

Audi A4 1995 ➤

Fuel supply system - Petrol engines									
Engine ID	AAH	ABC	ACK	ACZ	ADP	ADR	AEB	AFC	AFY
	AGA	AGB	AHL	AJG	AJL	ALF	ALG	ALW	ALZ
	AML	AMM	AMX	ANA	ANB	APR	APS	APT	APU
	APZ	AQD	ARG	ARJ	ARK	ARM	ASJ	ATW	ATX
	AVV	AWT	AZB	AZR					

Edition 01.1998

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

Audi A4 1995 ➤

Fuel supply system - Petrol 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 - General repair instructions

Observe safety precautions

=> Page **1**

Observe rules for cleanliness

=> Page **2**

Checking fuel pump relay and activation:

=> Simos injection and ignition system (4-cylinder); Repair group 24; Testing fuel pump relay and activation
Testing fuel pump relay and activation

=> Motronic injection and ignition system (4-cylinder); Repair group 24; Servicing Motronic injection and ignition system; Testing fuel pump relay and activation Servicing Motronic injection and ignition system Testing fuel pump relay and activation

=> Motronic injection and ignition system (4-cylinder) 07.96 ä; Repair group 24; Testing fuel pump relay Testing fuel pump relay

=> Motronic injection and ignition system (4-cylinder turbo) 07.96 ä; Repair group 24; Servicing Motronic injection system; Testing fuel pump relay Servicing Motronic injection system Testing fuel pump relay

=> Motronic injection and ignition system (6-cylinder); Repair group 24; Servicing Motronic injection system; Testing fuel pump relay and activation Servicing Motronic injection system Testing fuel pump relay and activation

=> MPI injection and ignition system; Repair group 24; Servicing multi-point injection system; Testing fuel pump relay and activation Servicing multi-point injection system Testing fuel pump relay and activation

=> MPFI injection and ignition system; Repair group 24; Servicing MPFI injection system; Testing fuel pump relay and activation Servicing MPFI injection system Testing fuel pump relay and activation

=> Motronic injection and ignition system (6-cylinder turbo); Repair group 24; Servicing Motronic injection system; Testing fuel pump relay Servicing Motronic injection system Testing fuel pump relay

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1.3 - Safety precautions when working on the fuel supply system

Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

Perform the following steps before starting to work on the fuel supply system:

- ♦ With ignition switched off, disconnect earth strap from battery.



- ♦ Open fuel filler cap briefly, then close it again.

When removing and installing components from a full or partly full fuel tank, note the following:

- ♦ If necessary, use fuel extractor V.A.G 1433 A to drain the fuel tank.
- ♦ The fuel tank must not be more than 1/3 full.
- ♦ 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 petrol 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 petrol. Wear fuel-resistant gloves.

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

- ♦ If necessary, use fuel extractor V.A.G 1433 A to drain the fuel tank.

1.4 - 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. Do not use fluffy cloths.
- ♦ Carefully cover opened components or seal, if the repair cannot be carried out 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.

2 - Fuel supply system - front-wheel drive

2.1 - Fuel supply system - front-wheel drive

Notes:

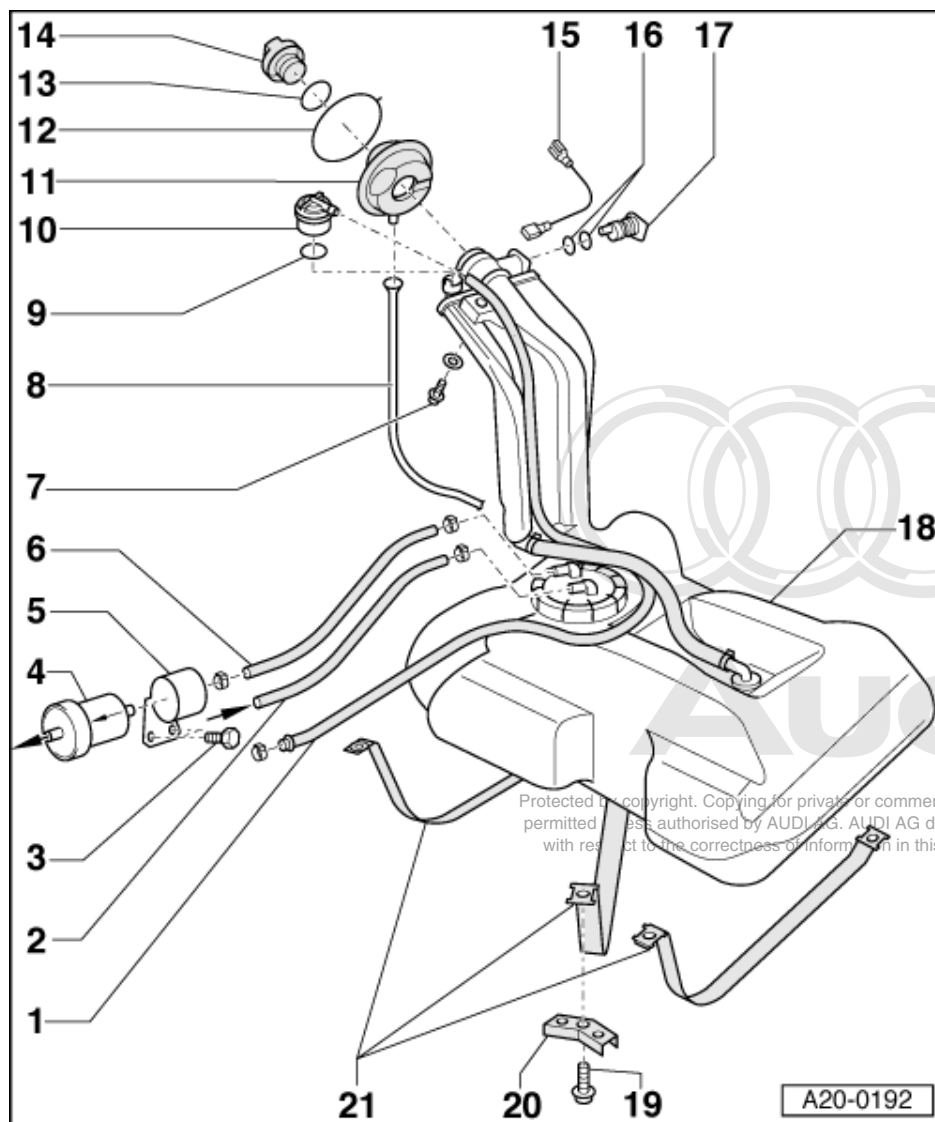
- ♦ Secure all hose connections with the correct hose clips (same as original equipment)

=> Parts catalogue

- ♦ Hose clip pliers V.A.G 1921 are recommended when installing spring-type clips.
- ♦ Always renew sealing rings and gaskets when assembling.

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2.2 - Overview of components: fuel tank with attachments



1 Breather pipe

- ♦ To activated charcoal filter
 => Page 74, Item 2

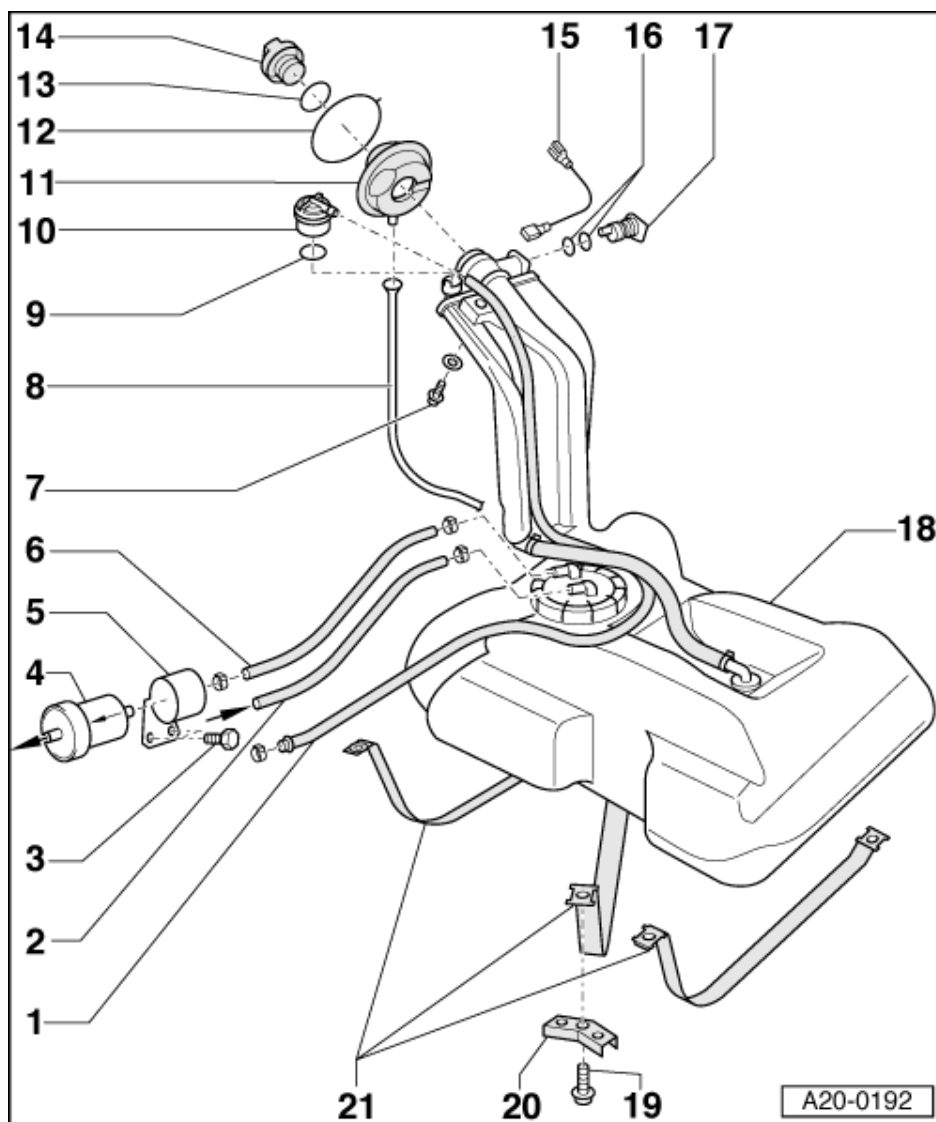
2 Return pipe

- ♦ From fuel manifold
- ♦ Note direction of arrow on flange

3 20 Nm

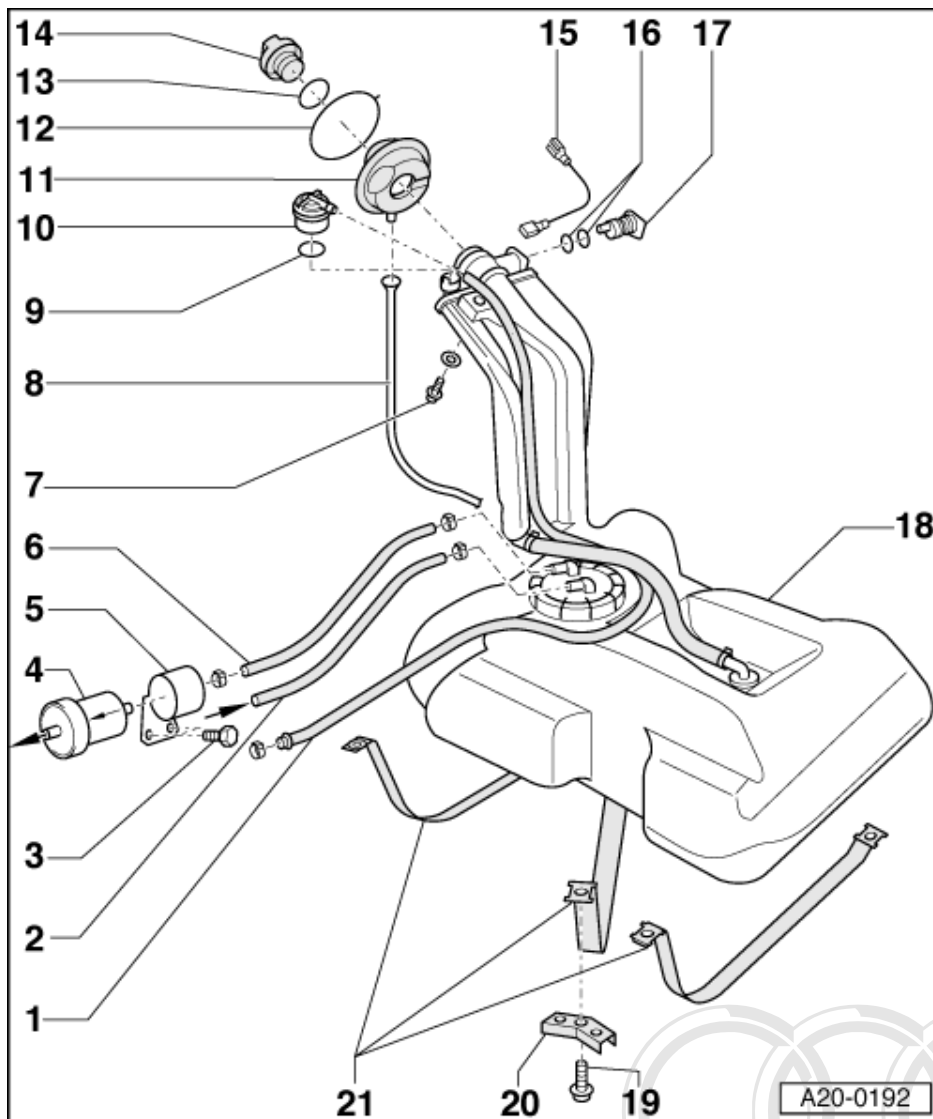
4 Fuel filter

- ♦ Installation position: Arrow points in through-flow direction



- 5 **Retaining clip**
 - ♦ For fuel filter
- 6 **Supply pipe**
 - ♦ To fuel manifold
 - ♦ Note direction of arrow on flange
- 7 **25 Nm**
- 8 **Overflow hose**
- 9 **O ring**
 - ♦ Renew
- 10 **Gravity valve**
 - ♦ Position => Fig. 1
 - ♦ To remove valve unclip upwards out of filler neck
 - ♦ Check valve for through-flow
valve vertical: open,
valve tilted 45 °: closed

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11 Rubber cup

12 Retaining ring

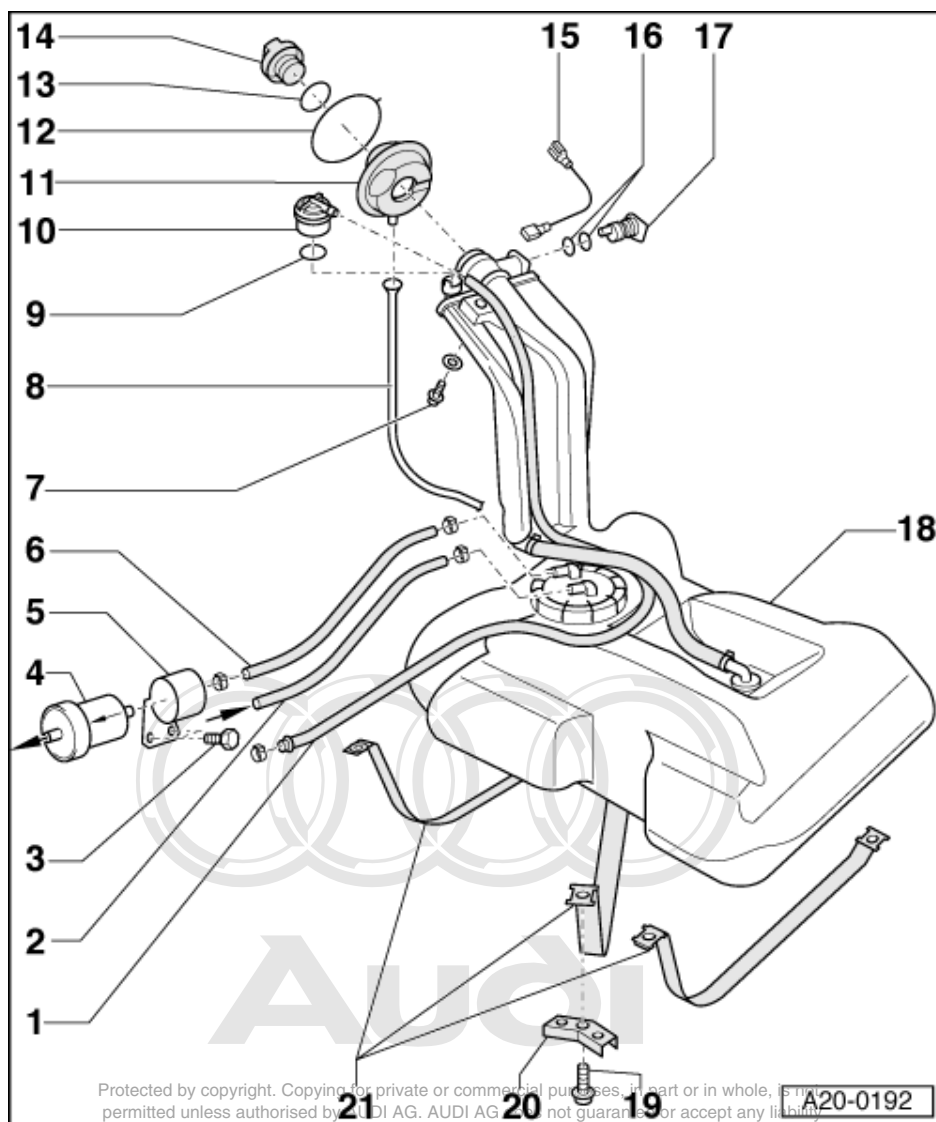
13 Gasket

- ◆ Renew if damaged

14 Cap

15 Earth connection

- ◆ Position => Fig. 1
- ◆ Ensure that connector is seated properly on metal ring of filler neck
- ◆ Secure the contact tab of wire with bolt for fuel filler neck - Item 4
- ◆ 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 with respect to the correctness of information in this document. Copyright by AUDI AG. Specification: approx. 0 Ω .



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16 O rings

- ♦ Renew

17 Vent valve

- ♦ Position => Fig. 1
- ♦ Removing, installing and checking => Fig. 3

18 Fuel tank

- ♦ Removing and installing
=> Page 8

19 25 Nm

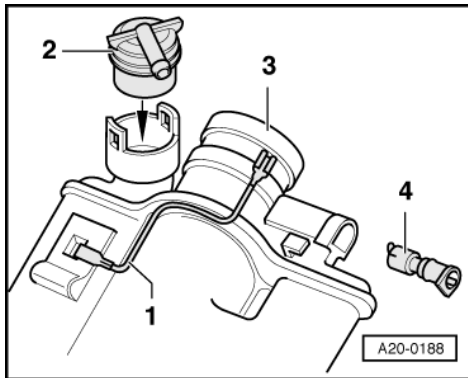
- ♦ Note tightening sequence
=> Page 11

20 Bracket

- ♦ For securing straps

21 Securing straps

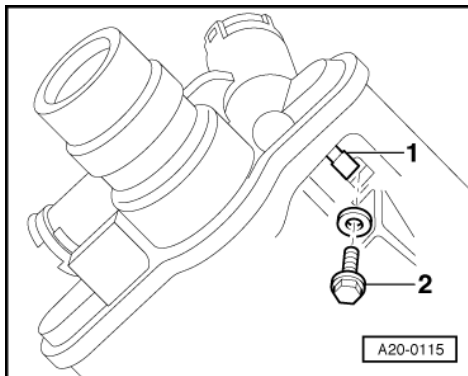
- ♦ Removing and installing
=> Page 8
- ♦ Note differing length
- ♦ Note correct position



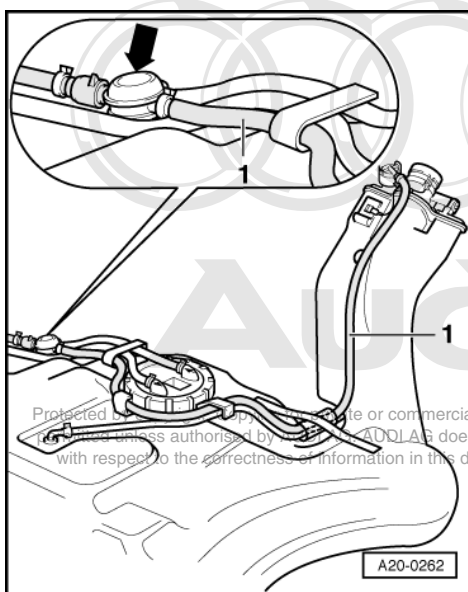
-> Fig.1 Position of gravity valve, vent valve and earth connection

- 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 wire with bolt -2- for fuel filler neck.
- 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

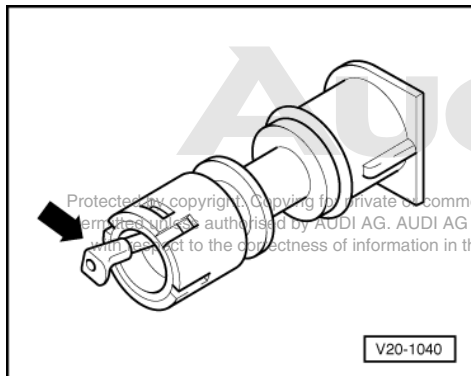


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-> Fig.2 Tank protector valve for vehicles with rough-road equipment

- ♦ The tank protector valve -arrow- is incorporated in the breather pipe -1- at front right of fuel tank.
- ♦ The tank protector valve allows air into the fuel tank to prevent the formation of a vacuum if the breather pipe is blocked.



-> Fig. 3 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: valve closed
 - Lever pressed in direction of arrow: valve open

2.3 - Draining fuel tank

Observe safety precautions

=> Page **1**

Observe rules for cleanliness

=> Page **2**

Special tools, testers and auxiliary items

- ♦ Fuel extractor V.A.G 1433 A
- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.
- Remove filler cap from fuel tank filler neck.
- Drain tank as far as possible via fuel filler neck.

2.4 - Removing and installing fuel tank with attachments

Observe safety precautions

=> Page **1**

Observe rules for cleanliness

=> Page **2**

Special tools, testers and auxiliary items

- ♦ Universal support V.A.G 1359/2
- ♦ Engine/gearbox jack V.A.G 1383 A

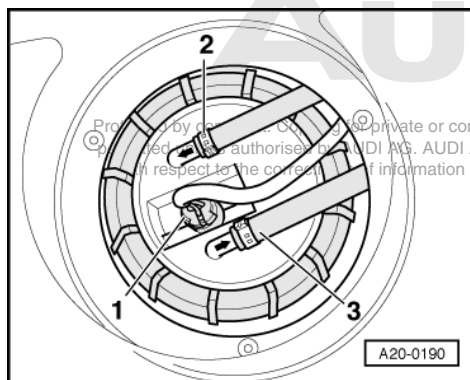
Removing

- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.
- Open fuel filler cap briefly, then close it again.
- Drain fuel tank if necessary using fuel extractor V.A.G 1433 A => Page 8.

Note:

The fuel tank must be empty when it is removed from the vehicle in order to reduce weight.

- Detach trim in luggage compartment.
- Detach cover for flange on fuel tank under floor trim in luggage compartment.

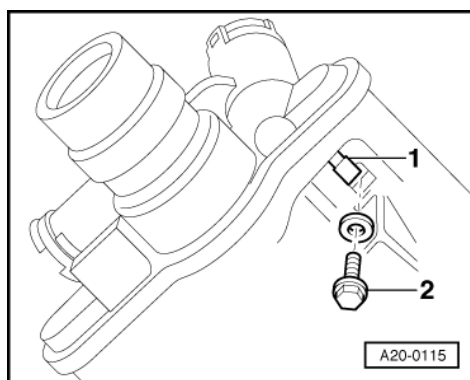


- -> Release and unplug 4-pin connector -1-.

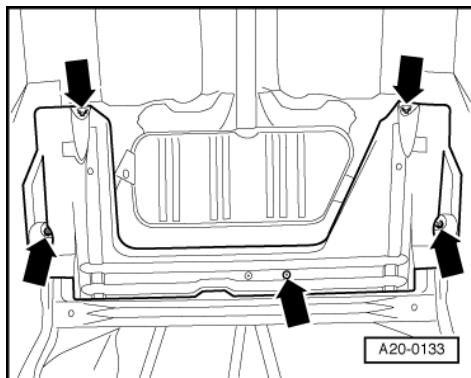
Note:

Do not disconnect return pipe -2- and supply pipe -3-.

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



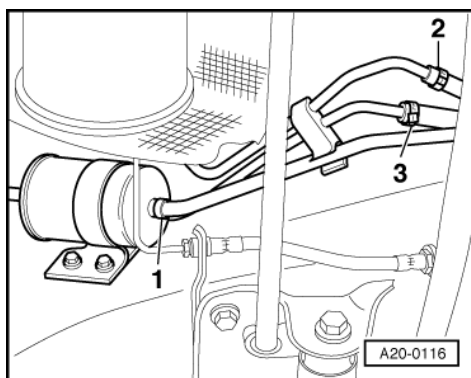
- Remove rear right wheel housing liner.
- -> Remove bolt -2- for fuel filler neck below wheel housing liner.



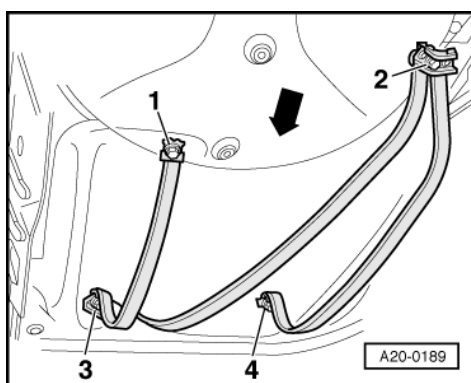
- -> If fitted, remove Cd panel in front of rear axle -arrows-.

Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.



- -> Mark the supply pipe -1-, return pipe -2- and breather pipe to activated charcoal filter -3- on vehicle floor. Then pull the pipes off.
- 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-.
- Lower fuel tank out of vehicle.

Note:

Arrow points in direction of travel.



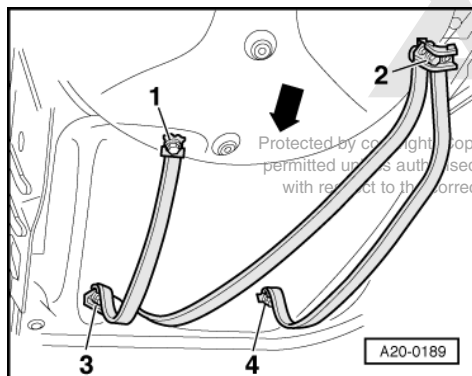
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Installing

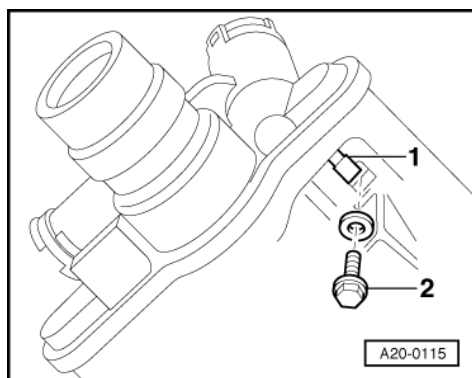
Installation is carried out in the reverse order, when doing this note the following:

Notes:

- ◆ Secure all hose connections with the correct hose clips (same as original equipment)
- => Parts catalogue
- ◆ Hose clip pliers V.A.G 1921 are recommended when installing spring-type clips.
- ◆ Always renew sealing rings and gaskets when assembling.
- 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.



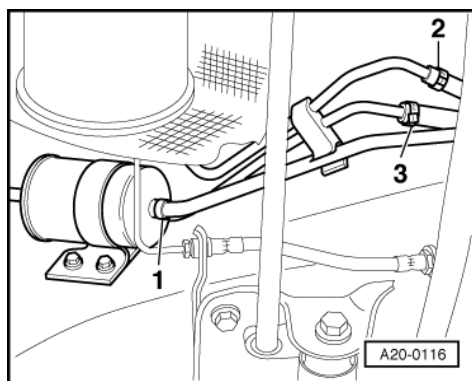
- -> First tighten bolts -1- and -2-, then bolts -3- and -4- (25 Nm).



- -> When screwing in bolt -2-, also secure terminal -1- of earth connection.

Caution

It is important to ensure that the earth terminal is secured with the bolt and the connector is properly seated at the fuel filler neck. Position=>Fig 7 .





- -> Connect pipes as previously marked:
 - 1 - Supply pipe
 - 2 - Return pipe
 - 3 - Breather pipe to activated charcoal filter
- Plug in connector for fuel pump and fuel gauge sender.

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.**

- After connecting battery, enter anti-theft code for radio

=> Radio operating instructions

- Close windows fully using electric window switches.
- Then operate all electric window switches again for at least one second in the "close" direction to activate the automatic one-touch function.
- Set clock to correct time.

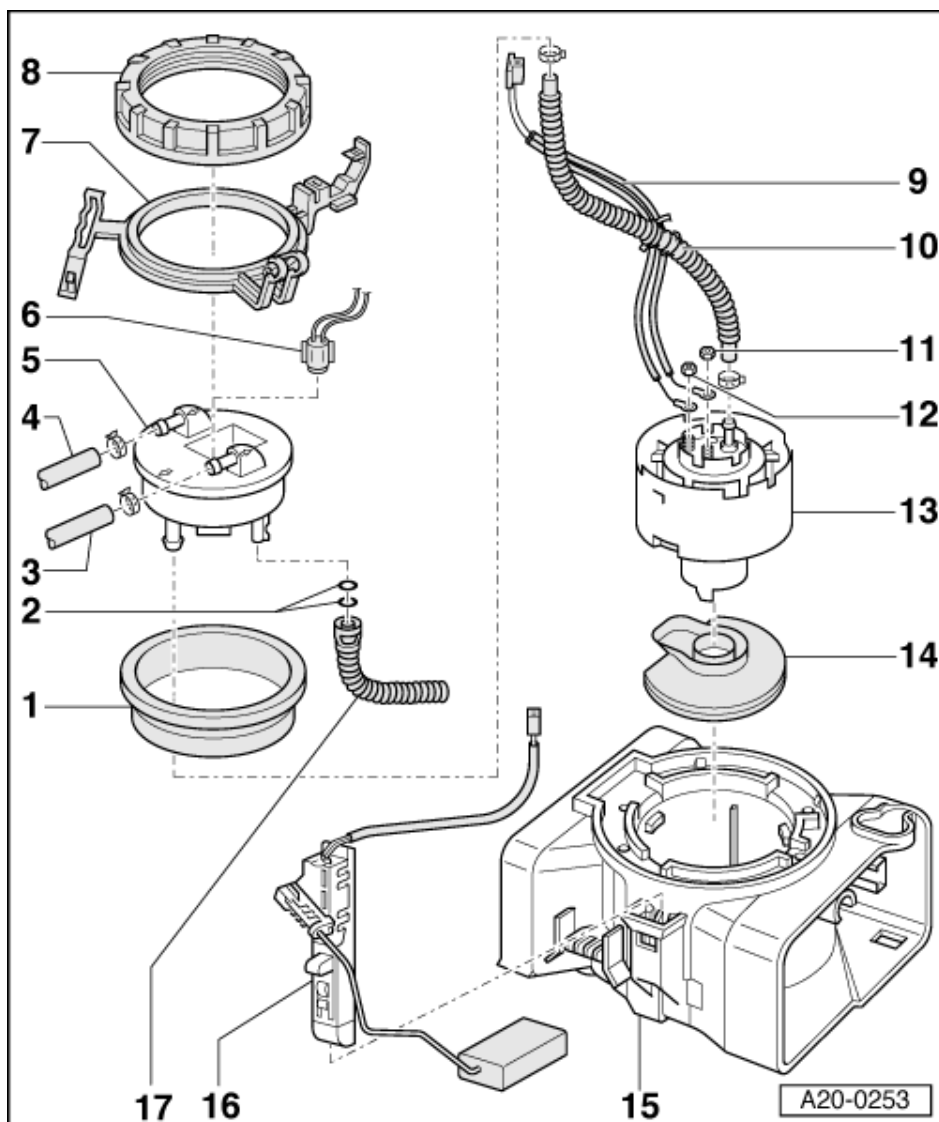
Tightening torque

Component	Nm
Securing straps for fuel tank to body	25
Cd panel in front of rear axle to body	10



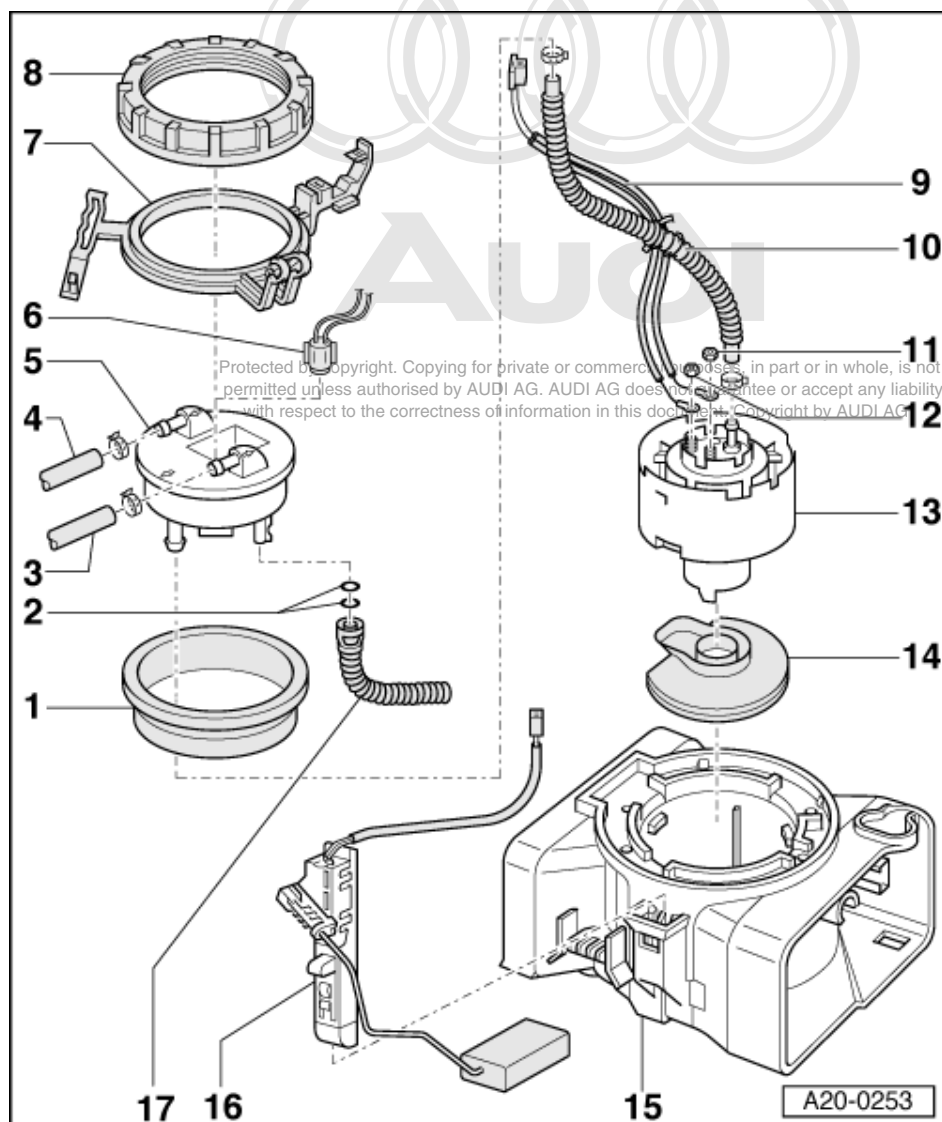
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2.5 - Overview of components: fuel delivery unit and fuel gauge sender



- 1 Oil seal**
 - ◆ Renew
 - ◆ When installing, fit seal (dry) in opening in fuel tank
- 2 O rings**
 - ◆ Always renew
 - ◆ Ensure correctly fitted
- 3 Return pipe**
 - ◆ From fuel manifold
 - ◆ Mark pipe before disconnecting
 - ◆ Note direction of arrow on flange

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4 Supply pipe

- ♦ To fuel manifold
- ♦ Mark pipe before disconnecting
- ♦ Note direction of arrow on flange

5 Flange

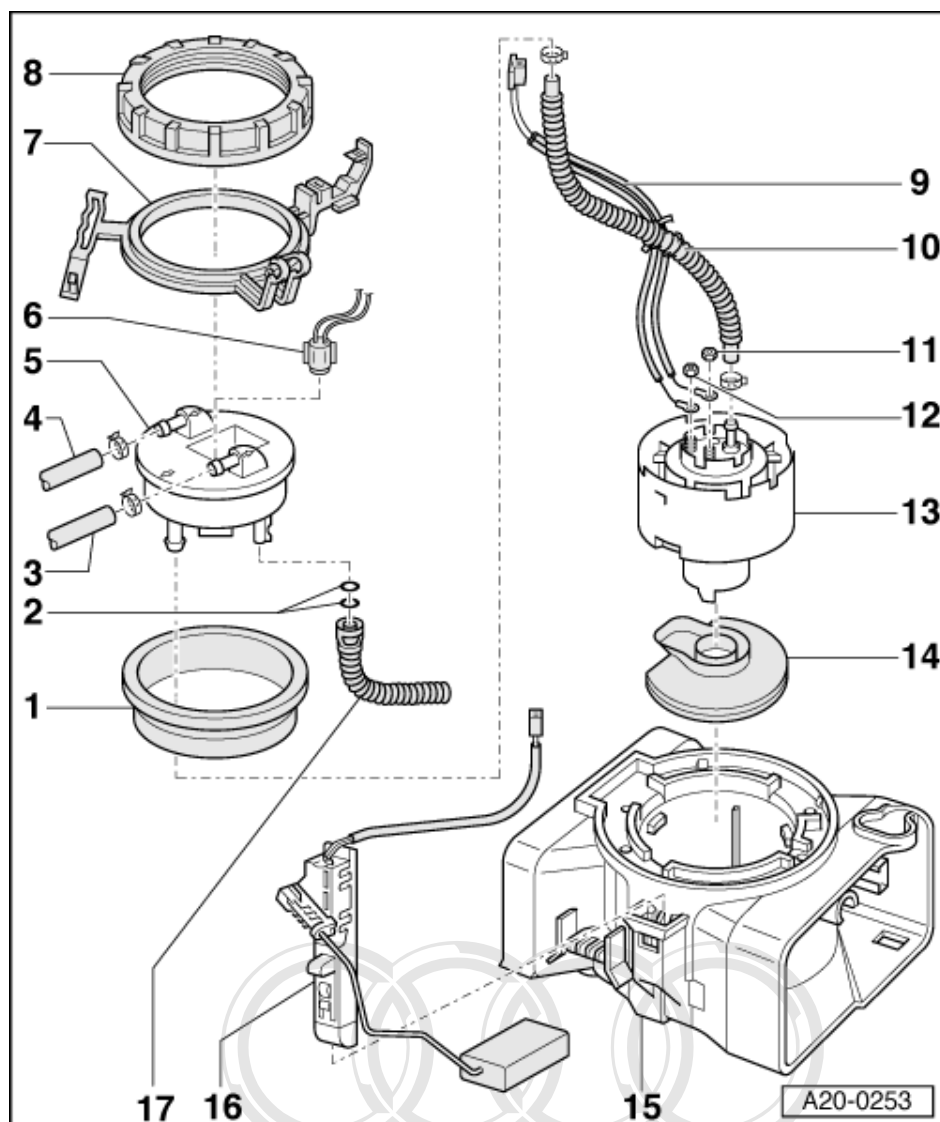
- ♦ Removing and installing
=> Page 22
- ♦ Installation position: see arrow
=> Page 26

6 Connector

- ♦ For fuel pump and fuel gauge sender -G

7 Pipe retainer

- ♦ Installation position: see illustration
- ♦ Hold in position when tightening union nut



8 Union nut, 60 Nm

- ♦ Remove and install with spanner 3217

9 Electrical wires

- ♦ To fuel pump
- ♦ Secure to -Item 10 - with fuel-resistant cable ties

10 Supply pipe

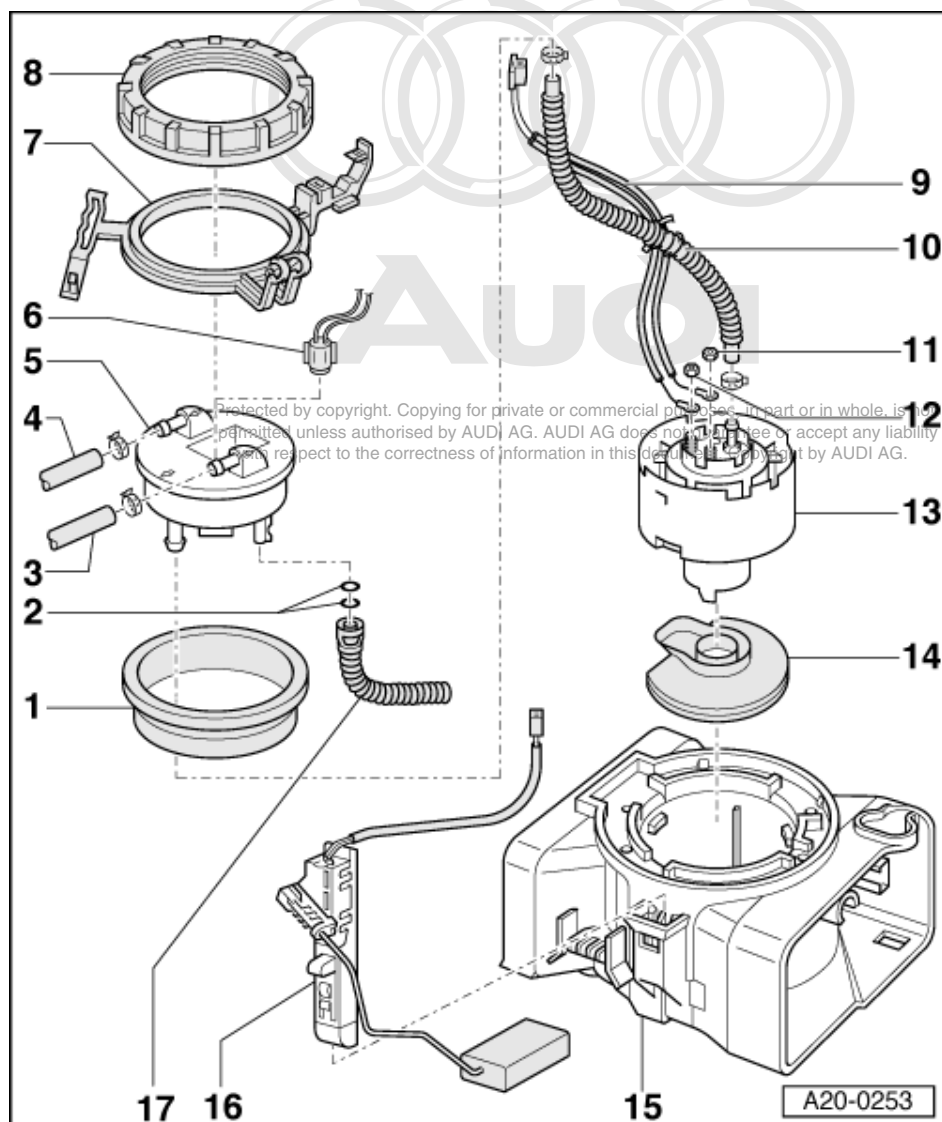
- ♦ Fuel pump/baffle housing
- ♦ Position => Page 24

11 Nut M4 - 1.5 Nm

- ♦ Fit toothed washer under nut

12 Nut M5 - 2 Nm

- ♦ Fit toothed washer under nut



13 Fuel delivery unit

- ♦ Removing and installing
=> Page 22
- ♦ Testing fuel pump (electrical test)
=> Page 17
- ♦ Checking holding pressure:

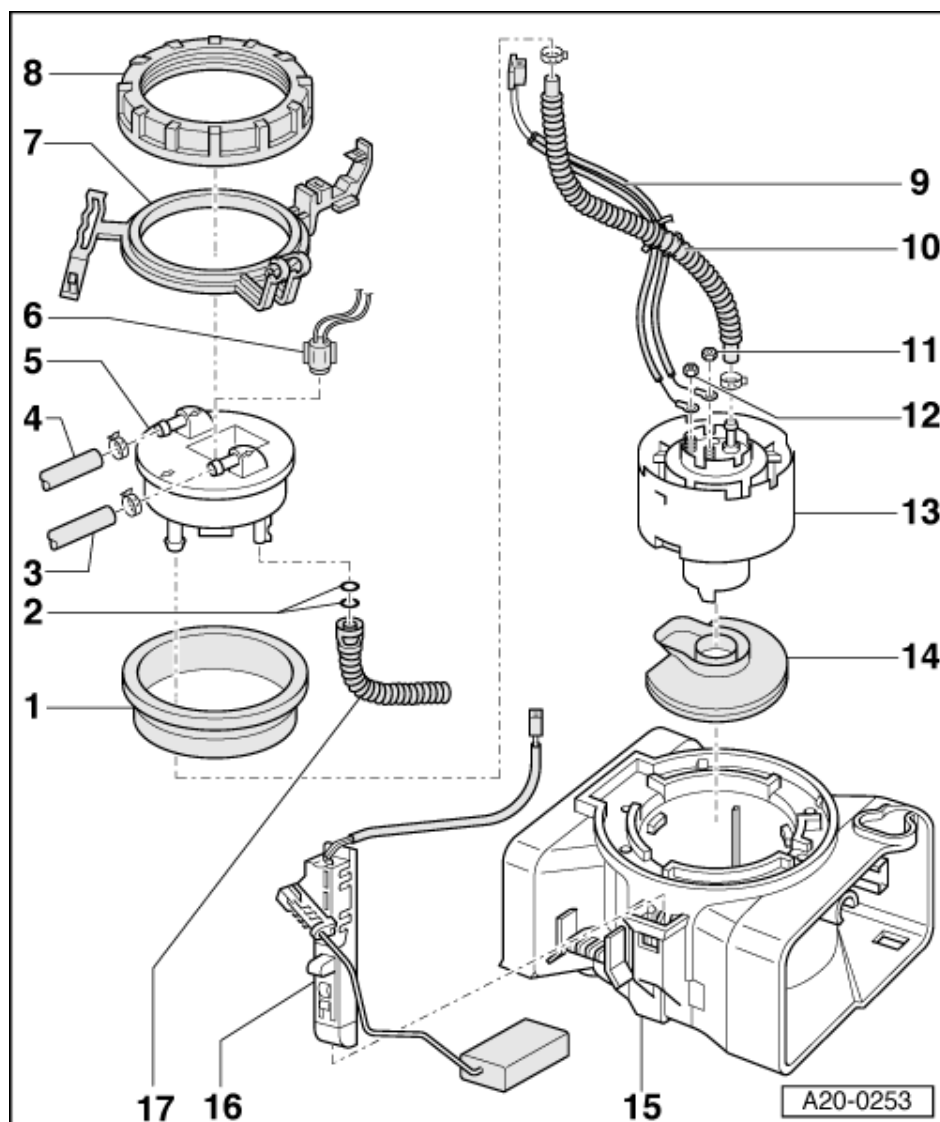
=> Injection and ignition system; Repair Group 24

14 Fuel filter screen

- ♦ Fitted onto fuel delivery unit
- ♦ Cannot be replaced separately
- ♦ Clean if dirt has collected

15 Baffle housing (lower section)

- ♦ Secured in place in fuel tank
- ♦ Cannot be dismantled



16 Fuel gauge sender -G

- ◆ Block-shaped float
- ◆ Testing => Page 27
- ◆ Removing and installing
=> Page 28

17 Return pipe

- ◆ Connected to inside of flange
- ◆ Press release tabs on connection to pull off

2.6 - Testing fuel pump (electrical test)

Special tools, testers and auxiliary items

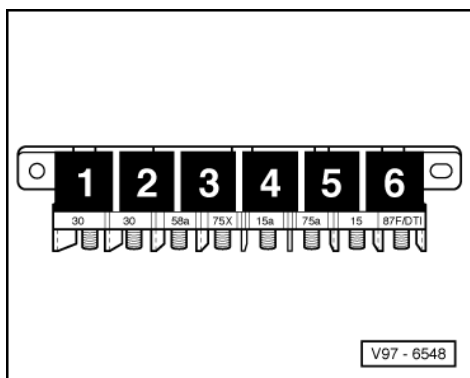
- ◆ Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- ◆ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ◆ Adapter set V.A.G 1594 A

Requirements for test:

- Battery voltage not less than 12 V



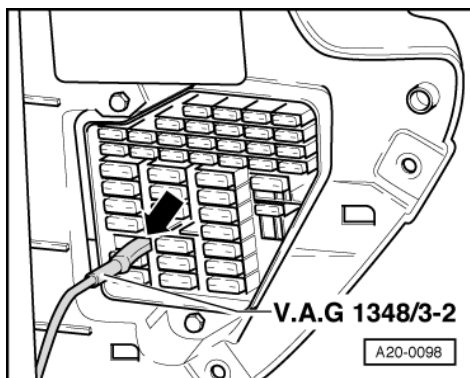
- Fuse No. 28 OK



- -> Relay 6 in central electrics unit OK
- Fuel filter OK
- Ignition switched off

Test sequence

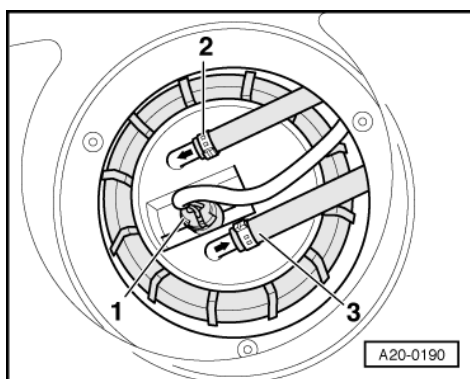
- Open fuse box cover on the left side of the dashboard panel.



- Pull fuse No. 28 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 No. 28 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should start running audibly.

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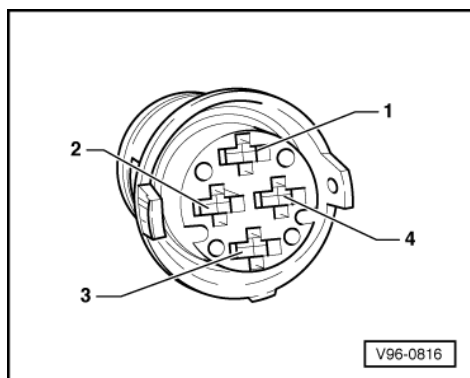
Note:



The fuel pump runs very quietly. Where possible, avoid noisy surroundings for this test.

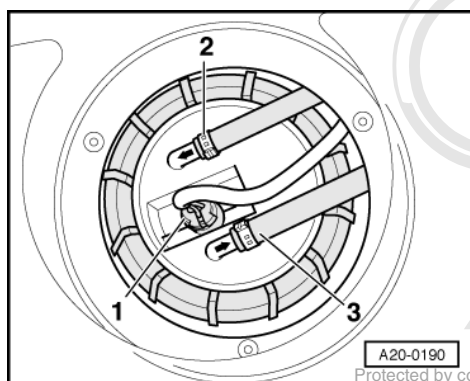
If pump does not start running:

- Detach trim in luggage compartment.
- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.
- -> Release and unplug 4-pin connector -1-.



- -> Set hand-held multimeter V.A.G 1526 to voltage measuring range (20 V direct current) and connect to contact 1 (green/yellow) and contact 4 (brown) of connector using test leads from V.A.G 1594 A.
- 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:

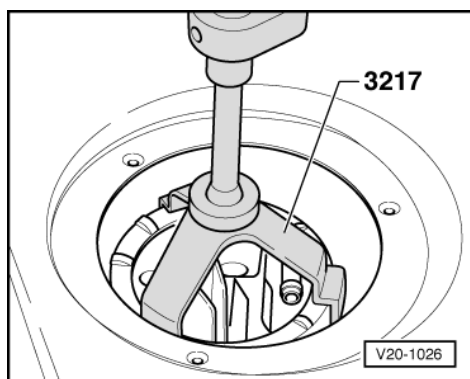


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Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

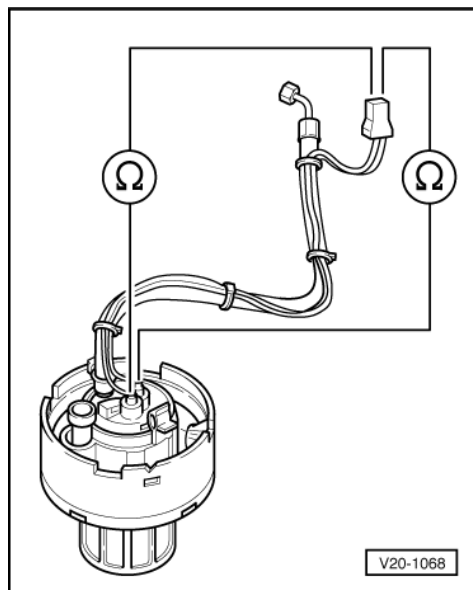
- -> Mark supply pipe -2- and return pipe -3-, then pull pipes off flange.



- -> 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 22 .
- Install flange => Page 25 .

2.7 - Checking fuel pump delivery rate

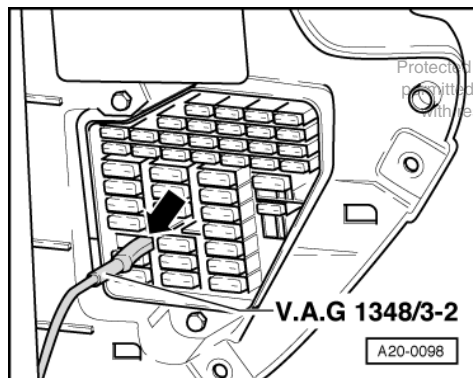
Special tools, testers and auxiliary items

- ♦ Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- ♦ Measuring container

Requirements for test:

- Battery voltage not less than 12 V
- Fuel filter OK
- Ignition switched off

Test sequence



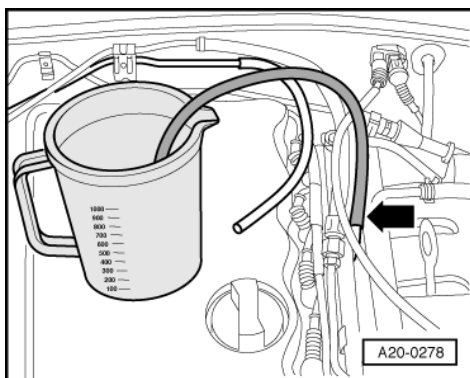
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- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse No. 28 off fuse carrier (left row, 5th large fuse from the top).

- -> Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right-hand terminal of fuse socket No. 28 -arrow-.
- Connect clamp to vehicle battery (+).
- Remove filler cap from fuel tank filler neck.
- Remove engine cover.

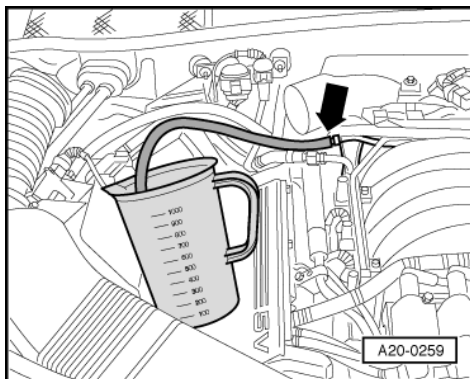
Vehicles with 4-cylinder engine:

Warning!
 Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.



- -> Pull off fuel return hose at connection on fuel distribution pipe.
- Connect extension hose to fuel distribution pipe and hold end of hose in measuring container.

Vehicles with 6-cylinder engine:

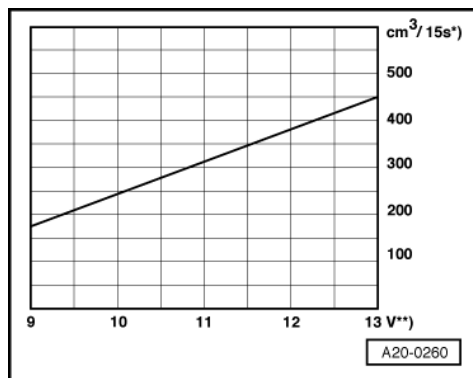


Warning!
 Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Pull off fuel return hose at connection on fuel distribution pipe.
- Connect extension hose to fuel distribution pipe and hold end of hose in measuring container.

All models

- Operate remote control for 15 seconds (keep button pressed).



- -> Compare the quantity of fuel delivered with specification.

*) Minimum delivery cm³/15 seconds

**) Voltage at fuel pump with engine stationary and pump running (approx. 2 volts less than battery voltage).

2.8 - Removing and installing fuel delivery unit

Observe safety precautions

=> Page **1**

Observe rules for cleanliness

=> Page **2**

Special tools, testers and auxiliary items

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

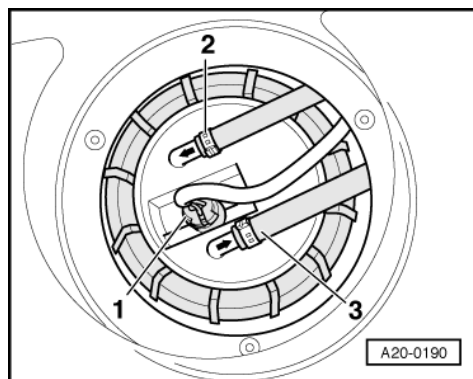
Removing

- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.
- Open fuel filler cap briefly, then close it again.
- Drain fuel tank if necessary using fuel extractor V.A.G 1433 A => Page **8**.

Note:

The fuel tank must not be more than 1/3 full.

- Detach trim in luggage compartment.

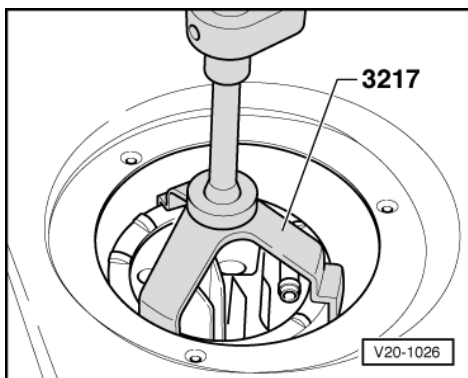


- Detach cover for flange on fuel tank under floor trim in luggage compartment.

Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

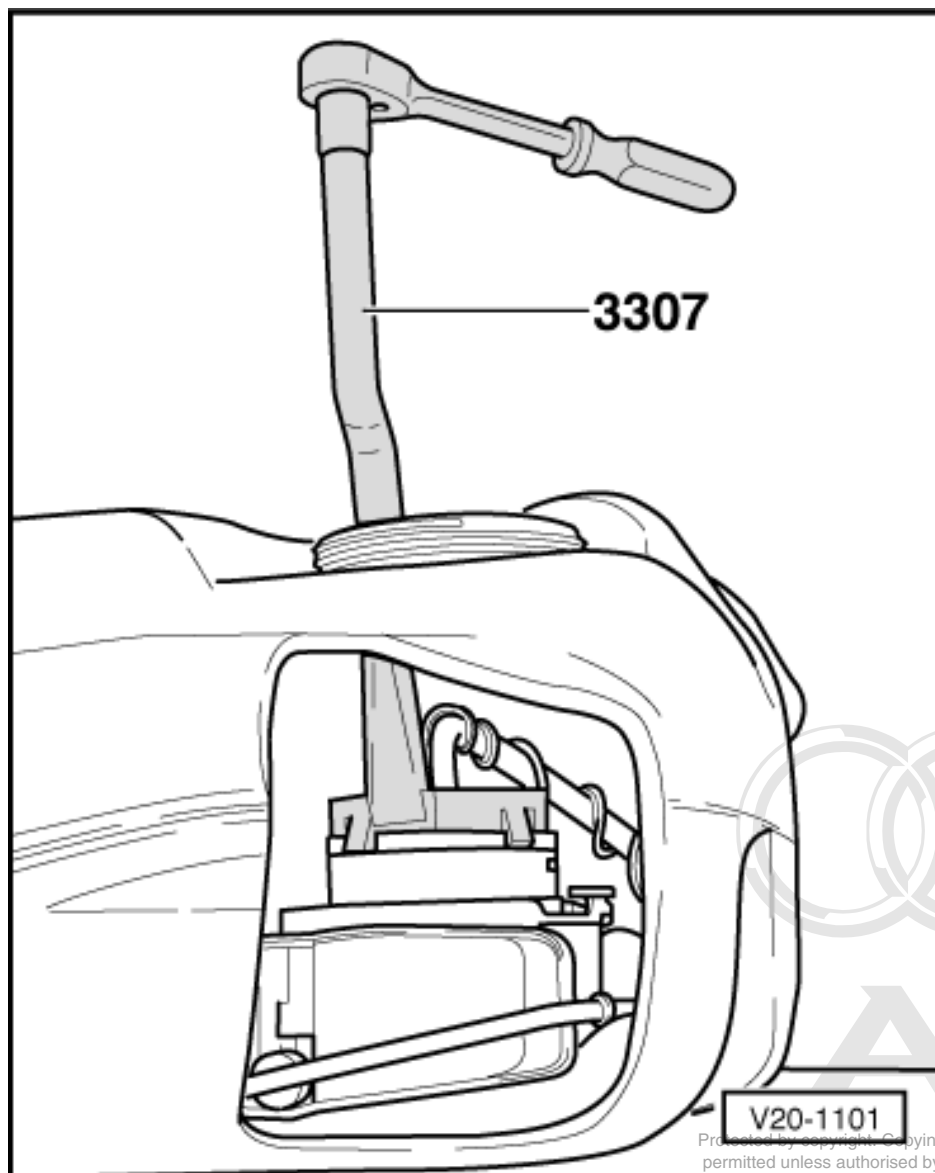
- -> Mark the supply pipe -2- and return pipe -3-, then pull pipes off flange.
- Release 4-pin connector -1- and unplug.



- -> 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.
- Pull fuel return pipe off inside of fuel delivery unit flange (press release tabs).



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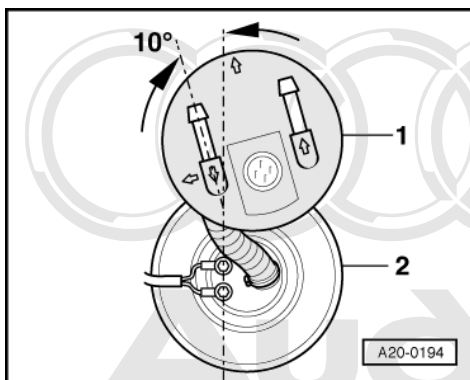
- -> Insert fuel pump spanner 3307 through opening in fuel tank and apply spanner to inner section of baffle housing.
- Using spanner 3307 turn inner section of baffle housing anti-clockwise as far as it will go (approx. 15°), and take out fuel pump with inner section of baffle housing.

Note:

If the delivery unit is to be renewed then drain old delivery unit before disposal.

Pre-assembling flange and inner section of baffle housing

- -> If the flange and fuel delivery unit have been detached, pre-assemble the parts => Page 13 .



- -> Angle between flange and inner section of baffle housing: 10°
- Compress clamps for supply pipe (between pump and flange) using hose clamp pliers V.A.G 1275.
- Connect electrical wires onto fuel pump (M4: 1.5 Nm, M5: 2 Nm)

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Note:

Fit a toothed washer under each nut.

- Secure the electrical wires using a fuel-resistant cable tie.

Installing

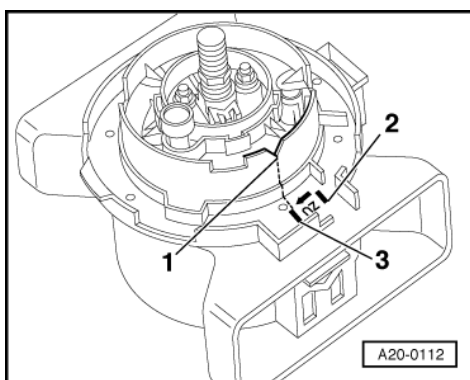
Installation is carried out in the reverse order, when doing this note the following:

Note:

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

=> Parts catalogue

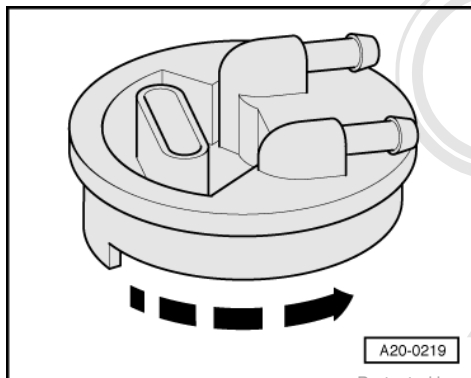
- Insert inner section of baffle housing, supply pipe and flange in fuel tank.



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

Note:

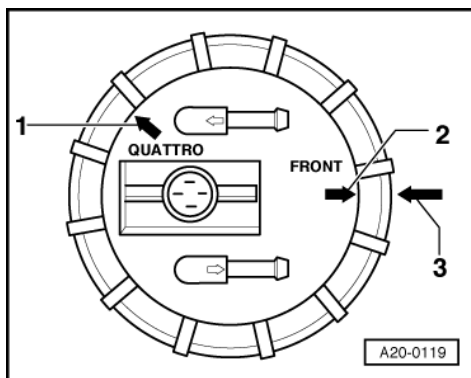
Baffle housing is shown without fuel tank for a clearer illustration.



- -> When installing, turn flange in an anti-clockwise direction, as indicated in illustration.
- Connect return pipe on inside of flange.

Notes:

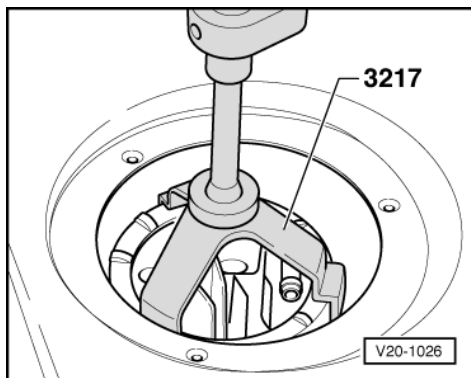
- ♦ Always use new O-rings.
- ♦ Lubricate O-rings with fuel or other lubricant.
- ♦ Fit new seal for flange (dry) in opening in fuel tank.
- Wrap fuel gauge sender wire once around the return pipe (in fuel tank) and connect at flange.



- -> Fit flange into 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.

Note:

The pipe retainer -Item 14 must be held in position when tightening the union nut.

- Connect pipes and plug in the connector.

Note:

Ensure that fuel pipes are securely seated.

- After connecting battery, enter anti-theft code for radio

=> Radio operating instructions

- Close windows fully using electric window switches.
- Then operate all electric window switches again for at least one second in the "close" direction to activate the automatic one-touch function.
- Set clock to correct time.

Tightening torque

Component	Nm
Union nut for flange	60

2.9 - Testing fuel gauge sender -G

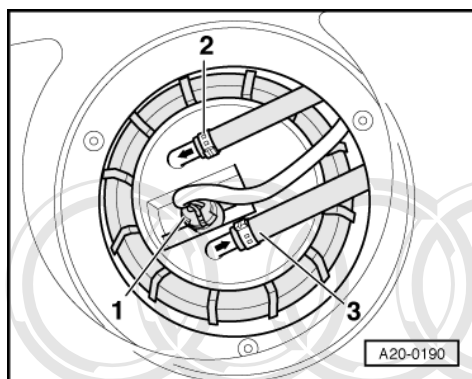
Note:

Testing signal from fuel gauge sender:

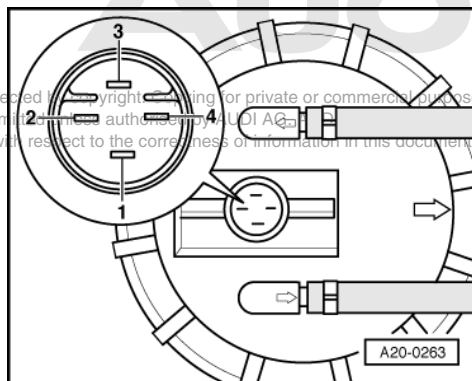
=> Electrical system; Repair group 90; Servicing dash panel insert; Identification of contacts on connectors
 Servicing dash panel insert Identification of contacts on connectors

Special tools, testers and auxiliary items

- ◆ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ◆ Adapter set V.A.G 1594 A



- Detach trim in luggage compartment.
- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.
- -> Release and unplug 4-pin connector -1-.



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- -> 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 maximum and minimum values for "tank full" and "tank empty", remove the fuel gauge sender -G => Page 28 and move the float all the way to its top or bottom position.

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2.10 - Removing and installing fuel gauge sender -G

Observe safety precautions

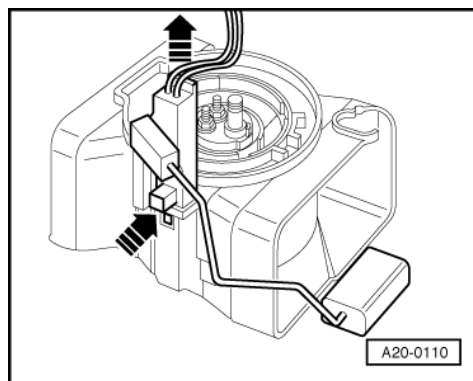
=> Page 1

Observe rules for cleanliness

=> Page 2

Removing

- Remove flange => Removing fuel delivery unit, from Page 22.
- Pull out flange carefully and place to one side with hoses connected.
- Unplug connector for fuel gauge sender on inside of flange.



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

Note:

The baffle housing is shown without the fuel tank for a clearer illustration.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.
- Install flange => Page 25; observe notes on procedure for connecting battery.

3 - Fuel supply system - four-wheel drive

3.1 - Fuel supply system - four-wheel drive

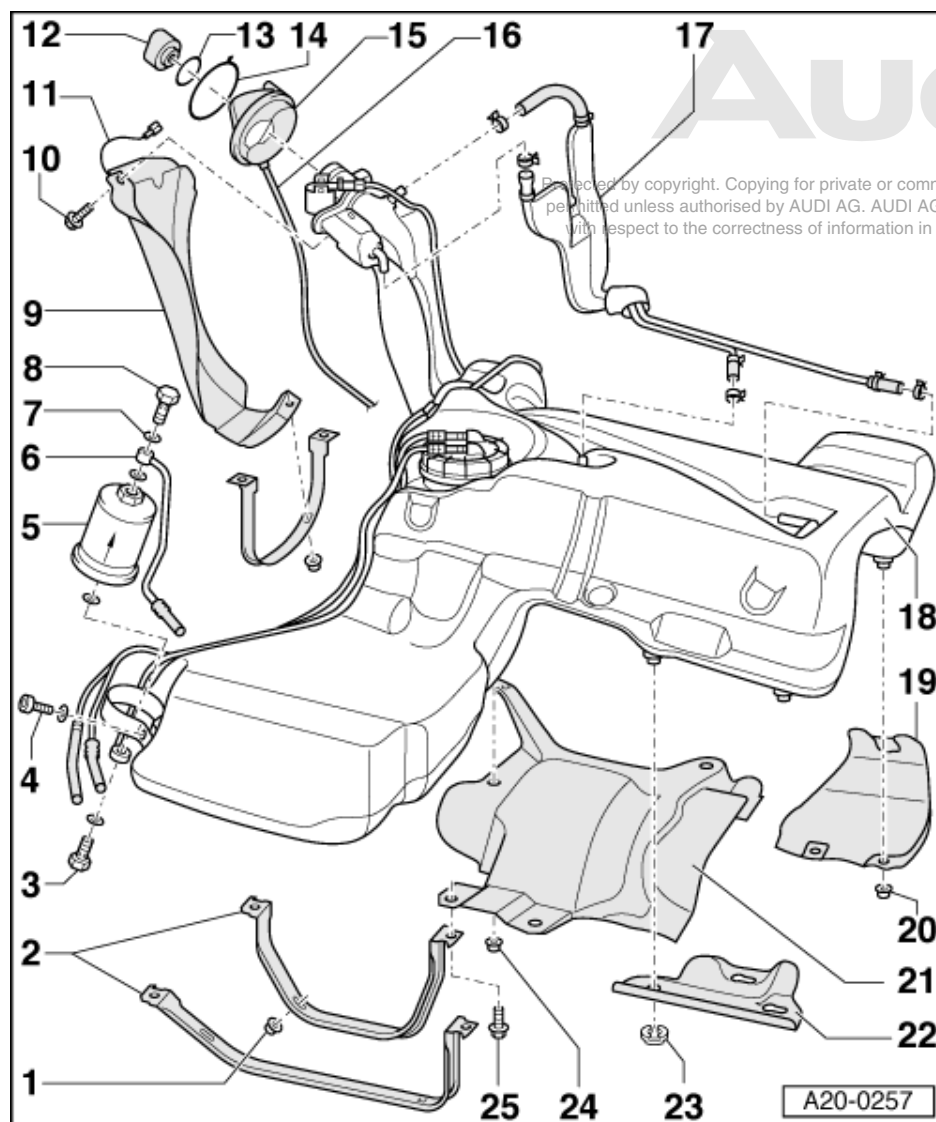
Notes:

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

=> Parts catalogue

- ◆ Hose clip pliers V.A.G 1921 are recommended when installing spring-type clips.
- ◆ 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

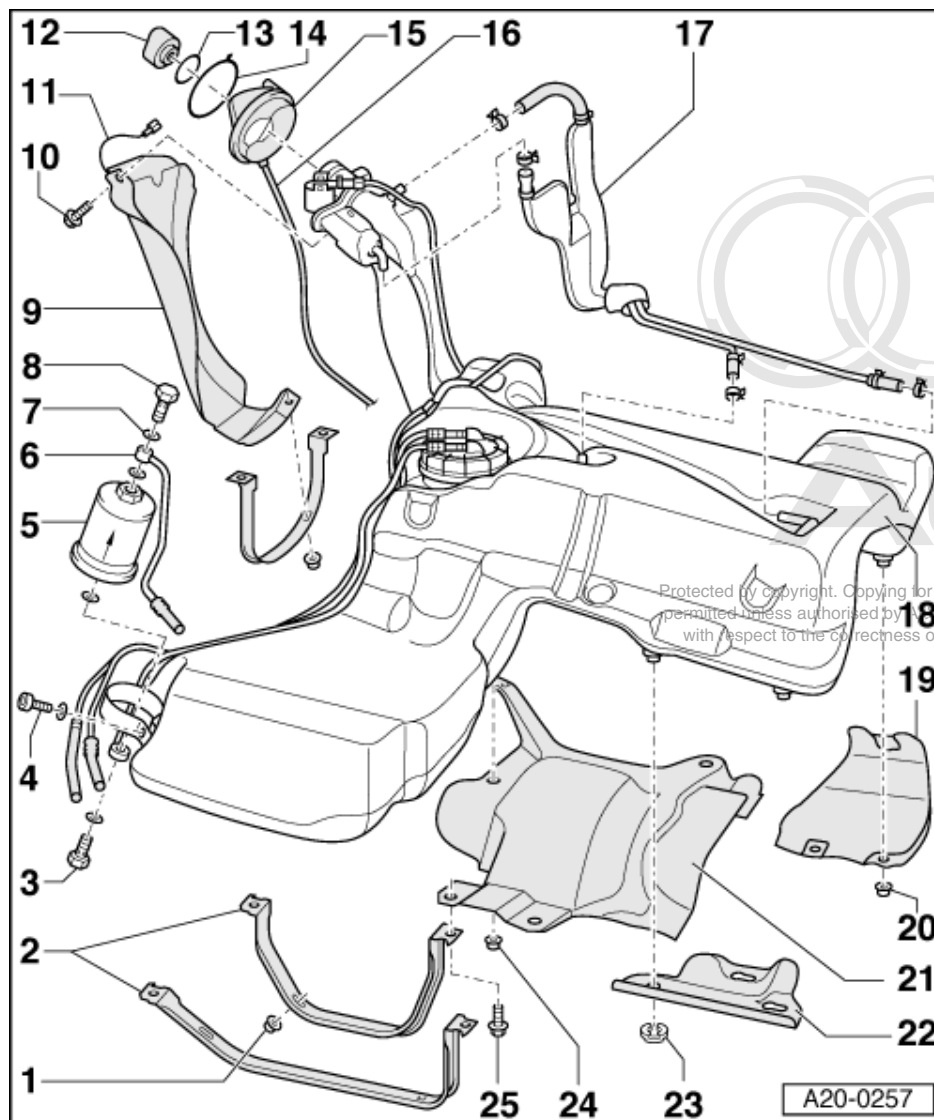
2 Securing straps

- ◆ Removing and installing
=> Page 36

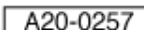


- ♦ Note differing length
- ♦ Note correct position

3 Banjo bolt M14 - 30 Nm

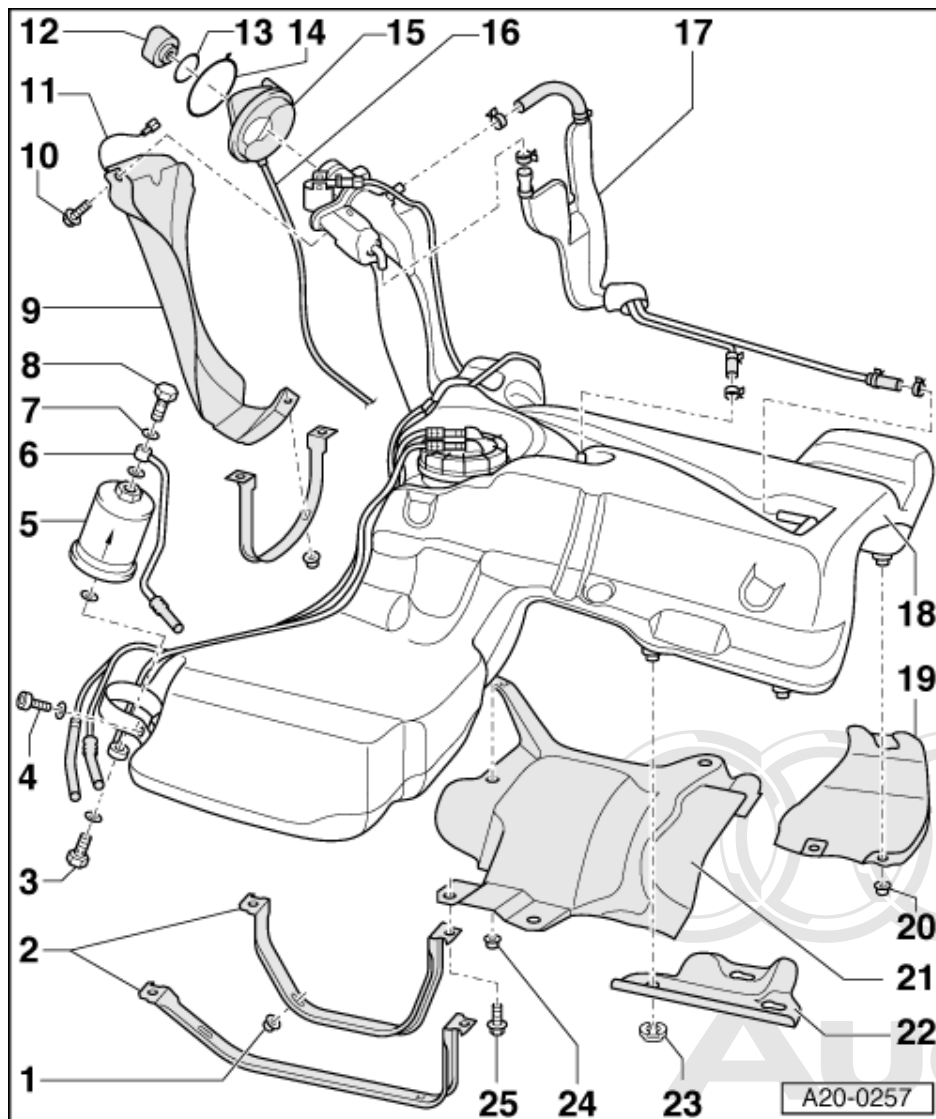


- 4 1.2 Nm**
- 5 Fuel filter**
- ♦ Installation position: Arrow points in through-flow direction
- 6 Supply pipe**
- ♦ To fuel supply pipe on fuel manifold
- 7 Seal**
- ♦ Renew
- 8 Banjo bolt M12 - 20 Nm**
- 9 Protective plate**
- ♦ For fuel filler neck
 - ♦ With earth connection
 - ♦ Before screwing in securing bolt -Item **10** -, ensure that earth connecting lug is properly seated (flanged edge)



14 Retaining ring

3.2 - Overview of components: fuel tank with attachments 31



15 Rubber cup

16 Overflow hose

17 Expansion chamber

- ◆ Secure pipes to expansion chamber with adhesive tape

18 Fuel tank

- ◆ Removing and installing
=> Page 36

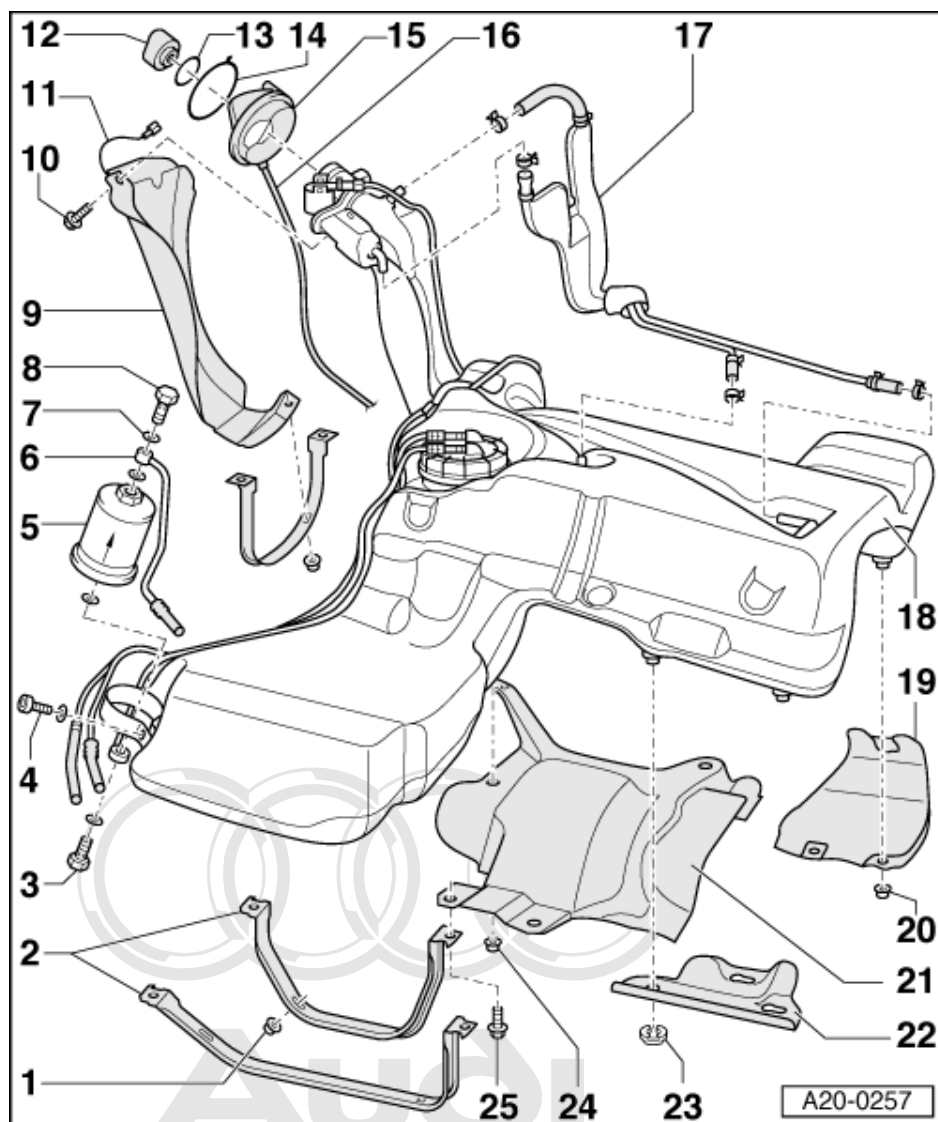
19 Heat shield

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

20 Plastic nut - 2 Nm

21 Carrier plate

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22 Heat shield

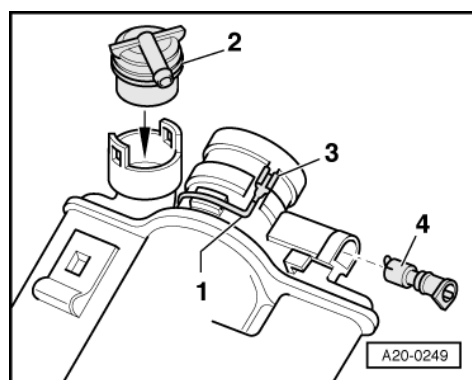
- ◆ For fuel filler neck

23 Securing clip

- ◆ Check securely seated

24 Plastic nut - 2 Nm

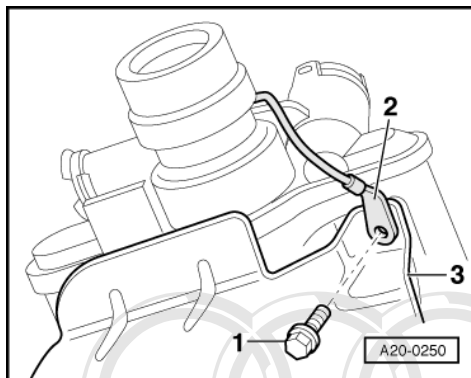
25 25 Nm



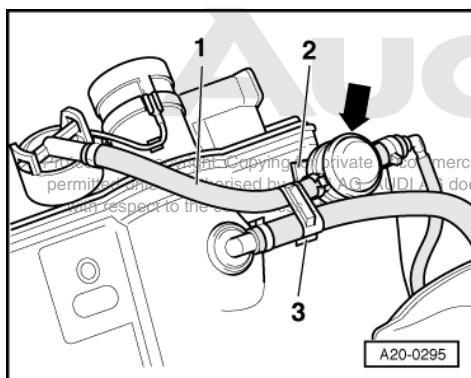
-> Fig.1 Position of gravity valve, vent valve and earth connection

- 1 - Earth connection
- 2 - Gravity valve
- 3 - Filler neck
- 4 - Vent valve

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

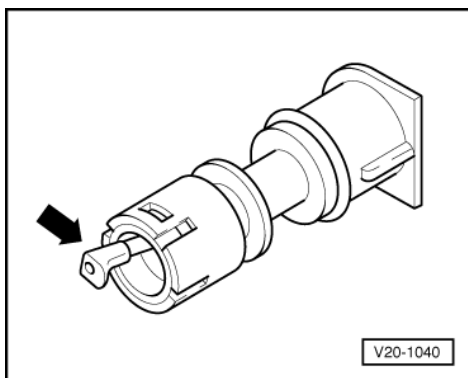


- -> Before screwing in securing bolt -1-, ensure earth connecting lug -2- is properly seated (flanged edge) on protective plate -3- for fuel filler neck.
- After installation, use an ohmmeter to check the electrical connection between the metal ring of the fuel filler neck and a bare metal part on the body.
- Specification: approx. 0 Ω



-> Fig.2 Tank protector valve for vehicles with rough-road equipment

- ♦ The tank protector valve -arrow- is fitted into the breather pipe -1- at the fuel filler neck.
 - 2 - Spacer between tank protector valve and fuel filler neck
 - 3 - Clip securing the two breather pipes
- ♦ The tank protector valve allows air into the fuel tank to prevent the formation of a vacuum if the breather pipe is blocked.



-> Fig. 3 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: valve closed
 - Lever pressed in direction of arrow: valve open

3.3 - Draining fuel tank

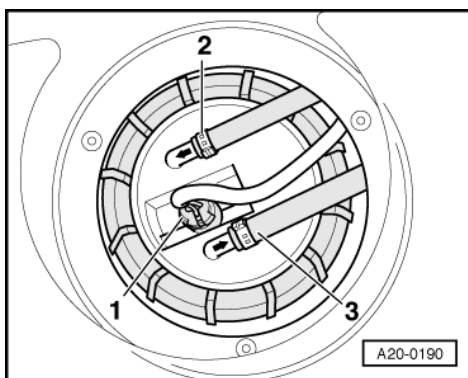
Observe safety precautions
 => Page 1

Observe rules for cleanliness
 => Page 2

Special tools, testers and auxiliary items

- ♦ Fuel extractor V.A.G 1433 A

- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.
- Remove filler cap from fuel tank filler neck.
- Drain fuel tank as far as possible via fuel filler neck.
- Detach trim in luggage compartment.
- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.

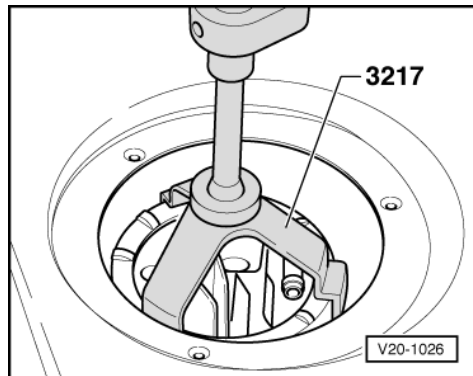




Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Mark the supply pipe -2- and return pipe -3-, then pull pipes off flange.
- Release 4-pin connector -1- and unplug.



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

3.4 - Removing and installing fuel tank with attachments

Observe safety precautions

=> Page **1**

Observe rules for cleanliness

=> Page **2**

Special tools, testers and auxiliary items

- ♦ Universal support V.A.G 1359/2
- ♦ Engine/gearbox jack V.A.G 1383 A

Removing

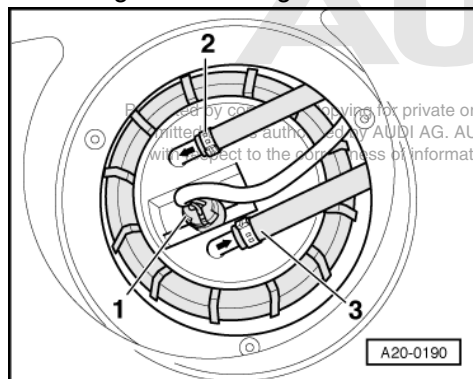
- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.
- Open fuel filler cap briefly, then close it again.
- Drain fuel tank if necessary using fuel extractor V.A.G 1433 A => Page **35**.

Note:

The fuel tank must be empty when it is removed from the vehicle in order to reduce weight.

- Remove rear axle:

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

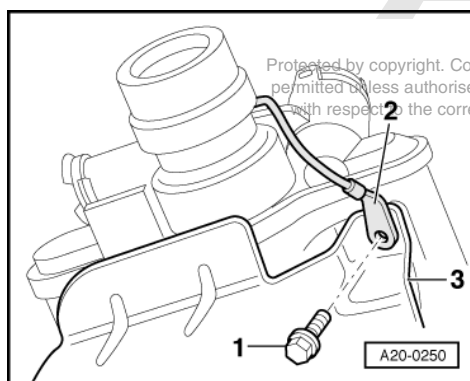


- Detach trim in luggage compartment.
- Detach cover for flange on fuel tank under floor trim in luggage compartment.
- -> Release and unplug 4-pin connector -1-.

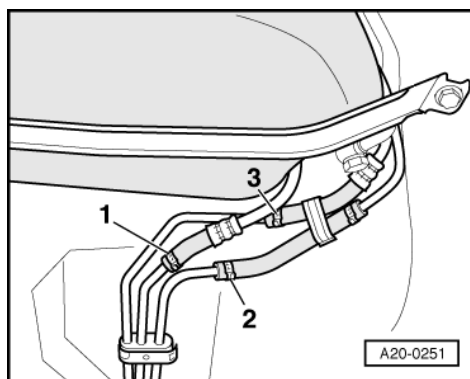
Note:

Do not disconnect return pipe -2- and supply pipe -3-.

- Clean area around tank filler neck.
- Open tank flap and lever out clamping ring in rubber cup (on filler neck).



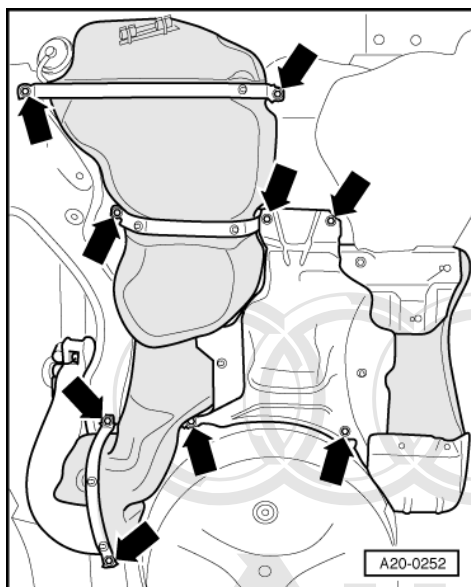
- Press rubber cup through to the inside.
- Take off rear right wheel.
- Remove rear right wheel housing liner.
- -> Remove bolt -1- for fuel filler neck, earth connection -2- and protective plate -3- below wheel housing liner.



Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Mark the supply pipe -1-, return pipe -3- and breather pipe to activated charcoal filter -2- on vehicle floor. Then pull pipes off.
- Position engine/gearbox hoist V.A.G 1383 A below vehicle to support tank.

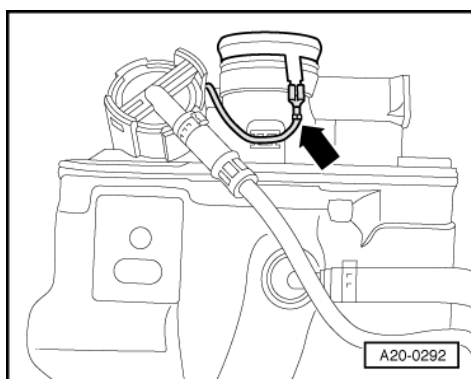


- Mark the correct positions of securing straps.
- -> Remove securing straps and carrier plate -arrows-.
- Lower fuel tank out of vehicle.

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Installation is carried out in the reverse order, when doing this note the following:

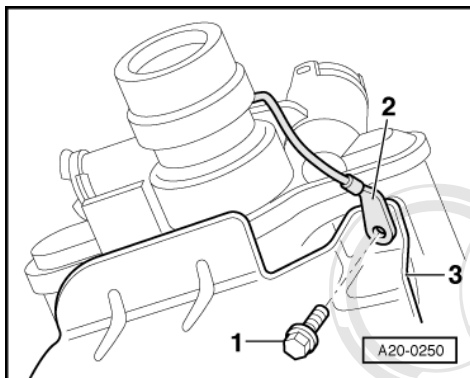
Notes:



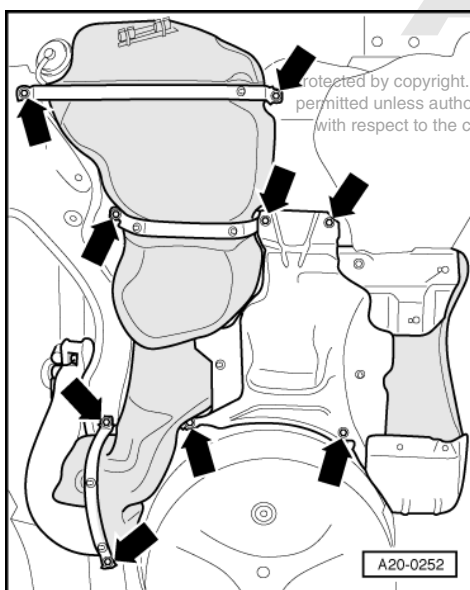
- ♦ Secure all hose connections with the correct hose clips (same as original equipment)

=> Parts catalogue

- ♦ Hose clip pliers V.A.G 1921 are recommended when installing spring-type clips.
- ♦ Always renew sealing rings and gaskets when assembling.
- -> Ensure that connector for earth connection -arrow- is properly seated on metal ring on fuel filler neck. Check that the earth wire is routed correctly.



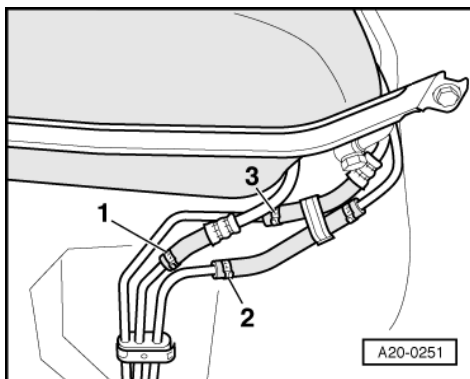
- Loosely attach securing straps and carrier plate on fuel tank.
- Position fuel tank with securing straps and carrier plate on underside of vehicle using engine/gearbox jack V.A.G 1383 A.
- -> First tighten bolt -1- securing protective plate -3-, earth connection -2- and fuel filler neck.



Caution

It is important to ensure that the earth terminal is secured with the bolt and the connector is properly seated at the fuel filler neck. Position=>Fig. 34 .

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





- -> Connect pipes as previously marked:
 - 1 - Supply pipe
 - 3 - Breather pipe to activated charcoal filter
 - 2 - Return pipe
- Plug in connector for fuel pump and fuel gauge sender.

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.Ω.**

- After connecting battery, enter anti-theft code for radio

=> Radio operating instructions

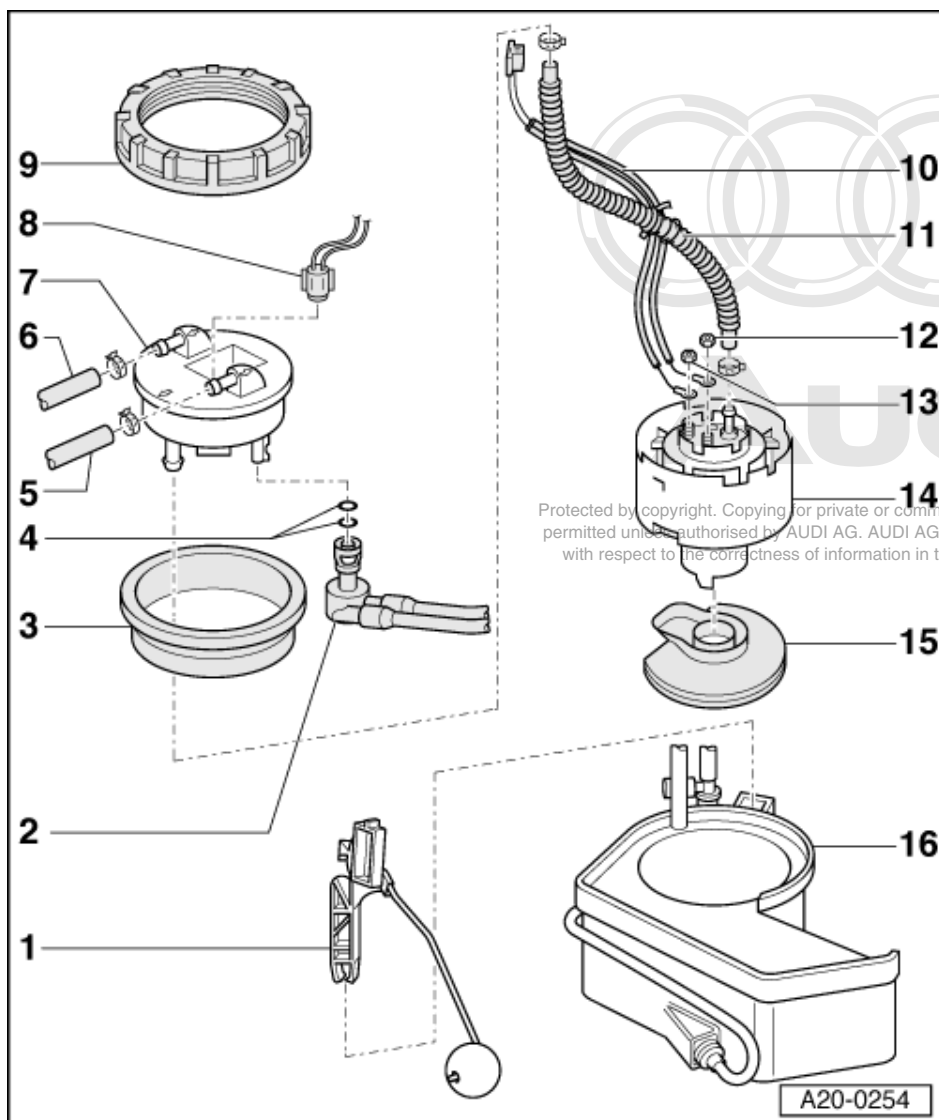
- Close windows fully using electric window switches.
- Then operate all electric window switches again for at least one second in the "close" direction to activate the automatic one-touch function.
- Set clock to correct time.

Tightening torques

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

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3.5 - Overview of components: fuel delivery unit and fuel gauge sender

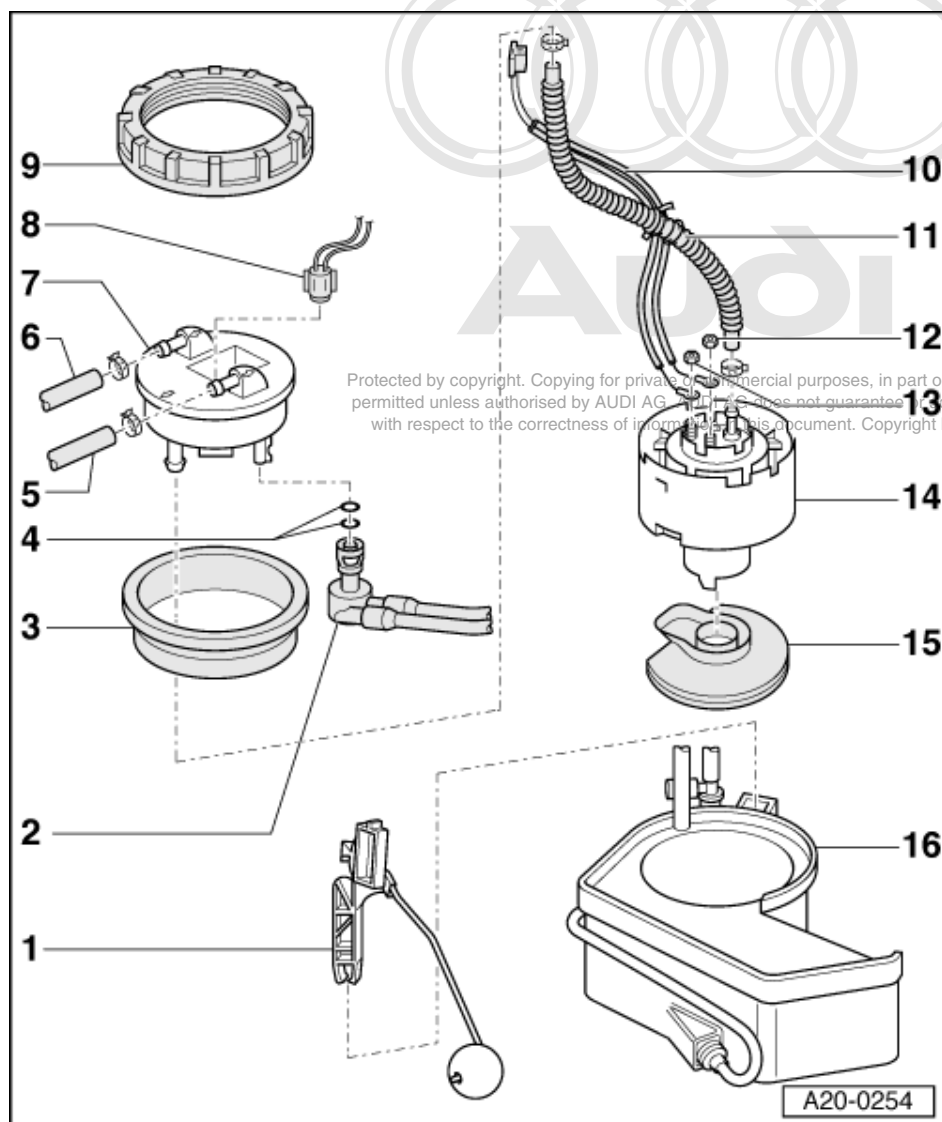


1 Fuel gauge sender -G

- ♦ Ball float
- ♦ Checking resistance => Page 54
- ♦ Removing and installing
=> Page 55

2 Return pipe

- ♦ With suction jet pump
- ♦ Connected to inside of flange
- ♦ Removing and installing
=> Page 69
- ♦ Press release tabs on connection to pull off



3 Seal

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

4 O rings

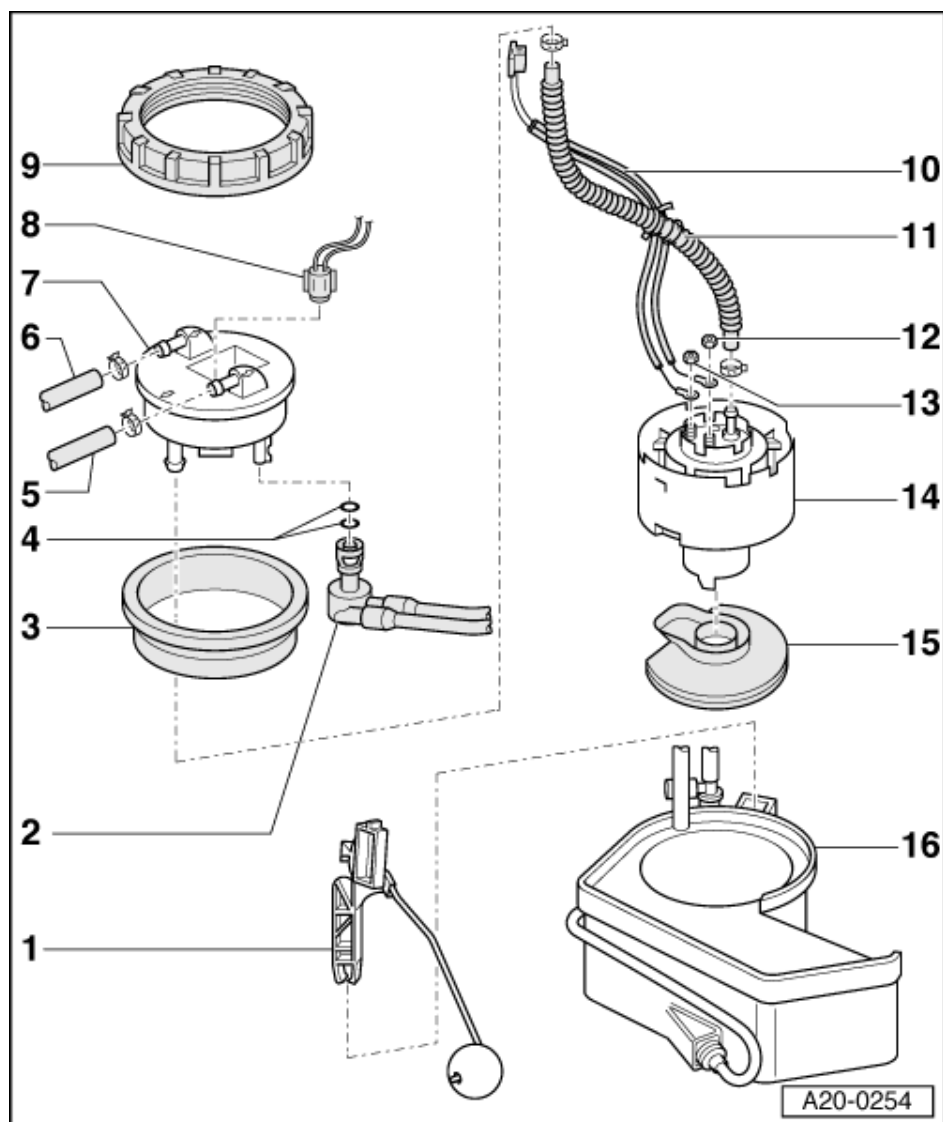
- ◆ Always renew
- ◆ Ensure correctly fitted

5 Return pipe

- ◆ From fuel manifold
- ◆ Mark pipe before disconnecting
- ◆ Note direction of arrow on flange

6 Supply pipe

- ◆ To fuel manifold
- ◆ Mark pipe before disconnecting
- ◆ Note direction of arrow on flange



7 Flange

- ◆ Removing and installing
 => Page 49
- ◆ Installation position: see arrow
 => Page 52

8 Connector

- ◆ For fuel pump and fuel gauge sender -G

9 Union nut, 60 Nm

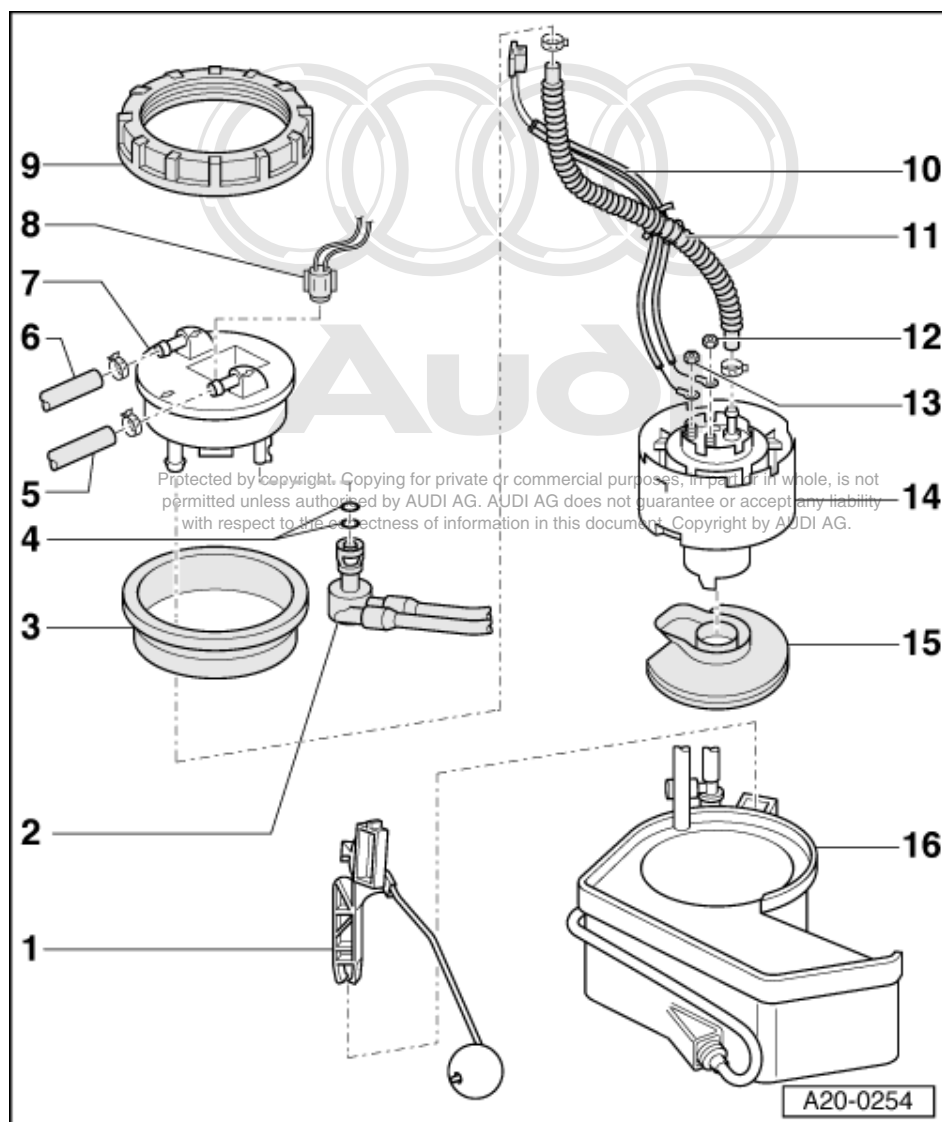
10 Electrical wires

- ◆ To fuel pump
- ◆ Secure to -Item 11 - using fuel-resistant cable tie

11 Supply pipe

- ◆ Fuel pump/baffle housing
- ◆ Position => Page 51

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12 Nut M4 - 1.5 Nm

- ♦ Fit toothed washer under nut

13 Nut M5 - 2 Nm

- ♦ Fit toothed washer under nut

14 Fuel delivery unit

- ♦ Removing and installing
=> Page 49
- ♦ Checking fuel pump (electrical test)
=> Page 45
- ♦ Checking holding pressure:

=> Injection and Ignition System; Repair group 24

15 Fuel filter screen

- ♦ Fitted onto fuel delivery unit
- ♦ Cannot be replaced separately
- ♦ Clean if dirt has collected

16 Baffle housing (lower section)

- ♦ Secured in place in fuel tank
- ♦ Cannot be dismantled

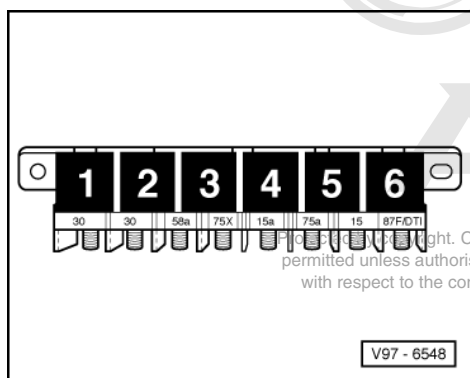
3.6 - Checking fuel pump (electrical test)

Special tools, testers and auxiliary items

- ◆ Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- ◆ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ◆ Adapter set V.A.G 1594 A

Requirements for test:

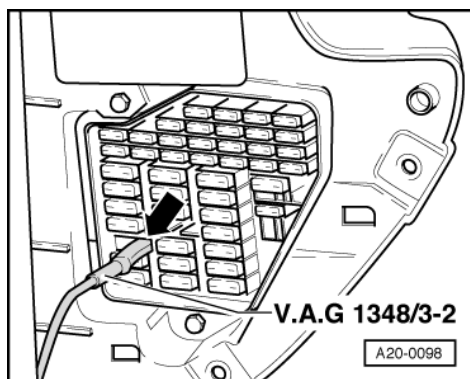
- Battery voltage not less than 12 V
- Fuse No. 28 OK



- -> Relay 6 in central electrics unit OK
- Fuel filter OK
- Ignition switched off

Test sequence

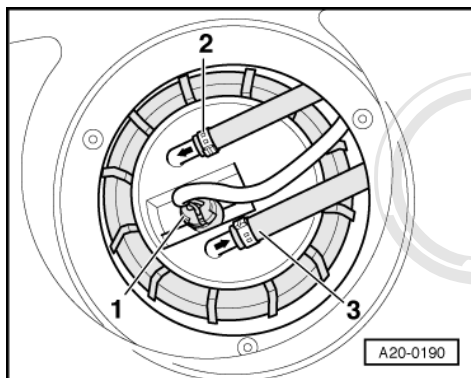
- Open fuse box cover on the left side of the dashboard panel.



- Pull fuse No. 28 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 No. 28 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should start running audibly.



Note:

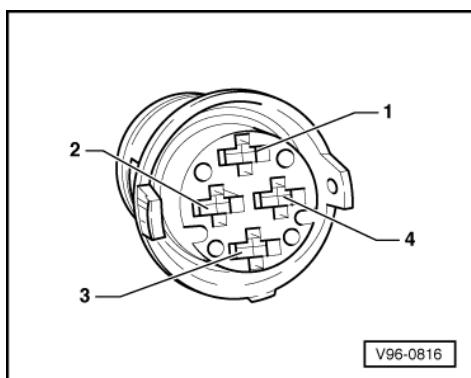


The fuel pump runs very quietly. Where possible, avoid noisy surroundings for this test.

If pump does not start running:

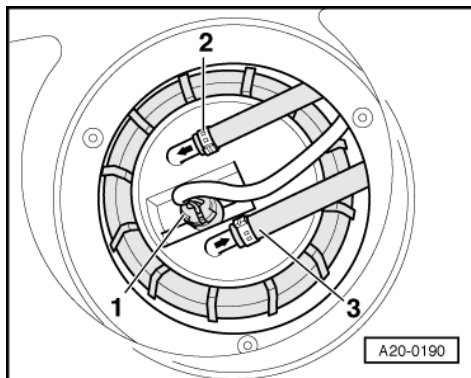
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- Detach trim in luggage compartment.
- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.
- -> Release and unplug 4-pin connector -1-.



- -> Set hand-held multimeter V.A.G 1526 to voltage measuring range (20 V direct current) and connect to contact 1 (green/yellow) and contact 4 (brown) of connector using test leads from V.A.G 1594 A.
- Press and hold remote control switch, and read off voltage.
 - Specification: approx. battery voltage

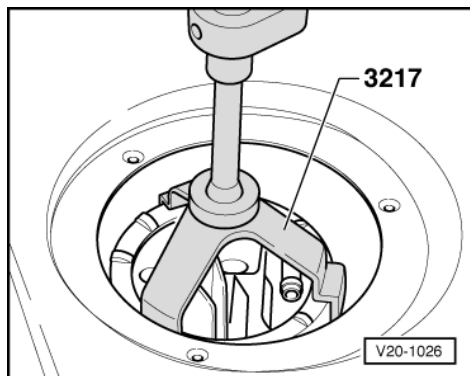
If the specification is obtained, even though the fuel pump did not run, remove flange as follows:



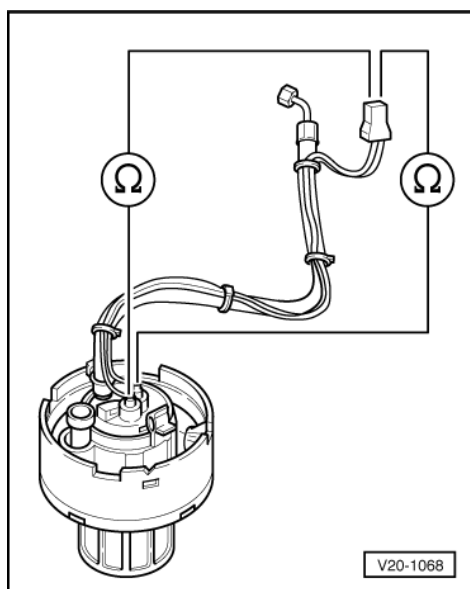
Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Mark the supply pipe -2- and return pipe -3-, then pull pipes off 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 49 .
- Install fuel delivery unit => Page 52 .

3.7 - Checking fuel pump delivery rate

Special tools, testers and auxiliary items

- ◆ Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- ◆ Measuring container



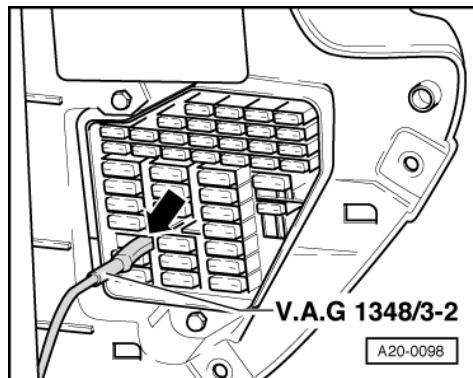
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Requirements for test:

- Battery voltage not less than 12 V
- Fuel filter OK
- Ignition switched off

Test sequence

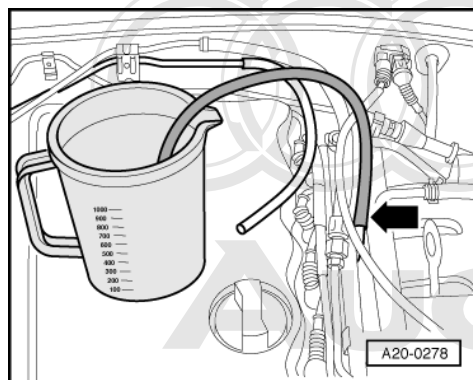


- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse No. 28 off fuse carrier (left row, 5th large fuse from the top).
- -> Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right-hand terminal of fuse socket No. 28 -arrow-.
- Connect clamp to vehicle battery (+).
- Remove filler cap from fuel tank filler neck.
- Remove engine cover.

Vehicles with 4-cylinder engine:

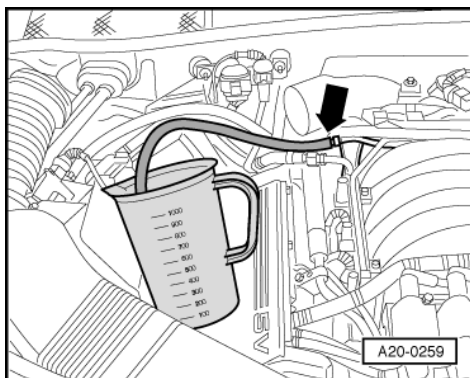
Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.



- -> Pull off fuel return hose at connection on fuel distribution pipe.
- Connect extension hose to fuel distribution pipe and hold end of hose in measuring container.

Vehicles with 6-cylinder engine:



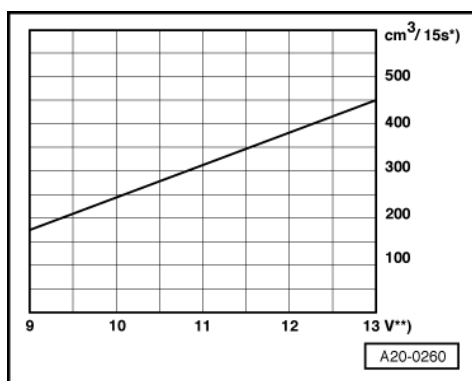
Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Pull off fuel return hose at connection on fuel distribution pipe.
- Connect extension hose to fuel distribution pipe and hold end of hose in measuring container.

All models

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- Operate remote control for 15 seconds (keep button pressed).
- -> Compare the quantity of fuel delivered with specification.

*) Minimum delivery cm³/15 seconds

**) Voltage at fuel pump with engine stationary and pump running (approx. 2 volts less than battery voltage).

3.8 - Removing and installing fuel delivery unit

Observe safety precautions

=> Page **1**

Observe rules for cleanliness

=> Page **2**

Special tools, testers and auxiliary items

- ◆ Ring nut spanner 3217
- ◆ Fuel pump spanner 3307



- ♦ Hose clamp pliers V.A.G 1275

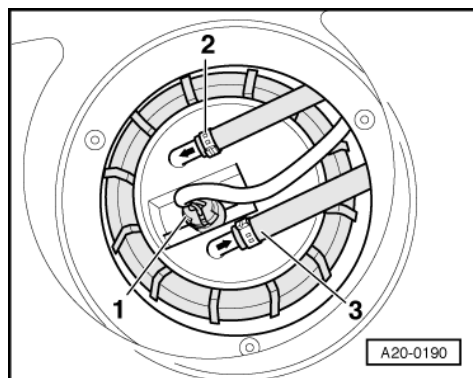
Removing

- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.
- Open fuel filler cap briefly, then close it again.
- Drain fuel tank if necessary using fuel extractor V.A.G 1433 A => Page 35 .

Note:

The fuel tank must not be more than 1/3 full.

- Detach trim in luggage compartment.



- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.

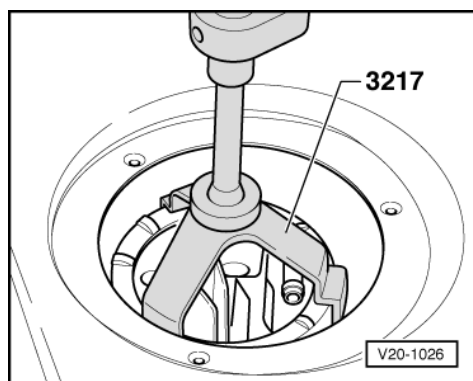


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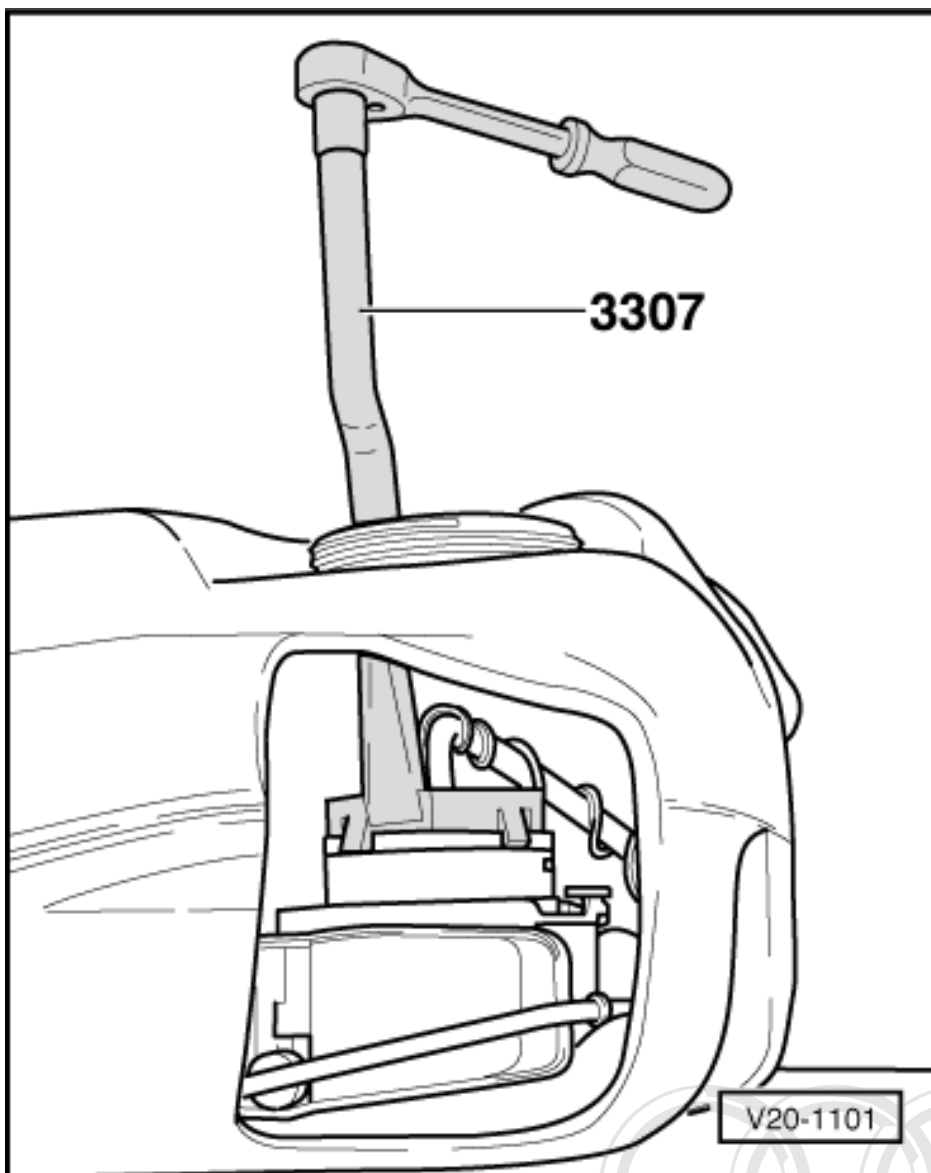
Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Mark the supply pipe -2- and return pipe -3-, then pull pipes off flange.
- Release 4-pin connector -1- and unplug.



- -> 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.
- Pull fuel return pipe off inside of fuel delivery unit flange (press release tabs).

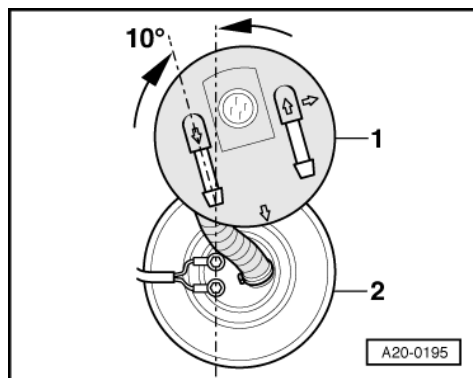


- -> Insert fuel pump spanner 3307 through opening in fuel tank and apply spanner to inner section of baffle housing.
- Using spanner 3307 turn inner section of baffle housing anti-clockwise as far as it will go (approx. 15°), and take out fuel pump with inner section of baffle housing.

Pre-assembling flange and inner section of baffle housing

- If flange and fuel delivery unit have been detached, pre-assemble the parts => Page 41 .

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- -> Angle between flange and inner section of baffle housing: 10°
Compress clamps for supply pipe (between pump and flange) using hose clamp pliers V.A.G 1275.
Connect electrical wires onto fuel pump
(M4: 1.5 Nm; M5: 2 Nm)

Note:

Fit a toothed washer under each nut.

- Secure the electrical wires using a fuel-resistant cable tie.

Installing

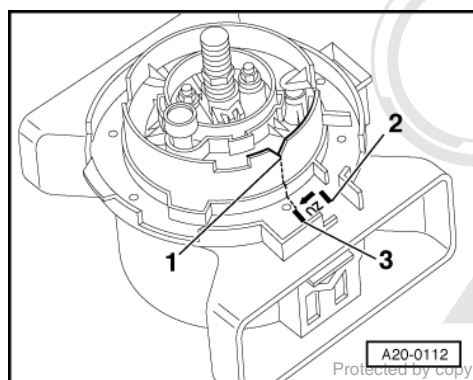
Installation is carried out in the reverse order, when doing this note the following:

Note:

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

=> Parts catalogue

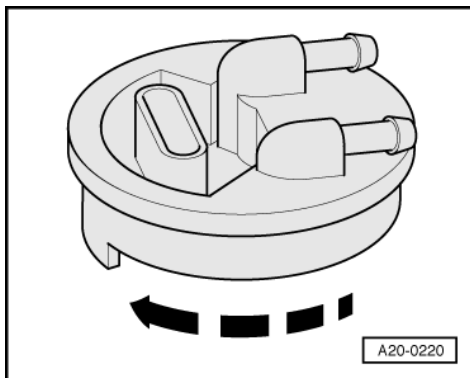
- Insert inner section of baffle housing, supply pipe and flange in fuel tank.



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

Note:

Baffle housing is shown without fuel tank for a clearer illustration.



- -> When installing, turn flange in a clockwise direction, as indicated in illustration.
- Connect return pipe on inside of flange.

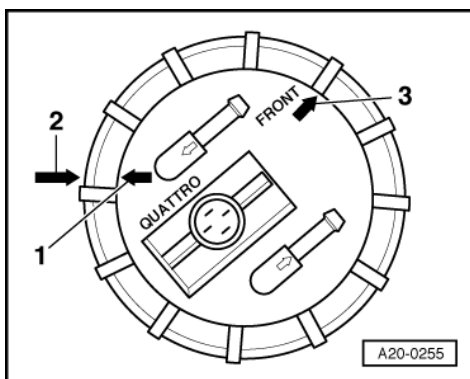
Note:

Lubricate O-rings with fuel or other lubricant.

- Wrap fuel gauge sender wire once around the return pipe (in fuel tank) and connect at flange.

Note:

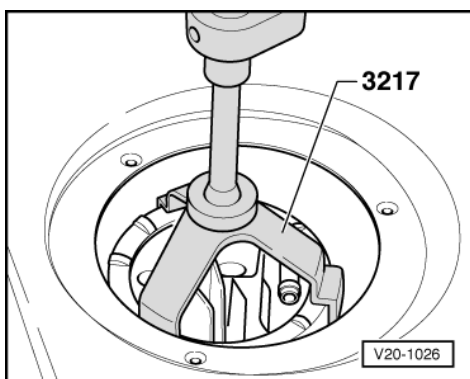
Lubricate the flange seal with fuel before fitting.



- -> Insert flange into fuel tank:
 - 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.

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- Connect pipes and plug in the connector.

Note:

Ensure that fuel pipes are securely seated.

- After connecting battery, enter anti-theft code for radio

=> Radio operating instructions

- Close windows fully using electric window switches.
- Then operate all electric window switches again for at least one second in the "close" direction to activate the automatic one-touch function.
- Set clock to correct time.

Tightening torque

Component	Nm
Union nut for flange	60

3.9 - Testing fuel gauge sender

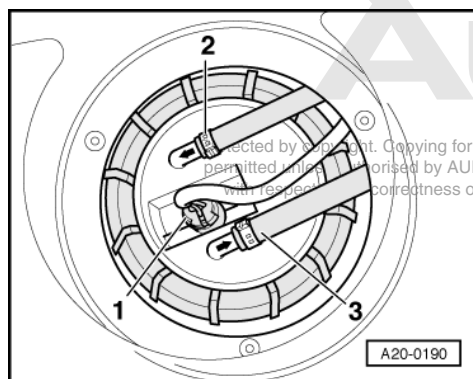
Note:

Testing signal from fuel gauge sender:

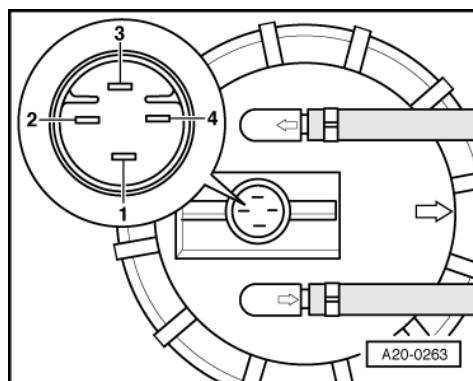
=> Electrical system; Repair group 90; Servicing dash panel insert; Identification of contacts on connectors
Servicing dash panel insert Identification of contacts on connectors

Special tools, testers and auxiliary items

- ♦ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ♦ Adapter set V.A.G 1594 A



- Detach trim in luggage compartment.
- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.
- -> Release and unplug 4-pin 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 maximum and minimum values for "tank full" and "tank empty", remove the fuel gauge sender -G => Page 55 and move the float all the way to its top or bottom position.

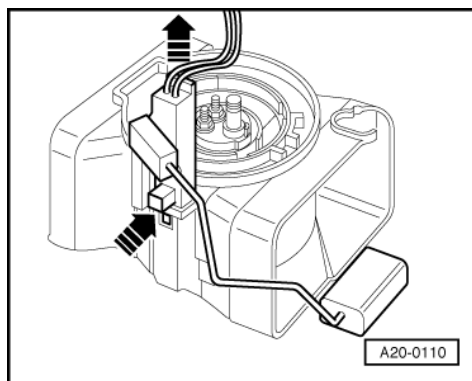
3.10 - Removing and installing fuel gauge sender -G

Observe safety precautions
=> Page 1

Observe rules for cleanliness
=> Page 2

Removing

- Remove flange => Removing fuel delivery unit, from Page 49.
- Pull out flange carefully and place to one side with supply pipe connected.
- 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-.

Notes:

- ♦ The baffle housing is shown without the fuel tank for a clearer illustration.
- ♦ The sender unit and baffle housing shown are for vehicles with front-wheel drive.

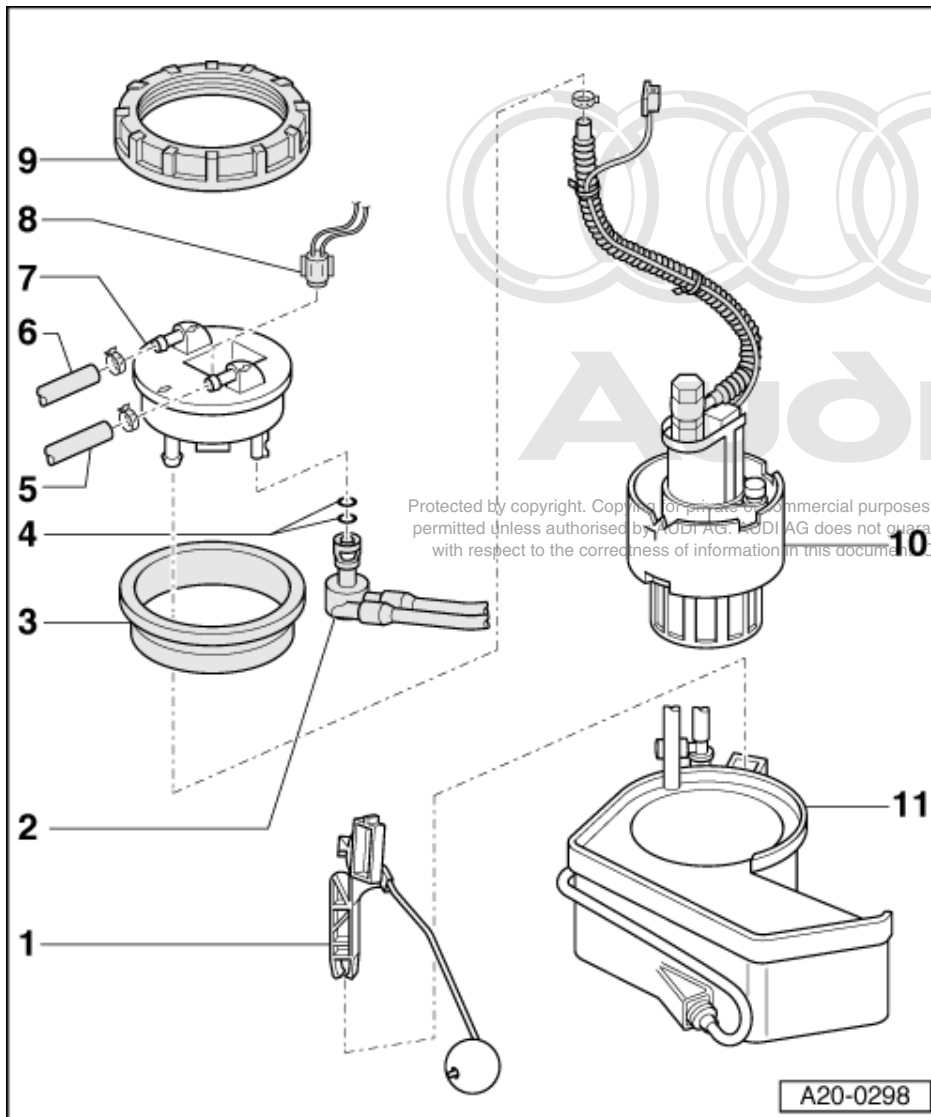
Installing

Installation is carried out in the reverse order, when doing this note the following:

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.
- Install flange => Page 52 ; observe notes on procedure for connecting battery.



3.11 - Overview of components: fuel delivery unit and fuel gauge sender - vehicles with 6-cylinder turbo engine

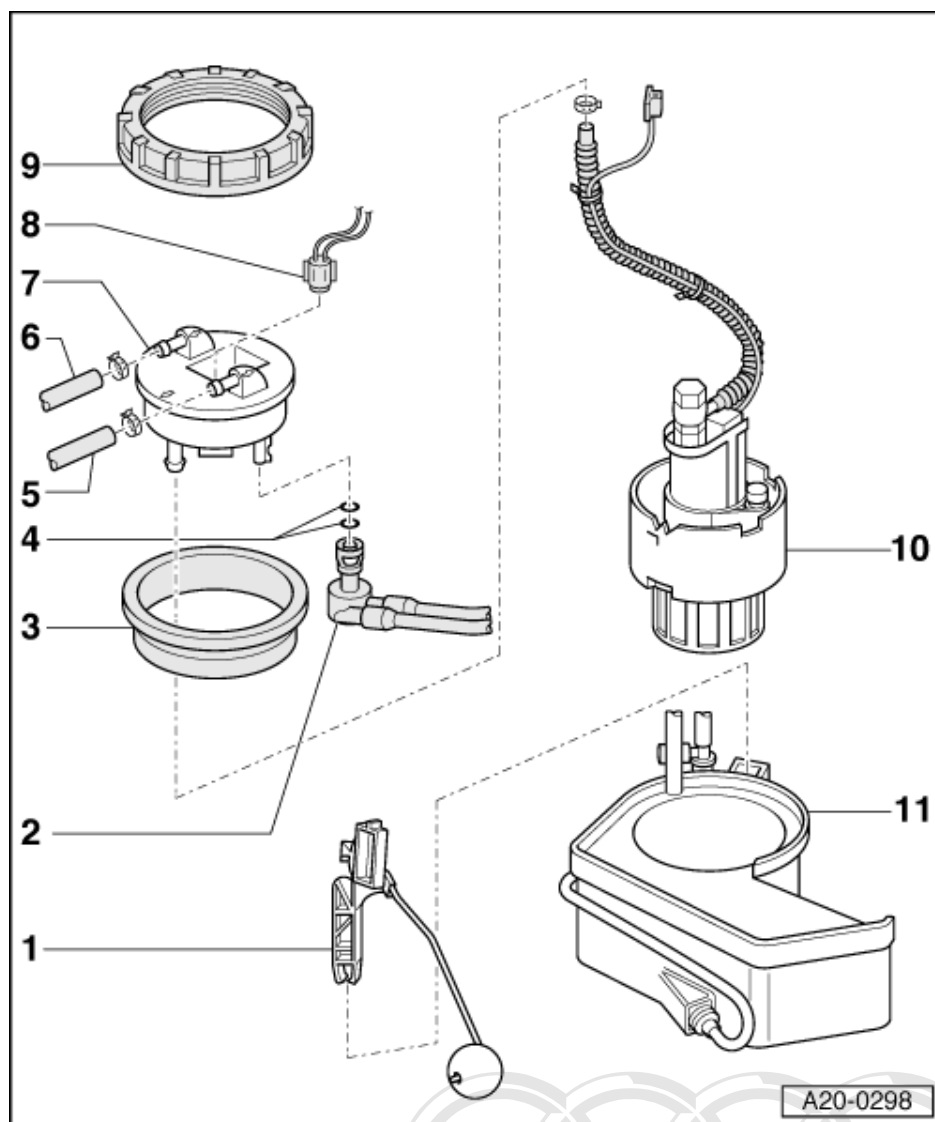


1 Fuel gauge sender -G

- ♦ Ball float
- ♦ Checking resistance
=> Page 67
- ♦ Removing and installing
=> Page 68

2 Return pipe

- ♦ With suction jet pump
- ♦ Connected to inside of flange
- ♦ Removing and installing
=> Page 69
- ♦ Press release tabs on connection to pull off



3 Seal

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

4 O rings

- ◆ Always renew
- ◆ Ensure correctly fitted

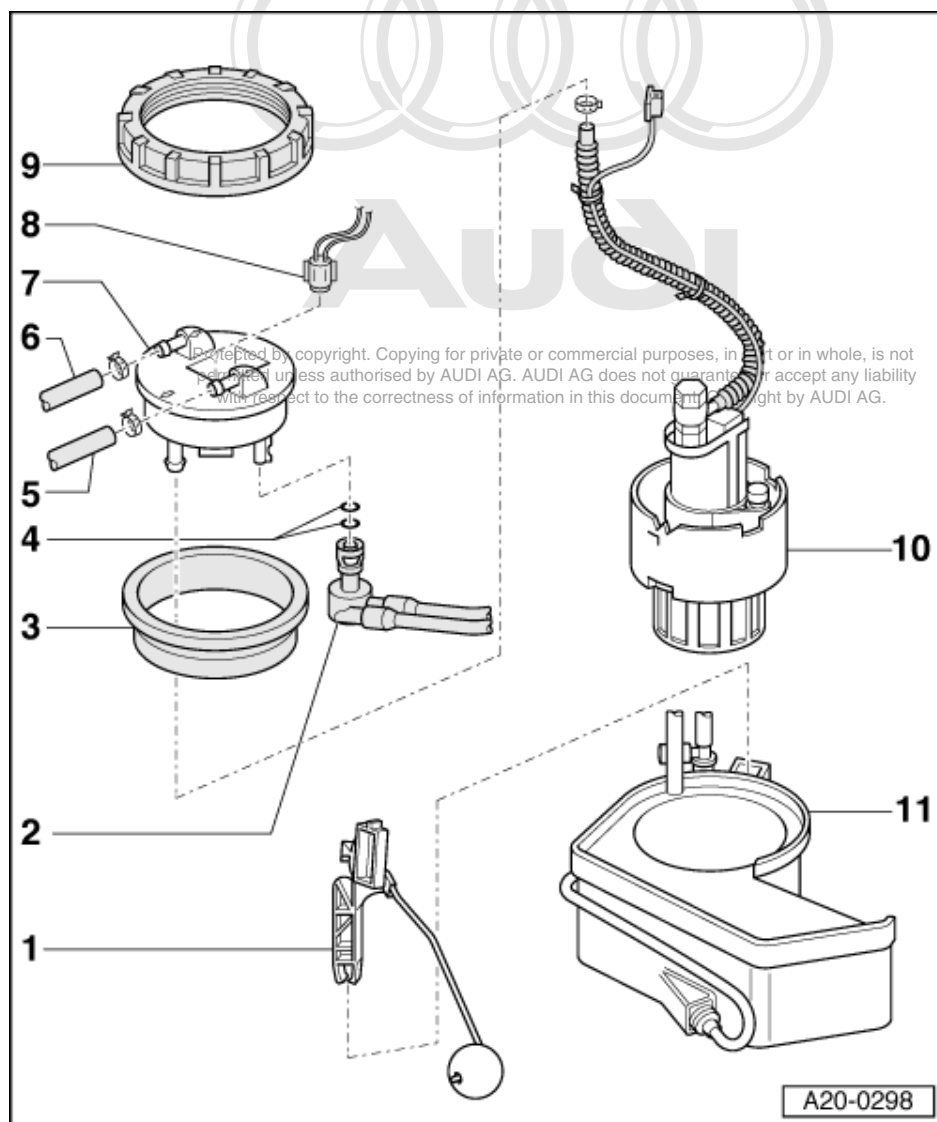
5 Return pipe

- ◆ From fuel manifold
- ◆ Mark pipe before disconnecting
- ◆ Note direction of arrow on flange

6 Supply pipe

- ◆ To fuel manifold
- ◆ Mark pipe before disconnecting
- ◆ Note direction of arrow on flange

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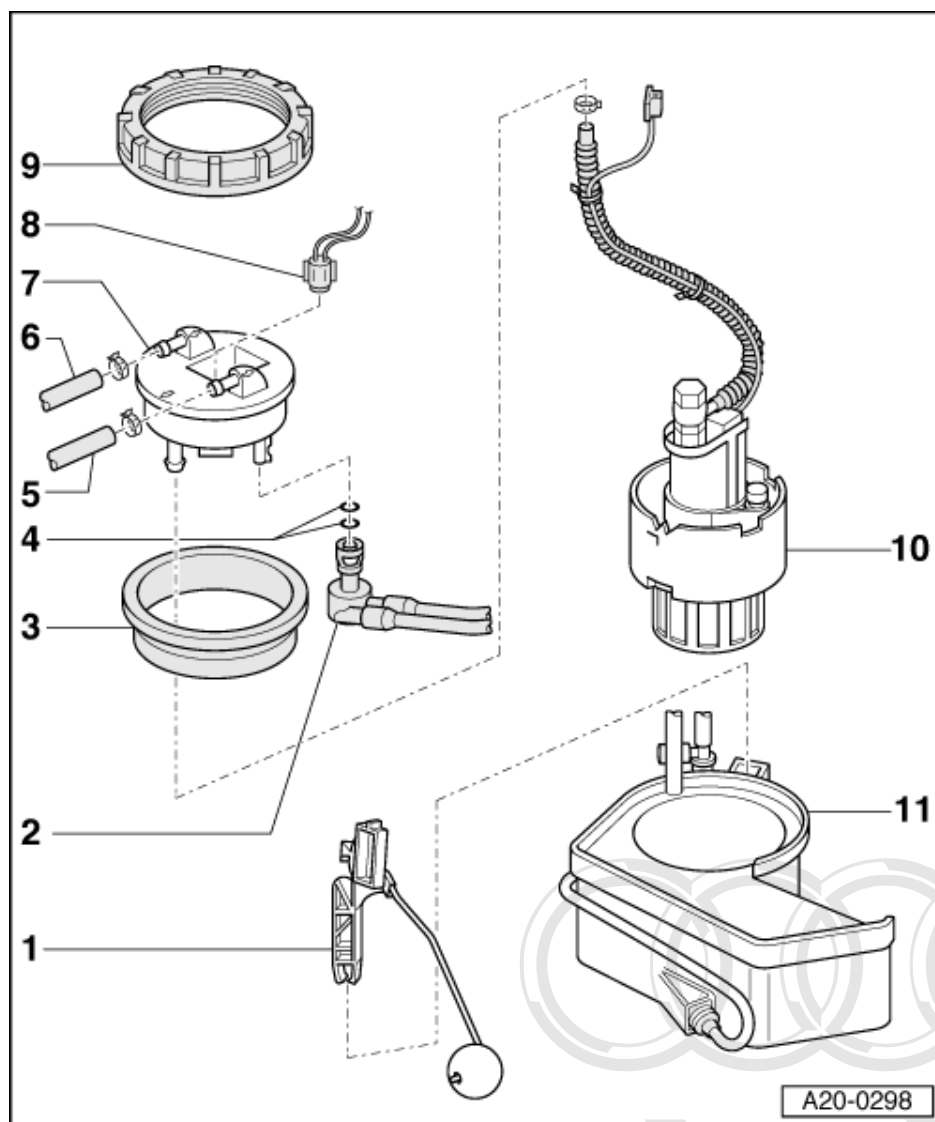
7 Flange

- ♦ Can only be replaced together with fuel delivery unit
- ♦ Removing and installing
=> Page 63
- ♦ Installation position: see arrow
=> Page 67

8 Connector

- ♦ For fuel pump and fuel gauge sender -G

9 Union nut, 60 Nm



10 Fuel delivery unit

- ◆ With fuel filter screen
- ◆ Can only be replaced together with flange
- ◆ Removing and installing
=> Page 63
- ◆ Checking fuel pump (electrical test)
=> Page 59
- ◆ Checking holding pressure:

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=> Injection and Ignition System; Repair group 24

11 Baffle housing (lower section)

- ◆ Secured in place in fuel tank
- ◆ Cannot be dismantled

3.12 - Checking fuel pump (electrical test) - vehicles with 6-cylinder turbo engine

Special tools, testers and auxiliary items

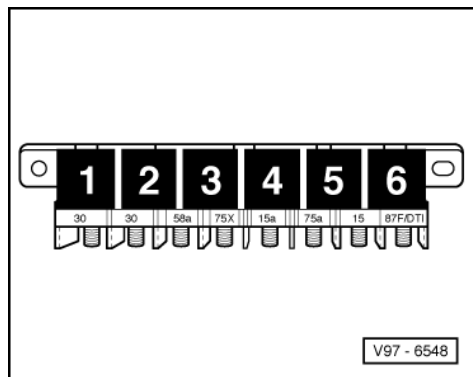
- ◆ Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- ◆ Hand multimeter V.A.G 1526 or V.A.G 1526 A



- ♦ Adapter set V.A.G 1594 A

Requirements for test:

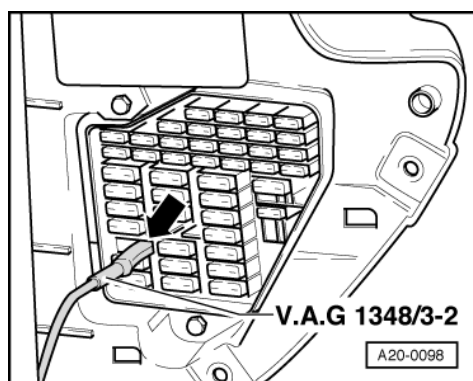
- Battery voltage not less than 12 V
- Fuse No. 28 OK



- -> Relay 6 in central electrics unit OK
- Fuel filter OK
- Ignition switched off

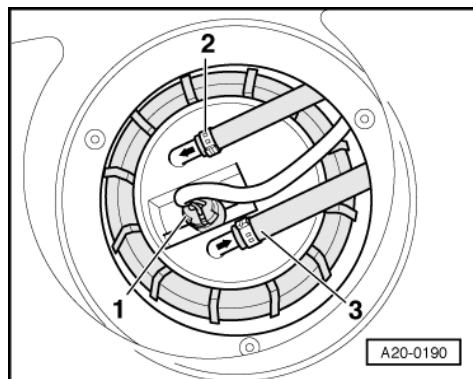
Test sequence

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



- Pull fuse No. 28 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 No. 28 -arrow-.
- Connect clamp to vehicle battery (+).
- Press remote control switch.
 - Pump should start running audibly.

Note:

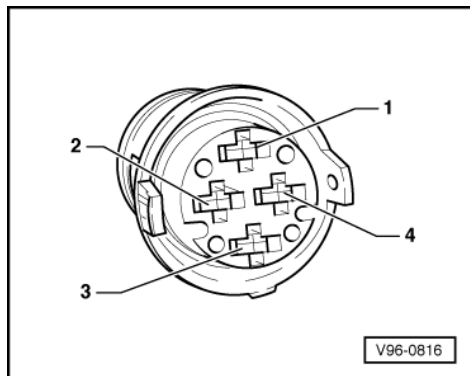


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The fuel pump runs very quietly. Where possible, avoid noisy surroundings for this test.

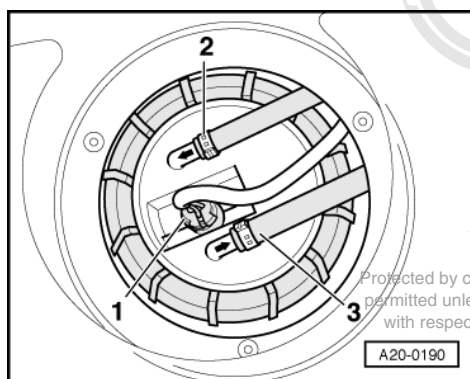
If pump does not start running:

- Detach trim in luggage compartment.
- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.
- -> Release and unplug 4-pin connector -1-.



- -> Set hand-held multimeter V.A.G 1526 to voltage measuring range (20 V direct current) and connect to contact 1 (green/yellow) and contact 4 (brown) of connector using test leads from V.A.G 1594 A.
- Press and hold remote control switch, and read off voltage.
- Specification: approx. battery voltage

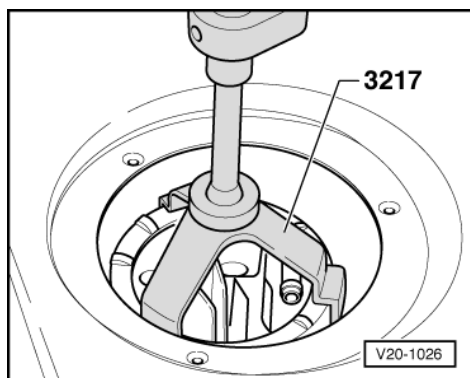
If the specification is obtained, even though the fuel pump did not run, remove flange as follows:



Warning!

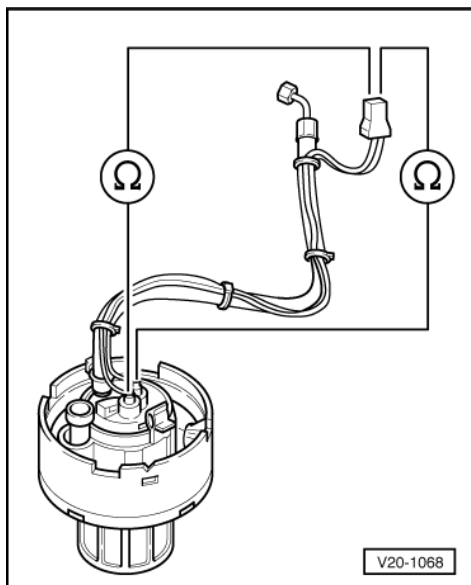
Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Mark the supply pipe -2- and return pipe -3-, then pull pipes off 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 **63** .
- Install flange => Page **22** .

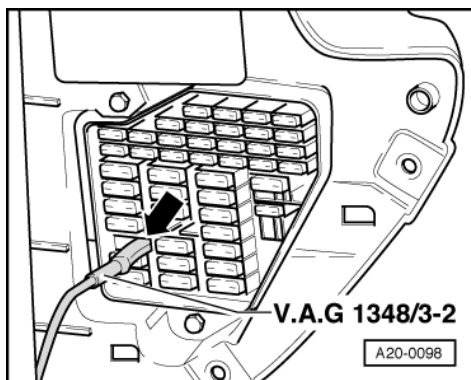
3.13 - Checking fuel pump delivery rate - vehicles with 6-cylinder turbo engine

Special tools, testers and auxiliary items

- ♦ Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- ♦ Measuring container

Requirements for test:

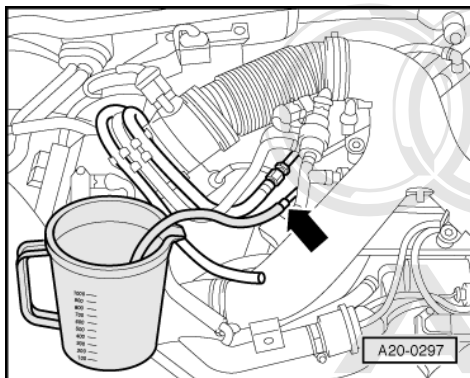
- Battery voltage not less than 12 V
- Fuel filter OK
- Ignition switched off



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Test sequence

- Open fuse box cover on the left side of the dashboard panel.
- Pull fuse No. 28 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 No. 28 -arrow-.
- Connect clamp to vehicle battery (+).
- Remove filler cap from fuel tank filler neck.



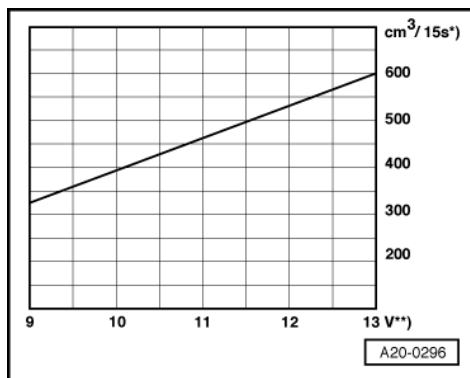
- Remove engine cover.

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Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

- -> Pull off fuel return hose at connection on fuel distribution pipe.
- Connect extension hose to fuel distribution pipe and hold end of hose in measuring container.



- Operate remote control for 15 seconds (keep button pressed).
- -> Compare the quantity of fuel delivered with specification.

*) Minimum delivery cm³/15 seconds

**) Voltage at fuel pump with engine stationary and pump running (approx. 2 volts less than battery voltage).

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

Observe safety precautions

=> Page **1**

Observe rules for cleanliness



=> Page **2**

Special tools, testers and auxiliary items

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

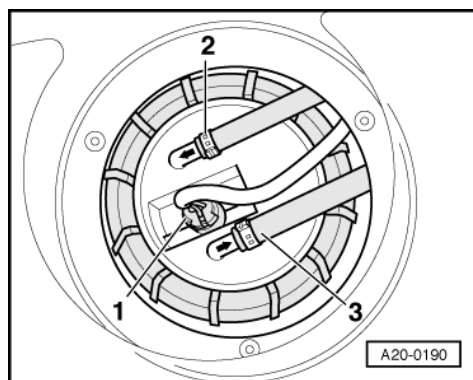
Removing

- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.
- Open fuel filler cap briefly, then close it again.
- Drain fuel tank if necessary using fuel extractor V.A.G 1433 A => Page **35**.

Note:

The fuel tank must not be more than 1/3 full.

- Detach trim in luggage compartment.

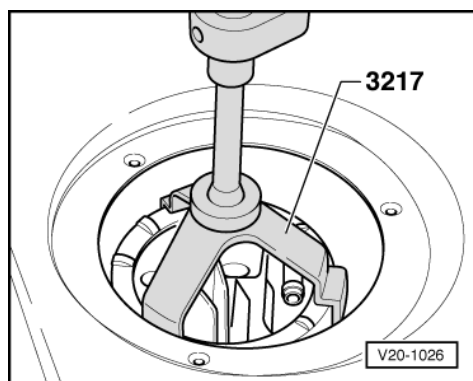


- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.

Warning!

Fuel system is under pressure! Before opening the system place a cloth around the connection. Then release pressure by carefully loosening the connection.

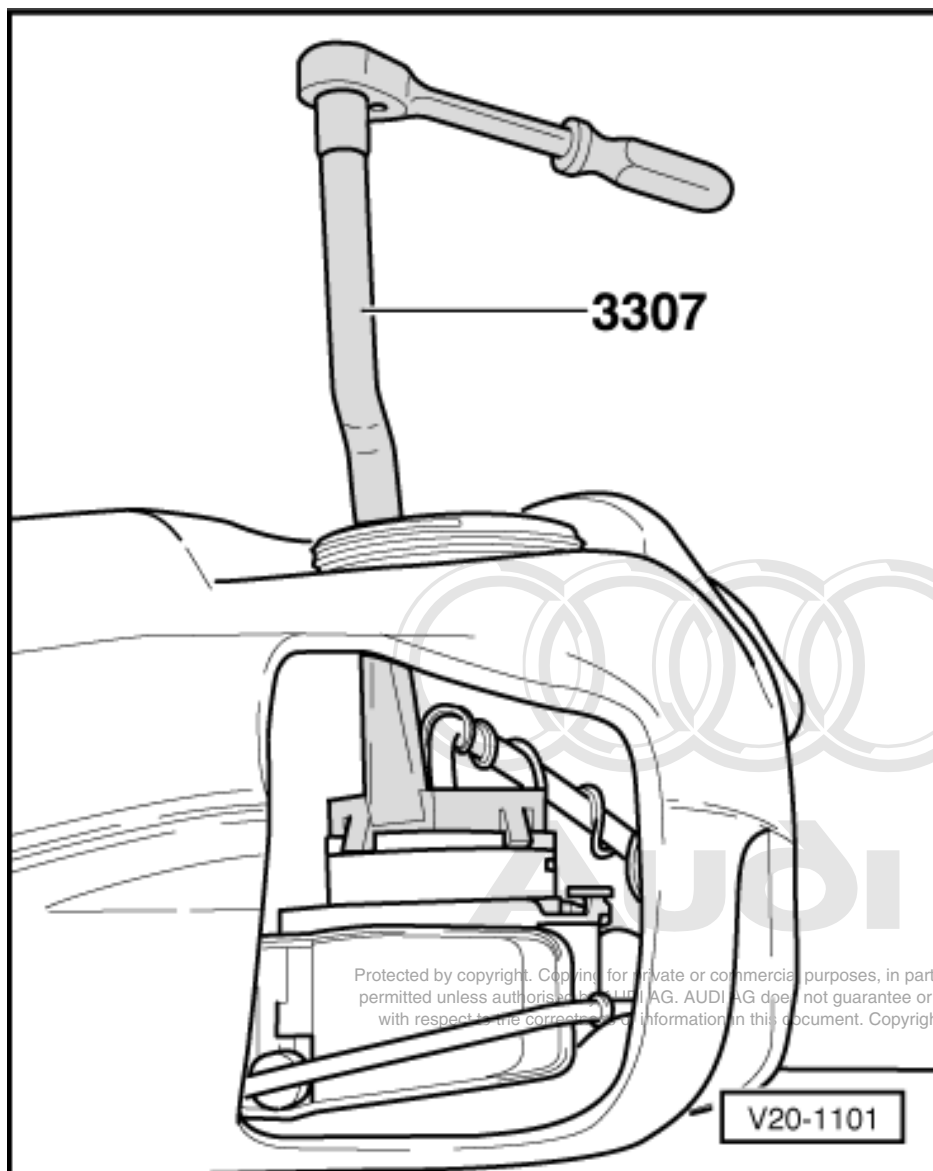
- -> Mark the supply pipe -2- and return pipe -3-, then pull pipes off flange.
- Release 4-pin connector -1- and unplug.



- -> 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.
- Pull fuel return pipe off inside of fuel delivery unit flange (press release tabs).



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

Installing

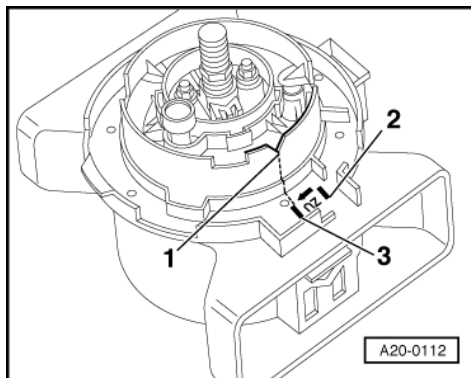
Installation is carried out in the reverse order, when doing this note the following:

Note:

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

=> Parts catalogue

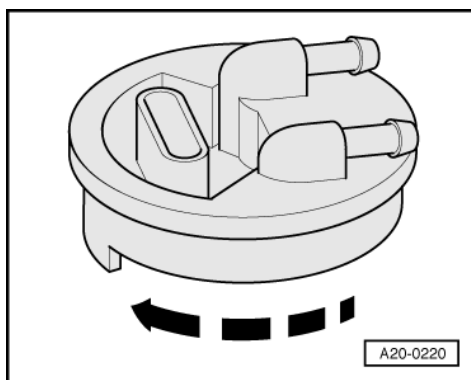
- Insert inner section of baffle housing, supply pipe and flange in fuel tank.



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

Note:

Baffle housing is shown without fuel tank for a clearer illustration.



- -> When installing, turn flange in a clockwise direction, as indicated in illustration.
- Connect return pipe on inside of flange.

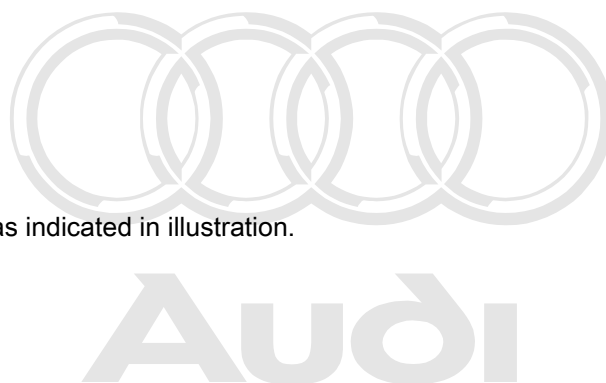
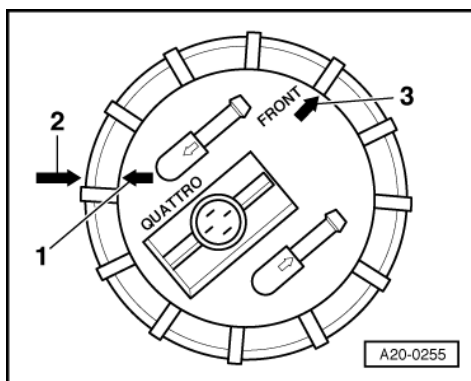
Note:

Lubricate O-rings with fuel or other lubricant.

- Wrap fuel gauge sender wire once around the return pipe (in fuel tank) and connect at flange.

Note:

Lubricate the flange seal with fuel before fitting.

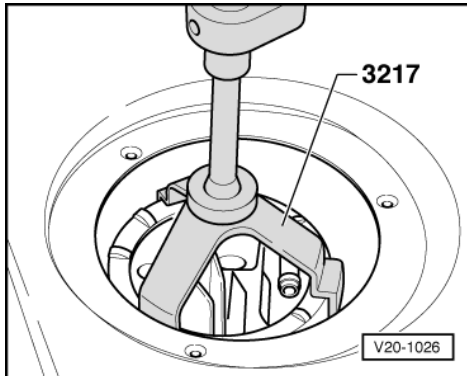


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- -> Insert flange into fuel tank:
- Installation position for vehicles with four-wheel drive:
 -arrow 1- must be aligned with -arrow 2-.

Note:

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



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

Note:

Ensure that fuel pipes are securely seated.

- After connecting battery, enter anti-theft code for radio

=> Radio operating instructions

- Close windows fully using electric window switches.
- Then operate all electric window switches again for at least one second in the "close" direction to activate the automatic one-touch function.
- Set clock to correct time.

Tightening torque

Component	Nm
Union nut for flange	60

3.15 - Testing fuel gauge sender - vehicles with 6-cylinder turbo engine

Note:

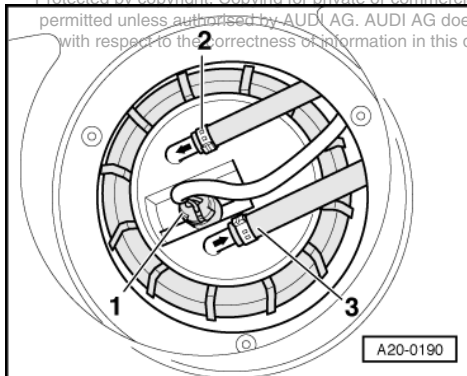
Testing signal from fuel gauge sender:

=> Electrical system; Repair group 90; Servicing dash panel insert; Identification of contacts on connectors

Special tools, testers and auxiliary items

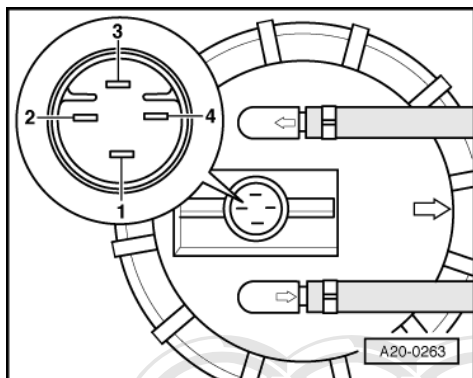
- ◆ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ◆ Adapter set V.A.G 1594 A

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- Detach trim in luggage compartment.
- Unbolt cover for flange on fuel tank under floor trim in luggage compartment.
- -> Release and unplug 4-pin 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 $\infty \omega$, this means there is a short circuit or an open circuit in the wiring in the tank.

Note:

In order to test the maximum and minimum values for "tank full" and "tank empty", remove the sender -G => Page 68 and move the float all the way to its top or bottom position.

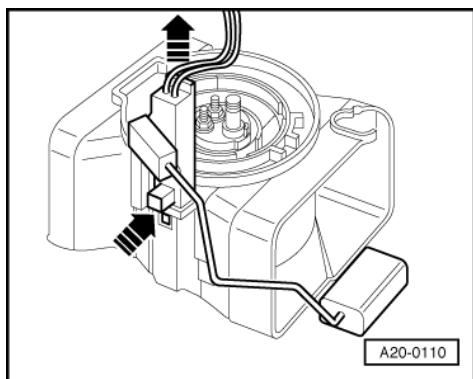
3.16 - Removing and installing fuel gauge sender -G - vehicles with 6-cylinder turbo engine

Observe safety precautions=> Page 1

Observe rules for cleanliness => Page 2

Removing

- Remove flange => Removing fuel delivery unit, from Page 63.
- Carefully pull out flange and place to one side with supply pipe connected.
- 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-.

Notes:

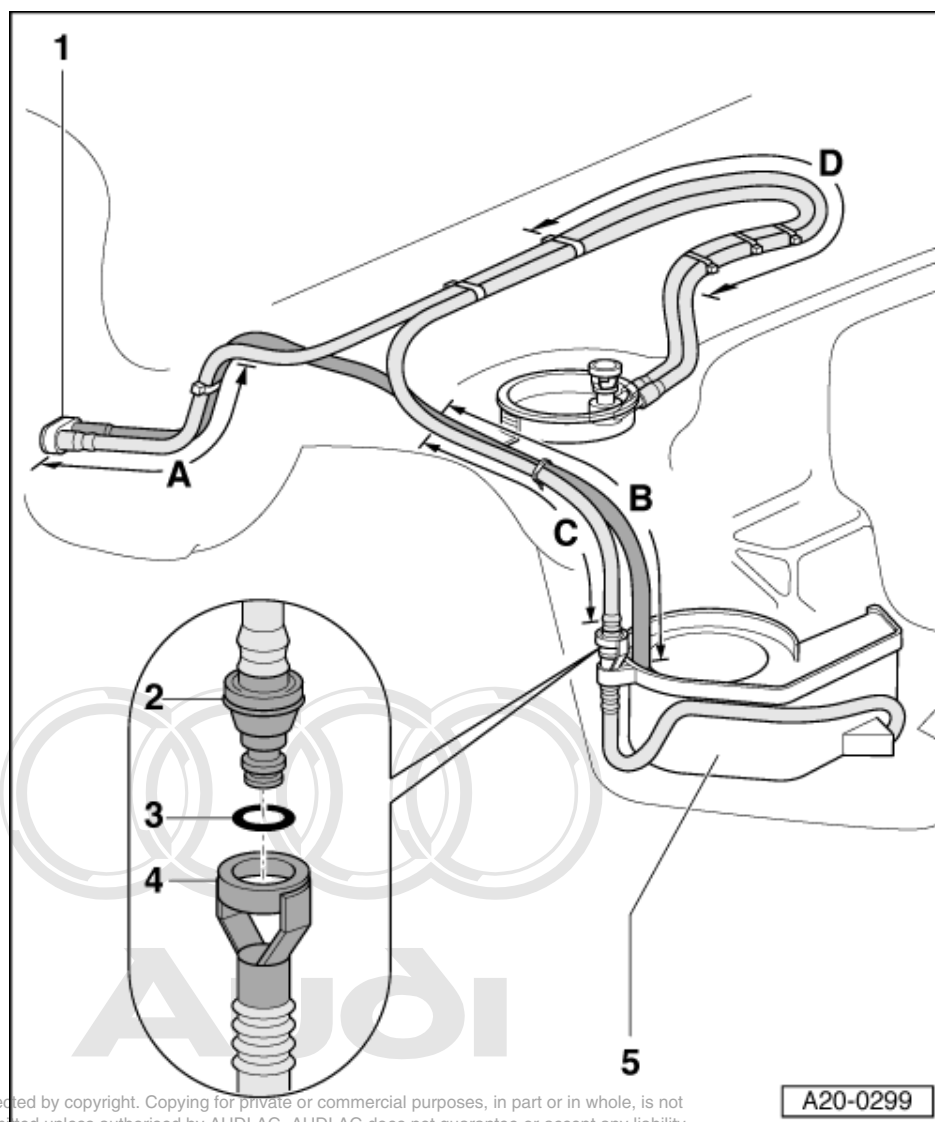
- ♦ The baffle housing is shown without the fuel tank for a clearer illustration.
- ♦ The sender unit and baffle housing shown are for vehicles with front-wheel drive.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Insert fuel gauge sender into guide on outer section of baffle housing and press down until it clicks into place.
- Install flange => Page 65 ; observe notes on procedure for connecting battery.

3.17 - Removing and installing suction jet pump



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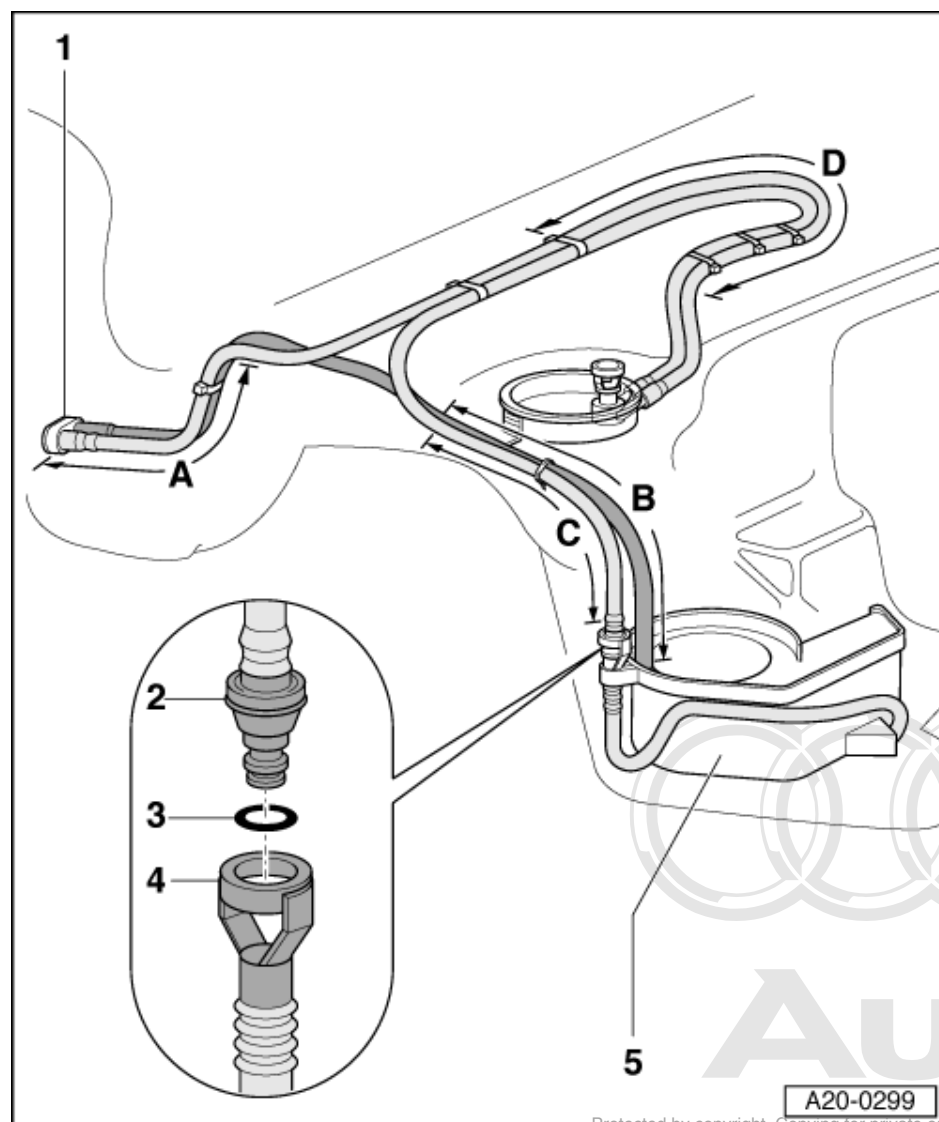
Observe safety precautions

=> Page 1

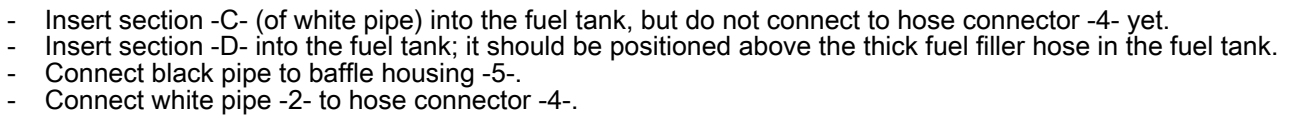
Observe rules for cleanliness

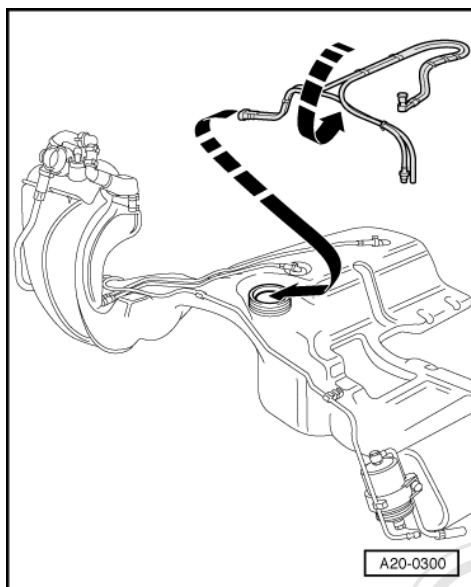
=> Page **2**
Notes:

- ♦ 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-.



- Remove fuel delivery unit
=> Page **63**
- Remove fuel gauge sender
=>Page **68**
- 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. **1**.
- Insert section -B- (of black pipe) into the fuel tank, but do not secure to baffle housing -5- yet.





-> Fig.1 Installing suction jet pump

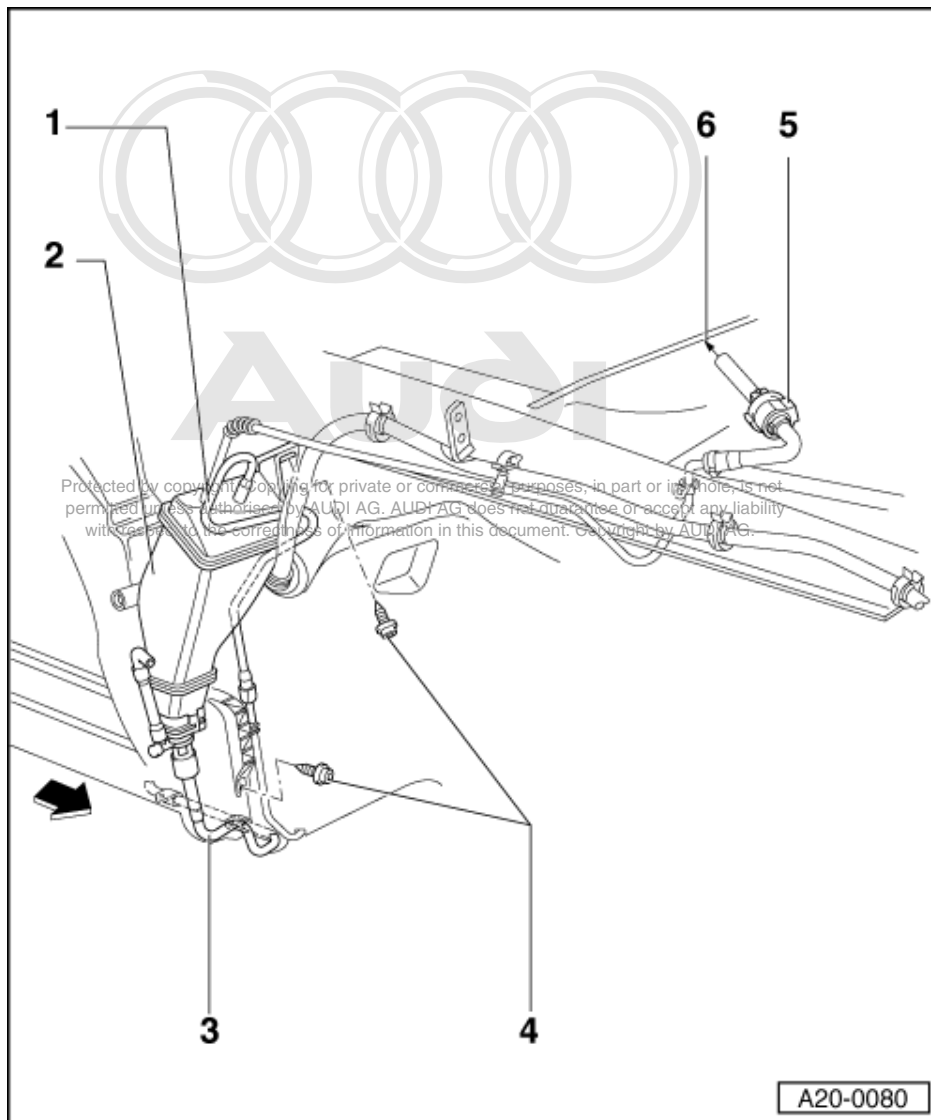
- Push suction jet pump into fuel tank and towards filler neck; at the same time turn the pump through approximately one full turn in an anti-clockwise direction -arrows- .



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4 - Servicing components

4.1 - Servicing components



4.2 - Servicing components of activated charcoal

4.3 - Servicing components of activated charcoal filter system

4.4 - Servicing components of activated charcoal filter system - front-wheel drive and four-wheel drive

Note:



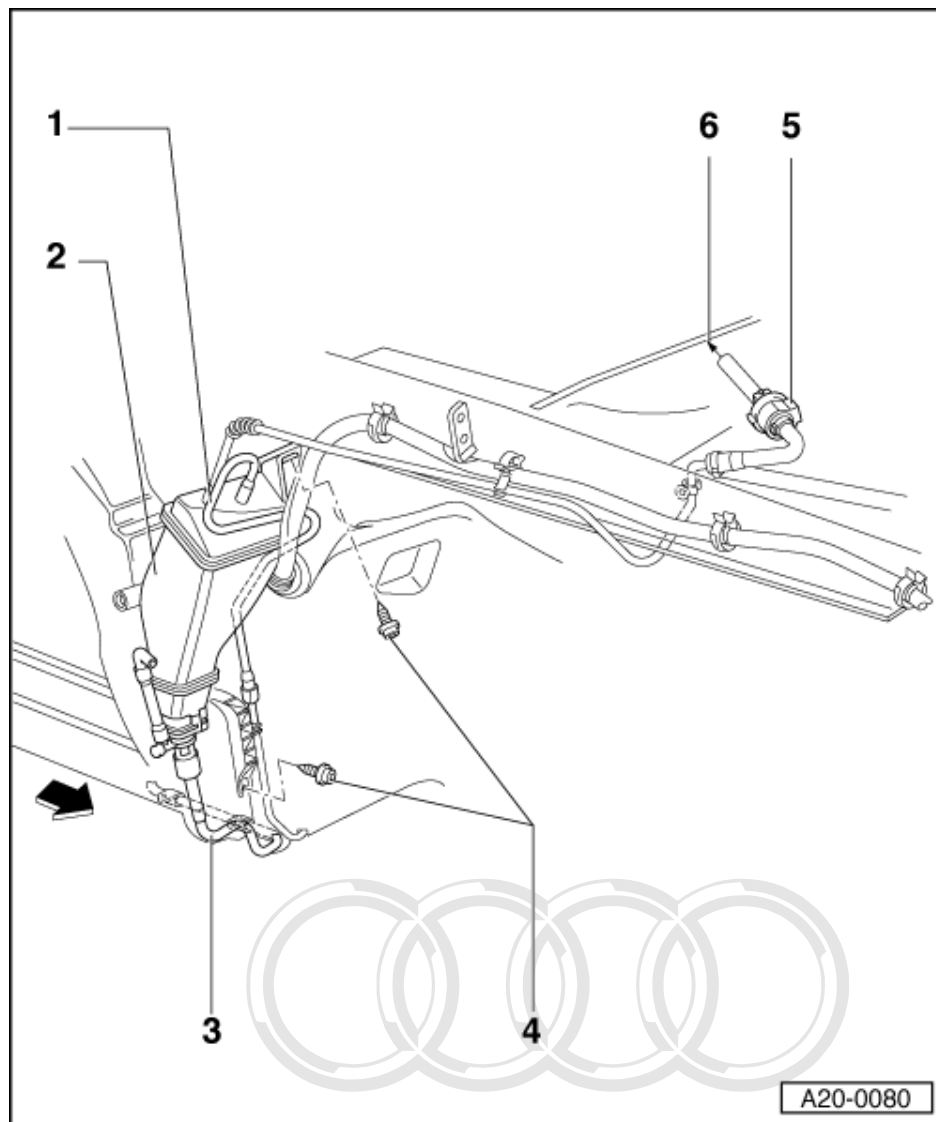
Arrow in illustration points in direction of travel

1 Vent pipe

2 Activated charcoal filter

- ◆ Location: behind wheel housing liner, front right
- ◆ To remove, remove wheel housing liner, front right

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



3 Breather pipe

- ◆ Open to atmosphere; comes out at vehicle floor, right side

4 10 Nm

5 Activated charcoal filter solenoid valve 1 -N80

- ◆ Checking operation and activation:

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=> Injection and Ignition System; Repair Group 24

6 To intake manifold

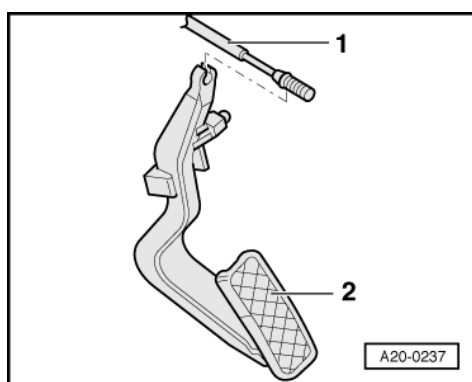
5 - Servicing throttle cable - front-wheel drive and four-wheel drive

5.1 - Servicing throttle cable - front-wheel drive and four-wheel drive

Notes:

- ♦ The throttle cable is very sensitive to kinking and must therefore be handled carefully when installing.
- ♦ A single slight kink can cause it to break when driving. Kinked cables must not be installed.
- ♦ When installing the throttle cable, ensure that it is aligned straight between its supporting mounts and the cable attachment points.

5.2 - Removing and installing throttle cable - vehicles with 4-cylinder normally aspirated engine

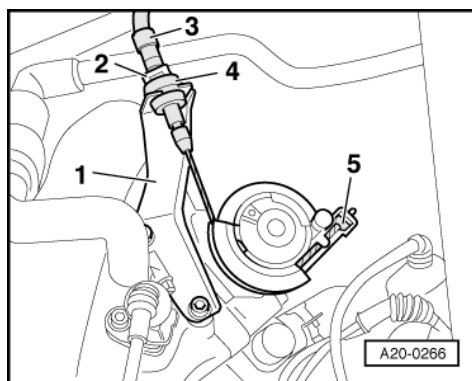


Removing

- Remove driver's storage compartment:

=> General body repairs; Repair group 70; Dash panel; Removing driver's storage compartment Dash panel
Removing driver's storage compartment

- -> Disengage throttle cable -1- at top of accelerator pedal -2-.



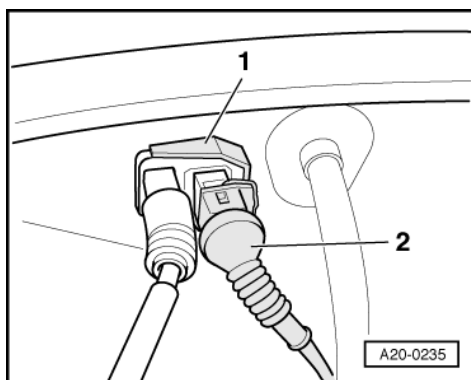
- -> Disengage nipple -5- on end of throttle cable from cable cam.
- Pull grooved section of cable sheath -3- out of rubber grommet -4- at support bracket -1-.



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Vehicles with automatic gearbox



- -> Unplug connector -2- on kickdown switch.

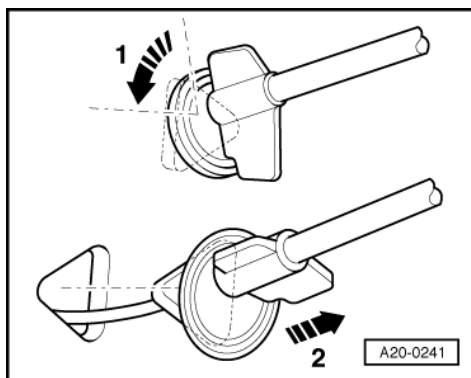
All models

- Pull securing clip -1- off throttle cable mounting or kickdown switch.

Note:

In vehicles with manual gearbox the securing clip is behind the bulkhead.

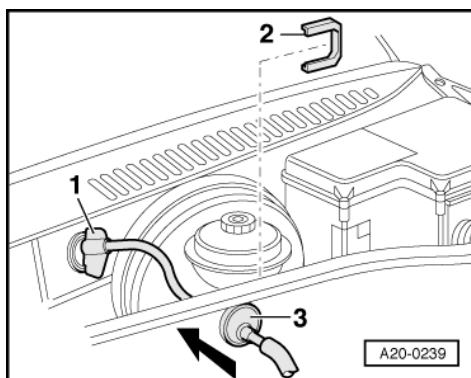
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- -> Turn throttle cable retainer approx. 90° anti-clockwise -arrow 1- and pull out of bulkhead in plenum chamber -arrow 2-.
- Take out throttle cable.

Installing

Installation is carried out in the reverse order, when doing this note the following:

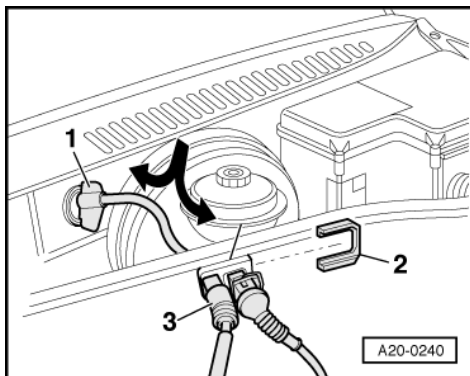


- Refer to notes => Page 75 .

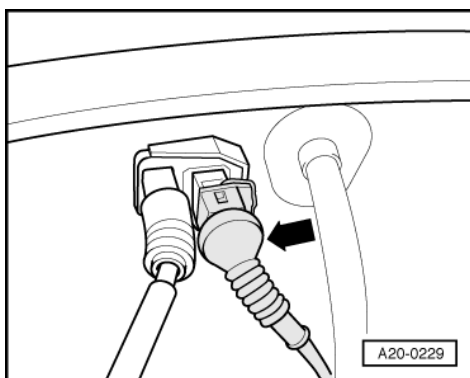
Vehicles with manual gearbox

- -> Working from the engine compartment, run the throttle cable with throttle cable mounting -3- and throttle cable retainer -1- through the two partition panels (as indicated by arrow).
- Secure throttle cable mounting behind bulkhead in plenum chamber with securing clip -2-.

Vehicles with automatic gearbox

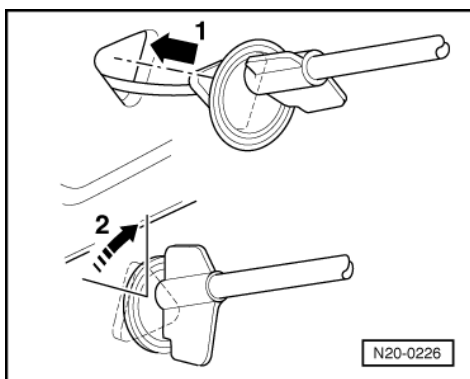


- -> Working from the plenum chamber, run the throttle cable with throttle cable mounting -3- and throttle cable retainer -1- through the front bulkhead towards the engine and through the rear bulkhead towards the interior (as indicated by arrow).
- Secure throttle cable mounting in front of bulkhead with securing clip -2- .



- -> Plug connector onto kickdown switch -arrow-.

All models

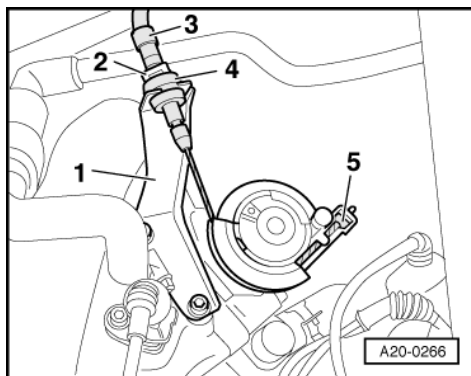


- -> After inserting throttle cable retainer in bulkhead -arrow 1-, secure by turning approx. 90° clockwise -arrow 2-.
- Adjust throttle cable => Page 78 .

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5.3 - Adjusting throttle cable - vehicles with 4-cylinder normally aspirated engine



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- -> Throttle cable -5- attached to accelerator pedal and to cable cam on throttle valve control part.
- Pull securing clip -2- off grooved section of throttle cable sheath -3-.
- Depress accelerator pedal into full throttle position.

Note:

A second mechanic is required for this step or use a spring tensioning rod braced against the steering wheel.

Vehicles with manual gearbox

- Adjust throttle cable by moving the securing clip -2- at the rubber grommet -4- in the support bracket -1- so that the full throttle position is attained at the throttle valve lever.

Vehicles with automatic gearbox

- Adjust throttle cable by moving the securing clip -2- at the rubber grommet -4- in the support bracket -1- so that the throttle valve is fully open and the kickdown switch clicks audibly.

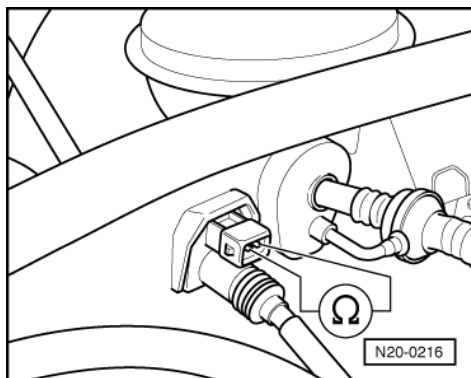
All models

- Release accelerator pedal or remove spring tensioning rod.
- After adjusting the throttle cable, check position of throttle valve at idling speed and full throttle stops.

Checking adjustment (vehicles with automatic gearbox)

Special tools, testers and auxiliary items

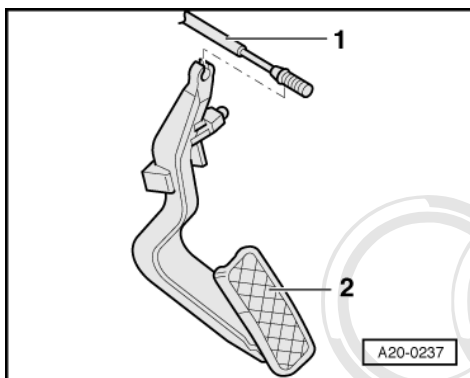
- ♦ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ♦ Adapter set V.A.G 1594 A
- Pull 2-pin connector off kick-down switch (F8) in engine compartment (on the bulkhead).



- -> Connect hand multimeter V.A.G 1526 with aux. cables from V.A.G 1594 to kick-down switch.
- Check resistance at switch.
 - Specification: $\infty \Omega$

- Slowly move accelerator pedal in direction of full throttle.
- The reading must drop to 0 shortly after resistance to movement is felt at kick-down point.
- At this point the accelerator pedal should be just short of the end stop.

5.4 - Removing and installing throttle cable - vehicles with 4-cylinder turbo engine

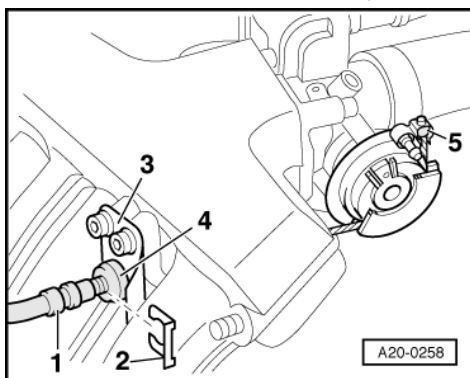


Removing

- Remove driver's storage compartment:

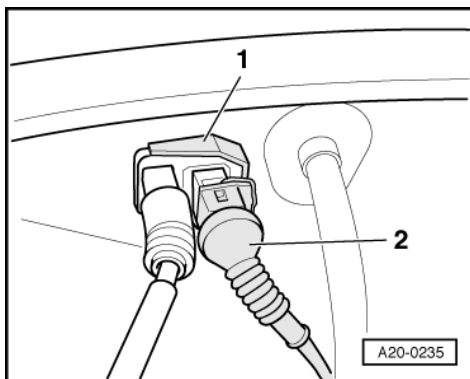
=> General body repairs; Repair group 70; Dash panel; Removing driver's storage compartment Dash panel
 Removing driver's storage compartment

- -> Disengage throttle cable -1- at top of accelerator pedal -2-.



- -> Disengage nipple -5- on end of throttle cable from cable cam.
- Pull grooved section of throttle cable sheath -1- out of rubber grommet -4- at support bracket -3-.

Vehicles with automatic gearbox





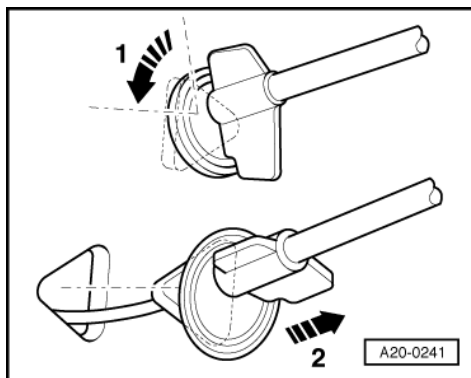
- -> Unplug connector -2- on kickdown switch.

All models

- Pull securing clip -1- off throttle cable mounting or kickdown switch.

Note:

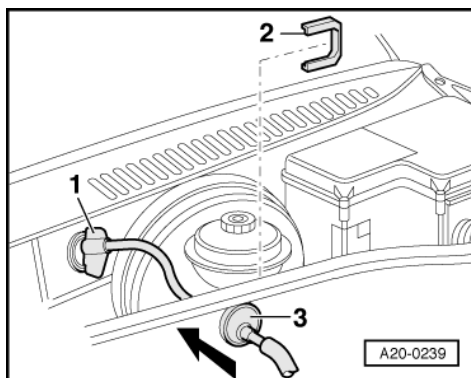
In vehicles with manual gearbox the securing clip is behind the bulkhead.



- -> Turn throttle cable retainer approx. 90° anti-clockwise -arrow 1- and pull out of bulkhead in plenum chamber -arrow 2-.
- Take out throttle cable.

Installing

Installation is carried out in the reverse order, when doing this note the following:

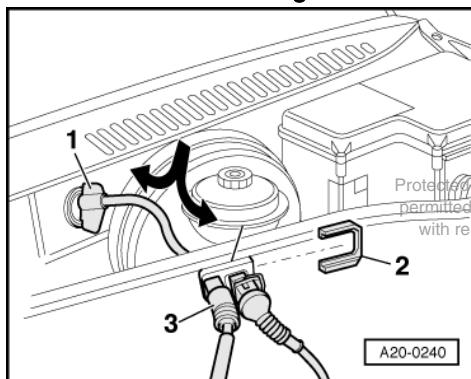


- Refer to notes => Page **75** .

Vehicles with manual gearbox

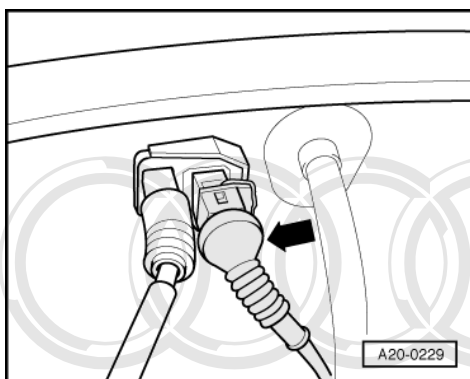
- -> Working from the engine compartment, run the throttle cable with throttle cable mounting -3- and throttle cable retainer -1- through the two partition panels (as indicated by arrow).
- Secure throttle cable mounting behind bulkhead in plenum chamber with securing clip -2-.

Vehicles with automatic gearbox



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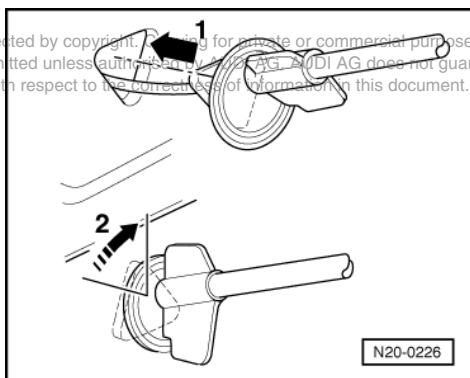
- -> Working from the plenum chamber, run the throttle cable with throttle cable mounting -3- and throttle cable retainer -1- through the front bulkhead towards the engine and through the rear bulkhead towards the interior (as indicated by arrow).
- Secure throttle cable mounting in front of bulkhead with securing clip -2- .



- -> Plug connector onto kickdown switch -arrow-.

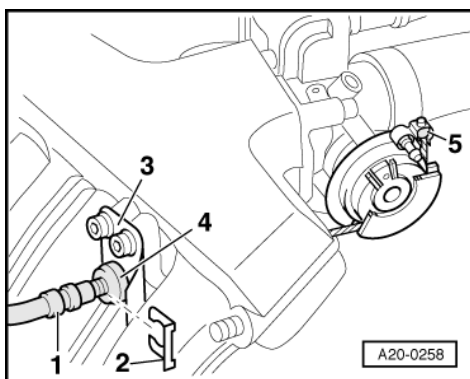
All models

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- -> After inserting throttle cable retainer in bulkhead -arrow 1-, secure by turning approx. 90° clockwise -arrow 2-.
- Adjust throttle cable => Page 81 .

5.5 - Adjusting throttle cable - vehicles with 4-cylinder turbo engine



- -> Throttle cable -5- attached to accelerator pedal and to cable cam on throttle valve control part.
- Pull securing clip -2- off grooved section of throttle cable sheath -1-.
- Depress accelerator pedal into full throttle position.



Note:

A second mechanic is required for this step or use a spring tensioning rod braced against the steering wheel.

Vehicles with manual gearbox

- Adjust throttle cable by moving the securing clip -2- at the rubber grommet -4- in the support bracket -3- so that the full throttle position is attained at the throttle valve lever.

Vehicles with automatic gearbox

- Adjust throttle cable by moving the securing clip -2- at the rubber grommet -4- in the support bracket -3- so that the throttle valve is fully open and the kickdown switch clicks audibly.

All models

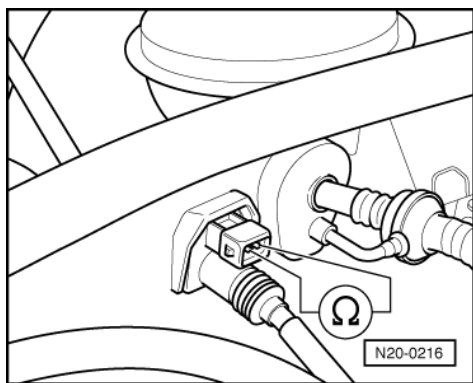
- Release accelerator pedal or remove spring tensioning rod.
- After adjusting the throttle cable, check position of throttle valve at idling speed and full throttle stops.

Checking adjustment (vehicles with automatic gearbox)

Special tools, testers and auxiliary items

- ♦ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ♦ Adapter set V.A.G 1594 A

- Pull 2-pin connector off kick-down switch (F8) in engine compartment (on the bulkhead).

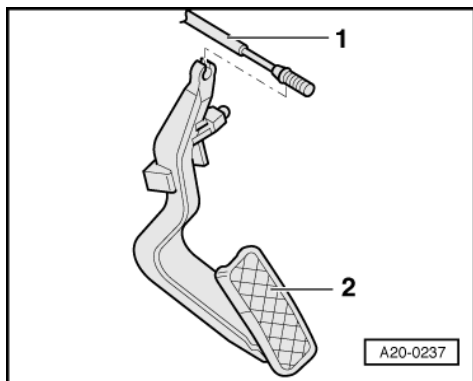


- -> Connect hand multimeter V.A.G 1526 with aux. cables from V.A.G 1594 to kick-down switch.
- Check resistance at switch.
 - Specification: $\infty \Omega$
- Slowly move accelerator pedal in direction of full throttle.
 - The reading must drop to 0 Ω shortly after resistance to movement is felt at kick-down point.
 - At this point the accelerator pedal should be just short of the end stop.

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5.6 - Removing and installing throttle cable - vehicles with 6-cylinder normally aspirated engine

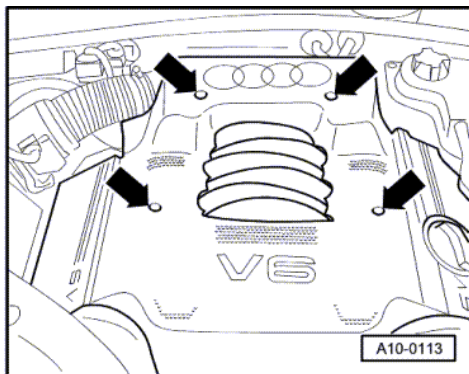
Removing



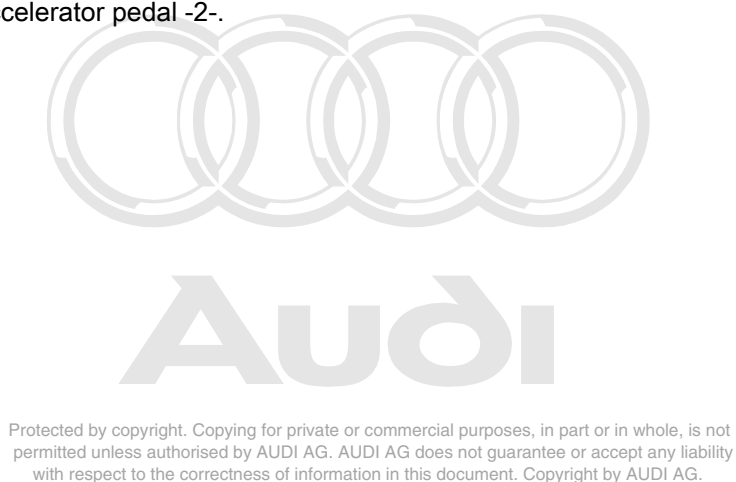
- Remove driver's storage compartment:

=> General body repairs; Repair group 70; Dash panel; Removing driver's storage compartment Dash panel
 Removing driver's storage compartment

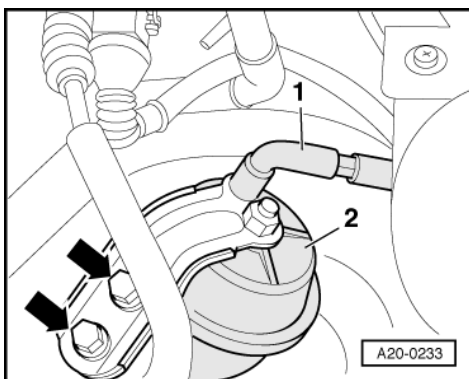
- -> Disengage throttle cable -1- at top of accelerator pedal -2-.



- -> Remove engine cover panel -arrows-.

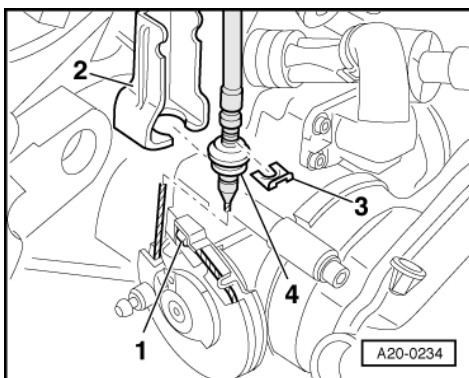


Vehicles with cruise control system



- -> Pull vacuum hose -1- off vacuum unit -2- for cruise control system.
- Loosen bolts -arrows- on bracket securing vacuum unit for cruise control system.
- Disengage actuator rod at throttle valve control part.

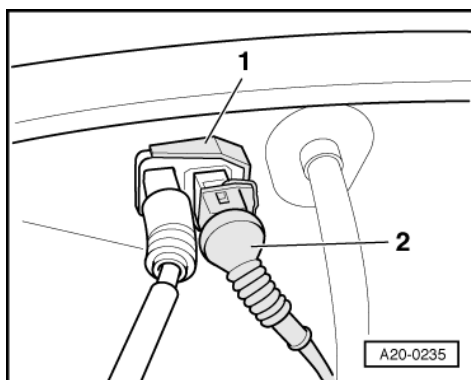
All models



- -> Pull securing clip -3- off grooved section of throttle cable sheath.
- Disengage nipple -1- on end of throttle cable from cable cam.
- Take throttle cable and rubber grommet -4- out of support bracket -2-.



Vehicles with automatic gearbox



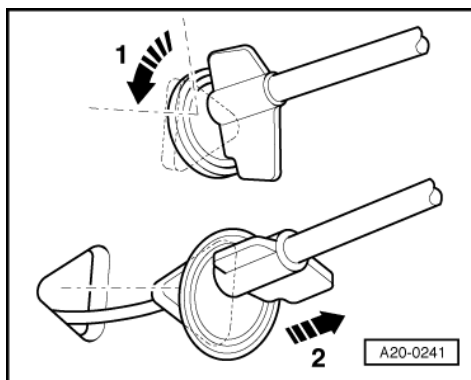
- -> Unplug connector -2- on kickdown switch.

All models

- Pull securing clip -1- off throttle cable mounting or kickdown switch.

Note:

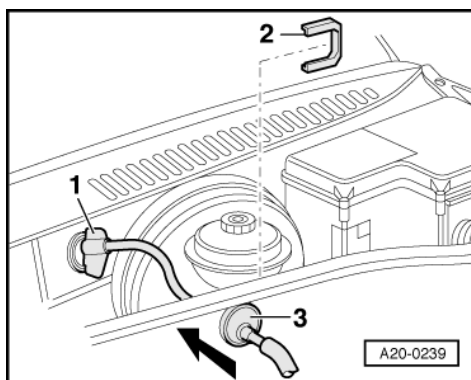
In vehicles with manual gearbox the securing clip is behind the bulkhead.



- -> Turn throttle cable retainer approx. 90° anti-clockwise -arrow 1- and pull out of bulkhead in plenum chamber -arrow 2-.
- Take out throttle cable.

Installing

Installation is carried out in the reverse order, when doing this note the following:



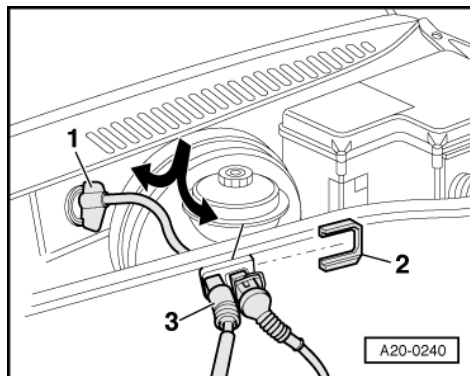
- Refer to notes => Page 75 .

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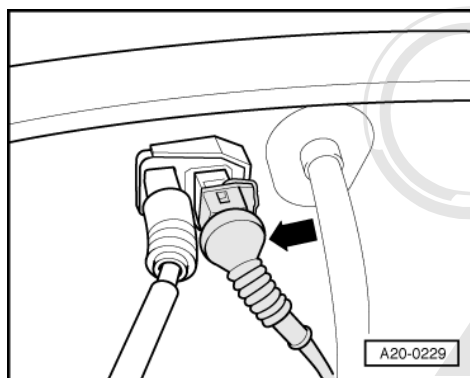
Vehicles with manual gearbox

- -> Working from the engine compartment, run the throttle cable with throttle cable mounting -3- and throttle cable retainer -1- through the two partition panels (as indicated by arrow).
- Secure throttle cable mounting behind bulkhead in plenum chamber with securing clip -2-.

Vehicles with automatic gearbox



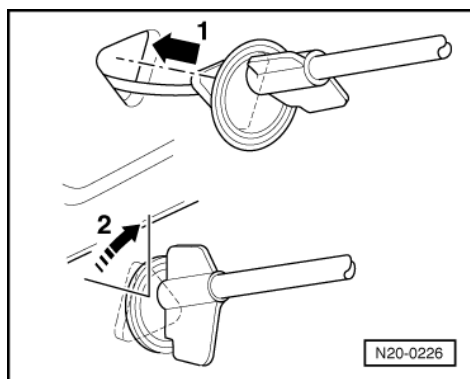
- -> Working from the plenum chamber, run the throttle cable with throttle cable mounting -3- and throttle cable retainer -1- through the front bulkhead towards the engine and through the rear bulkhead towards the interior (as indicated by arrow).
- Secure throttle cable mounting in front of bulkhead with securing clip -2- .



- -> Plug connector onto kickdown switch -arrow-.

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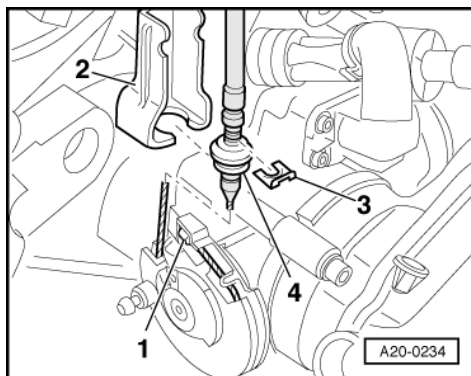
All models



- -> After inserting throttle cable retainer in bulkhead -arrow 1-, secure by turning approx. 90° clockwise -arrow 2-.
- Adjust throttle cable => Page 86 .



5.7 - Adjusting throttle cable - vehicles with 6-cylinder normally aspirated engine



- -> Throttle cable -1- is attached to accelerator pedal and cable cam on throttle valve control part
- Pull securing clip -3- off grooved section of throttle cable sheath.
- Depress accelerator pedal into full throttle position.

Note:

A second mechanic is required for this step or use a spring tensioning rod braced against the steering wheel.

Vehicles with manual gearbox

- Adjust throttle cable by moving the securing clip -3- at the rubber grommet -4- in the support bracket -2- so that the full throttle position is attained at the throttle valve lever.

Vehicles with automatic gearbox

- Adjust throttle cable by moving the securing clip -3- at the rubber grommet -4- in the support bracket -2- so that the throttle valve is fully open and the kickdown switch clicks audibly.

All models

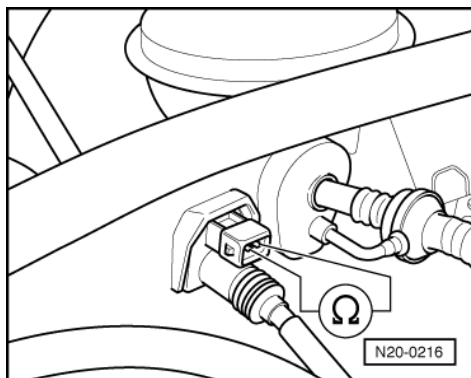
- Release accelerator pedal or remove spring tensioning rod.
- After adjusting the throttle cable check position of throttle valve at idling speed and full throttle stops.

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Checking adjustment (vehicles with automatic gearbox)

Special tools, testers and auxiliary items

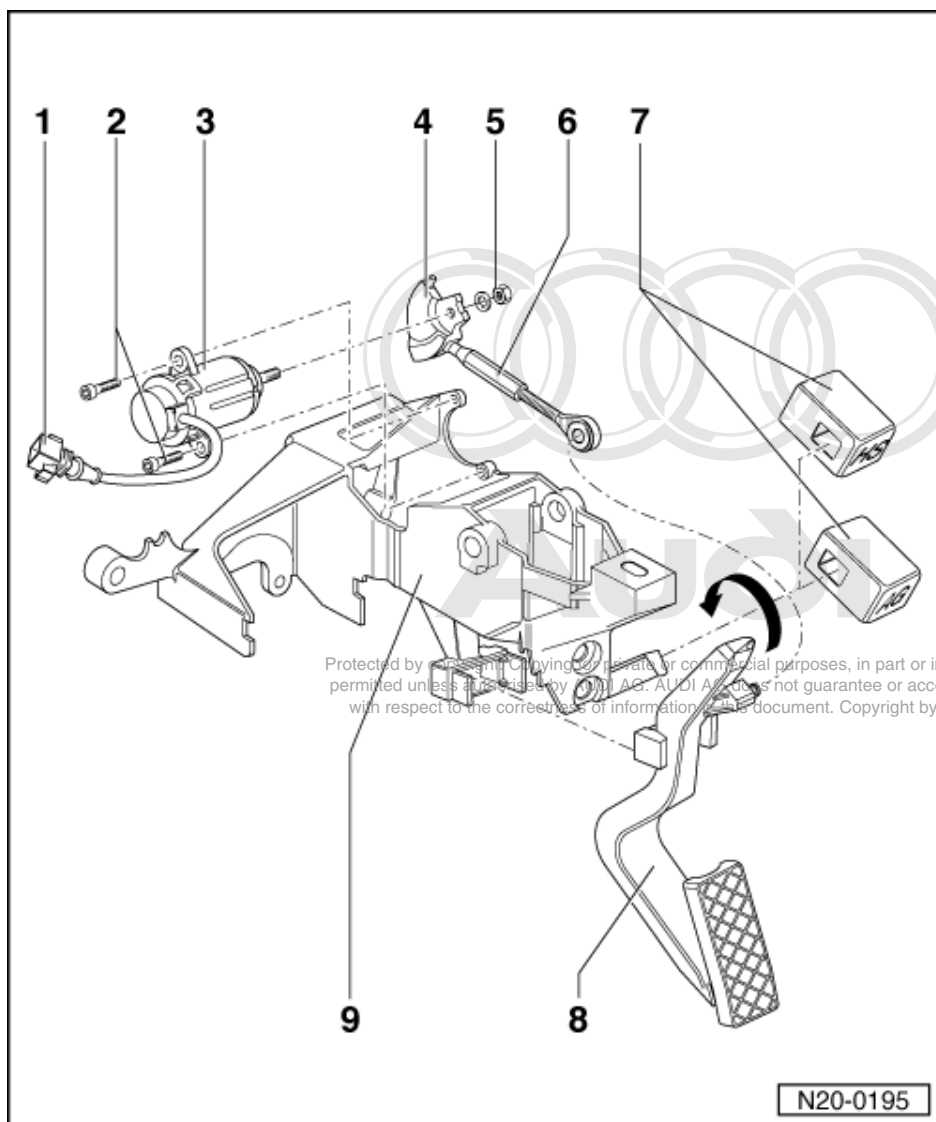
- ♦ Hand multimeter V.A.G 1526 or V.A.G 1526 A
- ♦ Adapter set V.A.G 1594 A
- Pull 2-pin connector off kick-down switch (F8) in engine compartment (on the bulkhead).



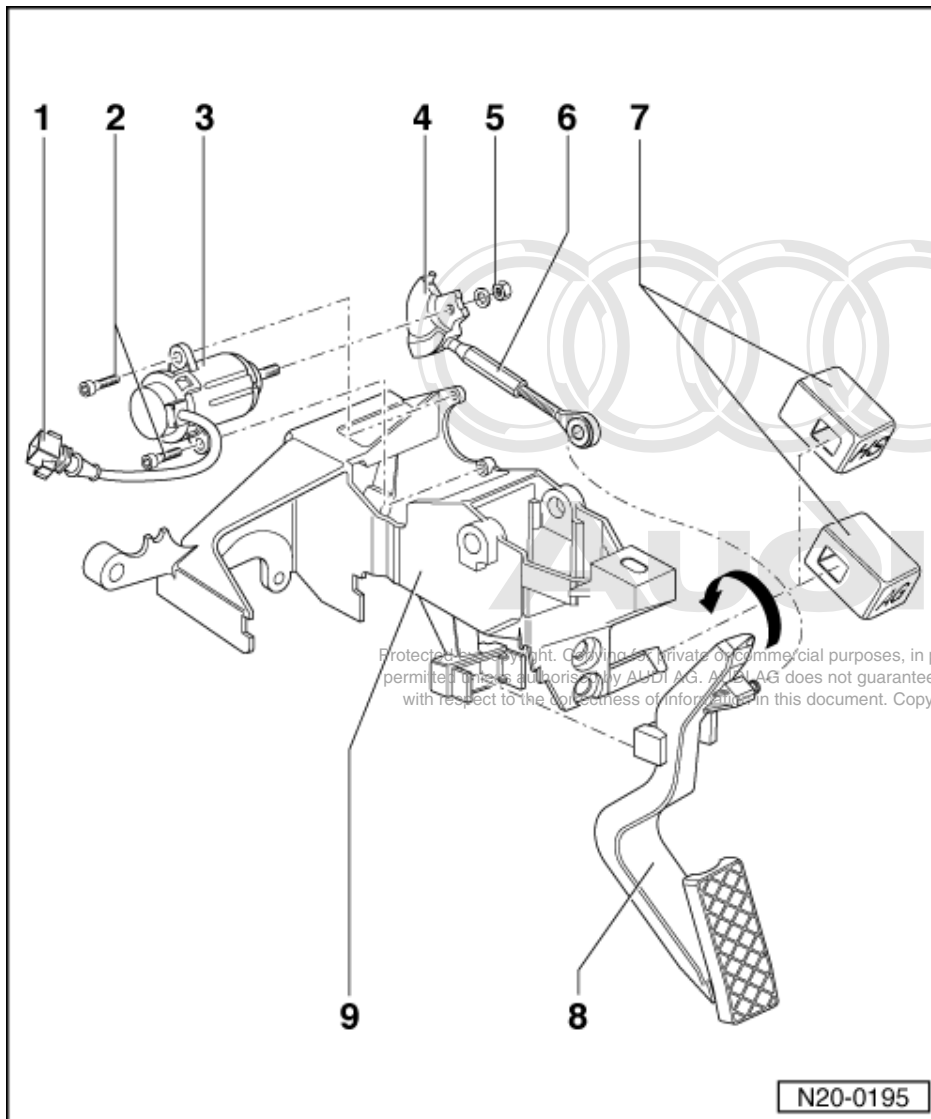
- -> Connect hand multimeter V.A.G 1526 with aux. cables from V.A.G 1594 to kick-down switch.
- Check resistance at switch.
 - Specification: $\infty \Omega$

- Slowly move accelerator pedal in direction of full throttle.
- The reading must drop to 0 w shortly after resistance to movement is felt at kick-down point.
- At this point the accelerator pedal should be just short of the end stop.

5.8 - Servicing accelerator mechanism - vehicles with 6-cylinder turbo engine



- 1 6-pin connector
- 2 10 Nm
- 3 Accelerator position sender -G79
 - ♦ Adjusting =>Page 89
 - ♦ To remove and install, remove mounting -Item 9 .
- 4 Cable cam
- 5 10 Nm
- 6 Operating rod
 - ♦ With threaded collar for adjustment =>Page 89



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

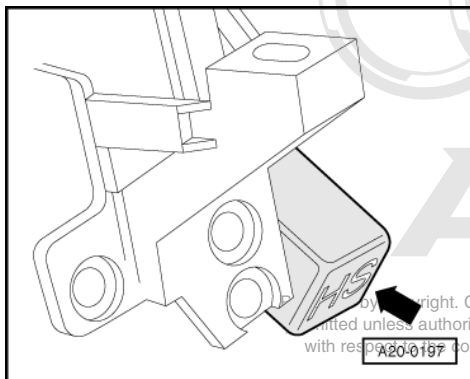
9 Mounting

- ◆ Removing and installing:

=> Running gear, Front and four-wheel drive; Repair group 46; Removing and installing pedal cluster Removing and installing pedal cluster

Adjusting accelerator position sender

Special tools, testers and auxiliary items

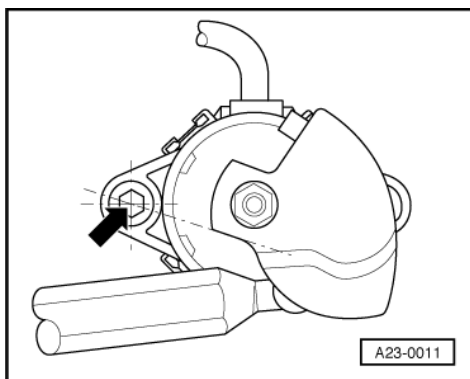


- ♦ Fault reader V.A.G 1551 (or vehicle system tester V.A.G 1552) with cable V.A.G 1551/3

Vehicles with manual gearbox

Requirement for test:

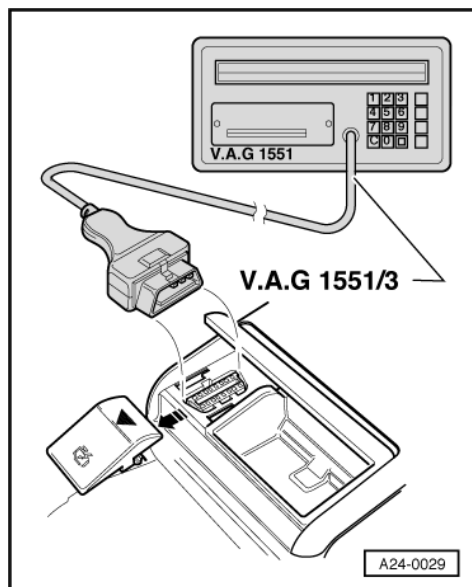
- -> Position of accelerator pedal stop: marking "H" or "HS" must be visible.



Note:

If accelerator position sender -G79 has been removed:

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



- -> With ignition switched off, connect fault reader V.A.G 1551 or vehicle system tester V.A.G 1552 to diagnostic connector with cable V.A.G 1551/3.

-> Indicated in display

V.A.G - SELF DIAGNOSIS HELP
1 - Rapid data transfer 1)
2 - Flash code output 1)

1) appears alternately

- Switch on ignition.
- Switch on the printer by pressing the PRINT button (indicator lamp in button should light up).
- Press key 1 for "Rapid data transfer".

-> When this display appears:

Rapid data transfer HELP
Enter address word XX

- Press keys 0 and 1 for address word "Engine electronics" and confirm entry with Q key.

-> The display on fault reader V.A.G 1551 will show the control unit identification. For example:

8D0907551 2.7l V6/5VT G D01
Coding 05211 WSC 12345

- Press =>key.

-> When this display appears:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 8 for the function "Read measured value block" and confirm entry with Q key.

-> When this display appears:

Read measured value block Q
Enter display group number XXX

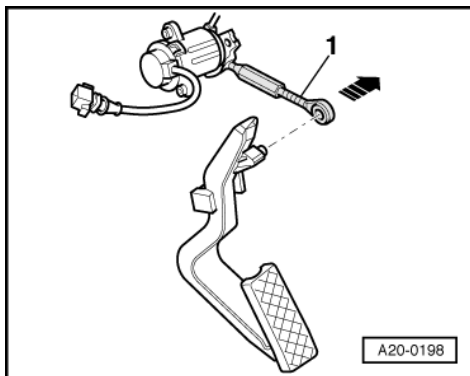
- Press keys 0, 6 and 2 for "Display group number 062" and confirm entry with Q key.

-> When this display appears:

Read measured value block 62
xx % xx % 73 % xx %

- Check display in display zone 3 (accelerator pedal position).
- Press accelerator all the way down and hold in position.
 - Specification: 72 ... 74 % (accelerator pedal pressed down)

If the specification is not attained:



- -> Disengage eyelet of operating rod -1- from accelerator pedal -arrow-.
- Turn threaded collar on operating rod.
- After completing adjustment, carefully engage operating rod on accelerator pedal.

- Check adjustment again:
- Press accelerator pedal down slowly.

-> Specification: figure in display zone 3 should constantly increase, reaching 72 ... 74 % when the accelerator pedal is pressed down fully.

Read measured value block 62
xx % xx % 73 % xx %



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