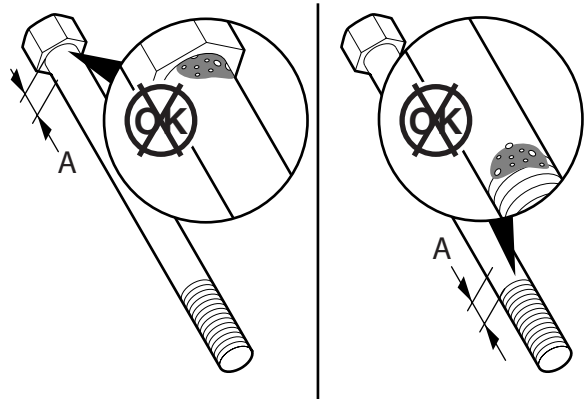


TECHNICAL DATA	0
DIAGNOSTICS	1
CE ENGINE	2
CE-ENGINE COOLING SYSTEM	3
CE-ENGINE LUBRICATION SYSTEM	4
PE ENGINE	5
PE-ENGINE COOLING SYSTEM	6
PE-ENGINE LUBRICATION SYSTEM	7
XE ENGINE	8
XE-ENGINE COOLING SYSTEM	9
XE-ENGINE LUBRICATION SYSTEM	10



Length of the area under the bolt head and area above the start of the screw thread where corrosion and pitting may not occur (A)

3.2 mm



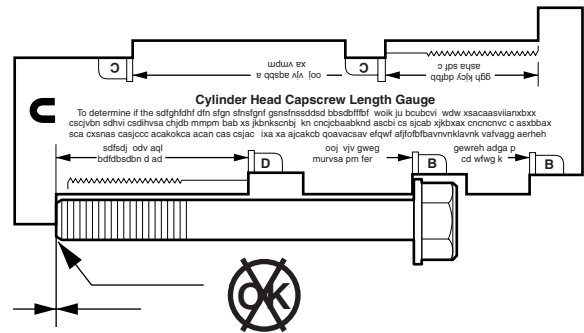
M201250

Maximum free length of the short cylinder head bolt (nominal 130 mm)

132.1 mm

Maximum free length of the long cylinder head bolt (nominal 150 mm)

152.1 mm



M201252

Valve clearance

Inspection dimension, cold valve clearance

Inlet 0.15 - 0.40 mm
 Exhaust 0.40 - 0.75 mm

Setting dimension, cold valve clearance

Inlet 0.25 mm
 Exhaust 0.50 mm

Gear backlash

Crankshaft gear - camshaft gear 0.076 - 0.28 mm
 Oil pump gear - idler gear 0.250 - 0.30 mm

Axial play

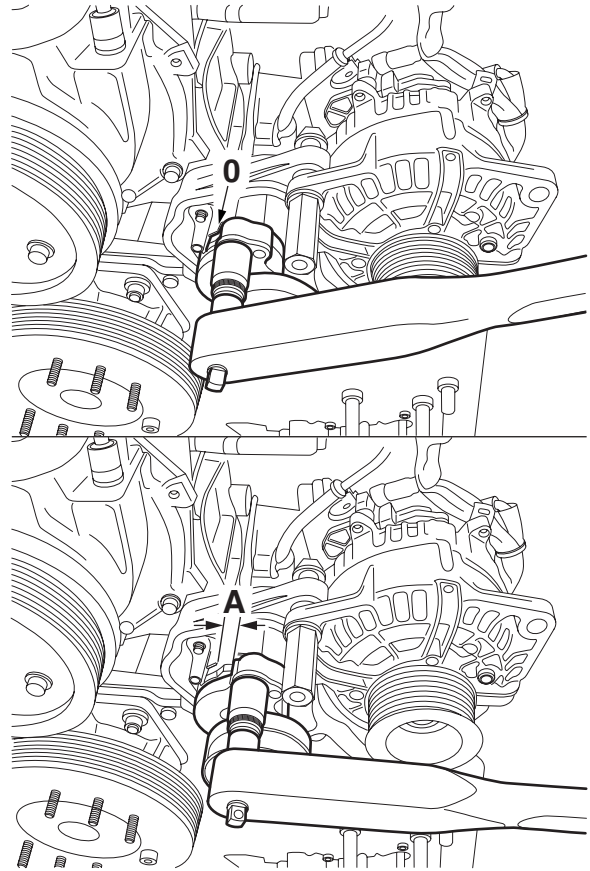
Crankshaft axial play 0.267 ± 0.165 mm
 Camshaft axial play 0.230 ± 0.130 mm

Oil sump pressure

New engine 60 - 80 l/min.
 Worn engine 180 l/min.

Automatic poly-V-belt tensioner

Torsional moment
from rest position (0)
to 17 mm torsion (A) 19 - 37 Nm



M201274

Cylinder liner

Height above cylinder block 0.02 - 0.10 mm

Cylinder head

Minimum height after overhaul 119.50 mm
Test pressure using air (hot) 1.5 bar

Valve clearance

Valve clearance (cold/hot)
inlet 0.50 mm
exhaust 0.50 mm

Axial play

Crankshaft axial play 0.06 - 0.32 mm
Camshaft axial play 0.10 - 0.55 mm
Idler gear axial play 0.05 - 0.25 mm

4.19 REMOVAL AND INSTALLATION, VIBRATION DAMPER

Removing the vibration damper

1. Remove the poly-V-belt.
2. Remove the attachment nuts from the viscous fan clutch. Place the viscous fan clutch and the fan in the wind tunnel.
3. Remove the attachment bolts from the vibration damper.

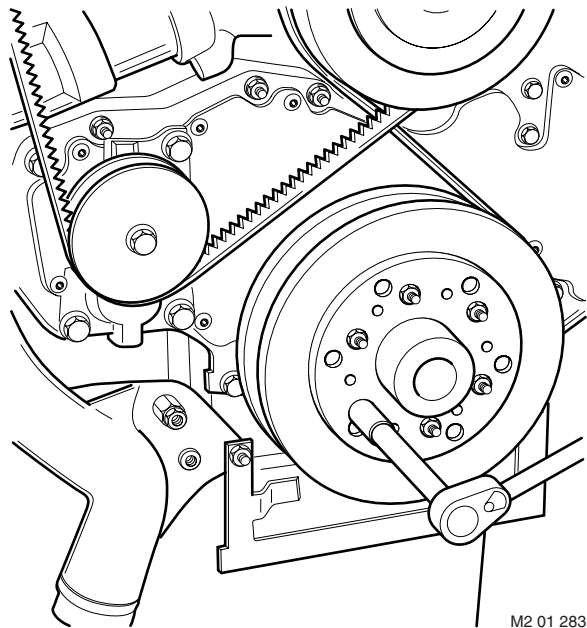
Note:

Using the special tool (DAF no. 1453155), the vibration damper can be removed in one movement along with the vibration damper hub. In that case, remove the 3 bolts and thrust washer from the vibration damper hub and fit the special tool (DAF no. 1453155) with the protruding part facing the engine.

4. Fit the special tool (DAF no. 1453155) with the protruding part facing the radiator; use the 6 attachment nuts of the fan hub.
5. Push the vibration damper off the hub by tightening the nuts evenly.

Installing the vibration damper

1. Check the vibration damper for external damage and silicone liquid leaks. In the event of damage or leaks, the vibration damper should be replaced.
2. Install the vibration damper. Tighten the attachment bolts to the specified torque. See "Technical data".
3. Fit the poly-V-belt.
4. Fit the viscous fan clutch with the fan.



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4.20 REMOVAL AND INSTALLATION, VIBRATION DAMPER HUB

Removing the vibration damper hub

1. Remove the vibration damper.
2. Remove the attachment bolts from the vibration damper hub and remove the thrust washer.

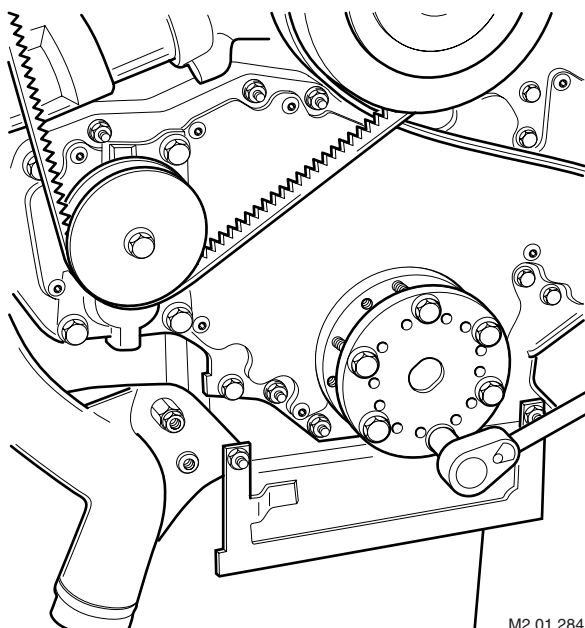


In most cases the vibration damper hub will suddenly break off from the crankshaft during removal. Avoid personal injury and damage to the hub.

3. Remove the vibration damper hub using the special tool (DAF no. 1453155).

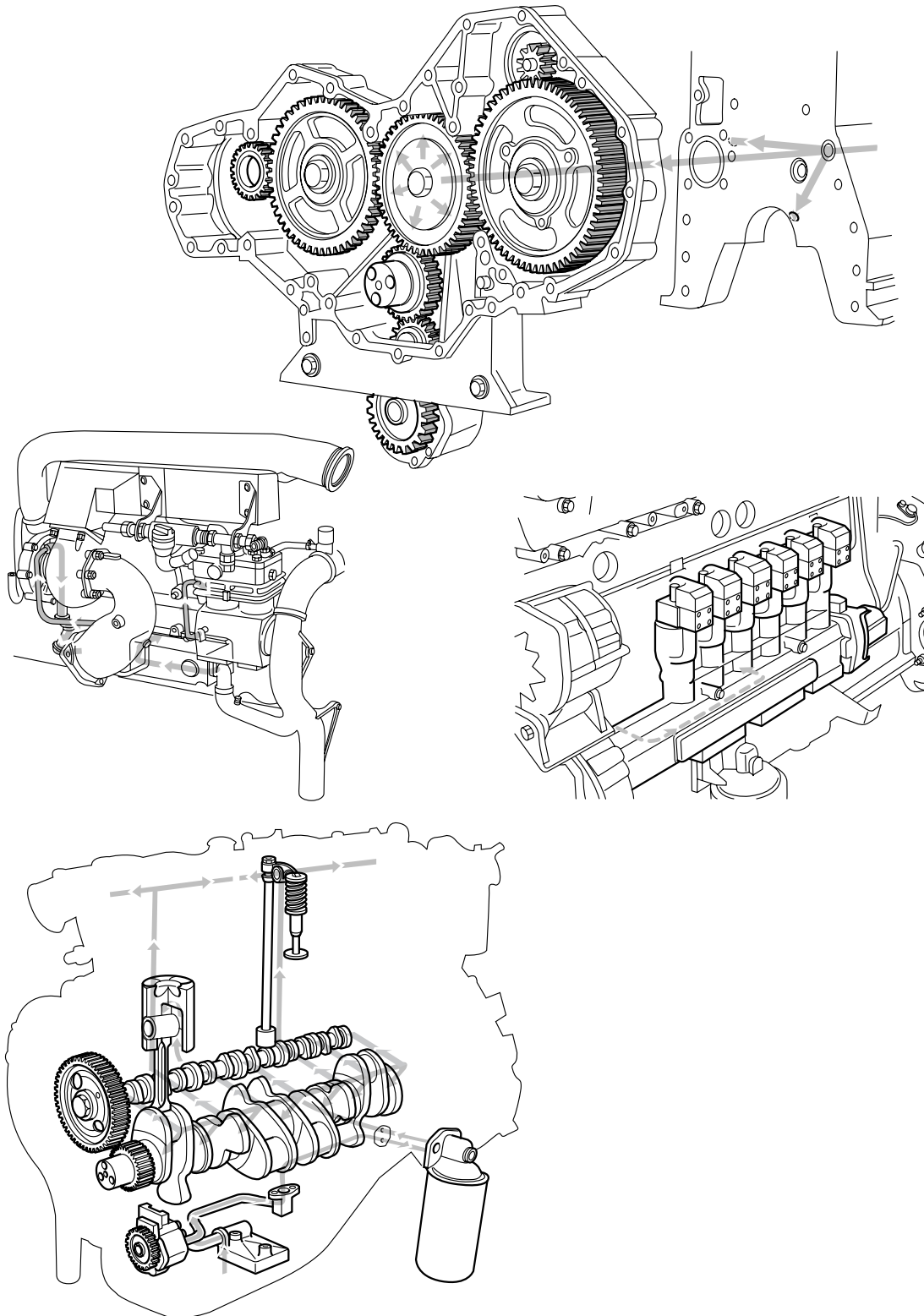
Installing the vibration damper hub

1. Fit the vibration damper hub onto the crankshaft.
2. Fit the thrust piece. Tighten the attachment bolts to the specified torque. See "Technical data".
3. Install the vibration damper. Fit the thrust piece. Tighten the attachment bolts to the specified torque. See "Technical data".



2. GENERAL

2.1 SYSTEM DESCRIPTION, LUBRICATION SYSTEM



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3. INSPECTION AND ADJUSTMENT

3.1 CHECKING ENGINE OIL CONSUMPTION

Engine oil consumption relates to the engine oil used during combustion in the engine. Since engine oil consumption is affected by driving style and the use to which the vehicle is put, it is also related to average fuel consumption. See "Technical data" for the maximum permissible engine oil consumption.

Test conditions

1. An engine oil consumption test is only meaningful after the engine has been run in (approx. 25,000 km).
2. Check the engine carefully for engine oil leakage before carrying out an engine oil consumption test. First repair any leaks.
3. Check the average fuel consumption and engine oil consumption as accurately as possible.
4. Only check the engine oil level when the engine is at operating temperature and only when the engine has been turned off for five minutes.
5. Make sure the vehicle is horizontal before checking the engine oil level.

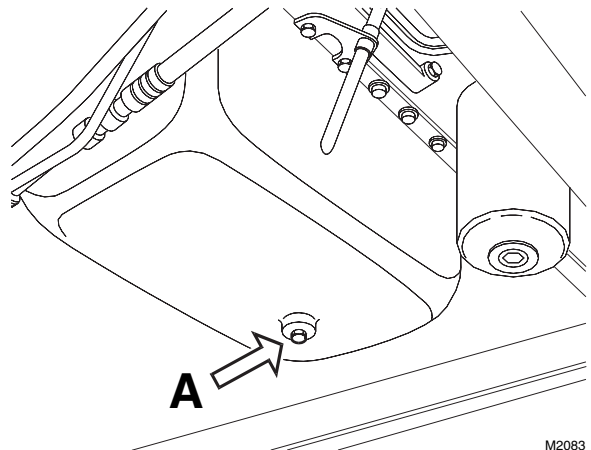
6. DRAINING AND FILLING

6.1 DRAINING AND FILLING LUBRICATING OIL

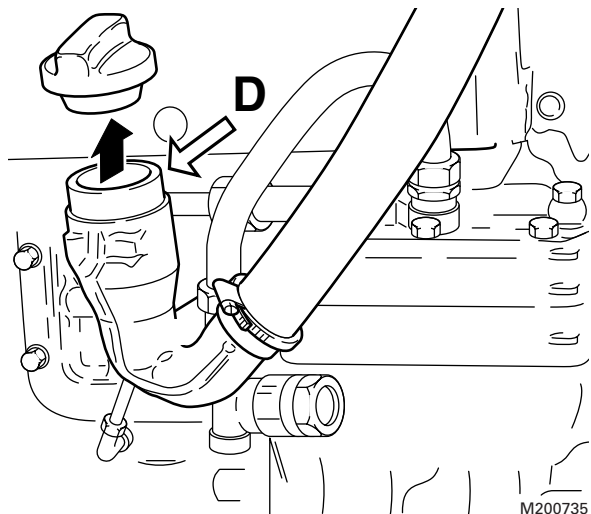


To prevent skin injury, avoid unnecessary contact with the drained lubricating oil.

1. Place the vehicle on a level and horizontal surface.
2. Drain the lubricating oil using the drain plug in the oil sump.
3. Replace the drain plug sealing ring and tighten the drain plug to the specified torque. See "Technical data".
4. Fill the engine through the lubricating oil filler pipe (D) with the specified quantity of lubricating oil. See "Technical data".



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3.2 REMOVAL AND INSTALLATION, VALVE COVER



When the engine or parts thereof are opened, dirt may penetrate. This may cause serious damage to the engine. Therefore, the engine should be cleaned thoroughly before any parts are opened.

Removing the valve cover

1. Clean the area around the valve cover.
2. Remove the attachment bolts from the valve cover.
3. Remove the valve cover and the valve cover gasket.

Installing the valve cover

1. Clean the sealing surface of the valve sleeve and the valve cover.
2. Fit the valve cover using a new valve cover gasket.
3. Fit the attachment bolts of the valve cover and tighten them to the specified torque. See the main group "Technical data".

3.3 INSPECTION AND ADJUSTMENT, TIMING GEAR

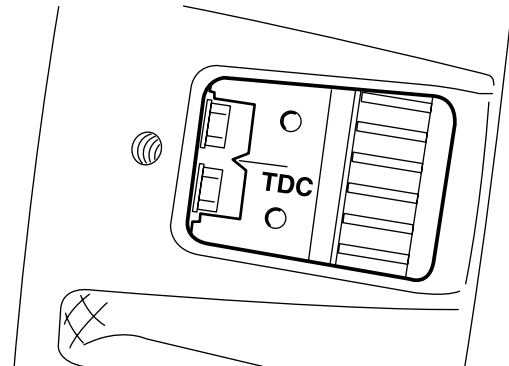
Checking the timing gear

1. Remove the valve cover from cylinders 1-2-3. See "Removal and Installation".
2. Position cylinder 1 at top dead centre (TDC on the flywheel, cylinder 6 in overlap position).
3. Remove the timing gear cover. See "Removal and installation".

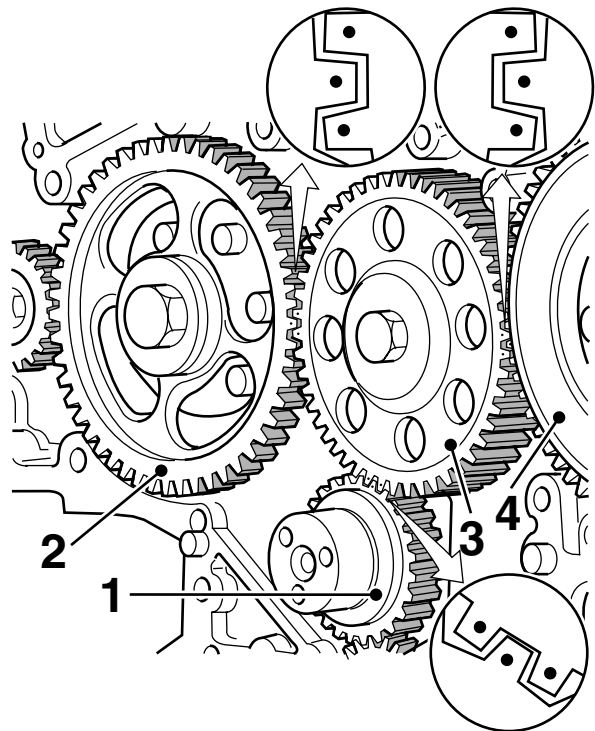
Note:

When the crankshaft (1) or the camshaft (2) of an engine is rotated separately without an idler gear (3), the engine's pistons may touch the valves.

4. Remove the idler gear (3). See "Removal and installation".
5. Now put the idler gear (3) back in such a way that the marks on it line up with the marks on the camshaft gear (2), the crankshaft gear (1) and the pump housing gear (4).
6. If the marks are not in line, the timing gear must be adjusted.
7. Tighten all attachment bolts that have been removed to the specified torque. See "Technical data".



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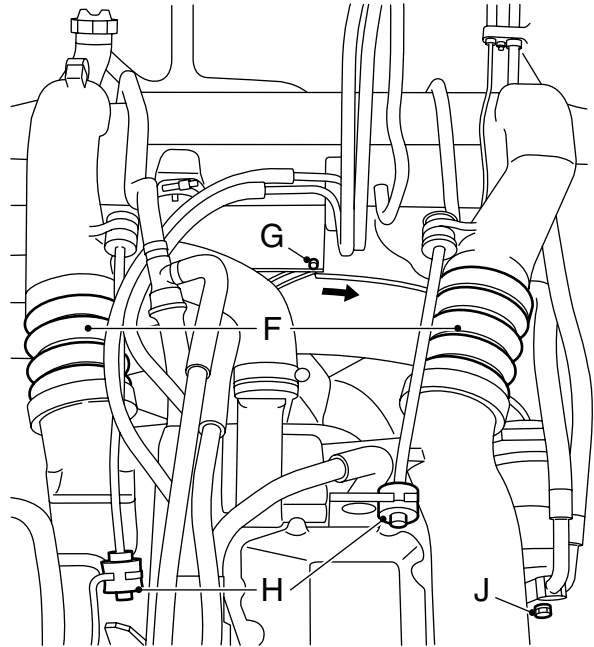


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4.12 REMOVAL AND INSTALLATION, POLY-V-BELT

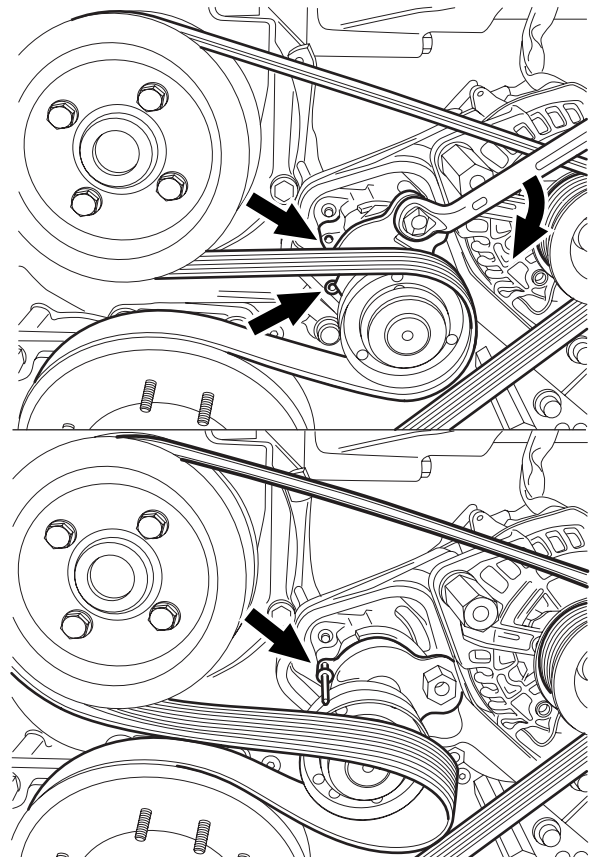
Removing the poly-V-belt

1. Remove the locking screw from the wind tunnel collar (G) and turn the latter towards the radiator.



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2. Move the tensioner against the spring force and lock it with a 4 to 5 mm thick pin (bore).
3. Loosen the connector of the electric fan clutch, if fitted, and remove the wiring from the bracket.
4. Take the poly-V-belt off over the fan.
5. Inspect the automatic tensioner. See "Inspection and adjustment".



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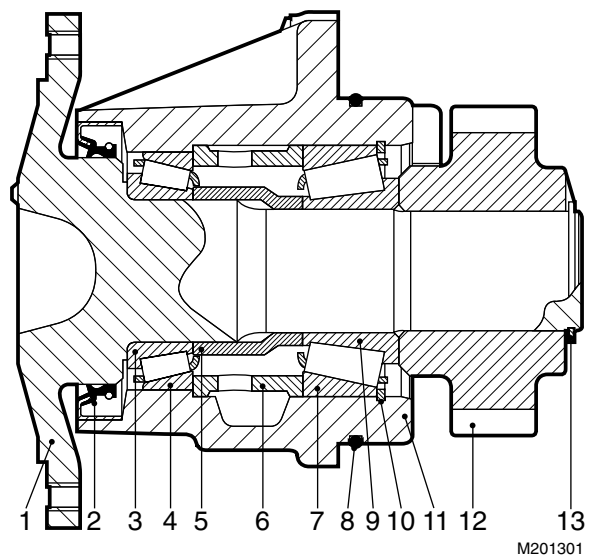
4.20 REMOVAL AND INSTALLATION, FAN DRIVE

Removing the fan drive

1. Remove the attachment nuts from the viscous fan clutch. Place the viscous fan clutch and the fan in the wind tunnel.
2. Remove the poly-V-belt.
3. Remove the fan drive attachment nuts.
4. Remove the fan drive.

Installing the fan drive

1. Fit a new lightly greased O-ring (8) in the groove of the bearing housing (11).
2. Apply engine oil to the bearings in the bearing housing.
3. Fit the fan drive in the timing case. Tighten the attachment nuts crosswise to the specified torque. See "Technical data".
4. Fit the poly-V-belt. Fit the viscous fan clutch with the fan.



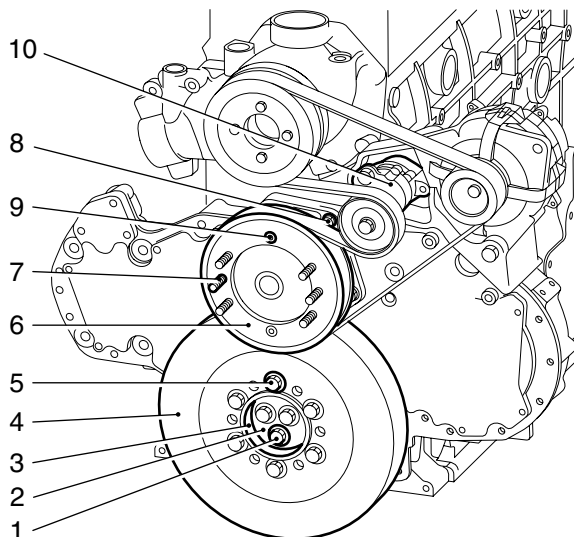
4.21 REMOVAL AND INSTALLATION, VIBRATION DAMPER

Removing the vibration damper

1. Remove the poly-V-belt.
2. Remove the attachment nuts from the viscous fan clutch. Place the viscous fan clutch and the fan in the wind tunnel.
3. Remove the attachment bolts (9) of the fan pulley (6) and remove it.
4. Remove the attachment nuts (8) of the fan drive and remove it.
5. Remove the attachment bolts (5) of the vibration damper (4) and remove it.

Installing the vibration damper

1. Check the vibration damper for external damage and silicone liquid leaks. In the event of damage or leaks, the vibration damper should be replaced.
2. Fit the vibration damper (4). Tighten the attachment bolts (5) to the specified torque. See "Technical data".
3. Fit the fan drive and tighten the attachment nuts (8) to the specified torque. See "Technical data".
4. Fit the fan pulley (6). Tighten the attachment bolts (9) to the specified torque. See "Technical data".
5. Fit the poly-V-belt.
6. Fit the viscous fan clutch with the fan.

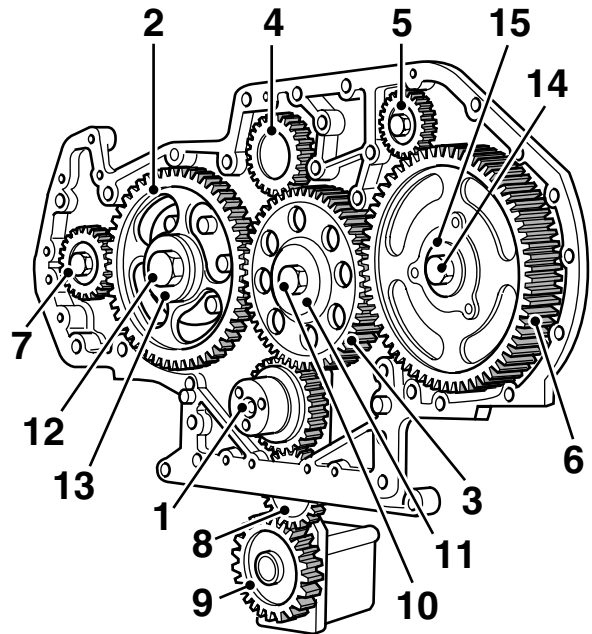


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4.26 REMOVAL AND INSTALLATION, TIMING CASE

Removing the timing case

1. Remove the timing gears.
2. Remove the air compressor.
3. Remove the steering pump.
4. Remove the camshaft attachment bolts and locking plate.

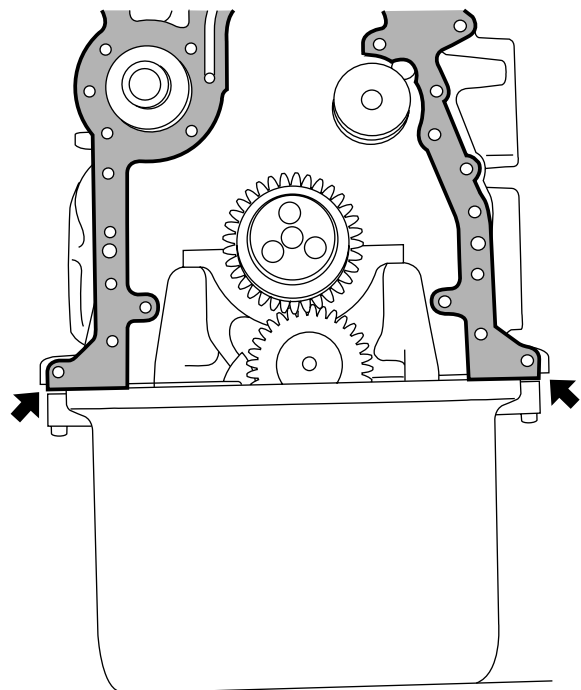


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5. Loosen the oil sump attachment bolts until the oil sump is free from the timing case.
6. Remove the bolts attaching the timing case to the cylinder block, and remove the timing case.

Installing the timing case

1. Remove any remnants of gasket. Clean and inspect the sealing surfaces, dowels and locating holes.
2. To position the gasket, insert three studs and fit the new gasket.
3. Then remove any gasket remnants between the cylinder block and the oil sump.
4. Fit the timing case. Tighten the attachment bolts to the specified torque. See "Technical data".



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