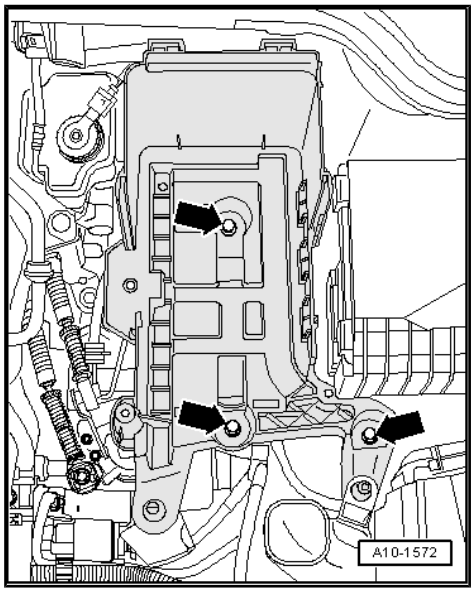
2 Engine data

Codes	BZB	CAWA	CAWB	CBFA	CCTA	CCTB
Manufactured from						
Golf 2004 ►	---	---	05.08 ►	03.08 ►	03.08 ►	---
Eos	---	---	05.08 ►	05.08 ►	05.08 ►	--
Tiguan	---	02.08 ►	02.08 ►	---	01.08 ►	05.08 ►
Scirocco	---	---	05.08 ►	---	---	---
Passat 2006 ►	11.07 ►	---	03.08 ►	03.08 ►	03.08 ►	03.08 ►
CC	03.08 ►	---	05.08 ►	10.09 ►	06.08 ►	---
Golf 2009 ►	---	---	---	07.09 ►	07.09 ►	---
Exhaust emission standard	EU 4	EU 4	EU 4	SULEV	ULEV 2	ULEV 2
Displacement l	1.8	2.0	2.0	2.0	2.0	2.0
Power kW at rpm	118/5000	125/5500	147/5100	147/5100	147/5100	125/5500
Torque Nm at rpm	250/1500	280/1700	280/1700	280/1700	280/1700	280/1500
Bore ∅ mm	82.5	82.5	82.5	82.5	82.5	82.5
Stroke mm	84.1	92.8	92.8	92.8	92.8	92.8
Compression ratio	9.6:1	9.6:1	9.6:1	9.6:1	9.6:1	9.6:1
RON	95[1)]	95	95	95	95	95
Ignition/injection system	FSI	FSI	FSI	FSI	FSI	FSI
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
Charging	Exhaust turbocharger	Exhaust turbocharger	Exhaust turbocharger	Exhaust turbocharger	Exhaust turbocharger	Exhaust turbocharger
Camshaft timing adjustment	Yes	Yes	Yes	Yes	Yes	Yes
Secondary air injection	No	No	No	Yes	No	No
Valves per cylinder	4	4	4	4	4	4
Oil pressure control	No	No	No	No	No	No

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

Codes	CGYA	CCZA	CCZB	CCZC	CCZD	CDAA	CDAB
Manufactured from							
Golf 2004 ►	---	---	---	---	---	---	---
Eos	---	05.09 ►	10.09 ►	---	---	---	---
Tiguan	---	10.09 ►	05.11 ►	10.09 ►	05.11 ►	---	---
Scirocco	---	---	10.09 ►	---	---	---	---
Passat 2006 ►	11.08 ►	10.09 ►	---	---	---	10.09 ►	10.09 ►
CC	10.09 ►	10.09 ►	11.10 ►	---	---	10.09 ►	10.09 ►
Golf 2009 ►	---	---	01.09 ►	---	---	05.09 ►	---
Exhaust emission standard	EU 4	EU 5	EU 5	EU 5	EU 5	EU 5	EU 4
Displacement l	1.8	2.0	2.0	2.0	2.0	1.8	1.8
Power kW at rpm	112/5000	147/5100	155/5300	125/4300	132/4300	118/4500	112/5000
Torque Nm at rpm	250/1500	280/1700	280/1700	280/1700	280/1700	250/1500	250/1500
Bore ∅ mm	82.5	82.5	82.5	82.5	82.5	82.5	82.5
Stroke mm	84.1	92.8	92.8	92.8	92.8	84.1	84.1
Compression ratio	9.6:1	9.6:1	9.6:1	9.6:1	9.6:1	9.6:1	9.6:1
RON	95[1)]	95	95	95	95	95[1)]	95[1)]

– Read event memories of all control units before removing ⇒ Vehicle diagnostic tester.
– Disconnect earth strap at battery with ignition switched off ⇒ Electrical system; Rep. gr. 27 ; Disconnecting and connecting battery.
– Remove engine cover panel ⇒ page 141 .
– Remove air filter ⇒ page 467 .
– Remove battery and battery tray.
– Remove wiper arms ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; Removing and installing windscreen wiper system; Removing and installing wiper arms .
– Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 64 ; Flush bonded windows; Assembly overview - plenum chamber cover .

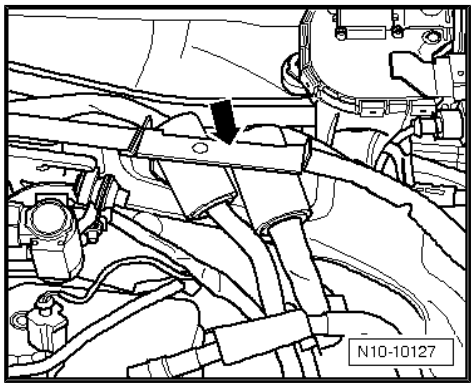


Golf, Eos:

– Remove bulkhead plenum chamber ⇒ Body - front; Rep. gr. 50 ; Assembly overview - bulkhead plenum chamber .
– If fitted, remove charge air duct to sound generator ⇒ page 455 .

All:

– If fitted, release feed-through for engine wiring harness -arrow- and pull off upwards.
– Pull left engine wiring harness connector off at engine control unit.



⇒ “4 Engine control unit J623 (Passat, CC up to 11/10)”, page 499

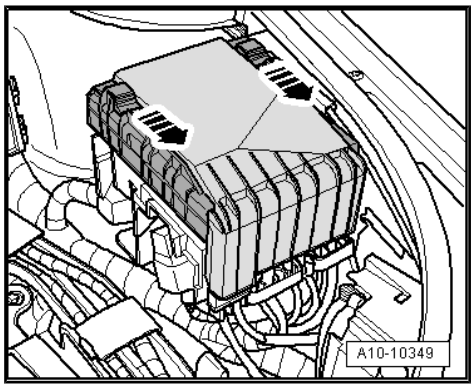
⇒ “5 Engine control unit J623 (Golf, Eos to 11/08)”, page 502

⇒ “6 Engine control unit J623 (Golf, Eos, Scirocco from 11/08; CC from 11/10)”, page 506

⇒ “7 Engine control unit J623 (Tiguan)”, page 511

⇒ “8 Engine control unit J623 (Scirocco to 11/08)”, page 514

– Slide the two clips in the direction of the -arrows- and remove cover from electronics box in engine compartment.

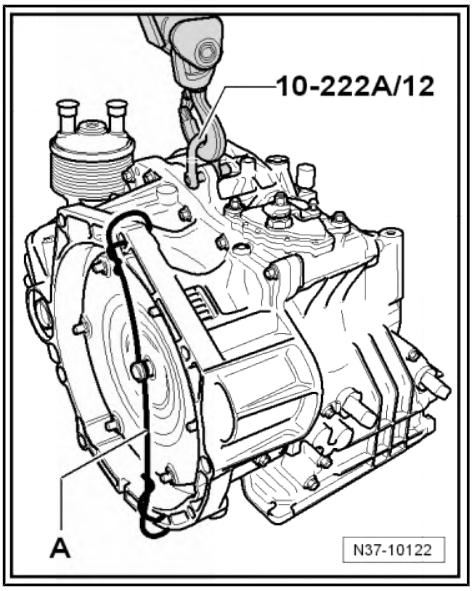


– Remove bevel box (manual gearbox) ⇒ Gearbox; Rep. gr. 34 .

All

– Disconnect all electrical connections from gearbox to engine and move them to one side.

– Secure gearbox to workshop hoist with shackle - 10 - 222 A / 12- , but do not raise.



– Remove upper engine/gearbox securing bolts.

Manual gearbox and DSG®

– Before now removing final securing bolts, support gearbox with workshop hoist.

– Remove lower engine/gearbox connecting bolts.

– Press gearbox off from engine, guiding the gearbox

Automatic gearbox

Bolts can be loosened with bit - T10179- . When tightening, however, note the lower tightening torque ⇒ 6-speed automatic gearbox 09G; Rep. gr. 37 ; Removing and installing gearbox .

Socket - T10035- simplifies the work.

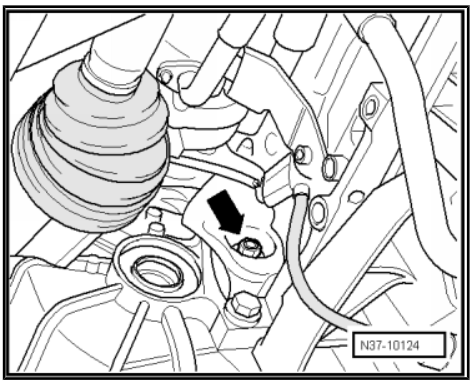
– Leave an easily accessible bolt in for safety purposes.

– Start with the two lower bolts.

The hole for removing the torque converter nut is covered with a rubber cap on the rear of the engine.

– Remove this cap.

– Remove 6 converter nuts -arrow- using insert tool - V/175- .



Note

- *Continue turning the engine carefully!*
- *When installing, take special care to turn the engine carefully »while guiding the gearbox onto the engine«. The starter ring gear can be held from the outside with a screwdriver. The studs will then engage in the holes in the drive plate.*

– Before now removing the final connecting bolt, support gearbox with workshop hoist.

– Only now is the final bolt removed.

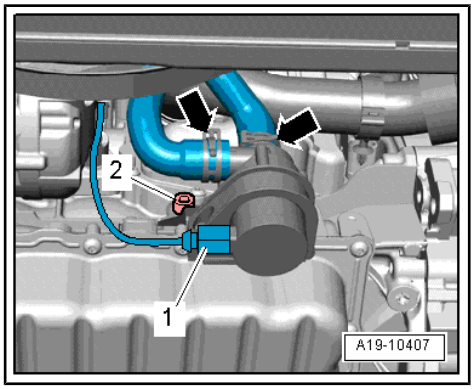
– Press gearbox off from engine, guiding the gearbox

Note

Observe torque converter. It must be removed together with gearbox.

All:

– Remove bolt -2- at bracket for coolant pump for continued circulation - V51- .



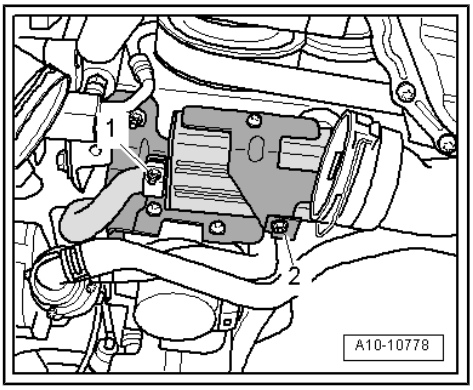
Vehicles with auxiliary heater:

– Slacken clip -1- and remove bolt -2-.

– Detach exhaust silencer for auxiliary heater.

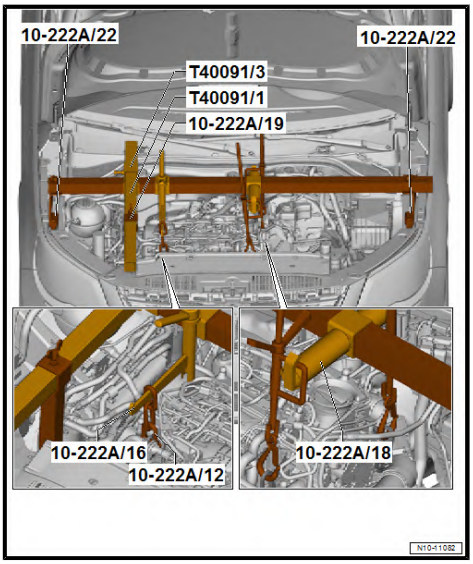
All:

– Remove engine cover panel ⇒ page 141 .



– Fit support bracket - 10 - 222 A- as shown. The rear spindle is not required. Attach hooks to support eyes on engine and support engine and gearbox.

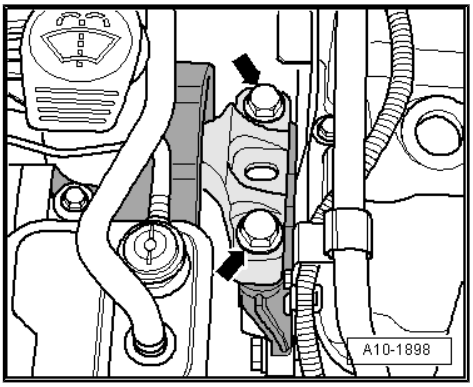
– Take up weight of engine with spindle.



– Unscrew bolts -arrows- of engine/gearbox support on the engine.

– Lower engine approx. 55 mm.

– Remove poly V-belt ⇒ page 39 .



4 Pistons and conrods

⇒ “4.1 Assembly overview - pistons and conrods”, page 80

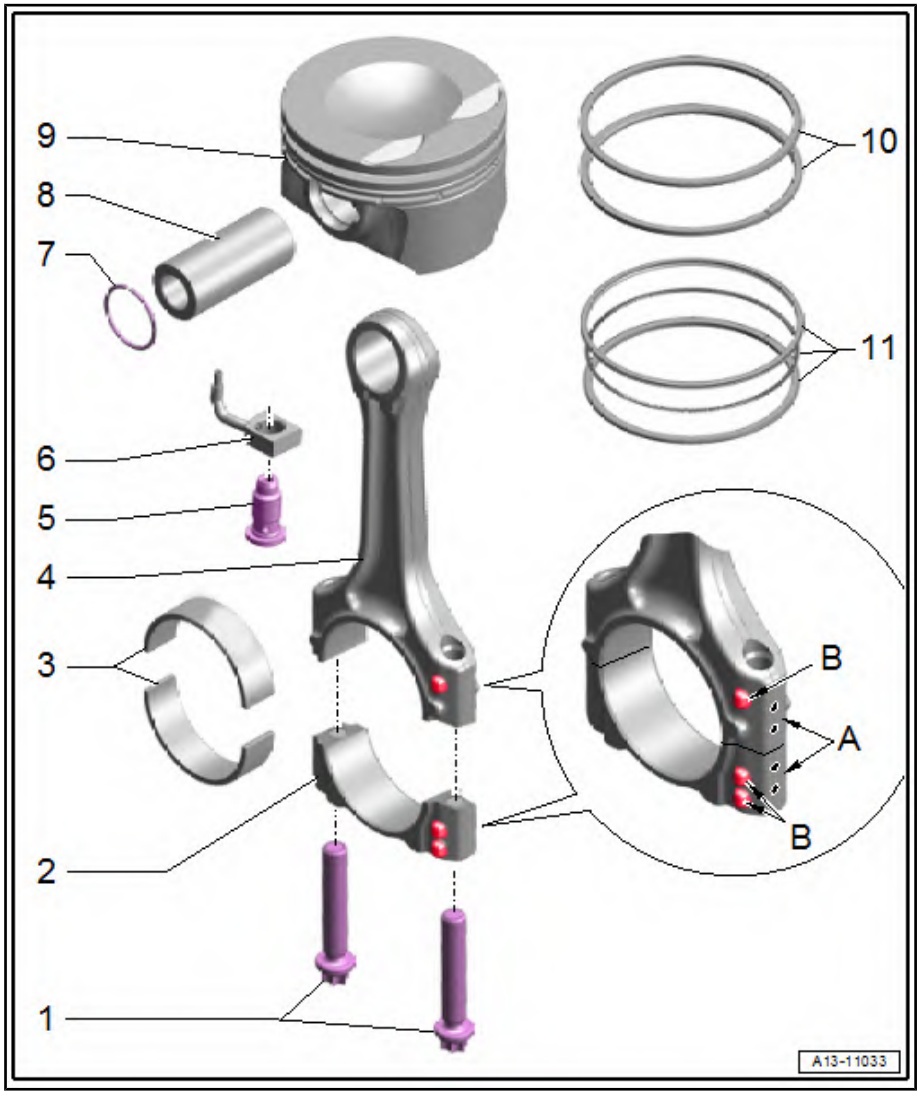
⇒ “4.2 Removing and installing pistons”, page 83

⇒ “4.3 Checking pistons and cylinder bores”, page 84

⇒ “4.4 Separating new conrod”, page 86

⇒ “4.5 Checking radial clearance of conrods”, page 87

4.1 Assembly overview - pistons and conrods



1 - Bolts

- ❑ Renew after removal
- ❑ Apply engine oil to thread and contact surface
- ❑ Use old bolts to measure radial clearance.
- ❑ 45 Nm +90°

2 - Conrod bearing cap

- ❑ Observe installation position
- ❑ Conrod bearing cap only fits in one position and only on the appropriate conrod due to the breaking procedure (cracking) separating the cap from the conrod
- ❑ Mark allocation to cylinder and conrod in colour -A-
- ❑ Installation position: Marking -B- faces towards pulley end.
- ❑ Separating new conrod ⇒ page 86 .

3 - Bearing bushes

- ❑ Fitting position ⇒ page 81
- ❑ Renew worn bearing shells
- ❑ Apply engine oil before installing
- ❑ Axial clearance

- ♦ New: 0.10 … 0.35 mm
- ♦ Wear limit: 0.40 mm
  - ❑ Measuring radial clearance ⇒ page 87

4 - Connecting rod

- ❑ Renew as set only.
- ❑ Mark allocation to cylinder and to conrod bearing cap
- ❑ Installation position: Marking -B- faces towards pulley end.
- ❑ Separating new conrod ⇒ page 86 .
- ❑ Measuring radial clearance ⇒ page 87

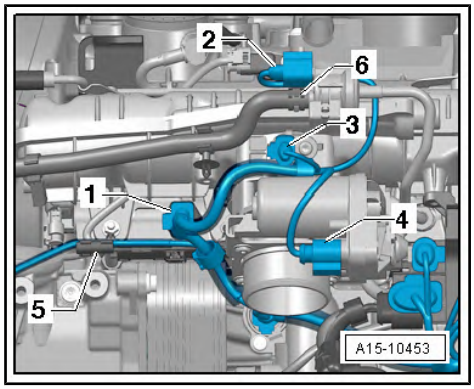
All:

– Pull coolant hose from union on side of cylinder head.

– Separate electrical connectors -1 to 4-.

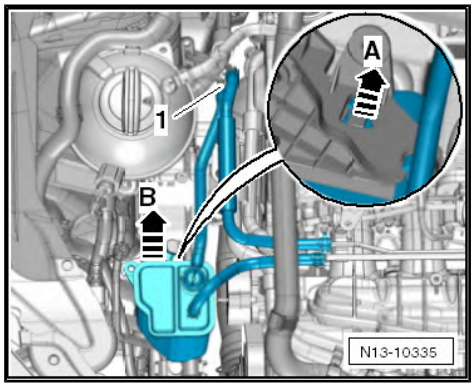
– Place electrical cable -5- to one side.

– Pull off vacuum line -6- leading to activated charcoal filter.



Golf, Scirocco:

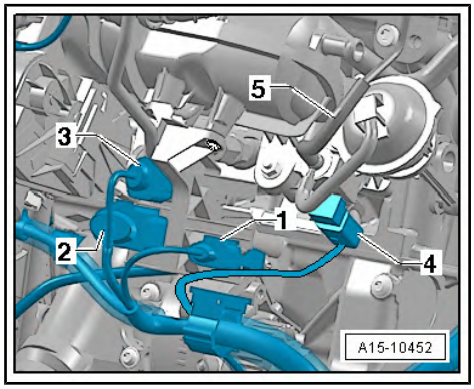
– Pull off breather line -1-, release activated charcoal filter -A- and remove upwards -B-.



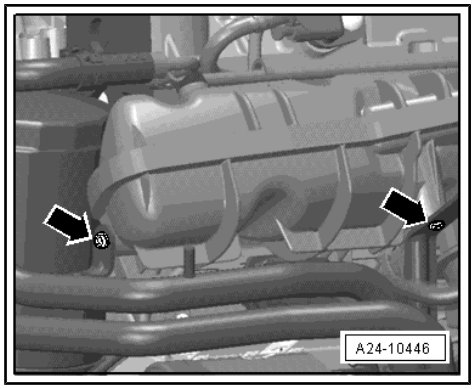
All:

– Separate electrical connectors -1- and pull out connectors from retainer.

– Separate electrical connectors -2 to 4-.

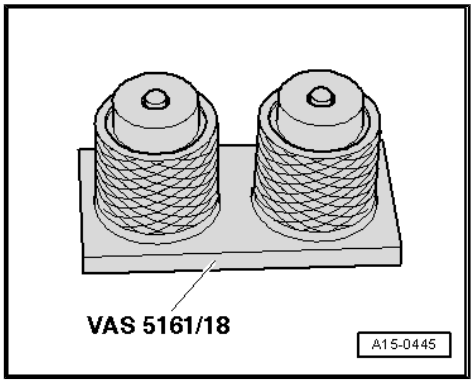


– Unscrew bolts -arrows- and detach coolant pipes from intake manifold.



Note

- *If the valve cotters have been removed from the installation cartridge, they must first be inserted into the insertion device - VAS 5161/18- .*
- *Press assembly cartridge -VAS 5161/8- onto insertion device from above and pick up valve cotters.*



– Press installation cartridge - VAS 5161/8- down with pressure fork - VAS 5161/2- , and turn installation cartridge knurled screw back and forth whilst pulling upwards.

– Relieve pressure fork - VAS 5161/2- whilst pulling on knurled screw.

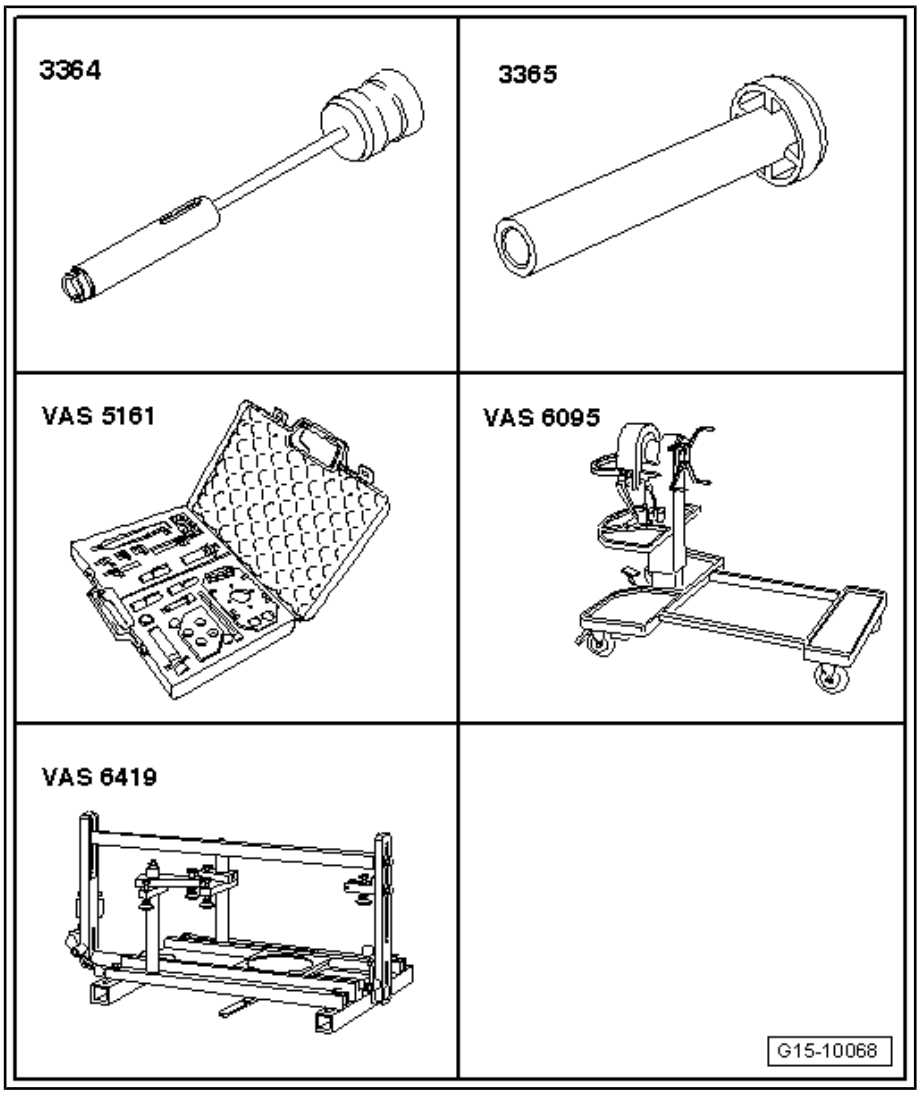
– Remove removal and installation device - VAS 5161- .

The remaining assembly steps are basically a reverse of the dismantling procedure, when doing this note as follows:

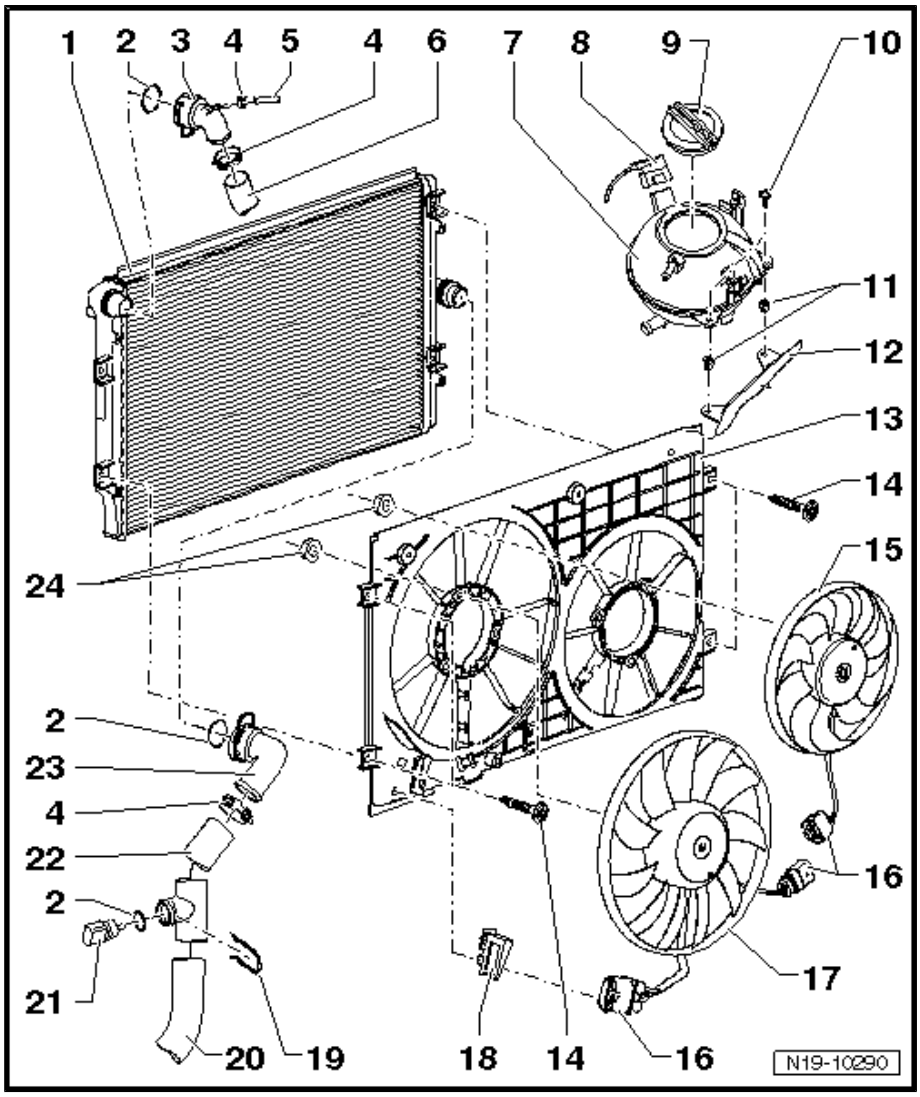
– Install camshafts ⇒ page 185 .

3.4.2 Removing and installing valve stem seals (cylinder head removed)

Special tools and workshop equipment required



3.3 Assembly overview - radiator, radiator cowl and radiator fan (Tiguan)



1 - Radiator/cooler

- ❑ Removing and installing ⇒ page 275

2 - O-ring

- ❑ Renew if damaged

3 - Union

- ❑ To remove, pull out retaining clip.

4 - Spring-type clip

- ❑ Remove and install with hose clip pliers - VAS 6340- .

5 - Coolant hose

- ❑ Connection diagram for coolant hoses ⇒ page 238

6 - Upper coolant hose

- ❑ To connection on cylinder head.
- ❑ Connection diagram for coolant hoses ⇒ page 238

7 - Expansion tank

- ❑ Check cooling system for leaks using cooling system tester - V.A.G 1274 B- and adapter for cooling system tester - V.A.G 1274/8-

8 - Connector

9 - Cap

- ❑ Check using cooling system tester - V.A.G 1274 B- and adapter for cooling system tester - V.A.G 1274/9-
- ❑ Pressure relief valve must open at pressure of 1.4 to 1.6 bar

10 - 5 Nm

11 - Plastic inserts

- ❑ For securing bolts.

12 - Bracket

13 - Cowling

14 - 5 Nm

15 - Radiator fan 2 - V177-

- ❑ Removing and installing ⇒ page 274

16 - Connector

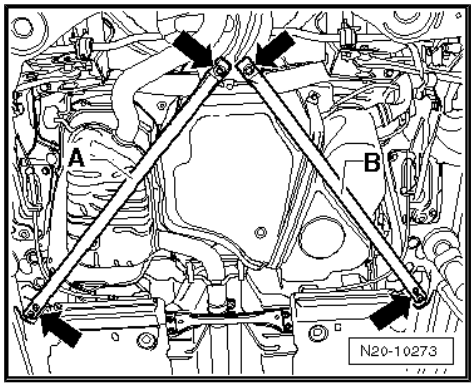
17 - Radiator fan - V7-

- ❑ With radiator fan control unit - J293-

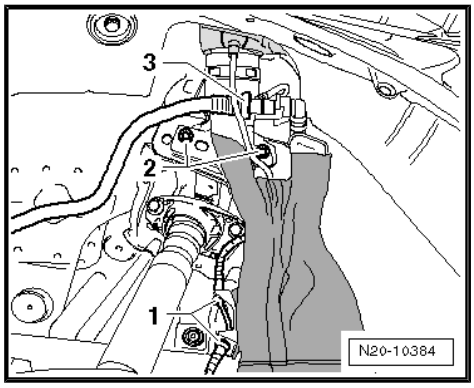
18 - Bracket

- ❑ For connector.

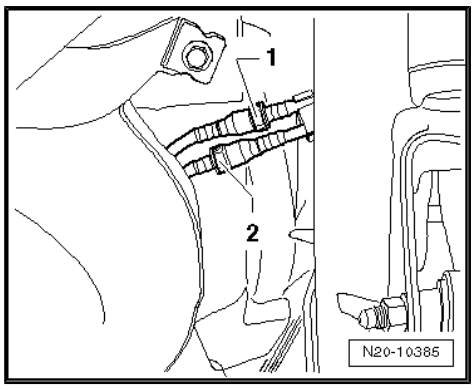
– Remove stiffener braces -A and B- ⇒ Running gear; Rep. gr. 42 ; Removing and installing stiffener braces .
– Remove centre and rear silencers.
– Remove heat shield for centre silencer.
– Remove rear right wheel.
– Remove rear right wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Removing and installing wheel housing liner; Rear wheel housing liner .



– Unclip wire from filler neck -1-.
– Separate breather line -3- (only engine code CBFA, CCTA, CCTB).
– Unbolt filler neck from body -2-.



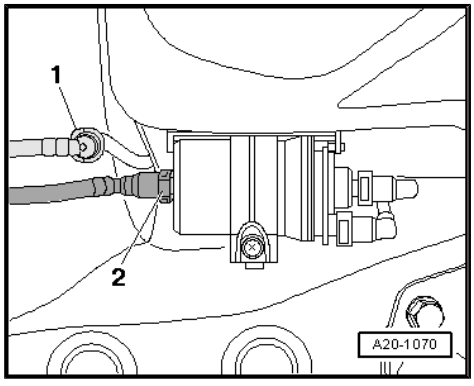
– Detach breather line -1- (white) behind fuel tank. Push in retaining ring to do this.
– Engine codes CBFA, CCTA, CCTB: Detach vacuum line -2- (green) for the fuel system diagnostic pump - V144- behind fuel tank. Push in retaining ring to do this.



WARNING

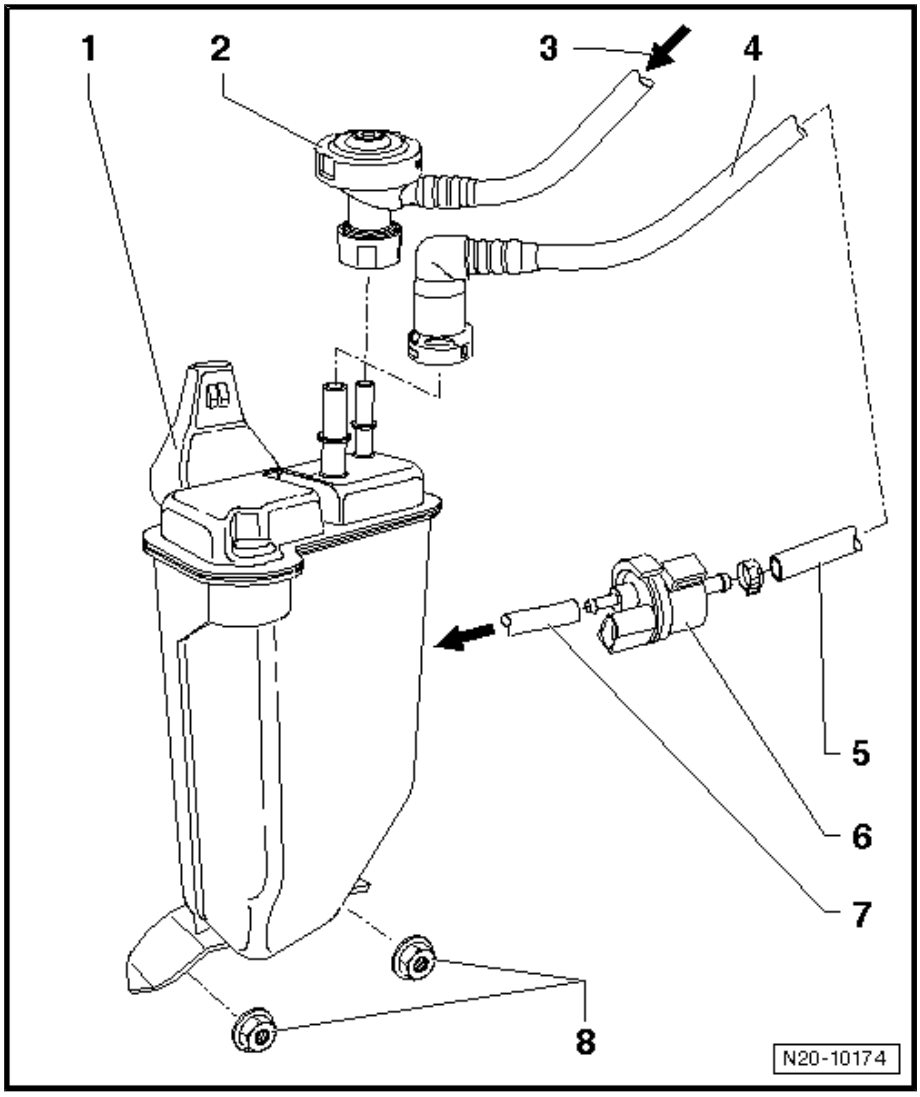
The fuel system is pressurised! Wear protective goggles and protective clothing to avoid injury and contact with the skin. Wrap a cloth around the connection before loosening hose connections. Then release pressure by carefully pulling hose off connection.

– Disconnect breather line -1- (white) and fuel line -2- (black) at connecting point.



Note

- *Press in securing ring to release the fuel lines.*
- *Vehicles with auxiliary heater, the fuel line of the metering pump - V54- must also be separated.*
- *On vehicles with engine code CBFA, CCTA, CCTB, the vacuum line (green) of fuel system diagnostic pump - V144- must also be separated.*



1 - Activated charcoal filter

- ❑ Location: in rear right wheel housing.
- ❑ To remove, unscrew securing bolts and pull activated charcoal filter downwards out of retainer.

2 - Pressure retention valve with connecting hose

- ❑ To remove, grasp securing ring (grey) and pull off upwards.
- ❑ Ensure firm seating

3 - From fuel tank

4 - Breather line

- ❑ To activated charcoal filter solenoid valve 1 - N80- ⇒ Item 6 (page 394)
- ❑ Clipped onto fuel tank
- ❑ Ensure firm seating

5 - Breather line

- ❑ From activated charcoal filter ⇒ Item 1 (page 394)
- ❑ Ensure firm seating

6 - Activated charcoal filter solenoid valve 1 - N80-

- ❑ Valve closed with ignition switched off
- ❑ When engine is warm, valve will be activated (pulsed) by engine control unit

7 - Connection hose

- ❑ To intake manifold
- ❑ Ensure firm seating

8 - 10 Nm

11.2 Assembly overview - activated charcoal filter system (engine codes CBFA, CCTA, CCTB)

Note

On some vehicles an additional filter is installed on the activated charcoal filter system

Assembly overview - activated charcoal filter system ⇒ page 395

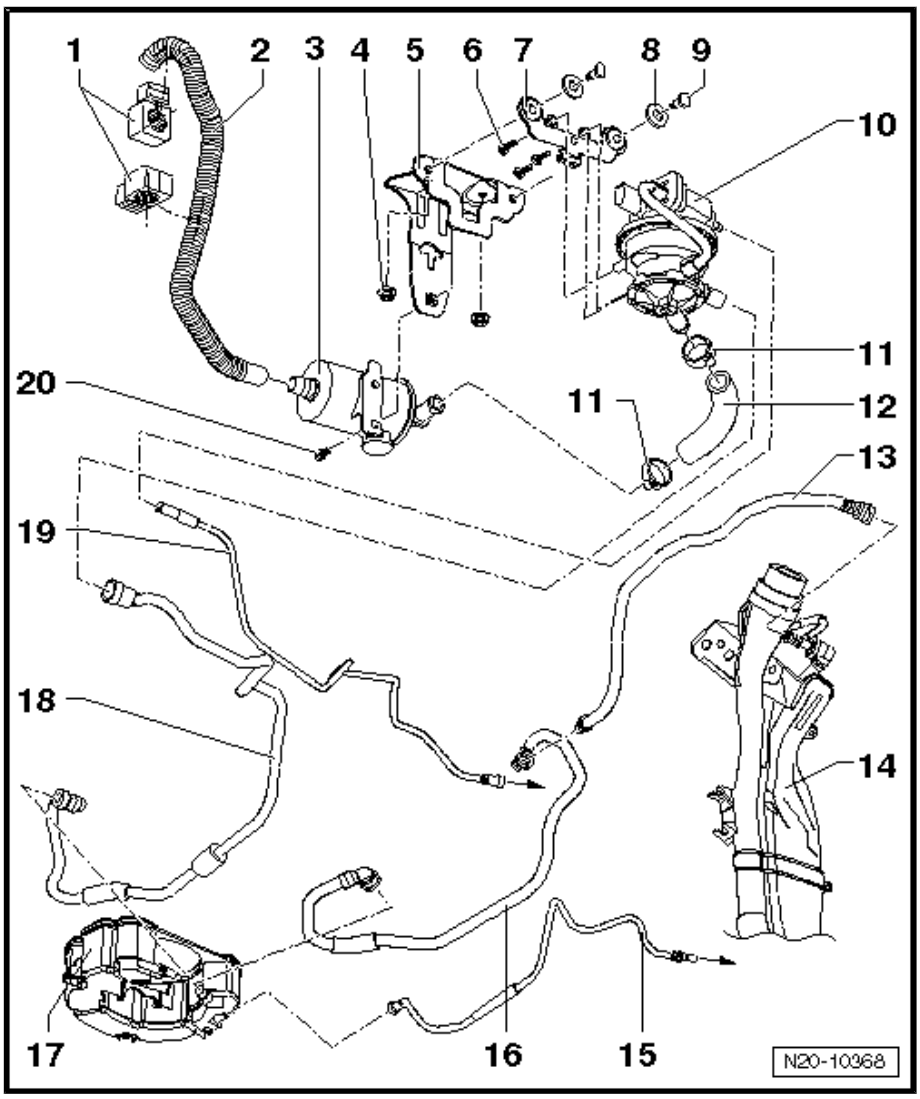
Assembly overview - activated charcoal filter system (vehicles with additional filter) ⇒ page 396 .

16 - Connector

17 - Vacuum line

- ❑ From intake manifold

13.3 Assembly overview - activated charcoal filter system (Eos)



1 - Hose retainer

2 - Breather line

- ❑ To remove and install, remove bumper

3 - Air filter

- ❑ For fuel system diagnosis pump - V144- .

4 - 6 Nm

5 - Bracket

- ❑ For fuel system diagnosis pump - V144- .

6 - 3 Nm

7 - Retaining plate

8 - Rubber mounting

9 - 8 Nm

10 - Fuel system diagnostic pump - V144-

- ❑ Location: Behind rear right wheel housing
- ❑ Removing and installing ⇒ page 415
- ❑ Checking fuel system for leaks ⇒ page 416

11 - Hose clamp

12 - Connection hose

13 - Breather line

- ❑ Behind wheel housing liner

14 - Fuel

15 - Breather line

- ❑ To activated charcoal filter solenoid valve 1 - N80-
- ❑ Press release button to pull off

16 - Breather line

- ❑ On underbody.

17 - Activated charcoal filter

- ❑ Location: down in spare wheel well
- ❑ Removing and installing ⇒ page 414

18 - Connecting cable

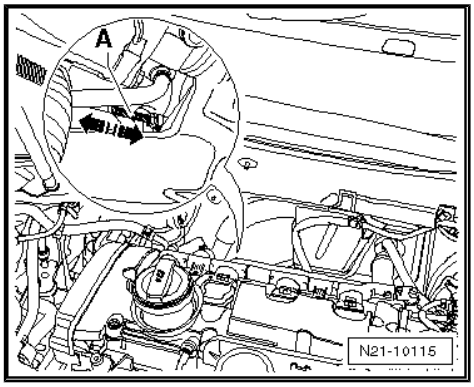
- ❑ Activated charcoal filter / fuel system diagnostic pump - V144-

19 - Vacuum line

- ❑ To intake manifold

The linkage -A- should start to move at a pressure of approx. 300 mbar and be at its limit stop at a pressure of approx. 700 mbar.

The stroke of the rod is approx. 10 mm.



Note

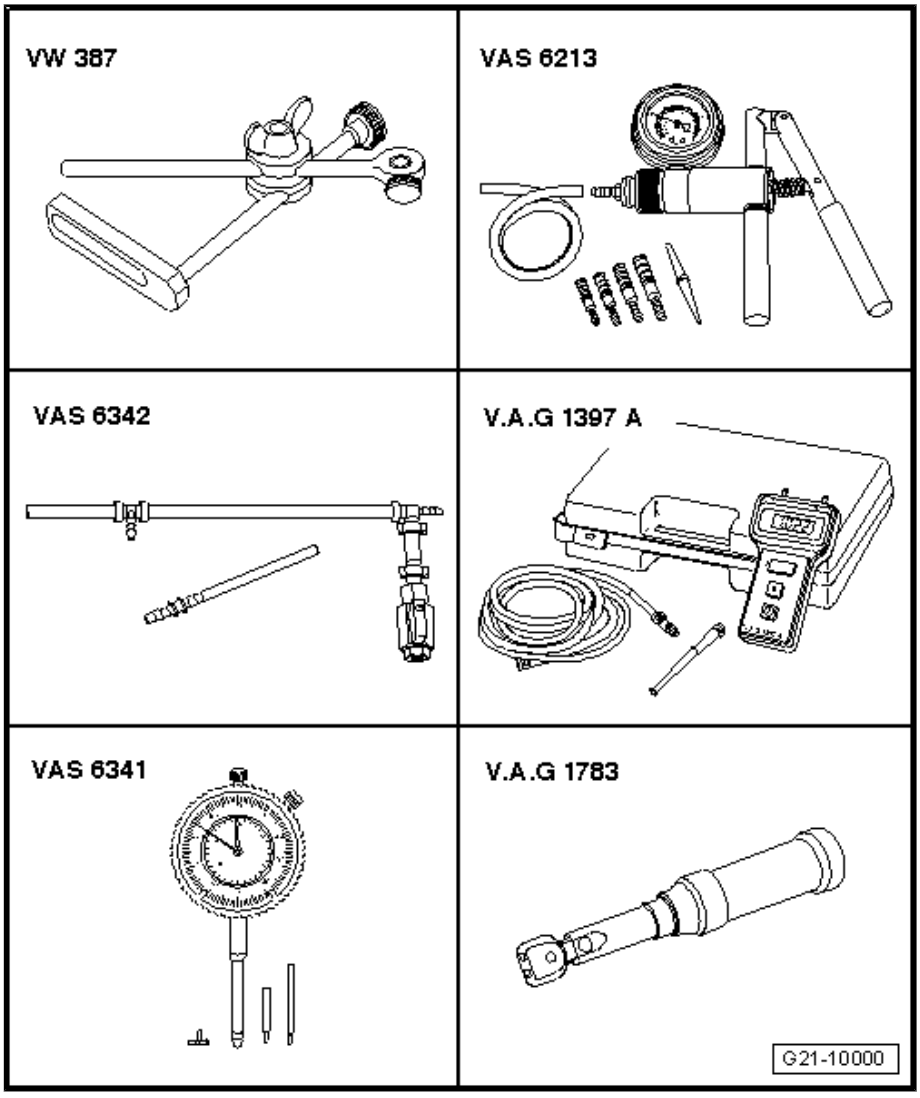
If no pressure can be built up using hand vacuum pump - VAS 6213- , or if the pressure drops immediately again, check hand vacuum pump - VAS 6213- and connecting hoses for leaks. If no fault is found: renew vacuum unit *⇒ page 443* *.*

1.5 Adjusting turbocharger vacuum unit (engine codes BZB, CGYA, CDAA, CDAB)

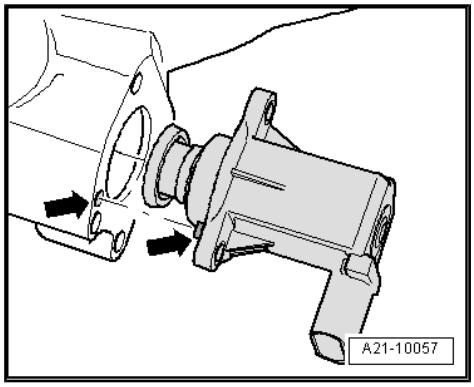
Note

This procedure is used only to adjust the vacuum unit. When checking adjusted vacuum units the values may differ.

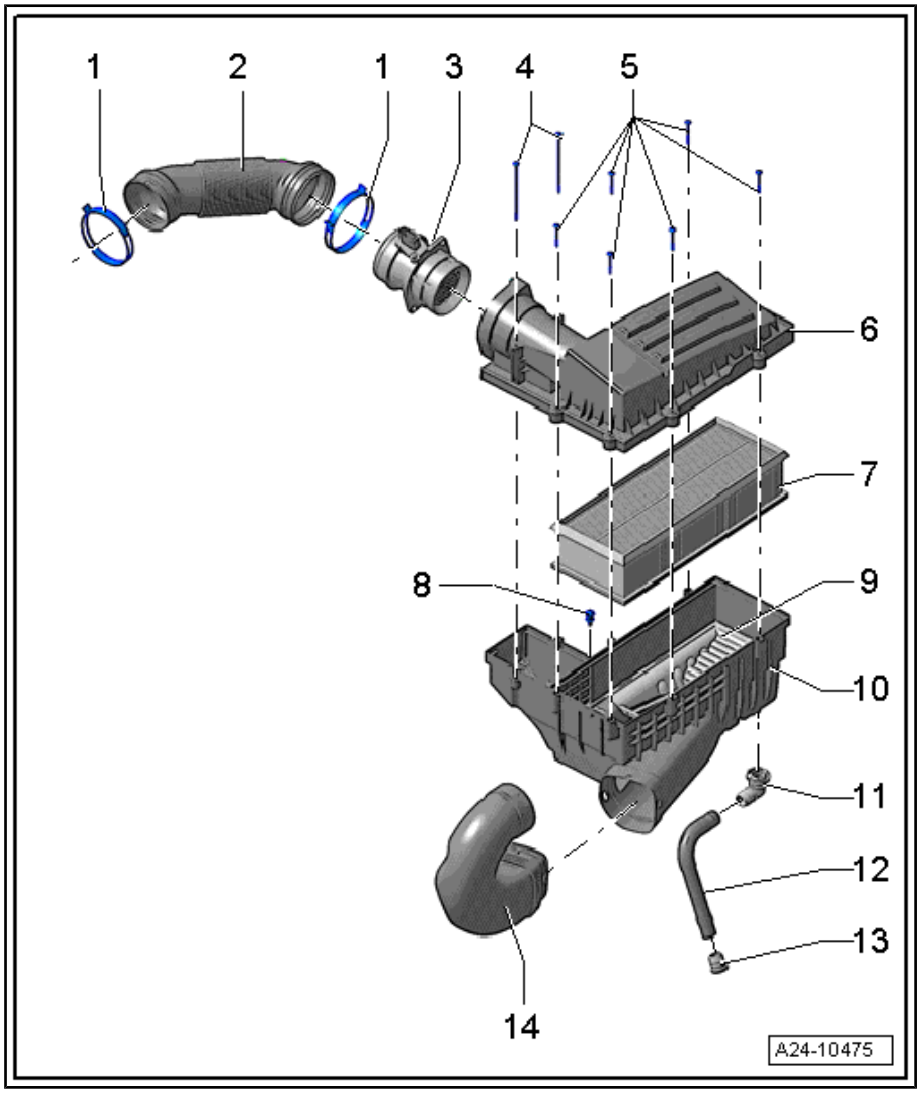
Special tools and workshop equipment required



Pay attention to installation position of turbocharger air recirculation valve - N249-



2.3 Assembly overview - air filter



1 - Spring-type clip

2 - Air intake hose

- ❑ To turbocharger
- ❑ Check air hose for contamination and leaves

3 - Air mass meter - G70-

- ❑ Removing and installing ⇒ page 469

4 - Bolts

- ❑ 1.5 Nm
- ❑ For upper part of air filter.

5 - Bolts

- ❑ 1.5 Nm
- ❑ For upper part of air filter.

6 - Air filter upper part

- ❑ Clean any salt residue, leaves and dirt from upper part of air filter

7 - Filter element

- ❑ Always use genuine part for air filter element
- ❑ Removing and installing ⇒ page 468
- ❑ Observe change intervals ⇒ Maintenance ; Booklet ; Service tables

8 - Bolt

- ❑ 8 Nm
- ❑ For air filter lower part

9 - Snow screen

- ❑ Not fitted in all vehicles.

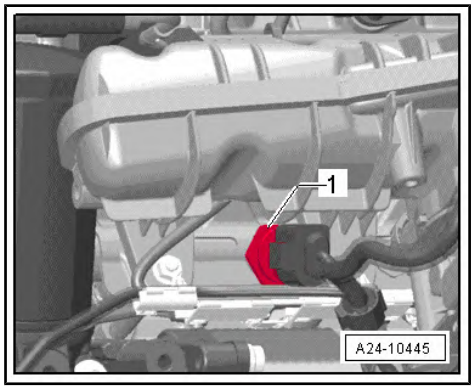
10 - Air filter lower part

- ❑ Clean any salt residue, leaves and dirt from lower part of air filter.

11 - Connection for water drain hose

- ❑ Clean connection

– Release connector from fuel pressure sender - G247- using assembly tool - T10118- .



WARNING

The fuel system is pressurised.

Danger of injury caused by fuel spray.

- *Wear protective goggles.*
- *Wear protective gloves.*
- *To release pressure, wrap a clean cloth around the connection and carefully loosen the connection.*

– Unscrew fuel pressure sender - G247- using deep hexagon socket, 27 mm - VAS 5301/7- .

– Collect escaping fuel with a cleaning cloth.

Installing:

Install in reverse order of removal, observing the following.

Lubricate sealing cone of fuel pressure sender - G247- with clean engine oil.

– Specified torques ⇒ page 472 .

2.14 Removing and installing throttle valve module - J338-

Removing:

Vehicles with sound generator:

– Remove charge air duct to sound generator ⇒ page 455 .

Golf, Eos, Scirocco:

– Remove radiator cowl ⇒ page 273 .

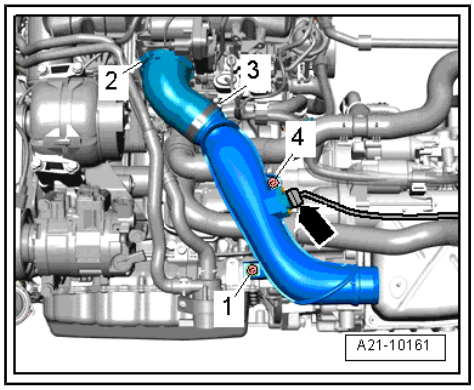
All:

– Release hose clip -2-.

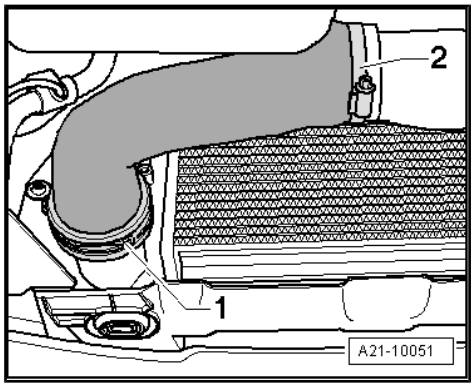
– Unscrew bolt -4-.

– Separate electrical connector -arrow-.

– Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .



– Remove air pipe -item 1 and 2-.



- ❑ Tighten bolted connections evenly. Specified torque and installation position ⇒ page 525

12 - Centre silencer

- ❑ Combined in one unit with rear silencer as original equipment. Can be renewed individually for repair purposes.
- ❑ Separate exhaust system ⇒ page 522

13 - Threaded union

- ❑ Tighten bolted connections evenly. Specified torque and installation position ⇒ page 525

14 - Front clamp

- ❑ Tighten bolted connections evenly. Specified torque and installation position ⇒ page 525

15 - Mounting

- ❑ For centre silencer

1.2 Assembly overview - exhaust system (engine codes CCTA, CCTB, CCZA, CDAA, CDAB)

1 - 25 Nm

2 - Mounting

- ❑ Renew if damaged

3 - Seal

- ❑ Renew

4 - 40 Nm

- ❑ Renew
- ❑ Coat studs of exhaust manifold with high-temperature paste.
- ❑ High-temperature paste - G 052 112 A3-

5 - Lambda probe - G39-

- ❑ Bank 1, probe 1
- ❑ 55 Nm
- ❑ The thread on new Lambda probes is coated with high-temperature paste.
- ❑ When re-using the old Lambda probe, coat only the thread with high-temperature paste; the paste must not get into the slots of the probe body.
- ❑ High-temperature paste - G 052 112 A3-