List of Workshop Manual Repair Groups

Repair Group

00 - Technical data
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19 - Cooling
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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.

00 – Technical data

1 Denomination

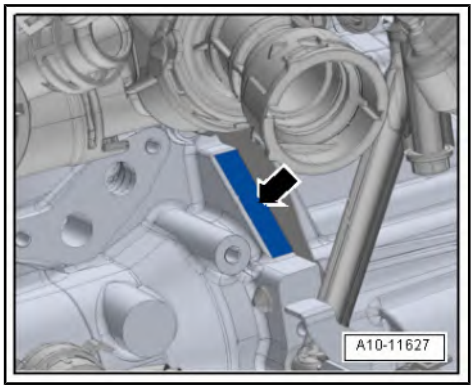
(SRL001550; Edition 04.2020)

⇒ “1.1 Engine number, engine data”, page 1

1.1 Engine number, engine data

⇒ “1.1.1 Engine characteristics, Octavia III”, page 1

⇒ “1.1.2 Engine characteristics, Rapid NH, Yeti”, page 3



The engine number (“engine identification characters” and “serial number”) is located at the engine/gearbox joint -arrow-.

In addition, a sticker with the “engine identification characters” and “serial number” is affixed to the toothed belt guard.

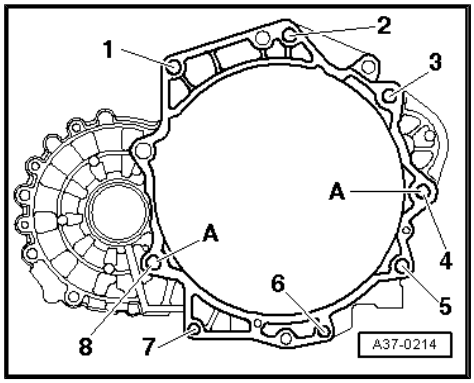
The engine identification characters are also indicated on the vehicle data sticker.

- Starting with the letter “C”, new four digit engine codes have been introduced.
- The first 3 digits of the engine identification characters refer to the displacement and the mechanical construction of the engine. They are type-punched on the cylinder block including the serial number.
- The 4th digit refers to the output and torque of the engine and depends upon the engine control unit.

1.1.1 Engine characteristics, Octavia III

Engine codes	CLHB	CLHA	CKFB	CKFC	CRVC	CUPA	CRKB	CRMB	CUNA	CXXA	CXXB	DBKA	CYKA	DDYB	DDYA	DCYA	DFFA	DGTE	DJGA
Manufactured	05.2013 ► 05.2015	11.2012 ► 05.2015	11.2012 ► 12.2012	11.2012 ► 05.2015	05.2013 ►	05.2013 ► 05.2015	05.2013 ► 05.2015	08.2014 ► 08.2018	08.2014 ►	05.2015 ► 02.2017	05.2015 ► 02.2017	05.2015 ► 02.2017	06.2015 ► 08.2018	02.2017 ► 08.2018	02.2017 ► 08.2018	02.2017 ► 08.2018	07.2018 ►	07.2018 ►	07/2018 ►
Injection system	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Bosch	Delphi	Delphi	Bosch	Bosch	Delphi	Delphi	Bosch	Bosch	Delphi	Bosch
Emission standards conforming to	EU5	EU5	EU5	EU5	EU4	EU5	EU6	EU6	EU6	EU6	EU6	EU6	EU5	EU6	EU6	EU6	EU6	EU6	EU6

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



Note

A vehicle with manual gearbox is shown as an example.

Vehicles fitted with a manual gearbox

– If a needle bearing is installed in the crankshaft, remove the needle bearing
⇒ “3.2 Replace the needle bearing in the crankshaft”, page 90 .

– If the clutch release bearing is worn, remove the clutch release bearing ⇒ Rep. gr. 30 ; Clutch; Summary of components - clutch .

– Lightly grease the gearing of the gearbox drive shaft using lubricating grease for spline ⇒ ETKA - Electronic Catalogue of Original Parts .

– Check the centring of the clutch disc.

Vehicles with dual clutch gearbox

– If no needle bearing is installed in the crankshaft, install needle bearing
⇒ “3.2 Replace the needle bearing in the crankshaft”, page 90 .

Continued for all vehicles

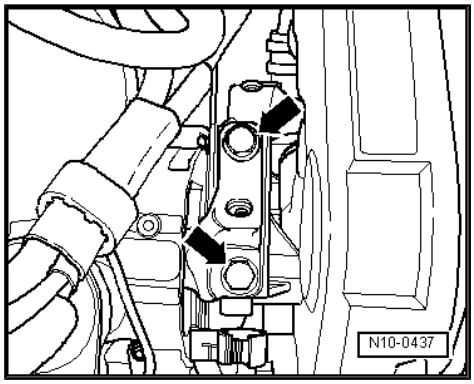
– Secure gearbox to engine.

– Install gearbox support bracket.

– Support engine/gearbox unit with the engine mount -T10497- or -T10497A- .

– Insert engine/gearbox assembly in the body.

– Initially insert screws -arrows- for engine mount by hand as far as the stop.



1 - Sealing flange on the belt pulley side

- ❑ with shaft sealing ring for crankshaft
- ❑ Replace after disassembly
- ❑ Removing and installing ⇒ “1.8 Removing and installing the sealing flange on the belt pulley side”, page 75

2 - Screw

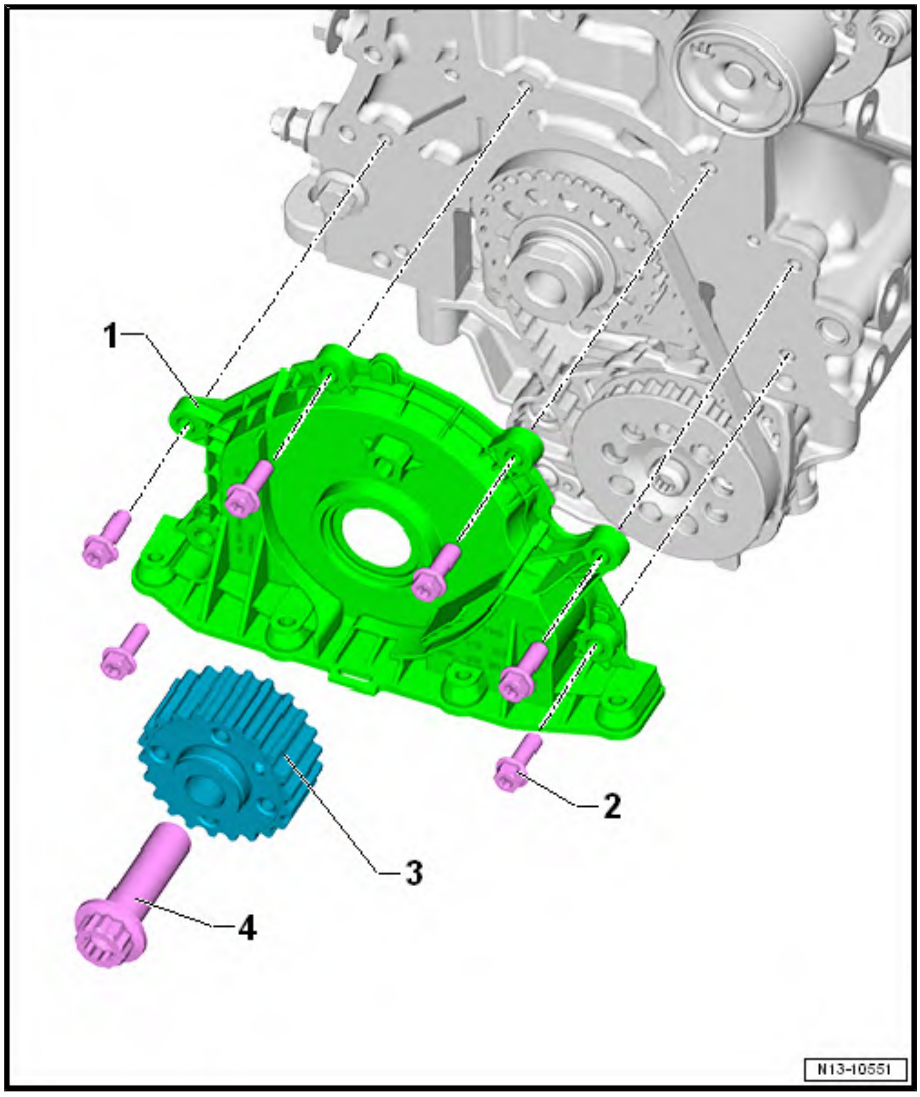
- ❑ Tightening torque and tightening order ⇒ page 68

3 - Crankshaft toothed belt sprocket

- ❑ there must not be any oil present on the contact surface between the pulley and the crankshaft
- ❑ can be installed only in one position

4 - Screw

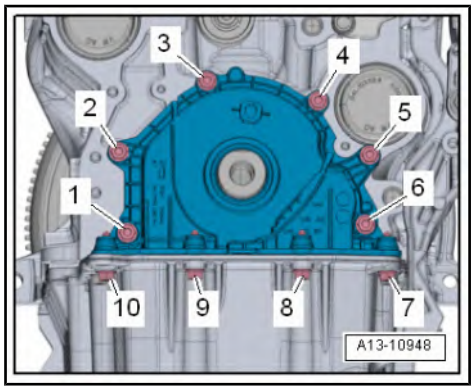
- ❑ Tightening torque Pos. -1- ⇒ “2.2 Summary of components - toothed belt”, page 141



Sealing flange on the belt pulley side - tightening torque and tightening order

– Tighten bolts step by step in the given sequence:

Stage	Bolts	Tightening torque
1.	-1- … -10-	by hand as far as the stop
2.	-1- … -6-	crosswise in steps up to 13 Nm
3.	-7- … -10-	13 Nm



18 - Vacuum hose

19 - Screw cap

20 - Seal

- ❑ for cap

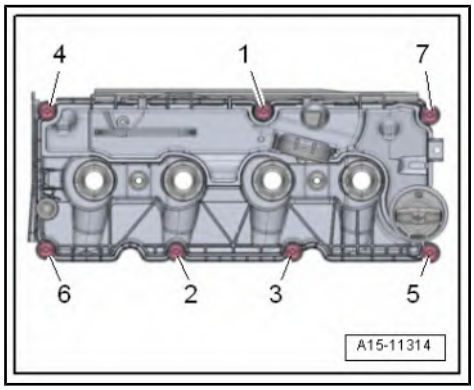
21 - Sealing sleeve

22 - Screw

- ❑ replace if the gasket has been damaged
- ❑ Tightening torque and tightening order ⇒ page 106

Cylinder head cover - tightening torque and tightening order

– Tighten the screws for the cylinder head cover in the sequence -1- … -7- to 9 Nm.



1.3 Removing and installing cylinder head

⇒ “1.3.1 Removing and installing the cylinder head, Octavia III, Yeti”, page 106

⇒ “1.3.2 Removing and installing the cylinder head, Rapid NH”, page 116

1.3.1 Removing and installing the cylinder head, Octavia III, Yeti

Special tools and workshop equipment required

- ♦ Dismantling tool for interior door trim , e.g. -T10236-
- ♦ Hose binding claw - VAS 6362-
- ♦ Screw plug set for engine - VAS 6122-
- ♦ Socket wrench XZN 10 - T10501-
- ♦ Commercially available scraper (blade width at least 40 mm)

Removing

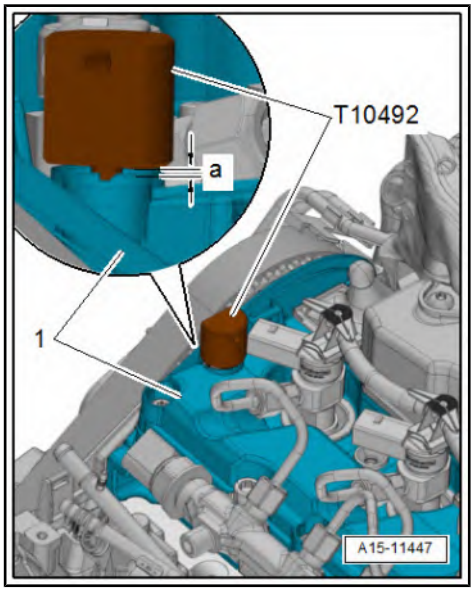
Requirements

- Engine temperature should not exceed 35°C, because the cylinder head could be twisted when slackening the screws.

– Lock the inlet camshaft with rig pin - T10492- . Please note the following when doing so:

The cylinder head cover -1- is installed:

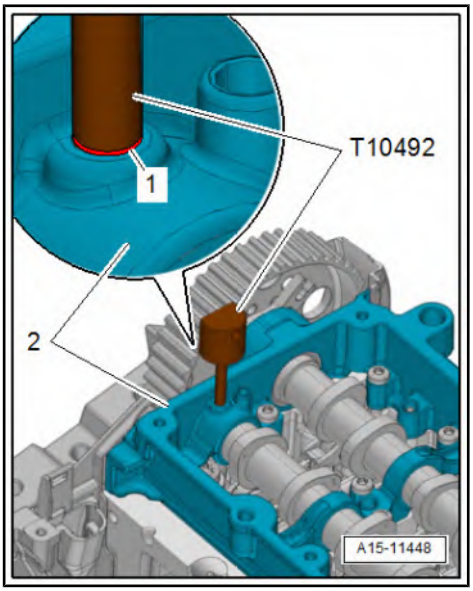
- The distance -a- must be approx. 1 mm.



the cylinder head cover is removed:

- The groove -1- on the rig pin - T10492- must line up with the camshaft housing -2-.

– Remove air filter
⇒ “4.2 Removing and installing air filter housing”, page 476 .

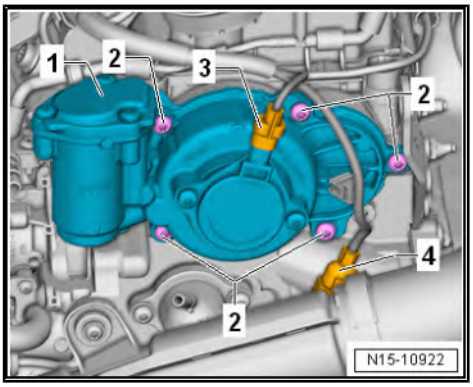


– Disconnect electrical plug connections -3- and -4-. Remove the clip from the housing.

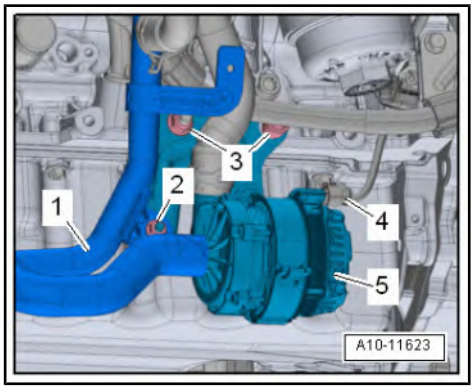
– Unscrew screws -2- and remove the housing -1-.

NOTICE

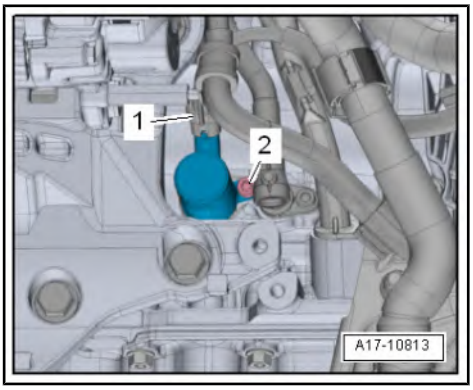
Before removing the operating valve, check the small pistons in the middle of the operating valve for freedom of movement. Press a finger on the piston and check whether it can be pressed in before moving into the end position. If the piston catches, the setting valve must be replaced. Otherwise, the engine may be damaged.



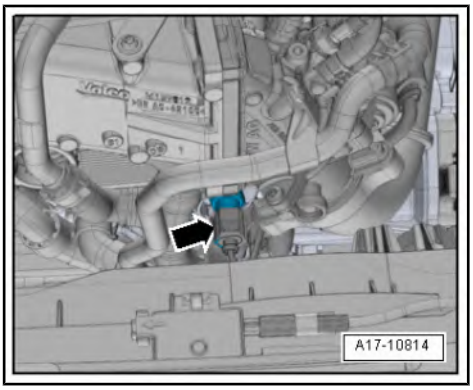
– Separate electrical plug connection -4-.
– Unscrew screws -3- and push pump for charge air cooler - V188- Pos. -5- to the side.



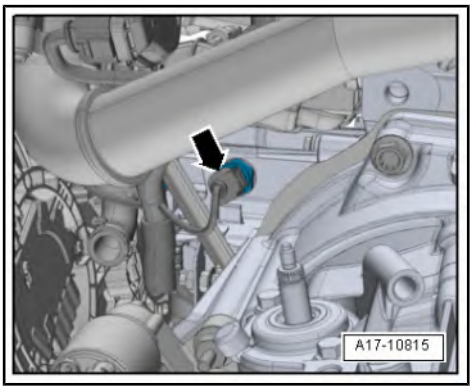
– Disconnect electrical connector -1- at the oil pressure control valve - N428- .



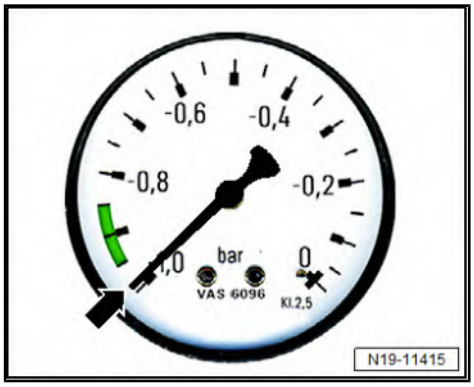
– Disconnect connector -arrow- from the oil pressure switch - F1- .



– Remove plug -arrow- at the oil pressure switch for reduced oil pressure - F378- .
– Remove cable strap from oil filter housing and detach electric cable.

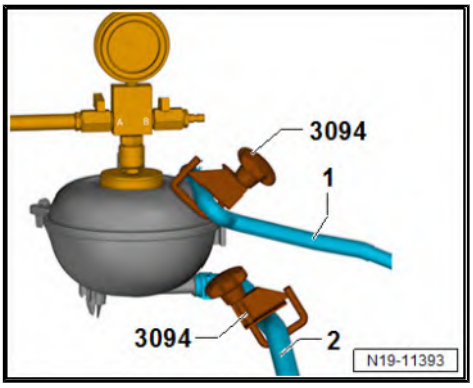


– Build up a vacuum with the electric vacuum pump until the pointer on the pressure gauge is -arrow- clearly below the green area.
– Close the valve -B- and turn off the electric vacuum pump - VAS 6096/2- .
– Check the pressure gauge. The pressure gauge pointer must not move.
– If the conditions are met, the cooling system can be filled ⇒ page 249 .

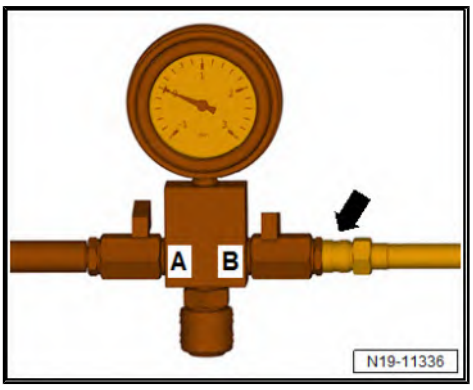


When the water separator in the electric vacuum pump is filled with coolant, the coolant expansion tank must be drained.

– Close the shut-off valve -B- and turn off the electric vacuum pump - VAS 6096/2- .
– Seal the supply hose -2- and return hose -1- of the coolant expansion tank with hose clamps up to 25 mm in length - MP7-602 (3094)- .



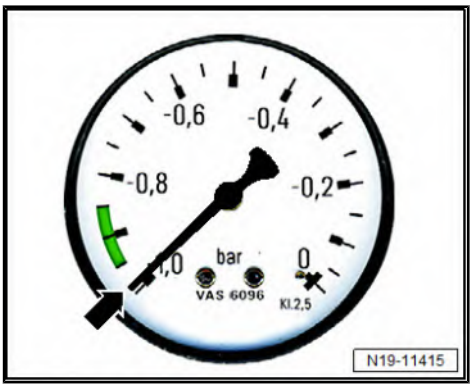
– Remove the plug-in coupling -arrow- and open the stopcock -B- so that the coolant expansion tank is ventilated.
– Cooling system filling device - VAS 6096- and test adapter - VAS 691 005/5- .
– Drain coolant from coolant expansion tank.
– Set up the Cooling system filling device and test adapter again, and remove the hose clamps.
– Switch on the electric vacuum pump - VAS 6096/2- and build up the vacuum again.



Fill the cooling system

Condition:

• The pointer on the pressure gauge -arrow- must be clearly below the green area.



2.2.4 Charge air cooler pump - V188- , variant 3

1 - Screw
- ❑ 40 Nm

2 - Mounting bracket
- ❑ Charge air cooler pump - V188-

3 - Screw
- ❑ 23 Nm

4 - Retaining clip

5 - Charge air cooler pump - V188-
- ❑ Removing and installing ⇒ “2.4 Removing and installing electric coolant pump”, page 285

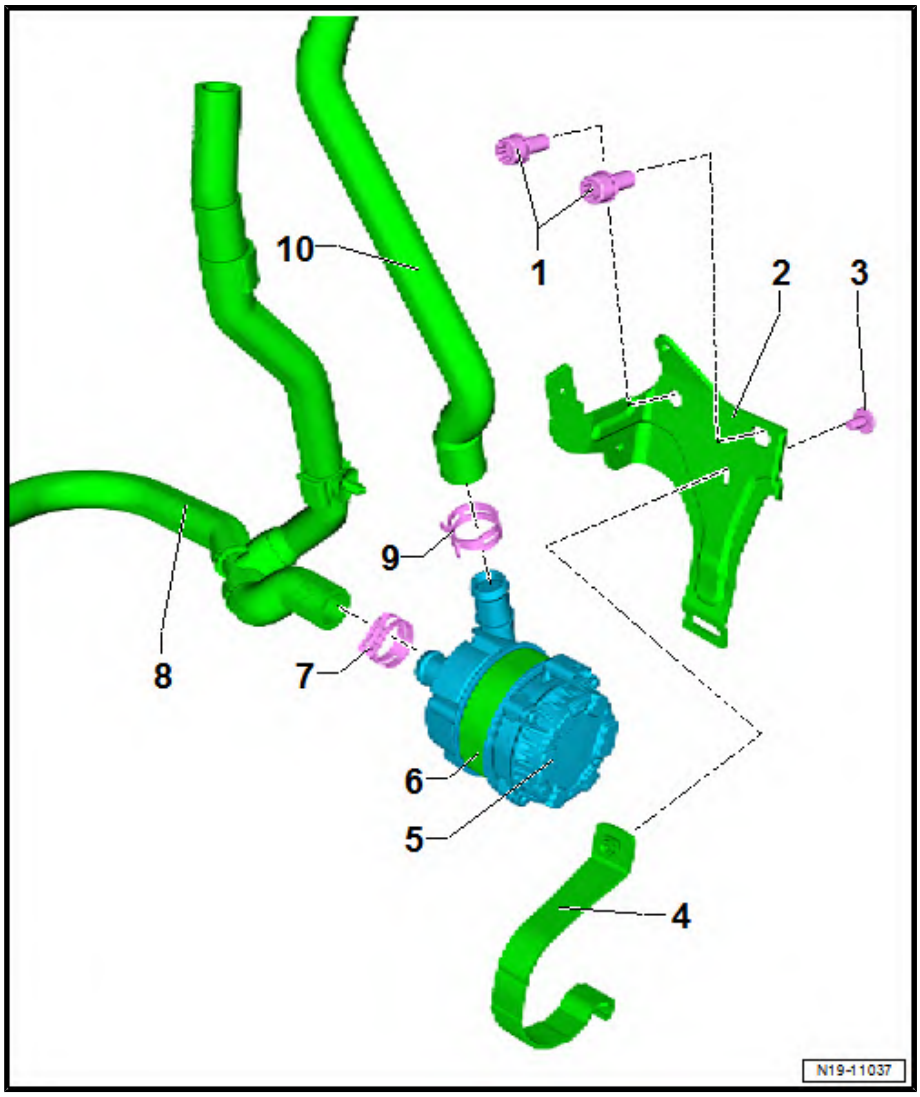
6 - Rubber holder

7 - Spring clip

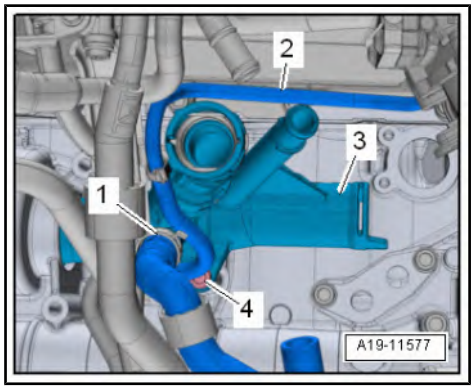
8 - Coolant hose

9 - Spring clip

10 - Coolant hose



– Loosen hose clamp -1-, remove coolant hose.
– Release screw -4-.
– Pull off coolant pipe bottom front -3- and remove, do not damage the vacuum line -2- when doing so.



Installing

Installation is carried out in the reverse order. When installing, observe the following:

Note

- *Replace gaskets and O-rings after disassembly.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Watch for coolant hoses with pre-tensioned spring band clamps
⇒ “4.1.7 Coolant hoses with preloaded spring-type clamps”, page 346 .
– Clean and smooth gasket and O-ring sealing surfaces.
– Moisten gaskets and O-rings with coolant.
– Install oil filter housing
⇒ “3.5 Removing and installing oil filter housing”, page 209 .
– Connect coolant hose with quick coupling ⇒ page 346 .

Note

Do not re-use used coolant.

– Top up coolant ⇒ “1.4 Filling with coolant”, page 235 .

Tightening torques - summaries of components

Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275
- ⇒ “5.1 Assembly overview - intake manifold”, page 481

3.2.4 Removing and installing the front bottom coolant pipe, Rapid NH

Special tools and workshop equipment required

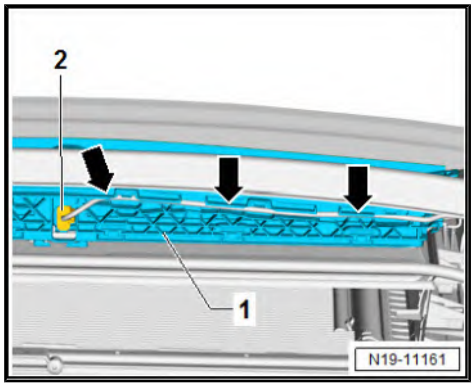
- Hose binding claw - VAS 6362-

Removing

– Remove oil filter housing
⇒ “3.5 Removing and installing oil filter housing”, page 209 .
– Remove the throttle valve control unit - J338-
⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491 .

Wiring loom placement on the frame of the radiator blind

– Wiring loom -2- for the control motor for radiator blind - V544- is attached in the retaining tab in the frame of the radiator blind -1- -arrows-.



4.3.2 Summary of components - component parts of the radiator blind

1 - Connecting bridge

2 - Screw

- ❑ for engine mount Pos. -8- ⇒ Item 8 (page 352)
- ❑ 2 Nm

3 - Control motor for radiator blind - V544-

- ❑ Removing and installing ⇒ “4.9 Removing and installing the radiator blind control motor V544 ”, page 370

4 - Flaps

- ❑ Note arrangement ⇒ Fig. ““Arrangement of the fins”“ , page 353

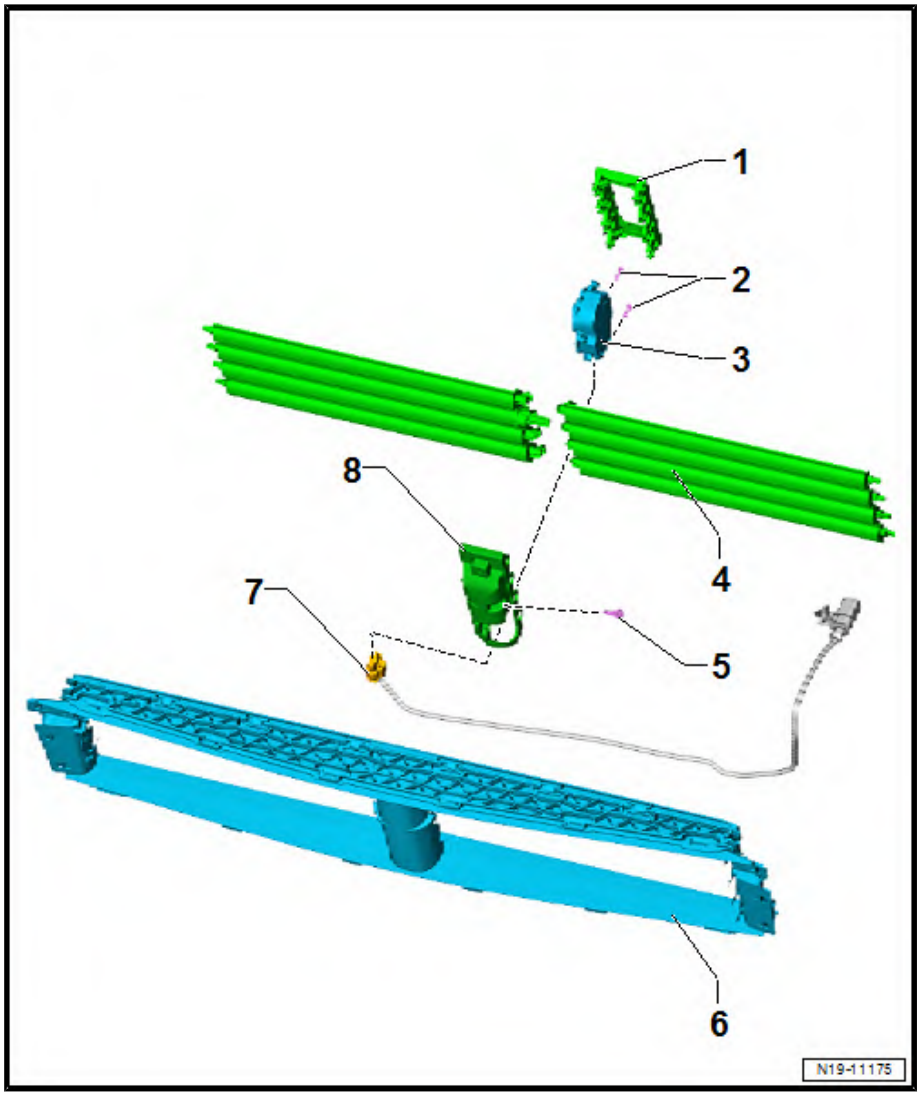
5 - Screw

- ❑ for radiator blind control motor - V544- Pos. -3- ⇒ Item 3 (page 352)
- ❑ 2 Nm

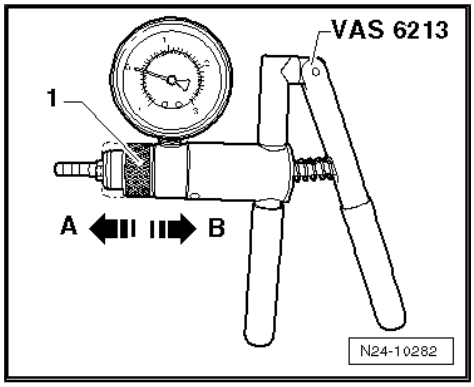
6 - Surround

7 - Wiring loom

8 - Engine mount



– 3Put the sliding ring -1- of the hand vacuum pump - VAS 6213- in position -A- for “vacuum”.

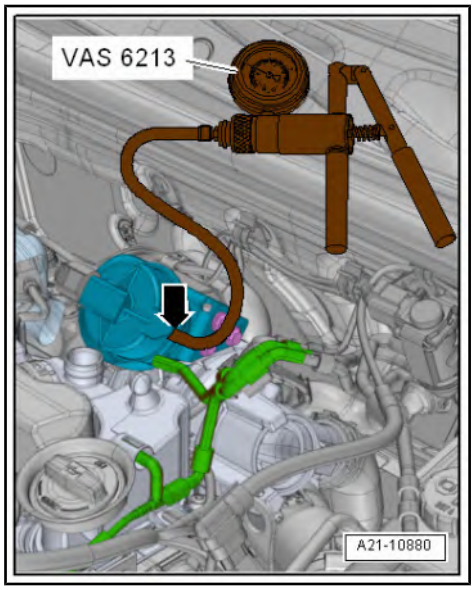


– Connect the hand vacuum pump - VAS 6213- to the pressure box -arrow-.

NOTICE

Risk of damage to the pressure box from excessive vacuum.

- **Under no circumstances may a vacuum greater than -0.08 MPa (-800 mbar) be generated.**



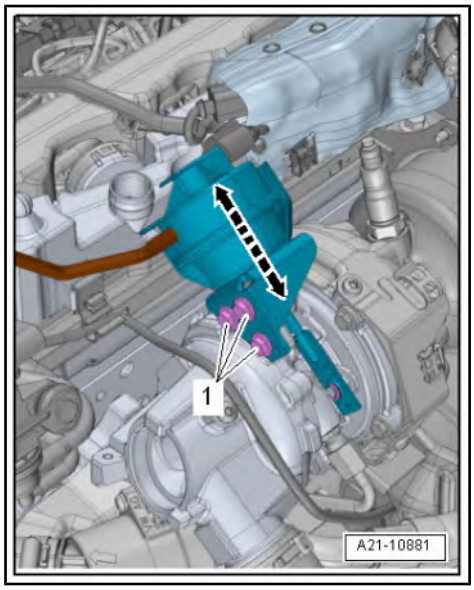
Adjust the voltage value

– Press the hand vacuum pump - VAS 6213- repeatedly until a pressure of -0.065 … -0.07 MPa (-650 … -700 mbar) is displayed on the pressure gauge.

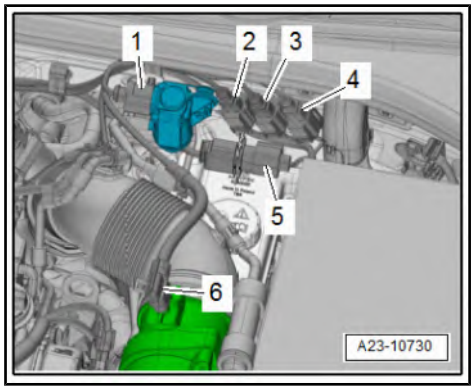
Version 1

– Slide the pressure box in the -direction of arrow- until a voltage of 0.75 ± 0.02 V is displayed on the ⇒ Vehicle diagnostic tester.

– Tighten screws -1-.



Electrical connectors on the bulkhead, variant 2



1 - Solenoid valve for charge pressure control - N75-

2 - Exhaust gas temperature transmitter 4 - G648-

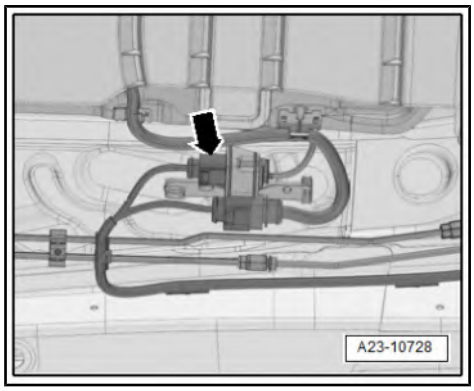
3 - Exhaust gas temperature transmitter 3 - G495-

4 - Exhaust temperature transmitter 2 - G448- for vehicles with EU6 emission level

5 - Lambda probe 1 in front of the catalytic converter - GX10-

6 - Air mass meter - G70-

Fitting location of electrical plug connection for lambda probe 1 after catalytic converter - GX7- (for vehicles with EU6 emission level)



- Underneath the left centre underfloor trim panel -arrow-

1.3 Filling/bleeding the fuel system

NOTICE

In order to prevent the high pressure pump from running dry (very accurate tolerances) and to achieve a quick engine start after parts are replaced, the following must be observed:

- **If fuel system between tank and pump parts/components have been removed or replaced the fuel system must be filled/bled before the engine is started up for the first time.**

In order to fill up the high pressure pump with fuel, proceed as follows:

- Vehicle must be refuelled.

– Connect vehicle diagnostic tester .

– Switch on the ignition and select the following options on the vehicle diagnostic tester :

- `0001 - Activate fuel pump`
- `Venting air from the fuel system.`

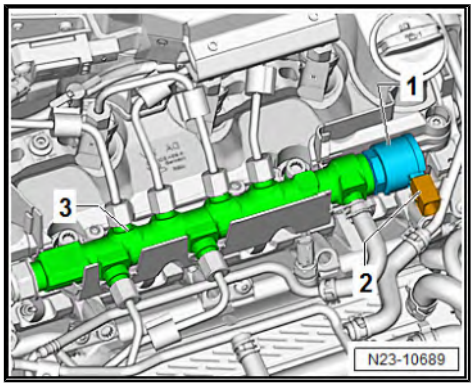
- The fuel pump activates.
- The fuel pump must run for approximately 2 to 3 minutes to ensure that the pump is sufficiently filled with fuel.

– After filling the fuel system, start the engine.

– Run the engine at medium speed for several minutes, then turn it off again.

– Test fuel system for tightness
⇒ “1.4 Check the fuel system for tightness”, page 445 .

– Delete event memory entry with Vehicle diagnosis tester .



– Align the fuel pressure regulating valve - N276- -1- with suitable workshop equipment.
– Turn the valve so that the electrical plug can be fitted to the connection -2- without tension.
– Connection -2- is installed in different positions.
– Fill/bleed the fuel system
⇒ “1.3 Filling/bleeding the fuel system”, page 444 .
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– After replacement, reset the learnt values ⇒ Vehicle diagnostic tester.

♦ `Resetting the learnt values of volume measurement unit and pressure control valve`

Tightening torques - summaries of components

Note

Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

Component	Tightening torque
Fuel pressure regulating valve - N276- on the high pressure accumulator (fuel distributor).	100 Nm

♦ ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454

6.2 Check fuel pressure regulating valve - N276-

Special tools and workshop equipment required

♦ Suitable auxiliary hose for connection to the fuel return-flow line
♦ Fuel tank, approx. 200 ml
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

NOTICE

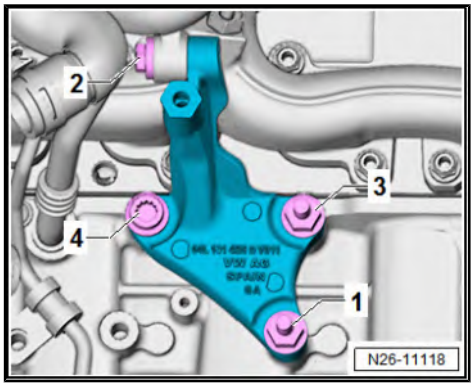
There is a risk of malfunctions caused by soiling.

♦ **Observe rules for cleanliness**
⇒ “3.1 Rules of cleanliness”, page 7 .

Bracket -2- for filter for exhaust gas recirculation– tightening torques and tightening order

– Tighten bolts step by step in the given sequence:

Stage	Bolts	Tightening torque
1.	-1- … -4-	by hand as far as the stop
2.	-1-	40 Nm
3.	-2-	20 Nm
4.	-3- and -4-	40 Nm



2.2 Removing and installing catalytic converter

for vehicles with EU4 emission level

Depending on the country-specific exhaust limit values, an unregulated particle filter (article reduction system) or a catalytic converter is installed in this engine. The difference in terms of removing and installing is small. For this reason, we only describe how to remove the catalytic converter.

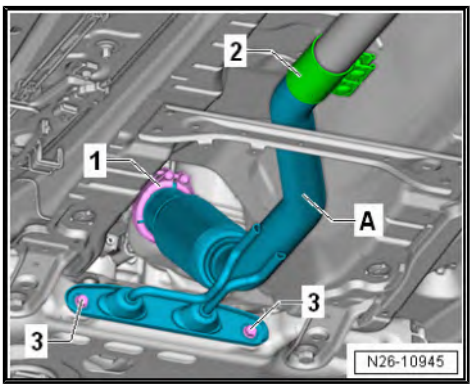
Removing

– Remove noise reduction for engine and tunnel ⇒ Exterior bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , if required, ⇒ Bodywork; Rep. gr. 50 .

– Undo the screws of the clamping sleeve -2- and leave the clamping sleeve in the installation position.

– Open clamp -1- and remove.

– Unscrew the screws -3-, slide the clamping sleeve -2- to the rear and remove the pre-exhaust pipe -A-.



– Unscrew the fixing nuts -1-, undo the screws -2- by a quarter turn.

– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .