Workshop Manual

Octavia III 2013 ➤ , Octavia III 2014 ➤ , Rapid NH 2013 ➤ , Rapid NH 2014 ➤ , Yeti 2010 ➤ , Yeti 2011 ➤

1.6/66;77;81;85;2.0/105;110;135 kW TDI CR engine									
Engine ID	CLH A	CLH B	CKF B	CKF C	CRV C	CUP A	CRK B	CRM B	CUN A
	CXX A	CXX B	DBK A	CYK A	CXM A	CUU A	CUU B	DFS A	DFS B
	DDY B	DDY A	DCY A	DGT E	DJG A	DFFA			

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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
23 - Mixture preparation - injection
26 - Exhaust system
28 - Glow plug 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.

Contents

00 - Technical data 1
1 Denomination 1
1.1 Engine number, engine data 1
2 Safety instructions 4
2.1 Safety precautions when working on fuel supply system 4
2.2 Safety precautions for working on vehicles with start-stop system 4
2.3 Safety precautions during road tests in which testing and measuring equipment is used . . 5
2.4 Safety precautions when working on cooling system 5
2.5 Safety precautions when working on the SCR system 5
2.6 Safety precautions when working on the exhaust system 6
3 Repair instructions 7
3.1 Rules of cleanliness 7
3.2 Foreign bodies in the engine 8
3.3 Contact corrosion 8
3.4 Cable routing and securing 8
3.5 Assembly of radiators and condensers 8
3.6 Supplementary instructions and assembly work on vehicles with an air conditioning system 8
3.7 General instructions for charge air system 9
10 - Removing and installing engine 11
1 Removing and installing engine 11
1.1 Removing engine 11
1.2 Attach engine attached to engine and gearbox mount 38
1.3 Installing engine 39
2 Assembly bracket 48
2.1 Assembly overview - assembly mountings 48
2.2 Removing and installing engine mount 53
2.3 Removing and installing pendulum support 56
2.4 Support the engine in its installed position 57
2.5 Check assembly bracket setting 60
3 Engine trim panel 64
3.1 Removing and installing engine trim panel 64
13 - Crankshaft group 65
1 Cylinder block (pulley end) 65
1.1 Assembly overview - cylinder block (pulley end) 65
1.2 Summary of components - sealing flange on the belt pulley side 67
1.3 Removing and installing V-ribbed belt 69
1.4 Removing and installing tensioning pulley for V-ribbed belt 71
1.5 Removing and installing vibration dampener 71
1.6 Removing and installing bracket for auxiliary units 72
1.7 Removing and installing engine support 74
1.8 Removing and installing the sealing flange on the belt pulley side 75
2 Cylinder block on gearbox side 79
2.1 Summary of components - cylinder block on gearbox side 79
2.2 Removing and installing flywheel 80
2.3 Removing and installing sealing flange on gearbox side 81
3 Crankshaft 89
3.1 Summary of components - crankshaft 89
3.2 Replace the needle bearing in the crankshaft 90
3.3 Measuring axial play of crankshaft 91

4 Pistons and conrods ... 93
4.1 Assembly overview - piston and conrod ... 93
4.2 Removing and installing the piston ... 96
4.3 Measure piston projection in TDC ... 97
4.4 Check piston and cylinder bore ... 98

15 - Cylinder head, valve gear ... 101

1 Cylinder head ... 101
1.1 Summary of components - cylinder head ... 101
1.2 Assembly overview - cylinder head cover ... 104
1.3 Removing and installing cylinder head ... 106
1.4 Removing and installing cylinder head cover ... 124
1.5 Removing and installing gasket rings for injection units ... 126
1.6 Removing and installing camshaft housing ... 127
1.7 Checking compression ... 138

2 Toothed belt drive ... 140
2.1 Summary of components - toothed belt guard ... 140
2.2 Summary of components - toothed belt ... 141
2.3 Removing and installing toothed belt guard ... 142
2.4 Removing and installing toothed belt ... 150
2.5 Remove the toothed belt from the camshaft ... 159

3 Valve gear ... 163
3.1 Assembly overview - valve gear ... 163
3.2 Removing and installing gasket ring for camshaft ... 166
3.3 Removing and installing camshaft control ... 168
3.4 Removing and installing camshaft control valve 1 N205 ... 173
3.5 Checking hydraulic balancing elements ... 173
3.6 Removing and installing valve stem seals ... 174

4 Inlet and exhaust valves ... 180
4.1 inspecting valve guides ... 180
4.2 Valve dimensions ... 181

17 - Lubrication ... 182

1 Sump, oil pump ... 182
1.1 Assembly overview - pan/oil pump ... 182
1.2 Removing and installing oil pan ... 187
1.3 Removing and installing the bottom part of the oil sump ... 191
1.4 Removing and installing top part of the oil sump ... 194
1.5 Removing and installing oil pump ... 198
1.6 Removing and installing oil level and oil temperature sender G266 ... 199

2 Engine oil cooler ... 202

3 Oil filter, oil pressure switch ... 203
3.1 Summary of components - oil filter housing/oil pressure switch ... 203
3.2 Removing and installing oil pressure switch F1 ... 205
3.3 Removing and installing oil pressure switch for reduced oil pressure F378 ... 207
3.4 Testing oil pressure ... 209
3.5 Removing and installing oil filter housing ... 209
3.6 Removing and installing valve for oil pressure control N428 ... 212

4 Oil circuit ... 214
4.1 Removing and installing oil flow line ... 214
4.2 Removing and installing the exhaust gas turbocharger oil return line ... 215

19 - Cooling ... 217

1 Cooling system, coolant ... 217
1.1 Connection diagram - coolant hoses ... 217

1.2 Check cooling system for leaks . . . 227
1.3 Draining the cooling system . . . 230
1.4 Filling with coolant . . . 235
1.5 Checking the filling quality . . . 251
1.6 Checking the electric vacuum pump VAS 6096/2 . . . 253
1.7 Flushing the cooling system . . . 253
1.8 Flushing cooling system, quick start guide . . . 273
2 Coolant pump, regulation of cooling system . . . 275
2.1 Summary of components - coolant pump/thermostat . . . 275
2.2 Summary of components - electric coolant pump . . . 279
2.3 Summary of components - coolant temperature transmitter . . . 284
2.4 Removing and installing electric coolant pump . . . 285
2.5 Removing and installing coolant pump . . . 298
2.6 Removing and installing coolant regulator . . . 300
2.7 Testing the coolant regulator . . . 304
2.8 Removing and installing coolant valve for cylinder head N489 . . . 304
2.9 Removing and installing coolant temperature transmitter G62 . . . 305
3 Coolant pipes . . . 309
3.1 Summary of components - coolant pipe . . . 309
3.2 Removing and installing coolant pipes . . . 312
4 Coolers, radiator, radiator fan . . . 338
4.1 Assembly overview - radiator/radiator fan . . . 338
4.2 Summary of components - fan shroud and radiator fan . . . 347
4.3 Summary of components - radiator blind . . . 351
4.4 Removing and installing radiator . . . 353
4.5 Removing and installing charge air cooling circuit . . . 362
4.6 Removing and installing fan shroud . . . 365
4.7 Removing and installing radiator fan V7 . . . 369
4.8 Removing and installing radiator blind . . . 369
4.9 Removing and installing the radiator blind control motor V544 . . . 370

21 - Turbocharging/supercharging . . . 374
1 Exhaust gas turbocharger . . . 374
1.1 Summary of components - exhaust gas turbocharger . . . 374
1.2 Removing and installing exhaust gas turbocharger . . . 382
1.3 Replacing exhaust gas turbocharger pressure box . . . 401
1.4 Removing and installing the exhaust gas turbocharger connection fitting . . . 407
2 Charge-air system . . . 409
2.1 Summary of components - charge air system . . . 409
2.2 Removing and installing charge pressure sender G31 . . . 411
2.3 Checking the charge-air system for leak-tightness . . . 411
2.4 Installing and removing the air guide pipe . . . 418
2.5 Leak testing the charge air cooler . . . 419

23 - Mixture preparation - injection . . . 423
1 Injection system . . . 423
1.1 Schematic overview - fuel system . . . 423
1.2 Installation location overview - fuel injection system . . . 428
1.3 Filling/bleeding the fuel system . . . 444
1.4 Check the fuel system for tightness . . . 445
2 Vacuum system . . . 446
2.1 Connection diagram - Vacuum system . . . 446
2.2 Checking the vacuum system . . . 448
2.3 Installing and removing vacuum line . . . 448
3 Injection units / high pressure accumulators (fuel distributors) . . . 452

3.1 Summary of components - injection units (injectors) . . . 452
3.2 Summary of components - High pressure reservoir (fuel distributor) . . . 454
3.3 Adjust the correction values for injection units . . . 456
3.4 Check injection units . . . 456
3.5 Check injection unit return quantity with engine running . . . 457
3.6 Check injection unit return flow quantity at starter speed . . . 460
3.7 Checking the injection units in open state . . . 463
3.8 Removing and installing the injection units . . . 464
3.9 Removing and installing high pressure lines . . . 468
3.10 Removing and installing high pressure reservoir (fuel distributor) . . . 470
4 Air filter . . . 473
4.1 Assembly overview - air filter housing . . . 473
4.2 Removing and installing air filter housing . . . 476
5 Intake manifold . . . 481
5.1 Assembly overview - intake manifold . . . 481
5.2 Removing and installing intake manifold . . . 483
5.3 Removing and installing the throttle valve control unit J338 . . . 491
6 Senders and sensors . . . 496
6.1 Removing and installing the fuel pressure regulating valve N276 . . . 496
6.2 Check fuel pressure regulating valve N276 . . . 503
6.3 Removing and installing fuel pressure sender G247 . . . 504
6.4 Removing and installing air flow mass meter G70 . . . 506
6.5 Removing and installing differential pressure transmitter G505 . . . 510
6.6 Removing and installing pressure sensor for exhaust gas 1 G450 . . . 515
6.7 Removing and installing intake air temperature sender G42 . . . 516
6.8 Removing and installing NOx transmitter 2 G687 . . . 517
6.9 Removing and installing charge air temperature transmitter after charge air cooler G811 . . . 519
6.10 Removing and installing fuel temperature transmitter G81 . . . 519
6.11 Removing and installing NOx transmitter control unit GX30 . . . 520
7 Engine control unit . . . 527
7.1 Removing and installing engine control unit J623 . . . 527
8 High pressure pump . . . 537
8.1 Summary of components - high pressure pump . . . 537
8.2 Removing and installing the high pressure pump . . . 538
9 Lambda probe . . . 541
9.1 Summary of components - lambda probe . . . 541
9.2 Removing and installing Lambda probe . . . 544
10 Engine noise speaker . . . 551
10.1 Removing and installing engine noise speaker . . . 551

26 - Exhaust system . . . 552
1 Exhaust pipes/silencers . . . 552
1.1 Assembly overview - silencers . . . 552
1.2 Removing and installing pre-exhaust pipe . . . 564
1.3 Separating exhaust pipes/silencers . . . 567
1.4 Removing and installing rear silencer . . . 568
1.5 Align exhaust system free of stress . . . 573
1.6 Inspecting the exhaust system for leaks . . . 574
1.7 Installation position of clamping sleeve . . . 574
1.8 Summary of components - pre-exhaust pipe . . . 575
1.9 Align exhaust tailpipes . . . 578
2 Cleansing exhaust emissions . . . 579
2.1 Summary of components - exhaust gas cleaning . . . 579
2.2 Removing and installing catalytic converter . . . 587

2.3 Removing and installing exhaust gas cleaning module . . . 589
2.4 Installing and removing regulated particle filter . . . 605
2.5 Removing and installing the exhaust flap control unit J883 . . . 610
3 SCR system (Selective Catalytic Reduction) . . . 612
3.1 Summary of components - reduction agent tank . . . 612
3.2 Summary of components - delivery line for reduction agent . . . 616
3.3 Summary of components - delivery module for reduction agent . . . 619
3.4 Removing and installing reduction agent tank . . . 620
3.5 Removing and installing delivery line for reduction agent . . . 626
3.6 Removing and installing the delivery module for reduction agent . . . 634
3.7 Removing and installing the injection valve for reduction agent N474 . . . 636
3.8 Removing and installing the control unit for reduction agent heater J891 . . . 639
3.9 Summary of components - injection valve for reduction agent . . . 640
3.10 Removing and installing the filler tube for reduction agent tank . . . 642
3.11 Disconnect delivery line for reduction agent . . . 644
3.12 Adjusting the learnt value for the SCR system . . . 646
4 Exhaust temperature regulation . . . 647
4.1 Summary of components - exhaust temperature regulation . . . 647
4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 . . . 653
4.3 Removing and installing the exhaust gas temperature transmitter 2 G448 . . . 656
4.4 Removing and installing the exhaust gas temperature transmitter 3 G495 . . . 661
4.5 Removing and installing the exhaust gas temperature transmitter 4 G648 . . . 666
5 Exhaust gas recirculation . . . 670
5.1 Summary of components - Exhaust gas recirculation . . . 670
5.2 Summary of components - exhaust gas recirculation 1 GX5 . . . 678
5.3 Removing and installing radiator for exhaust gas recirculation . . . 680
5.4 Removing and installing exhaust gas recirculation valve 1 GX5 . . . 691
5.5 Removing and installing exhaust gas recirculation valve 2 GX6 . . . 693
5.6 Removing and installing temperature sensor for exhaust gas recirculation G98 . . . 697
5.7 Test air-tightness of the radiator for exhaust gas recirculation . . . 699

28 - Glow plug system . . . 700
1 Glow plug system . . . 700
1.1 Summary of components - Glow plug system . . . 700
1.2 Removing and installing glow plugs . . . 701
1.3 Removing and installing automatic glow period control unit J179 . . . 703
1.4 Removing and installing Hall sender G40 . . . 704
1.5 Removing and installing the engine speed transmitter G28 . . . 704

00 – Technical data

1 Denomination

(SRL001550; Edition 04.2020)

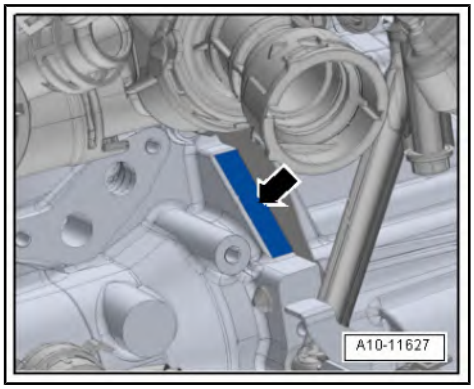
⇒ “1.1 Engine number, engine data”, page 1

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

Engine codes	CLHB	CLHA	CKFB	CKFC	CRVC	CUPA	CRKB	CRMB	CUNA	CXXA	CXXB	DBKA	CYKA	DDYB	DDYA	DCYA	DFFA	DGTE	DJGA
Displacement	1.598	1.598	1.968	1.968	1.968	1.968	1.598	1.968	1.968	1.598	1.598	1.598	1.968	1.598	1.598	1.968	1.968	1.598	1.968
Output kW at rpm	66/2750…4800	77/3000…4000	105/3500…4000	110/3500…4000	105/3500…4000	135/3500…4000	81/3250…4000	110-4000	135/3500…4000	66/2750…4800	81/3250…4000	81/3250…4000	110/3500…4000	66/2750…4600	85/3250…4000	110/3500…4000	110/3500…4000	85/3250…4000	135/3500…4000
Torque Nm at rpm	230/1400…2700	250/1500…2750	320/1750…3000	320/1750…3000	320/1750…3000	380/1750…3250	250/1500…3000	340/1750…3000	380/1750…3000	230/1400…2750	250/1500…3000	250/1500…3000	320/1750…3000	230/1400…2750	250/1500…3200	340/1750…3000	340/1750…3000	250/1750…3200	380/1750…3250
Bore ∅ mm	79.5	79.5	81.0	81.0	81.0	81.0	79.5	81.0	81.0	79.5	79.5	79.5	81.0	79.5	79.5	81.0	81.0	79.5	81.0
Stroke mm	80.5	80.5	95.5	95.5	95.5	95.5	80.5	95.5	95.5	80.5	80.5	80.5	95.5	80.5	80.5	95.5	95.5	80.5	95.5
Cylinder/ valves per cylinder	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4
Compression ratio	16.2	16.2	16.2	16.2	16.2	15.8	16.2	16.2	15.8	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2
Firing order	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2
SCR catalytic converter	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	yes	yes	yes
Exhaust gas recirculation with radiator	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Turbocharging	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Engine codes	CLHB	CLHA	CKFB	CKFC	CRVC	CUPA	CRKB	CRMB	CUNA	CXXA	CXXB	DBKA	CYKA	DDYB	DDYA	DCYA	DFFA	DGTE	DJGA
Charge air cooler	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Particle filter	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Balancing shafts	no	no	no	no	no	yes	no	no	yes	no	no	no	no	no	no	yes	no	no	yes

1.1.2 Engine characteristics, Rapid NH, Yeti

Engine codes		CXMA	CUUA	CUUB	DFSA	DFSB
Manufactured	Rapid NH	05.2015 ► 07.2018	-------	-------	-------	-------
	Yeti	-------	05.2015 ► 11.2015	05.2015 ► 11.2015	11.2015 ► 09.2017	11.2015 ► 09.2017
Injection system		Bosch	Bosch	Bosch	Bosch	Bosch
Emission standards conforming to		EU6	EU6	EU6	EU6	EU6
Displacement	l	1.598	1.968	1.968	1.968	1.968
Output	kW at rpm	85/3500… 4000	81- 3500	110- 3500	81- 3500	110- 3500
Torque	Nm at rpm	250/1500… 3000	250/1750… 3000	340/1750… 3000	250/1750… 3000	340/1750… 3000
Bore	∅ mm	79.5	81.0	81.0	81.0	81.0
Stroke	mm	80.5	95.5	95.5	95.5	95.5
Cylinder/valves per cylinder		4- 4	4- 4	4- 4	4- 4	4- 4
Compression ratio		16.2	16.2	16.2	16.2	16.2
Firing order		1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2	1-3-4-2
Catalytic converter		yes	no	no	no	no
SCR catalytic converter		no	yes	yes	yes	yes
Exhaust gas recirculation with radiator		yes	yes	yes	yes	yes
Turbocharging		yes	yes	yes	yes	yes
Charge air cooler		yes	yes	yes	yes	yes
Particle filter		yes	yes	yes	yes	yes
Balancing shafts		no	no	no	no	no

Volkswagen Technical Site: http://vwts.ru http://vwts.info

2 Safety instructions

⇒ “2.1 Safety precautions when working on fuel supply system”, page 4

⇒ “2.2 Safety precautions for working on vehicles with start-stop system”, page 4

⇒ “2.3 Safety precautions during road tests in which testing and measuring equipment is used”, page 5

⇒ “2.4 Safety precautions when working on cooling system”, page 5

⇒ “2.5 Safety precautions when working on the SCR system”, page 5

⇒ “2.6 Safety precautions when working on the exhaust system”, page 6

2.1 Safety precautions when working on fuel supply system

Leaking fuel creates a fire hazard

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

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

Risk of injury caused by fuel which is under high pressure.

The fuel system is under pressure. There is a risk of injury from ejected fuel.

Before opening the fuel system:

– Wear safety goggles.

– Wear protective gloves.

– Relieve the pressure: place clean cloths around the connection point and carefully open the connecting point.

Malfunctions caused by air in the fuel supply

After working on the fuel tank or the fuel delivery unit, the dosing pump takes in air and conveys the air to the auxiliary heating. The auxiliary heating may malfunction as a result of air in the fuel supply to the auxiliary heating.

– Fill the new fuel extraction pipe with fuel.

2.2 Safety precautions for working on vehicles with start-stop system

Risk of injury due to automatic engine start.

The engine may start up automatically on vehicles with activated start-stop system. A message in the dash panel insert indicates whether the start-stop system is activated.

– Deactivate start/stop system: switch off the ignition.

2.3 Safety precautions during road tests in which testing and measuring equipment is used

There is a risk of injury from unsecured testing and measuring instruments.

If the front passenger airbag is inflated in an accident, testing and measurement equipment that is insufficiently secured can become a dangerous projectile.

– The testing and measurement equipment must always be attached to the rear seat.

Or

– Have a second person operates the testing and measurement equipment on the rear seat.

2.4 Safety precautions when working on cooling system

There is a risk of scalding due to hot coolant.

When the engine is warm, the cooling system is under overpressure. Danger of scalding due to hot steam and hot coolant.

– Wear protective gloves.

– Wear safety goggles.

– Dissipate pressure: cover the cap of the coolant expansion reservoir with a cloth and open carefully.

2.5 Safety precautions when working on the SCR system

Risk of injury caused by the reduction agent

Reduction agent can irritate eyes and skin and can also damage the respiratory system and poison users.

– Wear safety goggles.

– Wear protective gloves.

– Wear protective clothing.

– Make sure the area is ventilated with fresh air. Switch on the extraction system in closed spaces.

Risk of damage caused by the reduction agent

If the reduction agent gets on trim or body components, it can crystallise after a while and damage the surface.

– Prevent reduction agent from getting on trim or body components.

– If it comes into contact with any surface, immediately remove with water and a cloth.

Please note the following when removing and installing components on the SCR system

♦ The reduction agent tank must be empty when working on the SCR system. Consult the work instructions for when the reduction agent tank must be emptied. Empty the reduction agent tank ⇒ Maintenance ; Booklet Octavia III , where applicable ⇒ Maintenance ; Booklet Yeti .

Automatic back-suction of reduction agent

- After the ignition is turned off, the reduction agent is sucked back out from the dosage line to the injection valve for reduction agent - N474- back into the reduction agent tank.
- Before working in this area, you need to wait for the back-suction to be completed. This may take up to 10 minutes after turning off the ignition.
- The battery can also not be disconnected until this back-suction has completed, i.e. 10 minutes after the ignition was turned off ⇒ Electrical system; Rep. gr. 27 ; Battery; disconnecting and connecting the battery .

2.6 Safety precautions when working on the exhaust system

Danger of poisoning by chemical substances.

Exhaust gas temperature sensors can contain chemical substances. Risk of injury to the respiratory tract and poisoning.

– Never cut, saw or open exhaust gas temperature transmitter.

Risk of injury due to hot condensate and particles in the exhaust system

The exhaust system may contain hot condensate and/or particles. Eye and skin injuries as well as injuries of the respiratory tract and poisoning are possible.

– Wear protective gloves and safety goggles when disconnecting the exhaust system.

– When separating, use an exhaust extraction system or ensure adequate ventilation.

NOTICE

Risk of damaging the decoupling element.

- ♦ **Do not twist decoupling element more than 10°.**
- ♦ **Do not load decoupling element with tensile stress.**
- ♦ **Do not damage wire mesh on decoupling element.**

3 Repair instructions

⇒ “3.1 Rules of cleanliness”, page 7

⇒ “3.2 Foreign bodies in the engine”, page 8

⇒ “3.3 Contact corrosion”, page 8

⇒ “3.4 Cable routing and securing”, page 8

⇒ “3.5 Assembly of radiators and condensers”, page 8

⇒ “3.6 Supplementary instructions and assembly work on vehicles with an air conditioning system”, page 8

⇒ “3.7 General instructions for charge air system”, page 9

3.1 Rules of cleanliness

⇒ “3.1.1 Regulations concerning cleanliness when working on the fuel supply/fuel injection system”, page 7

⇒ “3.1.2 Regulations concerning cleanliness when working on the exhaust gas turbocharger”, page 7

3.1.1 Regulations concerning cleanliness when working on the fuel supply/fuel injection system

When working on the fuel supply and injection system, pay careful attention to the following “6 rules” for cleanliness:

- Thoroughly clean the connection points and their surroundings before releasing.
- Place removed parts on a clean surface and cover. Use lint-free cloths!
- Carefully cover or close opened components if the repair is not completed immediately.
- Only install clean parts: remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box).
- When the system is opened: Avoid using compressed air. Avoid moving the vehicle.
- Also make sure no diesel fuel runs onto the coolant hoses. If this is the case clean the hoses immediately. Replace immediately any hoses which have suffered damage.

3.1.2 Regulations concerning cleanliness when working on the exhaust gas turbocharger

Carefully observe the following “5 rules” for cleanliness when working on the exhaust gas turbocharger:

- Thoroughly clean the connection points and their surroundings before releasing.
- Place removed parts on a clean surface and cover. Use lint-free cloths!
- Carefully cover or close opened components if the repair is not completed immediately.
- Only install clean parts: remove spare parts from their wrapping immediately before fitting. Do not use any parts which have been stored unwrapped (e.g. on a shelf or in a tool box).

- When the system is opened: Avoid using compressed air. Avoid moving the vehicle.

3.2 Foreign bodies in the engine

To prevent the penetration of foreign bodies, open channels of the inlet connection and exhaust tract must be sealed with suitable plugs during assembly works on the engine, for example from the screw plug set for engine - VAS 6122- .

3.3 Contact corrosion

The use of unsuitable connection elements (screws, nuts, washers, etc.) can cause contact corrosion.

This is why only connection elements with a special surface coatings are fitted.

Therefore, the rubber or plastic parts and the adhesives are made from electrically non-conductive materials.

If there is a question mark about the suitability of parts, generally use new parts ⇒ ETKA - Electronic Catalogue of Original Parts .

Please note the following

- Use original spare parts; original spare parts are tested and compatible with aluminium.
- Only use Škoda accessories.
- Any damage resulting from contact corrosion is not covered by the terms of the warranty.

3.4 Cable routing and securing

Risk of damage to cables

Cables may be damaged by moving or hot components.

– Lay cables in the original cable guide.

– Ensure that there is adequate clearance from all moving or hot components.

- To rule out mix ups and ensure the original fitting position is used, mark the cables before disassembly.
- Make photos or sketches where necessary.
- To prevent damage to lines, sufficient clearance from all moving or hot components must be ensured in the engine compartment due to its cramped construction.

3.5 Assembly of radiators and condensers

The radiator, condenser and charge air cooler may have minor indentations on the fins, even if assembled correctly. This does not constitute damage. Radiators, condensers and charge air coolers must not be replaced because of these indentations.

3.6 Supplementary instructions and assembly work on vehicles with an air conditioning system

NOTICE

Do not open the refrigerant circuit of the air conditioning system.

Note

To prevent damage to condenser or to refrigerant lines/hoses, ensure that the lines and hoses are not stretched, kinked or bent.

Steps which should be taken in order to remove and install the engine without opening the refrigerant circuit:

– Unscrew the retaining clip(s) on the refrigerant lines.

– Remove V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

– Remove AC compressor from the bracket for auxiliary units
⇒ “1.1 Assembly overview - cylinder block (pulley end)”, page 65 .

– Mount the air conditioning compressor and the condenser in such a way that the refrigerant lines/hoses are not under tension.

3.7 General instructions for charge air system

NOTICE

When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:

- **Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.**
- **Ensure that there is adequate free access to all moving or hot components.**

NOTICE

In case a mechanical damage to the exhaust gas turbocharger is found, for example, damage to the compressor wheel, it is not sufficient to only replace the turbocharger. In order to avoid consequential damage, perform the following tasks:

- **Clean all oil lines.**
- **Change engine oil and oil filter.**
- **Check air filter housing, air filter element and charge air pipes as well as charge air hoses for soiling.**
- **Check all the air guides and the charge air cooler for foreign bodies.**

If foreign bodies are detected in the charge air system, the complete charge-air routing must be cleaned and if necessary the charge air cooler must also be replaced.

- The charge-air system must be tight, check
⇒ “2.3 Checking the charge-air system for leak-tightness”, page 411 .
- Replace the gaskets, the sealing rings and the self-locking nuts.
- Hose connections and hoses for the charge air system must be free of oil and grease before being installed. Only seals and

sealing surfaces of the quick couplings are coated with oil ⇒ , page 474 .

- Observe markings on the hoses and components.
- All hose connections of the charge air system are secured with spring strap clamps or push-fit couplings.
- Only install approved clamps for securing the hose connections ⇒ ETKA - Electronic Catalogue of Original Parts .
- Hose clip pliers are recommended to install spring-type clips.
- Install hose connections with screw clamps ⇒ , page 474 .
- Before screwing down the oil feed line, fill the exhaust turbocharger via the connection fitting with engine oil.
- To ensure the oil supply to the exhaust gas turbocharger, leave the engine running for about 1 minute after installing the exhaust gas turbocharger.

10 – Removing and installing engine

1 Removing and installing engine

⇒ “1.1 Removing engine”, page 11

⇒ “1.2 Attach engine attached to engine and gearbox mount”, page 38

⇒ “1.3 Installing engine”, page 39

1.1 Removing engine

⇒ “1.1.1 Removing the engine, Octavia III”, page 11

⇒ “1.1.2 Removing the engine, Yeti”, page 20

⇒ “1.1.3 Removing the engine, Rapid NH”, page 30

1.1.1 Removing the engine, Octavia III

NOTICE

If the stripped engine is replaced after engine removal, the tightening of the injection unit clamping claws on the new stripped engine must be checked. Tightening torque: Pos. -8- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452 . In order to align the injection units when fitting the high pressure lines, the clamping claws are only tightened in series »by hand«. If not tightened up, the engine may be damaged.

Special tools and workshop equipment required

- Disassembly tool for door panel - T10236-
- Engine and gearbox jack , e.g. -V.A.G 1383A- or -VAS 6931-
- Double ladder
- Screw plug set for engine - VAS 6122-
- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6362-
- Locking pin - T10060A-
- Engine support - T10497- or -T10497A- with pin -T10497/1-
- Radiator protection mat , e.g. -VAS 531 003-
- Protective goggles and gloves

Note

- *The engine is removed downwards together with the gearbox.*
- *Fit all cable straps on again in the same place when installing.*
- *Fit all heat protection sleeves on again in the same place when installing.*

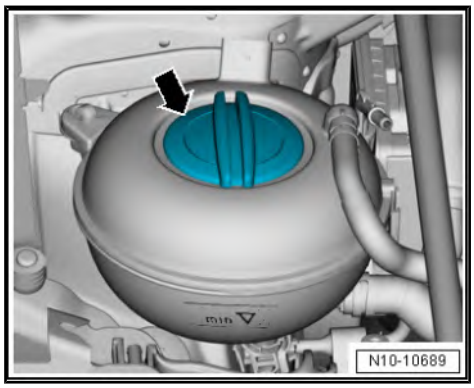
CAUTION

The cooling system remains pressurised while the engine is warm!

Danger of scalding due to hot steam and hot coolant.

Reduce excess pressure by covering the cap of the coolant expansion tank with a cloth and opening it carefully.

– Open cap -arrow- for coolant expansion tank.



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

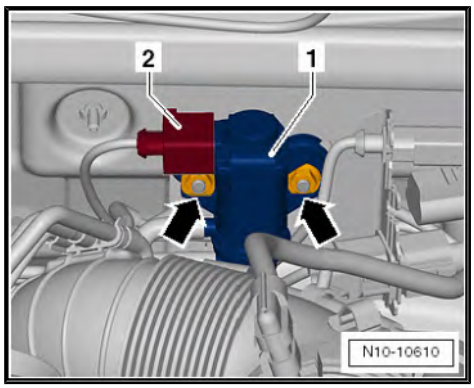
– Remove air filter
⇒ “4.2 Removing and installing air filter housing”, page 476 .

– If NOx transmitter control unit - GX30- is present, remove it from the battery holder
⇒ “6.11 Removing and installing NOx transmitter control unit GX30 ”, page 520 .

– Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .

– Detach the connection fitting from the exhaust gas turbocharger
⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407 .

– Unlock and disconnect connector -2- from charge pressure control solenoid valve - N75- -1-.



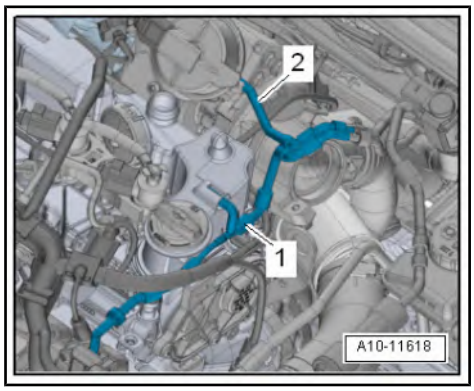
– Unscrew the nuts -arrows-.

– Place the charge pressure control solenoid valve - N75- -1- with vacuum lines on the engine.

– Release and pull off the electrical plug connections at the front wall ⇒ page 443 .

– Expose electric cables.

– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.



– Disconnect the vacuum hose -1- at the T-piece.

– Unlock tab -arrow-, remove vacuum hose -1-.

Vehicles with SCR system

– Disconnect electrical plug connector from injection valve for reduction agent - N474- -3- and pull off.

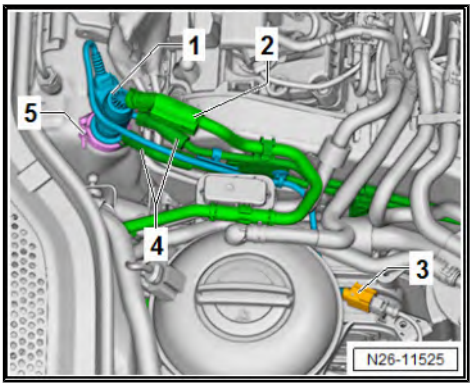
– Make wiring harness accessible.

– To capture escaping reduction agent, place a clean cloth under the separation point.

– Release and pull off reduction agent line -2- ⇒ “3.11 Disconnect delivery line for reduction agent”, page 644 .

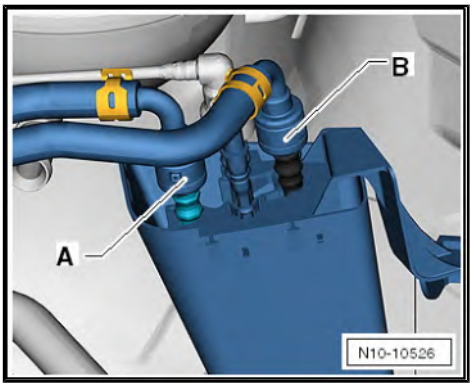
– Unclip reducing agent line on toothed belt guard and coolant expansion tank.

– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .



Continued for all vehicles

– Open quick couplings -A- and -B- of the fuel lines and disconnect fuel lines. Separate quick couplings ⇒ Rep. gr. 20 ; Quick couplings; separating quick couplings .



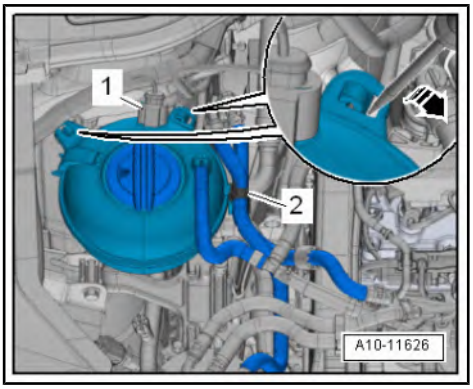
– Remove bracket -2- with fuel hoses.

– Screw off the fuel filter and place it on the engine with attached fuel hoses ⇒ Rep. gr. 20 ; Fuel filter; removing and installing fuel filter

– Separate electrical plug connection -1-.

– Remove coolant hoses, opening the mounting brackets to do so.

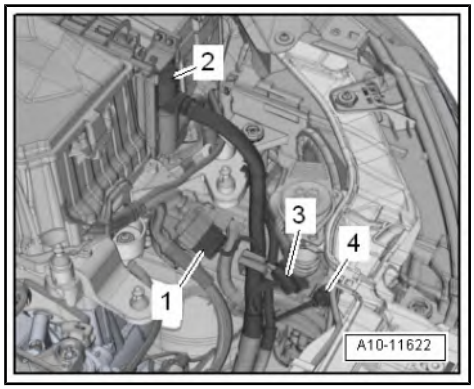
– Unlock catches using a screwdriver -arrow-, lay coolant expansion tank to the side.



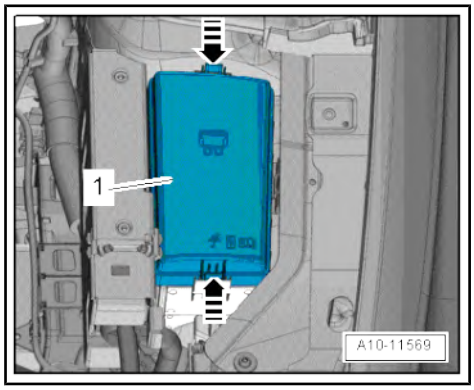
Note

For the following clip unclipping procedure, use the removal tool for door panel - T10236- .

– Disconnect plug -2- from the engine control unit - J623- ⇒ “7 Engine control unit”, page 527 .
– Take electrical plug connections -3- and -4- out of the holder and disconnect.
– Expose electric cables.

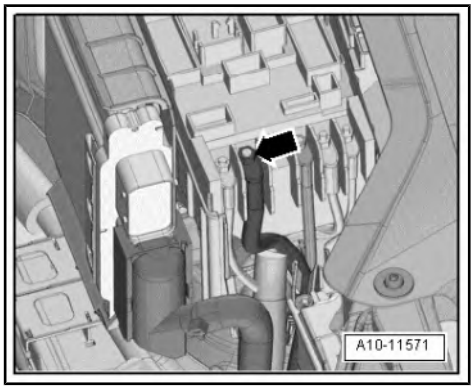


– Unlock catches -arrows-, remove cover -1- for E-box in the engine compartment.



– Unlock catch with a screwdriver -arrow- and pull cover -1- for E-box in the engine compartment upwards.

– Unscrew nut -arrow-, remove and expose electric cable.



Vehicles fitted with a manual gearbox

– Remove electric cables from the starter ⇒ Electrical system; Rep. gr. 27 ; Assembly overview - starter .

– Unlock and disconnect electrical plug connections on the gearbox ⇒ Rep. gr. 34 ; Removing and installing gearbox ,

– Remove clutch slave cylinder in vehicles with connected clutch line⇒ Rep. gr. 34 ; Clutch actuation; removing and installing clutch slave cylinder . Do not open line system.

– Lay the clutch slave cylinder along with the affixed connecting line to one side.

– Detach shift mechanism from gearbox ⇒ Rep. gr. 34 ; Shift mechanism .

– If present, remove the earthing cable from the gearbox ⇒ Electrical system; Rep. gr. 97 ; Relay carriers, fuse carriers, electronic boxes; Installation location overview - relay carrier, fuse carrier, electronic boxes ,

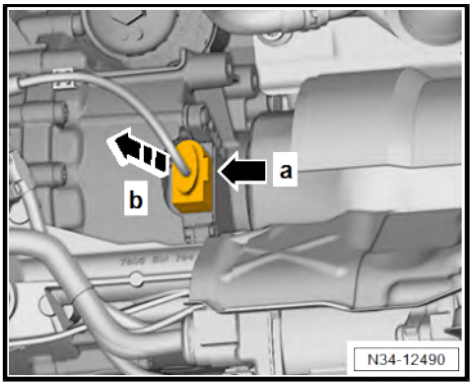
Vehicles with dual clutch gearbox

– Release and pull off electrical plug connection for the dual clutch gearbox mechatronics - J743- ⇒ Rep. gr. 34 ; Mechatronics .

– Remove electric cables from the starter ⇒ Electrical system; Rep. gr. 27 ; Assembly overview - starter .

– Detach shift mechanism from gearbox ⇒ Rep. gr. 34 ; Shift mechanism .

– If present, disconnect the electrical connector for additional hydraulic pump 1 for gearbox oil - V475- -a- and remove the plug -b-.



– If present, remove the earthing cable from the gearbox ⇒ Electrical system; Rep. gr. 97 ; Relay carriers, fuse carriers, electronic boxes; Installation location overview - relay carrier, fuse carrier, electronic boxes ,

Continuation for all vehicles

– Remove the front left and right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner .

– Remove the assembly carrier with steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering gear .

– Remove heat shield for right drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; installing and removing heat shield for drive shaft .

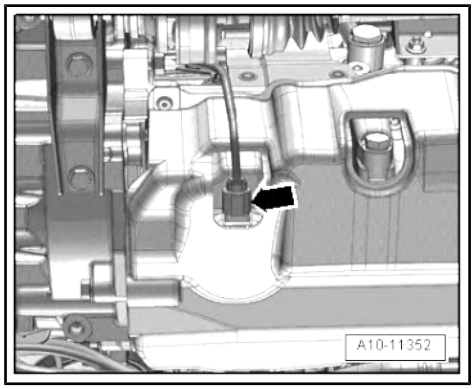
Note

Ensure that the surface protection of the drive shafts is not damaged.

– Unscrew left and right cardan shaft -Arrow- from the gearbox ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing the drive shaft and strap it up towards the rear.

– Disconnect electrical plug connection -arrow- for the oil level and oil temperature transmitter - G266- .

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .



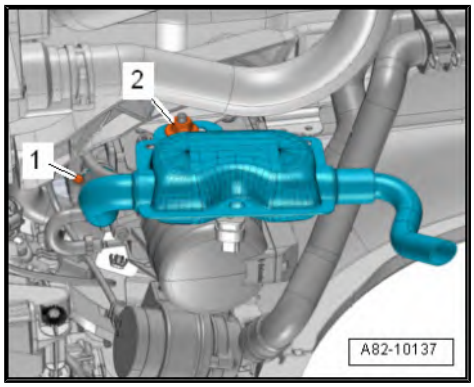
Vehicles with lambda probe 1 after catalytic converter - GX7-

– Undo the left underfloor trim panel in the middle in the direction of the exhaust pipe and press down ⇒ Body work; Rep. gr. 66 ; Underfloor trim panel; overview of components - underfloor trim panel .

– Take the electrical plug connection for Lambda probe 1 after catalytic converter - GX7- out of its bracket and disconnect, expose the electric cable
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .

Vehicles fitted with auxiliary heating

– Loosen clamp -1-, unscrew nut -2-, remove silencer for auxiliary heating.



Vehicles with air conditioning

– Remove the ribbed V-belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

– Remove air conditioner compressor with attached refrigerant lines from the engine ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Removing and installing air conditioner compressor .

– Remove AC compressor with connected refrigerant hoses from the holder and strap up to the right side.

Vehicles with four-wheel drive

– Remove propshaft from angle gearbox ⇒ Rear propshaft and final drive; Rep. gr. 39 ; Propshaft; Summary of components - propshaft .

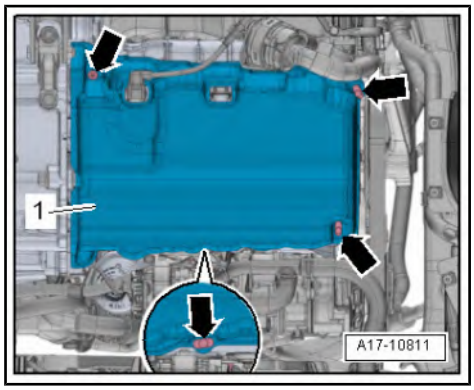
Continuation for all vehicles

Note

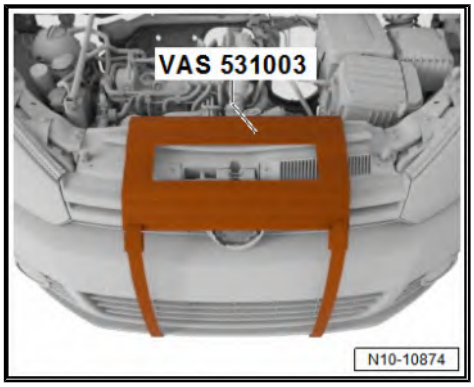
Different designs according to build version.

– Loosen clips -arrows-, remove noise insulation -1- for oil sump.

– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .



– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.

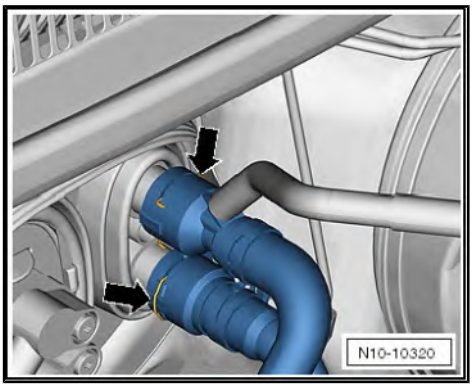


– Place catch pan - VAS 6208- underneath.
– Drain coolant
⇒ “1.3 Draining the cooling system”, page 230 .
– Screw the brackets of the electric coolant pumps off the engine
⇒ “2.2 Summary of components - electric coolant pump”, page 279 .
– Release and pull off the plug connections on the coolant pumps.
– Push the coolant pumps with connected coolant hoses to the side to give you space.

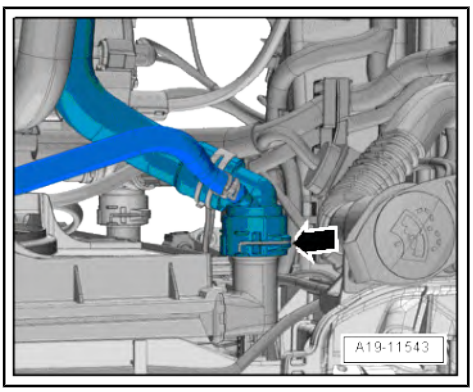
Note

Place a cloth under heating heat exchanger to absorb escaping coolant.

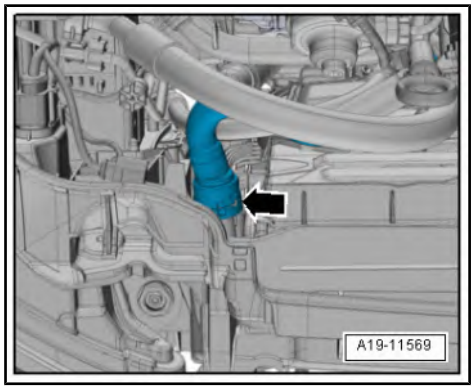
– If present: remove heat shield collar.
– Raise holding clamps -arrows-, remove coolant hoses from heat exchanger for heating.



– Raise holding clamp -arrow-, remove top left coolant hose from radiator.



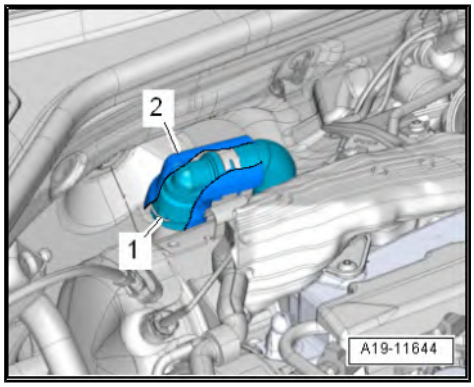
– Raise holding clamp -arrow-, remove top right coolant hose from charge air cooling circuit radiator.



Vehicles fitted with auxiliary heating

– Remove heat protection sleeve -2-.

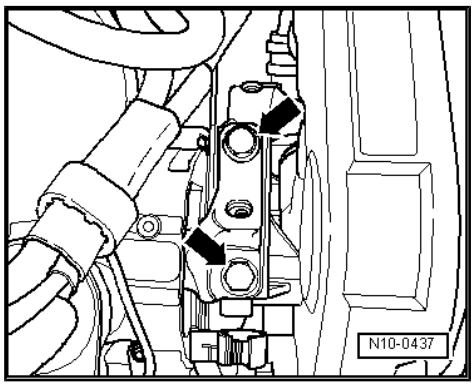
– Loosen hose clamp -1-, remove coolant hose.



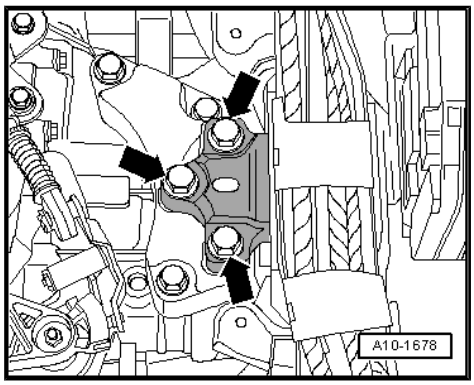
Continued for all vehicles

– Screw out screws -arrows- for engine mount by approximately 2 turns.

– Screw out screws -arrows- on gearbox mount by approximately 2 turns.

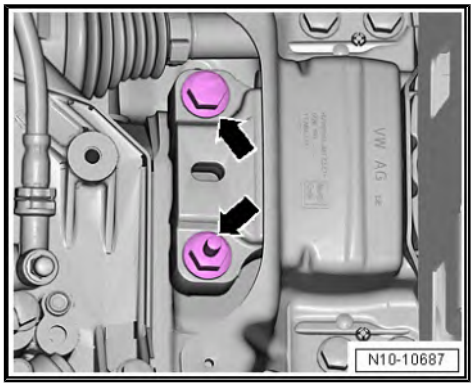


Vehicles with triple gearbox screwed connection

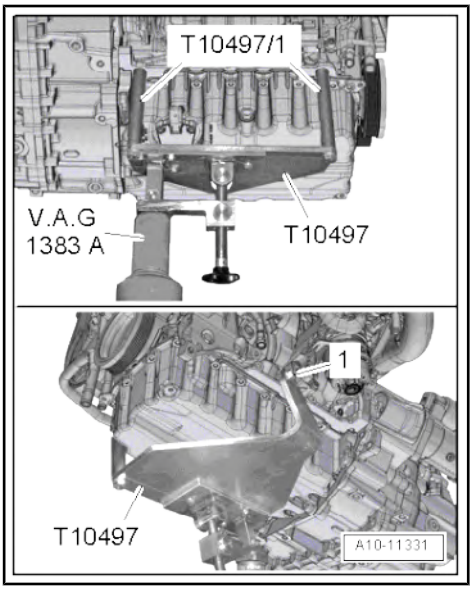


Vehicles with double gearbox screwed connection

Continuation for all vehicles



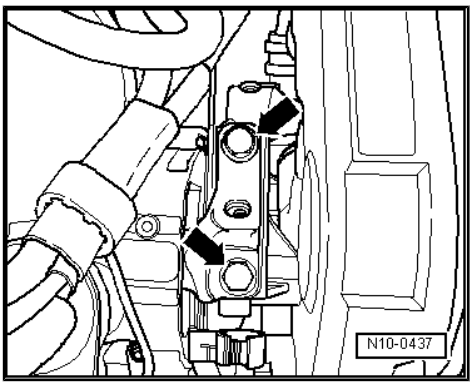
– Tighten engine mount - T10497- or -T10497A- with bolt - T10497/1- with screw -1- to around 20 Nm to cylinder block. Use the upper elongated hole “A” to do so.
– Insert engine and gearbox jack - V.A.G 1383A- into engine mount - T10497- or -T10497A- and slightly raise the engine/ gearbox unit.



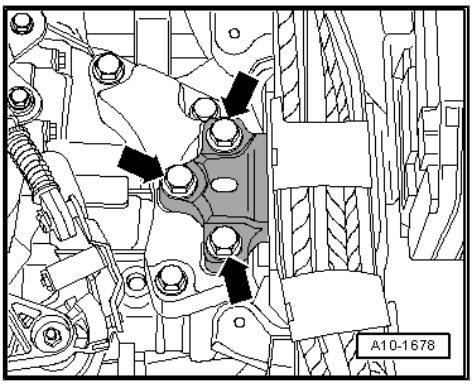
Note

Use the double ladder to unscrews the screws for the assembly bracket.

– Screw out engine mount screws -arrows- fully.
– Screw out gearbox mount screws -arrows- fully.

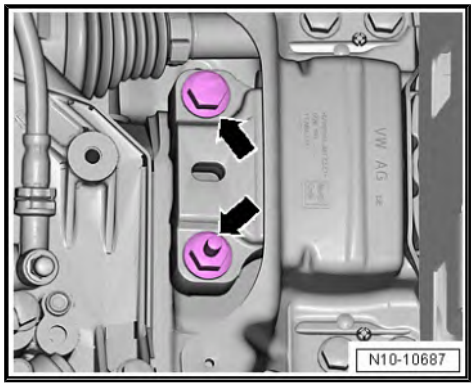


Vehicles with triple gearbox screwed connection



Vehicles with double gearbox screwed connection

Continuation for all vehicles



NOTICE

Risk of damaging vacuum lines or electric cables and the engine compartment.

- **Check that all vacuum lines and electric cables between engine, gearbox and body have been loosened.**
- **Guide the engine/gearbox unit out of the engine compartment carefully when lowering.**

– Lower engine/gearbox unit.

1.1.2 Removing the engine, Yeti

NOTICE

If the stripped engine is replaced after engine removal, the tightening of the injection unit clamping claws on the new stripped engine must be checked. Tightening torque: Pos. -8- ⇒ "3.1 Summary of components - injection units (injectors)", page 452 . In order to align the injection units when fitting the high pressure lines, the clamping claws are only tightened in series »by hand«. If not tightened up, the engine may be damaged.

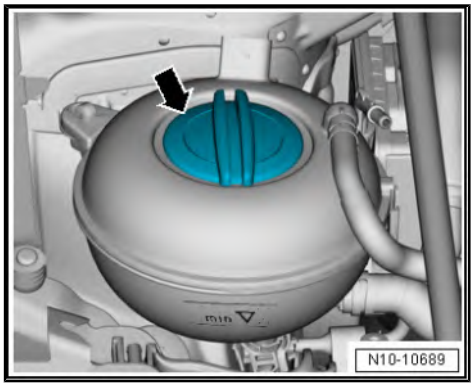
Special tools and workshop equipment required

- Disassembly tool for door panel - T10236-
- Engine and gearbox jack , e.g. -V.A.G 1383A- or -VAS 6931-
- Double ladder
- Screw plug set for engine - VAS 6122-
- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6362-
- Locking pin - T10060A-
- Engine support - T10497- or -T10497A- with pin -T10497/1-
- Protective goggles and gloves

Note

- *The engine is removed downwards together with the gearbox.*
- *Fit all cable straps on again in the same place when installing.*
- *Fit all heat protection sleeves on again in the same place when installing.*

– Open cap -arrow- for coolant expansion tank.



CAUTION

Danger of scalding due to hot steam and hot coolant.

- **When the engine is warm, the cooling system is under overpressure.**
- **Reduce excess pressure by covering the cap of the coolant expansion tank with a cloth and opening it carefully.**

– Remove assembly carrier without steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Removing and installing assembly carrier without steering gear .

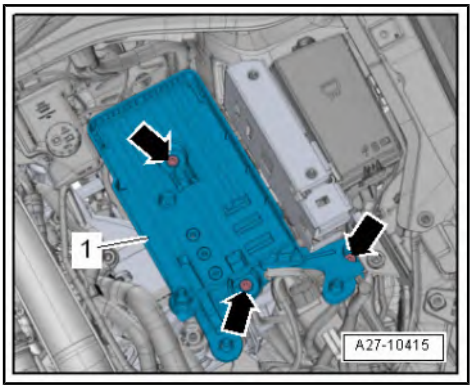
– Remove the front left and right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner .

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

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

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

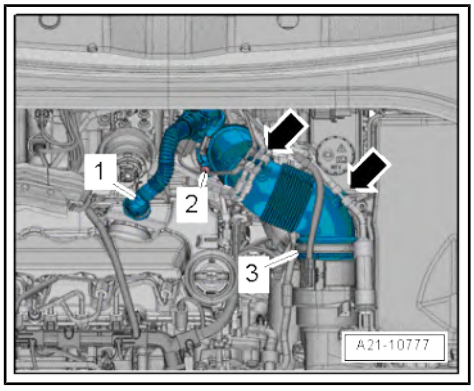
– Remove battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .



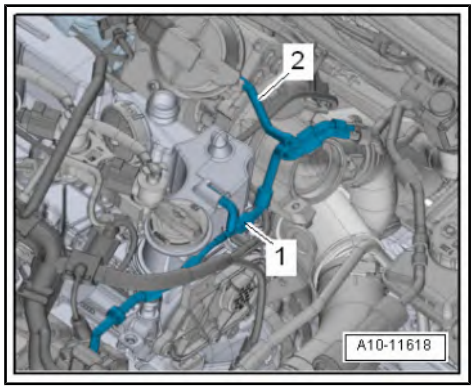
– Press release buttons on the hose -1- for crankcase ventilation, remove hose from cylinder head cover.

– Disconnect vacuum hoses on the air guide pipe -arrows-.

– Release screw -2-, swivel air guide pipe with inlet connection towards the rear and detach from exhaust gas turbocharger.



– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.
– Disconnect the vacuum hose -1- at the T-piece.



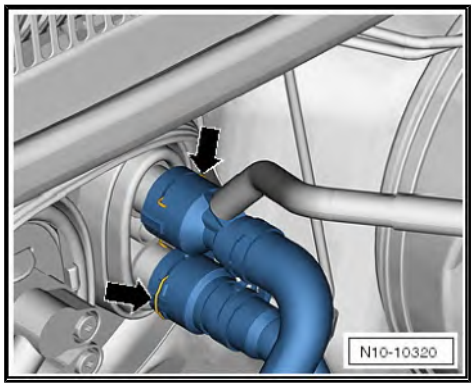
– Unlock tab -arrow-, remove vacuum hose -1-.

Note

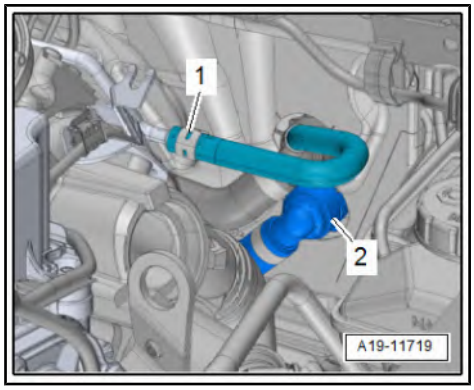
Place a cloth under heating heat exchanger to absorb escaping coolant.

– If present: remove heat shield collar.

– Raise holding clamps -arrows-, remove coolant hoses from heat exchanger for heating.



– Loosen hose clamp -1- and remove coolant hose.



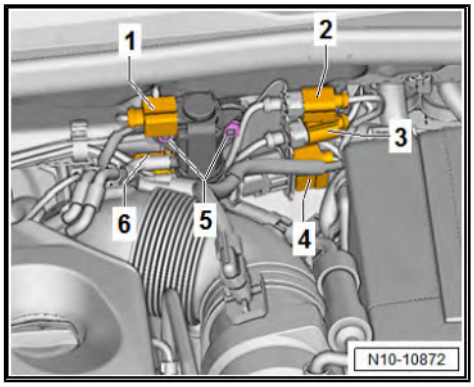
– Expose the following plug connections and electric cables:

1 - for charge pressure control solenoid valve - N75-

2 - for exhaust gas temperature sender 4 - G648-

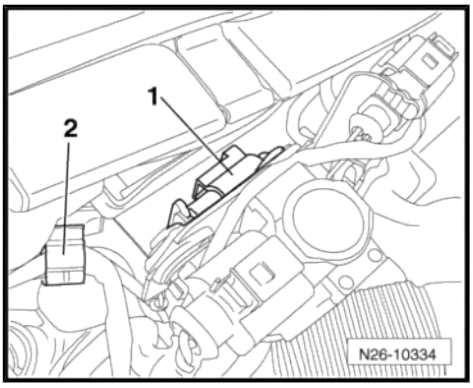
3 - for exhaust gas temperature sender 2 - G448-

4 - for lambda probe 1 upstream of catalytic converter - GX10-



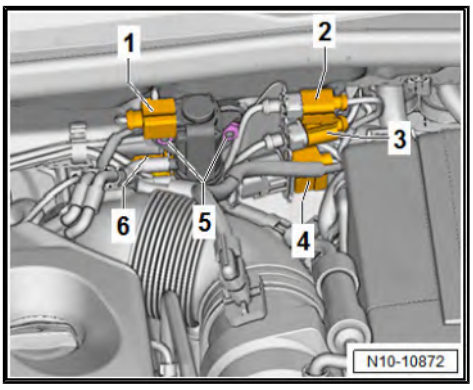
– Disconnect plug connection for exhaust gas temperature transmitter 3 - G495- -1- (attached behind the bracket).

– Unthread the cable from the brackets at the water channel partition and at the turbocharger.

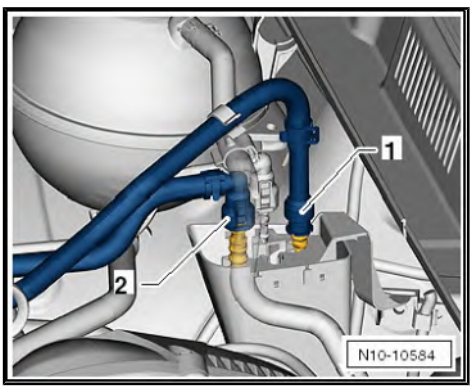


– Unscrew nuts -5-.

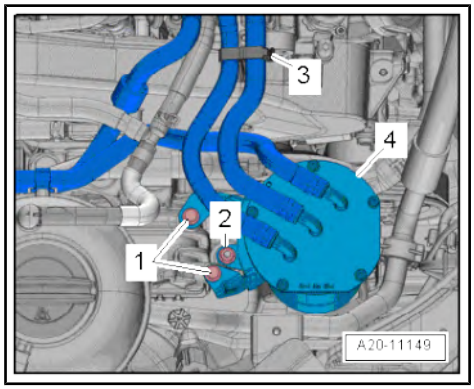
– Place the charge pressure control solenoid valve - N75- with vacuum lines on the engine.



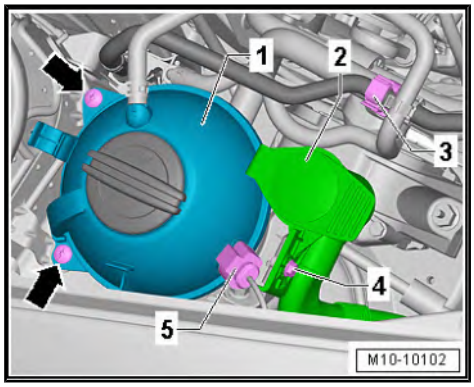
– Disconnect the fuel feed line -1- and the fuel return-flow line -2-.



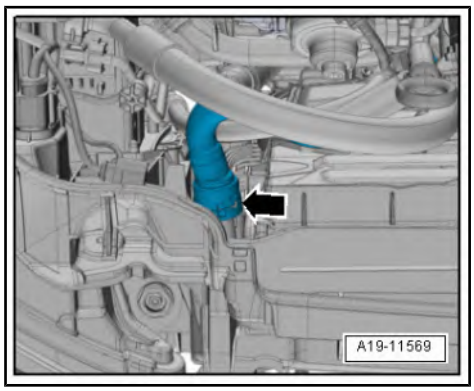
– Expose bracket -3- with fuel hoses.
– Unscrews screws -1- and nuts -2- (if present).
– Place the fuel filter -4- on the engine.



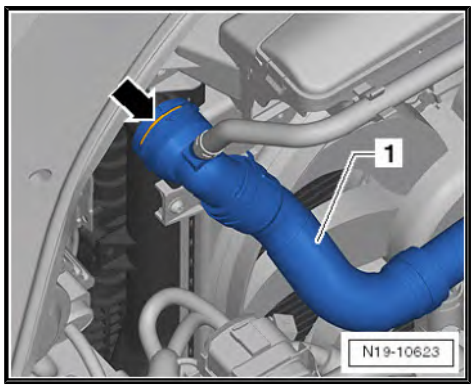
– Unscrew screw -4- and turn the filler neck of the washer fluid reservoir -2- to the front.
– Open the holding clamp -3- and disconnect plug -5- from the coolant expansion tank -1-.
– Unscrew screws -arrows- and place the coolant expansion tank -1- with connecting hose onto the engine.



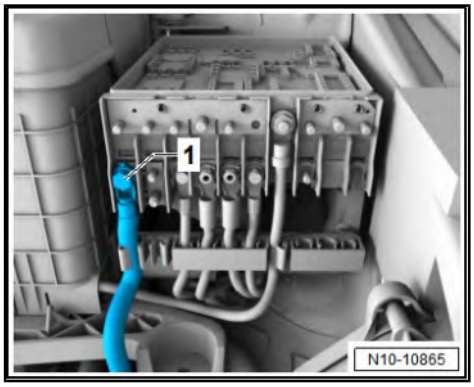
– Raise holding clamp -arrow-, remove top right coolant hose from charge air cooling circuit radiator.



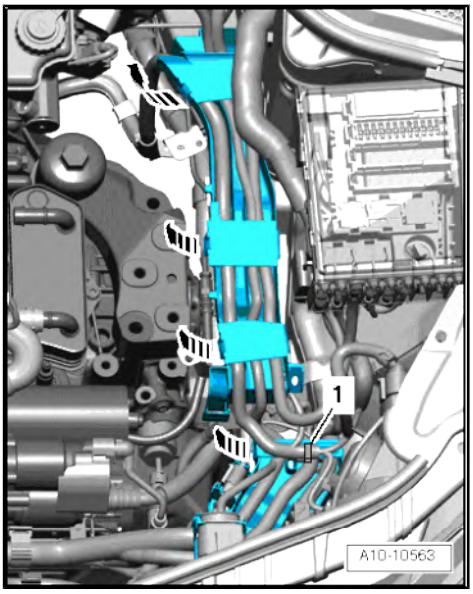
– Raise holding clamp -arrow-, remove top left coolant hose from radiator.
– Disconnect plug from the engine control unit - J623- ⇒ “7 Engine control unit”, page 527 .
– Take engine wiring loom out of the cable guide on the front wall.



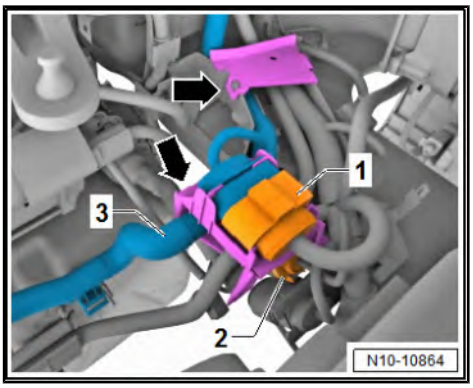
– Detach the alternator lead -1- from the fuse holder.



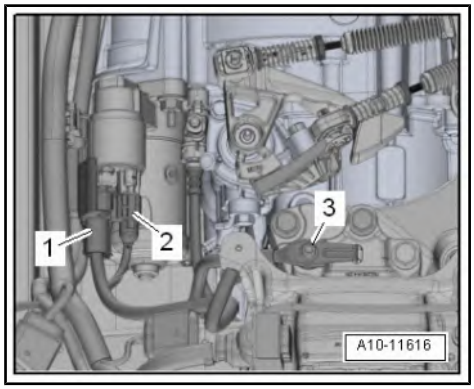
– Open the catches for cable guides on the frame side rail -arrows-.



– Disconnect electrical plug connections -1- and -2-.
– Place the catches -arrows- for cable guides and engine wiring loom -3- on the engine.



Vehicles fitted with a manual gearbox



– Separate electrical plug connection -2-.
– Press back B+-pole protection -1- and unscrew B+-cable from the starter magnet switch.
– Release nuts -3- and remove earth cable.
– Disconnect front left electrical plug connections on the gearbox:

1 - Gearbox neutral position transmitter - G701-

2 - Reversing light switch - F4-

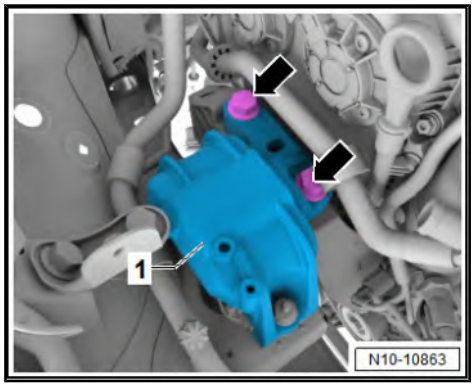
– Remove clutch slave cylinder and set aside with connected tube hose line ⇒ Rep. gr. 30 ; Clutch actuation; Removing and installing clutch slave cylinder .

Vehicles with 6-gear dual clutch gearbox

– Release and disconnect electrical plug connection for the dual clutch gearbox mechatronics - J743- ⇒ Rep. gr. 34 .

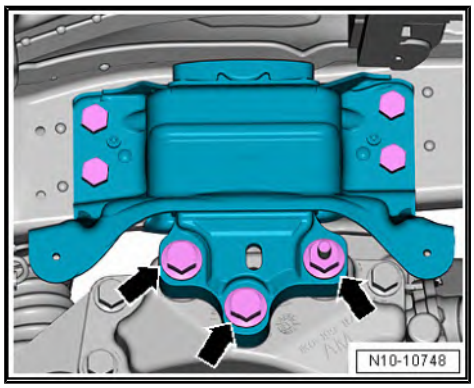
Continued for all vehicles

– Detach shift mechanism from gearbox ⇒ Rep. gr. 34 ; Shift mechanism .



– Screw out screws -arrows- on engine mount by approximately 2 turns.
– Screw out screws -arrows- for gearbox mount by approximately 2 turns.

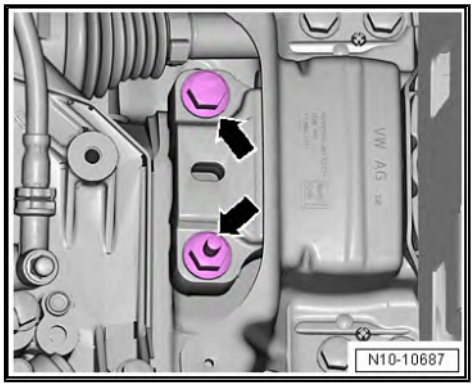
Vehicles with triple gearbox screwed connection



Vehicles with double gearbox screwed connection

Vehicles with air conditioning

– Remove the ribbed V-belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

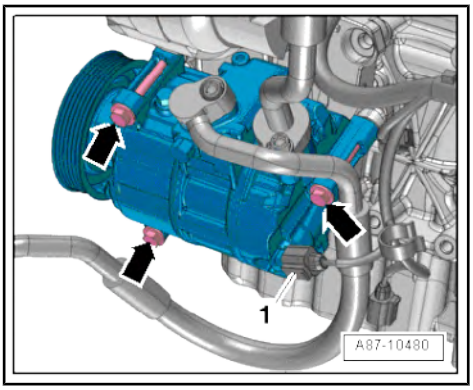


– Disconnect plug connection -1- on the control valve for the air conditioning system compressor - N280- .

NOTICE

Risk of damaging AC compressor, refrigerant lines and hoses.

- **Do not over-tension, buckle or bend refrigerant lines and hoses.**



– Unscrew screws -arrows-.

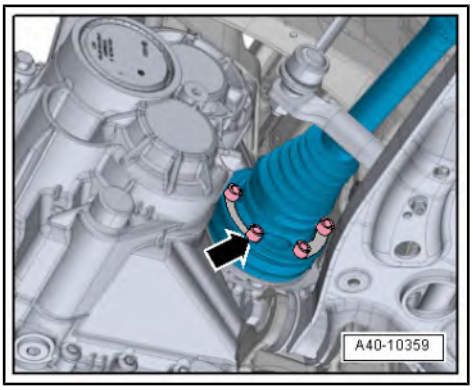
CAUTION

Risk of injury through refrigerant.

- **Do not open the refrigerant circuit of the air conditioning system.**

– Remove AC compressor with connected refrigerant hoses from the holder and strap up to the right side.

– Unscrew left and right cardan shaft -Arrow- from the gearbox ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing the drive shaft and strap it up towards the rear.



Note

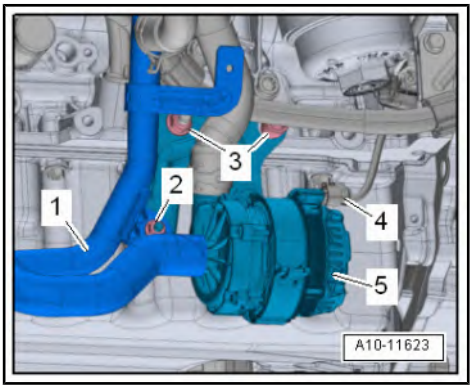
Ensure that the surface protection of the drive shafts is not damaged.

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Separate electrical plug connection -4-.

– Release nut -2- and screws -3-.

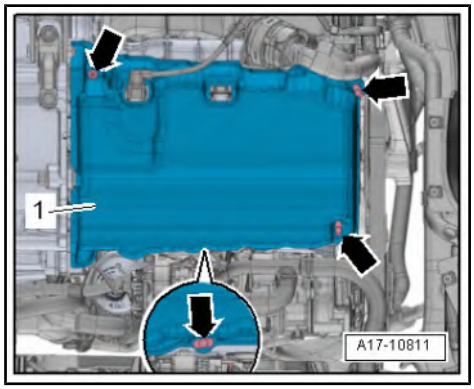
– Press coolant pipe -1- and pump for charge air cooler - V188- Pos. -5- to the side.



Note

Different designs according to build version.

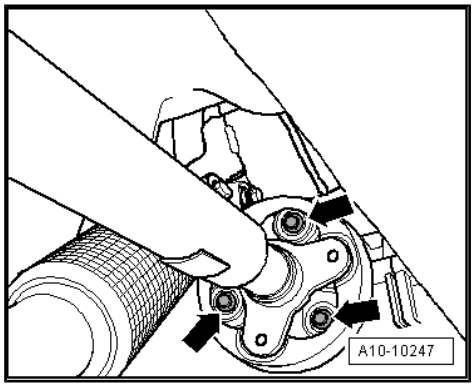
– Loosen clips -arrows-, remove noise insulation -1- for oil sump.



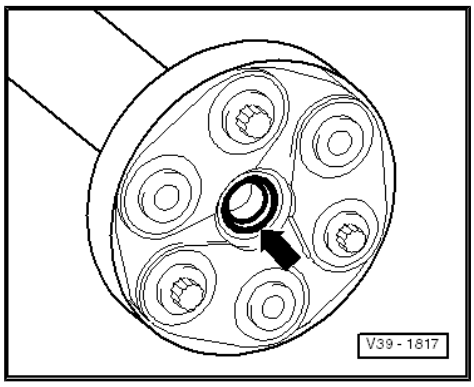
Vehicles with four-wheel drive

– For reassembly, mark the position of the flexible joint and the angle gearbox flange.

– Unscrew the propshaft from the angle gearbox -arrows-, while counterholding with a lever on the triangular flange.



– Push engine/gearbox assembly slightly forward (towards the front of the body) and then pull off the propshaft from the angle gearbox.



NOTICE

Risk of damage to the sealing ring -arrow- in the flange of the propshaft.

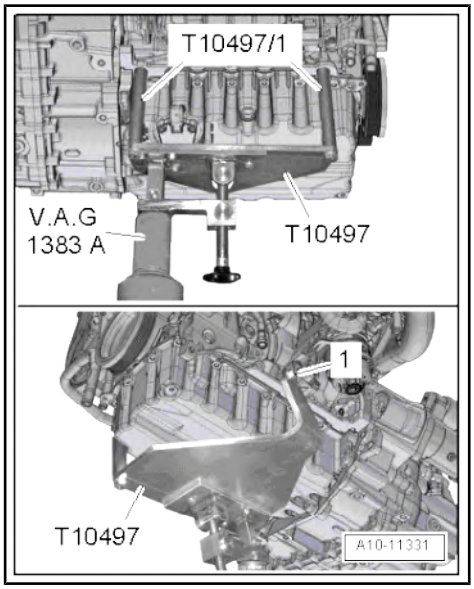
Push propshaft horizontally as far back and towards the right vehicle side as possible.

Note

In case of damaged sealing ring the propshaft must be replaced.

Continued for all vehicles

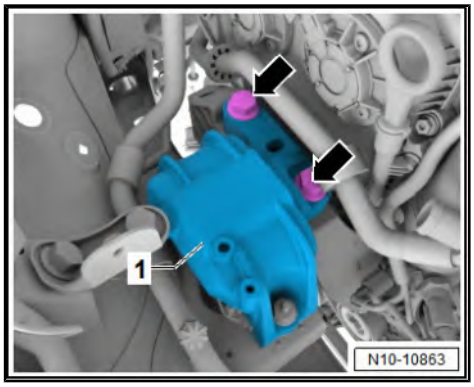
– Tighten engine mount - T10497- or -T10497A- with bolt - T10497/1- with screw -1- to around 20 Nm to cylinder block. Use the upper elongated hole “A” to do so.
– Insert engine and gearbox jack - V.A.G 1383A- into engine mount - T10497- or -T10497A- and slightly raise the engine/ gearbox unit.



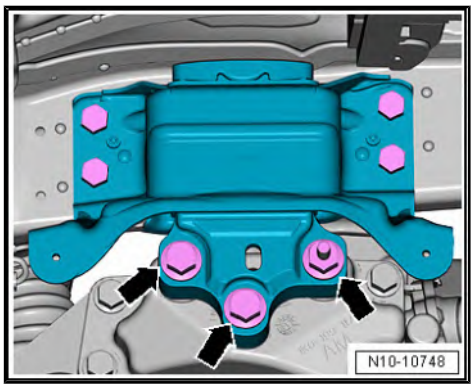
Note

Use the double ladder to unscrews the screws for the assembly bracket.

– Screw out engine mount screws -arrows- fully.
– Completely unscrew the screws -arrows- from the gearbox mount.



Vehicles with triple gearbox screwed connection

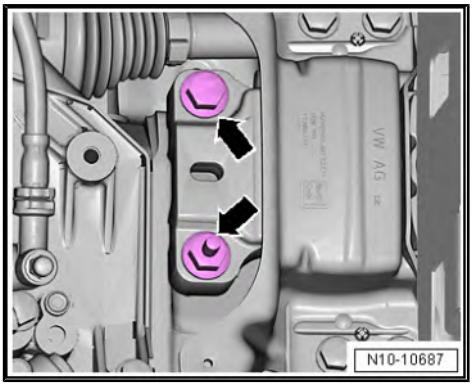


Vehicles with double gearbox screwed connection

NOTICE

Risk of damaging vacuum lines or electric cables and the engine compartment.

- **Check that all vacuum lines and electric cables between engine, gearbox and body have been loosened.**
- **Guide the engine/gearbox unit out of the engine compartment carefully when lowering.**



– Lower engine/gearbox unit.

1.1.3 Removing the engine, Rapid NH

NOTICE

If the stripped engine is replaced after engine removal, the tightening of the injection unit clamping claws on the new stripped engine must be checked. Tightening torque: Pos. -8- ⇒ "3.1 Summary of components - injection units (injectors)", page 452 . In order to align the injection units when fitting the high pressure lines, the clamping claws are only tightened in series »by hand«. If not tightened up, the engine may be damaged.

Special tools and workshop equipment required

- Disassembly tool for door panel - T10236-
- Engine and gearbox jack , e.g. -V.A.G 1383A- or -VAS 6931-
- Double ladder
- Screw plug set for engine - VAS 6122-
- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6362-
- Locking pin - T10060A-
- Engine support - T10497- or -T10497A- with pin -T10497/1-
- Protective goggles and gloves

Note

- *The engine is removed downwards together with the gearbox.*
- *Fit all cable straps on again in the same place when installing.*
- *Fit all heat protection sleeves on again in the same place when installing.*

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

– Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

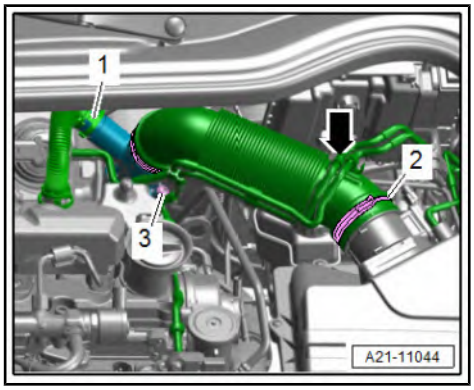
– Remove air filter housing ⇒ "4.2 Removing and installing air filter housing", page 476 .

– Remove the assembly carrier with steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering gear .

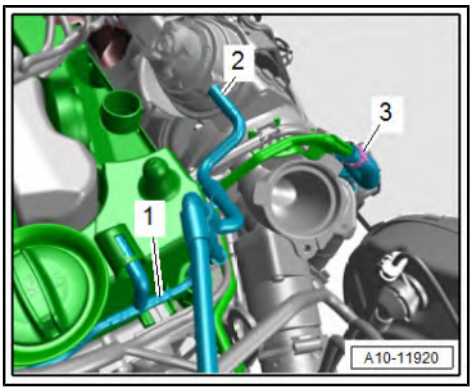
– Remove the front left and right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner .

– Drain coolant ⇒ "1.4 Filling with coolant", page 235 .

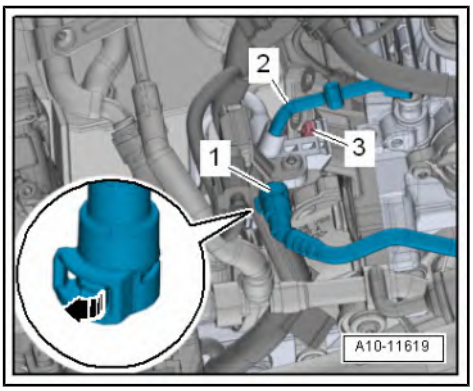
– Press release buttons on both sides of the hose -1- for crankcase ventilation and disconnect hose from connection fitting.
– Expose vacuum hoses -arrow- at the air guide pipe.
– Unscrew screws -3-, swivel air guide pipe with inlet connection clockwise and detach from exhaust gas turbocharger.



– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.
– Disconnect the vacuum hose -arrow- from the T-piece.
– Loosen hose clamp -3-, remove coolant hose.

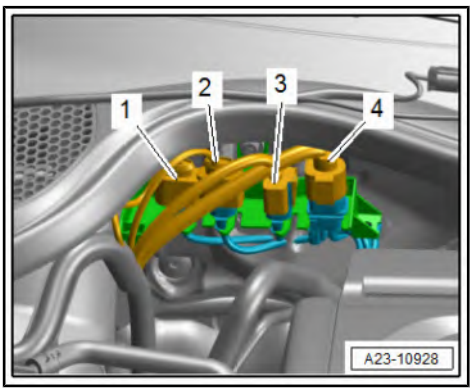


– Unlock catch -arrow-, disconnect vacuum hose -1- and place it to the side.



– If present, open heat shield collar.
– Remove electrical plug connections from the holder, disconnect and expose electric cables:

1 - for exhaust gas temperature sender 4 - G648-
2 - for exhaust gas temperature sender 3 - G495-
3 - for exhaust gas temperature sender 2 - G448-
4 - for lambda probe 1 upstream of catalytic converter - GX10-



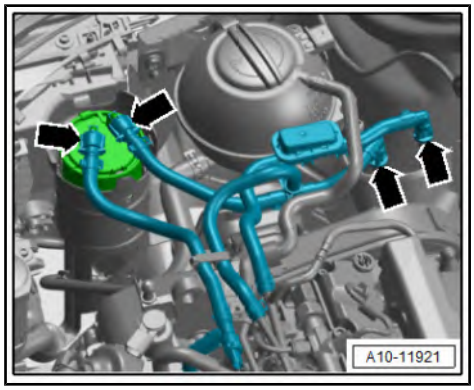
NOTICE

Risk of defects caused by contamination

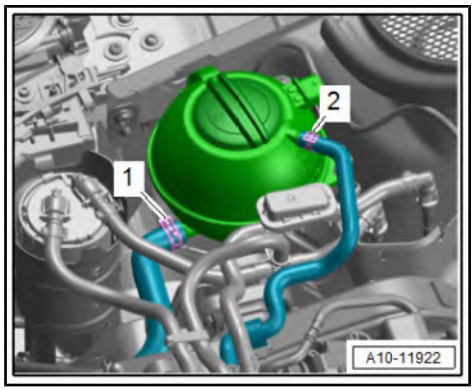
- **Rules of cleanliness when working on the fuel supply system**
  ⇒ "3.1 Rules of cleanliness", page 7 .

– Disconnect fuel lines -Arrows- ⇒ Rep. gr. 20 ; Push-on couplings; Disconnect push-on couplings .

– Expose fuel hoses on coolant expansion reservoir.



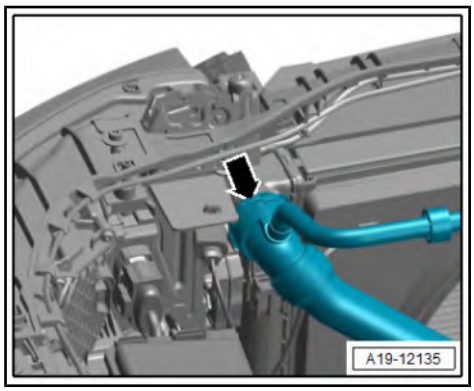
– Loosen hose clamps -1, 2-, remove coolant hoses.



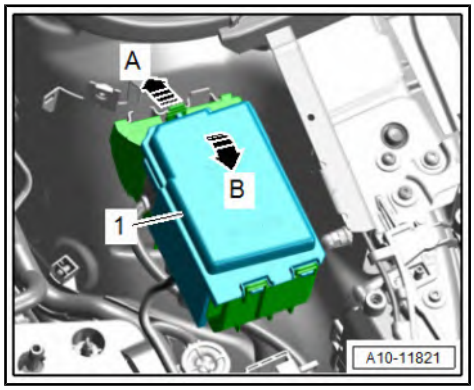
– Raise holding clamp -arrow- and remove top right coolant hose from radiator.

Note

For the following binding clip unclipping procedure, use the removal tool for door panel - T10236- .

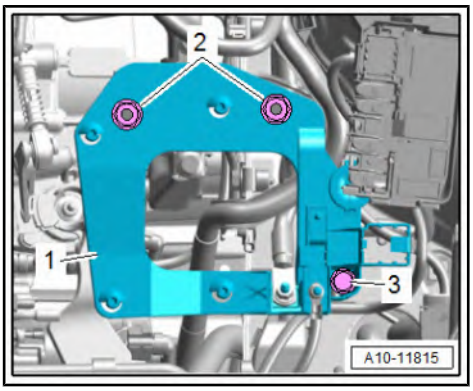


– Unlock catch arrow -A- and then open and remove cover -1- for E-box in the engine compartment -B-.

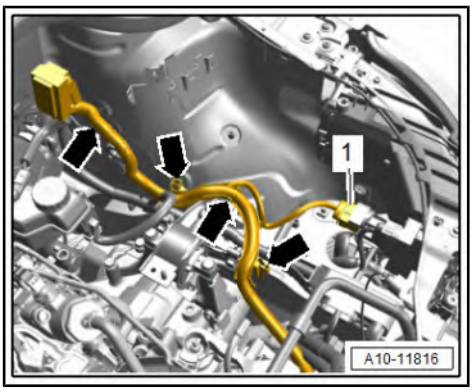


– Disconnect electric plug connection -1- from the starter motor.
– Unlock catch -arrow-, open cover -2-.
– Remove terminal B+ -4- and expose electric cable.
– Unscrew nut -3- and take off electric cable.

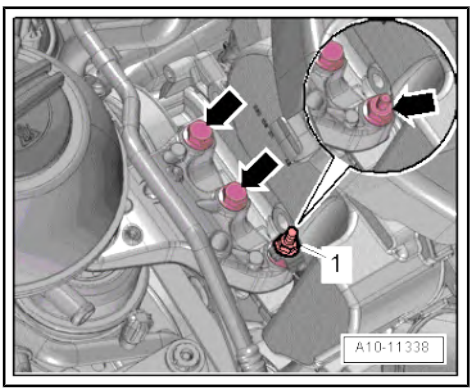
– Unscrew nut -2- and screw -3-.
– Press the clip -1- for jump start point and for air filter housing lightly to the side.
– Remove engine control unit - J623-
⇒ “7.1 Removing and installing engine control unit J623 ”, page 527 .



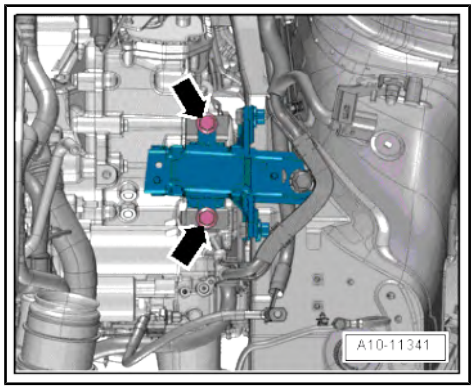
– Take electrical plug connection -1- out of the holder, disconnect and expose electric cables.
– Expose engine wiring harness -arrows- and place it on the engine.



– Unbolt earth cable -1-.
– Screw out screws -arrows- of the supporting arm for engine mount by approximately 2 turns.



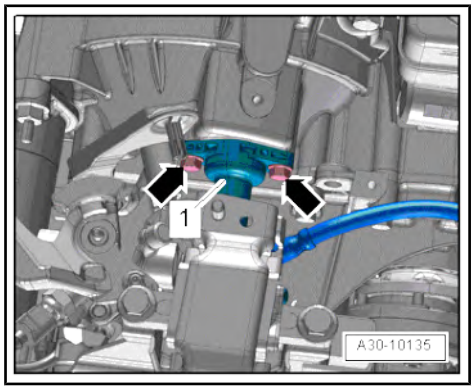
– Screw screws -2- out of the gearbox mounts by approximately 2 turns.



Vehicles fitted with a manual gearbox

– Remove switching and selector cable from gearbox, unscrew cable support bracket and lay aside with the cables ⇒ Rep. gr. 34 ; Shift mechanism .

– Screw out screws -arrows-, Remove the slave cylinder -1- and lay to one side; do not open the line system.

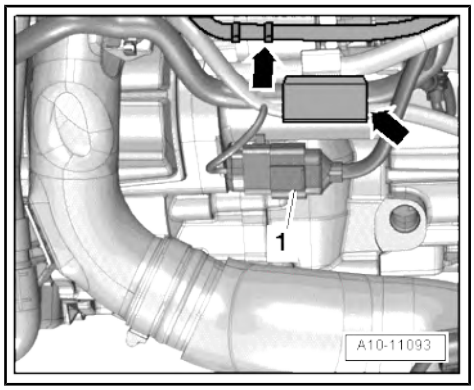


NOTICE

There is a risk of destroying the slave cylinders.

- **If the clutch slave cylinder is removed, do not depress the clutch pedal.**

– Separate electrical plug connection -1-.

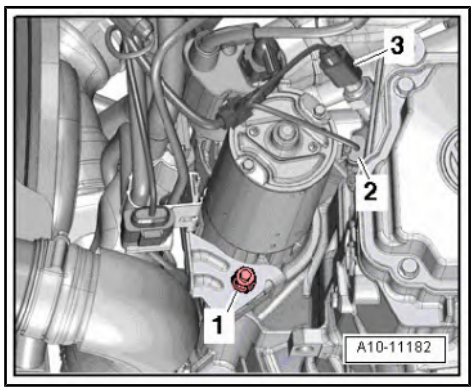


– Disconnect electrical plug connections:

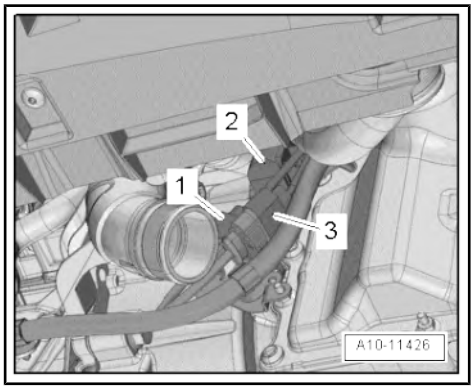
2 - for reversing light switch - F4- .

3 - for gearbox neutral position transmitter - G701-

– Unscrew the nut -1- and remove the holder for the electrical cables.



Vehicles with dual clutch gearbox:



– Remove selector lever cable from gearbox selector lever and lay to the side Shift mechanism⇒ Rep. gr. 34 ; .

– Take electrical plug connections -1 and 3- out of the holder and disconnect.

NOTICE

Risk of destruction of gearbox parts.

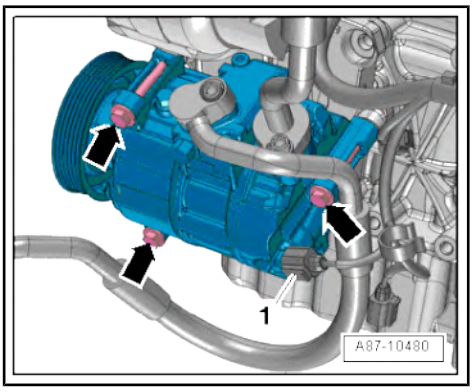
- **Do not in any circumstances allow the gearbox plug contacts to come into contact with your hands. The control unit and the mechatronics can be destroyed by electrostatic discharge in contact with your hands.**

– Touch ground with one hand (without glove) to discharge static electricity.

– Disconnect electrical plug connection -2- from the dual clutch gearbox mechatronics - J743- .

Continued for all vehicles:

– Remove the ribbed V-belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .



– Disconnect electric plug connection -1- on the control valve for the air conditioning system - N280- compressor.

NOTICE

Risk of damaging AC compressor, refrigerant lines and hoses.

- **Do not over-tension, buckle or bend refrigerant lines and hoses.**

– Unscrew screws -arrows-.

CAUTION

Risk of injury through refrigerant.

- **Do not open the refrigerant circuit of the air conditioning system.**

– Remove AC compressor with connected refrigerant hoses from the holder and strap up to the right side.

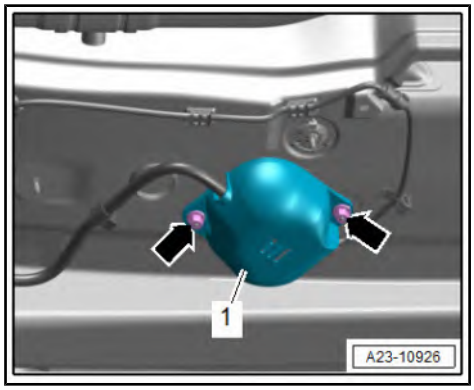
– Unscrew drive shaft left and right from the gearbox ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing the drive shaft .

Note

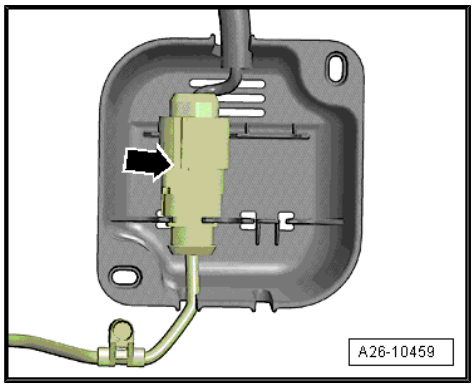
Ensure that the surface protection of the drive shafts is not damaged.

– Release underside panel in front centre right and press downwards ⇒ Exterior body work; Rep. gr. 66 ; Underfloor trim panels; overview of components - Underfloor trim panels .

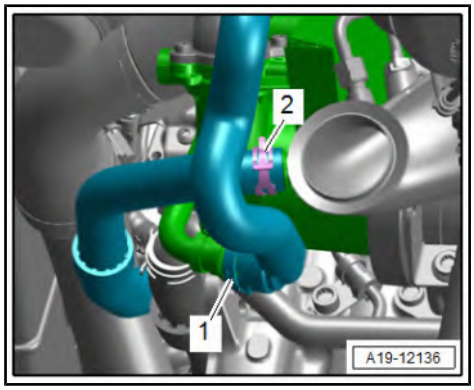
– Unscrew nuts -arrows- and take off cover -1-.



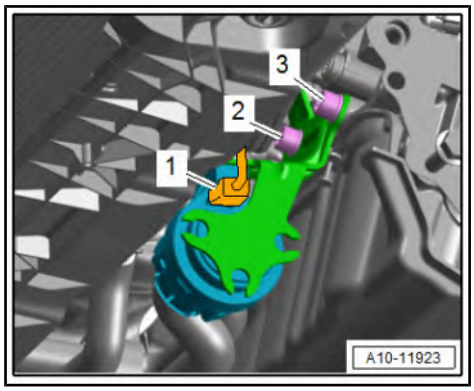
– Disconnect the electrical plug connection -arrow- for lambda probe 1 after catalytic converter - GX7-
– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .



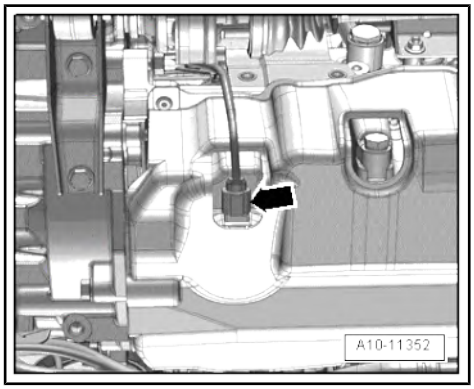
– Place catch pan - VAS 6208- underneath.
– Raise holding clamps -1 and 2- and disconnect coolant hoses.



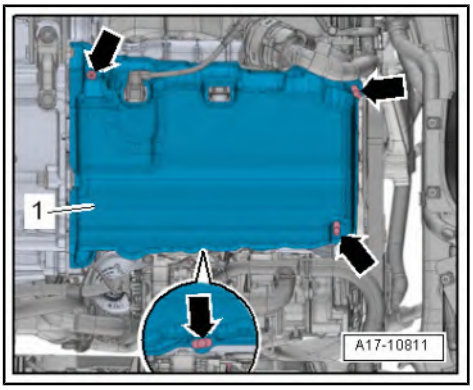
– Separate electrical plug connection -1-.
– Unscrew screws -2 and 3- and push charge air cooler pump - V188- to one side.



– Disconnect electrical plug connection -arrow- for the oil level and oil temperature transmitter - G266- .



– Loosen fixings -arrows- and remove noise insulation -1- for oil sump.

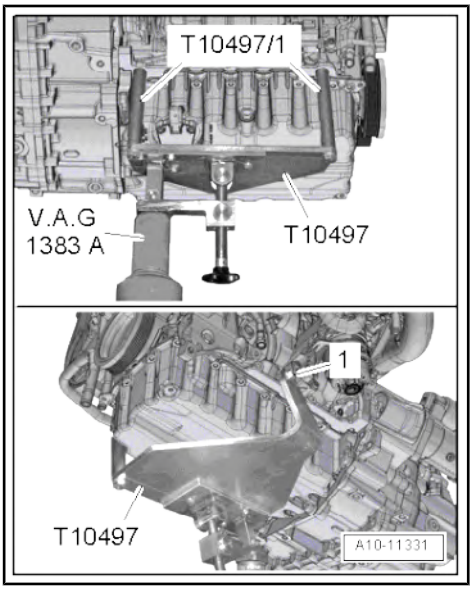


– Tighten engine mount - T10497- or -T10497A- with bolt - T10497/1- using the screw -1- to around 20 Nm to the cylinder block. Use the upper elongated hole “A” to do so.

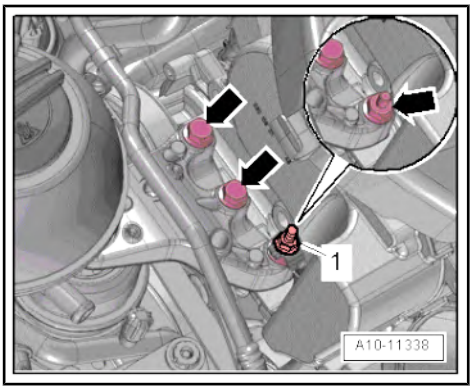
– Insert engine/gearbox jack into engine mount - T10497- or - T10497A- and slightly raise the engine/gearbox unit.

Note

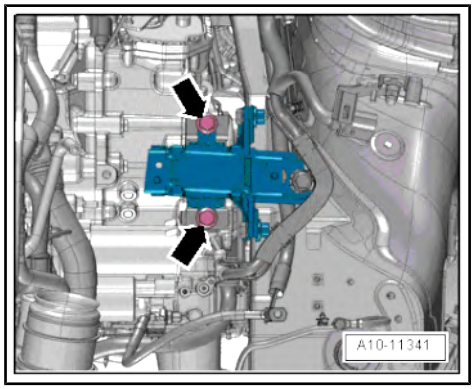
Use the double ladder to unscrews the screws for the assembly bracket.



– Screw out screws of the supporting arm for the engine mount -arrows- fully.



– Screw out gearbox mount screws -arrows- fully.



NOTICE

Risk of damaging vacuum pipes or electric cables and the engine compartment.

- **Check that all vacuum pipes and electric cables between engine, gearbox and body have been loosened.**
- **Guide the engine/gearbox unit out of the engine compartment carefully when lowering.**

– First drain engine/gearbox unit a little.

– Then swivel the engine/gearbox assembly out and forwards on the gearbox side and only then lower it again.

1.2 Attach engine attached to engine and gearbox mount

To perform the assembly work the engine must be secured to the Engine and gearbox support - VAS 6095- .

Special tools and workshop equipment required

- Workshop crane , e.g. -VAS 6100-
- Engine and gearbox mount - VAS 6095-
- Lifting device - MP 9-201 (2024A)-

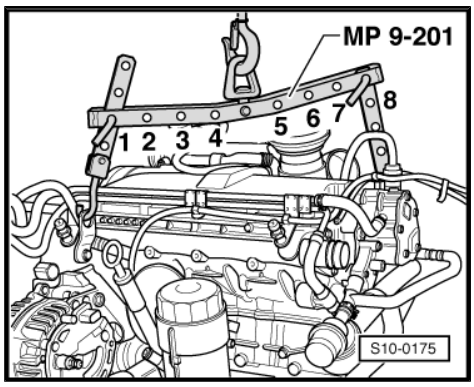
Condition

- Separate engine from gearbox.

CAUTION

Use securing pins on the hooks and rig pins to prevent release.

– Attach lifting device - MP 9-201 (2024A)- to engine and to workshop crane , e.g. -VAS 6100- .



Belt pulley end

- 2nd hole of the extension in Position 1

Flywheel side

- 4th hole of the extension in Position 8

Note

The illustration shows a pump injector engine. The attachment for the Common Rail engine occurs in the same way.

– Lower engine from engine mount -VAS 6100- using workshop crane - T10497- or -T10497A- .

– Attach engine attached to engine and gearbox mount - VAS 6095- .

1.3 Installing engine

⇒ “1.3.1 Installing the engine, Octavia III, Yeti”, page 39

⇒ “1.3.2 Installing the engine, Rapid NH”, page 43

1.3.1 Installing the engine, Octavia III, Yeti

NOTICE

If the stripped engine is replaced after engine removal, the tightening of the injection unit clamping claws on the new stripped engine must be checked. Tightening torque: Pos. -8- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452 . In order to align the injection units when fitting the high pressure lines, the clamping claws are only tightened in series »by hand«. If not tightened up, the engine may be damaged.

Note

- *Vehicles with dual-clutch gearbox: Always replace the needle bearing in the crankshaft after disconnecting the engine from the gearbox ⇒ “3.2 Replace the needle bearing in the crankshaft”, page 90 .*
- *Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness ⇒ “3 Repair instructions”, page 7 .*
- *Screws which have been tightened firmly to a torquing angle must be replaced.*
- *Replace self-locking nuts and screws as well as sealing rings, gaskets and O-rings.*
- *Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Fit all cable straps on again in the same place when installing.*

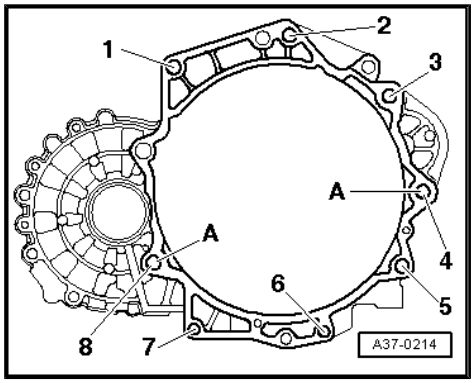
NOTICE

When undertaking all installation work, particularly in the engine compartment because of its cramped construction, please observe the following:

- **Lay lines of all kinds (for example, for fuel, hydraulic fluid, cooling fluid and refrigerant, brake fluid, vacuum) and electrical lines in such a way that the original line guide is re-established.**
- **To avoid damage to lines/wiring, ensure sufficient clearance to all moving or hot components.**

– Installing intermediate plate
⇒ “2.1 Summary of components - cylinder block on gearbox side”, page 79 .

– 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

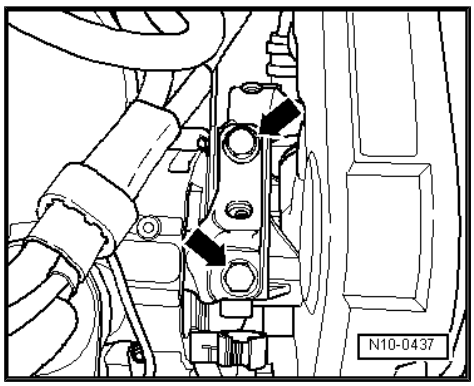
– Secure gearbox to engine.

– Install gearbox support bracket.

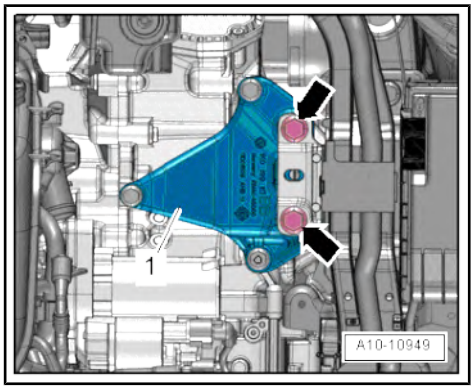
– Support engine/gearbox unit with the engine mount -T10497- or -T10497A- .

– Insert engine/gearbox assembly in the body.

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



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



Note

- *The gearbox mount for a vehicle with dual clutch gearbox 0CW is shown as an example.*
- *The screws must not be permanently tightened until the assembly bracket is adjusted*
  ⇒ “2.5 Check assembly bracket setting”, page 60 .

– Remove engine mount -T10497- or -T10497A- from engine.

– Install starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Summary of components - starter .

– Install charge air cooler pump - V188-
⇒ “2.4 Removing and installing electric coolant pump”, page 285 .

– Install air guide pipe
⇒ “2.1 Summary of components - charge air system”, page 409 .

Vehicles with dual clutch gearbox

– Install and adjust the selector lever linkage Shift mechanism⇒ Rep. gr. 34 ; .

Continued for all vehicles

– Install inlet connection
⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374 .

– Install pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Install drive shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Summary of components - drive shaft .

– Install AC compressor ⇒ Heating, Air Conditioning; Rep. gr. 87 ; AC compressor .

– Install the V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

Vehicles with lambda probe 1 after catalytic converter - GX7-

– Connect electrical plug connection for lambda probe 1 after catalytic converter - GX7-
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .

Vehicles with SCR system

– Fit NOx encoder control unit - GX30- on battery tray
⇒ page 524 .

– Connect reduction agent line
⇒ “3.11 Disconnect delivery line for reduction agent”, page 644 .

Continued for all vehicles

– Installing fuel filter ⇒ Rep. gr. 20 ; Fuel filter; Removing and installing fuel filter .

– Install engine control unit
⇒ “7 Engine control unit”, page 527 .

– Install fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

– Install differential pressure transmitter - G505-
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

– Connect clutch slave cylinder⇒ Rep. gr. 30 ; Clutch control; removing and installing clutch slave cylinder .

– Bleed the clutch hydraulics ⇒ Rep. gr. 30 ; Clutch control; bleed the clutch control .

– Install control cables with cable support bracket ⇒ Rep. gr. 34 ; Shift mechanism .

– Install assembly carrier ⇒ Running gear, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering box .

– Install front wheelhouse liners ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner .

– Adjust the assembly bracket
⇒ “2.5 Check assembly bracket setting”, page 60 .

– Install battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Summary of components - battery

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Connect vacuum hoses
⇒ “2.1 Connection diagram - Vacuum system”, page 446 .

– Install air filter
⇒ “4.1 Assembly overview - air filter housing”, page 473 .

– Checking the oil level:

♦ ⇒ Maintenance ; Booklet Octavia III

♦ ⇒ Maintenance ; Booklet Yeti

NOTICE

Risk of damaging control units as a result of overvoltage.

♦ **Do not use charger for jump starting!**

– Install battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Summary of components - battery .

– Venting air from the fuel system
⇒ “1.3 Filling/bleeding the fuel system”, page 444 .

– Connect coolant hoses with quick coupling ⇒ page 346 .

Note

Do not re-use used coolant.

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

Tightening torques

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Note

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

Component		Nm
Screws/nuts	M6	10
	M7	15
	M8	20
	M10	40
	M12	65

- ⇒ “2 Assembly bracket”, page 48 .
- Attaching engine to gearbox ⇒ Rep. gr. 34 ; Removing and installing gearbox; installing gearbox .

1.3.2 Installing the engine, Rapid NH

NOTICE

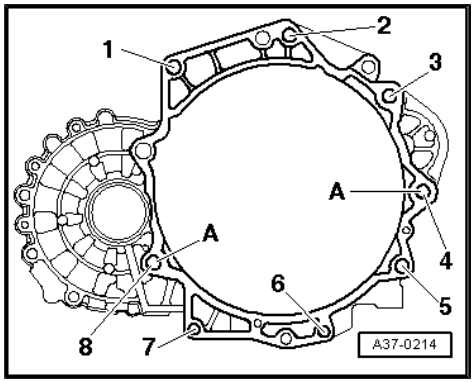
If the stripped engine is replaced after engine removal, the tightening of the injection unit clamping claws on the new stripped engine must be checked. Tightening torque: Pos. -8- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452 . In order to align the injection units when fitting the high pressure lines, the clamping claws are only tightened in series »by hand«. If not tightened up, the engine may be damaged.

Note

- *Screws which have been tightened firmly to a torquing angle must be replaced.*
- *Replace self-locking nuts and screws as well as sealing rings, gaskets and O-rings.*
- *Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Fit all cable straps on again in the same place when installing.*

– Installing intermediate plate
⇒ “2.1 Summary of components - cylinder block on gearbox side”, page 79 .

– 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 automatic 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

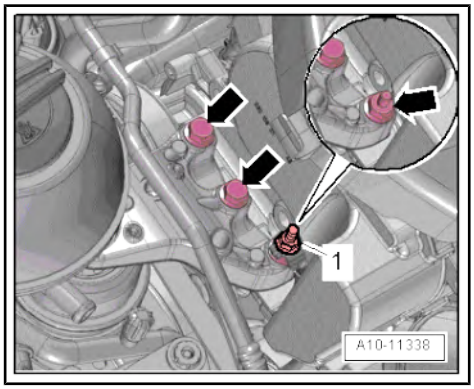
– Secure gearbox to engine.

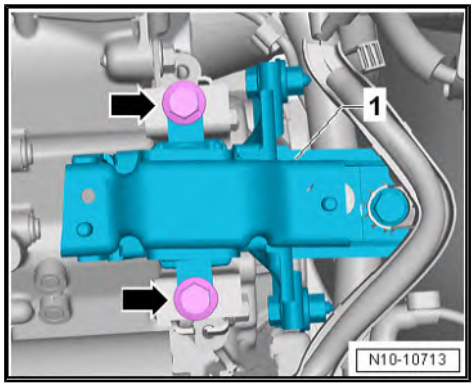
– Install gearbox support bracket.

– 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.





- Initially insert screws -arrows- for gearbox mount -1- by hand as far as the stop.
- Remove engine mount - T10497- or -T10497A- from engine.
- Install starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Summary of components - starter .
- Install pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .
- Remove left and right prop shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Prop shaft; overview of components - prop shaft .
- Install assembly carrier ⇒ Running gear, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering box .
- Install AC compressor ⇒ Heating, Air Conditioning; Rep. gr. 87 ; AC compressor .
- Install the V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .
- Tighten engine and gearbox mount
⇒ “2 Assembly bracket”, page 48 .
- Install engine control unit
⇒ “7 Engine control unit”, page 527 .

Vehicles fitted with a manual gearbox

- Remove clutch slave cylinder: ⇒ Rep. gr. 30 ; Clutch slave cylinder; Removing and installing clutch slave cylinder .

Continued for all vehicles

- Attach the shift mechanism to the gearbox Shift mechanism⇒ Rep. gr. 34 ; .
- Install battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Summary of components - battery
- Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes .
- Checking the oil level ⇒ Maintenance ; Booklet Rapid NH .

NOTICE

Risk of damaging control units as a result of overvoltage.

♦ **Do not use charger for jump starting!**

- Venting air from the fuel system
⇒ “1.3 Filling/bleeding the fuel system”, page 444 .

Note

Do not re-use used coolant.

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

Note

Do not re-use used coolant.

– Install the front left and right wheelhouse liner ⇒ Exterior body work ; Rep. gr. 66 ; Wheelhouse liner; Removing and installing the front wheelhouse liner .

Tightening torques

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Note

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

Component		Nm
Screws/nuts	M6	10
	M7	15
	M8	20
	M10	40
	M12	65

- ⇒ “2 Assembly bracket”, page 48 .
- Attach gearbox to engine ⇒ Rep. gr. 34 ; removing and installing gearbox; install gearbox .

2 Assembly bracket

⇒ “2.1 Assembly overview - assembly mountings”, page 48

⇒ “2.2 Removing and installing engine mount”, page 53

⇒ “2.3 Removing and installing pendulum support”, page 56

⇒ “2.4 Support the engine in its installed position”, page 57

⇒ “2.5 Check assembly bracket setting”, page 60

2.1 Assembly overview - assembly mountings

⇒ “2.1.1 Summary of components - assembly bracket, Octavia III”, page 48

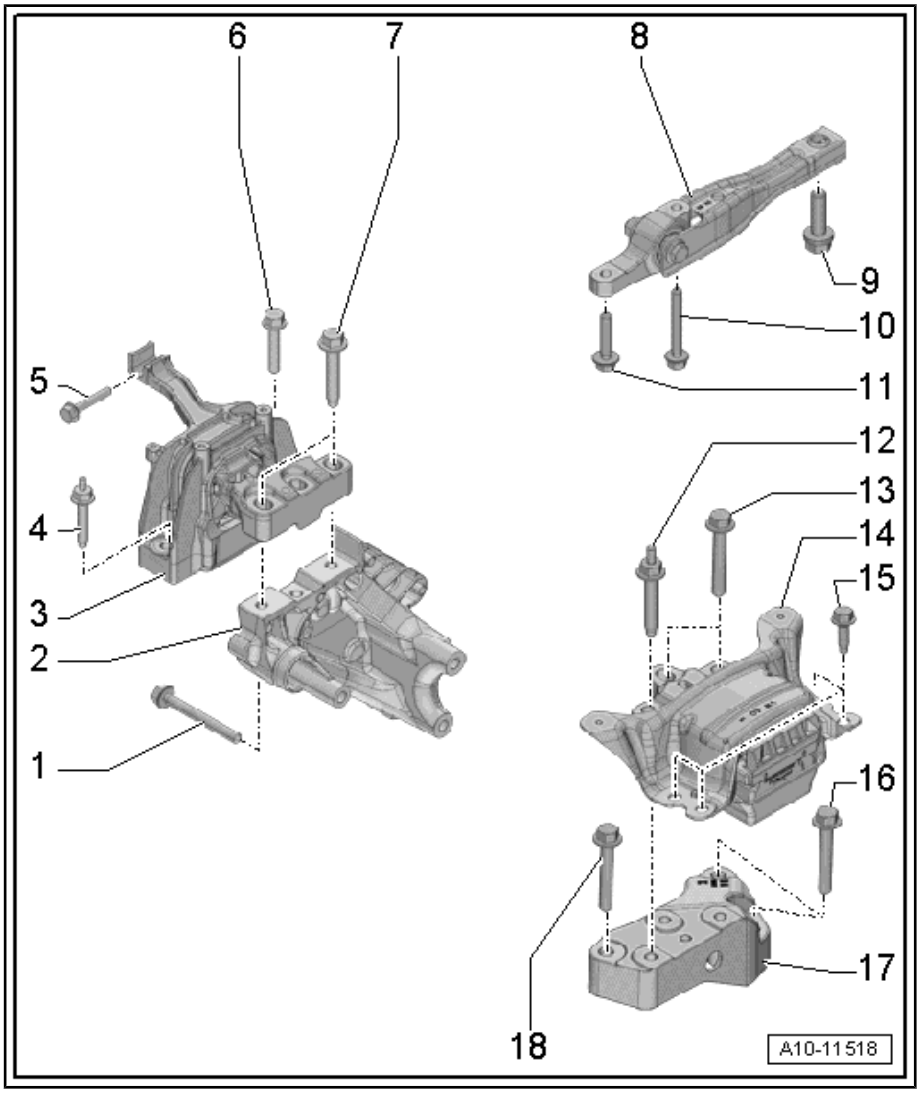
⇒ “2.1.2 Assembly bracket, Yeti”, page 51

⇒ “2.1.3 Summary of components - assembly bracket, Rapid NH”, page 52

2.1.1 Summary of components - assembly bracket, Octavia III

Note

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



1 - Screw
- ❑ Replace after disassembly
- ❑ Tightening sequence ⇒ page 50

2 - Engine support bracket
- ❑ Removing and installing ⇒ “1.7 Removing and installing engine support”, page 74

3 - Engine mounting
- ❑ with supporting arm
- ❑ Removing and installing ⇒ “2.2 Removing and installing engine mount”, page 53

4 - Screw
- ❑ Replace after disassembly
- ❑ 40 Nm + 90°

5 - Screw
- ❑ Replace after disassembly
- ❑ 20 Nm + 90°

6 - Screw
- ❑ Replace after disassembly
- ❑ 40 Nm + 90°

7 - Screw
- ❑ Replace after disassembly
- ❑ 60 Nm + 90°

8 - Pendulum support
- ❑ different designs; assignment ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Removing and installing ⇒ “2.3 Removing and installing pendulum support”, page 56

9 - Screw
- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 50

10 - Screw
- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 50

11 - Screw
- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 50

12 - Screw
- ❑ Replace after disassembly
- ❑ 60 Nm + 90°

13 - Screw
- ❑ Replace after disassembly
- ❑ 60 Nm + 90°

14 - Gearbox mount

- ❑ with supporting arm

15 - Screw

- ❑ Replace after disassembly
- ❑ 50 Nm + 90°

16 - Screw

- ❑ Replace after disassembly

⇒ Rep. gr. 34 ; Powertrain mounting; Assembly overview - powertrain mounting .

17 - Gearbox support bracket

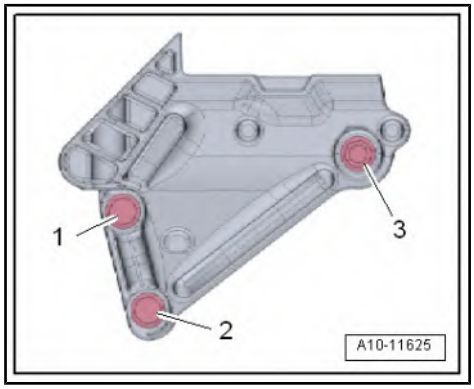
- ❑ for vehicles with manual gearbox

18 - Screw

- ❑ Replace after disassembly

⇒ Rep. gr. 34 ; Powertrain mounting; Assembly overview - powertrain mounting .

Engine support bracket - tightening torque and tightening order



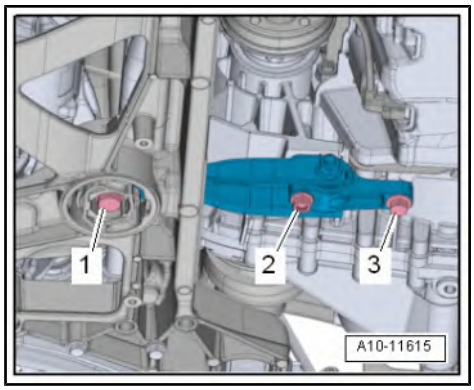
Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Tighten bolts step by step in the given sequence:

Stage	Bolts	Tightening torque / torquing angle
1.	-1- to -3-	7 Nm
2.	-1- to -3-	40 Nm
3.	-1- to -3-	Turn 180° further

Install pendulum support



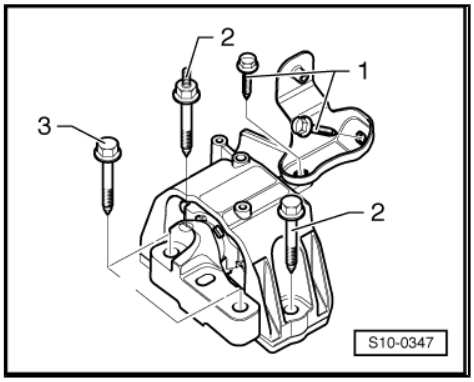
Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Tighten bolts step by step in the given sequence:

Stage	Bolts	Tightening torque / torquing angle
1.	-2-, -3-	50 Nm
2.	-1-	130 Nm
3.	-1- to -3-	Turn 90° further

2.1.2 Assembly bracket, Yeti

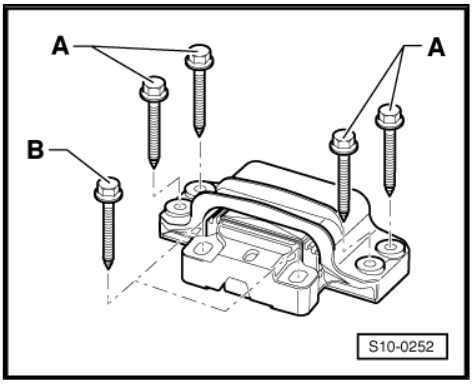


Assembly bracket

1 - 20 Nm + 90° - replace after disassembly

2 - 40 Nm + 90° - replace after disassembly

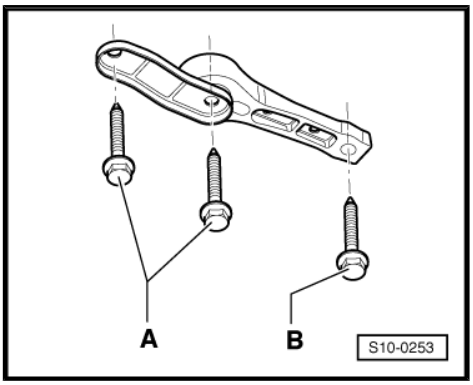
3 - 60 Nm + 90° - replace after disassembly



Gearbox mount

A - 40 Nm + 90° - replace after disassembly

B - 60 Nm + 90° - replace after disassembly



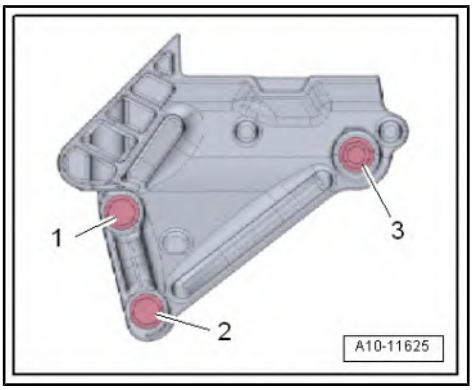
Pendulum support

A - strength class 8.8 - 40 Nm + 90° - replace after disassembly

B - 100 Nm + 90° - replace after disassembly

Remove: First remove screw -B-, then screws -A-.

Install: First tighten screws -A-, then screw -B-.



Engine support bracket - tightening torque and tightening order

Note

Screws which have been tightened firmly to a torquing angle must be replaced.

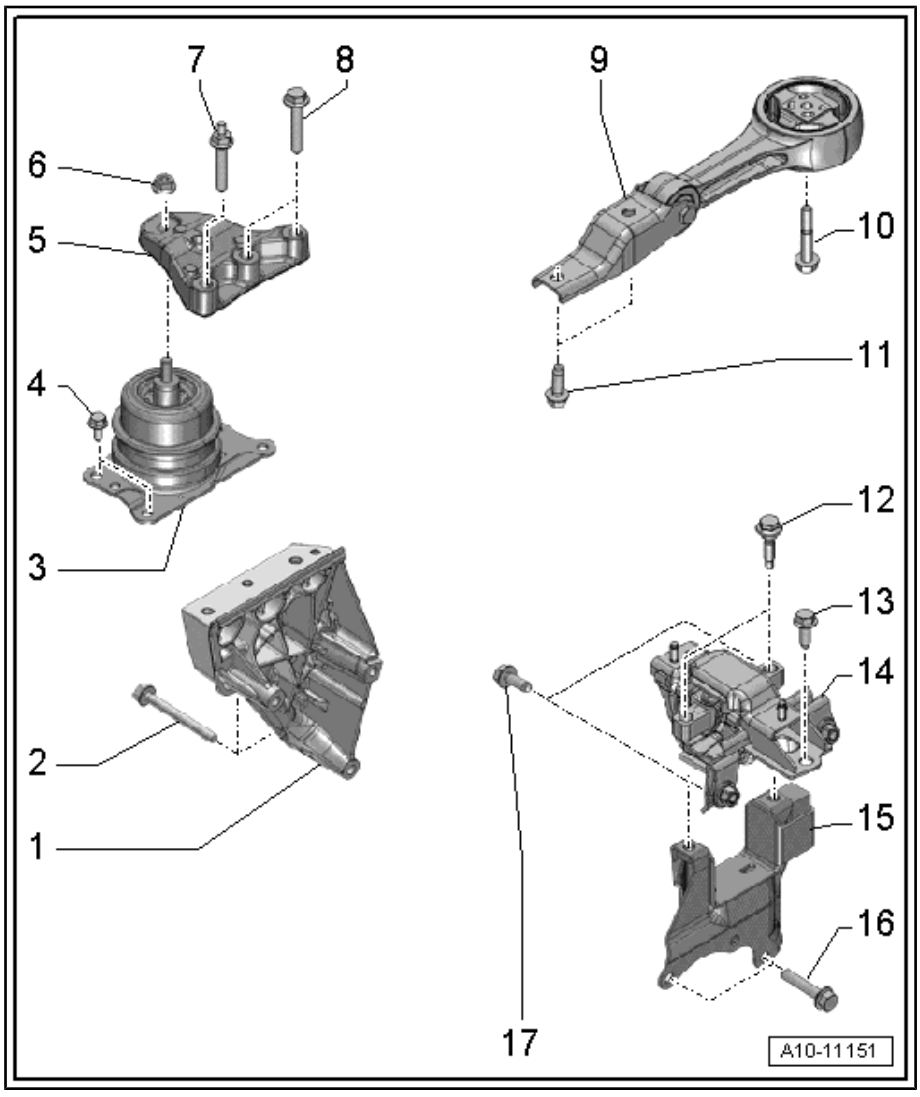
– Tighten bolts step by step in the given sequence:

Stage	Bolts	Tightening torque / torquing angle
1.	-1- to -3-	7 Nm
2.	-1- to -3-	40 Nm
3.	-1- to -3-	Turn 180° further

2.1.3 Summary of components - assembly bracket, Rapid NH

Note

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



1 - Engine support bracket

- ❑ Removing and installing ⇒ “1.7 Removing and installing engine support”, page 74

2 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 53

3 - Engine mounting

- ❑ do not disassemble
- ❑ with supporting arm Pos. -5- ⇒ Item 5 (page 52)
- ❑ Removing and installing ⇒ “2.2 Removing and installing engine mount”, page 53

4 - Screw

- ❑ Replace after disassembly
- ❑ 20 Nm + 90°

5 - Supporting arm

- ❑ do not disassemble
- ❑ with engine mount Pos. -3- ⇒ Item 3 (page 52)

6 - Nut

Note

Must not be loosened.

7 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque of the earth cable: 16 Nm
- ❑ 30 Nm + 90°

8 - Screw

- ❑ Replace after disassembly
- ❑ 30 Nm + 90°

9 - Pendulum support

- ❑ different designs; assignment ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Removing and installing ⇒ “2.3 Removing and installing pendulum support”, page 56

10 - Screw

- ❑ Replace after disassembly
- ❑ 40 Nm + 90°

11 - Screw

- ❑ Replace after disassembly
- ❑ 30 Nm + 90°

12 - Screw

- ❑ Replace after disassembly
- ❑ 40 Nm + 90°

13 - Screw

- ❑ Replace after disassembly
- ❑ 50 Nm + 90°

14 - Gearbox mount

- ❑ with supporting arm

15 - Gearbox support bracket

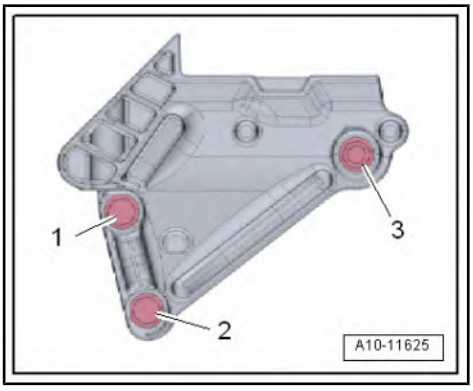
16 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ Rep. gr. 34 ; Assembly mountings; Summary of components - assembly bracket

17 - Screw

- ❑ Replace after disassembly
- ❑ 50 Nm + 90°

Engine support bracket - tightening torque and tightening order



Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Tighten bolts step by step in the given sequence:

Step	Bolts	Tightening torque / torquing angle
1.	-1- to -3-	7 Nm
2.	-1- to -3-	40 Nm
3.	-1- to -3-	Turn 180° further

2.2 Removing and installing engine mount

⇒ "2.2.1 Removing and installing the engine mount, Octavia III, Yeti", page 53

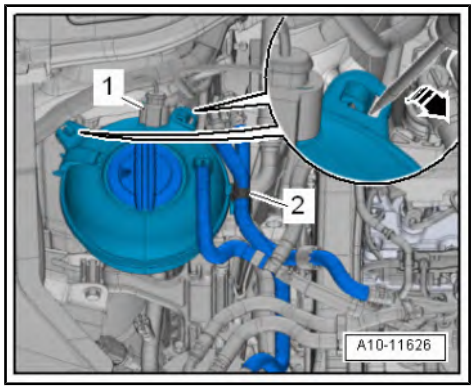
⇒ "2.2.2 Removing and installing the engine mount, Rapid NH", page 54

2.2.1 Removing and installing the engine mount, Octavia III, Yeti

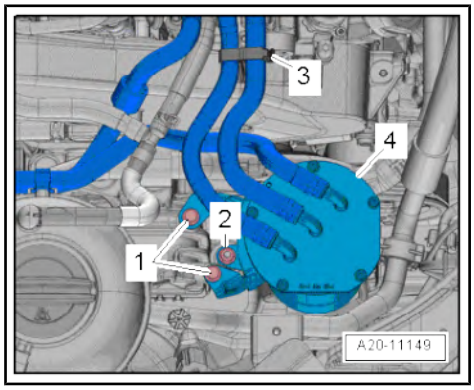
Removing

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

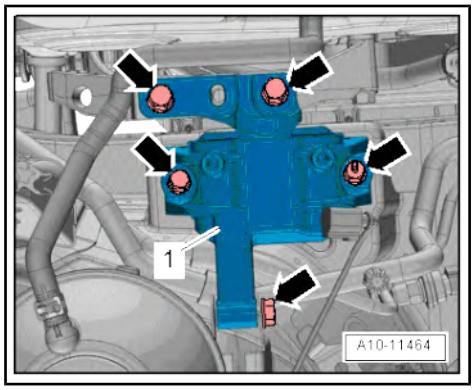
– Separate electrical plug connection -1-.
– Remove bracket -2- with fuel hoses.
– Unlock catches using a screwdriver -arrow-, lay coolant expansion tank to the side.



– Expose bracket -3- with fuel hoses.
– Release nut -2- and screws -1-.
– Lay fuel filter -4- to the side.
– Support the engine in its installed position
⇒ “2.4 Support the engine in its installed position”, page 57 .



– Unscrew screws -arrows- and remove engine mount -1-.



Installing

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

– Check assembly mounting adjustment
⇒ “2.5 Check assembly bracket setting”, page 60 .

Tightening torques - summaries of components

Note

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

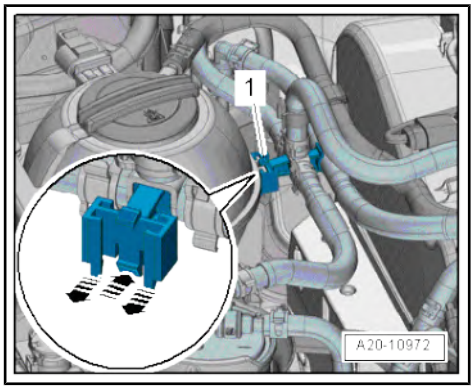
♦ ⇒ “2.1.1 Summary of components - assembly bracket, Octavia III”, page 48
♦ ⇒ Rep. gr. 20 ; Fuel filter; Summary of components - fuel filter

2.2.2 Removing and installing the engine mount, Rapid NH

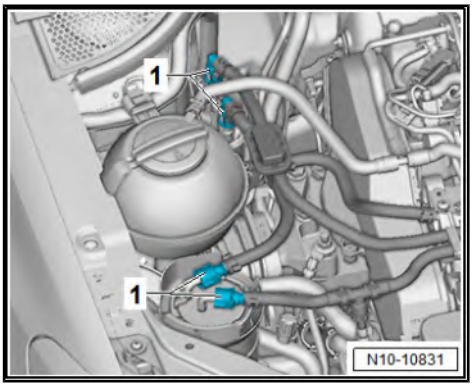
Removing

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

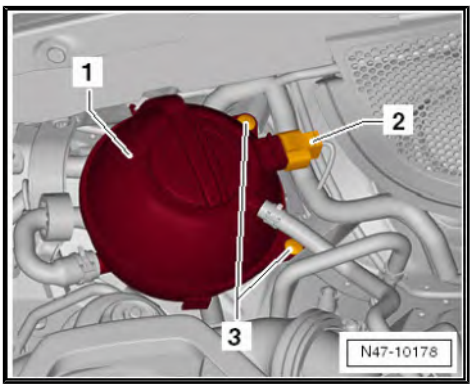
– Unlock catches -arrows- and disconnect holder -1- with fuel hoses from the guide on the coolant expansion reservoir.



– Disconnect quick couplings -1- and lay fuel hoses on the engine.



– Separate electrical plug connection -2-.
– Unscrew screws -3-.
– Remove coolant expansion bottle -1- and place on the engine.
– Support the engine and gearbox in installed position ⇒ “2.4 Support the engine in its installed position”, page 57 .
– Uniformly pre-tension the engine/gearbox unit with spindles, but do not raise.

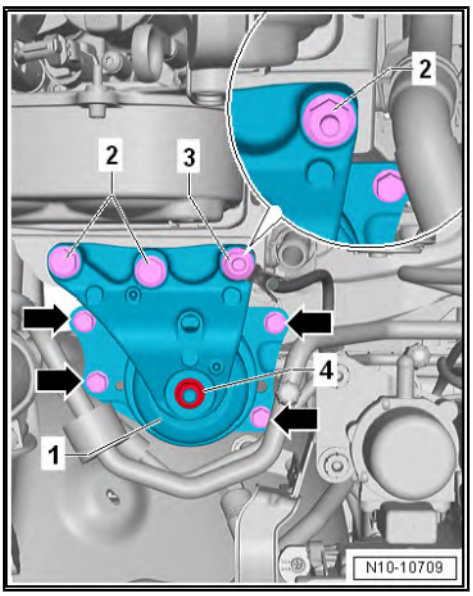


– Unscrew nut -3-.
– Remove earth cable.

NOTICE

The securing nut -4- must not be loosened.

– Unscrew screws -2- and -3- between engine bracket and engine.
– Unscrew screws -arrows- and remove engine mount -1-.

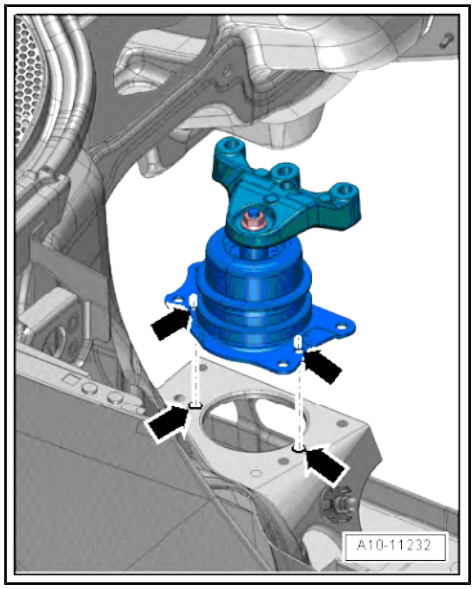


Installing

Installation is carried out in the reverse order. However, pay attention to the following:

– Position assembly bracket to longitudinal beam

• The insertion positions -arrows- must be in an axis; if required, check this with a suitable auger.



NOTICE

If the screws are inserted at an angle, the thread may get damaged.

- **Do not remove the support bracket - T30099- until the screws securing the assembly mountings have been tightened to the tightening torque.**

Tightening torques - summaries of components

Note

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

- ⇒ “2.1.3 Summary of components - assembly bracket, Rapid NH”, page 52

2.3 Removing and installing pendulum support

⇒ “2.3.1 Removing and installing the pendulum support, Octavia III”, page 56

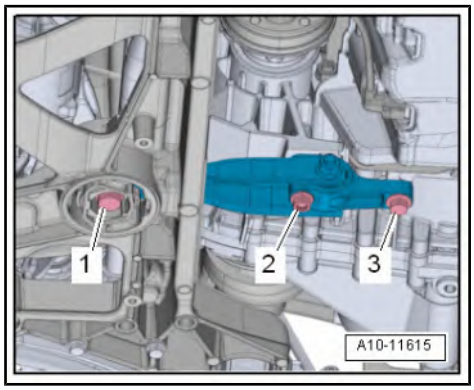
⇒ “2.3.2 Removing and installing the pendulum support, Rapid NH”, page 57

2.3.1 Removing and installing the pendulum support, Octavia III

Removing

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

– Undo screws -1-, -2-, -3- and remove the pendulum support.



Note

A vehicle with manual gearbox 02Q is shown as an example.

Installing

Installation is carried out in the reverse order.

Tightening torques - summaries of components

Note

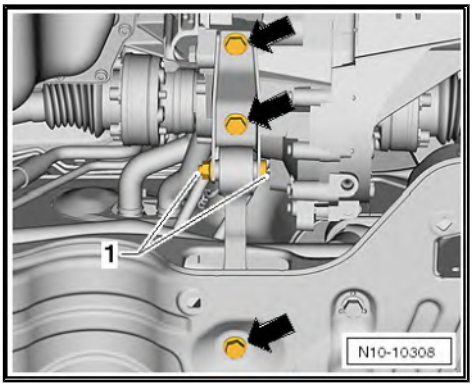
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ⇒ Fig. ““Install pendulum support”“ , page 50 .
- Sound damper - overview of components ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

2.3.2 Removing and installing the pendulum support, Rapid NH

Removing

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .



Note

Screw -1- must not be loosened.

– Unscrew screws -arrows- and remove the pendulum support.

Installing

Installation is carried out in the reverse order.

Tightening torques - summaries of components

Note

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

- ⇒ “2.1.3 Summary of components - assembly bracket, Rapid NH”, page 52
- ⇒ Body Work; Rep. gr. 50 .

2.4 Support the engine in its installed position

⇒ “2.4.1 Supporting the engine in installation position, Octavia III, Yeti”, page 57

⇒ “2.4.2 Supporting the engine in installation position, Rapid NH”, page 58

2.4.1 Supporting the engine in installation position, Octavia III, Yeti

Special tools and workshop equipment required

- Interceptor - T30099- or -T30099A-
- Base - T30119- for Octavia III, base - T30099/1- for Yeti
- Supporting device - T40091/1-
- -T40091/3- from engine support basic set - T40091-
- Support - 10-222 A/31-
- Hook - MP9-200/10 (10-222A/10)-
- Adapter - MP9-200/18 (10-222A/18)-

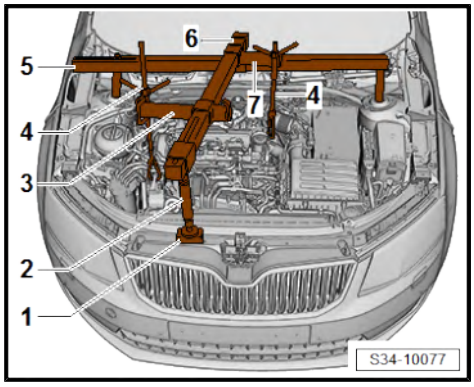
– Remove windscreen wiper arms -Arrows- ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; removing and installing windscreen wiper arms .

– Remove the plenum panel cover -5- ⇒ External body repairs; Rep. gr. 50 ; Bulkhead; Assembly overview - plenum panel cover .

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

– Remove caps of screwed connections for front suspension strut domes.

– Position the supporting device - 5- with joint - 6- and with the adapters as shown.



– Support engine at the eyes and slightly release load from assembly mountings by turning spindles.

Installing

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

– Install plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Front wall; Summary of components - plenum chamber cover .

– Install windscreen wiper arms ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; removing and installing windscreen wiper arms .

Tightening torque

Component	Tightening torque
M12 screws for the interceptor - T30099- or -T30099A-	20 Nm

2.4.2 Supporting the engine in installation position, Rapid NH

Special tools and workshop equipment required

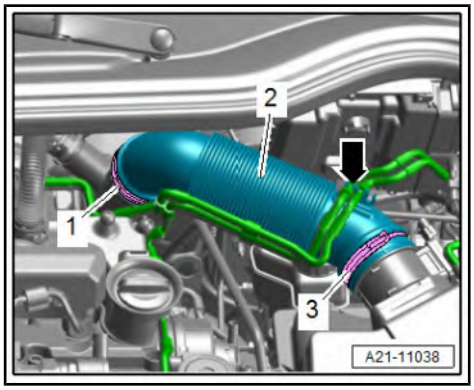
- Interceptor - T30099- or -T30099A-
- Supporting plate - T30099/1-
- Supporting device - T40091/1-
- -T40091/3- from engine support basic set - T40091-
- Support - 10-222 A/31-
- Hook - MP9-200/10 (10-222A/10)-
- Adapter - MP9-200/18 (10-222A/18)-

– Remove windscreen wiper arms -Arrows- ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; removing and installing windscreen wiper arms .

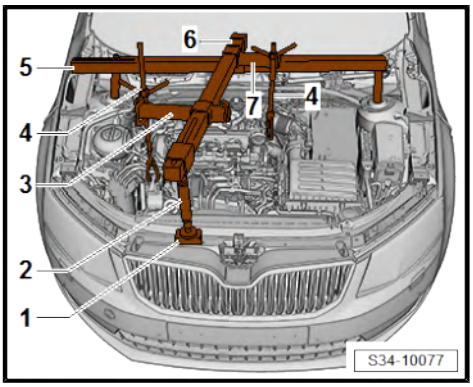
– Remove the plenum panel cover -5- ⇒ External body repairs; Rep. gr. 50 ; Bulkhead; Assembly overview - plenum panel cover .

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

– Expose vacuum hoses -arrow- at the air guide pipe.
– Release hose clamps -1, 3- and remove air guide pipe -2-.
– Remove caps of screwed connections for front suspension strut domes.



– Position the supporting device - 5- with joint - 6- and with the adapters as shown.
– Support engine at the eyes and slightly release load from assembly mountings by turning spindles.



Installing

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

– Install plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Front wall; Summary of components - plenum chamber cover .
– Install windscreen wiper arms ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; removing and installing windscreen wiper arms .

Tightening torque

Component	Tightening torque
M12 screws for the interceptor -T30099- or -T30099A-	20 Nm

2.5 Check assembly bracket setting

⇒ “2.5.1 Checking setting of engine mount, Octavia III”, page 60

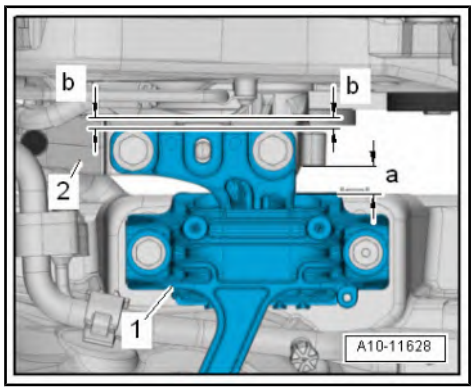
⇒ “2.5.2 Checking assembly bracket setting, Yeti”, page 62

2.5.1 Checking setting of engine mount, Octavia III

Checking the assembly bracket

The following dimensions must be reached:

- A distance of -a- = 10 mm must be present between engine support -2- and engine mount -1-.
- The cast edge on the engine support must be parallel with the engine mount supporting arm.
- Dimension -b- = dimension -b-.



Note

The distance -a- = 10 mm can be checked, for example with suitable round bars.

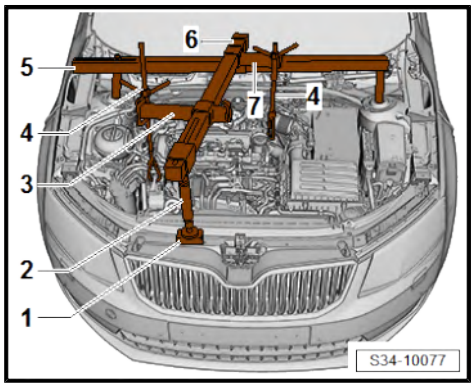
– If the measured distance is too great or too small, adjust the assembly bracket ⇒ page 60 .

Adjusting the assembly bracket

– Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .

– Support the engine in its installed position ⇒ “2.4 Support the engine in its installed position”, page 57 .

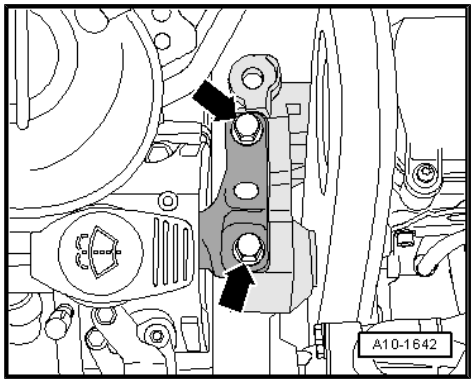
– Slightly pre-tension the engine/gearbox assembly with the spindles -4-, but do not raise.



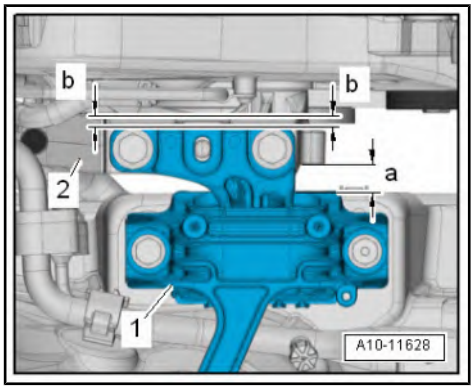
– Unscrew screws -arrows- for engine mount one after another and replace (if not already done during engine installation).

– Initially, loosely insert the screws.

– Move engine/gearbox unit with an assembly lever until the following dimensions are set:



- A distance of -a- = 10 mm must be present between engine support -2- and engine mount -1-.
- The cast edge on the engine support must be parallel with the engine mount supporting arm.
- Dimension -b- = dimension -b-.



Note

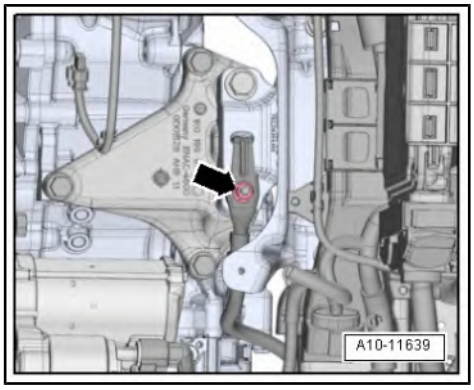
The distance -a- = 10 mm can be checked, for example with suitable round bars.

– Tighten engine mount screws.

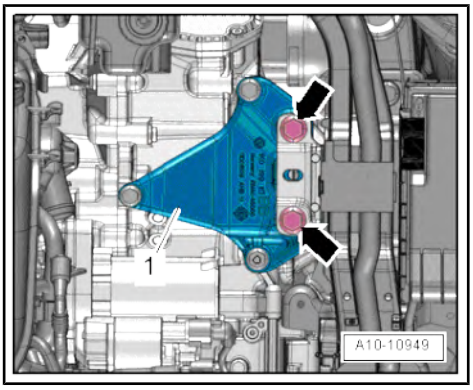
Note

A gearbox mount with 2 screwed connections is shown as an example.

– Unscrew nut -arrow-, expose earth cable.

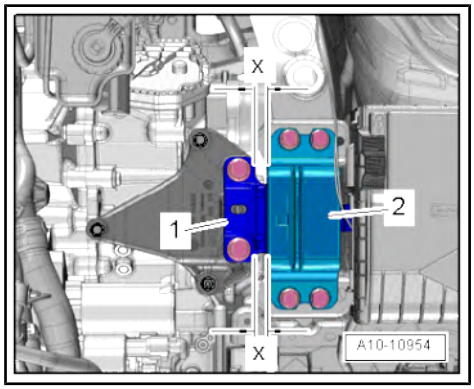


– Unscrew screws -arrows- for gearbox mount -1- one after another and replace (if not already done during engine installation).
– Initially, loosely insert the screws.



– Make sure that on the gearbox side the edges of the supporting arm -1- and gearbox mount -2- are parallel.

• Dimension -x- = dimension -x-.



Installation is carried out in the reverse order.

Tightening torques - summaries of components

Note

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

♦ ⇒ "2.1.1 Summary of components - assembly bracket, Octavia III", page 48

2.5.2 Checking assembly bracket setting, Yeti

Special tools and workshop equipment required

♦ Supporting device - T30099-

♦ Surface - T30099/1-

♦ Adapter - MP9-200/3 (10-222A/3)-

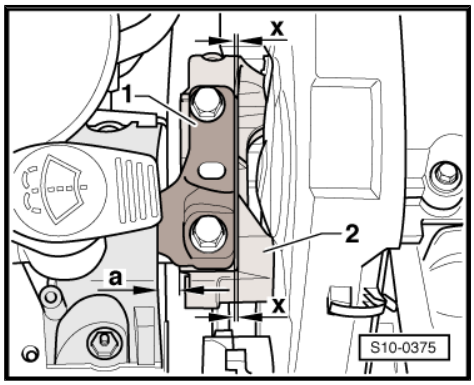
or

♦ Engine mount - T10497- or -T10497A-

♦ Engine and gearbox jack , e.g. -V.A.G 1383A- or -VAS 6931-

Checking the assembly bracket

Check dimensions on the right hanger for engine/gearbox unit:



• Between engine bracket and engine support there must be a distance -a- of 10 mm.

• The cast iron edge on the engine support -2- must be parallel to the supporting arm -1- the dimension -x- must be the same at the front and rear.

Note

The distance -a- can be checked, for example with suitable round bars.

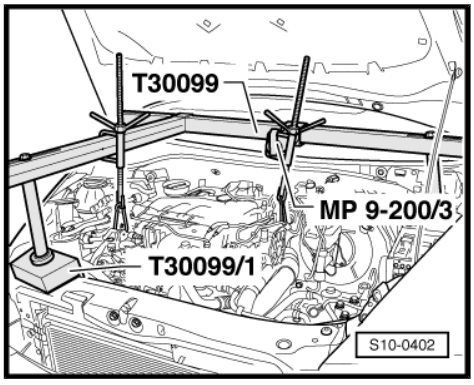
Only if there is an acoustic complaint (engine or gearbox knock on the frame side rail when cornering) and the dimension -a- is not 10 mm:

– Adjust the assembly bracket ⇒ page 62 .

Adjusting the unit mounting

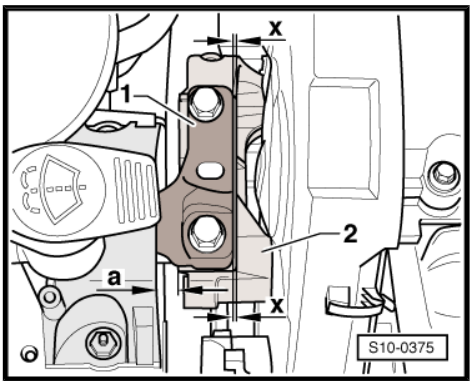
Condition

- Engine and gearbox held by supporting device - T30099- , supporting plate - T30099/1- and adapter - MP9-200/3 (10-222A/3)- or engine and gearbox supported by engine mount and engine/engine/gearbox jack .



The following dimensions -a- and -x- must be maintained:

- Between engine bracket and engine support there must be a distance -a- = 10 mm.
- The cast iron edge on the engine support -2- must be parallel to the supporting arm -1- the dimension -x- must be the same at the front and rear.



Note

The distance -a- = 10 mm can be checked, for example with suitable round bars.

Tightening torques of the unit mounting

Note

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

◆ ⇒ “2.1.2 Assembly bracket, Yeti”, page 51 .

3 Engine trim panel

⇒ “3.1 Removing and installing engine trim panel”, page 64

3.1 Removing and installing engine trim panel

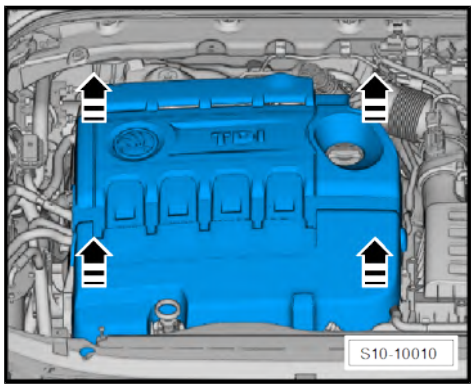
NOTICE

When removing and installing the engine trim panel, where applicable, prevent a collision with the fuel return-flow line or prevent coming into contact with the lines by accident. In unfavourable situations, the outlets on the injectors may break off. This can cause leaks in the fuel system.

The brackets of the engine cover on the cylinder head cover can break off when they are incorrectly removed.

- **It is therefore necessary to remove the engine cover according to the following instruction.**

– Carefully pull the engine cover off the retaining bolts one after another -arrows-. Do not pull engine cover off in jerks or on one side.



Installing

– To avoid damage, do not strike the engine cover with the fist or a tool.

– Position the engine cover paying attention to the oil fill supports and dipstick.

– First press the engine cover into the rubber grommets on the left side, then into the rubber grommets on the right side.

13 – Crankshaft group

1 Cylinder block (pulley end)

⇒ “1.1 Assembly overview - cylinder block (pulley end)”, page 65

⇒ “1.2 Summary of components - sealing flange on the belt pulley side”, page 67

⇒ “1.3 Removing and installing V-ribbed belt”, page 69

⇒ “1.4 Removing and installing tensioning pulley for V-ribbed belt”, page 71

⇒ “1.5 Removing and installing vibration dampener”, page 71

⇒ “1.6 Removing and installing bracket for auxiliary units”, page 72

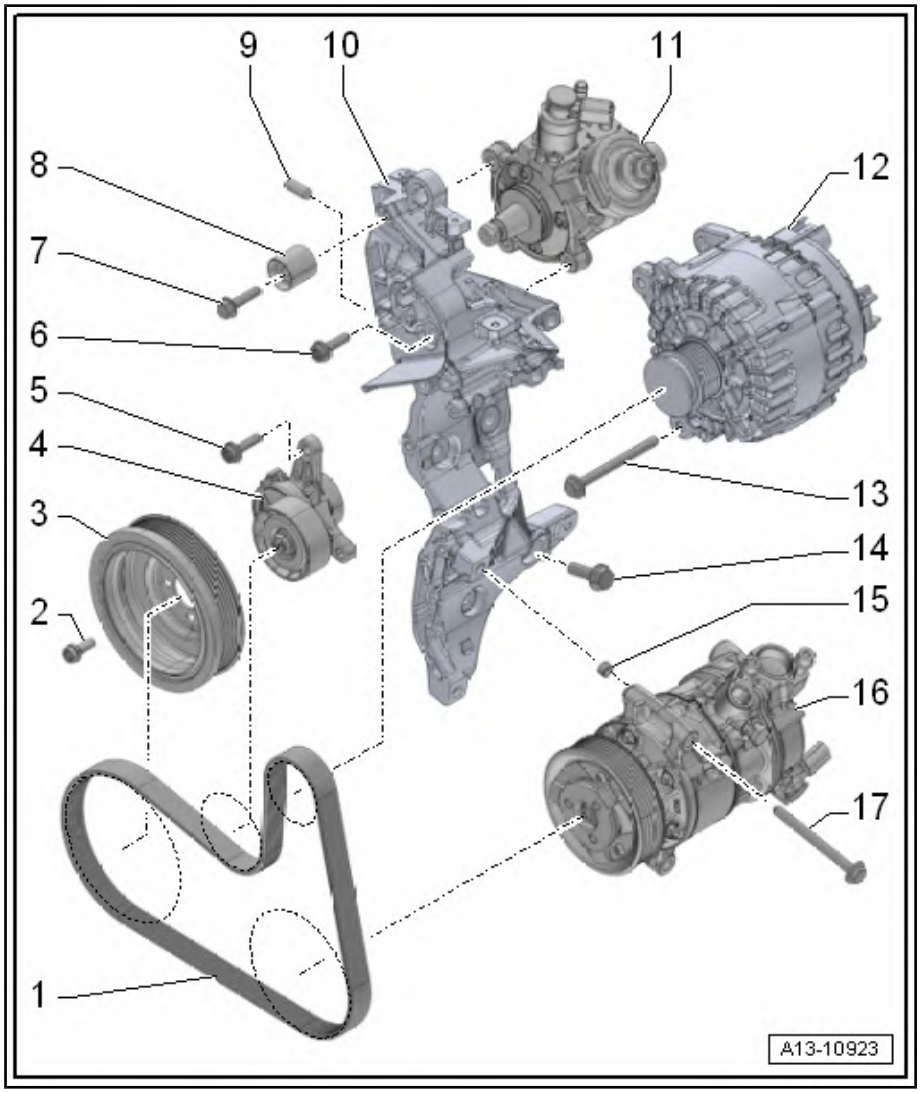
⇒ “1.7 Removing and installing engine support”, page 74

⇒ “1.8 Removing and installing the sealing flange on the belt pulley side”, page 75

1.1 Assembly overview - cylinder block (pulley end)

Note

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



1 - V-ribbed belt

- ❑ check for wear
- ❑ mark the direction of rotation with chalk or a felt-tip pen before removing
- ❑ do not kink
- ❑ Routing of the ribbed V-belt ⇒ page 70
- ❑ Removing and installing ⇒ “1.3 Removing and installing V-ribbed belt”, page 69
- ❑ pay attention to the correct position on the belt pulley when installing it

2 - Screw

- ❑ Replace after disassembly
- ❑ Use only original screws ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ M8 x 20: 10 Nm + 90°
- ❑ M8 x 50: 20 Nm + 180°

3 - Vibration dampener

- ❑ with vibration damper
- ❑ Installation position: Bore in the vibration dampener must be positioned above the elevation on the crankshaft toothed belt sprocket
- ❑ Removing and installing ⇒ “1.5 Removing and installing vibration dampener”, page 71

4 - Tensioning device for V-ribbed belt

- ❑ Removing and installing ⇒ “1.4 Removing and installing tensioning pulley for V-ribbed belt”, page 71

5 - Screw

- ❑ Replace after disassembly
- ❑ 20 Nm + 90°

6 - Screw

- ❑ Tightening torque Pos. -2- ⇒ “8.1 Summary of components - high pressure pump”, page 537

7 - Screw

- ❑ Tightening torque Pos. -12- ⇒ Item 14 (page 142)

8 - Dampener wheel

9 - Fitting sleeve

- ❑ pay attention to correct fit in the bracket for auxiliary units

10 - Bracket for auxiliary units

- ❑ Removing and installing ⇒ “1.6 Removing and installing bracket for auxiliary units”, page 72

11 - High pressure pump

- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537

12 - Alternator

- ❑ Summary of components ⇒ Electrical system; Rep. gr. 27 ; Alternator; Summary of components - alternator

13 - Screw

- ❑ Tightening torque ⇒ Electrical system; Rep. gr. 27 ; Alternator; Summary of components - alternator

14 - Screw

- ❑ different lengths ⇒ page 67
- ❑ Tightening torque and tightening order ⇒ page 67

15 - Fitting sleeve

- ❑ pay attention to correct fit in the AC compressor

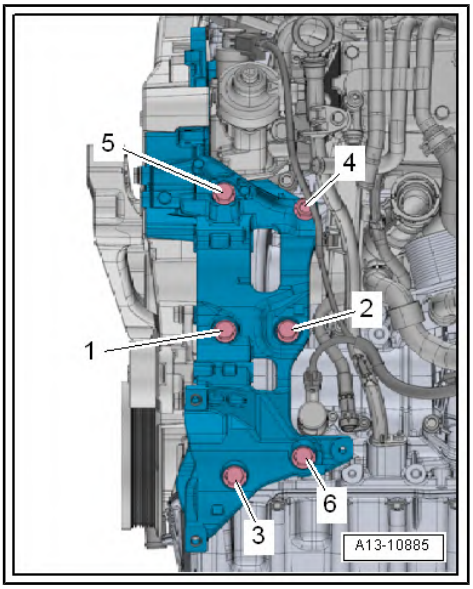
16 - AC compressor

- ❑ ⇒ Heating, air conditioning; Rep. gr. 87 ; AC compressor .

17 - Screw

- ❑ Tightening torque ⇒ Heating, air conditioning; Rep. gr. 87 ; AC compressor

Bracket for auxiliary units - tightening torques and tightening order



Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Set screws as follows:

♦ Screws -1-, -2-, -3-, -6- M10 x 35.

♦ Screw -4- M10 x 115.

♦ Screw -5- M10 x 175.

– Tighten bolts step by step in the given sequence:

Stage	Bolts	Tightening torque/torque angle
1.	-1- … -6-	by hand as far as the stop
2.	-1- … -6-	40 Nm
3.	-4- and -5-	Turn 180° further
4.	-1-, -2-, -3-, -6-	Turn 45° further

1.2 Summary of components - sealing flange on the belt pulley side

Note

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

Volkswagen Technical Site: http://vwts.ru http://vwts.info

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

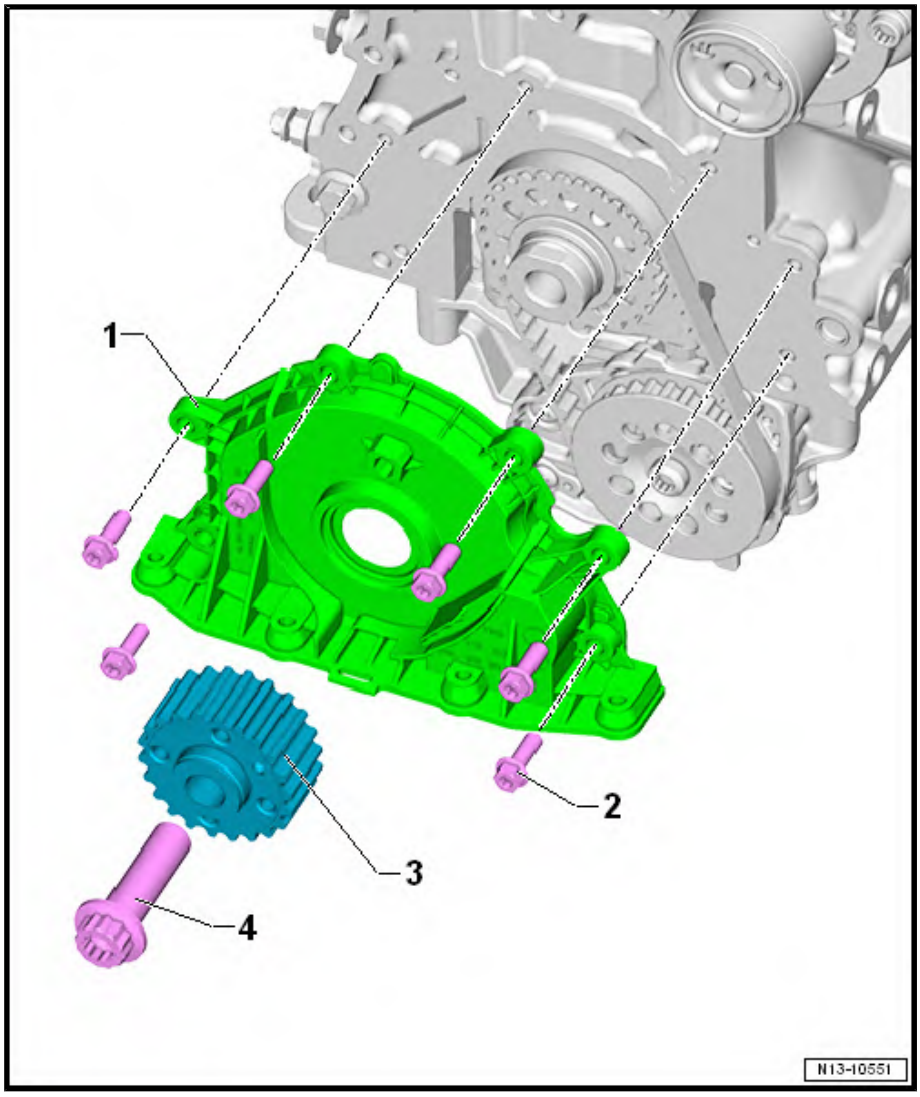
- ❑ Tightening torque and tightening order ⇒ page 68

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

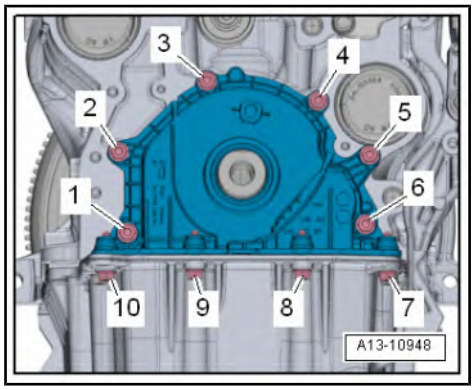
- ❑ Tightening torque Pos. -1- ⇒ “2.2 Summary of components - toothed belt”, page 141



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



1.3 Removing and installing V-ribbed belt

⇒ “1.3.1 Removing and installing V-ribbed belt for vehicles without air conditioning system”, page 69

⇒ “1.3.2 Removing and installing V-ribbed belt for vehicles with air conditioning system”, page 69

1.3.1 Removing and installing V-ribbed belt for vehicles without air conditioning system

Note

The repair kit includes the V-ribbed belt, the assembly tool - T10367- and an illustrated work procedure ⇒ ETKA - Electronic Catalogue of Original Parts .

Removing

– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

– Remove the front right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; Removing and installing the front wheelhouse liner .

– Cut through V-ribbed belt.

Installing

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

– The following work procedure is described in the illustrated work procedure from the repair kit.

– Start engine and check ribbed V-belt run.

1.3.2 Removing and installing V-ribbed belt for vehicles with air conditioning system

Special tools and workshop equipment required

♦ Locking pin - T10060A-

Removal

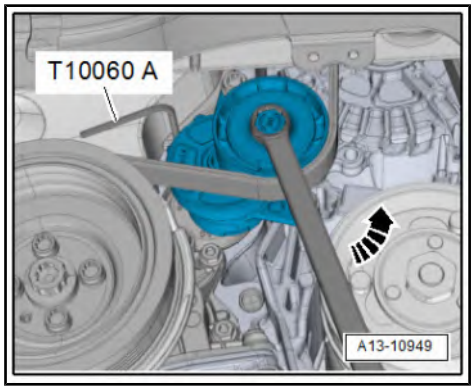
– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

NOTICE

Risk of damage by reversing the direction of rotation of a V-ribbed belt that has already been used.

♦ **If it is intended to re-install the V-ribbed belt, mark the direction of rotation with chalk or a felt-tip pen before removing it.**

– To release the tension of the V-ribbed belt, use the ring spanner to swivel the tensioning device anticlockwise -arrow-.
– Lock tensioning device with locking pin - T10060A- .
– Remove the V-ribbed belt.

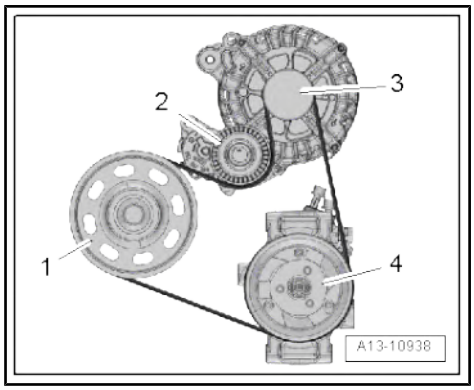


Installing

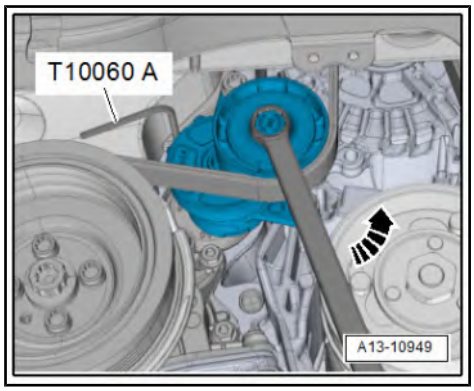
Installation is carried out in the reverse order. When installing, observe the following:

– Lay the V-ribbed belt onto the V-ribbed belt pulleys:

1 - Vibration dampener
2 - Tensioning pulley
3 - Alternator
4 - AC compressor



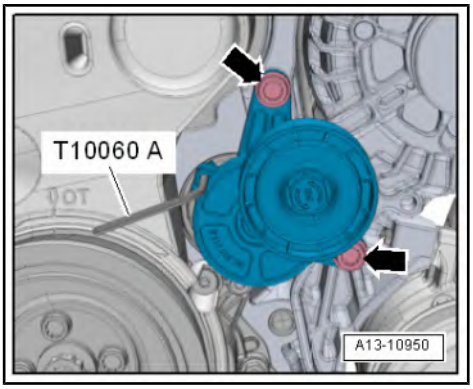
– Hold the tensioning element with the plug insert and pull out the locking pin - T10060A- .
– Release pressure on tensioning device.
– Check correct positioning of the V-ribbed belt.
– Start engine and check ribbed V-belt run.



Tightening torques - summaries of components

◆ Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

1.4 Removing and installing tensioning pulley for V-ribbed belt



Removing

– Remove V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

– Unscrew screws -arrows- and remove V-ribbed belt tensioning device.

Installing

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

Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Install the V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

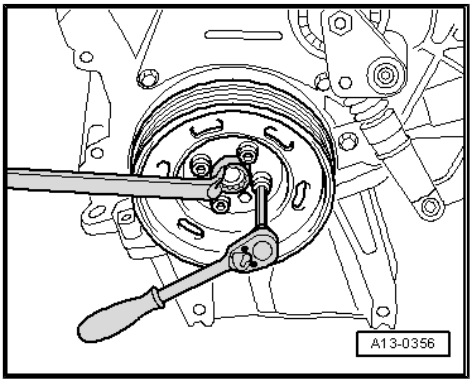
Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Assembly overview - cylinder block (pulley end)”, page 65

1.5 Removing and installing vibration dampener



Removing

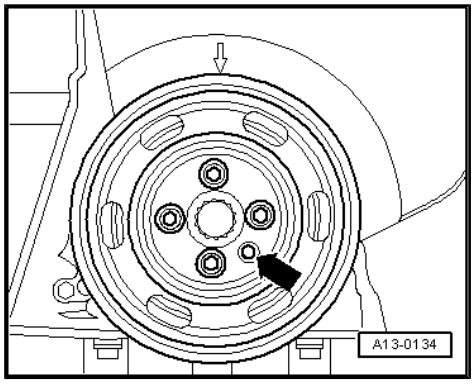
– Remove V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

– Loosen the screws of the vibration damper. To do so, counterhold the screw for the crankshaft toothed belt sprocket with the ring spanner.

– Unscrew screws and remove vibration dampener.

Installing

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



Note

Screws which have been tightened firmly to a torquing angle must be replaced.

- Installation position: The hole -arrow- in the vibration damper must be positioned above the tab on the crankshaft toothed belt sprocket.

– Install the V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Assembly overview - cylinder block (pulley end)”, page 65

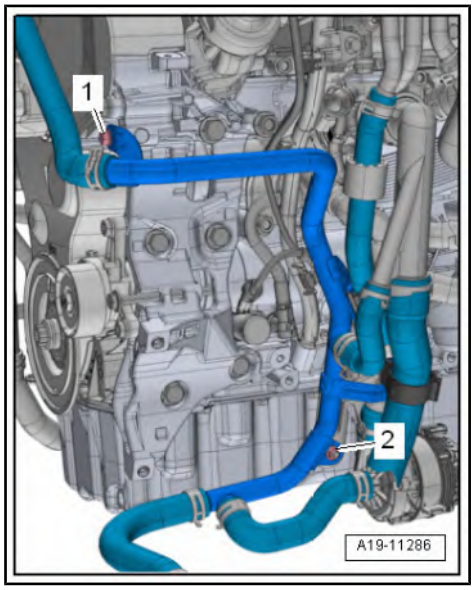
1.6 Removing and installing bracket for auxiliary units

Removing

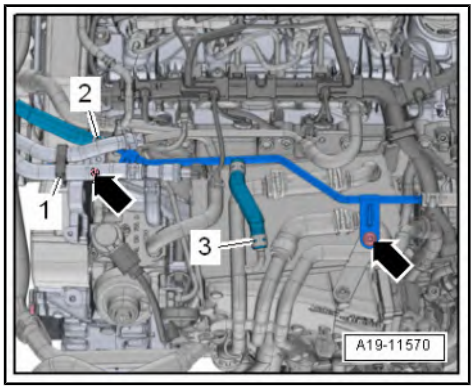
– Remove alternator ⇒ Electrical system ; Rep. gr. 27 ; Alternator; Removing and installing alternator .

– Remove high pressure pump
⇒ “8.2 Removing and installing the high pressure pump”, page 538 .

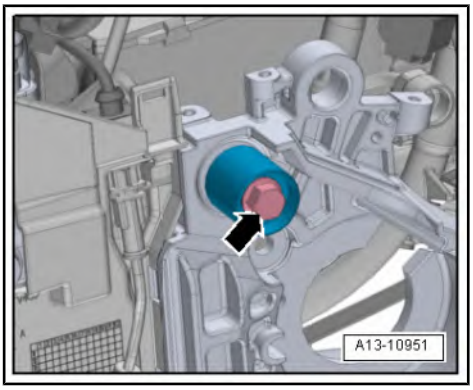
– Release nut -2- and screw -1-, push front right coolant pipe forwards slightly.



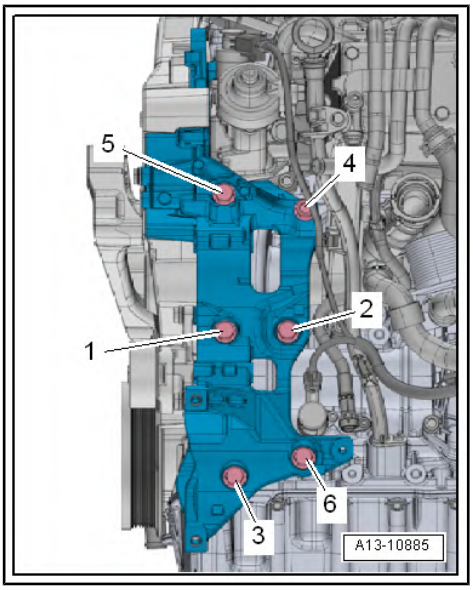
– Expose bracket -1- with fuel hoses.
– Unscrew screws -arrows-.



– Release screw -arrow-, remove guide pulley.



– Release the screws in the order -6- … -1-.
– Unscrew screws, remove bracket for auxiliary units.



Installing

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

Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Check that a dowel sleeve is inserted between the bracket for the auxiliary units and the cylinder block.

Tightening torques - summaries of components

Note

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

- ⇒ Fig. ""Bracket for auxiliary units - tightening torques and tightening order"" , page 67
- ⇒ "2.2 Summary of components - toothed belt", page 141
- ⇒ "3.1 Summary of components - coolant pipe", page 309
- ⇒ "8.1 Summary of components - high pressure pump", page 537
- ⇒ Electrical system; Rep. gr. 27 ; Alternator; Summary of components - alternator

1.7 Removing and installing engine support

⇒ “1.7.1 Removing and installing the engine support bracket, Octavia III, Yeti”, page 74

⇒ “1.7.2 Removing and installing the engine support bracket, Rapid NH”, page 74

1.7.1 Removing and installing the engine support bracket, Octavia III, Yeti

Removing

– Remove engine mounts
⇒ “2.2 Removing and installing engine mount”, page 53 .

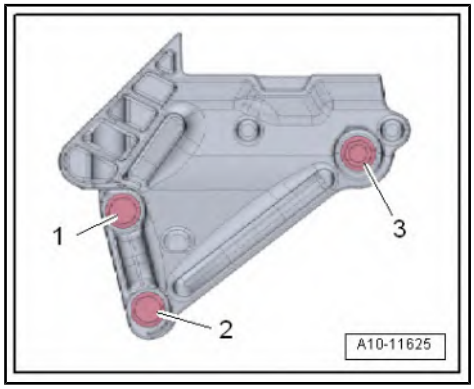
– Remove top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Use the spindle - MP9-200/10 (10-222A/10)- for raising and lowering until all screws are accessible.

Note

Remove the screw -2- together with the engine support.

– Unscrew screws -1-, -2- and -3- and remove engine support bracket.

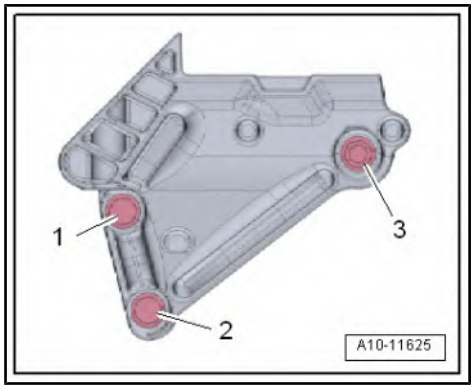


Installing

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

– Install the fixing screw -2- together with the engine support.

– Tighten the fixing screws in the sequence -1-, -2-, -3- by hand initially.



– Tighten all bolts fully in the specified sequence
⇒ “2 Assembly bracket”, page 48 .

– Install top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Install engine mount
⇒ “2.2 Removing and installing engine mount”, page 53 .

1.7.2 Removing and installing the engine support bracket, Rapid NH

Removing

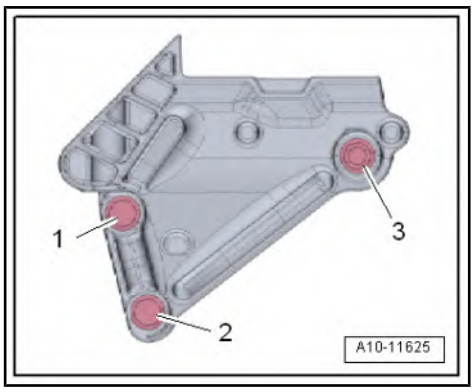
– Remove bottom toothed belt guard
⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149 .

– Remove top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .
– Remove engine mounts
⇒ “2.2 Removing and installing engine mount”, page 53 .
– Use the spindle - MP9-200/10 (10-222A/10)- for raising and lowering until all screws are accessible.

Note

Remove the screw -2- together with the engine support.

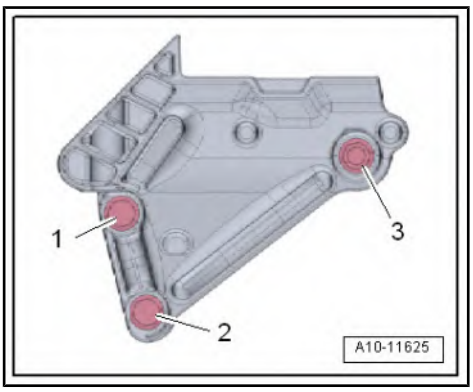
– Unscrew screws -1-, -2- and -3- and remove engine support bracket.



Installing

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

– Install the fixing screw -2- together with the engine support.



– Tighten the fixing screws in the sequence -1-, -2-, -3- by hand initially.
– Tighten screws in the specified sequence ⇒ page 53 .
– Install engine mount
⇒ “2.2 Removing and installing engine mount”, page 53 .
– Install top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .
– Install bottom toothed belt guard
⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149 .

1.8 Removing and installing the sealing flange on the belt pulley side

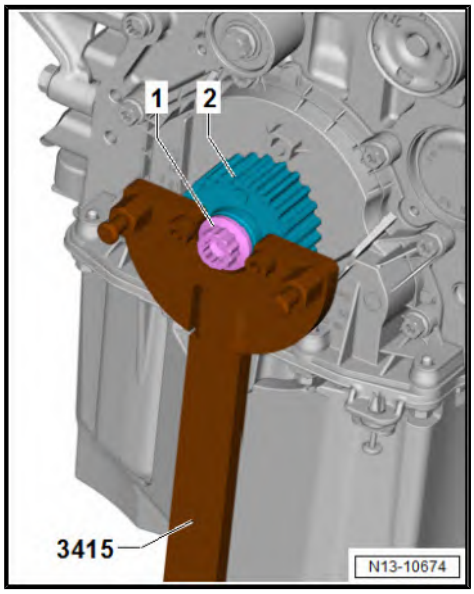
Special tools and workshop equipment required

- Counterholder - T30004 (3415)-
- Assembly device - T10053-
- Protective goggles and gloves
- Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Silicone sealant ⇒ ETKA - Electronic Catalogue of Original Parts

Removing

– Remove the front right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; Removing and installing the front wheelhouse liner .

– Remove the toothed belt from the camshaft
⇒ “2.5 Remove the toothed belt from the camshaft”, page 159 .
– Remove bottom toothed belt guard
⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149 .
– Remove the toothed belt from the remaining toothed belt wheels.
– Pull the timing belt up or push it as far as possible to avoid dirt and damage.
– Detach the screw -1- for crankshaft timing belt pulley -2-, and use the counterholder - T30004 (3415)- .
– Unscrew screw -1-, remove crankshaft timing belt pulley -2-.



Vehicles with one-part oil sump

– Removing the oil pan
⇒ “1.2 Removing and installing oil pan”, page 187 .

Vehicles with two-part oil sump

– Remove sump top part
⇒ “1.4 Removing and installing top part of the oil sump”, page 194 .

Continued for all vehicles

– Unscrew the remaining screws and carefully detach the sealing flange from the bonding.

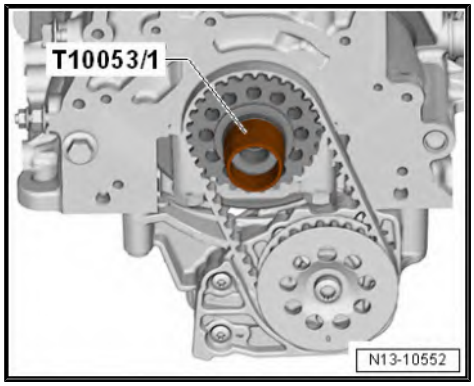
Installing

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

CAUTION

Wear protective gloves and goggles when working with gasket remover and degreasing agent!

– Remove residual sealant from the sealing surfaces on sealing flange, cylinder block and on the oil pan with chemical sealant remover.
– Degrease the sealing surfaces.
– Fit fitting sleeve -T10053/1- onto the crankshaft journal.



Note

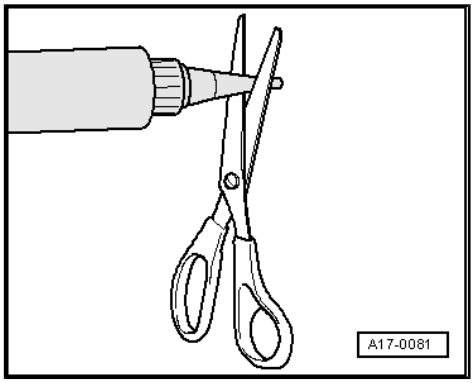
New sealing flange can be supplied with biting edge on the sealing surface to the sump or without them. If the biting edge is missing, apply a sealant strip.

Procedure for sealing flange without biting edge

Note

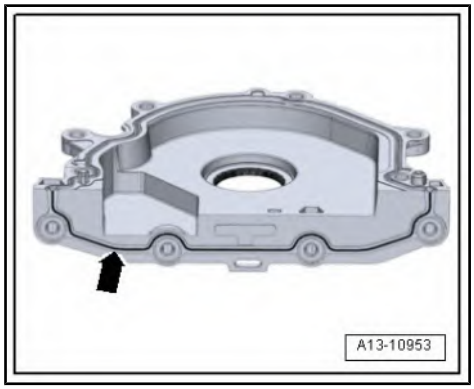
Pay attention to the use by date on sealant.

– Cut off nozzle tube at the front marking (∅ of nozzle approx. 2 mm).



– Apply sealant bead -arrow- onto the clean sealing surface of the sealing flange, as shown in the illustration.

• Thickness of sealant bead: 2-3 mm.



Note

♦ *The sealant bead must not be thicker than 3 mm otherwise excess sealant may get into the oil pan and clog the strainer in the oil suction pipe.*

♦ *After applying the sealant, the sealing flange must be installed within 5 minutes.*

Continued for all versions

– Slide new sealing flange over the guide sleeve.

• The fit pins will engage with the bores in the cylinder block during this process.

– Remove guide bushing.

– Screw in the screws of the sealing flange by hand up to the stop.

– Tighten the fixing screws of the sealing flange crosswise with the specified tightening torque and tightening order ⇒ page 68 .

Vehicles with one-part oil sump

– Installing the oil pan ⇒ “1.2 Removing and installing oil pan”, page 187 .

Vehicles with two-part oil sump

– Install sump top part ⇒ “1.4 Removing and installing top part of the oil sump”, page 194 .

Continuation for all vehicles

– install (set the timing) ⇒ page 153 .

– Install bottom toothed belt guard ⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149 .

Tightening torques - summaries of components

Note

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

♦ ⇒ Fig. ““Sealing flange on the belt pulley side - tightening torque and tightening order”“ , page 68

♦ ⇒ “2.2 Summary of components - toothed belt”, page 141

♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner

2 Cylinder block on gearbox side

⇒ “2.1 Summary of components - cylinder block on gearbox side”, page 79

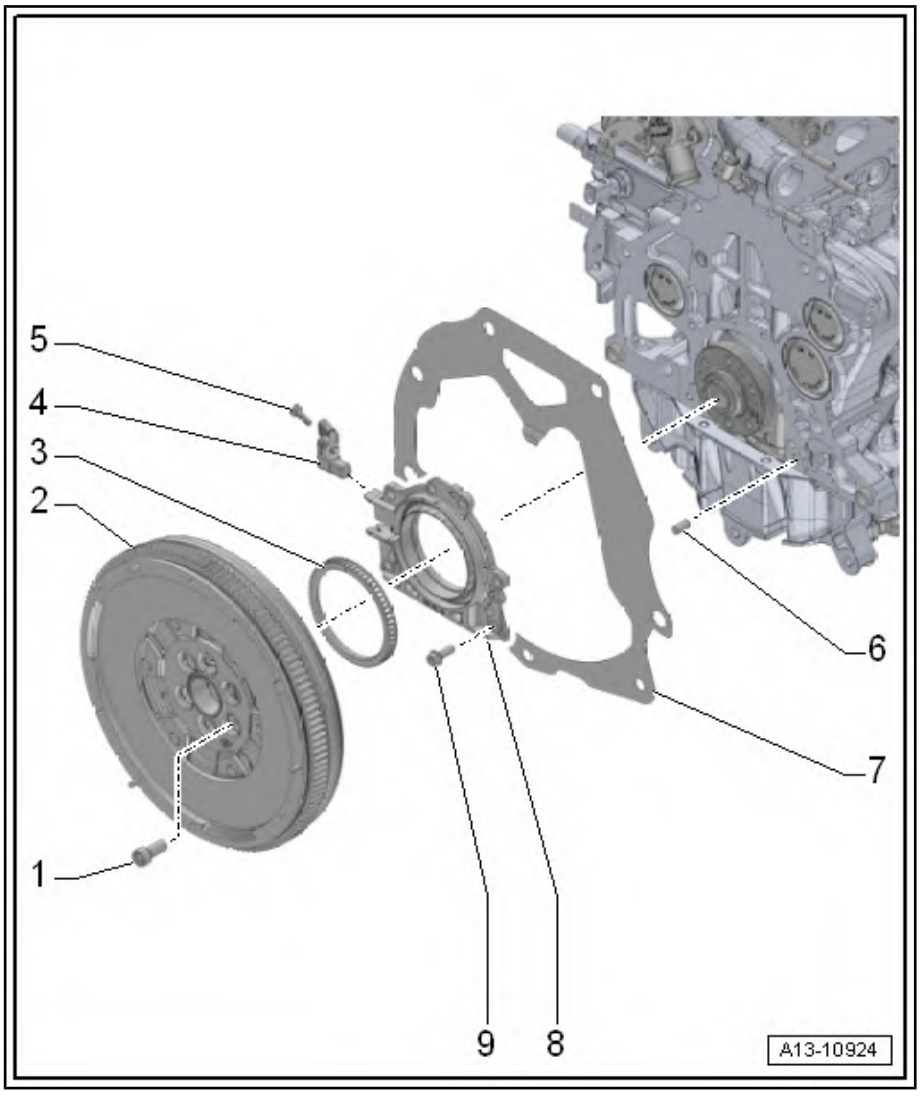
⇒ “2.2 Removing and installing flywheel”, page 80

⇒ “2.3 Removing and installing sealing flange on gearbox side”, page 81

2.1 Summary of components - cylinder block on gearbox side

Note

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



1 - Screw

- ❑ Replace after disassembly
- ❑ 60 Nm + 90°

2 - Flywheel

- ❑ Removing and installing ⇒ “2.2 Removing and installing flywheel”, page 80
- ❑ can be installed only in one position
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

3 - Rotor

- ❑ Engine speed sender - G28-
- ❑ Removing and installing ⇒ “2.3 Removing and installing sealing flange on gearbox side”, page 81

4 - Engine speed transmitter - G28-

- ❑ Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

5 - Screw

- ❑ 4.5 Nm

6 - Fit pin

- ❑ 2 pieces

7 - Intermediate plate

- ❑ do not damage/bend during assembly work
- ❑ installing ⇒ page 80

8 - Sealing flange on the gearbox side

- ❑ with sealing ring
- ❑ replace after removal ⇒ “2.3 Removing and installing sealing flange on gearbox side”, page 81

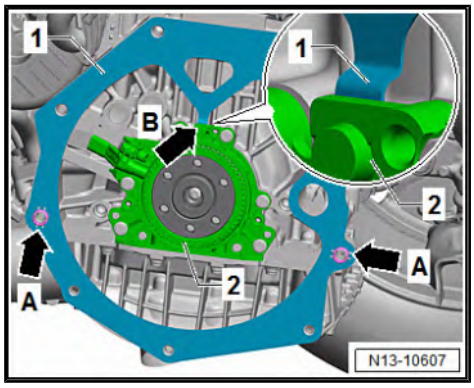
9 - Screw

- ❑ Tightening torque and tightening order ⇒ page 80

Installing intermediate plate

– Hook intermediate plate -1- onto the sealing flange -2- arrow -B-.

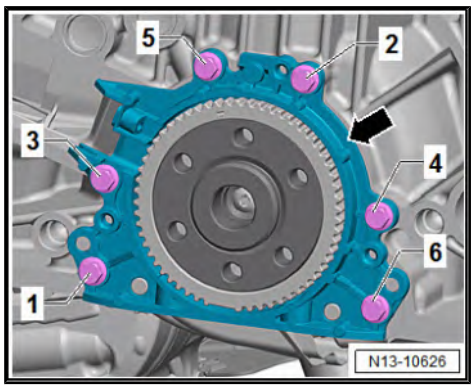
– Slide the intermediate plate onto the dowel sleeves arrows -A-



Sealing flange on the gearbox side - tightening torque and tightening order

– Tighten the screws in stages in the sequence -1- to -6- as shown:

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



2.2 Removing and installing flywheel

Special tools and workshop equipment required

- ♦ Rig tool - MP1-223 (3067)-

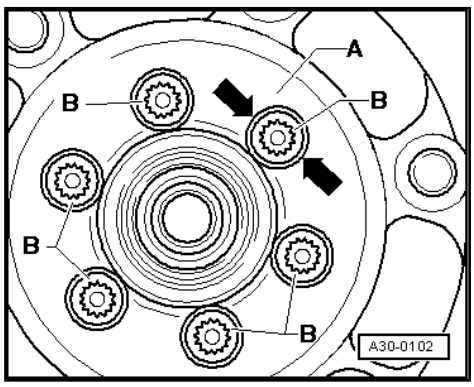
Removing

- Gearbox removed.

NOTICE

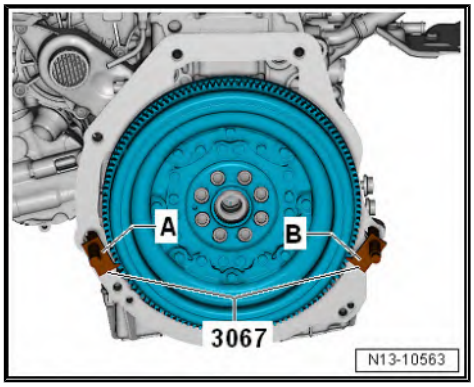
Risk of destruction of the flywheel.

- ♦ **Do not unscrew screws -B- using a pneumatic power wrench or impact wrench - unscrew by hand.**
- ♦ **When unscrewing screws, ensure that no screw head is present on the flywheel.**
- ♦ **Rotate flywheel -A- so that the screws -B- are positioned in the centre of the bores -arrows-.**



– Insert counterholder - MP1-223 (3067)- into the bore on the cylinder block Pos. -B-, loosen flywheel screws.

– Unscrew screws and remove flywheel.



Installing

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

Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Insert counterholder - MP1-223 (3067)- into the bore on the cylinder block Pos. -A-.

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 - cylinder block on gearbox side”, page 79

2.3 Removing and installing sealing flange on gearbox side

Special tools and workshop equipment required

♦ Tool insert SW 24 , e.g. -V.A.G 1332/11-

♦ Assembly device - T10134-

♦ Depth gauges , e.g. -VAS 6082-

♦ 3x screw M6x35

♦ 2x screw M7x35

Press out sealing flange with rotor

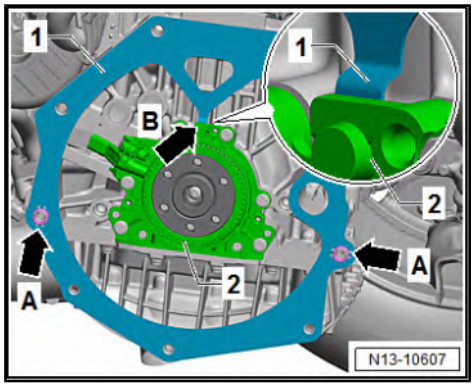
• Gearbox removed.

– Remove the flywheel
⇒ “2.2 Removing and installing flywheel”, page 80 .

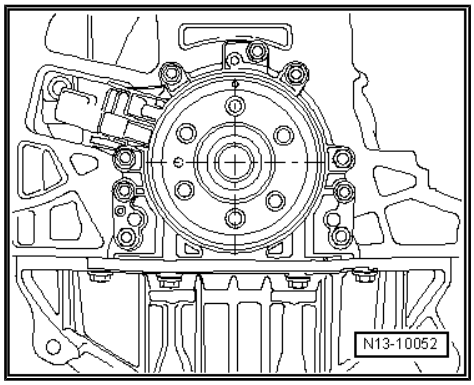
Note

For clearer illustration, the following work sequences are shown with the engine removed.

– Remove intermediate plate -1- from the dowel sleeves arrows -A-.
– Move intermediate plate -1- upwards.
– At the same time, pull the retaining lug arrow -B- of the intermediate plate -1- out of the recess behind the sealing flange.



– Turn the crankshaft at the screw for toothed belt pulley until the crankshaft is positioned on “TDC” as shown in the illustration.



Vehicles with one-part oil sump

– Removing the oil pan
⇒ “1.2 Removing and installing oil pan”, page 187 .

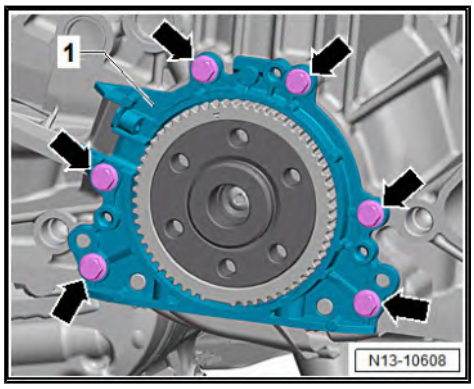
Vehicles with two-part oil sump

– Remove sump top part
⇒ “1.4 Removing and installing top part of the oil sump”, page 194 .

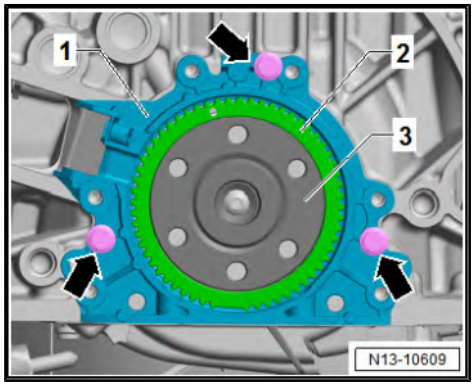
Continued for all vehicles

– Remove engine speed transmitter - G28-
⇒ “1.5 Removing and installing the engine speed transmitter G28 ”, page 704 .

– Unscrew screws -arrows- on sealing flange -1-.



– To press out, screw 3 screws M6x35 into the sealing flange -1- -arrows-.



Note

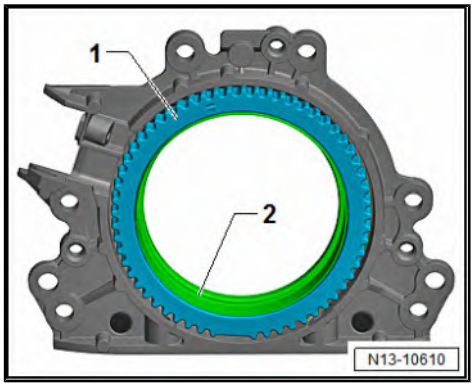
The sealing flange -1- is pressed together with the sensor rotor -2- from the crankshaft -3-.

– Screw the screws into the ceiling flange alternately by a maximum of $^{1}/_{2}$ turn.
– Remove sealing flange -1- with rotor -2-.

Press in sealing flange with rotor

Note

- *The sealing flange with PTFE sealing ring is provided with sealing lip supporting ring -2-. This support ring serves as a fitting sleeve and must not be removed prior to installation.*
- *Do not separate or turn the sealing flange and rotor -1- after removing them from the spare part package.*
- *The rotor -1- is brought to its installation position on the assembly tool - T10134- by a locating pin* ⇒ page 83 .
- *Sealing flange and sealing ring form one unit and must only be renewed together with the transmitter wheel.*
- *The assembly tool - T10134- is brought to its installation position to the crankshaft by a guide pin, which is inserted into a hole in the crankshaft* ⇒ page 83 .



Structure of the assembly tool - T10134-

A - Clamping surface

B - Nut

C - Assembly housing

D - Locating pin

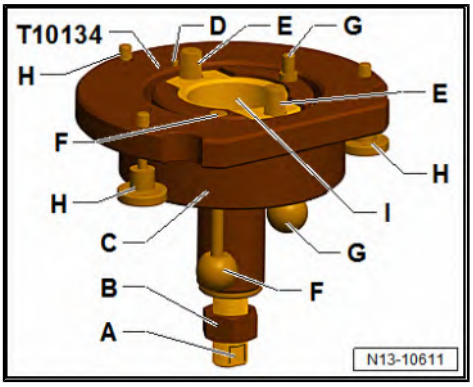
E - Allan screws (2 pieces)

F - Guide pin for petrol engines (red knob)

G - Guide pin for diesel engines (black knob)

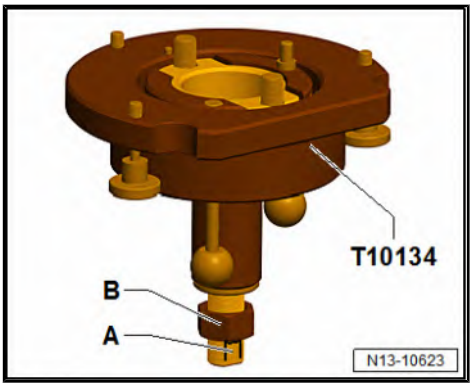
H - Knurled screws (3 pieces)

I - Inner part



Mount sealing flange with rotor on assembly tool - T10134-

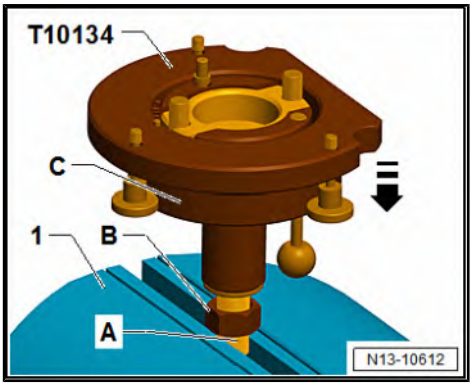
– Untwist nut -B- until just before it touches the clamping surface -A- of the threaded spindle.



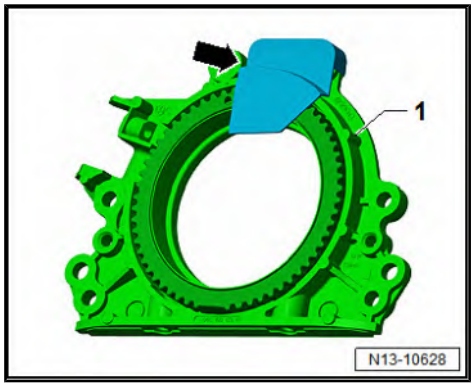
– Clamp assembly tool - T10134- on clamping surface -A- of the threaded spindle in a vice -1-.

– Press assembly housing -C- downwards until it lies on hexagon nut -B-.

• The inner part of the assembly tool and the assembly cup must be flush.



– Remove the securing clip -arrow- from the new sealing flange -1-.

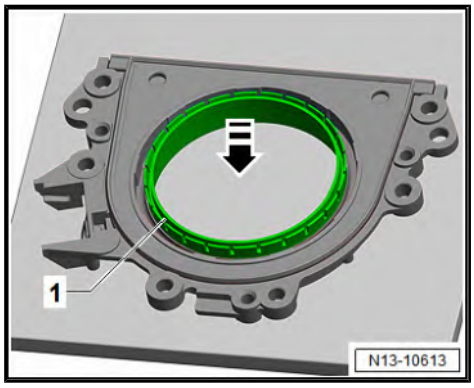


Note

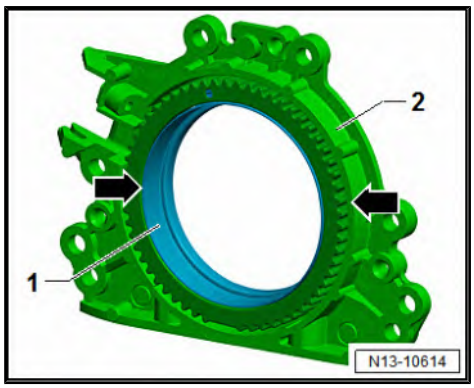
Do not twist rotor or take it out of the sealing flange.

– Place sealing flange with front side facing down on a clean level surface.

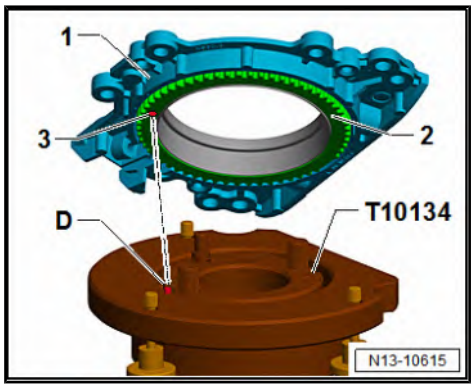
– Press down sealing lip supporting ring -1- in -direction of arrow-, until it rests on the level surface.



• The upper edge of the sealing lip supporting ring -1- and front edge of the sealing flange -2- must align -arrows-.



– Lay the sealing flange -1- with the front side on the assembly tool - T10134- so that the positioning pin -D- engages into the hole -3- of the rotor -2-.



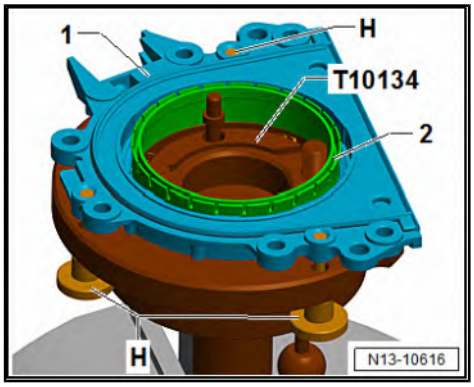
- Sealing flange must lie straight on the assembly tool.
- Only 2 of the 3 knurled screws -H- can be screwed in at a time

– Screw in the knurled screws -H- on the sealing flange -1-.

– Press the sealing flange -1- and sealing lip supporting ring -2- by tightening onto the surface of the assembly tool - T10134- .

– This prevents the locating pin from slipping out of the rotor hole.

– When installing sealing flange, ensure that transmitter wheel remains fixed in assembly tool.



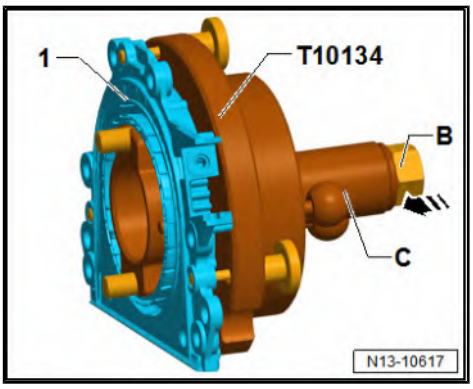
Attach the assembly tool - T10134- with the sealing flange -1- to the crankshaft flange:

- The crankshaft flange must be free of grease and oil.
- The engine is at “TDC”.

– Screw nut -B- on until it reaches end of threaded spindle.

– Press the threaded spindle of the assembly tool - T10134- in -direction of arrow- until the nut -B- rests against the assembly cup -C-.

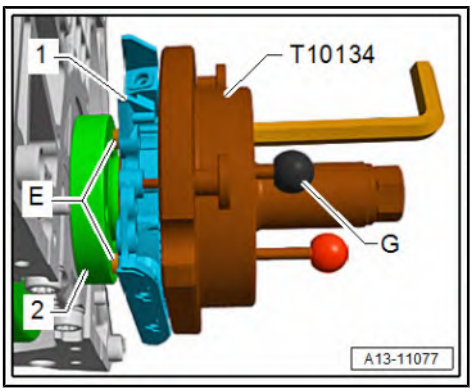
– Align flat side of assembly housing to the cylinder block sealing surface on the oil sump side.



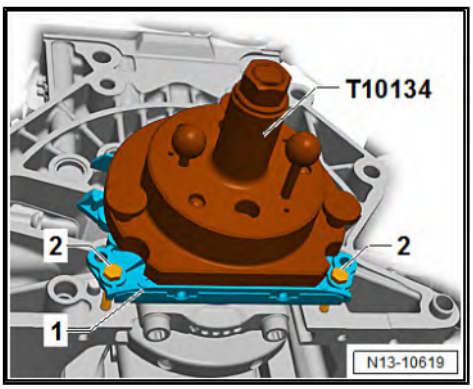
– Attach the assembly tool - T10134- with the sealing flange -1- to the crankshaft flange -2-.

– To do so, screw in the hexagon socket head bolts -E- by approximately 5 threads on the crankshaft flange with an Allen key.

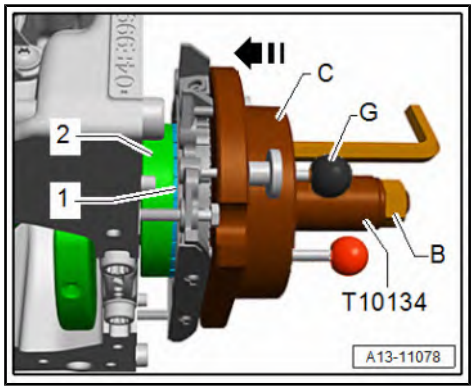
– Slide the guide pin for diesel engines (black knob) -G- into the crankshaft flange.



– Screw in 2 screws M6x35 Pos. -2- to guide the sealing flange -1- into the cylinder block.



Bolt assembly tool - T10134- onto crankshaft flange



– Push the assembly cup -C- by hand in the -direction of the arrow- until the sealing lip supporting ring -1- rests on the crankshaft flange -2-.

– Check whether the guide pin for diesel engines (black knob) -G- is correctly seated in the hole on the crankshaft. This gives the rotor its final installation position.

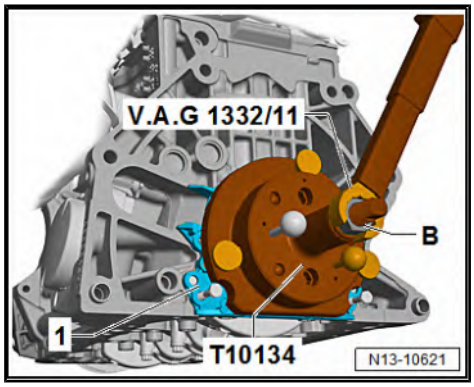
Note

The guide bolt for petrol engines (red knob) must not be fitted into the threaded hole of the crankshaft.

– Tighten the two hexagon socket head bolts of the assembly tool hand-tight.

– Screw nut -B- onto threaded spindle by hand until it lies against assembly housing -C-.

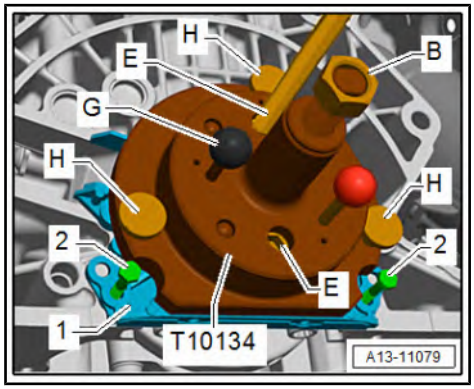
Press rotor onto the crankshaft flange using the assembly tool - T10134- :



– Tighten nut -B- of the assembly tool - T10134- to 35 Nm.

• After nut is tightened to 35 Nm, a small air gap must still be present between cylinder block and sealing flange -1-.

Checking transmitter wheel installation position on crankshaft



– Screw nut -B- on until it reaches end of threaded spindle.

– Unscrew both bolts -2- from the cylinder block.

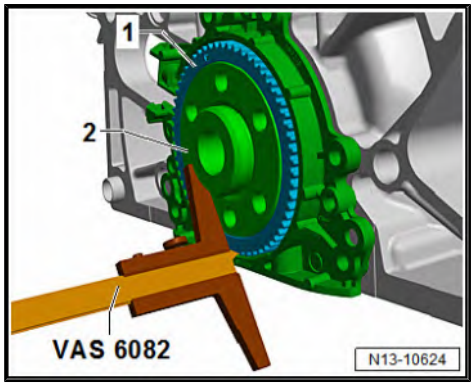
– Pull the guide bolt for diesel engines (black knob) -G- out of the crankshaft flange.

– Remove knurled screws -H- from the sealing flange -1-.

– Detach assembly tool - T10134- from the crankshaft flange - to do so, unscrew the hexagon socket head bolts -E- from the crankshaft flange.

– Remove sealing lip support ring.

– Mount depth gauge - VAS 6082- onto the crankshaft flange -2-.

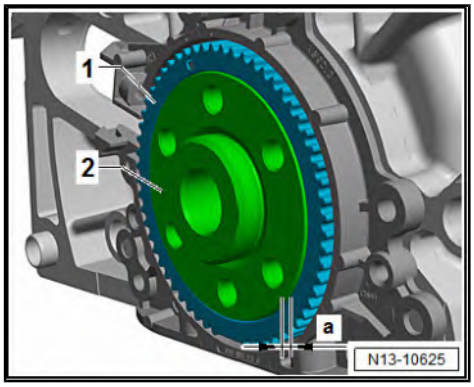


– Measure distance -a- between crankshaft flange -2- and rotor -1-.

• Set value: Dimension -a- = 0.5 mm.

– If the specified value is too small, press rotor down ⇒ page 87 .

– When the specified value has been reached, perform the remaining assembly ⇒ page 88 .



Re-pressing transmitter wheel

– Attach the assembly tool - T10134- to the crankshaft flange.

– Make sure the positioning pin of the assembly tool - T10134- engages in the bore of the rotor.

– Tighten the hexagon socket head bolts -E- hand-tight.

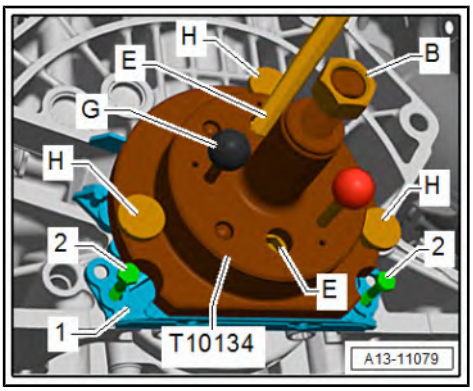
– Press the assembly tool - T10134- against the sealing flange -1- by hand.

– Screw nut -B- onto threaded spindle by hand until it lies against the assembly housing - T10134- .

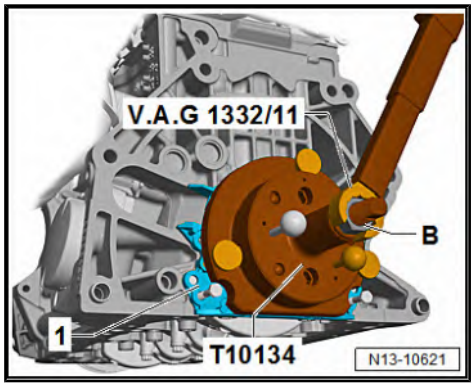
– Slide the guide pin for diesel engines (black knob) -G- into the crankshaft flange.

– Screw the knurled screws -H- into the flange -1-.

– Screw 2 screws M6x35 -2- to guide the sealing flange into the cylinder block.



– Tighten nut -B- of the assembly tool - T10134- to 40 Nm.
– Checking transmitter wheel installation position on crankshaft again ⇒ page 86 .
– If the setpoint value is too small, tighten the nuts on the assembly tool - T10134- to 45 Nm.
– Checking transmitter wheel installation position on crankshaft again ⇒ page 86 .



Assembling

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

Vehicles with one-part oil sump

– Installing the oil pan
⇒ “1.2 Removing and installing oil pan”, page 187 .

Vehicles with two-part oil sump

– Install sump top part
⇒ “1.4 Removing and installing top part of the oil sump”, page 194 .

Continuation for all vehicles

– Installing intermediate plate ⇒ page 80 .
– Install the flywheel
⇒ “2.2 Removing and installing flywheel”, page 80 .

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 - cylinder block on gearbox side”, page 79
- ⇒ “1.1 Assembly overview - pan/oil pump”, page 182
- Sealing flange ⇒ page 80
- ⇒ “1.1 Summary of components - Glow plug system”, page 700
- ⇒ Rep. gr. 34 ; Removing and installing gearbox; Tightening torques for gearbox

3 Crankshaft

⇒ “3.1 Summary of components - crankshaft”, page 89

⇒ “3.2 Replace the needle bearing in the crankshaft”, page 90

⇒ “3.3 Measuring axial play of crankshaft”, page 91

3.1 Summary of components - crankshaft

NOTICE

On engines with balancing shafts, the crankshaft must not be detached.

The correct position of the crankshaft to the balancing shaft must not be set using workshop equipment.

Note

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

1 - Cylinder block

2 - Bearing shell

- ❑ for cylinder block with lubricating groove
- ❑ replace used bearing shells

3 - Pulley

- ❑ for oil pump drive
- ❑ not available individually as a spare part

4 - Bearing shell

- ❑ for bearing cap without lubricating groove
- ❑ replace used bearing shells

5 - Screw

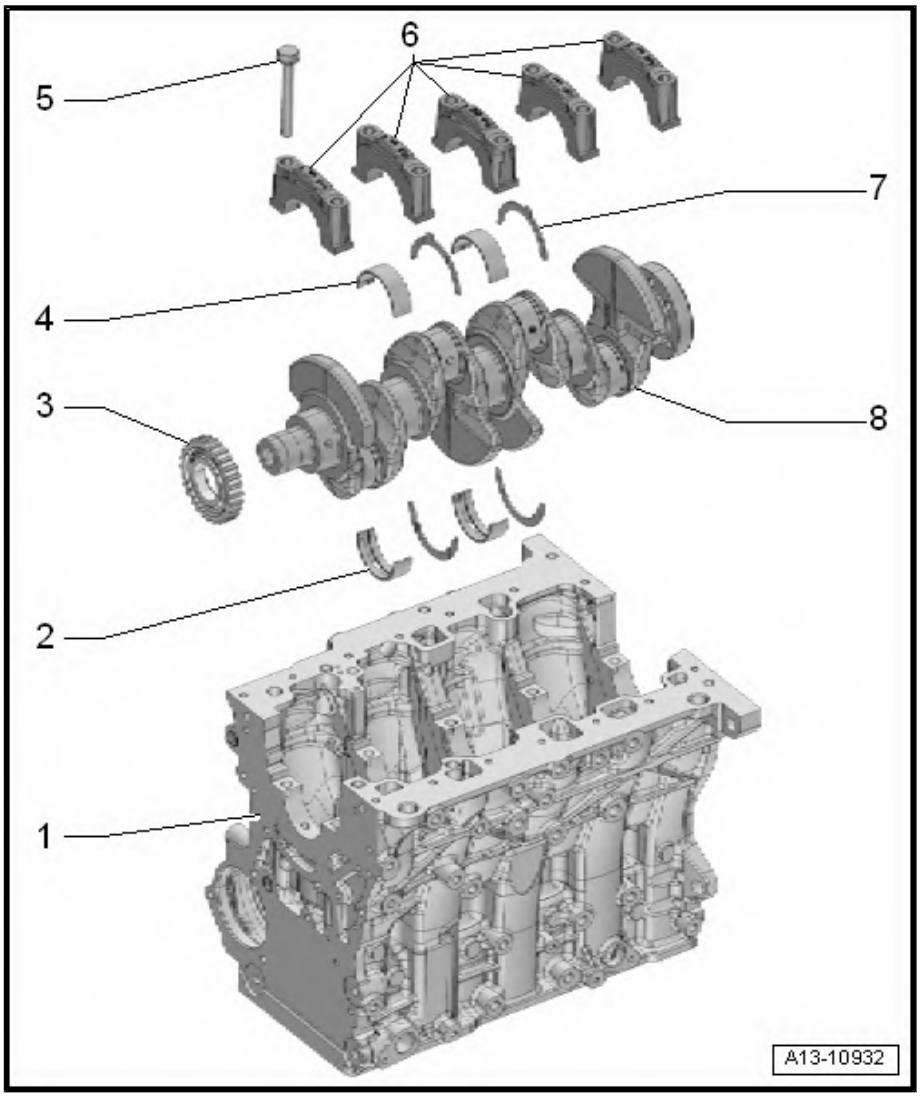
- ❑ Replace after disassembly
- ❑ 65 Nm + 90°

6 - Bearing caps

- ❑ Bearing cap 1: belt pulley side
- ❑ bearing cap 3 with recesses for thrust washers
- ❑ Installation position: retaining lugs of the bearing shells in the cylinder block/bearing cap must be on top of one another

7 - Thrust washer

- ❑ Replace after disassembly
- ❑ for bearing 3



- ❑ different version for cylinder block and bearing cap
- ❑ pay attention to locating element

8 - Crankshaft

- ❑ for vehicles with manual gearbox, no needle bearing must be installed; remove needle bearing if necessary ⇒ “3.2 Replace the needle bearing in the crankshaft”, page 90
- ❑ for vehicles with dual clutch gearbox, needle bearing must be installed in the crankshaft; install needle bearing if necessary ⇒ “3.2 Replace the needle bearing in the crankshaft”, page 90
- ❑ Measure axial play ⇒ “3.3 Measuring axial play of crankshaft”, page 91
- ❑ Crankshaft bearing pin: ∅ 54.00 mm
- ❑ Rod bearing journals (1.6 l engine): ∅ 47.80 mm
- ❑ Rod bearing journals (2.0 l engine): ∅ 50.90 mm
- ❑ Remove and install removed engine, secure engine to engine and gearbox motor ⇒ “1.2 Attach engine attached to engine and gearbox mount”, page 38

3.2 Replace the needle bearing in the crankshaft

Special tools and workshop equipment required

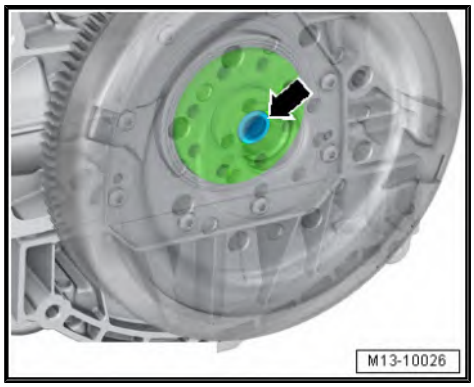
- ♦ Interior extractor , e.g. -Kukko 21/2- or -VAS 251 605-
- ♦ Countersupport , e.g. -Kukko 22/1- or -VAS 251 621-
- ♦ Centring mandrel - T30029 (3176)-

Note

- ♦ *For vehicles with manual gearbox, no needle bearing must be installed.*
- ♦ *For vehicles with dual clutch gearbox, needle bearing must be installed in the crankshaft; ⇒ ETKA - Electronic Catalogue of Original Parts .*

Condition

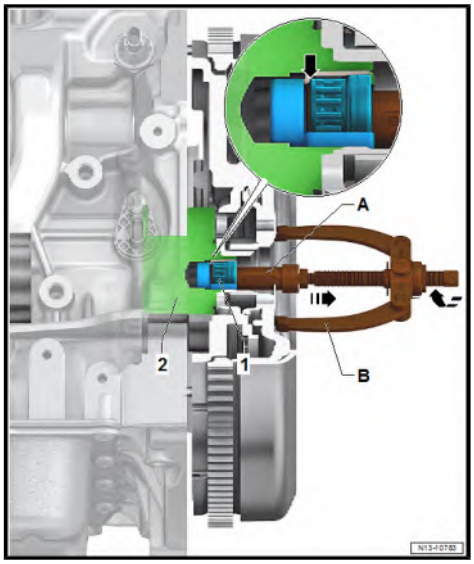
- Gearbox removed.
- If the engine and transmission were separated, always replace the needle bearing -arrow-.
- The leading edges of the internal extractor must not have broken out.



Removing

– Attach interior extractor to the needle bearing edge -arrow-.

– Pull out the needle bearing -1- with internal extractor -A- e.g. -Kukko 21/2- or -VAS 251 605- and countersupport -B-, e.g. -Kukko 22/1- or -VAS 251 621- from the crankshaft -2-.



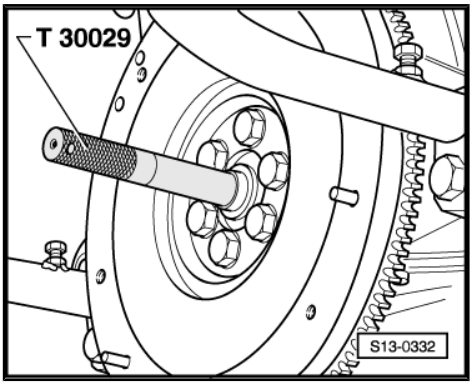
Installation

Note

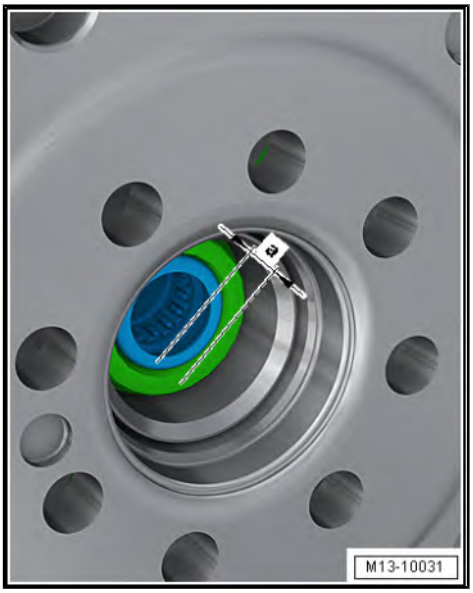
The marked side of the needle bearing must be legible when installed. Drive bearings closed on one side with the closed side in the direction of the crankshaft.

– Clean the bearing pedestal in the crankshaft and apply a thin coat of grease.

– Drive in the needle bearing using the centring pin - T30029 (3176)- .



Assembly depth: dimension -a- = 2 mm.



Note

If the needle bearing is accidentally driven in too deep it will need replacing as it is damaged when it is pulled back out.

3.3 Measuring axial play of crankshaft

Special tools and workshop equipment required

- Universal dial gauge bracket - MP3-447 (VW 387)-
- Dial gauge , e.g. -VAS 6079-

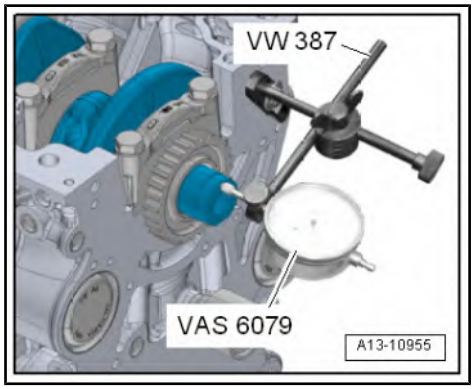
Work procedure

– Secure the dial gauge - VAS 6079- with universal dial gauge bracket - MP3-447 (VW 387)- to the cylinder block, as shown in the illustration, and against the crankshaft.

– Press the crankshaft by hand against the dial gauge.

– Set the dial gauge to “0”.

– Press the crankshaft off the dial gauge and read the measured value.



Axial clearance:

- new part: 0.07 … 0.17 mm
- Wear limit: 0,37 mm

4 Pistons and conrods

⇒ “4.1 Assembly overview - piston and conrod”, page 93

⇒ “4.2 Removing and installing the piston”, page 96

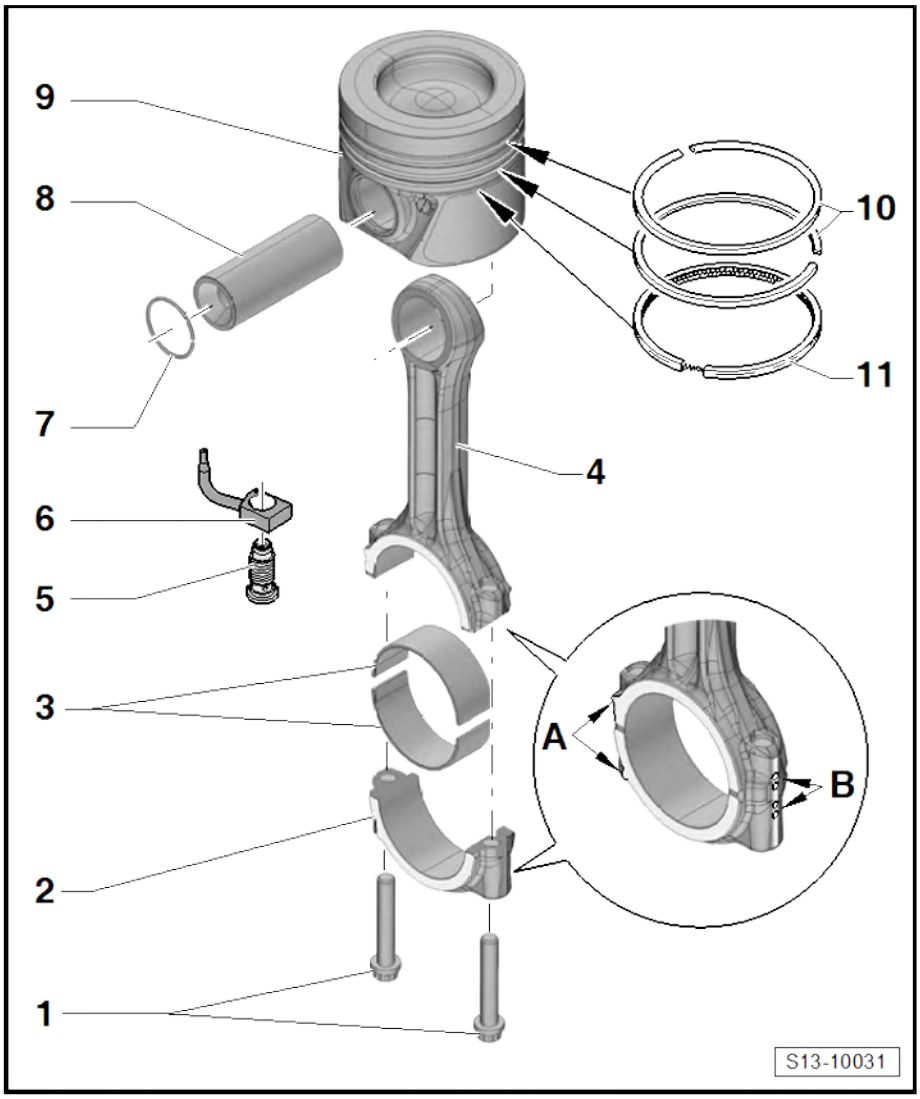
⇒ “4.3 Measure piston projection in TDC”, page 97

⇒ “4.4 Check piston and cylinder bore”, page 98

4.1 Assembly overview - piston and conrod

Note

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



1 - Screw

- ❑ Replace after disassembly
- ❑ Oil threads and contact surface
- ❑ 30 Nm + 90°

2 - Connecting rod bearing cap

- ❑ Check fitting position
- ❑ as a result of the conrods separated in the cracking process, the conrod bearing cap fits only in one position and only to the relevant conrod
- ❑ Mark assignment to the cylinder in colour -B-
- ❑ Installation position: markings -A- point toward belt pulley side

3 - Bearing shells

- ❑ Fitting position ⇒ page 95
- ❑ replace used bearing shells
- ❑ Observe version: top bearing shell (towards the piston) must be made from a long lasting material. Identifying new bearing shells: Black marking on working surface near the separation point
- ❑ check correct fitting

4 - Connecting rod

- ❑ Renew as set only.
- ❑ Mark assignment to the conrod bearing cap and to the cylinder in colour -B-
- ❑ Installation position: markings -A- towards belt pulley side
- ❑ with cracked conrod bearing cap
- ❑ separate new conrod ⇒ , page 95

- ❑ Axial play wear limit: 0.37 mm

5 - Pressure relief valve

- ❑ replace without sealant
- ❑ Removing and installing ⇒ page 96
- ❑ 27 Nm

6 - Oil spray jet

- ❑ for piston cooling
- ❑ Removing and installing ⇒ page 96

7 - Circlip

- ❑ 2 pieces
- ❑ Replace after disassembly

8 - Piston pin

- ❑ Removing and installing ⇒ “4.2 Removing and installing the piston”, page 96

9 - Piston

- ❑ with combustion chamber
- ❑ replace piston if there is any sign of crack formation on the piston crown or piston body
- ❑ Mark the installation position and the assignment to cylinder ⇒ page 95
- ❑ Removing and installing ⇒ “4.2 Removing and installing the piston”, page 96
- ❑ Check piston and cylinder bore ⇒ “4.4 Check piston and cylinder bore”, page 98
- ❑ Measure piston projection in “TDC” ⇒ “4.3 Measure piston projection in TDC”, page 97
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

10 - Compression rings

- ❑ Measure end gap ⇒ page 99
- ❑ Measure vertical gap ⇒ page 100
- ❑ use commercially available piston ring pliers for removing and installing
- ❑ Installation position: Identification “TOP” or labelled side towards piston crown
- ❑ Offset gaps by 120°

11 - Oil scraper ring

- ❑ Measure end gap ⇒ page 99
- ❑ Measure vertical gap ⇒ page 100
- ❑ use piston ring pliers for removing and installing
- ❑ Installation position: Identification “TOP” or labelled side towards piston crown
- ❑ Offset joint 120° to bottom compression ring

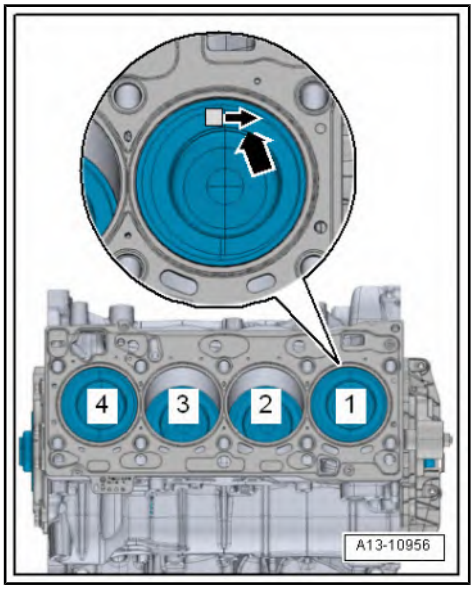
Fitting position of piston and assignment of piston to cylinder

NOTICE

Risk of damaging the piston crown.

- **For re-installation, mark the assignment in colour on the piston crown of cylinders that have already been used. Do not mark piston crown not using centre punch, scratch, nick or similar.**

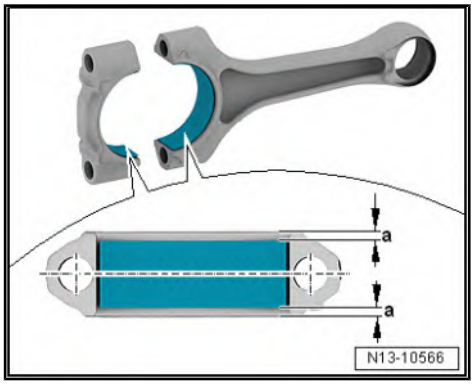
- Arrow on the piston crown to the belt pulley side -arrow-.



Installation position of the bearing shells in the conrods

– Insert bearing shells centrally in the conrod and conrod bearing cap.

- Dimension -a- = 2.5 mm.



Separating new connecting rod

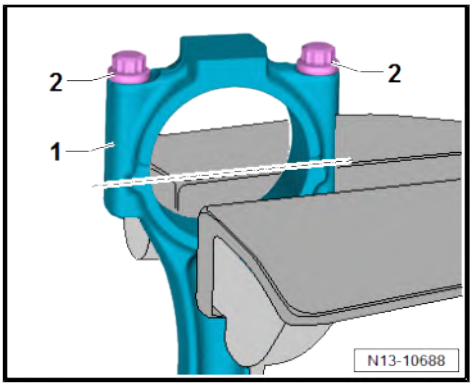
It can happen that on new conrods, the provided separation point is not completely cracked. If the connecting rod bearing cap cannot be removed by hand, then proceed as follows:

– Slightly clamp the conrod, as shown in the illustration, in a vice with aluminium protective jaws.

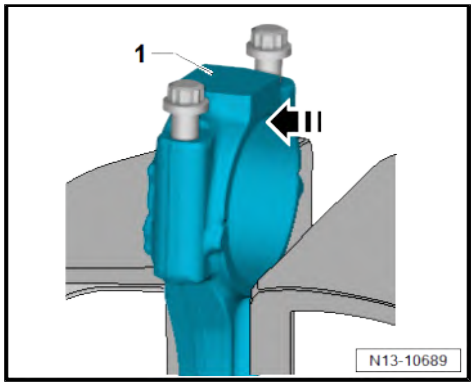
Note

- *Only tension the conrod slightly in order to avoid damage on the conrod.*
- *The conrod is clamped below the broken line.*

– Unscrew both screws -2- by approx. 5 turns.



– Carefully knock against the conrod bearing cap with a plastic hammer in -direction of arrow- in order to loosen it.

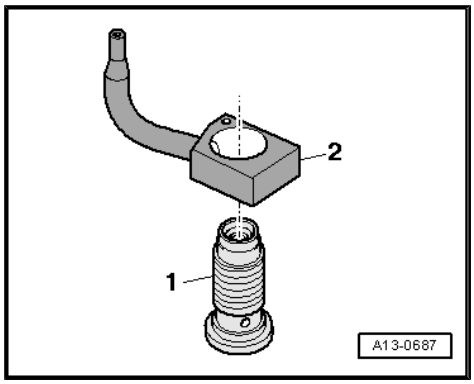


Oil spray nozzle and pressure relief valve

1 - Screw with pressure relief valve, 27 Nm

2 - Oil spray nozzle (for cooling piston)

- Fitting position: Align the guide edge of the oil injection nozzle to the area of the cylinder block being worked on.



NOTICE

Risk of damaging the oil injection nozzles.

- **Do not bend oil injection nozzles.**
- **Check oil injection nozzles after reinstalling the pistons.**
- **Replace the oil injection nozzles if they are bent.**

4.2 Removing and installing the piston

Special tools and workshop equipment required

- Drift - VW 222A-
- Piston ring tensioning strap

Removing

– Remove cylinder head
⇒ “1.3 Removing and installing cylinder head”, page 106 .

– Remove oil pump
⇒ “1.5 Removing and installing oil pump”, page 198 .

– For re-installation, mark the installation position and assignment of the conrod bearing cap to the cylinder head and to the conrod Pos. -2-
⇒ “4.1 Assembly overview - piston and conrod”, page 93 .

– Unscrew the conrod bearing cap.

– Pull out the piston with conrod upwards.

Note

In case of tightness of the piston pin, heat piston to approximately 60 °C.

– Remove the circlip from the bore of the piston pin.

– Drive off piston pin with a drift - VW 222A- .

Installing

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

Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Oil the contact surfaces of the bearing shells.

– Install piston with piston ring tensioning strap.

Fitting position:

- Piston ⇒ page 95 .
- Bearing shells in the conrods ⇒ page 95 .

– Install the conrod bearing cap according to marking.

– Install oil pump
⇒ “1.5 Removing and installing oil pump”, page 198 .

– Install cylinder head
⇒ “1.3 Removing and installing cylinder head”, page 106 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “4.1 Assembly overview - piston and conrod”, page 93

4.3 Measure piston projection in TDC

Note

♦ *When installation a new piston or engine part, you must check the piston protrusion in the “TDC”.*

♦ *If different values are measured from projection measurement of the pistons, the highest value applies for the cylinder head seal assignment.*

♦ *Depending on the piston projection fit the relevant cylinder head seal in accordance with the table below:*

Special tools and workshop equipment required

♦ Dial gauge - MP3-404/7 (VW382/7)-

♦ Gauge block plate - MP3-405/17 (VW385/17)-

♦ Dial gauge - VAS 6079-

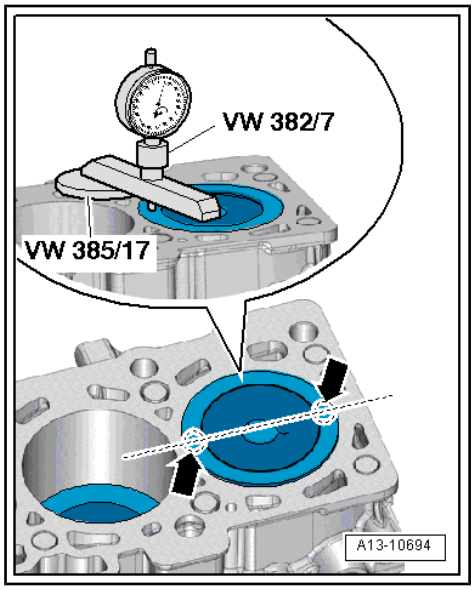
Test sequence

– Gauge - VAS 6079- with measuring gauge bracket - MP3-404/7 (VW382/7)- and end measuring plate - MP3-405/17 (VW385/17)- attach to cylinder block as shown in the picture

– Measure the supernatant on each piston at the two locations indicated by -arrows-. Measure in the longitudinal direction of the engine at the rear and at the front of the piston.

– For piston protrusion, the corresponding cylinder head gasket must be installed according to the following table:

Piston projection over cylinder block top side mm	Identification Holes
0.91 … 1.00	1
1.01 … 1.10	2
1.11 … 1.20	3

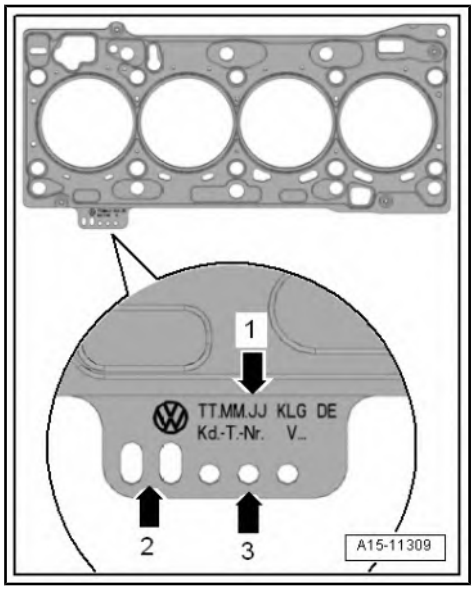


Identification of the cylinder head gasket

1 - Part number

2 - Ignore

3 - Holes



Note

If different values are measured during the projection measurement of the piston, the greatest dimension applies for the seal assignment.

4.4 Check piston and cylinder bore

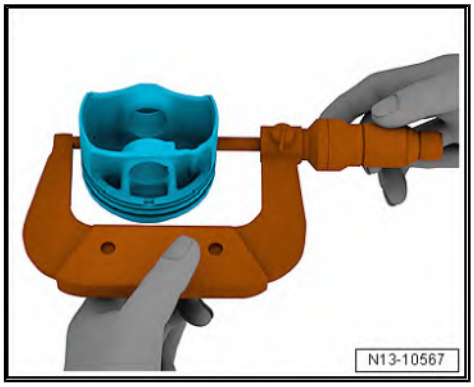
Inspecting piston

Special tools and workshop equipment required

♦ External micrometer

– Using an external micrometer, measure 75-100 mm at approx. 15mm from the lower edge of skirt and 90° to the piston pin axis.

• Maximum deviation from specified dimension: 0.04 mm.



Note

♦ *Look for wear of the piston skirt coating and for carbon deposits in general.*

♦ *Replace the piston if there is any sign of crack formation on the piston skirt.*

Ø piston mm		
Nominal dimension	1.6 l	79.42 1)
	2.0 ltr.	80.92 1)
• 1) Dimensions with coating (thickness 0.02 mm). The coating wears off.		

Measure cylinder bore

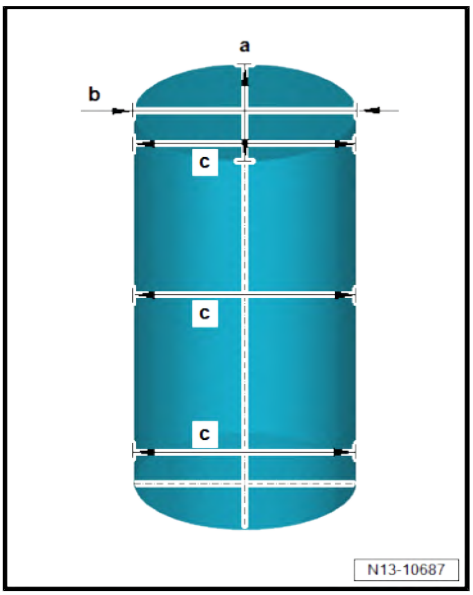
Special tools and workshop equipment required

♦ Cylinder gauge

– Measure cylinder at 3 points crosswise in transverse direction -a- and lengthwise -b-.

• Maximum deviation from specified dimension: 0.10 mm.

– Check cylinder bore for wear of the honing surface, scratches and other abnormalities.

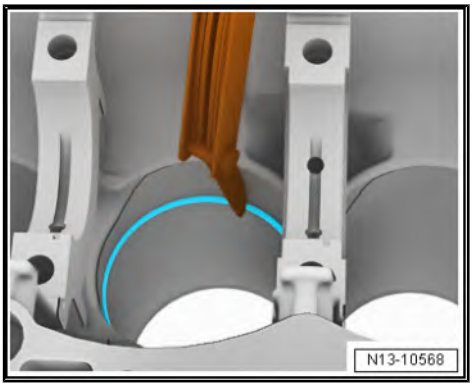


Ø cylinder mm		
Nominal dimension	1.6 l	79.5
	2.0 ltr.	81.0

Note

Cylinder bores must not be measured when cylinder block is mounted on engine and gearbox support - VAS 6095- , as measurements may be incorrect.

Measure piston ring end gap



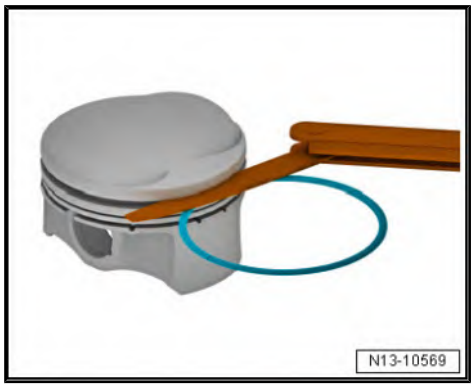
Special tools and workshop equipment required

♦ Feeler gauge

– Push the piston ring into the bottom cylinder opening at right angles to the cylinder wall from above to about 15 mm from the cylinder edge. To insert, use a piston without piston ring.

Piston ring	new mm	Wear limit mm
1st compression ring	0.30 … 0.40	0.55
2nd compression ring	0.20 … 0.45	0.95
Oil scraper ring	0.25 … 0.50	0.75

Measure piston ring vertical gap



Special tools and workshop equipment required

♦ Feeler gauge

– Clean before inspecting the annular grooves of the piston.

Piston ring	new mm	Wear limit mm
1. Compression ring	0.06 … 0.09	0.08
2. Compression ring	0.05 … 0.08	0.08
Oil scraper ring	0.03 … 0.06	0.08

15 – Cylinder head, valve gear

1 Cylinder head

⇒ “1.1 Summary of components - cylinder head”, page 101

⇒ “1.2 Assembly overview - cylinder head cover”, page 104

⇒ “1.3 Removing and installing cylinder head”, page 106

⇒ “1.4 Removing and installing cylinder head cover”, page 124

⇒ “1.5 Removing and installing gasket rings for injection units”, page 126

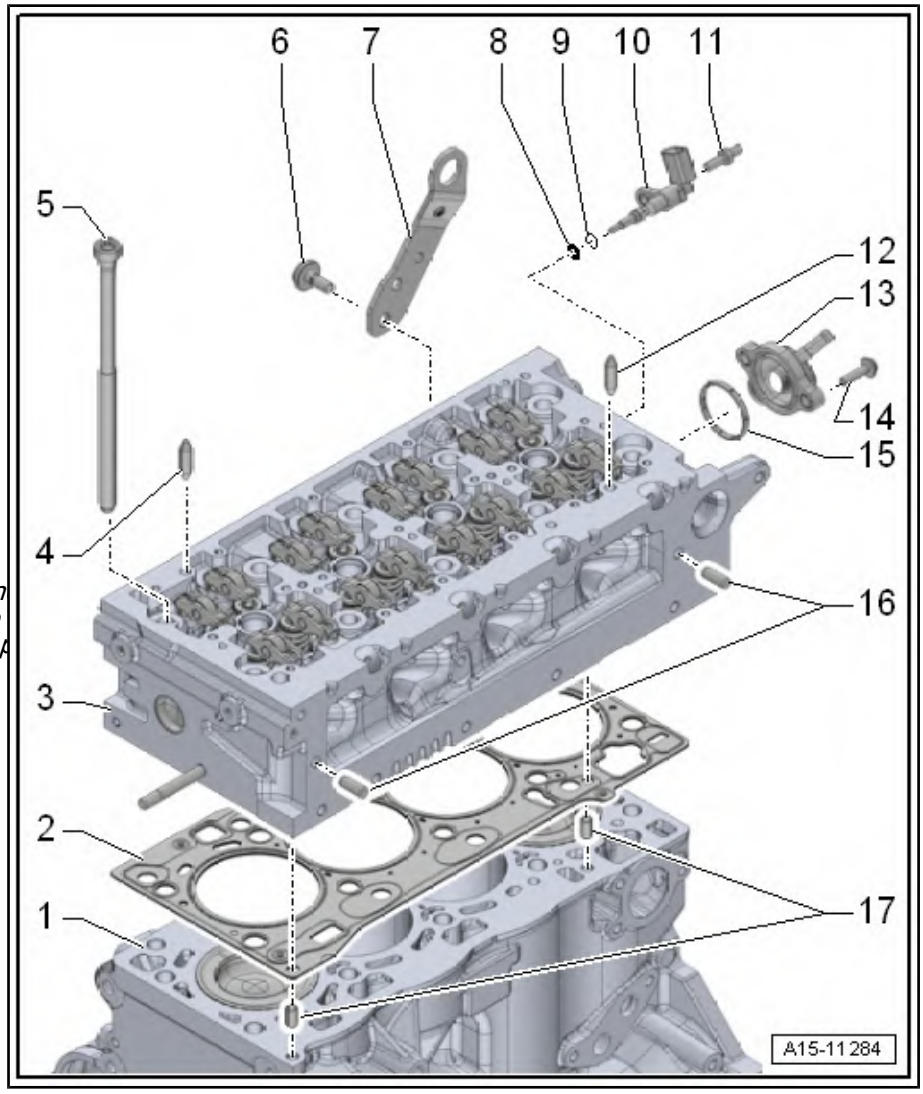
⇒ “1.6 Removing and installing camshaft housing”, page 127

⇒ “1.7 Checking compression”, page 138

1.1 Summary of components - cylinder head

Note

- *Cylinder heads with cracks between the valve seats may continue to be used without any reduction in the life time provided the cracks are slight and max. 0.5 mm wide.*
- *It is not permissible to rework the cylinder heads of diesel engines.*
- *Replace self-locking nuts, sealing rings, gaskets and O-rings.*
- *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*
- *Oil contact surfaces between the roller rocker finger and cam slideway.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *If the cylinder head or the cylinder head gasket is replaced, the system must be completely filled with fresh coolant ⇒ “1.4 Filling with coolant”, page 235 .*



1 - Cylinder block

2 - Cylinder head gasket

- ❑ replace after removal ⇒ “1.3 Removing and installing cylinder head”, page 106
- ❑ Identification of the cylinder head gasket ⇒ page 103
- ❑ after replacement, change the engine oil
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

3 - Cylinder head

Note

The valve seats must n worked because of the ces. Only lapping-in is p

- ❑ Removing and installing ⇒ “1.3 Removing and installing cylinder head”, page 106
- ❑ only place the removed cylinder head on a foam underlay, otherwise the glow plugs can be damaged
- ❑ check for distortion ⇒ page 103
- ❑ must not be reworked
- ❑ before installing, check whether both dowel sleeves for centring the cylinder head at the cylinder block are present
- ❑ change coolant and engine oil after replacement
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

4 - Fit pin

- ❑ for camshaft housing

5 - Screw

- ❑ Replace after disassembly
- ❑ Sequence for loosening ⇒ “1.3 Removing and installing cylinder head”, page 106
- ❑ Tightening torque and tightening order ⇒ page 104

6 - Screw

- ❑ 20 Nm

7 - Engine suspension eye

8 - Distance ring

- ❑ replace if damaged

9 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

10 - Coolant temperature transmitter - G62-

- ❑ Removing and installing
  ⇒ “2.9 Removing and installing coolant temperature transmitter G62 ”, page 305

11 - Double screw

- ❑ Tightening torque Pos. -4-
  ⇒ “2.3 Summary of components - coolant temperature transmitter”, page 284

12 - Fit pin

- ❑ for camshaft housing

13 - Connection fitting

- ❑ for coolant hoses

14 - Screw

- ❑ 10 Nm

15 - Sealing ring

- ❑ Replace after disassembly

16 - Fit pin

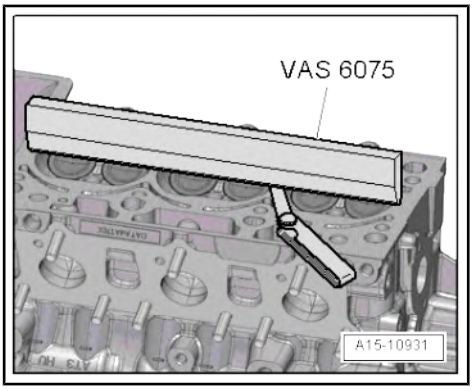
- ❑ for intake manifold with charge air cooler

17 - Dowel sleeves

Checking cylinder head for distortion

– Inspect cylinder head at several points for distortion using a 500 mm knife-edge straightedge - VAS 6075- and feeler gauge.

• Max. permissible distortion: 0.1 mm.



Note

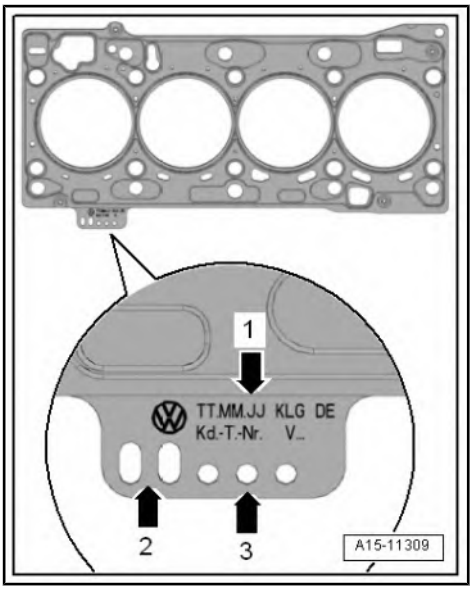
Cylinder heads for TDI engines must not be reworked.

Identification of the cylinder head gasket

1 - Part number

2 - Ignore

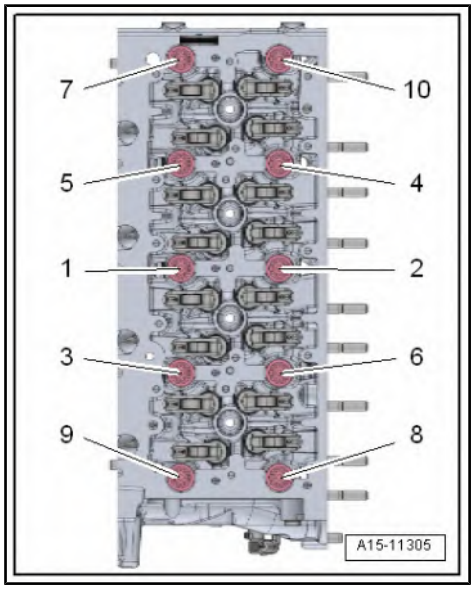
3 - Holes



Note

Differing thicknesses of cylinder head gaskets are inserted according to the piston projection
⇒ “4.3 Measure piston projection in TDC”, page 97 . If only the cylinder head gasket is replaced, install a new cylinder head gasket with the same identification.

Cylinder head - tightening torque and tightening order



Note

Screws which have been tightened firmly to a torquing angle must be replaced.

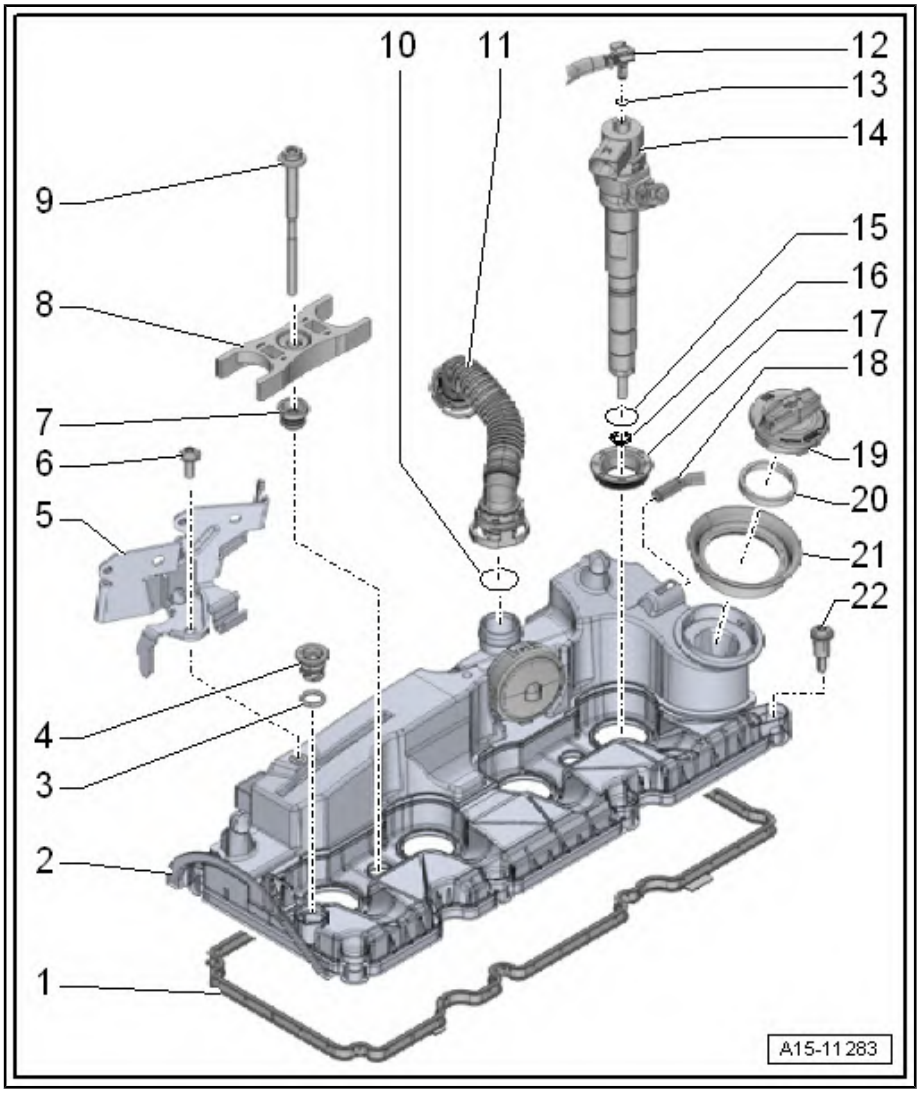
– Tighten bolts step by step in the given sequence:

Step	Bolts	Tightening torque / torquing angle
1.	-1- to -10-	30 Nm
2.	-1- to -10-	70 Nm
3.	-1- to -10-	Turn 90° further
4.	-1- to -10-	Turn 90° further
5.	-1- to -10-	Turn 90° further

1.2 Assembly overview - cylinder head cover

Note

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



1 - Seal

- ❑ replace if damaged or leaking

2 - Cylinder head cover

- ❑ Removing and installing ⇒ “1.4 Removing and installing cylinder head cover”, page 124

3 - O-ring

- ❑ Replace after disassembly

4 - Plug

5 - Mounting bracket

- ❑ for electrical cables

6 - Screw

- ❑ 8 Nm

7 - Grommet

- ❑ in the cylinder head cover

8 - Clamping claw

9 - Screw

- ❑ Tightening torque Pos. -8- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452

10 - O-ring

- ❑ replace if damaged or leaking
- ❑ Part of the hose for the crankcase breather

11 - Hose

- ❑ for crankcase ventilation
- ❑ to remove, press release buttons

12 - Fuel return-flow line

13 - O-ring

- ❑ Replace after disassembly

14 - Injection unit

- ❑ Observe rules for cleanliness ⇒ “3.1 Rules of cleanliness”, page 7
- ❑ Summary of components ⇒ “3.1 Summary of components - injection units (injectors)”, page 452

15 - O-ring

- ❑ Replace after disassembly

16 - Heat-protection seal

- ❑ Replace after disassembly

17 - Sealing ring

- ❑ for injection unit
- ❑ replace after removal ⇒ “1.5 Removing and installing gasket rings for injection units”, page 126

18 - Vacuum hose

19 - Screw cap

20 - Seal

- ❑ for cap

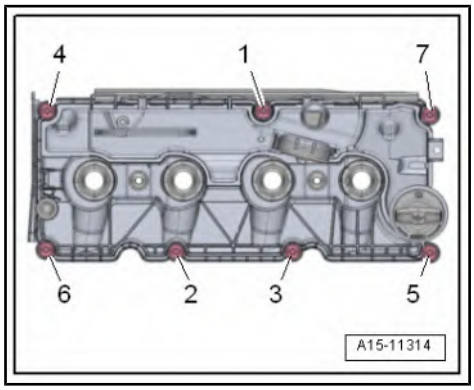
21 - Sealing sleeve

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.

Note

- *Fit all heat protection sleeves on again in the same place when installing.*
- *Cable straps should be fastened again in the same place when installing.*
- *Use suitable plugs to seal the open channels on the inlet connection and exhaust tract from the screw plug set for engine - VAS 6122- .*
- *Cover openings on gearbox with cleaning cloths so that no coolant can run into the coupling housing.*

Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness
⇒ “3 Repair instructions”, page 7 .

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

– Remove front top coolant pipe
⇒ “3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti”, page 312 .

– Remove rear coolant pipe
⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

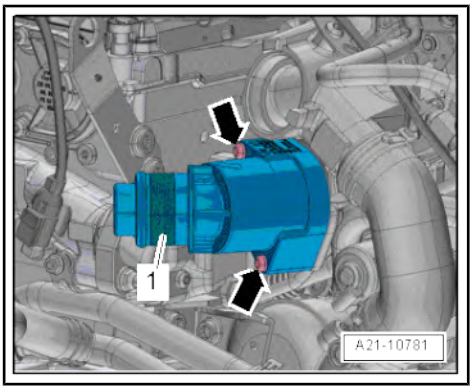
– Remove left coolant pipe
⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

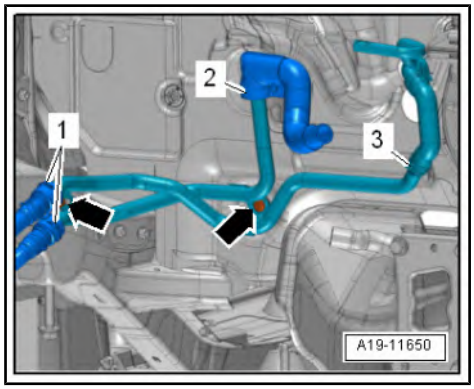
– Remove camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .

– Unscrew screws -arrows- and remove container with pre-cubic contents -1-.

Vehicles fitted with auxiliary heating



– Raise holding clamps -1- and undo hose clamp -3-, remove coolant hoses.
– Unscrew nuts -arrows- and remove coolant pipes.
– Release and pull off the electrical plug connections at the front wall
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .
– Expose electric cables.



Vehicles with EU4 emission level

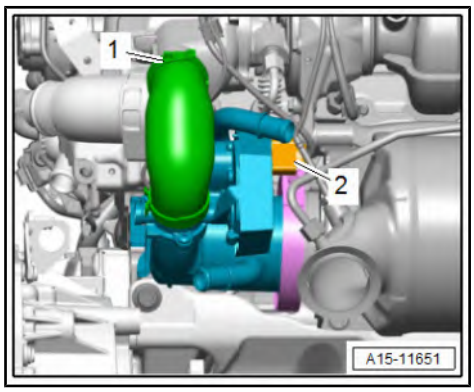
– Remove catalytic converter
⇒ “2.2 Removing and installing catalytic converter”, page 587 .

Vehicles with EU5 and EU6 emissions standards and with all-wheel drive

– Remove radiator for exhaust gas recirculation
⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

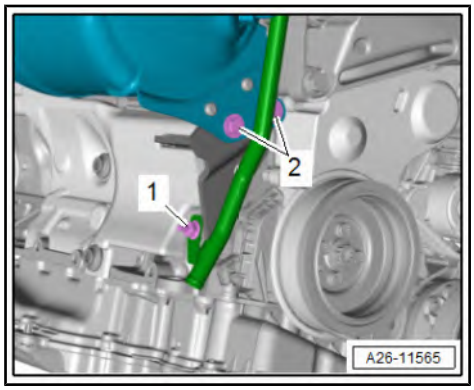
Vehicles with EU5 and EU6 emissions standards and with front-wheel drive

– Loosen hose clamp -1-, remove air guide hose.
– Push the heat protection sleeve to the side, disconnect electrical plug connection -2- and move the electric cable clear.



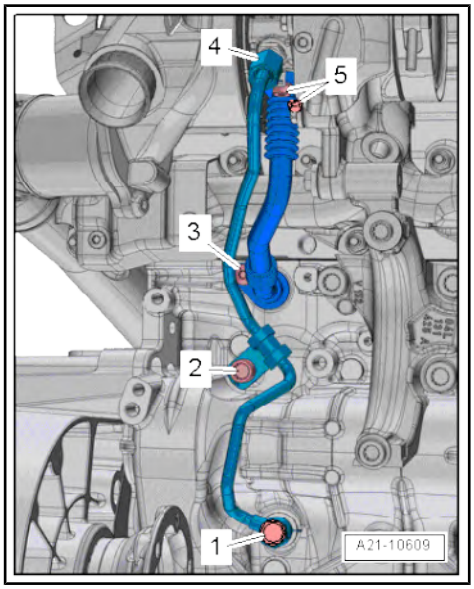
Continued for all vehicles

– Slacken the double screw -1-, press coolant pipe backwards slightly.
– Unscrew screws -2- and push exhaust gas cleaning module and, for vehicles with front-wheel drive, the radiator for exhaust gas recirculation backwards.



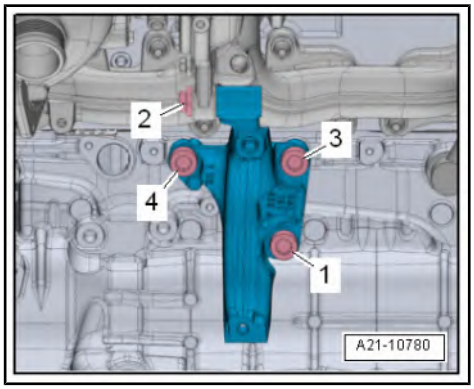
– Release nut -2- and remove union nut -4-.
– Unscrew screws -3-, -5- and remove oil return pipe.

Continuation for vehicles with emissions standard EU5 and EU6

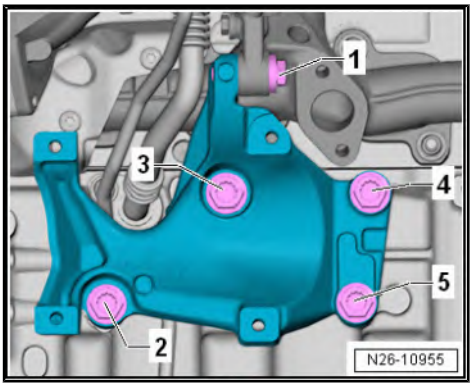


– Unscrew screw -2-, loosen screws -1-, -3-, -4- only.

Vehicles with EU4 emission level



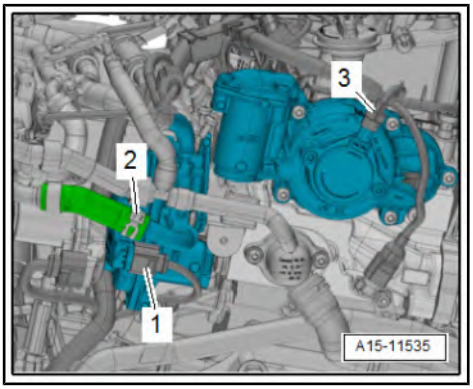
– Unscrew screw -1-, only loosen screws -2- to -5-.



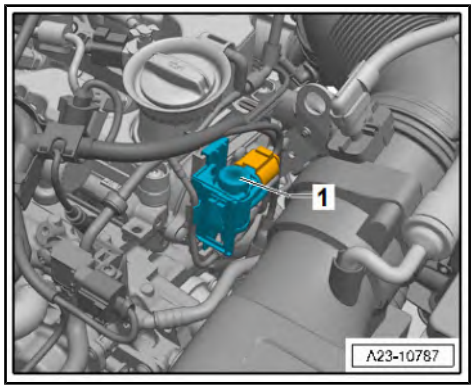
For vehicles with engine identification characters CRKB, CRMB, CUNA, CXXA, CXXB, DBKA, CUUA, CUUB, DCYA

– Disconnect electrical plug connections -1- and -3-.
– Loosen hose clamp -2-.

Vehicles with EU4 emission level



– Unlock and disconnect connector at changeover valve for radiator of exhaust gas recirculation - N345- -1-



Continued for all vehicles

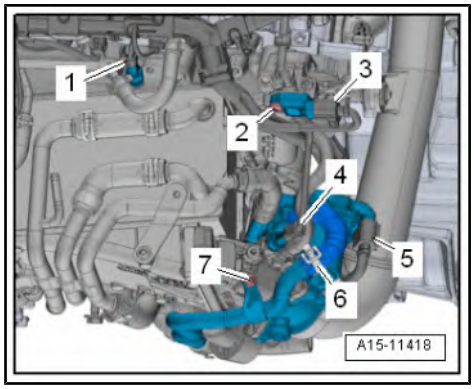
– Disconnect and expose electrical plug connections:

1 - for charge air temperature transmitter after charge air cooler - G811-

3 - for charge pressure encoder - G31-

4 - Intake air temperature sender - G42-

5 - Throttle valve control unit - J338-

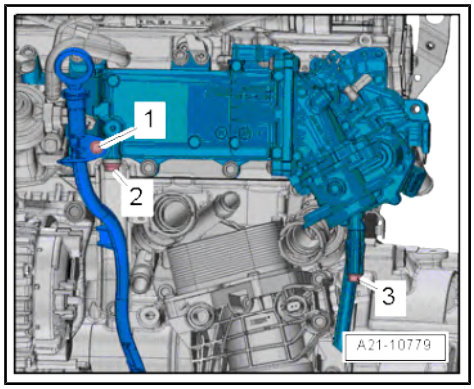


– Unscrew hose clamps -2-, -7-, remove coolant hose -6-.

– Lay coolant pipe to the side.

– Release screw -1- of guide pipe for oil dipstick.

– Unscrew screws -2-, -3- for intake manifold holder.



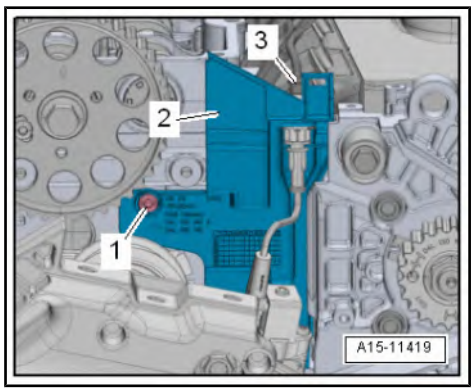
For vehicles with engine identification characters CRKB, CRMB, CUNA, CXXA, CXXB, DBKA, DDYB, DDYA, DCYA

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

Continued for all vehicles

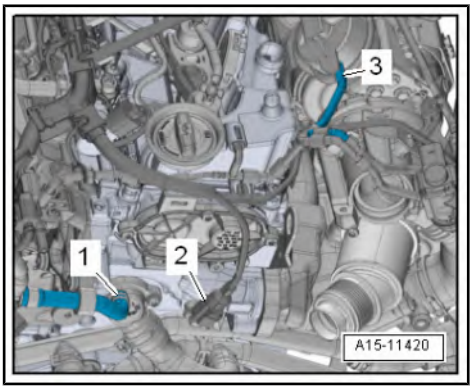
– Disconnect electrical plug connection -3- and remove from cover -2-.

– Unscrew screw -1- and leave cover -2- in installed position.

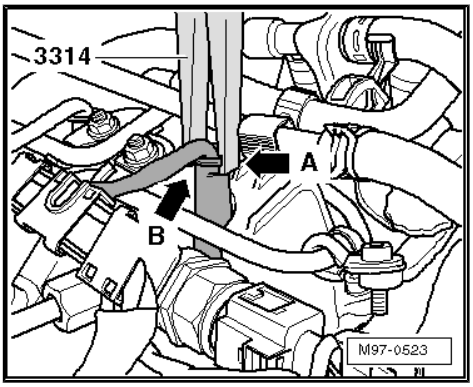


– Unlock tab -arrow-, remove vacuum hose -1-.
– Disconnect vacuum hose -2-.
– Release screw -3-.

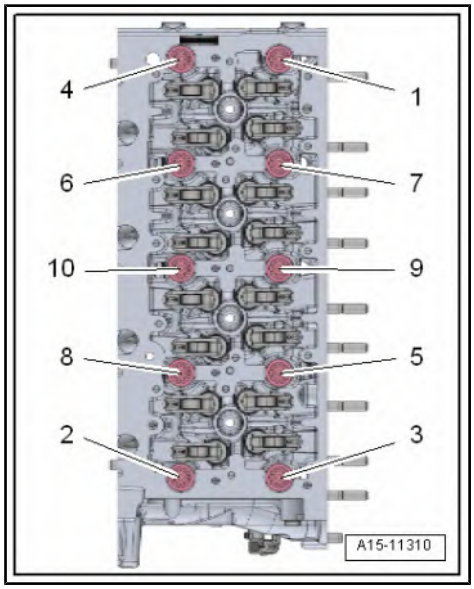
– Disconnect the electrical plug connection -2- for coolant temperature sender - G62- .
– Loosen hose clamp -1-, remove coolant hose.
– Disconnect vacuum hose -3-.



– Disconnect electrical plug connections at the glow plugs ⇒ “1.2 Removing and installing glow plugs”, page 701 .
– Lay electrical wiring loom to the side.



– Release the cylinder head bolts in the sequence -1- to -10-.



Note

A 2nd mechanic is required for removing the cylinder head.

– Swivel the cylinder head to the left out of the rear toothed belt guard and simultaneously remove the tensioning pulley.

– Make sure that the oil return-flow line for exhaust gas turbocharger is not damaged.

– Place the cylinder head so that the oil return-flow line is not bent. If necessary, put a piece of wood under the exhaust manifold.

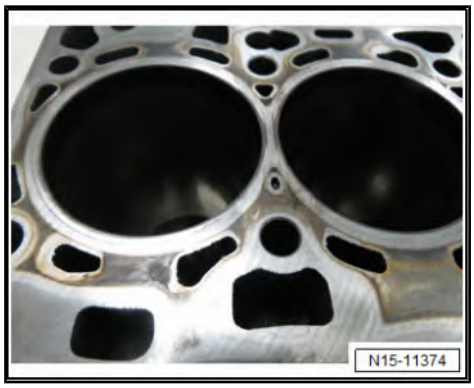
NOTICE

Risk of damage to the glow plugs when turning the cylinder head.

- **If the cylinder head is removed with installed glow plugs, do not place it down on the sealing surface since the glow plugs protrude slightly beyond the sealing surface.**

Installing

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



CAUTION

The use of inadmissible abrasives can result in consequential damage, such as turbocharger damage, connecting rod bearing damage, etc.

- **Abrasives (sandpaper, grinding wheels, sanding pads, sanding fleece, abrasive wool, etc.) cannot be used.**
- **The sealing surface (see photo) must not be raised.**
- **Dark discolouration (see photo) does not need to be removed.**
- **When removing the seal residue, make sure that no dissolved seal residue enters the open channels from the engine.**
- **Ensure that adjacent workplaces are clean and that none of the above mentioned abrasives are used.**

– Remove any residual gas from the cylinder head and cylinder block using a standard scraper with a blade. Sealing surfaces must not be damaged!

– Remove any dissolved residue with a lint-free cloth.

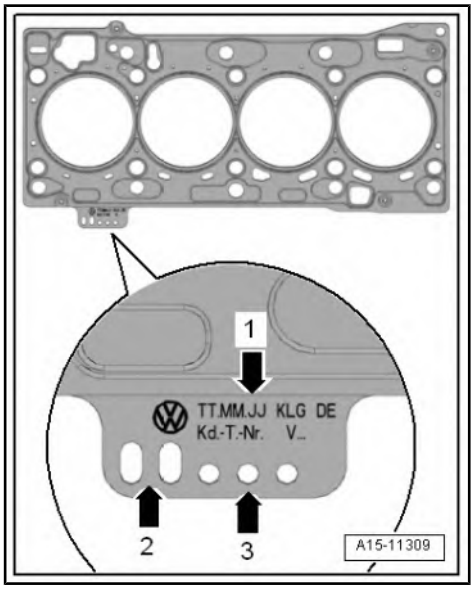
– If necessary, remove oil or coolant from the blind holes in the cylinder head bolts.

– Pay attention to the identification of the cylinder head gasket:

1 - Part number

2 - Ignore

3 - Holes



Note

- *If the cylinder head gasket or cylinder head has been replaced, select the new head cylinder head gasket according to the number of holes of the old cylinder head gasket.*
- *If parts of the crankshaft drive have been replaced, then the new cylinder head gasket must be determined by measuring the piston projection at "TDC"*
  ⇒ "4.3 Measure piston projection in TDC", page 97 .

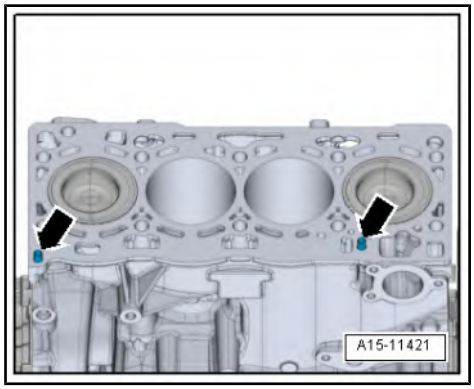
– Remove the new cylinder head gasket from its wrapping immediately before fitting. The silicone layer and the beading area of the cylinder head gasket must not be damaged.

– Place cylinder head gasket on the dowel sleeves -arrows- in the cylinder block.

• Installation position of cylinder head gasket: Identification “top” (facing upwards) or part number towards cylinder head.

– Remove the crankshaft arrester - T10490- before fitting on the cylinder head and turn back the crankshaft in the opposite direction of rotation of the engine until all the pistons are almost evenly at “TDC”.

– If there are no dowel sleeves are available for centring the cylinder block and cylinder head, insert dowel sleeves.



Note

The assistance of a 2nd mechanic is required for fitting on the cylinder head.

– Insert the cylinder head.

– Insert screws for cylinder head and tighten ⇒ page 104 .

Note

Tightening up the cylinder head bolts after doing repair work is not necessary.

The further assembly is carried out in reverse order to disassembly. However, pay attention to the following:

♦ If a new cylinder head is installed, the contact surfaces between roller cam follower and cam slide must be oiled.

♦ If the cylinder head or cylinder head gasket is replaced, the engine oil and coolant must be changed.

♦ Replace the sealing rings, seals and self-locking nuts.

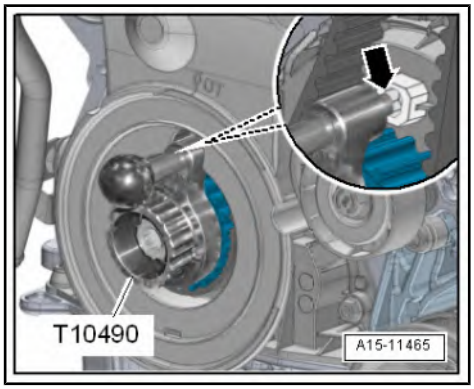
♦ Hose connections as well as charge air pipes and hoses must be free of oil and grease before being fitted.

♦ Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .

– Install camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .

– Turn the crankshaft in the direction of rotation of the engine until the stud -arrow- of the crankshaft arrester engages - T10490- during this rotary movement in the sealing flange.

– install (set the timing) ⇒ page 153 .



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

– Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

– Install pre-exhaust pipe ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Install the left coolant pipe ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

– Install the rear coolant pipe ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

– Install the front top coolant pipe ⇒ “3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti”, page 312 .

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

– Change engine oil:

♦ ⇒ Maintenance ; Booklet Octavia III

♦ ⇒ Maintenance ; Booklet Yeti

NOTICE

If a new cylinder head has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface ⇒ “1.7 Flushing the cooling system”, page 253 .

If the existing cylinder head is fitted:

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

Note

♦ *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*

♦ *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*

♦ `0001 - Adaption`

♦ `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - cylinder head”, page 101
- ⇒ “1.1 Assembly overview - pan/oil pump”, page 182
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “5.1 Assembly overview - intake manifold”, page 481
- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

1.3.2 Removing and installing the cylinder head, Rapid NH

Special tools and workshop equipment required

- Disassembly tool for door panel - 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.

Note

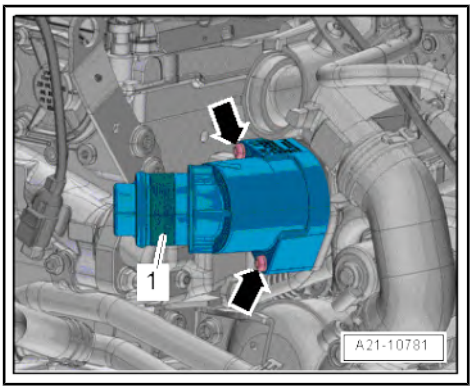
- *Fit all heat protection sleeves on again in the same place when installing.*
- *Cable straps should be fastened again in the same place when installing.*
- *Use suitable plugs to seal the open channels on the inlet connection and exhaust tract from the screw plug set for engine - VAS 6122- .*
- *Cover openings on gearbox with cleaning cloths so that no coolant can run into the coupling housing.*

Observe all safety measures and notes for assembly work on the fuel supply and injection system, at the charge air system and observe as well the rules for cleanliness
⇒ “3 Repair instructions”, page 7 .

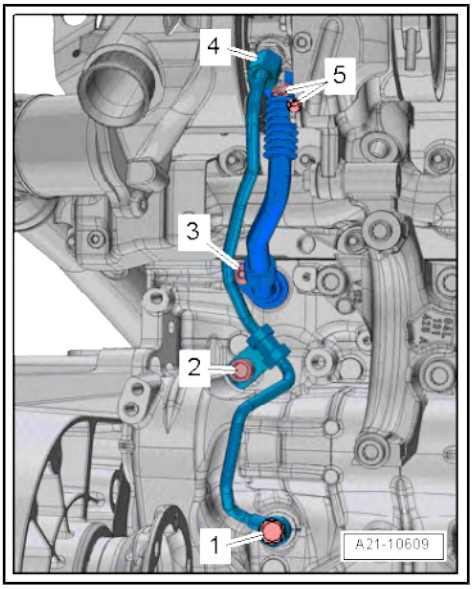
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

– Remove front top coolant pipe
⇒ “3.2.2 Removing and installing the top front coolant pipes, Rapid NH”, page 314 .

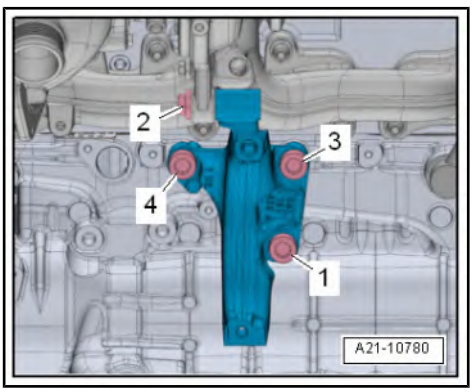
– Remove exhaust gas cleaning module
⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .
– Remove camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .
– Unscrew screws -arrows- and remove container with pre-cubic contents -1-.



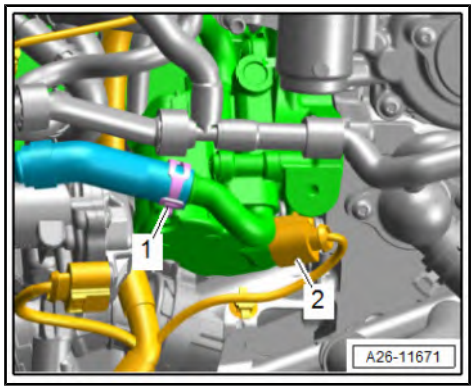
– Release nut -2- and remove union nut -4-.
– Unscrew screws -3-, -5- and remove oil return pipe.



– Unscrew screw -2-, loosen screws -1-, -3-, -4- only.



– Separate electrical plug connection -2-.
– Loosen hose clamp -1-, remove coolant hose.



– Disconnect and expose electrical plug connections:

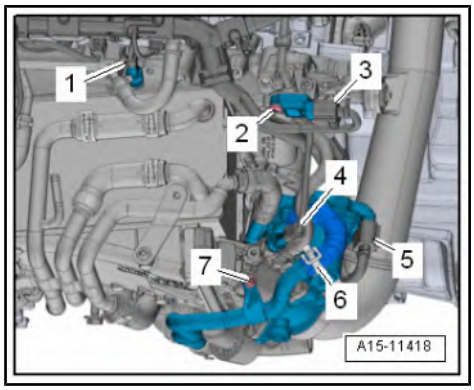
1 - for charge air temperature transmitter after charge air cooler - G811-

3 - for charge pressure encoder - G31-

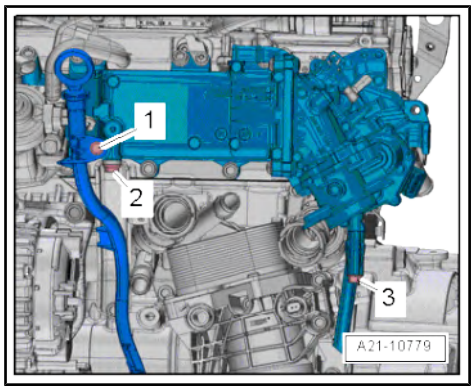
4 - Intake air temperature sender - G42-

5 - Throttle valve control unit - J338-

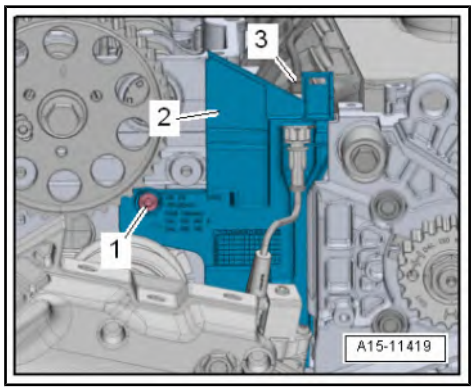
– Unscrew hose clamps -2-, -7-, remove coolant hose -6-.
– Lay coolant pipe to the side.



– Release screw -1- of guide pipe for oil dipstick.
– Unscrew screws -2-, -3- for intake manifold holder.

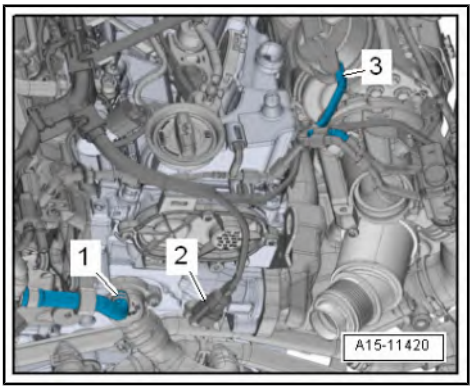


– Disconnect electrical plug connection -3- and remove from cover -2-.
– Unscrew screw -1- and leave cover -2- in installed position.

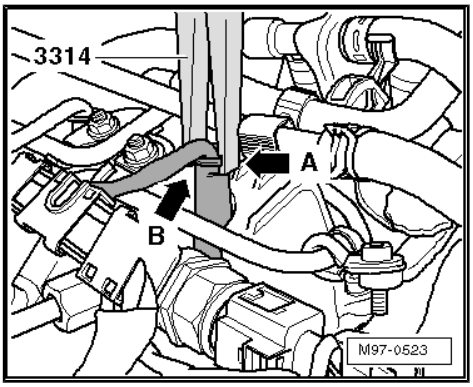


– Unlock tab -arrow-, remove vacuum hose -1-.
– Disconnect vacuum hose -2-.
– Release screw -3-.

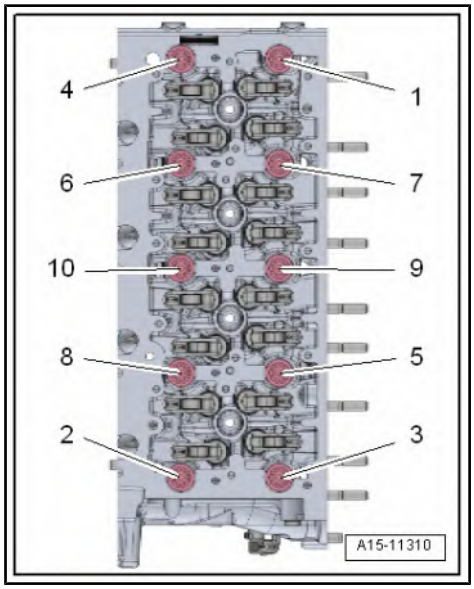
– Disconnect the electrical plug connection -2- for coolant temperature sender - G62- .
– Loosen hose clamp -1-, remove coolant hose.
– Disconnect vacuum hose -3-.



– Disconnect electrical plug connections at the glow plugs ⇒ “1.2 Removing and installing glow plugs”, page 701 .
– Lay electrical wiring loom to the side.



– Release the cylinder head bolts in the sequence -1- to -10-.



Note

A 2nd mechanic is required for removing the cylinder head.

– Swivel the cylinder head to the left out of the rear toothed belt guard and simultaneously remove the tensioning pulley.

– Make sure that the oil return-flow line for exhaust gas turbocharger is not damaged.

– Place the cylinder head so that the oil return-flow line is not bent. If necessary, put a piece of wood under the exhaust manifold.

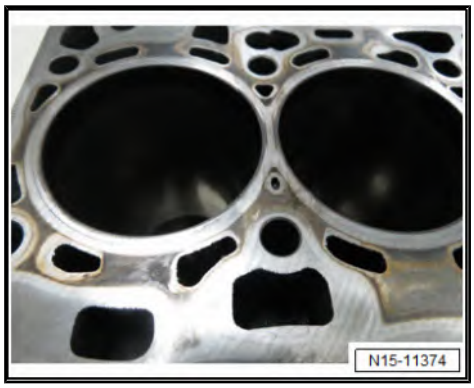
NOTICE

Risk of damage to the glow plugs when turning the cylinder head.

- **If the cylinder head is removed with installed glow plugs, do not place it down on the sealing surface since the glow plugs protrude slightly beyond the sealing surface.**

Installing

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



CAUTION

The use of inadmissible abrasives can result in consequential damage, such as turbocharger damage, connecting rod bearing damage, etc.

- **Abrasives (sandpaper, grinding wheels, sanding pads, sanding fleece, abrasive wool, etc.) cannot be used.**
- **The sealing surface (see photo) must not be raised.**
- **Dark discolouration (see photo) does not need to be removed.**
- **When removing the seal residue, make sure that no dissolved seal residue enters the open channels from the engine.**
- **Ensure that adjacent workplaces are clean and that none of the above mentioned abrasives are used.**

– Remove any residual gas from the cylinder head and cylinder block using a standard scraper with a blade. Sealing surfaces must not be damaged!

– Remove any dissolved residue with a lint-free cloth.

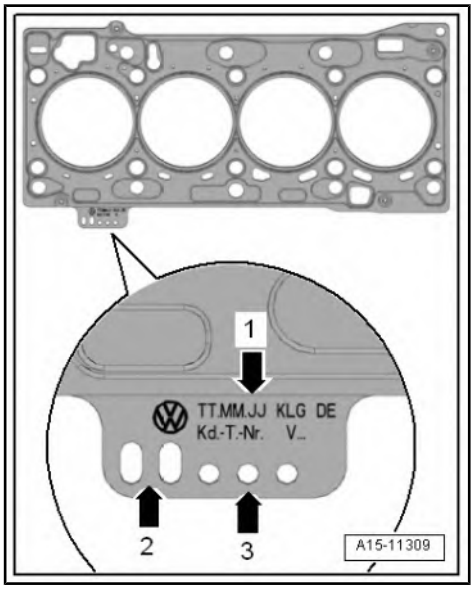
– If necessary, remove oil or coolant from the blind holes in the cylinder head bolts.

– Pay attention to the identification of the cylinder head gasket:

1 - Part number

2 - Ignore

3 - Holes



Note

- *If the cylinder head gasket or cylinder head has been replaced, select the new head cylinder head gasket according to the number of holes of the old cylinder head gasket.*
- *If parts of the crankshaft drive have been replaced, then the new cylinder head gasket must be determined by measuring the piston projection at "TDC"*
  ⇒ "4.3 Measure piston projection in TDC", page 97 .

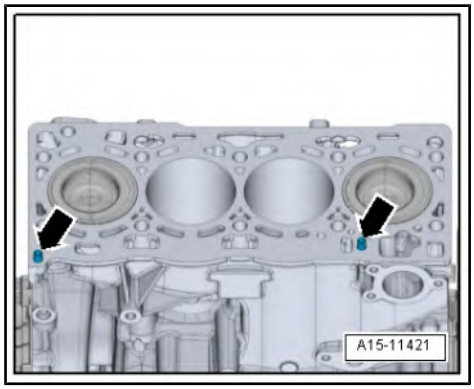
– Remove the new cylinder head gasket from its wrapping immediately before fitting. The silicone layer and the beading area of the cylinder head gasket must not be damaged.

– Place cylinder head gasket on the dowel sleeves -arrows- in the cylinder block.

• Installation position of cylinder head gasket: Identification “top” (facing upwards) or part number towards cylinder head.

– Remove the crankshaft arrester - T10490- before fitting on the cylinder head and turn back the crankshaft in the opposite direction of rotation of the engine until all the pistons are almost evenly at “TDC”.

– If there are no dowel sleeves are available for centring the cylinder block and cylinder head, insert dowel sleeves.



Note

The assistance of a 2nd mechanic is required for fitting on the cylinder head.

– Insert the cylinder head.

– Insert screws for cylinder head and tighten ⇒ page 104 .

Note

Tightening up the cylinder head bolts after doing repair work is not necessary.

The further assembly is carried out in reverse order to disassembly. However, pay attention to the following:

♦ If a new cylinder head is installed, the contact surfaces between roller cam follower and cam slide must be oiled.

♦ If the cylinder head or cylinder head gasket is replaced, the engine oil and coolant must be changed.

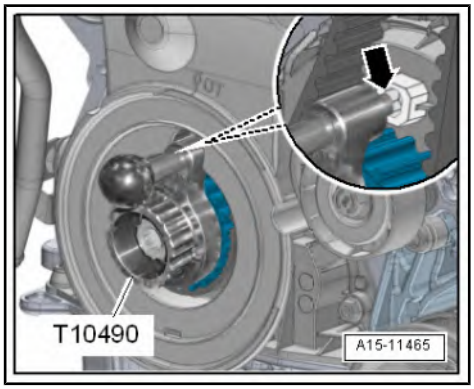
♦ Replace the sealing rings, seals and self-locking nuts.

♦ Hose connections as well as charge air pipes and hoses must be free of oil and grease before being fitted.

♦ Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .

– Install camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .

– Turn the crankshaft in the direction of rotation of the engine until the stud -arrow- of the crankshaft arrester engages - T10490- during this rotary movement in the sealing flange.



– install (set the timing) ⇒ page 153 .

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

– Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

– Install the front top coolant pipe ⇒ “3.2.2 Removing and installing the top front coolant pipes, Rapid NH”, page 314 .

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

– Change engine oil ⇒ Maintenance ; Booklet Rapid NH .

NOTICE

If a new cylinder head has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface ⇒ “1.7 Flushing the cooling system”, page 253 .

If the existing cylinder head is fitted:

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

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - cylinder head”, page 101
- ⇒ “2.1 Summary of components - toothed belt guard”, page 140

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “5.1 Assembly overview - intake manifold”, page 481
- ⇒ “1.1 Assembly overview - pan/oil pump”, page 182
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

1.4 Removing and installing cylinder head cover

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-

Removing

Note

Fit the heat protection sleeve on again in the same place when installing.

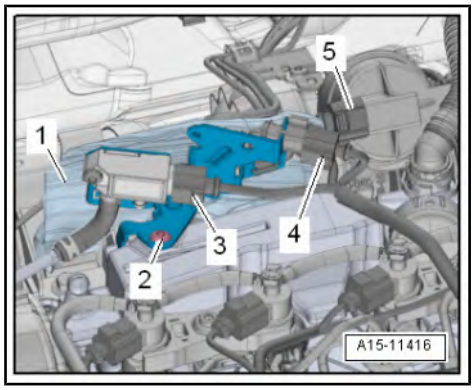
– Remove top toothed belt guard ⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Remove the injection units ⇒ “3.8 Removing and installing the injection units”, page 464 .

For vehicles with engine identification characters CLHA, CLHB, CKFB, CKFC, CRVC, CUPA, CYKA

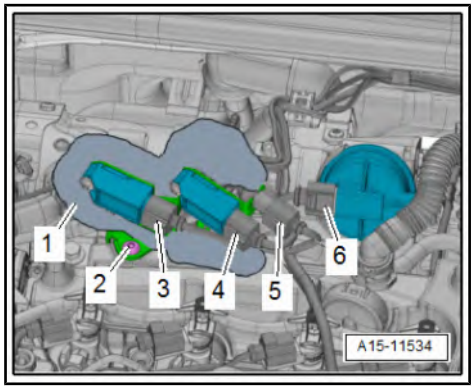
– Disconnect electrical plug connections -4-, -5-, expose electric wiring loom:

– Unscrew screw -2-, lay bracket with differential pressure transmitter - G505- to the rear.



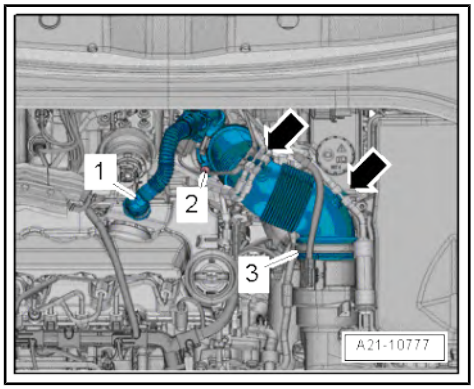
For vehicles with engine identification characters CRKB, CRMB, CUNA, CXXA, CXXB, DBKA, CXMA, CUUA, CUUB, DFSA, DFSB, DDYB, DDYA, DCYA

– Disconnect electrical plug connections -5- and -6- and move electric wiring harness clear.

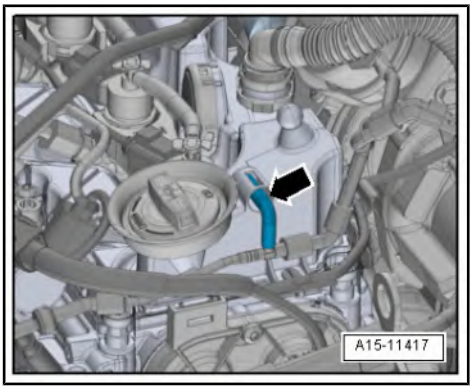


Continued for all vehicles

– Press release buttons on the hose -1- for crankcase ventilation, remove hose from cylinder head cover.

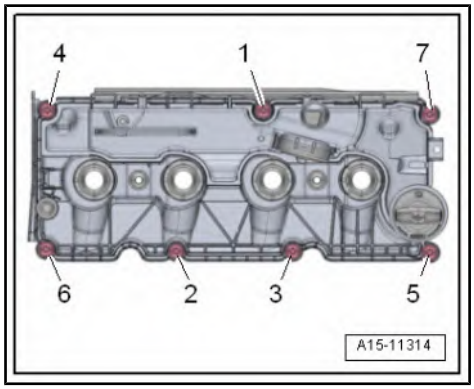


– Detach vacuum hose -arrow-.
– Expose wiring loom.



– Slacken the screws for the cylinder head cover in the sequence -7- … -1-and remove them.

– Remove cylinder head cover.



Installing

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

Note

- *Renew O-ring.*
- *Replace gasket and screws for cylinder head cover if damaged or leaking.*

– Connect vacuum hose
⇒ “2.1 Connection diagram - Vacuum system”, page 446 .

Tightening torques - summaries of components

Note

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

- ⇒ Fig. ““Cylinder head cover - tightening torque and tightening order”“ , page 106
- ⇒ “2.1 Summary of components - toothed belt guard”, page 140
- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452

1.5 Removing and installing gasket rings for injection units

Special tools and workshop equipment required

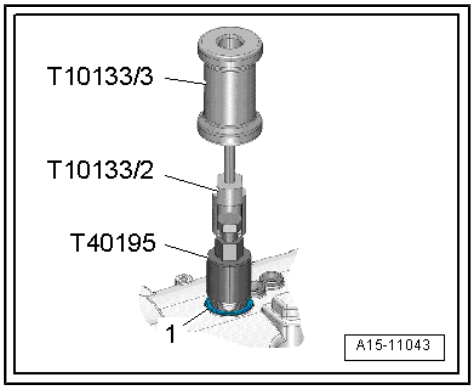
- Driver - 3390-
- Set of tools for FSI engines - T10133C-
- Sealing ring extractor - T40195-

Work procedure

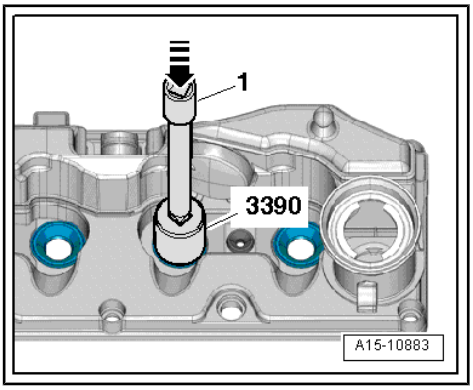
– Remove injection unit concerned
⇒ “3.8 Removing and installing the injection units”, page 464 .

– Insert sealing ring extractor - T40195- into the sealing ring -1-.

– Position hammer -T10133/3- with the adapter -T10133/2- on the sealing ring extractor, as shown in the illustration, and pull out upwards.



– Press in the new sealing ring for the injection unit using the driver - 3390- and short extension -1- from above up to the stop.



1.6 Removing and installing camshaft housing

⇒ “1.6.1 Removing and installing the camshaft housing, Octavia III, Yeti”, page 127

⇒ “1.6.2 Removing and installing the camshaft housing, Rapid NH”, page 132

1.6.1 Removing and installing the camshaft housing, Octavia III, Yeti

Special tools and workshop equipment required

- Silicone sealant ⇒ ETKA - Electronic Catalogue of Original Parts
- Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves
- Socket wrench XZN 10 - T10501-

Removing

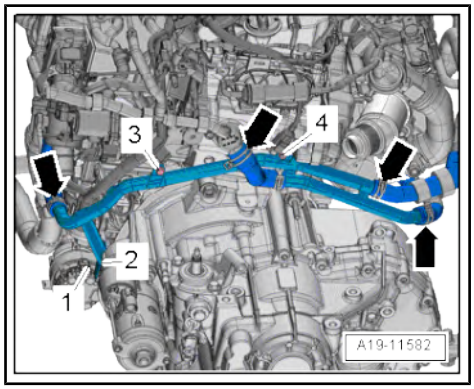
• Cylinder head fitted.

– Detach the connection fitting from the exhaust gas turbocharger
⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407 .

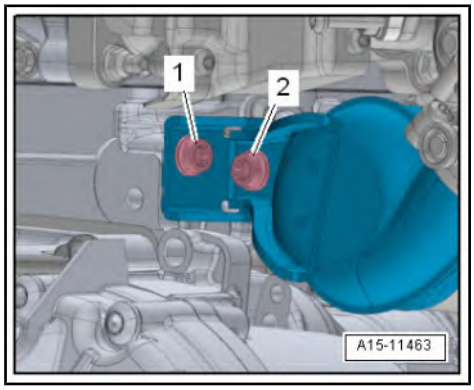
– Remove air filter housing
⇒ “4.2 Removing and installing air filter housing”, page 476 .

– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

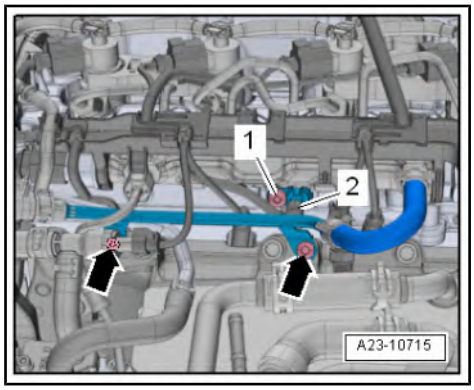
– Release nut -4- and screws -2-, -3-.
– Pull coolant pipe off double screw and push it downwards.



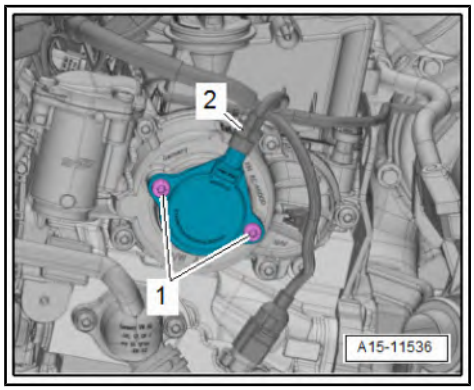
– Unscrew screw -1- using socket insert XZN 10 - T10501- , loosen screw -2-.
– Remove the toothed belt from the camshaft ⇒ “2.5 Remove the toothed belt from the camshaft”, page 159 .
– Remove cylinder head cover ⇒ “1.4 Removing and installing cylinder head cover”, page 124 .
– Remove high-pressure accumulator (fuel distributor) ⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470 .



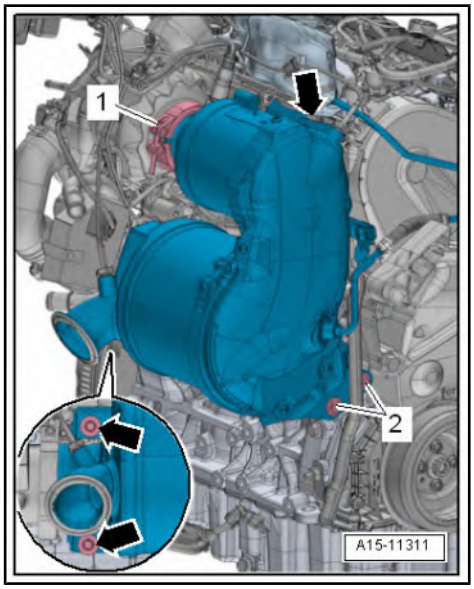
– Unscrew screws -arrows- and push the fuel lines forward slightly.
– Remove plug -2- for Hall sender - G40- .



– If present, disconnect electrical plug connection -2-.



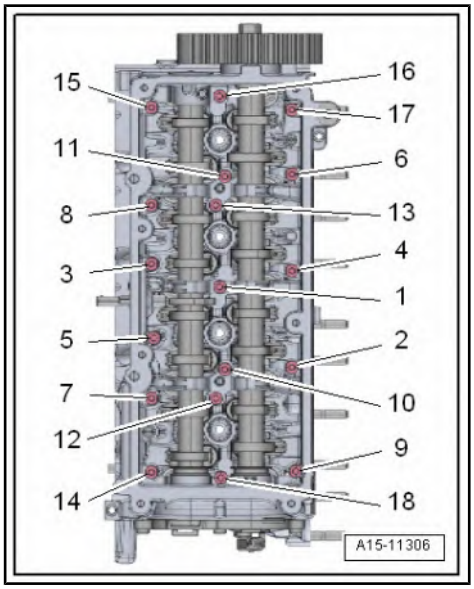
– Open clamp -1- and place it on the flared opening of the exhaust gas cleaning module.
– Loosen screws -2-, unscrew screws -arrows-.
– Push exhaust gas cleaning module back slightly.



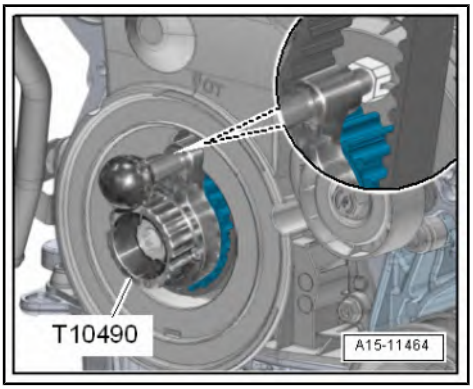
– Loosen screws for camshaft housing in the sequence -18- … -1-.
– Unscrew the screws and carefully loosen the camshaft housing and remove from the bonding.

Installing

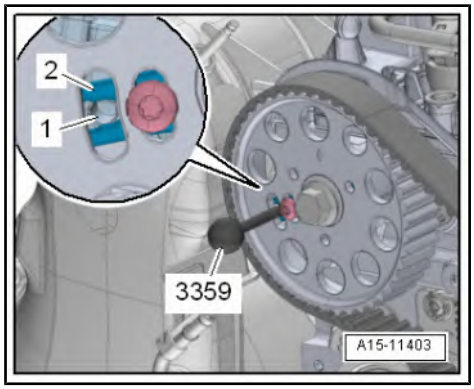
Requirements:



• Interlock crankshaft with crankshaft arrester - T10490- .



- The hub of the camshaft must be locked with the rig pin for diesel injection pump - 3359- .
- Screw loosely inserted.



NOTICE

Risk of contamination to the hinge system and bearings.

♦ **Cover open parts of the engine.**

CAUTION

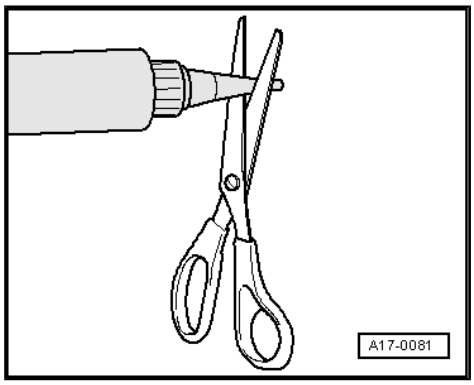
Wear protective gloves and goggles when working with gasket remover and degreasing agent!

– Remove residual sealant on the bearing frame and cylinder head using a chemical sealant remover.
– Clean sealing surfaces, they must be free of oil and grease.

Note

Pay attention to the use by date on sealant.

– Cut off nozzle tube at the front marking (∅ of nozzle approx. 1.5 mm).



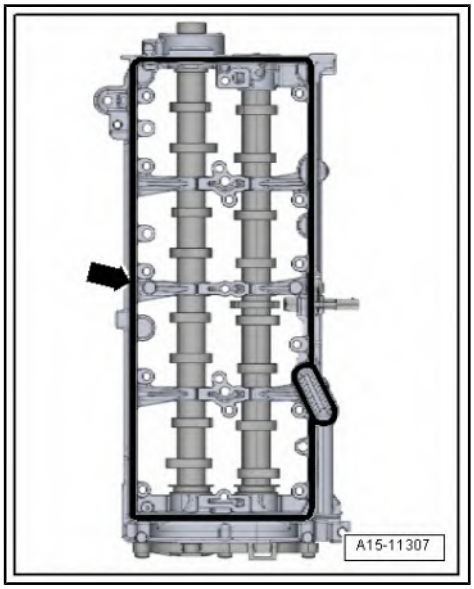
NOTICE

Risk of contamination of the camshaft bearings through excess sealant.

♦ **Do not apply thicker sealant beads than indicated.**

– Apply sealant beads -arrow- onto the clean sealing surfaces of the cylinder head as shown in the illustration.

• Thickness of sealant beads: 2 mm.



Note

♦ *After applying the sealant, the camshaft housing must be installed within 5 minutes.*

♦ *After installing the camshaft housing, allow the sealant to dry for about 30 minutes.*

– Carefully place the camshaft housing on the cylinder head, pay attention to fit pins when doing so.

– Tighten camshaft housing screws ⇒ page 166 .

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

– Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

– Install camshaft sealing ring ⇒ “3.2 Removing and installing gasket ring for camshaft”, page 166 .

– Install cylinder head cover ⇒ “1.4 Removing and installing cylinder head cover”, page 124 .

– install (set the timing) ⇒ page 153 .

NOTICE

Risk of damaging valves and piston crowns after work on the valve gear.

♦ **Because hydraulic compensation elements must be set, the engine must not be started until approximately 30 minutes after camshaft installation.**

♦ **To ensure that no valve is set during starting, turn the crankshaft carefully by at least 2 turns.**

Note

♦ *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*

♦ *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*

♦ `0001 - Adaption`

♦ `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ Fig. ""Camshaft housing - tightening torque and tightening order"" , page 166
- ⇒ "3.1 Summary of components - coolant pipe", page 309
- ⇒ "3.2 Summary of components - High pressure reservoir (fuel distributor)", page 454
- ⇒ "1.1 Summary of components - exhaust gas turbocharger", page 374
- ⇒ "2.1 Summary of components - charge air system", page 409

1.6.2 Removing and installing the camshaft housing, Rapid NH

Special tools and workshop equipment required

- Socket wrench XZN 10 - T10501-
- Silicone sealant ⇒ ETKA - Electronic Catalogue of Original Parts
- Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

Removing

- Cylinder head fitted.

– Remove the toothed belt from the camshaft ⇒ "2.5 Remove the toothed belt from the camshaft", page 159 .

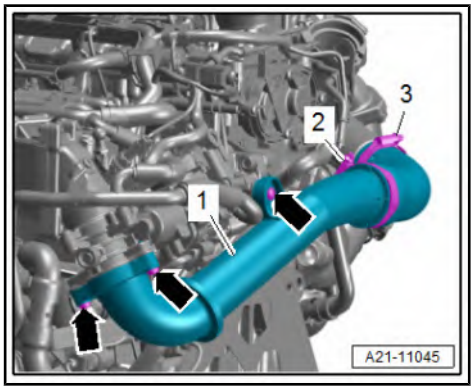
– Remove cylinder head cover ⇒ "1.4 Removing and installing cylinder head cover", page 124 .

– Remove high-pressure accumulator (fuel distributor) ⇒ "3.10 Removing and installing high pressure reservoir (fuel distributor)", page 470 .

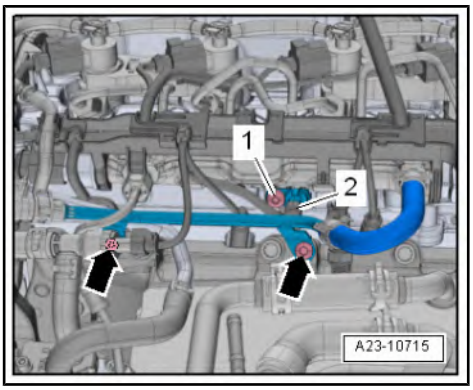
– Remove lambda probe 1 downstream of catalytic converter - GX7- ⇒ "9.2.4 Removing and installing lambda probe 1 after catalytic converter GX7 , Rapid NH", page 549 .

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

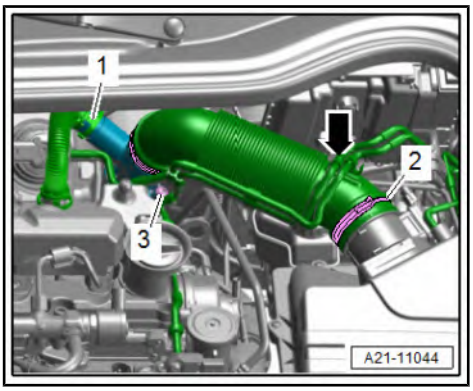
– Unscrew screws -arrows-.
– Loosen hose clamp -2-, remove air guide pipe -1-.



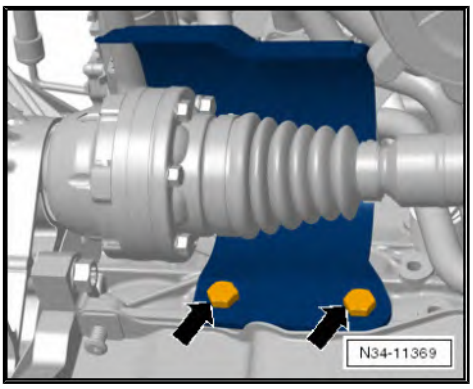
– Unscrew screws -arrows- and push the fuel lines forward slightly.
– Disconnect the electrical plug connection -2- from the Hall transmitter - G40- .



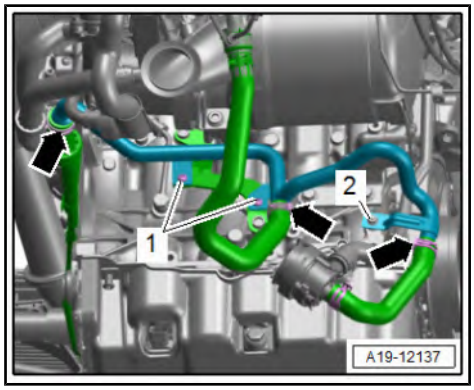
– Disconnect vacuum hoses on the air guide pipe -arrows-.
– Unscrew screws -3-, swivel air guide pipe with inlet connection clockwise and detach from exhaust gas turbocharger.



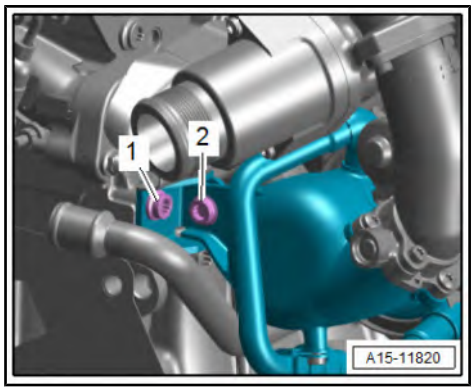
– Release screws -arrows-, remove heat shield for right drive shaft.



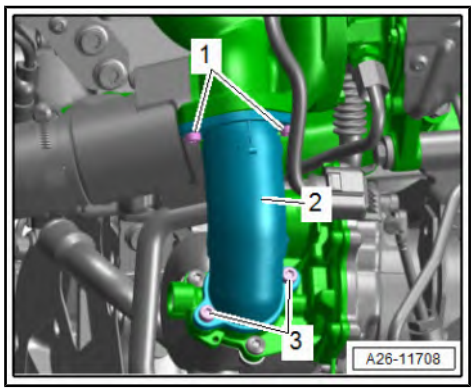
– Unscrew screws -1- and nuts -2- and remove rear coolant pipe and push rear coolant pipe downwards. If necessary, secure the coolant pipe with a cable strap to the drive shaft.



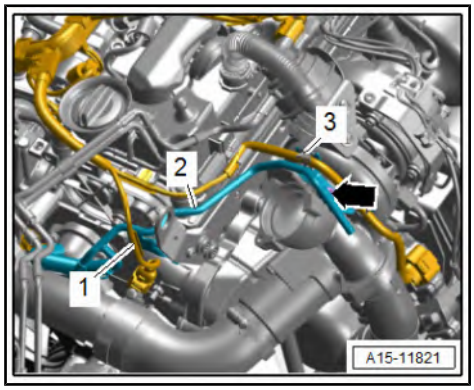
– Remove screw -1-, only slacken screw -2-.



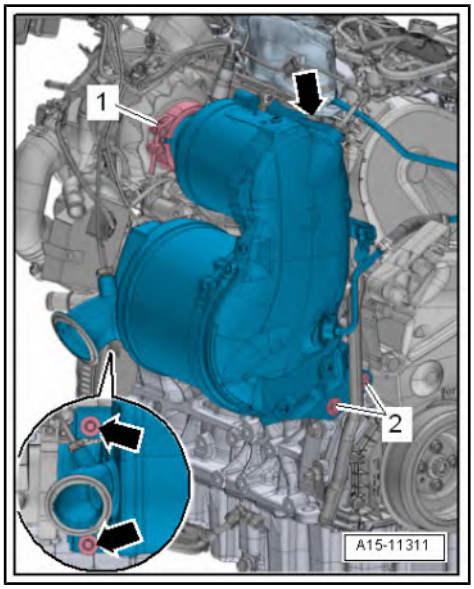
– Remove screws -1, 3- and remove connection fitting -2-.



– Expose electric cables -1, 3-.
– Unscrew screws -arrows- and push coolant line -2- to the left side.



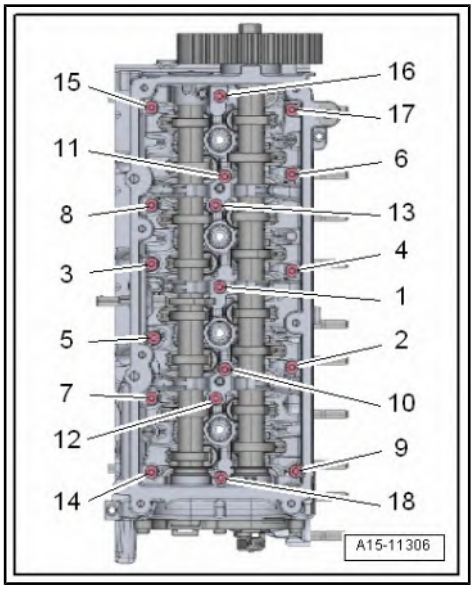
– Open the screw clamp -1- and place on the flared opening of the exhaust gas cleaning module.
– Unscrew screws -2- and -arrows-.
– Push exhaust gas cleaning module back slightly and secure.



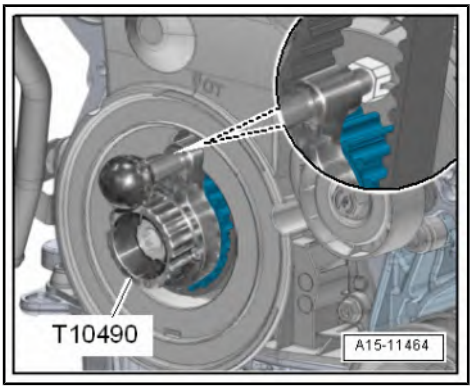
– Loosen screws for camshaft housing in the sequence -18- … -1-.
– Unscrew screws, carefully unscrew the camshaft housing and remove from the bonding.

Installing

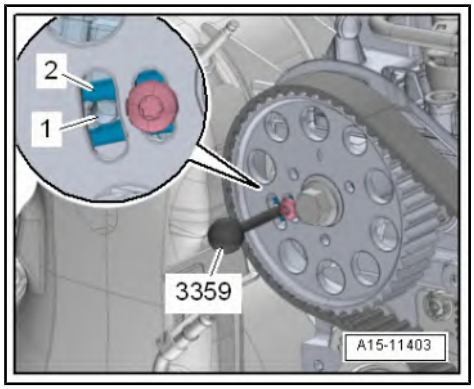
Requirements:



• Interlock crankshaft with crankshaft arrester - T10490- .



- The hub of the camshaft must be locked with the rig pin for diesel injection pump - 3359- .
- Screw loosely inserted.



NOTICE

Risk of contamination to the hinge system and bearings.

♦ **Cover open parts of the engine.**

CAUTION

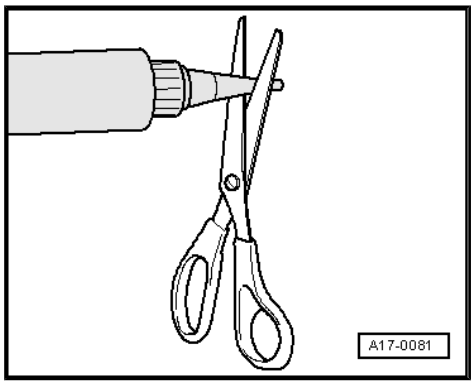
Wear protective gloves and goggles when working with gasket remover and degreasing agent!

– Remove residual sealant on the bearing frame and cylinder head using a chemical sealant remover.
– Clean sealing surfaces, they must be free of oil and grease.

Note

Pay attention to the use by date on sealant.

– Cut off nozzle tube at the front marking (∅ of nozzle approx. 1.5 mm).



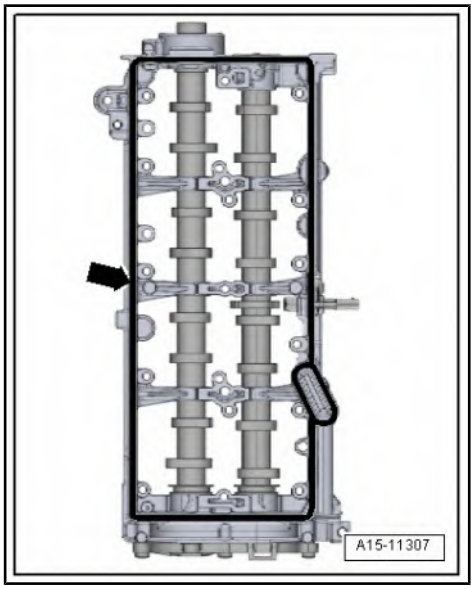
NOTICE

Risk of contamination of the camshaft bearings through excess sealant.

♦ **Do not apply thicker sealant beads than indicated.**

– Apply sealant beads -arrow- onto the clean sealing surfaces of the cylinder head as shown in the illustration.

• Thickness of sealant beads: 2 mm.



Note

♦ *After applying the sealant, the camshaft housing must be installed within 5 minutes.*

♦ *After installing the camshaft housing, allow the sealant to dry for about 30 minutes.*

♦ *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Carefully place the camshaft housing on the cylinder head, pay attention to fit pins when doing so.

– Tighten camshaft housing screws ⇒ page 166 .

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

– Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

– Install camshaft sealing ring ⇒ “3.2 Removing and installing gasket ring for camshaft”, page 166 .

– Installing heat shield for cardan shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; removing and installing heat shield for drive shaft .

– Install lambda probe downstream of catalytic converter - GX7- ⇒ “9.2.4 Removing and installing lambda probe 1 after catalytic converter GX7 , Rapid NH”, page 549 .

– Insert high-pressure accumulator (fuel distributor) ⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470 .

– Install cylinder head cover ⇒ “1.4 Removing and installing cylinder head cover”, page 124 .

– install (set the timing) ⇒ page 153 .

NOTICE

Risk of damaging valves and piston crowns after work on the valve gear.

♦ **Because hydraulic compensation elements must be set, the engine must not be started until approximately 30 minutes after camshaft installation.**

♦ **To ensure that no valve is set during starting, turn the crankshaft carefully by at least 2 turns.**

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ Fig. ""Camshaft housing - tightening torque and tightening order"" , page 166
- ⇒ "3.1 Summary of components - coolant pipe", page 309
- ⇒ "3.2 Summary of components - High pressure reservoir (fuel distributor)", page 454
- ⇒ "1.1 Summary of components - exhaust gas turbocharger", page 374
- ⇒ "2.1 Summary of components - charge air system", page 409
- ⇒ "4.1 Assembly overview - air filter housing", page 473
- ⇒ "5.1 Summary of components - Exhaust gas recirculation", page 670

1.7 Checking compression

Special tools and workshop equipment required

- Flexible-head wrench SW 10 - 3220-
- Compression tester , e.g. -V.A.G 1763-
- Adapter - V.A.G 1763/8-

Test condition

- Engine oil temperature approx. 80 C.
- Battery voltage at least 12.5 V

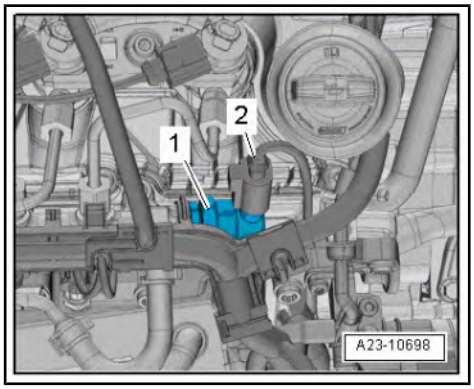
Test sequence

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

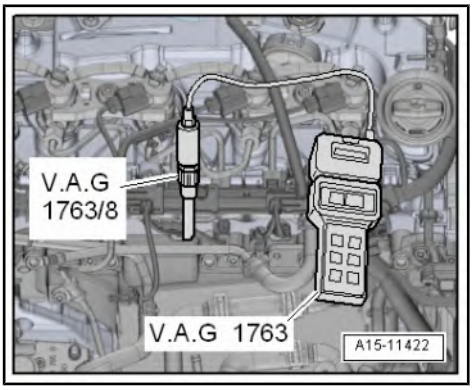
– Disconnect electrical plug connection at the fuel pressure control valve - N276- Pos. -2-.

– To relieve the fuel pressure in the high pressure accumulator, start engine for a short time.

– Remove all glow plugs
⇒ “1.2 Removing and installing glow plugs”, page 701 .



– Screw in adapter - V.A.G 1763/8- in place of the respective glow plug and connect compression tester - V.A.G 1763- .



Note

Use of the compression tester - V.A.G 1763- ⇒ Owner's Manual .

– The 2nd mechanic operates the starter until the tester no longer indicates a pressure rise.

– Repeat the procedure for each cylinder.

Compression readings	Pressure
New part	2.5 - 3.1 MPa (25.0 - 31.0 bar)
Wear limit	1.9 MPa (19.0 bar)
Maximum difference between cylinders	0.5 MPa (5.0 bar)

Assembling

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

– Install the glow plug for the relevant cylinder
⇒ “1.2 Removing and installing glow plugs”, page 701 .

– Querying and erasing event memory of engine control unit
⇒ Vehicle diagnostic tester.

2 Toothed belt drive

⇒ “2.1 Summary of components - toothed belt guard”, page 140

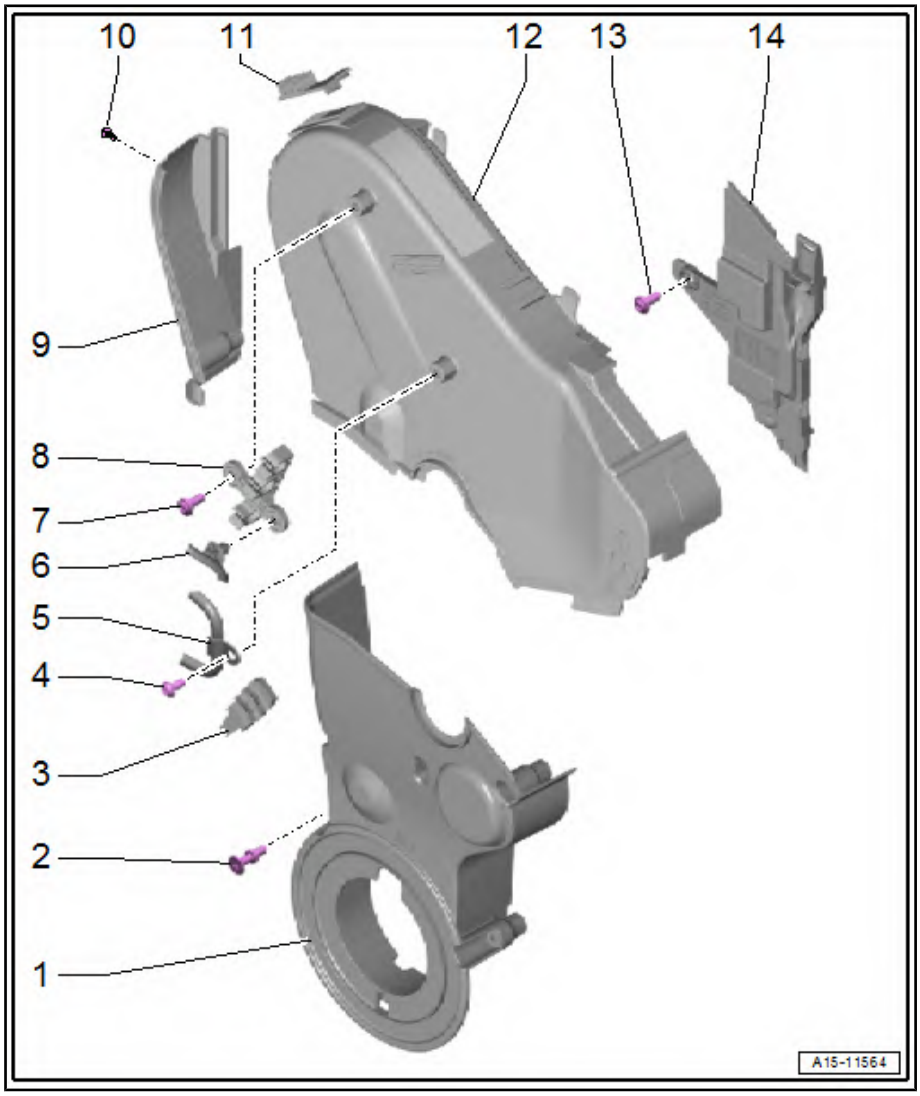
⇒ “2.2 Summary of components - toothed belt”, page 141

⇒ “2.3 Removing and installing toothed belt guard”, page 142

⇒ “2.4 Removing and installing toothed belt”, page 150

⇒ “2.5 Remove the toothed belt from the camshaft”, page 159

2.1 Summary of components - toothed belt guard



1 - Bottom toothed belt guard
- ❑ Removing and installing ⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149

2 - Screw
- ❑ with collar
- ❑ inserted in the bottom toothed belt guard such that it cannot be lost
- ❑ 12 Nm

3 - Mounting bracket
- ❑ for coolant line

4 - Screw
- ❑ 5 Nm

5 - Pipeline
- ❑ to differential pressure transmitter - G505-

6 - Retaining clip

7 - Screw
- ❑ 5 Nm

8 - Mounting bracket
- ❑ for coolant lines and SCR line

9 - Heat shield

10 - Screw
- ❑ 5 Nm

11 - Mounting bracket

12 - Top toothed belt guard
- ❑ Removing and installing ⇒ “2.3 Removing and installing toothed belt guard”, page 142

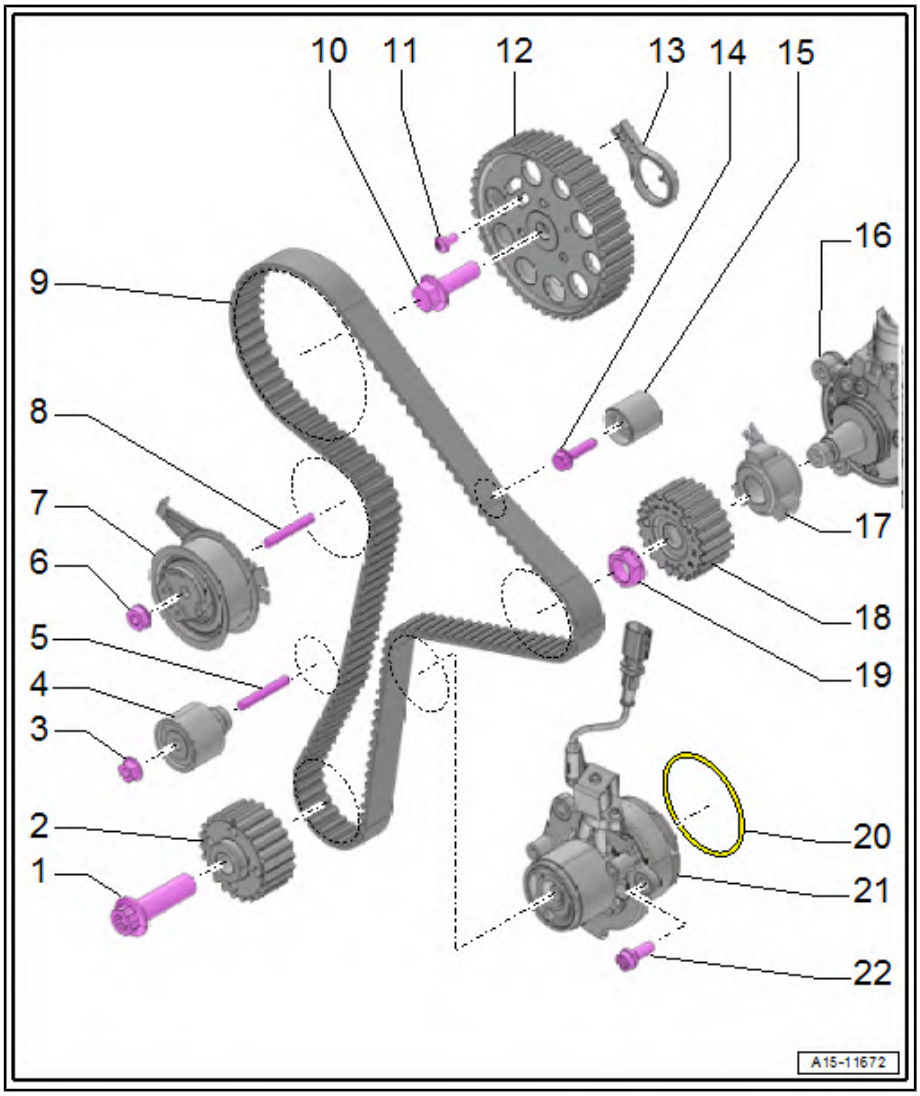
13 - Screw
- ❑ insert using locking agent ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ 12 Nm

14 - Rear toothed belt guard
- ❑ to remove, remove coolant pump ⇒ “2.5 Removing and installing coolant pump”, page 298

2.2 Summary of components - toothed belt

Note

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



1 - Screw

- ❑ Replace after disassembly
- ❑ Release and tighten using counterholder - T30004 (3415)-
- ❑ Do not additionally oil threads and collar
- ❑ Further rotation can be done across several stages, e.g. 90° + 45°
- ❑ 180 Nm + 135° (torquing angle can be established in stages, e.g. 90° + 45°)

2 - 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

3 - Nut

- ❑ 20 Nm

4 - Dampener wheel

5 - Pin screw

- ❑ replace if damaged
- ❑ 15 Nm

6 - Nut

- ❑ Replace after disassembly
- ❑ 20 Nm + 45°

7 - Tensioning pulley

8 - Pin screw

- ❑ replace if damaged
- ❑ 15 Nm

9 - Toothed belt

- ❑ mark the direction of rotation with chalk or a felt-tip pen before removing
- ❑ check for wear
- ❑ removing ⇒ “2.4 Removing and installing toothed belt”, page 150
- ❑ install (set the timing) ⇒ page 153

10 - Screw

- ❑ to loosen and tighten, use counterholder - T10172- or -T10172A- with adapters -T10172/11-

- ❑ Do not additionally oil threads and collar
- ❑ 100 Nm

11 - Locating screw

- ❑ 9 Nm

12 - Camshaft toothed belt pulley

- ❑ There must not be any oil present on the contact surface between the toothed belt pulley and the camshaft

13 - Camshaft driver

- ❑ Removing and installing ⇒ “1.6 Removing and installing camshaft housing”, page 127

14 - Screw

- ❑ 20 Nm

15 - Dampener wheel

16 - High pressure pump

- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537

17 - Hub for high-pressure pump

- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537
- ❑ There must not be any oil present between the lock hub and the toothed belt pulley

18 - Toothed belt pulley high pressure pump

- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537
- ❑ There must not be any oil present between the lock hub and the toothed belt pulley

19 - Nut

- ❑ Do not additionally oil threads and collar
- ❑ Tightening torque Pos. -4- ⇒ “8.1 Summary of components - high pressure pump”, page 537

20 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

21 - Coolant pump

- ❑ Removing and installing ⇒ “2.5 Removing and installing coolant pump”, page 298

22 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque Pos. -11- ⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275

2.3 Removing and installing toothed belt guard

⇒ “2.3.1 Removing and installing the top toothed belt guard, Octavia III, Yeti”, page 142

⇒ “2.3.2 Removing and installing top toothed belt guard, Octavia III with SCR system”, page 144

⇒ “2.3.3 Removing and installing the top toothed belt guard, Rapid NH)”, page 147

⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149

2.3.1 Removing and installing the top toothed belt guard, Octavia III, Yeti

Special tools and workshop equipment required

- ♦ Tool kit - T10395B- or -T10395A- or -T10395- + -T10395/8../10-

Note

Observe rules for cleanliness
⇒ "3.1 Rules of cleanliness", page 7 .

Removing

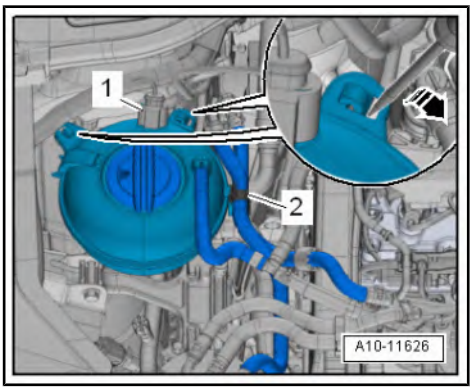
– Remove engine cover
⇒ "3.1 Removing and installing engine trim panel", page 64 .

– Separate electrical plug connection -1-.

– Remove bracket -2- with fuel hoses.

– Remove coolant hoses, opening the mounting brackets to do so.

– Unlock catches using a screwdriver -arrow-, lay coolant expansion tank to the side.

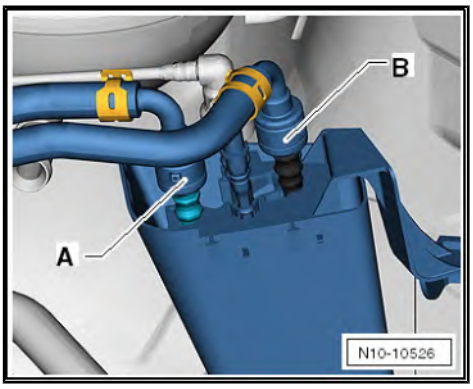


– Open quick couplings -A- and -B- of the fuel lines and disconnect fuel lines. Separate quick couplings ⇒ Rep. gr. 20 ; Quick couplings; separating quick couplings .

– Screw off the fuel filter and place it on the engine with attached fuel hoses ⇒ Rep. gr. 20 ; Fuel filter; removing and installing fuel filter

– Unscrew exhaust gas temperature sensor 3 - G495-
⇒ "4.4 Removing and installing the exhaust gas temperature transmitter 3 G495 ", page 661 .

– Open clamp -A-, pull off coolant hose and push to the side.



NOTICE

The transmitter with pipe must be removed because of possible mechanical damage to the differential pressure transmitter - G505- !

Vehicles with Differential pressure encoder - G505-

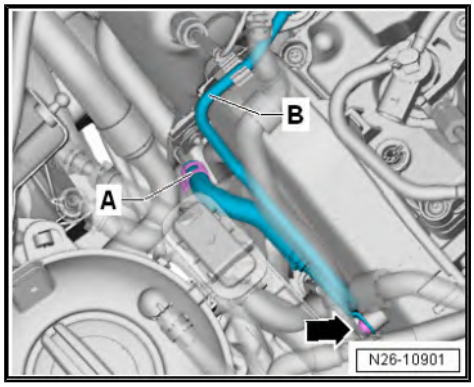
– Remove the differential pressure encoder - G505- from the cylinder head cover
⇒ "6.5 Removing and installing differential pressure transmitter G505 ", page 510 .

Vehicles with differential pressure encoder - G505- and with pressure sensor 1 for exhaust gas - G450-

– Remove the differential pressure transmitter - G505- and pressure sensor 1 for exhaust gas - G450- from the cylinder head cover
⇒ "6.5 Removing and installing differential pressure transmitter G505 ", page 510 .

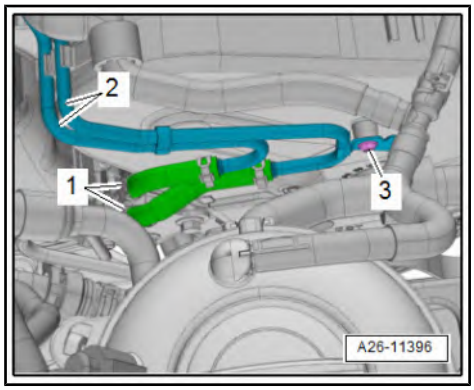
Vehicles with differential pressure line

– Unscrew screw -arrow-.
– Open clamp -A-, pull out hose, unclip pipeline -B- and remove with the differential pressure transmitter - G505- .



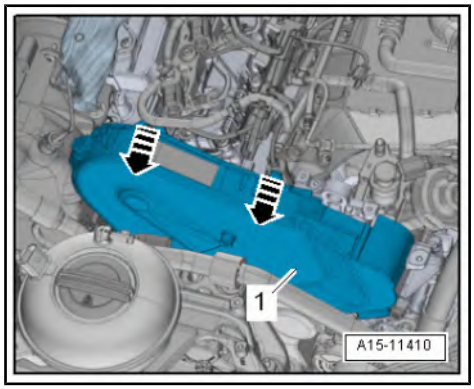
Vehicles with two differential pressure lines

– Unscrew bolt -3-.
– Mark the installation position and assignment of the hoses to the pipes.
– Loosen hose clamps -1-, remove hoses.
– Unclip pipe -2- and remove together with the sensors .



Continued for all vehicles

– Unlock catches -arrows-, unhook and remove top toothed belt guard -1-.



Installing

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

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

Tightening torques - summaries of components

Note

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

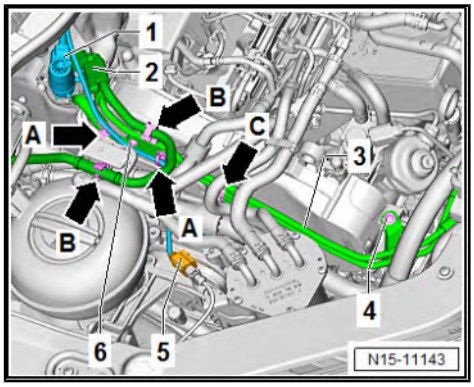
♦ ⇒ “4 Exhaust temperature regulation”, page 647
♦ ⇒ Rep. gr. 20 ; Fuel filter; Summary of components - fuel filter
♦ ⇒ “2.1 Summary of components - toothed belt guard”, page 140

2.3.2 Removing and installing top toothed belt guard, Octavia III with SCR system

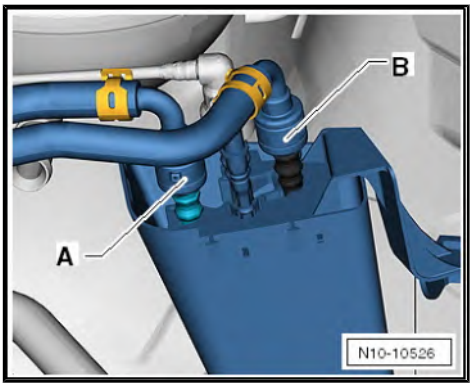
Removing

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

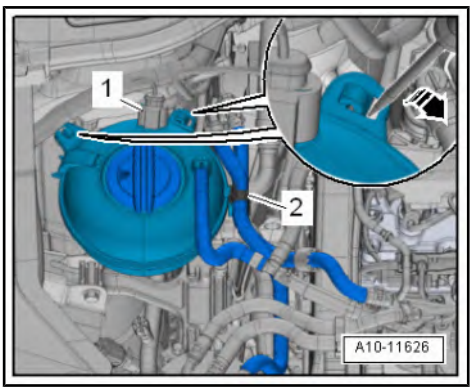
– Release electrical plug connector from injection valve for reduction agent - N474- -5- and pull off.
– Expose the electric cable and unclip from toothed belt guard -arrows A-.
– Unclip the delivery line for reduction agent -2- from the coolant expansion tank and the toothed belt guard -arrows B-.
– Lay the supply line to the side.



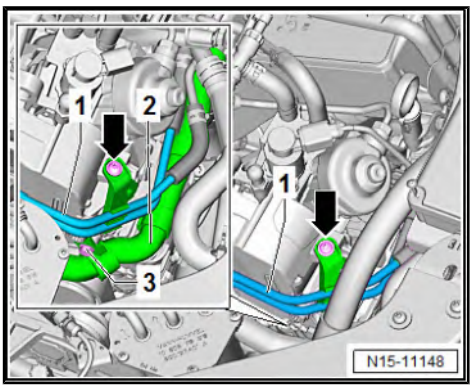
– Open quick couplings -A- and -B- of the fuel lines and disconnect fuel lines. Separate quick couplings ⇒ Rep. gr. 20 ; Quick couplings; separating quick couplings .
– Screw off the fuel filter and place it on the engine with attached fuel hoses ⇒ Rep. gr. 20 ; Fuel filter; removing and installing fuel filter .



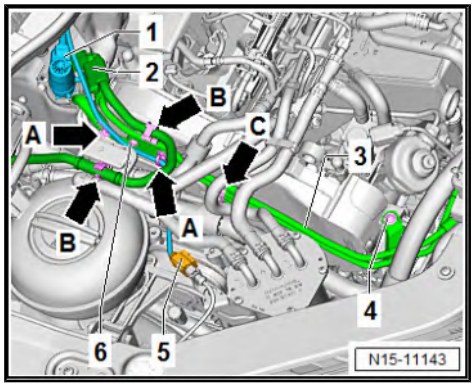
– Separate electrical plug connection -1-.
– Release and remove bracket -2- with fuel hoses.
– Remove coolant hoses, opening the mounting brackets to do so.
– Unlock catches with a screwdriver -arrow-.



– Remove bracket for coolant hose -2- from engine.
– Unscrew bolt -3- to do so.
– Place coolant expansion tank to one side.



– Unscrew screw -4- for the coolant lines -3-.
– Unscrew screw -6- for the coolant lines -3-.
– Unclip coolant lines -3- -arrow C-.
– Remove injection valve for reduction agent - N474- -1- from exhaust gas cleaning module with connected coolant hoses and lines.
⇒ “3.7.1 Removing and installing the injection valve for reduction agent N474 , Octavia III”, page 636 .
– Remove injection valve for reduction agent - N474- with connected lines and lay on the right side.



NOTICE

The transmitter with pipe must be removed because of possible mechanical damage to the differential pressure transmitter - G505- !

Vehicles with Differential pressure encoder - G505-

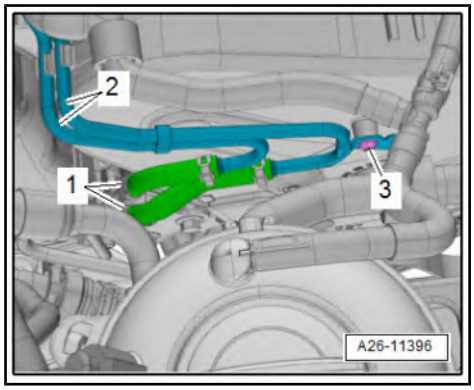
– Remove the differential pressure encoder - G505- from the cylinder head cover
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

Vehicles with differential pressure encoder - G505- and with pressure sensor 1 for exhaust gas - G450-

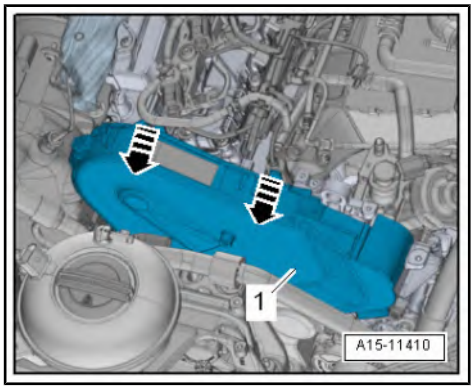
– Remove the differential pressure transmitter - G505- and pressure sensor 1 for exhaust gas - G450- from the cylinder head cover
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

Continued for all vehicles

– Unscrew bolt -3-.
– Expose the pipes -2- and unclip from toothed belt guard.
– Move the pipes with differential pressure transmitters to the rear right.



– Unlock catches -arrows-, unhook and remove top toothed belt guard -1-.



Installing

Installation is performed in the reverse order, while paying attention to the following:

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

– Venting air from the fuel system
⇒ “1.3 Filling/bleeding the fuel system”, page 444 .

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ⇒ Rep. gr. 20 ; Fuel filter; Summary of components - fuel filter
- ⇒ “2.1 Summary of components - toothed belt guard”, page 140
- ⇒ “3.9 Summary of components - injection valve for reduction agent”, page 640

2.3.3 Removing and installing the top toothed belt guard, Rapid NH)

Note

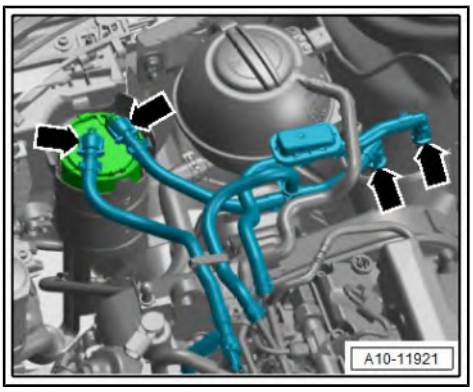
Observe rules for cleanliness
⇒ “3.1 Rules of cleanliness”, page 7 .

Removing

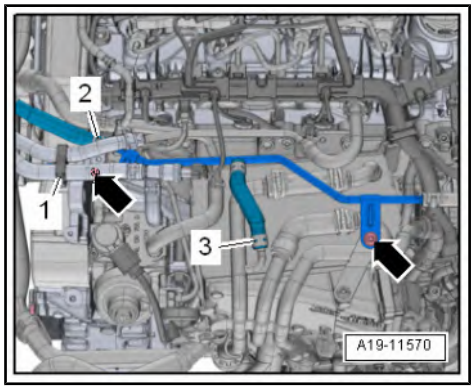
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

– Separated fuel lines -Arrows- ⇒ Rep. gr. 20 ; Quick couplings; separating quick couplings .

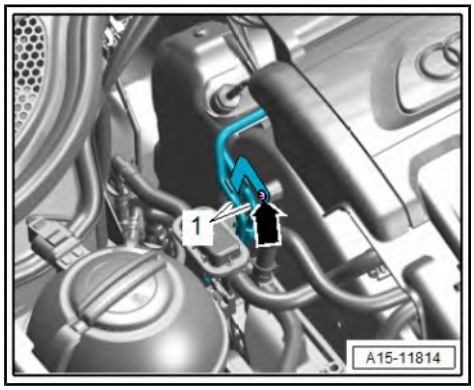
– Expose fuel hoses on coolant expansion reservoir.



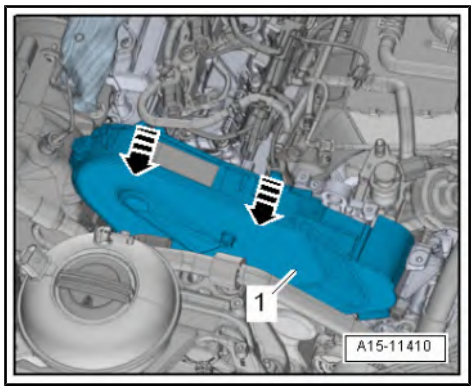
– Remove left screw -arrow-.



– If present, unscrew screw -arrow-.
– Detach measurement pipes -1- and push to the right side.



– Unlock locks -arrows-, unhook and remove top toothed belt guard -1-.



Installing

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

– Connect fuel lines ⇒ Fuel system for diesel engines; Rep. gr. 20 .
– Check fuel system for tightness
⇒ “1.4 Check the fuel system for tightness”, page 445 .
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

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 - toothed belt guard”, page 140

2.3.4 Removing and installing bottom toothed belt guard

Removing

Note

- *To simplify the production process in manufacturing plants, the bottom toothed belt guard is fitted with a guide, which reaches into the sealing flange. To remove the bottom toothed belt guard although the engine support is installed, this guide in the toothed belt guard must be destroyed.*
- *Note different versions!*

– Remove vibration dampener
⇒ “1.5 Removing and installing vibration dampener”, page 71 .

NOTICE

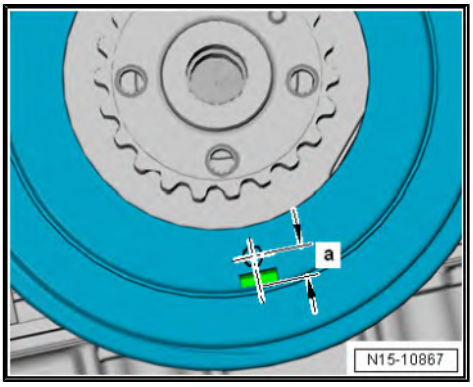
Risk of engine damage if the toothed belt is damaged.

- **Perform following work step very carefully!**

– For a toothed belt guard of an expiring series, set bores to the following dimensions:

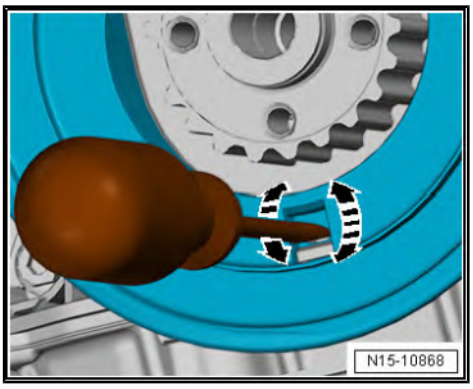
- Dimension -a-: 10 mm
- ∅ 8 mm

– Guide the screwdriver through the hole and break off the guide peg of the toothed belt guard towards the rear.



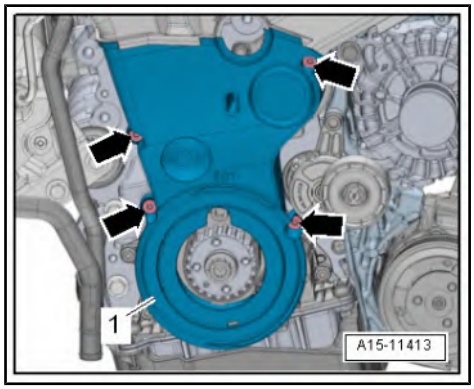
– For a newer toothed belt guard version, put a screwdriver into the guide peg slot.

– By turning the screwdriver in -direction of arrow-, break off the guide peg.



– Unscrew screws -arrows-.

– Unhook bottom toothed belt guard -1- upwards and remove.

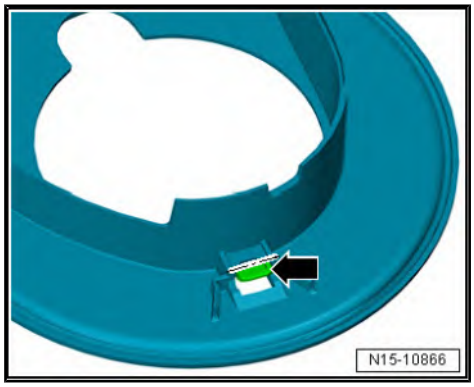


Installing

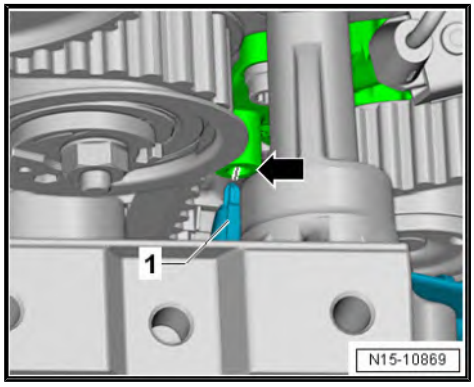
Installation is carried out in the reverse order. When installing, observe the following:

Note

When a new toothed belt guard is being installed the guide peg -arrow- must be disconnected before installation.



– Position the toothed belt guard, pay attention to fit pin -arrow- while doing so.



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 - toothed belt guard”, page 140

2.4 Removing and installing toothed belt

Special tools and workshop equipment required

♦ Rig pin for the diesel injection pump - 3359-

♦ Counterholder - T10051- or -T10051A-

♦ Counterholder - T10172- or -T10172A- with adapters - T10172/11-

♦ Offset screwdriver - T10264-

♦ Rig tool - T10265-

♦ Crankshaft arrester - T10490-

♦ Rig pin - T10492-

Removing

– Remove engine support
⇒ “1.7 Removing and installing engine support”, page 74 .

– Remove top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Remove bottom toothed belt guard
⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149 .

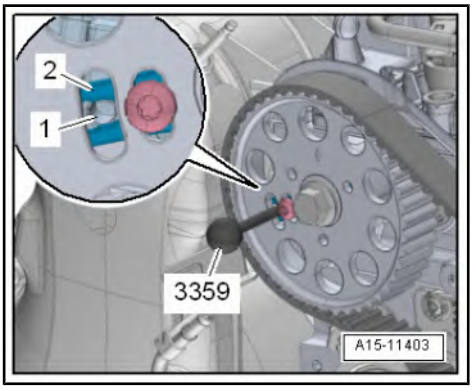
NOTICE

Risk of destruction as a result of the toothed belt pulley jumping.

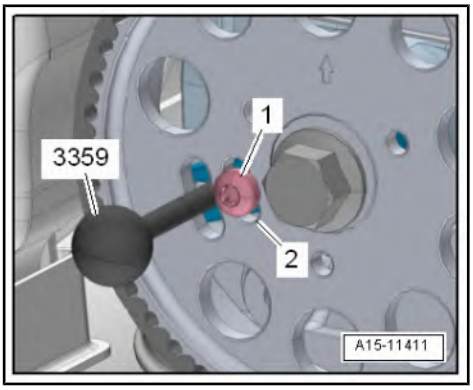
♦ **Only rotate the crankshaft in the direction of rotation of the engine!**

– Turn the crankshaft at the screw for toothed belt pulley until the camshaft toothed belt pulley is positioned on “TDC”.

– Lock hub of the camshaft using the diesel injection pump rig pin - 3359- ; to do so, insert the rig pin into fork -2- of the driver and into the bore behind it -1- in the cylinder head.

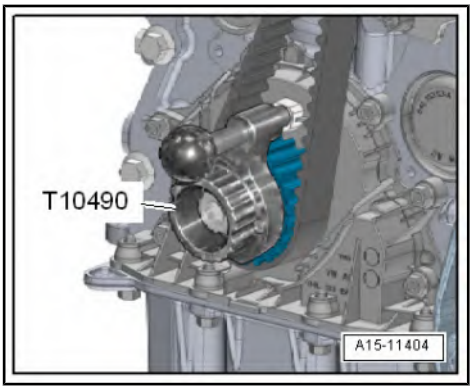


– Loosen fixing screw -1- in the camshaft sprocket by half a turn but do not release it.



– Lock the crankshaft toothed belt sprocket using the crankshaft arrester - T10490- .

- The studs of the crankshaft arrester - T10490- must reach into the threaded bores of the toothed belt pulley.
- The rig pin of the crankshaft arrester - T10490- must reach into the bores at the sealing flange.

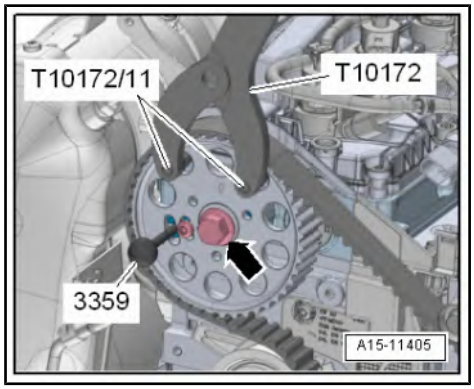


NOTICE

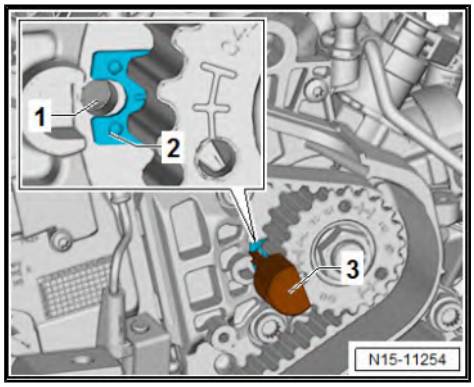
The tightening torque that is applied when loosening or tightening the central bolts on the camshaft must not be transferred to the rig pin under any circumstances. Using the counterholder in this case can also damage the »drivers«. The engine may be damaged. To release and tighten the central screw, pull out the rig pin and then insert it again, if necessary!

– Remove rig pin and partially undo the screws for the camshaft sprocket. Before removing fully, peg back the rig pin.

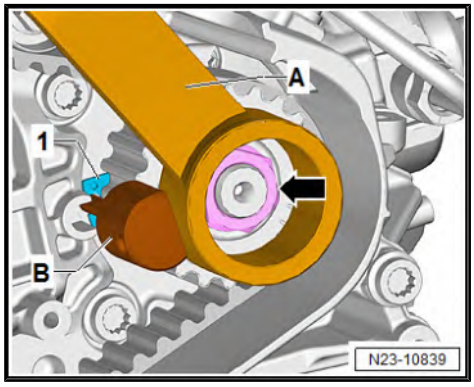
– Loosen screw -arrow- for camshaft sprocket; to do so, use counterholder - T10172- or -T10172A- with adapters - T10172/11- .



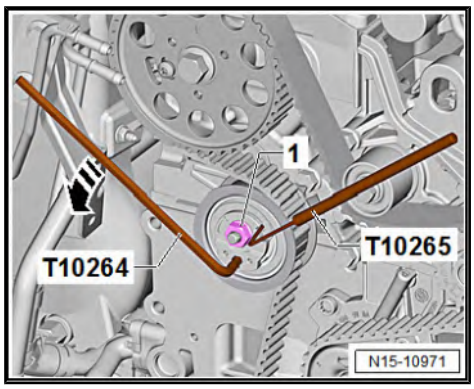
– Lock hub of the high-pressure pump with locking pin - T10492- -3-.
– To do so, insert the rig pin into the fork -2- of the hub and the bore behind it -1- on the bracket for auxiliary units.



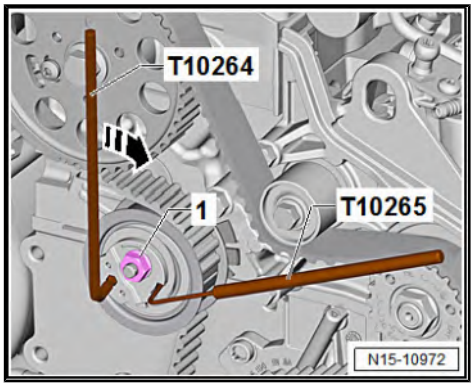
– Turn the locking pin - T10492- -B- so that the level edge points to the right, as shown.
– Fit the counterholder - T10051- or -T10051A- -A-.
– Unscrew the rig pin and partially unscrew the nuts for the high pressure pump toothed belt. Before removing fully, peg back the rig pin.
– Loosen the nut -arrow- for the high pressure pump toothed belt pulley by approximately 90°.



– Loosen nut -1- for tensioning pulley.
– Carefully turn eccentric of the tensioning pulley with offset screwdriver - T10264- clockwise -arrow- until the tensioning pulley can be interlocked with the rig tool - T10265- .



– Then turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- clockwise -arrow- up to the stop and tighten nut -1- by hand.



NOTICE

Risk of damage through reversing the rotation direction of an already used toothed belt.

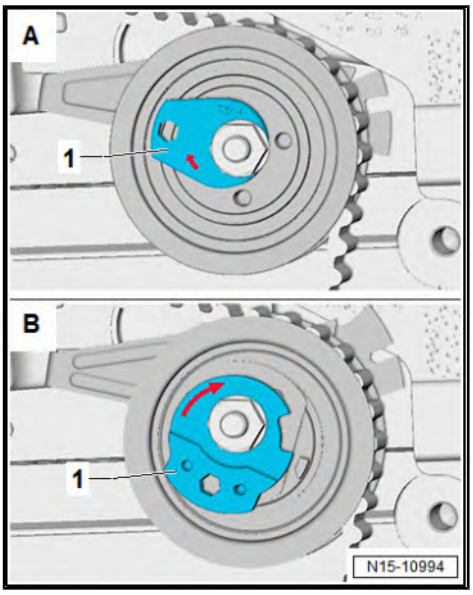
- **Mark the direction of rotation with chalk or a felt-tip pen for the re-installation before removing the toothed belt pulley.**

– First remove the toothed belt from the coolant pump and then from the remaining toothed belt gears.

Installing (set the timing)

Note

- *Different tensioning pulleys -A- or -B- are installed.*
- *The setting eccentric -1- is the distinguishing feature.*
- *For tensioning pulley -A-, it is not necessary to insert the rig tool - T10265- .*
- *Use offset screwdriver SW 8 - T10409- for tensioning.*
- *The work procedure is otherwise identical.*



Note

The engine must be cold for performing installation work on the toothed belt.

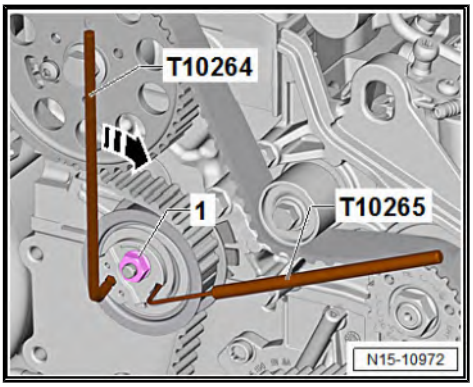
NOTICE

Risk of damage to valves and piston crowns.

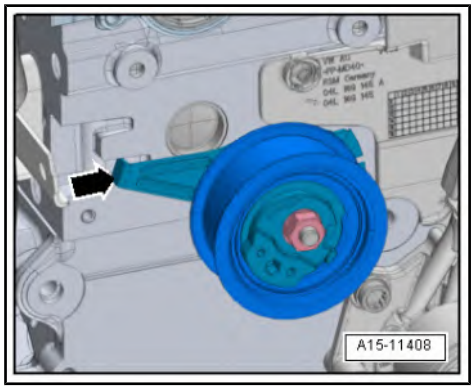
- **When rotating the camshaft, the crankshaft must not be positioned at "TDC" with any one piston.**

Requirements:

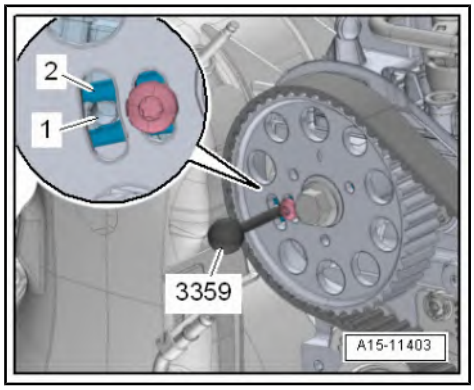
- Tensioning pulley -B- locked with rig tool - T10265- and fixed with nut -1- up to right stop.



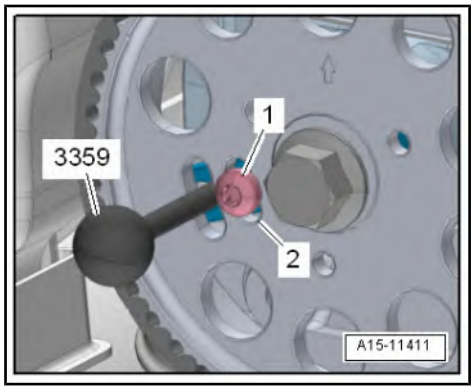
- The sheet peg -arrow- of the tensioning pulley must engage in the cast iron recess of the cylinder head.



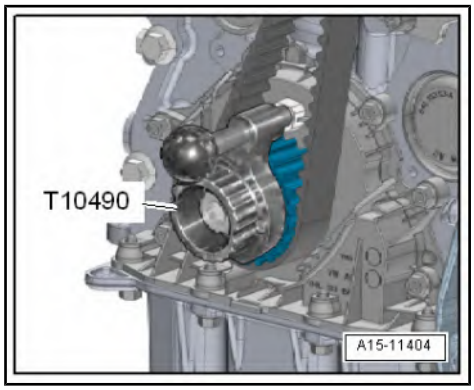
- The hub of the camshaft must be locked with the rig pin for diesel injection pump - 3359- .
- Screw loosely inserted.
- It must still be possible to just turn the camshaft toothed belt pulley, however it must not tilt.



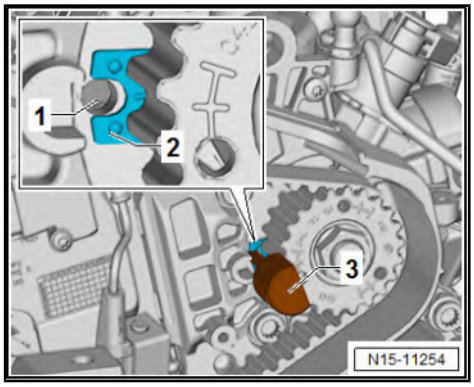
- Fixing screw -1- of the driver loosened by one half turn, positioned in the centre position in the elongated hole -2-.



- Interlock crankshaft with crankshaft arrester - T10490- .



- Lock hub of high pressure pump with rig pin - T10492- -3-.
- Nut loosely inserted.
- It must still be possible to just turn the toothed belt pulley of the high pressure pump, however it must not tilt.



– Turn the camshaft toothed belt pulley and high pressure pump toothed belt pulley in their elongated holes clockwise as far as the stop.

– Fit the toothed belt in the following order:

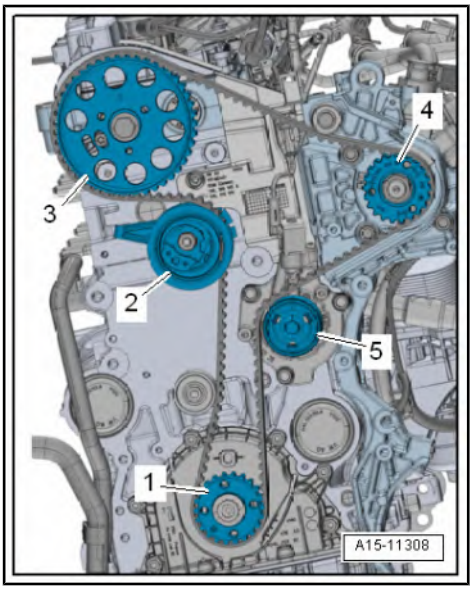
1 - Crankshaft toothed belt sprocket

2 - Tensioning pulley

3 - Camshaft toothed belt pulley

4 - Toothed belt pulley high pressure pump

5 - Coolant pump toothed belt pulley



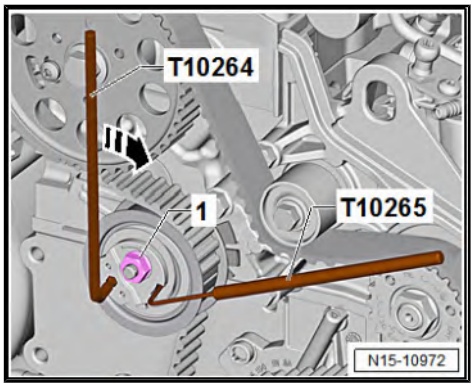
– Loosen nut -1- for tensioning pulley -B- and remove rig tool - T10265- .

Note

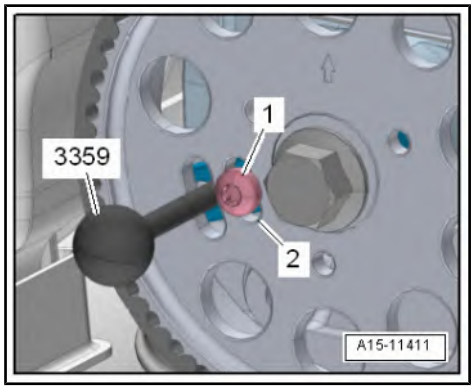
- *Sheet peg of the tensioning pulley must engage in the cast iron recess of the cylinder head.*
- *Ignore -arrow-.*

NOTICE

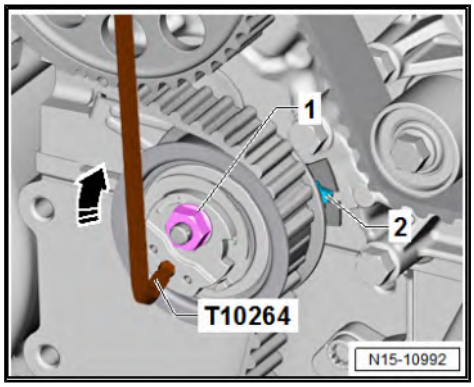
The locking screw -1- must not rest on the top stop of the slotted hole after the toothed belt has been tensioned.



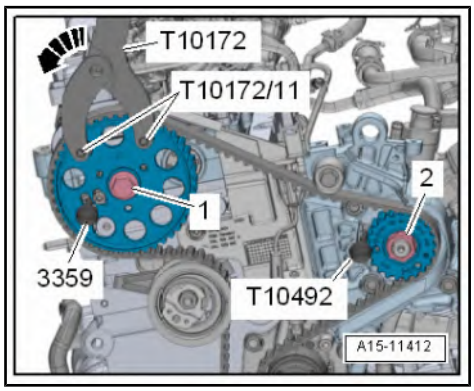
– Check whether the locking screw -1- is located between the centre elongated hole and the bottom stop -2-, where necessary correct the position of the camshaft sprocket by one tooth in a clockwise direction and put the toothed belt back into position.



– Turn the eccentric of the tensioning pulley carefully with the offset screwdriver - T10264- or offset screwdriver SW8 - T10409- clockwise -arrow- until the pointer -2- is in the centre of gap in the base plate.
• The nut -1- must not turn along.
– Hold tensioning pulley in this position and tighten nut.



– Fit the counterholder - T10172- or -T10172A- with adapters - T10172/11- on the camshaft gear as shown.
– Push the counterholder anticlockwise -arrow- and keep it pretensioned.
– In this position, tighten screw -1- for camshaft toothed belt pulley and nut -2- for high pressure pump toothed belt pulley initially to 20 Nm.

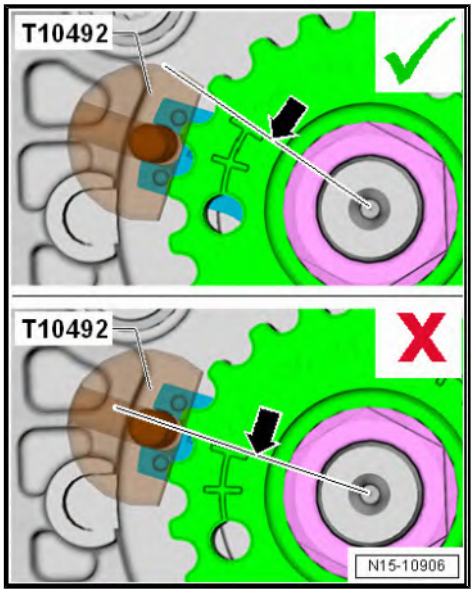


Note

The high pressure pump toothed belt pulley can only be twisted to a limited extent. It is therefore crucial to check that the toothed belt gear does not lie against the »stop« of the twisting range after tightening.

– Make sure that the marking on the toothed belt gear is not flush with the rig pin. You may need to correct the position of the toothed belt gear of the high pressure pump by a tooth clockwise and put the toothed belt back into position.

– Remove the rig pins -3359- , -T10492- and crankshaft arrester - T10490- and test the timing ⇒ page 157 .



Checking valve timing

NOTICE

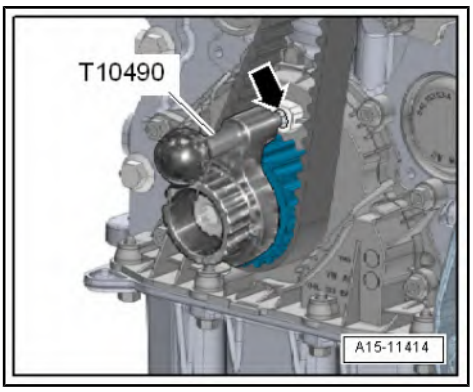
Risk of destruction of the engine as a result of the toothed belt pulley jumping.

- **Only rotate the crankshaft in the direction of rotation of the engine!**

– Turn the crankshaft at the screw for timing belt gear 2 turns in the direction of running of the engine until the crankshaft is positioned shortly before “TDC”.

– Position again the crankshaft arrester - T10490- on the crankshaft timing belt sprocket.

– Turn the crankshaft in the direction of rotation of the engine until the stud -arrow- of the crankshaft arrester engages during this rotary movement in the sealing flange.

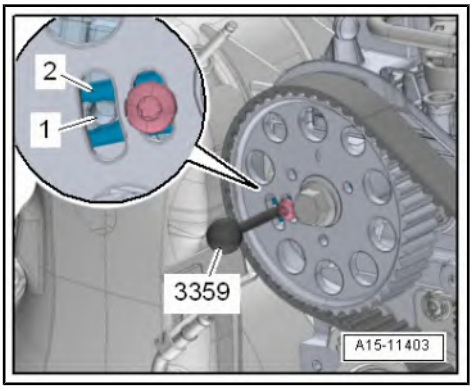


NOTICE

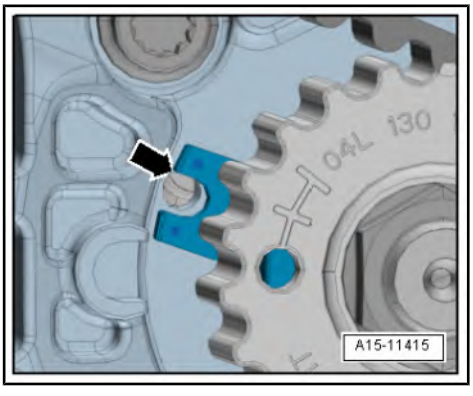
Adjustment error as a result of inaccurate “TDC” setting.

- **If it has been rotated above “TDC”: Rotate crankshaft again by 2 turns until it is again positioned shortly before “TDC”. Then lock the crankshaft from the direction of rotation using the crankshaft arrester - T10490- .**

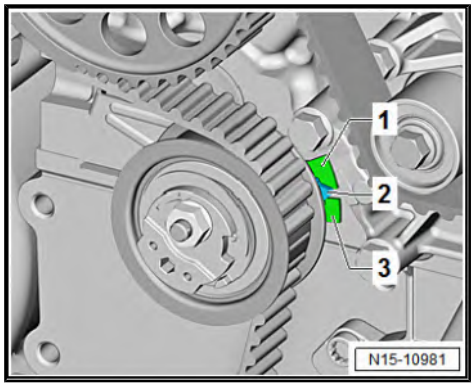
• The hub of the camshaft must be locked with the rig pin for diesel injection pump - 3359- .



• The locking point of the hub of the high pressure pump is always difficult to find again. A slight difference -arrow- does not influence the engine running.



- The tensioning pulley pointer -2- must be positioned in the centre between the pegs -1- and -3- of the base plate.



Note

A lateral offset of a maximum of 5 mm is permitted.

If the conditions are met, continue if timing is set correctly ⇒ page 158 .

If the conditions are not met, correct timing ⇒ page 158 .

Correct timing

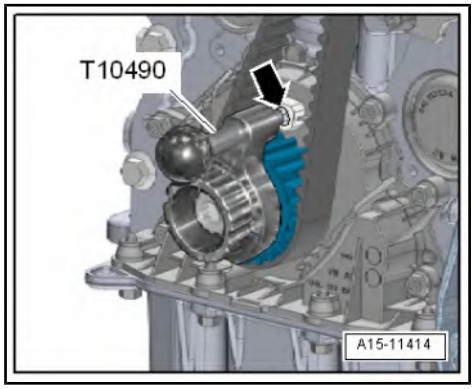
– If the hub of the camshaft cannot be locked, pull back the crankshaft arrester - T10490- until the stud disconnects from the bore.

– Turn the crankshaft slightly against the running direction of the engine over the “TDC”.

– Now turn the crankshaft slowly in the running direction of the engine until the hub of the camshaft can be locked.

– After locking, loosen camshaft toothed belt pulley screws.

A - Crankshaft arrester - T10490- stud is positioned to the left of the bore:



– Turn the crankshaft in the direction of rotation of the engine until the stud -arrow- of the crankshaft arrester engages during this rotary movement in the sealing flange.

– Tighten camshaft toothed belt pulley to 20 Nm.

B - Crankshaft arrester - T10490- stud is positioned to the right of the bore:

– First turn the crankshaft slightly against the running direction of the engine.

– Turn the crankshaft in the direction of rotation of the engine until the stud of the crankshaft arrester engages during this rotary movement in the sealing flange.

– Tighten camshaft toothed belt pulley to 20 Nm.

Continued if the timing is correctly set or has been corrected:

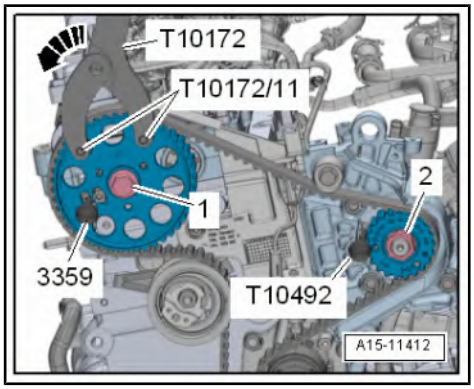
– Remove rig pin for diesel injection pump - 3359- and crankshaft arrester - T10490- .

– Turn the crankshaft at the screw for timing belt gear 2 turns in the direction of running of the engine until the crankshaft is positioned shortly before “TDC”.

– Repeat timing test ⇒ page 157 .

NOTICE

The tightening torque that is applied when loosening or tightening the central bolts on the camshaft must not be transferred to the rig pin under any circumstances. Using the counterholder in this case can also damage the »drivers«. The engine may be damaged. To release and tighten the central screw, pull out the rig pin and then insert it again, if necessary!



– If it is now possible to lock the camshaft hub, tighten screw -1- for camshaft sprocket Pos. -8- ⇒ “2.2 Summary of components - toothed belt”, page 141 to the end position using counterholder - T10172- or -T10172A- with adapters -T10172/11- .

– Tighten the nuts -2- for the toothed belt pulley on the high pressure pump Pos. -4- ⇒ “8.1 Summary of components - high pressure pump”, page 537 to the end position using the counterholder - T10051- or -T10051A- .

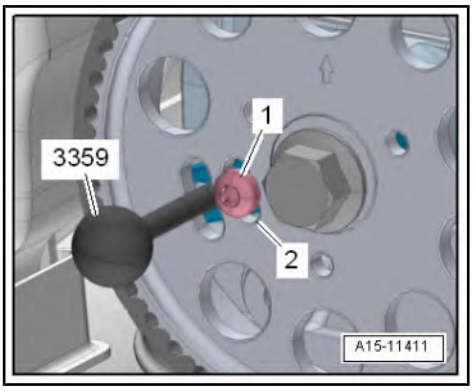
– Repeat timing test ⇒ page 157 .

Assembling

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

Note

Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .



– Tighten fixing screw -1-.

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 - toothed belt guard”, page 140
- ⇒ “2.2 Summary of components - toothed belt”, page 141

2.5 Remove the toothed belt from the camshaft

Special tools and workshop equipment required

- Rig pin for the diesel injection pump - 3359-
- Counterholder - T10051- or -T10051A-
- Counterholder - T10172- or -T10172A- with adapters - T10172/11-
- Offset screwdriver - T10264-
- Rig tool - T10265-
- Crankshaft arrester - T10490-
- Rig pin - T10492-

Removing

– Remove top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Remove vibration dampener
⇒ “1.5 Removing and installing vibration dampener”, page 71 .

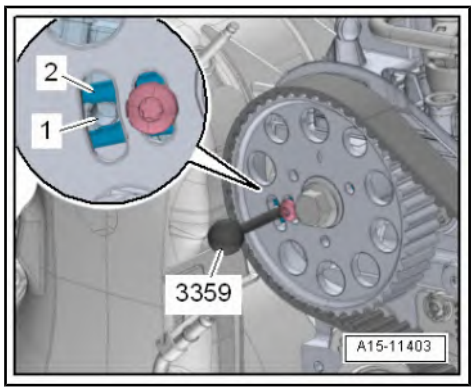
NOTICE

Risk of destruction as a result of the toothed belt pulley jumping.

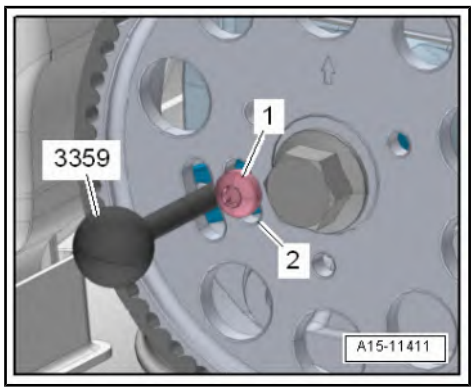
♦ **Only rotate the crankshaft in the direction of rotation of the engine!**

– Turn the crankshaft at the screw for toothed belt pulley until the camshaft toothed belt pulley is positioned on “TDC”.

– Lock hub of the camshaft using the diesel injection pump rig pin - 3359- ; to do so, insert the rig pin into fork -2- of the driver and into the bore behind it -1- in the cylinder head.

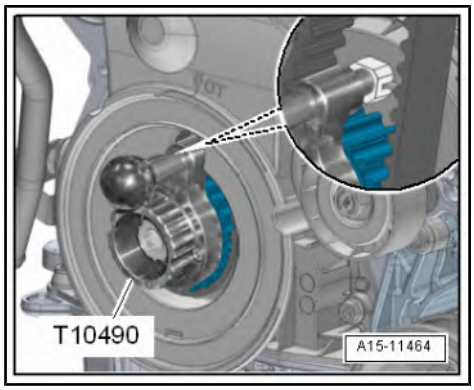


– Loosen fixing screw -1- in the camshaft sprocket by half a turn but do not release it.



– Lock the crankshaft toothed belt sprocket using the crankshaft arrester - T10490- .

- The studs of the crankshaft arrester - T10490- must reach into the threaded bores of the toothed belt pulley.
- The rig pin of the crankshaft arrester - T10490- must reach into the bores at the sealing flange.

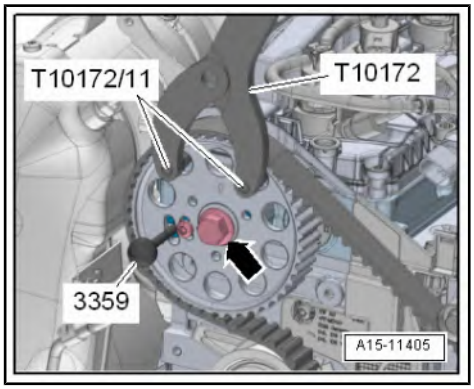


NOTICE

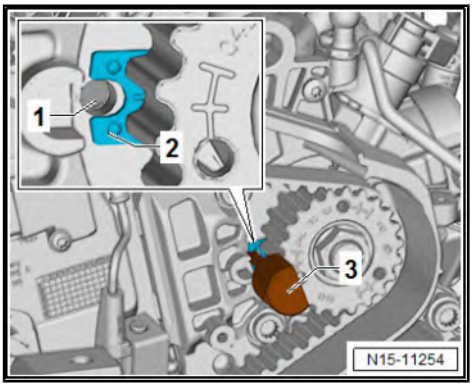
Risk of engine damage.

♦ **The diesel injection pump rig pin - 3359- must not be used as a counterholder for loosening the camshaft toothed belt pulley.**

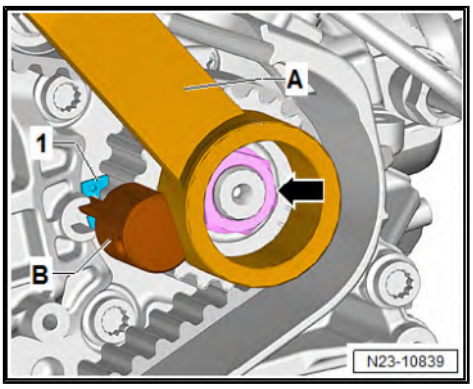
– Loosen screw -arrow- for camshaft sprocket; to do so, use counterholder - T10172- or -T10172A- with adapters - T10172/11- .



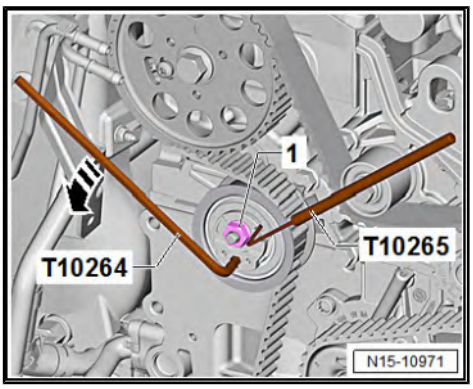
– Lock hub of the high-pressure pump with locking pin - T10492- -3-.
– To do so, insert the rig pin - T10492- into the fork -2- of the hub and the bore behind it -1- on the bracket for auxiliary units.



– Turn the locking pin - T10492- -B- so that the level edge points to the right, as shown.
– Fit the counterholder - T10051- or -T10051A- -A-.
– Loosen the nut -arrow- for the high pressure pump toothed belt pulley by approximately 90°.

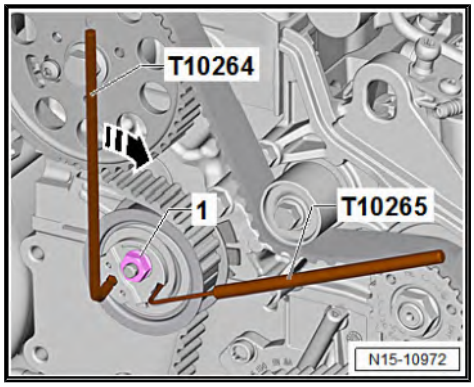


– Loosen nut -1- for tensioning pulley.
– Carefully turn eccentric of the tensioning pulley with offset screwdriver - T10264- clockwise -arrow- until the tensioning pulley can be interlocked with the rig tool - T10265- .



– Then turn the eccentric of the tensioning pulley with the offset screwdriver - T10264- clockwise -arrow- up to the stop and tighten nut -1- by hand.
– Remove the toothed belt from the camshaft toothed belt pulley.

Install (set the timing) ⇒ page 153



3 Valve gear

⇒ “3.1 Assembly overview - valve gear”, page 163

⇒ “3.2 Removing and installing gasket ring for camshaft”, page 166

⇒ “3.3 Removing and installing camshaft control”, page 168

⇒ “3.4 Removing and installing camshaft control valve 1 N205 ”, page 173

⇒ “3.5 Checking hydraulic balancing elements”, page 173

⇒ “3.6 Removing and installing valve stem seals”, page 174

3.1 Assembly overview - valve gear

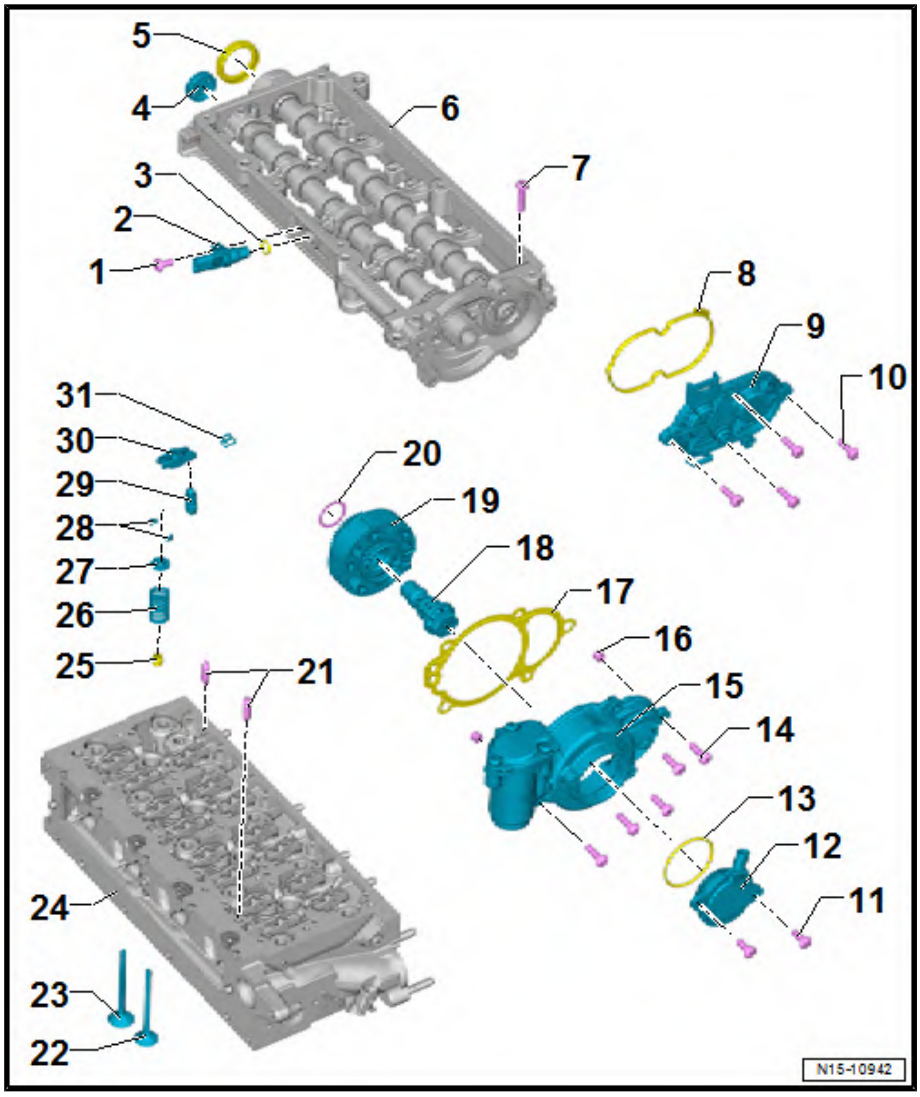
NOTICE

Risk of damaging valves and piston crowns after work on the valve gear.

- **Because hydraulic compensation elements must be set, the engine must not be started until approximately 30 minutes after camshaft installation.**
- **To ensure that no valve is set during starting, turn the crankshaft carefully by at least 2 turns.**

Note

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



1 - Screw

- ❑ Tightening torque ⇒ “1.1 Summary of components - Glow plug system”, page 700

2 - Hall transmitter - G40-

- ❑ Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

3 - O-ring

- ❑ Replace after disassembly

4 - Screw cap

- ❑ Replace after disassembly
- ❑ Removing: In cases where there is a built-in camshaft housing, insert a punch at the side of the cover and lever out
- ❑ Installing: Drive in flush without sealant with a suitable thrust piece, e.g. driver - 3390-

5 - Camshaft sealing ring

- ❑ Replace ⇒ “3.2 Removing and installing gasket ring for camshaft”, page 166

6 - Camshaft housing

- ❑ with integrated camshaft
- ❑ Removing and installing ⇒ “1.6 Removing and installing camshaft housing”, page 127

7 - Screw

- ❑ Replace after disassembly
- ❑ Sequence for loosening ⇒ “1.6 Removing and installing camshaft housing”, page 127
- ❑ Tightening torque and tightening order ⇒ page 166

8 - Sealing ring

- ❑ Replace after disassembly

9 - Cover

10 - Screw

- ❑ 8 Nm

11 - Screw

- ❑ If present
- ❑ integrated into camshaft housing Pos. -15- from 05/2015
- ❑ 8 Nm

12 - Camshaft control valve 1 - N205-

- ❑ If present
- ❑ integrated into camshaft housing Pos. -15- from 05/2015
- ❑ Removing and installing ⇒ “3.4 Removing and installing camshaft control valve 1 N205 ”, page 173

13 - Sealing ring

- ❑ If present
- ❑ integrated into camshaft housing Pos. -15- from 05/2015
- ❑ Replace after disassembly

14 - Screw

- ❑ If present
- ❑ Tightening torque and tightening order ⇒ page 166

15 - Bushing

- ❑ If present
- ❑ for camshaft control

16 - Fitting sleeve

- ❑ If present

17 - Seal

- ❑ If present
- ❑ Replace after disassembly

18 - Setting valve

- ❑ If present
- ❑ Removing and installing ⇒ “3.3 Removing and installing camshaft control”, page 168
- ❑ 50 Nm

19 - Camshaft adjuster

- ❑ If present
- ❑ Removing and installing ⇒ “3.3 Removing and installing camshaft control”, page 168

20 - Thrust washer

- ❑ If present
- ❑ check presence before assembling the camshaft adjusted

21 - Fit pin

- ❑ for camshaft housing

22 - Exhaust valve

- ❑ do not rework, only grinding in is permissible
- ❑ mark the fitting position for re-installation
- ❑ Valve dimensions ⇒ “4.2 Valve dimensions”, page 181
- ❑ inspecting valve guides ⇒ “4.1 inspecting valve guides”, page 180

23 - Inlet valve

- ❑ do not rework, only grinding in is permissible
- ❑ mark the fitting position for re-installation
- ❑ Valve dimensions ⇒ “4.2 Valve dimensions”, page 181
- ❑ inspecting valve guides ⇒ “4.1 inspecting valve guides”, page 180

24 - Cylinder head

- ❑ the valve seats must not be reworked because of the narrow tolerances

25 - Valve stem gasket

- ❑ Replace ⇒ “3.6 Removing and installing valve stem seals”, page 174

26 - Valve spring

27 - Valve spring plate

28 - Valve collets

29 - Hydraulic balancing element

- ❑ Check ⇒ “3.5 Checking hydraulic balancing elements”, page 173

- ❑ mark the fitting position for re-installation
- ❑ oil the contact surfaces before installing

30 - Roller rocker finger

- ❑ Removing and installing ⇒ “1.6 Removing and installing camshaft housing”, page 127
- ❑ mark the fitting position for re-installation
- ❑ inspect roller bearings for smooth operation
- ❑ oil the contact surfaces before installing

31 - Locking clip

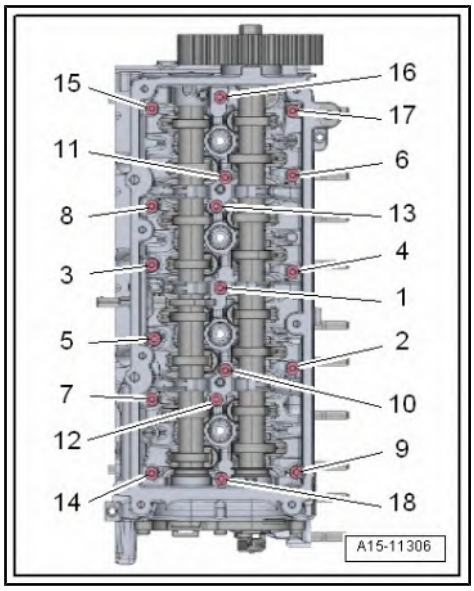
- ❑ for hydraulic balancing element

The engine code is also on the vehicle data sticker and on the crankcase above the gearbox.

Camshaft housing - tightening torque and tightening order

– Tighten bolts step by step in the given sequence:

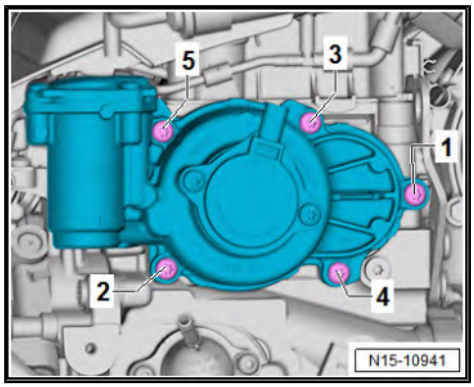
Stage	Bolts	Tightening torque / torquing angle
1.	-1- to -18-	by hand as far as the stop • The camshaft housing must rest on the cylinder head with its complete contact surface.
2.	-1- to -18-	10 Nm



Housing for camshaft adjuster – tightening torque and tightening order

– Tighten bolts step by step in the given sequence:

Step	Bolts	Tightening torque
1.	-1- to -5-	by hand as far as the stop
2.	-1- to -5-	8 Nm



3.2 Removing and installing gasket ring for camshaft

Special tools and workshop equipment required

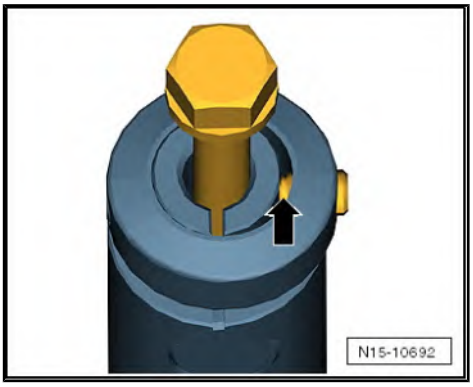
- ♦ Extractor - T10443-
- ♦ Assembly device - T10493-

– Remove the toothed belt from the camshaft ⇒ “2.5 Remove the toothed belt from the camshaft”, page 159 .

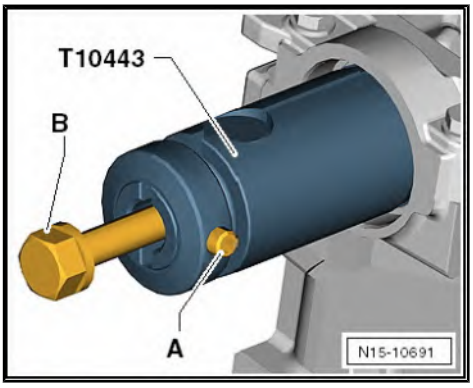
NOTICE

- **If it is turned back too much, the inner pressure plate loosens -T10443- from the pressure screw. The pressure plate must then be pressed onto the pressure screw once again.**

– Carefully turn back set screw -arrow- of the extractor -T10443- until a slight resistances noticeable.



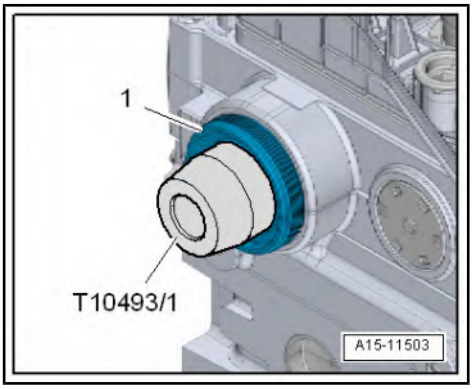
– Place extractor - T10443- straight, as shown in the illustration, and lock by tightening the set screw -A-.
– Screw in the pressure screw -B- until the gasket ring is pulled out.
– Clean the contact and sealing surfaces.



Note

The sealing lip of the gasket ring must not be oiled or greased additionally.

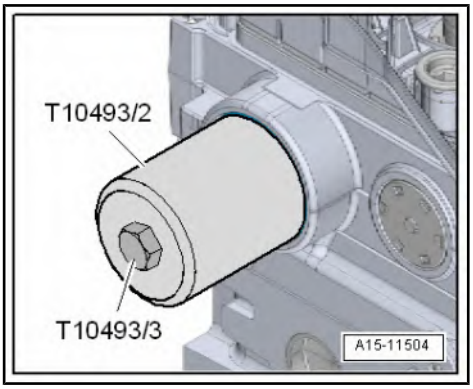
– Fit the guide bushing -T10493/1- onto the camshaft, as shown in the illustration.
– Carefully slide the shaft sealing ring -1- over the guide bushing onto the camshaft.



Note

The guide bushing remains fitted on the camshaft as a stop while the oil gasket is being pressed in.

– Press in the sealing ring with pressure bushing -T10493/2- and screw -T10493/3- up to the stop.
– install (set the timing) ⇒ page 153 .



3.3 Removing and installing camshaft control

⇒ “3.3.1 Removing and installing camshaft control”, page 168

⇒ “3.3.2 Removing and installing the setting valve for camshaft adjustment”, page 170

3.3.1 Removing and installing camshaft control

Special tools and workshop equipment required

- Rig pin for the diesel injection pump - 3359-
- Rig pin - T10492-

Removing

– Remove top toothed belt guard ⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

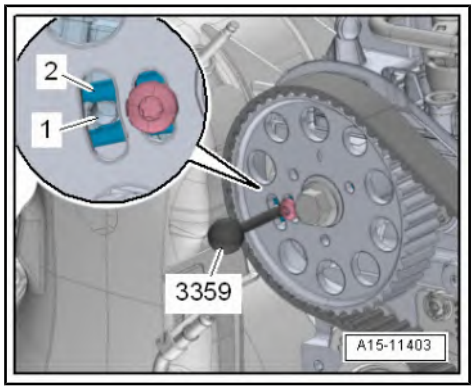
NOTICE

Risk of destruction as a result of the toothed belt pulley jumping.

- **Only rotate the crankshaft in the direction of rotation of the engine!**

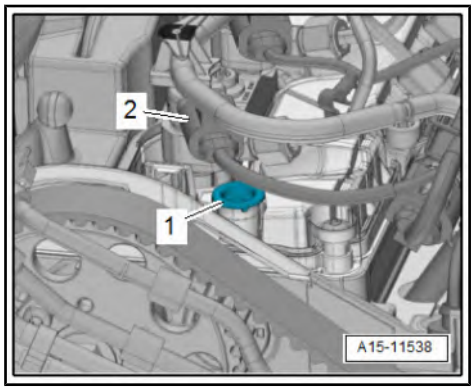
– Turn the crankshaft using the screw on the toothed belt gear until the camshaft sprocket is in the “TDC” position.

– Lock hub of the camshaft using the diesel injection pump rig pin - 3359- ; to do so, insert the rig pin into fork -2- of the driver and into the bore behind it -1- in the cylinder head.



– Disconnect the electrical plug connection -2- from the injection unit for cylinder 1.

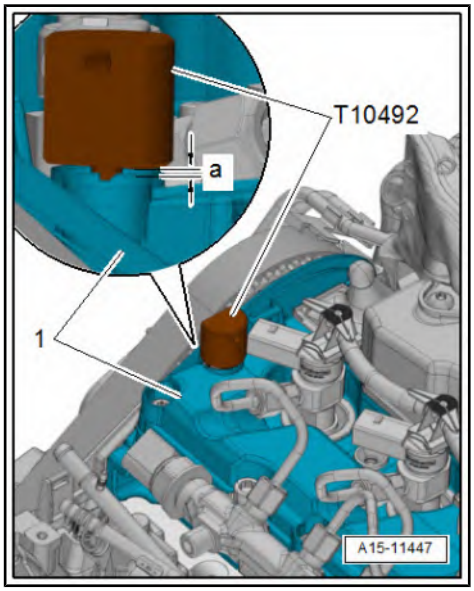
– On the cylinder head cover, unlock and remove screw plug -1- by turning it to the left.



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

The cylinder head cover -1- is installed:

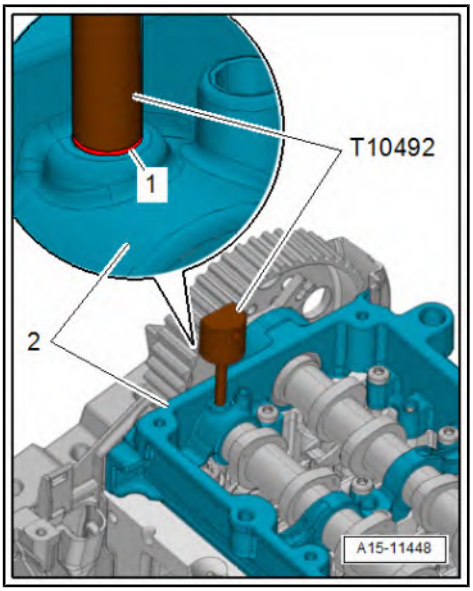
- The distance -a- must be approx. 1 mm.



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 .

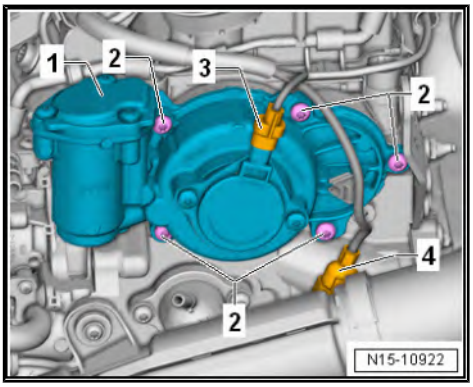


– Disconnect electrical plug connections -3- and -4-. Remove the clip from the housing.

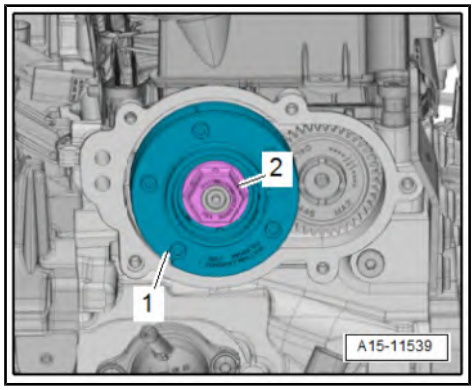
– Unscrew screws -2- and remove the housing -1-.

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.



– Unscrew setting valve -2- and remove camshaft adjuster -1-.



Installing

NOTICE

A thrust washer Pos. -20- is installed between camshaft adjuster and camshaft for secure connection ⇒ Item 20 (page 165) . Before assembly, you must ensure that this thrust washer is in the camshaft adjuster. Otherwise the camshaft adjuster can be released when the engine is running. Risk of engine damage.

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

– Install top toothed belt guard ⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Assembly overview - valve gear”, page 163
- ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

3.3.2 Removing and installing the setting valve for camshaft adjustment

Note

If the setting valve Pos. -18- ⇒ “3.1 Assembly overview - valve gear”, page 163 for camshaft adjustment has been diagnosed as defective, the camshaft adjuster can be left as is and only the setting valve has to be replaced.

Special tools and workshop equipment required

- Rig pin for the injection pump - 3359-
- Rig pin - T10492-

Removing

– Remove top toothed belt guard ⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

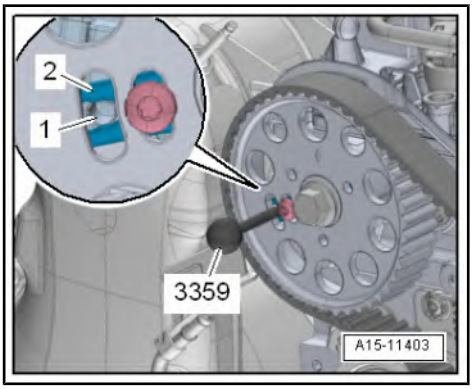
NOTICE

Risk of destruction as a result of the toothed belt pulley jumping.

- **Only rotate the crankshaft in the direction of rotation of the engine!**

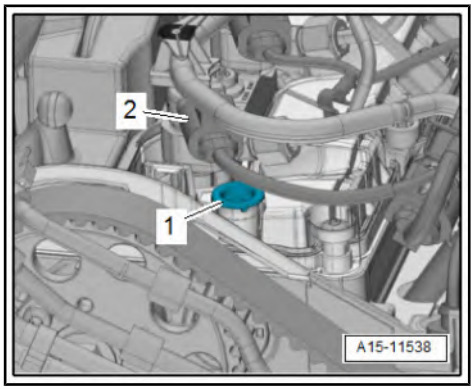
– Turn the crankshaft using the screw on the toothed belt gear until the camshaft sprocket is in the “TDC” position.

– Lock hub of the camshaft using the diesel injection pump rig pin - 3359- ; to do so, insert the rig pin into fork -2- of the driver and into the bore behind it -1- in the cylinder head.



– Disconnect the electrical plug connection -2- from the injection unit for cylinder 1.

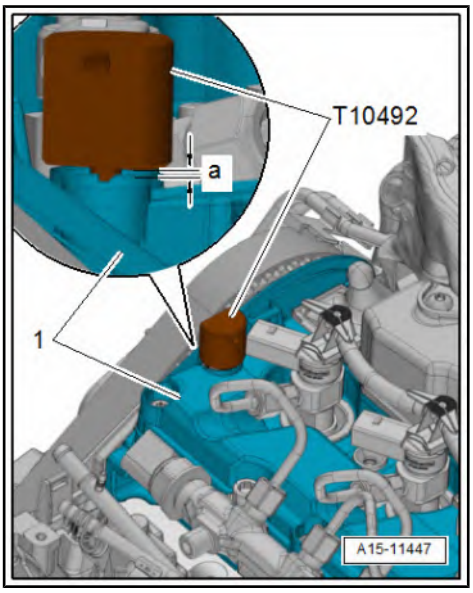
– On the cylinder head cover, unlock and remove screw plug -1- by turning it to the left.



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

The cylinder head cover -1- is installed:

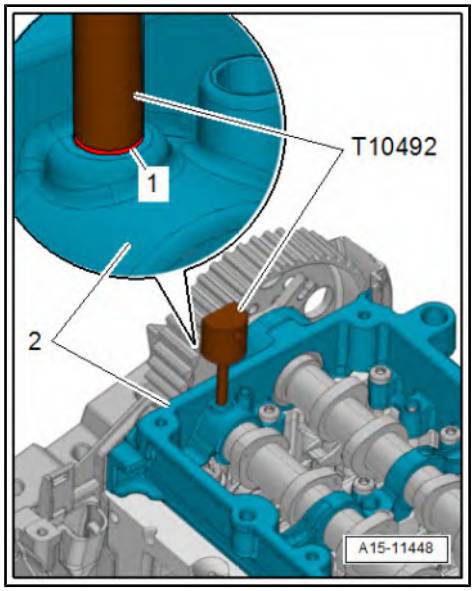
• The distance -a- must be approx. 1 mm.



the cylinder head cover is removed:

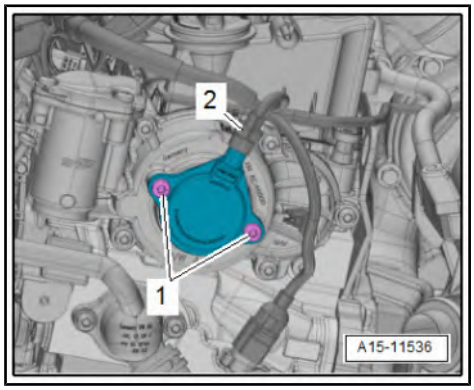
- The groove -1- on the rig pin - T10492- must line up with the camshaft housing -2-.

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



– Separate electrical plug connection -2-.

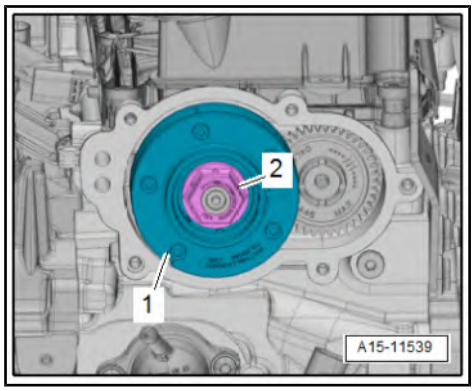
– Unscrew screw -1-, remove camshaft control valve 1 - N205- .



Note

The adjusting valve -2- and the camshaft adjuster -1- are shown without the housing in the illustration for the sake of clarity.

– Remove setting valve -2-.



Installing

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

Note

Replace sealing ring.

– Install top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

Tightening torques - summaries of components

Note

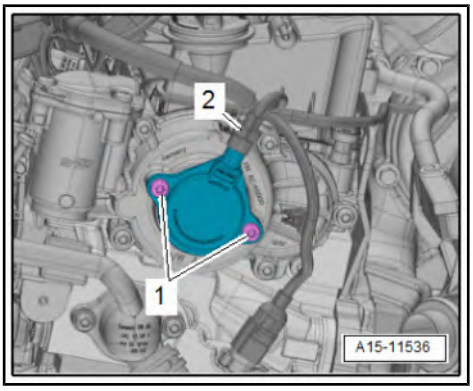
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ⇒ “3.1 Assembly overview - valve gear”, page 163
- ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

3.4 Removing and installing camshaft control valve 1 - N205-

Vehicles up to 05/2015.

Removing



– Remove air filter
⇒ “4.2 Removing and installing air filter housing”, page 476 .
– Separate electrical plug connection -2-.
– Unscrew screw -1-, remove camshaft control valve 1 - N205- .

Installing

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

Note

Renew O-ring.

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Assembly overview - valve gear”, page 163
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.5 Checking hydraulic balancing elements

Note

- *The hydraulic balancing elements cannot be repaired.*
- *Irregular valve noises when starting engine are normal.*

Special tools and workshop equipment required

- Feeler gauge

Test sequence

– Start engine and allow to run until the radiator fan has cut in once.
– Increase engine speed to about 2500 rpm for 2 minutes and conduct a test drive if necessary.

Note

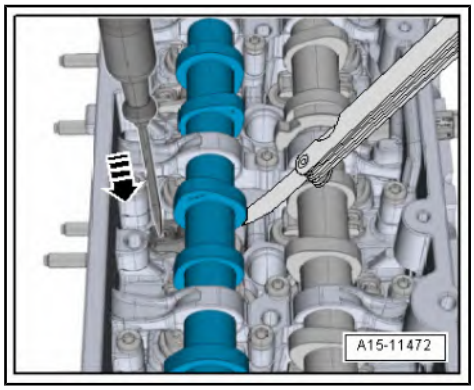
If the irregular valve noises disappear but occurs regularly during short journeys, the oil backstop must be replaced. Installation location of oil backstop in the oil filter housing Pos. -9-
⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203 .

– If the hydraulic balancing elements are still loud, determine which is the faulty balancing element as follows:

– Remove cylinder head cover
⇒ “1.4 Removing and installing cylinder head cover”, page 124 .

– Rotate crankshaft on the toothed belt pulley screw until the cam of the compensating element being checked is positioned at the top.

– To determine the clearance between cam and roller rocker finger, press the roller rocker finger down -arrow-.



– If a feeler gauge can be moved by 0.20 mm between the cam and the roller rocker finger, change the hydraulic compensating element
⇒ “1.6 Removing and installing camshaft housing”, page 127 .

Installing

– Install cylinder head cover
⇒ “1.4 Removing and installing cylinder head cover”, page 124 .

3.6 Removing and installing valve stem seals

⇒ “3.6.1 Removing and installing valve stem seals with cylinder head installed”, page 174

⇒ “3.6.2 Removing and installing valve stem seals with cylinder head removed”, page 177

3.6.1 Removing and installing valve stem seals with cylinder head installed

Special tools and workshop equipment required

- Valve stem seal extractor - MP1-230 (3364)-
- valve stem seal insertion tool - MP1-233 (3365)-
- Disassembly and assembly device for valve collets - VAS 5161- with sealing bolts -VAS 5161/29-1- , guide plate -VAS 5161A/31- and sleeve -VAS 5161A/31-1-

– Remove all glow plugs
⇒ “1.2 Removing and installing glow plugs”, page 701 .

– Remove camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .

– When installing again, mark the assignment of the roller rocker arms and the hydraulic clearance compensation elements.

– Remove the roller rocker arms together with the hydraulic balancing elements and lay aside on a clean surface.

– Put the piston of the relevant cylinder at “bottom dead centre”.

Cylinders 1, 3, 4

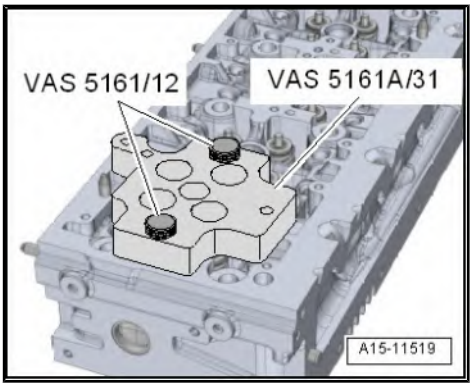
– Position the guide plate -VAS 5161A/31- onto the cylinder head.

• Labelling -A- points to the outlet side.

• Labelling - E - points to intake side

– Tighten guide plate with knurled screws -VAS 5161/12- by hand.

• Position of the knurled screws, as shown in the illustration.



Cylinder 2

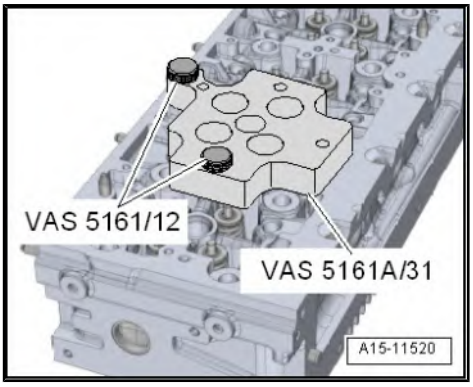
– Position the guide plate -VAS 5161A/31- onto the cylinder head.

• Labelling -A- points to the outlet side.

• Labelling - E - points to intake side

– Tighten guide plate with knurled screws -VAS 5161/12- by hand.

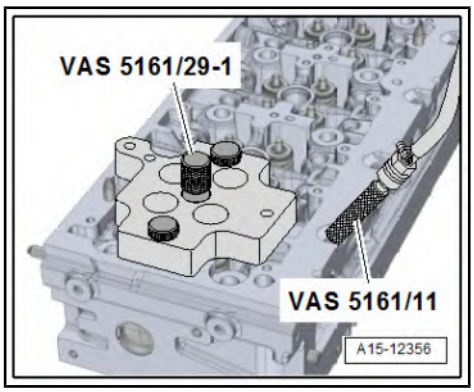
• Position of the knurled screws, as shown in the illustration.



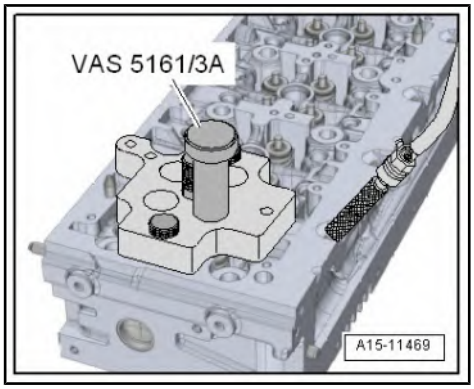
Continued for all cylinders

– Screw the sealing bolt -VAS 5161/29-1- into the guide plate.

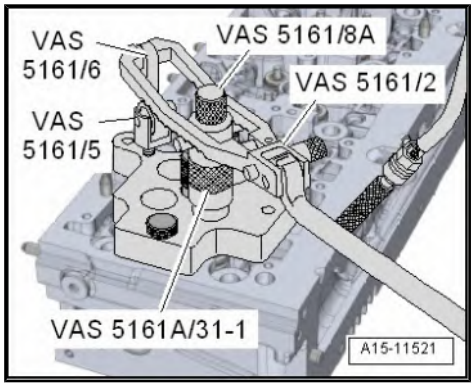
– Screw the adapter -VAS 5161/11- into the relevant pencil type glow plug thread by hand.



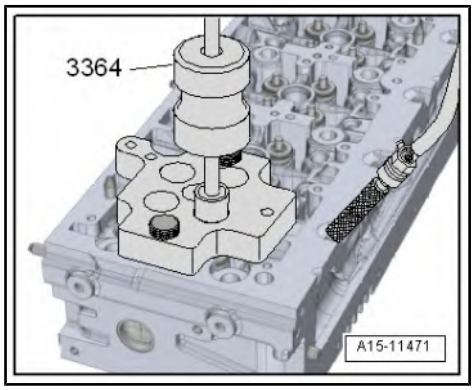
– Insert the impact drift -VAS 5161/3A- into the guide plate and knock off the tightly fitted valve collets using a plastic hammer.



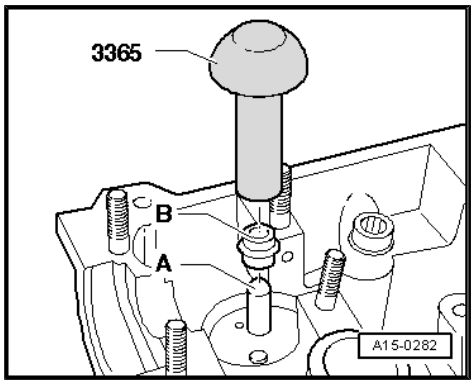
– Screw the detent part -VAS 5161/6- with the interlocking fork -VAS 5161/5- into the guide plate.
– Insert assembly cartridge -VAS 5161/8- with sleeve mounted -VAS 5161 A/31-1- into the guide plate.
– Connect the adapter to the compressed air with a commercially available intermediate piece and apply constant pressure.
• Minimum pressure: 0.6 MPa (6 bar) overpressure.
– Hook the pressure fork -VAS 5161/2- onto the detent part and push the assembly cartridge downwards.
– Turn simultaneously the knurled screw of the assembly cartridge to the right, until the tips click into the valve collets.
– Rotate the knurled screw to the left and to the right, by doing so the valve collets are pressed apart and are installed in the assembly cartridge.
– Release the pressure fork.
– Remove assembly cartridge with sleeve.
– Remove the valve spring with the valve spring retainer.



– Pull off valve stem seal with the valve steam seal extractor - MP 1-230 (3364)- .
– Lightly oil the sealing lip of the valve stem seal and the valve stem.

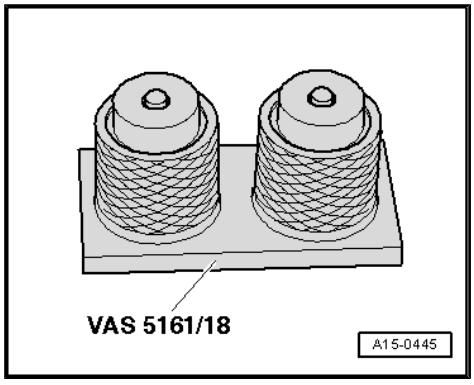


– Carefully push the valve stem seal onto the valve stem -A-.
– Carefully press the valve stem seal with the valve stem seal insertion tool - MP 1-233 (3365)- onto the valve guide.

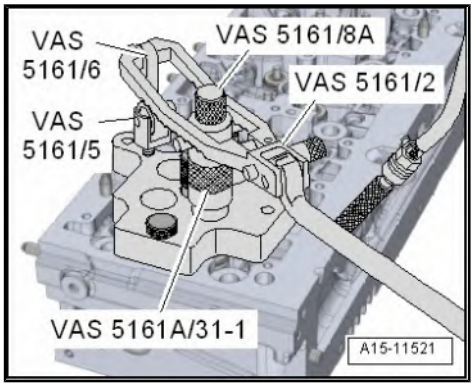


If the valve collets were removed from the assembly cartridge, first of all they must be inserted into the insertion device - VAS 5161/18- .

• The large diameter of the valve collets points to the top.
– Insert the valve spring and the valve spring retainer.
– Press the assembly cartridge from the top onto the insertion device for valve collets and lift up the valve collets.



– Re-insert the assembly cartridge into the guide plate -VAS 5161 A/31- .
– Press down the pressure fork and turn the knurled screw to the left and to the right while pulling it upwards, by doing so the valve collets are inserted.
– Release the pressure fork on tightened knurled screw.
– Repeat the procedure for each valve.



Assembling

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

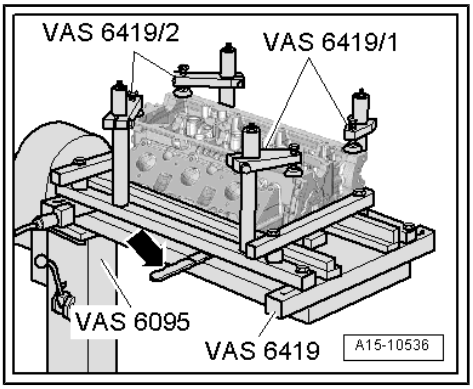
– Ensure that all the roller arms are correctly positioned on the valve stem ends and are clipped in place on the relevant hydraulic balancing elements.
– Install camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .
– Install glow plugs
⇒ “1.2 Removing and installing glow plugs”, page 701 .

3.6.2 Removing and installing valve stem seals with cylinder head removed

Special tools and workshop equipment required

- Valve stem seal extractor - MP1-230 (3364)-
- valve stem seal insertion tool - MP1-233 (3365)-
- Disassembly and assembly device for valve collets - VAS 5161- with guide plate -VAS 5161A/31- and sleeve -VAS 5161A/31-1-
- Engine and gearbox mount - VAS 6095-
- Cylinder head tensioning device - VAS 6419-

– Remove camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .
– When installing again, mark the assignment of the roller rocker arms and the hydraulic clearance compensation elements.
– Remove the roller rocker arms together with the hydraulic balancing elements and lay aside on a clean surface.
– Insert the cylinder head tensioning device - VAS 6419- into the engine and gearbox jack - VAS 6095- .
– Tension the cylinder head in the cylinder head tensioning device, as shown in the illustration.
– Connect cylinder head tensioning device to compressed air.
– Adjust the air bellows with the lever -arrow- below the combustion chamber on which the valve stem seals should be removed.
– Allow just enough air to flow into the air bag so that it applied to the valve disc.



Cylinders 1, 3, 4

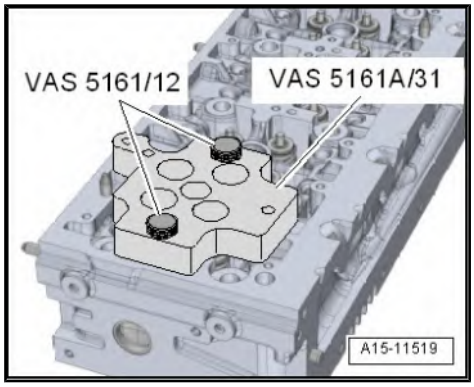
– Position the guide plate -VAS 5161A/31- onto the cylinder head.

• Labelling -A- points to the outlet side.

• Labelling - E - points to intake side

– Tighten guide plate with knurled screws -VAS 5161/12- by hand.

• Position of the knurled screws, as shown in the illustration.



Cylinder 2

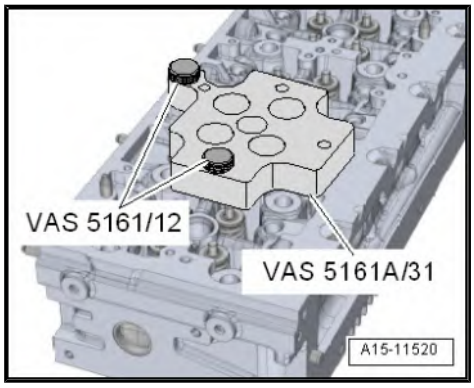
– Position the guide plate -VAS 5161 A/31- onto the cylinder head.

• Labelling -A- points to the outlet side.

• Labelling - E - points to intake side

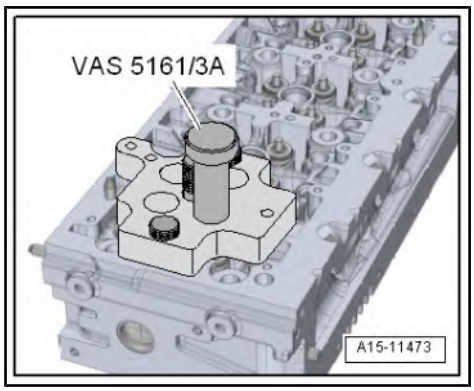
– Tighten guide plate with knurled screws -VAS 5161/12- by hand.

• Position of the knurled screws, as shown in the illustration.



Continued for all cylinders

– Insert the impact drift -VAS 5161/3A- into the guide plate and knock off the tightly fitted valve collets using a plastic hammer.



– Screw the detent part -VAS 5161/6- with the interlocking fork -VAS 5161/5- into the guide plate.

– Insert assembly cartridge -VAS 5161/8- with sleeve mounted -VAS 5161A/31-1- into the guide plate.

– Hook the pressure fork -VAS 5161/2- onto the detent part and push the assembly cartridge downwards.

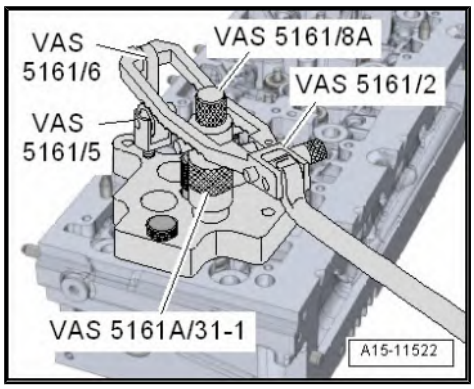
– Turn simultaneously the knurled screw of the assembly cartridge to the right, until the tips click into the valve collets.

– Rotate the knurled screw to the left and to the right, by doing so the valve collets are pressed apart and are installed in the assembly cartridge.

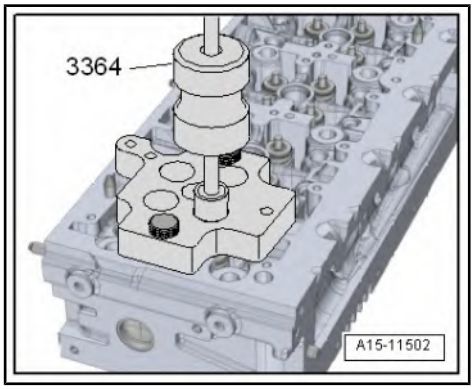
– Release the pressure fork.

– Remove assembly cartridge with sleeve.

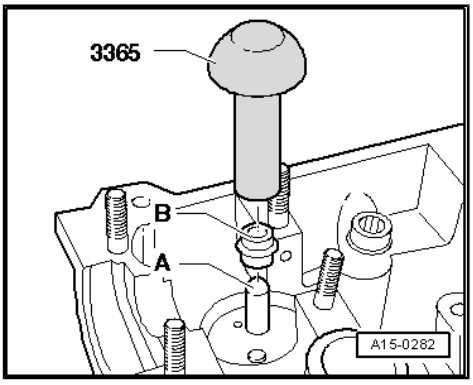
– Remove the valve spring with the valve spring retainer.



– Pull off valve stem seal with the valve steam seal extractor - MP1-230 (3364)- .
– Lightly oil the sealing lip of the valve stem seal and the valve stem.

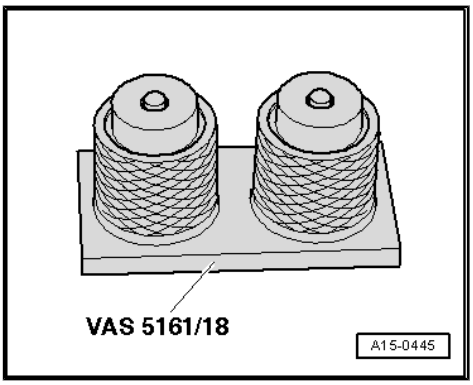


– Carefully push the valve stem seal onto the valve stem -A-.
– Carefully press the valve stem seal with the valve stem seal insertion tool - MP1-233 (3365)- onto the valve guide.

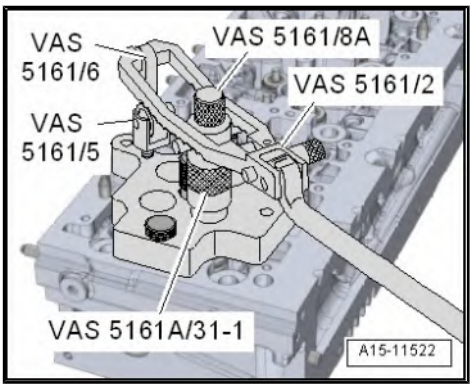


If the valve collets were removed from the assembly cartridge, first of all they must be inserted into the insertion device - VAS 5161/18- .

• The large diameter of the valve collets points to the top.
– Press the assembly cartridge from the top onto the insertion device for valve collets and lift up the valve collets.
– Insert the valve spring and the valve spring retainer.



– Re-insert the assembly cartridge into the guide plate -VAS 5161A/31- .
– Press down the pressure fork and turn the knurled screw to the left and to the right while pulling it upwards, by doing so the valve collets are inserted.
– Release the pressure fork on tightened knurled screw.
– Repeat the procedure for each valve.



Assembling

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

– Ensure that all the roller arms are correctly positioned on the valve stem ends and are clipped in place on the relevant hydraulic balancing elements.
– Install camshaft housing
⇒ “1.6 Removing and installing camshaft housing”, page 127 .

4 Inlet and exhaust valves

⇒ “4.1 inspecting valve guides”, page 180

⇒ “4.2 Valve dimensions”, page 181

4.1 inspecting valve guides

Special tools and workshop equipment required

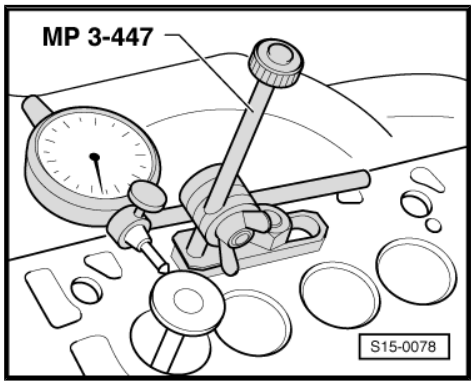
- Universal dial gauge bracket - MP 3-447 (VW 387)-
- Dial gauge

Test sequence

Note

- *If the valve is to be renewed as part of a repair, use a new valve for the measurement.*
- *Because of the different stem diameters only use inlet valve in inlet guide or outlet valve in outlet guide.*

– Secure dial gauge to the cylinder head using the universal dial gauge bracket - MP 3-447 (VW 387)- .



Note

If the valves are replaced when carrying out repair work, use new valves for the measurement.

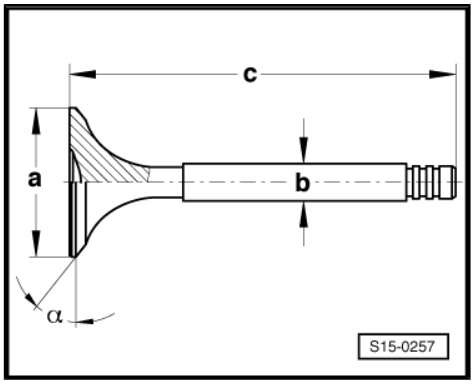
– Insert valve into valve guide. End of valve stem must be flush with guide.

• Valve rock: maximum 1.0 mm

Note

If the wear limit is exceeded, repeat measurement with new valves. If the wear limit is again exceeded, replace cylinder head. The valve guides cannot be changed.

4.2 Valve dimensions



Note

Inlet and exhaust valves must not be reworked. Only lapping-in is permitted.

For 1.6l engines

Dimension		Inlet valve	Exhaust valve
∅ a	mm	26.60	24.50
∅ b	mm	5.975	5.965
c	mm	99.30	99.10
α	∠°	45	45

For 2.0l engines

Dimension		Inlet valve	Exhaust valve
∅ a	mm	28.10	26.00
∅ b	mm	5.975	5.965
c	mm	99.30	99.10
α	∠°	45	45

Volkswagen Technical Site: http://vwts.ru http://vwts.info

17 – Lubrication

1 Sump, oil pump

⇒ “1.1 Assembly overview - pan/oil pump”, page 182

⇒ “1.2 Removing and installing oil pan”, page 187

⇒ “1.3 Removing and installing the bottom part of the oil sump”, page 191

⇒ “1.4 Removing and installing top part of the oil sump”, page 194

⇒ “1.5 Removing and installing oil pump”, page 198

⇒ “1.6 Removing and installing oil level and oil temperature sender G266 ”, page 199

1.1 Assembly overview - pan/oil pump

⇒ “1.1.1 Assembly overview - pan/oil pump”, page 182

⇒ “1.1.2 Assembly overview - oil sump/oil pump, two-part oil sump”, page 184

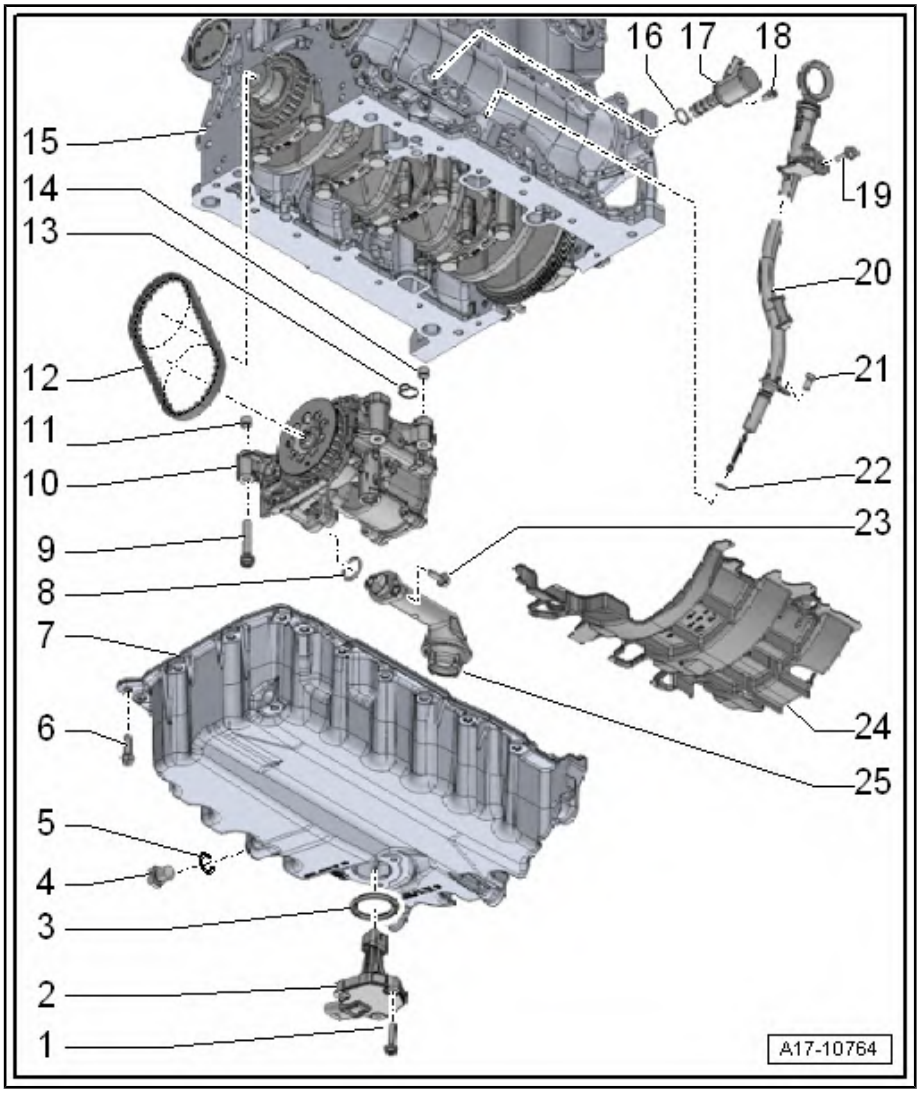
1.1.1 Assembly overview - pan/oil pump

Note

- *If considerable quantities of metal swarf or abrasion is found when carrying out engine repairs, this can be subject to damage to the crankshaft and conrod bearings. In order to prevent secondary damage, perform the following tasks after the repair: clean oil channels carefully; change oil injection nozzles, engine oil cooler and oil filter.*
- *Oil spray nozzle and pressure relief valve ⇒ page 96 .*
- *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*

Check the engine oil, amount of oil and oil specification:

- ⇒ Maintenance ; Booklet Octavia III .
- ⇒ Maintenance ; Booklet Yeti .
- ⇒ Maintenance ; Booklet Rapid NH .



1 - Screw

- ❑ self-locking
- ❑ Replace after disassembly
- ❑ 8 Nm

2 - Oil level and oil temperature transmitter - G266-

- ❑ Removing and installing ⇒ “1.6 Removing and installing oil level and oil temperature sender G266 ”, page 199

3 - Sealing ring

- ❑ Replace after disassembly

4 - Oil drain plug

- ❑ with integrated sealing ring
- ❑ replace
- ❑ 30 Nm

5 - Sealing ring

- ❑ Component part of the drain plug

6 - Screw

- ❑ Tightening torque and tightening order ⇒ page 184

7 - Oil pan

- ❑ Removing and installing ⇒ “1.2 Removing and installing oil pan”, page 187

8 - O-ring

- ❑ Replace after disassembly

9 - Screw

- ❑ Replace after disassembly

Note the different screw lengths:

- ♦ Torx screw 12 Nm + 180°
- ♦ Hexagon screw = 10 Nm + 180°

10 - Oil pump

- ❑ with vacuum pump
- ❑ Removing and installing ⇒ “1.5 Removing and installing oil pump”, page 198

11 - Fitting sleeve

12 - Toothed belt

- ❑ removing:
  - – Remove oil pump ⇒ “1.5 Removing and installing oil pump”, page 198
  - – Remove sealing flange on the belt pulley side ⇒ “1.8 Removing and installing the sealing flange on the belt pulley side”, page 75

13 - Seal

- ❑ Replace after disassembly

14 - Fitting sleeve

15 - Cylinder block

16 - O-ring

- ❑ Replace after disassembly

17 - Oil pressure control valve - N428-

- ❑ Removing and installing
  ⇒ “3.6 Removing and installing valve for oil pressure control N428 ”, page 212

18 - Screw

- ❑ 8 Nm

19 - Screw

- ❑ 8 Nm

20 - Guide tube for oil dipstick

21 - Screw

- ❑ 8 Nm

22 - O-ring

- ❑ Replace after disassembly

23 - Screw

- ❑ 8 Nm + 90°

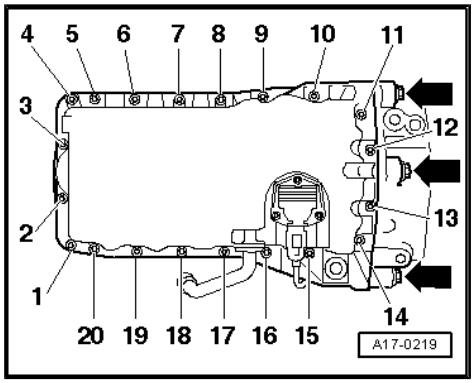
24 - Baffle

25 - Oil suction pipe

Oil sump - tightening torque and tightening order

– Tighten the bolts one after the other as follows:

Stage	Bolts	Tightening torque
1.	-1- … -20-	crosswise, 5 Nm
2.	-Arrows-	40 Nm
3.	-1- … -20-	crosswise, successively, ending with 13 Nm



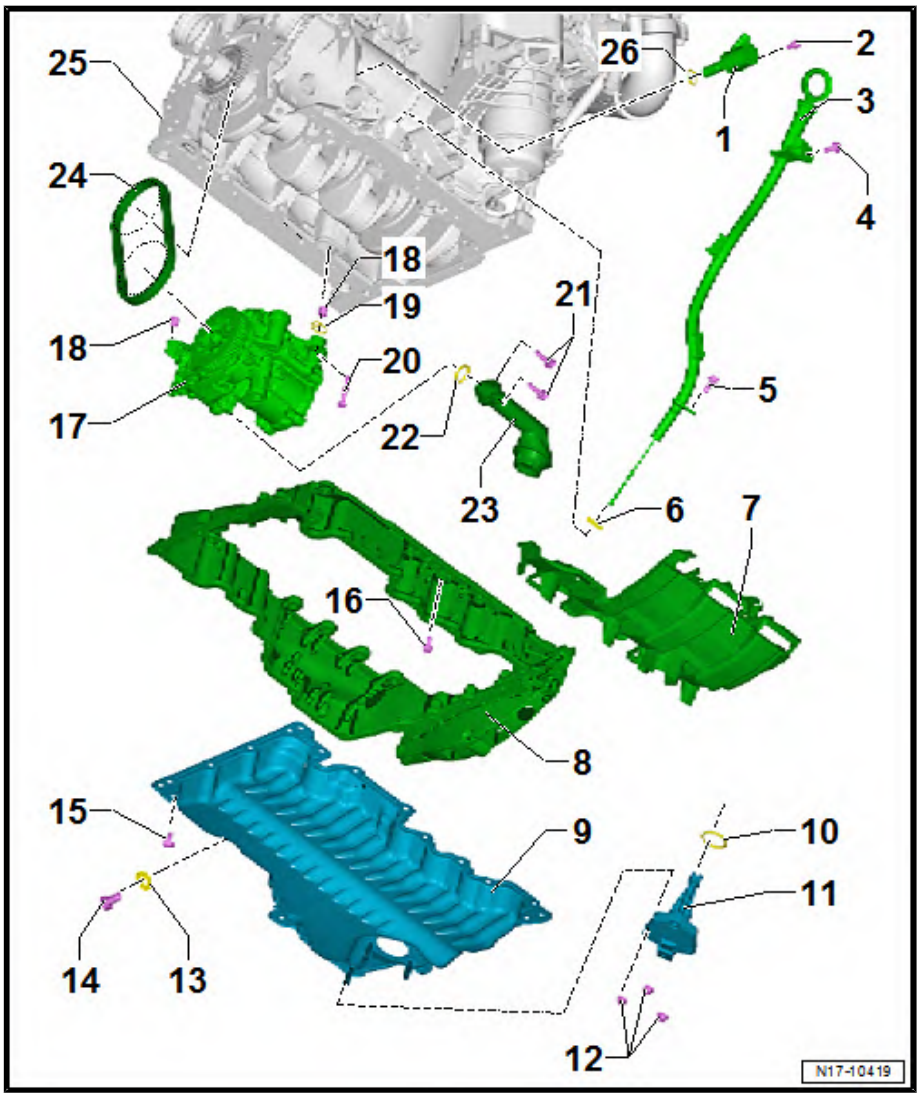
1.1.2 Assembly overview - oil sump/oil pump, two-part oil sump

Note

- *If considerable quantities of metal swarf or abrasion is found when carrying out engine repairs, this can be subject to damage to the crankshaft and conrod bearings. In order to prevent secondary damage, perform the following tasks after the repair: clean oil channels carefully; change oil injection nozzles, engine oil cooler and oil filter.*
- *Oil spray nozzle and pressure relief valve ⇒ page 96 .*
- *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*

Check the engine oil, amount of oil and oil specification:

♦ ⇒ Maintenance ; Booklet Octavia III .



1 - Oil pressure control valve - N428-

- ❑ Removing and installing ⇒ “3.6 Removing and installing valve for oil pressure control N428 ”, page 212

2 - Screw

- ❑ 8 Nm

3 - Guide tube for oil dipstick

4 - Screw

- ❑ 8 Nm

5 - Screw

- ❑ 8 Nm

6 - O-ring

- ❑ Replace after disassembly

7 - Baffle

8 - Top part of the oil sump

- ❑ Removing and installing ⇒ “1.4 Removing and installing top part of the oil sump”, page 194
- ❑ tightening order and tightening torque ⇒ page 187

9 - Bottom part of oil sump

- ❑ Removing and installing ⇒ “1.3 Removing and installing the bottom part of the oil sump”, page 191
- ❑ tightening order and tightening torque ⇒ page 186

10 - Sealing ring

- ❑ Replace after disassembly

11 - Oil level and oil temperature transmitter - G266-

- ❑ Removing and installing ⇒ “1.6 Removing and installing oil level and oil temperature sender G266 ”, page 199

12 - Nut

- ❑ 9 Nm

13 - Sealing ring

- ❑ Component part of the drain plug

14 - Oil drain plug

- ❑ with integrated sealing ring
- ❑ Replace after disassembly
- ❑ 30 Nm

15 - Screw

- ❑ for oil pan base
- ❑ tightening order and tightening torque ⇒ page 186

16 - Screw

- ❑ for oil pan shell
- ❑ tightening order and tightening torque ⇒ page 187

17 - Oil pump

- ❑ with vacuum pump
- ❑ Removing and installing ⇒ “1.5 Removing and installing oil pump”, page 198

18 - Fitting sleeve

19 - Seal

- ❑ Replace after disassembly

20 - Screw

- ❑ Replace after disassembly

Note the different screw lengths:

- ♦ Torx screw 12 Nm + 180°
- ♦ Hexagon screw = 10 Nm + 180°

21 - Screw

- ❑ 8 Nm + 90°

22 - O-ring

- ❑ Replace after disassembly

23 - Oil intake pipe

24 - Toothed belt

- ❑ removing:

- ♦ ⇒ “1.5 Removing and installing oil pump”, page 198
- ♦ ⇒ “1.8 Removing and installing the sealing flange on the belt pulley side”, page 75

25 - Cylinder block

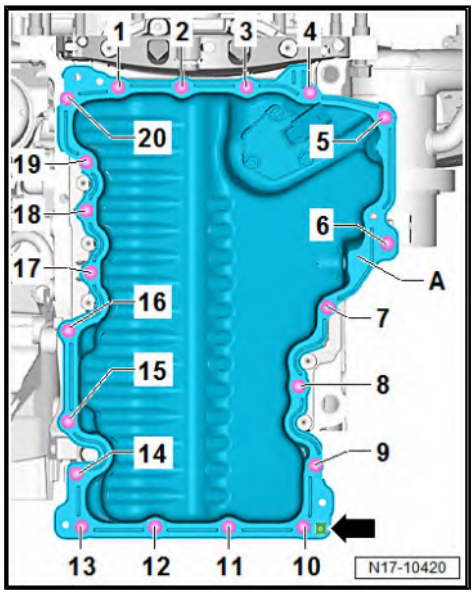
26 - O-ring

- ❑ Replace after disassembly

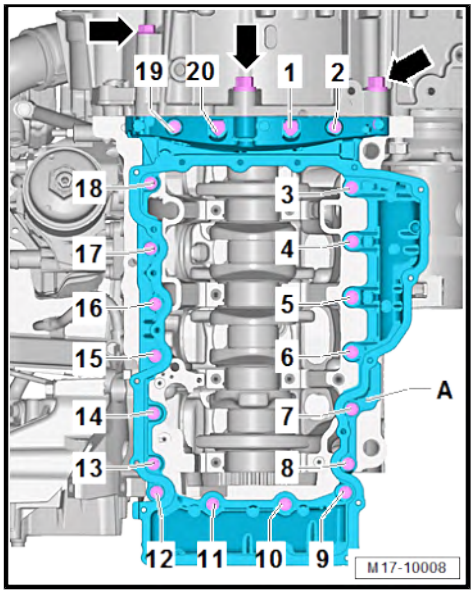
Oil sump bottom part - tightening torque and tightening order

– Tighten the bolts one after the other as follows:

Stage	Bolts	Tightening torque
1.	-1- … -20-	screw in by hand crosswise up to stop
2.	-1- … -20-	tighten crosswise to 12 Nm



Oil sump top part - tightening torque and tightening order



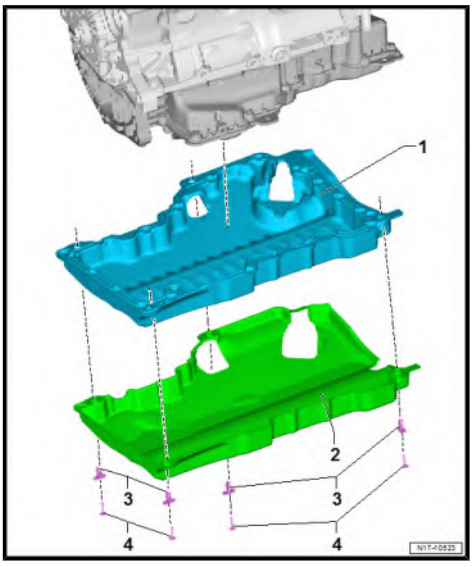
Note

- *3 bolts -9- to -11- are coated with special sealing point; note assignment when installing.*
- *For assignment of bolts, see ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Replace bolts.*

– Tighten the bolts one after the other as follows:

Stage	Bolts	Tightening torque
1.	-1- … -20-	screw in by hand crosswise up to stop
2.	-Arrows-	⇒ Rep. gr. 34 ; Removing and installing gearbox; Tightening torques for gearbox
3.	-1- … -20-	tighten crosswise to 13 Nm

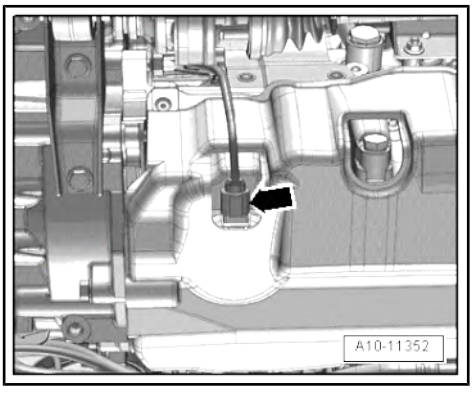
Noise insulation of oil sump



1 - Insulation
2 - Cover
3 - Expanding rivet
4 - Pin

Removing

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .



– Disconnect electrical plug connection -arrow- on the oil level and temperature sender - G266- and pull off.
– To remove, pull the pins out of the expanding rivets.

1.2 Removing and installing oil pan

Special tools and workshop equipment required

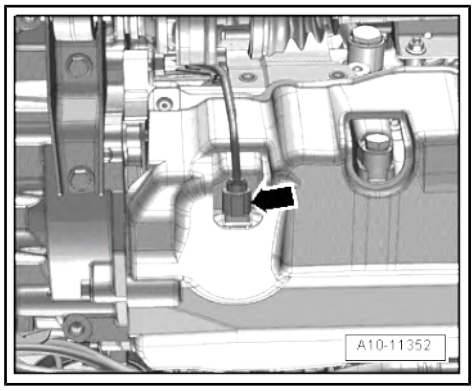
- Flexible-head wrench SW 10 - 3185-
- Socket - T10058-

- Silicone sealant ⇒ ETKA - Electronic Catalogue of Original Parts
- Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

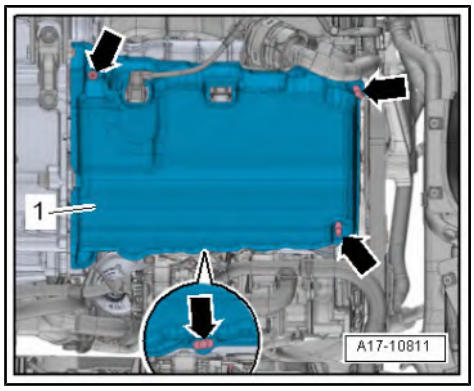
Removing

- Drained engine oil:
- ⇒ Maintenance ; Booklet Octavia III
- ⇒ Maintenance ; Booklet Yeti
- ⇒ Maintenance ; Booklet Rapid NH

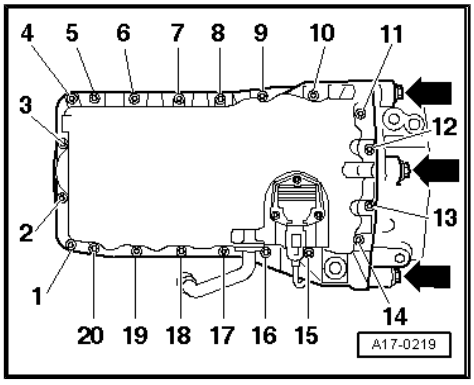
– Disconnect connector -arrow- from oil level and oil temperature sender - G266- .



– Loosen clips -arrows-, remove noise insulation -1- for oil sump.



– Screw out screws -arrows- of oil pan/gearbox.
– Loosen screws -1- to -20- crosswise and remove.
– Loosing oil sump carefully from the bonding.



Note

A vehicle with manual gearbox 02Q is shown as an example.

Installing

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

NOTICE

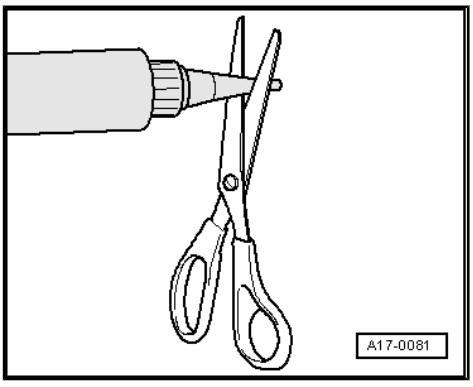
Risk of contamination to the hinge system and bearings.

♦ **Cover opened engine parts.**

CAUTION

Wear protective gloves and goggles when working with gasket remover and degreasing agent!

– Remove residual sealant from the sealing surfaces on the cylinder block and on the oil pan with chemical sealant remover.
– Degrease the sealing surfaces.



Note

Pay attention to the use by date on sealant.

– Cut off nozzle tube at the front marking (∅ of nozzle approx. 2 ... 3 mm).

NOTICE

There is risk of blockage of the lubrication system through excess sealant.

Do not apply thicker sealant strips than indicated.

When the sealing flange on the belt pulley side was NOT replaced

Note

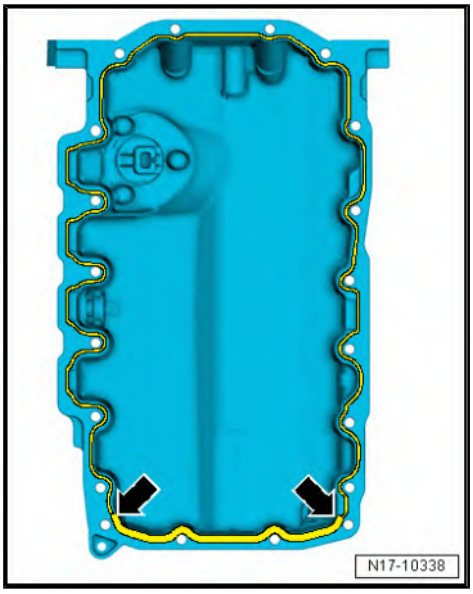
The bottom surface of the sealing flange on the belt pulley side has a displacement of approx. 1 mm to the bottom cylinder block surface after removing the old silicone seal, which must be compensated for by applying the required sealant on the corresponding area of the oil pan sealing surface.

– Apply sealant bead onto the clean sealing surfaces of the oil sump, as shown in the illustration.

♦ In the area of the sealing surface of the sealing flange on the belt pulley side between -arrows-: 3-4 mm

♦ In the area of the sealing surfaces of the cylinder block and the sealing flange on the gearbox side: 2-3 mm

• The old silicone seal, which is no longer present, must be replaced in the area of the sealing flange on the belt pulley side with the sealant bead equal to the height and width of the silicone seal.



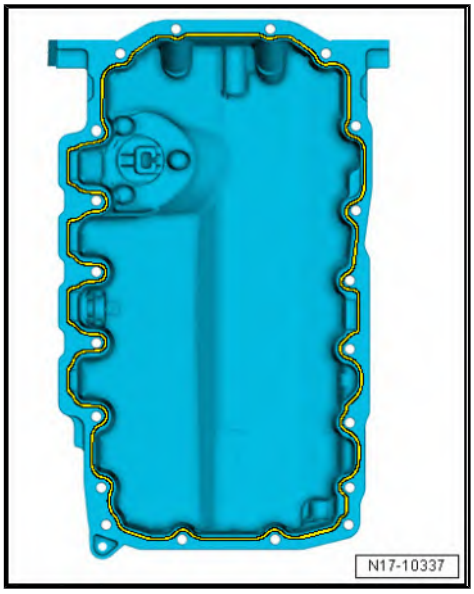
Note

After applying the sealant, the oil separator must be installed within 5 minutes.

When the sealing flange on the belt pulley side WAS replaced

– Apply sealant bead onto the clean sealing surfaces of the oil sump, as shown in the illustration.

♦ Thickness of sealant bead: 2-3 mm.



Note

♦ *Take particular care when applying sealant bead in the area of the sealing flange.*

♦ *After applying the sealant, the oil separator must be installed within 5 minutes.*

Continue as follows for both procedures

– Insert baffle.

– Position oil sump and tighten screws ⇒ page 184 .

• The oil pan must be flush to the gearbox flange at the intermediate plate.

Note

♦ *When installing the oil pan with the engine removed you must ensure that the oil sump is flush with the cylinder block at the flywheel side.*

♦ *Let sealing compound dry for approx. 30 minutes after installing oil sump. Only then fill with engine oil.*

– Fill with engine oil and check the oil level:

♦ ⇒ Maintenance ; Booklet Octavia III

♦ ⇒ Maintenance ; Booklet Yeti

♦ ⇒ Maintenance ; Booklet Rapid NH

Tightening torques - summaries of components

Note

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

♦ ⇒ Fig. ""Oil sump - tightening torque and tightening order"" , page 184

1.3 Removing and installing the bottom part of the oil sump

Special tools and workshop equipment required

♦ Wedges - T10383/2-

♦ Plastic hammer

♦ Flat scraper

♦ Silicone sealant ⇒ ETKA - Electronic Catalogue of Original Parts

♦ Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.

♦ Cleaning and degreasing agent , e.g. -D 009 401 04-

♦ Protective goggles and gloves

Removing

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

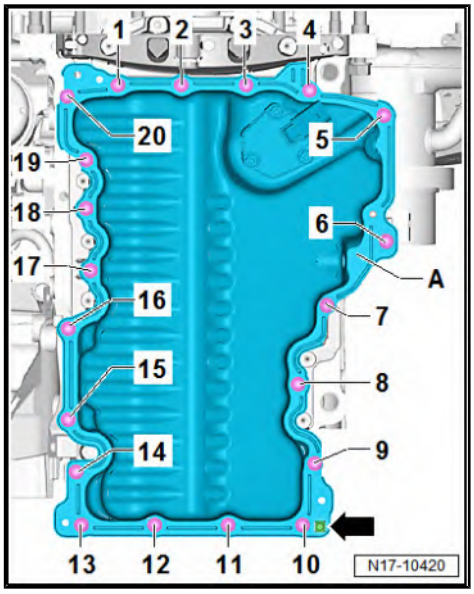
– Remove the front right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; Removing and installing the front wheelhouse liner .

– Remove noise insulation of oil sump ⇒ page 187 .

– Drain engine oil ⇒ Maintenance ; Booklet Octavia III .

– Loosen and remove screws -1- to -20-.

– Screw in the screw for the oil sump bottom part by 3 turn for the welded-on nut -arrow-.



Note

- *Do not screw in the screw with too much force.*
- *Screwing in the screw too far can deform the oil sump top part.*
- *When detaching the bonding, do not bend the bottom part of the oil sump.*

– Fit the wedge - T10383/2- at the detached point -arrow-.

– Place the recess on the wedge - T10383/2- onto the bolt.

Note

When driving in the wedge - T10383/2- , watch out for the toothed belt of the oil pump guided through the oil sump.

– Drive in the wedge with the plastic hammer. Thereby carefully loosen the bottom part of the oil sump from the bonding.

– Hold the bottom part of the oil sump under tension with the wedge - T10383/2- .

– Fit the next wedge - T10383/1- next to the detached point and loosen the bonding step by step.

Installing

– Check the bottom part of the oil sump for deformation; if necessary, align in area of the welded-on nut ⇒ page 193 .

NOTICE

Risk of contamination of the lubrication system and bearings.

- **Cover open parts of the engine.**

CAUTION

Wear protective gloves and goggles when working with gasket remover and degreasing agent!

– Remove residual sealant from the sealing surfaces on the cylinder block and on the oil pan with chemical sealant remover.

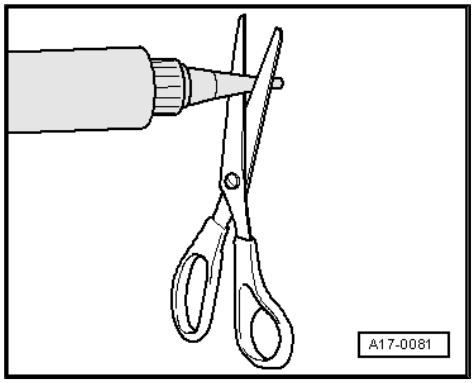
– Clean residues of oil, grease and sealant remover from the sealing surfaces with the beads in the bottom part of the oil sump.

– The coating of the oil sump bottom part must not be damaged. Risk of corrosion!

Note

Pay attention to the use by date on sealant.

– Cut off nozzle tube at the front marking (∅ of nozzle approx. 2 mm).

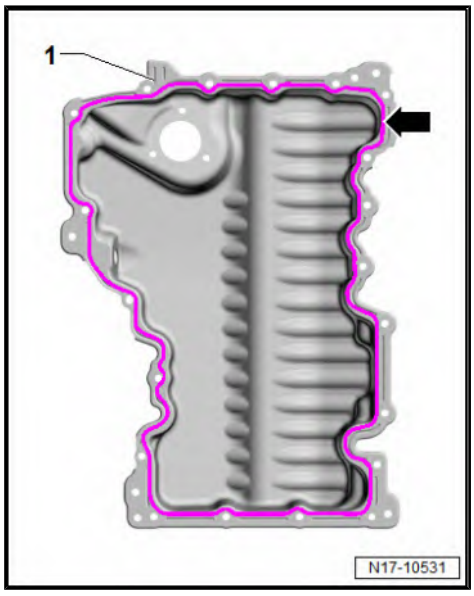


NOTICE

Risk of blockage of the lubrication system through excess sealant.

♦ **Do not apply a thicker sealant bead than indicated.**

– Apply a silicone sealant bead -arrow- onto the clean sealing surface of the oil sump bottom parts -1- as shown in the illustration.



• Thickness of sealant bead: 2-3 mm.

Note

♦ *Take particular care when applying sealant beads in the area of the sealing flange.*

♦ *After applying the sealant, the oil sump bottom part must be installed within 5 minutes.*

– Position oil sump bottom part and tighten screws ⇒ page 186 .

Note

After installing the lower part of the oil sump, allow the sealant to dry for about 30 minutes. Only then top up with engine oil.

– Fill with engine oil and check the oil level ⇒ Maintenance ; Booklet Octavia III .

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

♦ ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner

1.4 Removing and installing top part of the oil sump

Special tools and workshop equipment required

♦ Flexible-head wrench SW 10 - 3185-

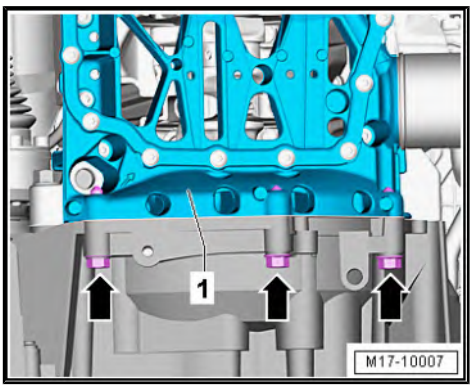
♦ Socket - T10058-

- Silicone sealant ⇒ ETKA - Electronic Catalogue of Original Parts
- Sealant remover Gasket Stripper (stock code GST, stock item No. R 34402), manufacturer Retech s.r.o.
- Cleaning and degreasing agent , e.g. -D 009 401 04-
- Protective goggles and gloves

Removing

– Remove oil sump bottom part ⇒ “1.3 Removing and installing the bottom part of the oil sump”, page 191 .

– Undo securing bolts -arrows- for gearbox/oil sump top part -1-.



– Loosen screws -1- to -20- crosswise and remove.

– Thereby carefully loosen the top part of the oil sump from the bonding.

– Remove baffle.

Installing

NOTICE

Risk of contamination of the lubrication system and bearings.

- **Cover open parts of the engine.**

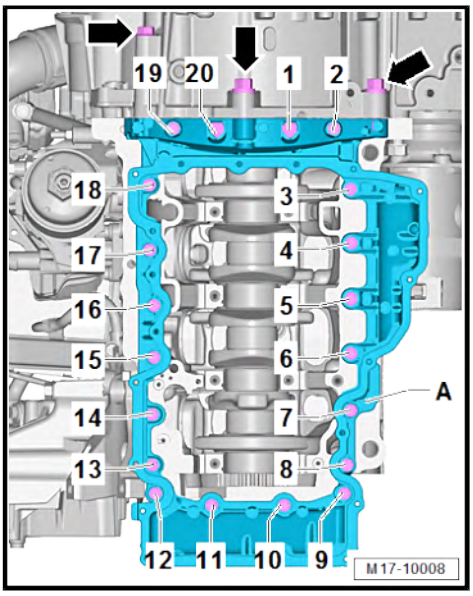
CAUTION

Wear protective gloves and goggles when working with gasket remover and degreasing agent!

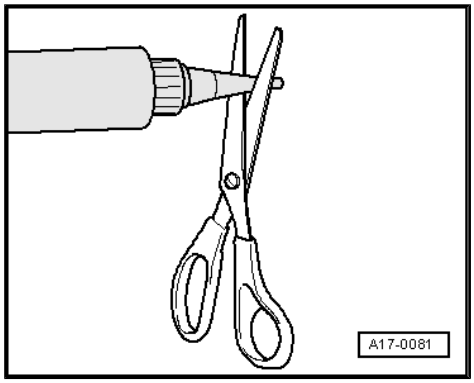
– Remove residual sealant from the sealing surfaces on the cylinder block and on the top part of the oil sump with commercially available chemical sealant remover.

– Clean sealing surfaces; the sealing surfaces must be free of oil and grease.

– Pay attention to the use by date on sealant.



– Cut off nozzle tube at the front marking (∅ of nozzle approx. 2-3 mm).

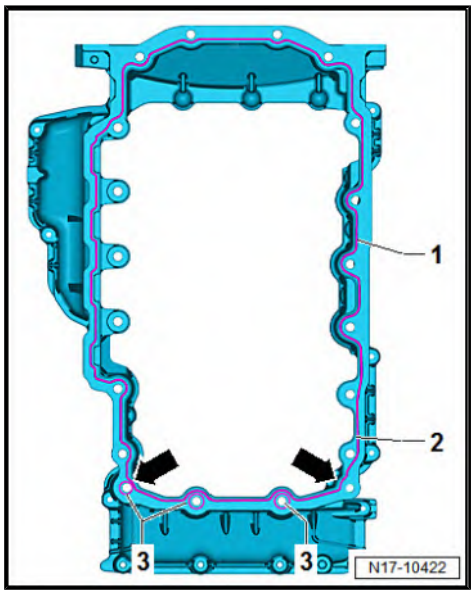


NOTICE

Risk of blockage of the lubrication system through excess sealant.

- **Do not apply a thicker sealant bead than indicated.**

When the sealing flange on the belt pulley side was not replaced



Note

- *The bottom surface of the sealing flange on the belt pulley side has a displacement of approx. 1 mm to the bottom cylinder block surface after removing the old silicone seal.*
- *which must be compensated for by applying the sealant on the corresponding area of the sealing surface of the oil sump top part.*

– Apply a silicone sealant bead -2- onto the clean sealing surface of the oil sump top part -1- as shown in the illustration.

- In the area of the sealing surface of 4 holes between -arrows-, surround holes with 3-4 mm of sealant.
- In the area of the sealing surface of the sealing flange on the belt pulley side between -arrows-: 3-4 mm
- In the area of the sealing surfaces of the cylinder block and the sealing flange on the gearbox side: 2-3 mm
- The old silicone seal, which is no longer present, must be replaced in the area of the sealing flange on the belt pulley side with the sealant bead equal to the height and width of the silicone seal.

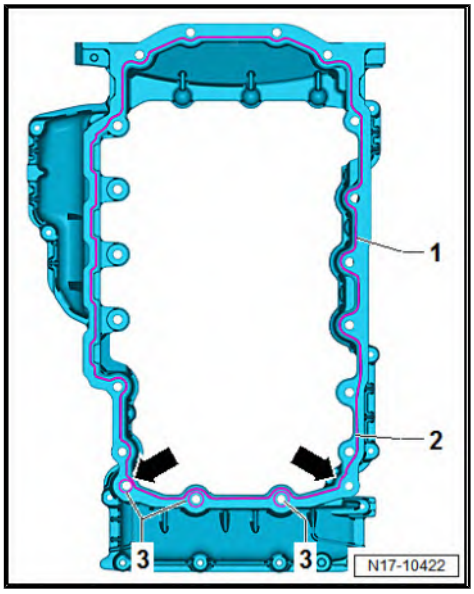
Note

- *Take particular care when applying sealant beads in the area of the sealing flange.*
- *After applying the sealant, the oil sump top part must be installed within 5 minutes.*

When the sealing flange on the belt pulley side WAS replaced

– Apply a silicone sealant bead -2- evenly onto the clean sealing surface of the oil sump top part -1- as shown in the illustration.

- In the area of the sealing surface of 4 holes between -arrows-, surround holes with 2-3 mm of sealant.
- Thickness of sealant bead: 2-3 mm.



Note

- *Take particular care when applying sealant beads in the area of the sealing flange.*
- *After applying the sealant, the oil sump top part must be installed within 5 minutes.*

Continue as follows for both procedures

– Fit baffle.

– Position oil sump top part and tighten screws ⇒ page 187 .

- Sump top part must be in contact with the intermediate plate so that it is lined up with the gearbox flange.

Note

- *3 bolts -10- to -12- are coated with special sealing point; note assignment when installing.*
- *For assignment of bolts, see ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Replace bolts.*
- *When assembly the oil sump top part with the engine removed, make sure that the oil sump top part is flush with the cylinder block on the flywheel side.*
- *After installing the top part of the oil sump, allow the sealant to dry for about 30 minutes. Only then top up with engine oil.*

– Fill with engine oil and check the oil level ⇒ Maintenance ; Booklet Octavia III .

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Assembly overview - pan/oil pump”, page 182
- ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner

1.5 Removing and installing oil pump

Removing

Vehicles with one-part oil sump

– Removing the oil pan
⇒ “1.2 Removing and installing oil pan”, page 187 .

Vehicles with two-part oil sump

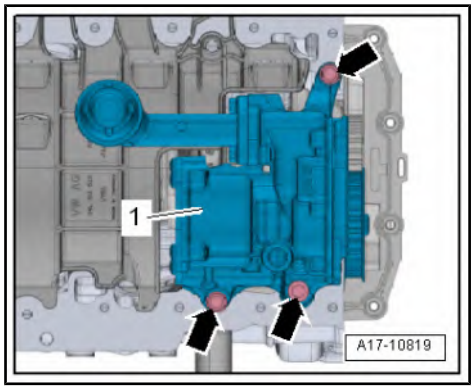
– Remove sump top part
⇒ “1.4 Removing and installing top part of the oil sump”, page 194 .

Continued for all vehicles

NOTICE

Do not kink or twist the toothed belt or damage it with sharp edges.

– Unscrew screws -arrows- and remove oil pump -1-.



NOTICE

The screw at the pump wheel must not be released.

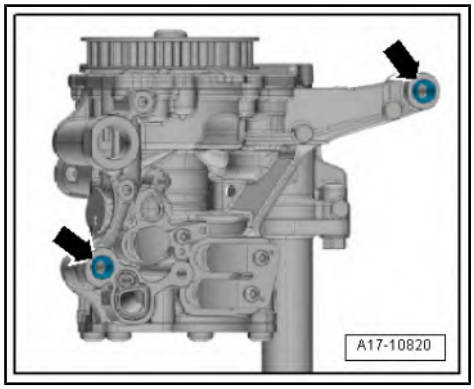
Installing

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

Note

- *Replace gasket.*
- *Screws which have been tightened firmly to a torquing angle must be replaced.*

– If no dowel sleeves -arrows- are present in the oil pump, insert dowel sleeves.



Vehicles with one-part oil sump

– Installing the oil pan
⇒ “1.2 Removing and installing oil pan”, page 187 .

Vehicles with two-part oil sump

– Install sump top part
⇒ “1.4 Removing and installing top part of the oil sump”, page 194 .

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

1.6 Removing and installing oil level and oil temperature sender - G266-

⇒ “1.6.1 Removing and installing oil level and oil temperature sender G266 ”, page 199

⇒ “1.6.2 Removing and installing oil level and oil temperature sender G266 , vehicle with two-part oil sump”, page 200

1.6.1 Removing and installing oil level and oil temperature sender - G266-

Removing

– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

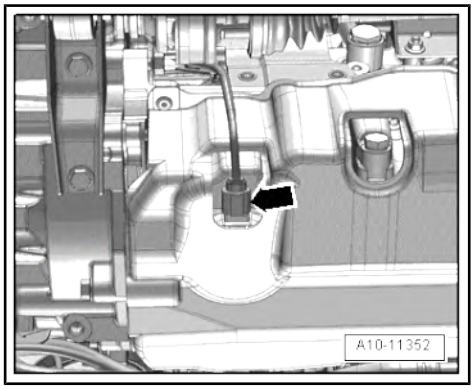
- Drained engine oil:

♦ ⇒ Maintenance ; Booklet Octavia III

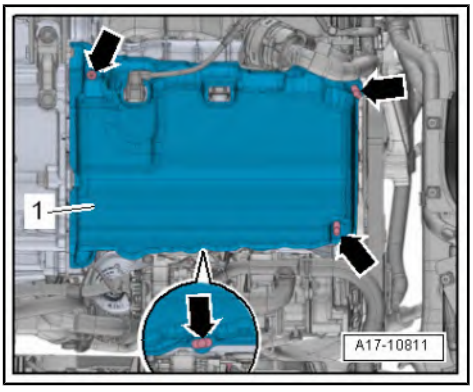
♦ ⇒ Maintenance ; Booklet Yeti

♦ ⇒ Maintenance ; Booklet Rapid NH

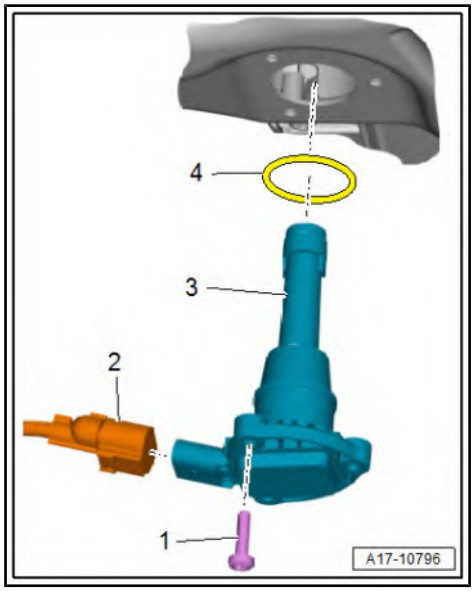
– Disconnect connector -arrow- from oil level and oil temperature sender - G266- .



– Loosen clips -arrows-, remove noise insulation -1- for oil sump.



– Unscrew screws -1- and remove oil level and oil temperature transmitter - G266- Pos. -3-.



Installing

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

Note

Replace the sealing ring -4- and the self-locking screws -1-.

– Fill with engine oil and check the oil level:

♦ ⇒ Maintenance ; Booklet Octavia III

♦ ⇒ Maintenance ; Booklet Yeti

♦ ⇒ Maintenance ; Booklet Rapid NH

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

1.6.2 Removing and installing oil level and oil temperature sender - G266- , vehicle with two-part oil sump

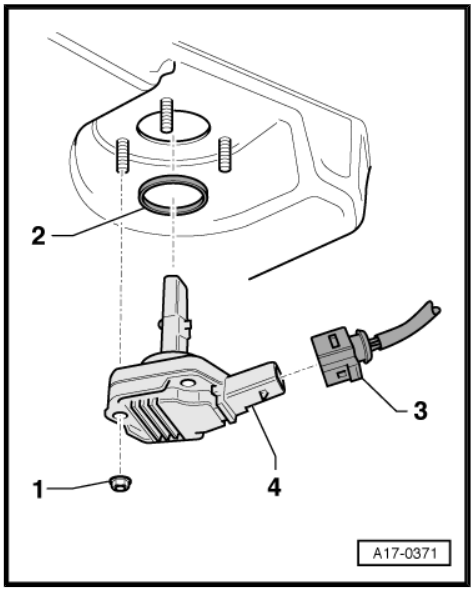
Removing

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

• Engine oil drained ⇒ Maintenance ; Booklet Octavia III .

– Remove noise insulation of oil sump ⇒ page 187 .

– Unlock and disconnect electrical plug connection -3- on the oil level and oil temperature sender - G266- .
– Unscrew nuts -1- and remove oil level and oil temperature transmitter - G266- -4-.



Installing

Installation is carried out in the reverse order. Pay attention to the following:

– Replace the gasket ring -2-.
– Fill with engine oil and check the oil level ⇒ Maintenance ; Booklet Octavia III .

Tightening torques - summaries of components

Note

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

◆ ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

2 Engine oil cooler

Note

The engine oil cooler must not be disconnected from the oil filter housing In the event of a defect, the engine oil cooler with the oil filter housing must be replaced
⇒ “3.5 Removing and installing oil filter housing”, page 209 .

3 Oil filter, oil pressure switch

⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203

⇒ “3.2 Removing and installing oil pressure switch F1 ”, page 205

⇒ “3.3 Removing and installing oil pressure switch for reduced oil pressure F378 ”, page 207

⇒ “3.4 Testing oil pressure”, page 209

⇒ “3.5 Removing and installing oil filter housing”, page 209

⇒ “3.6 Removing and installing valve for oil pressure control N428 ”, page 212

3.1 Summary of components - oil filter housing/oil pressure switch

Note

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

1 - Oil drain plug
- ❑ 5 Nm

2 - O-ring
- ❑ Replace after disassembly

3 - Screw cap
- ❑ 25 Nm

4 - O-ring
- ❑ Replace after disassembly
- ❑ moisten with engine oil

5 - Oil filter element
- ❑ pay attention to the notes ⇒ page 182
- ❑ removing and installing:

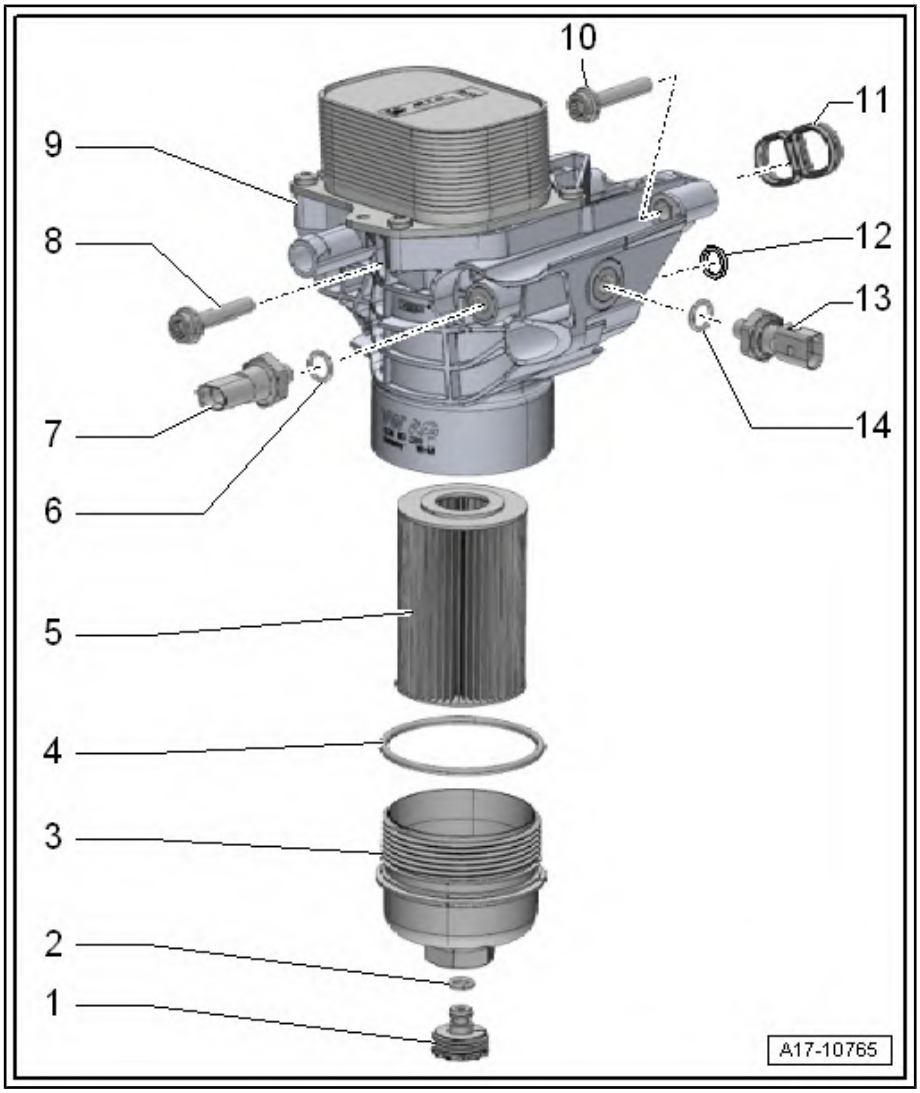
◆ ⇒ Maintenance ; Booklet Octavia III

◆ ⇒ Maintenance ; Booklet Yeti

◆ ⇒ Maintenance ; Booklet Rapid NH

6 - Sealing ring
- ❑ Replace after disassembly

7 - Oil pressure switch - F1-
- ❑ For assignment, see ⇒ ETKA - Electronic Catalogue of Original Parts.
- ❑ Switching pressure ⇒ page 204



- ❑ check in `Targeted fault finding` ⇒ Vehicle diagnostic tester
- ❑ Removing and installing ⇒ “3.2 Removing and installing oil pressure switch F1 ”, page 205
- ❑ 20 Nm

8 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 204

9 - Oil filter housing with engine oil cooler

- ❑ Oil filter housing and engine oil cooler must not be disconnected
- ❑ Removing and installing ⇒ “3.5 Removing and installing oil filter housing”, page 209

10 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 204

11 - Seal

- ❑ Replace after disassembly

12 - Sealing ring

- ❑ Replace after disassembly

13 - Oil pressure switch for reduced oil pressure - F378-

- ❑ For assignment, see ⇒ ETKA - Electronic Catalogue of Original Parts.
- ❑ Switching pressure ⇒ page 204
- ❑ check in `Targeted fault finding` ⇒ Vehicle diagnostic tester
- ❑ Removing and installing
  ⇒ “3.3 Removing and installing oil pressure switch for reduced oil pressure F378 ”, page 207
- ❑ 20 Nm

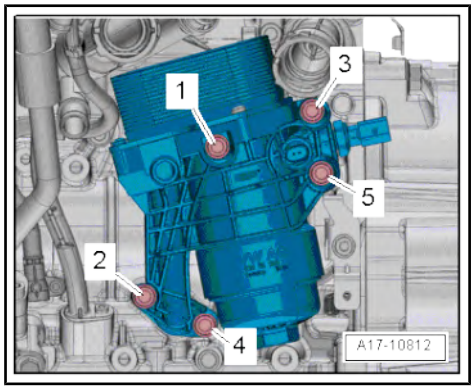
14 - Sealing ring

- ❑ Replace after disassembly

Oil pressure switch, colour coding and switching pressure

Colour coding	Switching pressure
blue	0.215…0.295 MPa (2.15…2.95 bar)
grey	0.2…0.27 MPa (2.0…2.7 bar)
brown	0.23…0.30 MPa (2.3…3.0 bar)
green	0.03…0.06 MPa (0.3…0.6 bar)

Oil filter housing - tightening torque and tightening order



Note

Screws which have been tightened firmly to a torquing angle must be replaced.

– Attach the top left and bottom right screws first.

– Tighten bolts step by step in the given sequence:

Step	Bolts	Tightening torque/torque angle
1.	-1- … -5-	20 Nm
2.	-1- … -5-	Turn 90° further

3.2 Removing and installing oil pressure switch - F1-

⇒ “3.2.1 Removing and installing the oil pressure switch F1 , Octavia III, Yeti”, page 205

⇒ “3.2.2 Removing and installing the oil pressure switch F1 , Rapid NH”, page 206

3.2.1 Removing and installing the oil pressure switch - F1- , Octavia III, Yeti

Special tools and workshop equipment required

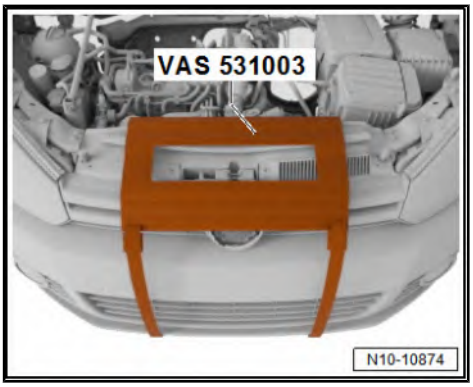
- Flexible-head wrench SW 24 - T40175-
- Socket insert SW 24 - T40284-
- Radiator protection mat , e.g. -VAS 531 003-

Removal

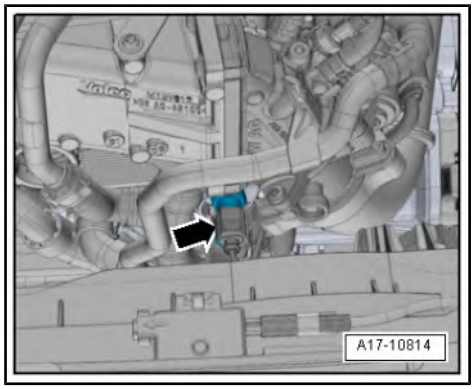
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



– Disconnect plug connection -arrow-.



Note

Place a cloth below to absorb leaking engine oil.

– Remove oil pressure switch - F1- with extension No. 24 - T40284- or articulated spanner, spanner size 24 - T40175- .

Installing

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

– After removal, replace the sealing ring for the oil pressure switch - F1- Pos. -6- ⇒ Item 6 (page 203) , see ⇒ ETKA - Electronic Catalogue of Original Parts .

– Cut open the sealing ring to replace it.

– Install the noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Summary of components - noise insulation .

– Checking the oil level:

♦ ⇒ Maintenance ; Booklet Octavia III

♦ ⇒ Maintenance ; Booklet Yeti

Tightening torques - summaries of components

Note

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

♦ ⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203

♦ ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.2.2 Removing and installing the oil pressure switch - F1- , Rapid NH

Special tools and workshop equipment required

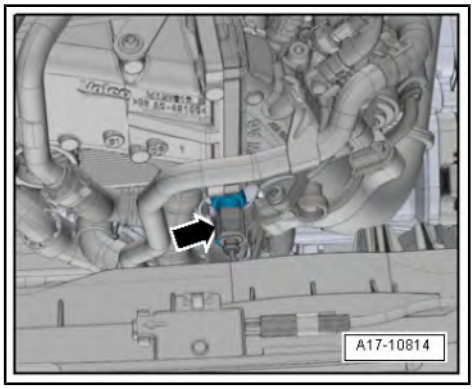
♦ Flexible-head wrench SW 24 - T40175-

♦ Socket insert SW 24 - T40284-

Removing

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

– Disconnect plug connection -arrow-.



Note

Place a cloth below to absorb leaking engine oil.

– Remove oil pressure switch - F1- with extension No. 24 - T40284- or articulated spanner, spanner size 24 - T40175- .

Installing

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

– After removal, replace the sealing ring for the oil pressure switch - F1- Pos. -6- ⇒ Item 6 (page 203) , see ⇒ ETKA - Electronic Catalogue of Original Parts .

– Cut open the sealing ring to replace it.

– Install the noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Summary of components - noise insulation .

– Checking the oil level ⇒ Maintenance ; Booklet Rapid NH .

Tightening torques - summaries of components

Note

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

◆ ⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203

3.3 Removing and installing oil pressure switch for reduced oil pressure - F378-

⇒ “3.3.1 Removing and installing the oil pressure switch for reduced oil pressure F378 , Octavia III, Yeti”, page 207

⇒ “3.3.2 Removing and installing the oil pressure switch for reduced oil pressure F378 , Rapid NH”, page 208

3.3.1 Removing and installing the oil pressure switch for reduced oil pressure - F378- , Octavia III, Yeti

Special tools and workshop equipment required

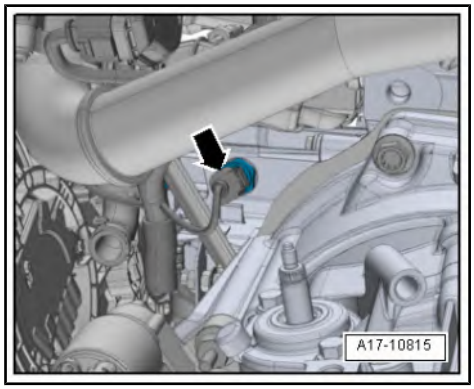
◆ Flexible-head wrench SW 24 - T40175-

◆ Socket insert SW 24 - T40284-

Removing

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

– Disconnect plug connection -arrow-.



Note

Place a cloth below to absorb leaking engine oil.

– Remove oil pressure switch for reduced oil pressure - F378- with extension no. 24 - T40284- or articulated spanner, spanner size 24 - T40175- .

Installing

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

– After removal, replace the sealing ring for the oil pressure switch - F1- Pos. -14- ⇒ Item 13 (page 204) , see ⇒ ETKA - Electronic Catalogue of Original Parts .

– Cut open the sealing ring to replace it.

– Checking the oil level:

♦ ⇒ Maintenance ; Booklet Octavia III

♦ ⇒ Maintenance ; Booklet Yeti

Tightening torques - summaries of components

Note

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

♦ ⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203

♦ ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.3.2 Removing and installing the oil pressure switch for reduced oil pressure - F378- , Rapid NH

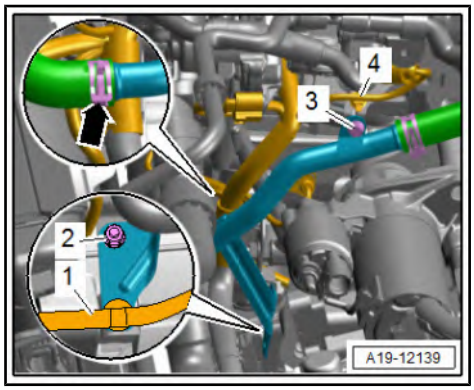
Special tools and workshop equipment required

♦ Flexible-head wrench SW 24 - T40175-

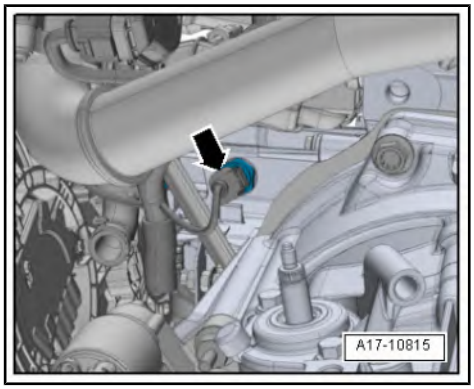
Removing

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

– Unscrew nut -2- and screw -3-.



– Disconnect plug connection -arrow-.



Note

Place a cloth below to absorb leaking engine oil.

– Unscrew oil pressure switch for reduced oil pressure - F378- with flexible-head wrench SW 24 - T40175- .

Installing

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

– After removal, replace the sealing ring for the oil pressure switch - F1- Pos. -14- ⇒ Item 13 (page 204) , see ⇒ ETKA - Electronic Catalogue of Original Parts .

– Cut open the sealing ring to replace it.

– Check the engine oil level ⇒ Maintenance ; Booklet Rapid NH .

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.4 Testing oil pressure

Note

It is not possible to cycle through all the switching levels of the oil pressure control when the vehicle is stationary because of the clutch guard speed. For this reason, the oil pressure must be tested with the vehicle diagnosis tester.

– Connect vehicle diagnosis tester.

– Navigate as follows to the oil pressure test:

`Testing oil pressure`

3.5 Removing and installing oil filter housing

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-
- Radiator protection mat , e.g. -VAS 531 003-

Note

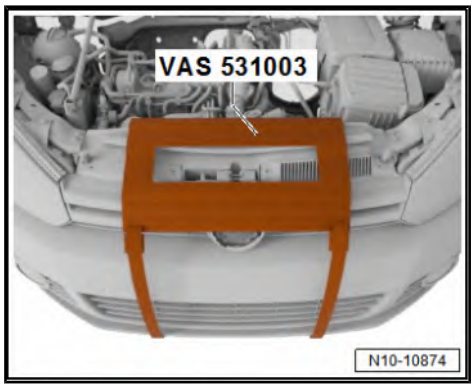
- *The engine oil cooler must not be disconnected from the oil filter housing In the event of a defect, the engine oil cooler must be replaced by the oil filter holder*
  ⇒ "3.5 Removing and installing oil filter housing", page 209 .
- *Various hose variants are used for the cooling system, which may vary slightly from the figures in the description*
  ⇒ "1.1 Connection diagram - coolant hoses", page 217 .

Removing

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

– Removing fan shroud
⇒ "4.6 Removing and installing fan shroud", page 365 .

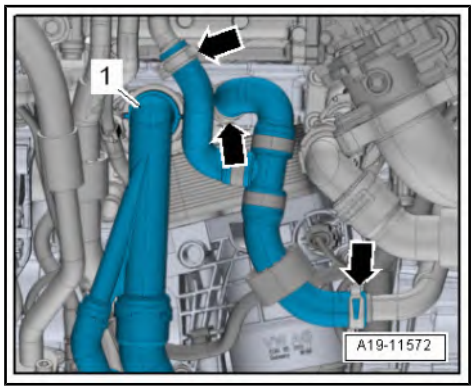
– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



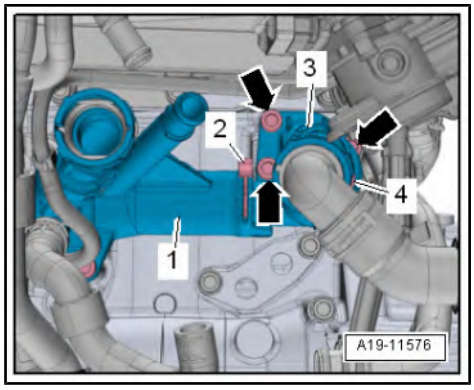
– Remove the front left coolant pipe
⇒ "3.2 Removing and installing coolant pipes", page 312 .

– If present, remove the front right coolant pipe
⇒ "3.2 Removing and installing coolant pipes", page 312 .

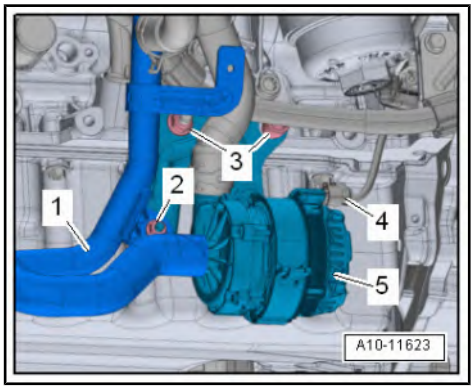
– Loosen hose clamps -arrows- and remove coolant hose.



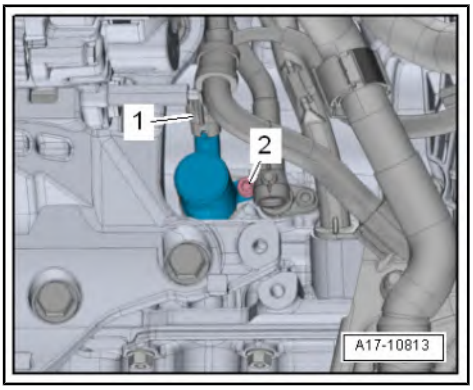
– Raise holding clamp -4-, remove coolant connection fittings.



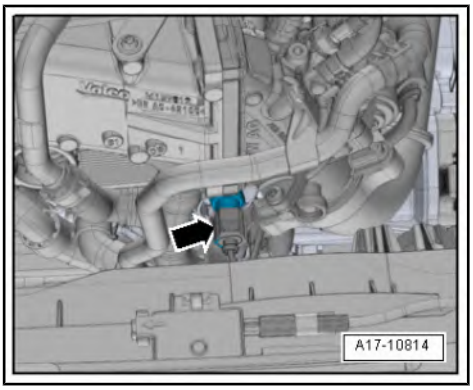
– Separate electrical plug connection -4-.
– Unscrew screws -3- and push pump for charge air cooler - V188- Pos. -5- to the side.



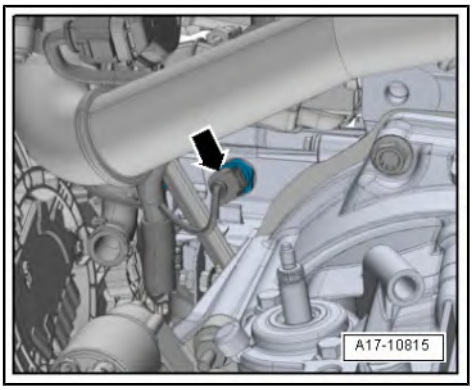
– Disconnect electrical connector -1- at the oil pressure control valve - N428- .

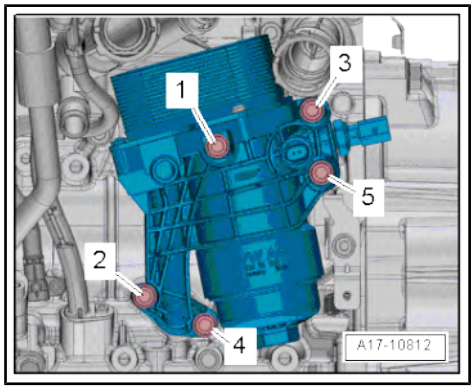


– Disconnect connector -arrow- from the oil pressure switch - F1- .



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





Note

Place a cloth below to absorb leaking engine oil.

– Unscrew screws in the order -5- … -1-, remove oil filter housing together with the engine oil cooler.

Installing

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

Note

- *Replace gasket and O-ring.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Fit all cable straps on again in the same place when installing.*

– Install front right coolant pipe ⇒ “3.2 Removing and installing coolant pipes”, page 312 .

– Install front left coolant pipe ⇒ “3.2 Removing and installing coolant pipes”, page 312 .

– Install fan shroud for radiator fan ⇒ “4.6 Removing and installing fan shroud”, page 365 .

– 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.

- ⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203
- ⇒ “2.2 Summary of components - electric coolant pump”, page 279
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.6 Removing and installing valve for oil pressure control - N428-

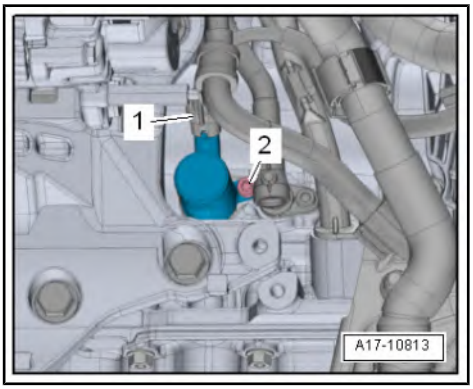
Removing

– Remove V-ribbed belt ⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

– Remove AC compressor with connected refrigerant hoses from the holder ⇒ Heating, Air Conditioning; Rep. gr. 87 ; AC

compressor; removing and installing AC compressor and strap to the right side.

– Separate electrical plug connection -1-.



Note

Place a cloth below to absorb leaking engine oil.

– Unscrew screws -2- and remove oil pressure control valve - N428- .

Installing

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

Note

Renew O-ring.

– Install the V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

– Checking the oil level:

♦ ⇒ Maintenance ; Booklet Octavia III

♦ ⇒ Maintenance ; Booklet Yeti

♦ ⇒ Maintenance ; Booklet Rapid NH

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

♦ ⇒ Heating, air conditioning; Rep. gr. 87 ; AC compressor .

4 Oil circuit

⇒ “4.1 Removing and installing oil flow line”, page 214

⇒ “4.2 Removing and installing the exhaust gas turbocharger oil return line”, page 215

4.1 Removing and installing oil flow line

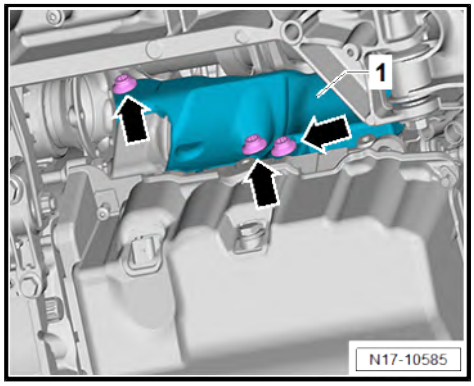
Vehicles with front-wheel drive

– Remove heat shield for right drive shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; installing and removing heat shield for drive shaft .

– Remove drive shaft right from gearbox ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; removing and installing drive shaft .

– Remove radiator for exhaust gas recirculation ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

– Remove heat protection -1-. Unscrew screws -arrows- for this purpose.



Vehicles with four-wheel drive

– Remove angle gearbox ⇒ Rep. gr. 34 ; Angle gearbox; Remove angle gearbox .

– Remove radiator for exhaust gas recirculation ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

– Remove heat protection between angle gear and motor.

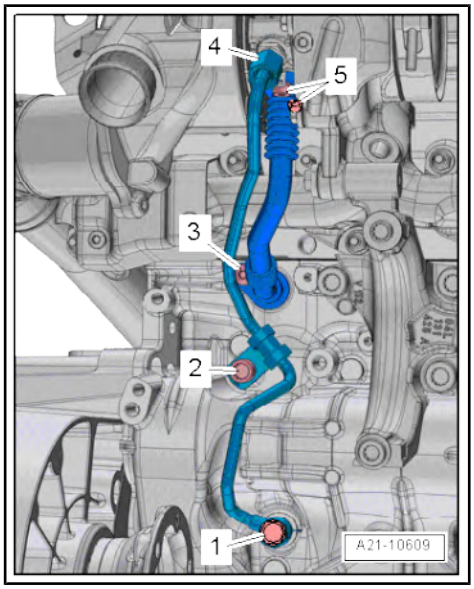
Continued for all vehicles

– Unscrew bolt -2-.

– Unscrew union nut -4-.

– Release hollow screw -1-.

– Remove oil supply line.



Installing

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

– Replace sealing rings after removal.

Note

after installing the exhaust turbocharger run the engine approx. 1 minute in idle and do not increase speed immediately in order to ensure the supply of oil to the turbocharger.

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
Screws for heat shield at engine rear	16 Nm

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “1.1 Assembly overview - silencers”, page 552
- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579
- ⇒ Chassis, axles, steering; Rep. gr. 40 ; Propeller shaft; Assembly overview - propeller shaft
- ⇒ Rep. gr. 34 ; Angle gearbox; summary of components - angle gearbox

4.2 Removing and installing the exhaust gas turbocharger oil return line

Vehicles with front-wheel drive

– Remove heat shield for right drive shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; installing and removing heat shield for drive shaft .

– Remove radiator for exhaust gas recirculation ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

Vehicles with four-wheel drive

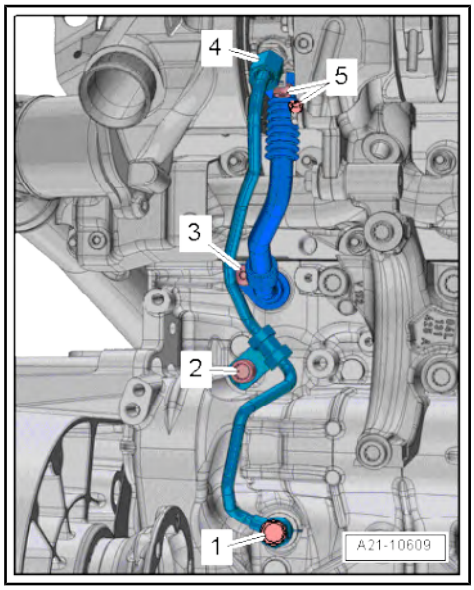
– Remove radiator for exhaust gas recirculation ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

– Remove heat protection between angle gear and motor.

Continued for all vehicles

– Unscrew screws -3- and -5-.

– Remove oil return line.



Installing

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

– Replace gaskets and seals after disassembly.

Note

after installing the exhaust turbocharger run the engine approx. 1 minute in idle and do not increase speed immediately in order to ensure the supply of oil to the turbocharger.

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “1.1 Assembly overview - silencers”, page 552
- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579
- ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing the heat shield for drive shaft
- ⇒ Chassis, axles, steering; Rep. gr. 40 ; Propeller shaft; Assembly overview - propeller shaft

19 – Cooling

1 Cooling system, coolant

⇒ “1.1 Connection diagram - coolant hoses”, page 217

⇒ “1.2 Check cooling system for leaks”, page 227

⇒ “1.3 Draining the cooling system”, page 230

⇒ “1.4 Filling with coolant”, page 235

⇒ “1.5 Checking the filling quality”, page 251

⇒ “1.6 Checking the electric vacuum pump VAS 6096/2 ”, page 253

⇒ “1.7 Flushing the cooling system”, page 253

⇒ “1.8 Flushing cooling system, quick start guide”, page 273

1.1 Connection diagram - coolant hoses

⇒ “1.1.1 Connection diagram - coolant hoses, engine codes CLHA, CLHB, CKFB, CKFC”, page 217

⇒ “1.1.2 Connection diagram - coolant hoses, engine codes CU-PA, CYKA”, page 220

⇒ “1.1.3 Connection diagram - coolant hoses, engine codes CRKB, CRVC, CRMB, CUNA, CXXA, CXXB, DBKA, CXMA, CUUA, CUUB, DFSA, DFSB, DDYB, DDYA, DCYA”, page 223

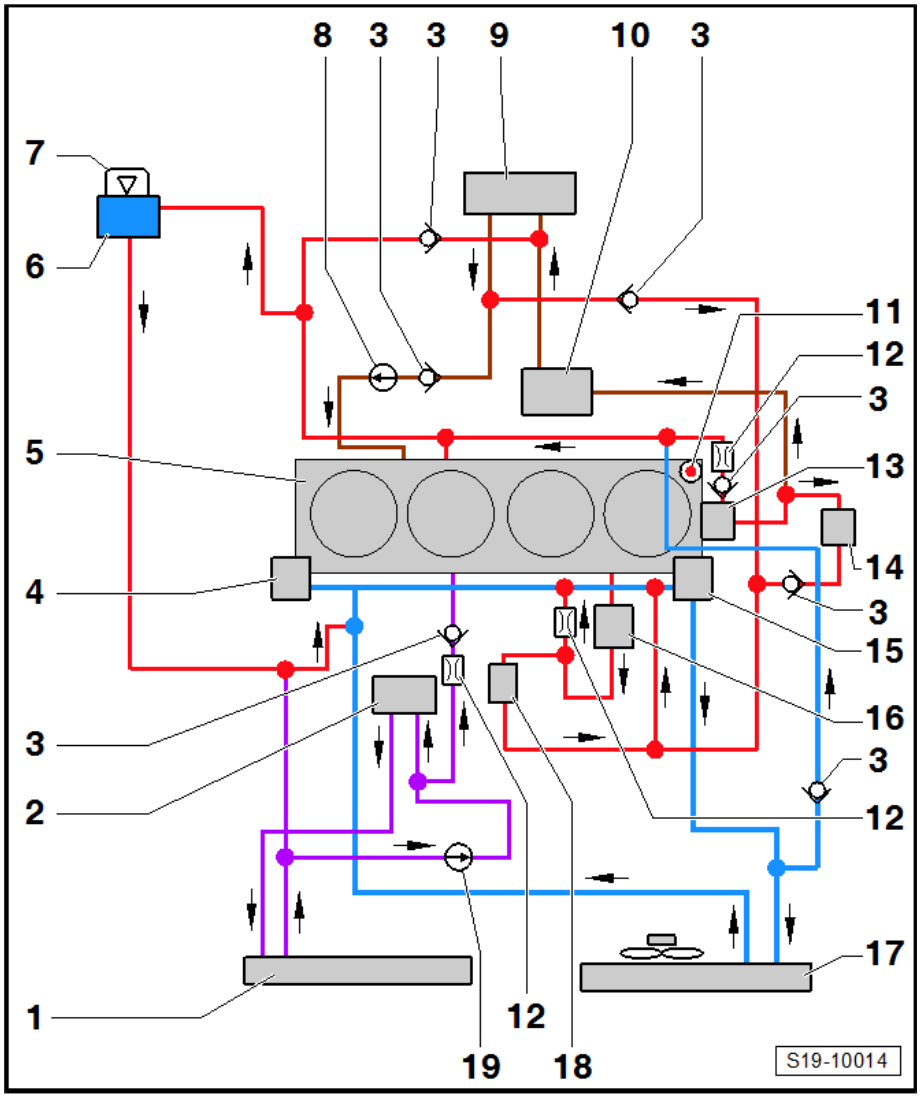
⇒ “1.1.4 Wiring diagram - Coolant hoses, Octavia III with SCR system”, page 225

1.1.1 Connection diagram - coolant hoses, engine codes CLHA, CLHB, CKFB, CKFC

Vehicles without auxiliary heating

Note

- *Blue = large coolant circuit.*
- *Red = small coolant circuit.*
- *Violet = coolant circuit for charge air cooler.*
- *Brown = heating circuit.*
- *The arrows point in the coolant flow direction.*



1 - Charge air cooling circuit radiator

2 - Charge air cooler

- ❑ Check for leaks ⇒ “2.5 Leak testing the charge air cooler”, page 419

3 - Non-return valve

4 - Coolant pump

5 - Cylinder head and cylinder block

6 - Coolant expansion tank

7 - Screw cap

- ❑ for coolant expansion tank
- ❑ Check pressure relief valve ⇒ page 229

8 - Heating backup pump - V488-

9 - Heat exchanger for heating

10 - Radiator for exhaust gas recirculation

11 - Coolant temperature transmitter - G62-

12 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

13 - Coolant connector

14 - Gearbox oil cooler

- ❑ Equipment variants

15 - Coolant regulator

16 - Engine oil cooler

17 - Coolant radiator

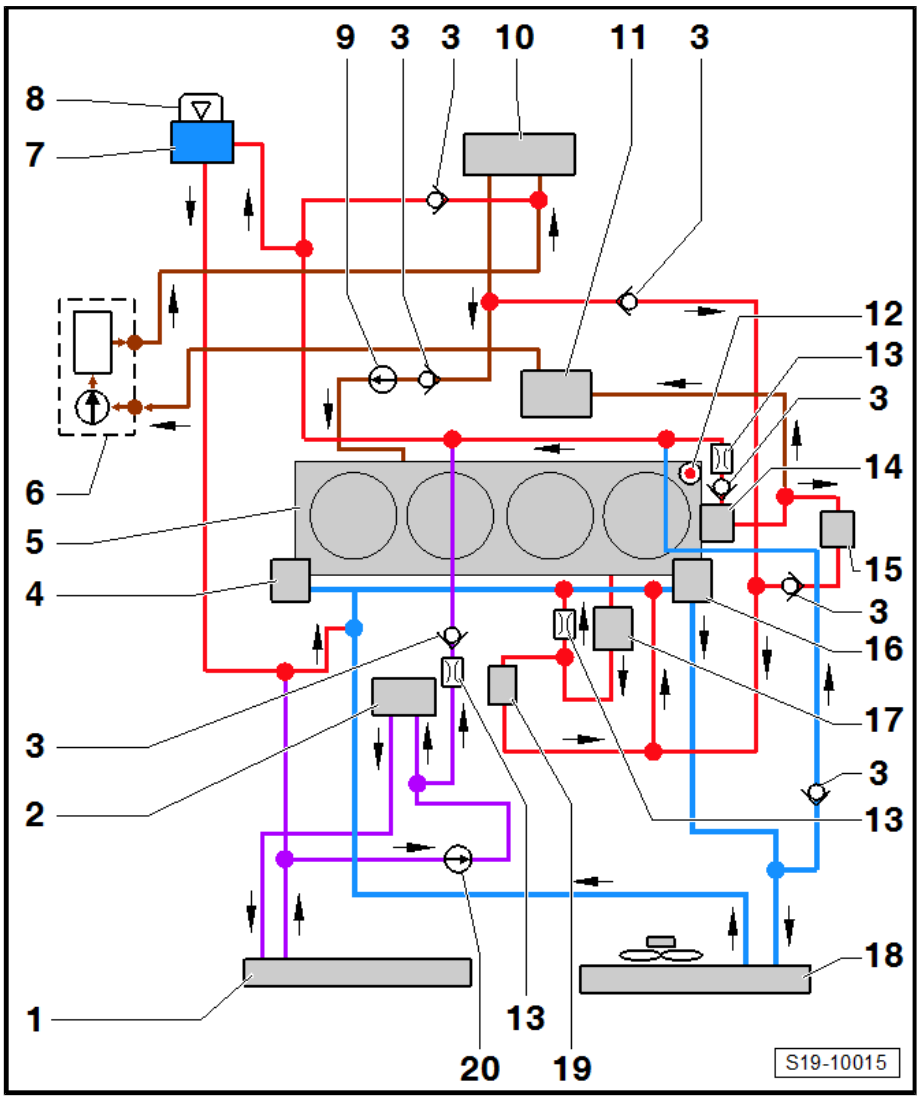
18 - Throttle valve control unit - J338-

19 - Charge air cooler pump - V188-

Vehicles fitted with auxiliary heating

Note

- *Blue = large coolant circuit.*
- *Red = small coolant circuit.*
- *Violet = coolant circuit for charge air cooler.*
- *Brown = heating circuit.*
- *The arrows point in the coolant flow direction.*



1 - Charge air cooling circuit radiator

2 - Charge air cooler

- ❑ Check for leaks ⇒ “2.5 Leak testing the charge air cooler”, page 419

3 - Non-return valve

4 - Coolant pump

5 - Cylinder head and cylinder block

6 - Auxiliary heating

- ❑ Equipment variants

7 - Coolant expansion tank

8 - Screw cap

- ❑ for coolant expansion tank
- ❑ Check pressure relief valve ⇒ page 229

9 - Heating backup pump - V488-

- ❑ According to build version

10 - Heat exchanger for heating

11 - Radiator for exhaust gas recirculation

12 - Coolant temperature transmitter - G62-

13 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

14 - Coolant connector

15 - Gearbox oil cooler

- ❑ Equipment variants

16 - Coolant regulator

17 - Engine oil cooler

18 - Coolant radiator

19 - Throttle valve control unit - J338-

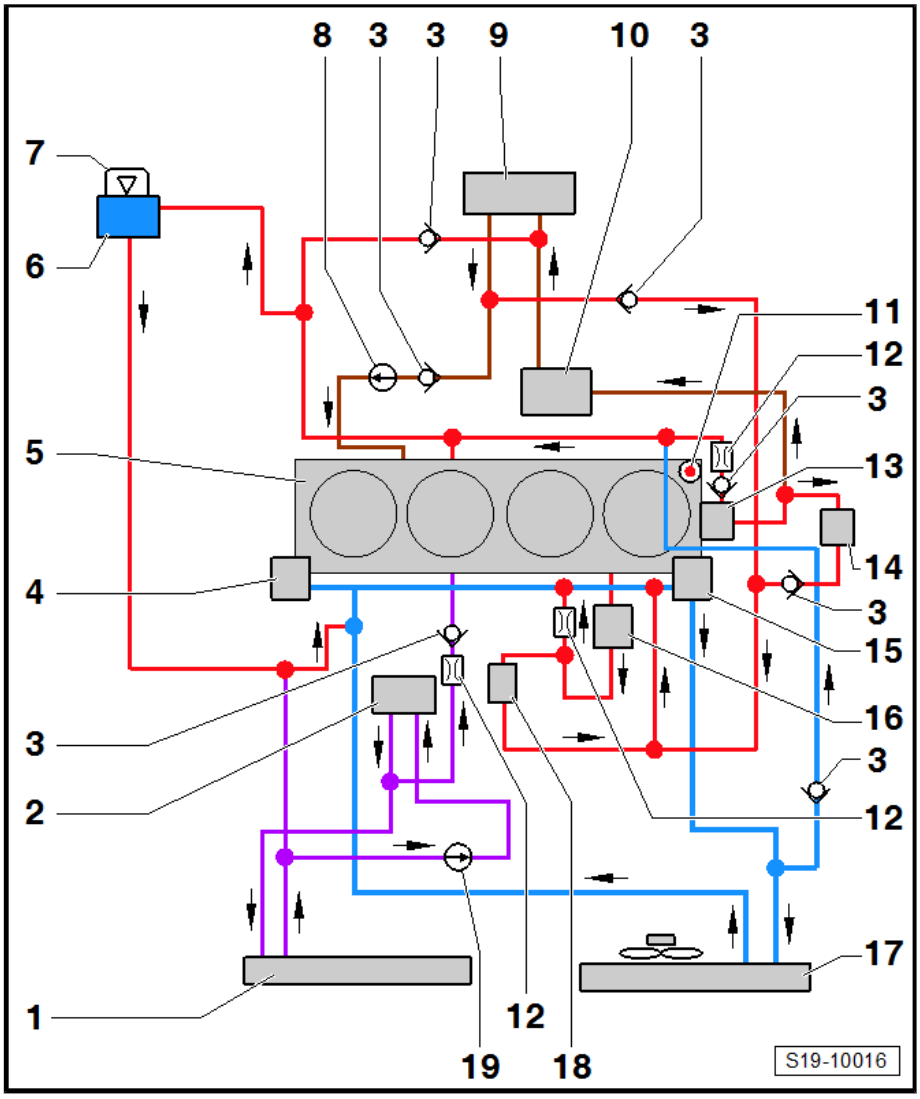
20 - Charge air cooler pump - V188-

1.1.2 Connection diagram - coolant hoses, engine codes CUPA, CYKA

Note

- *Blue = large coolant circuit.*
- *Red = small coolant circuit.*
- *Violet = coolant circuit for charge air cooler.*
- *Brown = heating circuit.*
- *The arrows point in the coolant flow direction.*

Vehicles without auxiliary heating



1 - Charge air cooling circuit radiator

2 - Charge air cooler

- ❑ Check for leaks ⇒ “2.5 Leak testing the charge air cooler”, page 419

3 - Non-return valve

4 - Coolant pump

5 - Cylinder head and cylinder block

6 - Coolant expansion tank

7 - Screw cap

- ❑ for coolant expansion tank
- ❑ Check pressure relief valve ⇒ page 229

8 - Heating backup pump - V488-

9 - Heat exchanger for heating

10 - Radiator for exhaust gas recirculation

11 - Coolant temperature transmitter - G62-

12 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

13 - Coolant connector

14 - Gearbox oil cooler

- ❑ Equipment variants

15 - Coolant regulator

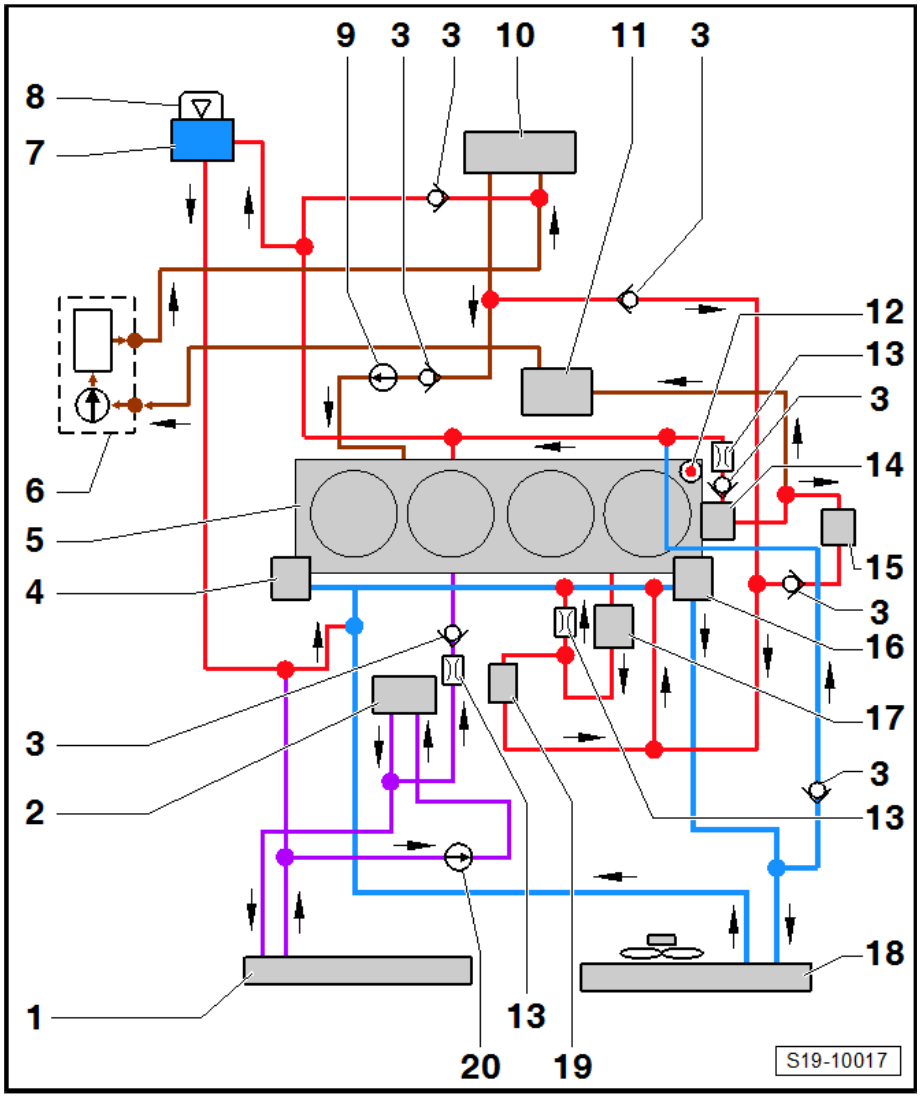
16 - Engine oil cooler

17 - Coolant radiator

18 - Throttle valve control unit - J338-

19 - Charge air cooler pump - V188-

Vehicles fitted with auxiliary heating



1 - Charge air cooling circuit radiator

2 - Charge air cooler

- ❑ Check for leaks ⇒ “2.5 Leak testing the charge air cooler”, page 419

3 - Non-return valve

4 - Coolant pump

5 - Cylinder head and cylinder block

6 - Auxiliary heating

- ❑ Equipment variants

7 - Coolant expansion tank

8 - Screw cap

- ❑ for coolant expansion tank
- ❑ Check pressure relief valve ⇒ page 229

9 - Heating backup pump - V488-

- ❑ According to build version

10 - Heat exchanger for heating

11 - Radiator for exhaust gas recirculation

12 - Coolant temperature transmitter - G62-

13 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

14 - Coolant connector

15 - Gearbox oil cooler

- ❑ Equipment variants

16 - Coolant regulator

17 - Engine oil cooler

18 - Coolant radiator

19 - Throttle valve control unit - J338-

20 - Charge air cooler pump - V188-

1.1.3 Connection diagram - coolant hoses, engine codes CRKB, CRVC, CRMB, CUNA, CXXA, CXXB, DBKA, CXMA, CUUA, CUUB, DFSA, DFSB, DDYB, DDYA, DCYA

Note

- *Blue = large coolant circuit.*
- *Red = small coolant circuit.*
- *Violet = coolant circuit for charge air cooler.*
- *Brown = heating circuit.*
- *The arrows point in the coolant flow direction.*

Vehicles without auxiliary heating

1 - Charge air cooling circuit radiator

2 - Charge air cooler

- ❑ Check for leaks ⇒ “2.5 Leak testing the charge air cooler”, page 419

3 - Non-return valve

4 - Coolant pump

5 - Cylinder head and cylinder block

6 - Coolant expansion tank

7 - Screw cap

- ❑ for coolant expansion tank
- ❑ Check pressure relief valve ⇒ page 229

8 - Heating backup pump - V488-

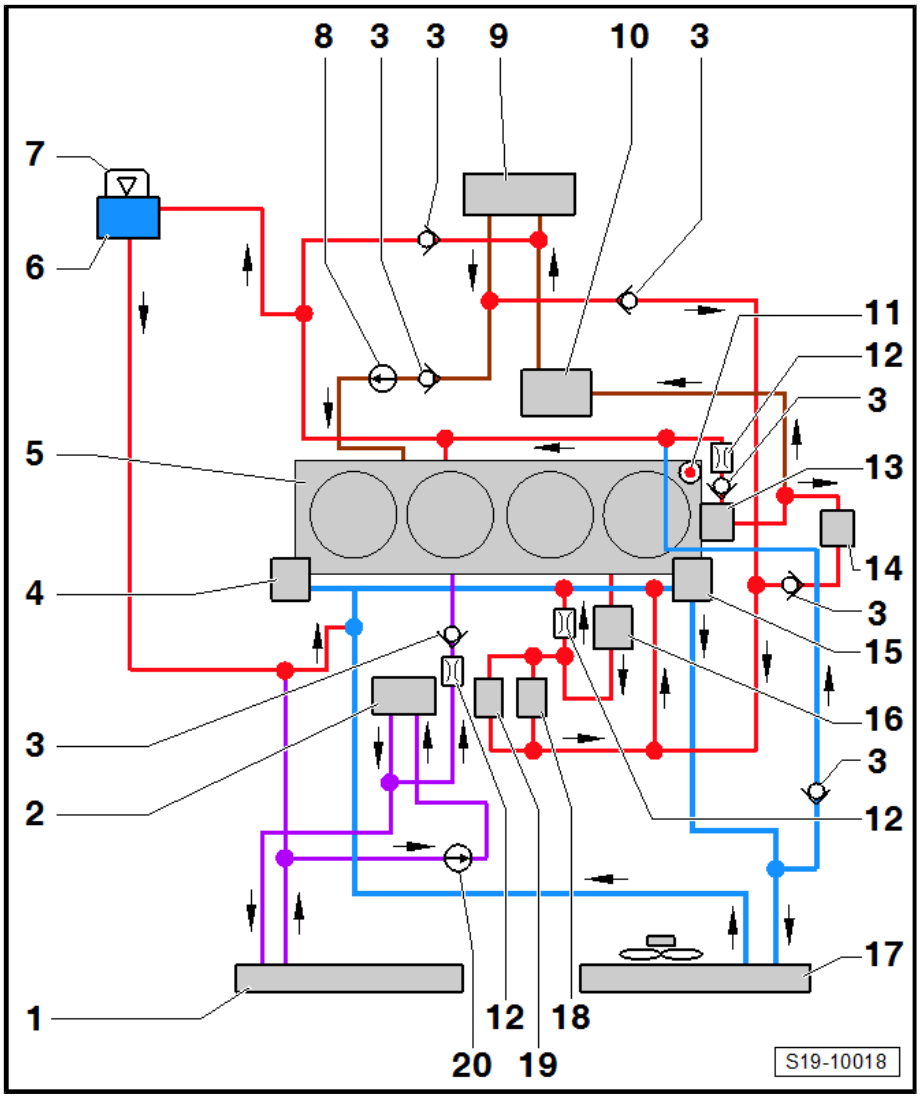
9 - Heat exchanger for heating

10 - Radiator for exhaust gas recirculation

11 - Coolant temperature transmitter - G62-

12 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)



13 - Coolant connector

14 - Gearbox oil cooler

- ❑ Equipment variants

15 - Coolant regulator

16 - Engine oil cooler

17 - Coolant radiator

18 - Throttle valve control unit - J338-

19 - Exhaust gas recirculation valve 1 - GX5-

comprises:

- ♦ Exhaust gas recirculation control motor - V338-
- ♦ Exhaust gas recirculation potentiometer - G212-

20 - Charge air cooler pump - V188-

Vehicles fitted with auxiliary heating

1 - Charge air cooling circuit radiator

2 - Charge air cooler

- ❑ Check for leaks ⇒ “2.5 Leak testing the charge air cooler”, page 419

3 - Non-return valve

4 - Coolant pump

5 - Cylinder head and cylinder block

6 - Auxiliary heating

- ❑ Equipment variants

7 - Coolant expansion tank

8 - Screw cap

- ❑ for coolant expansion tank
- ❑ Check pressure relief valve ⇒ page 229

9 - Heating backup pump - V488-

- ❑ According to build version

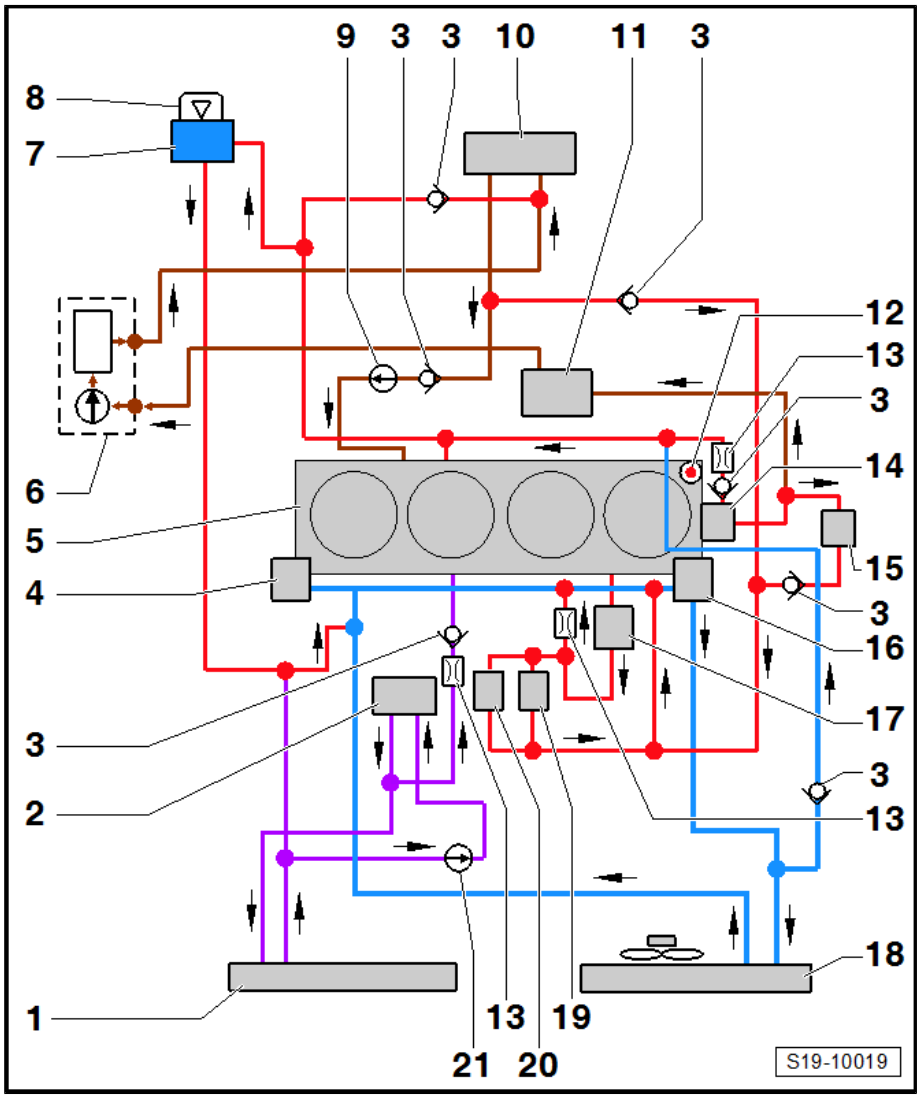
10 - Heat exchanger for heating

11 - Radiator for exhaust gas recirculation

12 - Coolant temperature transmitter - G62-

13 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)



14 - Coolant connector

15 - Gearbox oil cooler

- ❑ Equipment variants

16 - Coolant regulator

17 - Engine oil cooler

18 - Coolant radiator

19 - Throttle valve control unit - J338-

20 - Exhaust gas recirculation valve 1 - GX5-

comprises:

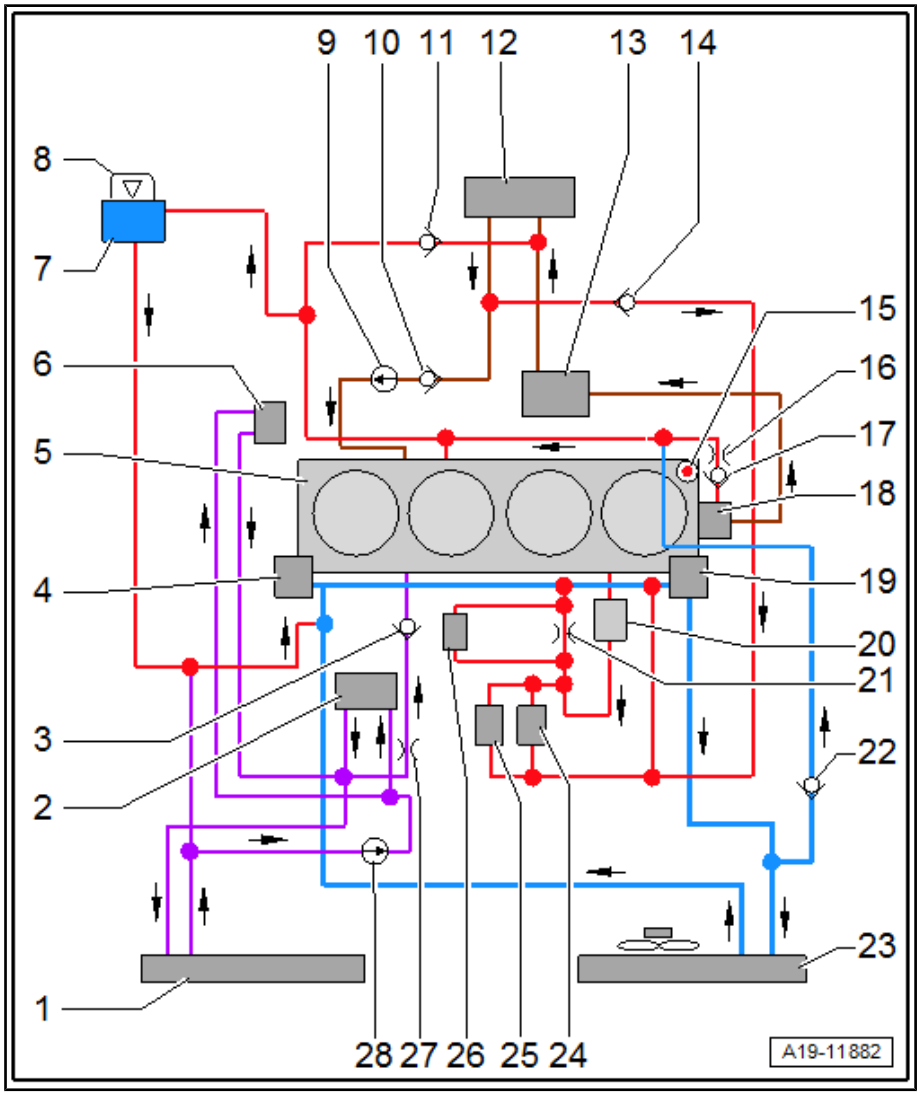
- ♦ Exhaust gas recirculation control motor - V338-
- ♦ Exhaust gas recirculation potentiometer - G212-

21 - Charge air cooler pump - V188-

1.1.4 Wiring diagram - Coolant hoses, Octavia III with SCR system

Note

- ♦ *Blue = large coolant circuit.*
- ♦ *Red = small coolant circuit.*
- ♦ *Violet = coolant circuit for charge air cooler.*
- ♦ *Brown = heating circuit.*



1 - Charge air cooling circuit radiator

2 - Charge air cooler

- ❑ Check for leaks ⇒ “2.5 Leak testing the charge air cooler”, page 419

3 - Non-return valve

4 - Coolant pump

5 - Cylinder head and cylinder block

6 - Injection valve for reduction agent - N474-

7 - Coolant expansion tank

8 - Screw cap

- ❑ for coolant expansion tank
- ❑ Check pressure relief valve ⇒ page 229

9 - Heating backup pump - V488-

- ❑ According to build version

10 - Non-return valve

11 - Non-return valve

- ❑ According to build version

12 - Heat exchanger for heating

13 - Radiator for exhaust gas recirculation

- ❑ Summary of components ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670
- ❑ Check for leaks ⇒ “5.7 Test air-tightness of the radiator for exhaust gas recirculation”, page 699

14 - Non-return valve

15 - Coolant temperature transmitter - G62-

16 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

17 - Non-return valve

18 - Coolant connector

19 - Coolant regulator

20 - Engine oil cooler

21 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

22 - Non-return valve

23 - Coolant radiator

- ❑ Summary of components ⇒ “4.1 Assembly overview - radiator/radiator fan”, page 338

24 - Throttle valve control unit - J338-

25 - Exhaust gas recirculation valve 1 - GX5-

comprises:
- ♦ Exhaust gas recirculation control motor - V338-
- ♦ Exhaust gas recirculation potentiometer - G212-

26 - External engine heating

- ❑ According to build version

27 - Choke

- ❑ integrated into the coolant hose, not visible from the outside
- ❑ The fitting position is not defined, therefore the coolant hose must not be unclipped with the hose clamp (Risk of damage!)

28 - Charge air cooler pump - V188-

1.2 Check cooling system for leaks

Special tools and workshop equipment required

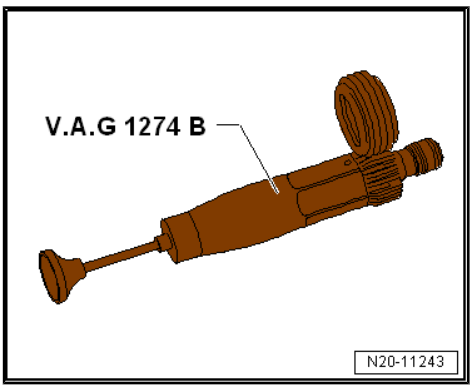
- ♦ Cooling system tester - V.A.G 1274 B-
- ♦ Adapter for cooling system tester - V.A.G 1274/8-
- ♦ Adapter for cooling system tester - V.A.G 1274/9-

Note

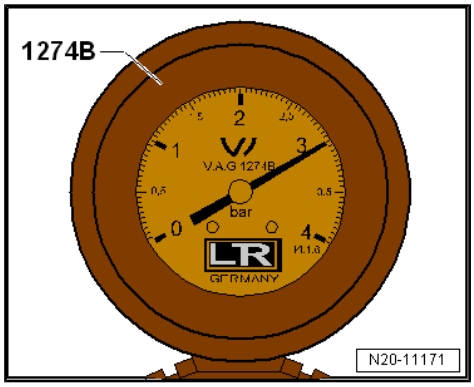
To ensure that the leak-tightness test can be carried out correctly, first carry out the test (self-test) of the cooling system testing device - V.A.G 1274 B- !

Test (self-test) of the cooling system tester - V.A.G 1274 B-

– Operate the cooling system testing device - V.A.G 1274 B- several times.



– Use the cooling system testing device to build up pressure to 0.3 MPa (3.0 bar).
– Monitor the pressure on the pressure manometer of the cooling system testing device for 30 seconds.



If no pressure is built up or if the pressure drops again

Cooling system testing device - V.A.G 1274 B- leaks and may not be used.

Check cooling system for leaks

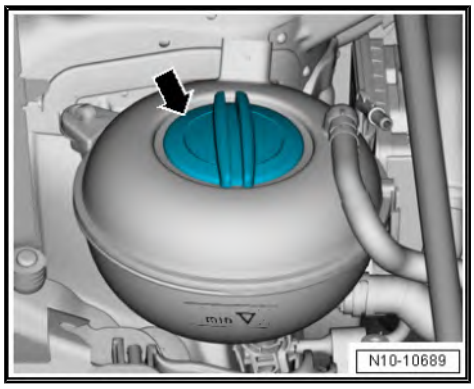
- Engine must be warm.

WARNING

Danger of scalding due to hot steam and hot coolant.

- **When the engine is warm, the cooling system is under overpressure.**
- **Reduce excess pressure by covering the cap of the coolant expansion tank with a cloth and opening it carefully.**

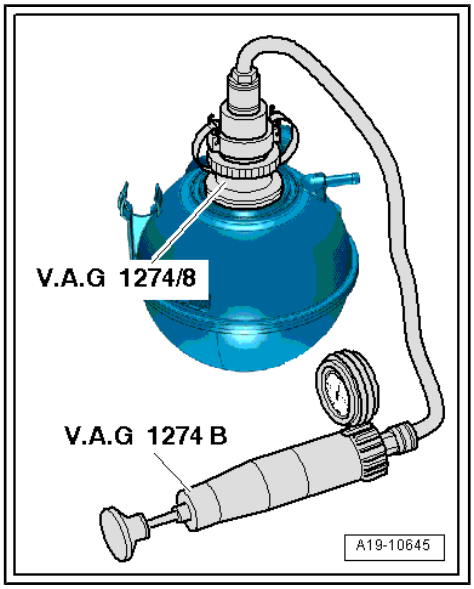
– Open cap -arrow- for coolant expansion tank.



– Fit the cooling system testing device - V.A.G 1274 B- with adapter -V.A.G 1274/8- onto the coolant expansion tank.
– Build up a pressure of approximately 0.15 MPa (1.5 bar) using hand pump on cooling system tester.
• The pressure must not drop below 0.02 MPa (0.2 bar) after 10 minutes.

If the pressure falls below 0.02 MPa (0.2 bar):

– Search position of the leak and repair fault.



Note

- *A fall in pressure of 0.02 MPa (0.2 bar) within 10 minutes is caused by cooling of the coolant.*
- *The colder the engine, the lower the pressure loss.*
- *You may need to repeat the test when the engine is cold.*
- *If the coolant level in the expansion tank sinks more than 30 mm, although no external leakage is detected, this indicates an air bubble in the cooling system. In this case, the filling quality must be checked*
  ⇒ "1.5 Checking the filling quality", page 251 .

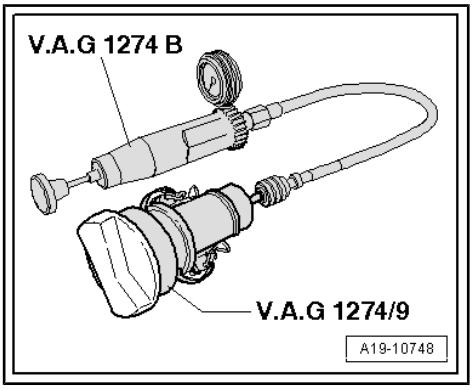
CAUTION

Risk of scalding!

- **Before the cooling system testing device - V.A.G 1274 B- is separated from the connecting hose or the connecting piece -V.A.G 1274 B/1- , the existing pressure must be released.**
- **For this step, press the pressure relief valve on the cooling system testing device - V.A.G 1274 B- and hold it pressed until the pressure gauge indicates the value »0«.**

Testing the pressure relief valve in the cap

– Screw the screw cap into the adapter for the cooling system testing device -V.A.G 1274/9- .
– Connect the connecting piece -V.A.G 1274 B/1- to the adapter for the cooling system testing device -V.A.G 1274/9- .
– Connect the connecting piece -V.A.G 1274 B/1- to the cooling system testing device - V.A.G 1274 B- via the supplied connecting hose.
– Build up overpressure using the hand pump on the tester.



Blue filler cap

• The pressure relief valve should open at a pressure of 0.14 ... 0.16 MPa (1.4 ... 1.6 bar).

Black filler cap

• The pressure relief valve should open at a pressure of 0.16 ... 0.18 MPa (1.6 ... 1.8 bar).

If the pressure relief valve opens too early or too late

– Renew cap.

1.3 Draining the cooling system

⇒ “1.3.1 Draining the cooling system, Octavia III”, page 230

⇒ “1.3.2 Draining the cooling system, Yeti”, page 232

⇒ “1.3.3 Draining the cooling system, Rapid NH”, page 233

1.3.1 Draining the cooling system, Octavia III

Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-
- Protective goggles
- Protective gloves

Note

- *The drained coolant must not be re-used.*
- *Observe the disposal instructions.*

WARNING

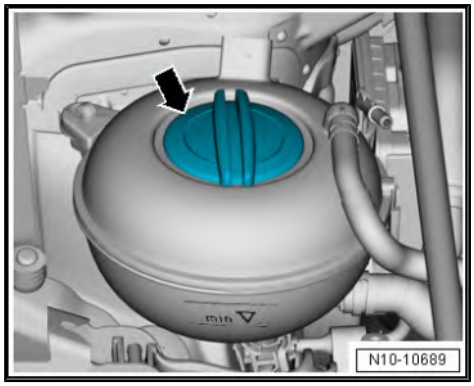
Danger of scalding due to hot steam and hot coolant.

- **When the engine is warm, the cooling system is under over-pressure.**
- **Reduce excess pressure by covering the cap of the coolant expansion tank with a cloth and opening it carefully.**

– Open cap -arrow- for coolant expansion tank.

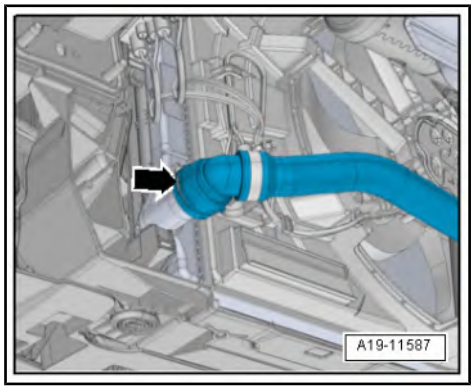
– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

– Place catch pan - VAS 6208- under the radiator.

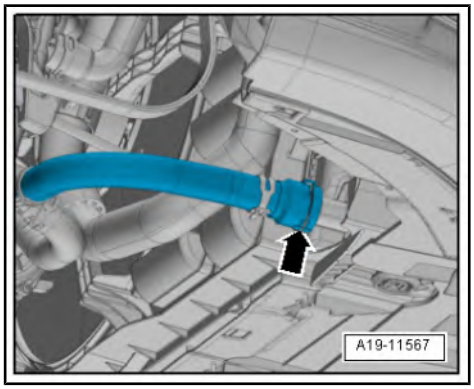


Vehicles with radiator variant 1

– Raise holding clamp -arrow-, remove bottom left coolant hose from radiator, allow coolant to drain.



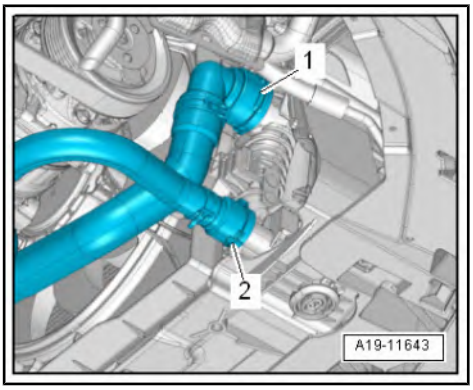
– Raise holding clamp -arrow-, remove bottom right coolant hose from charge air cooling circuit radiator and allow coolant to drain.



Vehicles with radiator variant 2

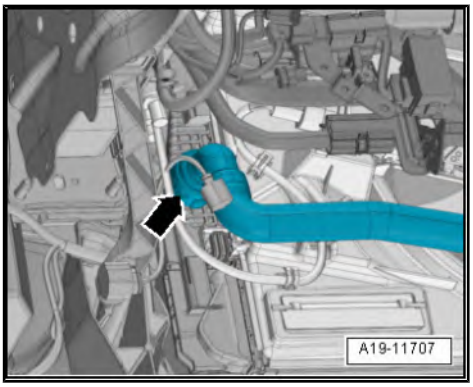
– Raise holding clamp -1-, remove bottom right coolant hose from radiator, allow coolant to drain.

– Raise holding clamp -2-, remove bottom right coolant hose from charge air cooling circuit radiator and allow coolant to drain.

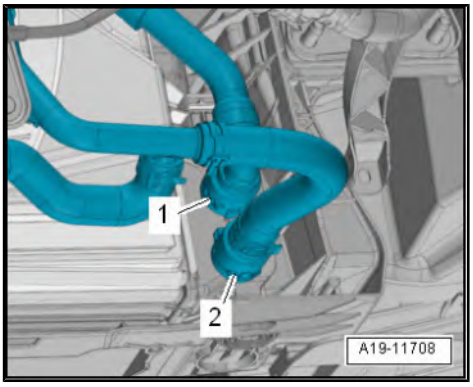


Vehicles with radiator variant 3

– Raise holding clamp -arrow-, remove bottom left coolant hose from radiator, allow coolant to drain.

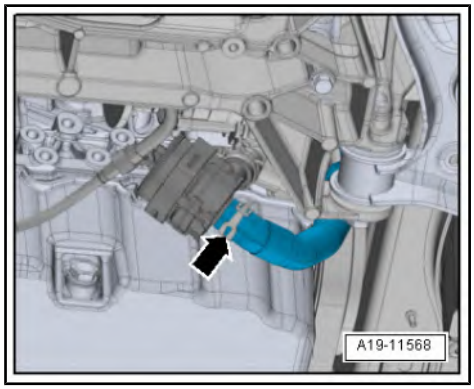


– Raise holding clamps -1-, -2-, remove coolant hoses from charge air cooling circuit radiator and allow coolant to drain.



Continued for all vehicles

– Loosen hose clamp -arrow-, remove bottom coolant hose to heating backup pump - V488- , allow coolant to drain.



1.3.2 Draining the cooling system, Yeti

Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-
- Protective goggles
- Protective gloves

Note

- *The drained coolant must not be re-used.*
- *Observe the disposal instructions.*

WARNING

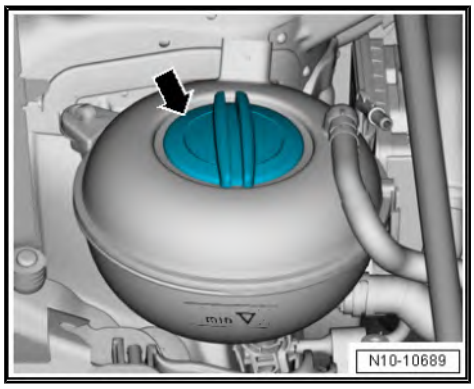
Danger of scalding due to hot steam and hot coolant.

- **When the engine is warm, the cooling system is under over-pressure.**
- **Reduce excess pressure by covering the cap of the coolant expansion tank with a cloth and opening it carefully.**

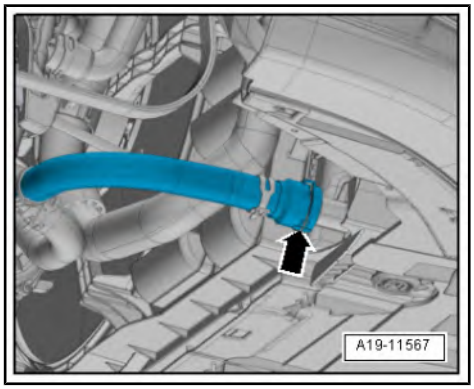
– Open cap -arrow- for coolant expansion tank.

– Remove the noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 .

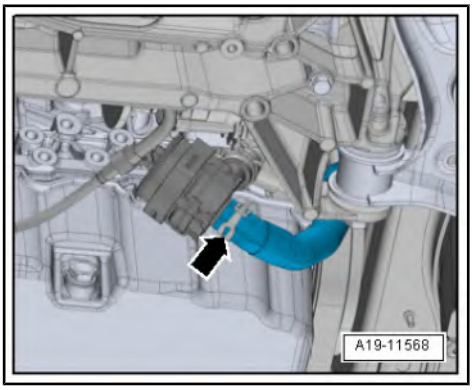
– Place catch pan - VAS 6208- under the radiator.



– Raise holding clamp -arrow-, remove bottom left coolant hose from charge air cooling circuit radiator and allow coolant to drain.



– Loosen hose clamp -arrow-, remove bottom coolant hose to heating backup pump - V488- , allow coolant to drain.



1.3.3 Draining the cooling system, Rapid NH

Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-
- Protective goggles
- Protective gloves

Note

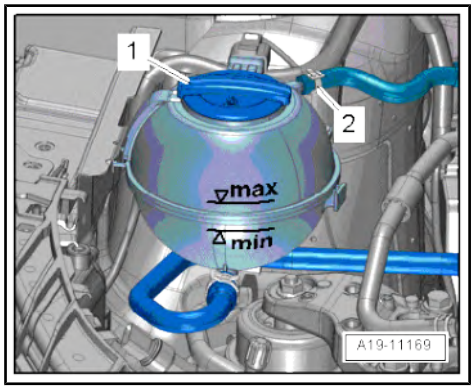
- *The drained coolant must not be re-used.*
- *Observe the disposal instructions.*

WARNING

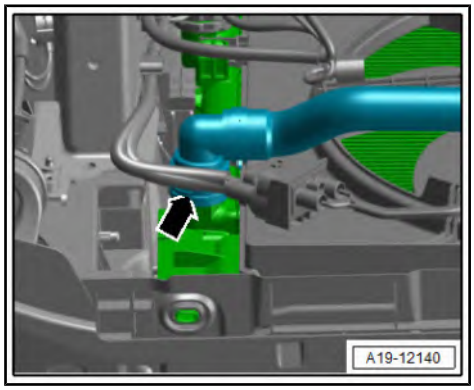
Danger of scalding due to hot steam and hot coolant.

- **When the engine is warm, the cooling system is under over-pressure.**
- **Reduce excess pressure by covering the cap of the coolant expansion tank with a cloth and opening it carefully.**

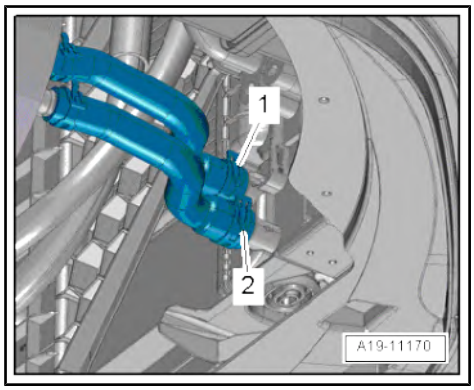
– Open the cap -1- of the coolant expansion reservoir.
– Remove the noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 .
– Place catch pan - VAS 6208- under the radiator.



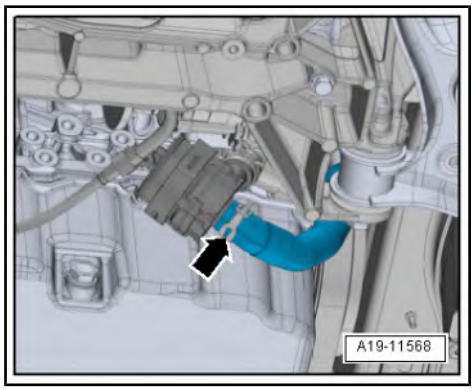
– Raise holding clamp -arrow-, remove coolant hose from bottom left of radiator and allow coolant to drain.



– Release clamps -1- and -2-, disconnect coolant hoses and let coolant drain.



– Loosen hose clamp -arrow-, remove bottom coolant hose to heating backup pump - V488- , allow coolant to drain.



1.4 Filling with coolant

⇒ “1.4.1 Filling with coolant without the electric vacuum pump, Octavia III”, page 235

⇒ “1.4.2 Filling coolant without the electric vacuum pump, Yeti”, page 239

⇒ “1.4.3 Filling coolant without the electric vacuum pump, Rapid NH”, page 243

⇒ “1.4.4 Filling up the electric vacuum pump VAS 6096/2 with coolant”, page 246

1.4.1 Filling with coolant without the electric vacuum pump, Octavia III

Condition:

- The coolant has been drained
  ⇒ “1.3.1 Draining the cooling system, Octavia III”, page 230 .

Note

- *If the electric vacuum pump - VAS 6096/2- is available, use it to fill the cooling system*
  ⇒ “1.4.4 Filling up the electric vacuum pump VAS 6096/2 with coolant”, page 246 .
- *By using the electric vacuum pump - VAS 6096/2- , a higher vacuum is achieved in the cooling system. Due to the higher vacuum, less air is left in the cooling system after filling. For this reason, a »shortened« bleed can be carried out with the ⇒ Vehicle diagnostic tester.*

Special tools and workshop equipment required

- Adapter for cooling system tester - V.A.G 1274/8-
- Cooling system charge unit - VAS 6096-
- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-
- Refractometer - T10007A- or -T10007B- or VAS - 531005-
- Protective goggles
- Protective gloves

Filling up

After replacing the components

- Cylinder head
- Heat exchanger for heating
- Coolant radiator
- Charge air cooling circuit radiator
- Intake manifold with charge air cooler

filling up is not sufficient. The cooling system must therefore be flushed and the coolant must be replaced
⇒ “1.7 Flushing the cooling system”, page 253 .

Note

- *The drained coolant must not be re-used.*
- *Observe the disposal instructions.*

NOTICE

Risk of engine damage if the cooling system is not filled/bled adequately.

After filling, the cooling system must be bled ⇒ Vehicle diagnostic tester.

Work procedure

– Reconnect coolant hoses with quick couplings ⇒ page 346 .

– Reconnect coolant hoses with hose clamps to the electric coolant pumps.

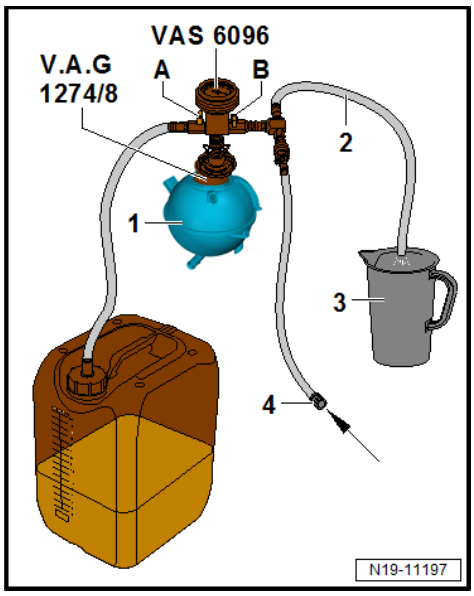
– Fill up the coolant reservoir -VAS 6096- with at least 8 litres of pre-mixed coolant mixed to the correct ratio:

- ⇒ Maintenance ; Booklet Octavia III .

– Screw the adapter for cooling system testing device - V.A.G 1274/8- to the coolant expansion tank.

– Fit cooling system charge unit - VAS 6096- to the adapter - V.A.G 1274/8- .

– Place the air hose -2- into a small container -3-.



Note

A small amount of coolant, which is entrained with the exhaust air, must be collected.

– Close the valves -A- and -B-, while doing so turn the lever at right angles to the direction of flow.

– Connect hose -4- to compressed air.

- Pressure: 0.6 ... 1.0 MPa (6 ... 10 bar)

– Open the valve -B-, while doing so turn the lever in the direction of flow.

• Vacuum is generated in the cooling system by the suction spray pump.

• The display instrument pointer must move into the green area.

– In addition, briefly open the valve -A- by turning the lever in the direction of flow, so that the hose of the coolant expansion bottle is -VAS 6096- filled with coolant.

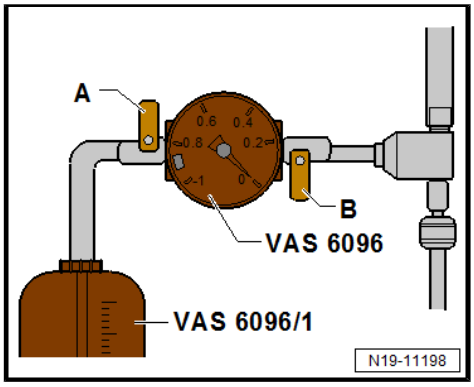
– Close the valve -A- again.

– Leave the valve -B- open a further 2 minutes.

• A vacuum pump is created in the cooling system by the vacuum pump; the display instrument pointer must remain in the green area.

– Close the valve -B-.

• If the display instrument pointer remains in the green area the vacuum in the cooling system is sufficient for subsequent filling.



Note

♦ *If the pointer is below the green area, repeat the process.*

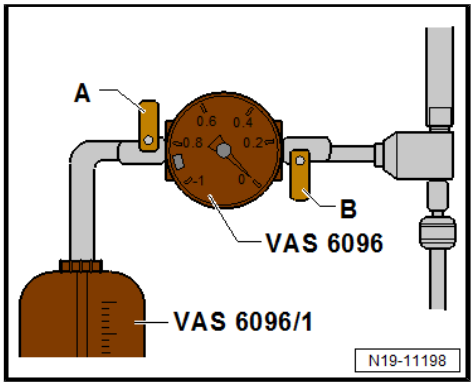
♦ *If the vacuum drops, check the cooling system for leak points.*

– Disconnect pneumatic hose.

– Open valve -A-.

• The vacuum pump in the cooling system draws the coolant out of the coolant reservoir -VAS 6096- and fills the cooling system.

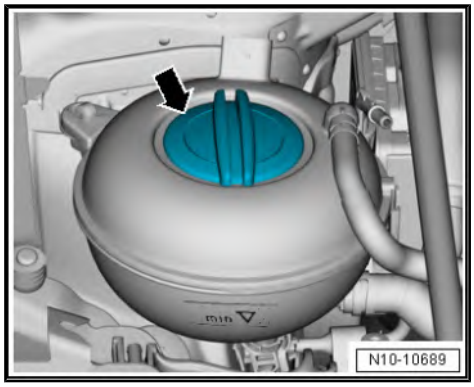
– Remove the cooling system charge unit - VAS 6096- from the coolant expansion tank.



Note

Do not re-use used coolant.

– Fill up coolant to “max” marking.



Note

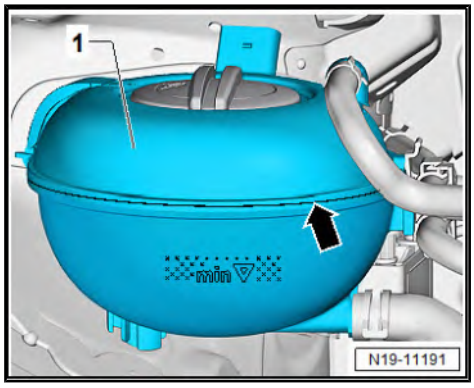
Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.

– Installing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

Bleeding the cooling system

– Start the engine.
– For vehicles with auxiliary heating, switch it on for approximately 30 seconds.
– Set temperature to “HI”.
– Switch off AC compressor. Press AC button to do so.
• The LED in the button must not illuminate.
– Set the fresh air blower for air conditioning to the lowest level.
– Connect ⇒ Vehicle diagnostic tester.
– Select the following options on the vehicle diagnosis tester :
♦ `0001 - Engine electronics, functions`
♦ `0001 - Coolant circuit filling`
– Follow the instructions on the ⇒ Vehicle diagnostic tester.
– Allow engine to cool down.

Check coolant level after repair.



• If the engine is at operating temperature, the coolant level must be at the »weld seam« -arrow-.
• If the engine is cold, the coolant level must be approx. 5 mm -arrow- above the max marking.
– If required, top up with coolant.

Note

The higher coolant level is necessary, as the coolant level may still fall after bleeding.

1.4.2 Filling coolant without the electric vacuum pump, Yeti

- The coolant has been drained
⇒ “1.3.2 Draining the cooling system, Yeti”, page 232 .

Note

- *If the electric vacuum pump - VAS 6096/2- is available, use it to fill the cooling system*
⇒ “1.4.4 Filling up the electric vacuum pump VAS 6096/2 with coolant”, page 246 .
- *By using the electric vacuum pump - VAS 6096/2- , a higher vacuum is achieved in the cooling system. Due to the higher vacuum, less air is left in the cooling system after filling. For this reason, a »shortened« bleed can be carried out with the ⇒ Vehicle diagnostic tester.*

Special tools and workshop equipment required

- Adapter for cooling system tester - V.A.G 1274/8-
- Cooling system charge unit - VAS 6096-
- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-
- Refractometer - T10007A- or -T10007B- or VAS - 531005-
- Protective goggles
- Protective gloves

Filling up

After replacing the components

- Cylinder head
- Heat exchanger for heating
- Coolant radiator
- Charge air cooling circuit radiator
- Intake manifold with charge air cooler

filling up is not sufficient. The cooling system must therefore be flushed and the coolant must be replaced
⇒ “1.7 Flushing the cooling system”, page 253 .

Note

- *The drained coolant must not be re-used.*
- *Observe the disposal instructions.*

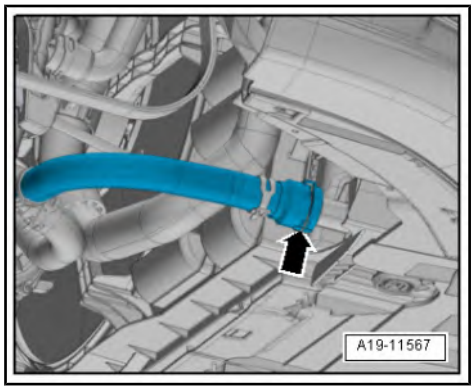
NOTICE

Risk of engine damage if the cooling system is not filled/bled adequately.

After filling, the cooling system must be bled ⇒ Vehicle diagnostic tester.

Work procedure

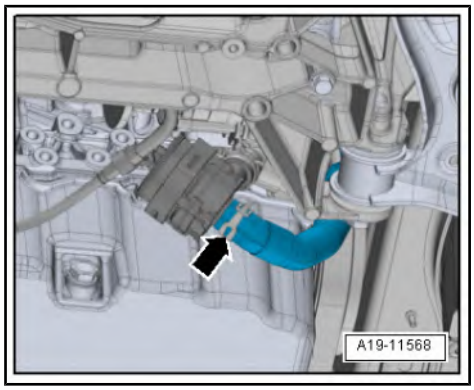
– Connect coolant hose -arrow- to bottom left of radiator.



– Connect coolant hose -arrow- to bottom of the heating backup pump - V488- .

– Fill up the coolant reservoir -VAS 6096- with at least 8 litres of pre-mixed coolant mixed to the correct ratio:

♦ ⇒ Maintenance ; Booklet Yeti .



– Screw the adapter for cooling system testing device - V.A.G 1274/8- to the coolant expansion tank.

– Fit cooling system charge unit - VAS 6096- to the adapter - V.A.G 1274/8- .

– Place the air hose -2- into a small container -3-.

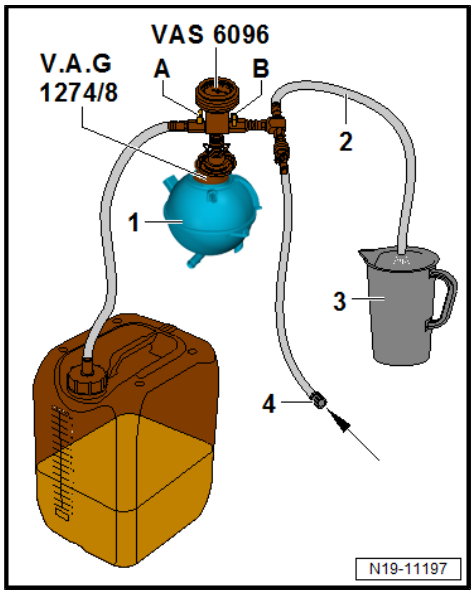
Note

A small amount of coolant, which is entrained with the exhaust air, must be collected.

– Close the valves -A- and -B-, while doing so turn the lever at right angles to the direction of flow.

– Connect hose -4- to compressed air.

• Pressure: 0.6 - 1.0 MPa (6 - 10 bar)



– Open the valve -B-, while doing so turn the lever in the direction of flow.

• A vacuum pump is created in the cooling system by the vacuum pump; the display instrument pointer must move into the green area.

– In addition, briefly open the valve -A- by turning the lever in the direction of flow, so that the hose of the coolant expansion bottle is -VAS 6096- filled with coolant.

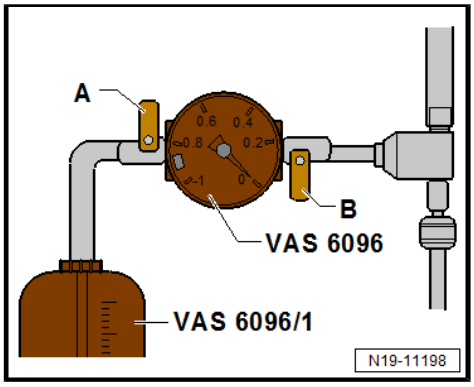
– Close the valve -A- again.

– Leave the valve -B- open a further 2 minutes.

• A vacuum pump is created in the cooling system by the vacuum pump; the display instrument pointer must remain in the green area.

– Close the valve -B-.

• If the display instrument pointer remains in the green area the vacuum in the cooling system is sufficient for subsequent filling.



Note

♦ *If the pointer is below the green area, repeat the process.*

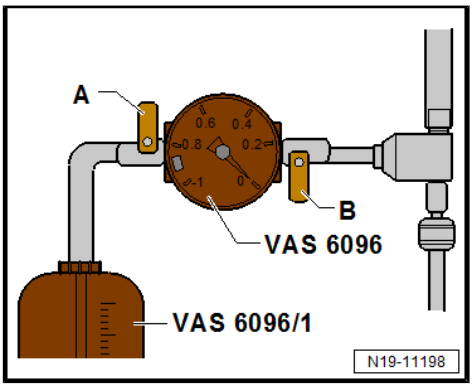
♦ *If the vacuum drops, check the cooling system for leak points.*

– Disconnect pneumatic hose.

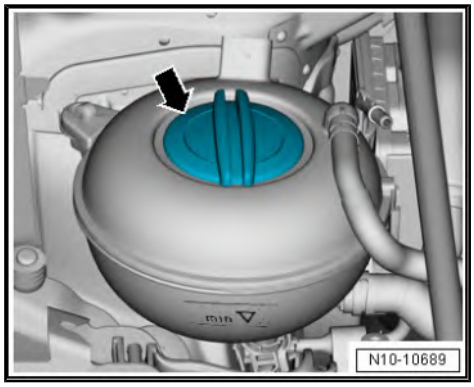
– Open valve -A-.

• The vacuum pump in the cooling system draws the coolant out of the coolant reservoir -VAS 6096- and fills the cooling system.

– Remove the cooling system charge unit - VAS 6096- from the coolant expansion tank.



– Fill up coolant to “max” marking.



Note

Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.

– Install the noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 .

Bleeding the cooling system

– Start the engine.
– For vehicles with auxiliary heating, switch it on for approximately 30 seconds.
– Set temperature to “HI”.
– Switch off AC compressor. Press AC button to do so.

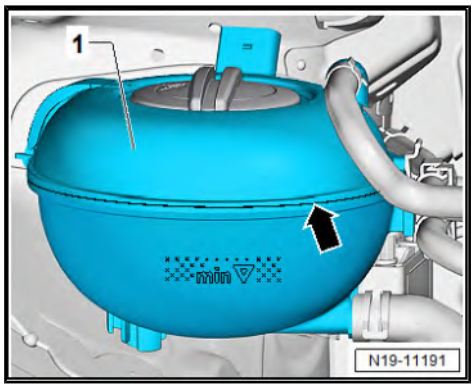
• The LED in the button must not illuminate.

– Set the fresh air blower for air conditioning to the lowest level.
– Connect ⇒ Vehicle diagnostic tester.
– Select the following options on the vehicle diagnosis tester :

◆ `0001 - Engine electronics, functions`
◆ `0001 - Coolant circuit filling`

– Follow the instructions on the ⇒ Vehicle diagnostic tester.
– Allow engine to cool down.

Check coolant level after repair.



• If the engine is at operating temperature, the coolant level must be at the »weld seam« -arrow-.
• If the engine is cold, the coolant level must be approx. 5 mm -arrow- above the max marking.

– If required, top up with coolant.

Note

The higher coolant level is necessary, as the coolant level may still fall after bleeding.

1.4.3 Filling coolant without the electric vacuum pump, Rapid NH

- The coolant has been drained
⇒ “1.3.3 Draining the cooling system, Rapid NH”, page 233 .

Note

- *If the electric vacuum pump - VAS 6096/2- is available, use it to fill the cooling system*
⇒ “1.4.4 Filling up the electric vacuum pump VAS 6096/2 with coolant”, page 246 .
- *By using the electric vacuum pump - VAS 6096/2- , a higher vacuum is achieved in the cooling system. Due to the higher vacuum, less air is left in the cooling system after filling. For this reason, a »shortened« bleed can be carried out with the ⇒ Vehicle diagnostic tester.*

Special tools and workshop equipment required

- Adapter for cooling system tester - V.A.G 1274/8-
- Cooling system charge unit - VAS 6096-
- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-
- Refractometer - T10007A- or -T10007B- or VAS - 531005-
- Protective goggles
- Protective gloves

Filling up

After replacing the components

- Cylinder head
- Heat exchanger for heating
- Coolant radiator
- Charge air cooling circuit radiator
- Intake manifold with charge air cooler

filling up is not sufficient. The cooling system must therefore be flushed and the coolant must be replaced
⇒ “1.7 Flushing the cooling system”, page 253 .

Note

- *The drained coolant must not be re-used.*
- *Observe the disposal instructions.*

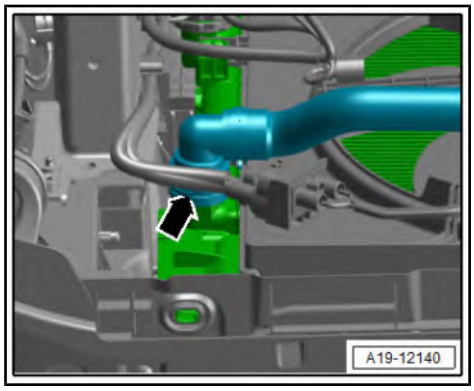
NOTICE

Risk of engine damage if the cooling system is not filled/bled adequately.

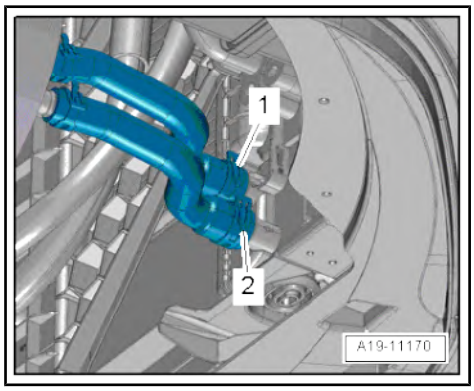
After filling, the cooling system must be bled ⇒ Vehicle diagnostic tester.

Work procedure

– Connect coolant hose -arrow- to bottom left of radiator.



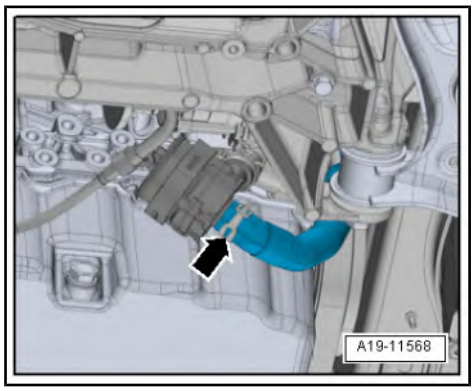
– Connect coolant hoses with hose couplings -1-, -2- to charge air cooling circuit radiator.



– Connect coolant hose -arrow- to bottom of the heating backup pump - V488- .

– Fill up the coolant reservoir -VAS 6096- with at least 8 litres of pre-mixed coolant mixed to the correct ratio:

♦ ⇒ Maintenance ; Booklet Rapid NH .



– Screw the adapter for cooling system testing device - V.A.G 1274/8- to the coolant expansion tank.

– Fit cooling system charge unit - VAS 6096- to the adapter - V.A.G 1274/8- .

– Place the air hose -2- into a small container -3-.

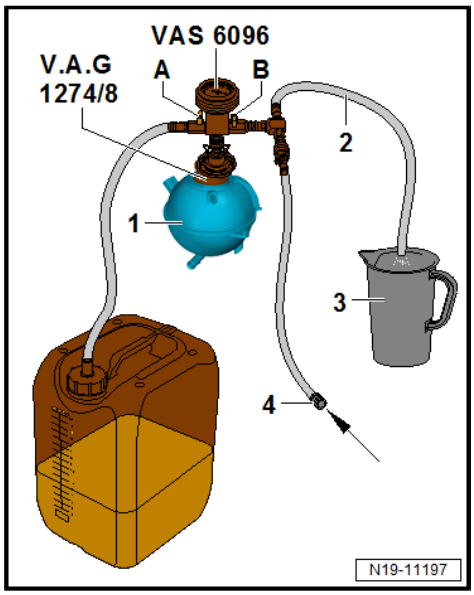
Note

A small amount of coolant, which is entrained with the exhaust air, must be collected.

– Close the valves -A- and -B-, while doing so turn the lever at right angles to the direction of flow.

– Connect hose -4- to compressed air.

• Pressure: 0.6 - 1.0 MPa (6 - 10 bar)



– Open the valve -B-, while doing so turn the lever in the direction of flow.

• A vacuum pump is created in the cooling system by the vacuum pump; the display instrument pointer must move into the green area.

– In addition, briefly open the valve -A- by turning the lever in the direction of flow, so that the hose of the coolant expansion bottle is -VAS 6096- filled with coolant.

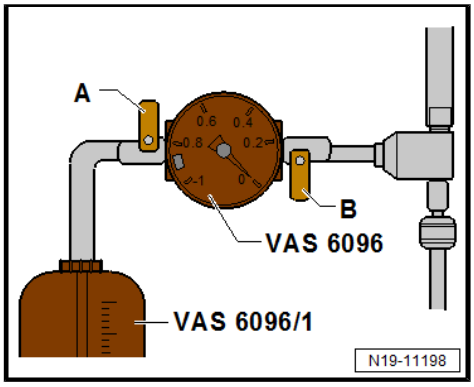
– Close the valve -A- again.

– Leave the valve -B- open a further 2 minutes.

• A vacuum pump is created in the cooling system by the vacuum pump; the display instrument pointer must remain in the green area.

– Close the valve -B-.

• If the display instrument pointer remains in the green area the vacuum in the cooling system is sufficient for subsequent filling.



Note

♦ *If the pointer is below the green area, repeat the process.*

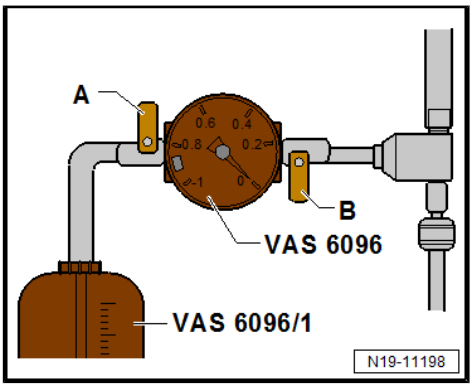
♦ *If the vacuum drops, check the cooling system for leak points.*

– Disconnect pneumatic hose.

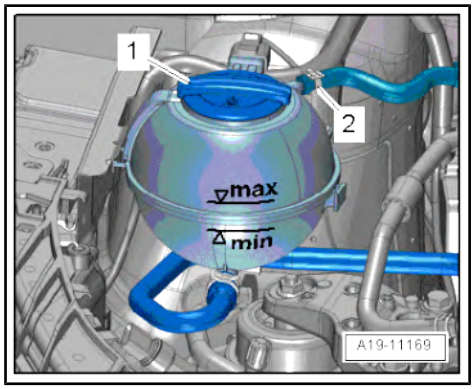
– Open valve -A-.

• The vacuum pump in the cooling system draws the coolant out of the coolant reservoir -VAS 6096- and fills the cooling system.

– Remove the cooling system charge unit - VAS 6096- from the coolant expansion tank.



– Fill up coolant to “max” marking.



Note

Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.

– Install the noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 .

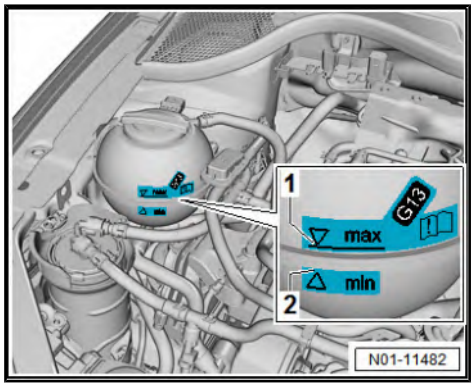
Bleeding the cooling system

– Start the engine.
– Set temperature to “HI”.
– Switch off AC compressor. Press AC button to do so.
• The LED in the button must not illuminate.
– Set the fresh air blower for air conditioning to the lowest level.
– Connect ⇒ Vehicle diagnostic tester.
– Select the following options on the vehicle diagnosis tester :
◆ `0001 - Engine electronics, functions`
◆ `0001 - Coolant circuit filling`
– Follow the instructions on the ⇒ Vehicle diagnostic tester.
– Switch off the engine.
– Allow engine to cool down.
– Check coolant level ⇒ page 246 .
– Top up coolant to approximately 5 mm above the “max” marking.

Note

During driving, any residual air quantities are discharged via the permanent vent lines.

– Check coolant level.
• When the engine is at operating temperature the coolant level may be at or above the “max” marking -1-.
• If the engine is cold the coolant level must between the “min” -2- and the “max” marking -1-.
– If necessary, top up with coolant.



1.4.4 Filling up the electric vacuum pump - VAS 6096/2- with coolant

Condition:

• The coolant was drained, as described below ⇒ “1.3 Draining the cooling system”, page 230 .

Note

By using the electric vacuum pump - VAS 6096/2- , a higher vacuum is achieved in the cooling system. Due to the higher vacuum, less air is left in the cooling system after filling. For this reason, a »shortened« bleed can be carried out with the ⇒ Vehicle diagnostic tester.

Special tools and workshop equipment required

- Cooling system charge unit - VAS 6096-
- Electric vacuum pump - VAS 6096/2-
- Coolant reservoir - VAS 6968-
- Test adapter - VAS 691 005/5-
- Catch pan , e.g. -VAS 6208-
- Refractometer - T10007A- or -T10007B- or VAS - 531005-
- Hose clamps up to Ø 25 mm - MP7-602 (3094)-

Filling up

After replacing the components:

- Cylinder head
- Heat exchanger for heating
- Coolant radiator
- Charge air cooling circuit radiator
- Intake manifold with charge air cooler

filling up is not sufficient. The cooling system must be rinsed ⇒ “1.7 Flushing the cooling system”, page 253 .

NOTICE

Risk of engine damage if the cooling system is not filled/bled adequately.

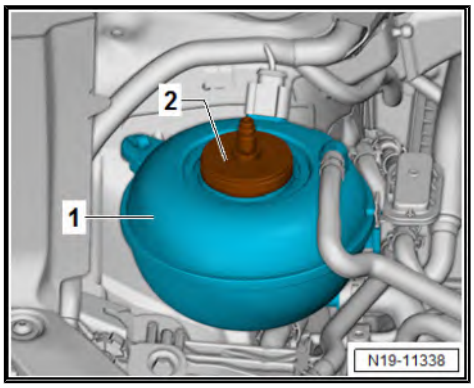
- **After filling the cooling system, it is essential to carry out a vent ⇒ Vehicle diagnostic tester.**

Work procedure

– Reconnect all coolant hoses that have been removed.

– Screw the test adapter - VAS 691 005/5- -2- onto the coolant expansion tank -1-.

– Carry out an electric vacuum pump - VAS 6096/2- test ⇒ “1.6 Checking the electric vacuum pump VAS 6096/2 ”, page 253 .



– Set up the coolant reservoir - VAS 6968- in such a way that it is higher than the coolant expansion tank -arrows- and fill it with at least 10 litres of premixed coolant at the correct mixing ratio.

♦ ⇒ Maintenance ; Booklet Octavia III .

♦ ⇒ Maintenance ; Booklet Yeti .

♦ ⇒ Maintenance ; Booklet Rapid NH .

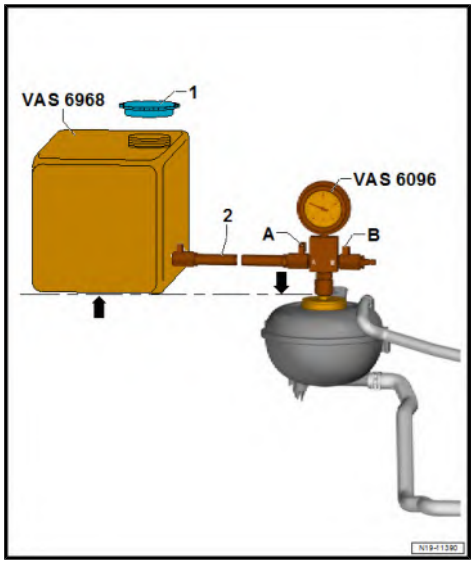
– Connect the cooling system filling device - VAS 6096- as shown on Coolant reservoir - VAS 6968- .

• Do not connect the cooling system filling device - VAS 6096- to the test adapter - VAS 691 005/5- yet. The filler hose should be bled first.

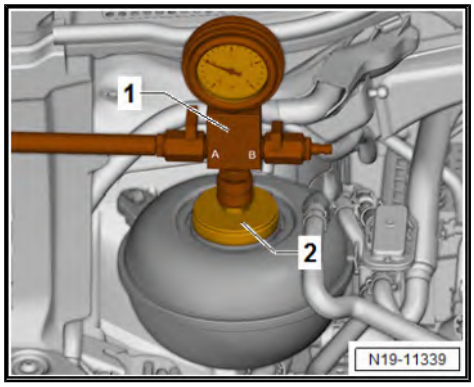
– Vent the hose -2-, to do this, briefly open the valve on the coolant reservoir and valves -A- and -B-, until the hose -2- is filled with coolant.

– Close valves -A- and -B-, while doing so turn the lever at right angles to the direction of flow.

– Open the -1- cap.

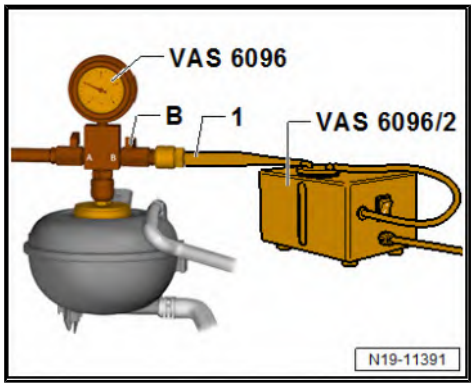


– Place the cooling system filling device -1- onto the test adapter -2-.



– Connect the hose -1- for the electric vacuum pump - VAS 6096/2- to the plug-in coupling -B- on cooling system filling device .

– Connect the electric vacuum pump - VAS 6096/2- to the vehicle battery and switch it on. Open the -B- valve.

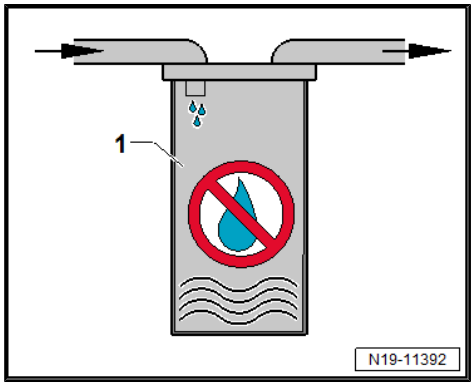


– When vacuuming, make sure that the water separator -1- in the vacuum pump does not fill up with coolant.

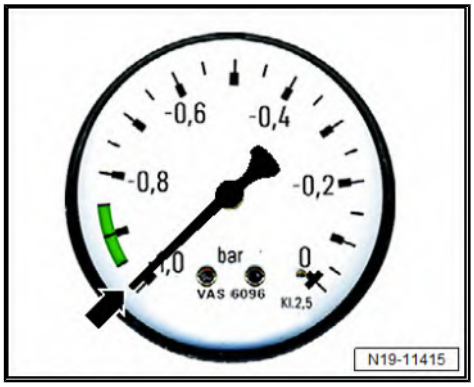
NOTICE

Risk of damage to the electric vacuum pump due to coolant being sucked in.

♦ **Make sure that the electric vacuum pump does not suck in any coolant. Stop the process if required and extract it from the coolant expansion tank ⇒ page 249 .**

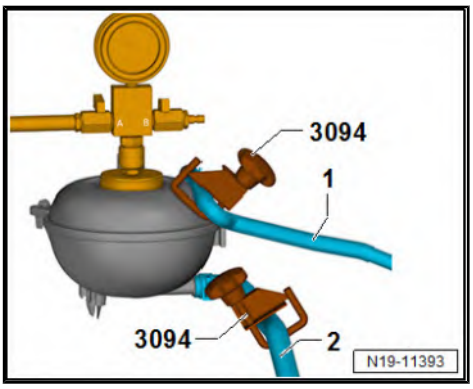


– Build up a vacuum with the electric vacuum pump until the pointer on the pressure gauge is -arrow- clearly below the green area.
– Close the valve -B- and turn off the electric vacuum pump - VAS 6096/2- .
– Check the pressure gauge. The pressure gauge pointer must not move.
– If the conditions are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

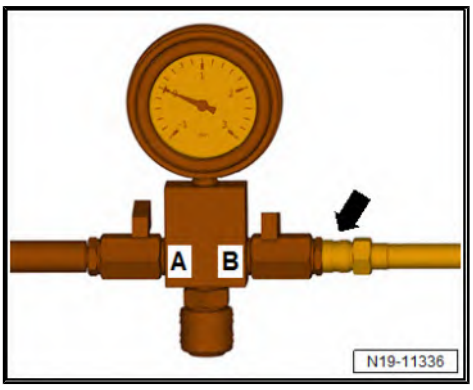


When the water separator in the electric vacuum pump is filled with coolant, the coolant expansion tank must be drained.

– 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)- .



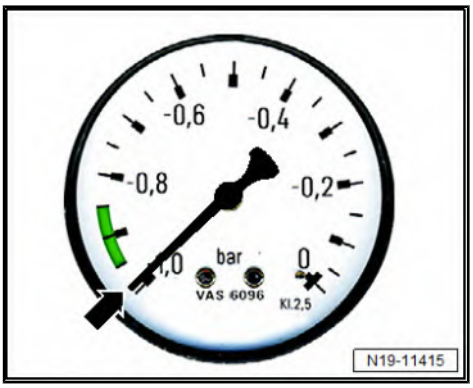
– Remove the plug-in coupling -arrow- and open the stopcock -B- so that the coolant expansion tank is ventilated.
– Cooling system filling device - VAS 6096- and test adapter - VAS 691 005/5- .
– Drain coolant from coolant expansion tank.
– Set up the Cooling system filling device and test adapter again, 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.

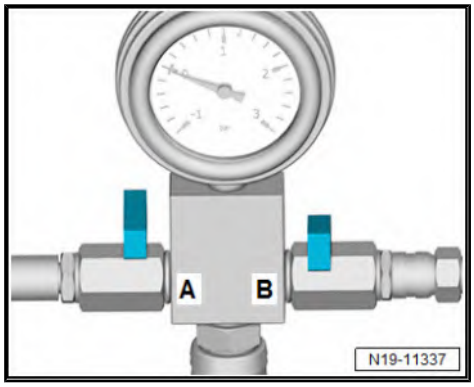


– Open the stopcock -A- »slowly« to prevent the refrigerant from foaming up.

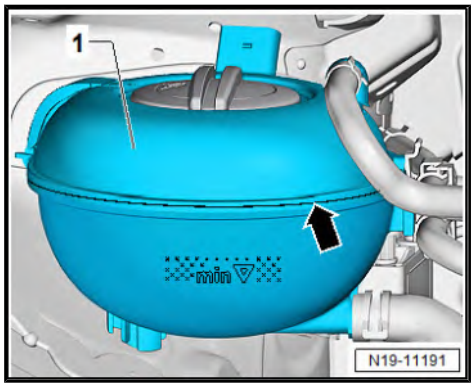
• Vacuum in the cooling system causes the coolant to be drawn out of the container - VAS 6968- and the cooling system is filled.

– After filling shut-off valve -A-, shut down.

– Remove the electric vacuum pump - VAS 6096/2- , cooling system filling device - VAS 6096- and test adapter - VAS 691 005/5- from the coolant expansion tank.



– Fill up the coolant to the weld -arrow- and close the coolant expansion tank.



For vehicles Octavia III

– Installing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

For Yeti and Rapid NH vehicles

– Install the noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 .

For all vehicles

– For vehicles with auxiliary heating, switch it on for approximately 30 seconds.

– Set temperature to “HI”.

– Turn off the air conditioning compressor by pressing AC.

• The LED in the button must not illuminate.

– Connect
vehicle diagnostic tester
.

– Switch on the ignition and select from ⇒ Vehicle diagnostic tester the following options:

♦ `0001 - Engine electronics, functions`

♦ `0001 - Coolant circuit filling`

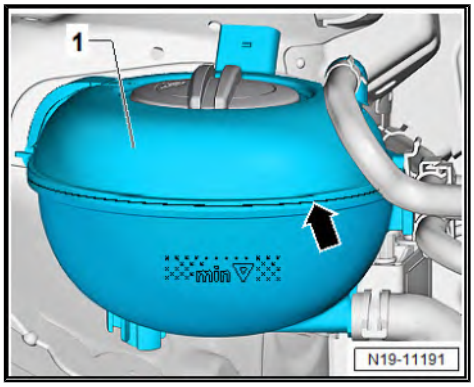
Note

Check the question “Was the cooling system filled using the electric vacuum pump VAS 6096/2?”, confirm with yes to carry out »shortened« ventilation.

– Proceed according to the instructions on the vehicle diagnosis tester.

– Allow engine to cool down.

Check coolant level after repair.



- If the engine is at operating temperature, the coolant level must be at the »weld seam« -arrow-.
- If the engine is cold, the coolant level must be approx. 5 mm -arrow- above the max marking.

– If necessary, top up with coolant.

Note

The higher coolant level is necessary, as the coolant level may still fall after bleeding.

1.5 Checking the filling quality

Note

Checking the filling quality is necessary to determine if there is air in the cooling system. If there is air in the cooling system, the coolant level may sink excessively over the runtime. Overheating of the engine is also possible.

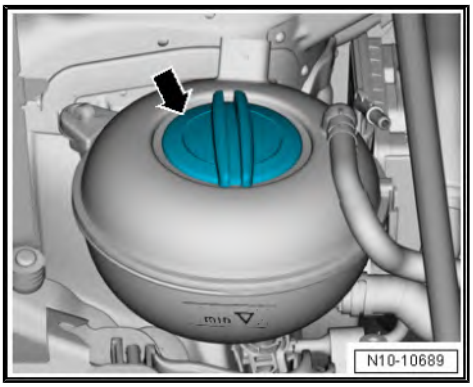
Special tools and workshop equipment required

- Cooling system tester - V.A.G 1274B-
- Adapter for cooling system tester - V.A.G 1274/8-

Condition

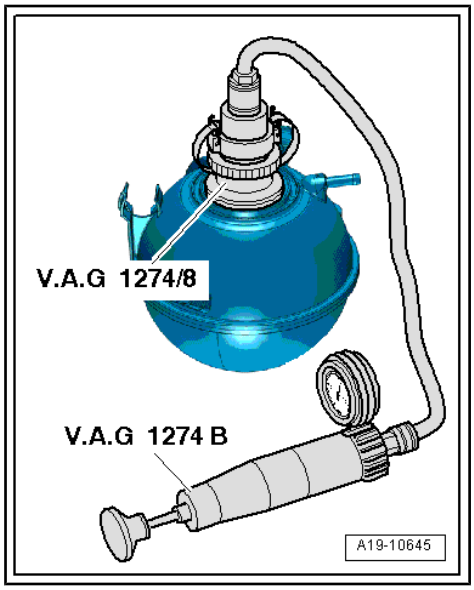
- Ignition off
- Coolant temperature between 40 °C and 60 °C

– Open cap -arrow- for coolant expansion tank.



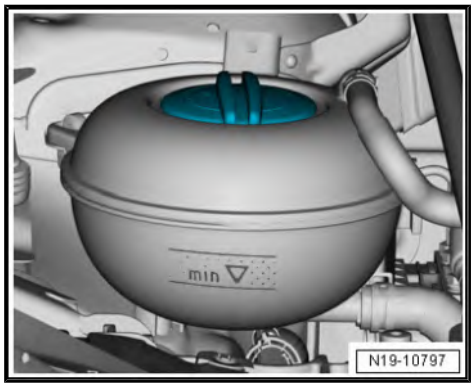
– Check coolant level, it must be approx. 5 mm -arrow- above the max mark. If necessary, top up with coolant.

– Fit the cooling system testing device - V.A.G 1274B- with adapter -V.A.G 1274/8- onto the coolant expansion tank.
– Using the hand pump of the cooling system testing device, generate an overpressure of approx. 0.15 MPa (1.5 bar).
– Observe coolant level in expansion tank.



If the coolant level in the expansion tank sinks more than 30 mm, this indicates an air bubble in the cooling system: the bleeding procedure using the vehicle diagnostic tester must be carried out.

- `0001 - Engine electronics, functions`
- `0001 - Coolant circuit filling`



– After venting, fill up with coolant to approx. 5 mm -arrow- above the max. marking.
– Check fill quality again.

If the coolant level in the expansion tank sinks less than 30 mm, the cooling system is properly filled.

1.6 Checking the electric vacuum pump - VAS 6096/2-

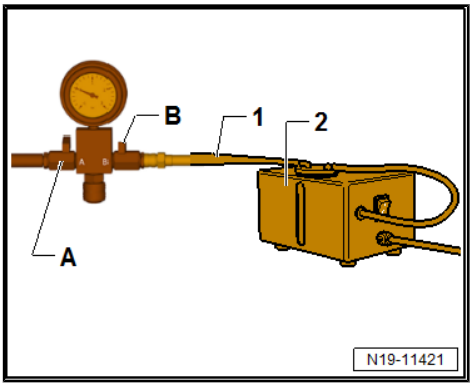
Note

In order to ensure correct filling of the cooling system, a check must be carried out before using the cooling system filling device - VAS 6096- and the electric vacuum pump - VAS 6096/2- .

– Connect the hose -1- for the electric vacuum pump - VAS 6096/2- to the plug-in coupling -B- on the cooling system filling device - VAS 6096- .

– Connect the electric vacuum pump - VAS 6096/2- to the vehicle battery and switch it on.

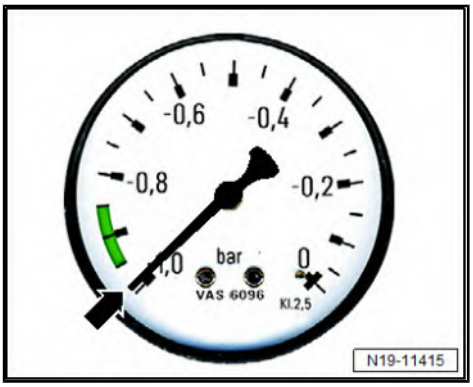
– Close valve -A- and open valve -B-.



– The pointer on the pressure gauge -arrow- must clearly move below the green area.

– Close the valve -B- and turn off the electric vacuum pump - VAS 6096/2- .

– Monitor the vacuum on the pressure manometer for 10 seconds. The pointer must not move.



If no sufficient pressure is built up or if the pressure rises again

The cooling system filling device - VAS 6096- , the pressure gauge or the electric vacuum pump - VAS 6096/2- are leaking or defective and must not be used.

1.7 Flushing the cooling system

The cooling system must be flushed after the following components are replaced:

- Cylinder head
- Heat exchanger for heating
- Coolant radiator
- Charge air cooling circuit radiator
- Intake manifold with charge air cooler

When flushing, the coolant is replaced by the new coolant. This ensure that the surfaces of the new components are properly protected.

Note

- *The cooling system is first flushed with approx. 12 litres of distilled water. Distilled water is then replaced by coolant (mixing ratio 50:50).*
- *The cooling system is vented with ⇒ Vehicle diagnostic tester after the coolant has been changed.*
- *Do not re-use used coolant.*

Special tools and workshop equipment required

- Coolant flushing and charge unit - VAS 531 007-
- Test adapter - VAS 691 005/5-
- Hose binding claw - VAS 6362-
- Ejector from the cooling system charge unit - VAS 6096-
- Refractometer - T10007A- or -T10007B- or VAS - 531 005-
- Compressed air connection of overpressure 0.6 ... 1.0 MPa (6 ... 10 bar)

Schematic overview of the coolant flushing and charge unit - VAS 531 007-

1 - Container with distilled water

- ❑ fill with at least 20 litres of distilled water
- ❑ 12 litres are needed for rinsing
- ❑ 8 litres serve as a safety reserve and remain in the canister

2 - Coolant reservoir

- ❑ fill with at least 20 litres of coolant
- ❑ Frost protection up to approx. -36 ° C (mixing ratio 50:50)
- ❑ 12 litres are needed for rinsing
- ❑ 8 litres serve as a safety reserve and remain in the canister

3 - Empty container

- ❑ for used coolant

4 - Empty container

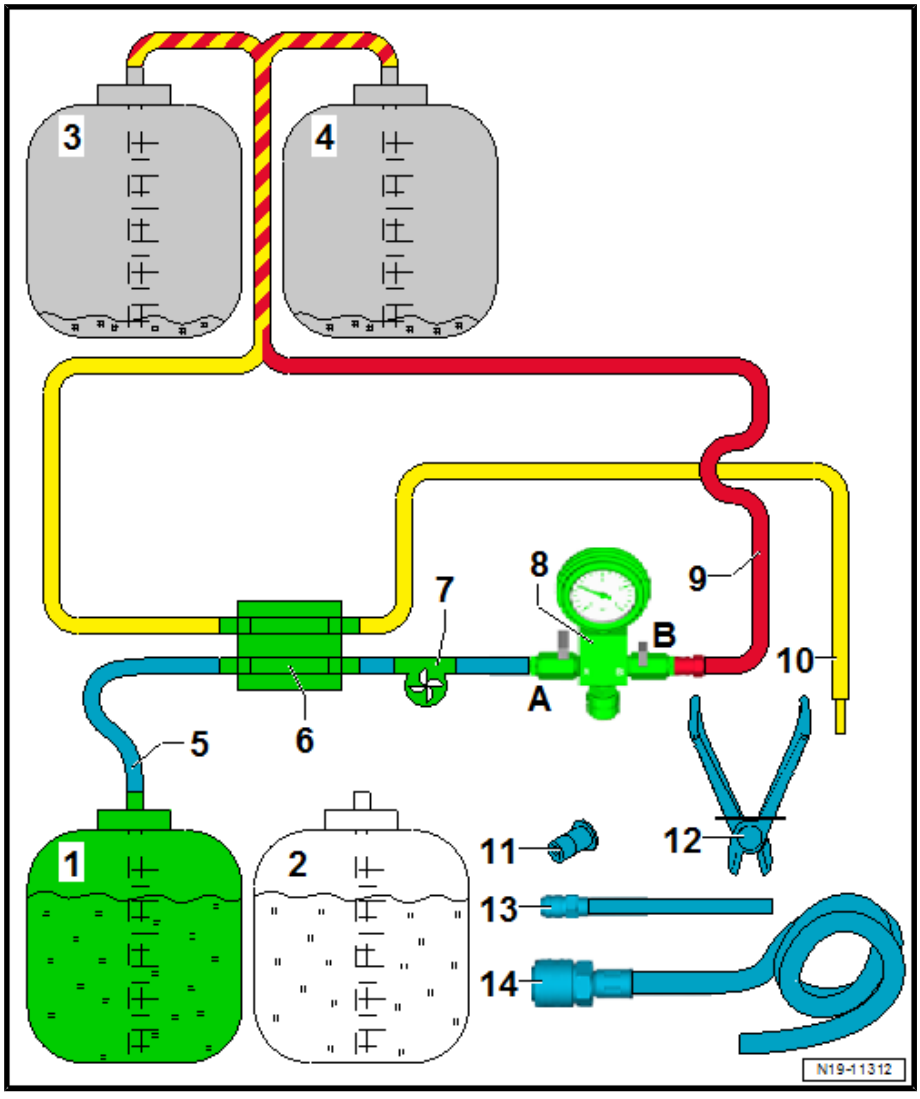
- ❑ for used coolant

5 - intake hose

- ❑ from connection 2 to inspection glass

6 - Inspection glass

- ❑ discoloured inspection glass must be cleaned with nylon brush



7 - Vane pump

- ❑ Shutoff pressure: approx. 0.15 MPa (1.5 bar)

8 - Valve block

- ❑ with pressure gauge and shut-off taps

9 - Drain hose

- ❑ connected to the valve block to eliminate pressure

10 - Flushing hose

- ❑ it is connected to the bleeder hose for the coolant expansion reservoir before flushing
- ❑ from connection 1 to inspection glass
- ❑ if not used, then close with plug

11 - Plug

12 - Hose clamps

- ❑ 4 pieces

13 - Adapter for cleaning

- ❑ Length: approx. 15 cm
- ❑ to clean the coolant flushing and charge unit for flushing
- ❑ connected between valve block and flushing hose, Pos. -10- ⇒ Item 10 (page 255)

14 - Adapter for extraction

- ❑ Length: approx. 100 cm
- ❑ connected to suction hose, Pos. -5-, to extract coolant ⇒ Item 5 (page 254)

Prepare coolant flushing and charge unit - VAS 531 007- :

– Fill container »1« with at least 20 litres of distilled water.

– Fill container »2« with at least 20 litres of coolant. Mixing ratio 50:50 approx. -36 °C.

– Empty containers »3« and »4«.

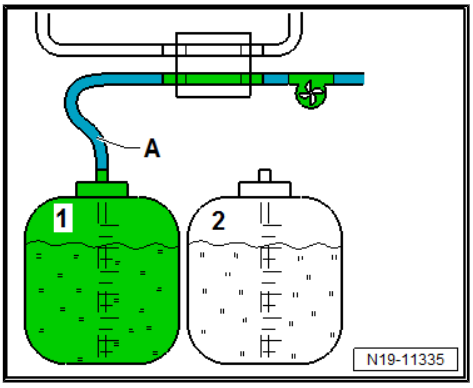
– Connect the battery charger.

– Remove valve block from the quick coupling on the trolley with the device.

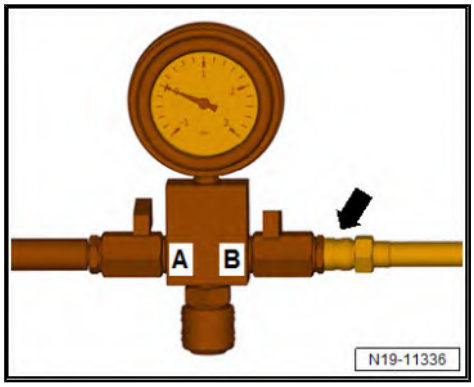
– Connect the coolant flushing and charge unit - VAS 531 007- to battery.

Venting the coolant flushing and charge unit - VAS 531 007-

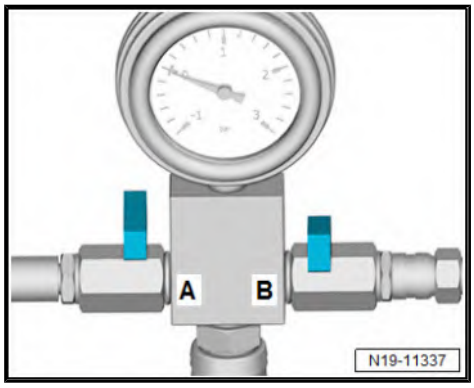
– Connect suction hose -A- to tank »1« with distilled water.



– Connect the discharge hose -arrow- to the quick coupling -B- on the valve block.



– Close the shut-off taps -A- and -B-.



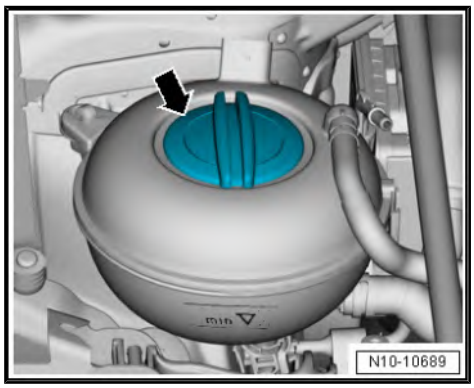
Note

Do not fit the valve block to the test adapter - VAS 691 005/5- yet. The filler hose should be bled first.

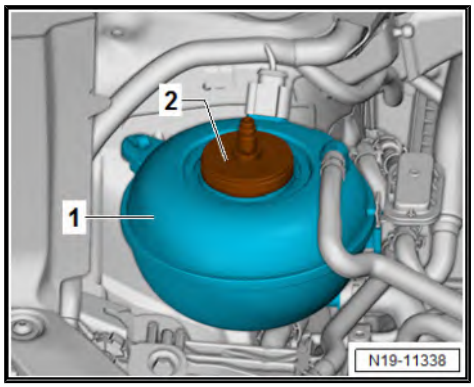
– Switch on the pump -VAS 531 007- .
– Open the shut-off tap -A-.
– Briefly open the shut-off tap -B- to vent the filler hose.
– Close shut-off taps -A- and -B- again.

Connecting the coolant flushing and charge unit - VAS 531 007-

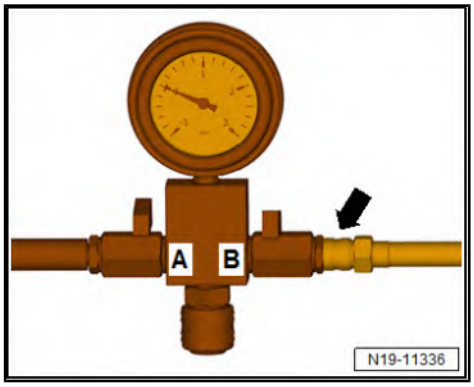
– Open cap -arrow- for coolant expansion tank.



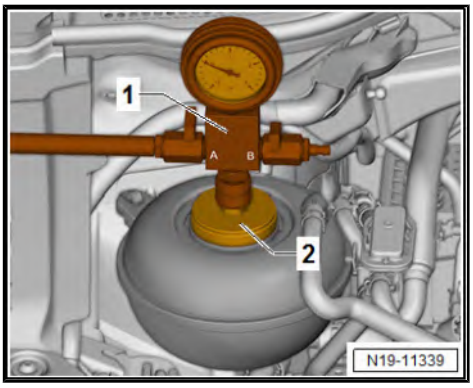
– Screw the test adapter -2- (-VAS 691 005/5-) onto the coolant expansion reservoir -1-.



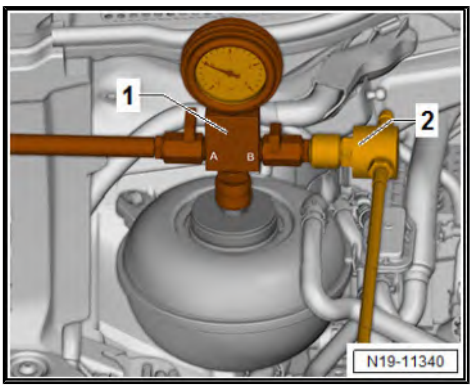
– Disconnect the discharge hose -arrow- from the quick coupling -B- on the valve block.



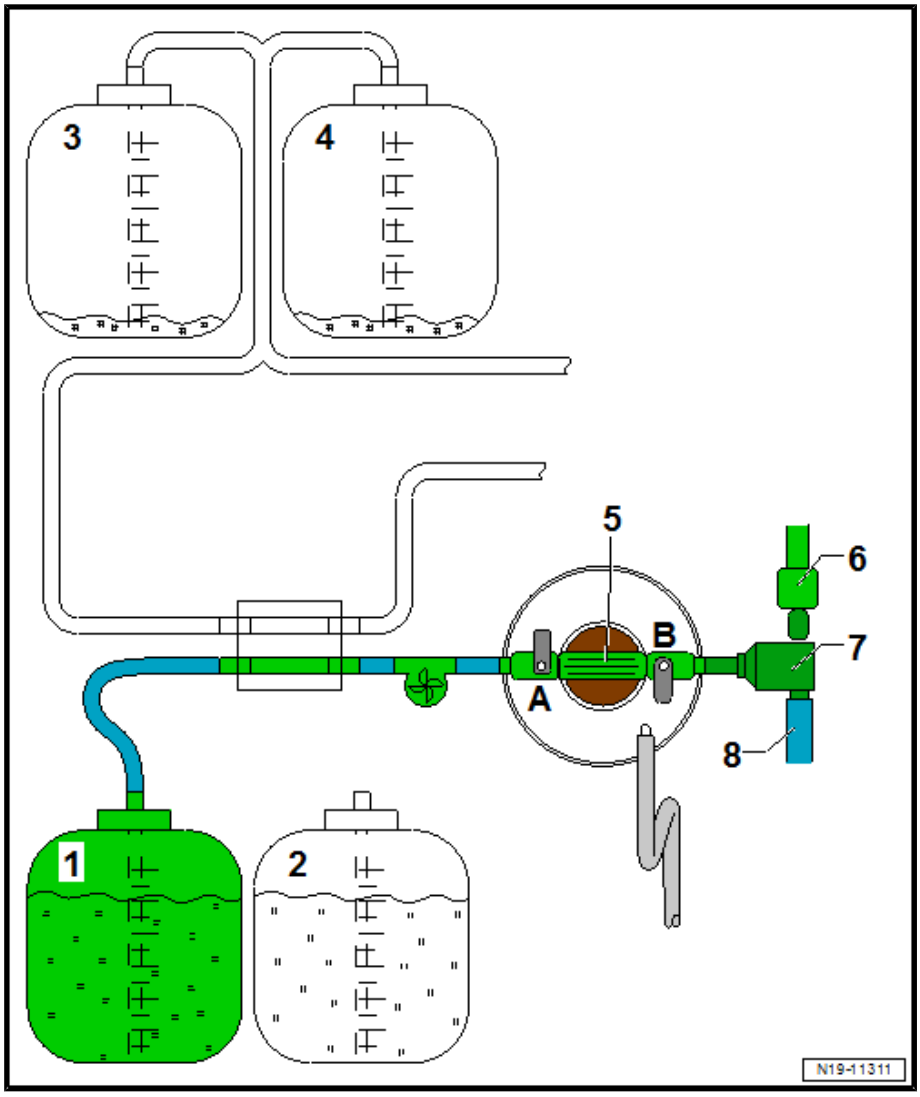
– Fit the valve block -1- onto the test adapter -2-.



– Connect the ejector -2- from the -VAS 6096- to the quick coupling -B- on the valve block -1-.



Filling the cooling system with distilled water



– Guide the bleeder hose -8- for ejector into a container.
– Connect the vacuum hose -6- to the suction spray pump -7-.
– Open the shut-off tap -B- on the valve block -5-.
• Vacuum is generated in the cooling system by the suction spray pump. The pressure indicator must fall to at least -0.085 MPa (-0.85 bar).
– Close shut-off tap -B-.
– Disconnect pressure hose -6-.
– Check the pressure gauge. The pressure indicator must remain at - 0.085 MPa (-0.85 bar) as a minimum. The vacuum in the cooling system is then sufficient for subsequent filling.

Note

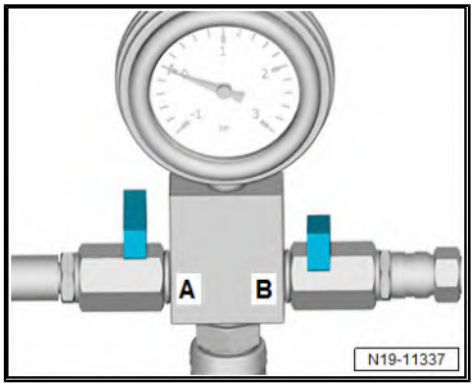
♦ *If the vacuum drops, check the cooling system for leak points.*
♦ *The generated vacuum depends on the pressure in the compressed air system.*

- The pump -VAS 531 007- must be switched on.

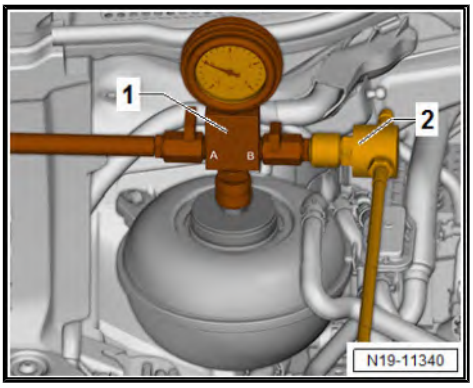
– »Slowly« open the shut-off tap -A- to avoid coolant foaming.

- Vacuum in the cooling system causes the distilled water to be drawn in and the cooling system is filled. The pump -VAS 531 007- also pumps distilled water into the coolant expansion reservoir.
- After filling, the excess pressure in the coolant expansion reservoir must be released. To do so proceed in the following manner:

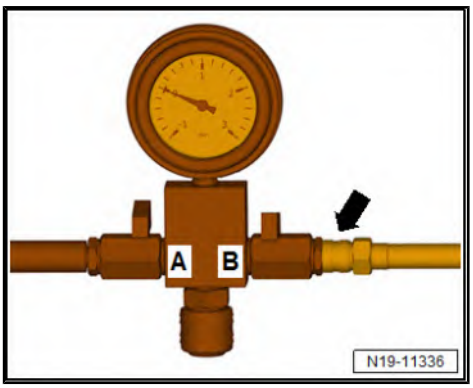
– Close the shut-off tap -A- after filling.



– Disconnect the ejector -2- from the valve block -1-.

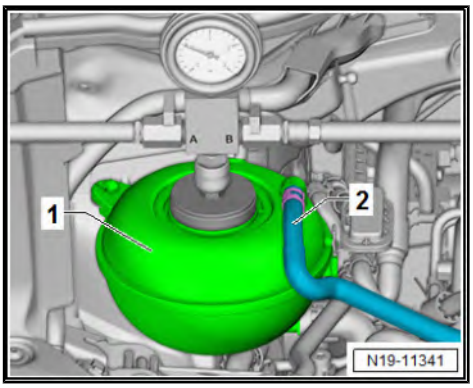


– Connect the discharge hose -arrow- to the quick coupling. Open the shut-off tap -B- and leave open to dissipate the pressure in the cooling system.

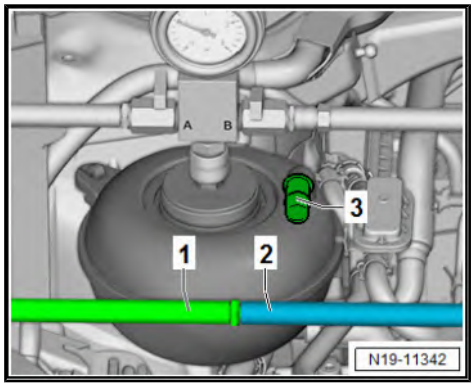


Flushing the cooling system with distilled water

– Disconnect the bleeder hose -2- from the coolant expansion reservoir -1-.



– Connect the bleeder hose -2- for the coolant expansion reservoir to the flushing hose -1-.
– Close the connection fitting on the coolant expansion reservoir with a plug -3-. Secure the plug with hose clamp.
– Close shut-off tap -B-.
– Remove engine cover.



Vehicles with camshaft adjustment

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

Continued for all vehicles

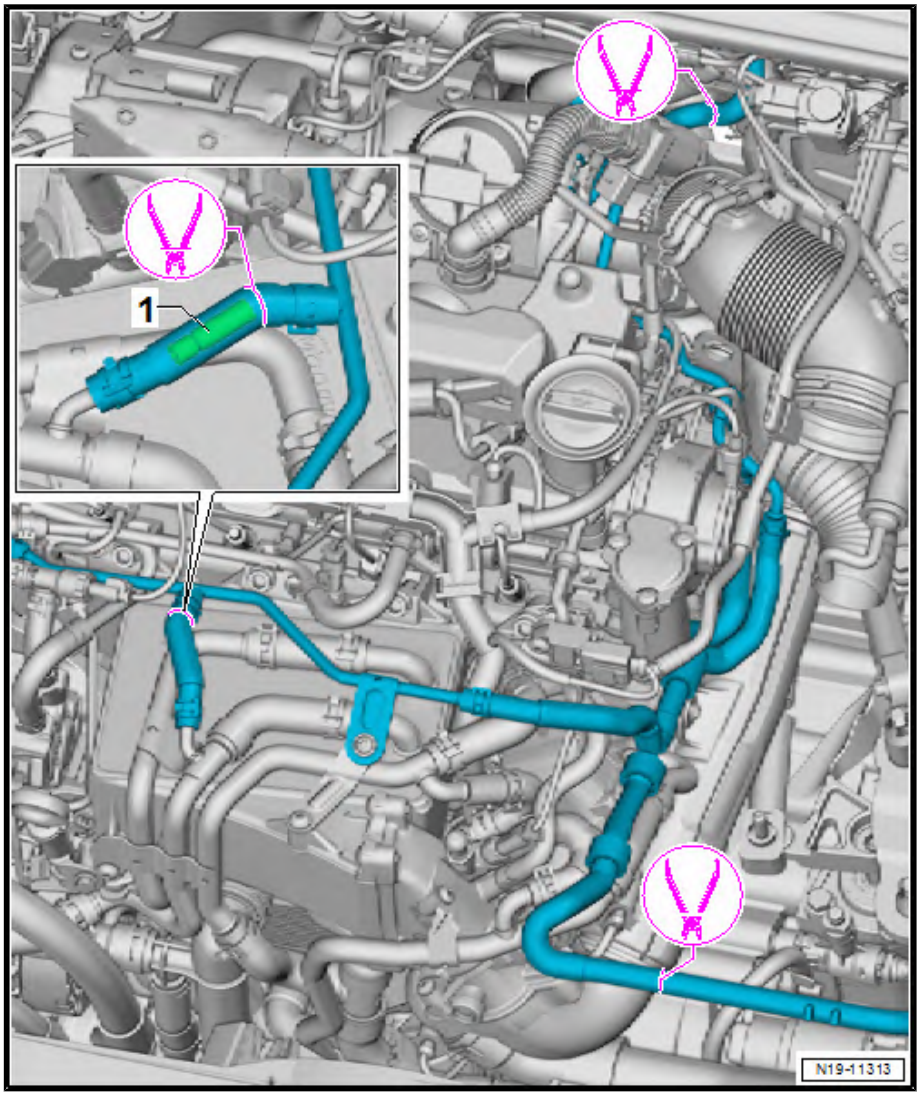
The cooling system is sub-divided into the following coolant circuits:

- Cylinder block and cylinder head
- Heat exchanger for heating
- Coolant radiator
- Charge air cooler and charge air cooling circuit radiator

Note

- *The following work procedure involves flushing these 4 coolant circuits by alternately closing the bleeder hoses.*
- *This procedure must be performed twice with distilled water. Then flush twice with coolant.*
- *The litre specifications are average values and may be different depending on equipment of the vehicle. The volume can be read off the scale on the container.*
- *The change of colour at connection 1 on the inspection glass is the relevant indicator for the flushing volume. The colours only match between connection 1 and 2 on the inspection glass on the second flush.*
- *If the colour in the inspection glass changes, further coolant circuits are flushed.*

1. Flushing the cylinder block and cylinder head with distilled water

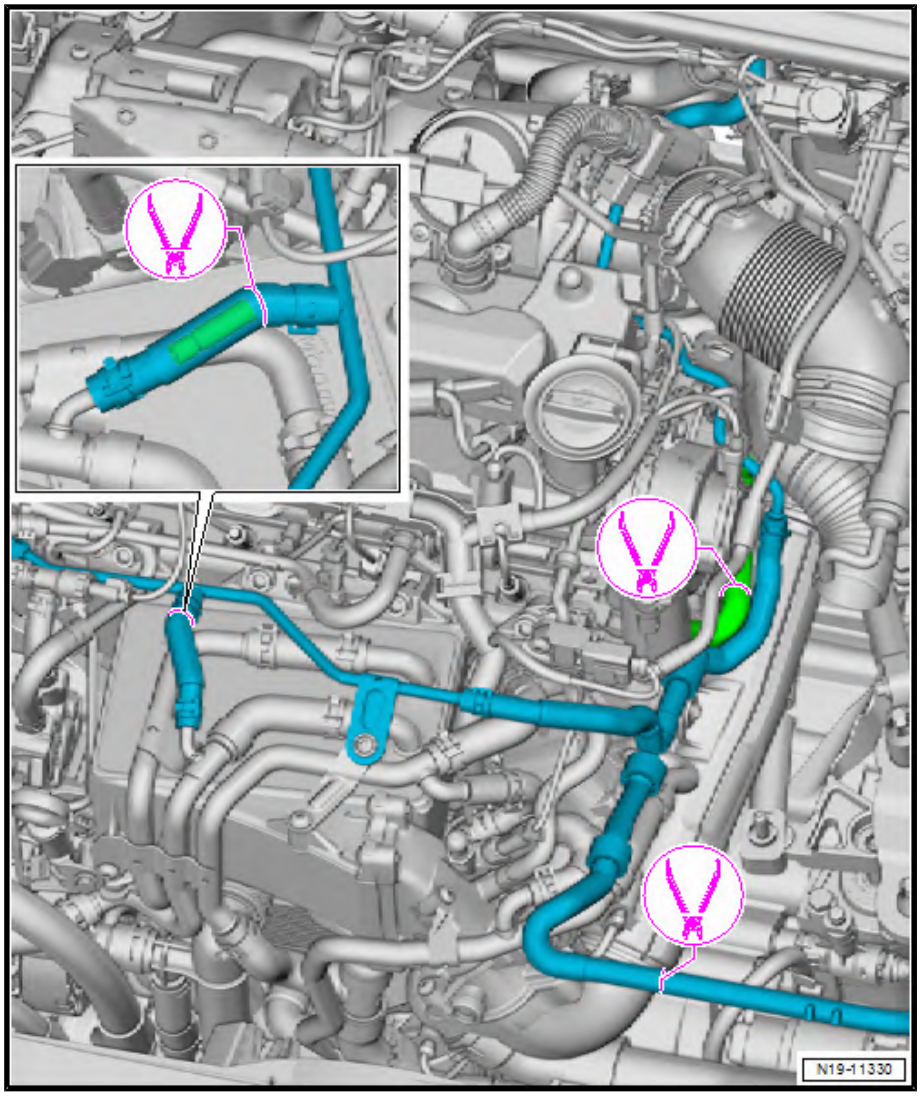


A non-return valve -1- is installed in the bleeder hose of the charge air cooler. The hose can therefore only be closed at the point shown.

– Close the bleeder hoses with hose clamps at the points indicated.
– Open the shut-off tap -A- on the valve block. The engine now pumps distilled water.
– Check the inspection glass: as soon as the coolant changes colour, close the shut-off tap -A-.

• Required quantity of distilled water: approx. 2-3 litres

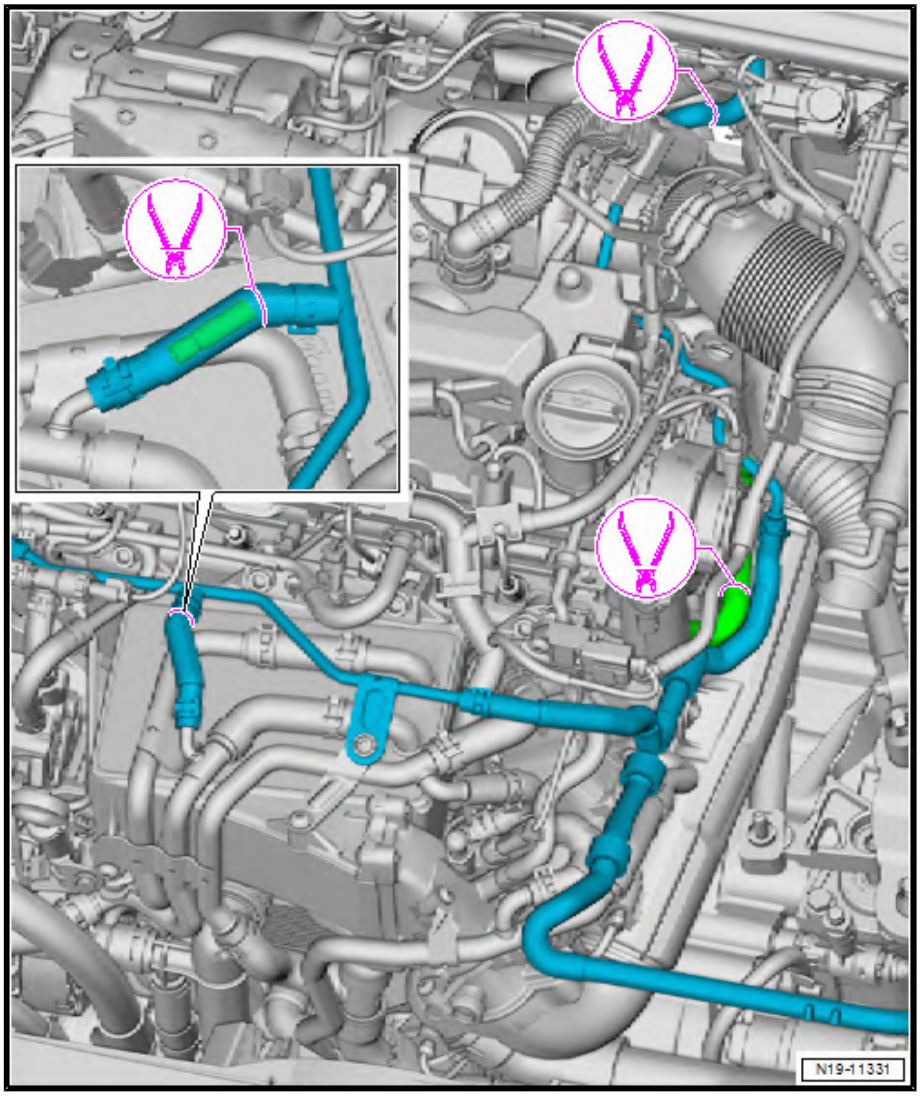
2. Flushing the heat exchanger for heating with distilled water



– Close the bleeder hoses with hose clamps at the points indicated.
– Open the shut-off tap -A- on the valve block. The engine now pumps distilled water.
– Check the inspection glass: as soon as the coolant changes colour, close the shut-off tap -A-.

• Required quantity of distilled water: approx. 2 litres

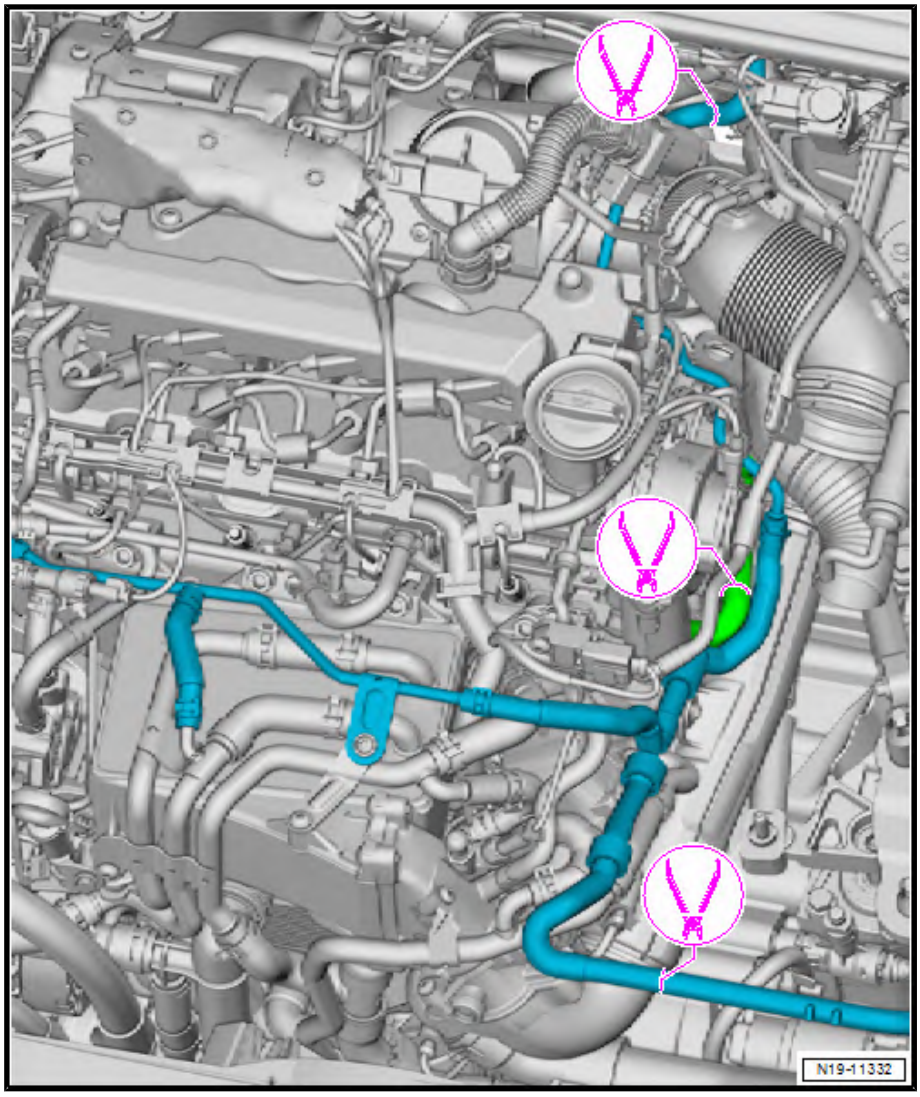
3. Flush radiator with distilled water



– Close the bleeder hoses with hose clamps at the points indicated.
– Open the shut-off tap -A- on the valve block. The engine now pumps distilled water.
– Check the inspection glass: as soon as the coolant changes colour, close the shut-off tap -A-.

• Required quantity of distilled water: approx. 2 litres

4. Flushing the charge air cooler and charge air cooling circuit radiator with distilled water



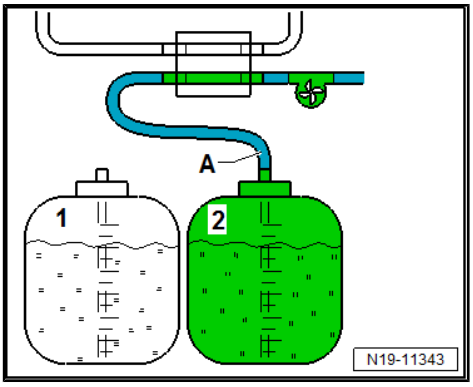
– Close the bleeder hoses with hose clamps at the points indicated.
– Open the shut-off tap -A- on the valve block. The engine now pumps distilled water.
– Check the inspection glass: as soon as the coolant changes colour, close the shut-off tap -A-.

• Required quantity of distilled water: approx. 2 litres

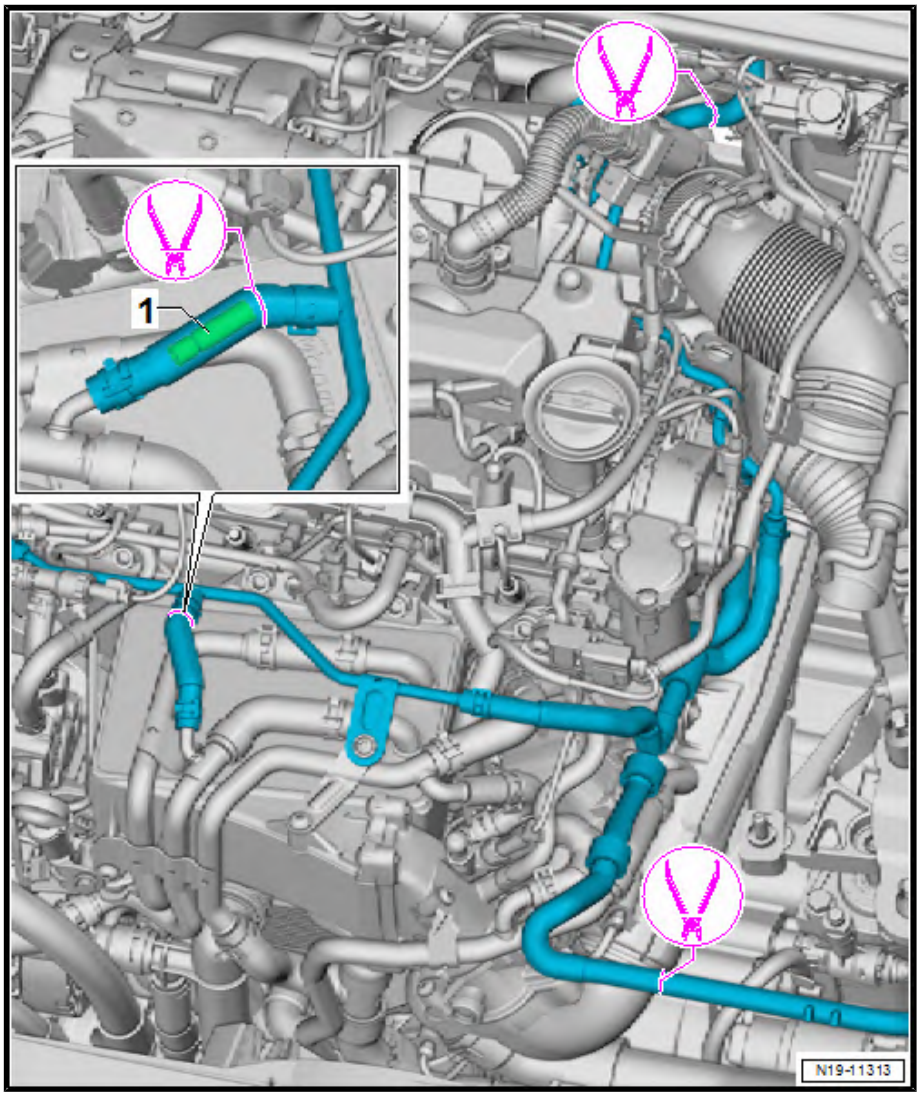
Repeat flushing steps 1-4 times, but always only pump approx. 1 litre of distilled water ⇒ page 260 . Then flush the cooling system with coolant.

Flushing the cooling system with coolant

– Connect suction hose -A- to container -2- with distilled water.



1. Flushing the cylinder block and cylinder head with coolant



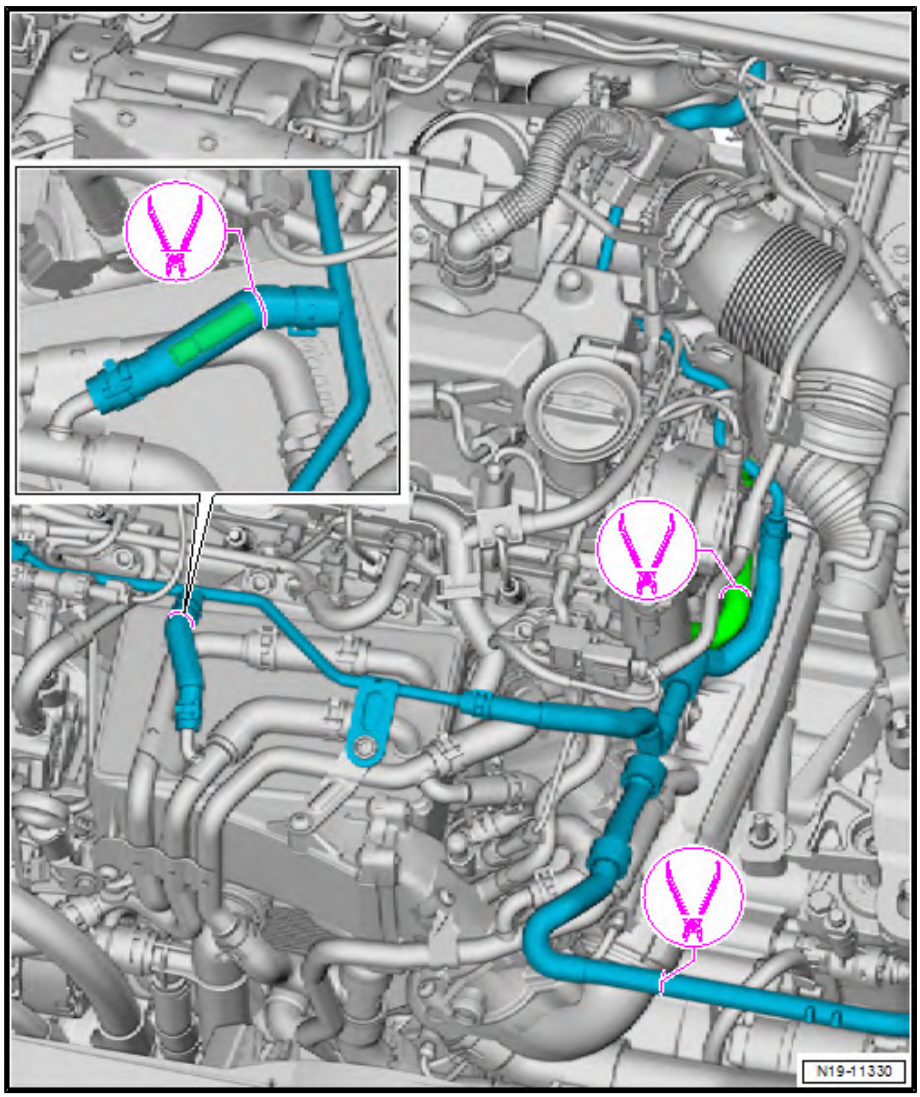
– Close the bleeder hoses with hose clamps at the points indicated.

– Open the shut-off tap -A- on the valve block. The engine now pumps coolant.

– Check the inspection glass: if you can see the coolant coming out in the inspection glass, close the shut-off tap -A-.

• Required quantity of coolant: approx. 2-3 litres

2. Flushing the heat exchanger for heating with coolant



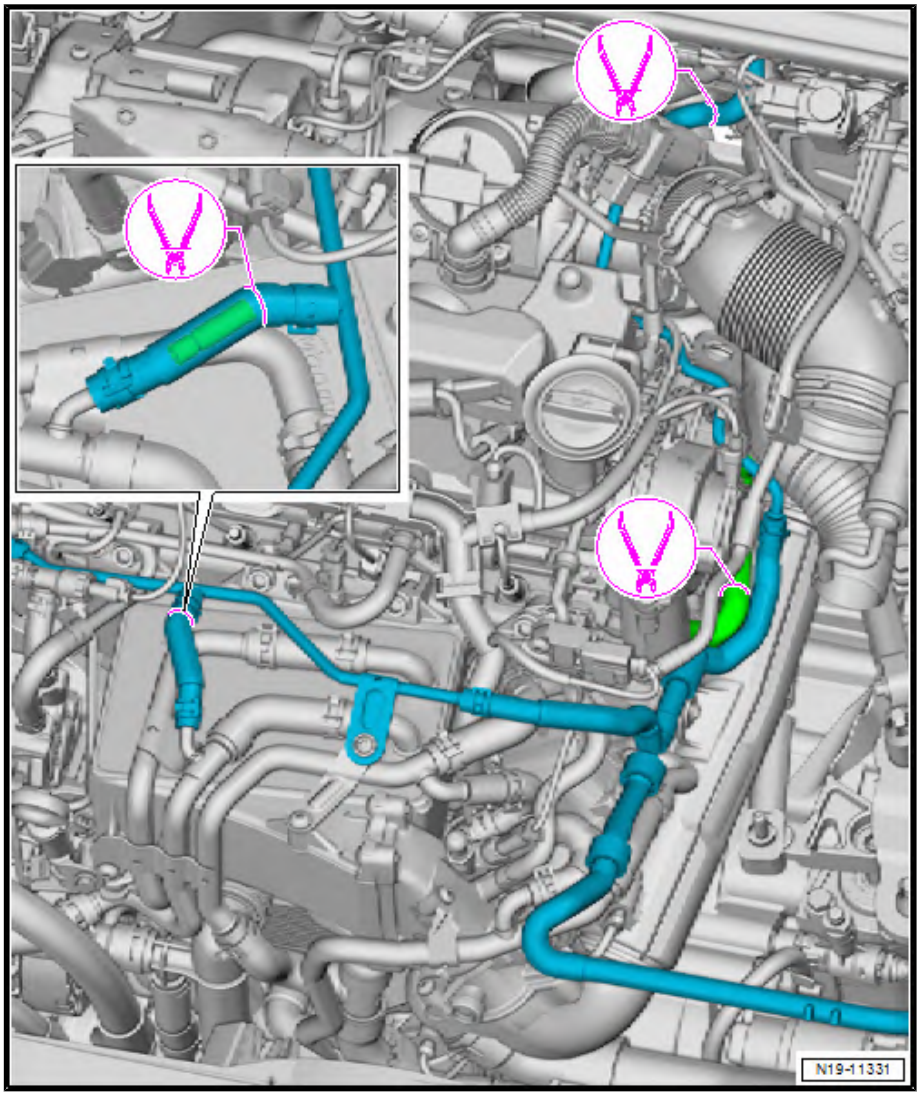
– Close the bleeder hoses with hose clamps at the points indicated.

– Open the shut-off tap -A- on the valve block. The engine now pumps coolant.

– Check the inspection glass: if you can see the coolant coming out in the inspection glass, close the shut-off tap -A-.

• Required quantity of coolant: approx. 2 litres

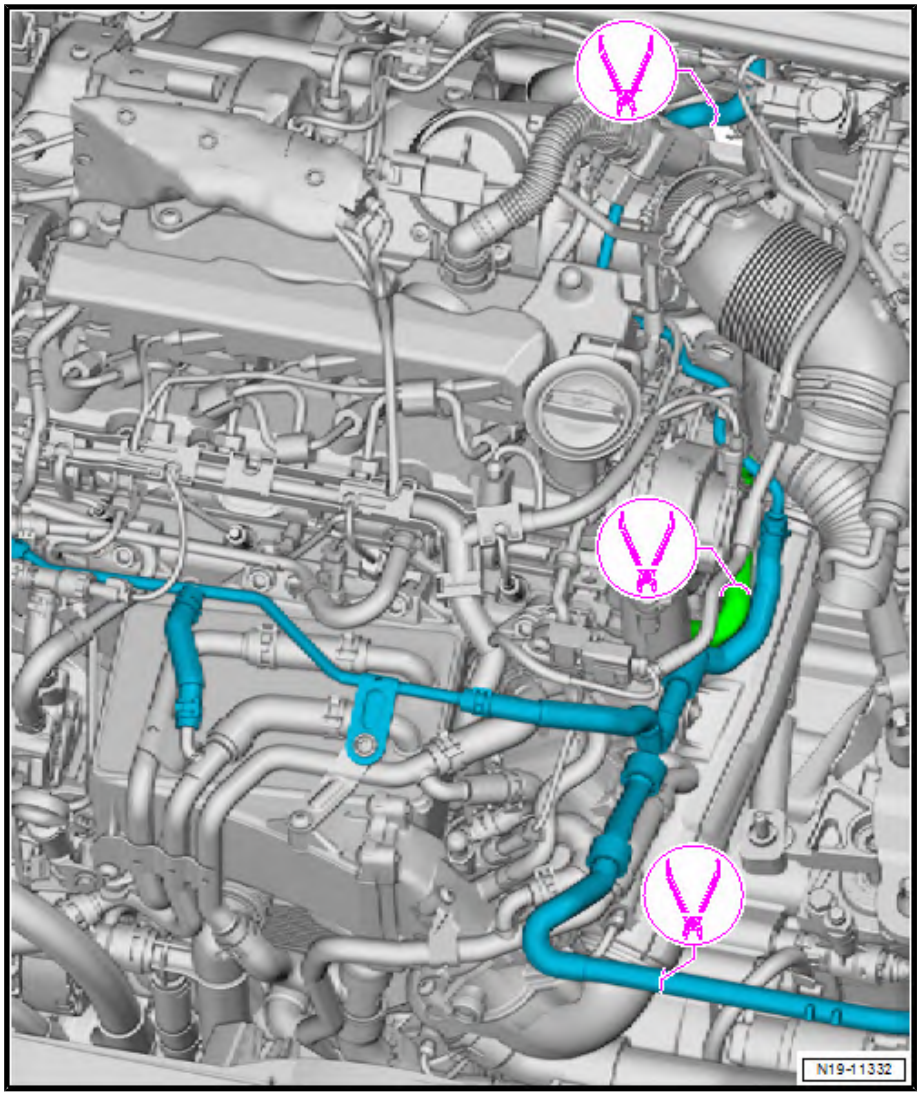
3. Flush the radiator with coolant



– Close the bleeder hoses with hose clamps at the points indicated.
– Open the shut-off tap -A- on the valve block. The engine now pumps coolant.
– Check the inspection glass: if you can see the coolant coming out in the inspection glass, close the shut-off tap -A-.

• Required quantity of coolant: approx. 2 litres

4. Flushing the charge air cooler and charge air cooling circuit radiator with coolant



– Close the bleeder hoses with hose clamps at the points indicated.
– Open the shut-off tap -A- on the valve block. The engine now pumps coolant.
– Check the inspection glass: if you can see the coolant coming out in the inspection glass, close the shut-off tap -A-.

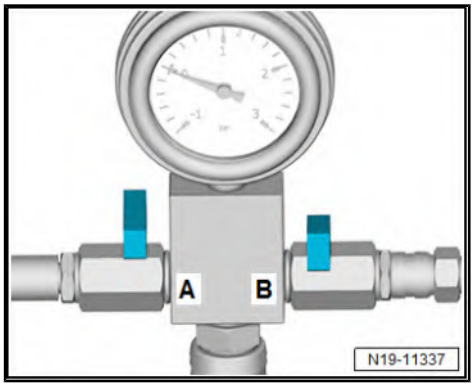
• Required quantity of coolant: approx. 2 litres

Repeat flushing steps 1-4 times, but always only pump approx. 1 litre of coolant ⇒ page 265 . The flushing procedure is then finished.

– Switch off the pump after flushing.
– Remove all hose clamps.

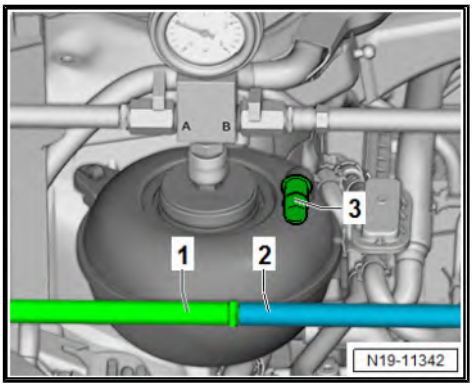
Disconnect the coolant flushing and charge unit - VAS 531 007- :

– Open the shut-off tap -B- and leave open to dissipate the pressure in the cooling system.

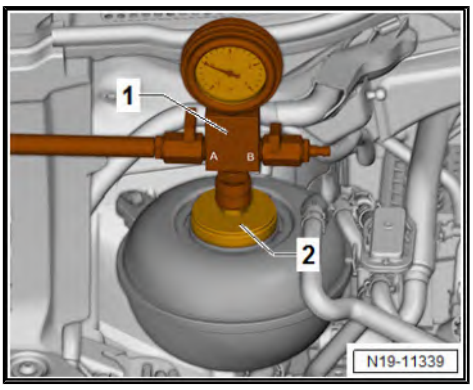


– Remove the plug -3- from the coolant expansion reservoir and re-connect the bleeder hose -2-.

– Close the flushing hose -1- with a plug.

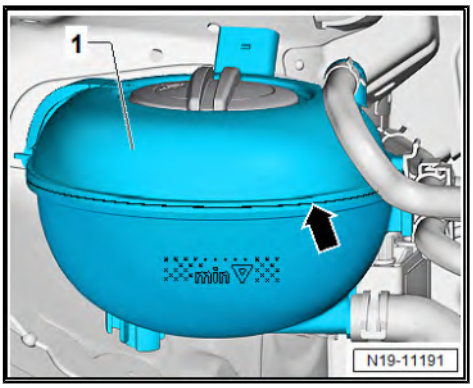


– Remove the valve block -1- and the test adapter -2-.

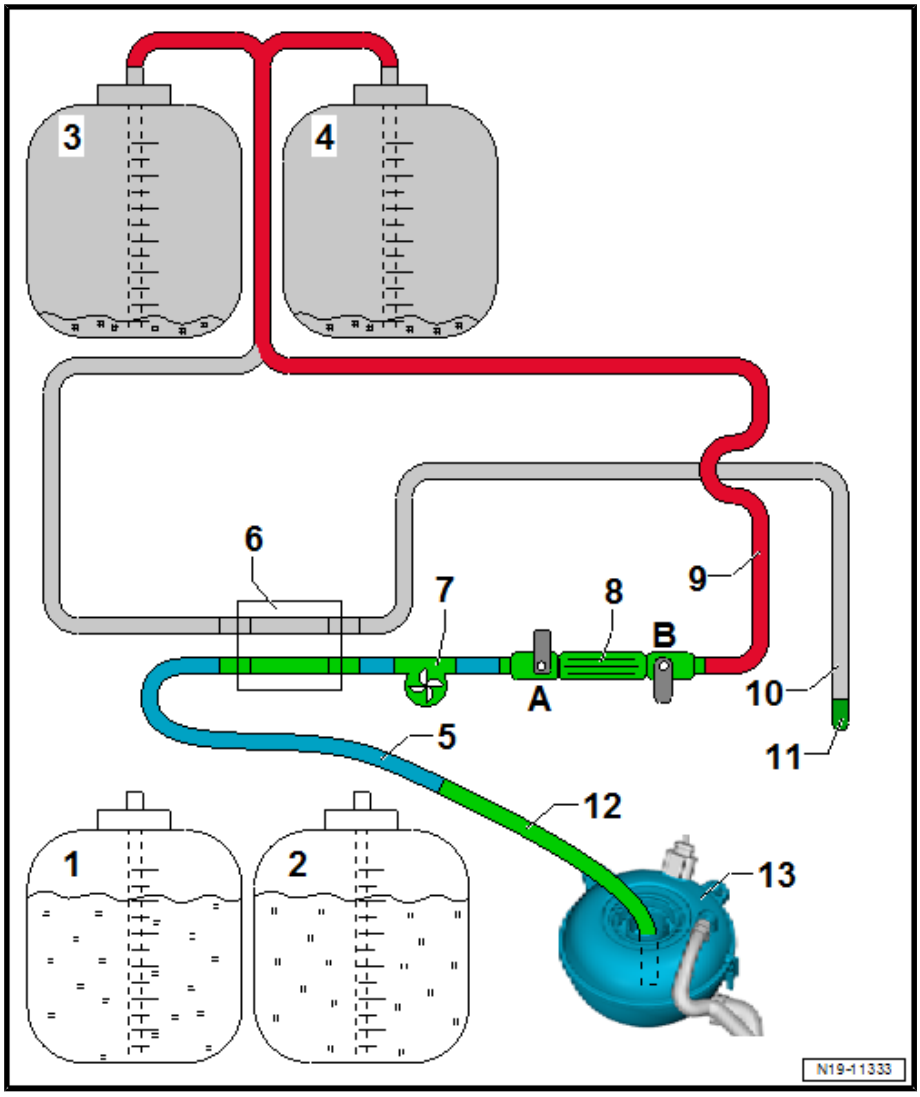


– The coolant must be approx. at the »weld seam« -arrow-.

– If necessary, extract or fill coolant.



Extracting coolant



Note

Use the adapter for extraction, Pos. -14-, to extract coolant *⇒ Item 14 (page 255)* *.*

– Disconnect the intake hose -5- from the container -2-.
– Connect the adapter for extraction -12- onto the quick coupling of the intake hose -5-.
– Switch on the pump -7- and open the shut-off taps -A- and -B- on the valve block -8-.
– Extract excess coolant with the adapter for extraction -12-.
– Close the shut-off taps on the valve block and switch off the pump.

Bleeding the cooling system

– For vehicles with auxiliary heating, switch on the auxiliary heating for approx. 30 seconds.
– Set temperature to “HI”.
– Switch off the AC compressor by pressing the AC button.

• The LED in the button must not illuminate.

– Connect vehicle diagnostic tester .

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

♦ `0001 - Engine electronics, functions`

♦ `0001 - Coolant circuit filling`

Note

By flushing, the cooling system has been largely bled. For this reason, a »shortened« bleed can be carried out with the vehicle diagnostic tester. Confirm the question "Was the cooling system filled using the electric vacuum pump?" by answering yes to carry out a »shortened« bleed.

– Follow the instructions of the vehicle diagnosis tester .

– Allow engine to cool down.

– Check the coolant level and antifreeze.

– If there is not enough antifreeze, extract coolant from the coolant expansion reservoir. Adjust to the right amount of antifreeze by topping up the coolant concentrate.

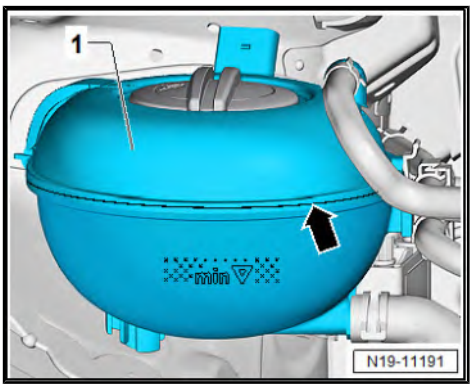
– Each time that you top up the coolant concentrate, let the engine run at high rpm for approx. 2 minutes and then check the antifreeze again.

• Frost protection must be set as follows:

♦ ⇒ Maintenance ; Booklet Octavia III .

♦ ⇒ Maintenance ; Booklet Yeti .

♦ ⇒ Maintenance ; Booklet Rapid NH .



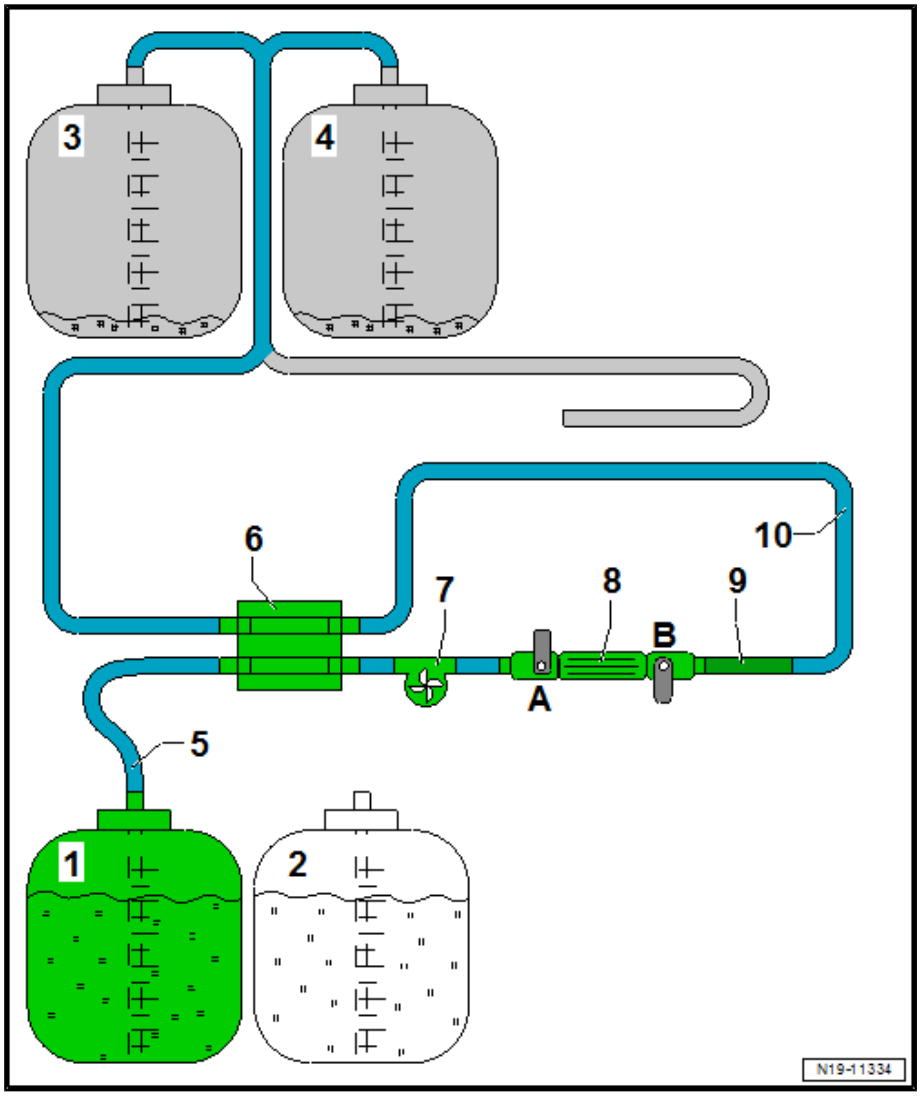
• If the engine is at operating temperature, the coolant level must be at the »weld seam« -arrow-.

• If the engine is cold, the coolant level must be approx. 5 mm -arrow- above the max marking.

Note

The higher coolant level is necessary, as the coolant level may still fall after bleeding.

Cleaning the coolant flushing and charge unit - VAS 531 007-



Note

- *If the coolant stays in the inspection glass for a long time, it may discolour. The inspection glass must therefore be flushed with distilled water after each flushing.*
- *If the inspection glass is discoloured, clear it with a nylon brush.*
- *Use the adapter for cleaning, Pos. -13-, to flush ⇒ Item 13 (page 255) .*

– Connect intake hose -5- to container -1- for distilled water.

– Connect the flushing hose -10- to the adapter for cleaning -9-. Connect the adapter for cleaning -9- to the quick coupling -B- on the valve block -8-.

– Open shut-off taps -A- and -B- of on the valve block -8-.

– Switch on the pump -7- and pump distilled water with the hoses until the coolant is flushed off the inspection glass -6-.

– Switch off the pump and close the shut-off taps.

– Remove the adapter for cleaning and close the flushing hose against with a plug.

1.8 Flushing cooling system, quick start guide

Note

The Quick Start Guide lists the main steps in the workflow. These can be printed and scraped during the workflow. A detailed workflow is listed here
⇒ "1.7 Flushing the cooling system", page 253 .

Step	Activity	Flushing volume
1	Draining coolant	---
2	Filling the cooling system with distilled water	---
3	Connect hose from coolant expansion tank on coolant flushing and filling device	---
4	Remove hoses for intercooler -1-, remove vent hose of the radiator -2- and the heat exchanger -4-, flush the cooling system	3 litres of distilled water
5	Hoses for intercooler -1-, remove vent hose of the radiator -2- and the cylinder head -3-, flush the cooling system	2 litres of distilled water
6	Remove hoses for intercooler -1-, vent hose of the cylinder head -3- and the heat exchanger -4-, flush the cooling system	2 litres of distilled water
7	Remove vent hose of the radiator -2-, the cylinder head -3- and the heat exchanger -4-, flush the cooling system	2 litres of distilled water
	Repeat steps 4, 5, 6 and 7, but always pump through 1 litre of distilled water	always 1 litre of distilled water
8	Remove hoses for intercooler -1-, remove vent hose of the radiator -2- and the heat exchanger -4-, flush the cooling system	3 litres of coolant
9	Hoses for intercooler -1-, remove vent hose of the radiator -2- and the cylinder head -3-, flush the cooling system	2 litres of coolant
10	Remove hoses for intercooler -1-, vent hose of the cylinder head -3- and the heat exchanger -4-, flush the cooling system	2 litres of coolant
11	Remove vent hose of the radiator -2-, the cylinder head -3- and the heat exchanger -4-, flush the cooling system	2 litres of coolant
	Repeat steps 8, 9, 10 and 11, but always pump only 1 litre of coolant	always 1 litre of coolant
12	Disconnect all closing pliers	---
13	Remove the coolant flushing and filling device and close the coolant expansion tank	---
14	Bleed cooling system with vehicle diagnostics tester	---
15	Inspecting antifreeze protection and coolant level	---

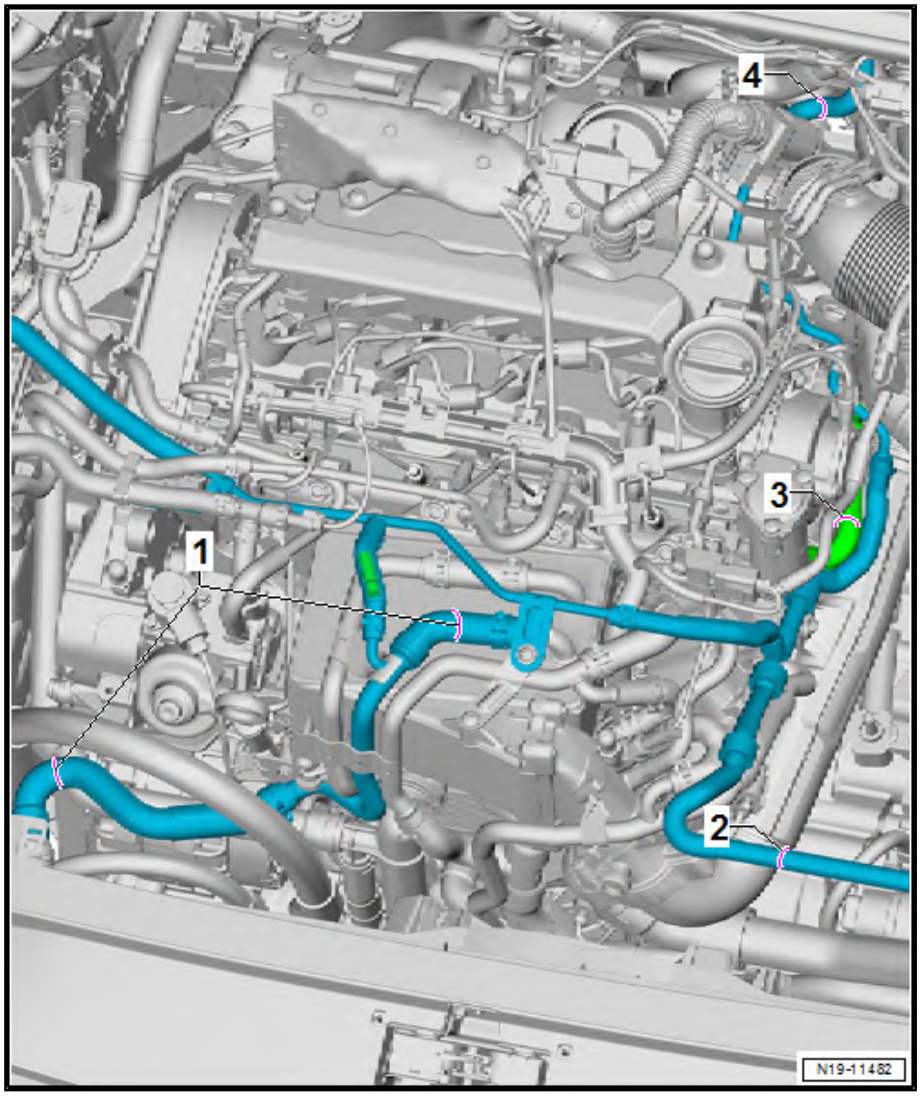
Locking points

1 - Hoses for charge air cooler

2 - Vent hose for cooler for coolant

3 - Vent hose for cylinder head

4 - Vent hose for heat exchanger for heating



2 Coolant pump, regulation of cooling system

⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275

⇒ “2.2 Summary of components - electric coolant pump”, page 279

⇒ “2.3 Summary of components - coolant temperature transmitter”, page 284

⇒ “2.4 Removing and installing electric coolant pump”, page 285

⇒ “2.5 Removing and installing coolant pump”, page 298

⇒ “2.6 Removing and installing coolant regulator”, page 300

⇒ “2.7 Testing the coolant regulator”, page 304

⇒ “2.8 Removing and installing coolant valve for cylinder head N489 ”, page 304

⇒ “2.9 Removing and installing coolant temperature transmitter G62 ”, page 305

2.1 Summary of components - coolant pump/thermostat

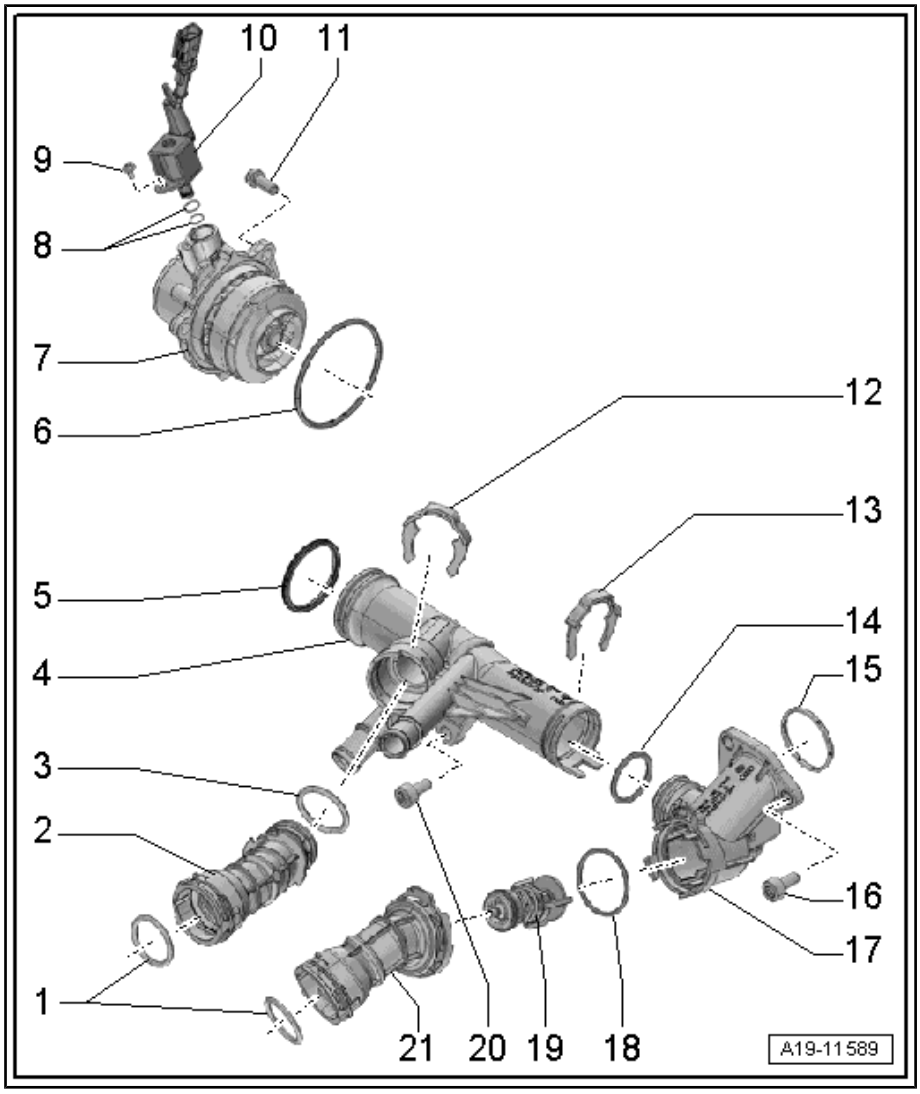
⇒ “2.1.1 Summary of components - coolant pump/thermostat, variant 1”, page 275

⇒ “2.1.2 Summary of components - coolant pump/thermostat, variant 2”, page 277

2.1.1 Summary of components - coolant pump/thermostat, variant 1

Note

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



1 - O-rings
- ❑ Replace after disassembly
- ❑ Moisten with coolant

2 - Connection fitting

3 - O-ring
- ❑ Replace after disassembly
- ❑ Moisten with coolant

4 - Coolant pipe - front bottom
- ❑ Removing and installing ⇒ “3.2 Removing and installing coolant pipes”, page 312

5 - Sealing ring
- ❑ Replace after disassembly

6 - O-ring
- ❑ Replace after disassembly
- ❑ Moisten with coolant

7 - Coolant pump
- ❑ Removing and installing ⇒ “2.5 Removing and installing coolant pump”, page 298

8 - O-rings
- ❑ Replace after disassembly
- ❑ Moisten with coolant

9 - Screw
- ❑ 8 Nm

10 - Coolant valve for cylinder head - N489-
- ❑ Removing and installing ⇒ “2.8 Removing and installing coolant valve for cylinder head N489 ”, page 304

11 - Screw
- ❑ Replace after disassembly
- ❑ 20 Nm + 45°

12 - Retaining clip
- ❑ check for firm seating

13 - Retaining clip
- ❑ check for firm seating

14 - O-ring
- ❑ Replace after disassembly
- ❑ Moisten with coolant

15 - Sealing ring
- ❑ Replace after disassembly

16 - Screw
- ❑ 20 Nm

17 - Coolant regulator housing

18 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

19 - Coolant regulator

- ❑ Removing and installing ⇒ “2.6 Removing and installing coolant regulator”, page 300

20 - Screw

- ❑ 20 Nm

21 - Connection fitting

2.1.2 Summary of components - coolant pump/thermostat, variant 2

Note

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

1 - Coolant pump

- ❑ Removing and installing ⇒ “2.5 Removing and installing coolant pump”, page 298

2 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

3 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

4 - Coolant pipe - front bottom

- ❑ Removing and installing ⇒ “3.2 Removing and installing coolant pipes”, page 312

5 - Retaining clip

- ❑ check for firm seating

6 - Sealing ring

- ❑ Replace after disassembly

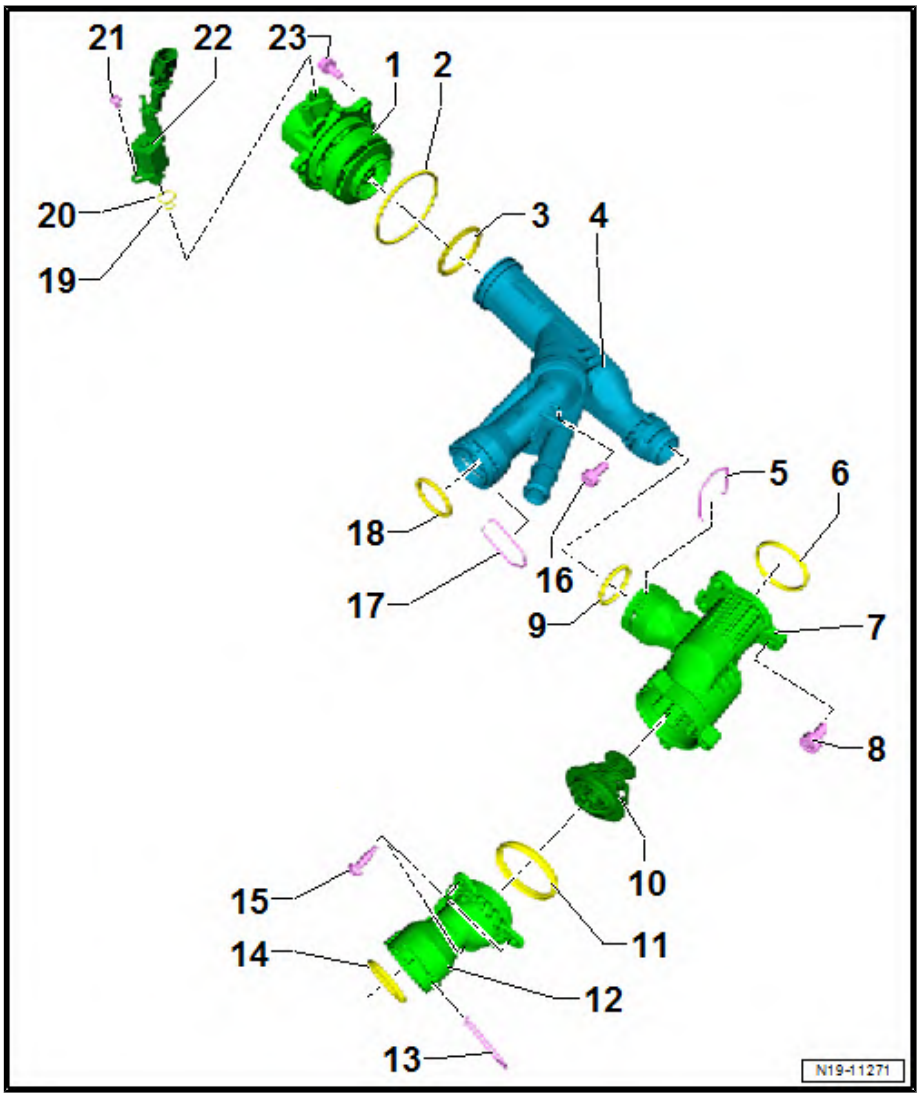
7 - Coolant regulator housing

8 - Screw

- ❑ 20 Nm

9 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant



10 - Coolant regulator

- ❑ Removing and installing ⇒ “2.6 Removing and installing coolant regulator”, page 300

11 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

12 - Connection fitting

13 - Retaining clip

- ❑ check for firm seating

14 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

15 - Screw

- ❑ 8 Nm

16 - Screw

- ❑ 8 Nm

17 - Retaining clip

- ❑ check for firm seating

18 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

19 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

20 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

21 - Screw

- ❑ 8 Nm

22 - Coolant valve for cylinder head - N489-

- ❑ Removing and installing
  ⇒ “2.8 Removing and installing coolant valve for cylinder head N489 ”, page 304

23 - Screw

- ❑ Replace after disassembly
- ❑ 20 Nm + 45°

2.2 Summary of components - electric coolant pump

⇒ “2.2.1 Pump for charge air cooler V188 , heating backup pump V488 , variant 1”, page 279

⇒ “2.2.2 Charge air cooler pump V188 , variant 2”, page 280

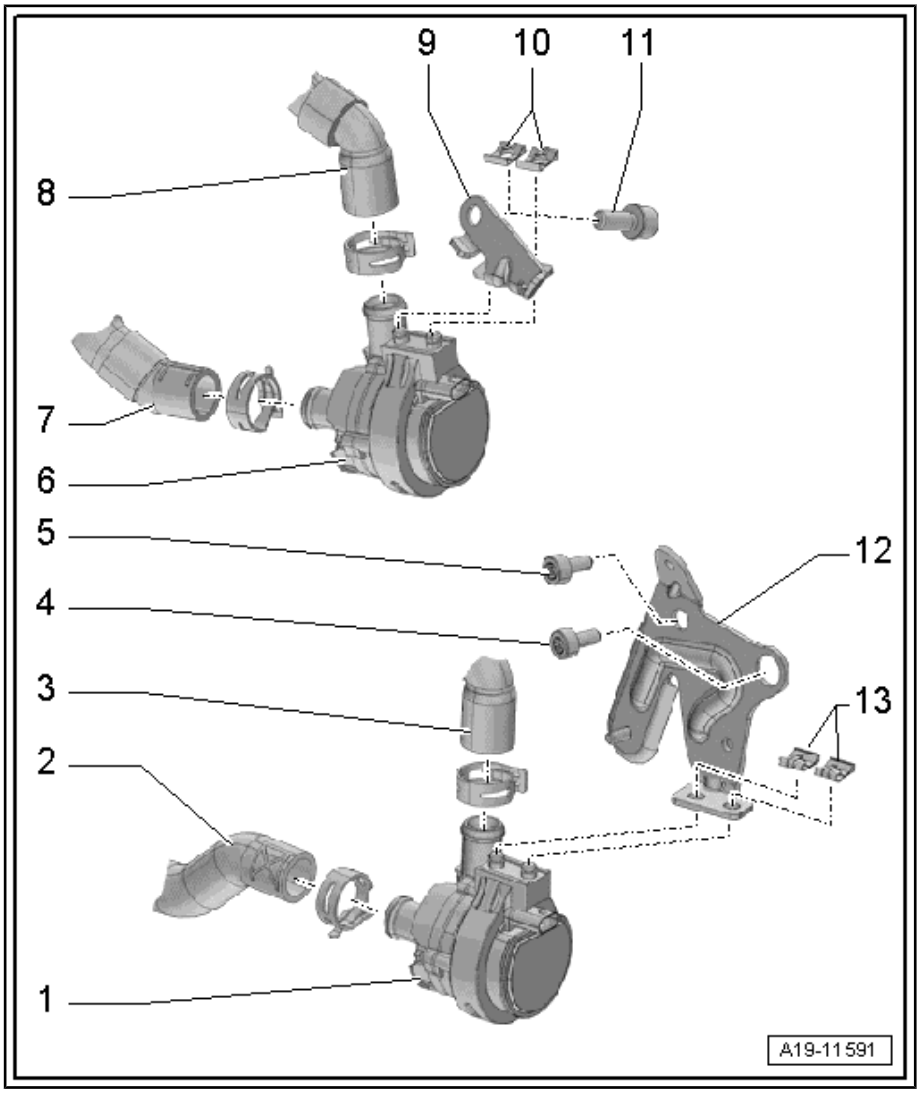
⇒ “2.2.3 Heating backup pump V488 , variant 2”, page 281

⇒ “2.2.4 Charge air cooler pump V188 , variant 3”, page 282

⇒ “2.2.5 Heating backup pump V488 , variant 3”, page 283

⇒ “2.2.6 Charge air cooler pump V188 , variant 4”, page 284

2.2.1 Pump for charge air cooler - V188- , heating backup pump - V488- , variant 1



1 - Charge air cooler pump - V188-

- ❑ Removing and installing ⇒ “2.4 Removing and installing electric coolant pump”, page 285

2 - Coolant hose

3 - Coolant hose

4 - Screw

- ❑ 40 Nm

5 - Screw

- ❑ 40 Nm

6 - Heating backup pump - V488-

- ❑ Removing and installing ⇒ “2.4 Removing and installing electric coolant pump”, page 285

7 - Coolant hose

8 - Coolant hose

9 - Mounting bracket

- ❑ Heating backup pump - V488-

10 - Clamps

11 - Screw

- ❑ 40 Nm

12 - Mounting bracket

- ❑ Charge air cooler pump - V188-

13 - Clamps

2.2.2 Charge air cooler pump - V188- , variant 2

1 - Retaining clip

2 - Screw

- ❑ 23 Nm

3 - Charge air cooler pump - V188-

- ❑ Removing and installing ⇒ “2.4 Removing and installing electric coolant pump”, page 285

4 - Coolant hose

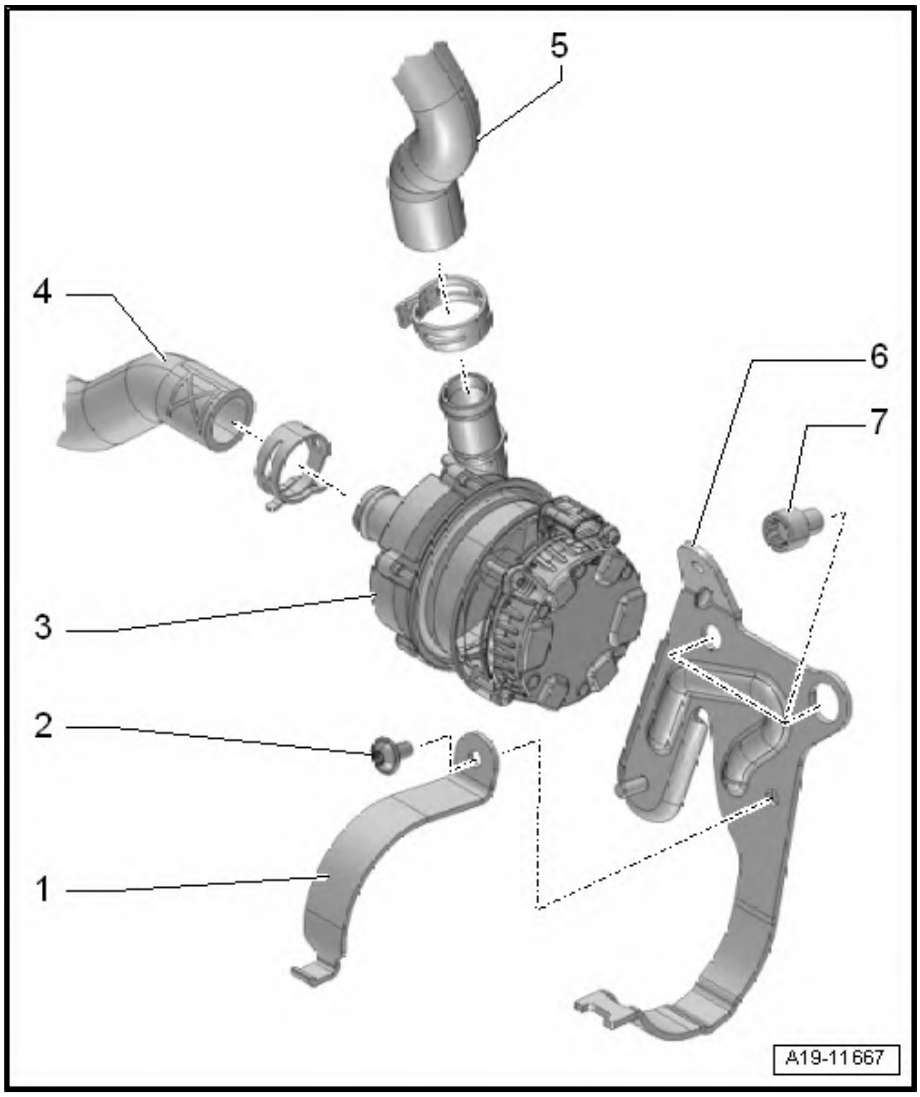
5 - Coolant hose

6 - Mounting bracket

- ❑ Charge air cooler pump - V188-

7 - Screw

- ❑ 40 Nm



2.2.3 Heating backup pump - V488- , variant 2

1 - Screw

- ❑ 1.5 Nm

2 - Bushing

3 - Rubber bearing

- ❑ pay attention to correct fit in the holder

4 - Mounting bracket

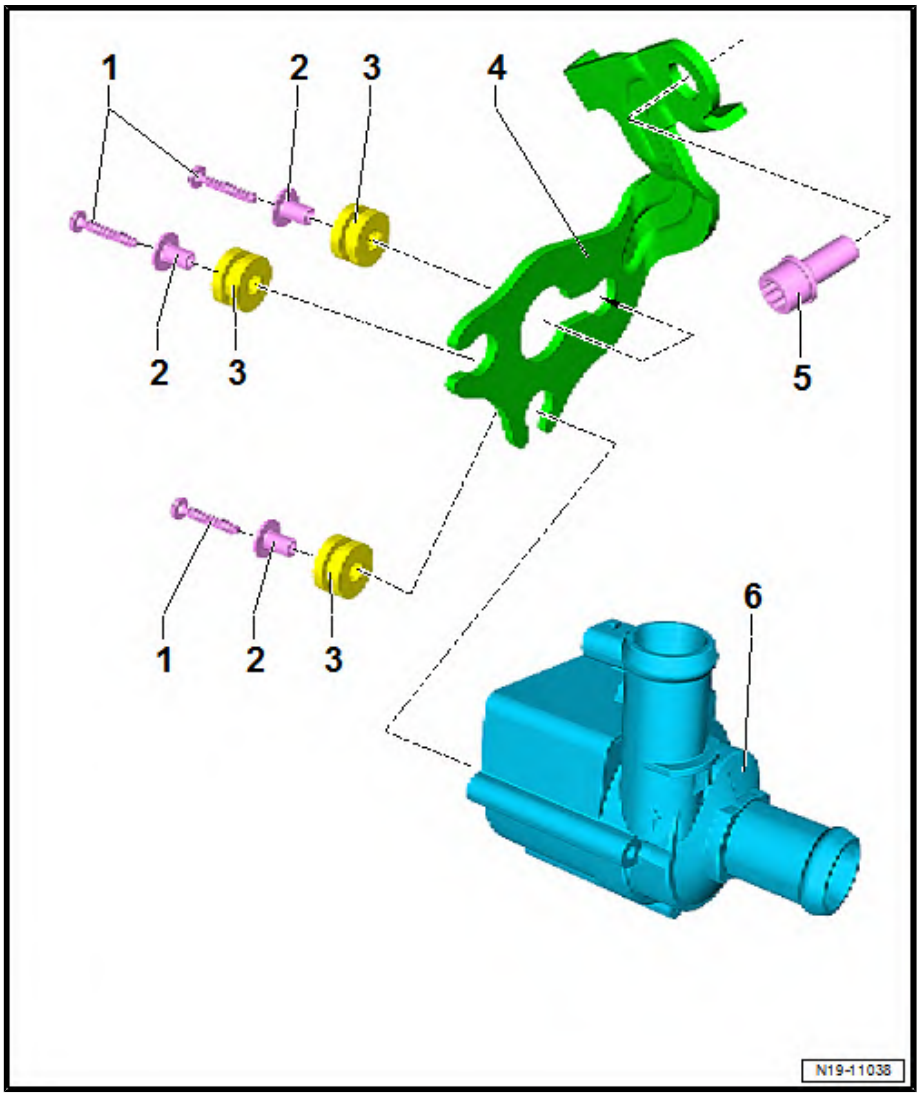
- ❑ Heating backup pump - V488-

5 - Screw

- ❑ 40 Nm

6 - Heating backup pump - V488-

- ❑ Removing and installing ⇒ “2.4 Removing and installing electric coolant pump”, page 285



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

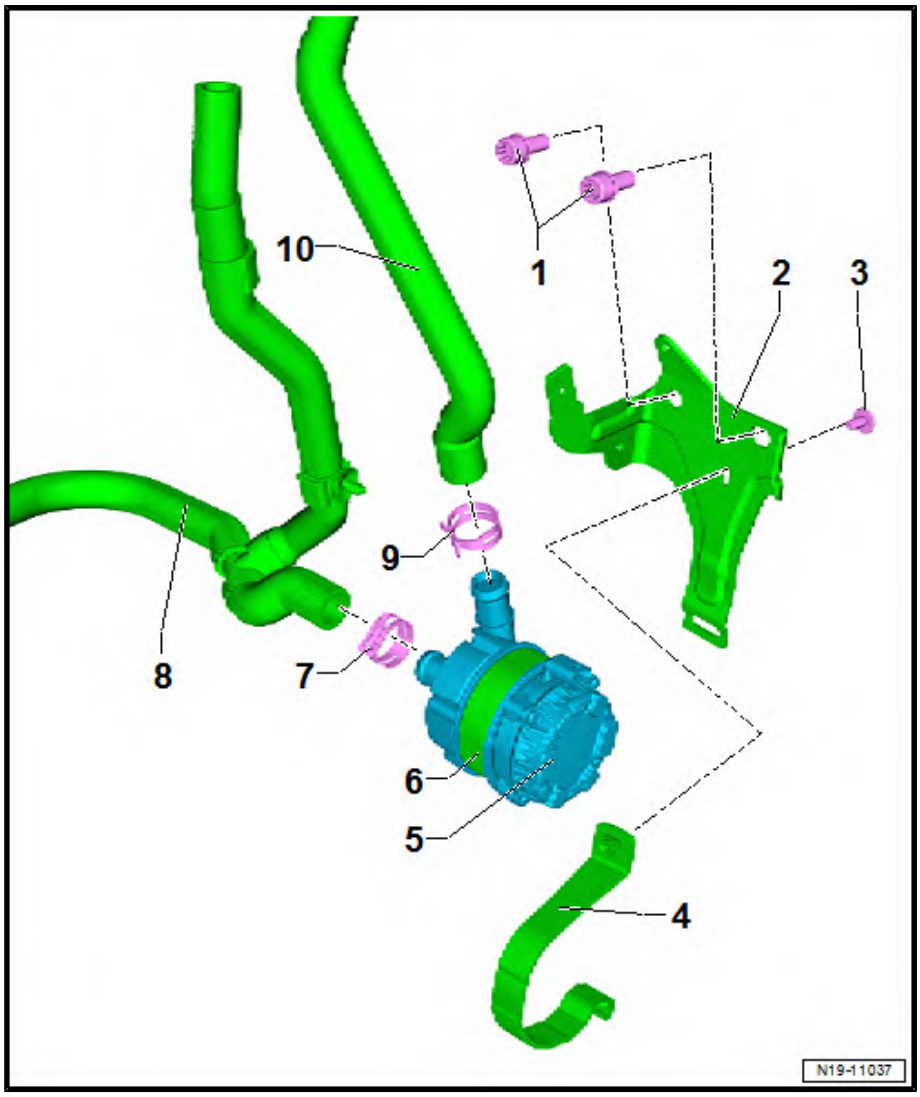
6 - Rubber holder

7 - Spring clip

8 - Coolant hose

9 - Spring clip

10 - Coolant hose



2.2.5 Heating backup pump - V488- , variant 3

1 - Screw

- ❑ 40 Nm

2 - Mounting bracket

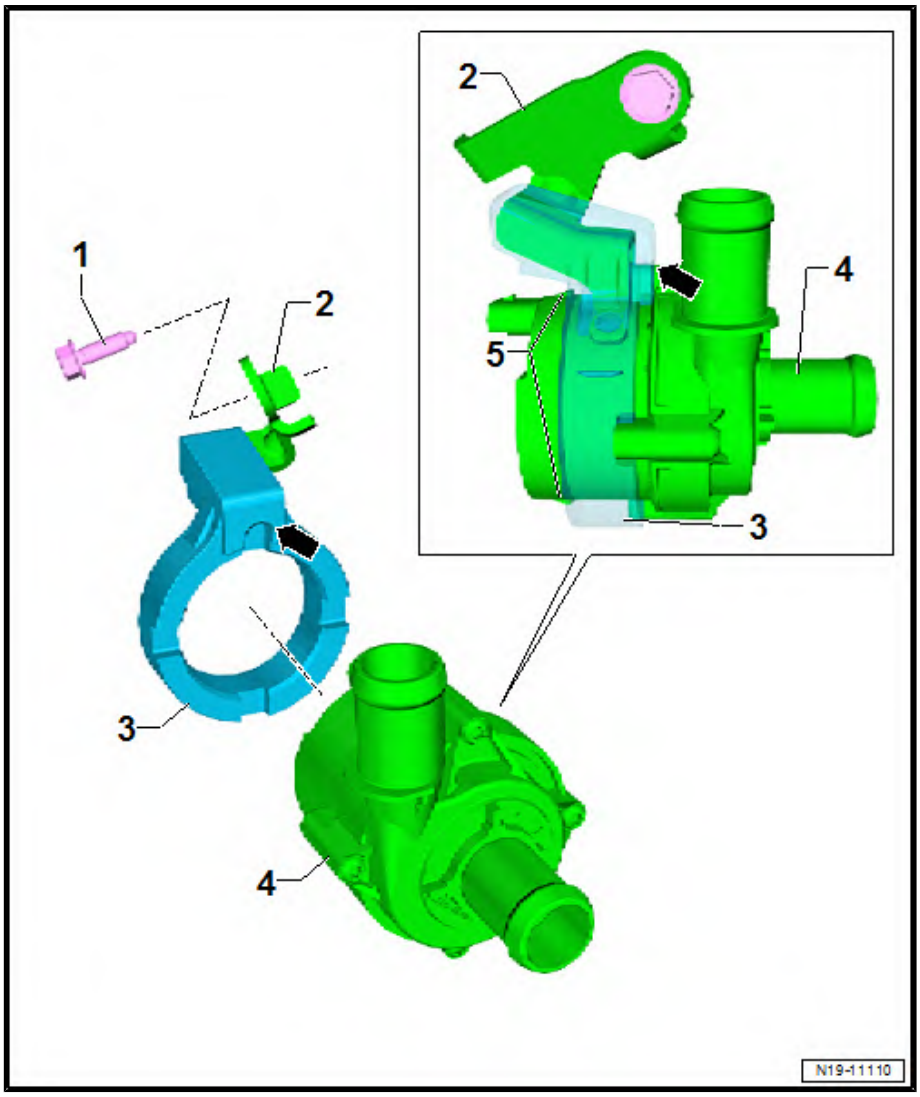
3 - Mounting bracket

4 - Heating backup pump - V488-

- ❑ Removing and installing ⇒ “2.4 Removing and installing electric coolant pump”, page 285

5 - Catch pegs

- ❑ 2 pieces



2.2.6 Charge air cooler pump - V188- , variant 4

1 - Screw
- ❑ 1.5 Nm

2 - Bushing

3 - Rubber bearing
- ❑ pay attention to correct fit in the holder

4 - Mounting bracket

5 - Screw
- ❑ 40 Nm

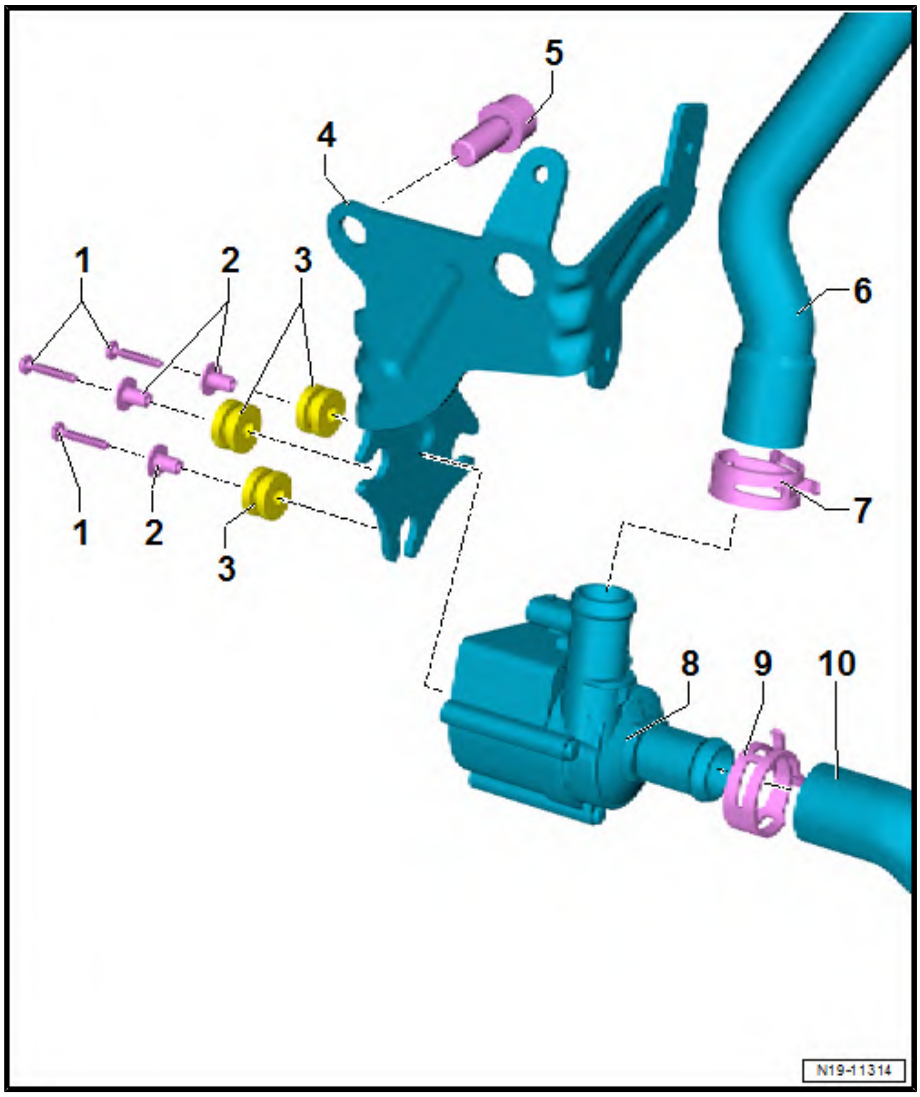
6 - Coolant hose

7 - Clamp

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

9 - Clamp

10 - Coolant hose



2.3 Summary of components - coolant temperature transmitter

Note

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

1 - Coolant temperature transmitter - G62-

- ❑ Removing and installing ⇒ “2.9 Removing and installing coolant temperature transmitter G62 ”, page 305

2 - Distance ring

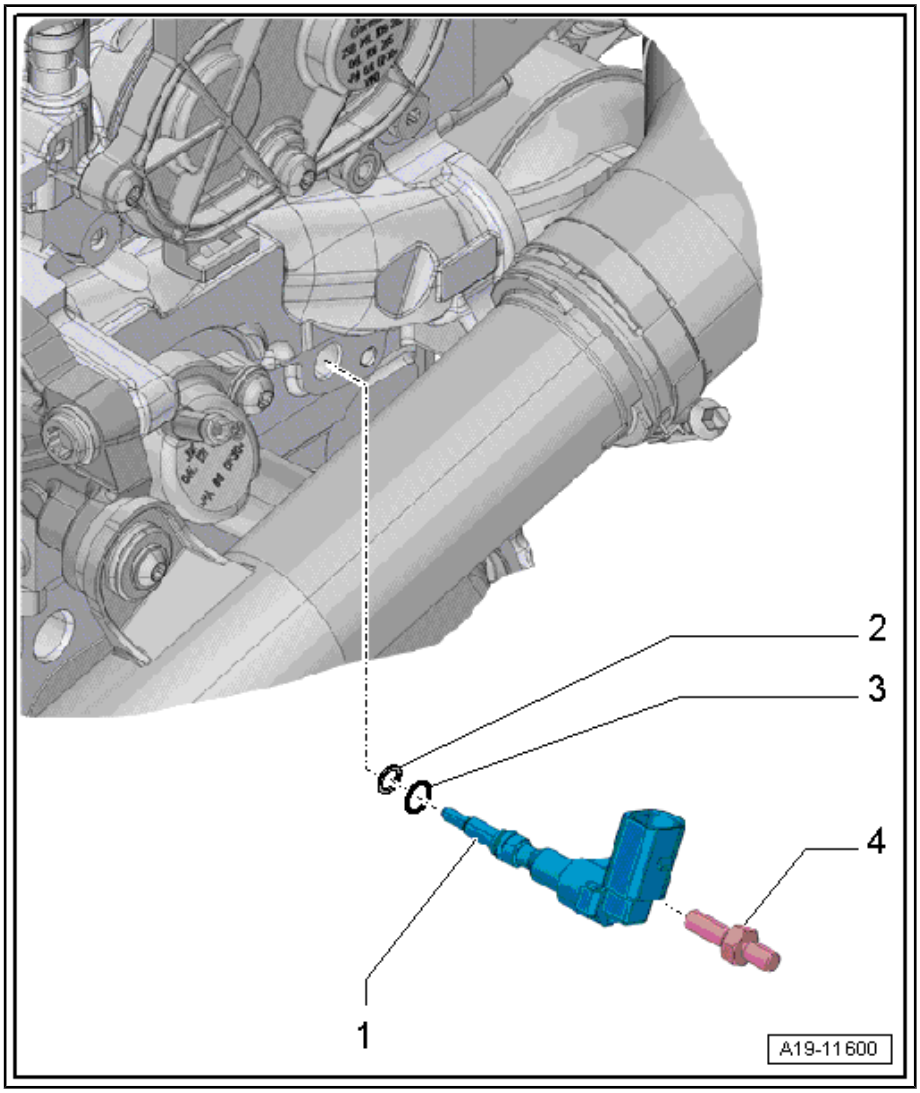
- ❑ replace if damaged

3 - O-ring

- ❑ Replace after disassembly
- ❑ Moisten with coolant

4 - Double screw

- ❑ 8 Nm



2.4 Removing and installing electric coolant pump

⇒ “2.4.1 Removing and installing charge air cooler pump V188 , variants 1 and 2”, page 285

⇒ “2.4.2 Removing and installing the heating backup pump V488 , variant 1”, page 287

⇒ “2.4.3 Removing and installing the heating backup pump V488 , variant 2”, page 289

⇒ “2.4.4 Removing and installing charge air cooler pump V188 , variant 3”, page 291

⇒ “2.4.5 Removing and installing the heating backup pump V488 , variant 3”, page 294

⇒ “2.4.6 Removing and installing charge air cooler pump V188 , variant 4”, page 296

2.4.1 Removing and installing charge air cooler pump - V188- , variants 1 and 2

Special tools and workshop equipment required

- ♦ Hose clamps up to ∅ 25 mm - MP7-602 (3094)-

- Hose binding claw - VAS 6362-
- Catch pan , e.g. -VAS 6208-

Vehicles with charge air cooler pump - V188- variant 1
⇒ page 286 .

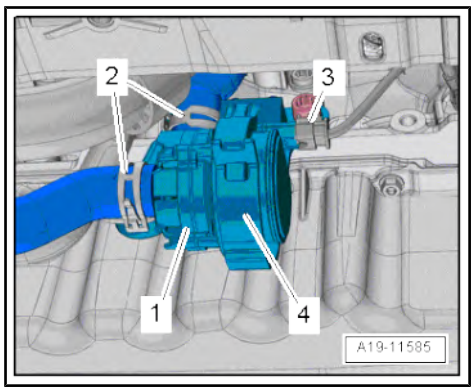
Vehicles with charge air cooler pump - V188- variant 2
⇒ page 287 .

If the charge air cooler pump - V188- has to be removed from the mounting bracket for reasons of space ⇒ page 287 .

Work procedure

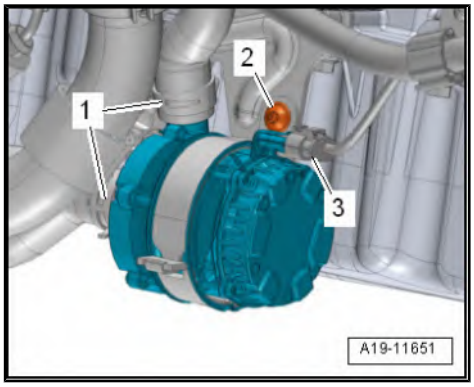
– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

Vehicles with charge air cooler pump - V188- variant 1



– Release and disconnect electrical plug connection -3-.
– Place a cloth below to absorb leaking coolant.
– Place catch pan - VAS 6208- underneath.
– Clamp off coolant hoses with hose clamp up to 25 mm diameter - MP7-602 (3094)- .
– Loosen hose clamps -2-, remove coolant hoses.
– Unhook charge air cooler pump - V188- Pos. -1- out of the retaining strap -4-.

Vehicles with charge air cooler pump - V188- variant 2



- Separate electrical plug connection -3-.
- Place a cloth below to absorb leaking coolant.
- Place catch pan - VAS 6208- underneath.
- Clamp off coolant hoses with hose clamp up to 25 mm diameter - MP7-602 (3094)- .
- Loosen hose clamps -1-, remove coolant hoses.
- Unscrew screw -2- and remove charge air cooler pump - V188- .

If the charge air cooler pump - V188- has to be removed from the engine for reasons of space

- Release and pull off electrical connector.
- Unscrew screw for the bracket.
- Place the charge air cooler pump - V188- to the side.

Installing

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

Note

Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .

- Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .
- Check filling quality ⇒ “1.5 Checking the filling quality”, page 251 .

Tightening torques - summaries of components

Note

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

- ⇒ “2.2 Summary of components - electric coolant pump”, page 279
- Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

2.4.2 Removing and installing the heating backup pump - V488- , variant 1

Special tools and workshop equipment required

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-
- Catch pan , e.g. -VAS 6208-

If the heating backup pump - V488- has to be removed
⇒ page 288 .

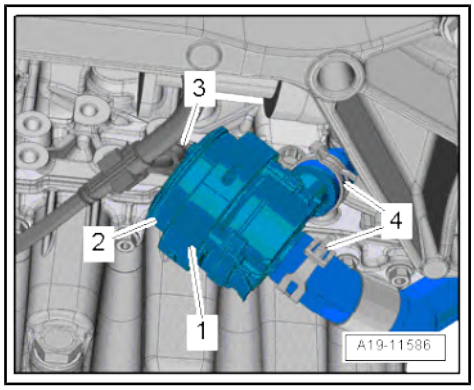
If the heating backup pump - V488- has to be removed from the engine because of lack of space ⇒ page 288 .

Work procedure

– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

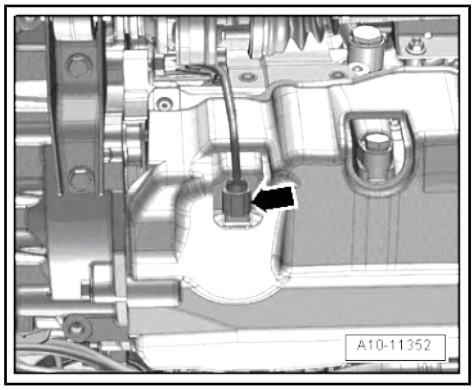
If the heating backup pump - V488- has to be removed

– Separate electrical plug connection -3-.
– Place a cloth below to absorb leaking coolant.
– Place catch pan - VAS 6208- underneath.
– Clamp off coolant hoses with hose clamp up to 25 mm diameter - MP7-602 (3094)- .
– Loosen hose clamps -4-, remove coolant hoses.
– Unhook heating backup pump cooler - V488- Pos. -2- out of the retaining strap -1-.

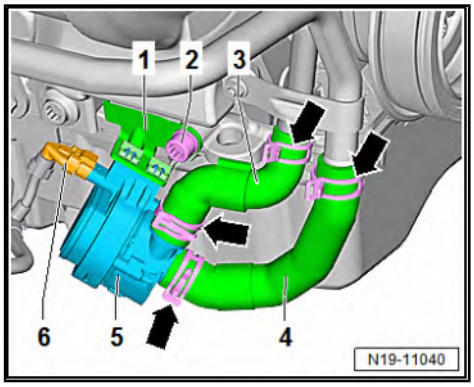


If the heating backup pump - V488- has to be removed from the engine because of lack of space

– Disconnect electrical plug connection -arrow- on the oil level and temperature sender - G266- and pull off.



– Expose wiring loom.
– Release and disconnect electrical plug connection -6-.
– Unscrew bolt -2-.
– Lay heating backup pump - V488- -5- to the side.



Installing

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

Note

Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .

– Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .
– Check filling quality ⇒ “1.5 Checking the filling quality”, page 251 .

Tightening torques - summaries of components

Note

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

- ⇒ “2.2 Summary of components - electric coolant pump”, page 279
- Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

2.4.3 Removing and installing the heating backup pump - V488- , variant 2

Special tools and workshop equipment required

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-
- Catch pan , e.g. -VAS 6208-

If the heating backup pump - V488- has to be removed ⇒ page 290

If the heating backup pump - V488- has to be removed from the engine because of lack of space ⇒ page 290

If the heating backup pump - V488- has to be removed from the bracket ⇒ page 291

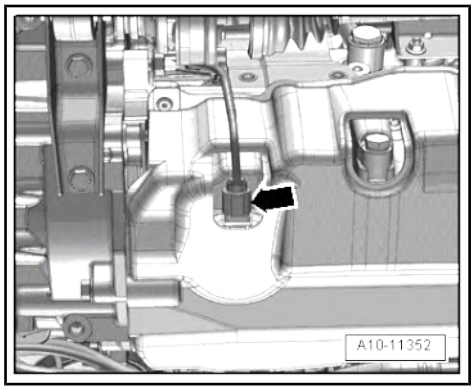
If the heating backup pump - V488- has been removed from the mounting bracket ⇒ page 291

Work procedure

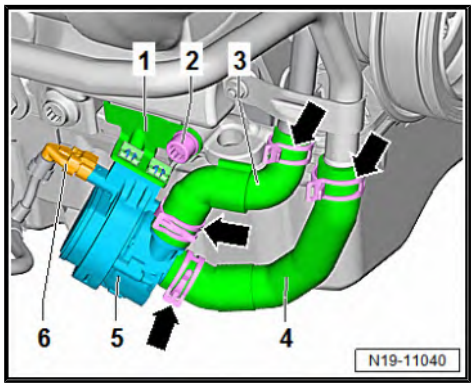
– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

If the heating backup pump - V488- has to be removed

- Disconnect electrical plug connection -arrow- on the oil level and temperature sender - G266- and pull off.
- Expose electric wiring harness.
- Place a catch pan for workshop crane - VAS 6208- underneath.

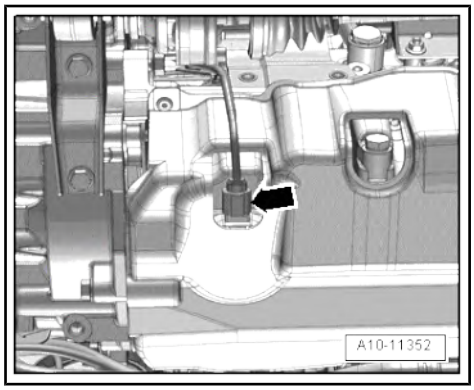


- Release and disconnect electrical plug connection -6-.
- Place a clean cloth below to absorb leaking coolant.
- Clamp off coolant hoses -3- and -4- with hose clamps up to ∅ 25 mm - MP7-602 (3094)- .
- Release hose clips -arrows- at the bottom of the heating backup pump - V488- and remove coolant hoses.
- Unscrew bolt -2-.
- Remove the heating backup pump - V488- -5- together with the bracket -1-.

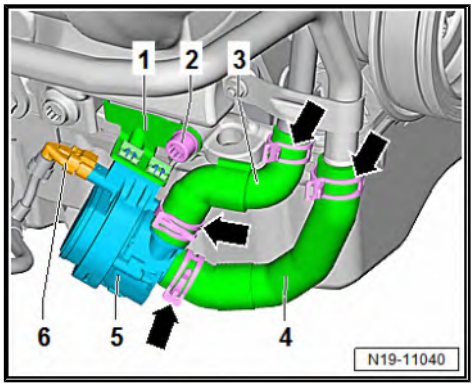


If the heating backup pump - V488- has to be removed from the engine because of lack of space

- Disconnect electrical plug connection -arrow- on the oil level and temperature sender - G266- and pull off.
- Expose electric wiring harness.



– Release and disconnect electrical plug connection -6-.
– Unscrew bolt -2-.
– Lay heating backup pump - V488- -5- to the side.



If the heating backup pump - V488- has to be removed from the support

– Unscrew screws and take out the pump.

Installing

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

Note

Secure all hose connections with hose clamps which comply with the series design ⇒ Electronic Catalogue of Original Parts .

If the heating backup pump - V488- has been removed from the bracket

– Check that the rubber bearing is seated correctly in the bracket.
– Check that the spacer sleeves are fitted correctly in the rubber bearing.
– Screw on the screws.
– Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .
– Check filling quality ⇒ “1.5 Checking the filling quality”, page 251 .

Tightening torques - summaries of components

Note

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

- ⇒ “2.2 Summary of components - electric coolant pump”, page 279
- Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

2.4.4 Removing and installing charge air cooler pump - V188- , variant 3

Special tools and workshop equipment required

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-
- Catch pan , e.g. -VAS 6208-
- Disassembly tool for door panel - T10236-

If the charge air cooler pump - V188- has to be removed from the mounting bracket for reasons of space ⇒ page 292 .

If the charge air cooler pump - V188- has to be removed ⇒ page 293

If the charge air cooler pump - V188- has to be removed from the mounting bracket ⇒ page 293

Work procedure:

– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

If the charge air cooler pump - V188- has to be removed from the engine for reasons of space

– Release and disconnect electrical plug connection -3-.

– Place a clean cloth below to absorb leaking coolant.

– Unclip the electrical wiring loom from the holder.

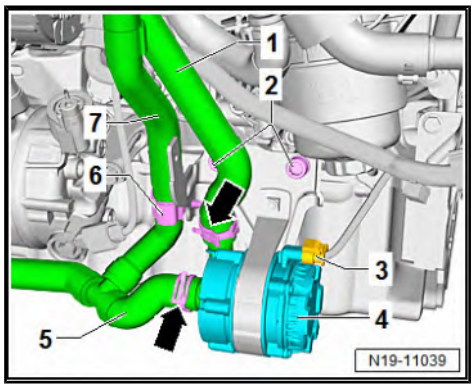
– Open the holder for the coolant hose to the radiator. Detach coolant hose.

– Unclip holder -6- for coolant hose to charge air cooler.

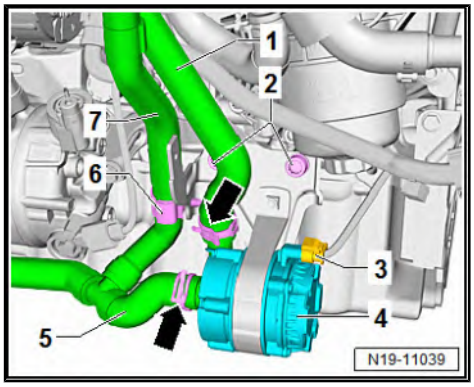
– Unscrew both screws -2-.

– Remove the charge air cooler pump - V188- together with bracket.

– Place the charge air cooler pump - V188- to the side.



If the charge air cooler pump - V188- has to be removed



- Place a catch pan for workshop crane - VAS 6208- underneath.
- Release and disconnect electrical plug connection -3-.
- Place a clean cloth below to absorb leaking coolant.
- Clamp off coolant hoses -1- and -5- with hose clamps up to ∅ 25 mm - MP7-602 (3094)- .
- Loosen hose clamps -arrows-, remove coolant hoses.
- Unclip the electrical wiring loom from the holder.
- Open the holder for the coolant hose to the radiator. Detach coolant hose.
- Unclip holder -6- for coolant hose to charge air cooler.
- Unscrew both screws -2-.
- Remove the charge air cooler pump - V188- together with bracket.

If the charge air cooler pump - V188- has to be removed from the bracket

- Unscrew screw Pos. -3- ⇒ Item 3 (page 282) and open the retaining bracket Pos. -4- ⇒ Item 4 (page 282) .
- Remove charge air cooler pump - V188- .

Installing

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

If the charge air cooler pump - V188- has been removed from the mounting bracket:

- Hook the retaining bracket Pos. -4- ⇒ Item 4 (page 282) at the bottom into the bracket Pos. -2- ⇒ Item 2 (page 282) .
- Remove charge air cooler pump - V188- .
- Make sure that the protrusion on the rubber holder Pos. -6- ⇒ Item 6 (page 282) is sitting in the bead of the retaining bracket -4- ⇒ Item 4 (page 282) .

Note

Secure all hose connections with hose clamps which comply with the series design ⇒ Electronic Catalogue of Original Parts .

- Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .
- Check filling quality ⇒ “1.5 Checking the filling quality”, page 251 .

Tightening torques - summaries of components

Note

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

- ⇒ “2.2 Summary of components - electric coolant pump”, page 279

- Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

2.4.5 Removing and installing the heating backup pump - V488- , variant 3

Special tools and workshop equipment required

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-
- Catch pan , e.g. -VAS 6208-

If the heating backup pump - V488- has to be removed
⇒ page 294

If the heating backup pump - V488- has to be removed from the engine because of lack of space ⇒ page 295

If the heating backup pump - V488- has been removed from the mounting bracket ⇒ page 296

Removing

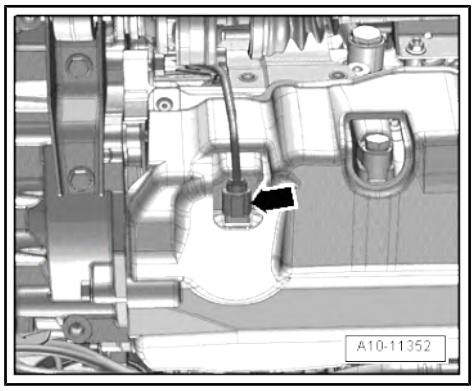
– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

If the heating backup pump - V488- has to be removed

– Disconnect electrical plug connection -arrow- on the oil level and temperature sender - G266- and pull off.

– Expose electric wiring harness.

– Place a catch pan for workshop crane - VAS 6208- underneath.



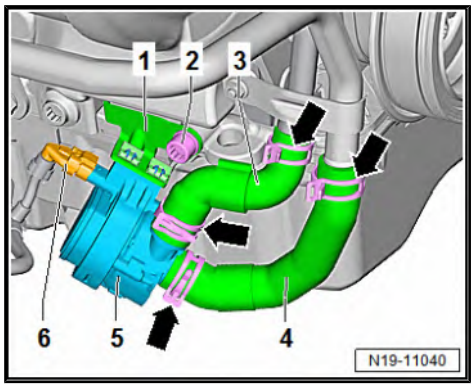
– Release and disconnect electrical plug connection -6-.

– Place a clean cloth below to absorb leaking coolant.

– Clamp off coolant hoses -3- and -4- with hose clamps up to ∅ 25 mm - MP7-602 (3094)- .

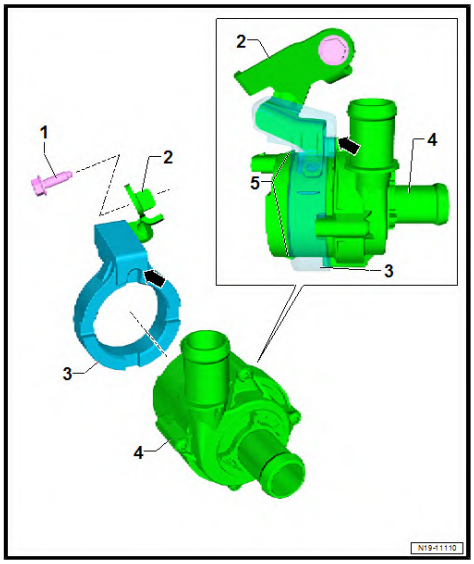
– Release hose clips -arrows- at the bottom of the heating back-up pump - V488- and remove coolant hoses.

– Unscrew bolt -2-.

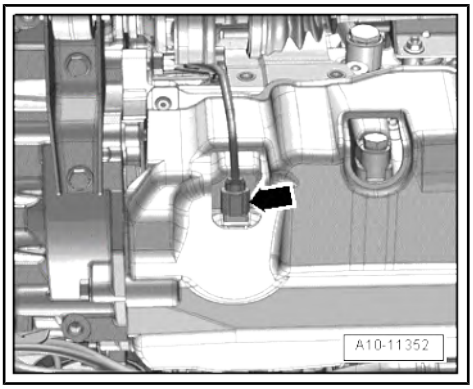


– Pull the heating backup pump - V488- -4- out of the mounting bracket -3-.

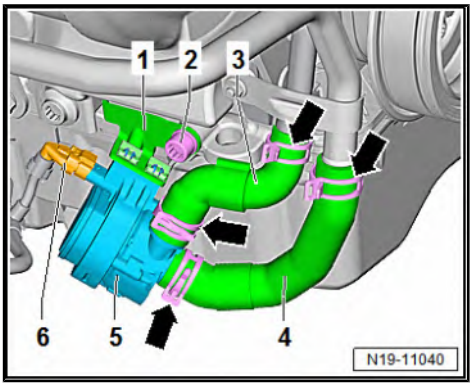
If the heating backup pump - V488- has to be removed from the engine because of lack of space



– Disconnect electrical plug connection -arrow- on the oil level and temperature sender - G266- and pull off.



– Expose electric wiring harness.
– Release and disconnect electrical plug connection -6-.
– Unscrew bolt -2-.
– Lay heating backup pump - V488- -5- to the side.



Installing

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

Note

Secure all hose connections with hose clamps which comply with the series design ⇒ Electronic Catalogue of Original Parts .

If the heating backup pump - V488- has been removed from the bracket

– Slide the heating backup pump - V488- into the mounting bracket -3-.

– Check the fitting position is correct.

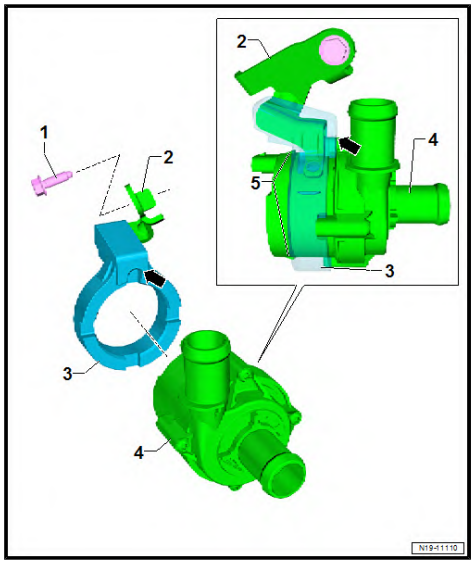
– The bead on the pump must sit in the recess -arrows-, as shown.

– Slide in until the retaining tabs -5- behind the bracket -3- engage.

– Check for correct seating by pulling gently in the opposite direction.

– Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .

– Check filling quality ⇒ “1.5 Checking the filling quality”, page 251 .



Tightening torques - summaries of components

Note

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

- ⇒ “2.2 Summary of components - electric coolant pump”, page 279
- Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

2.4.6 Removing and installing charge air cooler pump - V188- , variant 4

Special tools and workshop equipment required

- Hose clamps up to Ø 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-
- Catch pan , e.g. -VAS 6208-

If the charge air cooler pump - V188- has to be removed from the mounting bracket for reasons of space ⇒ page 297 .

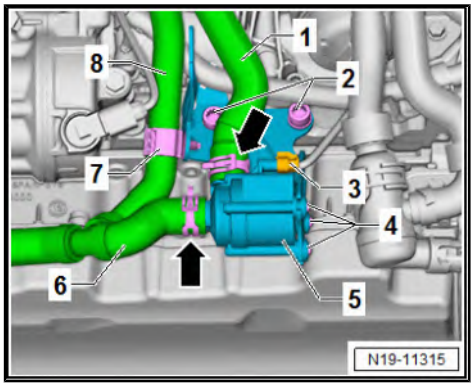
If the charge air cooler pump - V188- has to be removed ⇒ page 297

If the charge air cooler pump - V188- has to be removed from the mounting bracket ⇒ page 298

Work procedure

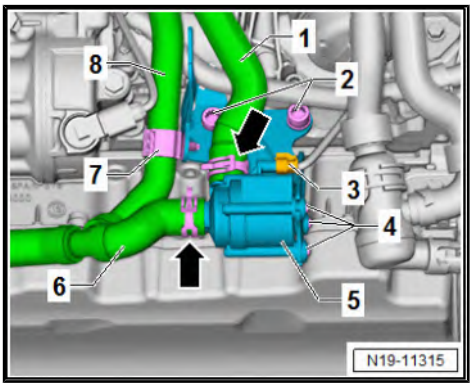
– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

If the charge air cooler pump - V188- has to be removed from the engine for reasons of space



- Release and disconnect electrical plug connection -3-.
- Unclip the electrical wiring loom from the holder.
- Open the holder for the coolant hose to the radiator. Detach coolant hose.
- Unclip holder -7- for coolant hose to charge air cooler.
- Unscrew both screws -2-.
- Remove the charge air cooler pump - V188- together with bracket.
- Place the charge air cooler pump - V188- to the side.

If the charge air cooler pump - V188- has to be removed from the mounting bracket:



- Place catch pan - VAS 6208- underneath.
- Release and disconnect electrical plug connection -3-.
- Place a clean cloth below to absorb leaking coolant.
- Clamp off coolant hoses -1- and -6- with hose clamps up to 25 mm - MP7-602 (3094)- .
- Loosen hose clamps -arrows-, remove coolant hoses.
- Unclip the electrical wiring loom from the holder.
- Open the holder for the coolant hose to the radiator. Detach coolant hose.
- Unclip holder -7- for coolant hose to charge air cooler.
- Unscrew both screws -2-.
- Remove the charge air cooler pump - V188- -5- together with bracket.

If the heating backup pump - V488- has to be removed from the support

– Loosen hose clamps -arrows-, remove coolant hoses.

– Unscrew screws -4- and remove charge air cooler pump - V188- -5-.

Installing

Note

Secure all hose connections with hose clamps which comply with the series design ⇒ ETKA - Electronic Catalogue of Original Parts .

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

– Check that the rubber bearing is seated correctly in the bracket.

– Check that the spacer sleeve is fitted correctly in the rubber bearing.

– Screw on the screws.

– Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .

– Check filling quality ⇒ “1.5 Checking the filling quality”, page 251 .

Tightening torques - summaries of components

Note

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

- ⇒ “2.2 Summary of components - electric coolant pump”, page 279
- Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

2.5 Removing and installing coolant pump

Note

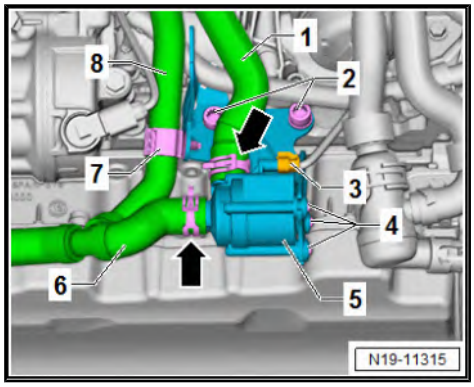
Do not check it is functioning by pulling on the coolant pump's modulating piston by hand! This can cause damage in the coolant pump. The engine would then not be supplied with enough coolant.

Removing

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

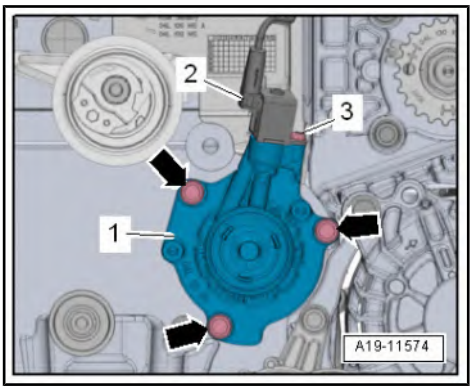
For vehicles Rapid

– Remove engine support ⇒ “1.7 Removing and installing engine support”, page 74



Continued for all vehicles

- Remove the toothed belt from the camshaft ⇒ “2.5 Remove the toothed belt from the camshaft”, page 159 .
- Remove bottom toothed belt guard ⇒ “2.3.4 Removing and installing bottom toothed belt guard”, page 149 .
- Remove the toothed belt from the remaining toothed belt wheels.
- Pull the timing belt up or push it as far as possible to avoid dirt and damage.
- Unscrew screw -3- and remove coolant valve for cylinder head - N489- Pos. -2-.
- Unscrew screws -arrows-, remove coolant pump -1-.



Installing

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

Note

Replace O-rings after disassembly.

- Clean and smooth O-ring sealing surfaces.
- Moisten O-rings with coolant.
- install (set the timing) ⇒ page 153 .

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
- ⇒ “2.1 Summary of components - toothed belt guard”, page 140

2.6 Removing and installing coolant regulator

⇒ “2.6.1 Removing and installing coolant thermostat, Octavia III, Yeti, variant 1”, page 300

⇒ “2.6.2 Removing and installing coolant thermostat, Octavia III, Yeti, variant 2”, page 301

⇒ “2.6.3 Removing and installing the coolant thermostat, Rapid NH”, page 303

2.6.1 Removing and installing coolant thermostat, Octavia III, Yeti, variant 1

Special tools and workshop equipment required

- Radiator protection mat , e.g. -VAS 531 003-

Removal

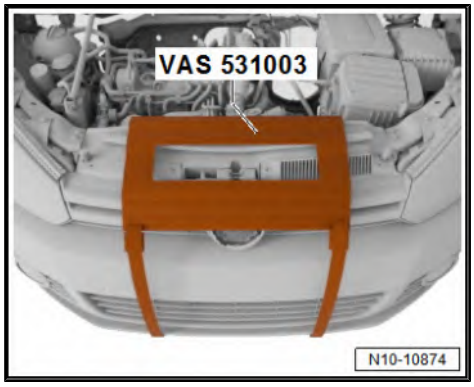
– Note the variants
⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275 .

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

– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

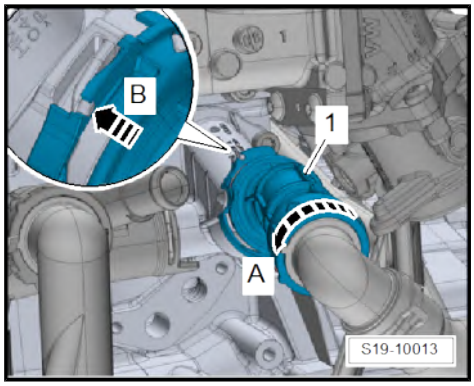
– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



– Unlock catch peg in direction of arrow -B- (from the top using a screwdriver).

– Turn and pull off connection fittings -1- in arrow direction -A-.

– Remove thermostat.



Installing

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

Note

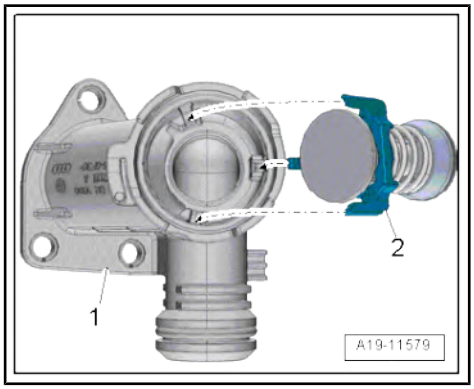
Replace O-ring after disassembly.

– Clean and smooth O-ring sealing surfaces.

– Moisten O-ring with coolant.

– Insert coolant regulator -2- into the coolant regulator housing.

• The retaining lugs must engage in the guides -arrows-.



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
- ⇒ “2.1 Summary of components - charge air system”, page 409
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

2.6.2 Removing and installing coolant thermostat, Octavia III, Yeti, variant 2

Special tools and workshop equipment required

- Radiator protection mat , e.g. -VAS 531 003-

Removal

– Note the variants ⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275 .

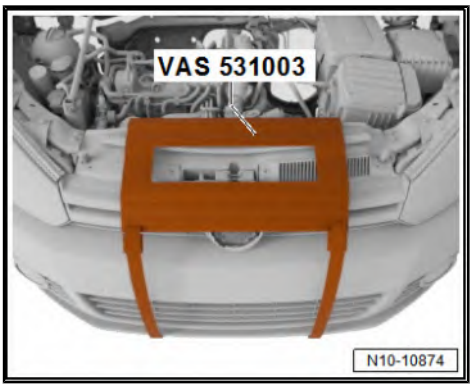
– Remove engine cover ⇒ “3.1 Removing and installing engine trim panel”, page 64 .

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

– Remove air guide pipe ⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

– Removing fan shroud ⇒ “4.6 Removing and installing fan shroud”, page 365 .

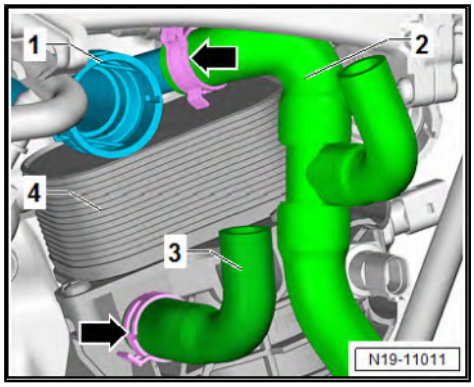
– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



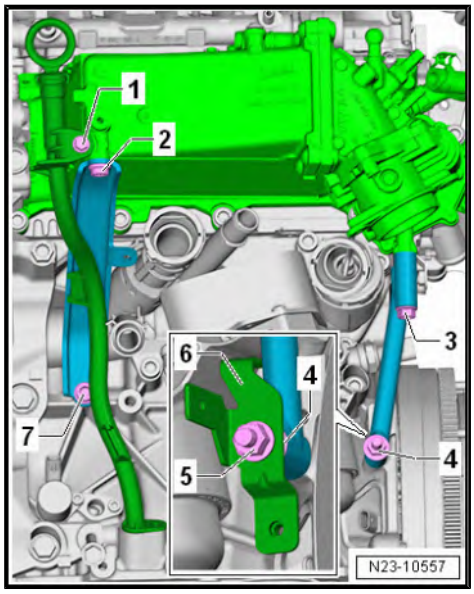
– Disconnect front coolant connection fitting ⇒ “3.2.5 Removing and installing front coolant connection fitting”, page 320 .

– Remove front coolant pipes ⇒ “3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti”, page 312 .

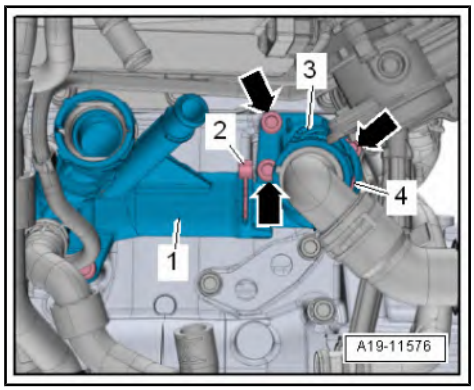
– Release top hose clamp -arrow-.
– Detach coolant hose -2- from the coolant thermostat housing -1-.



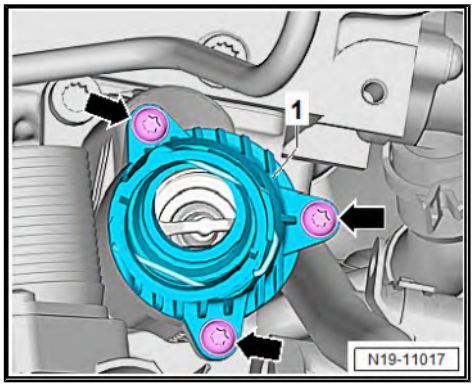
– Unscrew nuts -5- and remove the mounting bracket -6- from the double screw -4-.
– Unscrew screws -3- and -4-.
– Remove the support and push the wiring loom to the side.



– Raise hose clamp -4- and disconnect coolant hose.



– Unscrew screws -arrows-.
– Remove connection fitting -1-.
– Remove thermostat.



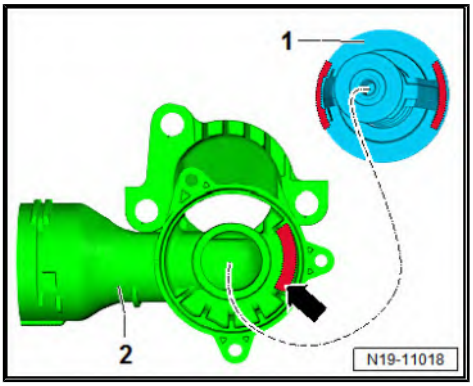
Installing

Installation is carried out in the reverse order. Pay attention to the following:

Note

Replace O-ring after disassembly.

– Clean and smooth O-ring sealing surfaces.
– Moisten O-rings with coolant.
– Insert coolant regulator -1- into the coolant regulator housing -2-.
• The guides on the coolant thermostat -1- must sit in the guide -arrow- of the housing -2-.
– Top up coolant ⇒ “1.4 Filling with coolant”, page 235 .



Tightening torques - summaries of components

Note

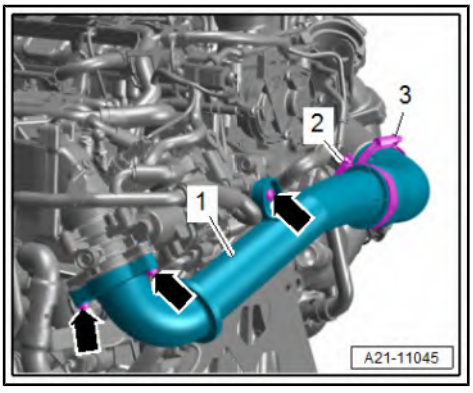
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275
- ⇒ “4.1 Assembly overview - air filter housing”, page 473
- ⇒ “5.1 Assembly overview - intake manifold”, page 481
- ⇒ “3.1 Summary of components - coolant pipe”, page 309

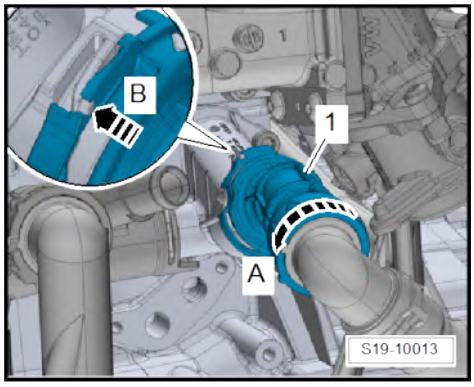
2.6.3 Removing and installing the coolant thermostat, Rapid NH

Removing

– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Remove air filter
⇒ “4.2 Removing and installing air filter housing”, page 476 .
– Unscrew screws -arrows-.
– Loosen hose clamp -2-, remove air guide pipe -1-.



– Unlock catch peg in direction of arrow -B- (from the top using a screwdriver).
– Turn and pull off connection fittings -1- in arrow direction -A-.
– Remove thermostat.



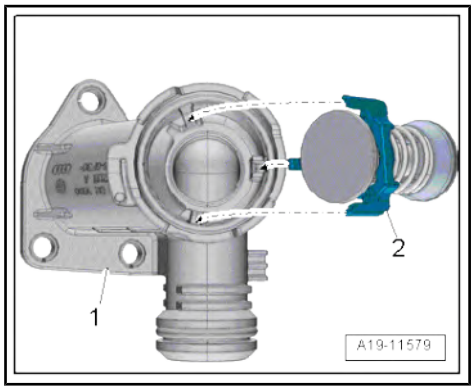
Installing

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

Note

Renew O-ring.

– Clean and smooth O-ring sealing surfaces.
– Moisten O-ring with coolant.
– Insert coolant regulator -2- into the coolant regulator housing.
• The retaining lugs must engage in the guides -arrows-.



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
- ⇒ “2.1 Summary of components - charge air system”, page 409
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

2.7 Testing the coolant regulator

– Heat up the removed coolant regulator in a water bath.

Start of opening	End of opening	Opening stroke
87 ± 2 °C	approximately 102 °C [1)]	min. 9 mm
• [1)] Cannot be tested.		

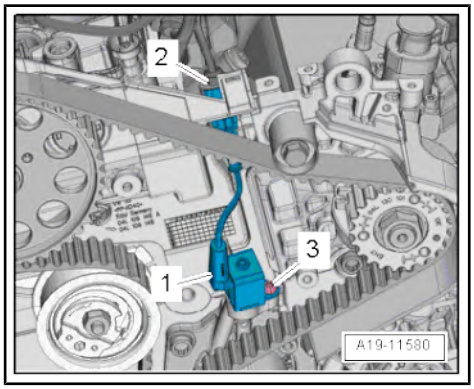
2.8 Removing and installing coolant valve for cylinder head - N489-

Removing

– Remove top toothed belt guard ⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

– Disconnect electrical plug connection -2-, expose electric cable.

– Unscrew screw -3- and remove coolant valve for cylinder head - N489- Pos. -1-.



Installing

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

Note

Replace O-rings.

– Install top toothed belt guard
⇒ “2.3 Removing and installing toothed belt guard”, page 142 .

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

2.9 Removing and installing coolant temperature transmitter - G62-

⇒ “2.9.1 Removing and installing the coolant temperature transmitter G62 , Octavia III, Yeti”, page 305

⇒ “2.9.2 Removing and installing the coolant temperature transmitter G62 , Rapid NH”, page 307

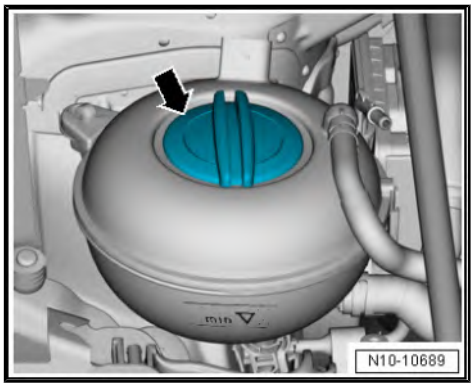
2.9.1 Removing and installing the coolant temperature transmitter - G62- , Octavia III, Yeti

Removing

Test condition

• Engine cold.

– Briefly open the cap -arrow- for the coolant expansion reservoir in order to remove the remaining pressure in the coolant system.



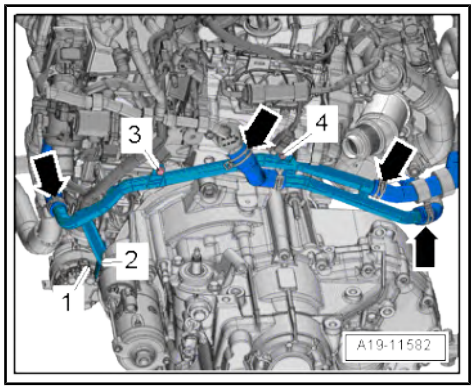
– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

Vehicles fitted with a manual gearbox

– Remove switching and selector cable from gearbox, unscrew cable support bracket and lay aside with the cables ⇒ Rep. gr. 34 ; Shift mechanism .

Continued for all vehicles

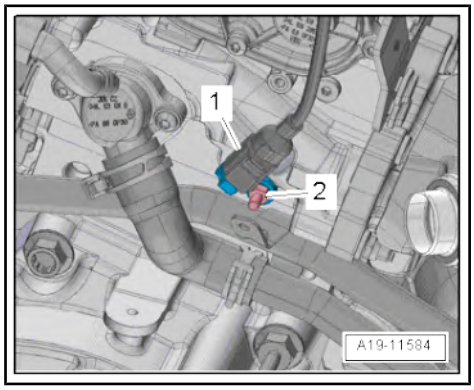
– Expose electric wiring loom -1-.
– Release nut -4- and screws -2-, -3-.
– Push coolant pipes slightly to the left.



Note

- *The left coolant pipes of variant 1 are shown as an example.*
- *-Ignore arrows-.*

– Separate electrical plug connection -1-.
– Unscrew double screw -2-, remove coolant temperature transmitter - G62- .



Note

Use a wire to pull out any O-ring or distance ring that has remained stuck inside the cylinder head.

Installing

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

Note

- *Replace O-rings after disassembly.*
- *Replace distance ring if it is damaged.*

– Install the left coolant pipe
⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .
– Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .
– Check filling quality
⇒ “1.5 Checking the filling quality”, page 251 .

Tightening torques - summaries of components

Note

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

- ⇒ “2.3 Summary of components - coolant temperature transmitter”, page 284
- ⇒ “4.1 Assembly overview - air filter housing”, page 473
- ⇒ “5.1 Assembly overview - intake manifold”, page 481
- Shift mechanism - Overview of components ⇒ Rep. gr. 34 ; Shift mechanism

2.9.2 Removing and installing the coolant temperature transmitter - G62- , Rapid NH

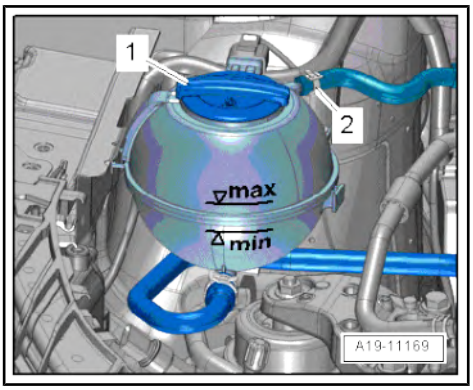
Removing

Test condition

- Engine cold.

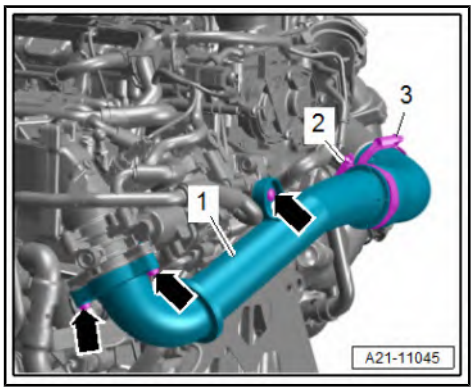
– Briefly open the filler cap -1- for the coolant expansion reservoir to dissipate the remaining pressure in the coolant system.

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



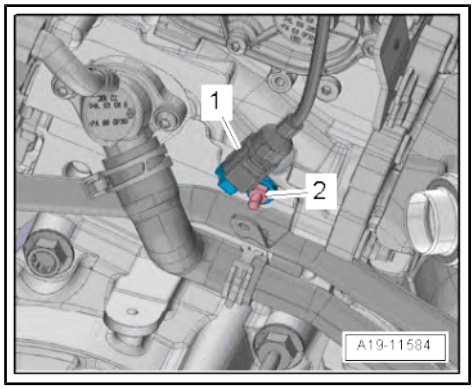
– Unscrew screws -arrows-.

– Loosen hose clamp -2-, remove air guide pipe -1-.



– Separate electrical plug connection -1-.

– Unscrew double screw -2-, remove coolant temperature transmitter - G62- .



Note

Use a wire to pull out any O-ring or distance ring that has remained stuck inside the cylinder head.

Installing

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

Note

- *Replace O-rings.*
- *Replace distance ring if it is damaged.*

– Check coolant level ⇒ “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.

- ⇒ “2.3 Summary of components - coolant temperature transmitter”, page 284
- ⇒ “4.1 Assembly overview - air filter housing”, page 473
- ⇒ “5.1 Assembly overview - intake manifold”, page 481

3 Coolant pipes

⇒ “3.1 Summary of components - coolant pipe”, page 309

⇒ “3.2 Removing and installing coolant pipes”, page 312

3.1 Summary of components - coolant pipe

⇒ “3.1.1 Summary of components - coolant pipes, Octavia III, Yeti”, page 309

⇒ “3.1.2 Summary of components - coolant pipes, Rapid NH”, page 311

3.1.1 Summary of components - coolant pipes, Octavia III, Yeti

Note

- *The arrows on the coolant pipes and the coolant hose ends must stand opposite to each other.*
- *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*

1 - Nut
- ❑ 10 Nm

2 - Coolant pipe - front right
- ❑ Removing and installing ⇒ “3.2.8 Removing and installing the front right coolant pipe”, page 325

3 - Screw
- ❑ 10 Nm

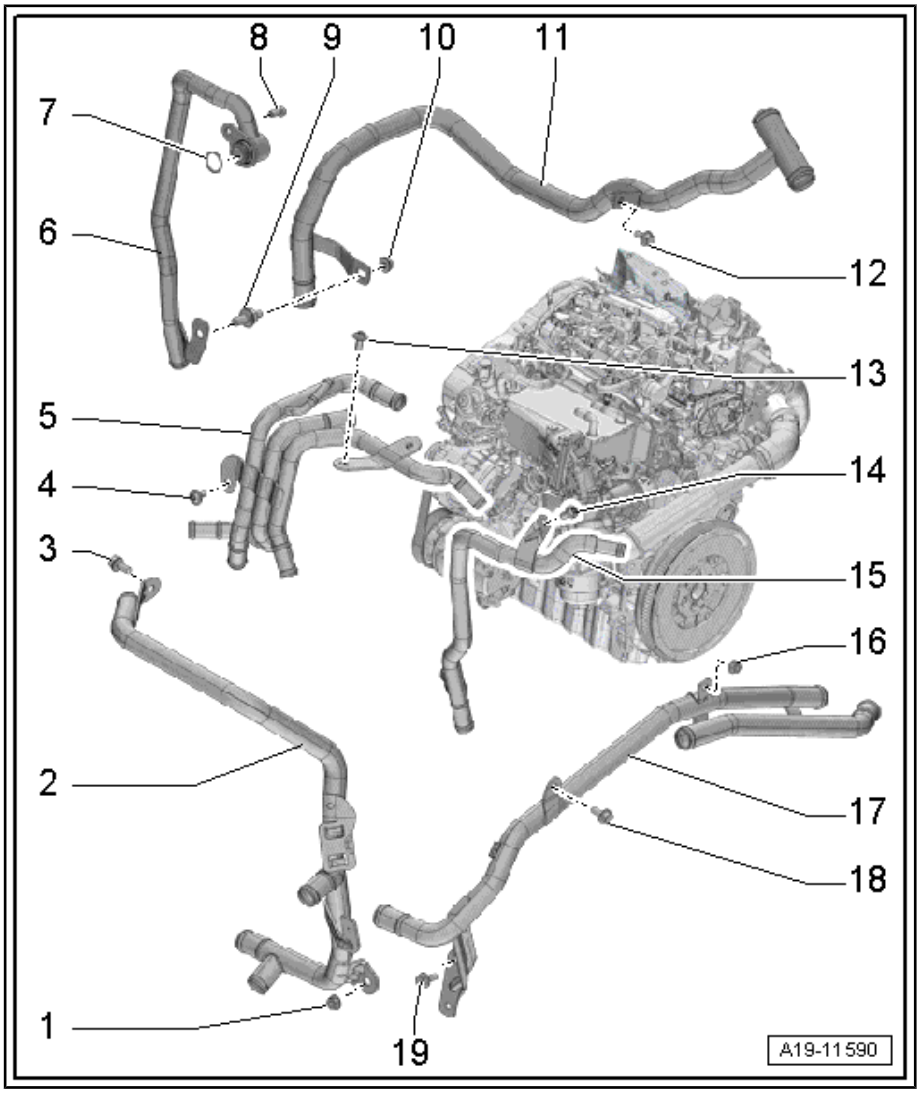
4 - Screw
- ❑ 10 Nm

5 - Coolant pipe - front top
- ❑ different designs; assignment ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Removing and installing ⇒ “3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti”, page 312

6 - Coolant pipe - bottom right
- ❑ Removing and installing ⇒ “3.2.13 Removing and installing the rear right coolant pipe, Octavia III, Yeti”, page 333

7 - O-ring
- ❑ Replace after disassembly
- ❑ Moisten with coolant

8 - Screw
- ❑ 10 Nm



9 - Screw

- ❑ 23 Nm

10 - Nut

- ❑ 10 Nm

11 - The coolant pipe at the rear

- ❑ Removing and installing
  ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329

12 - Screw

- ❑ 10 Nm

13 - Screw

- ❑ 10 Nm

14 - Screw

- ❑ 10 Nm

15 - Coolant pipe - front left.

- ❑ Removing and installing
  ⇒ “3.2.6 Removing and installing the front left coolant pipe, Octavia III, Yeti”, page 322

16 - Nut

- ❑ 10 Nm

17 - Coolant pipe - left

- ❑ different designs; assignment ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Removing and installing
  ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326

18 - Screw

- ❑ 8 Nm

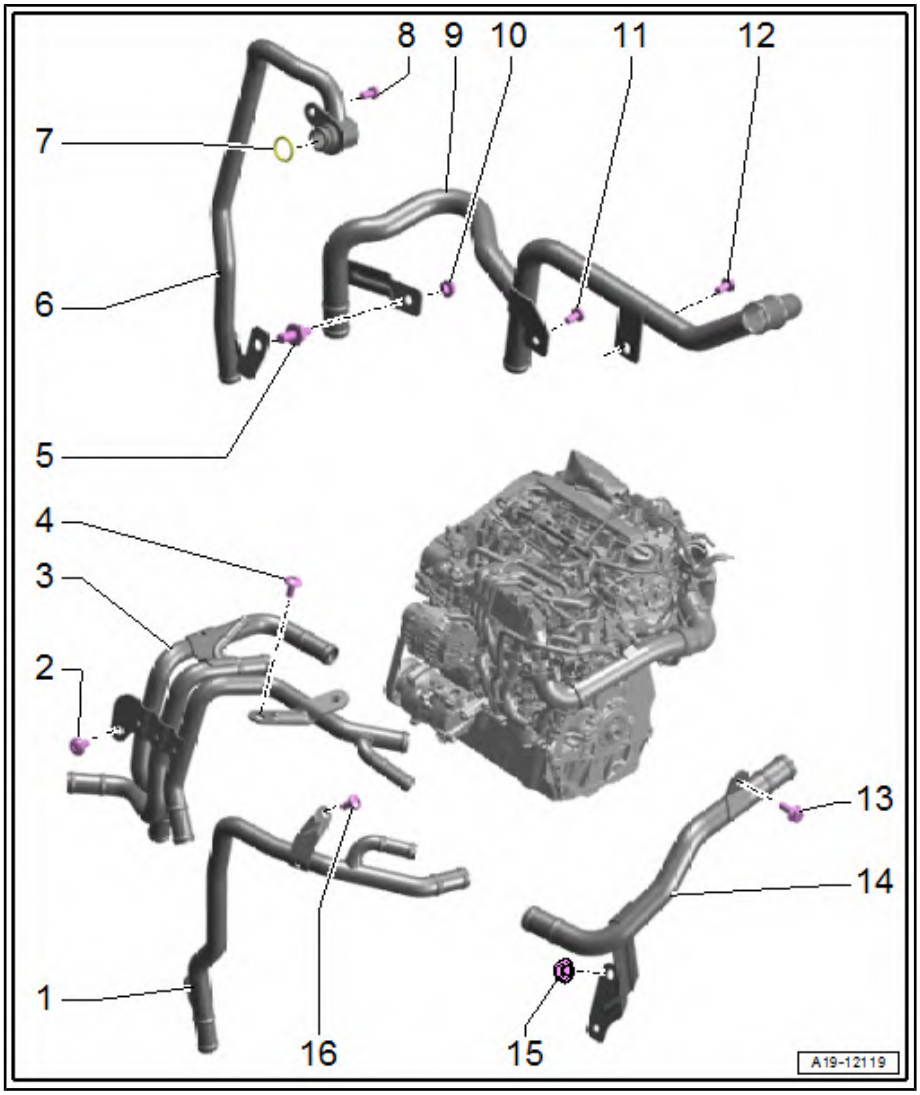
19 - Screw

- ❑ 8 Nm

3.1.2 Summary of components - coolant pipes, Rapid NH

Note

- *The arrows on the coolant pipes and the coolant hose ends must face each other.*
- *Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.*



1 - Front left coolant pipe
- ❑ Removing and installing ⇒ “3.2.4 Removing and installing the front bottom coolant pipe, Rapid NH”, page 318

2 - Screw
- ❑ 10 Nm

3 - Top coolant pipe
- ❑ Removing and installing ⇒ “3.2.2 Removing and installing the top front coolant pipes, Rapid NH”, page 314

4 - Screw
- ❑ 10 Nm

5 - Double screw
- ❑ 23 Nm

6 - Rear right coolant pipe
- ❑ Removing and installing ⇒ “3.2.14 Removing and installing the rear right coolant pipe, Rapid NH”, page 336

7 - O-ring
- ❑ Replace after disassembly
- ❑ Moisten with coolant

8 - Screw
- ❑ 10 Nm

9 - The coolant pipe at the rear
- ❑ Removing and installing ⇒ “3.2.12 Removing and installing the rear coolant pipe, Rapid NH”, page 331

10 - Nut
- ❑ 10 Nm

11 - Screw
- ❑ 8 Nm

12 - Screw
- ❑ 8 Nm

13 - Screw
- ❑ 8 Nm

14 - Left coolant pipe

- ❑ Removing and installing
  ⇒ “3.2.10 Removing and installing the left coolant pipes, Rapid NH”, page 328

15 - Nut

- ❑ 8 Nm

16 - Screw

- ❑ 10 Nm

3.2 Removing and installing coolant pipes

⇒ “3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti”, page 312

⇒ “3.2.2 Removing and installing the top front coolant pipes, Rapid NH”, page 314

⇒ “3.2.3 Removing and installing the front bottom coolant pipe, Octavia III, Yeti”, page 316

⇒ “3.2.4 Removing and installing the front bottom coolant pipe, Rapid NH”, page 318

⇒ “3.2.5 Removing and installing front coolant connection fitting”, page 320

⇒ “3.2.6 Removing and installing the front left coolant pipe, Octavia III, Yeti”, page 322

⇒ “3.2.7 Removing and installing the front left coolant pipe, Rapid NH”, page 324

⇒ “3.2.8 Removing and installing the front right coolant pipe”, page 325

⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326

⇒ “3.2.10 Removing and installing the left coolant pipes, Rapid NH”, page 328

⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329

⇒ “3.2.12 Removing and installing the rear coolant pipe, Rapid NH”, page 331

⇒ “3.2.13 Removing and installing the rear right coolant pipe, Octavia III, Yeti”, page 333

⇒ “3.2.14 Removing and installing the rear right coolant pipe, Rapid NH”, page 336

3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti

Special tools and workshop equipment required

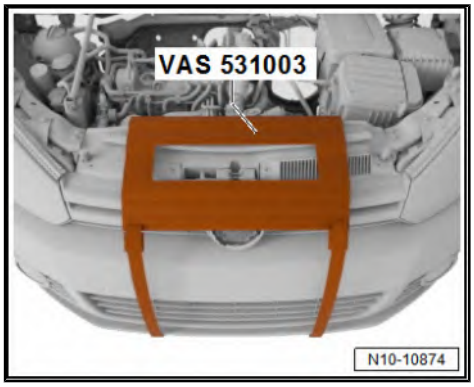
- ♦ Hose binding claw - VAS 6362-
- ♦ Radiator protection mat , e.g. -VAS 531 003-

Removal

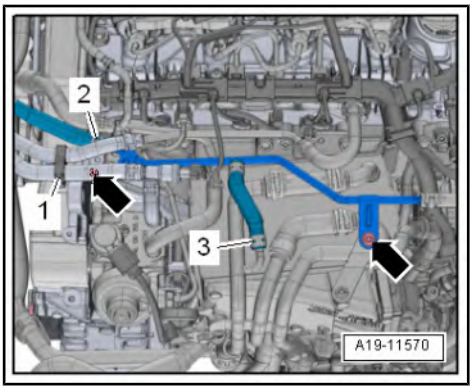
– Remove engine cover
  ⇒ “3.1 Removing and installing engine trim panel”, page 64 .

– Removing fan shroud
  ⇒ “4.6 Removing and installing fan shroud”, page 365 .

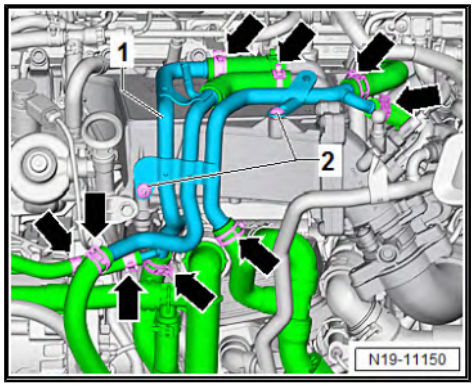
– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.
– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .



– Expose bracket -1- with fuel hoses.
– Unscrew screws -arrows-.
– Loosen hose clamp -3-, remove coolant hose.



– Remove screws -2-.



Note

The number of connected coolant hoses is different, depending on build version.

– Loosen hose clamps -arrows-, remove coolant hoses.

– Remove the front top coolant pipes -1-.

Installation

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

Note

- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Do not re-use used coolant.*

– Watch for coolant hoses with pre-tensioned spring band clamps
⇒ “4.1.7 Coolant hoses with preloaded spring-type clamps”, page 346 .

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

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

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.2.2 Removing and installing the top front coolant pipes, Rapid NH

Special tools and workshop equipment required

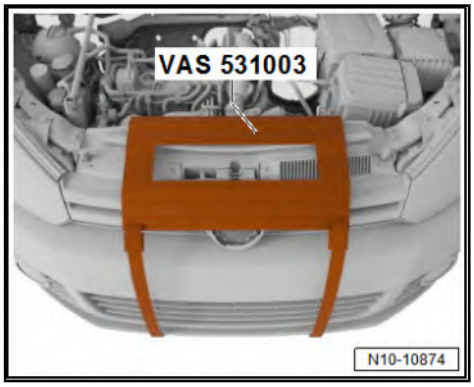
- Hose binding claw - VAS 6340-
- Hose binding claw - VAS 6362-
- Radiator protection mat , e.g. -VAS 531 003-

Removal

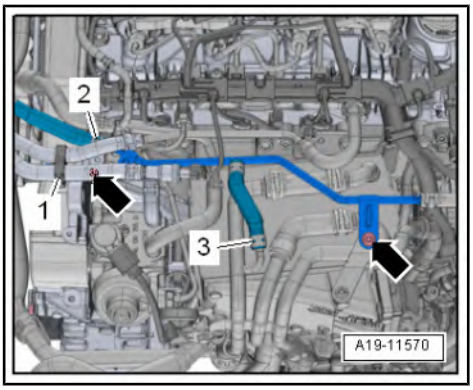
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

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

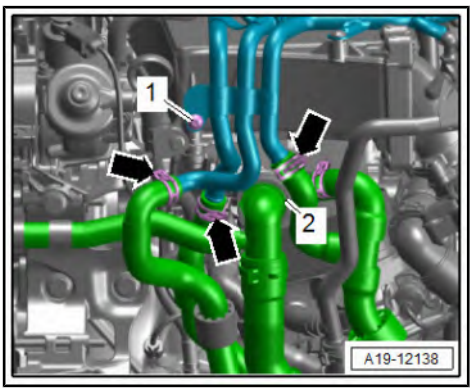
– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



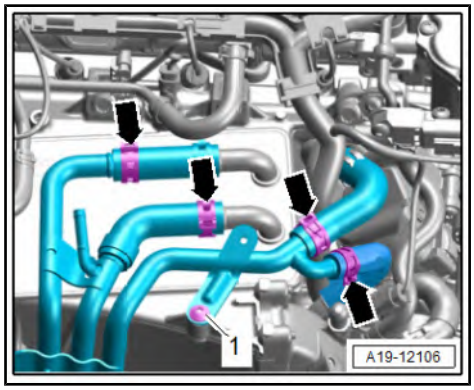
– Loosen hose clamps -2, 3-, remove coolant hoses.
– Disconnect bracket -1- with fuel hoses from the attachments.
– Unscrew screws -arrows-.



– Raise hose clamp -2- and push coolant connection to one side.
– Loosen hose clamps -arrows- and disconnect coolant hoses.
– Unscrew bolt -1-.



– Unscrew bolt -1-.
– Loosen hose clamps -arrows- and disconnect coolant hoses.
– Remove top coolant pipes.



Installing

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

Note

Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .

– Connect coolant connection with quick coupling ⇒ page 346 .
– Watch for coolant hoses with pre-tensioned spring band clamps ⇒ “4.1.7 Coolant hoses with preloaded spring-type clamps”, page 346 .

Note

Do not re-use used coolant.

– Top up coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Install the engine cover ⇒ “3.1 Removing and installing engine trim panel”, page 64 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “3.1 Summary of components - coolant pipe”, page 309

3.2.3 Removing and installing the front bottom coolant pipe, Octavia III, Yeti

Special tools and workshop equipment required

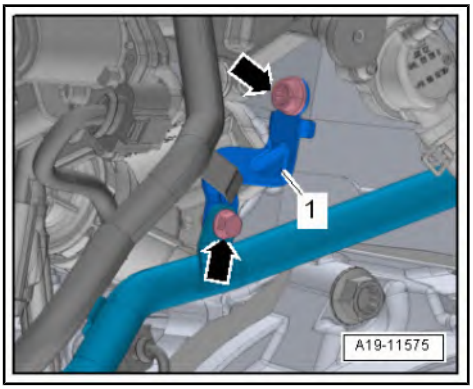
♦ Hose binding claw - VAS 6362-

Removing

– Remove oil filter housing ⇒ “3.5 Removing and installing oil filter housing”, page 209 .
– Remove air guide pipe ⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

For vehicles with engine identification characters CLHA, CLHB, CKFB, CKFC, CUPA, CRVC, CYKA

– Unscrew screws -arrows- and place bracket -1- with electric wiring harness to the side.



For vehicles with engine identification characters CRKB, CRMB, CUNA, CXXA, CXXB, DBKA, CUUA, CUUB, DFSA, DFSB, DDYB, DDYA, DCYA

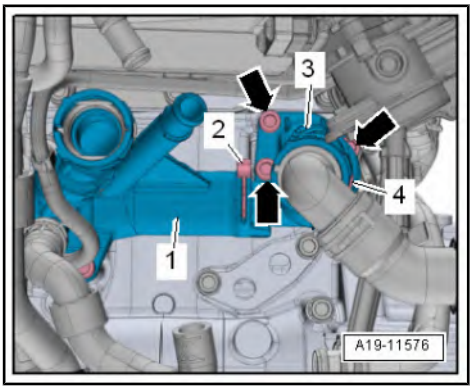
– Remove the throttle valve control unit - J338- ⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491 .

Continued for all vehicles

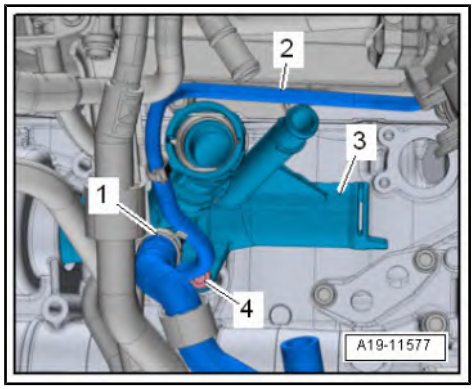
– Raise hose clamp -4-, remove coolant hose.

– Unscrew screws -arrows-.

– Pull off locking clip -2-, pull off coolant thermostat housing -3- from bottom front -1- and remove.



– 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

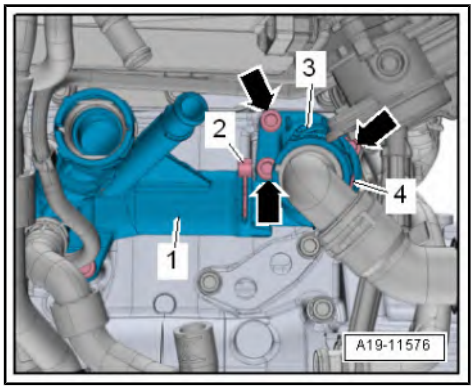
Special tools and workshop equipment required

- 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 .

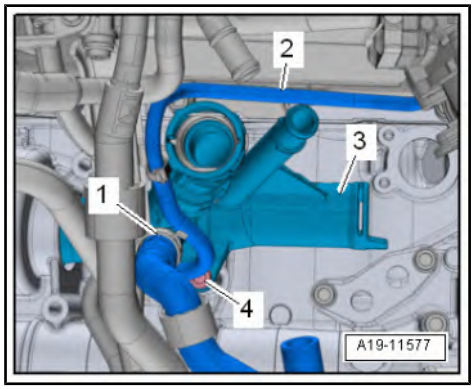
– Raise hose clamp -4-, remove coolant hose.
– Unscrew screws -arrows-.
– Pull off locking clip -2-, pull off coolant thermostat housing -3- from bottom front -1- and remove.



– 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.*

♦ *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 the throttle valve control unit - J338-
⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491 .

– 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

3.2.5 Removing and installing front coolant connection fitting

Special tools and workshop equipment required

♦ Hose binding claw - VAS 6362-

♦ Radiator protection mat , e.g. -VAS 531 003-

Removing

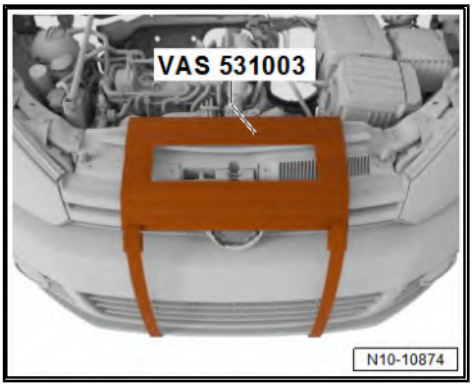
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64

– Drain coolant ⇒ “1.4 Filling with coolant”, page 235

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

– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

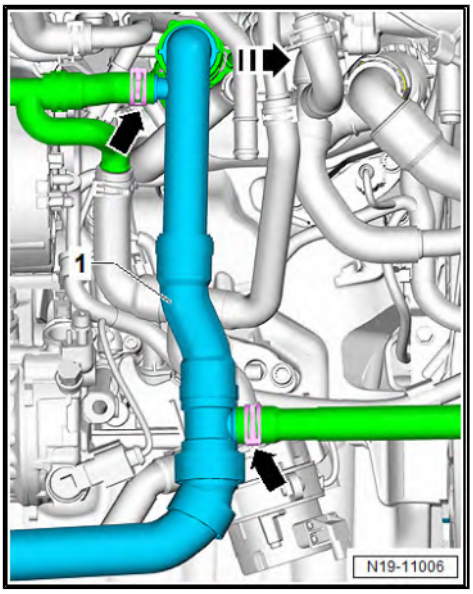
– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



– Open clamps -arrows-.

– Disconnect coolant hoses.

– Unlock retaining clip in -direction of arrow- and pull off the connection fitting -1-.



Installing

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

Note

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 .

Note

Do not re-use used coolant.

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

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

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.2.6 Removing and installing the front left coolant pipe, Octavia III, Yeti

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-

Removing

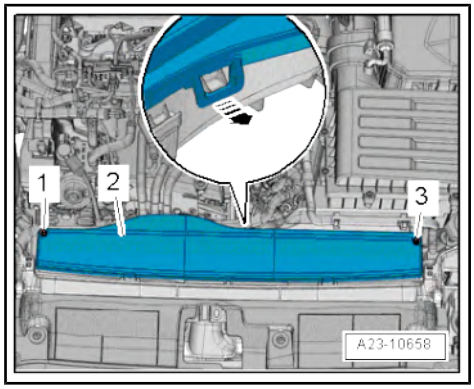
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

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

For vehicles Octavia III

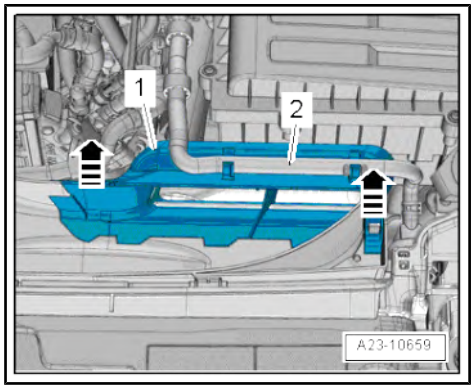
– Unscrew screws -1-, -3-.

– Unlock catch -arrows-, remove cover-2-.



– Detach coolant hose -2-.

– Unlock catches -arrows-, remove top part-1- of air guide.

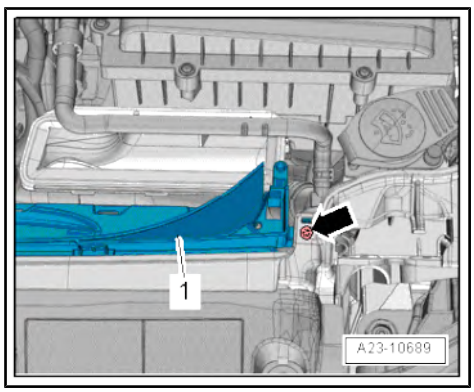


– Release screw left and right -arrow-.

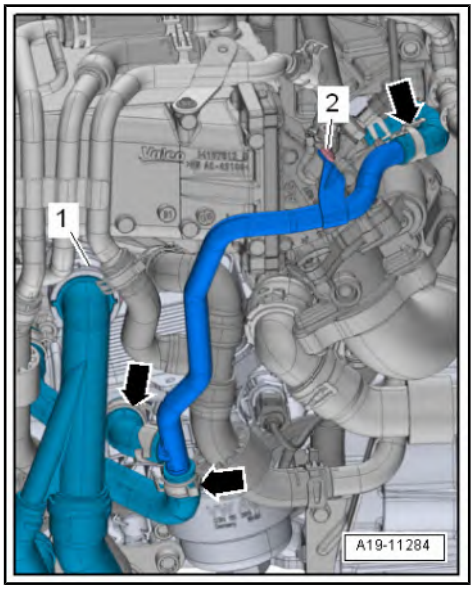
– Unclip and remove bottom part -1- of air guide.

Continued for all vehicles

Version 1



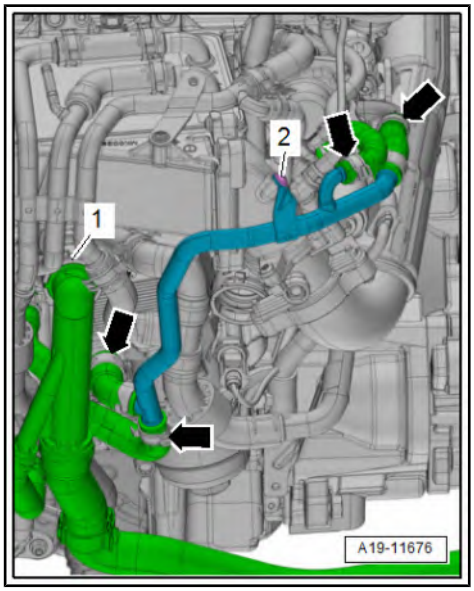
– Raise holding clamp -1-, remove coolant connection fittings.
– Release screw -2-.
– Loosen hose clamps -arrows-, remove coolant hoses.
– Remove the front left coolant pipe.



Version 2

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

– Raise holding clamp -1-, remove coolant connection fittings.
– Release screw -2-.
– Loosen hose clamps -arrows-, remove coolant hoses.
– Remove the front left coolant pipe.



Installing

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

Note

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 .

Note

Do not re-use used coolant.

– Top up coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

Tightening torques - summaries of components

Note

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

◆ ⇒ “3.1 Summary of components - coolant pipe”, page 309
◆ ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.2.7 Removing and installing the front left coolant pipe, Rapid NH

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-
- Radiator protection mat , e.g. -VAS 531 003-

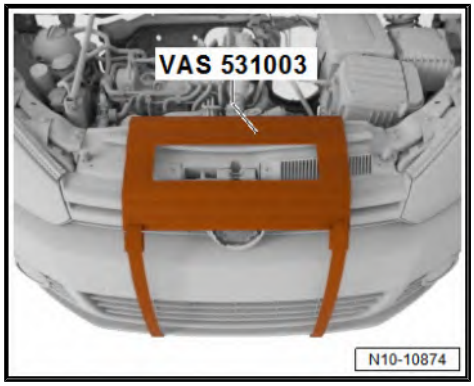
Removal

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

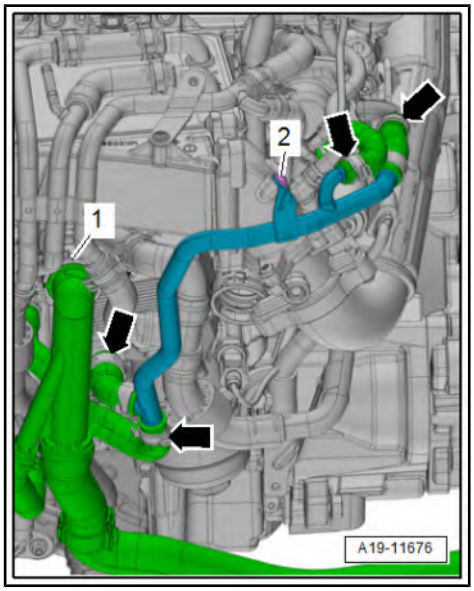
– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .

– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



– Raise holding clamp -1-, remove coolant connection fittings.
– Release screw -2-.
– Loosen hose clamps -arrows-, remove coolant hoses.
– Remove the front left coolant pipe.



Installing

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

Note

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 .
– Install fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

Note

Do not re-use used coolant.

– Top up coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “3.1 Summary of components - coolant pipe”, page 309

3.2.8 Removing and installing the front right coolant pipe

Special tools and workshop equipment required

♦ Hose binding claw - VAS 6340-
♦ Hose binding claw - VAS 6362-

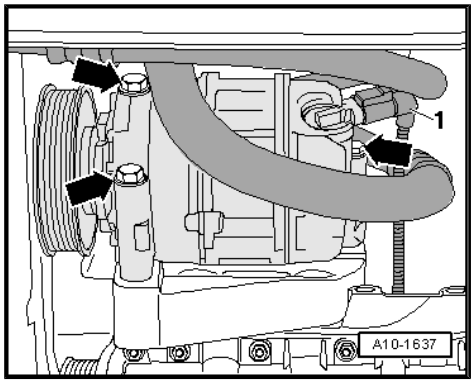
Note

Various hose variants are used for the cooling system, which may vary slightly from the figures in the description
⇒ “1.1 Connection diagram - coolant hoses”, page 217 .

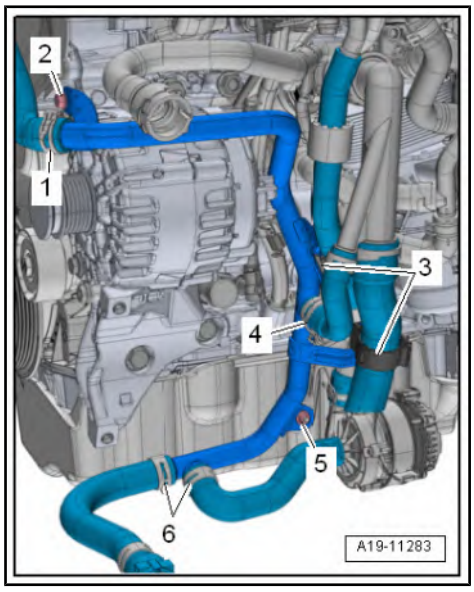
Removing

– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Remove V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

– Remove AC compressor with connected refrigerant hoses from the holder ⇒ Heating, Air Conditioning; Rep. gr. 87 ; AC compressor; removing and installing AC compressor and strap to the right side.



– Loosen hose clamps -1-, -4-, -6-, remove coolant hoses.
– Unscrew nut -5- and screw -2-.
– Expose coolant hoses -3-, remove front right coolant hose.



Installing

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

Note

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 .
– Install the V-ribbed belt
⇒ “1.3 Removing and installing V-ribbed belt”, page 69 .

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.

- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- Removing and installing AC compressor ⇒ Heating, Air Conditioning; Rep. gr. 87 ; AC compressor .

3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti

Special tools and workshop equipment required

- Hose binding claw - VAS 6340-

Removing

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

– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

Vehicles with dual clutch gearbox

– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

Continued for all other vehicles

– Screw cable support bracket off the gearbox and press slightly to the side ⇒ Rep. gr. 34 ; shift mechanism .

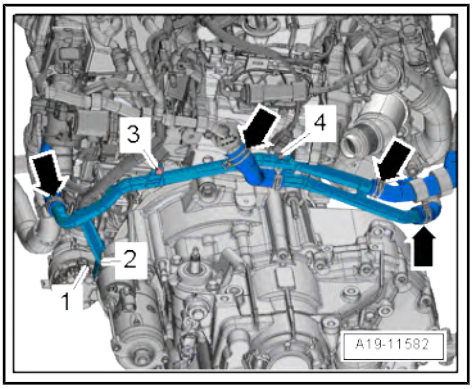
Vehicles without gear oil cooler

– Expose electric wiring loom -1-.

– Release nut -4- and screws -2-, -3-.

– Loosen hose clamps -arrows-, remove coolant hoses.

– Remove the left coolant pipes.



Vehicles with gear oil cooler

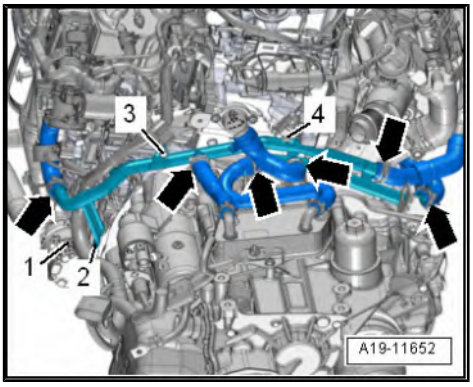
– Expose electric wiring loom -1-.

– Release nut -4- and screws -2-, -3-.

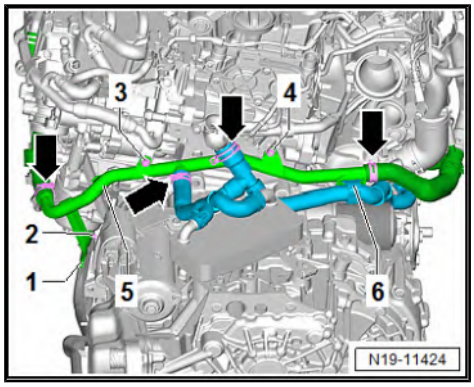
– Loosen hose clamps -arrows-, remove coolant hoses.

– Remove the left coolant pipes.

Vehicles with a coolant pipe on the left



– Expose electric wiring loom -1-.
– Release nut -4- and screws -2- and -3-.
– Unclip coolant hose -6- from the collant pipe -5-.
– Loosen hose clamps -arrows-, remove coolant hoses.
– Remove the left coolant pipes.



Vehicles with dual clutch gearbox

– Pull left coolant pipe forwards.
– Thread the coolant out between exhaust manifold and gearbox oil filter.

Installation

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

Note

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 .

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.

Component	Tightening torque
Charge air pipe screw clamp	5.5 Nm

◆ ⇒ “3.1 Summary of components - coolant pipe”, page 309
◆ ⇒ “4.1 Assembly overview - air filter housing”, page 473
◆ ⇒ “5.1 Assembly overview - intake manifold”, page 481
◆ Control cables - Overview of components ⇒ Rep. gr. 34 ; Shift mechanism

3.2.10 Removing and installing the left coolant pipes, Rapid NH

Special tools and workshop equipment required

◆ Hose binding claw - VAS 6340-

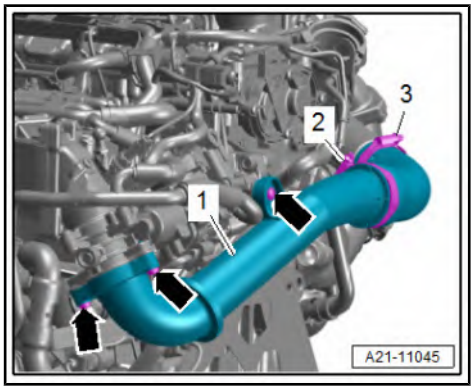
Removing

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

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

– Unscrew screws -arrows-.

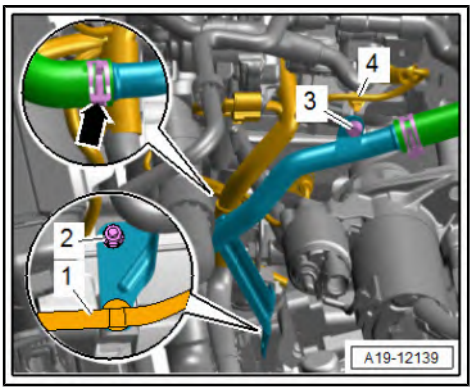
– Loosen hose clamp -2-, remove air guide pipe -1-.



– Expose the electric wiring loom -1-.

– Unscrew nut -2- and screw -3-.

– Disconnect coolant hose from left coolant pipe and take off coolant pipe.



Installing

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

Note

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 .

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.

- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “2.1 Summary of components - charge air system”, page 409
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti

Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-

♦ Hose binding claw - VAS 6362-

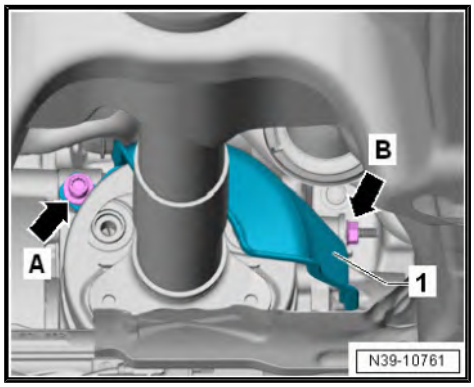
Removing

– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

Vehicles with four-wheel drive

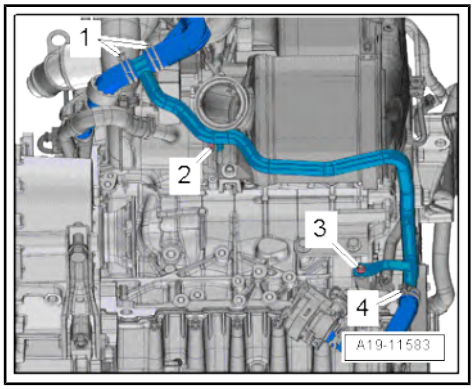
– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Unscrew screws -arrows- and remove heat shield -1-.



Continued for all vehicles

– Place catch pan - VAS 6208- underneath.



– Loosen hose clamp-4-, remove coolant hose, allow coolant to drain.
– Loosen hose clamps -1-, remove coolant hoses.
– Release nut -3- and screw -2-, remove rear coolant pipe.

Installing

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

Note

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 .

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.

- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- Sound damper - overview of components ⇒ External body-work; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,

3.2.12 Removing and installing the rear coolant pipe, Rapid NH

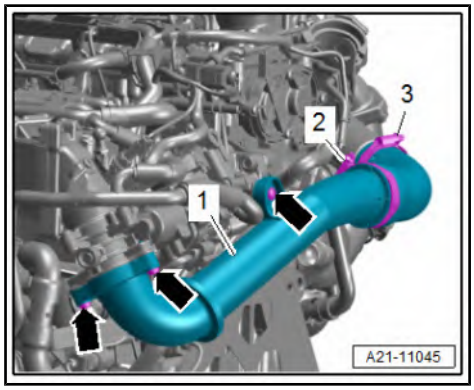
Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6340-
- Hose binding claw - VAS 6362-

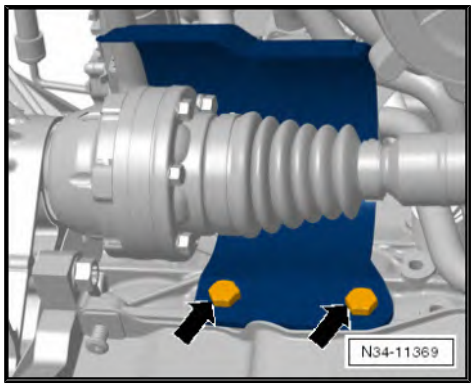
Removing

– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Remove air filter housing
⇒ “4.2 Removing and installing air filter housing”, page 476 .

– Unscrew screws -arrows-.
– Loosen hose clamp -2-, remove air guide pipe -1-.
– Remove the front left and right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner .

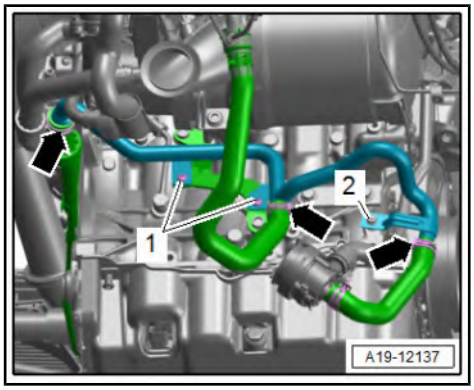


– Release screws -arrows- and remove heat shield for right drive shaft.



– Loosen hose clamps -arrows- and disconnect coolant hoses.

– Unscrew screws -1- and nuts -2- and remove rear coolant pipe.



Installing

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

Note

Secure all hose connections with hose clamps which comply with the series design ⇒ 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 .

– Installing heat shield for cardan shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; removing and installing heat shield for drive shaft .

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.

- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “2.1 Summary of components - charge air system”, page 409
- ⇒ “4.1 Assembly overview - air filter housing”, page 473
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing front wheelhouse liner

3.2.13 Removing and installing the rear right coolant pipe, Octavia III, Yeti

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-

Removing

Note

Fit all heat protection sleeves on again in the same place when installing.

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

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

– Remove rear coolant pipe
⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

– Remove left coolant pipe
⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Detach the connection fitting from the exhaust gas turbocharger
⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407 .

Vehicles with Differential pressure encoder - G505-

– Remove the differential pressure encoder - G505- from the cylinder head cover
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

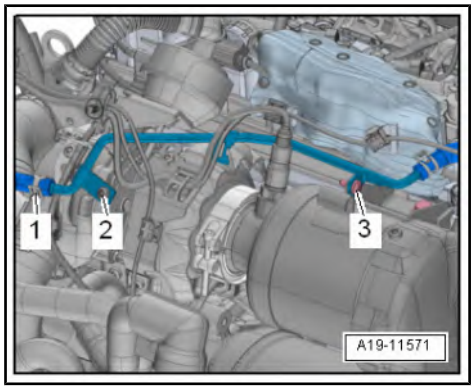
Vehicles with differential pressure encoder - G505- and with pressure sensor 1 for exhaust gas - G450-

– Remove the differential pressure transmitter - G505- and pressure sensor 1 for exhaust gas - G450- from the cylinder head cover
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

Vehicles with coolant pipe above the exhaust gas cleaner

– Loosen hose clamp -1-, remove coolant hose.

– Unscrew screw -2-, remove screw -3- and swivel coolant line to the side.

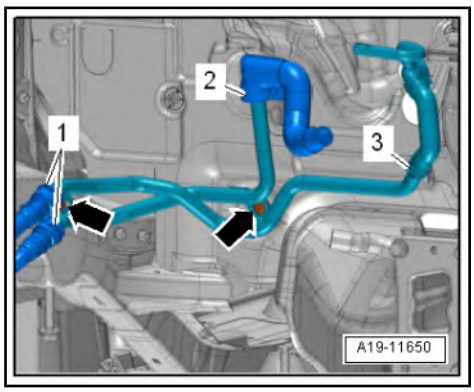


Continued for all vehicles

– Disconnect electrical connectors on the bulkhead and put electrical cables to one side
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .

Vehicles fitted with auxiliary heating

– Unscrew nuts -arrows- and push the coolant pipes slightly to the side.

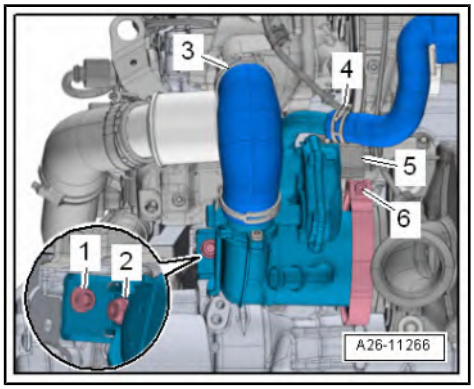


Vehicles with four-wheel drive

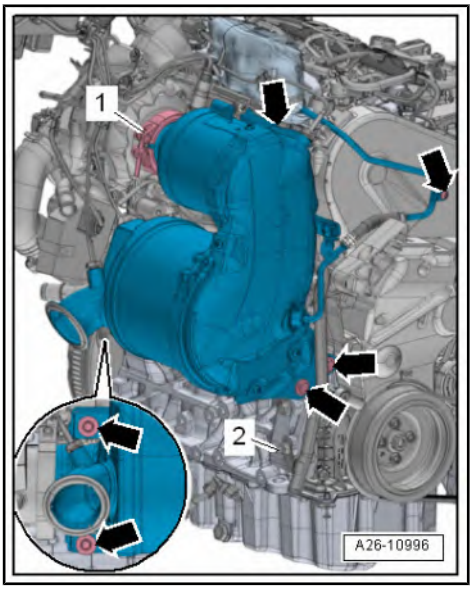
– Unscrew drive shaft from the angle gearbox on the right ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Summary of components - drive shaft .

Continued for all vehicles

– Press heat protection sleeve to the side, disconnect electrical plug connection -5-.
– Loosen hose clamp -3-, remove air guide hose.
– Loosen hose clamp -4-, remove coolant hose.
– Unscrew screw -1-, loosen screw -2-.

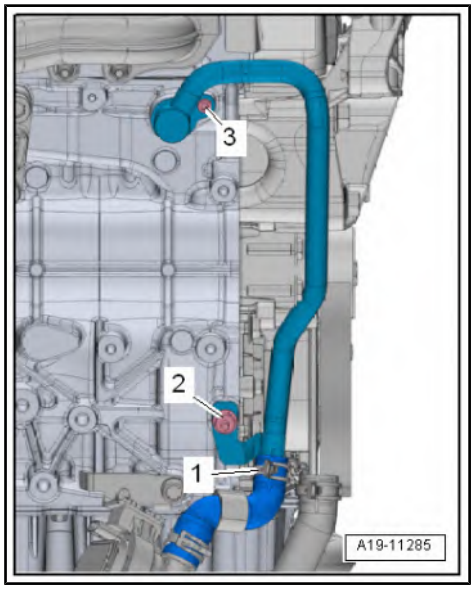


– Loosen screw -1- and remove clamping sleeve.
– Slacken the double screw -2-, press coolant pipe backwards slightly.
– Unscrew screws -arrows-, push exhaust gas cleaning module and exhaust gas recirculation cooler backwards.



– Loosen hose clamp -1-, remove coolant hose.

– Unscrew double screw -2- and screw -3-, remove rear right coolant pipe.



Installing

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

Note

- *Replace O-ring 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 .

– Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

– Install pre-exhaust pipe ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Install the rear coolant pipe ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

– Install the left coolant pipe ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

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.

- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “1 Exhaust pipes/silencers”, page 552
- ⇒ Chassis, axles, steering; Rep. gr. 40 ; Propeller shaft; Assembly overview - propeller shaft

3.2.14 Removing and installing the rear right coolant pipe, Rapid NH

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-

Removing

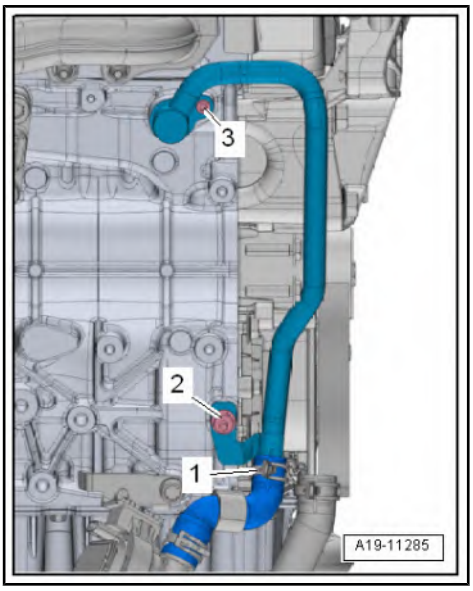
Note

Fit all heat protection sleeves on again in the same place when installing.

– Remove exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

– Loosen hose clamp -1-, remove coolant hose.

– Unscrew double screw -2- and screw -3-, remove rear right coolant pipe.



Installing

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

Note

- *Replace O-ring 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 .

– Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

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.

- ⇒ “3.1 Summary of components - coolant pipe”, page 309

4 Coolers, radiator, radiator fan

⇒ “4.1 Assembly overview - radiator/radiator fan”, page 338

⇒ “4.2 Summary of components - fan shroud and radiator fan”, page 347

⇒ “4.3 Summary of components - radiator blind”, page 351

⇒ “4.4 Removing and installing radiator”, page 353

⇒ “4.5 Removing and installing charge air cooling circuit”, page 362

⇒ “4.6 Removing and installing fan shroud”, page 365

⇒ “4.7 Removing and installing radiator fan V7 ”, page 369

⇒ “4.8 Removing and installing radiator blind”, page 369

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

4.1 Assembly overview - radiator/radiator fan

⇒ “4.1.1 Overview of components - Radiator, Octavia III, Variant 1”, page 338

⇒ “4.1.2 Overview of components - Radiator, Octavia III, Variant 2”, page 340

⇒ “4.1.3 Overview of components - Radiator, Octavia III, Variant 3”, page 341

⇒ “4.1.4 Summary of components - radiator, Rapid NH”, page 343

⇒ “4.1.5 Summary of components - radiator, Yeti”, page 344

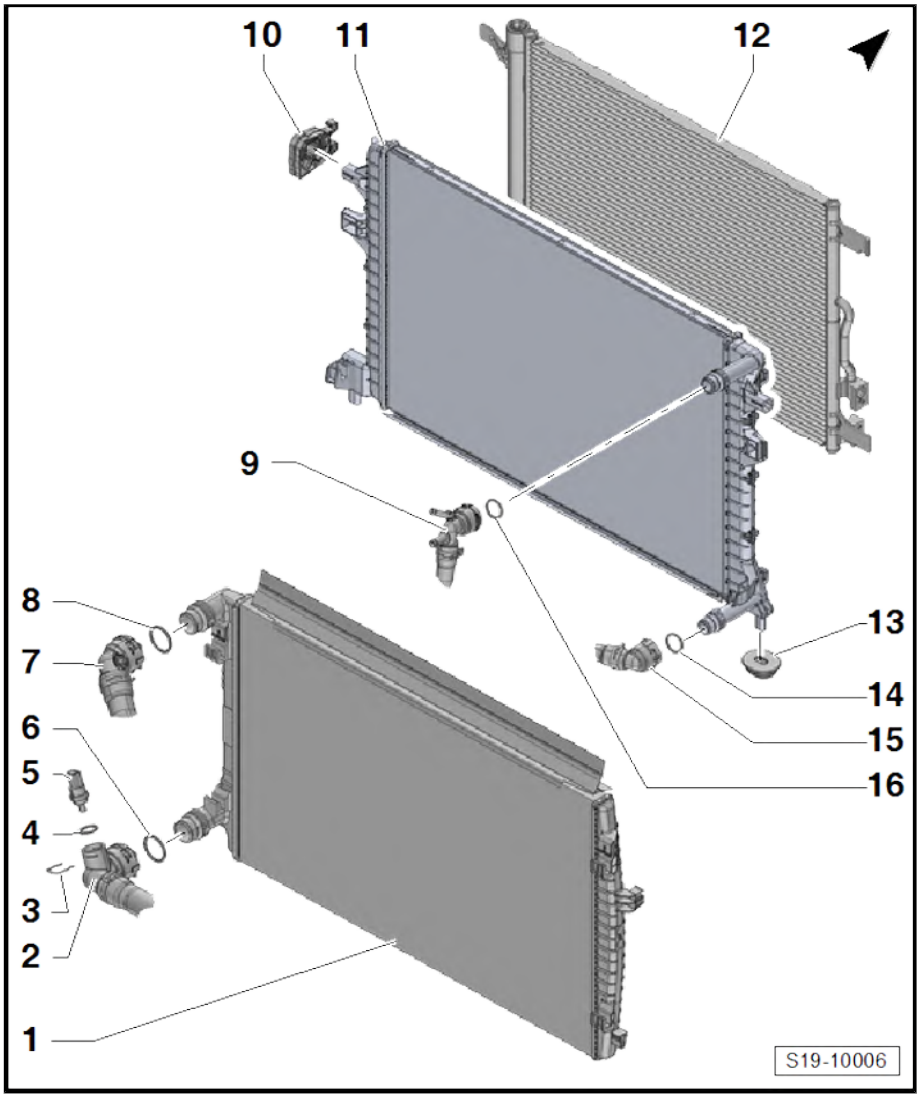
⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

⇒ “4.1.7 Coolant hoses with preloaded spring-type clamps”, page 346

4.1.1 Overview of components - Radiator, Octavia III, Variant 1

Note

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



1 - Coolant radiator

- ❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353
- ❑ After replacing, also replace coolant

2 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

3 - Not fitted

4 - Not fitted

5 - Not fitted

6 - O-ring

- ❑ replace if damaged
- ❑ Moisten with coolant

7 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

8 - O-ring

- ❑ replace if damaged
- ❑ Moisten with coolant

9 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

10 - Radiator mounting

- ❑ if the fuse breaks, replace it with a special screw, see ⇒ ETKA - Electronic Catalogue of Original Parts

11 - Charge air cooling circuit radiator

- ❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353

12 - Condenser

- ❑ installing and removing ⇒ Heating, Air Conditioning; Rep. gr. 87 ; Refrigerant circuit; installing and removing condenser .

13 - Rubber bearing

- ❑ for radiator

14 - O-ring

- ❑ Replace hose if damaged Pos. -15- ⇒ Item 15 (page 339) .
- ❑ Moisten with coolant

15 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

16 - O-ring

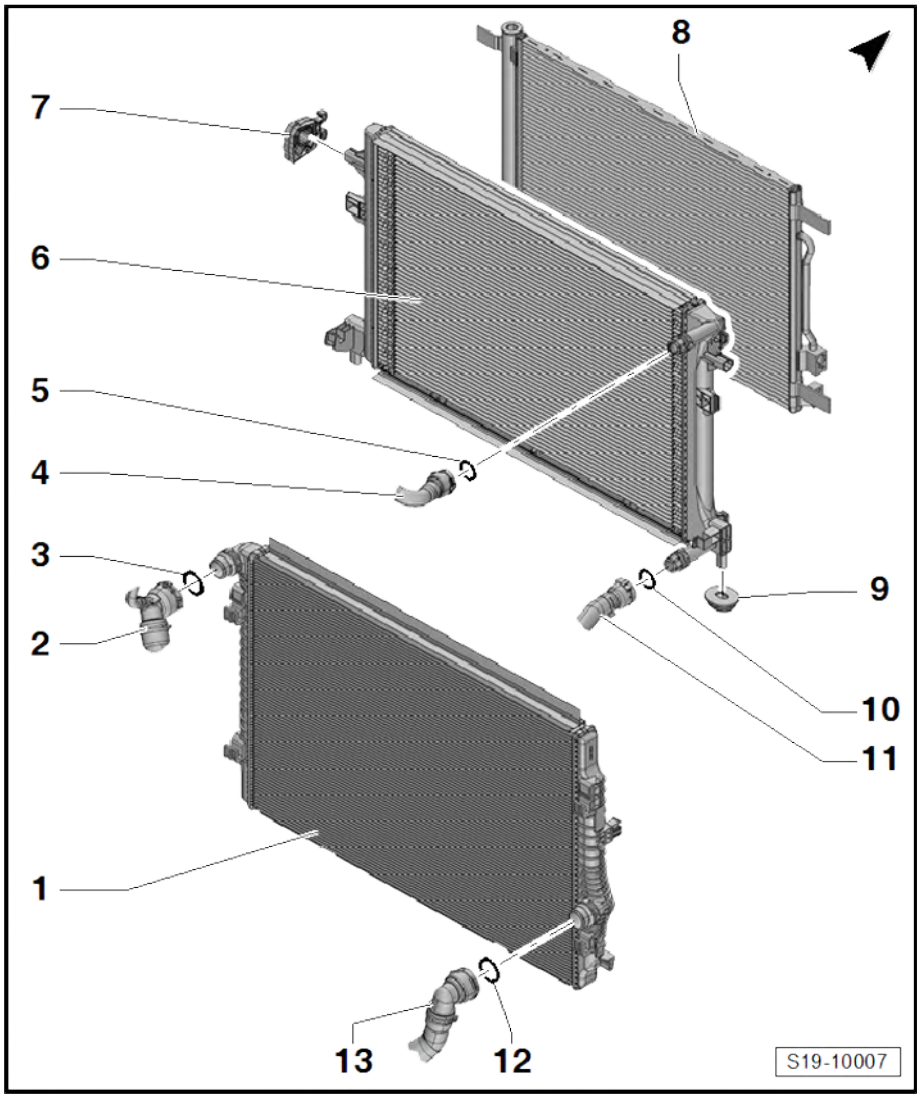
- ❑ Replace hose if damaged Pos. -9- ⇒ Item 9 (page 339) .

❑ Moisten with coolant

4.1.2 Overview of components - Radiator, Octavia III, Variant 2

Note

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



1 - Coolant radiator

❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353

❑ After replacing, also replace coolant

2 - Coolant hose

❑ to remove, raise the holding clamps

❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

3 - O-ring

❑ replace if damaged

❑ Moisten with coolant

4 - Coolant hose

❑ to remove, raise the holding clamps

❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

5 - O-ring

❑ Replace hose if damaged Pos. -4- ⇒ Item 4 (page 340) .

❑ Moisten with coolant

6 - Charge air cooling circuit radiator

❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353

7 - Radiator mounting

❑ if the fuse breaks, replace it with a special screw, see ⇒ ETKA - Electronic Catalogue of Original Parts

8 - Condenser

❑ installing and removing ⇒ Heating, Air Conditioning; Rep. gr. 87 ; Refrigerant circuit; installing and removing condenser .

9 - Rubber bearing

❑ for radiator

10 - O-ring

- ❑ Replace hose if damaged Pos. -11- ⇒ Item 11 (page 341) .
- ❑ Moisten with coolant

11 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

12 - O-ring

- ❑ replace if damaged
- ❑ Moisten with coolant

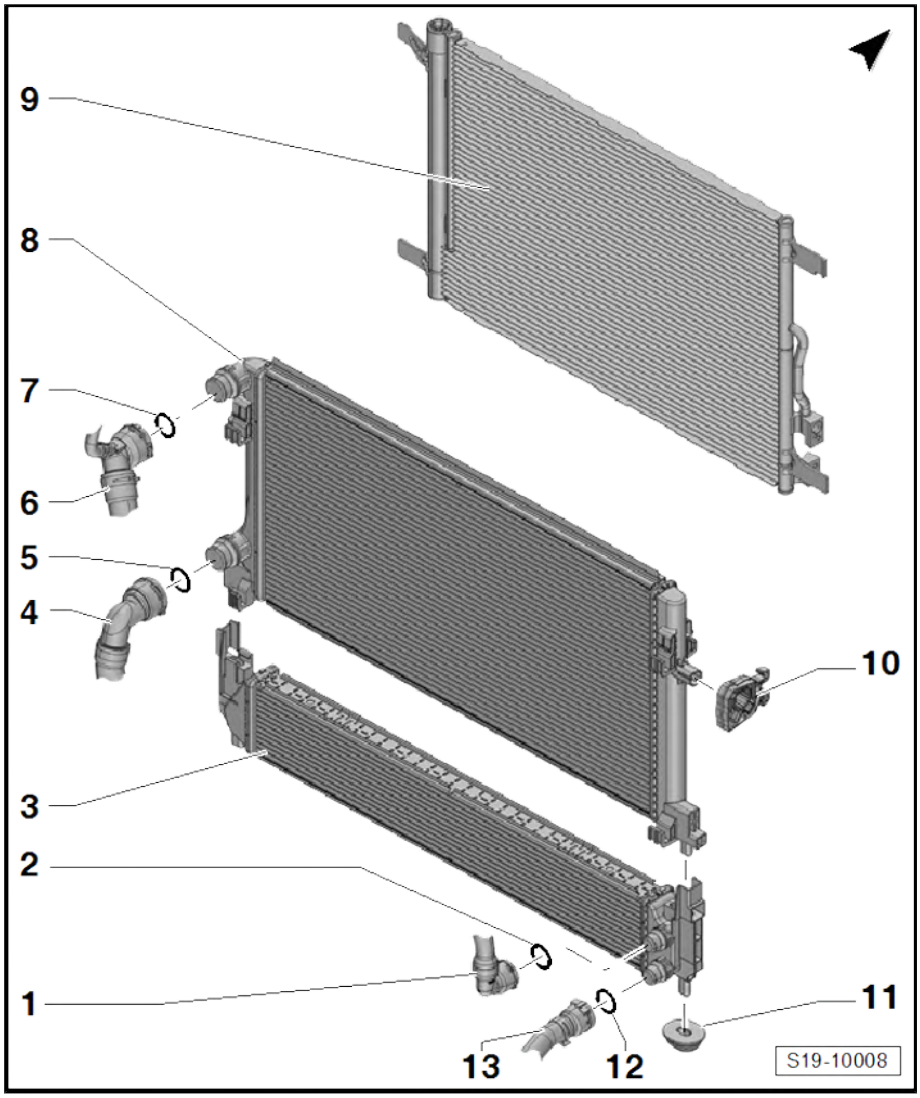
13 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

4.1.3 Overview of components - Radiator, Octavia III, Variant 3

Note

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



1 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

2 - O-ring

- ❑ Replace hose if damaged Pos. -1- ⇒ Item 1 (page 342) .
- ❑ Moisten with coolant

3 - Charge air cooling circuit radiator

- ❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353

4 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

5 - O-ring

- ❑ replace if damaged
- ❑ Moisten with coolant

6 - Coolant hose

- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

7 - O-ring

- ❑ replace if damaged
- ❑ Moisten with coolant

8 - Coolant radiator

- ❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353
- ❑ After replacing, also replace coolant

9 - Condenser

- ❑ installing and removing ⇒ Heating, Air Conditioning; Rep. gr. 87 ; Refrigerant circuit; installing and removing condenser .

10 - Radiator mounting

- ❑ if the fuse breaks, replace it with a special screw, see ⇒ ETKA - Electronic Catalogue of Original Parts

11 - Rubber bearing

- ❑ for radiator

12 - O-ring

- ❑ Replace hose if damaged Pos. -13- ⇒ Item 13 (page 342) .
- ❑ Moisten with coolant

13 - Coolant hose

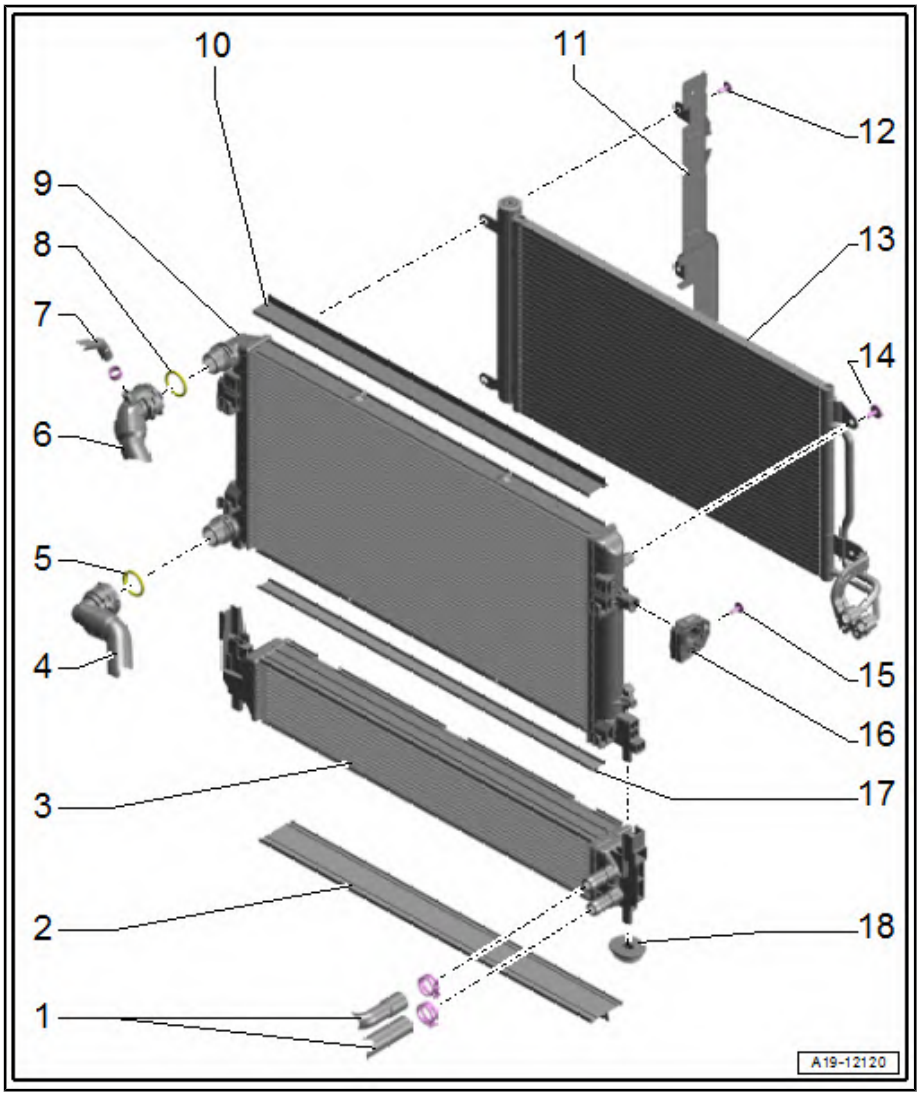
- ❑ to remove, raise the holding clamps

❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

4.1.4 Summary of components - radiator, Rapid NH

Note

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



1 - Coolant hose

❑ for coolant circuit for charge air cooler

2 - Air guide (air guide duct)

3 - Charge air cooling circuit radiator

❑ The coolant radiator and charge air cooling circuit radiator are removed together

❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353

4 - Bottom coolant hose

❑ for coolant circuit for charge air cooler

❑ to remove, raise the holding clamps

❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

5 - O-ring

❑ replace if damaged

❑ Moisten with coolant

6 - Top coolant hose

❑ for coolant circuit for charge air cooler

❑ to remove, raise the holding clamps

❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

7 - Coolant hose

❑ to coolant expansion reservoir

8 - O-ring

❑ replace if damaged

❑ Moisten with coolant

9 - Coolant radiator

❑ Removing and installing ⇒ “4.4 Removing and installing radiator”, page 353

10 - Air guide (air guide duct)

11 - Air guide (air guide duct)

- ❑ Equipment variants

12 - Screw

- ❑ Tightening torques ⇒ Heating, Air Conditioning; Rep. gr. 87

13 - Condenser (radiator)

- ❑ installing and removing ⇒ Heating, Air Conditioning; Rep. gr. 87 ; Refrigerant circuit; installing and removing condenser .

14 - Screw

- ❑ Tightening torques ⇒ Heating, Air Conditioning; Rep. gr. 87

15 - Screw

- ❑ 5 Nm

16 - Radiator mounting

17 - Air guide (air guide duct)

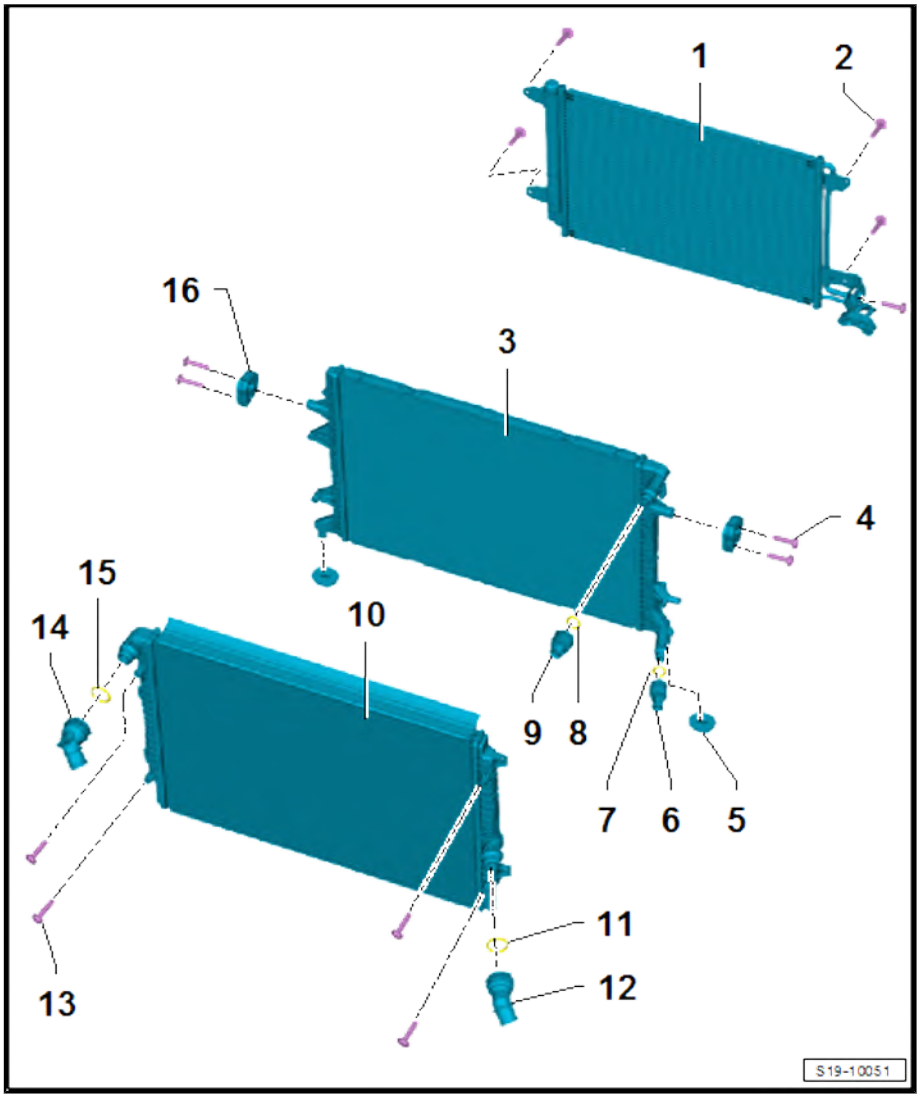
18 - Rubber bearing

- ❑ for charge air cooling circuit radiator

4.1.5 Summary of components - radiator, Yeti

Note

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



1 - Condenser (radiator)

- ❑ installing and removing ⇒ Heating, Air Conditioning; Rep. gr. 87 ; Refrigerant circuit; installing and removing condenser .

2 - Screw

- ❑ Tightening torques ⇒ Heating, Air Conditioning; Rep. gr. 87

3 - Coolant radiator

- ❑ Removing and installing ⇒ “4.4.2 Removing and installing radiator, Yeti”, page 357

4 - Screw

- ❑ 5 Nm

5 - Rubber bearing

- ❑ for radiator

6 - Coolant hose

- ❑ for coolant circuit for charge air cooler
- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

7 - O-ring

- ❑ replace if damaged
- ❑ Moisten with coolant

8 - O-ring

- ❑ replace if damaged
- ❑ Moisten with coolant

9 - Coolant hose

- ❑ for coolant circuit for charge air cooler
- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

10 - Charge air cooling circuit radiator

- ❑ Removing and installing ⇒ “4.5 Removing and installing charge air cooling circuit”, page 362

11 - O-ring

- ❑ Replace hose if damaged Pos. -12- ⇒ Item 12 (page 345) .
- ❑ Moisten with coolant

12 - Coolant hose

- ❑ for coolant circuit for charge air cooler
- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

13 - Screw

- ❑ 5 Nm

14 - Coolant hose

- ❑ for coolant circuit for charge air cooler
- ❑ to remove, raise the holding clamps
- ❑ Connect ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346

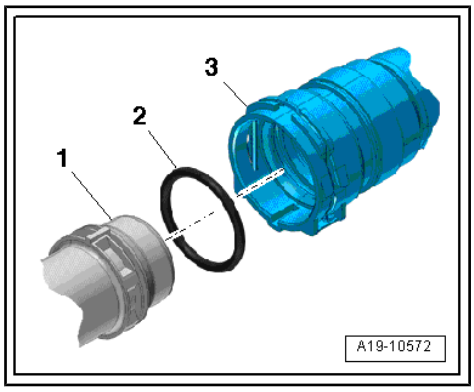
15 - O-ring

- ❑ Replace hose if damaged Pos. -14- ⇒ Item 14 (page 346) .
- ❑ Moisten with coolant

16 - Radiator mounting

4.1.6 Quick couplings of the coolant hoses

Connect coolant hose with quick coupling



– Check the O-ring -2- for damage and replace if necessary.

– Moisten O-ring with coolant and insert into coolant hose.

– Press coolant hose -3- onto connection -1- until there is an audible click.

– Press coolant hose down again and check by pulling that the quick coupling is fully engaged.

4.1.7 Coolant hoses with preloaded spring-type clamps

Special tools and workshop equipment required

- ♦ Hose binding claw - VAS 6362-
- ♦ Release tool - VAS 531 001-

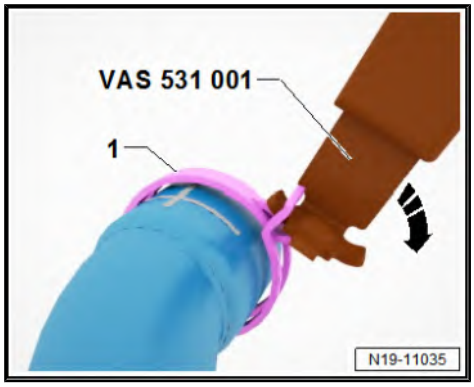
Open clamp

– Press spring-type clamps together with hose tie pliers until the clamp is locked.

– As a result, the clamp is opened and the coolant hose can be removed.

– Clamp cannot be removed from the coolant hose.

Close the clamp



– Install coolant hose.

– Unlock preloaded spring-type clamps as follows. Use the unlocking tool - VAS 531 001- in the spring-type clamp -1-, as shown. Unlock catch.

– To unlock, depending on construction, use the corresponding tool hook.

4.2 Summary of components - fan shroud and radiator fan

⇒ “4.2.1 Summary of components - fan shroud with radiator fan V7 , variant 1”, page 347

⇒ “4.2.2 Summary of components - fan shroud with radiator fan V7 , variant 2”, page 348

⇒ “4.2.3 Summary of components - fan shroud with radiator fan V7 and radiator fan 2 V177 , variant 1”, page 349

⇒ “4.2.4 Summary of components - fan shroud with radiator fan V7 and radiator fan 2 V177 , variant 2”, page 350

4.2.1 Summary of components - fan shroud with radiator fan - V7- , variant 1

1 - Screw

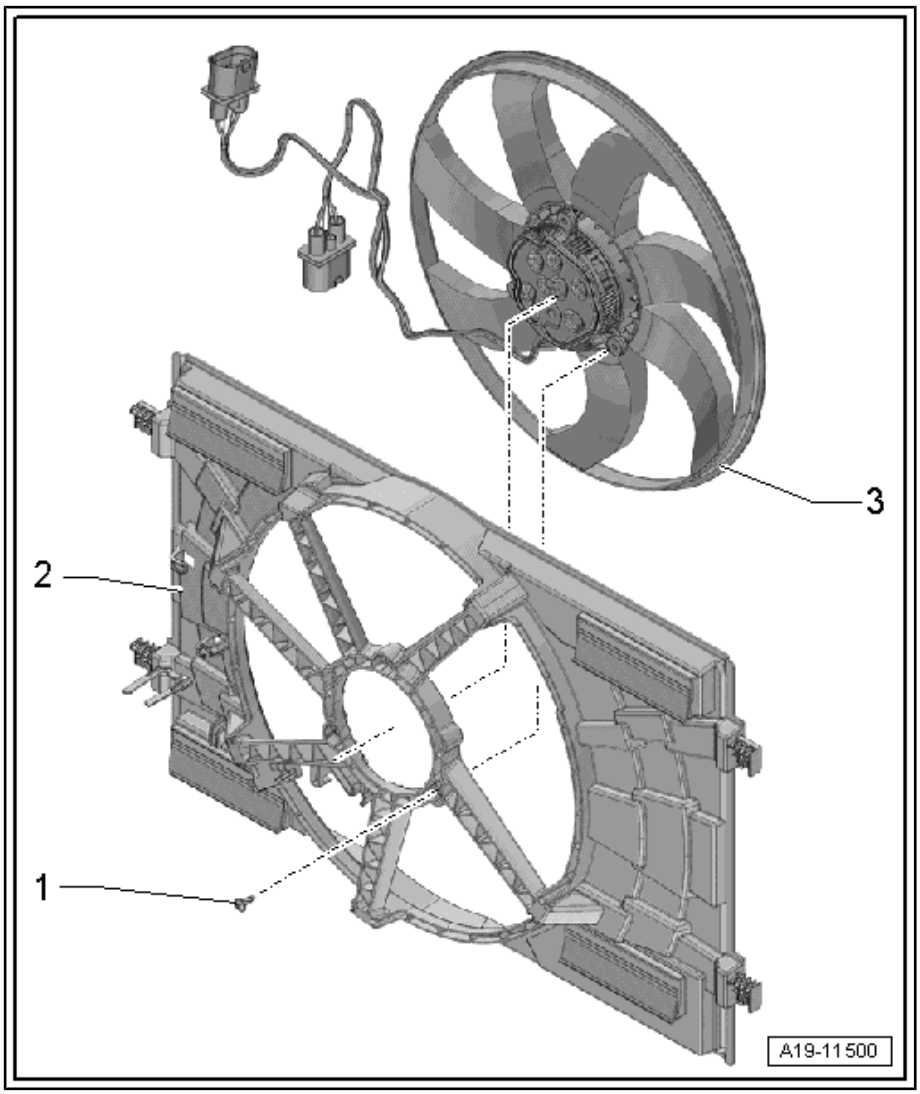
- ❑ 5 Nm

2 - Fan shroud

- ❑ Removing and installing ⇒ “4.6 Removing and installing fan shroud”, page 365

3 - Radiator fan - V7-

- ❑ Removing and installing ⇒ “4.7 Removing and installing radiator fan V7 ”, page 369



4.2.2 Summary of components - fan shroud with radiator fan - V7- , variant 2

1 - Bolt
- ❑ for spreader rivets

2 - Ring (collar) for air guide duct
- ❑ depending on version

3 - Radiator fan - V7-
- ❑ with radiator fan control unit - J293-
- ❑ Removing and installing ⇒ “4.7 Removing and installing radiator fan V7 ”, page 369

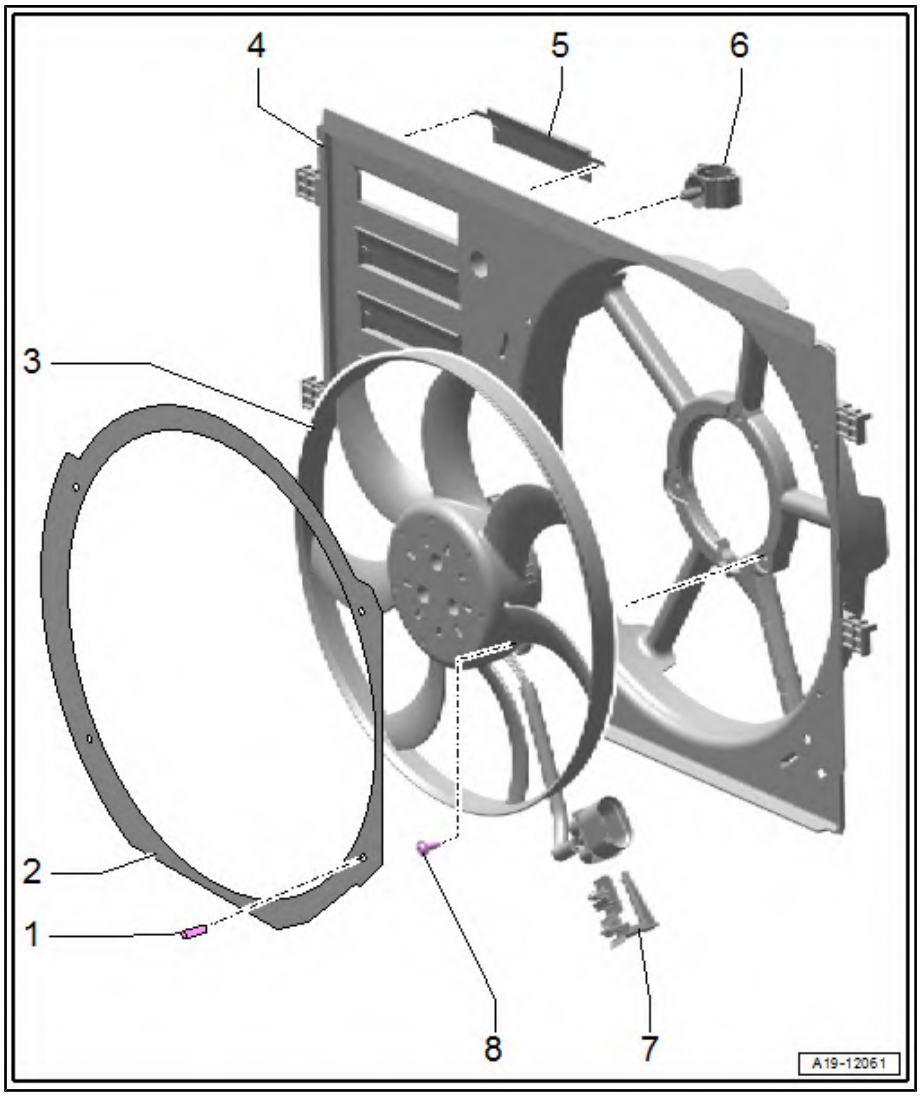
4 - Fan shroud
- ❑ Removing and installing ⇒ “4.6 Removing and installing fan shroud”, page 365

5 - Air flow flap

6 - Fixing clamp
- ❑ for coolant hose
- ❑ depending on version

7 - Mounting bracket
- ❑ for electrical plug connection

8 - Screw
- ❑ 1.5 Nm



4.2.3 Summary of components - fan shroud with radiator fan - V7- and radiator fan 2 - V177- , variant 1

1 - Screw

- ❑ 5 Nm

2 - Fan shroud

- ❑ Removing and installing ⇒ “4.6 Removing and installing fan shroud”, page 365

3 - Screw

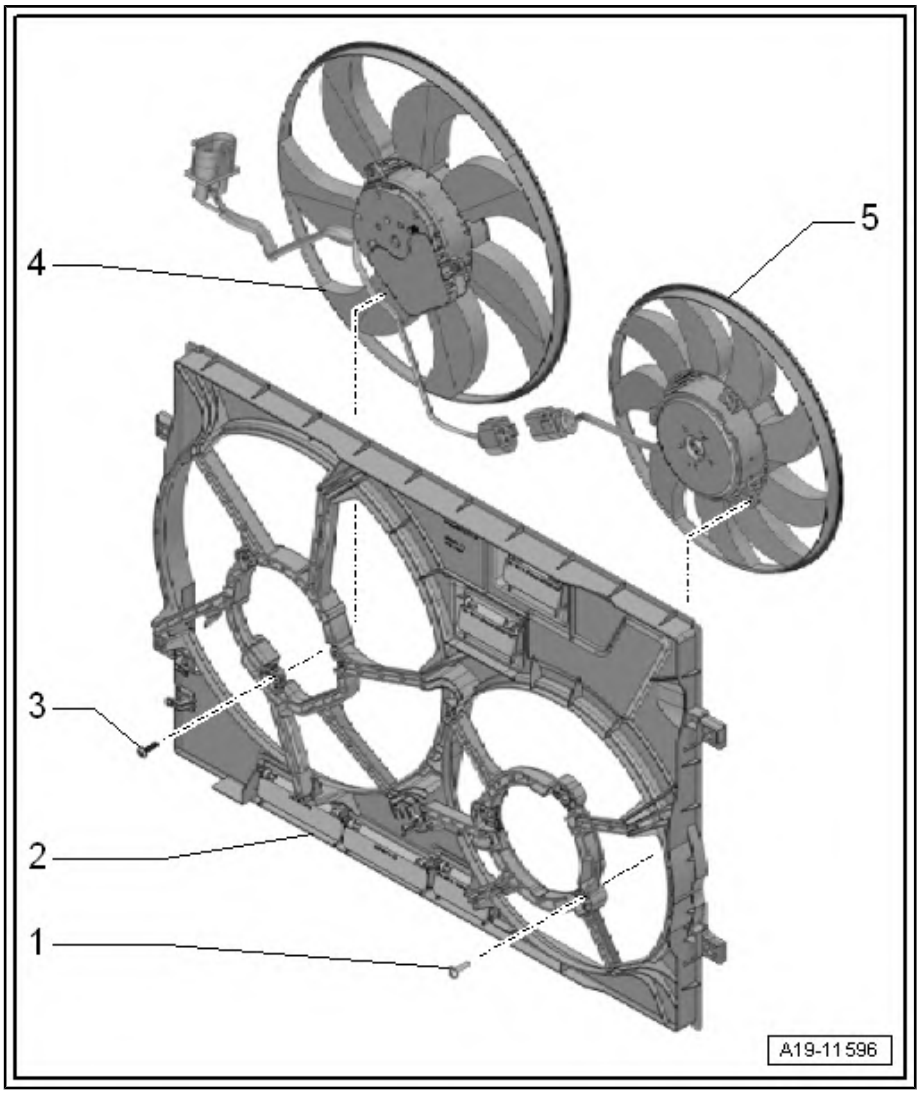
- ❑ 5 Nm

4 - Radiator fan - V7-

- ❑ Removing and installing ⇒ “4.7 Removing and installing radiator fan V7 ”, page 369

5 - Radiator fan 2 - V177-

- ❑ Removing and installing ⇒ “4.7 Removing and installing radiator fan V7 ”, page 369



4.2.4 Summary of components - fan shroud with radiator fan - V7- and radiator fan 2 - V177- , variant 2

1 - Fan shroud

- ❑ Removing and installing ⇒ “4.6.2 Removing and installing fan shroud, Yeti”, page 366

2 - Radiator fan 2 - V177-

- ❑ Removing and installing ⇒ “4.7 Removing and installing radiator fan V7 ”, page 369

3 - Radiator fan - V7-

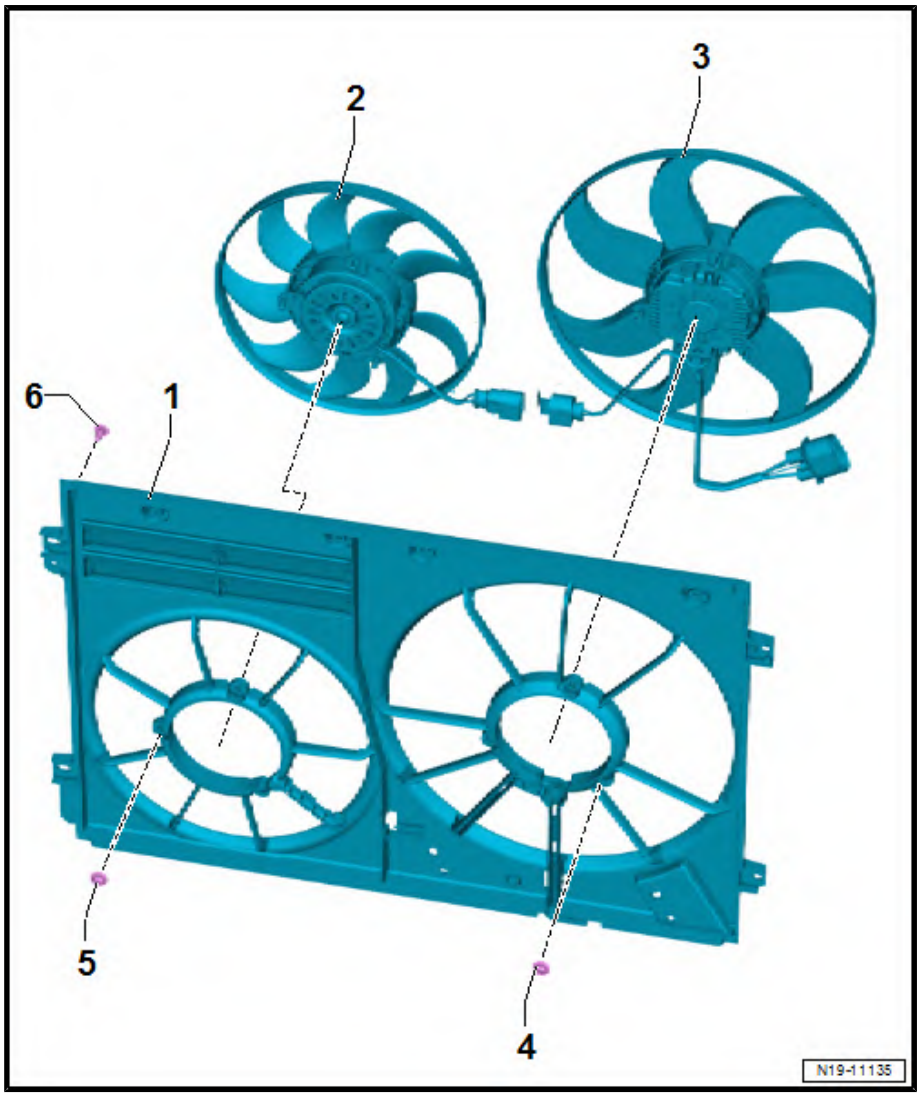
- ❑ Removing and installing ⇒ “4.7 Removing and installing radiator fan V7 ”, page 369

4 - Screw

- ❑ 5 Nm

5 - Screw

- ❑ 5 Nm

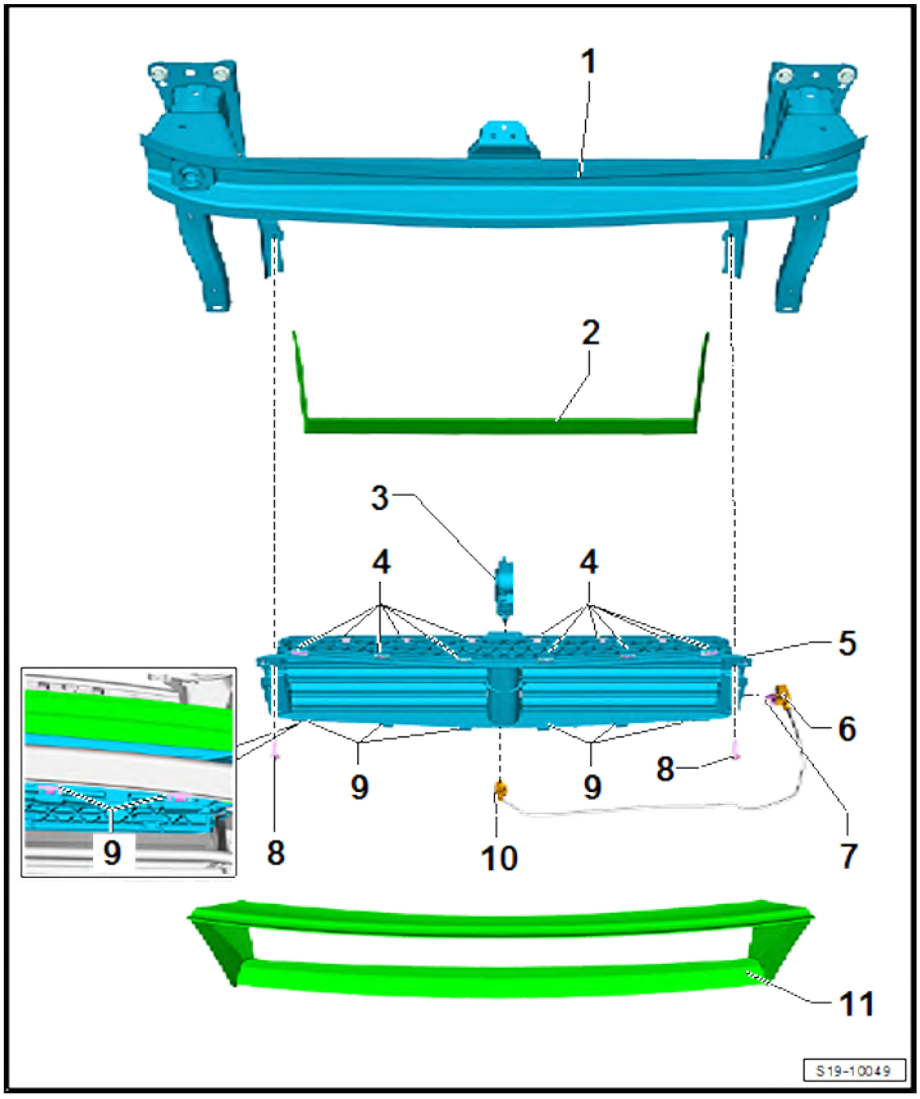


4.3 Summary of components - radiator blind

⇒ “4.3.1 Summary of components - radiator blind”, page 351

⇒ “4.3.2 Summary of components - component parts of the radiator blind”, page 352

4.3.1 Summary of components - radiator blind



1 - Bumper bracket

- ❑ Summary of components ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Summary of components - lock carrier .

2 - Air deflector

- ❑ Bottom

3 - Control motor for radiator blind - V544-

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

4 - Catch pegs

- ❑ for seal

5 - Radiator blind

- ❑ Removing and installing ⇒ “4.8 Removing and installing radiator blind”, page 369

6 - Connector

- ❑ Radiator blind control motor - V544-
- ❑ attached to bracket Pos. -7- ⇒ Item 7 (page 351)
- ❑ ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

7 - Mounting bracket

- ❑ for connector

8 - Screw

- ❑ 8 Nm

9 - Catch pegs

- ❑ for seal

10 - Wiring loom

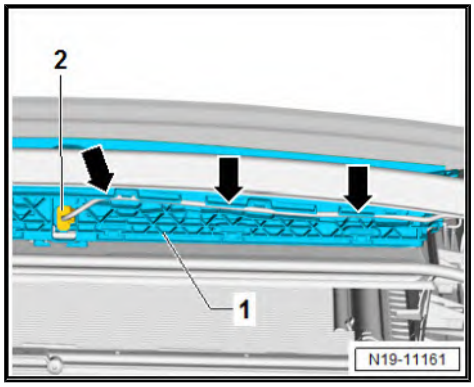
- ❑ Radiator blind control motor - V544-

11 - Seal

- ❑ front

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

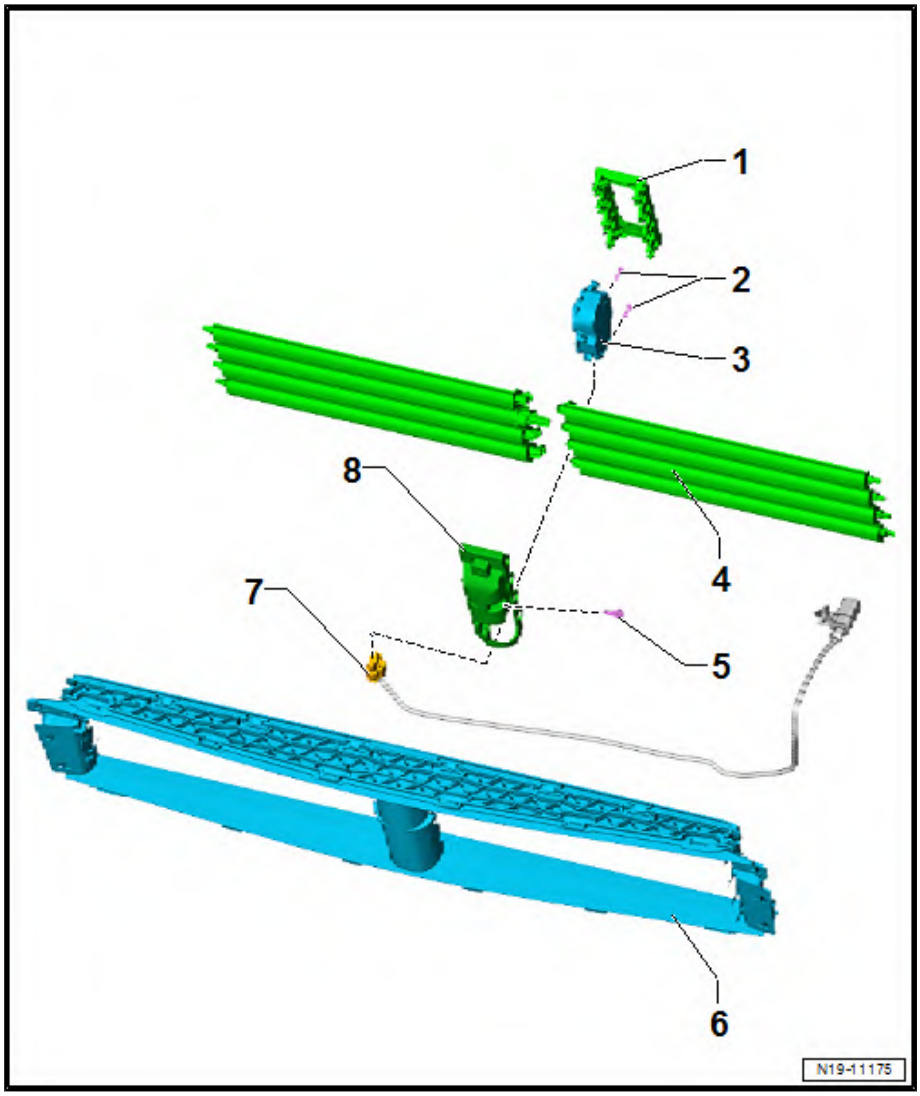
5 - Screw

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

6 - Surround

7 - Wiring loom

8 - Engine mount

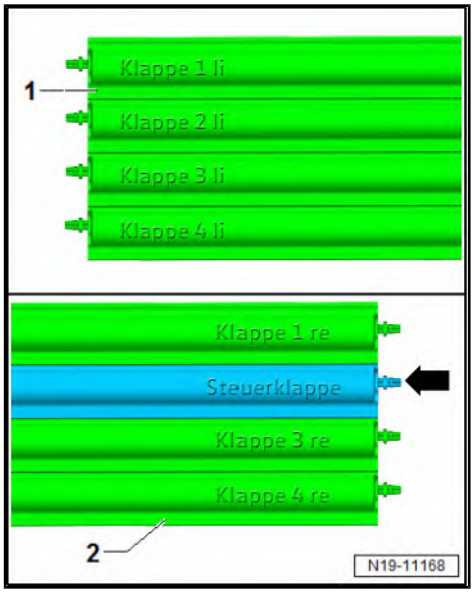


Arrangement of the fins

1 - Left flaps

2 - Right flaps

Šipka - Control flap



4.4 Removing and installing radiator

⇒ “4.4.1 Removing and installing radiator, Octavia III”, page 353

⇒ “4.4.2 Removing and installing radiator, Yeti”, page 357

⇒ “4.4.3 Removing and installing radiator, Rapid NH”, page 359

4.4.1 Removing and installing radiator, Octavia III

Note

The coolant radiator and charge air cooling circuit radiator are removed together.

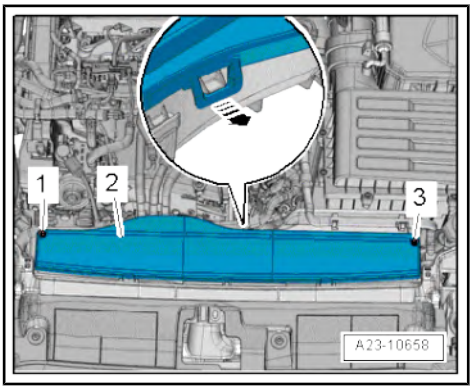
Removing

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

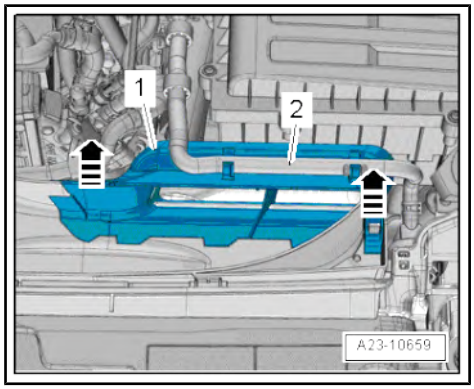
– Remove the front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; removing and installing bumper .

– Unscrew screws -1-, -3-.

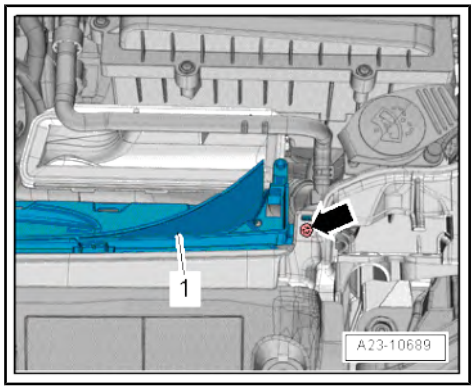
– Unlock catch -arrows-, remove cover-2-.



– Detach coolant hose -2-.
– Unlock catches -arrows-, remove top part-1- of air guide.

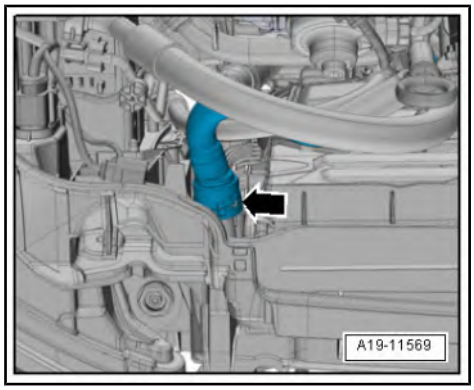


– Release screw left and right -arrow-.
– Unclip and remove bottom part -1- of air guide.
– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .



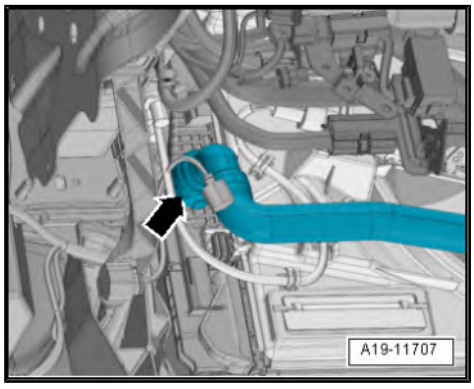
Vehicles with radiator versions 1 and 2

– Raise holding clamp -arrow-, remove top right coolant hose from charge air cooling circuit radiator.



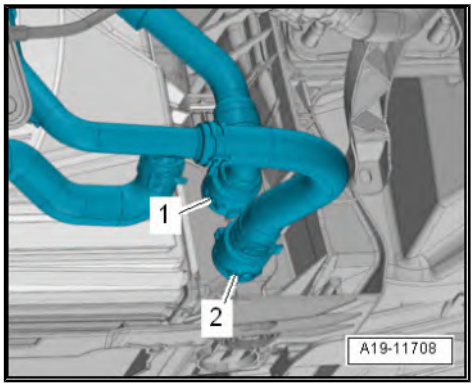
Vehicles with radiator variant 3

– Raise holding clamp -arrow-, remove bottom left coolant hose from radiator.

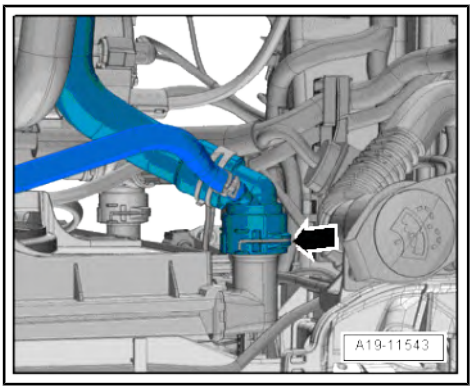


– Raise holding clamps -1-, -2- and remove coolant hoses from charge air circuit cooler.

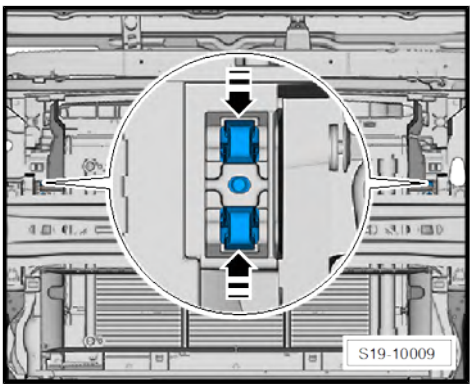
Continued for all vehicles



– Raise holding clamp -arrow-, remove top left coolant hose from radiator.

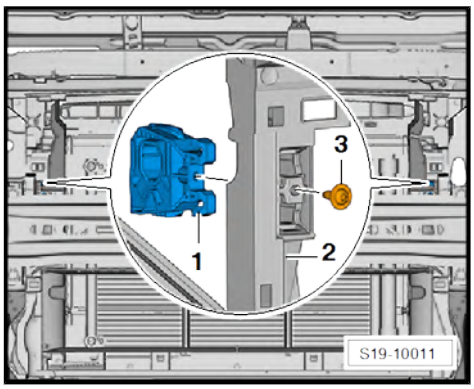


– Press catches left and right -arrows-, press coolant radiator slightly backwards.

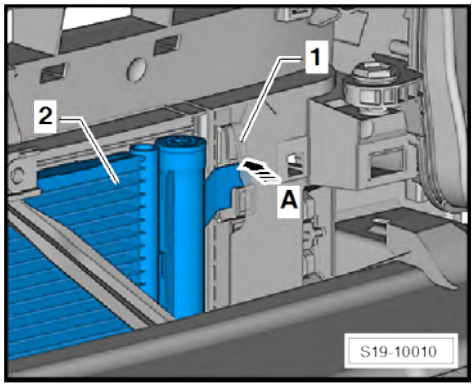


Note

If the fuse breaks, you will not need to replace the radiator bearing -1-. Replace the fuse with a special fuse -3- ⇒ ETKA - Electronic Catalogue of Original Parts .

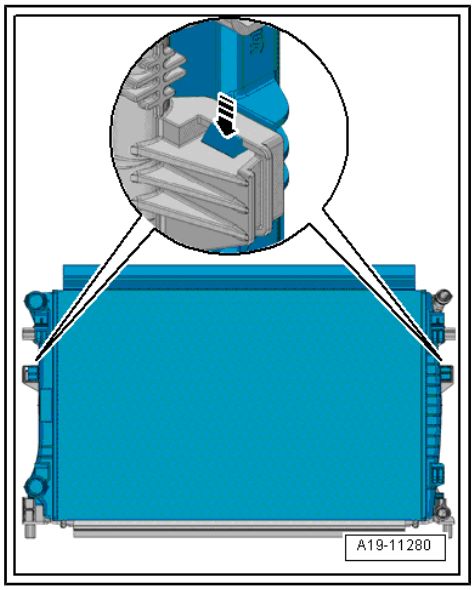


– Unlock the latches left and right -arrow A- and raise the condenser -2-.
– Press the radiator downwards until the radiator bearing deflects at the bottom, to do so, unhook the condenser -2- from the radiator.
– Strap condenser to the lock support.

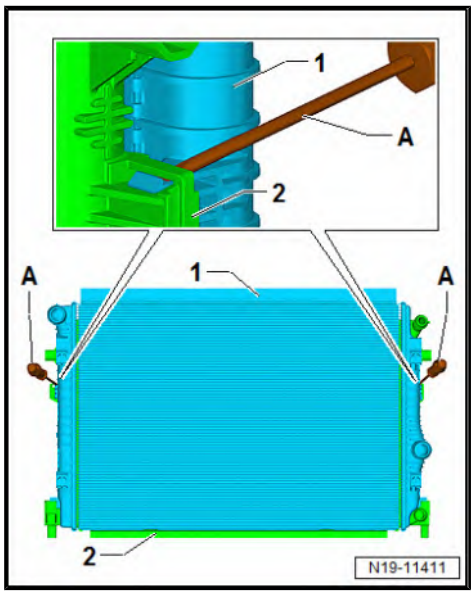


Vehicles with radiator versions 1 and 2

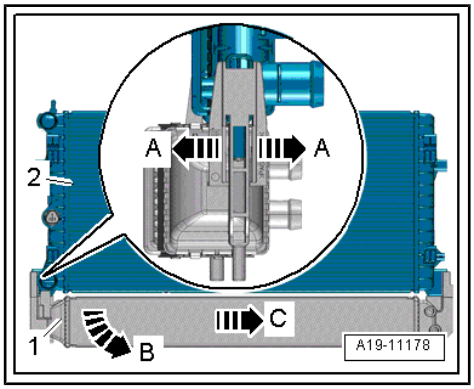
– Unlock the locking latches on the left and right radiator at the same time -arrow-.



– To unlock the engine compartment, insert a suitable screwdriver -A- from behind between the radiator for coolant -1- and the radiator for the charge air cooling circuit -2-.
– Fit the screwdriver -A- start as shown, but do not pry it.
– Remove coolant radiator from the charge air cooling circuit radiator.



Vehicles with radiator variant 3



– Unlock catches on the radiator -1- for the charge air circuit arrows -A-
– Remove charge air cooling circuit radiator from coolant radiator -2- arrow -B- and unhook arrow -C-.
– Remove both radiators.

Installing

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

Note

Only replace the O-ring if damaged.

– Install front bumper ⇒ General body repairs, exterior ; Rep. gr. 63 ; Front bumper; Removing and installing bumper .
– Install fan shroud ⇒ “4.6 Removing and installing fan shroud”, page 365 .
– Connect coolant hose with quick coupling ⇒ “4.1.6 Quick couplings of the coolant hoses”, page 346 .

Note

- *If there is light prints on the fins, follow the instructions ⇒ “3.5 Assembly of radiators and condensers”, page 8 .*
- *Do not re-use used coolant.*

NOTICE

If a new radiator has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface ⇒ “1.7 Flushing the cooling system”, page 253 .

If the existing radiator is fitted:

– 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.

- ⇒ “4.1 Assembly overview - radiator/radiator fan”, page 338
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

4.4.2 Removing and installing radiator, Yeti

Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6362-

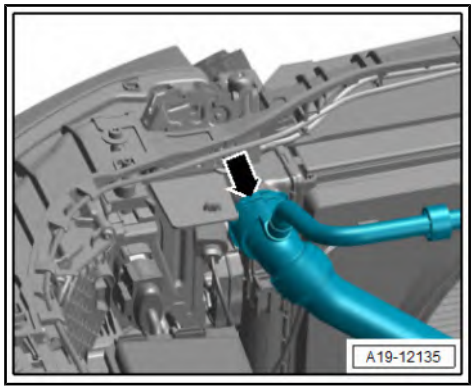
Removing

– Remove top and bottom part of the air guide duct Pos. -4- and -3- ⇒ page 473 .

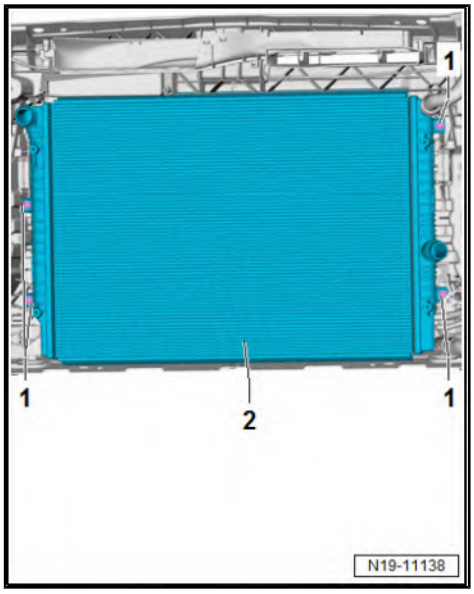
– Removing fan shroud ⇒ “4.6.2 Removing and installing fan shroud, Yeti”, page 366 .

– Drain coolant ⇒ “1.4.2 Filling coolant without the electric vacuum pump, Yeti”, page 239 .

– Raise holding clamp -arrow-, remove top left coolant hose from radiator.



– Unscrew fixing screws -1-.
– Remove radiator -2- downwards.



Installing

Installation is carried out in the reverse order. However, pay attention to the following:

Note

- *Only replace the O-ring if damaged.*
- *If there is light prints on the fins, follow the instructions* ⇒ *“3.5 Assembly of radiators and condensers”, page 8* .
- *Do not re-use used coolant.*

NOTICE

If a new radiator has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface
⇒ “1.7 Flushing the cooling system”, page 253 .

If the existing radiator is fitted:

– Top up coolant
⇒ “1.4.2 Filling coolant without the electric vacuum pump, Yeti”, page 239 .

Tightening torques - summaries of components

Note

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

- ⇒ “4.1.1 Summary of components - air filter housing, Octavia III, Yeti”, page 473
- ⇒ “4.1.5 Summary of components - radiator, Yeti”, page 344

4.4.3 Removing and installing radiator, Rapid NH

Note

The coolant radiator and charge air cooling circuit radiator are removed together.

Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6362-

Note

- *The radiator and the charge air cooler are separate parts.*
- *The charge air cooler is removed together with the cooler*

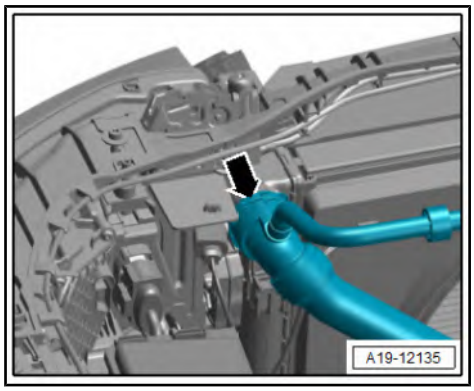
Removing

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

– Remove the front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; removing and installing bumper .

– Removing fan shroud ⇒ “4.6 Removing and installing fan shroud”, page 365 .

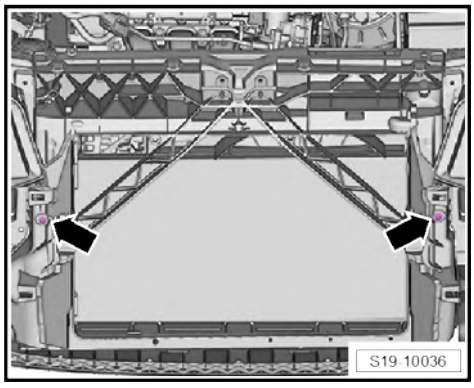
– Raise holding clamp -arrow-, remove top left coolant hose from radiator.



– Unscrew securing bolts -arrows-.

– Swivel top edge of the radiator backwards slightly.

– Remove radiator from the lower bearings and carefully press downwards.



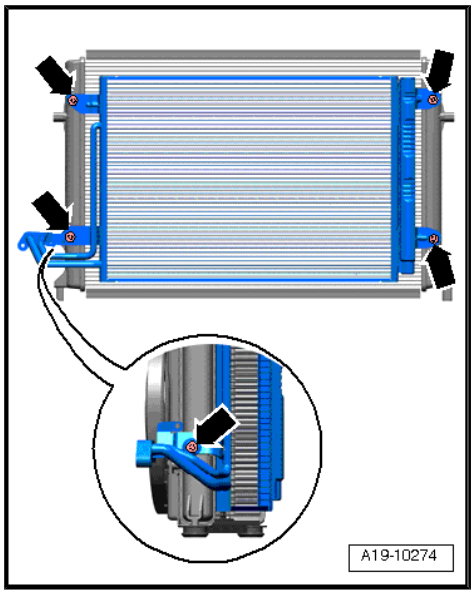
Vehicles with air conditioning

Note

To prevent damage to condenser or to refrigerant lines/hoses, ensure that the lines and hoses are not stretched, kinked or bent.

– Unscrew screws -arrows-.

– Insert catalytic converter forwards into the lock carrier and secure from falling.



Continued for all vehicles

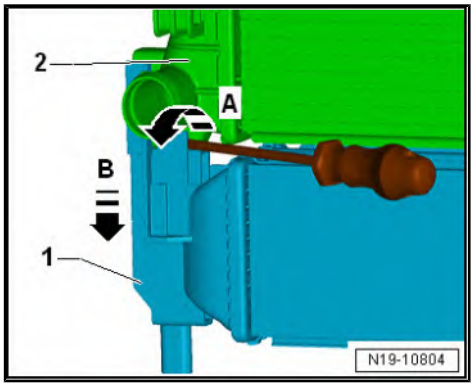
– Remove the radiator together with the charge air cooler downwards.

Removing the charge air cooler

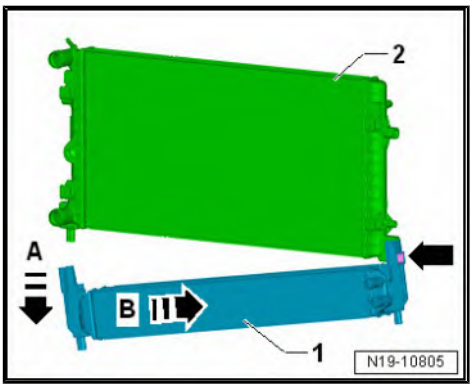
NOTICE

To prevent damage to the charge air cooler, the separation of the charge air cooler from the radiator must be carried out by 2 mechanics.

– Slide a wide cross-head screwdriver into the left lock of the radiator for charge air cooler -1- at the front and rear.
– Open the locks by turning the screwdriver in direction of arrow -A-.
– In this position, pull forward the charge air cooler -1- left in direction of arrow -B- out of the radiator -2-.



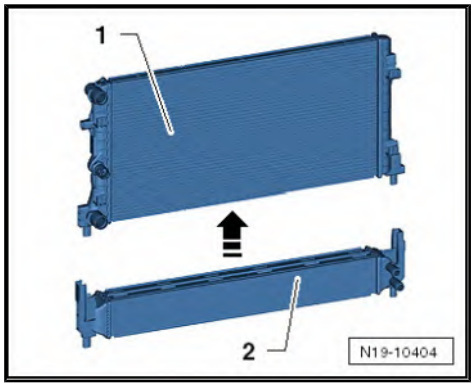
– Slide the charge air cooler -1- off in direction of arrow -A-, at the same time slide it in direction of arrow -B-, and unhook it from the lock on the right -arrow- of the radiator -2-.
– Remove the charge air cooling circuit cooler -1-.



Installing

Installation is carried out in the reverse order. However, pay attention to the following:

– Insert the charge air cooler -2- into the right support.
– Lock the charge air cooler -2- to the supports of the radiator -1-.
– Check for firm seating by pulling in the opposite direction.



Note

Only replace the O-ring if damaged.

– Install front bumper ⇒ General body repairs, exterior ; Rep. gr. 63 ; Front bumper; Removing and installing bumper .
– Install fan shroud ⇒ “4.6 Removing and installing fan shroud”, page 365 .

Note

- *If there is light prints on the fins, follow the instructions ⇒ “3.5 Assembly of radiators and condensers”, page 8 .*
- *Do not re-use used coolant.*

NOTICE

If a new radiator has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface ⇒ “1.7 Flushing the cooling system”, page 253 .

If the existing radiator is fitted:

– 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.

- ⇒ “4.1.4 Summary of components - radiator, Rapid NH”, page 343

4.5 Removing and installing charge air cooling circuit

⇒ “4.5.1 Removing and installing charge air cooling circuit radiator, Yeti”, page 362

4.5.1 Removing and installing charge air cooling circuit radiator, Yeti

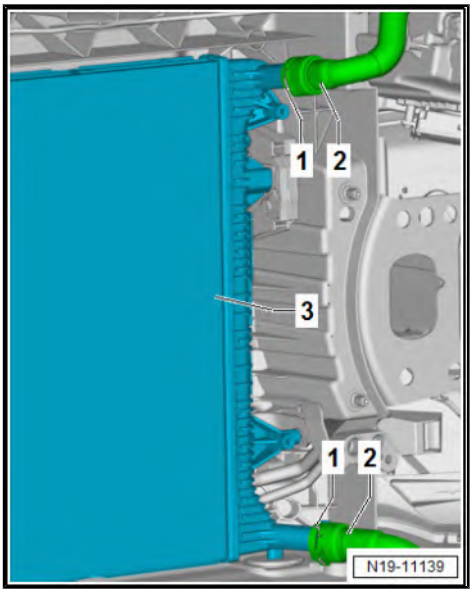
Special tools and workshop equipment required

- Catch pan , e.g. -VAS 6208-
- Hose binding claw - VAS 6362-

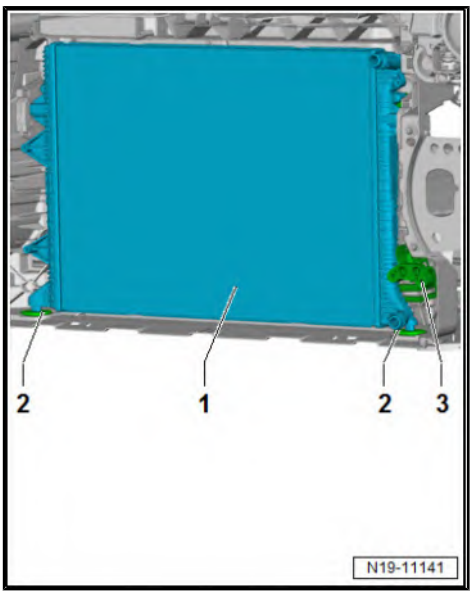
Removing

– Remove the front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; removing and installing bumper .

– Remove radiator
⇒ “4.4.2 Removing and installing radiator, Yeti”, page 357 .
– Release clamps -1-.
– Remove connection fitting -2- from additional radiator -3-.
– Remove top air guide above the charge air cooler ⇒ Body Work; Rep. gr. 50 .
– Unscrew fixing screws on charge air cooler Pos. -4-
⇒ “4.1.5 Summary of components - radiator, Yeti”, page 344 .



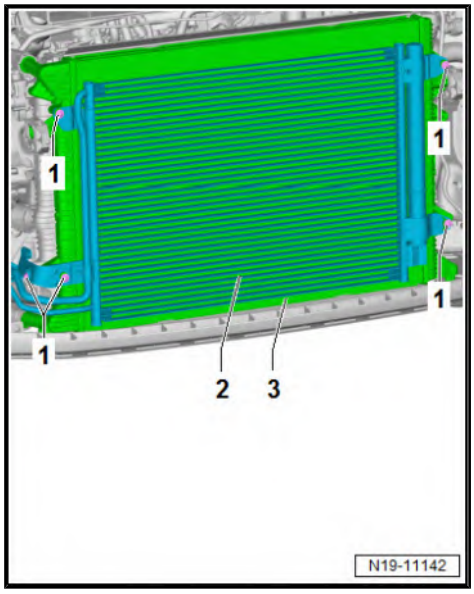
– Carefully pull additional radiator -1- with condenser -3- out of the guides -2-.



– Remove screws -1-.

• Assistance of a second mechanic is required.

– Disconnect additional radiator -3- from condenser -2-.



Note

To prevent damage to condenser or to refrigerant lines/hoses, ensure that the lines and hoses are not stretched, kinked or bent.

– Remove condenser -2- from additional radiator -3-.

– Attach condenser -2- to superstructure (e.g. with a wire).

– Remove charge air cooler downwards.

Installing

Installation is performed in the reverse order, while paying attention to the following:

Note

- *Only replace the O-ring if damaged.*
- *If there is light prints on the fins, follow the instructions* ⇒ *"3.5 Assembly of radiators and condensers", page 8* .
- *Do not re-use used coolant.*

NOTICE

If a new radiator has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface
⇒ "1.7 Flushing the cooling system", page 253 .

If the existing radiator is fitted:

– Top up coolant
⇒ "1.4.2 Filling coolant without the electric vacuum pump, Yeti", page 239 .

Tightening torques - summaries of components

Note

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

- ⇒ "4.1.5 Summary of components - radiator, Yeti", page 344
- Front bumper ⇒ General body repairs, exterior ; Rep. gr. 63 ; Front bumper; Removing and installing bumper .
- Top air guide ⇒ Body Work; Rep. gr. 50

4.6 Removing and installing fan shroud

⇒ "4.6.1 Removing and installing fan shroud, Octavia III", page 365

⇒ "4.6.2 Removing and installing fan shroud, Yeti", page 366

⇒ "4.6.3 Removing and installing the fan shroud, Rapid NH", page 367

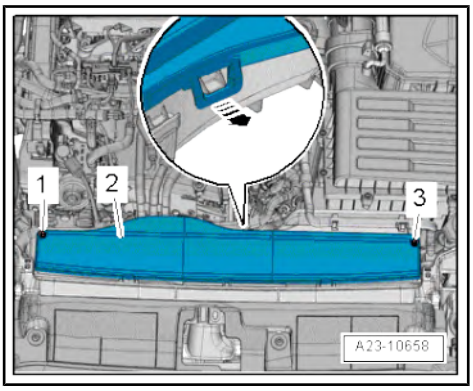
4.6.1 Removing and installing fan shroud, Octavia III

Removing

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

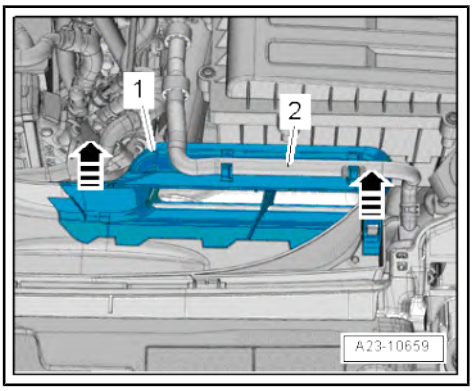
– Unscrew screws -1-, -3-.

– Unlock catch -arrows-, remove cover-2-.



– Detach coolant hose -2-.

– Unlock catches -arrows-, remove top part-1- of air guide.



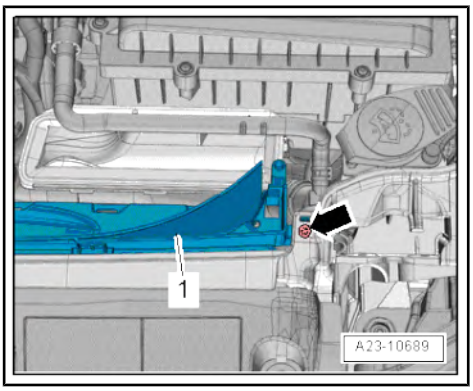
– Release screw left and right -arrow-.

– Unclip and remove bottom part -1- of air guide.

CAUTION

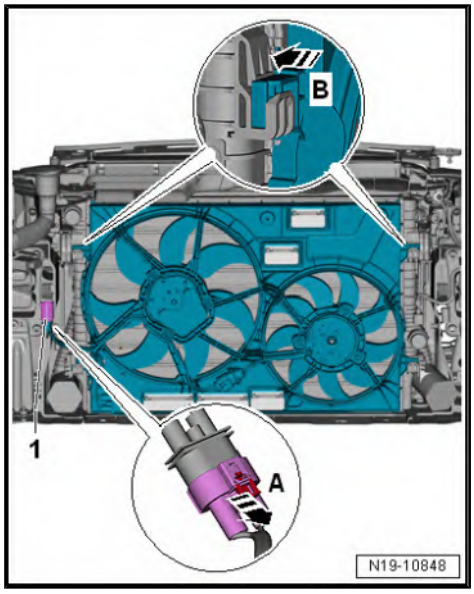
There is risk of injury from radiator fans starting up automatically.

- **Before carrying out work in the fan shroud area, disconnect the electrical plug connections.**



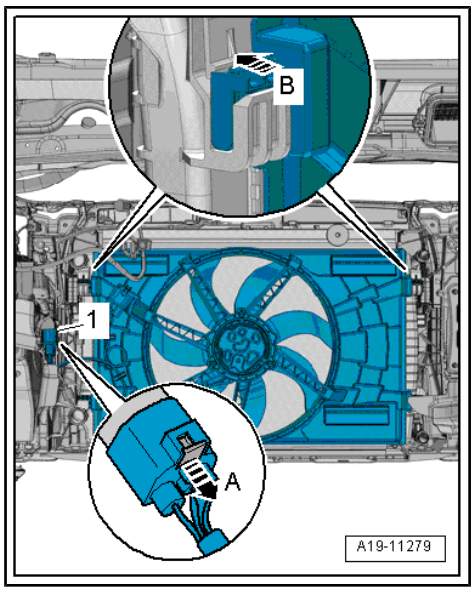
Fan shroud with two radiator fans

– Disconnect electric plug connection -1- for radiator fan.
– To do so, slide the securing mechanism in direction of arrow -A- and then push the release downwards.
– Press the locking catches on left and right of fan shroud arrow -B- simultaneously.
– Pull fan shroud up and remove from radiator.
– Remove fan shroud downwards.

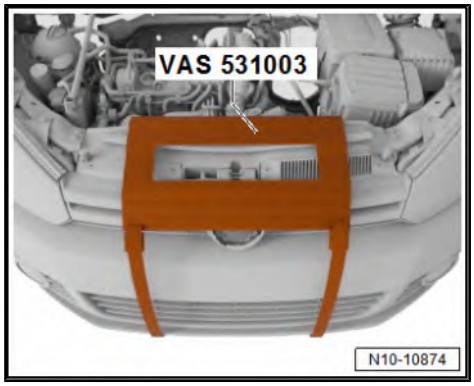


Fan shroud with one radiator fan

– Remove plug -1- for radiator fan, for this purpose slide screw clamp backwards arrow -A- and press release button down.
– Press the left and right locking catches for fan shroud simultaneously arrow -B-.
– Pull fan shroud up and remove from radiator.
– Remove fan shroud downwards.



– For further assembly work, cover the radiator with the radiator protection mat - VAS 531 003- .



Installing

Installation is carried out in the reverse order.

Tightening torques - summaries of components

♦ ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

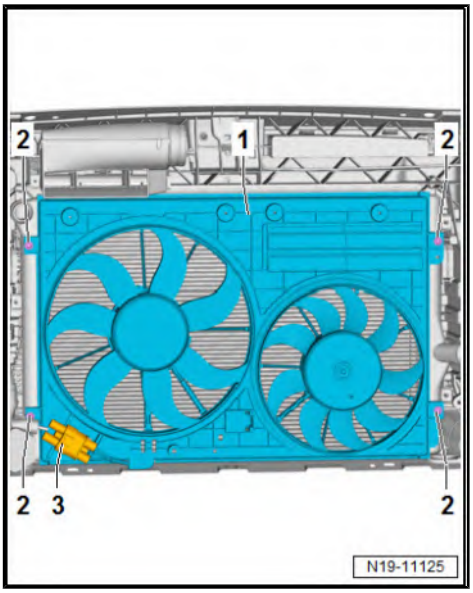
4.6.2 Removing and installing fan shroud, Yeti

Removing

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– Remove top and bottom part of the air guide duct Pos. -4- and -3-

⇒ “4.1.1 Summary of components - air filter housing, Octavia III, Yeti”, page 473 .

– Disconnect plug connection -3- for radiator fan.
– Unscrew fixing screws -2-.
– Remove fan shroud -1- downwards.



– For further assembly work, cover the radiator with the radiator protection mat - VAS 531 003- .

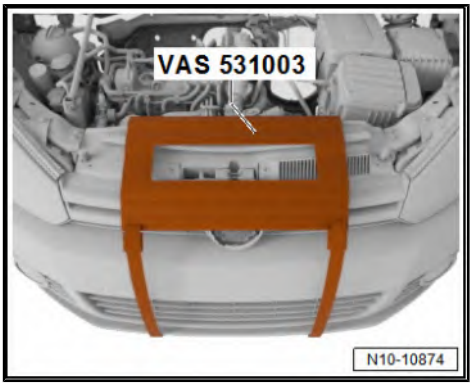
Installing

Installation is carried out in the reverse order.

Tightening torques - summaries of components

Note

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



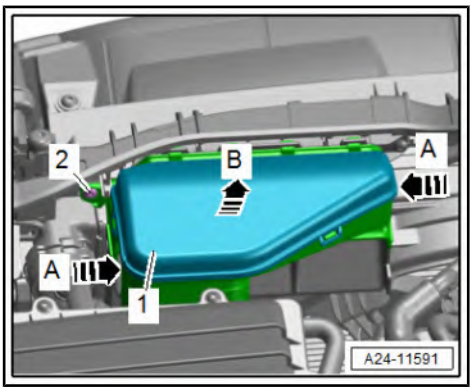
♦ ⇒ “4.1.1 Summary of components - air filter housing, Octavia III, Yeti”, page 473

♦ Sound dampening system - Summary of components ⇒ Body Work; Rep. gr. 50 .

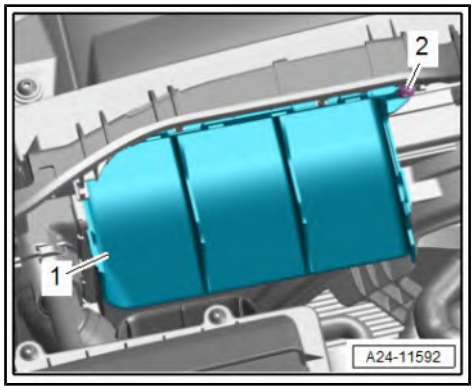
4.6.3 Removing and installing the fan shroud, Rapid NH

Removing

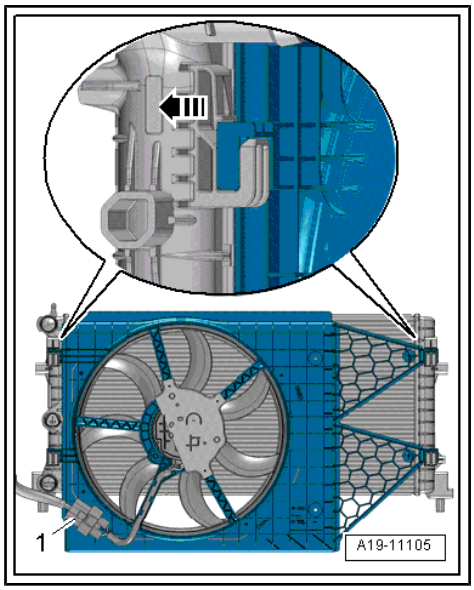
– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .
– Unscrew screw -2-, unlock catches arrows -A-.
– Disconnect the cover -1- from the air guide duct arrow -B- and remove.



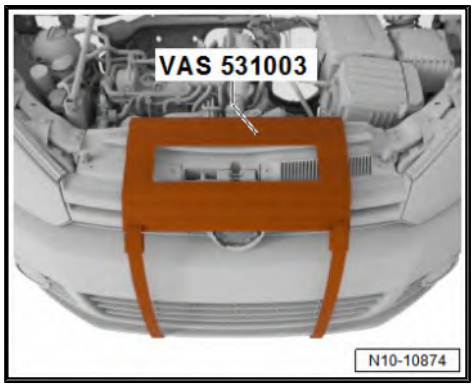
– Unscrew screw -2-, remove air guide duct -1-.



– Disconnect the electrical plug connection -1- of the bottom radiator fan at the fan shroud.
– Press the left and right locking catches for fan shroud simultaneously -arrow- and carefully remove fan shroud upwards off the radiator.



– For further assembly work, cover the radiator with the radiator protection mat - VAS 531 003- .



Installation

Installation is carried out in the reverse order.

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Assembly overview - air filter housing”, page 473
- Sound dampening system - Summary of components ⇒ Body Work; Rep. gr. 50 .

4.7 Removing and installing radiator fan - V7-

⇒ “4.7.1 Removing and installing radiator fans V7 and V177 ”, page 369

4.7.1 Removing and installing radiator fans - V7- and -V177-

Removing

Note

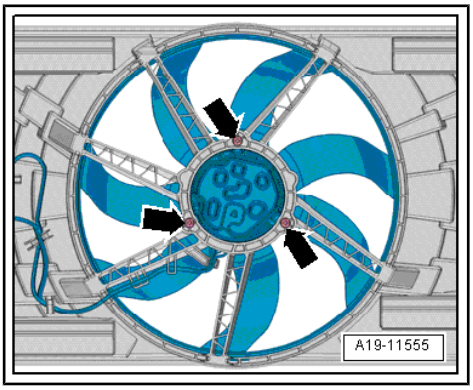
All cable straps should be fastened again in the same place when installing.

– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

For vehicles with a fan

– Expose electric cable.

– Unscrew screws and nuts, if applicable -arrows- and remove radiator fan - V7- .

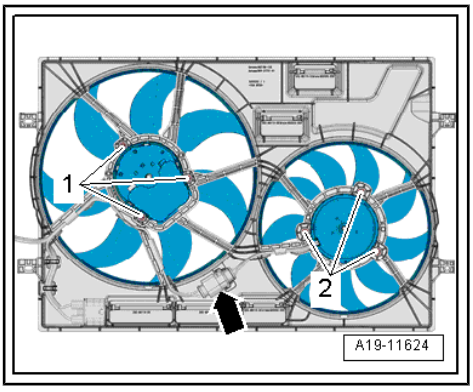


For vehicles with two fans

– Disconnect plug connection -arrow-.

– Unscrew screws and nuts, if applicable -1- and remove radiator fan - V7- .

– Unscrew screws and nuts, if applicable -2- and remove radiator fan 2 - V177- .



Installing

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

– Install fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

Tightening torques - summaries of components

Note

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

◆ ⇒ “4.2 Summary of components - fan shroud and radiator fan”, page 347

4.8 Removing and installing radiator blind

Special tools and workshop equipment required

- Disassembly tool for door panel - T10236-
- Disassembly wedge - 3409-

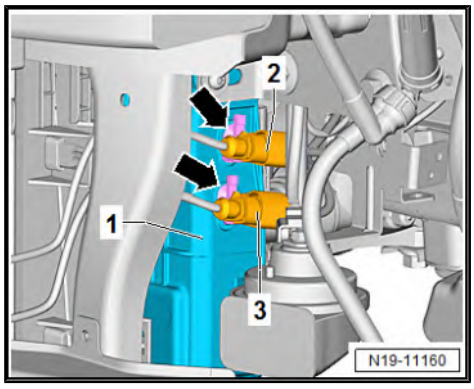
Removing

– Removing the sound damper ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .

– Remove the front bumper ⇒ General body repairs, exterior; Rep. gr. 63 ; Front bumper; removing and installing bumper .

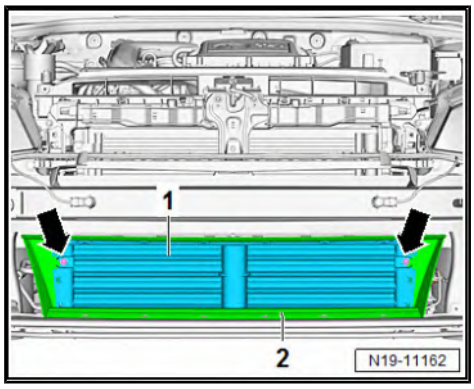
– Separate electrical plug connection -2-.

– Disconnect plug connection -2- from the connector holder -arrow- on lock carrier -1-.



– Unscrew screws -arrows-.

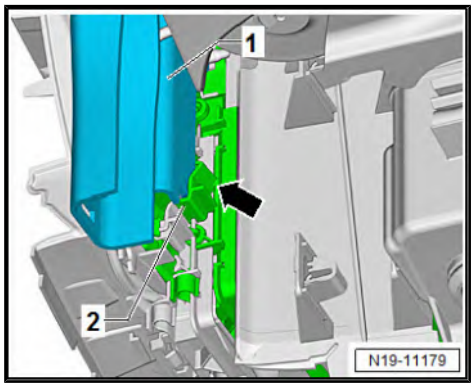
– Press radiator blind -1- with seal -2- down slightly and remove to front.



Installing

Installation is carried out in the reverse order. Pay attention to the following.

– Make sure that the guides of the radiator blind -2- correctly engage in the bumper carrier -1- -arrow-.



After replacing the radiator blind, perform basic setup ⇒ Vehicle diagnostic tester.

– Erase the event memory ⇒ Vehicle diagnostic tester.

– Connect vehicle diagnosis tester and perform basic setup ⇒ Vehicle diagnostic tester.

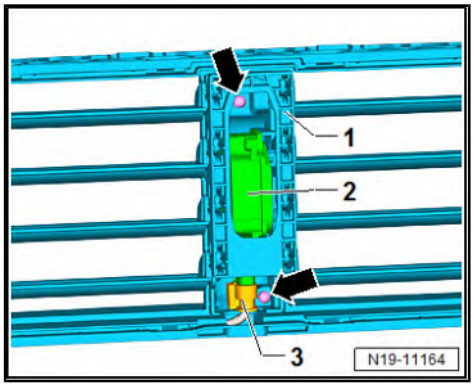
- `0001 - Adaptation of the control motor for radiator blind - V544`

4.9 Removing and installing the radiator blind control motor - V544-

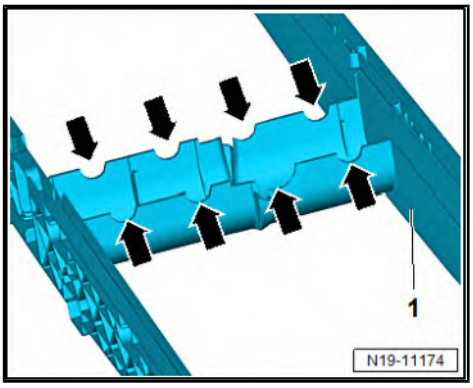
Removing

– Remove radiator blind
⇒ “4.8 Removing and installing radiator blind”, page 369 .

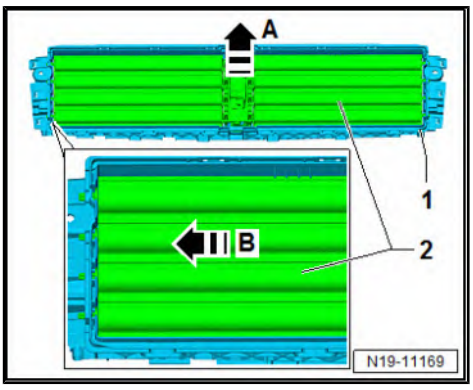
– Put the flaps of the radiator blind to “open”, as shown in the illustration.
– To do so, move the connecting bridge -1-.
– Separate electrical plug connection -3-.
– Unscrew screws -arrows-.



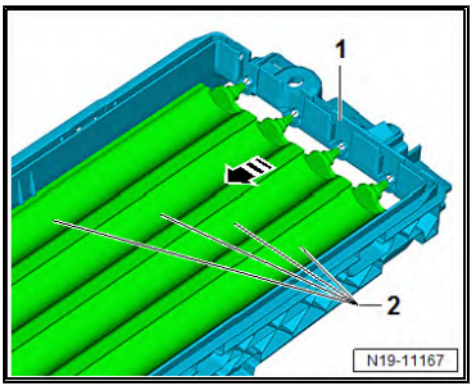
– Raise the engine mount -8- ⇒ Item 8 (page 352) with the flaps upwards out of the support -arrow- in the frame -1-.



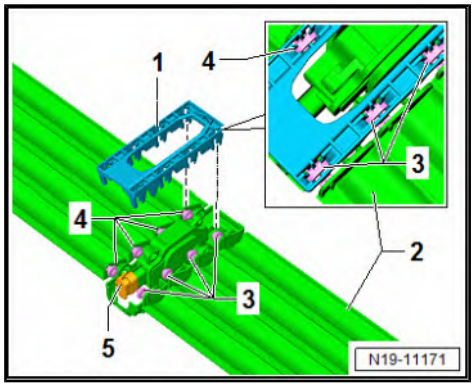
– Slide the engine mount with flaps -2- as far as possible to the left arrow -B-.



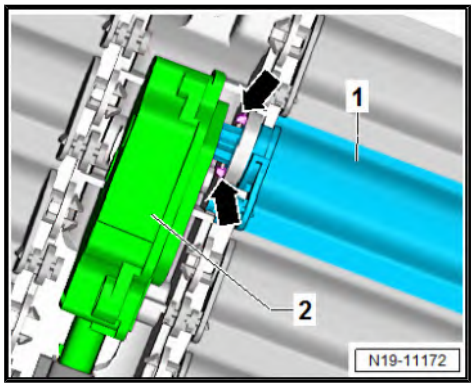
– Pry the flaps -2- on the right side out of the frame -1-.



– Mark the fitting position of the connecting bridge -1-.
– Use the plug -5- as reference point.
– Pry the connecting bridge -1- out of the guide rollers -3- and -4- of the flaps -2-.

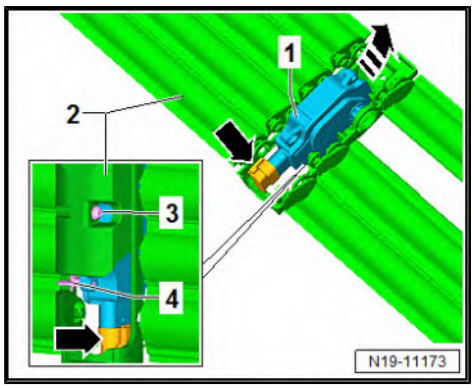


– Remove the control flap -1- from the radiator blind control motor - V544- -2-.
– To do this, release locking tabs -arrows-.



– If used, unscrew screw -3-.
– Swivel the radiator blind control motor - V544- upwards in -direction of arrow-.
– Remove the radiator blind control motor - V544- from the pin -4-.

If necessary, then detach and remove the flaps from the engine mount Pos. -8- ⇒ Item 8 (page 352) .



Installing

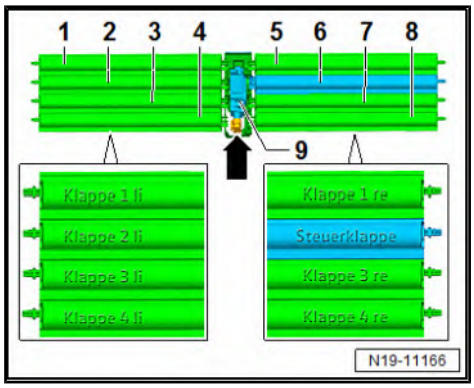
Installation is performed in the reverse order, while paying attention to the following:

– Position and secure the flaps -1- to -8- as shown.
– Slide on and secure the control flap -6-.

During assembly, note the position of the plug connection -arrow-, which points downwards.

– Note the arrangement of the flaps - the flaps overlap.

The top flap partially overlaps the next flap attached below it.

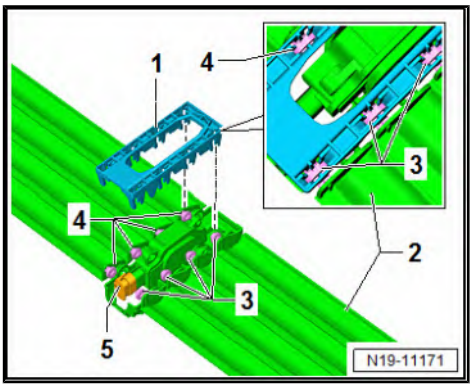


Number	Left flaps	Number	Right flaps
1	Flap 1, left	5	Flap 1, right
2	Flap 2, left	6	Control flap
3	Flap 3, left	7	Flap 3, right
4	Flap 4, left	8	Flap 4, right

– Bring connecting bridge -1- to correct fitting position.

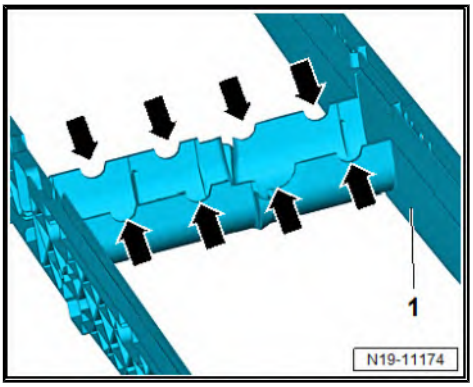
To do this, use the mark prepared earlier or use the plug -5- as reference point.

– Make sure that the connecting bridge is lying correctly on the guide rollers when you lock it.

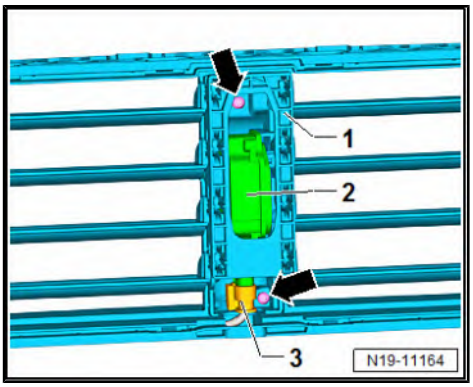


– Insert engine mount -8- ⇒ Item 8 (page 352) with the flaps onto the support in the frame -1-.

– Make sure that the engine mount correctly engages with the flaps into the supports -arrows-.



– Screw in screws -arrow-.



– Reconnect connector -2-.

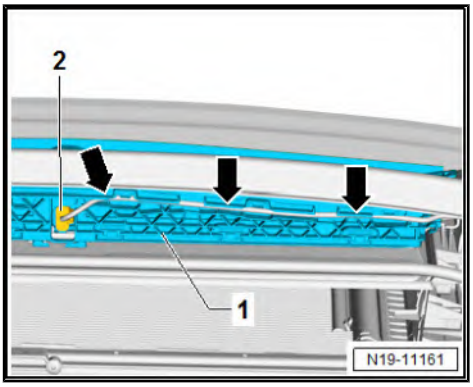
– Secure the wiring loom in the retaining tabs -arrows-.

After replacing the radiator blind control motor - V544- , perform basic setup ⇒ Vehicle diagnostic tester.

– Erase the event memory ⇒ Vehicle diagnostic tester.

– Connect vehicle diagnosis tester and perform basic setup ⇒ Vehicle diagnostic tester.

◆ `0001 - Adaptation of the control motor for radiator blind - V544`



21 – Turbocharging/supercharging

1 Exhaust gas turbocharger

⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374

⇒ “1.2 Removing and installing exhaust gas turbocharger”, page 382

⇒ “1.3 Replacing exhaust gas turbocharger pressure box”, page 401

⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407

1.1 Summary of components - exhaust gas turbocharger

⇒ “1.1.1 Summary of components - exhaust gas turbocharger with component parts, Octavia III, Yeti”, page 374

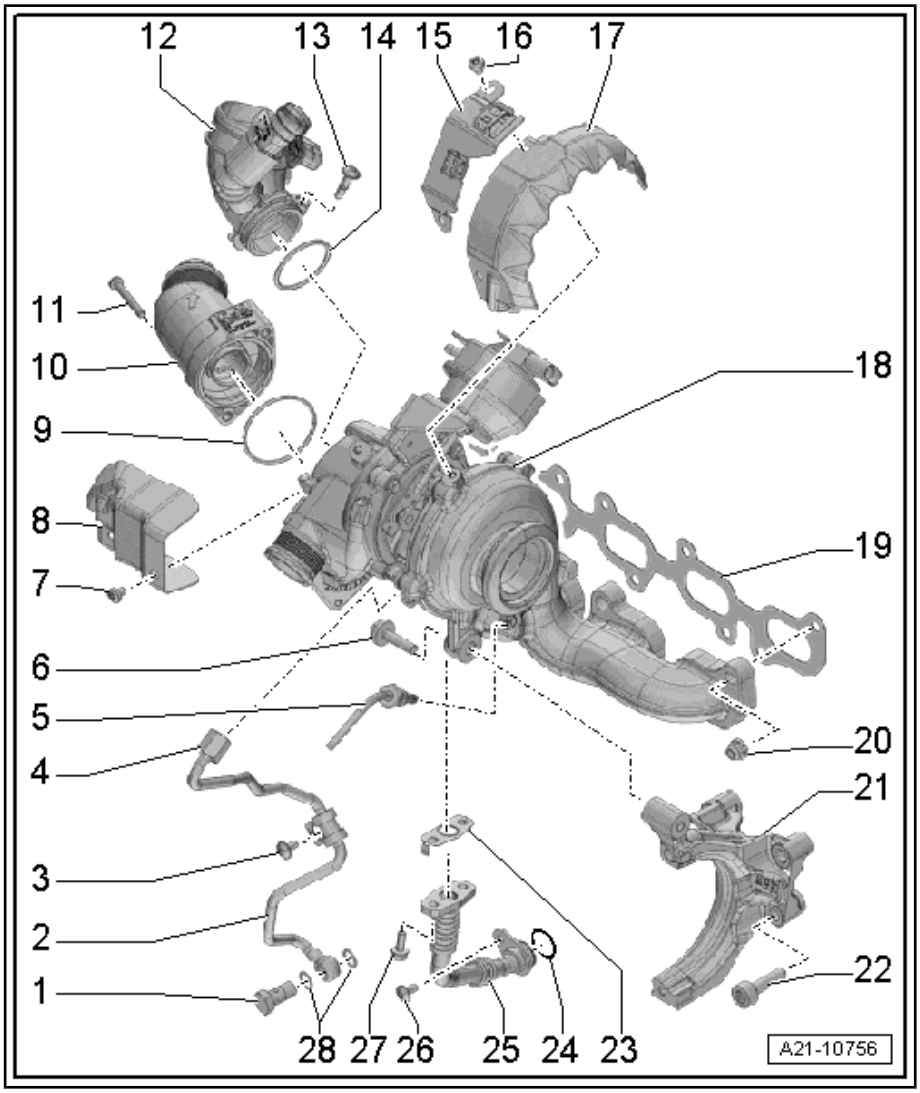
⇒ “1.1.2 Overview of components - Exhaust gas turbocharger with attachments, vehicles with emission standard EU4”, page 377

⇒ “1.1.3 Summary of components - exhaust gas turbocharger with component parts, Rapid NH”, page 379

1.1.1 Summary of components - exhaust gas turbocharger with component parts, Octavia III, Yeti

Note

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



1 - hollow bolt

- ❑ 30 Nm

2 - Oil feed line

- ❑ check continuity
- ❑ before installing, fill the exhaust turbocharger on the connection fitting for the oil feed line with engine oil
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

3 - Screw

- ❑ 12 Nm

4 - Union nut

- ❑ 22 Nm

5 - Exhaust gas temperature transmitter 1 - G235-

- ❑ Summary of components ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ❑ Removing and installing ⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653

6 - Screw

- ❑ Tightening torque and tightening order ⇒ page 583

7 - Screw

- ❑ 8 Nm

8 - Heat shield

9 - O-ring

- ❑ Replace after disassembly

10 - Pulsation dampener

- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

11 - Screw

- ❑ 8 Nm

12 - Connection fitting

13 - Screw

- ❑ 8 Nm

14 - O-ring

- ❑ Replace after disassembly

15 - Mounting bracket

- ❑ for electrical cables

16 - Screw

- ❑ 8 Nm

17 - Heat shield

18 - Exhaust gas turbocharger

- ❑ Removing and installing ⇒ “1.2 Removing and installing exhaust gas turbocharger”, page 382
- ❑ For assignment of repair kit, see ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Replace vacuum positioning element for charge pressure regulation with position transmitter for charge pressure regulator - G581- ⇒ “1.3 Replacing exhaust gas turbocharger pressure box”, page 401
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

19 - Seal

- ❑ Replace after disassembly
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

20 - Nut

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 376
- ❑ Studs in cylinder head 14 Nm

21 - Mounting bracket

- ❑ for exhaust gas cleaning module ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579
- ❑ Tightening torque and tightening order ⇒ page 583

22 - Screw

- ❑ for vehicles with exhaust gas cleaning module ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579
- ❑ Tightening torque and tightening order ⇒ page 583

23 - Seal

- ❑ Replace after disassembly

24 - O-ring

- ❑ Replace after disassembly
- ❑ moisten with engine oil

25 - Oil return-flow line

26 - Screw

- ❑ 10 Nm

27 - Ribbed bolt

- ❑ 14 Nm

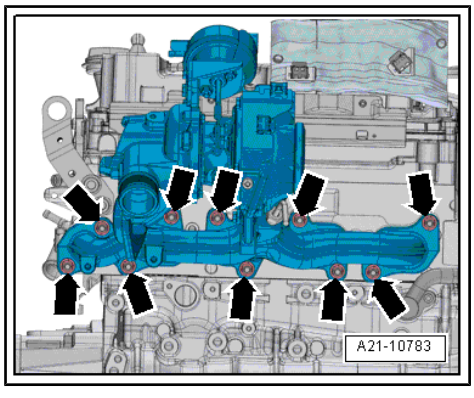
28 - Sealing rings

- ❑ Replace after removal

Exhaust gas turbocharger - tightening torque and tightening order

– Tighten bolts step by step in the given sequence:

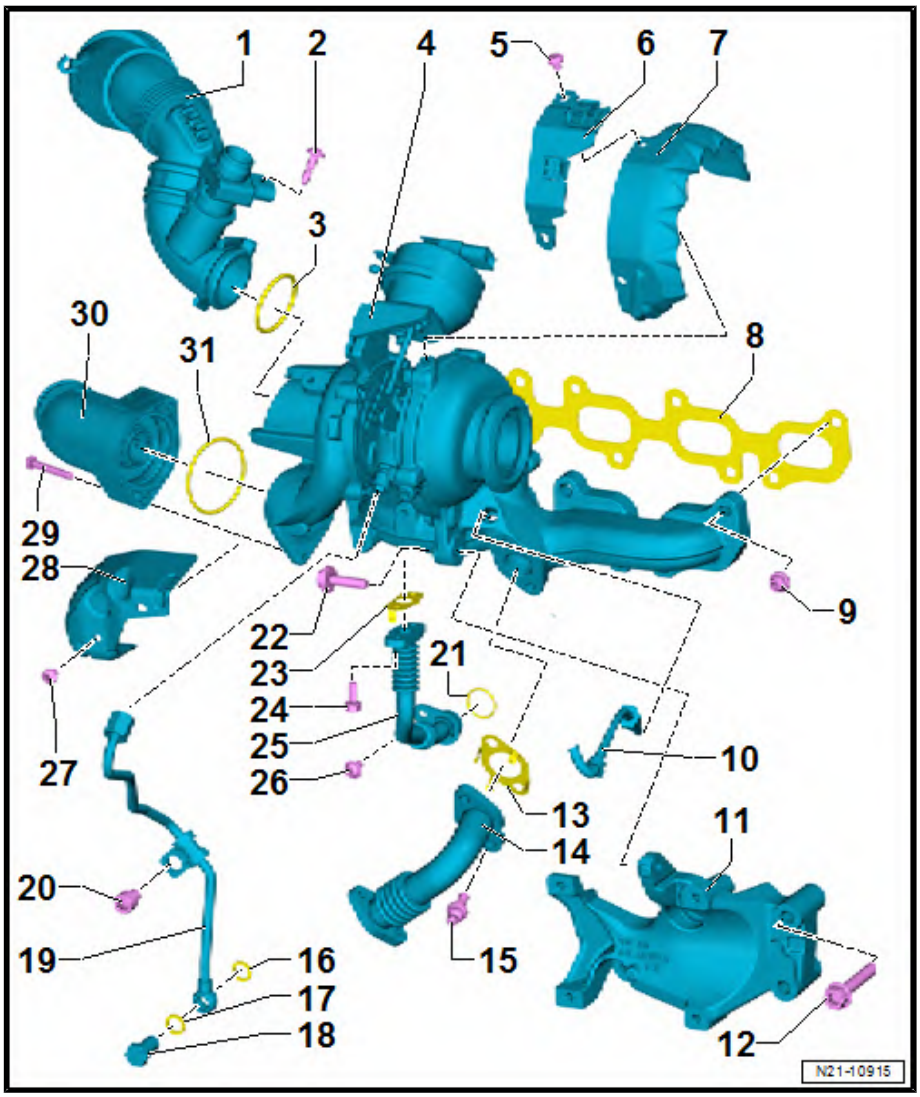
Step	Nut	Tightening torque
1.	-Arrows-	from inside to outside crosswise 11 Nm
2.	-Arrows-	from inside to outside crosswise 22 Nm
3.	-Arrows-	from inside to outside crosswise 22 Nm • This action takes account of the settling behaviour of the components.



1.1.2 Overview of components - Exhaust gas turbocharger with attachments, vehicles with emission standard EU4

Note

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



1 - Connection fitting

- ❑ Removing and installing ⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407

2 - Screw

- ❑ 8 Nm

3 - O-ring

- ❑ Replace after disassembly

4 - Exhaust gas turbocharger

- ❑ Removing and installing ⇒ “1.2 Removing and installing exhaust gas turbocharger”, page 382

5 - Screw

- ❑ 8 Nm

6 - Mounting bracket

7 - Heat shield

8 - Seal

- ❑ Replace after disassembly

9 - Nut

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 379
- ❑ Stud in cylinder head 14 Nm

10 - Exhaust gas temperature transmitter 1 - G235-

- ❑ Summary of components ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ❑ Removing and installing ⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653

11 - Mounting bracket

- ❑ for radiator for exhaust gas recirculation
- ❑ Tightening torque and tightening order ⇒ page 676

12 - Screw

- ❑ Tightening torque and tightening order ⇒ page 676

13 - Seal

- ❑ Replace after disassembly

14 - Connecting pipe

- ❑ to radiator for exhaust gas recirculation

15 - Nut

- ❑ Replace after disassembly
- ❑ 20 Nm

16 - Sealing ring

- ❑ Replace after disassembly

17 - Sealing ring

- ❑ Replace after disassembly

18 - hollow bolt

- ❑ 25 Nm

19 - Oil feed line

- ❑ check continuity
- ❑ Fill the exhaust turbocharger with engine oil through the connection fitting of the oil feed line before installing
- ❑ Union nut, 22 Nm

20 - Screw

- ❑ 16 Nm

21 - O-ring

- ❑ Replace after disassembly
- ❑ moisten with engine oil

22 - Screw

- ❑ Tightening torque and tightening order ⇒ page 676

23 - Seal

- ❑ Replace after disassembly

24 - Screw

- ❑ 14 Nm

25 - Oil return-flow line

26 - Screw

- ❑ 10 Nm

27 - Screw

- ❑ 8 Nm

28 - Heat shield

29 - Screw

- ❑ 15 Nm

30 - Pulsation dampener

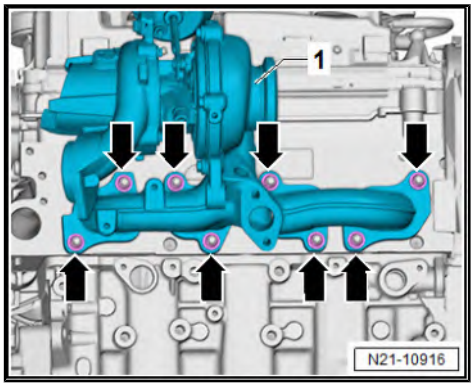
31 - Sealing ring

- ❑ Replace after disassembly

Exhaust gas turbocharger - tightening torque and tightening order

– Tighten bolts step by step in the given sequence:

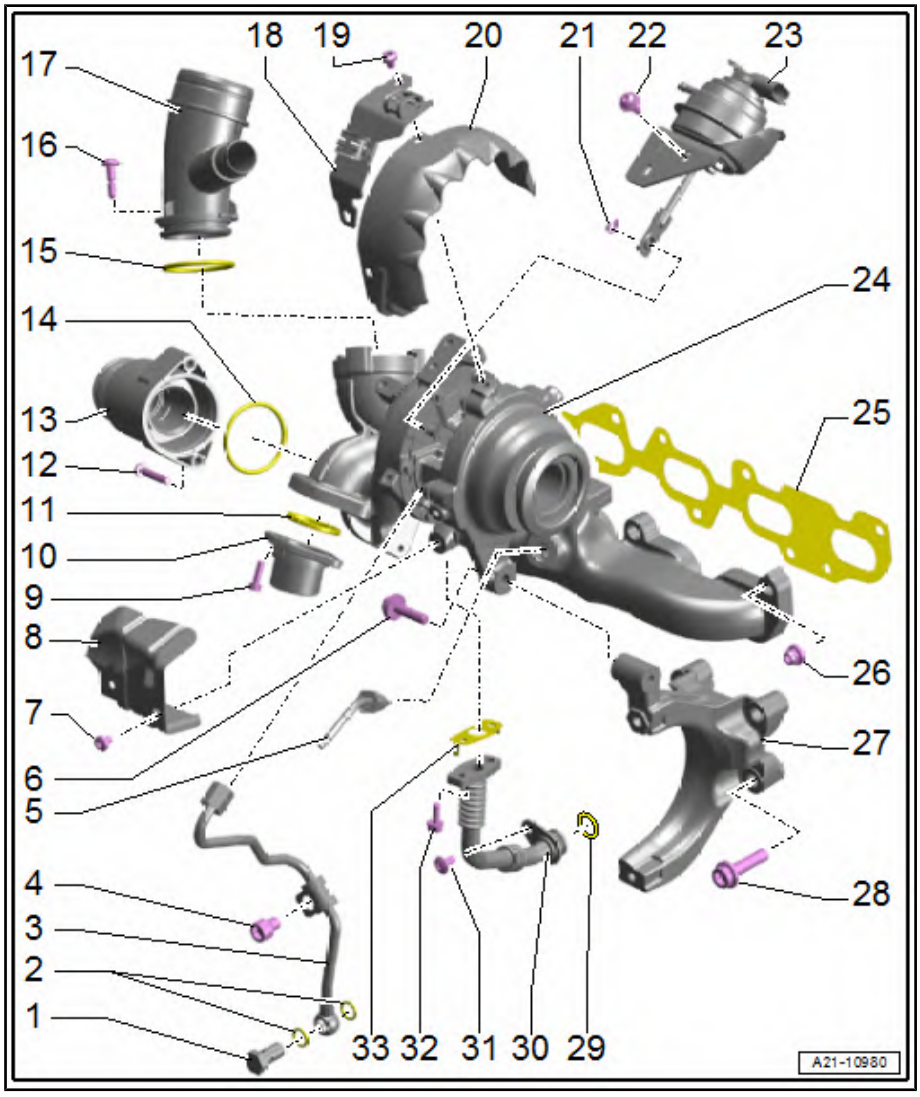
Stage	Nut	Tightening torque
1.	-Arrows-	tighten from inside to outside cross-wise to 11 Nm
2.	-Arrows-	tighten from inside to outside cross-wise to 22 Nm
3.	-Arrows-	tighten from inside to outside cross-wise to 22 Nm • This action takes account of the settling behaviour of the components.



1.1.3 Summary of components - exhaust gas turbocharger with component parts, Rapid NH

Note

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



1 - hollow bolt
- ❑ 30 Nm

2 - Sealing rings
- ❑ replace

3 - Oil feed line
- ❑ check continuity
- ❑ before installing, fill the exhaust turbocharger with engine oil via the connection fitting for the oil feed line

4 - Screw
- ❑ 12 Nm

5 - Exhaust gas temperature transmitter 1 - G235-
- ❑ Summary of components ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ❑ Removing and installing ⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653

6 - Screw
- ❑ Tightening torque and tightening order ⇒ page 583

7 - Screw
- ❑ 8 Nm

8 - Heat shield

9 - Screw
- ❑ 8 Nm

10 - Connection fitting

11 - O-ring
- ❑ Replace after disassembly

12 - Screw
- ❑ 8 Nm

13 - Pulsation dampener

14 - O-ring
- ❑ Replace after disassembly

15 - O-ring
- ❑ Replace after disassembly

16 - Screw
- ❑ 8 Nm

17 - Connection fitting

18 - Mounting bracket
- ❑ for electrical cables

19 - Screw
- ❑ 8 Nm

20 - Heat shield

21 - Circlip
- ❑ Replace after disassembly

22 - Screw
- ❑ 10 Nm

23 - Vacuum unit
- ❑ Part of the exhaust gas turbocharger

24 - Exhaust gas turbocharger
- ❑ Removing and installing ⇒ “1.2 Removing and installing exhaust gas turbocharger”, page 382

25 - Seal
- ❑ Replace after disassembly

26 - Nut
- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 381
- ❑ Studs in cylinder head 14 Nm

27 - Mounting bracket
- ❑ for exhaust gas cleaning module ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579
- ❑ Tightening torque and tightening order ⇒ page 583

28 - Screw
- ❑ Tightening torque and tightening order ⇒ page 583

29 - O-ring
- ❑ Replace after disassembly
- ❑ moisten with engine oil

30 - Oil return pipe

31 - Screw
- ❑ 10 Nm

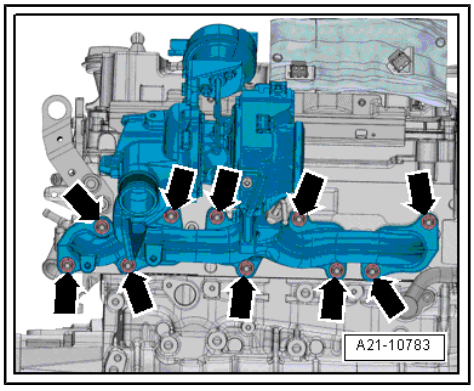
32 - Screw with securing teeth
- ❑ 14 Nm

33 - Seal
- ❑ Replace after disassembly

Exhaust gas turbocharger - tightening torque and tightening order

– Tighten bolts step by step in the given sequence:

Step	Bolts	Tightening torque
1.	-Arrows-	from inside to outside crosswise 11 Nm
2.	-Arrows-	from inside to outside crosswise 22 Nm
3.	-Arrows-	from inside to outside crosswise 22 Nm • This action takes account of the settling behaviour of the components.



1.2 Removing and installing exhaust gas turbocharger

⇒ “1.2.1 Removing and installing exhaust gas turbocharger, Octavia III”, page 382

⇒ “1.2.2 Removing and installing exhaust gas turbocharger, vehicles with EU4 emission level, engine identification characters CRVC”, page 388

⇒ “1.2.3 Removing and installing exhaust gas turbocharger, Yeti”, page 392

⇒ “1.2.4 Removing and installing exhaust gas turbocharger, Rapid NH”, page 396

1.2.1 Removing and installing exhaust gas turbocharger, Octavia III

NOTICE

In case a mechanical damage to the exhaust gas turbocharger is found, (e.g. damage to the compressor wheel), it is not sufficient to only replace the turbocharger. In order to avoid consequential damage, the following tasks must be performed:

- **Inspect the air filter housing, the air filter element and air guide hoses for contamination.**
- **Inspect the whole charge-air routing and charge air cooler for foreign bodies.**
- **If foreign bodies are found in the charge air system, clean the charge air duct and replace the charge air cooler if necessary.**
- **If damage to the exhaust gas turbocharger is evident, change the engine oil and engine oil filter.**

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-
- Socket wrench XZN 10 - T10501-

Note

- *Observe rules for cleanliness*
  ⇒ “3.1 Rules of cleanliness”, page 7 .
- *Observe general instructions for charge-air system*
  ⇒ “3 Repair instructions”, page 7 .

Removing

Note

Fit all heat protection sleeves on again in the same place when installing.

Left-hand drive

– Remove the right prop shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Prop shaft; removing and installing prop shaft .

Continued for all vehicles

- Remove engine cover
  ⇒ “3.1 Removing and installing engine trim panel”, page 64 .
- Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .
- Remove pre-exhaust pipe
  ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .
- Remove rear coolant pipe
  ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .
- Remove left coolant pipe
  ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .
- For vehicles with auxiliary heating, remove coolant lines from front wall.

Right-hand drive

Remove exhaust gas cleaning module
⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

Left-hand drive vehicles with exhaust gas pressure sensor 1 - G450- and differential pressure transmitter - G505- .

- Remove the differential pressure encoder - G505- and pressure sensor 1 for exhaust gas - G450- from the cylinder head cover
  ⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

Left-hand drive vehicles with differential pressure sender - G505-

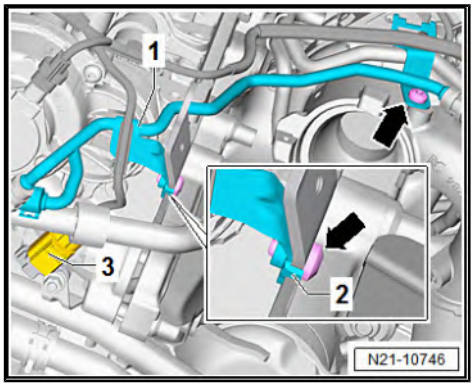
- Remove the differential pressure encoder - G505- from the cylinder head cover
  ⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

Vehicles with SCR system

- Remove injection valve for reduction agent - N474- on exhaust gas cleaning system and place to the side with connected cables
  ⇒ “3.7 Removing and installing the injection valve for reduction agent N474 ”, page 636 .

Continued for all vehicles

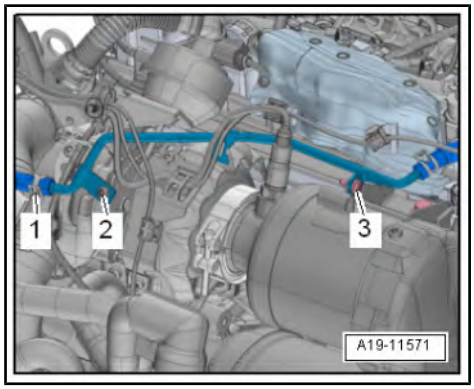
- Disconnect electrical connectors on the bulkhead and put electrical cables to one side
  ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .
- If available, remove coolant pipe -1- on turbocharger and on engine.
- Unscrew screws -arrows- for this purpose.
- Unlock plug -3-, pull it off and expose wiring loom.
- Unclip the coolant pipe -1- and push it to the side.



Vehicles with water pipe above the exhaust gas cleaner

– Open hose clamp -1-, remove coolant hose.

– Unscrew screws -2- and -3- and swivel coolant line to the side.



Vehicles with four-wheel drive

– Remove radiator for exhaust gas recirculation ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

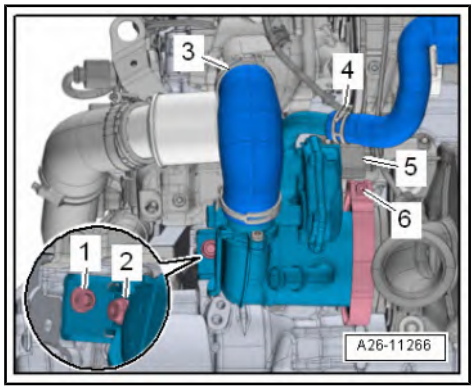
Vehicles with front-wheel drive

– Press heat protection sleeve to the side, disconnect electrical plug connection -5-.

– Loosen hose clamp -3-, remove air guide hose.

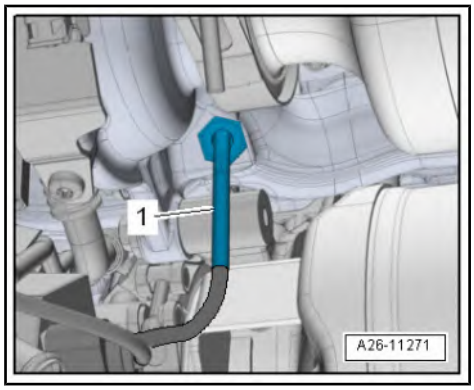
– Loosen hose clamp -4-, remove coolant hose.

– Unscrew screw -1- using socket insert XZN 10 - T10501- , loosen screw -2-.



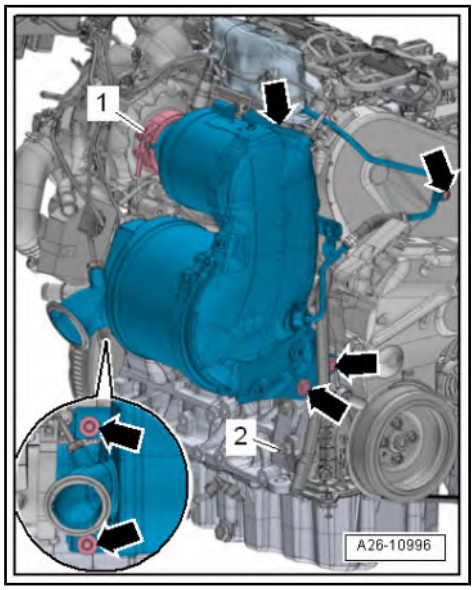
Continued for all vehicles

– Remove exhaust gas temperature sender 1 - G235- -1- ⇒ “4.2.1 Removing and installing the exhaust gas temperature transmitter 1 G235 , Octavia III, Yeti”, page 653 .

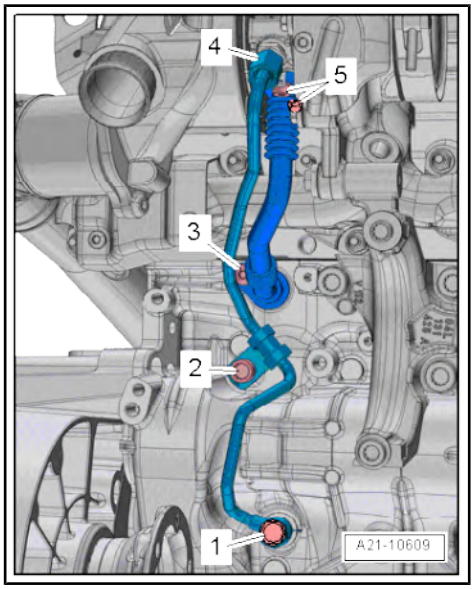


– Loosen screw -1- and remove screw clamp.

– Unscrew screws -arrows-, push exhaust gas cleaning module and exhaust gas recirculation cooler backwards.

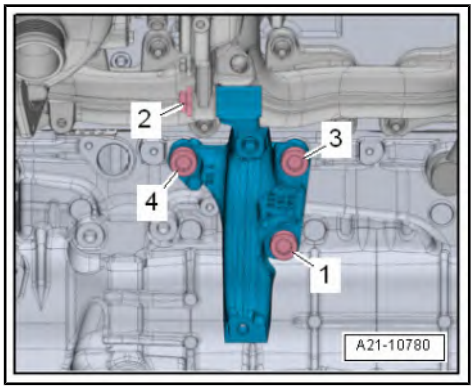


– Release nut -2- and remove union nut -4-.
– Unscrew screws -3-, -5-, remove oil return-flow line.



Vehicles with holder, variant 1

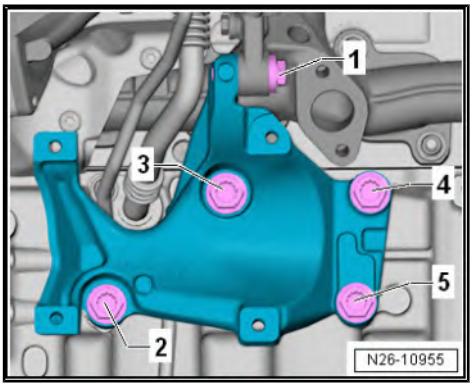
– Unscrew screws -1-4- and remove bracket for exhaust gas cleaning module.



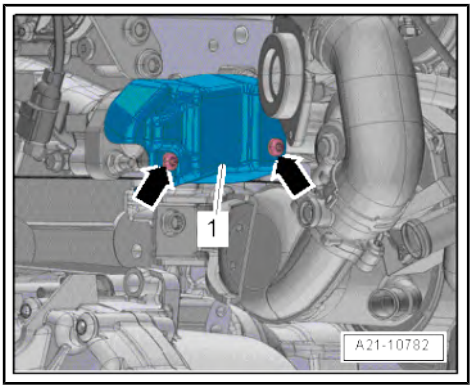
Vehicles with holder, variant 2

– Unscrew screws -1-5- and remove bracket for particle filter.

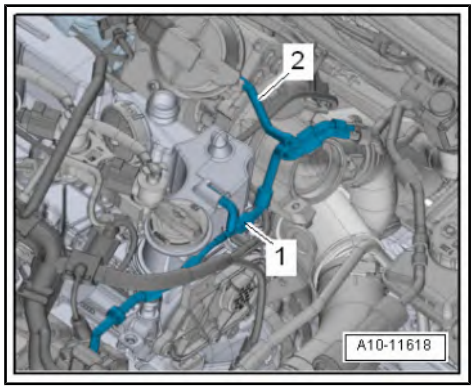
Continued for all vehicles



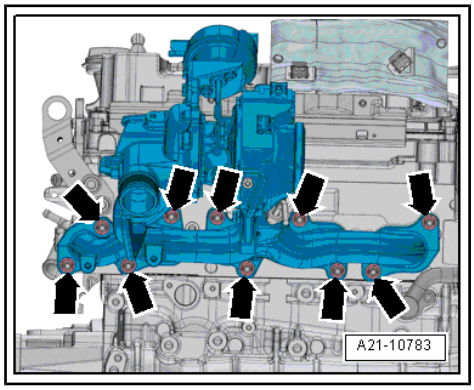
– Unscrew screws -arrows- and remove heat shield -1-.



– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.



– Unscrew nuts -arrows- and detach the exhaust gas turbocharger with exhaust manifold from the cylinder head, and remove from the top.

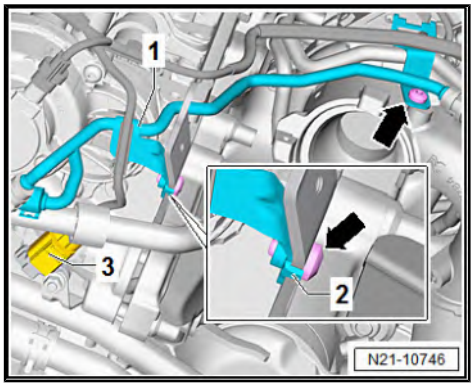


Installing

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

Note

- *Replace sealing rings, gaskets, O-rings and the self-locking nuts after disassembly.*
- *Fill the exhaust turbocharger with engine oil at the connection fitting for the oil feed line.*
- *Observe the assembly instruction for hose connections with screw clamps* ⇒ , page 474 .
- *Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *To ensure the oil supply to the exhaust gas turbocharger, leave the engine running for about 1 minute after installing the exhaust gas turbocharger; do not rev up immediately.*



- When installing the coolant pipe -1-, ensure that the guide -2- is seated correctly in the holder.
- Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .
- Install the left coolant pipe ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .
- Install the rear coolant pipe ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .
- Install pre-exhaust pipe ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .
- Connect vacuum hose ⇒ “2.1 Connection diagram - Vacuum system”, page 446 .
- Install exhaust temperature sender 1 - G235- ⇒ “4.2.1 Removing and installing the exhaust gas temperature transmitter 1 G235 , Octavia III, Yeti”, page 653 .
- Install the engine cover ⇒ “3.1 Removing and installing engine trim panel”, page 64 .
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Summary of components - drive shaft .

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ Fig. ““Bracket for exhaust gas cleaning module - tightening torques and tightening order”“ , page 583
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670
- ⇒ “3.9 Summary of components - injection valve for reduction agent”, page 640
- ⇒ Chassis, axles, steering; Rep. gr. 40 ; Propeller shaft; Assembly overview - propeller shaft

1.2.2 Removing and installing exhaust gas turbocharger, vehicles with EU4 emission level, engine identification characters CRVC

Note

Depending on the country-specific exhaust limit values, an unregulated particle filter (article reduction system) or a catalytic converter is installed in this engine.

NOTICE

In case a mechanical damage to the exhaust gas turbocharger is found, (e.g. damage to the compressor wheel), it is not sufficient to only replace the turbocharger. In order to avoid consequential damage, the following tasks must be performed:

- **Inspect the air filter housing, the air filter element and air guide hoses for contamination.**
- **Inspect the whole charge-air routing and charge air cooler for foreign bodies.**
- **If foreign bodies are found in the charge air system, clean the charge air duct and replace the charge air cooler if necessary.**
- **If damage to the exhaust gas turbocharger is evident, change the engine oil and engine oil filter.**

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-
- Socket wrench XZN 10 - T10501-

Note

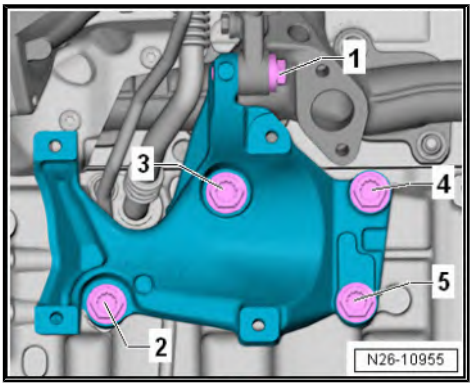
- *Observe rules for cleanliness ⇒ “3.1 Rules of cleanliness”, page 7 .*
- *Observe general instructions for charge-air system ⇒ “3 Repair instructions”, page 7 .*

Removing

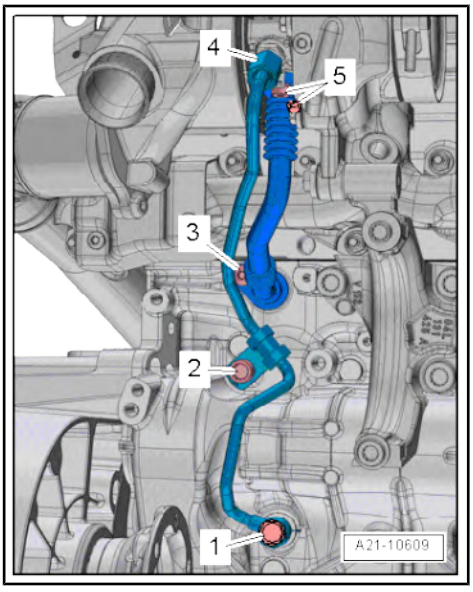
Note

Fit all heat protection sleeves on again in the same place when installing.

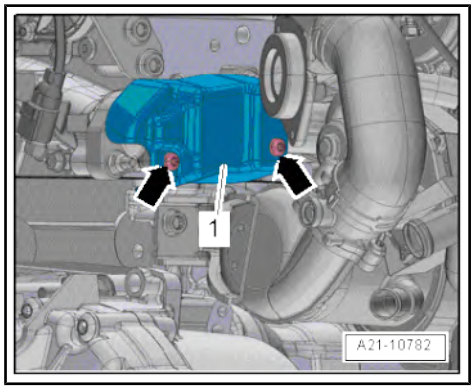
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .
– Remove rear coolant pipe
⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .
– For vehicles with auxiliary heating, remove coolant hoses from front wall ⇒ Auxiliary heating; Rep. gr. 82 ; Coolant circuit with auxiliary heating .
– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .
– Disconnect the line from the exhaust temperature sender 1 - G235- .
– Remove catalytic converter
⇒ “2.2 Removing and installing catalytic converter”, page 587 .
– Remove radiator for exhaust gas recirculation
⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .
– Unscrew screws -1- … -5- and remove bracket for radiator for exhaust gas recirculation.



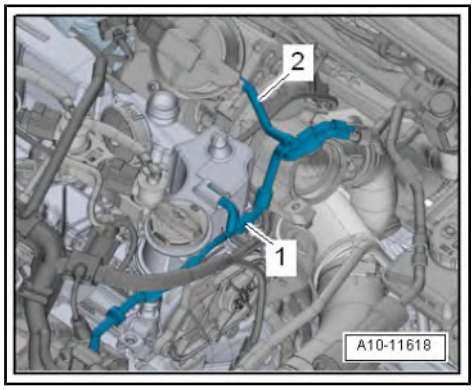
– Release nut -2- and remove union nut -4-.
– Unscrew screws -3-, -5-, remove oil return-flow line.



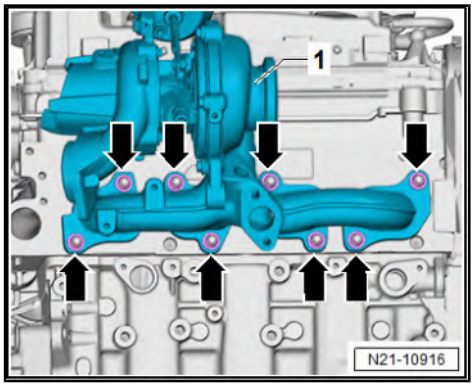
– Unscrew screws -arrows- and remove heat shield -1-.



– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.



– Unscrew nuts -arrows- and detach the exhaust gas turbocharger with exhaust manifold -1- from the cylinder head, and remove from the top.



Installing

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

Note

- *Replace sealing rings, gaskets, O-rings and the self-locking nuts after disassembly.*
- *Fill the exhaust turbocharger with engine oil at the connection fitting for the oil feed line.*
- *Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *To ensure the oil supply to the exhaust gas turbocharger, leave the engine running for about 1 minute after installing the exhaust gas turbocharger; do not rev up immediately.*

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Install the rear coolant pipe
⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

– Install mounting bracket for radiator for exhaust gas recirculation ⇒ page 676 .

– Install radiator for exhaust gas recirculation
⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

– Install catalytic converter
⇒ “2.2 Removing and installing catalytic converter”, page 587 .

– Install pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Connect vacuum hose
⇒ “2.1 Connection diagram - Vacuum system”, page 446 .

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

1.2.3 Removing and installing exhaust gas turbocharger, Yeti

NOTICE

In case a mechanical damage to the exhaust gas turbocharger is found, (e.g. damage to the compressor wheel), it is not sufficient to only replace the turbocharger. In order to avoid consequential damage, the following tasks must be performed:

- **Inspect the air filter housing, the air filter element and air guide hoses for contamination.**
- **Inspect the whole charge-air routing and charge air cooler for foreign bodies.**
- **If foreign bodies are found in the charge air system, clean the charge air duct and replace the charge air cooler if necessary.**
- **If damage to the exhaust gas turbocharger is evident, change the engine oil and engine oil filter.**

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-
- Socket wrench XZN 10 - T10501-

Note

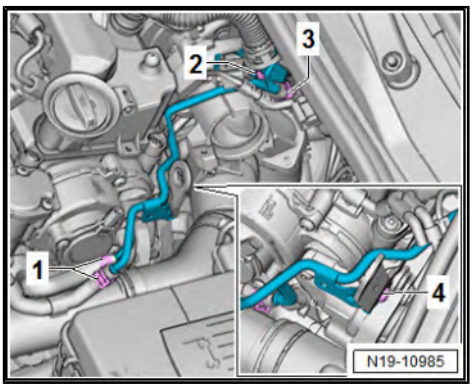
- *Observe rules for cleanliness*
  ⇒ “3.1 Rules of cleanliness”, page 7 .
- *Observe general instructions for charge-air system*
  ⇒ “3 Repair instructions”, page 7 .

Removing

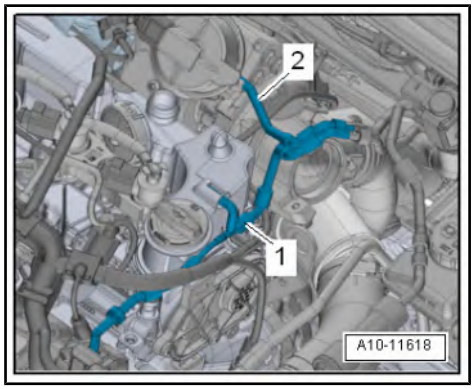
Note

Fit all heat protection sleeves on again in the same place when installing.

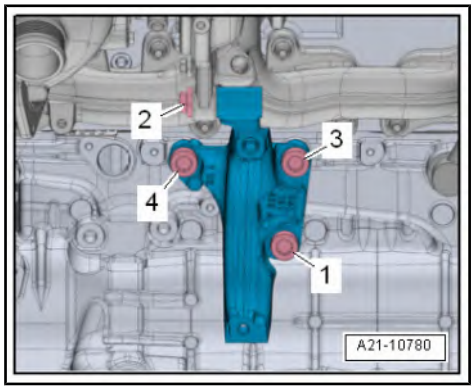
– Remove engine cover
  ⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Remove regulated particulate filter
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605 .
– Remove radiator for exhaust gas recirculation with filter for exhaust gas recirculation
  ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .
– Remove rear coolant pipe
  ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .
– For vehicles with auxiliary heating, remove coolant hoses from front wall ⇒ Auxiliary heating; Rep. gr. 82 ; Coolant circuit with auxiliary heating .
– Disconnect the line from exhaust temperature sender 1 - G235-
  ⇒ “4.2.1 Removing and installing the exhaust gas temperature transmitter 1 G235 , Octavia III, Yeti”, page 653 .
– Remove screw -2- from the coolant pipe.



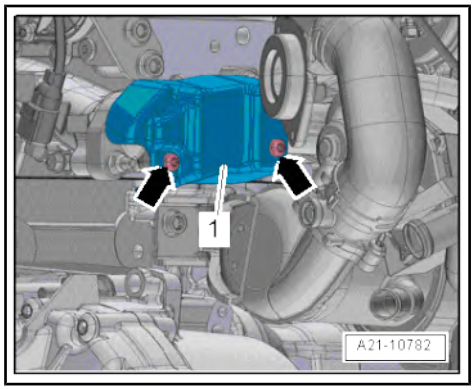
– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.



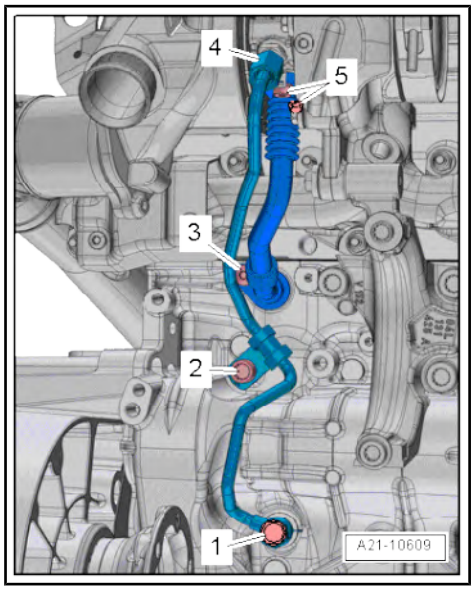
– Unscrew screws -1- to -4- and remove the bracket for the particle filter.



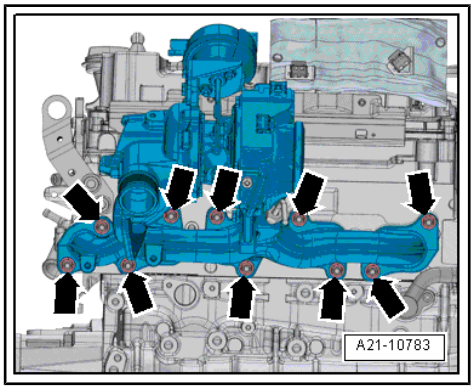
– Unscrew screws -arrows- and remove heat shield -1-.



– Remove screw -1- and -2- and union nut -4-. Remove oil supply line.
– Unscrew screws -3-, -5-, remove oil return-flow line.



– Unscrew nuts -arrows- and detach the exhaust gas turbocharger with exhaust manifold from the cylinder head and remove downwards.



Installing

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

Note

- *Replace sealing rings, gaskets, O-rings and the self-locking nuts after disassembly.*
- *Fill the exhaust turbocharger with engine oil at the connection fitting for the oil feed line.*
- *Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *To ensure the oil supply to the exhaust gas turbocharger, leave the engine running for about 1 minute after installing the exhaust gas turbocharger; do not rev up immediately.*

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Holder mounting bracket for exhaust gas recirculation ⇒ page 587 .

– Install the rear coolant pipe ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

– Install radiator for exhaust gas recirculation with filter for exhaust gas recirculation ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

– Install regulated particulate filter ⇒ “2.4 Installing and removing regulated particle filter”, page 605 .

– Install pre-exhaust pipe ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Connect vacuum hose ⇒ “2.1 Connection diagram - Vacuum system”, page 446 .

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

1.2.4 Removing and installing exhaust gas turbocharger, Rapid NH

NOTICE

In case a mechanical damage to the exhaust gas turbocharger is found, (e.g. damage to the compressor wheel), it is not sufficient to only replace the turbocharger. In order to avoid consequential damage, the following tasks must be performed:

- **Inspect the air filter housing, the air filter element and air guide hoses for contamination.**
- **Inspect the whole charge-air routing and charge air cooler for foreign bodies.**
- **If foreign bodies are found in the charge air system, clean the charge air duct and replace the charge air cooler if necessary.**
- **If damage to the exhaust gas turbocharger is evident, change the engine oil and engine oil filter.**

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-

Note

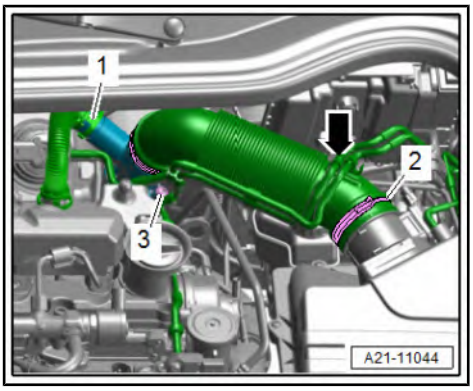
- *Observe rules for cleanliness*
  ⇒ “3.1 Rules of cleanliness”, page 7 .
- *Observe general instructions for charge-air system*
  ⇒ “3 Repair instructions”, page 7 .

Removing

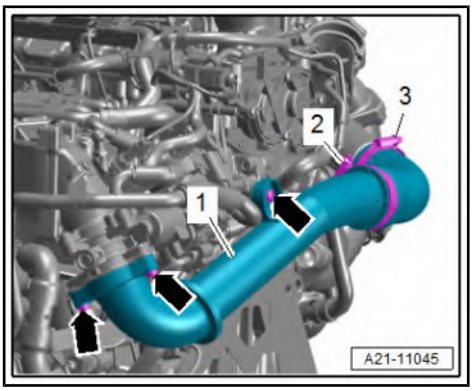
Note

Fit all heat protection sleeves on again in the same place when installing.

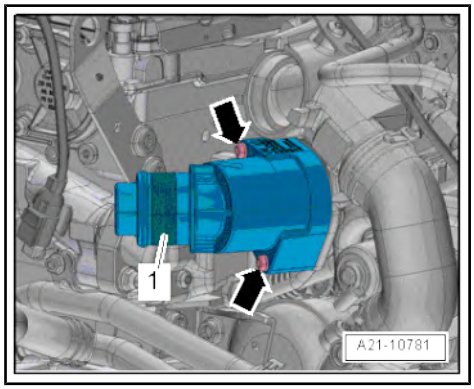
– Remove engine cover
  ⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Remove exhaust gas cleaning module
  ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .
– Remove air filter housing
  ⇒ “4.2 Removing and installing air filter housing”, page 476 .
– Press release buttons on both sides of the hose -1- for crankcase ventilation and disconnect hose from connection fitting.
– Expose vacuum hoses -arrow- at the air guide pipe.
– Unscrew screws -3-, swivel air guide pipe with inlet connection clockwise and detach from exhaust gas turbocharger.



– Unscrew screws -arrows-.
– Loosen hose clamp -2-, remove air guide pipe -1-.



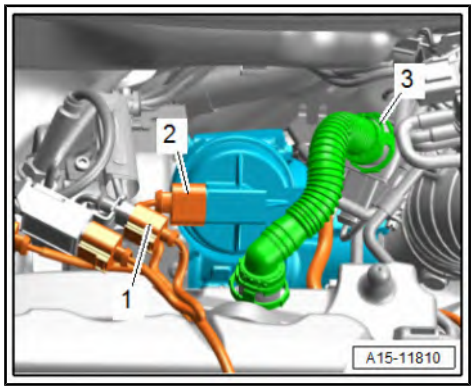
– Unscrew screws -arrows- and remove container with pre-cubic contents -1-.



– Disconnect electrical plug connections and expose wiring loom.

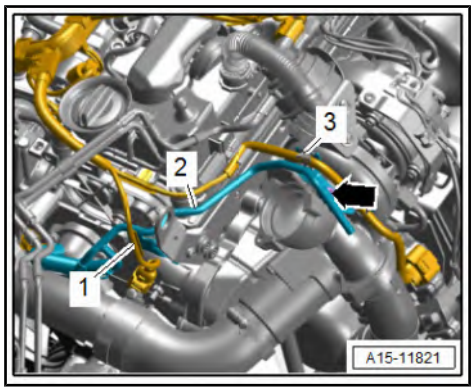
1 - for exhaust gas temperature sender 1 - G235-

2 - for position transmitter for charge pressure regulator - G581-



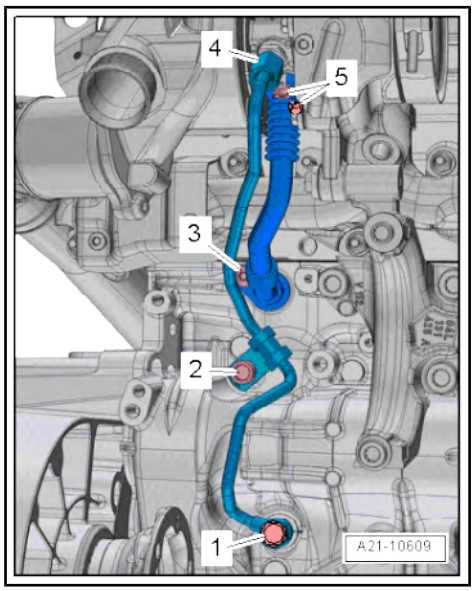
– Expose electric cables -1, 3-.

– Unscrew screws -arrows- and push coolant line -2- to the left side.

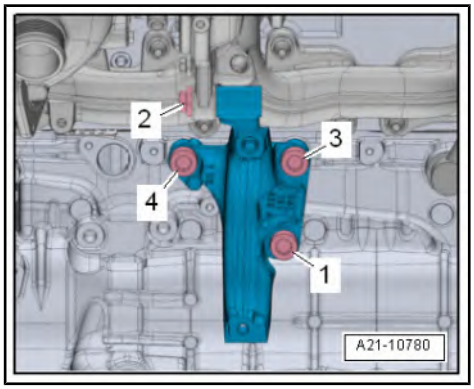


– Unscrew hollow screw -1-, screw -2- and union nut -4-.

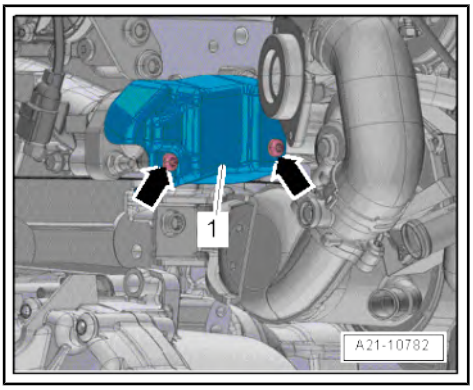
– Remove screws -3-, -5- and remove oil drain pipe.



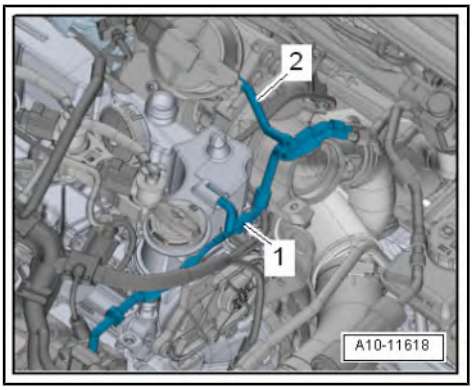
– Unscrew screws -1- … -4- and remove bracket for exhaust gas cleaning module.



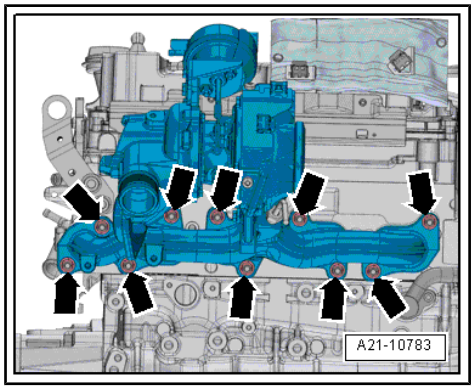
– Unscrew screws -arrows- and remove the heat shield -1-.



– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.



– Unscrew nuts -arrows- and remove the exhaust gas turbocharger with exhaust manifold from the cylinder head.



Installing

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

Note

- *Replace sealing rings, gaskets, O-rings and the self-locking nuts after disassembly.*
- *Fill the exhaust turbocharger with engine oil at the connection fitting for the oil feed line.*
- *Hose connections and air guide pipes and hoses must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *To ensure the oil supply to the exhaust gas turbocharger, leave the engine running for about 1 minute after installing the exhaust gas turbocharger; do not rev up immediately.*

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Install exhaust gas cleaning module ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589 .

– Connect vacuum hose ⇒ “2.1 Connection diagram - Vacuum system”, page 446 .

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

Note

Do not re-use used coolant.

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

Note

- *The function to increase oil pressure does not always have to be available on the engine control unit. In this case, the oil pressure is not increased.*
- *After installing new parts (engine/partial engine, cylinder head, camshaft housing or exhaust gas turbocharger), the oil pressure control must be limited to the high pressure level for approx. 1000 km. This takes into account the higher friction when running in new components and ensures optimum evacuation of particles from running-in wear. To do so, connect the vehicle diagnosis tester, switch on the ignition and select:*
- `0001 - Adaption`
- `Oil pressure for engine run-in`

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “2.1 Summary of components - charge air system”, page 409
- ⇒ “4.1.2 Summary of components - air filter housing, Rapid NH”, page 475

1.3 Replacing exhaust gas turbocharger pressure box

⇒ “1.3.1 Replacing exhaust gas turbocharger pressure box, variants 1 and 2”, page 401

⇒ “1.3.2 Replacing exhaust gas turbocharger pressure box, variant 3”, page 406

1.3.1 Replacing exhaust gas turbocharger pressure box, variants 1 and 2

Note

Before removing the pressure box for the exhaust gas turbocharger, check whether the repair set is available ⇒ ETKA - Electronic Catalogue of Original Parts . Otherwise, the entire exhaust gas turbocharger must be replaced.

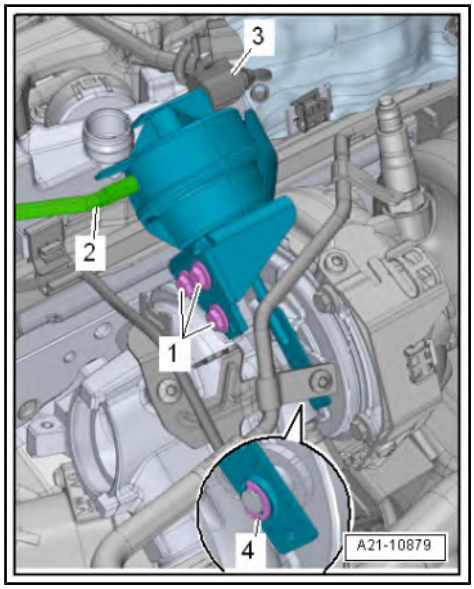
Special tools and workshop equipment required

- Hand vacuum pump - VAS 6213-

Removing

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

Version 1



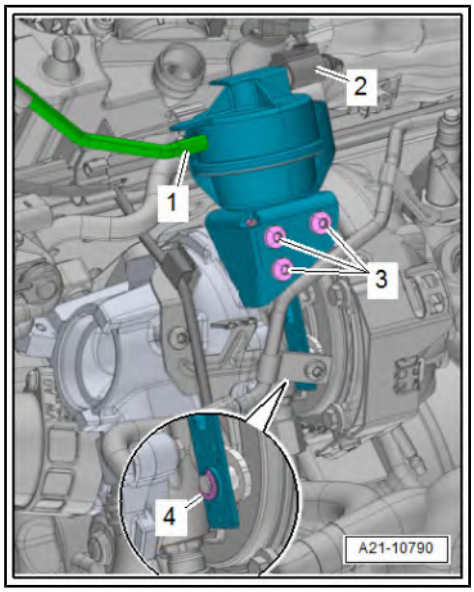
– Disconnect the electrical plug connection -3- from the position transmitter for charge pressure regulator - G581- .
– Remove the vacuum hose -2- from the vacuum unit for charge pressure control.

Note

When removing and installing the circlip, keep the force exerted on the lever hoist to a minimum. Pressing down the circlip e.g. with a large screwdriver can damage the exhaust gas turbocharger.

– Remove detention ring -4-.
– Unscrew screws -1- from the pressure box.
– Unhook the control rod from the adjuster lever and remove the pressure box with position sender for charge pressure regulator - G581- .

Version 2



– Disconnect the electrical plug connection -2- from the position transmitter for charge pressure regulator - G581- .
– Remove the vacuum hose -1- from the vacuum unit for charge pressure control.

Note

When removing and installing the circlip, keep the force exerted on the lever hoist to a minimum. Pressing down the circlip e.g. with a large screwdriver can damage the exhaust gas turbocharger.

– Remove detention ring -4-.
– Unscrew screws -3- from the pressure box.
– Unhook the control rod from the adjuster lever and remove the pressure box with position sender for charge pressure regulator - G581- .

Installing

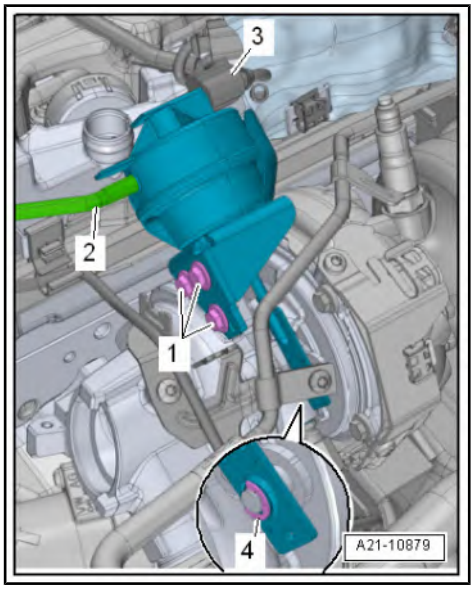
Note

Use new screws and a new circlip from the repair kit!

Version 1

– Hook the control rod into the adjuster lever.

– Position pressure box and screw in screws -1- by hand until it stops.



Note

When removing and installing the circlip, keep the force exerted on the lever hoist to a minimum. Pressing down the circlip e.g. with a large screwdriver can damage the exhaust gas turbocharger.

– Install the circlip -4-.

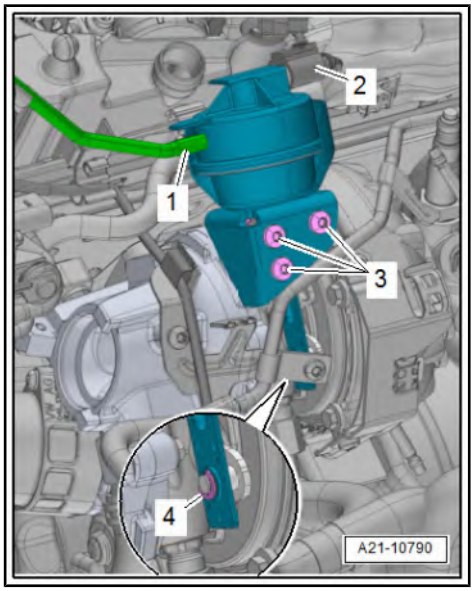
– Connect the electrical plug connection -3- to the position transmitter for charge pressure regulator - G581- .

– Tighten screws -1-.

Version 2

– Hook the control rod into the adjuster lever.

– Position pressure box and screw in screws -3- by hand until it stops.



Note

When removing and installing the circlip, keep the force exerted on the lever hoist to a minimum. Pressing down the circlip e.g. with a large screwdriver can damage the exhaust gas turbocharger.

– Install the circlip -4-.

– Connect the electrical plug connection -2- to the position transmitter for charge pressure regulator - G581- .

– Tighten screws -3-.

Continued for both variants

– Connect vehicle diagnosis tester.

– Start engine and erase event memory ⇒ Vehicle diagnostic tester.

– Carry out basic setting of the vacuum unit.

♦ `Adaptation of the exhaust gas turbocharger`

Tightening torque

Screws	Tightening torque
-1-	10 Nm
-3-	10 Nm

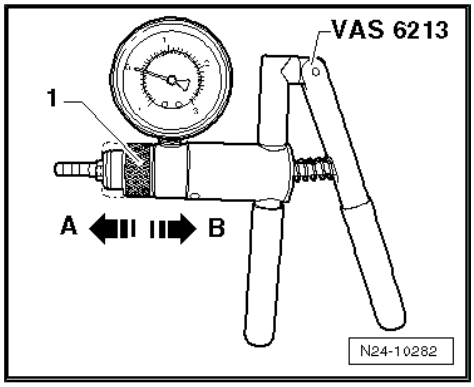
Adjusting the control rod of the vacuum unit

– Use the raw voltage for this measurement.

– Use ⇒ Vehicle diagnostic tester in for this purpose.

– Read the voltage value in `self-diagnosis`.

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

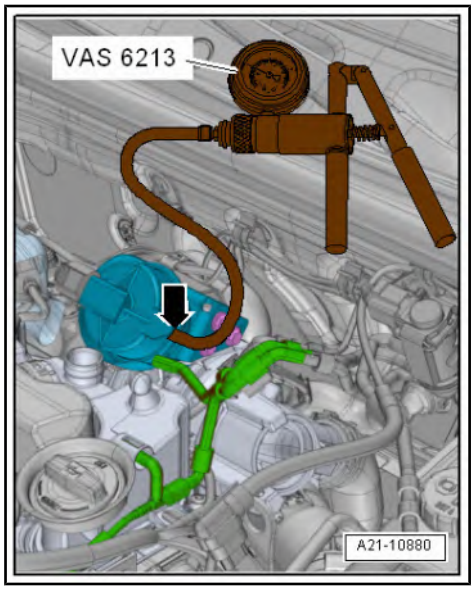


– Connect the hand vacuum pump - VAS 6213- to the pressure box -arrow-.

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.**



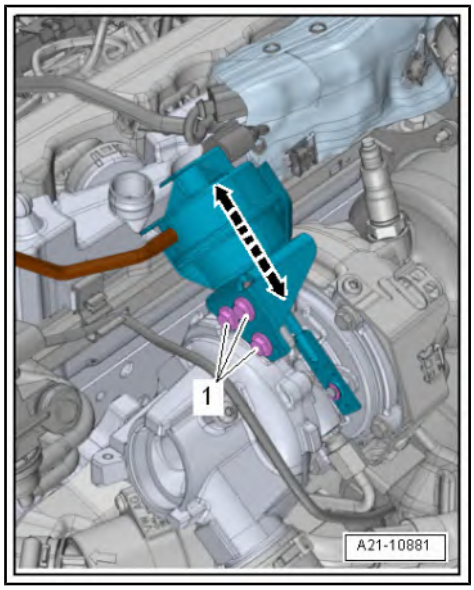
Adjust the voltage value

– 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.

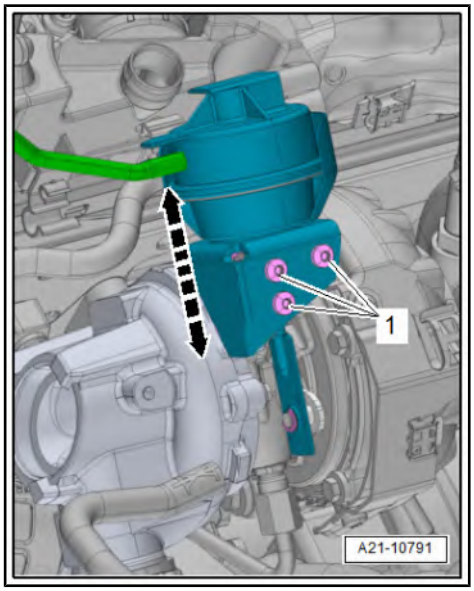
– Tighten screws -1-.



Version 2

– 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-.



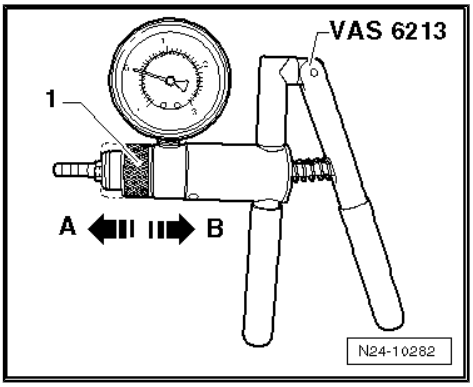
– Slide the sliding ring -1- of the hand vacuum pump - VAS 6213- to position -B- to vent the pressure box to ambient pressure.

Check the voltage value

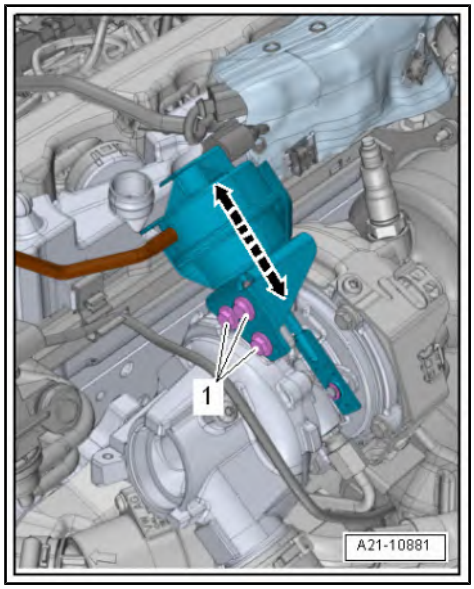
– 3Put the sliding ring -1- of the hand vacuum pump - VAS 6213- in position -A- for “vacuum”.

– 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.

– The ⇒ Vehicle diagnostic tester should now display a voltage of 0.75 ± 0.02 V.



Voltage not OK.



Note

Variant 1 is shown.

– Release screws -1-.
– Adjust the voltage value ⇒ page 404 .

Voltage value o.k.

– Coat the screws with sealing varnish from the repair kit.
– Install the engine cover ⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Start engine and erase event memory ⇒ Vehicle diagnostic tester.

Tightening torques - summaries of components

Note

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

Bolts	Tightening torque
-1-	10 Nm

1.3.2 Replacing exhaust gas turbocharger pressure box, variant 3

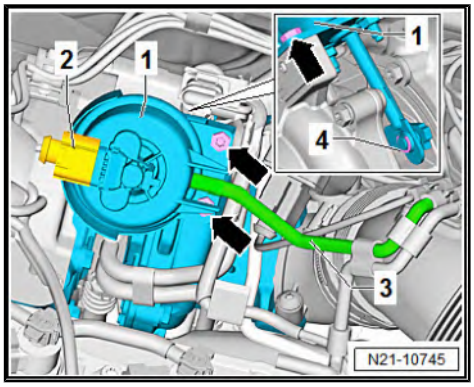
Note

Before removing the pressure box for the exhaust gas turbocharger, check whether the repair set is available ⇒ ETKA - Electronic Catalogue of Original Parts . Otherwise, the entire exhaust gas turbocharger must be replaced.

Removing

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

– Release and disconnect the electrical plug connection -2- from the position sender for charge pressure regulator - G581- .
– Remove the vacuum hose -3- from the vacuum unit -1- of the exhaust gas turbocharger.
– Unscrews screws -arrows- for the pressure box.



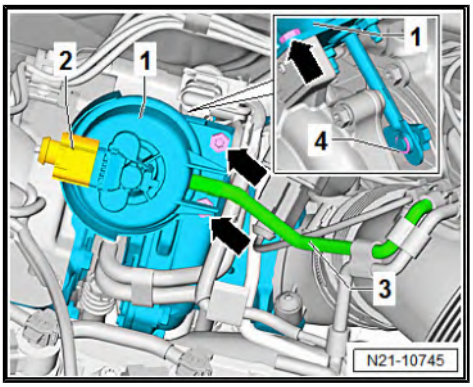
Note

When removing and installing the circlip, keep the force exerted on the lever hoist to a minimum. Pressing down the circlip e.g. with a large screwdriver can damage the exhaust gas turbocharger.

– Circlip -4- detach.
– Unhook the control rod from the adjuster lever and remove the pressure box with position sender for charge pressure regulator - G581- .

Installing

– Use new screws and a new circlip from the repair kit!
– Hook the control rod into the adjuster lever.



Note

When removing and installing the circlip, keep the force exerted on the lever hoist to a minimum. Pressing down the circlip e.g. with a large screwdriver can damage the exhaust gas turbocharger.

– Install the circlip -4-.
– Position pressure box and screw in screws -arrows- by hand up to the stop.
– Connect the electrical plug connection -2- to the position transmitter for charge pressure regulator - G581- .
– Connect vacuum hose -3-.
– Tighten screws -arrows-.
– Seal the screws with sealing varnish from the repair kit.
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Start engine and erase event memory ⇒ Vehicle diagnostic tester.
– Carry out basic setting of the vacuum unit.

`Adaptation of the exhaust gas turbocharger`

Tightening torques

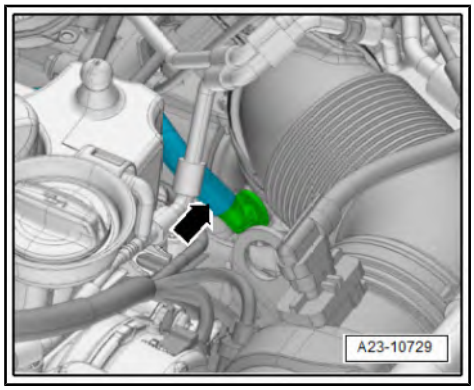
Bolts	Tightening torque
Screws -arrows-	10 Nm

1.4 Removing and installing the exhaust gas turbocharger connection fitting

Special tools and workshop equipment required

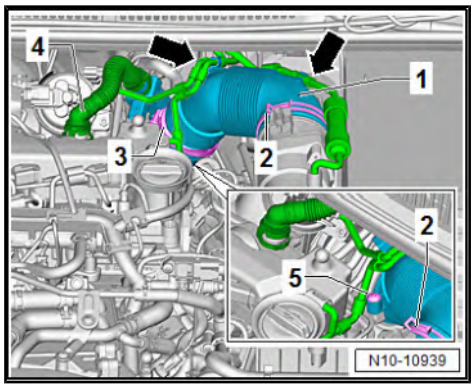
- Hose binding claw - VAS 6362-

– If present, detach vacuum hose -arrow-.



NOTICE

Depending on the vehicle build and the country version, hoses are used for the crankcase ventilation that cannot be released on the cylinder head cover without being destroyed. In these variants, the crankcase ventilation hose may only be separated at the connection fitting for the air guide hose.



– Remove hose -4- for the crankcase ventilation and air guide hose -1-.
– To do so, press the release.
– Disconnect vacuum hoses on the air guide pipe -arrows-.
– Slacken hose clamp -2-, remove air guide pipe from air mass meter - G70- .
– Unscrew bolt -5-.
– Rotate the air guide pipe with connection fitting to the right.
– Rotate to the rear until the guides on the connection fitting are rotated out of the lock.
– Pull the air guide pipe with connection fitting off the exhaust gas turbocharger.

Installing

Installation is performed in the reverse order, while paying attention to the following:

– Release the screw clamp between connection fitting and air guide hose -3-.
– Remove air guide hose.
– Position the connection fitting so that the guides are in front of the lock.
– Slide in the connection fitting and rotate it to the front up to the stop.
– Connect the air guide hose to the connection fitting.
– Tighten the screw clamp -3-.

Further installation occurs in reverse order.

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374

2 Charge-air system

⇒ “2.1 Summary of components - charge air system”, page 409

⇒ “2.2 Removing and installing charge pressure sender G31 ”, page 411

⇒ “2.3 Checking the charge-air system for leak-tightness”, page 411

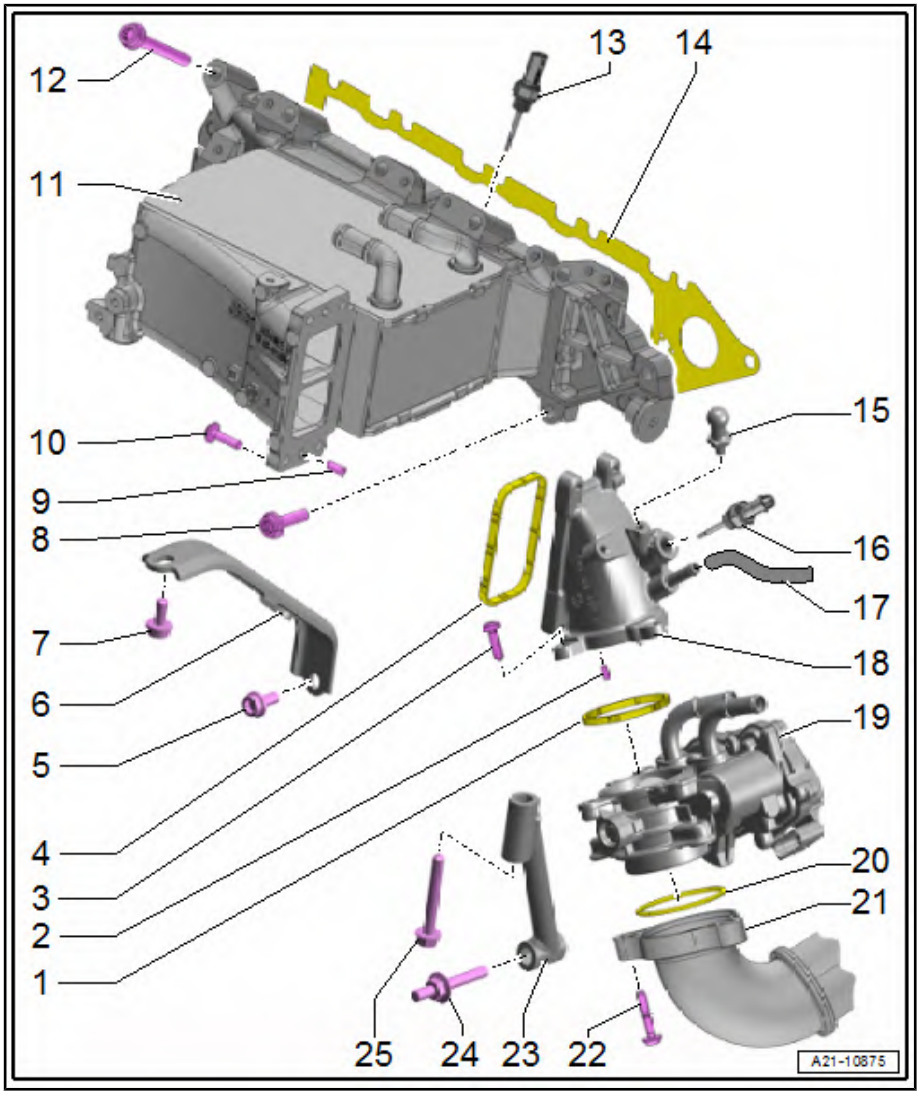
⇒ “2.4 Installing and removing the air guide pipe”, page 418

⇒ “2.5 Leak testing the charge air cooler”, page 419

2.1 Summary of components - charge air system

Note

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



1 - Sealing ring
- ❑ Replace after disassembly

2 - Fit pin

3 - Screw
- ❑ 8 Nm

4 - Seal
- ❑ Replace after disassembly

5 - Screw
- ❑ Tightening torque and tightening order ⇒ page 483

6 - Mounting bracket
- ❑ for the intake manifold

7 - Screw
- ❑ Tightening torque and tightening order ⇒ page 483

8 - Screw
- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 483

9 - Fit pin

10 - Screw
- ❑ 8 Nm

11 - Intake manifold with charge air cooler
- ❑ The intake manifold and charge air cooler form a single building unit
- ❑ Removing and installing ⇒ “5.2 Removing and installing intake manifold”, page 483

- ❑ Check for leaks ⇒ “2.3 Checking the charge-air system for leak-tightness”, page 411

12 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 483

13 - Charge air temperature transmitter after charge air cooler - G811-

- ❑ Removing and installing ⇒ “6.9 Removing and installing charge air temperature transmitter after charge air cooler G811 ”, page 519
- ❑ 22 Nm

14 - Seal

- ❑ Replace after disassembly

15 - Ball stud

- ❑ for engine cover
- ❑ 9 Nm

16 - Intake air temperature sender - G42-

- ❑ Removing and installing ⇒ “6.7 Removing and installing intake air temperature sender G42 ”, page 516
- ❑ 22 Nm

17 - Hose

- ❑ to charge pressure transmitter - G31-

18 - Connection fitting

- ❑ Throttle valve control unit - J338-

19 - Throttle valve control unit - J338-

- ❑ with throttle valve potentiometer - G69-
- ❑ Removing and installing ⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491

20 - O-ring

- ❑ Replace after disassembly

21 - Air guide pipe

22 - Screw

- ❑ 8 Nm

23 - Mounting bracket

- ❑ Throttle valve control unit - J338-

24 - Double screw

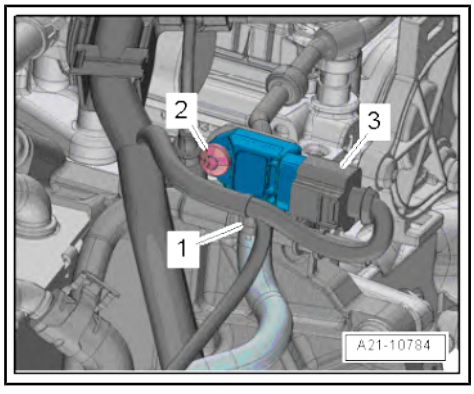
- ❑ Tightening torque and tightening order ⇒ page 483

25 - Screw

- ❑ Tightening torque and tightening order ⇒ page 483

Charge pressure sender - G31- - tightening torque

– Tighten -2- to 9 Nm.



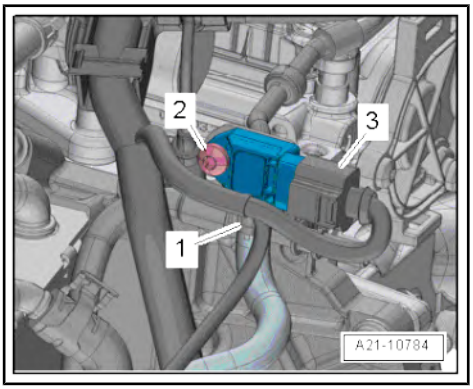
2.2 Removing and installing charge pressure sender - G31-

Removing

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

– Separate electrical plug connection -3-.

– Spray the hose on the charge pressure sender - G31- with solvent before removing it.



NOTICE

Risk of destruction of the charge pressure sender as a result of the connection fitting breaking.

♦ **Pull hose off carefully and straight from the connection fitting.**

– Unscrew screw -2- and remove charge pressure sender - G31- .

Installing

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

Tightening torques - summaries of components

♦ ⇒ Fig. “” Charge pressure sender -G31- - tightening torque”“ , page 410

2.3 Checking the charge-air system for leak-tightness

⇒ “2.3.1 Checking the charge-air system for leak-tightness, Octavia III, Yeti”, page 411

⇒ “2.3.2 Checking the charge-air system for leak-tightness, Rapid NH”, page 414

2.3.1 Checking the charge-air system for leak-tightness, Octavia III, Yeti

Special tools and workshop equipment required

♦ Charge air system tester , e.g. -V.A.G 1687-

♦ Adapter , e.g. -V.A.G 1687/11-

♦ Adapter , e.g. -V.A.G 1687/15-

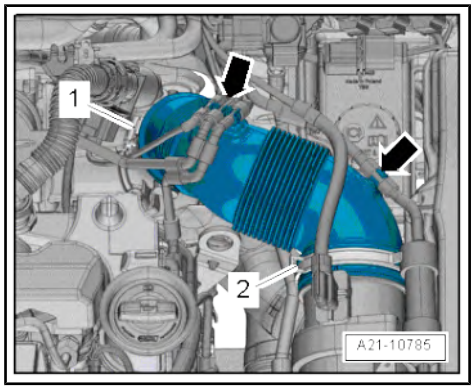
♦ Screw plug set for engine - VAS 6122-

♦ Hose binding claw

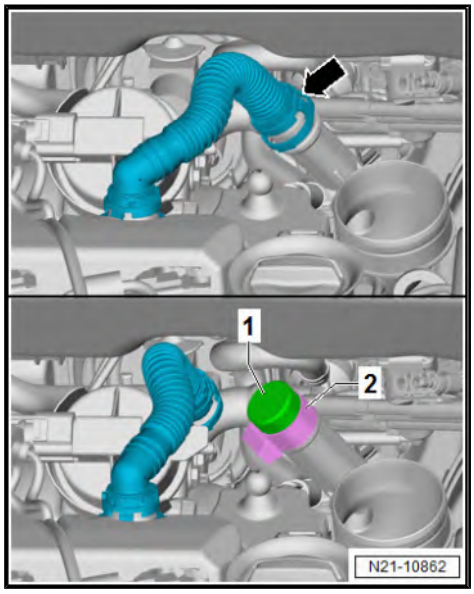
Test sequence

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

– Disconnect vacuum hoses on the air guide pipe -arrows-.
– Loosen hose clamps -1-, -2-, and remove air guide pipe.

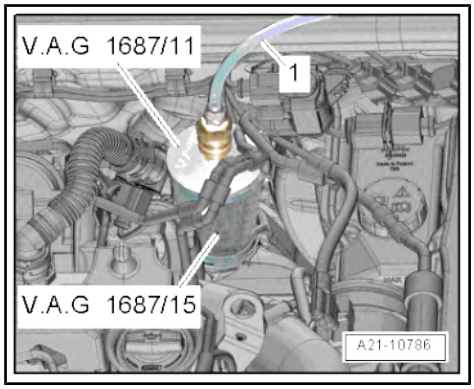


– Detach vent pipe for crankcase ventilation -arrow-.
– Close connection fitting with a plug -1- from the screw plug set for engine . Secure the plug with hose clamp -2-.

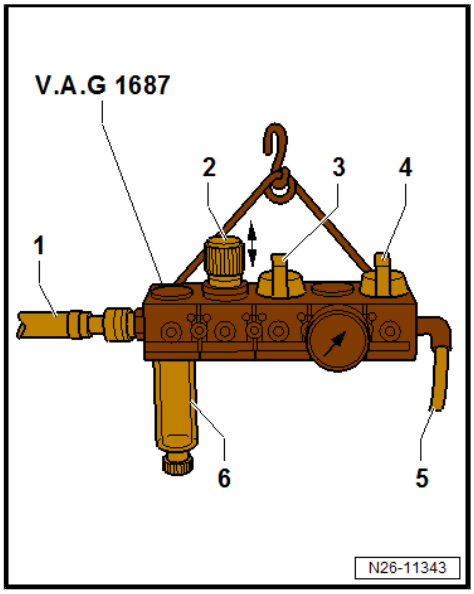


– Connect adapter - V.A.G 1687/11- with -V.A.G 1687/15- to the exhaust gas turbocharger.
– Connect pressure hose -1- from the charge-air system testing device - V.A.G 1687- to adapter.

Prepare tester for charge air system - V.A.G 1687- as follows:



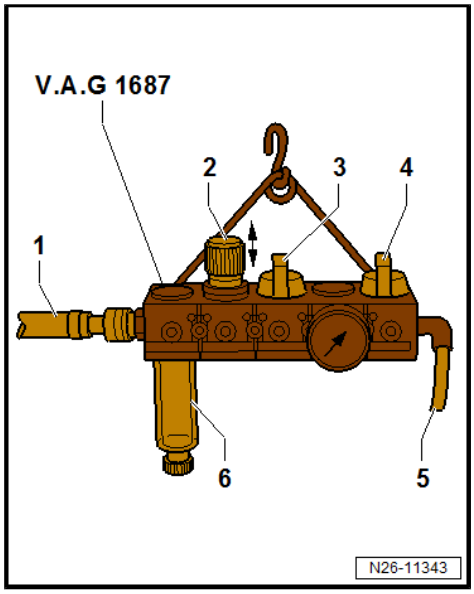
– Unscrew pressure control valve -2- fully and close the valves -3- and -4-.



Note

The rotary knob must be pulled to the top in order to rotate the pressure control valve -2-.

– Connect the pneumatic hose -1- (pneumatic support) to tester for charge air system.



Note

If there is water in the transparent drain container -6-, drain water via the drain plug.

– Open valve -3-.

NOTICE

The pressure must not be greater than 0.05 MPa (0.5 bar)! A too high pressure can damage the engine.

– Set the pressure to 0.05 MPa (0.5 bar) with the pressure control valve -2-.

– Open valve -4- and wait until the test circuit is filled. If necessary, re-adjust the pressure to 0.05 MPa (0.5 bar).

– Check charge air system for leak points.

- by listening and feeling
- with commercially available leak search spray
- with ultrasonic measuring device , e.g. -V.A.G 1842-

Note

- *Minor leaks are permissible on the suction side of the turbocharger, because the intake hoses are not designed for overpressure.*
- *A small amount of air escapes via the valves into the engine and via the radiator for exhaust gas recirculation into the exhaust system. For this reason no pressure test is possible.*
- *Using the ultrasonic tester - V.A.G 1842- ⇒ Owner's Manual .*
- *In case of a leak point, observe the instructions for charge air system ⇒ "3 Repair instructions", page 7 during the installation.*
- *Before removing the adapter, depressurize the test circuit by detaching the hose coupling.*

2.3.2 Checking the charge-air system for leak-tightness, Rapid NH

Special tools and workshop equipment required

- Charge air system tester , e.g. -V.A.G 1687-
- Adapter , e.g. -V.A.G 1687/11-
- Adapter , e.g. -V.A.G 1687/15-
- Adapter , e.g. -V.A.G 1687/19-
- Y distributor , e.g. -VAS 691 005/1-
- Adapter , e.g. -VAS 691 005/5-
- Turbocharger tester - V.A.G 1397A-
- Screw plug set for engine - VAS 6122-

♦ Hose binding claw

Preparing the adapter - V.A.G 1687/15-

– Shorten the adapter - V.A.G 1687/15- to 70 mm.

– Order replacement adapter - V.A.G 1687/15- for use in other cases.

Test sequence

Connect turbocharger tester - V.A.G 1397A-

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

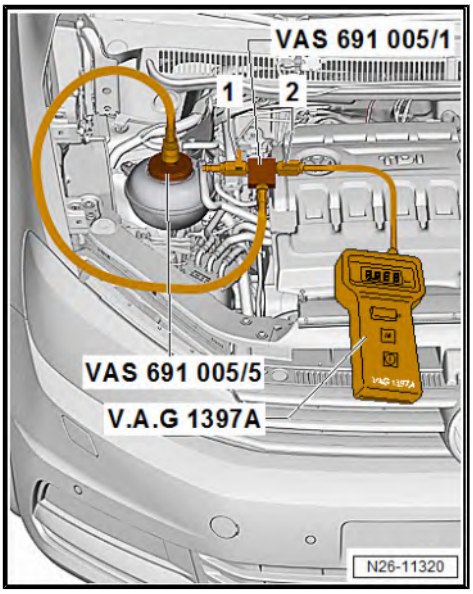
– Screw the test adapter - VAS 691 005/5- onto the coolant expansion tank.

– Mount the Y distributor - VAS 691 005/1- onto the test adapter - VAS 691 005/5- .

– Connect valve -1- for connection »C« and open valve -2- for connection »A«.

– Connect hose of the connection »A« Y distributor to connection »II« of the turbocharger tester - V.A.G 1397A- .

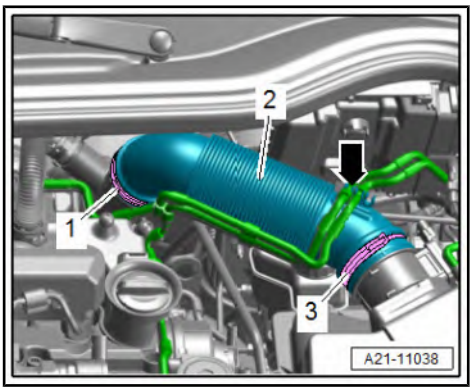
– Put turbocharger tester - V.A.G 1397A- in switch position »II« (measuring relative pressure) and switch on. The »II« must be visible.



Connect tester for charge air systems - V.A.G 1687-

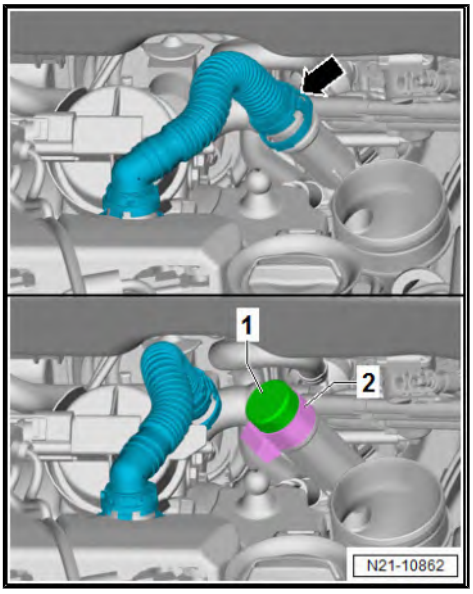
– Disconnect vacuum hoses on the air guide pipe -arrows-.

– Release hose clamps -1-, -3- and remove air guide pipe -2-.

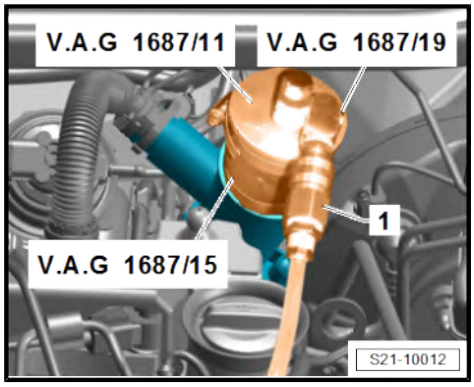


– Detach vent pipe for crankcase ventilation -arrow-.

– Close connection fitting with a plug -1- from the screw plug set for engine . Secure the plug with hose clamp -2-.

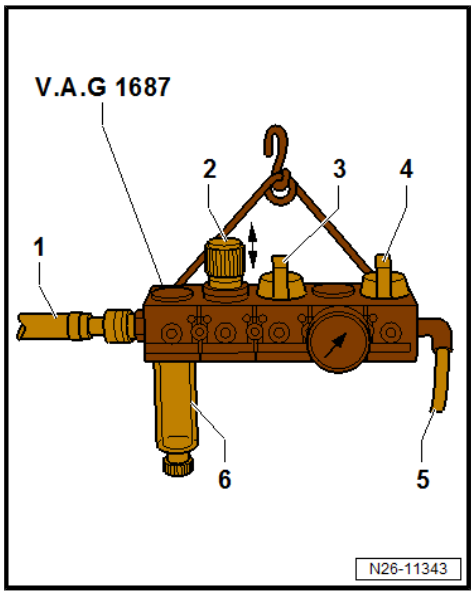


– Connect adapter - V.A.G 1687/11- with -V.A.G 1687/15- and -V.A.G 1687/19- to the exhaust gas turbocharger.
– Connect pressure hose -1- from the charge-air system testing device - V.A.G 1687- to adapter.



Prepare tester for charge air system - V.A.G 1687- as follows:

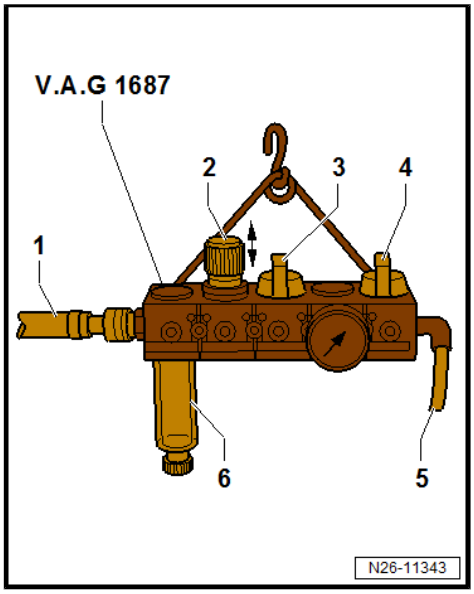
– Unscrew pressure control valve -2- fully and close the valves -3- and -4-.



Note

The rotary knob must be pulled to the top in order to rotate the pressure control valve -2-.

– Connect the pneumatic hose -1- (pneumatic support) to tester for charge air system.



Note

If there is water in the transparent drain container, drain water via the drain plug -6-.

– Open valve -3-.

NOTICE

The pressure must not be greater than 0.05 MPa (0.5 bar)! A too high pressure can damage the engine.

– Set the pressure to 0.05 MPa (0.5 bar) with the pressure control valve -2-.

– Open valve -4- and wait until the test circuit is filled. If necessary, re-adjust the pressure to 0.05 MPa (0.5 bar).

– Check charge air system for leak points.

♦ by listening and feeling

♦ with commercially available leak search spray

♦ with ultrasonic measuring device , e.g. -V.A.G 1842-

Note

♦ *Minor leaks are permissible on the suction side of the turbocharger, because the intake hoses are not designed for overpressure.*

♦ *A small amount of air escapes via the valves into the engine. For this reason no pressure test is possible.*

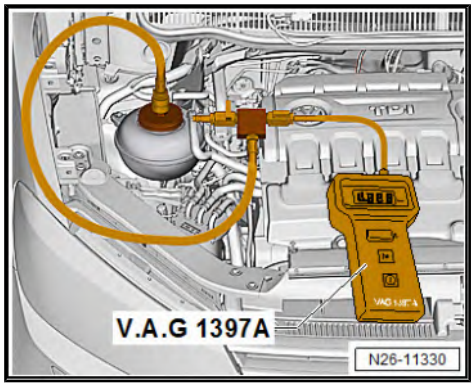
♦ *Using the ultrasonic tester - V.A.G 1842- ⇒ Owner's Manual .*

♦ *In case of a leak point, observe the instructions for charge air system ⇒ "3 Repair instructions", page 7 during the installation.*

♦ *Before removing the adapter, depressurize the test circuit by detaching the hose coupling.*

If there is no leak in the charge air system, check the water-cooled charge air cooler for leaks.

Read off the turbocharger tester - V.A.G 1397A-



– The pressure must stay at 0.05 MPa (0.5 bar).

• Monitor the turbocharger tester for 5 minutes.

• The pressure displayed on the turbocharger tester must not increase!

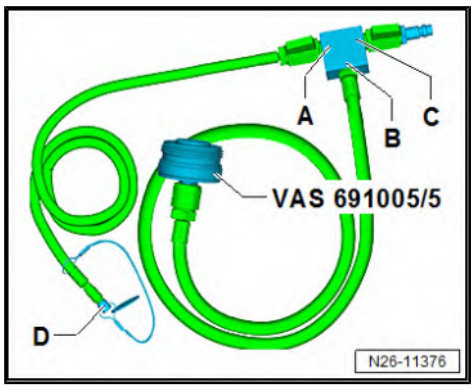
– If the pressure shown on the turbocharger tester increases, compressed air is escaping into the cooling system on the exhaust side. The charge air cooler is not leak-tight and must be replaced.

Note

♦ *There may be a slight vacuum as a result of cooling of the coolant. A vacuum is indicated on the turbocharger tester by a »minus« symbol. The »minus« values do not indicate a leak!*

♦ *If you are uncertain, repeat the test. To do so, briefly open the shut-off cock -1- and equalise the pressure in the cooling system. If the charge air cooler is not leak-tight, the pressure will continue to increase with each test.*

Clean Y distributor - VAS 691 005/1-



Note

After completing the leakage test, the Y distributor - VAS 691 005/1- must be cleaned to remove any moisture that has got in.

– Insert washer jet -D- into the hose connection -A- of the Y distributor .

– Position test adapter - VAS 691 005/5- on the hose at connection -B-.

– Connect pressure hose to connection -C-.

– Open the shut-off tap and blow air through the hose for approx. 15 seconds.

2.4 Installing and removing the air guide pipe

Special tools and workshop equipment required

♦ Torx insert T 30 - T10405-

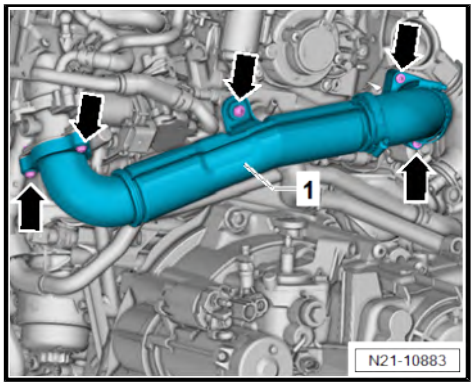
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

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

– Detach the connection fitting from the exhaust gas turbocharger
⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407 .

– Unscrew screws -arrows-.

– Remove air guide pipe -1-.



Installing

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

Tightening torques:

- ⇒ “2.1 Summary of components - charge air system”, page 409
- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

2.5 Leak testing the charge air cooler

⇒ “2.5.1 Checking the charge air cooler for leaks, Octavia III, Yeti”, page 419

2.5.1 Checking the charge air cooler for leaks, Octavia III, Yeti

Note

The charge air cooler generates a pressure of 0.05 MPa (0.5 bar) on the air side. The pressure in this case is measured in the cooling system.

Special tools and workshop equipment required

- Charge air system tester , e.g. -V.A.G 1687-
- Y distributor , e.g. -VAS 691 005/1-
- Adapter , e.g. -VAS 691 005/5-
- Turbocharger tester - V.A.G 1397A-
- Screw plug set for engine - VAS 6122-

Test condition

- The coolant temperature must be at least 40 °C.

Connect turbocharger tester - V.A.G 1397A-

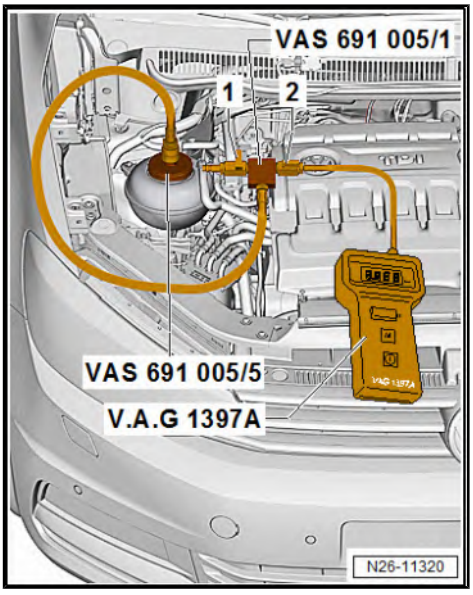
– Screw the test adapter - VAS 691 005/5- onto the coolant expansion tank.

– Mount the Y distributor - VAS 691 005/1- onto the test adapter - VAS 691 005/5- .

– Connect valve -1- for connection »C« and open valve -2- for connection »A«.

– Connect hose of the connection »A« Y distributor to connection »II« of the turbocharger tester - V.A.G 1397A- .

– Put turbocharger tester - V.A.G 1397A- in switch position »II« (measuring relative pressure) and switch on. The »II« must be visible.

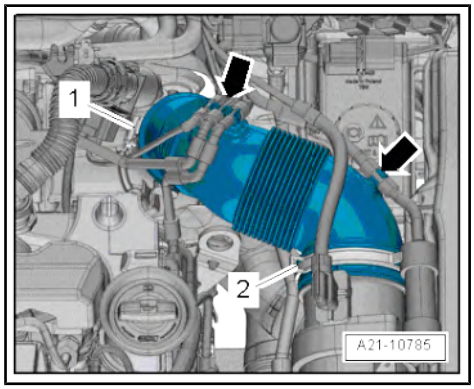


Connect tester for charge air systems - V.A.G 1687-

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

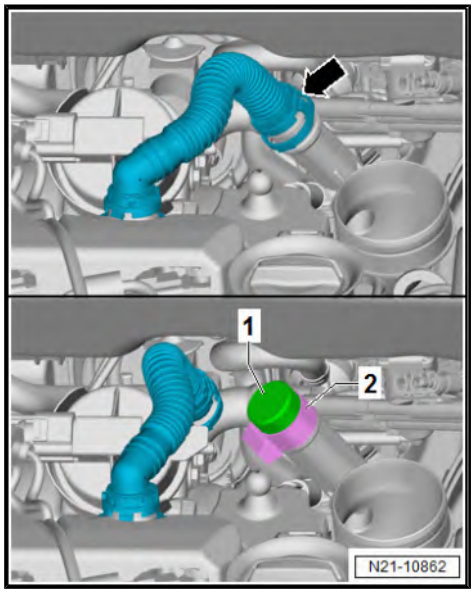
– Make the vacuum hoses -arrows- accessible.

– Loosen hose clamps -1, 2-, remove air guide pipe.



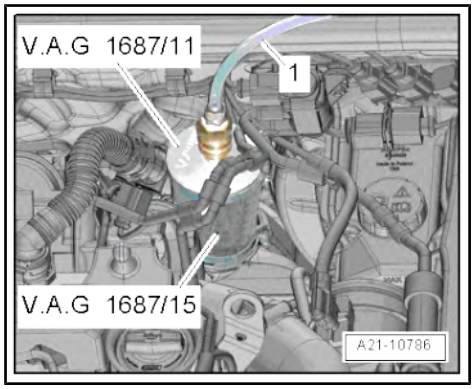
– Detach vent pipe for crankcase ventilation -arrow-.

– Close connection fitting with a plug -1- from the screw plug set for engine . Secure the plug with hose clamp -2-.

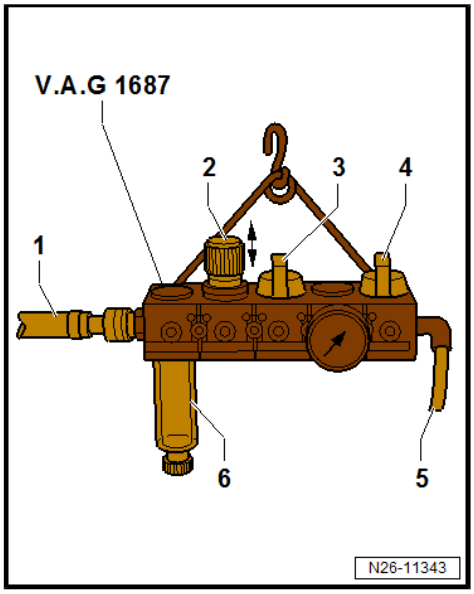


– Connect adapter - V.A.G 1687/11- with -V.A.G 1687/15- to the exhaust gas turbocharger. Secure hose with hose clamps.

– Connect testing device for charge-air systems - V.A.G 1687- to adapter.



Prepare tester for charge air system - V.A.G 1687- as follows:



– Pull the pressure control valve -2- upwards and unscrews completely, then close valves -3- and -4-.

– Connect the testing device for charge-air systems - V.A.G 1687- to the compressed air using a commercially available intermediate piece -1-.

Note

If there is water in the inspection glass -6-, drain water via the drain plug.

– Open valve -3-.

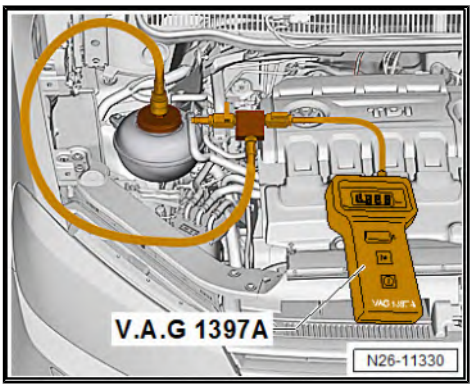
– Set the pressure to 0.05 MPa (0.5 bar) with the pressure control valve -2-.

– Open valve -4- and wait until the test circuit is filled. If necessary, re-adjust the pressure to 0.05 MPa (0.5 bar).

Note

A small amount of air escapes via the valves into the engine and via the radiator for exhaust gas recirculation into the exhaust system. For this reason no pressure test is possible.

Read off the turbocharger tester - V.A.G 1397A-



- Monitor the turbocharger tester for 5 minutes.
- The pressure displayed on the turbocharger tester must not exceed 0.0025 MPa (0.025 bar)!

– If the pressure shown on the turbocharger tester increases continuously above 0.0025 MPa (0.025 bar), compressed air is escaping from the inlet side into the cooling system. The charge air cooler is not leak-tight and must be replaced.

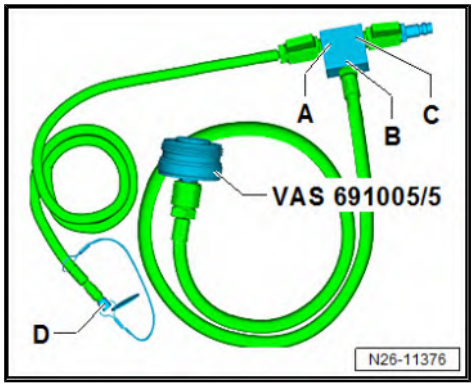
Note

♦ *As a result the subsequent heating of the coolant (reheating effect), there may be a slight increase in pressure of 0.0025 MPa (0.025 bar). This slight increase in pressure does not indicate leaking!*

♦ *There may be a slight vacuum as a result of cooling of the coolant. A vacuum is indicated on the turbocharger tester by a »minus« symbol. The »minus« values do not indicate a leak!*

♦ *If you are uncertain, repeat the test. To do so, briefly open the shut-off cock -1- and equalise the pressure in the cooling system. If the charge air cooler is not leak-tight, the pressure will continue to increase with each test.*

Clean Y distributor - VAS 691 005/1-



Note

After completing the leakage test, the Y distributor - VAS 691 005/1- must be cleaned to remove any moisture that has got in.

- Insert washer jet -D- into the hose connection -A- of the Y distributor .
- Position test adapter - VAS 691 005/5- on the hose at connection -B-.
- Connect pressure hose to connection -C-.
- Open the shut-off tap and blow air through the hose for approx. 15 seconds.

23 – Mixture preparation - injection

1 Injection system

⇒ “1.1 Schematic overview - fuel system”, page 423

⇒ “1.2 Installation location overview - fuel injection system”, page 428

⇒ “1.3 Filling/bleeding the fuel system”, page 444

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

1.1 Schematic overview - fuel system

⇒ “1.1.1 Schematic overview - fuel system, Bosch, Octavia III, Yeti”, page 423

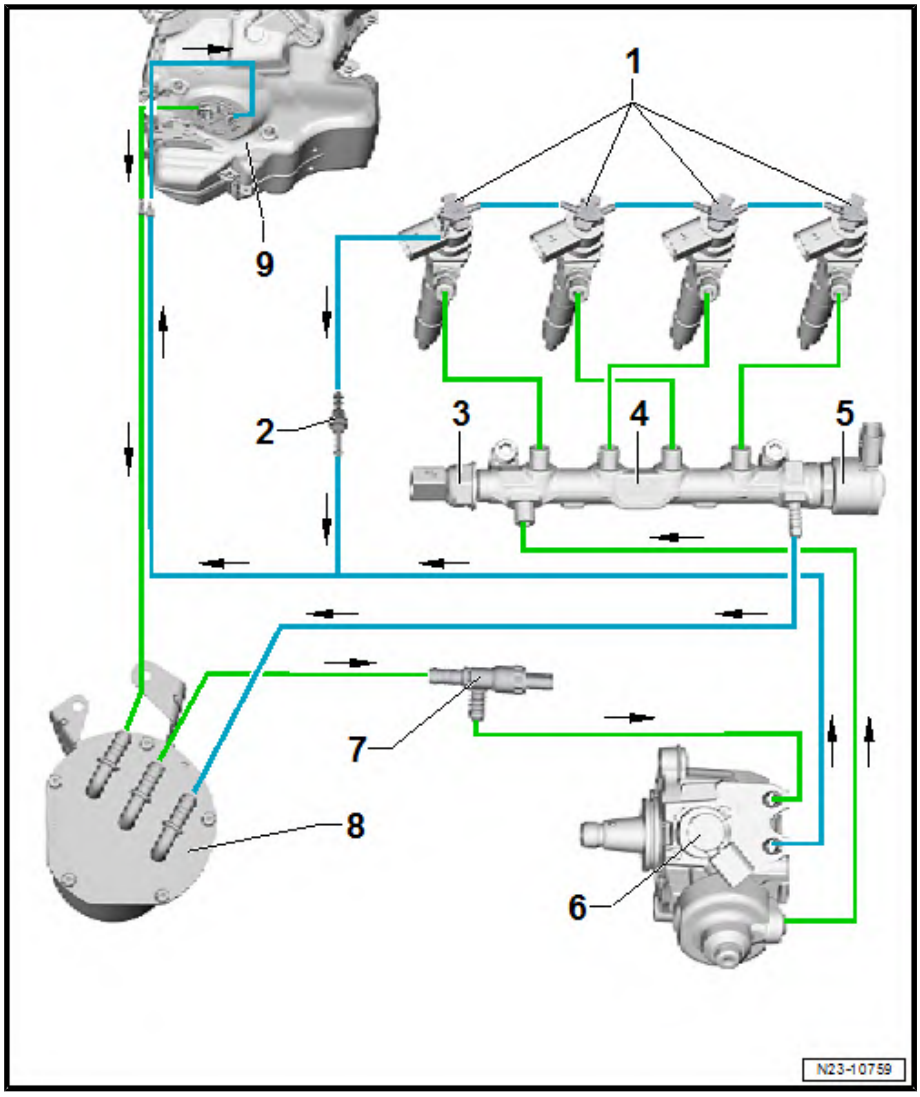
⇒ “1.1.2 Schematic overview - fuel system, Delphi, Octavia III”, page 425

⇒ “1.1.3 Schematic overview - fuel system, Rapid NH”, page 426

1.1.1 Schematic overview - fuel system, Bosch, Octavia III, Yeti

Note

- *Injection system assignment*
  ⇒ “1.1 Engine number, engine data”, page 1
- *Note that there are different variants for connection of the fuel lines to the fuel filter.*
- *Green = fuel feed line*
- *Blue = fuel return line*
- *The arrows point in the fuel flow direction.*



1 - Injection units

- ❑ Summary of components ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
- ❑ Removal and installation ⇒ “3.8 Removing and installing the injection units”, page 464
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

2 - Choke

3 - Fuel pressure transmitter - G247-

- ❑ Summary of components ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454
- ❑ Removal and installation ⇒ “6.3 Removing and installing fuel pressure sender G247 ”, page 504

4 - High-pressure accumulator (fuel distributor)

- ❑ Summary of components ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454
- ❑ Removal and installation ⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470

5 - Control valve for fuel pressure - N276-

- ❑ Summary of components ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454
- ❑ Removal and installation ⇒ “6.1 Removing and installing the fuel pressure regulating valve N276 ”, page 496

6 - High pressure pump

- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537
- ❑ Removal and installation ⇒ “8.2 Removing and installing the high pressure pump”, page 538

7 - Fuel temperature transmitter - G81-

- ❑ Removal and installation ⇒ “6.10 Removing and installing fuel temperature transmitter G81 ”, page 519

8 - Fuel filter

- ❑ ⇒ Rep. gr. 20 ; Fuel filter; Summary of components - fuel filter

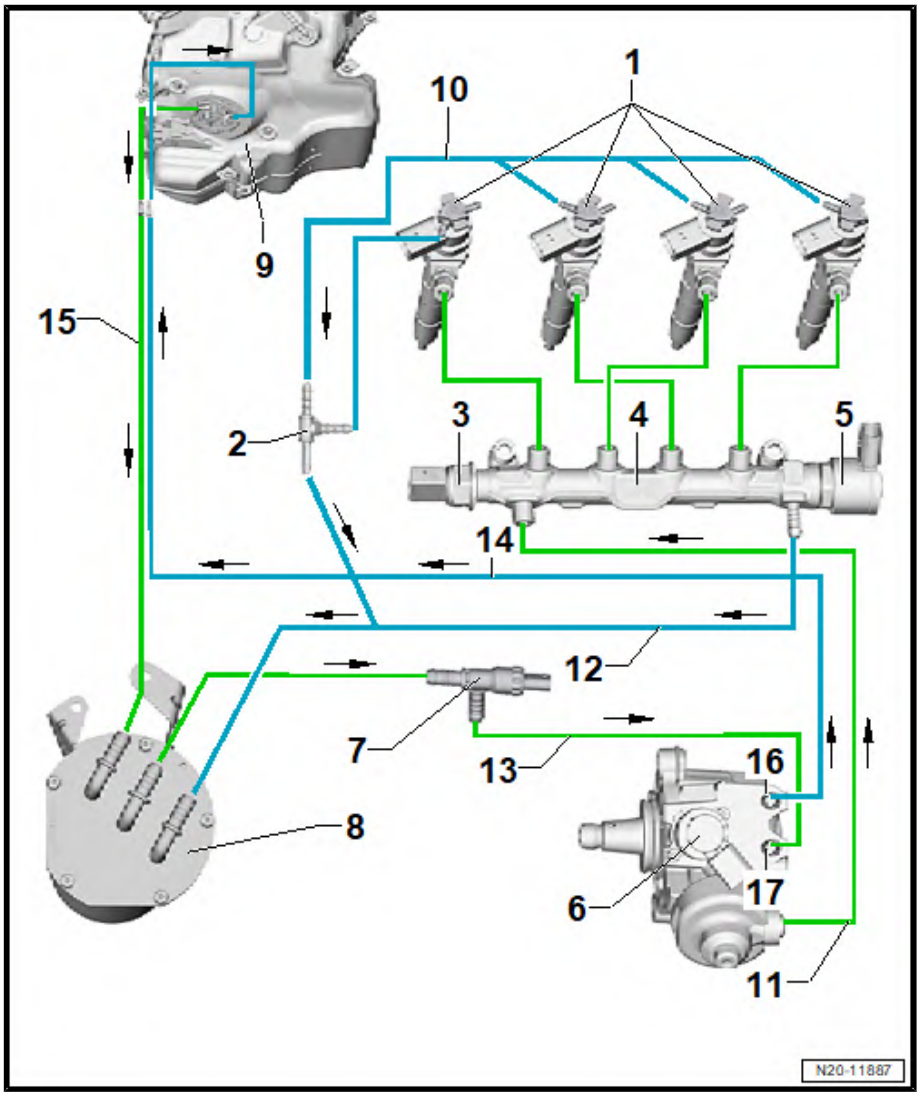
9 - Fuel tank

- ❑ With fuel system pressurisation pump - G6-
- ❑ ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - fuel tank

1.1.2 Schematic overview - fuel system, Delphi, Octavia III

Note

- *Injection system assignment*
  ⇒ “1.1 Engine number, engine data”, page 1
- *Note that there are different variants for connection of the fuel lines to the fuel filter.*
- *Green = fuel feed line*
- *Blue = fuel return line*
- *The arrows point in the fuel flow direction.*



1 - Injection units

- ❑ Summary of components
  ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
- ❑ Removal and installation
  ⇒ “3.8 Removing and installing the injection units”, page 464
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

2 - Choke

3 - Fuel pressure transmitter - G247-

- ❑ Summary of components
  ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454
- ❑ Removal and installation
  ⇒ “6.3 Removing and installing fuel pressure sender G247 ”, page 504

4 - High-pressure accumulator (fuel distributor)

- ❑ Summary of components
  ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454
- ❑ Removal and installation
  ⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470

5 - Control valve for fuel pressure - N276-

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

- ❑ Removal and installation
  ⇒ “6.1 Removing and installing the fuel pressure regulating valve N276 ”, page 496

6 - High pressure pump

- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537
- ❑ Removal and installation ⇒ “8.2 Removing and installing the high pressure pump”, page 538

7 - Fuel temperature transmitter - G81-

- ❑ Removal and installation
  ⇒ “6.10 Removing and installing fuel temperature transmitter G81 ”, page 519

8 - Fuel filter

- ❑ ⇒ Rep. gr. 20 ; Fuel filter; Summary of components - fuel filter

9 - Fuel tank

- ❑ With fuel system pressurisation pump - G6-
- ❑ ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - fuel tank

10 - Fuel return line

- ❑ from injection units to throttle position -2- ⇒ Item 2 (page 425)
- ❑ it must not be kinked, damaged or blocked

11 - High pressure line

- ❑ between the high pressure pump and high pressure reservoir (fuel distributor)
- ❑ removal ⇒ “3.9 Removing and installing high pressure lines”, page 468
- ❑ follow all instructions for installation of high pressure lines

12 - Fuel return line

- ❑ between the high pressure reservoir (fuel distributor) and fuel filter
- ❑ it must not be kinked, damaged or blocked

13 - fuel feed line

- ❑ between fuel filter and high pressure pump
- ❑ it must not be kinked, damaged or blocked
- ❑ Fuel feed line with fuel temperature sensor - G81- position -7- ⇒ Item 6 (page 426)

14 - Fuel return line

- ❑ between high pressure pump and fuel tank
- ❑ it must not be kinked, damaged or blocked

15 - fuel feed line

- ❑ between fuel tank and fuel filter
- ❑ it must not be kinked, damaged or blocked

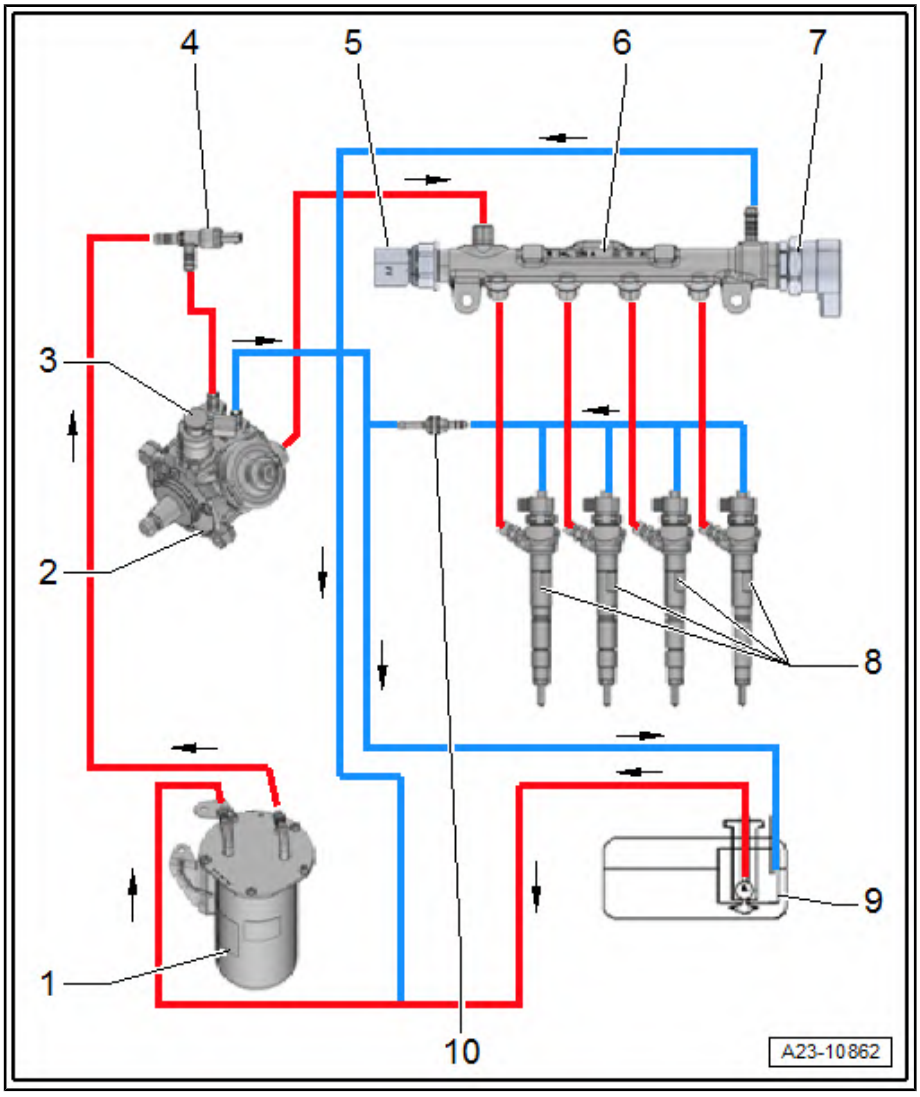
16 - Connection of the fuel return line to the high pressure pump

17 - Connection of the fuel supply pipe to the high pressure pump

1.1.3 Schematic overview - fuel system, Rapid NH

Note

- *Red = fuel feed lines.*
- *Blue = return-flow lines.*
- *The arrows point in the fuel flow direction.*



1 - Fuel filter

- ⇒ Rep. gr. 20 ; Fuel filter; Summary of components - fuel filter

2 - High pressure pump

- Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537

3 - Fuel dosage valve - N290-

4 - Fuel temperature transmitter - G81-

- 2 Nm

5 - Fuel pressure transmitter - G247-

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

6 - High-pressure accumulator (fuel distributor)

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

7 - Control valve for fuel pressure - N276-

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

8 - Injection units

- Summary of components ⇒ “3.1 Summary of components - injection units (injectors)”, page 452

9 - Fuel tank

- With fuel system pressurisation pump - G6-
- ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - fuel tank

10 - Choke

1.2 Installation location overview - fuel injection system

⇒ “1.2.1 Installation location overview in engine compartment, Octavia III, Yeti”, page 428

⇒ “1.2.2 Location overview in the engine compartment, vehicles with control unit for NOx generator GX30 ”, page 431

⇒ “1.2.3 Installation location overview in engine compartment, Rapid NH”, page 435

⇒ “1.2.4 Installation overview - engine from front”, page 440

⇒ “1.2.5 Installation location overview - engine from rear, vehicles without SCR system”, page 441

⇒ “1.2.6 Installation location overview - engine from rear, Octavia III with SCR system”, page 442

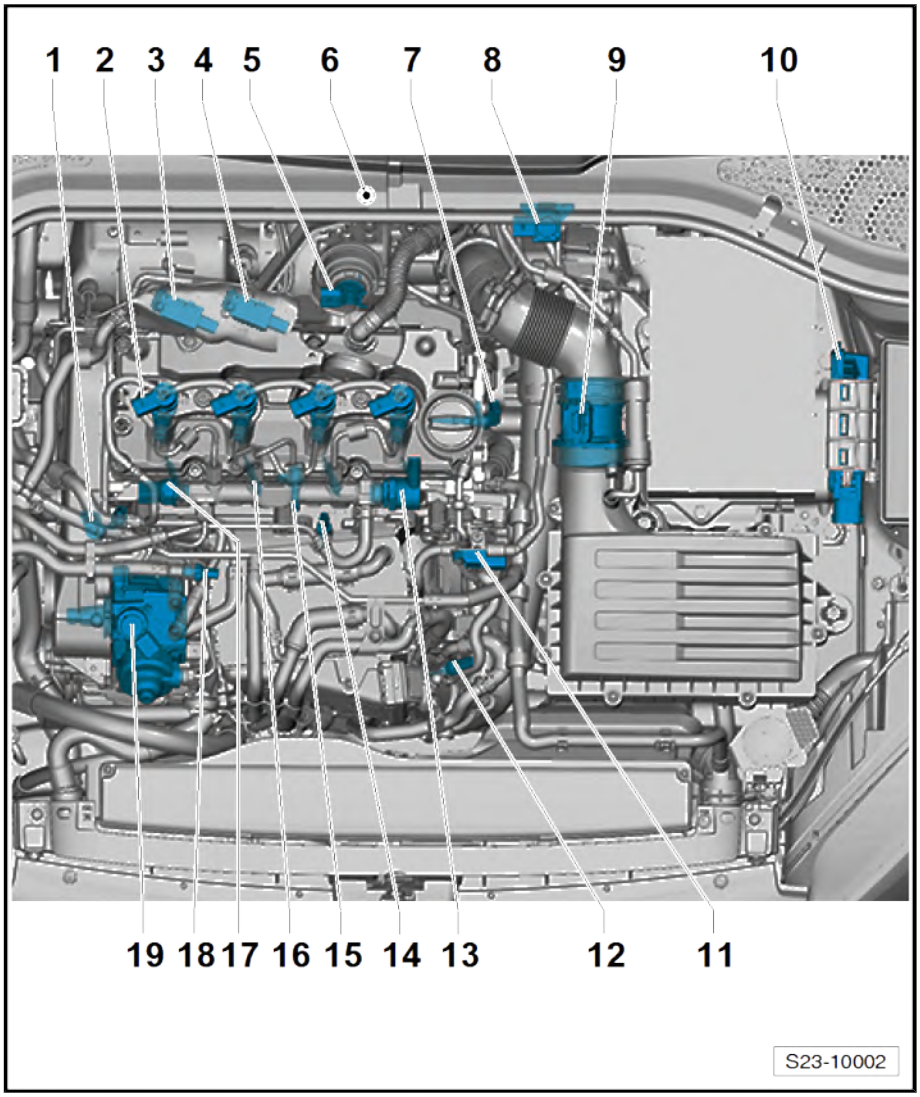
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

1.2.1 Installation location overview in engine compartment, Octavia III, Yeti

The control unit is equipped with event memory. Before repairs, setting operations and fault finding, query the event memory and run self-diagnosis ⇒ Vehicle diagnostic tester.

Note

- *Faults can be detected by the control unit as checking and adjustment work is being undertaken and then saved. It is therefore essential to always delete the event memory after completing all checking and adjustment work ⇒ Vehicle diagnostic tester.*
- *Observe the safety precautions when working on the diesel direct injection system ⇒ “2 Safety instructions”, page 4 .*



1 - Coolant valve for cylinder head - N489-

- ❑ Fitting location ⇒ page 431

2 - Injection units

- ♦ Injection valve for cylinder 1 - N30-
- ♦ Injection valve for cylinder 2 - N31-
- ♦ Injection valve for cylinder 3 - N32-
- ♦ Injection valve for cylinder 4 - N33-
  - ❑ Summary of components ⇒ “3.1 Summary of components - injection units (injectors)”, page 452

3 - Differential pressure transmitter - G505-

- ❑ its use depends on exhaust gas standard
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647

4 - Exhaust gas pressure sensor 1 - G450-

- ❑ Depending on vehicle
- ❑ Summary of components ⇒ “9.1 Summary of components - lambda probe”, page 541

5 - Position transmitter for charge pressure regulator - G581-

6 - Engine noise speaker

- ❑ only for vehicles with engine identification characters CUPA
- ❑ Removing and installing ⇒ “10.1 Removing and installing engine noise speaker”, page 551

7 - Coolant temperature transmitter - G62-

- ❑ Summary of components ⇒ “2.3 Summary of components - coolant temperature transmitter”, page 284

8 - Solenoid valve for charge pressure control - N75-

- ❑ Electrical plug connection for solenoid valve for charge pressure control - N75- ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

9 - Air mass meter - G70-

- ❑ Fitting location ⇒ “4.1 Assembly overview - air filter housing”, page 473

10 - Engine control unit - J623-

- ❑ Fitting location for Yeti: plenum chamber
- ❑ Removing and installing ⇒ “7 Engine control unit”, page 527

11 - Charge pressure sender - G31-

- ❑ Summary of components ⇒ “2.1 Summary of components - charge air system”, page 409

12 - Intake air temperature sender - G42-

- ❑ Summary of components ⇒ “5.1 Assembly overview - intake manifold”, page 481

13 - Fuel pressure regulating valve - N276-

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

14 - Charge air temperature sender downstream of charge air cooler - G811-

- ❑ Summary of components ⇒ “5.1 Assembly overview - intake manifold”, page 481

15 - Hall sender - G40- (camshaft position sensor)

- ❑ Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

16 - Glow plugs

- ♦ Glow plug 1 - Q10-
- ♦ Glow plug 2 - Q11-
- ♦ Glow plug 3 - Q12-
- ♦ Glow plug 4 - Q13-
  - ❑ Depending on the vehicle, the combustion chamber pressure sender is integrated into the glow plug
- ♦ Glow plug 3 - Q12- with combustion chamber pressure sender for cylinder 3 - G679-
  - ❑ Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

17 - Fuel pressure sender - G247-

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

18 - Fuel temperature transmitter

- ❑ Depending on vehicle, a different sensor may be installed
- ♦ Fuel temperature sender - G81-
- ♦ Fuel low pressure temperature and pressure sender - GX20-
  - ❑ Removal and installation
    ⇒ “6.10 Removing and installing fuel temperature transmitter G81 ”, page 519
  - ❑ Removal and installation
    ⇒ “6.11.4 Removing and installing fuel low pressure temperature and pressure sender GX20 ”, page 525

19 - High pressure pump

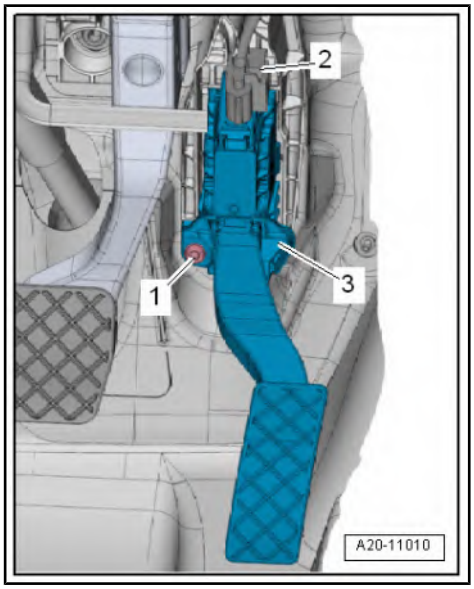
- ❑ with fuel dosage valve - N290- (do not remove valve)
- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537

Accelerator pedal module - GX2-

The accelerator pedal module - GX2- consists of:

- Accelerator pedal position sender - G79-
- Accelerator pedal position sender 2 - G185-

2 - Electrical connector for accelerator pedal module

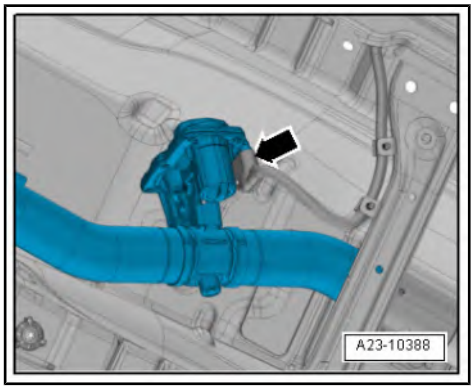


Note

Accelerator pedal position sender - G79- and accelerator pedal position sender 2 - G185- are integrated into the accelerator pedal module - GX2- and cannot be replaced separately.

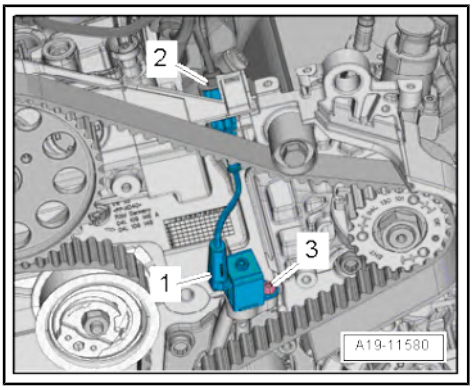
Installation location of exhaust flap control unit - J883-

- Summary of components
  ⇒ “1.1 Assembly overview - silencers”, page 552
- Removing and installing
  ⇒ “1.1 Assembly overview - silencers”, page 552



Installation location of coolant valve for cylinder head - N489-

- Pos. -1- top on coolant pump.
- Removing and installing
  ⇒ “2.8 Removing and installing coolant valve for cylinder head N489 ”, page 304 .

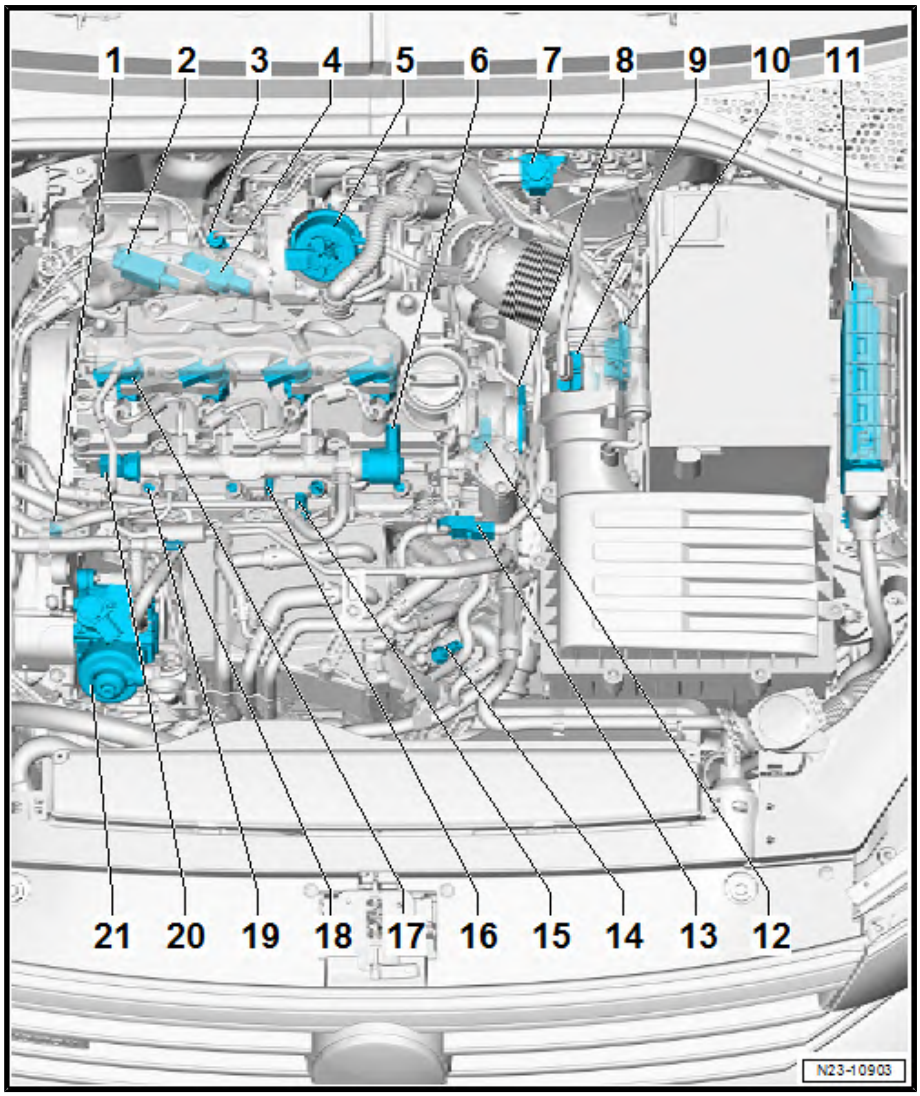


1.2.2 Location overview in the engine compartment, vehicles with control unit for NOx generator - GX30-

The control unit is equipped with event memory. Before repairs, setting operations and fault finding, query the event memory and run self-diagnosis ⇒ Vehicle diagnostic tester.

Note

- *Faults can be detected by the control unit as checking and adjustment work is being undertaken and then saved. It is therefore essential to always delete the event memory after completing all checking and adjustment work ⇒ Vehicle diagnostic tester.*
- *Observe the safety precautions when working on the diesel direct injection system ⇒ "2 Safety instructions", page 4 .*



1 - Coolant valve for cylinder head - N489-

- ❑ Fitting location ⇒ page 434

2 - Differential pressure transmitter - G505-

- ❑ its use depends on exhaust gas standard
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Summary of components ⇒ "4 Exhaust temperature regulation", page 647

3 - NOx sender - G295-

- ❑ forms together with control unit for NOx encoder - J583- the control unit for NOx encoder - GX30-
- ❑ Removing and installing ⇒ "6.11 Removing and installing NOx transmitter control unit GX30 ", page 520

4 - Exhaust gas pressure sensor 1 - G450-

- ❑ Depending on vehicle
- ❑ Summary of components ⇒ "9.1 Summary of components - lambda probe", page 541

5 - Position transmitter for charge pressure regulator - G581-

6 - Fuel pressure regulating valve - N276-

- ❑ Summary of components ⇒ "3.2 Summary of components - High pressure reservoir (fuel distributor)", page 454

7 - Solenoid valve for charge pressure control - N75-

- ❑ Electrical plug connection for solenoid valve for charge pressure control - N75- ⇒ "1.2.7 Installation location overview - electrical plug connections", page 443

8 - Camshaft control valve 1 - N205-

- ❑ Summary of components ⇒ "3.1 Assembly overview - valve gear", page 163

9 - Air mass meter - G70-

- ❑ Fitting location ⇒ “4.1 Assembly overview - air filter housing”, page 473

10 - NOx sender control unit - J583-

- ❑ forms together with NOx encoder - G295- the control unit for NOx encoder - GX30-
- ❑ Removing and installing
  ⇒ “6.11 Removing and installing NOx transmitter control unit GX30 ”, page 520

11 - Engine control unit - J623-

- ❑ Fitting location for Yeti: plenum chamber
- ❑ Removing and installing ⇒ “7 Engine control unit”, page 527

12 - Coolant temperature transmitter - G62-

- ❑ Summary of components ⇒ “2.3 Summary of components - coolant temperature transmitter”, page 284

13 - Charge pressure sender - G31-

- ❑ Summary of components ⇒ “2.1 Summary of components - charge air system”, page 409

14 - Intake air temperature sender - G42-

- ❑ Summary of components ⇒ “5.1 Assembly overview - intake manifold”, page 481

15 - Charge air temperature sender downstream of charge air cooler - G811-

- ❑ Summary of components ⇒ “5.1 Assembly overview - intake manifold”, page 481

16 - Hall sender - G40- (camshaft position sensor)

- ❑ Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

17 - Injection units

- ♦ Injection valve for cylinder 1 - N30-
- ♦ Injection valve for cylinder 2 - N31-
- ♦ Injection valve for cylinder 3 - N32-
- ♦ Injection valve for cylinder 4 - N33-
  - ❑ Summary of components ⇒ “3.1 Summary of components - injection units (injectors)”, page 452

18 - Fuel temperature transmitter

- ❑ Depending on vehicle, a different sensor may be installed

- ♦ Fuel temperature sender - G81-
- ♦ Fuel low pressure temperature and pressure sender - GX20-
  - ❑ Removal and installation
    ⇒ “6.10 Removing and installing fuel temperature transmitter G81 ”, page 519
  - ❑ Removal and installation
    ⇒ “6.11.4 Removing and installing fuel low pressure temperature and pressure sender GX20 ”, page 525

19 - Glow plugs

- ♦ Glow plug 1 - Q10-
- ♦ Glow plug 2 - Q11-
- ♦ Glow plug 3 - Q12-
- ♦ Glow plug 4 - Q13-
  - ❑ Depending on the vehicle, the combustion chamber pressure sender is integrated into the glow plug
- ♦ Glow plug 3 - Q12- with combustion chamber pressure sender for cylinder 3 - G679-
  - ❑ Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

20 - Fuel pressure sender - G247-

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

21 - High pressure pump

- ❑ with fuel dosage valve - N290- (do not remove valve)
- ❑ Summary of components ⇒ “8.1 Summary of components - high pressure pump”, page 537

Accelerator pedal module - GX2-

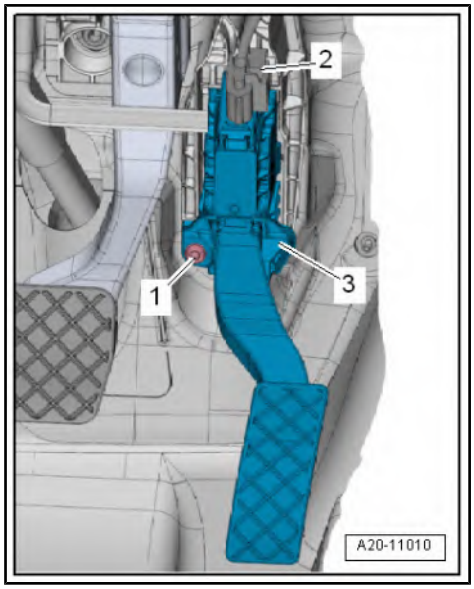
The accelerator pedal module - GX2- consists of:

- ♦ Accelerator pedal position sender - G79-
- ♦ Accelerator pedal position sender 2 - G185-

2 - Electrical connector for accelerator pedal module

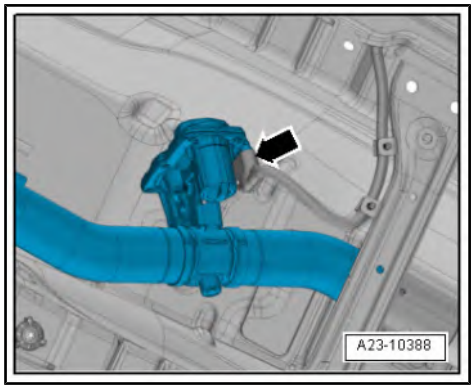
Note

Accelerator pedal position sender - G79- and accelerator pedal position sender 2 - G185- are integrated into the accelerator pedal module - GX2- and cannot be replaced separately.



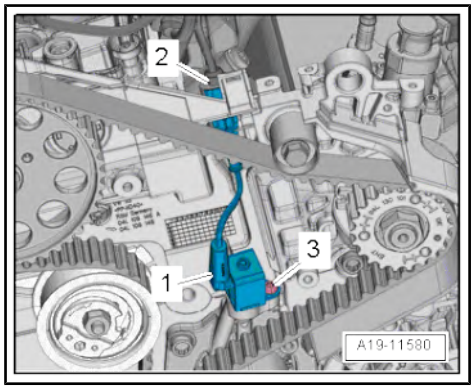
Installation location of exhaust flap control unit - J883-

- ♦ Summary of components
  ⇒ “1.1 Assembly overview - silencers”, page 552
- ♦ Removing and installing
  ⇒ “1.1 Assembly overview - silencers”, page 552



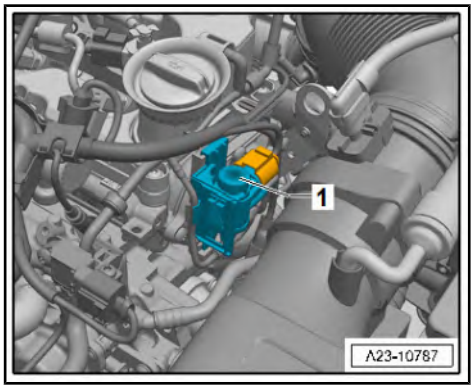
Installation location of coolant valve for cylinder head - N489-

- ♦ Pos. -1- top on coolant pump.
- ♦ Removing and installing
  ⇒ “2.8 Removing and installing coolant valve for cylinder head N489 ”, page 304 .



Changeover valve for radiator of exhaust gas recirculation - N345- -1-

- Summary of components
  ⇒ “5.1.3 Summary of components - Exhaust gas recirculation, vehicles with EU4 emission level, engine code CRVC”, page 674 .
- Not installed in all vehicles



1.2.3 Installation location overview in engine compartment, Rapid NH

Installation location overview - engine compartment

1 - Exhaust flap control unit - J883-

- ❑ Fitting location
  ⇒ page 437

2 - Accelerator pedal module - GX2-

Consists of: Accelerator position encoder - G79- and Encoder 2 for accelerator pedal position - G185-

- ❑ Fitting location
  ⇒ page 436

3 - Brake light switch - F-

- ❑ Fitting location
  ⇒ page 436

4 - Engine control unit - J623-

- ❑ Removing and installing
  ⇒ “7 Engine control unit”, page 527

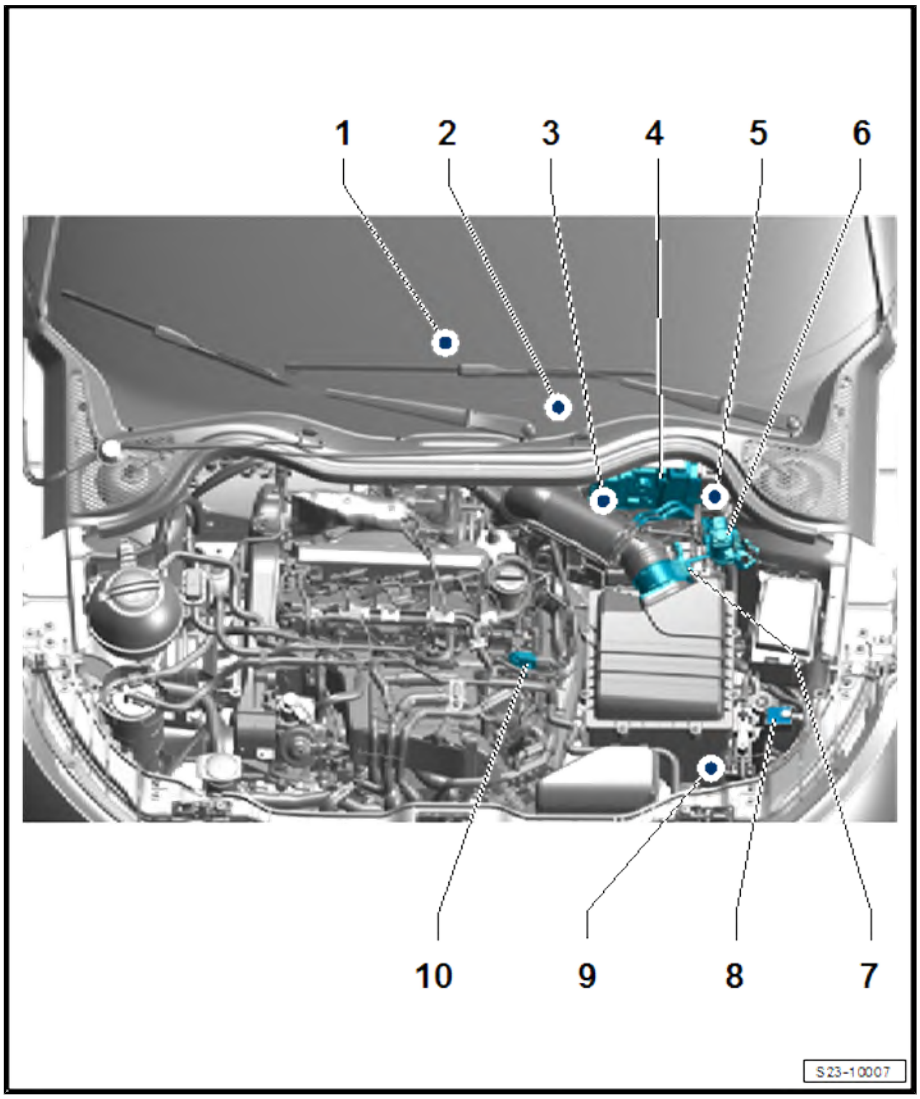
5 - Clutch position sender - G476-

- ❑ for vehicles with manual gearbox
- ❑ Fitting location
  ⇒ page 436

6 - Solenoid valve for charge pressure control - N75-

7 - Air mass meter - G70-

- ❑ Summary of components
  ⇒ “4.1 Assembly overview - air filter housing”, page 473



8 - Automatic glow period control unit - J179-

- ❑ Fitting location ⇒ page 437

9 - Gearbox neutral position transmitter - G701- / reversing light switch - F4-

- ❑ for vehicles with manual gearbox
- ❑ Fitting location ⇒ page 437

10 - Pressure sensor for the brake servo unit - G294-

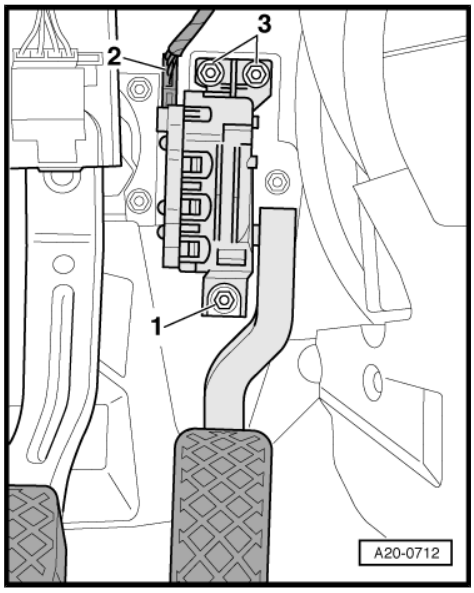
- ❑ provides signals to the ABS control unit - J104-

Fitting position of the accelerator pedal module - GX2-

The accelerator pedal module - GX2- consists of:

- ♦ Accelerator pedal position sender - G79-
- ♦ Accelerator pedal position sender 2 - G185-

2 - Electrical connector for accelerator pedal module



Note

Accelerator pedal position sender - G79- and accelerator pedal position sender 2 - G185- are integrated into the accelerator pedal module - GX2- and cannot be replaced separately.

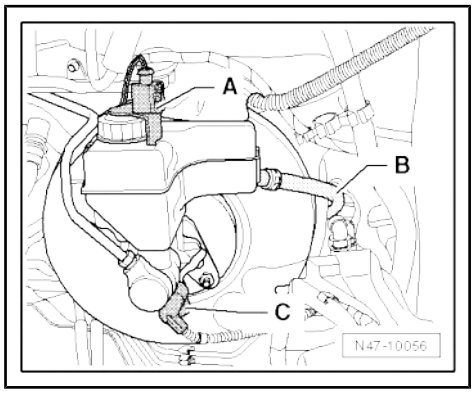
Removing and installing ⇒ Fuel system for diesel engines; Rep. gr. 20 .

Fitting location of brake light switch - F-

- ♦ On the brake master cylinder.

C - Brake light switch - F-

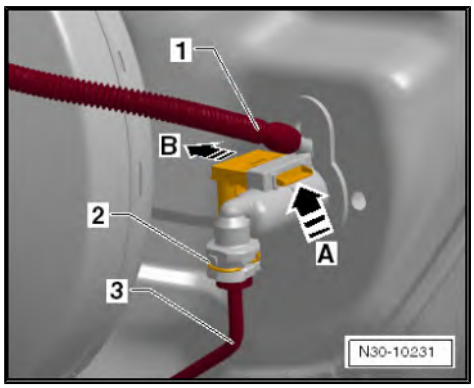
Removing and installing ⇒ Chassis; Rep. gr. 47 .



Fitting location of clutch position sender - G476-

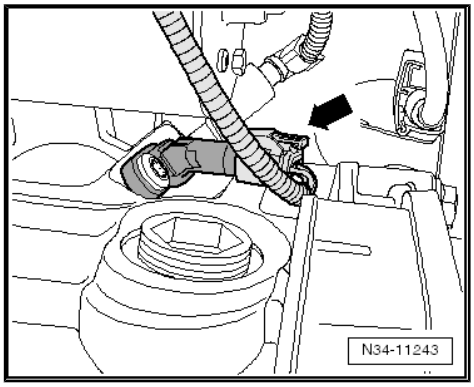
- ♦ On slave cylinder next to brake servo unit.

Removal and installation of ⇒ gearbox; Rep. gr. 30 .



Fitting location of gearbox neutral position transmitter - G701-

♦ On front of manual gearbox -arrow-.



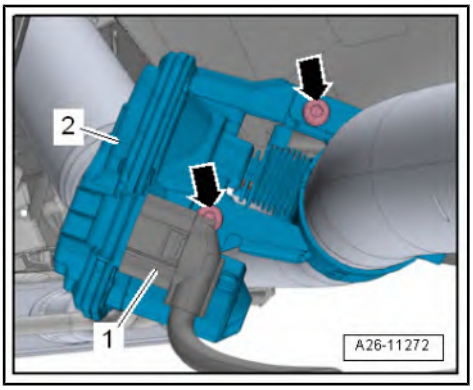
Installation location of exhaust flap control unit - J883-

- in the pre-exhaust pipe

1 - Electrical plug connection

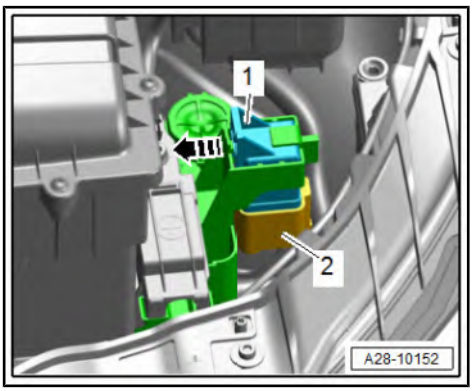
2 - Exhaust flap control unit - J883-

Removing and installing
⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610 .

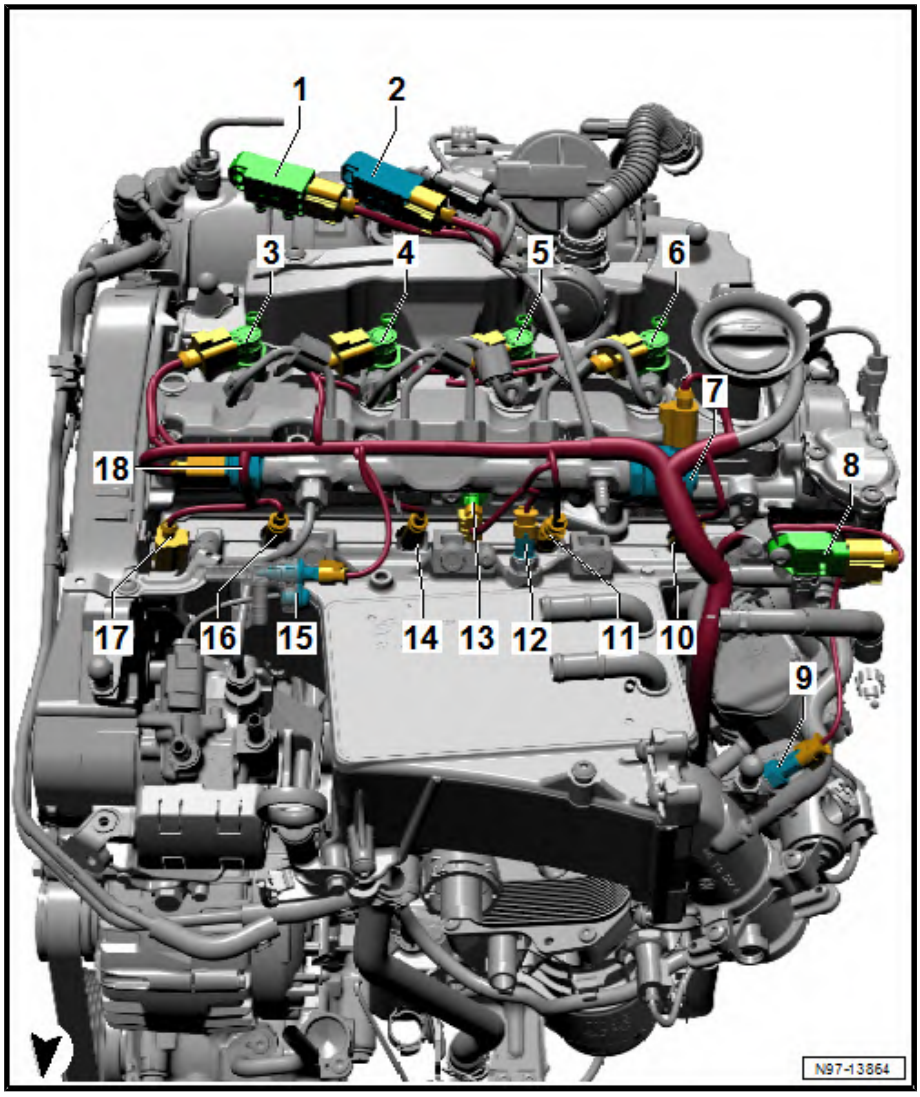


Fitting location of automatic glow period control unit - J179-

♦ Pos. -1- in front left engine compartment ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



Installation location overview - engine from top



1 - Differential pressure transmitter - G505-

- its use depends on exhaust gas standard
- Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts
- Summary of components ⇒ “4 Exhaust temperature regulation”, page 647

2 - Exhaust gas pressure sensor 1 - G450-

- Depending on vehicle
- Summary of components ⇒ “4 Exhaust temperature regulation”, page 647

3 - Injection valve for cylinder 1 - N30-

- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
- ⇒ “3.3 Adjust the correction values for injection units”, page 456
- ⇒ “3.4 Check injection units”, page 456
- ⇒ “3.5 Check injection unit return quantity with engine running”, page 457
- ⇒ “3.6 Check injection unit return flow quantity at starter speed”, page 460
- ⇒ “3.7 Checking the injection units in open state”, page 463
- ⇒ “3.8 Removing and installing the injection units”, page 464

4 - Injection valve for cylinder 2 - N31-

- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
- ⇒ “3.3 Adjust the correction values for injection units”, page 456
- ⇒ “3.4 Check injection units”, page 456
- ⇒ “3.5 Check injection unit return quantity with engine running”, page 457
- ⇒ “3.6 Check injection unit return flow quantity at starter speed”, page 460
- ⇒ “3.7 Checking the injection units in open state”, page 463
- ⇒ “3.8 Removing and installing the injection units”, page 464
-

5 - Injection valve for cylinder 3 - N32-

- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
- ⇒ “3.3 Adjust the correction values for injection units”, page 456
- ⇒ “3.4 Check injection units”, page 456
- ⇒ “3.5 Check injection unit return quantity with engine running”, page 457
- ⇒ “3.6 Check injection unit return flow quantity at starter speed”, page 460
- ⇒ “3.7 Checking the injection units in open state”, page 463
- ⇒ “3.8 Removing and installing the injection units”, page 464

6 - Injection valve for cylinder 4 - N33-

- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
- ⇒ “3.3 Adjust the correction values for injection units”, page 456
- ⇒ “3.4 Check injection units”, page 456
- ⇒ “3.5 Check injection unit return quantity with engine running”, page 457
- ⇒ “3.6 Check injection unit return flow quantity at starter speed”, page 460
- ⇒ “3.7 Checking the injection units in open state”, page 463
- ⇒ “3.8 Removing and installing the injection units”, page 464

7 - Control valve for fuel pressure - N276-

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

8 - Charge pressure transmitter - G31-

- Summary of components ⇒ “2.1 Summary of components - charge air system”, page 409

9 - Intake air temperature sender - G42-

- Summary of components ⇒ “5.1 Assembly overview - intake manifold”, page 481

10 - Glow plug

- Glow plug 4 - Q13-
- Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

11 - Glow plug

- Glow plug 3 - Q12-
- Depending on the vehicle, the combustion chamber pressure sender is integrated into the glow plug
- Cylinder 3 combustion chamber pressure sender - G679-
- Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

12 - Charge air temperature transmitter after charge air cooler - G811-

- Summary of components ⇒ “5.1 Assembly overview - intake manifold”, page 481

13 - Hall sender - G40-

- Camshaft position sensor
- Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

14 - Glow plug

- Glow plug 2 - Q11-
- Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

15 - Fuel temperature transmitter

- Depending on vehicle, a different sensor may be installed

♦ Fuel temperature sender - G81-

♦ Fuel low pressure temperature and pressure sender - GX20-

- Removal and installation
  ⇒ “6.10 Removing and installing fuel temperature transmitter G81 ”, page 519
- Removal and installation
  ⇒ “6.11.4 Removing and installing fuel low pressure temperature and pressure sender GX20 ”, page 525

16 - Glow plug

- Glow plug 1 - Q10-
- Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

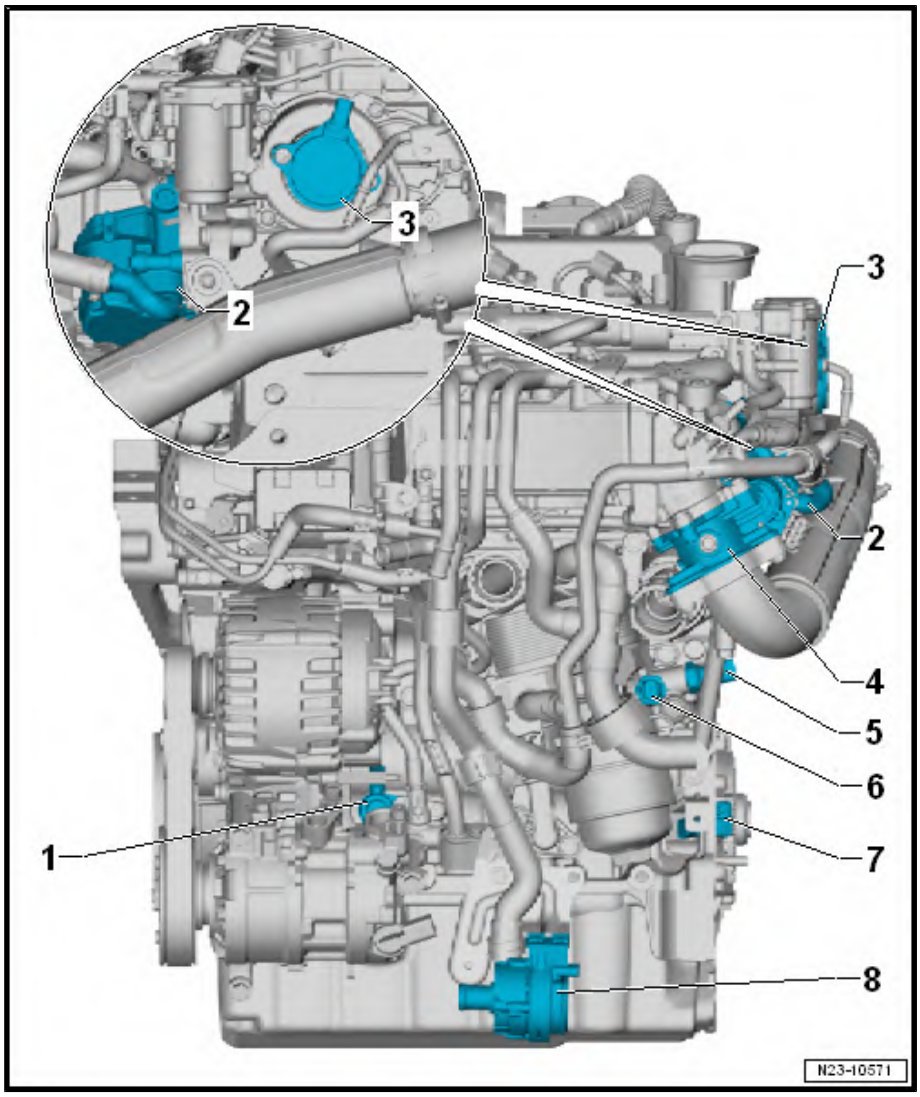
17 - Coolant valve for cylinder head - N489-

- Summary of components ⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275

18 - Fuel pressure transmitter - G247-

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

1.2.4 Installation overview - engine from front



1 - Oil pressure control valve - N428-

- ❑ Summary of components ⇒ “1.1 Assembly overview - pan/oil pump”, page 182
- ❑ Removing and installing ⇒ “3.6 Removing and installing valve for oil pressure control N428 ”, page 212

2 - Exhaust gas recirculation valve 1 - GX5-

comprises:

- ♦ Exhaust gas recirculation control motor - V338-
- ♦ Exhaust gas recirculation potentiometer - G212-
  - ❑ Depending on vehicle
  - ❑ Summary of components ⇒ “5.2 Summary of components - exhaust gas recirculation 1 GX5 ”, page 678

3 - Camshaft control valve 1 - N205-

- ❑ Only for vehicles with engine identification characters CRKB, CRMB, CUNA, CXXA, CXXB, DBKA, CUUA, CUUB, DCYA
- ❑ Summary of components ⇒ “3.1 Assembly overview - valve gear”, page 163

4 - Throttle valve control unit - J338-

- ❑ with throttle valve potentiometer - G69-
- ❑ Summary of components ⇒ “5.1 Assembly overview - intake manifold”, page 481

5 - Oil pressure switch for reduced oil pressure - F378-

- ❑ Summary of components ⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203

6 - Oil pressure switch - F1-

- ❑ Summary of components ⇒ “3.1 Summary of components - oil filter housing/oil pressure switch”, page 203

7 - Engine speed transmitter - G28-

- ❑ Summary of components ⇒ “1.1 Summary of components - Glow plug system”, page 700

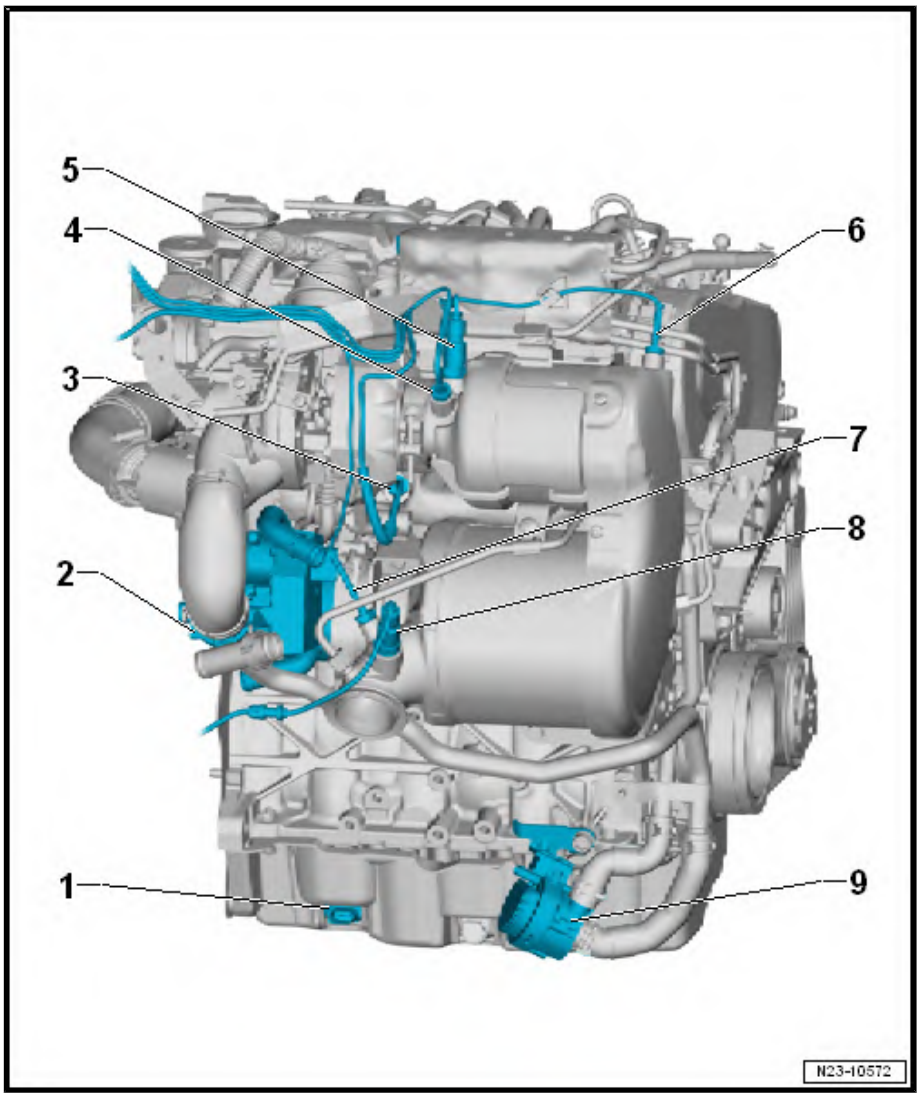
8 - Charge air cooler pump - V188-

- ❑ Summary of components ⇒ “2.2 Summary of components - electric coolant pump”, page 279

1.2.5 Installation location overview - engine from rear, vehicles without SCR system

Note

The summary of components only applies to vehicles with engine identification characters CLHA, CLHB, CRKB, CKFB, CKFC, CUPA, CRMB, CUNA, CXXA, CXXB, DBKA, CYKA, CXMA, DDYB, DDYA, DCYA.



1 - Oil level and oil temperature sender - G266-

- ❑ Summary of components ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

2 - Exhaust gas recirculation valve 2 - GX6-

comprises:

- ♦ Control engine 2 for exhaust gas recirculation - V339-
- ♦ Exhaust gas recirculation potentiometer 2 - G466-
  - ❑ Summary of components ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

3 - Exhaust gas temperature sender 1 - G235-

- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647

4 - Exhaust gas temperature transmitter 2 - G448-

- ❑ for vehicles with EU6 emission level
- ❑ Summary of components ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ❑ Electrical plug connection for exhaust gas temperature transmitter 2 - G448- ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

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

- ❑ consists of: lambda probe - G39- and lambda probe heater - Z19-
- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647
- ❑ Electrical connector for lambda probe 1 upstream of catalytic converter - GX10- ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

6 - Exhaust gas temperature sender 3 - G495-

- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647
- ❑ Electrical plug connection for exhaust gas temperature transmitter 3 - G495- ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

7 - Exhaust gas temperature sender 4 - G648-

- ❑ Depending on vehicle
- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647
- ❑ Electrical plug connection for exhaust gas temperature transmitter 4 - G648- ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

8 - Lambda probe 1 after catalytic converter - GX7-

- ❑ consists of: lambda probe downstream of catalytic converter - G130- and heater for lambda probe 1 downstream of catalytic converter - Z29-
- ❑ for vehicles with EU6 emission level
- ❑ Summary of components ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ❑ Electrical connector for lambda probe 1 downstream of catalytic converter - GX7- ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

9 - Heating backup pump - V488-

- ❑ Summary of components ⇒ “2.2 Summary of components - electric coolant pump”, page 279

1.2.6 Installation location overview - engine from rear, Octavia III with SCR system

1 - Oil level and oil temperature transmitter - G266-

- ❑ Summary of components ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

2 - Exhaust gas recirculation valve 2 - GX6-

comprises:

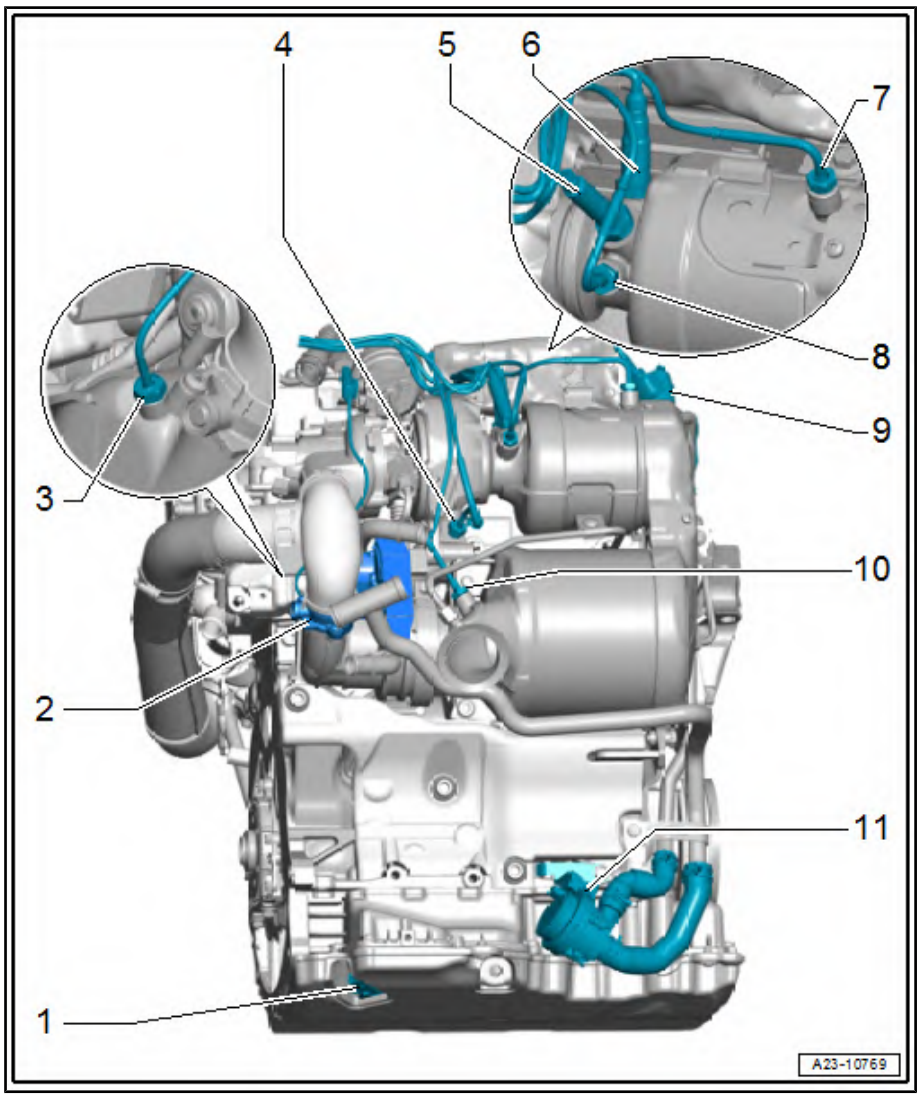
- ♦ Control engine 2 for exhaust gas recirculation - V339-
- ♦ Exhaust gas recirculation potentiometer 2 - G466-
  - ❑ Summary of components ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

3 - Temperature for exhaust gas recirculation - G98-

- ❑ Depending on vehicle
- ❑ Removing and installing ⇒ “5.6 Removing and installing temperature sensor for exhaust gas recirculation G98 ”, page 697
- ❑ 60 Nm

4 - Exhaust gas temperature transmitter 1 - G235-

- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647



5 - NOx sender control unit - GX30-

consists of NOx sender - G295- and NOx transmitter control unit - J583-

- ❑ Summary of components ⇒ “1.2 Installation location overview - fuel injection system”, page 428

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

- ❑ consists of: lambda probe - G39- and lambda probe heater - Z19-
- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647
- ❑ Electrical connector for lambda probe 1 upstream of catalytic converter - GX10-
  ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

7 - Exhaust gas temperature transmitter 3 - G495-

- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647
- ❑ Electrical plug connection for exhaust gas temperature transmitter 3 - G495-
  ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

8 - Exhaust gas temperature transmitter 2 - G448-

- ❑ If present
- ❑ Summary of components
  ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ❑ Electrical plug connection for exhaust gas temperature transmitter 2 - G448-
  ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

9 - Injection valve for reduction agent - N474-

- ❑ Summary of components
  ⇒ “3.9 Summary of components - injection valve for reduction agent”, page 640

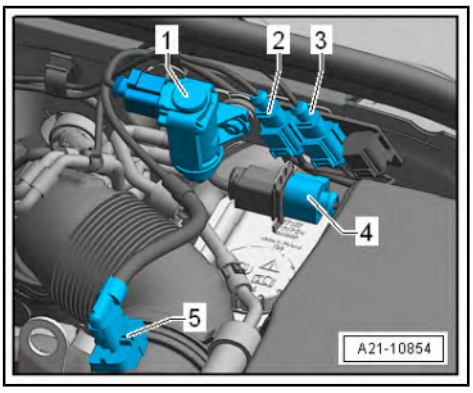
10 - Exhaust gas temperature transmitter 4 - G648-

- ❑ Depending on vehicle
- ❑ Summary of components ⇒ “4 Exhaust temperature regulation”, page 647
- ❑ Electrical plug connection for exhaust gas temperature transmitter 4 - G648-
  ⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443

11 - Heating backup pump - V488-

- ❑ Summary of components ⇒ “2.1 Summary of components - coolant pump/thermostat”, page 275

1.2.7 Installation location overview - electrical plug connections



Electrical connectors on the bulkhead, variant 1

1 - Solenoid valve for charge pressure control - N75-

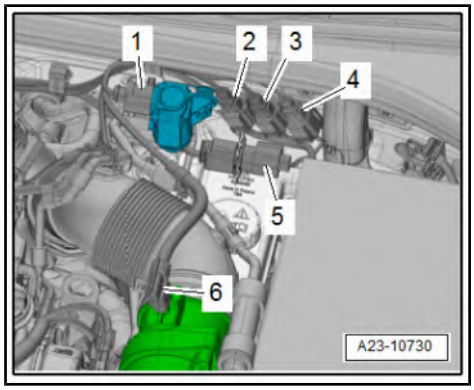
2 - Exhaust gas temperature transmitter 4 - G648-

3 - Exhaust gas temperature transmitter 3 - G495-

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

5 - Air mass meter - G70-

Electrical connectors on the bulkhead, variant 2



1 - Solenoid valve for charge pressure control - N75-

2 - Exhaust gas temperature transmitter 4 - G648-

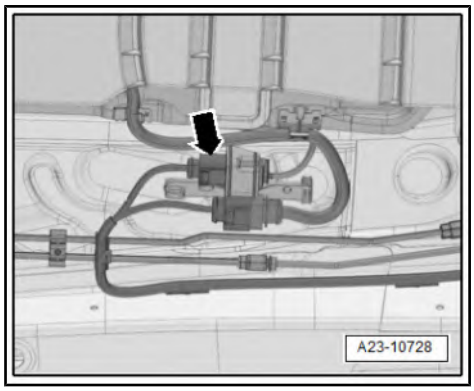
3 - Exhaust gas temperature transmitter 3 - G495-

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 .

– Afterwards, carry out a test drive with at least one full load acceleration.
– Then check the high-pressure system again for air-tightness.

Note

If air is still present in the fuel system the engine may enter dry-running operation during the test drive. Switch off engine and delete the event memory. Then proceed with the test drive.

– Delete event memory entry with Vehicle diagnosis tester .

1.4 Check the fuel system for tightness

– Let the engine run at idling speed for a few minutes.
– Carry out a visual inspection of the complete fuel system for leaks after switching off the engine.

If there is leakage despite the correct tightening torque:

– Replace the affected component part and repeat the test sequence.

If no leaks are found:

– Carry out a test drive with minimum one full load acceleration up to max. speed.
– Then once again carry out a visual inspection of the complete fuel system for leaks.

2 Vacuum system

⇒ “2.1 Connection diagram - Vacuum system”, page 446

⇒ “2.2 Checking the vacuum system”, page 448

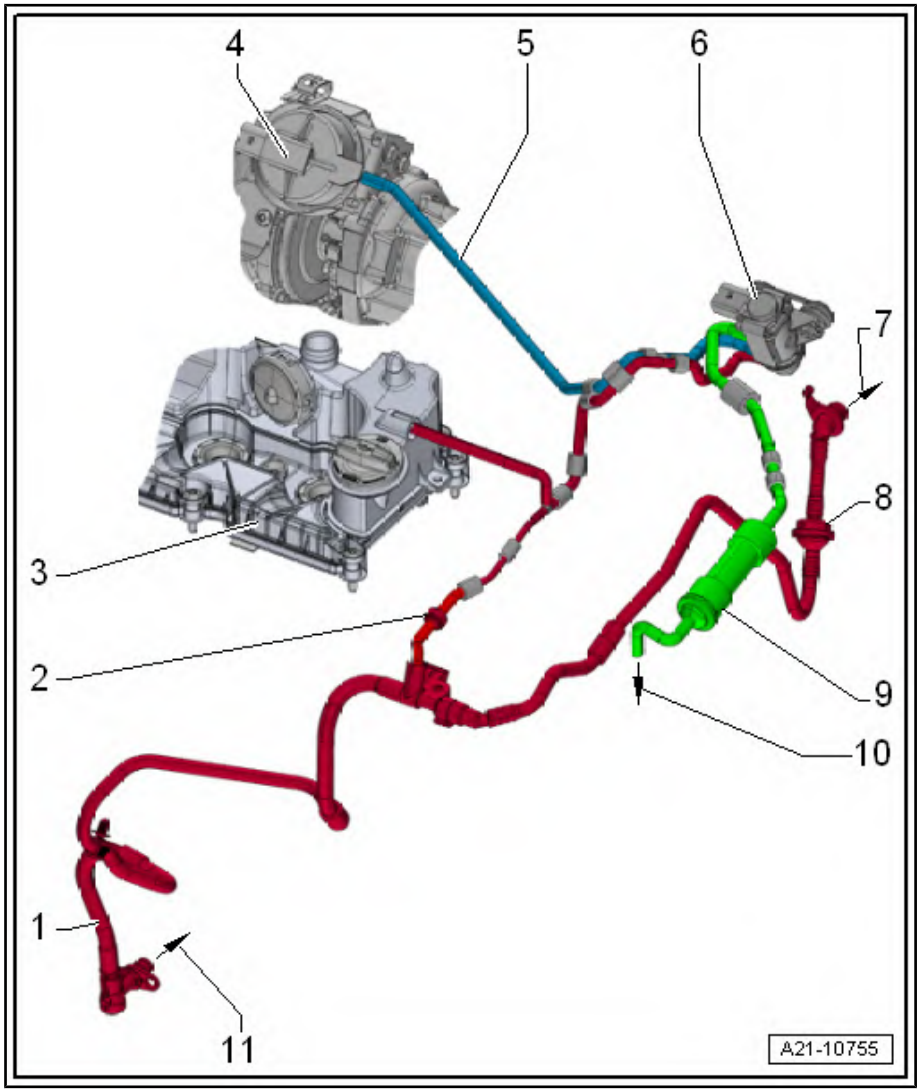
⇒ “2.3 Installing and removing vacuum line”, page 448

2.1 Connection diagram - Vacuum system

⇒ “2.1.1 Connection diagram - Vacuum system, Octavia III, Yeti”, page 446

⇒ “2.1.2 Connection diagram - Vacuum system (Rapid NH)”, page 447

2.1.1 Connection diagram - Vacuum system, Octavia III, Yeti



1 - Vacuum line

- ❑ with check valve in the connection pipe to the vacuum pump
- ❑ Fitting position ⇒ page 447
- ❑ Removing and installing ⇒ “2.3 Installing and removing vacuum line”, page 448
- ❑ Screw for the lines: 8 Nm

2 - Non-return valve

- ❑ Check fitting position
- ❑ the positive side points to the cylinder head cover

3 - Cylinder head cover

- ❑ with vacuum unit

4 - Vacuum unit

- ❑ at exhaust gas turbocharger
- ❑ for position transmitter for charge pressure regulator - G581-
- ❑ for charge pressure control

5 - Head tube for vacuum

- ❑ from charge pressure control solenoid valve - N75- for vacuum unit on the exhaust gas turbocharger

6 - Solenoid valve for charge pressure control - N75-

7 - To the brake servo unit

8 - Non-return valve

- ❑ Check fitting position

9 - Vent line

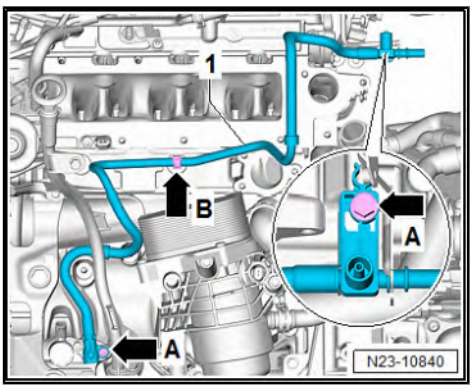
10 - To air filter housing

11 - To vacuum pump

- ❑ in the oil pump ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

Installation location of the pressure line

- Screw arrow -A-, 8 Nm
- Bracket, arrow -B-



2.1.2 Connection diagram - Vacuum system (Rapid NH)

1 - Vacuum line

- ❑ with check valve in the connection pipe to the vacuum pump
- ❑ Screw for the lines: 8 Nm

2 - Non-return valve

- ❑ Check fitting position
- ❑ the positive side points to the cylinder head cover

3 - Cylinder head cover

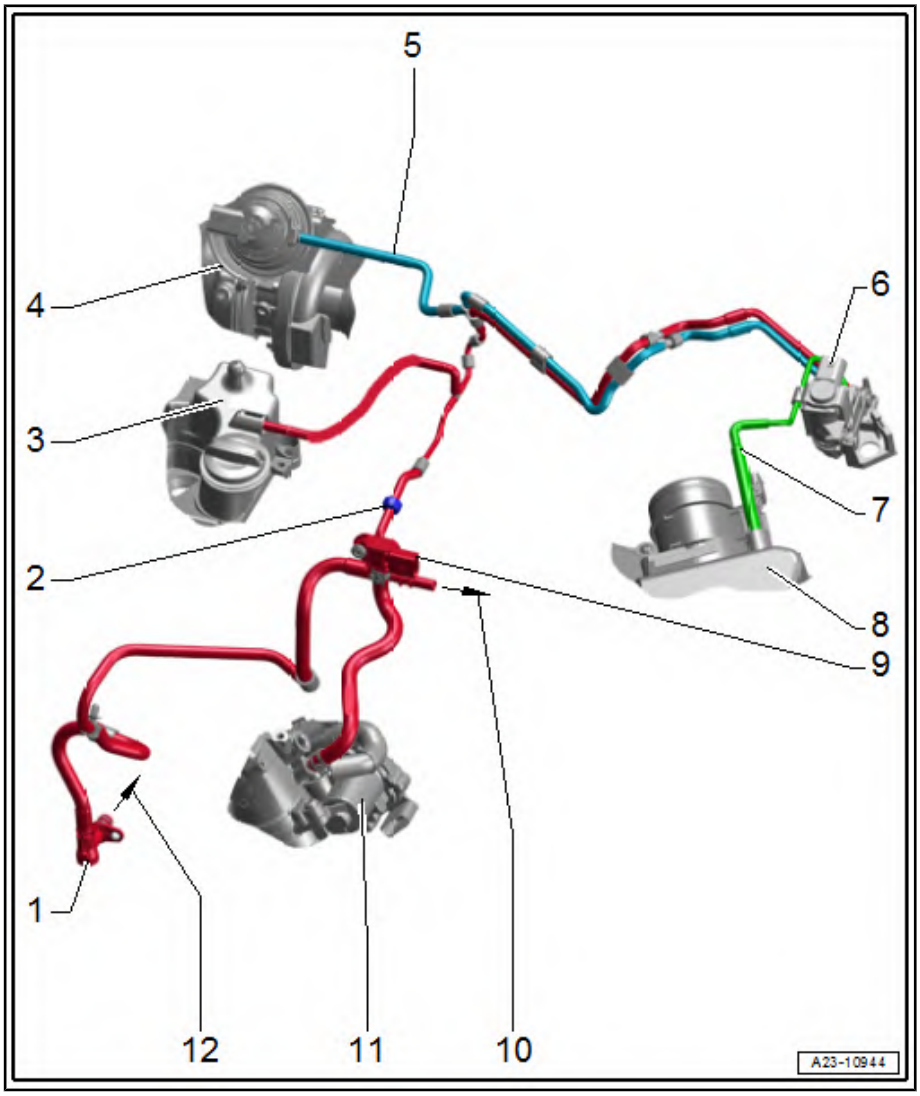
- ❑ with vacuum unit

4 - Vacuum unit

- ❑ at exhaust gas turbocharger
- ❑ for position transmitter for charge pressure regulator - G581-
- ❑ for charge pressure control

5 - Head tube for vacuum

- ❑ from charge pressure control solenoid valve - N75- for vacuum unit on the exhaust gas turbocharger



6 - Solenoid valve for charge pressure control - N75-

7 - Vent line

8 - Air filter housing

9 - Pressure sensor for the brake servo unit - G294-

10 - To the brake servo unit

11 - Connection fitting

- ❑ Throttle valve control unit - J338-

12 - To vacuum pump

- ❑ in the oil pump ⇒ “1.1 Assembly overview - pan/oil pump”, page 182

2.2 Checking the vacuum system

Special tools and workshop equipment required

- ♦ Hand vacuum pump , e.g. -VAS 6213-

– Check all the vacuum lines in the complete vacuum system for:

- ♦ tears
- ♦ Interruption (marten bites)
- ♦ Crimping
- ♦ porous points and other leaks

– Check vacuum line to the solenoid valve and check solenoid valve for the respective component.

– In the event of an event memory entry, check the vacuum lines to the mentioned component and also the remaining vacuum lines to the other components.

– If no vacuum can be created or the vacuum drops immediately with the hand vacuum pump - VAS 6213- , check hand vacuum pump and connecting hoses for leaks.

2.3 Installing and removing vacuum line

Removing

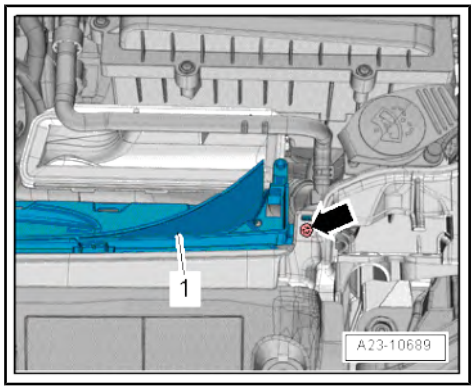
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

– Release screw left and right -arrow-.

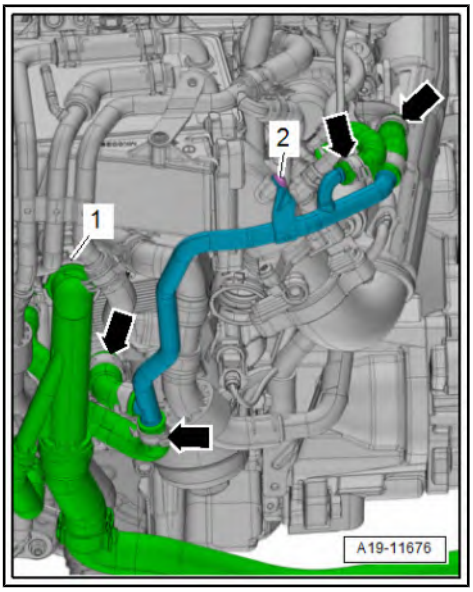
– Unclip and remove the air guide pipe bottom -1-.

– Remove bracket with charge pressure sender - G31- Pos. -11- ⇒ Item 11 (page 429) .

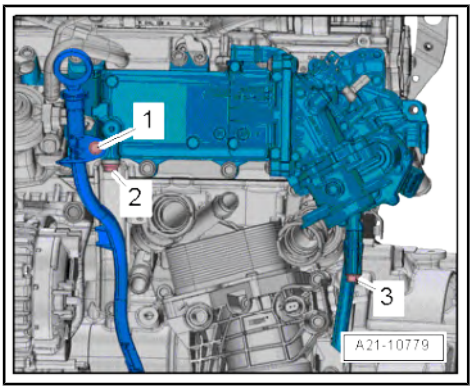


– Unlock tab -arrow-, remove vacuum hose -1-.
– Unscrew screw -3-, remove vacuum hose -2-.

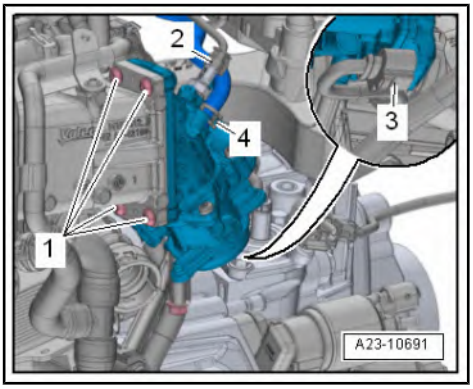
– Unscrew bolt -2-.



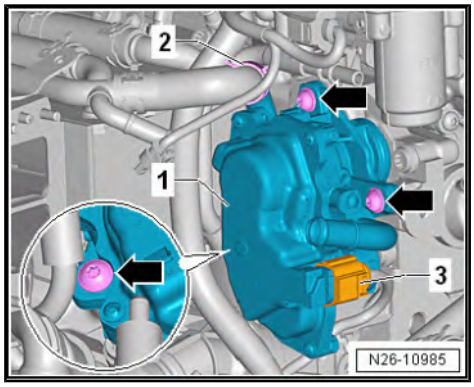
– Unscrew bolt -3-.



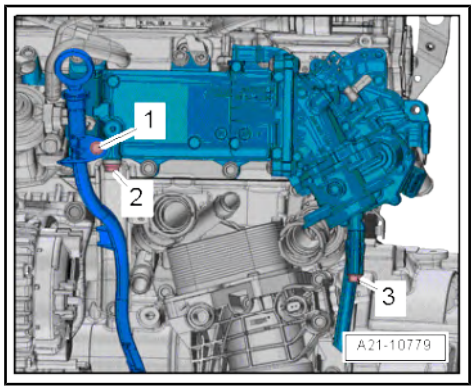
– Unscrew screws -1- for connection fitting of the throttle valve control unit - J338- and push to the side.



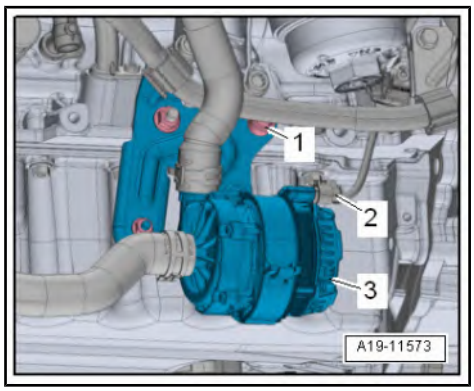
– Separate electrical plug connection -3-.
– Unscrew screws -arrows- and remove exhaust gas recirculation valve 1 - GX5- .



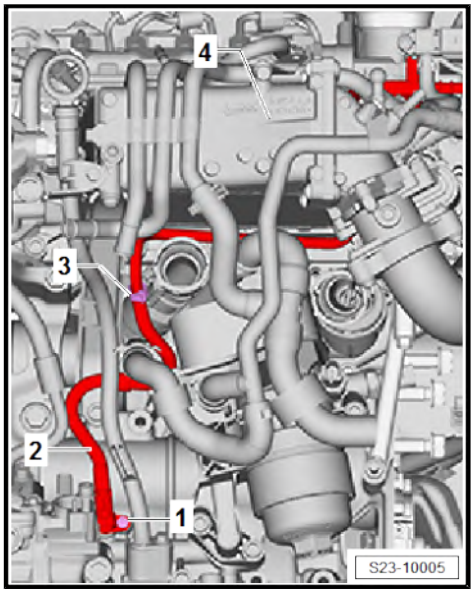
– Release screw -1- of guide pipe for oil dipstick.
– Remove alternator ⇒ Electrical system ; Rep. gr. 27 ; Alternator; Removing and installing alternator .



– Unscrew screws -1- and push pump for charge air cooler - V188- Pos. -3- forwards.
– Unscrew bottom screw of the guide pipe for oil dipstick, take off cable straps and remove the pipe.
– Remove front top coolant pipe
⇒ “3.2 Removing and installing coolant pipes”, page 312 .



– Unscrew bolt -1-.
– Unclip vacuum line -2- from clip -3- and cylinder block.
– Pull top part of vacuum line carefully forwards along the intake manifold with charge air cooler -4-.
– Remove vacuum line by turning upwards in stages.



Installing

Installation is performed in the reverse order, while paying attention to the following:

Note

Do not kink the vacuum line during installation.

Tightening torques - summaries of components

Note

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

Screw	Tightening torque
for vacuum line	8 Nm
for bracket for charge pressure sender - G31-	8 Nm

- ⇒ “2.1 Summary of components - charge air system”, page 409
- ⇒ “1.1 Assembly overview - pan/oil pump”, page 182
- ⇒ “2.2 Summary of components - electric coolant pump”, page 279
- ⇒ “5.2 Summary of components - exhaust gas recirculation 1 GX5 ”, page 678
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “4.1 Assembly overview - air filter housing”, page 473
- ⇒ Electrical system; Rep. gr. 27 ; Alternator; Summary of components - alternator

3 Injection units / high pressure accumulators (fuel distributors)

⇒ “3.1 Summary of components - injection units (injectors)”, page 452

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

⇒ “3.3 Adjust the correction values for injection units”, page 456

⇒ “3.4 Check injection units”, page 456

⇒ “3.5 Check injection unit return quantity with engine running”, page 457

⇒ “3.6 Check injection unit return flow quantity at starter speed”, page 460

⇒ “3.7 Checking the injection units in open state”, page 463

⇒ “3.8 Removing and installing the injection units”, page 464

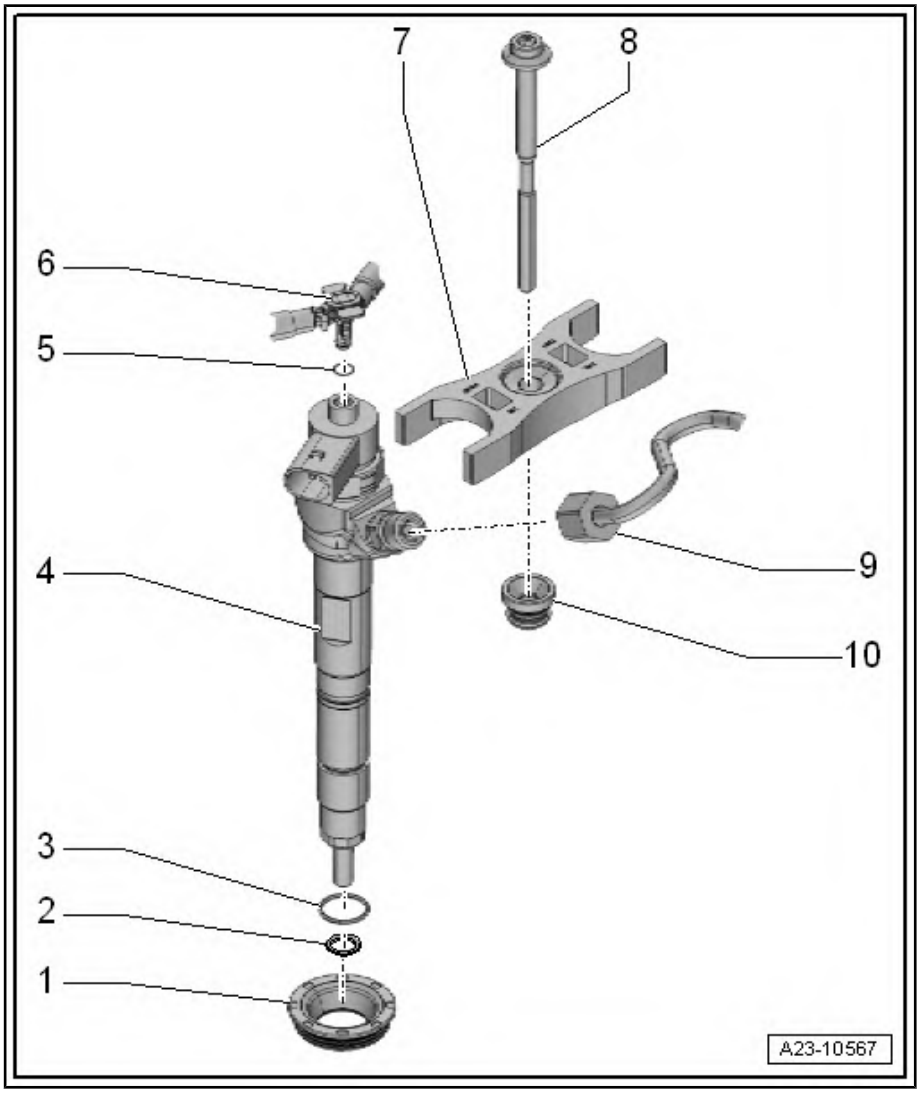
⇒ “3.9 Removing and installing high pressure lines”, page 468

⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470

3.1 Summary of components - injection units (injectors)

Note

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



1 - Sealing ring

- ❑ in the cylinder head cover
- ❑ replace after removal ⇒ “1.2 Assembly overview - cylinder head cover”, page 104

2 - Copper disc

- ❑ Replace after disassembly

3 - O-ring

- ❑ Replace after disassembly

4 - Injection unit

- ❑ removed injection units, high pressure lines and clamping claws to be re-installed must only be mounted again at the same cylinder.
- ❑ Removing and installing ⇒ “3.8 Removing and installing the injection units”, page 464
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

5 - O-ring

- ❑ Replace after disassembly

6 - Fuel return-flow line

- ❑ to fuel tank
- ❑ must not be kinked, damaged or blocked
- ❑ do not disassemble
- ❑ fill/bleed fuel system after exchange ⇒ “1.3 Filling/bleeding the fuel system”, page 444 .

7 - Clamping claw

- ❑ removed injection units and clamping claws to be re-installed must only be mounted again at the same cylinder
- ❑ Installation position, variant 1 ⇒ page 454
- ❑ Installation position, variant 2 ⇒ page 454

8 - Screw

- ❑ Replace after disassembly
- ❑ 8 Nm + 270°

9 - High pressure line

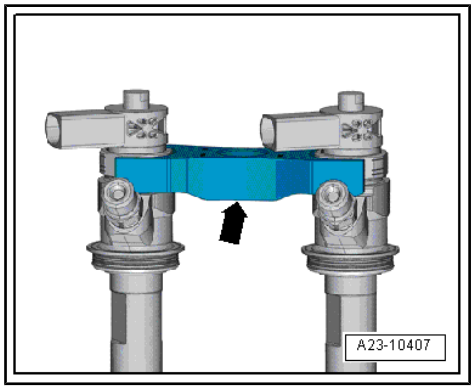
- ❑ between fuel high pressure reservoir and injection units
- ❑ follow all instructions for installation of high pressure lines ⇒ “3.9.2 Installing high pressure line”, page 469
- ❑ install free of stress
- ❑ 15 Nm + 60°

10 - Grommet

- ❑ in the cylinder head cover
- ❑ replace if damaged

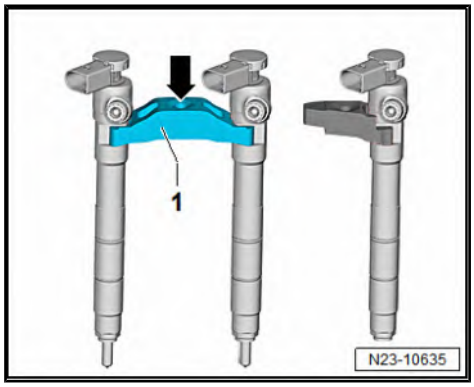
Installation position of the clamping claw, variant 1

- One clamping claw has 2 injection units.
- The thickening -arrow- of the clamping claw points downwards.



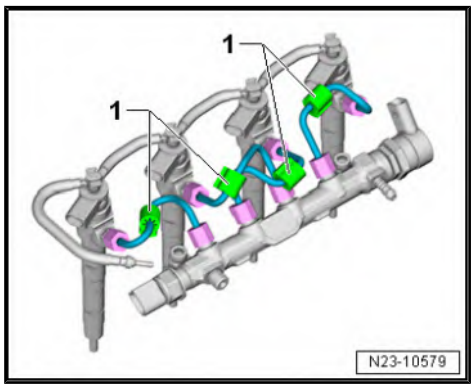
Installation position of the clamping claw, variant 2

- One clamping claw has 2 injection units.
- The bulge -arrow- of the clamping claw -1- points upwards.



Setting balancing weight on the high-pressure lines

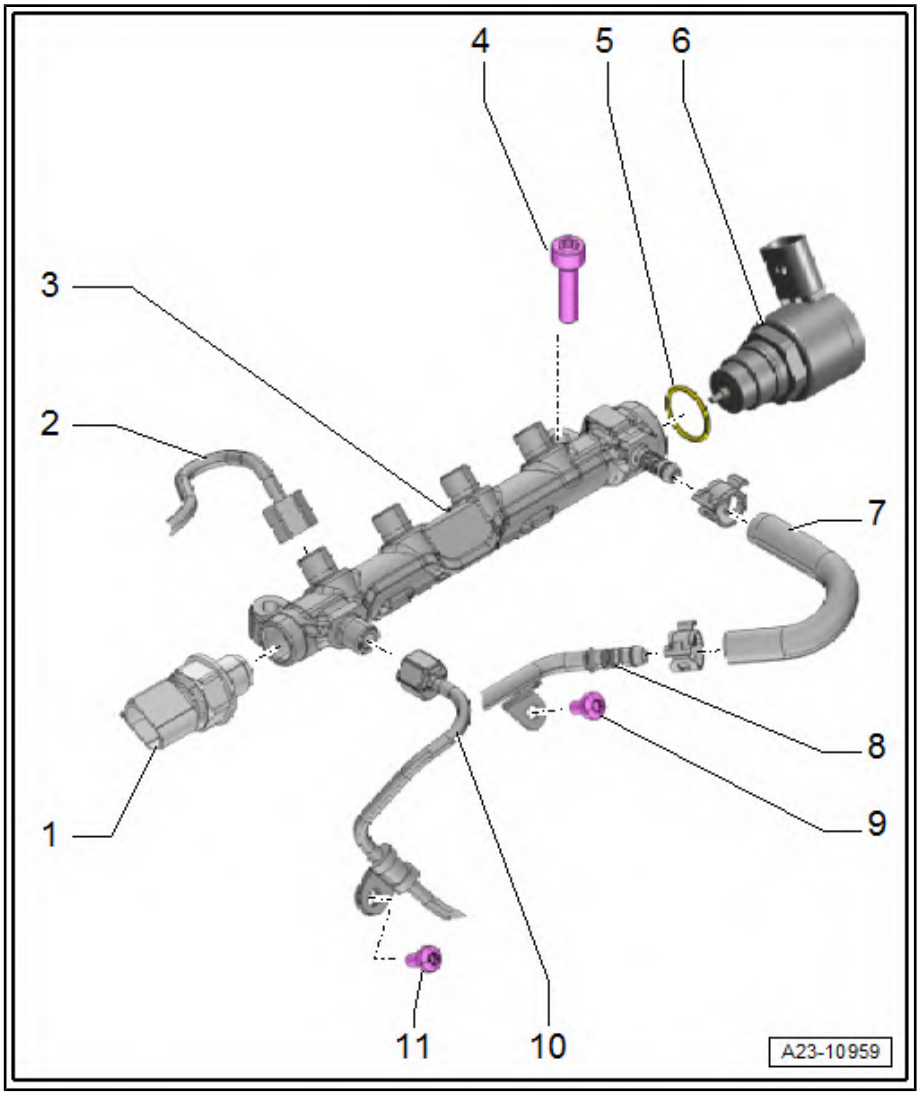
– Set balancing weight -1- on the high-pressure lines as shown in the diagram.



3.2 Summary of components - High pressure reservoir (fuel distributor)

Note

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



1 - Fuel pressure transmitter - G247-

- ❑ Removing and installing ⇒ “6.3 Removing and installing fuel pressure sender G247 ”, page 504
- ❑ Reuse possible ⇒ “6.3 Removing and installing fuel pressure sender G247 ”, page 504
- ❑ 100 Nm

2 - High pressure line

- ❑ between fuel high pressure reservoir and injection units
- ❑ follow all instructions for installation of high pressure lines ⇒ “3.9.2 Installing high pressure line”, page 469
- ❑ Fit balancing weight ⇒ page 454 .
- ❑ 15 Nm + 60°

3 - High-pressure accumulator (fuel distributor)

- ❑ Removal and installation ⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470

4 - Screw

- ❑ 20 Nm

5 - O-ring

- ❑ Replace after disassembly
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

6 - Control valve for fuel pressure - N276-

- ❑ Note different versions!
- ❑ Removing and installing ⇒ “6.1 Removing and installing the fuel pressure regulating valve N276 ”, page 496
- ❑ replace after each removal
- ❑ After replacement, adjust the learnt values ⇒ Vehicle diagnostic tester
- ❑ Tightening torque ⇒ “6.1 Removing and installing the fuel pressure regulating valve N276 ”, page 496

7 - Fuel return-flow hose

8 - Fuel return-flow line

9 - Screw

- ❑ 8 Nm

10 - High pressure line

- ❑ between high pressure pump and high pressure reservoir
- ❑ follow all instructions for installation of high pressure lines ⇒ “3.9.2 Installing high pressure line”, page 469
- ❑ 15 Nm + 60°

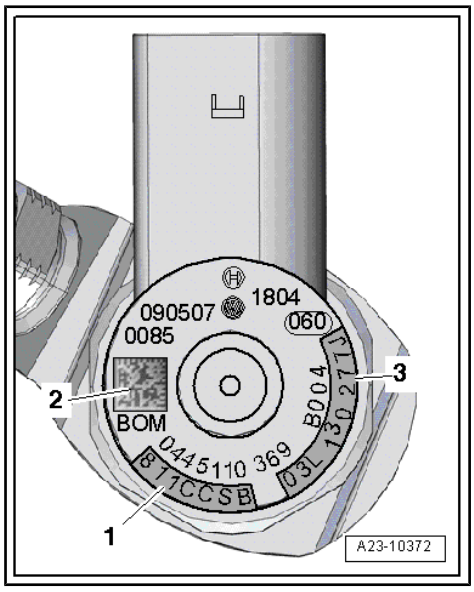
11 - Screw

- ❑ 8 Nm

3.3 Adjust the correction values for injection units

- The “injector quantity adjustment (IQA)” function is used to correct the injection rate for each cylinder individually throughout the characteristic range.
- The adjustment values -1- are printed on each injection unit. The printed values may be letters and/or digits.

View from the top of the injection unit



1 - Adjustment value (checksum; information in the image is only an example)

2 - Data Matrix Code

3 - Part number

- After replacement of an injection unit the adjustment value must be written to the engine control unit.
- After replacement of the engine control unit the “injection unit adjustment values” must be transferred to the new engine control unit.
- In addition, check all other “injector quantity adjustment” injection units to ensure that all values have been entered correctly. If the correct values are stored in the engine control unit, these values must never be entered again.
- The work procedure for the adaptation is described in the “Targeted fault finding”. (The work sequence is also described in “Targeted Functions”.) ⇒ Vehicle diagnostic tester.

3.4 Check injection units

There are 3 ways to check the injection units.

- ⇒ “3.3 Adjust the correction values for injection units”, page 456
- ⇒ “3.5 Check injection unit return quantity with engine running”, page 457
- ⇒ “3.6 Check injection unit return flow quantity at starter speed”, page 460

3.5 Check injection unit return quantity with engine running

Injection system assignment ⇒ page 1

⇒ “3.5.1 Checking the return flow of the injection units when the engine is running, vehicles with Bosch injection system”, page 457

⇒ “3.5.2 Checking the return flow of the injection units when the engine is running, vehicles with the Delphi injection system”, page 459

3.5.1 Checking the return flow of the injection units when the engine is running, vehicles with Bosch injection system

A - Check return quantity of all injection units

Special tools and workshop equipment required

- ♦ Measuring vessel, fuel test

– 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 .

– Disconnect hose connection -2- at the fuel return-flow line.

– Close the open return connection with a suitable blind plug -1- and secure it with a screw clamp.

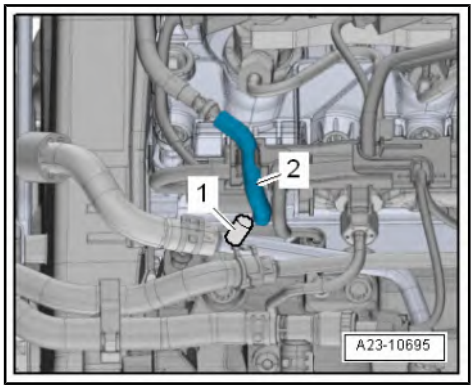
– Hold the fuel return-flow hose -2- (extend if necessary) in a measuring vessel to measure the overall return flow volume.

– Start engine and run in idle for 2 minutes.

• Set value in 2 minutes: 0 ml to 50 ml

– If the specified value is reached, increase engine rpm to 2000 to 2500 rpm for 2 minutes, then check the return flow quantity.

• Set value in 2 minutes: less than 250 ml



If the specified value is exceeded, this indicates that there is one (or more) defective fuel injection unit(s). Check the return flow quantity of each individual injection unit

B - Check return quantity of the individual injection units

Special tools and workshop equipment required

- ♦ Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- ♦ Return flow quantity measuring device - VAS 6684-
- ♦ Adapter C6 from return quantity measuring device - VAS 6684-

Note

Each injection unit has a small amount of return. If this return flow quantity is relatively great (in relation to the return flow quantity of the other injection units), this injection unit is probably defective.

NOTICE

There is a risk of malfunctions caused by soiling.

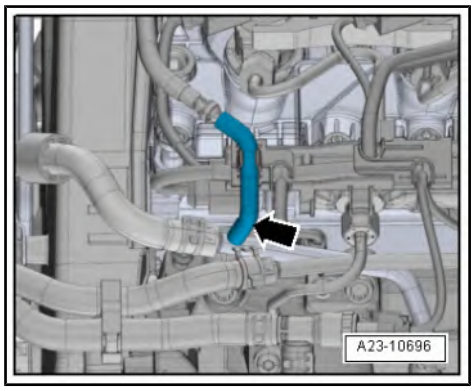
- **Observe rules for cleanliness**
  ⇒ “3.1 Rules of cleanliness”, page 7 .

– Before removing, clean all return flow connections (for example with a commercially available cold cleaner).

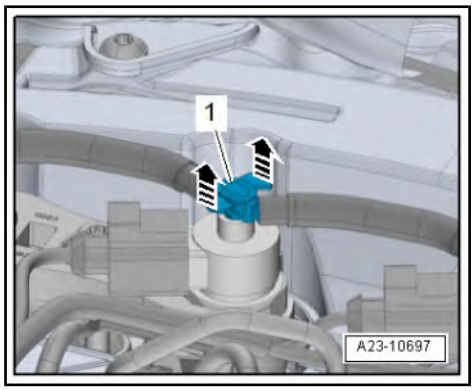
– Dry all the cleaned component parts.

– Pinch of coolant hose -arrow- using a hose clamp of up to 25 mm - MP7-602 (3094)- .

– If present, remove noise insulation.



– Pull off return-flow line connections on injection unit by pulling release buttons upwards -arrows-.



Note

Pay attention to cleanliness; no dirt must get into the removed return lines and the connections of the injection units.

– Firmly fit adapter C6 to the return-flow line connections of all 4 injection units.

– Connect hose lines of the return flow quantity measuring device - VAS 6684- to the adapter.

– Start engine and run in idle for a few minutes.

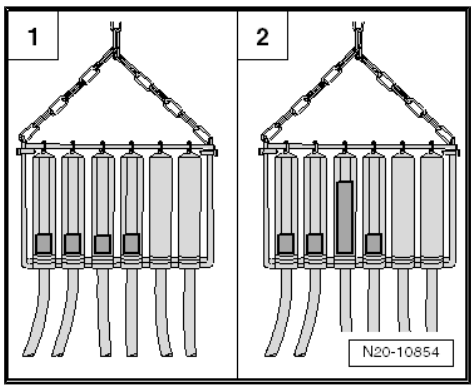
NOTICE

Risk of damage to injection units when return-flow lines are removed.

- **No acceleration must occur during testing - the engine must run in idle.**

– When the engine is at operating temperature while the engine is idling there must be only minimal difference in the return flow quantity of all 4 return-flow lines (example -1-).

– If one injection unit has a significantly higher return flow quantity (example -2-), this injection unit must be replaced
⇒ “3.8 Removing and installing the injection units”, page 464 .



Assembly of fuel return-flow lines

– Carefully press the connections of the return-flow lines onto the injection units. The cap must click audibly into place, afterwards carefully press the unlocking bolt downwards.

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

3.5.2 Checking the return flow of the injection units when the engine is running, vehicles with the Delphi injection system

Special tools and workshop equipment required

- Return flow quantity measuring device - VAS 6684-
- Unlocking tool , e.g. -T10236-
- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-

Note

Each injection unit has a small amount of return. If this return flow quantity is relatively large (in relation to the return flow quantity of the other injection units), this injection unit is probably defective.

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

– Before removal, clean all return line connections, e.g. clean cold in the usual way.

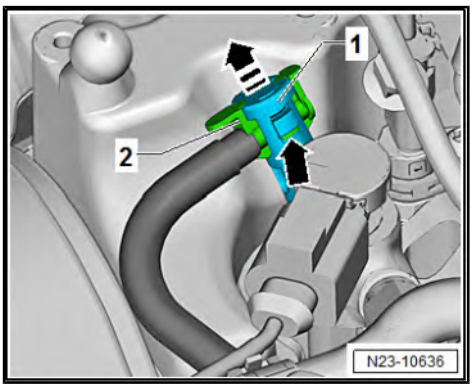
– Dry all the cleaned component parts.

Note

Prying out with a screwdriver on the solenoid valves of the injection units is not permitted!

– Unlock the centre part -1- of the return-flow connections in -direction of arrow-.

– Carefully remove connections -2- using the disassembly tool - T10236- .



Note

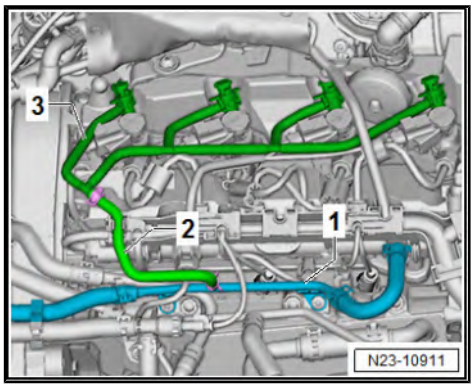
Pay attention to cleanliness. No dirt must get into the removed return lines and the connections of the injection units.

– Carefully remove the return connections on both tabs of the injection unit.

– Close return line -2- with hose clamp up to ∅ 25 mm - MP7-602 (3094)- before the fuel return line -1-.

– Hose lines of the return measuring device - VAS 6684- without adapter, plug directly into the return connections of the injection units.

– Start the engine.

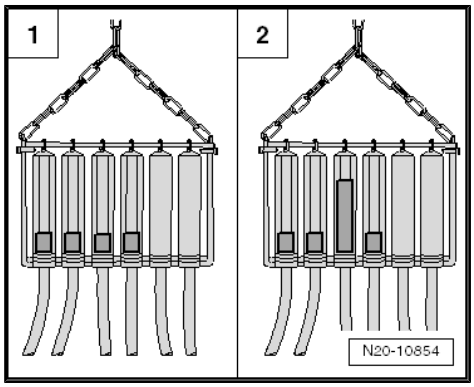


Speed	Measured time	Limit (max.) for injection unit	Matches the VAS 6684 scale
Idle speed	4 min	25 ml	between 2nd and 3rd Marking from above

Speed	Measured time	Limit (max.) for injection unit	Matches the VAS 6684 scale
2500 rpm	2 min	35 ml	Measuring cylinder completely filled

– When the engine is at operating temperature while the engine is idling there must be only minimal difference in the return flow quantity of all 4 return-flow lines (example -1-).

– If one injection unit has a significantly higher return flow quantity than in example -2-, replace the injection unit ⇒ “3.8 Removing and installing the injection units”, page 464 .



Assembly of fuel return-flow lines

– Check return connections for damage. If one or more retaining tabs are broken off, replace the return line.

– Carefully press the return lines connections onto the injection units. The cap must lock audibly. Then carefully press the intermediate piece downwards.

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

3.6 Check injection unit return flow quantity at starter speed

Injection system assignment ⇒ page 1

⇒ “3.6.1 Checking the return flow of the injection units with starter speed, vehicles with the Bosch injection system”, page 460

⇒ “3.6.2 Checking the return flow of the injection units with starter speed, vehicles with the Delphi injection system”, page 462

3.6.1 Checking the return flow of the injection units with starter speed, vehicles with the Bosch injection system

Note

If the engine will not start the return flow quantity of the injection units can also be tested at starter speed.

Special tools and workshop equipment required

- Return flow quantity measuring device - VAS 6684-
- Adapter C6 from return quantity measuring device - VAS 6684-
- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-

Work procedure

Note

Each injection unit has a small amount of return. If this return flow quantity is relatively great (in relation to the return flow quantity of the other injection units), this injection unit is probably defective.

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

NOTICE

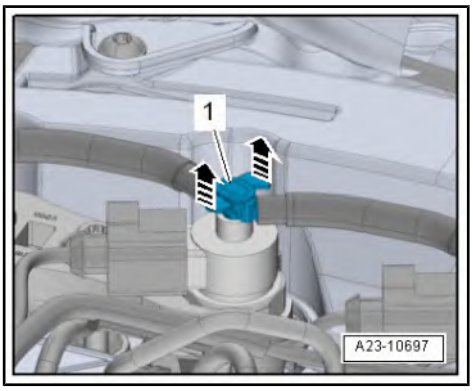
There is a risk of malfunctions caused by soiling.

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

– Before removing, clean all return flow connections (for example with a commercially available cold cleaner).

– Dry all the cleaned component parts.

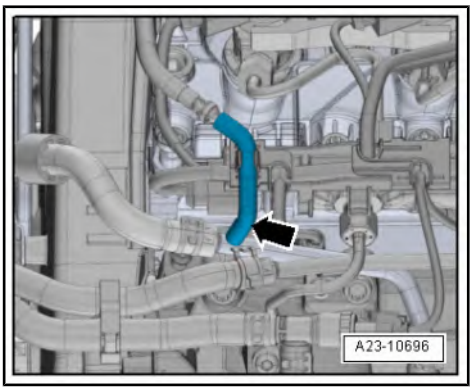
– If present, remove noise insulation.



Note

Pay attention to cleanliness; no dirt must get into the removed return lines and the connections of the injection units.

– Pull off return-flow line connections on injection unit by pulling release buttons upwards -arrows-.



– Close fuel drain hose -arrow- with the hose clamp up to ∅ 25 mm - MP7-602 (3094)- .

– Clean and blow out adapter of the return quantity measuring device - VAS 6684- .

– Firmly fit adapter C6 to the return-flow line connections of all 4 injection units.

– Connect hose lines of the return flow quantity measuring device - VAS 6684- to the adapter.

– Actuate the starter 3 times (leave a pause of 20 seconds between each start attempt - starter overheating protection).

• Set value of the return flow quantity: 0 ml

– If fuel is leaking from a fuel injection unit, that injection unit must be replaced.

Assembly of fuel return-flow lines

– Press connections of return-flow lines onto the injection units until they audibly locks into place.

– Then press the brackets down on both sides.

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

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

– Querying and erasing event memory of engine control unit
⇒ Vehicle diagnostic tester.

3.6.2 Checking the return flow of the injection units with starter speed, vehicles with the Delphi injection system

Note

If the engine will not start the return flow quantity of the injection units can also be tested at starter speed.

Special tools and workshop equipment required

- Return flow quantity measuring device - VAS 6684-
- Unlocking tool , e.g. -T10236-
- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-

Work procedure

Note

Each injection unit has a small amount of return. If this return flow quantity is relatively great (in relation to the return flow quantity of the other injection units), this injection unit is probably defective.

– 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 .

– Before removing, clean all return flow connections (for example with a commercially available cold cleaner).

– Dry all the cleaned component parts.

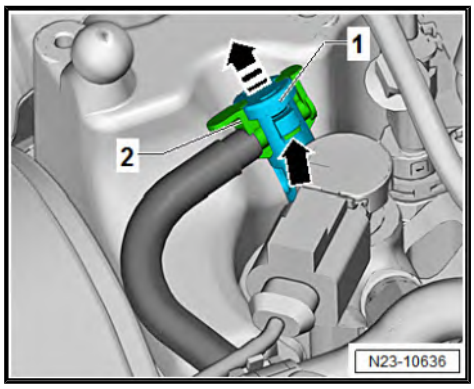
– Remove cover for noise insulation.

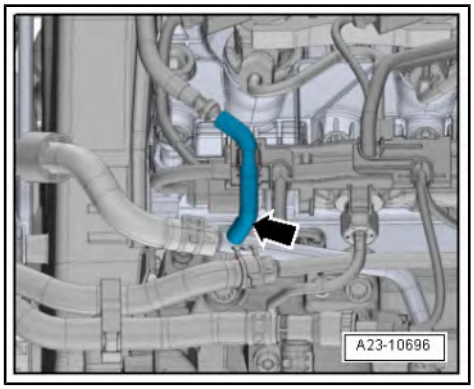
Note

Pay attention to cleanliness - no impurities must get into the open return lines and into the connections of the injection units.

– Unlock the centre part -1- of the return-flow connections in -direction of arrow-.

– Carefully remove connections -2- using the disassembly tool - T10236- .





– Close fuel drain hose -arrow- with the hose clamp up to ∅ 25 mm - MP7-602 (3094)- .

– Clean and blow out hoses of the return flow quantity measuring device - VAS 6684- .

– Firmly fit hoses straight to the return-flow line connections of all 4 injection units.

– Actuate the starter 3 times. Leave a pause of approx. 20 seconds between each start attempt - starter overheating protection.

• Set value of the return flow quantity: 0 ml

– If fuel is leaking from a fuel injection unit, that injection unit must be replaced.

Assembly of fuel return-flow lines

– Press connections of the return-flow lines onto the injection units until they audibly lock into place.

– Then press the brackets down on both sides.

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

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

– Querying and erasing event memory of engine control unit
⇒ Vehicle diagnostic tester.

3.7 Checking the injection units in open state

Special tools and workshop equipment required

♦ Hand vacuum pump , e.g. -VAS 6213-

♦ Adapter C7 from return flow quantity measuring device - VAS 6684- , for connecting the return line, variant 1

♦ Adapter C6 from return quantity measuring device - VAS 6684-

♦ Disassembly tool , e.g. -T10236- , for connecting the return line, variant 1

– Delete event memory entry with vehicle diagnosis tester ⇒ Vehicle diagnostic tester.

– 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 .

– Before removing, clean all connections (for example with a commercially available cold cleaner).

Note

- *Pay attention to cleanliness, no dirt must get into the fuel system.*
- *Check cylinders one after another.*

– Dry all the cleaned component parts.

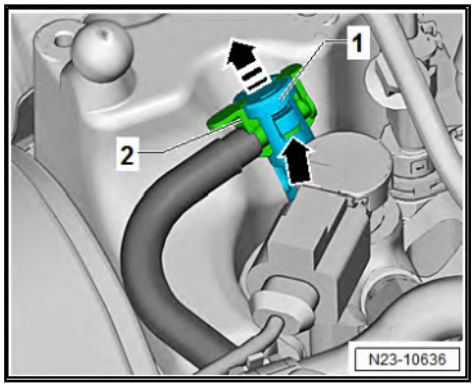
Start with cylinder 1.

– If present, remove noise insulation.

Connecting the return line, variant 1

– Unlock the centre part -1- of the return-flow connections in -direction of arrow-.

– Carefully remove connections -2- using the disassembly tool - T10236- .

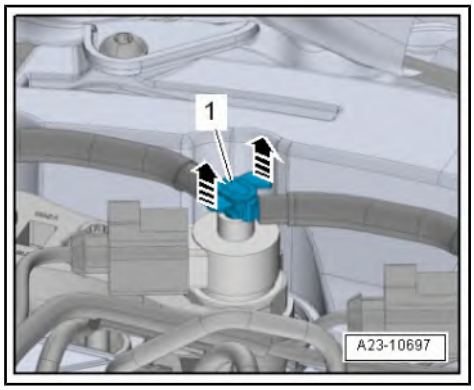


Connecting the return line, variant 2

– Pull off return-flow line connections on injection unit by pulling release buttons upwards -arrows-.

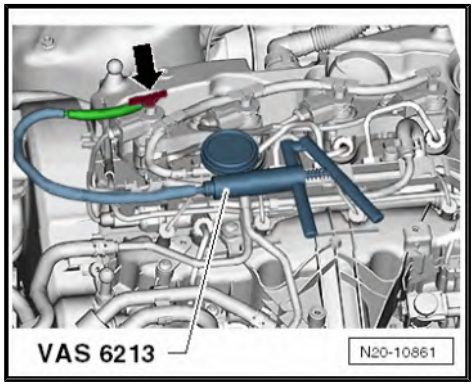
Continued for all vehicles

Clean and flow out adapter C6 or C6 from return flow quantity measuring device - VAS 6684- .



– Connect the clean, blown through adapter on the injection unit to be tested.

– A vacuum of -0,05 MPa (-500 mbar) is built up using the hand vacuum pump - VAS 6213- .



If the injection units are O.K, the vacuum remains constant for more than 30 s.

If the injection units are defective, the pressure drops again to 0 MPa (0 bar) within 2 ... 3 seconds.

If necessary repeat the test, pay attention to the vacuum loss on the hand vacuum pump - VAS 6213- .

– Replace injection units
⇒ “3.8 Removing and installing the injection units”, page 464 .

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

3.8 Removing and installing the injection units

Special tools and workshop equipment required

- Extractor - T10055-
- Assembly sleeve - T10377-
- Puller - T10415- , for Bosch injection system
- Puller - T10537- , for Delphi injection system
- Disassembly tool , e.g. -T10236- , for connecting the return line, variant 1

Removing

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

– If present, remove noise insulation.

NOTICE

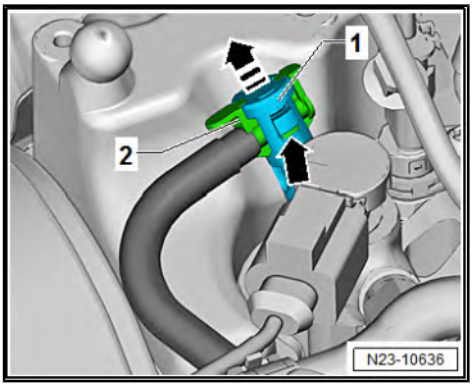
There is a risk of malfunctions caused by soiling.

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

Connecting the return line, variant 1

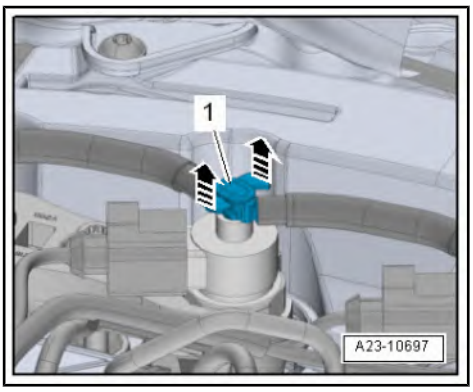
– Unlock the centre part -1- of the return-flow connections in -direction of arrow-.

– Carefully remove connections -2- using the disassembly tool - T10236- .



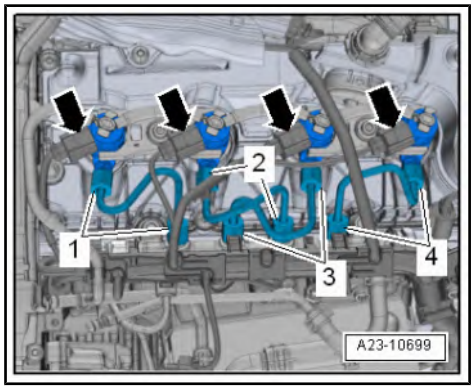
Connecting the return line, variant 2

– Pull off return-flow line connections on injection unit by pulling release buttons upwards -arrows-.



Continued for all vehicles

– Disconnect electrical plug connections -arrows- from the injection units.



Note

Each clamping claw secures 2 injection valves and can only be removed when both injection units are »removed«.

NOTICE

When undoing the high pressure line, counterhold with an open-end spanner. If the high pressure connection fitting loosens, this can cause leaks.

– Unscrew union nuts of the respective high pressure lines -1- … -4- and pull off the corresponding high pressure lines.

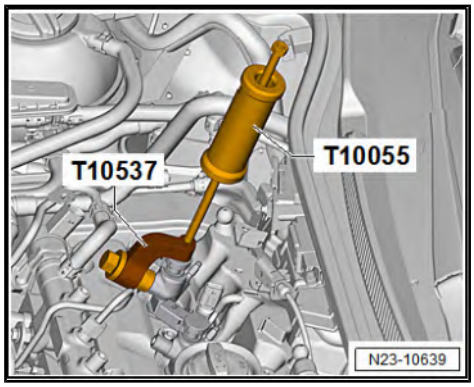
– Close open lines and connections with blind plugs.

• Sequence for removing the injection units First remove injection unit on cylinder “2” and then on cylinder “1”; first on cylinder “4” and then on cylinder “3”.

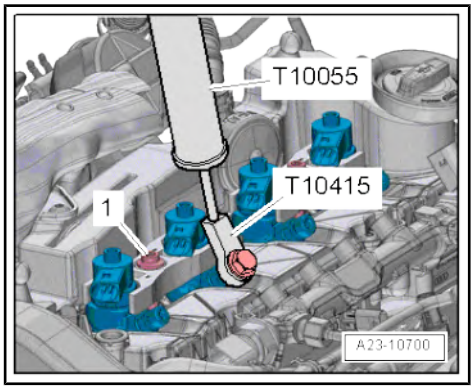
For vehicles with Delphi injection system, assignment ⇒ page 1

– Unscrew screw for clamping claw, Pos. -8- ⇒ Item 8 (page 453) .

– Position extractor - T10055- with the extractor - T10537- as shown in the illustration and pull out upwards.



For vehicles with Bosch injection system, assignment ⇒ page 1



– Unscrew bolt -1-.

– Position extractor - T10055- with the extractor - T10415- as shown in the illustration and pull out upwards.

Continued for all vehicles

– Remove the clamping claw before removing the injection unit.

Note

To avoid damaging the sealing lip, use rotary motion to pull off injection units.

– Place the removed injection units on a clean cloth.

Installing

NOTICE

Risk of damage to injection unit sealing surfaces.

- **To remove the soot particles on the sealing surface of the injection unit, clean the injection unit shaft in the cylinder head.**

– Clean the injection unit shaft in the cylinder head with the cleaning set - VAS 6811- ⇒ Owner's Manual .

Installing new injection units

When installing a new injection unit the following must be replaced:

- Screw for clamping claw
- Copper disc for injection unit
- O-ring for the injection unit shaft
- O-ring for fuel return-flow line connection

– Follow all instructions for installation of high pressure lines ⇒ “3.9.2 Installing high pressure line”, page 469 .

Installing used injection units

When reinstalling a used injection unit the following must be replaced:

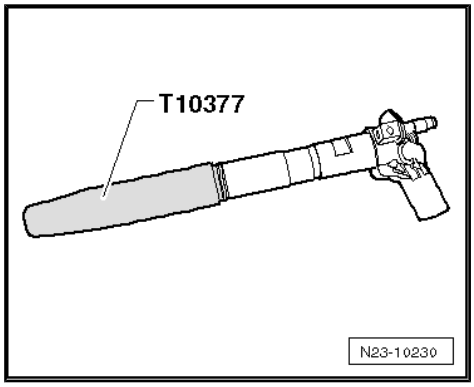
- Screw for clamping claw
- Copper disc for injection unit
- O-ring for the injection unit shaft
- O-ring for fuel return-flow line connection

– Spray the tip of the injection unit with a rust solvent spray. Remove soot particles or oil particles with a cloth after approximately 5 minutes.

– To dismantle the old copper disc from the injection unit, carefully tighten the copper disc in a vice until the copper ring is prevented from spinning between the chuck jaws. Pull the injection unit out of the copper disc with slight turning and pulling movements of the hand.

– Clean the deposits below the copper disc.

– Replace the sealing ring for the injection unit, using the assembly sleeve - T10377- .



Continued for used and new injection units

– Coat all O-rings with assembly oil, engine oil or diesel fuel before installation.

– Install the injection units.

– First tighten the union nuts of the high pressure lines hand-tight. Check that seating is free of tension.

After replacing one or more injection units

– Change the correction values for the new injection units to the engine control unit
⇒ “3.3 Adjust the correction values for injection units”, page 456 .

– After replacement, the learning value of Control valve for fuel pressure - N276- is reset to default ⇒ Vehicle diagnostic tester.

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

– 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 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “3.1 Summary of components - injection units (injectors)”, page 452 .

3.9 Removing and installing high pressure lines

⇒ “3.9.1 Removing the high pressure line between the high pressure pump and the high pressure reservoir (fuel distributor)”, page 468

⇒ “3.9.2 Installing high pressure line”, page 469

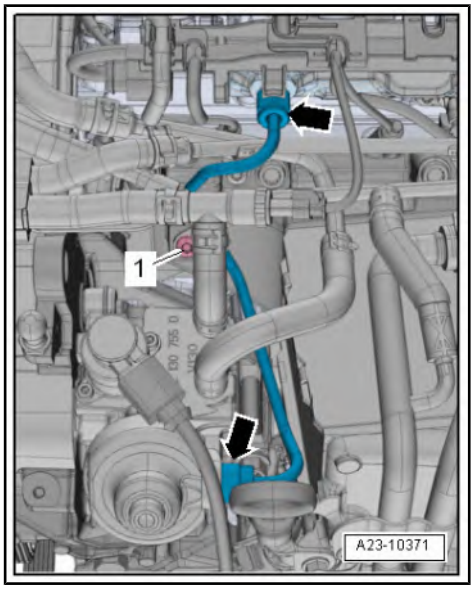
3.9.1 Removing the high pressure line between the high pressure pump and the high pressure reservoir (fuel distributor)

Removal

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

– Clean fuel line and line end with cold cleaner and blow dry with compressed air.

– Unscrew bolt -1-.



NOTICE

Avoid risk of malfunctions caused by contamination.

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

– Unscrew union nuts -arrows- and remove high pressure line.

3.9.2 Installing high pressure line

Special tools and workshop equipment required

- Tool insert SW 17 - V.A.G 1331/6-
- Socket wrench insert - T40055-

Work procedure

Note

- *Clean fuel line and line end with cold cleaner before removal, and blow dry with compressed air.*
- *Pay attention to the cylinder specific marking when re-using the high pressure lines.*
- *The high pressure lines can be re-used after the following tests:*
- *Check the sealing cone of the respective high pressure line for deformations and cracks.*
- *The line borings must not be deformed, constricted or damaged.*
- *Corroded lines must no longer be used.*

NOTICE

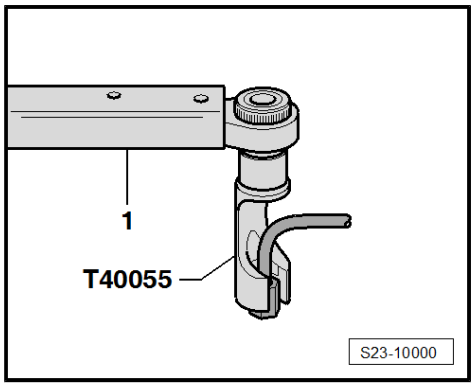
Risk of malfunctions caused by soiling.

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

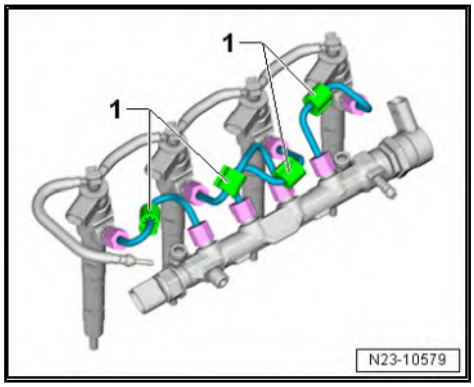
Risk of line break because of high pressure line being under tension.

- **Slacken the high-pressure accumulator (fuel distributor) and the clamping claws for improved and stress-free positioning of the injection lines. If necessary, move the high-pressure accumulator (fuel distributor) slightly and turn the corresponding injection unit slightly. The lines must be never bent or twisted.**

– Suction off dirt from the sealing cone on the fuel high pressure reservoir.
– Moisten thread of the nut with clean engine oil.
– Hand-tighten union nuts, ensure that the fit is tension-free.
– To tighten the high pressure lines on the high pressure accumulator and injection units, use torque wrench -1- with insertion tool SW 17 - V.A.G 1331/6- or socket wrench insert - T40055- .



– Set balancing weight -1- on the high-pressure lines as shown in the diagram.



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

Tightening torques - summaries of components

Note

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

♦ ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
♦ ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454

3.10 Removing and installing high pressure reservoir (fuel distributor)

Removing

NOTICE

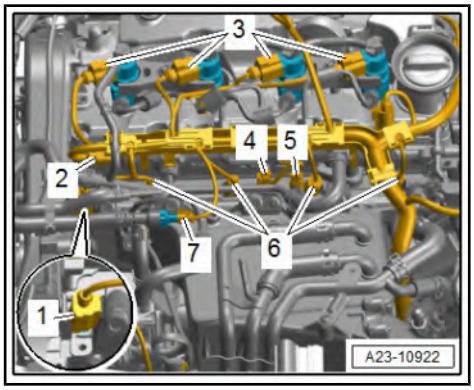
Risk of malfunctions caused by soiling.

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

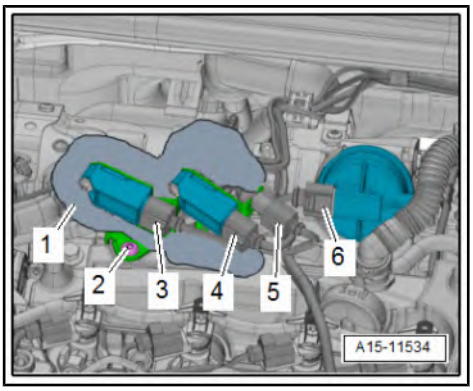
– Remove high pressure line between high pressure accumulator and the high pressure pump
⇒ “3.9.1 Removing the high pressure line between the high pressure pump and the high pressure reservoir (fuel distributor)”, page 468 .
– If present, remove noise insulation.

– Disconnect electrical plug connections:

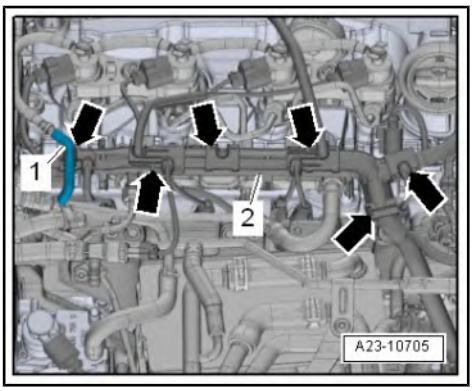
1 - for coolant valve for cylinder head - N489-
2 - for fuel pressure sender - G247-
3 - for injection units
4 - for Hall sender - G40-
5 - for intake air temperature transmitter - G42-
6 - for glow plugs
7 - for fuel temperature sender - G81-



– Open heat protection sleeve -1-.
– Disconnect electrical plug connections -3- and -6-.
– If present, disconnect electrical plug connections -4- and -5-.
– Expose electric wiring harness.



– Expose fuel return-flow hose -1-.
– Open holding clamps -arrows-, unclip and remove cable duct -2-.



– Disconnect electrical plug connections:

1 - for fuel pressure sender - G247-

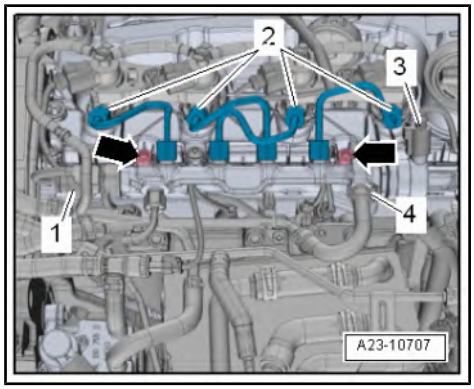
3 - for fuel pressure regulating valve - N276-

– Loosen hose clamp -4- and remove fuel return-flow hose.

– Unscrew high pressure line union nuts -2-.

– Remove high pressure line and place it on a clean cloth.

– Screw out screws -arrows- and remove high pressure accumulator (fuel distributor).



Installation

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

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Follow all instructions for installation of high pressure lines ⇒ “3.9.2 Installing high pressure line”, page 469 .

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - injection units (injectors)”, page 452
- ⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454

4 Air filter

⇒ “4.1 Assembly overview - air filter housing”, page 473

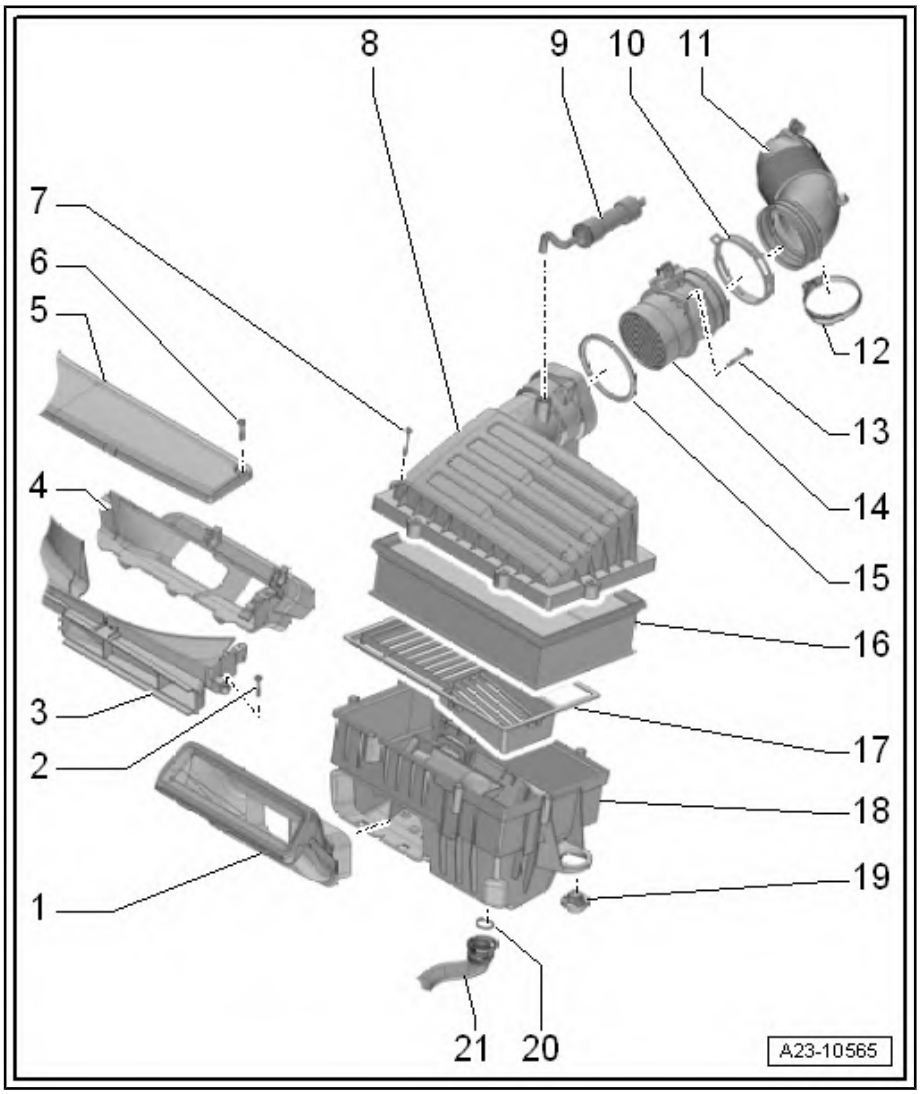
⇒ “4.2 Removing and installing air filter housing”, page 476

4.1 Assembly overview - air filter housing

⇒ “4.1.1 Summary of components - air filter housing, Octavia III, Yeti”, page 473

⇒ “4.1.2 Summary of components - air filter housing, Rapid NH”, page 475

4.1.1 Summary of components - air filter housing, Octavia III, Yeti



1 - Air deflector
- ❑ on the air filter lower part

2 - Screw
- ❑ 2 Nm

3 - Air guide lower part
- ❑ on the lock support

4 - air guide pipe top
- ❑ on the lock support

5 - Cover
- ❑ for air guide

6 - Screw
- ❑ 2 Nm

7 - Screw
- ❑ 1.5 Nm

8 - Air filter top part
- ❑ remove mechanical contaminations

9 - Ventilation hose
- ❑ from charge pressure control solenoid valve - N75-

10 - Spring clip

11 - intake hose

12 - Screw clamp
- ❑ installing ⇒ , page 474

13 - Screw
- ❑ 1.5 Nm

14 - Air mass meter - G70-
- ❑ Removing and installing ⇒ “6.4 Removing and installing air flow mass meter G70 ”, page 506

15 - O-ring
- ❑ replace if damaged

16 - Air filter element
- ❑ Use original air filter element ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Change intervals ⇒ Maintenance tables
- ❑ removing and installing:

- ⇒ Maintenance ; Booklet Octavia III
- ⇒ Maintenance ; Booklet Yeti

17 - Insert

- ❑ for air filter lower part

18 - Air filter bottom part

- ❑ remove mechanical contaminations

19 - Rubber bearing

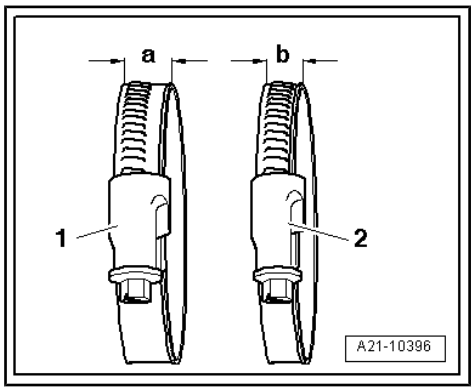
20 - O-ring

- ❑ replace if damaged
- ❑ Part of the drainage pipe

21 - Drain pipe

- ❑ with valve
- ❑ clean

Install air guide pipes with screw clamps



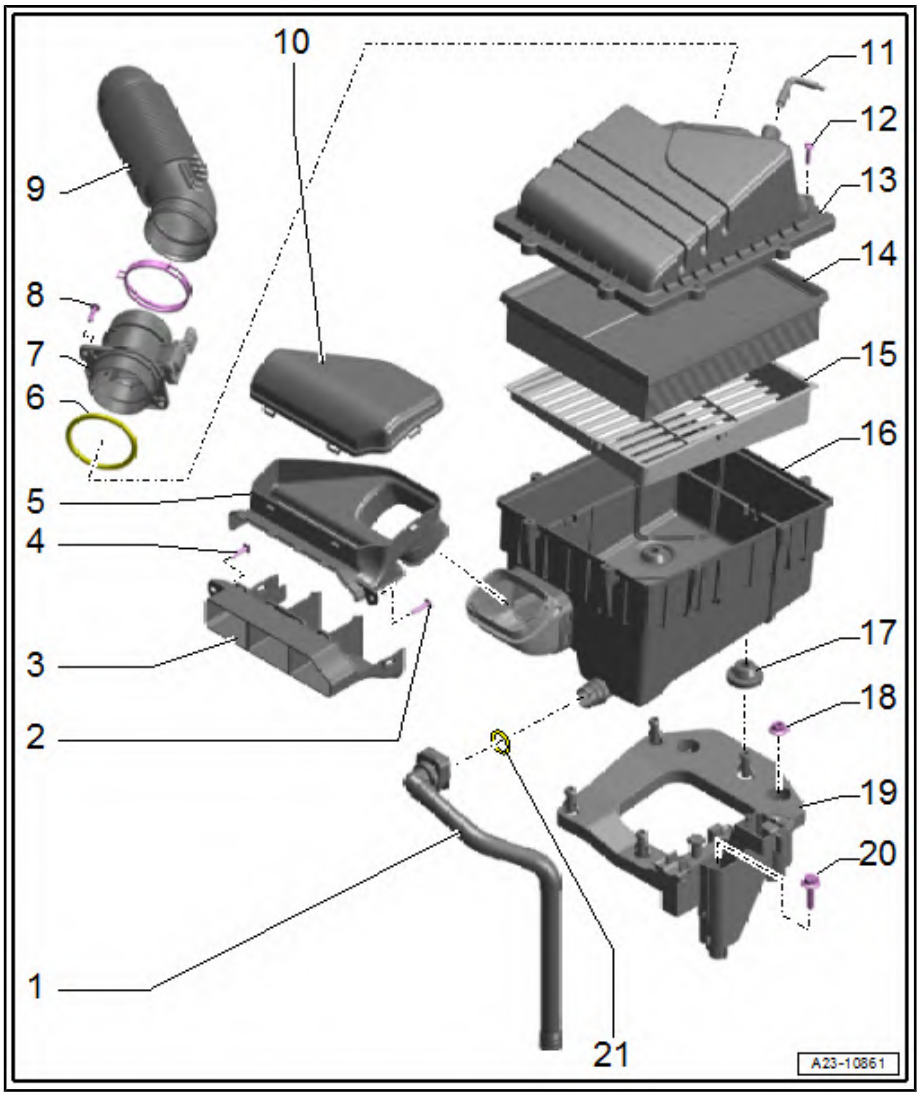
Note

- *Connections, charge air pipes and hoses of charge air system must be free of oil and grease before being installed.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *In order to secure the charge air hoses on their connection fittings, the threads must be treated with rust solvent if the screw clamps have been used beforehand.*
- *After a repair, check all the charge air pipes, charge air hoses and vacuum lines for tight connection and leaks.*

Tightening torques

Screw clamp	Tightening torque
-1-, width -a- = 13 mm	5.5 Nm
-2-, width -b- = 9 mm	3 Nm

4.1.2 Summary of components - air filter housing, Rapid NH



1 - Drain pipe
- ❑ with valve
- ❑ clean

2 - Screw
- ❑ 5 Nm

3 - Air guide lower part
- ❑ on the lock support

4 - Screw
- ❑ 5 Nm

5 - air guide pipe top
- ❑ on the lock support

6 - O-ring
- ❑ replace if damaged

7 - Air mass meter - G70-
- ❑ Removing and installing ⇒ “6.4 Removing and installing air flow mass meter G70 ”, page 506

8 - Screw
- ❑ 2 Nm

9 - intake hose

10 - Cover
- ❑ for air guide

11 - Ventilation hose
- ❑ from charge pressure control solenoid valve - N75-

12 - Screw
- ❑ 2 Nm

13 - Air filter top part
- ❑ remove mechanical contaminations

14 - Air filter element
- ❑ Use original air filter element ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ Change intervals ⇒ Maintenance tables
- ❑ Removing and installing ⇒ Maintenance ; Booklet Rapid NH

15 - Insert
- ❑ for air filter lower part

16 - Air filter bottom part
- ❑ remove mechanical contaminations
- ❑ Removing and installing ⇒ “4.2.3 Removing and installing the air filter housing, Rapid NH”, page 480

17 - Rubber bearing

18 - Nut
- ❑ Tightening torque ⇒ Electrical system; Rep. gr. 27

19 - Support
- ❑ for jump start point and air filter housing

- ❑ Removing and installing ⇒ Electrical System; Rep. gr. 27

20 - Screw

- ❑ Tightening torque ⇒ Electrical system; Rep. gr. 27

21 - O-ring

- ❑ replace if damaged
- ❑ Part of the drainage pipe

4.2 Removing and installing air filter housing

⇒ “4.2.1 Removing and installing air filter housing, Octavia III”, page 476

⇒ “4.2.2 Removing and installing air filter housing, Yeti”, page 478

⇒ “4.2.3 Removing and installing the air filter housing, Rapid NH”, page 480

4.2.1 Removing and installing air filter housing, Octavia III

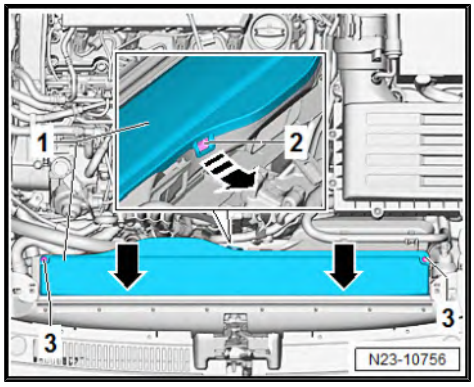
Removing

– Unscrew bolt -3-.

– Unlock catch -2- and remove cover-1-.

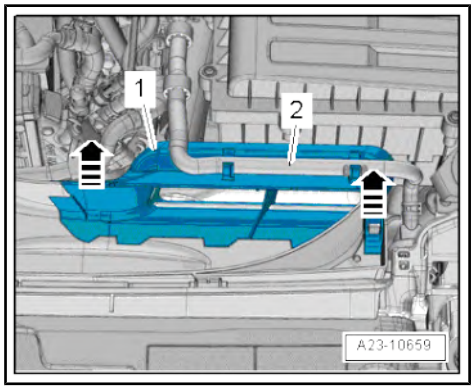
– Slide the cover -1- forwards and out of the brackets -arrows-.

– Remove cover -1-.

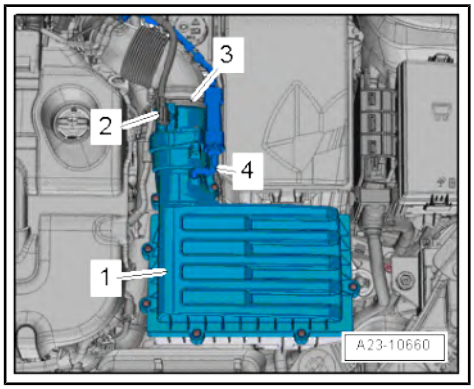


– Detach coolant hose -2-.

– Unlock catches -arrows-, remove air guide pipe upper part -1-.



– Disconnect the plug connection -2- at the air mass meter - G70- .
– Disconnect vacuum hose -4-.
– Loosen hose clamp -3-, remove extraction hose.
– Remove air filter -1-.



Installing

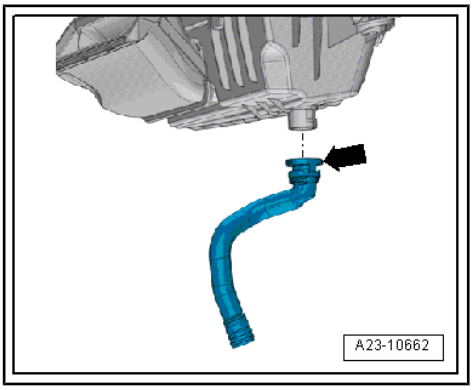
Installation is carried out in the reverse order. When installing, observe the following:

♦ Tightening torque
⇒ “4.1 Assembly overview - air filter housing”, page 473

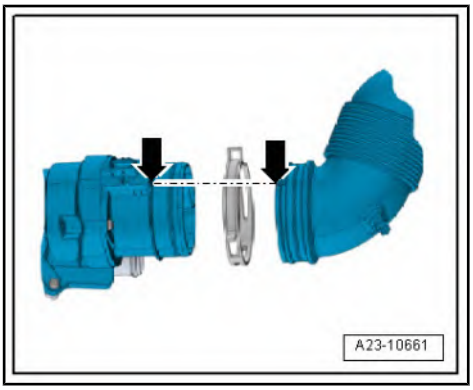
Note

♦ *Connections, charge air pipes and hoses of charge air system must be free of oil and grease before being installed.*
♦ *Use a silicone lubricant to assemble the suction hose.*
♦ *Only install approved spring strap clips for securing the hose connections ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Disconnect water drainage hose -arrow-.
– Clean connection and air filter lower part and hose to remove dirt and leaves.



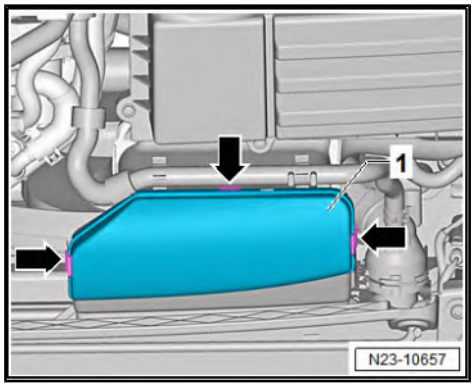
– When attaching the suction nozzle to the air filter housing, pay attention to the installation markings -arrows-.
– Put air filter onto the battery tray and push in until there is an audible click.
– Press air filter down again and check by pulling that the air filter is fully engaged.



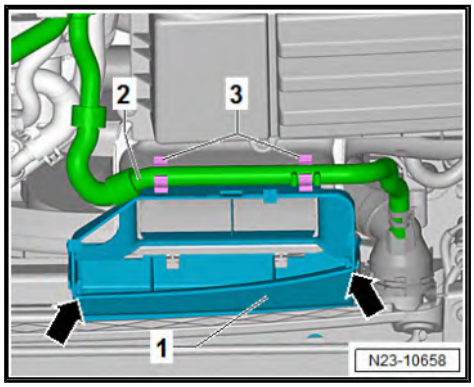
4.2.2 Removing and installing air filter housing, Yeti

Removing

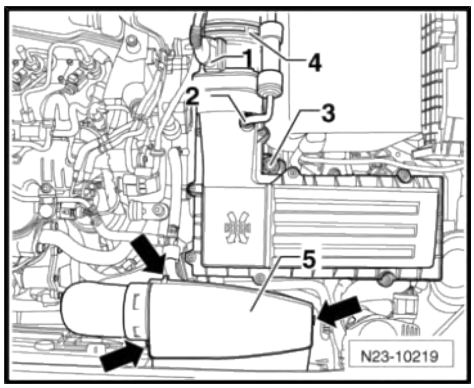
– Release and take off cover -1- at the catches -arrows-.



– Remove the coolant hose -2- from the brackets -3-.
– Unlock catches -arrows- and remove the air guide from the mountings -1-.

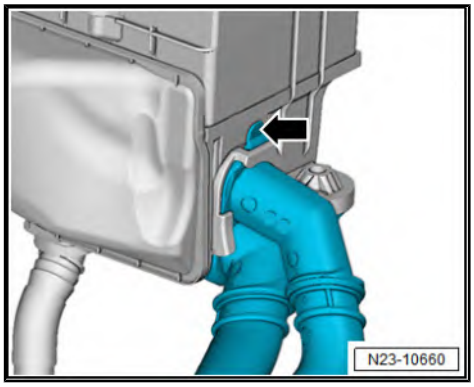


– Release and disconnect electrical plug connection -1- from air mass meter - G70- .
– Pull off hose -2-.
– Loosen hose clamp -4-, remove extraction hose.
– Unscrew bolt -3-.



– Release the securing tab -arrow- and remove the air filter from the compensating tank upwards.

– Pull air filter housing upwards off the mounting brackets.



Installing

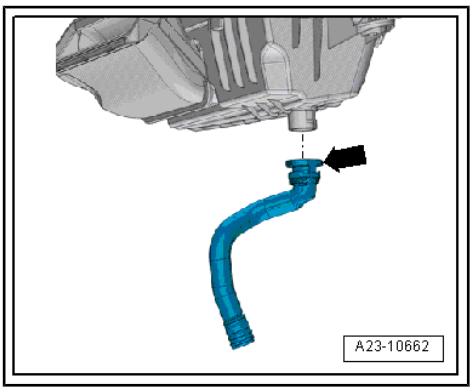
Installation is carried out in the reverse order. When installing, observe the following:

Note

- *Connections, charge air pipes and hoses of charge air system must be free of oil and grease before being installed.*
- *Use a silicone lubricant to assemble the suction hose.*
- *Only install approved spring strap clips for securing the hose connections ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Disconnect water drainage hose -arrow-.

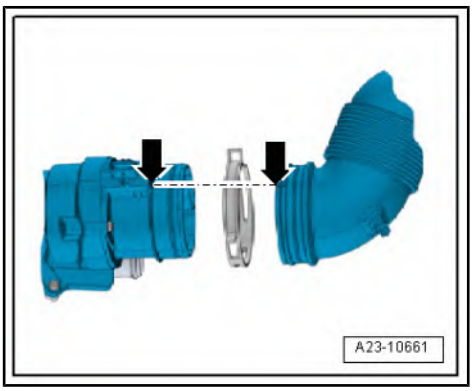
– Clean connection and air filter lower part and hose to remove dirt and leaves.



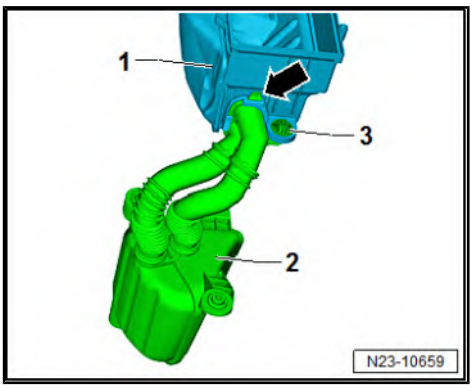
– When attaching the suction nozzle to the air filter housing, pay attention to the installation markings -arrows-.

– Put air filter onto the battery tray and push in until there is an audible click.

– Press air filter down again and check by pulling that the air filter is fully engaged.



– Ensure that the compensating tank -2- is seated on the centring pin -3- under the air filter -1-.



Tightening torques - summaries of components

Note

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

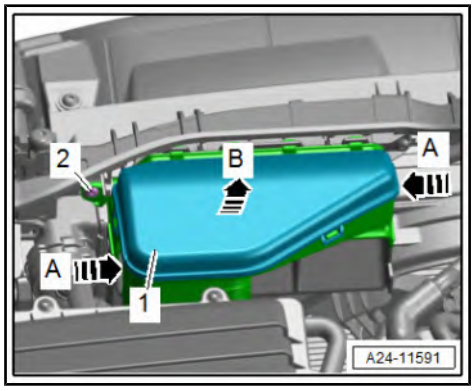
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

4.2.3 Removing and installing the air filter housing, Rapid NH

Removing

– Unscrew screw -2-, unlock catches arrows -A-.

– Disconnect the cover -1- from the air guide duct arrow -B- and remove.



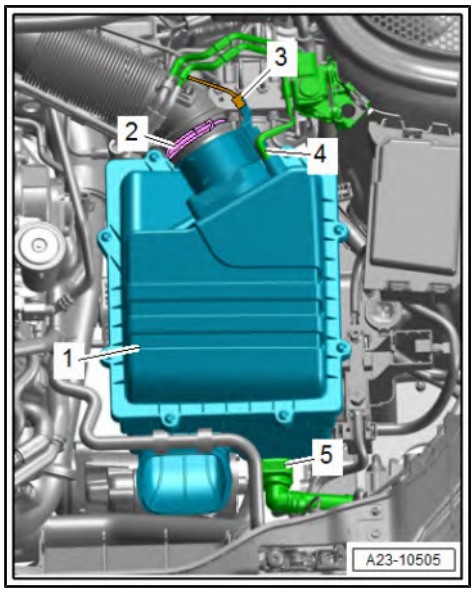
– Separate electrical plug connection -3-.

– Disconnect vacuum hose -4-.

– Disconnect water drain hose by pressing the release button -5-.

– Release hose clamp -2- and remove air guide pipe.

– Remove air filter housing -1- towards the top.



Installing

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

Note

- *Hose connections as well as charge air pipes and -hoses must be free of oil and grease before being installed.*
- *Use a silicone-free lubricant for installing the air guide hose.*
- *Secure all hose connections with hose clamps which comply with the series design ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Clean dirt and leaves off water drain hose.

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Assembly overview - air filter housing”, page 473

5 Intake manifold

⇒ “5.1 Assembly overview - intake manifold”, page 481

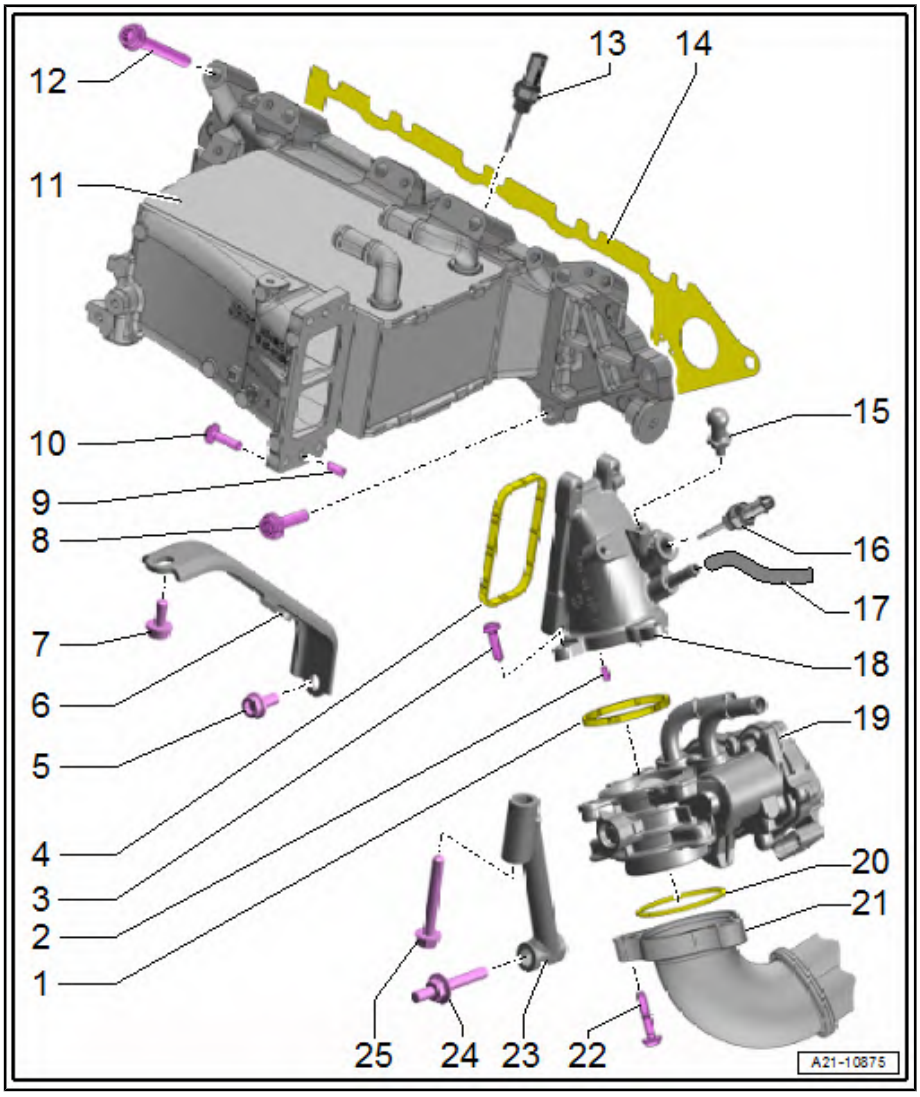
⇒ “5.2 Removing and installing intake manifold”, page 483

⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491

5.1 Assembly overview - intake manifold

Note

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



1 - Sealing ring
- ❑ Replace after disassembly

2 - Fit pin

3 - Screw
- ❑ 8 Nm

4 - Seal
- ❑ Replace after disassembly

5 - Screw
- ❑ Tightening torque and tightening order ⇒ page 483

6 - Mounting bracket
- ❑ for the intake manifold
- ❑ Tightening torque and tightening order ⇒ page 483

7 - Screw
- ❑ Tightening torque and tightening order ⇒ page 483

8 - Screw
- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 483

9 - Fit pin

10 - Screw
- ❑ 8 Nm

11 - Intake manifold with charge air cooler
- ❑ The intake manifold and charge air cooler form a single building unit
- ❑ Removing and installing ⇒ “5.2 Removing and installing intake manifold”, page 483
- ❑ Check for leaks ⇒ “2.3 Checking the charge-air system for leak-tightness”, page 411

12 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 483

13 - Charge air temperature transmitter after charge air cooler - G811-

- ❑ Removing and installing ⇒ “6.9 Removing and installing charge air temperature transmitter after charge air cooler G811 ”, page 519
- ❑ 22 Nm

14 - Seal

- ❑ Replace after disassembly

15 - Ball stud

- ❑ for engine cover
- ❑ 9 Nm

16 - Intake air temperature sender - G42-

- ❑ Removing and installing ⇒ “6.7 Removing and installing intake air temperature sender G42 ”, page 516
- ❑ 22 Nm

17 - Hose

- ❑ to charge pressure transmitter - G31-

18 - Connection fitting

- ❑ Throttle valve control unit - J338-

19 - Throttle valve control unit - J338-

- ❑ with throttle valve potentiometer - G69-
- ❑ Removing and installing ⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491

20 - O-ring

- ❑ Replace after disassembly

21 - Air guide pipe

22 - Screw

- ❑ Tightening torque ⇒ “2.1 Summary of components - charge air system”, page 409

23 - Mounting bracket

- ❑ Throttle valve control unit - J338-
- ❑ Tightening torque and tightening order ⇒ page 483

24 - Double screw

- ❑ Tightening torque and tightening order ⇒ page 483

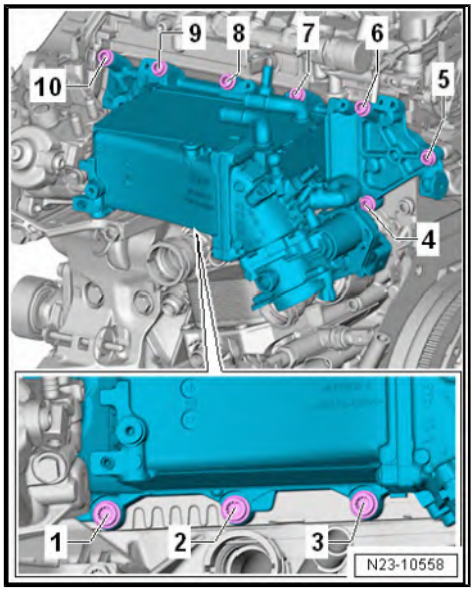
25 - Screw

- ❑ Tightening torque and tightening order ⇒ page 483

Intake manifold with charge air cooler - tightening torque and tightening order

– Tighten screws successively.

Stage	Bolts	Tightening torque
1.	-1- … -10-	by hand as far as the stop
2.	-1- … -10-	Tighten to 20 Nm
3.	-1- … -10-	Turn 90° further



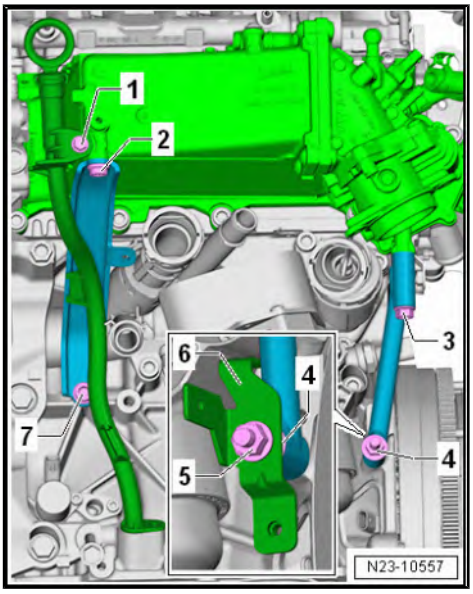
Mounting bracket for intake manifold and mounting bracket for throttle valve control unit - tightening torque and sequence

– Tighten screws one after the other:

NOTICE

When installing the mounting bracket for the intake manifold and, where necessary, the throttle flap control unit, ensure that the appropriate bracket is not screwed into place under tension or at an angle- crucial.

Stage	Nuts and bolts	Tightening torque
1.	-2-, -3-, -4-, -7-	firmly by hand as far as the stop
2.	-2-, -3-, -4-, -7-	Tighten to 20 Nm
3.	-5-	Tighten to 10 Nm
4.	-1-	Tighten to 10 Nm



5.2 Removing and installing intake manifold

⇒ “5.2.1 Removing and installing the intake manifold, Octavia III, Yeti”, page 483

⇒ “5.2.2 Removing and installing the intake manifold, Rapid NH”, page 487

5.2.1 Removing and installing the intake manifold, Octavia III, Yeti

Note

The intake manifold and charge air cooler form a single building unit.

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-
- Socket wrench XZN 10 - T10501-

♦ Radiator protection mat , e.g. -VAS 531 003-

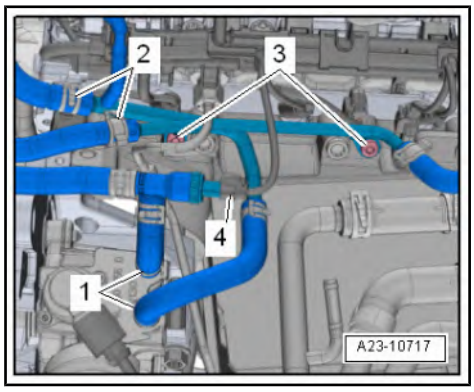
Removal

– Remove front top coolant pipe
⇒ “3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti”, page 312 .

– Remove high pressure line
⇒ “3.9 Removing and installing high pressure lines”, page 468 .

– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

– Separate electrical plug connection -4-.



NOTICE

There is a risk of malfunctions caused by soiling.

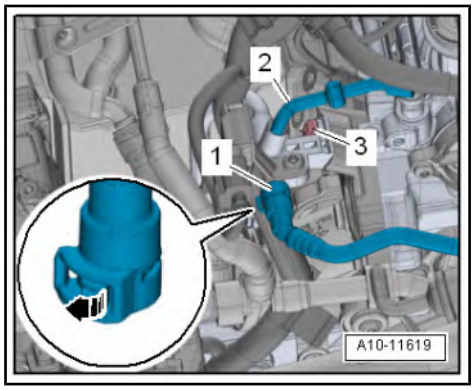
♦ **Observe rules for cleanliness**
⇒ **“3.1 Rules of cleanliness”, page 7** .

– Loosen hose clamps -1-, -2-, remove fuel hoses.

– Unscrew screws -3-, lay fuel lines forwards.

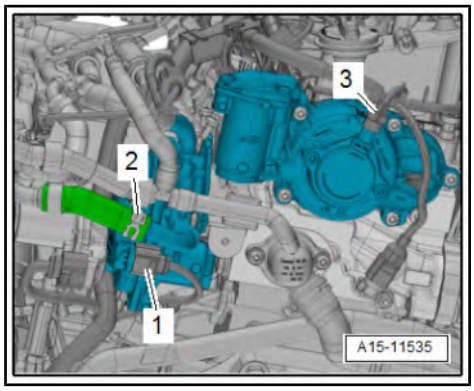
– Unlock catch -arrow-, remove vacuum hose -1-.

– Unscrew screw -3-, remove vacuum hose -2-.

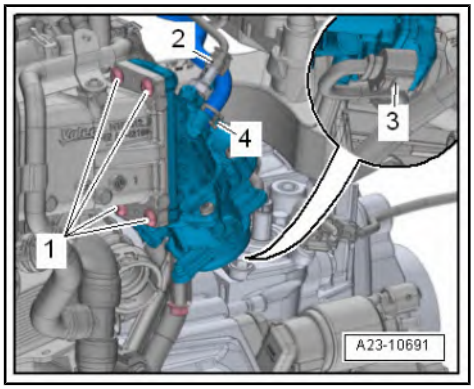


For vehicles with engine identification characters CRKB, CRMB, CUNA, CXXA, CXXB, DBKA, CUUA, CUUB, DDYB, DDYA, DCYA

– Separate electrical plug connection -1-.



– Loosen hose clamp -2-.
– Unscrew screws -1-, remove connection fittings with throttle valve control unit - J338- .



Continued for all vehicles

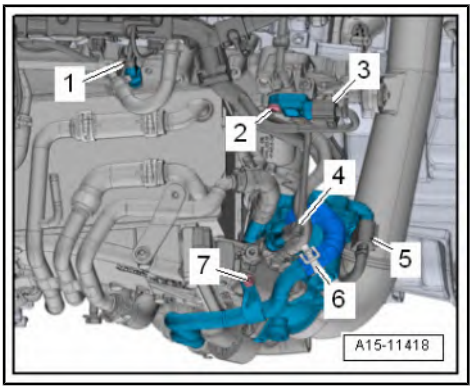
– Disconnect and expose electrical plug connections:

1 - for charge air temperature transmitter after charge air cooler - G811-

3 - for charge pressure sender - G31-

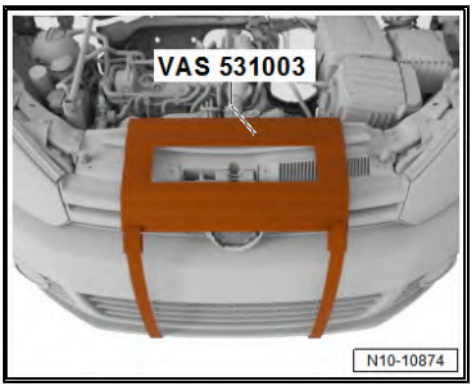
4 - for intake air temperature transmitter - G42-

5 - Throttle valve control unit - J338-

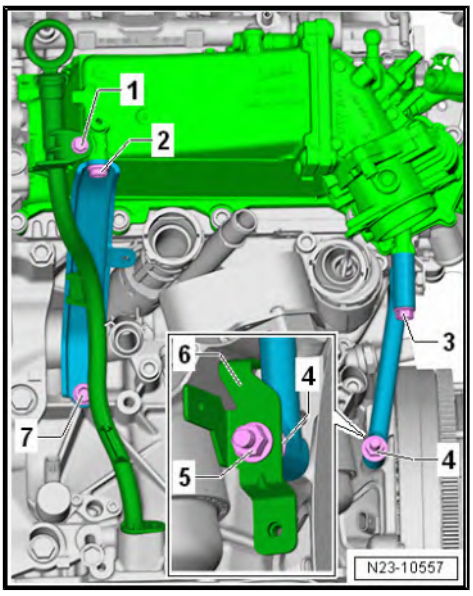


– Unscrew hose clamps -2-, -7-, remove coolant hose -6-.
– Removing fan shroud
⇒ “4.6 Removing and installing fan shroud”, page 365 .

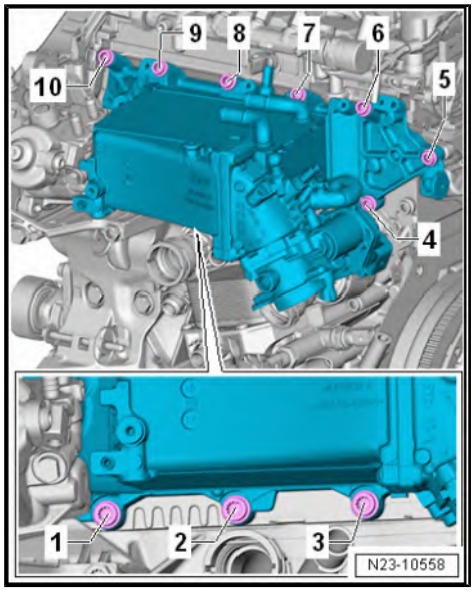
– Fit radiator protection mat - VAS 531 003- to vehicle, as shown.



– Release screw -1- of guide pipe for oil dipstick.
– Unscrew nuts -5- and remove the mounting bracket -6- from the double screw -4-.
– Release screws -4-, -7-.
– Unscrew screws -2-, -3- for intake manifold holder.



– Remove screws -10- … -1- with the Polydrive socket XZN 10 - T10501- , remove the intake manifold with charge air cooler.



Installing

Note

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

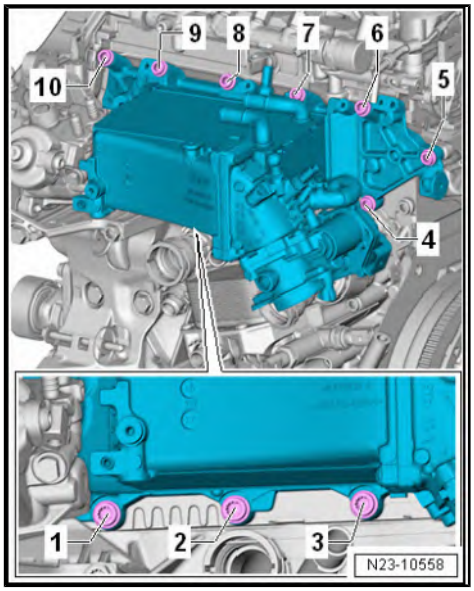
– Place the new cylinder head gasket onto the fitted pins.

NOTICE

Do not damage the sealing surface of the intake manifold when placing it onto the fitted pins.

– Position intake manifold on the dowel pins of the cylinder head.

– Tighten screws -1- … -10- as per the tightening torques and -sequence
⇒ Fig. ""Intake manifold with charge air cooler - tightening torque and tightening order"" , page 483 .



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

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Install air filter
⇒ "4.2 Removing and installing air filter housing", page 476 .

– Installing high pressure line
⇒ "3.9.2 Installing high pressure line", page 469 .

– Install the front top coolant pipe
⇒ "3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti", page 312 .

NOTICE

If a new intake manifold has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface
⇒ "1.7 Flushing the cooling system", page 253 .

If the existing intake manifold has been installed:

– Replace 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.

- ⇒ "4.1 Assembly overview - air filter housing", page 473
- Install air guide pipes with screw clamps ⇒ , page 474
- ⇒ "5.1 Assembly overview - intake manifold", page 481
- ⇒ "3.1 Summary of components - coolant pipe", page 309
- ⇒ "1.1 Assembly overview - pan/oil pump", page 182

5.2.2 Removing and installing the intake manifold, Rapid NH

Note

The intake manifold and charge air cooler form a single building unit.

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-
- Socket wrench XZN 10 - T10501-

Removing

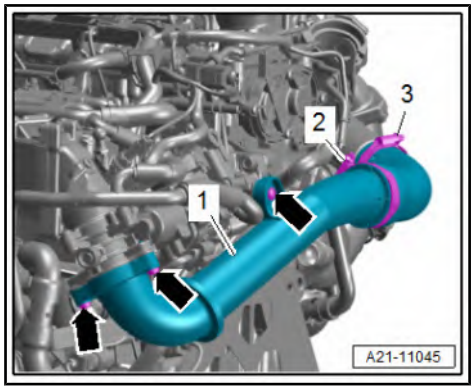
– Remove front top coolant pipe
⇒ “3.2.2 Removing and installing the top front coolant pipes, Rapid NH”, page 314 .

– Remove high pressure line
⇒ “3.9 Removing and installing high pressure lines”, page 468 .

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

– Unscrew screws -arrows-.

– Loosen hose clamp -2-, remove air guide pipe -1-.



– Separate electrical plug connection -4-.

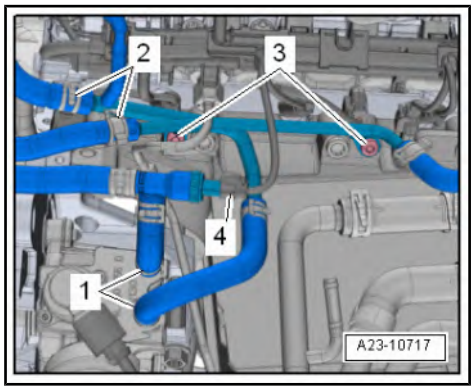
NOTICE

There is a risk of malfunctions caused by soiling.

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

– Loosen hose clamps -1-, -2-, remove fuel hoses.

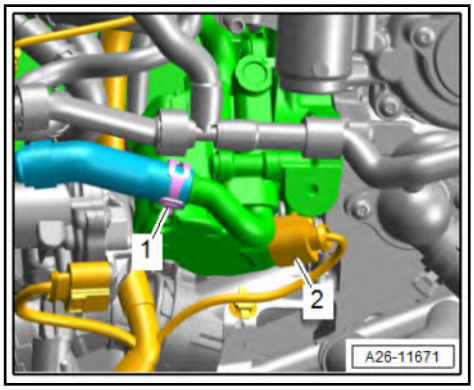
– Unscrew screws -3-, lay fuel lines forwards.



– Unlock catch -arrow-, remove vacuum hose -1-.

– Unscrew screw -3-, remove vacuum hose -2-.

– Separate electrical plug connection -2-.
– Loosen hose clamp -1-, remove coolant hose.



– Disconnect and expose electrical plug connections:

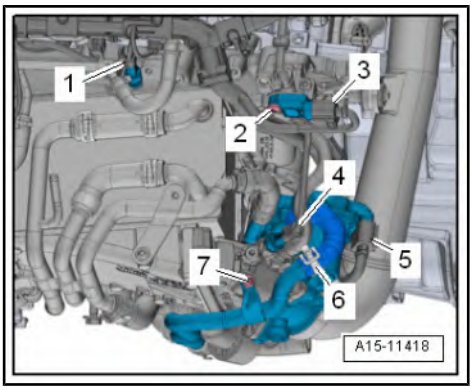
1 - for charge air temperature transmitter after charge air cooler - G811-

3 - for charge pressure sender - G31-

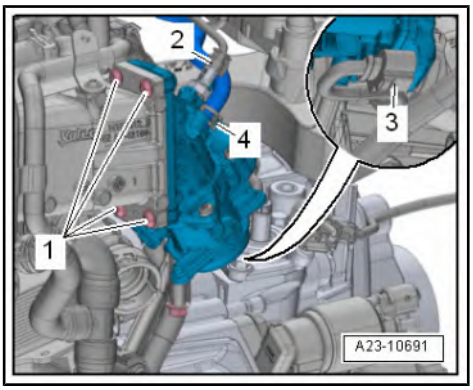
4 - for intake air temperature transmitter - G42-

5 - Throttle valve control unit - J338-

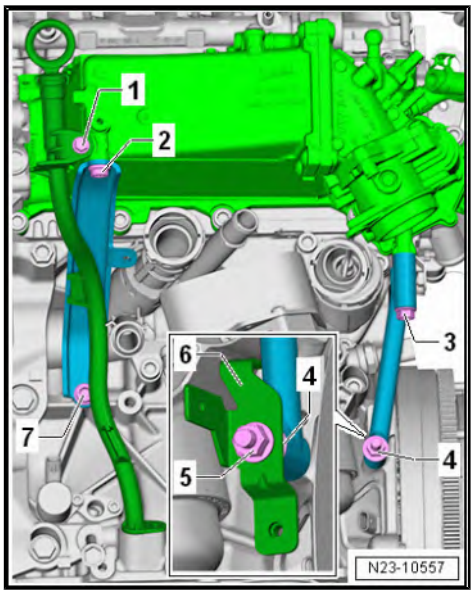
– Unscrew hose clamps -2-, -7-, remove coolant hose -6-.



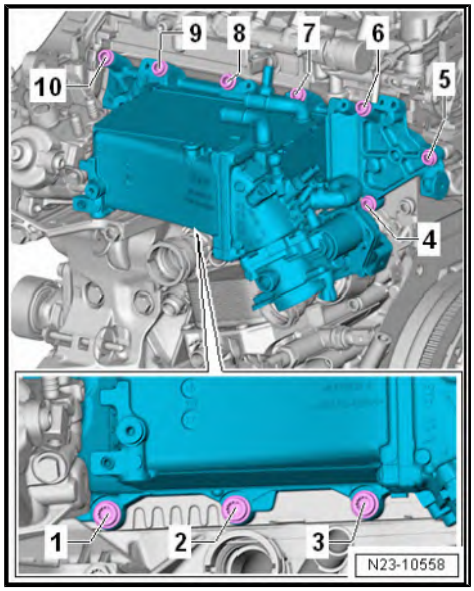
– Unscrew screws -1-, remove connection fittings with throttle valve control unit - J338-
⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491 .



– Release screw -1- of guide pipe for oil dipstick.
– Unscrew nuts -5- and remove the mounting bracket -6- from the double screw -4-.
– Release screws -4-, -7-.
– Unscrew screw -2- for intake manifold holder.



– Remove screws -10- … -1- with the Polydrive socket XZN 10 - T10501- , remove the intake manifold with charge air cooler.



Installing

Note

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

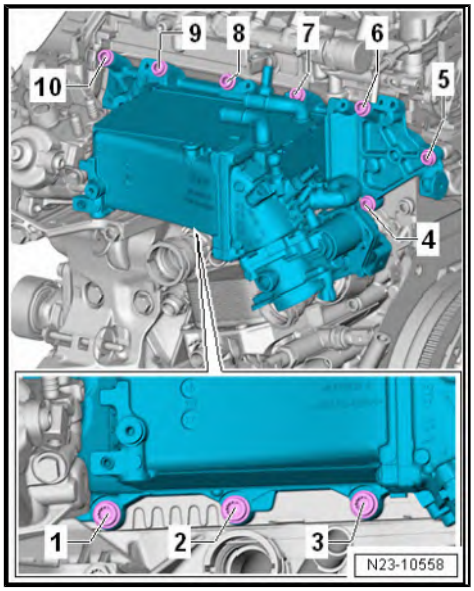
– Place the new cylinder head gasket onto the fitted pins.

NOTICE

Do not damage the sealing surface of the intake manifold when placing it onto the fitted pins.

– Position intake manifold on the assembly pins of the cylinder head.

– Tighten screws -1- … -10- as per the tightening torques and -sequence
⇒ Fig. ""Intake manifold with charge air cooler - tightening torque and tightening order"" , page 483 .



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

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Install air filter
⇒ "4.2 Removing and installing air filter housing", page 476 .

– Installing high pressure line
⇒ "3.9.2 Installing high pressure line", page 469 .

– Install the front top coolant pipe
⇒ "3.2.2 Removing and installing the top front coolant pipes, Rapid NH", page 314 .

NOTICE

If a new intake manifold has been fitted, the cooling system must be flushed and the coolant must be replaced to ensure optimum protection of the surface
⇒ "1.7 Flushing the cooling system", page 253 .

If the existing intake manifold has been installed:

– Replace 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.

- ⇒ "4.1 Assembly overview - air filter housing", page 473
- Install air guide pipes with screw clamps ⇒ , page 474
- ⇒ "5.1 Assembly overview - intake manifold", page 481
- ⇒ "3.1 Summary of components - coolant pipe", page 309
- ⇒ "1.1 Assembly overview - pan/oil pump", page 182

5.3 Removing and installing the throttle valve control unit - J338-

⇒ "5.3.1 Removing and installing the throttle valve control unit J338 , Octavia III, Yeti", page 491

⇒ "5.3.2 Removing and installing the throttle valve control unit J338 , Rapid NH", page 493

5.3.1 Removing and installing the throttle valve control unit - J338- , Octavia III, Yeti

Special tools and workshop equipment required

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-

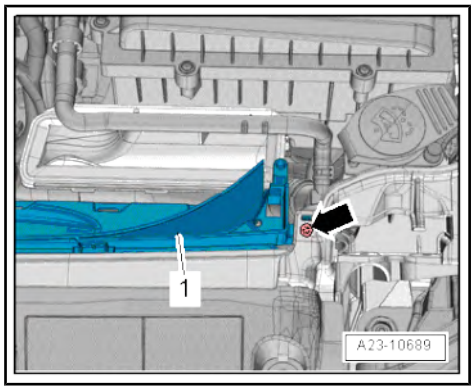
Removing

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

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

– Release screw left and right -arrow-.

– Unclip and remove the air guide pipe bottom -1-.

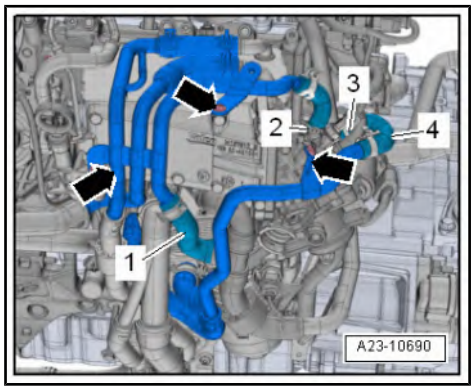


– Remove air guide pipe
⇒ “2.4 Installing and removing the air guide pipe”, page 418 .

Vehicles with variant 1

– Unscrew screws -arrows-.

– Unclamp coolant hose -1- and -4- with hose clamps to 25 mm - MP7-602 (3094)- .



Note

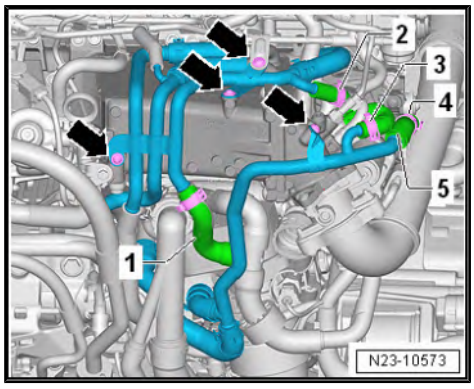
Place a cloth below to absorb leaking coolant.

– Loosen hose clamps -2-, -3-, remove coolant hoses.

Vehicles with variant 2

– Unscrew screws -arrows-.

– Unclamp coolant hose -1- and -5- with hose clamps to 25 mm - MP7-602 (3094)- .



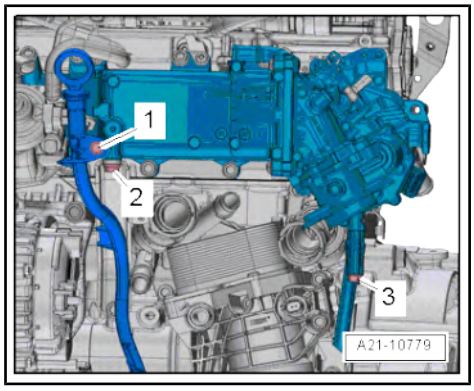
Note

Place a cloth below to absorb leaking coolant.

– Loosen hose clamps -2-, -3-, -4-, remove coolant hoses.

– Unscrew bolt -3-.

Continued for all vehicles



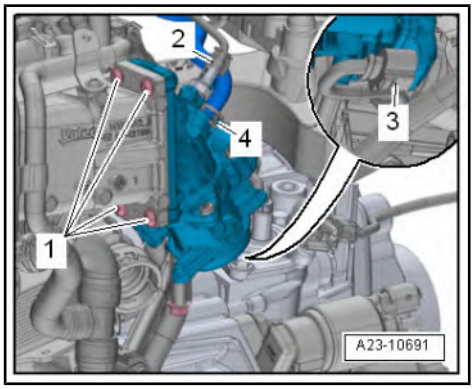
– Disconnect electrical plug connections:

2 - Intake air temperature sender - G42-

3 - Throttle valve control unit - J338-

– Loosen hose clamp -4-, remove air guide hose.

– Unscrew screws -1-, remove connection fittings with throttle valve control unit - J338- .



Installing

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

Note

Replace gaskets and O-rings after disassembly.

– When attaching the inlet connection to the throttle valve control unit - J338- , pay attention to the fit pins.

– Install the front top coolant pipe
⇒ “3.2.1 Removing and installing the top front coolant pipes, Octavia III, Yeti”, page 312 .

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

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

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.

- ⇒ “5.1 Assembly overview - intake manifold”, page 481
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

5.3.2 Removing and installing the throttle valve control unit - J338- , Rapid NH

Special tools and workshop equipment required

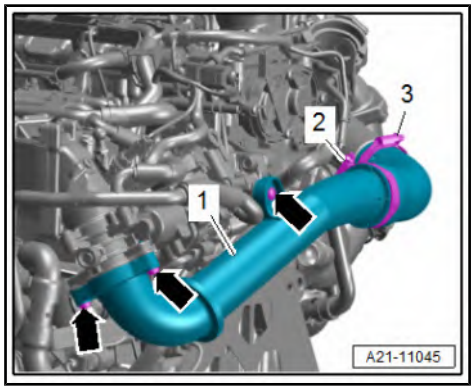
- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-

Removing

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

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

– Unscrew screws -arrows-.
– Loosen hose clamp -2-, remove air guide pipe -1-.

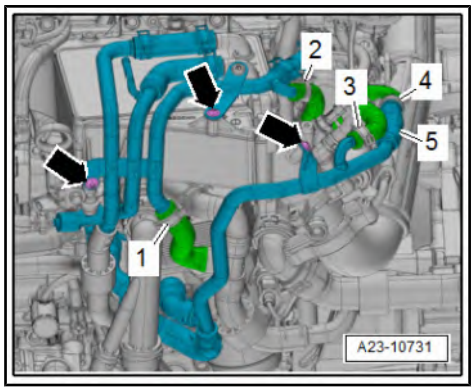


– Unscrew screws -arrows-.
– Unclamp coolant hose -1- and -5- with hose clamps to 25 mm - MP7-602 (3094)- .

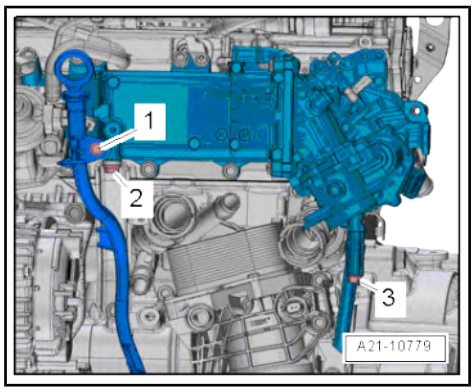
Note

Place a cloth below to absorb leaking coolant.

– Loosen hose clamps -2-, -3-, -4-, remove coolant hoses.



– Unscrew bolt -3-.



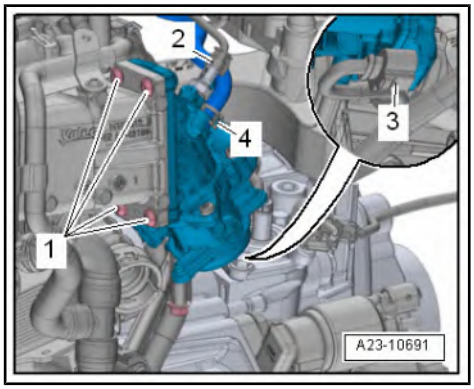
– Disconnect electrical plug connections:

2 - Intake air temperature sender - G42-

3 - Throttle valve control unit - J338-

– Loosen hose clamp -4-, remove air guide hose.

– Unscrew screws -1-, remove connection fittings with throttle valve control unit - J338- .



Installing

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

Note

Replace gaskets and O-rings after disassembly.

– When attaching the inlet connection to the throttle valve control unit - J338- , pay attention to the fit pins.

– Install the front top coolant pipe
⇒ “3.2.2 Removing and installing the top front coolant pipes, Rapid NH”, page 314 .

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

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.

- ⇒ “5.1 Assembly overview - intake manifold”, page 481
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ “4.1 Assembly overview - air filter housing”, page 473

6 Senders and sensors

⇒ “6.1 Removing and installing the fuel pressure regulating valve N276 ”, page 496

⇒ “6.2 Check fuel pressure regulating valve N276 ”, page 503

⇒ “6.3 Removing and installing fuel pressure sender G247 ”, page 504

⇒ “6.4 Removing and installing air flow mass meter G70 ”, page 506

⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510

⇒ “6.6 Removing and installing pressure sensor for exhaust gas 1 G450 ”, page 515

⇒ “6.7 Removing and installing intake air temperature sender G42 ”, page 516

⇒ “6.8 Removing and installing NOx transmitter 2 G687 ”, page 517

⇒ “6.9 Removing and installing charge air temperature transmitter after charge air cooler G811 ”, page 519

⇒ “6.10 Removing and installing fuel temperature transmitter G81 ”, page 519

⇒ “6.11 Removing and installing NOx transmitter control unit GX30 ”, page 520

⇒ “6.11.4 Removing and installing fuel low pressure temperature and pressure sender GX20 ”, page 525

6.1 Removing and installing the fuel pressure regulating valve - N276-

⇒ “6.1.1 Variants of the fuel pressure regulating valve N276 ”, page 496

⇒ “6.1.2 Removing and installing the fuel pressure regulating valve N276 , Variant 1”, page 497

⇒ “6.1.3 Removing and installing the fuel pressure regulating valve N276 , Variant 2”, page 500

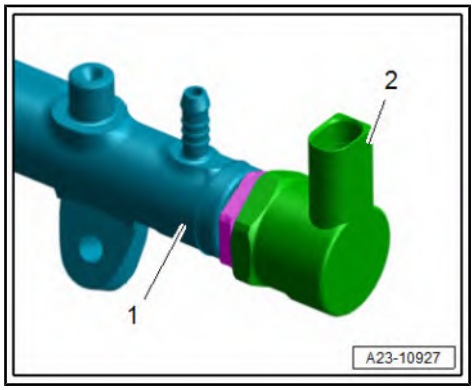
6.1.1 Variants of the fuel pressure regulating valve - N276-

Different variants of the fuel pressure regulating valve are installed

– Before removing and installing, check which variant is installed.

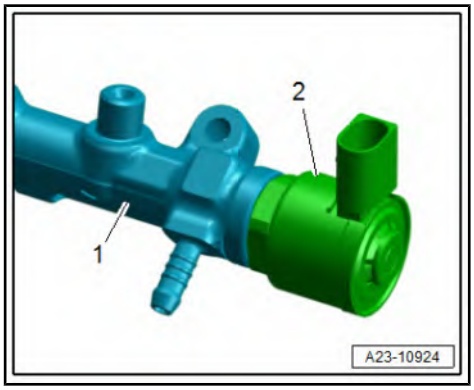
Version 1

– Removing and installing, Variant 1
⇒ “6.1.2 Removing and installing the fuel pressure regulating valve N276 , Variant 1”, page 497 .



Version 2

– Removing and installing, Variant 2
⇒ “6.1.3 Removing and installing the fuel pressure regulating valve N276 , Variant 2”, page 500 .



6.1.2 Removing and installing the fuel pressure regulating valve - N276- , Variant 1

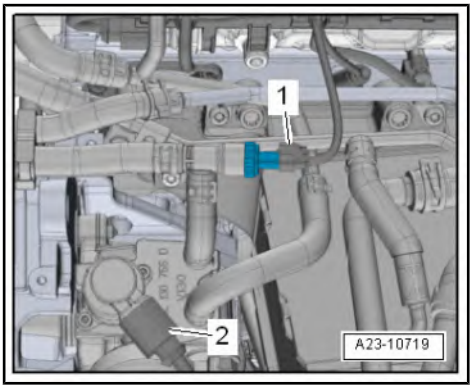
Special tools and workshop equipment required

♦ Socket insert SW 30 - T10553-

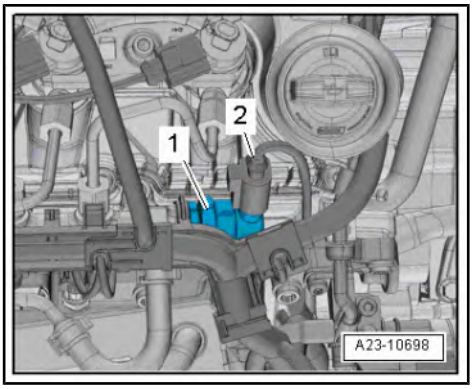
Removing

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

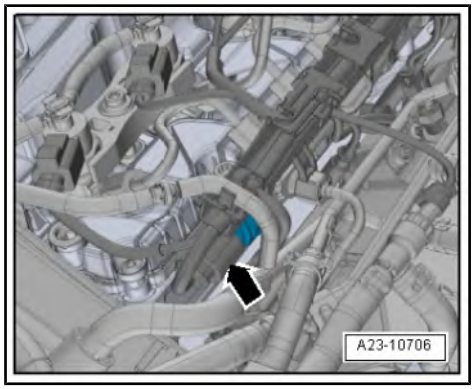
– Release and pull off electrical plug connection -1- from fuel temperature sender - G81- .



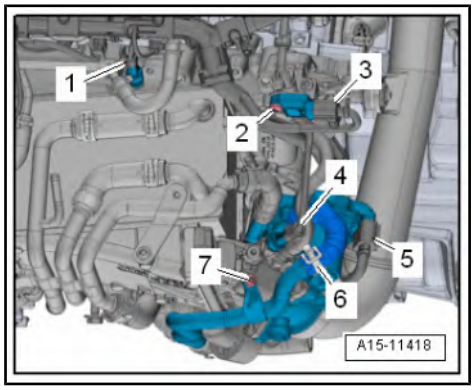
– Release and pull off electrical plug connection -2- from control valve for fuel pressure - N276- .



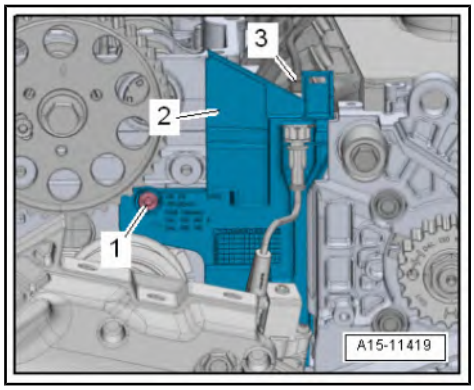
– Release and pull off electrical plug connection -arrow- from fuel pressure sender - G247- .



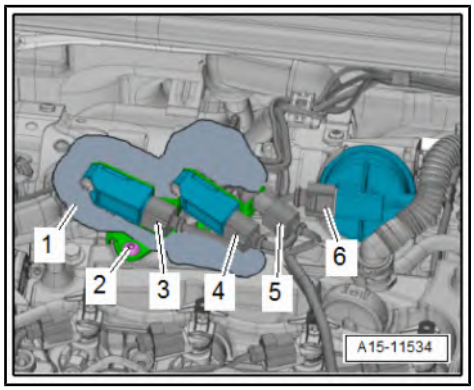
– Release and pull off connector -1- from charge air temperature transmitter after charge air cooler - G811- .



– Release and pull off electrical plug connection -3- for the coolant pump.

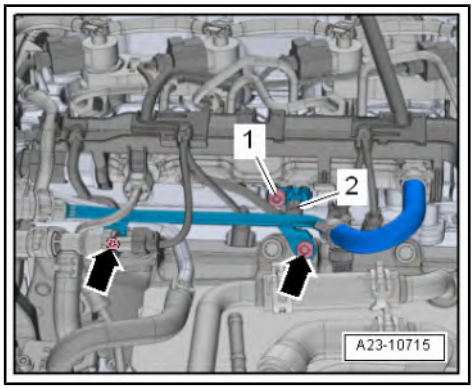


– Open heat protection sleeve -1-.
– Unlock and disconnect connectors -3- and -6-.
– If present, release and pull off electrical plug connections -4- and -5-.
– Expose electric wiring harness.



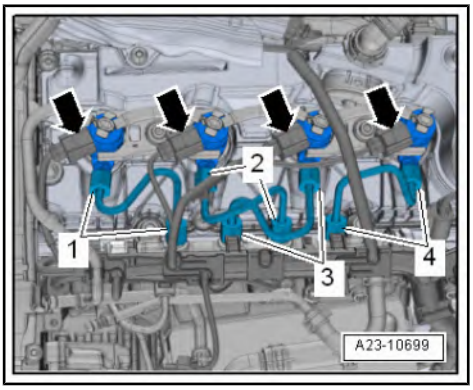
– Unscrew screws -arrows- and pull back the cable.

– Unlock and remove electrical plug connection -2- from Hall sender - G40- .

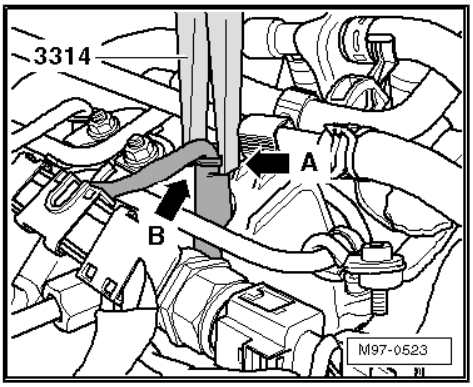


– Remove cover about the injection units.

– Release and pull off electrical plug connections -arrows- at the glow plugs.



– Disconnect electrical plug connections at the glow plugs.



– Expose the fuel return-flow hose -1- and disconnect it.

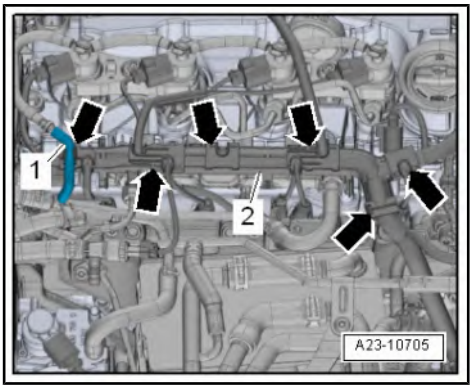
– Open holding clamps -arrows-, unclip and remove cable duct -2-.

– Before removing, clean the threaded area of the fuel pressure regulating valve - N276- , e.g. with commercial cold cleaning solvent.

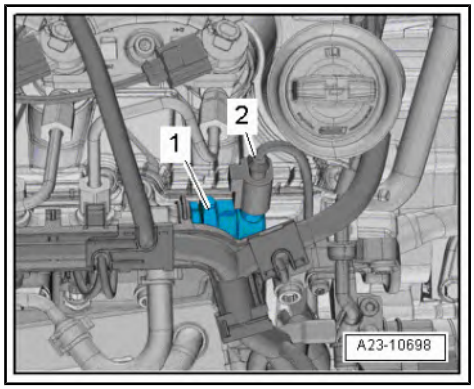
• No dirt must get into the hole of the fuel high pressure accumulator (fuel distributor).

• No cleaning agent must get into the plug connection, clean carefully.

– Dry fuel pressure regulating valve - N276- .



– Separate electrical plug connection -2-.
– Loosen union nuts -1- - to do so, counterhold hex on the high pressure accumulator (fuel distributor). The unscrew the nuts by hand.
– Suction the dirt out of the hole of the high pressure reservoir (thread and sealing surface). To do so do not use any mechanical tools.
– Close the open connection point on the high pressure reservoir with a clean dummy plug.



Installing

Note

- *Thee fuel pressure regulating valve - N276- must be replaced each time it is removed.*
- *Moisten the threaded insert and the biting edge of the fuel pressure regulating valve - N276- with diesel fuel.*

– Tighten union nut by hand.
– Align the new control valve so that the connecting cable is reinstalled free of tension after the plug has been repositioned.
– Counterhold housing hexagon of the regulating valve in this position using a wrench or pliers (such as water pump pliers).
– To tighten the union nuts use a suitable torque wrench with insertion tool SW 30 - T10553-
– 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).	80 Nm

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

6.1.3 Removing and installing the fuel pressure regulating valve - N276- , Variant 2

Special tools and workshop equipment required

- Socket insert SW 30 - T10553-

♦

Removing

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

– Remove high-pressure accumulator (fuel distributor)
⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470 .

Note

Before removing the fuel pressure regulating valve , you may clamp the high pressure accumulator (fuel distributor) in the vice. However, you must use protective jaw covers. The high pressure accumulator (fuel distributor) must not be attached to the cylinder head either via the screwed connections of the high pressure lines or via the retaining tabs.

– Clamp the high pressure accumulator (fuel distributor) in a vice with protective jaws.

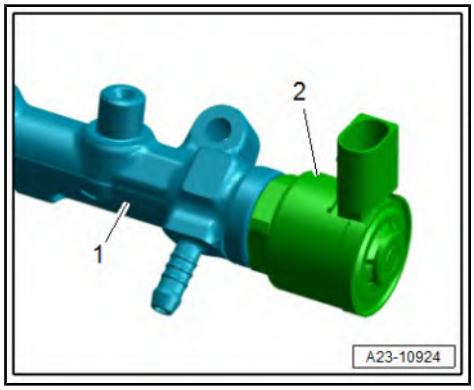
– Clean the threaded area of the fuel pressure regulating valve - N276- , e.g. with commercially available cold cleaning solvent.

• No dirt must get into the hole of the fuel high pressure accumulator (fuel distributor).

• No cleaning agent must get into the plug connection, clean carefully.

– Dry fuel pressure regulating valve - N276- .

– Unscrew the fuel pressure regulating valve - N276- -2- from the high pressure accumulator (fuel distributor) -1-.
– Suction the dirt out of the hole of the high pressure reservoir (thread and sealing surface). To do so do not use any mechanical tools.
– Close the open connection point on the high pressure reservoir with a clean dummy plug.



Installing

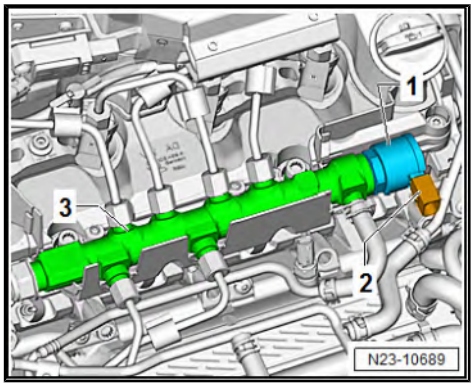
Note

- *Thee fuel pressure regulating valve - N276- must be replaced each time it is removed.*
- *Moisten the threaded insert and the biting edge of the fuel pressure regulating valve - N276- with diesel fuel.*

– Screw in the fuel pressure regulating valve - N276- and tighten by hand.
– To tighten, use a suitable torque wrench with insertion tool SW 30 - T10553- .
– Insert fuel high-pressure accumulator (fuel distributor) ⇒ “3.10 Removing and installing high pressure reservoir (fuel distributor)”, page 470 .

Note

The main body of the control valve is difficult to turn after tightening. Protect the basic housing from scratches or deformation with suitable means.



– 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 .

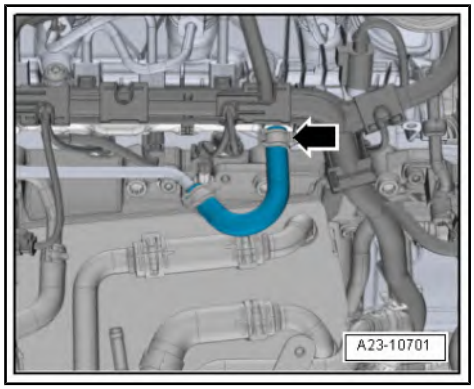
NOTICE

There is a risk of malfunctions caused by soiling.

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

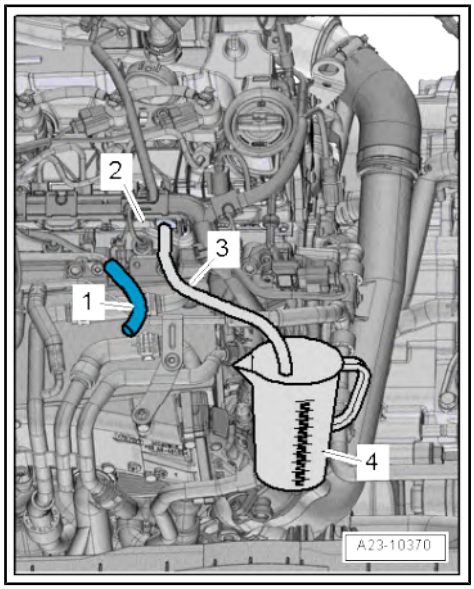
– Loosen hose clamp -arrow- and remove fuel return-flow hose from the high pressure reservoir.

– Close the return-flow line connection with a blind plug.



– Connect an auxiliary hose -3- to the high-pressure accumulator return line -2-.

– Hold this hose line -3- in a suitable vessel in order to measure the return flow quantity.



1) Test with engine running

– Start engine and run in idle.

- Vehicles with Delphi injection system, assignment ⇒ page 1 : Return flow 0 ml in 30 seconds. A drop-leakage is permissible.
- Vehicles with Bosch injection system: assignment ⇒ page 1 : Return flow more than 75 ml in 30 seconds.

If the specified value is not reached, the fuel pressure regulating valve - N276- is defective.

2) Test with engine running

If the condition under point 1) is fulfilled, increase the engine speed to ≥ 2000 rpm.

- Set value of the return flow quantity: 0 ml
- A drop-leakage is permissible

If the specified value is not reached, the fuel pressure regulating valve - N276- is defective.

3) The engine will no longer start

Perform the test at starter speed.

- Set value of the return flow quantity: 0 ml
- A drop-leakage is permissible

If the specified value is not reached, the fuel pressure regulating valve - N276- is defective.

– Replace fuel pressure regulating valve - N276- ⇒ “6.1 Removing and installing the fuel pressure regulating valve N276 ”, page 496 .

6.3 Removing and installing fuel pressure sender - G247-

Special tools and workshop equipment required

- ♦ Socket size 27 - T40218-
- ♦ Cleaning and degreasing agent , e.g. -D 009 401 04-
- ♦ Protective goggles and gloves

Removing

Note

- *Safety precautions when working on the fuel supply system*
  ⇒ *"2 Safety instructions", page 4* .
- *Observe rules for cleanliness*
  ⇒ *"3.1 Rules of cleanliness", page 7* .

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

CAUTION

Wear protective gloves and protective goggles when working with grease remover!

– Before removing, clean the thread area around the fuel pressure sender - G247- with a grease remover (no dirt must get into the hole of the high pressure reservoir).

Note

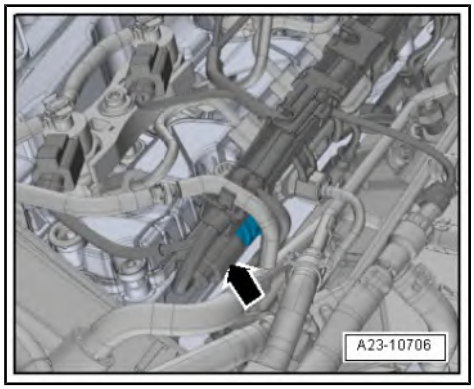
No grease remover must get into the plug connection, carefully clean.

– Dry the fuel pressure sender - G247- .

– Disconnect plug connection -arrow-.

– Unscrew the fuel pressure sender - G247- with the socket insert size 27 - T40218- .

– Suction the dirt out of the hole of the high pressure reservoir (thread and sealing surface). To do so do not use any mechanical tools.



Note

Close the hole of the high pressure reservoir immediately with a suitable screw plug to prevent dirt from penetrating.

Installing

Note

- *Look out for damage to the sealing surfaces (biting edge seal) and the thread of the new fuel pressure sender - G247- . It is possible to use the fuel pressure sender - G247- again.*
- *Also check the sealing surface in the hole of the high pressure reservoir.*
- *Coat the threaded insert and deformable sealing lip of the fuel pressure sender - G247- with diesel fuel.*

– Tighten the fuel pressure sender - G247- by hand.

– Tighten the transmitter:

- Tightening torque:
⇒ “3.2 Summary of components - High pressure reservoir (fuel distributor)”, page 454 .

– Filling and bleeding the fuel system
⇒ “1.3 Filling/bleeding the fuel system”, page 444 .

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

6.4 Removing and installing air flow mass meter - G70-

⇒ “6.4.1 Removing and installing air flow mass meter G70 , Octavia III, Yeti”, page 506

⇒ “6.4.2 Removing and installing the air flow mass meter G70 , Rapid NH”, page 508

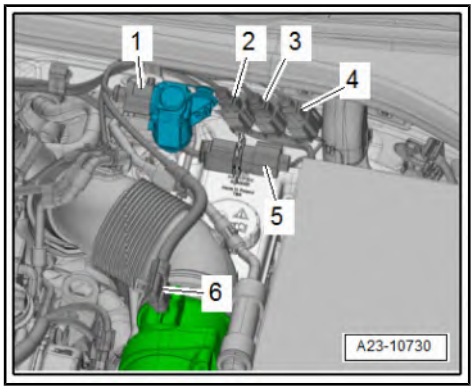
6.4.1 Removing and installing air flow mass meter - G70- , Octavia III, Yeti

Special tools and workshop equipment required

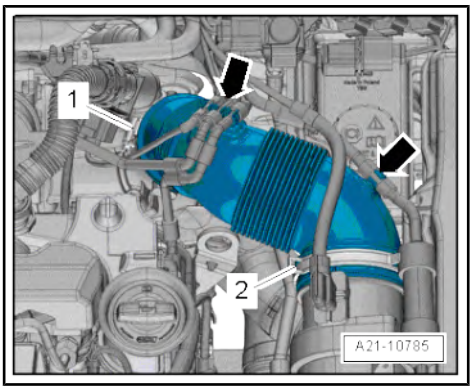
- Hose binding claw - VAS 6362-

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

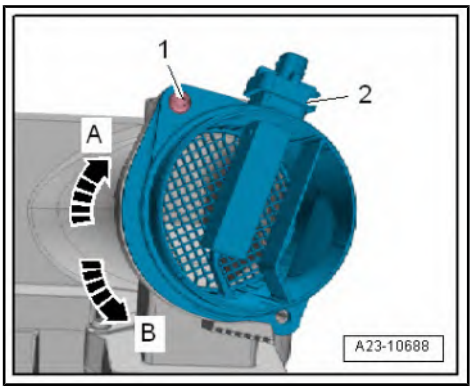
– Separate electrical plug connection -6-.



– Disconnect vacuum hoses on the air guide pipe -arrows-.
– Loosen hose clamps -1-, -2-, remove intake hose.



– Unscrew bolt -1-.
– Turn the air mass meter - G70- Pos. -2- in direction of arrow -B- and remove.



Installing

It is essential that the following work instructions are performed to ensure that the air mass meter - G70- functions correctly.

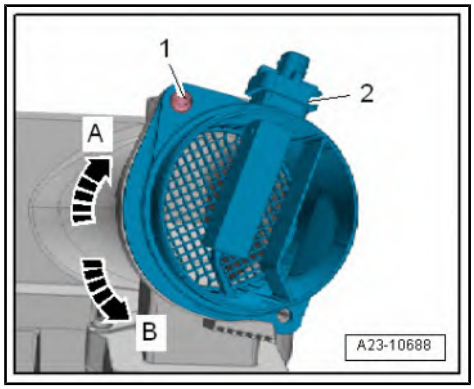
Note

- *If the air filter is heavily soiled or soaked, dirt particles or moisture can enter the air mass meter and distort the measured air flow values. This results in a reduction of output, because a lower injection quantity is calculated.*
- *Always use an original air filter element.*
- *Always replace any damaged gasket rings (unmetered air).*
- *Use a silicone-free lubricant and a seal to install the air duct tube.*
- *The hose- and pipe supports and the air guide hoses must be de-oiled and degreased before installing.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Check air mass meter and air guide hose (on the fresh air side) for salt residues, dirt and leaves.
– Check suction channel up to air filter insert for dirt. If you find it is dirty, remove salt residues, dirt and leaves from the air filter housing (top and bottom section) (clean by washing or using a vacuum as required).

– To install, position the air mass meter - G70- Pos. -2- and turn in the direction of arrow -A-.
– After replacement, reset the learnt values ⇒ Vehicle diagnostic tester.

♦ `Reset after replacing the air mass meter`



Tightening torques - summaries of components

Note

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

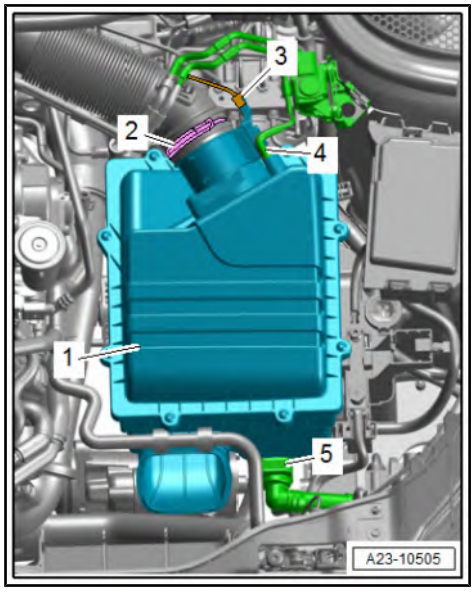
♦ ⇒ “4.1 Assembly overview - air filter housing”, page 473

6.4.2 Removing and installing the air flow mass meter - G70- , Rapid NH

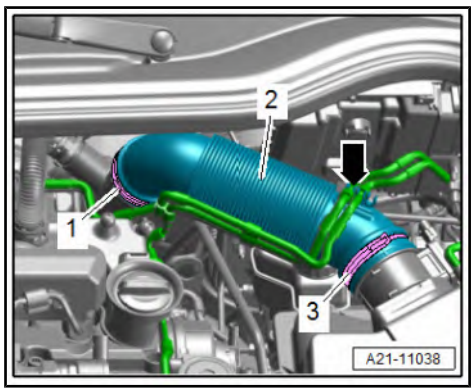
Special tools and workshop equipment required

♦ Hose binding claw - VAS 6362-

– Separate electrical plug connection -3-.

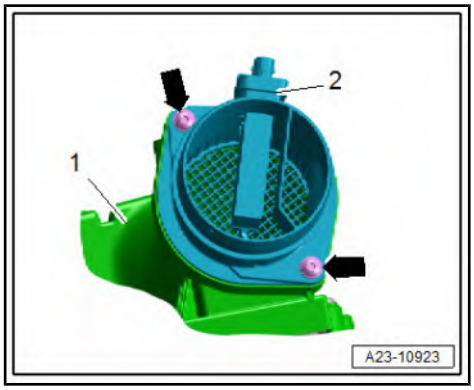


– Disconnect vacuum hoses on the air guide pipe -arrows-.
– Release hose clamps -1- and -3- and detach intake hose -2-.



– Unscrew screws -arrows-.

– Detach air flow mass meter - G70- -2- from the air filter housing -1-.



Installing

It is essential that the following work instructions are performed to ensure that the air mass meter - G70- functions correctly.

Note

- *If the air filter is heavily soiled or soaked, dirt particles or moisture can enter the air mass meter and distort the measured air flow values. This results in a reduction of output, because a lower injection quantity is calculated.*
- *Always use an original air filter element.*
- *Always replace any damaged gasket rings (unmetered air).*
- *Use a silicone-free lubricant and a seal to install the air duct tube.*
- *The hose- and pipe supports and the air guide hoses must be de-oiled and degreased before installing.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Check air mass meter and air guide hose (on the fresh air side) for salt residues, dirt and leaves.

– Check suction channel up to air filter insert for dirt. If you find it is dirty, remove salt residues, dirt and leaves from the air filter housing (top and bottom section) (clean by washing or using a vacuum as required).

– After replacement, reset the learnt values ⇒ Vehicle diagnostic tester.

- `Reset after replacing the air mass meter`

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Assembly overview - air filter housing”, page 473

6.5 Removing and installing differential pressure transmitter - G505-

⇒ “6.5.1 Removing and installing differential pressure transmitter G505 , variant 1”, page 510

⇒ “6.5.2 Removing and installing differential pressure transmitter G505 , variant 2”, page 512

⇒ “6.5.3 Removing and installing differential pressure transmitter G505 , variant 3”, page 513

6.5.1 Removing and installing differential pressure transmitter - G505- , variant 1

If the differential pressure transmitter - G505- has to be removed ⇒ page 510 .

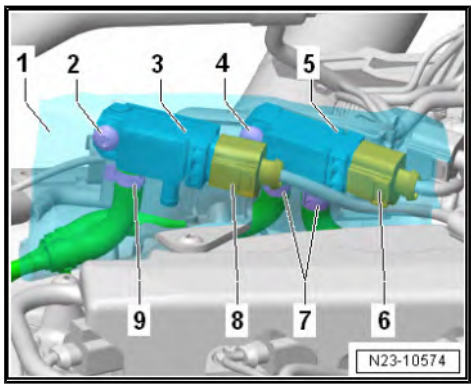
If the differential pressure transmitter - G505- and pressure sensor 1 for exhaust gas - G450- have to be removed from the cylinder head cover ⇒ page 511 .

Note

The differential pressure transmitter - G505- determines the loading status of the particle filter.

If the differential pressure transmitter - G505- has to be removed

– Remove engine cover ⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Open heat protection sleeve -1-.
– Release and pull off the electrical plug connection -8-.
– Unscrew screw -2- and remove differential pressure transmitter - G505- -3- from the bracket.
– Spray hose on differential pressure transmitter - G505- with solvent before removing it.
– Loosen hose clamp -9-.

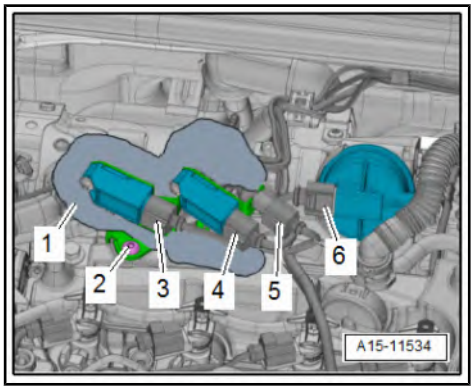


NOTICE

Avoid risk of destroying the differential pressure transmitter as a result of the connection fitting breaking off.

♦ **Pull hose off carefully and straight from the connection fitting.**

If the differential pressure transmitter - G505- and pressure sensor 1 for exhaust gas - G450- have to be removed from the cylinder head cover



- Remove engine cover
  ⇒ “3.1 Removing and installing engine trim panel”, page 64 .
- Open heat protection sleeve -1-.
- Release and pull off electrical plug connections -3- and -4-.
- Release and pull off electrical plug connection -5- and unhook from holder.
- Open the heat shield collar for electrical plug connection -6-.
- Release and disconnect electrical plug connection -6-.
- Expose electric wiring harness.
- Unscrew bolt -2-.
- Put differential pressure transmitter - G505- to one side together with the mounting bracket.

Installing

Installation is performed in the reverse order, while paying attention to the following:

Note

- *Pay attention to the tight connection and leaktightness of the hose.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

- Install the engine cover
  ⇒ “3.1 Removing and installing engine trim panel”, page 64 .

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
Screw holder / cylinder head cover	8 Nm

- ⇒ “9.1 Summary of components - lambda probe”, page 541
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

6.5.2 Removing and installing differential pressure transmitter - G505- , variant 2

If the differential pressure transmitter - G505- has to be removed ⇒ page 512 .

If the differential pressure transmitter - G505- has to be removed from the cylinder head cover ⇒ page 512 .

Note

The differential pressure transmitter - G505- determines the loading status of the particle filter.

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

If the differential pressure transmitter - G505- has to be removed

– Open heat protection sleeve -4-.

– Release and disconnect electrical plug connection -3-.

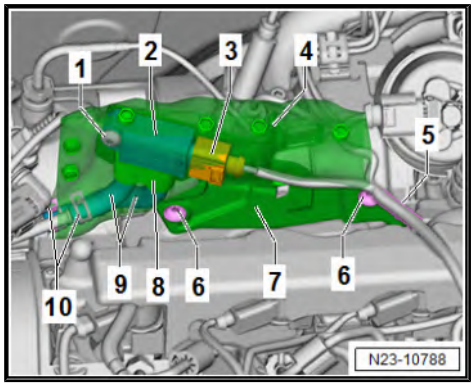
– Unscrew screw -1- and remove differential pressure transmitter - G505- -2- from the bracket.

– Release and remove bracket -8- on the rear of bracket -7-.

– Spray hose on differential pressure transmitter - G505- with solvent before removing it.

– Loosen hose clamps -10-.

– Disconnect hoses -9- from the pipes.



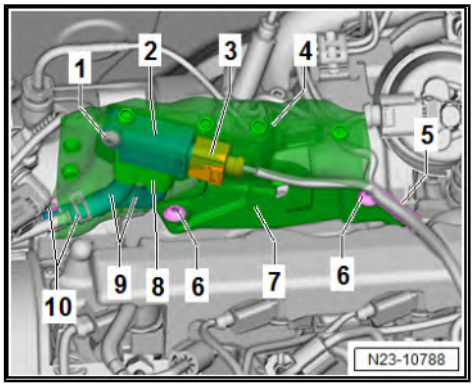
NOTICE

Avoid risk of destroying the differential pressure transmitter as a result of the connection fitting breaking off.

♦ **Pull hose off carefully and straight from the connection fitting.**

If the differential pressure transmitter - G505- has to be removed from the cylinder head cover

– Open heat protection sleeve -4-.
– Release and disconnect electrical plug connection -3-.
– Unclip and move clear the electric wiring loom -5-.
– Remove screws -6-.
– Put differential pressure transmitter - G505- to one side together with the mounting bracket -7-.



Installing

Installation is performed in the reverse order, while paying attention to the following:

Note

- *Pay attention to the tight connection and leaktightness of the hose.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

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

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
Screw holder / cylinder head cover	8 Nm

- ⇒ “9.1 Summary of components - lambda probe”, page 541
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

6.5.3 Removing and installing differential pressure transmitter - G505- , variant 3

Note

The differential pressure transmitter - G505- determines the loading status of the particle filter.

If the differential pressure transmitter - G505- has to be removed from the cylinder head cover ⇒ page 514 .

If the differential pressure encoder - G505- has to be removed ⇒ page 514 .

Removing

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

If the differential pressure transmitter - G505- has to be removed from the cylinder head cover

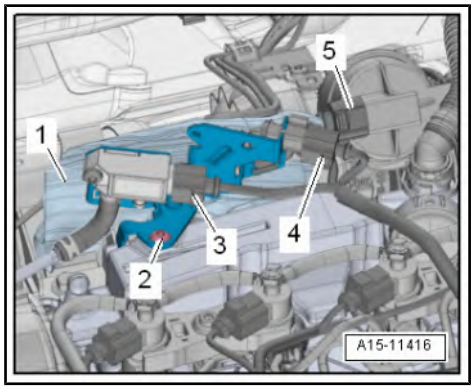
– Open heat protection sleeve -1-.

– Remove from bracket, unlock and disconnect electrical plug connection -4-.

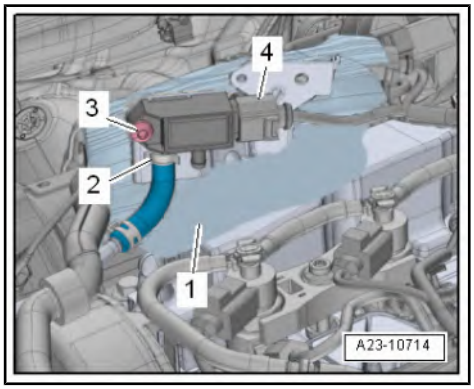
– Expose electric cables laterally.

– Disconnect electrical plug connections -3- and -5- and move electric wiring harness clear.

– Remove screws -2-, lay bracket with differential pressure encoder - G505- to the rear.



If the differential pressure transmitter - G505- has to be removed



– Open heat protection sleeve -1-.
– Separate electrical plug connection -4-.
– Unscrew screw -3- and remove differential pressure transmitter - G505- from the bracket.
– Spray the hose on the charge pressure sender - G505- with solvent before removing it.
– Loosen hose clamp -2-.

NOTICE

Risk of destruction of the differential pressure transmitter as a result of the connection fitting breaking off.

♦ **Pull hose off carefully and straight from the connection fitting.**

– Disconnect hose carefully and straight from the connection fitting (the connection fitting very easily breaks off the differential pressure sender - G505-).

Installing

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

Note

♦ *Pay attention to the tight connection and leaktightness of the hose.*

♦ *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

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

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
Screw holder / cylinder head cover	8 Nm

♦ ⇒ “9.1 Summary of components - lambda probe”, page 541

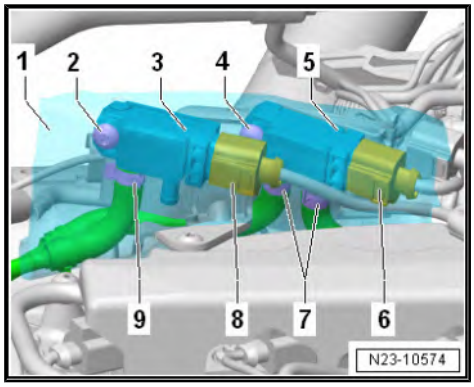
♦ ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

6.6 Removing and installing pressure sensor for exhaust gas 1 - G450-

Removing

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

– Open heat protection sleeve -1-.
– Separate electrical plug connection -8-.
– Unscrew screw -2- and press the differential pressure transmitter - G505- -3- slightly to one side.
– Separate electrical plug connection -6-.
– Unscrew bolt -4-.
– Spray hoses on the pressure sensor 1 for exhaust gas - G450- -5- with a solvent before removal.
– Loosen hose clamps -7-.



NOTICE

Risk of destruction of the pressure sensor as a result of the connection fitting breaking.

♦ **Pull hoses off carefully and straight from the connection fitting.**

– Pull hoses off carefully and straight from the connection fitting.

Installing

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

Note

♦ *Pay attention to the tight connection and leaktightness of the hose.*
♦ *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

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

Tightening torques - summaries of components

Note

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

♦ ⇒ “4 Exhaust temperature regulation”, page 647

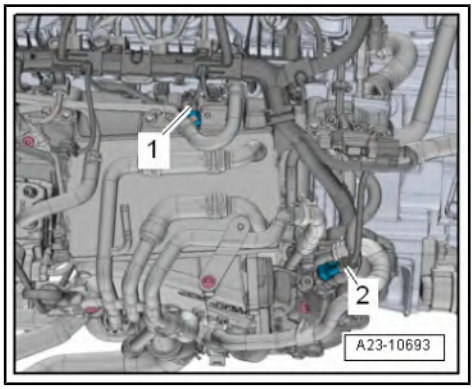
6.7 Removing and installing intake air temperature sender - G42-

Removing

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

– Separate electrical plug connection -2-.

– Unscrew intake air temperature sender - G42- .



Installing

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

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

Tightening torques - summaries of components

Note

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

♦ ⇒ “5.1 Assembly overview - intake manifold”, page 481 .

6.8 Removing and installing NOx transmitter 2 - G687-

⇒ “6.8.1 Removing and installing NOx encoder 2 G687 , Octavia III”, page 517

⇒ “6.8.2 Removing and installing NOx encoder 2 G687 , Yeti”, page 518

6.8.1 Removing and installing NOx encoder 2 - G687- , Octavia III

Special tools and workshop equipment required

♦ Ring spanner for lambda probe - 3337-

♦ Ring tool insert, spanner size 22

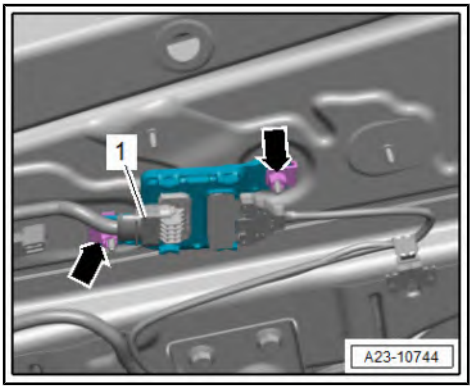
Removing

NOx encoder 2 - G687- is built-in at the front of the exhaust system after the exhaust flap control unit - J883- . The control unit for NOx sensor 2 - J881- is installed on the subfloor on the left.

The control unit for NOx sensor 2 - J881- and NOx sensor 2 - G687- form a component.

– Detach and lower the left centre internal underfloor trim panel ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels .

– Release and disconnect electrical plug connection -1-.

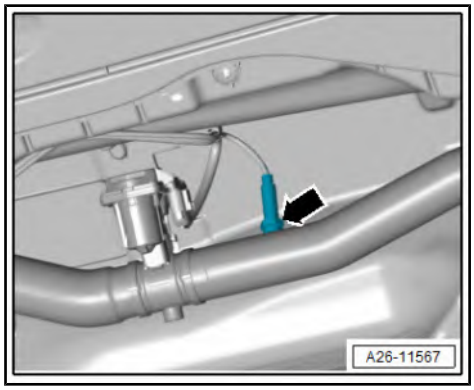


– Remove wiring harness from guides.

– Unscrew the nuts -arrows-. The nut is damaged when removing.

– Remove and expose control unit for NOx encoder 2 - J881- laterally.

– Remove the NOx encoder 2 - G687- -arrow-.



Installing

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

– Replace nuts each time they are removed. For assignment, see ⇒ ETKA - Electronic Catalogue of Original Parts.

– Push nuts in on the side of the NOx encoder control unit 2 - J881- until it clicks into place.

– Make sure that the nut is correctly seated in the guide.

– Push on the control unit for NOx encoder 2 - J881- together with the nuts on the threaded bolts until it rests against the holder.

Tightening torques - summaries of components

Note

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

- ⇒ “1.1 Assembly overview - silencers”, page 552
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels

6.8.2 Removing and installing NOx encoder 2 - G687- , Yeti

Removing

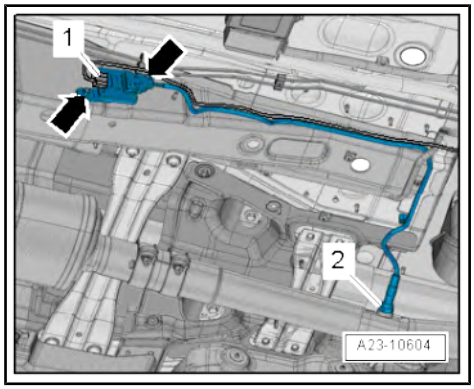
– Remove the right underfloor trim panel ⇒ Body Work; Rep. gr. 50 .

– Disconnect electrical connector -1- from NOx transmitter control unit 2 - J881- .

– Remove control unit for NOx transmitter 2 - J881- from holder.

– Expose wiring loom.

– Remove NOx encoder 2 - G687- -2-.



Installing

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

Tightening torques - summaries of components

Note

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

- ⇒ “4.1.4 Summary of components - exhaust temperature regulation, Yeti”, page 651
- ⇒ Body Work; Rep. gr. 50 .

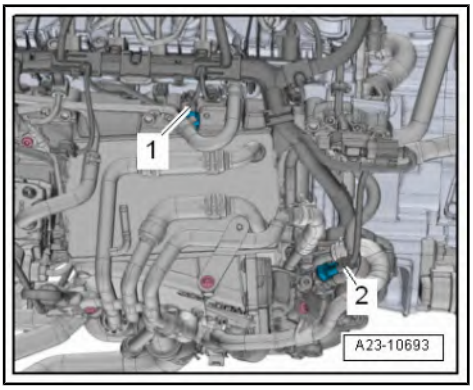
6.9 Removing and installing charge air temperature transmitter after charge air cooler - G811-

Removing

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

– Separate electrical plug connection -1-.

– Unscrew charge air temperature transmitter after charge air cooler - G811- .



Installing

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

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

Tightening torques - summaries of components

Note

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

♦ ⇒ “5.1 Assembly overview - intake manifold”, page 481 .

6.10 Removing and installing fuel temperature transmitter - G81-

Special tools and workshop equipment required

♦ Tool kit - T10395B- or -T10395A- or -T10395- + -T10395/8../10-

♦ Protective goggles and gloves

Removing

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

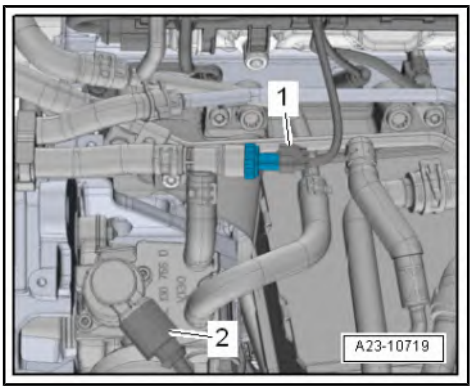
– Separate electrical plug connection -1-.

CAUTION

The fuel line is under pressure!

There is a risk of injury to the eyes and skin when in contact with fuel.

Wear safety goggles and safety clothing, in order to avoid injuries and skin contact. Place cleaning cloths around the connection point before detaching hose connections. Then reduce pressure by carefully releasing the connection point.



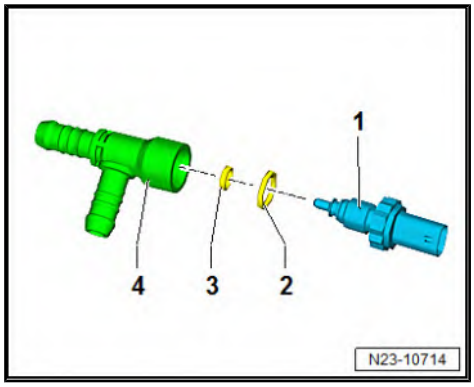
– Unscrew fuel temperature sender - G81- .

– Collect the fuel which flows out with a cleaning cloth.

Installing

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

– Replace the gasket ring -3-.
– Check the correct fit of the seal ring -2-.
– Screw fuel temperature sender - G81- -1- into the adapter -4-.
– Check fuel system for tightness
⇒ “1.4 Check the fuel system for tightness”, page 445 .
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .



Tightening torque

Note

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

Component	Tightening torque
Fuel temperature sender - G81-	2 Nm

6.11 Removing and installing NOx transmitter control unit - GX30-

⇒ “6.11.1 Variants of NOx sender control unit GX30 ”, page 520

⇒ “6.11.2 Removing and installing NOx sender control unit GX30 , variant A”, page 520

⇒ “6.11.3 Removing and installing NOx sender control unit GX30 , variant B”, page 523

6.11.1 Variants of NOx sender control unit - GX30-

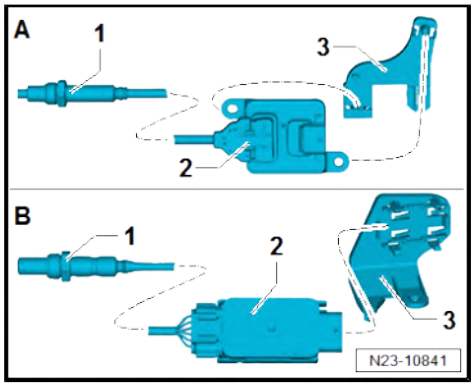
Different variants are installed

1 - NOx sender - G295-

2 - NOx sender control unit - J583-

3 - Mounting bracket

- Note the different variants
- Removing and installing variant A
⇒ “6.11.2 Removing and installing NOx sender control unit GX30 , variant A”, page 520
- Removing and installing variant B
⇒ “6.11.3 Removing and installing NOx sender control unit GX30 , variant B”, page 523



6.11.2 Removing and installing NOx sender control unit - GX30- , variant A

NOx transmitter control unit - GX30- consists of:

- NOx sender - G295-
- NOx transmitter control unit - J583-

Special tools and workshop equipment required

- Lambda probe open ring spanner set - 3337-
- Tool insert SW 22 , e.g. -V.A.G 1332/12-

Removing

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

Removal options

Removing NOx sender - G295- on exhaust gas cleaning module
⇒ page 521 .

Remove NOx encoder - J583- and the wiring loom due to lack of space ⇒ page 522 .

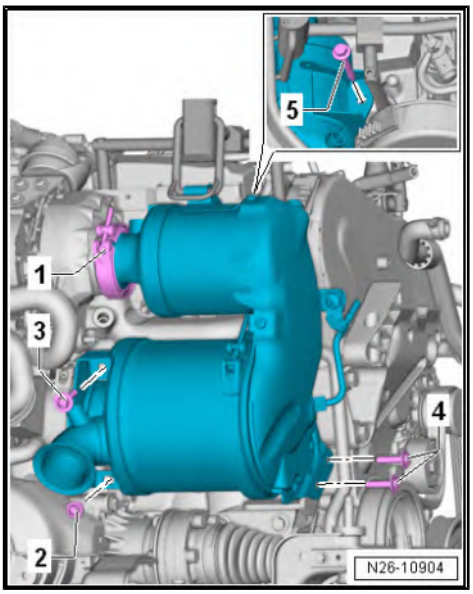
Removing NOx encoder - G295- and NOx encoder - J583-
⇒ page 522 .

Removing bracket for the NOx encoder - J583- ⇒ page 523 .

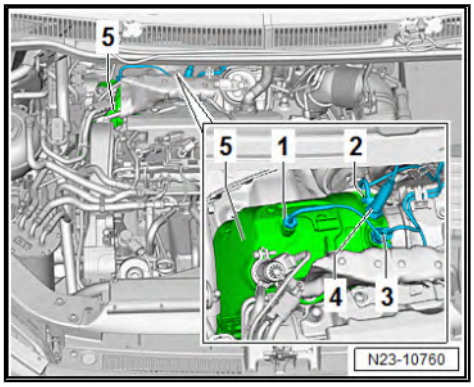
Removing NOx sender - G295- on exhaust gas cleaning module

– For reasons of space, it may be necessary to loosen and rotate the clamp -1-.

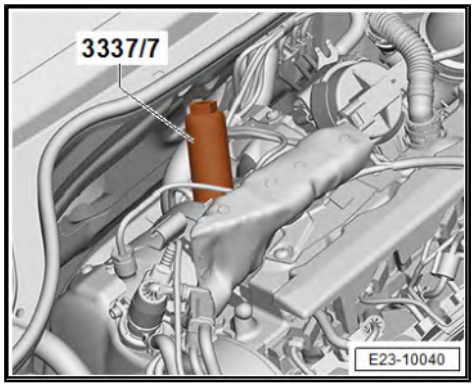
– Thread the wiring harness from the NOx sender - G295- out of the brackets on the front wall.



– Remove NOx encoder - G295- -4-.



– Use this wrench from the ring wrench set for Lambda probe - 3337/7- .
– Remove NOx sender - G295- from the exhaust gas cleaner.

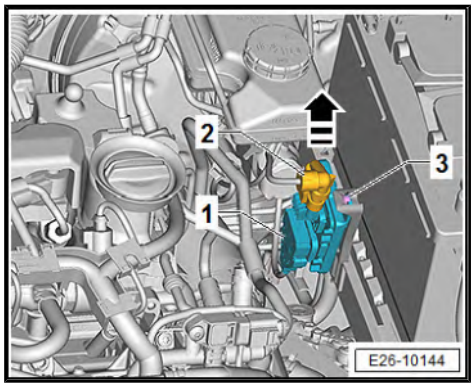


Remove the control unit for NOx encoder - J583- and the wiring harness from the bracket due to lack of space.

– Remove air filter housing due to lack of space ⇒ “4.2 Removing and installing air filter housing”, page 476 .

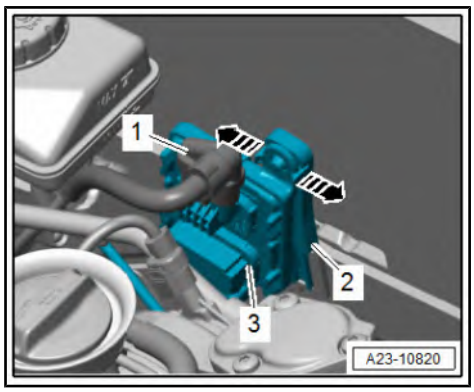
Variant 1 locking system

– Release and disconnect electrical plug connection -2-.
– Unlock the locking tab -3- of the holder for control unit for NOx encoder - J583- -1- in the direction of the -arrow- upwards.
– Pull the holder upwards.



Variant 2 locking system

– Release and disconnect electrical plug connection -1-.
– If present, open cables ties.
– Release lock -arrows- to the right and to the left.
– Pull the holder upwards.

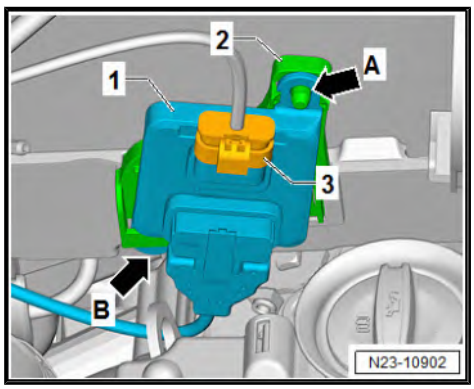


Continued for both variants

– Remove control unit on the guide arrow -A- on the holder -2- forwards.
– Pull control unit down -1- out of the guide arrow -B-
– Remove NOx sender control unit - J583- .
– Unclip the wiring harness from the brake fluid reservoir.
– Place the NOx sender control unit - J583- -1- to the side.

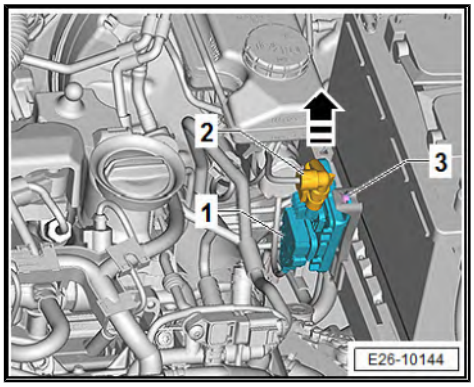
Remove NOx encoder control unit - GX30-

– Remove NOx encoder control unit - J583- from bracket ⇒ page 522 .
– Remove NOx encoder - G295- -arrow- on the emission control system ⇒ page 524 .



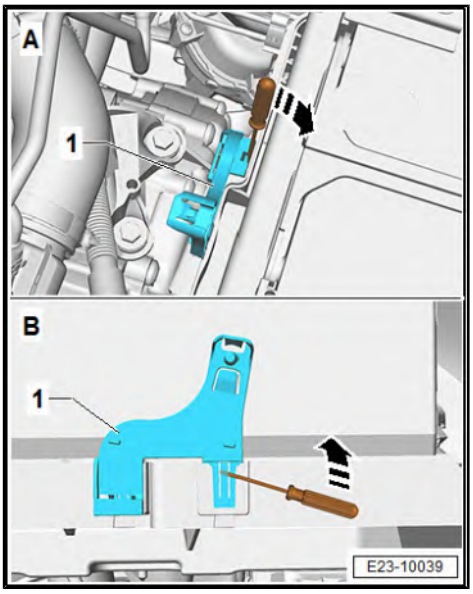
Removing bracket for the NOx sender control unit - J583-

– Remove NOx encoder control unit - J583- from bracket ⇒ page 522 .



– Unlock the tops of the holder for control unit for NOx encoder - J583- -1- with a small screwdriver on the battery tray in order -A- and -B- as shown in the figure.

– Remove the holder for control unit for NOx encoder - J583- -1- the battery tray upwards.



Installing

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

– Install NOx encoder - G295- and tighten with spanner set - 3337/7- , with plug-in tool, spanner size 22 - V.A.G 1332/12- .

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

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

Tightening torques - summaries of components

Note

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

- ⇒ “9.1 Summary of components - lambda probe”, page 541
- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

6.11.3 Removing and installing NOx sender control unit - GX30- , variant B

NOx transmitter control unit - GX30- consists of:

- NOx sender - G295-
- NOx transmitter control unit - J583-

Special tools and workshop equipment required

- Lambda probe open ring spanner set - 3337-
- Tool insert SW 22 , e.g. -V.A.G 1332/12-

Removing

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

Removal options

Removing NOx sender - G295- on exhaust gas cleaning module
⇒ page 524

Remove NOx encoder control unit - J583- and the wiring loom due to lack of space ⇒ page 524

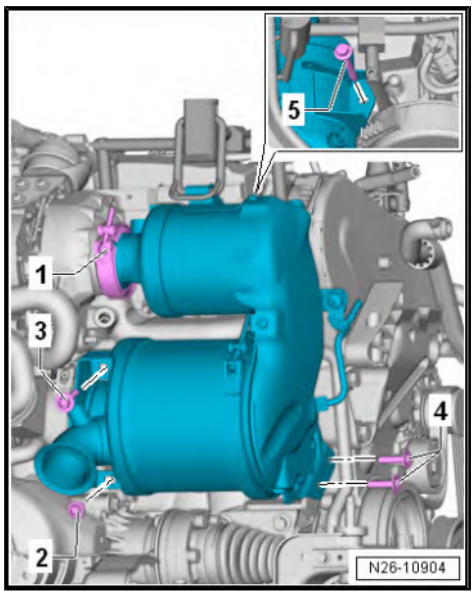
Removing NOx sender - G295- and NOx sender control unit - J583- ⇒ page 525

Removing bracket for the NOx sender control unit - J583-
⇒ page 525

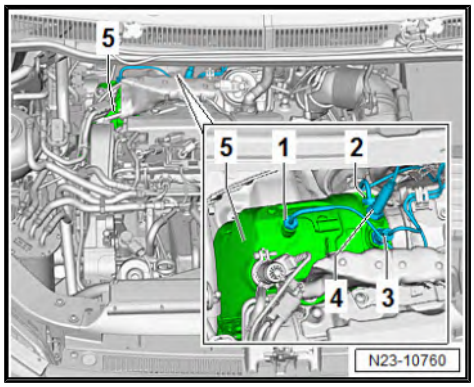
Removing NOx sender - G295- on exhaust gas cleaning module

– For reasons of space, it may be necessary to loosen and rotate the clamp -1-.

– Thread the wiring harness from the NOx sender - G295- out of the brackets on the front wall.

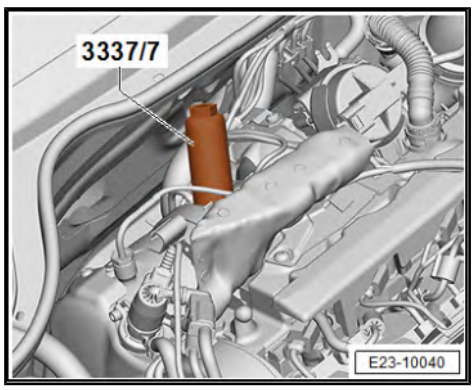


– Remove NOx encoder - G295- -4-.



– Use this wrench from the ring wrench set for Lambda probe - 3337/7- .

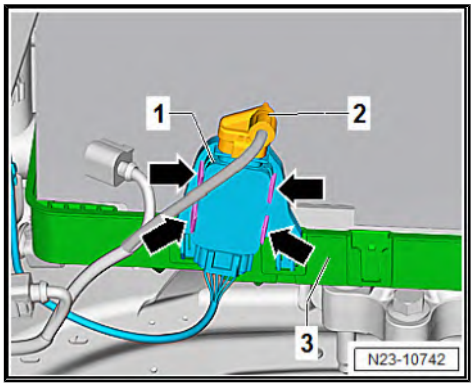
– Remove NOx encoder - G295- on exhaust gas cleaning module.



Remove NOx encoder control unit - J583- and the wiring loom due to lack of space

– Remove connection fitting on exhaust gas turbocharger ⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407 .

– Release and pull off the electrical plug connection -2-.
– Unclip NOx sender control unit - J583- -1- -arrows-.
– Remove NOx sender control unit - J583- .
– Thread out the wiring harness.
– Unclip the wiring harness from the brake fluid reservoir.
– Place the NOx sender control unit - J583- -1- to the side.

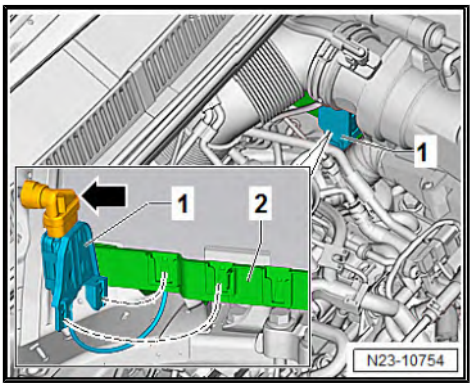


Removing NOx sender - G295- with NOx sender control unit - J583-

– Remove NOx sender control unit - J583- from bracket ⇒ page 524 .
– Unscrew the NOx sender - G295- -arrow- from exhaust gas cleaning module ⇒ page 524 .

Removing bracket for the NOx sender control unit - J583-

– Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
– Release retaining tabs on battery tray.
– Pull the bracket -1- upwards off the battery tray -2-.
– While doing so, release the retaining tabs.
– Remove the bracket with the NOx sender control unit - J583- .
– Release and disconnect the electrical plug connection -arrow-.
– Unclip NOx sender control unit - J583- from bracket ⇒ page 524 .



Installing

Installation is performed in the reverse order, while paying attention to the following:

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

Tightening torques - summaries of components

Note

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

- ⇒ “9.1 Summary of components - lambda probe”, page 541
- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

6.11.4 Removing and installing fuel low pressure temperature and pressure sender - GX20-

Removal

Special tools and workshop equipment required

- ♦ Hose binding claw - VAS 6362-

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

– Lay a cloth in the area of the high pressure pump to catch fuel that flows out.

CAUTION

The fuel system is under pressure.

Risk of injury from ejected fuel!

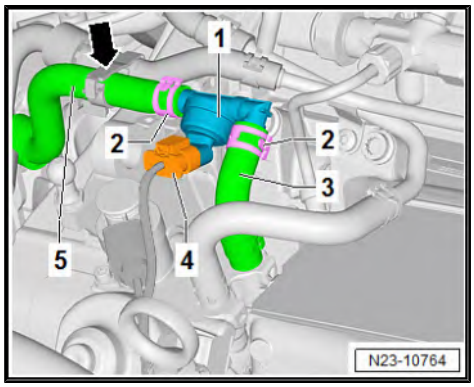
- ♦ **Wear safety goggles.**
- ♦ **Wear protective gloves.**
- ♦ **Relieve the pressure: place clean cloths around the connection point and carefully open the connecting point.**

– Unclip the fuel line -5- from the holder -arrow-.

– Unlock and pull off connector -4-.

– Release clamps -2-.

– Pull off fuel lines -3- and -5-.



Installation

Installation is carried out in the reverse order.

7 Engine control unit

⇒ “7.1 Removing and installing engine control unit J623 ”, page 527

7.1 Removing and installing engine control unit - J623-

⇒ “7.1.1 Removing and installing engine control unit J623 , Octavia III”, page 527

⇒ “7.1.2 Removing and installing engine control unit J623 , engine control unit with protective housing, Octavia III”, page 528

⇒ “7.1.3 Removing and installing engine control unit J623 , Yeti”, page 530

⇒ “7.1.4 Removing and installing engine control unit J623 , Rapid NH”, page 532

⇒ “7.1.5 Removing and installing engine control unit J623 , engine control unit with protective housing, Rapid NH”, page 533

7.1.1 Removing and installing engine control unit - J623- , Octavia III

Removing

– If the engine control unit is replaced, switch on the ignition and select the following on the vehicle diagnosis tester :

♦ `0001 - Replace the engine control unit`

• If the adjustment values of the injection units can no longer be read from the old (defective) engine control unit, these adjustment values must be manually entered into the new engine control unit and adapted to it.

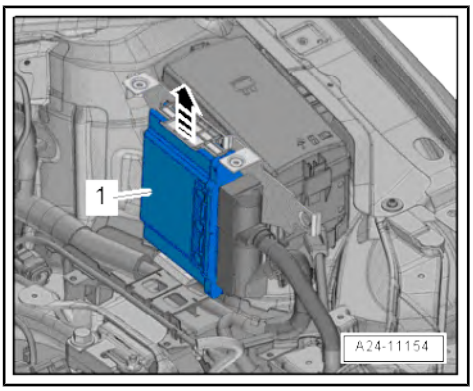
– Switch off ignition and pull out ignition key.

NOTICE

If the engine control unit touches the plus pole of the battery, this will destroy the engine control unit. For this reason, the battery must be disconnected before removing the engine control unit from its mounting ⇒ Electrical system; Rep. gr. 27 ; Battery, Disconnecting and connecting the battery .

– Unlock catch in -direction of the arrow- and remove the engine control unit -1-.

– Unlock plug connections for engine control unit - J623- and pull off.



Installing

Installation is carried out in the reverse order.

– Connect the battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnect and connect battery .

After installing a new engine control unit, the following work step must be performed

– Switch on the ignition and select the following on the diagnostic unit :

♦ `0001 - Replace the engine control unit`

7.1.2 Removing and installing engine control unit - J623- , engine control unit with protective housing, Octavia III

Special tools and workshop equipment required

- commercially available miniature grinder
- Hot air blower , e.g. -VAS 1978/14A- with push-on nozzle from wiring harness repair set , e.g. -VAS 1978 B-

Removing

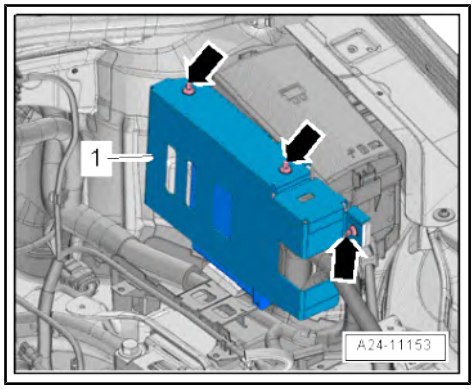
– If the engine control unit is replaced, switch on the ignition and select the following on the vehicle diagnosis tester :

- `0001 - Replace the engine control unit`

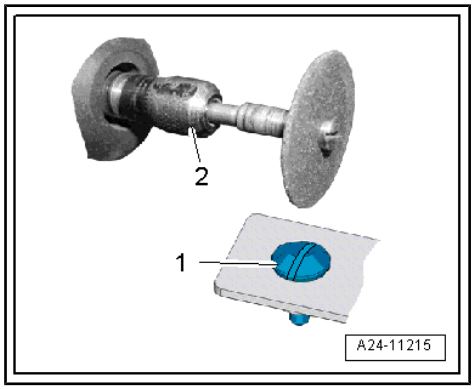
- If the adjustment values of the injection units can no longer be read from the old (defective) engine control unit, these adjustment values must be manually entered into the new engine control unit and adapted to it.

– Switch off ignition and pull out ignition key.

Remove the shear screws -arrows- as follows to remove the protective housing -1-:



– Make a slot for a screwdriver in the head of shear screw -1- with a miniature grinder -2-.

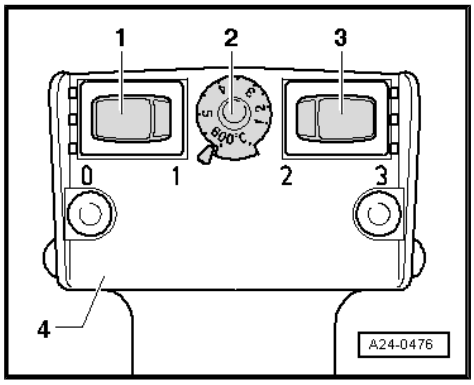


Note

- *The threads of the shear screws are equipped with locking agent. Warming the shear bolt when grinding a slot for a screwdriver makes it easier to loosen the screw afterwards.*
- *If the shear screws still cannot be undone, warm the, up with a hot air blower.*

Undoing pull-off screws with a hot air blower

– Set the temperature adjustment potentiometer -2- to maximum heating performance and set the air flow two stage switch -3- to position 3.



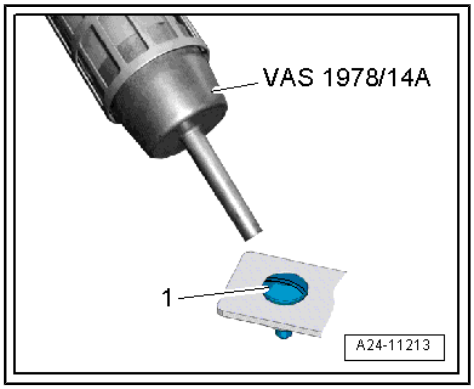
CAUTION

Risk of burns from hot air blower.

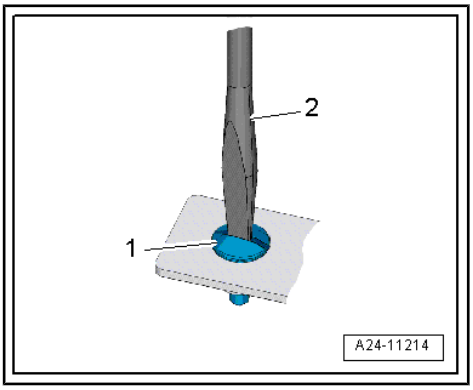
- **Only warm up the shear screws with a hot air blower.**
- **By warming the shear screws, the cover plate and parts in its vicinity are heated up strongly too. Where necessary, protect these parts by a piece of sheet covering.**

– Heat the shear screw head -1- for approximately 20 to 30 seconds.

Continued for slackened screws



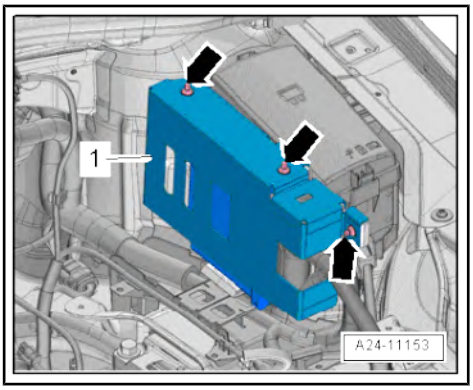
– Unscrew shear screw -1- with a screwdriver -2-.



– Remove protective housing -1-.

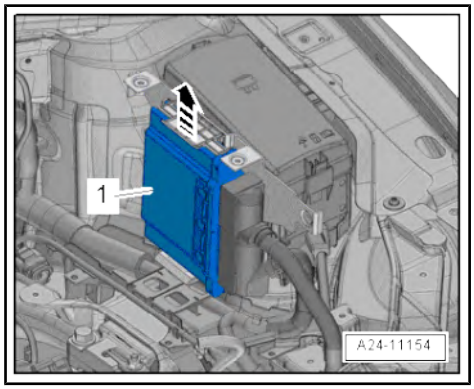
NOTICE

If the engine control unit touches the plus pole of the battery, this will destroy the engine control unit. For this reason, the battery must be disconnected before removing the engine control unit from its mounting ⇒ Electrical system; Rep. gr. 27 ; Battery, Disconnecting and connecting the battery .



– Unlock catch in -direction of the arrow- and remove the engine control unit -1-.

– Unlock plug connections for engine control unit - J623- and pull off.



Installing

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

– It is imperative for the protective housing to be put back in place on the engine control unit - J623- .

– Clean the threaded holes for the shear bolts to remove residues of locking agent. Cleaning can be done using a tapper.

– Secure the protective housing with new shear bolts.

– Connect the battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnect and connect battery .

After installing a new engine control unit, the following work step must be performed

– Switch on the ignition and select the following on the diagnostic unit :

♦ `0001 - Replace the engine control unit`

7.1.3 Removing and installing engine control unit - J623- , Yeti

Special tools and workshop equipment required

♦ commercially available miniature grinder

♦ Hot air blower , e.g. -VAS 1978/14A- with push-on nozzle from wiring harness repair set , e.g. -VAS 1978 B-

Removing

– If the engine control unit is replaced, switch on the ignition and select the following on the vehicle diagnosis tester :

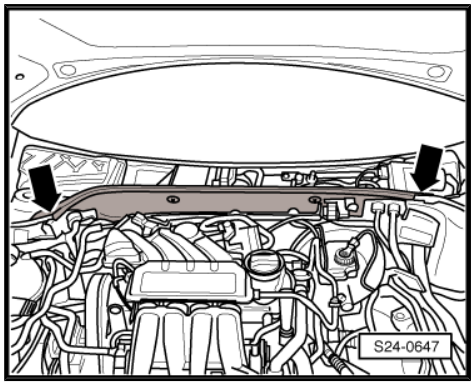
♦ `0001 - Replace the engine control unit`

• If the adjustment values of the injection units can no longer be read from the old (defective) engine control unit, these adjustment values must be manually entered into the new engine control unit and adapted to it.

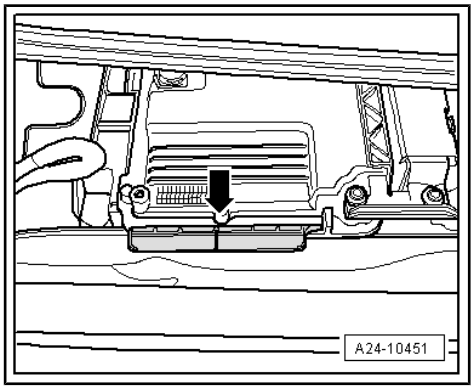
– Switch off ignition and pull out ignition key.

– Remove the cooling water tank cover ⇒ Body Work; Rep. gr. 66 .

– Remove bulkhead plenum chamber -arrows-.

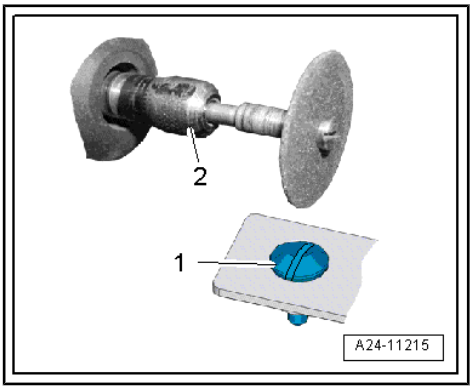


– Open retaining clip -arrow- and remove the engine control unit - J623- .



Vehicles with protective cover

– Make a slot for a screwdriver in the head of shear screw -1- with a miniature grinder -2-.

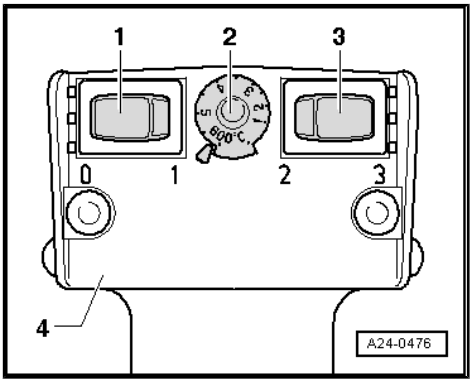


Note

- *The threads of the shear screws are equipped with locking agent. Warming the shear bolt when grinding a slot for a screwdriver makes it easier to loosen the screw afterwards.*
- *If the shear screws still cannot be undone, warm the, up with a hot air blower.*

Undoing pull-off screws with a hot air blower

– Set the temperature adjustment potentiometer -2- to maximum heating performance and set the air flow two stage switch -3- to position 3.

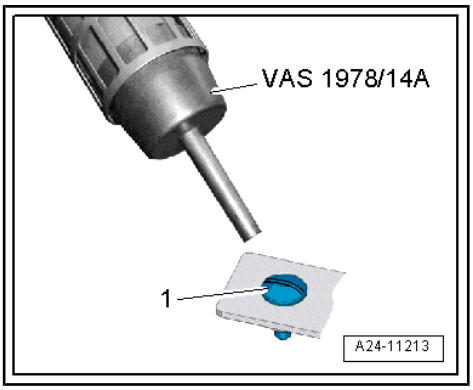


CAUTION

Risk of burns from hot air blower.

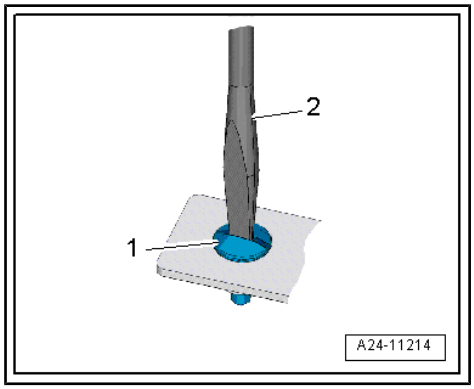
- **Only warm up the shear screws with a hot air blower.**
- **By warming the shear screws, the cover plate and parts in its vicinity are heated up strongly too. Where necessary, protect these parts by a piece of sheet covering.**

– Heat the shear screw head -1- for approximately 20 to 30 seconds.

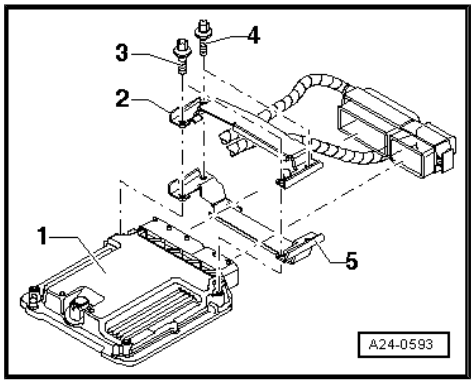


Continued for slackened screws

– Unscrew shear screw -1- with a screwdriver -2-.



– Remove the protective covers for plug connections -2- and -5-.



Continued for all vehicles

– Unlock both plug connectors at engine control unit and remove them.

Installing

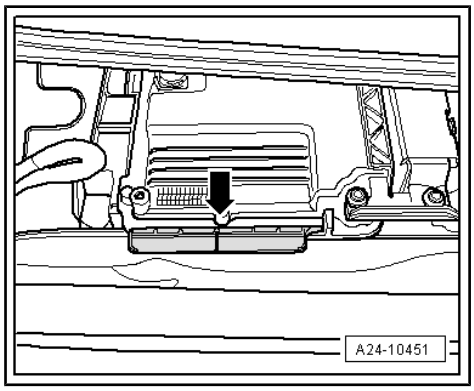
– Connect both plugs and lock.

Vehicles with protective cover

– Fasten protective covers with new pull-off screws.

– Tighten pull-off screws evenly until the heads are pulled off.

Continued for all vehicles



– Push engine control unit into the bracket and lock with retaining clip -arrow-.

– Install the bulkhead plenum chamber ⇒ Body Work; Rep. gr. 66 .

– Install the plenum chamber cover ⇒ Body Work; Rep. gr. 66 .

After installing a new engine control unit, the following work step must be performed

– Switch on the ignition and select the following on the diagnostic unit :

♦ `0001 - Replace the engine control unit`

7.1.4 Removing and installing engine control unit - J623- , Rapid NH

Removing

– If the engine control unit is replaced, switch on the ignition and select the following on the vehicle diagnosis tester :

♦ `0001 - Replace the engine control unit`

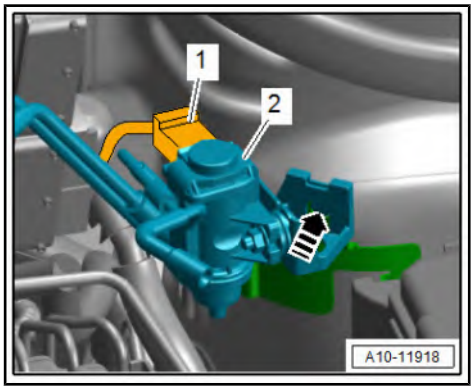
• If the adjustment values of the injection units can no longer be read from the old (defective) engine control unit, these adjustment values must be manually entered into the new engine control unit and adapted to it.

– Switch off ignition and pull out ignition key.

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

– Disconnect electrical plug connection -1- on the charge pressure control solenoid valve - N75- Pos. -2-.

– Unlock catch -arrow-, remove holder with solenoid injector upwards and lay it aside.

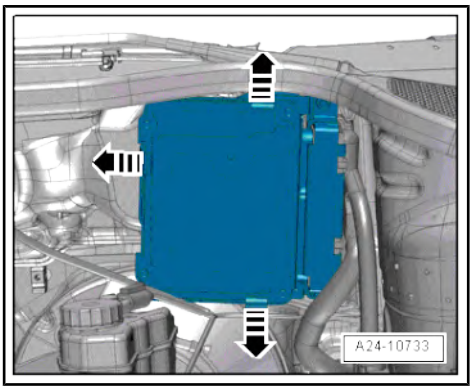


NOTICE

If the engine control unit touches the plus pole of the battery, this will destroy the engine control unit. For this reason, the battery must be disconnected before removing the engine control unit from its mounting ⇒ Electrical system; Rep. gr. 27 ; Battery, Disconnecting and connecting the battery .

– Unlock catch -arrow- and remove the engine control unit - J623- from the mounting bracket.

– Unlock and disconnect plug from engine control unit - J623- .



Installing

Installation is carried out in the reverse order.

– Connect the battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnect and connect battery .

After installing a new engine control unit, the following work step must be performed

– Switch on the ignition and select the following on the diagnostic unit :

♦ `0001 - Replace the engine control unit`

7.1.5 Removing and installing engine control unit - J623- , engine control unit with protective housing, Rapid NH

Special tools and workshop equipment required

♦ commercially available miniature grinder

♦ Hot-air blower , e. g. -VAS 1978/14A- with push-on nozzle from the wiring harness repair set - VAS 1978 B-

Removing

– If the engine control unit is replaced, switch on the ignition and select the following on the vehicle diagnosis tester :

♦ `0001 - Replace the engine control unit`

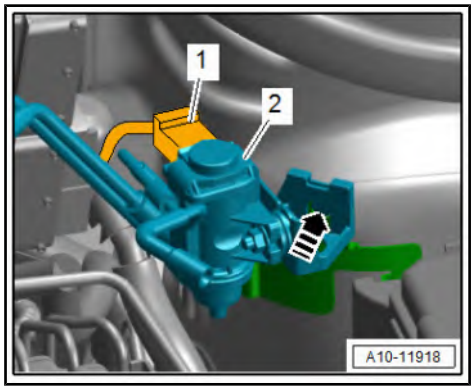
• If the adjustment values of the injection units can no longer be read from the old (defective) engine control unit, these adjustment values must be manually entered into the new engine control unit and adapted to it.

– Switch off ignition and pull out ignition key.

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

– Disconnect electrical plug connection -1- on the charge pressure control solenoid valve - N75- Pos. -2-.

– Unlock catch -arrow-, remove holder with solenoid injector upwards and lay it aside.

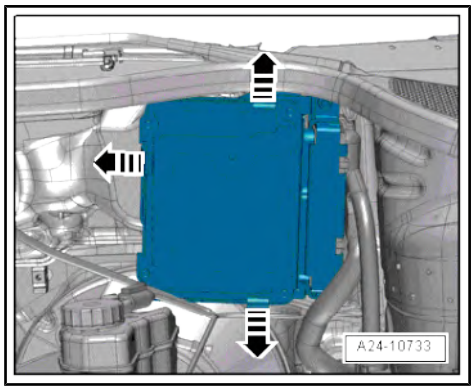


NOTICE

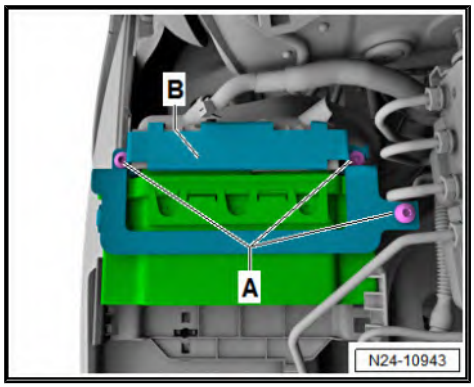
If the engine control unit touches the plus pole of the battery, this will destroy the engine control unit. For this reason, the battery must be disconnected before removing the engine control unit from its mounting ⇒ Electrical system; Rep. gr. 27 ; Battery, Disconnecting and connecting the battery .

– Unlock catch -arrow- and remove the engine control unit - J623- from the mounting bracket.

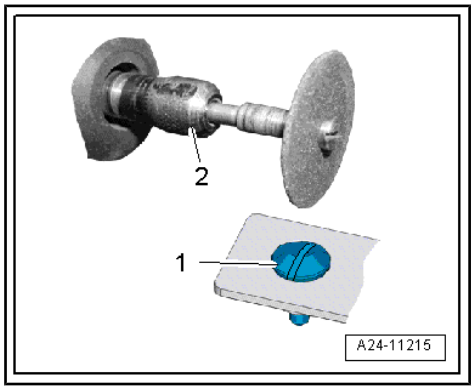
– Push the electric harness as far as possible to the side.



– Undo pull-off screws -A- as follows:



– Make a slot for a screwdriver in the head of shear screw -1- with a miniature grinder -2-.



Note

- *The threads of the shear screws are equipped with locking agent. Warming the pull-off screw when grinding a slot for a screwdriver makes it easier to undo it afterwards.*
- *If the shear screws still cannot be undone, warm the, up with a hot air blower.*

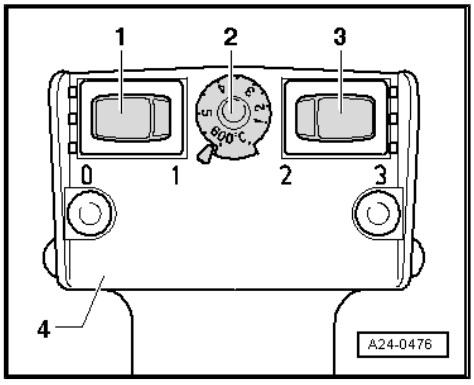
Undoing pull-off screws with a hot air blower

– Set the temperature adjustment potentiometer -2- to maximum heating performance and set the air flow two stage switch -3- to position 3.

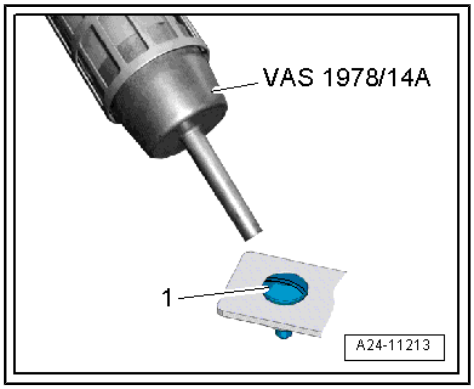
CAUTION

Risk of burns from hot air blower.

- **Only warm up the shear screws with a hot air blower.**
- **By warming the pull-off screws, the parts in its vicinity are heated up strongly too. Where necessary, protect these parts by a piece of sheet covering.**

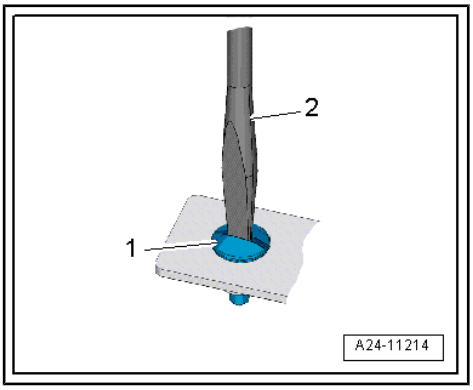


– Heat the shear screw head -1- for approximately 20 to 30 seconds.



Continued for slackened screws

– Unscrew shear screw -1- with a screwdriver -2-.



– Remove locking device -B-.

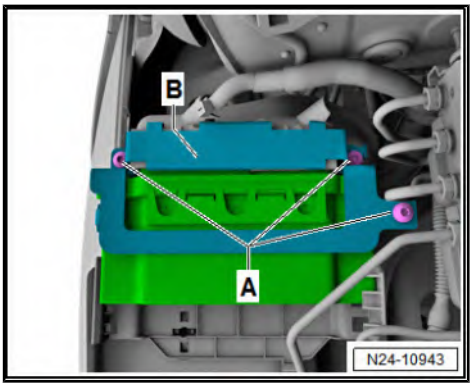
– Remove engine control unit - J623- from the protective housing.

Installing

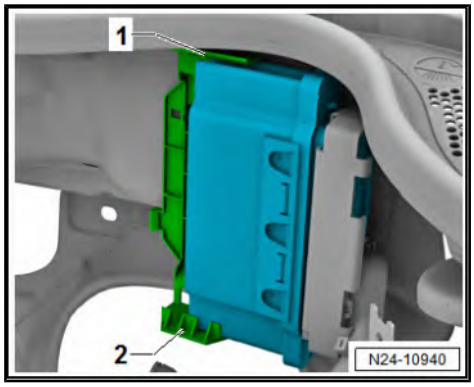
Installation is carried out in the reverse order. Pay attention to the following:

– Slide in the engine control unit - J623- into the protective housing as far as it goes.

– Place locking device -B- onto the protective housing and screw on with new pull-off screws -A- ⇒ Electronic Catalogue of Original Parts (ETKA) .



– Insert the engine control unit - J623- into the catch -2- of the bracket holder.
– Move the engine control unit - J623- into the top support until the catch -1- engages.
– Connect the battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnect and connect battery .



After installing a new engine control unit, the following work step must be performed

– Switch on the ignition and select the following on the diagnostic unit :

◆ `0001 - Replace the engine control unit`

8 High pressure pump

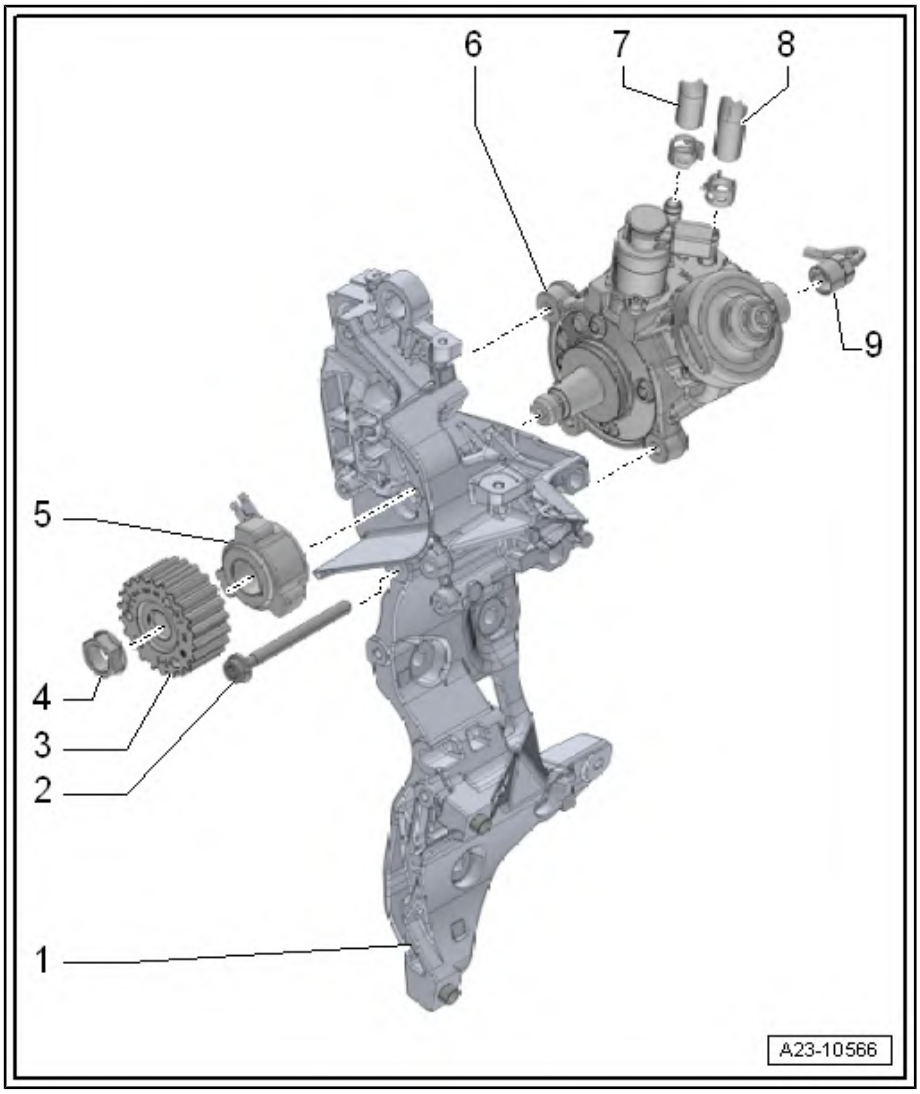
⇒ “8.1 Summary of components - high pressure pump”, page 537

⇒ “8.2 Removing and installing the high pressure pump”, page 538

8.1 Summary of components - high pressure pump

Note

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



1 - Bracket for auxiliary units

- ❑ Removing and installing ⇒ “1.6 Removing and installing bracket for auxiliary units”, page 72

2 - Screw

- ❑ 3 pieces
- ❑ different lengths
- ❑ Replace after disassembly
- ❑ Tightening torque:
- ♦ Short screw 20 Nm + 45°
- ♦ Long screw 20 Nm + 180°

3 - Toothed belt gear on the high pressure pump

4 - Nut

- ❑ to release and tighten use counterholder -T10051- or -T10051A-
- ❑ 95 Nm

5 - Hub

- ❑ to remove, use extractor -T10489-

6 - High pressure pump

- ❑ with fuel dosage valve -N290- (do not remove valve)
- ❑ Removing and installing ⇒ “8.2 Removing and installing the high pressure pump”, page 538
- ❑ After replacing, readjust the learnt values in “Targeted Functions” ⇒ Vehicle diagnostic tester

7 - Fuel hose

- ❑ Hose connection for the supply and return lines is shown on the high pressure pump

8 - Fuel hose

- ❑ Hose connection for the supply and return lines is shown on the high pressure pump

9 - High pressure line

- ❑ between the high pressure accumulator and high pressure pump
- ❑ removing
  ⇒ “3.9.1 Removing the high pressure line between the high pressure pump and the high pressure reservoir (fuel distributor)”, page 468
- ❑ follow all instructions for installation of high pressure lines
  ⇒ “3.9.2 Installing high pressure line”, page 469

8.2 Removing and installing the high pressure pump

Special tools and workshop equipment required

- ♦ Counterholder - T10051- or -T10051A-
- ♦ Extractor -T10489-
- ♦ Locking pin -T10492-

Removing

Note

- ♦ *Safety precautions when working on the fuel supply system*
  ⇒ “2 Safety instructions”, page 4 .
- ♦ *Observe rules for cleanliness*
  ⇒ “3.1 Rules of cleanliness”, page 7 .

NOTICE

Risk of damage to the high pressure pump from running dry.

- ♦ **If the high pressure pump is removed or replaced, the fuel system must be filled/bled before the engine is started for the first time**
  ⇒ “1.3 Filling/bleeding the fuel system”, page 444 .

– Remove the toothed belt from the camshaft
⇒ “2.5 Remove the toothed belt from the camshaft”, page 159 .

– Remove high pressure line between high pressure accumulator and the high pressure pump
⇒ “3.9.1 Removing the high pressure line between the high pressure pump and the high pressure reservoir (fuel distributor)”, page 468 .

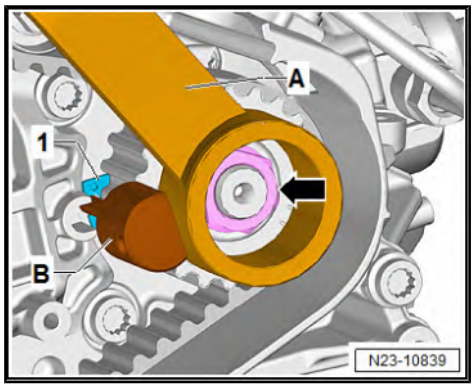
– Place counterholder - T10051- or -T10051A- -A- on the high pressure pump toothed belt pulley.

– Tighten nuts -arrow- hand tight.

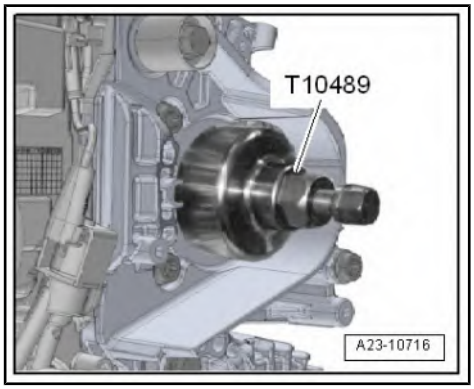
– Pull out the rig pin - T10492- -B-. Slowly turn the shaft of the high pressure pump shaft to stress-free position.

– Unscrew nut -arrow- and remove counterholder - T10051- or -T10051A- -A-.

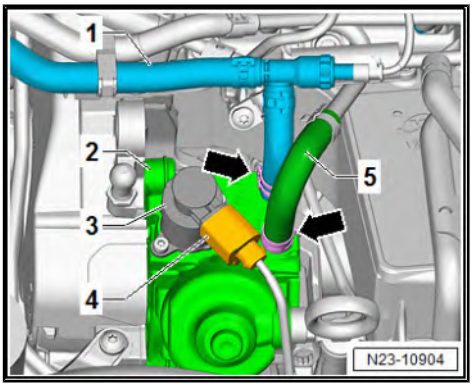
– Remove the high pressure pump toothed belt pulley.



– Suspend extractor -T10489- at the hub by turning to the right.
– Remove the hub of the high pressure pump.



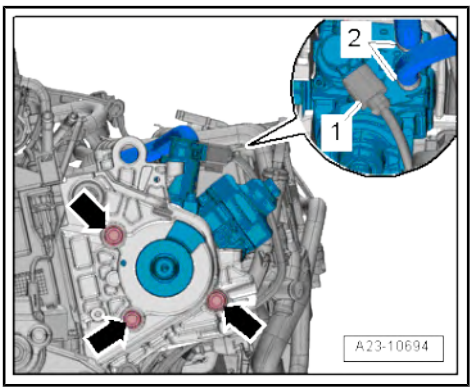
– Pull off the fuel hoses -1- and -5- from the high pressure pump -2-.
– In addition, open the clamps -arrows-.
– Release and pull off electrical plug connection -4- from valve for fuel dosing - N290- -3-.



– Unscrew screws -arrows-.
– Carefully remove the high pressure pump.

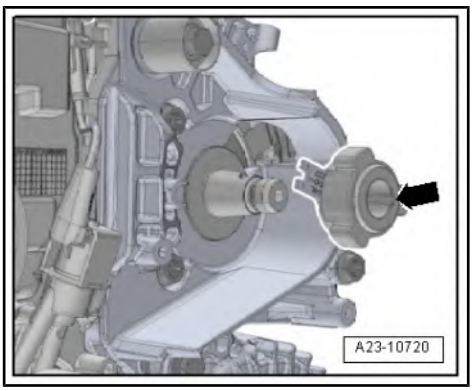
Installing

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



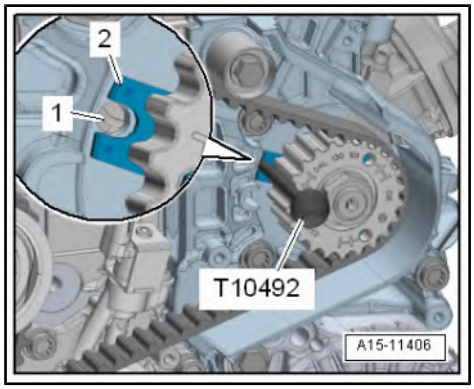
– Place hub -arrow- on the high pressure pump shaft.

• The key on the high pressure pump shaft must engage into the slot in the hub.



– Mount the toothed belt pulley onto the hub.

• There must not be any oil present between the counterholder and the toothed belt pulley



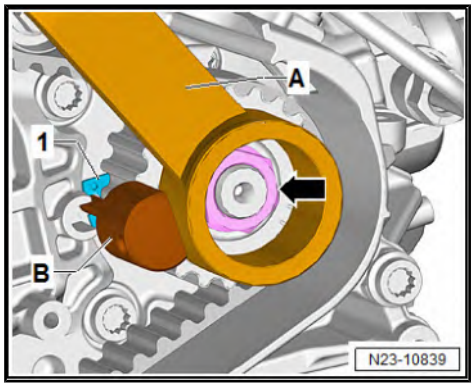
– Turn nuts -arrow- to the thread of the high pressure pump shaft.

– Place counterholder - T10051- or -T10051A- -A- on toothed belt pulley and tighten nut -arrow- hand-tight.

– Turn high pressure pump toothed belt pulley using the counterholder - T10051- or -T10051A- -A- until it can be locked with the rig pin - T10492- -B-.

– To do so, insert the rig pin - T10492- -B- into the fork -1- of the hub and the bore behind it on the bracket for auxiliary units.

– Loosen nuts -arrow- again.



• It must still be possible to just turn the high pressure pump toothed belt pulley, however it must not hang loose.

– Install the toothed belt
⇒ “2.4 Removing and installing toothed belt”, page 150 .

– Installing high pressure line
⇒ “3.9.2 Installing high pressure line”, page 469 .

NOTICE

Risk of damage to the high pressure pump from running dry.

♦ **If the high pressure pump is removed or replaced, the fuel system must be filled/bled before the engine is started for the first time**
⇒ “1.3 Filling/bleeding the fuel system”, page 444 .

– After replacing the high pressure pump, re-adjust the learnt values ⇒ Vehicle diagnostic tester.

♦ `0001 - Reset engine control learnt values`

Tightening torques - summaries of components

Note

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

♦ ⇒ “8.1 Summary of components - high pressure pump”, page 537

9 Lambda probe

⇒ “9.1 Summary of components - lambda probe”, page 541

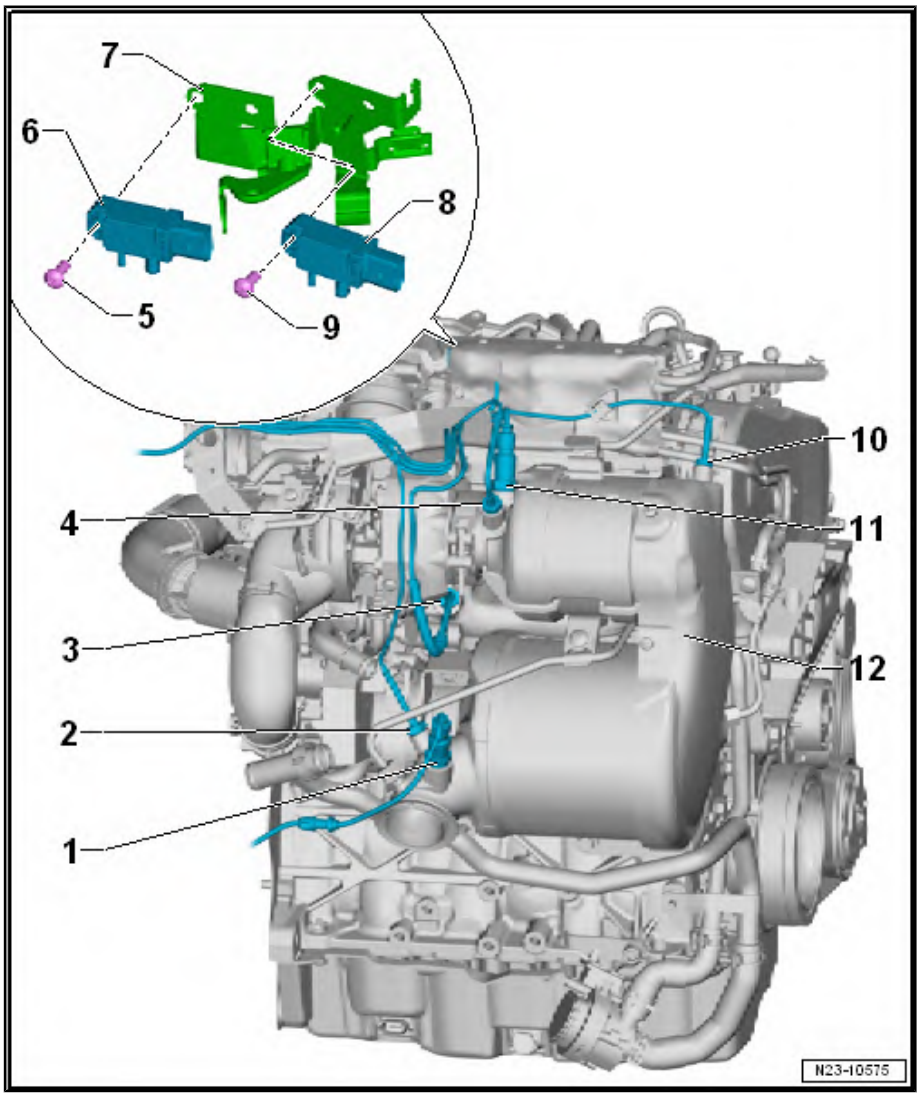
⇒ “9.2 Removing and installing Lambda probe”, page 544

9.1 Summary of components - lambda probe

⇒ “9.1.1 Summary of components - lambda probe, vehicles without SCR system”, page 541

⇒ “9.1.2 Overview of components - Lambda probe, Octavia III with SCR system”, page 543

9.1.1 Summary of components - lambda probe, vehicles without SCR system



1 - Lambda probe 1 after catalytic converter - GX7-

- ❑ consists of: lambda probe downstream of catalytic converter - G130- and heater for lambda probe 1 downstream of catalytic converter - Z29-
- ❑ for vehicles with EU6 emission level
- ❑ Removing and installing ⇒ “9.2 Removing and installing Lambda probe”, page 544
- ❑ Observe mounting instructions ⇒ “9.2 Removing and installing Lambda probe”, page 544 .
- ❑ 52 Nm

2 - Exhaust gas temperature transmitter 4 - G648-

- ❑ Removing and installing ⇒ “4.5 Removing and installing the exhaust gas temperature transmitter 4 G648 ”, page 666
- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste

3 - Exhaust gas temperature transmitter 1 - G235-

- ❑ Removing and installing ⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653
- ❑ Coat threads with hot bolt paste; hot bolt paste ⇒ ETKA - Electronic Catalogue of Original Parts

4 - Exhaust gas temperature transmitter 2 - G448-

- ❑ for vehicles with EU6 emission level
- ❑ Removing and installing ⇒ “4.3 Removing and installing the exhaust gas temperature transmitter 2 G448 ”, page 656

5 - Screw

- ❑ 8 Nm

6 - Differential pressure transmitter - G505-

- ❑ Removing and installing
  ⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510

7 - Mounting bracket

8 - Exhaust gas pressure sensor 1 - G450-

- ❑ for vehicles with EU6 emission level
- ❑ Removing and installing
  ⇒ “6.6 Removing and installing pressure sensor for exhaust gas 1 G450 ”, page 515

9 - Screw

- ❑ 8 Nm

10 - Exhaust gas temperature transmitter 3 - G495-

- ❑ Removing and installing
  ⇒ “4.4 Removing and installing the exhaust gas temperature transmitter 3 G495 ”, page 661
- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste

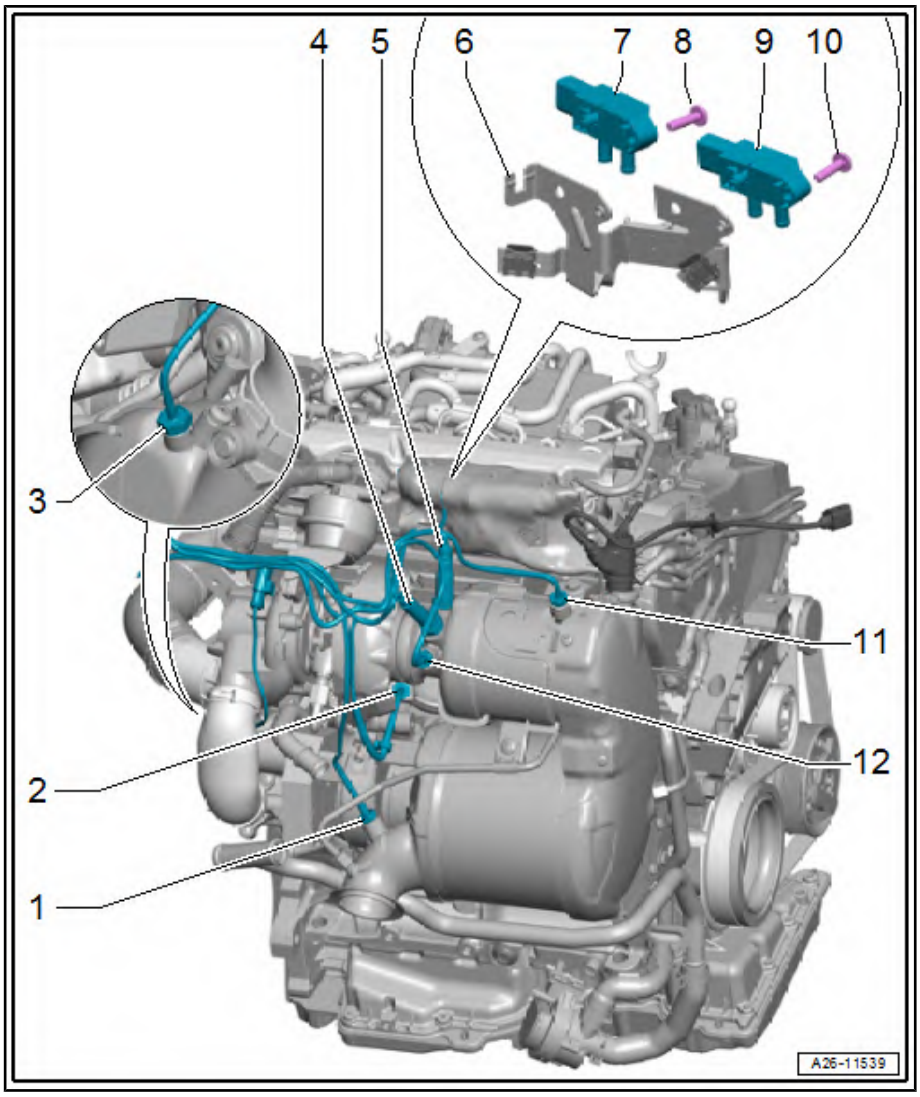
11 - Lambda probe 1 in front of the catalytic converter - GX10-

- ❑ consists of: lambda probe - G39- and lambda probe heater - Z19-
- ❑ Removing and installing ⇒ “9.2 Removing and installing Lambda probe”, page 544
- ❑ 52 Nm

12 - Exhaust gas cleaning module

- ❑ ⇒ “2.1.2 Summary of components - exhaust gas cleaning, vehicles with exhaust gas cleaning module”, page 580

9.1.2 Overview of components - Lambda probe, Octavia III with SCR system



1 - Exhaust gas temperature transmitter 4 - G648-

- ❑ Removing and installing ⇒ “4.5.1 Removing and installing the exhaust gas temperature transmitter 4 G648 , Octavia III, Yeti”, page 666

2 - Exhaust gas temperature transmitter 1 - G235-

- ❑ Removing and installing ⇒ “4.2.1 Removing and installing the exhaust gas temperature transmitter 1 G235 , Octavia III, Yeti”, page 653

3 - Temperature for exhaust gas recirculation - G98-

- ❑ Depending on vehicle
- ❑ Removing and installing ⇒ “5.6 Removing and installing temperature sensor for exhaust gas recirculation G98 ”, page 697
- ❑ 60 Nm

4 - NOx sender control unit - GX30-

consists of NOx sender - G295- and NOx sender control unit - J583-

- ❑ Removing and installing ⇒ “6.11 Removing and installing NOx transmitter control unit GX30 ”, page 520
- ❑ 52 Nm

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

- ❑ consists of: lambda probe - G39- and lambda probe heater - Z19-
- ❑ Removing and installing ⇒ “9.2.1 Removing and installing lambda probe 1 upstream of catalytic converter GX10 , Octavia III, Yeti”, page 544
- ❑ 52 Nm

6 - Mounting bracket

- ❑ for differential pressure transmitter

7 - Exhaust gas pressure sensor 1 - G450-

- ❑ Depending on vehicle
- ❑ Removing and installing ⇒ “6.6 Removing and installing pressure sensor for exhaust gas 1 G450 ”, page 515

8 - Screw

- ❑ 8 Nm

9 - Differential pressure transmitter - G505-

- ❑ its use depends on exhaust gas standard

❑ Removing and installing
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510

10 - Screw

❑ 8 Nm

11 - Exhaust gas temperature transmitter 3 - G495-

❑ Removing and installing
⇒ “4.4.2 Removing and installing the exhaust gas temperature encoder 3 G495 , Octavia III, with SCR system”, page 663

12 - Exhaust gas temperature transmitter 2 - G448-

❑ Removing and installing
⇒ “4.3.2 Removing and installing the exhaust gas temperature encoder 2 G448 , Octavia III, with SCR system”, page 657

9.2 Removing and installing Lambda probe

⇒ “9.2.1 Removing and installing lambda probe 1 upstream of catalytic converter GX10 , Octavia III, Yeti”, page 544

⇒ “9.2.2 Removing and installing Lambda probe 1 after catalytic converter GX10 , Rapid NH”, page 545

⇒ “9.2.3 Removing and installing lambda probe 1 after catalytic converter GX7 , Octavia III, Yeti”, page 547

⇒ “9.2.4 Removing and installing lambda probe 1 after catalytic converter GX7 , Rapid NH”, page 549

9.2.1 Removing and installing lambda probe 1 upstream of catalytic converter - GX10- , Octavia III, Yeti

Lambda probe 1 before catalytic converter - GX10- comprises:

- Lambda probe - G39-
- Lambda probe heater - Z19-

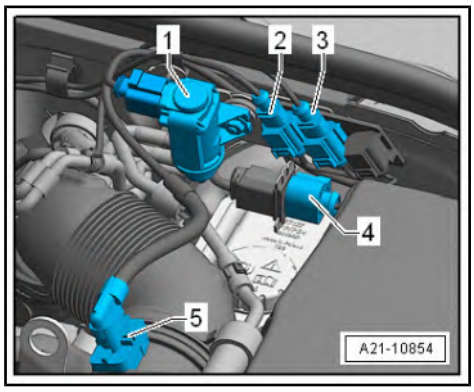
Special tools and workshop equipment required

- Extension piece (No. 22) - T10491-

Removing

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

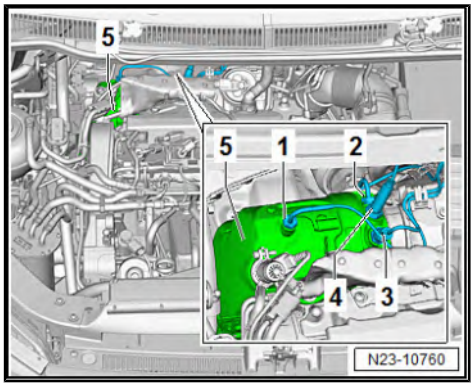
– Take the electrical plug connection -4- for Lambda probe 1 upstream of catalytic converter - GX10- out of its bracket and disconnect, expose the electric cable.



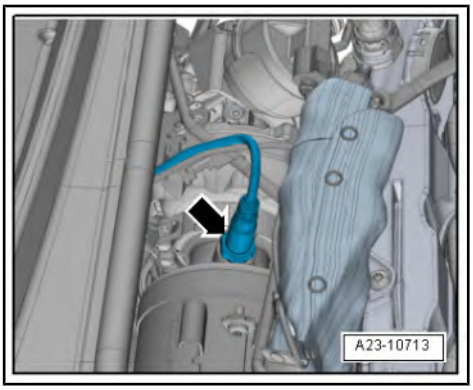
Octavia III with SCR-System

– Remove lambda probe 1 in front of the catalytic converter - GX10- -3-.

Continued for other vehicles



– Remove lambda probe 1 in front of the catalytic converter - GX10- -arrow-.



Installing

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

Note

- *New lambda probes are coated with an assembly paste; the paste is not allowed to reach to slots on the body of the probe.*
- *For a re-used lambda probe, only coat the thread with hot bolt paste . This paste must not come into contact with the slots of the lambda probe body.*
- *The electrical wiring of the lambda probe must be attached to the same position when installing. This prevents the lambda probe cable from coming into contact with the exhaust pipe.*

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

– After replacing the differential pressure transmitter, reset the learnt values ⇒ Vehicle diagnostic tester.

- `0001 - Resetting the lambda probe learning values`

Tightening torques - summaries of components

Note

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

- ⇒ “9.1 Summary of components - lambda probe”, page 541 .

9.2.2 Removing and installing Lambda probe 1 after catalytic converter - GX10- , Rapid NH

Lambda probe 1 before catalytic converter - GX10- comprises:

- Lambda probe - G39-
- Lambda probe heater - Z19-

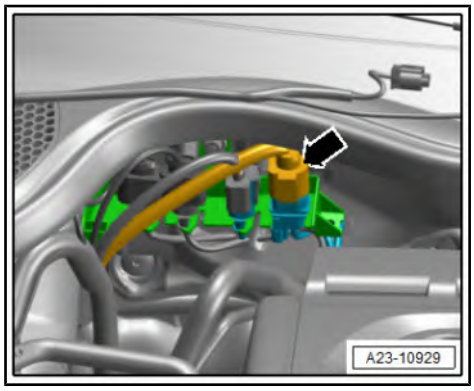
Special tools and workshop equipment required

- Extension piece (No. 22) - T10491-

Removing

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

– Take the electrical plug connection -arrow- for lambda probe 1 in front of catalytic converter - GX10- out of its bracket, and disconnect.

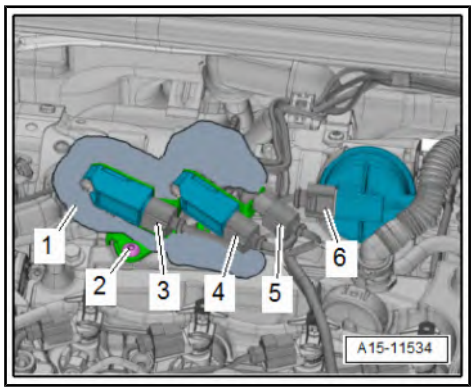


– Open heat protection sleeve -1-.

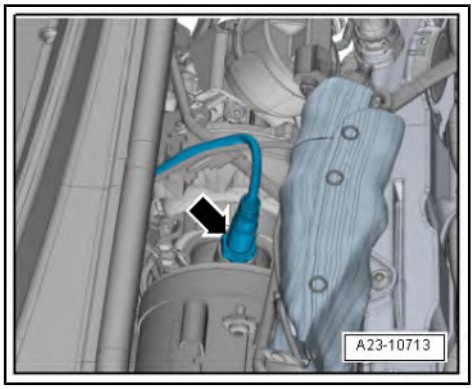
– Disconnect electrical plug connections -3, 4, 6- and expose electric cable.

– Take electrical plug connection -5- for exhaust gas temperature transmitter 1 - G235- out of the bracket, disconnect and expose electric cable.

– Unscrew screw -2- and press bracket with differential pressure transmitters to the front.



– Unscrew lambda probe 1 in front of the catalytic converter - GX10- -arrow- with socket insert SW 22 - T10491- .



Installing

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

Note

- *New lambda probes are coated with an assembly paste; the paste is not allowed to reach to slots on the body of the probe.*
- *For a re-used lambda probe, only coat the thread with hot bolt paste . This paste must not come into contact with the slots of the lambda probe body.*
- *The electrical wiring of the lambda probe must be attached to the same position when installing. This prevents the lambda probe cable from coming into contact with the exhaust pipe.*

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

– After replacing the differential pressure transmitter, reset the learnt values ⇒ Vehicle diagnostic tester.

- `0001 - Resetting the lambda probe learning values`

Tightening torques - summaries of components

Note

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

- ⇒ “9.1 Summary of components - lambda probe”, page 541 .

9.2.3 Removing and installing lambda probe 1 after catalytic converter - GX7- , Octavia III, Yeti

The Lambda probe 1 downstream of catalytic converter - GX7- comprises:

- Lambda probe downstream of catalytic converter - G130-
- Lambda probe heater 1 downstream of catalytic converter - Z29-

Special tools and workshop equipment required

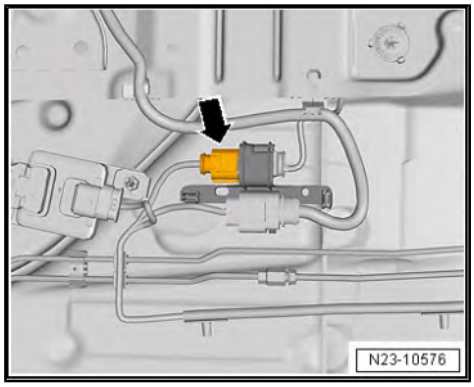
- Socket insert for Lambda probe - 3337-

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 .

– Remove underbody panelling on left ⇒ Bodywork - exterior assembly work; Rep. gr. 66 ; Underbody panelling; overview of components - Underbody panels , ⇒ Bodywork - assembly work if required; Rep. gr. 50 .

– Take the electrical plug connection -arrow- for Lambda probe 1 after catalytic converter - GX7- out of its bracket and disconnect, expose the electric cable.

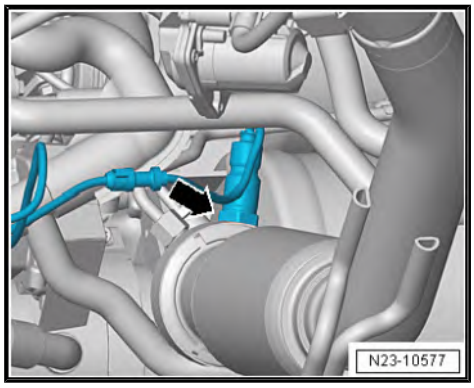


Vehicles with four-wheel drive

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

Continued for all vehicles

– Unscrew the lambda probe 1 after catalytic converter - GX7- -arrow- with a socket wrench from the socket insert for lambda probe - 3337- .



Installing

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

Note

- *New lambda probes are coated with an assembly paste; the paste is not allowed to reach to slots on the body of the probe.*
- *For a re-used lambda probe, only coat the thread with hot bolt paste . This paste must not come into contact with the slots of the lambda probe body.*
- *The electrical wiring of the lambda probe must be attached to the same position when installing. This prevents the lambda probe cable from coming into contact with the exhaust pipe.*

– After replacing the differential pressure transmitter, reset the learnt values ⇒ Vehicle diagnostic tester.

- `0001 - Resetting the lambda probe learning values`

Tightening torques - summaries of components

Note

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

- ⇒ “9.1 Summary of components - lambda probe”, page 541 .
- ⇒ “1.1 Assembly overview - silencers”, page 552
- Sound damper - overview of components ⇒ External bodywork; Rep. gr. 66 ; Sound damper; Removing and installing sound damper , possibly. ⇒ Bodywork; Rep. gr. 50 ,
- Underfloor trim panel - Overview of components ⇒ General body repairs, exterior ; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panel , ⇒ Body work if required; Rep. gr. 50 .

9.2.4 Removing and installing lambda probe 1 after catalytic converter - GX7- , Rapid NH

The Lambda probe 1 downstream of catalytic converter - GX7- comprises:

- Lambda probe downstream of catalytic converter - G130-
- Lambda probe heater 1 downstream of catalytic converter - Z29-

Special tools and workshop equipment required

- Socket insert for Lambda probe - 3337-

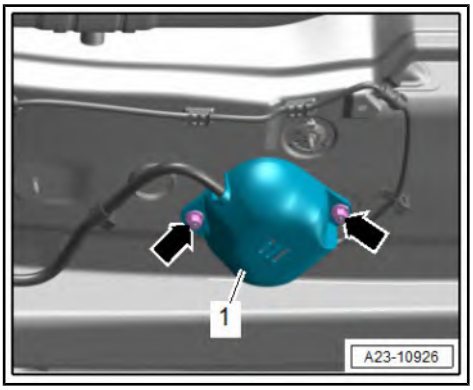
Removing

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

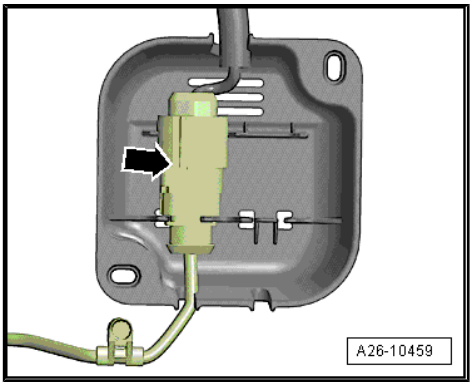
– Loosen the front centre right underfloor trim panel and press down ⇒ Body Work; Rep. gr. 50 .

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

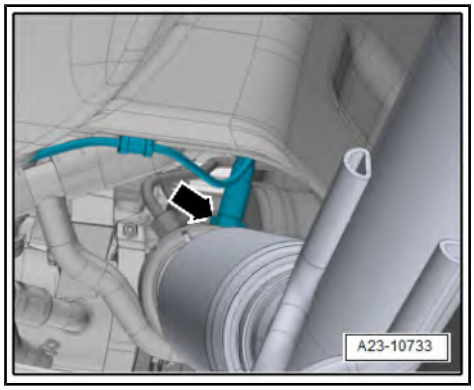
– Unscrew nuts -arrows- and take off cover -1-.



– Disconnect the electrical plug connection -arrow- for lambda probe 1 after catalytic converter - GX7-



– Unscrew the lambda probe 1 after catalytic converter - GX7- -arrow- with a socket wrench from the socket insert for lambda probe - 3337- .



Installing

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

Note

- *New lambda probes are coated with an assembly paste; the paste is not allowed to reach to slots on the body of the probe.*
- *For a re-used lambda probe, only coat the thread with hot bolt paste . This paste must not come into contact with the slots of the lambda probe body.*
- *The electrical wiring of the lambda probe must be attached to the same position when installing. This prevents the lambda probe cable from coming into contact with the exhaust pipe.*

– After replacing the differential pressure transmitter, reset the learnt values ⇒ Vehicle diagnostic tester.

- `0001 - Resetting the lambda probe learning values`

Tightening torques - summaries of components

Note

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

- ⇒ “9.1 Summary of components - lambda probe”, page 541 .
- ⇒ “1.1 Assembly overview - silencers”, page 552
- Sound dampening system - Summary of components ⇒ Body Work; Rep. gr. 50 .
- Underfloor trim panel - Summary of components ⇒ Body Work; Rep. gr. 50 .

10 Engine noise speaker

⇒ “10.1 Removing and installing engine noise speaker”, page 551

10.1 Removing and installing engine noise speaker

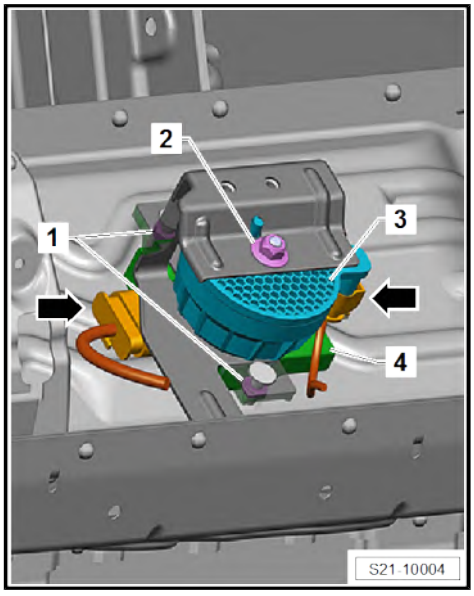
Removing

– Remove the plenum panel cover and then the bulkhead plenum chamber ⇒ External body repairs; Rep. gr. 50 ; Bulkhead; Assembly overview - plenum panel cover .

– Disconnect the plug connections -arrows-.

– Unscrew nut -2- and the control element of the engine noise speaker -3-.

– Unscrew nuts -1- and the control element of the engine noise speaker -4-.



Installing

Installation is carried out in the reverse order.

Tightening torques

Nut	Tightening torque
Nut -1-	3 Nm
Nut -2-	7 Nm

26 – Exhaust system

1 Exhaust pipes/silencers

⇒ “1.1 Assembly overview - silencers”, page 552

⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564

⇒ “1.3 Separating exhaust pipes/silencers”, page 567

⇒ “1.4 Removing and installing rear silencer”, page 568

⇒ “1.5 Align exhaust system free of stress”, page 573

⇒ “1.6 Inspecting the exhaust system for leaks”, page 574

⇒ “1.7 Installation position of clamping sleeve”, page 574

⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

⇒ “1.9 Align exhaust tailpipes”, page 578

1.1 Assembly overview - silencers

⇒ “1.1.1 Summary of components - sound damper, vehicles with front-wheel drive, engine codes CLHA, CLHB, CRKB, CXXA, CXXB, DBKA, DDYB, DDYA”, page 552

⇒ “1.1.2 Summary of components - sound damper, vehicles with front-wheel drive, engine codes CKFB, CKFC, CRMB, CYKA, DCYA, DFFA”, page 554

⇒ “1.1.3 Overview of components - sound damper, vehicles with front wheel drive, engine codes CUPA, CUNA, DJGA”, page 556

⇒ “1.1.4 Summary of components - sound damper, vehicles with EU4 emission level, engine codes CRVC”, page 558

⇒ “1.1.5 Overview of components - sound damper, four-wheel drive vehicles, engine codes CLHA, CKFC, CRMB, CUNA, DDYA, DCYA, DJGA, DGTE, DFFA”, page 560

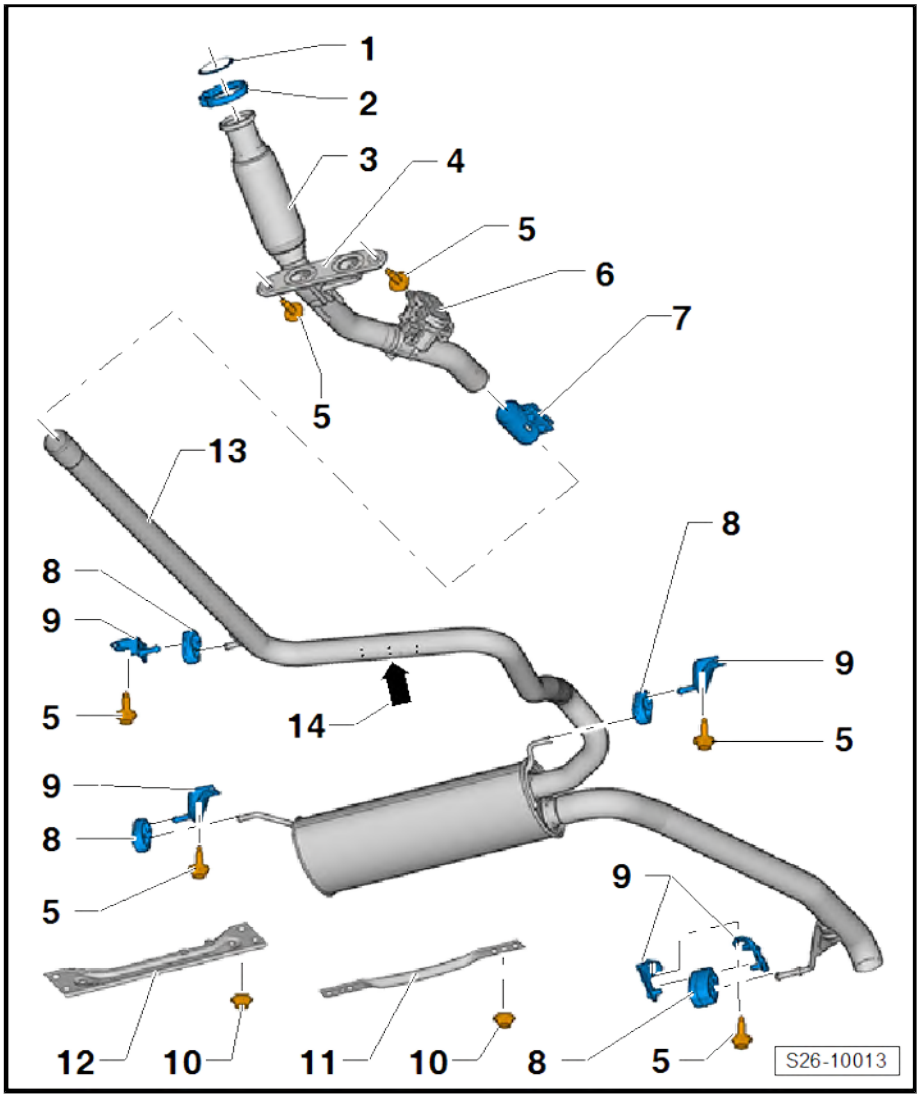
⇒ “1.1.6 Overview of components - sound damper, engine codes CUUA, CUUB, DFSA, DFSB”, page 561

⇒ “1.1.7 Overview of components - sound damper, engine code CXMA”, page 563

1.1.1 Summary of components - sound damper, vehicles with front-wheel drive, engine codes CLHA, CLHB, CRKB, CXXA, CXXB, DBKA, DDYB, DDYA

Note

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



1 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position
  ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm

3 - Exhaust pipe

- ❑ Vehicles with NOx encoder 2 - J881-
  ⇒ “1.8.2 Overview of components - exhaust front pipe, vehicles with NOx encoder 2 G687 ”, page 577
- ❑ Removing and installing
  ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension
  ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

4 - Mounting bracket

- ❑ replace if damaged

5 - Screw

- ❑ 23 Nm

Screw, together for fuel tank clamping tensioning strap

- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - Fuel tank

6 - Exhaust flap control unit - J883-

- ❑ Removing and installing
  ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

7 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress
  ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

8 - Retaining strap

- ❑ replace if damaged

9 - Shackle

- ❑ replace if damaged

10 - Nut

- ❑ 20 Nm

11 - Rear tunnel bridge

12 - Front tunnel bridge

13 - Middle and rear part of the exhaust system

- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ “1.3 Separating exhaust pipes/silencers”, page 567
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Removing and installing ⇒ “1.4 Removing and installing rear silencer”, page 568

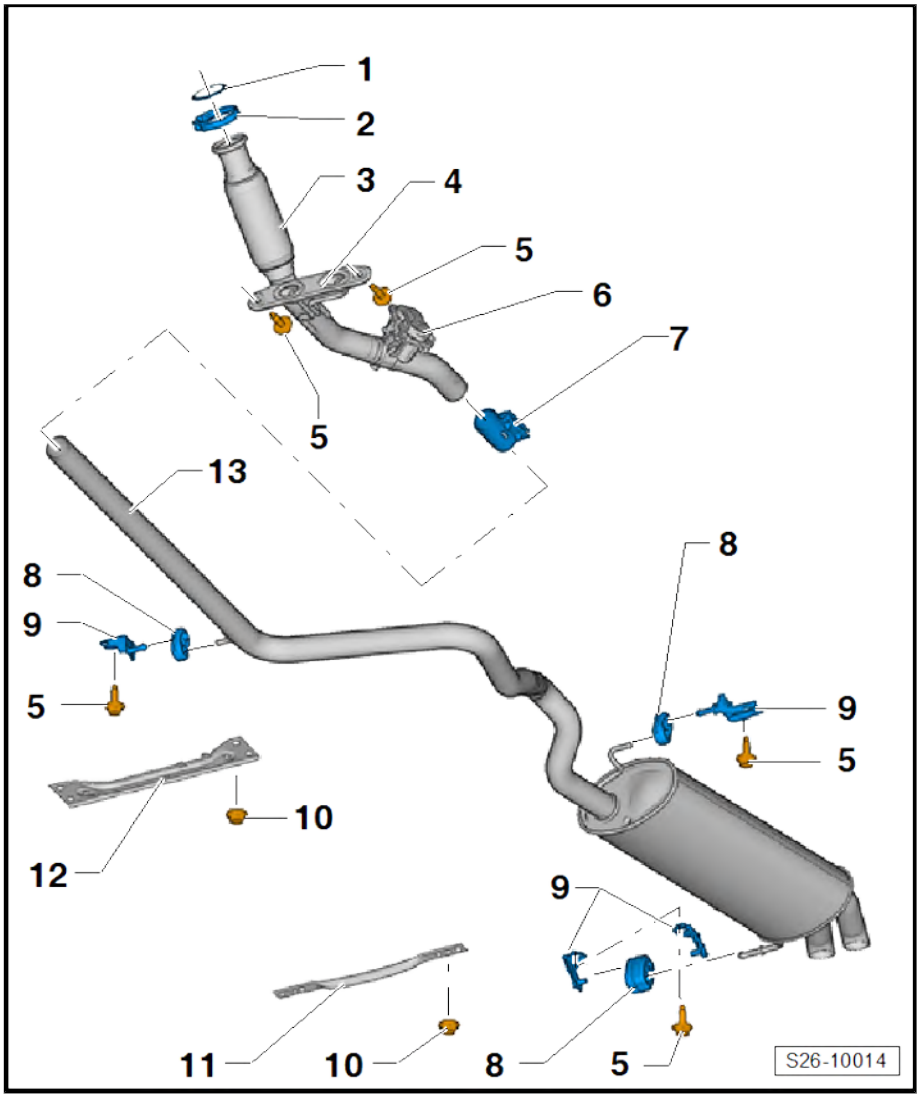
14 - Separation point

- ❑ for repairs
- ❑ marked with recesses around the circumference
- ❑ Separation point ⇒ “1.3 Separating exhaust pipes/silencers”, page 567

1.1.2 Summary of components - sound damper, vehicles with front-wheel drive, engine codes CKFB, CKFC, CRMB, CYKA, DCYA, DFFA

Note

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



1 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position
  ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm

3 - Exhaust pipe

- ❑ Removing and installing
  ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension
  ⇒ “1.5 Align exhaust system free of stress”, page 573

4 - Mounting bracket

- ❑ replace if damaged

5 - Screw

- ❑ 23 Nm

Screw, together for fuel tank clamping tensioning strap

- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - Fuel tank

6 - Exhaust flap control unit - J883-

- ❑ Removing and installing
  ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

7 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress
  ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

8 - Retaining strap

- ❑ replace if damaged

9 - Shackle

- ❑ replace if damaged

10 - Nut

- ❑ 20 Nm

11 - Rear tunnel bridge

12 - Front tunnel bridge

13 - Middle and rear part of the exhaust system

- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ “1.3 Separating exhaust pipes/silencers”, page 567
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Removing and installing ⇒ “1.4 Removing and installing rear silencer”, page 568

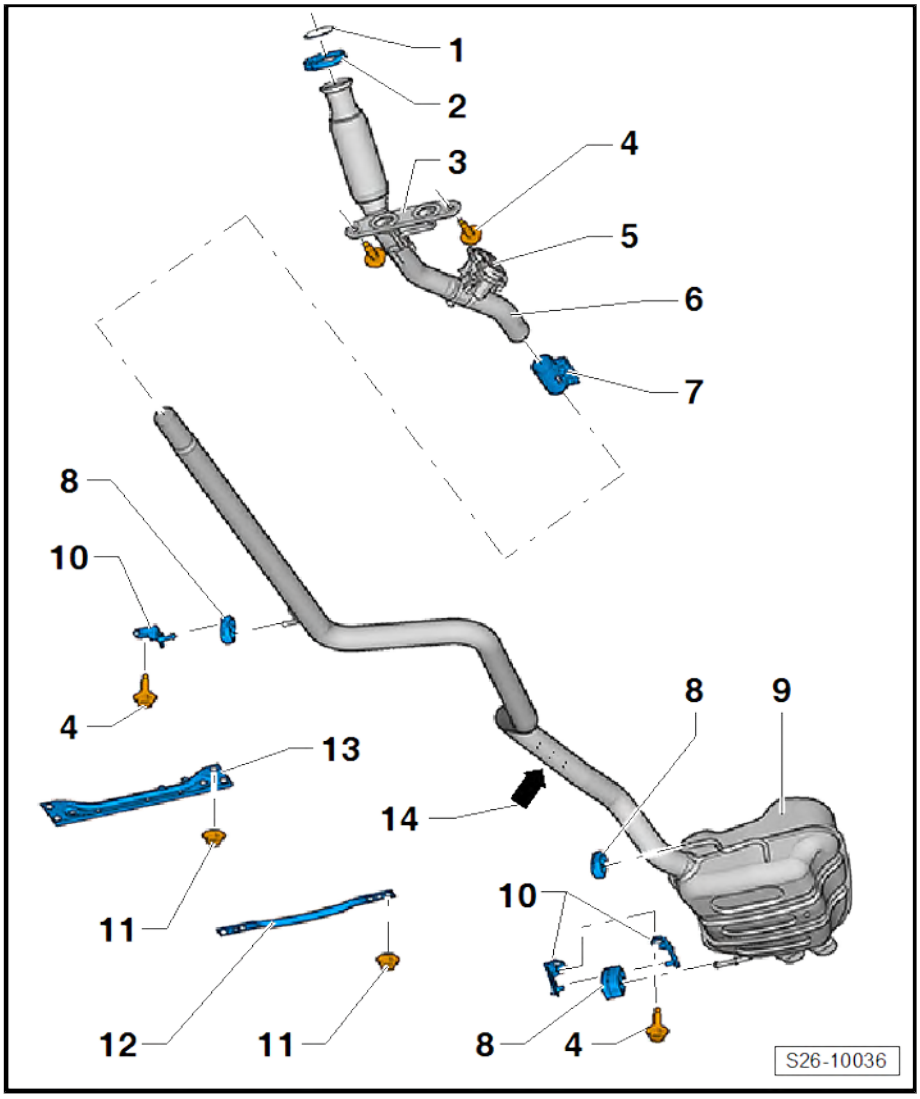
14 - Separation point

- ❑ for repairs
- ❑ marked with recesses around the circumference
- ❑ Separation point ⇒ “1.3 Separating exhaust pipes/silencers”, page 567

1.1.3 Overview of components - sound damper, vehicles with front wheel drive, engine codes CUPA, CUNA, DJGA

Note

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



1 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position
  ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm

3 - Mounting bracket

- ❑ replace if damaged

4 - Screw

- ❑ 23 Nm

Screw, together for fuel tank clamping tensioning strap

- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - Fuel tank

5 - Exhaust flap control unit - J883-

- ❑ Removing and installing
  ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

6 - Exhaust pipe

- ❑ Vehicles with NOx encoder 2 - J881-
  ⇒ “1.8.2 Overview of components - exhaust front pipe, vehicles with NOx encoder 2 G687 ”, page 577
- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

7 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress
  ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

8 - Retaining strap

- ❑ replace if damaged

9 - Middle and rear part of the exhaust system

- ❑ for first equipment a building unit, replace individually when carrying out repairs
  ⇒ “1.3 Separating exhaust pipes/silencers”, page 567
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Removing and installing ⇒ “1.4 Removing and installing rear silencer”, page 568

10 - Shackle

- ❑ replace if damaged

11 - Nut

- ❑ 20 Nm

12 - Rear tunnel bridge

13 - Front tunnel bridge

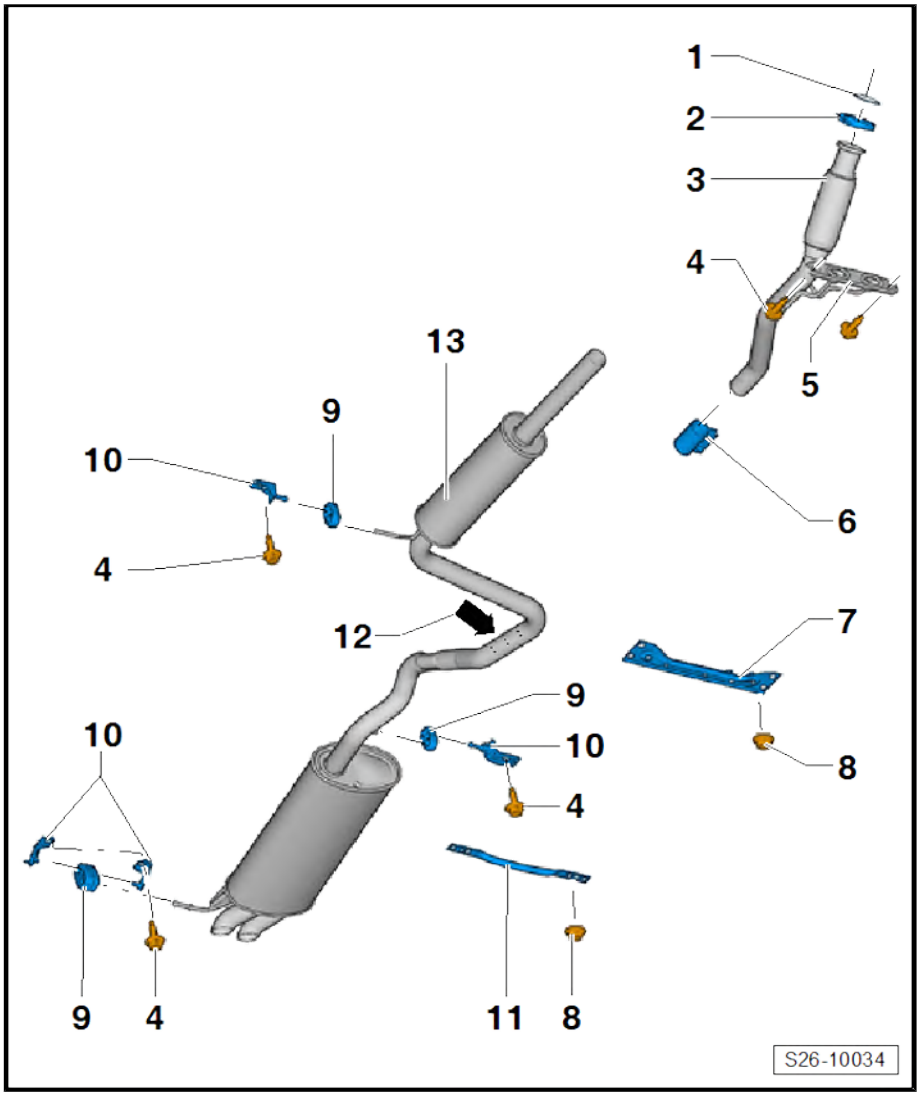
14 - Separation point

- ❑ for repairs
- ❑ marked with recesses around the circumference
- ❑ Separation point ⇒ “1.3 Separating exhaust pipes/silencers”, page 567

1.1.4 Summary of components - sound damper, vehicles with EU4 emission level, engine codes CRVC

Note

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



1 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position
  ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm

3 - Exhaust pipe

- ❑ Removing and installing
  ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension
  ⇒ “1.5 Align exhaust system free of stress”, page 573

4 - Screw

- ❑ 23 Nm

Screw, together for fuel tank clamping tensioning strap

- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - Fuel tank

5 - Mounting bracket

- ❑ replace if damaged

6 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress
  ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

7 - Front tunnel bridge

8 - Nut

- ❑ 20 Nm

9 - Retaining strap

- ❑ replace if damaged

10 - Shackle

- ❑ replace if damaged

11 - Rear tunnel bridge

12 - Separation point

- ❑ for repairs
- ❑ marked with recesses around the circumference

- ❑ Separation point ⇒ “1.3 Separating exhaust pipes/silencers”, page 567

13 - Middle and rear part of the exhaust system

- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ “1.3 Separating exhaust pipes/silencers”, page 567
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Removing and installing ⇒ “1.4 Removing and installing rear silencer”, page 568

1.1.5 Overview of components - sound damper, four-wheel drive vehicles, engine codes CLHA, CKFC, CRMB, CUNA, DDYA, DCYA, DJGA, DGTE, DFFA

Note

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

1 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm

3 - Mounting bracket

- ❑ replace if damaged

4 - Exhaust flap control unit - J883-

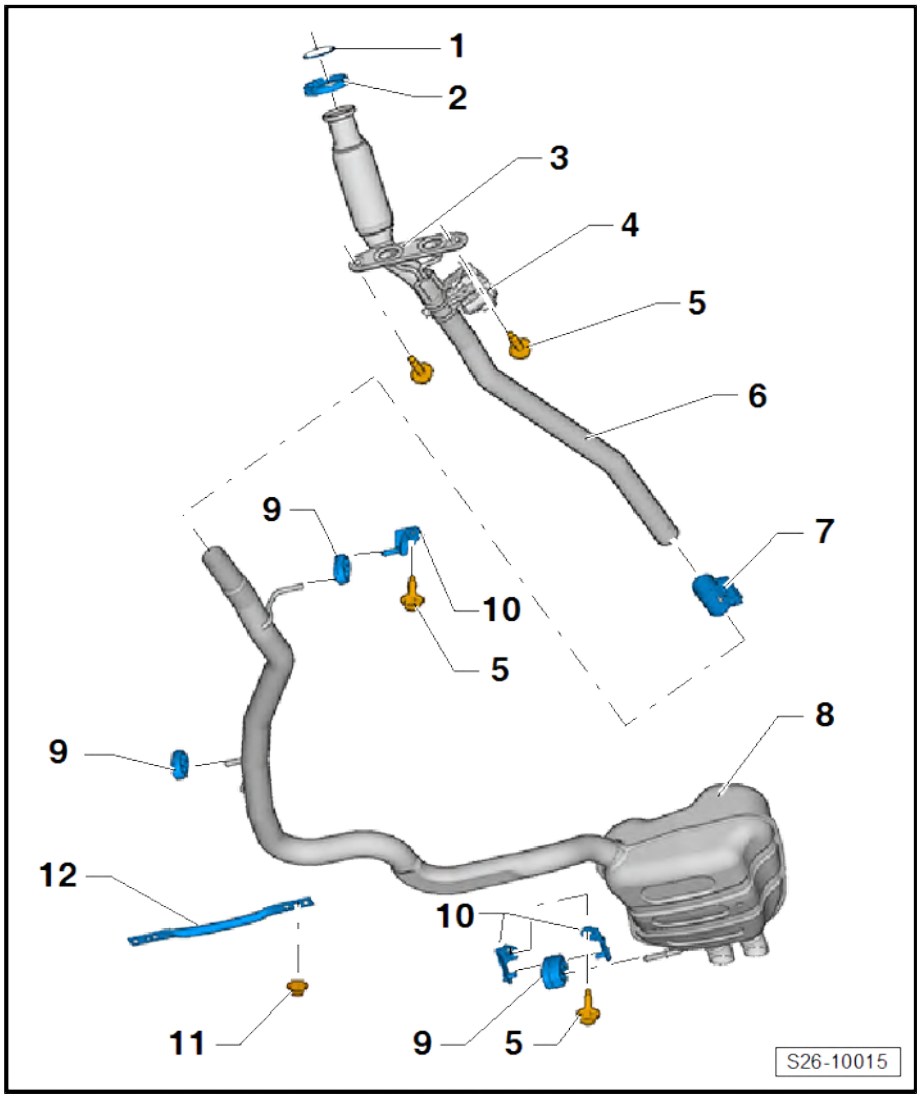
- ❑ Removing and installing ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

5 - Screw

- ❑ 23 Nm

Screw, together for fuel tank clamping tensioning strap

- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ Rep. gr. 20 ; Fuel tank; Summary of components - Fuel tank



6 - Exhaust pipe

- ❑ Vehicles with NOx encoder 2 - J881-
  ⇒ “1.8.2 Overview of components - exhaust front pipe, vehicles with NOx encoder 2 G687 ”, page 577
- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts

7 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress
  ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

8 - Middle and rear part of the exhaust system

- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Removing and installing ⇒ “1.4 Removing and installing rear silencer”, page 568

9 - Retaining strap

- ❑ replace if damaged

10 - Shackle

- ❑ replace if damaged

11 - Nut

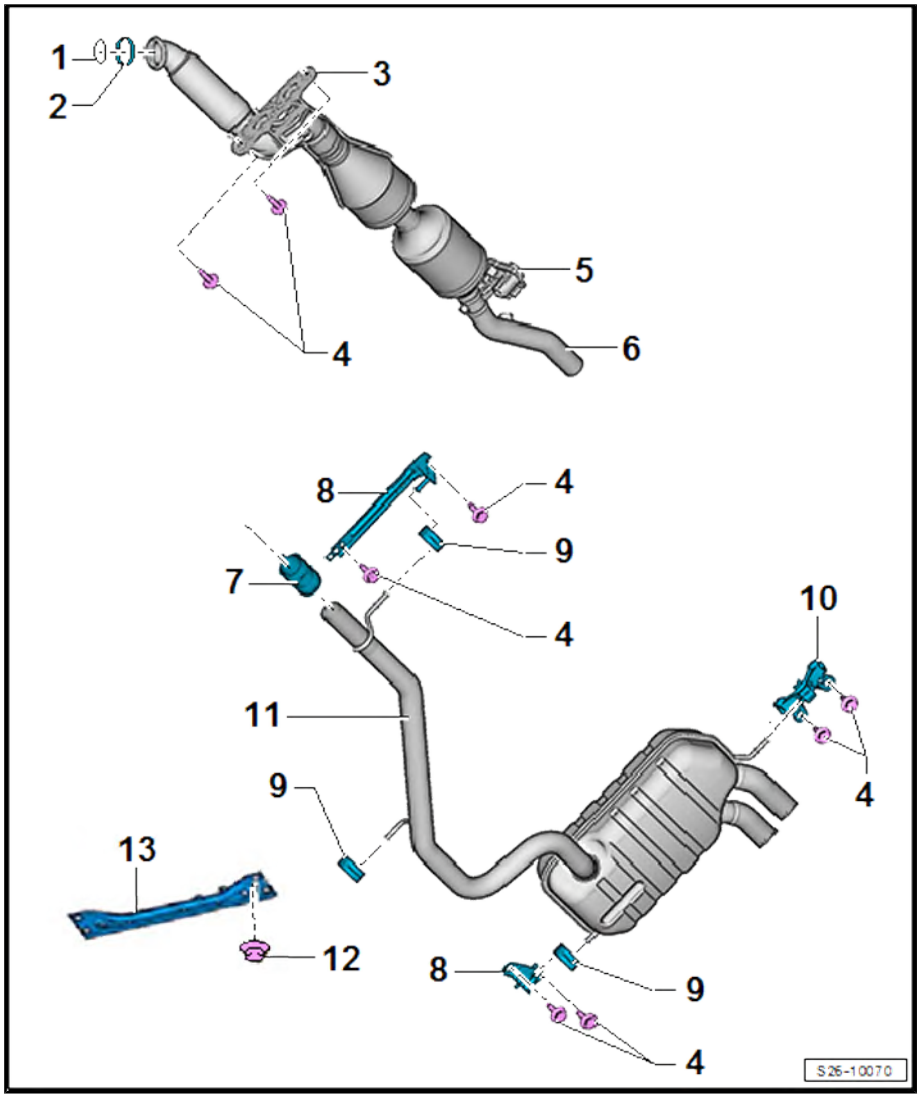
- ❑ 20 Nm

12 - Rear tunnel bridge

1.1.6 Overview of components - sound damper, engine codes CUUA, CUUB, DFSA, DFSB

Note

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



1 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm

3 - Mounting bracket

- ❑ replace if damaged

4 - Screw

- ❑ 20 Nm

5 - Exhaust flap control unit - J883-

- ❑ Removing and installing ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

6 - Exhaust pipe

- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573

7 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

8 - Shackle

- ❑ replace if damaged

9 - Retaining strap

- ❑ replace if damaged

10 - Retaining strap

- ❑ replace if damaged
- ❑ Pay attention to the part number

11 - Middle and rear part of the exhaust system

- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573

12 - Nut

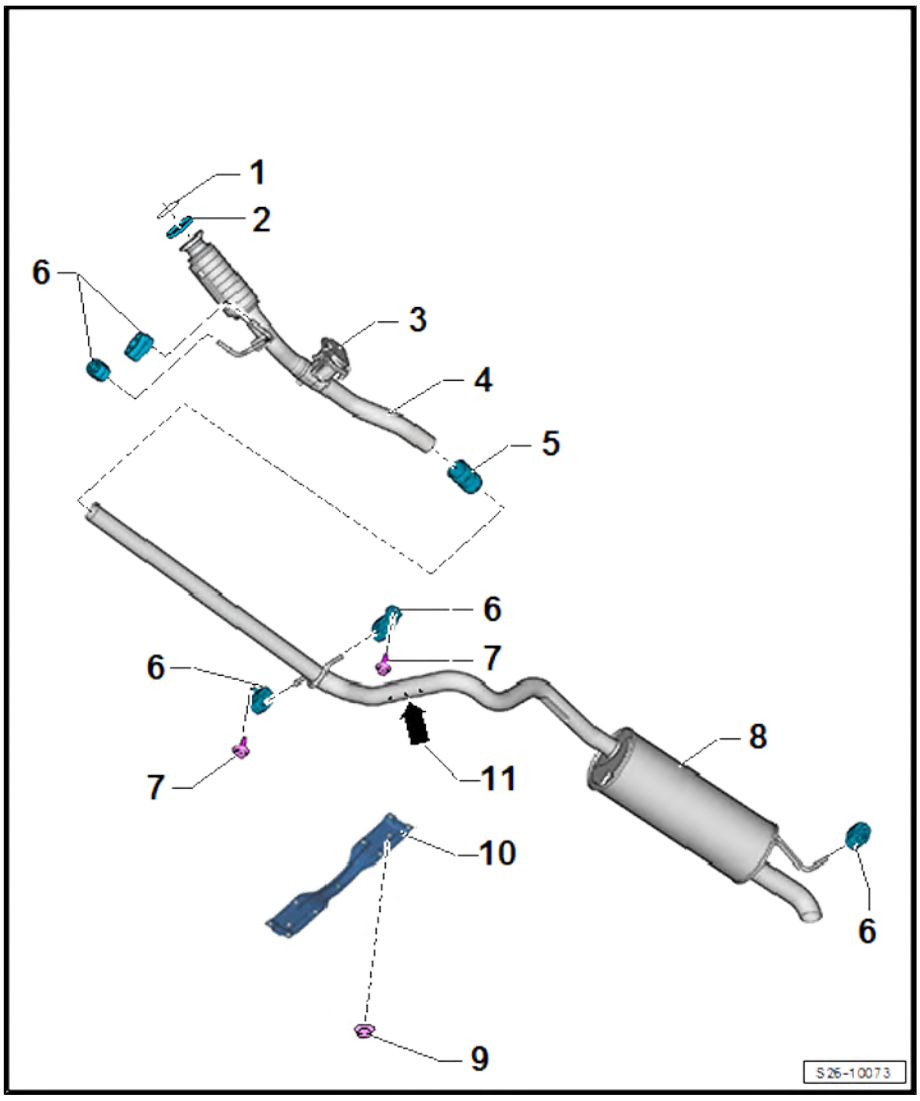
- ❑ 20 Nm

13 - Tunnel bridge

1.1.7 Overview of components - sound damper, engine code CXMA

Note

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



1 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm

3 - Exhaust flap control unit - J883-

- ❑ Removing and installing ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

4 - Exhaust pipe

- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573

5 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

6 - Retaining strap

- ❑ replace if damaged

7 - Screw

- ❑ 20 Nm

8 - Middle and rear part of the exhaust system

- ❑ for first equipment a building unit, replace individually when carrying out repairs ⇒ “1.3 Separating exhaust pipes/silencers”, page 567
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573

- ❑ Removing and installing ⇒ “1.4 Removing and installing rear silencer”, page 568

9 - Nut

- ❑ 20 Nm

10 - Front tunnel bridge

11 - Separation point

- ❑ for repairs
- ❑ marked with recesses around the circumference
- ❑ Separation point ⇒ “1.3 Separating exhaust pipes/silencers”, page 567

1.2 Removing and installing pre-exhaust pipe

⇒ “1.2.1 Removing and installing pre-exhaust pipe, Octavia III, Yeti”, page 564

⇒ “1.2.2 Removing and installing pre-exhaust pipe, Rapid NH”, page 567

1.2.1 Removing and installing pre-exhaust pipe, Octavia III, Yeti

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 .

Vehicles with front-wheel drive

– Remove the front tunnel bridge ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels .

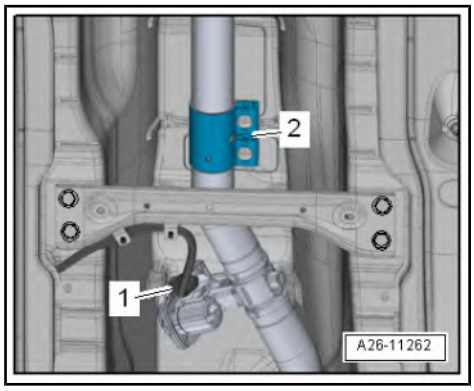
Vehicles with NOx encoder 2 - G687-

– Unscrew the NOx sensor 2 - G687- from the front exhaust pipe ⇒ “6.8.1 Removing and installing NOx encoder 2 G687 , Octavia III”, page 517 .

Vehicles fitted with exhaust flap control unit - J883-

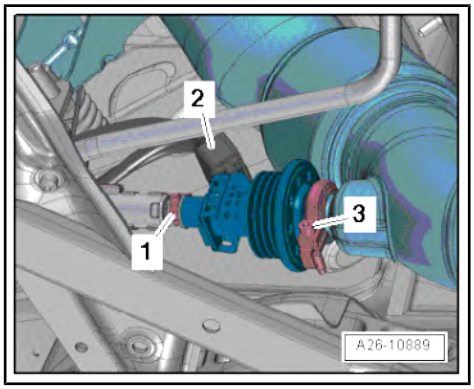
– If present, remove the heat shield collar from the connector.

– Release and disconnect electrical plug connection -1-.



For vehicles with engine identification characters CUUA, CUUB, DFSA, DFSB

– Disconnect electrical connector -2- from the injection valve for reduction agent - N474- .
– Release the clamp -3- and remove the injection valve for reduction agent - N474- .

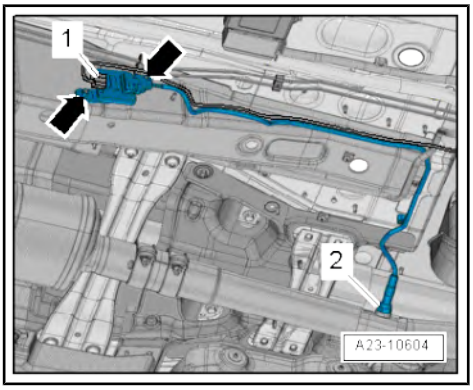


Note

Replace the clamp after disassembly.

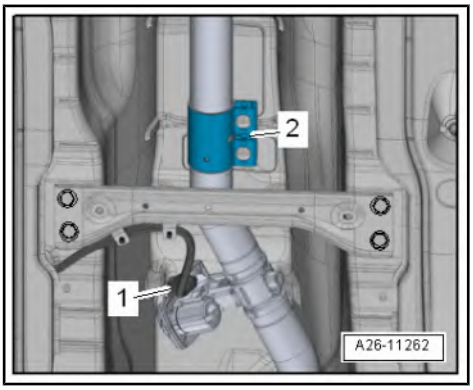
– Remove underbody panels on left ⇒ Bodywork - exterior assembly work; Rep. gr. 66 ; Underbody panels; overview of fitting positions - Underbody panels , ⇒ Bodywork - assembly work if required; Rep. gr. 50 .

– Disconnect electrical connector -1- on NOx transmitter control unit 2 - J881- .
– Remove control unit for NOx transmitter 2 - J881- from mounting.
– Expose wiring loom.
– Remove front tunnel bridge
⇒ “1.1 Assembly overview - silencers”, page 552 .

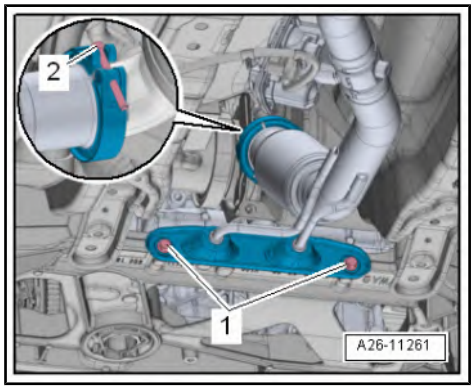


Continued for all vehicles

– Slacken the clamping sleeve -2- and slide it backwards.



– Remove screws -1-.
– Loosen screw -2- and remove clamp.
– Remove pre-exhaust pipe.



Installing

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

Note

Replace seals and screw clamp after disassembly.

– Pay attention to the installation position of the screw clamp for the pre-exhaust pipe. The clamp must not rest against components.
– Adhere to the installation position of the gasket between the exhaust gas cleaning module and pre-exhaust pipe ⇒ “1.8 Summary of components - pre-exhaust pipe”, page 575 .
– Install the injection valve for reduction agent - N474- ⇒ “3.7 Removing and installing the injection valve for reduction agent N474 ”, page 636 .
– Align exhaust system free of stress ⇒ “1.5 Align exhaust system free of stress”, page 573 .

Tightening torques - summaries of components

Note

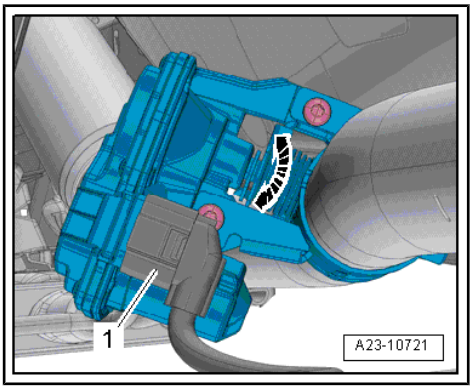
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

- ⇒ “1.1 Assembly overview - silencers”, page 552
- ⇒ “3.2 Summary of components - delivery line for reduction agent”, page 616
- ⇒ External body repairs; Rep. gr. 66 ; Sound damper; removing and installing sound damper .
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels
- ⇒ Body Work; Rep. gr. 50

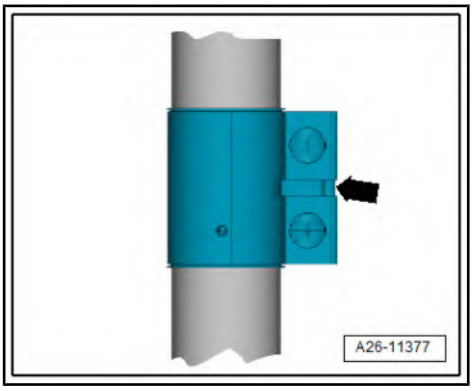
1.2.2 Removing and installing pre-exhaust pipe, Rapid NH

Removing

– Separate electrical plug connection -1-.

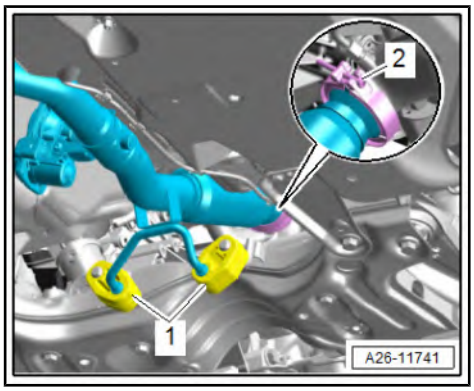


– Loosen the clamping sleeve -arrow- and slide it backwards.



– Loosen screw -2- and remove clamping sleeve.

– Detach the retaining straps -1- for exhaust system from the assembly carrier and take off the pre-exhaust pipe.



Installing

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

Note

Replace gasket.

– Align exhaust system free of stress
⇒ “1.5 Align exhaust system free of stress”, page 573 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Assembly overview - silencers”, page 552

1.3 Separating exhaust pipes/silencers

Special tools and workshop equipment required

♦ Body saw e.g. -V.A.G 1523A-

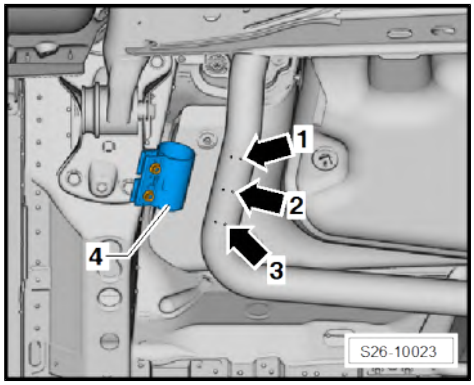
- Protective goggles

Note

- *For vehicles with torsion beam rear axle, a separation point is provided in the exhaust pipe to facilitate removal of the exhaust system.*
- *The coupling point is marked by indentation on the circumference of the exhaust pipe.*

CAUTION

To avoid injury from metal shavings, wear eye protection and protective clothing.



- Cut exhaust pipe at right angles at the separation point arrow -2-.
- When installing, position clamping sleeve -4- at the side markings -arrow 1- and -arrow 3-.
- Note installation position of clamping sleeve ⇒ “1.7 Installation position of clamping sleeve”, page 574 .
- Align exhaust system free of stress ⇒ “1.5 Align exhaust system free of stress”, page 573 .
- Tighten bolted connections of clamping sleeve evenly ⇒ page 575 .

1.4 Removing and installing rear silencer

⇒ “1.4.1 Removing and installing rear silencer, vehicles with front-wheel drive, engine codes CLHA, CLHB, CRKB, CKFB, CKFC, CRVC, CRMB, CXXA, CXXB, DBKA, CYKA, DDYB, DDYA, DCYA, DTGE, DFFA”, page 568

⇒ “1.4.2 Removing and installing rear silencer, vehicles with front-wheel drive, engine codes CUPA, CUNA, DJGA”, page 570

⇒ “1.4.3 Removing and installing rear silencer, vehicles with four-wheel drive, engine codes CLHA, CKFC, CRMB, CUNA, CXXB, DDYA, DCYA, DGTE, DJGA, DFFA”, page 572

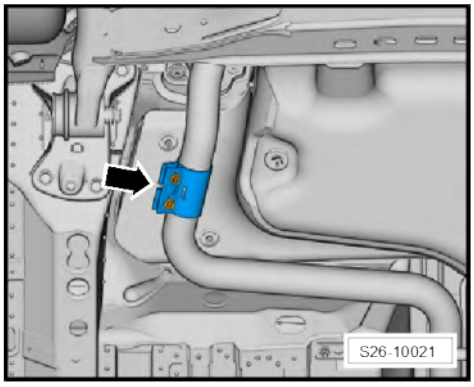
⇒ “1.4.4 Removing and installing rear silencer , engine identification characters CXMA”, page 573

1.4.1 Removing and installing rear silencer, vehicles with front-wheel drive, engine codes CLHA, CLHB, CRKB, CKFB, CKFC, CRVC, CRMB, CXXA, CXXB, DBKA, CYKA, DDYB, DDYA, DCYA, DTGE, DFFA

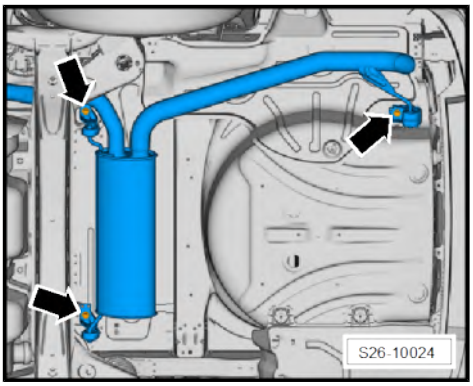
Removing

- Vehicles without separation point: replace middle or rear silencer ⇒ “1.3 Separating exhaust pipes/silencers”, page 567 .

– Vehicles with separation point: loosen clamping sleeve -arrow- and press forwards.
– Unscrew screws -arrows-, remove rear silencer.



Vehicles with 1.6 l engine

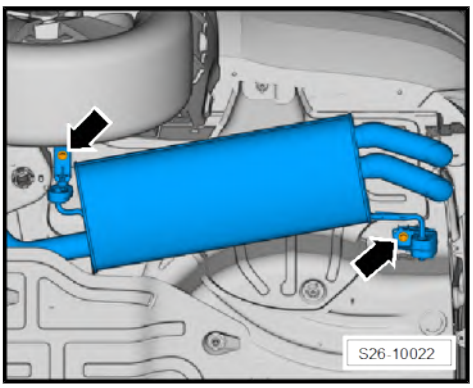


Vehicles with 2.0 l engine

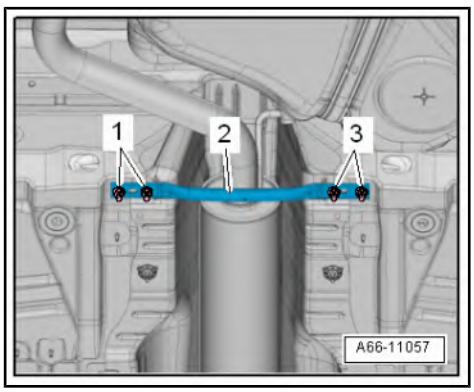
Continued for all vehicles

If the exhaust pipe must be removed:

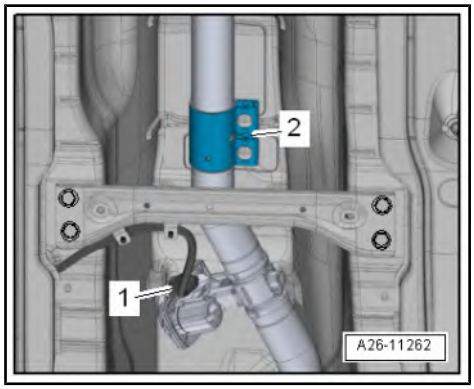
– Remove the left rear underfloor trim panel ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels .



– Remove rear tunnel bridge -2- ⇒ “1 Exhaust pipes/silencers”, page 552 .



– Loosen the clamping sleeve -2- and slide it forwards.

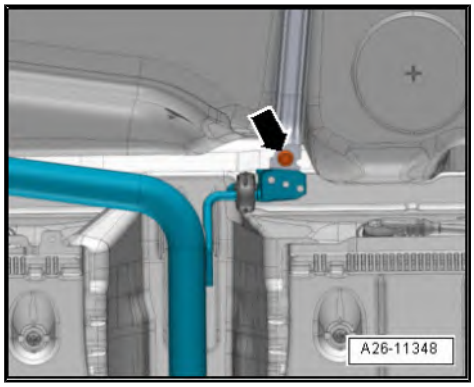


CAUTION

Risk of accident from weight of the rear silencer.

- **A second mechanic is required to remove the rear silencer.**

– Unscrew screws -arrows-, remove middle silencer.



Installing

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

– Observe the rear and front installation position of clamping plate
⇒ “1.7 Installation position of clamping sleeve”, page 574

– Align exhaust system free of stress
⇒ “1.5 Align exhaust system free of stress”, page 573 .

Tightening torques - summaries of components

Note

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

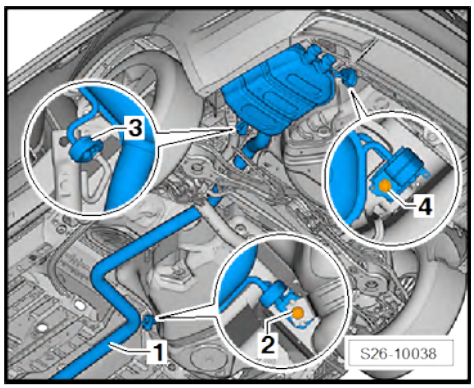
- ⇒ “1.1 Assembly overview - silencers”, page 552

1.4.2 Removing and installing rear silencer, vehicles with front-wheel drive, engine codes CUPA, CUNA, DJGA

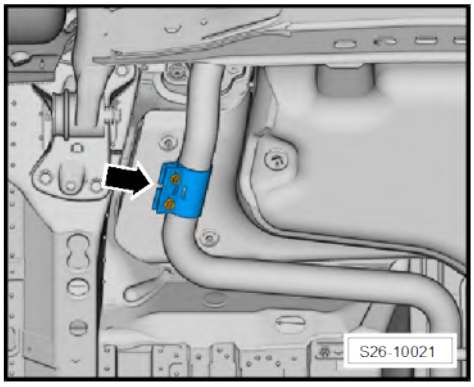
Removing

– Vehicles without separation point: replace middle or rear silencer ⇒ “1.3 Separating exhaust pipes/silencers”, page 567 .

– Vehicles with separation point: unhook suspension -3- from the rear silencer.



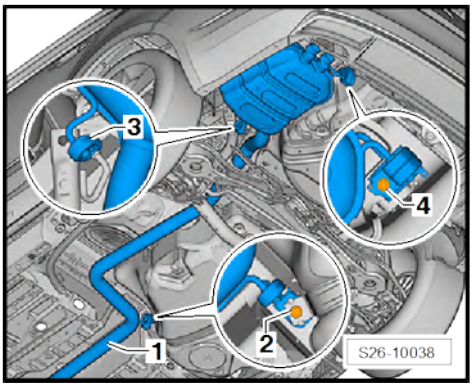
– Loosen clamping sleeve -arrow- and press forwards.



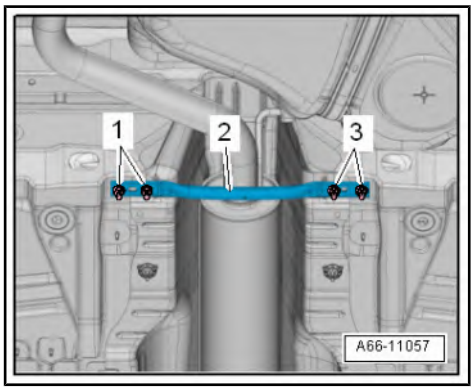
– Screw out screw -4- and remove rear silencer.

If the exhaust pipe must be removed:

– Remove the left rear underfloor trim panel ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels .



– Remove rear tunnel bridge -2-
⇒ “1.1 Assembly overview - silencers”, page 552 .

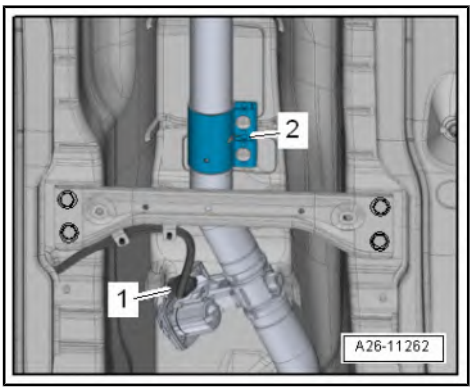


– Loosen the clamping sleeve -2- and slide it forwards.

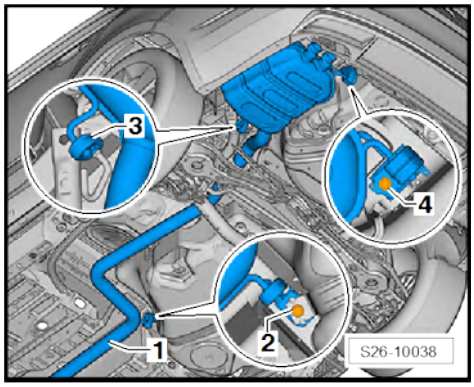
⚠ CAUTION

Risk of accident from weight of the rear silencer.

♦ A second mechanic is required to remove the rear silencer.



– Unscrew screw -2-, remove middle silencer -1-.



Installing

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

– Align exhaust system free of stress
⇒ “1.5 Align exhaust system free of stress”, page 573 .

Tightening torques - summaries of components

Note

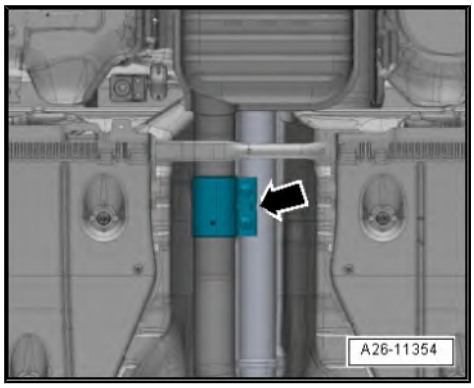
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

◆ ⇒ “1.1 Assembly overview - silencers”, page 552

1.4.3 Removing and installing rear silencer, vehicles with four-wheel drive, engine codes CLHA, CKFC, CRMB, CUNA, CXXB, DDYA, DCYA, DGTE, DJGA, DFFA

Removing

– Loosen clamping sleeve -arrow- and press forwards.



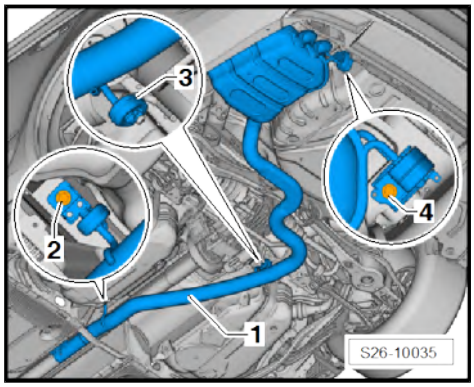
CAUTION

Risk of accident from weight of the rear silencer.

◆ A second mechanic is required to remove the rear silencer.

– Unhook suspension -3- from the rear silencer.

– Remove screws -2- and -4-, remove rear silencer -1-.



Installing

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

– Align exhaust system free of stress
⇒ “1.5 Align exhaust system free of stress”, page 573 .

Tightening torques - summaries of components

Note

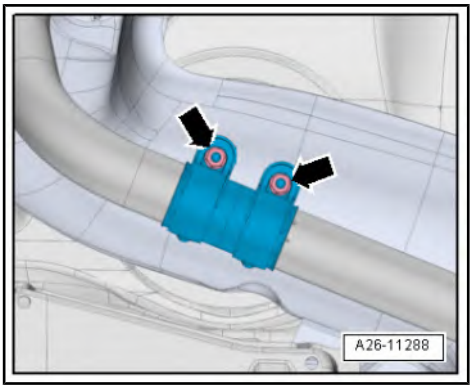
Replace bolts / nuts that are tightened at an angle of rotation, as well as replacement components after removal.

◆ ⇒ “1.1 Assembly overview - silencers”, page 552

1.4.4 Removing and installing rear silencer , engine identification characters CXMA

– Vehicles without separation point: replace middle or rear silencer ⇒ “1.3 Separating exhaust pipes/silencers”, page 567 .

– Vehicles with separation point: loosen clamping sleeve -arrow- and press forwards.

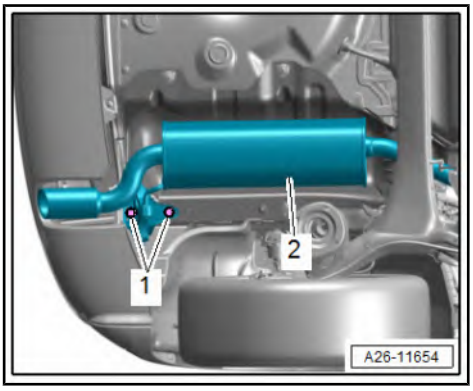


CAUTION

Risk of accident from weight of the rear silencer.

♦ A second mechanic is required to remove the rear silencer.

– Unscrew screws -1- and remove rear silencer -2-.



Installing

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

– Align exhaust system free of stress ⇒ “1.5 Align exhaust system free of stress”, page 573 .

Tightening torques - summaries of components

Note

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

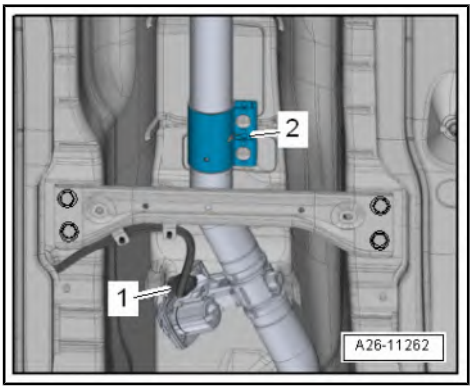
Screw	Tightening torque
Hanger	20 Nm

♦ ⇒ “1.1 Assembly overview - silencers”, page 552

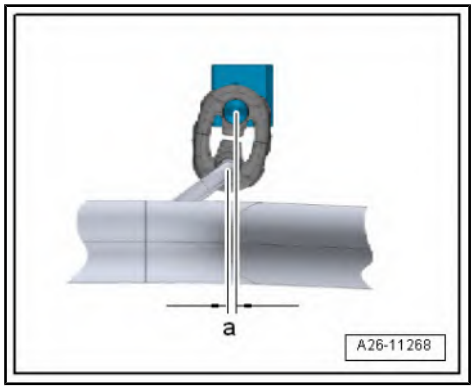
1.5 Align exhaust system free of stress

• The exhaust system is aligned when cold.

– Slacken bolted connections of clamping sleeve -2-.



– Push the rear silencer so far forward until the pre-tensioning on the retaining strap on the exhaust pipe is -a- = 5 mm.



– Installing the clamping sleeve
⇒ “1.7 Installation position of clamping sleeve”, page 574 .

– Tighten bolted connections of clamping sleeve evenly.

Tightening torques - summaries of components

Note

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

◆ ⇒ “1.1 Assembly overview - silencers”, page 552

1.6 Inspecting the exhaust system for leaks

– Start engine and run in idle.

– Close off exhaust pipes for the duration of the leak test, e.g. with cloths or plugs.

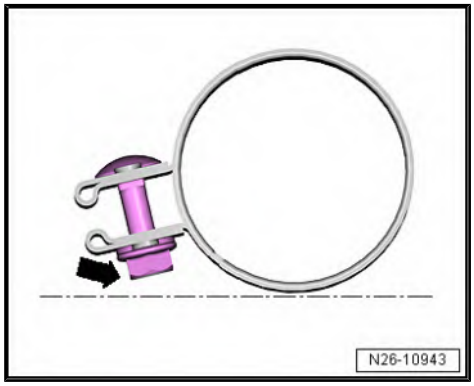
– Check all connection points for tightness by listening: exhaust manifold to cylinder head, turbocharger to pre-exhaust pipe, etc.

– Eliminate any leak found.

1.7 Installation position of clamping sleeve

Installation position of clamping sleeve

– Install clamping sleeve in the position shown.

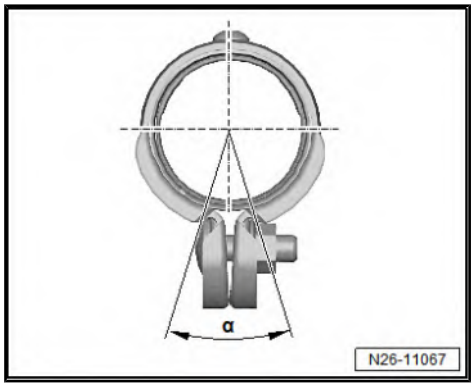


- The screw connection points in the direction of travel to the right.
- The bolted connection -arrow- must not protrude beyond the bottom edge of the clamping sleeve.
- Pay attention to the fitting position of the screw clamp The clamp must not rest against components.

For vehicles Rapid

Rear and front installation position of clamping plate

– Install clamping sleeve in the position shown.



- Angle -α- = approximately 15°.
- Threaded connection faces downwards.

Continuation for all vehicles

Installation dimension for vehicles with marking on the exhaust pipe.

1 - Clamping sleeve

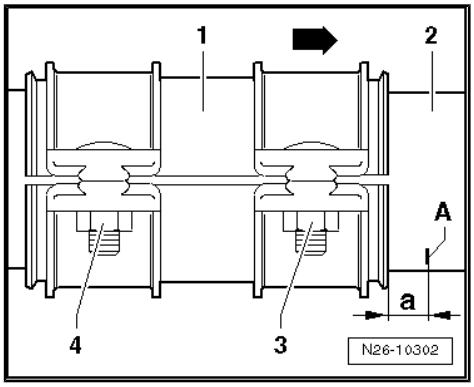
2 - Exhaust pipe

a - Installation dimension

A - Marking on the exhaust system

Installation dimension -a- for the clamping sleeve:

a - 8.5 mm

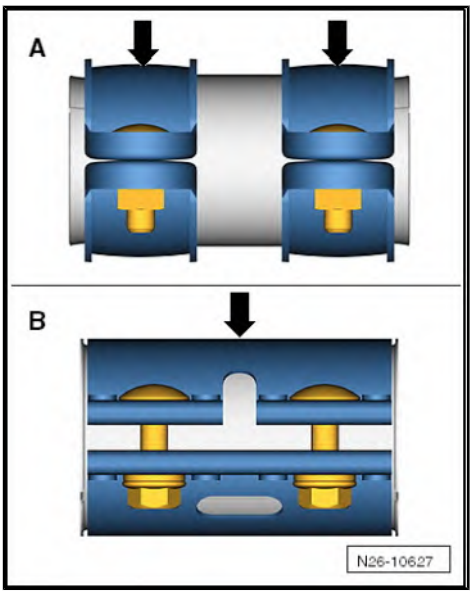


Tightening torque of clamping sleeve

Varianta A - 25 Nm

Varianta B - 30 Nm

Tighten screwed connections uniformly.

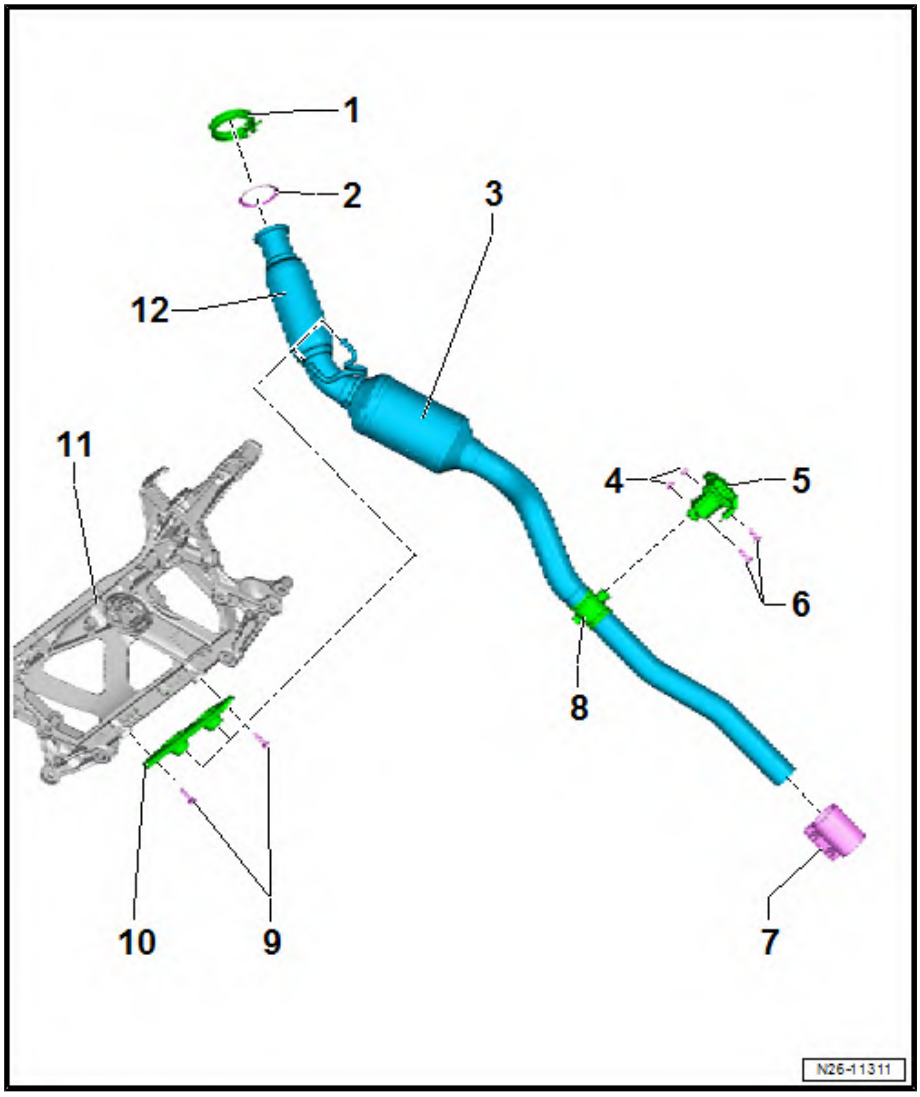


1.8 Summary of components - pre-exhaust pipe

⇒ “1.8.1 Summary of components - pre-exhaust pipe”, page 575

⇒ “1.8.2 Overview of components - exhaust front pipe, vehicles with NOx encoder 2 G687 ”, page 577

1.8.1 Summary of components - pre-exhaust pipe



1 - Screw clamp

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm
- ❑ For allocation, see ⇒ Electronic Catalogue of Original Parts

2 - Seal

- ❑ Replace after disassembly
- ❑ Note installation position ⇒ page 577

3 - Catalytic converter

- ❑ Not installed in all vehicles

4 - Nut

- ❑ Not installed in all vehicles

5 - Exhaust flap control unit - J883-

- ❑ Removing and installing ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610
- ❑ Not installed in all vehicles

6 - Screw

- ❑ 10 Nm
- ❑ Not installed in all vehicles

7 - Clamping sleeve

- ❑ before tightening, align exhaust system free of stress ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position ⇒ “1.7 Installation position of clamping sleeve”, page 574
- ❑ Tighten screwed connections uniformly ⇒ page 575

8 - Exhaust flap

- ❑ Not installed in all vehicles

9 - Screw

- ❑ 20 Nm

10 - Mounting bracket

- ❑ replace if damaged

11 - Assembly carrier

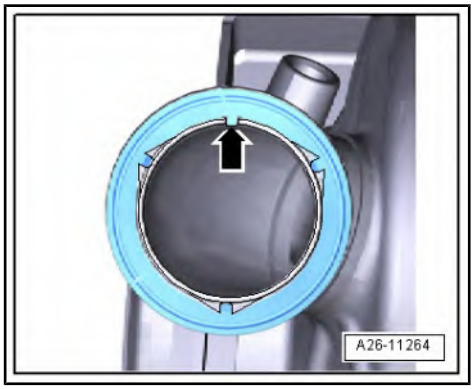
- ❑ Design may differ ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier, Summary of components - Assembly carrier

12 - Exhaust pipe

- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564

Installation position of gasket between exhaust gas cleaning module and pre-exhaust pipe

- The square tab of the seal -Arrow- is not present on all vehicles.
- The square tab of the seal -Arrow-, if available, must be in the groove of the emission control module or the catalytic converter.



1.8.2 Overview of components - exhaust front pipe, vehicles with NOx encoder 2 - G687-

Note

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

1 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Note the fitting position; the clamp must not rest against components.
- ❑ 7 Nm
- ❑ For assignment, see ⇒ ETKA - Electronic Catalogue of Original Parts.

2 - Seal

- ❑ Replace after disassembly
- ❑ Check fitting position ⇒ page 578

3 - Exhaust pipe

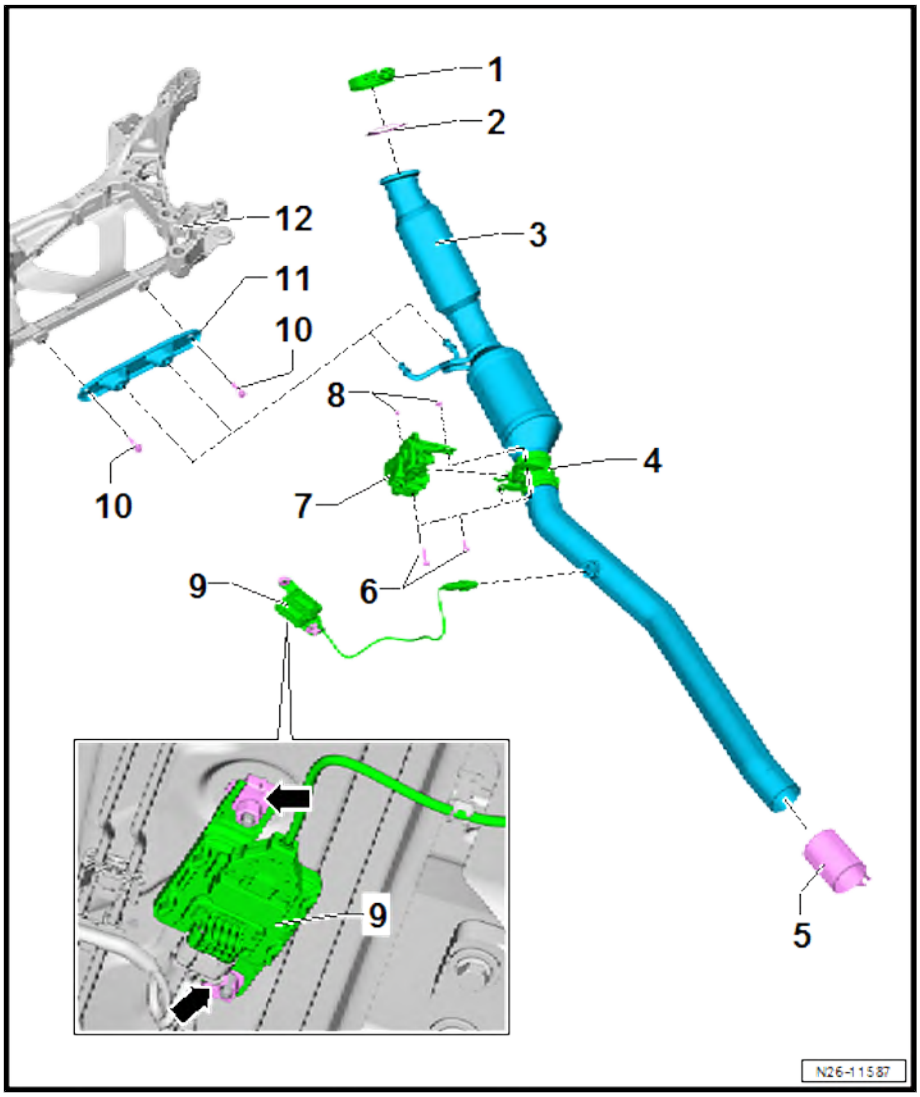
- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564

4 - Exhaust flap

- ❑ Removing and installing ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

5 - Front clamping sleeve

- ❑ before tightening, align exhaust system free of stress ⇒ “1.5 Align exhaust system free of stress”, page 573
- ❑ Fitting position



⇒ “1.7 Installation position of clamping sleeve”, page 574

- ❑ Tighten screwed connections uniformly ⇒ page 575

6 - Screw

- ❑ 10 Nm
- ❑ Not installed in all vehicles

7 - Exhaust flap control unit - J883-

- ❑ Removing and installing ⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610
- ❑ Not installed in all vehicles

8 - Nut

- ❑ Not installed in all vehicles

9 - NOx encoder 2 - G687- / Control unit for NOx encoder 2 - J881-

- ❑ Removing and installing ⇒ “6.8.1 Removing and installing NOx encoder 2 G687 , Octavia III”, page 517
- ❑ Not installed in all vehicles
- ❑ Replace holder -arrows- after removal
- ❑ NOx sensor 2 - G687- on front exhaust pipe 52 Nm

10 - Screw

- ❑ 20 Nm

11 - Mounting bracket

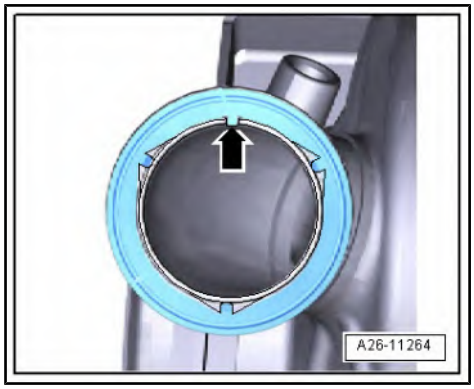
- ❑ replace if damaged

12 - Assembly carrier

- ❑ Design may differ ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier, Summary of components - Assembly carrier

Installation position of gasket between exhaust gas cleaning system and pre-exhaust pipe

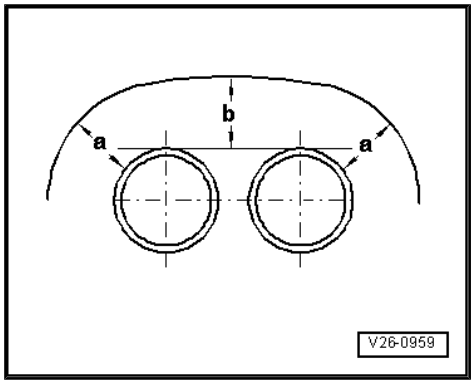
- The square tab of the seal -Arrow- is not present on all vehicles.
- The square tab of the seal -Arrow-, if available, must be in the groove of the emission control module or the catalytic converter.



1.9 Align exhaust tailpipes

– Align rear silencer in such a way that there is an equal distance -a- and -b- between bumper opening and exhaust tailpipes.

– For centring the exhaust tailpipes, if necessary loosen the suspension of the rear silencer.



2 Cleansing exhaust emissions

⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579

⇒ “2.2 Removing and installing catalytic converter”, page 587

⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589

⇒ “2.4 Installing and removing regulated particle filter”, page 605

⇒ “2.5 Removing and installing the exhaust flap control unit J883 ”, page 610

2.1 Summary of components - exhaust gas cleaning

⇒ “2.1.1 Variants of the emission control system, Octavia III”, page 579

⇒ “2.1.2 Summary of components - exhaust gas cleaning, vehicles with exhaust gas cleaning module”, page 580

⇒ “2.1.3 Summary of components - exhaust gas cleaning, vehicles with EU4 emission level”, page 583

⇒ “2.1.4 Overview of components - emission control, vehicles with regulated particulate filter”, page 585

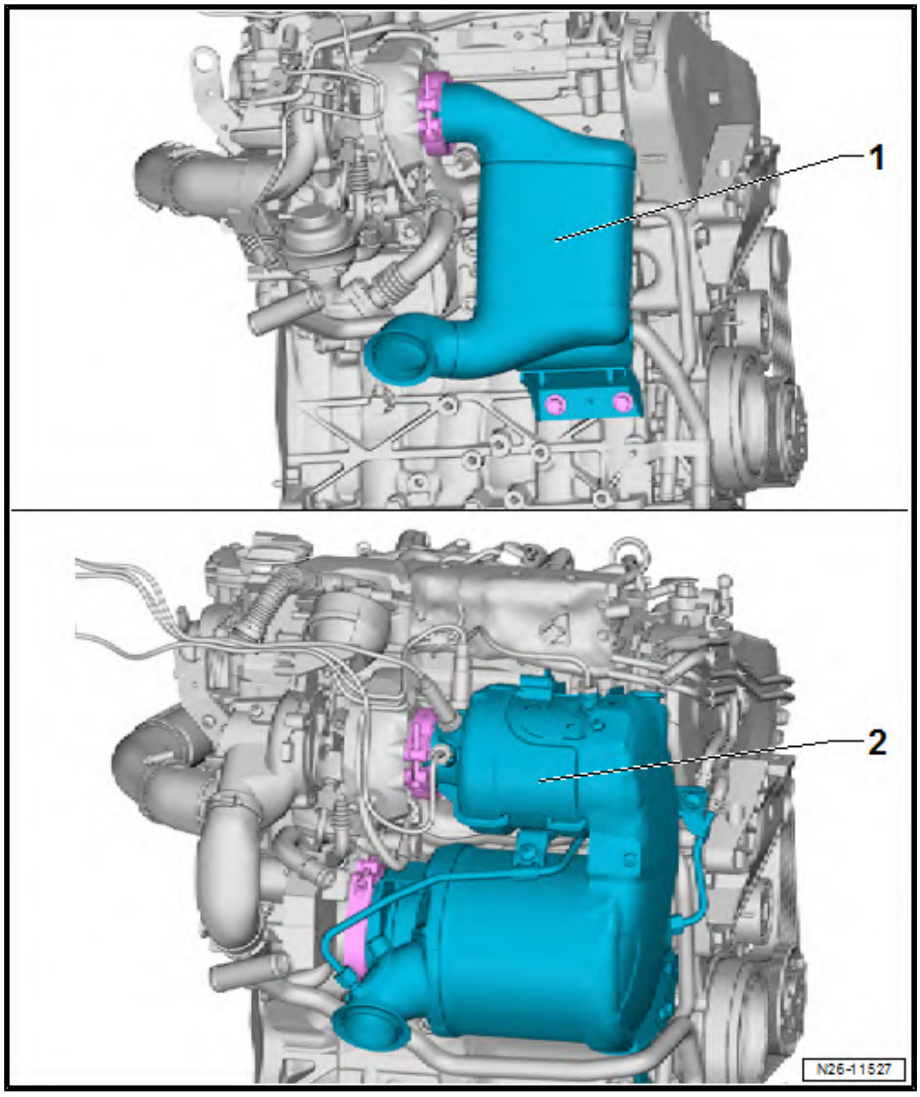
2.1.1 Variants of the emission control system, Octavia III

1 - Particle filter or catalytic converter, vehicles with EU4 emission standard

- ⇒ “2.1.3 Summary of components - exhaust gas cleaning, vehicles with EU4 emission level”, page 583
- ⇒ “2.2 Removing and installing catalytic converter”, page 587

2 - Exhaust gas cleaning module, vehicles with EU5 and EU6 emission level

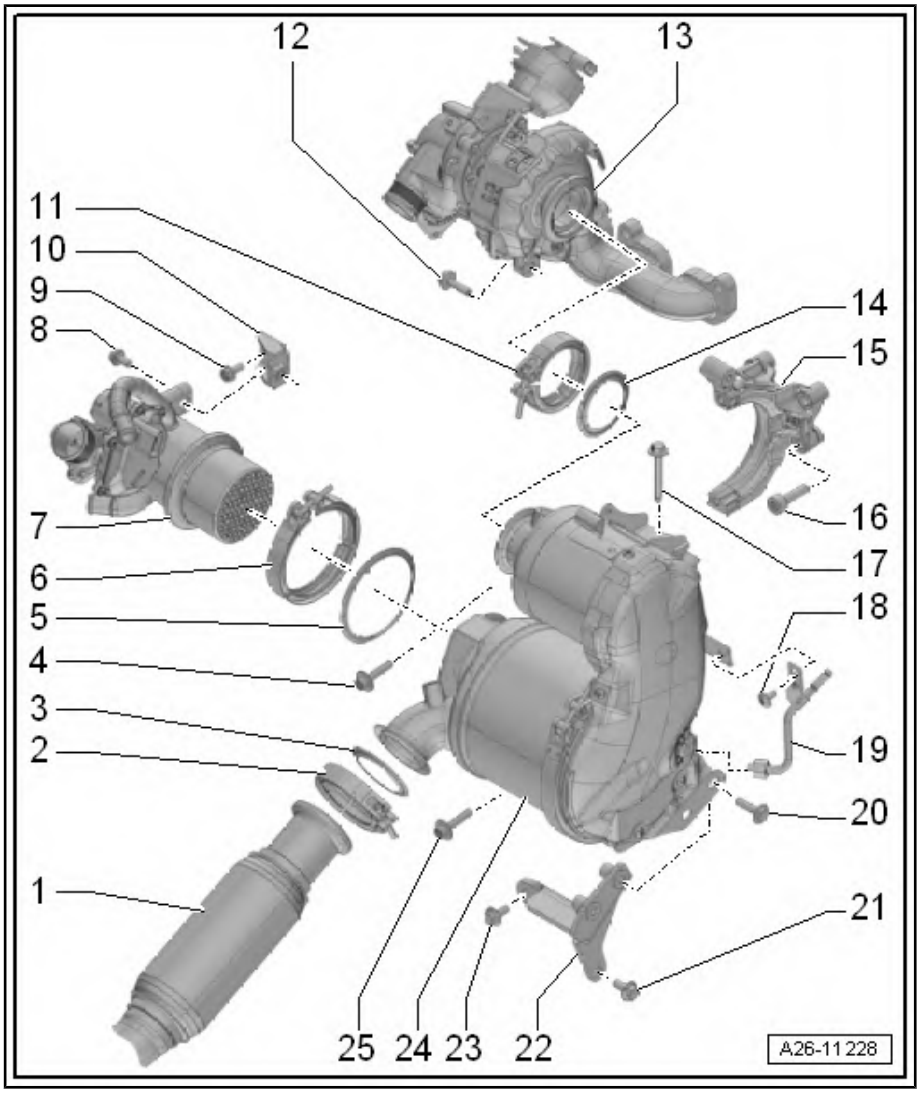
- ⇒ “2.1.2 Summary of components - exhaust gas cleaning, vehicles with exhaust gas cleaning module”, page 580
- ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589



2.1.2 Summary of components - exhaust gas cleaning, vehicles with exhaust gas cleaning module

Note

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



1 - Exhaust pipe

- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573

2 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Fitting position ⇒ “1.1 Assembly overview - silencers”, page 552
- ❑ Tightening torque ⇒ “1.1 Assembly overview - silencers”, page 552

3 - Seal

- ❑ Replace after disassembly
- ❑ Check fitting position ⇒ “1.1 Assembly overview - silencers”, page 552

4 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order:

♦ Octavia III ⇒ page 596

♦ Rapid NH ⇒ page 603

5 - Seal

- ❑ Replace after disassembly

6 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 672

7 - Radiator for exhaust gas recirculation

- ❑ Removing and installing ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680

8 - Screw

- ❑ Tightening torque and tightening order ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

9 - Screw

- ❑ Tightening torque and tightening order ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

10 - Mounting bracket

- ❑ for radiator for exhaust gas recirculation

11 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Fitting position ⇒ page 583

- ❑ Tightening torque and tightening order ⇒ page 596

12 - Screw

- ❑ Tightening torque and tightening order
  ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374

13 - Exhaust gas turbocharger

- ❑ Removing and installing ⇒ “1.2 Removing and installing exhaust gas turbocharger”, page 382

14 - Seal

- ❑ Replace after disassembly
- ❑ put it onto the catalyst

15 - Mounting bracket

- ❑ for exhaust gas cleaning module
- ❑ with balancing element
- ❑ Prepare balancing element for installation:

- ♦ Octavia III ⇒ page 595
- ♦ Rapid NH ⇒ page 602

16 - Screw

Tightening torque and tightening order
⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374

17 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order:

- ♦ Octavia III ⇒ page 596
- ♦ Rapid NH ⇒ page 603

18 - Screw

- ❑ 9 Nm

19 - Measurement pipe

- ❑ to differential pressure transmitter - G505-
- ❑ Union nut tightening torque 45 Nm

20 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order:

- ♦ Octavia III ⇒ page 596
- ♦ Rapid NH ⇒ page 603

21 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 583

22 - Mounting bracket

- ❑ for exhaust gas cleaning module
- ❑ with balancing elements
- ❑ Prepare balancing elements for installation ⇒ page 595

23 - Screw

- ❑ Tightening torque and tightening order ⇒ page 583

24 - Exhaust gas cleaning module

- ❑ Particle filter with catalyser
- ❑ Removing and installing ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589

25 - Screw

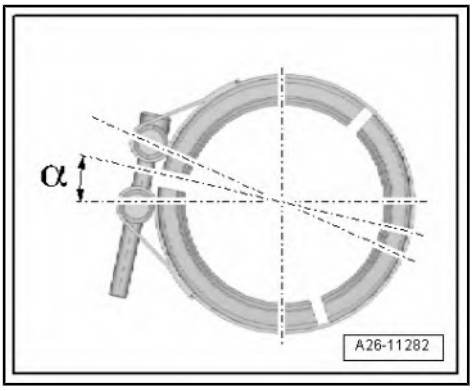
- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order:

♦ Octavia III ⇒ page 596

♦ Rapid NH ⇒ page 603

Installation position of gripper clamp for exhaust gas cleaning module

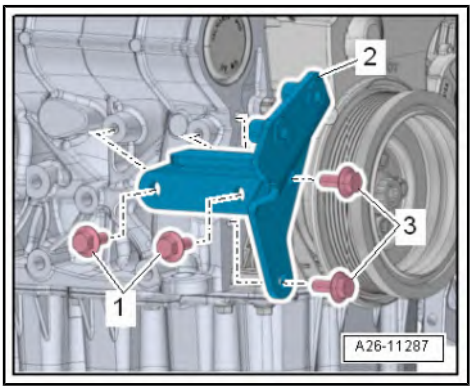
- Angle -α- = 30°.



Bracket -2- for exhaust gas cleaning module - tightening torques and tightening order

– Tighten bolts step by step in the given sequence:

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

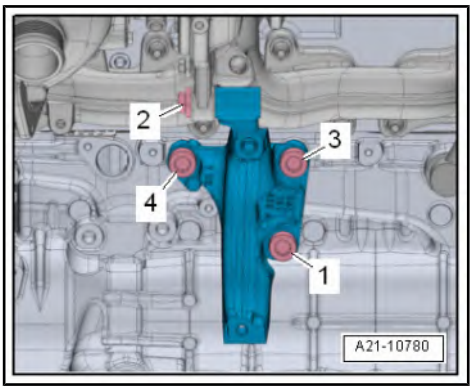


Bracket for exhaust gas cleaning module - tightening torques and tightening order

– Bring bracket to installation position.

– Tighten bolts step by step in the given sequence:

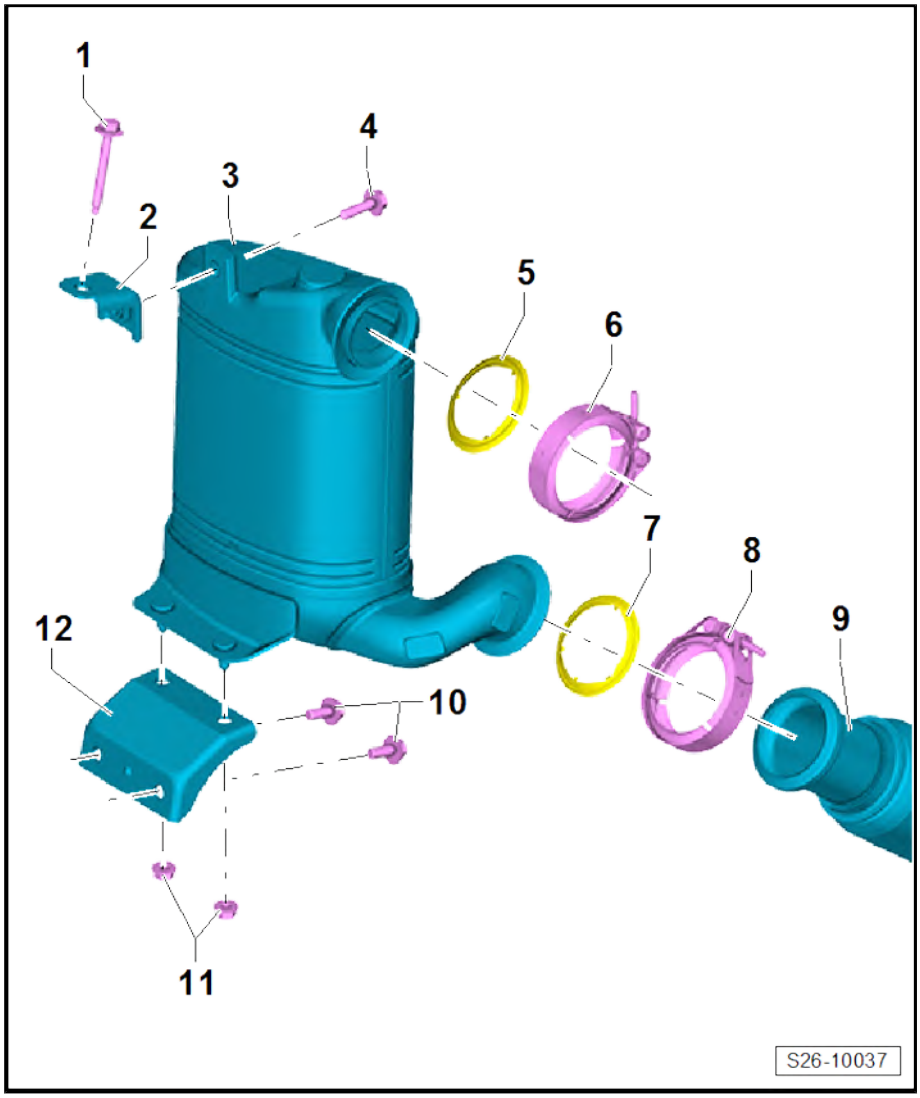
Stage	Bolts	Tightening torque
1.	-1-, -2-, -3-, -4-	by hand as far as the stop
2.	-2-	20 Nm
3.	-1-	40 Nm
4.	-3-, -4-	40 Nm



2.1.3 Summary of components - exhaust gas cleaning, vehicles with EU4 emission level

Note

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



1 - Screw

- ❑ Tightening torque and tightening order ⇒ page 588

2 - Mounting bracket

- ❑ must not be fitted
- ❑ screwed onto the cylinder head
- ❑ Tightening torque and tightening order ⇒ page 588

3 - Catalytic converter/particle filter

- ❑ Country-specific components
- ❑ Removing and installing ⇒ “2.2 Removing and installing catalytic converter”, page 587

4 - Screw

- ❑ Tightening torque and tightening order ⇒ page 588

5 - Seal

- ❑ Replace after disassembly

6 - Clamping sleeve

- ❑ Tightening torque and tightening order ⇒ page 588

7 - Seal

- ❑ Replace after disassembly

8 - Clamping sleeve

- ❑ 7 Nm

9 - Exhaust pipe

- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564
- ❑ Installing the exhaust system without tension ⇒ “1.5 Align exhaust system free of stress”, page 573

10 - Screw

- ❑ Tightening torque and tightening order ⇒ page 588

11 - Nut

- ❑ Tightening torque and tightening order ⇒ page 588

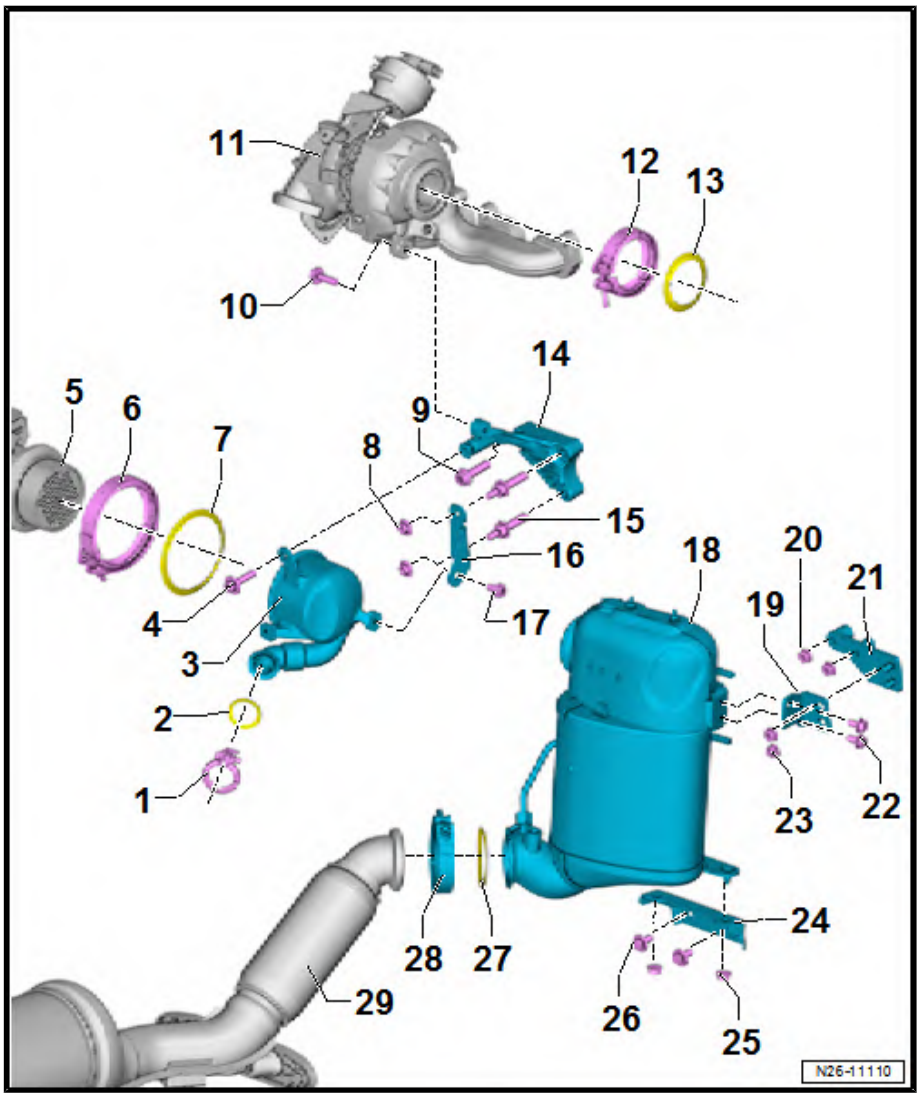
12 - Mounting bracket

- ❑ screwed onto the crankcase
- ❑ Tightening torque and tightening order ⇒ page 588

2.1.4 Overview of components - emission control, vehicles with regulated particulate filter

Note

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



1 - Clamping sleeve

- ❑ Tightening torque and tightening order ⇒ “2.4 Installing and removing regulated particle filter”, page 605

2 - Seal

- ❑ Replace after disassembly

3 - Filter for exhaust gas recirculation

4 - Screw

- ❑ Tightening torque and tightening order ⇒ “2.4 Installing and removing regulated particle filter”, page 605

5 - Radiator for exhaust gas recirculation

- ❑ Removing and installing ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680

6 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ 7 Nm

7 - Seal

- ❑ Replace after disassembly

8 - Nut

- ❑ 20 Nm

9 - Screw

- ❑ Tightening torque and tightening order ⇒ page 587

10 - Screw

- ❑ Tightening torque and tightening order ⇒ page 587

11 - Exhaust gas turbocharger

- ❑ Removing and installing ⇒ “1.2 Removing and installing exhaust gas turbocharger”, page 382

12 - Clamping sleeve

- ❑ Tightening torque and tightening order ⇒ “2.4 Installing and removing regulated particle filter”, page 605

13 - Seal

- ❑ Replace after disassembly

14 - Mounting bracket

- ❑ Filter for exhaust gas recirculation
- ❑ screwed onto the crankcase
- ❑ Tightening torque and tightening order ⇒ page 587

15 - Screw

- ❑ Tightening torque and tightening order ⇒ page 587

16 - Mounting bracket

- ❑ Tightening torque and tightening order
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605

17 - Screw

- ❑ Tightening torque and tightening order
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605

18 - Regulated particulate filter

- ❑ Removing and installing ⇒ “2.4 Installing and removing regulated particle filter”, page 605

19 - Mounting bracket

20 - Nut

- ❑ 20 Nm

21 - Mounting bracket

22 - Screw

- ❑ Tightening torque and tightening order
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605

23 - Nut

- ❑ Tightening torque and tightening order
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605

24 - Mounting bracket

25 - Nut

- ❑ Tightening torque and tightening order
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605

26 - Screw

- ❑ Tightening torque and tightening order
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605

27 - Seal

- ❑ Replace after disassembly

28 - Clamping sleeve

- ❑ Tightening torque and tightening order
  ⇒ “2.4 Installing and removing regulated particle filter”, page 605

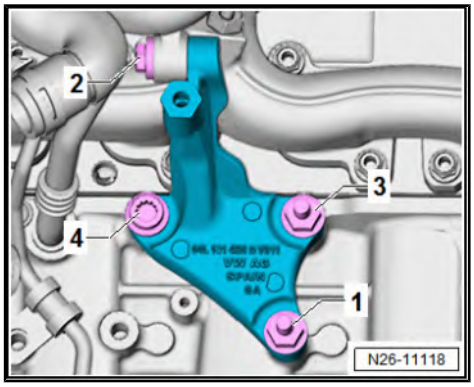
29 - Exhaust pipe

- ❑ with catalytic converter
- ❑ Removing and installing ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564

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.

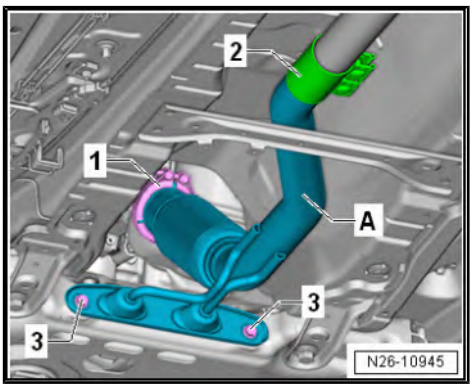
Removing

– 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.

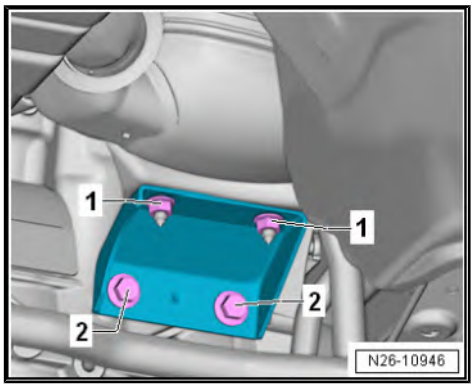
– Open clamp -1- and remove.

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

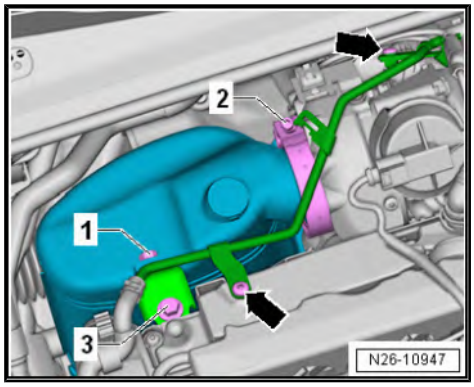


– Unscrew the fixing nuts -1-, undo the screws -2- by a quarter turn.

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



– If installed, unscrew the screws -arrows- of the coolant line and pull the coolant line forwards slightly.
– Unscrew screws -1- and -3-, open and remove the clamp -2-.
– Carefully remove the catalytic converter upwards.



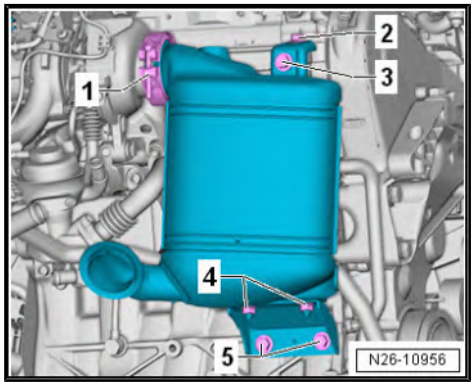
Installation

Note

- *Replace self-locking nuts and screws as well as sealing rings, gaskets and O-rings after disassembly.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Fit all cable straps on again in the same place when installing.*

– Position the new seal onto the centring stud of the flared opening on the catalytic converter and slide the new clamp over the flared opening.
– Place the catalytic converter into position from the top and, using the pin bolts, tighten into the bottom mounting bracket.
– For further tightening sequence, see the following table ⇒ page 588

Tightening torques and tightening sequence, catalytic converter



Stage	Component	Measure
I	Clamping sleeve -1-:	Position via the sealing flange, secure screw
II	Screws -2- and -3-	Tighten until hand-tight and immediately loosen by 90°
III	Clamping sleeve -1-:	tighten to 8 Nm
IV	Nut -4-	tighten to 20 Nm
V	Screws -5-	tighten to 20 Nm
VI	Screw -2-	tighten to 20 Nm, turn a further 90°, then tighten another 45°
VII	Screw -3-	tighten to 20 Nm

Further installation occurs in reverse order.

2.3 Removing and installing exhaust gas cleaning module

⇒ “2.3.1 Removing and installing exhaust gas cleaning module, Octavia III”, page 589

⇒ “2.3.2 Removing and installing exhaust gas cleaning module, Rapid NH”, page 598

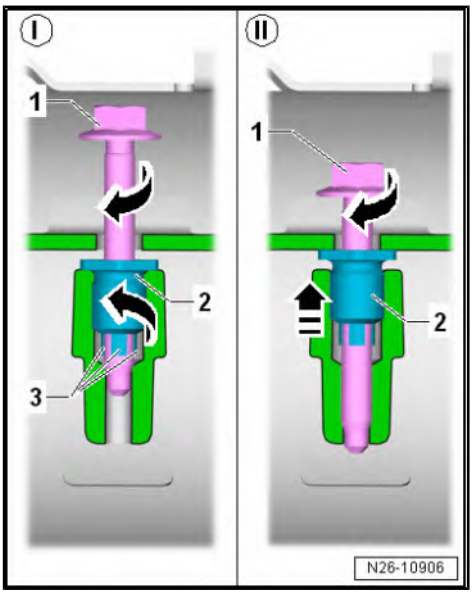
2.3.1 Removing and installing exhaust gas cleaning module, Octavia III

For vehicles with EU5 and EU6 emission level

Note

The exhaust gas cleaning module is attached to the engine with 4 balancing elements among other items. These balancing elements have a left-hand thread on the outside. When screwed on, screw -1- initially moves the balancing element -2- as a result of the friction at the straps -3-. The balancing element moves across the screw head against the left-hand thread, despite the fact that the screw is rotating in the anticlockwise direction, thus compensating for the clearance between the components. It must be possible to freely rotate the balancing element with its left-hand thread, otherwise the straps do not create the friction at the screw that is needed to move the balancing element. To avoid reducing the friction, there should be no lubricant on the straps.

Function of the balancing element



Special tools and workshop equipment required

- Socket insert SW 8 - 3247-
- Assembly device - T10511-
- Calibration device - T10512-

Removing

– Remove the assembly carrier with steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering gear .

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

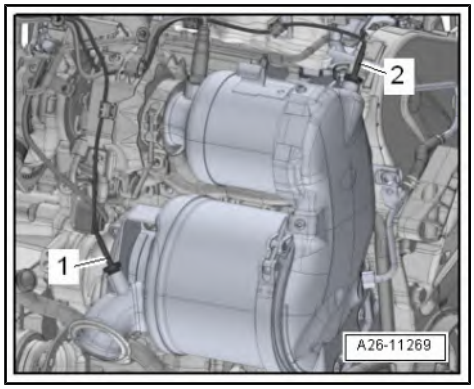
– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .

– Remove rear coolant pipe
⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

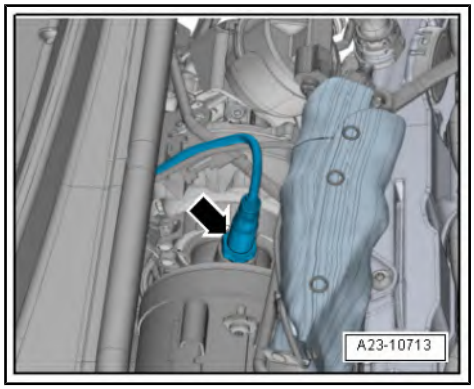
– Remove radiator for exhaust gas recirculation
⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

For vehicles with engine identification characters CLHA, CLHB, CKFB, CKFC, CUPA, CYKA

– Remove exhaust gas temperature sender -1- and -2-
⇒ “4.1.1 Summary of components - exhaust temperature regulation, Octavia III, Rapid NH”, page 647 .



– Remove lambda probe 1 upstream of catalytic converter - GX10-
⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647 .

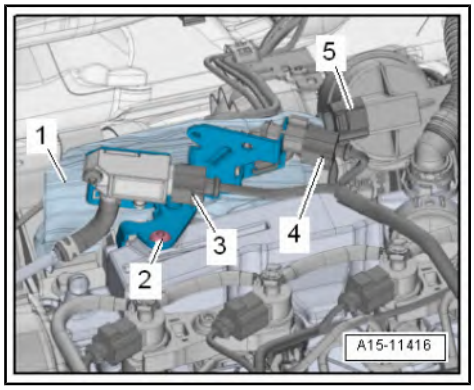


– Open heat protection sleeve -1-.

– Take electrical plug connection-4 - out of the bracket, disconnect and expose electric cable.

– Disconnect electrical plug connections -3- and -5- and move electric wiring harness clear.

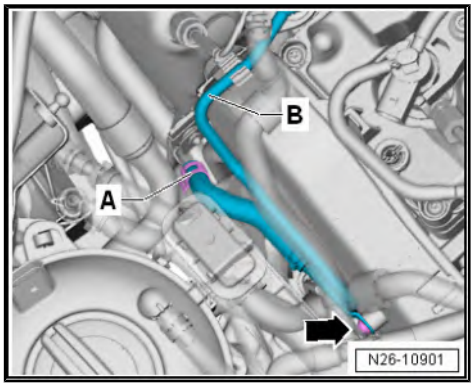
– Unscrew screw -2-, lay bracket with differential pressure transmitter - G505- to the rear.



– Unscrew screw -arrow-.

– Open clamp -A-, pull out hose, unclip pipeline -B- and remove with the differential pressure transmitter - G505- .

For vehicles with engine codes CRKB, CRMB, CUNA, CXXA, CXXB, DBKA, DDYB, DDYA, DCYA, DGTE, DFFA, DJGA



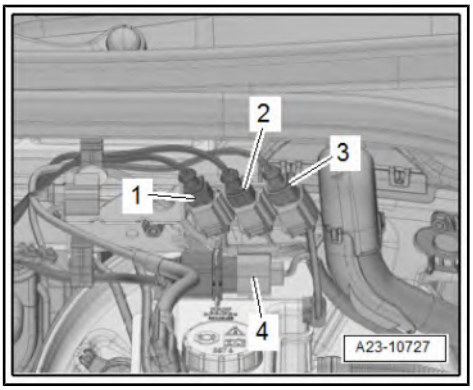
– Disconnect electrical plug connections and lay the electric cables to one side:

1 - Exhaust gas temperature transmitter 4 - G648-

2 - Exhaust gas temperature transmitter 3 - G495-

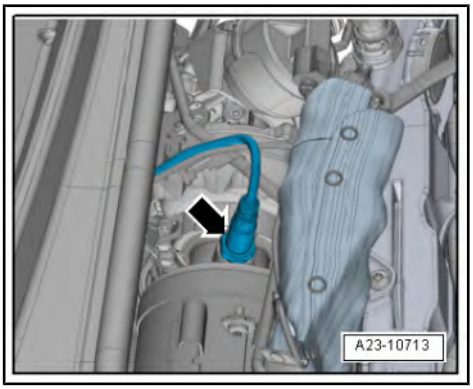
3 - Exhaust gas temperature transmitter 2 - G448-

– Remove exhaust gas temperature sender - G648- and -G495- -G448- ⇒ “4 Exhaust temperature regulation”, page 647 .

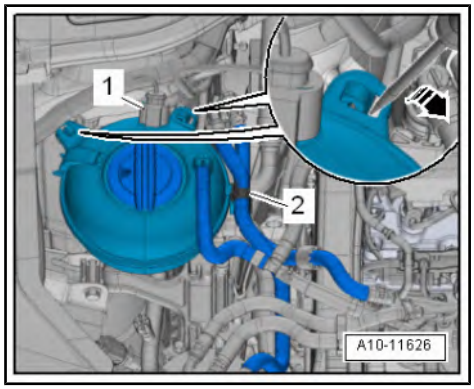


– Remove lambda probe 1 upstream of catalytic converter - GX10-
⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647 .

– Remove lambda probe 1 downstream of catalytic converter - GX7-
⇒ “9.2.3 Removing and installing lambda probe 1 after catalytic converter GX7 , Octavia III, Yeti”, page 547 .



– Unlock locks using a screwdriver -arrow- and lay coolant expansion tank to the side.



Vehicles with SCR system

– Remove NOx sender control unit - GX30- on exhaust gas cleaning module
⇒ “6.11 Removing and installing NOx transmitter control unit GX30 ”, page 520 .

– Remove injection valve for reduction agent - N474- from exhaust gas cleaning module and place to the side with connected cables
⇒ “3.7.1 Removing and installing the injection valve for reduction agent N474 , Octavia III”, page 636 .

Vehicles with Differential pressure encoder - G505-

– Remove the differential pressure encoder - G505- from the cylinder head cover
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

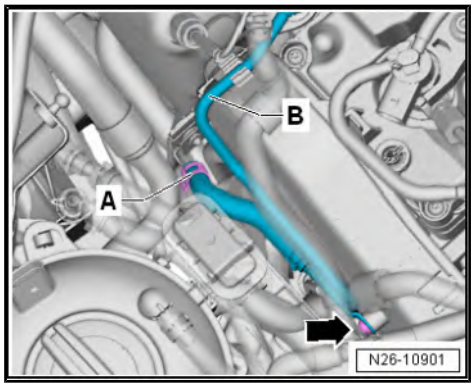
Vehicles with differential pressure encoder - G505- and with pressure sensor 1 for exhaust gas - G450-

– Remove the differential pressure transmitter - G505- and pressure sensor 1 for exhaust gas - G450- from the cylinder head cover
⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510 .

Vehicles with differential pressure line

– Open the clamp -A- and detach the hose.

– Unclip pipeline -B- and remove the differential pressure encoder - G505-



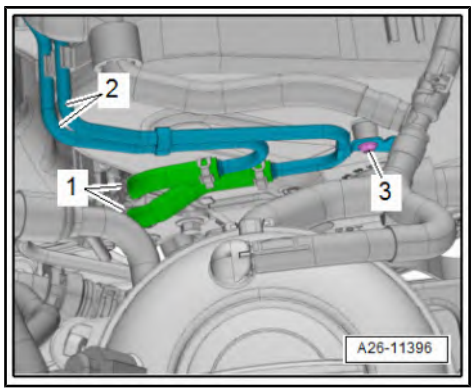
Vehicles with two differential pressure lines

– Unscrew bolt -3-.

– Mark the installation position and assignment of the hoses to the pipes.

– Loosen hose clamps -1-, remove hoses.

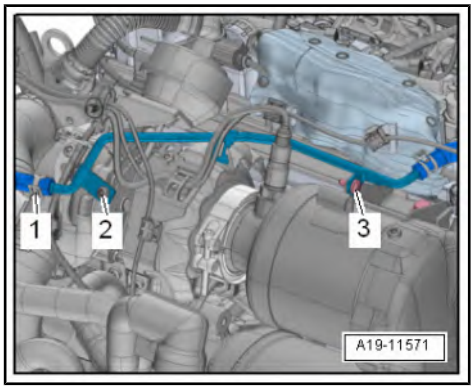
– Press out pipeline -2- and remove the differential pressure transmitter.



Continued for all vehicles

– Open hose clamp -1-, remove coolant hose.
– Unscrew screws -2- and -3- and swivel coolant line to the side.

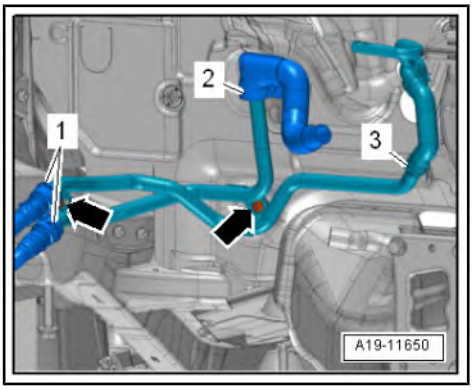
Vehicles fitted with auxiliary heating



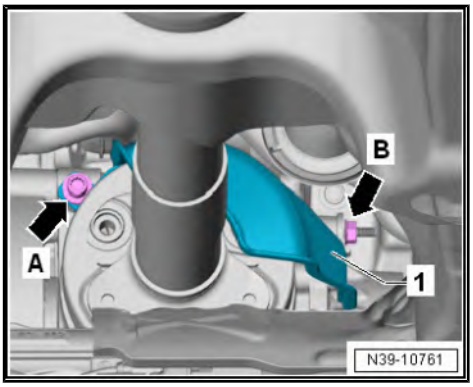
– Raise holding clamps -1- and undo hose clamp -3-, remove coolant hoses.
– Unscrew nuts -arrows- and remove coolant pipes.

Vehicles with four-wheel drive

– Unscrew right drive shaft from angle gearbox ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Summary of components - drive shaft and tie up to rear.



– Unscrew screws -arrows- and remove heat shield -1-.
– For reassembly, mark the position of the flexible joint and the angle gearbox flange.
– Unscrew the propshaft from the angle gearbox -arrows-, while counterholding with a lever on the triangular flange.

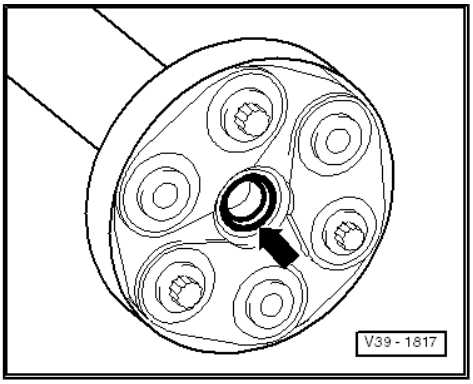


– Push engine/gearbox assembly slightly forward (towards the front of the body) and then pull off the propshaft from the angle gearbox.

NOTICE

Risk of damage to the sealing ring -arrow- in the flange of the propshaft.

Push propshaft horizontally as far back and towards the left vehicle side as possible.



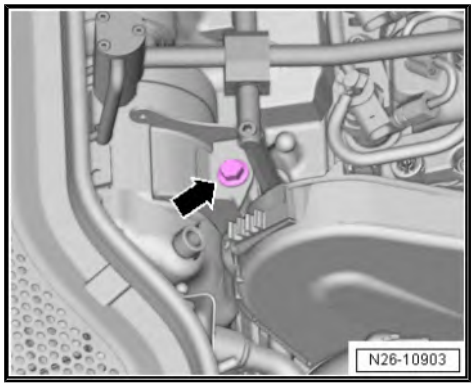
Note

In case of damaged sealing ring the propshaft must be replaced.

– Tie up propshaft towards the left vehicle side.

Continued for all vehicles

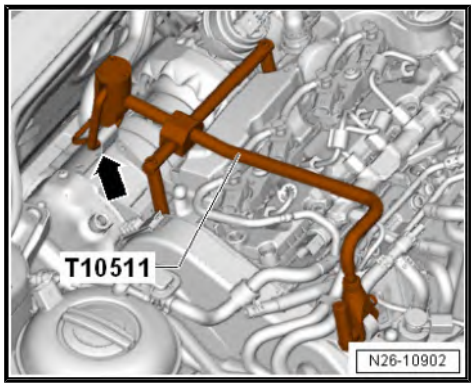
– Unscrew screw -arrow-.



Note

The feet of the assembly aid - T10511- are supported on the screw heads of the cylinder head cover.

– Place assembly aid - T10511- as shown, suspend retaining bracket -arrow- in the suspension catch of the exhaust gas cleaning module.



– Open clamp -1- and position it on the flared opening of the exhaust gas cleaning module.

– Unscrew the remaining screws in the order -4- … -2-.

Right-hand drive

– Push engine forwards with the assistance of a second mechanic.

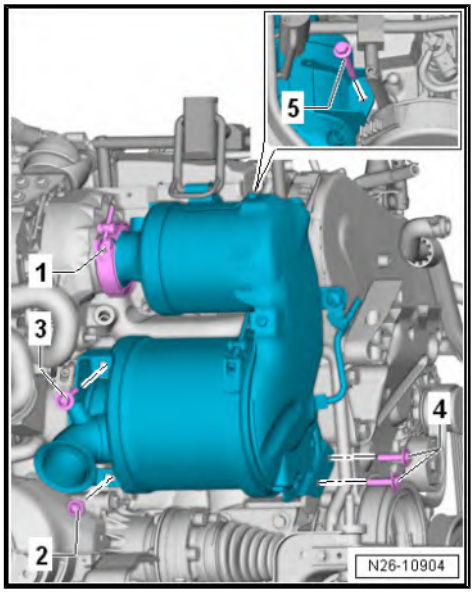
Continued for all vehicles

– Swivel the exhaust gas cleaning module downwards away from the engine and push it upwards.

– Pull retaining bracket out of the suspension catch of the exhaust gas cleaning module and remove the exhaust gas cleaning module downwards.

Installing

• Assembly aid - T10511- positioned on engine



Note

♦ *Ensure that the retaining bracket of the assembly aid - T10511- pivoted in the front wall direction is - »open«-.*

♦ *Replace seals, self-locking nuts and gripper clamp for exhaust gas cleaning module.*

♦ *Fit all cable straps and heat protection sleeves back in the same places when re-installing.*

NOTICE

Risk of stress fractures and engine damage caused by the built-in exhaust gas cleaning module being under tension.

♦ **Before installation, ensure that these balancing elements are not stiff or tight.**

♦ **The balancing element must turn freely in the thread.**

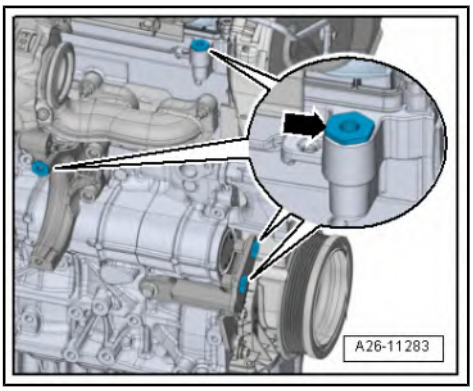
♦ **Lubricant must only be applied to the thread - the retaining straps must remain »clean«.**

♦ **The screw retaining straps must be bent far enough together for the balancing element to be moved when the screw is screwed in.**

– Check for and ensure the balancing elements move freely -arrow-.

– Fully unscrew balancing elements in the clockwise direction (left-hand thread).

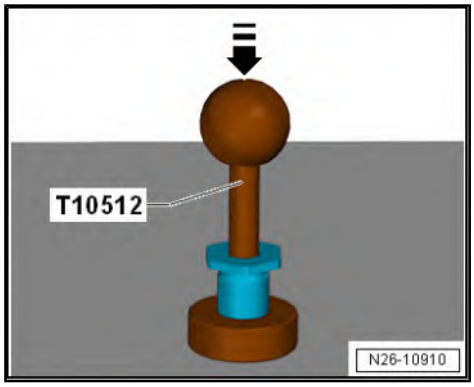
– Clean stiff threads and moisten them with rust dissolver if necessary.



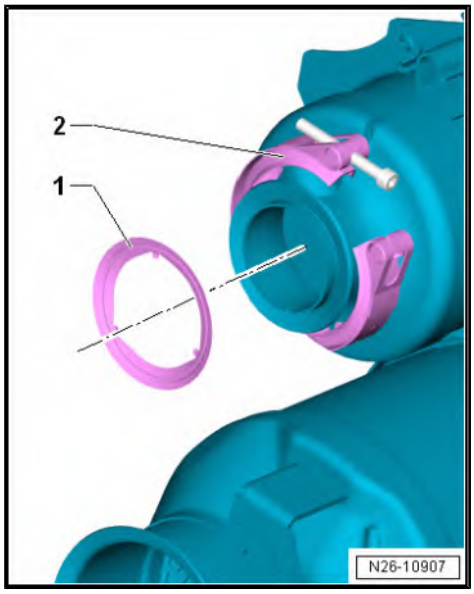
NOTICE

The retaining straps of the balancing elements must not be moistened with lubricant of any kind. Reducing the friction would impair the function of the balancing element.

– Bring retaining straps to the functional dimension using the calibration tool - T10512- as follows.
– Slide the balancing element onto the firing pin, insert into the centring sleeve and turn the retaining straps back by striking the ball stud lightly using the palm of your hand.
– Screw balancing elements in fully by hand and unscrew again by 45°.



– Disconnect the gasket -1- at the exhaust gas cleaning module.
– Unhook clamp screw and lay clamp -2- entirety on the flared opening of the exhaust gas cleaning module. Do not bend clamp



Right-hand drive

– Push engine forwards with the assistance of a second mechanic.

Continued for all vehicles

– Guide exhaust cleaning module to the installation position from below, push it up and hook the bracket in the suspension catch of the exhaust gas cleaning module.

The exhaust gas cleaning module is now suspended in weight-neutral manner in the approximate installation position.

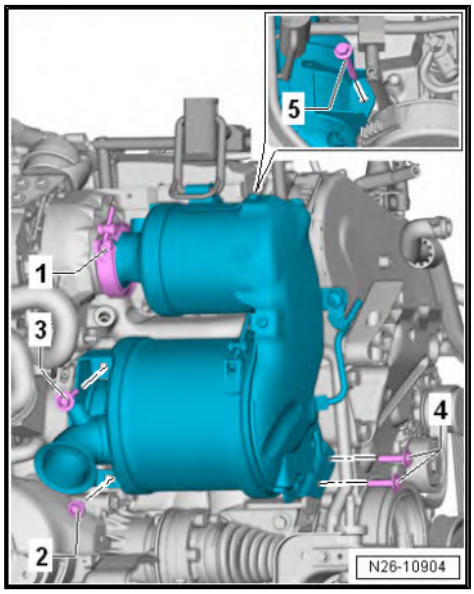
Note

Replace all fixing screws of the exhaust gas cleaning module.

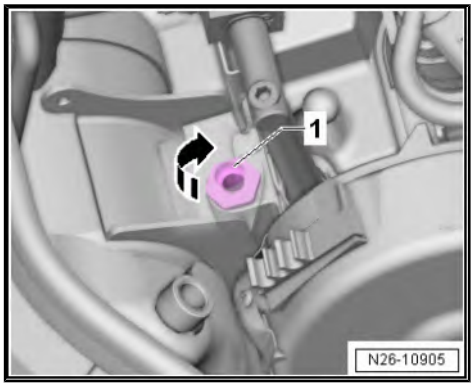
Tightening order for exhaust gas cleaning module

– Replace all fixing screws of the exhaust gas cleaning module after removal.

Stage	Screw	Measure
1.	Clamping sleeve -1-:	Position using the sealing flange and tighten to 3 Nm
2.	Screw -2-	Tighten until hand-tight and immediately loosen by 90°
3.	Clamping sleeve -1-:	tighten to 8 Nm
4.	Screw -2-	tighten to 20 Nm
5.	Screw -3-	insert and lock by pressing, do not tighten or turn screw
6.	Screws -4-	insert and lock by pressing. Tighten screws to 20 Nm
7.	Screw -3-	tighten to 20 Nm

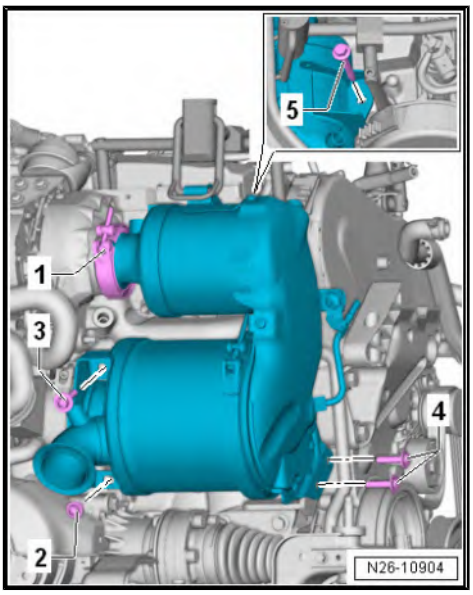


– Unscrew balancing element (left-hand thread) -1- on the cylinder head using socket insert SW 8 - 3247- in -arrow direction- as far as the stop, then rotate a further 90°.



Continued tightening order

Stage	Screw	Measure
8.	Screw -5-	insert and lock by pressing
9.	Screw -5-	tighten to 20 Nm
10.	Screw -5-	Turn 90° further
11.	Screw -5-	turn 45° further



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

Vehicles with four-wheel drive

– Screw propshaft to angle gearbox ⇒ Rear propshaft and final drive; Rep. gr. 39 ; Propshaft; Summary of components - propshaft .

– Screw drive shaft to the angle gearbox on the right ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Summary of components - drive shaft .

Continued for all vehicles

– Install radiator for exhaust gas recirculation ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

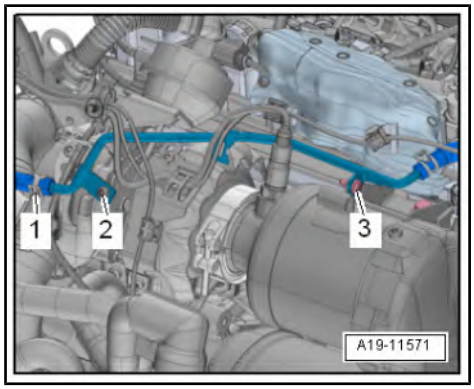
– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

– Install the left coolant pipe ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

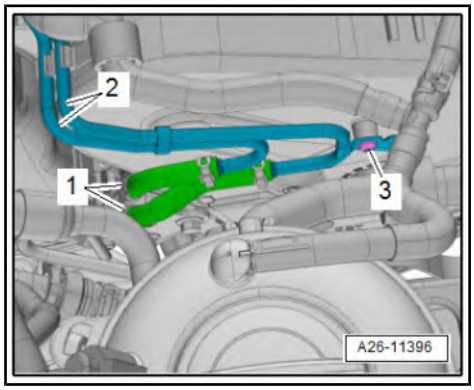
– Install the rear coolant pipe ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

– Install pre-exhaust pipe ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Connect coolant hose, fit hose clamp -1-.
– Screw in screws -2- and -3- and tighten to 10 Nm.



– Connect hoses, fit hose clamps -1-.
– Observe the installation position and assignment of the hoses to the pipes.
– Tighten screw -3-, Pos. -4-
⇒ “2.1 Summary of components - toothed belt guard”, page 140 .
– Screw on bracket for differential pressure transmitter to cylinder head cover, Pos. -5-
⇒ “1.2 Assembly overview - cylinder head cover”, page 104 .
– Install assembly carrier ⇒ Running gear, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering box .
– Adjust the learning values after replacing the exhaust gas cleaning module ⇒ Vehicle diagnostic tester.



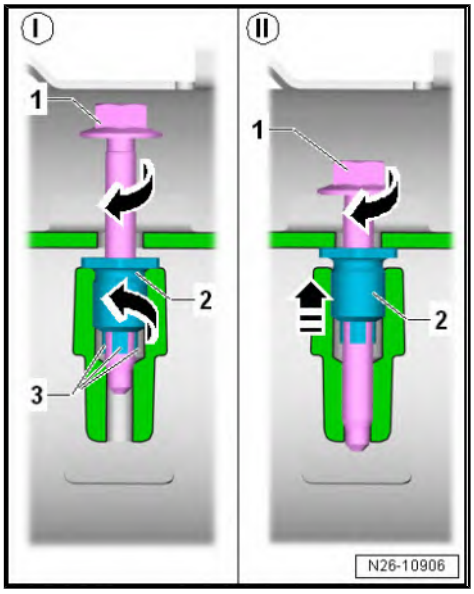
♦ `0001 - Adapt learnt values of particle filter`

2.3.2 Removing and installing exhaust gas cleaning module, Rapid NH

Note

The exhaust gas cleaning module is attached to the engine with 4 balancing elements among other items. These balancing elements have a left-hand thread on the outside. When screwed on, screw -1- initially moves the balancing element -2- as a result of the friction at the straps -3-. The balancing element moves across the screw head against the left-hand thread, despite the fact that the screw is rotating in the anticlockwise direction, thus compensating for the clearance between the components. It must be possible to freely rotate the balancing element with its left-hand thread, otherwise the straps do not create the friction at the screw that is needed to move the balancing element. To avoid reducing the friction, there should be no lubricant on the straps.

Function of the balancing element



Special tools and workshop equipment required

- Socket insert SW 8 - 3247-
- Assembly device - T10511-
- Calibration device - T10512-
- Engine support bracket - T10533-

Removing

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

– Remove the assembly carrier with steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering gear .

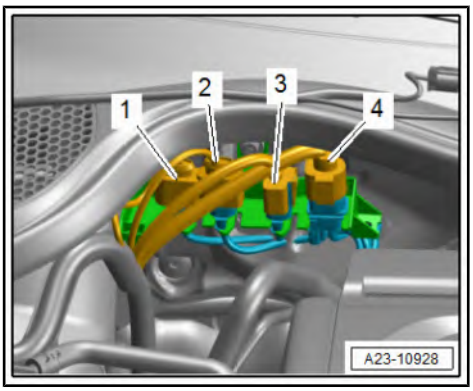
– Remove rear coolant pipe
⇒ “3.2.12 Removing and installing the rear coolant pipe, Rapid NH”, page 331 .

– Remove lambda probe 1 downstream of catalytic converter - GX7-
⇒ “9.2.4 Removing and installing lambda probe 1 after catalytic converter GX7 , Rapid NH”, page 549 .

– Remove radiator for exhaust gas recirculation
⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

– If present, open heat shield collar.

– Remove electrical plug connections from the holder, disconnect and expose electric cables:



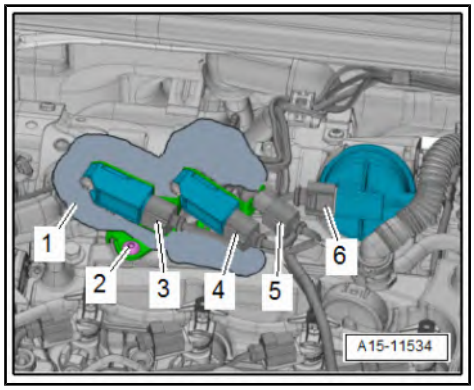
1 - for exhaust gas temperature sender 4 - G648-

2 - for exhaust gas temperature sender 3 - G495-

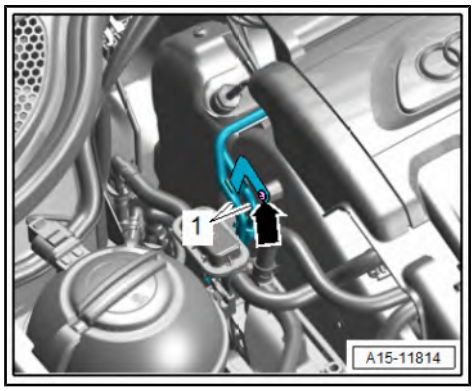
3 - for exhaust gas temperature sender 2 - G448-

4 - for lambda probe 1 upstream of catalytic converter - GX10-

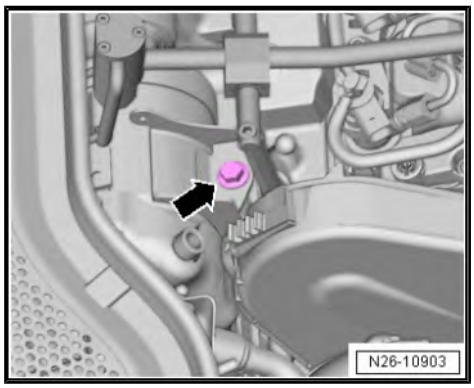
– Open heat protection sleeve -1-.
– Take electrical plug connection -5- out of the holder, disconnect and expose electric cables.
– Disconnect electrical plug connections -3, 4-, expose electric wiring loom.
– Take electric cable for lambda probe 1 - GX10- out of the holder, disconnect and expose electric cable.
– Unscrew screw -2- and place the holder on the cylinder head cover.



– If present, unscrew screw -arrow- and detach measurement pipe -1-.



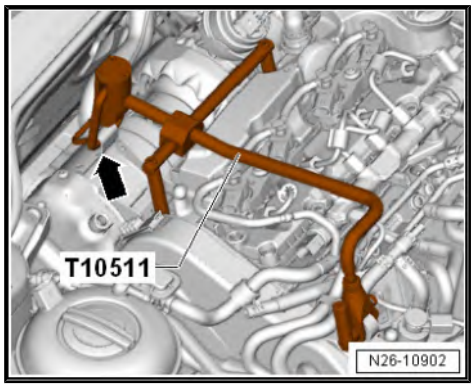
– Unscrew screw -arrow-.



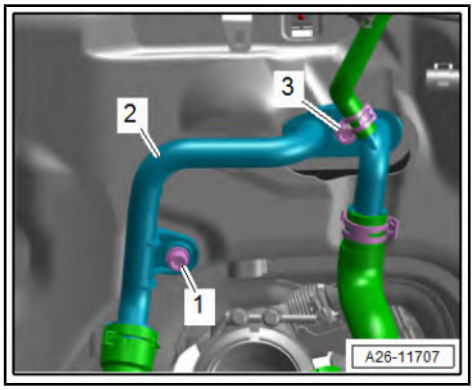
– Remove noise insulation from the injectors.
– Place assembly aid - T10511- as shown, suspend securing bracket -arrow- in the suspension catch of the exhaust gas cleaning module.

Note

The claws of the assembly aid - T10511- rest on the screw heads of the cylinder head cover.



– Unscrew nut -1- and screws -3-, disconnect adapter -2- for coolant hoses from the heat exchanger for heating and put to the side.



– Place the engine support bracket - T10533- as shown and tighten the screw for the engine support bracket hand-tight.

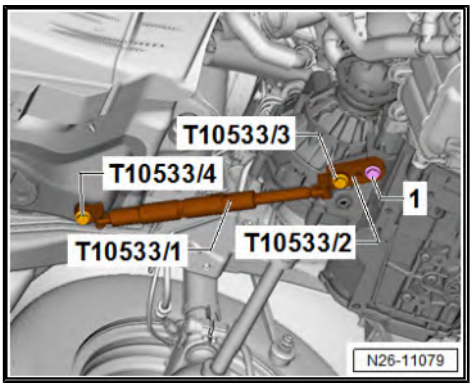
– Also tighten screw -1- for pendulum support hand-tight.

NOTICE

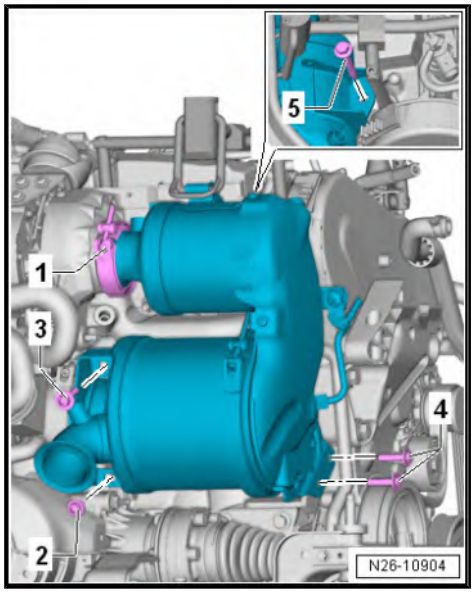
Risk of damage to parts.

♦ **When pressing the engine/gearbox assembly in, there must be no parts pressing again the fan shroud.**

– Push the engine/gearbox assembly as far forward as possible by turning the suspension screw on the engine support bracket - T10533- .



– Open the screw clamp -1- and place on the flared opening of the exhaust gas cleaning module.
– Unscrew the remaining screws in the order -4, 3, 2-.
– Turn the exhaust gas cleaning module downwards from the engine and push it upwards.
– Pull the securing bracket of the suspension catch of the exhaust gas cleaning module and remove the exhaust gas cleaning module downwards.



Installing

- Assembly aid - T10511- positioned on engine

Note

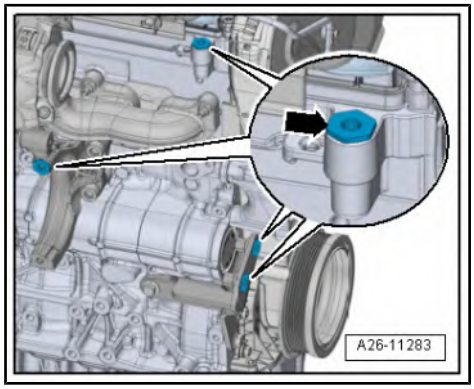
- *Ensure that the retaining bracket of the assembly aid - T10511- pivoted in the front wall direction is - »open«-.*
- *Replace cylinder head bolts and screws which have been tightened to a torquing angle.*
- *Replace seals, self-locking nuts and gripper clamp for exhaust gas cleaning module.*
- *Fit all cable straps and heat protection sleeves back in the same places when re-installing.*

NOTICE

Risk of stress fractures and engine damage caused by the built-in exhaust gas cleaning module being under tension.

- **Before installation, ensure that these balancing elements are not stiff or tight.**
- **The balancing element must turn freely in the thread.**
- **Lubricant must only be applied to the thread - the retaining straps must remain »clean«.**
- **The screw retaining straps must be bent far enough together for the balancing element to be moved when the screw is screwed in.**

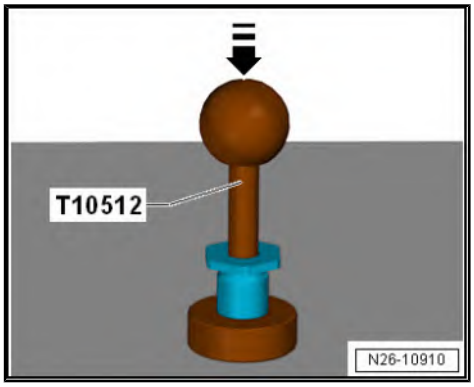
– Check for and ensure the balancing elements move freely -arrow-.
– Fully unscrew balancing elements in the clockwise direction (left-hand thread).
– Clean stiff threads and moisten them with lubricant if necessary.



NOTICE

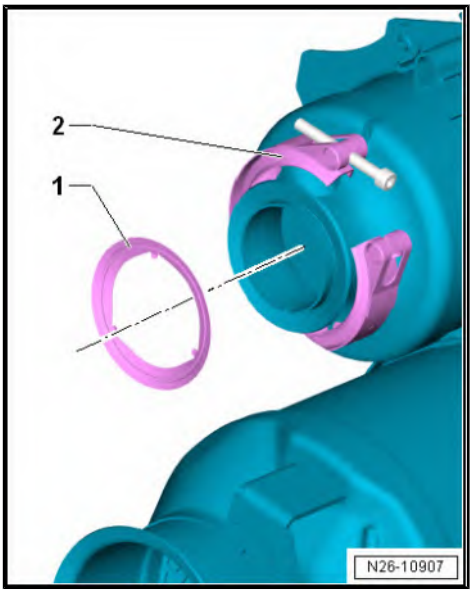
The retaining straps of the balancing elements must not be moistened with lubricant of any kind. Reducing the friction would impair the function of the balancing element.

– Bring retaining straps to the functional dimension using the calibration tool - T10512- as follows.
– Slide the balancing element onto the firing pin, insert into the centring sleeve and turn the retaining straps back by striking the ball stud lightly using the palm of your hand.
– Screw balancing elements in fully by hand and unscrew again by 45°.



– Disconnect the gasket -1- at the exhaust gas cleaning module.
– Unhook clamp screw and lay clamp -2- entirety on the flared opening of the exhaust gas cleaning module. Do not bend clamp
– Guide exhaust cleaning module to the installation position from below, push it up and hook the bracket in the suspension catch of the exhaust gas cleaning module.

The exhaust gas cleaning module is now suspended in weight-neutral manner in the approximate installation position.



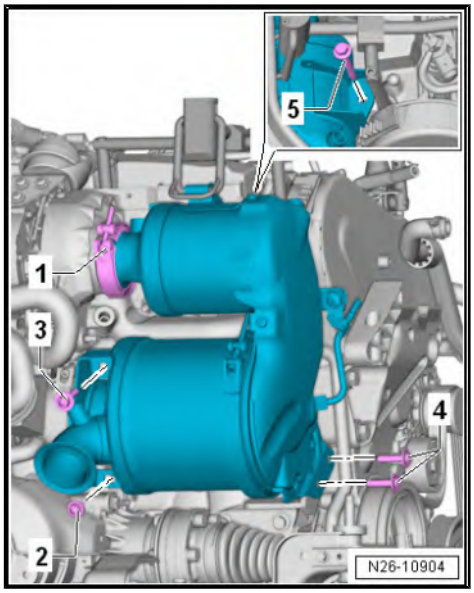
Note

Replace all fixing screws of the exhaust gas cleaning module.

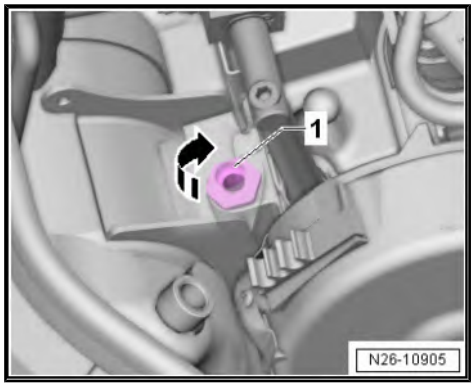
Tightening order for exhaust gas cleaning module

– Replace all fixing screws of the exhaust gas cleaning module after removal.

Stage	Screw	Measure
1.	Clamping sleeve -1-:	Position using the sealing flange and tighten to 3 Nm
2.	Screw -2-	Tighten until hand-tight and immediately loosen by 90°
3.	Clamping sleeve -1-:	tighten to 8 Nm
4.	Screw -2-	tighten to 20 Nm
5.	Screw -3-	insert and lock by pressing, do not tighten or turn screw
6.	Screws -4-	insert and lock by pressing. Tighten screws to 20 Nm
7.	Screw -3-	tighten to 20 Nm

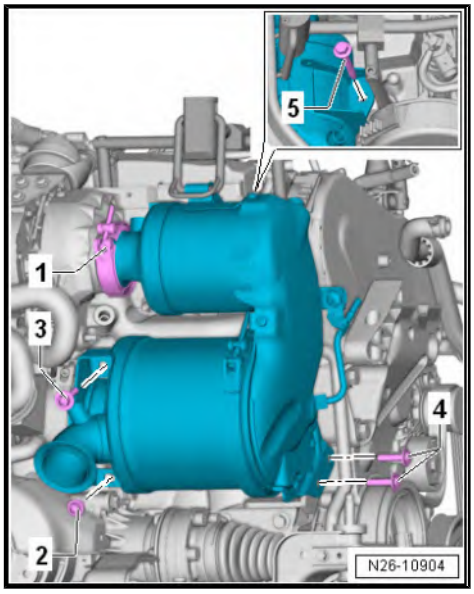


– Unscrew balancing element (left-hand thread) -1- on the cylinder head using socket insert SW 8 - 3247- in -arrow direction- as far as the stop, then rotate a further 90°.



Continued tightening order

Stage	Screw	Measure
8.	Screw -5-	insert and lock by pressing
9.	Screw -5-	tighten to 20 Nm
10.	Screw -5-	Turn 90° further
11.	Screw -5-	turn 45° further



– Remove assembly tool - T10511- .

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

– Install radiator for exhaust gas recirculation
⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .

– Install lambda probe downstream of catalytic converter - GX7-
⇒ “9.2.4 Removing and installing lambda probe 1 after catalytic converter GX7 , Rapid NH”, page 549 .

– Install the rear coolant pipe
⇒ “3.2.12 Removing and installing the rear coolant pipe, Rapid NH”, page 331 .

– Installing heat shield for cardan shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; removing and installing heat shield for drive shaft .

– Install assembly carrier with steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering gear .

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

– Adjust the learning values after replacing the exhaust gas cleaning module ⇒ Vehicle diagnostic tester.

♦ `0001 - Adapt learnt values of particle filter`

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 - toothed belt guard”, page 140

♦ ⇒ Heating, Air conditioning; Rep. gr. 87

♦ ⇒ Chassis; Rep. gr. 40

2.4 Installing and removing regulated particle filter

Special tools and workshop equipment required

♦ Hose binding claw - VAS 6340-

♦ Calibration device - T10512-

Removing

– Remove the sound dampening system ⇒ Body Work; Rep. gr. 50 .

– Remove the assembly carrier ⇒ Chassis; Rep. gr. 40 .

– Remove pre-exhaust pipe with catalytic converter ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

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

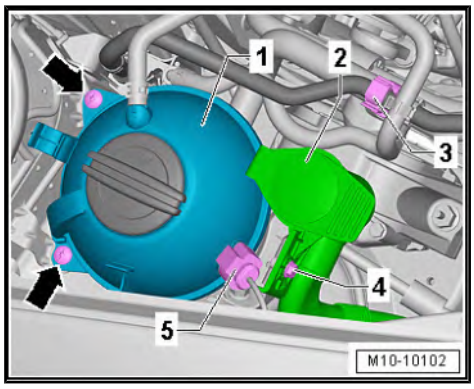
– Unscrew screw -4- and turn the filler neck of the washer fluid reservoir -2- to the front.

– Open the holding clamp -3- and disconnect plug -5- from the coolant expansion tank -1-.

– Unscrew screws -arrows- and place the coolant expansion tank -1- with connecting hose onto the engine.

– Remove exhaust gas temperature sender - G648- , -G448- , -G495- ⇒ “4.1.4 Summary of components - exhaust temperature regulation, Yeti”, page 651 .

– Remove lambda probe 1 upstream of catalytic converter - GX10- ⇒ “9.2.1 Removing and installing lambda probe 1 upstream of catalytic converter GX10 , Octavia III, Yeti”, page 544 .

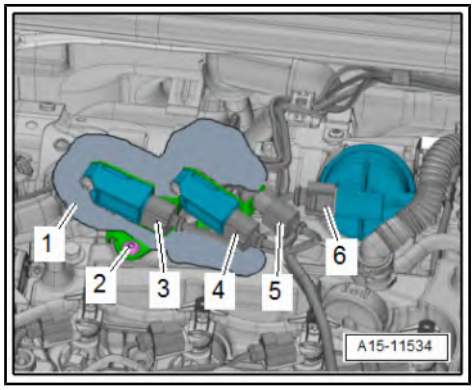


– Open heat protection sleeve -1-.

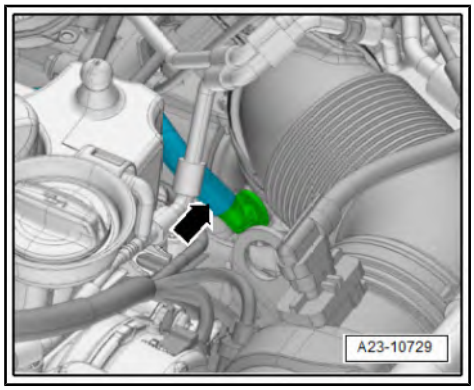
– Remove electrical plug connection-5- out of the bracket, disconnect and move electric cable clear.

– Disconnect electrical plug connections -3- and -4- and move electric wiring loom clear.

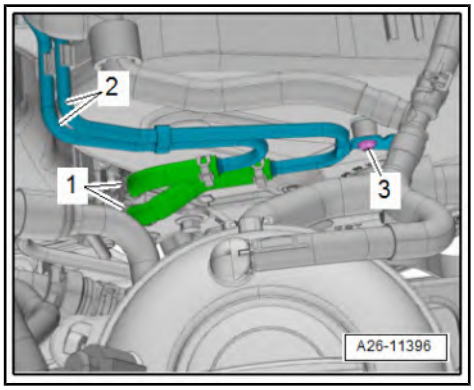
– Unscrew bolt -2-.



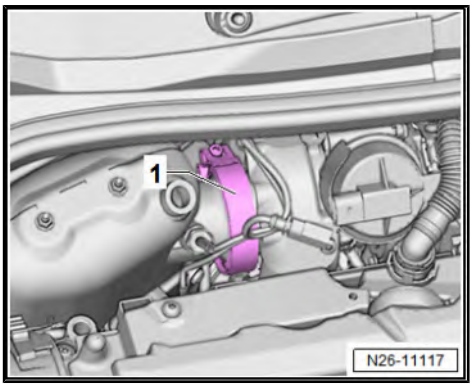
– If installed, pull off the vacuum hose -arrow-.



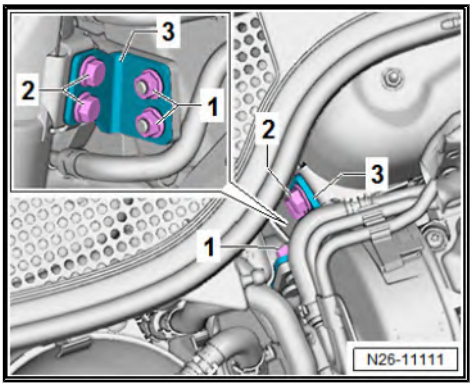
– Unscrew bolt -3-.
– Mark the installation position and assignment of the hoses to the pipes.
– Loosen hose clamps -1-, remove hoses.
– Loosen pipes -2- and remove differential pressure transmitter.



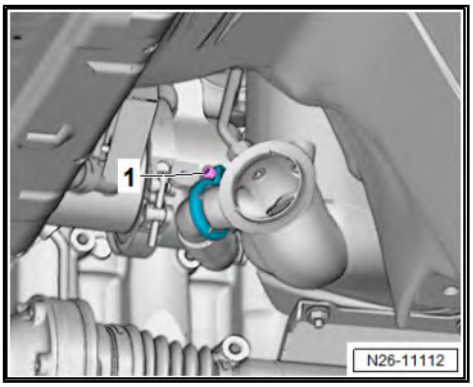
– Open clamp -1- and position it on the flared opening of the particle filter.



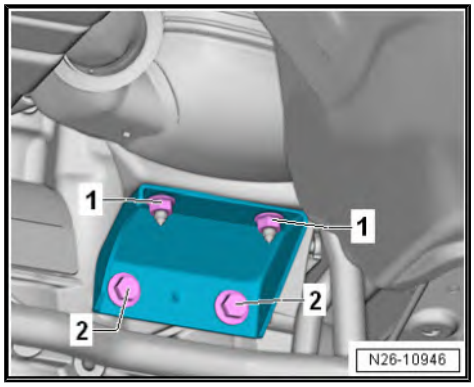
– Remove nuts -1- and unscrew screws -2-. Remove bracket -3-.
– Remove the right prop shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Prop shaft; removing and installing prop shaft .
– Remove rear coolant pipe
⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .
– Remove radiator for exhaust gas recirculation
⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680 .



– Open clamp -1- and remove.



– Unscrew the fixing nuts -1-, undo the screws -2- by a quarter turn.
– Push the particle filter upwards out of the fixtures and then remove downwards.

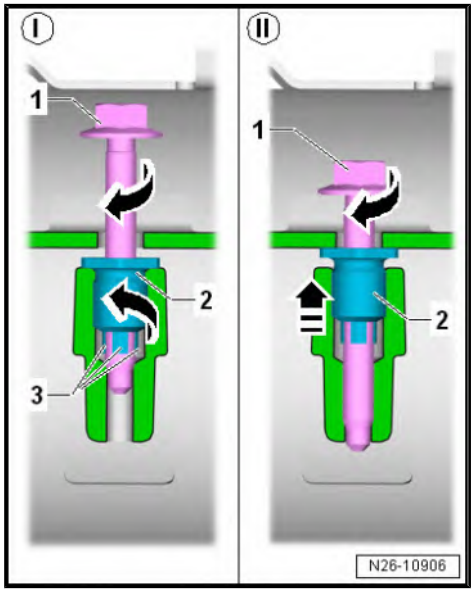


Installing

Note

The filter for exhaust gas recirculation is also attached to the engine by the balancing element. This balancing element has a left-hand thread on the outside. When screwed on, screw -1- initially moves the balancing element -2- as a result of the friction at the straps -3-. The balancing element moves across the screw head against the left-hand thread, despite the fact that the screw is rotating in the anticlockwise direction, thus compensating for the clearance between the components. It must be possible to freely rotate the balancing element with its left-hand thread, otherwise the straps do not create the friction at the screw that is needed to move the balancing element. To avoid reducing the friction, there should be no lubricant on the straps.

Function of the balancing element



Note

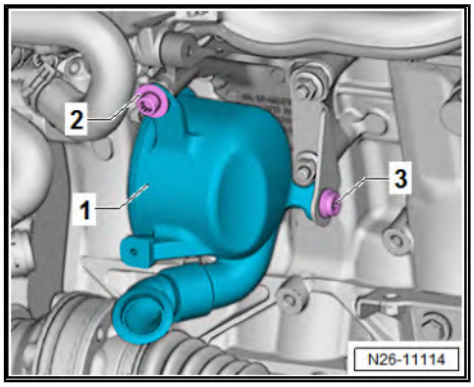
- *Replace seals, self-locking nuts and the clamp for particle filter.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Fit all cable straps and heat protection sleeves back in the same places when re-installing.*

NOTICE

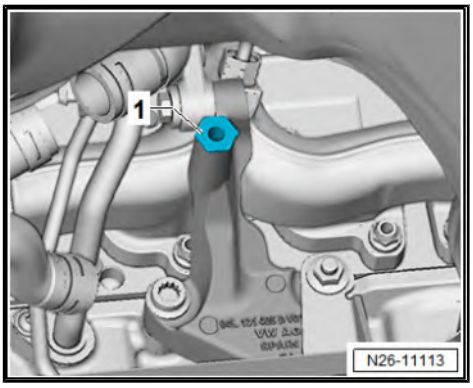
To avoid injury from metal shavings, wear eye protection and protective clothing.

- **Risk of breaking and engine damage as a result of filter for exhaust gas recirculation installed with deformation.**
- **The balancing element must turn freely in the thread.**
- **Lubricant must only be applied to the thread - the retaining straps must remain »clean«.**
- **The retaining straps for the screw must bend far enough together for the balancing element to be screwed in when the screw is screwed in.**

– Unscrew screws -2- and -3- and remove filter for exhaust gas recirculation -1-.



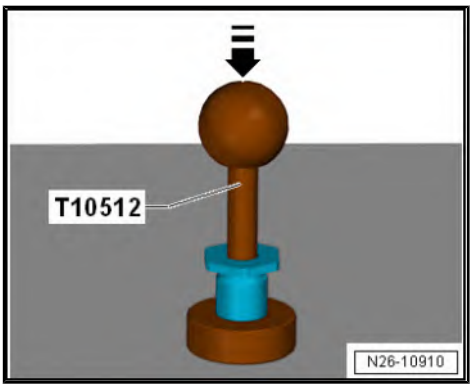
– Check for and ensure ease of movement of the balancing element -arrow-.
– Completely unscrew the balancing element in the clockwise direction (left-hand thread).
– Clean stiff thread or brush with rust remover.



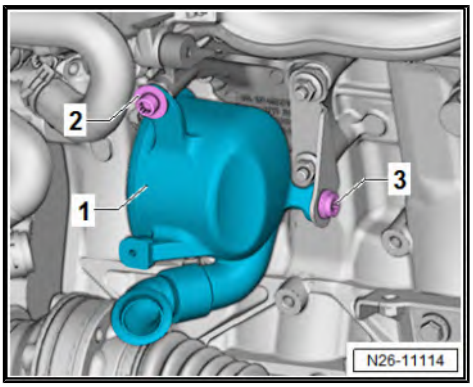
NOTICE

The retaining straps for the balancing element must not be coated with lubricant. Reducing the friction would impair the function of the balancing element.

– Bring the retaining straps to functional dimension using the calibration tool - T10512- as follows.
– Slide the balancing element onto the firing pin, insert into the centring sleeve and turn the retaining straps back by striking the ball stud lightly using the palm of your hand.
– Screw the balancing element in fully by hand and unscrew again by 45°.

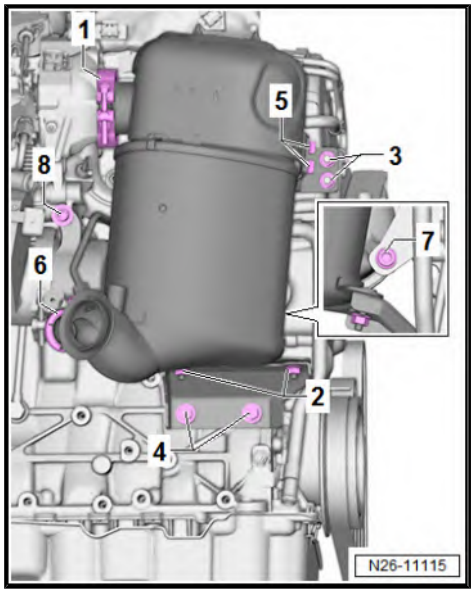


– Place for filter for exhaust gas recirculation -1- into the mounting bracket.
– Insert screw -2- and lock by pressing it in. Do not tighten or twist the screw.
– Tighten the screw -3- until hand-tight and immediately unscrew by 90°.
– Place the new gasket onto the centring studs of the flared opening of the particle filter and slide the new clamp over the flared opening.
– Place the new gasket onto the connection fitting of the filter for exhaust gas recirculation to the particle filter and slide the new clamp over the flared opening.
– Position the particle filter and, using the pin bolts, insert into the bottom mounting bracket.



Tightening sequence for particle filter

Stage	Screw	Measure
1.	Clamping sleeve -1-:	Position via the sealing flange, lock screw
2.	Nut -2-	Tighten until hand-tight and immediately loosen by 90°
3.	Nut -3-	Tighten until hand-tight and immediately loosen by 90°
4.	Clamping sleeve -1-:	tighten to 8 Nm
5.	first the nuts -2-, then the screws -4-	tighten to 20 Nm
6.	first the nuts -3-, then the screws -5-	tighten to 20 Nm
7.	Clamping sleeve -6-:	position over the sealing flange, lock the screw and tighten to 3 Nm
8.	Screw -7-	tighten to 20 Nm
9.	Screw -8-	tighten to 20 Nm



Further installation occurs in reverse order.

2.5 Removing and installing the exhaust flap control unit - J883-

For vehicles with engine identification characters CLHA, CLHB, CRKB, CKFB, CKFC, CUPA, CRMB, CUNA, CXXA, CXXB, DBKA, CXMA, CUUA, CUUB, DFSA, DFSB, DDYB, DDYA, DCYA, DGTE, DJGA, DFFA

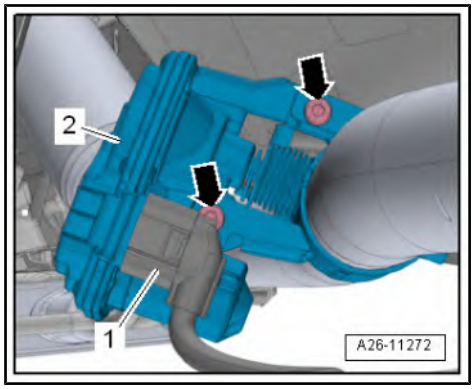
Removing

– Remove bottom tunnel panels on left ⇒ Bodywork - exterior assembly work; Rep. gr. 66 ; Underbody panels; overview of components - Underbody panels , ⇒ Bodywork - assembly work if required; Rep. gr. 50 .

– If present, remove the heat shield collar from the connector.

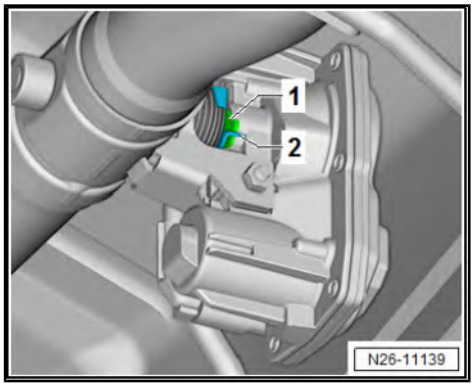
– Separate electrical plug connection -1-.

– Unscrew screws -arrows- and remove exhaust flap control unit - J883- .



Installing

– Mount new exhaust flap control unit - J883- . When doing so, ensure that the driver of the control unit -1- engages into the tab of the exhaust flap -2-.
– Insert new securing bolts and screw on new nuts.
– Tighten the top bolt first, then the bottom bolt.
– Remove the protective cap for the electrical plug connection and connect connector -1-. If necessary, secure the heat shield collar.
– After replacing the exhaust flap control unit - J883- , adjust the learning values ⇒ Vehicle diagnostic tester.



♦ `Adaption of the exhaust flap`

Tightening torques - summaries of components

Note

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

Bolts	Tightening torque
for exhaust flap control unit	9 Nm

♦ ⇒ General body repairs, exterior ; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panel , ⇒ Body work if required; Rep. gr. 50

3 SCR system (Selective Catalytic Reduction)

⇒ “3.1 Summary of components - reduction agent tank”, page 612

⇒ “3.2 Summary of components - delivery line for reduction agent”, page 616

⇒ “3.3 Summary of components - delivery module for reduction agent”, page 619

⇒ “3.4 Removing and installing reduction agent tank”, page 620

⇒ “3.5 Removing and installing delivery line for reduction agent”, page 626

⇒ “3.6 Removing and installing the delivery module for reduction agent”, page 634

⇒ “3.7 Removing and installing the injection valve for reduction agent N474 ”, page 636

⇒ “3.8 Removing and installing the control unit for reduction agent heater J891 ”, page 639

⇒ “3.9 Summary of components - injection valve for reduction agent”, page 640

⇒ “3.10 Removing and installing the filler tube for reduction agent tank”, page 642

⇒ “3.11 Disconnect delivery line for reduction agent”, page 644

⇒ “3.12 Adjusting the learnt value for the SCR system”, page 646

3.1 Summary of components - reduction agent tank

⇒ “3.1.1 Summary of components - reduction agent tank, Octavia III”, page 612

⇒ “3.1.2 Summary of components - reducing agent tank, Yeti”, page 614

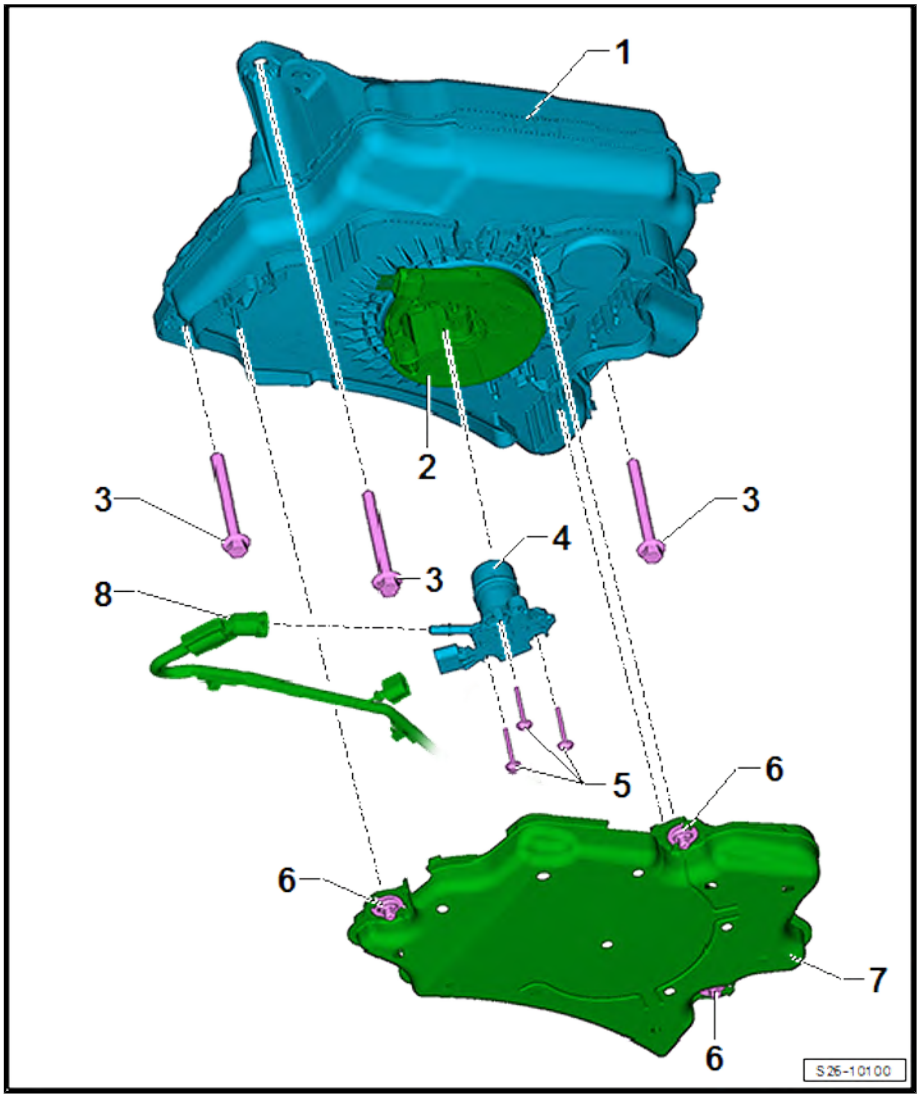
3.1.1 Summary of components - reduction agent tank, Octavia III

Note

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

Summary of components - reduction agent tank from above
⇒ page 613

Summary of components - reduction agent tank from below



1 - Reduction agent tank

- ❑ with:
- ♦ Feed unit
- ♦ Temperature transmitter for reduction agent - G685-
- ♦ Reduction agent tank sender - G697-
- ♦ Heater for reduction agent tank (heating circuit 1) - Z102-
  - ❑ Installation position: rear right
  - ❑ Removing and installing ⇒ “3.4 Removing and installing reduction agent tank”, page 620

2 - Feed unit

- ❑ Part of the reduction agent tank
- ❑ Cannot be removed
- ❑ depending on the vehicle with sensor for reducing agent quality - G849-

3 - Screw

- ❑ 20 Nm

4 - Delivery module

- ❑ with:
- ♦ Pump for reduction agent - V437-
- ♦ Return flow pump for reduction agent - V561-
- ❑ Summary of components ⇒ “3.3 Summary of components - delivery module for reduction agent”, page 619
- ❑ Removing and installing delivery module ⇒ “3.6 Removing and installing the delivery module for reduction agent”, page 634

5 - Screw

- ❑ 6 Nm
- ❑ Replace after disassembly

6 - Nut

- ❑ 2 Nm

7 - Cover

8 - Line for reduction agent

- ❑ from delivery module to injection valve for reduction agent - N474-
- ❑ with heating for reduction agent line (heating circuit 2) - Z104-
- ❑ Summary of components ⇒ “3.2 Summary of components - delivery line for reduction agent”, page 616

Summary of components - reduction agent tank from above

1 - Mounting bracket
- ❑ at fuel tank filler tube

2 - Sealing grommet
- ❑ between body and wheelhouse

3 - Screw cap

4 - Screw
- ❑ 8 Nm

5 - Filler tube
- ❑ Removing and installing ⇒ “3.10 Removing and installing the filler tube for reduction agent tank”, page 642

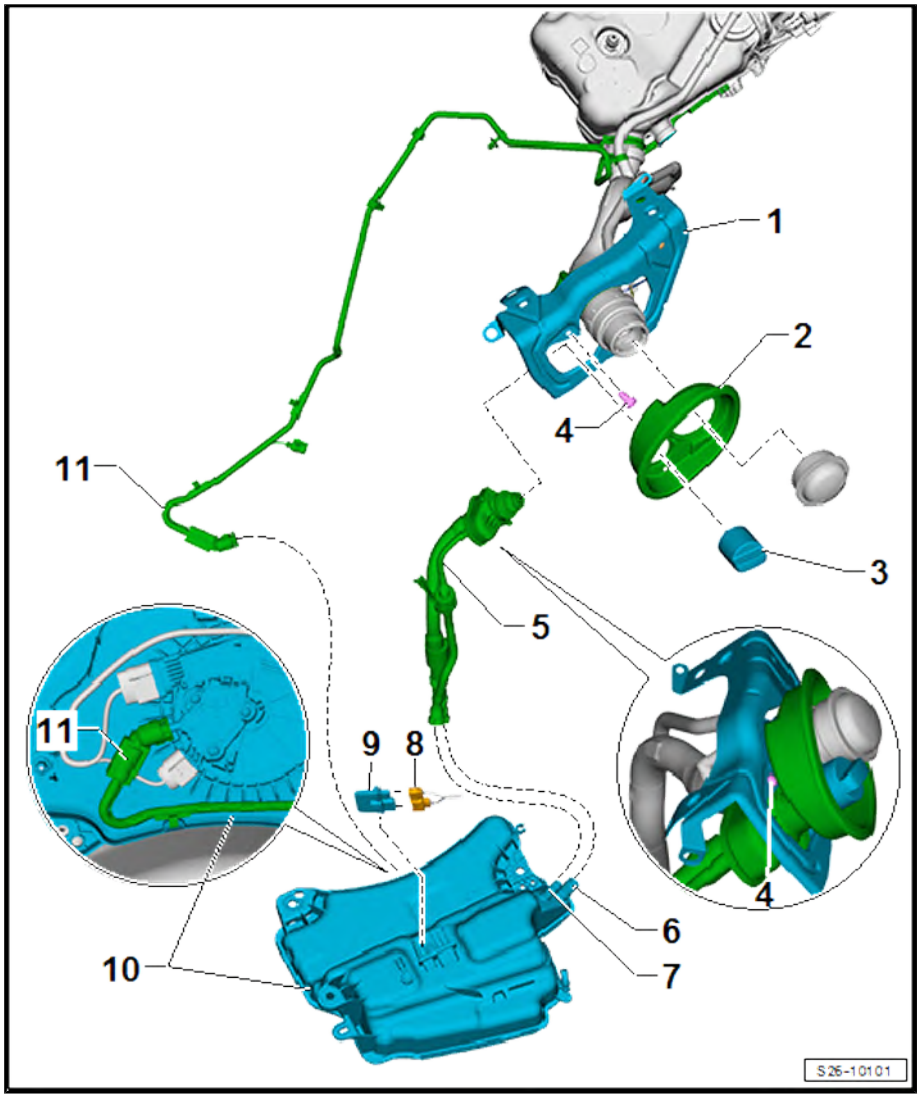
6 - Connection fitting
- ❑ for filler pipe

7 - Connection fitting
- ❑ for vent pipe

8 - Electrical wiring loom

9 - Control unit for reduction agent heater - J891-
- ❑ Removing and installing ⇒ “3.8.1 Removing and installing the control unit for reduction agent heat J891 , Octavia III”, page 639

10 - Reduction agent tank
- ❑ Removing and installing ⇒ “3.4 Removing and installing reduction agent tank”, page 620

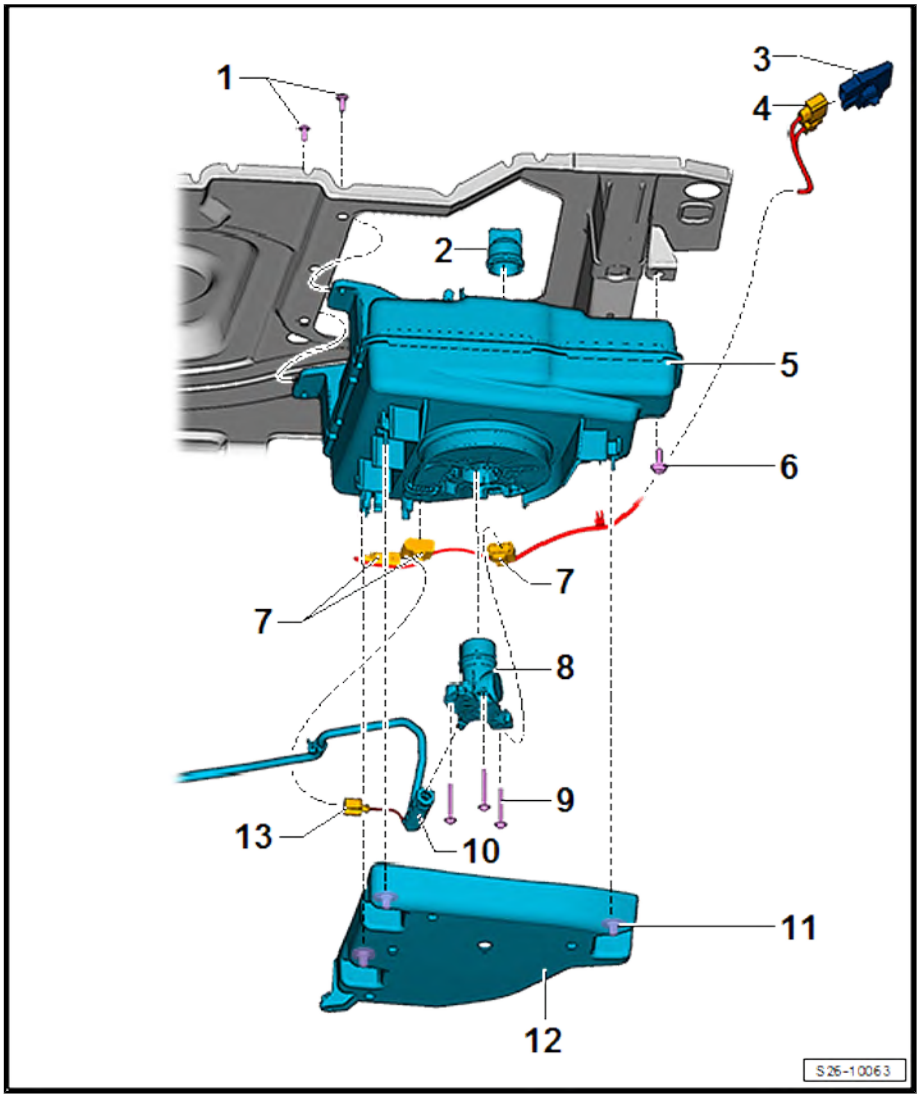


11 - Delivery line for reduction agent
- ❑ Summary of components ⇒ “3.2 Summary of components - delivery line for reduction agent”, page 616
- ❑ Disconnect delivery line ⇒ “3.11 Disconnect delivery line for reduction agent”, page 644

3.1.2 Summary of components - reducing agent tank, Yeti

Note

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



1 - Screw

- ❑ 8 Nm

2 - Screw cap

3 - Control unit for reduction agent heater - J891-

- ❑ Removing and installing ⇒ “3.8 Removing and installing the control unit for reduction agent heater J891 ”, page 639

4 - Electrical plug connection

- ❑ for control unit for reduction agent heater - J891-

5 - Reduction agent tank

- ❑ with:

- ♦ Feed unit
- ♦ Temperature transmitter for reduction agent - G685-
- ♦ Reduction agent tank sender - G697-
- ♦ Heater for reduction agent tank (heating circuit 1) - Z102-
  - ❑ Fitting location: at the height of the luggage compartment on right under the underfloor.
  - ❑ Removing and installing ⇒ “3.4 Removing and installing reduction agent tank”, page 620

6 - Screw

- ❑ 20 Nm

7 - Electrical line

8 - Delivery module for reduction agent - GX19-

comprises:

- ♦ Pump for reduction agent - V437-
- ♦ Return flow pump for reduction agent - V561-
  - ❑ Summary of components ⇒ “3.3 Summary of components - delivery module for reduction agent”, page 619
  - ❑ Removing and installing delivery module ⇒ “3.6 Removing and installing the delivery module for reduction agent”, page 634

9 - Screw

- ❑ 3 pieces
- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ “3.3 Summary of components - delivery module for reduction agent”, page 619

10 - Line for reduction agent

- ❑ from delivery module to injection valve for reduction agent - N474-
- ❑ with heating for reduction agent line (heating circuit 2) - Z104-
- ❑ Summary of components ⇒ “3.2 Summary of components - delivery line for reduction agent”, page 616

- ❑ Disconnect coupling ⇒ page 619

11 - Nut

- ❑ 2 Nm

12 - Bottom cover

13 - Electrical plug connection

- ❑ for heating for reduction agent line (heating circuit 2) - Z104-

3.2 Summary of components - delivery line for reduction agent

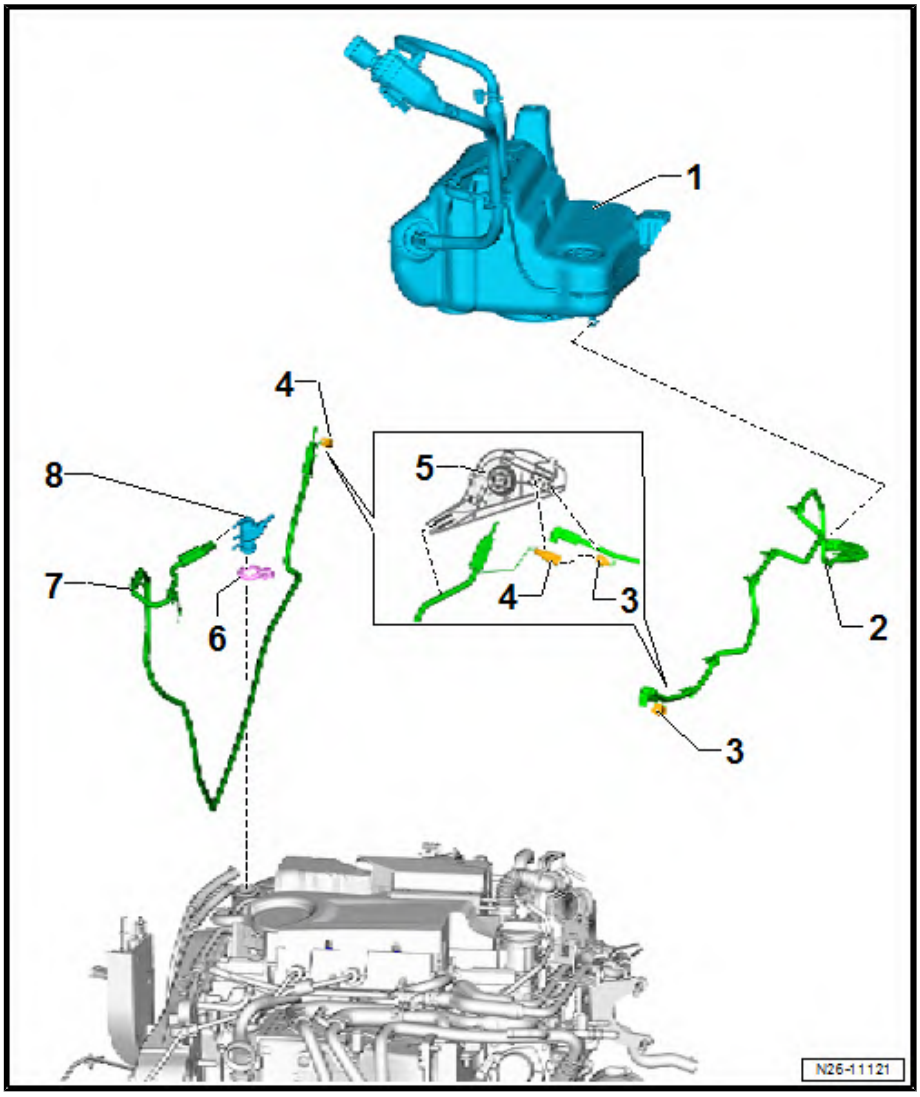
⇒ “3.2.1 Summary of components - Delivery line for reduction agent, Octavia III”, page 616

⇒ “3.2.2 Summary of components - delivery line for reduction agent, Yeti”, page 618

3.2.1 Summary of components - Delivery line for reduction agent, Octavia III

Note

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



1 - Reduction agent tank

- ❑ Summary of components ⇒ “3.1 Summary of components - reduction agent tank”, page 612
- ❑ Removing and installing ⇒ “3.4 Removing and installing reduction agent tank”, page 620
- ❑ empty ⇒ Maintenance ; Booklet Octavia III

2 - Line for reduction agent

- ❑ from delivery module to separation point on the underbody
- ❑ with heating for reduction agent line (heating circuit 2) - Z104-
- ❑ Removing and installing ⇒ “3.5.2 Removing and installing the rear part of the delivery line for reduction agent, Octavia III”, page 631
- ❑ Disconnect coupling ⇒ “3.11 Disconnect delivery line for reduction agent”, page 644

3 - Electrical connector of the delivery line

- ❑ for the reduction agent line heating - Z104-

4 - Electrical connector of the delivery line

- ❑ for the reduction agent line heating - Z104-

5 - Support

- ❑ on underbody right in area of rear axle
- ❑ Disconnect coupling ⇒ “3.11 Disconnect delivery line for reduction agent”, page 644

6 - Clamping sleeve

- ❑ replace after disassembly
- ❑ Versions ⇒ page 642

7 - Line for reduction agent

- ❑ from separation point on the underbody to injection valve for reduction agent - N474-
- ❑ with heating for reduction agent line (heating circuit 2) - Z104-
- ❑ Removing and installing ⇒ “3.5.2 Removing and installing the rear part of the delivery line for reduction agent, Octavia III”, page 631
- ❑ Disconnect coupling ⇒ “3.11 Disconnect delivery line for reduction agent”, page 644

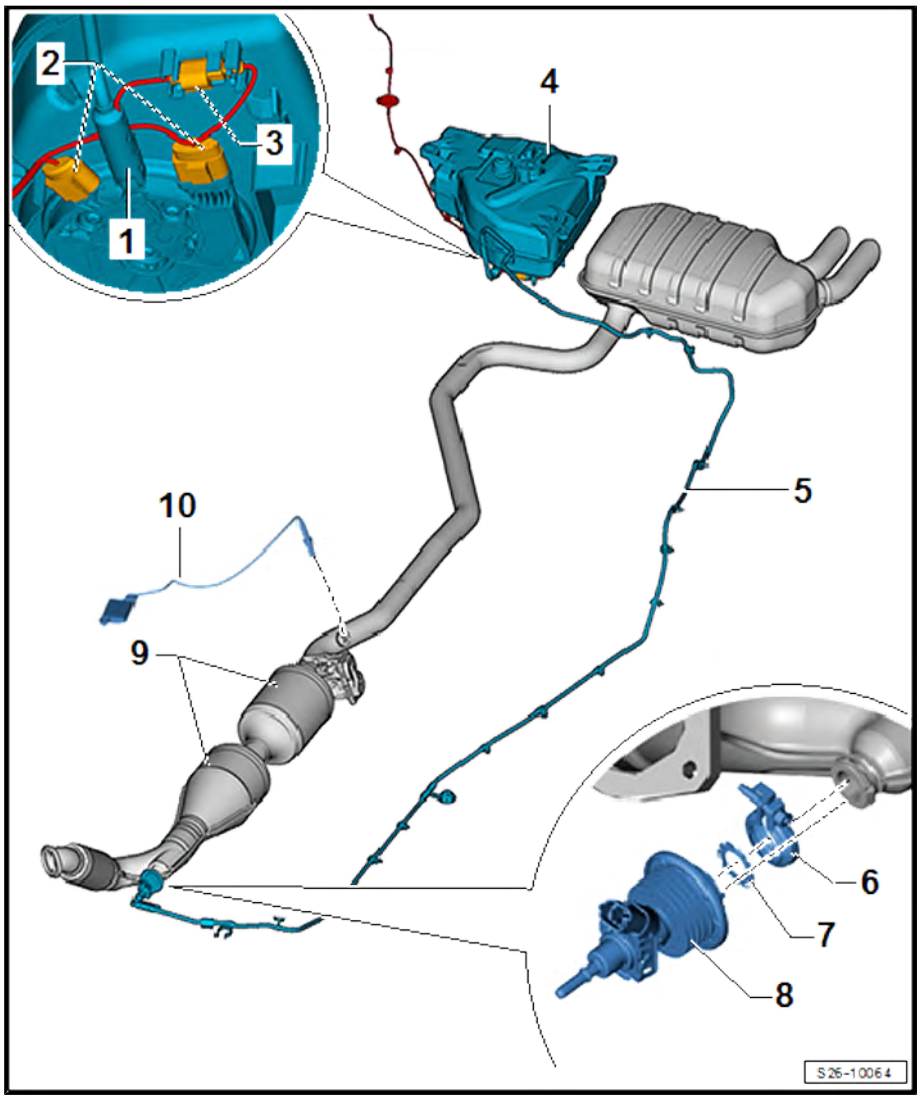
8 - Injection valve for reduction agent - N474-

- ❑ Removing and installing ⇒ “3.7.1 Removing and installing the injection valve for reduction agent N474 , Octavia III”, page 636
- ❑ Summary of components ⇒ “3.9 Summary of components - injection valve for reduction agent”, page 640

3.2.2 Summary of components - delivery line for reduction agent, Yeti

Note

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



1 - Push-on coupling

- ❑ Line for reduction agent
- ❑ Disconnect coupling ⇒ page 619

2 - Plug connection

- ❑ for delivery module for reduction agent - GX19-

3 - Plug connection

- ❑ for the reduction agent line heating - Z104-

4 - Reduction agent tank

- ❑ with:

- ♦ Feed unit
- ♦ Temperature transmitter for reduction agent - G685-
- ♦ Reduction agent tank sender - G697-
- ♦ Heater for reduction agent tank (heating circuit 1) - Z102-
  - ❑ Fitting location: at the height of the luggage compartment on right under the underfloor.
  - ❑ Removing and installing ⇒ “3.4 Removing and installing reduction agent tank”, page 620

5 - Delivery line for reduction agent

- ❑ Removing and installing ⇒ “3.5 Removing and installing delivery line for reduction agent”, page 626

6 - Clamp

- ❑ Replace after disassembly
- ❑ 5 Nm

7 - Seal

- ❑ Replace after disassembly

8 - Injection valve for reduction agent - N474-

- ❑ Removing and installing ⇒ “3.7 Removing and installing the injection valve for reduction agent N474 ”, page 636

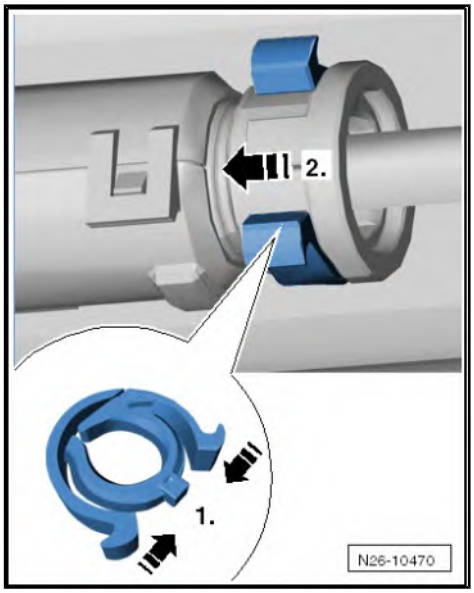
9 - Reduction catalytic converter

10 - NOx transmitter 2 - G687-

- ❑ with control unit for NOx transmitter 2 - J881-
- ❑ removing ⇒ “6.8 Removing and installing NOx transmitter 2 G687 ”, page 517

Disconnect coupling for the reduction agent line

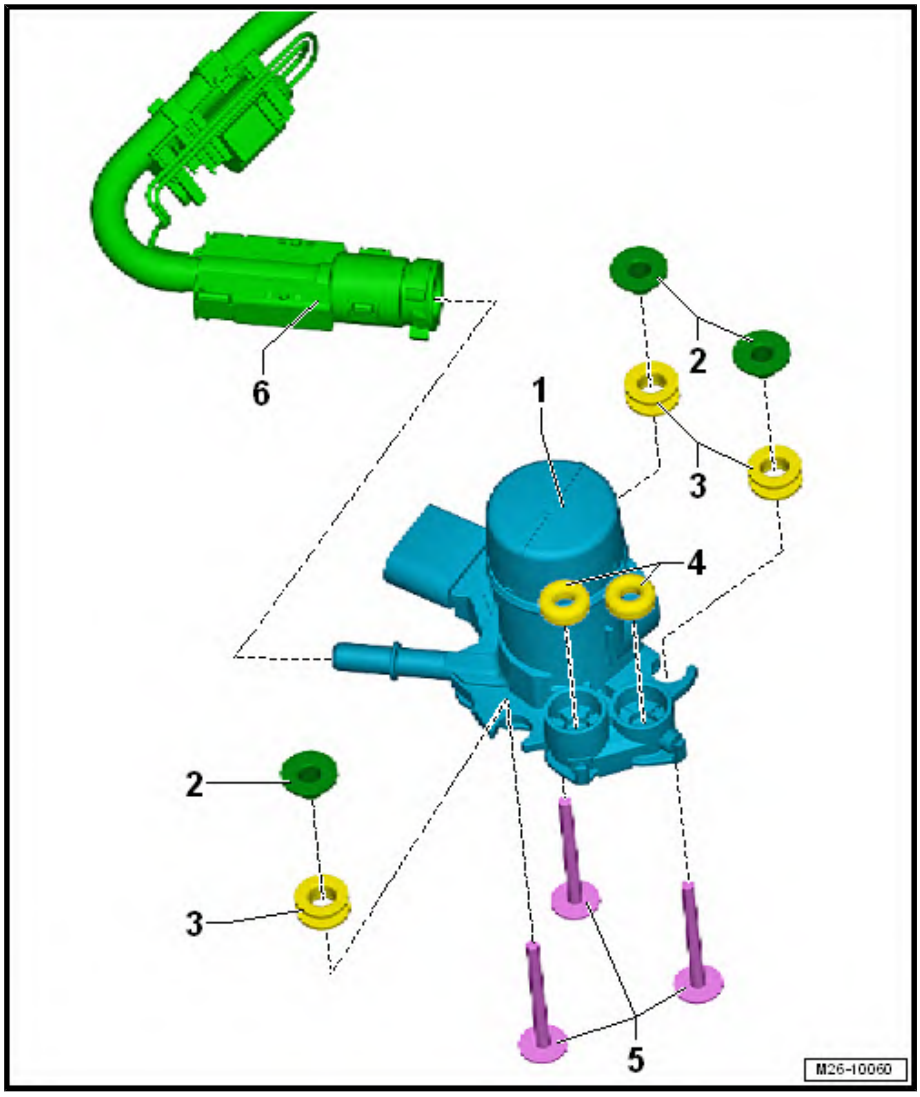
- – Hold connection on both sides, then press and hold pressed.
- – Press together the locking clip of the reduction agent line as shown in direction of arrow -1-.
- – Pull off the delivery line in direction of arrow -2- without auxiliary tools or »jerking«.
- – To capture escaping reduction agent, place a clean cloth under the separation point.
- – Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .



3.3 Summary of components - delivery module for reduction agent

Note

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



1 - Delivery module for reduction agent

- ❑ Removing and installing ⇒ “3.6 Removing and installing the delivery module for reduction agent”, page 634

2 - Spacer sleeves

- ❑ 3 pieces
- ❑ Replace after disassembly
- ❑ included with repair kit

3 - Shock absorber

- ❑ 3 pieces
- ❑ Replace after disassembly
- ❑ included with repair kit

4 - Seal

- ❑ 2 pieces
- ❑ Replace after disassembly

5 - Screw

- ❑ 3 pieces
- ❑ Replace after disassembly
- ❑ 6 Nm

6 - Line for reduction agent

- ❑ from delivery module to injection valve for reduction agent - N474-
- ❑ with heating for reduction agent line (heating circuit 2) - Z104-
- ❑ Summary of components ⇒ “3.2 Summary of components - delivery line for reduction agent”, page 616
- ❑ Disconnect coupling ⇒ page 619

3.4 Removing and installing reduction agent tank

⇒ “3.4.1 Removing and installing reduction agent tank, Octavia III”, page 620

⇒ “3.4.2 Removing and installing reduction agent tank, Yeti”, page 623

3.4.1 Removing and installing reduction agent tank, Octavia III

Special tools and workshop equipment required

- ♦ Engine and gearbox jack , e.g. -V.A.G 1383A- or -VAS 6931-
- ♦ Screw plug set for engine - VAS 6122-

Removing

CAUTION

Leaking reduction agent represents danger.

- **Note the safety precautions for handling reduction agent** ⇒ “2.5 Safety precautions when working on the SCR system”, page 5 .

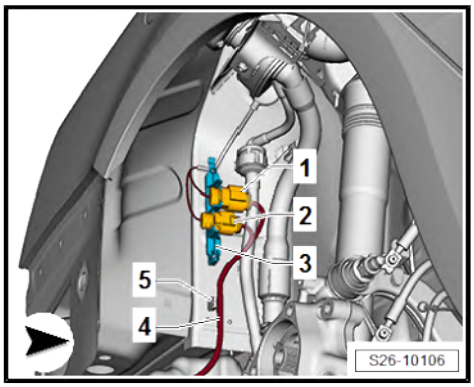
– Remove the rear right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing rear wheelhouse liner .

– Empty the reduction agent tank ⇒ Maintenance ; Booklet Octavia III .

– Push out plug connectors -1- and take -2- from the mounting bracket -3-.

– Release and remove electrical plug connectors.

– Unclip line -4- from the holder -5-.

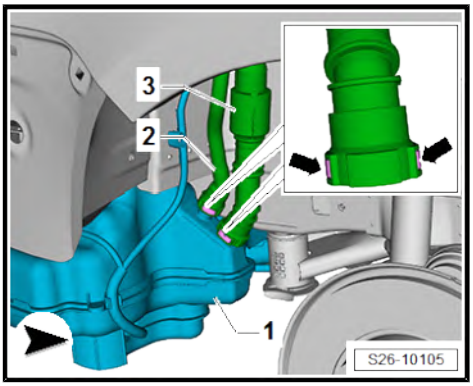


– Unclip vent line -2- from the top attachment.

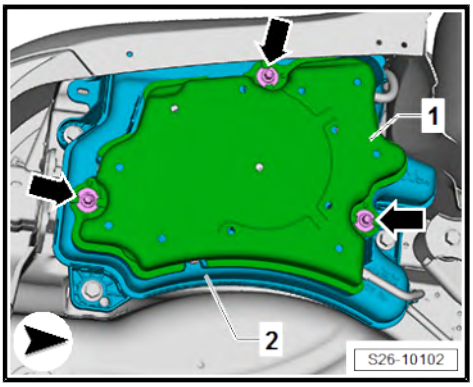
– Remove vent line -2- and filler tube -3- from the reduction agent tank -1-.

– To do so press the release tabs -arrows-.

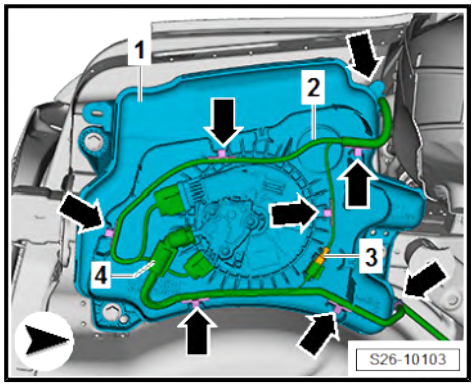
– Pull off the filler tube and the line.



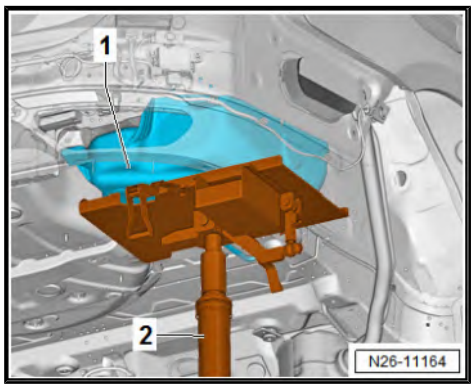
– Remove nuts -arrows-, remove cover -1- of the reducing agent tank -2-.



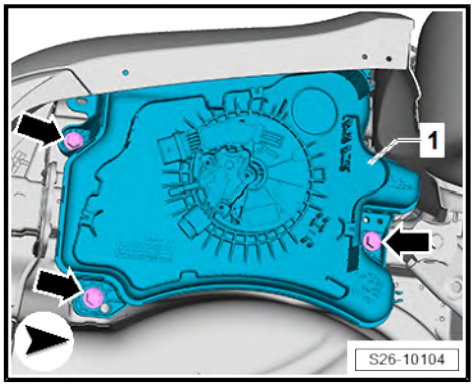
– Unclip, release and pull off electrical plug connection -3-.
– Release and pull off reduction agent line -4-. Disconnect reduction agent line
⇒ “3.11 Disconnect delivery line for reduction agent”, page 644 .
– To capture escaping reduction agent, place a clean cloth under the separation point.
– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .
– Unclip line for reducing agent -4- from the holders -arrows- of the reducing agent tank -1-.



– Position the engine and gearbox jack - VAS 6931- -2- for support below the reduction agent tank -1- with soft foam underlay in between.



– Unscrew screws -arrows- of the reduction agent tank -1-.



Note

To provide a clearer illustration, the engine and gearbox jack that is placed underneath is not shown.

– Lower reduction agent tank using engine and gearbox jack -VAS 6931- .

– Guide to the reduction agent tank by hand as well.

Installing

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

Note

Fit all cable straps on again in the same place when installing.

– Check the lines are seated firmly by pulling in the opposite direction.

– Check that the lines are clipped to the reduction agent tank.

– Adapt learnt values for the SCR system after draining off reduction agent or replacing components ⇒ “3.12 Adjusting the learnt value for the SCR system”, page 646 .

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - reduction agent tank”, page 612
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Installation location overview - underfloor trim panels

3.4.2 Removing and installing reduction agent tank, Yeti

Special tools and workshop equipment required

- Engine and gearbox jack , e.g. -V.A.G 1383A- or -VAS 6931-
- Screw plug set for engine - VAS 6122-

Removing

CAUTION

Hazard caused by escaping reduction agent.

- **Note the safety precautions for handling reduction agent ⇒ “2.5 Safety precautions when working on the SCR system”, page 5 .**

– Observe safety instructions ⇒ “2 Safety instructions”, page 4 .

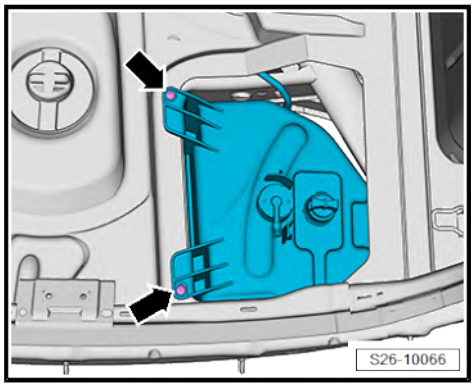
– Observe rules for cleanliness
⇒ “3 Repair instructions”, page 7 .

– Empty the reduction agent tank ⇒ Maintenance ; Booklet Yeti .

Vehicles with cover, Variant 1

– Remove reduction agent tank cover in the luggage compartment ⇒ General body repairs, interior; Rep. gr. 68 .

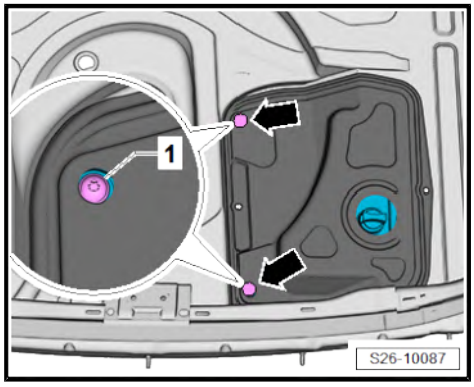
– Unscrew screws -arrows-.



Vehicles with cover, Variant 2

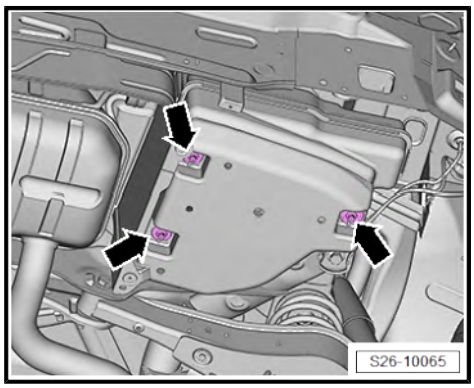
– Remove plug -arrows- from cover for reduction agent tank in the luggage compartment.

– Remove screws -1-.



Continued for all vehicles

– Unscrew nuts -arrows- and remove cover -A-.



NOTICE

Protect disconnected electrical connectors from reduction agent with suitable device or a plastic bag with cable ties. There is a risk that the electrical connections will be damaged because of the high fluidity and subsequent crystallisation of the reduction agent.

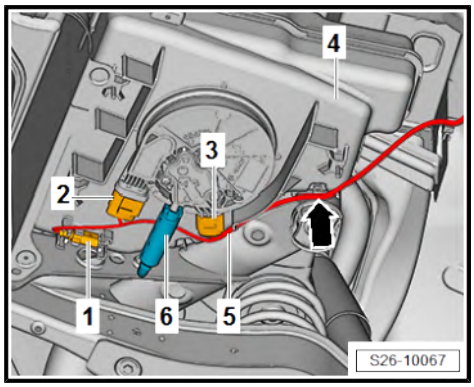
– Unlock and disconnect connectors -1-, -2- and -3-.

– Release and pull off reduction agent line -6-. Disconnect coupling for the reduction agent line ⇒ page 619 .

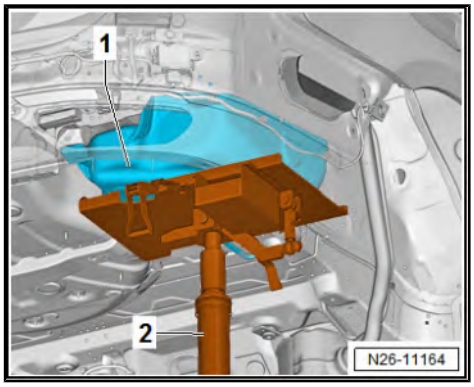
– To capture escaping reduction agent, place a clean cloth under the separation point.

– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .

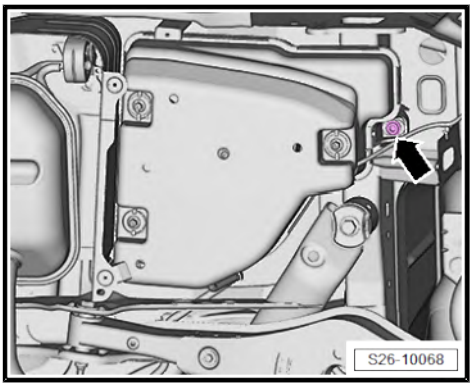
– Unclip all lines -5- on the reduction agent tank -4- -arrow-.



– Position the engine and gearbox jack - VAS 6931- for support below the reduction agent tank -1- with soft foam underlay in between.



– Remove the screw -arrow- of the reduction agent tank.
– Carefully lower the reduction agent tank.



Note

To provide a clearer illustration, the engine and gearbox jack is not shown.

– Lower reduction agent tank using engine and gearbox jack - VAS 6931- .
– Guide to the reduction agent tank by hand as well.

Installing

Installation is performed in the reverse order, while paying attention to the following:

– Check the lines are seated firmly by pulling in the opposite direction.
– Check that the lines are clipped to the reduction agent tank.
– Fill the reduction agent tank ⇒ Maintenance ; Booklet Yeti .
– Adapt learnt values for the SCR system after draining off reduction agent or replacing components ⇒ “3.12 Adjusting the learnt value for the SCR system”, page 646 .

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - reduction agent tank”, page 612
- ⇒ General body repairs, interior; Rep. gr. 68

3.5 Removing and installing delivery line for reduction agent

⇒ “3.5.1 Removing and installing the front part of the delivery line for reduction agent, Octavia III”, page 626

⇒ “3.5.2 Removing and installing the rear part of the delivery line for reduction agent, Octavia III”, page 631

⇒ “3.5.3 Removing and installing delivery line for reduction agent, Yeti”, page 632

3.5.1 Removing and installing the front part of the delivery line for reduction agent, Octavia III

Special tools and workshop equipment required

- Screw plug set for engine - VAS 6122-

Removing

– Observe safety instructions ⇒ “2 Safety instructions”, page 4 .

– Observe rules for cleanliness ⇒ “3 Repair instructions”, page 7 .

– Note the safety precautions when working on the SCR system ⇒ “2.5 Safety precautions when working on the SCR system”, page 5 .

– To capture escaping reduction agent, place a clean cloth under the separation point.

– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .

– If available, remove the right underfloor trim panel in front of the rear axle ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels .

Vehicles fitted with auxiliary heating

– Unhook dosing pump - V54- from fuel tank ⇒ Auxiliary heating; Rep. gr. 82 ; Fuel system; Removing and installing the dosing pump - V54- .

– To do so, press it from below from the dosing pump - V54- upwards out of the support.

– Lay the dosing pump - V54- to the side.

Continued for all vehicles

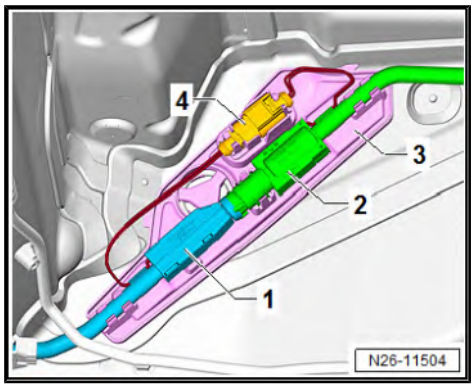
– Disconnect delivery line for reduction agent -1- and -2- at the connection point in the region of the rear axle.

– Disconnect coupling for the reduction agent line ⇒ “3.11 Disconnect delivery line for reduction agent”, page 644 .

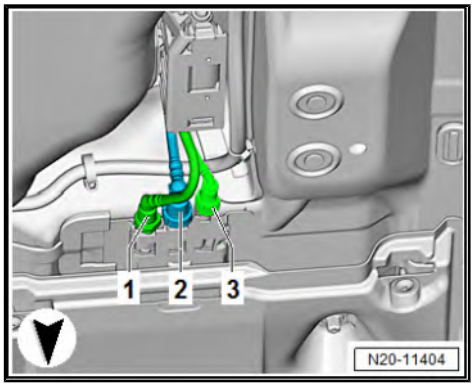
– Unclip, unlock and pull off electrical connector -4- of the delivery line for reduction agent on the mounting bracket -3- in the area of the rear axle.

– Strap up the connector towards the rear.

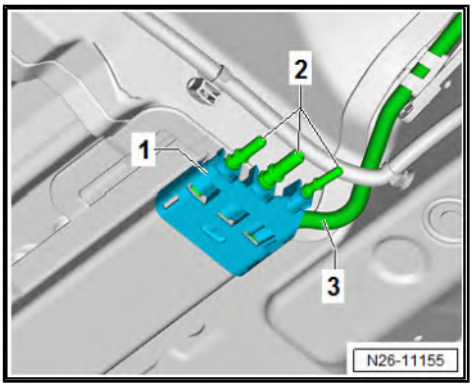
– Loosen underbody trim panel on right side and lower ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim panel; Summary of components - underbody trim panels



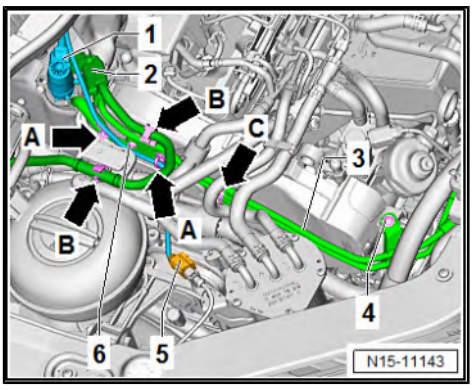
– Disconnect the fuel lines -1- and -2- on the underbody.
– Separated fuel lines on the underbody ⇒ Rep. gr. 20 ; Quick couplings; separating quick couplings .



– Unclip mounting bracket -1- on underbody and on the lines -2-.
– Unclip delivery line for reduction agent -3-.
– Secure a feedthrough aid (e.g. cable or cord) to the fuel lines.
– This feedthrough aid makes re-installation easier, so make sure the length is adequate.
– Use adhesive tape to secure the feedthrough aid.
– Lower vehicle with the lift platform.



– Unclip the delivery line for reduction agent -2- from the coolant expansion tank and the toothed belt guard -arrows B-.
– Disconnect delivery line for reduction agent at the injection valve for reduction agent - N474-
⇒ “3.7.1 Removing and installing the injection valve for reduction agent N474 , Octavia III”, page 636 .



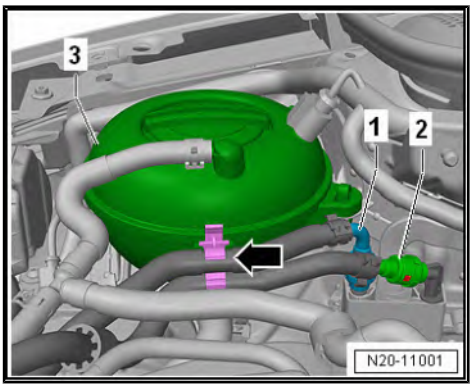
– Remove fuel hoses -1- and -2-. Separate quick couplings ⇒ Rep. gr. 20 ; Quick couplings; separating quick couplings .

CAUTION

Fuel line is under pressure!

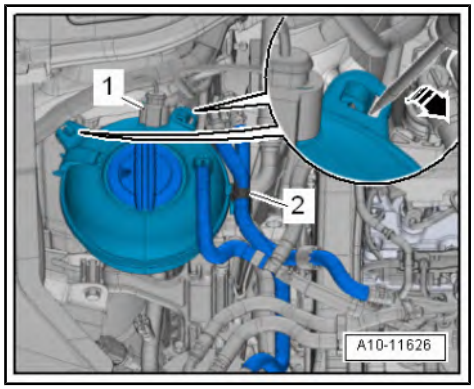
There is a risk of injury to the eyes and skin when in contact with fuel.

Wear safety goggles and safety clothing, in order to avoid injuries and skin contact. Place cleaning cloths around the connection point before detaching hose connections. Then reduce pressure by carefully releasing the connection point.



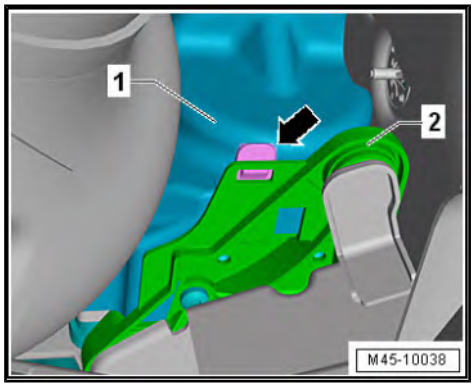
– Unclip the fuel lines -1- and -2- from the bracket -arrow- at the coolant expansion tank -3-.

– Separate electrical plug connection -1-.
– Remove coolant hoses, opening the mounting brackets to do so.
– Unlock catches using a screwdriver -arrow-, lay coolant expansion tank to the side.
– Open the brackets for the refrigerant lines on right wheelhouse.
– Unclip refrigerant lines ⇒ Heating, Air Conditioning; Rep. gr. 87 ; Refrigerant circuit; Removing and installing the refrigerant lines with inner heat exchanger .



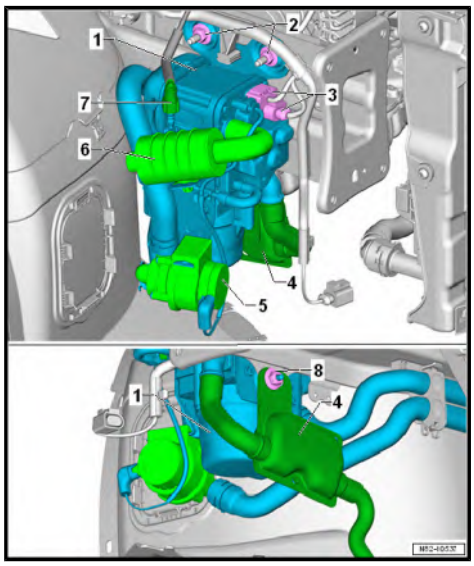
Left-hand drive

– If present, remove heat shield -1- from the ABS hydraulic unit - N55- .
– To do so, unclip the heat shield -1- from the bracket -2- -arrow-.

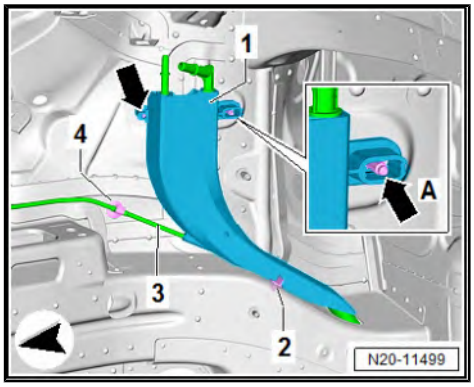


Vehicles fitted with auxiliary heating

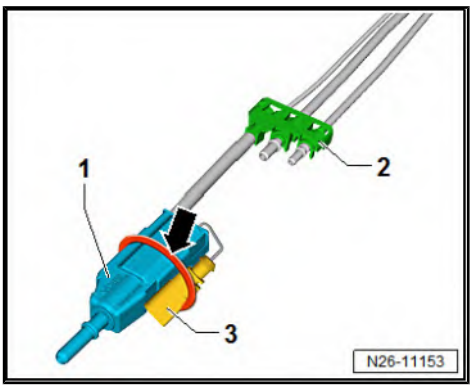
– Remove the front part of the front right wheelhouse liner or the front right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; Removing and installing the front wheelhouse liner .
– Release and pull the fuel line -7-.
– Unclip and thread the fuel line off the brackets.
– Unclip the brackets for the coolant line from the body ⇒ Heating, Air Conditioning; Rep. gr. 87 ; Removing and installing the refrigerant lines with inner heat exchanger .
– Thread out the fuel line under the refrigerant lines and the engine bracket.



Continued for all vehicles



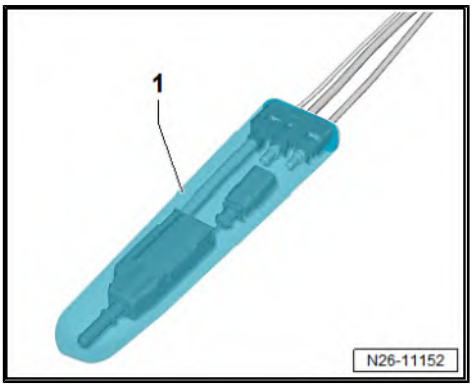
- Unclip shielding -1- from the threaded bolts on the body -arrow-.
- Unclip shielding -1- from the side member -2-.
- If present, remove the clip -4- for the fuel line of the auxiliary heating -3- on the body.
- Unclip brackets -2- for shielding from the frame side rail.
- Pull lines upwards.
- Do not rotate the lines while doing so or pull on them!
- Unclip the lines and pull shielding off upwards.
- Pull flow line for reduction agent and the fuel lines in the engine compartment forwards together out of the guide tunnel.



- Unclip the supply line for reducing agent -1- from the clips -2- for the line.

Installing

- Remove feedthrough aid from the old lines.
- Clip the delivery line for reduction agent into the holding clamps -2- for the lines.
- Connect the delivery line for reduction agent to the plug -3-.
- Make sure that the plugs are seated correctly on the new lines.
- Close lines with suitable plugs from the screw plug set for engine - VAS 6122- .



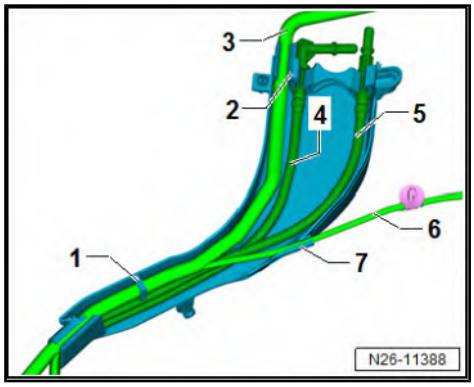
- Attach the threading aid -1-, as shown.

Note

- *A threading aid is provided via the ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *A threading aid can be ordered using the ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *The delivery line for reduction agent, fuel, vent and fuel line for auxiliary heating are installed together.*
- *Fix the lines with adhesive tape, if necessary.*

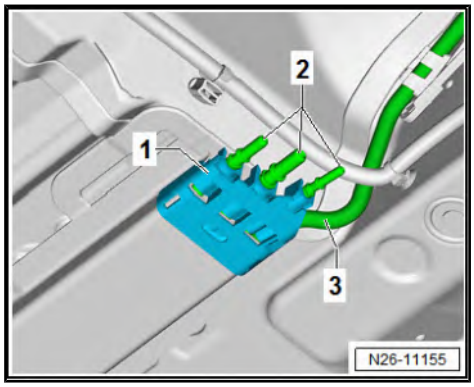
- Insert the lines as shown into the guides of the shielding and clip in place ⇒ page 630 .
- The fuel line are clipped in placed in the top part of the shielding only after they have been threaded in ⇒ page 630 .
- Secure feedthrough aid to the fuel lines.
- Use adhesive tape to secure the feedthrough aid.
- Make sure that the feedthrough aid is only secured at the front section of the lines.
- Close the slotted guide in the bottom section of the shielding with adhesive tape so that the lines do no slide out at this point.
- Fit the fuel lines with the shielding to the opening in the frame side rail.

Installation position of the lines at the shielding



1 - Line guide for the delivery line for reduction agent
2 - Brackets for the lines in bottom section of the separation point
3 - Delivery line for reduction agent
4 - Return-flow line
5 - fuel feed line
6 - Fuel line for auxiliary heating
7 - Guide for the fuel line of the auxiliary heating

– Slide the delivery line for reduction agent and fuel lines together from front to rear.
– Clip the delivery line for reduction agent into the holding clamps for the lines.

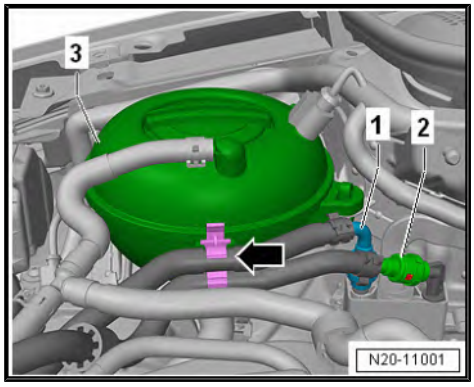


– Clip onto the mounting bracket on the underfloor -1-.
– Then clip the bracket onto the underfloor.
– Connect the delivery line for reduction agent and the electrical connector and clip onto the mounting bracket.

Vehicles fitted with auxiliary heating

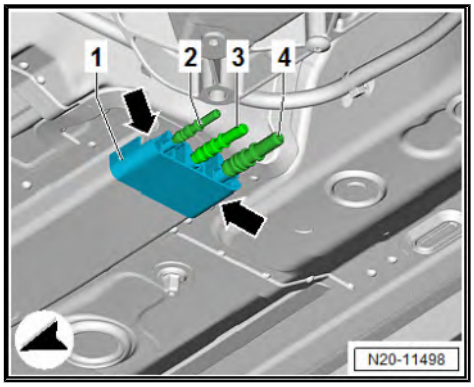
– Insert the dosing pump - V54- onto the mounting and pull downwards.
– Ensure that the dosing pump - V54- is correctly locked on the mounting.

Installation position of the fuel lines at the separation point in the engine compartment



1 - fuel feed line
2 - Fuel return-flow line

Installation position of the fuel lines at the underfloor



2 - Fuel return-flow line

3 - fuel feed line

4 - Fuel line for auxiliary heating

Tightening torques - summaries of components

Note

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

- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underfloor trim panel; Summary of components - Underfloor trim panels
- ⇒ Auxiliary heating; Rep. gr. 82 ; Fuel Supply; Removing and installing the dosing pump - V54-

3.5.2 Removing and installing the rear part of the delivery line for reduction agent, Octavia III

Special tools and workshop equipment required

- Screw plug set for engine - VAS 6122-

Removing

– Observe safety instructions ⇒ “2 Safety instructions”, page 4 .

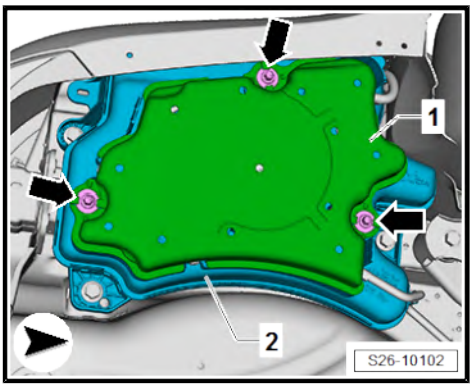
– Observe rules for cleanliness ⇒ “3 Repair instructions”, page 7 .

– Note the safety precautions when working on the SCR system ⇒ “2.5 Safety precautions when working on the SCR system”, page 5 .

– To capture escaping reduction agent, place a clean cloth under the separation point.

– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .

– Remove nuts -arrows-, remove cover -1- of the reducing agent tank -2-.



Vehicles fitted with auxiliary heating

– Unhook dosing pump - V54- from fuel tank ⇒ Auxiliary heating; Rep. gr. 82 ; Fuel system; Removing and installing the dosing pump - V54- .

– To do so, press it from below from the dosing pump - V54- upwards out of the support.

– Lay the dosing pump - V54- to the side.

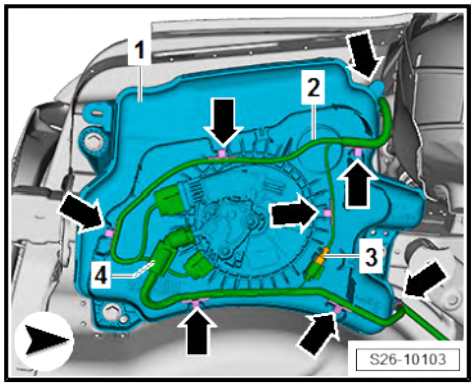
Continued for all vehicles

– Unclip, release and pull off electrical plug connection -3-.

– Release and pull off reduction agent line -4-. Disconnect reduction agent line
⇒ “3.11 Disconnect delivery line for reduction agent”, page 644 .

– Unclip line for reducing agent -4- from the holders -arrows- of the reducing agent tank -1-.

– Unclip supply line for reducing agent in the area of the rear axle on the vehicle and make it accessible.

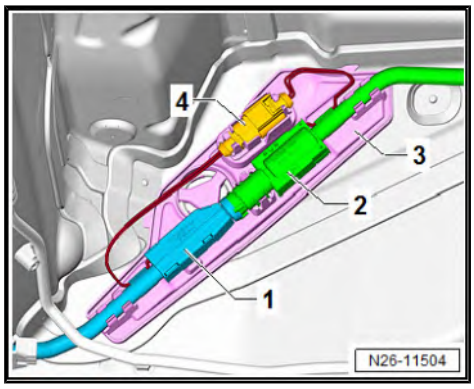


– Unclip the supply line for reducing agent from the holder -3- and make it accessible.

– Disconnect delivery line for reduction agent -1- and -2- at the connection point in the region of the rear axle
⇒ “3.11 Disconnect delivery line for reduction agent”, page 644 .

– Unclip, unlock and disconnect electrical connector -4- of the delivery line for reduction agent on the mounting bracket -3- in the area of the rear axle.

– Strap up the connector towards the rear.



Installing

Installation is carried out in the reverse order. Pay attention to the following.

– Adapt learnt values for the SCR system after draining off reduction agent or replacing components
⇒ “3.12 Adjusting the learnt value for the SCR system”, page 646 .

Tightening torques - summaries of components

Note

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

♦ ⇒ Auxiliary heating; Rep. gr. 82 ; Fuel Supply; Removing and installing the dosing pump - V54-

3.5.3 Removing and installing delivery line for reduction agent, Yeti

Removing

CAUTION

Hazard caused by escaping reduction agent.

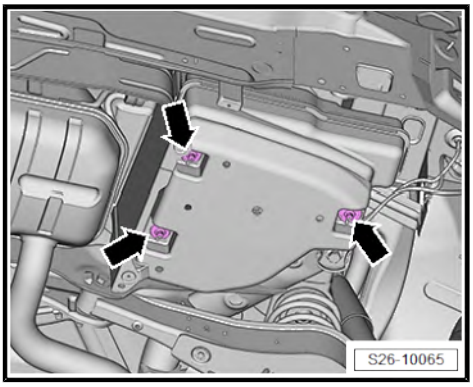
♦ **Note the safety precautions for handling reduction agent**
⇒ “2.5 Safety precautions when working on the SCR system”, page 5 .

– Observe safety instructions ⇒ “2 Safety instructions”, page 4 .

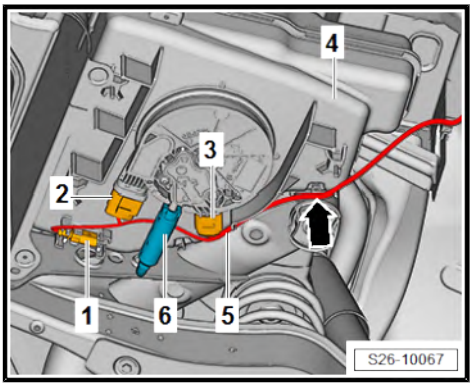
– Observe rules for cleanliness
⇒ “3 Repair instructions”, page 7 .

– To capture escaping reduction agent, place a clean cloth under the separation point.

– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .
– Remove the right underfloor trim panel ⇒ Body Work; Rep. gr. 50 .
– Unscrew nuts -arrows- and remove cover.



– Unlock and pull off connector -1-.
– Disconnect couplings for the reduction agent line ⇒ Fig. ""Disconnect coupling for the reduction agent line"" , page 619 .
– Unclip delivery line for reduction agent from all mounting brackets on superstructure.
– Slightly lower the fuel tank using the engine and gearbox jack - VAS 6931- ⇒ Fuel system for diesel engines; Rep. gr. 20 .
– Carefully loosen the delivery line, pull off from other clips and remove.



Installing

Installation is performed in the reverse order, while paying attention to the following:

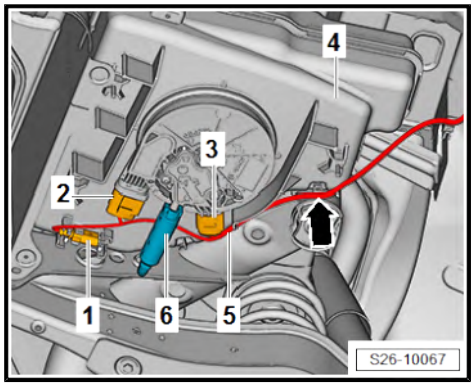
NOTICE

The delivery line is formed in the factory and has a heating element over its entire length. Ensure that the line is not kinked, twisted or stretched. Otherwise, the heating element and therefore the delivery line are damaged.

– Remove the plug and connect the delivery line to the injection valve for reduction agent - N474- .
– Clip in the delivery line from front to rear.
– Close the retaining clips.
– Remove the plug.

– Connection the delivery line -6- and the electrical wiring -1-. Secure both lines to the mountings.

– Re-install the underfloor trim panel on the left.



Tightening torques - summaries of components

Note

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

- ⇒ Body Work; Rep. gr. 50 .
- ⇒ Fuel system for diesel engines; Rep. gr. 20
- ⇒ “3.1 Summary of components - reduction agent tank”, page 612

3.6 Removing and installing the delivery module for reduction agent

⇒ “3.6.1 Removing and installing the delivery module for reduction agent GX19 ”, page 634

3.6.1 Removing and installing the delivery module for reduction agent - GX19-

The delivery module for reduction agent - GX19- consists of:

- Pump for reduction agent - V437-
- Return flow pump for reduction agent - V561-

Special tools and workshop equipment required

- Torque wrench - VAS 6854-

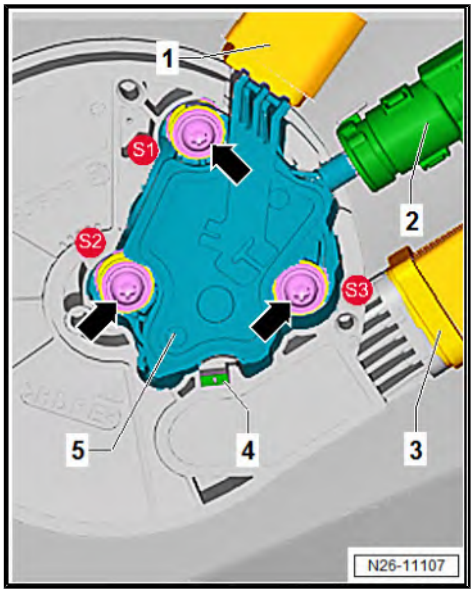
Removing

– Remove reduction agent tank ⇒ “3.4 Removing and installing reduction agent tank”, page 620 .

– Place reduction agent tank on a clean surface.

– The delivery module must point upwards in this case.

– Clean the area around the delivery module -5-.
– Unscrew screws -arrows-.
– Carefully pry the delivery module -5- out of the recess -4- with a slotted screwdriver.
– Pull the delivery module out of the reduction agent tank.



Installing

Installation is performed in the reverse order, while paying attention to the following:

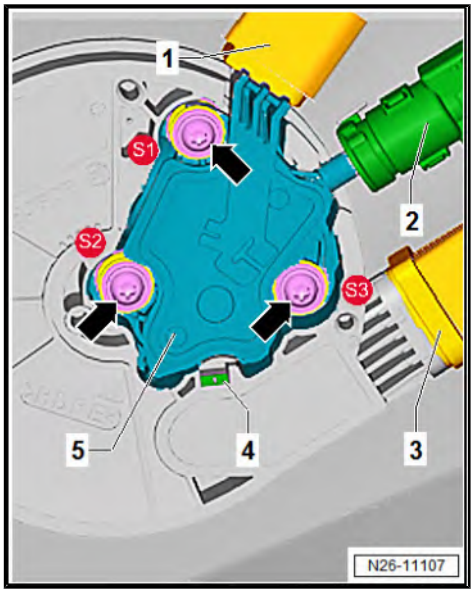
Note

- *Do not clean the delivery module for reduction agent with compressed air.*
- *Clean all components and connections with water and a lint-free cloth.*
- *All components must be dry before the assembly.*
- *Moisten seals with a lubricant for assembly ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Check seals for damage.*

– Replace shock absorber Pos. -3- ⇒ Item 3 (page 620) .
– Replace the spacer sleeves Pos. -2- ⇒ Item 2 (page 620) .
– Replace seal Pos. -4- ⇒ Item 4 (page 620) .
– Position the delivery module for reduction agent and press it into the mounting without tilting it.
– Apply the necessary force across the entire surface.

Note

- *There are labels on the supply unit on the reduction agent tank.*
- *Labels -S1- to -S3- indicate the tightening sequence.*
- *The delivery module is tightened as follows.*
- *Replace bolts.*



order of tightening	Labelling of screws on the supply unit	Position of the screw	Tightening torque
1.	S1	Screw at largest distance from seal	6 Nm
2.	S2	Screw at medium distance from seal	

order of tightening	Labelling of screws on the supply unit	Position of the screw	Tightening torque
3.	S3	Screw with smallest distance from seal	

– Adapt learnt values for the SCR system after draining off reduction agent or replacing components
⇒ “3.12 Adjusting the learnt value for the SCR system”, page 646 .

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - reduction agent tank”, page 612
- ⇒ General body repairs, interior; Rep. gr. 68

3.7 Removing and installing the injection valve for reduction agent - N474-

⇒ “3.7.1 Removing and installing the injection valve for reduction agent N474 , Octavia III”, page 636

⇒ “3.7.2 Removing and installing the injection valve for reduction agent N474 , Yeti”, page 638

3.7.1 Removing and installing the injection valve for reduction agent - N474- , Octavia III

Special tools and workshop equipment required

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-
- Hose binding claw - VAS 6362-
- Screw plug set for engine - VAS 6122-
- Torx plug-in tool E8 from socket wrench set - VAS 6928-

Removing

CAUTION

Hazard caused by escaping reduction agent.

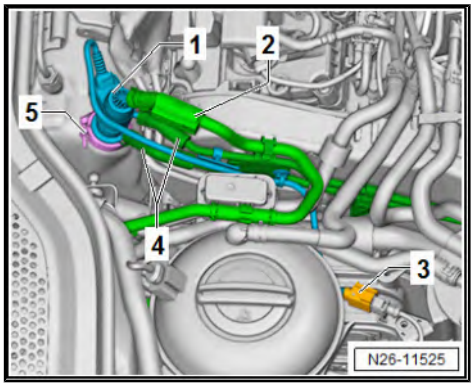
- **Note the safety precautions for handling reduction agent**
⇒ “2.5 Safety precautions when working on the SCR system”, page 5 .
- **Wear safety goggles.**

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

– Unclip, release and pull out the connector -3-.

– Expose electric wiring harness.

– Pinch off coolant hoses -4- with hose clamps up to ∅ 25 mm - MP7-602 (3094)- and remove. Release the hose clamps for this purpose.



Note

To capture escaping reduction agent, place a clean cloth under the separation point.

– Release and pull off reduction agent line -2- ⇒ “3.11 Disconnect delivery line for reduction agent”, page 644 .

– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .

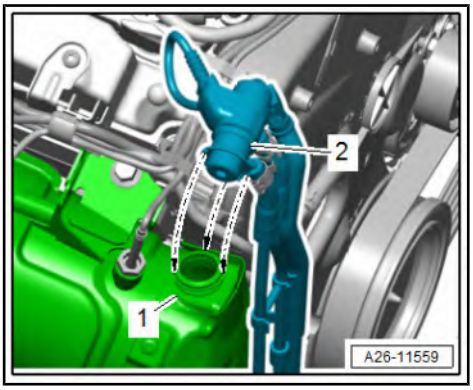
– Release the open warm-type clamp -5- and remove the injection valve for reduction agent - N474- .

Installing

Installation is performed in the reverse order, while paying attention to the following:

Note

- *Replace gasket.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*



- Installation position: the tabs in the injection valve for reduction agent - N474- Pos. -2- must be inserted into the corresponding mountings in the exhaust gas cleaning system -1- -arrows-.

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

– Adapt learnt values for the SCR system after draining off reduction agent or replacing components ⇒ “3.12 Adjusting the learnt value for the SCR system”, page 646 .

Tightening torques - summaries of components

Note

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

- ⇒ “3.9 Summary of components - injection valve for reduction agent”, page 640
- ⇒ “3.1 Summary of components - reduction agent tank”, page 612

3.7.2 Removing and installing the injection valve for reduction agent - N474- , Yeti

Removing

CAUTION

Hazard caused by escaping reduction agent.

- **Note the safety precautions for handling reduction agent ⇒ "2.5 Safety precautions when working on the SCR system", page 5 .**

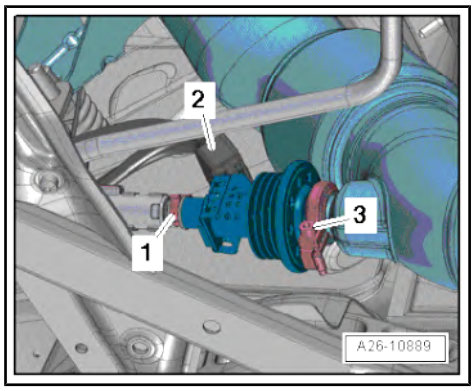
– To capture escaping reduction agent, place a clean cloth under the separation point.

– Disconnect electrical connector -2- from the injection valve for reduction agent - N474- .

– Release and pull off reduction agent line -1-. Disconnect coupling for the reduction agent line ⇒ page 619 .

– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .

– Release the clamp -3- and remove the injection valve for reduction agent - N474- .



Installing

Installation is performed in the reverse order, while paying attention to the following:

Note

- *Replace gasket and clamp.*
- *All brackets that are removed to remove the reduction agent line must always be replaced.*

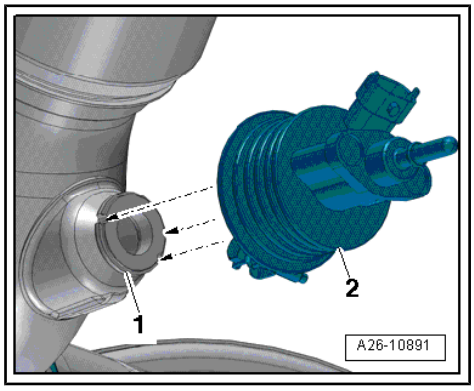
– Connect the injection valve for reduction agent - N474- -2- to the reduction catalytic converter -1- with a new seal, taking not of the tabs (electrical connection points upwards).

– Place new clamp over the connection point and press in until it clicks into place. The injection valve for reduction agent - N474- is now fixed in place.

– Tighten the screw on the clamp.

– Connect the electrical wire first, then the delivery line.

– Adapt learnt values for the SCR system after draining off reduction agent or replacing components ⇒ "3 Repair instructions", page 7 .



Tightening torques - summaries of components

Note

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

- ⇒ "3.2 Summary of components - delivery line for reduction agent", page 616

3.8 Removing and installing the control unit for reduction agent heater - J891-

⇒ “3.8.1 Removing and installing the control unit for reduction agent heat J891 , Octavia III”, page 639

⇒ “3.8.2 Removing and installing reduction agent heating control unit J891 , Yeti”, page 639

3.8.1 Removing and installing the control unit for reduction agent heat - J891- , Octavia III

Removing

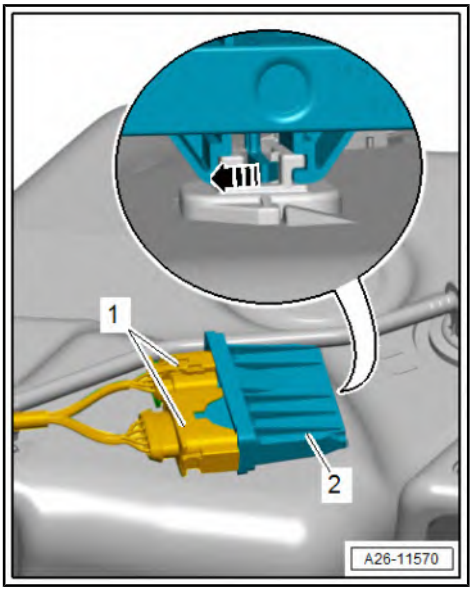
– Remove reduction agent tank ⇒ “3.4 Removing and installing reduction agent tank”, page 620 .

– Carefully release the lock -arrow- with a screwdriver.

– Move the control unit for reduction agent heating - J891- -2- back.

– Take off the fresh air blower control unit - J891- -2-.

– Unlock and disconnect the electrical connectors -1-.



Installing

Installation is carried out in the reverse order.

Tightening torques - summaries of components

◆ ⇒ “3.1 Summary of components - reduction agent tank”, page 612

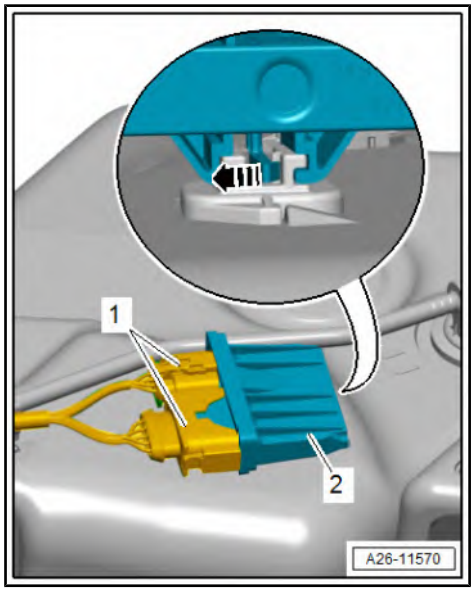
3.8.2 Removing and installing reduction agent heating control unit - J891- , Yeti

Removing

– Remove the side trim panel in luggage compartment ⇒ General body repairs, interior; Rep. gr. 70 .

– Unclip the control unit for reduction agent heater - J891- from the body.

– Unlock and unplug the electrical connectors -1-.
– Unlock the catch in -direction of arrow- and remove the mounting bracket.



Installing

Installation is carried out in the reverse order. Pay attention to the following.

Tightening torques - summaries of components

♦ ⇒ General body repairs, interior; Rep. gr. 70

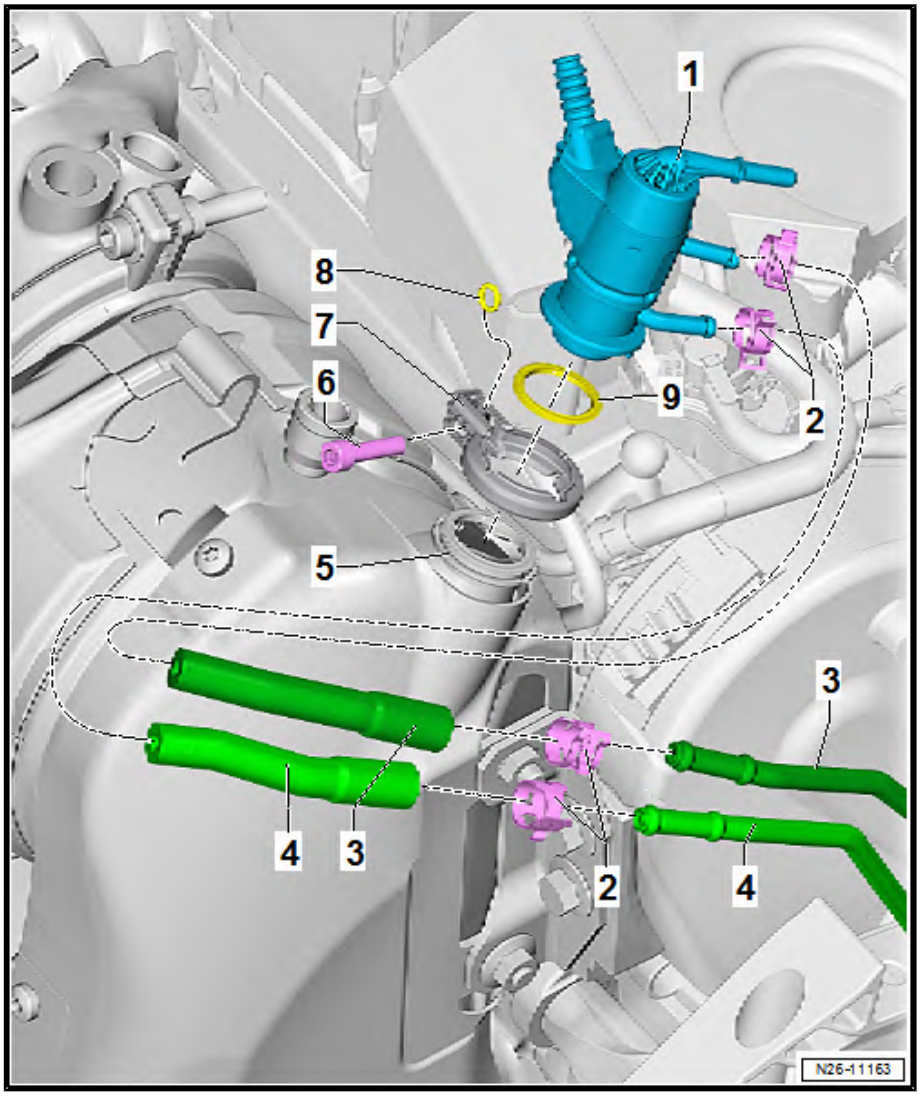
3.9 Summary of components - injection valve for reduction agent

⇒ “3.9.1 Summary of components - injection valve for reduction agent, Octavia III”, page 640

3.9.1 Summary of components - injection valve for reduction agent, Octavia III

Note

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



1 - Injection valve for reduction agent - N474-

- ❑ Removing and installing ⇒ “3.7.1 Removing and installing the injection valve for reduction agent N474 , Octavia III”, page 636

2 - Hose clamps

3 - Coolant line

- ❑ Connection diagram ⇒ “1.1 Connection diagram - coolant hoses”, page 217

4 - Coolant line

- ❑ Connection diagram ⇒ “1.1 Connection diagram - coolant hoses”, page 217

5 - Exhaust gas cleaning module

- ❑ Summary of components - ⇒ “2.1 Summary of components - exhaust gas cleaning”, page 579
- ❑ Removing and installing ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589

6 - Screw

- ❑ Replace after disassembly
- ❑ Tightening torque ⇒ page 642
- ❑ pay attention to different versions

7 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Versions ⇒ page 642

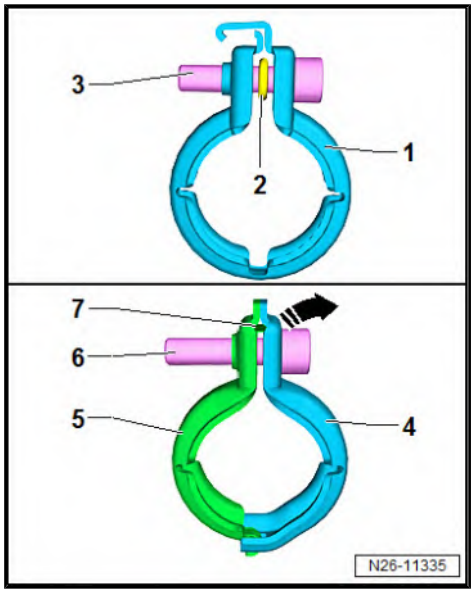
8 - Rubber ring

9 - Seal

- ❑ Replace after disassembly

Variants of the screw clamps

1 - Screw clamp, one-piece
2 - O-ring
3 - Screw, 5 Nm
4 - Clamp, two-piece with eye
5 - Clamp, two-piece with hook
6 - Screw, 8 Nm
7 - Lock washer



3.10 Removing and installing the filler tube for reduction agent tank

⇒ "3.10.1 Removing and installing filler pipe for reduction agent tank, Octavia III", page 642

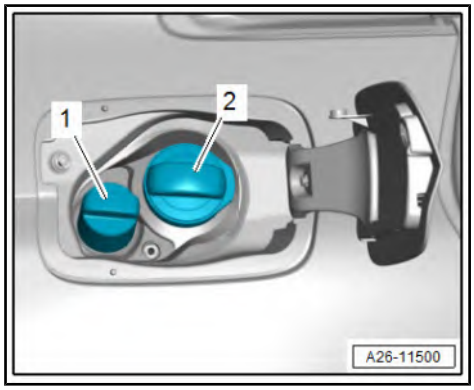
3.10.1 Removing and installing filler pipe for reduction agent tank, Octavia III

Special tools and workshop equipment required

♦ Catch pan , e.g. -VAS 6208-

Removing

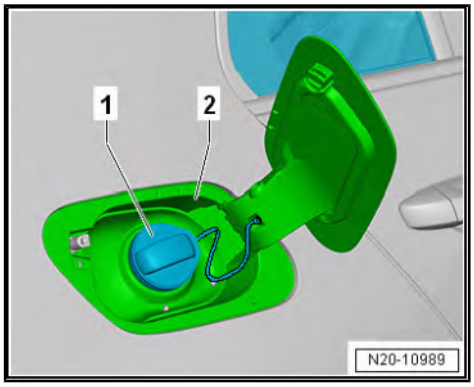
– Remove rear right wheel ⇒ Chassis, axles, steering; Rep. gr. 44 ; Wheels, tyres; wheel change .
– Remove the rear right wheelhouse liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheelhouse liner; removing and installing rear wheelhouse liner .
– Open fuel tank flap and clean area around the filler cap -1-.
– Clean the area around the fuel filler neck.
– Unscrew screw caps -1- and -2-.



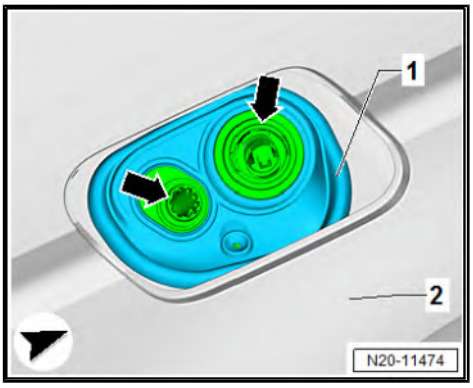
Note

Close the opening of the fuel filler neck with a clean plug, so that no dirt can penetrate.

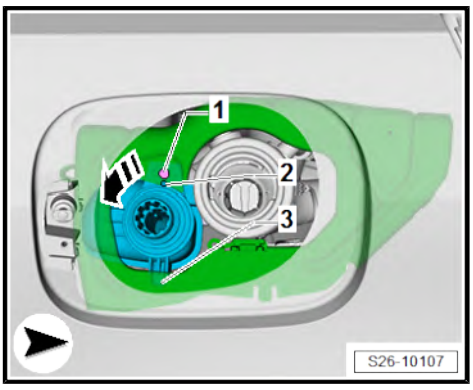
– Remove fuel tank lid unit -2- ⇒ General body repairs, exterior; Rep. gr. 55 ; Fuel tank lid unit; installing and removing fuel tank lid unit .



– Wind the sealing grommet -1- off the filler tubes -arrows-.



– Unscrew bolt -1-.
– Unclip vent line from the top attachment.
– Place catch pan - VAS 6208- underneath.



CAUTION

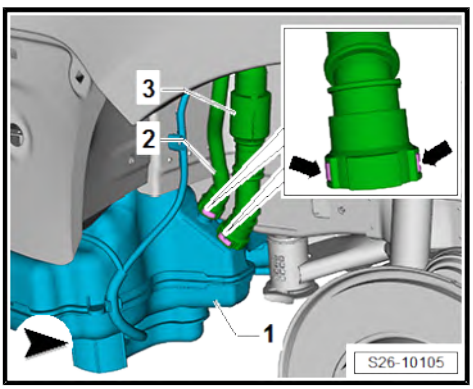
Hazard caused by escaping reduction agent.

♦ **Note the safety precautions for handling reduction agent** ⇒ “2.5 Safety precautions when working on the SCR system”, page 5 .

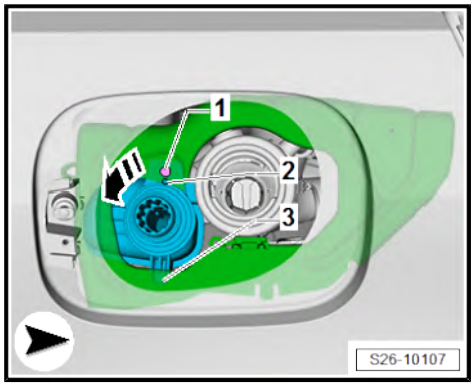
Note

To capture escaping reduction agent, place a clean cloth under the separation point.

– Remove vent line -2- and filler tube -3- from the reduction agent tank -1-.
– To do so press the release tabs -arrows-.



– Detach the filler pipe by turning it in -arrow- and remove from the mount -3-.
– Remove from the filler pipe and the line.



Installing

Installation is carried out in the reverse order. Pay attention to the following.

Tightening torques - summaries of components

Note

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

- ⇒ “3.1 Summary of components - reduction agent tank”, page 612
- ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres; wheel change.
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Remove and install rear wheel housing liner
- ⇒ General body repairs, exterior; Rep. gr. 55 ; Fuel tank lid unit; Summary of components - Fuel tank lid unit

3.11 Disconnect delivery line for reduction agent

Variant 1
⇒ Fig. ““Disconnect delivery line for reduction agent, version 1”“ , page 644

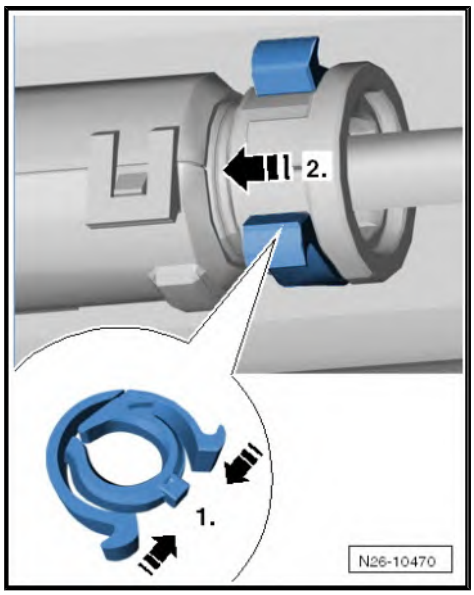
Variant 2
⇒ Fig. ““Disconnect delivery line for reduction agent, version 2”“ , page 645

Variant 3
⇒ Fig. ““Disconnect delivery line for reduction agent, version 3”“ , page 646

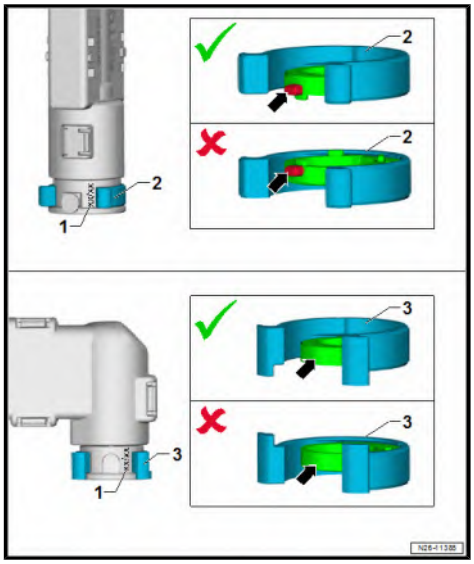
Disconnect delivery line for reduction agent, version 1

Release

– Clean the area around the locking clip with water.
– To capture escaping reduction agent, place a clean cloth under the separation point.
– Slide the plug connection in the opposite direct to the arrow -2-.
– Hold plug connection on both sides, then press and hold pressed.
– Press together the locking clip of the reduction agent line -1- as shown in direction of arrow -1-.
– Pull off the delivery line in direction of arrow -2- without auxiliary tools or »jerking«.
– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .
– Clean all components and connections with water and a lint-free cloth.



Lock



Note

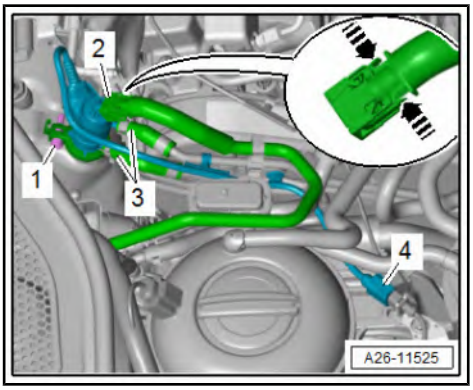
- *Note the different designs of the securing clip.*
- *Assignment is based on the type of quick coupling.*
- *The guide lug -arrow- is the distinguishing feature.*
- *The type is indicated at -1-.*
- *For assignment of securing clip, see table ⇒ page 645 .*
- *Note the installation position of the securing clip.*
- *The securing clip must be installed as shown.*
- *If the securing clip/locking clip is installed incorrectly, the connection cannot be disassembled without being destroyed.*
- *In some circumstances, this may result in damage to the mating connector.*

Assignment of securing clip

Type	Assignment of securing clip
5/16 and 3/8	Securing clip 2 with guide lug
1- 4	Securing clip 3

– Check the connection points are clean and clean them, if necessary.
– Check the connection points for damage and replace them, if necessary.
– Slide on the line until it locks audibly into place.
– Check for firm seating by pulling in the opposite direction.

Disconnect delivery line for reduction agent, version 2

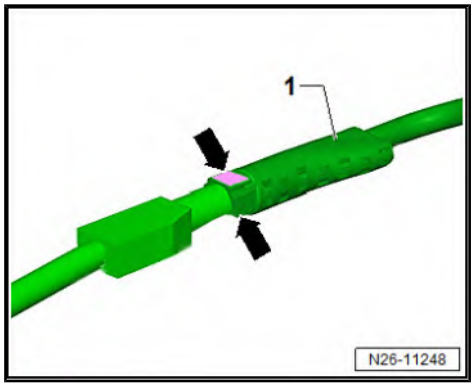


– Clean the area around the lock with water.
– Slide the plug connection in the opposite direction to the pulling off.
– Press catches together -arrows- and hold.
– Pull off reduction agent line -2-.
– To capture escaping reduction agent, place a clean cloth under the separation point.
– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .
– Clean all components and connections with water and a lint-free cloth.

Lock

– Check the connection points are clean and clean them, if necessary.
– Check the connection points for damage and replace them, if necessary.
– Slide on the line until it locks audibly into place.
– Check for firm seating by pulling in the opposite direction.

Disconnect delivery line for reduction agent, version 3



– Clean the area around the lock with water.
– Slide the plug connection in the opposite direction to the pulling off.
– Press catches together -arrows- and hold.
– Pull off reduction agent line -1-.
– To capture escaping reduction agent, place a clean cloth under the separation point.
– Close all open lines and connections with clean plugs from the screw plug set for engine - VAS 6122- .
– Clean all components and connections with water and a lint-free cloth.

Lock

– Check the connection points are clean and clean them, if necessary.
– Check the connection points for damage and replace them, if necessary.
– Slide on the line until it locks audibly into place.
– Check for firm seating by pulling in the opposite direction.

3.12 Adjusting the learnt value for the SCR system

The learnt value in the engine control unit must be re-adjusted with the vehicle diagnostic tester if reduction agent has been drained off or one of the following components has been replaced

- Reduction agent tank
- Pump for reduction agent
- Injection valve for reduction agent
- Line for reduction agent
- Engine control unit

Reset learnt values ⇒ Vehicle diagnostic tester.

`0001 - Adjusting learnt values for the SCR system`

4 Exhaust temperature regulation

⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647

⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653

⇒ “4.3 Removing and installing the exhaust gas temperature transmitter 2 G448 ”, page 656

⇒ “4.4 Removing and installing the exhaust gas temperature transmitter 3 G495 ”, page 661

⇒ “4.5 Removing and installing the exhaust gas temperature transmitter 4 G648 ”, page 666

4.1 Summary of components - exhaust temperature regulation

⇒ “4.1.1 Summary of components - exhaust temperature regulation, Octavia III, Rapid NH”, page 647

⇒ “4.1.2 Overview of components - exhaust gas temperature control, Octavia III with SCR system”, page 650

⇒ “4.1.3 Summary of components - exhaust gas temperature regulation, vehicles with EU4 emission level”, page 651

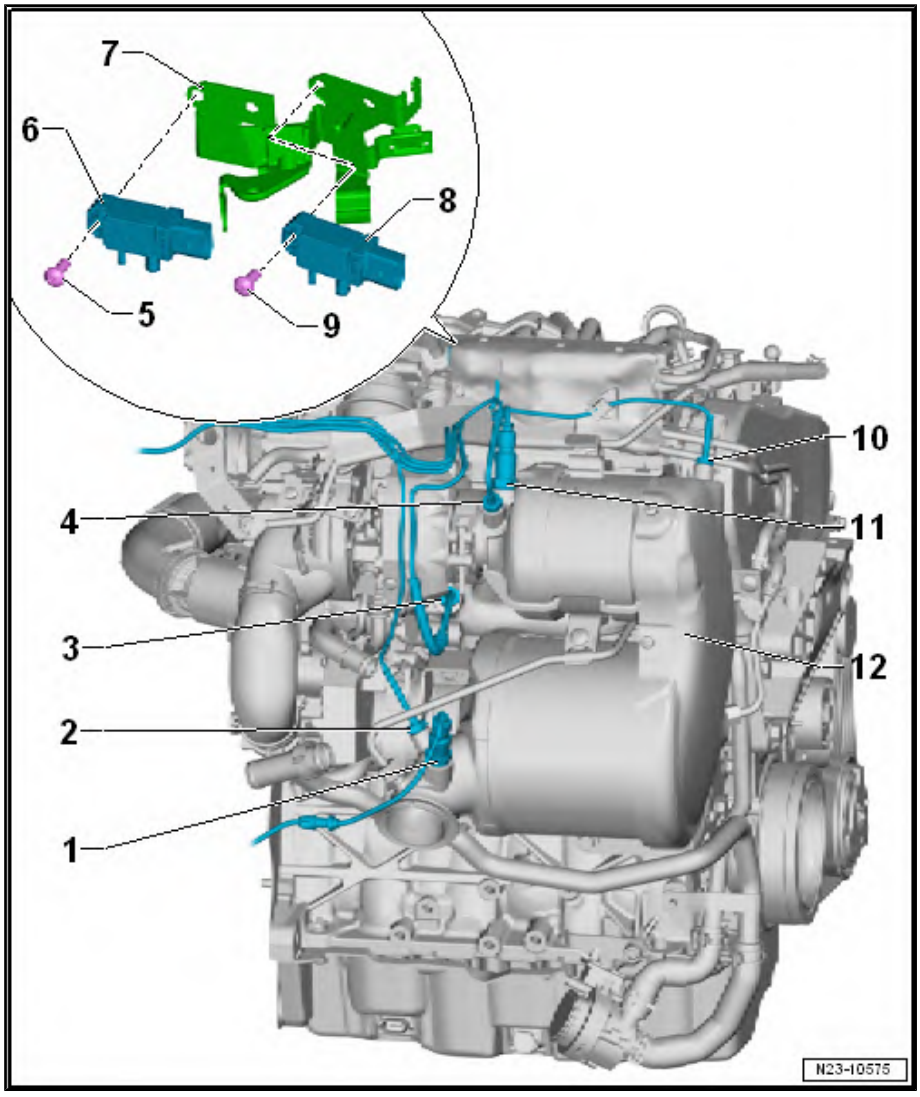
⇒ “4.1.4 Summary of components - exhaust temperature regulation, Yeti”, page 651

4.1.1 Summary of components - exhaust temperature regulation, Octavia III, Rapid NH

NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- The threads of the exhaust gas temperature transmitter -G495- and -G648- are coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.



1 - Lambda probe 1 after catalytic converter - GX7-

- consists of: lambda probe downstream of catalytic converter - G130- and heater for lambda probe 1 downstream of catalytic converter - Z29-
- Depending on vehicle
- Removing and installing ⇒ “9.2 Removing and installing Lambda probe”, page 544
- 52 Nm

2 - Exhaust gas temperature transmitter 4 - G648-

- Depending on vehicle
- Removing and installing ⇒ “4.5 Removing and installing the exhaust gas temperature transmitter 4 G648 ”, page 666
- the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- 2.0l engines: 60 Nm
- 1.6 l engines: 45 Nm

3 - Exhaust gas temperature transmitter 1 - G235-

- Removing and installing ⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653
- Coat threads with hot bolt paste; hot bolt paste ⇒ ETKA - Electronic Catalogue of Original Parts
- 45 Nm

4 - Exhaust gas temperature transmitter 2 - G448-

- for vehicles with EU6 emission level
- the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- Removing and installing ⇒ “4.3 Removing and installing the exhaust gas temperature transmitter 2 G448 ”, page 656
- 2.0l engines: 60 Nm
- 1.6 l engines: 45 Nm

5 - Screw

- Tightening torque ⇒ “9.1 Summary of components - lambda probe”, page 541

6 - Differential pressure transmitter - G505-

- its use depends on exhaust gas standard
- Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts
- Removing and installing ⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510

7 - Mounting bracket

8 - Exhaust gas pressure sensor 1 - G450-

- Depending on vehicle
- Removing and installing
  ⇒ “6.6 Removing and installing pressure sensor for exhaust gas 1 G450 ”, page 515

9 - Screw

- Tightening torque ⇒ “9.1 Summary of components - lambda probe”, page 541

10 - Exhaust gas temperature transmitter 3 - G495-

- Removing and installing
  ⇒ “4.4 Removing and installing the exhaust gas temperature transmitter 3 G495 ”, page 661
- the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- 2.0l engines: 60 Nm
- 1.6 l engines: 45 Nm

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

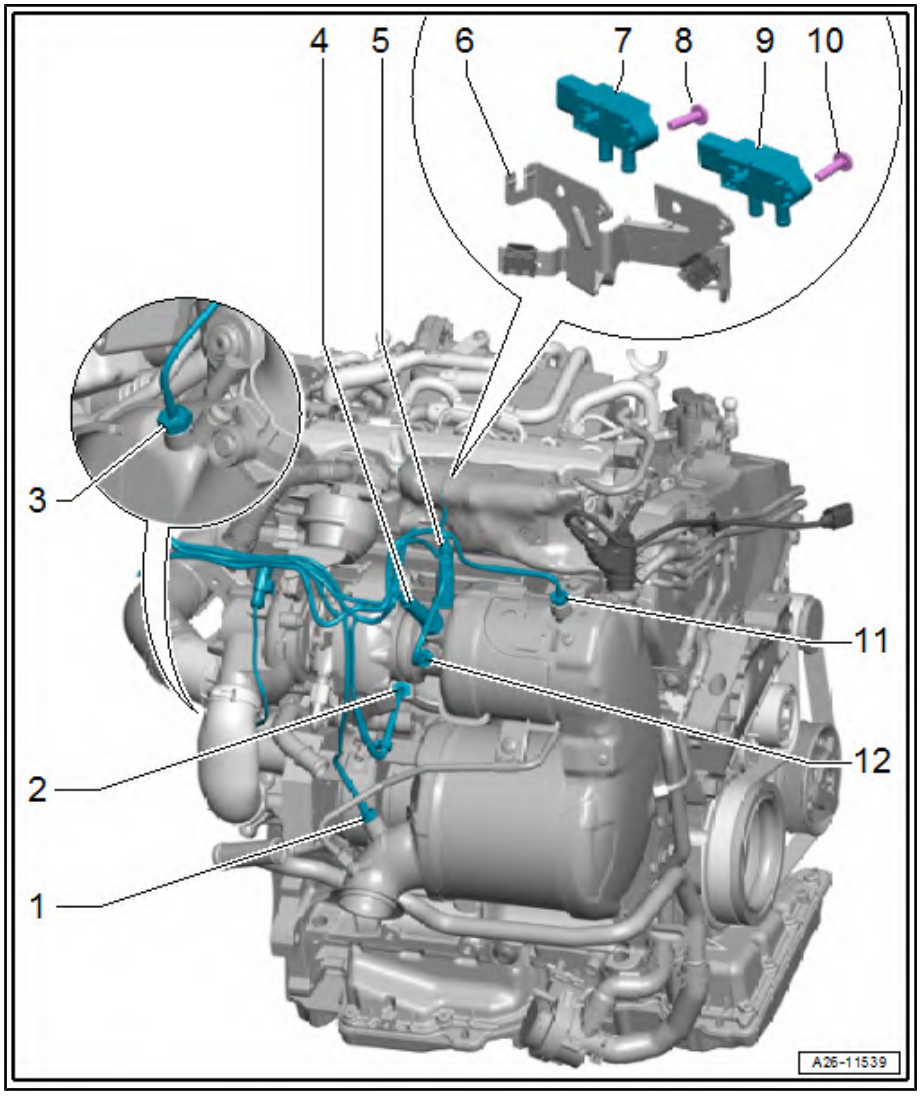
- consists of: lambda probe - G39- and lambda probe heater - Z19-
- Removing and installing ⇒ “9.2 Removing and installing Lambda probe”, page 544

12 - Exhaust gas cleaning module

4.1.2 Overview of components - exhaust gas temperature control, Octavia III with SCR system

Note

- *Malfunction caused by loose exhaust gas temperature transmitter.*
- *The threads of the exhaust gas temperature transmitter -G495- and -G648- are coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.*



1 - Exhaust gas temperature transmitter 4 - G648-

- ❑ Removing and installing ⇒ “4.5 Removing and installing the exhaust gas temperature transmitter 4 G648 ”, page 666
- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- ❑ 2.0l engines: 60 Nm
- ❑ 1.6 l engines: 45 Nm

2 - Exhaust gas temperature transmitter 1 - G235-

- ❑ Removing and installing ⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653
- ❑ Coat threads with hot bolt paste; hot bolt paste ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ 45 Nm

3 - Temperature for exhaust gas recirculation - G98-

- ❑ Depending on vehicle
- ❑ Removing and installing ⇒ “5.6 Removing and installing temperature sensor for exhaust gas recirculation G98 ”, page 697
- ❑ 60 Nm

4 - NOx sender control unit - GX30-

consists of NOx sender - G295- and NOx sender control unit - J583-

- ❑ Removing and installing ⇒ “6.11 Removing and installing NOx transmitter control unit GX30 ”, page 520

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

- ❑ consists of: lambda probe - G39- and lambda probe heater - Z19-
- ❑ Removing and installing ⇒ “9.2.1 Removing and installing lambda probe 1 upstream of catalytic converter GX10 , Octavia III, Yeti”, page 544

6 - Mounting bracket

- ❑ for differential pressure transmitter

7 - Exhaust gas pressure sensor 1 - G450-

- ❑ Depending on vehicle
- ❑ Removing and installing
  ⇒ “6.6 Removing and installing pressure sensor for exhaust gas 1 G450 ”, page 515

8 - Screw

- ❑ 8 Nm

9 - Differential pressure transmitter - G505-

- ❑ its use depends on exhaust gas standard
- ❑ Removing and installing
  ⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510

10 - Screw

- ❑ 8 Nm

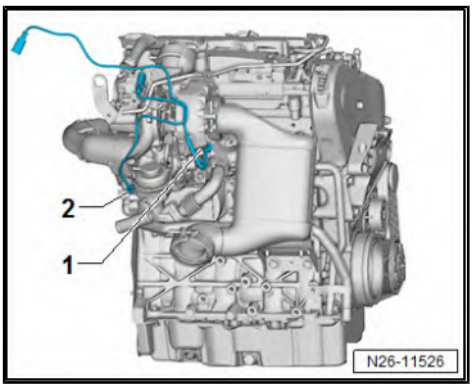
11 - Exhaust gas temperature transmitter 3 - G495-

- ❑ Removing and installing
  ⇒ “4.4 Removing and installing the exhaust gas temperature transmitter 3 G495 ”, page 661
- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- ❑ 2.0l engines: 60 Nm
- ❑ 1.6 l engines: 45 Nm

12 - Exhaust gas temperature transmitter 2 - G448-

- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- ❑ Removing and installing
  ⇒ “4.3 Removing and installing the exhaust gas temperature transmitter 2 G448 ”, page 656
- ❑ 2.0l engines: 60 Nm
- ❑ 1.6 l engines: 45 Nm

4.1.3 Summary of components - exhaust gas temperature regulation, vehicles with EU4 emission level



1 - Temperature sensor for exhaust gas recirculation - G98-
⇒ “5.6.1 Removing and installing the temperature sensor for exhaust gas recirculation G98 , vehicles with exhaust gas standard EU4”, page 697

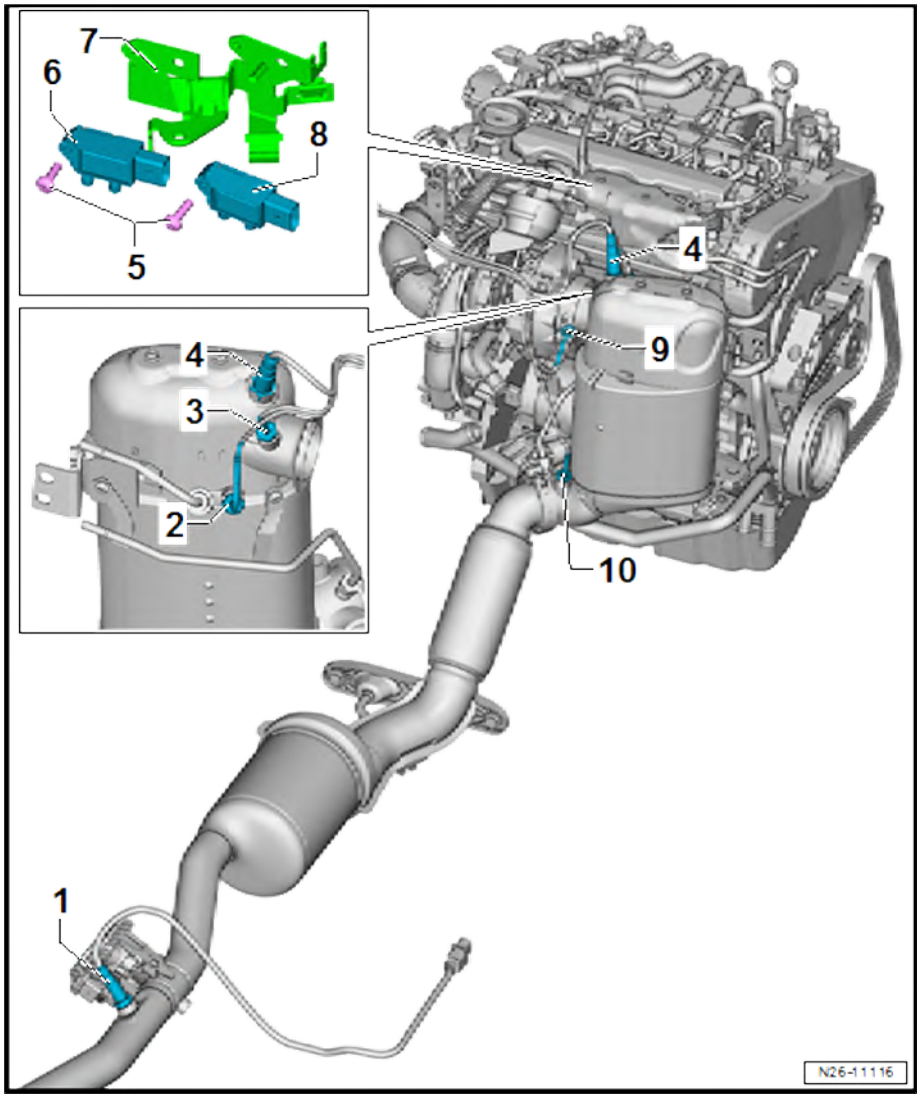
2 - Exhaust gas temperature sender 1 - G235-
⇒ “4.2 Removing and installing the exhaust gas temperature transmitter 1 G235 ”, page 653

4.1.4 Summary of components - exhaust temperature regulation, Yeti

NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- ♦ **The threads of the exhaust gas temperature transmitter - G495- and -G648- are coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**



1 - NOx transmitter 2 - G687-

- ❑ with control unit for NOx transmitter 2 - J881-
- ❑ Removing and installing ⇒ “6.8 Removing and installing NOx transmitter 2 G687 ”, page 517
- ❑ Observe part number ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ 50 Nm

2 - Exhaust gas temperature transmitter 3 - G495-

- ❑ Removing and installing ⇒ “4.4.1 Removing and installing the exhaust gas temperature transmitter 3 G495 , Octavia III, Yeti”, page 661
- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- ❑ 60 Nm

3 - Exhaust gas temperature transmitter 2 - G448-

- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- ❑ Removing and installing ⇒ “4.3.1 Removing and installing the exhaust gas temperature transmitter 2 G448 , Octavia III, Yeti”, page 656
- ❑ 60 Nm

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

- ❑ consists of: lambda probe - G39- and lambda probe heater - Z19-
- ❑ Removing and installing ⇒ “9.2.1 Removing and installing lambda probe 1 upstream of catalytic converter GX10 , Octavia III, Yeti”, page 544

5 - Screw

- ❑ Tightening torque ⇒ “9.1 Summary of components - lambda probe”, page 541

6 - Differential pressure transmitter - G505-

- ❑ Removing and installing ⇒ “6.5 Removing and installing differential pressure transmitter G505 ”, page 510

7 - Mounting bracket

- ❑ Differential pressure transmitter - G505-

8 - Exhaust gas pressure sensor 1 - G450-

- ❑ Removing and installing ⇒ “6.6 Removing and installing pressure sensor for exhaust gas 1 G450 ”, page 515

9 - Exhaust gas temperature transmitter 1 - G235-

- ❑ Removing and installing ⇒ “4.2.1 Removing and installing the exhaust gas temperature transmitter 1 G235 , Octavia III, Yeti”, page 653

- ❑ Coat threads with hot bolt paste; hot bolt paste ⇒ ETKA - Electronic Catalogue of Original Parts
- ❑ 45 Nm

10 - Exhaust gas temperature transmitter 4 - G648-

- ❑ Removing and installing
  ⇒ “4.4.1 Removing and installing the exhaust gas temperature transmitter 3 G495 , Octavia III, Yeti”, page 661
- ❑ the thread of the exhaust gas temperature transmitter is coated and must not be coated additionally with hot bolt paste
- ❑ 60 Nm

4.2 Removing and installing the exhaust gas temperature transmitter 1 - G235-

⇒ “4.2.1 Removing and installing the exhaust gas temperature transmitter 1 G235 , Octavia III, Yeti”, page 653

⇒ “4.2.2 Removing and installing exhaust gas temperature transmitter 1 G235 , Rapid NH”, page 654

4.2.1 Removing and installing the exhaust gas temperature transmitter 1 - G235- , Octavia III, Yeti

Special tools and workshop equipment required

- ♦ Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
- ♦ Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- ♦ Socket wrench insert - T40055-

Removing

Note

When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

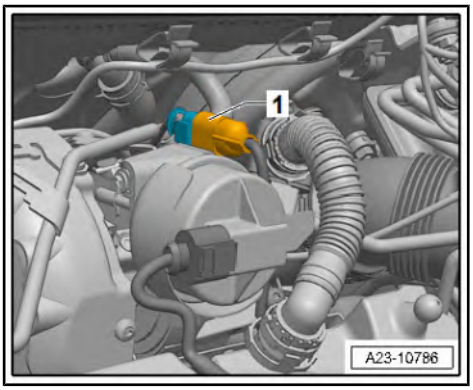
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

– If present, remove electrical connector -1- from the mounting bracket.

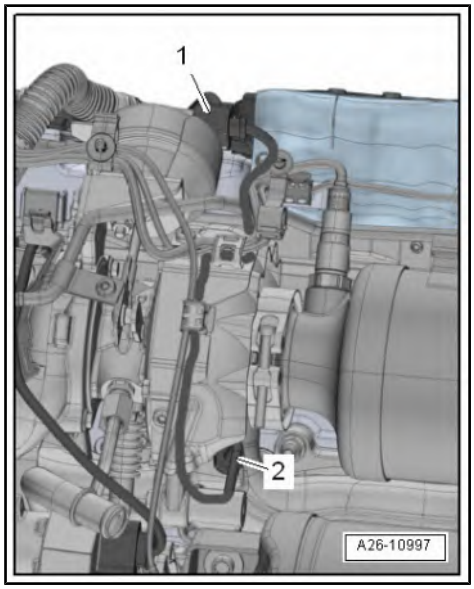
– Release and pull off electrical connector.

– Expose electric wiring harness.

– Open heat protection sleeve.



– Take electrical plug connection-1 - out of the holder, disconnect and expose electric wiring loom.
– Unscrew exhaust gas temperature transmitter 1 - G235- Pos. -2-.
– Use a suitable tool from the list of tools.



Installing

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

– Fit all cable straps on again in the same place when installing.

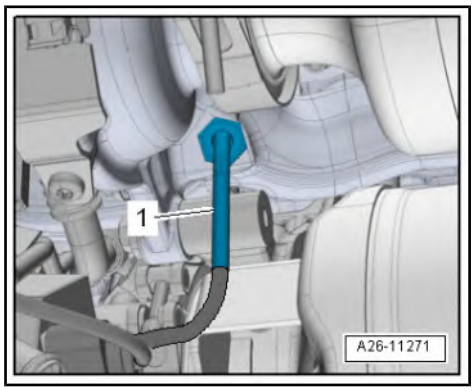
Note

♦ *Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.*

♦ *Coat thread with hot bolt paste; Hot bolt paste ⇒ ETKA - Electronic Catalogue of Original Parts .*

Fitting position of the exhaust gas temperature sender -G235- :

• Angled shank -1- downwards horizontally.



– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
– Install the engine cover ⇒ “3.1 Removing and installing engine trim panel”, page 64 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “4 Exhaust temperature regulation”, page 647

4.2.2 Removing and installing exhaust gas temperature transmitter 1 - G235- , Rapid NH

Special tools and workshop equipment required

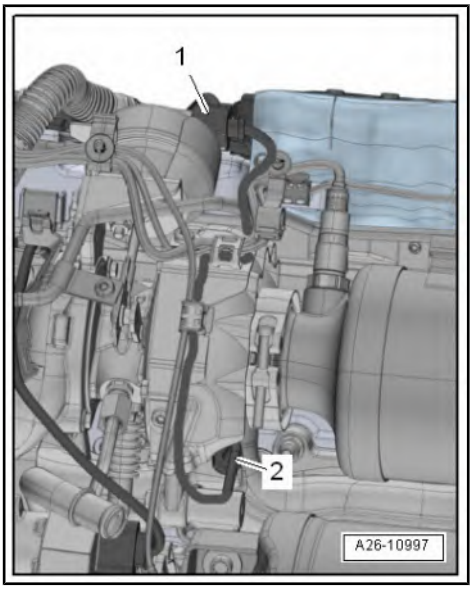
♦ Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
♦ Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
♦ Socket wrench insert - T40055-

Removing

Note

When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .
– Remove the assembly carrier with steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering gear .
– Open heat protection sleeve.
– Take electrical plug connection-1 - out of the holder, disconnect and expose electric wiring loom.
– Unscrew exhaust gas temperature transmitter 1 - G235- Pos. -2-.
– Use a suitable tool from the list of tools.



Installing

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

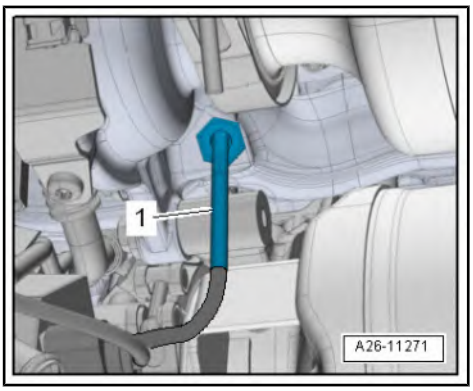
– Fit all cable straps on again in the same place when installing.

Note

♦ *Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.*

♦ *Coat thread with hot bolt paste; Hot bolt paste ⇒ ETKA - Electronic Catalogue of Original Parts .*

Fitting position of the exhaust gas temperature sender -G235- :



• Angled shank -1- downwards horizontally.
– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
– Install assembly carrier with steering gear ⇒ Chassis, axles, steering; Rep. gr. 40 ; Assembly carrier; Removing and installing assembly carrier with steering gear .
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

Tightening torques - summaries of components

Note

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

♦ ⇒ “4 Exhaust temperature regulation”, page 647
♦ ⇒ “1.1 Assembly overview - silencers”, page 552

4.3 Removing and installing the exhaust gas temperature transmitter 2 - G448-

⇒ “4.3.1 Removing and installing the exhaust gas temperature transmitter 2 G448 , Octavia III, Yeti”, page 656

⇒ “4.3.2 Removing and installing the exhaust gas temperature encoder 2 G448 , Octavia III, with SCR system”, page 657

⇒ “4.3.3 Removing and installing exhaust gas temperature transmitter 2 G448 , Rapid NH”, page 659

4.3.1 Removing and installing the exhaust gas temperature transmitter 2 - G448- , Octavia III, Yeti

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- Socket wrench insert - T40055-

Removing

Note

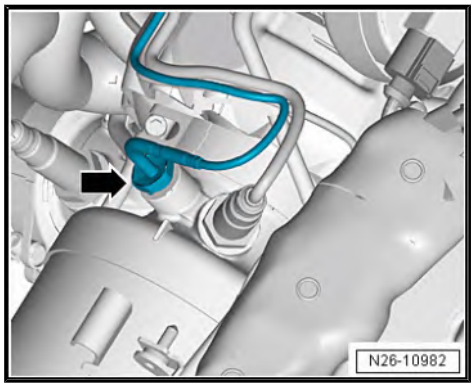
When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

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

– Release and pull off the electrical plug connection
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .

– Unscrew exhaust temperature sender 2 - G448- -arrow-.

– Use a suitable tool from the list of tools.



Installing

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

NOTICE

Malfunction caused by a loose exhaust gas temperature sender.

- **The thread of the exhaust temperature sender 2 - G448- is coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

– Fit all cable straps on again in the same place when installing.

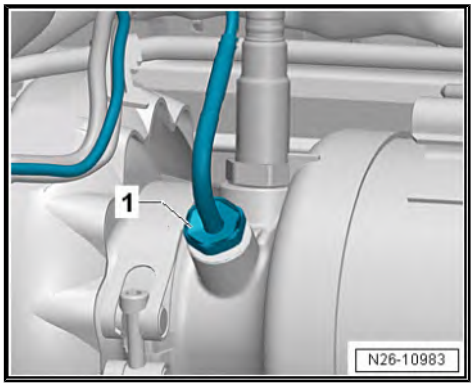
Note

Protect exhaust gas temperature sender against impact and hammering: do not use exhaust gas temperature sender if it has fallen onto the floor.

Fitting position of the exhaust gas temperature sender 2 - G448- :

- The angled shaft -1- must point vertically upwards.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



Tightening torques - summaries of components

Note

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

◆ ⇒ “4 Exhaust temperature regulation”, page 647

4.3.2 Removing and installing the exhaust gas temperature encoder 2 - G448- , Octavia III, with SCR system

Special tools and workshop equipment required

◆ Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-

◆ Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-

◆ Socket wrench insert - T40055-

Removing

Note

When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

Fitting location
⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647

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

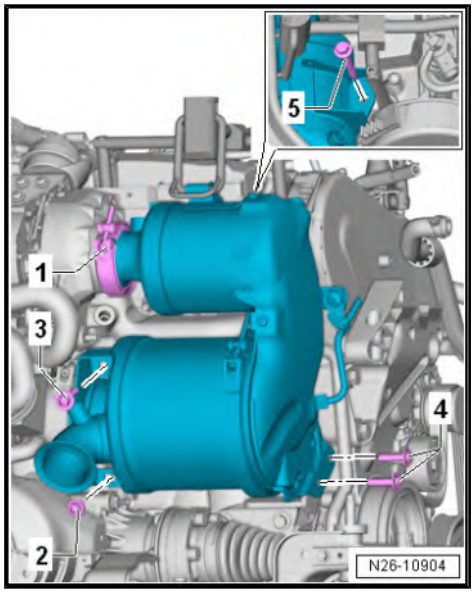
– Remove NOx sender control unit - GX30- on exhaust gas cleaning module
⇒ “6.11 Removing and installing NOx transmitter control unit GX30 ”, page 520 .

– Release and pull off the electrical plug connection
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .

– Remove electrical plug connection from the mounting bracket.

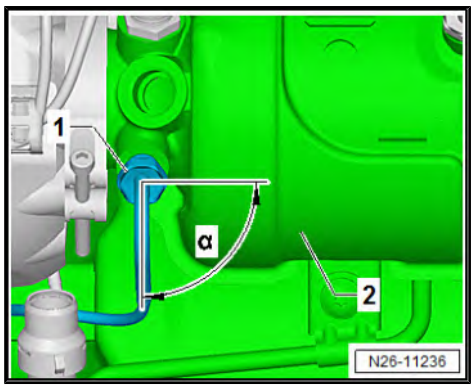
– Expose electric wiring harness.

– For reasons of space, it may be necessary to loosen and rotate the clamp -1-.



– Unscrew exhaust gas temperature sender 2 - G448- -1-.

– Use a suitable tool from the list of tools.



Installing

Installation is performed in the reverse order, while paying attention to the following:

– Fit all cable straps on again in the same place when installing.

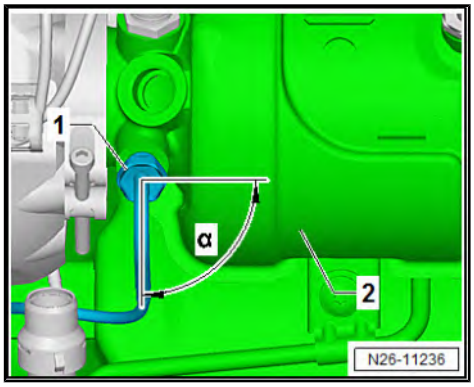
NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- **the thread of the temperature transmitter 2 - G448- is coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.



– Observe the fitting position of exhaust temperature sender.
– The exhaust gas temperature sender must be installed as shown.

α - 90°

– The angled shank must point vertically downwards in the direction of the pre-exhaust pipe.
– Check electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes ⇒ Current flow diagrams, Electrical fault finding and Fitting locations and
⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647 .
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647
- ⇒ “9.1 Summary of components - lambda probe”, page 541

4.3.3 Removing and installing exhaust gas temperature transmitter 2 - G448- , Rapid NH

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- Socket wrench insert - T40055-

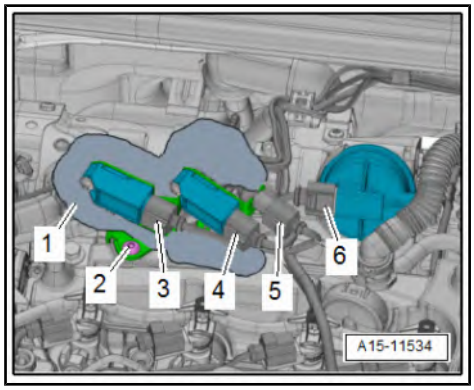
Removing

Note

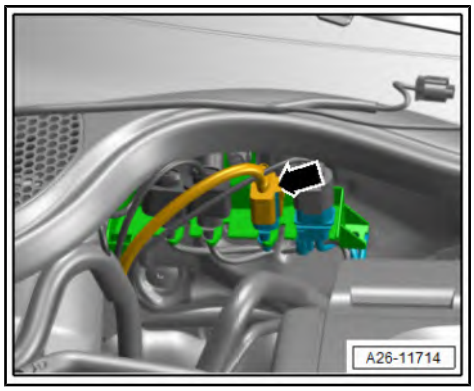
When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

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

– Open heat protection sleeve -1-.
– Disconnect electrical plug connections -3, 4, 6- and expose electric cable.
– Take electrical plug connection -5- for exhaust gas temperature transmitter 1 - G235- out of the bracket, disconnect and expose electric cable.
– Unscrew screw -2- and press bracket with differential pressure transmitters to the front.

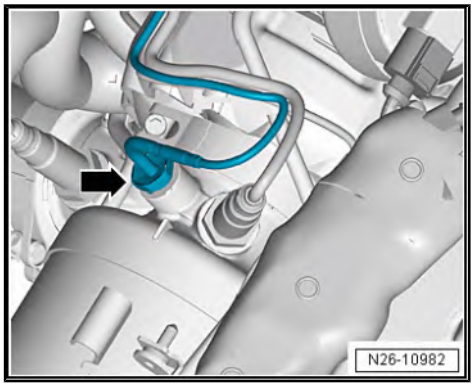


– If present, open heat shield collar.
– Take electrical plug connection -arrow- for exhaust gas temperature transmitter 2 - G448- out of the bracket, disconnect and expose electric cable.



– Unscrew exhaust temperature sender 2 - G448- -arrow-.

– Use a suitable tool from the list of tools.



Installing

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

NOTICE

Malfunction caused by a loose exhaust gas temperature sender.

- **The thread of the exhaust temperature sender 2 - G448- is coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

– Fit all cable straps on again in the same place when installing.

Note

Protect exhaust gas temperature sender against impact and hammering: do not use exhaust gas temperature sender if it has fallen onto the floor.

Fitting position of the exhaust gas temperature sender 2 - G448- :

- The angled shank must point vertically downwards.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

Tightening torques - summaries of components

Note

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

- ⇒ “4 Exhaust temperature regulation”, page 647
- ⇒ “1.2 Assembly overview - cylinder head cover”, page 104

4.4 Removing and installing the exhaust gas temperature transmitter 3 - G495-

⇒ “4.4.1 Removing and installing the exhaust gas temperature transmitter 3 G495 , Octavia III, Yeti”, page 661

⇒ “4.4.2 Removing and installing the exhaust gas temperature encoder 3 G495 , Octavia III, with SCR system”, page 663

⇒ “4.4.3 Removing and installing exhaust gas temperature transmitter 3 G495 , Rapid NH”, page 665

4.4.1 Removing and installing the exhaust gas temperature transmitter 3 - G495- , Octavia III, Yeti

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- Socket wrench insert - T40055-

Removing

Note

When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

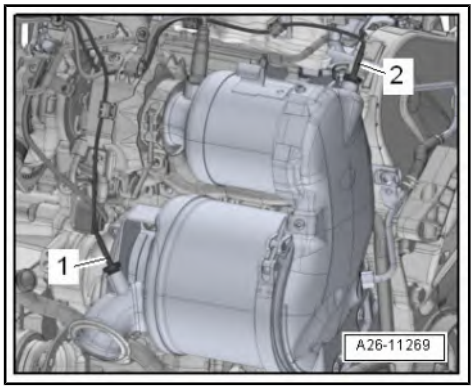
– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

– Release and pull off the electrical plug connection
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .

– Expose electric cables.

– Unscrew exhaust gas temperature sender 3 - G495- -2-.

– Use a suitable tool from the list of tools.



Installing

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

NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- **The threads of the exhaust gas temperature senders are coated. Exhaust gas temperature senders must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

– Fit all cable straps on again in the same place when installing.

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647

4.4.2 Removing and installing the exhaust gas temperature encoder 3 - G495- , Octavia III, with SCR system

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + -T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- Socket wrench insert - T40055-

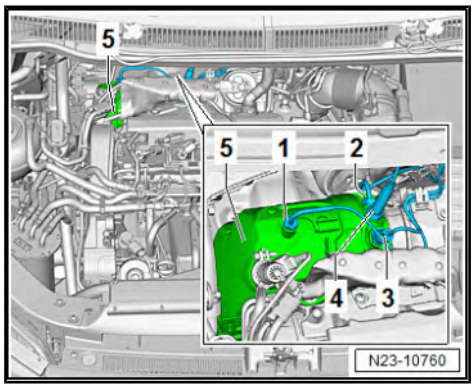
Removing

Note

When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

Fitting location
⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647

– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Mark the alignment of the angled shaft of the exhaust gas temperature sender 3 - G495- for re-installation.
– Release and pull off the electrical plug connection
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .
– Remove electrical plug connection from the mounting bracket.
– Expose electric wiring harness.
– Unscrew exhaust gas temperature sender 3 - G495- -1-.
– Use a suitable tool from the list of tools.



Installing

Installation is performed in the reverse order, while paying attention to the following:

NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- **The threads of the exhaust gas temperature senders are coated. Exhaust gas temperature senders must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

– Fit all cable straps on again in the same place when installing.

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.

– Note the fitting position of the exhaust gas temperature sender 3 - G495- . Use the mark you already made for this purpose.
– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
– Install the engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647

4.4.3 Removing and installing exhaust gas temperature transmitter 3 - G495- , Rapid NH

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- Socket wrench insert - T40055-

Removing

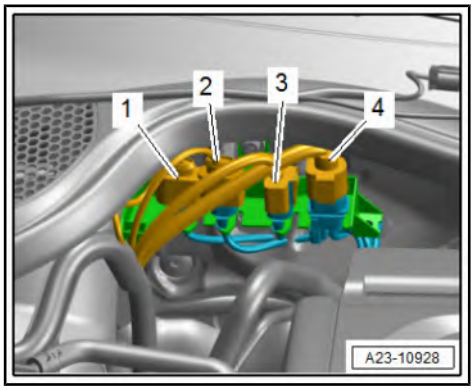
Note

When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

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

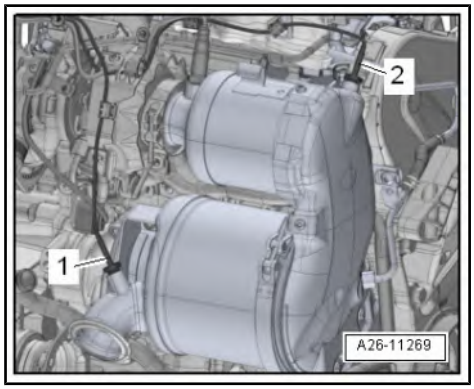
– If present, open heat shield collar.

– Take electrical connector for exhaust gas temperature encoder 3 - G495- -1- out of the bracket, disconnect and expose electric cable.



– Unscrew exhaust gas temperature sender 3 - G495- -2-.

– Use a suitable tool from the list of tools.



Installing

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

NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- **The threads of the exhaust gas temperature senders are coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

– Fit all cable straps on again in the same place when installing.

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

Tightening torques - summaries of components

Note

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

- ⇒ “4 Exhaust temperature regulation”, page 647

4.5 Removing and installing the exhaust gas temperature transmitter 4 - G648-

⇒ “4.5.1 Removing and installing the exhaust gas temperature transmitter 4 G648 , Octavia III, Yeti”, page 666

⇒ “4.5.2 Removing and installing exhaust gas temperature transmitter 4 G648 , Rapid NH”, page 667

4.5.1 Removing and installing the exhaust gas temperature transmitter 4 - G648- , Octavia III, Yeti

Special tools and workshop equipment required

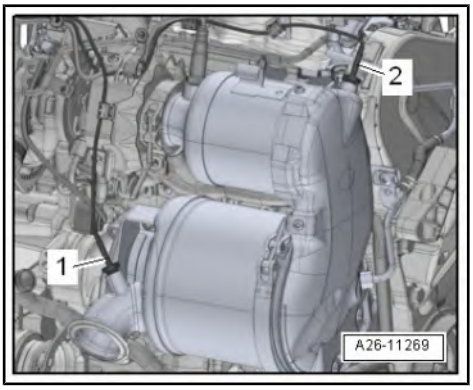
- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- Socket wrench insert - T40055-

Removing

Note

When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

– Remove engine cover
⇒ “3.1 Removing and installing engine trim panel”, page 64 .
– Release and pull off the electrical plug connection
⇒ “1.2.7 Installation location overview - electrical plug connections”, page 443 .
– Expose electric cables.
– Unscrew exhaust gas temperature sender 4 - G648- -1-.
– Use a suitable tool from the list of tools.



Installing

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

NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- **The threads of the exhaust gas temperature senders are coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

– Fit all cable straps on again in the same place when installing.

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

Tightening torques - summaries of components

Note

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

- ⇒ “4.1 Summary of components - exhaust temperature regulation”, page 647

4.5.2 Removing and installing exhaust gas temperature transmitter 4 - G648- , Rapid NH

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-
- Socket wrench insert - T40055-

Removing

Note

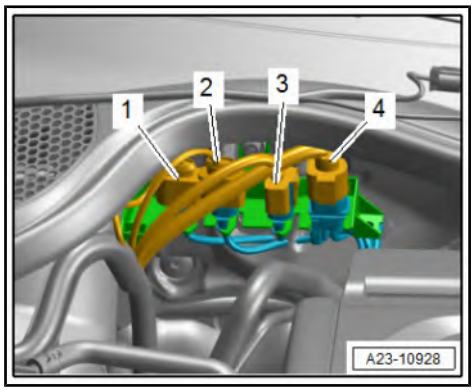
When removing, the electric cable must be not cut off, since doing so would mean that fault diagnosis would no longer be possible.

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

– If present, open heat shield collar.

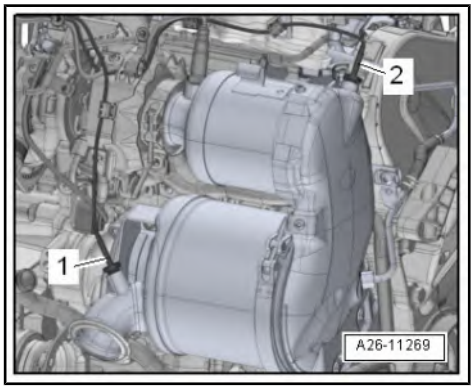
– Take electrical connector for exhaust gas temperature encoder 4 - G648- -2- out of the bracket, disconnect and expose electric cable.

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .



– Unscrew exhaust gas temperature sender 4 - G648- -1-.

– Use a suitable tool from the list of tools.



Installing

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

NOTICE

Malfunction caused by loose exhaust gas temperature transmitter.

- **The threads of the exhaust gas temperature senders are coated. It must NOT be coated additionally with hot bolt paste and must be tightened to the specified tightening torque.**

– Fit all cable straps on again in the same place when installing.

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

Tightening torques - summaries of components

Note

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

- ⇒ “4 Exhaust temperature regulation”, page 647
- ⇒ “1.1 Assembly overview - silencers”, page 552

5 Exhaust gas recirculation

⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

⇒ “5.2 Summary of components - exhaust gas recirculation 1 GX5 ”, page 678

⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680

⇒ “5.4 Removing and installing exhaust gas recirculation valve 1 GX5 ”, page 691

⇒ “5.5 Removing and installing exhaust gas recirculation valve 2 GX6 ”, page 693

⇒ “5.6 Removing and installing temperature sensor for exhaust gas recirculation G98 ”, page 697

⇒ “5.7 Test air-tightness of the radiator for exhaust gas recirculation”, page 699

5.1 Summary of components - Exhaust gas recirculation

⇒ “5.1.1 Summary of components - Exhaust gas recirculation, Octavia III”, page 670

⇒ “5.1.2 Summary of components - Exhaust gas recirculation, Yeti”, page 672

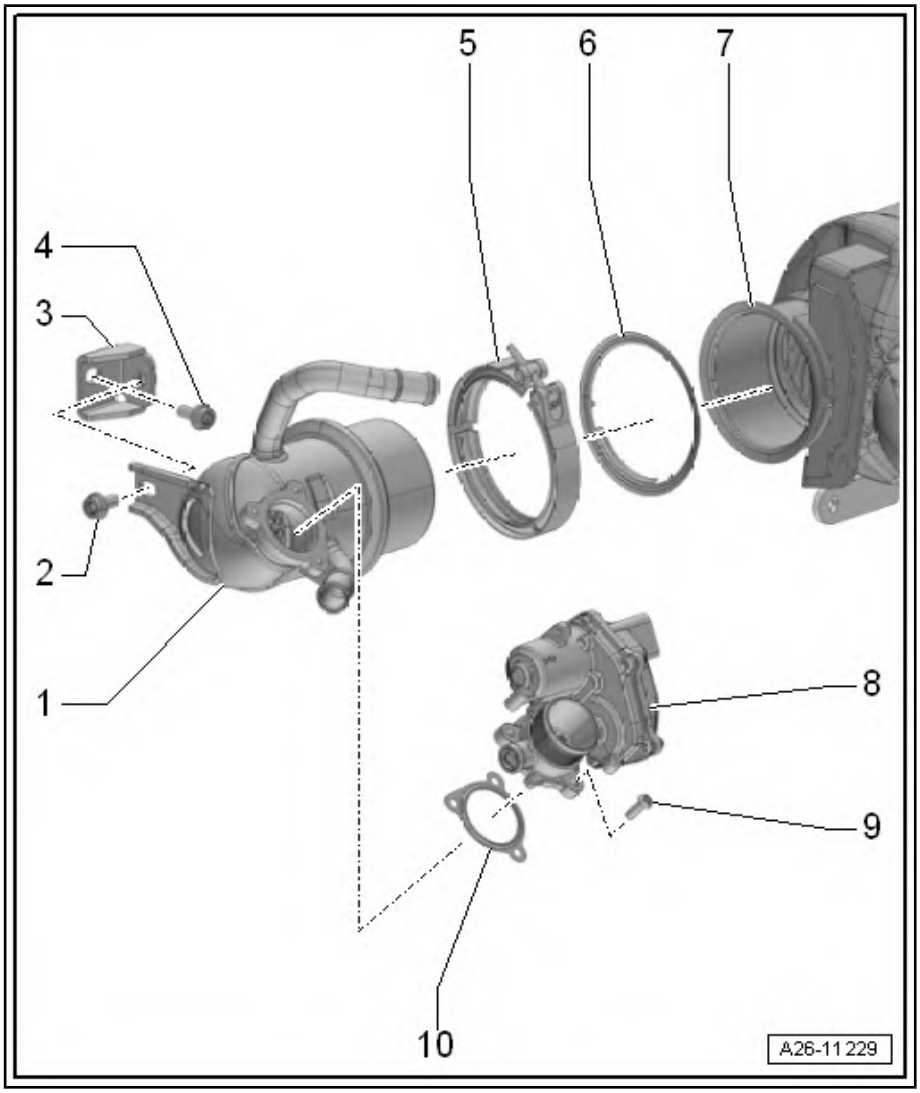
⇒ “5.1.3 Summary of components - Exhaust gas recirculation, vehicles with EU4 emission level, engine code CRVC”, page 674

⇒ “5.1.4 Summary of components - Exhaust gas recirculation, Rapid NH”, page 676

5.1.1 Summary of components - Exhaust gas recirculation, Octavia III

Note

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



1 - Radiator for exhaust gas recirculation

- ❑ Removing and installing ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680
- ❑ Check for leaks ⇒ “5.7 Test air-tightness of the radiator for exhaust gas recirculation”, page 699

2 - Screw

- ❑ Tightening torque and tightening order ⇒ page 672 , if only the radiator for exhaust gas recirculation has been removed

3 - Mounting bracket

- ❑ for radiator for exhaust gas recirculation

4 - Screw

- ❑ Tightening torque and tightening order ⇒ page 672 , if only the radiator for exhaust gas recirculation has been removed

5 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Tightening torque and tightening order ⇒ page 672

6 - Seal

- ❑ Replace after disassembly

7 - Exhaust gas cleaning module

- ❑ Removing and installing ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589

8 - Exhaust gas recirculation valve 2 - GX6-

comprises:

- ♦ Control engine 2 for exhaust gas recirculation - V339-
- ♦ Exhaust gas recirculation potentiometer 2 - G466-
  - ❑ Removing and installing ⇒ “5.5 Removing and installing exhaust gas recirculation valve 2 GX6 ”, page 693

Note

Control motor for exhaust gas recirculation is protected against damage using heat from a heat-protection matting. If this heat-protection matting gets damaged it will need to be replaced and the control motor checked by heat damage (it may also need to be replaced).

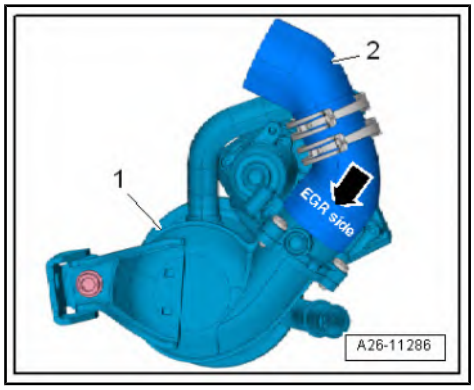
9 - Screw

- ❑ 9 Nm

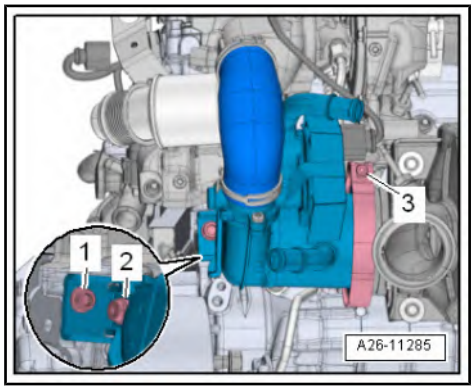
10 - Seal

- ❑ Replace after disassembly

Installation position of air guide hose at radiator for exhaust gas recirculation



Radiator for exhaust gas recirculation - tightening torques and tightening order



– Note the fitting position of the screw clamp -3-. The clamp must not rest against components.

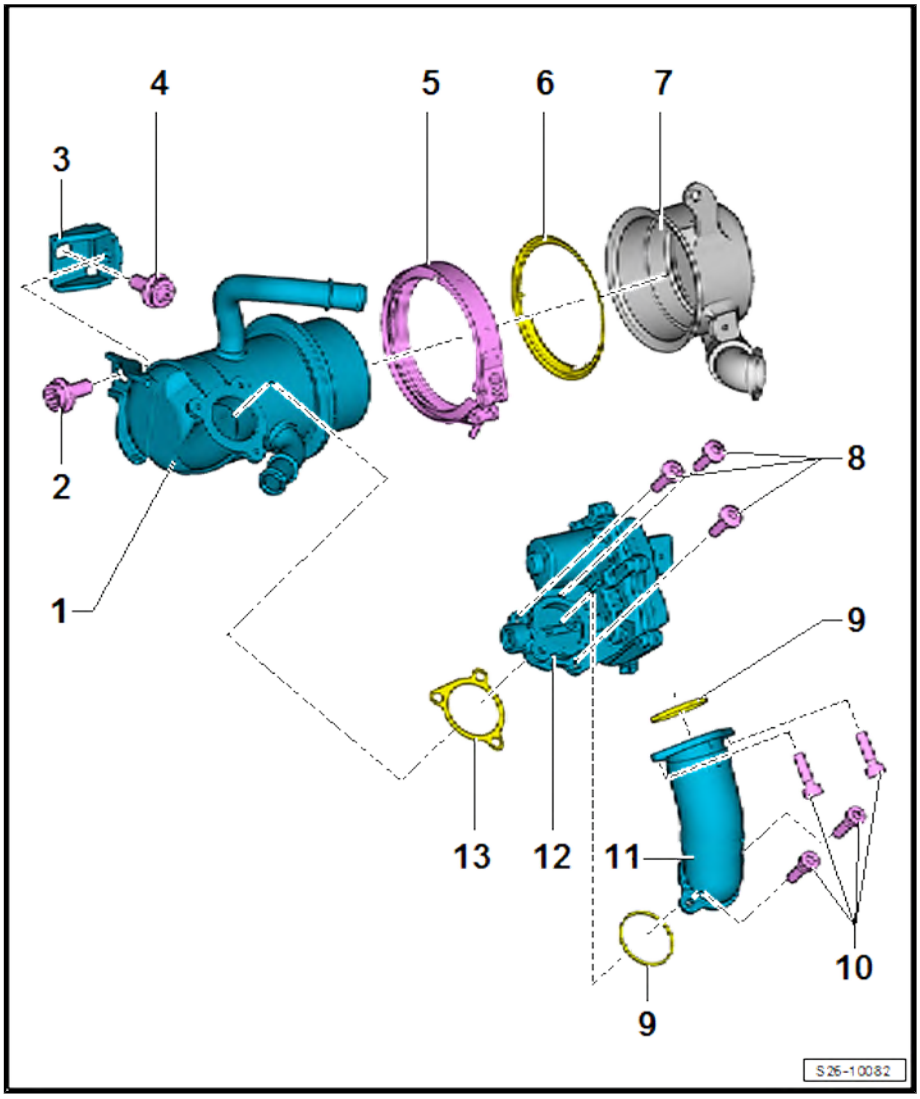
– Tighten bolts step by step in the given sequence:

Stage	Bolts	Tightening torque
1.	-1-, -2-	Insert screws
2.	Clamping sleeve -3-:	7 Nm
3.	-1-, -2-	by hand as far as the stop
4.	-1-, -2-	20 Nm

5.1.2 Summary of components - Exhaust gas recirculation, Yeti

Note

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



1 - Radiator for exhaust gas recirculation

- ❑ Removing and installing ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680
- ❑ Check for leaks ⇒ “5.7 Test air-tightness of the radiator for exhaust gas recirculation”, page 699

2 - Screw

- ❑ Tightening torque and tightening order ⇒ page 674 , if only the radiator for exhaust gas recirculation has been removed

3 - Mounting bracket

- ❑ for radiator for exhaust gas recirculation

4 - Screw

- ❑ Tightening torque and tightening order ⇒ page 674 , if only the radiator for exhaust gas recirculation has been removed

5 - Clamping sleeve

- ❑ Replace after disassembly
- ❑ Fitting position ⇒ page 674
- ❑ Tightening torque and tightening order ⇒ page 674

6 - Seal

- ❑ Replace after disassembly

7 - Filter for exhaust gas recirculation

8 - Screw

- ❑ 9 Nm

9 - O-ring

- ❑ Replace after disassembly

10 - Screw

- ❑ 10 Nm

11 - Connecting pipe

12 - Exhaust gas recirculation valve 2 - GX6-

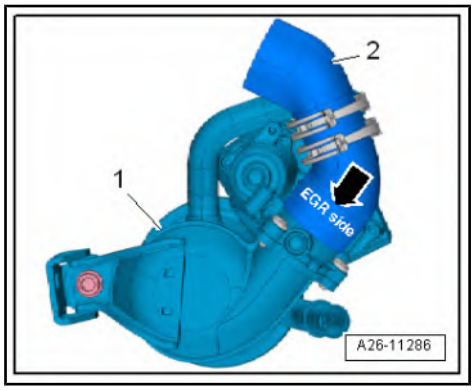
comprises:

- ♦ Control engine 2 for exhaust gas recirculation - V339-
- ♦ Exhaust gas recirculation potentiometer 2 - G466-
  - ❑ Removing and installing ⇒ “5.5 Removing and installing exhaust gas recirculation valve 2 GX6 ”, page 693

13 - Seal

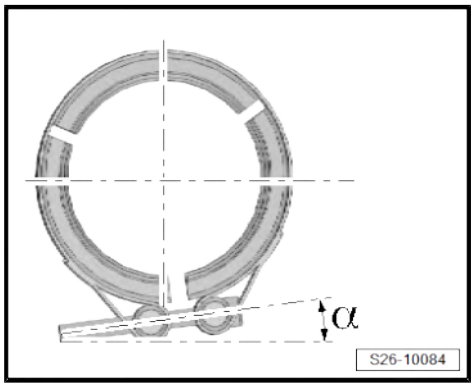
- ❑ Replace after disassembly

Installation position of air guide hose at radiator for exhaust gas recirculation



Installation position for radiator for exhaust gas recirculation

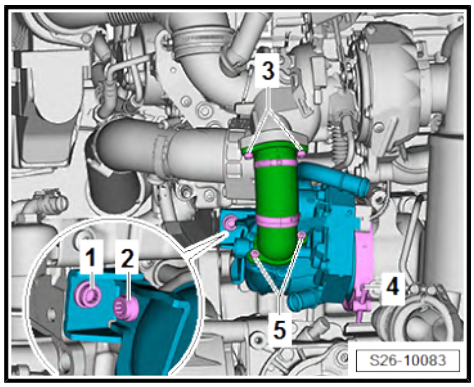
- Angle -α- = 0-10°.



Radiator for exhaust gas recirculation - tightening torques and tightening order

– Tighten bolts step by step in the given sequence:

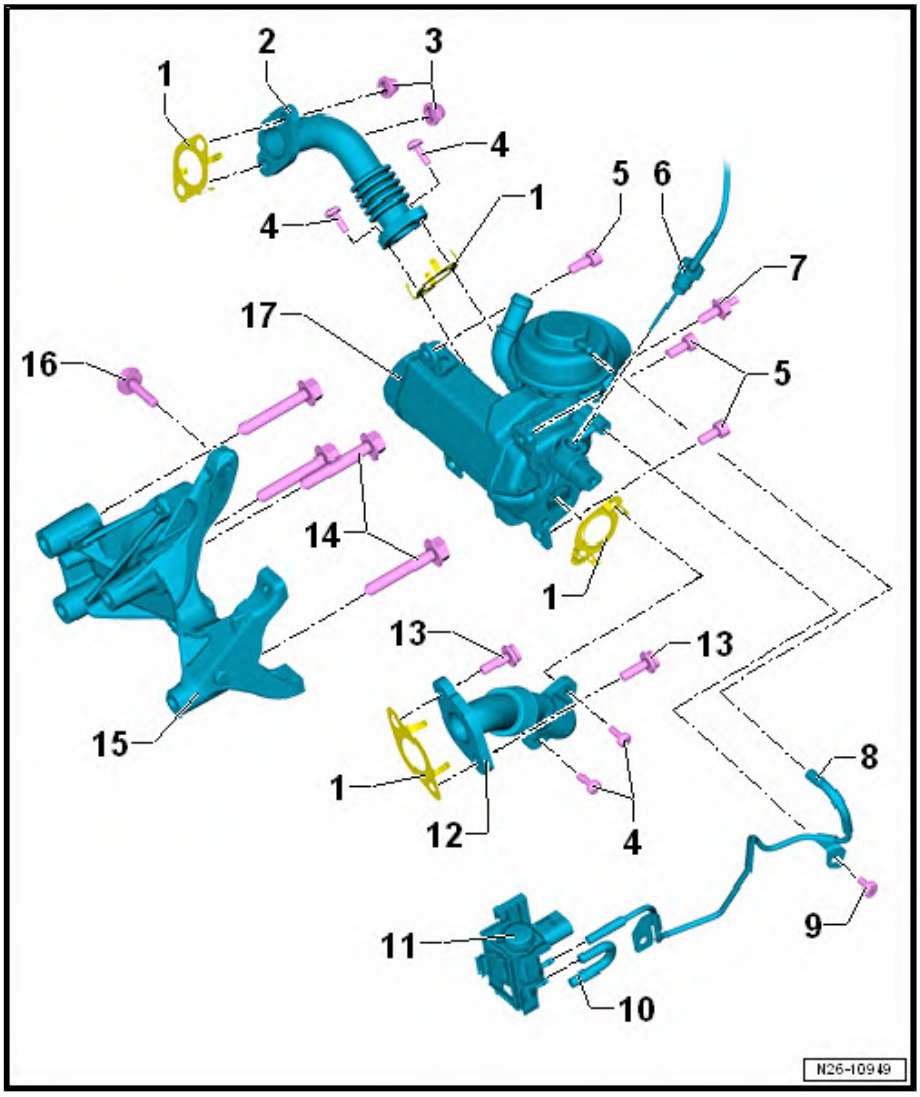
Stage	Bolts	Tightening torque
1.	-5- and -3-	10 Nm
2.	Clamping sleeve -4-:	7 Nm
3.	-1-, -2-	by hand as far as the stop
4.	-1-, -2-	20 Nm



5.1.3 Summary of components - Exhaust gas recirculation, vehicles with EU4 emission level, engine code CRVC

Note

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



1 - Seal
- ❑ Replace after disassembly

2 - Connecting pipe
- ❑ to exhaust manifold

3 - Nut
- ❑ Replace after disassembly
- ❑ 20 Nm

4 - Screw
- ❑ Replace after disassembly
- ❑ 8 Nm

5 - Screw
- ❑ Replace after disassembly
- ❑ 20 Nm

6 - Temperature for exhaust gas recirculation - G98-
- ❑ Removing and installing ⇒ “5.6 Removing and installing temperature sensor for exhaust gas recirculation G98 ”, page 697
- ❑ 60 Nm

7 - Double screw
- ❑ Replace after disassembly
- ❑ 20 Nm

8 - Vacuum line

9 - Screw
- ❑ 8 Nm

10 - Vacuum line

11 - Changeover valve for radiator of exhaust gas recirculation - N345-
- ❑ Fitting position ⇒ page 676

12 - Connecting pipe
- ❑ to cylinder head

13 - Screw
- ❑ Replace after disassembly
- ❑ 20 Nm

14 - Screw
- ❑ Observe tightening sequence ⇒ page 676

15 - Mounting bracket
- ❑ for radiator for exhaust gas recirculation
- ❑ screwed onto the cylinder head
- ❑ Observe tightening sequence ⇒ page 676

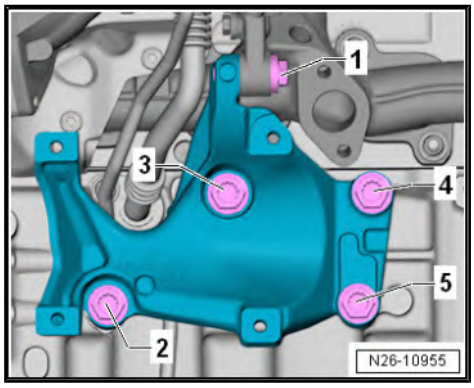
16 - Screw
- ❑ Observe tightening sequence ⇒ page 676

17 - Radiator for exhaust gas recirculation

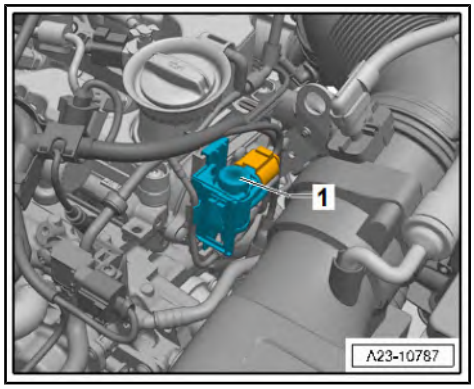
- ❑ Removing and installing
  ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680
- ❑ Check for leaks ⇒ “5.7 Test air-tightness of the radiator for exhaust gas recirculation”, page 699

Tightening torques and tightening sequence for mounting bracket for radiator for exhaust gas recirculation

Stage	Bolts	Tightening torque
1.	-2- … -5-	by hand as far as the stop
2.	-1-	tighten to 20 Nm
3.	-2- … -5-	tighten to 55 Nm



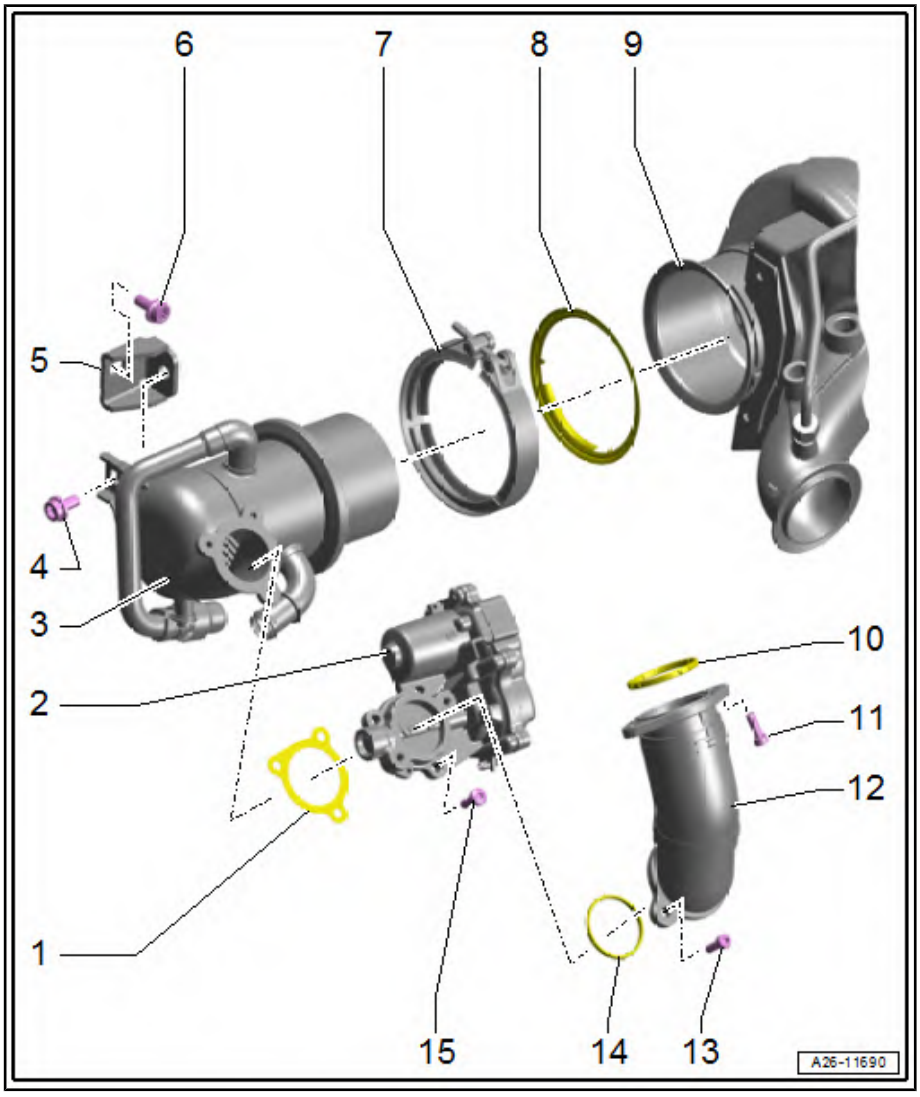
Changeover valve for radiator of exhaust gas recirculation - N345- -1-



5.1.4 Summary of components - Exhaust gas recirculation, Rapid NH

Note

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



1 - Seal

- ❑ Replace after disassembly

2 - Exhaust gas recirculation valve 2 - GX6-

comprises:

- ♦ Control engine 2 for exhaust gas recirculation - V339-
- ♦ Exhaust gas recirculation potentiometer 2 - G466-
  - ❑ Removing and installing ⇒ “5.5 Removing and installing exhaust gas recirculation valve 2 GX6 ”, page 693

3 - Radiator for exhaust gas recirculation

- ❑ Removing and installing ⇒ “5.3 Removing and installing radiator for exhaust gas recirculation”, page 680
- ❑ Check for leaks ⇒ “5.7 Test air-tightness of the radiator for exhaust gas recirculation”, page 699

4 - Screw

- ❑ Tightening torque and tightening order ⇒ page 678 , if only the radiator for exhaust gas recirculation has been removed

5 - Mounting bracket

- ❑ for radiator for exhaust gas recirculation

6 - Screw

- ❑ Tightening torque and tightening order ⇒ page 678 , if only the radiator for exhaust gas recirculation has been removed

7 - Screw clamp

- ❑ Replace after disassembly
- ❑ Fitting position ⇒ page 678
- ❑ Tightening torque and tightening order ⇒ page 678

8 - Seal

- ❑ Replace after disassembly

9 - Exhaust gas cleaning module

- ❑ Removing and installing ⇒ “2.3 Removing and installing exhaust gas cleaning module”, page 589

10 - O-ring

- ❑ Replace after disassembly

11 - Screw

- ❑ 9 Nm

12 - Connection fitting

13 - Screw

- ❑ 9 Nm

14 - O-ring

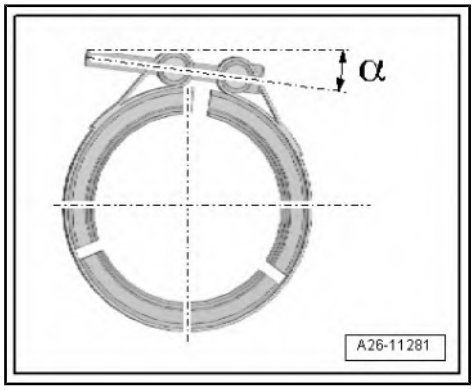
- ❑ Replace after disassembly

15 - Screw

- ❑ 9 Nm

Installation position of screw clamp for radiator for exhaust gas recirculation

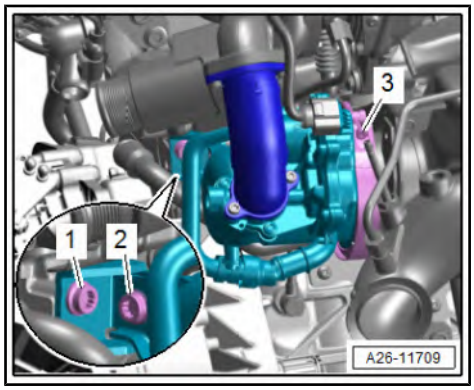
- Angle -α- = 10 -15°.



Radiator for exhaust gas recirculation - tightening torques and tightening order

– Tighten all bolts successively in the given sequence:

Stage	Bolts	Tightening torque
1.	Screw clamp -3-	7 Nm
2.	-1-, -2-	by hand as far as the stop
3.	-1-, -2-	20 Nm



5.2 Summary of components - exhaust gas recirculation 1 - GX5-

⇒ “5.2.1 Removing and installing exhaust gas recirculation valve 1 GX5 , Octavia III, Yeti, EU6”, page 678

⇒ “5.2.2 Summary of components - exhaust gas recirculation valve 1 GX5 , Rapid NH, EU6”, page 679

5.2.1 Removing and installing exhaust gas recirculation valve 1 - GX5- , Octavia III, Yeti, EU6

Note

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

1 - Coolant hose

2 - Spring clip

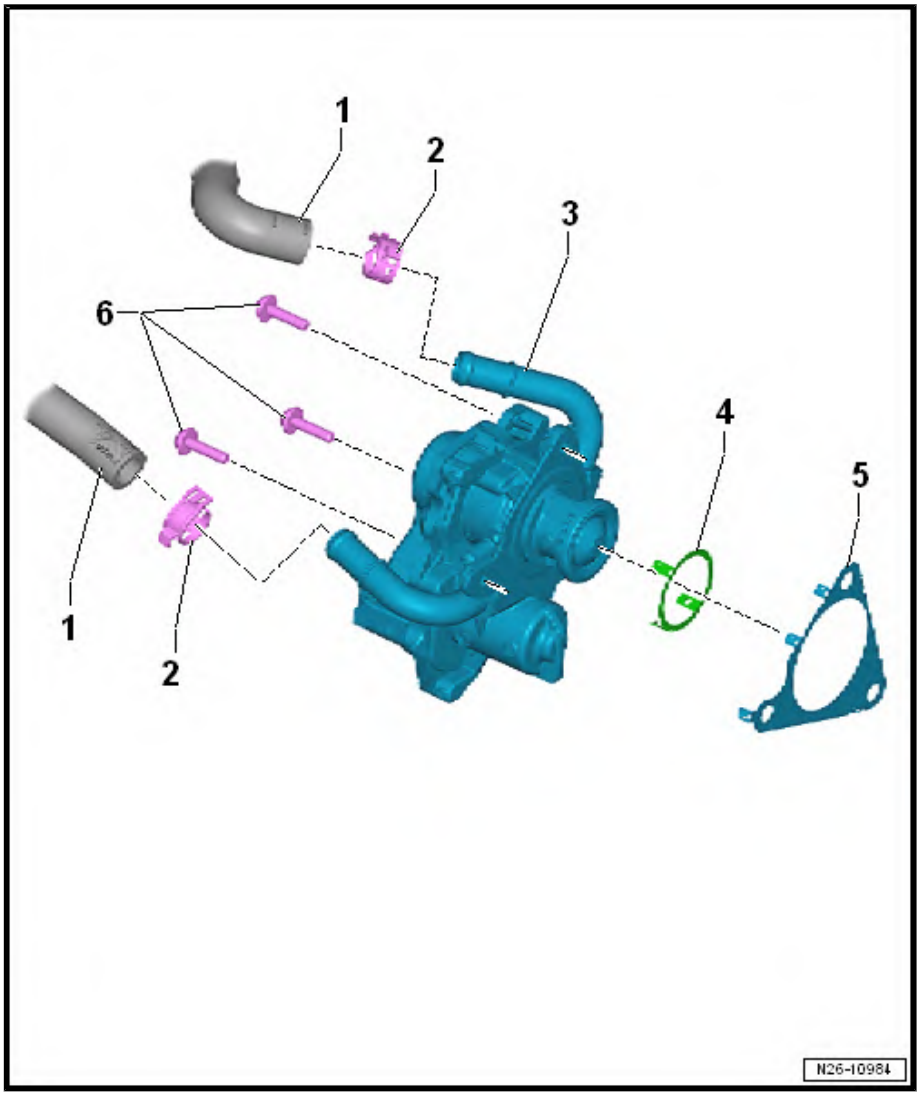
3 - Exhaust gas recirculation valve 1 - GX5-

comprises:
- Exhaust gas recirculation control motor - V338-
- Exhaust gas recirculation potentiometer - G212-
  - ❑ Removing and installing ⇒ “5.4 Removing and installing exhaust gas recirculation valve 1 GX5 ”, page 691

4 - Seal
- ❑ Replace after disassembly

5 - Seal
- ❑ Replace after disassembly

6 - Screw
- ❑ 9 Nm



5.2.2 Summary of components - exhaust gas recirculation valve 1 - GX5- , Rapid NH, EU6

Note

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

1 - Screw

- ❑ 9 Nm

2 - Coolant hose

3 - Exhaust gas recirculation valve 1 - GX5-

comprises:

- ♦ Exhaust gas recirculation control motor - V338-
- ♦ Exhaust gas recirculation potentiometer - G212-
  - ❑ Removing and installing ⇒ “5.4 Removing and installing exhaust gas recirculation valve 1 GX5 ”, page 691

4 - Screw

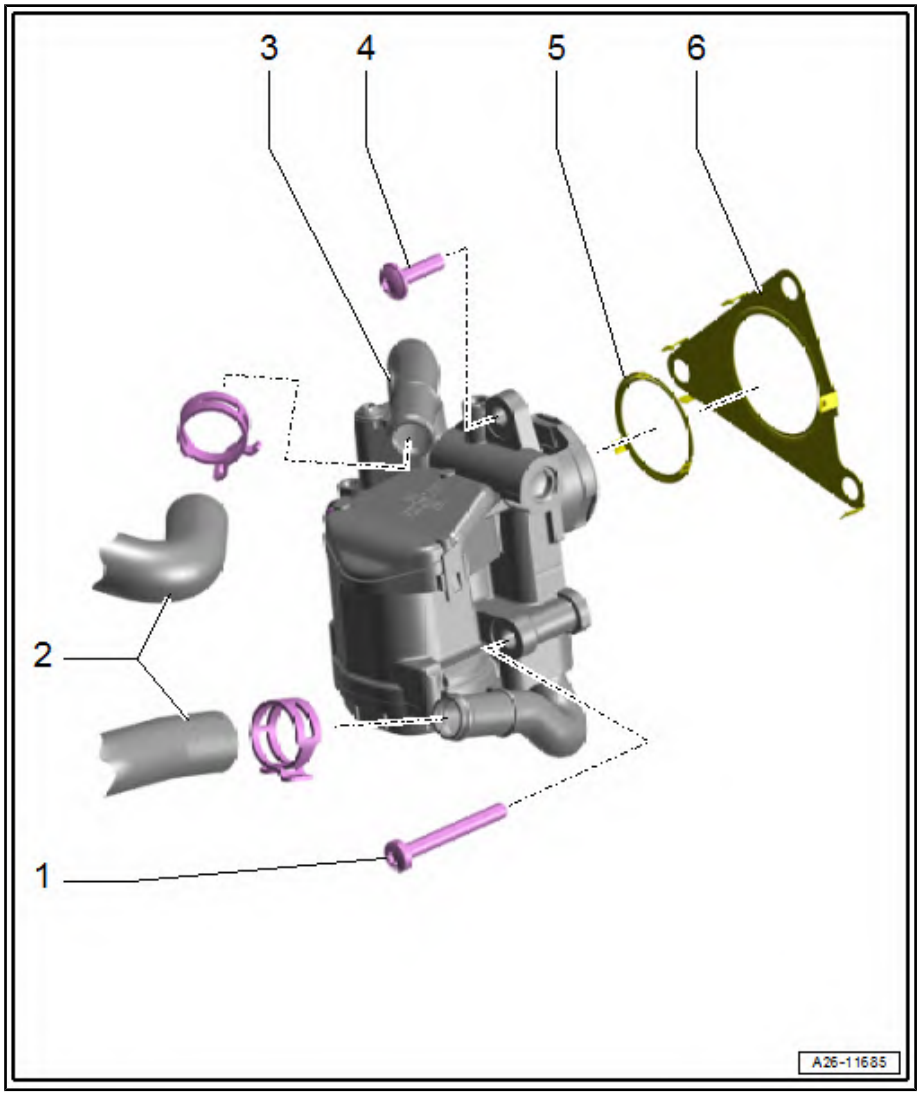
- ❑ 9 Nm

5 - Sealing ring

- ❑ Replace after disassembly

6 - Seal

- ❑ Replace after disassembly



5.3 Removing and installing radiator for exhaust gas recirculation

⇒ “5.3.1 Removing and installing radiator for exhaust gas recirculation, Octavia III”, page 680

⇒ “5.3.2 Removing and installing radiator for exhaust gas recirculation, Yeti”, page 683

⇒ “5.3.3 Removing and installing radiator for exhaust gas recirculation, Rapid NH”, page 686

⇒ “5.3.4 Removing and installing the radiator for exhaust gas recirculation, vehicles with emission standard EU4, engine identification characters CRVC”, page 689

5.3.1 Removing and installing radiator for exhaust gas recirculation, Octavia III

Special tools and workshop equipment required

- ♦ Hose binding claw - VAS 6340-
- ♦ Socket insert XZN 10 - T10501-

Removing

– Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .

– Remove left coolant pipe
⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

– Remove rear coolant pipe
⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .

Vehicles fitted with a manual gearbox

– Remove switching and selector cable from gearbox, unscrew cable support bracket and lay aside with the cables ⇒ Rep. gr. 34 ; Shift mechanism .

Vehicles with dual clutch gearbox 0CW

– Remove selector cable from gearbox, unscrew cable support bracket and strap up with the cables ⇒ Rep. gr. 34 ; Shift mechanism .

Vehicles with dual clutch gearbox 0D9

– Remove selector cable from gearbox and pull it out of the cable support bracket ⇒ Rep. gr. 34 ; Shift mechanism .

Vehicles with four-wheel drive

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

Continued for all vehicles

– Press heat protection sleeve to the side, disconnect electrical plug connection -5-.

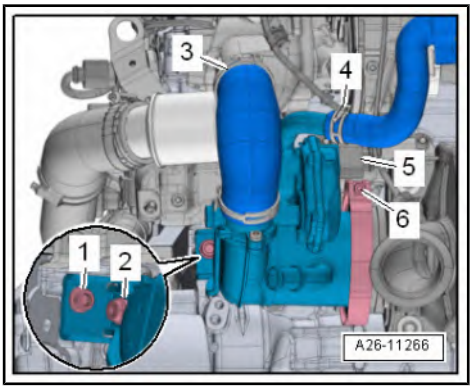
– Loosen hose clamp -3-, remove air guide hose.

– Loosen hose clamp -4-, remove coolant hose.

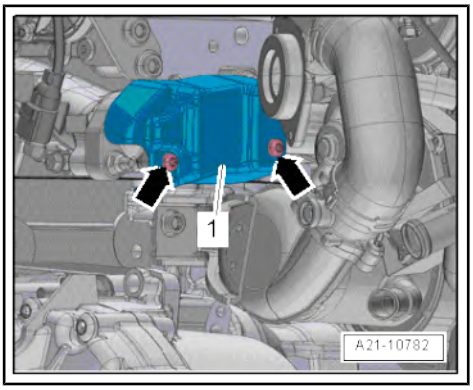
– Loosen screw -6- and remove exhaust gas cleaning module screw clamp.

– Remove screw -1- with socket insert XZN 10 - T10501- .

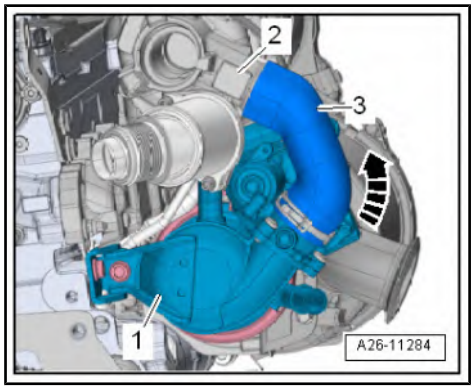
– Loosen screw -2- with socket insert XZN 10 - T10501- .



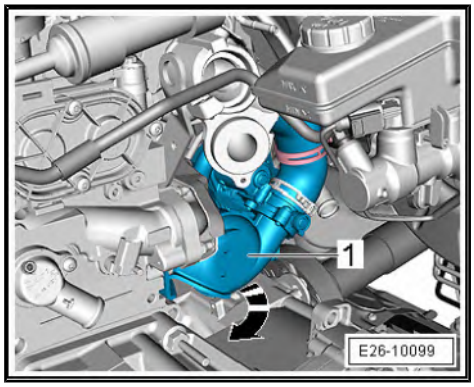
– Unscrew screws -arrows- and remove heat shield -1-.



– Turn radiator for exhaust gas recirculation counter downwards in the -direction of arrow-.
– The hose -3- of the exhaust gas turbocharger -2- is pulled off as you do so.
– Loosen the bottom clamp on the radiator for exhaust gas recirculation -1-.
– Detach hose -3- from radiator for exhaust gas recirculation -1-.
– Pull out the radiator for exhaust gas recirculation from the emission control system.



– Remove the radiator for exhaust gas recirculation -1- upwards from the gearbox in the -direction of the arrow-.



Installation

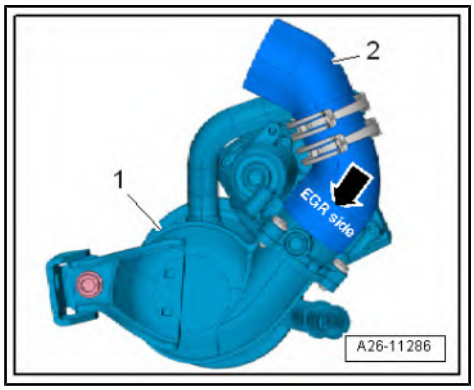
Installation is carried out in the reverse order. When installing, observe the following:

Note

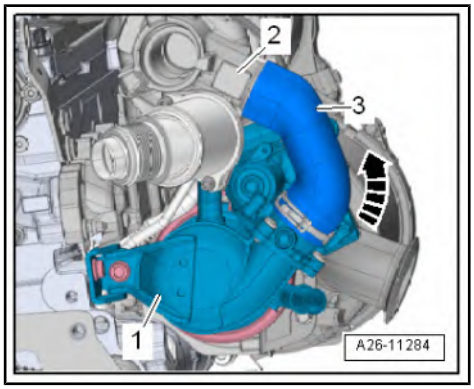
- *Check heat-protection matting for damage and replace if necessary.*
- *If heat shield collar is defective, check exhaust gas recirculation valve 2 - GX6- for heat damage and replace if necessary.*
- *Replace gaskets, clamp and spring strap clips after disassembly.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Thread the radiator for exhaust gas recirculation in between engine, exhaust gas turbocharger, gearbox and brake servo unit.

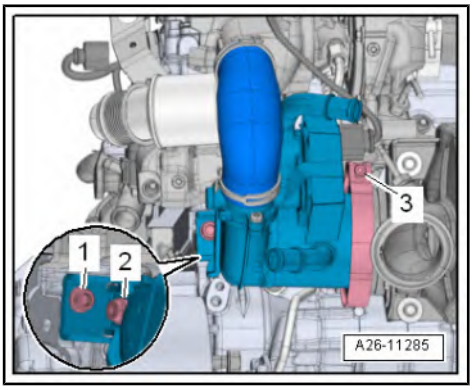
– Attach hose -2- to radiator -1- for exhaust gas recirculation.
• Installation position: the label “EGR side” -arrow- points to the exhaust gas recirculation radiator.
– Ensure that the air guide hose fitting is free of tension.



– Position radiator -1- for exhaust gas recirculation on the exhaust gas cleaning module with gasket and gripper clamp.
– Turn radiator for exhaust gas recirculation in -direction of arrow- and simultaneously fit hose -3- onto the exhaust gas turbocharger -2-.



– Bring screw clamp -3- to installation position. The clamp must not rest against components.
– Tighten screw connections ⇒ page 672 .
– Install the left coolant pipe ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .
– Install the rear coolant pipe ⇒ “3.2.11 Removing and installing the rear coolant pipe, Octavia III, Yeti”, page 329 .



Tightening torques - summaries of components

Note

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

- ⇒ Fig. ““Radiator for exhaust gas recirculation - tightening torques and tightening order”“ , page 672
- ⇒ Electrical system; Rep. gr. 27 ; Battery; Summary of components - battery
- ⇒ “1.1 Assembly overview - silencers”, page 552
- ⇒ Rep. gr. 34 ; Shift mechanism
- ⇒ “3.1 Summary of components - coolant pipe”, page 309

5.3.2 Removing and installing radiator for exhaust gas recirculation, Yeti

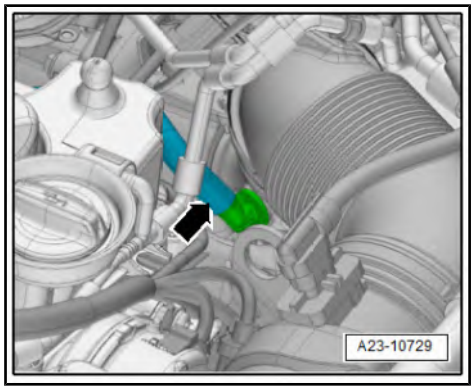
Special tools and workshop equipment required

- Hose binding claw - VAS 6340-
- Socket insert XZN 10 - T10501-

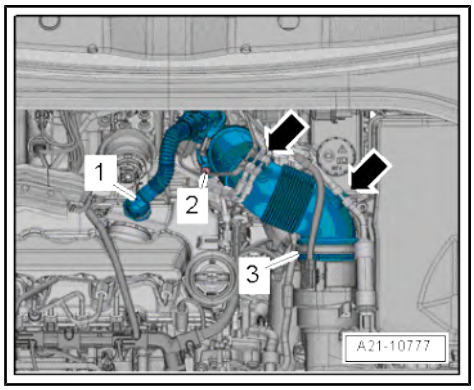
Removing

– Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
– Remove left coolant pipe ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

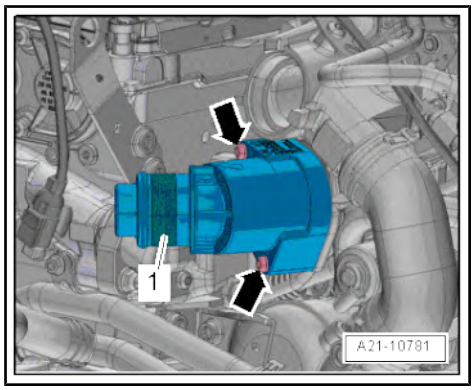
– If a vacuum hose is installed: disconnect it -arrow- and move it clear.



– Press release buttons on the hose -1- for crankcase ventilation, remove hose from cylinder head cover.
– Disconnect vacuum hoses on the air guide pipe -arrows-.
– Release screw -2-, swivel air guide pipe with inlet connection towards the rear and detach from exhaust gas turbocharger.



– Unscrew screws -arrows-, remove pulsation dampener -1-.



Vehicles fitted with a manual gearbox

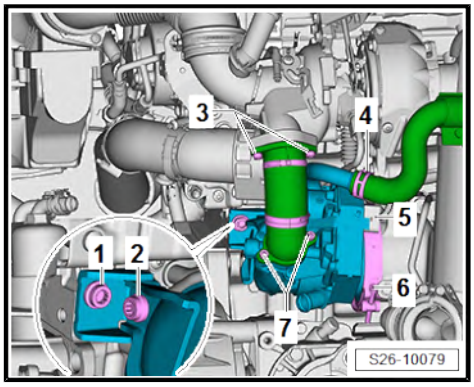
– Remove switching and selector cable from gearbox, unscrew cable support bracket and lay aside with the cables ⇒ Rep. gr. 34 ; Shift mechanism .

Vehicles with dual clutch gearbox

– Remove selector cable from gearbox and pull it out of the cable support bracket ⇒ Rep. gr. 34 ; Shift mechanism .

Continued for all vehicles

– Press heat protection sleeve to the side, disconnect electrical plug connection -5-.
– Remove screws -3-.
– Loosen hose clamp -4-, remove coolant hose.
– Loosen screw -6- and press open warm-type clamp to the filter for exhaust gas recirculation.
– Unscrew screw -1-, loosen screw -2-.
– Remove radiator for exhaust gas recirculation.



Installing

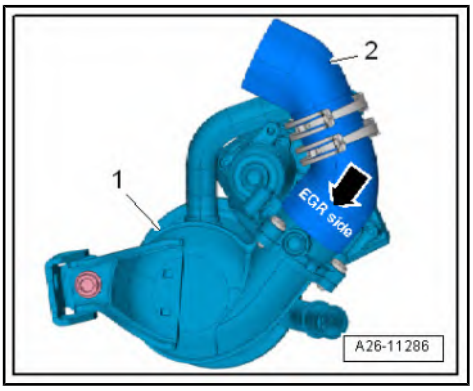
Installation is carried out in the reverse order. When installing, observe the following:

Note

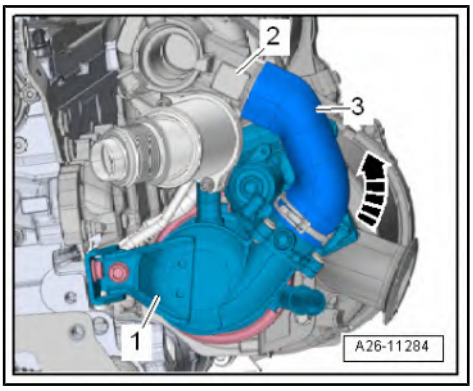
- *Check heat-protection matting for damage and replace if necessary.*
- *If heat shield collar is defective, check exhaust gas recirculation valve 2 - GX6- for heat damage and replace if necessary.*
- *Replace gaskets, clamp and spring strap clips after disassembly.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

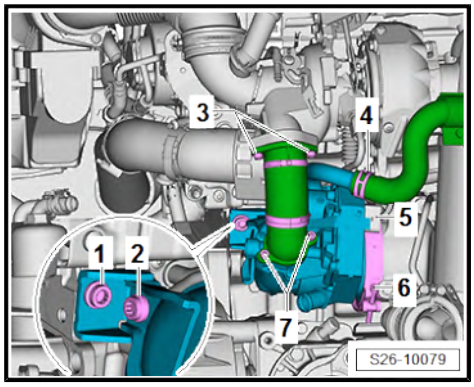
Install radiator for exhaust gas recirculation

– Attach hose -2- to radiator -1- for exhaust gas recirculation.
• Installation position: the label “EGR side” -arrow- points to the exhaust gas recirculation radiator.



– Slide radiator -1- for exhaust gas recirculation with gasket and screw clamp on filter for exhaust gas recirculation up to the stop.
– Turn radiator for exhaust gas recirculation upwards -arrow- until the connecting hose -3- lies against the turbocharger.





- Tighten the fixing screws -3- and -7-.
- Ensure that the air guide hose fitting is free of tension.
- Adjust and tighten the clamping sleeve -6- ⇒ page 674 .
- Adjust the mounting bracket for the radiator for exhaust gas recirculation and secure screws -1- and -2- free of stress.
- Tighten screws -1- and -2- ⇒ page 674 .
- Reconnect connector -5-.
- Install the left coolant pipe ⇒ “3.2.9 Removing and installing the left coolant pipes, Octavia III, Yeti”, page 326 .

Tightening torques - summaries of components

Note

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

- ⇒ Fig. ““Radiator for exhaust gas recirculation - tightening torques and tightening order”“ , page 674
- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ Rep. gr. 34 ; Shift mechanism
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ Electrical system; Rep. gr. 27 ; Battery; Summary of components - battery

5.3.3 Removing and installing radiator for exhaust gas recirculation, Rapid NH

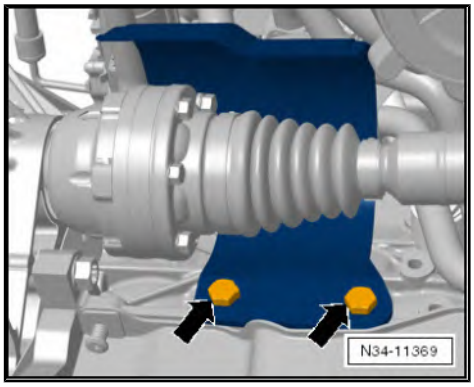
Special tools and workshop equipment required

- Hose binding claw - VAS 6340-
- Socket insert XZN 10 - T10501-
- Engine support bracket - T10533-
- Catch pan , e.g. -VAS 6208-

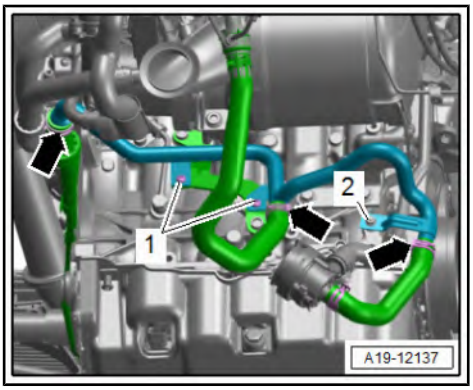
Removing

- Remove air filter housing ⇒ “4.2 Removing and installing air filter housing”, page 476 .
- Remove pre-exhaust pipe ⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .
- Remove pendulum support ⇒ “2.3 Removing and installing pendulum support”, page 56 .
- Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .

– Release screws -arrows- and remove heat shield for right drive shaft.



– Unscrew screws -1- and nuts -2- and remove rear coolant pipe and push rear coolant pipe downwards. If necessary, secure the coolant pipe with a cable strap to the drive shaft.

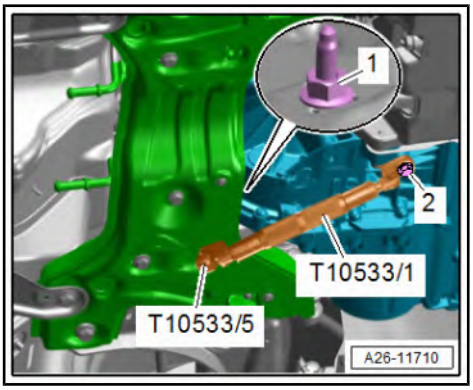


– Position engine support bracket - T10533- and secure with nut -1- and screw -2-, as shown.

NOTICE

Risk of damage to parts.

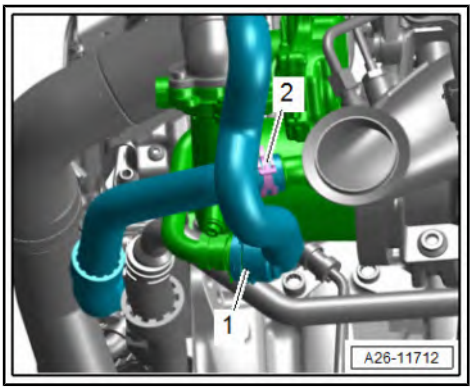
- **When pressing the engine/gearbox assembly in, there must be no parts pressing again the fan shroud.**



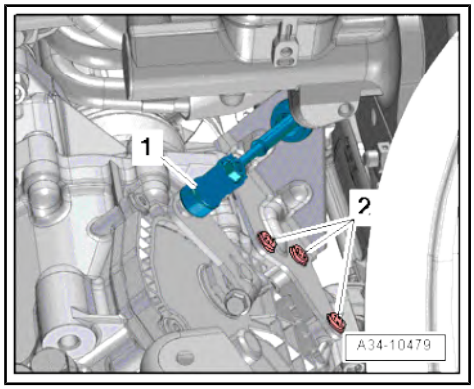
– Push the engine/gearbox assembly as far forward as possible by turning the tightening nut on the engine support bracket - T10533- .

– Place catch pan - VAS 6208- underneath.

– Remove coolant hoses by raising the holding clamp -1- and loosening hose clamp -2-.



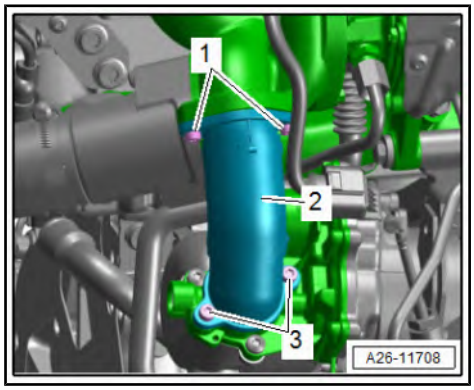
– Remove selector lever cable -1- from gearbox selector lever.
– Unscrew screws -2- and push selector lever cable with cable support bracket to left side.



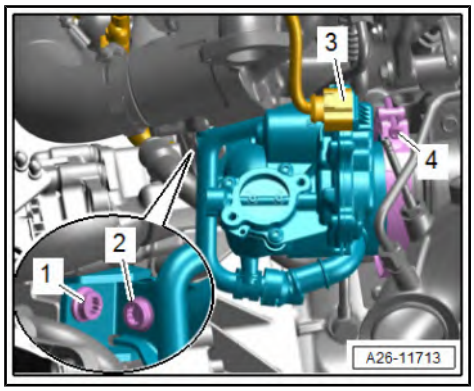
Note

Do not bend or kink the selector lever cable.

– Remove screws -1-, -3- and remove connection fitting -2-.



– Press heat protection sleeve to the side, disconnect electrical plug connection -3-.
– Release screw clamp -4- and push towards exhaust gas cleaning module.
– Remove screw -1-, only slacken screw -2-.
– Remove radiator for exhaust gas recirculation.



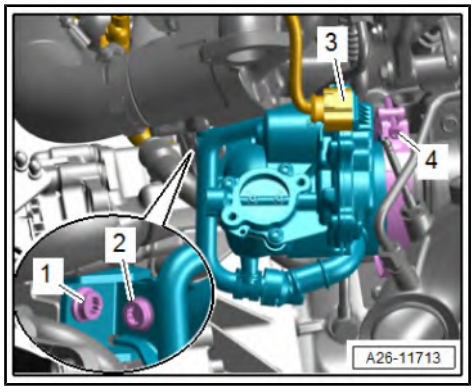
Installing

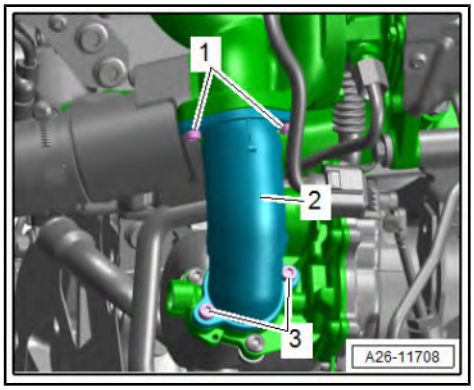
Installation is carried out in the reverse order. When installing, observe the following:

Note

- *Replace seals, O-rings, hose clamps and screw clamps after disassembly.*
- *Secure all hose connections with hose clamps which comply with the series design ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Position radiator for exhaust gas recirculation on the exhaust gas cleaning module with seal and screw clamp -4-.
– Tighten screws -1-, -2- hand-tight.





– Put connector -1- in position for and tighten screws -1-, -3-.
– Bring screw clamp -3- to installation position ⇒ page 678 .
– Tighten screw connections ⇒ page 678 .
– Install and adjust the selector lever linkage Shift mechanism⇒ Rep. gr. 34 ; . .
– Install pendulum support ⇒ “2.3 Removing and installing pendulum support”, page 56 .
– Installing heat shield for cardan shaft ⇒ Chassis, axles, steering; Rep. gr. 40 ; Drive shaft; removing and installing heat shield for drive shaft .
– Connect coolant hoses with quick coupling ⇒ page 346 .
– Install air filter housing ⇒ “4.2 Removing and installing air filter housing”, page 476 .

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.

- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670
- ⇒ Fig. ““Radiator for exhaust gas recirculation - tightening torques and tightening order”“ , page 678
- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “1.1 Assembly overview - silencers”, page 552
- ⇒ “3.1 Summary of components - coolant pipe”, page 309
- ⇒ Rep. gr. 34 ; Shift mechanism

5.3.4 Removing and installing the radiator for exhaust gas recirculation, vehicles with emission standard EU4, engine identification characters CRVC

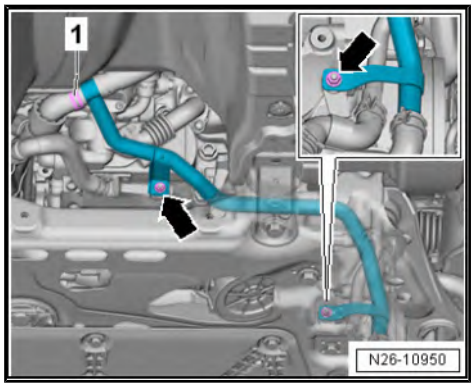
Special tools and workshop equipment required

- Socket - T10347-
- Socket wrench XZN 10 - T10501-
- Tool kit - T10395B- or -T10395A- or -T10395- + - T10395/8../10-

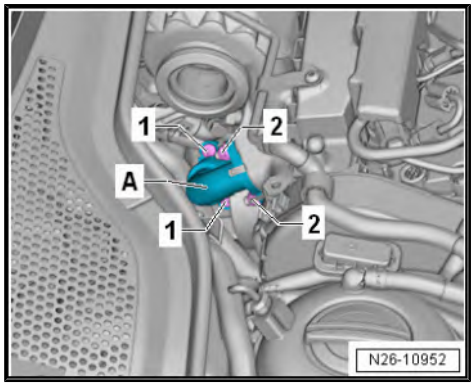
Removing

– Remove catalytic converter ⇒ “2.2 Removing and installing catalytic converter”, page 587 .

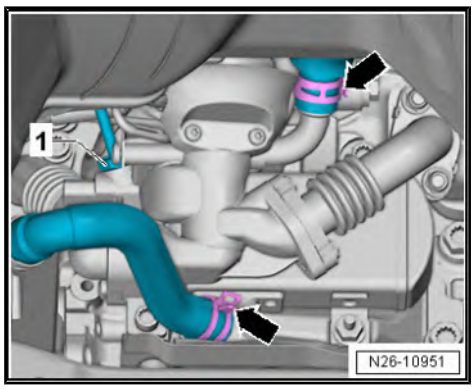
– Drain coolant ⇒ “1.4 Filling with coolant”, page 235 .
– Loosen hose clamp -1- and disconnect hose. Unscrew the nuts -arrows-.
– For example, tie use coolant pipe with cable straps.



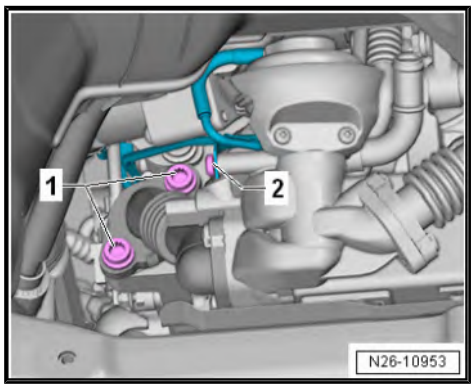
– Unscrew screws -1- with the Polydrive socket - T10347- , unscrew nuts -2-.
– Remove connection pipe -A-.



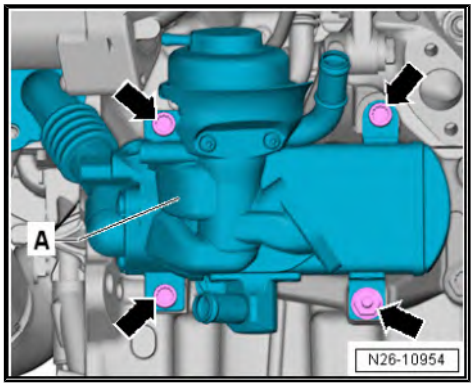
– Open clamps -arrows- and detach coolant hoses.
– Remove temperature sensor for exhaust gas recirculation - G98- -1-
⇒ “5.6 Removing and installing temperature sensor for exhaust gas recirculation G98 ”, page 697 .



– Unscrew screws -1- with socket insert XZN 10 - T10501- .
– Unscrew mounting bracket of the vacuum line -2-.
– Detach vacuum line from radiator for exhaust gas recirculation.



– Unscrew screws -arrows- and carefully remove the radiator for exhaust gas recirculation -A- through the vehicle tunnel.



Installing

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

Note

- *Replace self-locking nuts and screws as well as sealing rings, gaskets and O-rings after disassembly.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*
- *Fit all cable straps on again in the same place when installing.*

– Install catalytic converter ⇒ “2.2 Removing and installing catalytic converter”, page 587 .

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.

- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670

5.4 Removing and installing exhaust gas recirculation valve 1 - GX5-

⇒ “5.4.1 Removing and installing exhaust gas recirculation valve 1 GX5 , Octavia III, Yeti, EU6”, page 691

⇒ “5.4.2 Removing and installing exhaust gas recirculation valve 1 GX5 , Rapid NH, EU6”, page 692

5.4.1 Removing and installing exhaust gas recirculation valve 1 - GX5- , Octavia III, Yeti, EU6

The exhaust recirculation valve 1 - GX5- consists of:

- Exhaust gas recirculation control motor - V338-
- Exhaust gas recirculation potentiometer - G212-

Special tools and workshop equipment required

- Hose clamps up to ∅ 25 mm - MP7-602 (3094)-

Removing

Note

Observe rules for cleanliness.

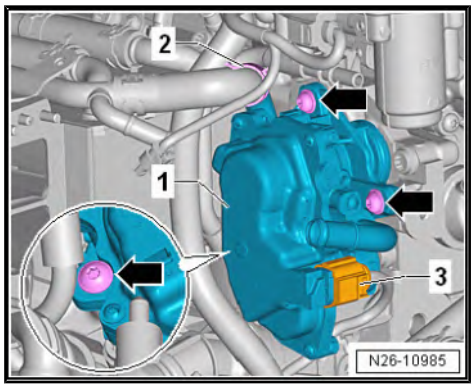
– Remove the throttle valve control unit - J338-
⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491 .

– Disconnect electrical plug connection -3-.

– Disconnect coolant hose with hose clamp -MP7-602 (3094)- .

– Loosen hose clamp -2-, remove coolant hose.

– Unscrew screws -arrows- and remove exhaust gas recirculation valve 1 - GX5- .



Installing

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

Note

- *Replace gasket.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Check coolant level ⇒ “1.4 Filling with coolant”, page 235 .

– Check filling quality
⇒ “1.5 Checking the filling quality”, page 251 .

Tightening torques - summaries of components

Note

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

- ⇒ “5.2 Summary of components - exhaust gas recirculation 1 GX5 ”, page 678
- ⇒ “5.1 Assembly overview - intake manifold”, page 481

5.4.2 Removing and installing exhaust gas recirculation valve 1 - GX5- , Rapid NH, EU6

The exhaust recirculation valve 1 - GX5- consists of:

- Exhaust gas recirculation control motor - V338-
- Exhaust gas recirculation potentiometer - G212-

Special tools and workshop equipment required

- Hose binding claw - VAS 6362-

Removing

Note

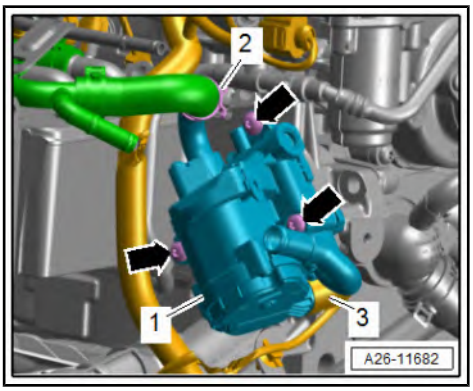
Observe rules for cleanliness.

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

– Separate electrical plug connection -3-.

– Loosen hose clamp -2-, remove coolant hose.

– Unscrew screws -arrows- and remove exhaust gas recirculation valve 1 - GX5- Pos. -1-.



Installing

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

Note

- *Replace gasket.*
- *Secure all hose connections with corresponding hose clamps ⇒ ETKA - Electronic Catalogue of Original Parts .*

– Install the throttle valve control unit - J338- ⇒ “5.3 Removing and installing the throttle valve control unit J338 ”, page 491 .

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.

- ⇒ “5.2 Summary of components - exhaust gas recirculation 1 GX5 ”, page 678

5.5 Removing and installing exhaust gas recirculation valve 2 - GX6-

⇒ “5.5.1 Removing and installing exhaust gas recirculation valve 2 GX6 , Octavia III, Yeti”, page 693

⇒ “5.5.2 Removing and installing exhaust gas recirculation valve 2 GX6 , Rapid NH”, page 695

5.5.1 Removing and installing exhaust gas recirculation valve 2 - GX6- , Octavia III, Yeti

The exhaust recirculation valve 2 - GX6- consists of:

- Control engine 2 for exhaust gas recirculation - V339-
- Exhaust gas recirculation potentiometer 2 - G466-

For vehicles with engine identification characters CLHA, CLHB, CRKB, CKFB, CKFC, CUPA, CRMB, CUNA, CXXA, CXXB, DBKA, CUUA, CUUB, DFSA, DFSB, CYKA, DDYB, DDYA, DCYA, DFFA

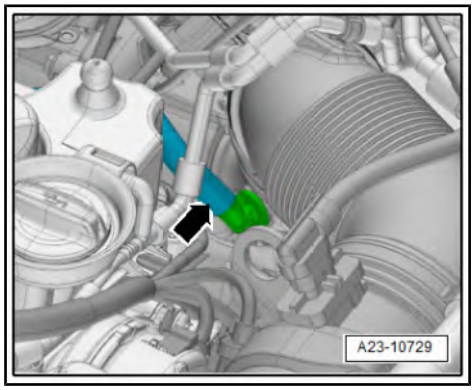
Special tools and workshop equipment required

- Hose binding claw - VAS 6362-

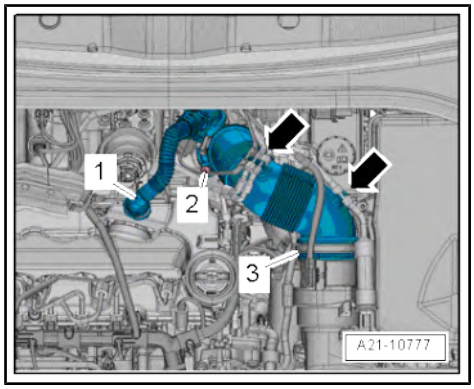
Removing

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

– If a vacuum hose is installed: disconnect it -arrow- and move it clear.

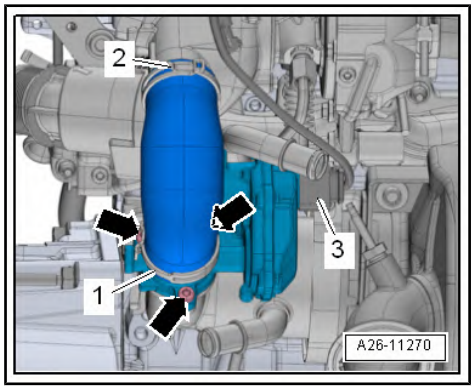


– Press release buttons on the hose -1- for crankcase ventilation, remove hose from cylinder head cover.
– Disconnect vacuum hoses on the air guide pipe -arrows-.
– Loosen spring strap clip -3-, remove air guide pipe from air mass meter - G70- .
– Release screw -2-, swivel air guide pipe with inlet connection towards the rear and detach from exhaust gas turbocharger.



For vehicles Octavia III

– Release spring strap clamps -1- and -2- and remove connecting pipe.

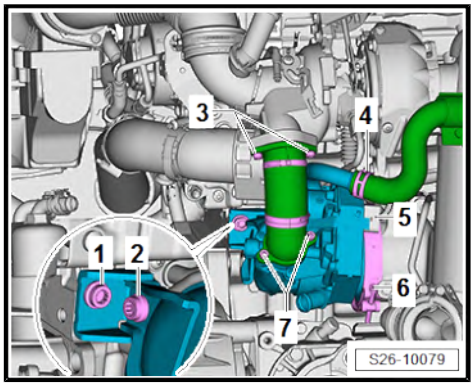


For the vehicles Yeti

Volkswagen Technical Site: http://vwts.ru http://vwts.info

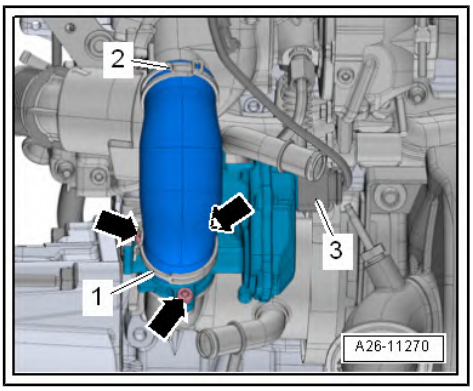
– Unscrew screws -3- and -7- and remove connecting pipe.

Continued for all vehicles



– Press heat protection sleeve to the side, disconnect electrical plug connection -3-.

– Unscrew screws -arrows- and remove exhaust gas recirculation valve 2 - GX6- .



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 .*

Tightening torques - summaries of components

Note

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

- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670
- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374

5.5.2 Removing and installing exhaust gas recirculation valve 2 - GX6- , Rapid NH

The exhaust recirculation valve 2 - GX6- consists of:

- Control engine 2 for exhaust gas recirculation - V339-
- Exhaust gas recirculation potentiometer 2 - G466-

Special tools and workshop equipment required

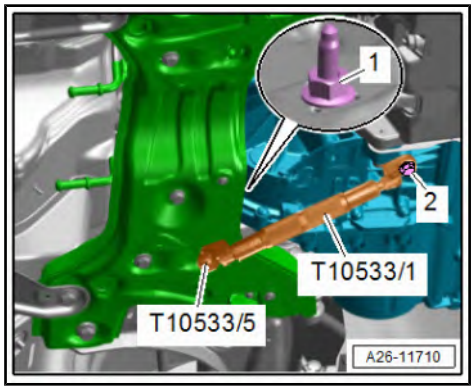
- Engine support bracket - T10533-

Removing

– Remove pre-exhaust pipe
⇒ “1.2 Removing and installing pre-exhaust pipe”, page 564 .

– Remove pendulum support
⇒ “2.3 Removing and installing pendulum support”, page 56 .

– Position engine support bracket - T10533- and secure with nut -1- and screw -2-, as shown.



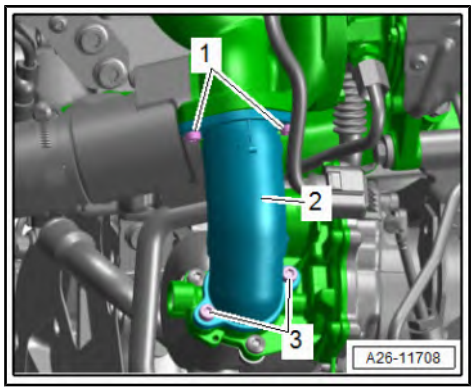
NOTICE

Risk of damage to parts.

- **When pressing the engine/gearbox assembly in, there must be no parts pressing again the fan shroud.**

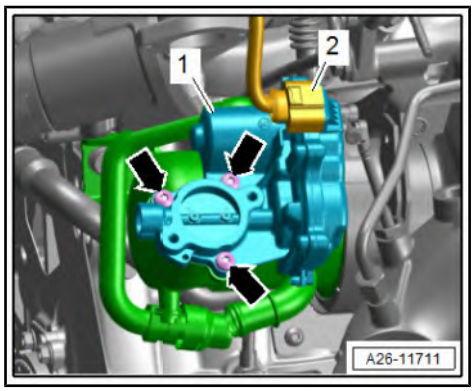
– Push the engine/gearbox assembly as far forward as possible by turning the tightening nut on the engine support bracket - T10533- .

– Remove screws -1-, -3- and remove connection fitting -2-.



– Press heat protection sleeve to the side, disconnect electrical plug connection -2-.

– Unscrew screws -arrows- and remove exhaust gas recirculation valve 2 - GX6- Pos. -1-.



Installing

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

Note

Replace seals and O-rings after removal.

– Install pendulum support
⇒ “2.3 Removing and installing pendulum support”, page 56 .

Tightening torques - summaries of components

Note

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

- ⇒ “5.1 Summary of components - Exhaust gas recirculation”, page 670
- ⇒ “1.1 Summary of components - exhaust gas turbocharger”, page 374
- ⇒ “1.1 Assembly overview - silencers”, page 552

5.6 Removing and installing temperature sensor for exhaust gas recirculation - G98-

⇒ “5.6.1 Removing and installing the temperature sensor for exhaust gas recirculation G98 , vehicles with exhaust gas standard EU4”, page 697

⇒ “5.6.2 Removing and installing the temperature sensor for exhaust gas recirculation G98 , vehicles with exhaust gas cleaner and SCR system”, page 698

5.6.1 Removing and installing the temperature sensor for exhaust gas recirculation - G98- , vehicles with exhaust gas standard EU4

Note

Depending on the country-specific exhaust limit values, an unregulated particle filter (article reduction system) or a catalytic converter is installed in this engine.

Special tools and workshop equipment required

- Tool kit - T10395B- or -T10395A- or -T10395- + -T10395/8../10-
- Ring insertion tool, open, SW 17 , e.g. -V.A.G 1331/10-

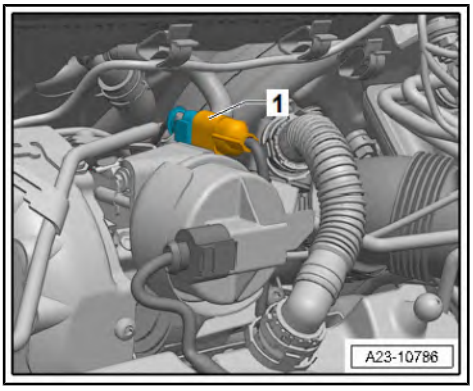
Removing

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

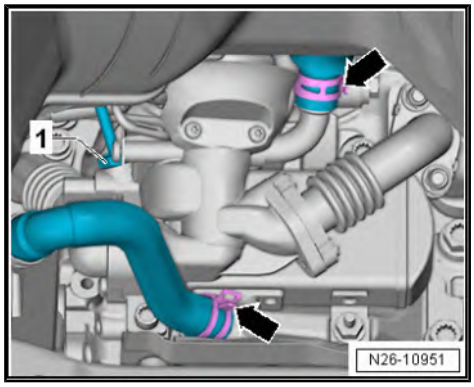
– Detach the connection fitting from the exhaust gas turbocharger
⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407 .

– Remove from bracket, unlock and disconnect electrical plug connection -1-.

– Expose electric wiring harness.



– Unscrew the temperature sensor for exhaust gas recirculation - G98- -1- using a suitable tool from the tool set.



Installing

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

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

Tightening torques - summaries of components

Note

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

♦ ⇒ “5.1.3 Summary of components - Exhaust gas recirculation, vehicles with EU4 emission level, engine code CRVC”, page 674

5.6.2 Removing and installing the temperature sensor for exhaust gas recirculation - G98- , vehicles with exhaust gas cleaner and SCR system

Special tools and workshop equipment required

♦ Socket insert SW 14 - T10401-

Removing

Note

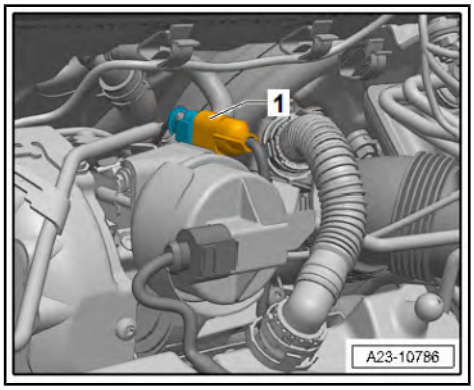
♦ *Fit all cable straps on again in the same place when installing.*

♦ *When removing, the electric cable must not be cut off, since doing so would mean that fault diagnosis would no longer be possible.*

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

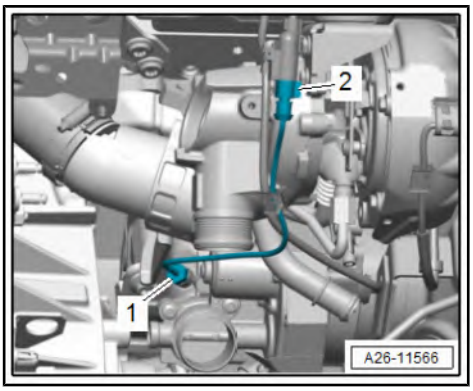
– Detach the connection fitting from the exhaust gas turbocharger
⇒ “1.4 Removing and installing the exhaust gas turbocharger connection fitting”, page 407 .

– Remove from bracket, unlock and disconnect electrical plug connection -1-.



– Expose electric cable -2-.

– Unscrew temperature sensor for exhaust gas recirculation - G98- -1-.



Installing

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

Note

Protect exhaust gas temperature transmitter against impact and hammering: do not use exhaust gas temperature transmitter if it has fallen onto the floor.

– Electrical connections and proper routing ⇒ Electrical System; Rep. gr. 97 ; Relay carrier, fuse holder, E-boxes; Installation overview - Relay carrier, fuse holder, E-boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

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

Tightening torques - summaries of components

Note

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

♦ ⇒ “4.1.2 Overview of components - exhaust gas temperature control, Octavia III with SCR system”, page 650

5.7 Test air-tightness of the radiator for exhaust gas recirculation

Air-tightness of the radiator for exhaust gas recirculation is tested with the ⇒ Vehicle diagnostic tester.

– Connect the ⇒ Vehicle diagnostic tester to the vehicle and check function:

♦ `Cooling system leak-tightness`

Note

The specified path may vary slightly, depending on vehicle, engine and the version of the data on the vehicle diagnosis tester.

28 – Glow plug system

1 Glow plug system

⇒ “1.1 Summary of components - Glow plug system”, page 700

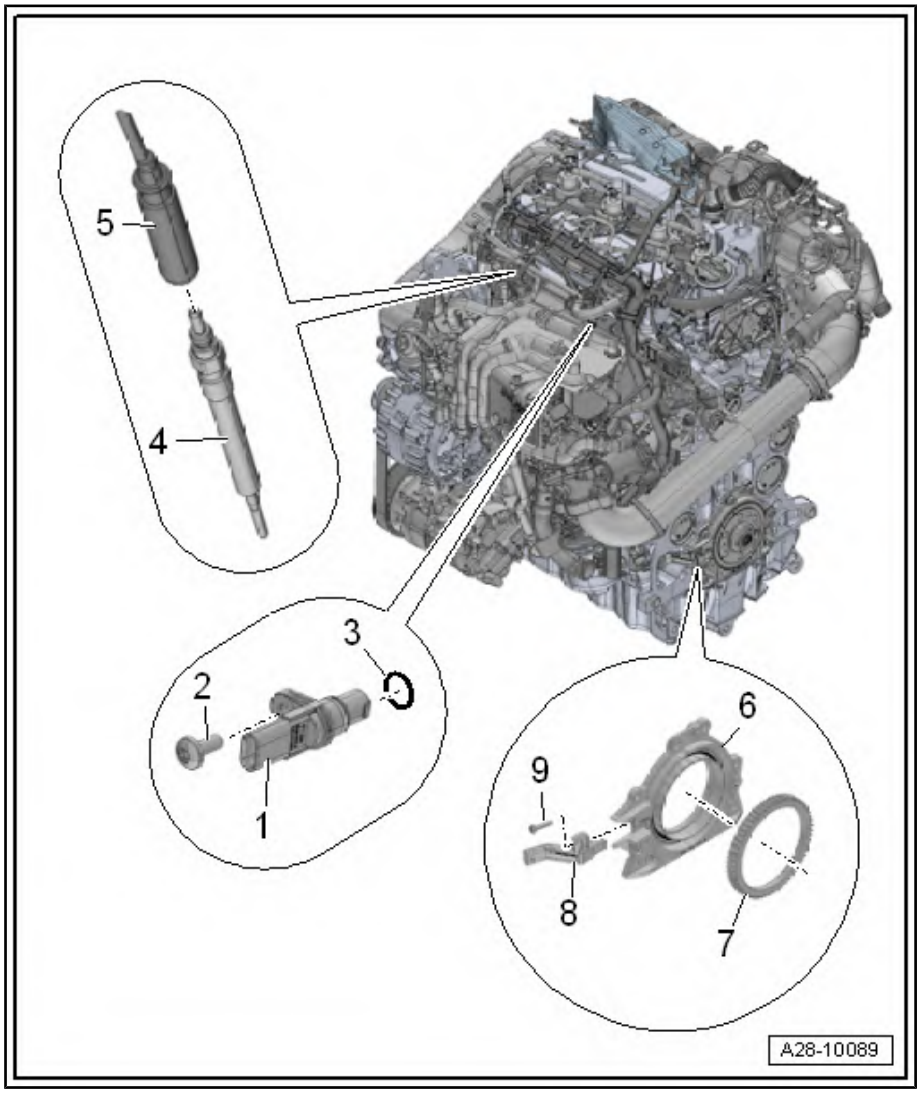
⇒ “1.2 Removing and installing glow plugs”, page 701

⇒ “1.3 Removing and installing automatic glow period control unit J179 ”, page 703

⇒ “1.4 Removing and installing Hall sender G40 ”, page 704

⇒ “1.5 Removing and installing the engine speed transmitter G28 ”, page 704

1.1 Summary of components - Glow plug system



1 - Hall transmitter - G40-

- ❑ Removing and installing ⇒ “1.4 Removing and installing Hall sender G40 ”, page 704

2 - Screw

- ❑ 9 Nm

3 - O-ring

- ❑ no spare parts, in case of damage replace together with Hall sender - G40-

4 - Glow plug

- ◆ Glow plug 1 - Q10-
- ◆ Glow plug 2 - Q11-
- ◆ Glow plug 3 - Q12-
- ◆ Glow plug 4 - Q13-
  - ❑ only integrated into the glow plug of the cylinder 3 combustion chamber pressure sender - G679- for cylinder 3 in vehicles with EU6 emission level
  - ❑ Glow plug variants ⇒ page 701
  - ❑ Removing and installing ⇒ “1.2 Removing and installing glow plugs”, page 701
  - ❑ Glow plugs without combustion chamber pressure transmitter 17 Nm
  - ❑ Glow plugs with combustion chamber pressure transmitter 12 Nm

5 - Electrical plug connection

- ❑ for glow plugs

6 - Sealing flange on the gearbox side

- ❑ Removing and installing ⇒ “2.3 Removing and installing sealing flange on gearbox side”, page 81

7 - Rotor

- ❑ Engine speed sender - G28-
- ❑ Removing and installing ⇒ “2.3 Removing and installing sealing flange on gearbox side”, page 81

8 - Engine speed transmitter - G28-

- ❑ Removing and installing
  ⇒ “1.5 Removing and installing the engine speed transmitter G28 ”, page 704

9 - Screw

- ❑ 4.5 Nm

1.2 Removing and installing glow plugs

Note

Metal glow plugs are installed in this engine.

Special tools and workshop equipment required

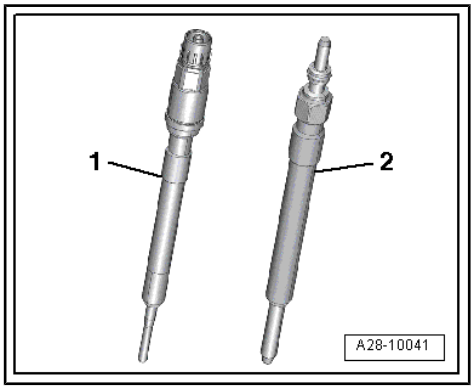
- ♦ Flexible-head wrench SW 10 -3220-
- ♦ Pliers - 3314-
- ♦ Cleaning and degreasing agent , e.g. -D 009 401 04-
- ♦ Protective goggles and gloves
- ♦ 12 mm socket - VAS 6454- only for vehicles with EU6 emission level

Removing

Glow plug variants

1 - Glow plug with transmitter for internal pressure of the cylinder – only for cylinder 3 in vehicles with EU6 emission level

2 - Glow plugs without combustion chamber pressure transmitter



Observe all safety measures and notes for assembly work on the fuel system and on the injection system as well as the rules for cleanliness ⇒ “3 Repair instructions”, page 7 .

– Switch off ignition and pull out ignition key.

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

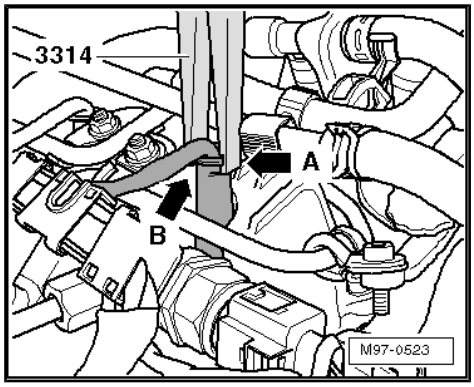
NOTICE

Risk of damaging support sleeves.

- ♦ **Only press pliers - 3314- for disconnecting glow plug connectors together so that they grip the support sleeve collar securely without damaging it.**

– Open holding clamps of the electrical wiring loom and disconnect the electrical plug connections from the glow plugs as follows.

– Position pliers - 3314- using the pliers groove arrow -A- on the support sleeve collar arrow -B-, as shown.



NOTICE

- **Carefully remove the glow plug connectors from the glow plugs.**
- **If the plug is damaged when disconnecting it, the complete wiring loom including the plugs must be replaced (plugs cannot be replaced separately).**

– Carefully disconnect the plug from the glow plugs.

– Clean glow plugs in the cylinder head (no dirt must fall into the cylinder).

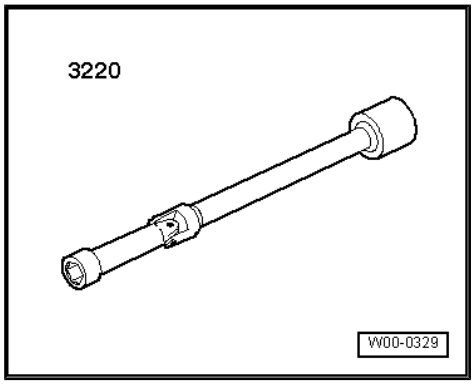
When cleaning, for example:

CAUTION

Wear protective gloves and protective goggles when working with grease remover!

1. Suction off heavy dirt using a vacuum cleaner.
2. Spray the pencil type glow plug channel using a brake cleaner or a suitable cleaner, let it take effect for a short period of time and blow out with compressed air.
3. Then clean the pencil type glow plug channel with a cloth which is wetted with oil.

– To release the glow plugs, use socket wrench SW 10 - 3220- .



Note

Use 12 mm socket - VAS 6454- to loosen the glow plug in cylinder 3 for vehicles with EU6 emission level.

Installing

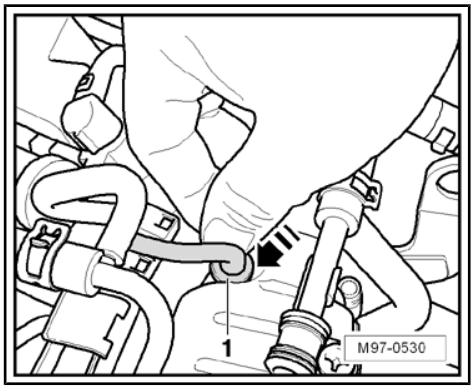
Installation is carried out in the reverse order.

– To tighten the glow plugs, use socket wrench SW 10 - 3220- .

Note

Use the 12 mm socket - VAS 6454- to tighten the glow plug in cylinder 3 for vehicles with EU6 emission level.

– Place the glow plug connectors -1- back onto the glow plugs -arrows-.



Note

Make sure the glow plug connectors fit tightly.

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Summary of components - Glow plug system”, page 700

1.3 Removing and installing automatic glow period control unit - J179-

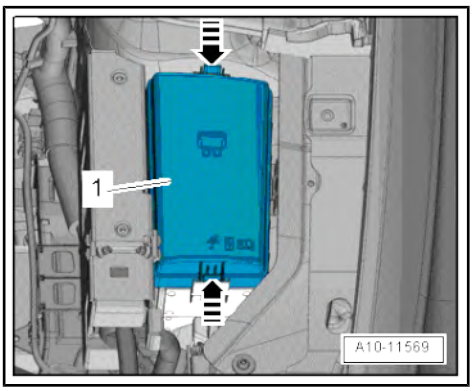
⇒ “1.3.1 Removing and installing automatic glow period control unit J179 , Octavia III, Yeti”, page 703

⇒ “1.3.2 Removing and installing automatic glow period control unit J179 , Rapid NH”, page 704

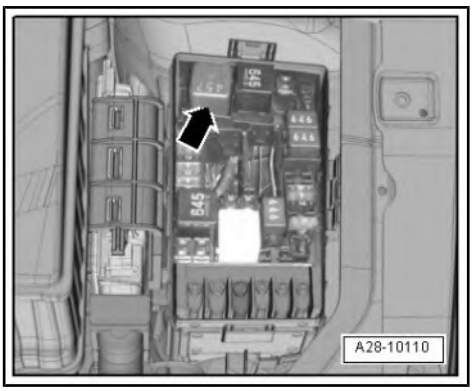
1.3.1 Removing and installing automatic glow period control unit - J179- , Octavia III, Yeti

Removing

– Unlock catches -arrows-, remove cover.



– Remove automatic glow period control unit - J179- -arrow- from the socket in the e-box engine compartment.



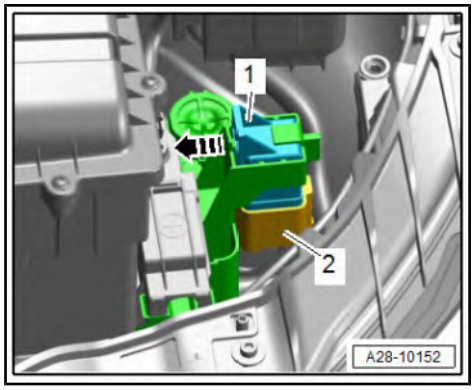
Installing

Installation is carried out in the reverse order.

1.3.2 Removing and installing automatic glow period control unit - J179- , Rapid NH

Removing

– Unlock catch -arrow-, remove automatic glow period control unit - J179- Pos. -1- downwards and disconnect electrical plug connection -2-.



Installing

Installation is carried out in the reverse order.

1.4 Removing and installing Hall sender - G40-

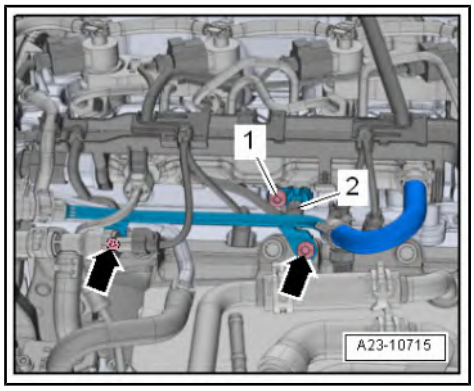
Removing

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

– Unscrew screws -arrows- and push the fuel lines forward slightly.

– Separate electrical plug connection -2-.

– Unscrew screw -1- and disconnect Hall sender - G40- .



Installing

Installation is carried out in the reverse order.

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Summary of components - Glow plug system”, page 700

1.5 Removing and installing the engine speed transmitter - G28-

Special tools and workshop equipment required

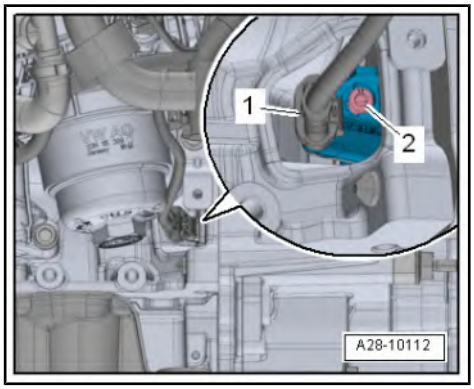
♦ Insertion tool - T10118-

♦ Socket size 4 - T10370-

Removing

– Remove the sound dampening system ⇒ General body repairs, exterior ; Rep. gr. 66 ; Sound damper; Removing and installing the sound damper ⇒ Bodywork; Rep. gr. 50 .

– Disconnect electrical plug connection -1- using the assembly tool - T10118- .



Note

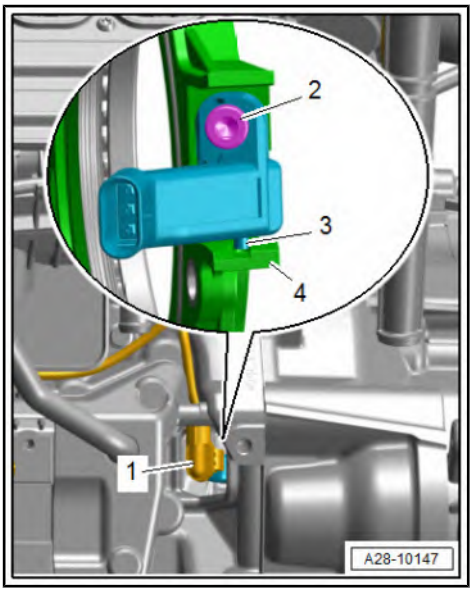
To unlock the electrical plug connection without the assembly tool - T10118- , use a screwdriver to press plug on the engine speed transmitter and simultaneously raise release button with a thin wire hooklet.

– Unscrew screw -2-, remove engine speed transmitter - G28- .

Installing

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

– Place the engine speed sender - G28- in position for installation so that the lug -3- engages in the guide on the sealing flange -4-, as shown.



– Tighten screw -2- and connect plug connection -1-.

Tightening torques - summaries of components

Note

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

♦ ⇒ “1.1 Summary of components - Glow plug system”, page 700