

Replacing the oil pump / front crankshaft seal

Special tools: [999 5433](#) , [999 5455](#)

Note! If oil pressure is low or a fault in the oil pump is suspected: Measure the oil pressure.

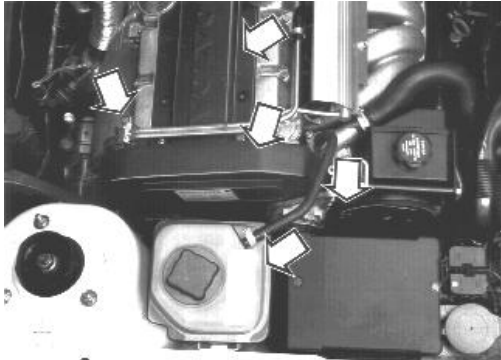
See [Check oil pressure](#) .

[Checking oil pressure](#) applies to the X70.

Removing timing belt

Remove:

- spark plugs cover
- two fuel line clamps
- lift expansion tank and place on the engine
- front timing cover
- auxiliaries belt

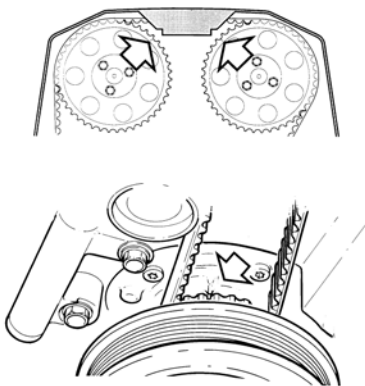


Position camshafts/crankshaft according to marking

Remove right front wheel and slacken off fender liner a little.

Remove vibration damper protective panel.

The camshaft pulleys should rotate until all the markings correspond.



Removing timing belt

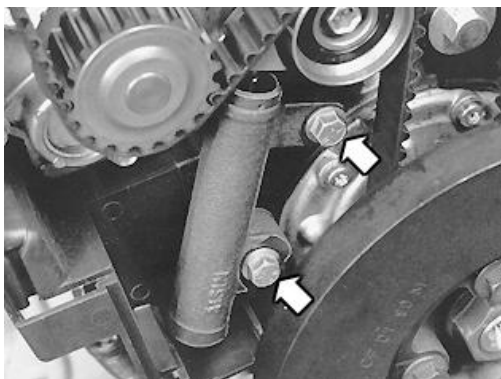
Remove tensioner damping unit upper screw.

Slacken off the lower screw.

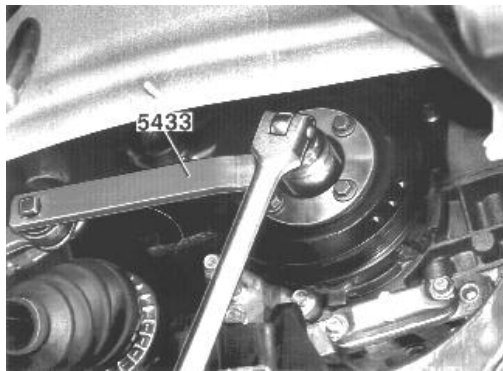
Turn the tensioner damping unit so that the tension pulley comes free.

Remove:

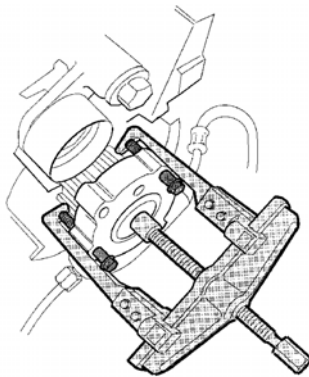
- the lower screw
- tensioner damping unit
- upper timing cover
- timing belt



Remove the vibration damper



Remove the cover plate.
Remove the vibration damper. Use counterhold [999 5433](#) .



Remove the crankshaft belt pulley

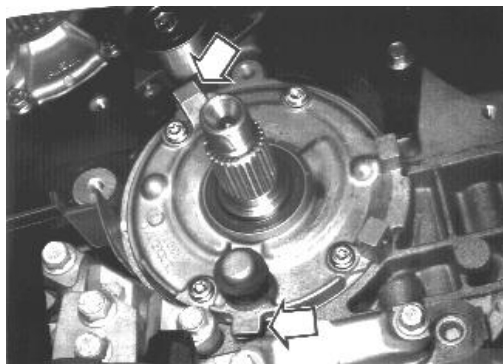
Use a universal puller and two of the vibration damper screws.
Tighten the two screws by hand until they come into contact with the pulley.
Install the puller, so that the claws are on the screws (not on the camshaft pulley).

Caution! Ensure that the tool claws do not damage the pulley teeth.



When replacing the front oil pump seal only

Remove the old seal. Using a groove-cut chisel.
Clean the mating surface.
Install a new seal. Use tool [999 5455](#) . Grease the seal.
Press in the seal using the crankshaft centre nut.



Remove the oil pump

Remove four oil pump screws.
Carefully pry out the oil pump. Use a groove-cut chisel with stop lugs to loosen the oil pump.
Clean the gasket face and the mating surfaces.

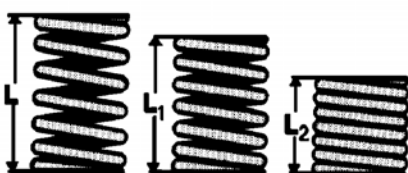
Disassemble the oil pump

Clean and check all components



Check for damage and wear. In particular check the half-moon shaped insert (the surface between the suction and pressure sides). If faulty replace the pump completely. There are separate components in the relief valve.

Test the relief valves springs



Load (N)	Length (mm)
0	82.13
52±4	56.10
85±8	39.90
Relief valve opens:	0.50 MPa
Turbocharged engines:	
0	76.22
59±4	56.10
108±8	39.90
Relief valve opens:	0.60 MPa

Position the pump wheel in the housing. Check the clearance and play



Put the large pump wheel in with the marking upwards.

Put in the small pump wheel.

Check the clearance / play. If there is too much clearance / play replace pump assembly.

Assemble the pump

Caution! Replace the oil pump if the measured clearance between the outer surfaces and the oil pump housing is greater than 0.35 mm and the oil pressure is below 1 bar at an oil temperature of 100°C. Measure play using feeler gauge.

Install the oil pump

Use a new gasket.

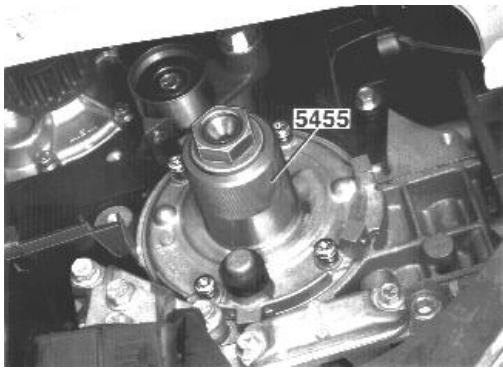
Use tool [999 5455](#) when installing the pump.

Use the screws as guides.

Tighten the oil pump using the crankshaft centre nut.

Tighten the screws crosswise. Tighten to **10 Nm**.

Install the crankshaft belt pulley. Use the centre



nut and a spacer.

Install the timing belt

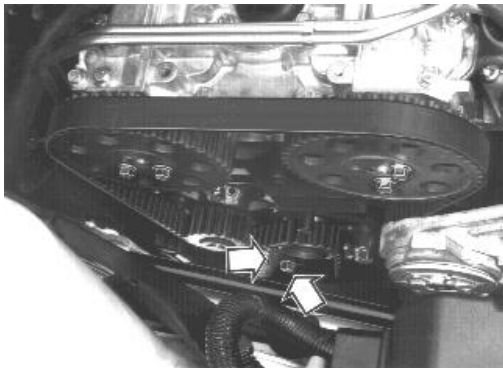
Install the screws for the tensioner and damping unit. Tighten to **25 Nm**.

Place the belt around the crankshaft and right idler pulley.

Place the belt over the camshaft pulley.

Position the belt around the coolant pump.

Press the belt over the tensioner pulley.



Install the vibration damper

Remove the lock pin from the tensioner damping unit.

Install the vibration damper.

Tighten the centre nut. Tighten to **180 Nm**.

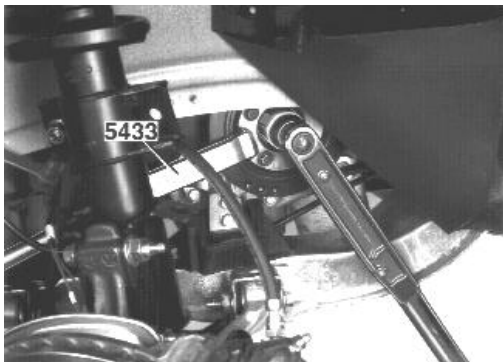
Use counterhold **999 5433**.

Remove the counterhold (**999 5433**). Tighten the screws. Tighten to **25 Nm**. Angle-tighten **30°**.

Install the upper timing cover.

Turn the crankshaft two revolutions. Check that the markings on the crankshaft and camshaft timing gear pulley align.

Install the cover plate over the spark plugs.



Install:

- the splashguard by the vibration damper and timing cover
- the auxiliaries belt
- the two mounting brackets for the fuel lines
- the expansion tank
- the wing liner and wheel.

Test drive the engine.

