

Engine - Mechanical

- A13SM and A15SM engines

Poly-V-belt

torque settings	
alternator	
- adjusting bolt	20 Nm
- bolt	20 Nm

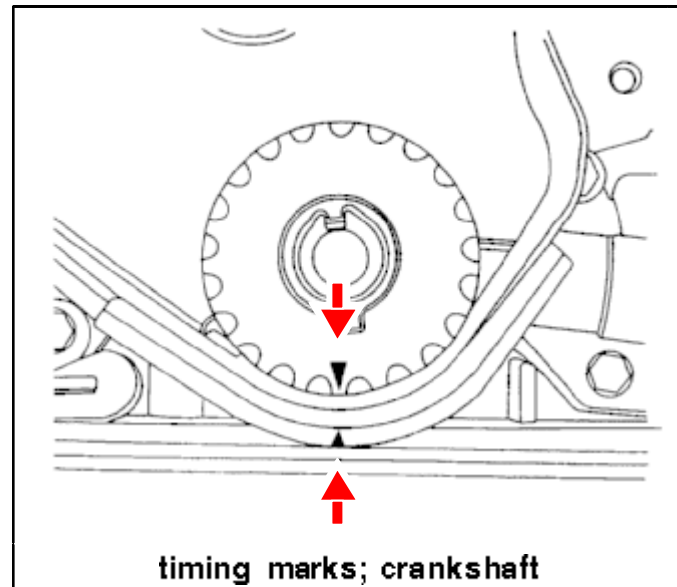
Adjustment

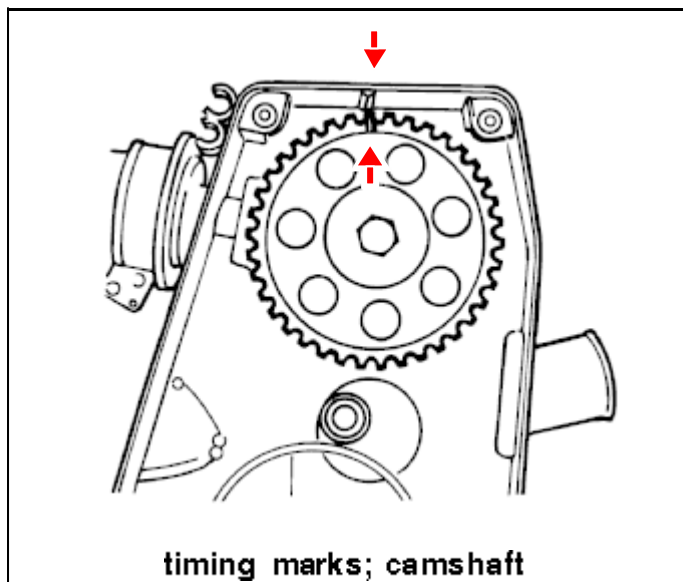
Tension the poly-V-belt by turning the tensioner bolt.

Timing belt

checking / renewing

See the general information about [Timing belts \(Service intervals\)](#).





Removal

Detach / disconnect: the battery earth lead.

Remove:

- the shield; from below the engine
- the air intake hoses
- the air filter housing
- the RH front wheel
- the shield; from the inner wing panel
- the poly-V-belt
- the upper timing cover

Lay aside: the alternator.

Remove: the power steering pump pulley.

Support: the engine.

Detach / disconnect: the RH engine mounting bracket.

Remove:

- the power steering pump
- the crankshaft pulley
- the lower timing cover.

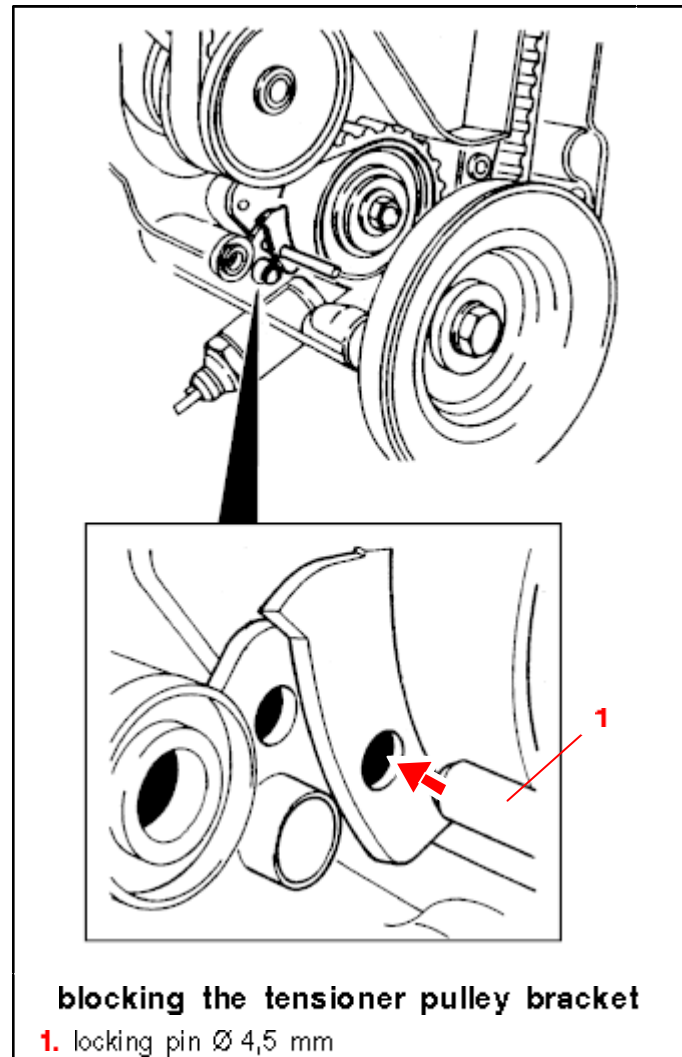
Rotate the crankshaft clockwise until the timing marks are aligned.

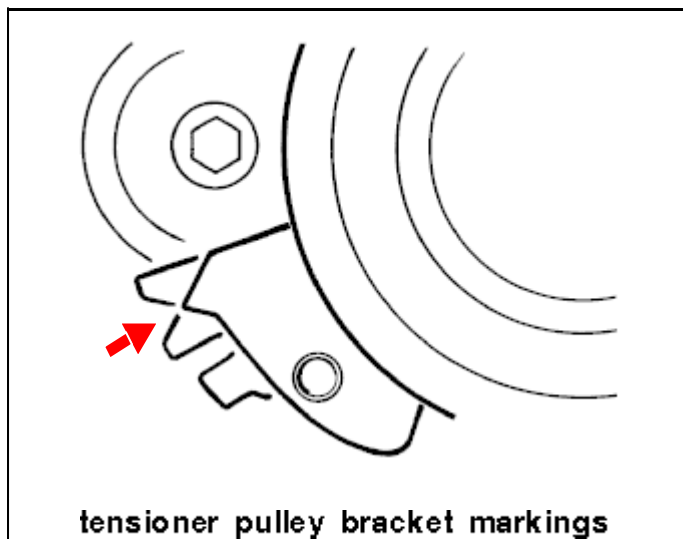
Detension the timing belt:

Detach / disconnect: the water pump.

Remove: the timing belt.

Installation





special tools

tensioner pulley bracket locking pin	Ø 4,5 mm
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torque settings

timing covers	10 Nm
water pump	10 Nm
engine mounting bracket	60 Nm
power steering pump	25 Nm
power steering pump pulley	25 Nm
crankshaft pulley	
– step 1	95 Nm
– step 2	angle turn: 30°
– step 3	angle turn: 15°

Check that the timing marks are aligned.

Fit / apply: the timing belt.

Tension the timing belt:

Turn the water pump clockwise until the locking pin can be inserted.

Connect / tighten: the water pump.

Block the tensioner pulley bracket. See illustration.

Rotate the crankshaft clockwise; 2 turns.

Remove: the tensioner pulley bracket locking pin.

Detach / disconnect: the water pump.

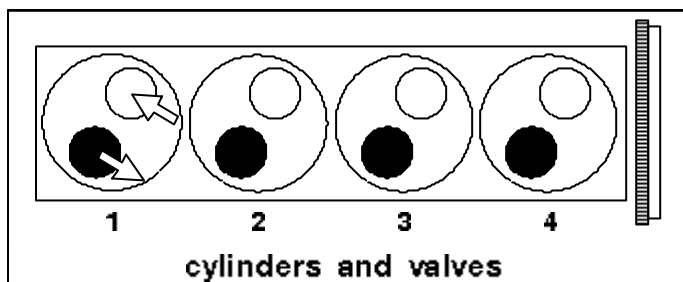
Turn the water pump until the tensioner pulley bracket markings are aligned. See illustration.

Connect / tighten: the water pump.

Check that the timing marks are aligned.

Complete the installation in reverse order of removal.

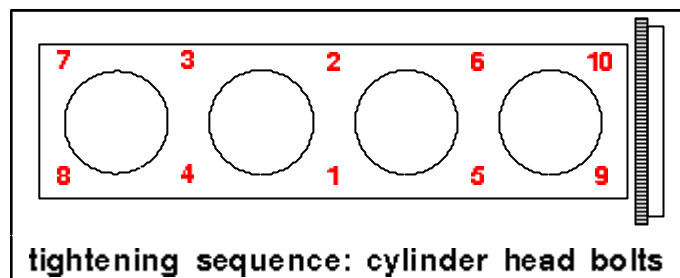
Valves, rocker arms and tappets



technical specifications

firing order	1 - 3 - 4 - 2
valve operation	OHC; rocker arms; hydraulic valve clearance adjusters

Torque settings



cylinder head

cylinder head bolts

- step 1	25 Nm
- step 2	angle turn: 60°
- step 3	angle turn: 60°
- step 4	angle turn: 10°

exhaust manifold 25 Nm

inlet manifold 25 Nm

valve cover 10 Nm

engine block

big end bearing caps

! Use new bolts

- step 1	25 Nm
- step 2	angle turn: 30°
- step 3	angle turn: 15°

main bearing caps	
! Use new bolts	
– step 1	50 Nm
– step 2	angle turn: 45°
– step 3	angle turn: 15°
flywheel	
– step 1	35 Nm
– step 2	angle turn: 30°
– step 3	angle turn: 15°
timing	
timing cover	10 Nm
camshaft gear	45 Nm
timing belt tensioner pulley	20 Nm
crankshaft pulley	
– step 1	95 Nm
– step 2	angle turn: 30°
– step 3	angle turn: 15°
lubrication system	
engine sump	10 Nm
oil drain plug	55 Nm
oil pressure sensor	40 Nm
cooling system	
coolant temperature sensor	20 Nm
thermostat housing	20 Nm
water pump	10 Nm

auxiliary units	
starter motor	43 Nm
alternator	20 Nm
power steering pump	25 Nm
power steering pump pulley	25 Nm
ignition / fuel system	
spark plugs	40 Nm
oxygen sensor	41 Nm
knock sensor	20 Nm

– A16DM engine

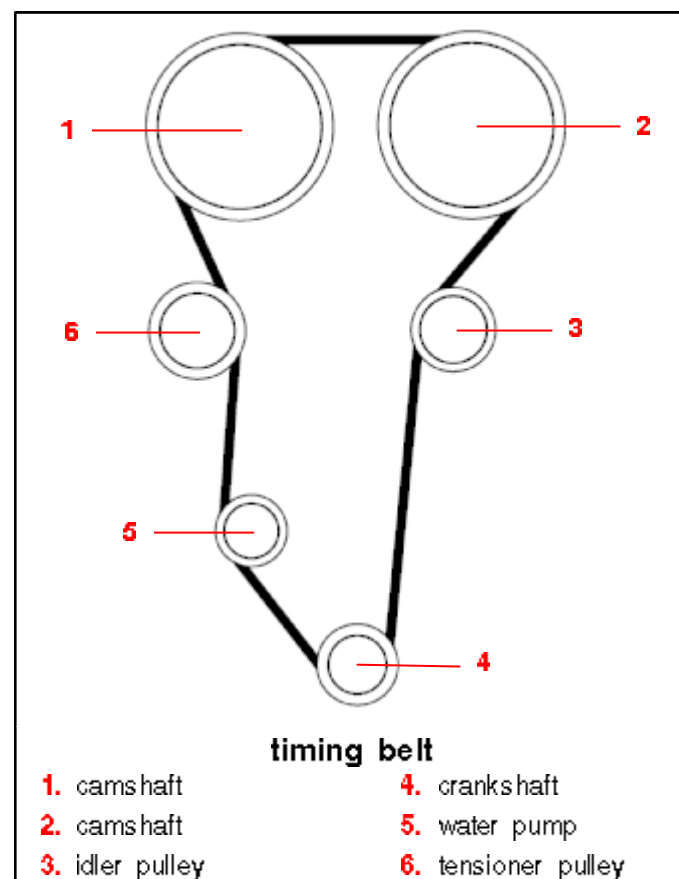
Poly-V-belt

torque settings	
alternator	
– adjusting bolt	20 Nm
– bolt	20 Nm

Adjustment

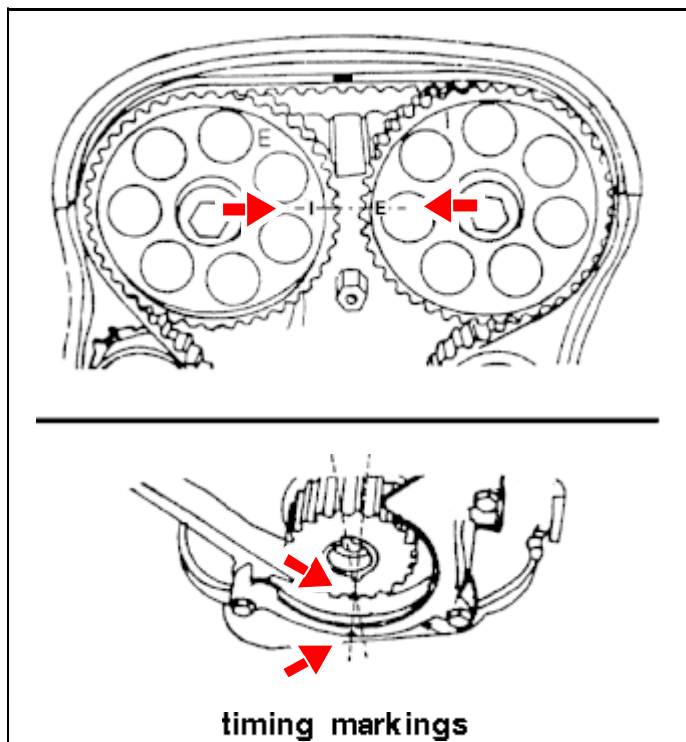
Tension the poly-V-belt by turning the tensioner bolt.

Timing belt



checking / renewing

See the general information about [Timing belts \(Service intervals\)](#).



Removal

Detach / disconnect: the earth lead; from the battery.

Remove:

- the air intake hoses
- the air filter housing
- the RH front wheel
- the undershield; from the inner wing panel
- the poly-V-belt
- the power steering pump pulley
- the crankshaft pulley
- the timing covers.

Remove: the power steering pump.

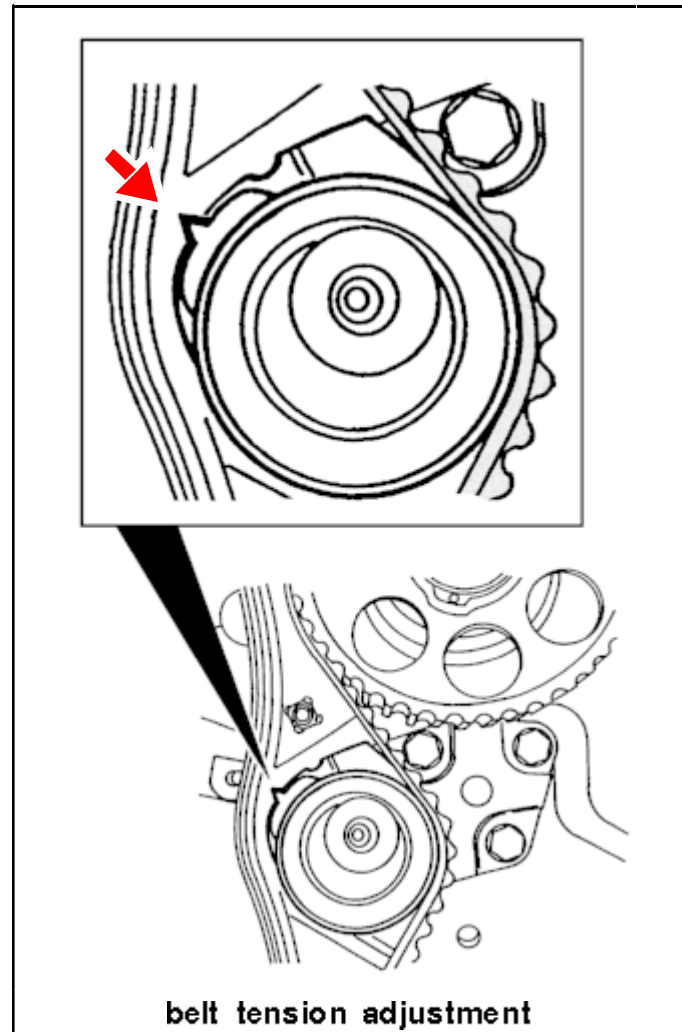
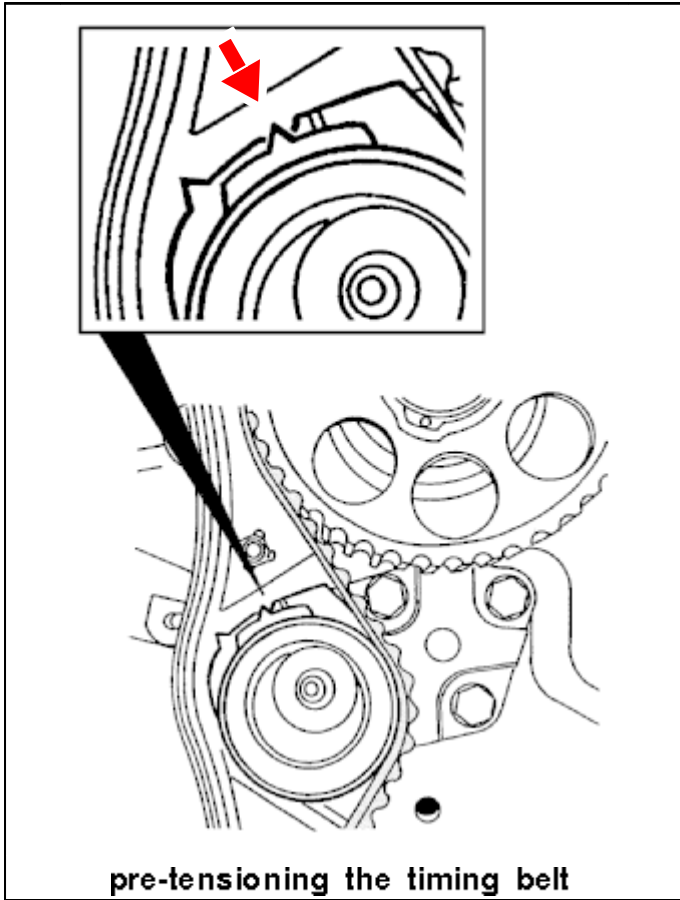
Turn the engine clockwise until the timing marks are aligned.
See illustration.

Detension the timing belt:

Detach / disconnect: the water pump.

Remove: the timing belt.

Installation



torque settings

crankshaft pulley	
- step 1	95 Nm
- step 2	angle turn: 30°
- step 3	angle turn: 15°
water pump	10 Nm
power steering pump	25 Nm
power steering pump pulley	25 Nm
timing cover	10 Nm

Check that the timing markings are aligned.

Fit / apply: the timing belt.

Tension the timing belt:

Turn the water pump clockwise until the tensioner pulley pointer is in the position shown. See illustration "Pre-tensioning the timing belt".

Connect / tighten: the water pump.

Rotate the crankshaft clockwise; 2 turns.

Detach / disconnect: the water pump

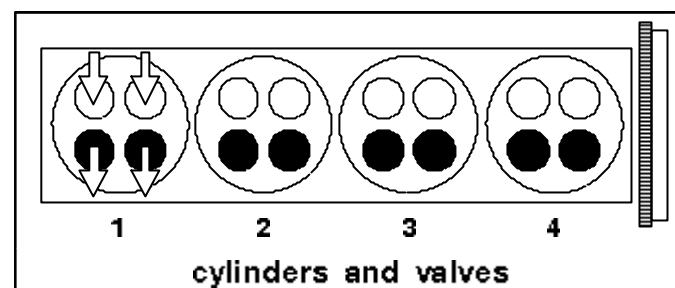
Turn the water pump clockwise until the tensioner pulley markings are aligned. See illustration.

Connect / tighten: the water pump.

Check that the timing marks are aligned.

Complete the installation in reverse order of removal.

Valves, rocker arms and tappets

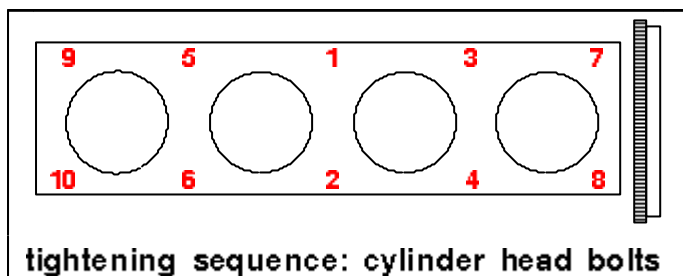


technical specifications

firing order	1 - 3 - 4 - 2
valve operation	DOHC; hydraulic tappets

The hydraulic tappets cannot be adjusted.

Torque settings



cylinder head	
cylinder head bolts	
– step 1	25 Nm
– step 2	angle turn 60°
– step 3	angle turn 60°
– step 4	angle turn 10°
camshaft bearing caps	16 Nm
exhaust manifold	25 Nm
inlet manifold	25 Nm
valve cover	10 Nm
big end bearing caps	
! Use new bolts	
– step 1	25 Nm
– step 2	angle turn 30°
– step 3	angle turn 15°

main bearing caps	
! Use new bolts	
– step 1	50 Nm
– step 2	angle turn 45°
– step 3	angle turn 15°
timing	
timing cover	10 Nm
camshaft gear	68 Nm
timing belt tensioner pulley	25 Nm
idler pulley	40 Nm
crankshaft pulley	
– step 1	95 Nm
– step 2	angle turn: 30°
– step 3	angle turn: 15°
lubrication system	
engine sump	10 Nm
oil pressure switch	40 Nm
cooling system	
coolant temperature sensor	20 Nm
thermostat housing	20 Nm
water pump	10 Nm
auxiliary units	
starter motor	43 Nm
alternator	20 Nm
power steering pump	25 Nm

ignition / fuel system	
spark plugs	25 Nm
oxygen sensor	41 Nm
knock sensor	20 Nm