

## Toothed Belt

### Special tools and workshop equipment required

- ♦ Retainer -3036-
- ♦ Locking Pin -3242-
- ♦ Torque Wrench -V.A.G 1783-
- ♦ Reversible Ratchet -VAS 5122-
- ♦ Two-Arm Puller -T40001- with -T40001/2-
- ♦ Camshaft Locator -T40005-
- ♦ Tightener Pulley Wrench -T40009-
- ♦ Locking Pin -T40011-

### Toothed Belt, Removing

- Remove lock carrier. Refer to → Chapter „Lock Carrier, Removing“.
- Disconnect the connector -5- on the Charge Air Pressure Sensor -G31-.
- Loosen hose clips -3- and -4-.
- Disconnect the hoses from the recirculating valves.
- Remove bolts -1-, -2- and remove the air guide pipe.
- Remove ribbed belt. Refer to → Chapter „Ribbed Belt“
- Remove upper left and right toothed belt guards.



#### Caution

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

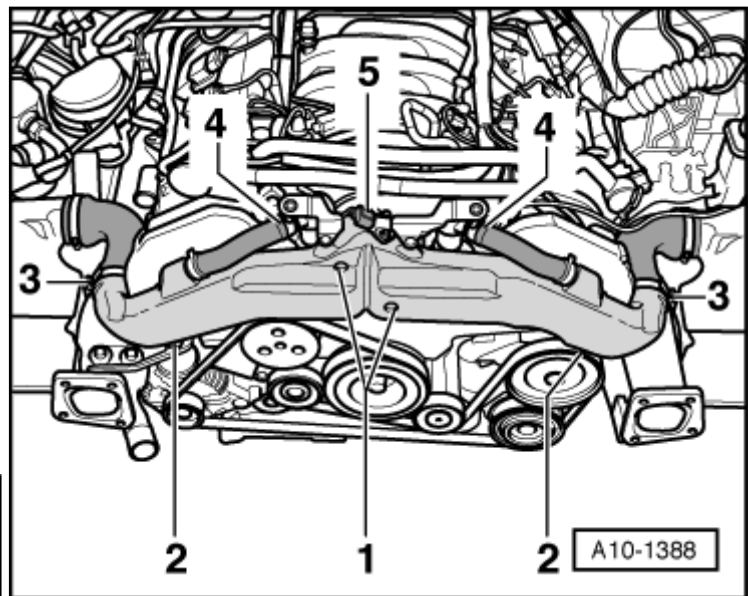
- Position the crankshaft at the toothed belt sprocket center bolt at the TDC marking in the direction of engine rotation.
- Notch -B- aligns with marking -A-.

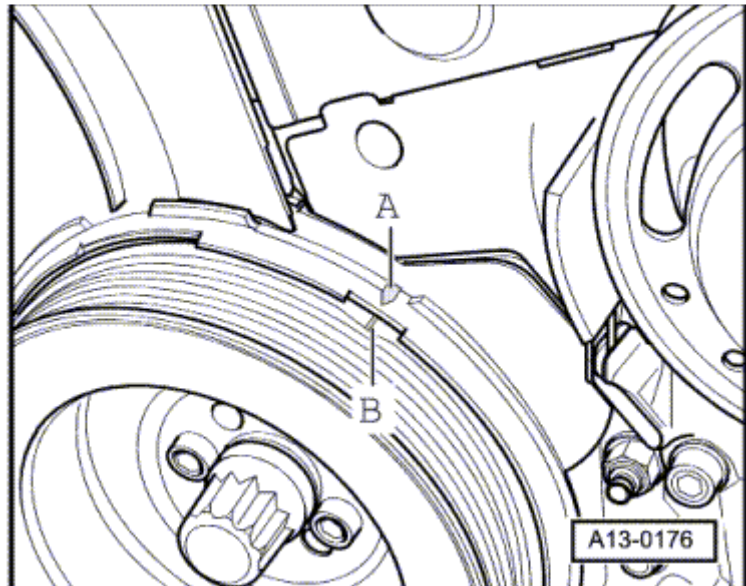


#### Note

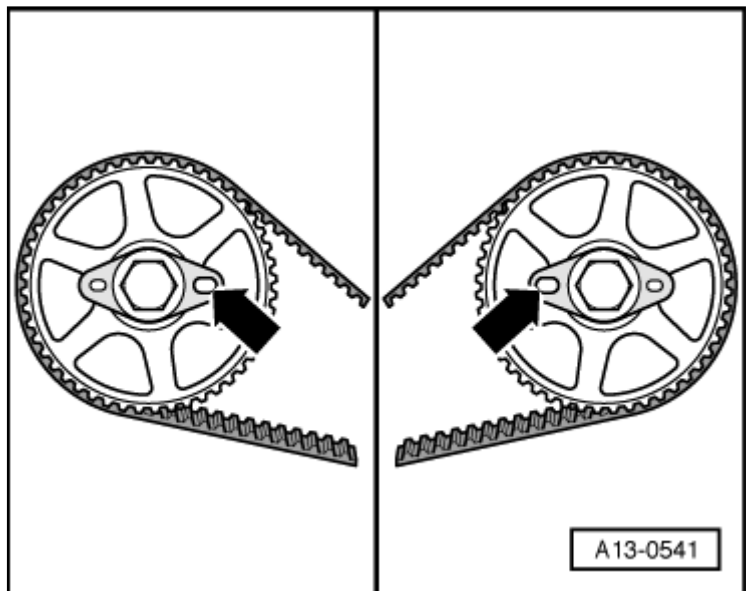
*Turning over the engine is performed at the center bolt of the crankshaft.*

- Check position of camshafts:

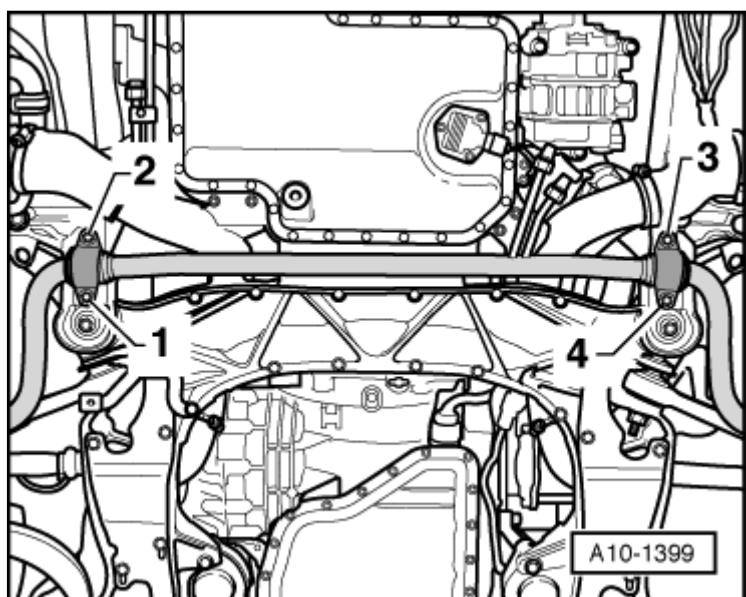




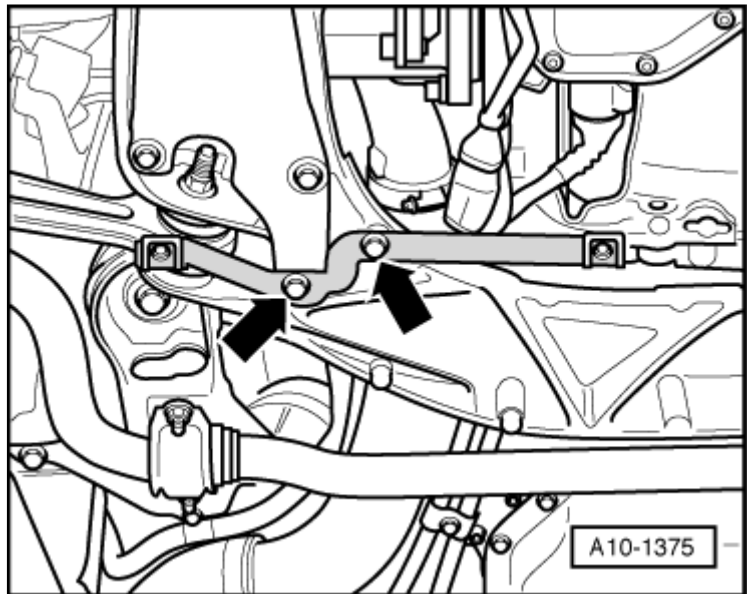
- The large holes -arrows- on securing plates at camshaft gears must align on inside.
- In case they do not align, turn one more rotation.



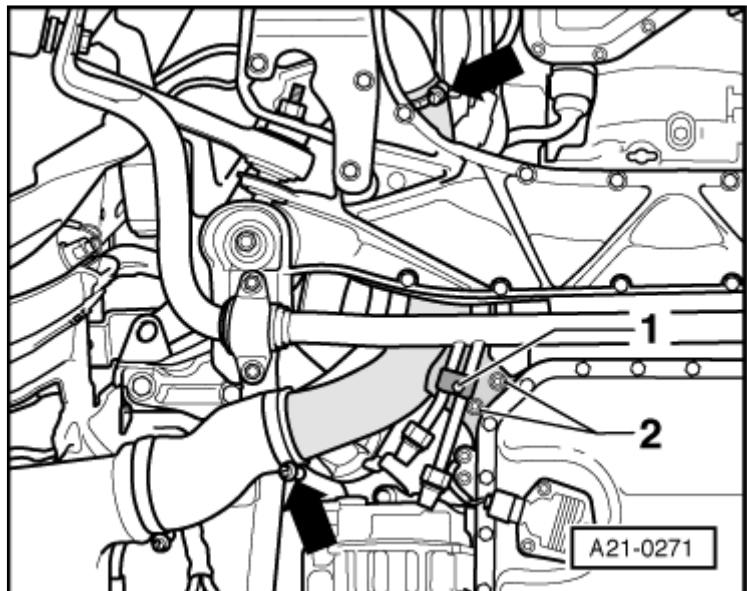
- Remove nuts -1 to 4- for left and right stabilizer mounts.



- Remove left noise insulation bracket -arrows-.



- Remove the screws -1- and -2-.
- Loosen the hose clamps -arrows- and remove the left air guide pipe.



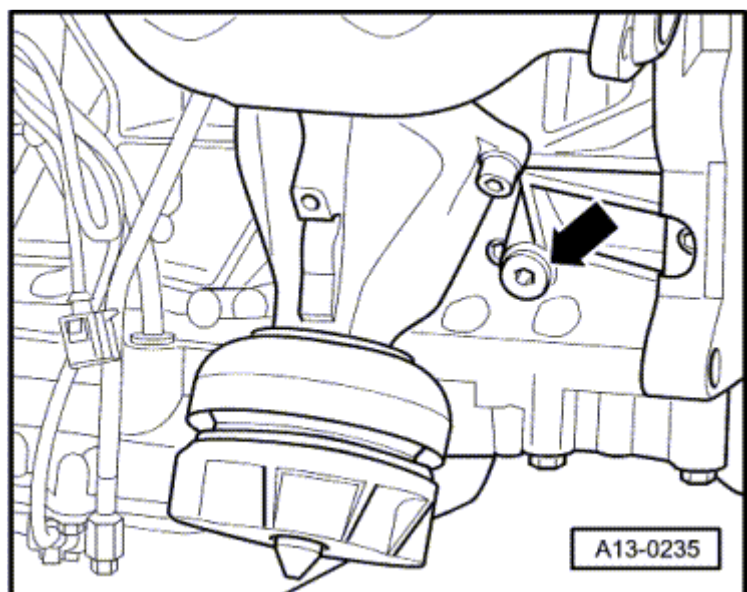
- Remove locking bolt -arrow- of TDC marking at upper section of oil pan.

**WARNING**

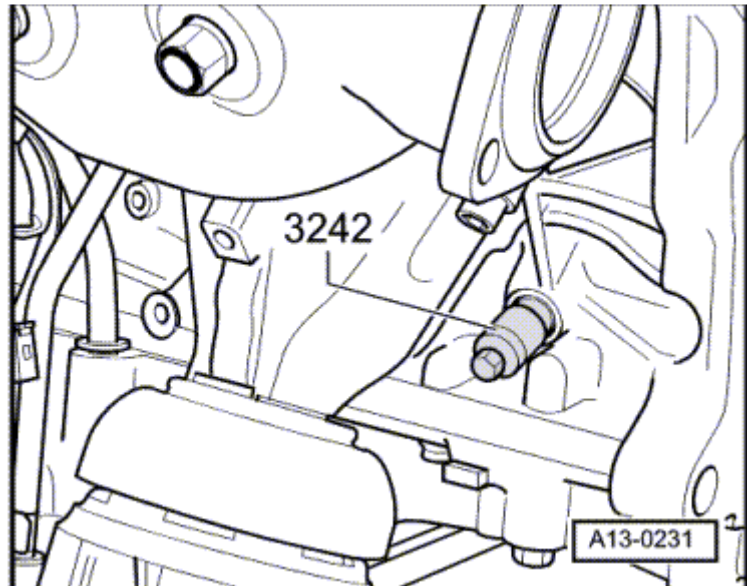
***Do not rotate crankshaft while touching TDC mark with finger - danger of injury.***

**Note**

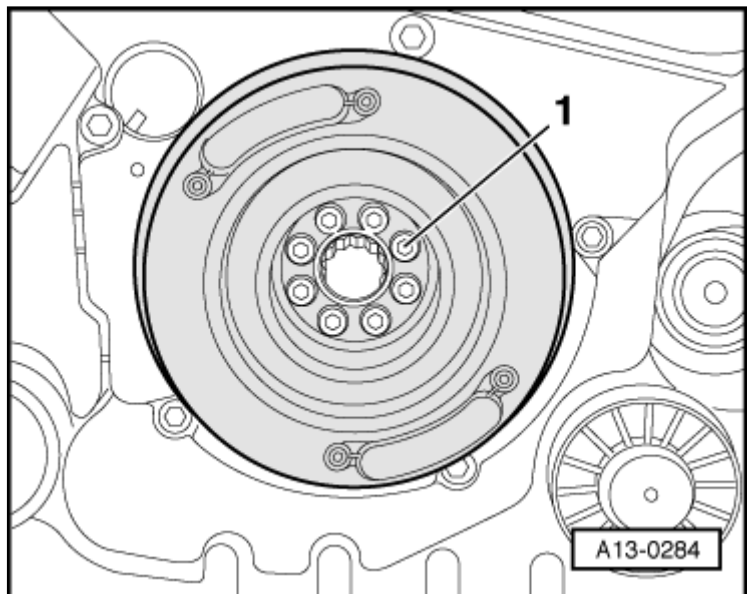
*In the crankshaft, a TDC bore is located exactly behind the locking bolt (can be felt by touch).*



- Install the -3242- into the hole



- Remove vibration damper of crankshaft after removing 8 attachment bolts -1-.
- Remove the center toothed belt guard.

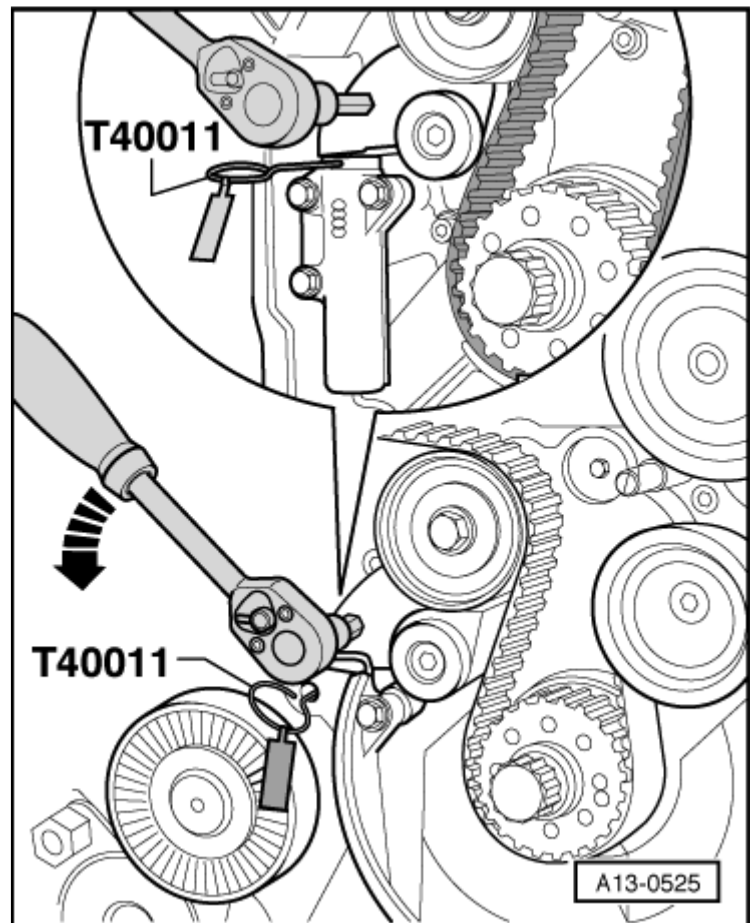


- Using an 8 mm hex socket wrench, turn toothed belt tensioner in direction of - arrow- until tensioning lever pushes tensioner together far enough so that - T40011- can be inserted into the bores of pistons and housing.

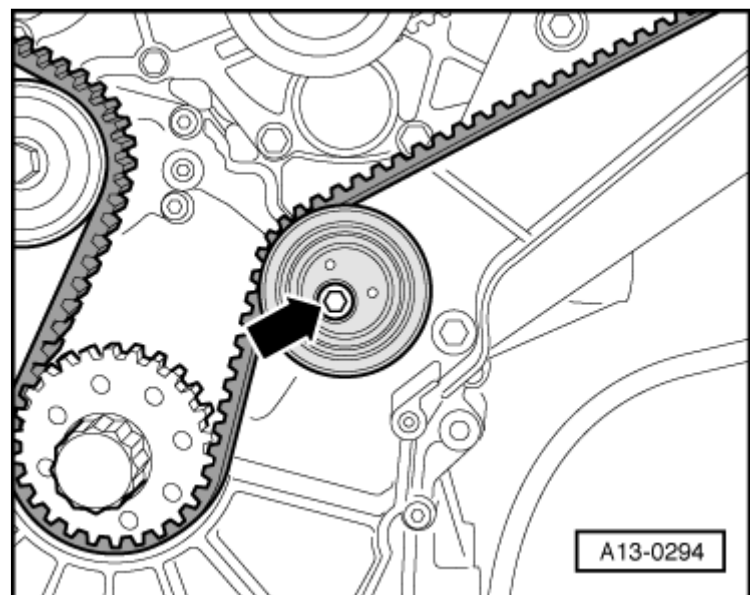


### Note

- ♦ When inserting, the bracket for the torque support remains installed. The locking pin 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.
- ♦ Before removing the ribbed belt, mark the running direction with chalk or felt tip marker. A reversed turning direction can cause damage to the used toothed belt.

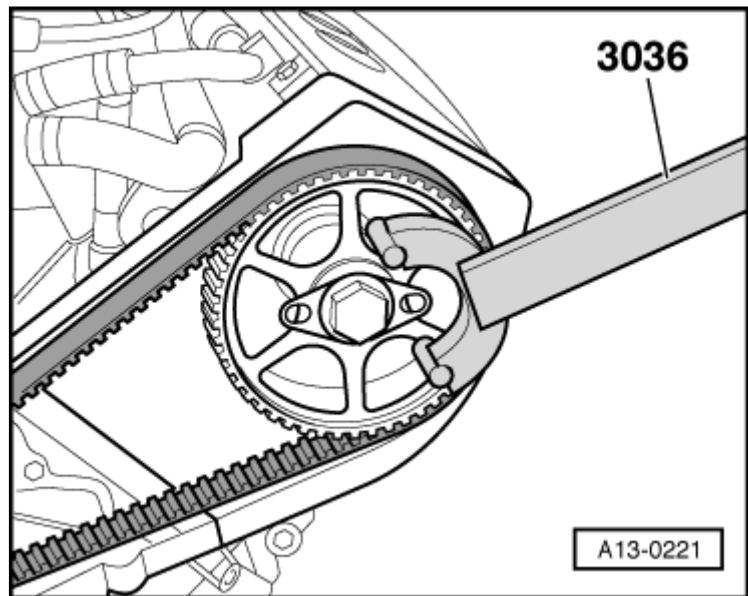


- Loosen bolt -arrow- of eccentric pulley.

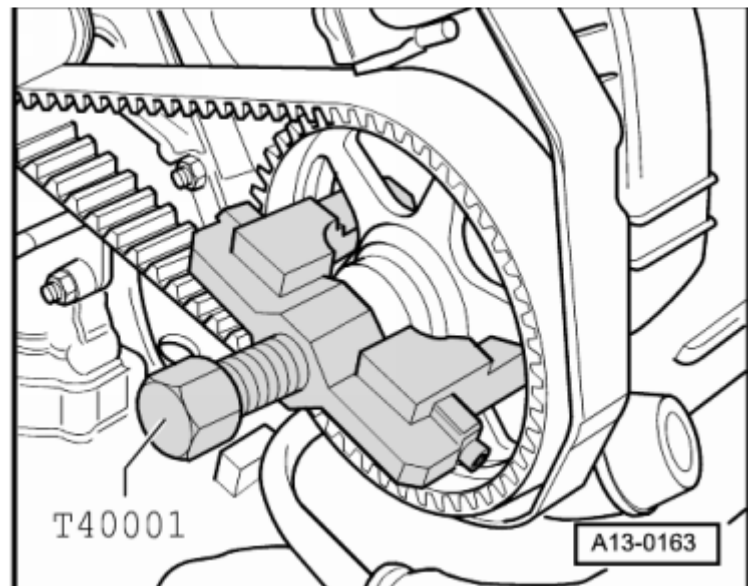


- Loosen the bolts on both camshaft sprockets approximately two turns. Counterhold it using the -3036- while doing this.





- Remove left and right camshaft gears from cone using -T40001- with -T40001/2-.
- Remove toothed belt.



### Installing (Adjusting valve timing)



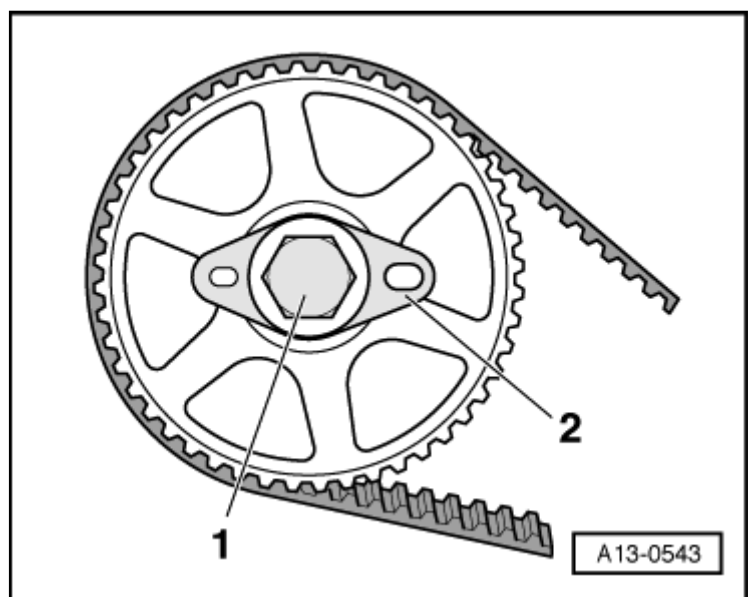
#### Note

When turning camshaft, crankshaft must not be at TDC. Valves and/or pistons may be damaged.

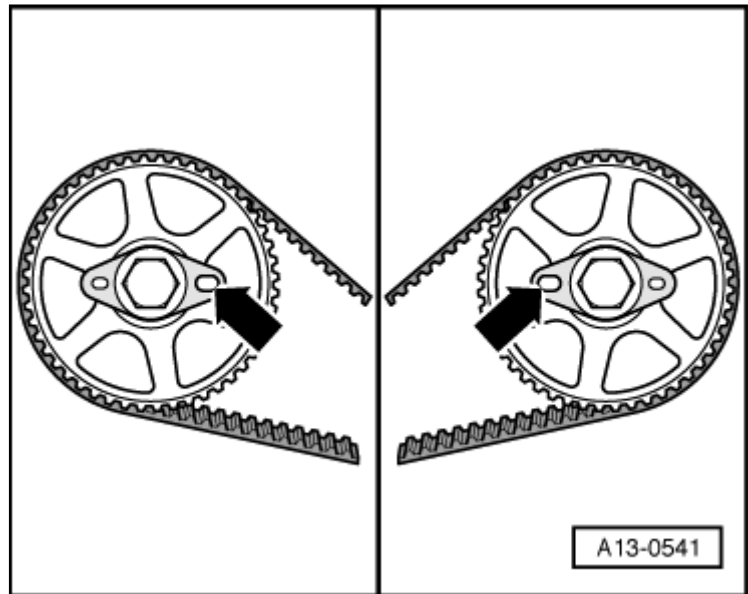
- Replace bolts -1- for camshaft gears and securing plates -2-.
- Grease threads and head seating surfaces of bolts for camshaft gears.
- Install bolts far enough so that they can still just be turned and do not cant.
- Observe the proper seating of the securing plates on the camshafts.

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

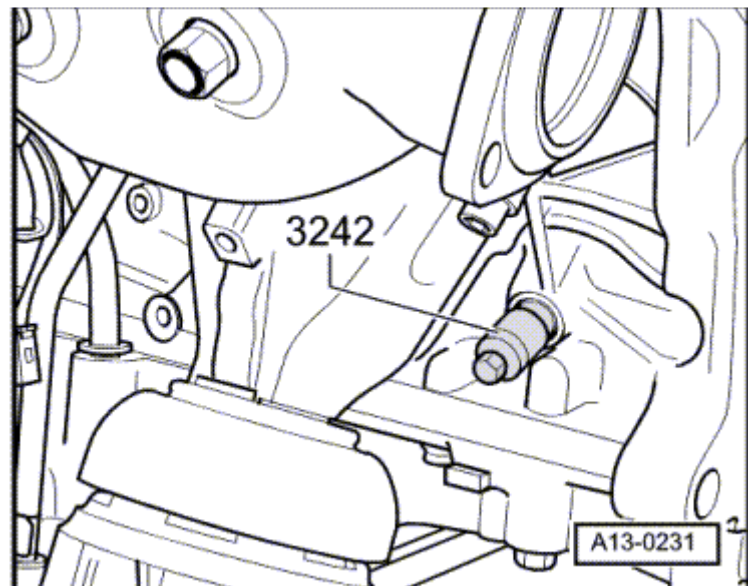
- The large holes -arrows- on securing



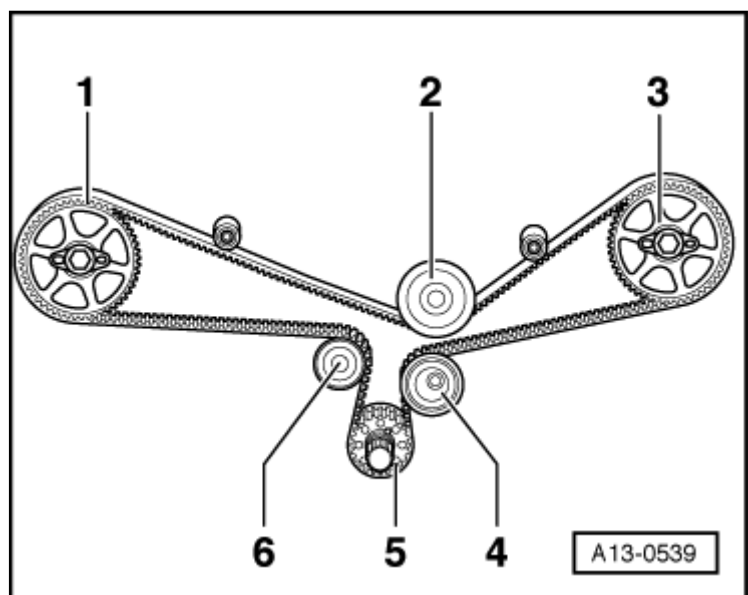
plates at camshaft gears must align on inside.



- -3242- must be screwed in.



- Route toothed belt in the following sequence: Toothed belt gear crankshaft -5-, eccentric pulley -4-, tensioner -6-, toothed belt gear left camshaft -3-, coolant pump -2-.
- At last, place toothed belt on toothed belt gear of right camshaft -1-.

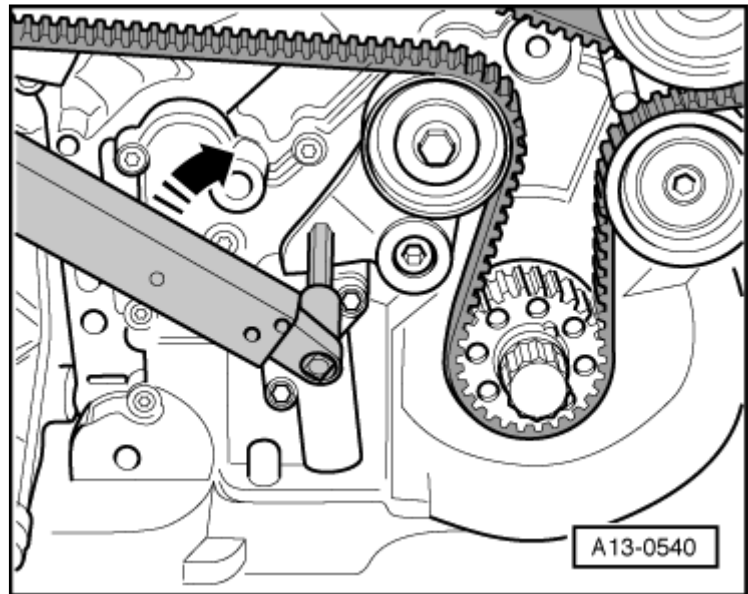


- Turn tensioning lever twice at 40 Nm in direction of -arrow- to pretension toothed

belt.

**Note**

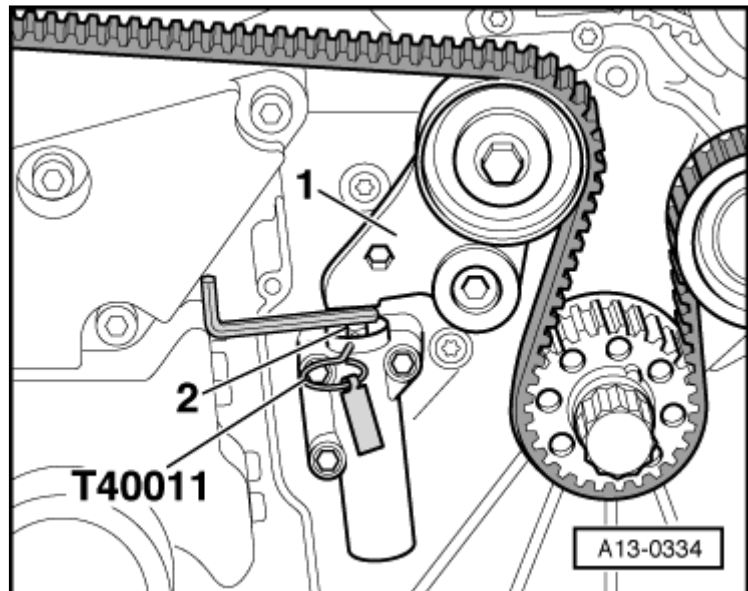
In the next two illustrations, depicted with torque support bracket removed, for the sake of illustration.



- Insert a 5 mm hex socket wrench between tensioning lever -1- and tensioner piston -2-.

**Note**

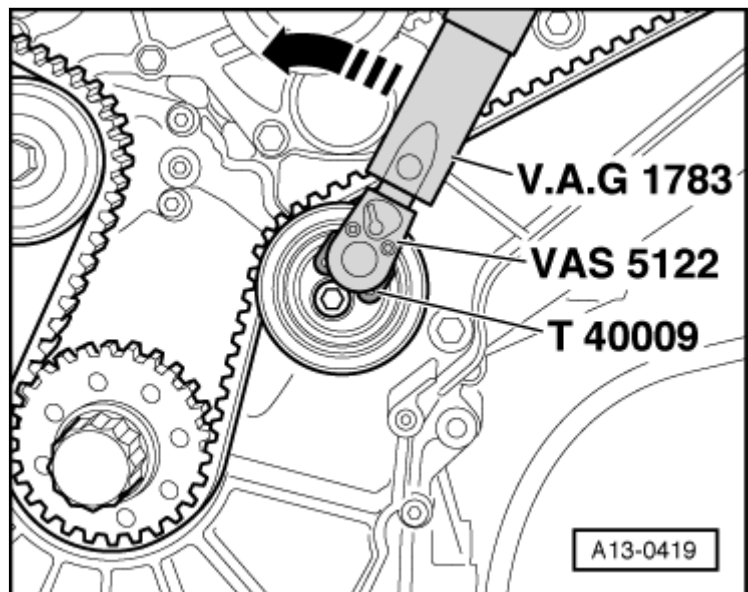
Use a  $\frac{3}{8}$  to  $\frac{1}{4}$  adapter to attach the -T40009-.



- Tension toothed belt. Turn the eccentric roller using the -T40009- and -V.A.G 1783- and -VAS 5122- in direction of -arrow- and hold.
- Protection torque: 6 Nm
- Tighten eccentric pulley.
- Tightening specification: 45 Nm.

**Note**

Make sure that position does not change while tightening.



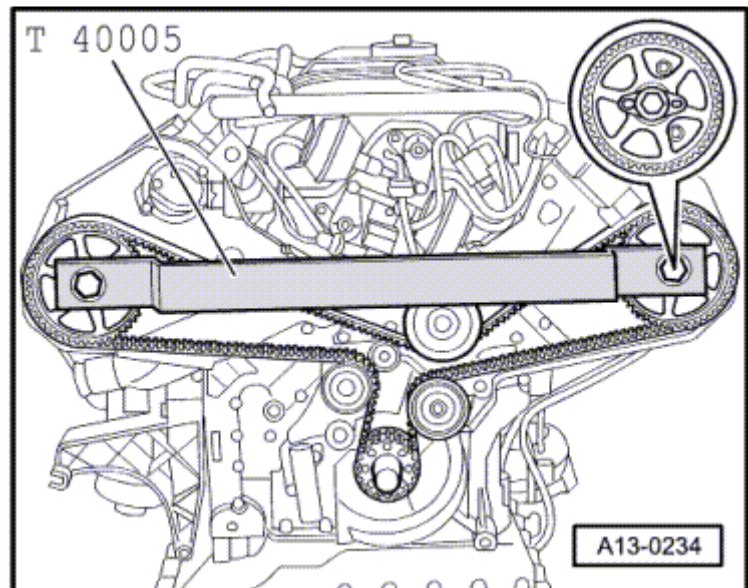
- Insert -T40005- into securing plates of both camshafts.



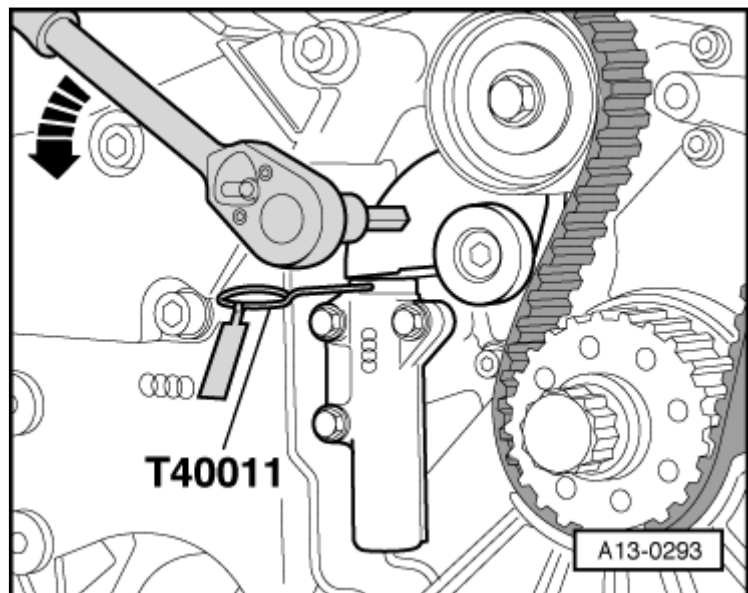
- Press in camshaft adjustment as far as possible.
- Tighten camshaft gears.

**Note**

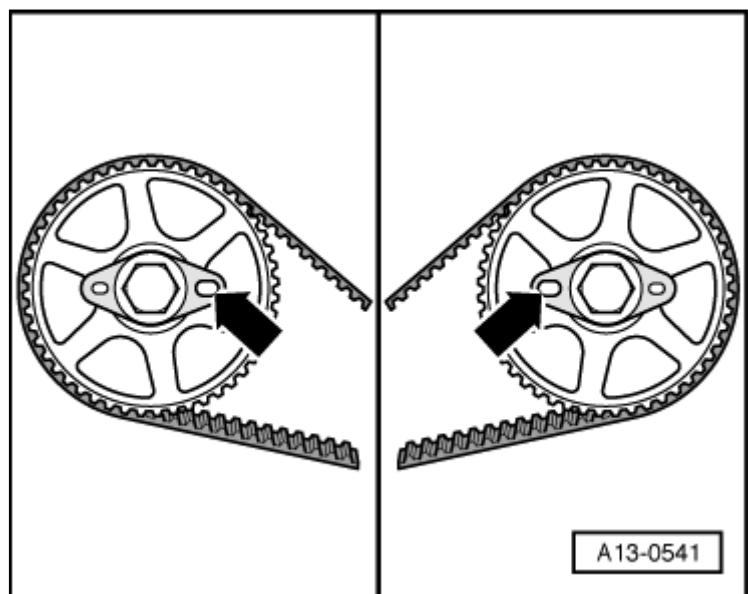
The -T40005- serves as a retainer.



- Remove -T40005-.
- Remove the 5 mm hex socket
- Turn the tensioning lever using 8 mm hex socket wrench in direction of -arrow- until -T40011- can be pulled out.
- Remove -3242-.
- Turn crankshaft two turns in direction of engine rotation until the crankshaft stands at TDC again.



- The large holes -arrows- on securing plates at camshaft gears must align on inside.

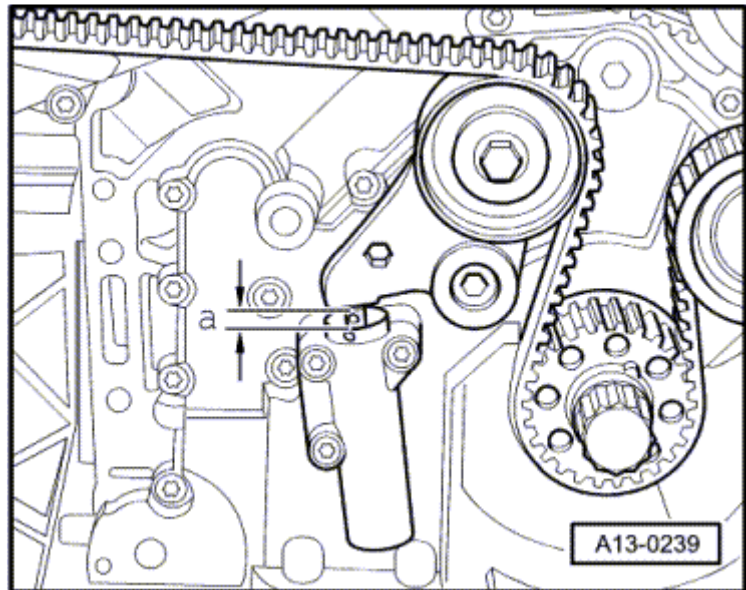


- Check dimension -a- between tensioning lever and tensioner housing.

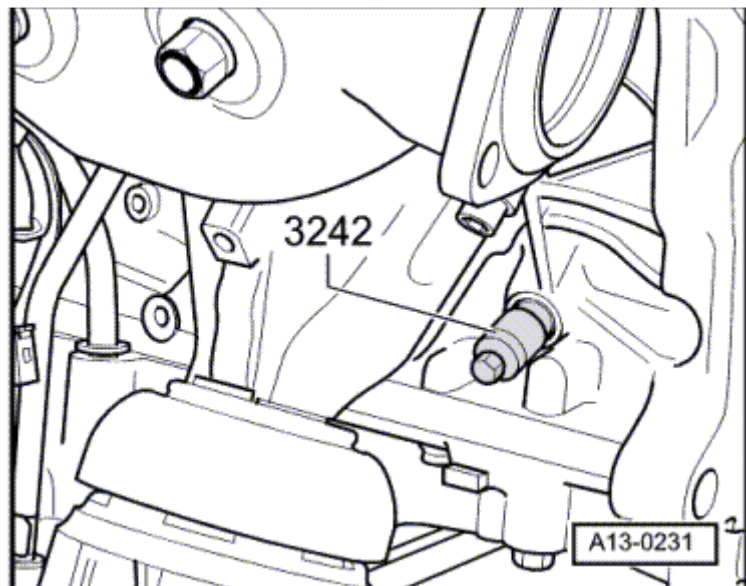
- Dimension -a- =  $5.0 \pm 1.0$  mm.

**Note**

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



- To check timing, bolt -3242- in bore at upper section of oil pan again.



- Check camshaft positions using -T40005-.

**Note**

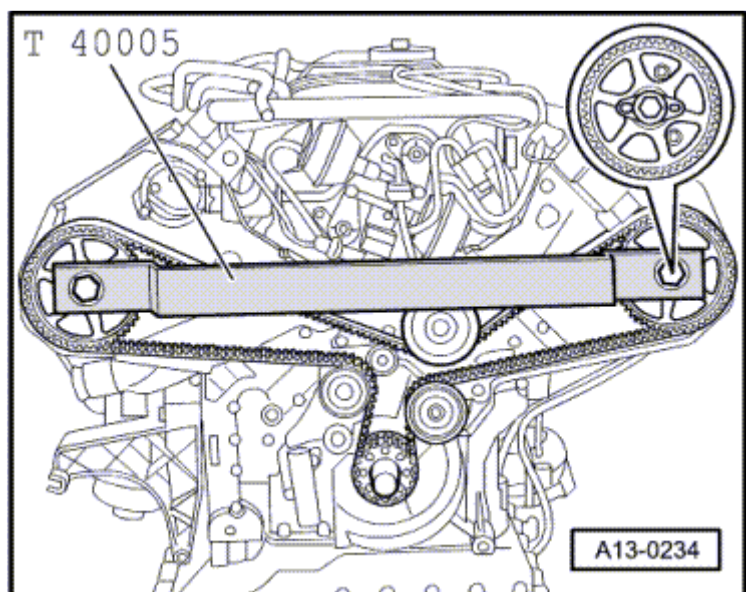
*If camshaft locator cannot be inserted, repeat adjustment.*

- Remove -T40005- from both cylinder heads.
- Remove -3242-.
- Bolt locking bolt of TDC marking into upper section of oil pan using new sealing ring.

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

**Note**

- ♦ *Replace gaskets, seals and O-rings.*
- ♦ *Hose connections and charge air system hoses must be free of oil and grease before installing. Do not use lubricant*



*under any circumstances.*

- ◆ *Secure all hose connections using hose clamps appropriate for the model type. Refer to → [Electronic Parts Catalog "ETKA"](#).*
- Install stabilizer bar. Refer to → [Suspension, Wheels, Steering; Rep. Gr.40](#).
- Install ribbed belt → [Anchor](#).
- Install lock carrier with attachments. Refer to → [Body Exterior; Rep. Gr.50](#).
- Install front bumper. Refer to → [Body Exterior; Rep. Gr.63](#).
- Install air filter housing → [Anchor](#).
- Fill with coolant. Refer to → [Anchor](#).



#### Note

- ◆ *Only reuse drained coolant if cylinder head or engine block was not replaced.*
- ◆ *Dirty coolant must not be re-used.*
- Adjust headlamps. Refer to → [Electrical Equipment; Rep. Gr.94](#).

#### Tightening Specifications

Component		Nm
Eccentric pulley to cylinder block		45
Camshaft sprocket to camshaft		55
Sealing plug in upper section of oil pan		35
Vibration damper to crankshaft gear		22
Tension roller for ribbed belt		43
Front air guide pipe to	Throttle valve control module	10
	Bracket	10 → <a href="#">Note</a>
Hose clamps 9 mm wide		3
Hose clamps 13 mm wide		5,5

<sup>1)</sup> Insert using locking compound; locking compound. Refer to → [Electronic Parts Catalog "ETKA"](#).