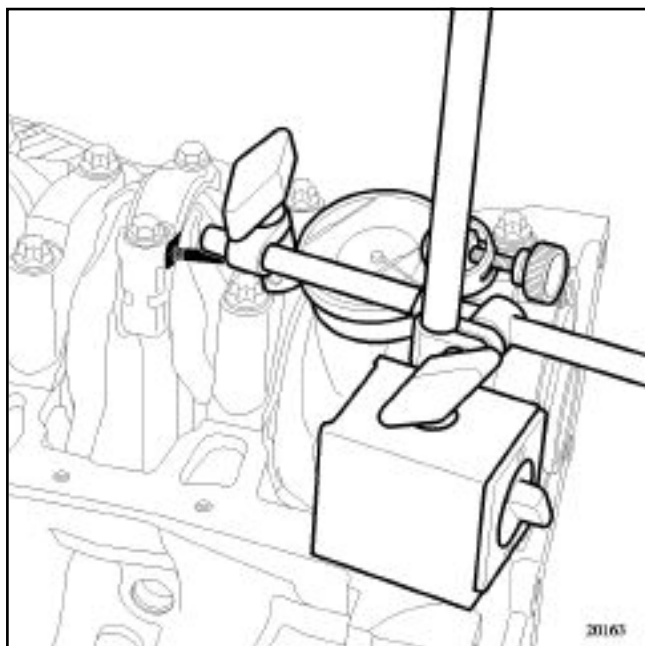




20163

Check the longitudinal clearance of the big ends, which must be between **0.205 and 0.467 mm** .

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790

Special tooling required	
Mot. 1018	Sump plug tool.
Mot. 1586	Tool for fitting PTFE crankshaft seal, timing end.
Mot. 1714	Adapter for fitting PTFE crankshaft seal, timing end.
Mot. 1585	Tool for fitting PTFE crankshaft seal, flywheel end.
Emb. 1596	24 mm socket for removing/refitting clutch master cylinder.
Mot. 1329	Oil filter removing tool (76 mm diameter).
Mot. 923	Engine lifting ring.
Mot. 582-01	Flywheel locking tool.
Mot. 1677	Flywheel locking tool.
Emb. 1780	Set of clutch disc centring mandrels.

Tightening torques 	
the oil pump mounting bolts	25 ± 2.5 Nm
the oil level sensor	25 ± 2.5 Nm
the crankshaft nose closure unit mounting bolts	11 ± 1.1 Nm
the coolant pump mounting bolts	11 ± 1.1 Nm
the engine oil sump mounting bolts	14 ± 1.4 Nm
the drain plug of the engine oil sump	20 ± 2 Nm
the coolant pump pipe mounting bolt	22 ± 2.2 Nm
the coolant / oil heat exchanger mounting bolt	45 ± 4.5 Nm

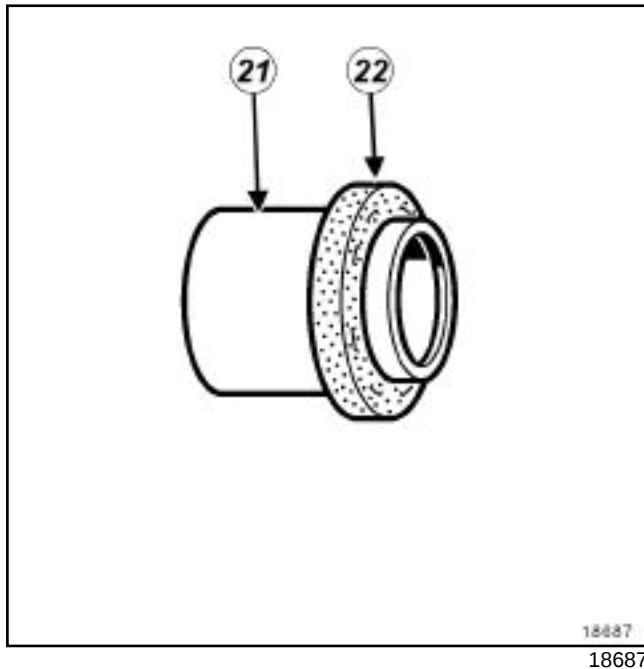
Tightening torques 	
the oil filter holder mounting bolt	45 ± 4.5 Nm
the acceleration meter	20 ± 2 Nm
the oil pressure switch	30 ± 3 to 35 ± 3.5 Nm
the oil filter	14 ± 2 Nm
the multifunction support mounting bolts (from 1 to 6 or from 1 to 5)	44 ± 4.4 Nm
multifunction support mounting bolt (7)	21 ± 2.1 Nm
the mounting bolts of the power assisted steering pump or the dummy pulley	21 ± 2.1 Nm
the air conditioning compressor mounting bolts	21 ± 2.1 Nm
the alternator mounting bolts	21 ± 2.1 Nm
the coolant / oil heat exchanger mounting bolt	45 ± 4.5 Nm
the oil filter holder mounting bolt	45 ± 4.5 Nm
the acceleration meter	20 ± 2 Nm
the oil pressure switch	30 ± 3 to 35 ± 3.5 Nm
oil filter	14 ± 2 Nm
flywheel mounting bolts	55 ± 5.5 Nm
the clutch mechanism mounting bolts	M6 to 14 ± 1.4 Nm and bolts M7 to 20 ± 2 Nm

I - RECOMMENDATIONS FOR REPAIR

IMPORTANT

Wear protective gloves during every operation.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



18687

WARNING

This type of seal is very delicate. When handling, it is essential to hold the protective piece (21). It is strictly forbidden to touch seal (22); this is to prevent any oil leaks once the oil seal is fitted to the engine.

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

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.)

II - PARTS AND CONSUMABLES FOR THE REPAIR**Parts always to be replaced**

- The crankshaft nose closure unit seal,
- The coolant pump seal,
- The oil sump mounting seal,
- The clutch mechanism (if necessary),
- The friction disc (if necessary),
- Flywheel mounting bolt
- The coolant pump inlet pipe seal,
- The oil/coolant heat exchanger seals,
- The crankshaft seal, timing end,
- The crankshaft seal, flywheel end,
- Oil filter,

- The seal of the drain plug of the engine oil sump.

Consumables

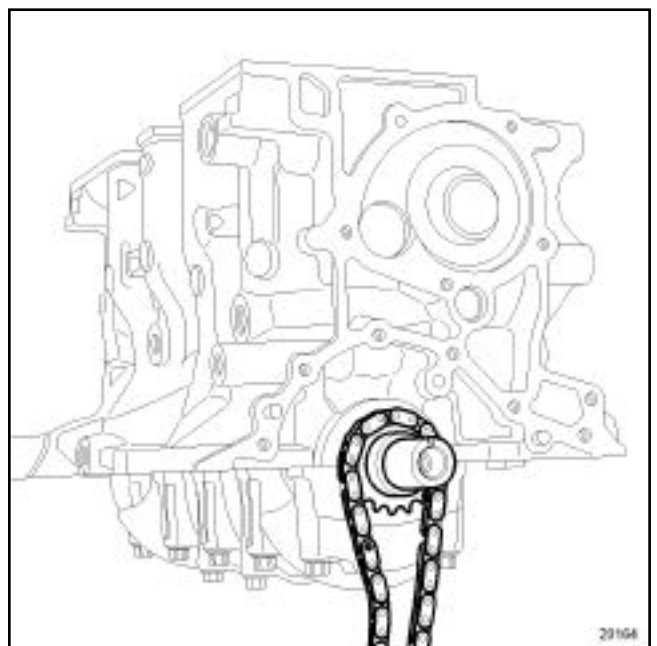
- Degreasing agent, part no. **77 11 224 559** .
- Silicone adhesive sealant, part no. **77 11 227 484** ,
- High-resistance bolt locking product, part no. **77 11 230 112** ,

III - EQUIPMENT REQUIRED

- Torque/angle wrench,
- Torque wrench
- Cylinder head bolt tightening gauge (angular measuring type),
- Rule,
- Male triangular drive drain plug spanner **8 mm** ,
- Male torx socket.
- Oil can,
- Workshop hoist.

IV - REASSEMBLING THE CYLINDER BLOCK

Put a little engine oil from an oil can in the oil pump via the oil sump filter.



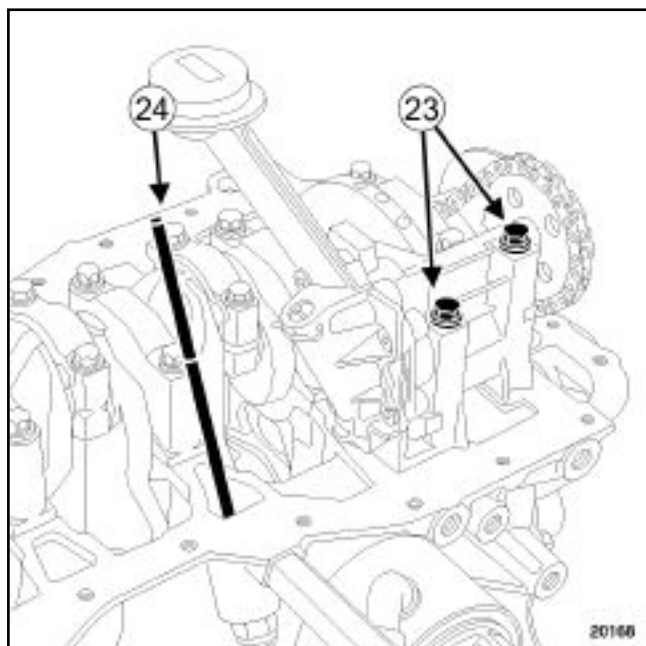
29164

20164

Refit:

- the oil pump drive sprocket,
- the oil pump chain.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



20168

Refit:

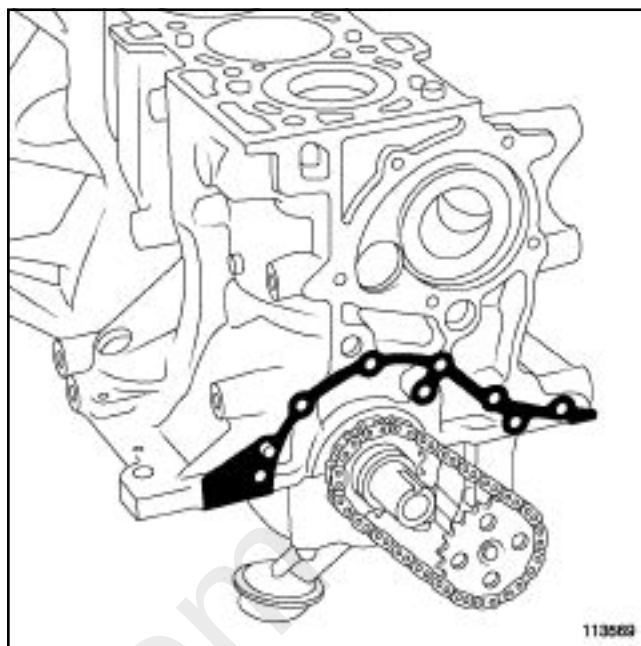
- the oil pump,
- the oil pump mounting bolts (23) ,
- the oil level sensor (24) .

Tighten to torque:

- **the oil pump mounting bolts (25 ± 2.5 Nm) ,**
- **the oil level sensor (25 ± 2.5 Nm) .**

Apply degreaser to:

- the crankshaft nose closure panel,
- the coolant pump,
- the surface of the seal of the crankshaft nose closure unit on the cylinder block,
- the surface of the coolant pump seal on the cylinder block.

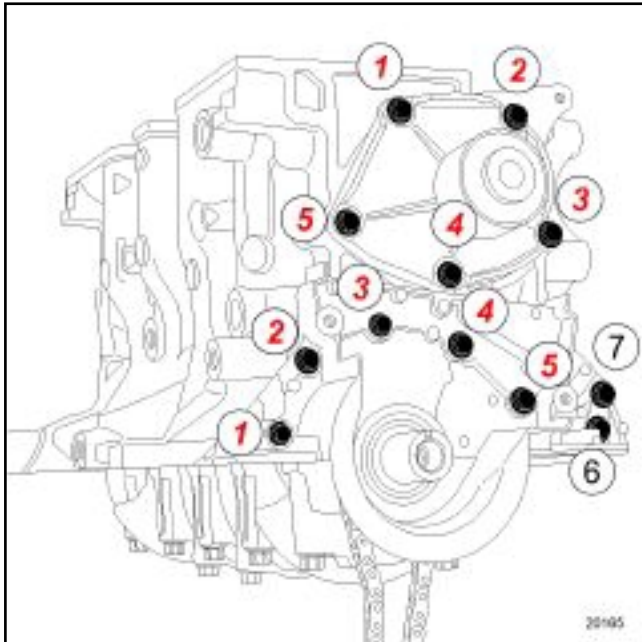


113569

Fit a new seal to the crankshaft nose closure unit.

Check for the centring dowels on the crankshaft nose closure unit.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



20165

Refit:

- the crankshaft nose closure unit,
- the crankshaft nose closure unit mounting bolt,

Tighten to torque and in order **the crankshaft nose closure unit mounting bolts (11 ± 1.1 Nm)**.

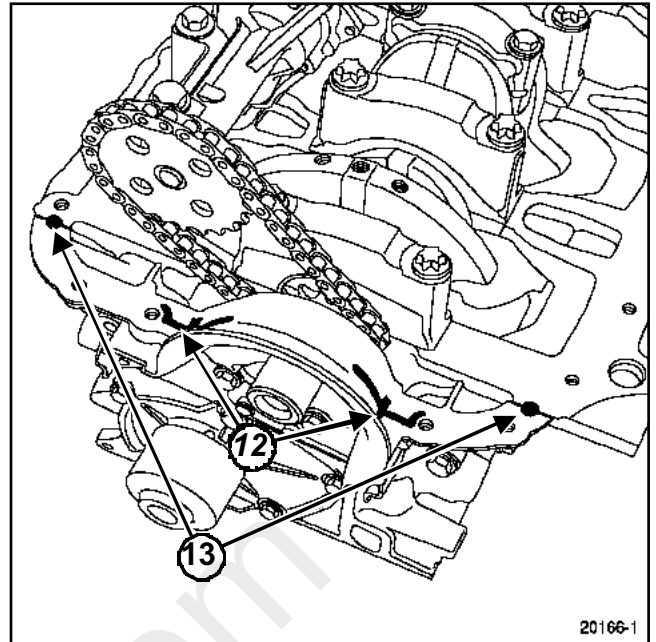
Apply a drop of **HIGH-RESISTANCE BOLT LOCKING PRODUCT** to the coolant pump mounting bolts.

Refit:

- the coolant pump fitted with a new seal,
- the coolant pump mounting bolts.

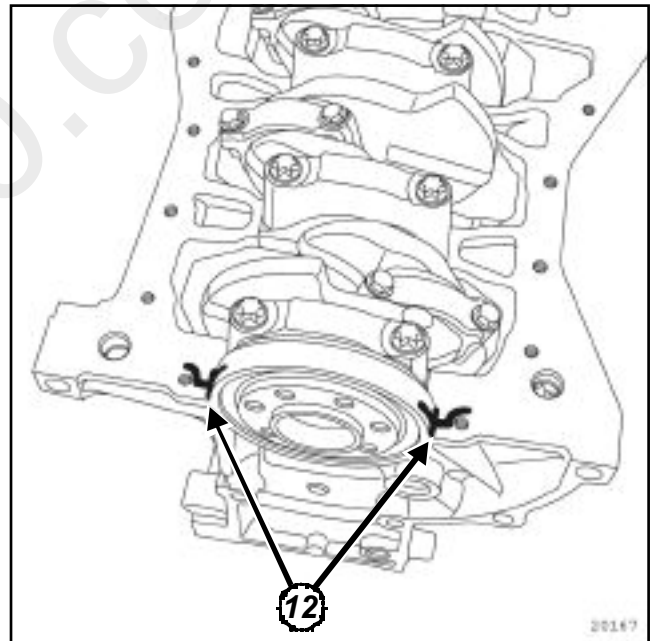
Tighten to torque and in order **the coolant pump mounting bolts (11 ± 1.1 Nm)**.

Using degreaser, degrease the seal surfaces of the lower part of the cylinder block and the oil sump.



20166-1

20166



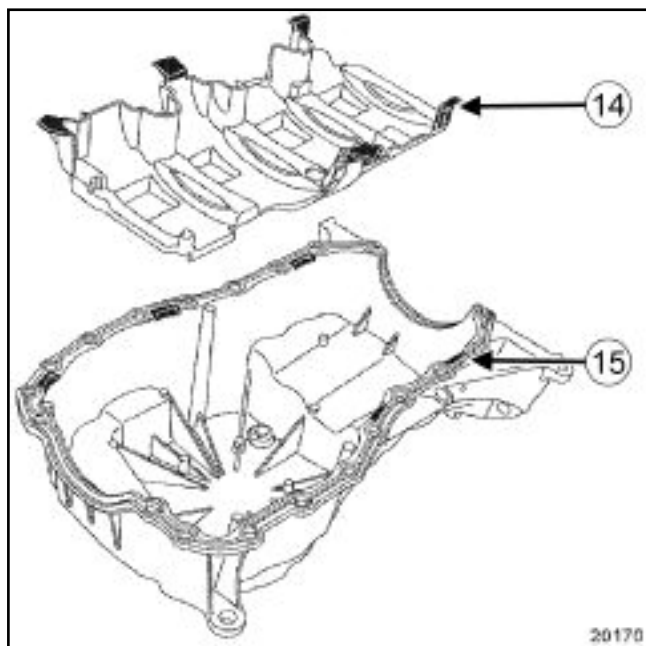
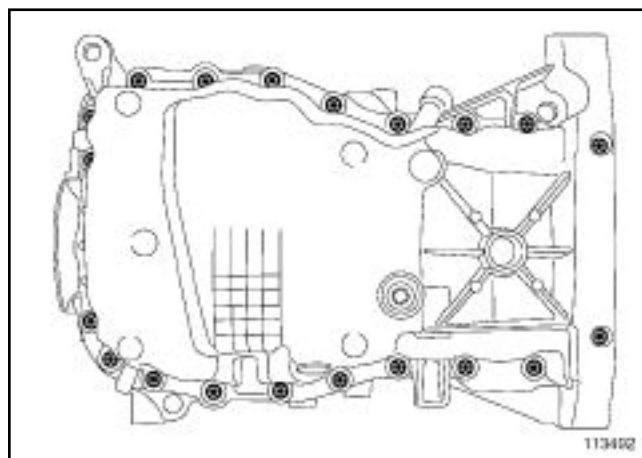
20167

20167

Apply:

- four beads (12) of **SILICONE ADHESIVE SEALANT** with a diameter of **5 mm**,
- two points (13) of **SILICONE ADHESIVE SEALANT 5 mm** in diameter, at the connection between the crankshaft nose closure panel and the cylinder block.

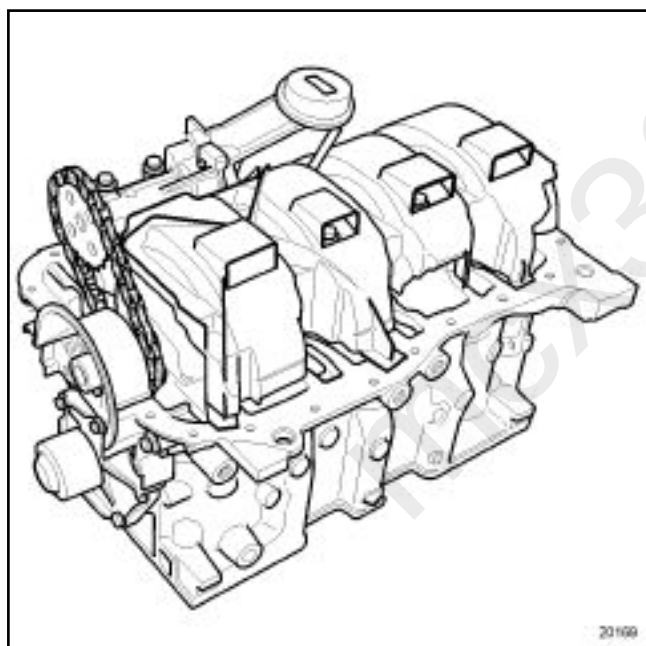
K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790

20170
20170

113492

Refit:

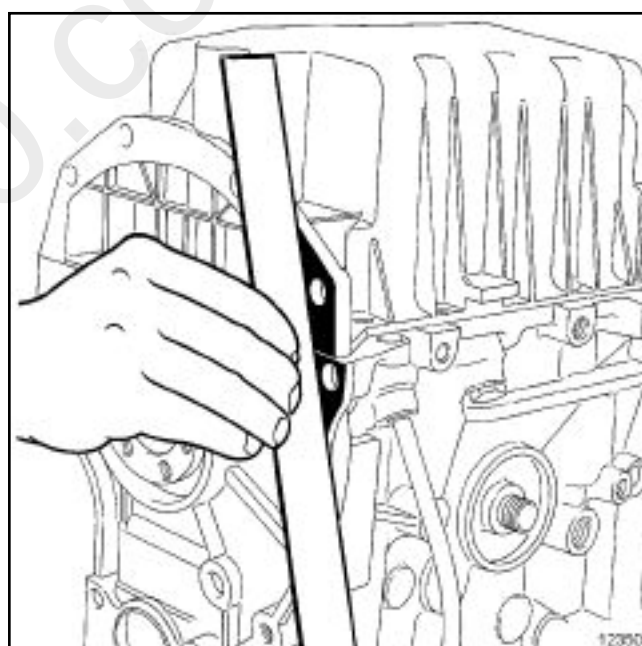
- the oil sump mounting seal,
- the engine oil sump,
- the oil sump mounting bolts,



20169

When refitting the engine oil sump check that the lugs (14) of the oil splash plate are correctly positioned facing the grooves (15) .

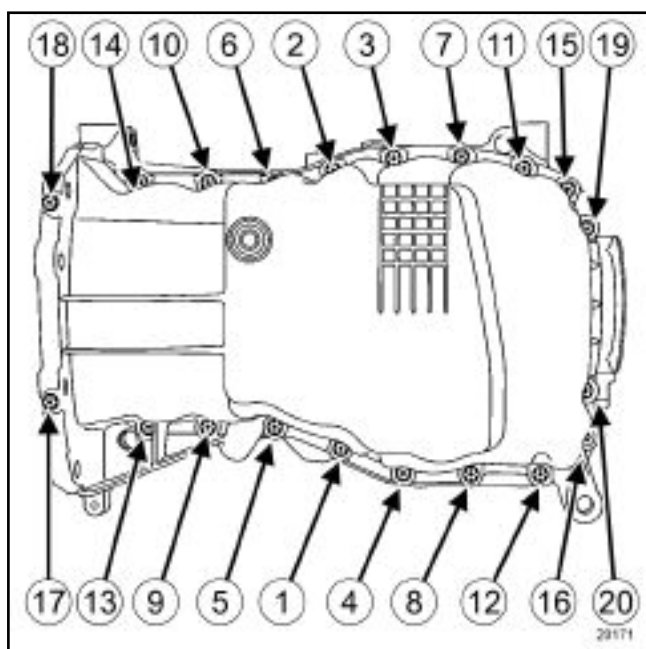
Refit the oil splash plate.



12350

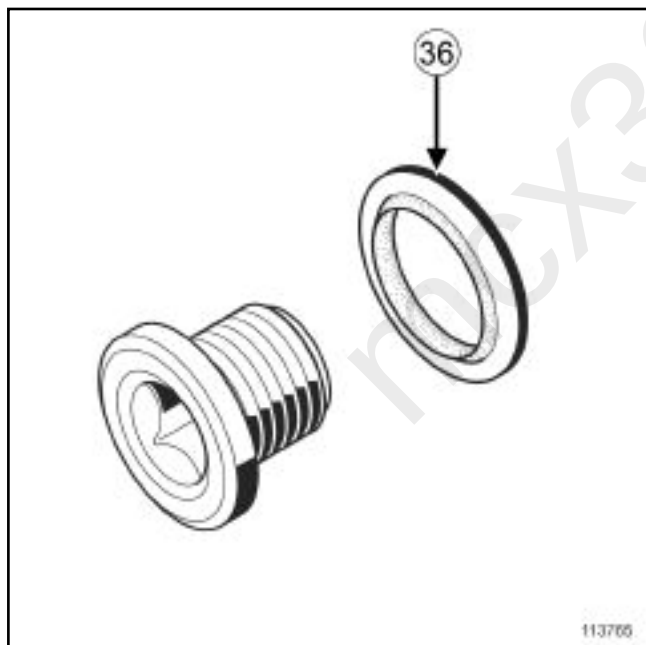
Using a ruler, align the engine oil sump with the cylinder block.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



20171

Tighten to torque and in order **the engine oil sump mounting bolts** ($14 \pm 1.4 \text{ Nm}$) .



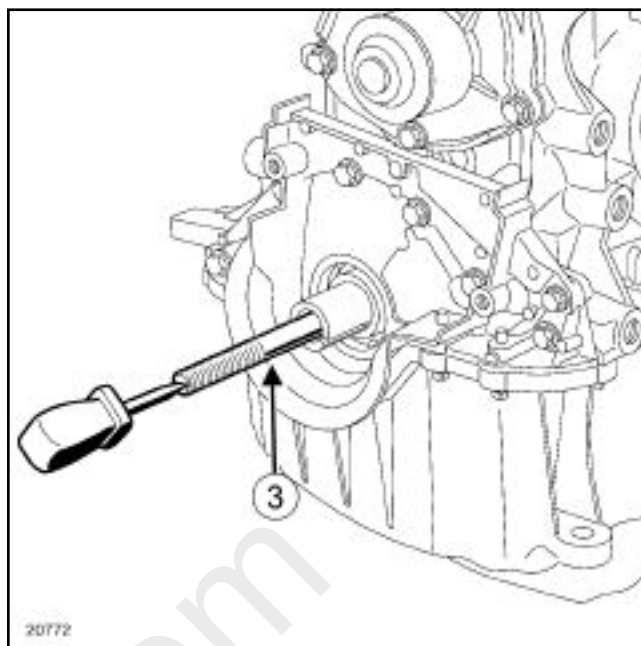
113765

Refit:

- a seal (36) on the drain plug of the engine oil sump,
- the drain plug of the engine oil sump, using the (Mot. 1018) .

Tighten to torque **the drain plug of the engine oil sump** ($20 \pm 2 \text{ Nm}$) .

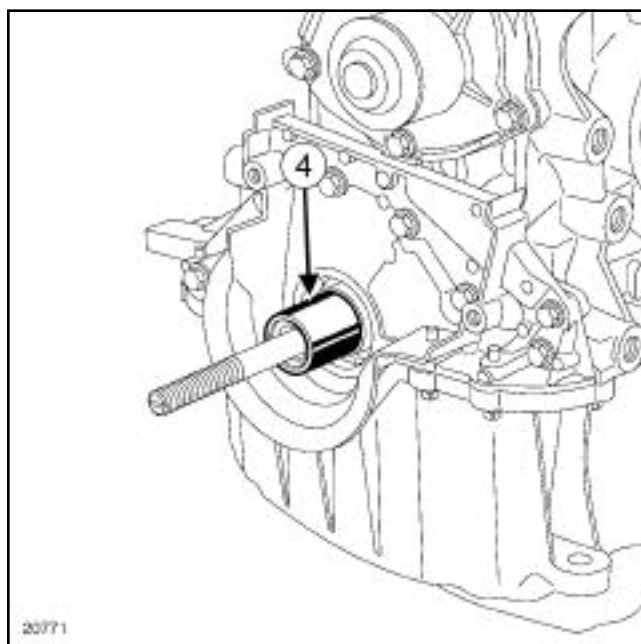
Using degreaser, degrease the seal mating face on the crankshaft and the crankshaft nose closure unit.



20772

Tighten the threaded rod (3) :

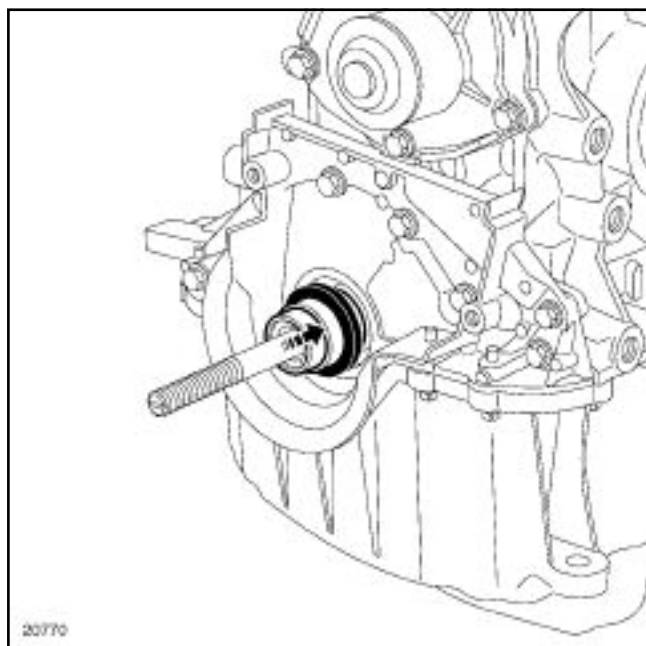
- of tool (Mot. 1586) in the crankshaft with an internal thread of M12 ,
- of tool (Mot. 1714) in the crankshaft with an internal thread of M14 ,



20771

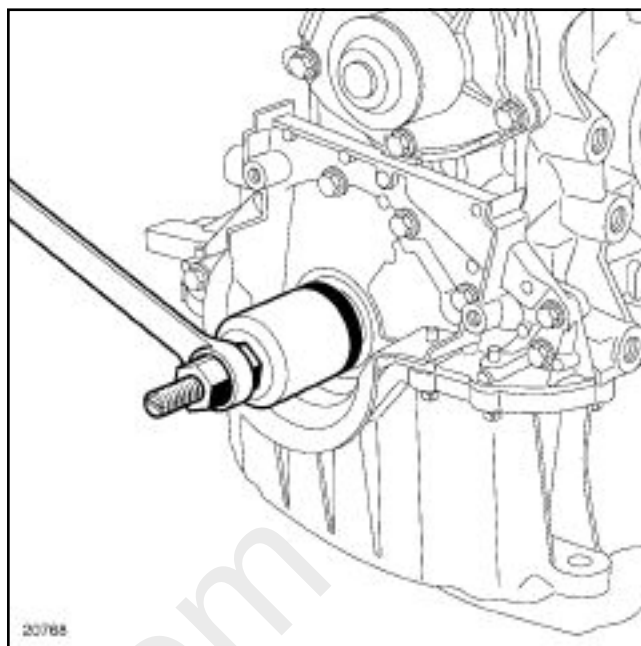
Insert the spacer (4) of tool (Mot. 1586) in the crankshaft.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



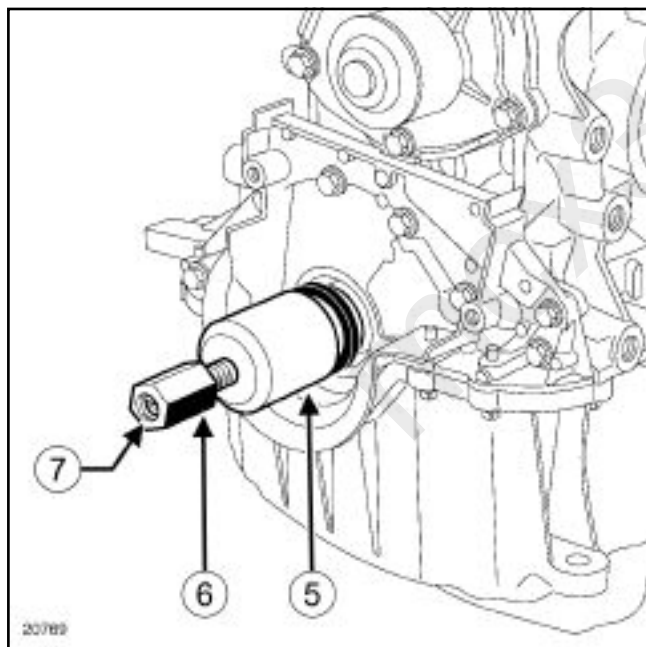
20770

Fit the protector with the new seal in place on the spacer, taking care not to touch the seal.



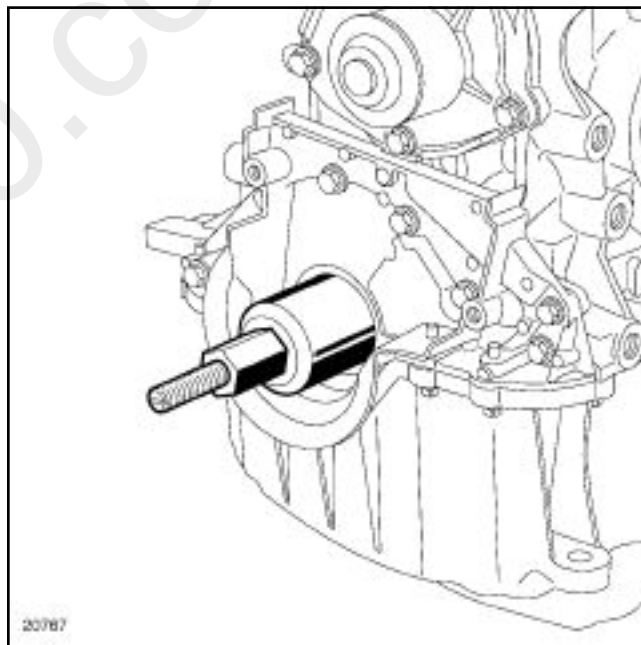
20768

20768



20769

Fit cover (5) and nut (6) (with the thread (7) of the nut towards the outside of the engine).

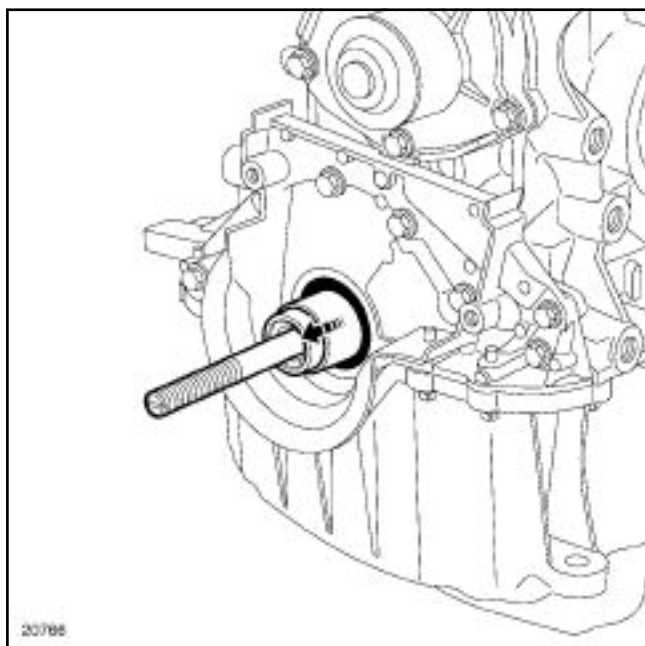


20767

20767

Screw on the nut until the cover touches the spacer.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790

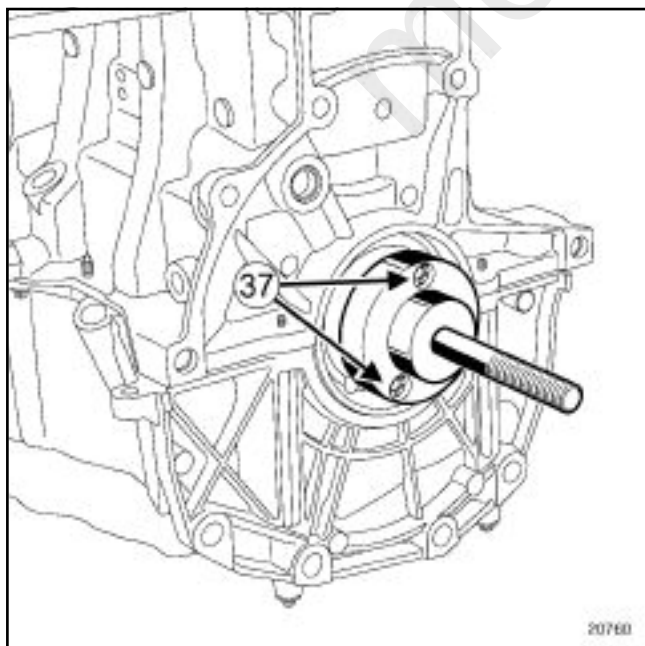


20766

Remove:

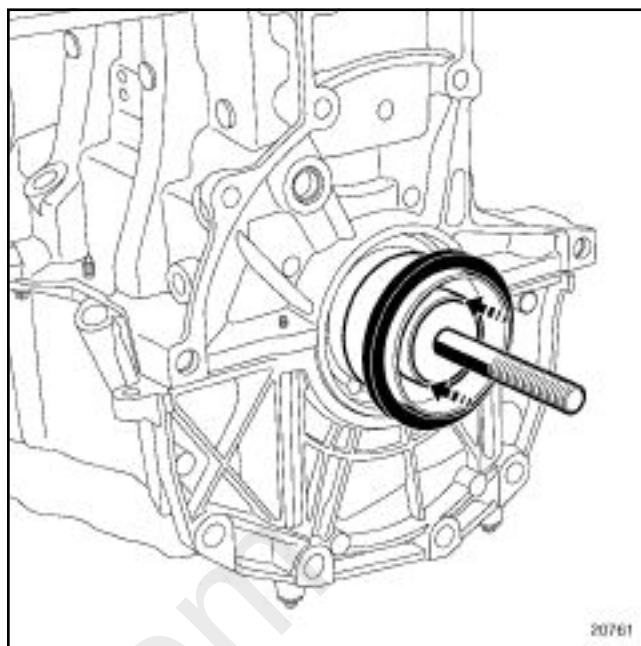
- the nut,
- the cap,
- the protector,
- the spacer,
- the threaded rod.

Using degreaser, degrease the seal mating face on the crankshaft and the cylinder block (flywheel end).



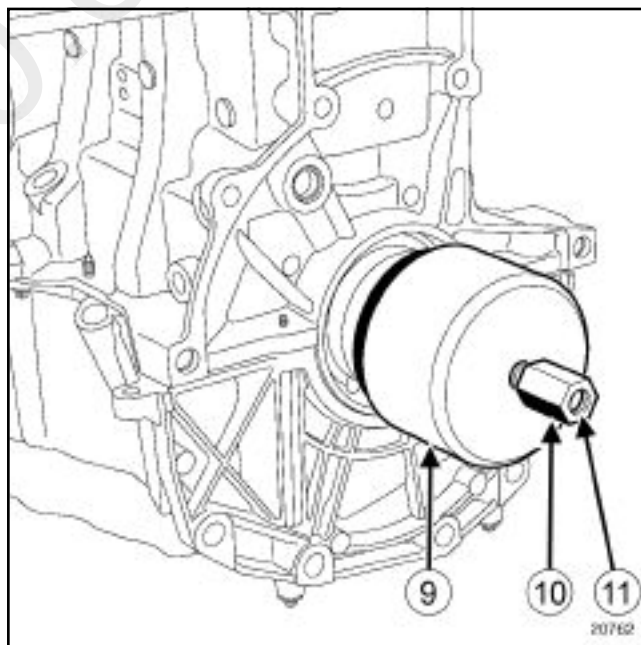
20760

Mount tool (**Mot. 1585**) on the crankshaft, securing it using bolts (**37**) .



20761

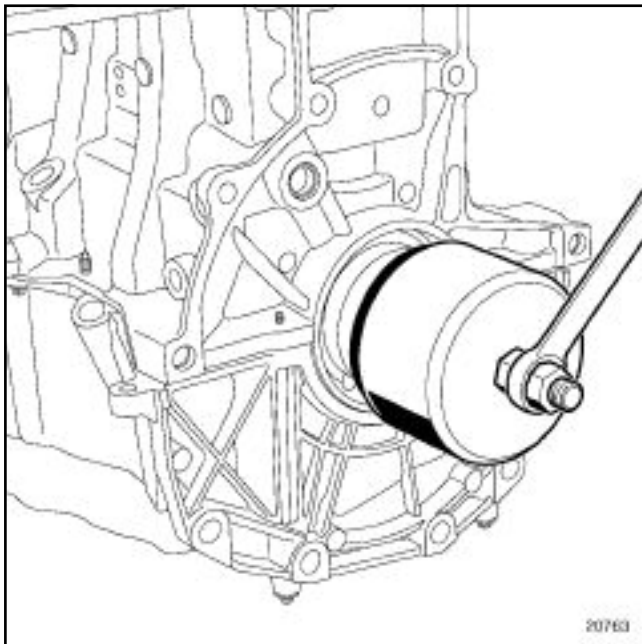
Fit the protector with its seal in place on tool, (**Mot. 1585**) taking care not to touch the seal.



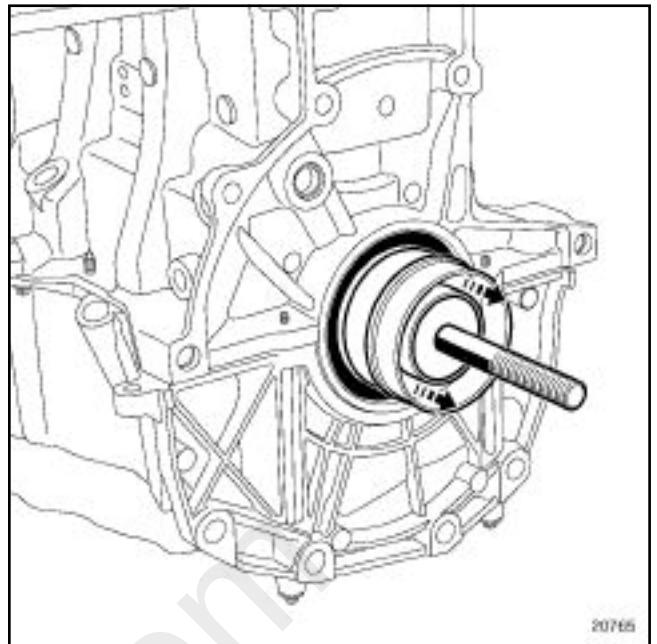
20762

Fit cover (**9**) and nut (**10**) (with the thread (**11**) of the nut towards the outside of the engine).

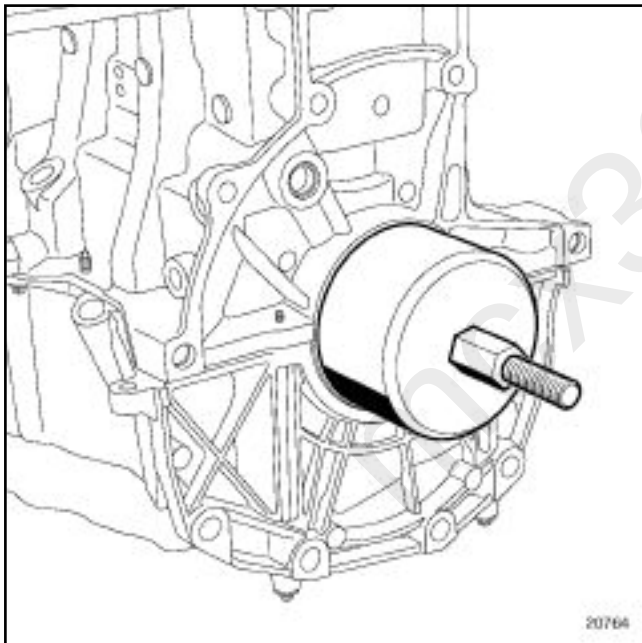
K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



20763



20765



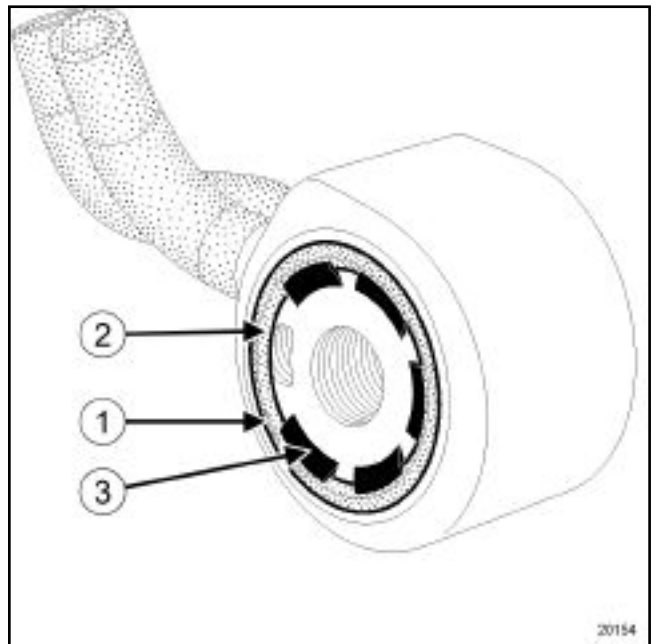
20764

Screw on the nut until the cover touches the cylinder block.

Remove:

- the nut,
- the cap,
- the protector,
- the base.

Using degreaser, degrease the seal mating face of the cylinder block where it receives the coolant / oil heat exchanger.



20154

Replace the seal (1) of the coolant / oil heat exchanger, positioning the lip (2) of the joint behind the tabs (3) of the coolant / oil heat exchanger.

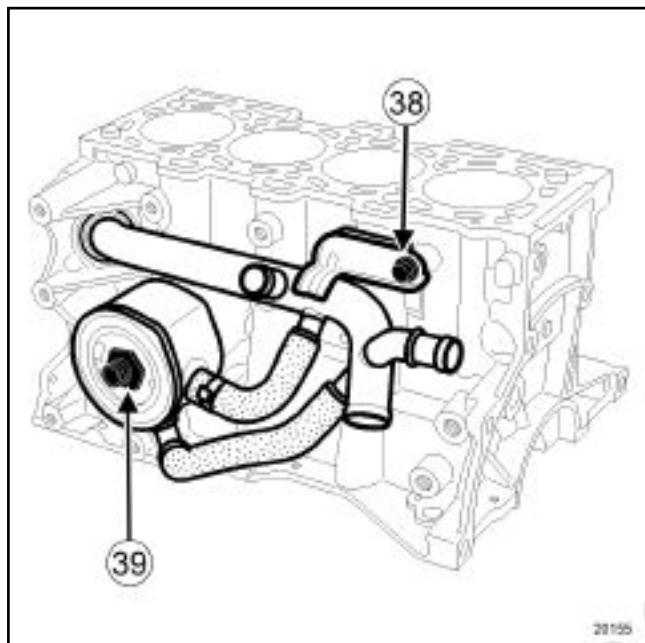
Cylinder block: Refitting

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790

1 - For engines fixed to the flywheel side

Refit a new o-ring seal to the coolant pump inlet pipe.

Put a little soapy water on the o-ring seal of the coolant pump inlet pipe.



Refit:

- the coolant pump inlet pipe,
- the mounting bolt (38) of the coolant pump inlet pipe,

Tighten to torque **the coolant pump pipe mounting bolt (22 ± 2.2 Nm)** .

Position the coolant / oil heat exchanger (fitted with its coolant hoses), enclosing the coolant hoses in the inlet pipe of the coolant pump, in order to position correctly the coolant / oil heat exchanger.

Apply two drops of **HIGH-RESISTANCE BOLT LOCKING PRODUCT** to the coolant / oil heat exchanger mounting bolt.

Refit:

- the coolant / oil heat exchanger,
- the mounting bolt (39) of the oil / coolant heat exchanger,

Tighten to torque **the coolant / oil heat exchanger mounting bolt (45 ± 4.5 Nm)** .

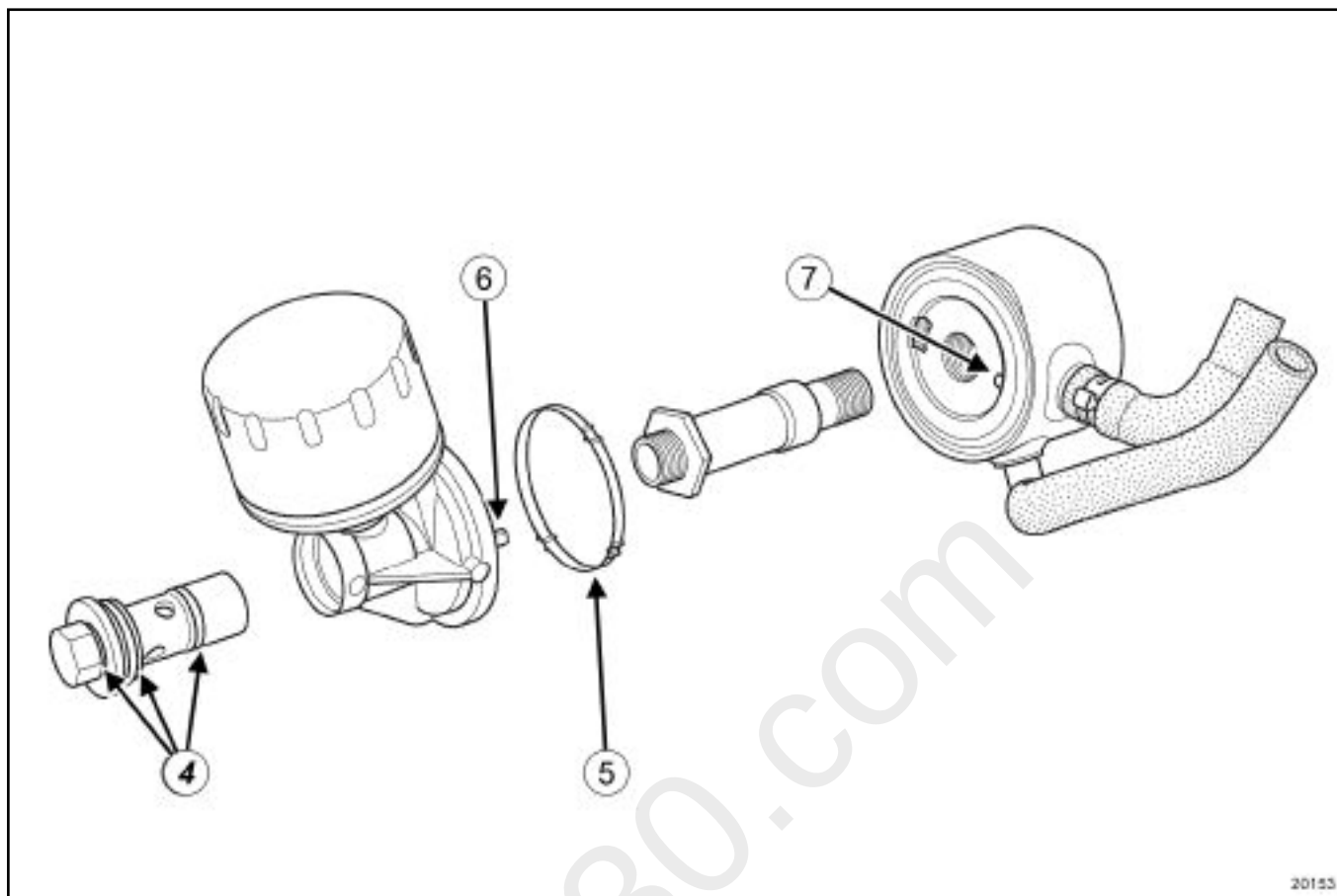
Using degreaser, degrease the seal mating face of the coolant / oil heat exchanger where it receives the oil filter holder.

ENGINE AND LOWER ENGINE ASSEMBLY

Cylinder block: Refitting

10A

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



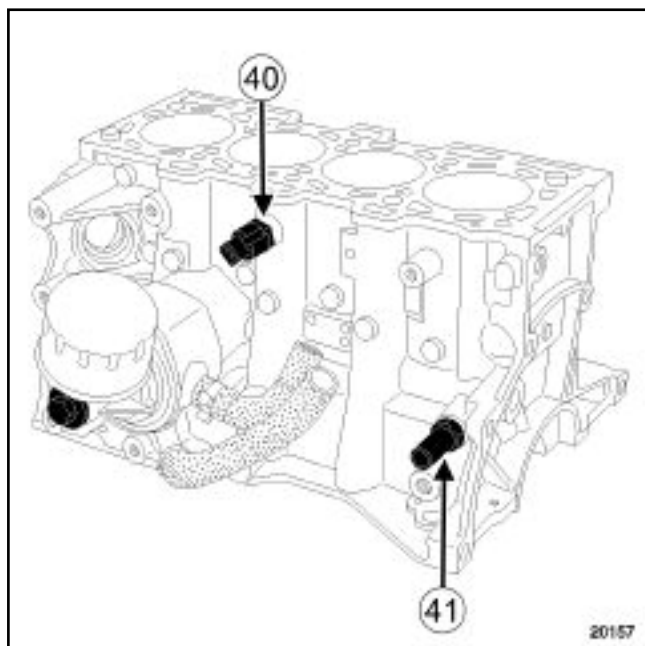
20153

20153

Replace the seals **(4)** and **(5)** .

Refit the oil filter holder, positioning the lug **(6)** in the hole **(7)** on the coolant / oil heat exchanger.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



20157

Refit:

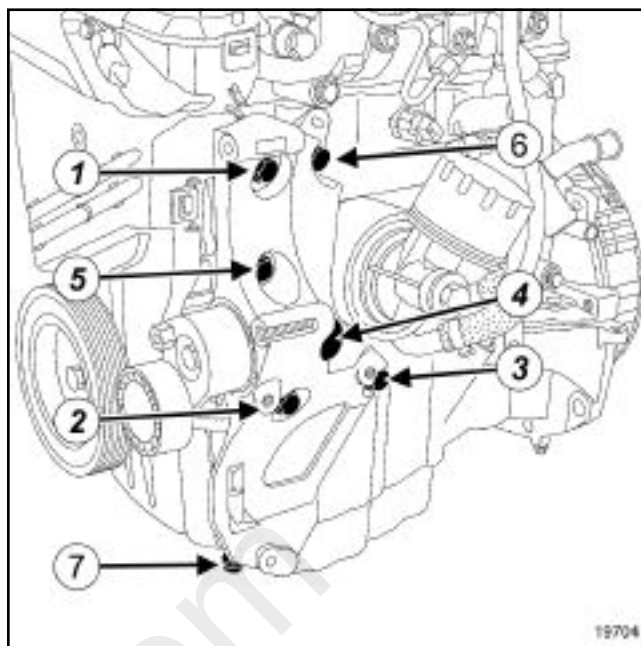
- the acceleration meter (40) ,
- the oil pressure switch (41) .

Tighten to torque:

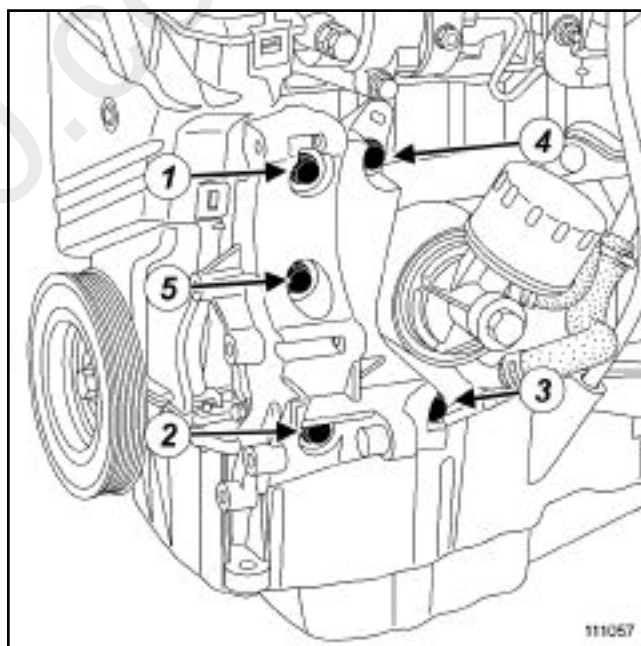
- the oil filter holder mounting bolt (45 ± 4.5 Nm) ,
- the acceleration meter (20 ± 2 Nm) using the tool (Emb. 1596) ,
- the oil pressure switch (30 ± 3 to 35 ± 3.5 Nm) .

Lubricate the oil filter seal with new engine oil.

Refit the oil filter using the (Mot. 1329) .

Tighten to torque the oil filter (14 ± 2 Nm) .

19704



111057

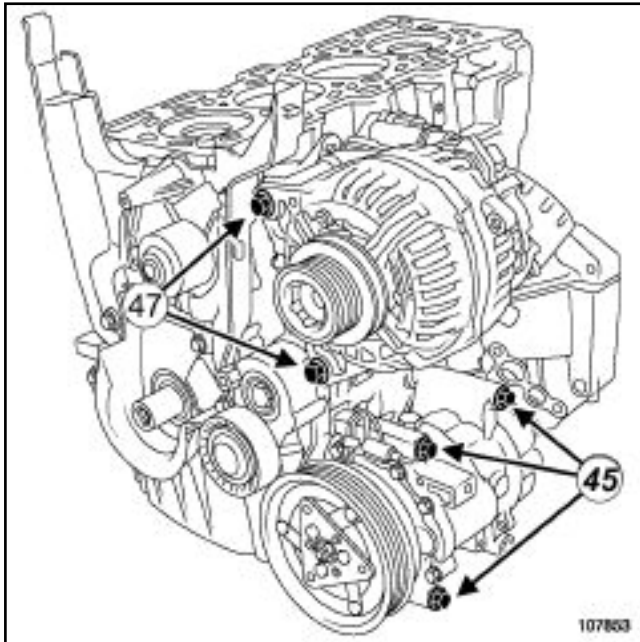
Refit:

- the multifunction support,
- the multifunction support mounting bolts.

Tighten to torque and in order the **multifunction support mounting bolts** (from 1 to 6 or from 1 to 5) (44 ± 4.4 Nm) .

Torque tighten the **multifunction support mounting bolt** (7) (21 ± 2.1 Nm) .

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



107853

Tighten to torque:

- the mounting bolts of the power assisted steering pump or the dummy pulley (21 ± 2.1 Nm) ,
- the air conditioning compressor mounting bolts (21 ± 2.1 Nm) ,
- the alternator mounting bolts (21 ± 2.1 Nm) .

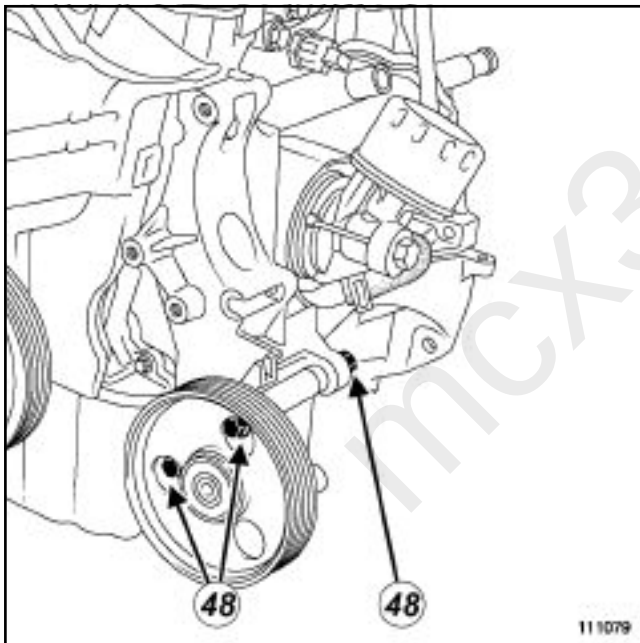
2 - For engines fixed to the oil filter side

In order to position correctly the coolant / oil heat exchanger on the cylinder block it is essential to remove the cylinder block from the engine support using tool **(Mot. 923)** and a workshop hoist.

Remove the engine spindle from the cylinder block.

Refit:

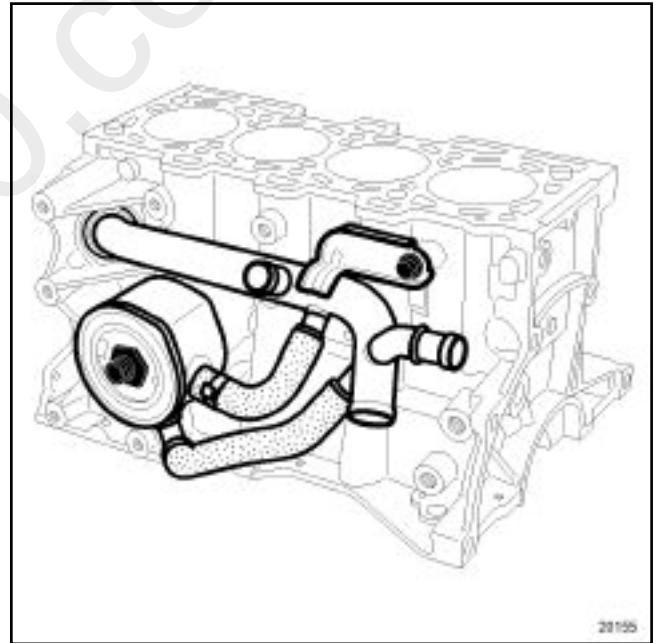
- the coolant pump inlet pipe,
- the mounting bolt of the coolant pump inlet pipe.



111079

Refit:

- the power assisted steering pump or the dummy pulley,
- the mounting bolts (48) of the power assisted steering pump or the dummy pulley,
- the air conditioning compressor (if fitted),
- the air conditioning compressor mounting bolts (45) ,
- the alternator,
- the alternator mounting bolts (47) .



20155

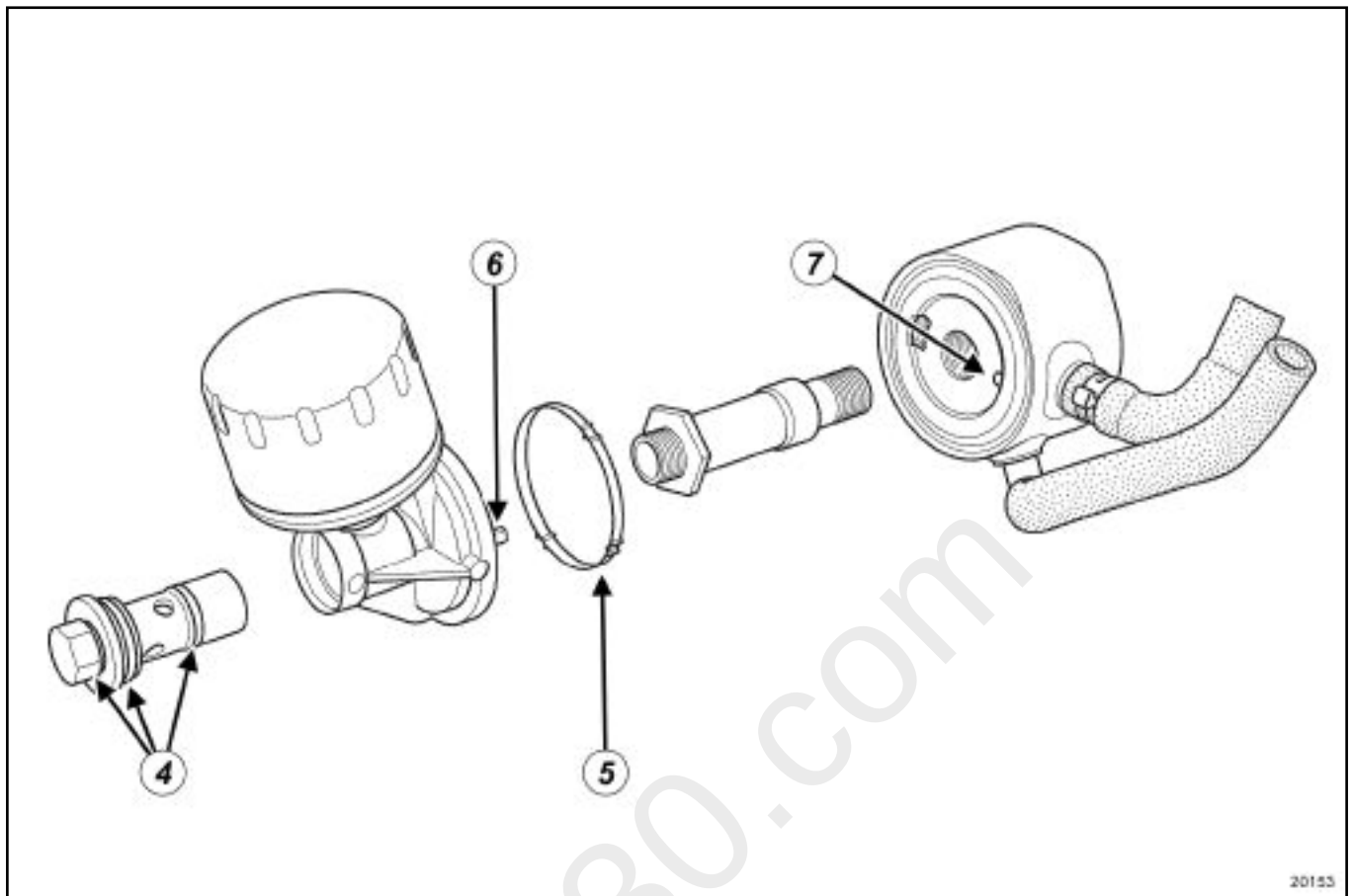
Position the coolant / oil heat exchanger (fitted with its coolant hoses), enclosing the coolant hoses in the inlet pipe of the coolant pump, in order to position correctly the coolant / oil heat exchanger.

Apply two drops of **HIGH-RESISTANCE BOLT LOCKING PRODUCT** to the coolant / oil heat exchanger mounting bolt.

Tighten to torque the coolant / oil heat exchanger mounting bolt (45 ± 4.5 Nm) .

Using degreaser, degrease the seal mating face of the coolant / oil heat exchanger where it receives the oil filter holder.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790

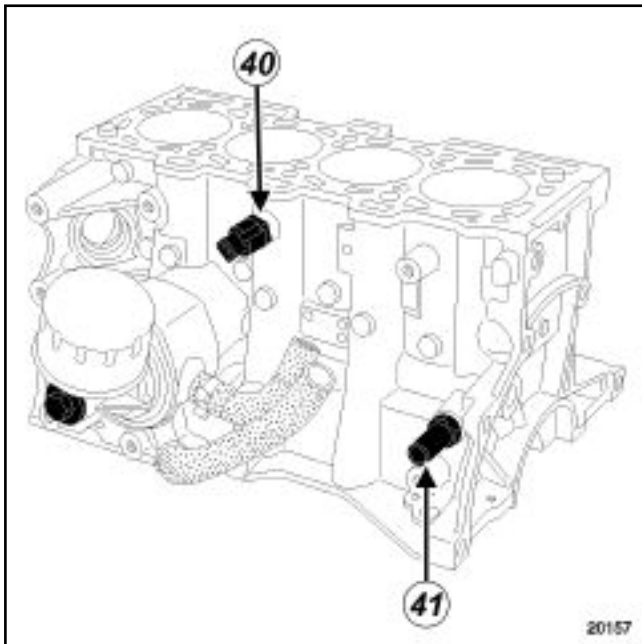


20153

Replace the seals (4) and (5) .

Refit the oil filter holder, positioning the lug (6) in the hole (7) on the coolant / oil heat exchanger.

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



20157

Refit:

- the acceleration meter (40) ,
- the oil pressure switch (41) .

Tighten to torque:

- the oil filter holder mounting bolt ($45 \pm 4.5 \text{ Nm}$) ,
- the acceleration meter ($20 \pm 2 \text{ Nm}$) using the tool (Emb. 1596) ,
- the oil pressure switch (30 ± 3 to $35 \pm 3.5 \text{ Nm}$) .

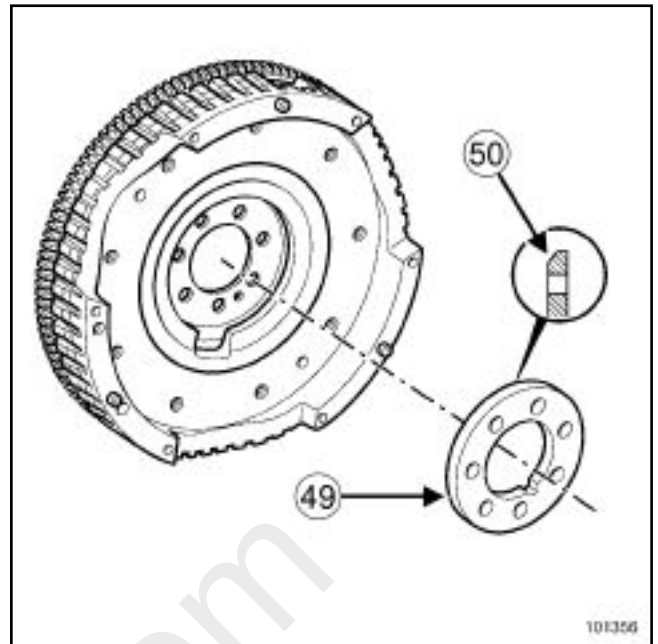
Remove the coolant pump inlet pipe.

Refit:

- the engine spindle onto the cylinder block.
- the cylinder block onto the engine support.

Lubricate the oil filter seal with new engine oil.

Refit the oil filter using the tool (Mot. 1329) .

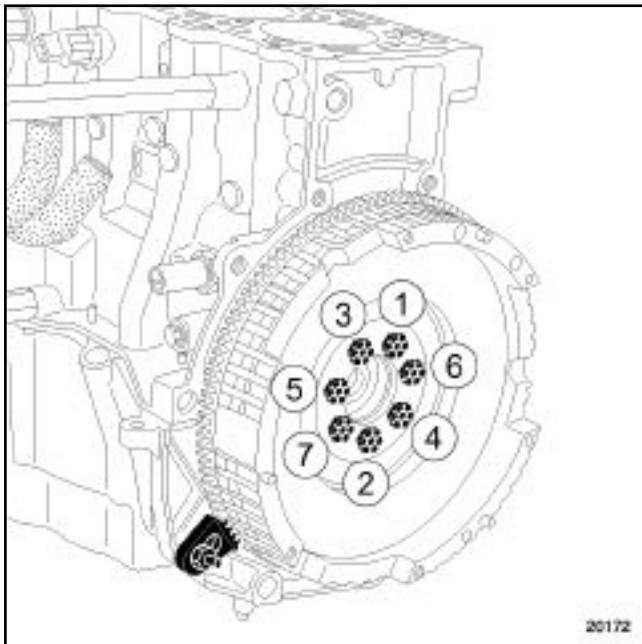
Tighten to torque the oil filter ($14 \pm 2 \text{ Nm}$) .

101356

Note:

Certain flywheels have a shim (49) . It is essential to position the chamfer (50) of the shim on the flywheel side .

K9K, and 260 or 270 or 272 or 700 or 702 or 704 or 706 or 710 or 722 or 750 or 752 or 790



20172

Refit:

- the flywheel,
- the new flywheel mounting bolts,
- engine flywheel locking tool (**Mot. 582-01**) or (**Mot. 1677**) .

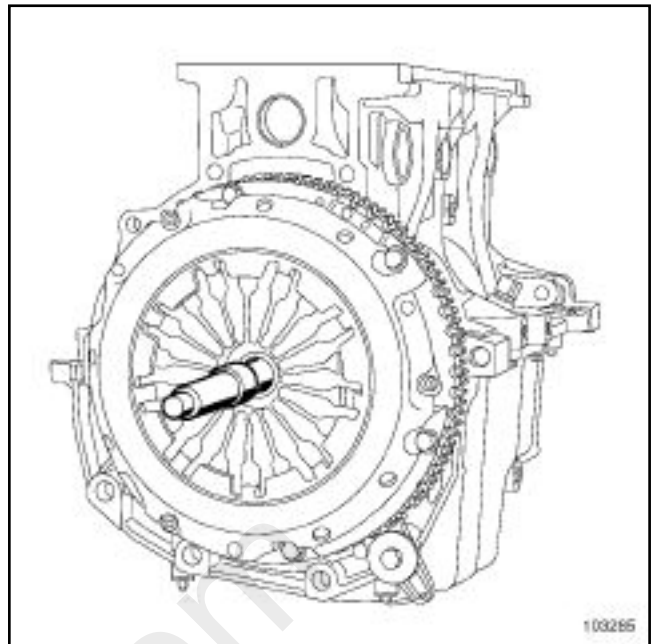
Tighten to torque and in order the **flywheel mounting bolts (55 ± 5.5 Nm)** .

Using degreasing agent, degrease the friction face on the flywheel.

Refit the friction disc (aligning it correctly).

Centre the friction disc using tool (**Emb. 1780**) .

Using degreasing agent, degrease the friction face on the clutch mechanism.



103285

Refit:

- the clutch pressure plate,
- the clutch mechanism mounting bolts.

Gradually tighten the mounting bolts of the clutch pressure plate.

Tighten to torque **the clutch mechanism mounting bolts (M6 to 14 ± 1.4 Nm and bolts M7 to 20 ± 2 Nm)** .

Remove engine flywheel locking tool (**Mot. 582-01**) or. (**Mot. 1677**) .

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768

Special tooling required	
Mot. 1018	Sump plug tool.
Mot. 1586	Tool for fitting PTFE crankshaft seal, timing end.
Mot. 1714	Adapter for fitting PTFE crankshaft seal, timing end.
Mot. 1585	Tool for fitting PTFE crankshaft seal, flywheel end.
Emb. 1596	24 mm socket for removing/refitting clutch master cylinder.
Mot. 1329	Oil filter removing tool (76 mm diameter).
Mot. 1677	Flywheel locking tool.
Emb. 1780	Set of clutch disc centring mandrels.

Tightening torques 	
oil pump mounting bolts	25 ± 2.5 Nm
the crankshaft nose closure unit mounting bolts	11 ± 1.1 Nm
the coolant pump mounting bolts	11 ± 1.1 Nm
the engine oil sump mounting bolts	14 ± 1.4 Nm
the drain plug of the engine oil sump	20 ± 2 Nm
the coolant pump inlet pipe mounting bolt	22 ± 2.2 Nm
the oil level sensor	25 ± 2.5 Nm
the acceleration meter	20 ± 2 Nm
the coolant/oil heat exchanger mounting bolt	45 ± 4.5 Nm
oil filter holder mounting bolt	45 ± 4.5 Nm

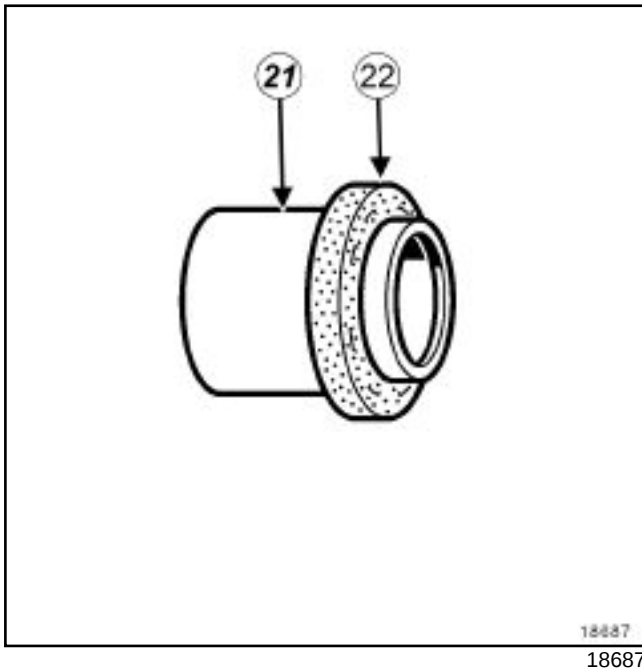
Tightening torques 	
oil filter	14 ± 2 Nm
the multifunction support mounting bolts (1 to 6)	44 ± 4.4 Nm
multifunction support mounting bolt (7)	21 ± 2.1 Nm
the mounting bolts of the power assisted steering pump or the dummy pulley	21 ± 2.1 Nm
the air conditioning compressor mounting bolts	21 ± 2.1 Nm
the alternator mounting bolts	21 ± 2.1 Nm
flywheel mounting bolts	55 ± 5.5 Nm
the clutch mechanism mounting bolts	M6 to 14 ± 1.4 Nm and bolts M7 to 20 ± 2 Nm

I - RECOMMENDATIONS FOR REPAIR

IMPORTANT

Wear protective gloves during every operation.

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768

**WARNING**

This type of seal is very delicate. When handling, it is essential to grip protective piece (21). It is strictly forbidden to touch seal; (22) this is to prevent any oil leaks once the oil seal is fitted to the engine.

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

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.)

II - PARTS AND CONSUMABLES FOR THE REPAIR**Parts always to be replaced**

- The crankshaft nose closure unit seal,
- The coolant pump seal,
- The oil sump mounting seal,
- The clutch mechanism (if necessary),
- The friction disc (if necessary),
- Flywheel mounting bolt
- The coolant pump inlet pipe seal,
- The oil/coolant heat exchanger seals,
- The crankshaft seal, timing end,
- The crankshaft seal, flywheel end,
- Oil filter,

- The seal of the drain plug of the engine oil sump.

Consumables

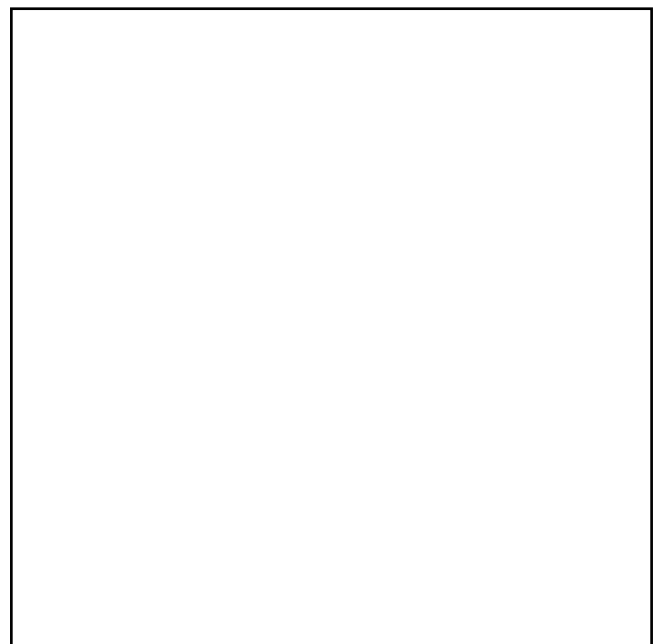
- Degreasing agent, part no. **77 11 224 559** .
- Silicone adhesive sealant, part no. **77 11 227 484** ,
- High-resistance bolt locking product, part no. **77 11 230 112** ,

III - EQUIPMENT REQUIRED

- Torque/angle wrench,
- Torque wrench
- Cylinder head bolt tightening gauge (angular measuring type),
- Rule,
- Male triangular drive drain plug spanner **8 mm** ,
- Male torx socket.
- Oil can,

IV - REASSEMBLING THE CYLINDER BLOCK

Put a little engine oil from an oil can in the oil pump via the oil sump filter.

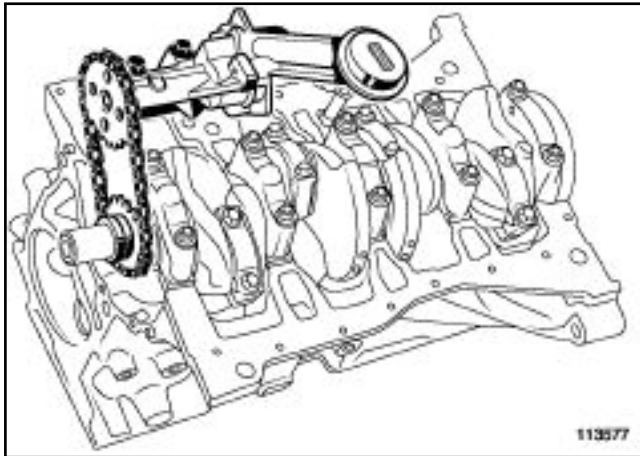


20164

Refit:

- the oil pump drive sprocket,
- the oil pump chain.

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



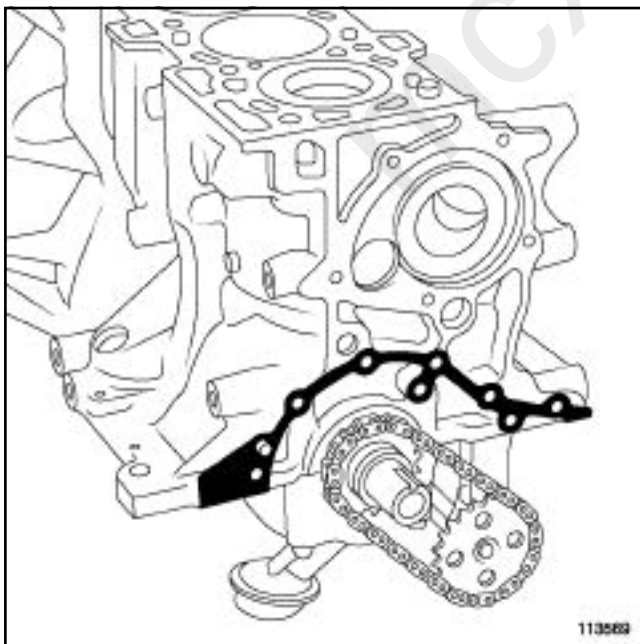
113577

Refit the oil pump.

Tighten to torque the **oil pump mounting bolts** ($25 \pm 2.5 \text{ Nm}$).

Apply degreaser to:

- the crankshaft nose closure panel,
- the coolant pump,
- the surface of the seal of the crankshaft nose closure unit on the cylinder block,
- the surface of the coolant pump seal on the cylinder block.

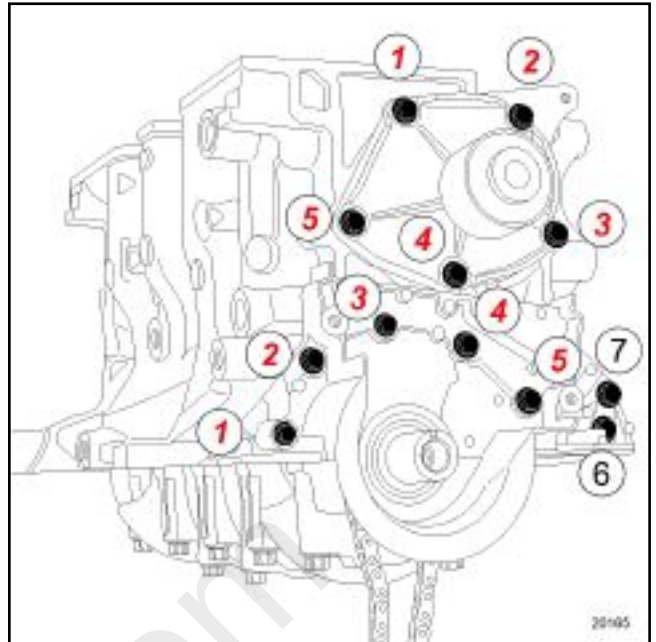


113569

113569

Fit a new seal to the crankshaft nose closure unit.

Check for the centring dowels on the crankshaft nose closure unit.



20165

Refit:

- the crankshaft nose closure panel,
- the crankshaft nose closure unit mounting bolt,

Tighten to torque and in order **the crankshaft nose closure unit mounting bolts** ($11 \pm 1.1 \text{ Nm}$).

Apply a drop of **HIGH-RESISTANCE BOLT LOCKING PRODUCT** to the coolant pump mounting bolts.

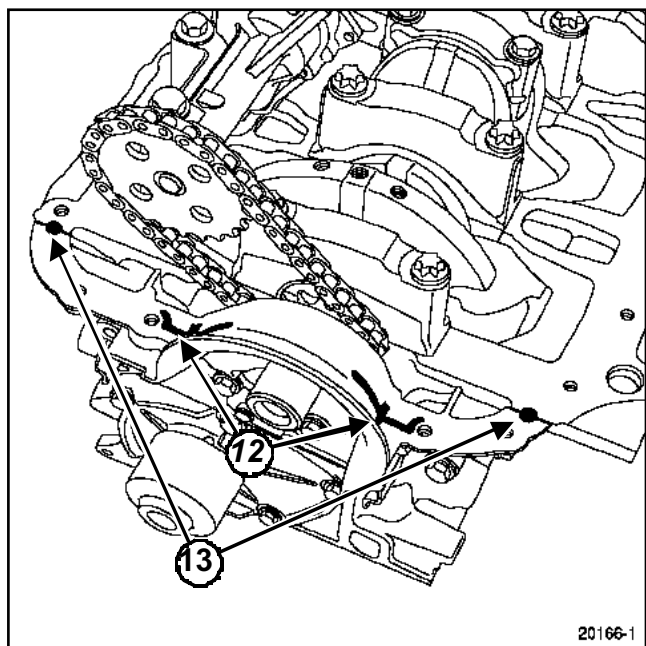
Refit:

- the coolant pump fitted with a new seal,
- the coolant pump mounting bolts.

Tighten to torque and in order **the coolant pump mounting bolts** ($11 \pm 1.1 \text{ Nm}$).

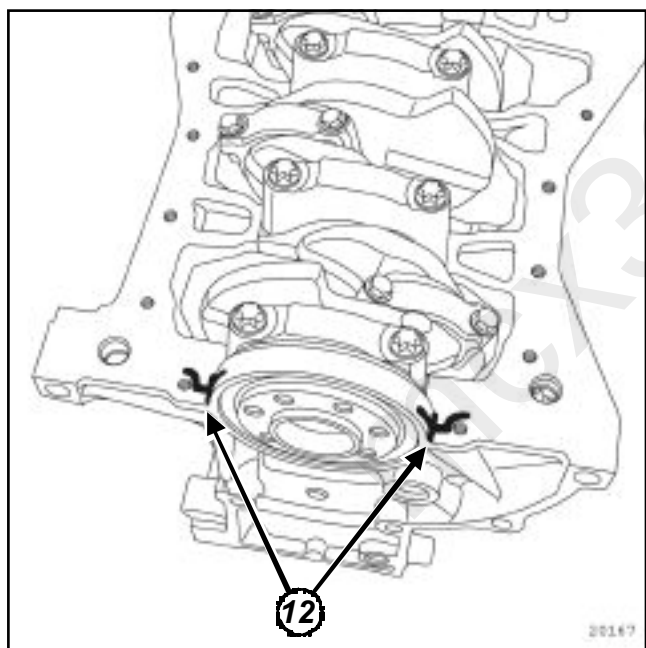
Using degreaser, degrease the seal surfaces of the lower part of the cylinder block and the oil sump.

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



20166-1

20166



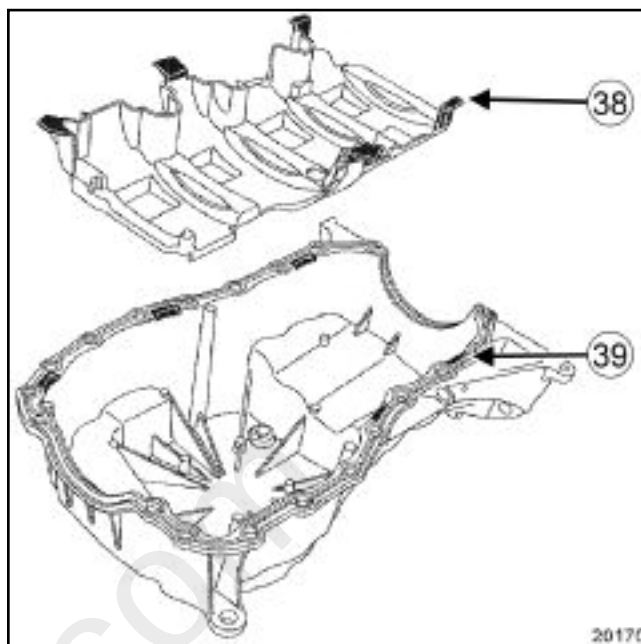
20167

20167

Apply:

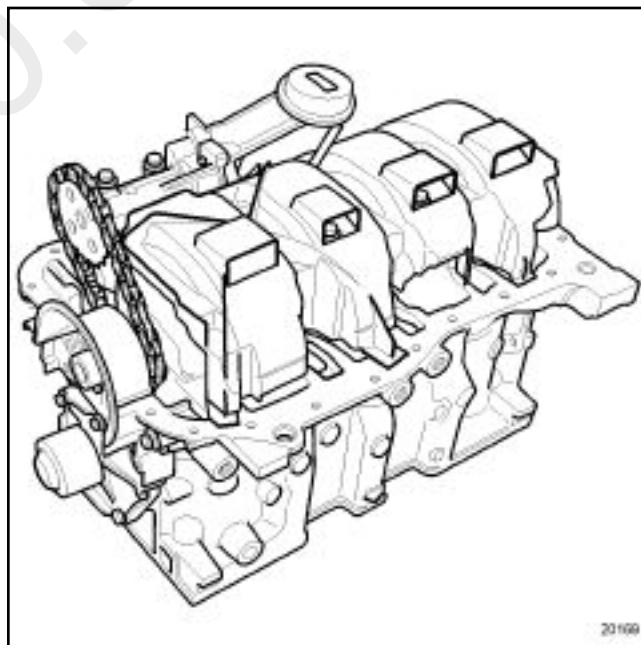
- four beads (12) of **SILICONE ADHESIVE SEALANT** with a diameter of **5 mm**,
- two points (13) of **SILICONE ADHESIVE SEALANT 5 mm** in diameter, at the connection between the crankshaft nose closure panel and the cylinder block.

K9K, and 712 or 728



20170

20170

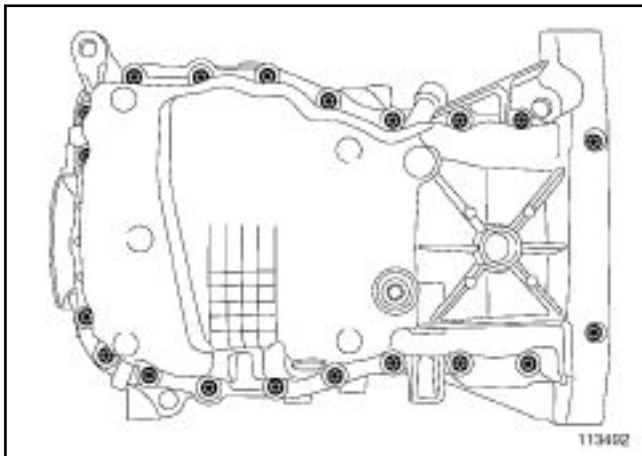


20169

When refitting the engine oil sump check that the tabs (38) of the oil splash plate are correctly positioned facing the grooves (39).

Refit the oil splash plate.

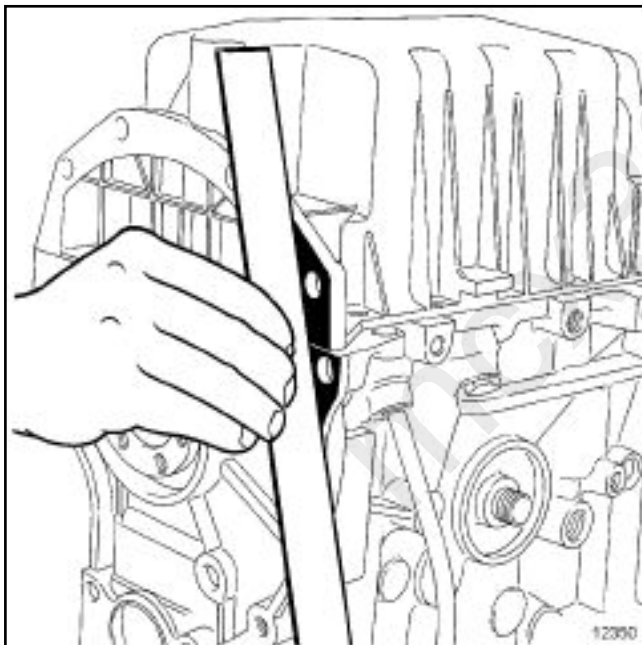
K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



113492

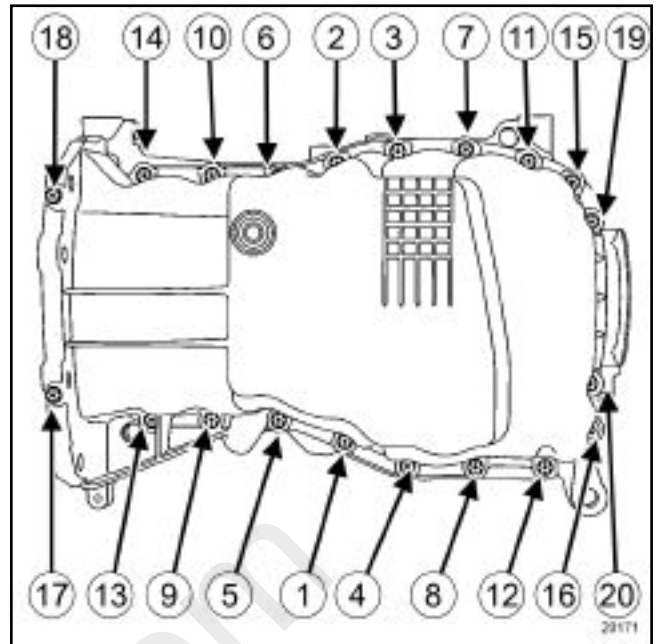
Refit:

- the oil sump mounting seal,
- the engine oil sump,
- the oil sump mounting bolts,



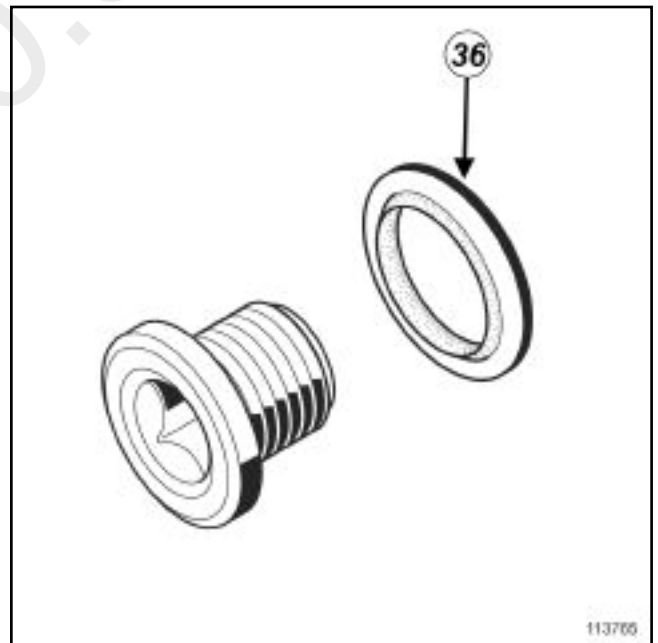
12350

Using a ruler, align the engine oil sump with the cylinder block.



20171

Tighten to torque and in order **the engine oil sump mounting bolts** ($14 \pm 1.4 \text{ Nm}$).



113765

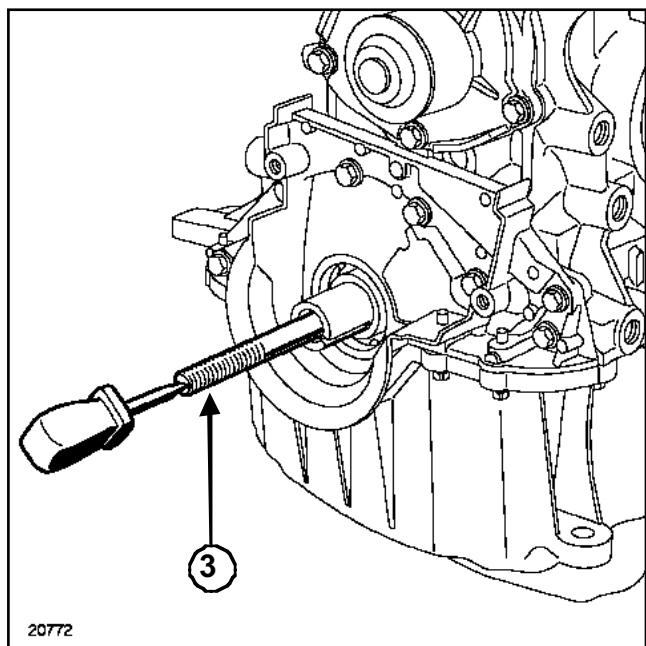
Refit:

- a seal (36) on the drain plug of the engine oil sump,
- the drain plug of the engine oil sump, using the (Mot. 1018) .

Tighten to torque **the drain plug of the engine oil sump** ($20 \pm 2 \text{ Nm}$) .

Using degreaser, degrease the seal mating face on the crankshaft and the crankshaft nose closure unit.

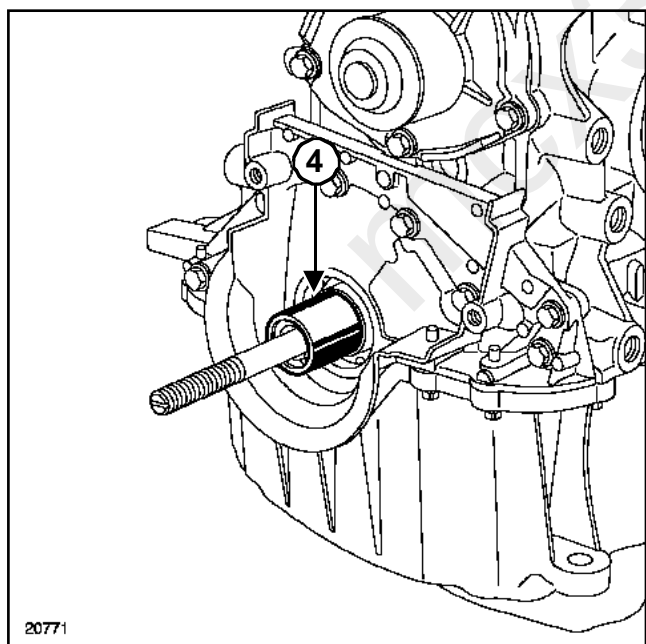
K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



20772

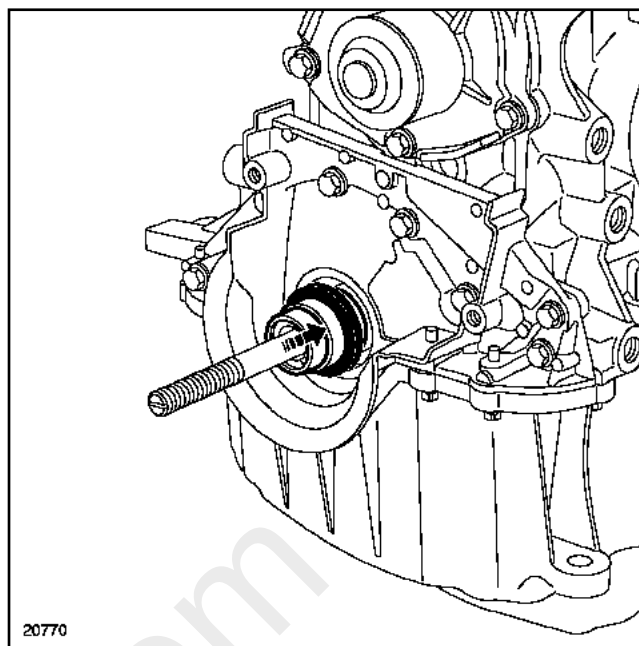
Tighten the threaded rod (3) :

- of the **(Mot. 1586)** in the crankshaft with a **M12** thread hole,
- of the **(Mot. 1714)** in the crankshaft with a **M14** thread hole,



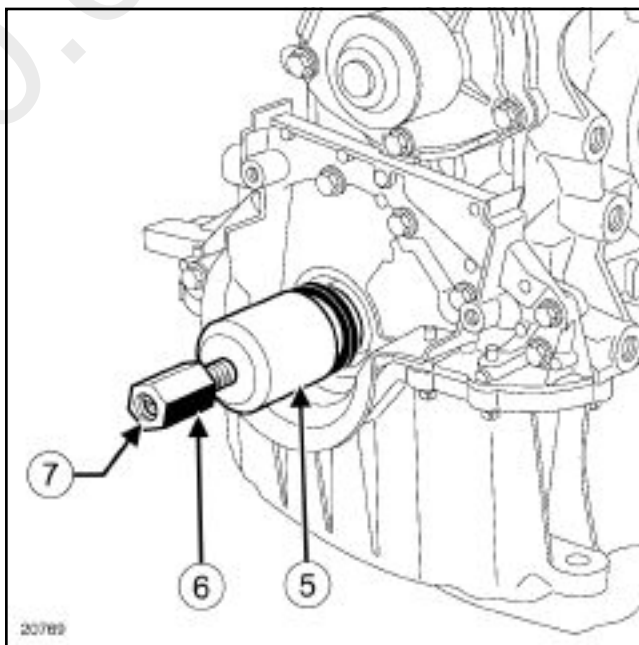
20771

Insert the spacer (4) of the **(Mot. 1586)** in the crankshaft.



20770

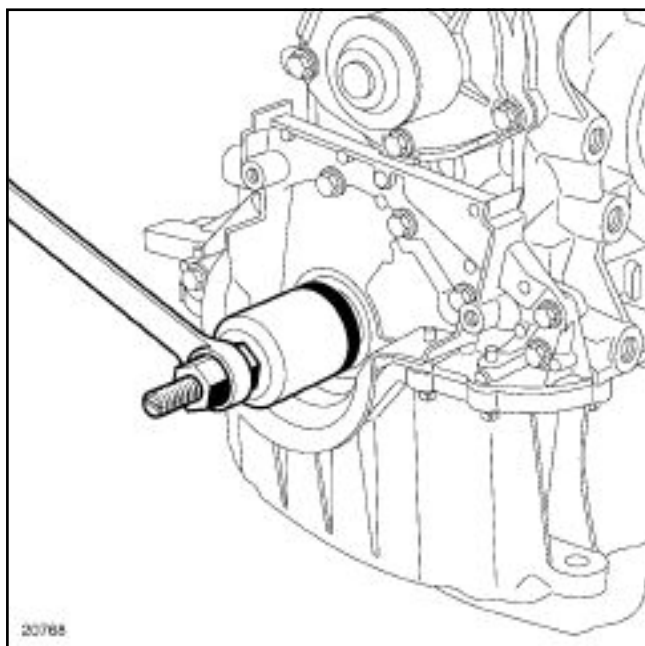
Fit the protector with the new seal in place on the spacer, taking care not to touch the seal.



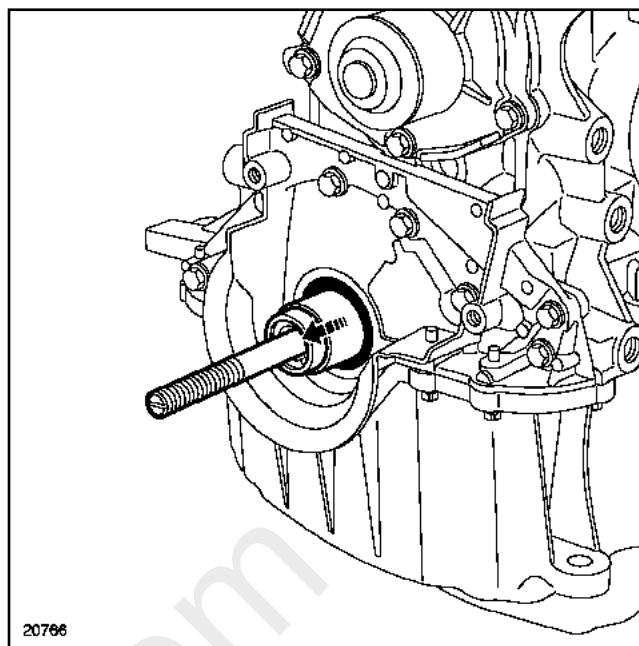
20769

Fit cover (5) and nut (6) (with the thread (7) of the nut towards the outside of the engine).

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768

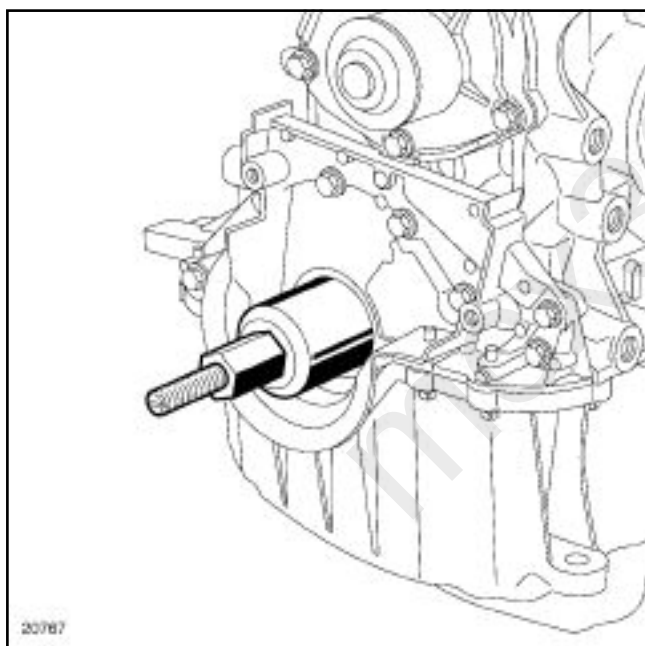


20768



20766

20766



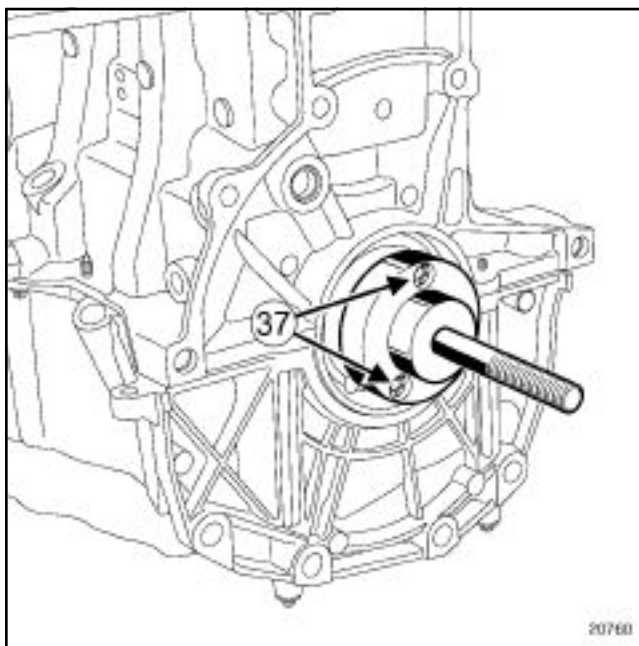
20767

Screw on the nut until the cover touches the spacer.

Remove

- the nut,
- the cap,
- the protector,
- the spacer,
- the threaded rod.

Using degreaser, degrease the seal mating face on the crankshaft and the cylinder block (flywheel end).

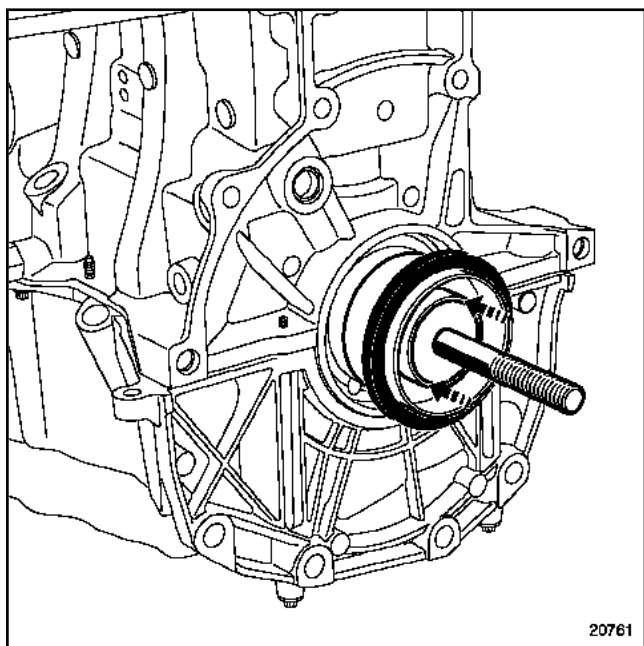


20760

20760

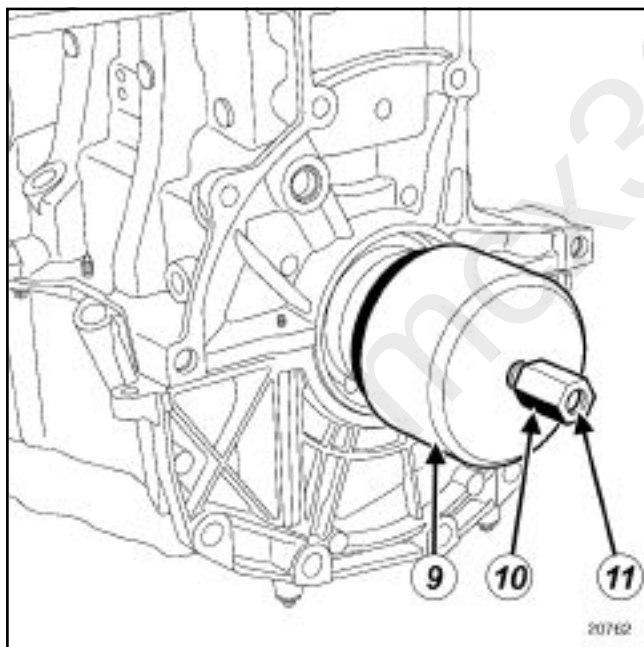
Mount the **(Mot. 1585)** on the crankshaft, securing it using bolts **(37)**.

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



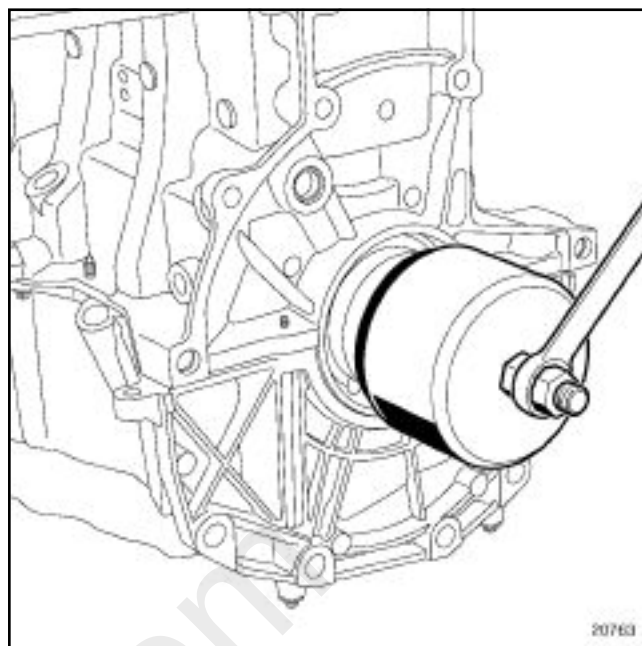
20761

Fit the protector with its seal in place on the **(Mot. 1585)**, taking care not to touch the seal.

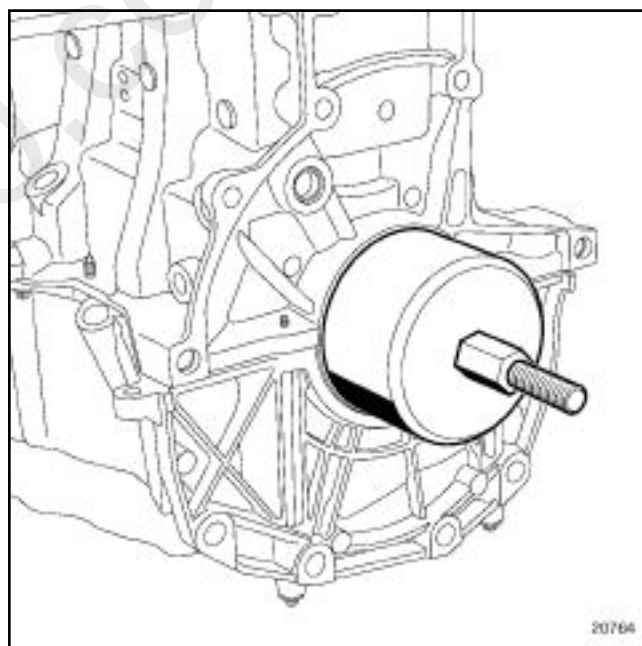


20762

Fit cover **(9)** and nut **(10)** (with the thread **(11)** of the nut towards the outside of the engine).



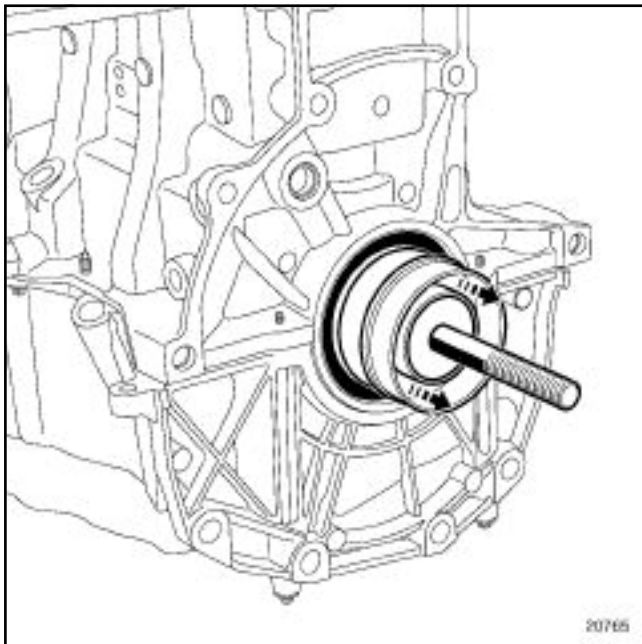
20763



20764

Screw on the nut until the cover touches the cylinder block.

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



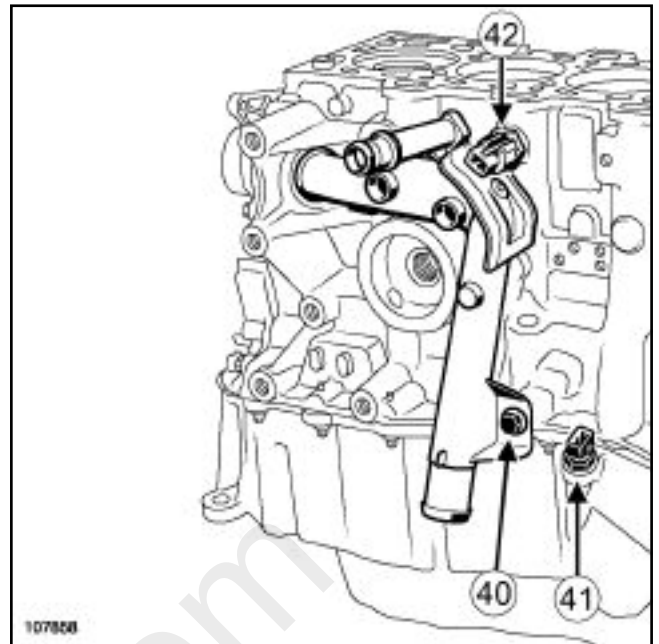
20765

Remove:

- the nut,
- the cap,
- the protector,
- the base.

Refit a new O-ring seal to the coolant pump inlet pipe.

Put a little soapy water on the O-ring seal of the coolant pump inlet pipe.



107858

Refit:

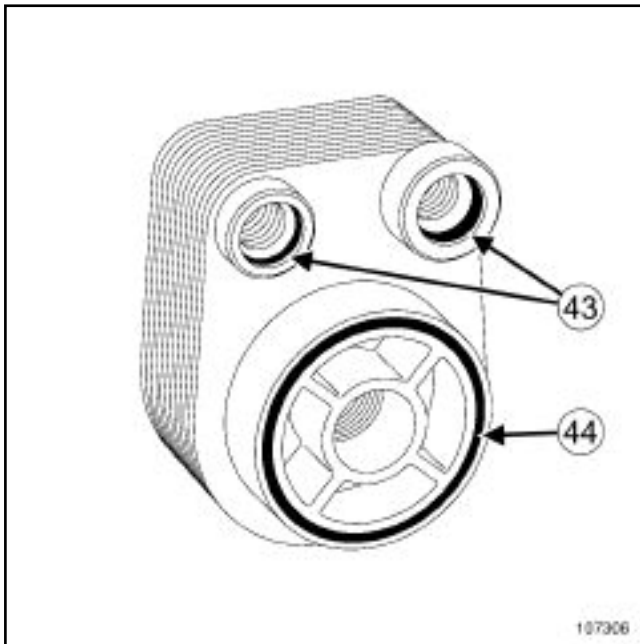
- the coolant pump inlet pipe,
- the mounting bolt (40) of the coolant pump inlet pipe,
- the oil level sensor (41) ,
- the acceleration meter (42) .

Tighten to torque:

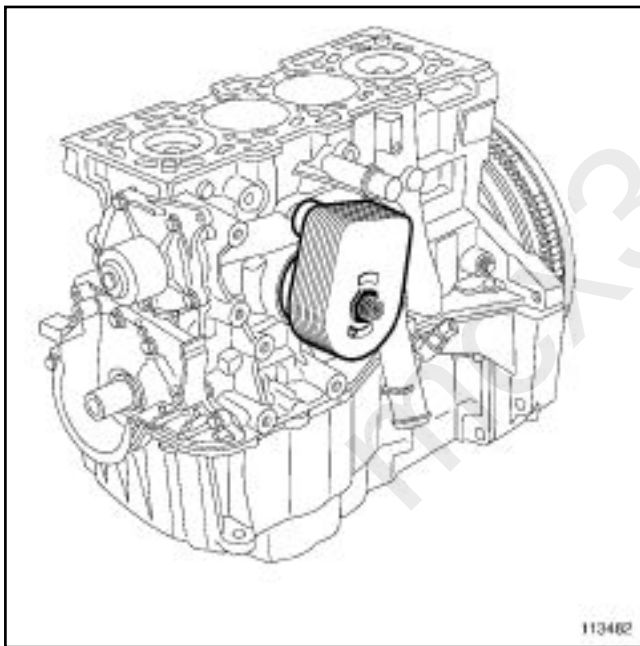
- **the coolant pump inlet pipe mounting bolt (22 ± 2.2 Nm) .**
- **the oil level sensor (25 ± 2.5 Nm) .**
- **the acceleration meter (20 ± 2 Nm) using the (Emb. 1596) .**

Using degreaser, degrease the seal mating face of the cylinder block where it receives the coolant / oil heat exchanger.

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



107306



113482

Fit the new seals (43) and (44) on the coolant/oil heat exchanger.

Apply soapy water to the two seals (43) in contact with the inlet pipe of the coolant pump.

Apply two drops of **HIGH-RESISTANCE BOLT LOCKING PRODUCT** to the coolant/oil heat exchanger mounting bolt.

Refit:

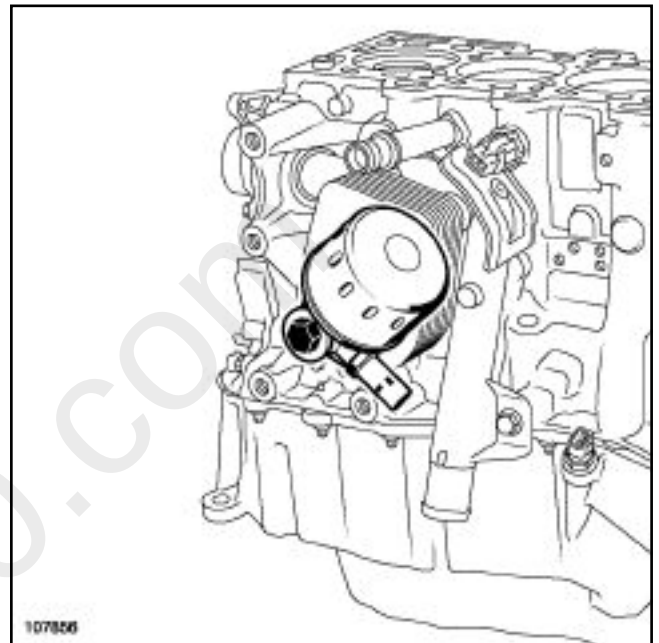
- the coolant/oil heat exchanger,
- the mounting bolt of the oil/coolant heat exchanger,

Tighten to torque **the coolant/oil heat exchanger mounting bolt (45 ± 4.5 Nm)**.

Using degreaser, degrease the seal mating face of the coolant / oil heat exchanger where it receives the oil filter holder.

Refit:

- a new seal on the oil filter holder,
- a new seal on the oil filter holder mounting bolt.



107856

Refit:

- the oil filter holder,
- the oil filter holder mounting bolt

Tighten to torque the **oil filter holder mounting bolt (45 ± 4.5 Nm)**.

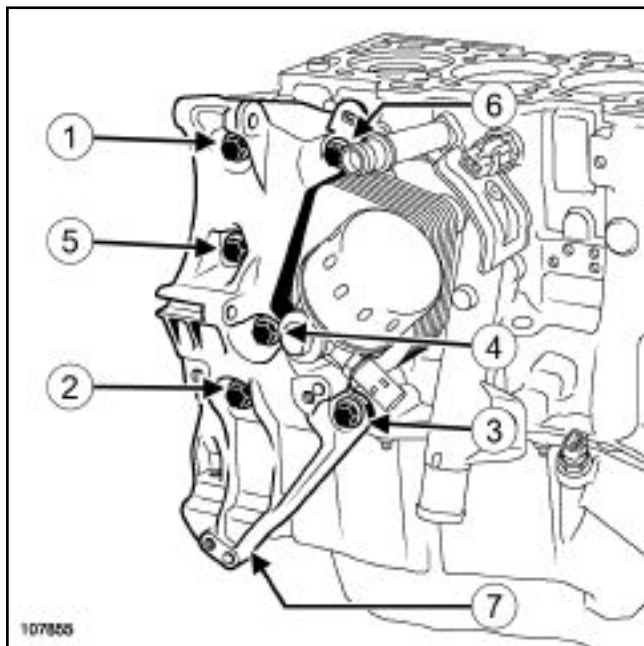
Lubricate the oil filter seal with new engine oil.

Refit the oil filter using the **(Mot. 1329)**.

Tighten to torque the **oil filter (14 ± 2 Nm)**.

Cylinder block: Refitting

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



107855

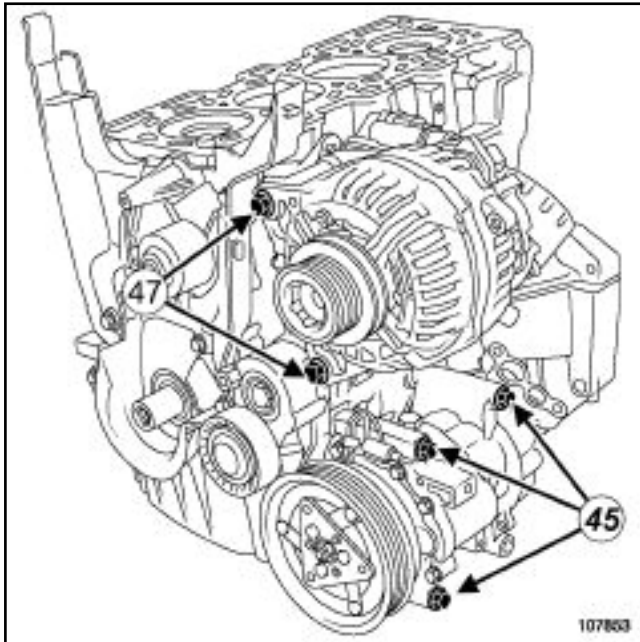
Refit:

- the multifunction support,
- the multifunction support mounting bolts.

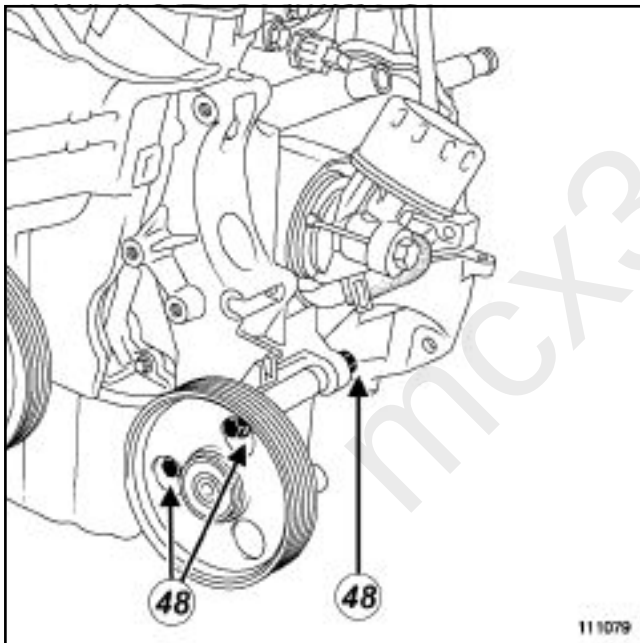
Tighten to torque and in order **the multifunction support mounting bolts (1 to 6)** (44 ± 4.4 Nm) .

Torque tighten the **multifunction support mounting bolt (7)** (21 ± 2.1 Nm) .

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



107853



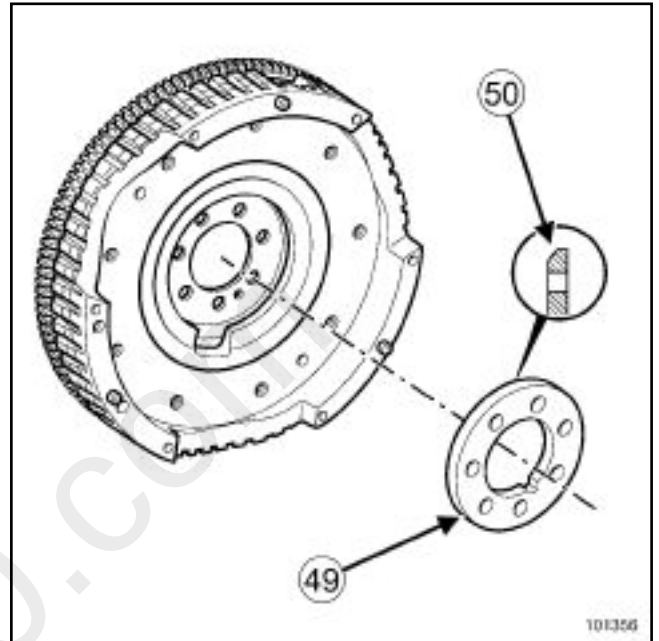
111079

Refit:

- the power assisted steering pump or the dummy pulley,
- the mounting bolts (48) of the power assisted steering pump or the dummy pulley,
- the air conditioning compressor (if fitted),
- the air conditioning compressor mounting bolts (45),
- the alternator,
- the alternator mounting bolts (47).

Tighten to torque:

- the mounting bolts of the power assisted steering pump or the dummy pulley (21 ± 2.1 Nm),
- the air conditioning compressor mounting bolts (21 ± 2.1 Nm),
- the alternator mounting bolts (21 ± 2.1 Nm).

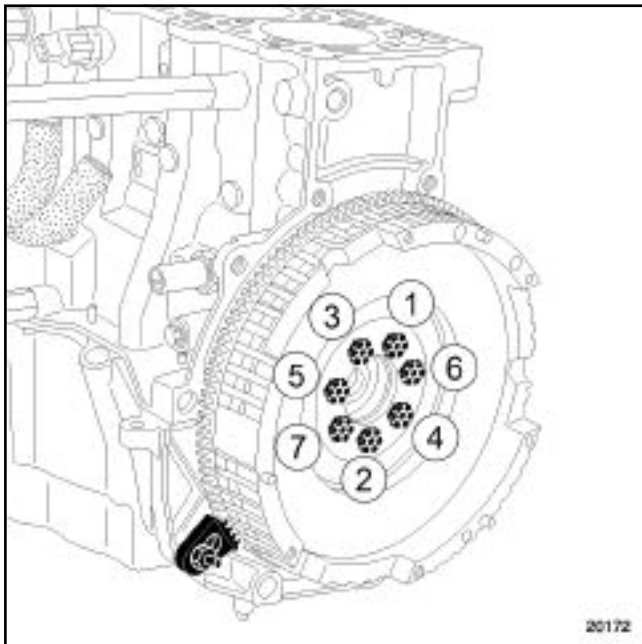


101356

Note:

Certain flywheels have a shim (49). It is essential to position the chamfer (50) of the shim on the flywheel side.

K9K, and 274 or 276 or 712 or 714 or 716 or 718 or 724 or 728 or 729 or 760 or 762 or 766 or 768



20172

Refit:

- the flywheel,
- the new flywheel mounting bolts,
- the engine flywheel locking tool (**Mot. 1677**) .

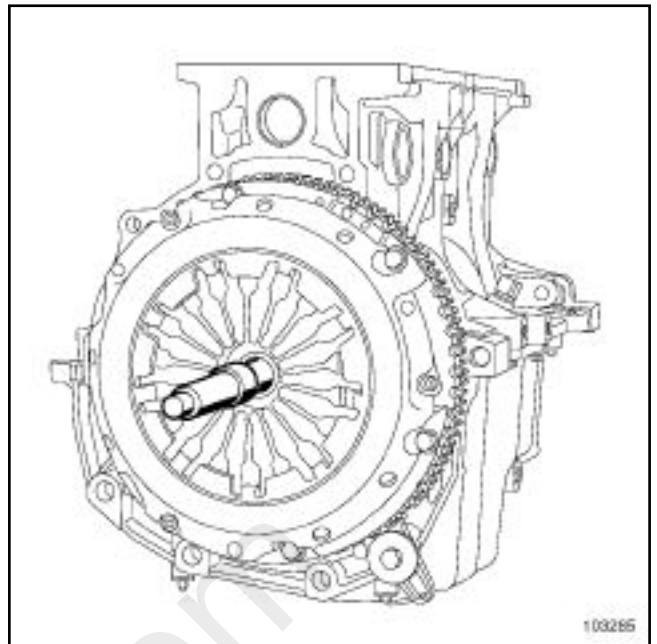
Tighten to torque and in order the **flywheel mounting bolts (55 ± 5.5 Nm)** .

Using degreasing agent, degrease the friction face on the flywheel.

Refit the friction plate (aligning it correctly).

Centre the friction plate using the (**Emb. 1780**) .

Using degreasing agent, degrease the friction face on the clutch mechanism.



103285

Refit:

- the clutch pressure plate,
- the clutch mechanism mounting bolts.

Gradually tighten the mounting bolts of the clutch pressure plate.

Tighten to torque **the clutch mechanism mounting bolts (M6 to 14 ± 1.4 Nm and bolts M7 to 20 ± 2 Nm)** .

Remove flywheel immobiliser tool (**Mot. 1677**) .

ENGINE AND LOWER ENGINE ASSEMBLY

Cylinder block: Refitting

10A

K9K, and 732 or 764

Special tooling required	
Mot. 1018	Sump plug tool.
Mot. 1586	Tool for fitting PTFE crankshaft seal, timing end.
Mot. 1714	Adapter for fitting PTFE crankshaft seal, timing end.
Mot. 1585	Tool for fitting PTFE crankshaft seal, flywheel end.
Mot. 1677	Flywheel locking tool.
Emb. 1780	Set of clutch disc centring mandrels.
Emb. 1761	Clutch pressure plate removal/refitting kit
Mot. 1329	Oil filter removing tool (76 mm diameter).

Tightening torques 	
oil pump mounting bolts	25 ± 2.5 Nm
the crankshaft nose closure unit mounting bolts	11 ± 1.1 Nm
the coolant pump mounting bolts	11 ± 1.1 Nm
the engine oil sump mounting bolts	14 ± 1.4 Nm
the drain plug of the engine oil sump	20 ± 2 Nm
the flywheel mounting bolts	2 ± 20 Nm + 36° ± 6°
clutch mechanism bolt	14 ± 1.4 Nm
the clutch mechanism bolt	14 ± 1.4 Nm
the coolant pump inlet pipe mounting bolt	22 ± 2.2 Nm
the oil level sensor	25 ± 2.5 Nm

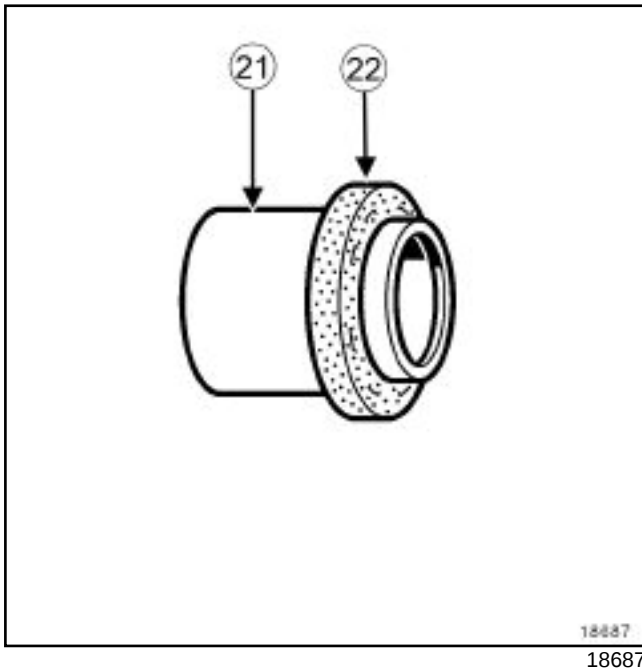
Tightening torques 	
the coolant/oil heat exchanger mounting bolt	45 ± 4.5 Nm
oil filter holder mounting bolt	45 ± 4.5 Nm
oil filter	14 ± 2 Nm
the multifunction support mounting bolts (1 to 6)	44 ± 4.4 Nm
multifunction support mounting bolt (7)	21 ± 2.1 Nm
air conditioning compressor mounting bolts	21 ± 2.1 Nm
the alternator mounting bolts	21 ± 2.1 Nm

I - RECOMMENDATIONS FOR REPAIR

IMPORTANT

Wear protective gloves during every operation.

K9K, and 732 or 764

**WARNING**

This type of seal is very delicate. When handling, it is essential to grip protective piece. (21) It is strictly forbidden to touch seal, (22) this is to prevent any oil leaks once the oil seal is fitted to the engine.

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

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.)

II - PARTS AND CONSUMABLES FOR THE REPAIR**Parts always to be replaced**

- The crankshaft nose closure unit seal,
- The coolant pump seal,
- The oil sump mounting seal,
- The clutch mechanism (if necessary),
- The friction disc (if necessary),
- Flywheel mounting bolt
- The coolant pump inlet pipe seal,
- The oil / coolant heat exchanger seals,
- The crankshaft, timing end, mounting seal,
- The crankshaft, flywheel end, mounting seal,
- Oil filter,

- The seal of the drain plug of the engine oil sump.

Consumables

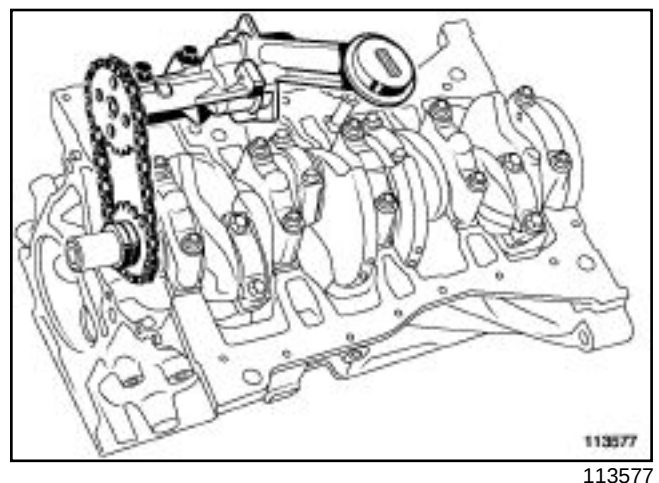
- Degreasing agent, part no. **77 11 224 559** .
- Silicone adhesive sealant, part no. **77 11 227 484** ,
- High-resistance bolt locking product, part no. **77 11 230 112** ,

III - EQUIPMENT REQUIRED

- Torque/angle wrench,
- Torque wrench
- Cylinder head bolt tightening gauge (angular measuring type),
- Ruler,
- Square section drain wrench, male **8 mm** ,
- Male torx socket.
- Oil can,

IV - REASSEMBLING THE CYLINDER BLOCK

Put a little engine oil from an oil can in the oil pump via the oil sump filter.



Refit:

- the oil pump drive sprocket,
- the oil pump complete with its chain,
- the oil pump mounting bolts.

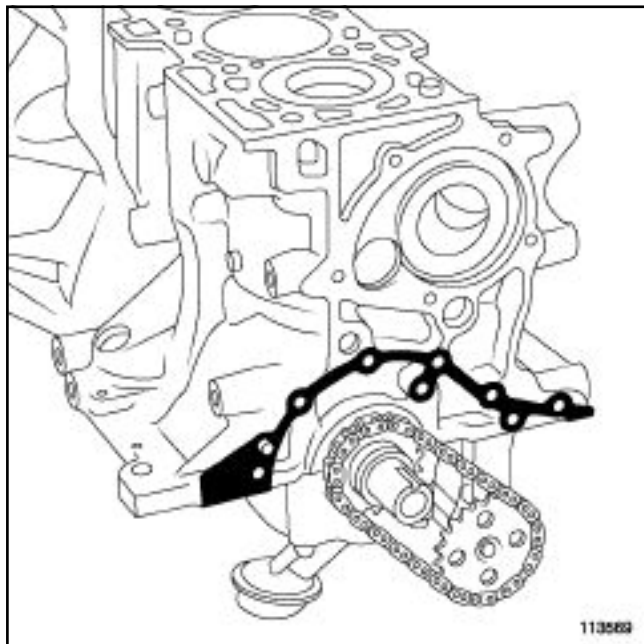
Tighten to torque the **oil pump mounting bolts (25 ± 2.5 Nm)** .

Apply degreaser to:

- the crankshaft nose closure panel,
- the coolant pump,

K9K, and 732 or 764

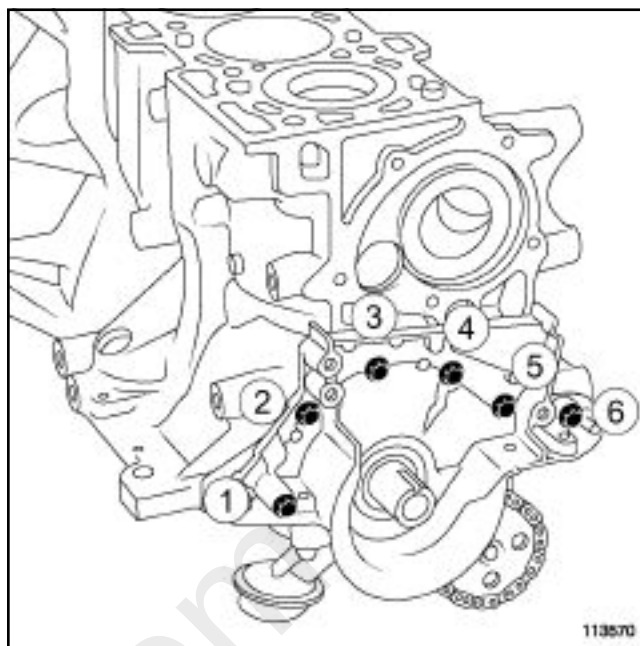
- the surface of the seal of the crankshaft nose closure unit on the cylinder block,
- the surface of the coolant pump seal on the cylinder block.



113569

Fit a new seal to the crankshaft nose closure unit.

Check for the centring dowels on the crankshaft nose closure unit.



113570

113570

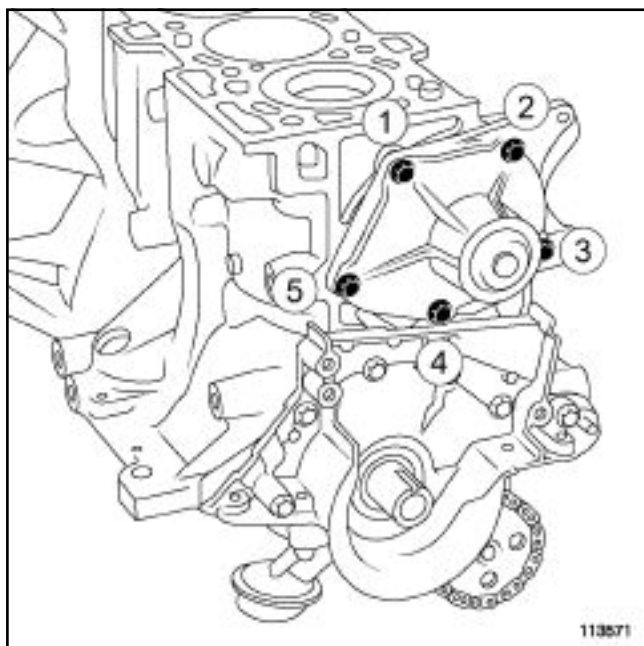
Refit:

- the crankshaft nose closure panel,
- the crankshaft nose closure unit mounting bolt,

Tighten to torque and in order **the crankshaft nose closure unit mounting bolts (11 ± 1.1 Nm)** .

Apply a drop of **HIGH-RESISTANCE BOLT LOCKING PRODUCT** to the coolant pump mounting bolts.

K9K, and 732 or 764



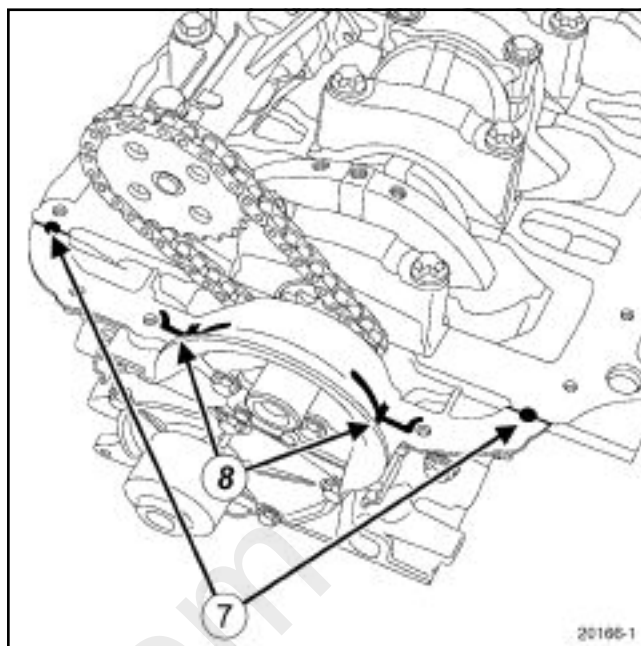
113571

Refit:

- the coolant pump fitted with a new seal,
- the coolant pump mounting bolts.

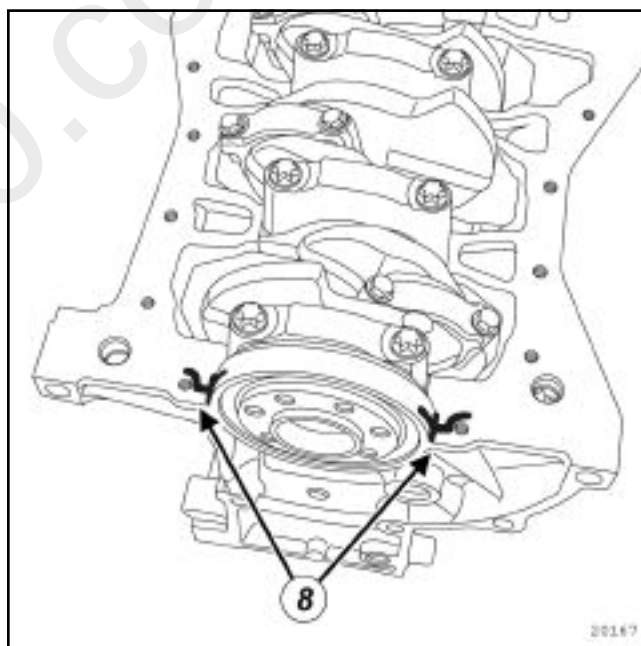
Tighten to torque and in order **the coolant pump mounting bolts (11 ± 1.1 Nm)**.

Using degreaser, degrease the seal surfaces of the lower part of the cylinder block and the oil sump.



20166-1

20166



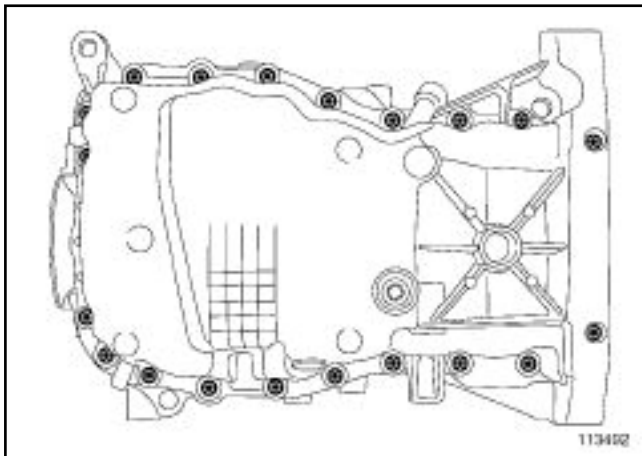
20167

20167

Apply:

- four beads (8) of **SILICONE ADHESIVE SEALANT** with a diameter of **5 mm**,
- two points (7) of **SILICONE ADHESIVE SEALANT** **5 mm** in diameter, at the connection between the crankshaft nose closure panel and the cylinder block.

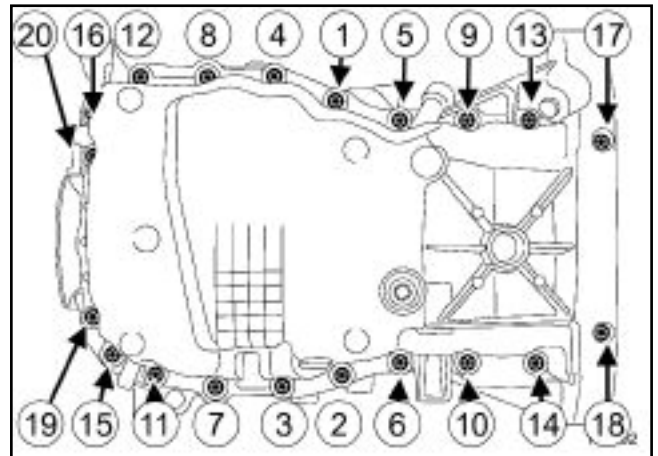
K9K, and 732 or 764



113492

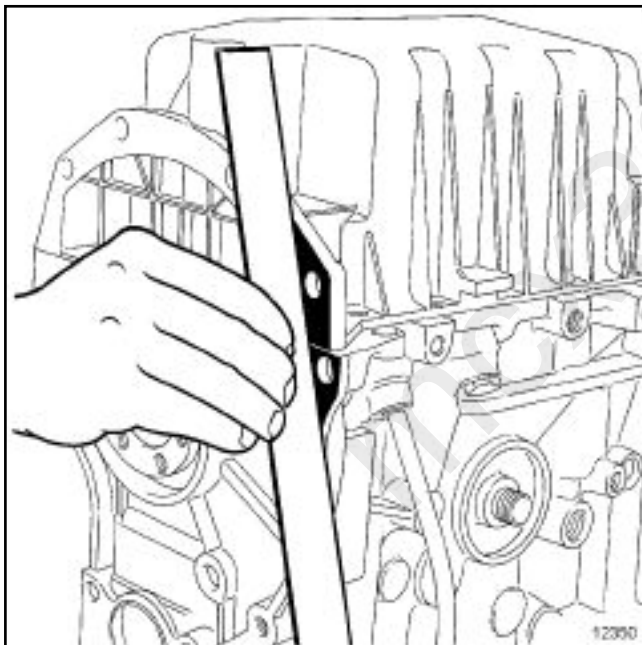
Refit:

- the oil sump mounting seal,
- the engine oil sump,
- the oil sump mounting bolts,



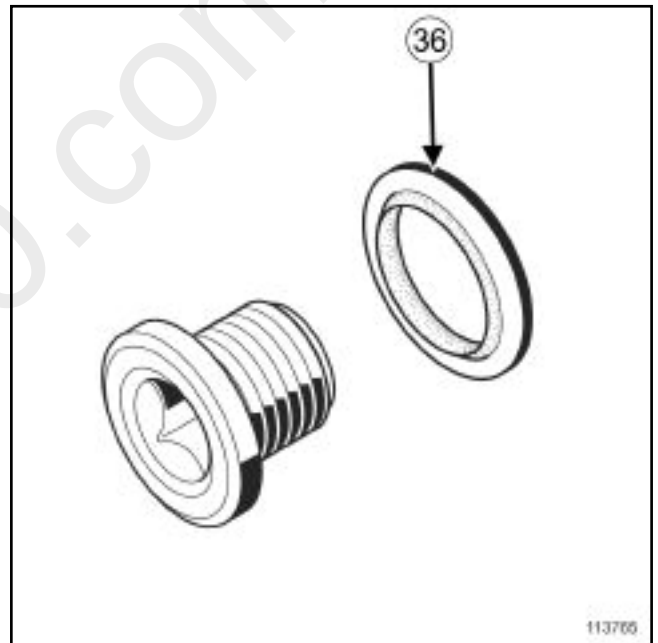
113492

Tighten to torque and in order **the engine oil sump mounting bolts** ($14 \pm 1.4 \text{ Nm}$).



12350

Using a ruler, align the engine oil sump with the cylinder block.



113765

Refit:

- a seal (36) on the drain plug of the engine oil sump,
- the drain plug of the engine oil sump, using the (Mot. 1018) .

Tighten to torque **the drain plug of the engine oil sump** ($20 \pm 2 \text{ Nm}$).

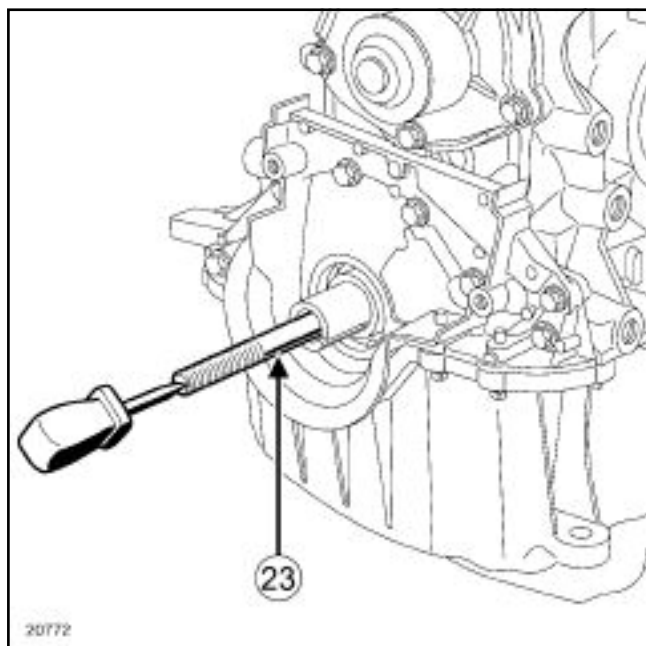
Using degreaser, degrease the seal mating face on the crankshaft and the crankshaft nose closure unit.

ENGINE AND LOWER ENGINE ASSEMBLY

Cylinder block: Refitting

10A

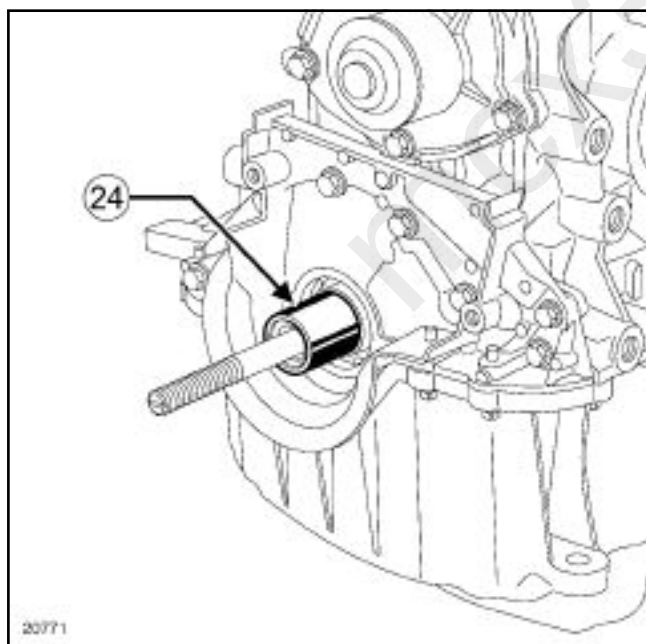
K9K, and 732 or 764



20772

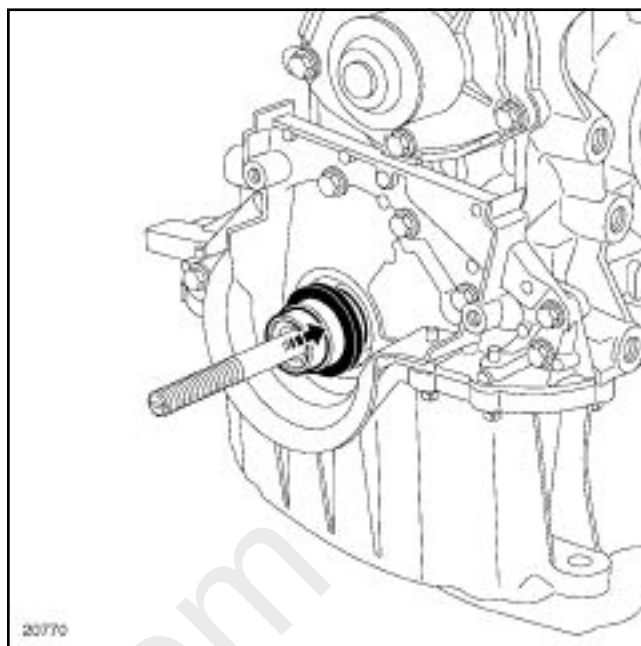
Tighten the threaded rod (23) :

- of tool **(Mot. 1586)** in the crankshaft with an internal thread of **M12** ,
- of tool **(Mot. 1714)** in the crankshaft with an internal thread of **M14** ,



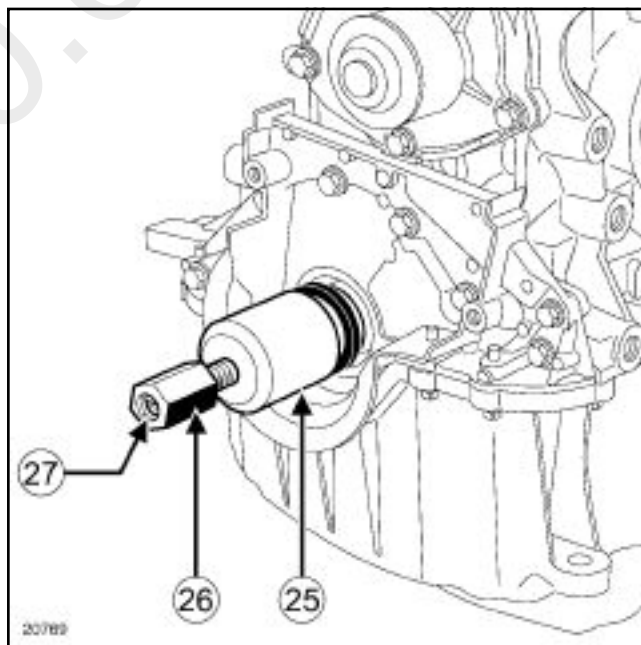
20771

Insert the spacer (24) of tool **(Mot. 1586)** in the crankshaft.



20770

Fit the protector with the new seal in place on the spacer, taking care not to touch the seal.



20769

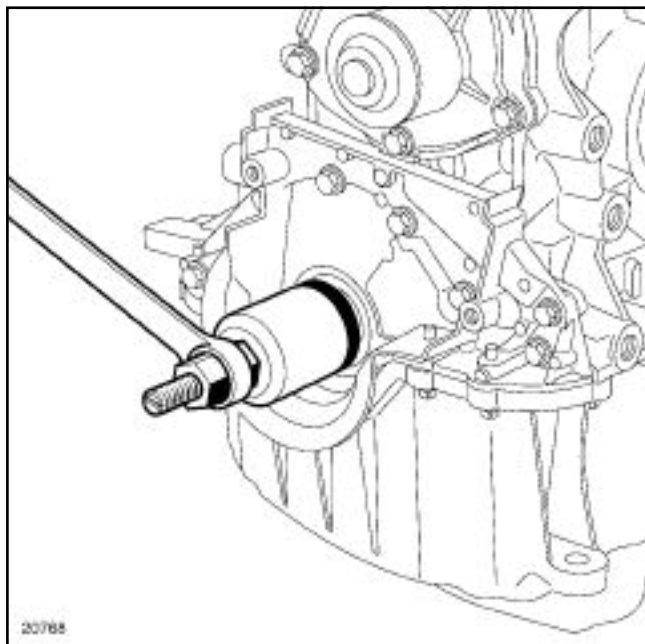
Fit cover (25) and nut (26) (with the thread (27) of the nut towards the outside of the engine).

ENGINE AND LOWER ENGINE ASSEMBLY

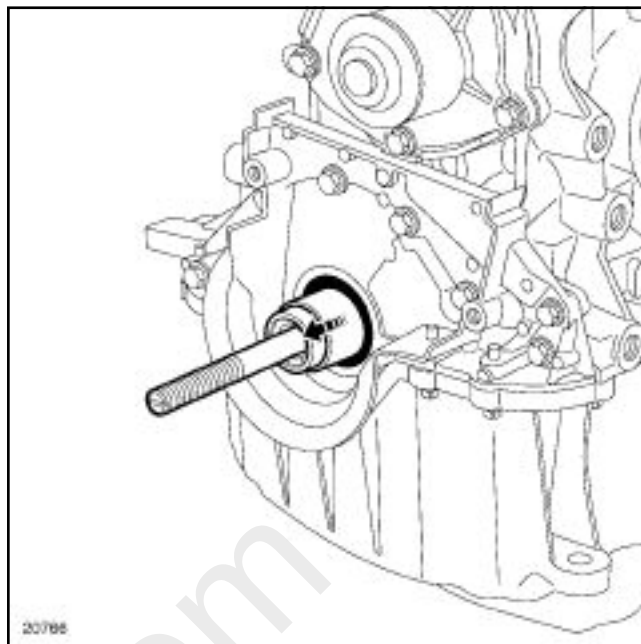
Cylinder block: Refitting

10A

K9K, and 732 or 764



20768

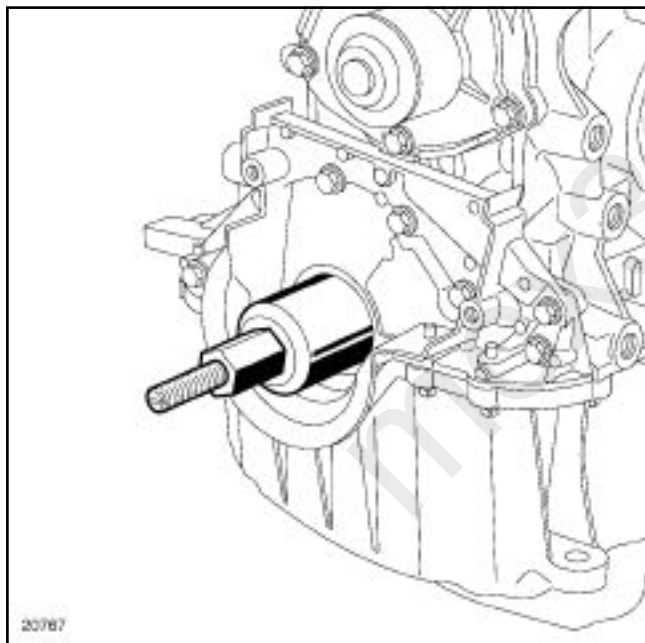


20766

Remove:

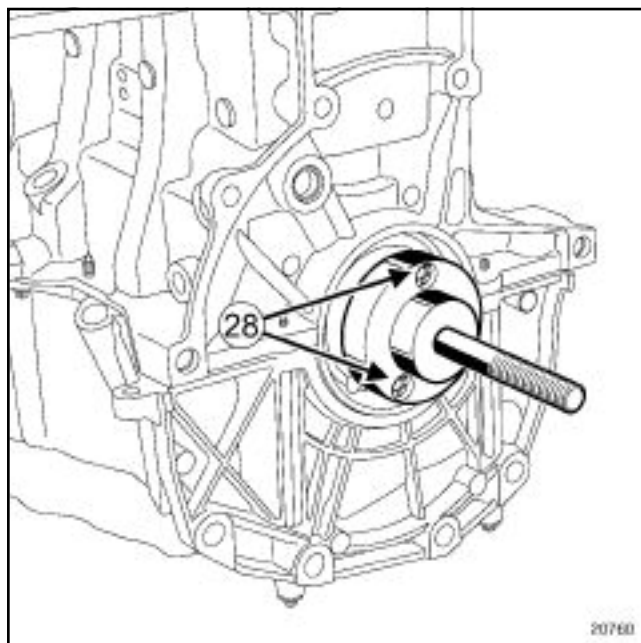
- the nut,
- the cap,
- the protector,
- the spacer,
- the threaded rod.

Using degreaser, degrease the seal mating face on the crankshaft and the cylinder block (flywheel end).



20767

Screw on the nut until the cover touches the spacer.



20760

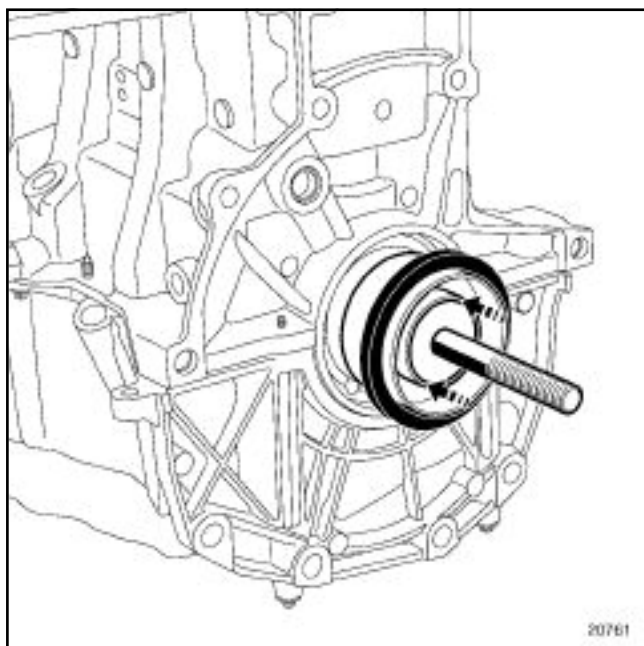
Mount the **(Mot. 1585)** on the crankshaft, securing it using bolts **(28)**.

ENGINE AND LOWER ENGINE ASSEMBLY

Cylinder block: Refitting

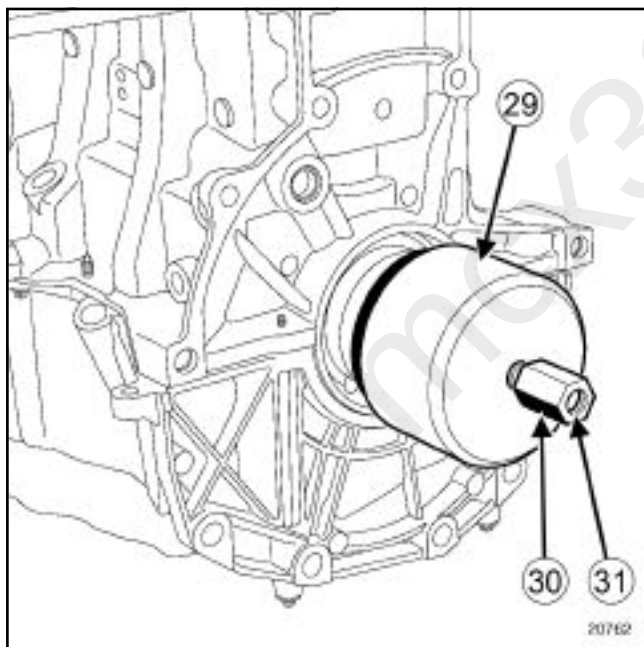
10A

K9K, and 732 or 764



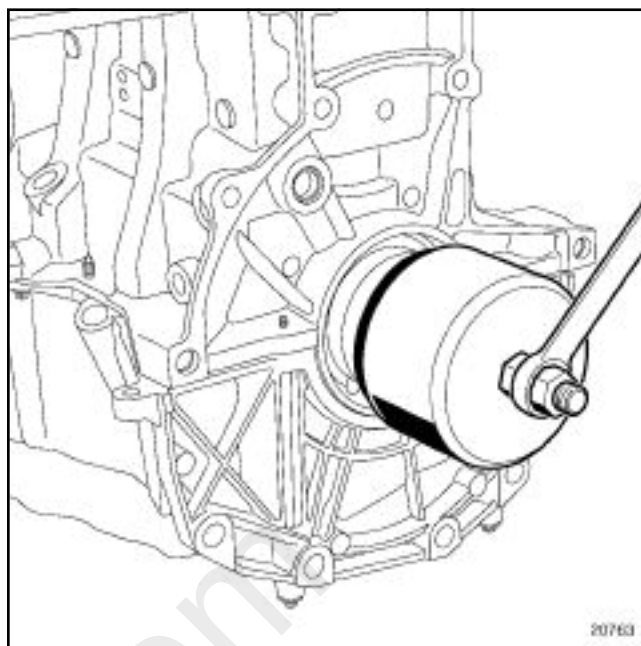
20761

Fit the protector with its seal in place on tool, (**Mot. 1585**) taking care not to touch the seal.

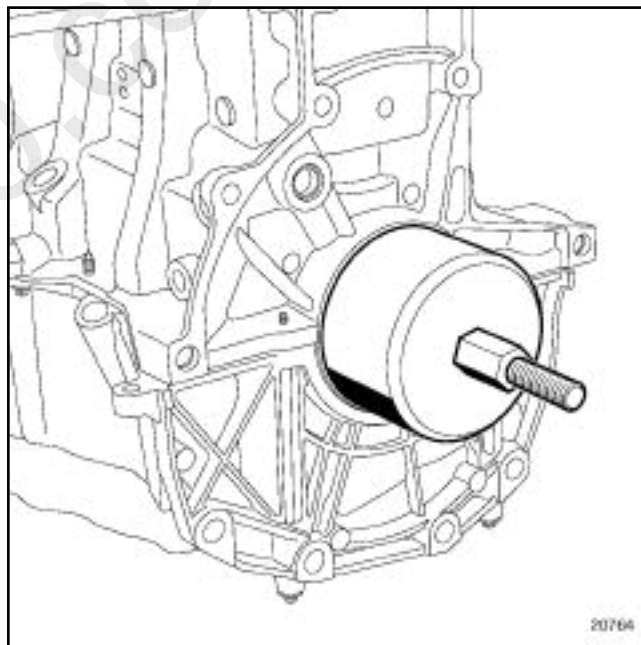


20762

Fit cover (**29**) and nut (**30**) (with the thread (**31**) of the nut towards the outside of the engine).



20763



20764

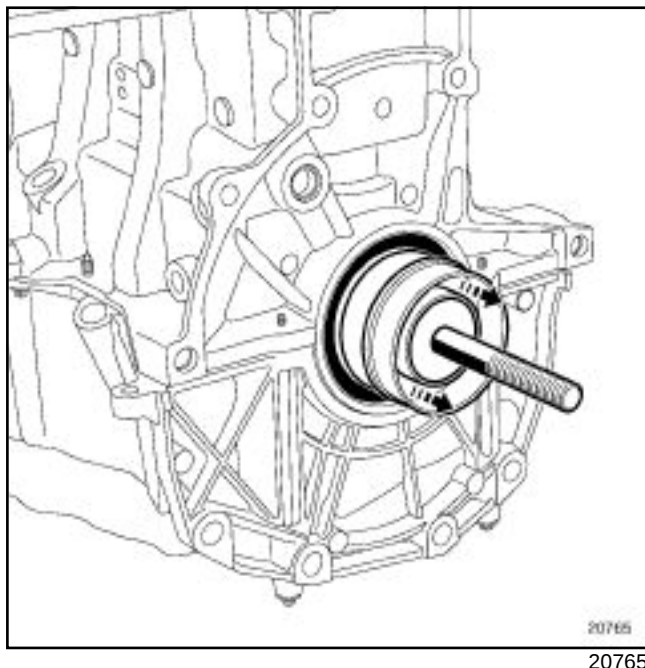
Tighten the nut until the cover touches the cylinder block.

ENGINE AND LOWER ENGINE ASSEMBLY

Cylinder block: Refitting

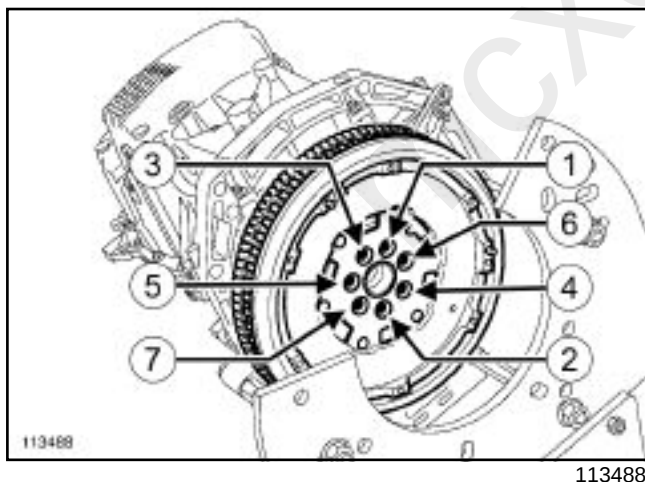
10A

K9K, and 732 or 764



Remove:

- the nut,
- the cap,
- the protector,
- the base.

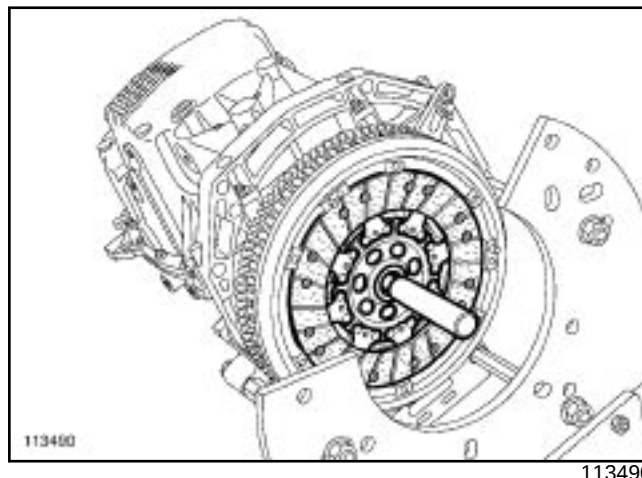


Refit:

- the flywheel,
- the new flywheel mounting bolts,
- engine flywheel locking tool (**Mot. 1677**) .

Tighten to torque and in order **the flywheel mounting bolts** ($2 \pm 20 \text{ Nm} + 36^\circ \pm 6^\circ$) .

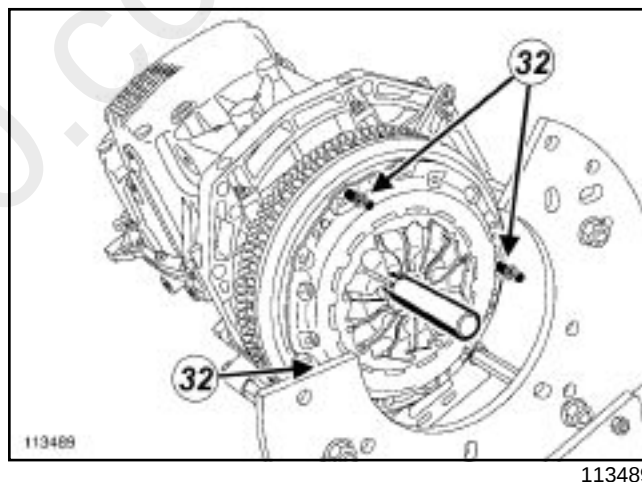
Using degreasing agent, degrease the friction face on the flywheel.



Refit the friction disc (aligning it correctly).

Centre the friction disc using the (**Emb. 1780**) .

Using degreasing agent, degrease the friction face on the clutch mechanism.



Refit the clutch mechanism.

Position the mounting bolts of the clutch mechanism using tool (**Emb. 1761**) (32) .

Position the clutch mechanism flat against the flywheel, tightening the nuts of tool (**Emb. 1761**) .

Refit the clutch mechanism mounting bolts.

Tighten to torque the **clutch mechanism bolt** ($14 \pm 1.4 \text{ Nm}$) .

Remove the (**Emb. 1761**) .

Refit the three clutch mechanism mounting bolts.

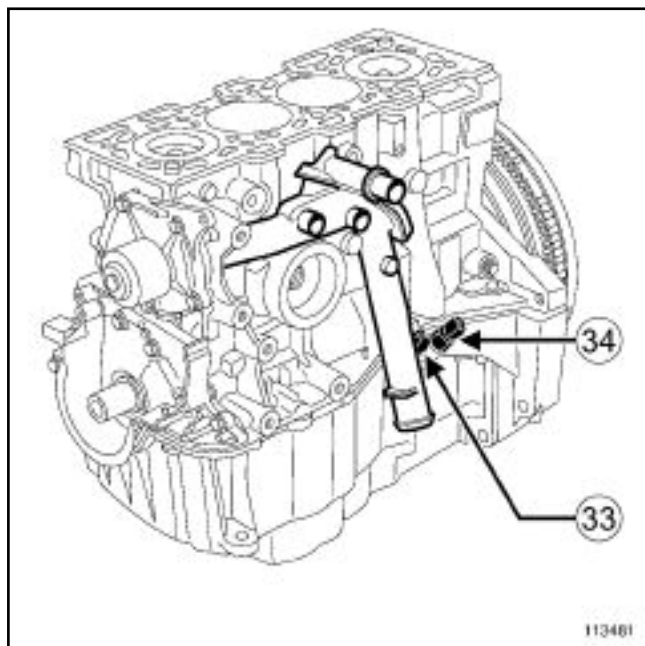
Tighten to torque **the clutch mechanism bolt** ($14 \pm 1.4 \text{ Nm}$) .

Remove flywheel immobiliser tool (**Mot. 1677**) .

Refit a new o-ring seal to the coolant pump inlet pipe.

K9K, and 732 or 764

Put a little soapy water on the o-ring seal of the coolant pump inlet pipe.



113481

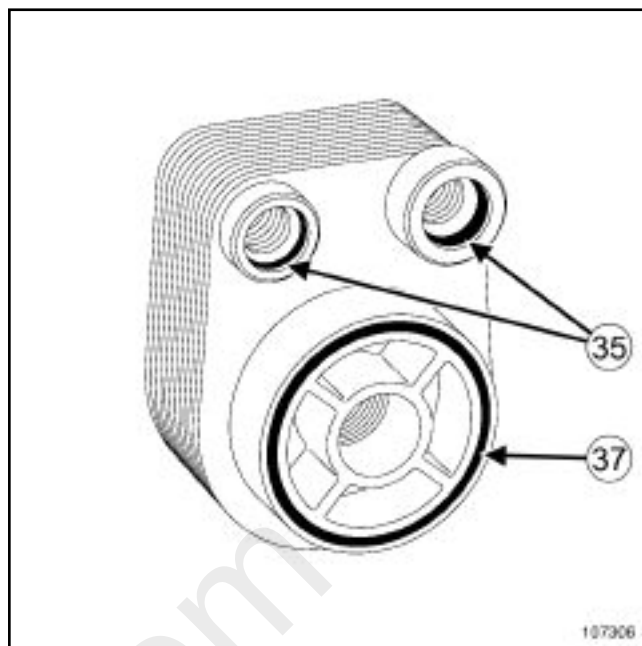
Refit:

- the coolant pump inlet pipe,
- the mounting bolt (33) of the coolant pump inlet pipe,
- the oil level sensor (34) .

Tighten to torque:

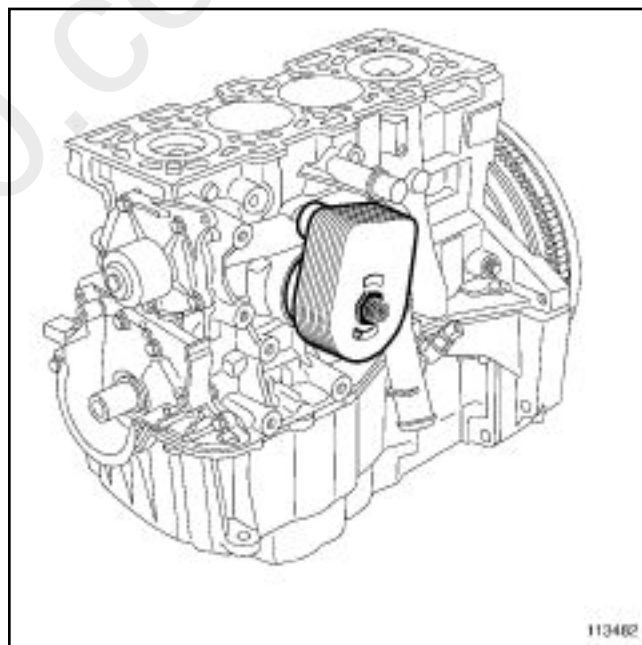
- the coolant pump inlet pipe mounting bolt ($22 \pm 2.2 \text{ Nm}$) ,
- the oil level sensor ($25 \pm 2.5 \text{ Nm}$) .

Using degreaser, degrease the seal mating face of the cylinder block where it receives the coolant / oil heat exchanger.



107306

107306



113482

113482

Fit the new seals (35) and (37) on the coolant / oil heat exchanger.

Apply soapy water to the two seals (35) in contact with the inlet pipe of the coolant pump.

Apply two drops of **HIGH-RESISTANCE BOLT LOCKING PRODUCT** to the coolant / oil heat exchanger mounting bolt.

Refit:

- the coolant/oil heat exchanger,
- the mounting bolt of the oil/coolant heat exchanger,

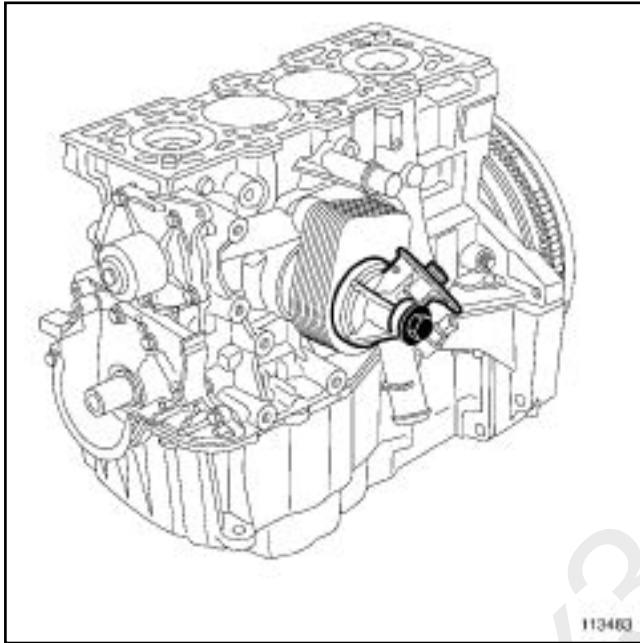
K9K, and 732 or 764

Tighten to torque **the coolant/oil heat exchanger mounting bolt (45 ± 4.5 Nm)** .

Using degreaser, degrease the seal mating face of the coolant/oil heat exchanger where it receives the oil filter holder.

Refit:

- a new seal on the oil filter holder,
- a new seal on the oil filter holder mounting bolt.



Refit:

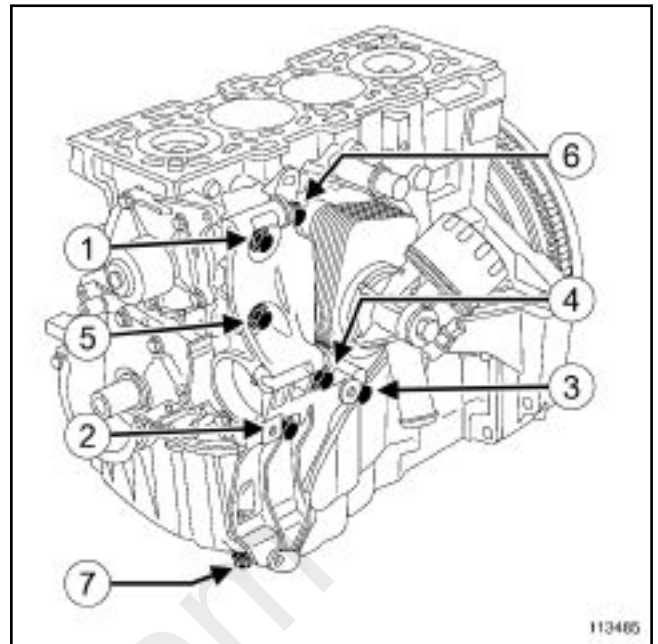
- the oil filter holder,
- the oil filter holder mounting bolt

Tighten to torque the **oil filter holder mounting bolt (45 ± 4.5 Nm)** .

Lubricate the oil filter seal with new engine oil.

Refit the oil filter using the **(Mot. 1329)** .

Tighten to torque the **oil filter (14 ± 2 Nm)** .

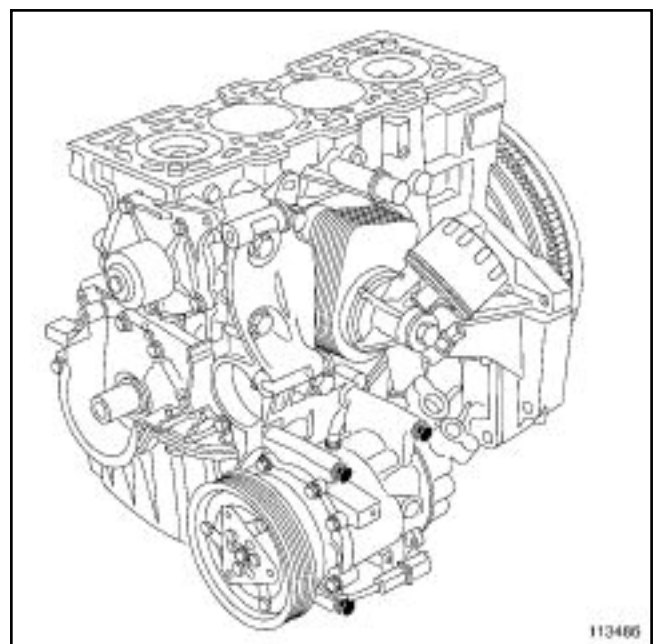


Refit:

- the multifunction support,
- the multifunction support mounting bolts.

Tighten to torque and in order **the multifunction support mounting bolts (1 to 6) (44 ± 4.4 Nm)** .

Torque tighten the **multifunction support mounting bolt (7) (21 ± 2.1 Nm)** .



Refit:

- the air conditioning compressor,
- the air conditioning compressor mounting bolts.