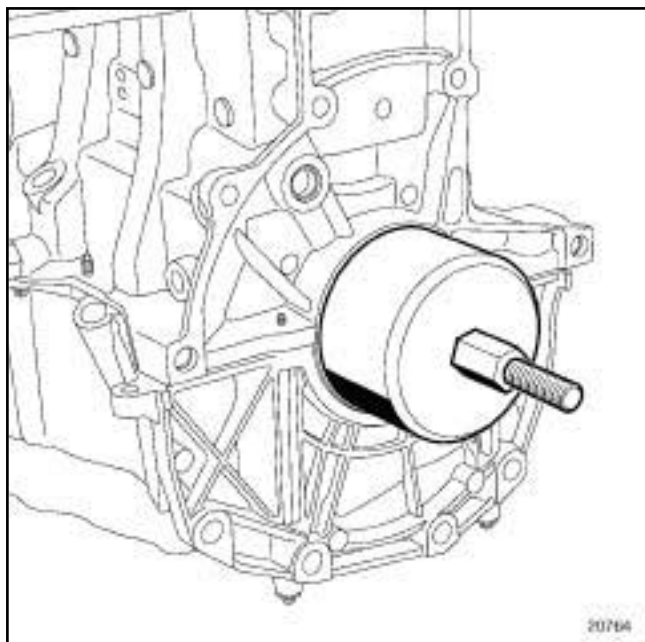


ENGINE AND CYLINDER BLOCK ASSEMBLY

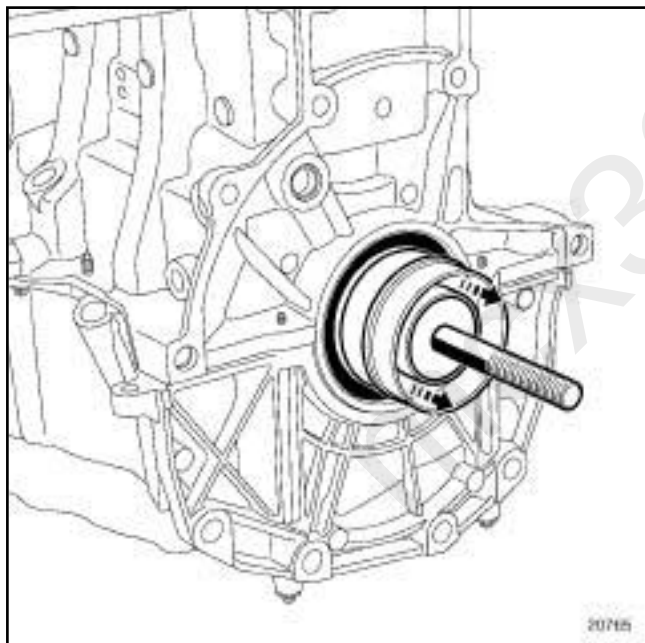
Crankshaft seal, gearbox end: Removal - Refitting

10A

K4M or K9K



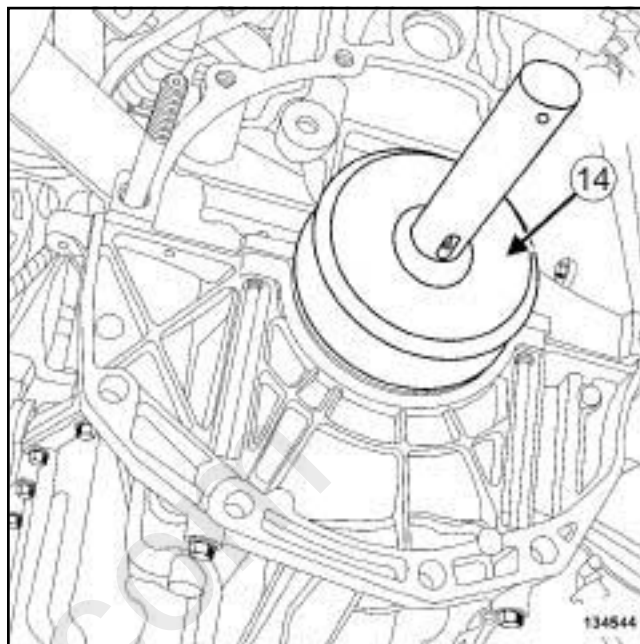
20764



20765

- ❑ Remove the nut, the cover, the protector and the base plate.

K4M



134544

- ❑ Refit the crankshaft seal at the gearbox end, using the tool (14) .

III - FINAL OPERATION

- ❑ Refit:
 - the flywheel (see **10A, Engine and cylinder block assembly, Flywheel: Removal - Refitting**, page **10A-75**) (20A, Clutch),
 - the clutch (see **Pressure plate - Disc: Removal - Refitting**) (20A, Clutch),
 - the gearbox (see **Manual gearbox: Removal - Refitting**) (21A, Manual gearbox).
- ❑ Connect the battery (see **Battery: Removal - Refitting**) (80A, Battery).
- ❑ Perform the following operations:
 - fill the manual gearbox (see **Manual gearbox oils: Draining - Filling**) (21A, Manual gearbox),
 - bleed the clutch control circuit (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).

Lower cover: Removal - Refitting

K9K

Special tooling required

Tav. 1747 Threaded rods for carrying out subframe operations.

Tightening torques

oil pump bolts	25 N.m
sump bolts on the cylinder block	14 N.m
sump bolts on the gear-box	44 N.m
sump bolts on the multi-function support	25 N.m
power assisted steering pump support bolt on the sump	25 N.m
bracket bolts	62 N.m
relay bearing bolts	44 N.m
right-hand driveshaft flange bolt(s) on the relay bearing	21 N.m
front axle subframe tie-rod upper bolts	21 N.m
power-assisted steering low pressure pipe bolt on the front axle sub-frame	25 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 front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55, Exterior protection).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray.
- ☐ Drain the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page **10A-32**).

☐ Remove:

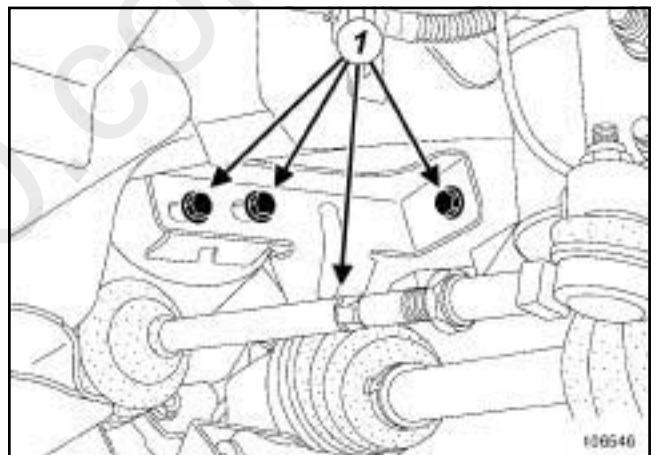
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch side liners,
- the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page **19D-8**).

- ☐ Extract the lower arm ball joints from the stub axle carrier (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components).

- ☐ Remove (see **Steering box: Removal - Refitting**) (36A, Steering assembly):

- the heat shield bolts on the steering box,
- the steering box heat shield,
- the steering box bolts on the front axle subframe.

- ☐ Attach the steering rack to the body.



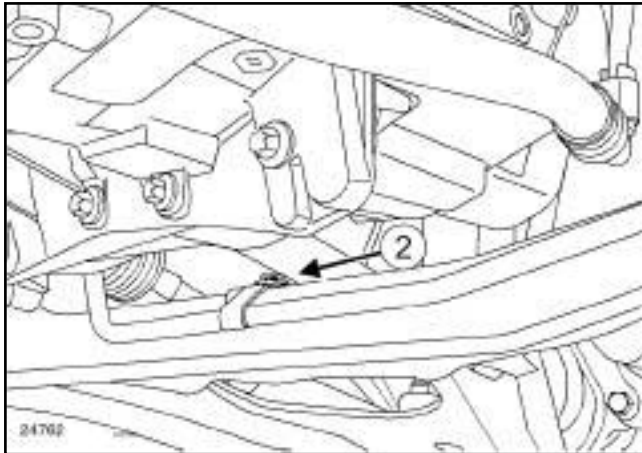
106546

☐ Remove:

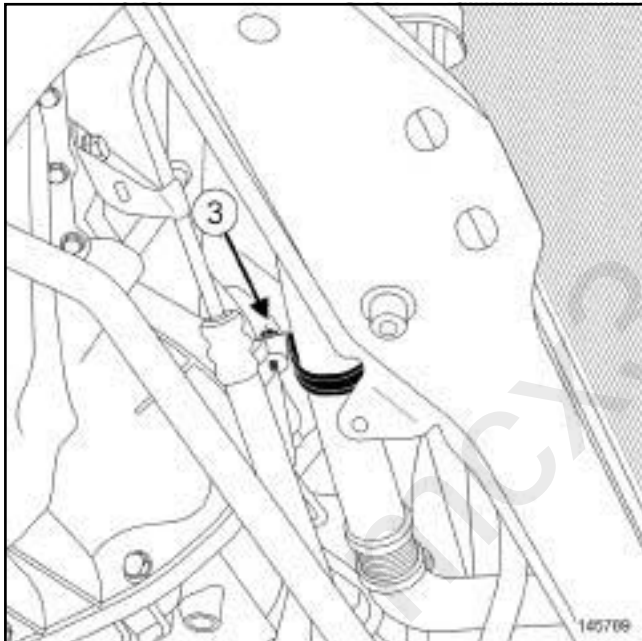
- the catalytic converter upstream strut bolts (1),
- the catalytic converter upstream strut.

Lower cover: Removal - Refitting

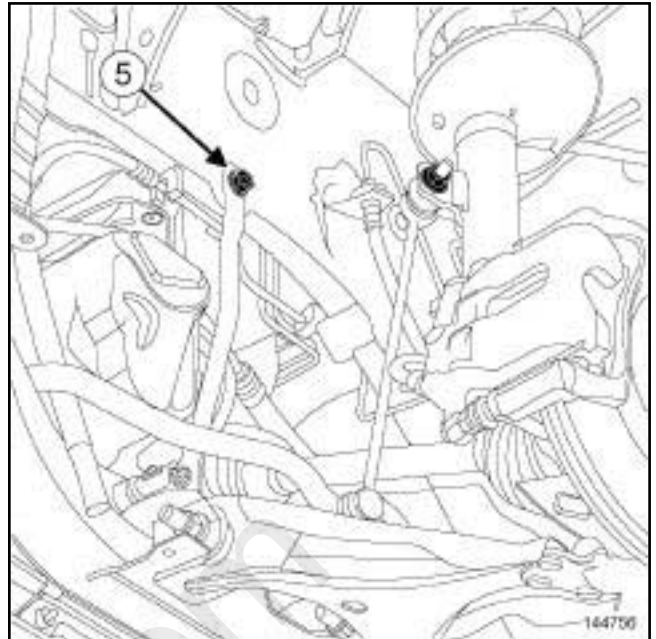
K9K



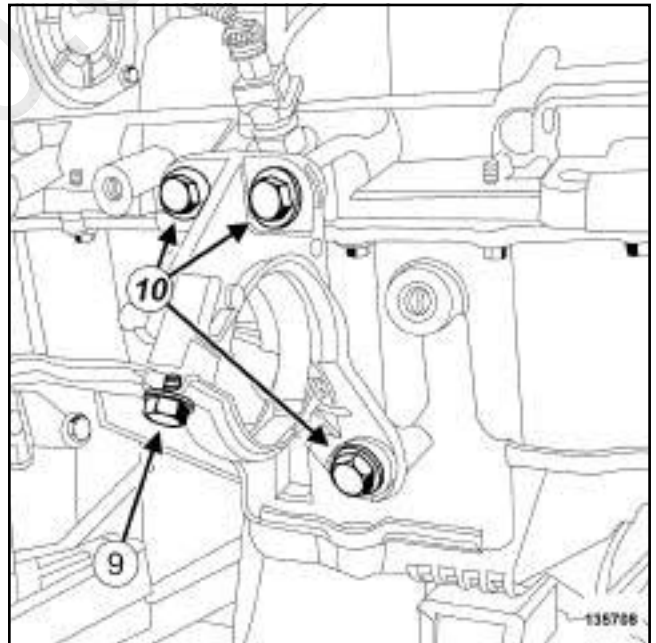
- ❑ Remove the power-assisted steering low pressure pipe bolt (2) on the front axle subframe.



- ❑ Remove the cooling pipe support bolt (3) on the sump.

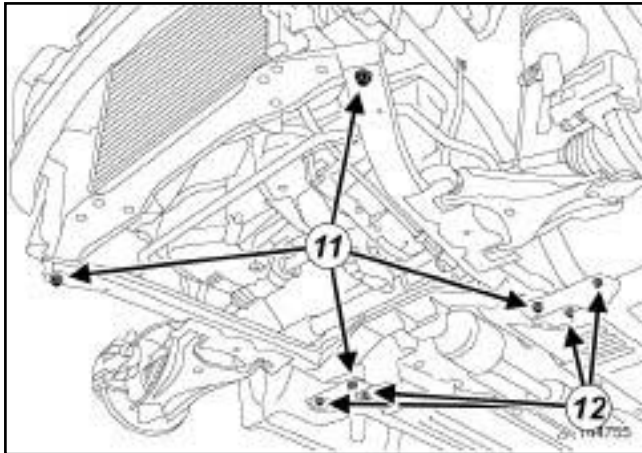


- ❑ Remove the front axle subframe tie-rod upper bolts (5) .



- ❑ Remove:
- the right-hand driveshaft flange bolt (9) on the relay bearing,
 - the bolts (10) from the relay bearing,
 - the relay bearing.

K9K

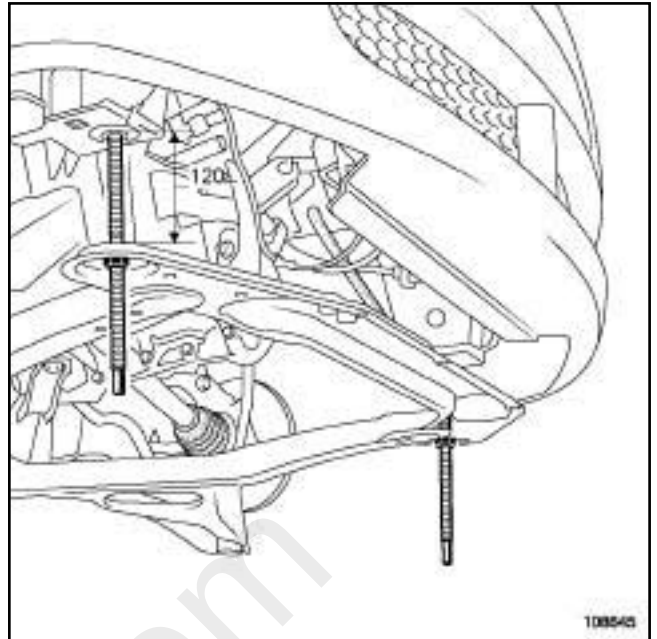


❑ Remove:

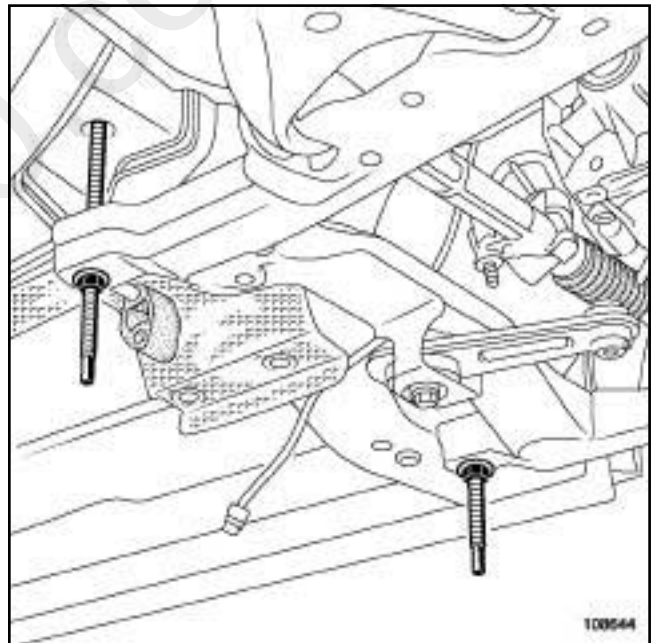
- the bracket bolts (12) ,
- one by one, the front axle subframe bolts (11) and replace them in turn with the threaded rods of the (Tav. 1747).

Note:

Make sure the threaded rod of the (Tav. 1747) is sufficiently screwed into the threaded hole and that the nut of the tool is correctly resting on the front axle subframe.



108645



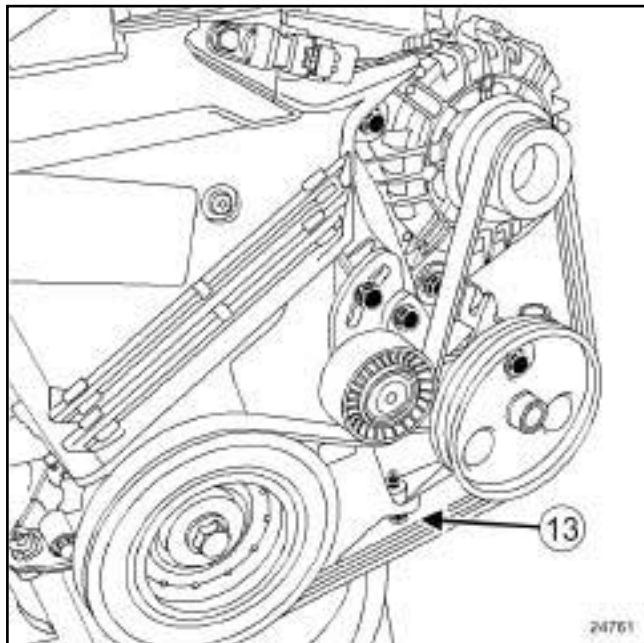
108644

- ❑ Lower the front axle subframe **120 mm**, gradually loosening the nuts of the (Tav. 1747).

K9K

II - REMOVAL OPERATION

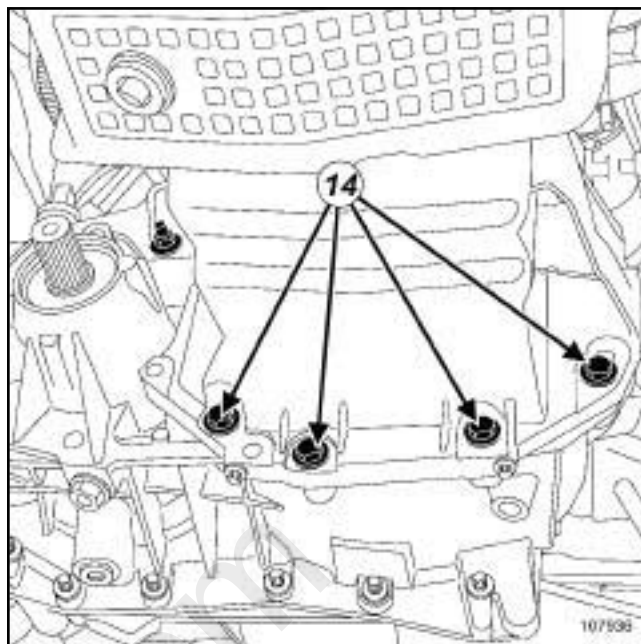
STANDARD HEATING RECIRCULATION



- ☐ Remove the power-assisted steering pump support bolt (13) on the sump.

AIR CONDITIONING

- ☐ Remove the bolt from the sump on the multifunction support.


☐ Remove:

- the engine-gearbox coupling bolts (14) ,
- the sump bolts,
- the sump.

Note:

If the sump cannot be extracted because it is in contact with the oil pump strainer, do not force the removal of the sump as this may damage the oil splash plate.

Loosen the oil pump bolts by a few turns (the tip of your finger should pass between the bolt head and the oil pump casing) using 10 mm and 13 mm open-jawed spanners and while tilting the sump towards the front of the vehicle.

REFITTING

I - REFITTING PREPARATION OPERATION

- ☐ parts always to be replaced: engine oil sump seal.
- ☐ parts always to be replaced: Front sub-frame bolt.

WARNING

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

K9K

- ❑ Clean the cylinder block joint face using **SUPER CLEANING AGENT FOR JOINT FACES** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

WARNING

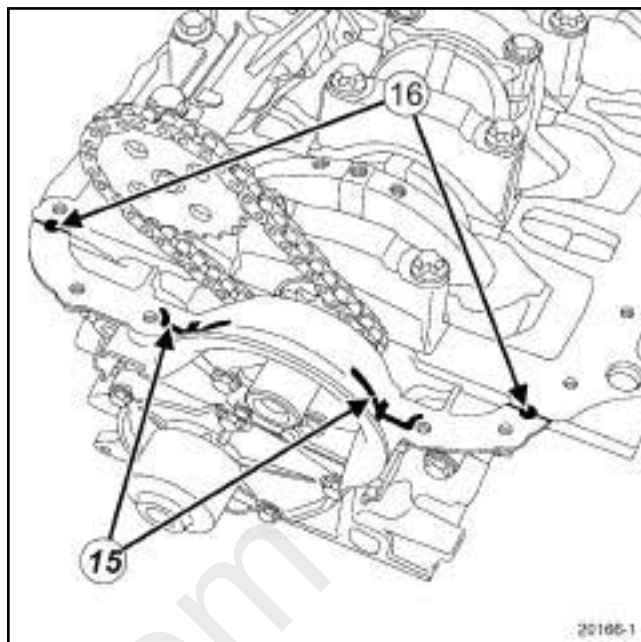
To ensure proper sealing, the gasket surfaces must be clean, dry and not greasy (avoid any finger marks).

- ❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease:

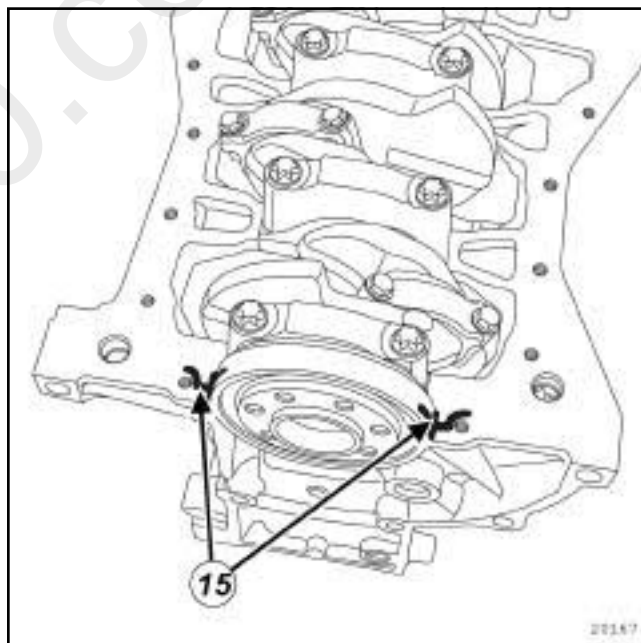
- the sump joint face if it is to be reused,
- the cylinder block gasket face.

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.).



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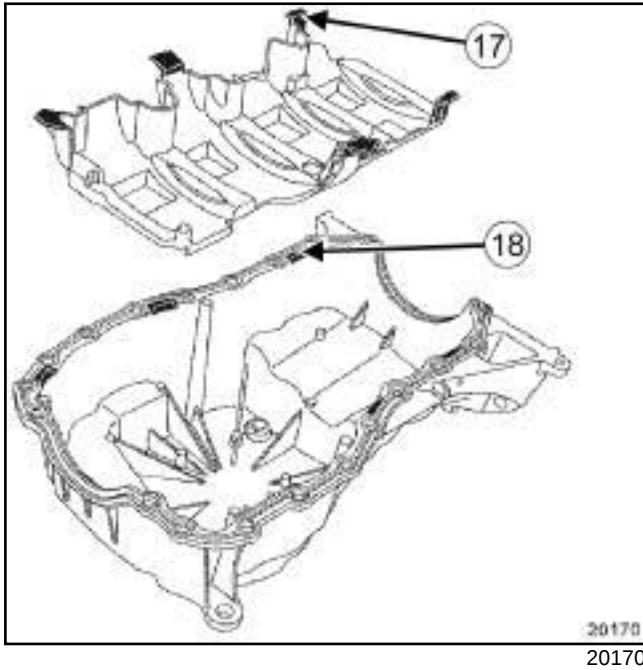
- ❑ Apply:

- four beads (15) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm**,
- two drops (16) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm** at the intersection between the cylinder block and the crankshaft closure panel.

Lower cover: Removal - Refitting

K9K

II - REFITTING OPERATION



Note:

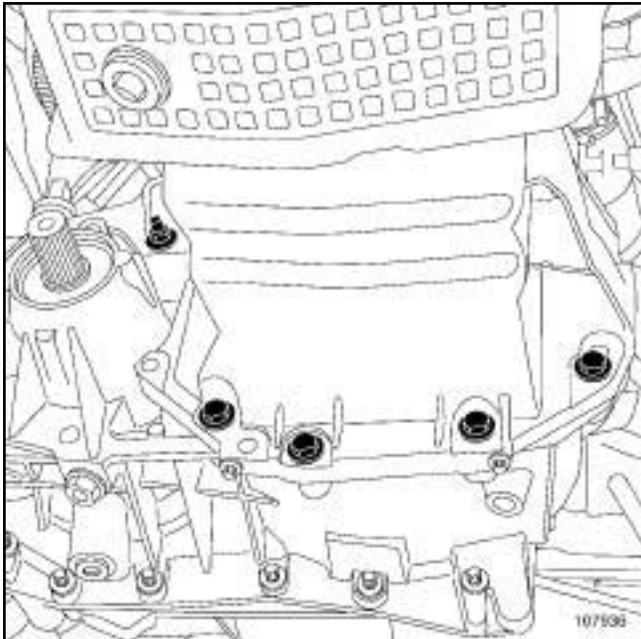
When refitting the sump, ensure that:

- the oil splash plate tabs (**17**) are positioned correctly in the slots (**18**) ,
- the coupling faces of the sump and cylinder block are correctly aligned, to prevent the clutch housing being deformed when fitting the gear-box.

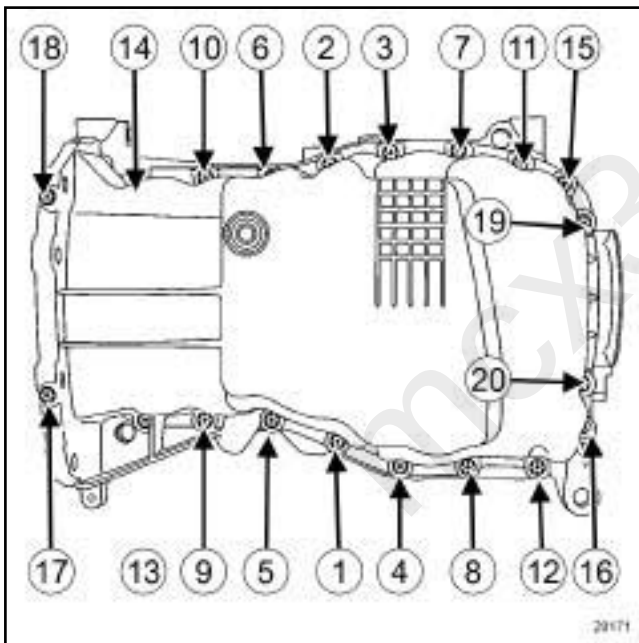
Refit the oil splash plate.

Lower cover: Removal - Refitting

K9K



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- ☐ Refit the oil sump fitted with a new seal.

Note:

If the oil pump was loosened beforehand in order to extract the sump, position the sump in order to slide the oil pump strainer into the oil splash plate of the sump.

Position a component jack to support the sump.

Lean the sump towards the front of the vehicle in order to access the oil pump bolts.

Torque tighten the **oil pump bolts (25 N.m)** using the small torque wrench **77 11 226 888**.

Note:

Before pressing the sump on the cylinder block, check that the sump seal is still in place and that it has not come out of the grooves on the sides.

- ☐ Tighten until contact:

- the sump bolts on the cylinder block,
- the sump bolts on the gearbox.

- ☐ Torque tighten:

- in order the **sump bolts on the cylinder block (14 N.m)**,
- the **sump bolts on the gearbox (44 N.m)**.

AIR CONDITIONING

- ☐ Refit the sump bolt on the multifunction support.
- ☐ Torque tighten the **sump bolts on the multifunction support (25 N.m)**.

STANDARD HEATING RECIRCULATION

- ☐ Refit the power-assisted steering pump support on the sump.
- ☐ Torque tighten the **power assisted steering pump support bolt on the sump (25 N.m)**.

III - FINAL OPERATION

- ☐ Fit the front axle subframe.
- ☐ Refit the brackets.
- ☐ Torque tighten the **bracket bolts (62 N.m)**.

Lower cover: Removal - Refitting

K9K

- ☐ One by one, remove the threaded rods of the (**Tav. 1747**) and replace them in turn with new front axle subframe bolts.
- ☐ Refit:
 - the relay bearing bolts,
 - the right-hand driveshaft flange bolt(s) on the relay bearing.
- ☐ Tighten to torque and in order:
 - the **relay bearing bolts (44 N.m)**,
 - the **right-hand driveshaft flange bolt(s) on the relay bearing (21 N.m)**.
- ☐ Refit the front axle subframe tie-rod upper bolts.
- ☐ Torque tighten the **front axle subframe tie-rod upper bolts (21 N.m)**.
- ☐ Refit the cooling pipe support bolt on the sump.
- ☐ Refit the power-assisted steering low pressure pipe bolt on the front axle subframe.
- ☐ Torque tighten the **power-assisted steering low pressure pipe bolt on the front axle subframe (25 N.m)**.
- ☐ Refit the catalytic converter upstream stay (see **19B, Exhaust, Catalytic converter: Removal - Refitting**, page **19B-10**).
- ☐ Refit the steering box bolts on the front axle subframe (see **Steering box: Removal - Refitting**) (36A, Steering assembly).
- ☐ Refit:
 - the steering box heat shield,
 - the lower arm ball joints (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components),
 - the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page **19D-8**).
- ☐ Refit the front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55, 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**).

Lower cover: Removal - Refitting

K4M

Special tooling required

Tav. 1747	Threaded rods for carrying out subframe operations.
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Tightening torques

sump bolts on the cylinder block	14 N.m
sump bolts on the gear-box	44 N.m
sump bolt on the multi-function support	25 N.m
bracket bolts	62 N.m
front axle subframe bolts	110 N.m
relay bearing bolts	44 N.m
right-hand driveshaft flange bolt(s) on the relay bearing	21 N.m
front axle subframe tie-rod upper bolts	21 N.m
power-assisted steering low pressure pipe bolt on the front axle subframe	21 N.m
steering box bolts on the front axle subframe	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 front bumper (see **Front bumper assembly: Exploded view**) and (see **Exterior body front trim assembly: Exploded view**) (55A, Exterior protection).
- ☐ Remove:
 - the engine undertray bolts,
 - the engine undertray.
- ☐ Drain the engine oil (see **10A, Engine and cylinder block assembly, Engine oil: Draining - Refilling**, page **10A-32**).

☐ Remove:

- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel arch side liners,
- the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page **19D-8**).

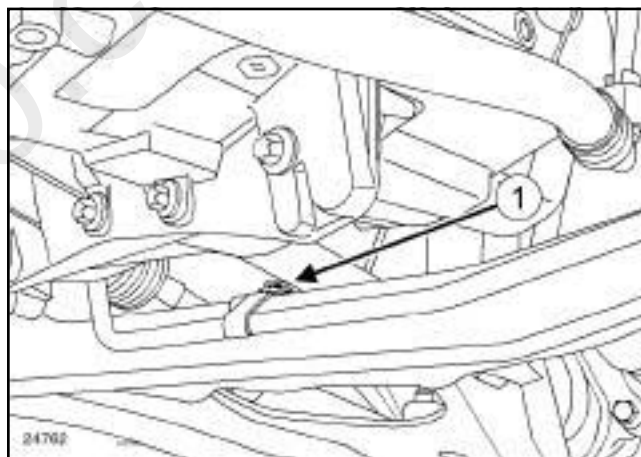
- ☐ Extract the lower arm ball joints from the stub axle carrier (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components).

- ☐ Unclip the downstream oxygen sensor wiring on the heat shield on the steering box.

- ☐ Remove (see **Steering box: Removal - Refitting**) (36A, Steering assembly):

- the heat shield bolts on the steering box,
- the steering box heat shield,
- the steering box bolts on the front axle subframe.

- ☐ Attach the steering rack to the body.

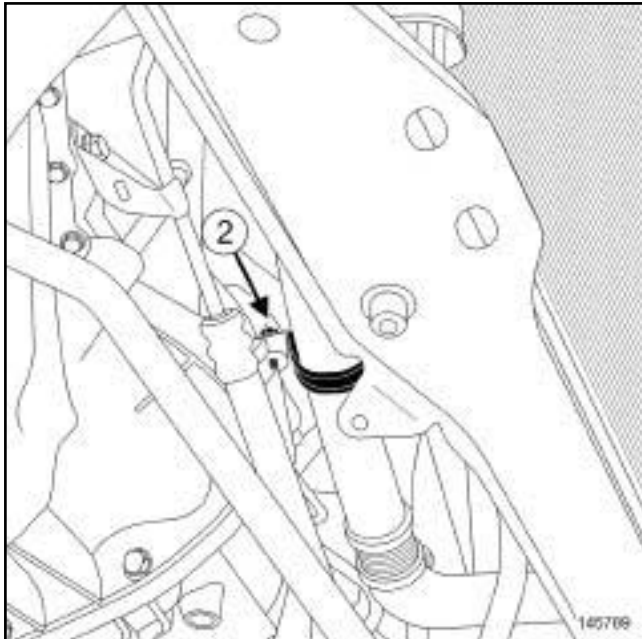


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- ☐ Remove the power-assisted steering low pressure pipe bolt (1) on the front axle subframe.

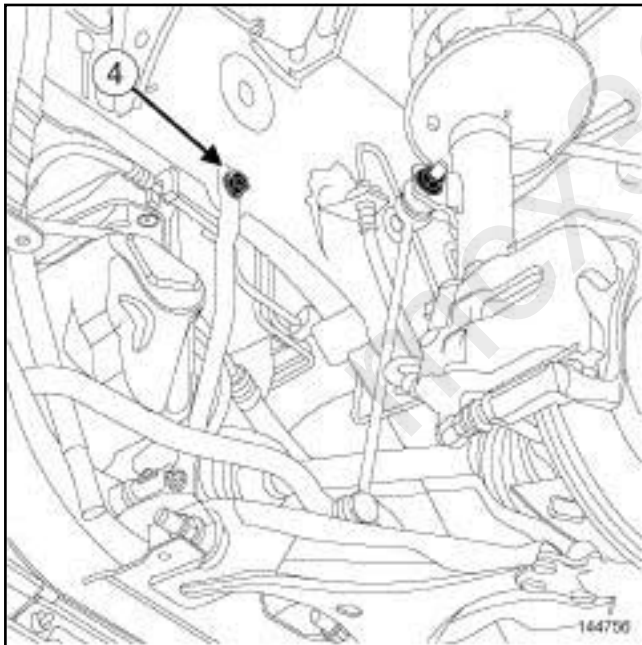
Lower cover: Removal - Refitting

K4M



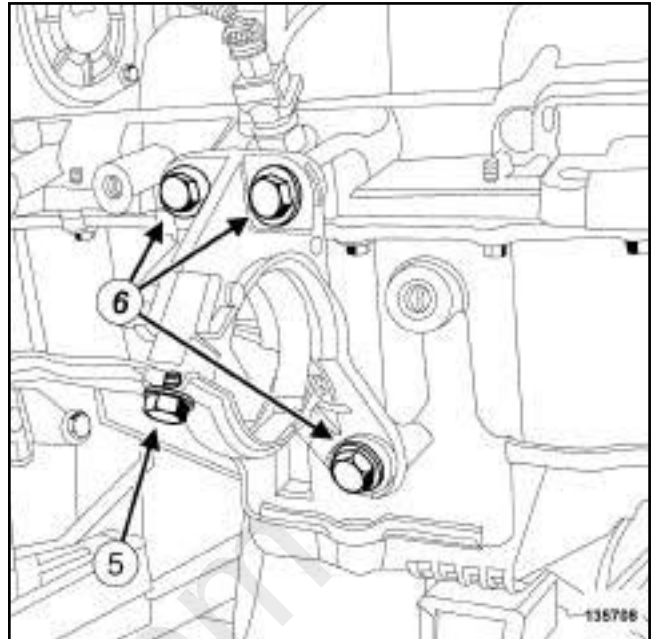
145789

- ❑ Remove the cooling pipe support bolt (2) on the sump.



144756

- ❑ Remove the front axle subframe tie-rod upper bolts (4).

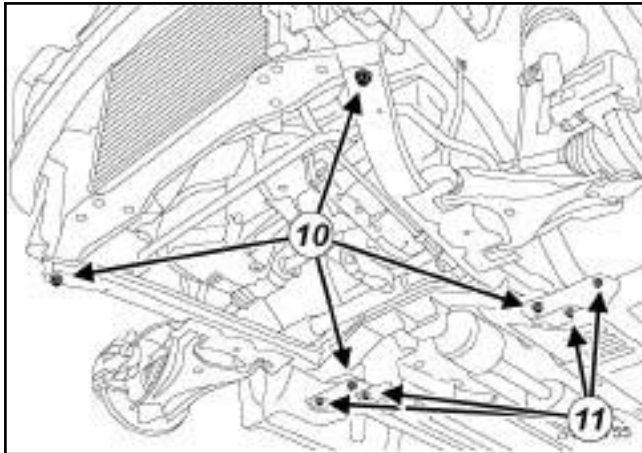


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- ❑ Remove:
 - the right-hand driveshaft flange bolt (5) on the relay bearing,
 - the bolts (6) from the relay bearing,
 - the relay bearing.

Lower cover: Removal - Refitting

K4M

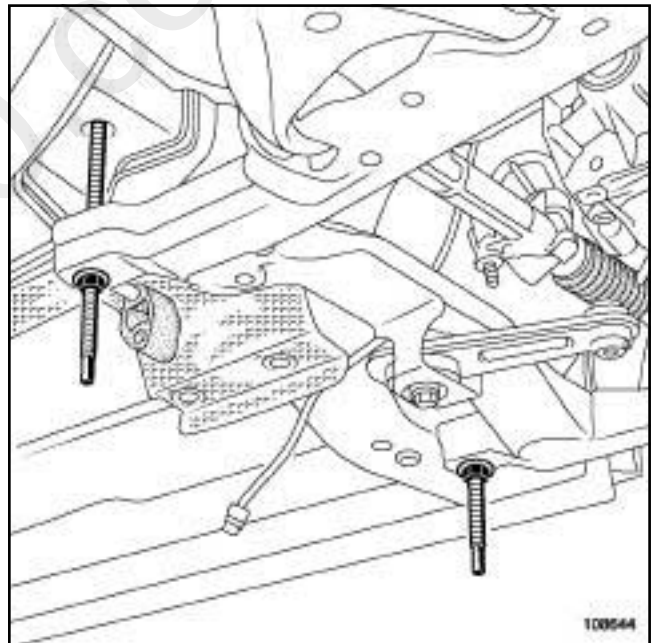
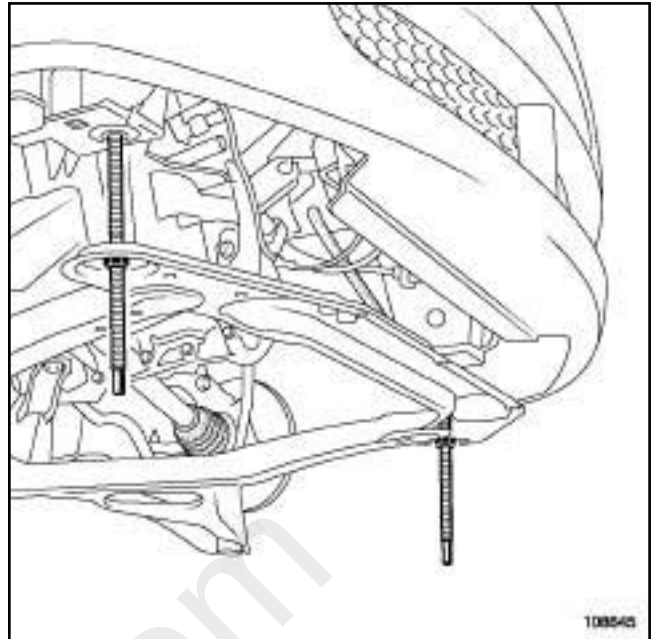


❑ Remove:

- the bracket bolts (11) ,
- one by one, the front axle subframe bolts (10) and replace them in turn with the threaded rods of the (Tav. 1747).

Note:

Make sure the threaded rod of the (Tav. 1747) is sufficiently screwed into the threaded hole and that the nut of the tool is correctly resting on the front axle subframe.

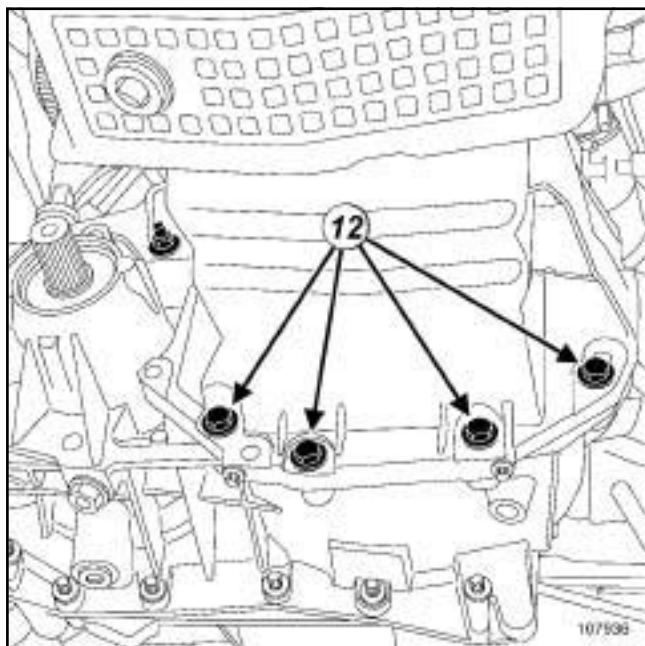


- ❑ Lower the front axle subframe by at least **120 mm**, gradually loosening the nuts of the (Tav. 1747).

Lower cover: Removal - Refitting

K4M

II - REMOVAL OPERATION



❑ Remove:

- the sump bolt from the multifunction support,
- the engine-gearbox coupling bolts (12) ,
- the sump bolts on the cylinder block,
- the sump,
- the oil splash plate.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ parts always to be replaced: engine oil sump seal.
- ❑ parts always to be replaced: Front sub-frame bolt.

WARNING

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

- ❑ Clean the cylinder block joint face using **SUPER CLEANING AGENT FOR JOINT FACES** (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).

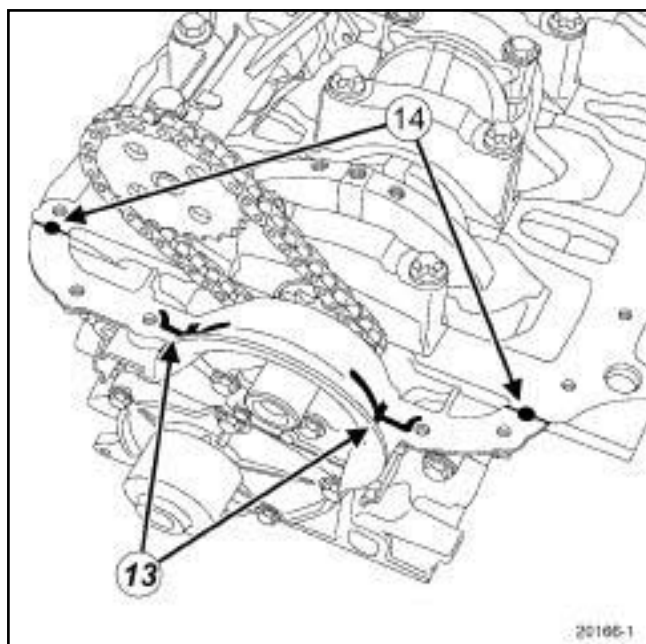
- ❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to degrease:

- the sump joint face if it is to be reused,
- the cylinder block gasket face.

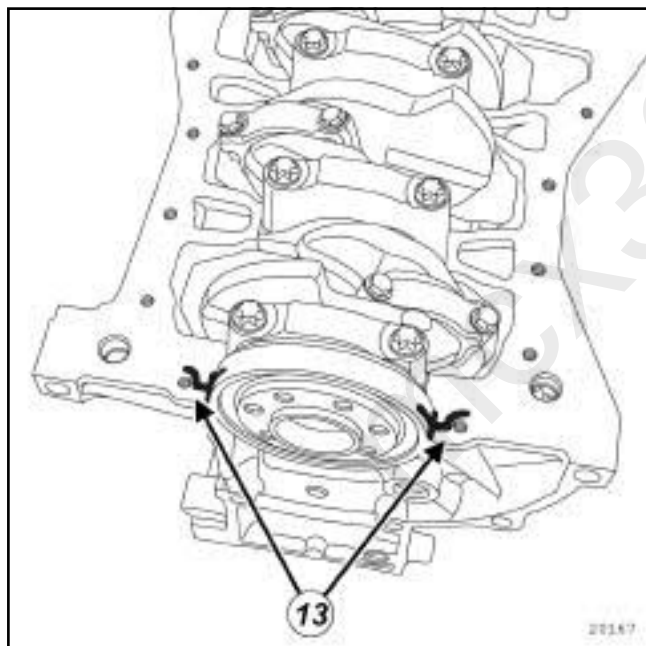
WARNING

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.).

K4M



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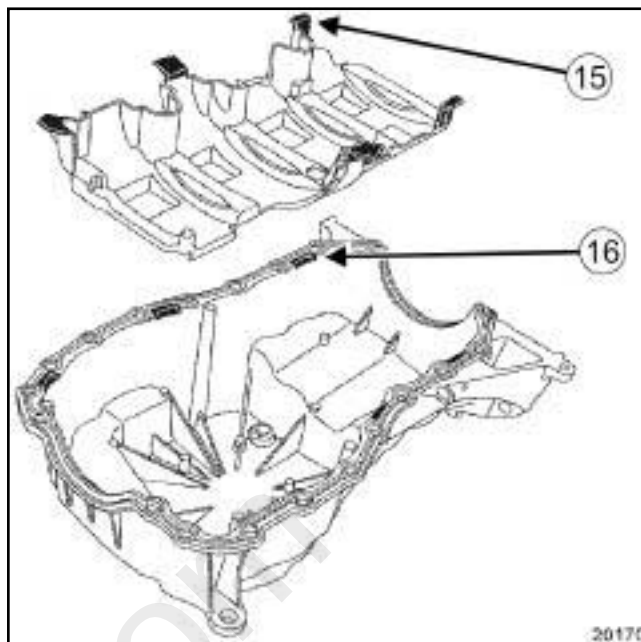


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□ Apply:

- four beads (13) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm**,
- two drops (14) of **SILICONE ADHESIVE SEALANT** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) with a diameter of **5 mm** at the intersection between the cylinder block and the crankshaft closure panel.

II - REFITTING OPERATION



20170



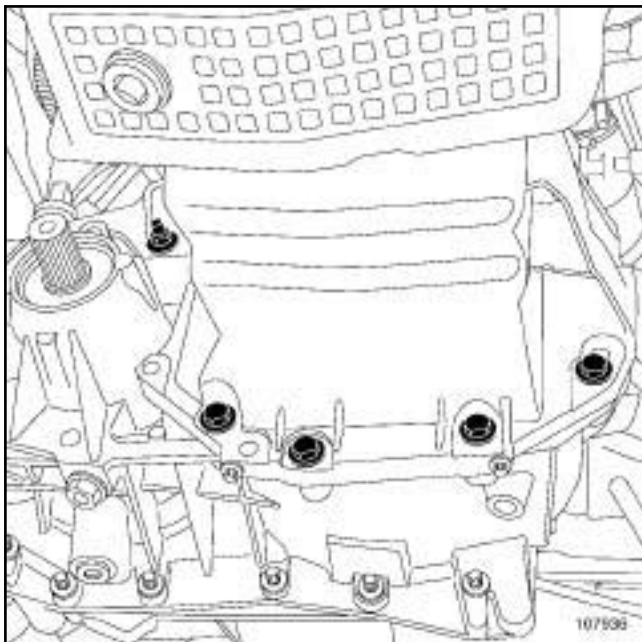
Note:

When removing the sump, ensure that:

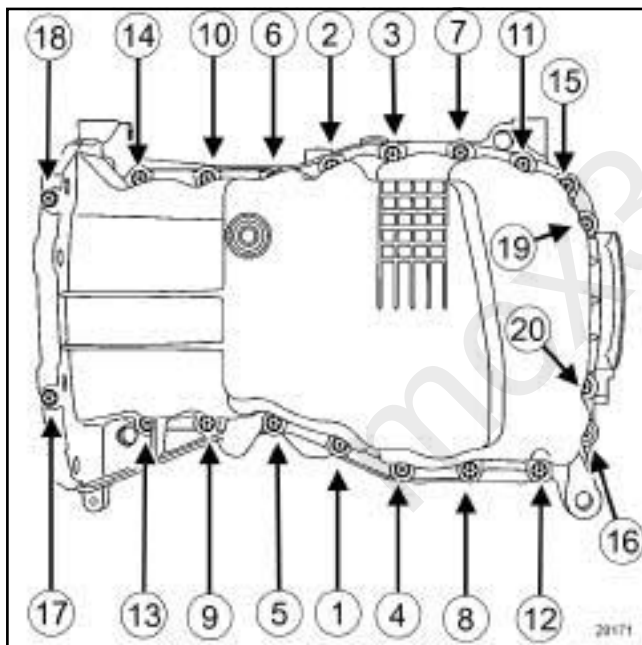
- the oil splash plate tabs (15) are positioned correctly in the slots (16) ,
- the coupling faces of the sump and cylinder block are correctly aligned, to prevent the clutch housing being deformed when fitting the gear-box.

Refit the oil splash plate.

K4M



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20171

- ☐ Refit the oil sump fitted with a new seal.
- ☐ Tighten until contact:
 - the sump bolts on the cylinder block,
 - the bolts from the sump on the gearbox,
 - the sump bolts from the multifunction support.
- ☐ Torque tighten:
 - in order the **sump bolts on the cylinder block (14 N.m)**,
 - the **sump bolts on the gearbox (44 N.m)**,

- the **sump bolt on the multifunction support (25 N.m)**.

III - FINAL OPERATION

- ☐ Fit the front axle subframe.
- ☐ Refit the brackets.
- ☐ Torque tighten the **bracket bolts (62 N.m)**.
- ☐ One by one, remove the threaded rods of the (**Tav. 1747**) and replace them in turn with new front axle subframe bolts.

K4M

- ☐ Torque tighten the **front axle subframe bolts (110 N.m)**.

- ☐ Refit:

- the relay bearing bolts,
- the right-hand driveshaft flange bolt(s) on the relay bearing.

- ☐ Tighten to torque and in order:

- the **relay bearing bolts (44 N.m)**,
- the **right-hand driveshaft flange bolt(s) on the relay bearing (21 N.m)**.

- ☐ Refit the front axle subframe tie-rod upper bolts.

- ☐ Torque tighten the **front axle subframe tie-rod upper bolts (21 N.m)**.

- ☐ Refit the cooling pipe support bolt on the sump.

- ☐ Refit the power-assisted steering low pressure pipe bolt on the front axle subframe.

- ☐ Torque tighten the **power-assisted steering low pressure pipe bolt on the front axle subframe (21 N.m)**.

- ☐ Refit the steering box bolts on the front axle subframe.

- ☐ Tighten to torque the **steering box bolts on the front axle subframe (105 N.m)**.

- ☐ Refit:

- the steering box heat shield,
- the lower arm ball joints (see **Front driveshaft lower arm: Removal - Refitting**) (31A, Front axle components),
- the lower engine tie-bar (see **19D, Engine mounting, Lower engine tie-bar: Removal - Refitting**, page 19D-8) .