**Toothed Belt**

**Special tools and workshop equipment required**

- Tightener pulley wrench -T40009-
- Crankshaft holder -3242-
- Torque wrench (5-60 Nm) -VAG 1783-
- Ratchet insert 1/4" -VAS 6234-
- Puller -T40001- with claws -T40001/2-
- Camshaft adjustment -T40005-
- Locking pin -T40011-
- Spanner wrench -3212-

**Removing**

**Note**

*Before raising the vehicle on a hoist (wheels off the ground), activate the vehicle lift mode. Refer to →Suspension, Wheels, Steering; Rep. Gr.43.*

- Remove the front bumper. Refer to →Body Exterior; Rep. Gr.63.
- Remove the lock carrier. Refer to →Body Exterior; Rep. Gr.50.
- Remove the ribbed belt. Refer to →Chapter „Ribbed Belt”.
- Remove the engine cover -2- upward.
- Remove the upper left and upper right toothed belt guards.

**Caution**

*Only turn over the engine at the crankshaft in the direction of engine rotation (clockwise).*

- Rotate the crankshaft in the direction of engine rotation using the crankshaft toothed belt gear bolt to the cylinder 5 Top Dead Center (TDC) marking.

- Notch -B- aligns with the mark -A-

**Note**

*Turning over the engine is performed at the center bolt of the crankshaft.*
– Check the position of the camshafts:

• The large holes -arrows- on the securing plates of the camshaft gears must align on the inside.
  – In case they do not align, turn one more rotation.

– Remove the coolant pipe bolt -arrow- from oil pan.
- Remove the coolant pipe bolt -arrow- from the engine block.

- Remove the locking bolt -arrow- for the TDC mark.

**Note**

*In the crankshaft, a TDC bore is located exactly behind the locking bolt (can be felt by touch).*

**WARNING**

*Do not rotate the crankshaft while touching the TDC mark with your finger - danger of injury.*
- Install the -3242- in the hole for the locking bolt in the upper oil pan.

- Remove the vibration damper bolts -1- from the crankshaft.
- Remove the center toothed belt guard.
– Remove the torque support bolt -arrow- from the torque support valve -N382-.

– Remove the bracket bolts -arrows- for the torque support valve.
Using an 8 mm hex wrench, rotate the toothed belt tensioner in the -direction of the arrow- until the tensioning lever pushes the tensioning element together far enough so that the -T40011- can be inserted into the bore of the tensioning element piston and housing.

**Note**

- When inserting, the bracket for the torque support valve remains installed. The -T40011- can be guided through a hole in the bracket to be inserted into the holes in the tensioner.
- The toothed belt tensioner is oil dampened. Compress it by slowly applying constant pressure.
- Mark the direction of rotation of the toothed belt. Reversed running direction can cause damage.

Loosen the eccentric roller bolt -arrow-. 
– Install the -T40005- in the camshaft securing plates.

– Loosen both camshaft gear bolts approximately 5 turns.

**Note**  
*The -T40005- serves as a retainer.*

– Remove the -T40005-.

– Remove the left and right camshaft gears using the -T40001- with the -T40001/2-.

– Remove the toothed belt.

**Caution**  
*Check the gears after removing. If dents are visible, replace the gears.*

**Installing, (Adjusting Valve Timing)**

**Note**  
*When turning the camshaft, the crankshaft must not be at TDC. Valves and/or pistons may be damaged.*
– Replace the bolts -1- for the camshaft gears and securing plates -2-.

– Grease the threads and head seating surfaces of the bolts for the camshaft gears.

– Install the bolts far enough so that they can still just be turned and do not tilt.

– Observe the proper seating of the securing plates on the camshafts.

Before installing the toothed belt, make sure the crankshaft and camshafts are set to TDC cylinder 5:

- The large holes -arrows- on the securing plates at the camshaft gears must align on the inside.
- The -3242- must be installed in the hole in the upper oil pan.

- Route the toothed belt in the following sequence: Crankshaft toothed belt gear -5-, eccentric roller -4-, tensioner -6-, left camshaft gear -3-, coolant pump -2-.

- Lastly, place the toothed belt on the right camshaft gear -1-.
Turn the tensioning lever twice at 40 Nm in the direction of the arrow to pretension the toothed belt.

**Note**

_The next two illustrations are shown with the torque support bracket removed._

- Insert a 5 mm hex wrench flat between the tensioning lever -1- and tensioning element piston -2-. 
- Tighten the toothed belt by turning the eccentric roller using the -T40009- and the -VAG 1783- using the -VAS 6234- in the direction of the arrow and hold.

  ♦ Pre-tightening specification: 6 Nm

- Tighten the eccentric roller bolt.

**Note**

*Make sure that the position does not change while tightening.*

- Insert the -T40005- into the securing plates of both camshafts.

  ♦ Press in the -T40005- as far as possible.

- Tighten the camshaft gears.

**Note**

*The -T40005- serves as a retainer.*

- Remove the -T40005-.

- Remove the 5 mm hex wrench.
– Rotate the tensioning lever using a 8 mm hex wrench in the -direction of the arrow- until the -T40011- can be removed.
– Remove the -3242-.
– Turn the crankshaft two complete rotations in direction of engine rotation until the crankshaft is at TDC cylinder 5 again.

♦ The large holes -arrows- on the securing plates for the camshaft gears must align on the inside.
Check dimension -a- between the tensioning lever and tensioning element.

Dimension -a- = 5.0 ± 1.0 mm

**Note**

*If dimension -a- is not obtained, repeat the adjustment.*

To check the timing, install the -3242- in the hole in the upper oil pan again.
Check the camshaft positions using the -T40005-.

**Note**
*If the -T40005- cannot be inserted, repeat adjustment.*

- Remove the -T40005-.
- Remove the -3242-.
- Install the locking bolt of the TDC marking into the upper oil pan using new sealing ring.

Further installation is performed in reverse order of removal, noting the following:

**Note**

- Replace the gaskets, seals and O-rings.
- Secure all hose connections using hose clamps appropriate for the model type, refer to the → parts catalog.

- Install the ribbed belt. Refer to → Chapter „Ribbed Belt“.
- Install the lock carrier with attachments. Refer to → Body Exterior; Rep. Gr.50.
- Fill the cooling system. Refer to → Chapter „Draining and Filling“.
- Install the torque support. Refer to → Chapter „Torque Bracket and Support Valve Assembly Overview“.
Note
- Only reuse the drained coolant if the cylinder head or engine block was not replaced.
- Dirty coolant must not be reused.

Tightening Specifications

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