

## Engine – Mechanical

### – A13SM and A15SM engines

#### Poly-V-belt

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

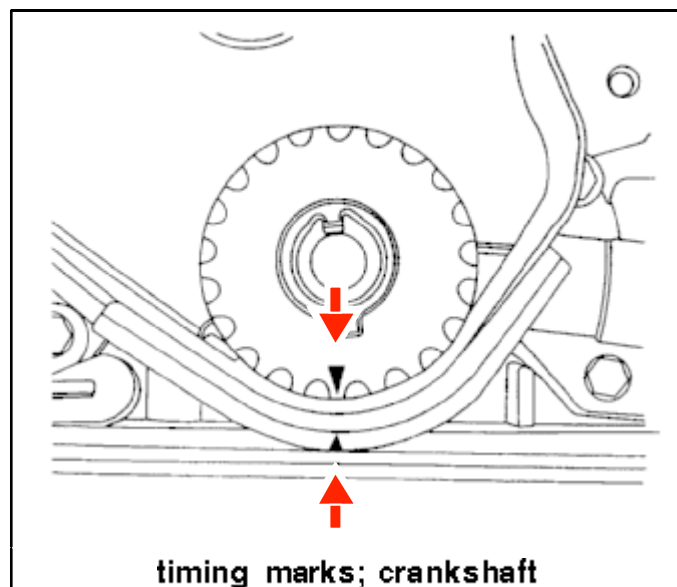
#### Adjustment

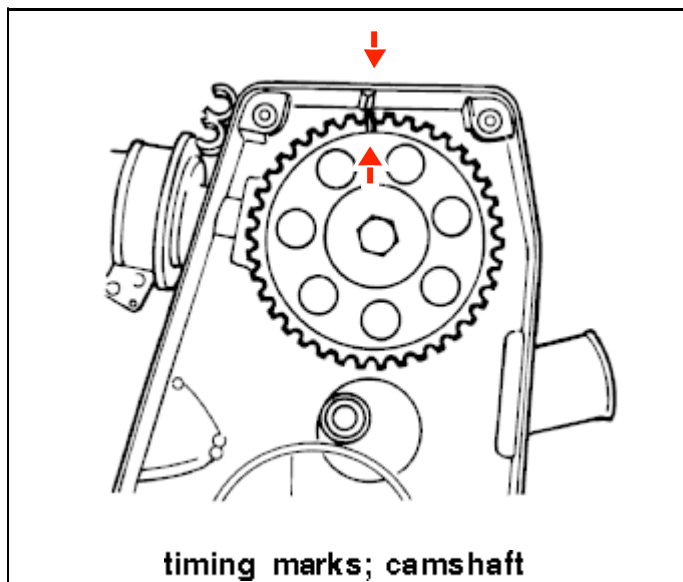
Tension the poly-V-belt by turning the tensioner bolt.

#### 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.

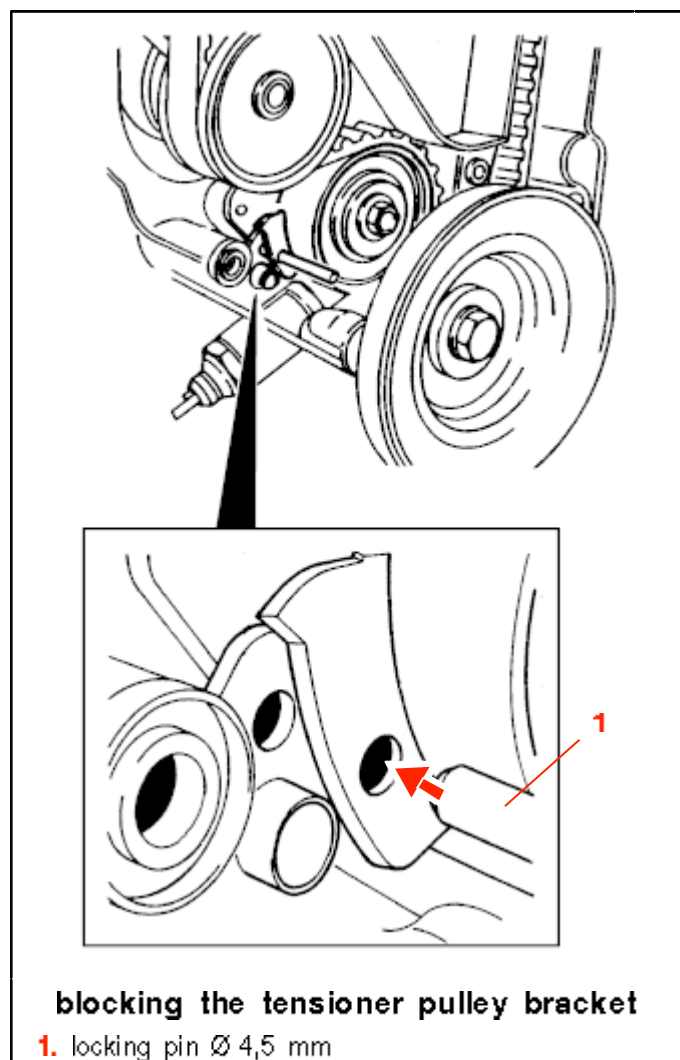
Rotate the crankshaft clockwise until the timing marks are aligned.

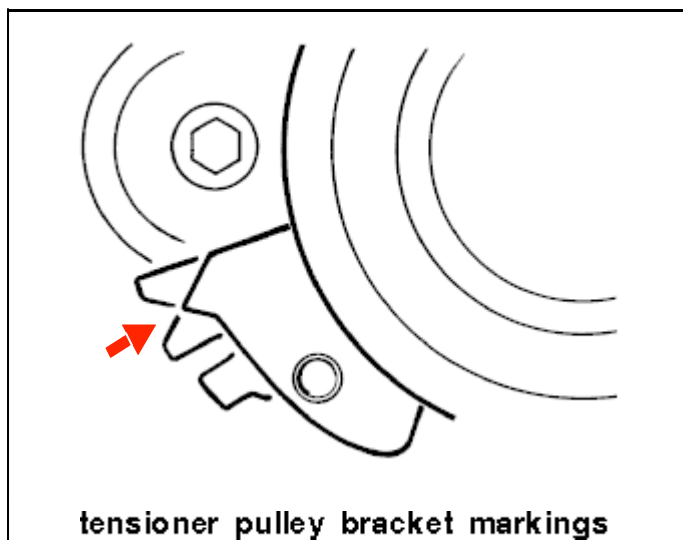
Detension the timing belt:

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.

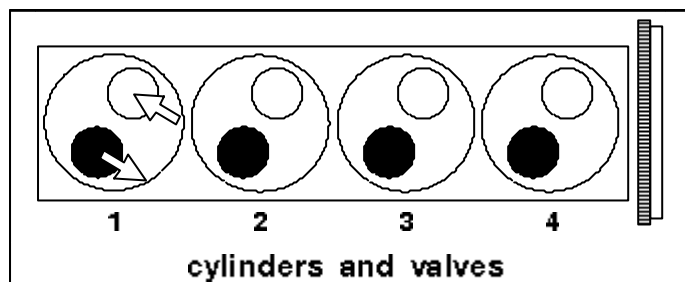
Turn the water pump until the tensioner pulley bracket markings are aligned. See illustration.

Connect / tighten: the water pump.

Check that the timing marks are aligned.

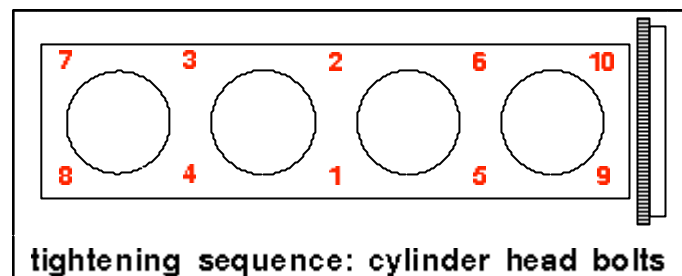
Complete the installation in reverse order of removal.

## 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°
<b>timing</b>	
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°
<b>lubrication system</b>	
engine sump	10 Nm
oil drain plug	55 Nm
oil pressure sensor	40 Nm
<b>cooling system</b>	
coolant temperature sensor	20 Nm
thermostat housing	20 Nm
water pump	10 Nm

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

## – A16DM engine

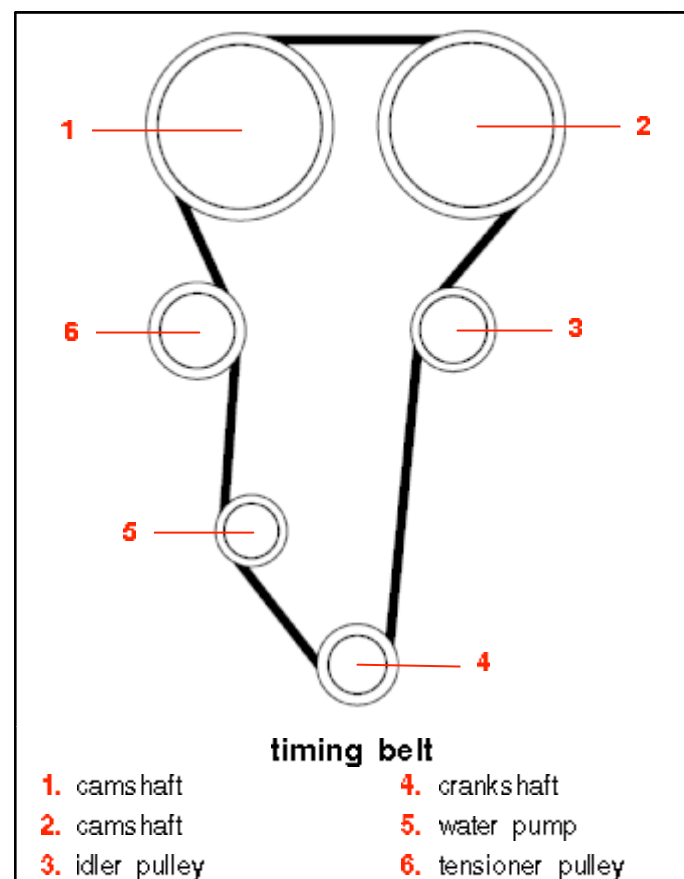
### Poly-V-belt

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

#### Adjustment

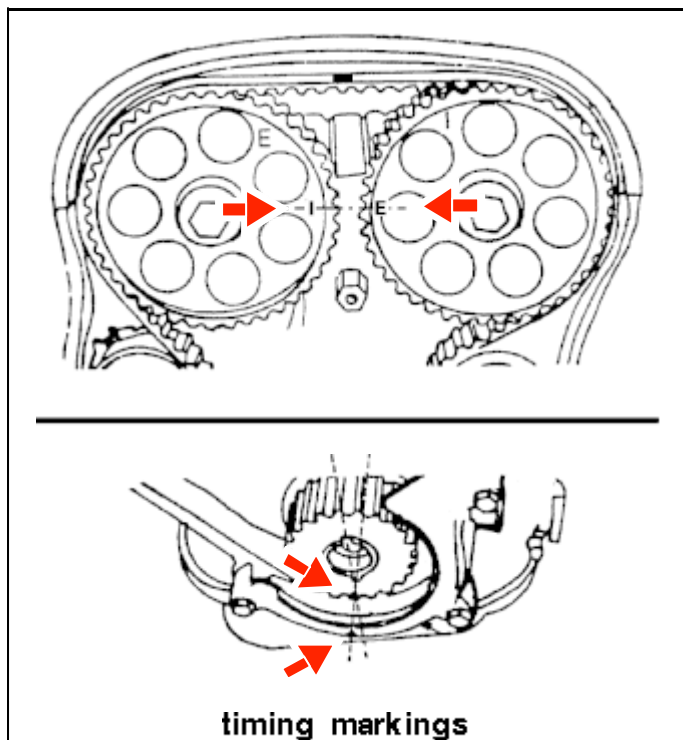
Tension the poly-V-belt by turning the tensioner bolt.

### 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.

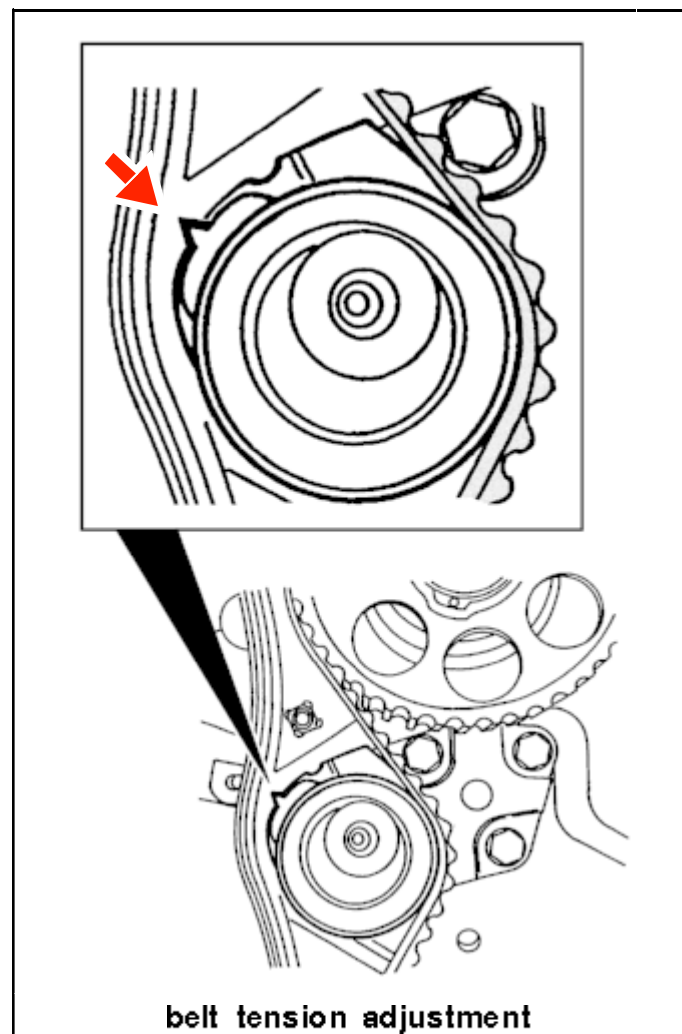
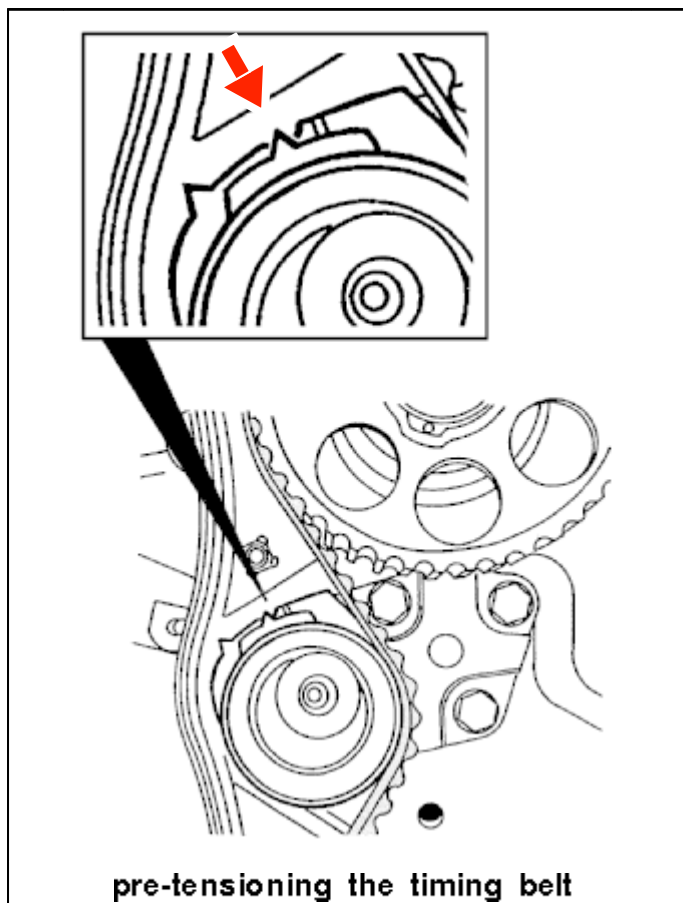
See illustration.

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

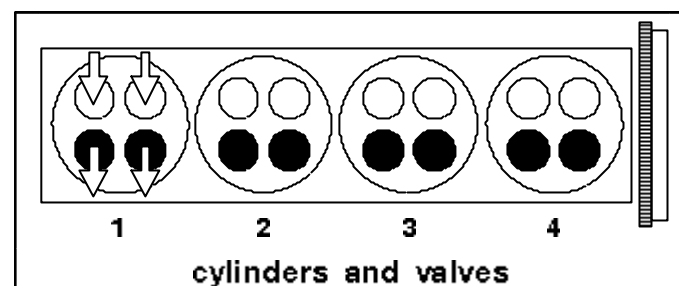
Turn the water pump clockwise until the tensioner pulley markings are aligned. See illustration.

Connect / tighten: the water pump.

Check that the timing marks are aligned.

Complete the installation in reverse order of removal.

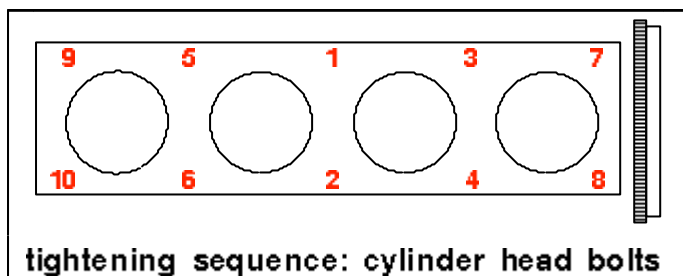
## Valves, rocker arms and tappets



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°
<b>timing</b>	
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°
<b>lubrication system</b>	
engine sump	10 Nm
oil pressure switch	40 Nm
<b>cooling system</b>	
coolant temperature sensor	20 Nm
thermostat housing	20 Nm
water pump	10 Nm
<b>auxiliary units</b>	
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