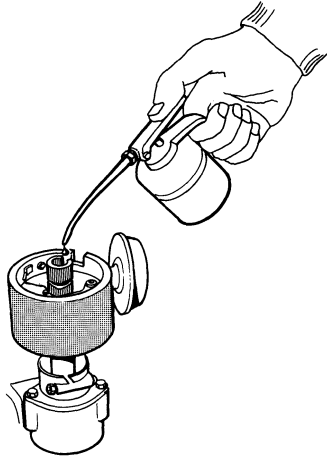


## D8 - Distributor

lubricate



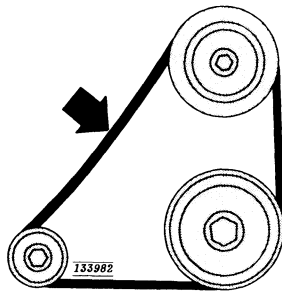
**B 200-230 E in the 240**

Lubricate the distributor shaft sparingly (1-2 drops of oil)

## D9 - Auxiliary unit belts

check/adjust

*Applies to engines which do not have multi-tooth belts*



Check belt tension.

It should be possible to press the middle of the belt about 5-10 mm.

If necessary, adjust by changing the position of the alternator.

**B 16, B 18, B 20, D 19 T**

*3-track belt*

Check belt tension with gauge 115 9660

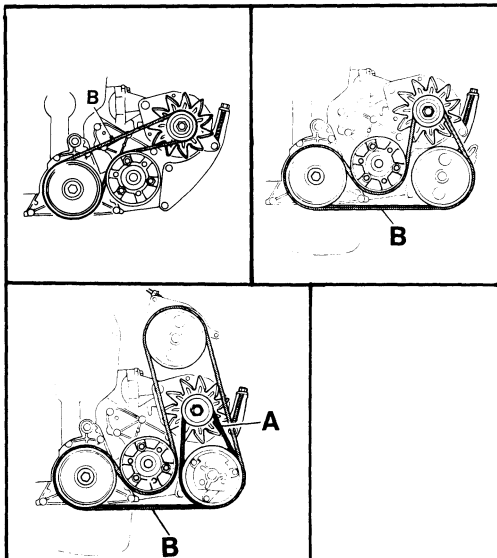
Measure at A.

*6-track belt*

Check belt tension with special tools 999 5434 and 999 5436

Measure at B.

Remove the right-hand protecting cover for measuring under B.



Engine type	Check min. value*	Adjustment "run-in" belt	Adjustment new belt
<b>3-track belt Tool 115 9660</b>			
	20 kg	30-35 kg	45-50 kg
<b>6-track belt Tool 999 5434/999 5436</b>			
Basic version	4.5 mm	4 mm	3-4 mm
Single option	3.5 mm	3 mm	2-3 mm
Double option	3.5 mm	3 mm	2-3 mm
D 19 T	4.5 mm	3 mm	2-3 mm

\* If belt tension has dropped below the control value, the tension shall be adjusted to the nominal value for a "run-in" belt.

## D10 - Auxiliary drive belt

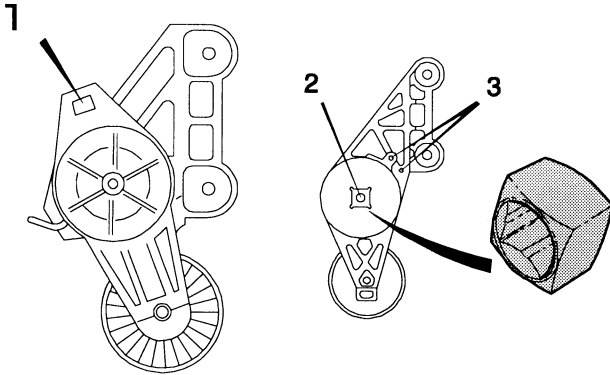
### grease the belt tensioner/replace belt

As of model year 1995, the belt tensioner is a maintenance-free unit

(Grease the belt tensioner every 45,000 km, fit a new belt every 90,000 km)

**B 5202/5204/5234/5252/5254**

1



Remove the auxiliary drive belt

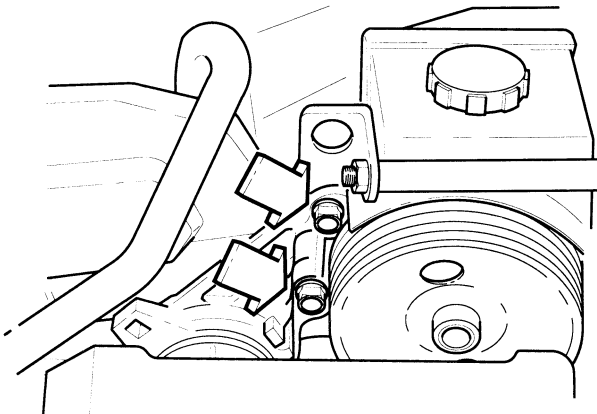
Use an articulated wrench with a 3/8" socket (1) in the belt tensioner to loosen the belt.

On the 1995 model, use tool 999 5547 in the belt tensioner's centre (2).

Lock the belt tensioner in its service setting with a lock pin in the holes (3) when they are above one another.

Remove the belt.

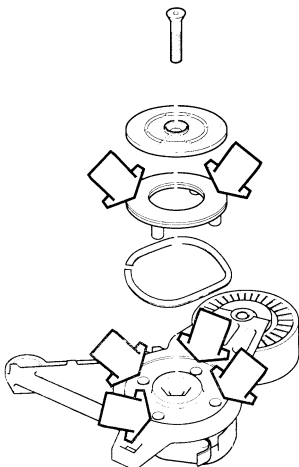
2



Remove the belt tensioner

Undo the belt tensioner's two screws and remove the tensioner.

3

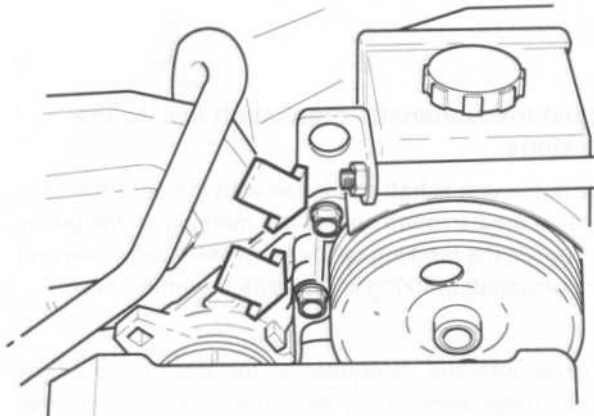


Grease the automatic tensioner pulley (not M/Y 1995)

Undo the pulley's centre screw and dismantle as in the figure.

Apply grease, P/N 11 61 246-2 (50 g) or 11 61 247-0 (500 g) between the friction plate and cover, and in the four holes used for the spring (marked by arrows).

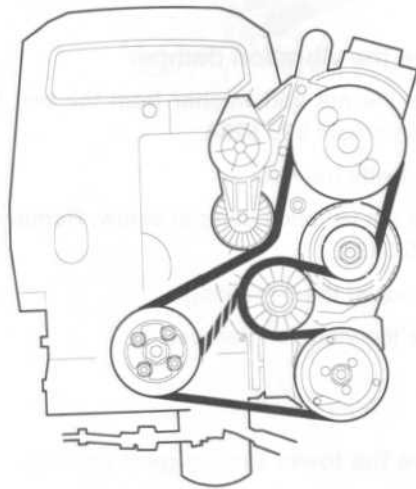
Reassemble the belt tensioner. Torque-tighten the centre screw to 20 Nm.



Refit the belt tensioner

Torque-tighten to 20 Nm.

5



Fit the belt

New! A new belt every 90,000 km!

Loop the belt around the crankshaft.

Then loop it around the A/C compressor, idler pulley, alternator and servo pump (the dotted line shows the belt path if no A/C is fitted).

Tighten the belt tensioner using the articulated wrench and fit the belt into place.

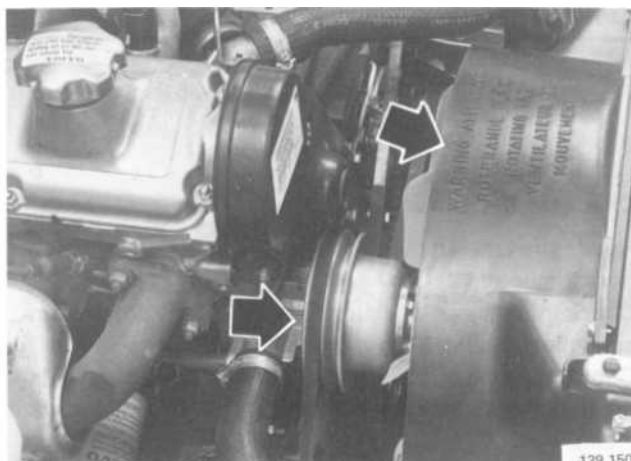
Check its operation.

## D11 - Camshaft belt replace

**B 200-230**

Special tool: 5284

1



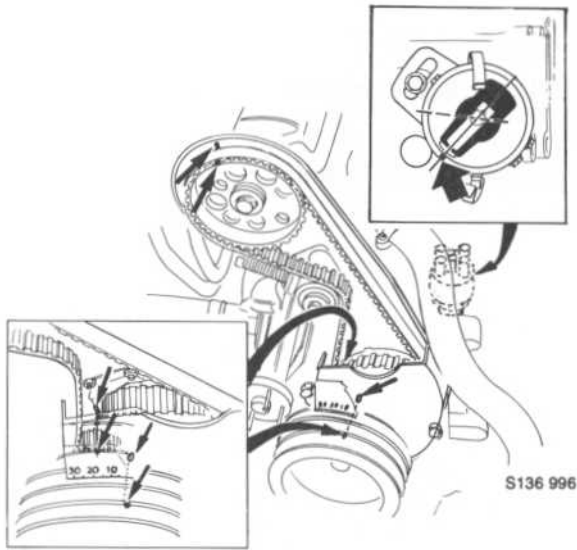
Remove

- fan
- clamp for pre-heating hose under fan shroud (variant)
- fan shroud

Remove the drive belts and coolant pump pulley

- undo the adjustment screws
- remove all the drive belts
- remove the pulley

Remove the upper timing gear casing



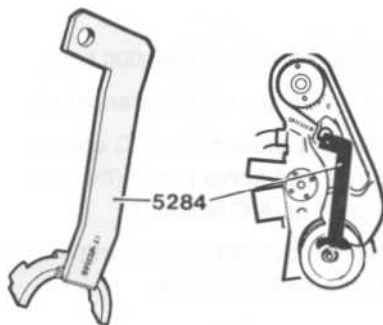
2

Adjust the camshaft - crankshaft acc. to the markings

Rotate the crankshaft clockwise with the centre screw. Position the camshaft so that the marking on the pulley is opposite the marking on the inner tooth belt cover and the crankshaft marking is opposite 0 on the cover.

*Engines with the distributor at the front edge of the engine block: remove the distributor cap and check that the rotor is aligned with the marking.*

3



Remove the vibration damper

Remove the nut and washer from the belt tensioner. Use counterhold 999 5284.

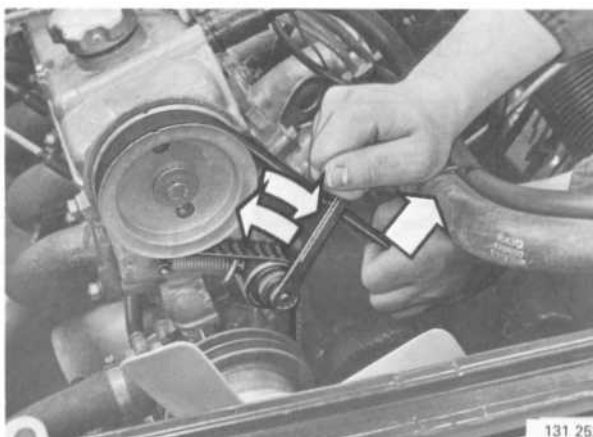
Secure it with the nut.

Remove the vibration damper screw. Remove counterhold 999 5284.

Check, adjust the 0-marking.

Remove the vibration damper.

4



Remove the lower timing gear casing.

5

Remove the camshaft belt

Undo the belt tensioner's nut about 1 revolution.

Pull out the pulley so that the pulley tensioner is compressed.

Tighten the nut once again.

Note! The pistons may strike the valves if the crankshaft or camshaft are rotated when the timing gear belt is removed.

Remove the camshaft belt.

6

Check the belt tensioner

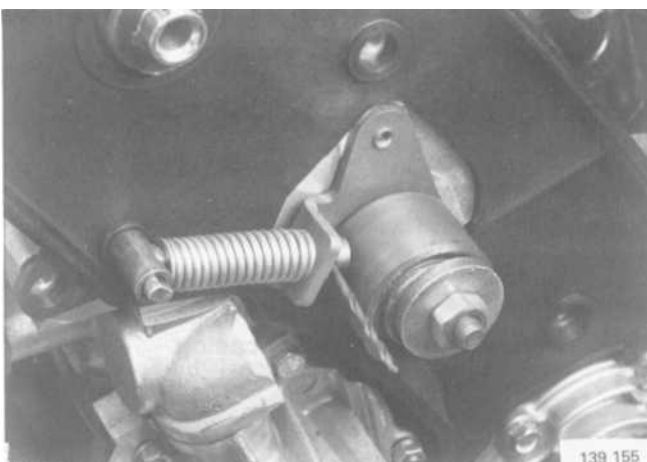
Rotate the tension pulley and listen for abnormal noise from the bearing.

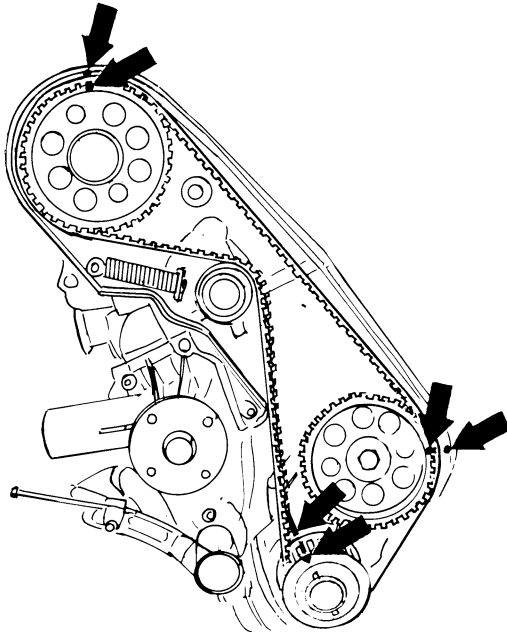
Check that the contact surface with the belt is free from scratches and rubber residue.

Check that the belt tensioner slides smoothly around its guide pin, that the contact surface against the block is clean.

After cleaning, lubricate with:

P/N 11 61 246 (50g) or 11 61 247 (500g).





Check the basic setting

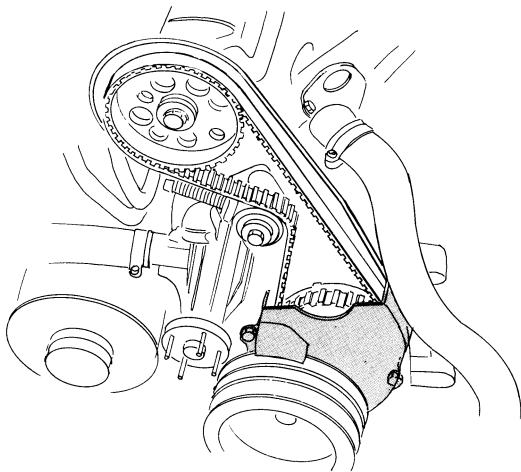
Fit the new timing gear belt

Important! Do not rotate the crankshaft or camshaft, or else the pistons may strike the valves.

- Align the tooth belt pulley with the marking.
- Thread the belt around the crankshaft and intermediate shaft. The two markings on the belt should be opposite the crankshaft marking.
- Tension the belt and thread it over the camshaft and belt tensioner.
- Check that the belt is properly in place and that the pulley markings are aligned with the engine markings.

Tension the timing belt

- Undo the belt tensioner nut approx. 1 revolution.
- The belt tensioner's spring will tension the belt.
- Retighten the nut.



Refit

- the lower timing gear casing
- the vibration damper

Check that the guide plate is correctly positioned.

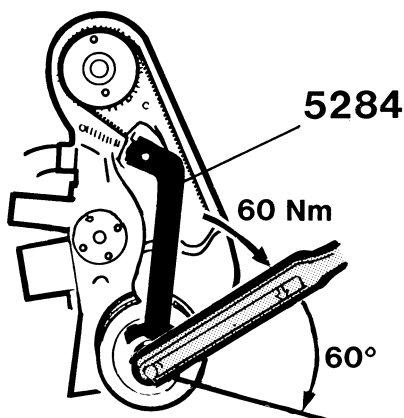
Important! The vibration damper only fits in one position. There is a lug on the crankshaft gear which fits into the vibration damper.

Refit the crankshaft bolt and washer.

Tighten the vibration damper

Remove the nut and washer from the belt tensioner.

Use counterhold 999 5284. Fix it in position with the nut.



Tighten the crankshaft bolt:

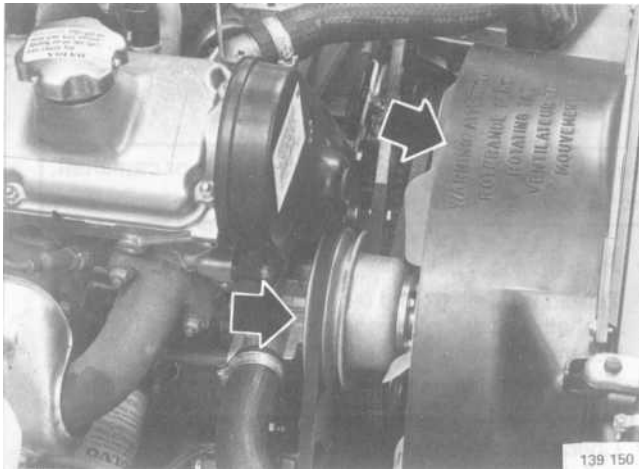
Stage 1 60 Nm (6 kpm)

Stage 2 angle-tighten 60 (use protractor 999 5098)

Use counterhold 999 5284.

Fit the washer and nut on the belt tensioner.

Tighten the nut.



#### Refit

- the upper timing gear casing
- coolant pump pulley
- drive belts (loose)
- fan shroud
- pre-heating hose holder
- fan

#### Tension the drive belts

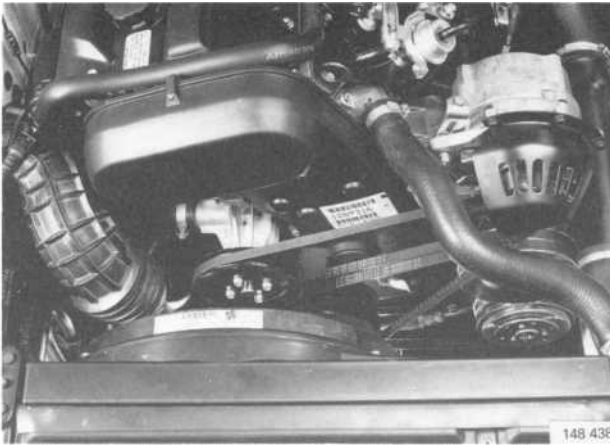
When correctly tensioned, the belt should be able to be pressed down 5-10 mm using normal thumb pressure.

Start the engine and run it until the thermostat opens. Switch off the engine.

#### Tension the camshaft belt

- Remove the rubber plug in the timing gear casing.
- Turn the engine over to TDC.
- Undo the belt tensioner nut approx. 1 revolution.
- The belt tensioner spring will tension the belt.
- Tighten the nut once again.
- Refit the plug in the timing gear casing.

Retighten belt tension after 15,000 km (see op. D12)



**B 204/234**

*Special tool: 5416, 998 8500*

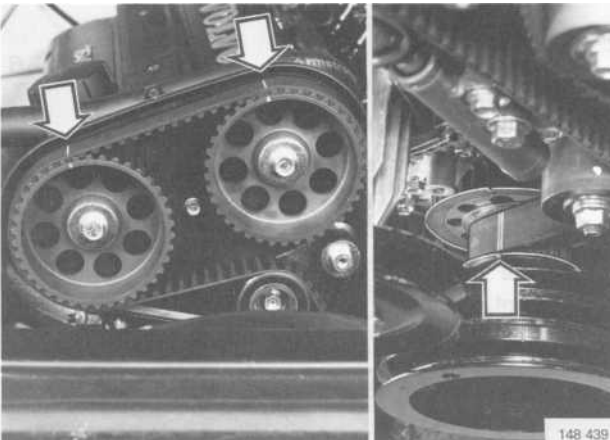
*(Including replacement of balance shaft pulley and greasing of tension pulley)*

1

Remove:

- alternator drive belt
- drive belts for servo pump and A/C (if fitted)
- the three timing gear casings
- splash guard under the engine

2



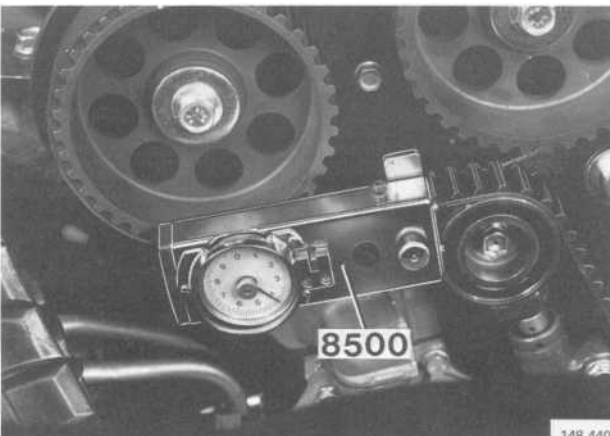
Adjust camshafts - crankshaft according to marking

Adjust engine to TDC for cylinder 1.

Check that the marking on the camshaft pulley is opposite the marking on the inner timing gear casing.

Check that the marking on the crankshaft's belt-guidance pulley is opposite the TDC marking on the engine block.

3



Measure the belt tension

Wait 5 minutes after adjustment of the camshaft belt.

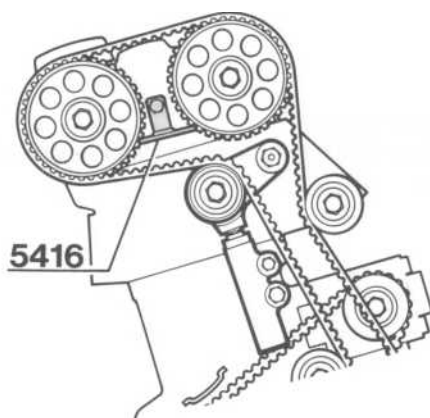
Place measurement instrument 998 8500 between the output axle's belt pulley and the tensioner pulley.

Read the value.

Belt tension should be between 3.5 - 4.6 units.

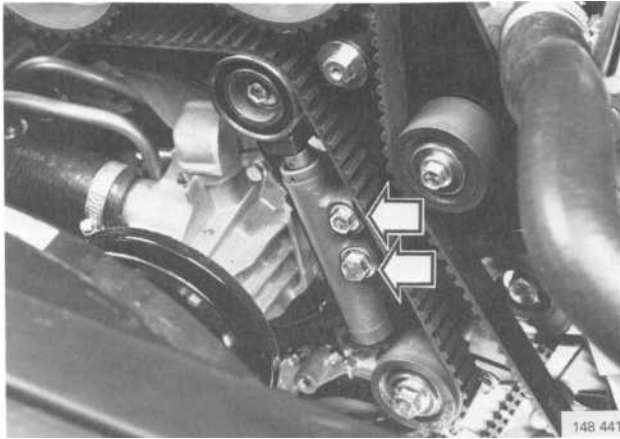
If the correct value is not obtained, the tensioner must be replaced.

4



Secure the camshaft gear

Use holder 999 5416.



## Removing the camshaft belt

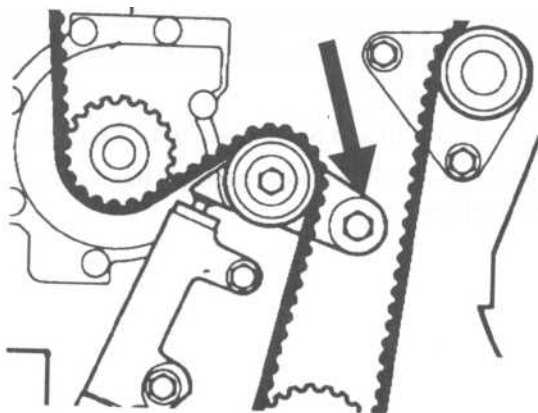
5

- Remove the camshaft belt
- Remove the tensioner's upper screw (M8).
- Undo the lower screw (M10).
- Rotate the tensioner until the screw is freed.
- Remove the lower screw.
- Remove the camshaft belt.



6

- Check the tension and idler pulleys
- Rotate the idler pulleys and listen for abnormal noise in the bearings. Check that the pulley surfaces against the belt are clean and smooth.
- Check the tension pulley lever and the idler pulley attachment.
- Tension pulley lever, torque 40 Nm
- Idler pulleys, torque 25 Nm



7

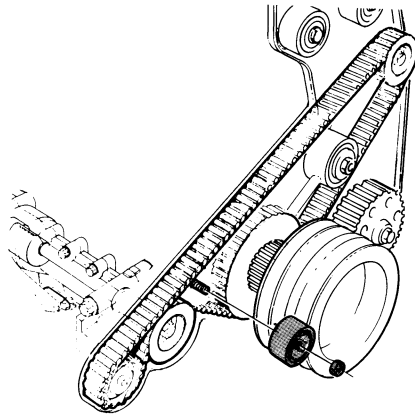
## Greasing the bushing

- Remove:
- the tension pulley's lever screw
  - the tension pulley
  - the socket behind the screw

Grease the surfaces of the lever's bushing, the screw and socket with grease, P/N 11 61 246-2 (50 g) or 11 61 247-0 (500 g).

- Refit:
- the socket
  - the tension pulley
  - the screw for the tension pulley; torque-tighten to 39 ±5 Nm

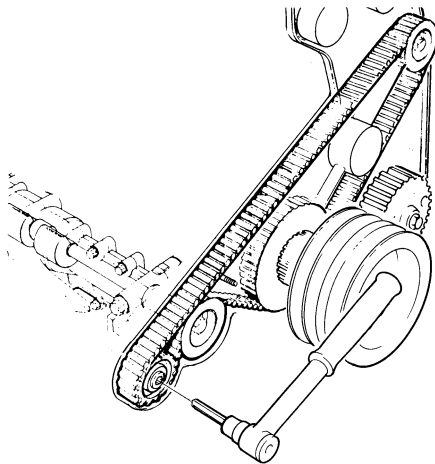




*Removal of the balance shaft belt*

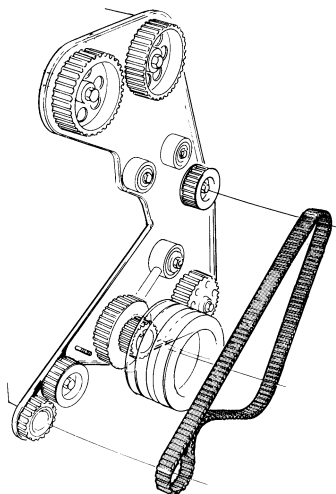
8

Remove the balance shaft belt's idler pulley  
Check that the pulley surfaces and bearings are fault-free.



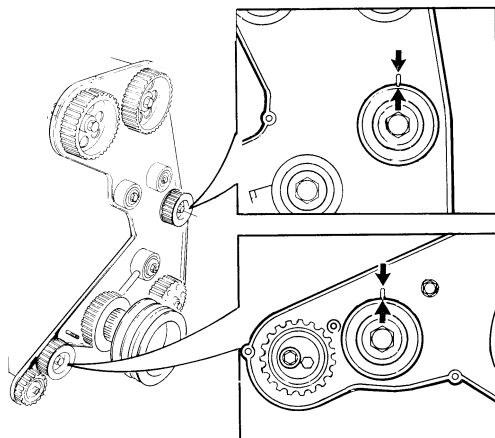
9

Undo the balance shaft belt tension pulley  
Undo the lock screw.



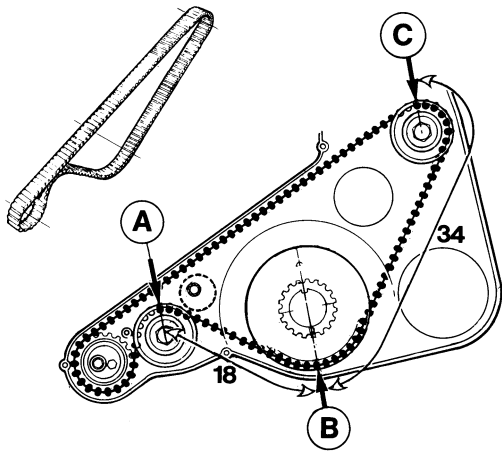
10

Remove the balance shaft belt  
Pull the belt off the tensioner pulley and balance shaft pulley.  
Pull the belt out under the crankshaft gear.  
Check the tensioner pulley bearings and look for signs of oil leakage at the shaft seals.



11

Check the balance shaft and crankshaft markings  
Check the balance shaft markings to ensure that they are opposite the marking on the inner timing gear casing.  
Check that the crankshaft is opposite the TDC marking on the engine block.



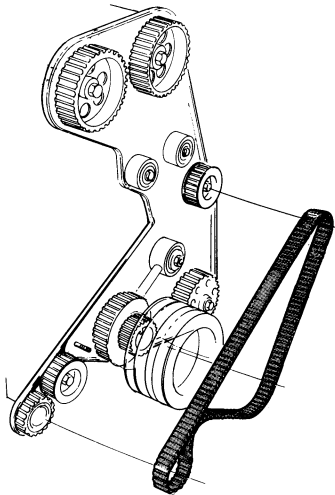
### Fitting of balance shaft belt

12

The balance shaft belt's three markings

- A. Balance shaft, right side (white dot).
- B. Crankshaft lower marking (blue dot).
- C. Balance shaft, left side (white dot).

A - B = 18 teeth  
B - C = 34 teeth



13

Fit the balance shaft belt

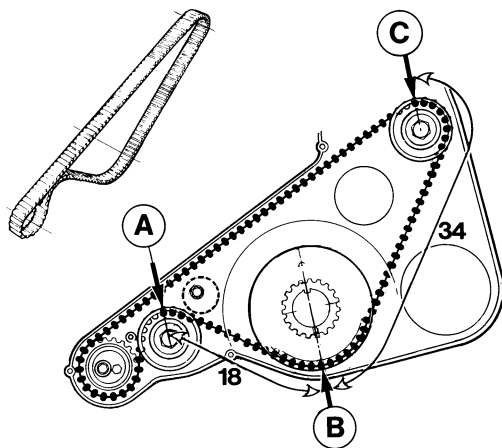
Carefully insert the belt under the crankshaft gear.

Check that the belt's blue dot (marking B) is opposite the TDC marking on the guide plate, on the lower section of the crankshaft.

Thread the belt around the left (upper) balance shaft so that the C-mark is opposite the balance shaft gear marking.

Thread the belt on the right (lower) balance shaft, so that the A-mark is opposite the balance shaft gear marking.

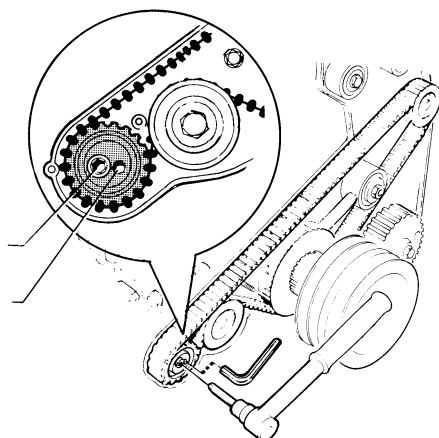
Thread the belt around the tensioner pulley.



14

Check the balance shaft and crankshaft markings

Check that they are still correct.



15

Tighten the tensioner pulley

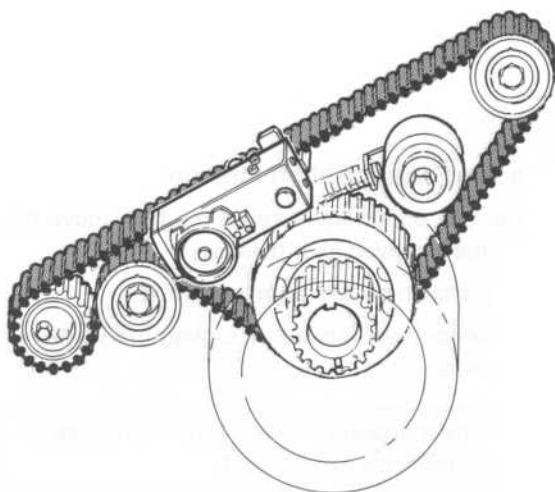
Tension the belt using a hexagonal key in the adjustment hole (1) of the pulley.

Rotate the crankshaft a few degrees to each side of the TDC marking.

Position the crankshaft at TDC.

The pulley's adjustment hole should be just under the 3 o'clock position when the lock screw is tightened.

Tighten the lock screw (2) to 40 Nm. Use a hexagonal key to counterhold the adjustment hole (1).



Check the belt tension

Use measuring instrument 998 8500.

Measure at the belt above the position of the removed idler pulley. Belt tension should now be between 1-4 units.

Note! If belt tension is outside the above range, the tension pulley should be loosened and step 15 should be repeated.

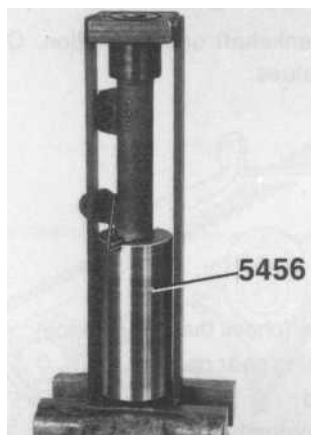
### *Fitting the camshaft belt*

17

Lock the tensioner element

Check that there is no visible leakage.

Press together the tensioner with tool 999 5456, Place the tensioner in the tool and tighten the tool's centre nut. Wait until compression is completed and then insert a lock pin (diam. 2 mm) in the piston.



18

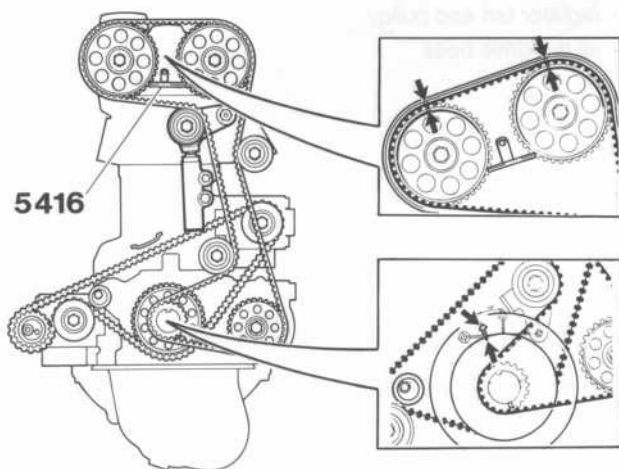
Fit the camshaft belt

Place the belt's twin-stripe marking opposite the marking on the guide plate, on the upper side of the crankshaft.

Place the belt around the crankshaft gear and over the tension pulley, and then over the right idler pulley.

Place the belt over the camshaft gears. The belt's two single markings must match the camshaft gear markings.

Thread the belt around the left idler pulley and press the belt over the tension pulley.



19

Fit the tensioner

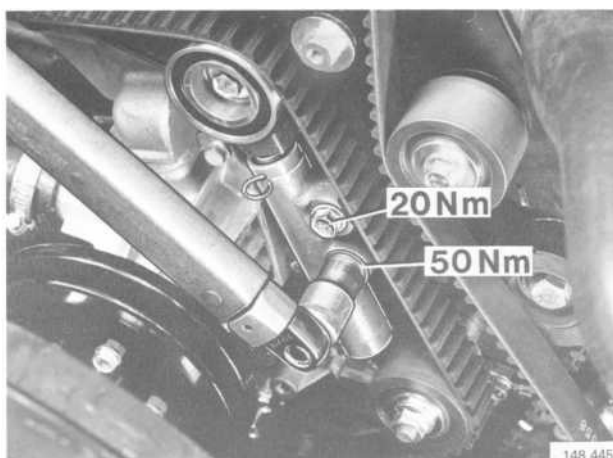
Insert the tensioner screws.

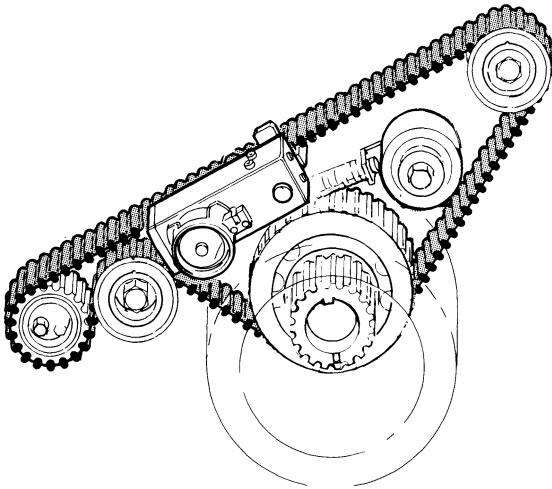
Torque: M8 = 20 Nm, M 10 = 50 Nm.

Pull the lock pin out of the tensioner.

Remove holder 999 5416.

Rotate the crankshaft 2 revolutions and check that the markings on the crankshaft and camshaft gears still match.





#### Check/adjust balance shaft tension

Use gauge 998 8500. Measure on the belt above the location of the removed idler pulley.

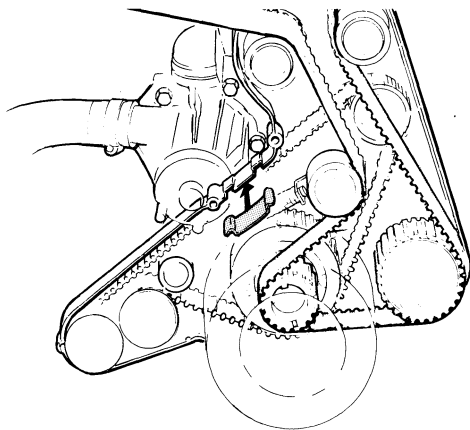
Belt tension shall be  $3.8 \pm 0.2$  units at  $20^\circ\text{C}$ .

If tension is too low: Adjust by turning the tensioner pulley clockwise.

Note! The tensioner pulley may only be turned clockwise. Only small movements are required.

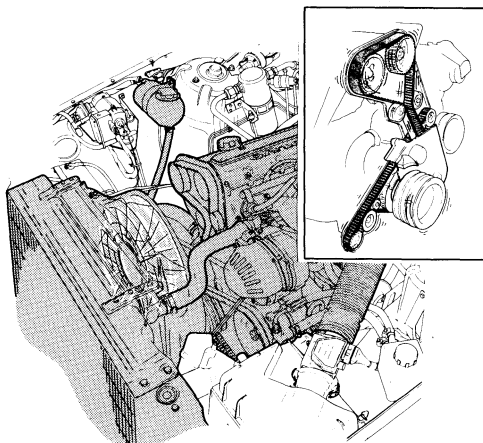
If tension is too high: Carry out steps 15-16.

Turn the crankshaft one revolution. Check/adjust the newly set values.



#### Install:

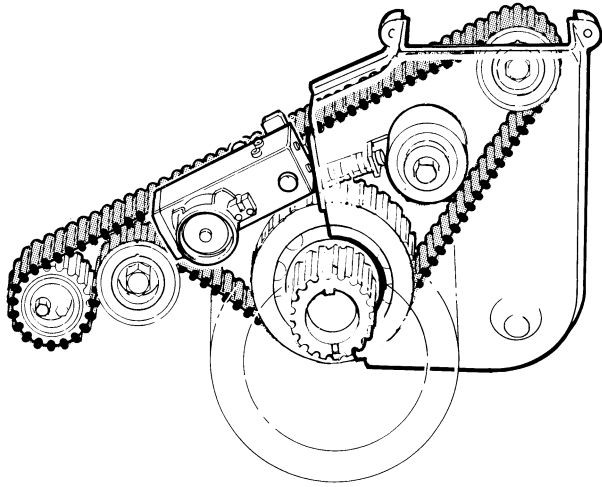
- guide plate (check that it is in place)
- middle timing gear casing
- fan shroud
- tie strips for the heater hose
- radiator fan and pulley
- all the drive belts



#### Run the engine to operating temperature

Run the engine until the thermostat opens. Switch off the engine.

Caution! Remember that timing gear casings (1) and (2) have not yet been fitted at this point.



*Check/adjust balance shaft belt tension after thermostat opens*

23

Check belt tension

Use gauge 999 8500

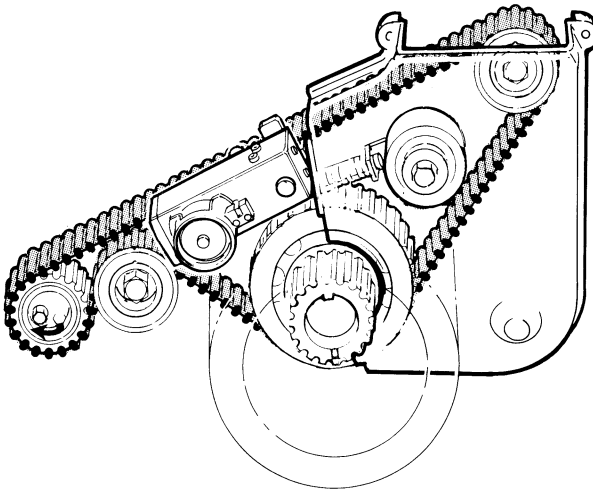
Place the gauge above the location of the removed idler pulley.

Tension should be between  $4.9 \pm 0.2$  units.

If belt tension is correct, proceed to steps 27-29.

If belt tension is too low, proceed to steps 24-26.

If belt tension is too high, repeat steps 15-16, and adjust as per steps 24-26.



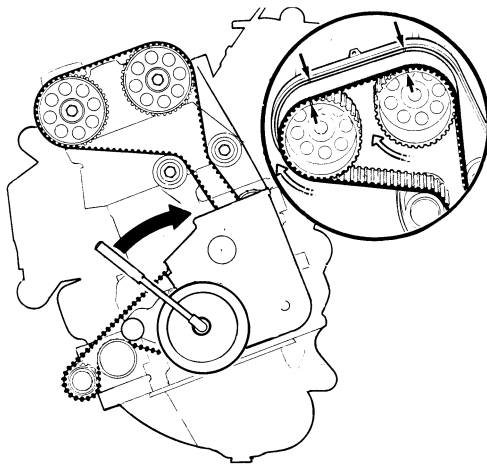
24

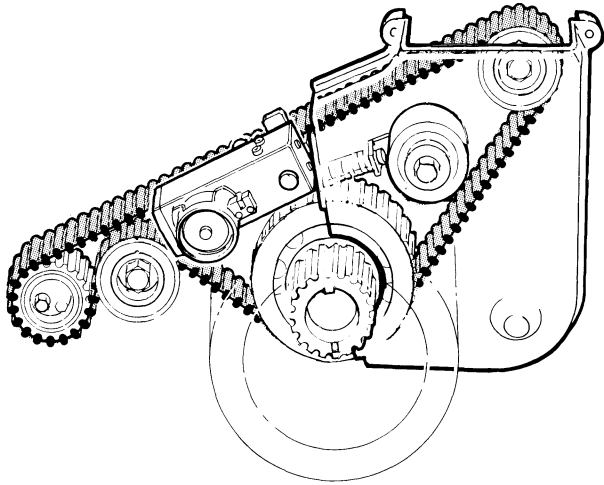
Turn the crankshaft clockwise and read the gauge

Note! The tensioner pulley may only be rotated clockwise. Only small movements are required.

25

Turn the crankshaft clockwise one revolution

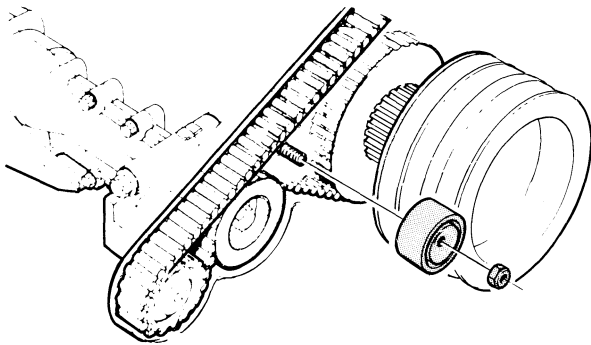




26

Check belt tension

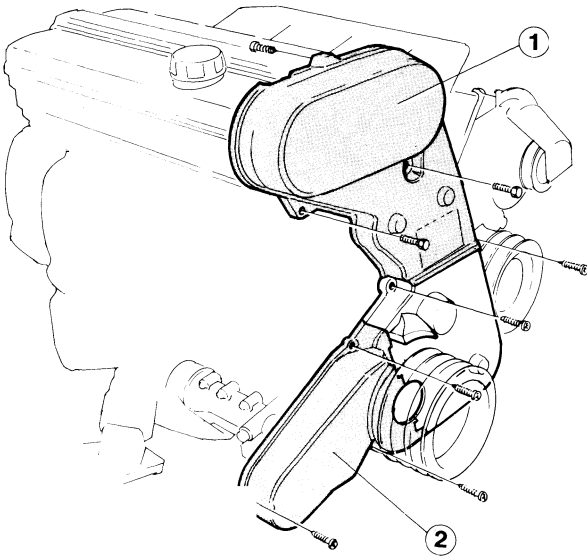
Belt tension should now be within the prescribed range  $4.9 \pm 0.2$ .



27

Install idler pulley

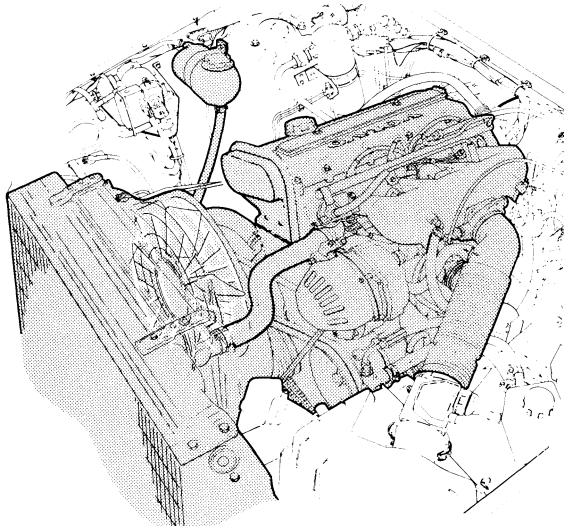
Ensure the pulley is properly seated



28

Install:

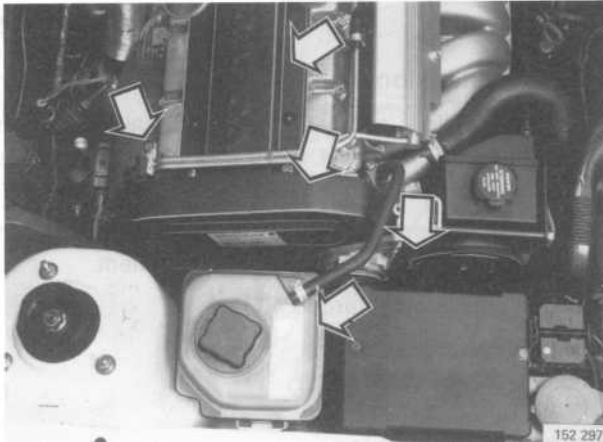
- the lower timing gear casing (2)
- the upper timing gear casing (1)



29

Test operation

Test-run the engine.



**B 5202/5204/5234/5252/5254**

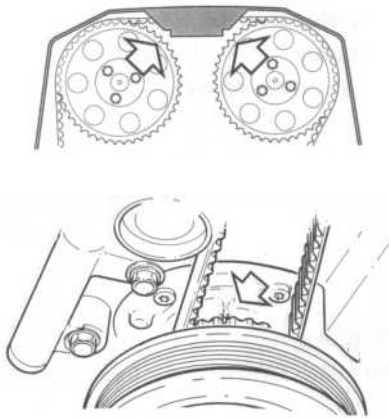
*Special tool: 998 8500, 999 5456  
(Including greasing the tension pulley)*

1

Remove:

- the spark plug cover
- the two fuel pipe clamps
- lift up the expansion tank and place it above the engine
- the front timing gear cover
- the auxiliary unit belt
- the lower belt casing

2



Align the camshafts/crankshaft according to the marking

Remove the right front wheel and undo the wheel arch liner somewhat.

Remove the vibration damper protecting plate.

Turn the crankshaft clockwise until the markings, camshaft gear and inner timing gear cover and the crankshaft, pulley/oil-pump housing match.

3

Check the belt tension

Wait 5 minutes after adjustment of the timing gear belt.

Place gauge 998 8500 between the output axle pulley and the coolant pump.

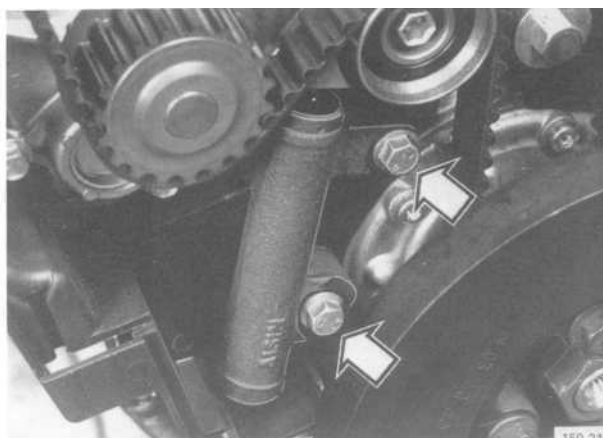
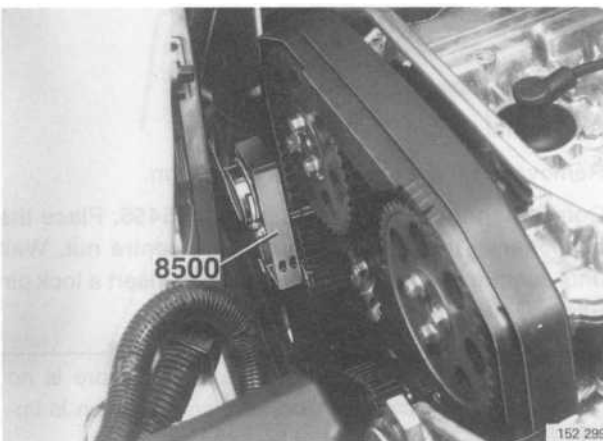
Read the value with the help of a mirror; the gauge may not be removed before the reading is completed.

Belt tension should be within

21 mm belt	3.5-4.6 units
23 mm belt, 4 valve	2.5-4.0 units
23 mm belt, 2 valve	2.7-4.2 units

If the recommended value is not obtained, the tensioner must be replaced.

4



Remove the camshaft belt

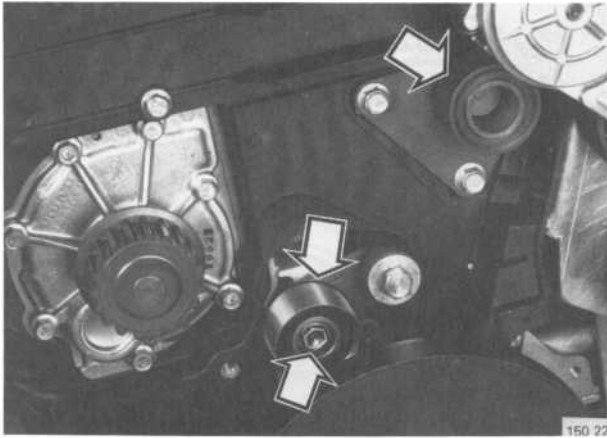
Remove the tensioner's upper screw.

Undo the lower screw.

Turn the tensioner so that the pulley rotates freely.

Remove:

- the lower screw.
- the tensioner.
- the upper timing gear casing.
- the camshaft belt.



5

#### Check the tensioner and idler pulleys

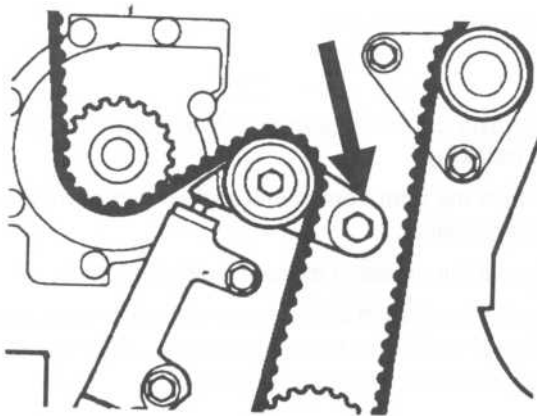
Rotate the pulleys and listen for abnormal noise from the bearings. Check that the pulley contact surfaces with the belts are clean and smooth.

Check that the tensioner pulley lever has not seized in its bearing. Check the idler pulley attachment.

Tension pulley lever, torque 40 Nm.

Idler pulley, torque 25 Nm.

6



#### Greasing the bushing

Remove:

- the tension pulley lever's screw
- the tension pulley
- the socket behind the screw

Grease the surfaces of the lever's bushing, screw and socket with grease, P/N 11 61 246-2 (50 g) or 11 61 247-0 (500 g).

Refit:

- the socket
- the tension pulley
- the tension pulley lever's screw; torque-tighten to 40 Nm.

7



#### Lock the tensioner

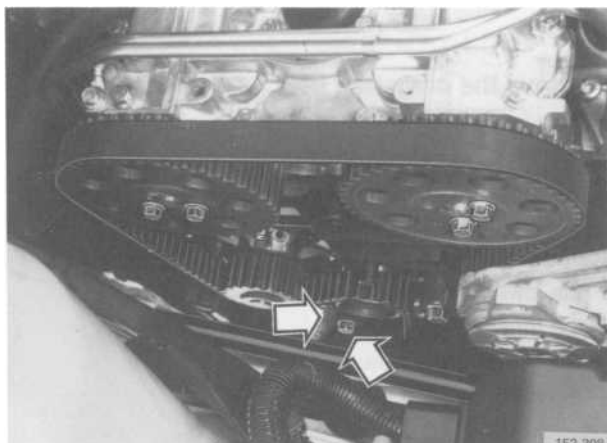
Check that there is no visible leakage.

Remove the plastic washer on the piston.

Compress the tensioner with tool 999 5456. Place the tensioner in the tool and tighten the centre nut. Wait until compression is complete and then insert a lock pin (diam. 2 mm) in the piston.

**Note!** If there is any visible leakage or if there is no resistance upon compression, or if compression is impossible, the tensioner must be replaced.

8



#### Fit the new camshaft belt

Insert the tensioner screws.

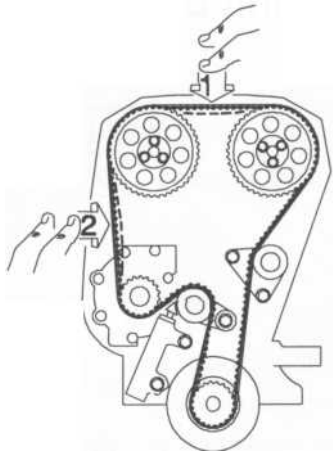
Tighten to 25 Nm.

Thread the belt around the crankshaft and right idler pulley.

Thread the belt over the camshaft gears.

Thread the belt around the coolant pump and press the belt over the tension pulley.

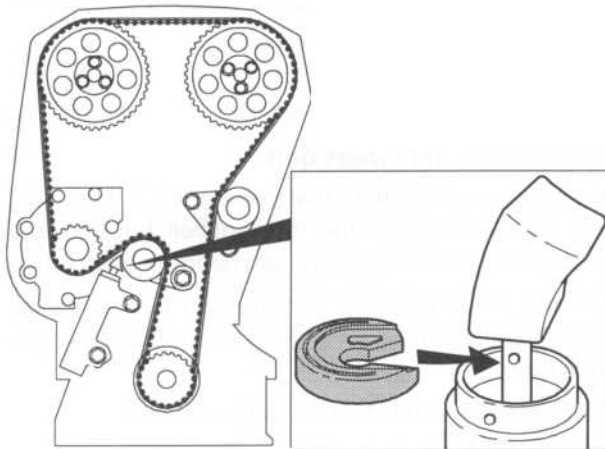




Rotate the crankshaft through two revolutions

Pull out the lock pin from the tensioner.

Press hard or hit the belt with a plastic mallet twice in the direction of arrow (1) and twice in the direction of arrow (2).

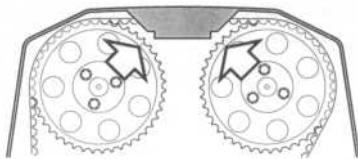


Fit a new plastic washer on the piston.

Make sure that the washer is centred on the piston and tensioner housing.

Note! Check that the correct side of the washer faces upwards. See the illustration. The recessed side should face up.

Fit the upper timing gear casing.



Rotate the crankshaft two revolutions and check that the markings on the crankshaft and camshaft pulleys match.

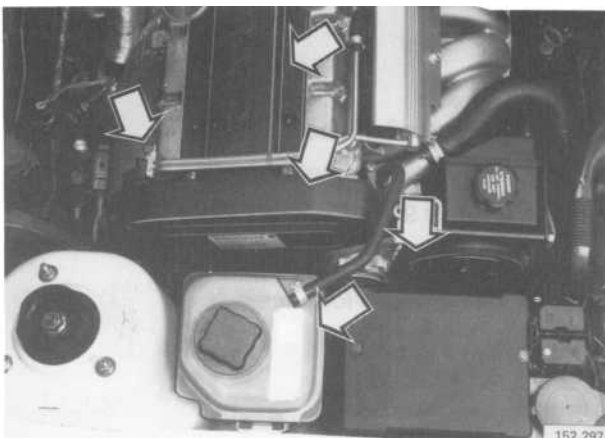


Refit:

- the two clamps for the fuel pipes
- the front timing gear cover
- the auxiliary unit belt
- the spark plug cover
- the expansion tank
- the lower belt casing
- the inner wheel arch liner
- the wheel

Check operation

Test-run the engine.



# D12 - Camshaft belt/auxiliary unit belt

replace

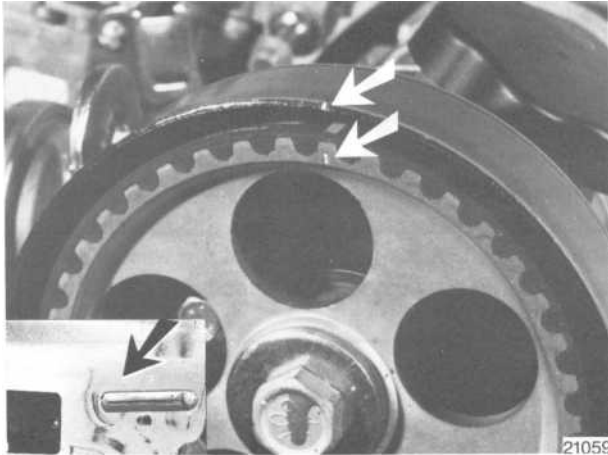
**B 16, B 18, B 20**

Special tools 999 5434 , 999 5435 , 999 5436 ,  
115 9660

1

Remove:

- right side protecting plate
- power steering pump cover
- auxiliary unit drive belts after the power steering and/or alternator has/have been loosened.
- Remove the camshaft belt cover.



2

Remove the camshaft belt

Rotate the crankshaft so that cylinder no. 1 is at TDC and the markings on the flywheel/bell housing and camshaft belt cover/cam gear are opposite each other.

Remove the plug at the bottom right beside the oil dipstick and insert an 8 mm lock pin in the hole in the crankcase.

Check that the crankshaft cannot be rotated.

Remove the crankshaft pulley and vibration damper.

Remove the belt cover and make a mark on the edge opposite the mark on the camshaft gear. Undo the belt tensioner. Remove the belt. Begin at the tensioner.

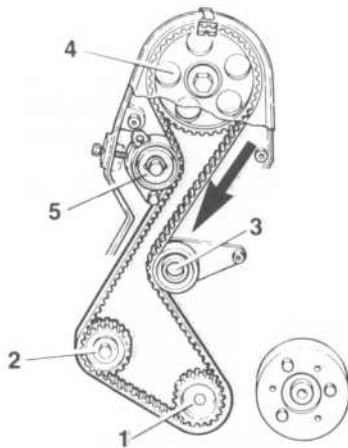
3

Fit the camshaft belt

Check that the lock pin is in place. Place the belt so that the mark is opposite the marks on the crankshaft and camshaft gear.

Observe the following when fitting:

- the belt's direction of movement (see the arrow);
- the sequence in which the belt is to be fitted to the gears (see fig.)



4

Adjust the camshaft belt

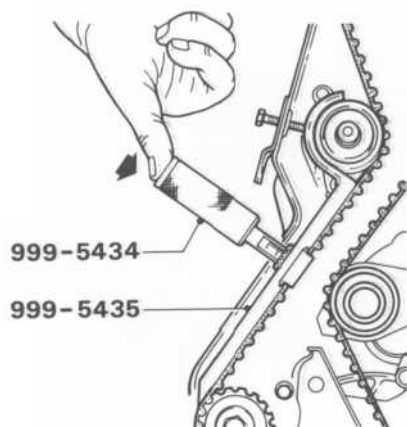
Tension the belt with the help of an M6 screw.

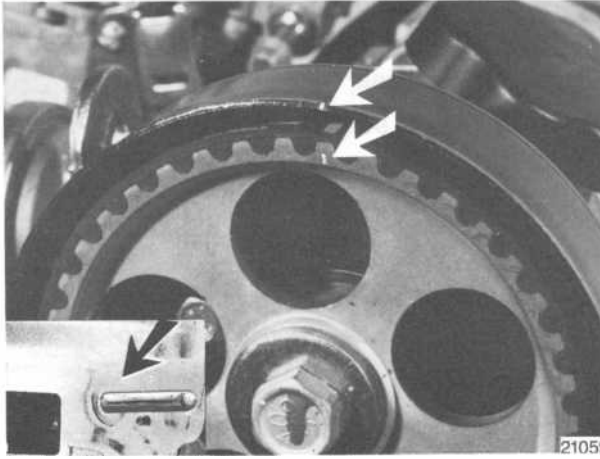
Use special tools 999 5434 and 5435.

Correct tension: 7.5 mm (cold belt).

Tighten the tensioner's lock nut.

Tightening torque: 50 Nm.





5

Check that the belt is correctly fitted

Remove the special tool.

Remove the lock pin.

Turn the crankshaft two full revolutions in the correct direction of rotation.

Rotate the crankshaft to the TDC position (insert the lock pin) and check that the mark on the camshaft gear is opposite the mark on the edge of the belt cover.

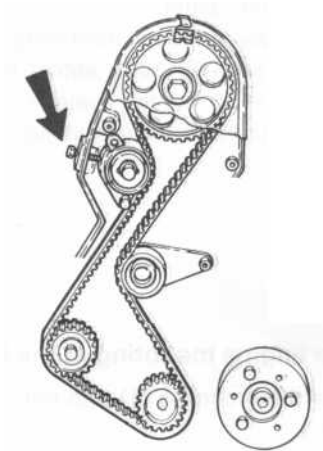
Remove the lock pin and refit the plug.

6

Check camshaft belt tension

Use special tools 999 5434 and 5435 to check the tension: 7.5 mm.

Remove the tensioner screw.



7

Fit:

- camshaft belt cover
- crankshaft pulley
- auxiliary unit drive belt
- drive belt for power steering and air conditioning (where fitted).

Check/adjust the auxiliary unit belts: see inspection point D9.

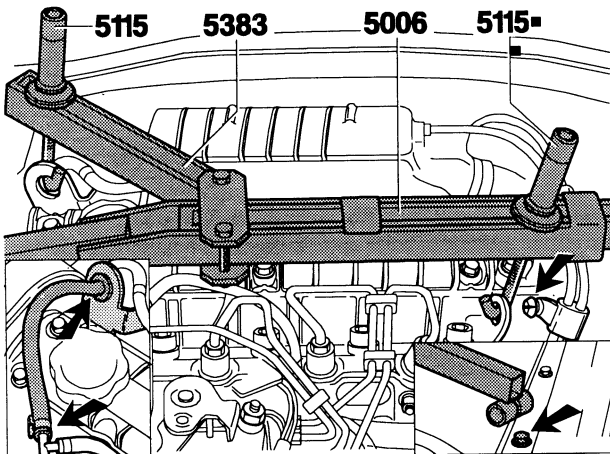
**D 19 T**

Fit a new timing gear belt/and Poly V-belt

*Special tools* 999 5006, 999 5115, 999 5383,  
999 5434, 999 5506

Remove:

- the lower cover plate for the Poly V-belt
- Poly V-belt from the alternator/coolant pump



Fit the lifting eyelet and its lift hooks.

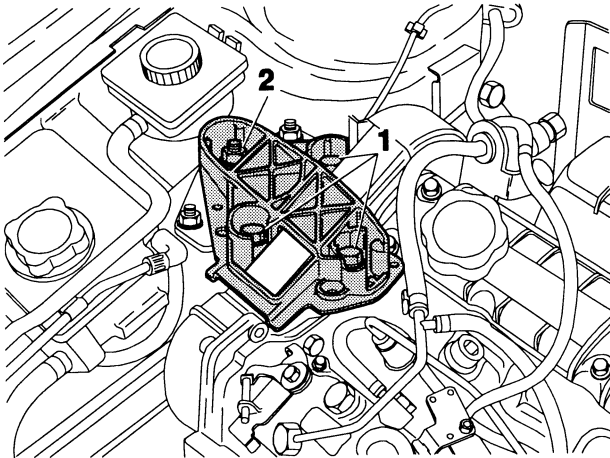
Place a flannel under the fuel return pipe.  
Remove fuel return pipe at the fuel pump's pipe and  
remove it from the lifting eyelet beside the timing gear  
end.

Remove the rubber gaiter.

Remove the screw at the left front wing (A).

Place lifting eyelet 999 5006 above the engine and  
insert hook 999 5115 into the eyelet.

Place support unit 999 5383 and lifting eyelet 999 5115  
in the eyelet.

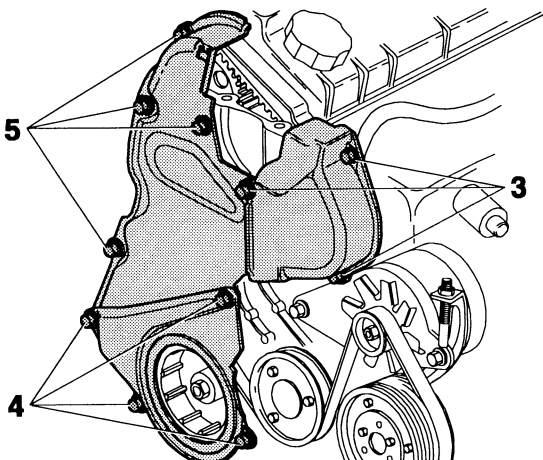


Lower the engine mounting at the timing gear.

Remove the three screws (1) and nut (2) and remove  
the mounting.

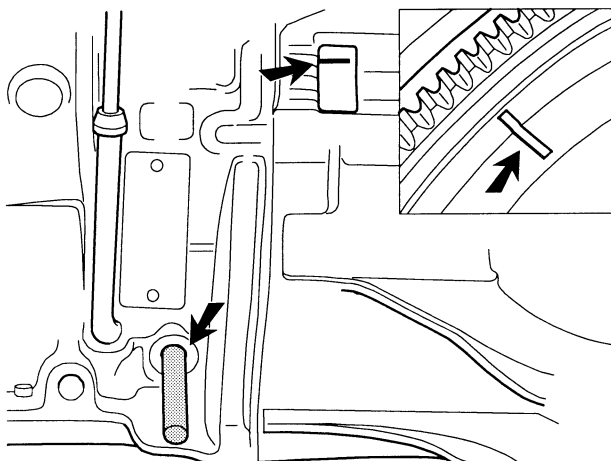
Remove the fuel filter from the housing bracket.

Remove the two nuts.



Remove the timing gear housings.

Remove the three screws (3) and dismantle the timing  
cover from the fuel pump's gear. Remove the four  
screws (5) and dismantle the upper timing gear cover.



### Remove the timing belt

Rotate the crankshaft clockwise until cyl. no. 1 (flywheel side) is above the TDC injection point so that the following markings match:

- flywheel - bell housing
- rear protecting plate - camshaft gear

Etch a mark on the injection pump's mounting bracket opposite the mark on the injection pump's drive gear.

Remove the plug from the threaded hole to the right of the oil dipstick. Insert an 8 mm thick drill bit through the hole.

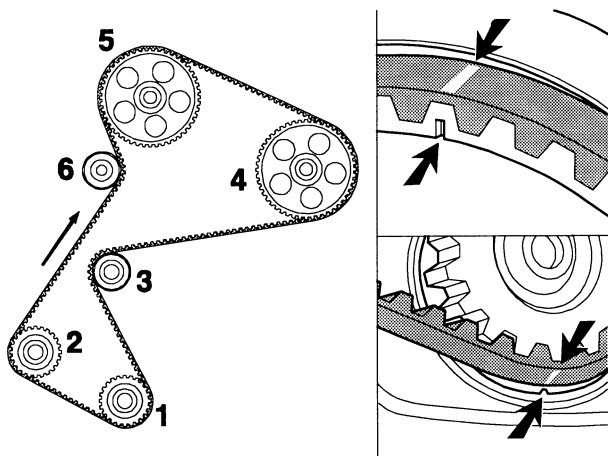
Check that the drill locks the crankshaft.

Remove the crankshaft pulley.

Undo the tensioner pulley.

Remove the drive belt.

Clean and check the drive gears.



### Fit the timing belt.

Check that the drill bit in the crankshaft has not shifted.

Fit the timing belt.

The markings on the belt should match the marks on the crankshaft/injection pump gear.

Note! Observe the following when fitting the belt:

- the belt's direction of rotation (arrows on the belt)
- the sequence in which the belt is to be fitted over the various gears (follow the numbers in the figure).
- the tension pulley must be completely non-tensioned so as to avoid damaging the belt.

### Adjusting the timing belt

Tighten an M6 screw to adjust the position of the tension pulley.

Apply special tool 999 5506 to the belt and the tension pulley.

Slide the 0-ring on gauge 999 5434 below the graded scale (1).

Place gauge 999 5434 in the hole in 999 5506 and press the tool as in the illustration 2.

The depth of pressure can be felt with the thumb.

The correct pressure is obtained when the measuring needle is at the same height as the top of the gauge.

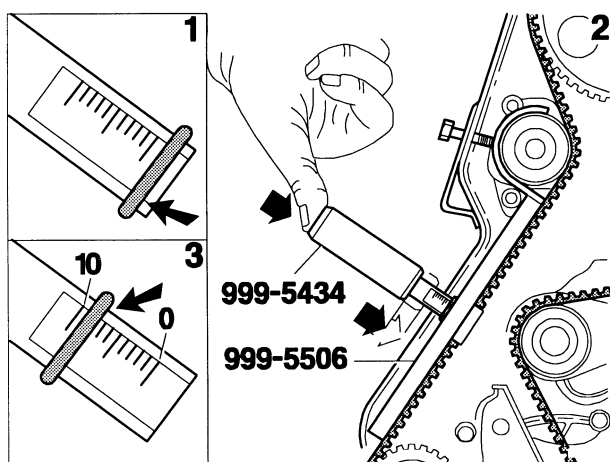
Carefully withdraw gauge 999 5506 and read the belt tension (in mm).

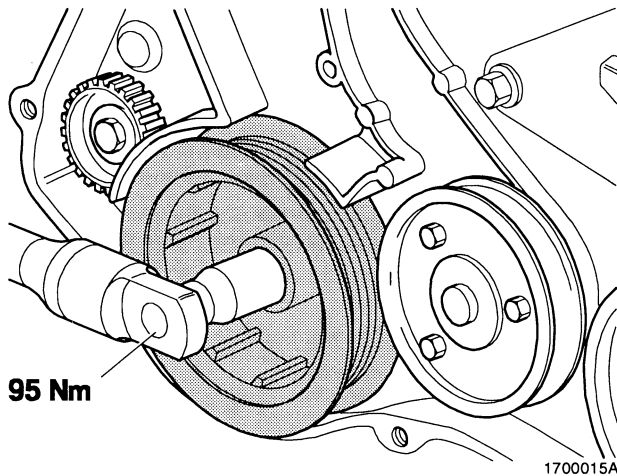
Adjust belt tension correctly using the M6 screw. Reference value for checking and adjusting (cold engine): 7.5 mm.

Tighten the tension pulley's lock nut to 50 Nm.

Check that the marks on the timing belt match the marks on

- crankshaft I injection pump gear
- crankshaft gear





#### Fit the crankshaft pulley

Fit the crankshaft pulley.

Clean the centre screw.

Apply locking fluid and tighten the screw to 95 Nm.

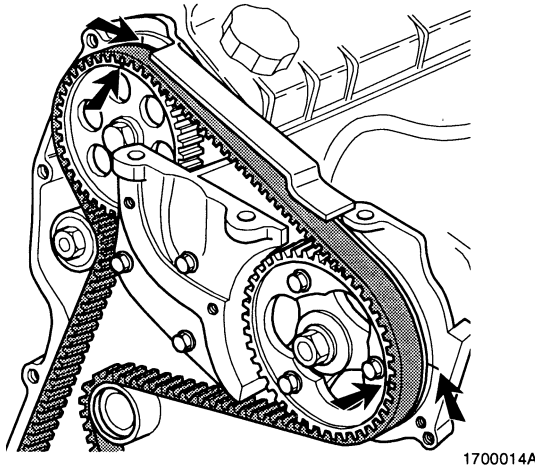
Check that the crankshaft pulley is correctly fitted.

Remove tool 999 5434. Remove the drill bit.

Rotate the crankshaft two full revolutions (clockwise).

Stop in the TDC position and reinsert the drill bit.

Check that the marks on the timing gear cover and injection pump mounting bracket match the marks on the camshaft/injection pump's gears.



Check belt tension.

Remove the M6 screw

Check-tighten belt tension and adjust if necessary (see the section on adjusting the timing belt on the previous page)

## Check/adjust injection pump.

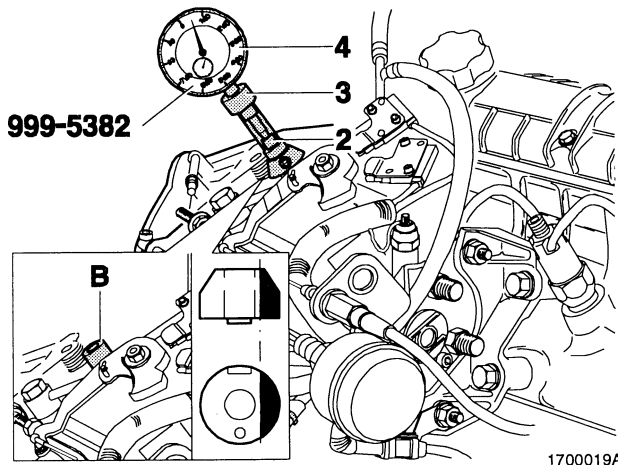
Fit the gauge to the injection pump.

If necessary, remove 6 mm of material from the gauge 999 5382 (see the figure)

Remove the drill bit and rotate the crankshaft 3/4 revolution clockwise.

Fit gauge 999 5382:

- remove the plug (B) and insert the pin (2), which belongs to the special tool.
  - fit and tighten the holder (3).
  - fit the dial gauge (4) and insert it at least 0.2 mm.
- Tighten the gauge and reset it to zero.



Check/adjust injection.

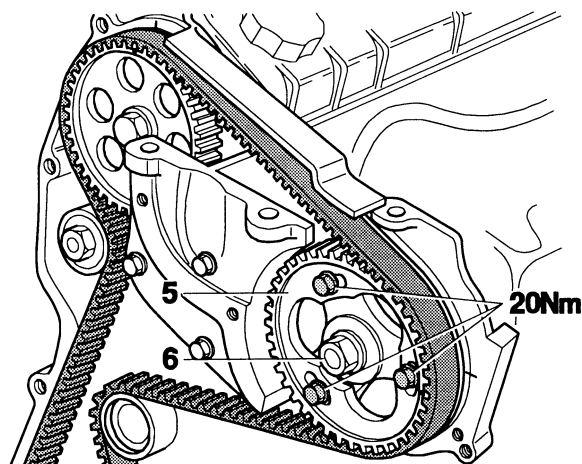
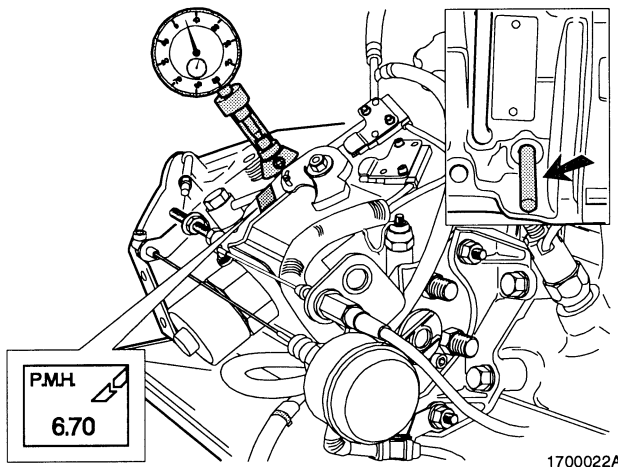
Rotate the crankshaft clockwise until the needle on the gauge shows 5.00.

Press the drill bit in and rotate the crankshaft clockwise until the drill slips into the recess in the crankshaft.

Read the gauge.

The reference value is found on the pump's inspection arm.

Tolerance 0.02 mm.



If the correct value is not obtained, undo the pump gear's three screws (5); the pump's drive shaft (6) is rotated until the correct value is appears on the dial.

Tighten the three screws to 20 Nm.

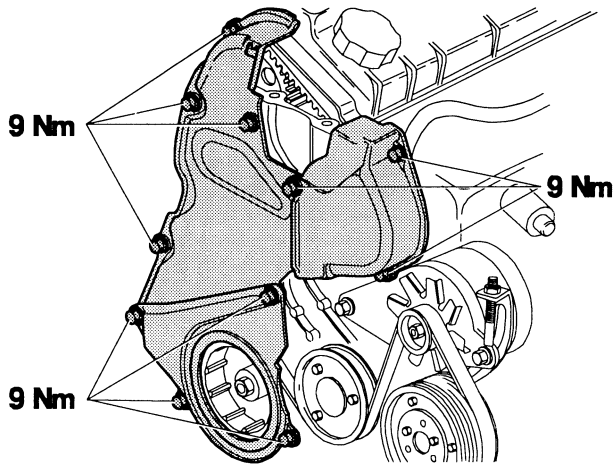
Check the setting once more.

Remove the gauge.

Remove tool 999 5382 together with the dial and pin.

Refit the plug with a new gasket. Tighten to 20 Nm.

Fit the oil filler cap.



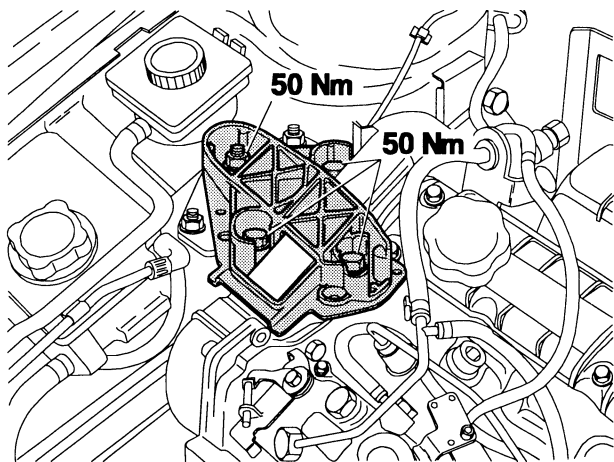
Fit the timing covers.

Fit the upper timing cover and the four screws.

Fit the fuel pump's gear casing and the three screws.

Tighten all the screws.

Tightening torque: 9 Nm.



Refit the engine mounting.

Fit the mounting.

Fit and tighten the three screws.

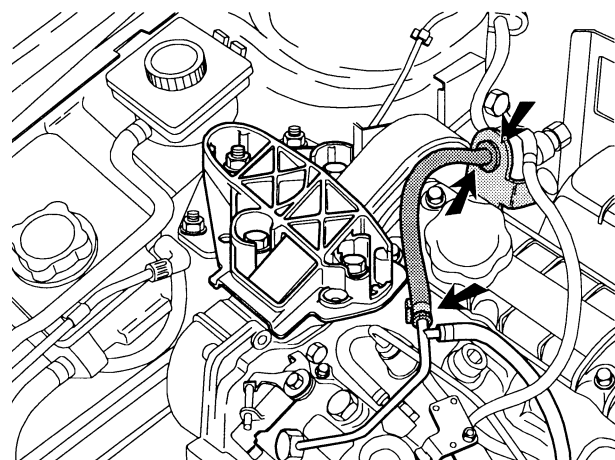
Tightening torque: 50 Nm.

Fit and tighten the nut.

Tightening torque: 50 Nm.

Remove lifting eyelet 999 5006 and 999 5383 together with the hooks 999 5115.

Check the fitting and adjust if necessary.



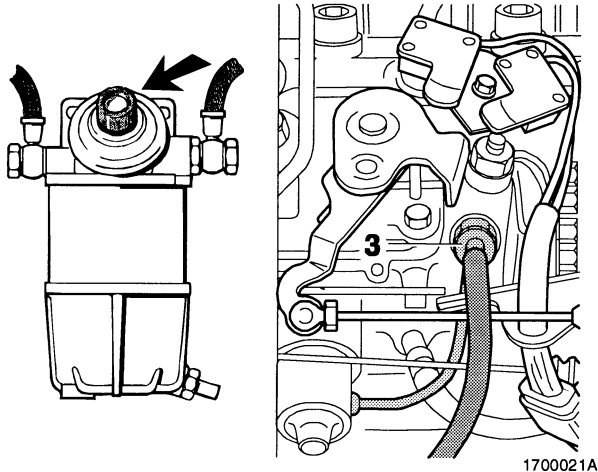
Connect the fuel pump's return pipe.

Fit:

- the rubber ring in the lifting eyelet
- the return pipe through the lifting eyelet
- a new clamp on the return pipe

Connect the return pipe to the fuel pump's pipe and tighten the clamp.





1700021A

Bleed the fuel system.

Place a container under the pump. Connect a hose to the bleeder screw (3) and let it hang down into the container.

Open the bleeder screw.

Use the filter's manual pump build up pressure until clean fuel appears via the bleeder screw.

Shut the bleeder screw and remove the hose.

Pump a few more times until a slight resistance is felt.

Fit the Poly V-belt on the alternator/coolant pump.

Check/adjust the drive belt (Poly V-belt)

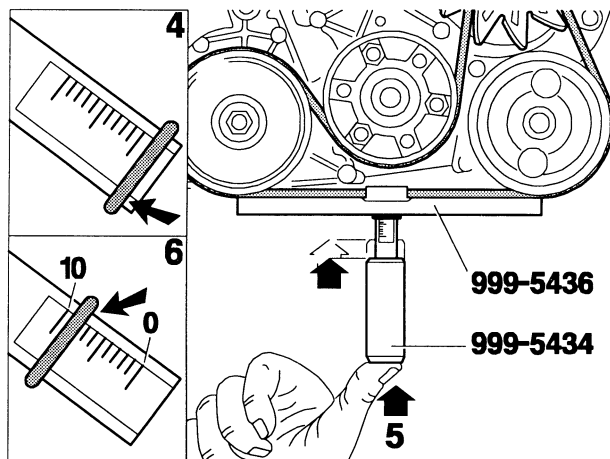
Fit tools 999 5434 and 999 5436 to the belt.

Thread the gauge's O-ring below the graded scale (4). Fit the gauge and press it as far in as shown in the figure (5).

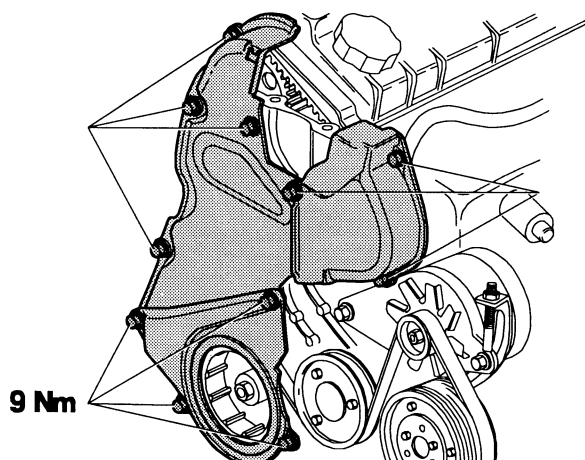
The depth of this pressure can be felt with the thumb.

The correct length is obtained when the needle is flush with the top of the gauge.

Carefully remove the gauge and read the belt tension (6).



Inspection max. value	Adjustment "run-in" belt	Adjustment new belt
4.5 mm	4 mm	3 - 4 mm



Fit:

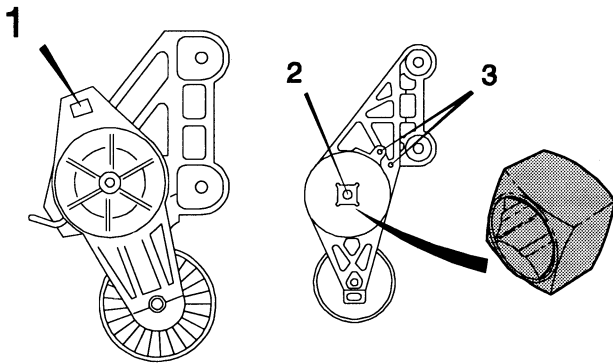
- the lower cover plate and tighten to 9 Nm
- side protector

Fit:

- fuel filter
- the two nuts and tighten them
- Start and check

**B 6244/6254/6304**

Special tool: 998 8500



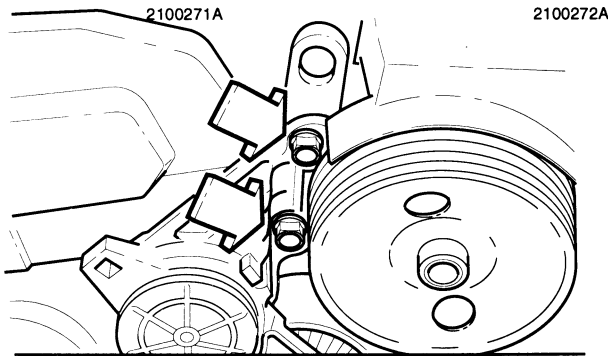
**Removal of auxiliary unit belt incl. greasing of belt tensioner**

As of model year 1994, the belt tensioner is maintenance-free

1

Remove the auxiliary unit belt

Remove the belt. Use an articulated wrench with a 3/8" socket (1) to loosen the belt.



As of M/Y 1994, use tool 999 5547 in the belt tensioner's centre (2).

Lock the belt tensioner in the service setting by inserting a lock pin in the holes (3) when they are above each other.

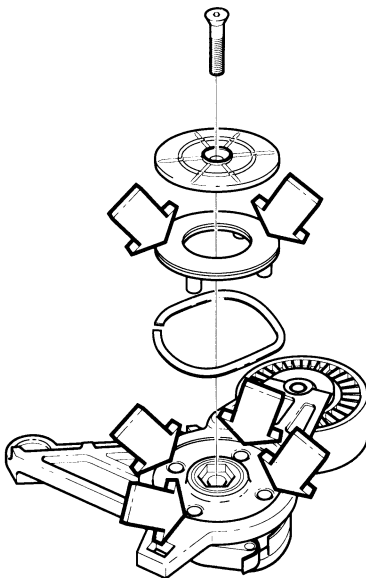
Remove the belt.

2

Remove the belt tensioner

Undo the belt tensioner's two screws and remove the tensioner.

3



Grease the automatic tensioner pulley

Undo the tensioner's centre screw and dismantle as in the figure.

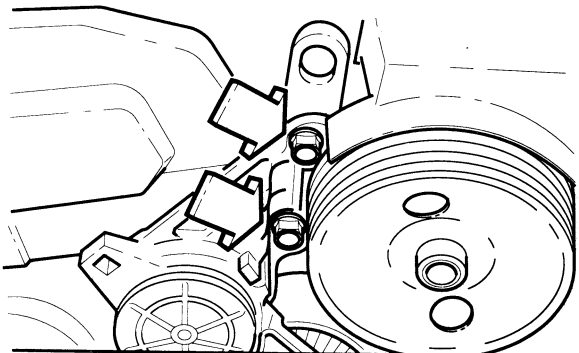
Apply grease P/N 11 61 246-2 (50 g) or 11 61 247-0 (500 g) between the friction plate and cover, and in the four holes used for the spring (marked by arrows).

Reassemble the belt tensioner. Torque-tighten the belt tensioner. Torque-tighten the centre screw to 20 Nm.

4

Refit the belt tensioner

Torque-tighten to 20 Nm.





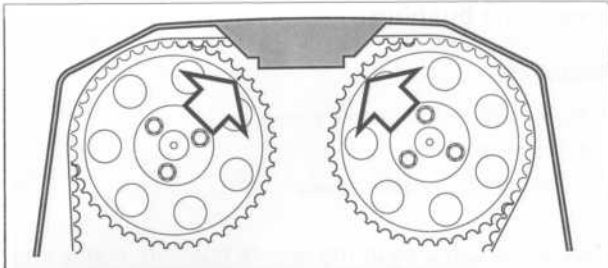
## Replacing the camshaft felt incl. greasing the tension pulley

5

Remove:

- the front timing gear casing
- the splash guard under the engine
- the vibration damper shield
- ignition cable cover

6



Set the camshaft/crankshaft acc. to the markings

Rotate the crankshaft clockwise until the markings on the camshaft pulley and inner timing gear cover and the markings on the crankshaft pulley/oil pump housing match.

Remove the upper timing gear cover.



7

Measure belt tension

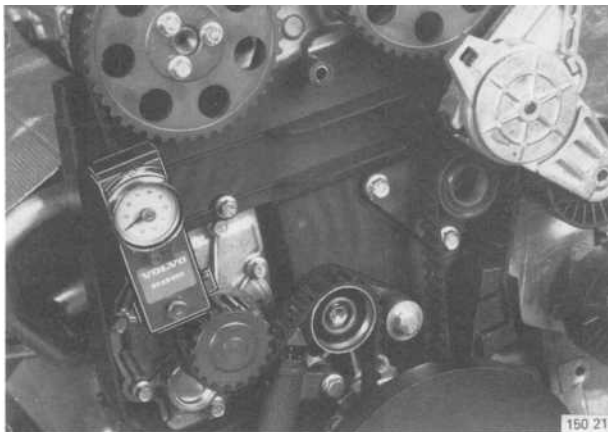
Wait for 5 minutes after adjustment of the camshaft belt.

Place gauge 998 8500 between the output shaft pulley and the coolant pump.

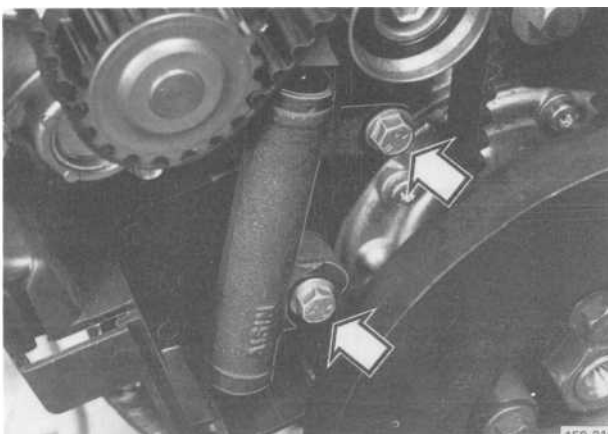
Read the value.

Belt tension should be between:

21 mm belt	3.5 - 4.6 units
23 mm belt	3.0 - 4.0 units
28 mm belt	2.5 - 3.5 units



If the specified value is not obtained, the tensioner unit must be replaced.



Remove the camshaft belt

Loosen and remove the tension unit's upper screw.

Undo the lower screw.

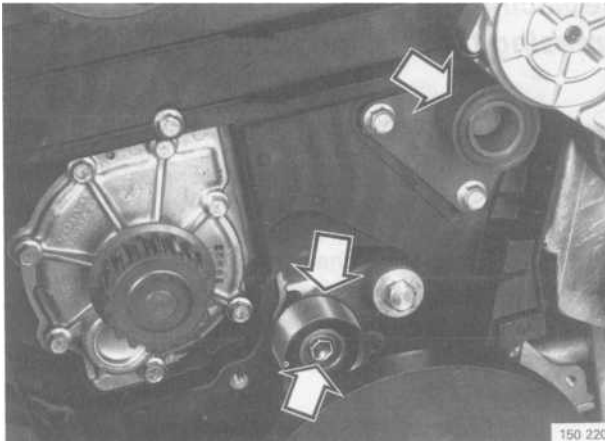
Rotate the tension unit so that the screw is released.

Remove the lower screw.

Remove the tension unit.

Remove the camshaft belt.

Do not rotate the camshafts or crankshaft when the timing gear belt has been removed.

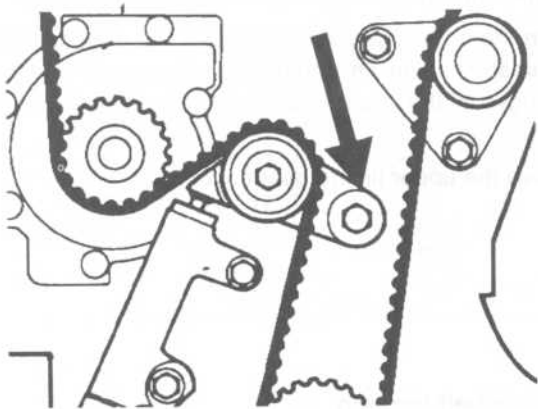


#### Check the tensioner and idler pulleys

Rotate the pulleys and listen for abnormal noise from the bearings. Check that the pulley surfaces facing the belt are clean and smooth.

Check the tension pulley lever and the idler pulley's attachment. Tension pulley lever, torque 40 Nm.

Idler pulley, torque 25 Nm.



#### Grease the bushing

##### Remove:

- the tension pulley lever's screw
- the tension pulley
- the socket behind the screw

Grease the surfaces of the lever's bushing, screw and socket with grease, P/N 11 61 246-2 (50 g) or 11 61 247-0 (500 g).

##### Fit:

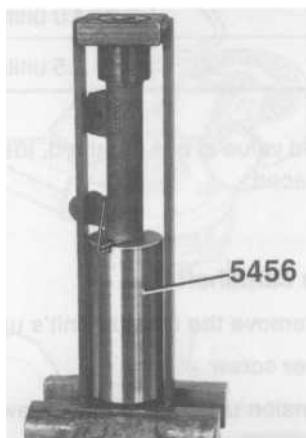
- the socket
- the tension pulley
- the tension pulley lever's screw; torque-tighten to  $39 \pm 5$  Nm.

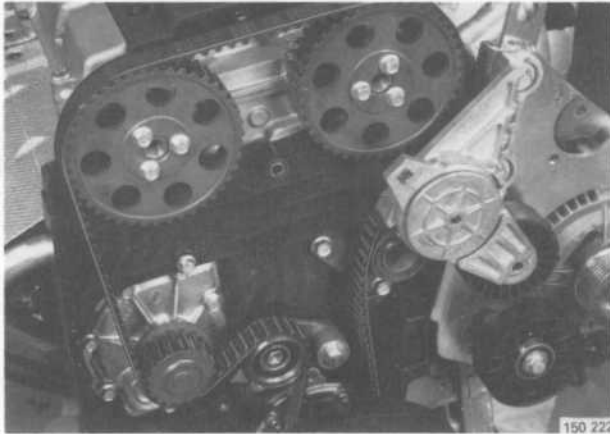
#### Lock the tensioner

Check that there is no visible leakage.

Compress the tensioner with tool 999 5456. Place the tension unit in the tool and screw the tool's centre nut to the end. Wait until compression is complete and insert a lock pin (0 2 mm) in the piston.

**Note!** If there is any visible leakage or if no resistance is felt during compression, or if compression is impossible, the tensioner must be replaced.



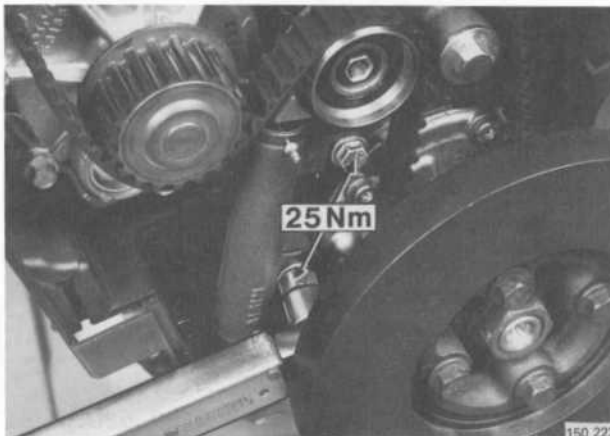


#### Fit the camshaft belt

Thread the belt around the crankshaft and right idler pulley.

Thread the belt over the camshaft pulleys.

Thread the belt around the coolant pump and press it over the tensioning pulley.



#### Fit the tensioner

Fit the tensioner's screws, torque 25 Nm.

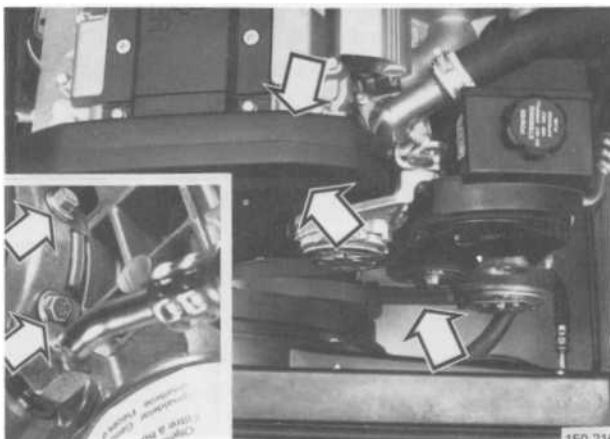
Pull out the lock pin from the tensioner.

Press firmly or hit the belt with a rubber mallet twice in the direction of arrow (1) and twice in the direction of arrow (2).

Fit the upper timing gear cover.

Fit the upper timing gear cover.

Rotate the crankshaft two revolutions and check that the markings on the crankshaft and camshaft pulleys match.

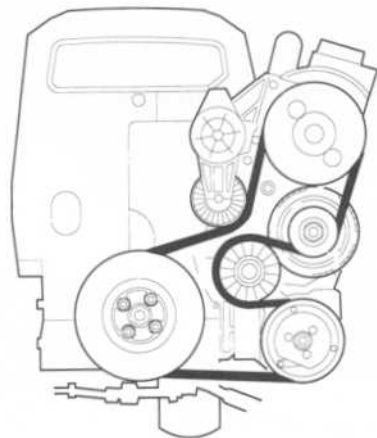


#### Fit:

- ignition cable cover
- front timing gear casing
- vibration damper shield
- splash-guard under the engine

#### Perform a function test

Test run the engine.



#### Fit the auxiliary unit belt

Note! New belt every 90,000 km!

Thread the belt around the crankshaft.

Then around the A/C compressor, idler pulley, alternator and servo pump.

Tighten the belt tensioner with the articulated wrench and position the belt.

Check its operation.