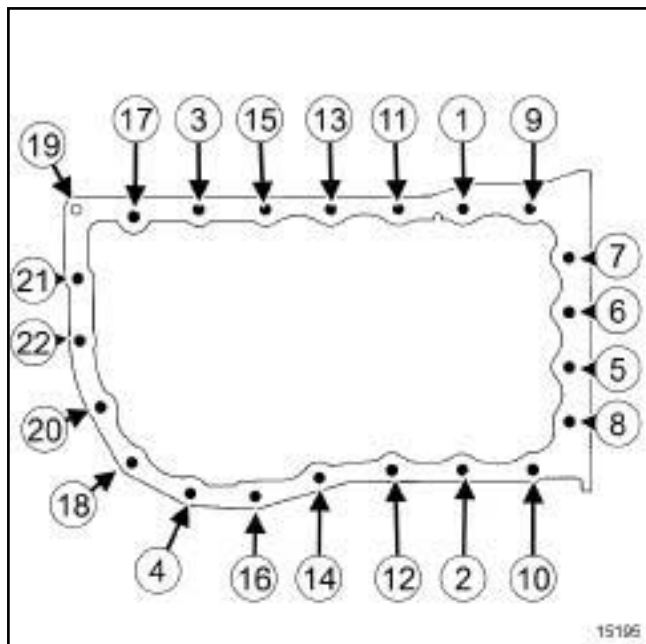


Lower cover: Removal - Refitting

F4R



15195

- ☐ Torque tighten and in order:
 - the **sump mounting bolts (1) to (6) (15 Nm)**,
 - the **sump mounting bolts (7) to (10), (1), (2), and (11) to (22) (18 Nm)**,
 - the **sump mounting bolts on the gearbox (44 Nm)**.
- ☐ Clean around the sides of the sump.
- ☐ Remove the drain plug and its old seal.
- ☐ Refit the drain plug with its new seal.

WARNING

Systematically replace the gaskets.

1 - Standard refitting of sump

- ☐ Fit the lower engine tie-bar.
- ☐ Refit the lower engine tie-bar mounting bolt, engine side.
- ☐ Torque tighten:
 - the **engine tie-bar mounting bolt on the mounting (180 Nm)**,
 - the **engine tie-bar mounting bolt on the sub-frame (105 Nm)**.

2 - Replacement of the sump

- ☐ Refit:
 - the lower cross member.

- the reinforcement lower cross member mounting nuts,

☐ Refit:

- the engine tie-bar support, engine side,
- the engine tie-bar support mounting bolts, engine side.

☐ Torque tighten the **engine tie-bar support mounting bolts (62 Nm)**.☐ Fit the lower engine tie-bar.☐ Refit the lower engine tie-bar mounting bolt, engine side.☐ Torque tighten:

- the **engine tie-bar mounting bolt on its mounting (180 Nm)**,
- the **engine tie-bar mounting bolt on the sub-frame (105 Nm)**.

III - FINAL OPERATION☐ Perform the following operations:

- top up the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page **10A-13**) ,
- check the engine oil level using the dipstick.

☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).☐ Start the engine and let it run for **5 minutes**.☐ Check that there are no leaks between the cylinder block and the sump.☐ Refit the engine undertray.

ENGINE AND CYLINDER BLOCK ASSEMBLY

Conrod bearing shell: Removal - Refitting

10A

K9K

Special tooling required

Mot. 1914	Tool for fitting G9 con rod bearing shells
Mot. 1920	Tool for fitting F9 / K9 con rod bearing shells

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**) .

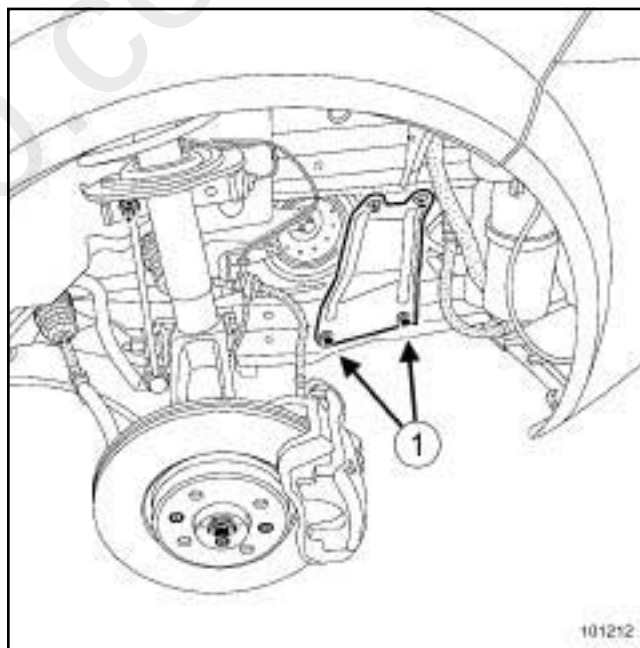
IMPORTANT

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-13) .
- ☐ Remove the oil filter (see **10A, Engine and cylinder block assembly, Oil filter: Removal - Refitting**, page 10A-20) .
- ☐ Remove the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page 19D-13) .



101212

101212

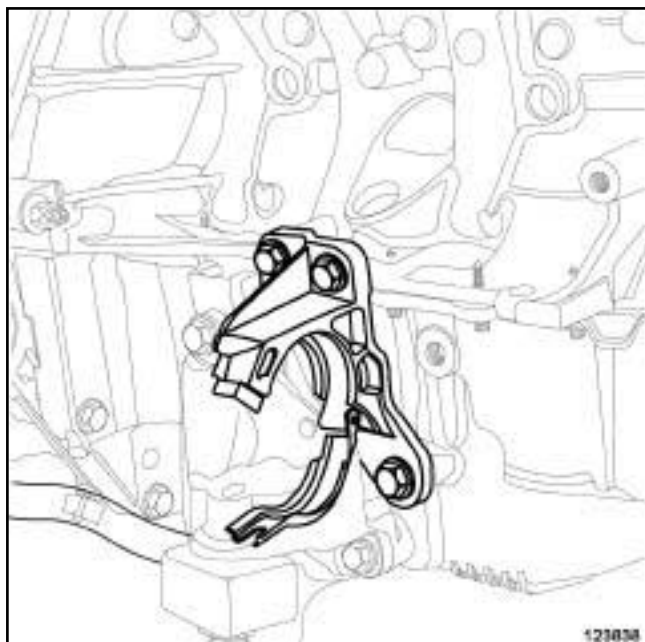
- ☐ Strap the radiator to the vehicle using **safety strap(s)**.
- ☐ Remove the clips from the front wheel arch liners on the radiator mounting cross member.
- ☐ Remove the side reinforcement mountings on the radiator mounting cross member (1) .
- ☐ Remove the radiator mounting cross member without removing the front bumper (see **Radiator mounting cross member: Removal - Refitting**) (31A, Front axle components).

ENGINE AND CYLINDER BLOCK ASSEMBLY

Conrod bearing shell: Removal - Refitting

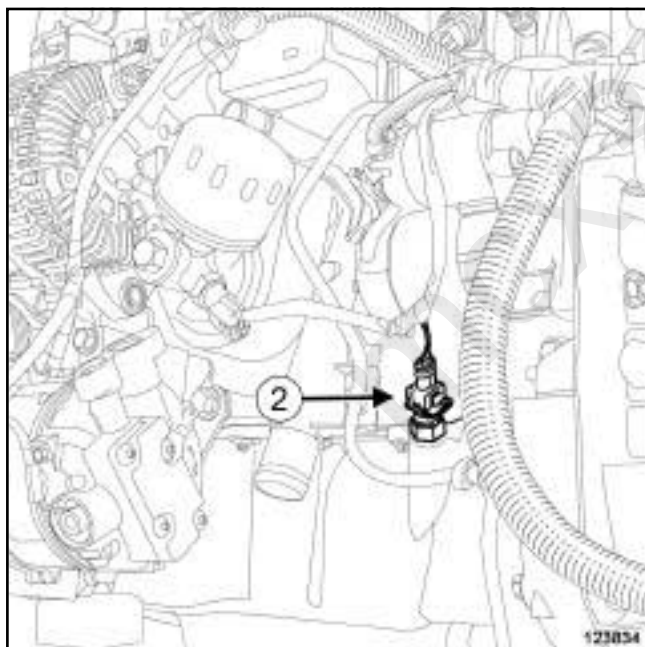
10A

K9K



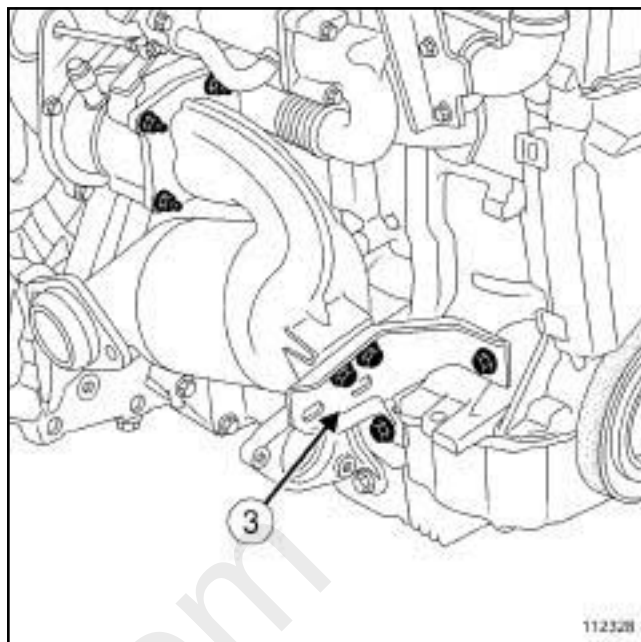
123838

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



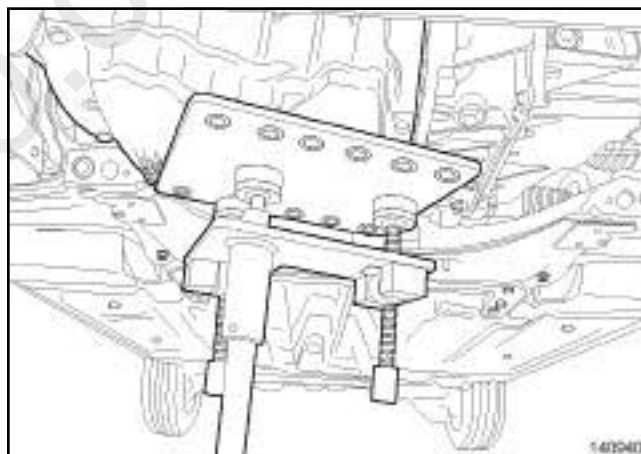
123834

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



112328

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



140940

- ❑

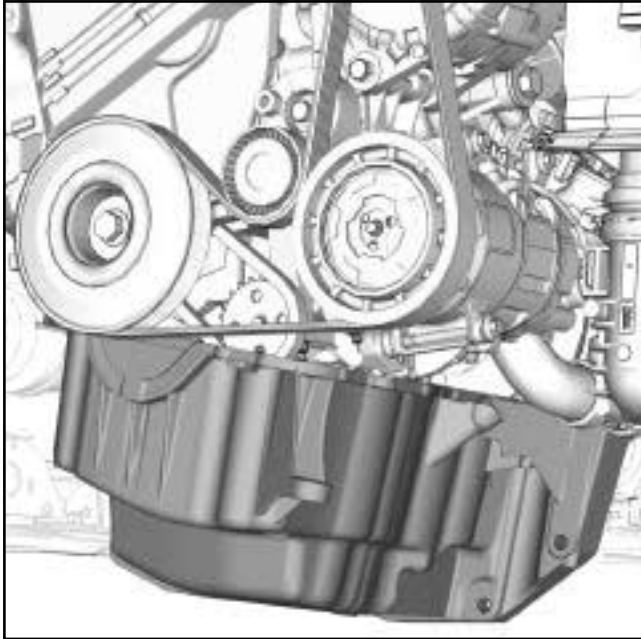
WARNING

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**.

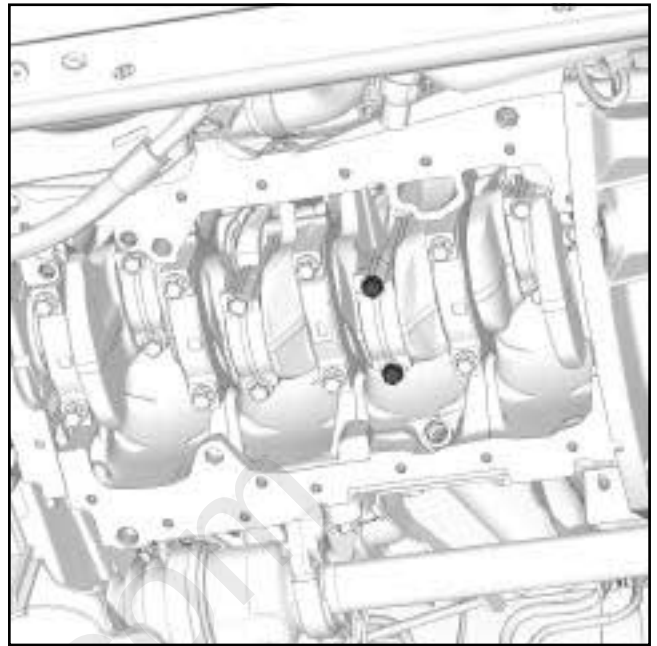
K9K



140917

- ☐ 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.

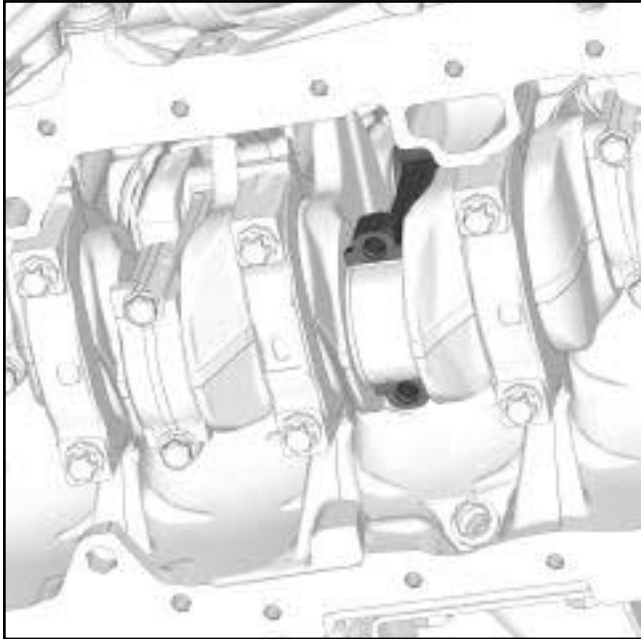
II - REMOVAL OPERATION FOR THE CON ROD BEARING SHELLS NO.2



139306

- ☐ 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.

K9K



139300

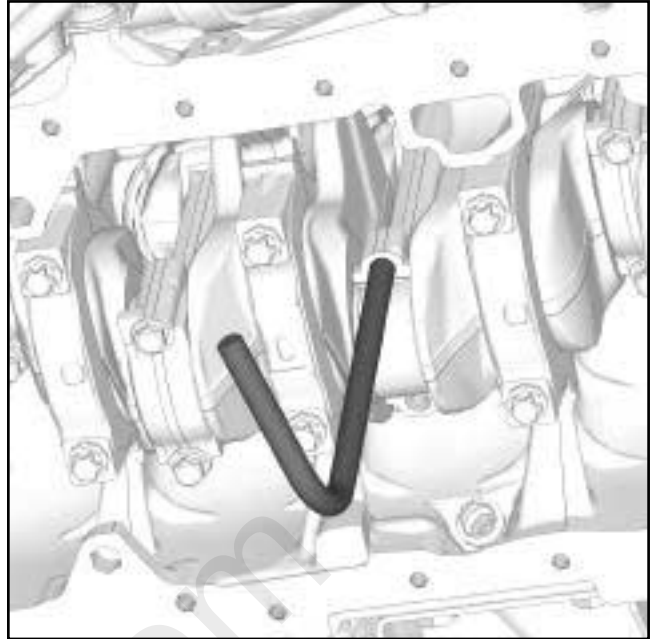
☐ Remove:

- 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.

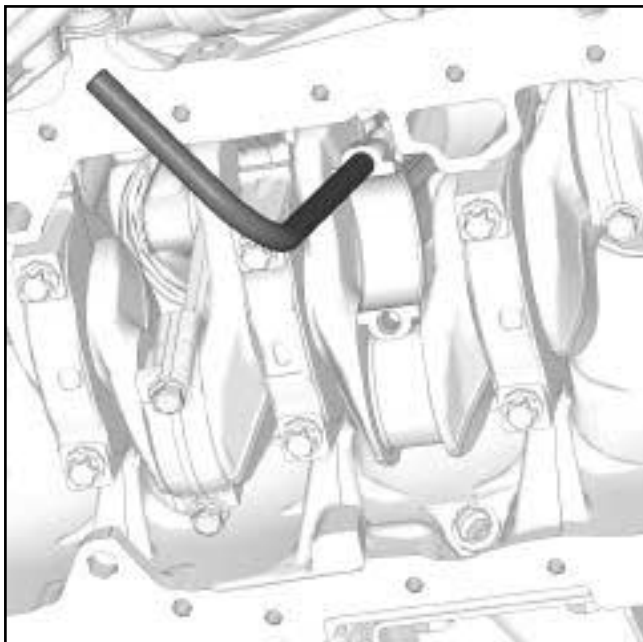


139310

- ☐
- Fit the tie rod of the tool (
- Mot. 1914**
-) 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).

K9K



139315

**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 (**Mot. 1914**), 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 (10,03,02,10)

**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 (**Mot. 1920**) with the marking "**K9K SUP**".

Fit the head of the tool (**Mot. 1920**) with the marking "**K9K INF**" on the threaded sleeve of the tool (**Mot. 1914**).

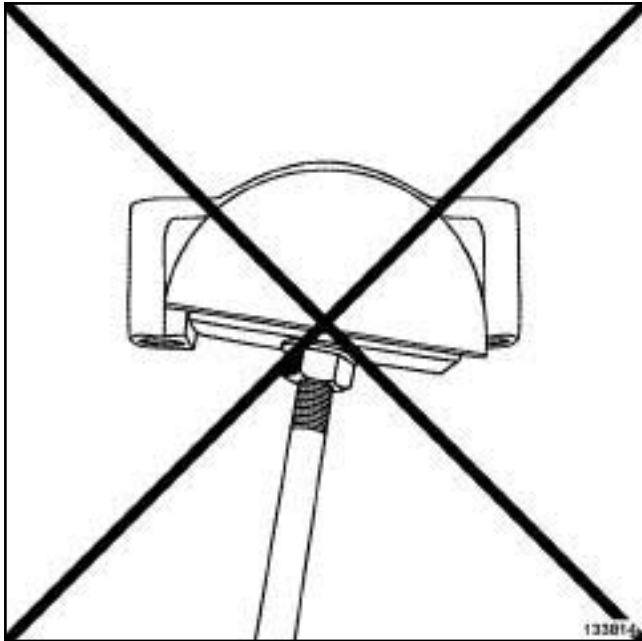
- ☐ Position the lower con rod bearing shell on the tool (**Mot. 1920**).

ENGINE AND CYLINDER BLOCK ASSEMBLY

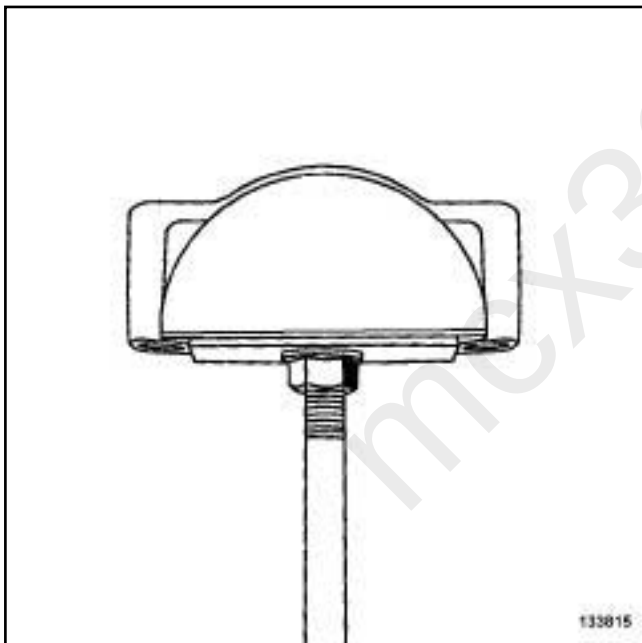
Conrod bearing shell: Removal - Refitting

10A

K9K



133814



133815

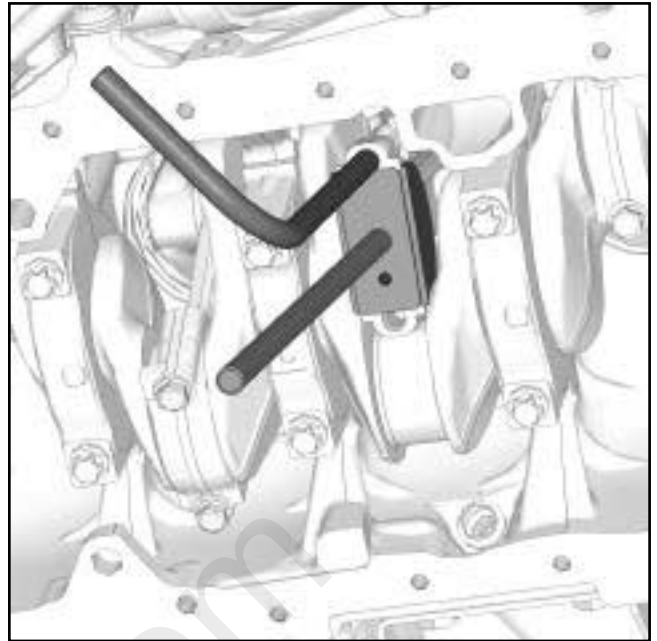
❑

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 (**Mot. 1920**).

- ❑ 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.



139318

- ❑ 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 (**Mot. 1920**).
- ❑ Fit the upper con rod bearing shell on the con rod body using the tool (**Mot. 1920**).
- ❑ 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°)**.

K9K

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 (10,03,01,09)

parts always to be replaced: Oil filter (10,05,05,03)

parts always to be replaced: Drain plug seal on engine oil sump (10,03,01,04)

WARNING

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

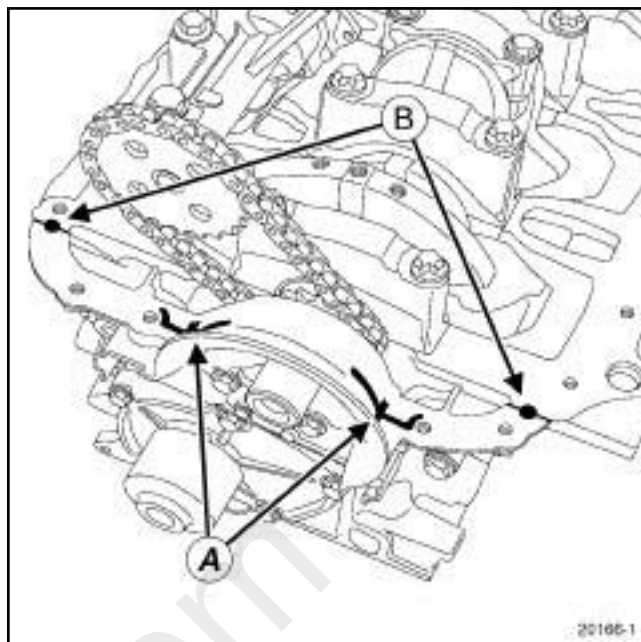
WARNING

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

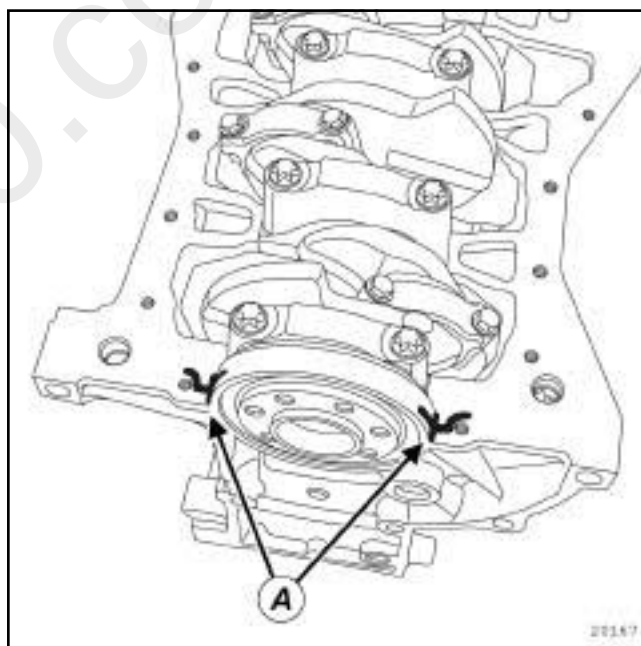
- ☐ Use a wooden spatula or an **ABRASIVE PAD** to clean the joint face of the cylinder block and engine oil sump.
- ☐ Refit the oil pump.
- ☐ Fit without tightening the oil pump bolts, while keeping a clearance of **3 mm** to **5 mm**.
- ☐ Fit the engine oil sump seal.

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.).



20166



20167

- ☐ 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**.