

Removing and installing toothed belt (vehicles with separate toothed belt covers)

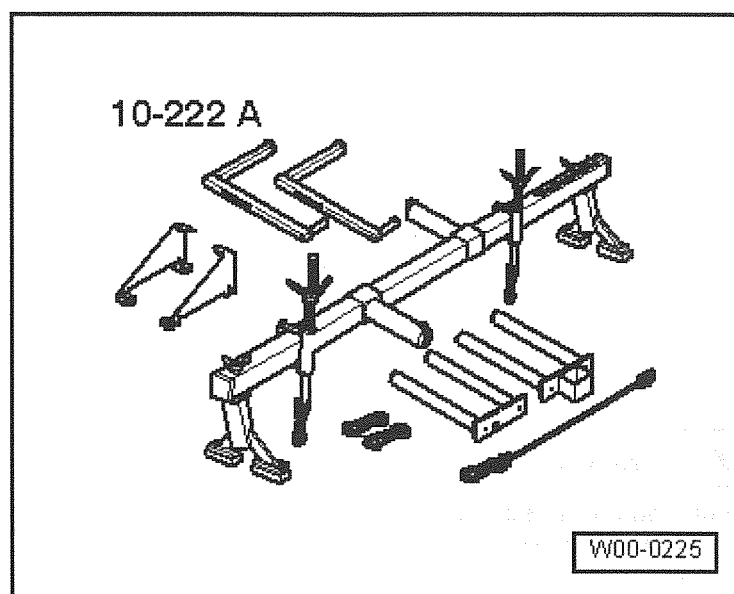


Note

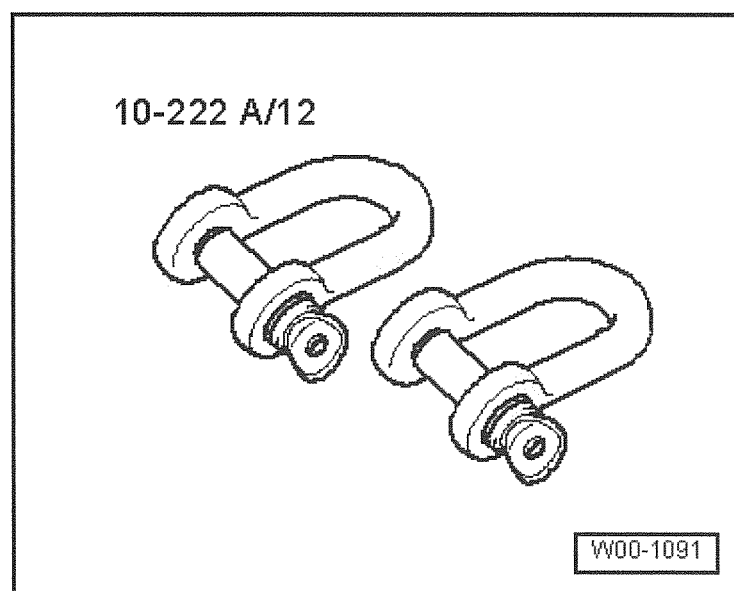
Vehicles from 01/2006 onwards are fitted with a new type of toothed belt cover. Identification: the top section of the toothed belt cover has no cap → Item and the toothed belt cover is divided near the engine support. Removing and installing toothed belt (vehicles without separate toothed belt covers) → Chapter.

Special tools and workshop equipment required

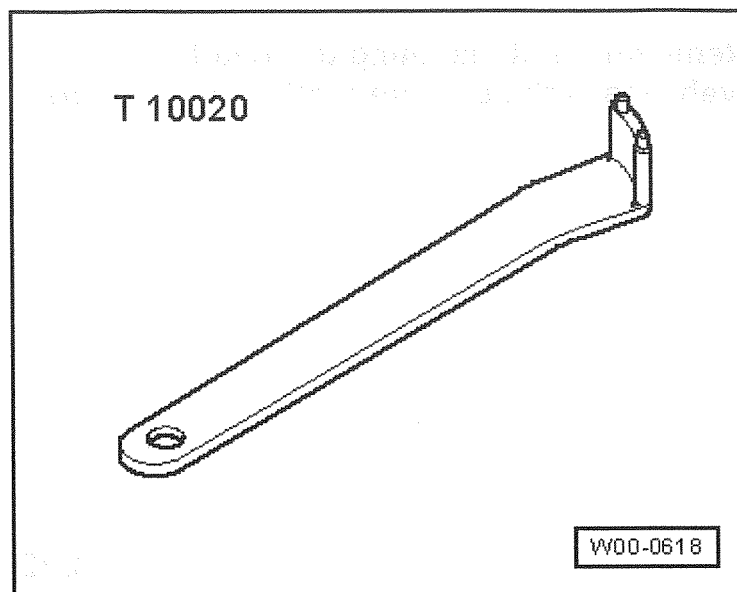
- ◆ Support bracket -10 - 222 A-



- ◆ Shackle -10 - 222 A /12-



- ◆ Pin wrench -T10020-



◆ Locking pin -T10060A-

Removing

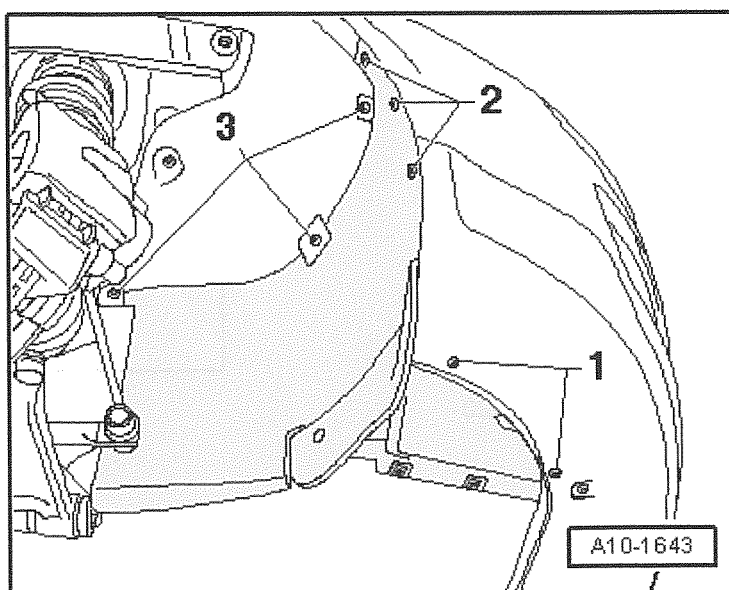
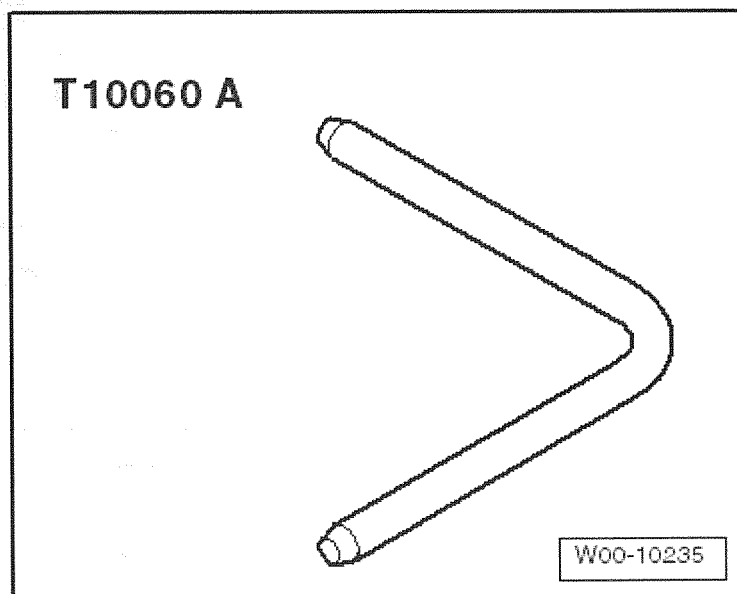
- Detach engine cover panel with air cleaner
→ Rep. gr.24



WARNING

Hot steam/hot coolant may escape when opening expansion tank. Cover cap with cloth and open carefully.

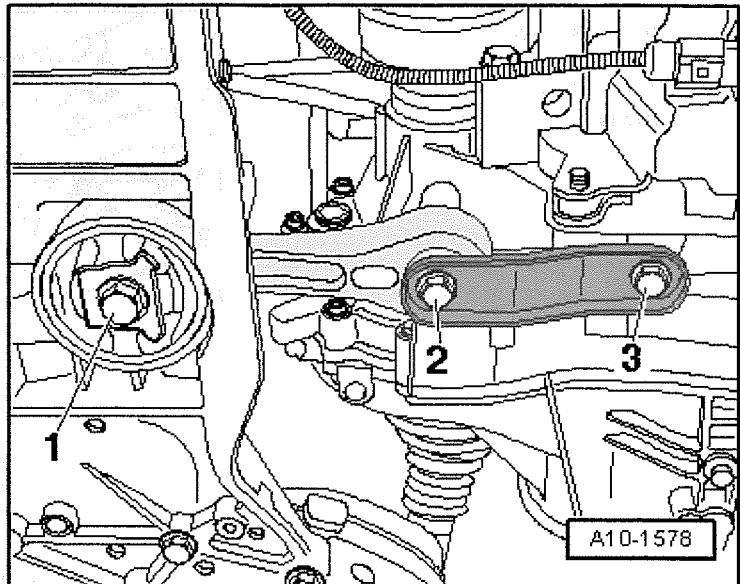
- Open filler cap on coolant expansion tank.
- Remove noise insulation
→ Rep. gr.50
- Remove noise insulation (right-side)-fasteners 1 ... 3-



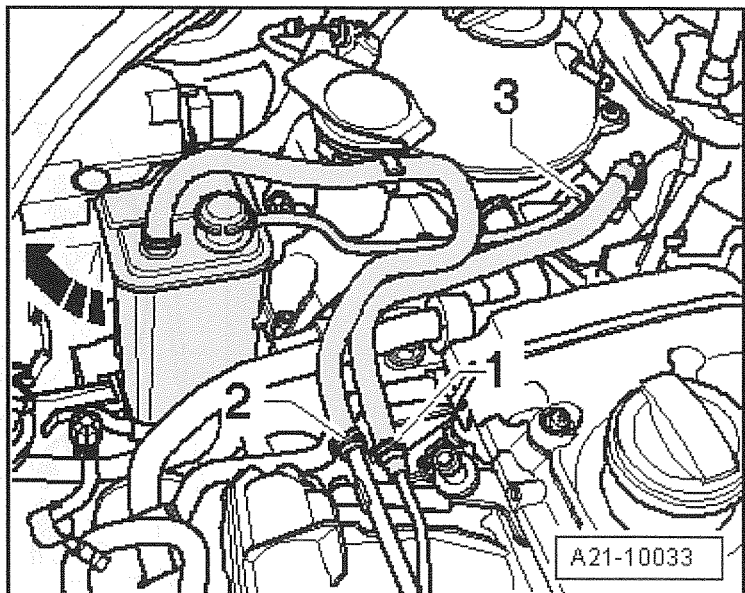
- Unscrew bolts -1 ... 3- and remove pendulum support.
- Drain off coolant → Chapter.

⚠ WARNING

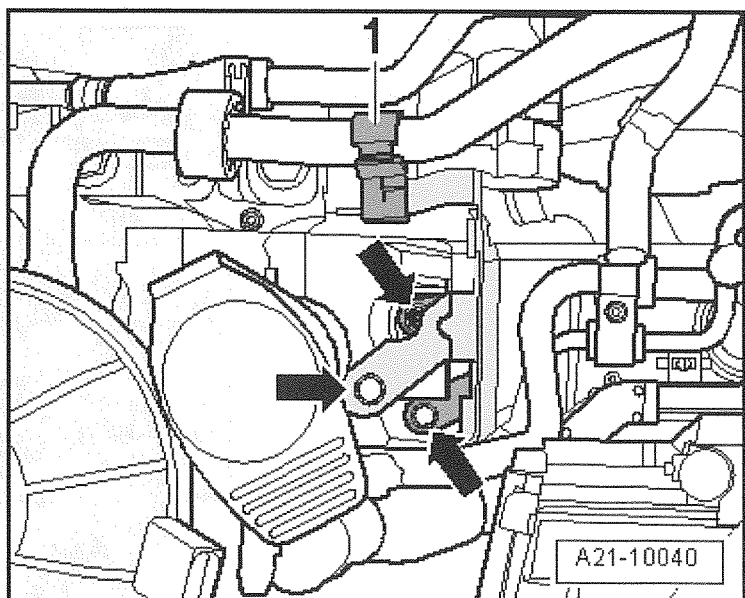
Fuel supply line is pressurised. Wear safety goggles and protective clothing to avoid possible injury and skin contact. Before opening hose connections wrap a cloth around the connection. Then release pressure by carefully pulling hose off connection.



- Mark fuel line -1- and line going to ACF -2-.
- Disconnect fuel line -1-.
- Disconnect ACF line -2-.
- Disconnect ACF line going to tank -3-.
- Lift out ACF in -direction of arrow-.

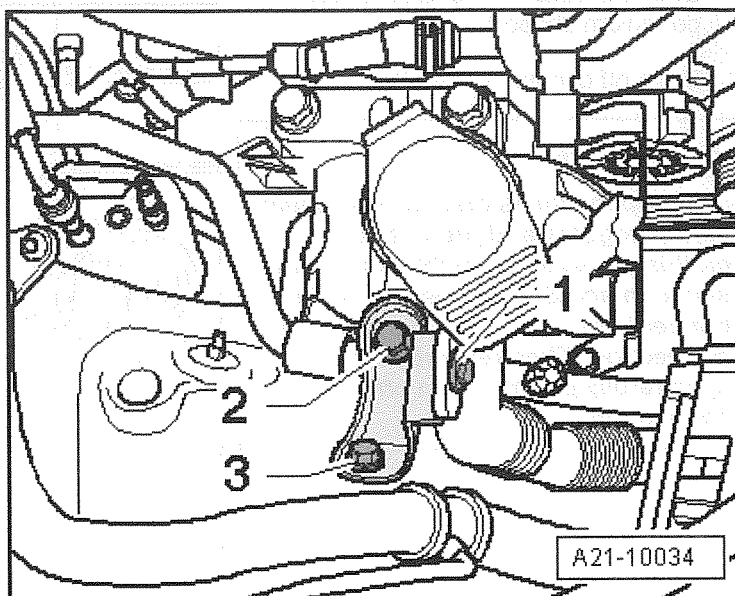


- Detach the coolant hose at the bracket -1-.
- Remove bracket for activated charcoal filter -arrows-.

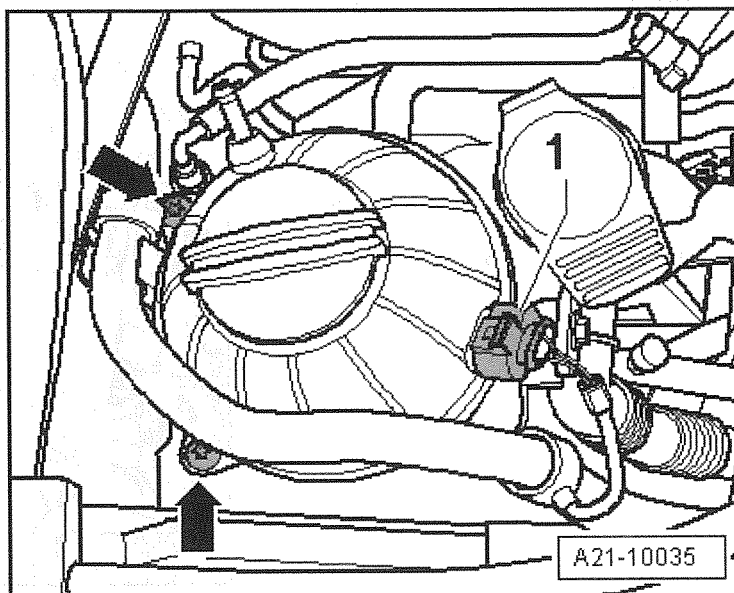


Unbolt filler neck for windscreen washer reservoir -1-.

- Remove retaining clip; to do so, unscrew bolts -2 and 3-.



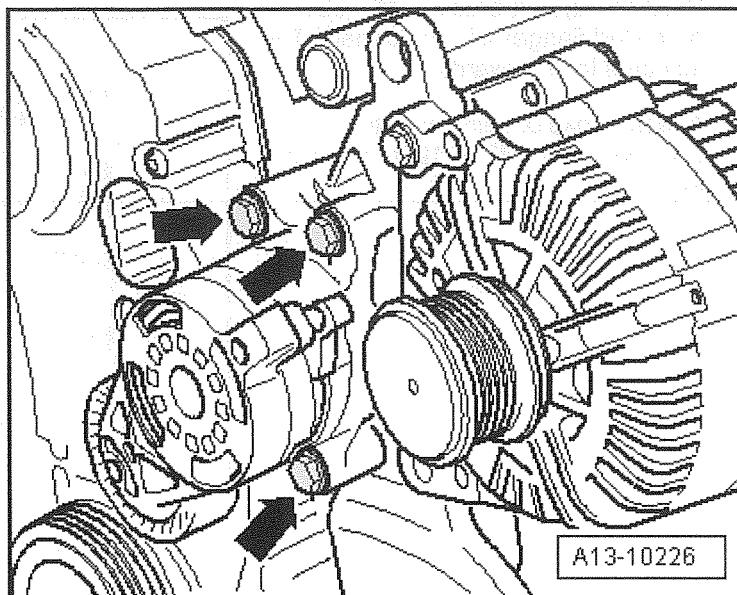
- Unplug electrical connector -1- from coolant level indicator.
- Detach coolant expansion tank -arrows-.



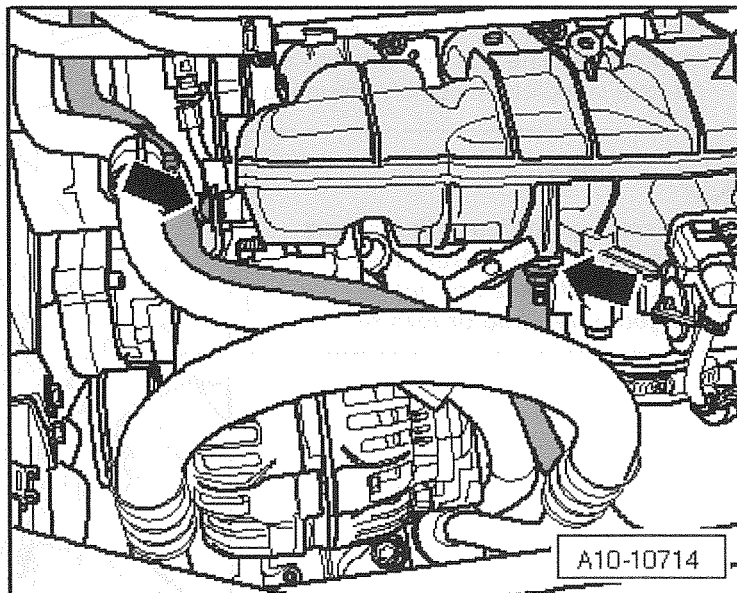
- Disconnect coolant pipe -arrow-.
- Remove poly V-belt → Chapter.



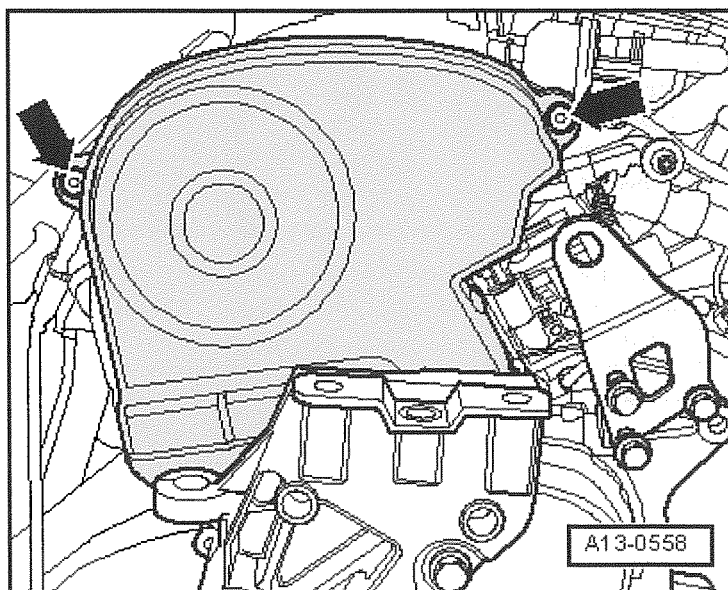
Remove tensioner for poly V-belt
-arrows-.



– Detach coolant pipe -arrows-.

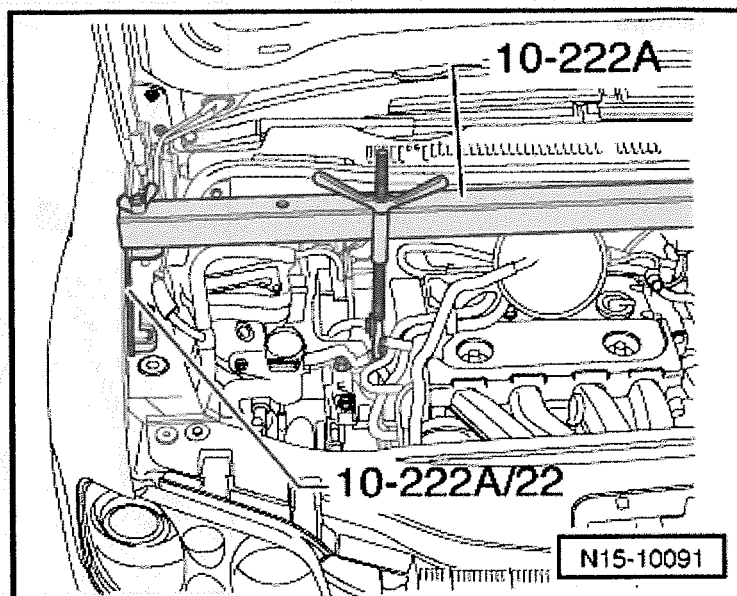


– Remove bolts -arrows- and detach toothed belt cover.



Position support bracket -10 - 222 A- on bolted flanges of wing panels. The spindles face forwards.

- Attach hooks of spindles with shackles -10 - 222 A /12- to the lifting eyes.

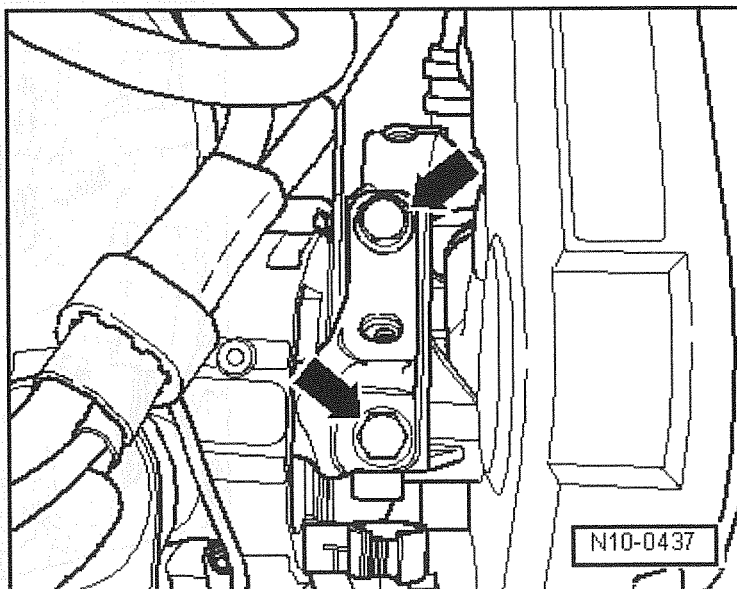


- Remove securing bolts from assembly mounting/engine support -arrows- and remove complete assembly mounting.

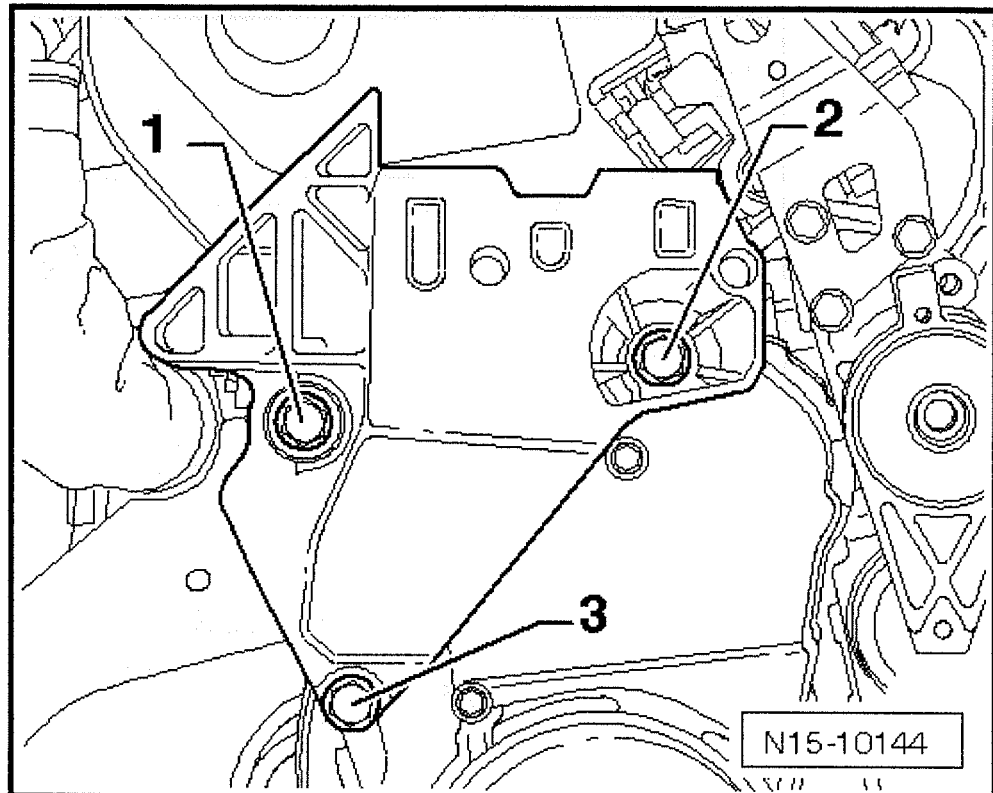


Caution

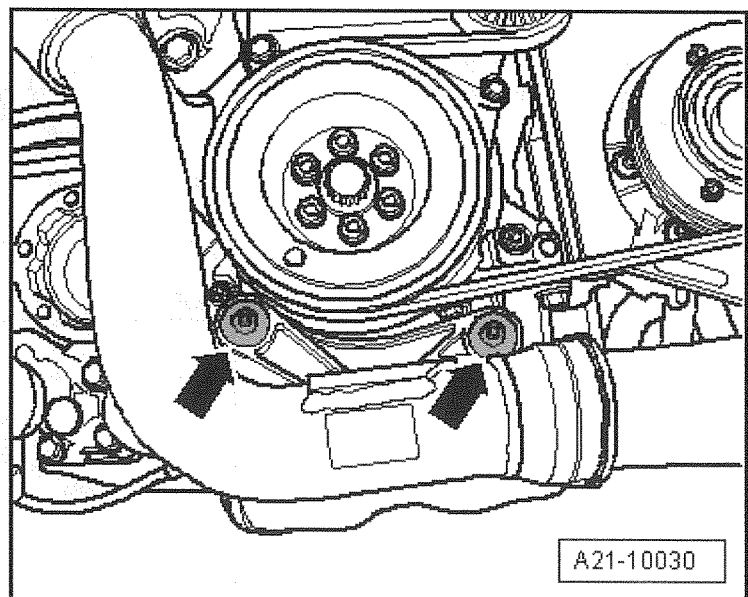
When raising engine with support bracket -10-222A-, ensure that components/hoses are not damaged, stretched or torn off.



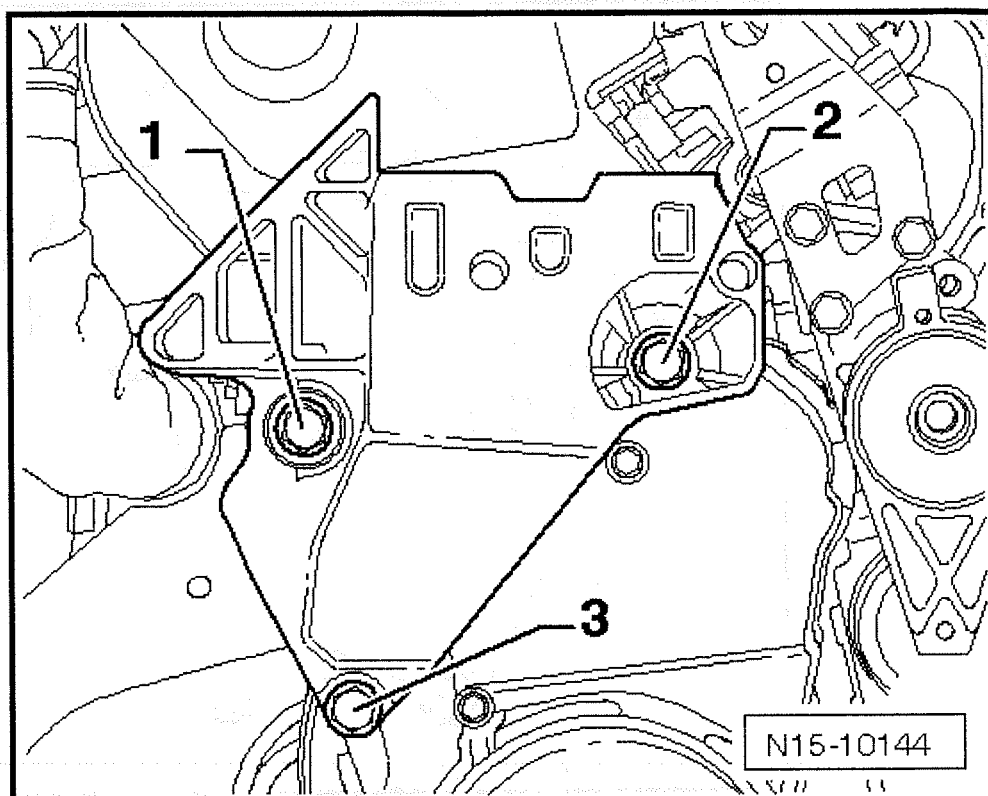
- Raise engine with support bracket -10-222A- until it is possible to loosen and remove the two top bolts -1 and 2- securing the engine support.



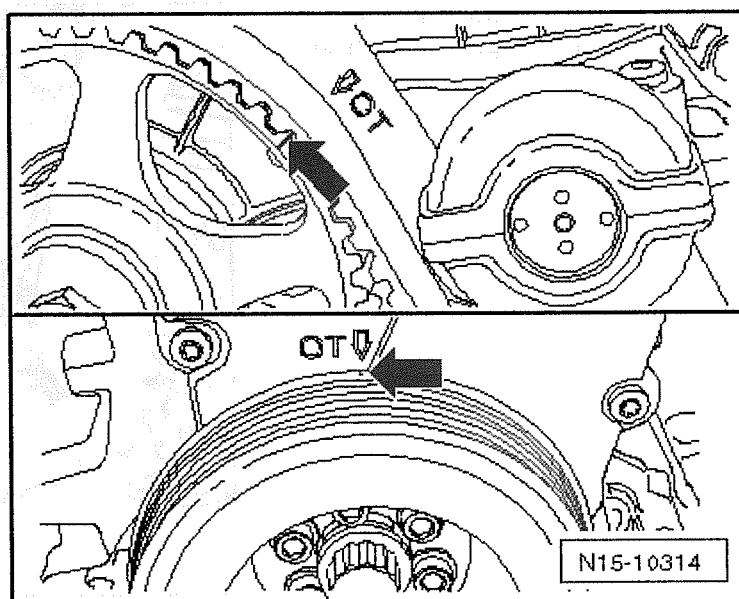
- Unscrew bolts -arrows- and remove charge air pipe together with hoses.



- Unscrew the bottom bolt -3- and remove engine support from below.



- Set camshaft sprocket to TDC marking by turning crankshaft. Marking on camshaft sprocket must align with arrow on toothed belt cover.

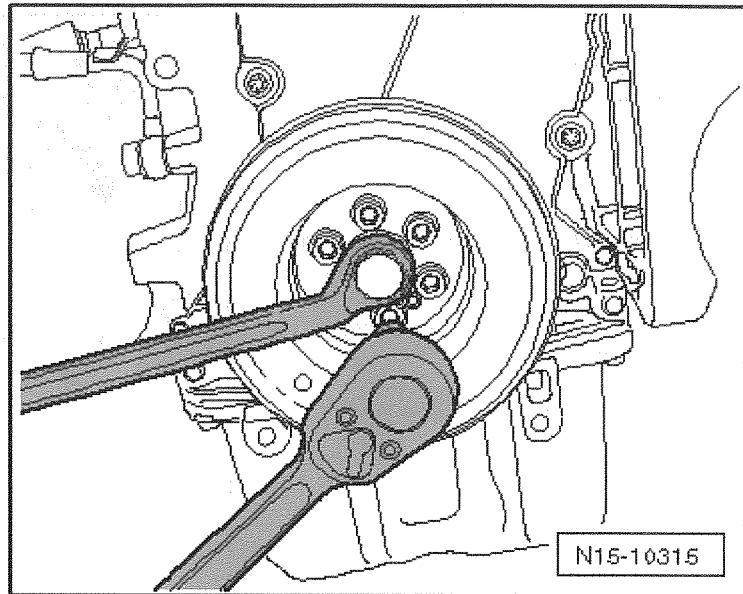


- Remove vibration damper / pulley.

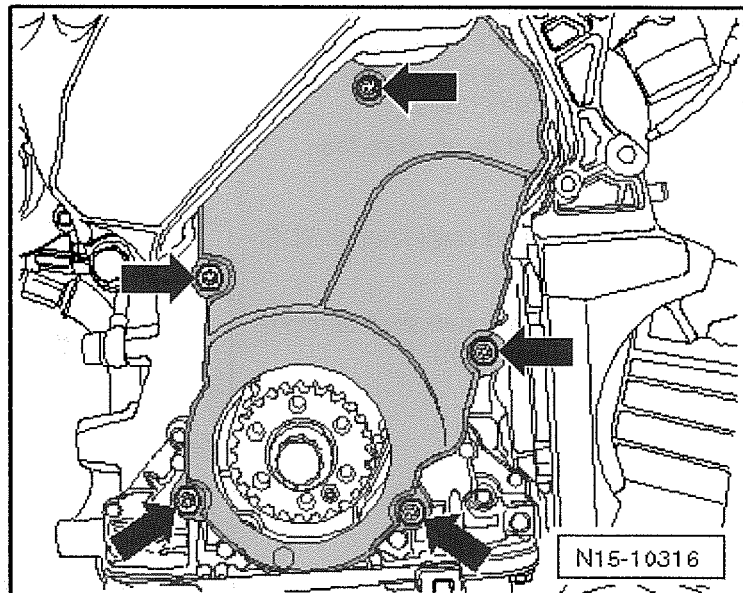


Note

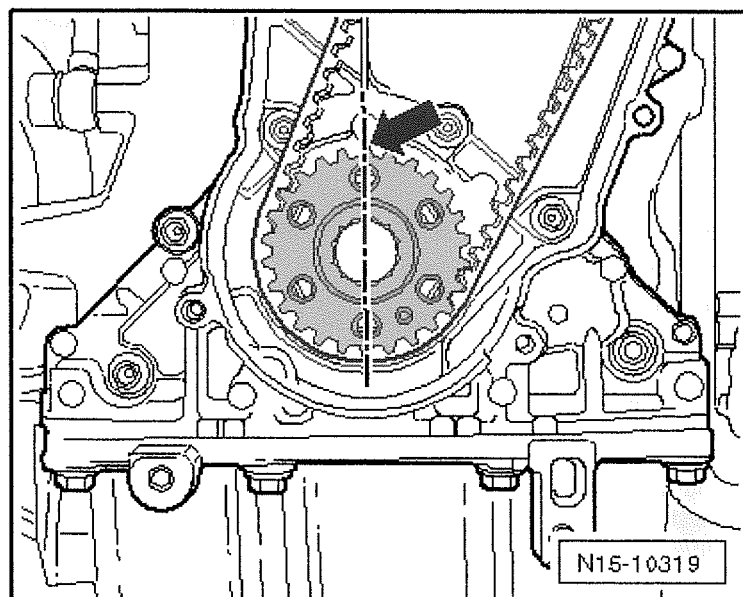
- ♦ The TDC markings must align before the vibration damper is detached.
- ♦ Do not rotate the crankshaft unless the TDC position is marked by an additional marking.



- Unscrew bottom bolts from toothed belt cover (bottom) -arrows-.



- Mark TDC position -arrow-.



Unscrew both top bolts from toothed belt cover -arrows- and remove toothed belt cover from engine downwards.

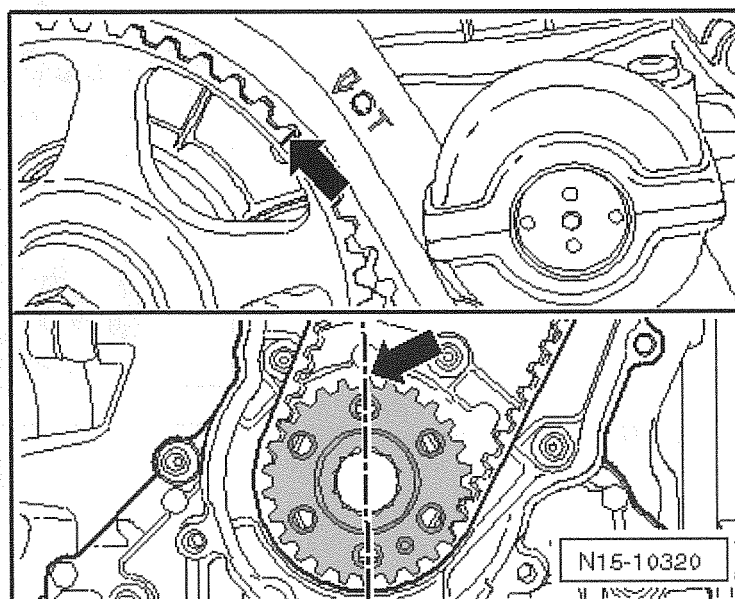
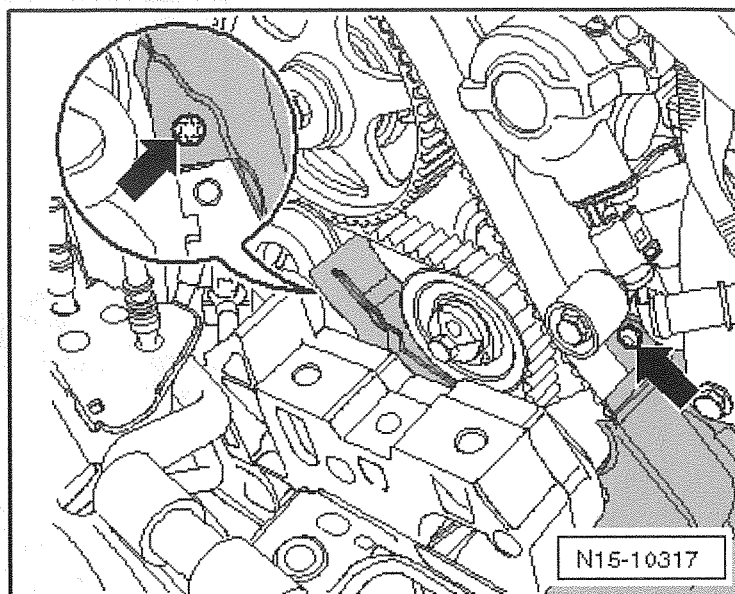
- Remove engine support from engine upwards.
- Mark direction of rotation of toothed belt.
- Loosen tensioning roller and remove toothed belt.
- Turn crankshaft back slightly.

Installing

- Tightening torques → Chapter

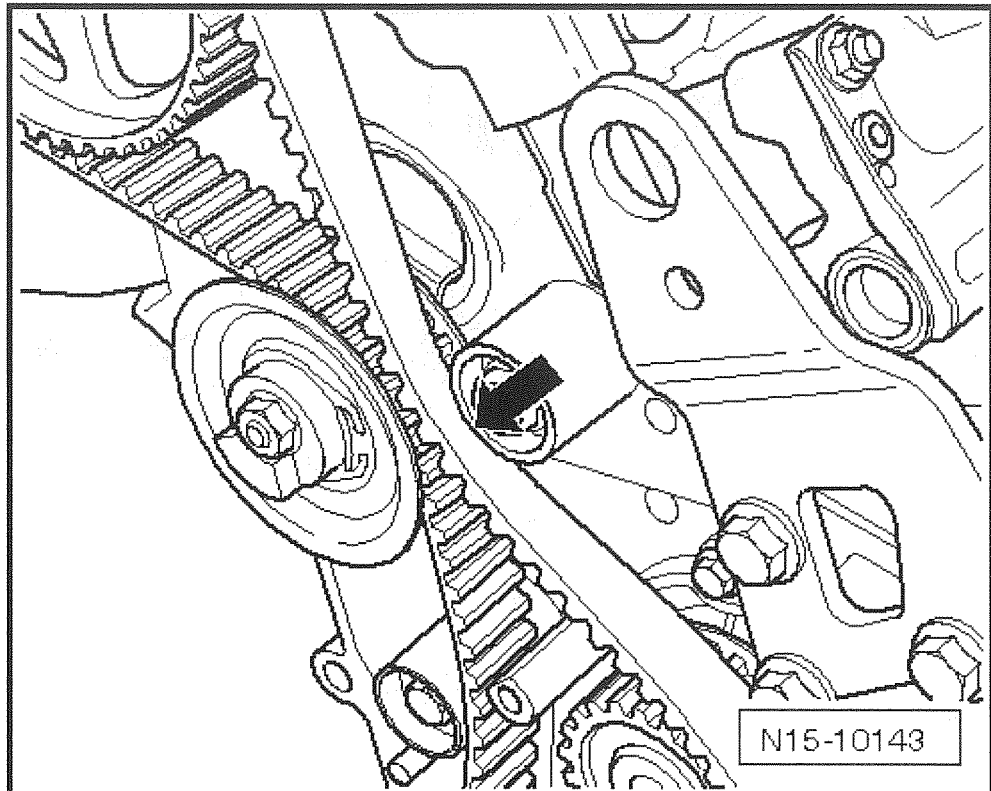
Note

- ♦ *When turning the camshaft, the crankshaft must not be at TDC. Otherwise, there is a risk of damage to valves and piston crowns.*
- ♦ *The engine must be no more than warm to touch.*
- Turn camshaft and crankshaft to TDC markings.
- Fit toothed belt on crankshaft sprocket (note rotation direction).

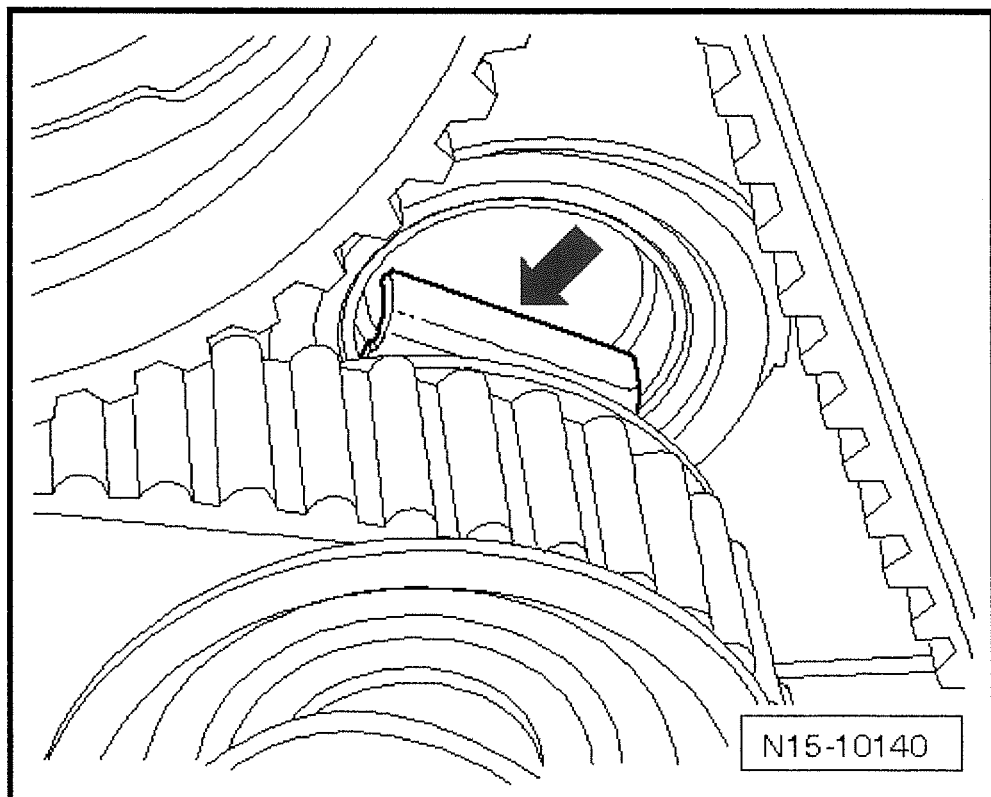


- Fit toothed belt in the sequence: tensioning roller, camshaft sprocket, coolant pump and last onto idler roller -arrow-.

Note



*Check
tensioning roller
is seated
correctly in
cylinder head.*



- Tension
toothed belt.
To do so,
turn
hexagon

key at the eccentric adjuster clockwise (direction of arrow) until the notch is above the indicator (toothed belt over-tensioned).

- Then release tension on toothed belt.
- Now tension toothed belt until the notch and the indicator are aligned.
- Tighten securing nut
- Turn crankshaft two turns in direction of engine rotation and set again to TDC. Make sure that the engine is rotated without stopping during the final 45° ($\frac{1}{8}$ turn).
- Check toothed belt tension. Specification: indicator and notch must align.

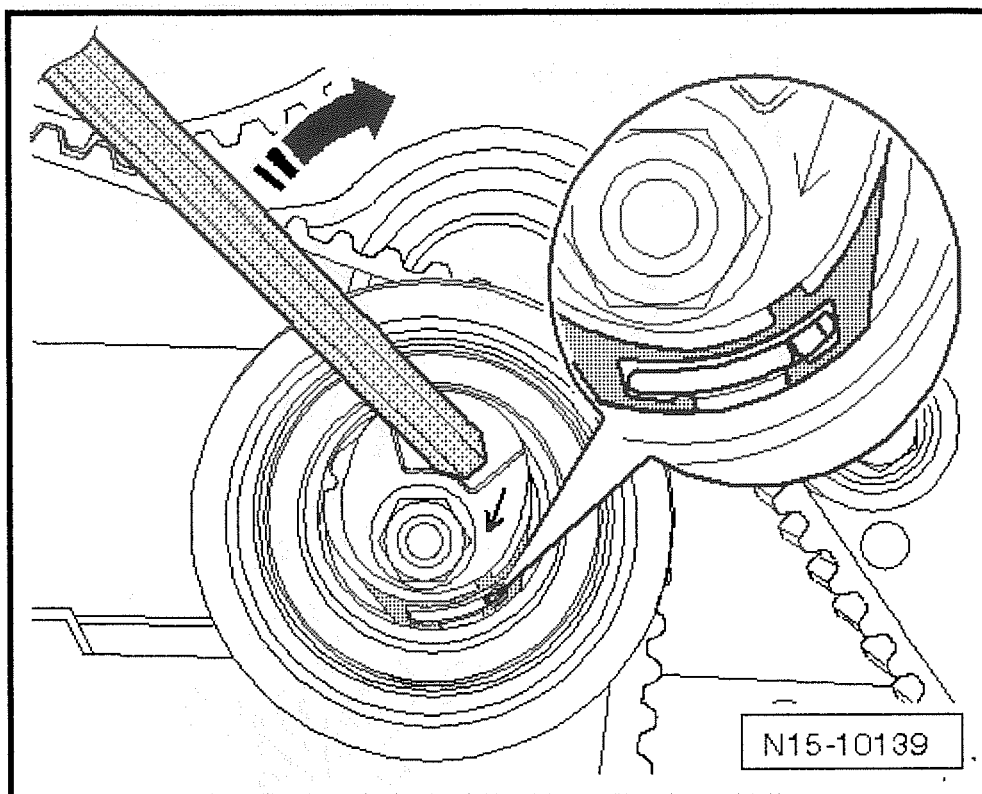
- Check valve timing. The markings must align -arrows-.

If the markings do not align:

- Repeat adjustment of valve timing.

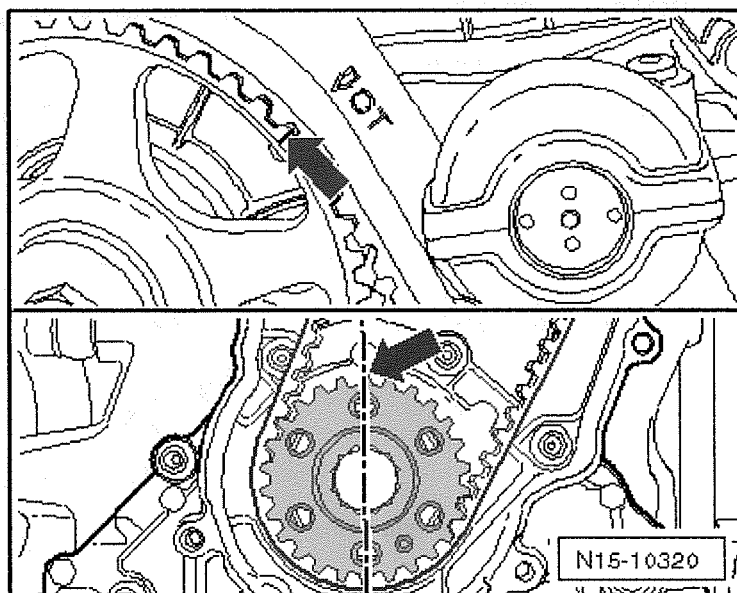
If the markings align:

- Install engine support on cylinder block and tighten bolts hand-tight.



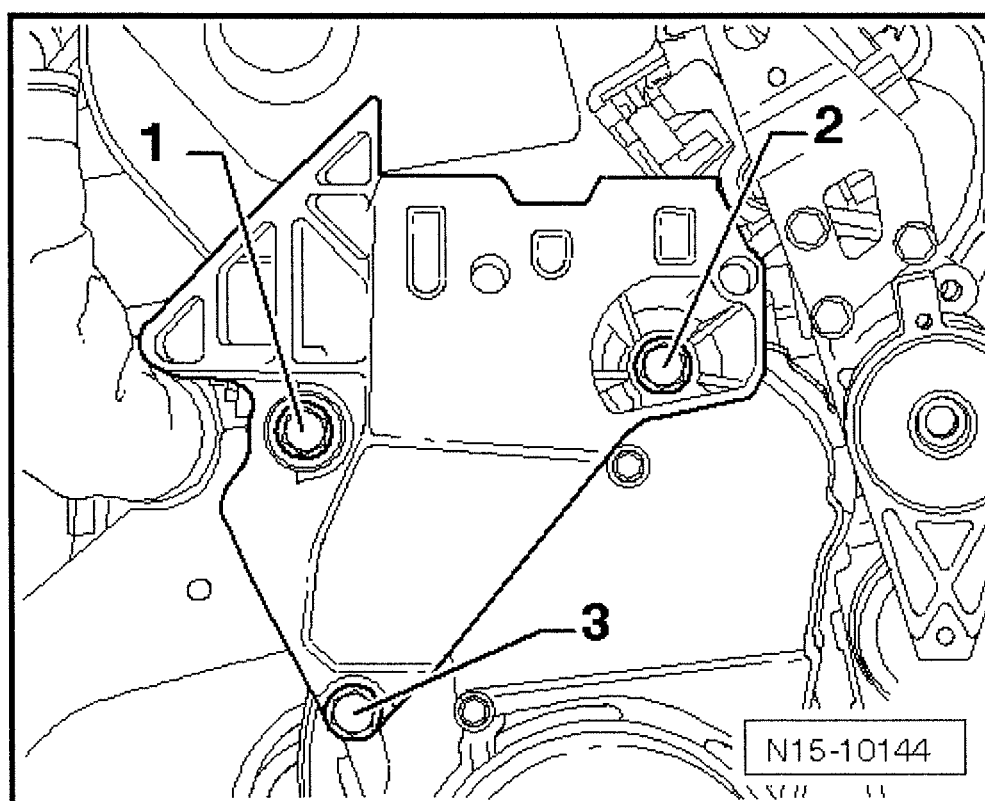


Note



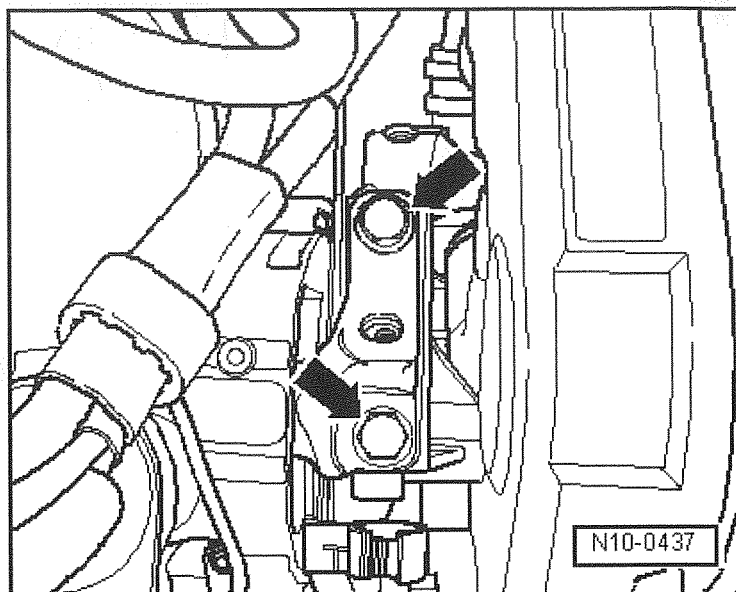
Note different bolt lengths. Bolt -3- is approx. 25 mm shorter than bolts -1 and 2-.

- Lower engine with support bracket -10-222A- until it is possible to tighten the bolt at the bottom -3-.
- Tighten all bolts.
- Install assembly mounting for engine.



- Tighten bolts on assembly mounting for engine and engine support hand-tight -arrows-; to do so, bring surfaces into contact using support bracket -10-222 A-.
- Detach support bracket -10-222 A-.
- Reconnect fuel and breather pipes. Make sure plug-in connectors are properly secured.
- Install coolant expansion tank.

- Install crankshaft pulley → Chapter.
- Adjust engine mountings → Chapter.
- Install poly V-belt → Chapter.
- Install air pipes with plug-in connectors → Chapter.
- Bleed fuel system → Motronic direct injection and ignition system (4-cylinder); Rep. Gr. 24; Servicing fuel injection system.
- Install noise insulation → Rep. gr.50
- Install engine cover panel/air cleaner.

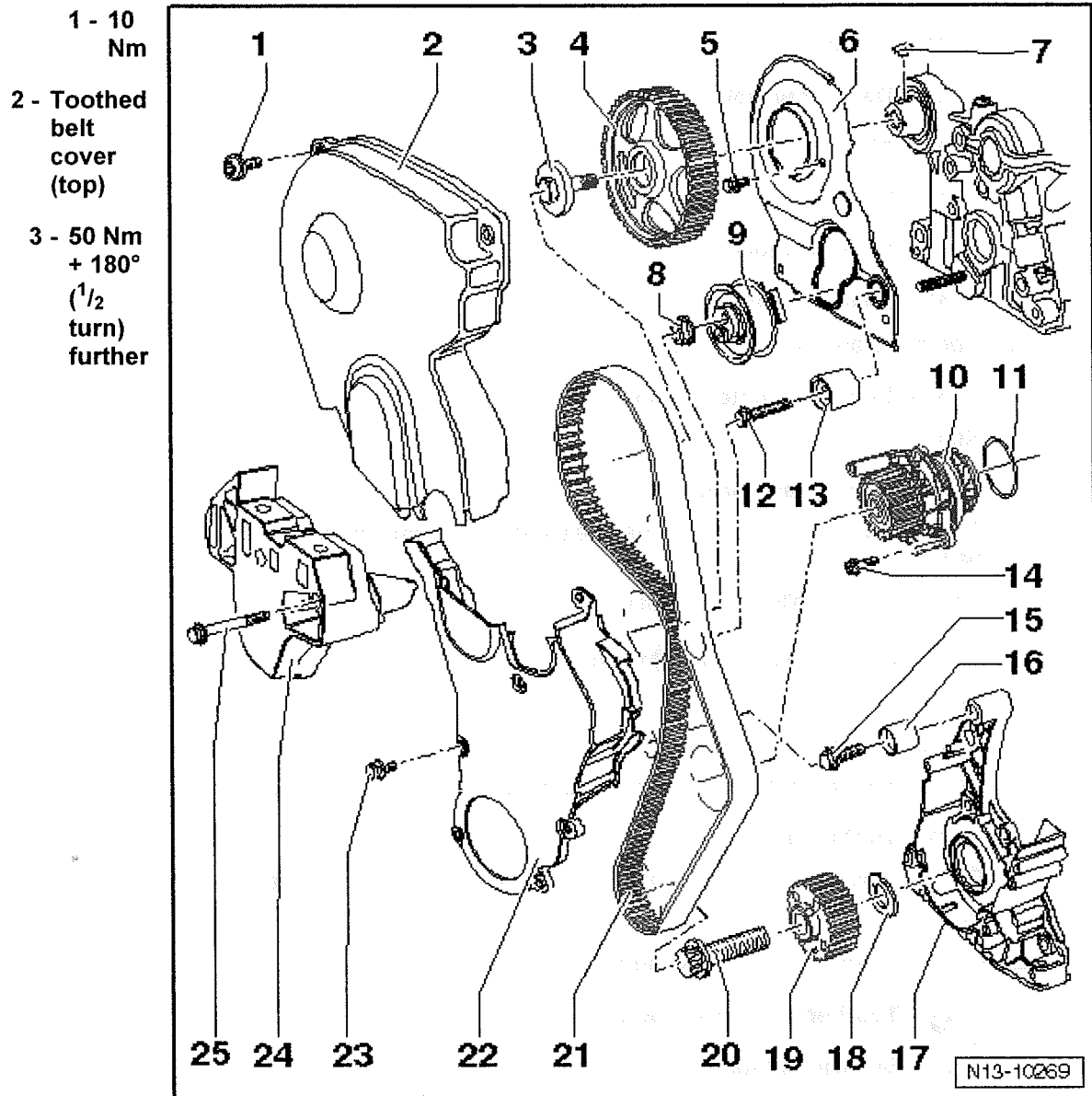


Toothed belt drive - exploded view (vehicles with separate toothed belt covers)



Note

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- ❑ Use counterhold tool -3036- when loosening and tightening → Fig.

4 - Camshaft sprocket

- ❑ Installation position fixed by Woodruff key → Item
- ❑ Detaching camshaft sprocket → Fig.

5 - 10 Nm

- ❑ Apply locking fluid when fitting

6 - Toothed belt cover (rear)

7 - Woodruff key

- Check for firm attachment

8 - 25 Nm**9 - Semi-automatic tensioning roller****10 - Coolant pump**

- Removing and installing → Chapter

11 - O-ring

- Renew

12 - 25 Nm**13 - Damper wheel****14 - 15 Nm****15 - 35 Nm****16 - Damper wheel****17 - Sealing flange**

- Removing and installing → Chapter

18 - Diamond-coated washer

- Renew

19 - Crankshaft sprocket

- Contact surfaces between toothed belt sprocket, diamond-coated washer and crankshaft must be free of oil
- Can only be installed in one position

20 - 90 Nm + 90° (1/4 turn) further

- Renew
- Do not lubricate with oil
- Use counterhold tool -3415- when loosening and tightening → Fig.

21 - Toothed belt

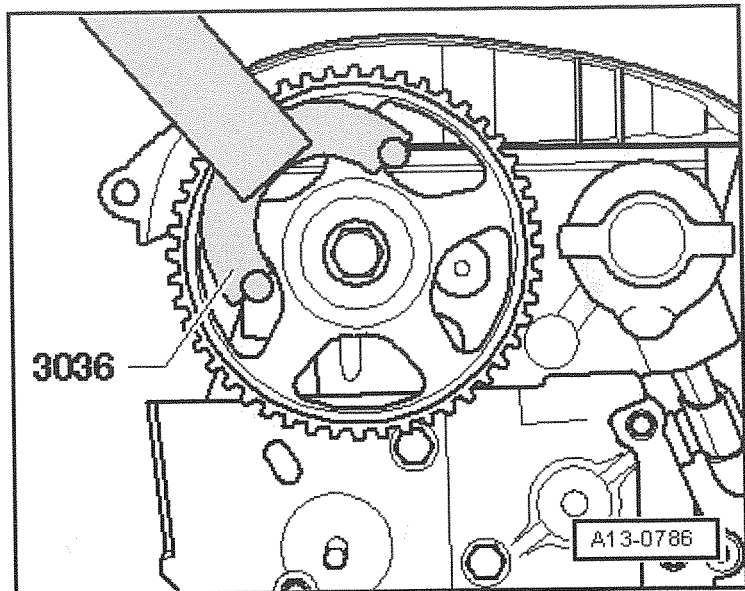
- Before removing, mark direction of rotation with chalk or felt-tip pen
- Check for wear
- Removing and installing → Chapter

22 - Toothed belt cover (bottom)**23 - Securing bolts**

- For toothed belt cover (bottom)
- 7x
- 8 Nm

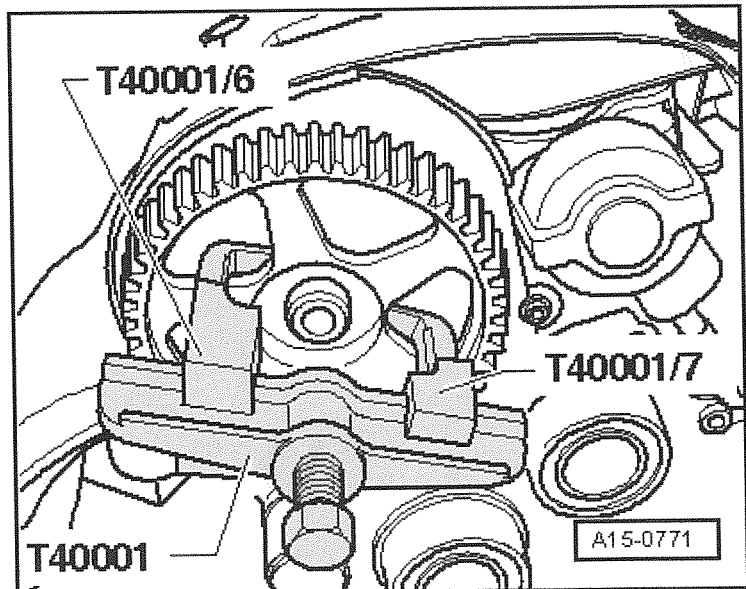
24 - Engine bracket**25 - 45 Nm****Loosening camshaft sprocket**

- Use counterhold -3036- when loosening and tightening central bolt.



Detaching camshaft sprocket

- Use two-arm puller -T40001- with claws T40001/6 and T40001/7 to detach camshaft sprocket.



Removing and installing crankshaft sprocket

- Use counterhold -3415- when loosening and tightening central bolt.

