

TOP AND FRONT OF ENGINE

Lifting eyes: Removal - Refitting

11A

F4R

IV - REMOVING THE GEARBOX SIDE LIFTING EYE

☐ Remove:

- the gearbox side lifting eye mounting bolts,
- the gearbox side lifting eye.

☐ Put the lifting eye and mounting bolts back in the tool tray.

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TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

D4F, and 740 or 742 or 764

Equipment required

cylinder head testing tools

Tightening torques

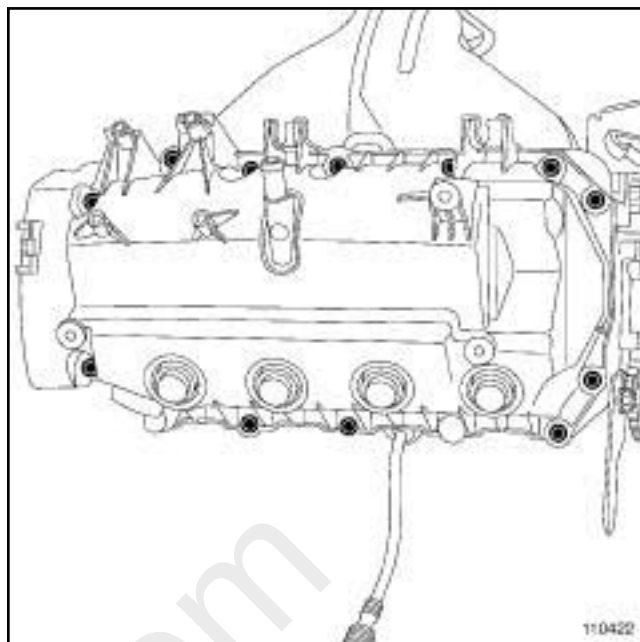
cylinder head bolts (initial torque)	20 N.m
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cylinder head bolts	230° ± 6°
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REMOVAL

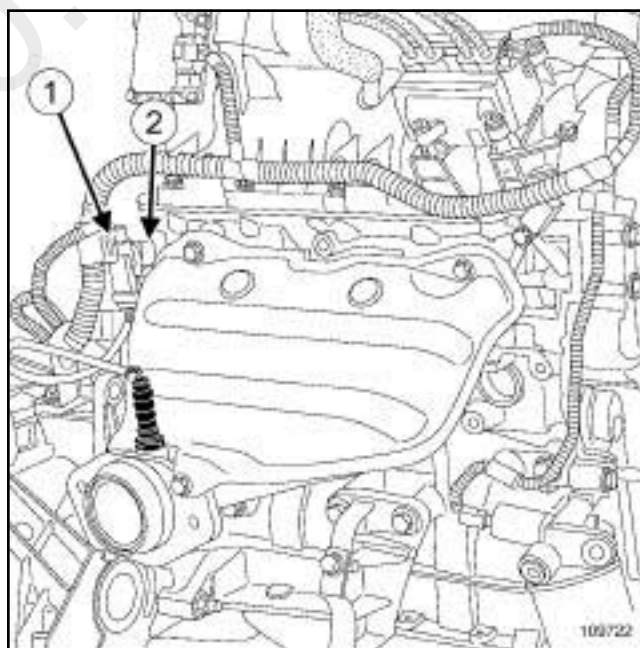
I - REMOVAL PREPARATION OPERATION

- ☐ 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 engine undertray.
- ☐ Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .
- ☐ Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,
 - the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page 11A-31) ,
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) ,
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) ,
 - the intake distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page 12A-46) .
 - the ignition coil (see **17A, Ignition, Coils: Removal - Refitting**, page 17A-2) .
- ☐ Unclip the electrical wiring from the rocker cover.



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- ☐ Remove the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page 11A-183) .



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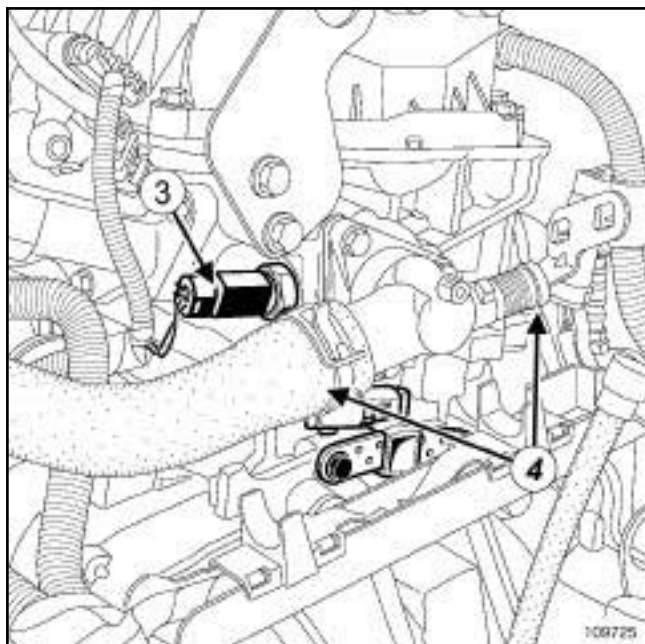
- ☐ Disconnect the upstream oxygen sensor connector (1) .
- ☐ Remove the mounting (2) from the upstream oxygen sensor connector.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

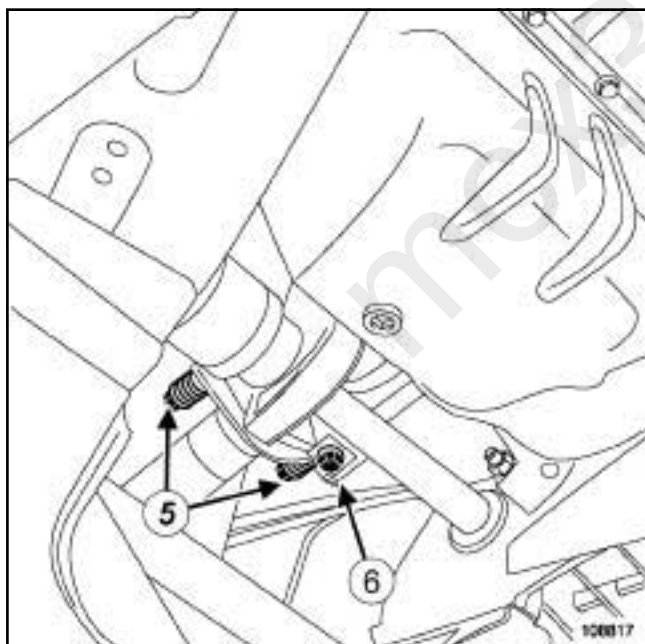
11A

D4F, and 740 or 742 or 764



109725

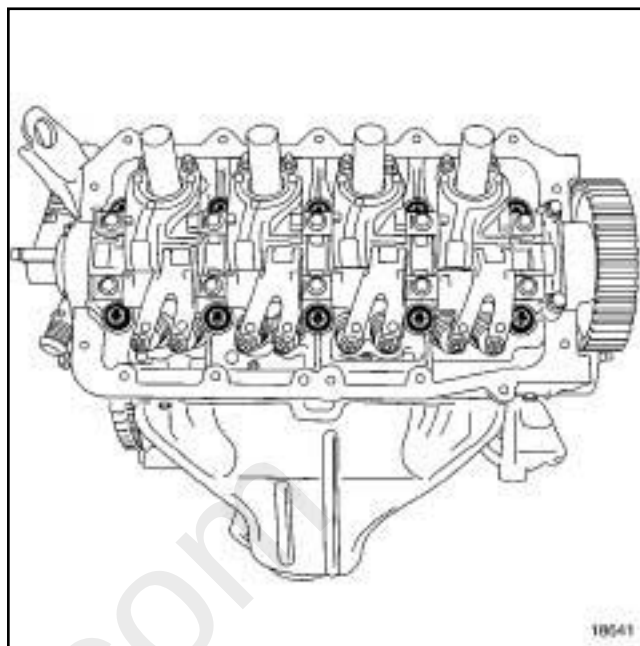
- ☐ Disconnect the coolant temperature sensor connector (3) .
- ☐ Remove the cooling hoses (4) on the water chamber.



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- ☐ Remove:
 - the bolts (5) from the exhaust flange,
 - the strut bolt (6) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



18641

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

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Cylinder head gasket (10,02,01,04).
- ☐ parts always to be replaced: cylinder head bolts (10,02,01,14).

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

D4F, and 740 or 742 or 764

1 - Cleaning the cylinder head

- ❑ Clean the cylinder head.

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 leaktight gloves (Nitrile type) for this operation.

- ❑ Clean the joint faces with **SUPER CLEANER FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to dissolve any part of the seal still adhering.
- ❑ Apply the product to the part to be cleaned. Wait approximately ten minutes, then remove the residue using a wooden spatula.

WARNING

Do not allow this product to drip onto the paintwork.

Clean the cylinder head carefully to prevent foreign bodies from entering the oil supply and return galleries.

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

2 - Checking the gasket face

- ❑ With a ruler and shim set, check for cylinder head gasket face bow.

The maximum deformation is **0.05 mm**.

WARNING

No regrinding of the cylinder head is permitted.

- ❑ Test the cylinder head for any cracks using the **cylinder head testing tools** (see **garage equipment catalogue**).
- ❑ Strip the cylinder head (see **Cylinder head: Stripping**) (Technical Note 6004A, 10A, Engine and peripherals).

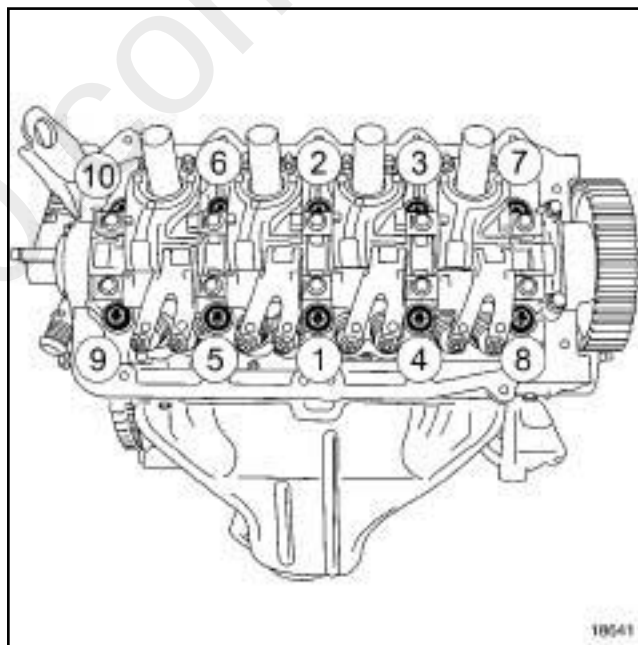
- ❑ Adjust the valve clearances (see **10A, Engine and cylinder block assembly, Valves: Adjustment**, page **10A-232**).

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.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Bring the pistons to mid-stroke position to prevent them from coming into contact with the valves during the tightening of the cylinder head.
- ❑ Fit the cylinder head with a new gasket.
- ❑ Refit new cylinder head bolts.



18641

- ❑ Tightening the cylinder head:
 - pretighten to torque and in order the **cylinder head bolts (initial torque) (20 N.m)**,
 - check that all of the cylinder head bolts are tightened to the correct torque,
 - angle tighten in order the **cylinder head bolts (230° ± 6°)**.

III - FINAL OPERATION

- ❑ Refit the upstream oxygen sensor connector attachment.
- ❑ Connect:
 - the upstream oxygen sensor connector,

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

D4F, and 740 or 742 or 764

- the coolant temperature sensor connector.
- ☐ Refit:
 - the water chamber cooling hoses,
 - the exhaust clamp mounting bolts,
 - the strut bolt.
 - the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page **11A-183**) .
- ☐ Clip the electrical wiring onto the rocker cover.
- ☐ Refit:
 - the ignition coil (see **17A, Ignition, Coils: Removal - Refitting**, page **17A-2**) ,
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page **11A-48**) ,
 - the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page **11A-31**) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) ,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the engine undertray,
 - the inlet manifold (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page **12A-46**) ,
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page **12A-17**) .
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ☐ Fill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page **19A-16**) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M

Special tooling required	
Mot. 1202-01	Clip pliers for hose clips (large size).
Mot. 1202-02	Clip pliers for hose clips (small size)
Mot. 1448	Remote operation pliers for hose clips.
Mot. 1672	Lower engine support.
Mot. 1453	Engine anchorage support with multiple adjustments and retaining straps.
Mot. 1573	Cylinder head support
Mot. 104	Cylinder head gasket centring pins

Equipment required
cylinder head test tank

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

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,
 - 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**, page 12A-15) ,
- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).

- ☐ Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .

- ☐ Remove:

- the ignition coils (see **17A, Ignition, Coils: Removal - Refitting**, page 17A-2) ,
- the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page 12A-33) ,
- the intake distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page 12A-46) .

K4M, and 862

- ☐ Remove the oil separator (see **11A, Top and front of engine, Oil decanter: Removal - Refitting**, page 11A-302) .

- ☐ Remove:

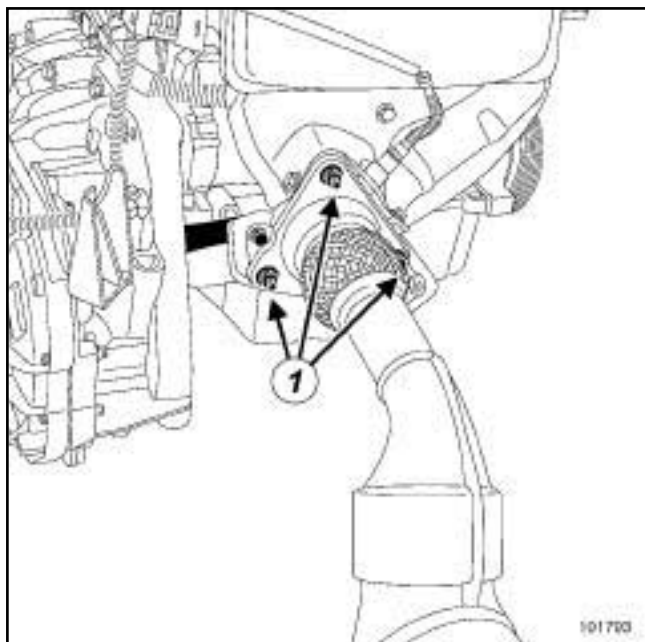
- the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page 19D-13) ,
- the right-hand suspended engine mounting (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page 19D-22) ,
- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,
- the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page 11A-31) ,
- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M

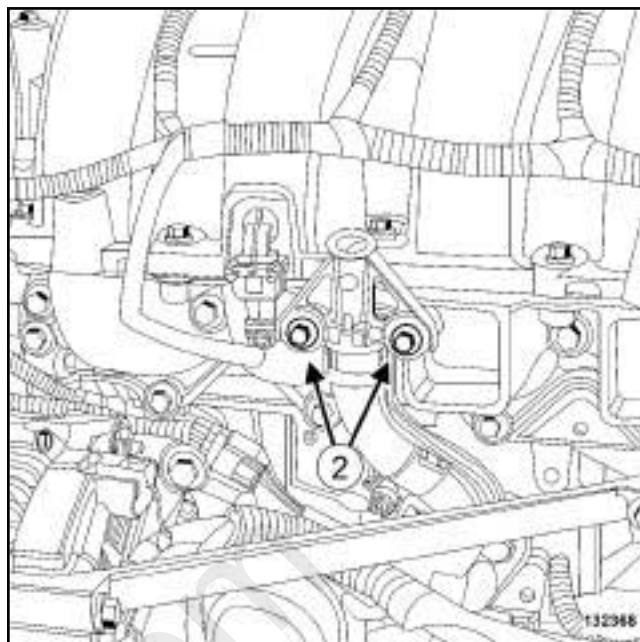


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- ☐ Remove the nuts (1) from the exhaust flange.
- ☐ Disconnect the oxygen sensor connectors .

K4M, and 862

- ☐ Drain the gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox).
- ☐ Remove:
 - the front right-hand wheel driveshaft (see **Front right-hand driveshaft: Removal - Refitting**) (29A, Driveshafts),
 - the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page **19B-27**) .



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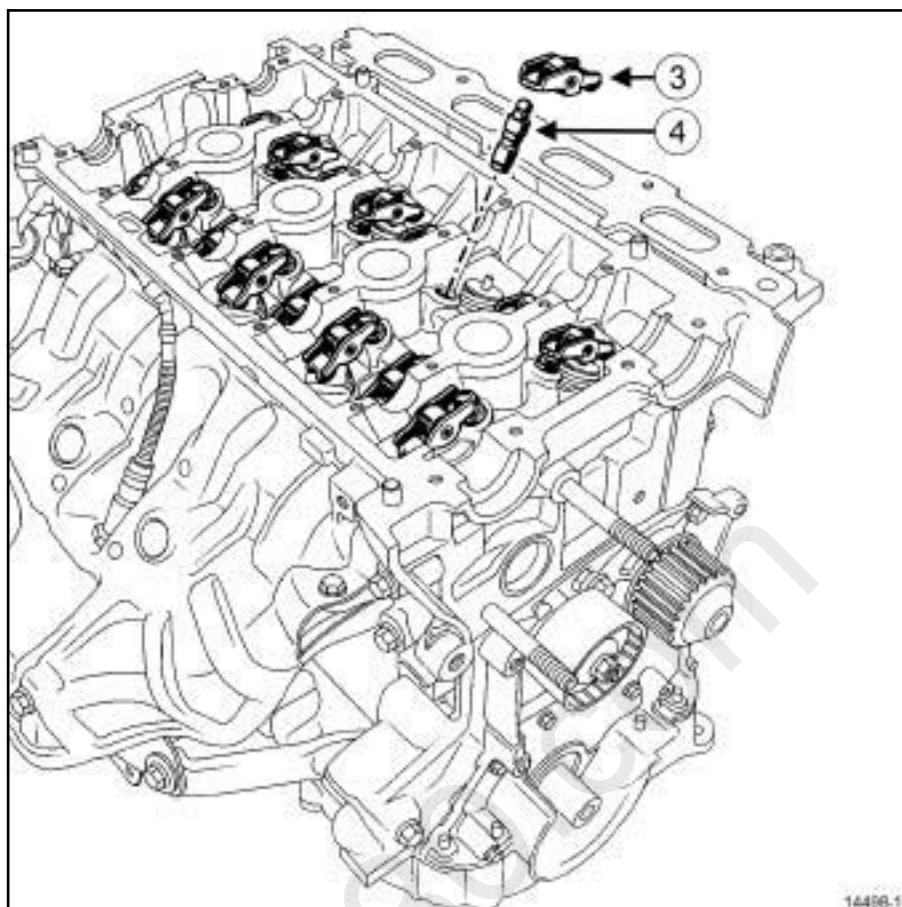
- ☐ Remove:
 - the dipstick,
 - the dipstick guide bolts (2) .
- ☐ Move aside the dipstick guide.
- ☐ Disconnect:
 - the coolant temperature sensor connector,
 - the coolant hoses using the tool (**Mot. 1202-01**) or the tool (**Mot. 1202-02**) or the tool (**Mot. 1448**) on the cylinder head coolant unit.
- ☐ Move the electrical wiring to one side.
- ☐ Remove:
 - the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page **11A-183**) ,
 - the inlet camshaft,
 - the exhaust camshaft.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M



14498-1

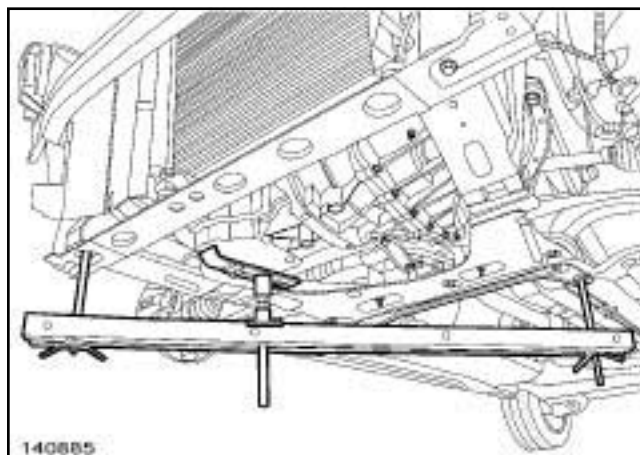
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Remove:

- the valve rockers (3) ,
- the hydraulic tappets (4) .

Note:

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



140885

140885

- Position the (Mot. 1672).
- Remove the (Mot. 1453).

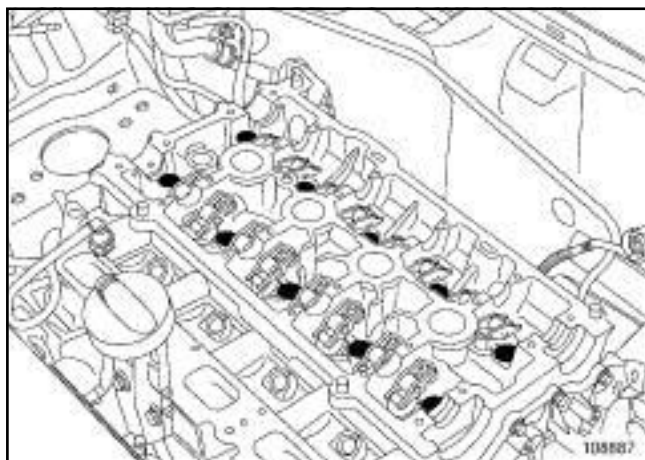
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M

II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Remove:
 - the cylinder head bolts,
 - the cylinder head.
- ☐ Mount the cylinder head on the cylinder head support (**Mot. 1573**).
- ☐ Remove the cylinder head gasket from the cylinder block.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Cylinder head gasket (**10,02,01,04**).

- ☐ parts always to be replaced: cylinder head bolts (**10,02,01,14**).

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 the repair**) (04B, Consumables - Products) on the parts to be cleaned (see **Vehicle: Parts and consumables for the repair**) (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.

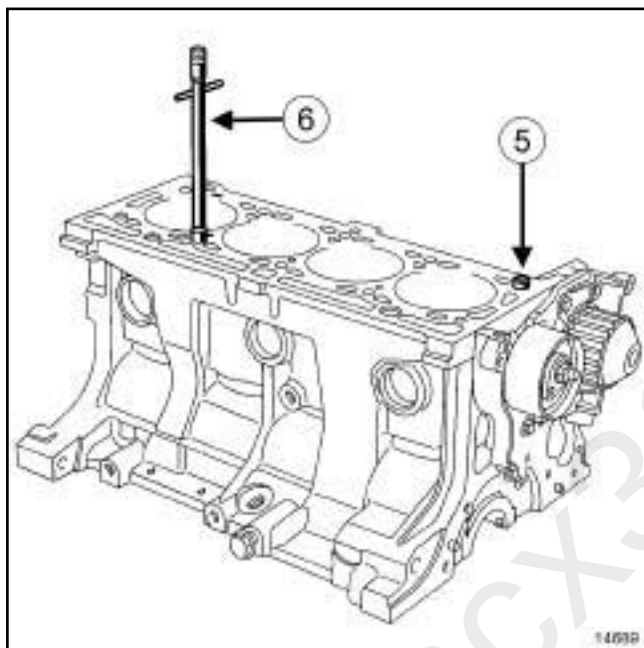
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M

- ☐ Test the cylinder head to detect any possible cracks using a **cylinder head test tank**.
- ☐ For the procedure of stripping down the cylinder head (see **Cylinder head: Stripping**) (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 (**Mot. 104**) (6) on the cylinder block.

II - 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

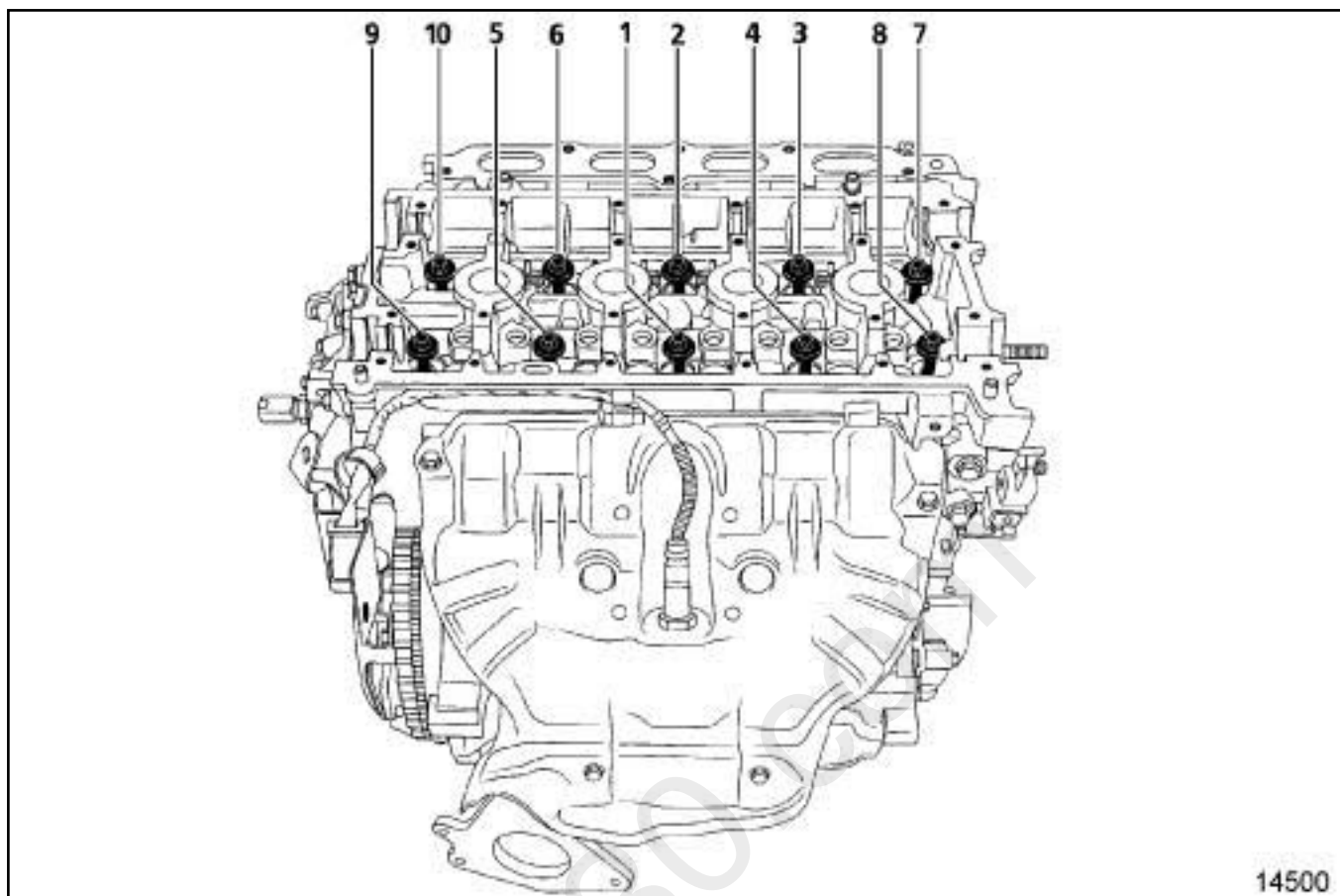
Do not oil the new bolts. Be sure to oil bolts being reused.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M



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°)**.

III - FINAL OPERATION

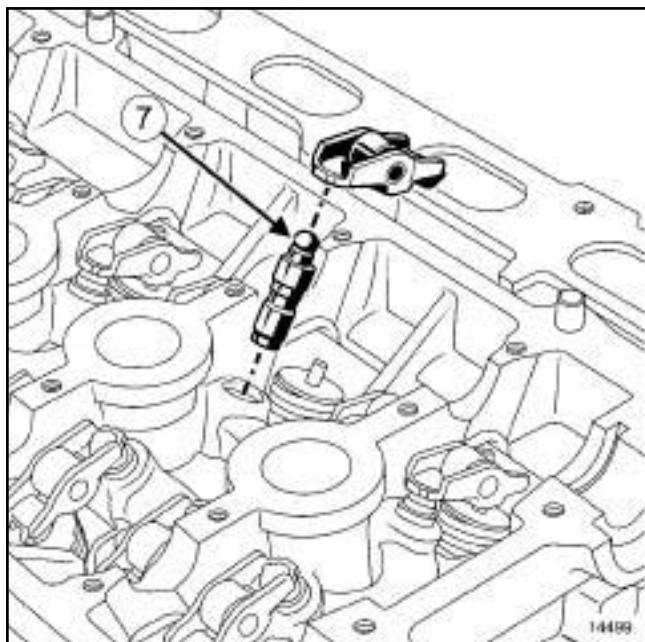
- ☐ Position the **(Mot. 1453)**.
- ☐ Remove the **(Mot. 1672)**.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M



14499

- ☐ 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.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

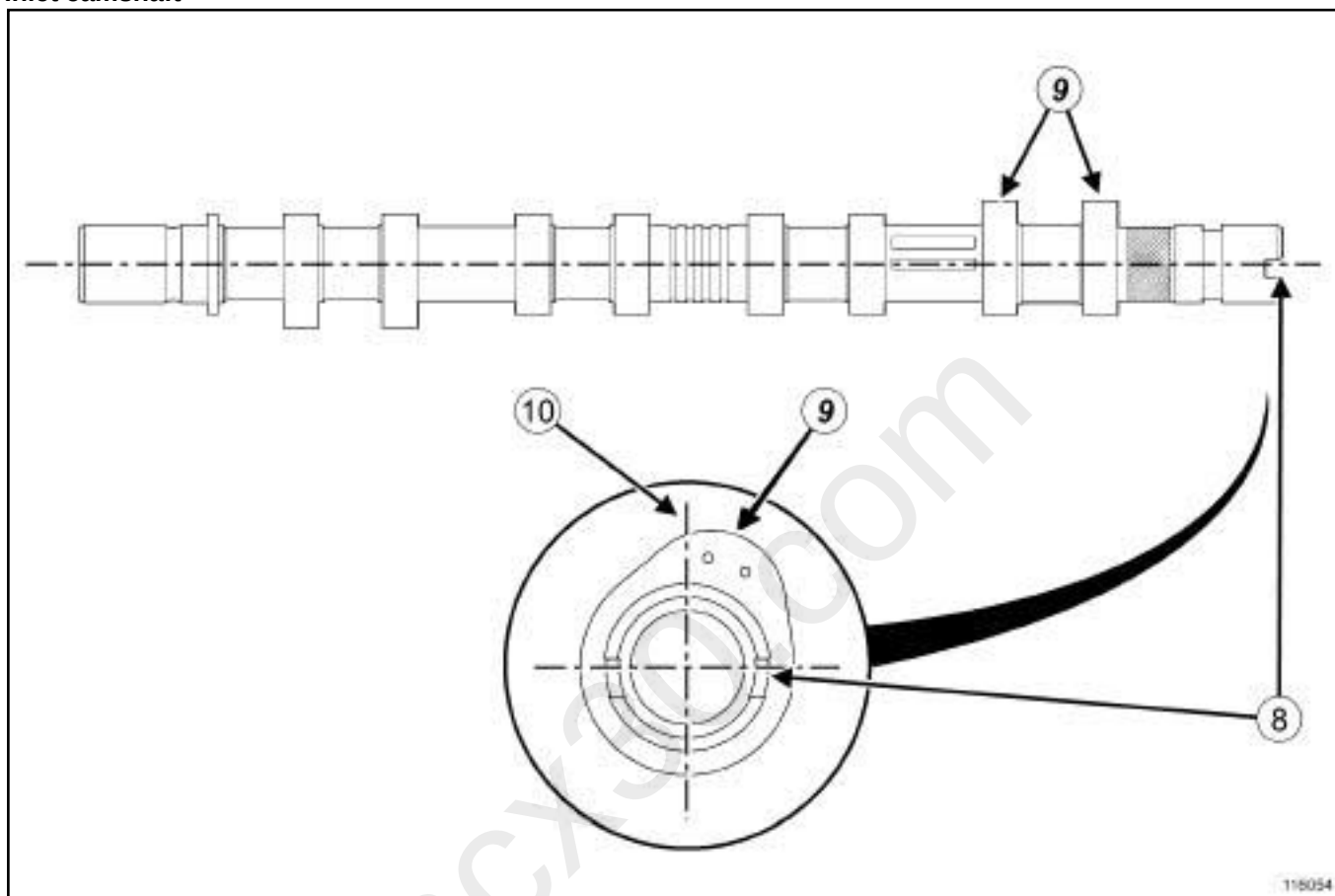
11A

K4J or K4M

Camshaft marking

K4J

Inlet camshaft



116054

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.

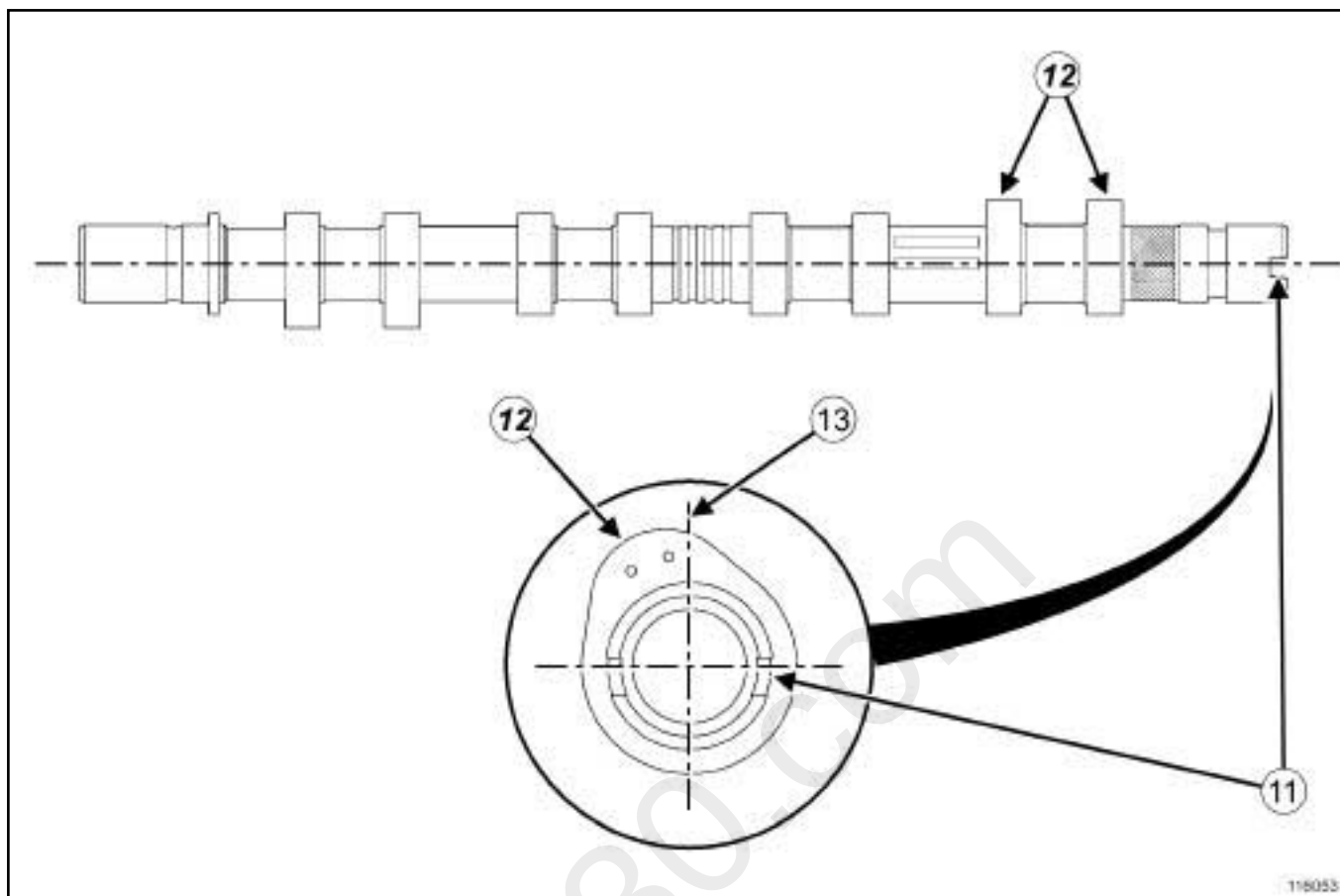
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M

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.

TOP AND FRONT OF ENGINE

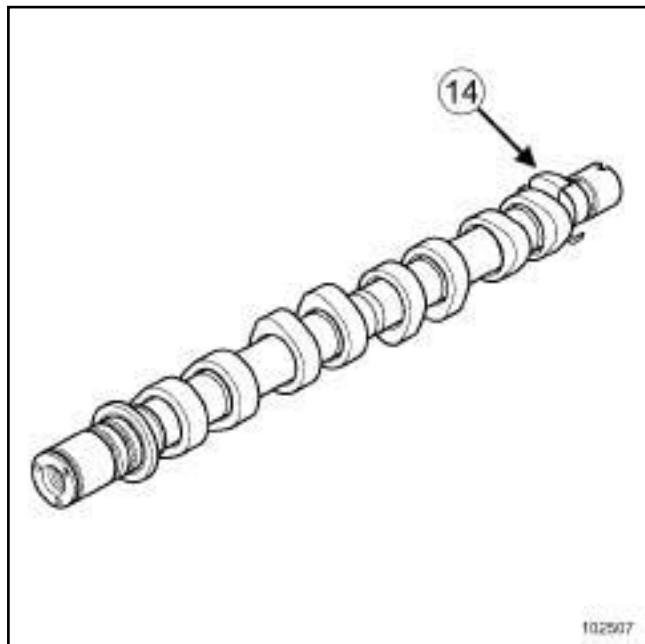
Cylinder head: Removal - Refitting

11A

K4J or K4M

K4M

Inlet camshaft

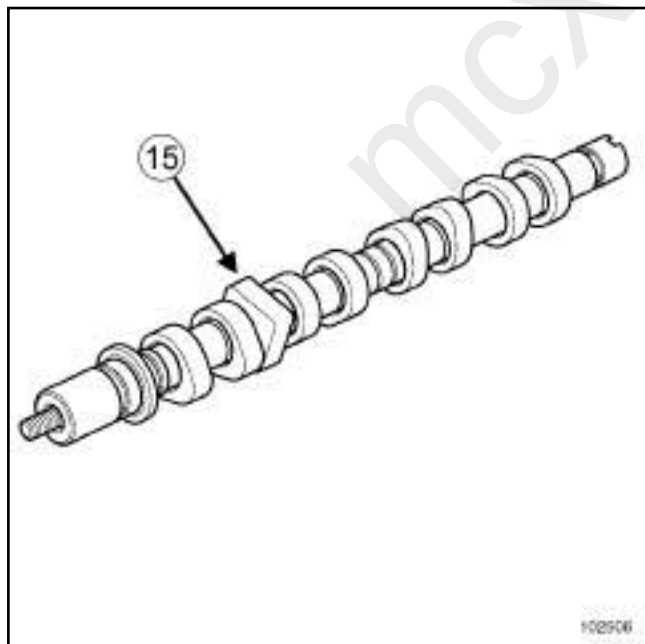


102507

(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**, page **11A-183**) .

❑ Connect:

- the coolant hoses using the tool (**Mot. 1202-01**) or the tool (**Mot. 1202-02**) or the tool (**Mot. 1448**) on the cylinder head coolant unit.

- the coolant temperature sensor connector.

K4M, and 862

❑ Refit:

- the dipstick guide,

- the dipstick,

- the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page **19B-27**) ,

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

❑ Fill the gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox).

❑ 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**, page **11A-48**) ,

- the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page **11A-31**) ,

- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) ,

- the right-hand suspended engine mounting (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page **19D-22**) ,

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K4J or K4M

- the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page **19D-13**) .

K4M, and 862

- ☐ Refit the oil separator (see **11A, Top and front of engine, Oil decanter: Removal - Refitting**, page **11A-302**) .

- ☐ Refit:

- the inlet manifold (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page **12A-46**) ,
- the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page **12A-33**) ,
- the ignition coils (see **17A, Ignition, Coils: Removal - Refitting**, page **17A-2**) .

- ☐ Refit:

- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
- the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page **12A-17**) ,
- 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 system: Draining - Refilling**, page **19A-16**) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 764 or 772

Special tooling required	
Mot. 1672	Lower engine support.
Mot. 1448	Remote operation pliers for hose clips.
Mot. 1202-01	Clip pliers for hose clips (large size).
Mot. 1202-02	Clip pliers for hose clips (small size)

Equipment required	
workshop hoist	
cylinder head testing tools	

Tightening torques 	
cylinder head bolts (initial torque)	25 N.m
cylinder head bolts	270° ± 10°
inner timing cover bolts	9 N.m
alternator bolts	21 N.m
subframe tie-rod bolt on the left-hand side	105 N.m
radiator mounting cross member bolt on the right-hand side	105 N.m
turbocharger oil return pipe bolts on the turbocharger	12 N.m
studs of the catalytic converter (K9K*764) or of the catalytic pre-converter (K9K*772) on the turbocharger	7 N.m
nuts of the catalytic converter (K9K*764) or of the catalytic pre-converter (K9K*772) on the turbocharger	26 N.m
downstream strut lower bolt	44 N.m
downstream strut upper bolts	26 N.m

Tightening torques 	
upstream strut bolt on the cylinder block	21 N.m
upstream strut nut on the cylinder block	21 N.m
bolt of the upstream strut on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772)	21 N.m
studs of the connecting hose on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772)	7 N.m
nuts of the connecting hose on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772)	21 N.m
timing side lifting eye bolts	10 N.m
clip of the air filter unit air outlet pipe	5.5 N.m
intercooler air outlet pipe clip	5.5 N.m
exchanger inlet air pipe nut on the alternator	8 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

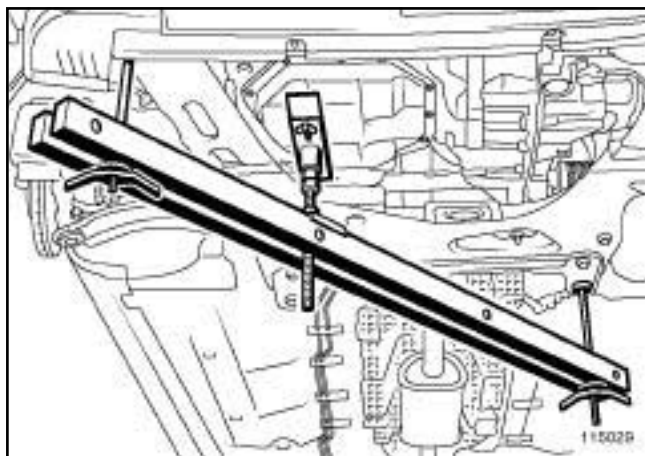
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine cover,
 - the engine undertray,
 - the radiator mounting cross member bolt on the right-hand side,
 - the subframe tie-rod bolt on the left-hand side.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

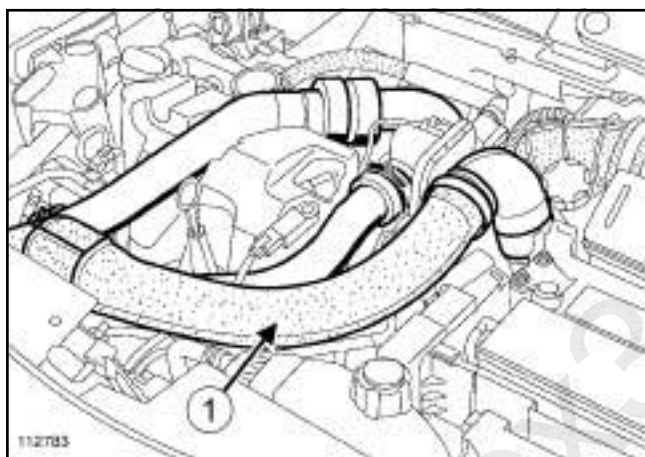
11A

K9K, and 764 or 772



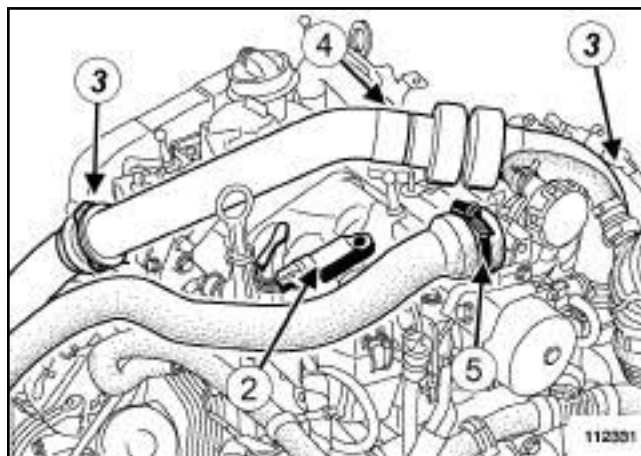
115029

- ☐ Fit the lower engine support tool (**Mot. 1672**).



112783

- ☐ Remove:
 - the air filter unit air inlet pipe (1) ,
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery tray (see **Battery: Removal - Refitting**) (80A, Battery),
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) .



112331

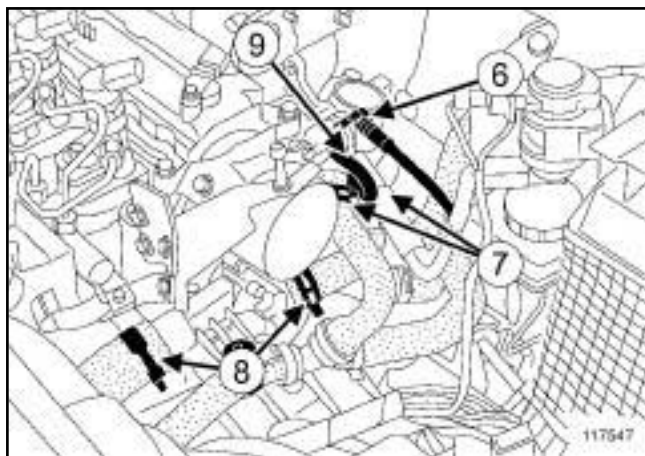
- ☐ Disconnect the connector (2) from the inlet air pressure sensor.
- ☐ Move aside the turbocharger air outlet pipe retaining pins (3) .
- ☐ Remove:
 - the bolt (4) from the turbocharger air outlet pipe,
 - the turbocharger air outlet pipe.
- ☐ Loosen the clip (5) on the intercooler air outlet pipe.
- ☐ Disconnect the intercooler air outlet pipe.
- ☐ Remove the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).
- ☐ Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

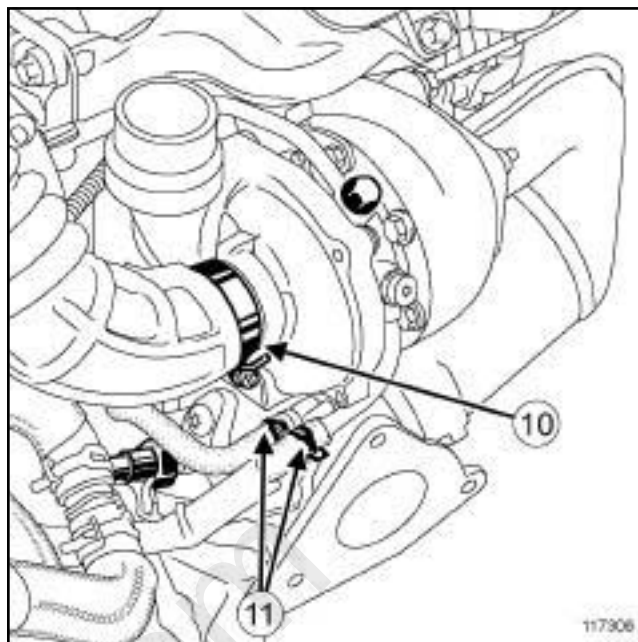
11A

K9K, and 764 or 772



117547

- ☐ Disconnect the vacuum pipe union (6) from the vacuum pump.
- ☐ Separate the clip (7) on the EGR cooler hoses using the (Mot. 1448) or (Mot. 1202-01) or (Mot. 1202-02).
- ☐ Disconnect the EGR cooler hoses.
- ☐ Separate the clip (8) on the water chamber hoses using the (Mot. 1448) or (Mot. 1202-01) or (Mot. 1202-02).
- ☐ Disconnect:
 - the water chamber hoses,
 - the coolant temperature sensor connector (9) .



117306

- ☐ Disconnect:
 - the oil vapour rebreathing pipe on the rocker cover,
 - the turbocharging pressure regulation valve pipe.
- ☐ Loosen the clip (10) of the air outlet pipe on the air filter unit.
- ☐ Disconnect the air outlet pipe from the air filter unit.
- ☐ Remove the air outlet pipe from the air filter box.

K9K, and 772

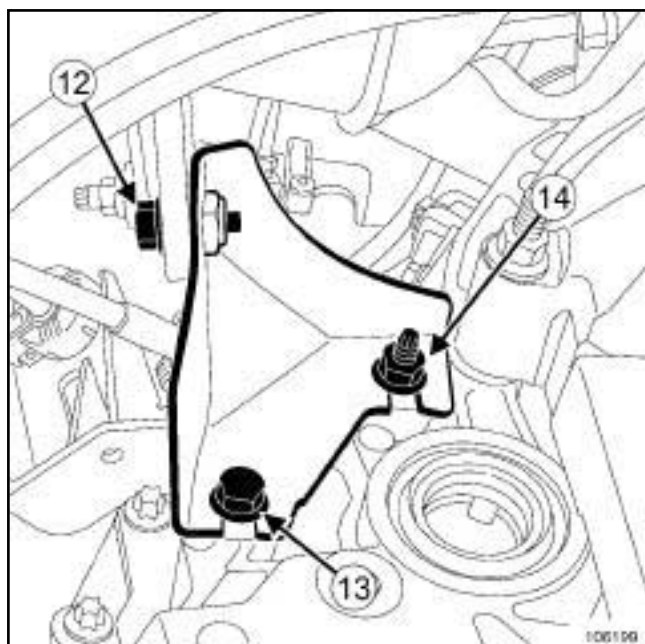
- ☐ Remove the turbocharger cooling hose clip (11) using the (Mot. 1448) or (Mot. 1202-01) or (Mot. 1202-02).
 - ☐ Disconnect the turbocharger cooling hoses.
-
- ☐ Remove the nuts from the connecting hose on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772).
 - ☐ Move aside the connecting hose.
 - ☐ Remove the seal between the connecting hose and the catalytic converter (K9K*764) or the catalytic pre-converter (K9K*772).

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

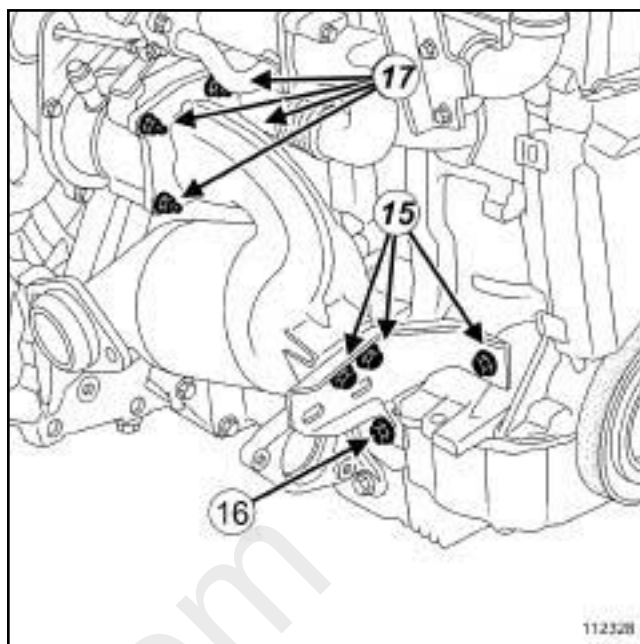
11A

K9K, and 764 or 772



106199

- ❑ Remove the bolt (12) from the upstream strut on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772).
- ❑ Undo:
 - the upstream strut bolt (13) on the cylinder block,
 - the upstream strut nut (14) on the cylinder block.
- ❑ Remove the upstream strut.



112328

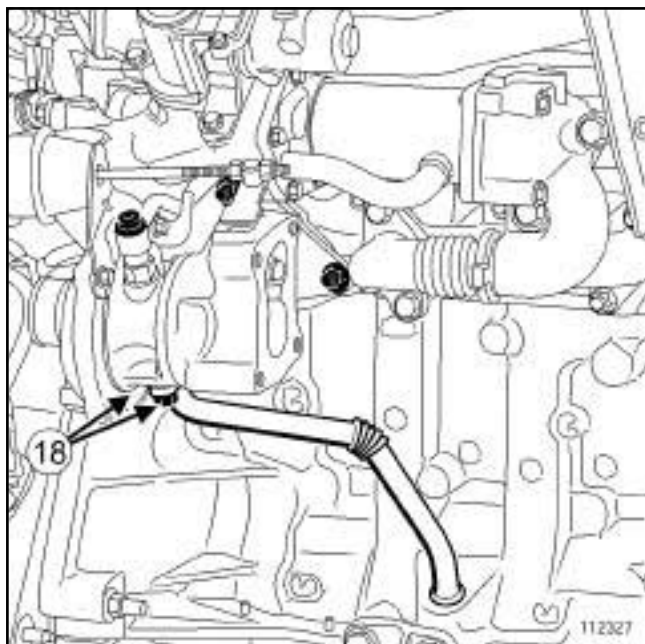
- ❑ Remove:
 - the bolts from the lifting eye, timing end,
 - the lifting eye on the timing end,
 - the upper bolts (15) from the downstream strut on the catalytic converter (K9K*764) or catalytic pre-converter (K9K*772).
- ❑ Undo the downstream strut lower bolt (16) .
- ❑ Remove:
 - the downstream strut,
 - the nuts (17) from the catalytic converter (K9K*764) or from the catalytic pre-converter (K9K*772) on the turbocharger.
- ❑ Move the catalytic pre-converter towards the timing.
- ❑ Remove the seal between the turbocharger and the catalytic converter (K9K*764) or the catalytic pre-converter (K9K*772).

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

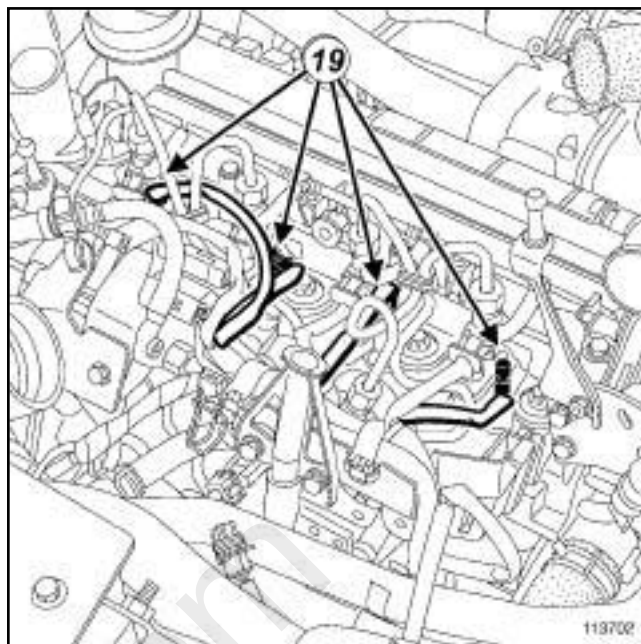
11A

K9K, and 764 or 772



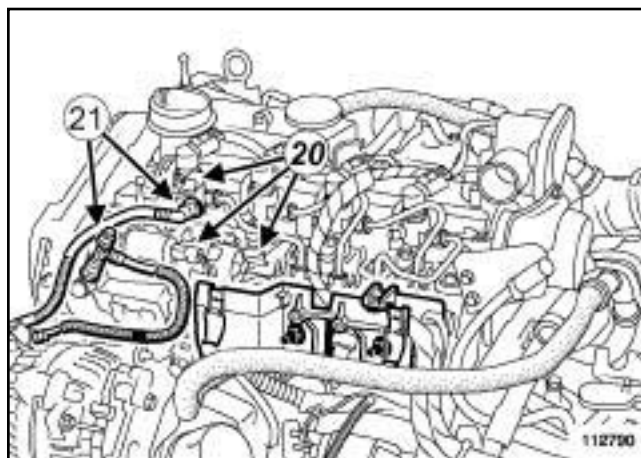
❑ Remove:

- the bolts (18) from the turbocharger oil return pipe,
- the turbocharger oil return pipe,
- the accessories belt (see 11A, **Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,
- the timing belt (see 11A, **Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) ,
- the rocker cover (see 11A, **Top and front of engine, Rocker cover: Removal - Refitting**, page 11A-183) .



❑ Disconnect:

- the heater plugs (19) ,
- the exhaust gas recirculation solenoid valve connector,
- the damper valve connector (if fitted).



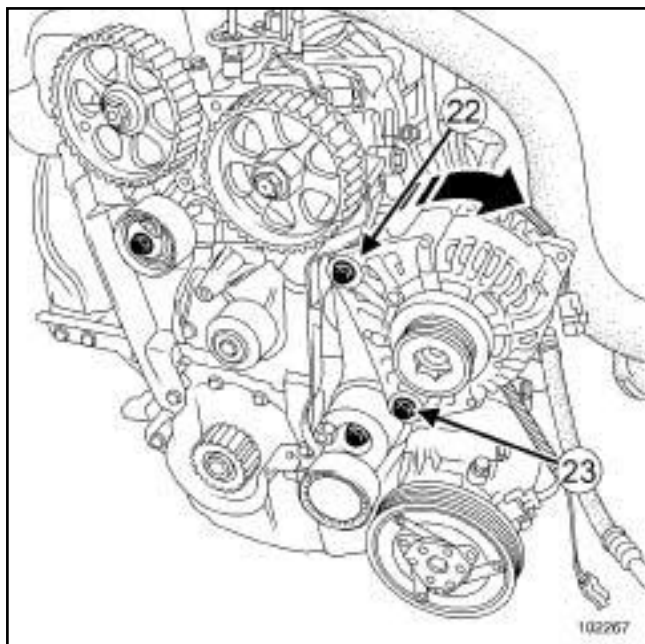
- ❑ Disconnect the high pressure pump connectors (20) .
- ❑ Unclip the clip on the injector rail protector mounting.
- ❑ Move aside the wiring of the injector rail protector mounting.
- ❑ Disconnect the diesel supply and return pipes (21) from the high pressure pump then fit the blanking plugs.
- ❑ Plug the openings.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

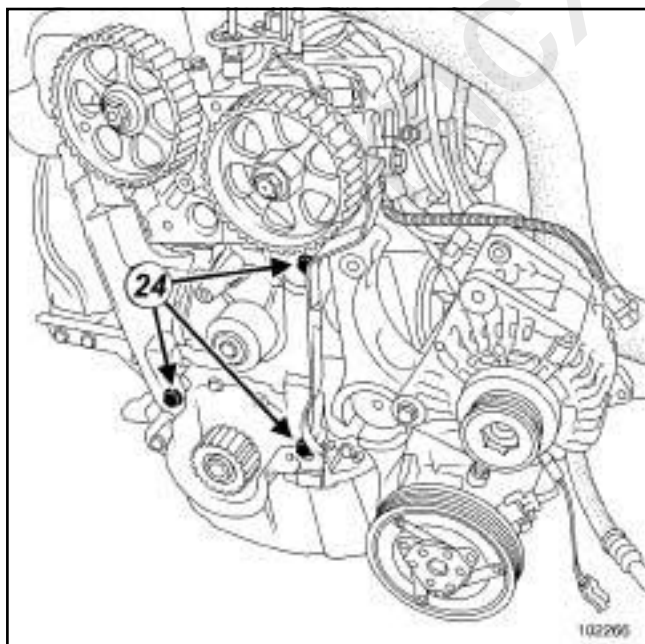
11A

K9K, and 764 or 772



102267

- ☐ Disconnect the alternator connector.
- ☐ Remove the alternator electrical wiring nut.
- ☐ Move aside the alternator electrical wiring.
- ☐ Remove the alternator upper bolt (22) .
- ☐ Loosen the alternator lower bolt (23) .
- ☐ Tilt the alternator forward.

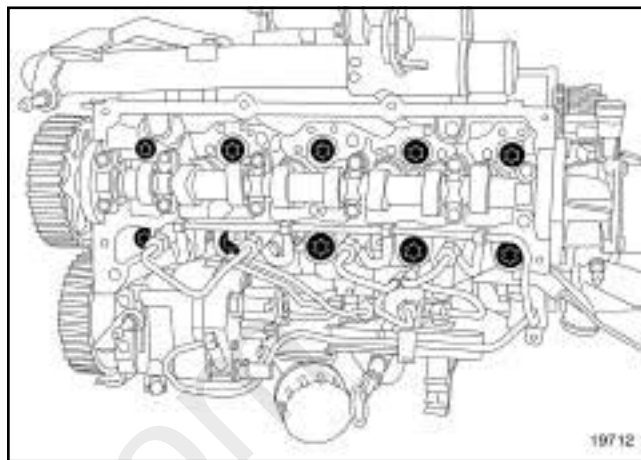


102266

- ☐ Remove:
 - the inner timing cover bolts (24) ,
 - the inner timing cover.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- ☐ Refit:
 - the lifting eye on the timing end,
 - the timing end lifting eye bolts.



19712

- ☐ Remove the cylinder head bolts.
- ☐ Fit **workshop hoist**.
- ☐ Remove the cylinder head.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: Cylinder head gas-ket (10,02,01,04).
- ☐ parts always to be replaced: seal between turbo-charger and catalytic converter (10,09,01,08).
- ☐ parts always to be replaced: cylinder head bolts (10,02,01,14).

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 764 or 772

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

IMPORTANT

Wear goggles with side protectors for this operation.

IMPORTANT

Wear gloves during 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 a **GREY ABRASIVE PAD** to clean the joint faces of:
 - the cylinder head,
 - the cylinder block
- ❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the joint faces of:
 - the cylinder head,
 - the cylinder block.

WARNING

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

WARNING

Protect the oilway so that foreign bodies do not enter the oil pipes in the cylinder head.

Failure to follow this instruction could lead to the blocking of the oilways, resulting in a rapid deterioration of the camshaft.

- ❑ Check for gasket face deformation using a ruler and a set of shims.
- ❑ The maximum deformation is **0.05 mm**.

WARNING

No regrinding of the cylinder head is permitted.

- ❑ Test the cylinder head to detect any possible cracks using **cylinder head testing tools**.

- ❑ Strip down the cylinder head (see **Cylinder head: Stripping**) (Technical Note 6006A, 10A, Engine and peripherals).

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.

- ❑ Fit a new cylinder head seal, centred by two dowels.
- ❑ Bring the pistons to mid-stroke position to prevent any risk of contact with the valves when tightening the cylinder head.

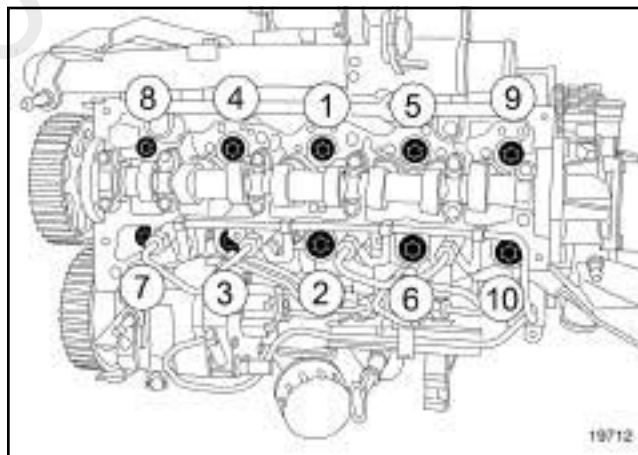
II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the cylinder head.

WARNING

Do not retighten the cylinder head bolts after applying this procedure.

- ❑ Remove **workshop hoist**.



19712

- ❑ Refit new cylinder head bolts.
- ❑ Pretighten to torque and in order the **cylinder head bolts (initial torque) (25 N.m)**.
- ❑ Check that all of the cylinder head bolts are tightened to the correct torque.
- ❑ Angle tighten in order the **cylinder head bolts (270° ± 10°)**.

III - FINAL OPERATION

- ❑ Refit:
 - the inner timing cover,
 - the inner timing cover bolts.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 764 or 772

- ☐ Tighten to torque the **inner timing cover bolts (9 N.m)**.
- ☐ Fit the alternator in place.
- ☐ Refit the alternator upper bolt.
- ☐ Torque tighten the **alternator bolts (21 N.m)**.
- ☐ Refit the alternator electrical wiring nut.
- ☐ Connect the alternator connector.
- ☐ Fit the wiring of the injector rail protector mounting.
- ☐ Clip the clip onto the injector rail protector mounting.
- ☐ Remove the blanking plugs from the openings.
- ☐ Connect:
 - the diesel supply and return pipes on the high pressure pump,
 - the high pressure pump connectors.
 - the exhaust gas recirculation solenoid valve connector,
 - the heater plugs,
 - the damper valve (if equipped).
- ☐ Refit:
 - the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page **11A-183**) ,
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page **11A-48**) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) .
- ☐ Remove the lower engine support tool (**Mot. 1672**).
- ☐ Refit:
 - the subframe tie-rod bolt on the left-hand side,
 - the radiator mounting cross member bolt on the right-hand side.
- ☐ Torque tighten:
 - the **subframe tie-rod bolt on the left-hand side (105 N.m)**,
 - the **radiator mounting cross member bolt on the right-hand side (105 N.m)**.

- ☐ Refit the turbocharger oil return pipe with its new seals, starting at the inlet in the cylinder block.

WARNING

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

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

Note:

During this operation, make sure that the turbo-charger oil return pipe does not fold.

Respect the direction of fitting of the turbo-charger oil return pipe seal.

- ☐ Fit without tightening the turbocharger oil return pipe bolts on the turbocharger.
- ☐ Tighten to torque the **turbocharger oil return pipe bolts on the turbocharger (12 N.m)**.
- ☐ Remove:
 - the bolts from the lifting eye, timing end,
 - the lifting eye on the timing end.
- ☐ Refit the studs of the catalytic converter (K9K*764) or the catalytic pre-converter (K9K*772) on the turbocharger.
- ☐ Torque tighten the **studs of the catalytic converter (K9K*764) or of the catalytic pre-converter (K9K*772) on the turbocharger (7 N.m)**.
- ☐ Refit a new seal between the turbocharger and the catalytic converter (K9K*764) or the catalytic pre-converter (K9K*772).
- ☐ Fit the catalytic converter (K9K*764) or the catalytic pre-converter (K9K*772).
- ☐ Refit the nuts of the catalytic converter (K9K*764) or of the catalytic pre-converter (K9K*772) on the turbocharger.
- ☐ Torque tighten the **nuts of the catalytic converter (K9K*764) or of the catalytic pre-converter (K9K*772) on the turbocharger (26 N.m)**.
- ☐ Refit the downstream strut.
- ☐ Fit without tightening:
 - the downstream strut lower bolt,
 - the downstream strut upper bolts.
- ☐ Refit the upstream strut.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 764 or 772

- ☐ Fit without tightening the upstream strut bolts on the cylinder block.
- ☐ Fit without tightening:
 - the upstream strut bolt on the cylinder block,
 - the upstream strut nut on the cylinder block.
- ☐ Refit the bolt of the upstream strut on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772).
- ☐ Refit without tightening the bolt of the upstream strut on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772).
- ☐ Torque tighten:
 - the **downstream strut lower bolt (44 N.m)**,
 - the **downstream strut upper bolts (26 N.m)**,
 - the **upstream strut bolt on the cylinder block (21 N.m)**,
 - the **upstream strut nut on the cylinder block (21 N.m)**,
 - the **bolt of the upstream strut on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772) (21 N.m)**.
- ☐ Refit the studs of the connecting hose on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772).
- ☐ Torque tighten the **studs of the connecting hose on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772) (7 N.m)**.
- ☐ Refit:
 - a new seal between the hose and the catalytic converter (K9K*764) or the catalytic pre-converter (K9K*772),
 - the nuts of the connecting hose on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772).
- ☐ Torque tighten the **nuts of the connecting hose on the catalytic converter (K9K*764) or on the catalytic pre-converter (K9K*772) (21 N.m)**.
- ☐ Refit:
 - the lifting eye on the timing end,
 - the timing end lifting eye bolts.
- ☐ Tighten to torque the **timing side lifting eye bolts (10 N.m)**.

K9K, and 772

- ☐ Connect the turbocharger cooling hoses.
- ☐ Fit the turbocharger cooling hose clip using the **(Mot. 1448)** or **(Mot. 1202-01)** or **(Mot. 1202-02)**.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 764 or 772

- ☐ Refit the air outlet pipe onto the air filter unit.
- ☐ Connect the air outlet pipe of the air filter unit.
- ☐ Torque tighten the **clip of the air filter unit air outlet pipe (5.5 N.m)**.
- ☐ Connect:
 - the oil vapour rebreathing pipe on the rocker cover,
 - the turbocharging pressure regulation valve pipe.
- ☐ Connect:
 - the coolant temperature sensor connector,
 - the water chamber hoses.
- ☐ Fit the water chamber hose clips using the **(Mot. 1448)** or **(Mot. 1202-01)** or **(Mot. 1202-02)**.
- ☐ Connect the exhaust gas cooler hoses.
- ☐ Fit the clip of the exhaust gas cooler hose using the **(Mot. 1448)** or **(Mot. 1202-01)** or **(Mot. 1202-02)**.
- ☐ Connect the vacuum pipe to the vacuum pump.
- ☐ Refit the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).
- ☐ Connect the intercooler air outlet pipe.
- ☐ Torque tighten the **intercooler air outlet pipe clip (5.5 N.m)**.
- ☐ Loosen the intercooler inlet air pipe nut on the alternator.
- ☐ Fit:
 - the turbocharger air outlet pipe,
 - the turbocharger air outlet pipe retaining pins.
- ☐ Snap on the turbocharger air outlet pipe.
- ☐ Tighten the turbocharger outlet air pipe bolt on the rocker cover.
- ☐ Torque tighten the **exchanger inlet air pipe nut on the alternator (8 N.m)**.
- ☐ Connect the air inlet pressure sensor connector.
- ☐ Refit:
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) ,
 - the battery tray (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the air filter unit air inlet pipe,
 - the engine undertray,
 - the engine cover.
- ☐ Fill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 750 or 752 or 766 or 768

Special tooling required	
Mot. 1672	Lower engine support.
Mot. 1448	Remote operation pliers for hose clips.
Mot. 1202-01	Clip pliers for hose clips (large size).
Mot. 1202-02	Clip pliers for hose clips (small size)

Equipment required
workshop hoist
cylinder head testing tools

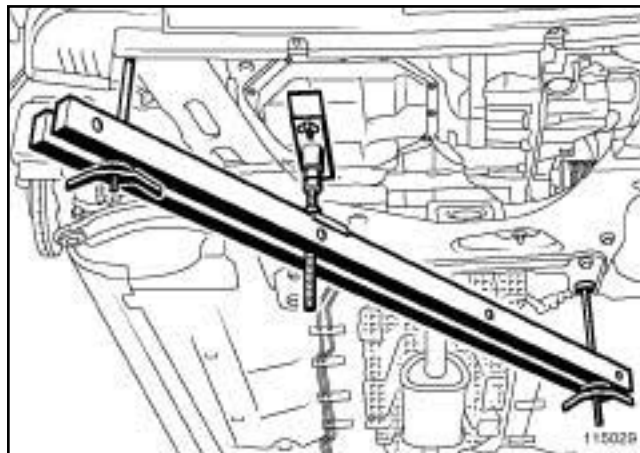
Tightening torques 	
cylinder head bolts (initial torque)	25 N.m
cylinder head bolts	270° ± 10°
inner timing cover bolts	9 N.m
alternator bolts	21 N.m
injector rail protector mounting bolts	21 N.m
high pressure pump protector bolts	21 N.m
turbocharger oil return pipe bolts	12 N.m
subframe tie-rod bolt on the left-hand side	105 N.m
radiator mounting cross member bolt on the right-hand side	105 N.m

REMOVAL

I - REMOVAL PREPARATION OPERATION

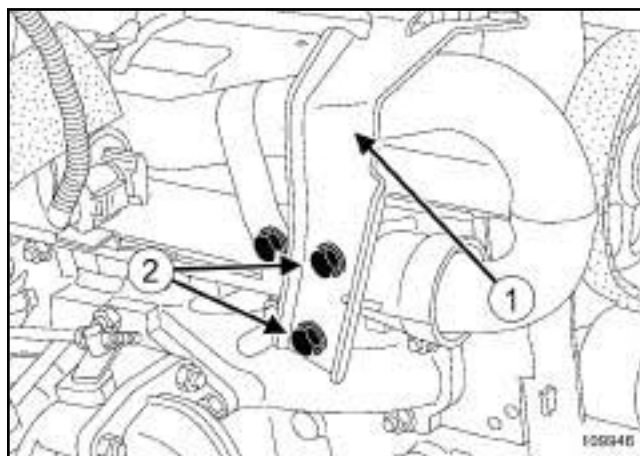
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove:
 - the engine undertray,
 - the radiator mounting cross member bolt on the right-hand side,

- the subframe tie-rod bolt on the left-hand side.



115029

- ☐ Fit the lower engine support tool (**Mot. 1672**).
- ☐ Remove:
 - the air filter unit air inlet pipe,
 - 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 unit: Removal - Refitting**, page 12A-17) ,
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment).
- ☐ Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .
- ☐ Remove the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page 19B-27) .



109946

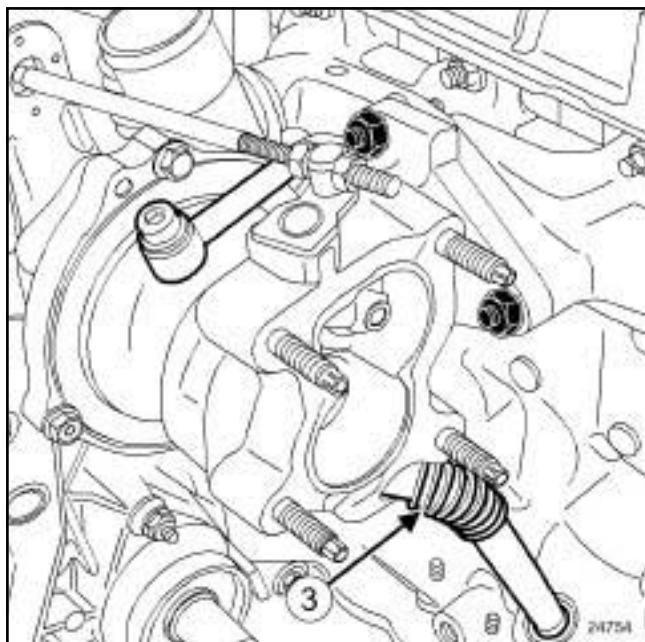
- ☐ Refit:
 - the timing end lifting eye (1) ,
 - the timing end lifting eye bolts (2) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

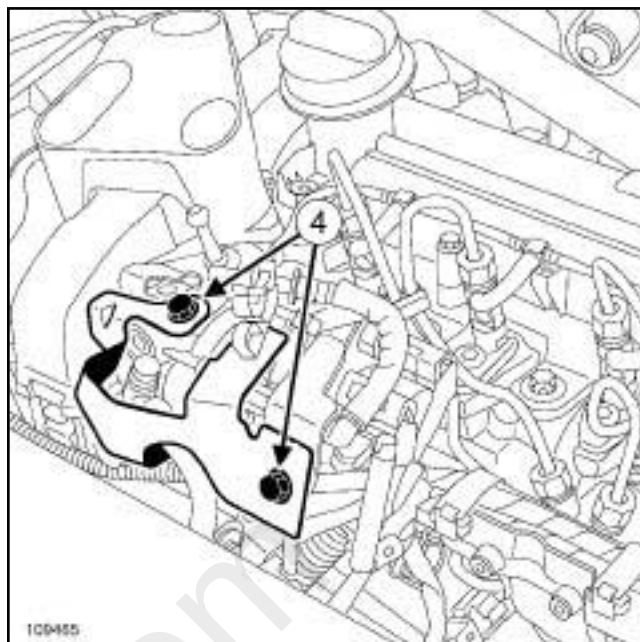
11A

K9K, and 750 or 752 or 766 or 768



❑ Remove:

- the turbocharger oil return pipe bolts
- the turbocharger oil return pipe (3) ,
- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting, page 11A-5**) ,
- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting, page 11A-48**) ,
- the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting, page 11A-183**) .



❑ Remove:

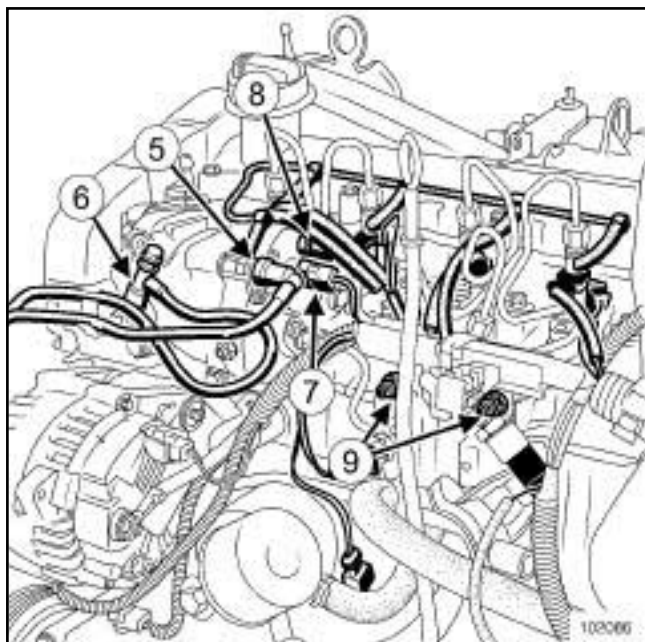
- the bolts (4) from the high pressure pump protector,
- the high pressure pump protector.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 750 or 752 or 766 or 768



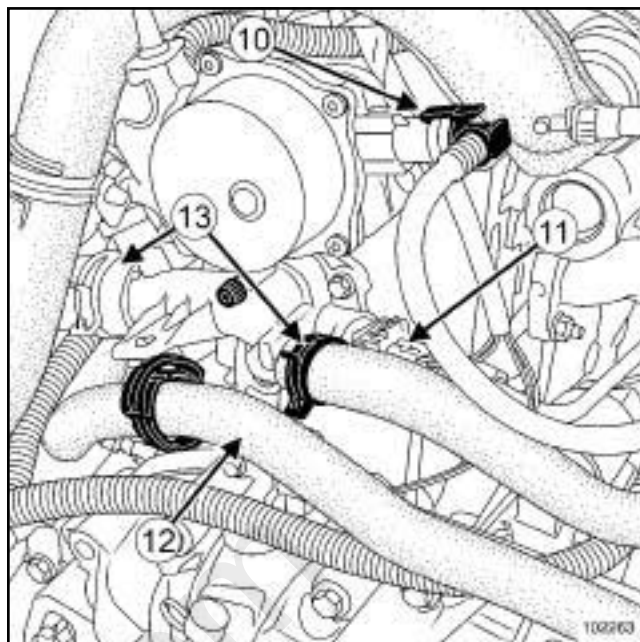
102086

☐ Disconnect:

- the fuel supply pipe (5) ,
- the fuel return pipe (6) ,
- the fuel flow actuator connector (7) ,
- the diesel temperature sensor connector (8) ,
- the injector connectors,
- the heater plug connectors.

☐ Remove the injector rail protector mounting bolts (9)

☐ Move aside the injector rail protector mounting.



102263

☐ Disconnect:

- the brake servo pipe union (10) from the vacuum pump,
- the temperature sensor connector (11) on the water chamber.

☐ Unclip the cooling hose (12) .

☐ Separate the water chamber inlet and outlet hose clip (13) using the tool (Mot. 1448) or (Mot. 1202-01) or (Mot. 1202-02).

☐ Disconnect the water chamber inlet and outlet hoses.

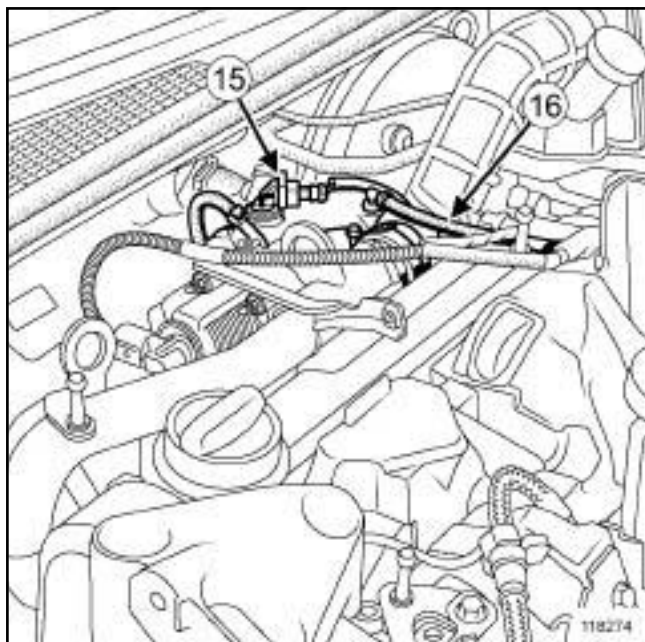
☐ Disconnect the crankshaft position sensor connector.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

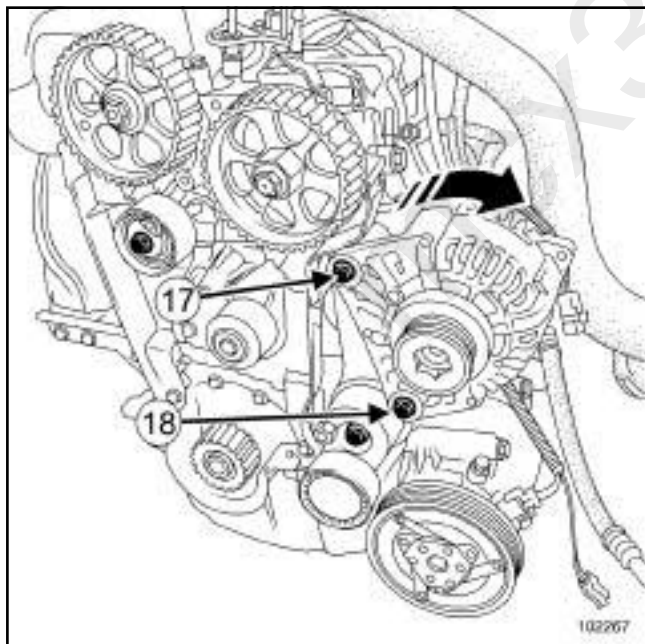
K9K, and 750 or 752 or 766 or 768



118274

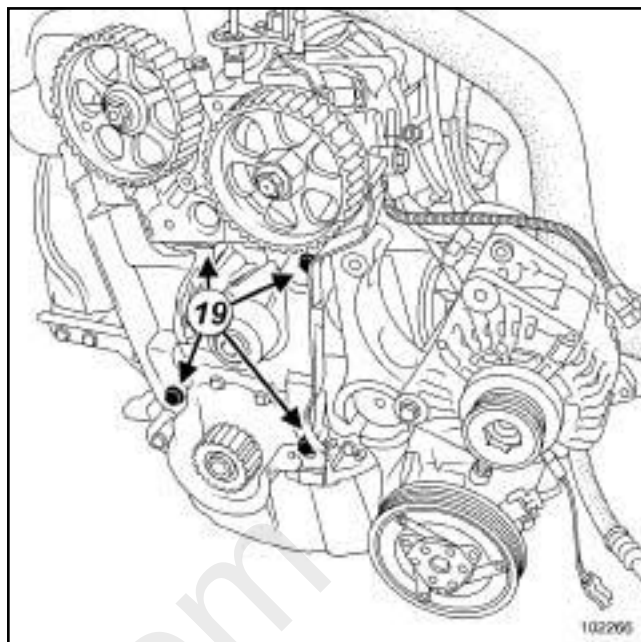
❑ Disconnect:

- the air temperature sensor connector (15) ,
- the vacuum pipe (16) between the pressure sensor and the turbocharger air outlet pipe.



102267

- ❑ Disconnect the alternator connector.
- ❑ Remove the alternator electrical wiring nut.
- ❑ Move aside the alternator electrical wiring.
- ❑ Remove the alternator upper bolt (17) .
- ❑ Loosen the alternator lower bolt (18) .
- ❑ Tilt the alternator forward.

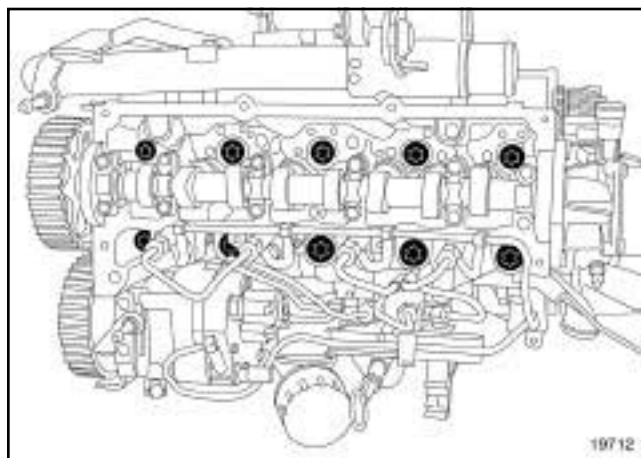


102266

❑ Remove:

- the inner timing cover bolts (19) ,
- the inner timing cover.

II - OPERATION FOR REMOVAL OF PART CONCERNED



19712

19712

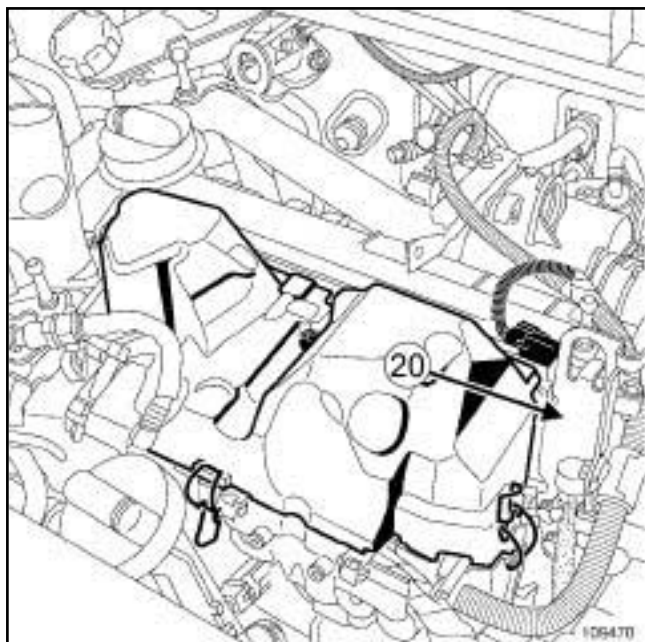
- ❑ Remove the cylinder head bolts.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 750 or 752 or 766 or 768



109470

- ☐ Refit:
 - the lifting eye (20) on the gearbox side,
 - the gearbox side lifting eye bolts.
- ☐ Fit **workshop hoist**.
- ☐ Remove the cylinder head.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ **parts always to be replaced: Cylinder head gasket (10,02,01,04).**
- ☐ **parts always to be replaced: cylinder head bolts (10,02,01,14).**
- ☐ **parts always to be replaced: seal between turbo-charger and catalytic converter (10,09,01,08).**

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

IMPORTANT

Wear goggles with side protectors for this operation.

IMPORTANT

Wear gloves during 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 a **GREY ABRASIVE PAD** to clean the joint faces of the cylinder head and cylinder block.
- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease the joint face of the cylinder head and cylinder block.

WARNING

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

WARNING

Protect the oilway so that foreign bodies do not enter the oil pipes in the cylinder head.

Failure to follow this advice could block the oil supply pipes, causing rapid camshaft damage.

- ☐ Check for gasket face deformation using a ruler and a set of shims.
- ☐ The maximum deformation is **0.05 mm**.

WARNING

No regrinding of the cylinder head is permitted.

- ☐ Test the cylinder head to detect any possible cracks using **cylinder head testing tools**.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 750 or 752 or 766 or 768

- ❑ Strip down the cylinder head (see **Cylinder head: Stripping**) (Technical Note 6006A, 10A, Engine and peripherals).

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.

- ❑ Fit a new cylinder head seal, centred by two dowels.
- ❑ Bring the pistons to mid-stroke position to prevent any risk of contact with the valves when tightening the cylinder head.

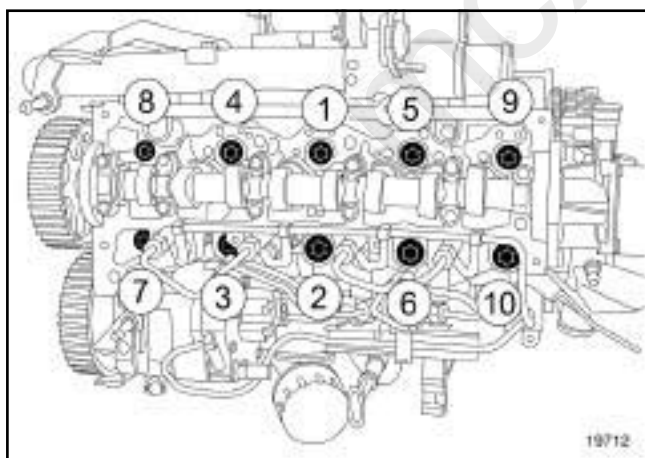
II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit the cylinder head.

WARNING

Do not retighten the cylinder head bolts after applying this procedure.

- ❑ Remove **workshop hoist**.
- ❑ Remove:
 - the gearbox side lifting eye bolts,
 - the gearbox side lifting eye.



19712

- ❑ Refit new cylinder head bolts.
- ❑ Pretighten to torque and in order the **cylinder head bolts (initial torque) (25 N.m)**.
- ❑ Check that all of the cylinder head bolts are tightened to the correct torque.
- ❑ Angle tighten in order the **cylinder head bolts (270° ± 10°)**.

III - FINAL OPERATION

- ❑ Refit:
 - the inner timing cover,
 - the inner timing cover bolts.
- ❑ Tighten to torque the **inner timing cover bolts (9 N.m)**.
- ❑ Fit the alternator in place.
- ❑ Refit the alternator upper bolt.
- ❑ Torque tighten the **alternator bolts (21 N.m)**.
- ❑ Connect:
 - the alternator connector,
 - the crankshaft position sensor,
 - the vacuum pipe between the pressure sensor and the turbocharger air outlet pipe,
 - the air temperature sensor connector,
 - the water chamber inlet and outlet hoses.
- ❑ Fit the water chamber inlet and outlet hose clip using the tool **(Mot. 1448)** or **(Mot. 1202-01)** or **(Mot. 1202-02)**.
- ❑ Clip on the cooling hose.
- ❑ Connect:
 - the brake servo pipe union onto the vacuum pump,
 - the temperature sensor connector.
- ❑ Fit the injector rail protector mounting.
- ❑ Refit the injector rail protector mounting bolts.
- ❑ Tighten to torque the **injector rail protector mounting bolts (21 N.m)**.
- ❑ Connect:
 - the heater plug connectors,
 - the injector connectors,
 - the diesel temperature sensor connector ,
 - the fuel flow actuator connector,
 - the fuel return pipe,
 - the fuel supply pipe.
- ❑ Refit:
 - the high pressure pump protector,
 - the bolts of the high pressure pump protector.
- ❑ Torque tighten the **high pressure pump protector bolts (21 N.m)**.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

K9K, and 750 or 752 or 766 or 768

☐ Refit:

- the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page **11A-183**) ,
- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page **11A-48**) ,
- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) ,
- the turbocharger oil return pipe,
- the turbocharger oil return pipe bolts.

☐ Torque tighten the **turbocharger oil return pipe bolts (12 N.m)**.

☐ Remove:

- the bolts from the lifting eye, timing end,
- the lifting eye on the timing end.

☐ Refit:

- the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page **19B-27**) ,
- the air filter unit air inlet pipe,
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page **12A-17**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery).

☐ Remove the lower engine support tool (**Mot. 1672**).

☐ Refit:

- the subframe tie-rod bolt on the left-hand side,
- the radiator mounting cross member bolt on the right-hand side.

☐ Torque tighten:

- the **subframe tie-rod bolt on the left-hand side (105 N.m)**,
- the **radiator mounting cross member bolt on the right-hand side (105 N.m)**.

☐ Refit the engine undertray.

☐ Fill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page **19A-16**) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

D4F, and 784

Special tooling required

Mot. 1448 Remote operation pliers for hose clips.

Equipment required

cylinder head testing tools

Tightening torques

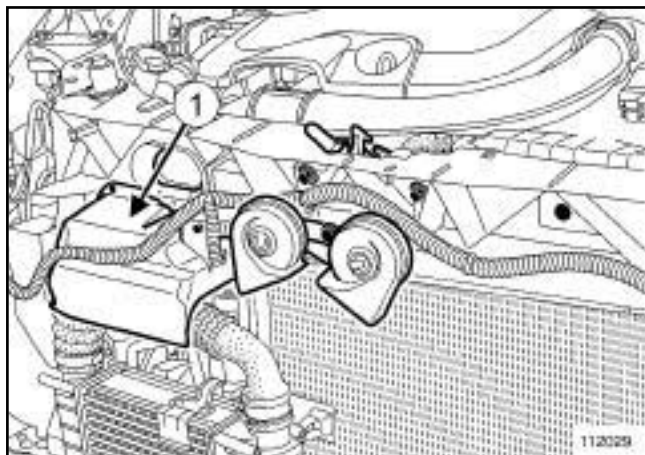
cylinder head bolts (initial torque) **20 Nm**

cylinder head bolts **230° ± 6**

REMOVAL

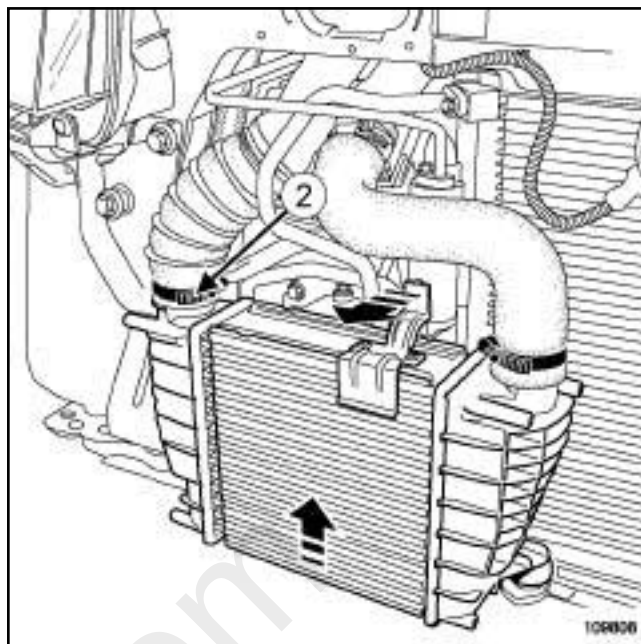
I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 392, 02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).
- ☐ Remove:
 - the engine undertray,
 - the engine cover,
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 393, 55A, Exterior protection).
- ☐ Drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .



112029

- ☐ Remove the air deflector (1) .



109808

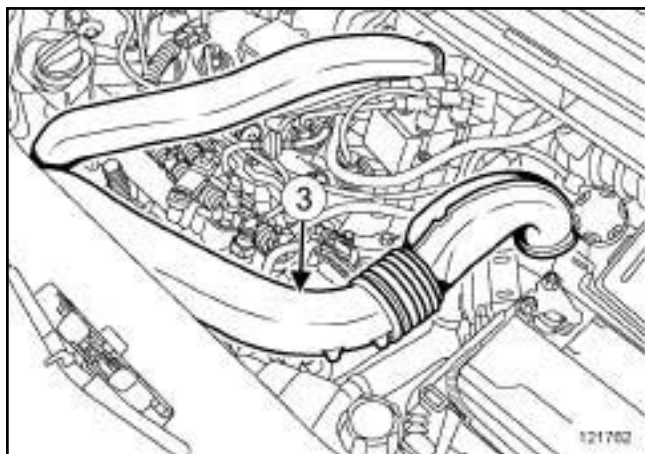
- ☐ Undo the intercooler air inlet pipe clip (2) .
- ☐ Disconnect the intercooler air inlet pipe from the intercooler.

TOP AND FRONT OF ENGINE

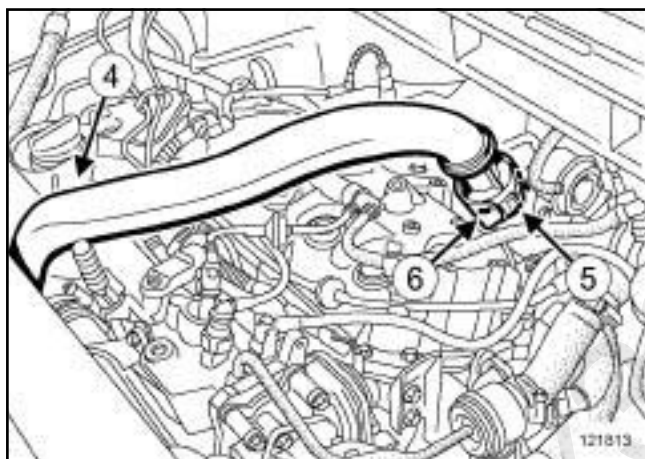
Cylinder head: Removal - Refitting

11A

D4F, and 784



121762



121813

❑ Remove:

- the air pipe (3) from the air filter box inlet,
- the bolt (4) from the intercooler air inlet pipe on the intake distributor.

- ❑ Remove the intercooler air inlet pipe clip (5) on the turbocharger.

Note:

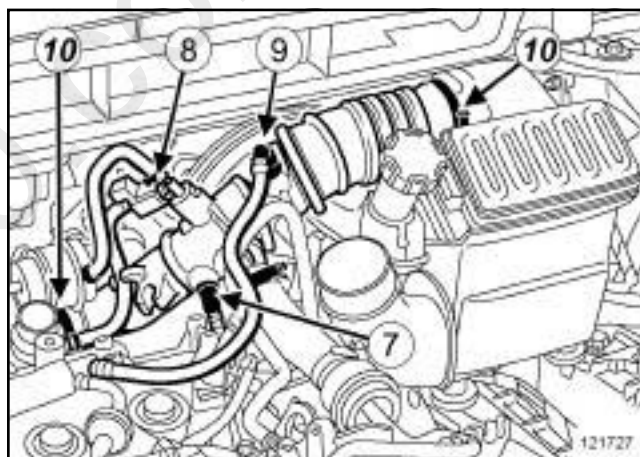
If the clip (6) is removed from the heat resistant protector, the latter must be replaced.

- ❑ Remove the intercooler air inlet pipe.

❑ Remove:

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (MR 392, 35A, Wheels and tyres),
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 393, 55A, Exterior protection),
- the engine undertray,

- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,
- the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page 11A-31) ,
- the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page 19B-27) ,
- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) ,
- the turbocharger oil pipes (see **12B, Turbocharging, Turbocharger oil pipe: Removal - Refitting**, page 12B-15) ,
- the ignition coil (see **17A, Ignition, Coils: Removal - Refitting**, page 17A-2) .



121727

❑ Disconnect:

- the fuel vapour recirculation pipe (7) from the air filter box air outlet pipe,
- the oil vapour rebreathing pipe (9) from the air filter unit air outlet pipe,
- the turbocharging pressure relief valve (8) from the air filter unit air outlet pipe.

- ❑ Undo the air filter unit air outlet pipe clips (10) .

❑ Disconnect:

- the turbocharging pressure relief valve control pipes,
- the air filter box outlet air pipe.

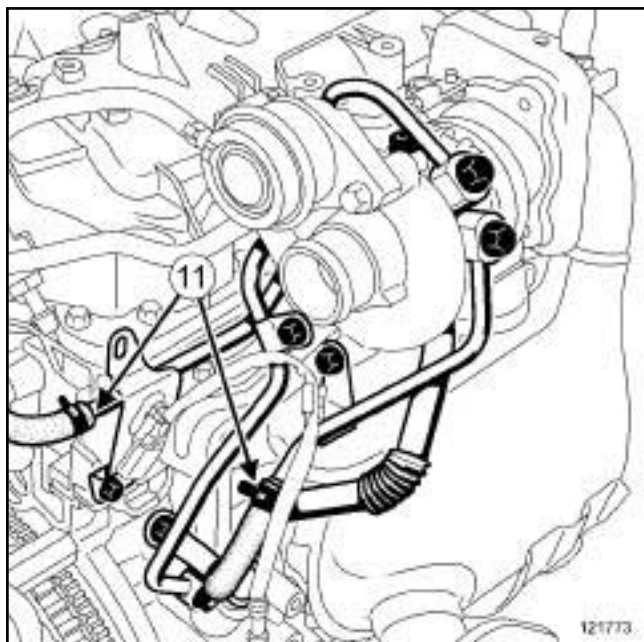
- ❑ Remove the air filter box air outlet pipe.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

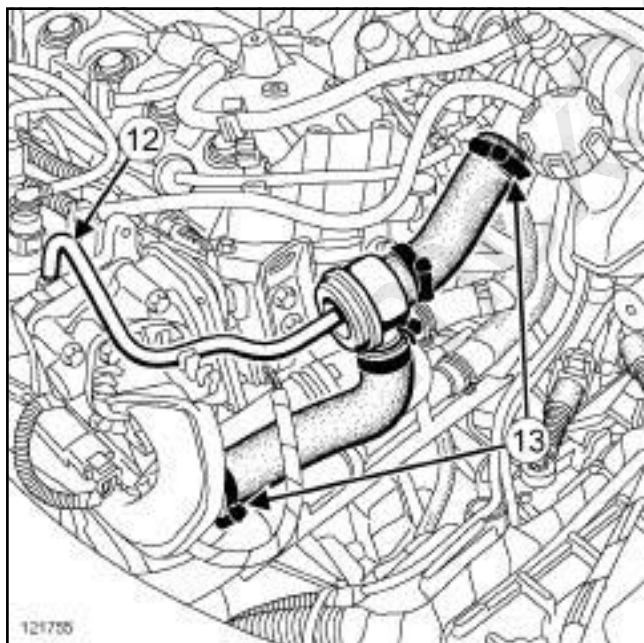
11A

D4F, and 784



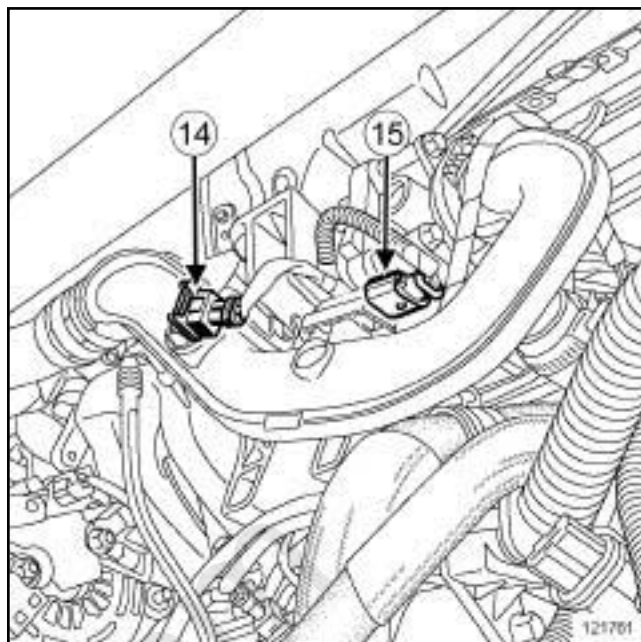
121773

- ❑ Move the clips (11) on the turbocharger cooling hoses to one side, using the (Mot. 1448).
- ❑ Disconnect the turbocharger cooling hoses.



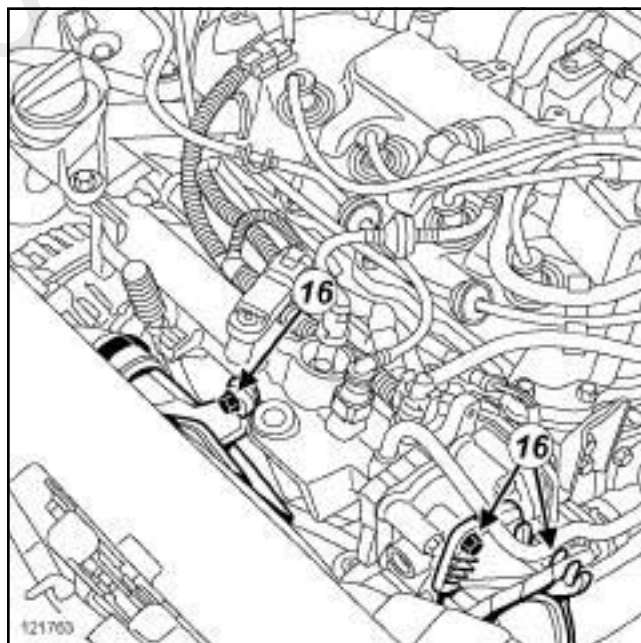
121755

- ❑ Disconnect the intake distributor vacuum hose (12) .
- ❑ Undo the clips (13) on the compressor discharge valve air pipe.
- ❑ Remove the compressor discharge valve air pipe.



121761

- ❑ Disconnect:
 - the connector (14) from the air temperature sensor,
 - the air pressure sensor connector (15) .



121763

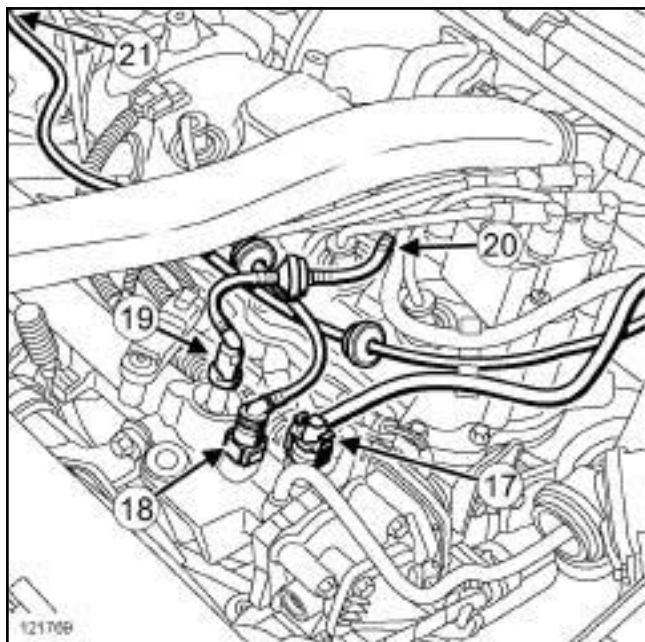
- ❑ Remove the intercooler air outlet pipe bolts (16) .
- ❑ Move the intercooler air outlet pipe towards the front of the vehicle.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

D4F, and 784



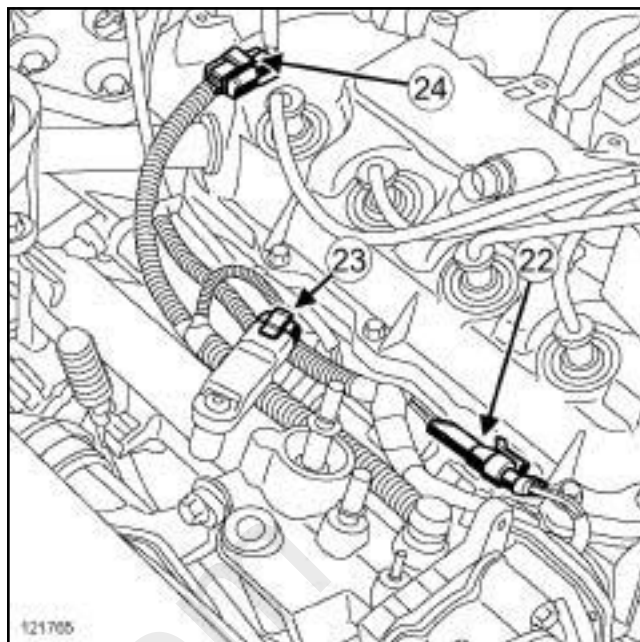
121769

❑ Disconnect:

- the brake servo non-return valve pipe (17) ,
- the petrol vapour rebreathing pipe (18) from the intake distributor,
- the oil vapour rebreathing pipe (19) on the intake distributor,
- the oil vapour rebreathing pipe (20) on the rocker cover,
- the petrol vapour rebreathing pipe (21) from the petrol vapour rebreathing solenoid valve.

❑ Remove:

- the oil vapour rebreathing pipe,
- the fuel vapour rebreathing pipe.



121765

❑ Disconnect:

- the injector rail - injector wiring harness connector (22) ,
- the air inlet pressure connector (23) ,
- the upstream oxygen sensor connector (24) ,
- the fuel vapour rebreather solenoid valve connector,
- the coolant temperature sensor connector,

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 latex gloves during the operation.

WARNING

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

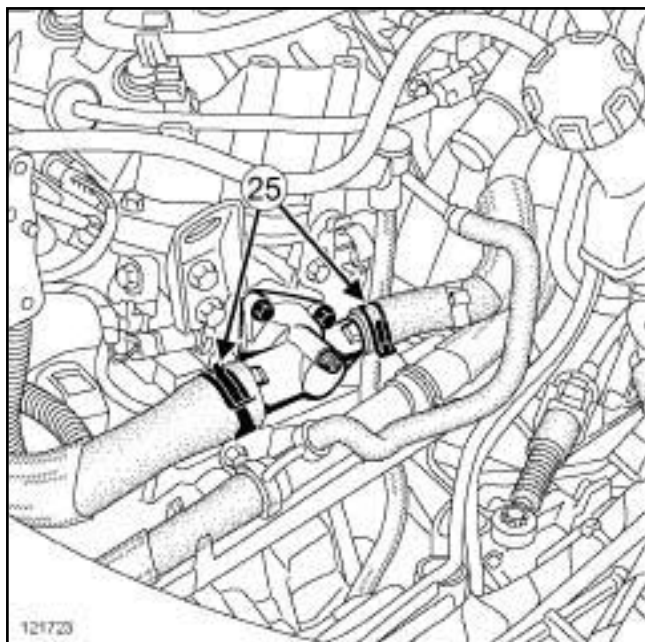
- ❑ Disconnect the petrol supply union on the injector rail - injector.
- ❑ Plug the openings.
- ❑ Move the wiring harness away from the engine.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

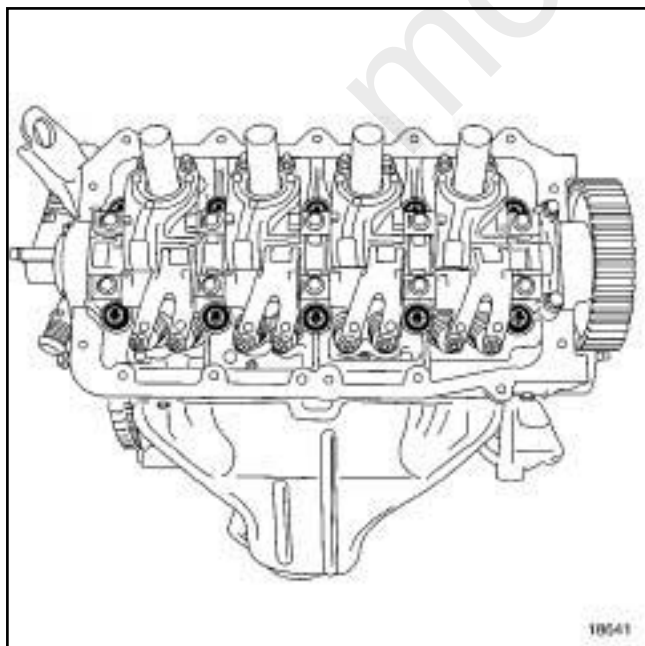
D4F, and 784



121723

- ☐ Remove the clips (25) from the cooling hoses using the (Mot. 1448).
- ☐ Disconnect the cooling hoses.
- ☐ Remove the rocker cover (see 11A, Top and front of engine, Rocker cover: Removal - Refitting, page 11A-183) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



18641

- ☐ Remove:
 - the cylinder head bolts,

- the cylinder head,
- the cylinder head gasket.

REFITTING

I - REFITTING PREPARATIONS OPERATION

- ☐ Clean the cylinder head with **SUPER CLEANER FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (MR 392, 04B, Consumables - Products).

WARNING

Do not scratch the aluminium joint faces: any surface damage to the joint faces may cause leaks.

IMPORTANT

Wear goggles with side protectors for this operation.

IMPORTANT

Wear latex gloves during the operation.

WARNING

Do not allow this product to drip onto the paintwork.

Clean the cylinder head carefully to prevent foreign bodies from entering the oil supply and return galleries.

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

Note:

The cylinder head bolts must be replaced each time they are removed and should not be oiled before being fitted.

- ☐ Always replace:
 - the cylinder head bolts,
 - the cylinder head gasket.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

D4F, and 784

1 - Checking the gasket face

- ❑ With a ruler and set of feeler gauges, check for gasket face bow.

The maximum deformation is **0.05 mm**.

WARNING

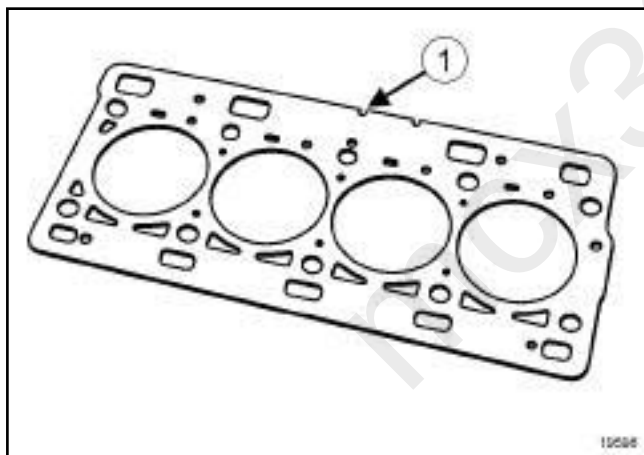
No regrinding of the cylinder head is permitted.

- ❑ Test the cylinder head for any cracks using the **cylinder head testing tools** (see **Garage Equipment Catalogue**).
- ❑ Strip the cylinder head (see **Cylinder head: Stripping**) (Technical Note 6004A, 10A, Engine and peripherals).

2 - If replacing the cylinder head

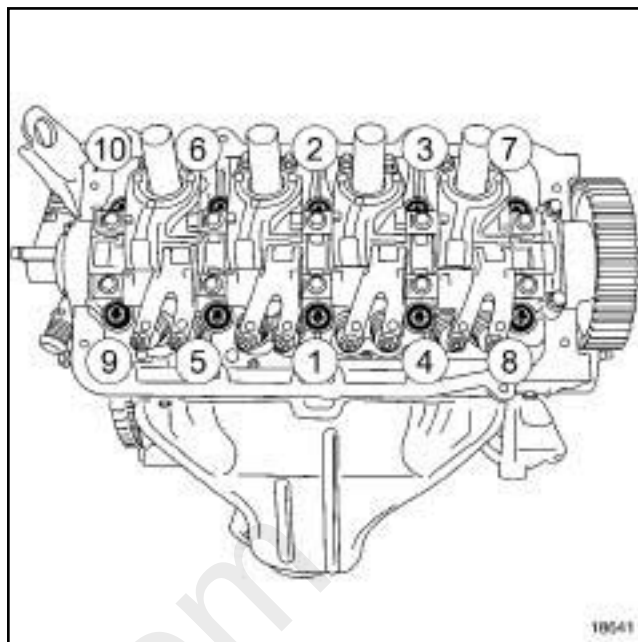
- ❑ Rebuild the cylinder head (see **Cylinder head: Rebuilding**) (Technical Note 6004A, 10A, Engine and peripherals).

II - REFITTING OPERATION FOR PART CONCERNED



19598

- ❑ Fit the new cylinder head gasket onto the cylinder block, positioning the marking (1) on the oil filter side.



18641

- ❑ Refit:
 - the cylinder head,
 - the new cylinder head bolts.
- ❑ Pretighten to torque and in order the **cylinder head bolts (initial torque) (20 Nm)**.
- ❑ Check that all the cylinder head bolts are tightened to **20 Nm**.
- ❑ Angle tighten, in order the **cylinder head bolts ($230^\circ \pm 6$)**.

III - FINAL OPERATION.

- ❑ Refit the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page **11A-183**).
- ❑ Connect the cooling hoses.
- ❑ Refit:
 - the cooling radiator hose clips using the (**Mot. 1448**),
 - the engine wiring harness.
- ❑ Remove the blanking plugs.
- ❑ Connect:
 - the petrol inlet union on the injector rail - injectors.
 - the coolant temperature sensor connector,
 - the fuel vapour rebreather solenoid valve connector,
 - upstream oxygen sensor connector,

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

D4F, and 784

- the air inlet pressure connector.
- the injector rail - injector wiring harness connector.
- ☐ Refit:
 - the petrol vapour rebreather pipe,
 - the oil vapour rebreathing pipe.
- ☐ Connect:
 - the petrol vapour rebreathing pipe to the solenoid valve,
 - the oil vapour rebreathing pipe on the rocker cover,
 - the oil vapour rebreather pipe from the inlet manifold,
 - the fuel vapour rebreathing pipe onto the inlet manifold,
 - the brake servo non-return valve pipe.
- ☐ Refit the air filter box air outlet pipe.
- ☐ Connect:
 - the air filter box outlet air pipe,
 - the turbocharging pressure relief valve control pipes.
- ☐ Tighten:
 - the clips on the air filter box outlet air pipe,
 - the turbocharging pressure relief valve control pipe clips.
- ☐ Connect:
 - the oil vapour rebreathing pipe to the air filter unit air outlet pipe.
 - the petrol vapour rebreathing pipe to the air filter unit air outlet pipe.
- ☐ Refit:
 - the intercooler outlet air pipe,
 - the intercooler air outlet pipe bolts.
- ☐ Connect:
 - air pressure sensor connector,
 - the air temperature sensor connector.
- ☐ Refit the compressor discharge valve air pipe.
- ☐ Tighten the compressor discharge valve pipe clips.
- ☐ Connect:
 - the vacuum hose on the intake distributor,
 - the turbocharger cooling hoses.

- ☐ Refit:
 - the turbocharger cooling hose clips using the (**Mot. 1448**),
 - the ignition coil (see **17A, Ignition, Coils: Removal - Refitting**, page **17A-2**),
 - the turbocharger oil pipes (see **12B, Turbocharging, Turbocharger oil pipe: Removal - Refitting**, page **12B-15**),
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page **11A-48**),
 - the catalytic converter (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page **19B-27**),
 - the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page **11A-31**),
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**),
 - the engine undertray,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 393, 55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (MR 392, 35A, Wheels and tyres).
- ☐ Refit the intercooler air inlet pipe.
- ☐ Clip the intercooler air inlet pipe onto the turbocharger.
- ☐ Refit:
 - the intercooler air inlet pipe bolt on the intake distributor,
 - the air filter unit air inlet pipe.
- ☐ Connect the intercooler air inlet pipe to the intercooler.
- ☐ Tighten the intercooler inlet pipe clip.
- ☐ Refit:
 - the air deflector,
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 393, 55A, Exterior protection),
 - the engine cover,
 - the engine undertray.
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).
- ☐ Fill and bleed the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page **19A-16**).

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

M4R

Special tooling required

Mot. 919-02 Flywheel locking tool.

Equipment required

1/2" female torx socket (12.7 mm square drive)

Tightening torques

cylinder head bolts (1st tightening)	40 N.m
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cylinder head bolts (2nd tightening)	100°
--------------------------------------	-------------

cylinder head bolts (3rd tightening)	100°
--------------------------------------	-------------

IMPORTANT

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

WARNING

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

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

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Remove the « engine and gearbox » assembly (see **10A, Engine and cylinder block assembly, Engine - gearbox assembly: Removal - Refitting**, page **10A-162**) .

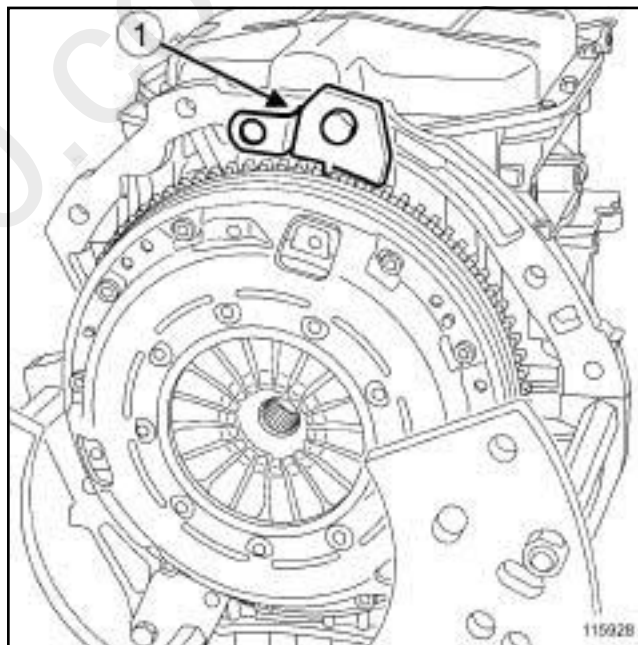
M4R, and 700

- ☐ Disconnect the manual gearbox from the engine (see **Manual gearbox: Removal - Refitting**) (21A, Manual gearbox).

M4R, and 701

- ☐ Disconnect the automatic gearbox from the engine (see **Automatic gearbox: Removal - Refitting**) (23A, Automatic transmission).
- ☐ Place the engine on the component support (see **Engine support equipment: Use**) .
- ☐ Drain the engine (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page **10A-13**) .
- ☐ Remove the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) .

M4R, and 700



115928

- ☐ Immobilise the flywheel by fitting the tool (**Mot. 919-02**) (1) on the cylinder block.

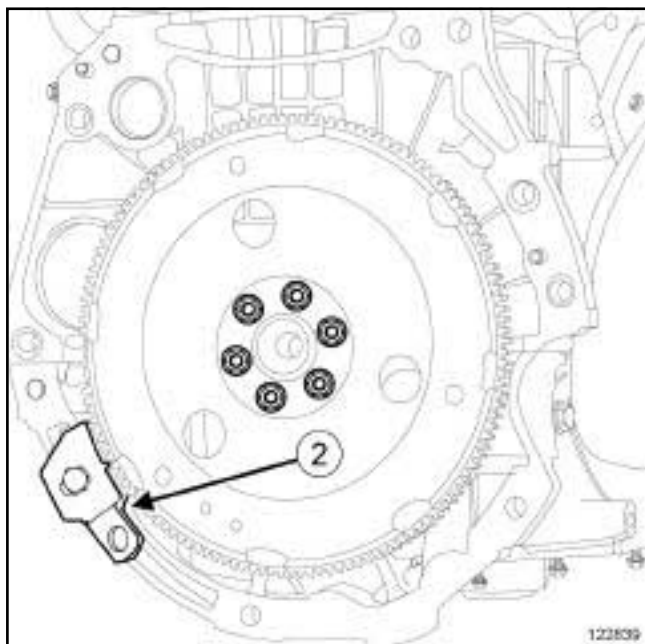
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

M4R

M4R, and 701



122839

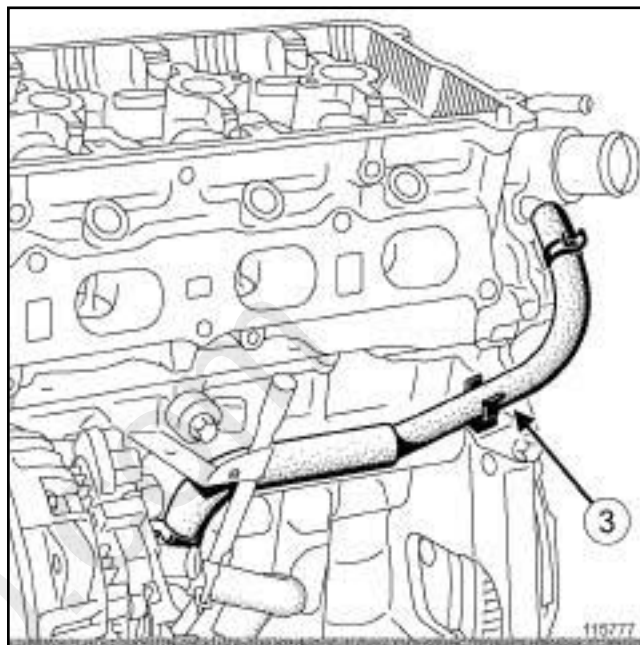
- ❑ Immobilise the drive plate by fitting the tool (**Mot. 919-02**) (2) on the cylinder block.

- ❑ Remove:

- the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page **11A-31**) ,
- the (**Mot. 919-02**),
- the crankshaft seal on the timing side (see **10A, Engine and cylinder block assembly, Crankshaft seal on timing end: Removal - Refitting**, page **10A-1**) ,
- the timing chain (see **11A, Top and front of engine, Timing chain: Removal - Refitting**, page **11A-170**) ,
- the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page **12A-33**) ,
- the inlet distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page **12A-46**) ,
- the ignition coils (see **17A, Ignition, Coils: Removal - Refitting**, page **17A-2**) ,
- the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page **11A-183**) ,
- the timing sprockets (see **Timing sprocket: Removal - Refitting**) ,

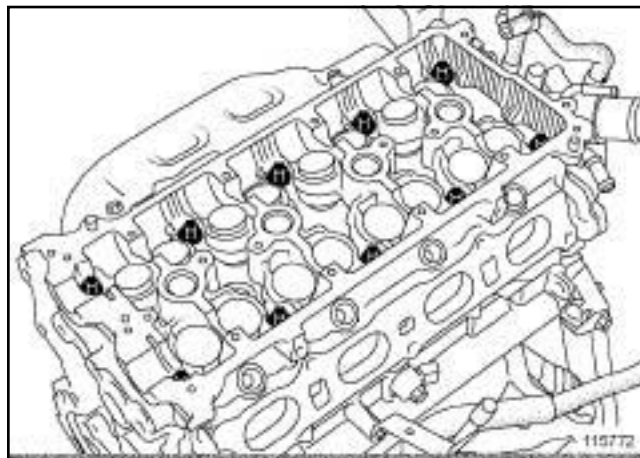
- the injector rail (see **13B, Diesel injection, Injector rail: Removal - Refitting**, page **13B-64**) ,
- the camshafts (see **11A, Top and front of engine, Camshaft: Removal - Refitting**, page **11A-247**) .

II - REMOVAL OF CYLINDER HEAD



115777

- ❑ Remove the cooling hose (3) .



115772

- ❑ Remove:

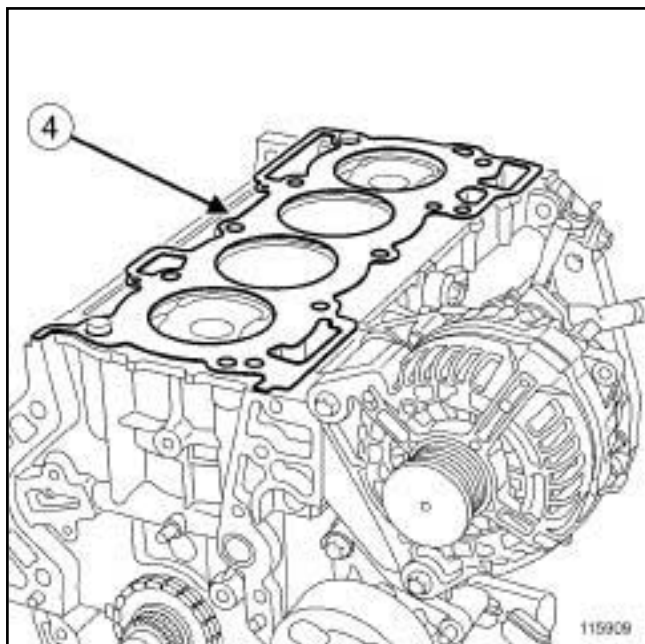
- the cylinder head bolts using a **1/2" female torx socket (12.7 mm square drive)**,
- the cylinder head.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

M4R



115909

- ❑ Remove the cylinder head gasket (4) from the cylinder block.

REFITTING

I - REFITTING PREPARATION OPERATION

❑

WARNING

Protect the oilway so that foreign bodies do not enter the oil pipes in the cylinder head.

Failure to follow this instruction could lead to the blocking of the oilways, resulting in a rapid deterioration of the camshaft.

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 cylinder block gasket face,
 - the cylinder head joint face.
- ❑ Remove the residue using a plastic spatula.

- ❑ Finish cleaning the joint faces using a **GREY ABRASIVE PAD** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

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:
 - the cylinder block gasket face,
 - the cylinder head joint face.
- ❑ Parts always to be replaced:
 - the cylinder head gasket,
 - the cylinder head bolts.

II - OPERATION FOR REFITTING THE CYLINDER HEAD

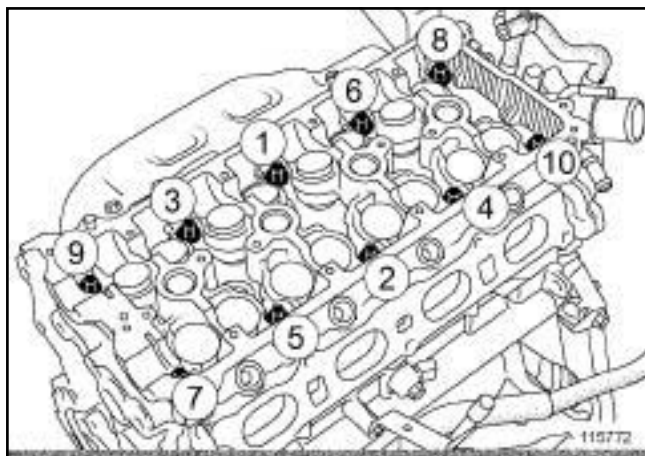
- ❑ Position piston 1 at Top Dead Centre.
- ❑ Check for the cylinder head centring dowels on the cylinder block.
- ❑ Refit:
 - the new cylinder head gasket on the cylinder block,
 - the cylinder head,
 - the new cylinder head bolts.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

M4R



115772



Note:

Do not retighten the cylinder head bolts after applying this procedure.

- ☐ Tighten in order and to torque the cylinder head bolts (**40 N.m**).
- ☐ Tighten to angle and in order the cylinder head bolts (**100°**).
- ☐ Loosen all the cylinder head bolts.
- ☐ Tighten in order and to torque the **cylinder head bolts (1st tightening) (40 N.m)**.
- ☐ Tighten to angle and in order the **cylinder head bolts (2nd tightening) (100°)**.
- ☐ Retighten to angle and in order the **cylinder head bolts (3rd tightening) (100°)**.
- ☐ Refit the cooling hose (**3**) .
- ☐ Oil the camshaft bearings.

III - FINAL OPERATION

- ☐ Refit:
 - the camshafts (see **11A, Top and front of engine, Camshaft: Removal - Refitting**, page **11A-247**) ,
 - the injector rail (see **13B, Diesel injection, Injector rail: Removal - Refitting**, page **13B-64**) ,
 - the timing sprockets (see **Timing sprocket: Removal - Refitting**) ,
 - the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page **11A-183**) ,
 - the ignition coils (see **17A, Ignition, Coils: Removal - Refitting**, page **17A-2**) ,

- the inlet distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page **12A-46**) ,
- the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page **12A-33**) ,
- the timing chain (see **11A, Top and front of engine, Timing chain: Removal - Refitting**, page **11A-170**) ,
- the crankshaft seal on the timing side (see **10A, Engine and cylinder block assembly, Crankshaft seal on timing end: Removal - Refitting**, page **10A-1**) .

- ☐ Immobilise the flywheel or the drive plate using the tool (**Mot. 919-02**).
- ☐ Refit the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page **11A-31**) .
- ☐ Remove the tool (**Mot. 919-02**).
- ☐ Refit the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) .
- ☐ Remove the engine from the component support (see **Engine support equipment: Use**) .

M4R, and 700

- ☐ Connect the manual gearbox to the engine (see **Manual gearbox: Removal - Refitting**) (**21A, Manual gearbox**).

M4R, and 701

- ☐ Connect the automatic gearbox to the engine (see **Automatic gearbox: Removal - Refitting**) (**23A, Automatic transmission**).
- ☐ Refit the « engine and gearbox » assembly (see **10A, Engine and cylinder block assembly, Engine - gearbox assembly: Removal - Refitting**, page **10A-162**) .
- ☐ Top up the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page **10A-13**) .

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

F4R

Special tooling required

Mot. 1573 Cylinder head support

Equipment required

Diagnostic tool

Tightening torques

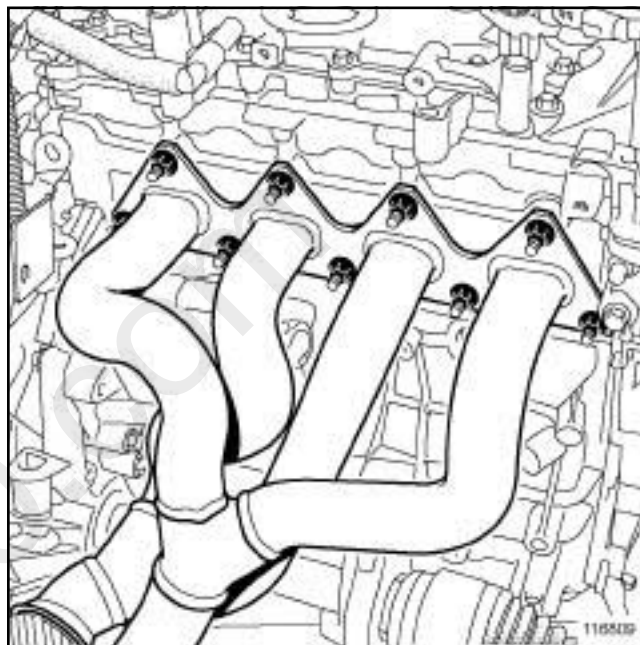
cylinder head bolts	30 N.m
cylinder head bolts	30 N.m
cylinder head bolts	180° ± 25°
exhaust manifold nuts	30 N.m

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).
- ☐ Perform the following operations:
 - drain the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page 10A-13) ,
 - drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .
- ☐ Remove:
 - the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page 12A-33) ,
 - the inlet distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page 12A-46) ,
 - the injector holder plate equipped with the injector rail (see **12A, Fuel mixture, Injector holder shim: Removal - Refitting**, page 12A-70) ,
 - the ignition coils (see **17A, Ignition, Coils: Removal - Refitting**, page 17A-2) ,
 - the oil separator (see **11A, Top and front of engine, Oil decanter: Removal - Refitting**, page 11A-302) ,
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) ,

- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,
- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) .



116809

- ☐ Remove the exhaust manifold nuts.
- ☐ Move aside the exhaust manifold.
- ☐ Remove:
 - the exhaust manifold gasket,
 - the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page 11A-183) ,
 - the inlet and exhaust camshafts.

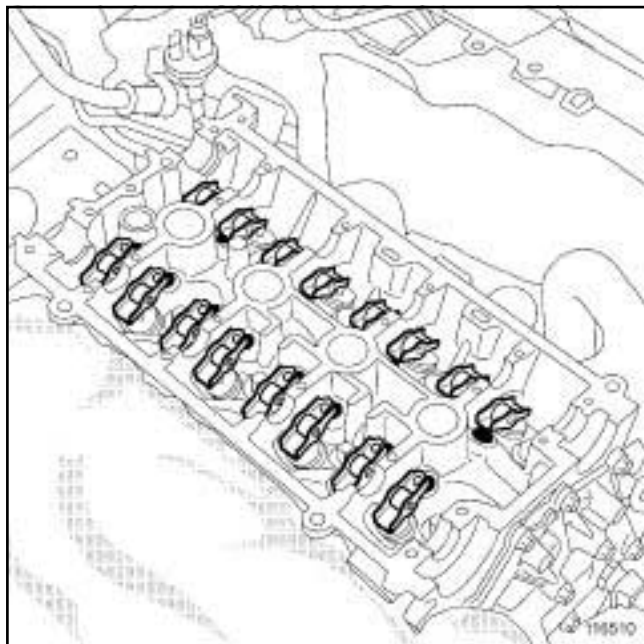
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

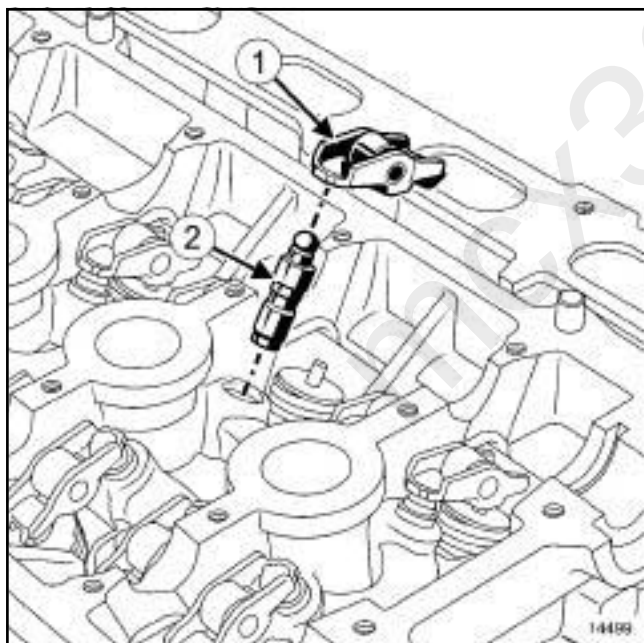
11A

F4R

II - OPERATION FOR REMOVAL OF PART CONCERNED



116510



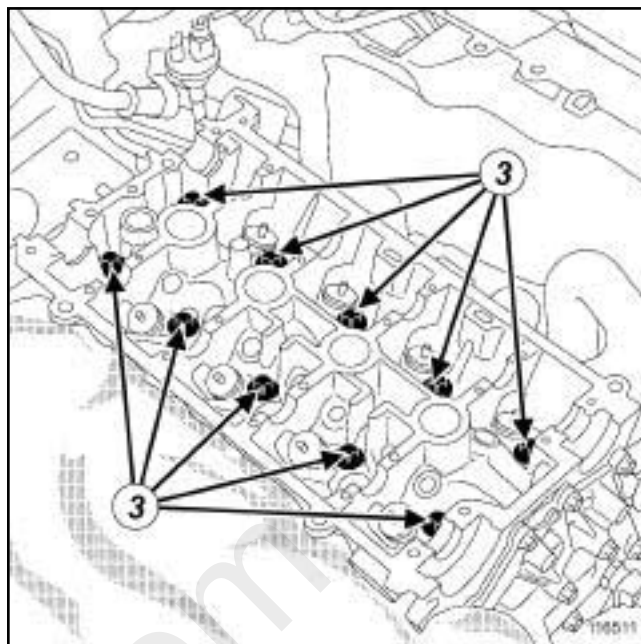
14499

❑ Remove:

- the valve rockers (1) ,
- the hydraulic tappets (2) .

Note:

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



116511

❑ Remove:

- the cylinder head bolts (3) ,
- the cylinder head.

❑ Mount the cylinder head on the cylinder head support (Mot. 1573).

❑ Remove the cylinder head seal.

REFITTING

I - REFITTING PREPARATION OPERATION

1 - CLEANING THE CYLINDER HEAD

- ❑ parts always to be replaced: cylinder head bolts (10,02,01,14).
- ❑ parts always to be replaced: Cylinder head gasket (10,02,01,04).
- ❑ parts always to be replaced: exhaust manifold seal (10,07,02,07).

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

F4R

- ❑ Clean the cylinder head.

IMPORTANT

Wear goggles with side protectors for this operation.

IMPORTANT

Wear leaktight gloves (Nitrile type) 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.

WARNING

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

WARNING

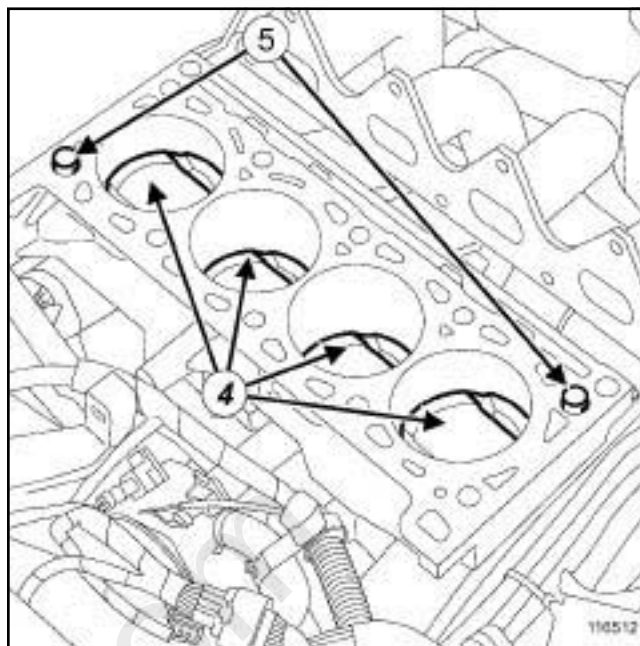
Do not allow this product to drip onto the paintwork.

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.

- ❑ Clean the joint faces using **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to dissolve the part of the seal that is still attached to the cylinder head and the cylinder block.
- ❑ Apply the product to the part to be cleaned, wait approximately ten minutes then remove the residue with a wooden spatula.

2 - PREPARING TO FIT THE CYLINDER HEAD



116512

- ❑ Place the pistons at (4) half stroke.
- ❑ Check that the centring devices (5) are present and in good condition on the cylinder block.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit:
 - a new cylinder head gasket,
 - the cylinder head,
 - new cylinder head bolts.

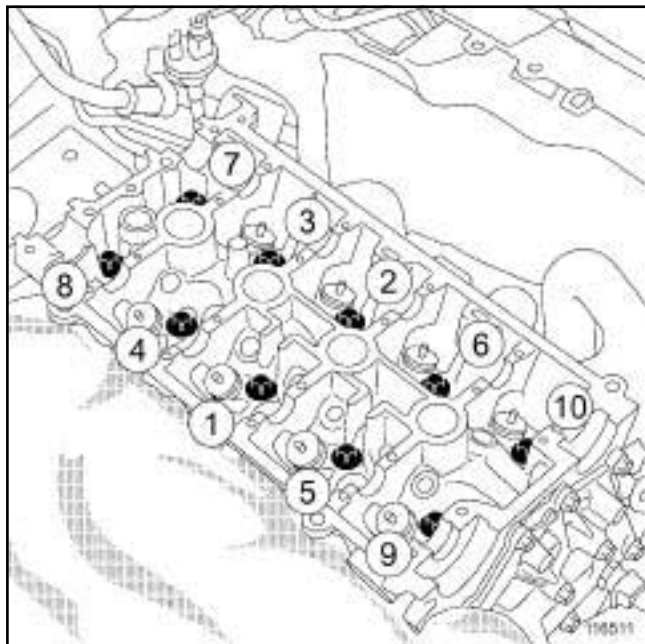
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

F4R

Tightening the cylinder head



116511

- ☐ Torque tighten (initial tightening) in order the **cylinder head bolts (30 N.m)**.
- ☐ Torque tighten (second tightening) in order the **cylinder head bolts (30 N.m)**.
- ☐ Angle tighten in order the **cylinder head bolts (180° ± 25°)**.

Note:

Do not retighten the cylinder head bolts after applying this procedure.

III - FINAL OPERATION

☐ Refit:

- the hydraulic tappets,
- the valve rockers,
- the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting, page 11A-183**).

☐ Fit:

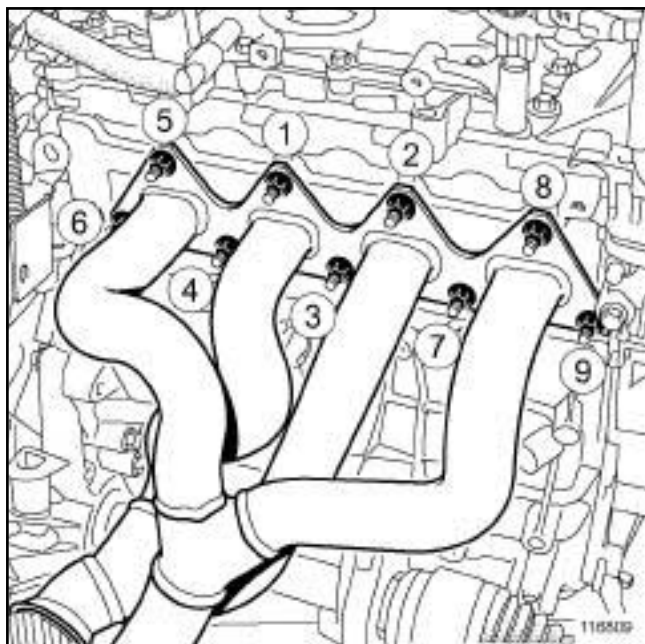
- a new exhaust manifold gasket,
- the exhaust manifold.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

F4R



116809

- ☐ Refit the exhaust manifold nuts.
- ☐ Torque tighten in order the **exhaust manifold nuts (30 N.m)**.
- ☐ Refit:
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,
 - the front bumper (see **Front bumper: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) ,
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery),
 - the oil separator (see **11A, Top and front of engine, Oil decanter: Removal - Refitting**, page 11A-302) ,
 - the ignition coils (see **17A, Ignition, Coils: Removal - Refitting**, page 17A-2) ,
 - the injector holder plate equipped with the injector rail (see **12A, Fuel mixture, Injector holder shim: Removal - Refitting**, page 12A-70) ,
 - the inlet distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page 12A-46) ,
 - the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page 12A-33) .

☐ Perform the following operations:

- top up the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page 10A-13) ,
- fill and bleed the coolant circuit (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .

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

☐ Refit the engine undertray.

☐ Using the **Diagnostic tool**, check that there are no faults stored by the injection computer and clear them if necessary.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

F4R, and 830

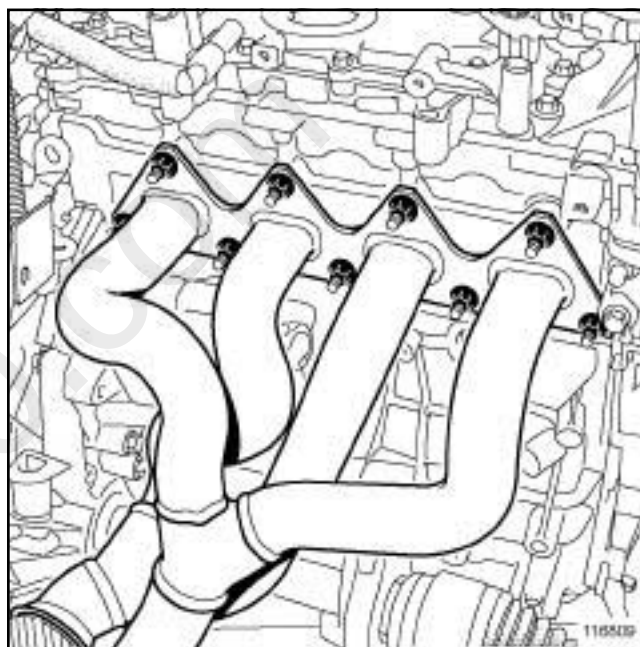
Special tooling required	
Mot. 1573	Cylinder head support
Equipment required	
Diagnostic tool	
Tightening torques 	
cylinder head mounting bolts	30 Nm
cylinder head mounting bolts	180° ± 25°
exhaust manifold mounting nuts	18 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 392, 02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).
- ☐ Perform the following operations:
 - drain the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page 10A-13) ,
 - drain the cooling system (see **19A, Cooling, Cooling system: Draining - Refilling**, page 19A-16) .
- ☐ Remove:
 - the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page 12A-33) ,
 - the intake distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting**, page 12A-46) ,
 - the injector holder plate equipped with the injector rail (see **12A, Fuel mixture, Injector holder shim: Removal - Refitting**, page 12A-70) ,
 - the ignition coils (see **17A, Ignition, Coils: Removal - Refitting**, page 17A-2) ,
 - the oil decanter (see **11A, Top and front of engine, Oil decanter: Removal - Refitting**, page 11A-302) ,
 - the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery),

- the air filter box (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (MR 392, 35A, Wheels and tyres),
- the front bumper (see **Front bumper: Removal - Refitting**) (MR 393, Bodywork, 55A, Exterior protection),
- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,
- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) .



116809

- ☐ Remove the mounting nuts from the exhaust manifold.
- ☐ Move aside the exhaust manifold.
- ☐ Remove:
 - the exhaust manifold gasket,
 - the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting**, page 11A-183) ,
 - the inlet and exhaust camshafts.

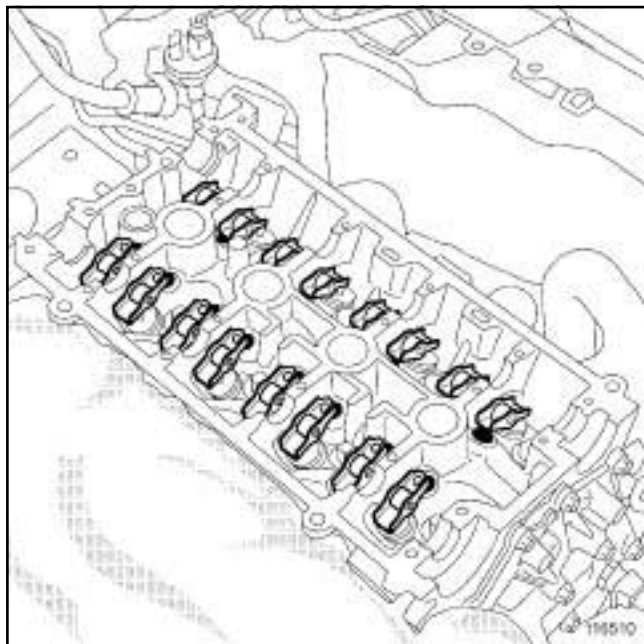
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

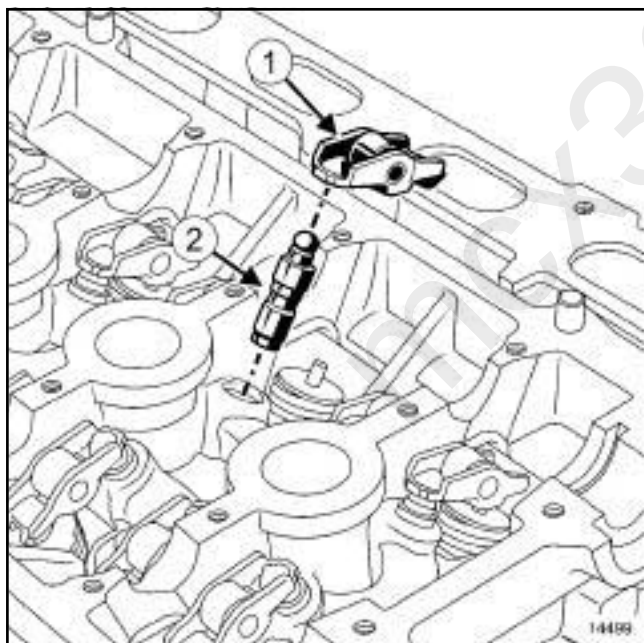
11A

F4R, and 830

II - OPERATION FOR REMOVAL OF PART CONCERNED



116510



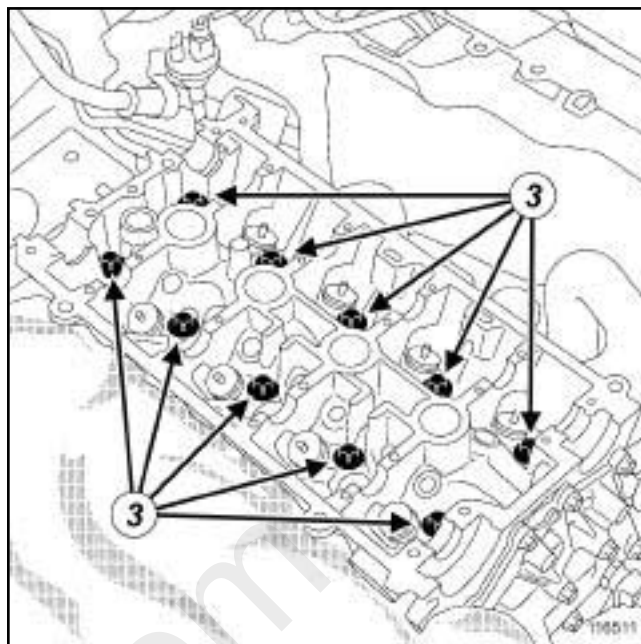
14499

❑ Remove:

- the valve rockers (1) ,
- the hydraulic tappets (2) .

Note:

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



116511

❑ Remove:

- the cylinder head mounting bolts (3) ,
- the cylinder head.

❑ Mount the cylinder head on the cylinder head support (Mot. 1573).

❑ Remove the cylinder head gasket.

TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

F4R, and 830

REFITTING

I - REFITTING PREPARATIONS OPERATION

1 - CLEANING THE CYLINDER HEAD

- ❑ Clean the cylinder head.

IMPORTANT

Wear goggles with side protectors for this operation.

IMPORTANT

Wear latex gloves during the operation.

WARNING

Do not scratch the aluminium joint faces: any surface damage to the joint faces may cause leaks.

WARNING

The joint faces must be clean, dry and free from grease (avoid finger marks).

WARNING

Do not allow this product to drip onto the paintwork.

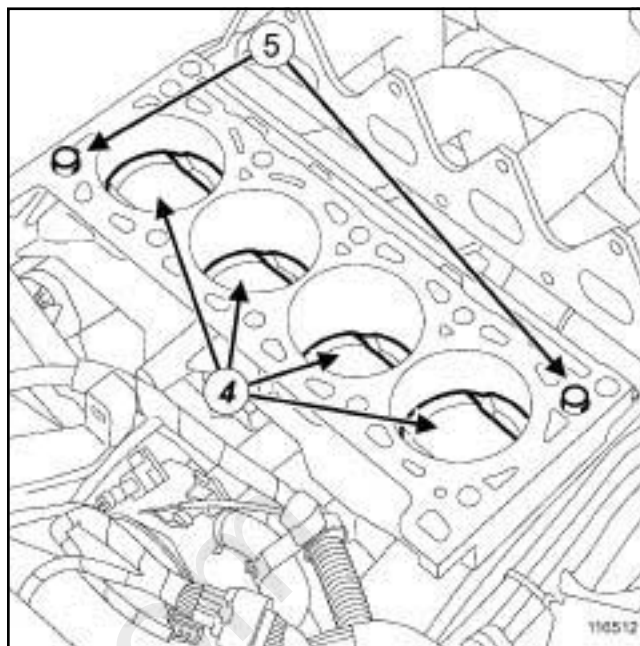
Clean the cylinder head carefully to prevent foreign bodies from entering the oil supply and return galleries.

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

- ❑ Clean the joint faces with **SUPER CLEANER FOR JOINT FACES** to dissolve any part of the seal still remaining on the cylinder head and cylinder block.

Apply the product to the part to be cleaned, wait approximately ten minutes then remove the residue with a wooden spatula.

2 - PREPARING TO FIT THE CYLINDER HEAD



116512

- ❑ Place the pistons at (4) half stroke.
- ❑ Check that the centring devices (5) are present and in good condition on the cylinder block.

II - REFITTING OPERATION FOR PART CONCERNED

- ❑ Refit:
 - the new cylinder head gasket,
 - the cylinder head,
 - the new cylinder head bolts.

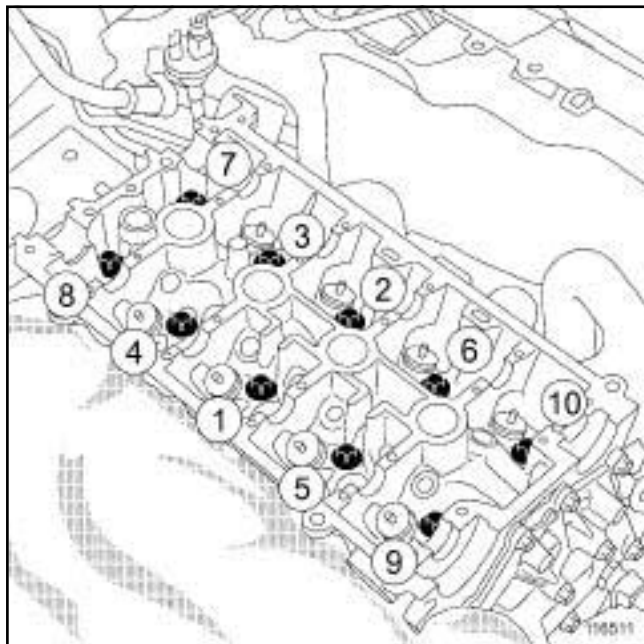
TOP AND FRONT OF ENGINE

Cylinder head: Removal - Refitting

11A

F4R, and 830

Tightening the cylinder head:



116511

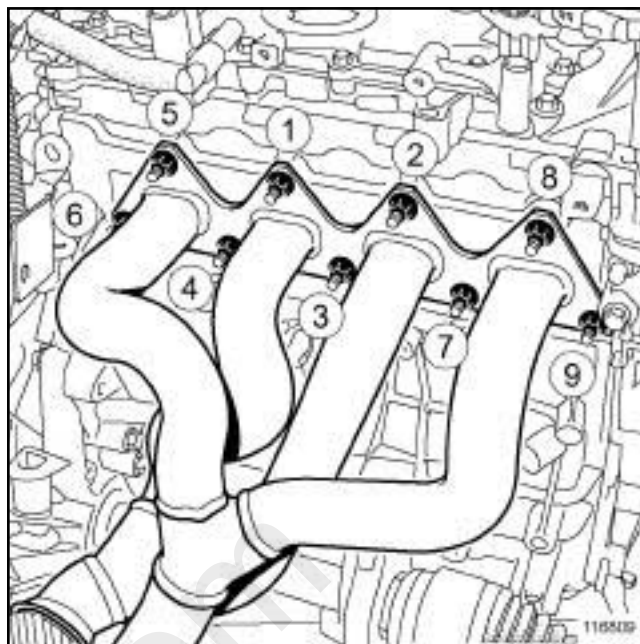
- ☐ First, torque tighten, in order the **cylinder head mounting bolts (30 Nm)**.
- ☐ Then torque tighten, in order the cylinder head mounting bolts again **(30 Nm)**.
- ☐ Angle tighten in order the **cylinder head mounting bolts ($180^\circ \pm 25^\circ$)**.

Note:

Do not retighten the cylinder head mounting bolts after applying this procedure.

III - FINAL OPERATION.

- ☐ Refit:
 - the hydraulic tappets,
 - the valve rockers,
 - the rocker cover (see **11A, Top and front of engine, Rocker cover: Removal - Refitting, page 11A-183**).
- ☐ Fit:
 - the new exhaust manifold gasket,
 - the exhaust manifold.



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- ☐ Refit the exhaust manifold mounting nuts.
- ☐ Torque tighten in order the **exhaust manifold mounting nuts (18 Nm)**.
- ☐ Refit:
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting, page 11A-48**),
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting, page 11A-5**),
 - the front bumper (see **Front bumper: Removal - Refitting**) (MR 393, Bodywork, 55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (MR 392, 35A, Wheels and tyres),
 - the air filter box (see **12A, Fuel mixture, Air filter unit: Removal - Refitting, page 12A-17**),
 - the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery),
 - the oil decanter (see **11A, Top and front of engine, Oil decanter: Removal - Refitting, page 11A-302**),
 - the ignition coils (see **17A, Ignition, Coils: Removal - Refitting, page 17A-2**),
 - the injector holder plate equipped with the injector rail (see **12A, Fuel mixture, Injector holder shim: Removal - Refitting, page 12A-70**),
 - the intake distributor (see **12A, Fuel mixture, Inlet distributor: Removal - Refitting, page 12A-46**),