

Audi A4 1995 ➤

Fuel supply system - Diesel engines									
Engine ID	1Z	AFB	AFF	AFN	AHH	AHU	AJM	AKN	ATJ
	AVG								

Edition 03.1998



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List of Workshop Manual Repair GroupsList of Workshop Manual
Repair GroupsList of Workshop Manual Repair Groups

Audi A4 1995 ➤

Fuel supply system - Diesel engines

Repair Group

20 - Fuel supply system



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

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20 - Fuel supply system

1 - Notes for working on fuel supply system

1.1 - Notes for working on fuel supply system

1.2 - Safety precautions when working on the fuel supply system

Warning

- ◆ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ◆ Wear protective gloves.
- ◆ Wear protective goggles.

When removing and installing the fuel gauge sender or fuel delivery unit from a full or partly full fuel tank, note the following:

- ◆ The fuel tank must not be more than 3/4 full.
- ◆ If necessary, drain the tank
=> Page 76 .
- ◆ Before commencing work, switch on exhaust extraction system and place an extraction hose close to the sender opening in the fuel tank to extract escaping fuel fumes.
If no exhaust extraction system is available, a radial fan (as long as motor is not in air flow) with a displacement greater than 15 m³/h can be used.
- ◆ Prevent skin contact with fuel! Wear fuel-resistant gloves!

Drain the fuel tank before removal from the vehicle in order to reduce weight.

- ◆ If necessary, drain the tank
=> Page 76 .

1.3 - Rules for cleanliness

When working on the fuel supply/injection system, pay careful attention to the following "basic rules":

- ◆ Thoroughly clean all unions and the adjacent areas before disconnecting.
- ◆ Place parts that have been removed on a clean surface and cover them over. Do not use fluffy cloths.
- ◆ Carefully cover or seal opened components if the repair cannot be completed immediately.
- ◆ Only install clean components:
Only unpack replacement parts immediately prior to installation.
Do not use parts that have been stored loose (e.g. in tool boxes etc.).
- ◆ When the system is open:
Do not work with compressed air.
Do not move vehicle unless absolutely necessary.
- ◆ Also ensure that no diesel fuel runs onto the coolant hoses. Hoses coming in contact with fuel must be cleaned immediately. Damaged hoses must be replaced.



2 - Fuel supply system - front-wheel drive

2.1 - Fuel supply system - front-wheel drive

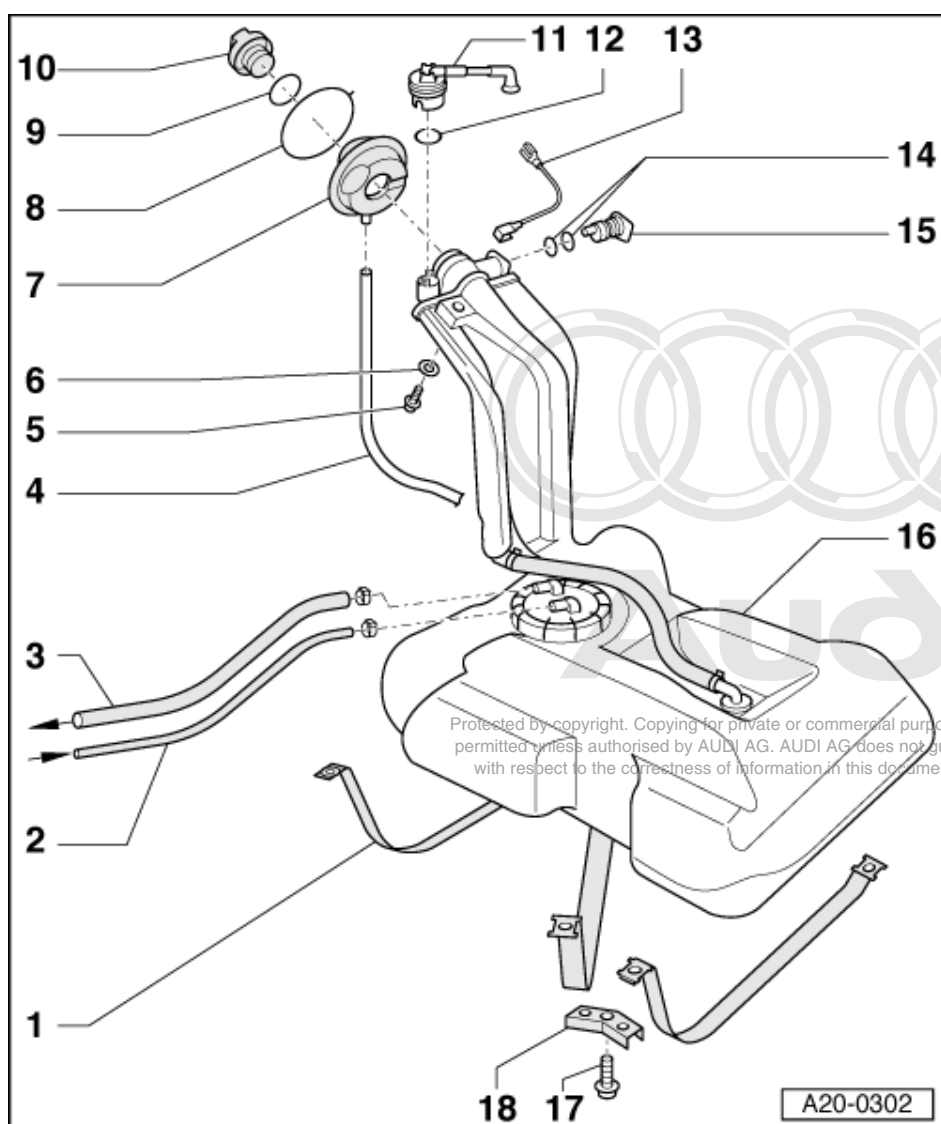
Notes:

- ♦ Secure all hose connections with the correct hose clips (same as original equipment)

=> Parts catalogue

- ♦ Always renew sealing rings and gaskets when assembling.

2.2 - Overview of components: fuel tank with attachments

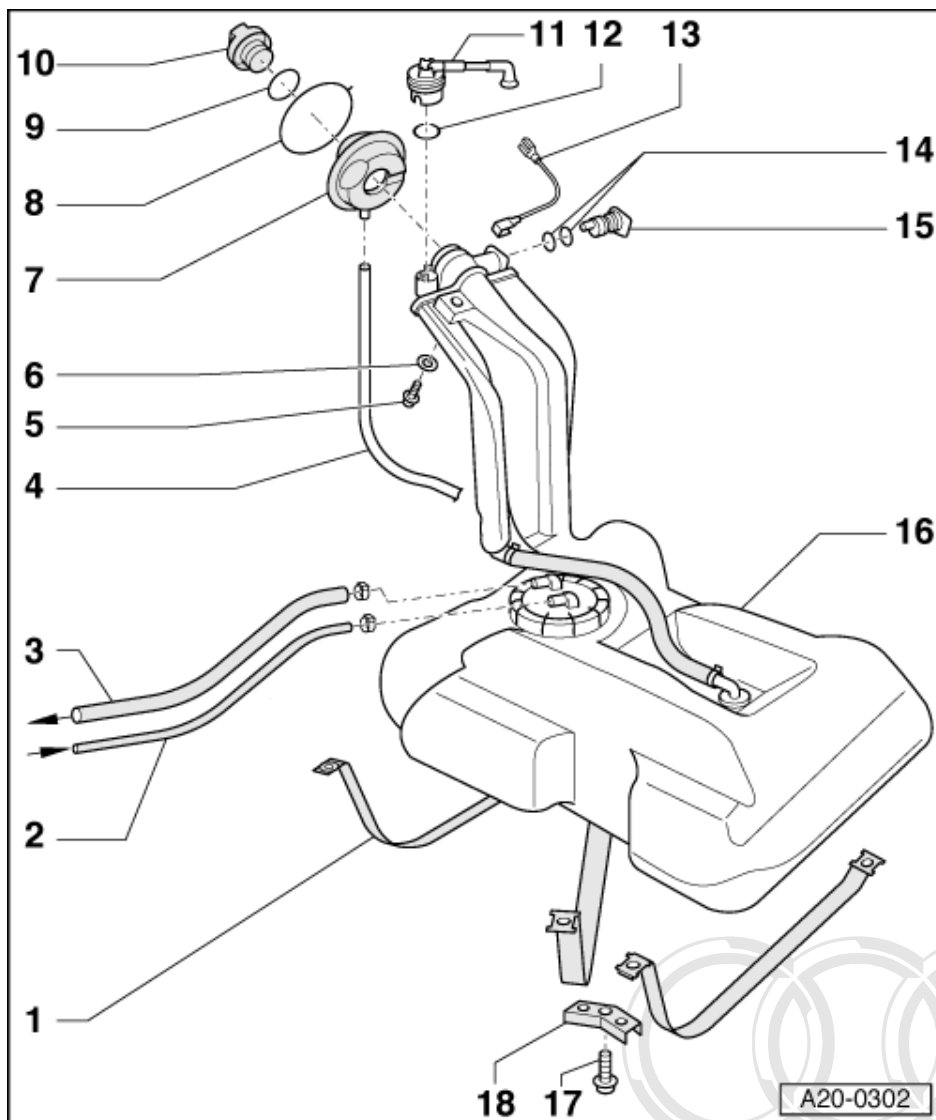


1 Securing strap

- ♦ Removing and installing
=> Page **11**
- ♦ Note differing length
- ♦ Note correct position

Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100°C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.



2 Fuel return pipe

- ♦ From fuel filter
- ♦ Vehicles with 6-cylinder engine: twin pipes on underside of vehicle, with Y-connector at each end.
 Removing and installing
 => Fig. 8

3 Fuel supply pipe

- ♦ Goes to fuel filter

4 Overflow hose

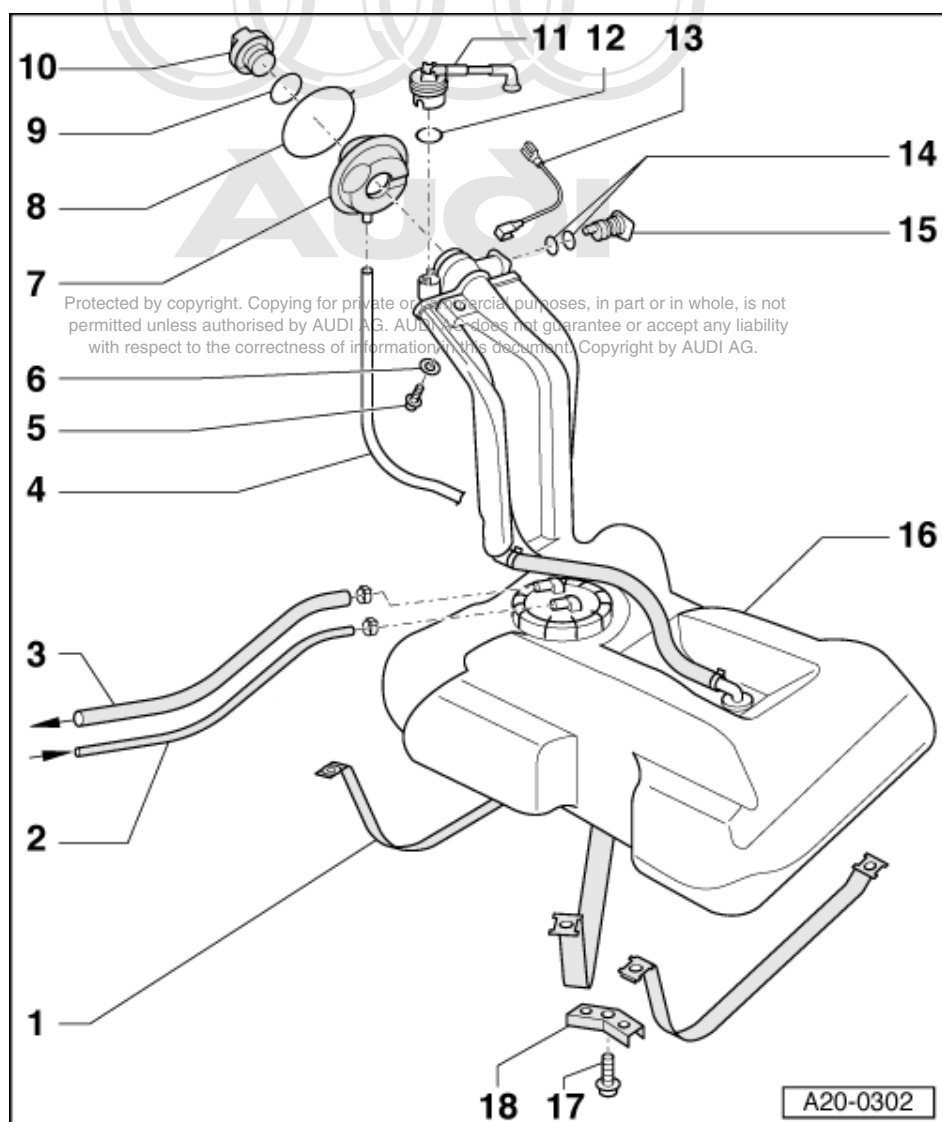
- ♦ Engage in retainer

5 25 Nm

6 Washer

7 Rubber cup

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8 Retaining ring

9 Gasket

- ♦ Renew if damaged

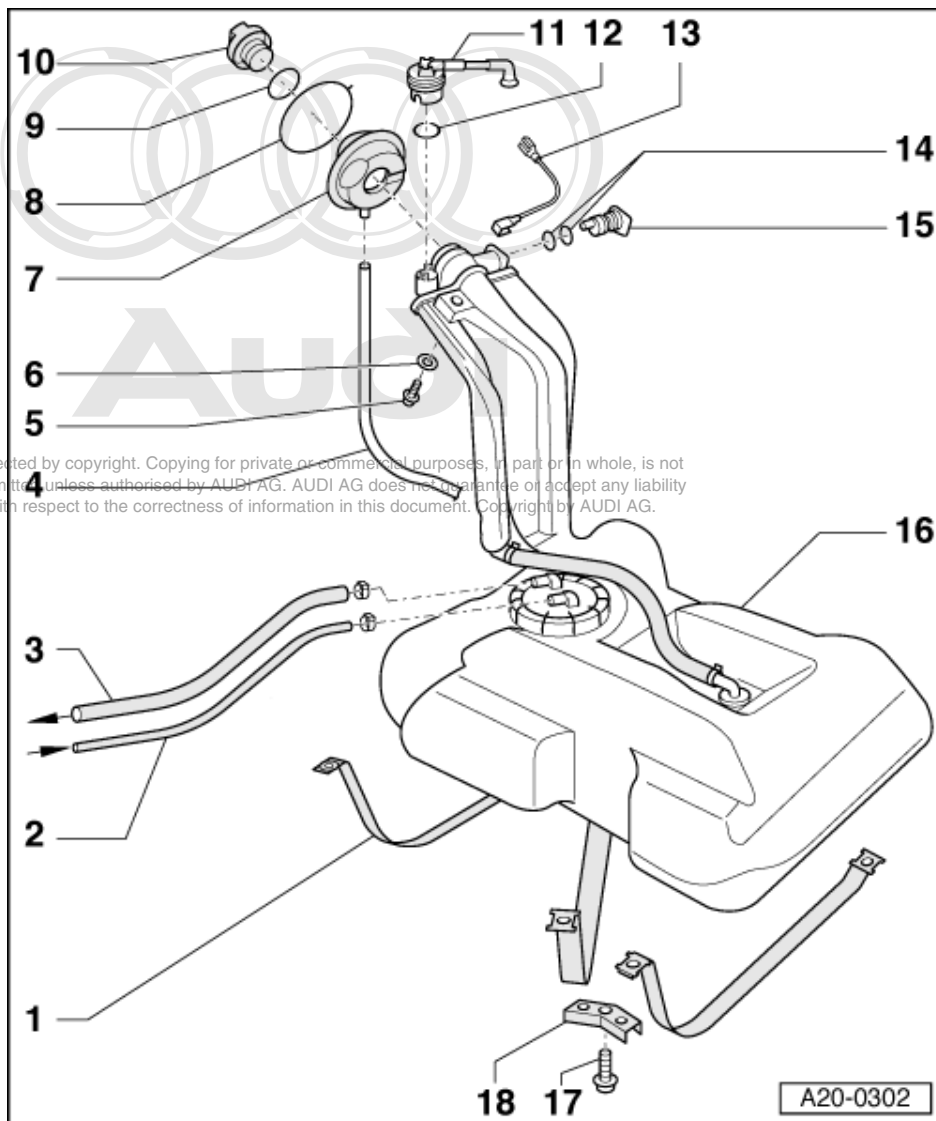
10 Cap

11 Gravity valve

- ♦ To remove valve unclip upwards out of filler neck
- ♦ Position => Fig. 7
- ♦ Check valve for through-flow
valve vertical: open,
valve tilted 45 °: closed

12 O ring

- ♦ Renew

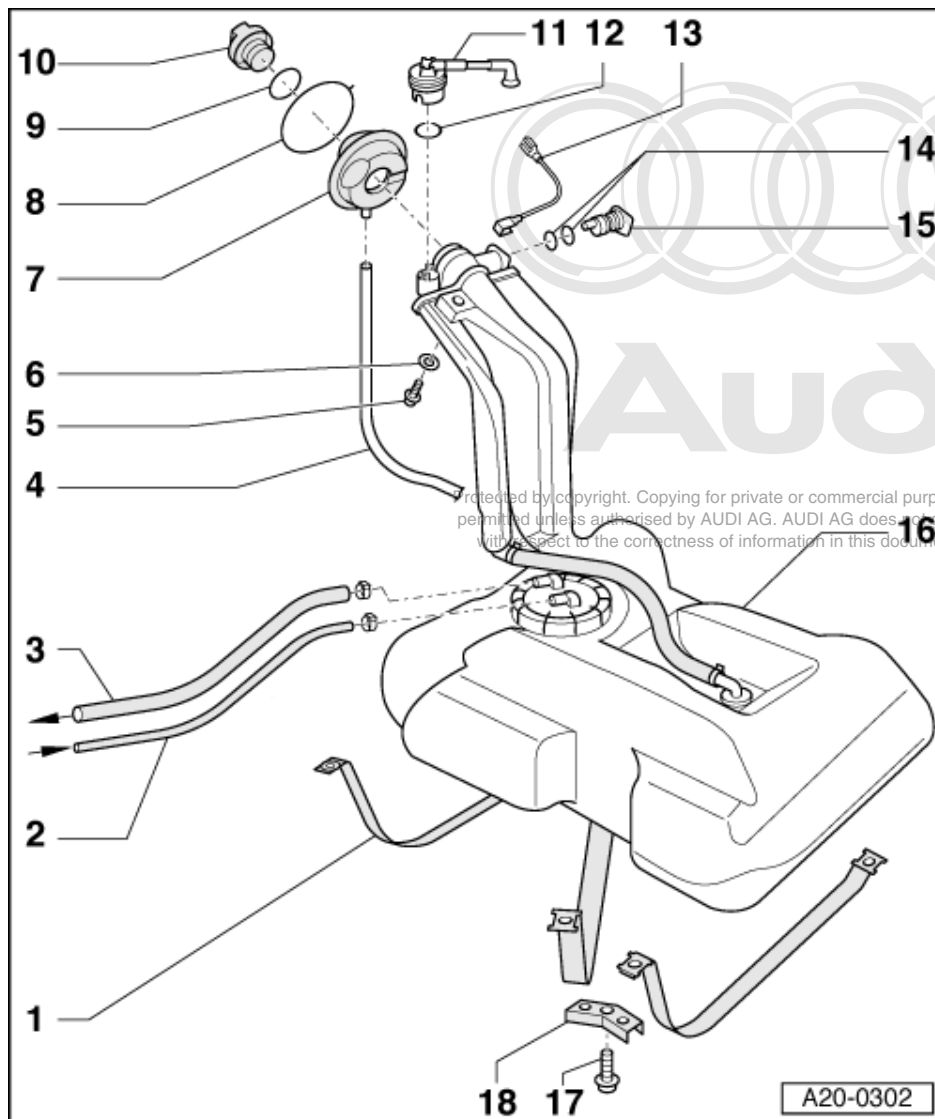


13 Earth connection

- ◆ Position
=> Fig. 7
- ◆ Ensure that connector is seated properly on metal ring of filler neck
- ◆ Secure terminal on earth connection with securing bolt for fuel filler neck -Item 3
- ◆ After installation, use an ohmmeter to check the electrical connection between the metal ring on the fuel filler neck and a bare metal part on the body
Specification: approx. 0 Ω .

14 O rings

- ◆ Renew



15 Vent valve

- ♦ Position
=> Fig. 7
- ♦ Removing, installing and checking => Fig. 8

16 Fuel tank

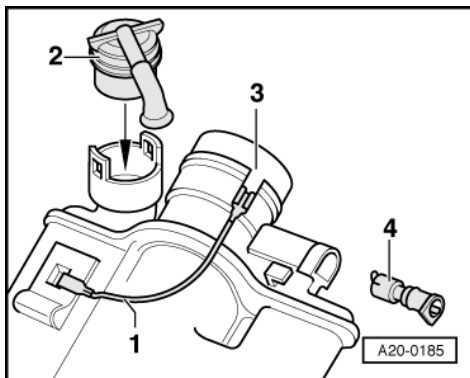
- ♦ Removing and installing
=> Page 11

17 25 Nm

- ♦ Tighten in correct sequence
=> Page 14

18 Bracket

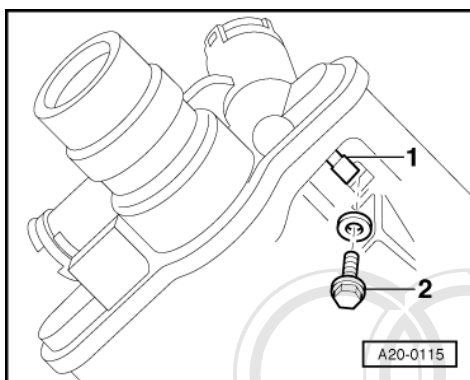
- ♦ For securing straps



-> Fig.1 Position of gravity valve, vent valve and earth connection

- 1 - Earth connection
- 2 - Gravity valve
- 3 - Metal ring on filler neck
- 4 - Vent valve

- Route earth connection as shown in illustration.
- Ensure that plug connector for earth connection is properly seated on metal ring on fuel filler neck.

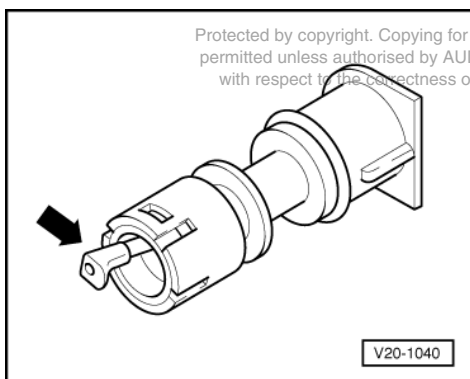


- -> Secure the contact tab -1- of earth wire with bolt -2- for fuel filler neck.

Caution

After installation, use an ohmmeter to check the electrical connection between the metal ring on the fuel filler neck and a bare metal part on the body:

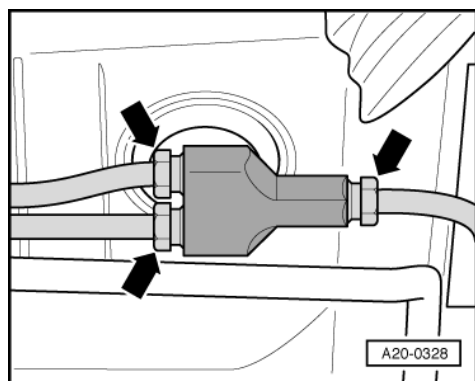
- ◆ **Specification: approx. 0Ω.**



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-> Fig. 2 Removing, installing and checking vent valve

- To remove, unclip valve from side of filler neck.
- Before installing vent valve, unscrew filler cap from fuel tank.
- Checking vent valve:
 - Lever in released position: it should not be possible to blow through valve
 - Lever pressed in direction of arrow: it should be possible to blow through valve



-> Fig.3 Removing and installing Y-connector for fuel return pipe

- ♦ On vehicles with 6-cylinder engine twin return pipes are fitted on underside of vehicle for improved fuel cooling.
- ♦ Tighten unions -arrows- to 15 Nm.

2.3 - Draining fuel tank

Observe safety precautions=> Page **1** .

Observe rules for cleanliness => Page **1** .

Procedure if fuel tank is more than 3/4 full => Page **9** .

Procedure if fuel tank is less than 3/4 full => Page **10** .

Special tools and workshop equipment required

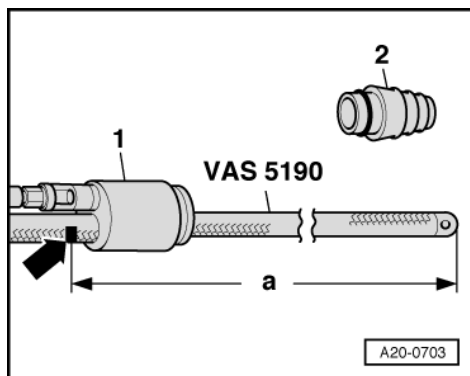


- ♦ VAS 5190

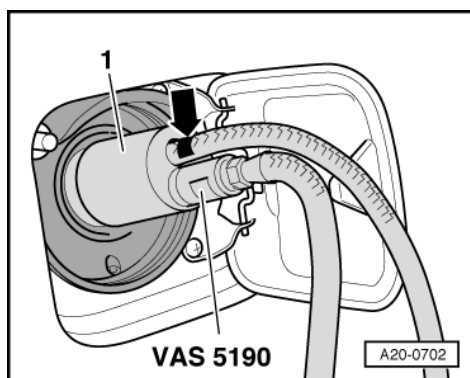
Work sequence

Warning
 Secure earth wire of V.A.G 1433

A - Procedure if fuel tank is more than 3/4 full

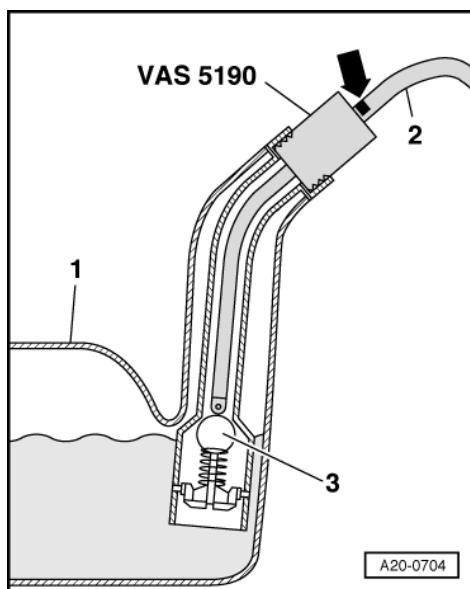


- Remove filler cap from fuel tank filler neck.
- -> Detach tapered adapter -2- from shaft end -1- of VAS 5190.
- Make a mark -arrow- on hose using insulating tape.
 - Dimension a = 615 mm



- -> Screw shaft end -1- of fuel extractor VAS 5190 onto fuel filler neck.
- Push drain hose into fuel tank until marking on drain hose -arrow- coincides with shaft end.

Note:





-> A ball valve -3- is located at the bottom end of the fuel filler neck in the fuel tank -1-. In order not to damage the valve or press it in too far with the drain hose -2-, do not push the hose into the fuel tank further than the mark -arrow- applied earlier.

- Drain tank as far as possible via fuel filler neck.
- Carefully pull out drain hose.

Vehicles with 4-cylinder engine:

- Remove fuel gauge sender
=>Page 19.
- Extract remaining fuel through opening for fuel gauge sender.

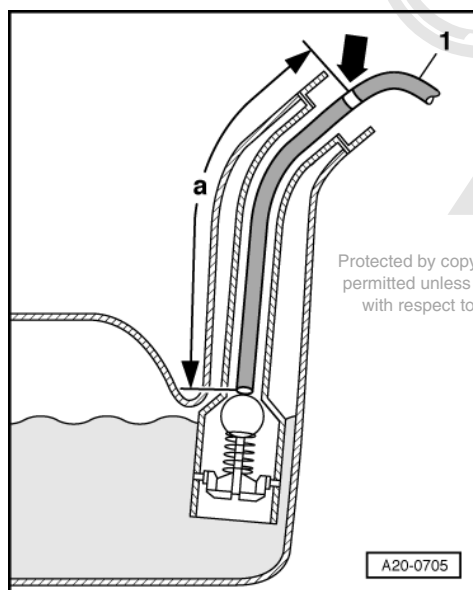
Vehicles with 4-cylinder engine (unit injector):

- Remove flange and move clear to one side with hoses/pipes connected
=> Removing fuel delivery unit, Page 34.
- Extract remaining fuel through opening for fuel delivery unit.

Vehicles with 6-cylinder engine:

- Remove flange and move clear to one side with hoses/pipes connected
=> Removing fuel delivery unit, Page 59.
- Extract remaining fuel through opening for fuel delivery unit.

Notes:



- ♦ -> The procedure when using a fuel extractor without shaft end is basically the same.
- ♦ Make a mark -arrow- on hose using insulating tape.
-Distance a = 550 mm
- ♦ In this case make a mark -arrow- on hose using insulating tape.
-Distance a = 1500 mm
- ♦ If the hose does not go in easily, lubricate lightly with engine oil. Do not use silicone lubricant.

B - Procedure if tank is less than 3/4 full

Vehicles with 4-cylinder engine:

- Remove fuel gauge sender
=>Page 19.
- Extract remaining fuel through opening for fuel gauge sender.

Vehicles with 4-cylinder engine (unit injector):

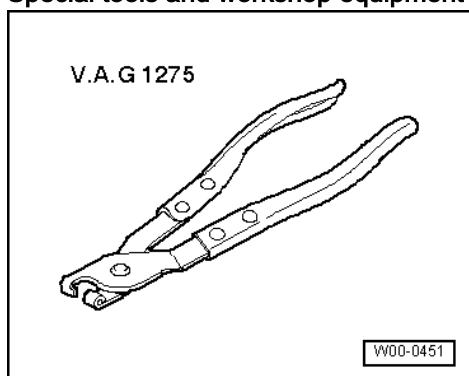
- Remove flange and move clear to one side with hoses/pipes connected
 => Removing fuel delivery unit, Page 34 .
- Extract remaining fuel through opening for fuel delivery unit.

Vehicles with 6-cylinder engine:

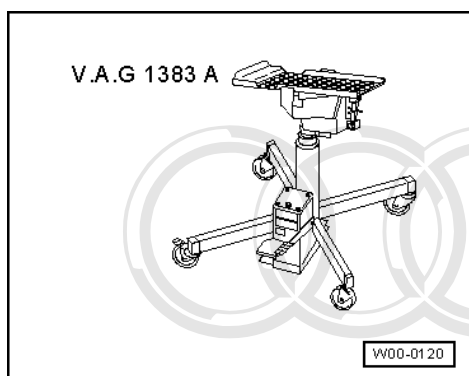
- Remove flange and move clear to one side with hoses/pipes connected
 => Removing fuel delivery unit, Page 59 .
- Extract remaining fuel through opening for fuel delivery unit.

2.4 - Removing and installing fuel tank

Special tools and workshop equipment required



- ♦ Hose clamp pliers V.A.G 1275

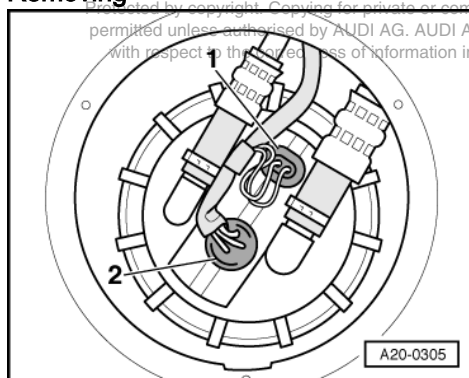


- ♦ V.A.G 1383 A and V.A.G 1359/2

Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

Removing

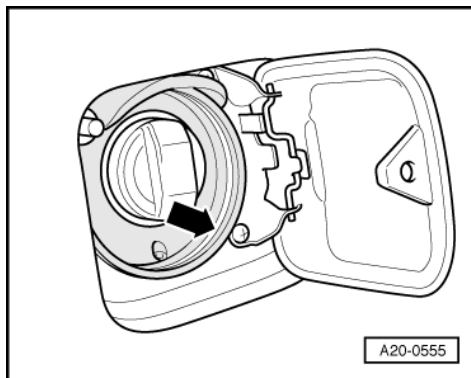




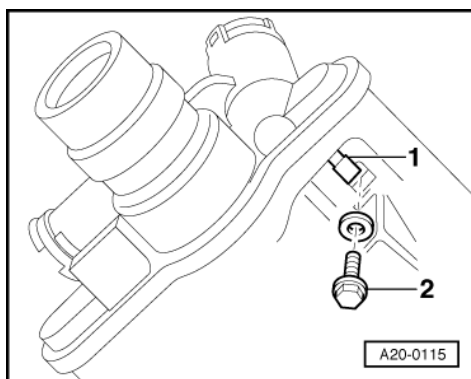
- The fuel tank must be empty when it is removed from the vehicle in order to reduce weight. Drain fuel tank if necessary (procedure => Page 8).
- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connectors -1- and -2-.

Note:

Connector -1- is only fitted on vehicles with 6-cylinder engine.



- Clean area around tank filler neck.
- -> Open tank flap and lever out clamping ring -arrow- in rubber cup (on filler neck).
- Press rubber cup through to the inside.
- Take off rear right wheel.



- Remove rear right wheel housing liner:

=> General body repairs, Exterior; Repair group 66; Removing and installing rear wheel housing liner Removing and installing rear wheel housing liner

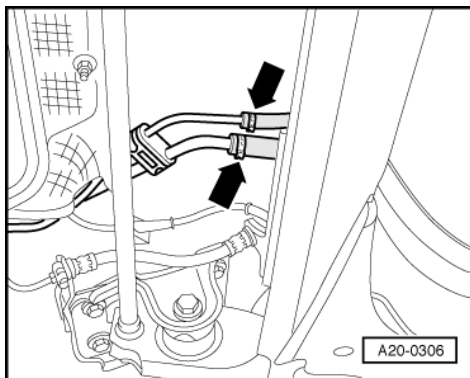
- -> Remove bolt -2- for fuel filler neck below wheel housing liner.

Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.



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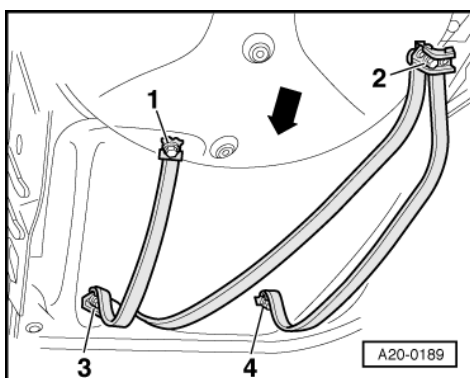
- -> Disconnect fuel supply and return hoses -arrows- at connecting point.

Vehicles with auxiliary heater

- In addition, disconnect supply hose for auxiliary heater.

All models

- Position engine/gearbox hoist V.A.G 1383 A below vehicle to support tank.
- Mark the correct positions of the securing straps.



- -> Remove the securing straps -1 ... 4-.

Note:

Arrow points in direction of travel.

- Lower fuel tank out of vehicle.

Installing

Install in reverse sequence; note the following points:

Notes:

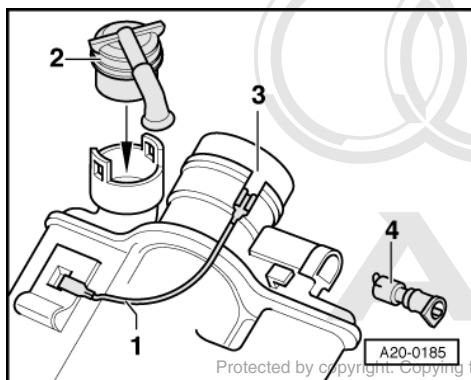
- ◆ Secure all hose connections with the correct hose clips (same as original equipment)

=> Parts catalogue

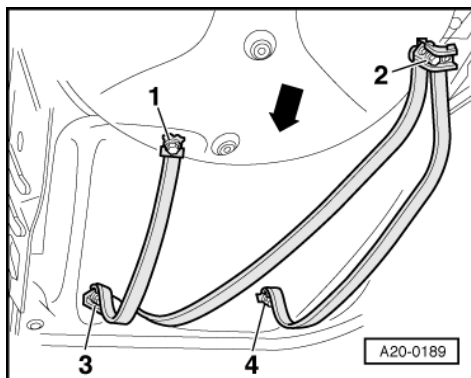
- ◆ Always renew sealing rings and gaskets when assembling.

- Check the earth wiring at both ends for traces of oxidation. Remove any traces of oxidation if necessary.

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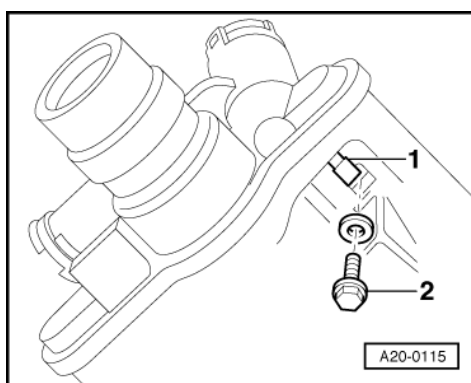
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- -> Route earth connection -1- as shown in illustration
 - Ensure that connector for earth connection is properly seated on metal ring on fuel filler neck -3-.
 - Ensure that contact tab is properly clipped onto contact at mounting hole.
 - Position fuel tank and securing straps on underside of vehicle using engine/gearbox jack V.A.G 1383 A.
 - Push the fuel tank all the way to the right.



- -> Tighten bolts -1- and -2- first, then tighten bolts -3- and -4- (25 Nm).

Note:

Arrow points in direction of travel.

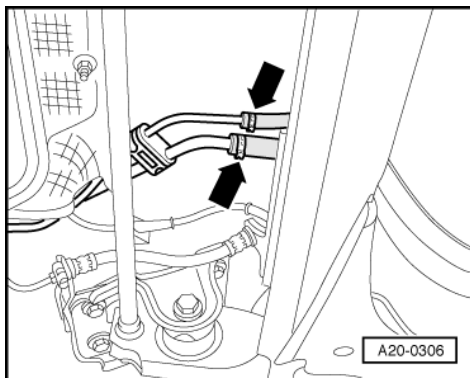


- -> Secure the contact tab -1- of earth wire with bolt -2- for fuel filler neck.

Caution

After installation, use an ohmmeter to check the electrical connection between the metal ring on the fuel filler neck and a bare metal part on the body:

- ♦ **Specification: approx. 0Ω.**



- -> Connect fuel pipes/hoses -arrows-.
- Plug in connector for fuel pump and fuel gauge sender.

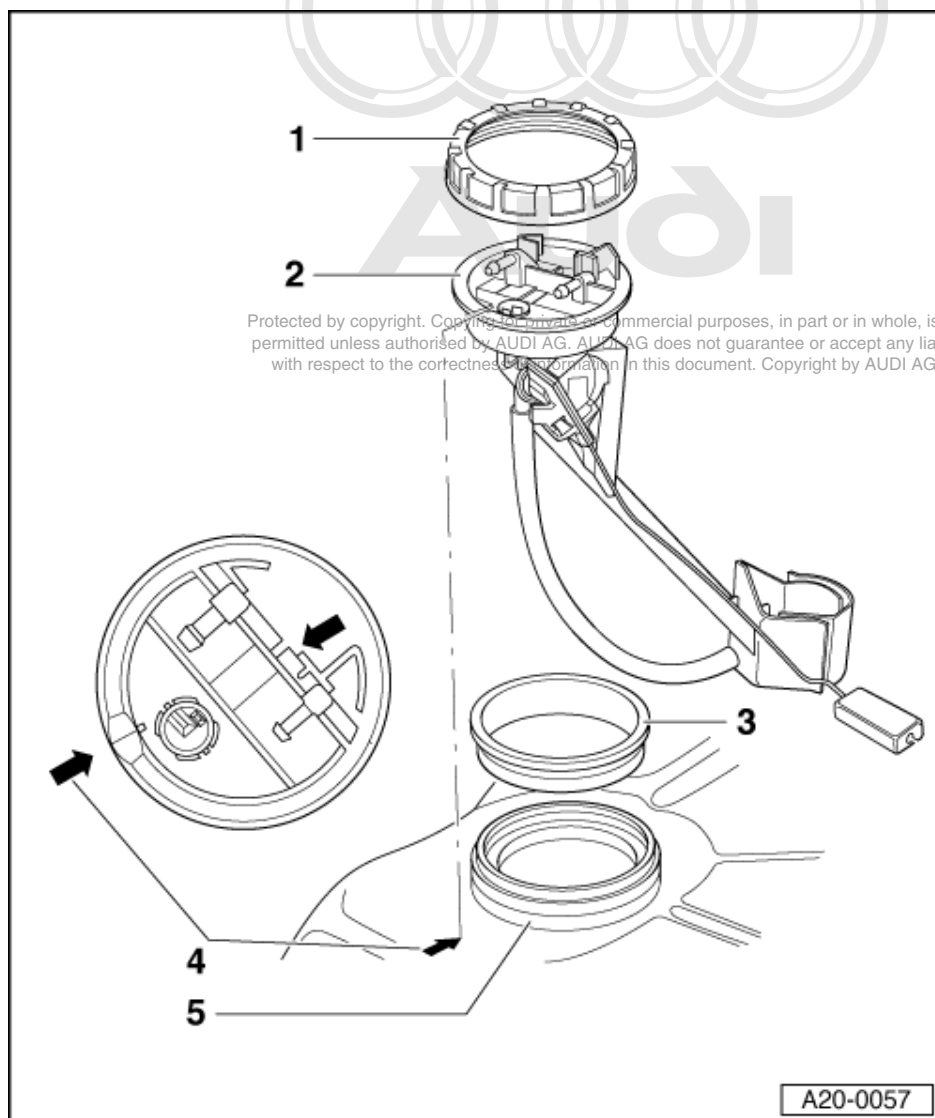
Tightening torques

Component	Nm
Securing straps for fuel tank to body	25
Fuel filler neck to body	25

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2.5 - Overview of fuel gauge sender - vehicles with 4-cylinder engine



1 Union nut, 60 Nm

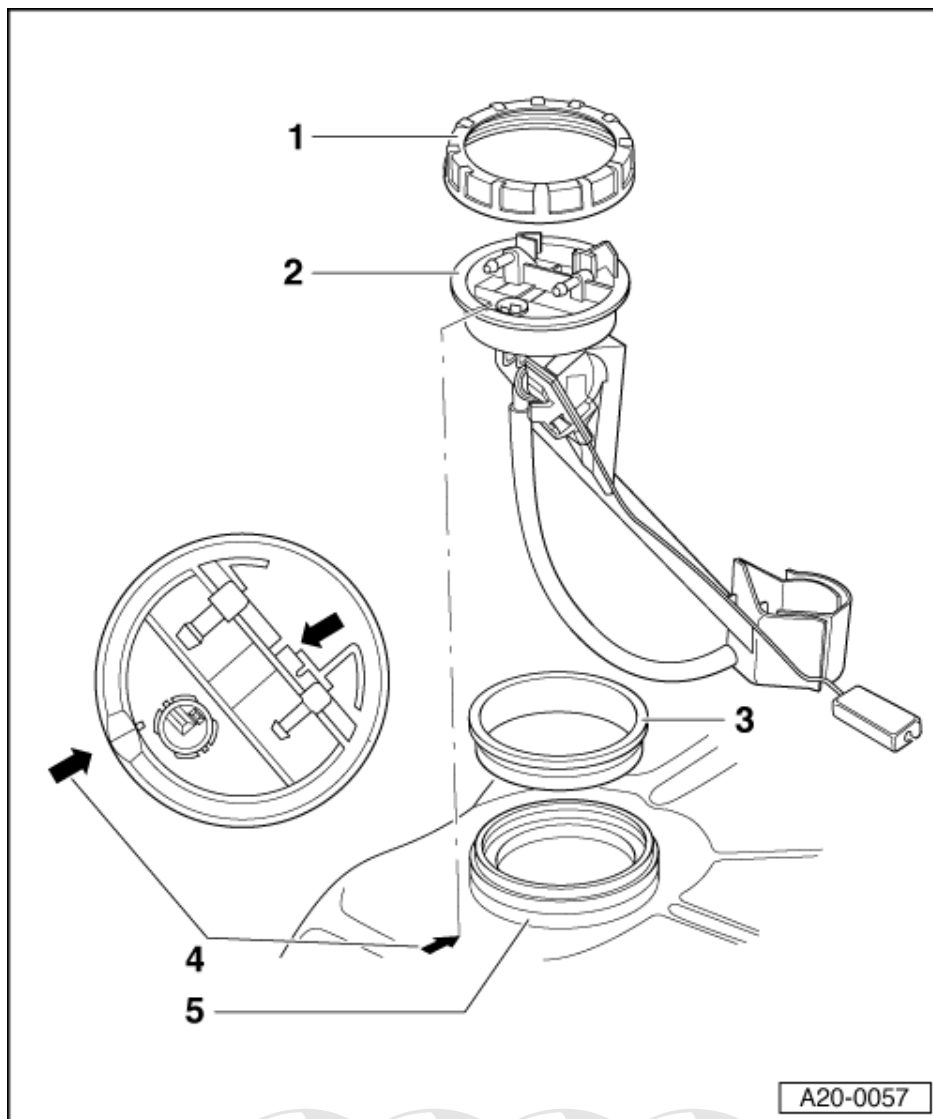
- ♦ Remove and install with spanner 3217

2 Fuel gauge sender -G

- ♦ Checking resistance
=> Page 18
- ♦ Removing and installing
=> Page 19

3 Seal

- ♦ Renew if damaged
- ♦ When installing, fit seal (dry) in opening in fuel tank



4 Position of fuel gauge sender in relation to fuel tank

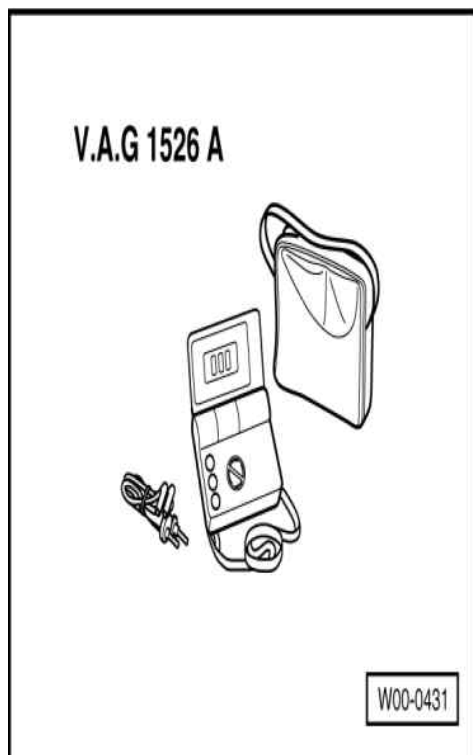
- ♦ Arrow must be aligned with notch

5 Fuel tank

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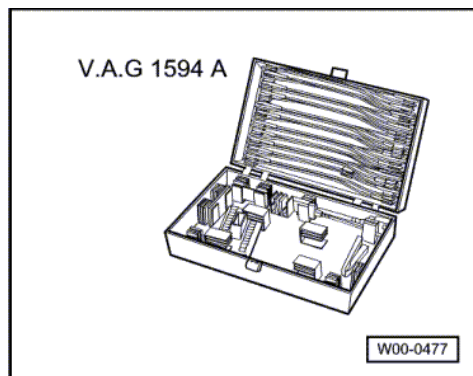


2.6 - Checking fuel gauge sender -G - vehicles with 4-cylinder engine



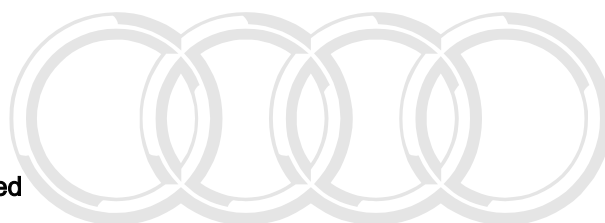
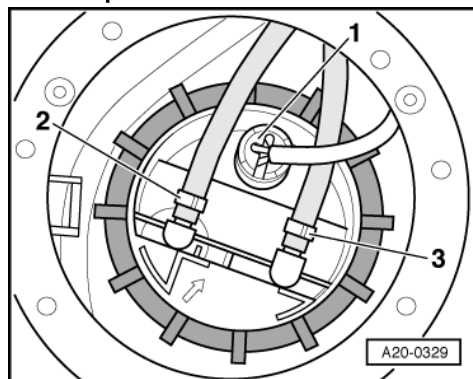
Special tools and workshop equipment required

- ♦ V.A.G 1526 A



- ♦ V.A.G 1594 A

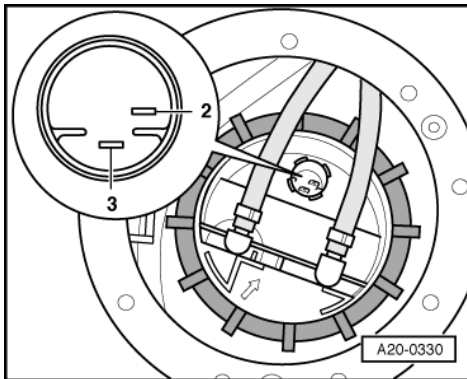
Test sequence



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- Detach floor trim in luggage compartment.
- Detach cover for fuel gauge sender.
- -> Release connector -1- and unplug.



- -> Measure resistance at contacts -2- and -3- on flange:

Sender unit	Tank full	Tank empty
Fuel gauge sender -G	40 ω	280 ω

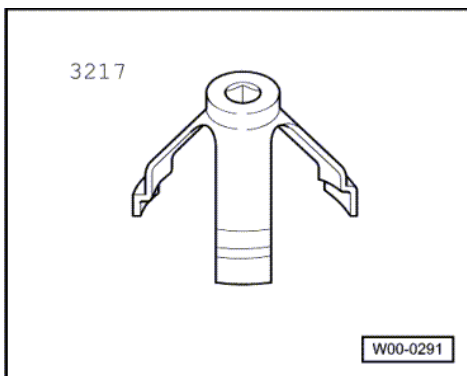
According to the amount of fuel in the tank, the resistance should be somewhere between the specified values for "tank full" and "tank empty".

- If the resistance is 0 ω or ∞ ω , this means there is a short circuit or an open circuit in the wiring in the tank.

Note:

In order to test the resistance for "tank full" and "tank empty", remove the fuel gauge sender -G => Page 19 and move the float all the way to its top or bottom position.

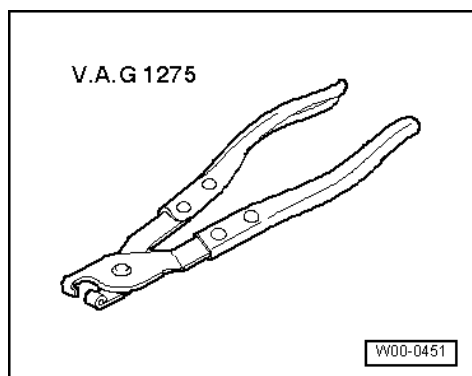
2.7 - Removing and installing fuel gauge sender -G - Vehicles with 4-cylinder engine



Special tools and workshop equipment required

- ◆ Union nut spanner 3217

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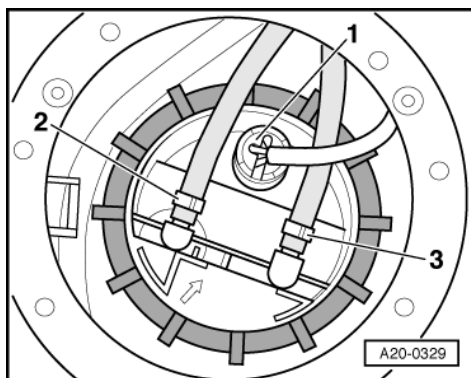
- ♦ Hose clamp pliers V.A.G 1275

Observe safety precautions=> Page 1 .

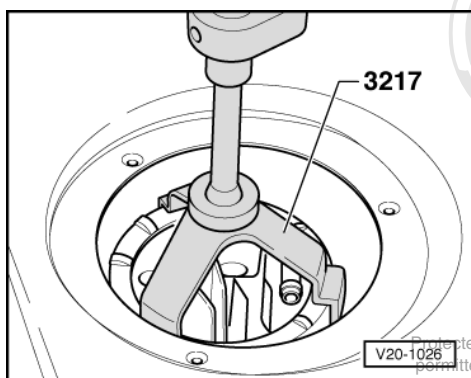
Observe rules for cleanliness => Page 1 .

Removing

- The fuel tank must not be more than 3/4 full when removing the fuel gauge sender. Drain fuel tank if necessary.
Procedure => Page 8 .
- Detach floor trim in luggage compartment.
- Detach cover for fuel gauge sender.



- -> Disconnect fuel return pipe -2- and fuel supply pipe -3- from fuel gauge sender.
- Release and unplug connector -1-.



- -> Remove union nut with spanner 3217.
- Take out fuel gauge sender and seal from opening in fuel tank.

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Installing

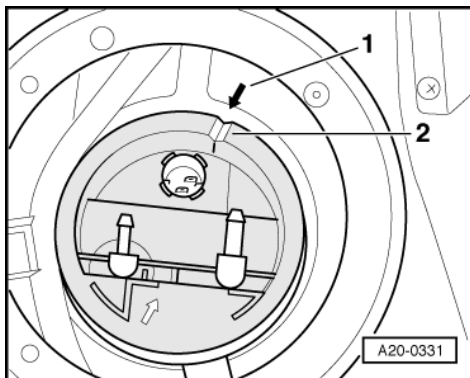
Install in reverse sequence; note the following points:

Note:

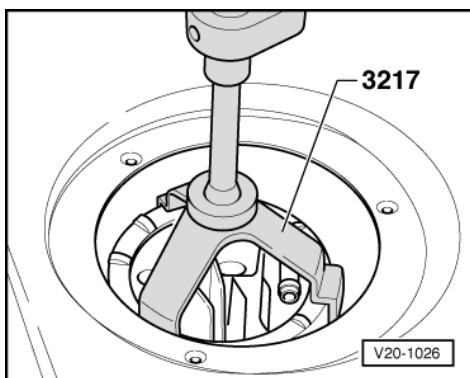
Secure all hose connections with the correct hose clips (same as original parts)

=> Parts catalogue

- Fit new seal for fuel gauge sender (dry) in opening in fuel tank.



- -> Insert fuel gauge sender in fuel tank; note correct installation position:
 - Notch -2- on flange must be aligned with marking on fuel tank -1-.

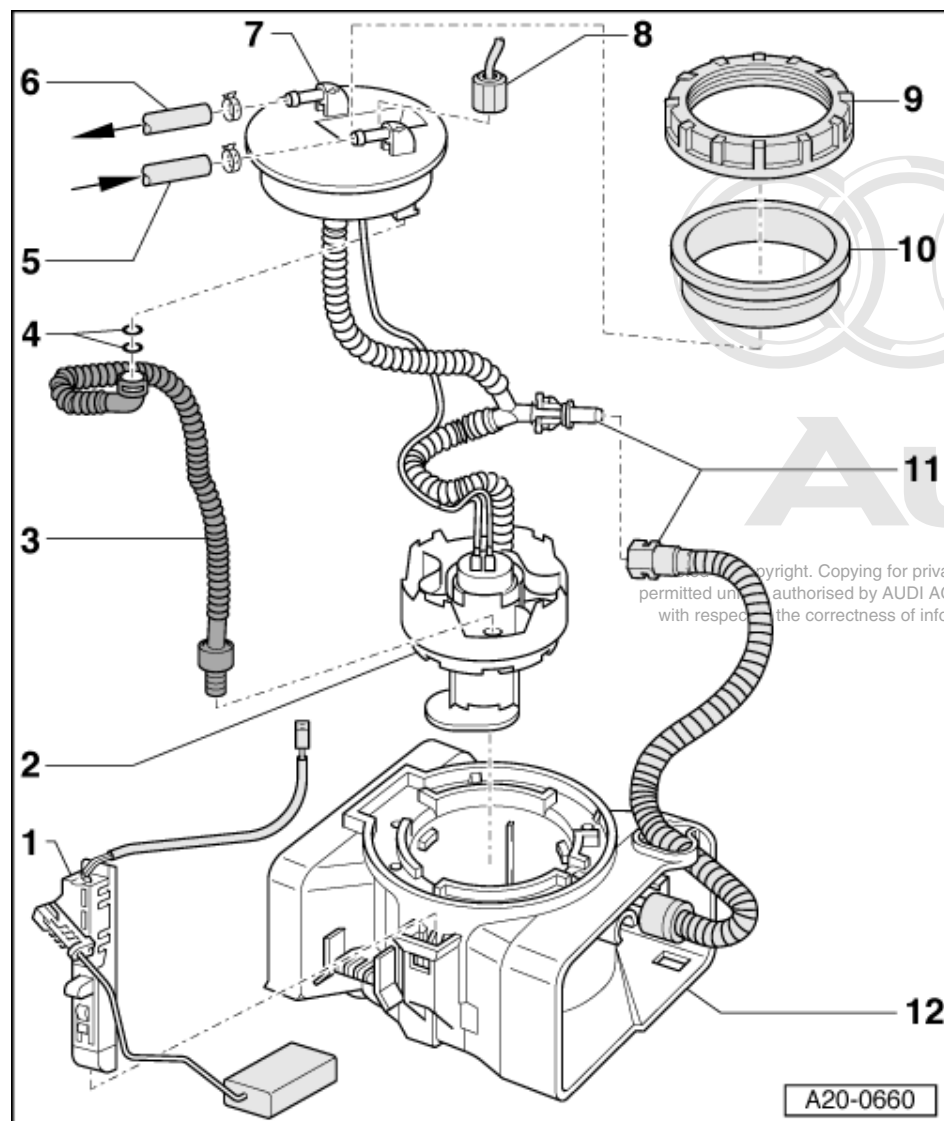


- -> Tighten union nut with spanner 3217 (60 Nm).
- Connect pipes and plug in the connector.

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2.8 - Overview of components: fuel delivery unit and fuel gauge sender - Vehicles with 4-cylinder engine (unit injector)



Note:

Description of function

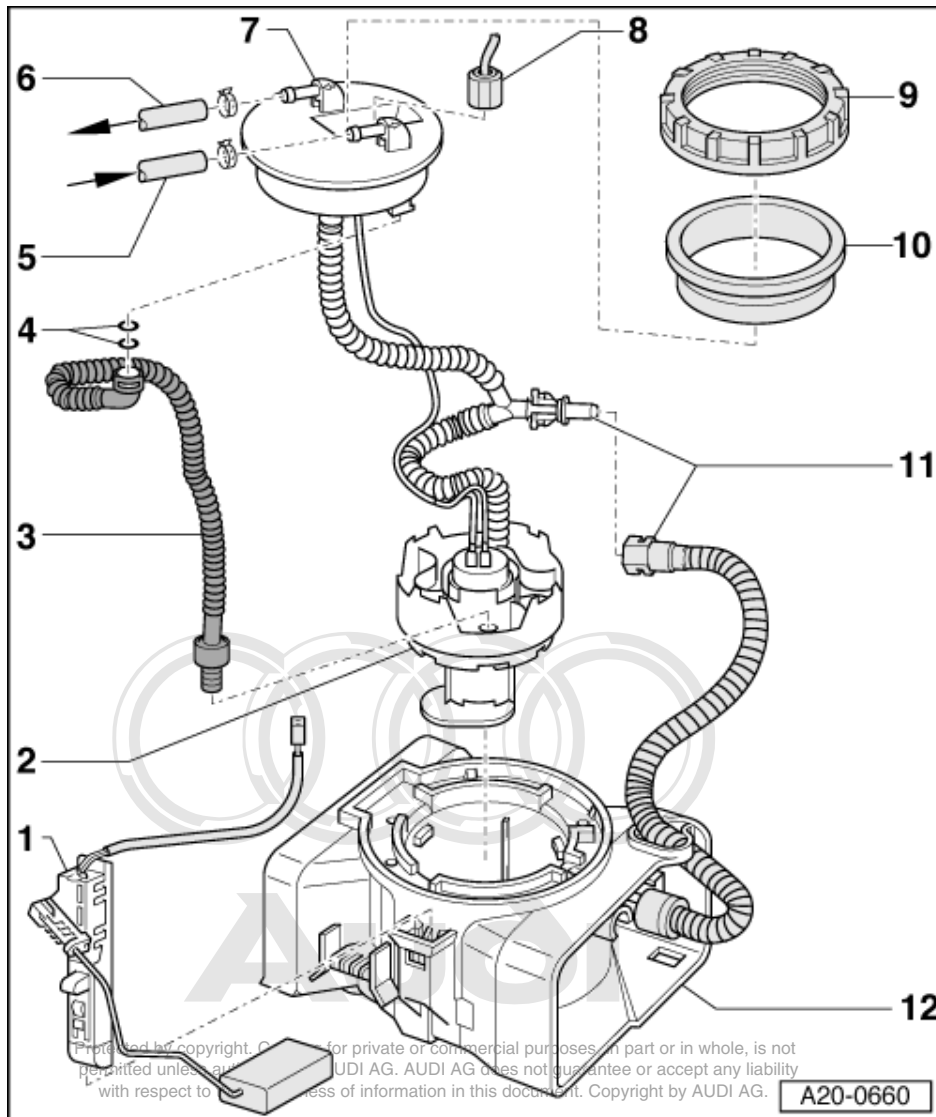
=>Page 24 .

1 Fuel gauge sender -G

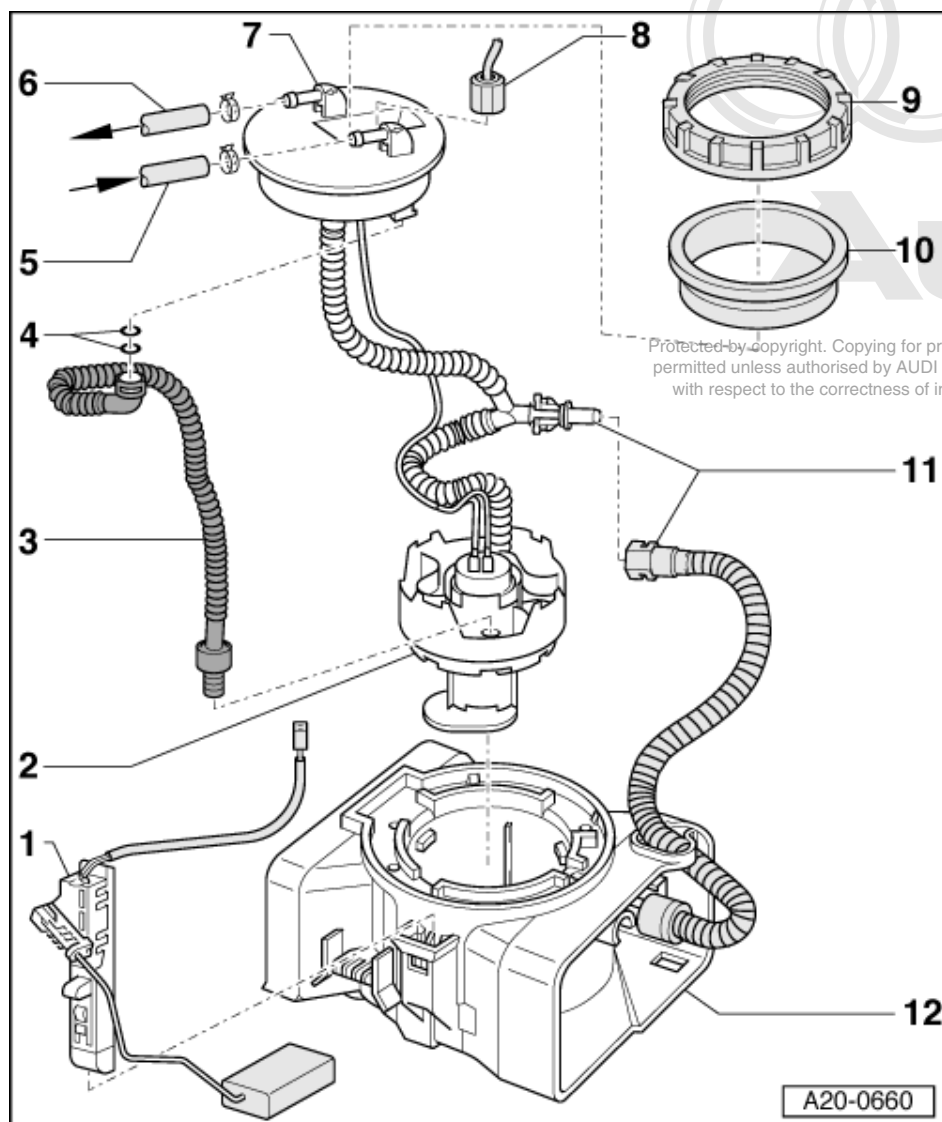
- ◆ Checking resistance
=> Page 41
- ◆ Removing and installing
=> Page 42

2 Fuel delivery unit

- ◆ Testing fuel pump (electrical test)
=> Page 30
- ◆ Removing and installing
=> Page 34
- ◆ Can only be renewed as a complete unit



- 3 Fuel return hose
- 4 O rings
 - ♦ Renew
- 5 Fuel return pipe
 - ♦ From fuel filter
- 6 Fuel supply pipe
 - ♦ To fuel filter
- 7 Flange
 - ♦ Cannot be renewed separately
 - ♦ Installation position: note position of arrow => Page 40
- 8 Connector
 - ♦ For fuel pump and fuel gauge sender -G



9 Union nut, 60 Nm

- ♦ Remove and install with spanner 3217

10 Seal

- ♦ Renew if damaged
- ♦ When installing, fit seal (dry) in opening in fuel tank

11 Fuel hose

- ♦ From fuel pump to baffle housing and fuel pump to suction jet pump

12 Baffle housing (outer section)

- ♦ With suction jet pump
- ♦ Cannot be dismantled
- ♦ Shown without fuel tank for clearer illustration.

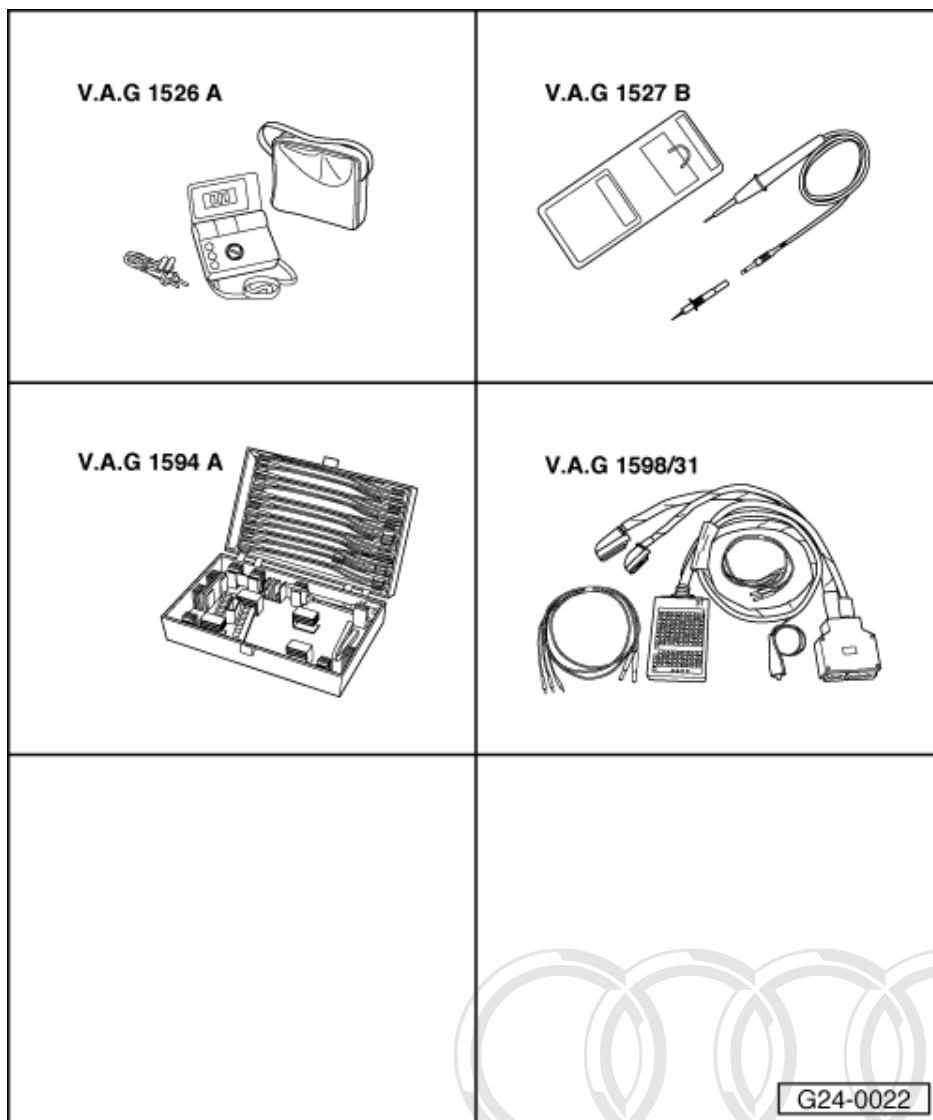
Description of function

The electric fuel pump delivers fuel from the baffle housing in the fuel tank to the tandem pump located on the engine.

Therefore it is no longer necessary to bleed the fuel system if the tank has been run dry or after performing repairs on components of the fuel system.

The electric fuel pump also sends a pressurised stream of fuel into a suction jet pump (entrainment pump) at the bottom of the baffle housing. The suction jet pump delivers fuel from the bottom of the fuel tank to the electrical fuel pump via the baffle housing.

2.9 - Testing fuel pump relay -J17 and activation - Vehicles with 4-cylinder engine (unit injector)



Special tools and workshop equipment required

- ◆ V.A.G 1526 A
- ◆ V.A.G 1527 B
- ◆ V.A.G 1594 A
- ◆ V.A.G 1598/31

Test requirement:

- Battery voltage not less than 12.7 V

Test sequence

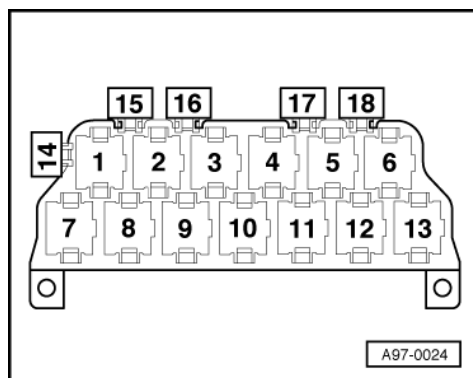
- Remove storage compartment on driver's side:

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=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Operate starter.



- -> The fuel pump relay in 13-point relay carrier should pick up (no fixed position); this can be felt by touching the relay. The fuel pump should run (audible in boot - 2nd mechanic required).

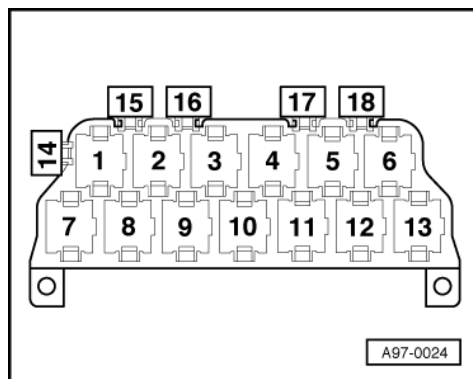
A - If the relay does not pick up:

- Test voltage supply to fuel pump relay.
 - Test activation of fuel pump relay
- =>Page 28 .

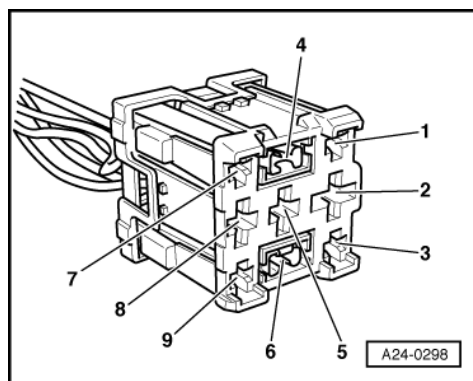
B - If the relay picks up but the fuel pump does not run:

- Test activation of fuel pump
- =>Page 29 .
- Test fuel pump (electrical test) =>Page 30 .

Testing voltage supply of fuel pump relay



- -> Remove fuel pump relay from 13-point relay carrier (no fixed position).

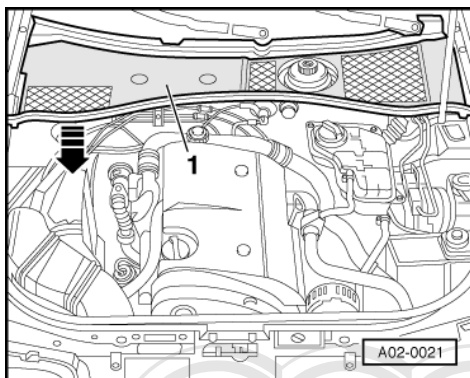


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- -> Connect voltage tester V.A.G 1527 B as follows:

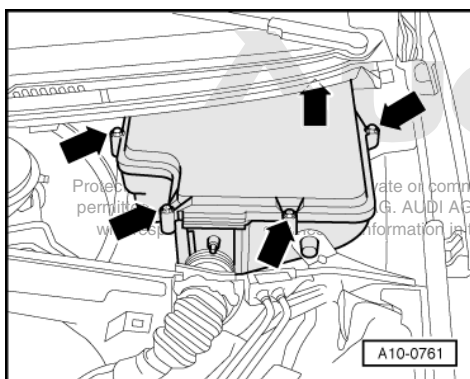
13-point relay carrier, (No fixed position) Contact	Measure against
1	Engine earth
5	Engine earth

- Switch on ignition.
 - The LED should light up.

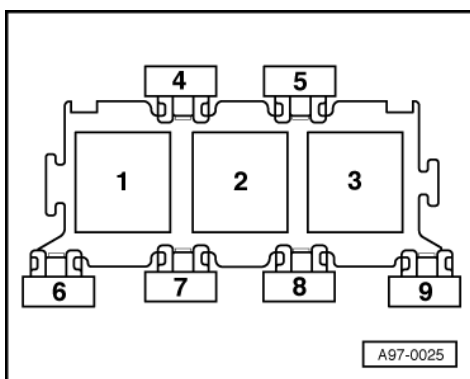


If the LED does not light up:

- Switch off ignition.
- -> Remove rubber seal from plenum chamber in direction of arrow-.
- Remove plenum chamber cover -1- from the front.



- -> Remove cover for electronics box in plenum chamber -arrows-.



- -> Unplug terminal 30 voltage supply relay -J317 (located in 3-point relay carrier in electronics box, plug-in position 3).



- Test for open circuit and short to positive or earth in the following wiring connection:

13-point relay carrier (no fixed position) Contact	3-point relay carrier (electronics box) plug-in position 3 Contact
1	5
5	5

- Rectify any open/short circuit as necessary.

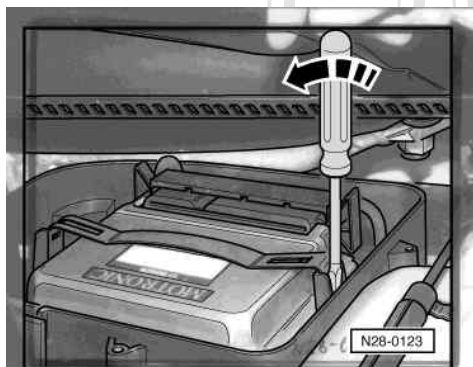
=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If no wiring fault is detected:

- Test voltage supply of diesel direct-injection system:

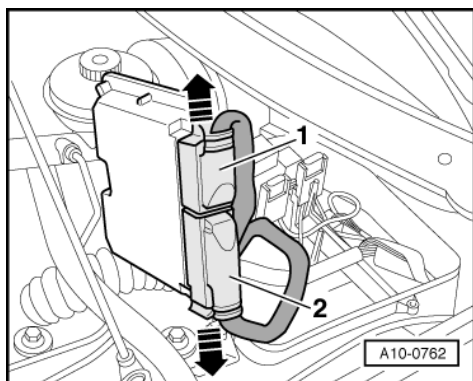
=> TDI diesel direct injection and glow plug system (4-cylinder unit injector); Repair group 23; Servicing diesel direct injection system; Testing voltage supply of diesel direct injection system Servicing diesel direct injection system Testing voltage supply of diesel direct injection system

Testing activation of fuel pump relay



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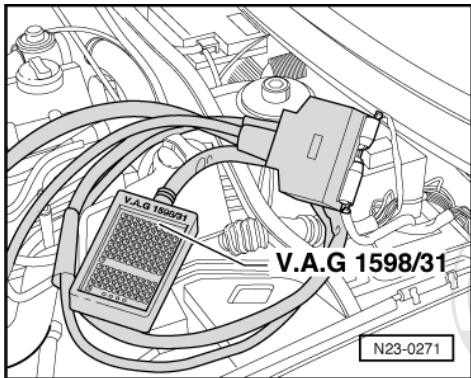
- -> Carefully lever off the retainer bar with a screwdriver -arrow-.



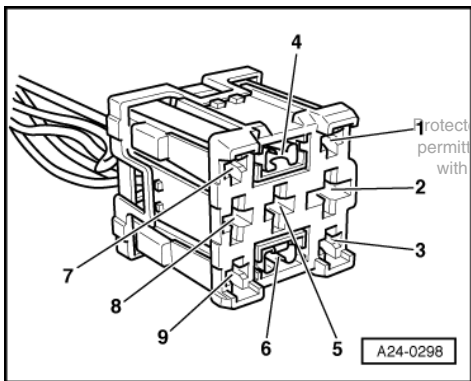
- -> Release retainer catch -arrows- and unplug connectors -1- and -2- from control unit.
- Take out engine control unit.

Warning!

To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.



- -> Connect test box V.A.G 1598/31 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected). Also connect earth clamp on test box to earth.



- -> Test for open circuit and short to positive or earth in the following wiring connections:

13-point relay carrier (no fixed position) Contact	Test box V.A.G 1598/31 Socket
6	80

- Rectify any open/short circuit as necessary.

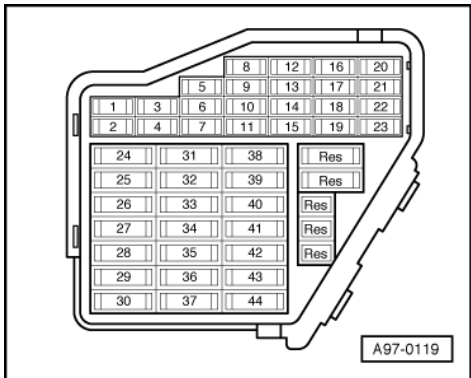
=> Current flow diagrams, Electrical fault finding and Fitting locations binder

Testing activation of fuel pump

Requirements for test:

- Fuel pump relay connected
- Engine control unit connected.

- Open fuse box cover on the left side of the dashboard panel.





- -> Pull fuse S 228 off fuse carrier (left row, 5th large fuse from the top).
- Connect multimeter (voltage test range) between earth and left fuse contact.
- Operate starter.
 - Specification: approx. battery voltage

If the specification is not obtained:

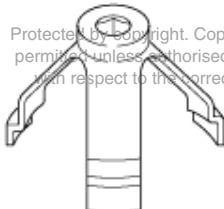
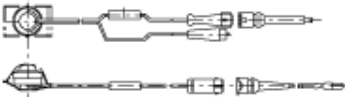
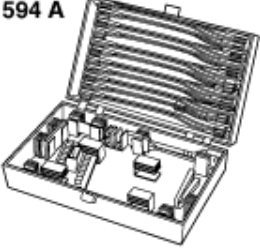
- Check wiring

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If the wiring is OK and no faults are found in the tests up to this point:

- Fit a new fuel pump relay -J17.

2.10 - Testing fuel pump (electrical test) - Vehicles with 4-cylinder engine (unit injector)

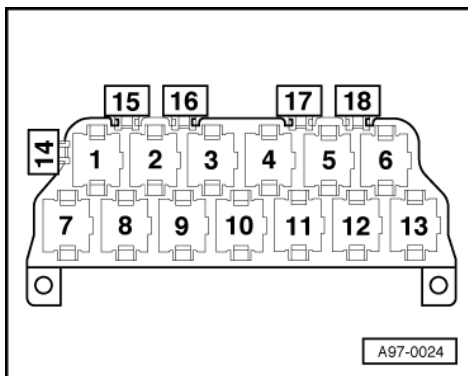
3217  Protected by Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.	V.A.G 1275 
V.A.G 1348/3A 	V.A.G 1526 A 
V.A.G 1594 A 	G20-0016

Special tools and workshop equipment required

- ♦ Ring nut spanner 3217
- ♦ V.A.G 1275
- ♦ V.A.G 1348/3A with V.A.G 1348/3-2
- ♦ V.A.G 1526 A

♦ V.A.G 1594 A

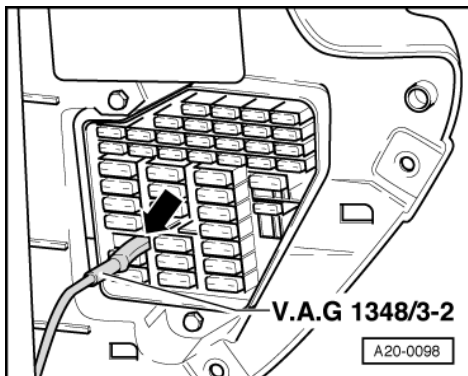
Requirements for test:



- Battery voltage not less than 12.7 V
- Fuse S228 OK
- -> Relay -J17 in 13-point relay carrier OK (no fixed position).
 Testing =>Page 25 .
- Fuel filter OK
- Ignition switched off

Test sequence

- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse S228 off fuse carrier (left row, 5th large fuse from the top).

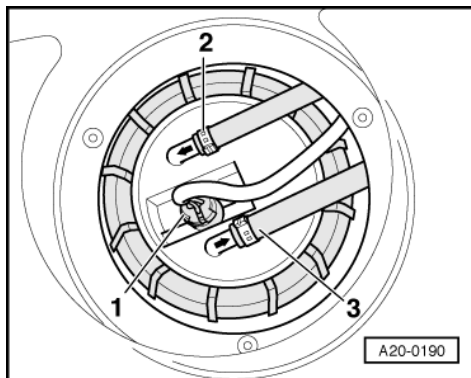


- -> Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right-hand terminal of fuse socket S228 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should run (audible in boot - 2nd mechanic required).

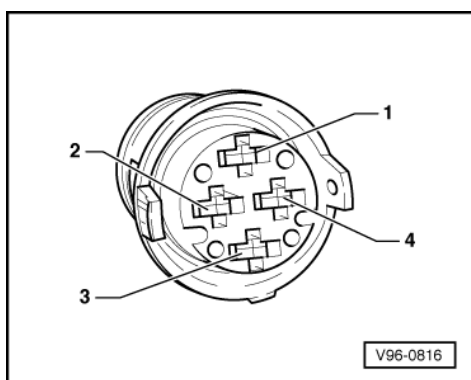
If pump does not start running:

- Detach floor trim in luggage compartment.

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- Unbolt cover for flange.
- -> Release and unplug connector -1-.

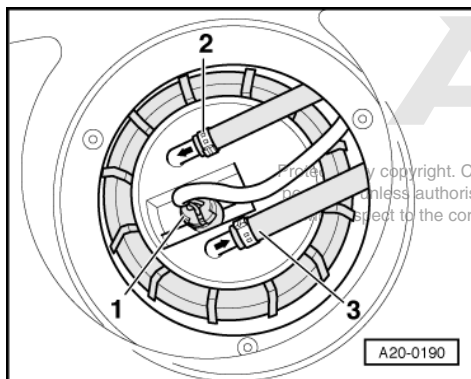


- -> Connect multimeter (voltage measurement range) between contact 1 (green/yellow) and contact 4 (brown).
- Press and hold remote control switch, and read off voltage.
 - Specification: approx. battery voltage

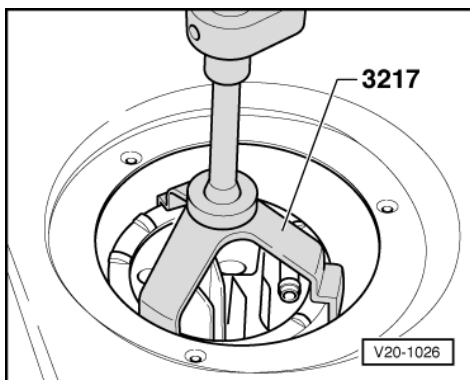
If the specification is obtained, even though the fuel pump did not run, remove flange as follows:

Warning

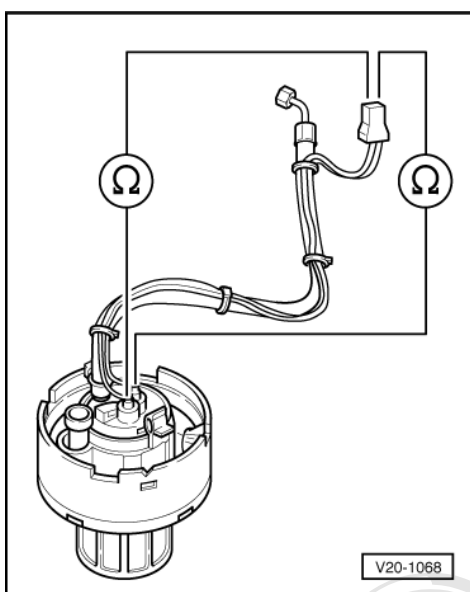
- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.



- -> Mark fuel return pipe -2- and fuel supply pipe -3- and disconnect from flange.



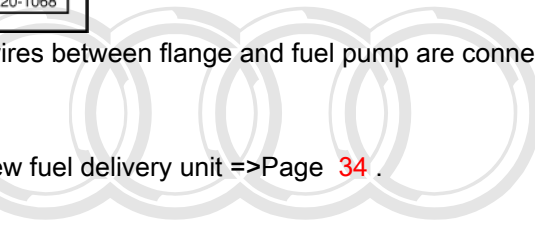
- -> Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.



- -> Check that the electrical wires between flange and fuel pump are connected and test for continuity.

If no wiring fault is detected:

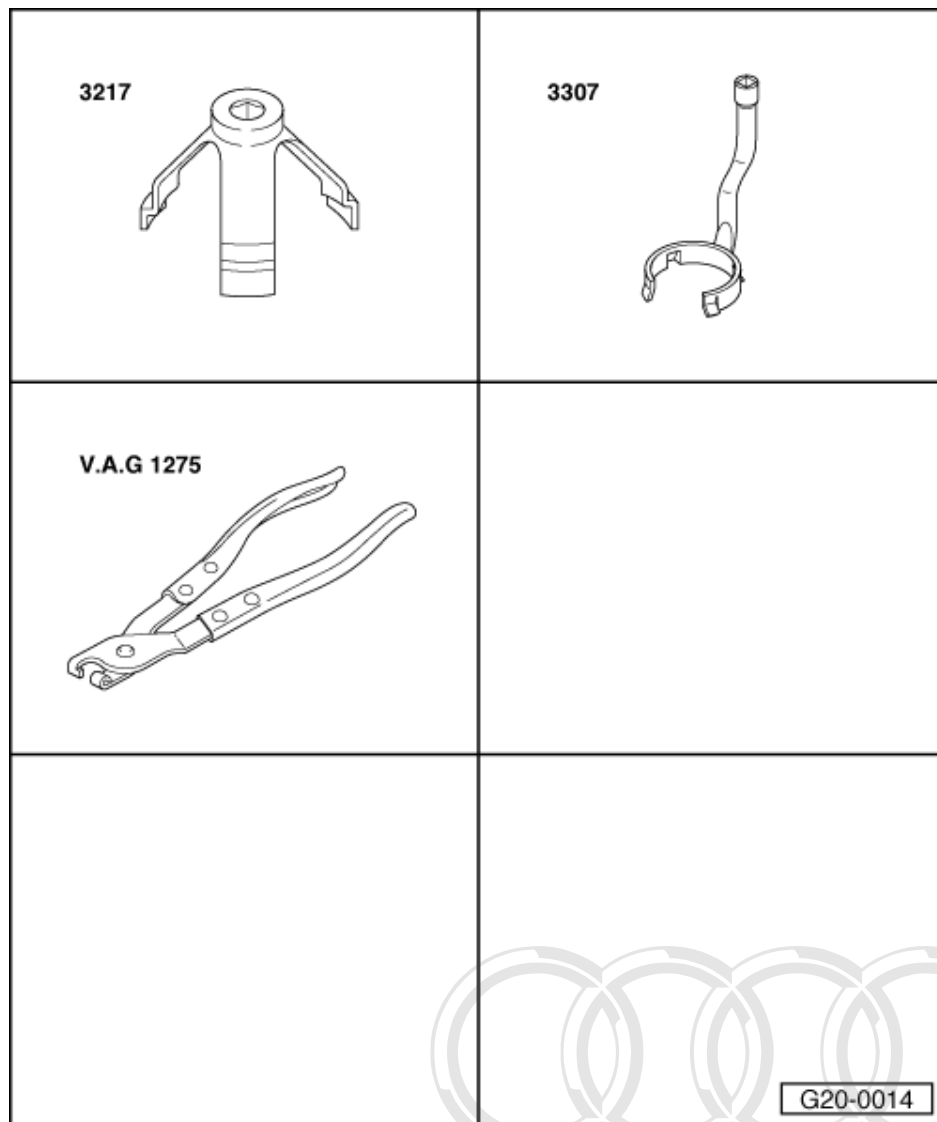
- Fuel pump is defective. Renew fuel delivery unit =>Page 34 .


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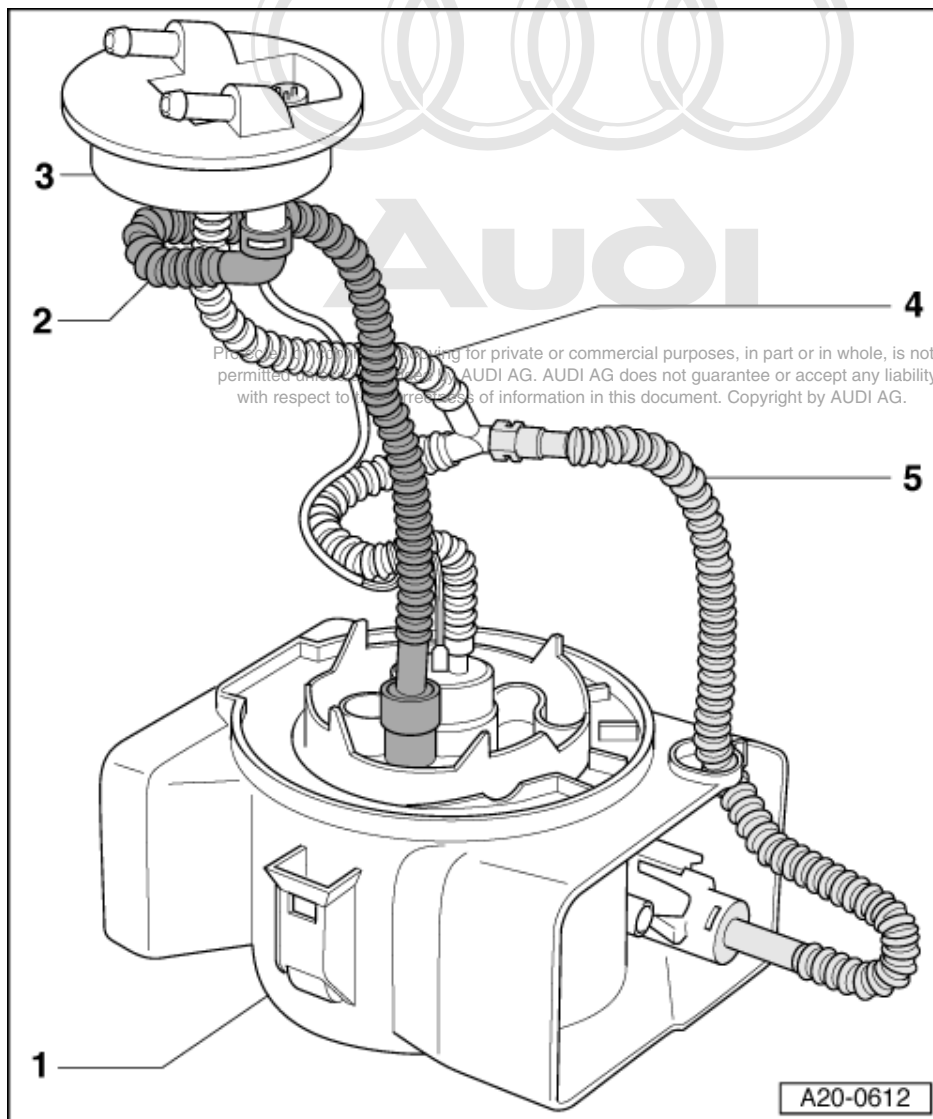
2.11 - Removing and installing fuel delivery unit - Vehicles with 4-cylinder engine (unit injector)



Special tools and workshop equipment required

- ♦ Ring nut spanner 3217
- ♦ Fuel pump spanner 3307
- ♦ Hose clamp pliers V.A.G 1275

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Note:

The illustration shows the correct routing of pipes inside the tank.

- 1 Baffle housing
- 2 Return hose
- 3 Flange
- 4 Supply hose
 - ♦ From fuel pump to flange
- 5 Supply hose
 - ♦ From fuel pump to suction jet pump

Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

Removing

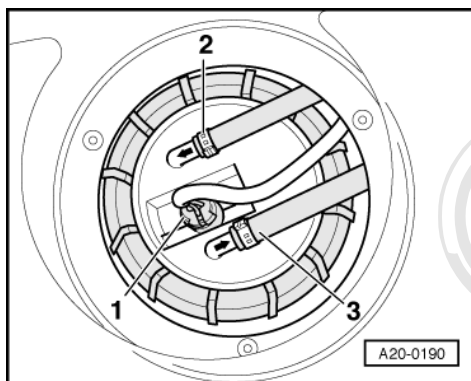
- The fuel tank must not be more than 3/4 full when removing the fuel delivery unit. Drain fuel tank if necessary. Procedure => Page 8 .
- Detach floor trim in luggage compartment.



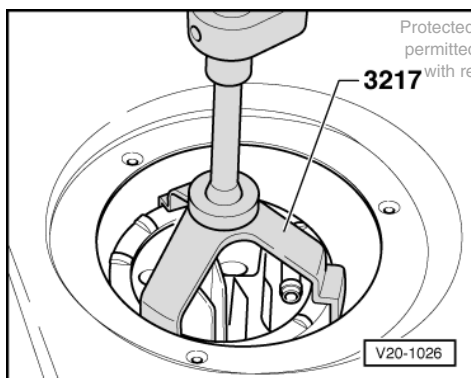
- Unbolt cover for flange.

Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.

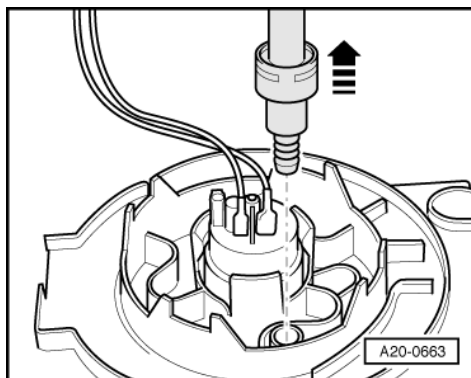


- -> Mark fuel return pipe -2- and fuel supply pipe -3- and disconnect from flange.
- Release and unplug connector -1-.

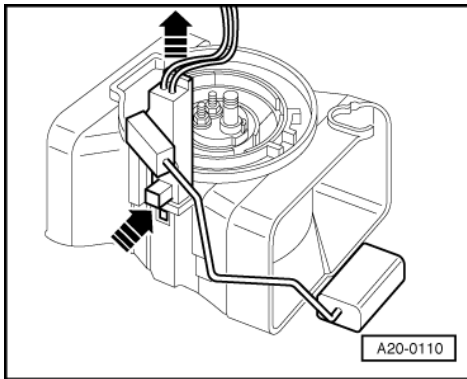


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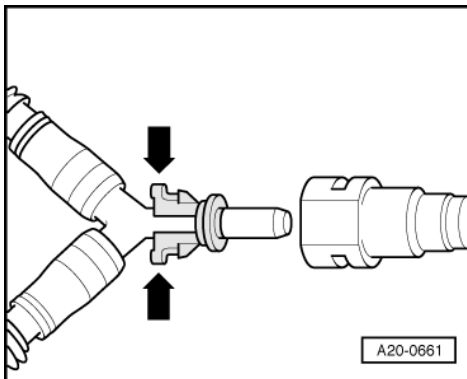
- -> Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.
- Unplug connector for fuel gauge sender on inside of flange.



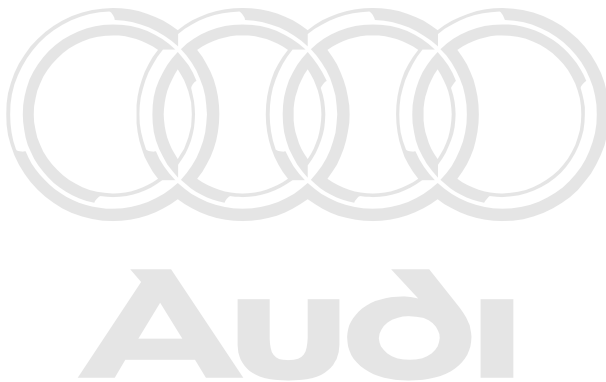
- -> Disconnect connecting piece on fuel return hose from inner section of baffle housing by pulling upwards -arrow-.



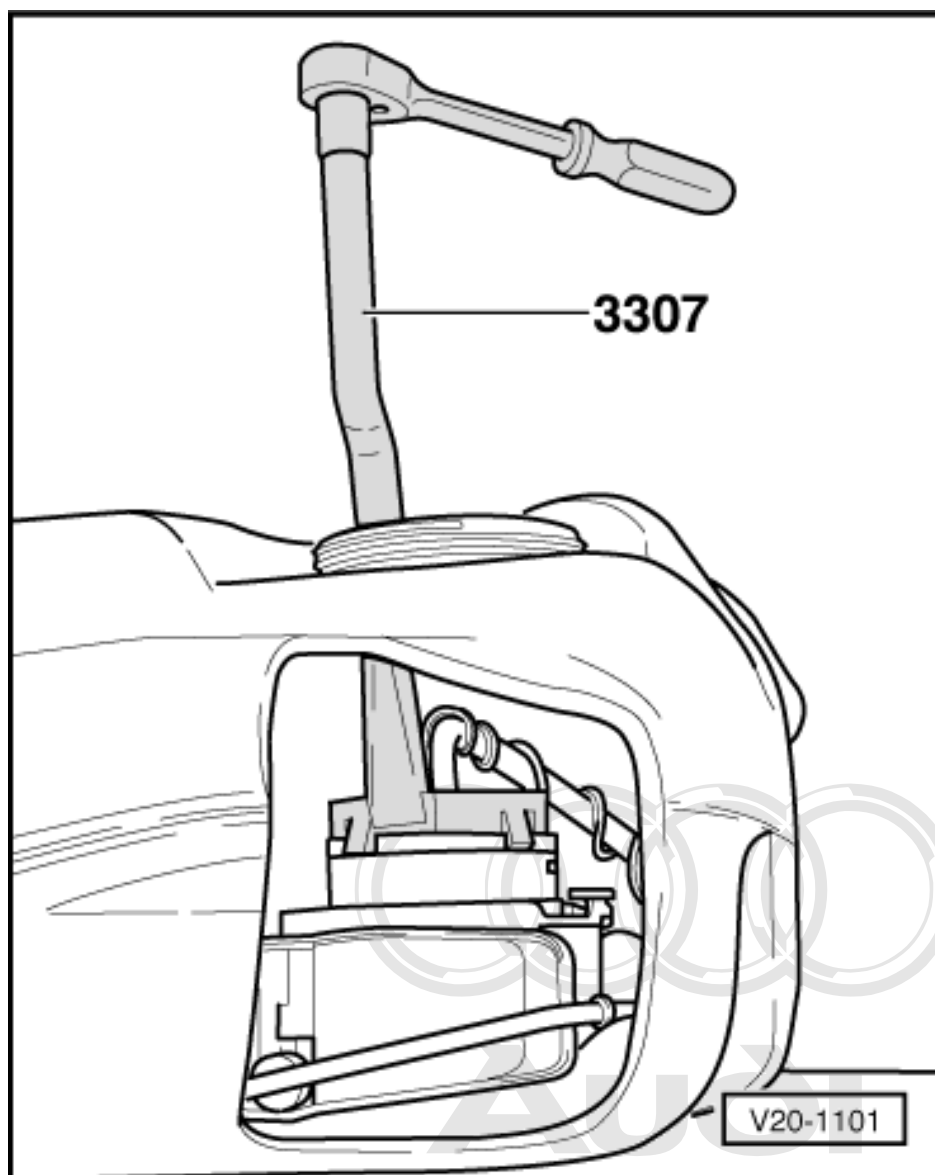
- -> Press retaining tab and at the same time pull sender unit out of baffle housing in fuel tank -arrows-.



- -> Press release catches -arrows- and disconnect fuel hose at Y-connector.
- Place fuel hose going to suction jet pump in fuel tank.



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- -> Insert fuel pump spanner 3307 through opening in fuel tank and apply spanner to fuel delivery unit.
- Using spanner 3307, turn fuel delivery unit anti-clockwise as far as it will go (approx. 15°), and take out.

Installing

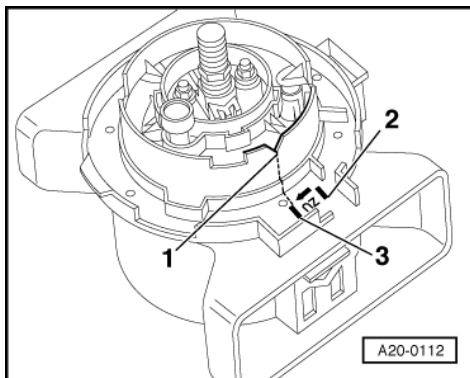
Install in reverse sequence; note the following points:

Note:

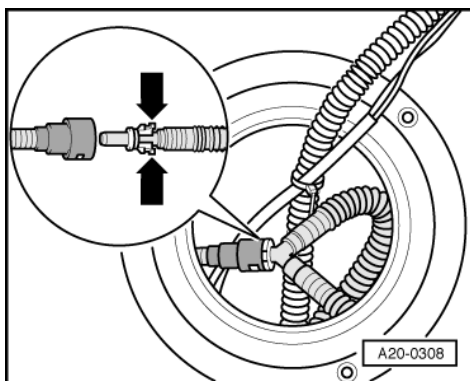
Secure all hose connections with the correct hose clips (same as original parts)

=> Parts catalogue

- Insert fuel delivery unit in fuel tank.



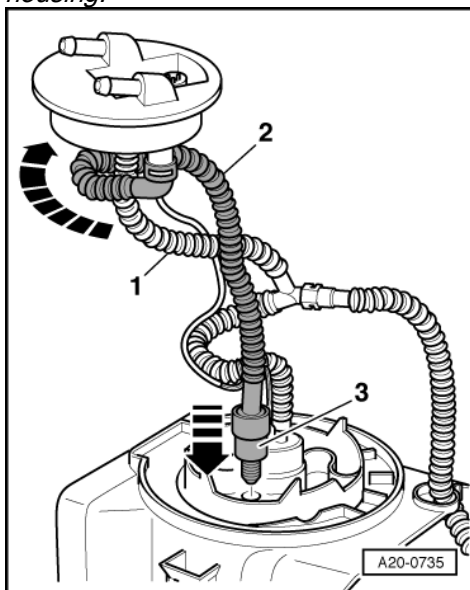
- -> Fit fuel delivery unit into outer section of baffle housing (in tank) so that notch -1- on fuel delivery unit is aligned with marking -2- on outer section of housing.
- The fuel delivery unit should move down noticeably.
- Apply fuel pump spanner 3307 and turn fuel delivery unit clockwise as far as it will go (approx. 15°). Notch -1- will then be aligned with marking -3- (bayonet fitting).



- -> Connect fuel hose to Y-connector so that catches engage -arrows-.
- Insert Y-connector with fuel hoses in fuel tank and position to the rear right.

Note:

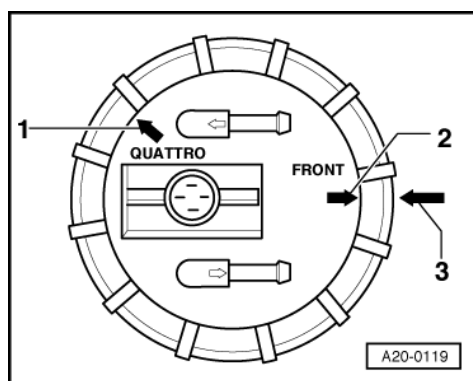
Ensure that fuel hose going from baffle housing to Y-connector is engaged in retainer in outer section of baffle housing.



- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.
- -> Check if fuel return hose -2- is connected to flange.
- Wrap fuel return hose clockwise around fuel supply hose -1- and insert connecting piece -3- into opening on inner section of baffle housing.



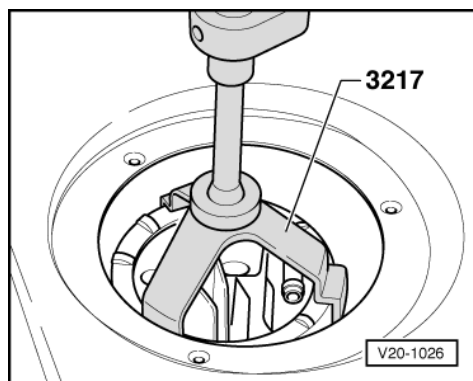
- Wrap electrical wire for fuel gauge sender one turn anti-clockwise around fuel supply hose (in tank) and connect wire to flange.
- Fit new sealing ring for flange in fuel tank opening (sealing ring should be dry).



- -> Turn flange clockwise to installation position and insert in fuel tank.
- Installation position for vehicles with front-wheel drive: **arrow 2 must be aligned with arrow 3**.

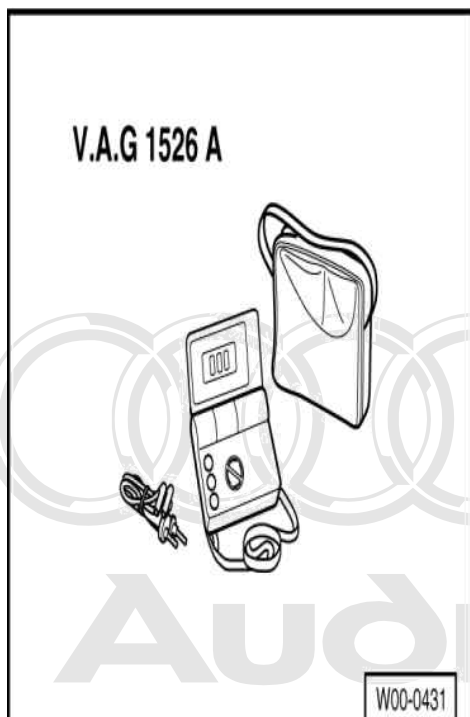
Note:

-Arrow 1- is for vehicles with four-wheel drive (can be ignored).



- -> Tighten union nut with spanner 3217 (60 Nm).
- Connect pipes and plug in the connector.

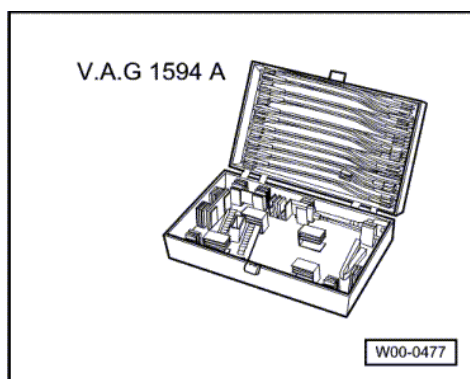
2.12 - Testing fuel gauge sender - Vehicles with 4-cylinder engine (unit injector)



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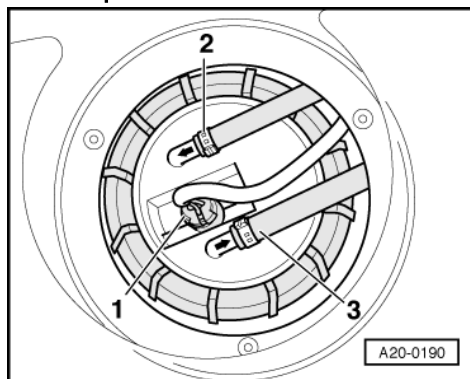
Special tools and workshop equipment required

- ♦ V.A.G 1526 A



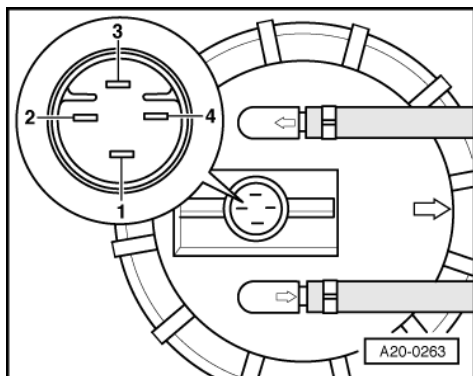
- ♦ V.A.G 1594 A

Test sequence





- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connector -1-.



- -> Measure resistance at contacts -2- and -3- on flange:

Sender unit	Tank full	Tank empty
Fuel gauge sender -G	40 ω	280 ω

According to the amount of fuel in the tank, the resistance should be somewhere between the specified values for "tank full" and "tank empty".

- If the resistance is 0 ω or ∞ ω , this means there is a short circuit or an open circuit in the wiring in the tank.

Note:

In order to test the resistance for "tank full" and "tank empty", remove the fuel gauge sender -G => Page 42 and move the float all the way to its top or bottom position.

2.13 - Removing and installing fuel gauge sender -G - Vehicles with 4-cylinder engine (unit injector)

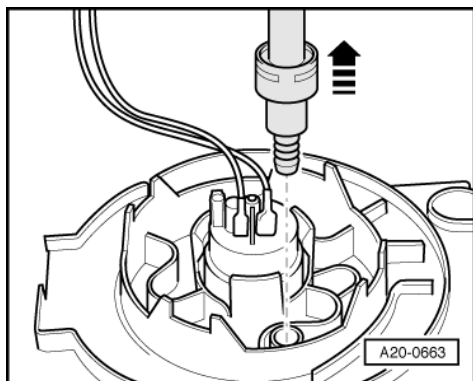
Observe safety precautions=> Page 1 .

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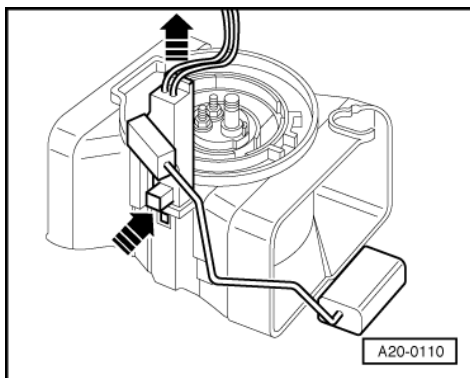
Observe rules for cleanliness => Page 1 .

Removing

- Pull out flange and move clear to one side with pipes connected
=> Removing fuel delivery unit, Page 59 .
- Unplug connector for fuel gauge sender on inside of flange.



- -> Disconnect connecting piece on fuel return hose from inner section of baffle housing by pulling upwards -arrow-.



- -> Press retaining tab, and at the same time pull the sender unit out of baffle housing in fuel tank -arrows-.

Installing

Install in reverse sequence; note the following points:

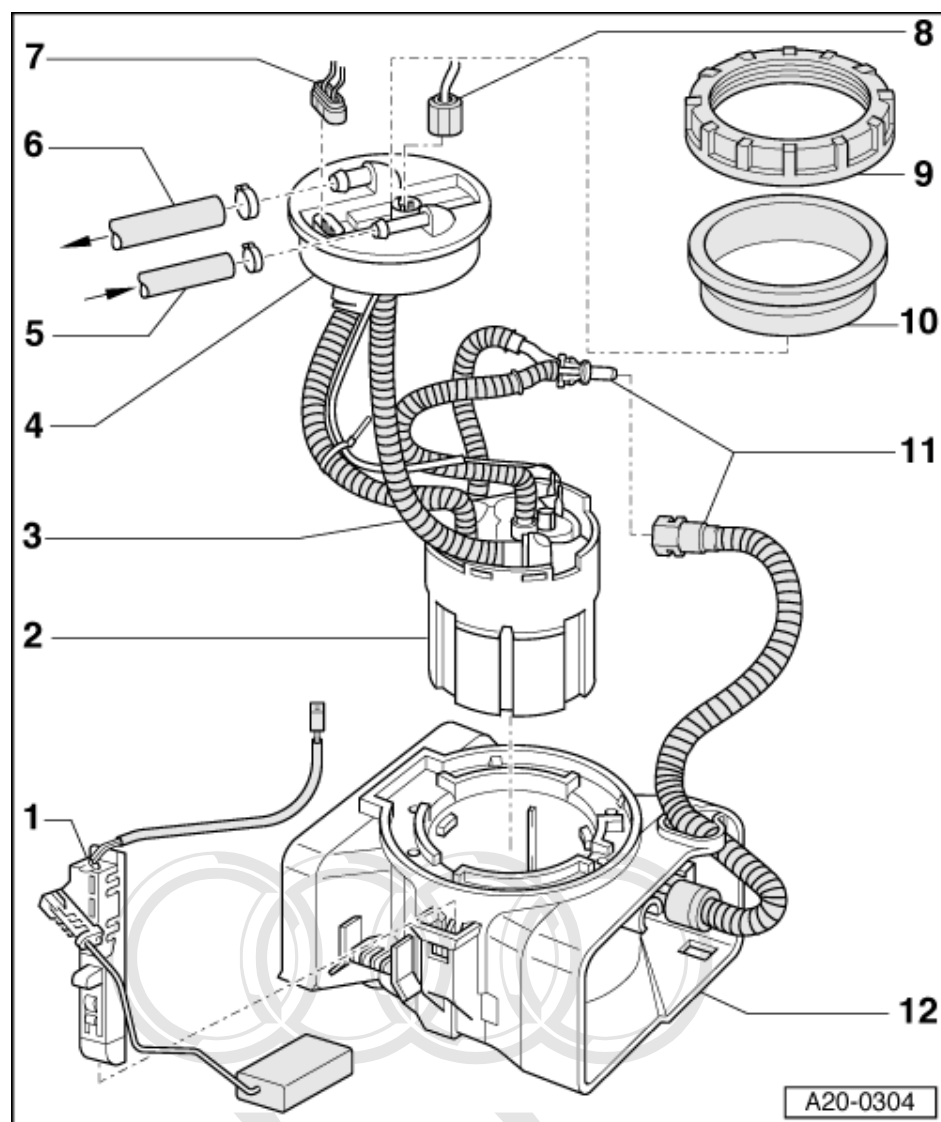
- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.
- Install flange => Page 38 .



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2.14 - Overview of fuel delivery unit and fuel gauge sender - vehicles with 6-cylinder engine



Note:

Description of function

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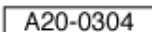
=>Page 46

1 Fuel gauge sender -G

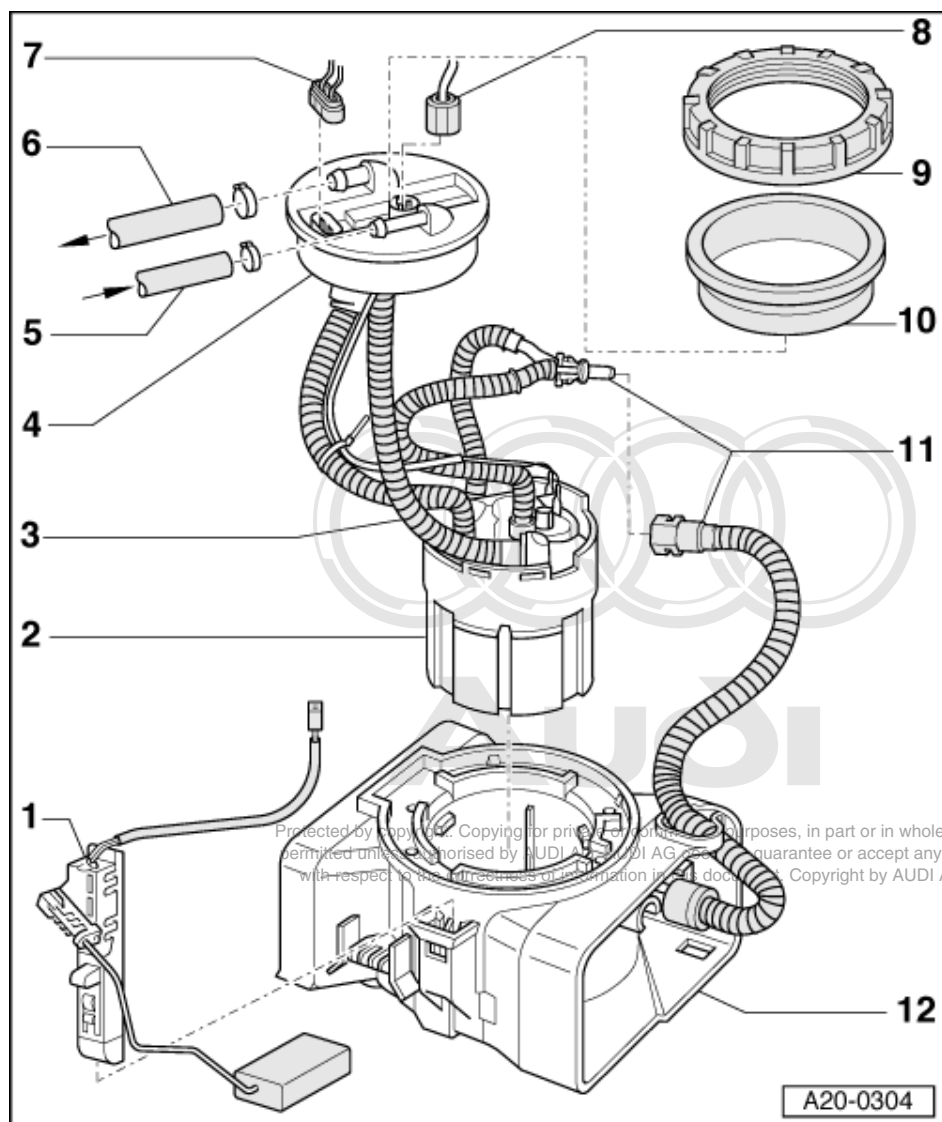
- ♦ Checking resistance => Page 66
- ♦ Removing and installing
=> Page 67

2 Fuel delivery unit

- ♦ With sender for low fuel level -G210
- ♦ Testing fuel pump (electrical test)
=> Page 53
- ♦ Removing and installing
=> Page 59
- ♦ Can only be renewed as a complete unit



- ♦ **For fuel pump and fuel gauge sender -G**

**9 Union nut, 60 Nm**

- ♦ Remove and install with spanner 3217

10 Seal

- ♦ Renew if damaged
- ♦ When installing, fit seal (dry) in opening in fuel tank

11 Fuel hose

- ♦ From fuel pump to baffle housing and fuel pump to suction jet pump

12 Baffle housing (outer section)

- ♦ With suction jet pump
- ♦ Cannot be dismantled
- ♦ Shown without fuel tank for clearer illustration.

Description of function

To ensure that the contents of the fuel tank can be drawn off completely (apart from a small remainder), a two-part baffle housing with electric fuel pump is fitted inside the tank.

The electric fuel pump delivers fuel from the outer section of the baffle housing into a chamber in the inner section of the baffle housing, from which it is then drawn off by the injection pump of the diesel direct injection system.

The electric fuel pump also sends a pressurised stream of fuel into a suction jet pump (entrainment pump) at the bottom of the baffle housing. The suction jet pump ensures that the outer section of the baffle housing is always kept filled with fuel.

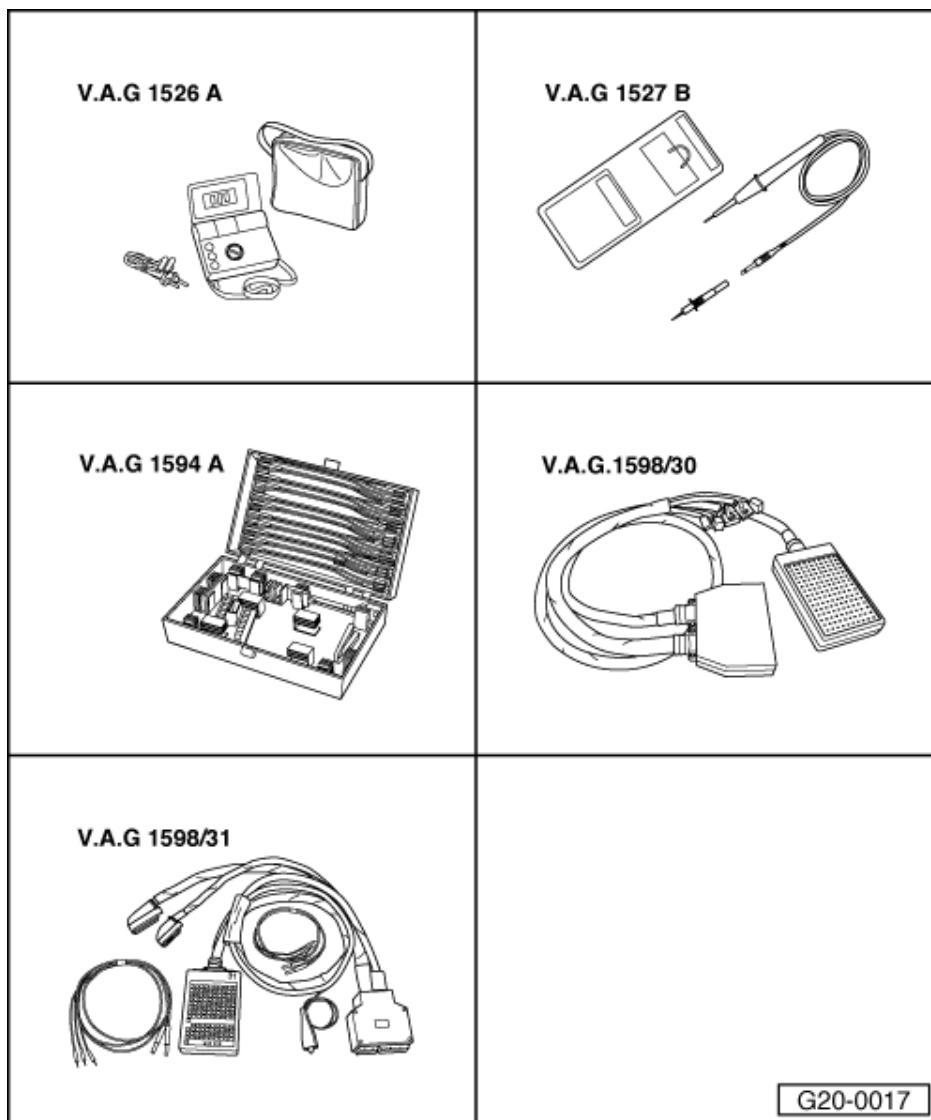
To ensure that the engine runs reliably, the chamber in the inner section of the baffle housing must always be kept filled with fuel. If the tank is nearly empty and this chamber is about to be drained, the sender for low fuel level -G210 transmits a signal to shut off the injection system.

Installation position of sender for low fuel level -G210: in inner section of baffle housing

Testing sender for low fuel level -G210 => Page **57** .

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2.15 - Testing fuel pump relay -J17 and activation - Vehicles with 6-cylinder engine



Special tools and workshop equipment required

- ◆ V.A.G 1526 A
- ◆ V.A.G 1527 B
- ◆ V.A.G 1594 A
- ◆ V.A.G 1598/30
(engine code letters AFB with manual gearbox and automatic gearbox; engine code letters AKN with manual gearbox)
- ◆ V.A.G 1598/31

(engine code letters AKN with automatic gearbox)

Test requirement:

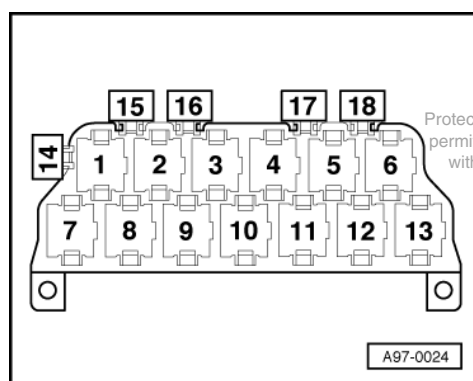
- Battery voltage not less than 12.7 V

Test sequence

- Remove storage compartment on driver's side:

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Operate starter.



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- -> The fuel pump relay in 13-point relay carrier should pick up (no fixed position); this can be felt by touching the relay. The fuel pump should run (audible in boot - 2nd mechanic required).

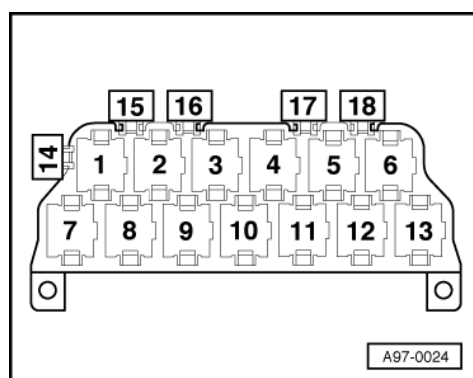
A - If the relay does not pick up:

- Test voltage supply to fuel pump relay.
 - Test activation of fuel pump relay
- =>Page 50 .

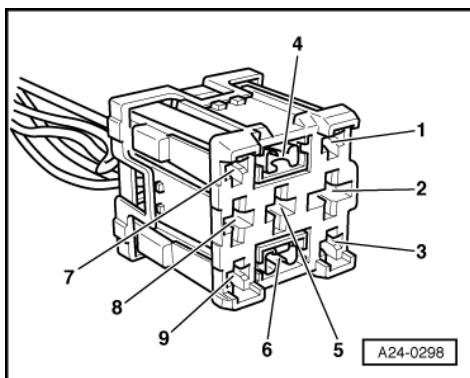
B - If the relay picks up but the fuel pump does not run:

- Test activation of fuel pump
- =>Page 52 .
- Test fuel pump (electrical test) =>Page 53 .

Testing voltage supply of fuel pump relay



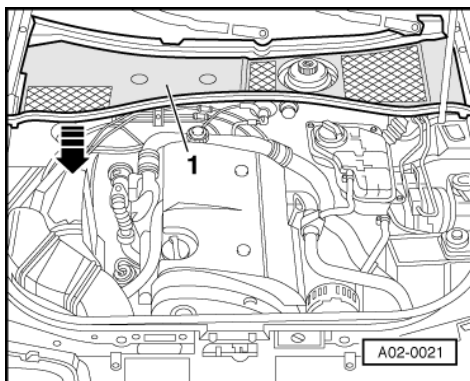
- -> Remove fuel pump relay from 13-point relay carrier (no fixed position).



- -> Connect voltage tester V.A.G 1527 B as follows:

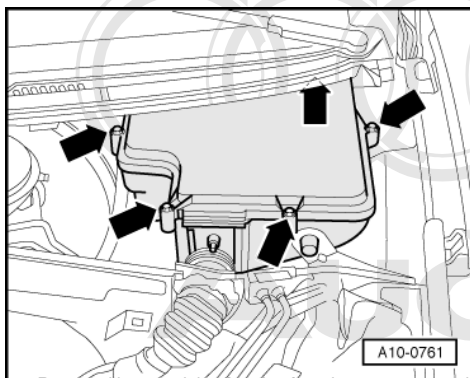
13-point relay carrier, (No fixed position) Contact	Measure against
2	Engine earth
4	Engine earth

- Switch on ignition.
 - The LED should light up.

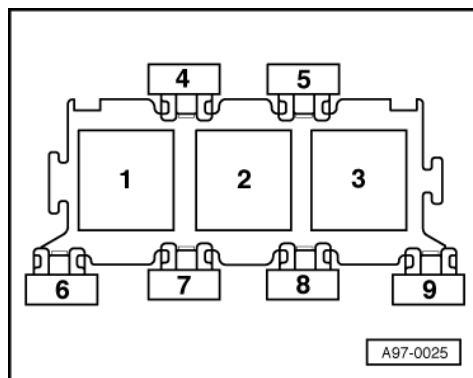


If the LED does not light up:

- Switch off ignition.
- -> Remove rubber seal from plenum chamber in direction of arrow-.
- Remove plenum chamber cover -1- from the front.



- ➤ Remove cover for electronics box in plenum chamber arrows-.



- -> Remove diesel direct injection system relay -J322 from 3-point relay carrier in electronics box, plug-in position 3.
- Test for open circuit and short to positive or earth in the following wiring connection:

13-point relay carrier (no fixed position) Contact	3-point relay carrier (electronics box) plug-in position 3 Contact
2	5
4	5

- Rectify any open/short circuit as necessary.

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

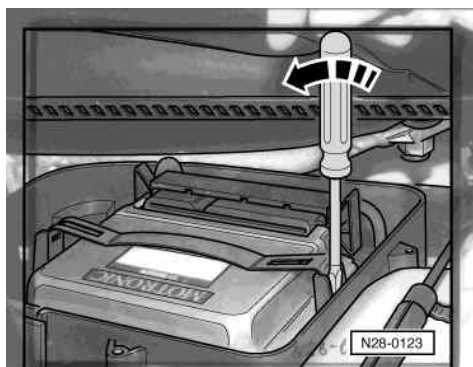
If no wiring fault is detected:

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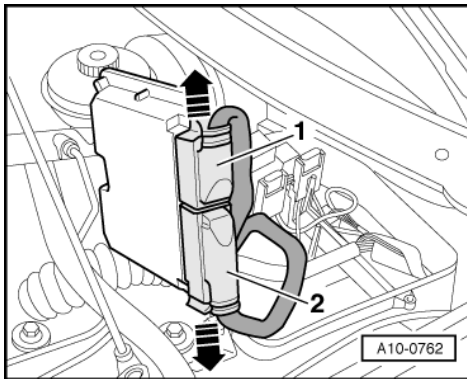
- Test voltage supply of diesel direct-injection system:

=> Diesel direct injection and glow plug system (TDI 6-cylinder); Repair group 23; Servicing diesel direct-injection system, Testing voltage supply of diesel direct-injection system Servicing diesel direct-injection system, Testing voltage supply of diesel direct-injection system

Testing activation of fuel pump relay



- -> Carefully lever off the retainer bar with a screwdriver -arrow-.

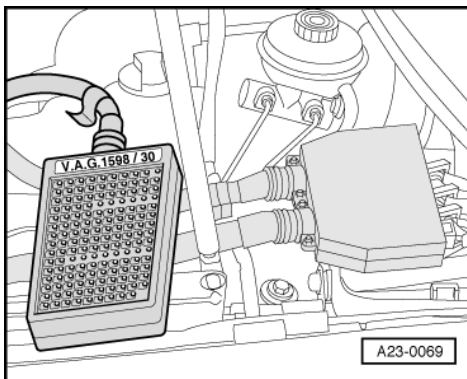


- -> Release retainer catch -arrows- and unplug connectors -1- and -2- from control unit.
- Take out engine control unit.

Warning!

To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.

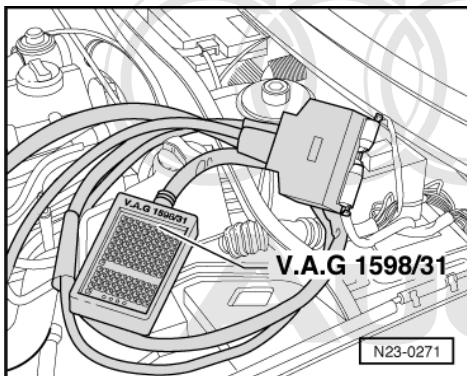
- **Engine code letters AFB with manual gearbox and automatic gearbox**



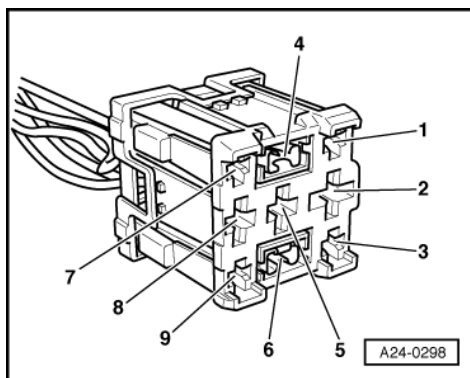
- **Engine code letters AKN with manual gearbox**

- -> Connect test box V.A.G 1598/30 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected).

- **Engine code letters AKN with automatic gearbox.**



- -> Connect test box V.A.G 1598/31 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected). Also connect earth clamp on test box to earth.



- -> Test for open circuit and short to positive or earth in the following wiring connections:

13-point relay carrier, (no fixed position) Contact	Test box V.A.G 1598/30 Socket	Test box V.A.G 1598/31 Socket
6	4/10	80

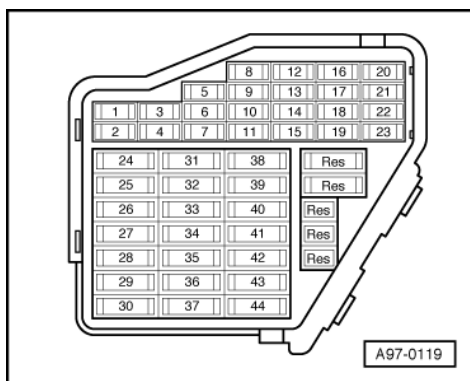
- Rectify any open/short circuit as necessary.

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

Testing activation of fuel pump

Requirements for test:

- Fuel pump relay connected
- Engine control unit connected.
- Open fuse box cover on the left side of the dashboard panel.



- Pull fuse S 228 off fuse carrier (left row, 5th large fuse from the top).
- Connect multimeter (voltage test range) between earth and left fuse contact.
- Operate starter.
 - Specification: approx. battery voltage

If the specification is not obtained:

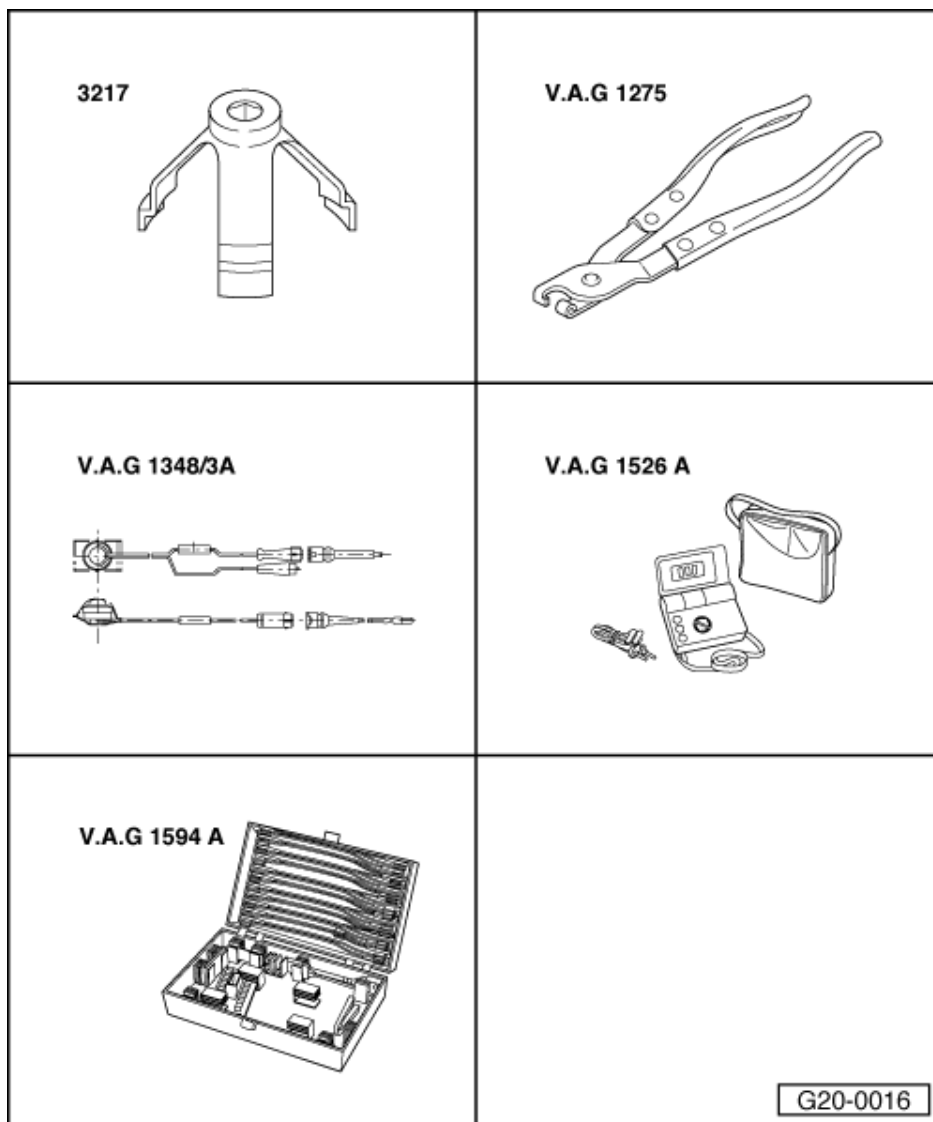
- Check wiring

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If the wiring is OK and no faults are found in the tests up to this point:

- Fit a new fuel pump relay -J17.

2.16 - Testing fuel pump (electrical test) - Vehicles with 6-cylinder engine

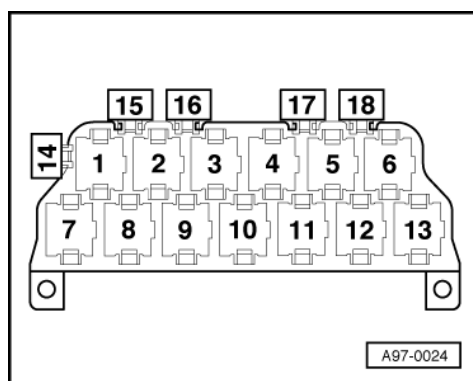


Special tools and workshop equipment required

- ♦ Ring nut spanner 3217
- ♦ V.A.G 1275
- ♦ V.A.G 1348/3A with V.A.G 1348/3-2
- ♦ V.A.G 1526 A
- ♦ V.A.G 1594 A



Requirements for test:

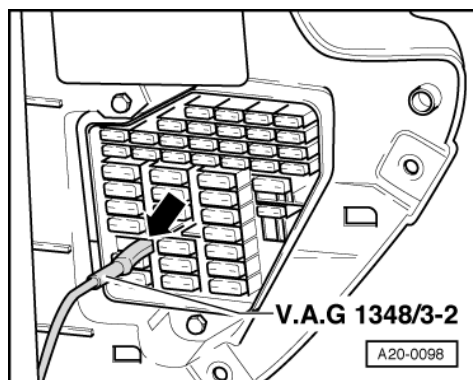


- Battery voltage not less than 12.7 V
- Fuse S228 OK
- -> Relay -J17 in 13-point relay carrier OK (no fixed position).
Testing =>Page 47 .
- Fuel filter OK
- Ignition switched off

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Test sequence

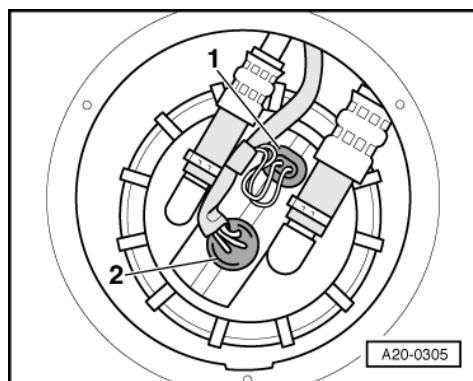
- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse S228 off fuse carrier (left row, 5th large fuse from the top).



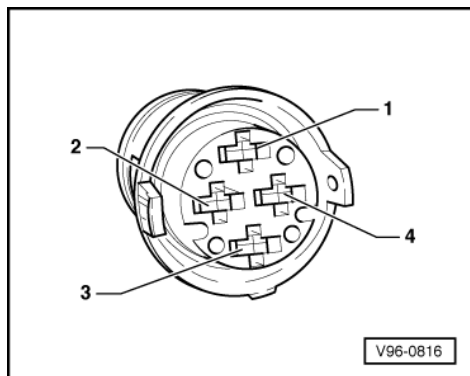
- -> Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right-hand terminal of fuse socket S228 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should run (audible in boot - 2nd mechanic required).

If pump does not start running:

- Detach floor trim in luggage compartment.

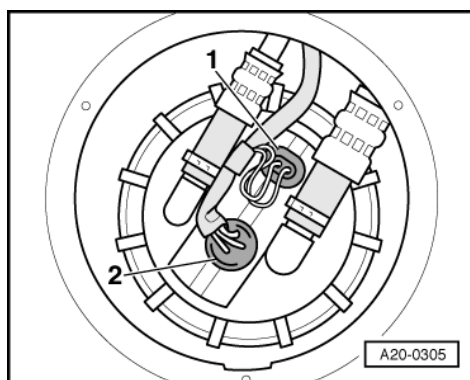


- Unbolt cover for flange.
- -> Release and unplug connector -2-.

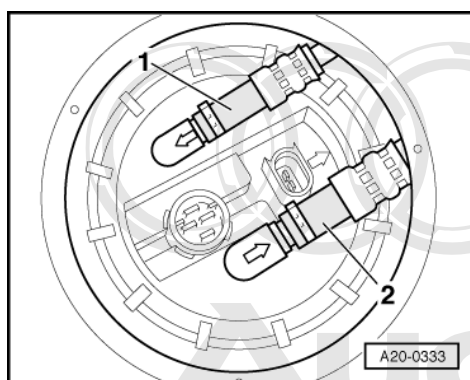


- -> Connect multimeter (voltage measurement range) between contact 1 (green/yellow) and contact 4 (brown).
- Press and hold remote control switch, and read off voltage.
 - Specification: approx. battery voltage

If the specification is obtained, even though the fuel pump did not run, remove flange as follows:

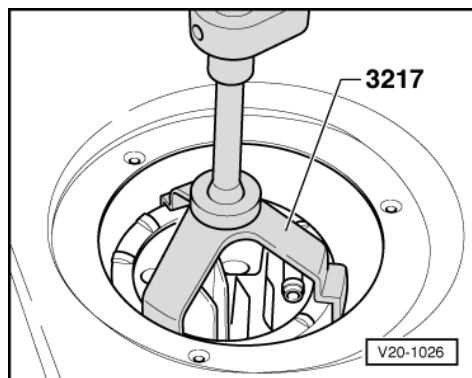


- -> Also unplug connector -1-.

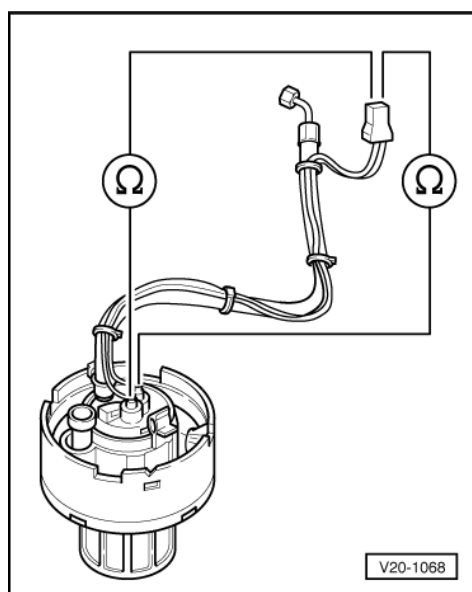


- -> Disconnect fuel return pipe -1- and fuel supply pipe -2- from flange.

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- -> Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.



- -> Check that the electrical wires between flange and fuel pump are connected and test for continuity.

If no wiring fault is detected:

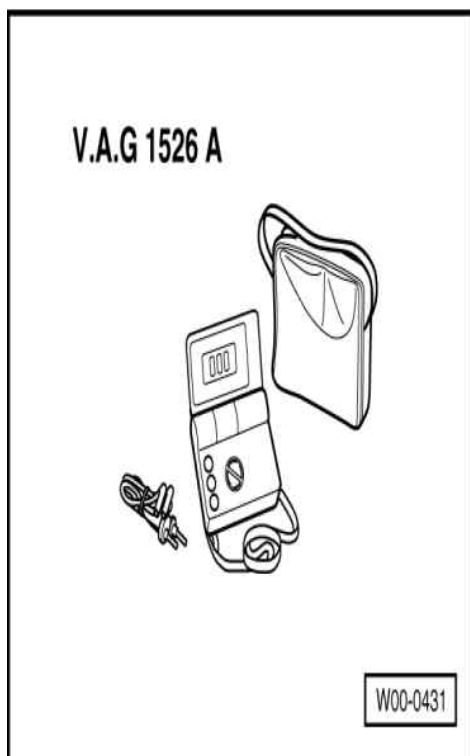
- Fuel pump is defective. Renew fuel delivery unit =>Page 59 .



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2.17 - Testing sender for low fuel level -G210 - vehicles with 6-cylinder engine

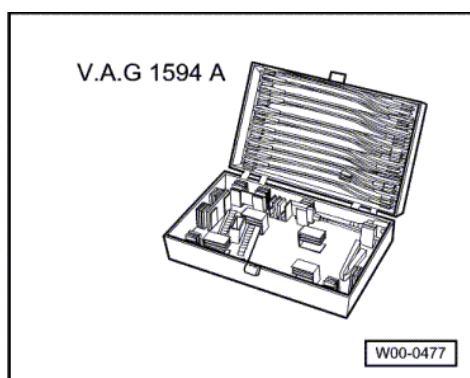
Note:



Sender for low fuel level -G210 cannot be replaced separately.

Special tools and workshop equipment required

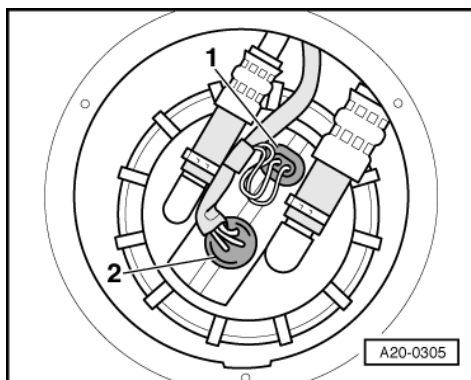
- ♦ V.A.G 1526 A



- ♦ V.A.G 1594 A

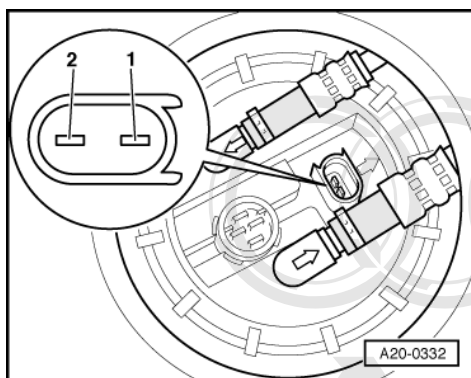


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Test sequence

- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Unplug connector -1-.

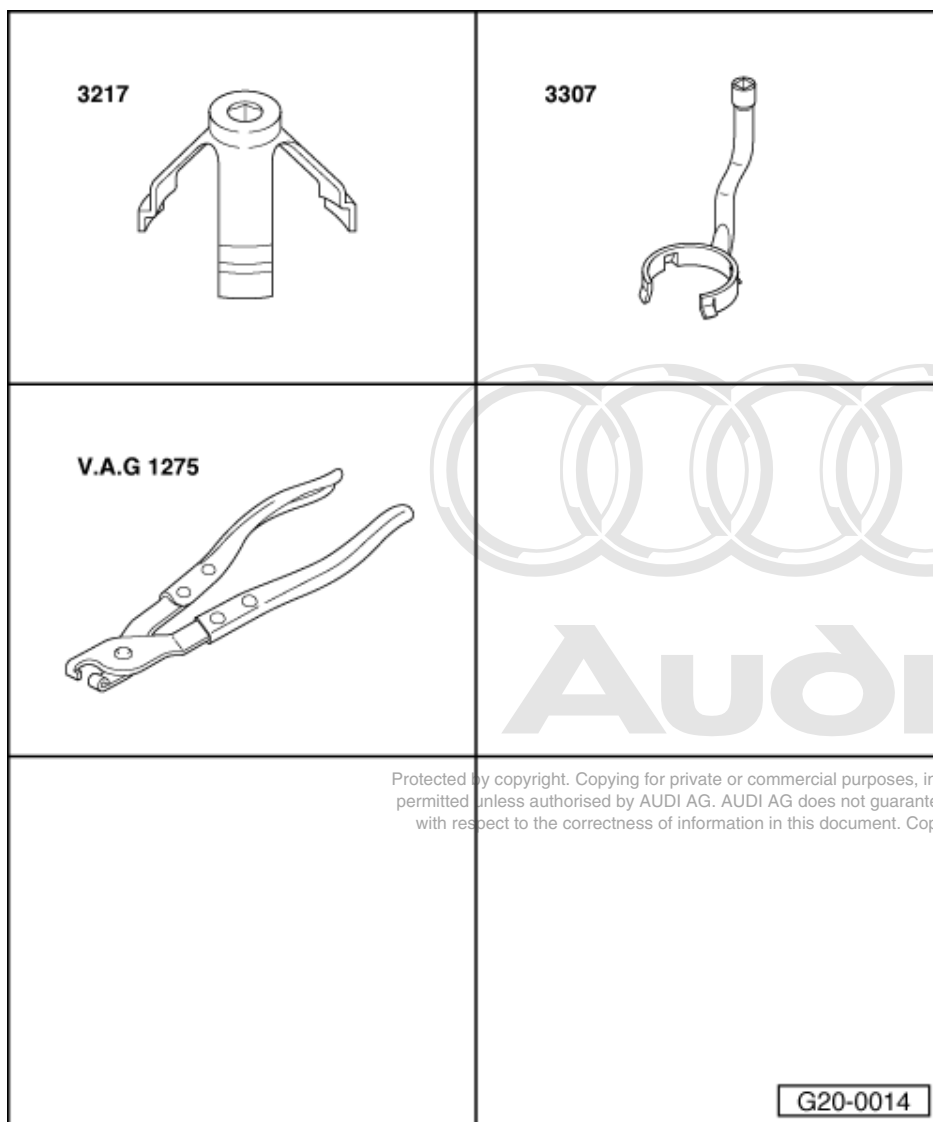


- -> Measure resistance at contacts -1- and -2- on flange.
- Fuel level in baffle housing OK:
Specification approx: 430 ω
- Fuel level in baffle housing too low:
Specification approx: 100 ω
- If resistance reading is 0 ω or ∞ , this indicates a short circuit or open circuit in wiring in tank.

Note:

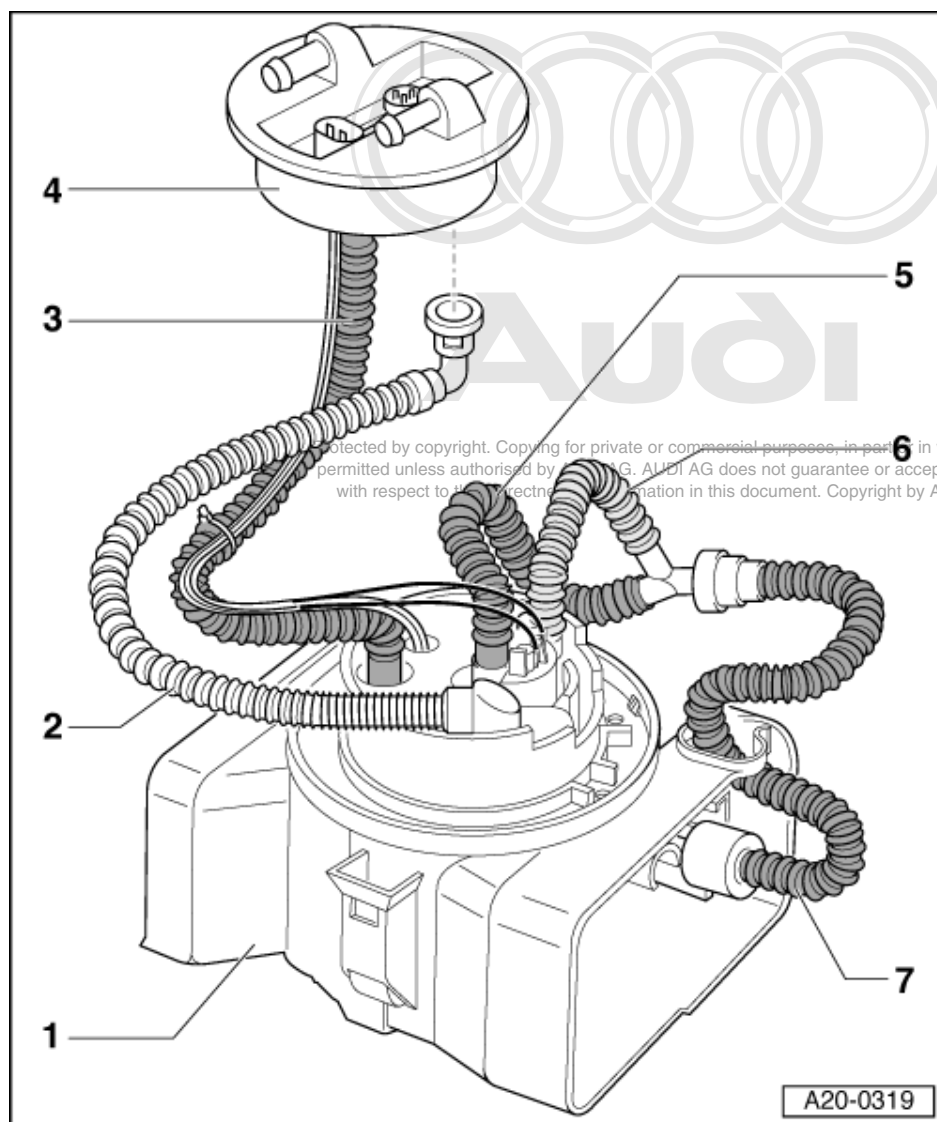
To check the two resistance values, remove fuel delivery unit =>Page 59. Measure resistance values with fuel delivery unit in normal position and turned upside down.

2.18 - Removing and installing fuel delivery unit - vehicles with 6-cylinder engine



Special tools and workshop equipment required

- ◆ Ring nut spanner 3217
- ◆ Fuel pump spanner 3307
- ◆ Hose clamp pliers V.A.G 1275



Note:

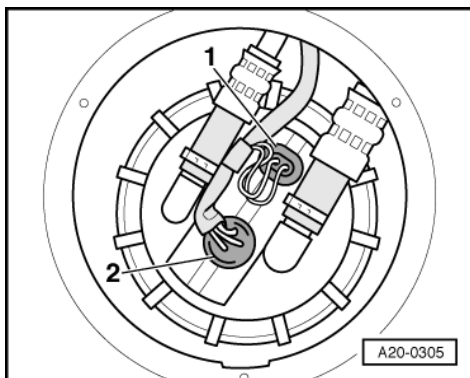
The illustration shows the correct routing of hoses inside the tank.

- 1 Baffle housing**
- 2 Fuel return hose**
- 3 Fuel supply hose**
- 4 Flange**
- 5 Hose**
 - ♦ From fuel pump to Y-connector
- 6 Fuel hose**
 - ♦ From fuel delivery unit to Y-connector
- 7 Fuel hose**
 - ♦ From Y-connector to suction jet pump

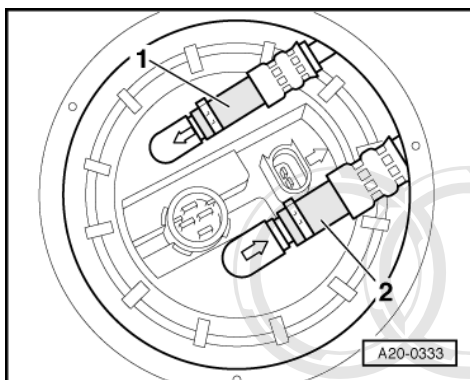
Observe safety precautions=> Page **1** .

Observe rules for cleanliness => Page **1** .

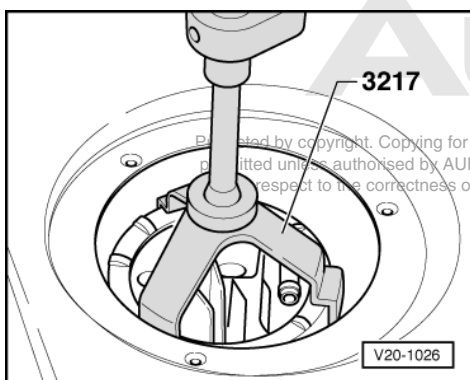
Removing



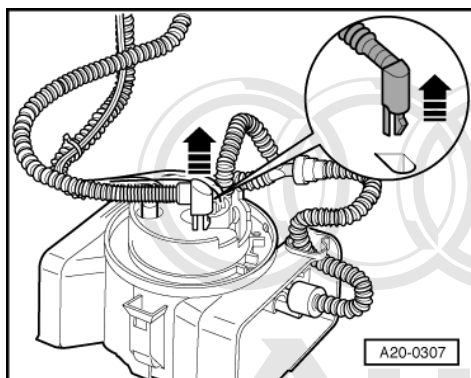
- The fuel tank must not be more than 3/4 full when removing the fuel delivery unit. Drain fuel tank if necessary. Procedure => Page 8.
- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connectors -1- and -2-.



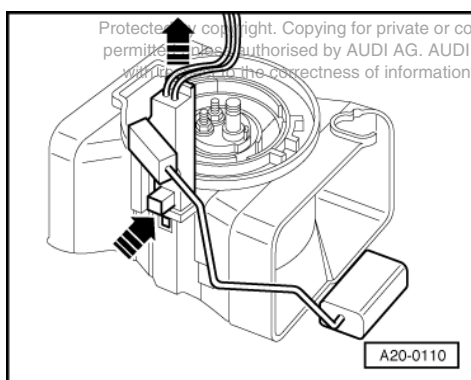
- -> Disconnect fuel return pipe -1- and fuel supply pipe -2- from flange.



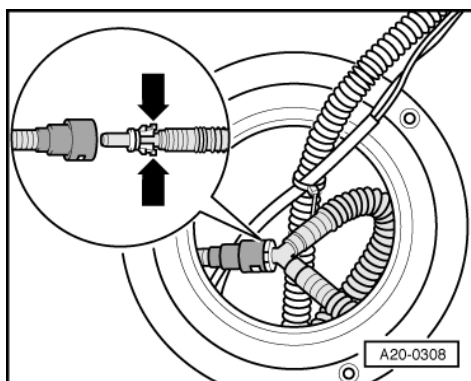
- -> Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.
- Unplug connector for fuel gauge sender on inside of flange.



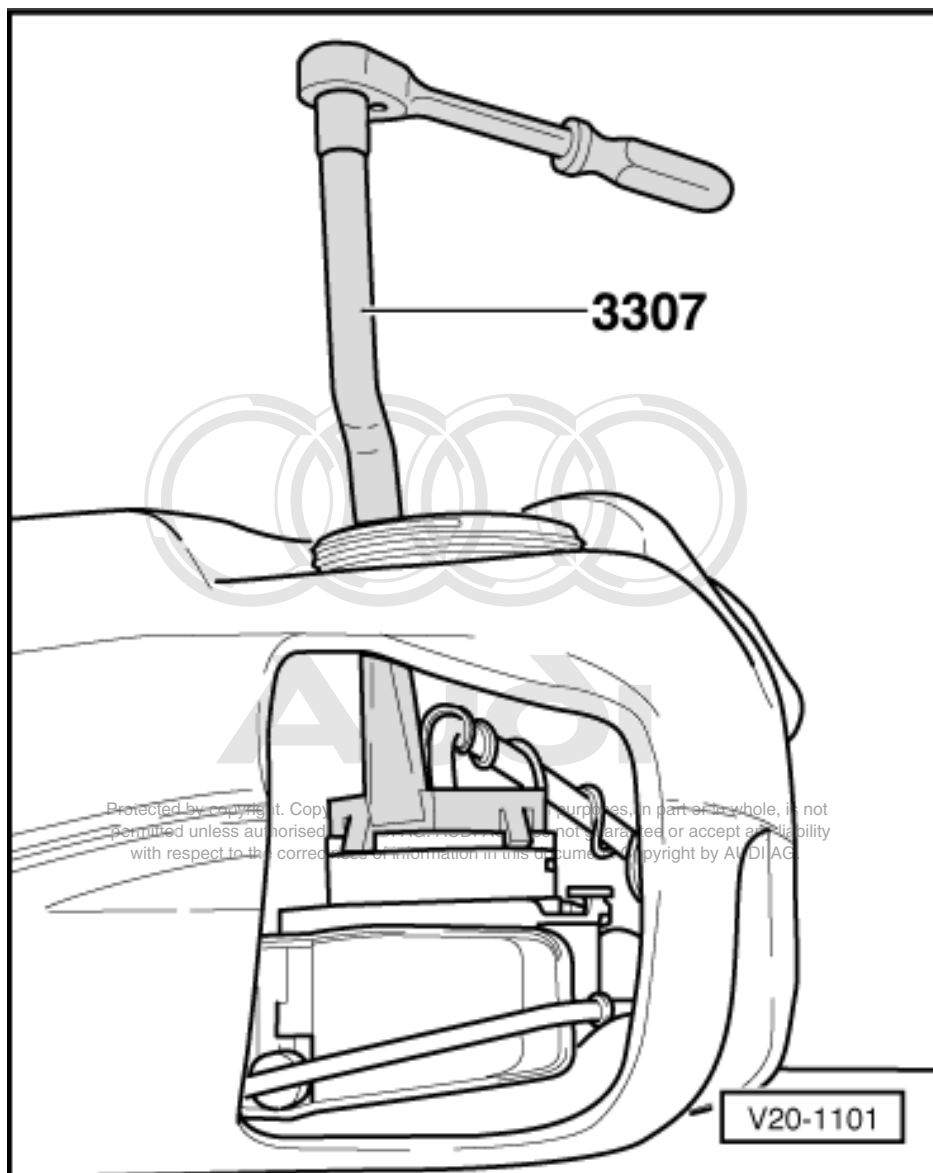
- -> Disconnect elbow connector on fuel return hose from inner section of baffle housing by pulling upwards -arrow-.



- -> Press retaining tab and at the same time pull sender unit out of baffle housing in fuel tank -arrows-.



- -> Press release catches -arrows- and disconnect fuel hose at Y-connector.
- Place hose going to suction jet pump in fuel tank.



- -> Insert fuel pump spanner 3307 through opening in fuel tank and apply spanner to fuel delivery unit.
- Using spanner 3307, turn fuel delivery unit anti-clockwise as far as it will go (approx. 15°), and take out fuel delivery unit.

Installing

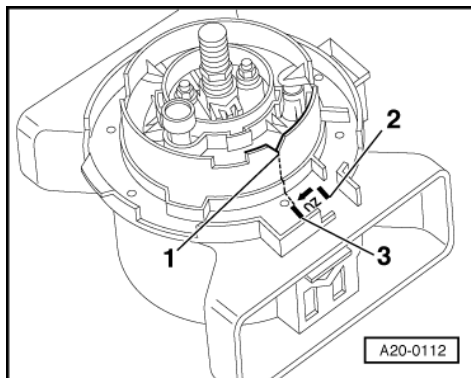
Install in reverse sequence; note the following points:

Note:

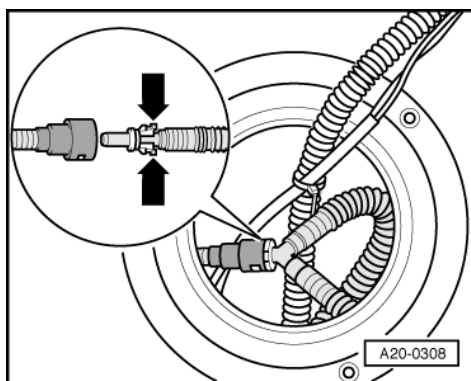
Secure all hose connections with the correct hose clips (same as original parts)

=> Parts catalogue

- Insert fuel delivery unit in fuel tank.



- -> Fit fuel delivery unit into outer section of baffle housing (in tank) so that notch -1- on fuel delivery unit is aligned with marking -2- on outer section of housing.
- The fuel delivery unit should move down noticeably.
- Apply fuel pump spanner 3307 and turn fuel delivery unit clockwise as far as it will go (approx. 15°). Notch -1- will then be aligned with marking -3- (bayonet fitting).

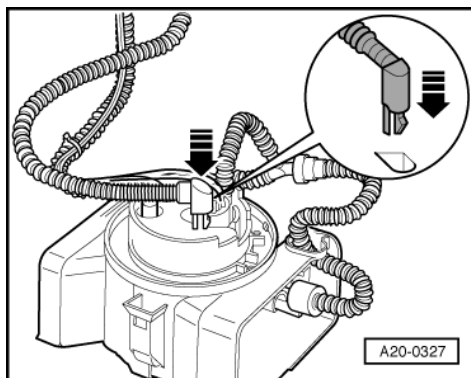


- -> Connect fuel pipe to Y-connector so that catches engage -arrows-.
- Insert Y-connector with fuel pipes in fuel tank and position to one side.

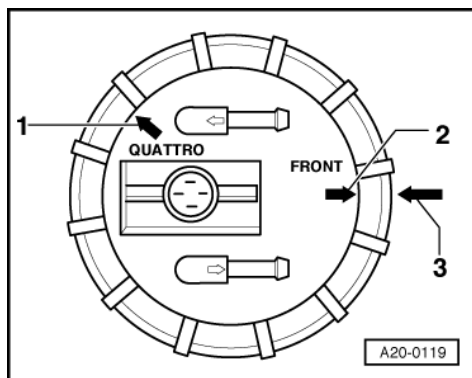
Note:

Ensure that fuel hose going from baffle housing to Y-connector is engaged in retainer in outer section of baffle housing.

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.



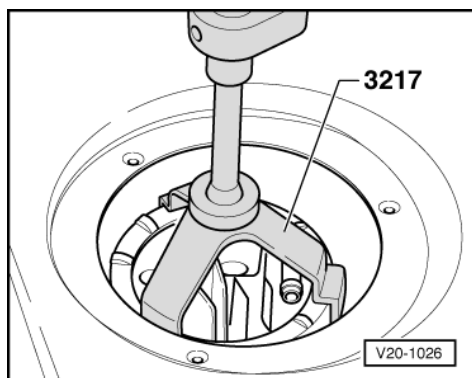
- -> Plug elbow connector of fuel return hose onto inner section of baffle housing so that it engages -arrow-.
- Wrap electrical wire for fuel gauge sender one turn anti-clockwise around fuel supply hose (in tank) and connect wire to flange.
- Fit new sealing ring for flange in fuel tank opening (sealing ring should be dry).



- -> Turn flange clockwise to installation position and insert in fuel tank.
- Installation position for vehicles with front-wheel drive: -arrow 2- must be aligned with -arrow 3-.

Note:

-Arrow 1- is for vehicles with four-wheel drive (can be ignored).



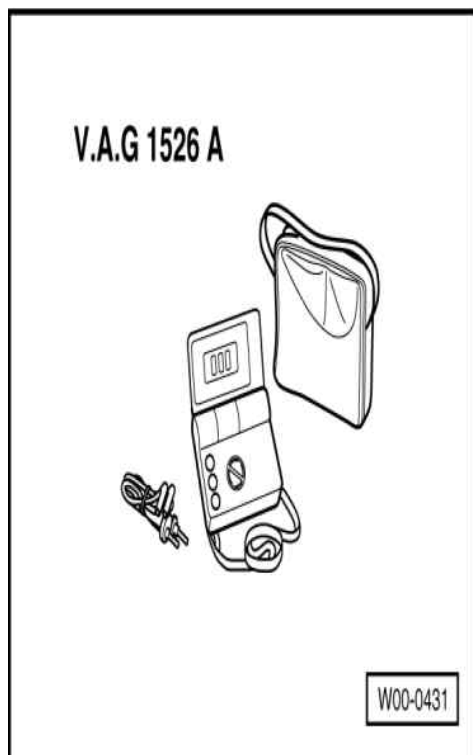
- -> Tighten union nut with spanner 3217 (60 Nm).
- Connect fuel pipes and electrical wiring.



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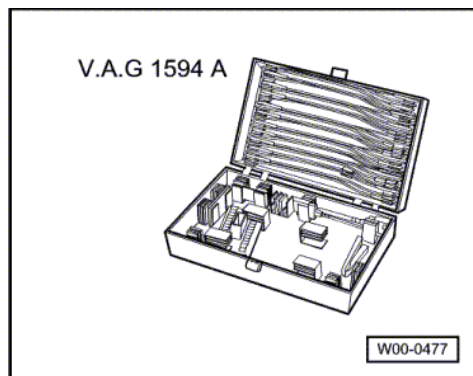
2.19 - Checking fuel gauge sender -G - vehicles with 6-cylinder engine



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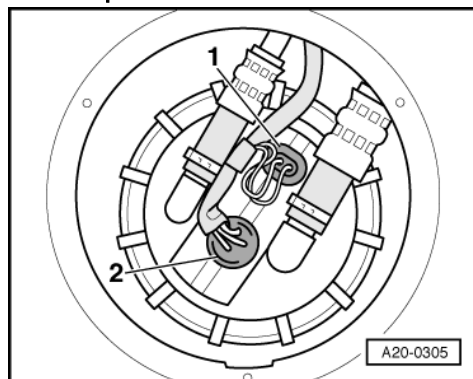
Special tools and workshop equipment required

- ♦ V.A.G 1526 A

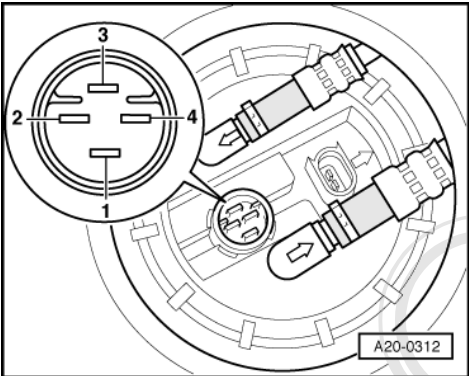


- ♦ V.A.G 1594 A

Test sequence



- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connector -2-.



- -> Measure resistance at contacts -2- and -3- on flange:

Sender unit	Tank full	Tank empty
Fuel gauge sender -G	40 ω	280 ω

According to the amount of fuel in the tank, the resistance should be somewhere between the specified values for "tank full" and "tank empty".

- If the resistance is 0 ω or ∞ ω , this means there is a short circuit or an open circuit in the wiring in the tank.

Note:

In order to test the resistance for "tank full" and "tank empty", remove the fuel gauge sender -G => Page 67 and move the float all the way to its top and bottom positions.

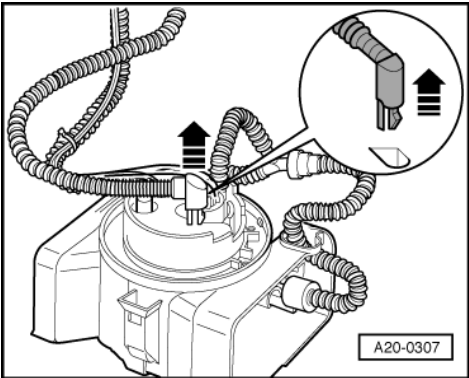
2.20 - Removing and installing fuel gauge sender -G - Vehicles with 6-cylinder engine

Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

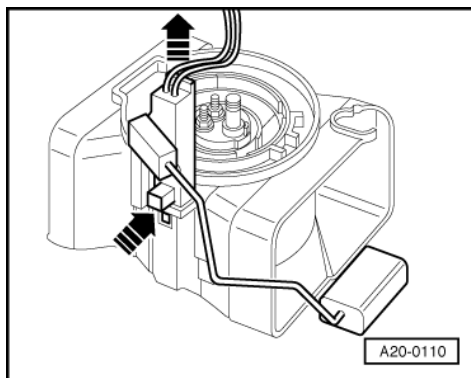
Removing

- Detach flange and move clear to one side with hoses connected => Removing fuel delivery unit, from Page 59 .
- Unplug connector for fuel gauge sender on inside of flange.





- -> Disconnect elbow connector on fuel return hose from inner section of baffle housing by pulling upwards -arrow-.

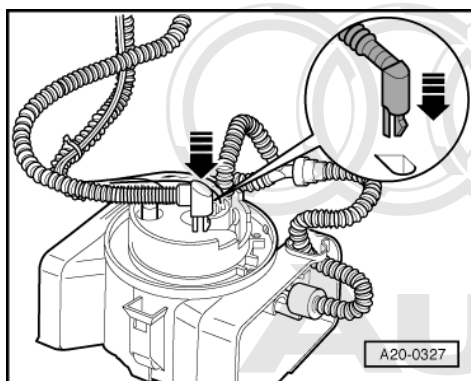


- -> Press retaining tab and at the same time pull sender unit out of baffle housing in fuel tank -arrows-.

Installing

Install in reverse sequence; note the following points:

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.



- -> Plug elbow connector of fuel return hose onto inner section of baffle housing so that it engages -arrow-.
- Wrap electrical wire for fuel gauge sender one turn anti-clockwise around fuel supply hose (in tank) and connect wire to flange.
- Install flange => Page 63 .

3 - Fuel supply system - four-wheel drive

3.1 - Fuel supply system - four-wheel drive

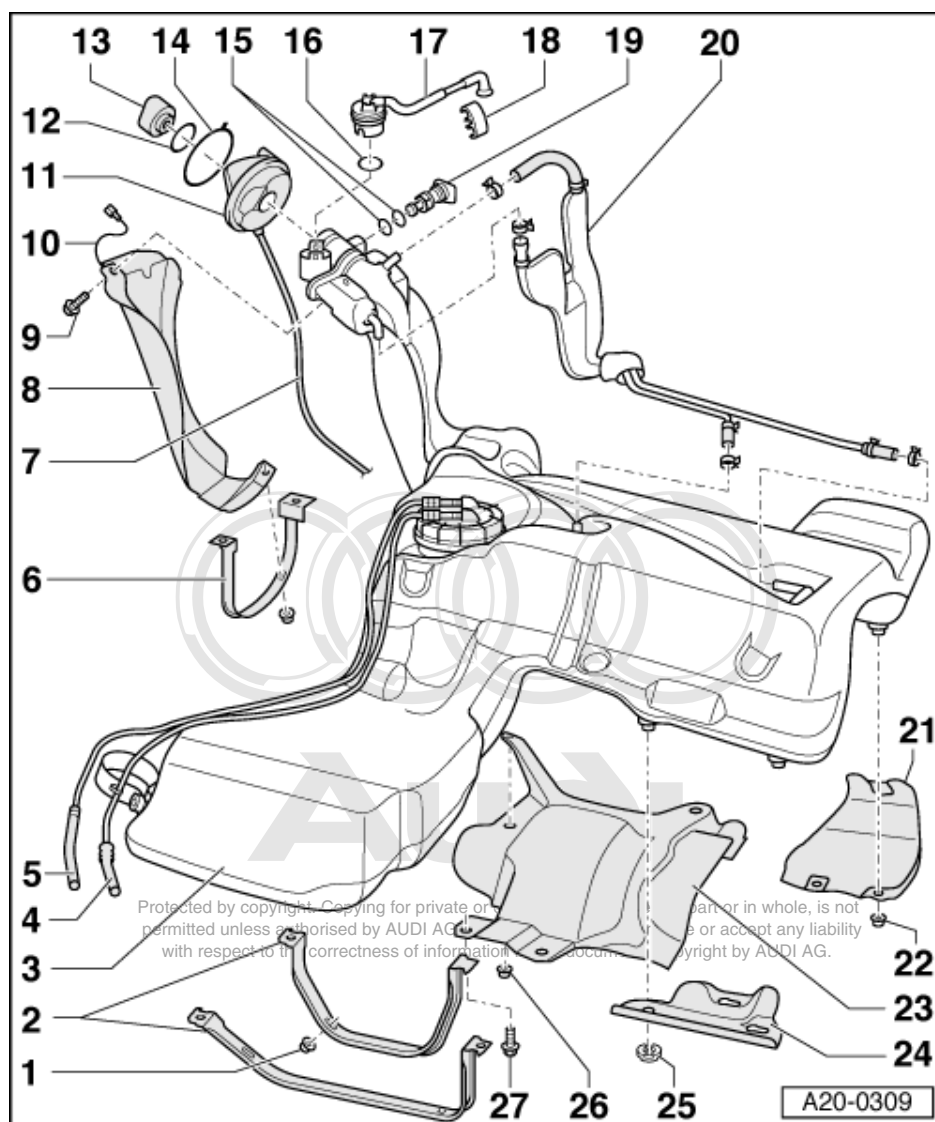
Notes:

- ♦ Secure all hose connections with the correct hose clips (same as original equipment)

=> Parts catalogue

- ♦ Always renew sealing rings and gaskets when assembling.

3.2 - Overview of components: fuel tank with attachments



1 Plastic nut - 2 Nm

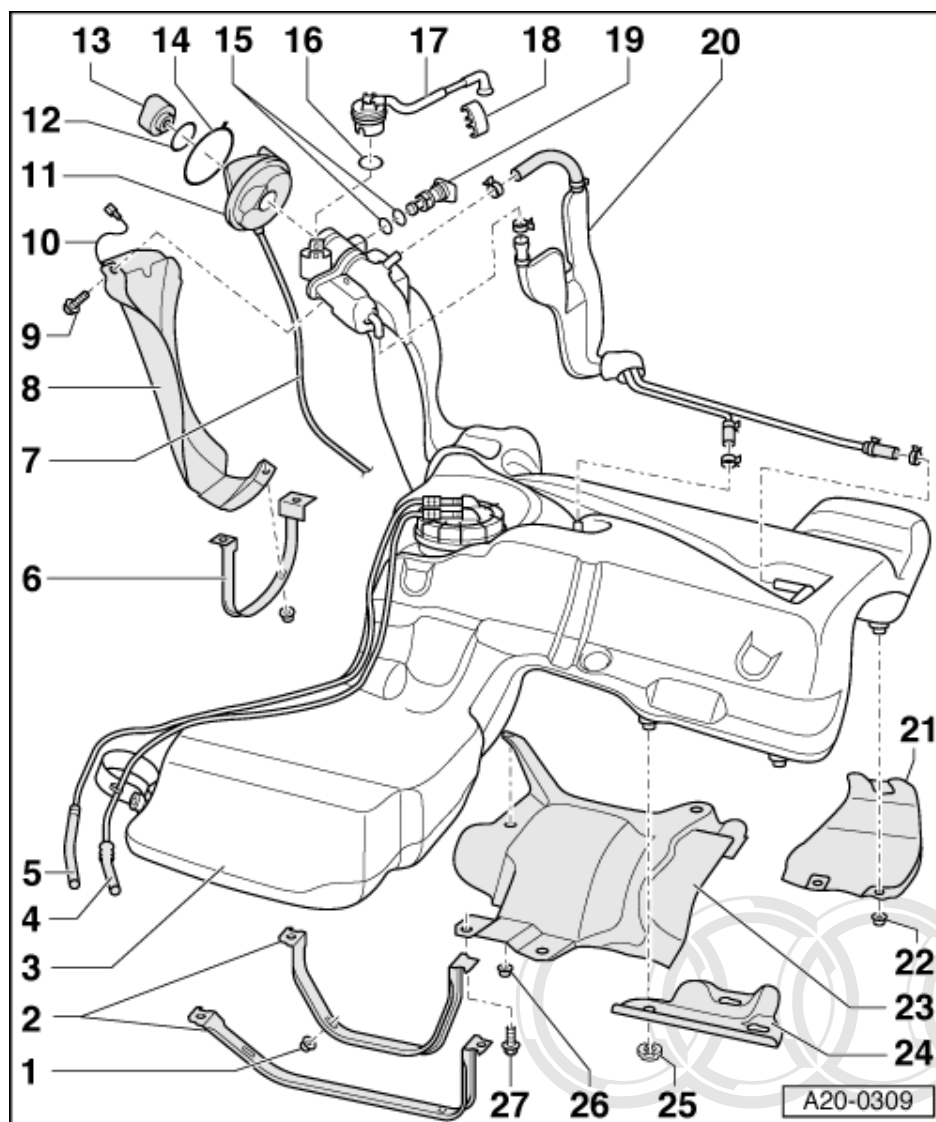
- ♦ Tighten loosely to hold securing straps in place on fuel tank
- ♦ Do not tighten fully until securing strap mountings have been secured

2 Securing straps

- ♦ Removing and installing
=> Page 79
- ♦ Note differing length
- ♦ Note correct position

3 Fuel tank

- ♦ Removing and installing
=> Page 79



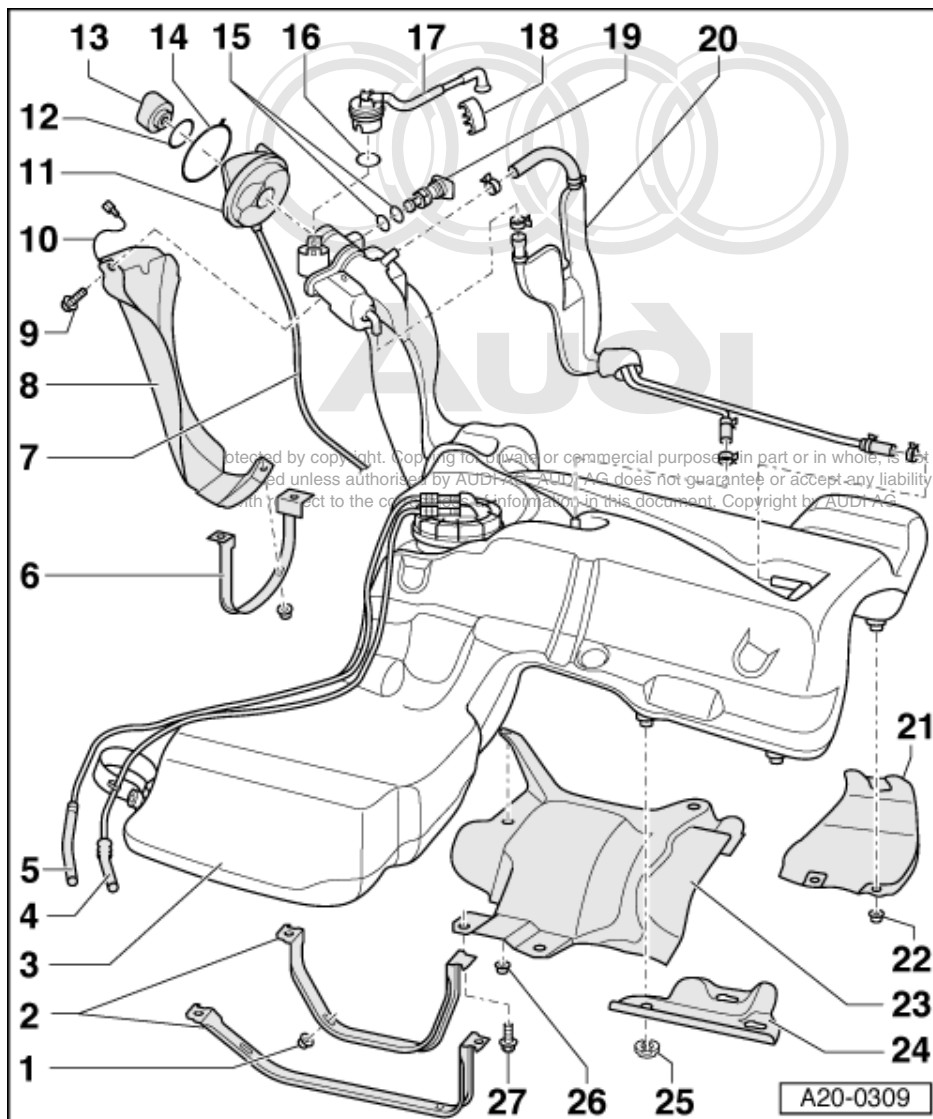
Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100°C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.

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4 Fuel return pipe

- ♦ From fuel filter
- ♦ Clipped into retaining ring and onto fuel tank
- ♦ Vehicles with 6-cylinder engine: twin pipes on underside of vehicle, with Y-connector at each end. Removing and installing
=> Fig. 76



5 Fuel supply pipe

- ◆ Goes to fuel filter
- ◆ Clipped onto fuel tank

6 Rear securing strap

- ◆ With plastic bracket on rear mounting point from about 07.97 onwards

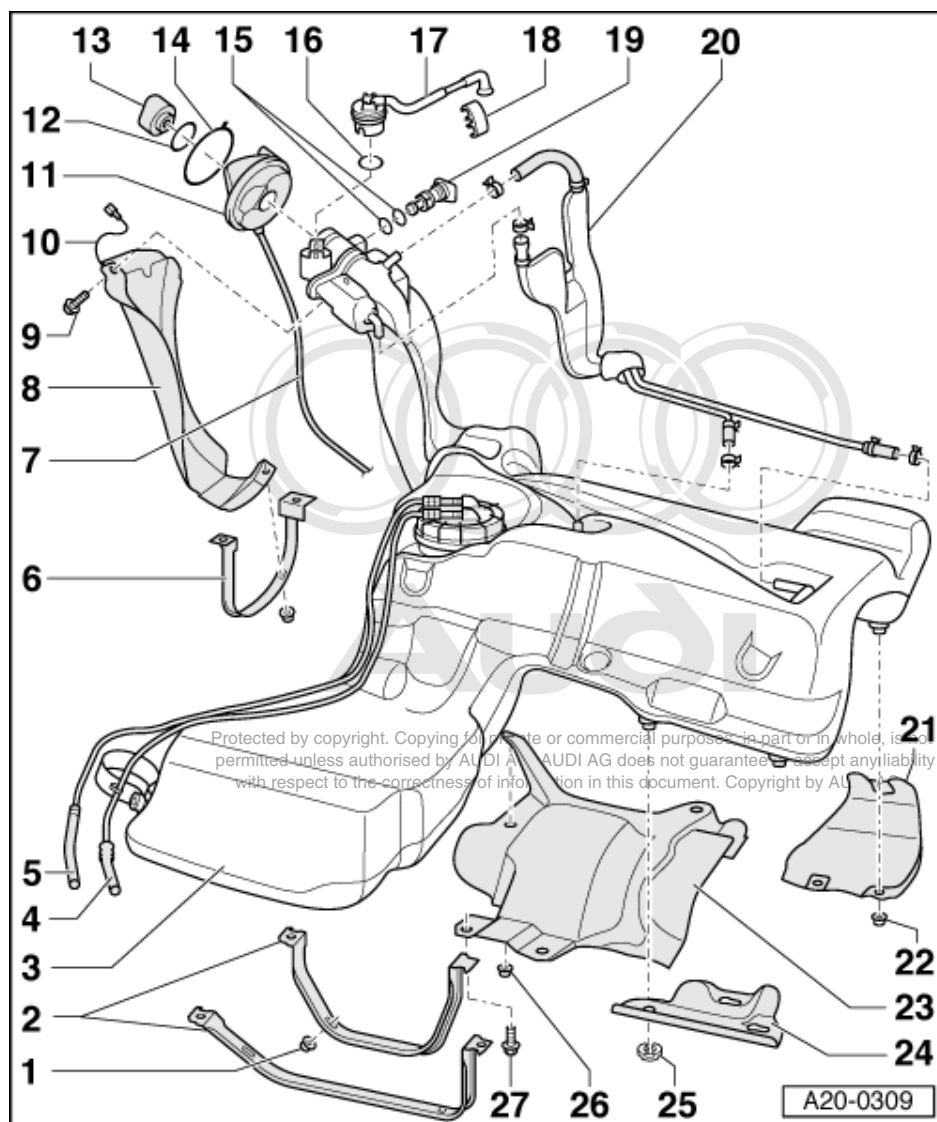
7 Overflow hose

- ◆ Engage in retainer

8 Protective plate

- ◆ For fuel filler neck
- ◆ With earth connection
- ◆ Before screwing in securing bolt -Item 9 -, ensure that earth connecting lug is properly seated (flanged edge)

9 25 Nm



10 Earth connection

- ◆ Position => Fig. 75
- ◆ Ensure that connector is seated properly on metal ring of filler neck
- ◆ Check flanged edge on protective plate -Item 8 -
- ◆ After installation, use an ohmmeter to check the electrical connection between the metal ring on the fuel filler neck and a bare metal part on the body
Specification: approx. 0 Ω .

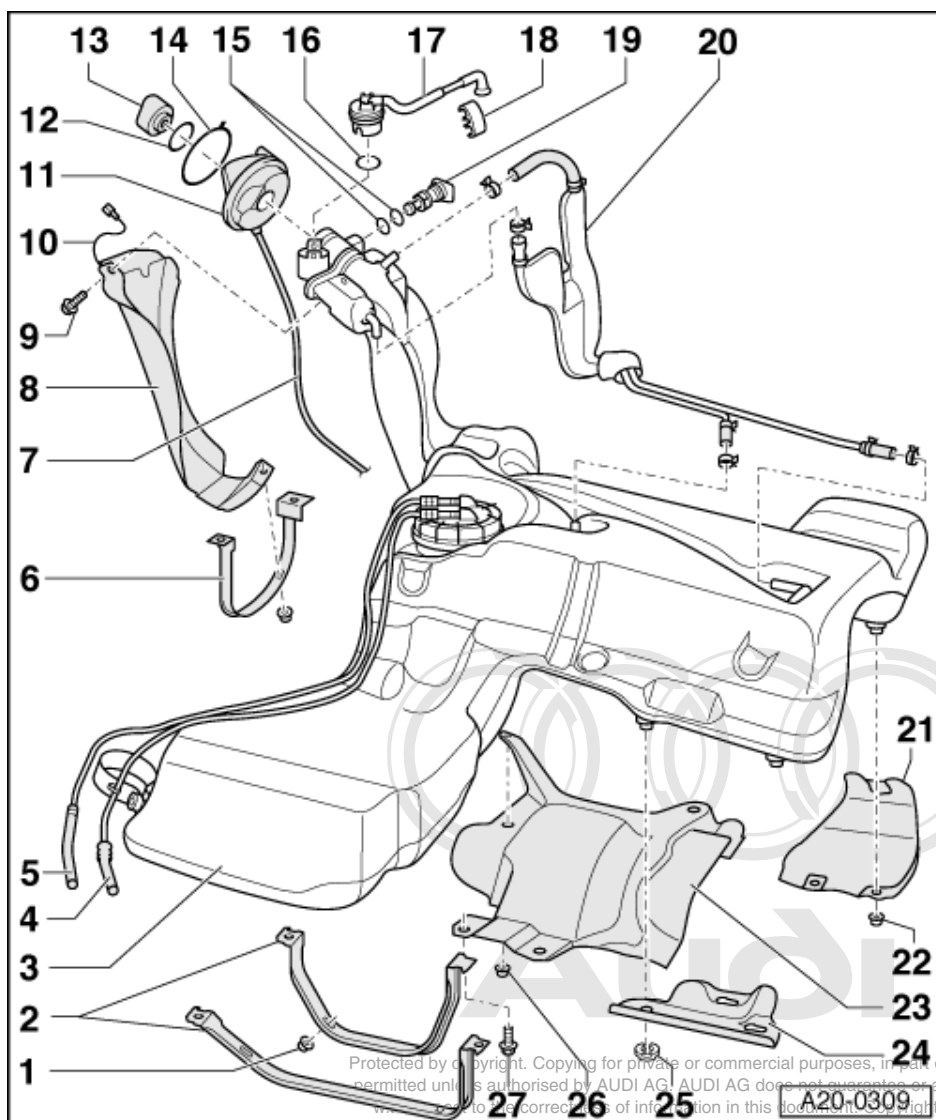
11 Rubber cup

12 Gasket

- ◆ Renew if damaged

13 Sealing cap

14 Retaining ring



15 O rings

- ◆ Renew

16 O ring

- ◆ Renew

17 Gravity valve

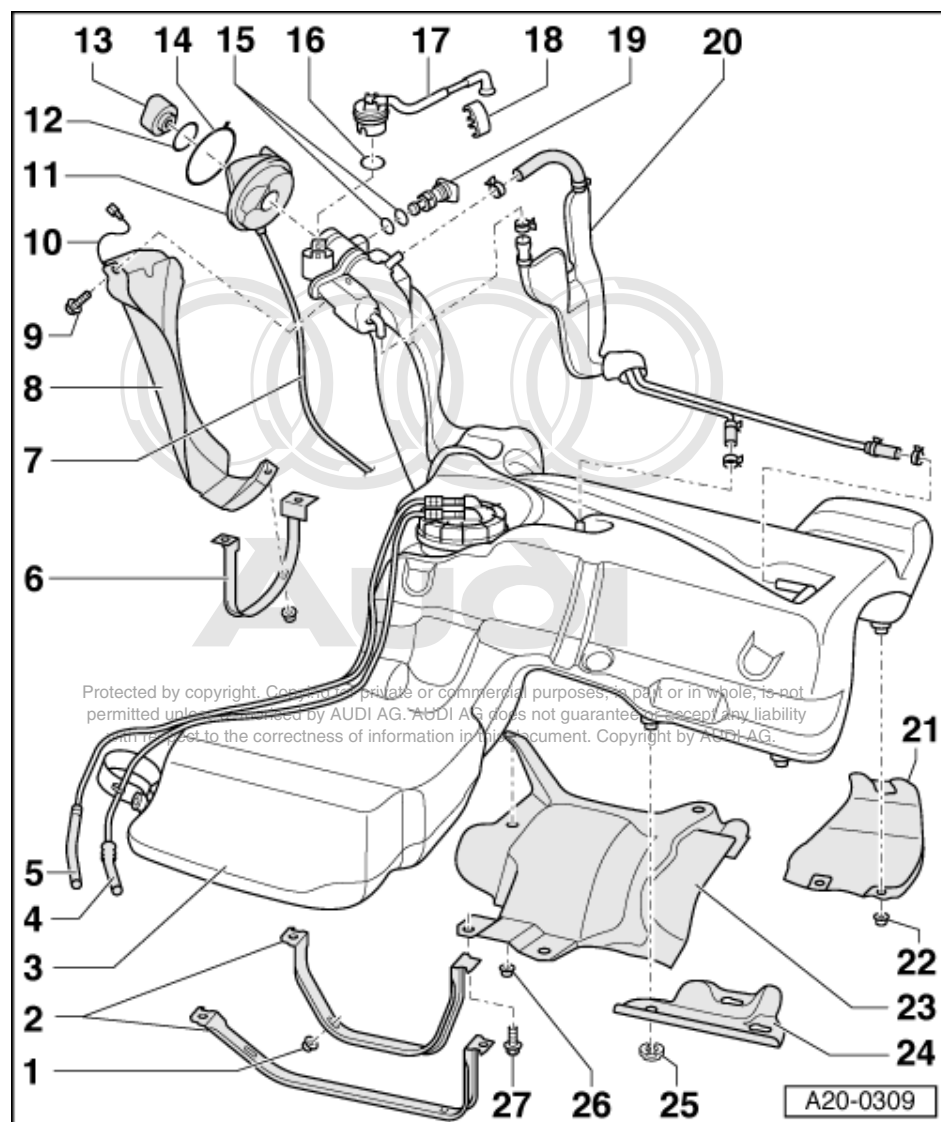
- ◆ To remove valve unclip upwards out of filler neck
- ◆ Position
=> Fig. 75
- ◆ Check valve for through-flow
valve vertical: open,
valve tilted 45 °: closed

18 Retaining clip

- ◆ Press onto the two vent pipes

19 Vent valve

- ◆ Position
=> Fig. 75
- ◆ Removing, installing and checking => Fig. 76



20 Expansion chamber

- ♦ Secure pipes to expansion chamber with adhesive tape

21 Heat shield

- ♦ For fuel tank
- ♦ Rear edge secured to fuel tank with adhesive tape

22 Plastic nut - 2 Nm

23 Carrier plate

24 Heat shield

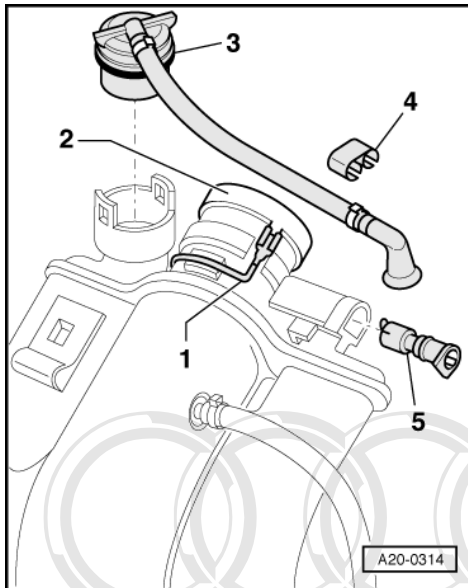
- ♦ For fuel filler neck

25 Securing clip

- ♦ Check securely seated

26 Plastic nut - 2 Nm

27 25 Nm



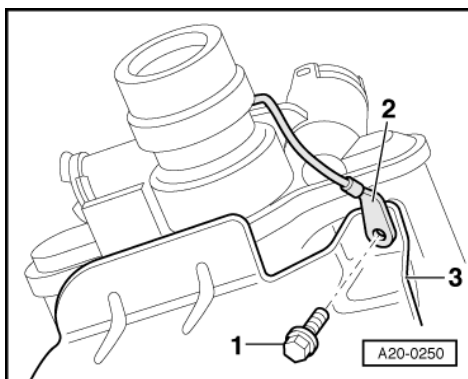
-> Fig.1 Position of gravity valve, vent valve and earth connection

- 1 - Earth connection
- 2 - Metal ring on filler neck
- 3 - Gravity valve
- 4 - Retaining clip securing both vent pipes
- 5 - Vent valve

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- Position the earth connection as illustrated.

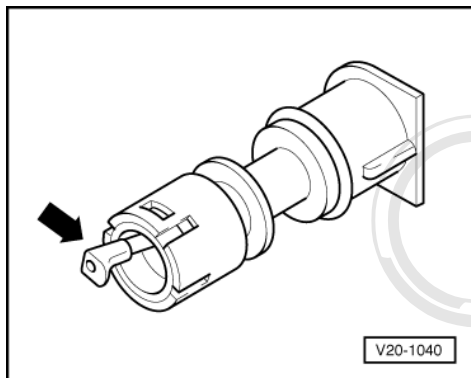
- Ensure that connector for earth connection is properly seated on metal ring of fuel filler neck.



- -> Before screwing in securing bolt -1-, ensure earth connecting lug -2- is properly seated (flanged edge) on protective plate -3- for fuel filler neck.

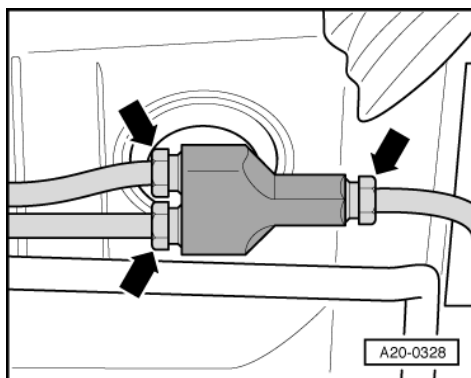
Warning

After installation, use an ohmmeter to check the electrical connection between the metal ring on the fuel filler neck and a bare metal part on the body:
 Specification: approx. 0Ω.



-> **Fig. 2 Removing, installing and checking vent valve**

- To remove, unclip valve from side of filler neck.
- Before installing vent valve, unscrew filler cap from fuel tank.
- Checking vent valve:
 - Lever in released position: it should not be possible to blow through valve
 - Lever pressed in direction of arrow: it should be possible to blow through valve



-> **Fig.3 Removing and installing Y-connector for fuel return pipe**

- ♦ On vehicles with 6-cylinder engine twin return pipes are fitted on underside of vehicle for improved fuel cooling.
- ♦ Tighten unions -arrows- to 15 Nm.

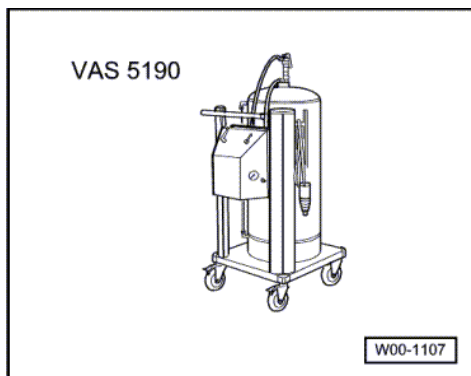
3.3 - Draining fuel tank

Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

Procedure if tank is more than 3/4 full => Page 77 .

Procedure if tank is less than 3/4 full => Page 78 .



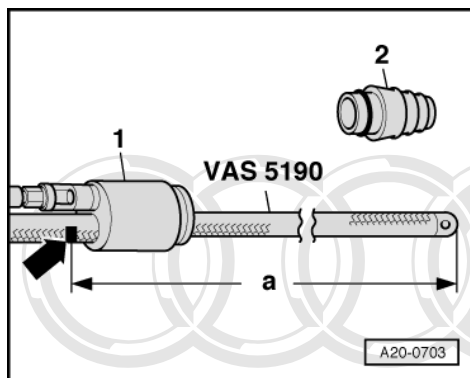
Special tools and workshop equipment required

- ♦ VAS 5190

Work sequence

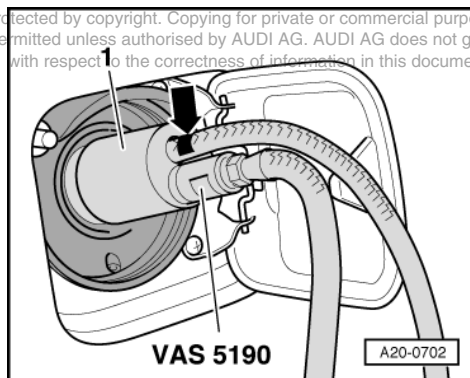
Warning
 Secure earth wire of V.A.G 1433

A - Procedure if fuel tank is more than 3/4 full



- Remove filler cap from fuel tank filler neck.
- -> Detach tapered adapter -2- from shaft end -1- of VAS 5190.
- Make a mark -arrow- on hose using insulating tape.
- Dimension a = 1565 mm

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- -> Screw shaft end -1- of fuel extractor VAS 5190 onto fuel filler neck.
- Push drain hose into fuel tank until marking on drain hose -arrow- coincides with shaft end.

Note:

In order not to damage the fuel gauge sender or the suction jet pump, do not push the hose into fuel tank further than the applied marking.

- Drain fuel tank as far as possible via fuel filler neck.
- Carefully pull out drain hose.

Vehicles with 4-cylinder engine:

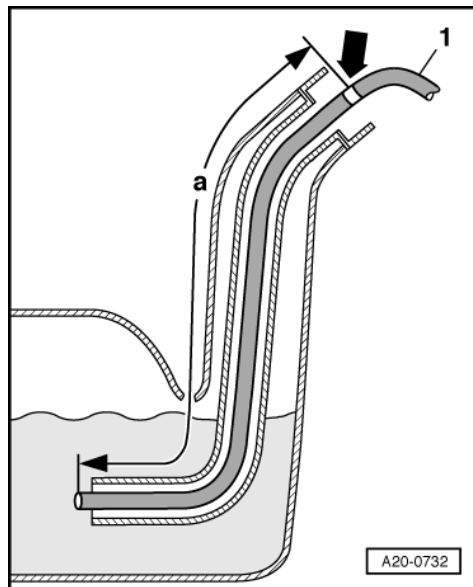
- Remove flange and move clear to one side with hoses/pipes connected
 => Removing fuel delivery unit, Page 95 .
- Extract remaining fuel through opening for fuel delivery unit.

Vehicles with 4-cylinder engine (unit injector):

- Remove flange and move clear to one side with hoses/pipes connected
=> Removing fuel delivery unit, Page 117 .
- Extract remaining fuel through opening for fuel delivery unit.

Vehicles with 6-cylinder engine:

- Remove flange and move clear to one side with hoses/pipes connected
=> Removing fuel delivery unit, Page 142 .
- Extract remaining fuel through opening for fuel delivery unit.

Notes:

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- ♦ -> The procedure when using a fuel extractor without shaft end is basically the same.
- ♦ In this case make a mark -arrow- on hose using insulating tape.
-Distance a = 1500 mm
- ♦ Drain hose -1- is in correct position when marking on drain hose -arrow- coincides with rim of filler neck.
- ♦ If the hose does not go in easily, lubricate lightly with engine oil. Do not use silicone lubricant.

B - Procedure if tank is less than 3/4 full**Vehicles with 4-cylinder engine:**

- Remove flange and move clear to one side with hoses/pipes connected
=> Removing fuel delivery unit, Page 95 .
- Extract remaining fuel through opening for fuel delivery unit.

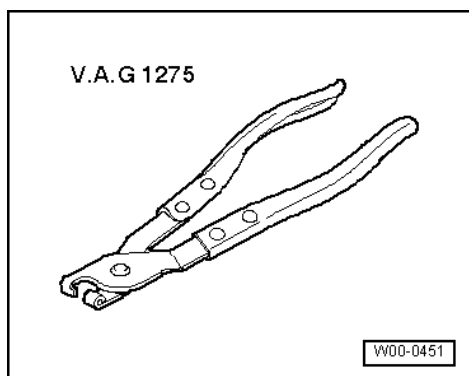
Vehicles with 4-cylinder engine (unit injector):

- Remove flange and move clear to one side with hoses/pipes connected
=> Removing fuel delivery unit, Page 117 .
- Extract remaining fuel through opening for fuel delivery unit.

Vehicles with 6-cylinder engine:

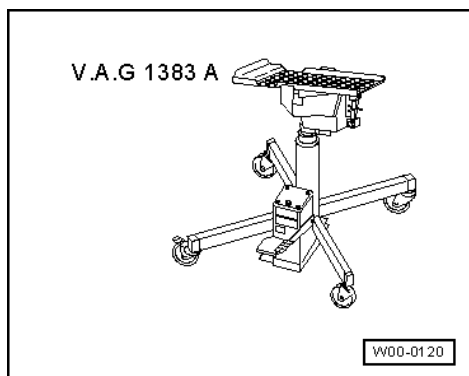
- Remove flange and move clear to one side with hoses/pipes connected
=> Removing fuel delivery unit, Page 142 .
- Extract remaining fuel through opening for fuel delivery unit.

3.4 - Removing and installing fuel tank



Special tools and workshop equipment required

- ◆ Hose clamp pliers V.A.G 1275



- ◆ V.A.G 1383 A and V.A.G 1359/2

Observe safety precautions=> Page 1.

Observe rules for cleanliness => Page 1.

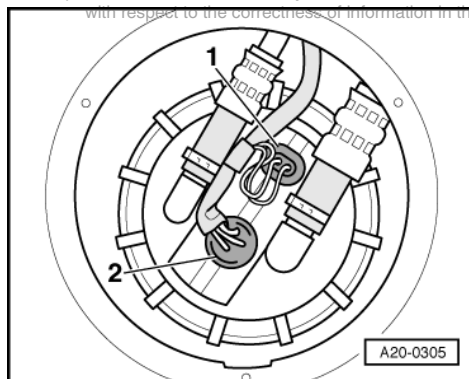
Removing

- The fuel tank must be empty when it is removed from the vehicle in order to reduce weight. Drain fuel tank if necessary. Procedure => Page 76.
- Remove rear axle:

=> Running gear, Front-wheel drive and four-wheel drive; Repair group 42; Removing and installing rear axle

- Detach floor trim in luggage compartment.

- **Unbolt cover for flange**

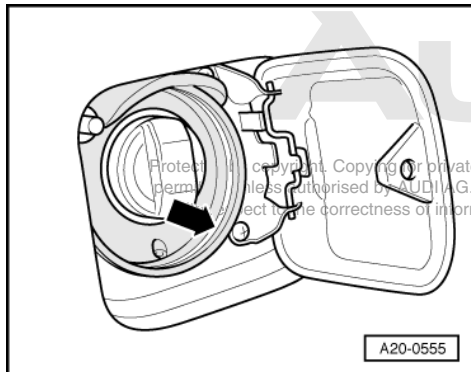




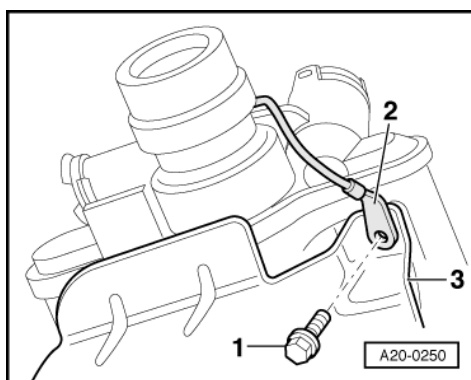
- -> Release and unplug connectors -1- and -2-.

Note:

Connector -1- is only fitted on vehicles with 6-cylinder engine.



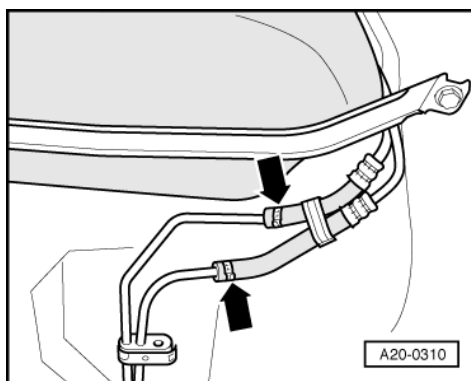
- Clean area around tank filler neck.
- -> Open tank flap and lever out clamping ring -arrow- in rubber cup (on filler neck).
- Press rubber cup through to the inside.



- -> Remove bolt -1- for fuel filler neck, earth connection -2- and protective plate -3- below wheel housing liner.

Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.



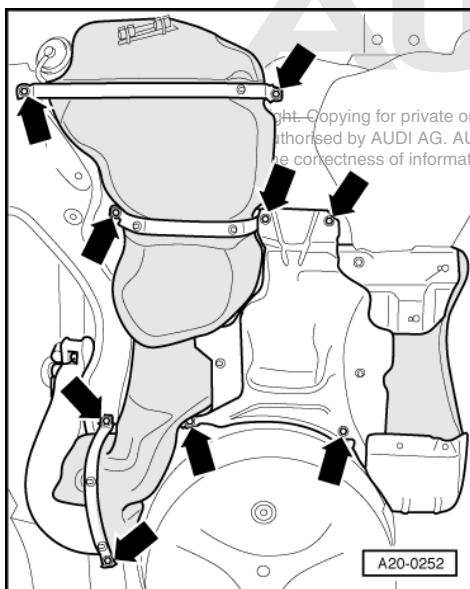
- -> Disconnect fuel supply pipe and fuel return pipe -arrows- on underside of vehicle.

Vehicles with auxiliary heater

- In addition, disconnect supply hose for auxiliary heater.

All models

- Position engine/gearbox hoist V.A.G 1383 A below vehicle to support tank.



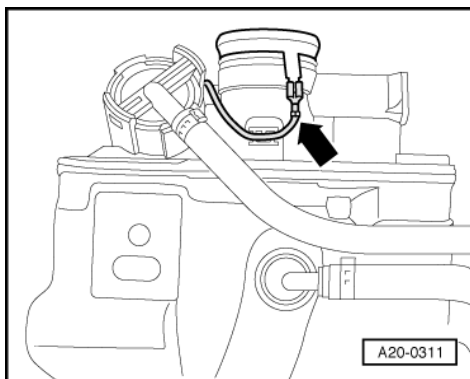
- Mark the correct positions of the securing straps.
- -> Remove securing straps and carrier plate -arrows-.
- Lower fuel tank out of vehicle.

Installing

Install in reverse sequence; note the following points:

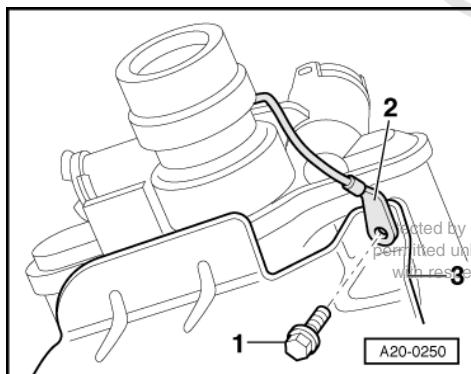
Notes:

- ♦ Secure all hose connections with the correct hose clips (same as original equipment)
- => Parts catalogue
- ♦ Always renew sealing rings and gaskets when assembling.
 - Check the earth wiring at both ends for traces of oxidation. Remove any traces of oxidation if necessary.





- -> Route earth connection as shown in illustration.
- Ensure that connector for earth connection -arrow- is properly seated on metal ring on fuel filler neck.
- Loosely attach securing straps and carrier plate on fuel tank.
- Position fuel tank with securing straps and carrier plate on underside of vehicle using engine/gearbox jack V.A.G 1383 A.

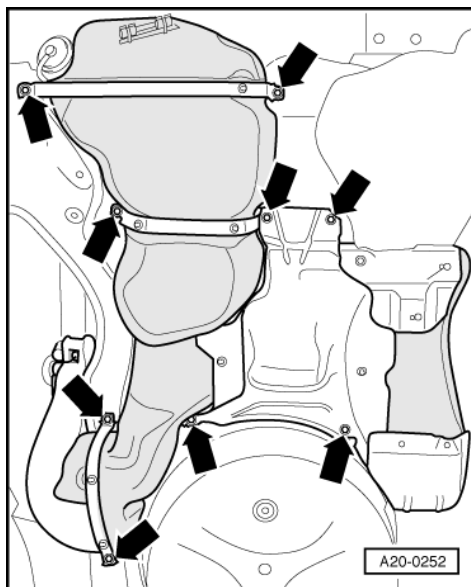


- -> First tighten bolt -1- securing protective plate -3-, earth connection -2- and fuel filler neck.

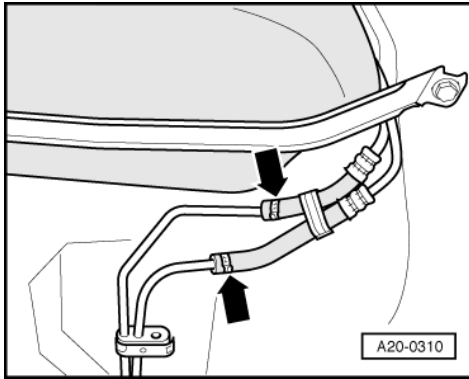
Caution

After installation, use an ohmmeter to check the electrical connection between the metal ring on the fuel filler neck and a bare metal part on the body:

- ♦ **Specification: approx. 0Ω.**



- -> Tighten bolts for securing straps and carrier plate -arrows-.
- Tighten plastic nuts on securing straps and carrier plate.



- -> Connect fuel pipes -arrows-.
- Plug in connector for fuel pump and fuel gauge sender.

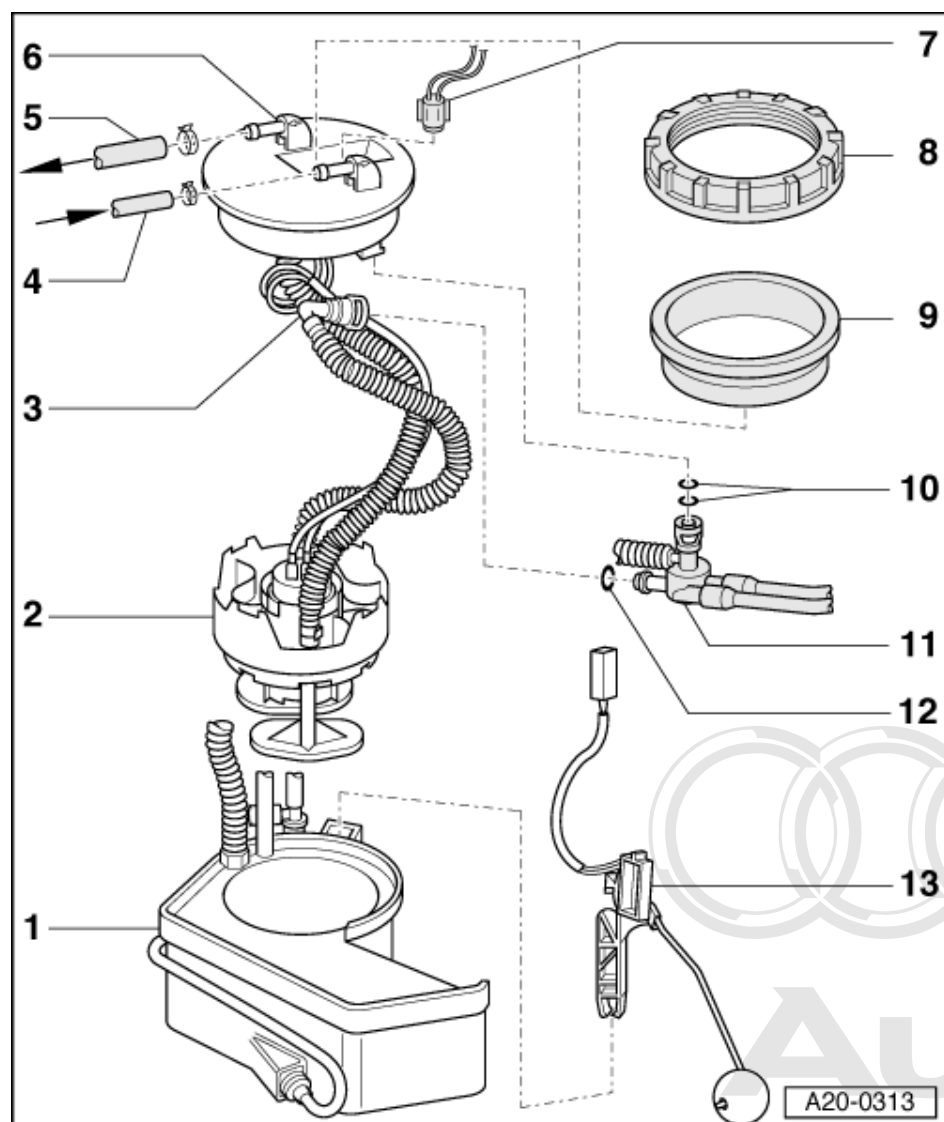
Tightening torques

Component	Nm
Securing straps and carrier plate for fuel tank to body	25
Fuel filler neck to body	25
Securing straps to fuel tank	2
Carrier plate to fuel tank	2

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3.5 - Overview of fuel delivery unit and fuel gauge sender - vehicles with 4-cylinder engine



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Note:

Description of function

=>Page 87 .

1 Baffle housing (outer section)

- ◆ Secured in place in fuel tank
- ◆ Cannot be dismantled
- ◆ Shown without fuel tank for clearer illustration.

2 Fuel delivery unit

- ◆ Checking fuel pump (electrical test)
=> Page 91
- ◆ Removing and installing
=> Page 95

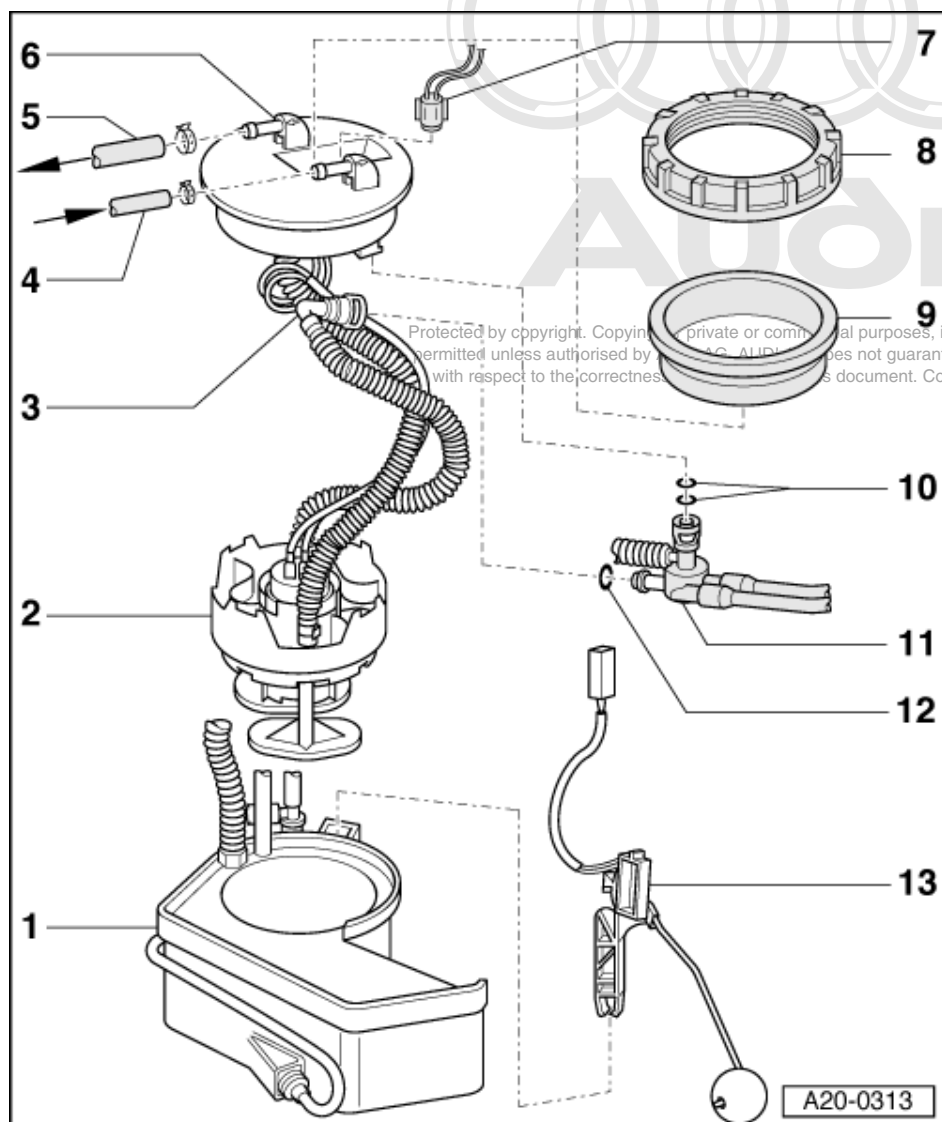


- ◆ Use uncoupling tool T40020 or press release tabs on connection to disconnect from suction jet pump

- ◆ Note direction of arrow on flange

- ◆ Note direction of arrow on flange

- ♦ Installation position: note position of arrow => Page 100



7 Connector

- ♦ For fuel pump and fuel gauge sender -G

8 Union nut, 60 Nm

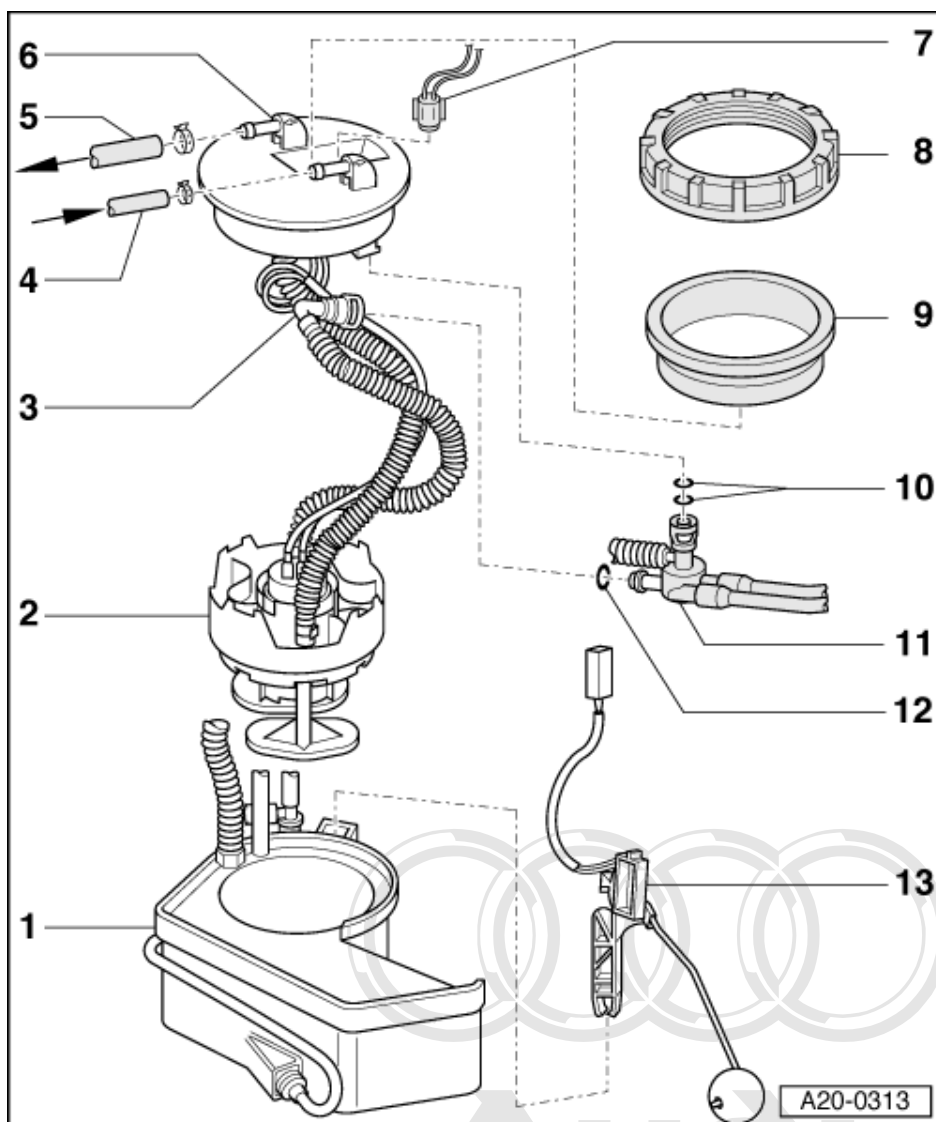
- ♦ Remove and install with spanner 3217

9 Seal

- ♦ Renew
- ♦ When installing, fit seal (dry) in opening in fuel tank

10 O rings

- ♦ Always renew
- ♦ Ensure correctly fitted



11 Suction jet pump

- ♦ With return pipe
- ♦ Connected to inside of flange
- ♦ Removing and installing
=> Page 152
- ♦ Use uncoupling tool T40020 or press release tabs on connection to disconnect

12 O ring

- ♦ Always renew

13 Fuel gauge sender -G

- ♦ Removing and installing
=> Page 102

Description of function

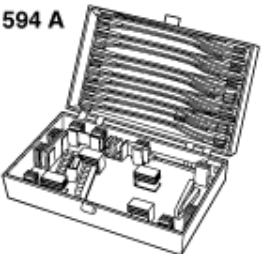
The electric fuel pump sends a pressurised stream of fuel into the suction jet pump (entrainment pump) in the rear chamber of the tank.

The suction jet pump then delivers the fuel from the rear chamber into the front part of the tank and the supply pipe going to the injection pump.



It is not possible to empty the rear fuel tank chamber completely if the fuel pump or the suction jet pump are defective.

3.6 - Testing fuel pump relay -J17 and activation - Vehicles with 4-cylinder engine

V.A.G 1526 A 	V.A.G 1527 B 
V.A.G 1594 A 	
	G24-0006

Special tools and workshop equipment required

- ♦ V.A.G 1526 A
- ♦ V.A.G 1527 B
- ♦ V.A.G 1594 A

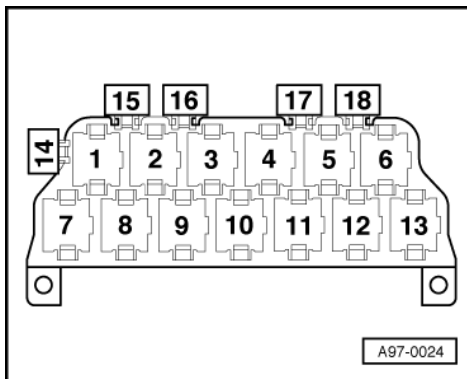
Test requirement:

- Battery voltage not less than 12.7 V

Test sequence

- Remove storage compartment on driver's side:

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment
 Storage compartments, covers Removing driver's storage compartment



- Start the engine.
 - -> The fuel pump relay located in 13-point relay carrier (no fixed position) should pick up; this can be felt by touching the relay. The fuel pump should run (audible in boot with cover removed from fuel delivery unit - 2nd mechanic required).

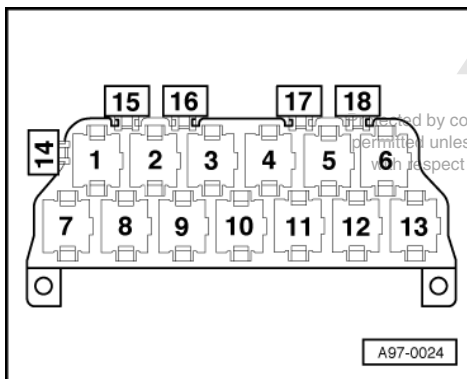
A - If the relay does not pick up:

- Test voltage supply to fuel pump relay.

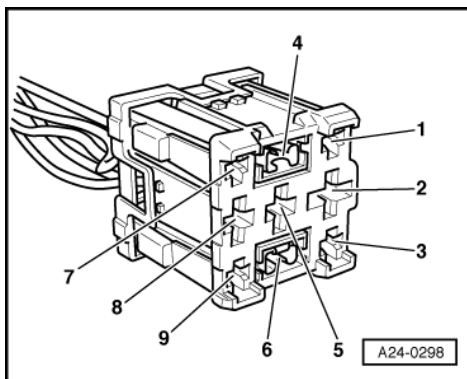
B - If the relay picks up but the fuel pump does not run:

- Test activation of fuel pump
=>Page 90 .
- Test fuel pump (electrical test) =>Page 91 .

Testing voltage supply of fuel pump relay



- -> Remove fuel pump relay from 13-point relay carrier (no fixed position).





- -> Connect voltage tester V.A.G 1527 B as follows:

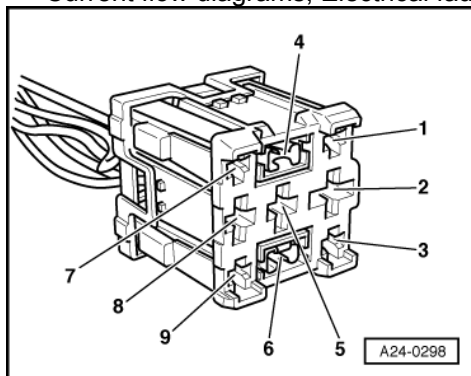
13-point relay carrier, (No fixed position) Contact	Measure against
2	Engine earth

- The LED should light up.

If the LED does not light up:

- Rectify any open/short circuit as necessary.

=> Current flow diagrams, Electrical fault finding and Fitting locations binder



- -> Connect voltage tester V.A.G 1527 B as follows:

13-point relay carrier, (No fixed position) Contact	Measure against
4	Engine earth
6	Battery positive

- Start the engine.
- The LED should light up.

If the LED does not light up:

- Rectify any open/short circuit as necessary.

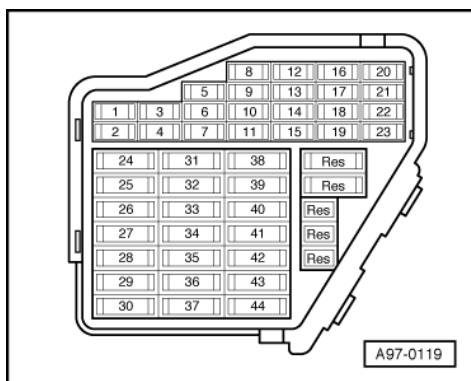
=> Current flow diagrams, Electrical fault finding and Fitting locations binder

Testing activation of fuel pump

Requirements for test:

- Fuel pump relay connected
- Engine control unit connected.

- Open fuse box cover on the left side of the dashboard panel.



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- -> Pull fuse S 228 off fuse carrier (left row, 5th large fuse from the top).
- Connect multimeter (voltage test range) between earth and left fuse contact.
- Operate starter.
 - Specification: approx. battery voltage

If the specification is not obtained:

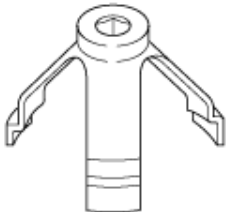
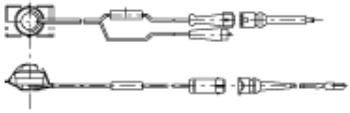
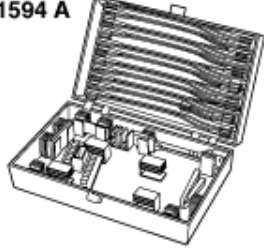
- Check wiring

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If the wiring is OK and no faults are found in the tests up to this point:

- Fit a new fuel pump relay -J17.

3.7 - Testing fuel pump (electrical test) - Vehicles with 4-cylinder engine

3217 	V.A.G 1275 
V.A.G 1348/3A 	V.A.G 1526 A 
V.A.G 1594 A 	Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG. G20-0016

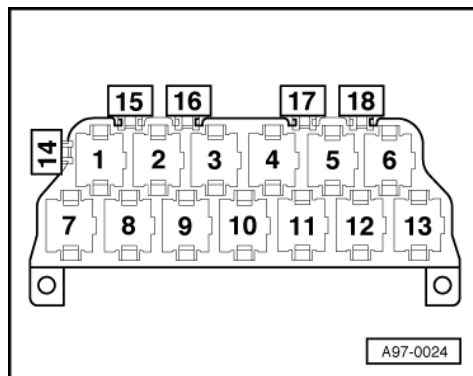
Special tools and workshop equipment required

- ◆ Ring nut spanner 3217
- ◆ V.A.G 1275
- ◆ V.A.G 1348/3A with V.A.G 1348/3-2
- ◆ V.A.G 1526 A



- ♦ V.A.G 1594 A

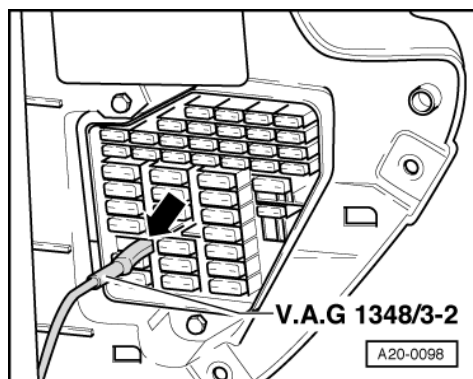
Requirements for test:



- Battery voltage not less than 12.7 V
- Fuse S228 OK
- -> Relay -J17 in 13-point relay carrier OK (no fixed position)
Testing =>Page 88
- Fuel filter OK
- Ignition switched off

Test sequence

- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse S228 off fuse carrier (left row, 5th large fuse from the top).

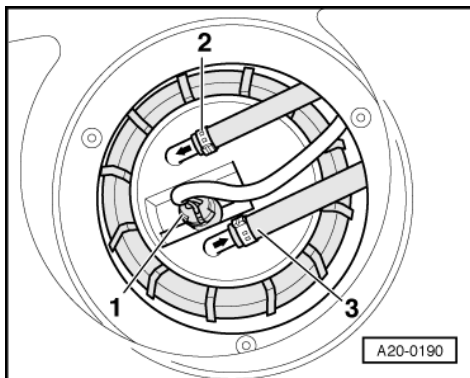


- -> Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right-hand terminal of fuse socket S228 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should run (audible in boot - 2nd mechanic required).

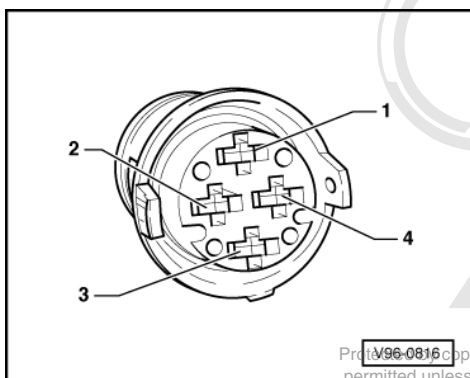
If pump does not start running:

- Detach floor trim in luggage compartment.

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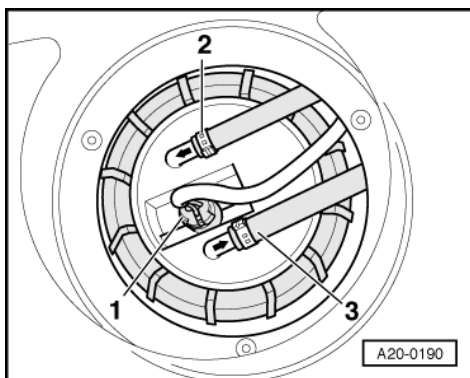


- Unbolt cover for flange.
- -> Release and unplug connector -1-.

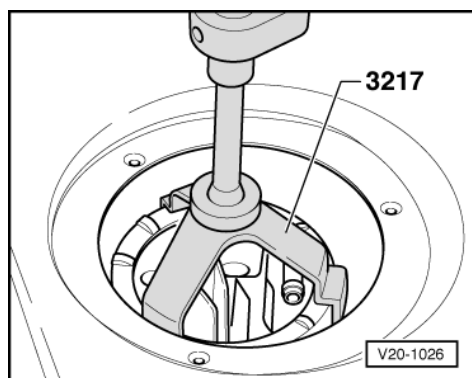


- -> Connect multimeter (voltage measurement range) between contact 1 (green/yellow) and contact 4 (brown).
- Press and hold remote control switch, and read off voltage.
 - Specification: approx. battery voltage

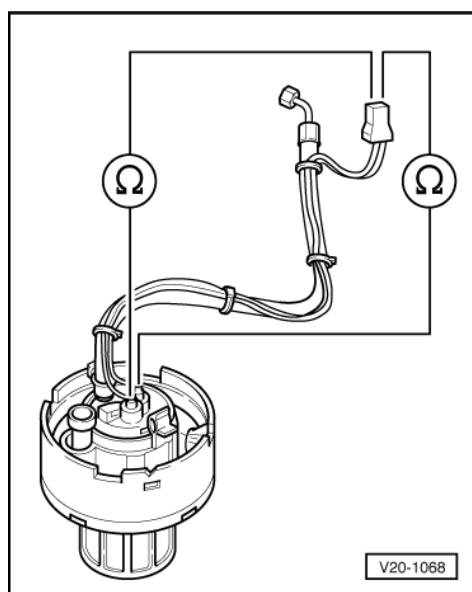
If the specification is obtained, even though the fuel pump did not run, remove flange as follows:



- -> Disconnect fuel return pipe -2- and fuel supply pipe -3- from flange.



- ➔ Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.



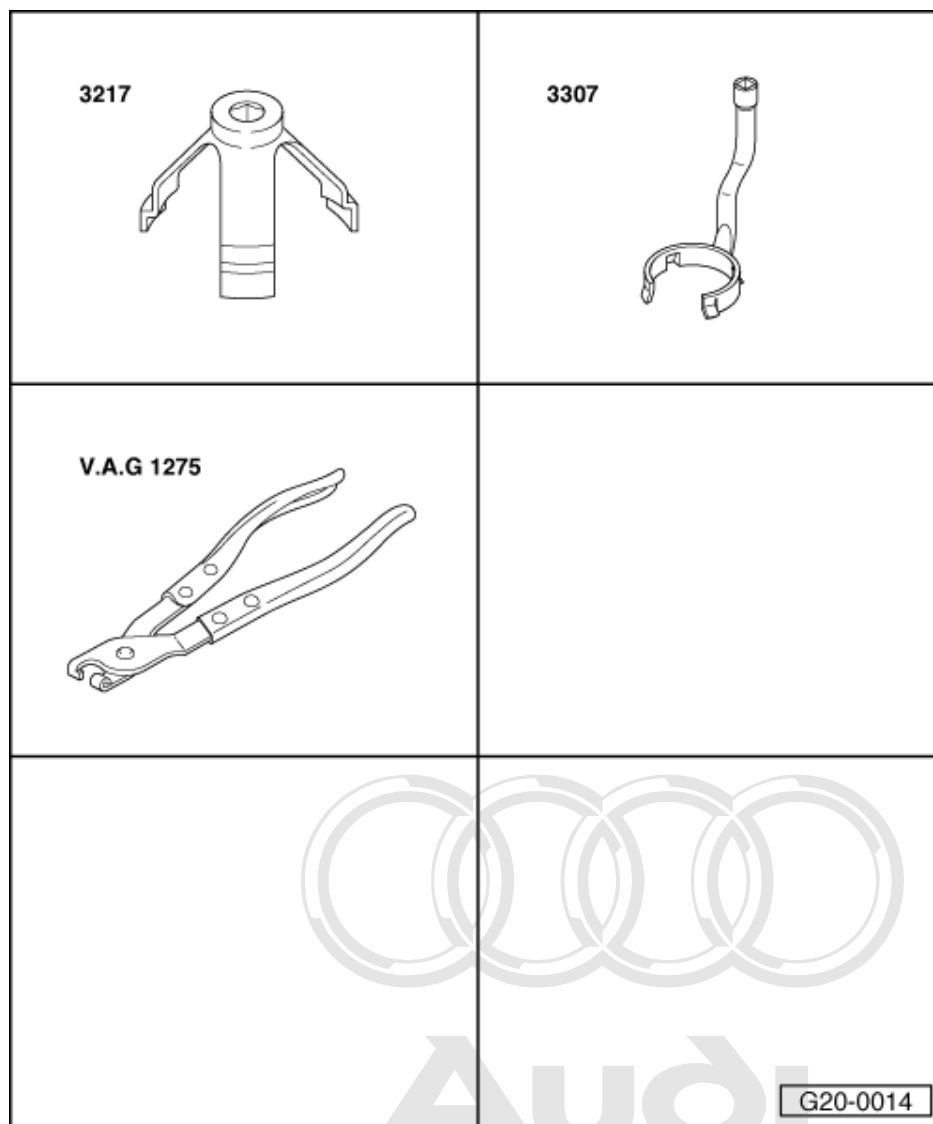
- ➔ Check that the electrical wires between flange and fuel pump are connected and test for continuity.

If no wiring fault is detected:

- Fuel pump is defective. Renew fuel delivery unit => Page 95 .
- Install fuel delivery unit => Page 99 .

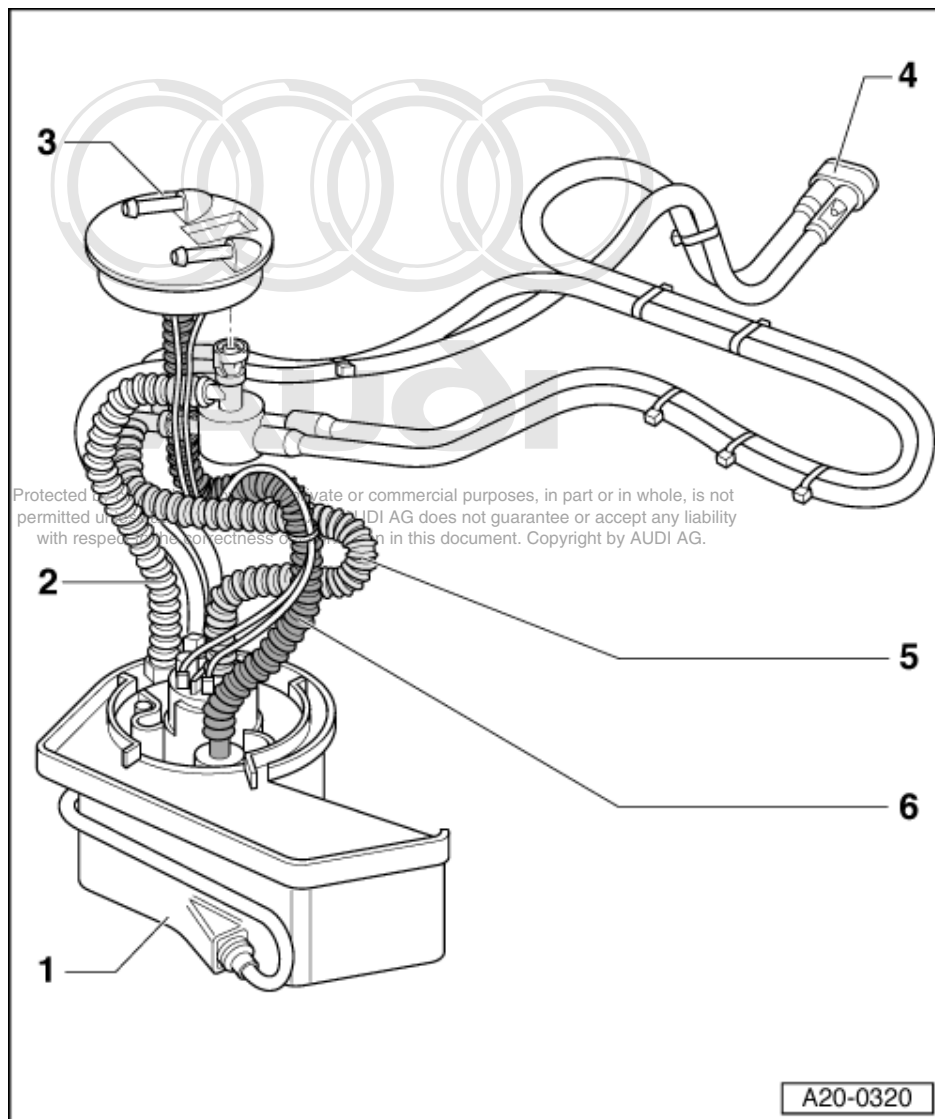
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3.8 - Removing and installing fuel delivery unit - vehicles with 4-cylinder engine



Special tools and workshop equipment required

- ◆ Ring nut spanner 3217
- ◆ Fuel pump spanner 3307
- ◆ Hose clamp pliers V.A.G 1275



Note:

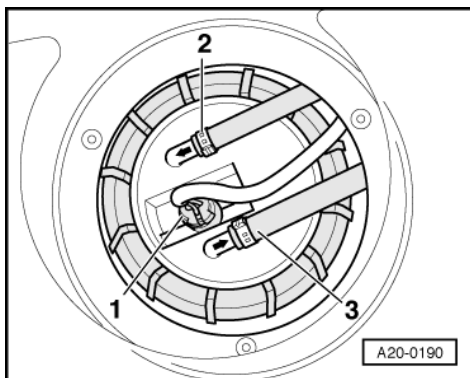
The illustration shows the correct routing of hoses inside the tank.

- 1 Baffle housing
- 2 Fuel return hose
 - ♦ From suction jet pump
- 3 Flange
- 4 Suction jet pump
- 5 Fuel hose
 - ♦ From fuel pump to suction jet pump
- 6 Fuel supply hose

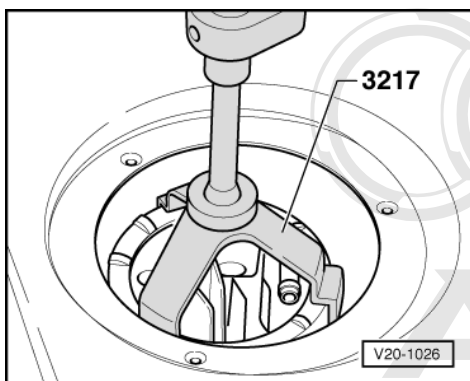
Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

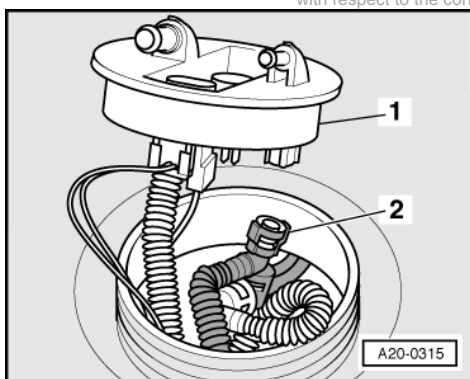
Removing



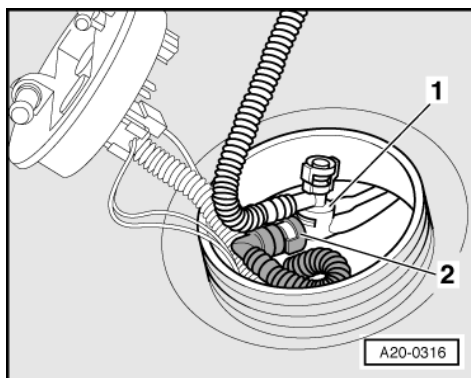
- The fuel tank must not be more than 3/4 full when removing the fuel delivery unit. Drain fuel tank if necessary. Procedure => Page 76 .
- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Disconnect fuel return pipe -2- and fuel supply pipe -3- from flange.
- Release and unplug connector -1-.



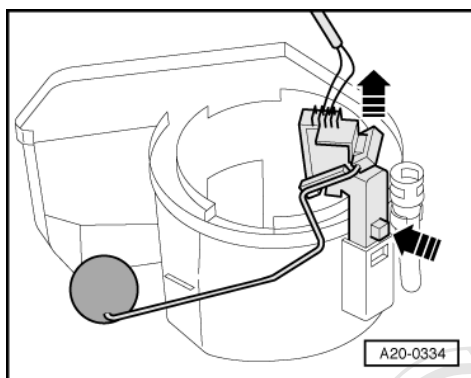
- -> Remove union nut with spanner 3217.
 - Remove flange and seal out of opening in fuel tank.
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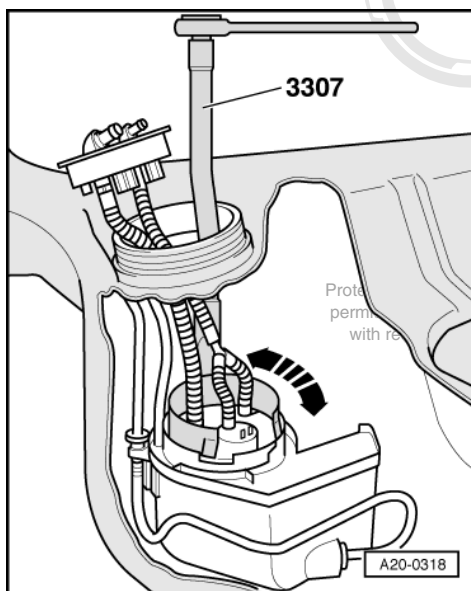
- -> Pull fuel return hose -2- off inside of flange -1- (use uncoupling tool T40020 or press release tabs).
- Unplug connector for fuel gauge sender on inside of flange.



- -> Disconnect fuel hose -2- from fuel pump at connection -1- for suction jet pump (use uncoupling tool T40020 or press release tabs).



- -> Press retaining tab, and at the same time pull the sender unit out of baffle housing in fuel tank -arrows-.



- -> Insert fuel pump spanner 3307 through opening in fuel tank and apply spanner to fuel delivery unit.
- Using spanner 3307, turn fuel delivery unit anti-clockwise as far as it will go (approx. 15°), and take out fuel delivery unit.

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Installing

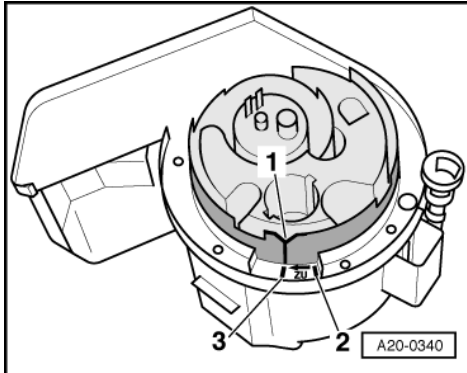
Install in reverse sequence; note the following points:

Note:

Secure all hose connections with the correct hose clips (same as original equipment)

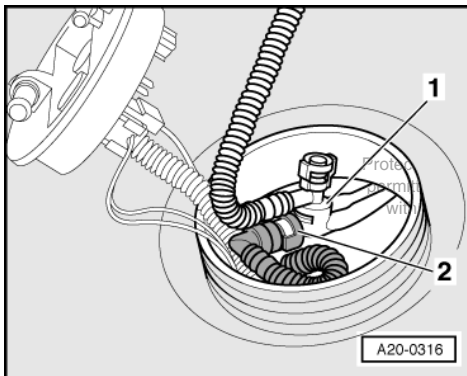
=> Parts catalogue

- Place fuel delivery unit in fuel tank.

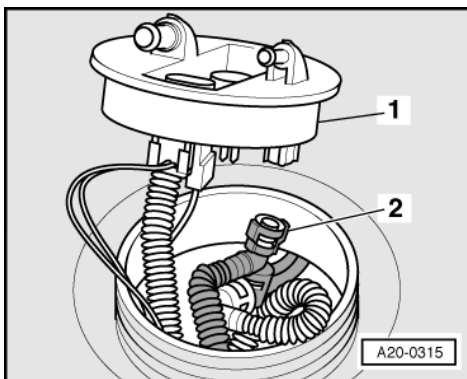


- -> Fit fuel delivery unit into outer section of baffle housing (in tank) so that notch -1- on fuel delivery unit is aligned with marking -2- on outer section of housing.
 - The fuel delivery unit should move down noticeably.
- Apply fuel pump spanner 3307 and turn fuel delivery unit clockwise as far as it will go (approx. 15°). Notch -1- will then be aligned with marking -3- (bayonet fitting).
- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.

Notes:

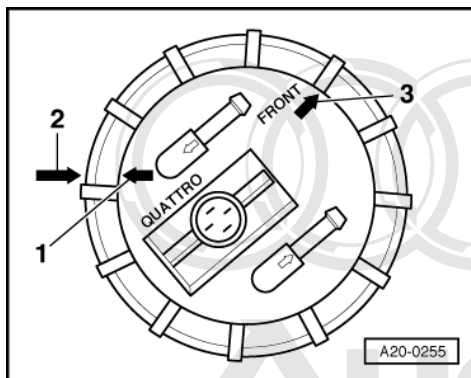


- ◆ Use new O-rings.
- ◆ Ensure that O-rings are not trapped - use lubricant if necessary.
- -> Connect fuel hose -2- (from fuel pump) to connection -1- for suction jet pump.
- Wrap fuel gauge sender wire once around the supply hose (in fuel tank) and connect at flange.





- -> Connect return hose -2- to inside of flange -1-.
- Fit new sealing ring for flange in fuel tank opening (sealing ring should be dry).



- -> Fit flange into fuel tank; note correct installation position:

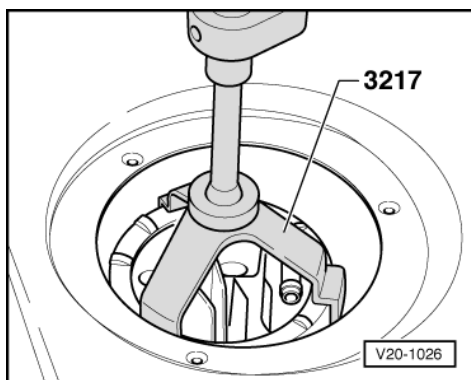
- Installation position for vehicles with four-wheel drive:

-arrow 1- must be aligned with -arrow 2-.

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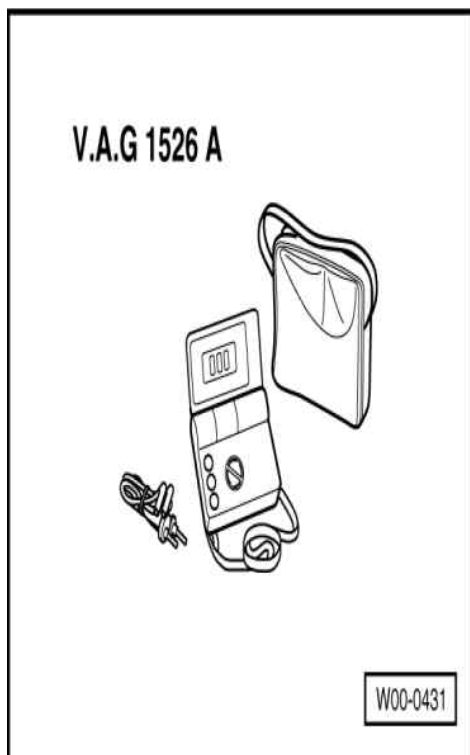
Note:

-Arrow 3- is for vehicles with front-wheel drive (can be disregarded).



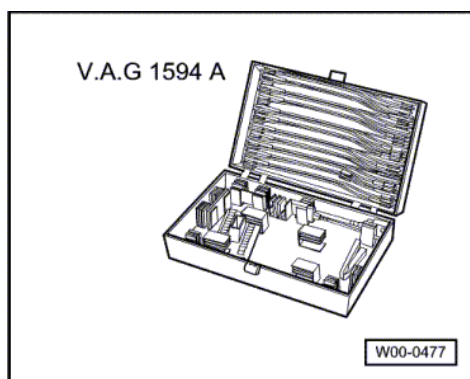
- -> Tighten union nut with spanner 3217 (60 Nm).
- Connect pipes and plug in the connector.

3.9 - Checking fuel gauge sender - vehicles with 4-cylinder engine



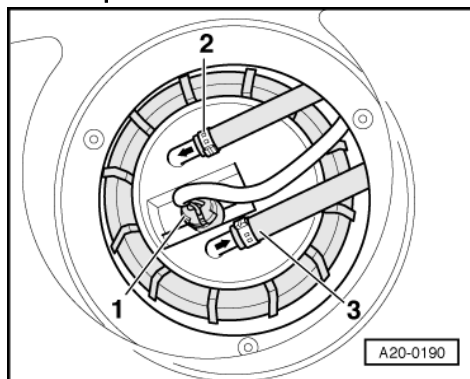
Special tools and workshop equipment required

- ♦ V.A.G 1526 A



- ♦ V.A.G 1594A

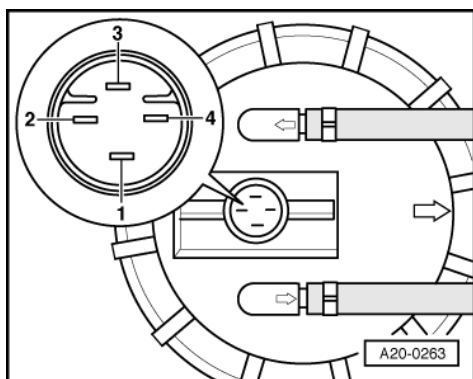
Test sequence



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- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connector -1-.



- -> Measure resistance at contacts -2- and -3- on flange:

Sender unit	Tank full	Tank empty
Fuel gauge sender -G	40 ω	280 ω

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According to the amount of fuel in the tank, the resistance should be somewhere between the specified values for "tank full" and "tank empty".

- If the resistance is 0 ω or $\infty \omega$, this means there is a short circuit or an open circuit in the wiring in the tank.

Note:

In order to test the resistance for "tank full" and "tank empty", remove fuel gauge sender -G => Page 102 and move the float all the way to its top or bottom position.

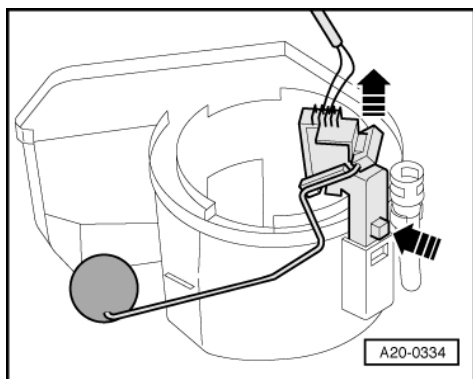
3.10 - Removing and installing fuel gauge sender -G - Vehicles with 4-cylinder engine

Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

Removing

- Detach flange and move clear to one side with pipes connected => Removing fuel delivery unit, Page 95 .
- Unplug connector for fuel gauge sender on inside of flange.



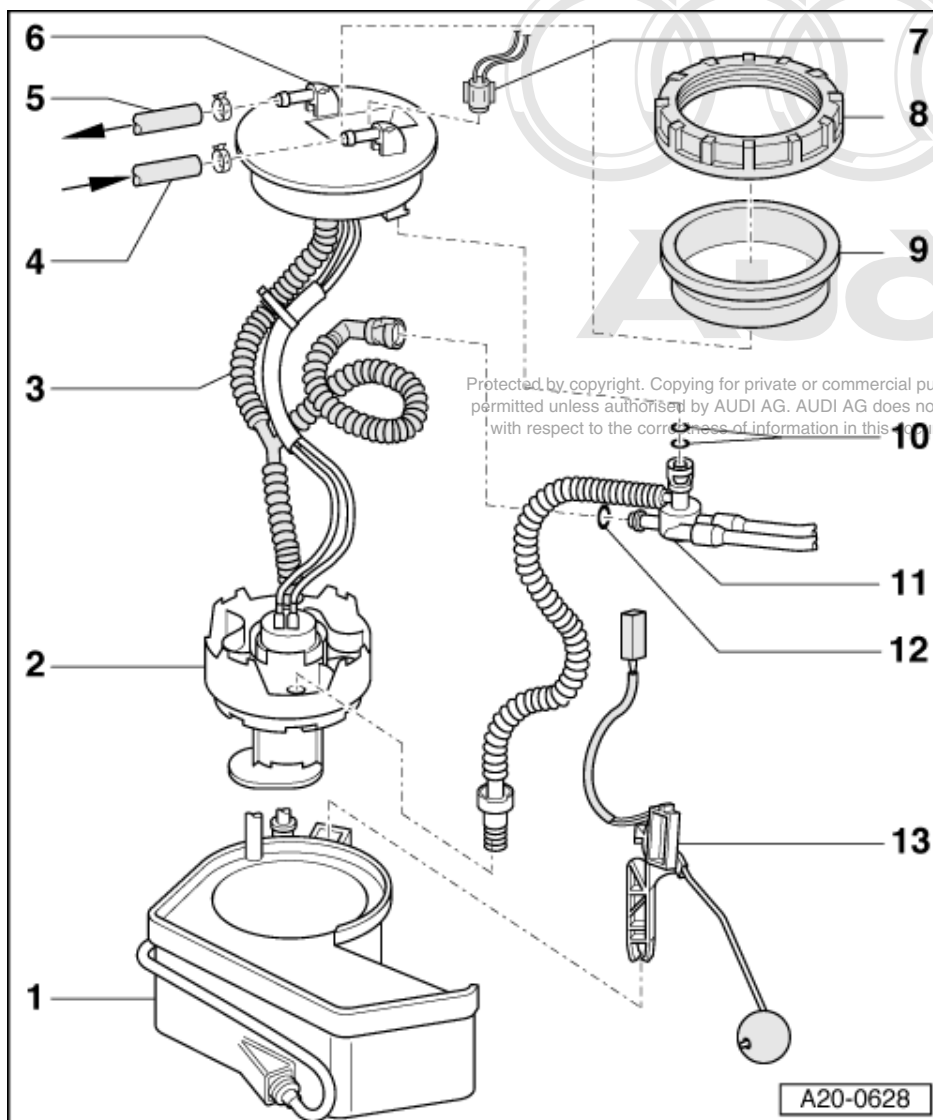
- -> Press retaining tab, and at the same time pull the sender unit out of baffle housing in fuel tank -arrows-.

Installing

Install in reverse sequence; note the following points:

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.
- Install flange => Page 99 .

3.11 - Overview of fuel delivery unit and fuel gauge sender - Vehicles with 4-cylinder engine (unit injector)



Note:

Description of function

=>Page 107 .

1 Baffle housing (outer section)

- ♦ Secured in place in fuel tank
- ♦ Cannot be dismantled
- ♦ Shown without fuel tank for clearer illustration.

2 Fuel delivery unit

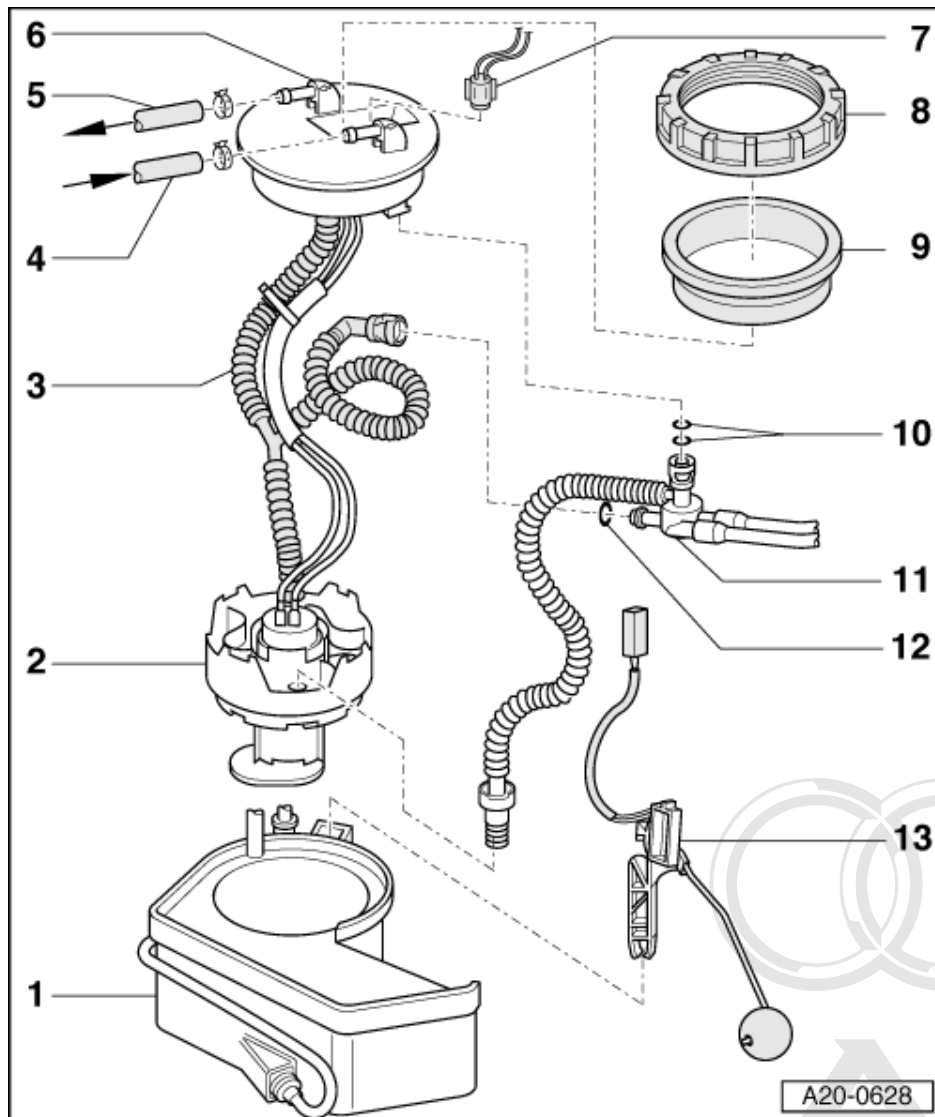
- ♦ Checking fuel pump (electrical test)



=> Page 113

- ♦ Removing and installing

=> Page 117



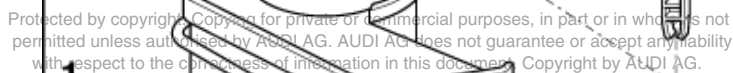
3 Fuel hose

- ♦ From fuel pump to baffle housing and fuel pump to suction jet pump
- ♦ Use uncoupling tool T40020 or press release tabs on connection to disconnect from suction jet pump.

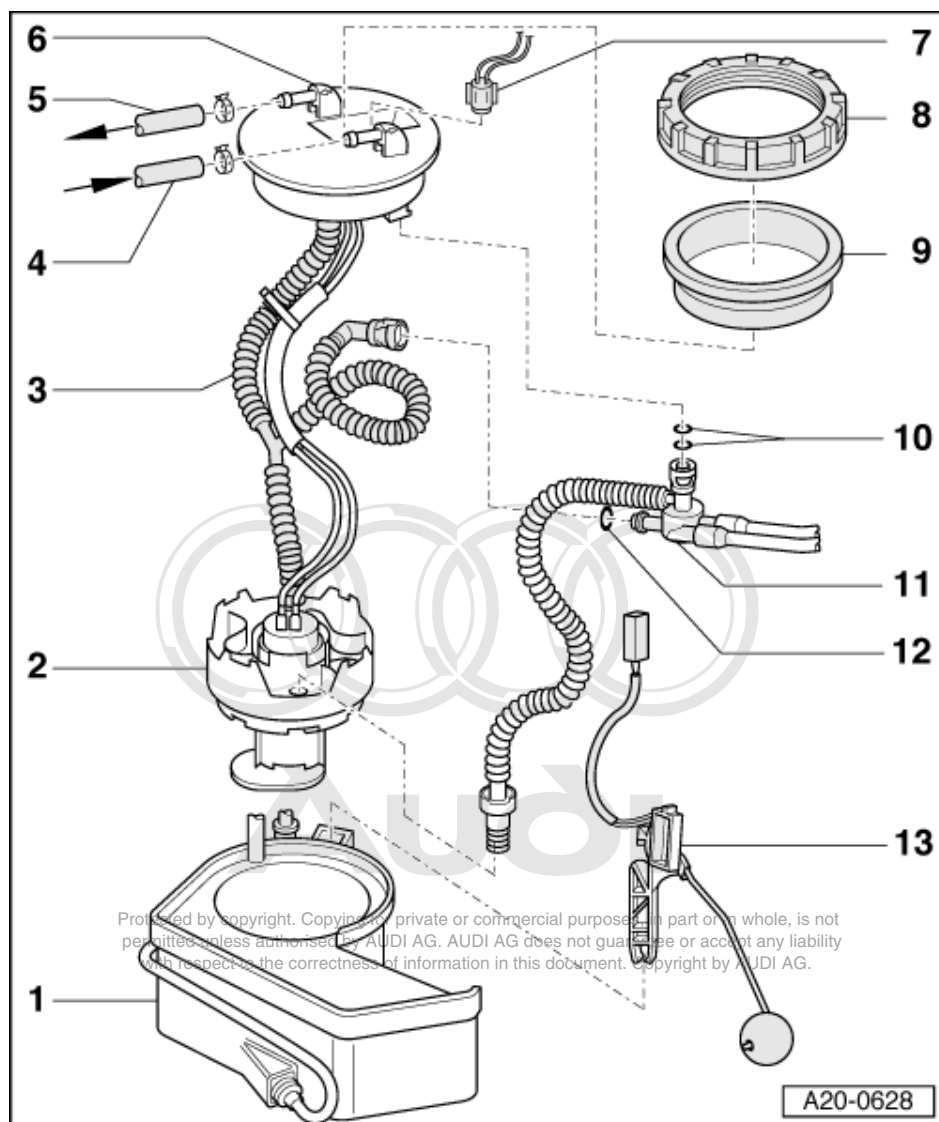
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Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100°C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.



- A20-0628



9 Seal

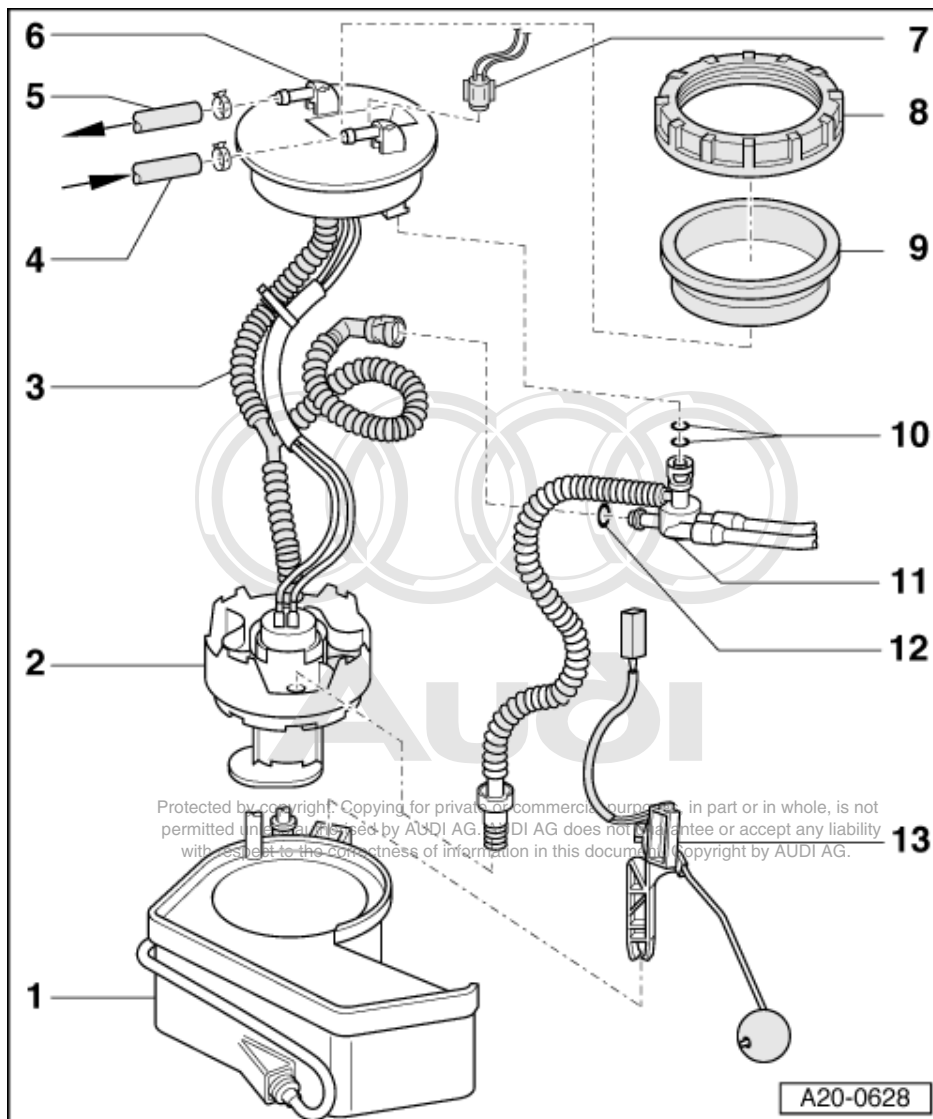
- ◆ Renew
- ◆ When installing, fit seal (dry) in opening in fuel tank

10 O rings

- ◆ Always renew
- ◆ Ensure correctly fitted

11 Suction jet pump

- ◆ With return pipe
- ◆ Connected to inside of flange
- ◆ Removing and installing
=> Page 152
- ◆ Use uncoupling tool T40020 or press release tabs on connection to disconnect



12 O ring

- ♦ Always renew

13 Fuel gauge sender -G

- ♦ Checking resistance
=> Page 124
- ♦ Removing and installing
=> Page 125

Description of function

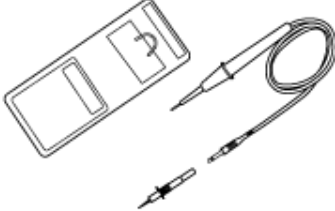
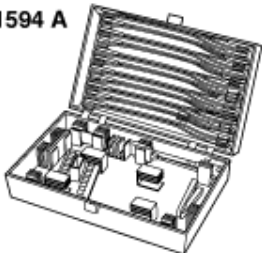
The electric fuel pump delivers fuel from the fuel tank baffle housing to the tandem pump located on the engine.

Therefore it is no longer necessary to bleed the fuel system after running the fuel tank empty or after performing repairs on components of the fuel system.

The electric fuel pump also sends a pressurised stream of fuel into two suction jet pumps (entrainment pumps), one at the bottom of the baffle housing and the other in the rear chamber of the tank. The suction jet pumps ensure that the baffle housing is always kept filled with fuel and the rear chamber of the tank is properly drained.



3.12 - Testing fuel pump relay -J17 and activation - Vehicles with 4-cylinder engine (unit injector)

V.A.G 1526 A 	V.A.G 1527 B 
V.A.G 1594 A 	V.A.G 1598/31 
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Special tools and workshop equipment required

- ♦ V.A.G 1526 A
- ♦ V.A.G 1527 B
- ♦ V.A.G 1594 A
- ♦ V.A.G 1598/31

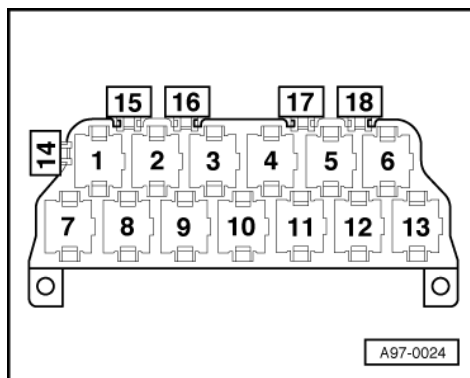
Test requirement:

- Battery voltage not less than 12.7 V

Test sequence

- Remove storage compartment on driver's side:

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment
Storage compartments, covers
Removing driver's storage compartment



- Operate starter.
 - -> The fuel pump relay in 13-point relay carrier should pick up (no fixed position); this can be felt by touching the relay. The fuel pump should run (audible in boot - 2nd mechanic required).

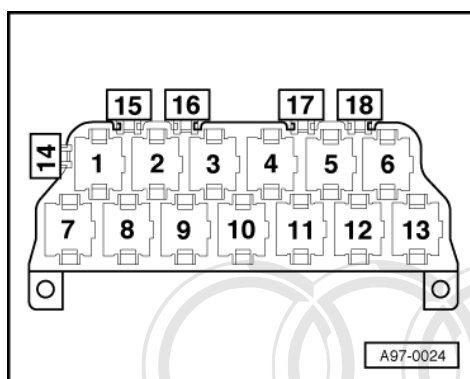
A - If the relay does not pick up:

- Test voltage supply to fuel pump relay.
- Test activation of fuel pump relay
=>Page 111 .

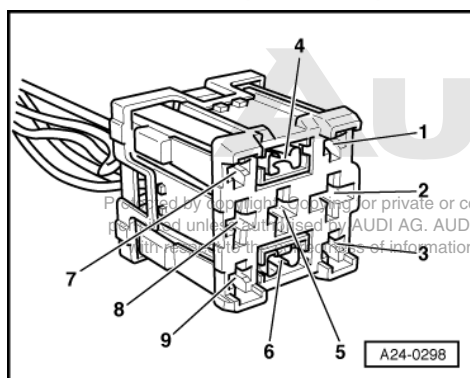
B - If the relay picks up but the fuel pump does not run:

- Test activation of fuel pump
=>Page 112 .
- Test fuel pump (electrical test) =>Page 113 .

Testing voltage supply of fuel pump relay



- -> Remove fuel pump relay from 13-point relay carrier (no fixed position).

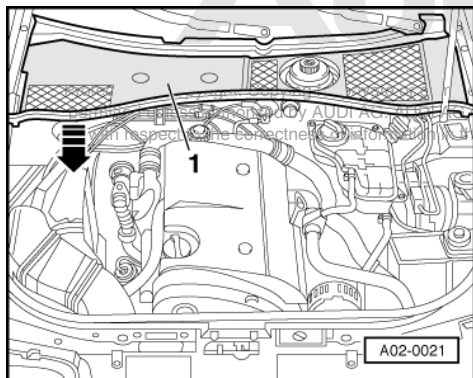


- -> Connect voltage tester V.A.G 1527 B as follows:



13-point relay carrier, (No fixed position) Contact	Measure against
1	Engine earth
5	Engine earth

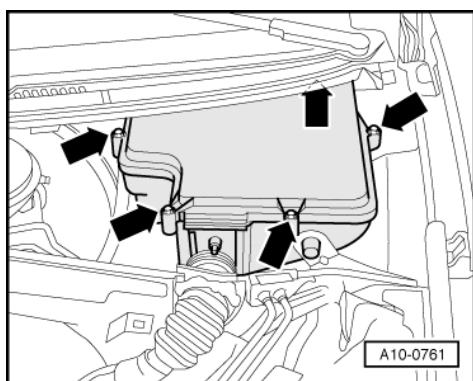
- Switch on ignition.
- The LED should light up.



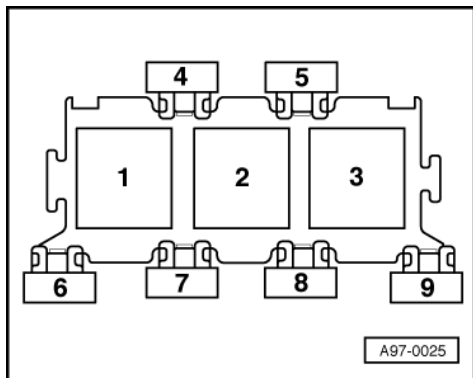
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If the LED does not light up:

- Switch off ignition.
- -> Remove rubber seal from plenum chamber in direction of arrow-.
- Remove plenum chamber cover -1- from the front.



- -> Remove cover for electronics box in plenum chamber -arrows-.



- -> Unplug terminal 30 voltage supply relay -J317 (located in 3-point relay carrier in electronics box, plug-in position 3).

- Test for open circuit and short to positive or earth in the following wiring connection:

13-point relay carrier (no fixed position) Contact	3-point relay carrier (electronics box) plug-in position 3 Contact
1	5
5	5

- Rectify any open/short circuit as necessary.

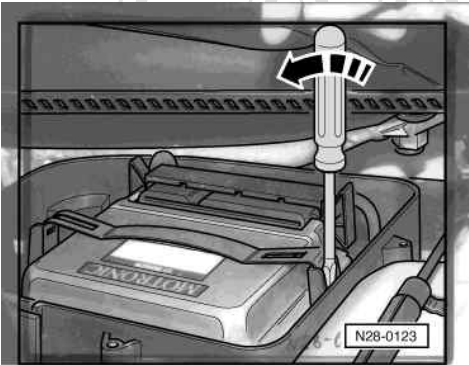
=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If no wiring fault is detected:

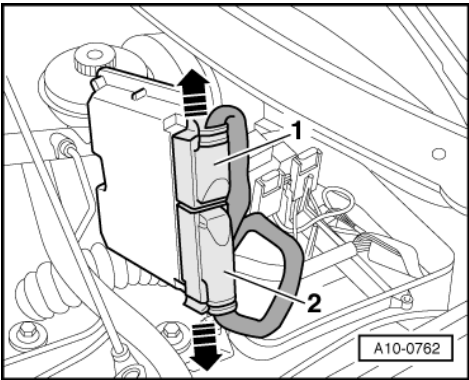
- Test voltage supply of diesel direct-injection system:

=> TDI diesel direct injection and glow plug system (4-cylinder unit injector); Repair group 23; Servicing diesel direct injection system; Testing voltage supply of diesel direct injection system Servicing diesel direct injection system Testing voltage supply of diesel direct injection system

Testing activation of fuel pump relay



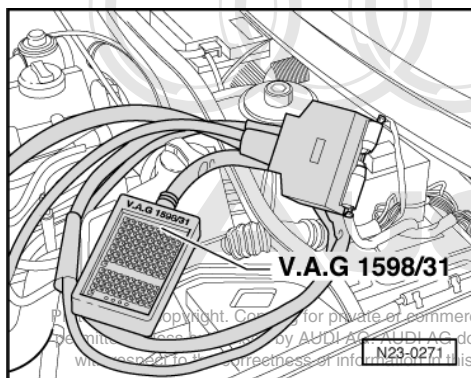
- -> Carefully lever off the retainer bar with a screwdriver -arrow-.



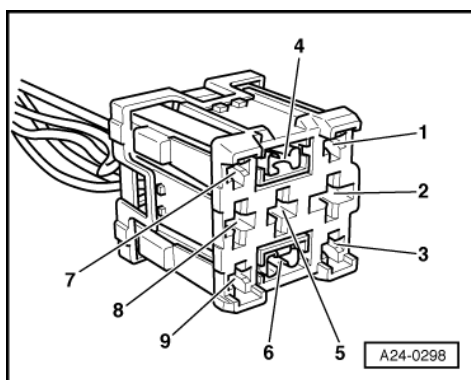
- -> Release retainer catch -arrows- and unplug connectors -1- and -2- from control unit.
- Take out engine control unit.

Warning!

To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.



- -> Connect test box V.A.G 1598/31 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected). Also connect earth clamp on test box to earth.



- -> Test for open circuit and short to positive or earth in the following wiring connections:

13-point relay carrier (no fixed position) Contact	Test box V.A.G 1598/31 Socket
6	80

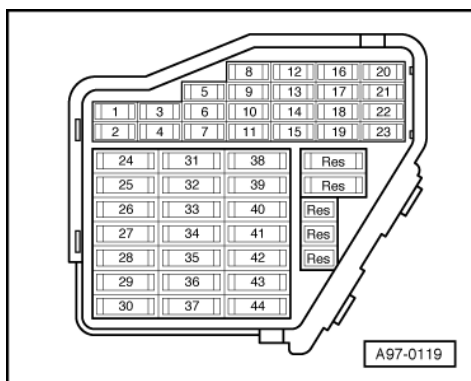
- Rectify any open/short circuit as necessary.

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

Testing activation of fuel pump

Requirements for test:

- Fuel pump relay connected
 - Engine control unit connected.
- Open fuse box cover on the left side of the dashboard panel.



- -> Pull fuse S 228 off fuse carrier (left row, 5th large fuse from the top).
- Connect multimeter (voltage test range) between earth and left fuse contact.
- Operate starter.
 - Specification: approx. battery voltage

If the specification is not obtained:

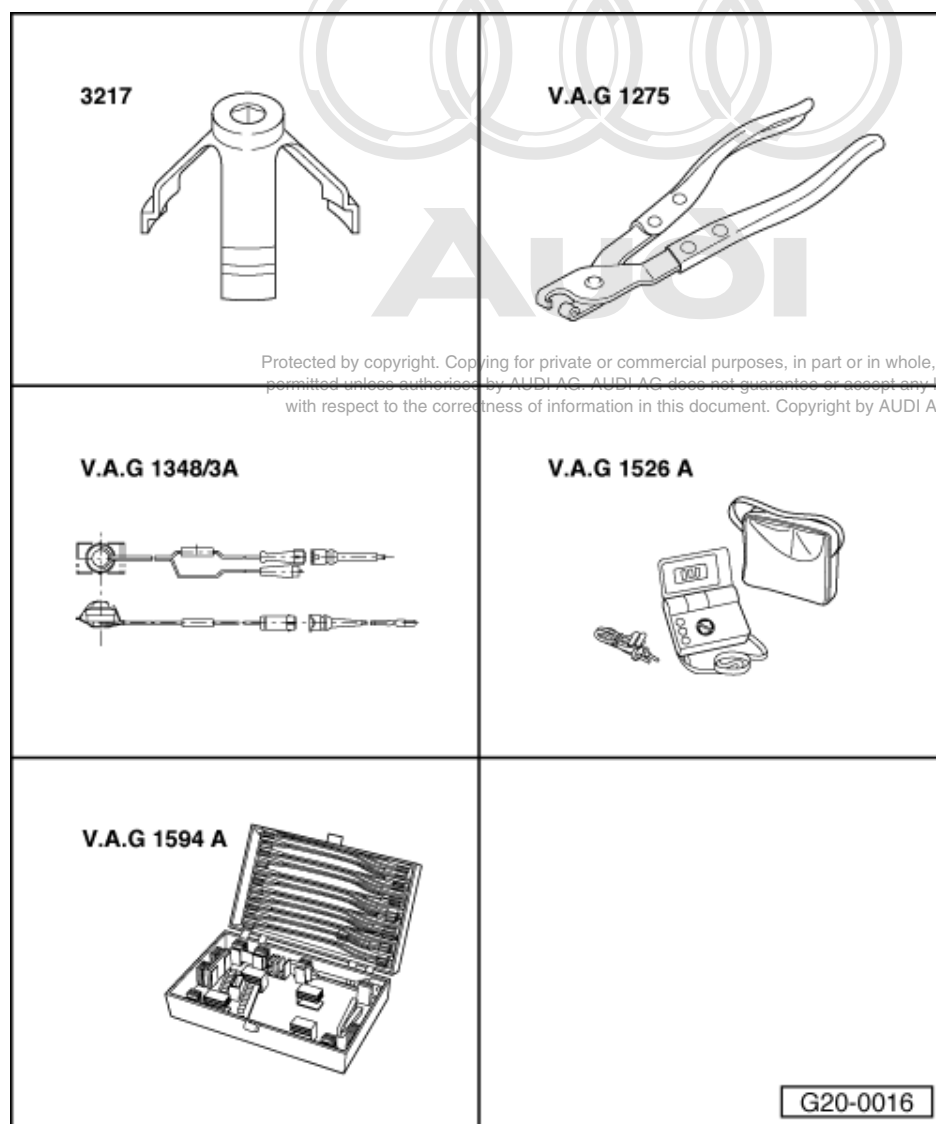
- Check wiring

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If the wiring is OK and no faults are found in the tests up to this point:

- Fit a new fuel pump relay -J17.

3.13 - Testing fuel pump (electrical test) - Vehicles with 4-cylinder engine (unit injector)



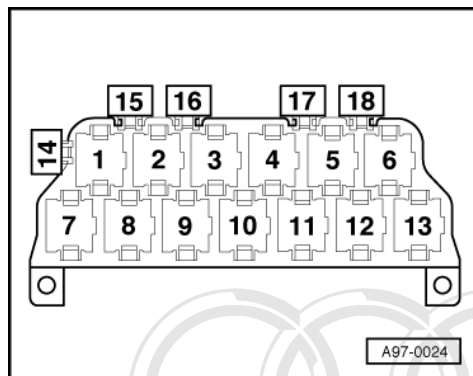
Special tools and workshop equipment required

- ◆ Ring nut spanner 3217
- ◆ V.A.G 1275
- ◆ V.A.G 1348/3A with V.A.G 1348/3-2
- ◆ V.A.G 1526 A



- ♦ V.A.G 1594 A

Requirements for test:

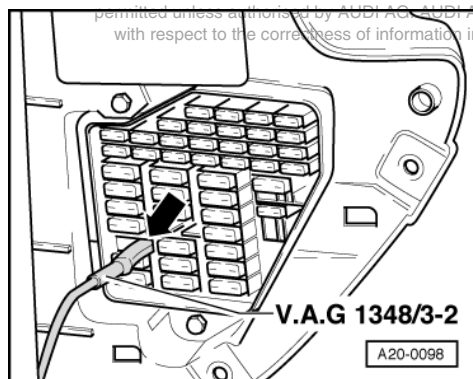


- Battery voltage not less than 12.7 V
- Fuse S228 OK
- -> Relay -J17 in 13-point relay carrier OK (no fixed position)
Testing =>Page 108
- Fuel filter OK
- Ignition switched off

Test sequence

- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse S228 off fuse carrier (left row, 5th large fuse from the top).

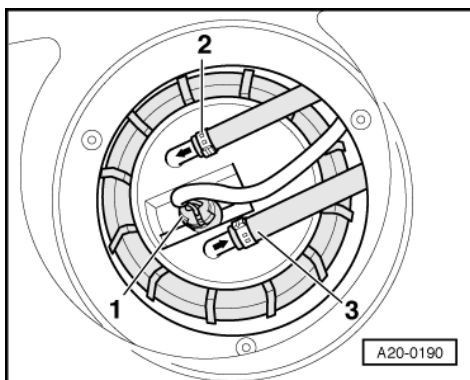
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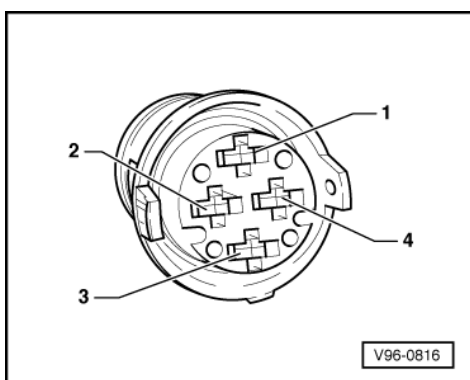
- -> Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right-hand terminal of fuse socket S228 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should run (audible in boot - 2nd mechanic required).

If pump does not start running:

- Detach floor trim in luggage compartment.



- Unbolt cover for flange.
- -> Release and unplug connector -1-.

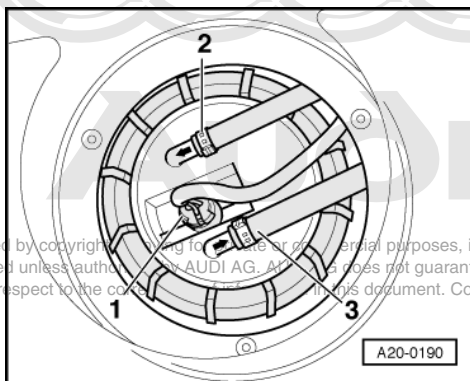


- -> Connect multimeter (voltage measurement range) between contact 1 (green/yellow) and contact 4 (brown).
- Press and hold remote control switch, and read off voltage.
 - Specification: approx. battery voltage

If the specification is obtained, even though the fuel pump did not run, remove flange as follows:

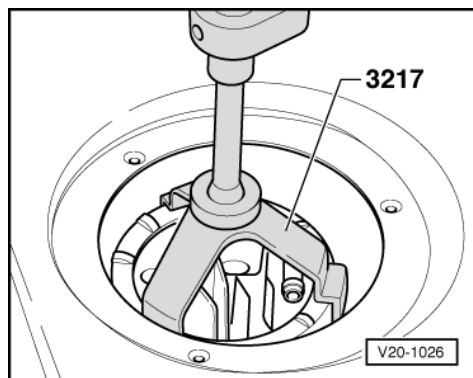
Warning

- ◆ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ◆ Wear protective gloves.
- ◆ Wear protective goggles.

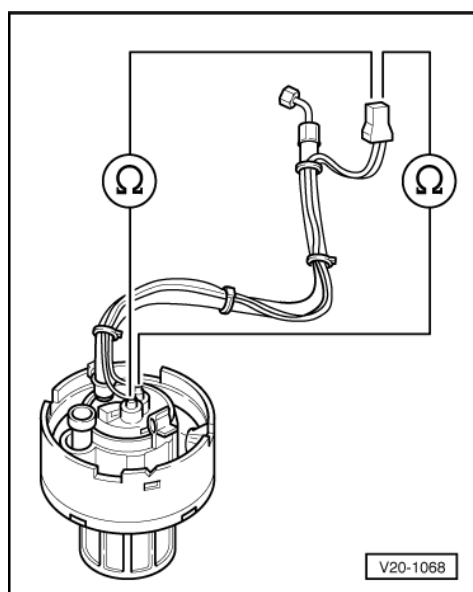


- -> Disconnect fuel return pipe -2- and fuel supply pipe -3- from flange.

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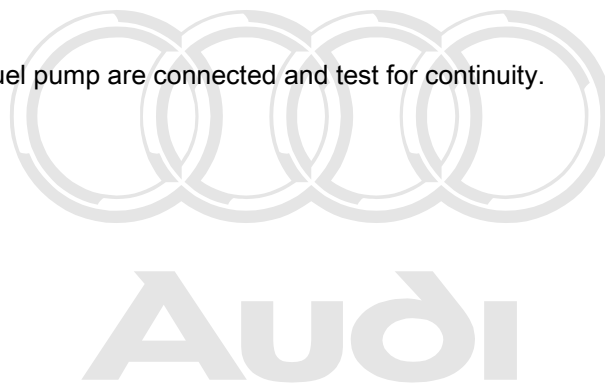
- -> Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.



- -> Check that the electrical wires between flange and fuel pump are connected and test for continuity.

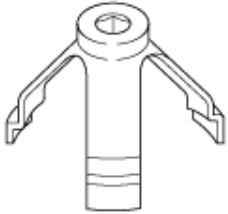
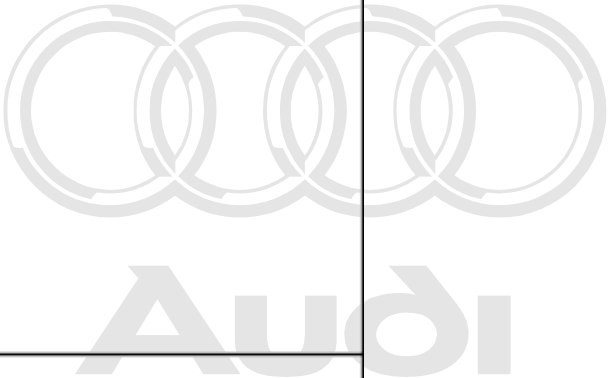
If no wiring fault is detected:

- Fuel pump is defective.
Renew fuel delivery unit =>Page 117 .



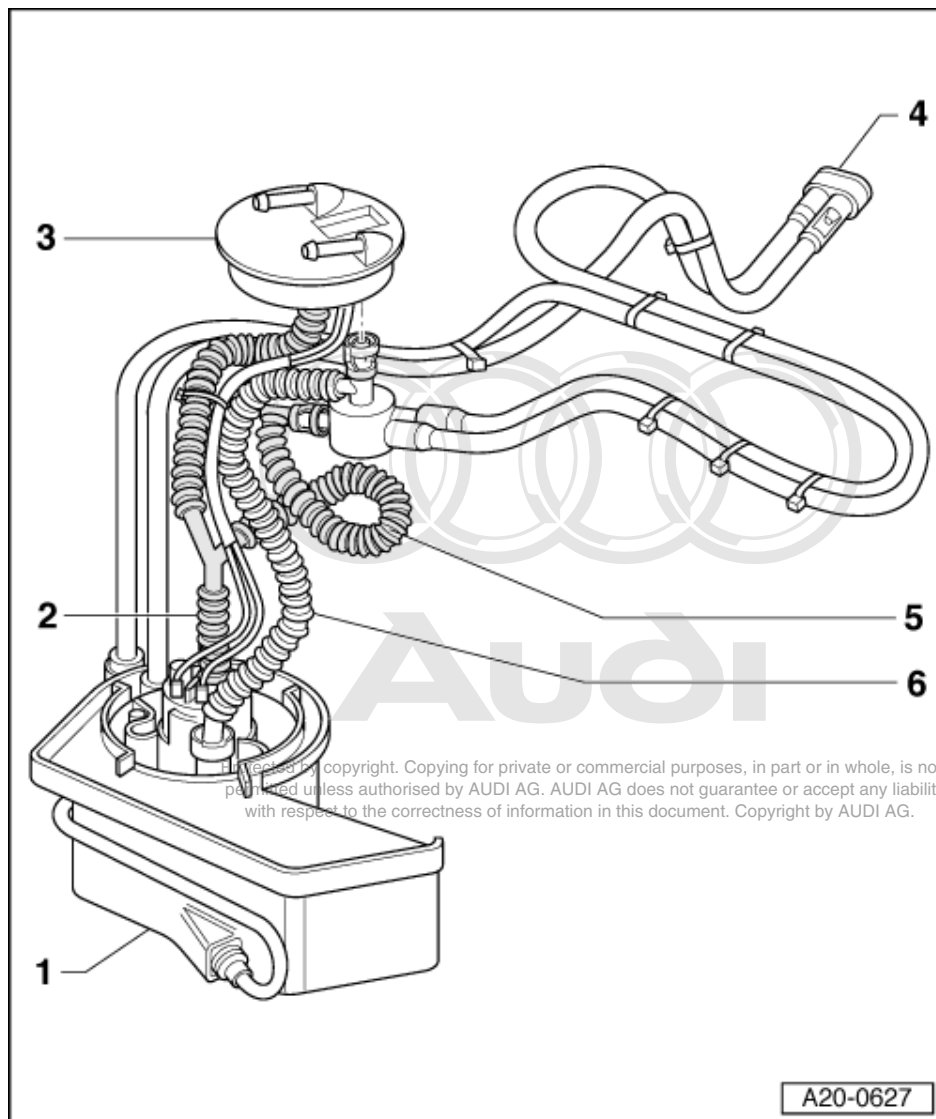
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3.14 - Removing and installing fuel delivery unit - Vehicles with 4-cylinder engine (unit injector)

3217 	3307 
V.A.G 1275 	
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Special tools and workshop equipment required

- ◆ Ring nut spanner 3217
- ◆ Fuel pump spanner 3307
- ◆ V.A.G 1275



Note:

The illustration shows the correct routing of pipes inside the tank.

- 1 Baffle housing
- 2 Fuel supply hose
- 3 Flange
- 4 Suction jet pump
- 5 Fuel supply hose
 - ♦ From fuel pump to suction jet pump
- 6 Fuel return hose
 - ♦ From suction jet pump to inner section of baffle housing

Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

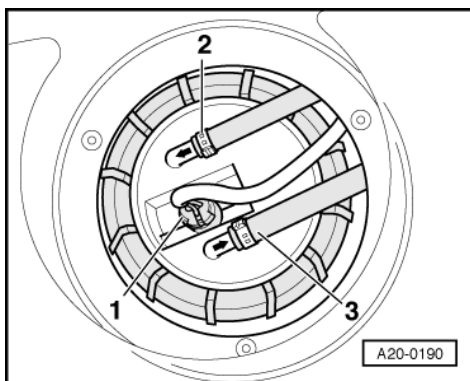
Removing

- The fuel tank must not be more than 3/4 full when removing the fuel delivery unit. Drain fuel tank if necessary. Procedure => Page 76 .
- Detach floor trim in luggage compartment.

- Unbolt cover for flange.

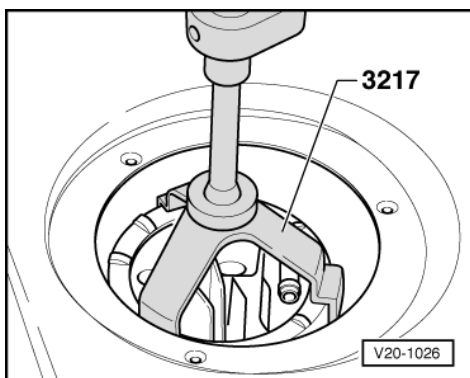
Warning

- ◆ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ◆ Wear protective gloves.
- ◆ Wear protective goggles.

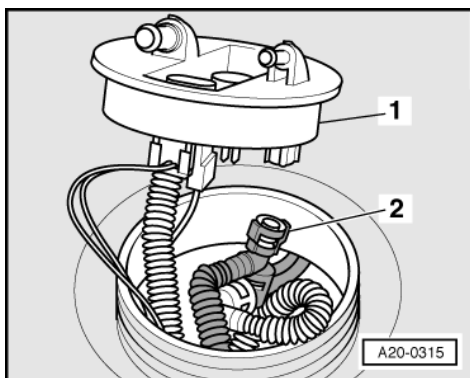


- -> Mark fuel return pipe -2- and fuel supply pipe -3- and disconnect from flange.
- Release and unplug connector -1-.

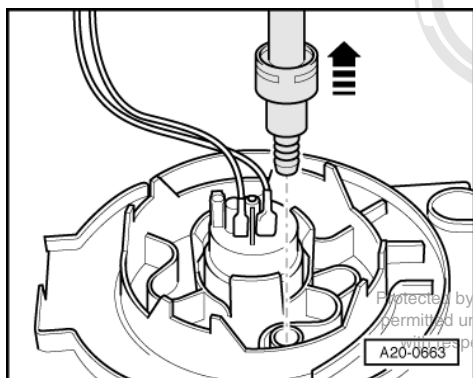
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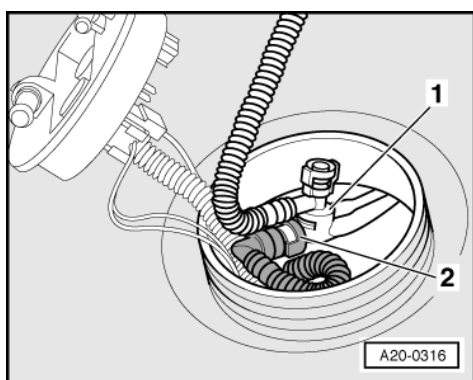
- -> Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.



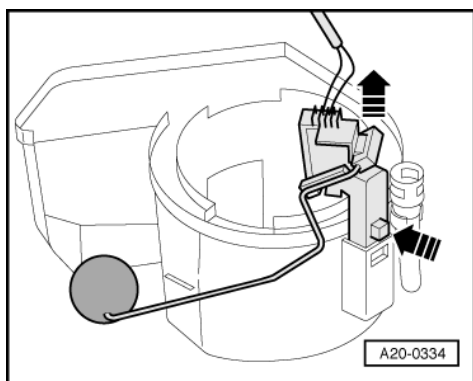
- -> Pull fuel return hose -2- off inside of flange -1- (use uncoupling tool T40020 or press release tabs).
- Unplug connector for fuel gauge sender on inside of flange.



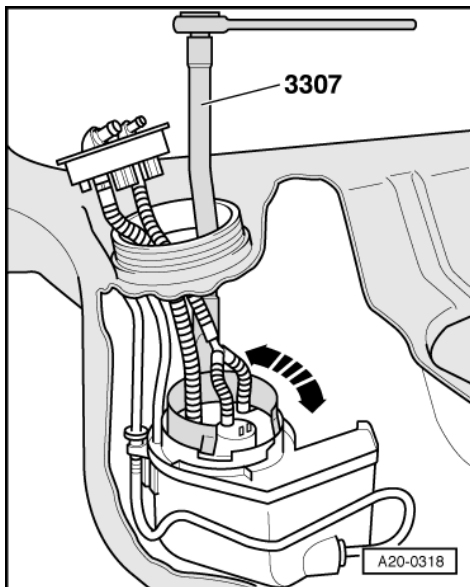
- -> Disconnect connecting piece on return hose from inner section of baffle housing by pulling upwards - arrow-.



- -> Disconnect fuel hose -2- from fuel pump at connection -1- for suction jet pump (use uncoupling tool T40020 or press release tabs).



- -> Press retaining tab, and at the same time pull the sender unit out of baffle housing in fuel tank -arrows-.
- Place pipe going to suction jet pump in fuel tank.



- -> Insert fuel pump spanner 3307 through opening in fuel tank and apply spanner to fuel delivery unit.
- Using spanner 3307, turn fuel delivery unit anti-clockwise as far as it will go (approx. 15°), and take out.

Installing

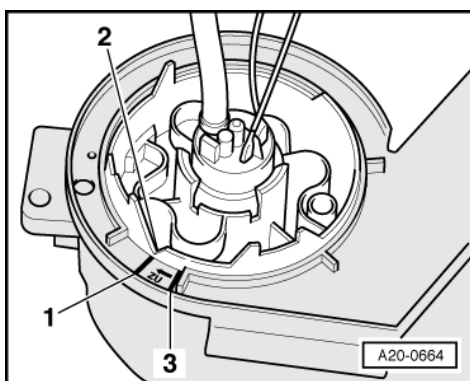
Install in reverse sequence; note the following points:

Note:

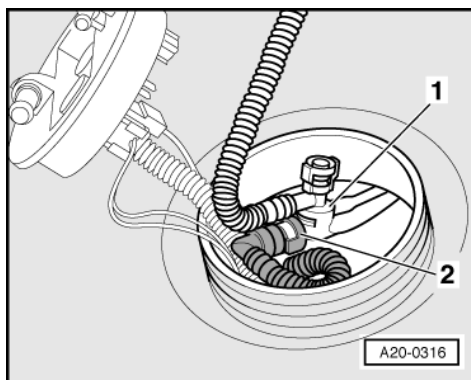
Secure all hose connections with the correct hose clips (same as original equipment)

=> Parts catalogue

- Insert fuel delivery unit in fuel tank.

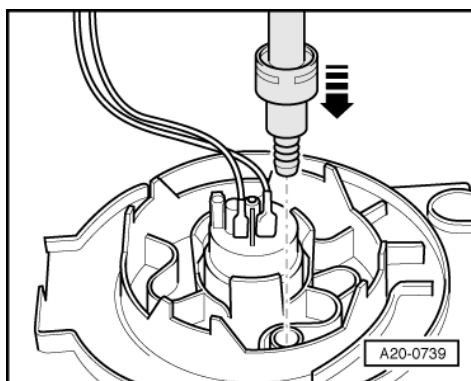


- -> Fit fuel delivery unit into outer section of baffle housing (in tank) so that notch -2- on fuel delivery unit is aligned with marking -3- on outer section of housing.
 - The fuel delivery unit should move down noticeably.
- Apply fuel pump spanner 3307 and turn fuel delivery unit clockwise as far as it will go (approx. 15°). Notch -2- will then be aligned with marking -1- (bayonet fitting).
- Insert inner section of baffle housing together with flange in fuel tank.
- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.

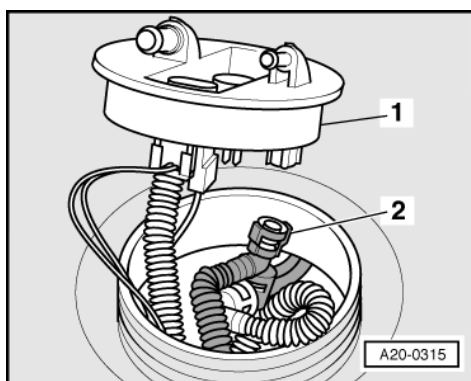


Notes:

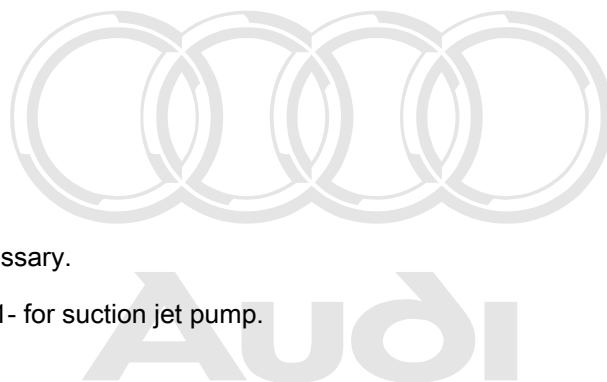
- ♦ Use new O-rings.
- ♦ Ensure that O-rings are not trapped - use lubricant if necessary.
- -> Connect fuel hose -2- (from fuel pump) to connection -1- for suction jet pump.



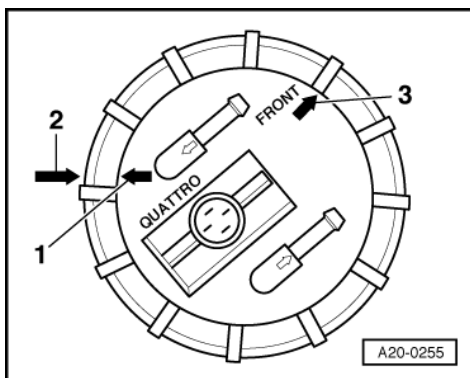
- -> Insert connection piece -3- into opening of inner section of baffle housing -arrow-.
- Route fuel gauge sender wire over fuel supply hose (in fuel tank) and connect at flange.



- -> Connect fuel return hose -2- to inside of flange -1-.
- Fit new sealing ring for flange in fuel tank opening (sealing ring should be dry).



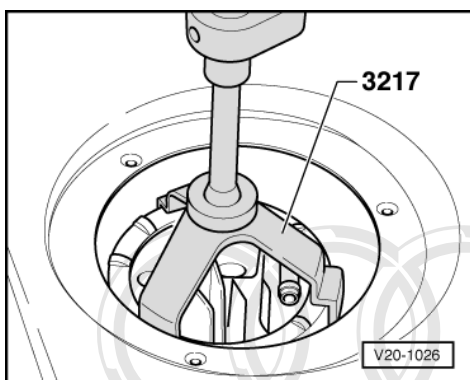
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- -> Fit flange into fuel tank; note correct installation position:
- Installation position for vehicles with four-wheel drive:
 -arrow 1- must be aligned with -arrow 2-.

Note:

-Arrow 3- is for vehicles with front-wheel drive (can be disregarded).



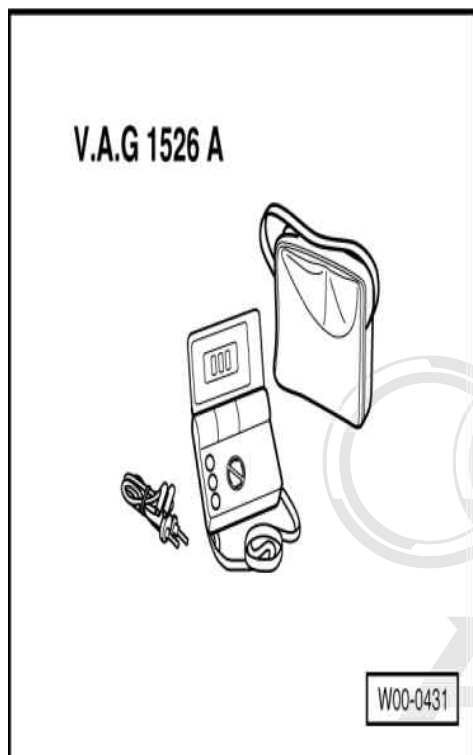
- -> Tighten union nut with spanner 3217 (60 Nm).
- Connect pipes and plug in the connector.



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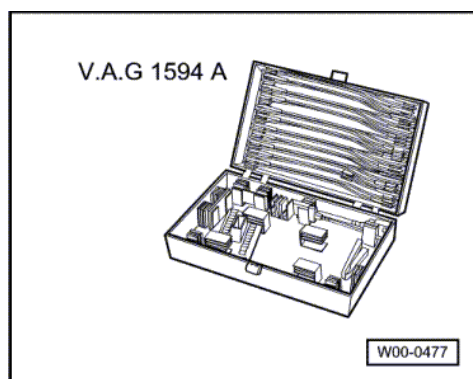
3.15 - Checking fuel gauge sender - Vehicles with 4-cylinder engine (unit injector)



Special tools and workshop equipment required

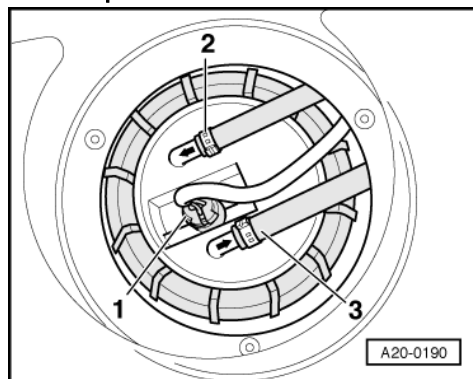
- ♦ V.A.G 1526 A

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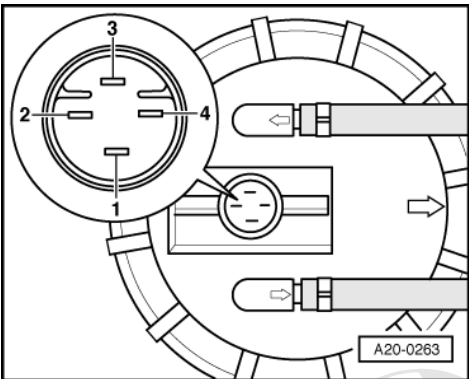


- ♦ V.A.G 1594 A

Test sequence



- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connector -1-.



- -> Measure resistance at contacts -2- and -3- on flange:

Sender unit	Tank full	Tank empty
Fuel gauge sender -G	40 ω	280 ω

According to the amount of fuel in the tank, the resistance should be somewhere between the specified values for "tank full" and "tank empty".

- If the resistance is 0 ω or ∞ ω , this means there is a short circuit or an open circuit in the wiring in the tank.

Note:

In order to test the resistance for "tank full" and "tank empty", remove the fuel gauge sender -G => Page 125 and move the float all the way to its top or bottom position.

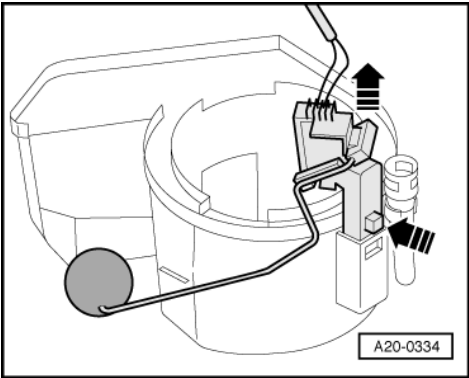
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3.16 - Removing and installing fuel gauge sender -G - Vehicles with 4-cylinder engine (unit injector)

Observe safety precautions=> Page 1 .

Observe rules for cleanliness => Page 1 .

Removing



- Detach flange and place clear to one side with hoses/pipes connected => Removing fuel delivery unit, Page 117 .
- Unplug connector for fuel gauge sender on inside of flange.



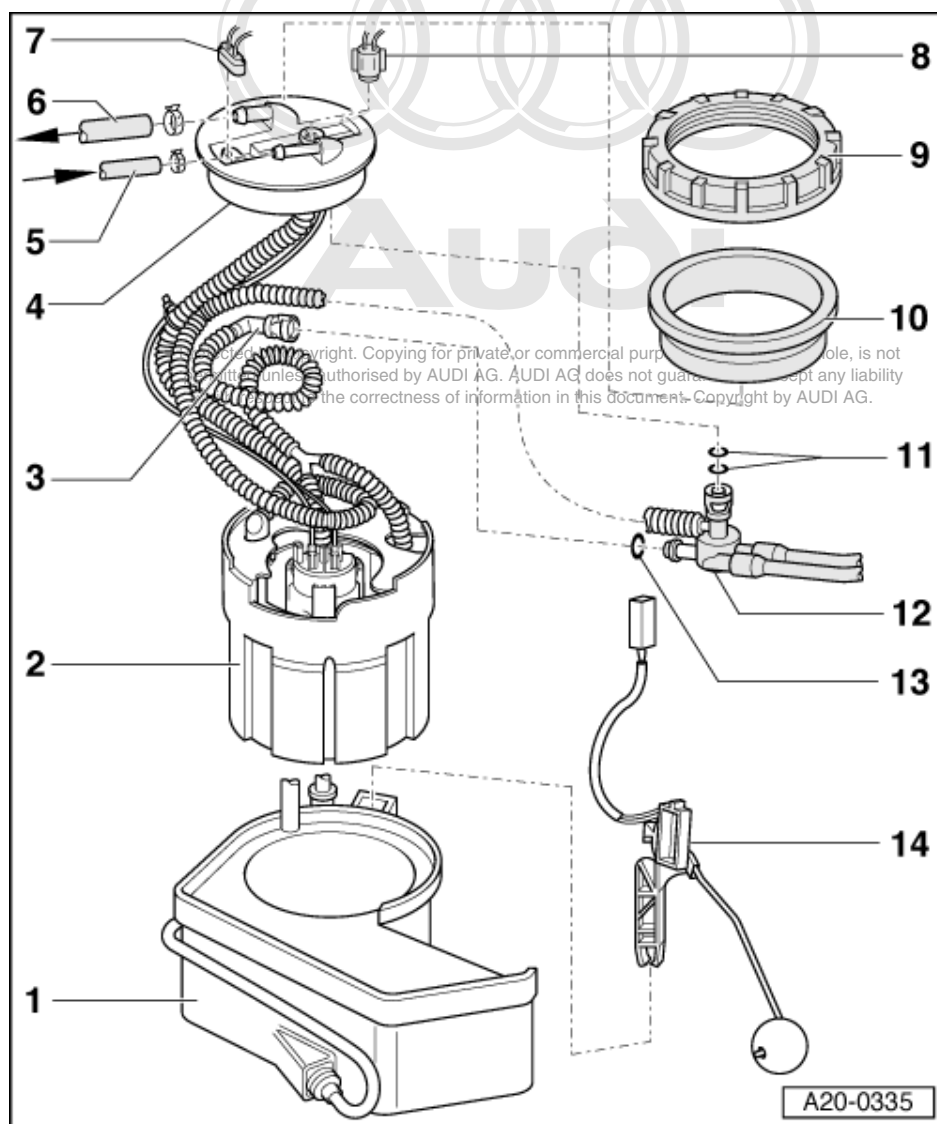
- -> Press retaining tab, and at the same time pull the sender unit out of baffle housing in fuel tank -arrows-.

Installing

Install in reverse sequence; note the following points:

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.
- Install flange => Page 121 .

3.17 - Overview of fuel delivery unit and fuel gauge sender - vehicles with 6-cylinder engine



Note:

Description of function

=>Page 20-184.

1 Baffle housing (outer section)

- ◆ Secured in place in fuel tank
- ◆ Cannot be dismantled
- ◆ Shown without fuel tank for clearer illustration.

2 Fuel delivery unit

-
- This diagram illustrates the assembly of a water pump. The components are numbered as follows:
- 1**: Main pump housing with a power cord.
 - 2**: Upper pump body.
 - 3**: Coiled power cable.
 - 4**: Another coiled power cable.
 - 5**: Small cylindrical component.
 - 6**: Small cylindrical component with a screw.
 - 7**: Small cylindrical component with a screw.
 - 8**: Small cylindrical component with a screw.
 - 9**: Flange with a gasket.
 - 10**: Flange with a gasket.
 - 11**: Small cylindrical component with a screw.
 - 12**: Small cylindrical component with a screw.
 - 13**: Small cylindrical component with a screw.
 - 14**: Small cylindrical component with a screw.
- The diagram shows the pump housing (1) at the bottom, with the upper body (2) and various cables (3, 4) connected to it. The flanges (9, 10) and other components (5, 6, 7, 8, 11, 12, 13, 14) are shown in their relative positions for assembly.

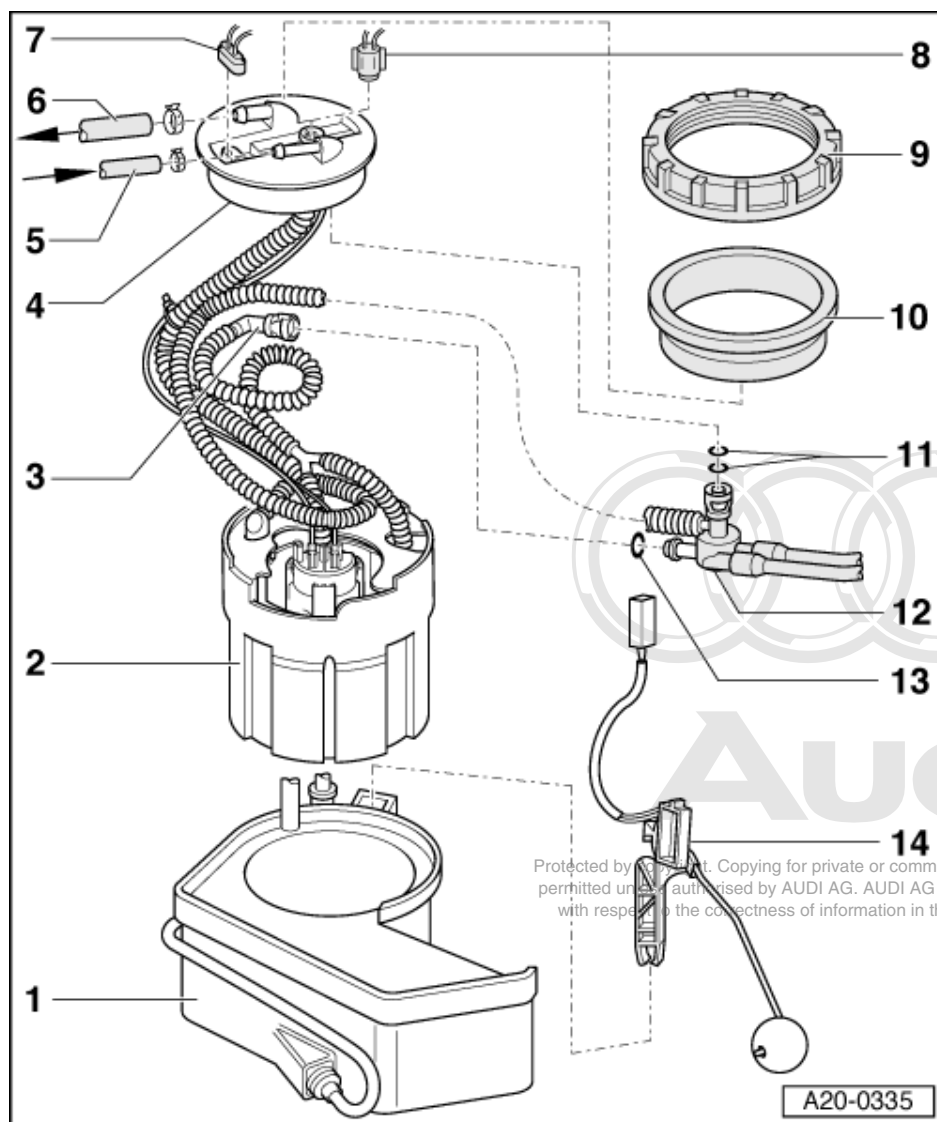
◆ **Between fuel pump and suction jet pump**
◆ **Use connecting tool T40020 or press release tabs on**

- #### 4 Flange

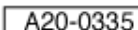
- ## 5 Fuel return pipe

- ## 6 Fuel supply pipe

- ◆ Goes to fuel filter
- ◆ Note direction of arrow on flange



- 7 Connector**
 - ◆ For sender for low fuel level -G210
- 8 Connector**
 - ◆ For fuel pump and fuel gauge sender -G
- 9 Union nut, 60 Nm**
 - ◆ Remove and install with spanner 3217
- 10 Seal**
 - ◆ Renew
 - ◆ When installing, fit seal (dry) in opening in fuel tank
- 11 O rings**
 - ◆ Always renew
 - ◆ Ensure correctly fitted



- ◆ With return pipe
- ◆ Connected to inside of flange
- ◆ Removing and installing
=> Page 152
- ◆ Use uncoupling tool T40020 or press release tabs on connection to disconnect

- ◆ Always renew

- ◆ Checking resistance
=> Page 149
- ◆ Removing and installing
=> Page 150

To ensure that the contents of the fuel tank can be drawn off completely (apart from a small remainder), a two-part baffle housing with electric fuel pump is fitted inside the tank.

The electric fuel pump delivers fuel from the outer section of the baffle housing into a chamber in the inner section of the baffle housing, from which it is then drawn off by the injection pump of the diesel direct-injection system.

The electric fuel pump also sends a pressurised stream of fuel into two suction jet pumps (entrainment pumps), one at the bottom of the baffle housing and the other in the rear chamber of the tank. The suction jet pumps



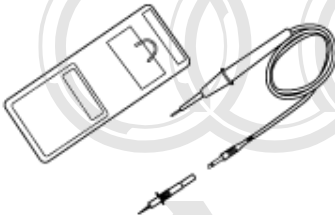
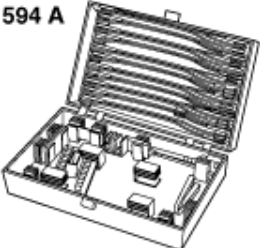
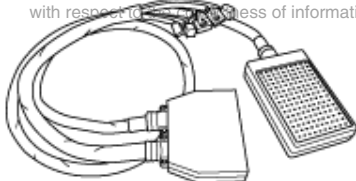
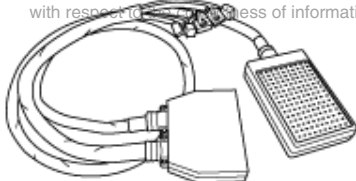
ensure that the outer section of the baffle housing is always kept filled with fuel and the rear chamber of the tank is properly drained.

To ensure that the engine runs reliably, the chamber in the inner section of the baffle housing must always be kept filled with fuel. If the tank is nearly empty and this chamber is about to be drained, the sender for low fuel level -G210 transmits a signal to shut off the injection system.

Installation position of sender for low fuel level -G210: in inner section of baffle housing.

Testing sender for low fuel level -G210 => Page **140** .

3.18 - Testing fuel pump relay -J17 and activation - Vehicles with 6-cylinder engine

V.A.G 1526 A 	V.A.G 1527 B 
V.A.G 1594 A 	V.A.G 1598/30 
V.A.G 1598/31 	

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G20-0017

Special tools and workshop equipment required

- ♦ V.A.G 1526 A
- ♦ V.A.G 1527 B
- ♦ V.A.G 1594 A
- ♦ V.A.G 1598/30
(engine code letters AFB with manual gearbox and automatic gearbox; engine code letters AKN with manual gearbox)
- ♦ V.A.G 1598/31

(engine code letters AKN with automatic gearbox)

Test requirement:

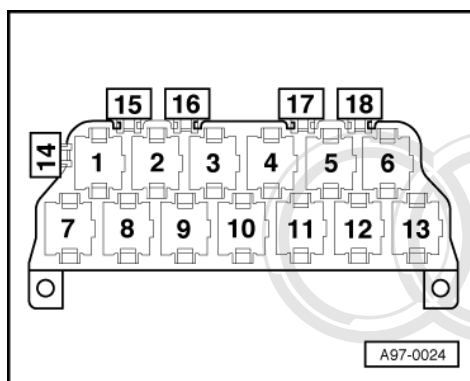
- Battery voltage not less than 12.7 V

Test sequence

- Remove storage compartment on driver's side:

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Operate starter.



- -> The fuel pump relay in 13-point relay carrier should pick up (no fixed position); this can be felt by touching the relay. The fuel pump should run (audible in boot - 2nd mechanic required).

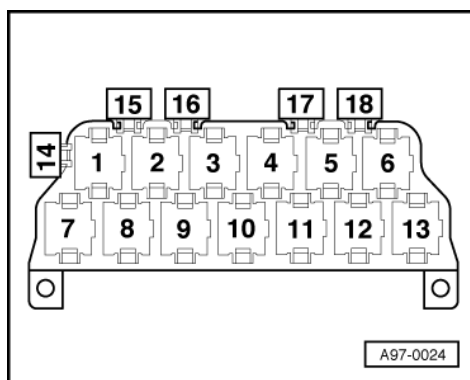
A - If the relay does not pick up:

- Test voltage supply to fuel pump relay.
 - Test activation of fuel pump relay
- =>Page 133 .

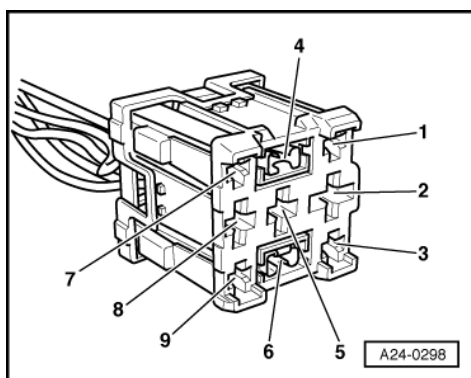
B - If the relay picks up but the fuel pump does not run:

- Test activation of fuel pump
- =>Page 135 .
- Test fuel pump (electrical test) =>Page 136 .

Testing voltage supply of fuel pump relay



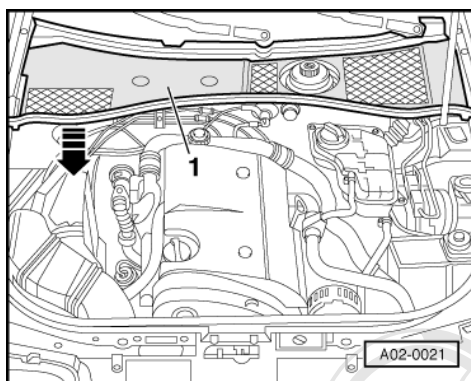
- -> Remove fuel pump relay from 13-point relay carrier (no fixed position).



- -> Connect voltage tester V.A.G 1527 B as follows:

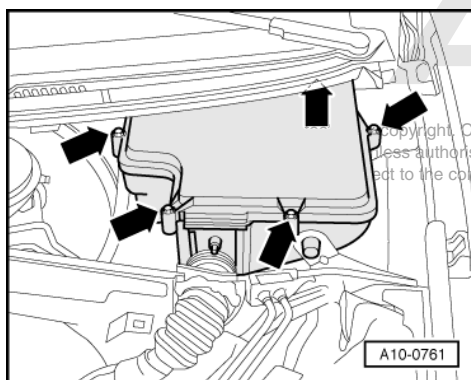
13-point relay carrier, (No fixed position) Contact	Measure against
2	Engine earth
4	Engine earth

- Switch on ignition.
- The LED should light up.

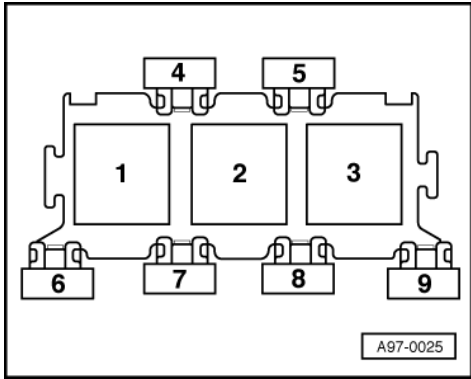


If the LED does not light up:

- Switch off ignition.
- -> Remove rubber seal from plenum chamber in direction of arrow-.
- Remove plenum chamber cover -1- from the front.



- -> Remove cover for electronics box in plenum chamber -arrows-.



- -> Unplug diesel direct injection system relay -J322 (located in 3-point relay carrier in electronics box, plug-in position 3.
- Test for open circuit and short to positive or earth in the following wiring connection:

13-point relay carrier, (no fixed position) Contact	3-point relay carrier (electronics box) plug-in position 3 Contact
2	5
4	5

- Rectify any open/short circuit as necessary.

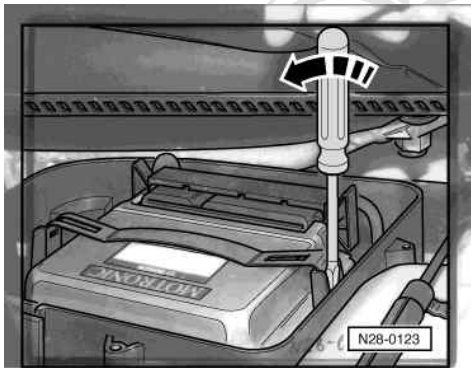
=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If no wiring fault is detected:

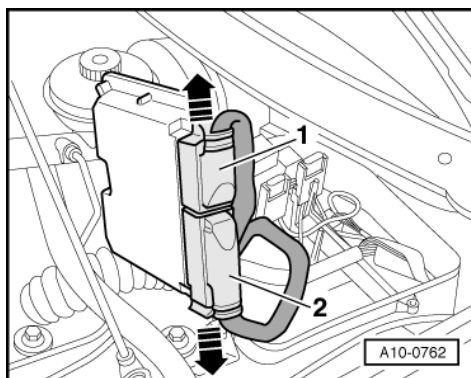
- Test voltage supply of diesel direct-injection system:

=> Diesel direct injection and glow plug system (TDI 6-cylinder); Repair group 23; Servicing diesel direct-injection system, Testing voltage supply of diesel direct-injection system Servicing diesel direct-injection system, Testing voltage supply of diesel direct-injection system

Testing activation of fuel pump relay



- -> Carefully lever off the retainer bar with a screwdriver arrow-

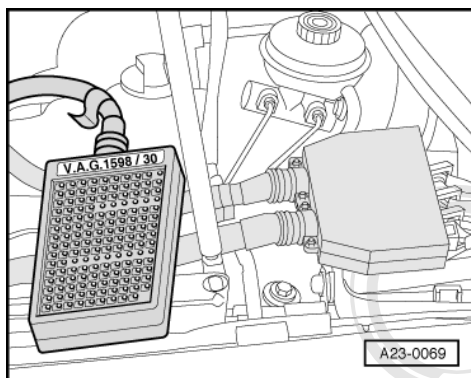


- -> Release retainer catch -arrows- and unplug connectors -1- and -2- from control unit.
- Take out engine control unit.

Warning!

To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.

- **Engine code letters AFB with manual gearbox and automatic gearbox**

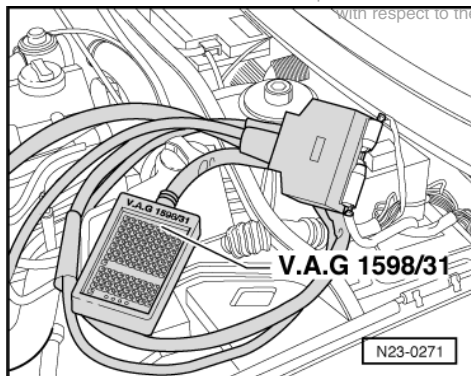


- **Engine code letters AKN with manual gearbox**

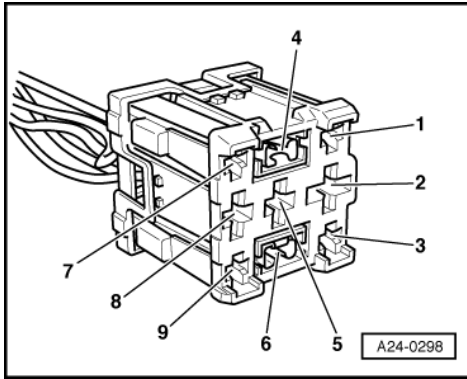
- -> Connect test box V.A.G 1598/30 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected).

- **Engine code letters AKN with automatic gearbox.**

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- -> Connect test box V.A.G 1598/31 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected). Also connect earth clamp on test box to earth.



- -> Test for open circuit and short to positive or earth in the following wiring connections:

13-point relay carrier, (no fixed position) Contact	Test box V.A.G 1598/30 Socket	Test box V.A.G 1598/31 Socket
6	4/10	80

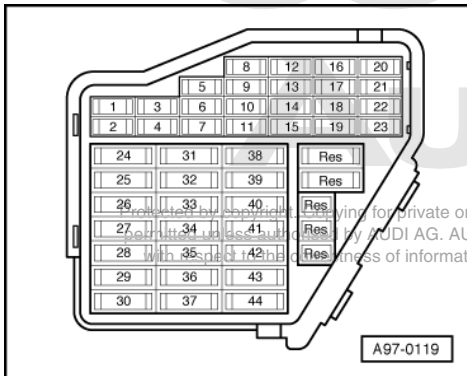
- Rectify any open/short circuit as necessary.

=> Current flow diagrams, Electrical fault finding and Fitting locations binder

Testing activation of fuel pump

Requirements for test:

- Fuel pump relay plugged in
- Engine control unit connected.
- Open fuse box cover on the left side of the dashboard panel.



- -> Pull fuse S 228 off fuse carrier (left row, 5th large fuse from the top).
- Connect multimeter (voltage test range) between earth and left fuse contact.
- Operate starter.
 - Specification: approx. battery voltage

If the specification is not obtained:

- Check wiring

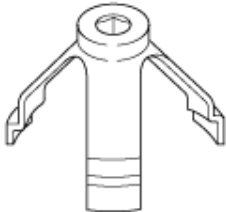
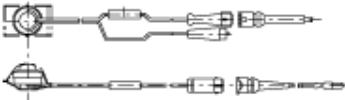
=> Current flow diagrams, Electrical fault finding and Fitting locations binder

If the wiring is OK and no faults are found in the tests up to this point:



- Fit a new fuel pump relay -J17.

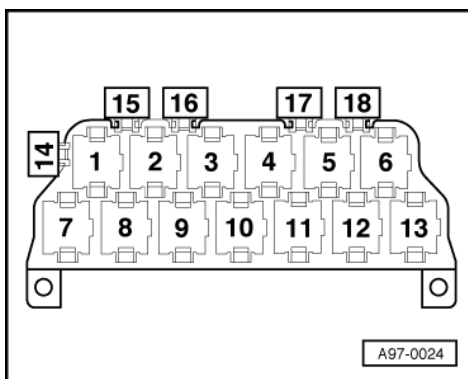
3.19 - Testing fuel pump (electrical test) - Vehicles with 6-cylinder engine

3217 	V.A.G 1275 
V.A.G 1348/3A 	V.A.G 1526 A 
V.A.G 1594 A 	Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG. G20-0016

Special tools and workshop equipment required

- ♦ Ring nut spanner 3217
- ♦ V.A.G 1275
- ♦ V.A.G 1348/3A with V.A.G 1348/3-2
- ♦ V.A.G 1526 A
- ♦ V.A.G 1594 A

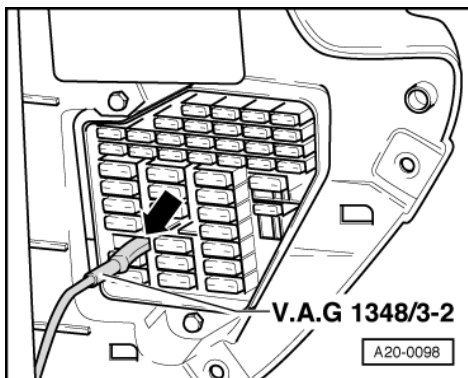
Requirements for test:



- Battery voltage not less than 12.7 V
- Fuse S228 OK
- -> Relay -J17 in 13-point relay carrier OK (no fixed position)
Testing =>Page **130** .
- Fuel filter OK
- Ignition switched off

Test sequence

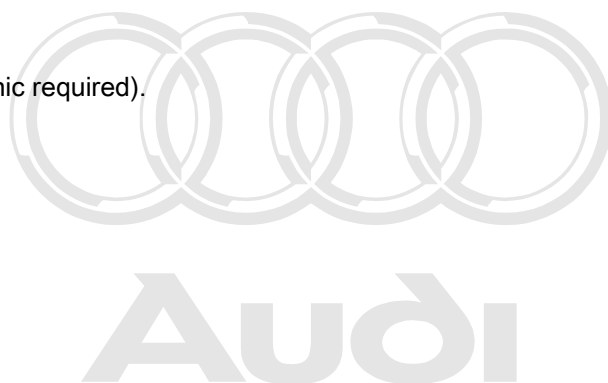
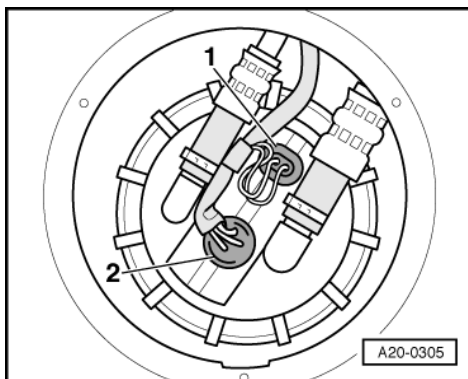
- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse S228 off fuse carrier (left row, 5th large fuse from the top).



- -> Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right-hand terminal of fuse socket S228 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should run (audible in boot - 2nd mechanic required).

If pump does not start running:

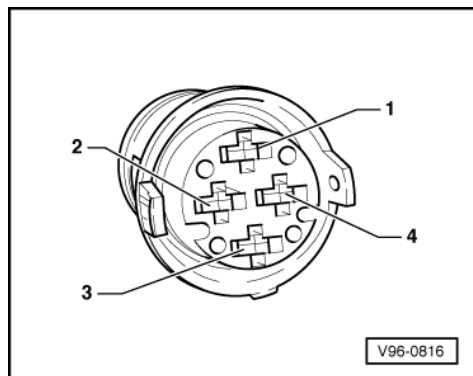
- Detach floor trim in luggage compartment.



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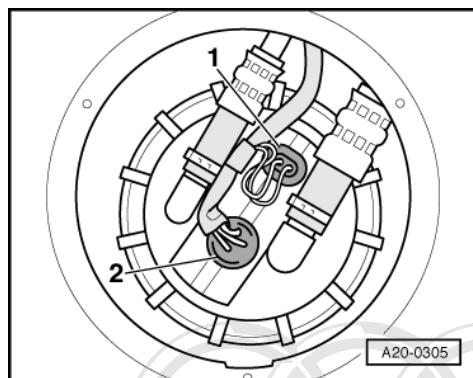


- Unbolt cover for flange.
- -> Release and unplug connector -2-

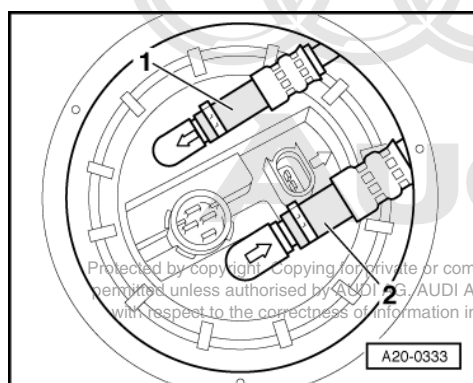


- -> Connect multimeter (voltage measurement range) between contact 1 (green/yellow) and contact 4 (brown).
- Press and hold remote control switch, and read off voltage.
 - Specification: approx. battery voltage

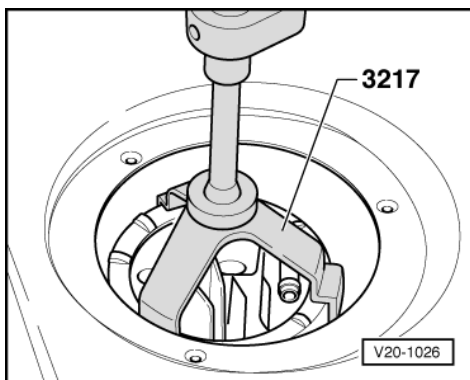
If the specification is obtained, even though the fuel pump did not run, remove flange as follows:



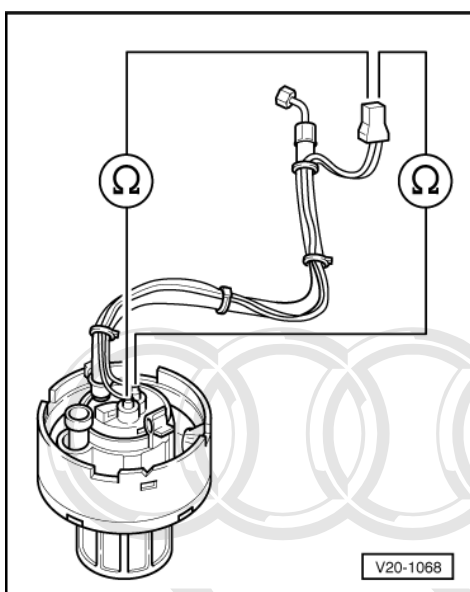
- -> Also unplug connector -1-.



- -> Disconnect fuel return pipe -1- and fuel supply pipe -2- from flange.



- -> Remove union nut with spanner 3217.
- Remove flange and seal out of opening in fuel tank.



- -> Check that the electrical wires between flange and fuel pump are connected and test for continuity.

If no wiring fault is detected:

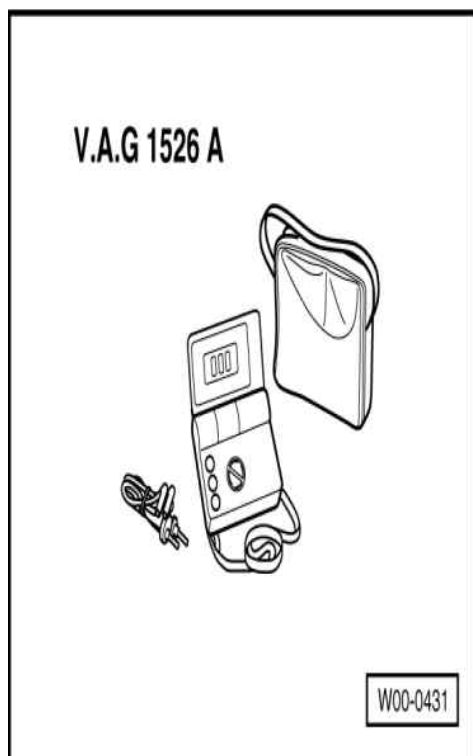
- Fuel pump is defective. Renew fuel delivery unit =>Page 142 .

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3.20 - Testing sender for low fuel level -G210 - Vehicles with 6-cylinder engine

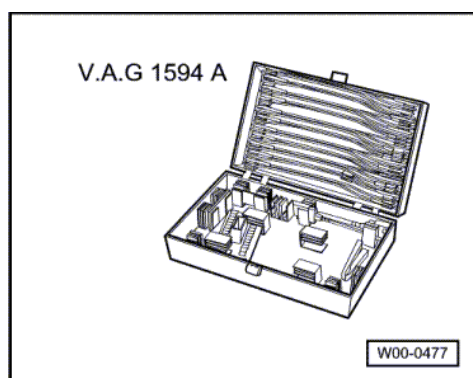
Note:



Sender for low fuel level -G210 cannot be replaced separately.

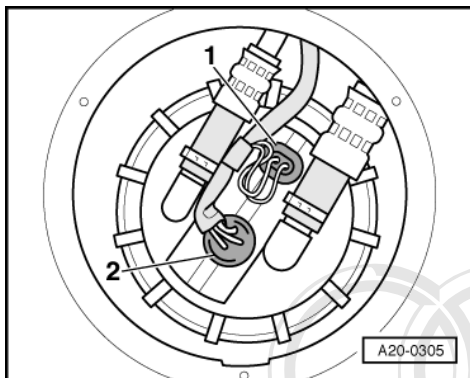
Special tools and workshop equipment required

- ♦ V.A.G 1526 A



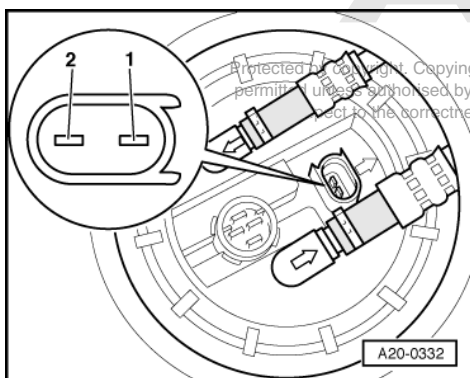
- ♦ V.A.G 1594 A

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Test sequence

- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Unplug connector -1-.



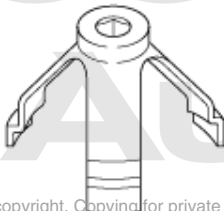
- -> Measure resistance at contacts -1- and -2- on flange.
- Fuel level in baffle housing OK:
Specification approx: 430 ω
- Fuel level in baffle housing too low:
Specification approx: 100 ω
- If resistance reading is 0 ω or ∞ ω , this indicates a short circuit or open circuit in wiring in tank.

Note:

To check the two resistance values, remove fuel delivery unit =>Page 142 . Measure resistance values with fuel delivery unit in normal position and turned upside down.

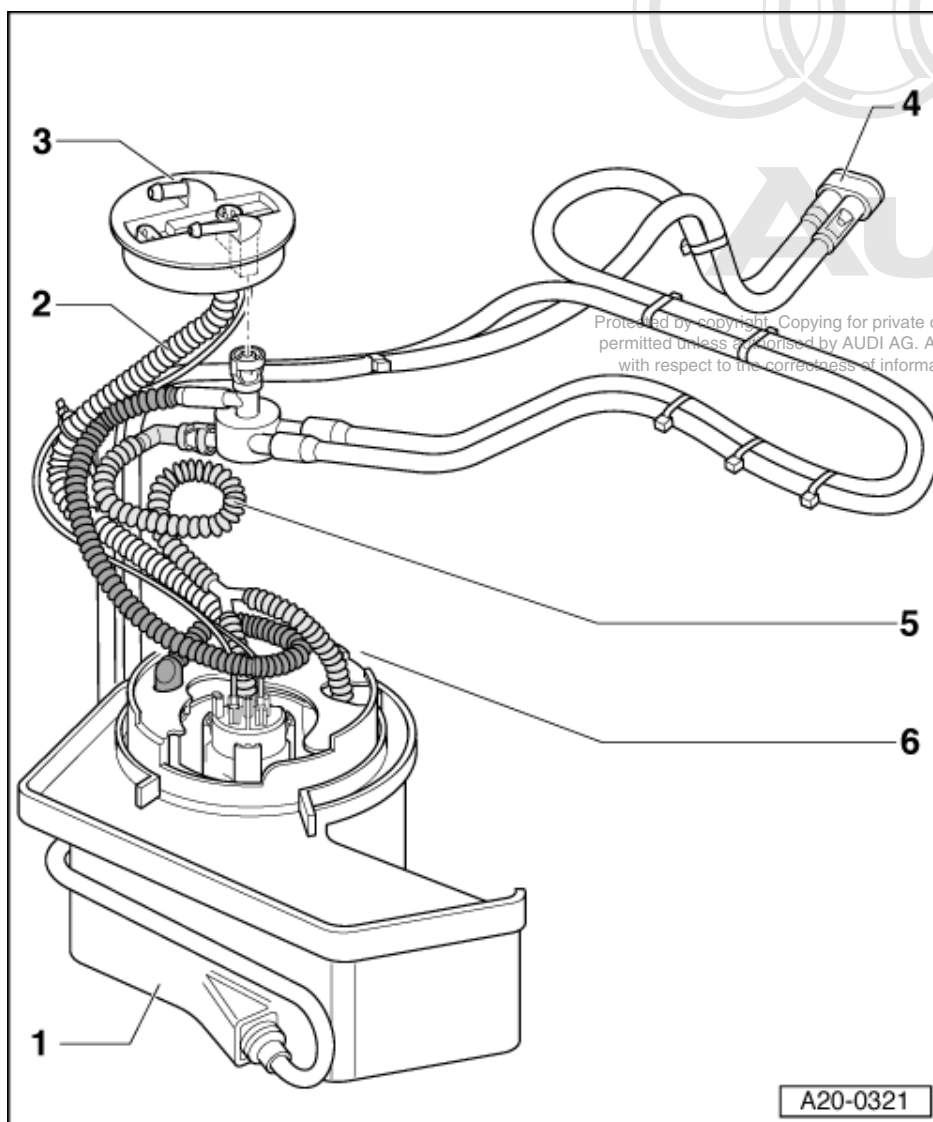


3.21 - Removing and installing fuel delivery unit - vehicles with 6-cylinder engine

3217  Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.	3307 
V.A.G 1275 	
	G20-0014

Special tools and workshop equipment required

- ♦ Ring nut spanner 3217
- ♦ Fuel pump spanner 3307
- ♦ V.A.G 1275



Note:

The illustration shows the correct routing of hoses inside the tank.

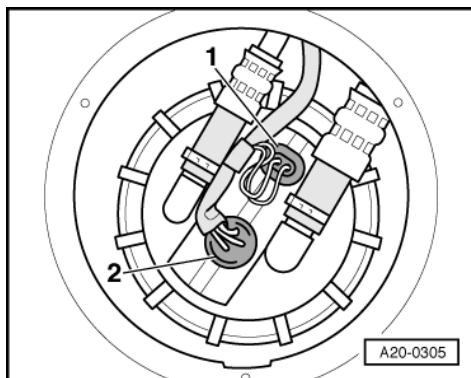
- 1 Baffle housing**
- 2 Fuel supply hose**
- 3 Flange**
- 4 Suction jet pump**
- 5 Fuel hose**
 - ♦ From fuel pump to suction jet pump and to inner section of baffle housing
- 6 Fuel return hose**
 - ♦ From flange

Observe safety precautions=> Page 1 .

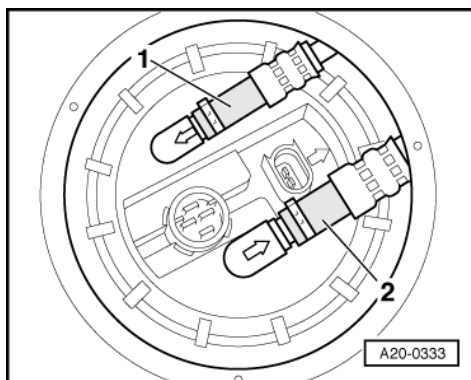
Observe rules for cleanliness => Page 1 .



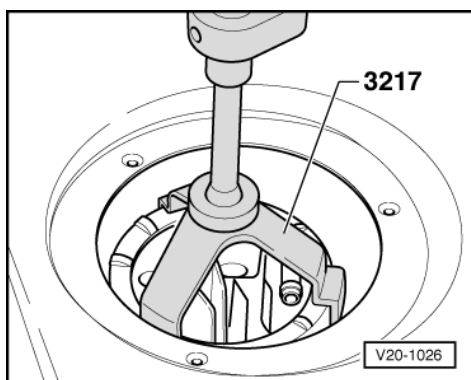
Removing



- The fuel tank must not be more than 3/4 full when removing the fuel delivery unit. Drain fuel tank if necessary. Procedure => Page 76 .
- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connectors -1- and -2-.



- -> Disconnect fuel return pipe -1- and fuel supply pipe -2- from flange.

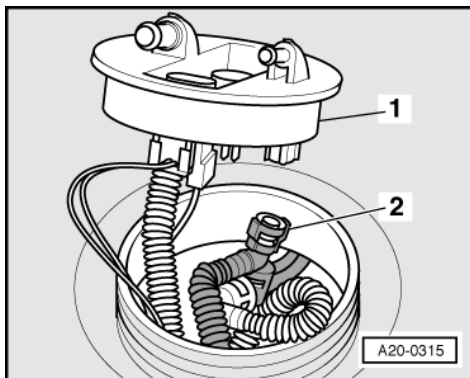


- -> Remove union nut with spanner 3217.
- Pull flange up slightly and take seal out of opening in fuel tank.

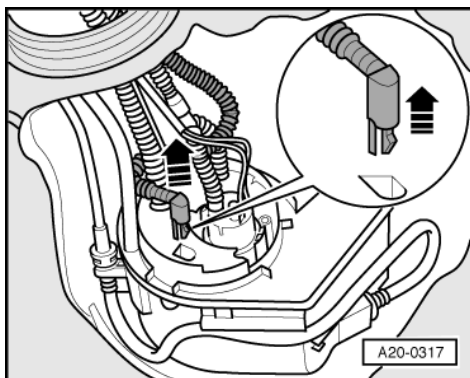


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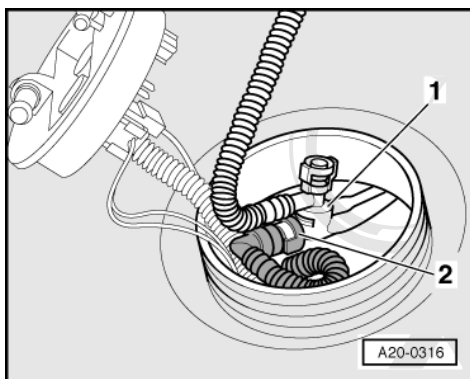
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- -> Pull fuel return hose -2- off inside of flange -1- (use uncoupling tool T40020 or press release tabs).
- Unplug connector for fuel gauge sender on inside of flange.

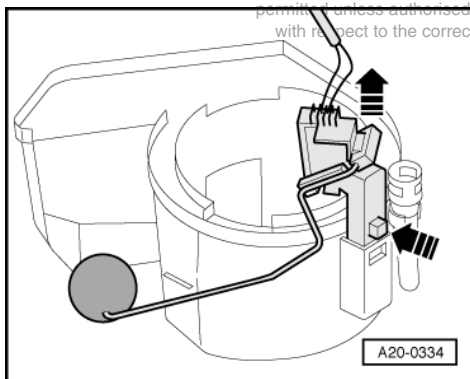


- -> Disconnect elbow connection on return hose from fuel delivery unit -arrow-.



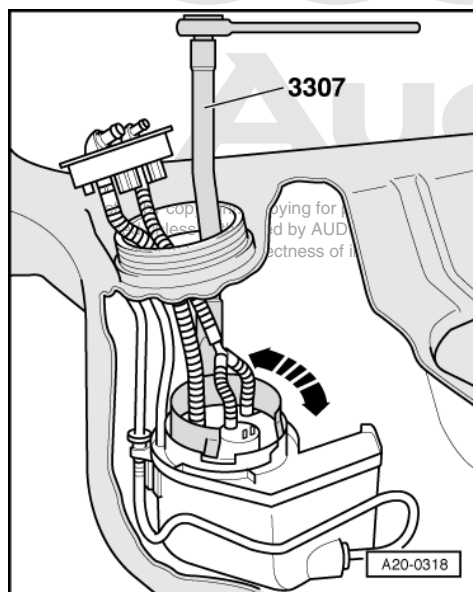
- -> Disconnect fuel hose -2- from fuel pump at connection -1- for suction jet pump (use uncoupling tool T40020 or press release tabs).

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- -> Press retaining tab, and at the same time pull the sender unit out of baffle housing in fuel tank -arrows-.



- -> Insert fuel pump spanner 3307 through opening in fuel tank and apply spanner to fuel delivery unit.
- Using spanner 3307, turn fuel delivery unit anti-clockwise as far as it will go (approx. 15°), and take out.

Installing

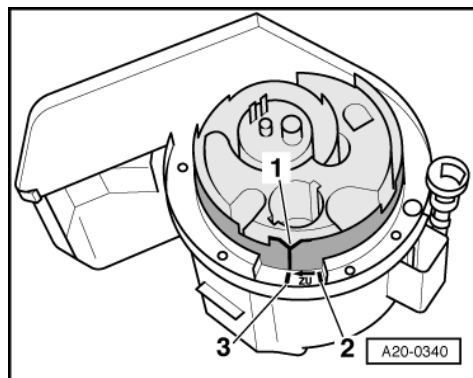
Install in reverse sequence; note the following points:

Note:

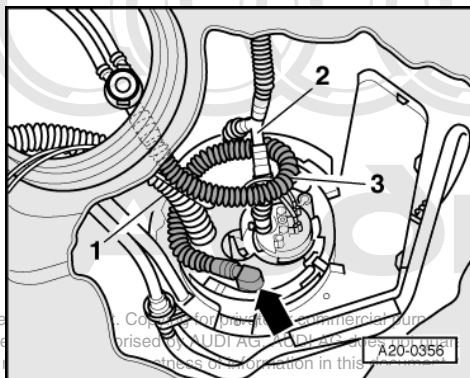
Secure all hose connections with the correct hose clips (same as original equipment)

=> Parts catalogue

- Place fuel delivery unit in fuel tank.



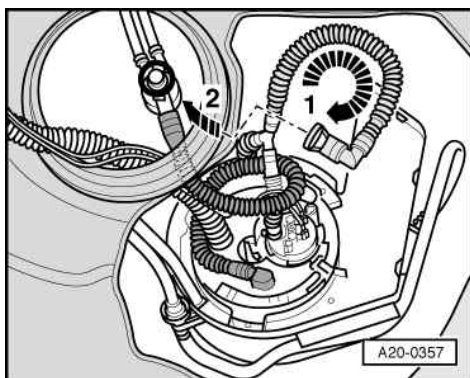
- -> Fit fuel delivery unit into outer section of baffle housing (in tank) so that notch -1- on fuel delivery unit is aligned with marking -2- on outer section of housing.
- The fuel delivery unit should move down noticeably.
- Apply fuel pump spanner 3307 and turn fuel delivery unit clockwise as far as it will go (approx. 15°). Notch -1- will then be aligned with marking -3- (bayonet fitting).



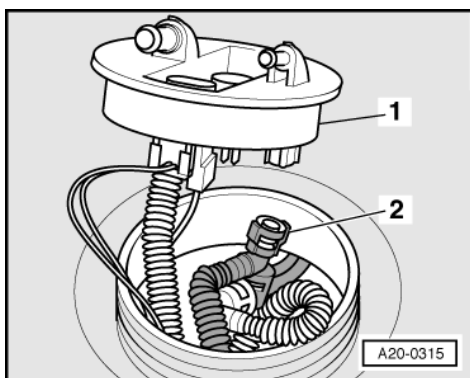
- -> Guide return pipe -3- under Y-connector -2- and between the two short pipes.
- Route fuel return hose round outside of fuel supply hose -1- and insert elbow connection -arrow- into opening in fuel delivery unit -arrow-.

Notes:

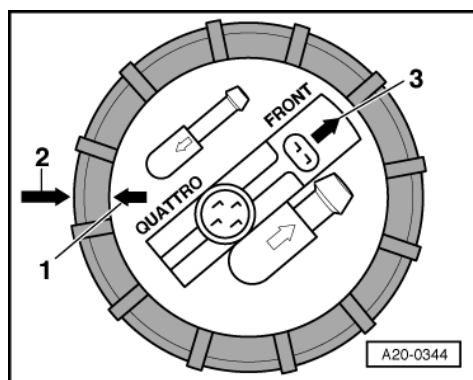
- ◆ Use new O-rings.
- ◆ Ensure that O-rings are not trapped - use lubricant if necessary.



- -> Turn hose coming from fuel pump clockwise -arrow 1-.
- Connect hose to connection for suction jet pump -arrow 2-.
- Install sender for low fuel level -G210.
- Wrap fuel gauge sender wire one turn anti-clockwise round supply hose (in tank), and connect wire at flange.



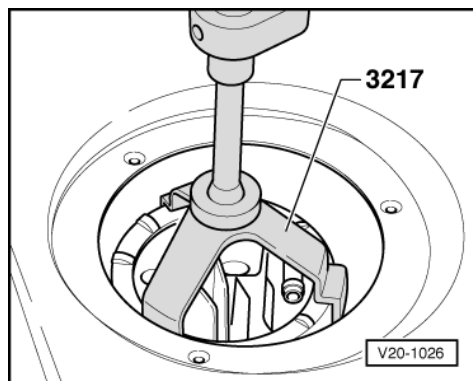
- -> Connect return hose -2- to inside of flange -1-.
- Fit new sealing ring for flange in fuel tank opening (sealing ring should be dry).



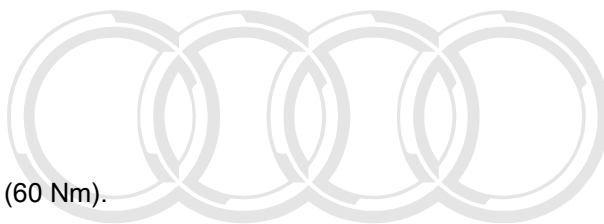
- -> Fit flange into fuel tank; note correct installation position:
- Installation position for vehicles with four-wheel drive:
 - arrow 1- must be aligned with -arrow 2-.

Note:

-Arrow 3- is for vehicles with front-wheel drive (can be disregarded).



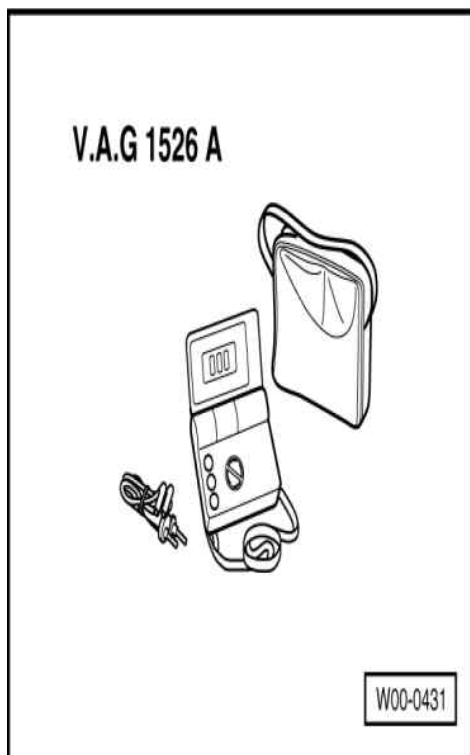
- -> Tighten union nut with spanner 3217 (60 Nm).
- Connect fuel pipes and electrical wiring.



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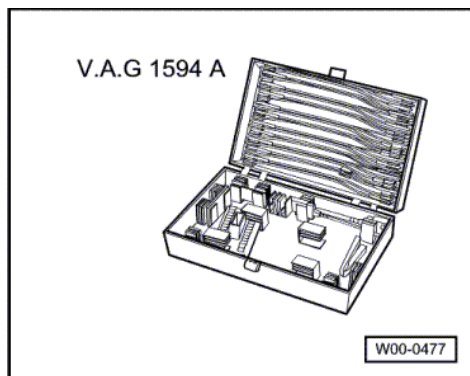
3.22 - Checking fuel gauge sender -G - Vehicles with 6-cylinder engine



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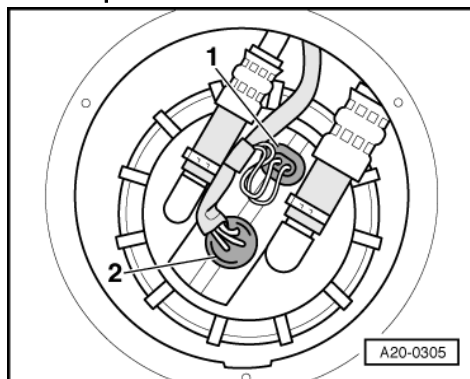
Special tools and workshop equipment required

- ♦ V.A.G 1526A



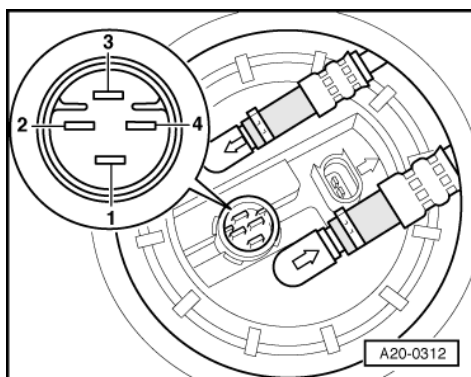
- ♦ V.A.G1594 A

Test sequence





- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- Release and unplug connector -2-.



- -> Measure resistance at contacts -2- and -3- on flange:

Sender unit	Tank full	Tank empty
Fuel gauge sender -G	40 ω	280 ω

According to the amount of fuel in the tank, the resistance should be somewhere between the specified values for "tank full" and "tank empty".

- If the resistance is 0 ω or $\infty \omega$, this means there is a short circuit or an open circuit in the wiring in the tank.

Note:

In order to test the resistance for "tank full" and "tank empty", remove the sender -G => Page 150 and move the float all the way to its top or bottom position .

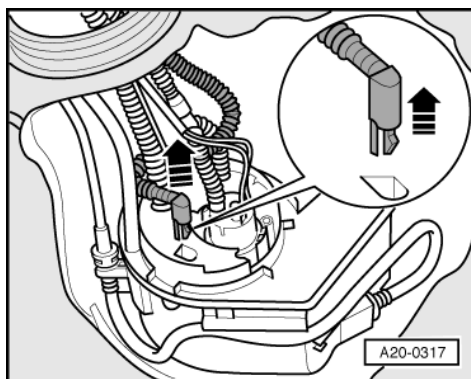
3.23 Removing and installing fuel gauge sender -G- Vehicles with 6-cylinder engine

Observe safety precautions=> Page 1 .

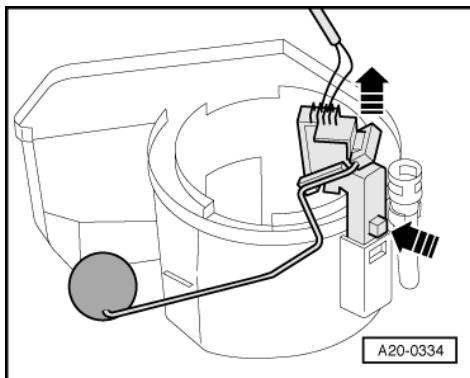
Observe rules for cleanliness => Page 1 .

Removing

- Detach flange and place to one side with pipes connected
=> Removing fuel delivery unit, from Page 142 .
- Unplug connector for fuel gauge sender on inside of flange.



- -> Disconnect elbow connection on return hose from fuel delivery unit -arrow-.

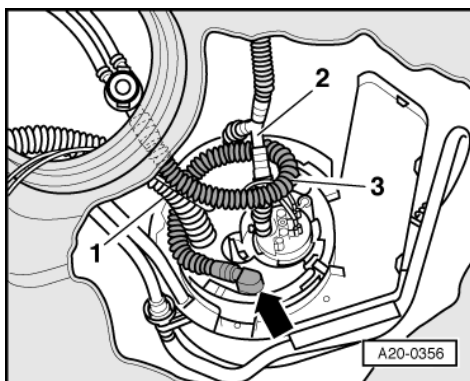


- -> Press retaining tab, and at the same time pull the sender unit out of baffle housing in fuel tank -arrows-.

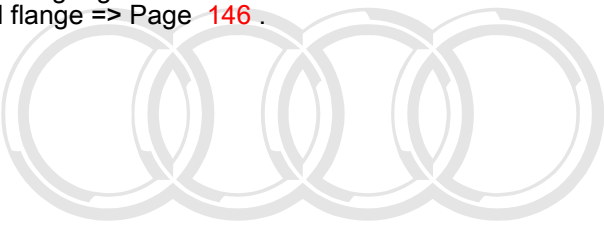
Installing

Install in reverse sequence; note the following points:

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.



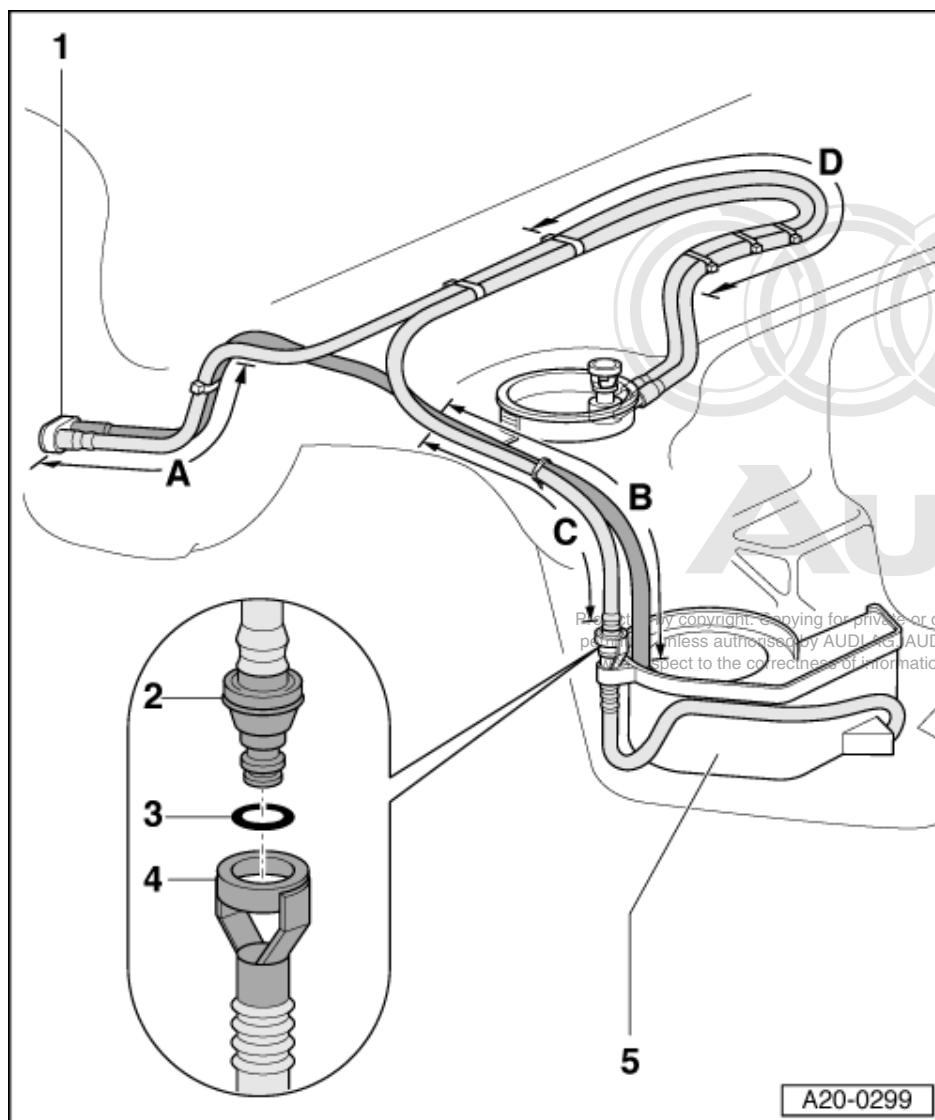
- -> Guide return hose -3- under Y-connector -2- and between the two short pipes.
- Route return hose round outside of supply pipe -1- and insert pipe connection into hole in fuel delivery unit -arrow-.
- Wrap fuel gauge sender wire one turn anti-clockwise round supply pipe (in tank), and connect wire at flange.
- Install flange => Page 146 .


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3.24 - Removing and installing suction jet pump



Observe safety precautions

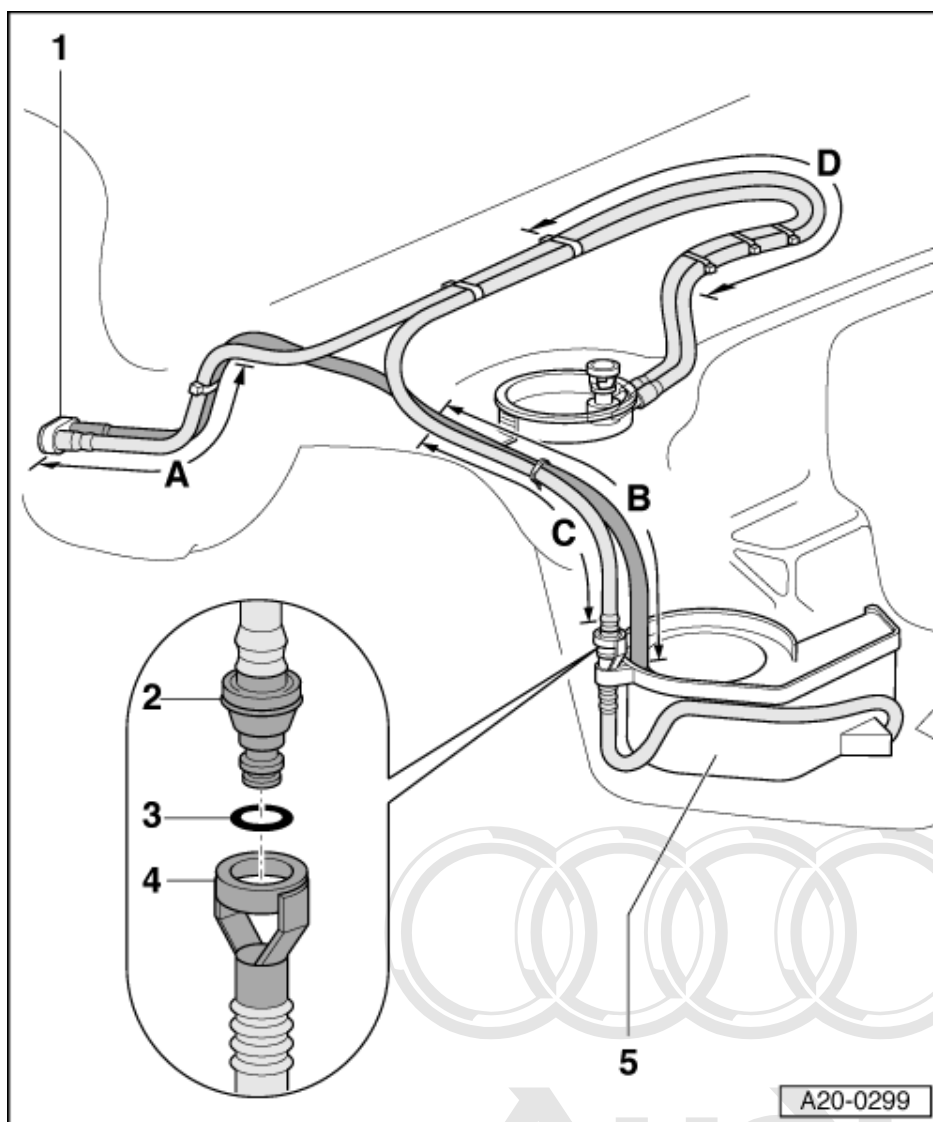
=> Page 1

Observe rules for cleanliness

=> Page 1

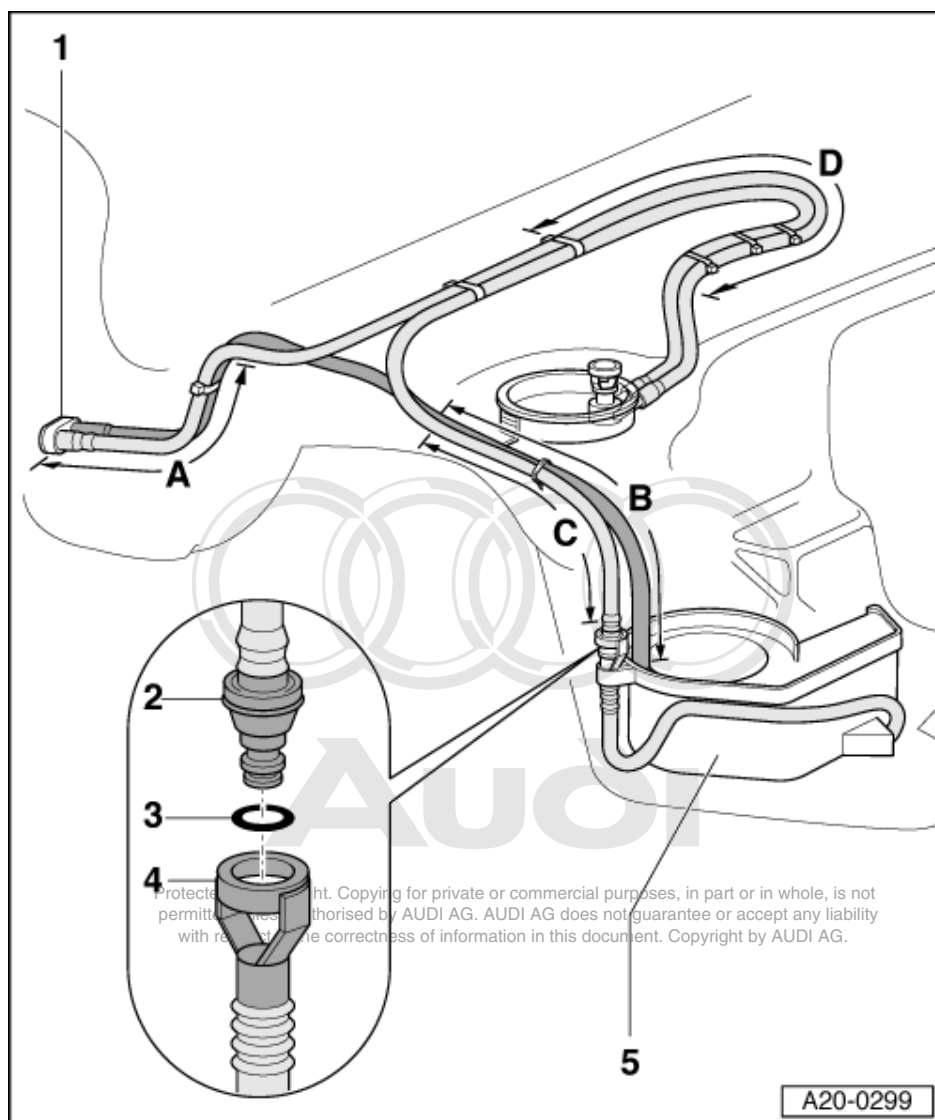
Notes:

- ♦ This section describes how to install the suction jet pump. Removal is carried out in the reverse order.
- ♦ Take care not to kink pipes -1- for suction jet pump. Do not use suction jet pump if pipes are kinked.
- ♦ Fit a new O-ring -3-.
- ♦ For better access, unhook large filling hose located in fuel tank from retaining clip to remove and install suction jet pump.

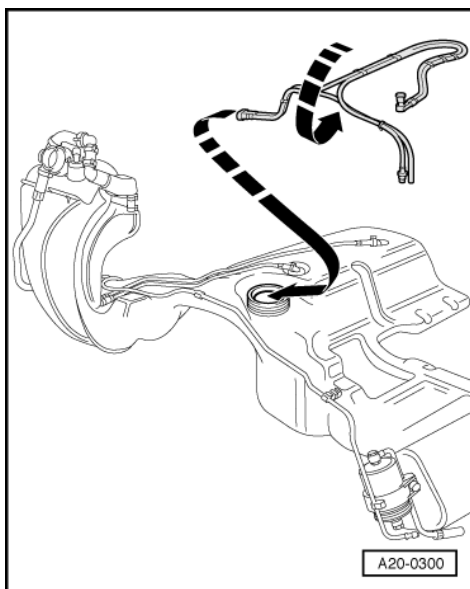


- Remove fuel delivery unit
 => Page 142 .
- Remove fuel gauge sender
 =>Page 150 .
- Position suction jet pump 1- in installation position in opening for flange.
- Insert section -A- into the fuel tank.
- Guide section -A- in the fuel tank towards the fuel filler neck; at the same time turn it through approximately one full turn in an anti-clockwise direction => Fig. 155 .
- Insert section -B- (of black pipe) into the fuel tank, but do not secure to baffle housing -5- yet.

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- Insert section -C- (white pipe) into the fuel tank, but do not secure to baffle housing -5- yet.
- Insert section -D- into the fuel tank; it should be positioned above the thick fuel filler hose in the fuel tank.
- Connect black pipe to baffle housing -5-.
- Connect white pipe -2- to hose connector -4-.



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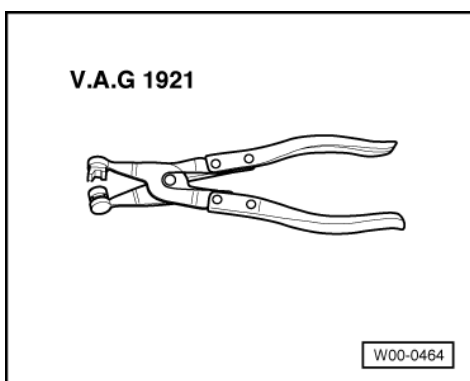
-> Fig.1 Installing suction jet pump

- Push suction jet pump into fuel tank and towards filler neck; at the same time turn the pump through approximately one full turn in an anti-clockwise direction -arrows- .

4 - Servicing tandem pump - Vehicles with 4-cylinder engine (unit injector)

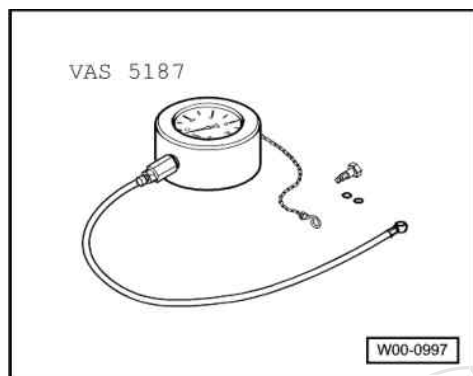
4.1 - Servicing tandem pump - Vehicles with 4-cylinder engine (unit injector)

4.2 - Testing tandem pump



Special tools and workshop equipment required

- ♦ Pliers V.A.G 1921 for spring type clips



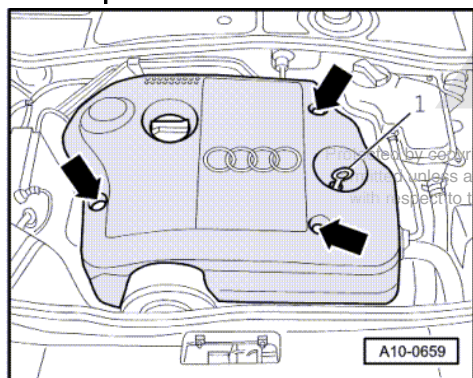
- ♦ Tandem pump test device VAS 5187

Observe rules for cleanliness => Page 1.

Requirements for test:

- Coolant temperature at least 85 °C
- Unit injectors OK.

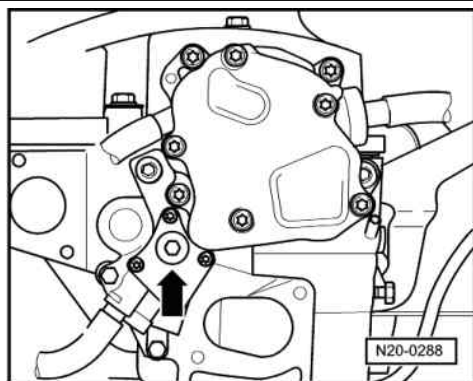
Test sequence



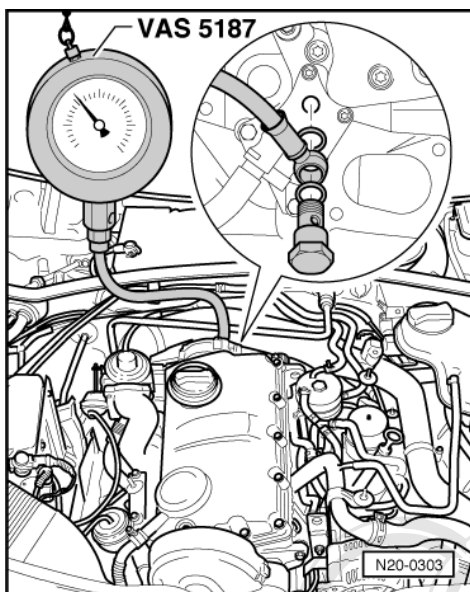
- -> Pull out oil dipstick -1- from guide tube.
- Unclip dust covers.
- Unscrew nuts -arrows- and remove engine cover.
- Remove noise insulation located under engine cover.
- Re-insert oil dipstick into guide tube.

Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.



- -> Remove plug -arrow-.



- -> Connect pressure tester VAS 5187 as shown.
- Start the engine.
- Increase engine speed to 1500 rpm.
- Observe pressure on pressure gauge.
 - Specification: min. 3.5 bar

If the specification is not obtained:

- Replace tandem pump => Page **158**

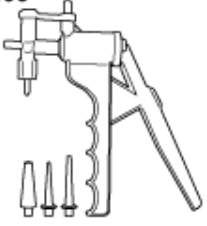
Note:

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After removing pressure tester, tighten plug to 25 Nm. Always replace seal.

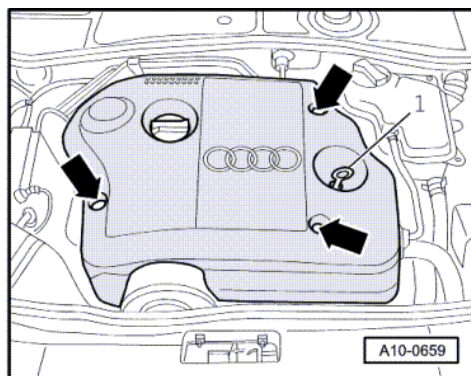


4.3 - Removing and installing tandem pump

V.A.G 1390 	V.A.G 1390/1 
V.A.G 1921 	
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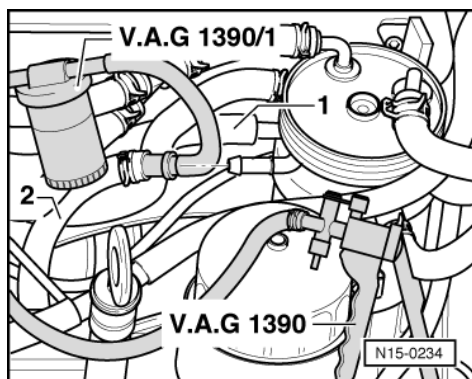
Special tools and workshop equipment required

- ♦ V.A.G 1390
- ♦ V.A.G 1390/1
- ♦ V.A.G 1921

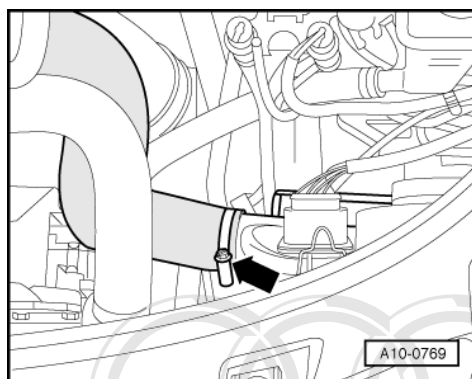


Removing

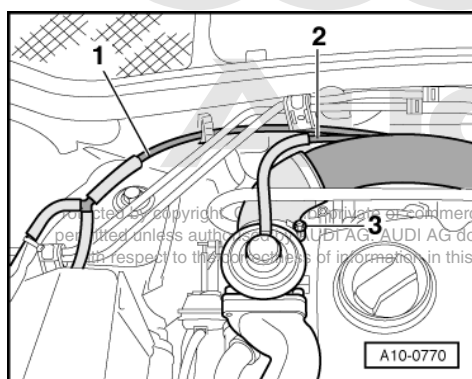
- -> Pull out oil dipstick -1- from guide tube.
- Unclip dust covers.
- Unscrew nuts -arrows- and remove engine cover.
- Remove noise insulation located under engine cover.
- Re-insert oil dipstick into guide tube.



- -> Pull off supply hose -1- (white marking) and return hose -2- (blue marking) from fuel filter.
- Insert a suitable adapter from V.A.G 1390 into connecting hose.
- Connect adapter with connecting hose to bleeder container V.A.G 1390/1.
- Connect hand vacuum pump V.A.G 1390 with fluid receptacle V.A.G 1390/1 to return hose.
- Operate hand vacuum pump until no more fuel comes out of return hose. Make sure that no fuel enters hand vacuum pump.



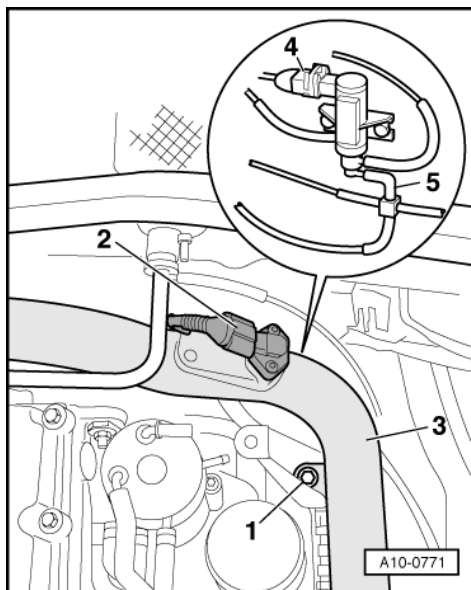
- Unbolt coolant expansion tank and move clear to one side with coolant hoses connected.
- -> Detach air intake hose from charge air cooler -arrow-.



- -> Detach vent pipe -1- to air cleaner and vacuum pipe -2- to mechanical exhaust gas recirculation valve.

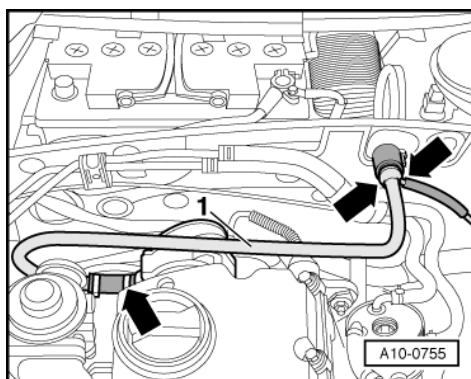


- Disconnect air intake hose -3- from inlet connection.

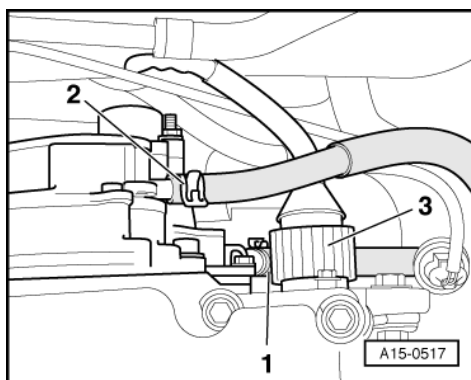


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- -> Unplug connectors -2- and -4-.
- Disconnect vacuum hose -5- and move vacuum pipe clear from charge air pipe.
- Remove bolt -1-.
- Remove air intake pipe -3-.



- -> Disconnect hose connectors -arrows-.
- Remove vacuum pipe -1-.

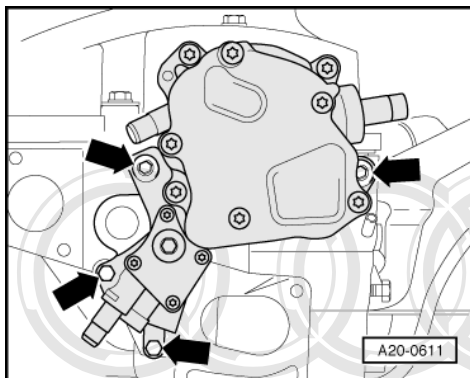


- -> Turn knurled nut -3- of main connector anti-clockwise.
- Unplug main connector.

Warning

- ◆ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ◆ Wear protective gloves.
- ◆ Wear protective goggles.

- Detach fuel hoses -1- and -2-.

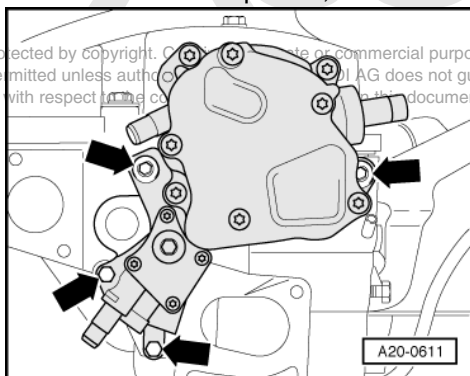


- -> Remove bolts -arrows-.
- Remove tandem pump from cylinder head.

Installing

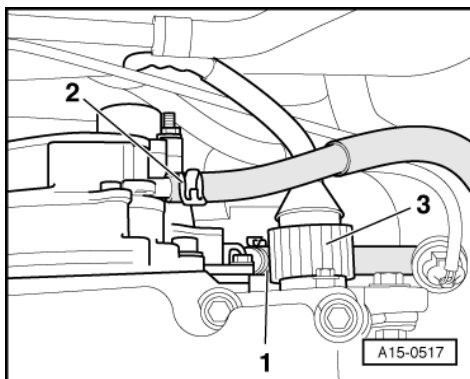
Install in reverse sequence; note the following points:

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Notes:

- ◆ Always replace tandem pump seals.
- ◆ Ensure that the drive lugs of the tandem pump coupling engage properly with the camshaft.
- -> Install tandem pump and tighten upper securing bolts to 20 Nm.
- Tighten lower securing bolts to 10 Nm.

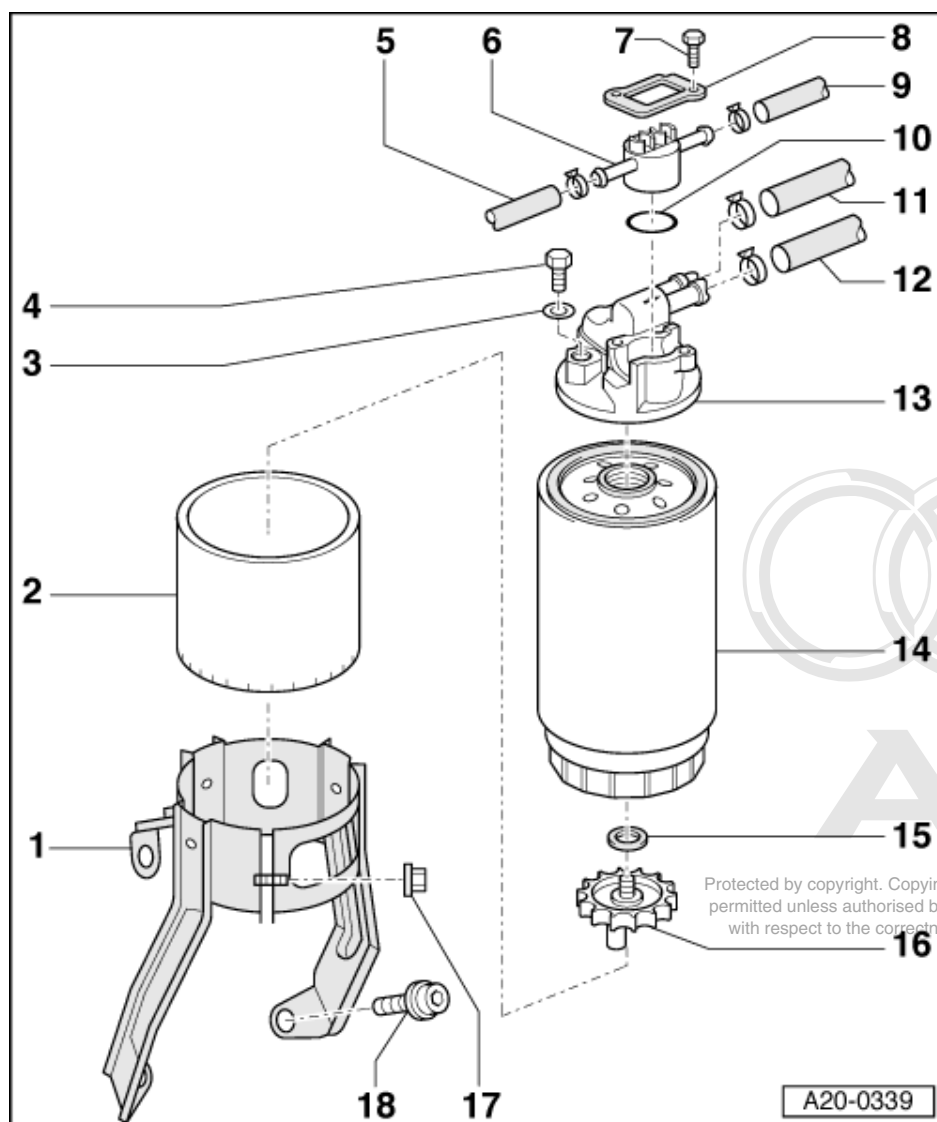




- -> Connect fuel hoses -1- and -2- to tandem pump.
- Plug in main connector and turn knurled nut -3- clockwise.
- Install vacuum pipe for brake servo.
- Install charge air pipe.

5 - Servicing fuel filter

5.1 - Servicing fuel filter



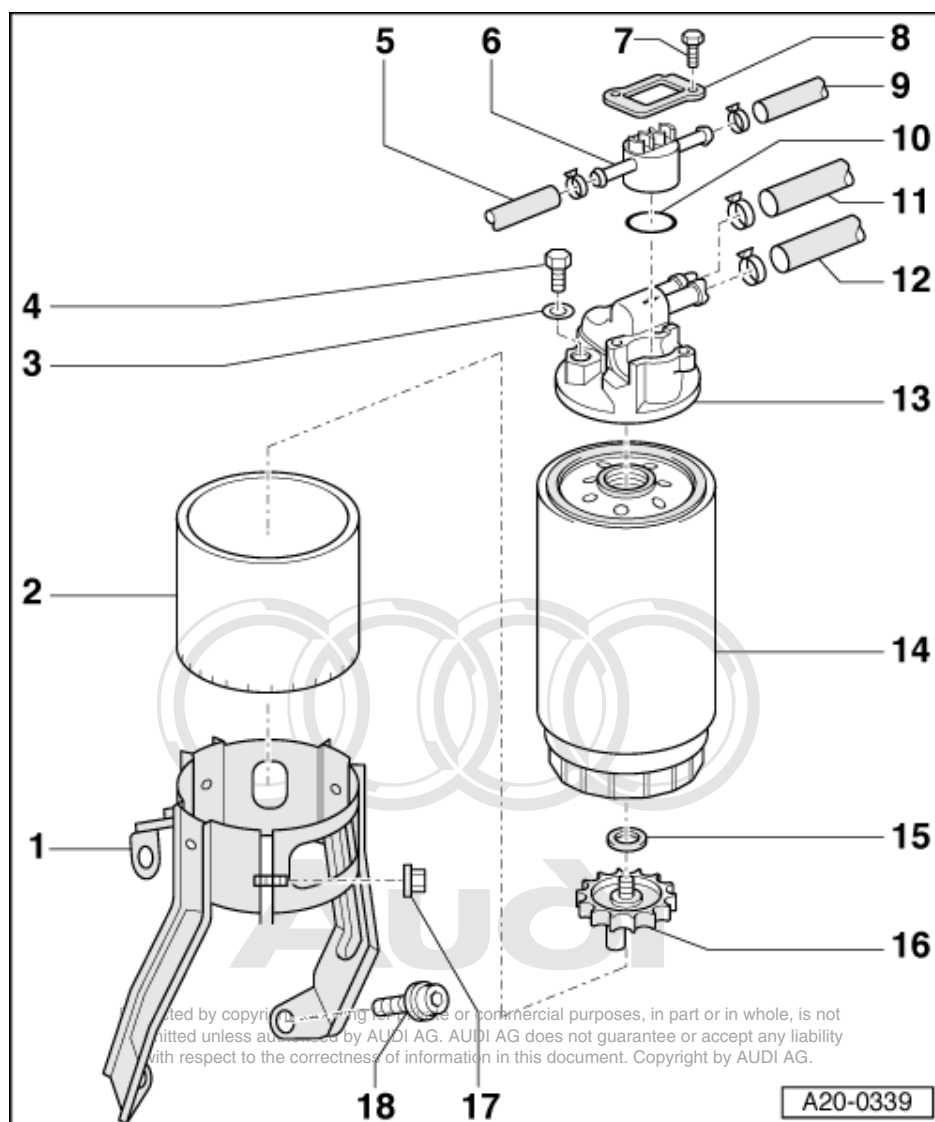
5.2 - Overview of fuel filter - vehicles with 4-cylinder engine

Notes:

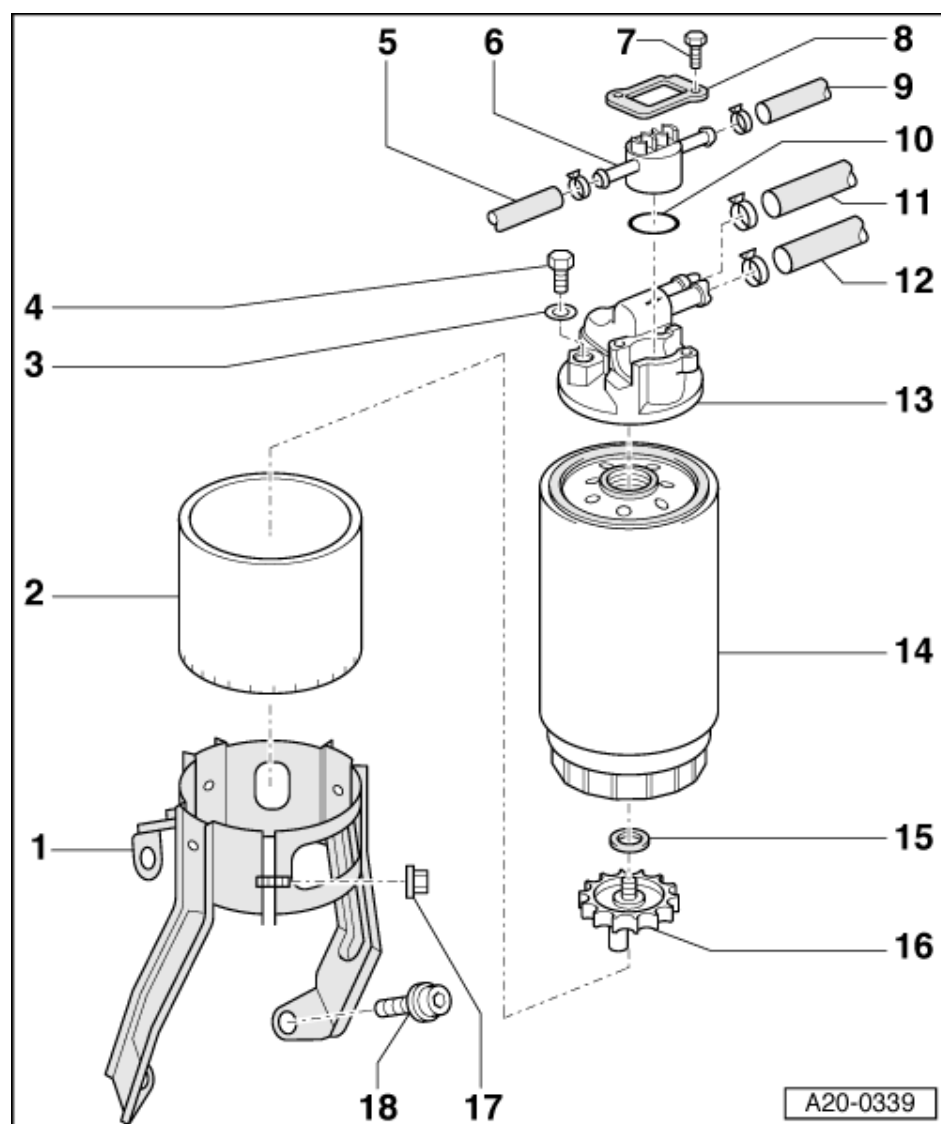
- ♦ Fitting location of fuel filter: at rear of engine compartment, right side.
- ♦ All hose connections must be secured with hose clips (same as original parts).

=> Parts List

- 1 Bracket**
 - ♦ For fuel filter
- 2 Plastic insert**
 - ♦ Slide onto filter



- 3 Seal**
 - ♦ Renew
- 4 Vent screw - 10 Nm**
 - ♦ Loosen in order to drain water
- 5 Fuel return pipe**
 - ♦ To fuel tank
- 6 Control valve**
 - ♦ Installation position: arrow points towards fuel tank
 - ♦ When changing filter, remove securing clip and take control valve off complete with fuel pipes
 - ♦ Watch O-ring in fuel filter flange when fitting
 - ♦ Temperatures below + 15 °C:
Passage to filter open
 - ♦ Temperatures over + 31 °C:
Passage to filter closed

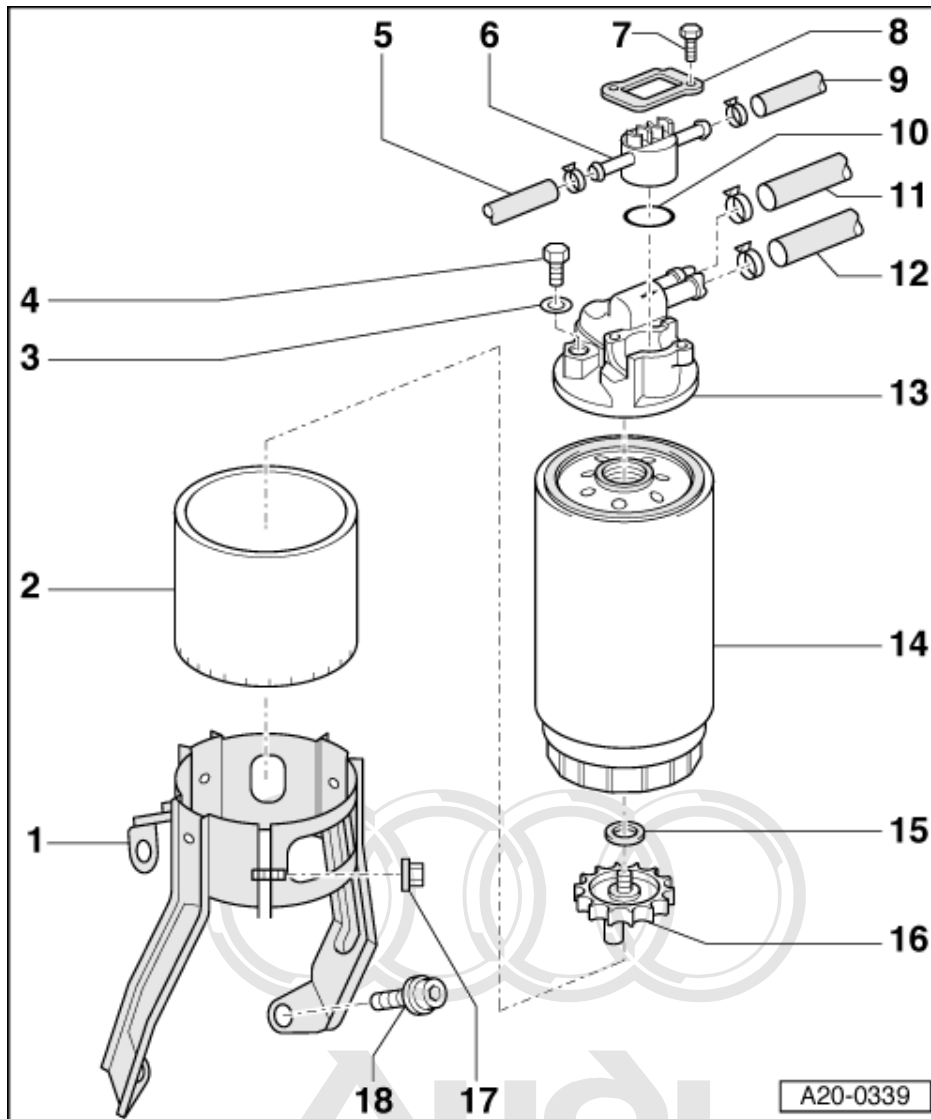


- 7 5 Nm
- 8 Retaining plate
- 9 Fuel return pipe
 - ♦ From injection pump
- 10 O ring
 - ♦ Renew
- 11 Fuel supply pipe
 - ♦ From fuel tank
- 12 Fuel supply pipe
 - ♦ To injection pump
- 13 Fuel filter flange
- 14 Fuel filter
 - ♦ Drain off water or renew filter at intervals specified in Service Schedule

=> Maintenance booklet

- ◆ Fill with diesel before installing
- ◆ Tighten by hand

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15 Seal

- ♦ Renew if damaged

16 Water drain plug

- ♦ Loosen and allow approx. 100 cm³ fluid to drain
- ♦ Loosen vent screw -Item 4 - in order to drain water

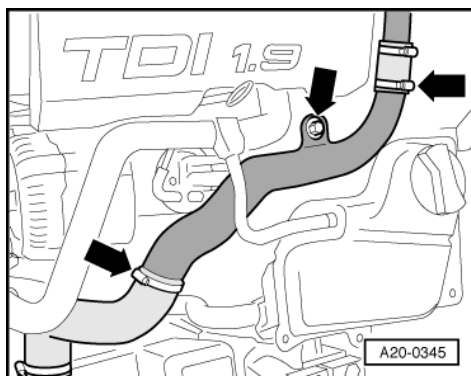
17 10 Nm

18 25 Nm



5.3 - Removing and installing fuel filter - vehicles with 4-cylinder engine

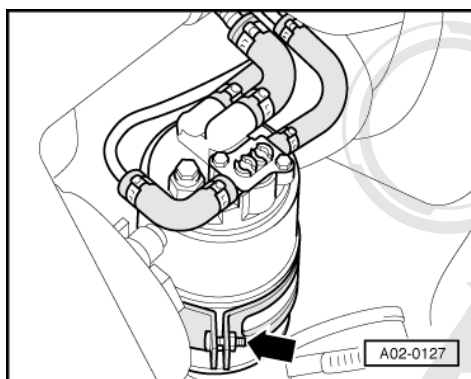
Notes:



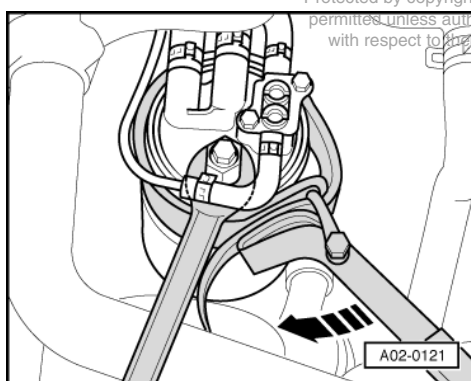
- ♦ Please ensure that no Diesel fuel contacts coolant hoses. If necessary clean hose immediately.
- ♦ Observe disposal regulations!

Removing

- -> Remove pressure pipe -arrows-



- -> Slacken clamp -arrow- on bracket and take filter out of bracket with hoses still attached.



- -> Using 17 mm open-end spanner, counterhold fuel filter flange at flats on boss for vent screw. Unscrew filter using strap wrench if necessary -arrow-.

Warning

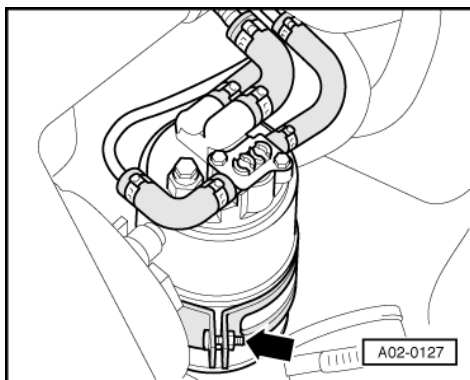
Do not use pliers to hold the fuel filter. This can damage the head of the filter and cause fuel leaks.

- Unscrew filter from fuel filter flange.

Installing

Install in reverse sequence; note the following points:

- Moisten new seal and new rubber seal lightly with diesel.
- Fill new filter with clean diesel. This will enable the engine to start more quickly.
- Screw filter onto filter flange (hand-tight).
- Push plastic insert onto new filter.



- -> Insert fuel filter into bracket and secure with clamping nut -arrow-.

Note:

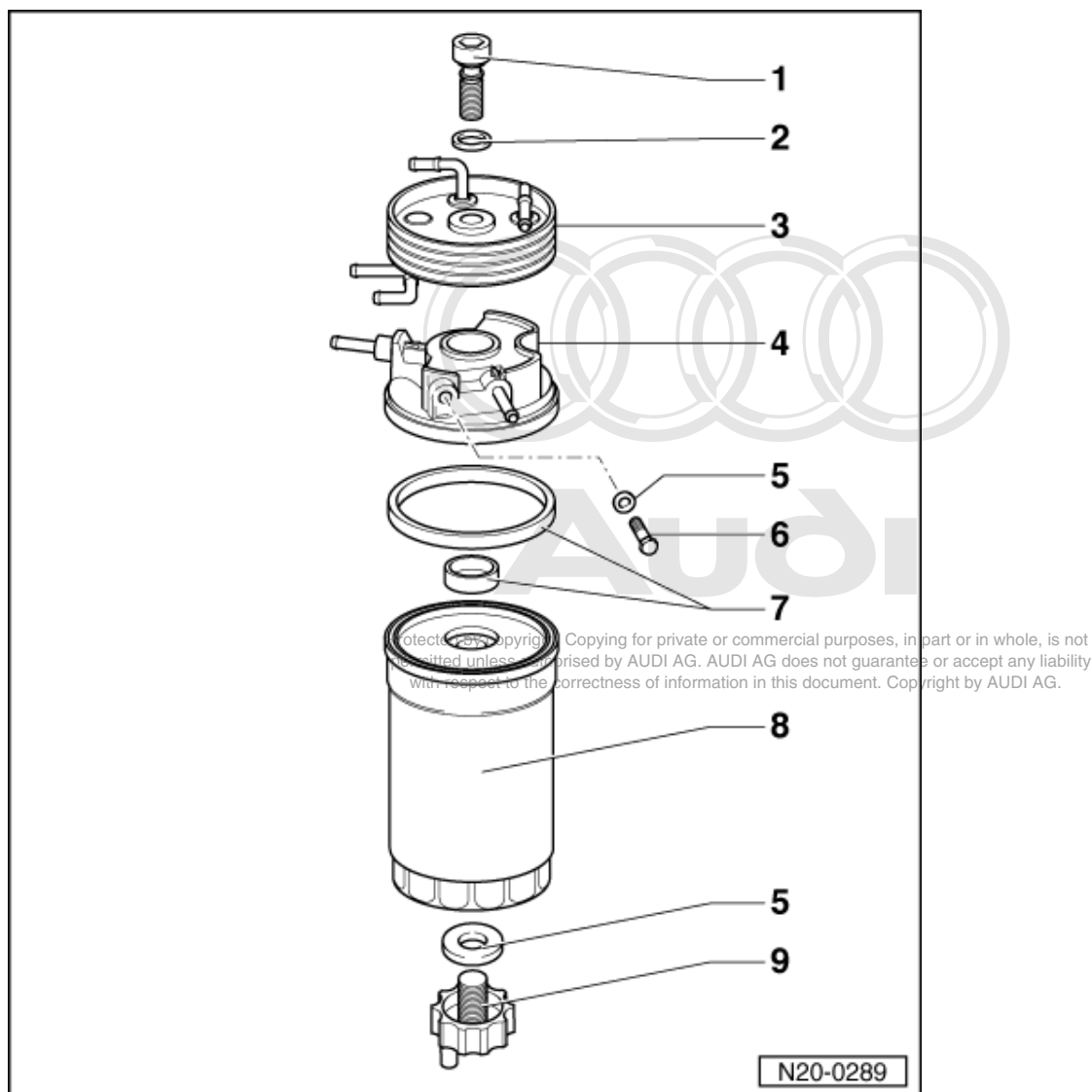
Flow direction is marked by arrows (do not interchange connections).

- Start engine and check fuel system for leaks (visual check).

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5.4 - Overview of fuel filter - Vehicles with 4-cylinder engine (unit injector)

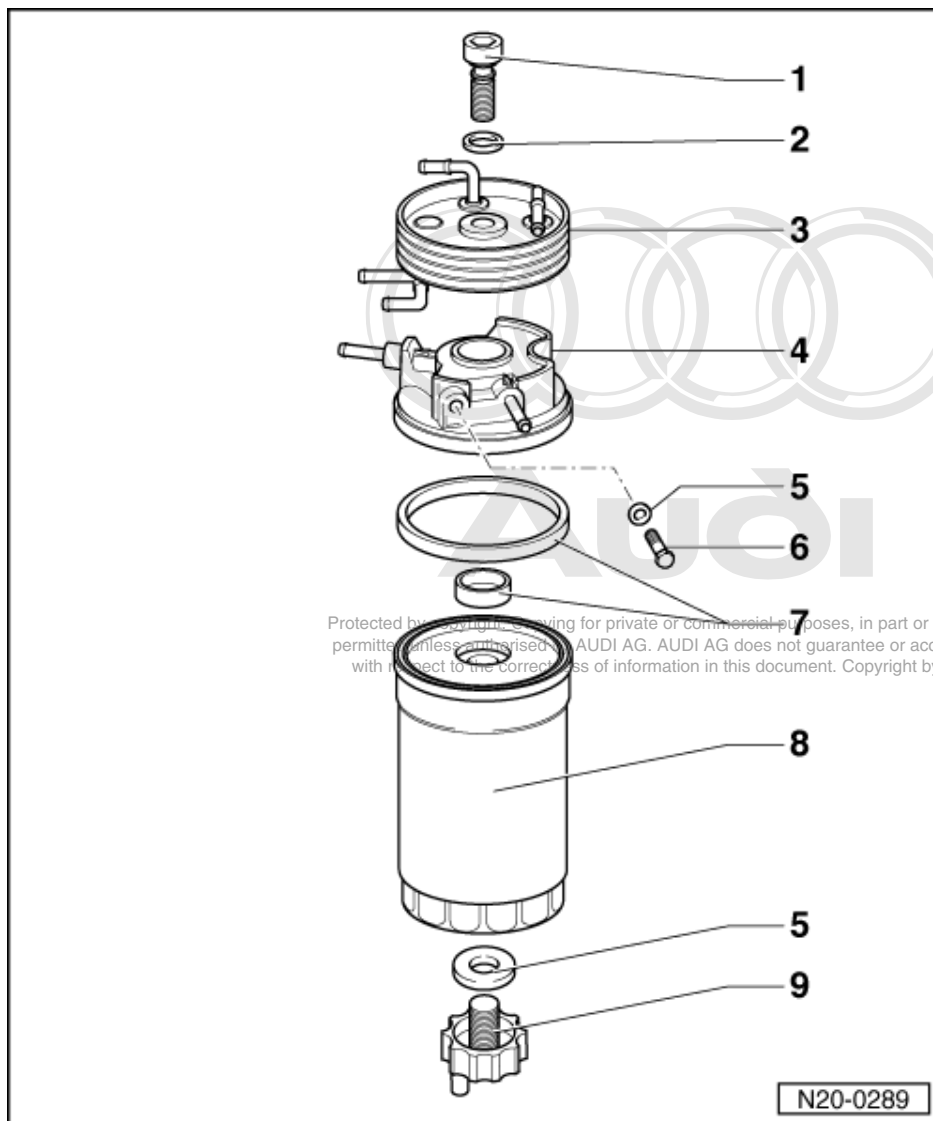


Notes:

- ♦ Fitting location of fuel filter: at left of cylinder head.
- ♦ All hose connections must be secured with hose clips (same as original parts).

=> Parts List

- 1 14 Nm
- 2 O-Ring
 - ♦ Renew
- 3 Cooler
 - ♦ Connection diagram => Page 170



4 Fuel filter flange

- ♦ Flow direction is marked by an arrow
- ♦ Connection diagram => Page 170

5 Seal

- ♦ Renew

6 Vent screw - 10 Nm

- ♦ Loosen in order to drain water

7 Gasket

- ♦ Renew

8 Fuel filter

- ♦ Drain off water or renew filter at intervals specified in Service Schedule

=> Maintenance booklet

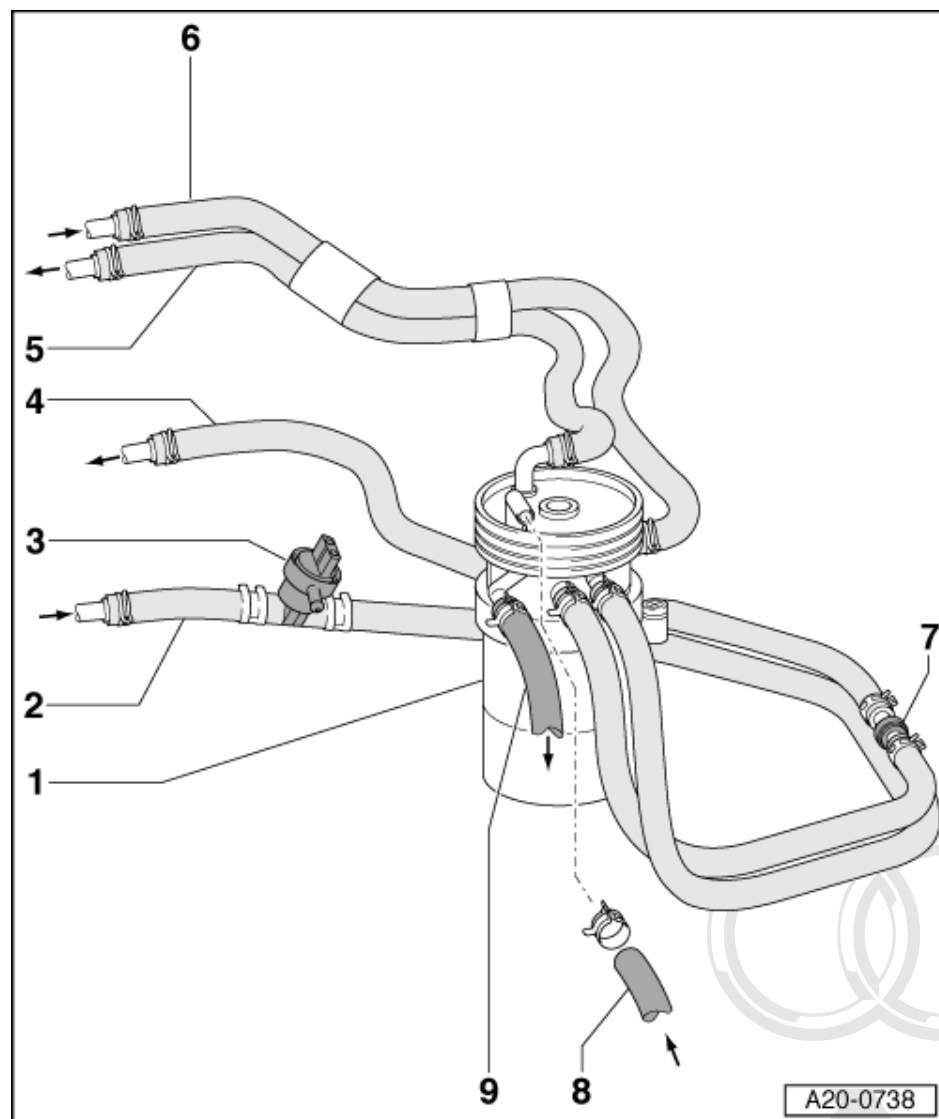
- ♦ Fill with diesel before installing

9 Water drain plug

- ♦ Loosen and allow approx. 100 cm³ fluid to drain
- ♦ Loosen vent screw -Item 6- in order to drain water



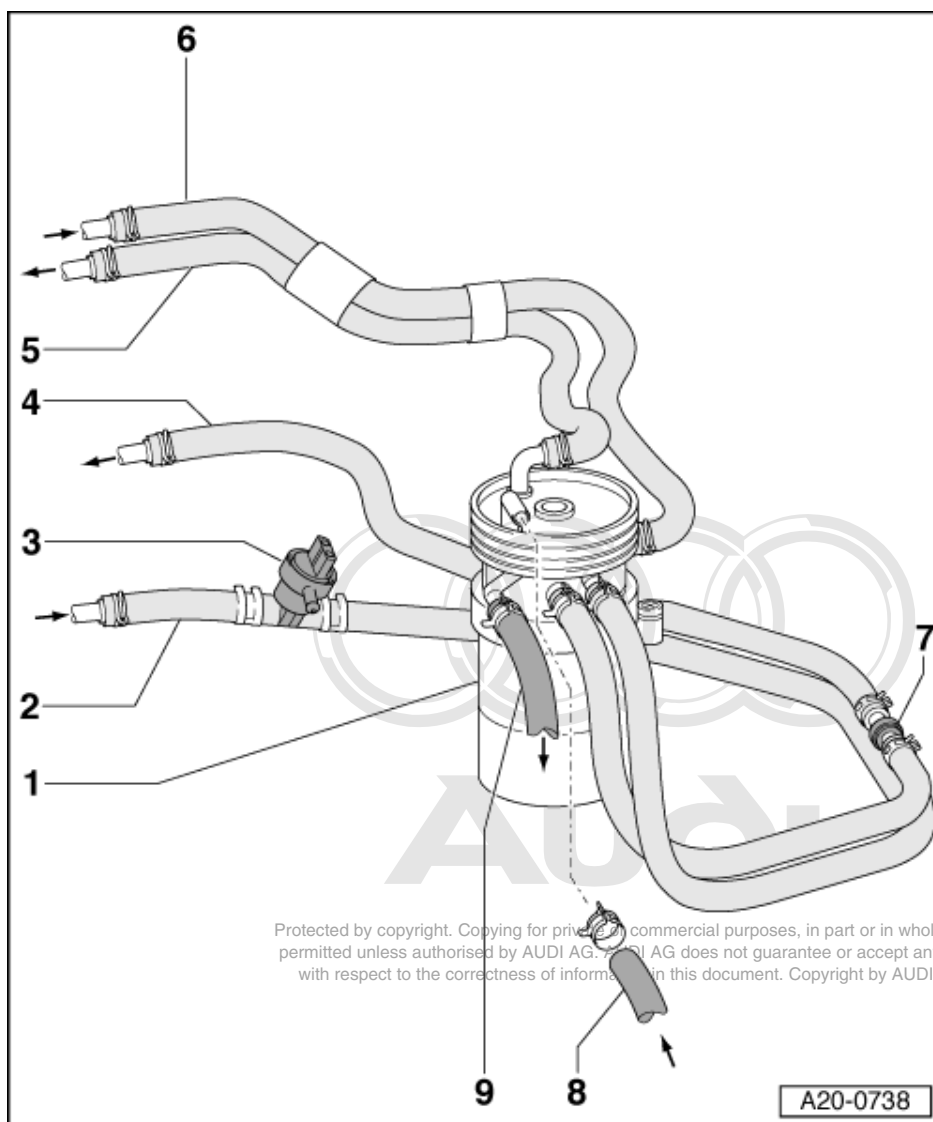
5.5 - Connection diagram for fuel and coolant hoses - Vehicles with 4-cylinder engine (unit injector)



- 1 Fuel filter
- 2 Fuel return hose
 - ◆ From tandem pump
 - ◆ Blue marking
 - ◆ Clipped onto lower coolant pipe
- 3 Fuel temperature sender -G81
 - ◆ Checking:

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=> TDI diesel injection and glow plug system (4-cyl. unit injector); Repair group 23; Testing control unit input values; Testing fuel temperature sender -G81 Testing control unit input values Testing fuel temperature sender -G81



- 4 Fuel return hose**
 - ◆ To fuel tank
 - ◆ Blue marking
 - ◆ Clipped onto bulkhead
- 5 Fuel supply hose**
 - ◆ To tandem pump
 - ◆ White marking
- 6 Fuel supply hose**
 - ◆ From fuel tank
 - ◆ White or with white marking
 - ◆ Clipped onto bulkhead
- 7 Non-return valve**
 - ◆ Installation position: Arrow points towards tandem pump
- 8 Coolant return hose**
 - ◆ To cooler
- 9 Coolant supply hose**
 - ◆ From cooler

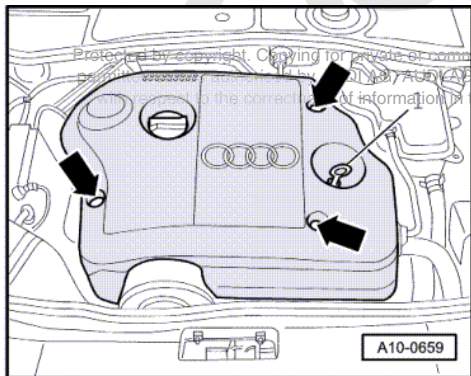


5.6 - Removing and installing fuel filter - Vehicles with 4-cylinder engine (unit injector)

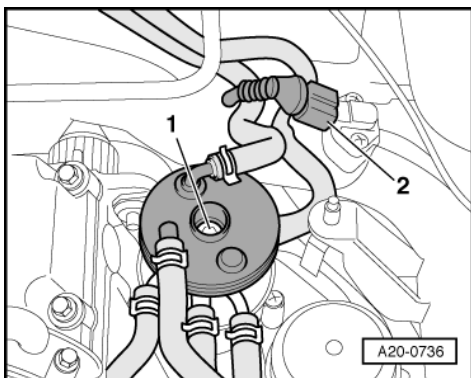
Notes:

- ♦ Please ensure that no Diesel fuel contacts coolant hoses. If necessary clean hose immediately.
- ♦ Observe disposal regulations!

Removing



- -> Pull out oil dipstick -1- from guide tube.
- Unclip dust covers.
- Unscrew nuts -arrows- and remove engine cover.
- Remove noise insulation located under engine cover.
- Re-insert oil dipstick in guide tube.

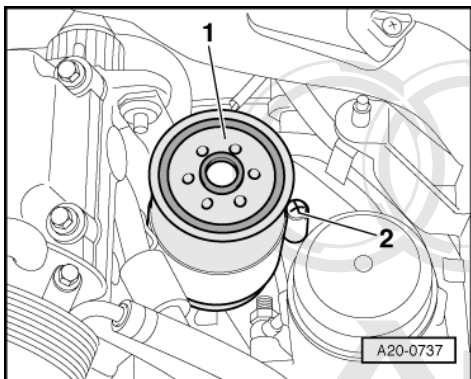


- -> Unplug connector -2-.

Warning

- ♦ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ♦ Wear protective gloves.
- ♦ Wear protective goggles.

- Remove bolt -1-.
- Lift off cooler and fuel filter flange from fuel filter. Place to one side with fuel hoses connected.



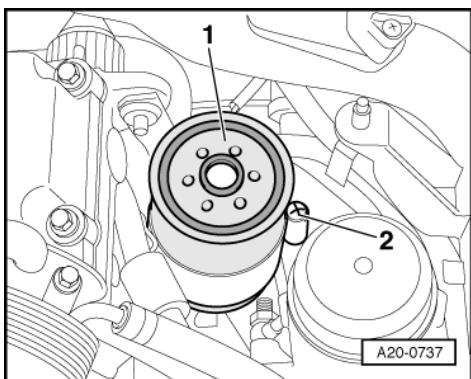
- -> Loosen clamping screw -2- at bracket.
- Remove filter -1- from bracket.

Installing

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Install in reverse sequence; note the following points:

- Moisten new seals lightly with diesel.
- Fill new filter with clean diesel. This will enable the engine to start more quickly.



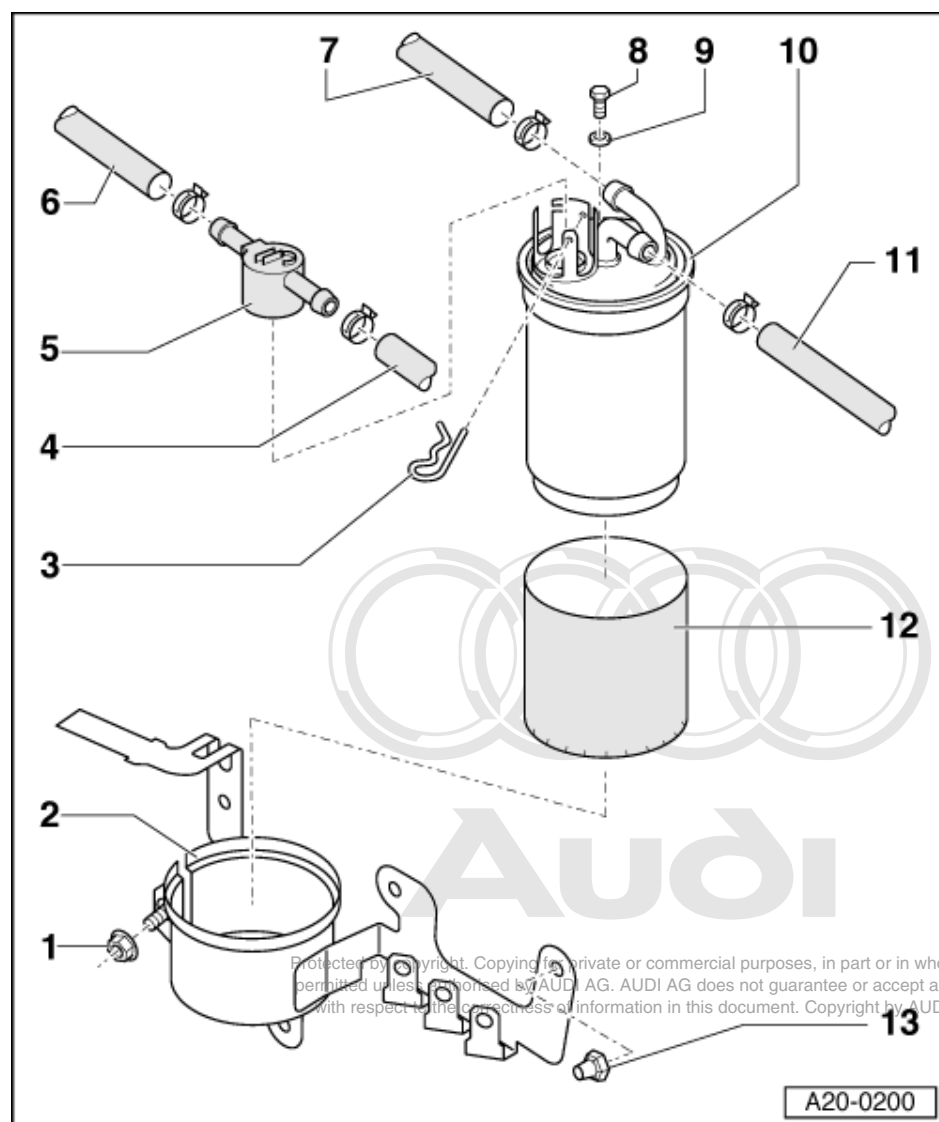
- -> Insert fuel filter into bracket and secure with clamping screw -2-.
- Start engine and check fuel system for leaks (visual check).

Tightening torque

Component	Nm
Cooler with fuel filter flange to fuel filter	14



5.7 - Overview of fuel filter - Vehicles with 6-cylinder engine

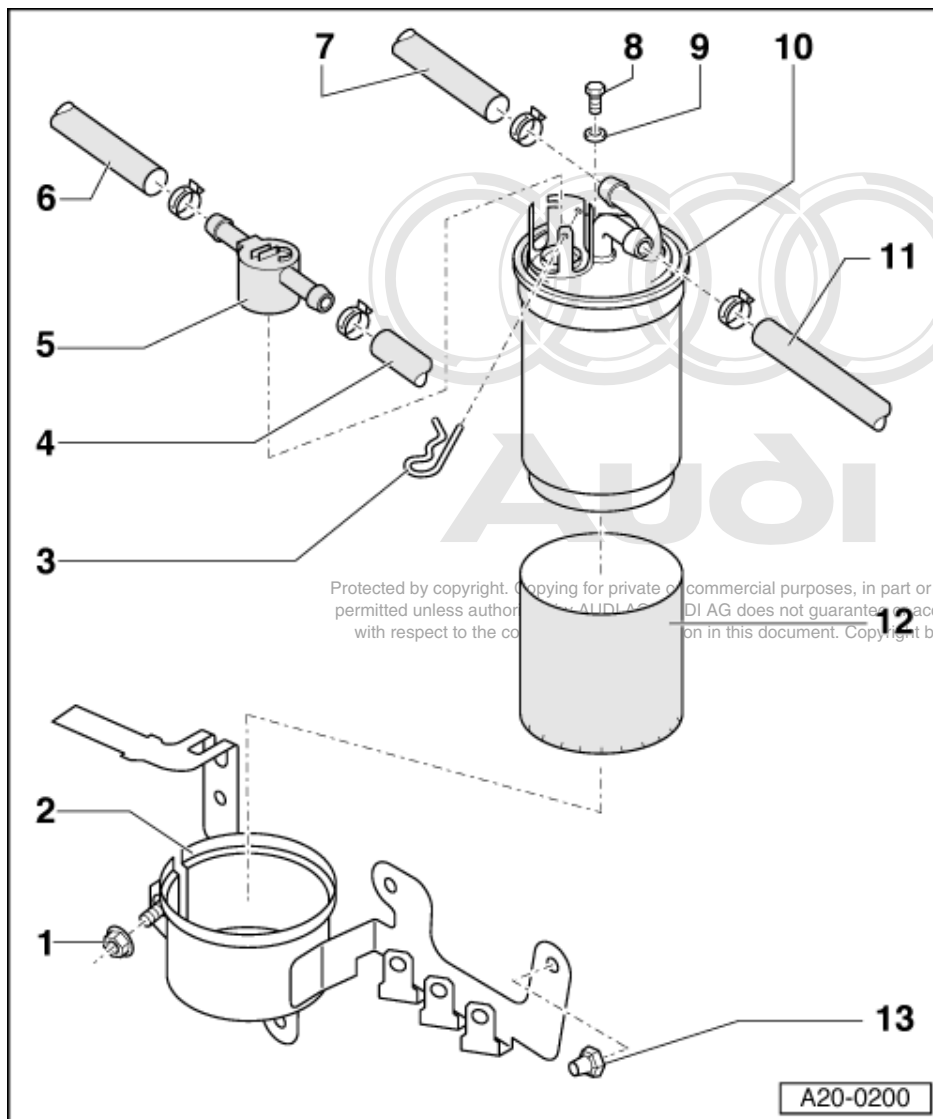


Notes:

- ♦ Fitting location of fuel filter: at rear of engine compartment, right side.
- ♦ All hose connections must be secured with hose clips (same as original parts).

=> Parts List

- 1 10 Nm
- 2 Bracket
 - ♦ For fuel filter
- 3 Securing clip



4 Fuel return pipe

- ♦ From injection pump

5 Control valve

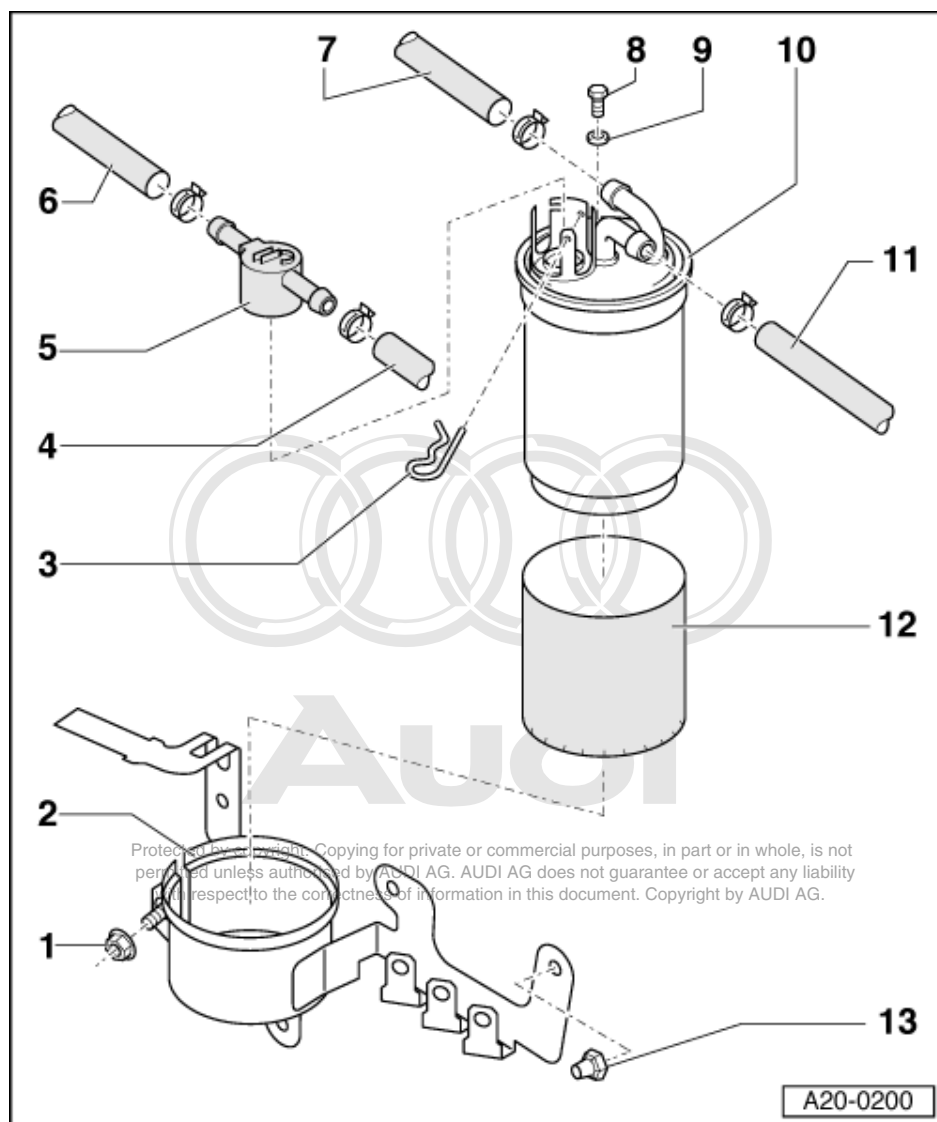
- ♦ Installation position: arrow points towards fuel tank
- ♦ When changing filter, remove securing clip and take control valve off complete with fuel pipes
- ♦ Watch O-ring in filter housing when fitting valve
- ♦ Temperatures below + 15 °C:
 Passage to filter open
- ♦ Temperatures over + 31 °C:
 Passage to filter closed

6 Fuel return pipe

- ♦ To fuel tank

7 Fuel supply pipe

- ♦ From fuel tank



8 Water drain screw
- 4 Nm

9 Seal
♦ Renew

10 Fuel filter
♦ With seal for control valve
♦ Flow direction is marked by an arrow
♦ Do not interchange connections
♦ Drain off water or renew filter at intervals specified in Service Schedule

=> Maintenance booklet

- ♦ Fill with diesel before installing

11 Fuel supply pipe
♦ To injection pump

12 Plastic insert
♦ Slide onto filter

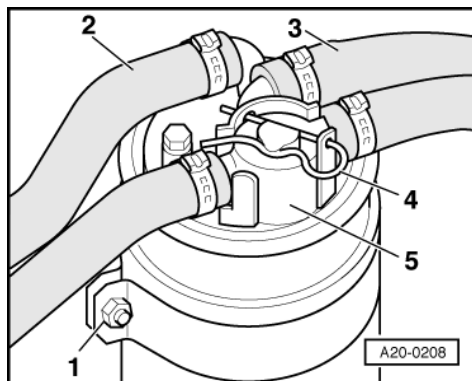
13 10 Nm

5.8 - Removing and installing fuel filter - Vehicles with 6-cylinder engine

Notes:

- ◆ Please ensure that no Diesel fuel contacts coolant hoses. If necessary clean hose immediately.
- ◆ Observe disposal regulations!

Removing

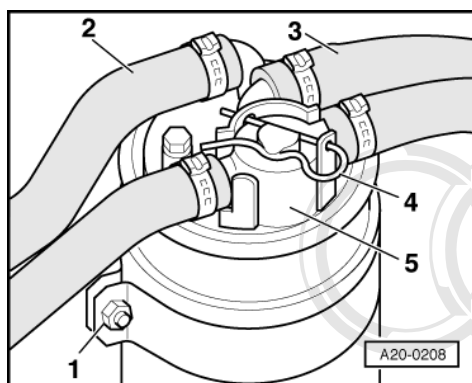


- -> Pull off retaining clip -4-.
- Take off control valve -5- with fuel hoses connected.
- Disconnect fuel hoses -2- and -3- from hose connections.
- Loosen clamp -1- on bracket and take filter out of bracket.

Installing

Install in reverse sequence; note the following points:

- Push plastic insert onto new filter.
- Fill new filter with clean diesel. This will enable the engine to start more quickly.
- Watch O-ring in filter housing when fitting control valve.
- Install control valve with fuel pipes connected.



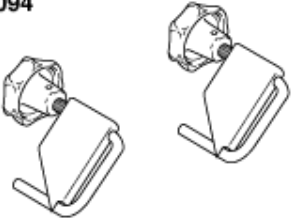
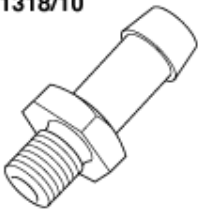
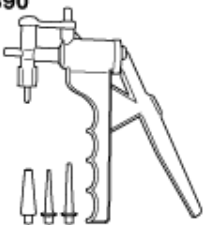
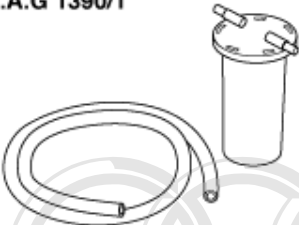
- -> Fit retaining clip -4-.
- Push fuel hoses -2- and -3- onto hose connections and secure with hose clips.
- Start engine and check fuel system for leaks (visual check).

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6 - Bleeding fuel system

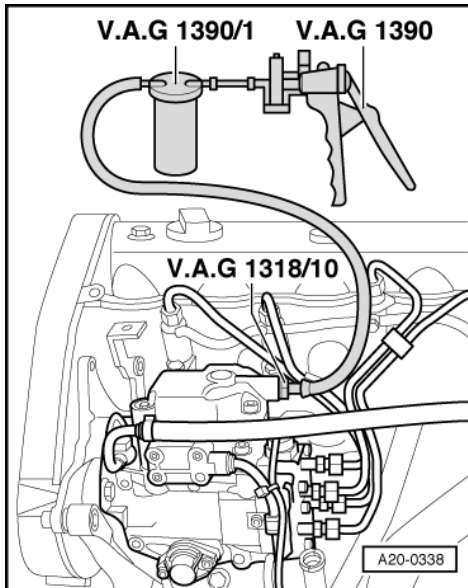
6.1 - Bleeding fuel system

3094 	V.A.G 1318/10 
V.A.G 1390 	V.A.G 1390/1 
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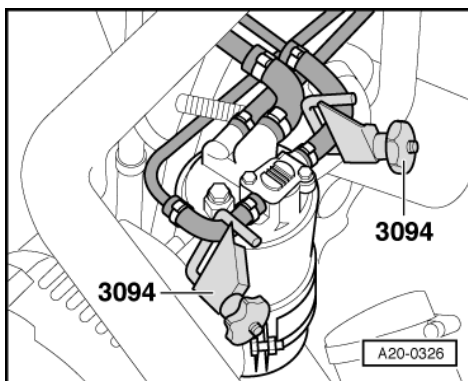
6.2 - Vehicles with 4-cylinder engine

Special tools and workshop equipment required

- ♦ Hose clamps 3094
- ♦ Adapter V.A.G 1318/10
- ♦ V.A.G 1390
- ♦ V.A.G 1390/1



- -> Screw adapter V.A.G 1318/10 into return connection on injection pump.
- Connect hand vacuum pump V.A.G 1390 and bleeder container V.A.G 1390/1 to adapter.



- -> Clamp off fuel return hose in front of and behind regulating valve using hose clamps 3094.
- Operate hand vacuum pump until fuel flows free of bubbles.

Important:
 Empty the bleeder container

- Reconnect return pipe to injection pump (25 Nm).

Note:

Replace seals.

- Remove hose clamps 3094 from return hose.
- Start the engine and check fuel system for leaks (visual check).

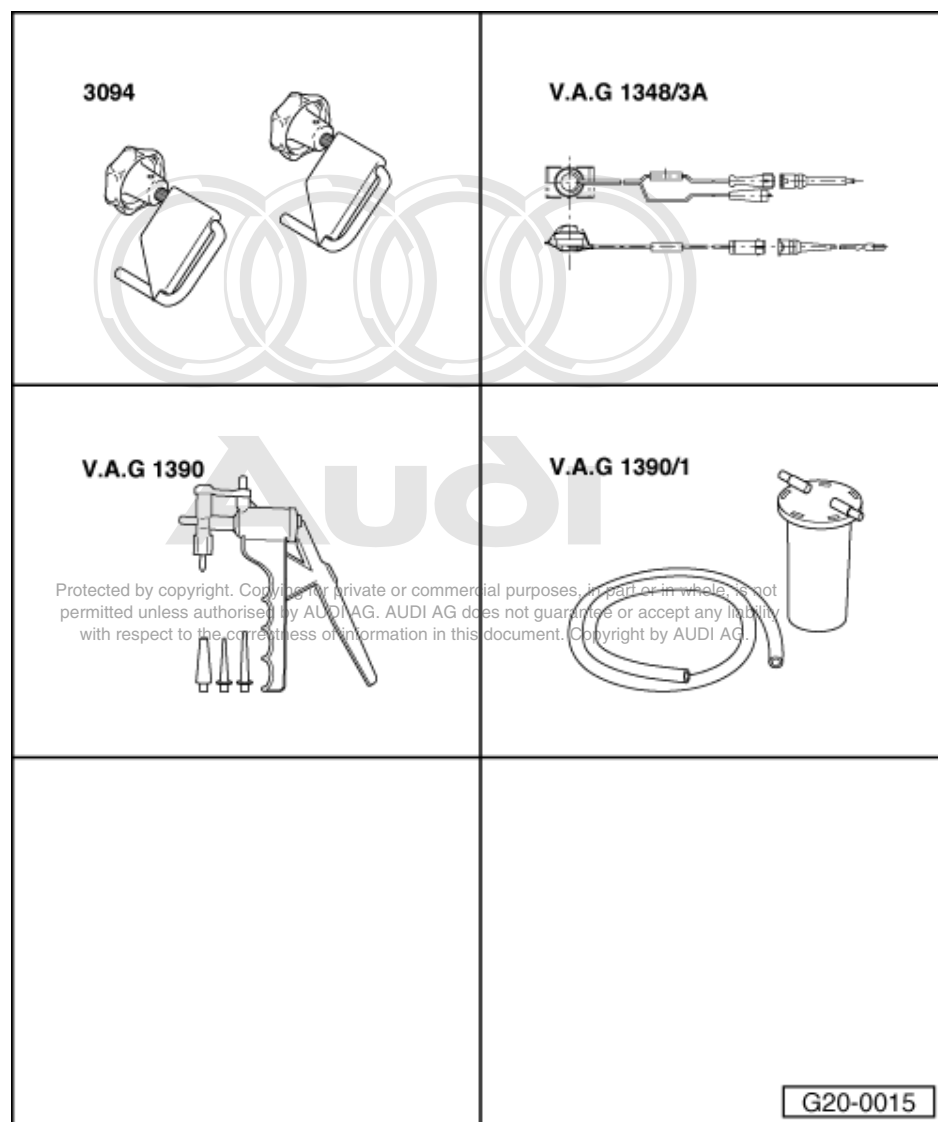
6.3 - Vehicles with 4-cylinder engine (unit injector)

Due to the design of the engine, with a pre-delivery pump located in the fuel tank, it is not necessary to bleed vehicles with unit injector engine.



The fuel system bleeds itself when the starter is operated.

6.4 - Vehicles with 6-cylinder engine



Special tools and workshop equipment required

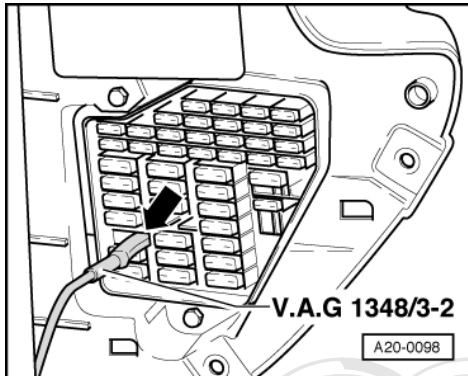
- ◆ Hose clamps 3094
- ◆ V.A.G 1348/3A with V.A.G 1348/3-2
- ◆ V.A.G 1390
- ◆ V.A.G 1390/1

Important

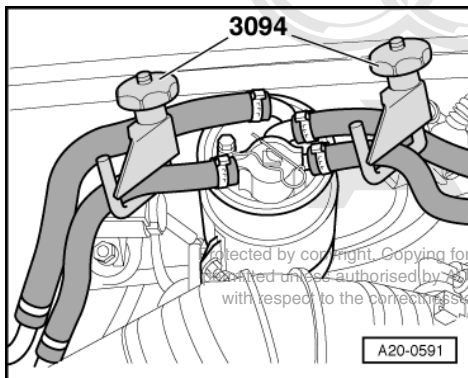
- ◆ The inner section of the baffle housing must be kept full of fuel (capacity approx. 0.5 litre) while bleeding the fuel system.
- ◆ When the engine is not running (electric fuel pump off), the inner section of the baffle housing will only stay full if there are more than 40 litres of fuel in the tank. For this reason, put in enough fuel to bring up the contents of the tank to more than 40 litres before bleeding the fuel system.

Note:

If you do not want to put more fuel in the tank because of tests that will be required later, the following procedure can be used to keep the inner section of the baffle housing full of fuel while bleeding the system:



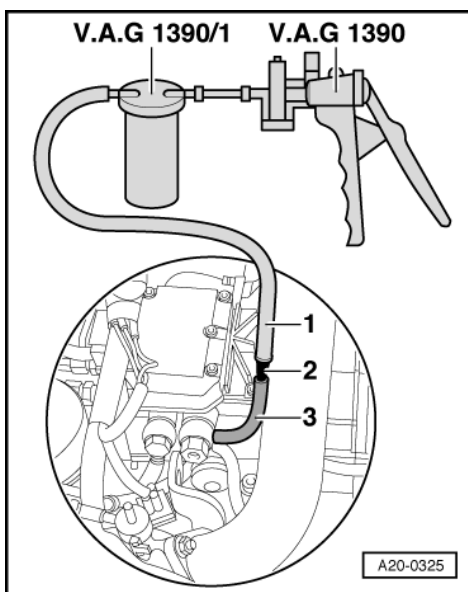
- Open fuse box cover on left side of dash panel.
- Pull out fuse S228 from fuse carrier (left-hand row of fuses, 5th large fuse from the top).
- -> Connect remote control V.A.G 1348/3A with adapter lead V.A.G 1348/3-2 to right-hand terminal in fuse socket S228 -arrow-.



- Connect clamp to positive terminal (+) of battery.
- Keep remote control switch pressed while bleeding fuel system; fuel pump should run audibly.

Bleeding

- -> Using hose clamps 3094, clamp off fuel return hose between filter and fuel tank.





- -> Disconnect return hose for injectors of right cylinder bank at injection pump.
- Connect a short length of hose -3- to the free hose connection on the injection pump.
- Insert a suitable adapter -2- from V.A.G 1390/1 into the short length of hose.
- Connect hose -1- between adapter and bleeder container V.A.G 1390/1.
- Then operate hand vacuum pump and fill bleeder container 3 times.

Important:

Empty the bleeder container

Note:

Air bubbles may still be visible in the hose even after the bleeder container has been filled 3 times.

- Re-connect return hose to injection pump.
- Remove hose clamp 3094 from return hose.
- Put back fuse S228 if it has been removed.
- Start the engine and check fuel system for leaks (visual check).

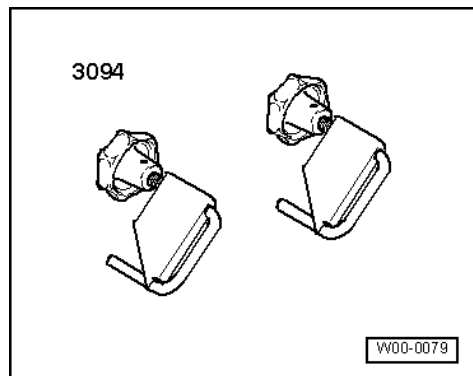
Important:

If the engine does not start quickly, do not continue operating the starter for longer than 15 seconds. Bleed the fuel system again.

7 - Checking fuel system for leaks

7.1 - Checking fuel system for leaks

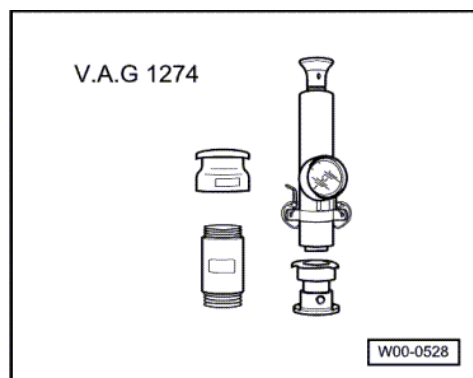
7.2 - Vehicles with 4-cylinder engine



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Special tools and workshop equipment required

- ♦ Hose clamps 3094

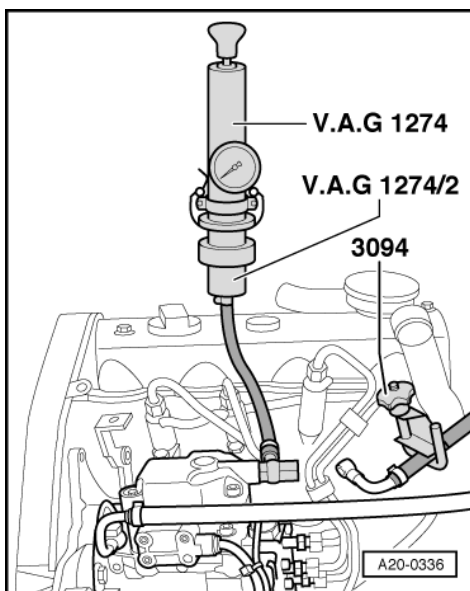


- ♦ Cooling system tester V.A.G 1274 with adapter V.A.G 1274/2 A

Leaks in the fuel system may result in the following:

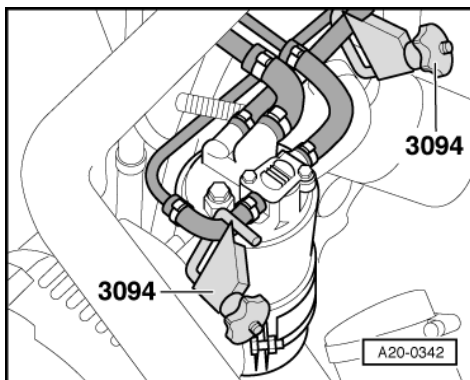
- ♦ Foam build-up or air bubbles in the supply pipe
- ♦ Loss of power, misfiring
- ♦ Starting problems

Work sequence



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- -> Attach adapter 1274/2A to cooling system tester V.A.G 1274.
- Unscrew return pipe from injection pump and connect hose from adapter V.A.G 1274/2A in its place.



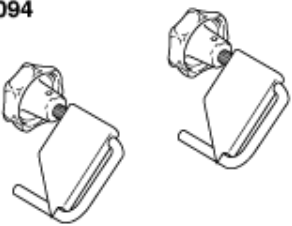
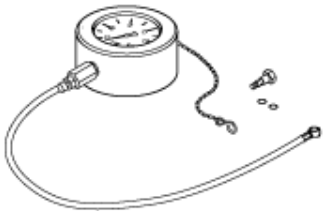
- -> Fit hose clamps 3094 at the following points:
 - On supply hose downstream of fuel filter
 - On return hose downstream of fuel filter
 - On return hose from injection pump
- Use hand pump on tester to create a pressure of between 1.0 and 1.5 bar.
- If the pressure constantly drops, locate leak and eliminate fault.

Note:

By moving the hose clamps from the filter to the fuel tank connections it is also possible to test the fuel hoses.



7.3 - Vehicles with 4-cylinder engine (unit injector)

3094 	V.A.G 1274  Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
VAS 5187 	
	G20-0019

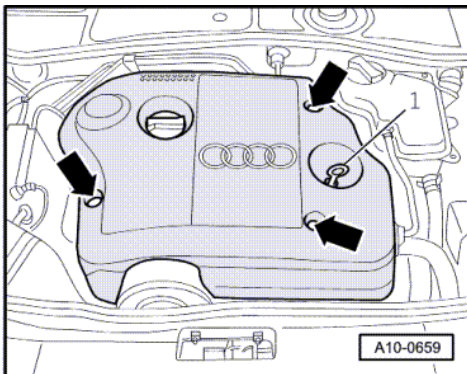
Special tools and workshop equipment required

- ♦ Hose clamps 3094
- ♦ V.A.G 1274 with adapter V.A.G 1274/2 A
- ♦ Test device for tandem pump VAS 5187

Leaks in the fuel system may result in the following:

- ♦ Foam build-up or air bubbles in the supply pipe
- ♦ Loss of power, misfiring
- ♦ Starting problems

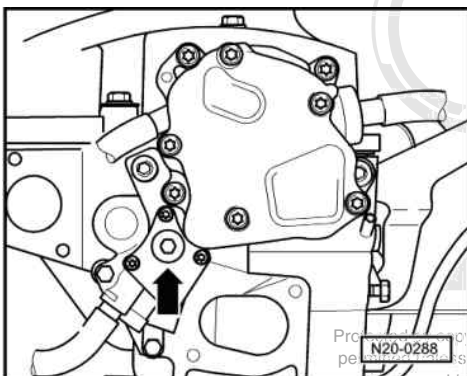
Work sequence



- -> Pull out oil dipstick -1- from guide tube.
- Unclip dust covers.
- Unscrew nuts -arrows- and remove engine cover.
- Remove noise insulation located under engine cover.
- Re-insert oil dipstick into guide tube.

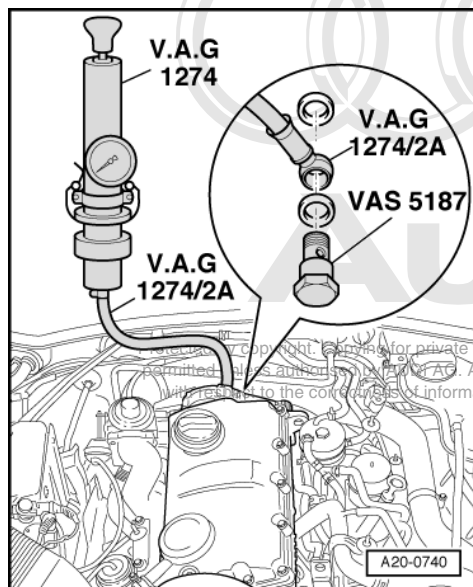
Warning

- ◆ In extreme cases the fuel pipes/hoses or the fuel can reach a temperature of 100 C on vehicles with unit injector engine. Allow the fuel to cool down before disconnecting the pipes/hoses - acute danger of scalding.
- ◆ Wear protective gloves.
- ◆ Wear protective goggles.

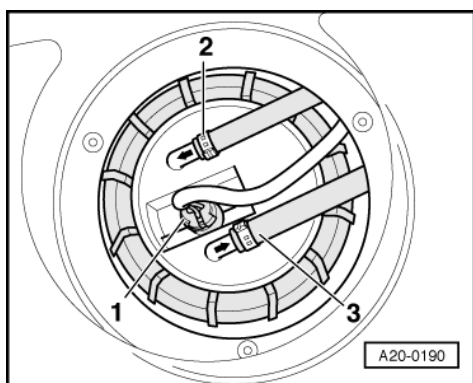


- -> Remove plug -arrow-.

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- -> Attach adapter 1274/2 to cooling system tester V.A.G 1274.
- Connect adapter V.A.G 1274/2A to tandem pump using banjo bolt from VAS 5187.



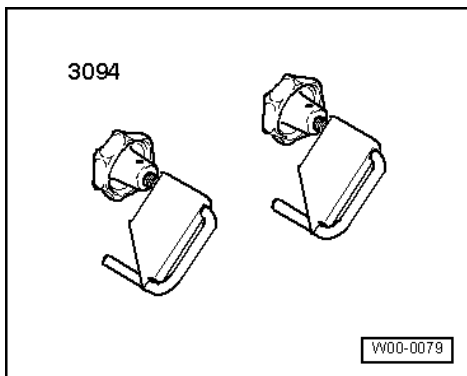
- Detach floor trim in luggage compartment.
- Unbolt cover for flange.
- -> Release and unplug connector -1- (if necessary).
- Fit hose clamps 3094 on the fuel supply hose -3- and the fuel return hose -2-.
- Use hand pump on tester to create a pressure of between 1.0 and 1.5 bar.
- If the pressure constantly drops, locate leak and eliminate fault.

Note:

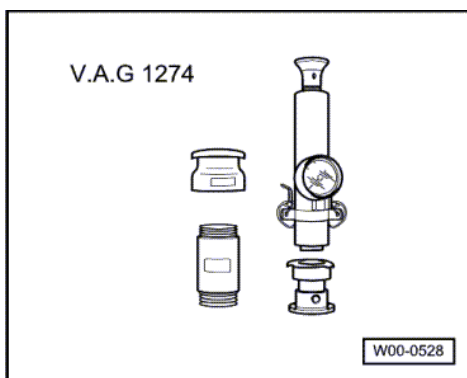
After removing pressure tester, tighten plug to 25 Nm. Always replace seal.

7.4 - Vehicles with 6-cylinder engine

Special tools and workshop equipment required



- ◆ Hose clamps 3094

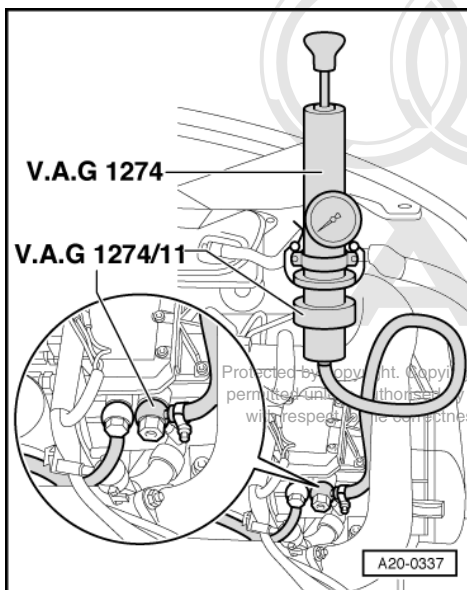


- ◆ Cooling system tester V.A.G 1274 with adapter V.A.G 1274/11

Leaks in the fuel system may result in the following:

- ◆ Foam build-up or air bubbles in the supply pipe
- ◆ Loss of power, misfiring
- ◆ Starting problems

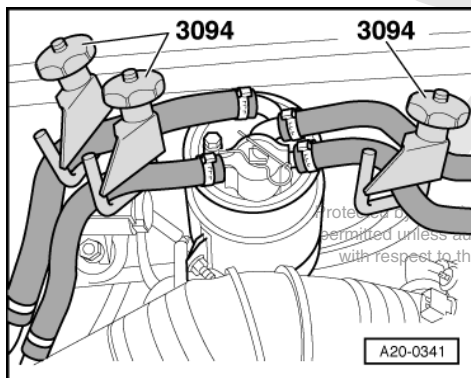
Work sequence



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- -> Attach adapter 1274/11 to cooling system tester V.A.G 1274.
- Unscrew return pipe from injection pump and connect hose from adapter V.A.G 1274/11 in its place.

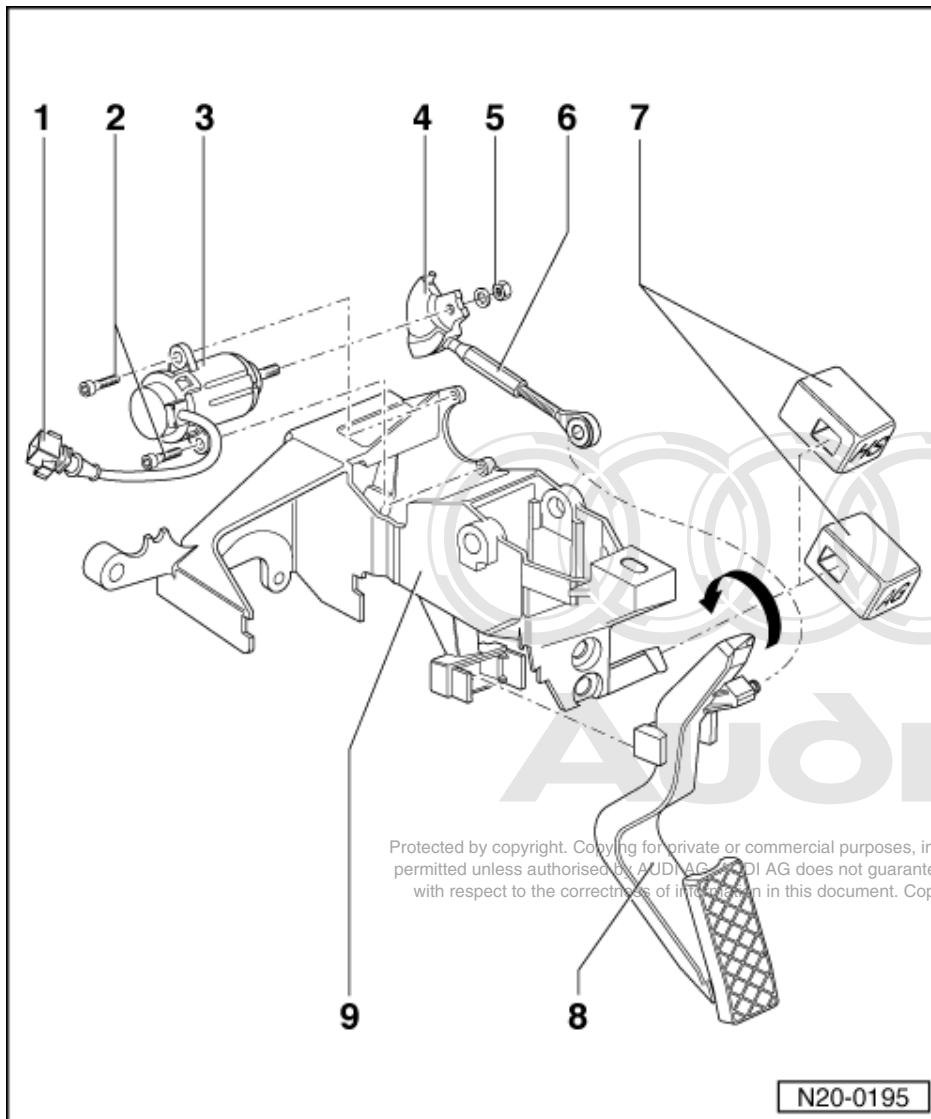


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- -> Fit hose clamps 3094 at the following points:
 - On supply hose downstream of fuel filter
 - On return hose downstream of fuel filter
 - On return hose from injection pump
- Use hand pump on tester to create a pressure of between 1.0 and 1.5 bar.
- If the pressure constantly drops, locate leak and eliminate fault.

Note:

By moving the hose clamps from the filter to the fuel tank connections it is also possible to test the fuel hoses.



7 Accelerator pedal stop

- ◆ Position on vehicles with manual gearbox: marking "H" or "HS" (hand-shift) must be visible
- ◆ Position on vehicles with automatic gearbox: marking "A" or "AG" must be visible

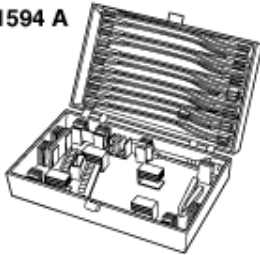
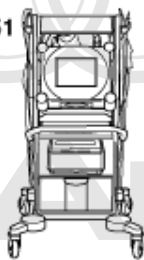
8 Accelerator pedal

9 Mounting

- ◆ Detach steering column from steering box before removing

=> Running gear, FWD and 4WD; Repair group 48; Removing and installing steering column Removing and installing steering column

8.2 - Testing accelerator pedal position sender -G79 - Vehicles with 4-cylinder engine

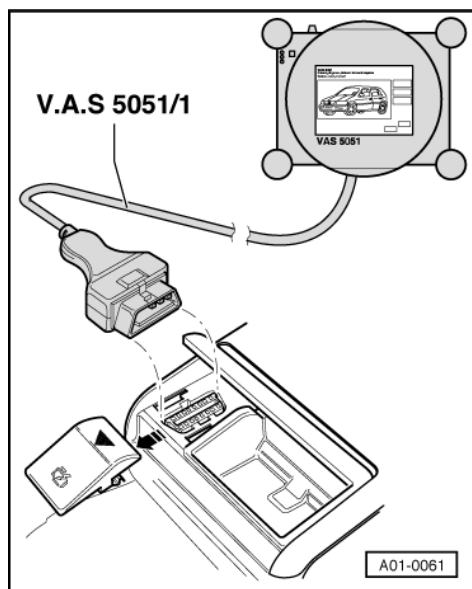
V.A.G 1526 A 	V.A.G 1594 A 
V.A.G 1598/18 	V.A.G 1598/22 
VAS 5051 	

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G20-0021

Special tools and workshop equipment required

- ◆ V.A.G 1526 A
 - ◆ V.A.G 1594 A
 - ◆ V.A.G 1598/18
(Vehicles ä 06.97)
 - ◆ V.A.G 1598/22
(Vehicles 07.97 ä)
 - ◆ VAS 5051 with VAS 5051/1
- or
- ◆ V.A.G 1551 with V.A.G 1551/3 A

**Test sequence**

- Connect the vehicle diagnostic, test and information system VAS 5051 or fault reader V.A.G 1551 and select engine electronics control unit by entering address word "01". When doing this the ignition must be on

=> Diesel direct injection and glow plug system (4-cyl.) ä 06.97; Repair group 01; Self-diagnosis of diesel direct injection system Self-diagnosis of diesel direct injection system

=> TDI injection and glow plug system (4-cyl.) 07.97 ä 07.99; Repair group 01; Self-diagnosis Self-diagnosis

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- Enter "08" to select the function "Read measured value block" and confirm entry with Q key.

-> Indicated on display:

Read measured value block	Q
Enter display group number xxx	

- Press keys 0, 0 and 2 for "Display group number 002" and confirm entry with Q key.

-> Indicated on display:

(1...4 = Display zones)

Read measured value block 2
1 2 3 4

- Check display in display zone 2.
 - Specification: 0.0 % (accelerator not depressed)
- Check display in display zone 3.
 - Specification:
 - 0 1 0 (accelerator not depressed)
 - 0 0 0 (accelerator depressed)
- Press accelerator pedal down slowly.

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Vehicles with manual gearbox

- Check display in display zone 2.
 - Specification: the value should increase steadily to 100 % (accelerator fully depressed).

Vehicles with automatic gearbox

- Specification: the pressure point of the kick-down switch should be clearly noticeable before reaching the full-throttle stop.

All models

If the specifications for the initial and/or final readouts are not obtained:

- Adjust accelerator position sender -G79 => Page 196 .

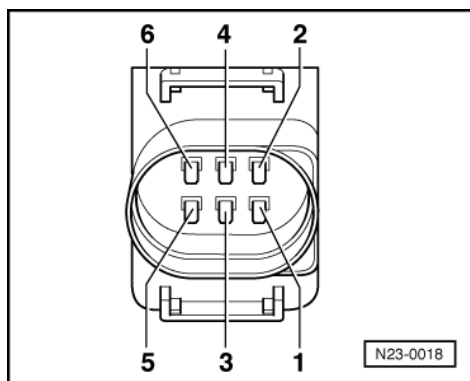
If the display does not change or only changes irregularly:

Testing internal resistance

- Switch off ignition.
- Remove storage compartment (shelf) on driver's side.

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Unplug connector for accelerator position sender -G79 (located in footwell on accelerator pedal).



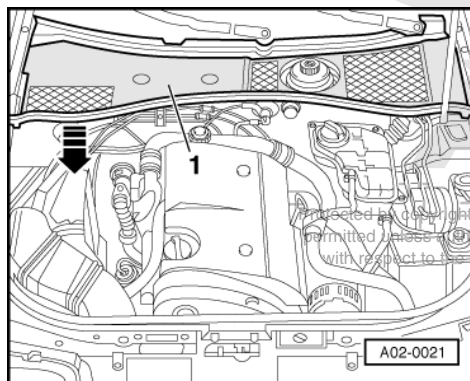
- -> Connect multimeter (resistance measurement range) as follows:

Contacts	Accelerator	Specification
1 + 3	Not depressed	0.6 ... 1.4 kΩ
2 + 3	Not depressed	0.6 ... 1.4 kΩ
4 + 6	Not depressed	0.6 ... 1.4 kΩ
	Depressed	∞ Ω
5 + 6 1)	Not depressed	∞ Ω
	Fully depressed	0.6 ... 1.4 kΩ

1) Only on vehicles with automatic gearbox.

If the specifications are not obtained:

- Renew accelerator position sender -G79.

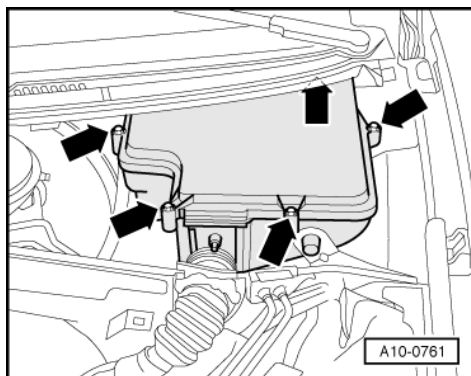


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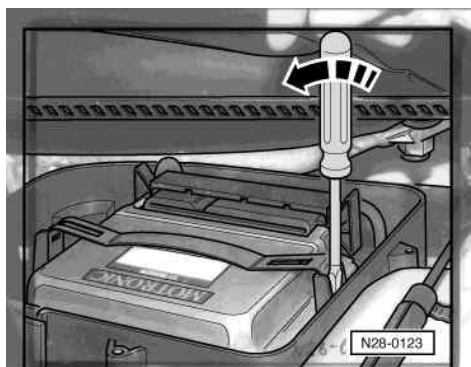


Checking wiring connections

- Switch off ignition.
- -> Remove rubber seal from plenum chamber cover in direction of arrow if necessary.
- Remove plenum chamber cover -1- from the front.



- -> Remove cover for electronics box in plenum chamber -arrows-.

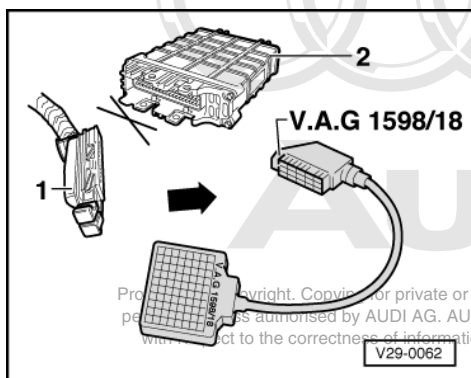


- -> Carefully lever off the retainer bar with a screwdriver -arrow-.
- Release catches and unplug control unit connectors.

Warning!

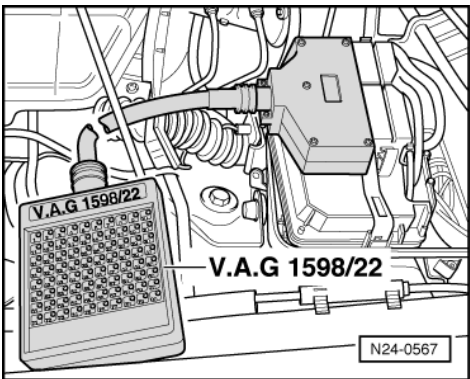
To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.

Vehicles ä 06.97:



- -> Connect test box V.A.G 1598/18 to unplugged connector -1- of engine control unit -2- (the control unit remains disconnected).

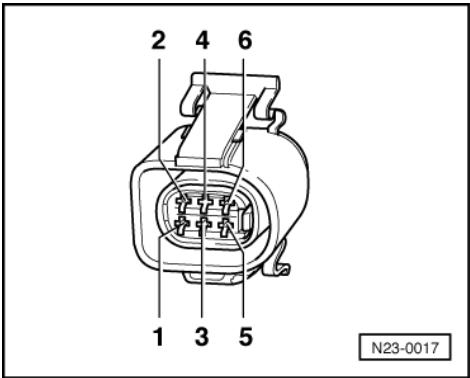
Vehicles 08.99 ä:



- -> Connect test box V.A.G. 1598/22 to the connectors which have been unplugged from the engine control unit (the control unit remains disconnected).

All models

- Unplug connector for accelerator position sender -G79 (located in footwell on accelerator pedal).



- -> Test for open circuit and short to positive or earth in the following wiring connections:

Connector Contact	Test box V.A.G 1598/18 (ä 06.97) Socket	Test box V.A.G 1598/22 (07.97 ä) Socket
1	15	24
2	57	11
3	55	23
4	65	12
6	1, 24, 46	25
5 1)	62	8

1) Only on vehicles with automatic gearbox.

- Rectify any open/short circuit as necessary.

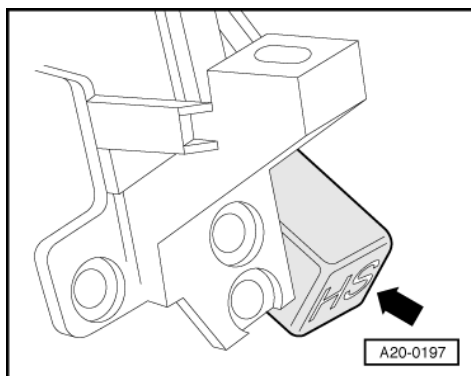
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=> Current flow diagrams, Electrical fault finding and Fitting locations binder



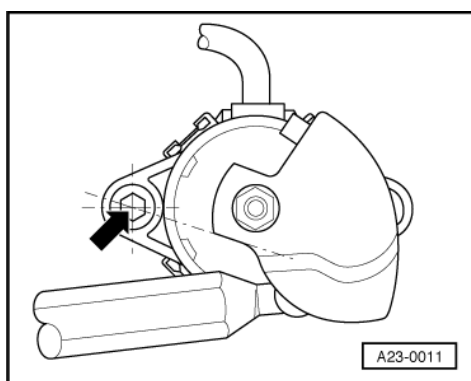
8.3 - Adjusting accelerator position sender - vehicles with 4-cylinder engine

Vehicles with manual gearbox



Requirement for test:

- -> Position of accelerator pedal stop: marking "H" or "HS" must be visible.



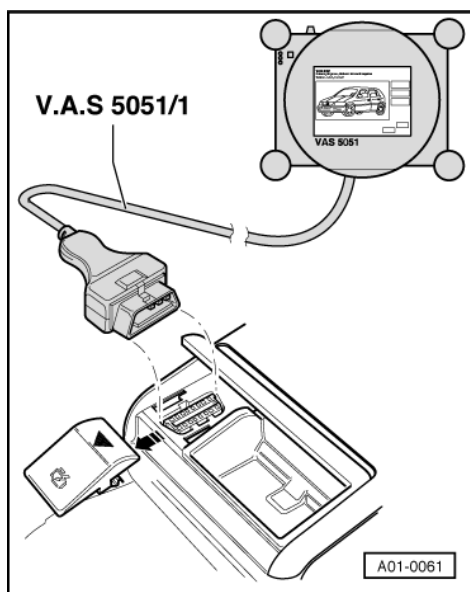
Note:

If accelerator position sender -G79 has been removed:

- -> Fit cable cam as shown.
- ♦ In rest position the continuation of the spanner flat should intersect with the centre of the drilling -arrow-.
- Install sender with cable cam already fitted.

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Work sequence



- Connect the vehicle diagnostic, test and information system VAS 5051 or fault reader V.A.G 1551 and select engine electronics control unit by entering address word "01". When doing this the ignition must be on

=> Diesel direct injection and glow plug system (4-cyl.) ä 06.97; Repair group 01; Self-diagnosis of diesel direct injection system Self-diagnosis of diesel direct injection system

=> TDI injection and glow plug system (4-cyl.) 07.97 ä 07.99; Repair group 01; Self-diagnosis Self-diagnosis

-> Indicated on display:

Rapid data transfer HELP
 Select function XX

- Enter "08" to select the function "Read measured value block" and confirm entry with Q key.

-> Indicated on display:

Read measured value block Q
 Enter display group number xxx

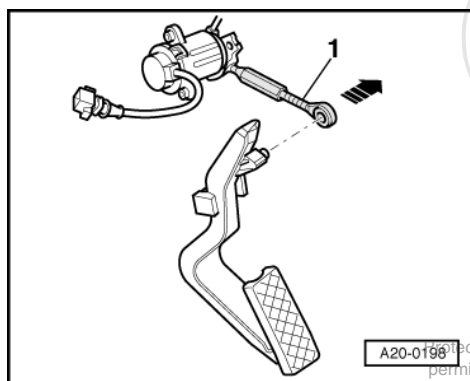
- Press keys 0, 0 and 2 for "Display group number 002" and confirm entry with Q key.

-> Indicated on display:

(1...4 = Display zones)

Read measured value block 2
 1 2 3 4

- Check display in display zone 2.
 - Specification: 0.0 % (accelerator not depressed)



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- -> Disengage eyelet of operating rod -1- from accelerator pedal -arrow-.
- Remove anti-twist retainer (cable tie).
- Turn threaded collar on operating rod.

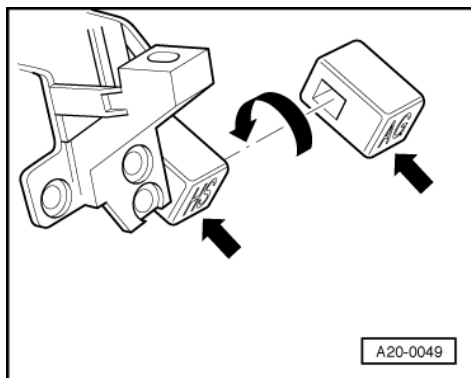
Note:

The "100 %" display should be reached exactly when the pedal contacts the full throttle stop. If "100 %" is reached before the pedal contacts the stop, turn back the threaded collar accordingly.

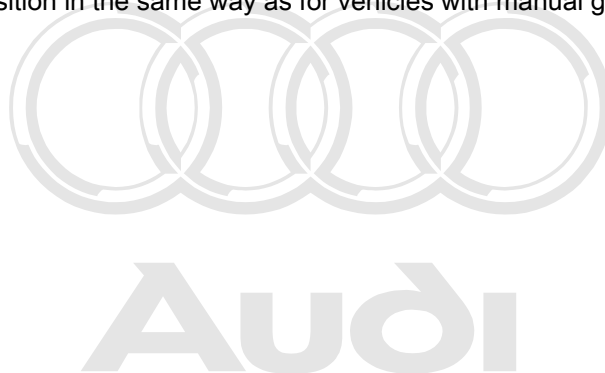
- After completing adjustment, carefully engage operating rod on accelerator pedal.
- Check display in display zone 3.
 - Specification:
 - 0 1 0 (accelerator not depressed)
 - 0 0 0 (accelerator depressed)
- Fit new anti-twist retainer (cable tie).

Vehicles with automatic gearbox

- The adjustment procedure is the same as for vehicles with manual gearbox, except for the following points:
 - When making the adjustment, the accelerator pedal stop must first be fitted in the position for vehicles with manual gearbox:
Marking "H" or "HS" must be visible.
 - With this stop installed, adjust full throttle position in the same way as for vehicles with manual gearbox (readout in display zone 2: 100%) .

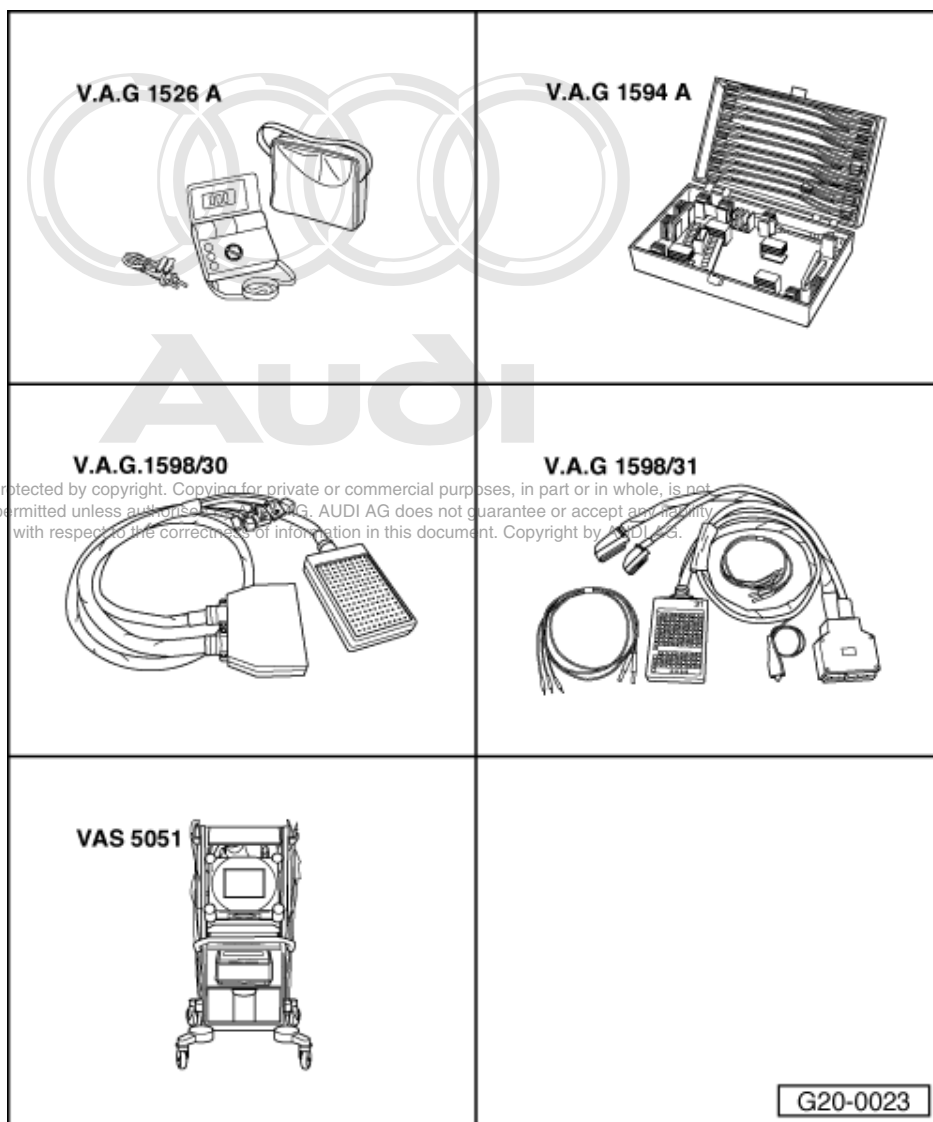


- -> After completing the adjustment, install the accelerator pedal stop in the position for vehicles with automatic gearbox -arrows-:
Marking "A" or "AG" must be visible.



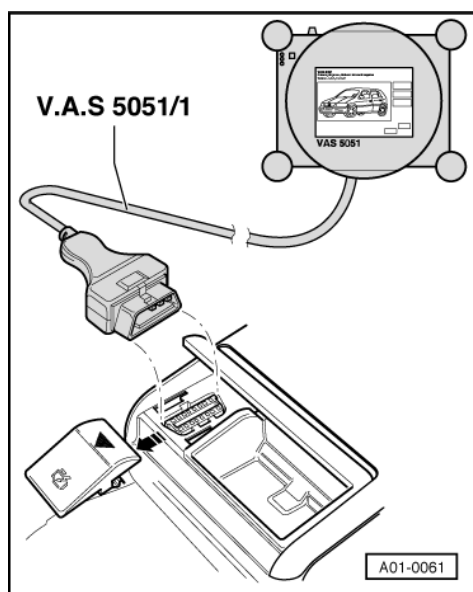
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8.4 - Testing accelerator pedal position sender -G79 - Vehicles with 6-cylinder engine



Special tools and workshop equipment required

- ◆ V.A.G 1526 A
 - ◆ V.A.G 1594 A
 - ◆ V.A.G 1598/30
 (engine code letters AFB with manual gearbox and automatic gearbox; engine code letters AKN with manual gearbox)
 - ◆ V.A.G 1598/31
 (engine code letters AKN with automatic gearbox)
 - ◆ VAS 5051 with VAS 5051/1
- or
- ◆ V.A.G 1551 with V.A.G 1551/3 A

**Test sequence**

- -> Connect the vehicle diagnostic, test and information system VAS 5051 or fault reader V.A.G 1551. Select engine electronics control unit by entering address word "01". When doing this the ignition must be on

=> Diesel direct injection and glow plug system (TDI 6-cyl.); Repair group 01; Self-diagnosis Self-diagnosis

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- Enter "08" to select the function "Read measured value block" and confirm entry with Q key.

-> Indicated on display:

Read measured value block	Q
Enter display group number XXX	

- Press keys 0, 0 and 2 for "Display group number 002" and confirm entry with Q key.

-> Indicated on display:

(1...4 = Display zones)

Read measured value block 2
1 2 3 4

- Check display in display zone 2.
 - Specification: 0.0 % (accelerator not depressed)
- Check display in display zone 3.
 - Specification:
 - 0 01 00 (accelerator not depressed)
 - 0 00 00 (accelerator depressed)
- Press accelerator pedal down slowly.

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Vehicles with manual gearbox

- Check display in display zone 2.
 - Specification: the value should increase steadily to 100 % (accelerator fully depressed).

Vehicles with automatic gearbox

- Specification: the pressure point of the kick-down switch should be clearly noticeable before reaching the full-throttle stop.

All models

If the specifications for the initial and/or final readouts are not obtained:

- Adjust accelerator position sender -G79 => Page 204 .

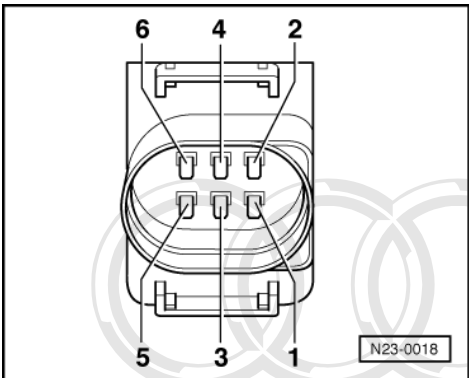
If the display does not change or only changes irregularly:

Testing internal resistance

- Switch off ignition.
- Remove storage compartment (shelf) on driver's side.

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Unplug connector for accelerator position sender -G79 (located in footwell on accelerator pedal).



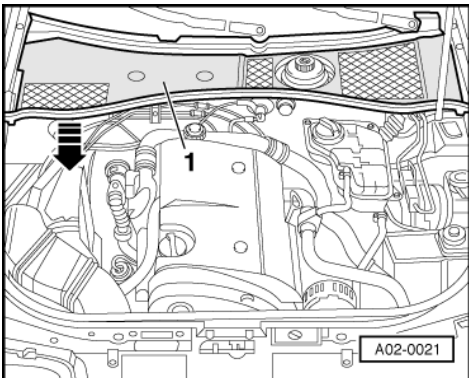
- -> Connect multimeter (resistance measurement range) as follows:

Contacts	Accelerator	Specification
1 + 3	Not depressed	0.6 ... 1.4 k ω
2 + 3	Not depressed	0.6 ... 1.4 k ω
4 + 6	Not depressed	0.6 ... 1.4 k ω
5 + 6 1)	Depressed	∞ ω
	Not depressed	∞ ω
	Fully depressed	0.6 ... 1.4 k ω

- 1) Only on vehicles with automatic gearbox.

If the specifications are not obtained:

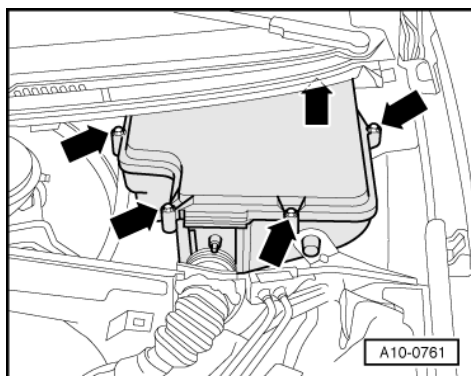
- Renew accelerator position sender -G79.



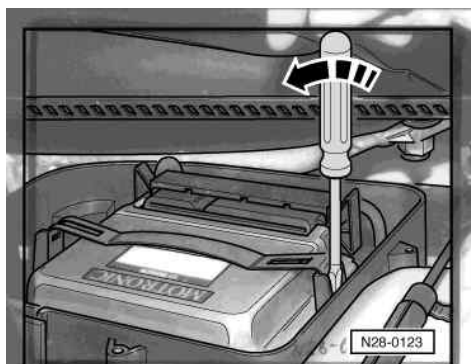


Checking wiring connections

- Switch off ignition.
- -> Remove rubber seal from plenum chamber in direction of arrow-.
- Remove plenum chamber cover -1- from the front.



- -> Remove cover for electronics box in plenum chamber -arrows-.

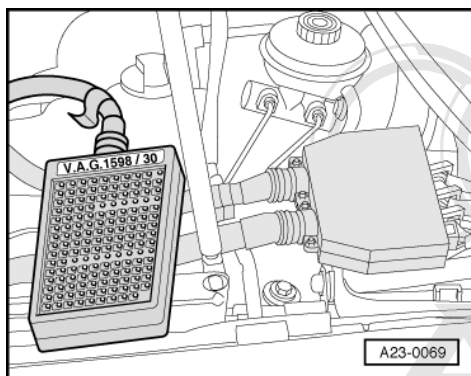


- -> Carefully lever off the retainer bar with a screwdriver -arrow-.
- Release catches and unplug control unit connectors.

Warning!

To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.

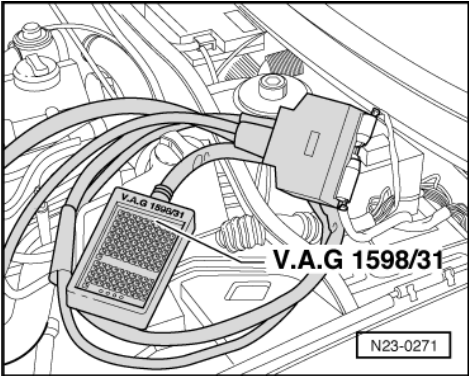
- **Engine code letters AFB with manual gearbox and automatic gearbox**



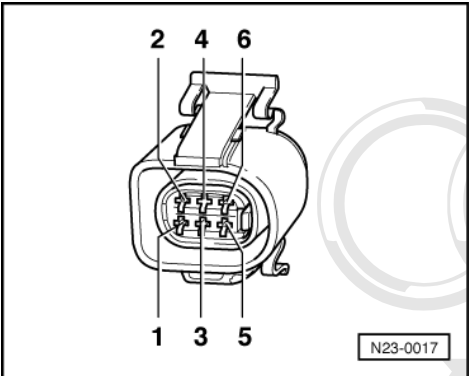
- **Engine code letters AKN with manual gearbox**

- -> Connect test box V.A.G. 1598/30 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected).

- Engine code letters AKN with automatic gearbox.



- > Connect test box V.A.G 1598/31 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected). Also connect earth clamp on test box to earth.
- Unplug connector for accelerator position sender -G79 (located in footwell on accelerator pedal).



- > Test for open circuit and short to positive or earth in the following wiring connections:

Connector Contact	Test box V.A.G 1598/30 Socket	Test box V.A.G 1598/31 Socket
1	4/08	69
2	4/09	12
3	4/07	50
4	4/13	70
6	4/12	51
5 1)	4/34	63

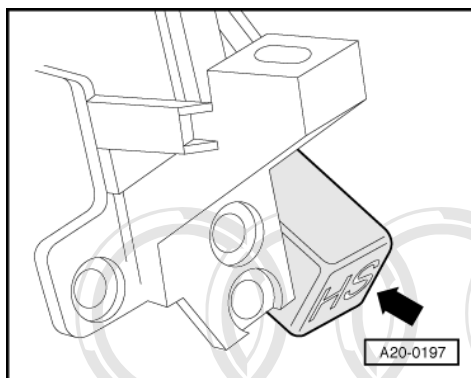
1) Only on vehicles with automatic gearbox.

- Rectify any open/short circuit as necessary.
- => Current flow diagrams, Electrical fault finding and Fitting locations binder



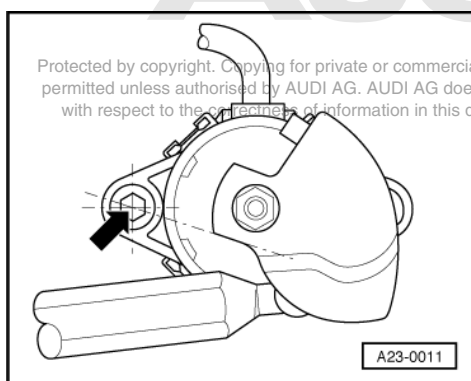
8.5 - Adjusting accelerator position sender - Vehicles with 6-cylinder engine

Vehicles with manual gearbox



Requirement for test:

- -> Position of accelerator pedal stop: marking "H" or "HS" must be visible.

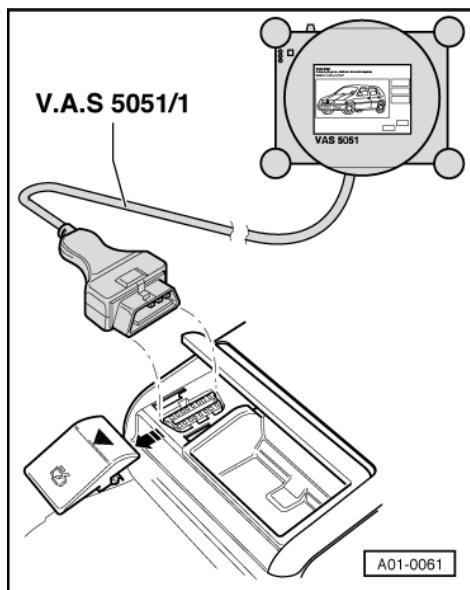


Note:

If accelerator position sender -G79 has been removed:

- -> Fit cable cam as shown.
- ♦ In rest position the continuation of the spanner flat should intersect with the centre of the drilling -arrow-.
- Install sender with cable cam already fitted.

Work sequence



- -> Connect the vehicle diagnostic, test and information system VAS 5051 or fault reader V.A.G 1551 and select engine electronics control unit by entering address word "01". When doing this the ignition must be on

=> Diesel direct injection and glow plug system (TDI 6-cyl.); Repair group 01; Self-diagnosis Self-diagnosis

-> Indicated on display:

Rapid data transfer HELP
 Select function XX

- Enter "08" to select the function "Read measured value block" and confirm entry with Q key.

-> Indicated on display:

Read measured value block Q
 Enter display group number XXX

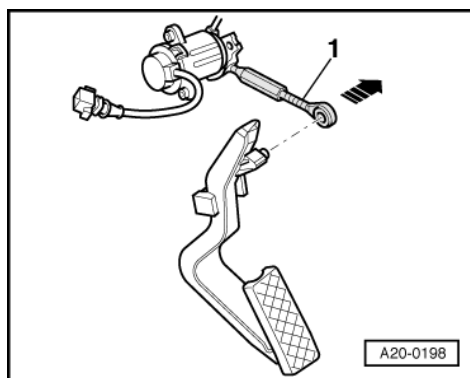
- Press keys 0 0 and 2 for "Display group number 002" and confirm entry with Q key.

-> Indicated on display:

(1...4 = Display zones)

Read measured value block 2
 1 2 3 4

- Check display in display zone 2.
 - Specification: 0.0 % (accelerator not depressed)





- -> Disengage eyelet of operating rod -1- from accelerator pedal -arrow-.
- Remove anti-twist retainer (cable tie).
- Turn threaded collar on operating rod.

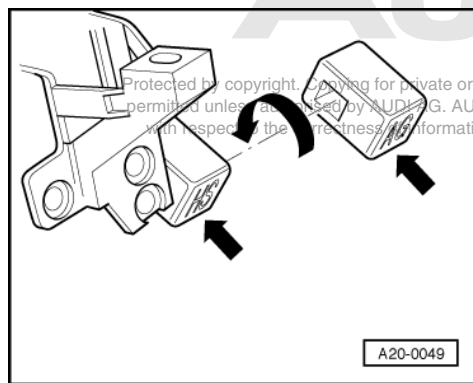
Note:

The "100 %" display should be reached exactly when the pedal contacts the full throttle stop. If "100 %" is reached before the pedal contacts the stop, turn back the threaded collar accordingly.

- After completing adjustment, carefully engage operating rod on accelerator pedal.
- Check display in display zone 3.
 - Specification:
 - 0 01 00 (accelerator not depressed)
 - 0 00 00 (accelerator depressed)
- Fit new anti-twist retainer (cable tie).

Vehicles with automatic gearbox

- The adjustment procedure is the same as for vehicles with manual gearbox, except for the following points:



- When making the adjustment, the accelerator pedal stop must first be fitted in the position for vehicles with manual gearbox:
Marking "H" or "HS" must be visible.
 - With this stop installed, adjust full throttle position in the same way as for vehicles with manual gearbox (readout in display zone 2: 100%) .
 - -> After completing the adjustment, install the accelerator pedal stop in the position for vehicles with automatic gearbox -arrows-:
Marking "A" or "AG" must be visible.
- Then check kickdown switch:

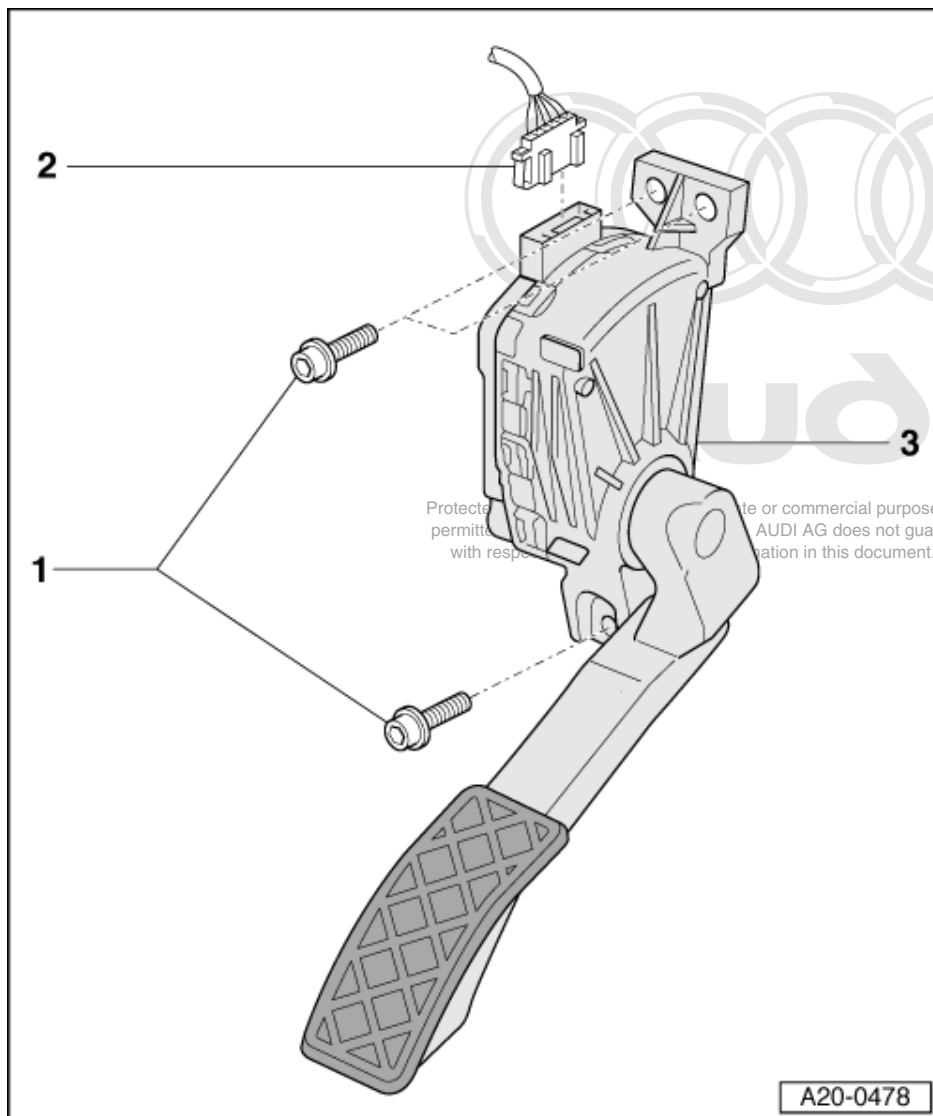
-> Indicated on display:
(1...4 = Display zones)

Read measured value block 2			
1	2	3	4

- Check display in display zone 3.
 - Specification:
 - 0 01 00 (accelerator not depressed)
 - 0 00 00 (accelerator depressed)
 - 0 10 00 (accelerator depressed past kickdown point)

9 - Servicing accelerator linkage - Vehicles with accelerator pedal module 02.99 ä

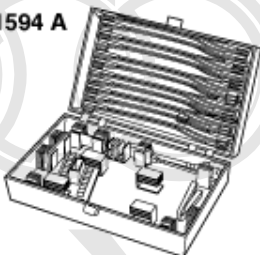
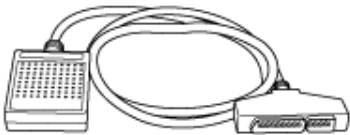
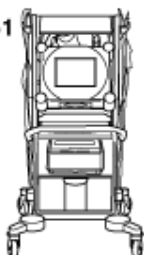
9.1 - Servicing accelerator linkage - Vehicles with accelerator pedal module 02.99 ä



- 1 Hexagon socket head bolt
- 9Nm
- 2 6 pin connector
- 3 Accelerator pedal module
 - ♦ With accelerator pedal position sender -G79
 - ♦ Testing =>Page **213**
 - ♦ Removing and installing
=> Page **218**



9.2 - Testing accelerator pedal position sender -G79 - Vehicles with 4-cylinder engine

V.A.G 1526 A 	V.A.G 1594 A 
V.A.G 1598/22 	V.A.G 1598/31 
VAS 5051 	G20-0022

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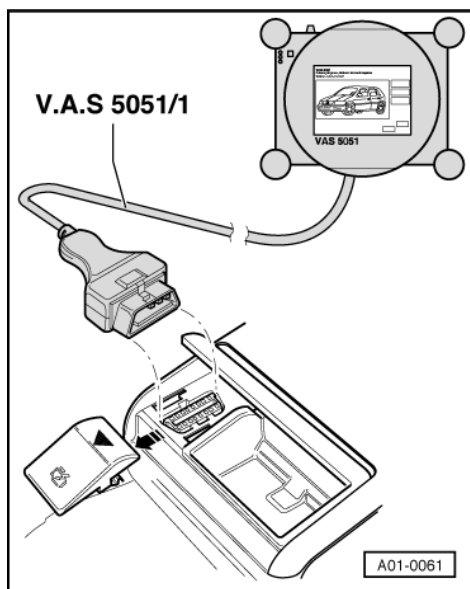
Special tools and workshop equipment required

- ♦ V.A.G 1526 A
- ♦ V.A.G 1594 A
- ♦ V.A.G 1598/22
(Vehicles ä 07.99)
- ♦ V.A.G 1598/31
(Vehicles 08.99 ä)
- ♦ VAS 5051 with VAS 5051/1

or

- ♦ V.A.G 1551 with V.A.G 1551/3 A

Test sequence



- ➔ Connect the vehicle diagnostic, test and information system VAS 5051 or fault reader V.A.G 1551 and select engine electronics control unit by entering address word "01. When doing this the ignition must be on
- => TDI injection and glow plug system (4-cyl.) 07.97 ä 07.99; Repair group 01; Self-diagnosis Self-diagnosis
- => TDI injection and glow plug system (4-cyl.) 08.99 ä; Repair group 01; Self-diagnosis Self-diagnosis
- => TDI injection and glow plug system (4-cyl. unit injector); Repair group 01; Self-diagnosis Self-diagnosis

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- Enter "08" to select the function "Read measured value block" and confirm entry with Q key.

-> Indicated on display:

Read measured value block	Q
Enter display group number xxx	

- Press keys 0, 0 and 2 for "Display group number 002" and confirm entry with Q key.

-> Indicated on display:

(1...4 = Display zones)

Read measured value block 2
1 2 3 4

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- Check display in display zone 2.
 - Specification: 0.0 % (accelerator not depressed)
- Check display in display zone 3.
 - Specification:
 - 0 1 0 (accelerator not depressed)
 - 0 0 0 (accelerator depressed)
- Press accelerator pedal down slowly.

Vehicles with manual gearbox

- Check display in display zone 2.
 - Specification: the value should increase steadily to 100 % (accelerator fully depressed).

Vehicles with automatic gearbox

- Specification: the pressure point of the kick-down switch should be clearly noticeable before reaching the full-throttle stop.

All models

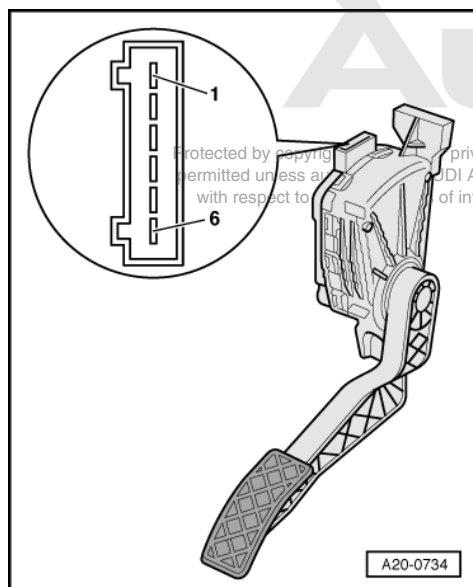
If the specifications for the initial and/or final readouts are not obtained:

- Test free travel of module, renew accelerator pedal module if necessary.

If the display does not change or only changes irregularly:

Testing internal resistance

- Switch off ignition.
- Remove accelerator pedal module => Page 218 and unplug connector for accelerator position sender - G79.



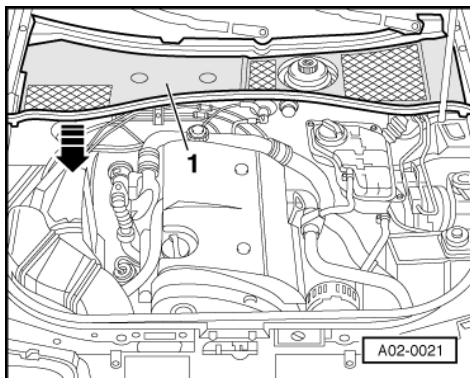
- -> Connect multimeter (resistance measurement range) as follows:

Contacts	Accelerator	Specification
3 + 4	Not depressed	0.6 ... 1.4 kΩ
2 + 3	Not depressed	0.6 ... 1.4 kΩ
5 + 6	Not depressed	0.6 ... 1.4 kΩ
	Depressed	∞ Ω
1 + 6 1)	Not depressed	∞ Ω
	Fully depressed	0.6 ... 1.4 kΩ

- 1) Only on vehicles with automatic gearbox.

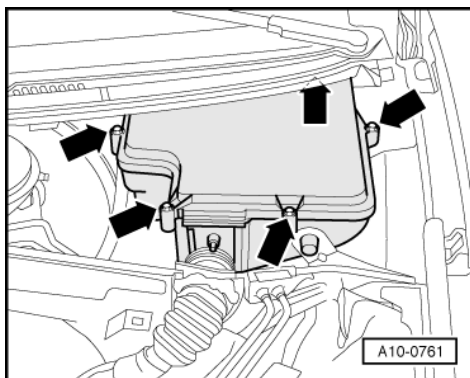
If the specifications are not obtained:

- Renew accelerator pedal module with accelerator position sender -G79.

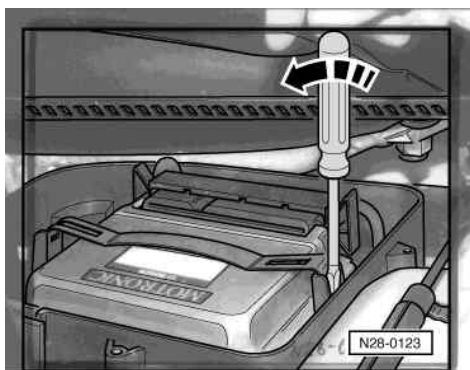


Checking wiring connections

- Switch off ignition.
- -> Remove rubber seal from plenum chamber in direction of arrow.
- Remove plenum chamber cover -1- from the front.



- -> Remove cover for electronics box in plenum chamber -arrows-.



- -> Carefully lever off the retainer bar with a screwdriver -arrow-.
- Release catches and unplug control unit connectors.

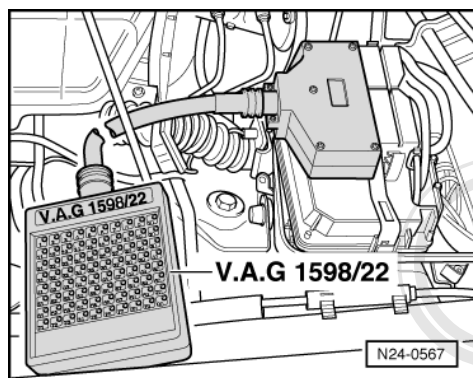
Warning!

To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.

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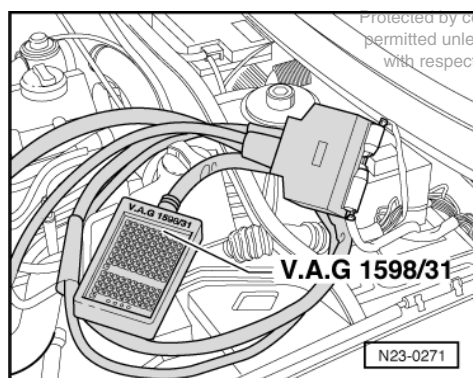


Vehicles ä 07.99:



- -> Connect test box V.A.G. 1598/22 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected).

Vehicles 08.99 ä:



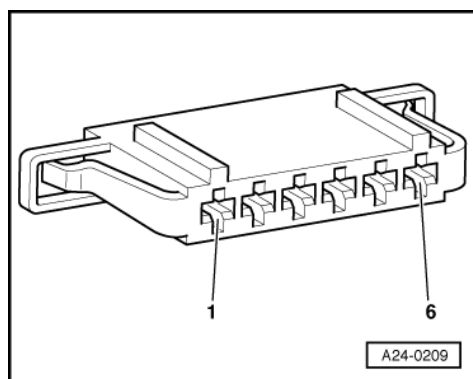
- -> Connect test box V.A.G 1598/31 to unplugged connectors for engine control unit (control unit remains disconnected). Also connect earth clamp of test box to earth.

All models

- Remove storage compartment (shelf) on driver's side.

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Unplug connector for accelerator position sender -G79 (located in footwell on accelerator pedal).

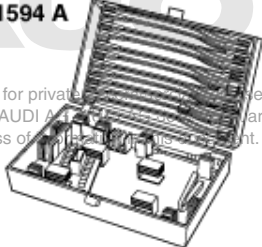
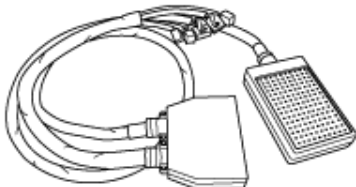
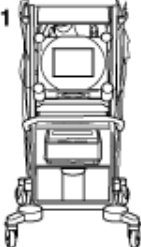


- -> Test for open circuit and short to positive or earth in the following wiring connections:

Connector Contact	Test box V.A.G 1598/22 (ä 07.99) Socket	Test box V.A.G 1598/31 (08.99 ä) Socket
1	8	63
2	11	12
3	23	50
4	24	69
5	12	70
6	25	51

- Rectify any open/short circuit as necessary.
- => Current flow diagrams, Electrical fault finding and Fitting locations binder

9.3 - Testing accelerator pedal position sender -G79 - Vehicles with 6-cylinder engine

V.A.G 1526 A 	V.A.G 1594 A 
V.A.G.1598/30 	V.A.G 1598/31 
VAS 5051 	G20-0023

Special tools and workshop equipment required

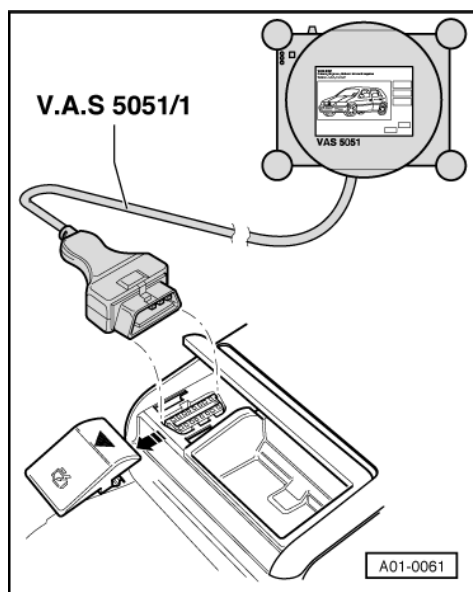


- ♦ V.A.G 1526 A
- ♦ V.A.G 1594 A
- ♦ V.A.G 1598/30
(engine code letters AFB with manual gearbox and automatic gearbox; engine code letters AKN with manual gearbox)
- ♦ V.A.G 1598/31
(engine code letters AKN with automatic gearbox)
- ♦ VAS 5051 with VAS 5051/1

or

- ♦ V.A.G 1551 with V.A.G 1551/3 A

Test sequence



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- -> Connect the vehicle diagnostic, test and information system VAS 5051 or fault reader V.A.G 1551 and select engine electronics control unit by entering address word "01". When doing this the ignition must be on

=> Diesel direct injection and glow plug system (TDI 6-cyl.); Repair group 01; Self-diagnosis Self-diagnosis

-> Indicated on display:

Rapid data transfer	HELP
Select function XX	

- Enter "08" to select the function "Read measured value block" and confirm entry with Q key.

-> Indicated on display:

Read measured value block	Q
Enter display group number xxx	

- Press keys 0, 0 and 2 for "Display group number 002" and confirm entry with Q key.

-> Indicated on display:

(1...4 = Display zones)

Read measured value block 2
1 2 3 4

- Check display in display zone 2.
 - Specification: 0.0 % (accelerator not depressed)
- Check display in display zone 3.
 - Specification:
 - 0 01 00 (accelerator not depressed)

- 0 00 00 (accelerator depressed)
- Press accelerator pedal down slowly.

Vehicles with manual gearbox

- Check display in display zone 2.
 - Specification: the value should increase steadily to 100 % (accelerator fully depressed).

Vehicles with automatic gearbox

- Specification: the pressure point of the kick-down switch should be clearly noticeable before reaching the full-throttle stop.

All models

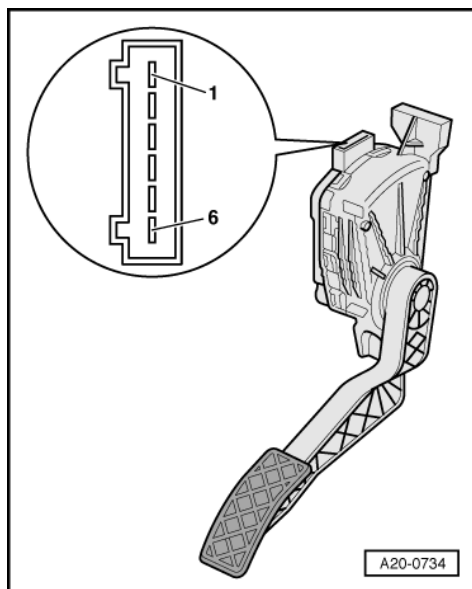
If the specifications for the initial and/or final readouts are not obtained:

- Test accelerator pedal for free travel, renew accelerator pedal module if necessary.

If the display does not change or only changes irregularly:

Testing internal resistance

- Switch off ignition.
- Remove accelerator pedal module => Page 218 and unplug connector for accelerator position sender - G79.



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- -> Connect multimeter (resistance measurement range) as follows:

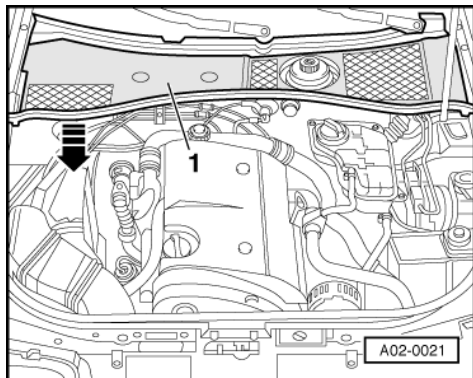
Contacts	Accelerator	Specification
3 + 4	Not depressed	0.6 ... 1.4 kΩ
2 + 3	Not depressed	0.6 ... 1.4 kΩ
5 + 6	Not depressed	0.6 ... 1.4 kΩ
	Depressed	∞ Ω
1 + 6 1)	Not depressed	∞ Ω
	Fully depressed	0.6 ... 1.4 kΩ

- 1) Only on vehicles with automatic gearbox.



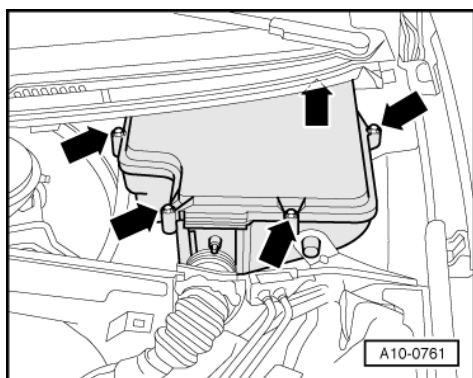
If the specifications are not obtained:

- Renew accelerator pedal module with accelerator position sender -G79.

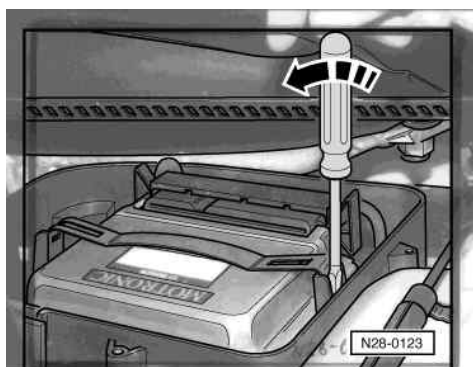


Checking wiring connections

- Switch off ignition.
- -> Remove rubber seal from plenum chamber in direction of arrow-.
- Remove plenum chamber cover -1- from the front.



- -> Remove cover for electronics box in plenum chamber -arrows-.

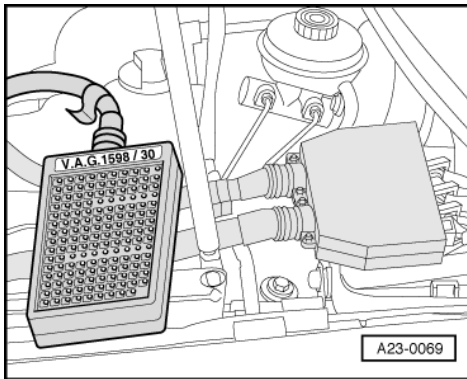


- -> Carefully lever off the retainer bar with a screwdriver -arrow-.
- Release catches and unplug control unit connectors.

Warning!

To prevent damage to the electronic components, switch to the respective measuring range before connecting the measuring cable and observe the test prerequisites.

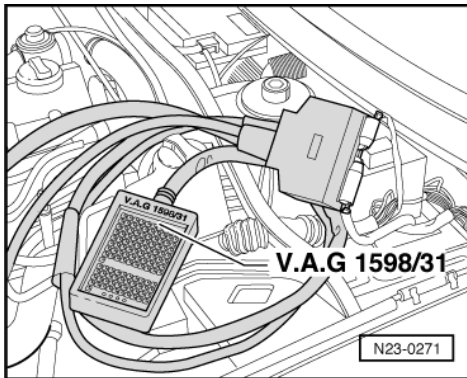
- Engine code letters AFB with manual gearbox and automatic gearbox



- Engine code letters AKN with manual gearbox

- -> Connect test box V.A.G 1598/30 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected).

- Engine code letters AKN with automatic gearbox.



- -> Connect test box V.A.G 1598/31 to the connectors which have been unplugged from the engine control unit (control unit remains disconnected). Also connect earth clamp on test box to earth.

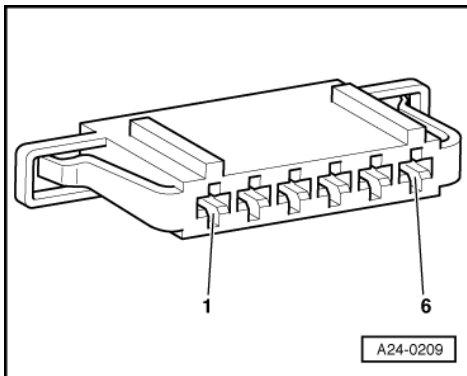
All models

- Remove storage compartment (shelf) on driver's side.

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Unplug connector for accelerator position sender -G79 (located in footwell on accelerator pedal).

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- -> Test for open circuit and short to positive or earth in the following wiring connections:



Connector Contact	Test box V.A.G 1598/30 Socket	Test box V.A.G 1598/31 Socket
1	4/34	63
2	4/09	12
3	4/07	50
4	4/08	69
5	4/13	70
6	4/12	51

- Rectify any open/short circuit as necessary.

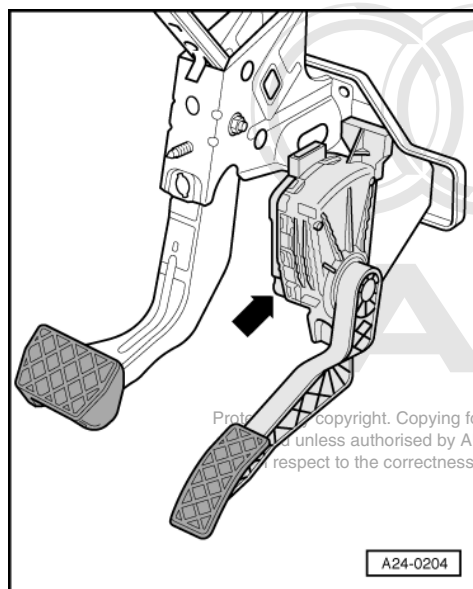
=> Current flow diagrams, Electrical fault finding and Fitting locations binder

9.4 - Removing and installing accelerator pedal module with accelerator position sender

- Remove storage compartment on driver's side:

=> General body repairs, Interior; Repair group 68; Storage compartments, covers; Removing driver's storage compartment Storage compartments, covers Removing driver's storage compartment

- Unplug 6-pin connector -2-.
- Unscrew the 3 bolts.



- -> Remove accelerator pedal module -arrow-.

Installation is performed in the reverse order.

Tightening torque

Component	Nm
Accelerator pedal module to pedal bracket	9