

Timing Belt: Service and Repair

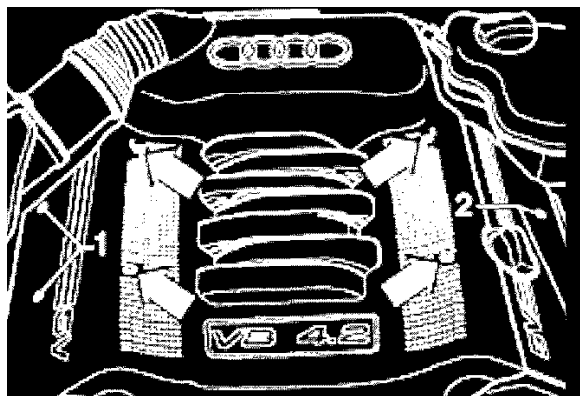
Toothed Belt, Removing and Installing

Toothed belt, removing and installing

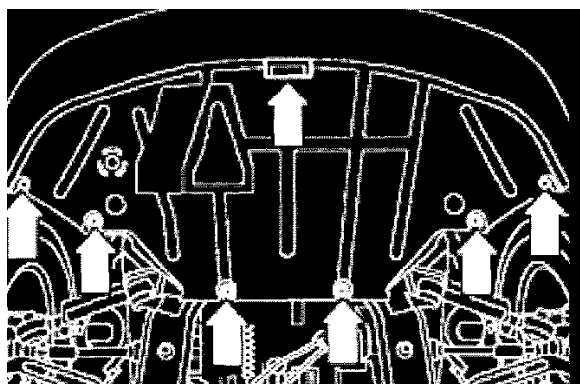
Special tools and equipment:

- Spring pin from 2024A
- Pin wrench 3212
- Open end wrench 3312
- Wrench 3078 (22 mm)
- Clamping bolt 3242
- Camshaft bar T40005
- Puller T40001
- Torque wrench VAG 1410
- Socket attachment VAS 5122
- Tensioning roller key T40009
- Pin T40011

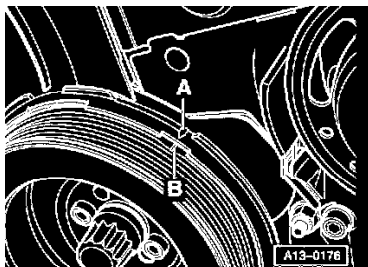
Removing



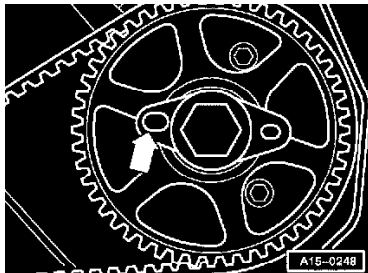
- Remove engine cover-arrows-.
- Remove cylinder head cover-1- and -2-.
- Disengage spring clips at toothed belt cover.
- Remove toothed belt cover.



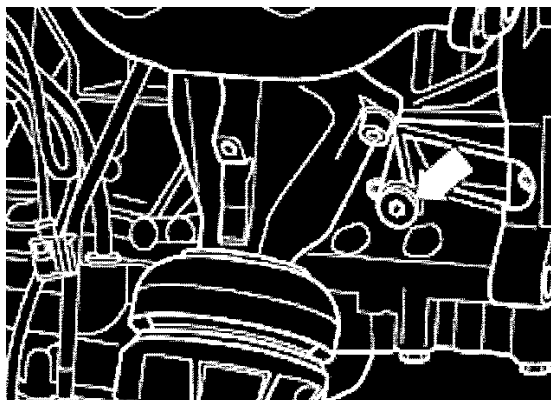
- Remove noise insulation -arrows-.
- Removing and installing ribbed belt. See: Drive Belts, Mounts, Brackets and Accessories/Drive Belt/Service and Repair
- Remove ribbed belt pulley for viscous fan.



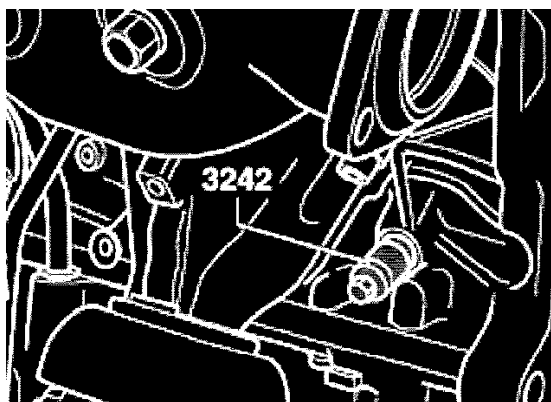
- Turn crankshaft to TDC by hand. Markings -A- and -B- must be aligned.



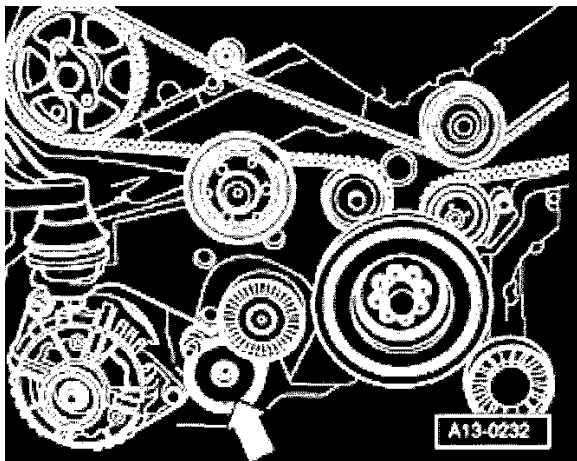
- Check position of camshafts: larger holes -arrow- in securing plates on camshaft sprockets must be in line with each other and facing inward. If not, turn crankshaft one revolution.



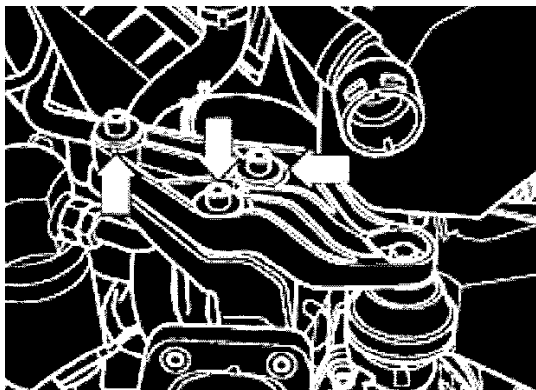
- Remove sealing plug -arrow- from left side of cylinder block.
- TDC drilling in crankshaft must be behind sealing plug hole (feel to check).



- Screw clamping bolt 3242 for crankshaft into sealing plug hole and tighten.



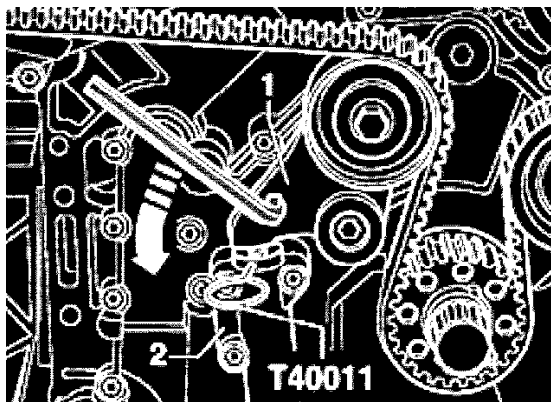
- Remove tensioner for ribbed belt.
- Remove vibration damper.



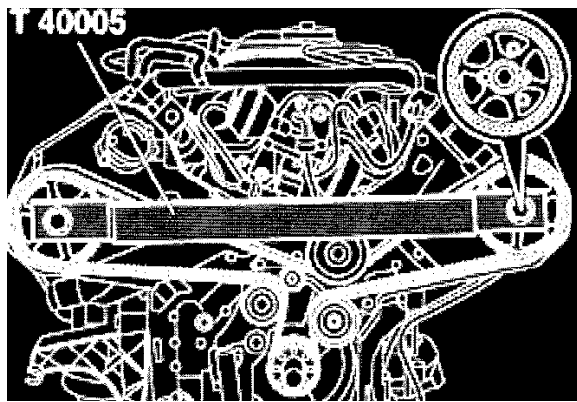
- Remove torque support -arrows-.

Note:

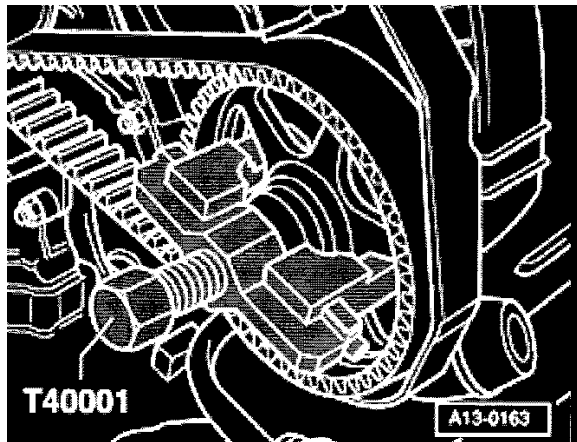
- Mark the direction of rotation of the toothed belt with chalk or felt pen before removing. A used belt can break if it rotates in the wrong direction when reinstalled.
- The toothed belt tensioning element is oil damped. To compress tensioning element apply constant pressure (compresses slowly).



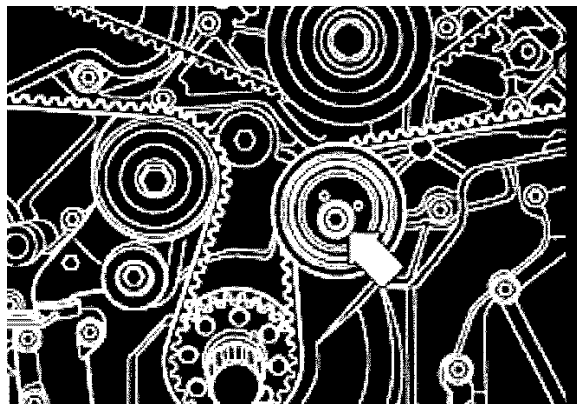
- Using 8 mm Allen key, turn toothed belt tensioning lever-1- in direction of arrow until tensioning element -2- is compressed far enough to insert pin T40011 in the drilling and in plunger.



- Install camshaft bar T40005 onto securing plates of the two camshafts.
- Loosen two camshaft bolts and unscrew approximately 5 turns.
- Remove camshaft bar T40005.

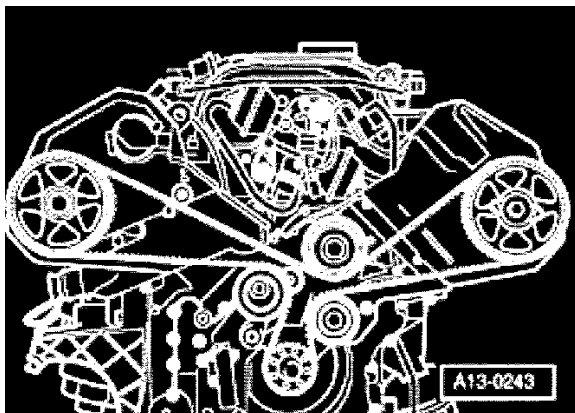


- Pull off both camshaft sprockets using puller T40001.



- Loosen toothed belt tensioning roller (arrow).
- Remove toothed belt together with camshaft sprocket for cylinder bank 1-4.

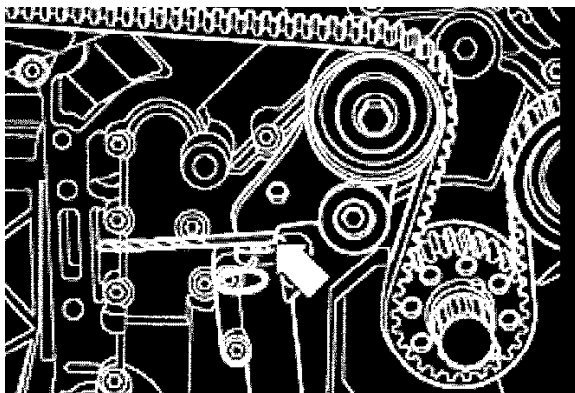
Installing



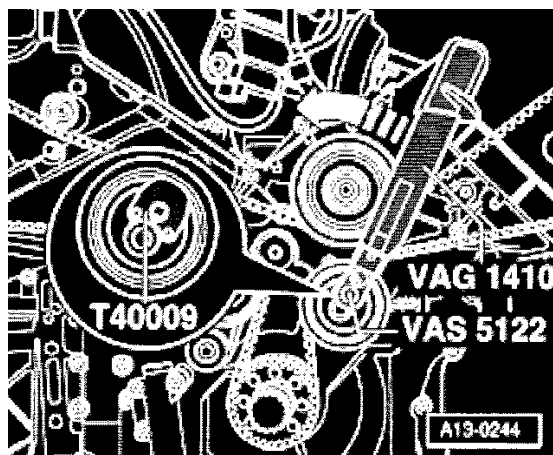
- First install toothed belt on crankshaft sprocket, idler wheel for tensioner, tensioning roller, camshaft sprocket for cylinder bank 5-8, coolant pump and damper wheel.
- Then take camshaft sprocket for cylinder bank 1-4, install toothed belt and bolt sprocket onto camshaft.
- Lightly secure both camshaft sprockets with securing plates by tightening hand tight.

Note: The camshaft sprockets must be tight enough on the camshaft tapers to be turned but not to be moveable axially.

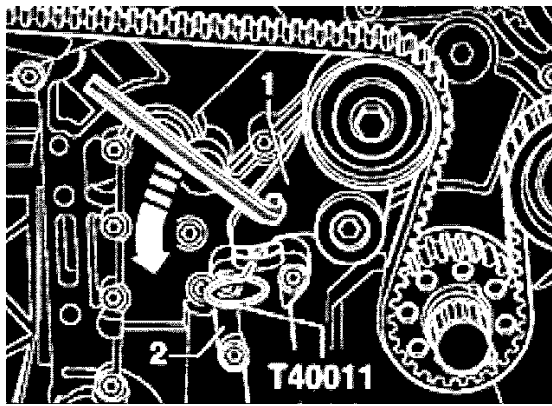
- Attach camshaft bar T40005.



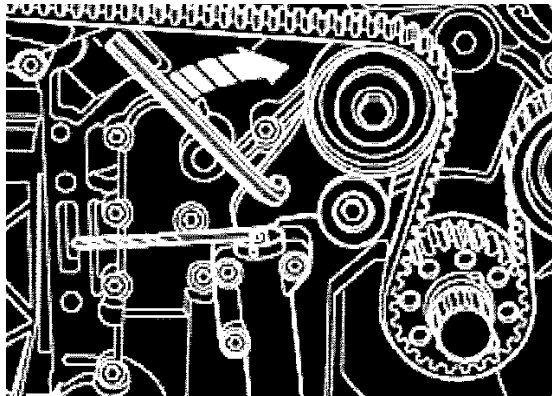
- Insert a 5 mm drill bit between tensioner and hydraulic piston -arrow-.



- Tension toothed belt initially to **4 Nm (35 inch lbs.)** using tensioning key T40009 and torque wrench VAG 1410 with socket attachment VAS5122 by turning in direction of arrow. Then tighten eccentric wheel to **22 Nm (16 ft. lbs.)**.
- Remove 5 mm drill bit.



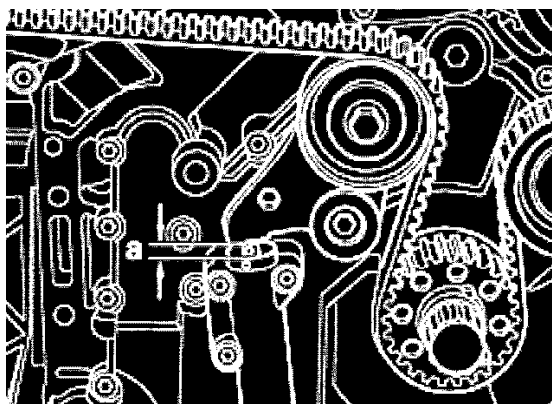
- Using 8 mm Allen key, turn toothed belt tensioning lever -1- in direction of arrow until T40011 can be removed.



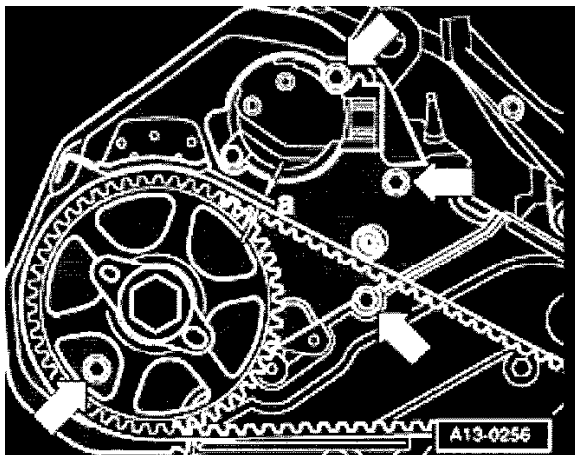
- Using 8 mm Allen key, turn toothed belt tensioning lever in direction of arrow until 7 mm drill bit can be inserted between toothed belt tensioning lever and hydraulic tensioning element.
- Tighten bolts on camshaft sprockets.

Note: Use camshaft T40005 to prevent camshafts from turning.

- Remove camshaft bar T40005.
- Remove 7 mm drill bit.
- Remove crankshaft clamping bolt 3242 and install sealing plug in hole.
- Turn crankshaft 2 revolutions.



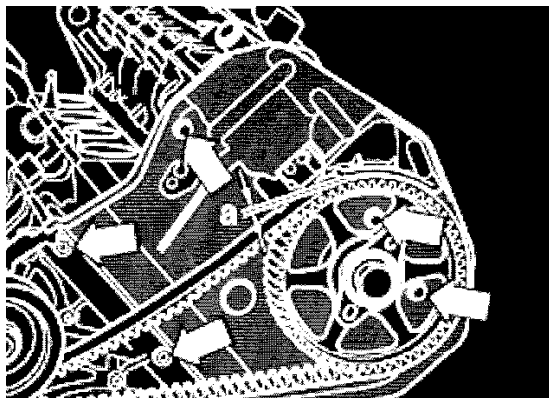
- Measure dimension -a- between toothed belt tensioning lever and hydraulic tensioning element.
 - Dimension a = **5 mm**.
- If distance is not correct re-adjust tensioning roller to **5 mm**.



- Check dimension -a- of belt guard with feeler gauge.
- Dimension -a- = **1 mm (0.0393 inch)**

Right cover, adjusting

- Turn crankshaft until all bolts -arrows- are exposed.
- Loosen all bolts -arrows- of cover.
- Adjust dimension -a- using feeler gauge to **1 mm (0.0393 inch)**.



- Check dimension -a- of belt guard with feeler gauge.
- Dimension -a- = **1 mm (0.0393 inch)**

Left cover, adjusting

- Turn crankshaft until all bolts -arrows- are exposed.
- Loosen all bolts -arrows- of cover.
- Adjust dimension -a- using feeler gauge to 1 mm (0.0393 inch).

Tightening torques

Toothed Belt Sprocket To Camshaft **55 Nm (41 ft. lbs.)**

Idler Wheel **45 Nm (33 ft. lbs.)**

Toothed Belt Tensioning Roller **20 Nm (15 ft. lbs.)**

Pulley To Crankshaft **20 Nm (15 ft. lbs.)**

Toothed Belt Tensioner **10 Nm (7 ft. lbs.)**

Eccentric Wheel **22 Nm (16 ft. lbs.)**

Center Bolt To Crankshaft 1) **200 Nm + 180 degrees (148 ft. lbs. + 180 degrees)** 2)

Cover To Cylinder Head **10 Nm (7 ft. lbs.)**

1) Always replace center bolt.

2) Turning in two stages of **90 degrees** is also permissible.