleaning cloths.

IMPORTANT

Wear protective glasses

WARNING

Do not blast with compressed air once the fuel circuit is open, otherwise impurities may enter the system. Use cloths if necessary.



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- ☐ Remove the clips between the high pressure pipes.
- ☐ Undo:
 - the nut securing the high pressure pipes between the injection rail and the injector,
- ☐ Remove the four high pressure pipes and discard.

Note:

Make preparations for fuel outflow. Clean with new cloths.

- ☐ Fit the blanking plugs.
- ☐ Remove the high pressure pipe between the high pressure pump and the injector rail (13) .

Note:

Make preparations for fuel outflow. Clean with new cloths.

- ☐ Fit the blanking plugs.

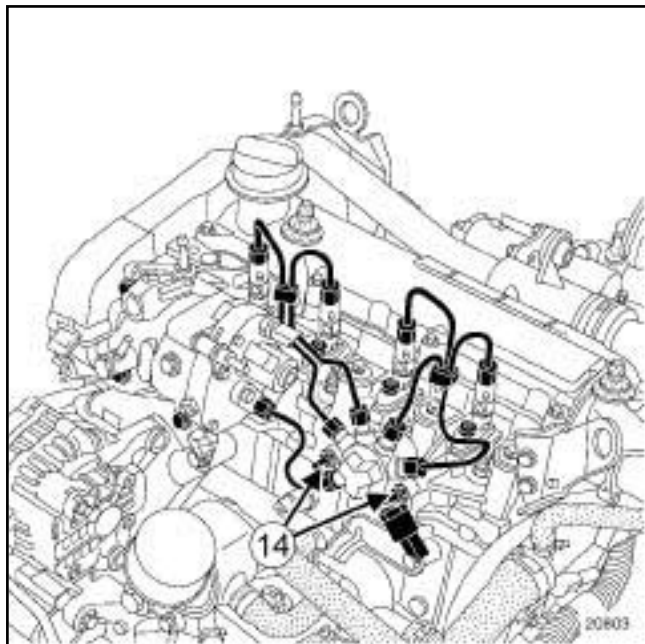
DIESEL INJECTION

Injector rail: Removal - Refitting

13B

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II - REMOVAL OF PART CONCERNED



❑ Remove:

- the nuts (**14**) from the injector rail,
- the injector rail.

WARNING

If the injector rail is to be reused, keep it in a sealed plastic bag all the time it is disconnected.

REFITTING

I - REFITTING PREPARATION OPERATION

❑

WARNING

Only remove the blanking plugs immediately before connecting the fuel circuit pipes.

The plugs are single-use. Do not reuse them, and discard the whole kit once opened.

- ❑ Take the injector rail out of its plastic bag.

WARNING

If an injector rail is being replaced, only remove the new one from its original packaging when it is about to be fitted.

II - REFITTING PART CONCERNED

- ❑ Fit the injector rail.

- ❑ Screw on the injector rail bolts without tightening them (the rail should be loose).

III - FINAL OPERATION.

- ❑ Remove the blanking plugs from:

- the high pressure pump,
- the injection rail fuel inlet opening.

- ❑ Fit a new high pressure pipe between the injector rail and the high pressure pump.

Note:

If the new pipe kit does not contain an applicator, lubrication of the pipe threads will be unnecessary (as they are self-lubricating pipes).

- ❑ Screw on the high pressure pipe nuts by hand until contact is made, but without tightening them.

- ❑ Remove the blanking plugs from:

- the rail injector fuel return openings,
- the injector fuel inlet.

- ❑ Fit the new high pressure pipes between the rail and the injectors.

Note:

If the new pipe kit does not contain an applicator, lubrication of the pipe threads will be unnecessary (as they are self-lubricating pipes).

- ❑ Screw on the high pressure pipe nuts by hand until contact is made, but without tightening them.

- ❑ Torque tighten:

- the **injector rail nuts (28 Nm)**,
- the **high pressure pipe nuts between the injector rail and the injectors (24 Nm)** using the **(Mot. 1746)** or **(Mot. 1566)**, starting on the injector side,
- the **high pressure pipe nuts between the injector rail and the high pressure pump (24 Nm)** using the **(Mot. 1746)** or **(Mot. 1566)**, starting on the high pressure pump side.

- ❑ Refit:

- the wiring harness with the neck,
- the channel mountings,
- the dipstick duct bolts,
- the dipstick,
- the injector rail protector cover,