



Note, one or more warnings are present in this procedure



Tightening torques	
cylinder head bolts	20 N.m
cylinder head bolts	240° ± 6°
exhaust manifold studs	8 N.m
exhaust manifold nuts	26 N.m

Essential special tooling	
Multiple-adjusting engine mounting support with retaining straps.	Mot. 1453
Pliers for large hose clips.	Mot. 1202-01
Pliers for small hose clips.	Mot. 1202-02
Long nose pliers for hose clips.	Mot. 1448
Cylinder head support	Mot. 1573
Cylinder head aligning tool	Mot. 104
Lower engine support.	Mot. 1672

Essential equipment
cylinder head test tank

 parts always to be replaced: 
Cylinder head gasket
cylinder head bolts

REMOVAL

1. 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,
- the front wheels ([see Wheel: Removal - Refitting](#)) (35A, Wheels and tyres),
- the front wheel arch liners ([see Front wheel arch liner: Removal - Refitting](#)) (55A, Exterior protection),
- the front bumper ([see Front bumper: Removal - Refitting](#)) (55A, Exterior protection),
- the battery ([see Battery: Removal - Refitting](#)) (80A, Battery),
- the battery tray ([see Battery tray: Removal - Refitting](#)) (80A, Battery),
- the air filter unit ([see 12A. Fuel mixture. Air filter: Removal - Refitting](#)),
- the windscreen wiper arms ([see Windscreen wiper arm: Removal - Refitting](#)) (85A, Wiping - Washing),
- the scuttle panel grille ([see Scuttle panel grille: Removal - Refitting](#)) (56A, Exterior equipment),
- the scoop under the scuttle panel grille ([see Scoop under scuttle panel grille: Removal - Refitting](#)) (56A, Exterior equipment).

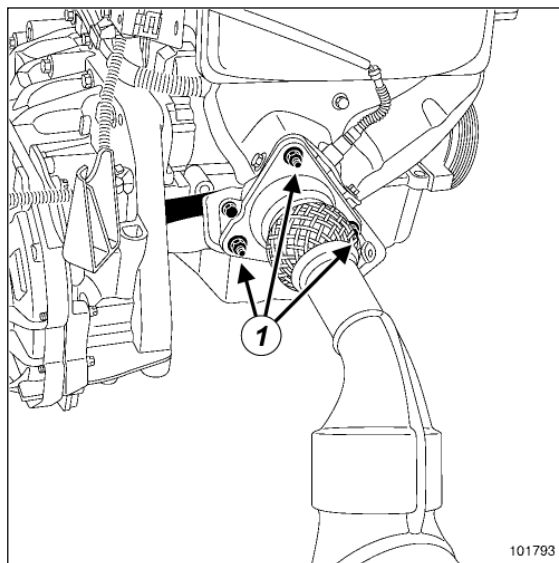
 Drain the cooling system ([see 19A. Cooling. Cooling circuit: Draining - Refilling](#)).

 Remove:

- the ignition coils ([see 17A. Ignition. Coils Removal - Refitting](#)),
- the throttle valve ([see 12A. Fuel mixture. Throttle valve: Removal - Refitting](#)),
- the intake distributor ([see 12A. Fuel mixture. Inlet manifold: Removal - Refitting](#)).

 Remove:

- the lower engine tie-bar ([see 19D. Engine mounting. Lower engine tie-bar: Removal - Refitting](#)),
- the right-hand suspended engine mounting ([see 19D. Engine mounting. Right-hand suspended engine mounting: Removal - Refitting](#)),
- the accessories belt ([see 11A. Top and front of engine. Accessories belt: Removal - Refitting](#)),
- the crankshaft accessories pulley ([see 11A. Top and front of engine. Crankshaft accessories pulley: Removal - Refitting](#)),
- the timing belt ([see 11A. Top and front of engine. Timing belt: Removal - Refitting](#)).



101793

■ Remove the nuts (1) from the exhaust flange.

■ Disconnect the oxygen sensor connectors .

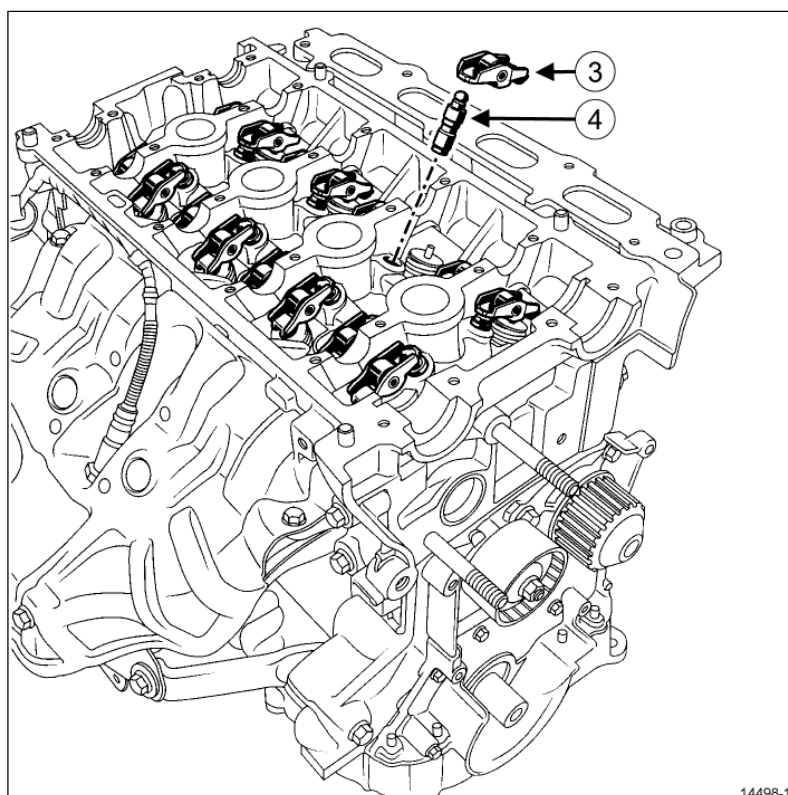
■ Disconnect:

- the coolant temperature sensor connector,
- the coolant hoses using the tool REPLACES CLIP PLIERS MOT. 1202 Pliers for large hose clips. (Mot. 1202-01) or the tool Pliers for small hose clips. (Mot. 1202-02) or the tool Long nose pliers for hose clips. (Mot. 1448) on the cylinder head coolant unit.

■ Move the electrical wiring to one side.

■ Remove:

- the rocker cover (see 11A. Top and front of engine. Rocker cover: Removal - Refitting).
- the inlet camshaft,
- the exhaust camshaft.



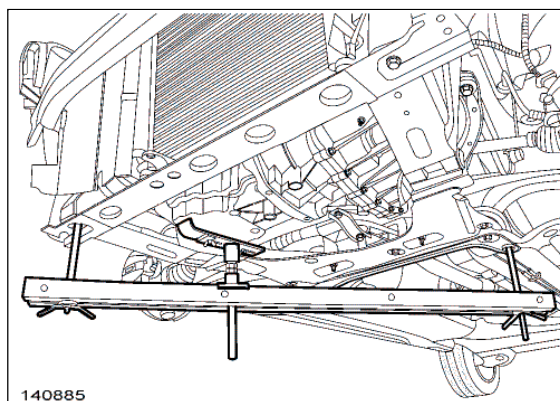
14498-1

- Remove:
- the valve rockers (3) .
 - the hydraulic tappets (4) .



Note:

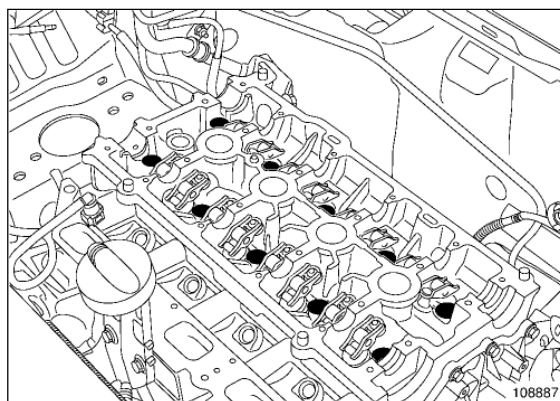
To prevent any risk of unpriming the hydraulic tappets make sure that they are vertical.



- Position the REPLACES MOT. 1367 Lower engine support. (Mot. 1672) .

- Remove the Multiple-adjusting engine mounting support with retaining straps. (Mot. 1453) .

2. OPERATION FOR REMOVAL OF PART CONCERNED



- Remove:
- the cylinder head bolts,
 - the cylinder head.

- Mount the cylinder head on the cylinder head support Cylinder head support (Mot. 1573) .

- Remove the cylinder head gasket from the cylinder block.

REFITTING

1. REFITTING PREPARATION OPERATION



parts always to be replaced: [Cylinder head gasket](#) 



parts always to be replaced: [cylinder head bolts](#) 

**WARNING**

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

**IMPORTANT**

Wear goggles with side protectors for this operation.

**IMPORTANT**

Wear protective gloves during the operation.

**WARNING**

Do not allow this product to drip onto the paintwork.

Clean the cylinder head carefully to avoid any foreign bodies entering the oil return and supply pipes.

Failure to follow this advice could lead to the blocking of the various oil inlet galleries, which would quickly result in engine damage.

**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 repair**) (04B, Consumables - Products) on the parts to be cleaned ([see Vehicle: Parts and ingredients for the repairwork](#)) (04B, Consumables - Products).

☐ Leave for approximately ten minutes.

☐ Remove residues with a wooden spatula.

☐ Finish cleaning the parts using a grey abrasive pad.

☐ Use a ruler and set of feeler gauges to check that there is no gasket face bow.

Maximum distortion: **0.05 mm**

**WARNING**

No regrinding of the cylinder head is permitted.

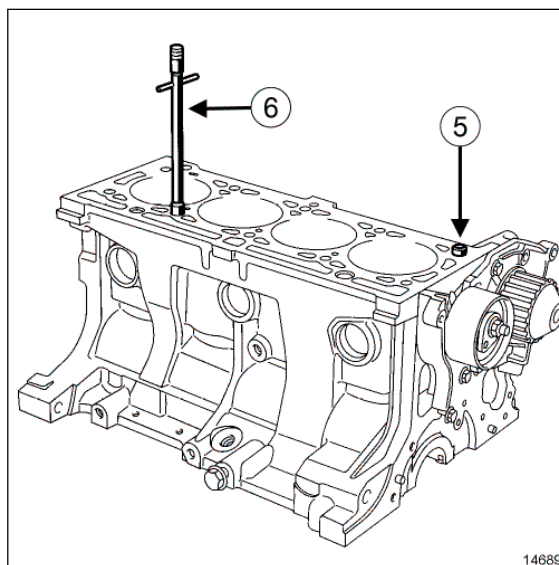
☐ Test the cylinder head to detect any possible cracks using a **EQUIPMENT REMOVED** .

☐ For the procedure of stripping down the cylinder head (see **Cylinder head: Dismantling**) (Technical Note 6006A, 10A, Engine and peripherals).

☐ Position the pistons at mid-stroke to prevent any contact with the valves when refitting the camshafts.

☐ Be sure to degrease:

- the combustion side of the cylinder head,
- the combustion side of the cylinder block.



14689

- ☐ Check that the centring dowel (5) is on the cylinder block.
- ☐ Set up tool Cylinder head aligning tool (Mot. 104) (6) on the cylinder block.

2. REFITTING OPERATION FOR PART CONCERNED

- ☐ Fit a new cylinder head gasket.
- ☐ Refit the cylinder head.



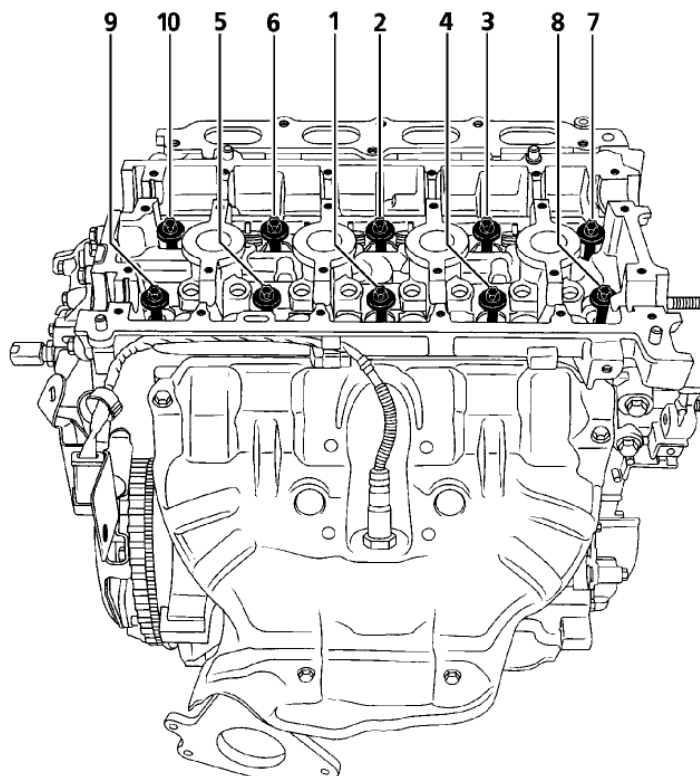
WARNING

In order to ensure that the bolts are correctly tightened, use a syringe to remove any oil which may be in the cylinder head mounting holes.



WARNING

Do not oil the new bolts. Be sure to oil bolts being reused.

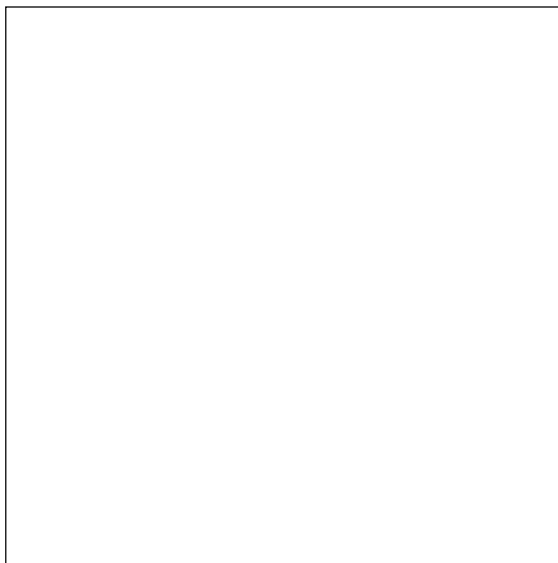


14500

- ☐ Pretighten to torque and in order the cylinder head bolts **20 N.m** .
- ☐ Check that all the cylinder head bolts are tightened to the correct torque of **20 N.m** .
- ☐ Angle tighten in order the cylinder head bolts **240° ± 6°** .


3. FINAL OPERATION

- ☐ Position the Multiple-adjusting engine mounting support with retaining straps. (Mot. 1453) .
- ☐ Remove the REPLACES MOT. 1367 Lower engine support. (Mot. 1672) .



- ☐ Reprime the hydraulic tappets (hydraulic tappets may empty after a long down time).

To check if repriming is necessary, press the top of the tappet (7) with your thumb.

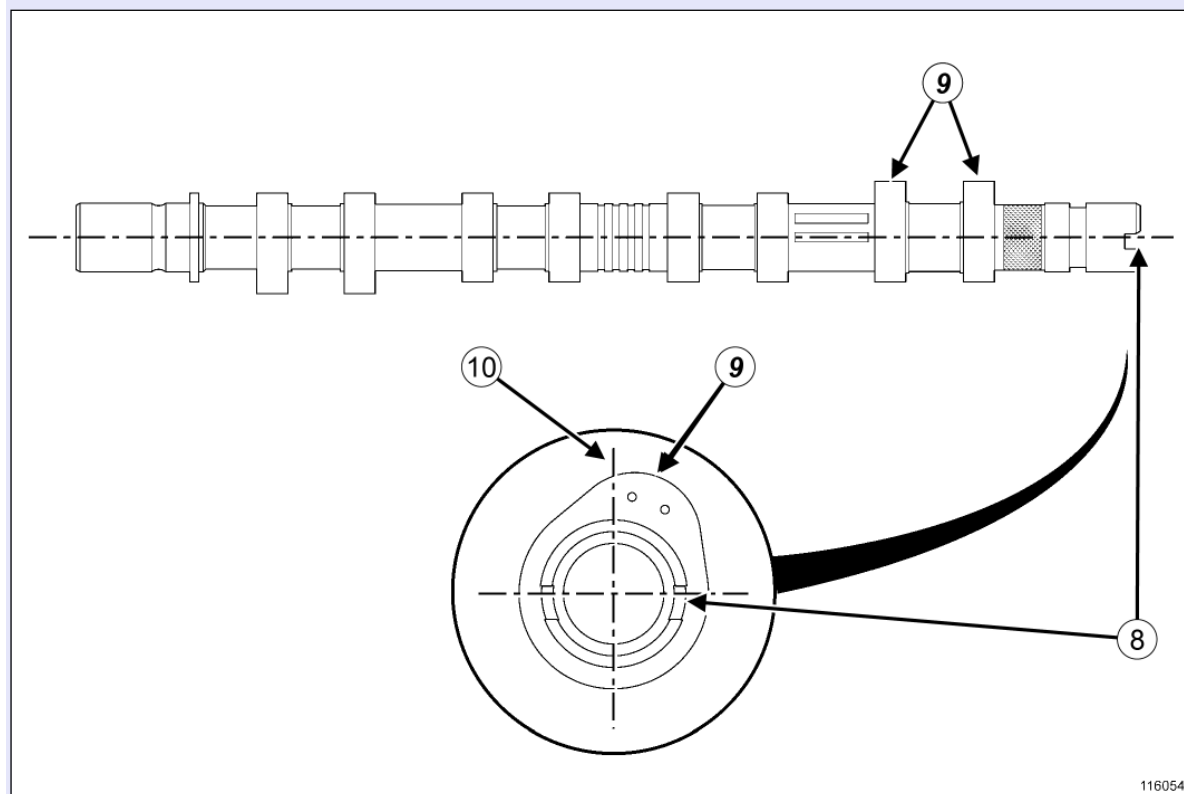
 If the tappet piston depresses:

- immerse the tappets in a container of diesel fuel,
- refit the hydraulic tappets.

 Refit:

- the hydraulic tappets,
- the valve rockers.

1- CAMSHAFT MARKING

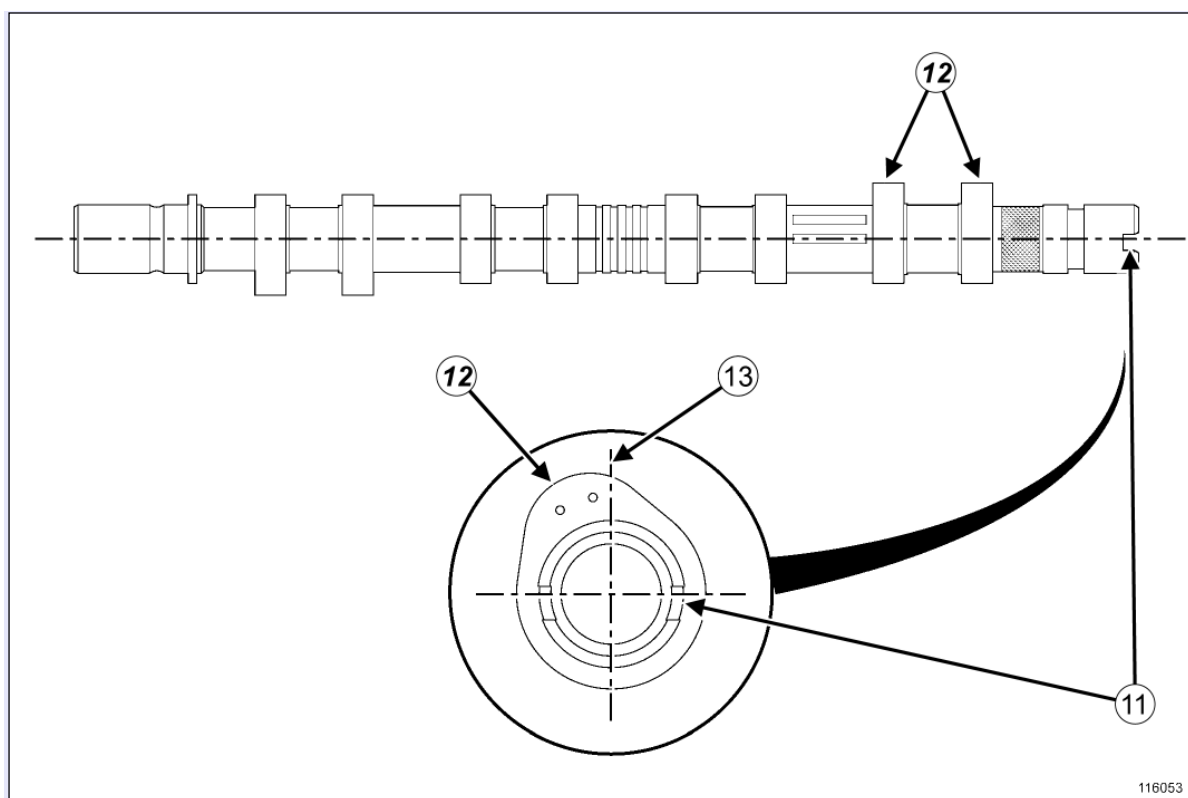


116054

☐ Position the groove (8) at the end of the camshaft so that it is horizontal and offset downwards.

The cams (9) for cylinder 1 must be located to the right of the vertical axis (10), flywheel end view.

EXHAUST CAMSHAFT



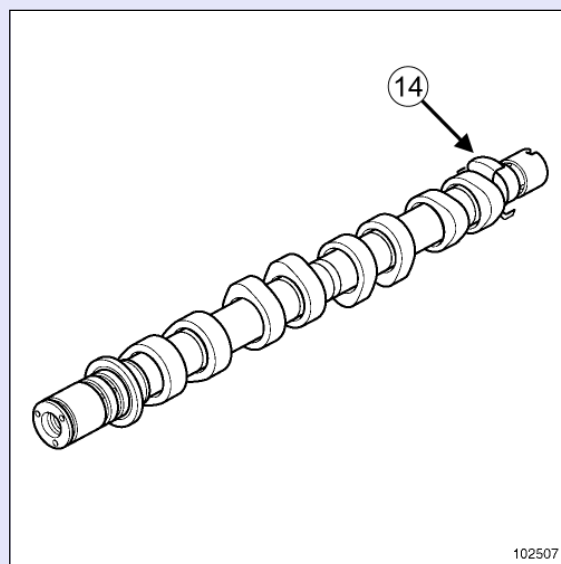
Position the groove (11) at the end of the camshaft so that it is horizontal and offset downwards.

The cams (12) for cylinder 1 must be located to the left of the vertical axis (13), flywheel end view.

Refit the camshafts, oiling the bearings.

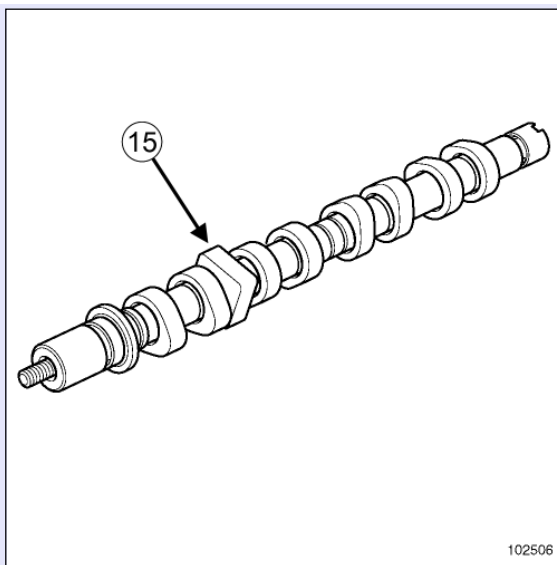
INLET CAMSHAFT

K4M



(14) The inlet camshaft is fitted with the camshaft sensor target

EXHAUST CAMSHAFT



102506

(15) The exhaust camshaft is fitted with the square cam

■ Refit the camshafts, oiling the bearings.

■ Refit the rocker cover ([see 11A. Top and front of engine, Rocker cover: Removal - Refitting](#)).

■ Connect:

- the coolant hoses using the tool REPLACES CLIP PLIERS MOT. 1202 Pliers for large hose clips. ([Mot. 1202-01](#)) or the tool Pliers for small hose clips. ([Mot. 1202-02](#)) or the tool Long nose pliers for hose clips. ([Mot. 1448](#)) on the cylinder head coolant unit.
- the coolant temperature sensor connector.

■ Connect the oxygen sensor connectors.

■ Refit the exhaust flange nuts.

■ Tighten to torque:

- the exhaust manifold studs **8 N.m**.
- the exhaust manifold nuts **26 N.m**.

■ Refit:

- the timing belt ([see 11A. Top and front of engine, Timing belt: Removal - Refitting](#)),
- the crankshaft accessories pulley ([see 11A. Top and front of engine, Crankshaft accessories pulley: Removal - Refitting](#)),
- the accessories belt ([see 11A. Top and front of engine, Accessories belt: Removal - Refitting](#)),
- the right-hand suspended engine mounting ([see 19D. Engine mounting, Right-hand suspended engine mounting: Removal - Refitting](#)),
- the lower engine tie-bar ([see 19D. Engine mounting, Lower engine tie-bar: Removal - Refitting](#)).

■ Refit:

- the inlet manifold ([see 12A. Fuel mixture, Inlet manifold: Removal - Refitting](#)),
- the throttle valve ([see 12A. Fuel mixture, Throttle valve: Removal - Refitting](#)),
- the ignition coils ([see 17A. Ignition, Coils Removal - Refitting](#)).

■ Refit:

- the scoop under the scuttle panel grille ([see Scoop under scuttle panel grille: Removal - Refitting](#)) (56A, Exterior equipment),
- the scuttle panel grille ([see Scuttle panel grille: Removal - Refitting](#)) (56A, Exterior equipment),
- the windscreen wiper arms ([see Windscreen wiper arm: Removal - Refitting](#)) (85A, Wiping - Washing),
- the air filter unit ([see 12A. Fuel mixture, Air filter unit: Removal - Refitting](#)),
- the battery tray ([see Battery: Removal - Refitting](#)) (80A, Battery),
- the battery ([see Battery: Removal - Refitting](#)) (80A, Battery),
- the front bumper ([see Front bumper: Removal - Refitting](#)) (55A, Exterior protection),
- the front wheel arch liners ([see Front wheel arch liner: Removal - Refitting](#)) (55A, Exterior protection),
- the front wheels ([see Wheel: Removal - Refitting](#)) (35A, Wheels and tyres),
- the engine undertray,
- the engine cover.

■ Fill and bleed the cooling system ([see 19A. Cooling, Cooling circuit: Draining - Refilling](#)).



Repair-10x02x01-01x37-1-2-1.xml



SSL version : 1.00 du 13/11/07