

Lower cover: Removal - Refitting

K4M

- ☐ Refit the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).
- ☐ Refit:
 - the engine undertray,
 - the front wheel arch side liners,
 - the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).
- ☐ Top up the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page **10A-32**).

ENGINE AND CYLINDER BLOCK ASSEMBLY

Conrod bearing shell: Removal - Refitting

10A

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Equipment required

safety strap(s)
component jack
indelible pencil
torque wrench
Diagnostic tool

Tightening torques

con rod cap bolts	20 N.m + 45° ± 6°
oil pump bolts	25 N.m

IMPORTANT

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

IMPORTANT

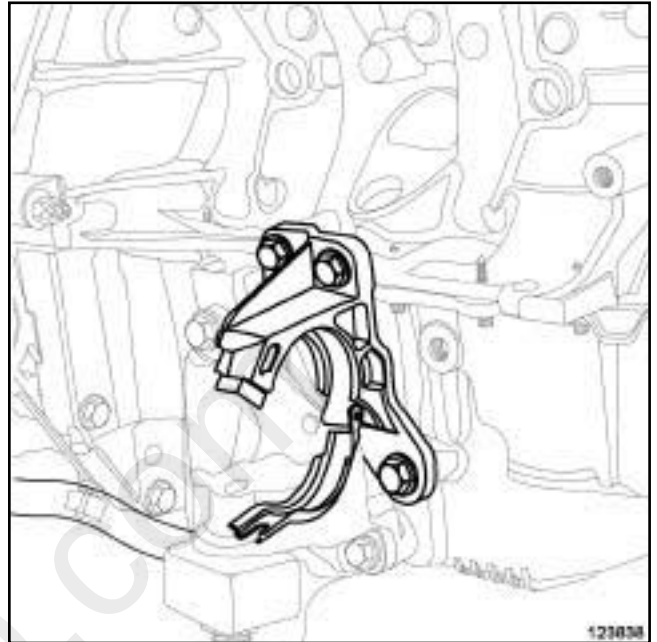
Wear leaktight gloves (Nitrile type) for this operation.

REMOVAL

I - REMOVAL PREPARATION OPERATION

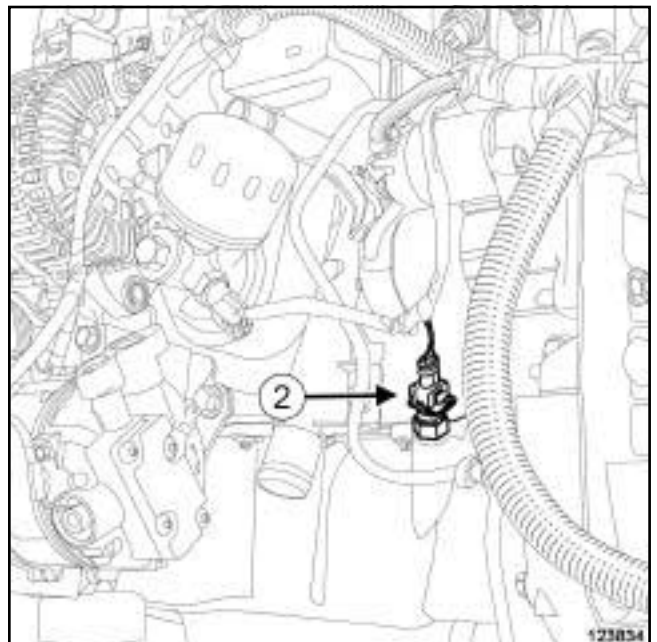
- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).
- ☐ Remove the engine undertray.
- ☐ Drain the oil from the engine (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page 10A-32) .
- ☐ Remove the oil filter (see **10A, Engine and cylinder block assembly, Oil filter: Removal - Refitting**, page 10A-34) .
- ☐ Remove the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page 19D-8) .

- ☐ Strap the radiator to the vehicle using **safety strap(s)**.
- ☐ Remove the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components).



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- ☐ Remove the relay bearing of the front right-hand wheel driveshaft.



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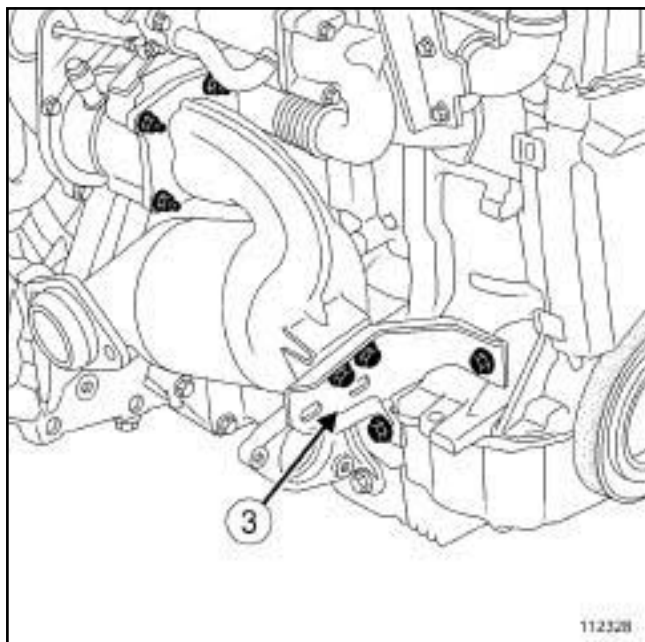
- ☐ Disconnect the oil level sensor connector (if equipped) (2) .

ENGINE AND CYLINDER BLOCK ASSEMBLY

Conrod bearing shell: Removal - Refitting

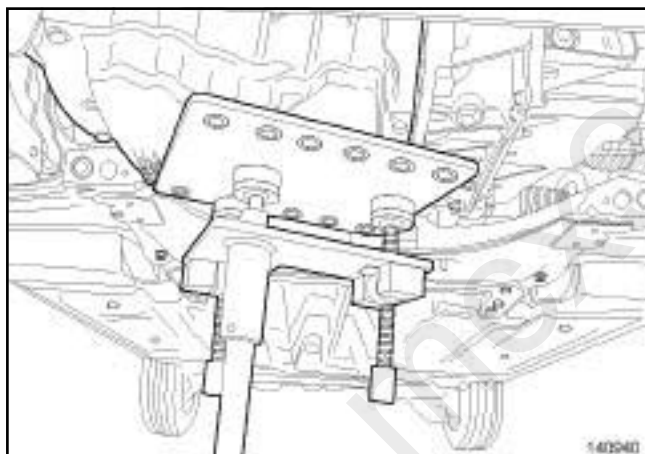
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- ❑ Remove the catalytic converter upstream stay (3) .



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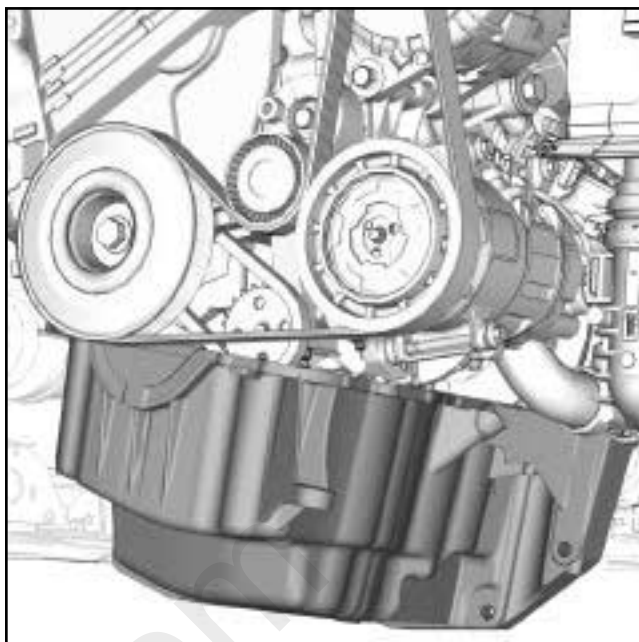
❑

WARNING

Failure to observe the following procedure may damage the oil pump strainer.

Undo the bolts of the engine oil sump.

- ❑ Fit a **component jack** to support the engine oil sump.
- ❑ Remove the bolts from the engine oil sump.
- ❑ Detach the engine oil sump, while supporting it with the **component jack**.

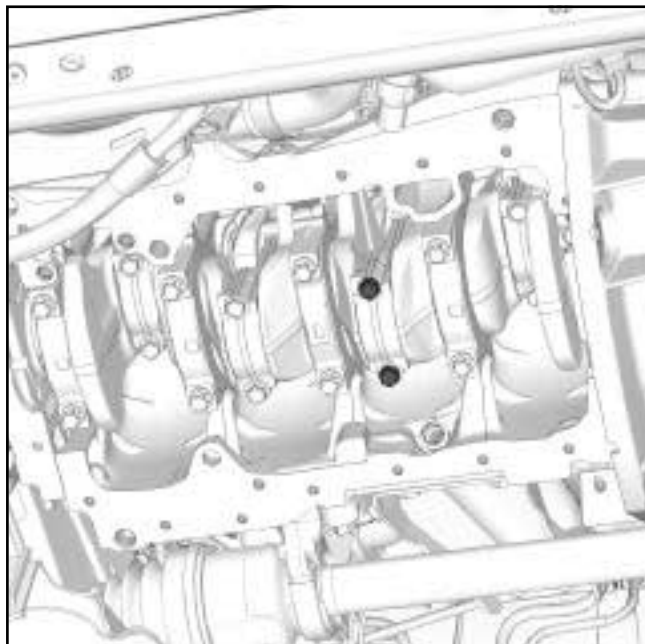


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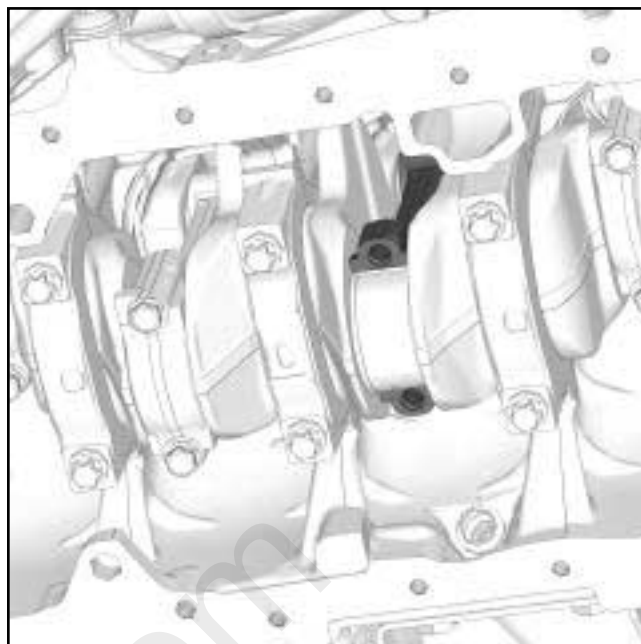
- ❑ Tilt the engine oil sump forwards in order to access the oil pump bolts.
- ❑ Partially loosen the oil pump bolts **3 mm to 5 mm**.
- ❑ Detach the oil pump from its position in order to remove the engine oil sump.
- ❑ Remove:
 - the engine oil sump,
 - the engine oil sump seal,
 - the oil pump.

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II - REMOVAL OPERATION FOR THE CON ROD BEARING SHELLS NO.2



- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean the big ends.
- ☐ Mark the position of the con rod cap in relation to the con rod body using a **indelible pencil**.
- ☐ Position the crankshaft at Top Dead Centre.



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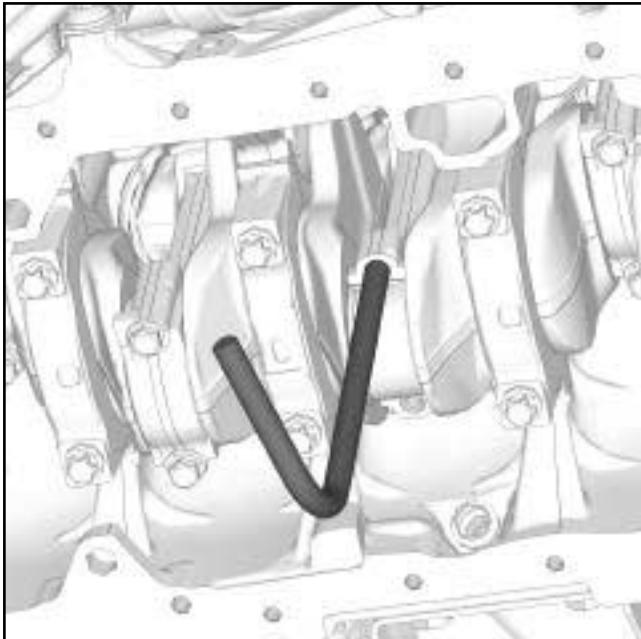
- ☐ Remove:
 - the con rod bolts,
 - the con rod cap,
 - the lower con rod bearing shell.

Note:

If reusing the con rod bearing shells, mark the position of the lower con rod bearing shell in relation to the con rod cap.

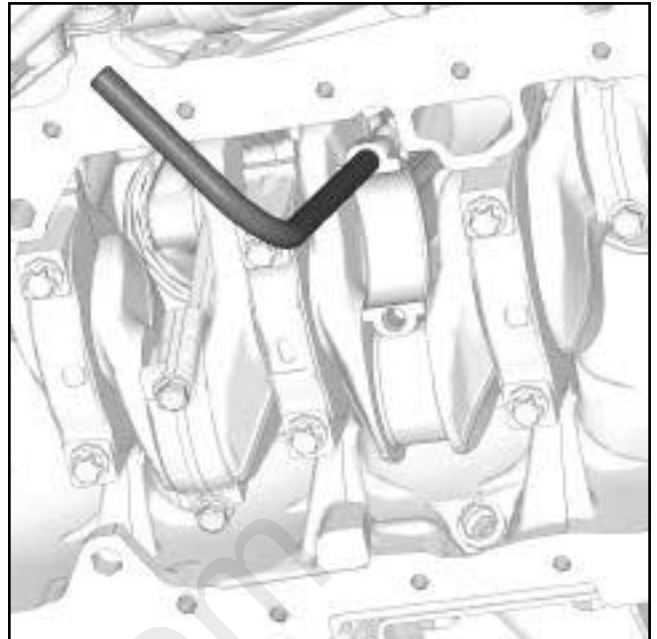
- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - products) to clean the bearing mating face on the con rod cap.

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- ☐ Fit the tie rod of the tool on the con rod body.
- ☐ Push the con rod upwards to release the con rod from the crankpin.
- ☐ Turn the crankshaft **90°** clockwise (timing end).



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☐**WARNING**

Failure to observe the following procedure may damage the piston base cooling jets.

Pull the con rod - piston assembly using the tie rod of the tool, taking care not to allow the piston to touch the piston base cooling jets.

- ☐ Remove the upper con rod bearing shell.

Note:

If reusing the con rod bearing shells, mark the position of the upper con rod bearing shell in relation to the con rod body.

- ☐ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - products) to clean the bearing mating face on the con rod body.

REFITTING**I - REFITTING OPERATION FOR THE CON ROD BEARING SHELLS ON CYLINDER NO.2**

- ☐ parts always to be replaced: con rod cap bolts

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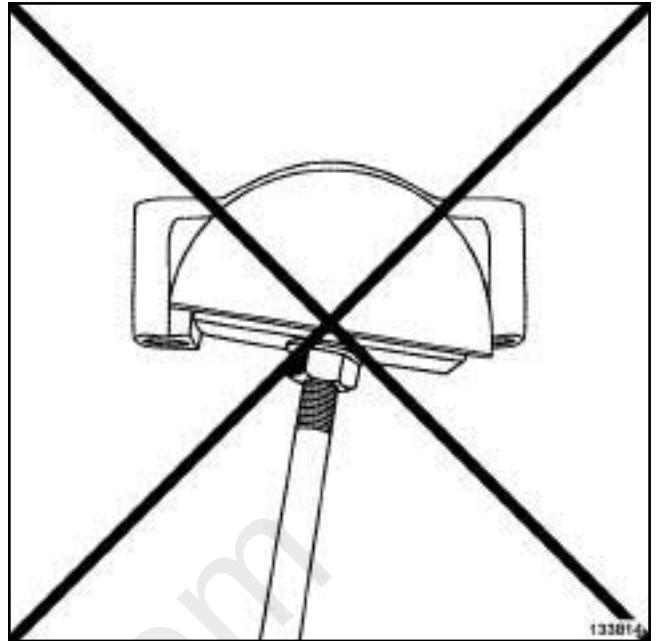
Note:

Always replace con rod bearing shells with a width of **20 mm** by con rod bearing shells with a width of **18 mm**.

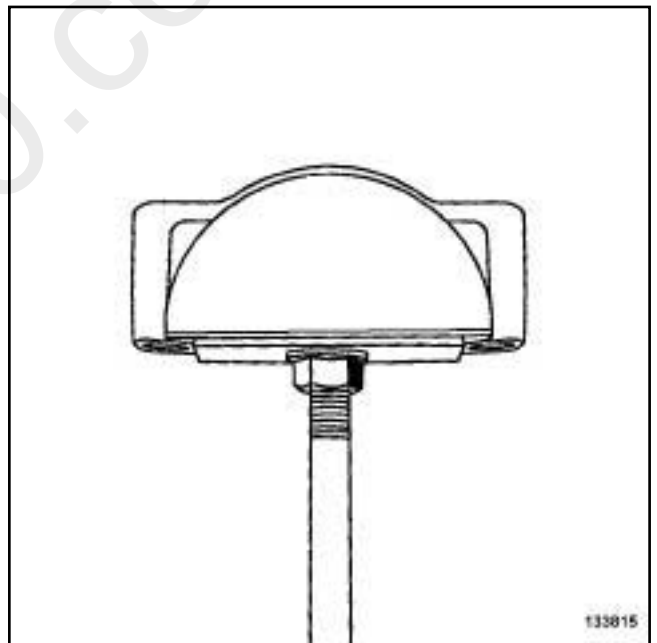
If the set of con rod bearing shells only includes con rod bearing shells which are **18mm** wide, only use the head of the tool with the marking "**K9K SUP**".

Fit the head of the tool with the marking "**K9K INF**" on the threaded sleeve of the tool.

- ☐ Position the lower con rod bearing shell on the tool.



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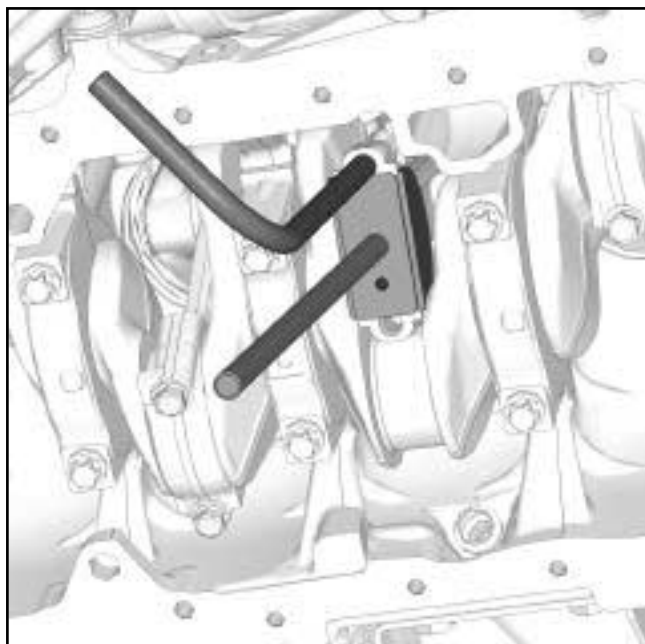
Note:

The contact surface between the bearing shell and the con rod must be dry and free of grease.

Fit the lower con rod bearing shell on the con rod cap using the tool.

- ☐ Position the lower con rod bearing shell so that the ends do not protrude beyond the con rod cap.
- ☐ Lubricate the surface of the con rod bearing shell (crankshaft end) using new engine oil.

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- ☐ Remove the tool head with the marking " **K9K INF** " and fit the head with the marking " **K9K SUP** ".
- ☐ Position the upper con rod bearing shell on the tool.
- ☐ Fit the upper con rod bearing shell on the con rod body using the tool.
- ☐ Position the upper con rod bearing shell so that the ends do not protrude beyond the con rod body.
- ☐ Lubricate the surface of the con rod bearing shell (crankshaft end) using new engine oil.
- ☐ Push the con rod - piston assembly back up into place.
- ☐ Turn the crankshaft **90°** anticlockwise.
- ☐ Lubricate the crankpin with new engine oil.
- ☐ Pull the con rod - piston assembly to position the con rod on the crankshaft.
- ☐

Note:

Before refitting the con rod cap, ensure that there are no impurities (filings, cloth lint, etc.) on the con rod body or cap surfaces.

Refit:

- the con rod cap according to the mark made during removal,
- the new con rod bolts.
- ☐ Torque and angle tighten the **con rod cap bolts (20 N.m + 45° ± 6°)**.

II - REMOVAL - REFITTING OPERATIONS FOR THE CON ROD BEARING SHELLS ON CYLINDERS NO.3, 1 AND 4

- ☐ Perform the same removal - refitting operations as for the con rod bearing shells on cylinder no. 2.

Note:

For removing and refitting the con rod bearing shells on cylinders no. 1 and no. 4, position the pistons at Bottom Dead Centre before performing the same removal and refitting operations as for the con rod bearing shells on cylinder no. 2.

III - FINAL OPERATION

- ☐ **parts always to be replaced: engine oil sump seal**

parts always to be replaced: Oil filter

parts always to be replaced: Drain plug seal on engine oil sump

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).

- ☐ Use a wooden spatula or an **ABRASIVE PAD** to clean the joint face of the cylinder block and engine oil sump.
- ☐ Refit the oil pump.
- ☐ Fit without tightening the oil pump bolts, while keeping a clearance of **3 mm to 5 mm**.
- ☐ Fit the engine oil sump seal.

WARNING

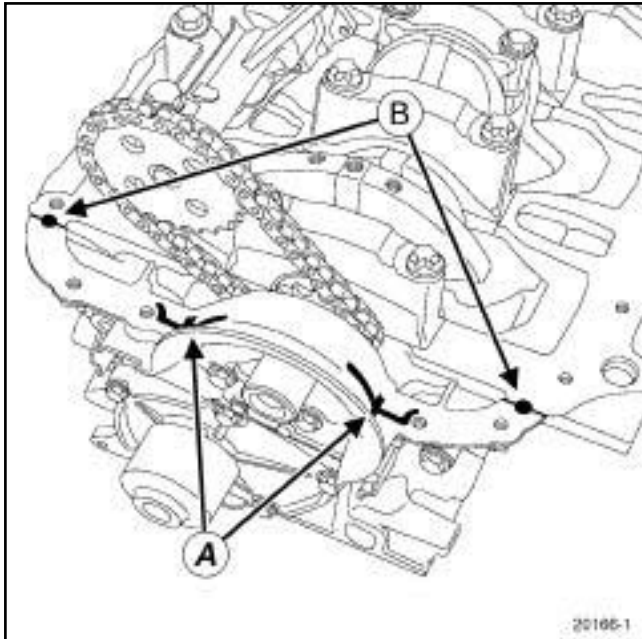
Applying excess sealant could cause it to be squeezed out when parts are tightened. A mixture of sealant and fluid could damage certain components (engine, radiator, etc.).

ENGINE AND CYLINDER BLOCK ASSEMBLY

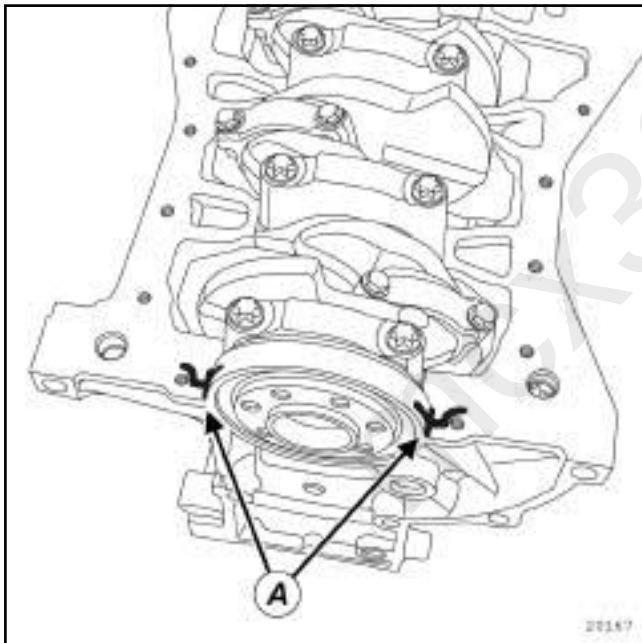
Conrod bearing shell: Removal - Refitting

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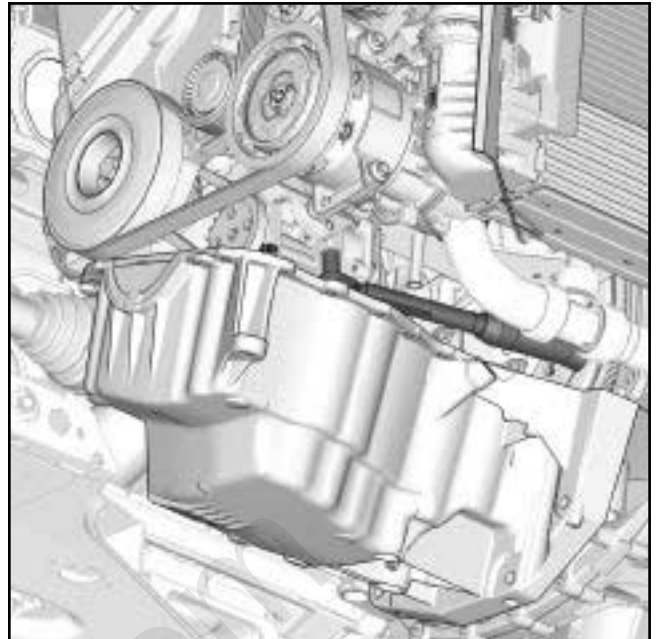


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- ☐ Apply **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) :
 - four beads with a diameter of **5 mm** at (A) ,
 - two drops with a diameter of **5 mm** at (B) .
- ☐ Fit the engine oil sump while supporting it using a **component jack**.



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- ☐ Tilt the engine oil sump forwards in order to access the oil pump bolts.
- ☐ Torque tighten the **oil pump bolts (25 N.m)** using the **torque wrench PROSTEEL**, part number **77 11 226 888** starting with the **13 mm** bolt.
- ☐

Note:

Check that the engine oil sump seal is definitely in place before tightening the engine oil sump bolts.

- ☐ Refit the engine oil sump bolts.
- ☐ Torque tighten in order the engine oil sump bolts (see **10A, Engine and cylinder block assembly, Lower cover: Removal - Refitting**, page 10A-9) .
- ☐ Refit the catalytic converter upstream stay (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page 19B-10) .
- ☐ Connect the connector to the oil level sensor.
- ☐ Refit the relay bearing of the front right-hand wheel driveshaft (see **Front right-hand driveshaft: Removal - Refitting**) .
- ☐ Refit the front axle subframe (see **Front axle sub-frame: Removal - Refitting**) (31A, Front axle components).
- ☐ Remove the **safety strap(s)** from the radiator.
- ☐ Refit the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page 19D-8) .