List of Workshop Manual Repair Groups

Repair Group

00 - Technical data
10 - Removing and installing engine
13 - Crankshaft group
15 - Cylinder head, valve gear
17 - Lubrication
19 - Cooling
21 - Turbocharging/supercharging
24 - Mixture preparation - injection
26 - Exhaust system
28 - Ignition system

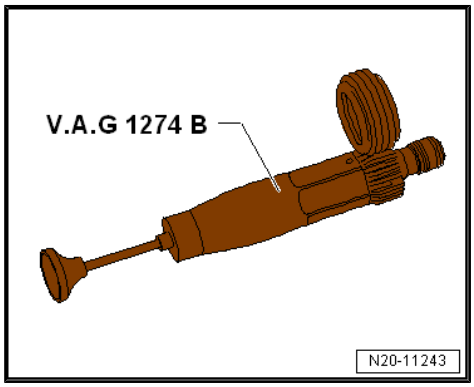
Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

Note

To perform the leakage test correctly, first run a self-test on the cooling system tester - V.A.G 1274 B- .

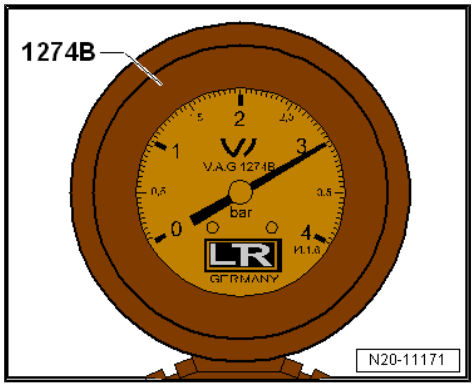
Self test of cooling system tester - V.A.G 1274 B-

– Operate cooling system tester - V.A.G 1274 B- several times.



– Build up a pressure of 3.0 bar on cooling system tester .

– Observe pressure on pressure gauge of cooling system tester for 30 seconds.



If no pressure builds up or if the pressure drops again:

The cooling system tester - V.A.G 1274 B- is leaking and should not be used.

Checking cooling system for leaks

• Engine at operating temperature.

CAUTION

If the engine is hot, the coolant system is exposed to high pressure. Danger of scalding by steam and hot coolant.

Skin and other parts of the body may be scalded.

– Wear protective gloves.

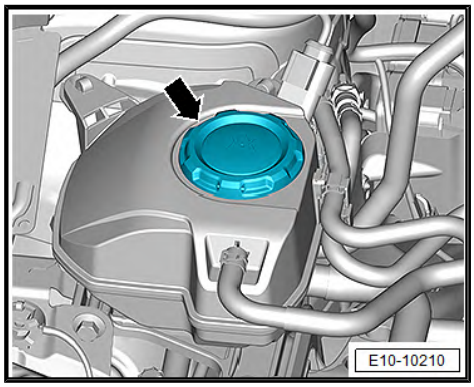
– Wear protective goggles.

– Reduce excess pressure by covering cap of coolant expansion tank with cloths and opening it carefully.

Procedure

Ibiza 2018, Arona

– Carefully open filler cap -arrow- on coolant expansion tank.



00 – Technical data

1 Safety information

(ERL003833; Edition 07.2018)

1.1 Safety regulations for working on fuel supply

Risk of injury from highly pressurised fuel.

The fuel system is pressurised. Injury from fuel spray possible.

Before opening the fuel system:

– Wear protective goggles.

– Wear protective gloves.

– To release pressure, wrap a clean cloth around the connection and carefully loosen the connection.

Danger of fire caused by escaping fuel

When the battery is connected and the driver door opens, the door contact switch activates the fuel pump. Escaping fuel can ignite and cause a fire.

– Disconnect voltage supply to fuel pump before opening the fuel system.

1.2 Safety measures when working on vehicles with a start/stop system

Risk of injury due to unexpected motor start

If the vehicle’s start/stop system is activated, the engine can start unexpectedly. Can be detected on a notification in the dash panel insert, whether the start-stop system is activated.

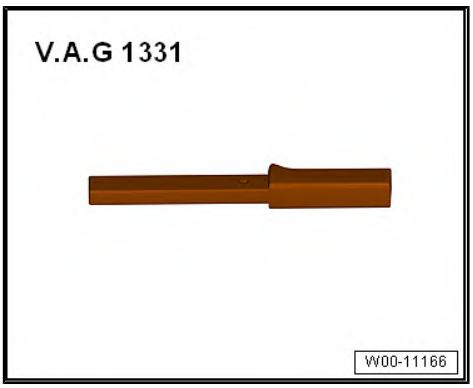
– Deactivate Start/Stop system by switching off the ignition.

Engine data

Code	CHZB	CHZC	CHZD	CHZJ	CHZL	DKJA
Exhaust emissions fulfil	EU6 plus	EU6 plus	EU6 plus	EU6 plus	EU6 plus	EU6 plus
Displacement l	999	999	999	999	999	999
Power kW at rpm	70/5000 ... 5500	81/5500	85/5000 to 5500	85/5000 ... 5000	70/5000 ... 5500	85/5000 ... 5000
Torque Nm at rpm	160/1500 ... 3500	200/1500 to 3500	200/2000 ... 3500	200/2000 ... 3500	175/2000 ... 3500	200/2000 ... 3500
Cylinder bore ∅ mm	74.5	74.5	74.5	74.5	74.5	74.5
Stroke mm	76.4	76.4	76.4	76.4	76.4	76.4
Compression ratio	10.5	10.5	10.5	10.5	10.5	10.5
RON at least	95	95	95	95	95	95
Injection system/ ignition system	FSI	FSI	FSI	FSI	FSI	FSI
Exhaust gas recirculation	No	No	No	No	No	No
Exhaust gas temperature control	No	No	No	No	No	No
Turbocharging	Turbocharger	Turbocharger	Turbocharger	Turbocharger	Turbocharger	Turbocharger
Knock control	1 Sensor	1 Sensor	1 Sensor	1 Sensor	1 Sensor	1 Sensor
Supercharging air refrigeration	yes	yes	yes	yes	yes	yes

- Torque wrench - V.A.G 1332-

- Torque wrench - V.A.G 1331-



Procedure

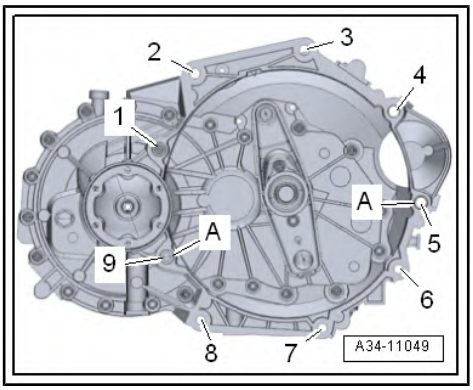
Note

- *If a further tightening angle is specified for certain bolts, these must be renewed.*
- *Renew self-locking nuts and bolts, and seals, O-rings and gaskets.*
- *Secure all hose connections with the hose clips corresponding to original equipment ⇒ Electronic Parts Catalogue .*
- *Fit heat shield sleeves in the same place when installing.*

– Install intermediate plate
⇒ Fig. ""Installing intermediate plate"" , page 136 .

Vehicles with manual gearbox

– If there are no dowel sleeves -A- in the cylinder block for centring the engine and gearbox, insert new dowel sleeves.



♦ Torque wrench - V.A.G 1332-

Removing

– Remove battery tray ⇒ Electrical system; Rep. gr. 27 ; battery; battery tray: remove and install .

Note

Different types of brackets are fitted depending on version.

Ibiza 2018

– Support engine in its installation position ⇒ “2.5.3 Supporting engine in installation position, Ibiza 2018”, page 93 .

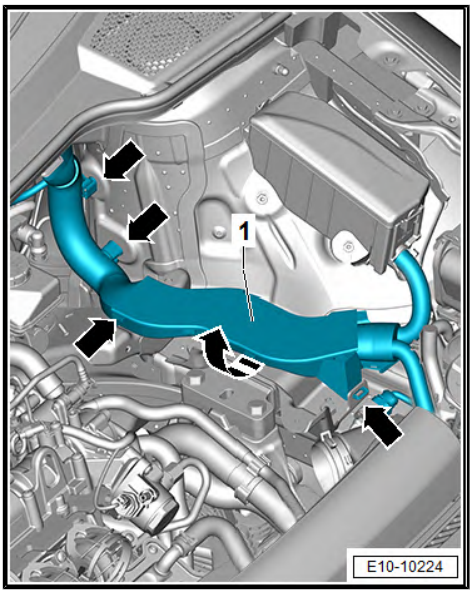
Arona

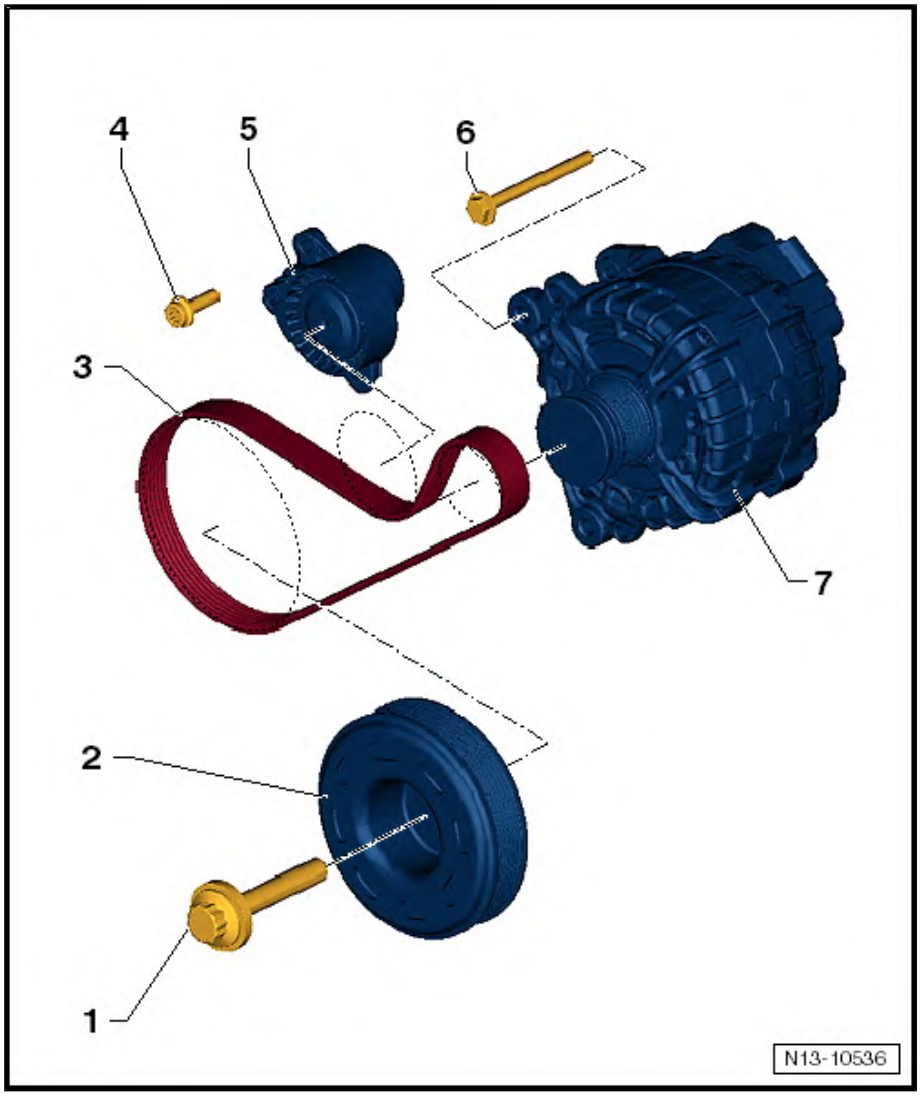
– Support engine in its installation position ⇒ “2.5.4 Supporting engine in installation position, Arona”, page 97 .

Continued for all vehicles:

– Tighten spindle slightly to take up weight of engine/gearbox assembly; do not lift.

– Loosen line guide -1- from its fastening points -arrows-, slide upwards -in direction of arrow- and secure on one side.





1 - Bolt

- ❑ Renew after removal
- ❑ Use counterhold - T10475- to loosen and tighten.
- ❑ 150 Nm +180°

2 - Vibration damper

- ❑ Removing and installing ⇒ “1.4 Removing and installing vibration damper”, page 118

3 - Poly V-belt

- ❑ Check for wear
- ❑ Before removing, mark direction of rotation with chalk or felt-tipped pen
- ❑ The length of the poly V-belt must be determined depending on the design of the overrunning alternator pulley in accordance with the ⇒ Electronic Parts Catalogue (ETKA) .
- ❑ Do not kink
- ❑ Poly V-belt routing ⇒ page 114
- ❑ Removing and installing ⇒ “1.2.1 Removing and installing poly V-belt, vehicles without air conditioner compressor”, page 113
- ❑ When installing, make sure it is properly seated on pulleys.

4 - Bolt

- ❑ Renew after removal
- ❑ 20 Nm +90°

5 - Tensioning device for poly V-belt

- ❑ Pivot with socket to slacken poly V-belt
- ❑ Lock with locking tool - T10060 A- .
- ❑ Removing and installing ⇒ “1.3.1 Removing and installing tensioner for poly V-belt, vehicles without air conditioner compressor”, page 116

6 - Bolt

- ❑ Tightening torque ⇒ Electrical system; Rep. gr. 27 ; Alternator; Alternator: Exploded view

7 - Alternator

- ❑ removing and installing ⇒ Electrical system; Rep. gr. 27 ; Alternator; Removing and installing alternator .
- ❑ With freewheel
- ❑ Depending on the type and version of the alternator different overrunning alternator pulleys -A- and -B- may be installed: correspondence ⇒ page 111 .
- ❑ The length of the poly V-belt must be determined depending on the design of the overrunning alternator pulley in accordance with the ⇒ Electronic Parts Catalogue (ETKA) .

– Remove intermediate plate -1- from dowel sleeves -arrows A-.

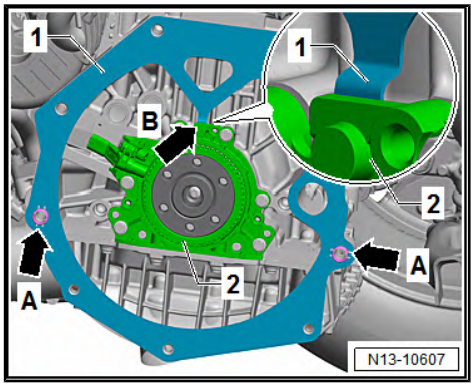
– Guide intermediate plate -1- upwards.

– While doing so, pull retaining lug -arrow B- of intermediate plate -1- out of recess behind sealing flange.

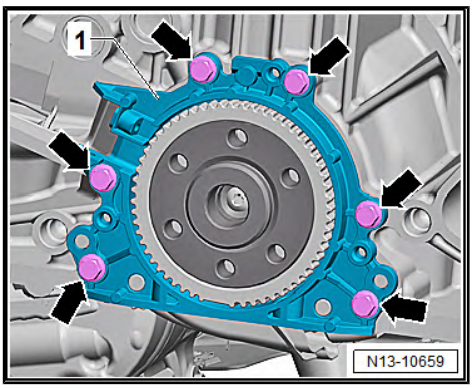
– Turn crankshaft to “TDC” position
⇒ “4.7 Setting piston to TDC position”, page 155 .

– Remove sump
⇒ “1.3 Removing and installing sump”, page 237 .

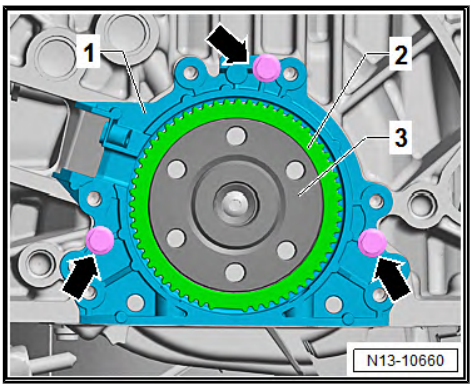
– Remove engine speed sender - G28-
⇒ “1.5 Removing and installing engine speed sender G28 ”, page 470 .



– Unscrew bolts -arrows- for sealing flange -1-.



– To press off, screw 3 bolts M6x35 into sealing flange -1- -arrows-.



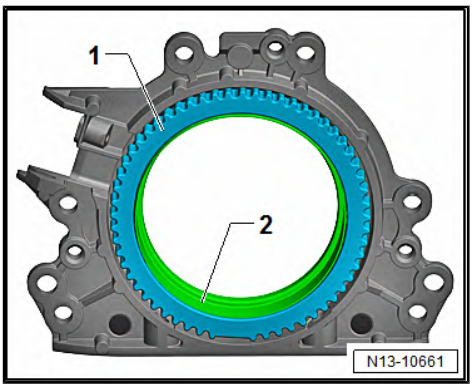
Note

The sealing flange -1- is pressed off the crankshaft -3- with the sender wheel -2-.

– Screw bolts alternately into sealing flange not more than $^1/_2$ turn at a time.

– Remove sealing flange -1- together with sender wheel -2-.

Pressing in sealing flange with sender ring



Note

- *The sealing flange with a PTFE seal is equipped with a sealing lip support ring -2-. This support ring serves as a fitting sleeve and must not be removed prior to installation.*
- *Sealing flange and sender wheel -1- must not be separated or turned after removal from packaging.*
- *The sender wheel -1- is held in its installation position on the locating pin of the assembly tool - T10134- ⇒ page 140 .*
- *Sealing flange and oil seal form one unit and may only be renewed together with the sender wheel.*
- *The assembly tool - T10134- is held in its position relative to the crankshaft by a guide pin inserted into a hole in the crankshaft ⇒ page 140 .*

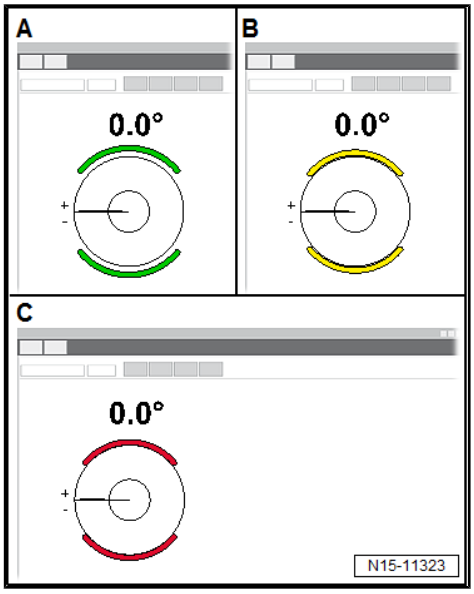
– Make sure that brake indicator on display is green.

• It must not be yellow or red.

A - Green, brake is released

B - Yellow, brake is applied

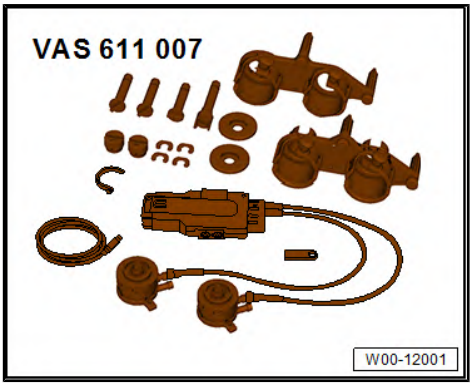
C - Red, brake has been tightened to torque



2.5 Checking valve timing

Special tools and workshop equipment required

♦ Test tool - VAS 611 007-



Procedure

• Toothed belt installed.

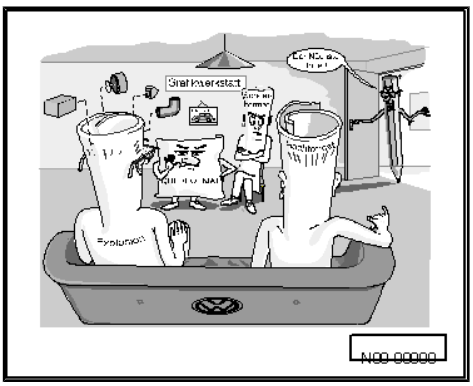
Preparations

– Remove air filter housing
⇒ “3.2 Removing and installing air filter housing”, page 397 .

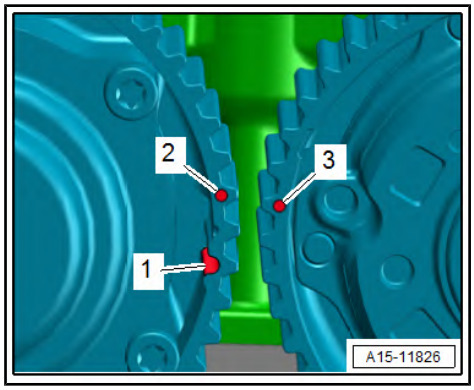
– Drain coolant
⇒ “1.3 Draining and adding coolant”, page 260 .

– Loosen bolts -2-.

– Remove cover for thermostat housing -1-.

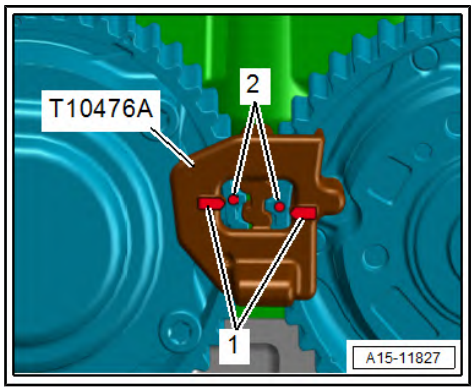


- The items -2- and -3- must be slightly offset.
- Groove -1- is used to check whether the assembly tool - T10476A- has been inserted correctly.



– Insert assembly tool - T10476A- between camshaft pulleys.

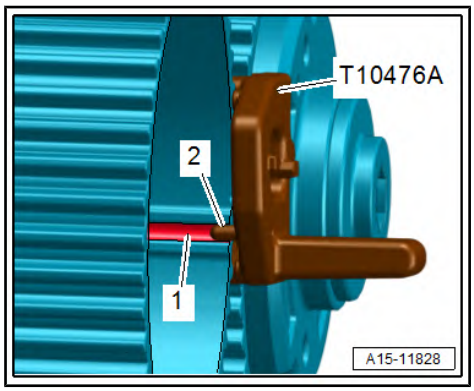
- The markings -1- on the assembly tool - T10476A- must be aligned with markings -2- on the camshaft pulleys.



– Insert assembly tool - T10476A- to stop.

- Dowel pin -2- of assembly tool - T10476A- must engage in groove of exhaust camshaft pulley -1-.

– Fit toothed belt onto camshafts
⇒ “2.7 Removing toothed belt from camshaft”, page 198 .

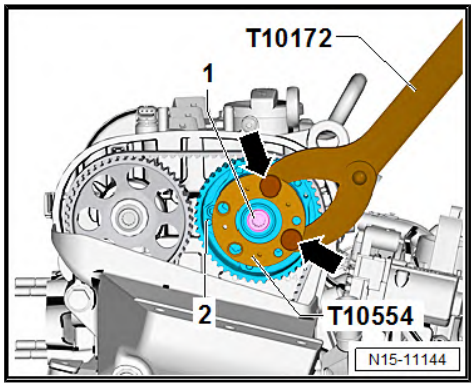


Pretighten

– Hold the inlet camshaft with the counterhold tool - T10554- and the counterhold tool - T10172A- in this position.

– Tighten bolt -1- in two rounds with specified tightening torque.

Stage	Securing bolt for camshaft adjuster, inlet side	Specified torque
1.	-1-	18 Nm
2.	-1-	50 Nm



– Fill coolant up to “max.” mark.

– Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview – noise insulation .

– On vehicles with auxiliary heater, switch on auxiliary heater for about 30 seconds.

– Set temperature regulator to “HI”.

– Switch off air conditioner compressor. To do this, press AC button.

• LED in the button must not light up.

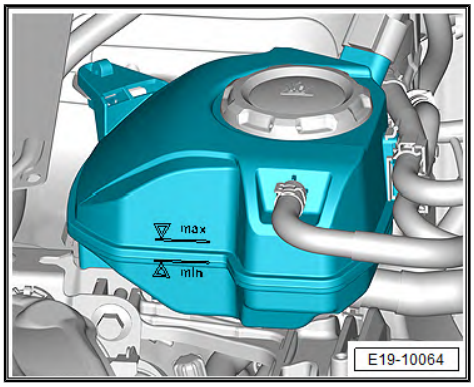
– Start engine and run it for max. 2 min. at a speed of approx. 1500 rpm.

– Fill coolant up to the overflow hole of the coolant expansion tank while the engine is running.

– Tighten cap of coolant expansion tank until it engages.

– Run engine at idling speed until both large coolant hoses on radiator are heated up.

– Switch off engine and let it cool off.

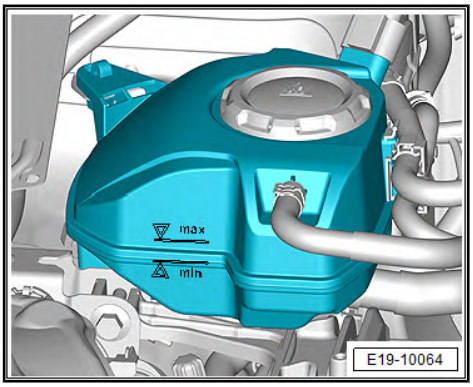


– Check coolant level.

• The coolant level must be between the “min. mark” and the “max. mark” when the engine is cold.

• When the engine is at operating temperature, it is permissible that the coolant level is at the “max. mark” or above.

– Top up with coolant again if necessary.

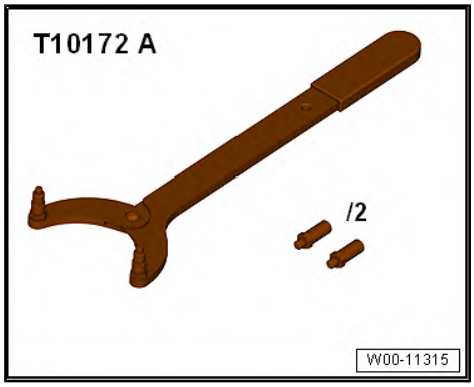


1.3.3 Draining and adding coolant, Toledo 2013, Ibiza 2016

2.7 Removing and installing toothed belt pulley for coolant pump

Special tools and workshop equipment required

- Counterhold - T10172 A- with adapter -T10172/2-

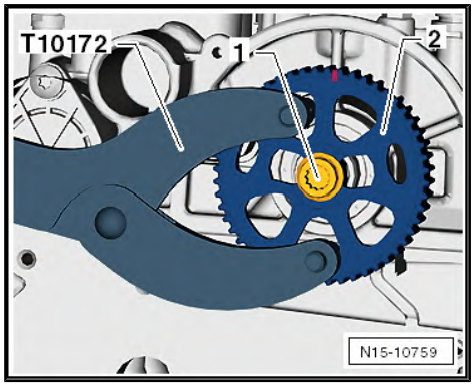


Removing

– Remove coolant pump
⇒ “2.5 Removing and installing coolant pump”, page 286 .

– Loosen bolt -1- using counterhold - T10172 A- with adapters -T10172/2- .

– Unscrew bolt and remove toothed belt pulley -2-.



Installing

Install in reverse order of removal, observing the following:

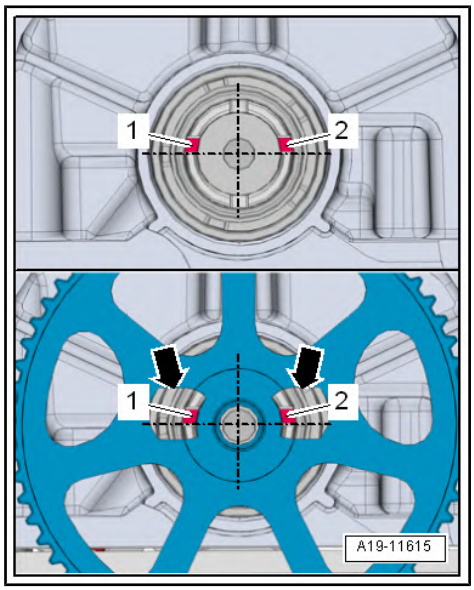
– Fit toothed belt pulley:

Position of camshaft recesses:

- The grooves -1- and -2- in the camshaft are arranged asymmetrically.
- Cut-outs -arrows- in toothed belt pulley are also arranged asymmetrically.

– Fit toothed belt pulley onto camshaft so that the asymmetrical notches of the camshaft are fully centred within the cut-outs of the toothed belt pulley.

– Install coolant pump
⇒ “2.5 Removing and installing coolant pump”, page 286



Specified torques

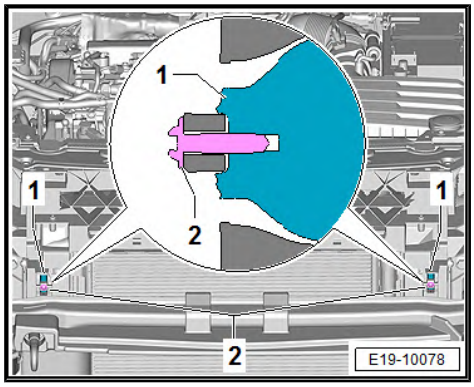
- ⇒ “2.1 Assembly overview - coolant pump, thermostat”, page 278

2.8 Removing and installing coolant temperature sender - G62-

Special tools and workshop equipment required

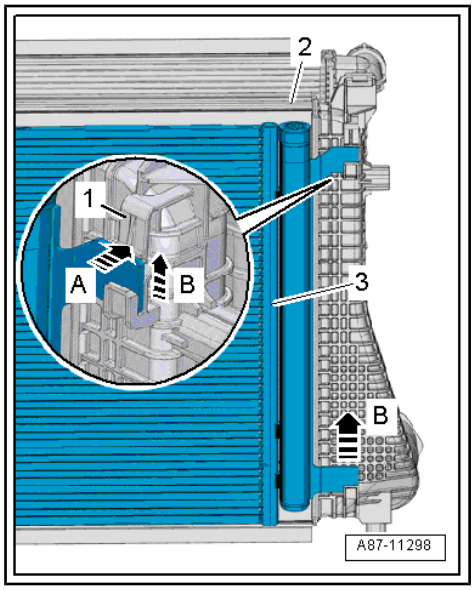
Vehicles with radiator mounting carrier, bolted

– Unscrew bolts -2- of radiator mounting carrier -1- on left and right.

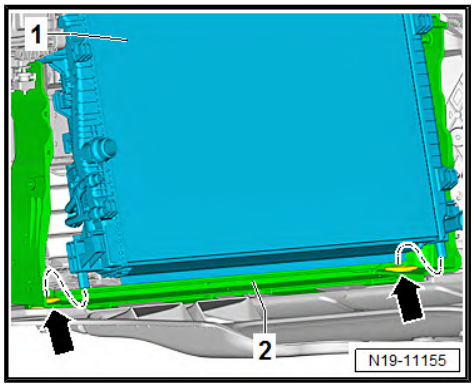


Continued for all vehicles

– Push upper edge of radiator slightly in direction of engine.
– Raise radiator, disengage from lower mounting points and push backwards.
– Press catches -1- on both sides in direction of -arrow A- to release them.
– Pull condenser -3- in -direction of arrow B-, and detach it from charge-air cooler -2-.
– Tie up condenser to lock carrier.



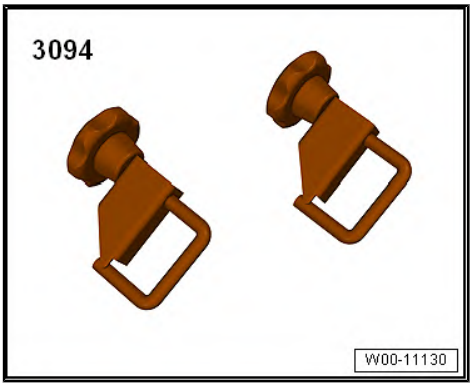
– Lift radiator module -1- at bottom out of radiator mountings -arrows-.
– Remove both radiators.



2.2 Removing and installing charge air cooler

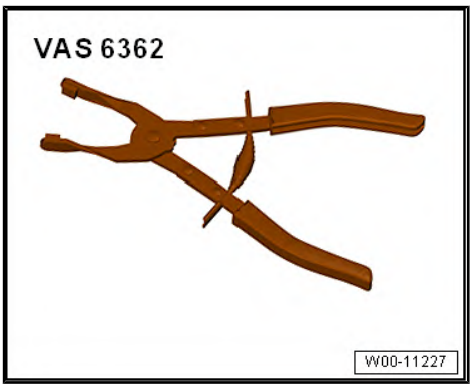
Special tools and workshop equipment required

- Hose clamps to 25 mm - 3094-



- Drip tray for workshop hoist - VAS 6208-

- Hose clip pliers - VAS 6362-



Removing

– Remove air filter housing ⇒ page 397 .

– Remove air intake pipe ⇒ page 368 .

Note

Place a cloth underneath to catch any escaping coolant.

– Place drip tray for workshop hoist - VAS 6208- underneath.

– Clamp off coolant hoses on charge air cooler using hose clamps, up to 25 mm - 3094- .

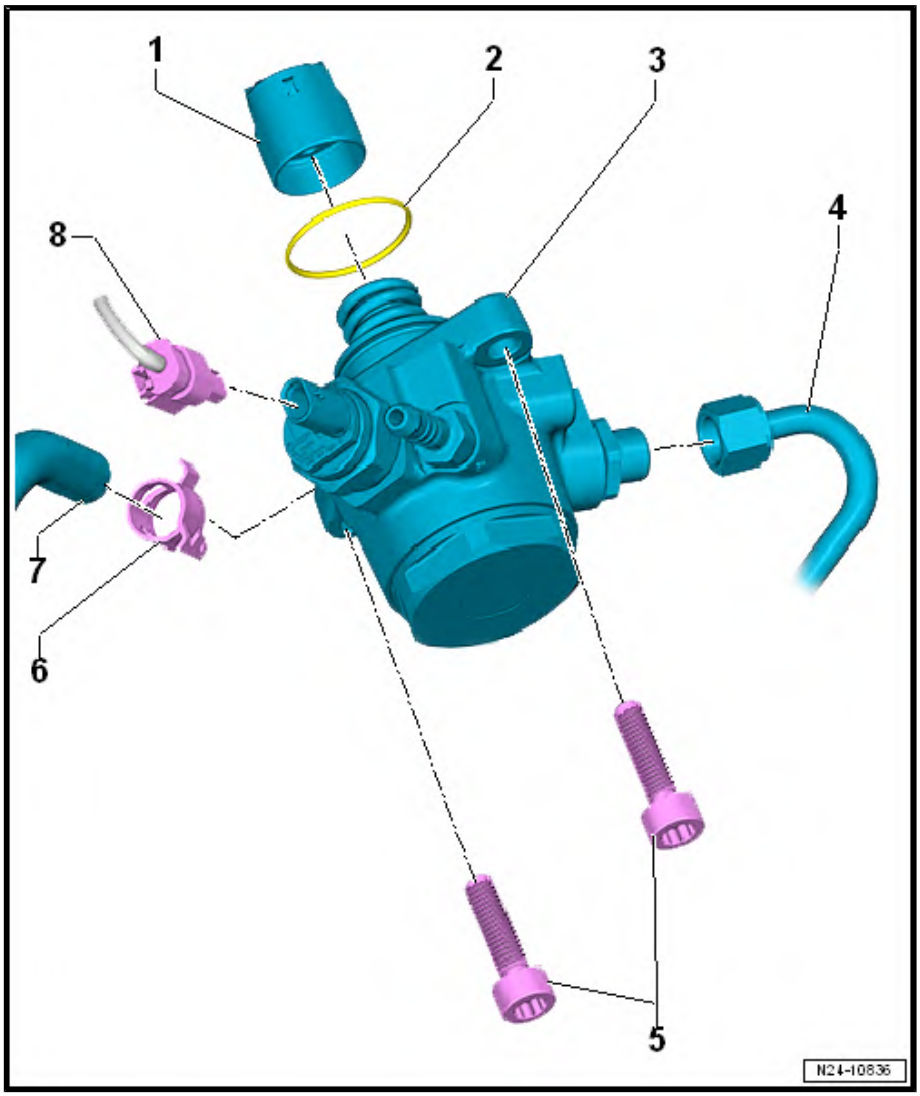
7 High-pressure pump

⇒ “7.1 Assembly overview - high-pressure pump”, page 425

⇒ “7.2 Removing and installing high-pressure pump”, page 426

⇒ “7.3 Removing and installing high-pressure pipe”, page 427

7.1 Assembly overview - high-pressure pump



1 - Roller tappet

- ❑ When installing lubricate lightly with clean engine oil

2 - O-ring

- ❑ Renew after removal
- ❑ When installing lubricate lightly with clean engine oil

3 - High-pressure pump

- ❑ With fuel pressure regulating valve - N276- .
- ❑ Do not dismantle.
- ❑ Removing and installing ⇒ page 426

4 - High-pressure pipe

- ❑ Removing and installing ⇒ page 427
- ❑ Renew after removal
- ❑ Check for damage before reinstalling.
- ❑ Do not alter shape.
- ❑ Unions must be free of damage
- ❑ Lubricate thread of union nuts with clean engine oil
- ❑ 16 Nm + 45°

5 - Bolt

- ❑ Renew after removal
- ❑ Specified torque and tightening sequence ⇒ page 426

6 - Hose clamp

7 - Return (leakage) line (fuel return line)

8 - Electrical connector