

Workshop Manual Audi Q3 2012 ➤

Fuel supply system, diesel engines

Engine ID	CFFA	CFFB	CFG C	CFG D	CLLB	CLJA	CUV B	CUV C	CUV D
	CUW A	CYLA	DFU A	DFTA	DFTB	DFT C	DBB A		

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List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

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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00 – Technical data

1 Safety precautions

(ARL004611; Edition 03.2016)

⇒ [“1.1 Safety precautions when working on the fuel system”, page 1](#)

⇒ [“1.2 Safety precautions when working on vehicles with start/stop system”, page 2](#)

⇒ [“1.3 Safety precautions when using testers and measuring instruments during a road test”, page 2](#)

⇒ [“1.4 Safety precautions when working on the SCR system”, page 3](#)

1.1 Safety precautions when working on the fuel system

When working on the fuel system note the following warnings:



WARNING

Risk of injury - fuel system operates under pressure.

- ◆ *Wrap a cloth around the connection before opening the fuel system. Then release pressure by carefully loosening the connection.*

The fuel can become extremely hot. This can cause injuries.

- ◆ *In extreme cases the temperature of the fuel lines and the fuel can be up to 100 °C after the engine is switched off. Allow the fuel to cool down before disconnecting the lines - danger of scalding.*
- ◆ *Put on protective gloves.*
- ◆ *Put on safety goggles.*

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

- ◆ Fuel tank must not be full. The amount of fuel which can be left in the fuel tank is indicated in the corresponding procedure description. Drain fuel tank if necessary ⇒ [page 7](#).
- ◆ Before commencing work, switch on exhaust extraction system and place an extraction hose close to the opening in the fuel tank to extract escaping petrol fumes. If no exhaust extraction system is available, a radial fan with a displacement of at least 15 m³/h can be used (the fan motor must be clear of the air stream).
- ◆ Avoid skin contact with fuel. Wear fuel-resistant gloves.

Removing and installing fuel tank

Fuel tank must be empty to reduce weight. Drain fuel tank if necessary ⇒ [page 7](#).

Observe the following points to prevent personal injuries and damage to the injection and glow plug system:

- ◆ Always switch off the ignition before connecting or disconnecting tester cables or electrical wiring for the injection or glow plug system.

- ◆ Always switch off ignition before washing engine.
- ◆ Erase any entries in event memory resulting from testing or installation ⇒ Vehicle diagnostic tester, Guided Functions, then Interrogate event memory.

**Caution**

To prevent irreparable damage to the electronic components when disconnecting the battery:

- ◆ *Observe notes on procedure for disconnecting the battery.*
- ◆ *Always switch off the ignition before disconnecting the battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .*

1.2 Safety precautions when working on vehicles with start/stop system

When performing repairs on vehicles with start/stop system, note the following:

**WARNING**

Risk of injury due to automatic engine start on vehicles with start/stop system.

- ◆ *On vehicles with activated start/stop system (this is indicated by a message in the instrument cluster display), the engine may start automatically on demand.*
- ◆ *Therefore it is important to ensure that the start/stop system is deactivated when performing repairs (switch off ignition, if required switch on ignition again).*

1.3 Safety precautions when using testers and measuring instruments during a road test

Note the following if testers and measuring instruments have to be used during a road test:

**WARNING**

Accidents can be caused if the driver is distracted by test equipment while road-testing, or if test equipment is not properly secured.

Persons sitting in the front passenger's seat could be injured if the airbag is triggered in an accident.

- *The use of test equipment while driving causes distraction.*
- *There is an increased risk of injury if test equipment is not secured.*
- ◆ *Test equipment must always be secured on the rear seat with a strap and operated from the rear seat by a second person.*

1.4 Safety precautions when working on the SCR system

When working on the SCR system, note the following warnings:



WARNING

Reducing agent can cause skin irritation.

- ◆ *Avoid contact with the skin and eyes. Wear protective gloves.*
- ◆ *If your skin has come into contact with reducing agent, rinse it off with soap and water.*
- ◆ *If reducing agent gets into your eyes, rinse them out with water for several minutes.*
- ◆ *Do not breathe in or swallow reducing agent.*
- ◆ *If you have swallowed reducing agent, rinse your mouth, drink lots of water and consult a paramedic or doctor immediately.*

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 When removing and installing components at the SCR system, note the following:

- ◆ When working on the SCR system, the reducing agent tank must be empty. Refer to the corresponding work description to find out when the reducing agent must be drained from the tank. Drain tank if necessary; procedure ⇒ Rep. gr. 26 ; SCR (selective catalytic reduction) system .

When removing and installing tank, note the following:

- ◆ The reducing agent tank must be empty. Drain tank if necessary; procedure ⇒ Rep. gr. 26 ; SCR (selective catalytic reduction) system .

Automatic drawing back of reducing agent

- After the ignition is switched off, the reducing agent is automatically drawn back into the tank from the metering line leading to the injector for reducing agent - N474- .
- Before performing work in this area, you must therefore wait until the reducing agent has been drawn back; this can take up to 10 minutes after the ignition has been switched off.
- It is also important to wait until the reducing agent has been drawn back (i.e. 10 minutes after the ignition is switched off) before disconnecting the battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .



WARNING

Safety risk due to escaping reducing agent.

- ◆ *To prevent large amounts of reducing agent from escaping when the metering line is opened, wait until the reducing agent has been drawn back automatically ⇒ **page 3** .*

2 Repair instructions

⇒ ["2.1 Rules for cleanliness", page 4](#)

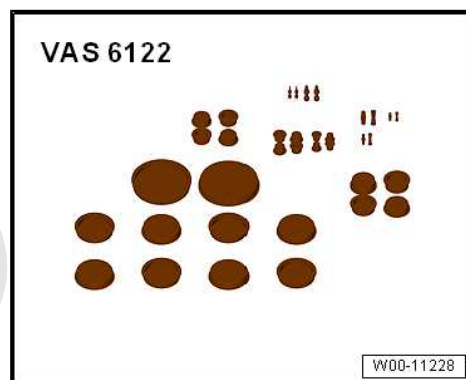
⇒ ["2.2 Test conditions", page 4](#)

⇒ ["2.3 Contact corrosion", page 4](#)

2.1 Rules for cleanliness

Even small amounts of dirt can cause malfunctions. For this reason, please observe the following rules when working on the fuel supply system and injection system:

- ◆ Carefully clean connection points and the surrounding area with engine cleaner or brake cleaner and dry thoroughly before opening.
- ◆ Immediately seal open lines and connections with clean plugs, for example from engine bung set - VAS 6122- .
- ◆ Place parts that have been removed on a clean surface and cover them over. Use only lint-free cloths.
- ◆ Carefully cover or seal open components if repairs cannot be carried out immediately.
- ◆ Only install clean components; replacement parts should only be unpacked immediately prior to installation. Do not use parts that have not been stored in their packing (e.g. in tool boxes etc.).
- ◆ When the system is open, do not work with compressed air and do not move the vehicle.
- ◆ Protect unplugged electrical connectors against dirt and moisture and make sure connections are dry when attaching.



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2.2 Test conditions

- Battery voltage at least 12.5 V
- Fuel pump fuse OK ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Fuel pump relay - J17- OK ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Fuel pump control unit - J538- OK; checking in Guided Fault Finding ⇒ Vehicle diagnostic tester.
- Fuel tank at least $\frac{1}{4}$ full.
- Fuel filter OK.
- Fuel lines OK (not obstructed or crushed).
- Ignition off.
- Suitable grade of diesel for climatic conditions. Summer-grade diesel may be affected by thickening at very low temperatures.
- All electrical equipment switched off.

2.3 Contact corrosion

Contact corrosion can occur if unsuitable fasteners are used (e.g. bolts, nuts, washers, etc.).

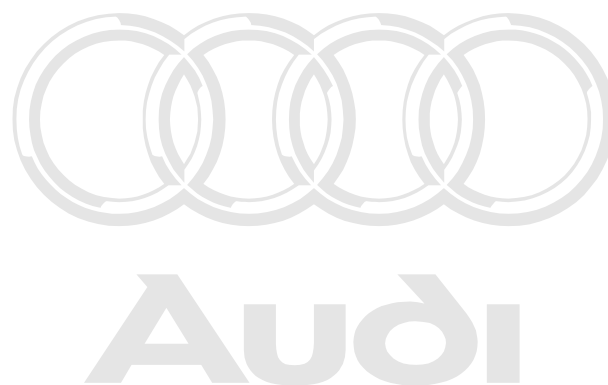
For this reason, only fasteners with a special surface coating are used.

Additionally, all rubber and plastic parts and all adhesives are made of non-conductive materials.

Always install new parts if you are not sure whether used parts can be re-fitted ⇒ Electronic parts catalogue .

Note the following:

- ◆ We recommend using only genuine replacement parts; these have been tested and are compatible with aluminium.
- ◆ We recommend the use of Audi accessories.
- ◆ Damage caused by contact corrosion is not covered under warranty.



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20 – Fuel supply system

1 Fuel tank

⇒ [“1.1 Exploded view - fuel tank”, page 6](#)

⇒ [“1.2 Draining fuel tank”, page 7](#)

⇒ [“1.3 Removing and installing fuel tank”, page 10](#)

⇒ [“1.4 Removing and installing misfuelling prevention device”, page 15](#)

⇒ [“1.5 Deactivating misfuelling prevention device”, page 19](#)

1.1 Exploded view - fuel tank

1 - Securing strap (right-side)

2 - Bolt

- ☐ Renew after removing
- ☐ 20 Nm +90°

3 - Fuel supply line

- ☐ To fuel filter
- ☐ Do not kink
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 34](#)

4 - Fuel return line

- ☐ From engine
- ☐ Do not kink
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 34](#)

5 - Fuel tank

- ☐ Removing and installing ⇒ [page 10](#)

6 - Bolt

- ☐ Renew after removing
- ☐ 8 Nm +90°

7 - Filler cap

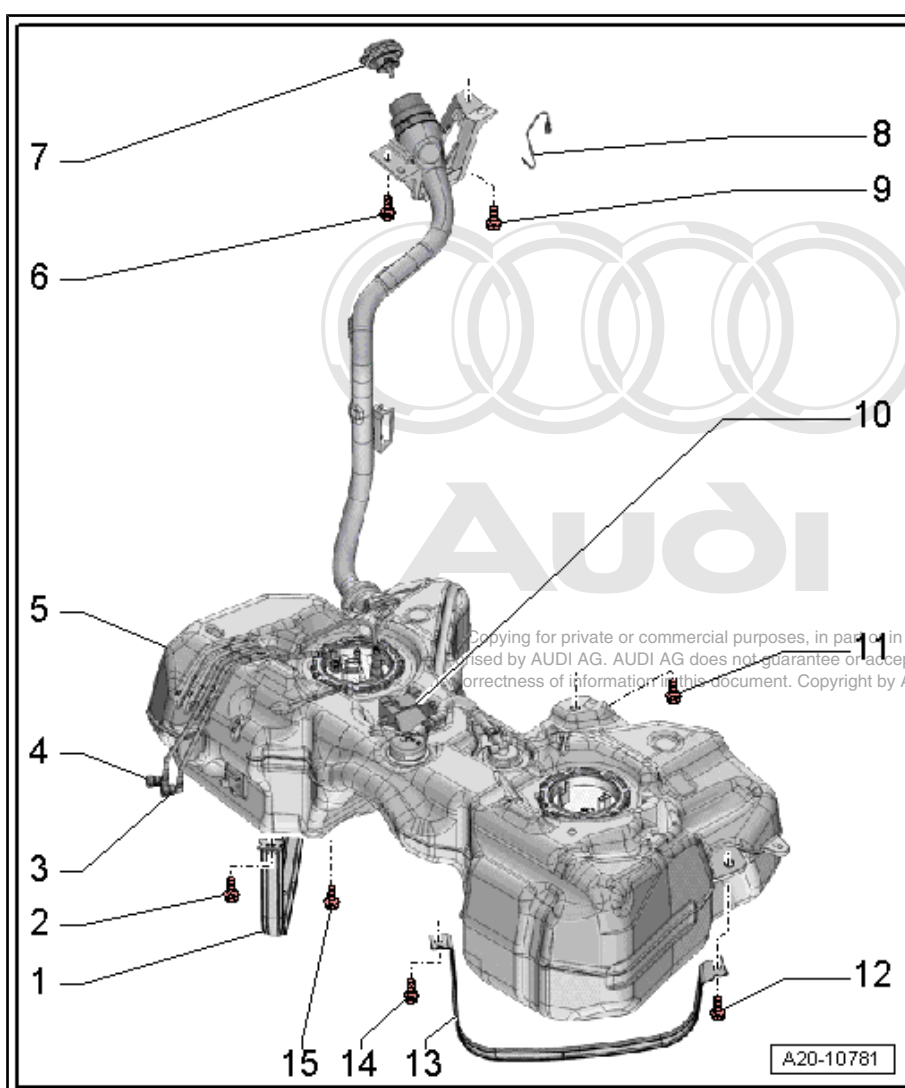
- ☐ Screw down until it clicks audibly
- ☐ Secured to tank flap unit

8 - Earth connection

- ☐ For fuel filler neck
- ☐ To eliminate electrostatic charge ⇒ [page 7](#)

9 - Bolt

- ☐ To secure fuel filler neck
- ☐ To eliminate electrostatic charge ⇒ [page 7](#)
- ☐ Renew after removing
- ☐ 8 Nm +90°



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10 - Bracket

- ☐ For fuel pump control unit - J538-

11 - Bolt

- ☐ Renew after removing
- ☐ 20 Nm +90°

12 - Bolt

- ☐ Renew after removing
- ☐ 20 Nm +90°

13 - Securing strap (left-side)

14 - Bolt

- ☐ Renew after removing
- ☐ 20 Nm +90°

15 - Bolt

- ☐ Renew after removing
- ☐ 20 Nm +90°

Earth connection for fuel filler neck

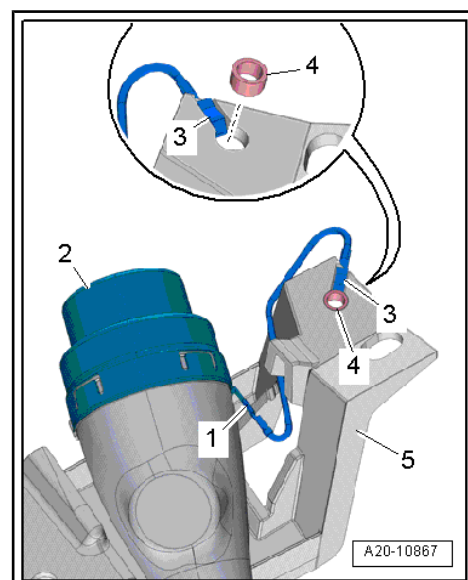
- Route earth connection as shown in illustration.
- Make sure that the following connectors are securely seated:
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 - ◆ Connector -1- for earth connection on threaded ring -2- of fuel filler neck
- Engage contact tab -3- of earth connection in mounting hole on fuel tank -5- and press in spacer bush -4-.



WARNING

Safety risk due to electrostatic discharge.

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



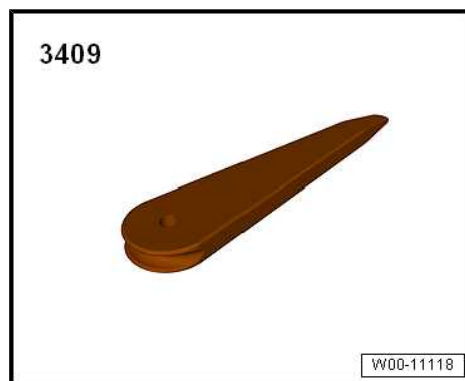
1.2 Draining fuel tank

A - Procedure if fuel tank is more than $\frac{3}{4}$ full ➔ [page 8](#) .

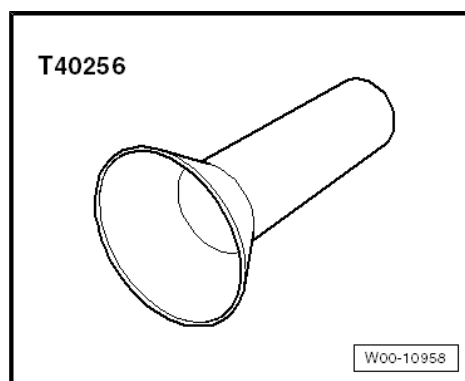
B - Procedure if fuel tank is less than $\frac{3}{4}$ full ➔ [page 10](#) .

Special tools and workshop equipment required

◆ Removal wedge - 3409-



◆ Release tool for misfuelling prevention device -T40256- for equipment version with misfuelling prevention device



◆ Fuel extractor - VAS 5190A-



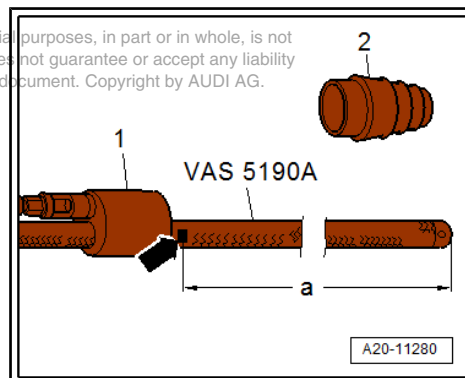
Procedure

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Move front seats all the way forwards.
- Switch off ignition.

A - Procedure if fuel tank is more than $\frac{3}{4}$ full

i Note

- ◆ *Shaft end -1- and tapered adapter -2- of fuel extractor -VAS 5190A- are not used.*
- ◆ *Slide shaft end -1- slightly towards rear on hoses.*
- Use insulating tape to mark the extraction hose -arrow- at a distance of -a- = 960 mm from the end of the hose.

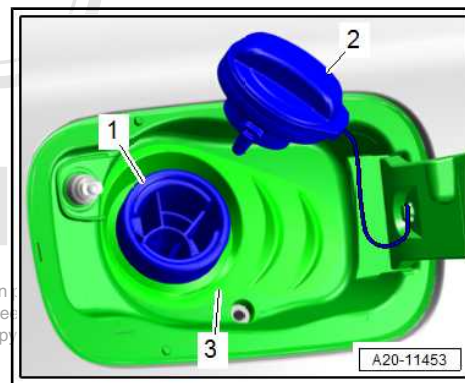


- Open tank flap.
- Remove filler cap -2- for fuel filler neck -1-.

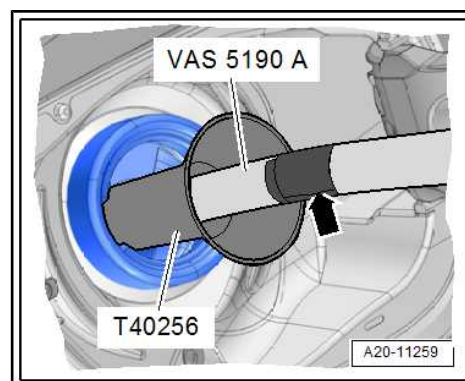
 Note

Disregard -item 3-.

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- Depending on equipment version: Insert release tool for misfuelling prevention device -T40256- in fuel filler neck as far as stop.
- Push extraction hose from -VAS 5190A- into fuel tank until marking on hose -arrow- is level with edge of filler neck.



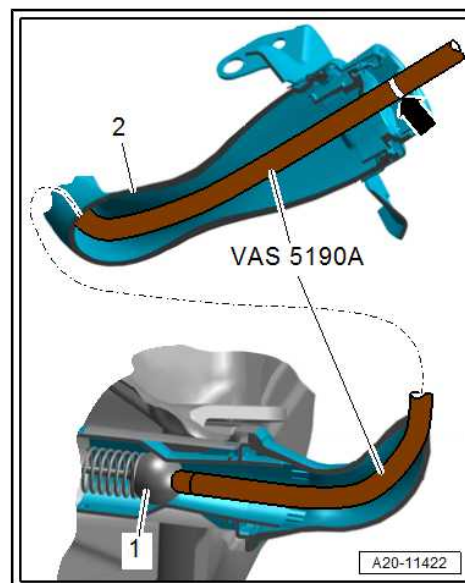
 Note

A ball valve -1- is located at the bottom of the filler neck -2- in the fuel tank; it must not be damaged by the extraction hose from -VAS 5190A-. Therefore, only push the hose in as far as the tape marking -arrow-.

- Push extraction hose into fuel tank only until marking on hose -arrow- is level with edge of filler neck.
- Extract fuel from tank via fuel filler neck.
- Pull out extraction hose carefully.

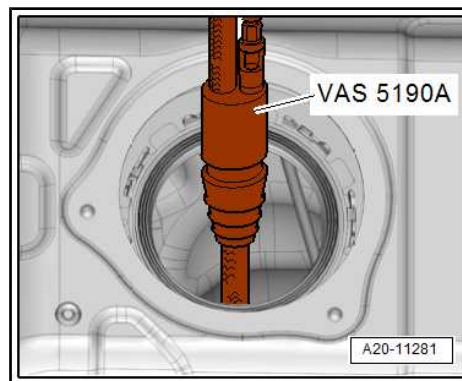
 Note

When no more fuel is extracted, the fuel tank has been drained enough for the flange to be opened safely.



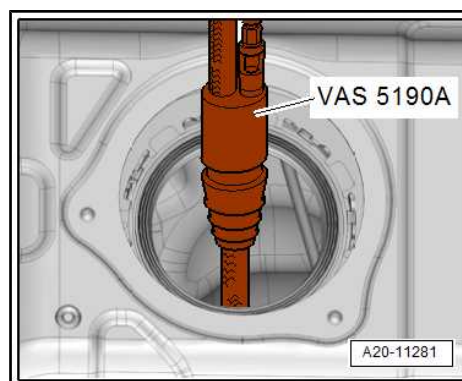
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .

- Remove fuel gauge sender 2 - G169- ➔ [page 30](#) .
- Extract fuel from both fuel tank chambers through opening for flange and fuel gauge sender 2 - G169- using fuel extractor - VAS 5190A- .
- Install fuel gauge sender 2 - G169- ➔ [page 30](#) .



B - Procedure if fuel tank is less than $\frac{3}{4}$ full

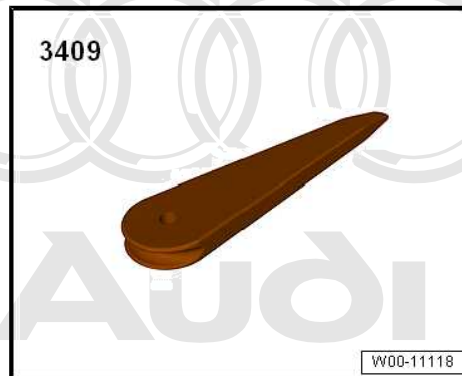
- Remove fuel gauge sender 2 - G169- ➔ [page 30](#) .
- Extract fuel from both fuel tank chambers through opening for flange and fuel gauge sender 2 - G169- using fuel extractor - VAS 5190A- .
- Install fuel gauge sender 2 - G169- ➔ [page 30](#) .



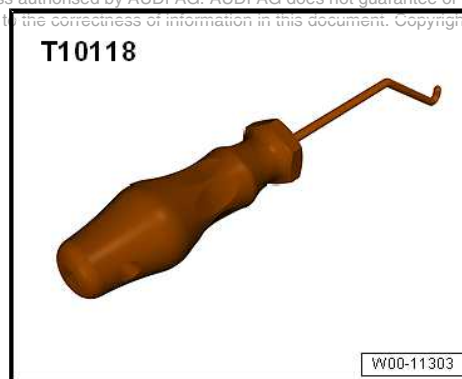
1.3 Removing and installing fuel tank

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



- ◆ Assembly tool - T10118-



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◆ Engine and gearbox jack - VAS 6931-



Removing

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Move front seats all the way forwards.
- Switch off ignition.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .

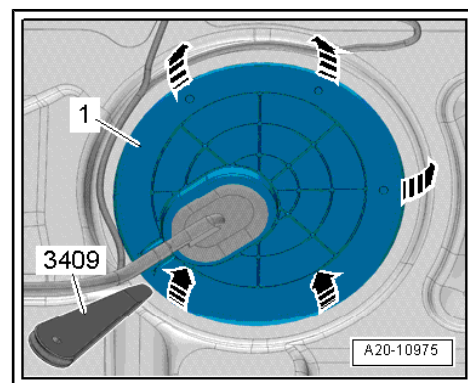


WARNING

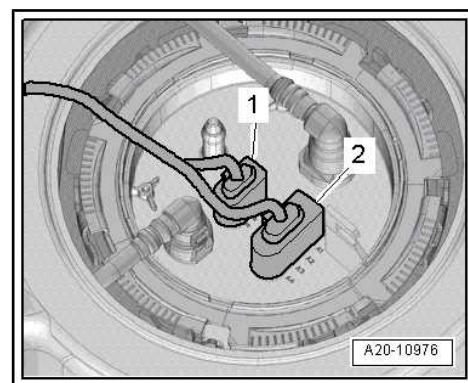
Risk of accident caused by weight of fuel tank

- ◆ *Fuel tank must be empty when it is removed.*

- Drain fuel tank ⇒ [page 7](#) .
- Unclip cover -1- for flange (right-side) at retainers -arrows- using removal wedge - 3409- .

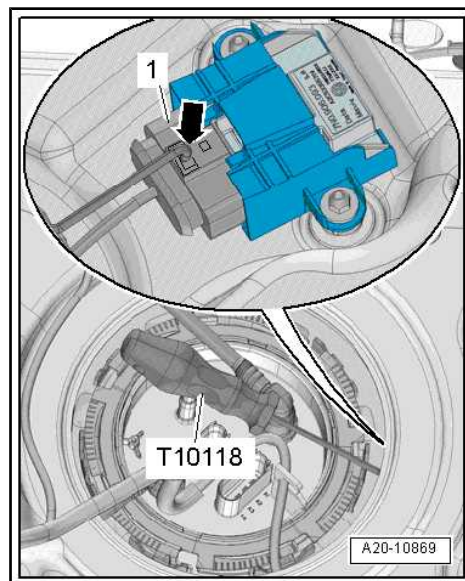


- Release retainer catches and unplug electrical connectors -1- and -2- on flange (right-side).

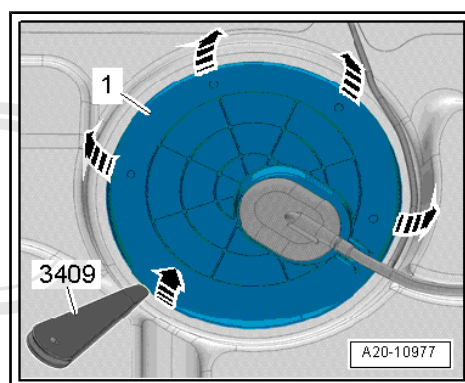


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- Unplug electrical connector -1- for fuel pump control unit - J538- .
- To do so, feel for retainer catch -arrow- with your finger and hook assembly tool - T10118- into retainer catch.
- Pull assembly tool - T10118- until retainer catch is released.
- Unplug electrical connector at fuel pump control unit - J538- .

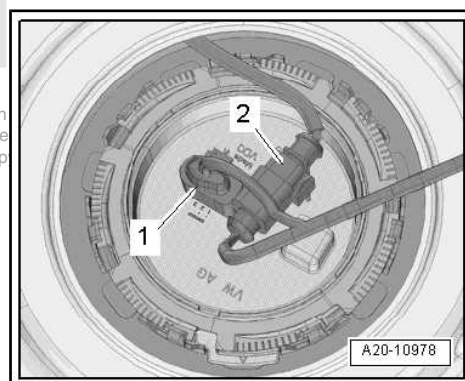


- Unclip cover -1- for flange (left-side) at retainers -arrows- using removal wedge - 3409- .



- Release retainer catch and unplug electrical connector -1- on flange (left-side).
- Release retainer catch and unplug electrical connector -2- (if fitted).

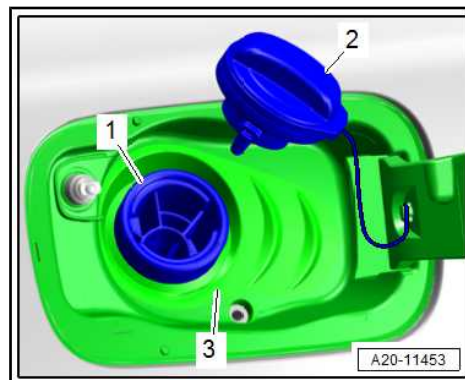
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- Open tank flap.
- Clean area around fuel filler neck.
- Remove filler cap -2- for fuel filler neck.
- Disengage rubber sleeve -3- from fuel filler neck -1-.


Note

Seal off opening of fuel filler neck with a clean plug to prevent dirt from entering.

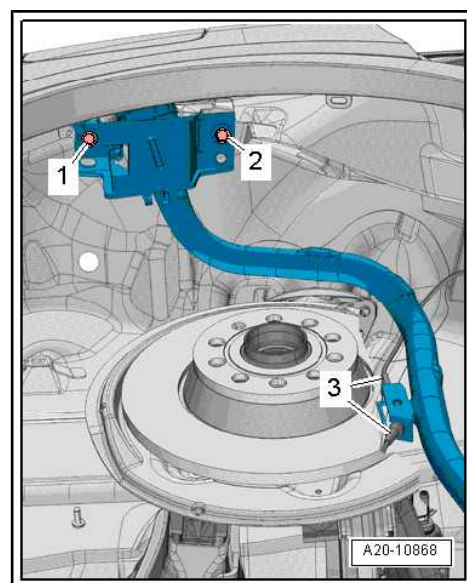
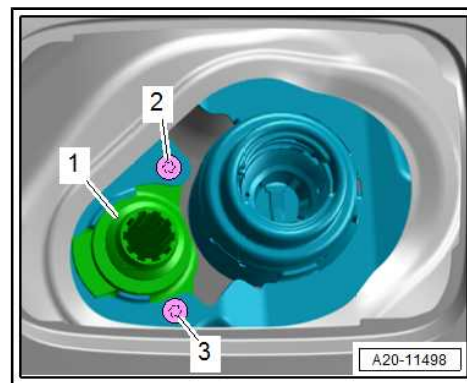


Vehicles with SCR system:

- Remove tank flap unit ⇒ General body repairs, exterior; Rep. gr. 55 ; Tank flap unit; Removing and installing tank flap unit .
- Remove bolts -2 and 3-, and detach filler neck -1- for reducing agent from fuel filler neck.

All vehicles (continued):

- Remove rear wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .
- Remove bolts -1- and -2- for fuel filler neck.
- Disengage electrical wire -3- for rear right speed sensor - G44- from bracket on filler neck.
- Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencer; Exploded view - silencer .

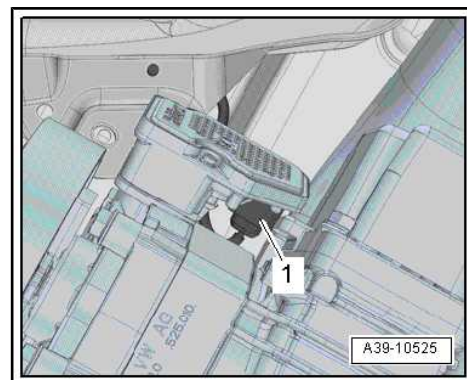


Vehicles with four-wheel drive:

- Remove propshaft ⇒ Rep. gr. 39 ; Propshaft; Removing and installing propshaft .
- Release retainer catch and unplug electrical connector -1- for Haldex coupling.

All vehicles (continued):

- Remove underbody trim panels (rear left and right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .



WARNING

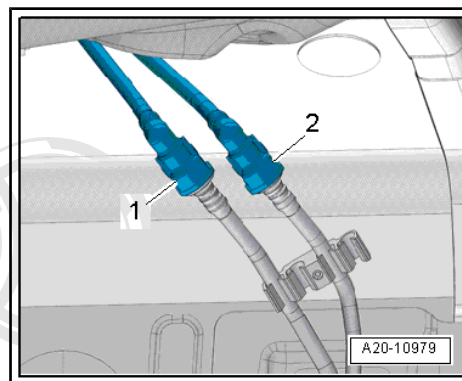
The fuel can become extremely hot. This can cause injuries.

- ◆ ***In extreme cases the fuel lines and the fuel can reach a temperature of 100 °C. Allow the fuel to cool down before disconnecting the lines - danger of scalding.***
- ◆ ***Put on protective gloves.***
- ◆ ***Put on safety goggles.***

Risk of injury - fuel system operates under high pressure.

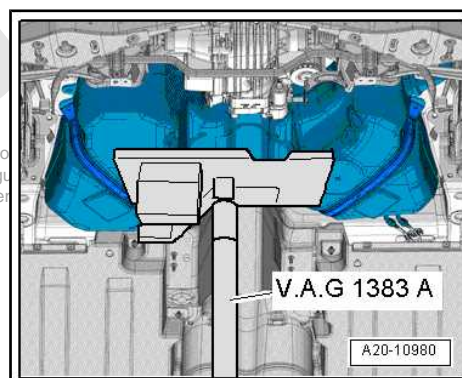
- ◆ ***To reduce the pressure in the fuel system, wrap a clean cloth around the connection and carefully loosen the connection.***

- Disconnect fuel lines -1 and 2-. Disconnecting plug-in connectors ⇒ [page 34](#)



- Position engine and gearbox jack under vehicle to support tank, as shown in illustration.
- In addition, a 2nd mechanic will be required to support the fuel tank at the rear by hand.

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WARNING

Risk of accident caused by weight of fuel tank

◆ *Fuel tank must be empty when it is removed.*

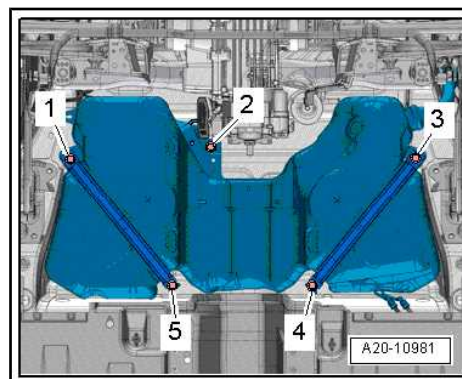
- Remove bolts -1 ... 5-.



Note

For illustration purposes the fuel tank is shown without the engine and gearbox jack .

- Lower fuel tank with engine and gearbox jack .
- Remove fuel tank downwards (turning it sideways as required).
- In addition, a 2nd mechanic will be required to guide fuel filler neck out past trailing arm out by hand.



Installing

Installation is carried out in the reverse order; note the following:



Note

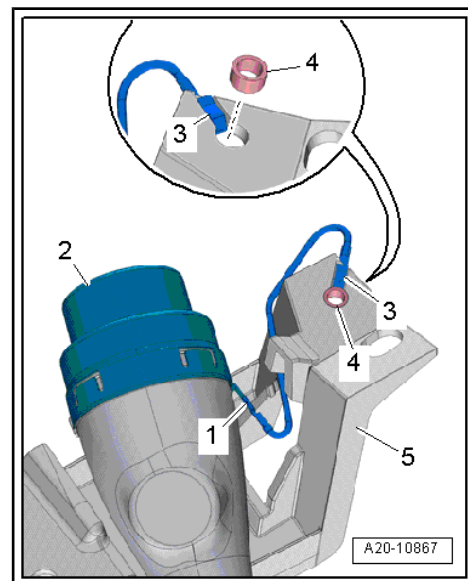
- ◆ *Renew seals.*
- ◆ *When plugging in electrical connectors, make sure they engage correctly.*
- Check earth wire for traces of oxidation at connectors; remove any oxidation if necessary.
- Make sure that the following connectors are securely seated:
 - Connector -1- must be seated securely on metal ring -2-.
 - Contact tab -3- must be attached to fuel tank -5- and secured with spacer bush -4-.



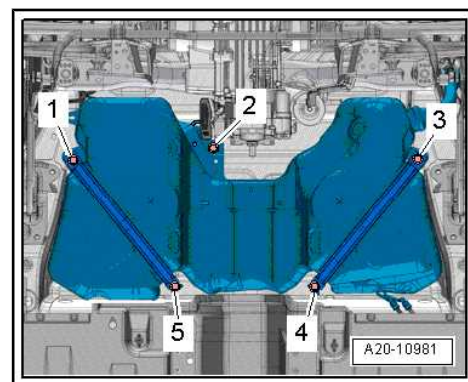
WARNING

Safety risk due to electrostatic discharge.

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



- Check that fuel lines are clipped onto fuel tank.
- Position fuel tank with securing straps on underside of vehicle using engine and gearbox jack .
- When installing fuel tank, make sure that fuel filler neck is correctly inserted into opening on body.
- Tighten bolts -1 ... 5-.
- Remove underbody trim panels (rear, both sides) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- Install propshaft ⇒ Rep. gr. 39 ; Propshaft; Removing and installing propshaft .
- Install rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencer; Exploded view - silencer .
- Install rear right wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear) .
- Install rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .



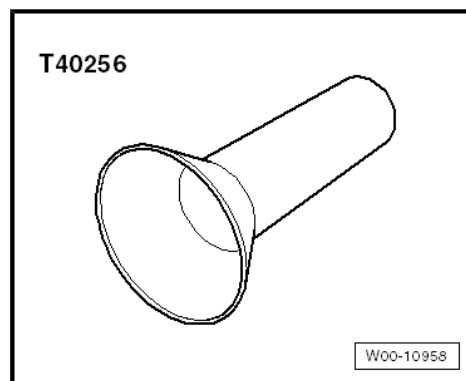
Tightening torques

- ◆ **⇒ "1.1 Exploded view - fuel tank", page 6**

1.4 Removing and installing misfuelling prevention device

Special tools and workshop equipment required

- ◆ Release tool for misfuelling prevention device -T40256-



- ◆ Circlip pliers

Removing

Observe safety precautions ⇒ [page 1](#) .

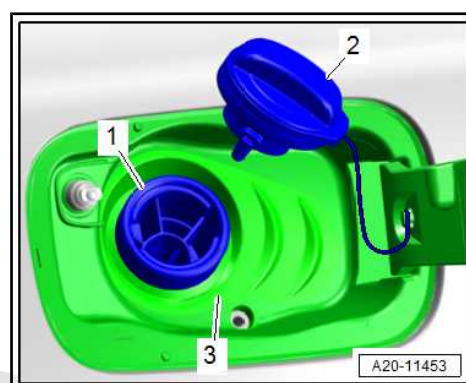
Observe rules for cleanliness ⇒ [page 4](#) .

- Open tank flap.
- Clean area around fuel filler neck.
- Remove filler cap -2- for fuel filler neck -1-.

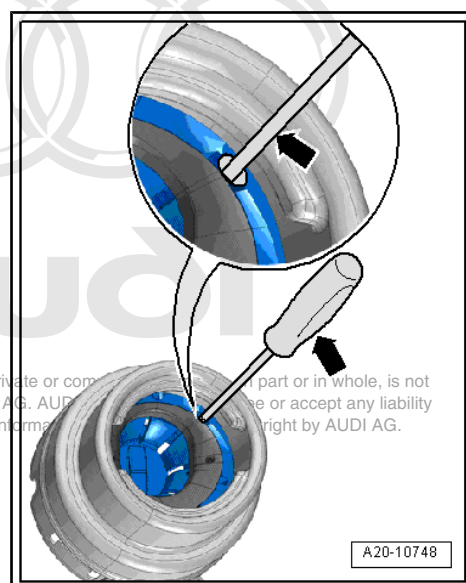


Note

Disregard -item 3-.

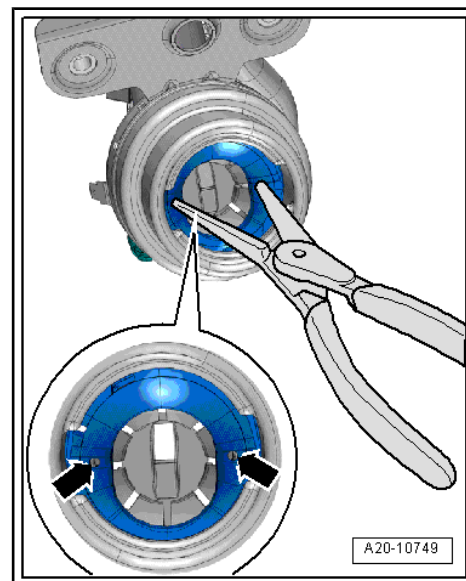


- Release retaining tab for locking ring using Torx screwdriver -arrow-.

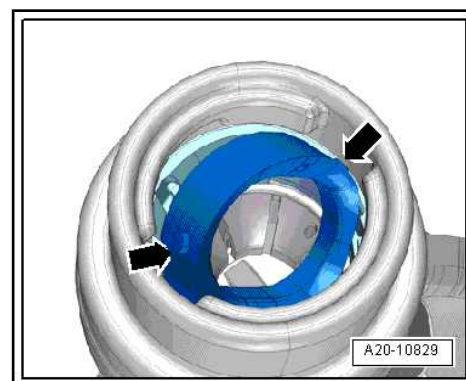


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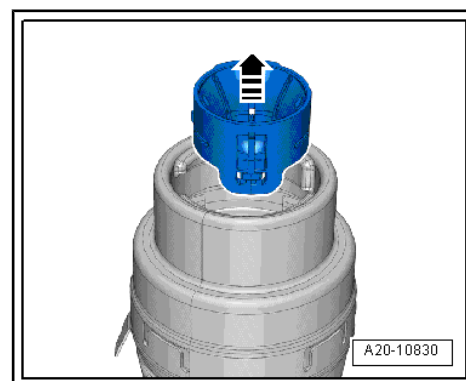
- Insert circlip pliers in both holes -arrows- in locking ring.
- Turn locking ring approx. 25° anti-clockwise.



- Tilt locking ring inside fuel filler neck and take it out through slots -arrows- for filler cap.



- Pull misfuelling prevention device out of fuel filler neck -arrow- (use circlip pliers if necessary).

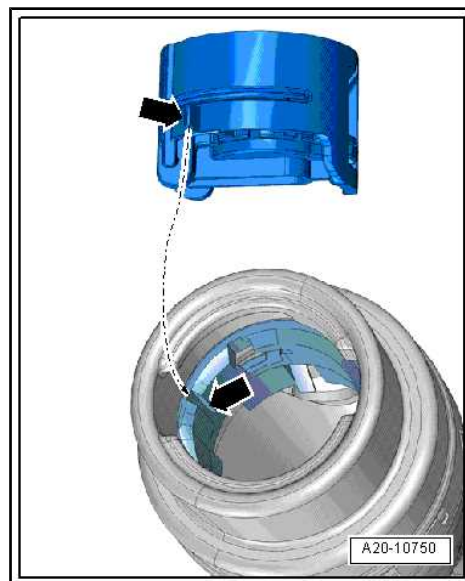


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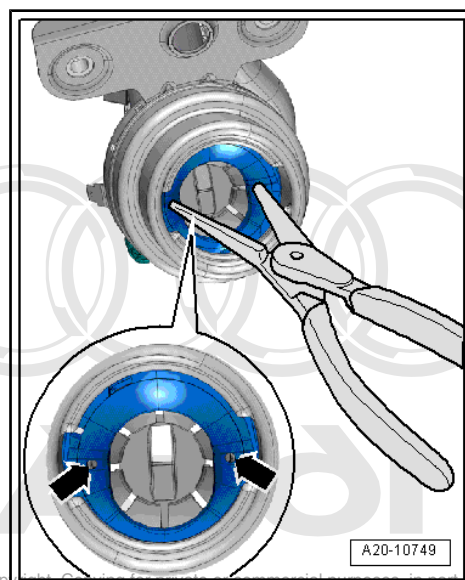
Installing

Installation is carried out in the reverse order; note the following:

- Insert misfuelling prevention device in fuel filler neck.
- The lug on the misfuelling prevention device must engage in the groove on the filler neck -arrows-.



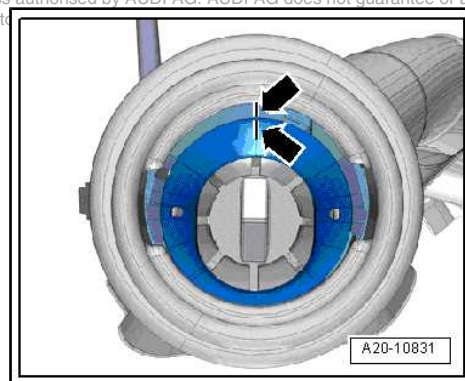
- Fit locking ring using circlip pliers (turn 25° clockwise).



- If parts have been assembled correctly, markings on locking ring and fuel filler neck should now be aligned -arrows-.

Function test:

- It must not be possible to open locking flap of misfuelling prevention device without release tool -T40256- .
- It must be possible to insert release tool -T40256- into fuel filler neck as far as stop.



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1.5 Deactivating misfuelling prevention device

Procedure

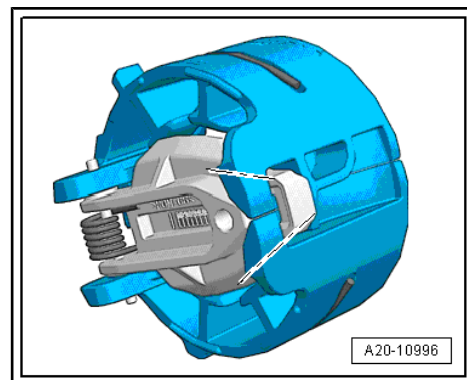
- Remove misfuelling prevention device ⇒ [page 15](#) .
- Cut off retaining tabs at markings, as shown in illustration.



Note

It must be possible to open locking flap of misfuelling prevention device smoothly.

- Install misfuelling prevention device ⇒ [page 15](#) .



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2 Fuel delivery unit/fuel gauge senders

⇒ "2.1 Exploded view - fuel delivery unit/fuel gauge senders", page 20

⇒ "2.2 Removing and installing fuel delivery unit/fuel gauge sender", page 21

⇒ "2.3 Checking fuel gauge sender G ", page 25

⇒ "2.4 Removing and installing fuel gauge sender G ", page 28

⇒ "2.5 Checking fuel gauge sender 2 G169 ", page 28

⇒ "2.6 Removing and installing fuel gauge sender 2 G169 ", page 30

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2.1 Exploded view - fuel delivery unit/fuel gauge senders

1 - Fuel delivery unit

- ☐ With fuel system pressurisation pump - G6-
- ☐ Checking fuel pump (electrical test) in Guided Fault Finding ⇒ Vehicle diagnostic tester
- ☐ Removing and installing ⇒ page 21
- ☐ Put at least 5 litres of fuel into tank after installing

2 - Fuel gauge sender - G-

- ☐ Checking resistance values ⇒ page 25
- ☐ Removing and installing ⇒ page 28

3 - Seal

- ☐ Renew
- ☐ Install dry

4 - Locking ring

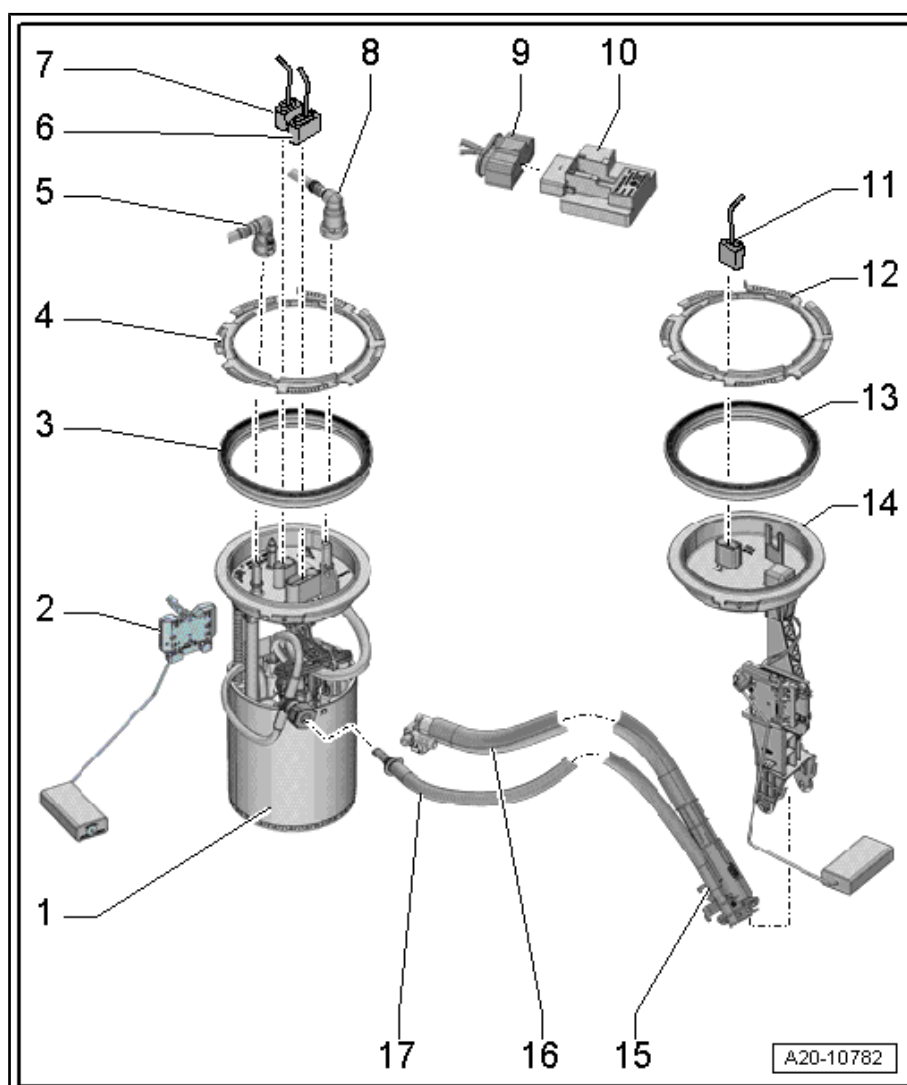
- ☐ Loosen and tighten with wrench - T10202-
- ☐ 110 Nm

5 - Fuel return line

- ☐ From engine
- ☐ Do not kink
- ☐ Disconnecting and connecting plug-in connectors ⇒ page 34
- ☐ Note direction of arrow (fuel supply or fuel return system) on flange when installing
- ☐ Clipped onto fuel tank

6 - Electrical connector

- ☐ For fuel system pressurisation pump - G6-



7 - Electrical connector

- ☐ For fuel gauge sender - G-

8 - Fuel supply line

- ☐ To fuel filter
- ☐ Do not kink
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 34](#)
- ☐ Note direction of arrow (fuel supply or fuel return system) on flange when installing
- ☐ Clipped onto fuel tank

9 - Electrical connector

- ☐ For fuel pump control unit - J538-

10 - Fuel pump control unit - J538-

- ☐ Checking in Guided Fault Finding ⇒ Vehicle diagnostic tester
- ☐ Removing and installing ⇒ [page 54](#)

11 - Electrical connector

- ☐ For fuel gauge sender 2 - G169-

12 - Locking ring

- ☐ Loosen and tighten with wrench - T10202-
- ☐ 110 Nm

13 - Seal

- ☐ Renew
- ☐ Install dry

14 - Fuel gauge sender 2 - G169-

- ☐ Checking resistance values ⇒ [page 28](#)
- ☐ Removing and installing ⇒ [page 30](#)

15 - Suction-jet pump

- ☐ Removing and installing ⇒ [page 47](#)

16 - Supply line

- ☐ Do not kink
- ☐ Clipped onto fuel delivery unit
- ☐ Press release tab on connection piece to disconnect

17 - Supply line for suction-jet pump

- ☐ Do not kink
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 34](#)

2.2 Removing and installing fuel delivery unit/fuel gauge sender

Special tools and workshop equipment required

◆ Removal wedge - 3409-



◆ Wrench - T10202-



Removing

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Move front seats all the way forwards.
- Switch off ignition.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .

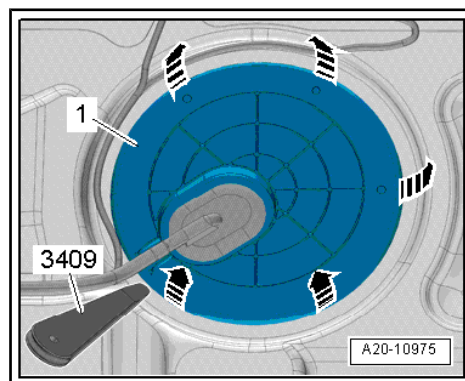


WARNING

Danger! Fuel may escape.

- ◆ ***The fuel tank must not be more than 1/3 full when removing the fuel delivery unit, otherwise a large amount of fuel will escape.***

- Drain fuel tank if necessary ⇒ [page 7](#) .
- Unclip cover -1- for flange (right-side) at retainers -arrows- using removal wedge - 3409- .



- Release retainer catches and unplug electrical connectors -1- and -2- on flange (right-side).



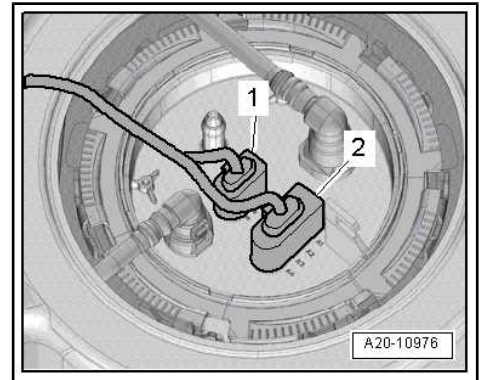
WARNING

The fuel can become extremely hot. This can cause injuries.

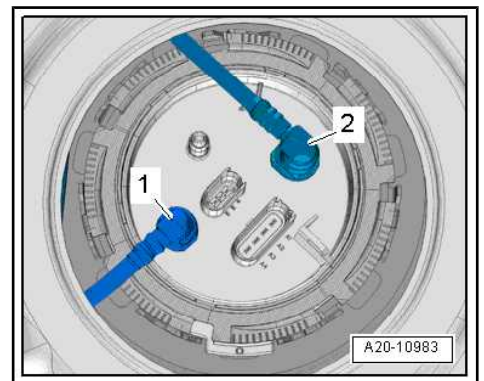
- ◆ *In extreme cases the fuel lines and the fuel can reach a temperature of 100 °C. Allow the fuel to cool down before disconnecting the lines - danger of scalding.*
- ◆ *Put on protective gloves.*
- ◆ *Put on safety goggles.*

Risk of injury - fuel system operates under high pressure.

- ◆ *To reduce the pressure in the fuel system, wrap a clean cloth around the connection and carefully loosen the connection.*



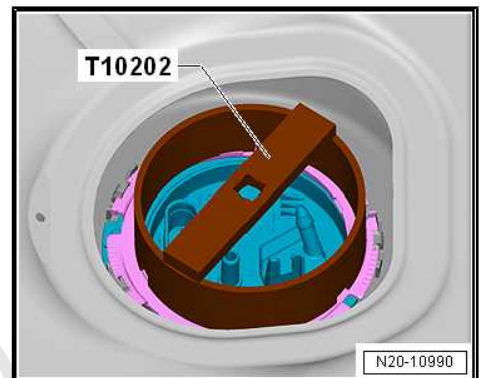
- Disconnect fuel lines -1 and 2- on flange. Disconnecting plug-in connectors ⇒ [page 34](#)



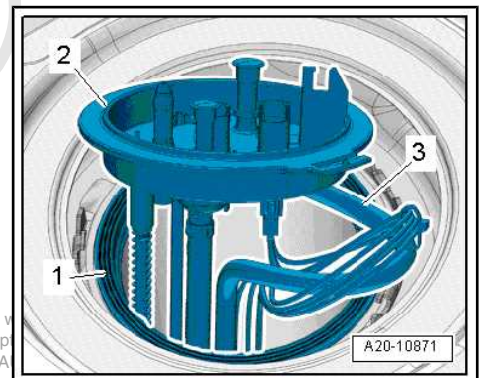
WARNING

Danger! Fuel may escape.

- ◆ *The fuel tank must not be more than 1/3 full when removing the fuel delivery unit, otherwise a large amount of fuel will escape.*

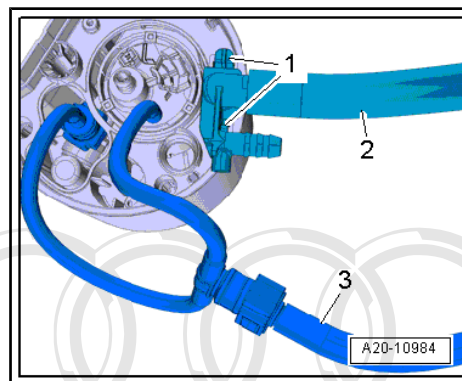


- Remove locking ring using wrench - T10202- .
- Pull flange -2- slightly out of opening in fuel tank.
- Remove seal -1- from opening in fuel tank.
- Carefully pull flange with fuel line -3- and electrical wiring out of opening in fuel tank.



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- Reach into opening in fuel tank and disconnect supply line -3- for suction-jet pump. Disconnecting plug-in connectors ⇒ [page 34](#)
- Reach through opening in fuel tank, release supply line -2- at retainers -1- and disconnect from fuel delivery unit.



WARNING

Safety risk from escaping fuel: the fuel delivery unit is still filled.

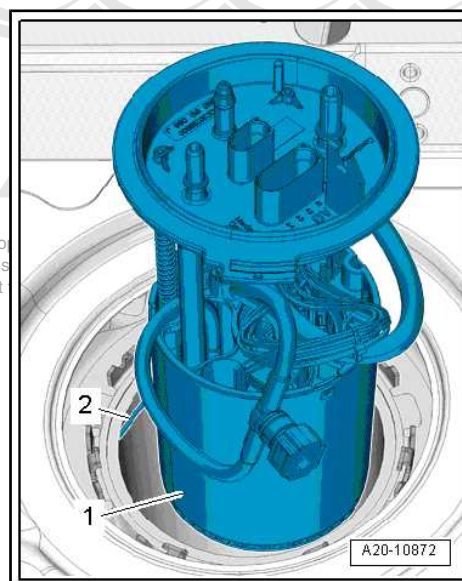
- ◆ **Use a cloth to catch escaping fuel.**

- Carefully pull fuel delivery unit -1- with fuel gauge sender -2- out through opening in fuel tank by turning and tilting it as required.



Note

When removing the fuel delivery unit, make sure you do not bend the float arm of the fuel gauge sender.

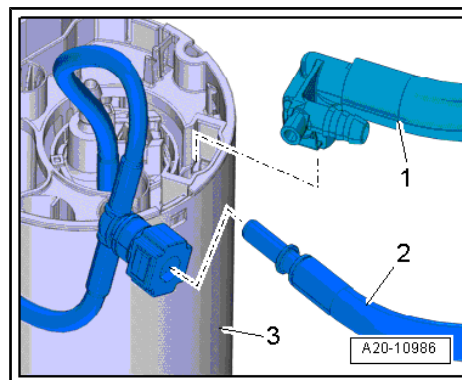


Installing

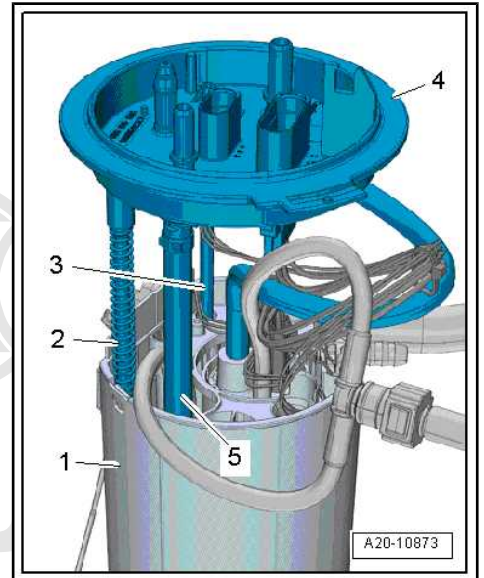


Note

- ◆ **Renew seal.**
- ◆ **Make sure that fuel hoses are securely fitted.**
- ◆ **When plugging in electrical connectors, make sure they engage correctly.**
- ◆ **When inserting the fuel delivery unit, make sure you do not bend the float arm of the fuel gauge sender.**
- Carefully insert fuel delivery unit with fuel gauge sender - G- in fuel tank.
- Reach through opening in fuel tank and clip supply line -1- onto fuel delivery unit -3- so it engages audibly.
- Connect supply line for suction-jet pump -2- so it engages audibly.
- Press supply line for suction-jet pump and supply line in again and then pull to check that plug-in connectors are correctly engaged.



- Route fuel hoses and electrical wiring as shown in illustration.
- Position flange -4- with guide tubes -2- and -3- and fuel return pipe -5- on fuel delivery unit -1-.
- Insert guide tubes and fuel return pipe into guides as shown in illustration.



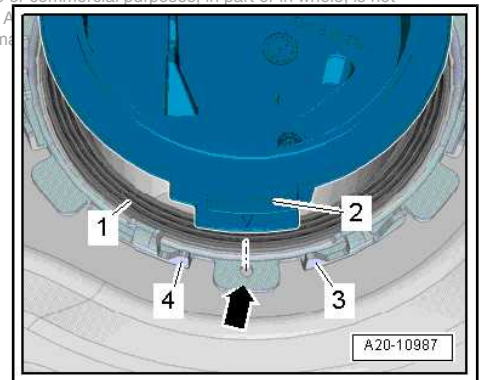
- Install new seal -1- for flange (seal must be installed dry)



Caution

Leakage risk

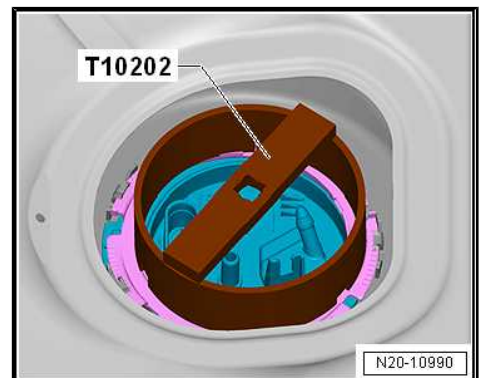
- ◆ **The seal must not be pinched or damaged when installing the flange.**



- Fit flange in correct installation position.
- Lug -2- on flange must point towards hole -arrow- on locking ring and must be between tabs -3 and 4- on fuel tank.
- Press flange down against spring pressure.
- Fit locking ring and secure using wrench - T10202- .
- Connect fuel lines so they engage audibly.
- Press fuel lines in again and then pull to check that plug-in connectors are correctly engaged.

Remaining installation steps are carried out in reverse sequence; note the following:

- Install rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .
- Put at least 5 litres of fuel into tank after installing fuel delivery unit.



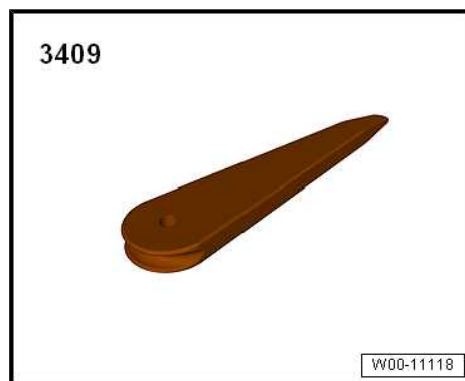
Tightening torques

- ◆ ⇒ ["2.1 Exploded view - fuel delivery unit/fuel gauge senders", page 20](#)

2.3 Checking fuel gauge sender - G-

Special tools and workshop equipment required

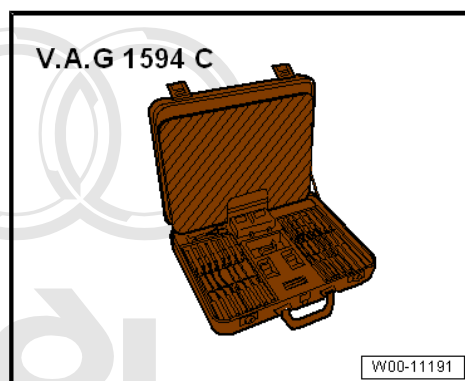
◆ Removal wedge - 3409-



◆ Hand-held multimeter - V.A.G 1526 E-



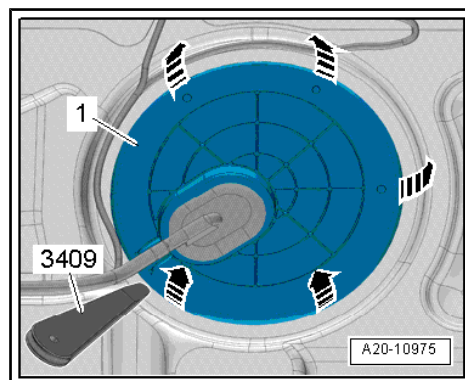
◆ Auxiliary measuring set - V.A.G 1594D-



Procedure

- Move front seats all the way forwards
- Switch off ignition.
- Remove rear seat bench ⇒ General body repairs, interior;
Rep. gr. 72 ; Rear seats; Removing and installing seat bench/
individual seats .
- Unclip cover -1- for flange (right-side) at retainers -arrows- using removal wedge - 3409- .

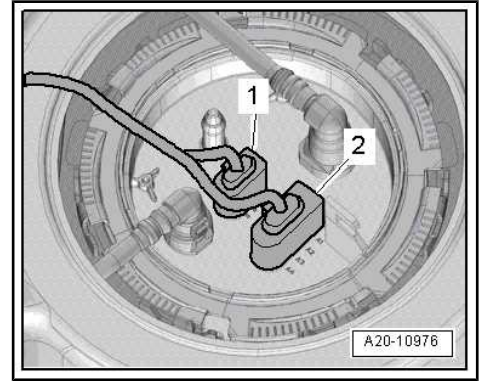
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- Release retainer catch and unplug electrical connector -1- on flange (right-side).

 Note

Disregard -item 2-.



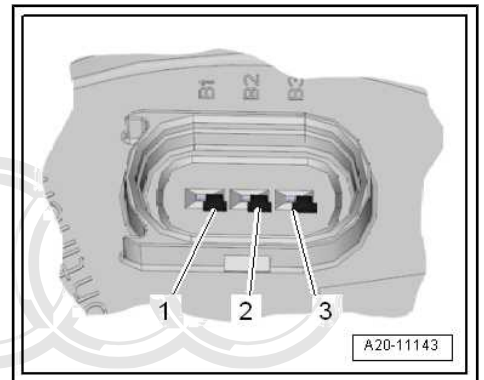
Fuel gauge sender - G- installed:

 Note

To obtain an exact measurement of the resistance value for the specification "Tank full", the fuel tank must be completely full. For this, drive for at least 500 metres after filling the tank to let air bubbles escape from the fuel tank; then add fuel again.

- Connect multimeter (resistance test) as shown in table.

Measure at contacts	Tank empty	Tank full
1 + 2	approx. 270 Ω	approx. 77.5 Ω
1 + 3	approx. 70 Ω	approx. 262.5 Ω
2 + 3 ¹⁾	approx. 340 Ω	approx. 340 Ω
¹⁾ Sender in any position		



Fuel gauge sender - G- removed:

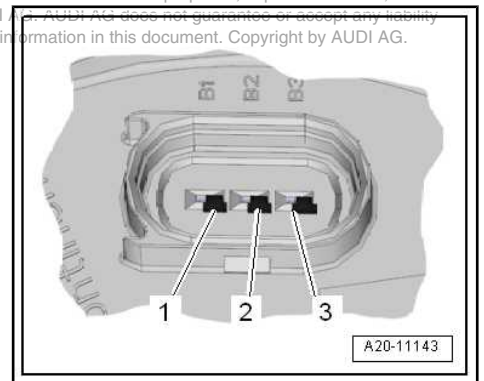
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 Note

- ◆ *In order to test the maximum and minimum resistance values for "tank full" and "tank empty", remove the fuel gauge sender - G- and move the float all the way to its top or bottom position.*
- ◆ *The following values are obtained with the fuel gauge sender removed, due to the greater travel of the float arm:*

- Connect multimeter (resistance test) as shown in table.

Measure at contacts	Tank empty	Tank full
1 + 2	approx. 290.3 Ω	approx. 77.5 Ω
1 + 3	approx. 49.7 Ω	approx. 262.5 Ω
2 + 3 ¹⁾	approx. 340 Ω	approx. 340 Ω
¹⁾ Sender in any position		



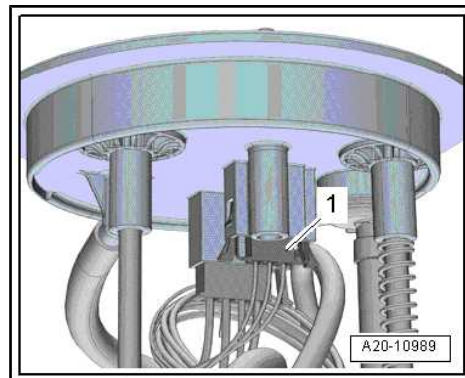
Fuel gauge sender - G- is defective in the following cases:

- ◆ Large differences in test readings
- ◆ Reading: 0 Ω (short circuit)
- ◆ Reading ∞ Ω (open circuit)
- ◆ No fault in electrical wiring
- Install fuel gauge sender - G- [⇒ page 28](#) .

2.4 Removing and installing fuel gauge sender - G-

Removing

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Remove fuel delivery unit ⇒ [page 21](#) .
- Release retainer catch and unplug electrical connector -1- on flange.
- Move clear electrical wiring leading to fuel gauge sender - G- .



- Release catches -1- and -2- -arrows A- and press out fuel gauge sender - G- upwards -arrow B-.

Installing

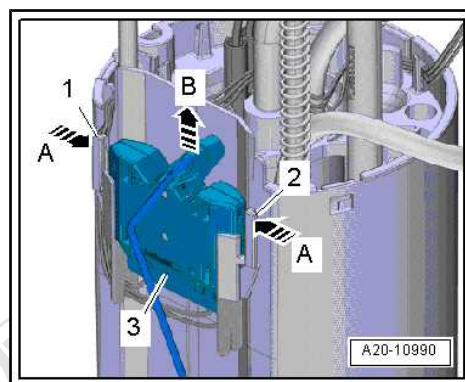
Installation is carried out in the reverse order; note the following:



Note

When plugging in electrical connectors, make sure they engage correctly.

- Insert fuel gauge sender - G- into guides on fuel delivery unit and press downwards until it clicks into place.
- Route electrical wiring at fuel delivery unit and clip in.
- Install fuel delivery unit ⇒ [page 21](#) .



2.5 Checking fuel gauge sender 2 - G169-

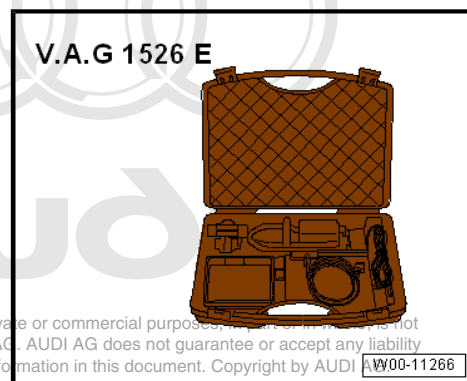
Special tools and workshop equipment required

- ◆ Removal wedge - 3409-

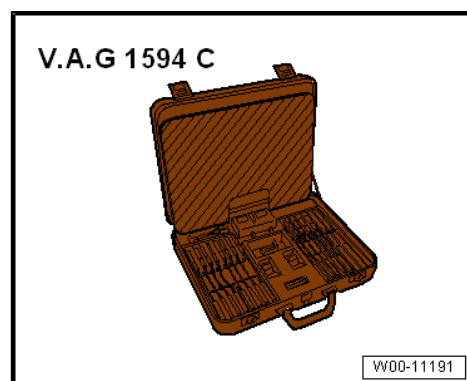


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◆ Hand-held multimeter - V.A.G 1526 E-

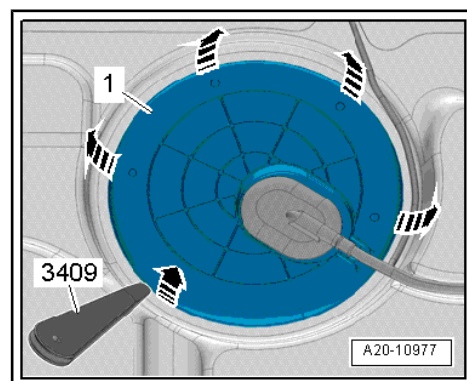


◆ Auxiliary measuring set - V.A.G 1594D-



Procedure

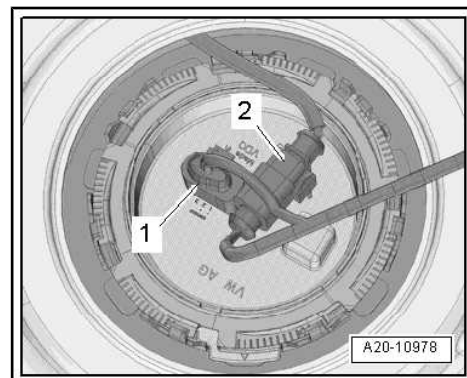
- Move front seats all the way forwards.
- Switch off ignition.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .
- Unclip cover -1- for flange (left-side) at retainers -arrows- using removal wedge - 3409- .



- Release retainer catch and unplug electrical connector -1- on flange (left-side).

 Note

Disregard -item 2-.



With fuel gauge sender 2 - G169- installed:



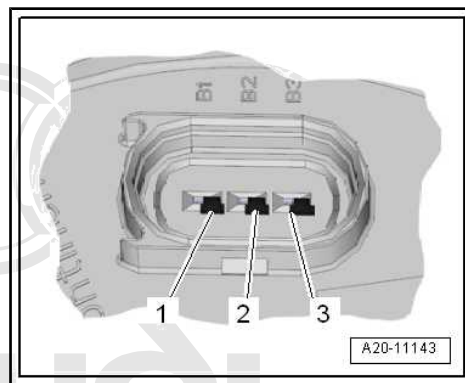
Note

To obtain an exact measurement of the resistance value for the specification "Tank full", the fuel tank must be completely full. For this, drive for at least 500 metres after filling the tank to let air bubbles escape from the fuel tank; then add fuel again.

– Connect multimeter (resistance test) as shown in table.

Measure at contacts	Tank empty	Tank full
1 + 2	approx. 270 Ω	approx. 62.5 Ω
1 + 3	approx. 70 Ω	approx. 277.5 Ω
2 + 3 1)	approx. 340 Ω	approx. 340 Ω

1) Sender in any position



With fuel gauge sender 2 - G169- removed:



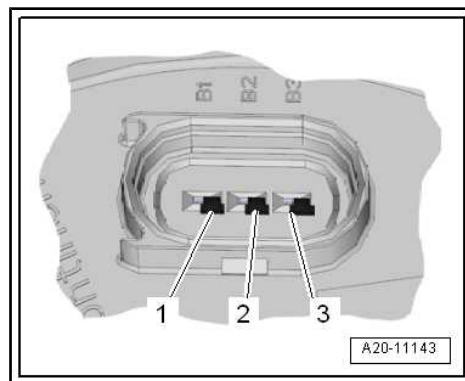
Note

- ◆ To test the maximum and minimum resistance values for "tank full" and "tank empty", remove the fuel delivery unit and move the sender float all the way to its top or bottom position.
- ◆ The following values are obtained with the fuel gauge sender removed, due to the greater travel of the float arm:

– Connect multimeter (resistance test) as shown in table.

Measure at contacts	Tank empty	Tank full
1 + 2	max. 270 Ω	at least 39 Ω
1 + 3	at least 70 Ω	max. 301 Ω
2 + 3 1)	approx. 340 Ω	approx. 340 Ω

1) Sender in any position



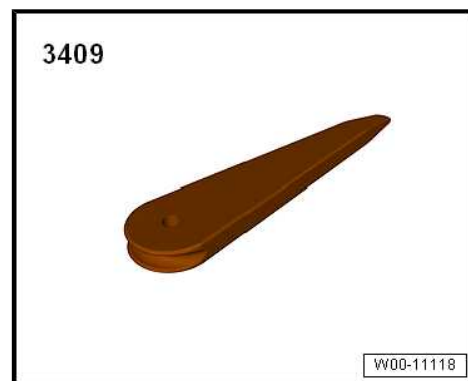
Fuel gauge sender - G- is defective in the following cases:

- ◆ Large differences in test readings
 - ◆ Reading: 0 Ω (short circuit)
 - ◆ Reading: ∞ Ω (open circuit)
 - ◆ No fault in electrical wiring
- Install fuel gauge sender 2 - G169- ➔ [page 30](#) .

2.6 Removing and installing fuel gauge sender 2 - G169-

Special tools and workshop equipment required

◆ Removal wedge - 3409-



◆ Wrench - T10202-



Removing

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Move front seats all the way forwards.
- Switch off ignition.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .



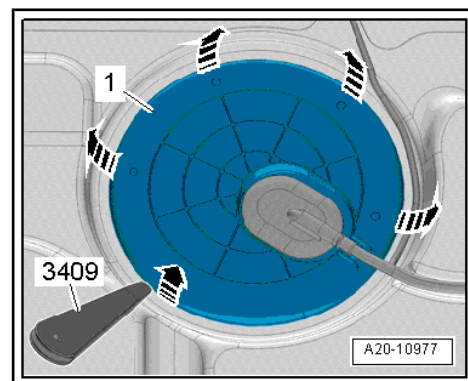
WARNING

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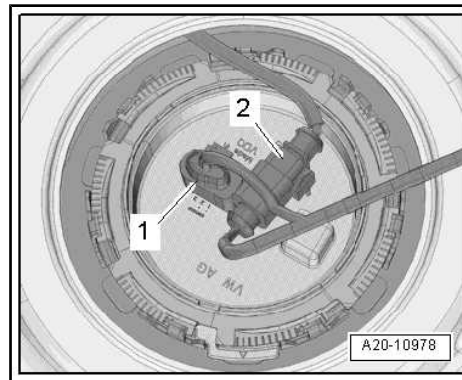
Danger! Fuel may escape.

- ◆ ***The fuel tank must not be more than 1/3 full when removing the fuel gauge sender; otherwise a large amount of fuel will escape.***

- Drain fuel tank if necessary ⇒ [page 7](#) .
- Unclip cover -1- for flange (left-side) at retainers -arrows- using removal wedge - 3409- .



- Release retainer catch and unplug electrical connector -1- on flange (left-side).
- If fitted, disengage electrical connector -2- and move wiring clear to one side.

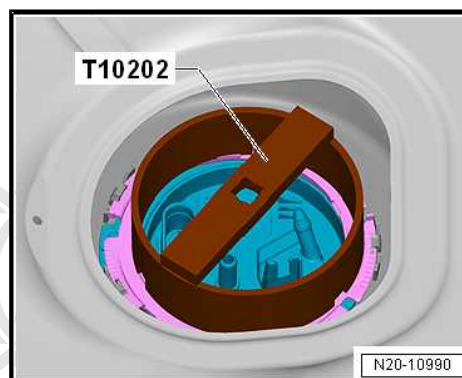


WARNING

Danger! Fuel may escape.

- ♦ *The fuel tank must not be more than $\frac{1}{3}$ full when removing the fuel gauge sender; otherwise a large amount of fuel will escape.*

- Remove locking ring using wrench - T10202- .



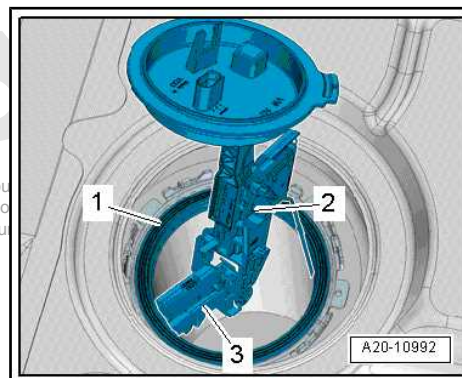
- Carefully pull fuel gauge sender 2 - G169- with suction-jet pump slightly out of opening in fuel tank.
- Remove seal -1- from opening in fuel tank.
- Unclip fuel gauge sender 2 - G169- -item 2- from suction-jet pump -3- and carefully take it out of opening in fuel tank.

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Note

When removing, make sure you do not bend float arm of fuel gauge sender.



Installing



Note

- ♦ *Renew seal.*
- ♦ *Make sure that fuel hoses are securely fitted.*
- ♦ *When plugging in electrical connectors, make sure they engage correctly.*
- ♦ *When inserting, make sure you do not bend float arm of fuel gauge sender.*
- Carefully insert fuel gauge sender 2 - G169- in fuel tank and clip onto suction-jet pump.

- Install new seal -1- for flange (seal must be installed dry).



Caution

Leakage risk

- ◆ *The seal must not be pinched or damaged when installing the flange.*

- Fit flange in correct installation position.
- Lug -2- on flange must point towards hole -arrow- on locking ring and must be between tabs -3 and 4- on fuel tank.

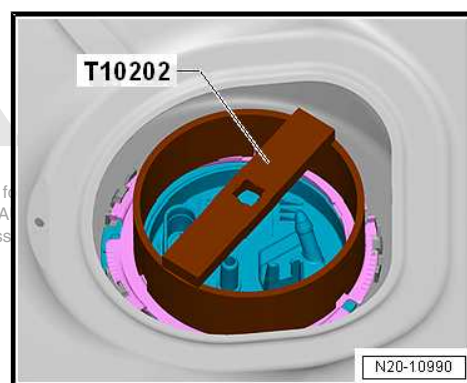
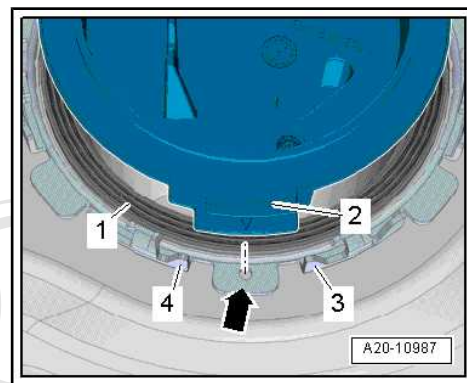
- Fit locking ring and secure using wrench - T10202- .

Remaining installation steps are carried out in reverse sequence; note the following:

- Install rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - fuel delivery unit/fuel gauge senders”, page 20](#)



3 Plug-in connectors

⇒ "3.1 Disconnecting plug-in connectors", page 34

3.1 Disconnecting plug-in connectors

Special tools and workshop equipment required

- ◆ Lever - T10468-



- ◆ Safety goggles
- ◆ Protective gloves (fuel-resistant)

Allocation of plug-in connectors



Note

The plug-in connectors for the fuel lines, vacuum lines, and breather lines are colour coded. There is either a coloured marking on the plug-in connector, or the release tab is the corresponding colour ⇒ page 34.

Colour coding

Plug-in connector	Colour coding on plug-in connector
Fuel supply	Black
Fuel return line	Blue
Breather	White-beige
Vacuum	Green



WARNING

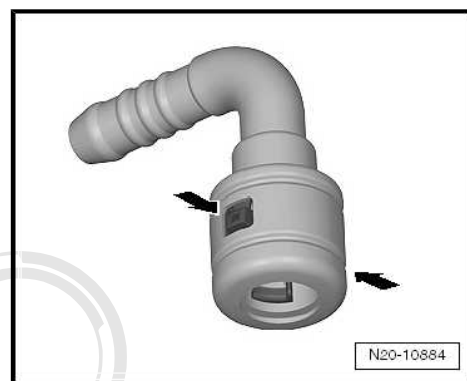
Fuel line is pressurised.

Risk of injury to eyes and skin caused by fuel.

Wear safety goggles and protective clothing to avoid possible injury and skin contact. Before opening hose connections wrap a cloth around the connection. Then relieve pressure by carefully opening the connection.

Version 1

Plug-in connector with release tabs -arrows- on both sides

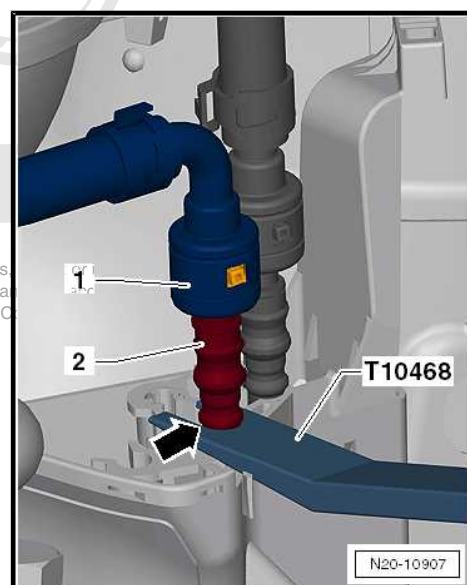


Disconnecting

Counter-hold connection point for fuel -1- in engine compartment.

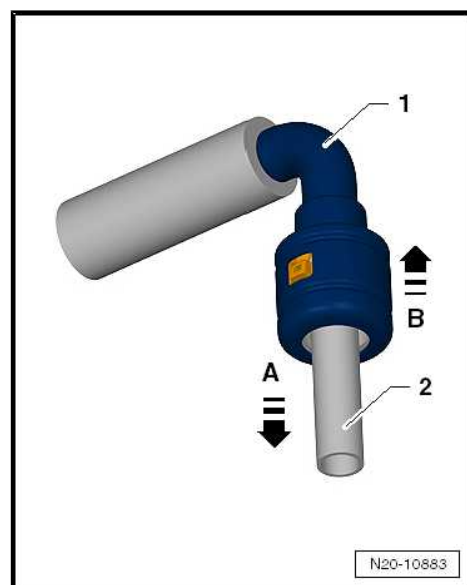
- Insert lever - T10468- between heat shield and stop -arrow- of fuel line -2- and counter-hold.

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Continued for all connection points in fuel system:

- Press plug-in connector -1- in direction of -arrow A-.
- Press in and hold release tabs.
- Unplug plug-in connector -1- from fuel line -2- in direction of -arrow B-.
- When installing observe colour coding ⇒ [page 34](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

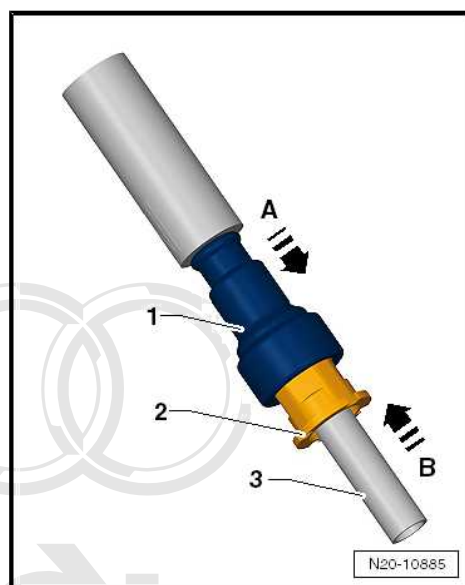
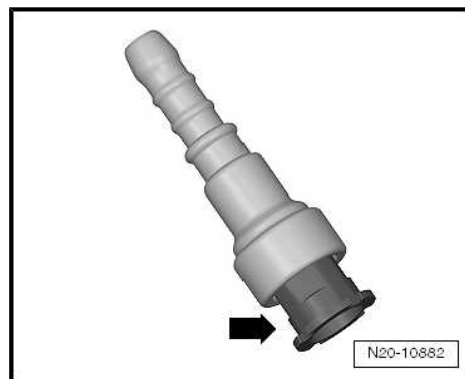


Version 2

Plug-in connector with pull release -arrow-:

Disconnecting

- Press plug-in connector -1- in direction of -arrow A-.
- Pull the pull release catch -2- in direction of -arrow B-.
- Unplug plug-in connector -1- from fuel line -3- in direction of -arrow B-.
- When installing observe colour coding ⇒ [page 34](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

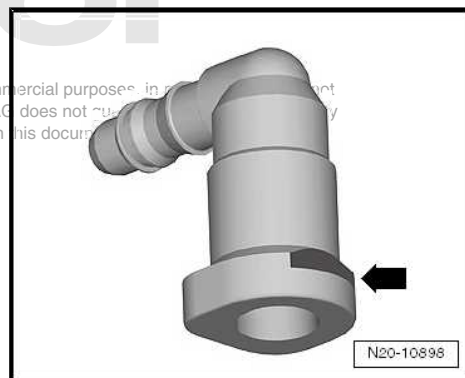


Version 3

Plug-in connector with release tab at front -arrow-:

Disconnecting

- Press release tab -arrow- and disconnect plug-in connectors.
- When installing observe colour coding ⇒ [page 34](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

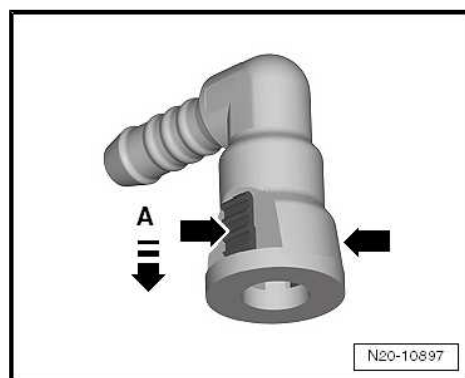


Version 4

Plug-in connector with release tab -arrows- on both sides:

Disconnecting

- Press plug-in connector in direction of -arrow A-.
- Press release tabs -arrows- and disconnect plug-in connector.
- When installing observe colour coding ⇒ [page 34](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

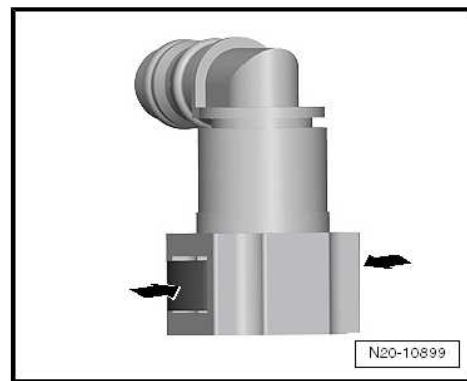


Version 5

Plug-in connector with release tabs -arrows- on both sides:

Disconnecting

- Press release tabs -arrows- and disconnect plug-in connector.
- When installing observe colour coding ⇒ [page 34](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

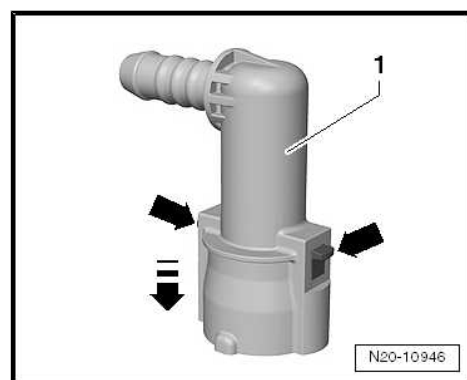


Version 6

Plug-in connector with release tabs -arrows- on both sides:

Disconnecting

- Press and hold plug-in connector -1- in direction of -arrow -.
- Press release tabs -arrows- and disconnect plug-in connector.
- When installing observe colour coding ⇒ [page 34](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

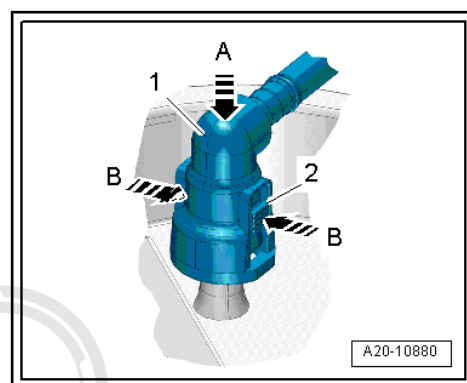


Version 7

Plug-in connector -1- with release tabs -2- on both sides:

Disconnecting

- Press and hold plug-in connector -1- in direction of -arrow A-.
- Press release tabs -2- in direction of -arrow B- and unplug plug-in connector -1-.
- When installing observe colour coding ⇒ [page 34](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.



4 Fuel filter

⇒ [“4.1 Exploded view - fuel filter”, page 38](#)

⇒ [“4.2 Removing and installing fuel filter”, page 39](#)

4.1 Exploded view - fuel filter

1 - Fuel filter housing

- ☐ Removing and installing
⇒ [page 39](#)

2 - Filter element

- ☐ Removing and installing
⇒ [page 39](#)

3 - Filter housing cover with connections

- ☐ For fuel filter housing

4 - Bolt

- ☐ 5x
- ☐ 5 Nm

5 - Hose clips

- ☐ Release with hose clip pliers - V.A.G 1921-

6 - Fuel supply hose

- ☐ From fuel tank
- ☐ Attached to connection marked “VT” on filter housing cover
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 34](#)
- ☐ Secure hose with hose clip and then pull to check that hose is properly secured

7 - Fuel supply hose

- ☐ To high-pressure pump
- ☐ Attached to connection marked “VM” on filter housing cover

- ☐ Secure hose with hose clip and then pull to check that hose is properly secured

8 - Fuel return hose

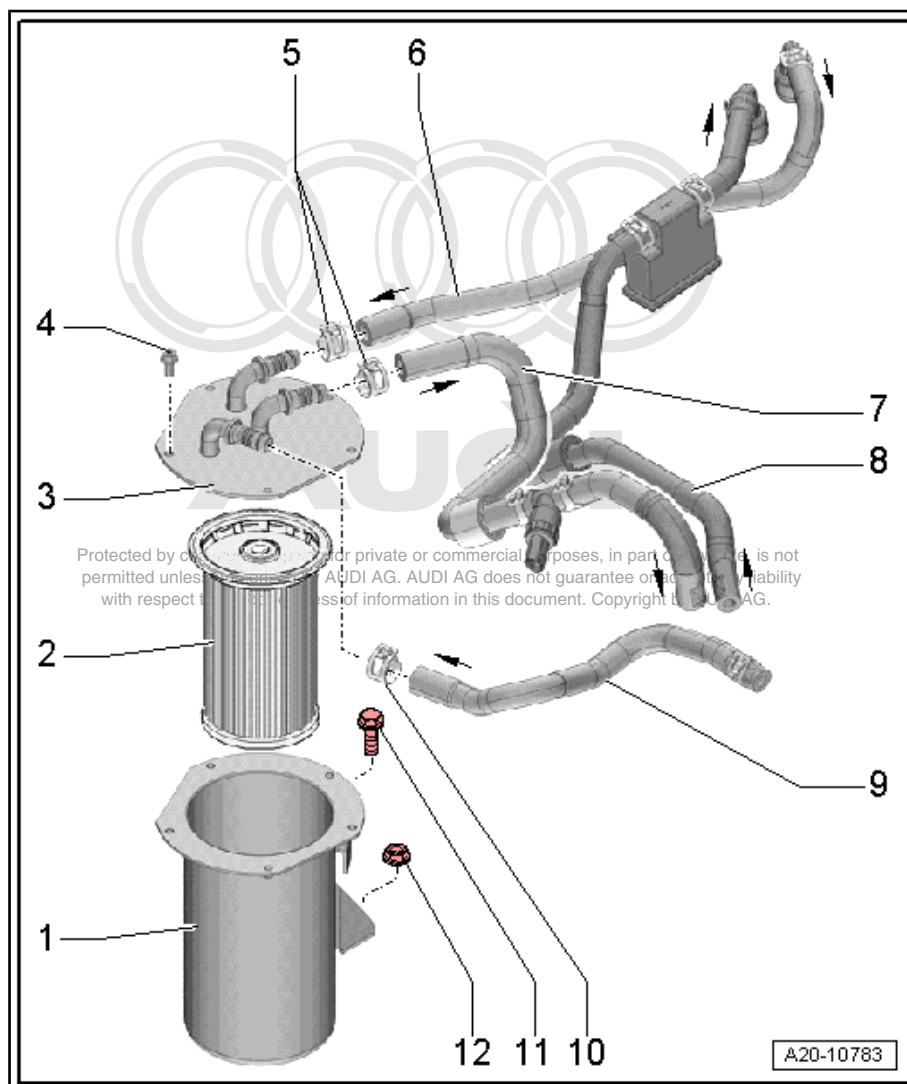
- ☐ From high-pressure pump to fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 34](#)
- ☐ Secure hose with hose clip and then pull to check that hose is properly secured

9 - Fuel return hose

- ☐ From engine
- ☐ Attached to connection marked “RM” on filter housing cover
- ☐ Secure hose with hose clip and then pull to check that hose is properly secured

10 - Hose clip

- ☐ Release with hose clip pliers - V.A.G 1921-



11 - Bolt

- ☐ 2x
- ☐ 8 Nm

12 - Nut

- ☐ 8 Nm

4.2 Removing and installing fuel filter

⇒ [“4.2.1 Removing and installing filter element”, page 39](#)

⇒ [“4.2.2 Removing and installing fuel filter housing”, page 39](#)

4.2.1 Removing and installing filter element

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Removing

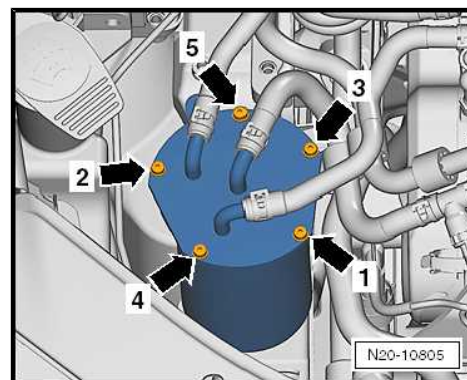
- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Switch off ignition.
- Remove bolts -arrows 1 ... 5- in the sequence shown.



WARNING

Safety risk from fuel escaping at fuel filter housing and filter element.

- ◆ ***Use a cloth to catch escaping fuel.***



- Lift filter housing cover and take out filter element.

Installing

Installation is carried out in the reverse order; note the following:



Caution

Running when dry causes irreparable damage to high-pressure pump.

- ◆ ***If the fuel filter or fuel lines are renewed, it is important to bleed the fuel system before the engine is started for the first time.***

- Bleed fuel system ⇒ Rep. gr. 23 ; Injection system; Filling and bleeding fuel system .

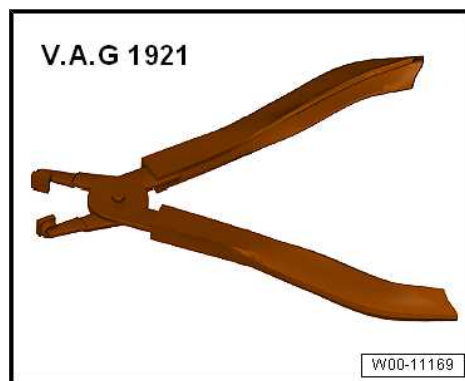
Tightening torques

- ◆ ⇒ [“4.1 Exploded view - fuel filter”, page 38](#)

4.2.2 Removing and installing fuel filter housing

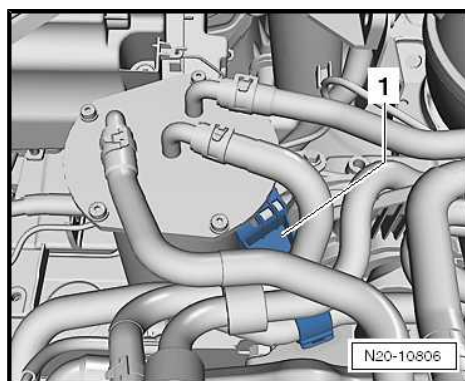
Special tools and workshop equipment required

◆ Hose clip pliers - V.A.G 1921-

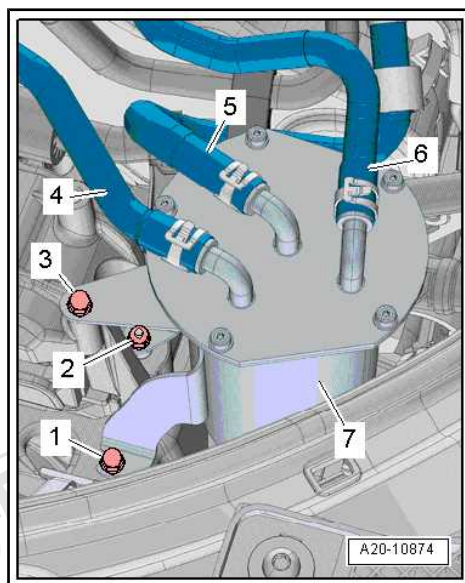


Removing

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Switch off ignition.
- Unclip bracket -1- for coolant hose from fuel filter housing.



- Release hose clips with hose clip pliers - V.A.G 1921- and detach fuel hoses -4, 5 and 6-.
- Remove nut -2- and bolt -3-.
- Loosen bolt -1- and detach fuel filter housing -7-.



Installing

Installation is carried out in the reverse order; note the following:



Note

Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ *Electronic parts catalogue* .

- Secure fuel line with hose clip and then pull to check that fuel line is properly secured.



Caution

Running when dry causes irreparable damage to high-pressure pump.

- ◆ **If the fuel filter or fuel lines are renewed, it is important to bleed the fuel system before the engine is started for the first time.**

- Bleed fuel system ⇒ Rep. gr. 23 ; Injection system; Filling and bleeding fuel system .

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Tightening torques

- ◆ ⇒ [“4.1 Exploded view - fuel filter”, page 38](#)

5 Fuel pump

⇒ ["5.1 Checking fuel system pressurisation pump G6", page 41](#)

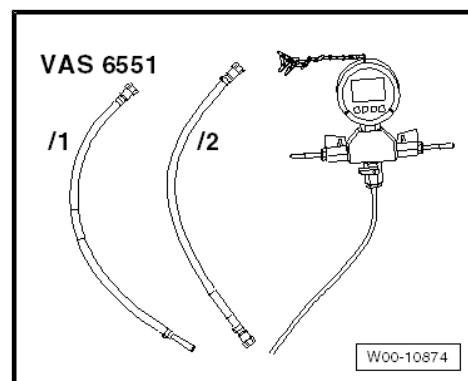
⇒ ["5.2 Removing and installing suction-jet pump", page 47](#)

⇒ ["5.3 Removing and installing fuel pump control unit J538", page 54](#)

5.1 Checking fuel system pressurisation pump - G6-

Special tools and workshop equipment required

- ◆ Pressure tester (diesel) - VAS 6551-



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- ◆ Pressure control valve - VAS 6551/6-



- ◆ Vehicle diagnostic tester
- ◆ Fuel-resistant measuring container

A - Checking fuel delivery rate

- Observe test conditions ➔ [page 4](#) .
- Open tank flap.
- Remove filler cap -2- for fuel filler neck -1-.



Note

Disregard -item 3-.



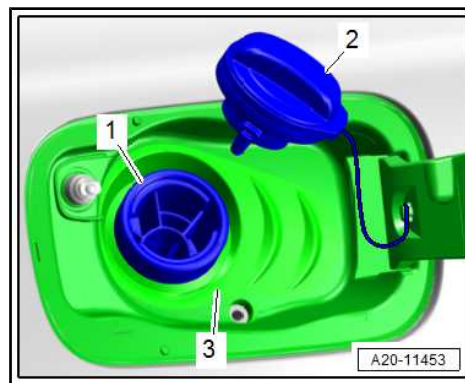
WARNING

The fuel can become extremely hot. This can cause injuries.

- ◆ *In extreme cases the temperature of the fuel lines and the fuel can be up to 100 °C after the engine is switched off. Allow the fuel to cool down before disconnecting the lines - danger of scalding.*
- ◆ *Put on protective gloves.*
- ◆ *Put on safety goggles.*

Risk of injury - fuel system operates under high pressure.

- ◆ *To reduce the pressure in the fuel system, wrap a clean cloth around the connection and carefully loosen the connection.*

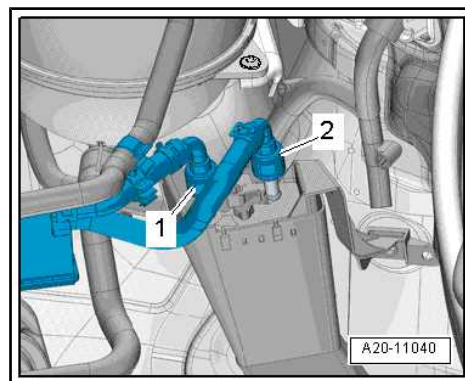


- Disconnect fuel supply line -2-. Disconnecting plug-in connectors ➔ [page 34](#)

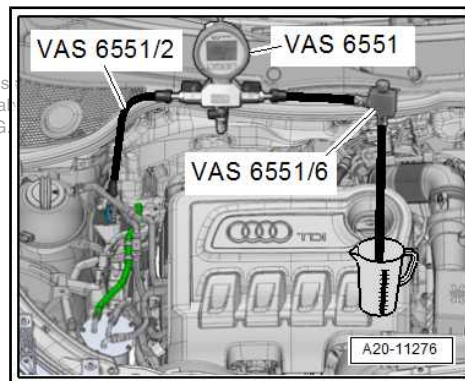


Note

Disregard -item 1-.



- Connect pressure tester (diesel) - VAS 6551- to fuel supply line with hose - VAS 6551/2- .
- Attach pressure control valve - VAS 6551/6- and hold end of hose into fuel-resistant measuring container

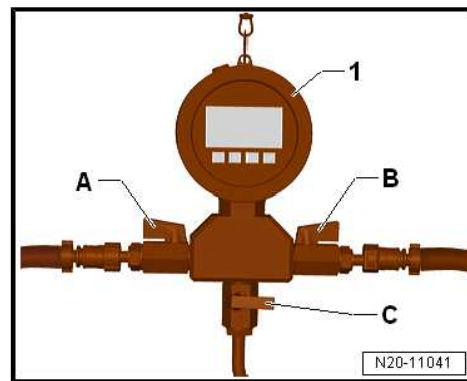


- Switch on pressure tester (diesel) - VAS 6551- -item 1- by pressing **On/Off** button.

 Note

To measure the fuel delivery rate, pressure must first be built up in the fuel supply line; the fuel pump must then operate against this pressure during the measurement. This pressure can be built up using the pressure control valve - VAS 6551/6- as follows:

- Open cut-off valves -A and B-.
- Levers must point in direction of flow.



Caution

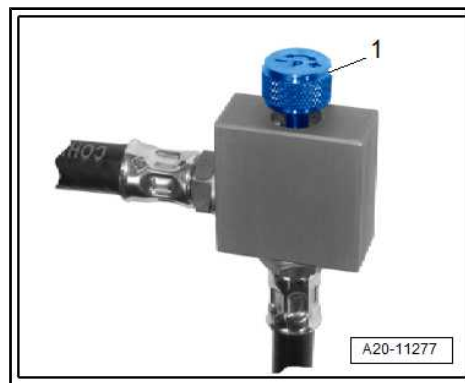
Risk of fuel escaping.

- ◆ ***Cut-off valve -C- must be closed.***
- ◆ ***The lever should point perpendicular to direction of flow.***

- Connect vehicle diagnostic tester .
- Switch on the ignition and select the following menu options on the vehicle diagnostic tester:
 - ◆ **Vehicle self-diagnosis**
 - ◆ **Engine electronics**
 - ◆ **Basic setting**
 - ◆ **Checking fuel system pressurisation pump**
- Press **Start**: The fuel pump will start running.

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- Build up pressure in fuel system by turning adjuster screw -1- on pressure control valve - VAS 6551/6- until correct pressure is reached.
- Specification: 5 bar
- From this point on, do not turn adjuster screw -1-.
- Press **Stop**.
- Drain measuring container.
- For measurement, press **Start** again and let fuel pump run for 15 seconds.
- Press **Stop** after 15 seconds.
- Check amount of fuel delivered in measuring container.
- Specification: minimum delivery rate 600 cm³/15 sec.


If the minimum delivery rate is attained:

- ◆ Fuel supply line and fuel pump are OK.
- ◆ However, there may be a fault in the return line. For Fault Finding, perform "Pressure test for entire system"
⇒ [page 46](#).

If minimum delivery rate is not achieved, check for the following causes:

- ◆ Fuel pump or fuel pressure regulator in fuel tank faulty.
- ◆ Fuel line crushed.


Note

To find the precise cause of the fault, a pressure test must be performed on the fuel supply line as described below.

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B - Pressure test on fuel supply line

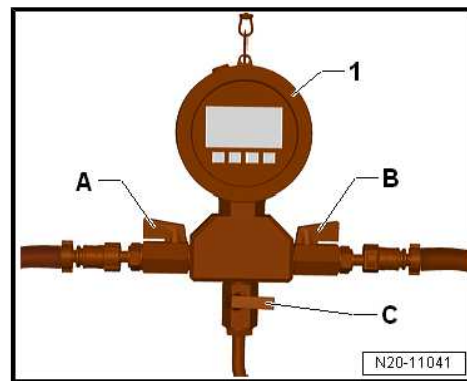
- Leave measuring equipment connected in the same way as for measuring the fuel delivery rate.
- Vehicle diagnostic tester still connected.
- Switch on pressure tester (diesel) - VAS 6551- -item 1- by pressing **[On/Off]** button.
- Open cut-off valve -A-.
- Lever must point in direction of flow.



Caution

Risk of fuel escaping.

- ◆ **Cut-off valves -B and C- must be closed.**
- ◆ **The levers should point perpendicular to direction of flow.**



- Press **[Start]** on vehicle diagnostic tester display to start the fuel pump.
- Press **[Stop]** after 15 seconds.
- Read fuel pressure off pressure tester (diesel) - VAS 6551- .
- Specification: at least 4 bar

If specification is attained although fuel delivery rate was not OK:

- ◆ Fuel supply line crushed.

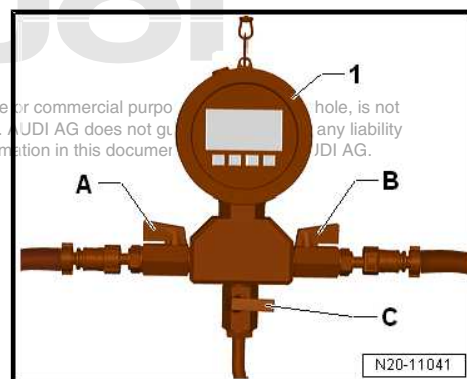
If specification is not attained:

- ◆ Check fuel supply line and its connections for leaks.
- ◆ Fuel pump or fuel pressure regulator in fuel tank faulty.

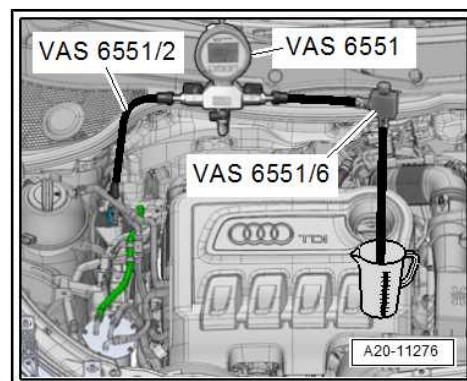


Note

- ◆ **To detect any faults in the fuel return line or in the relief valve of the high-pressure pump, a pressure test must be performed on the entire system as described below.**
- ◆ **Before disconnecting the measuring equipment, release the fuel pressure by opening the cut-off valves -B and C- and allowing fuel to drain off into a measuring container.**



- Detach pressure control valve - VAS 6551/6- and remove together with measuring container.



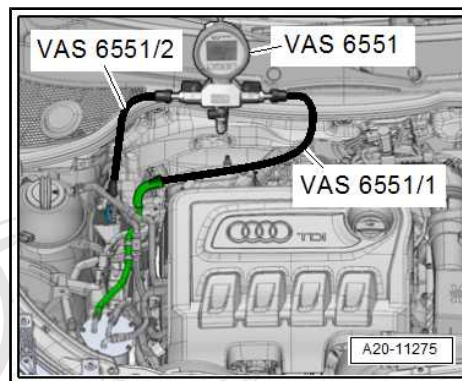
C - Pressure test for entire system

- Fuel delivery rate and pressure test on fuel supply line OK
- Hose - VAS 6551/2- connected to fuel supply line and to pressure tester (diesel) - VAS 6551- .
- Vehicle diagnostic tester connected.
- Connect hose - VAS 6551/1- to fuel supply line leading to high-pressure pump and to pressure tester (diesel) - VAS 6551- .



Note

In this way the pressure tester (diesel) - VAS 6551- is connected into the fuel supply line.



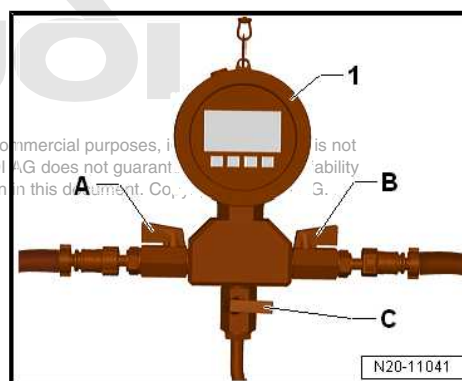
- Switch on pressure tester (diesel) - VAS 6551- -item 1- by pressing **[On/Off]** button.
- Open cut-off valves -A and B-.
- Levers must point in direction of flow.



Caution

Risk of fuel escaping.

- ◆ **Cut-off valve -C- must be closed.**
- ◆ **The lever should point perpendicular to direction of flow.**



- Switch on the ignition and select the following menu options on the vehicle diagnostic tester :
 - ◆ **Vehicle self-diagnosis**
 - ◆ **Engine electronics**
 - ◆ **Basic setting**
 - ◆ **Checking fuel system pressurisation pump**
- Press **[Start]**: The fuel pump will start running.
- Read fuel pressure off pressure tester (diesel) - VAS 6551- .
- Specification: at least 3.5 bar

If specification is not attained although fuel delivery rate was OK:

- ◆ Check fuel lines and their connections for leaks.
- ◆ Relief valve in high-pressure pump not OK

Assembling

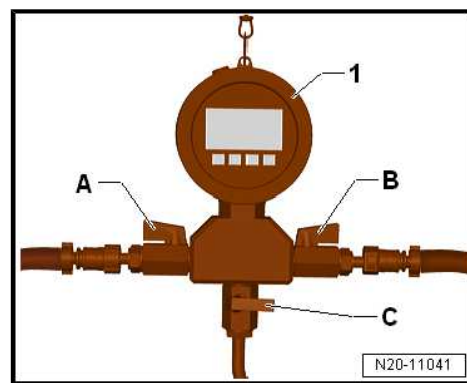
Installation is carried out in the reverse order; note the following:

- The ignition must be switched off.

i Note

Before removing the pressure tester -1-, release the fuel pressure by opening the cut-off valves -B, C- and allowing fuel to drain off into a measuring container.

- Detach pressure tester (diesel) - VAS 6551- together with connecting lines.
- Connect fuel supply line, making sure it engages audibly.
- Press fuel supply line in again and then pull to check that plug-in connector is correctly engaged.



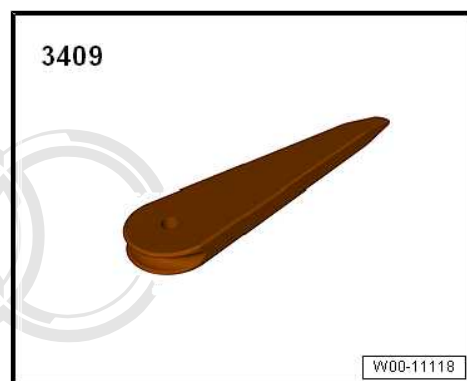
5.2 Removing and installing suction-jet pump

i Note

The suction-jet pump cannot be renewed separately if defective.

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



- ◆ Wrench - T10202-



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Suction-jet pump: operation

The fuel tank is divided into a left and a right chamber. A so-called suction-jet pump -2- is used for delivering the fuel from the left fuel tank chamber to the baffle housing of the fuel delivery unit -1- on the right.

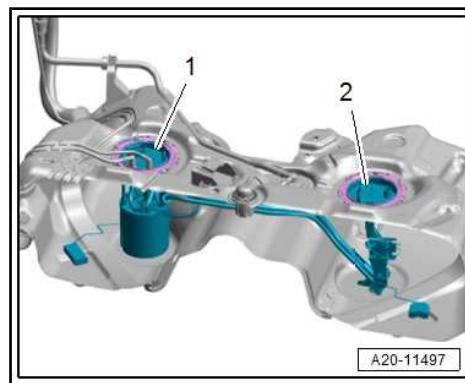
The suction-jet pump operates according to the principle of fluid entrainment: the stream of fuel from the electric fuel pump is passed through a nozzle in the suction-jet pump, and is thus accelerated. The accelerated stream of fuel draws off the surrounding fuel and delivers it to the baffle housing of the fuel delivery unit.

Faults caused by defective suction-jet pump



Caution

If the suction-jet pump is defective, the engine can stop due to fuel starvation when the tank is still $\frac{1}{4}$ full.



If the suction-jet pump is not working, up to 15 litres of fuel (up to approx. $\frac{1}{4}$ of tank capacity) may remain in the left chamber of the tank from where it cannot be drawn into the fuel delivery unit.

If the engine stops due to fuel starvation with the tank up to approx. $\frac{1}{4}$ full, proceed as follows:

- Check fuel pump in **Guided Fault Finding** ⇒ Vehicle diagnostic tester.
- Follow instructions shown on display of vehicle diagnostic tester.
- After reading out data from control unit, press **Go to** key and select function/component.
- Function/component selection:
 - + Power unit (Rep. Gr. 01; 10 - 39)
 - + ... - Engine (Rep. Gr. 01, 10 - 28)
 - + 20 Fuel supply system
 - + Electrical components
 - + G6 - Fuel pump (Rep. Gr. 20)

- Continue to follow instructions shown on display of vehicle diagnostic tester.

If fuel pump is OK, but no fuel is delivered:

- Add approx. 5 litres of fuel.
- Start engine.

If engine now starts:

Renewing flange with suction-jet pump and fuel gauge sender 2 - G169- .

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 4](#) .
- Move front seats all the way forwards.
- Switch off ignition.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .

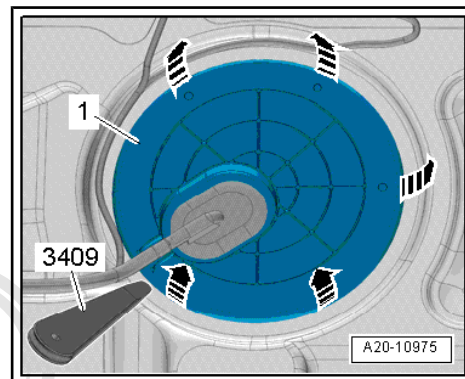


WARNING

Danger! Fuel may escape.

- ◆ ***The fuel tank must not be more than $\frac{1}{3}$ full when removing the fuel delivery unit, otherwise a large amount of fuel will escape.***

- Drain fuel tank if necessary $\Rightarrow$ [page 7](#) .
- Unclip cover -1- for flange (right-side) at retainers -arrows- using removal wedge - 3409- .



- Release retainer catches and unplug electrical connectors -1- and -2- on flange (right-side).



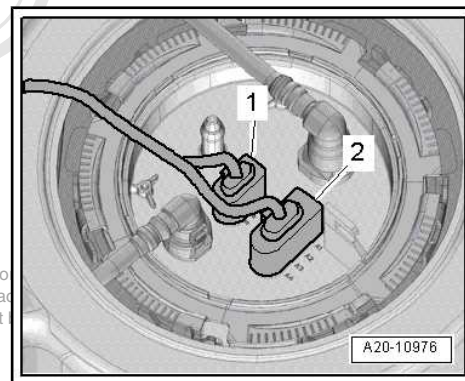
WARNING

The fuel can become extremely hot. This can cause injuries.

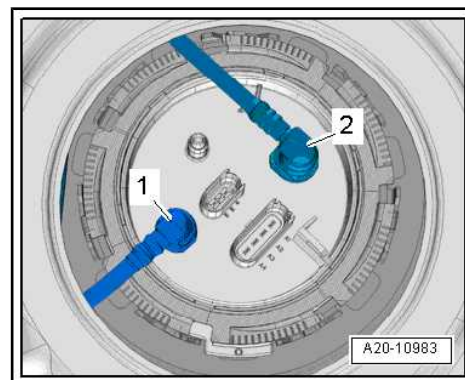
- ◆ ***In extreme cases the fuel lines and the fuel can reach a temperature of 100 °C. Allow the fuel to cool down before disconnecting the lines - danger of scalding.***
- ◆ ***Put on protective gloves.***
- ◆ ***Put on safety goggles.***

Risk of injury - fuel system operates under high pressure.

- ◆ ***To reduce the pressure in the fuel system, wrap a clean cloth around the connection and carefully loosen the connection.***



- Disconnect fuel lines -1 and 2- on flange. Disconnecting plug-in connectors $\Rightarrow$ [page 34](#)



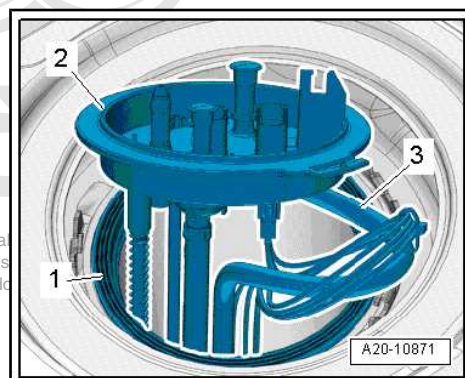
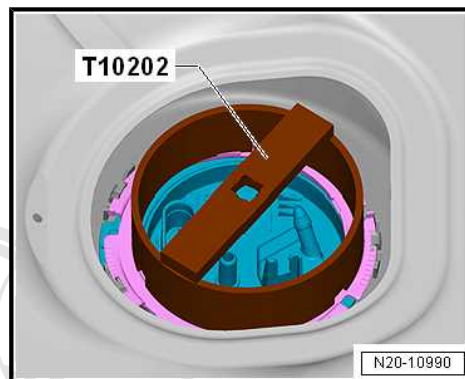

WARNING

Danger! Fuel may escape.

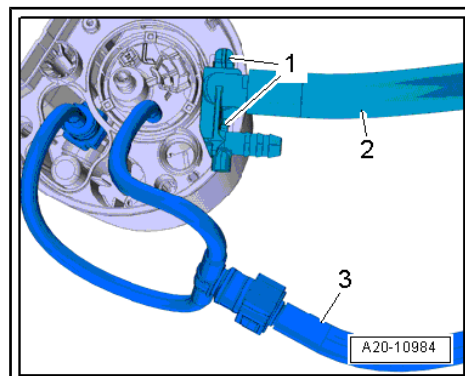
- ◆ ***The fuel tank must not be more than 1/3 full when removing the fuel delivery unit, otherwise a large amount of fuel will escape.***

- Remove locking ring using wrench - T10202- .
- Pull flange -2- slightly out of opening in fuel tank.
- Remove seal -1- from opening in fuel tank.
- Carefully pull flange with fuel line -3- and electrical wiring out of opening in fuel tank.

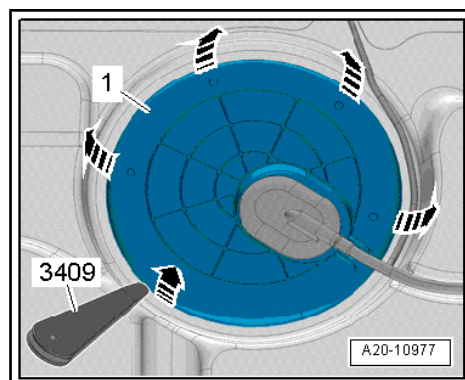
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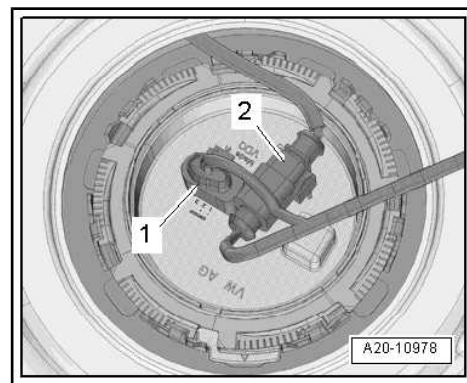
- Reach into opening in fuel tank and disconnect supply line -3- for suction-jet pump. Disconnecting plug-in connectors => [page 34](#)
- Reach through opening in fuel tank, release supply line -2- at retainers -1- and disconnect from fuel delivery unit.



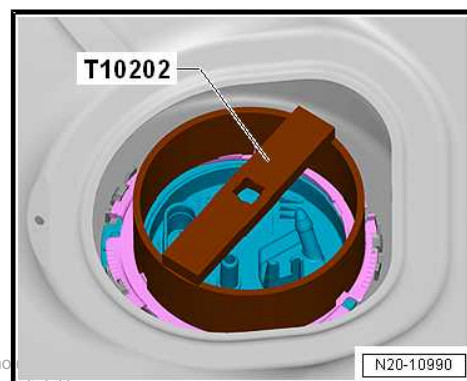
- Unclip cover -1- for flange (left-side) at retainers -arrows- using removal wedge - 3409- .



- Release retainer catch and unplug electrical connector -1- on flange (left-side).
- If fitted, disengage electrical connector -2- and move wiring clear to one side.



- Remove locking ring using wrench - T10202- .



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- Carefully pull fuel gauge sender 2 - G169- with suction-jet pump out of opening in fuel tank.
- Remove seal -1- from opening in fuel tank.
- Unclip fuel gauge sender 2 - G169- -item 2- from suction-jet pump and carefully take it out of opening in fuel tank.



Note

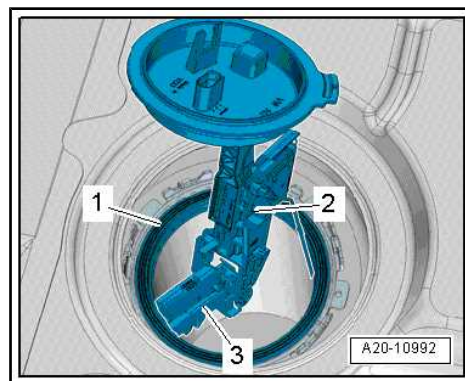
When removing, make sure you do not bend float arm of fuel gauge sender.



WARNING

Safety risk from escaping fuel: the suction-jet pump is still filled.

- ◆ Use a cloth to catch escaping fuel.



- Carefully pull suction-jet pump -3- out of opening in fuel tank.

Assembling



Note

- ◆ Renew seals.
- ◆ Make sure that fuel hoses are securely fitted.
- ◆ When plugging in electrical connectors, make sure they engage correctly.
- ◆ When inserting, make sure you do not bend float arm of fuel gauge sender.
- Insert suction-jet pump in fuel tank through opening (left-side).
- Carefully insert fuel gauge sender 2 - G169- in fuel tank and clip onto suction-jet pump.
- Install new seal -1- for flange (seal must be installed dry).

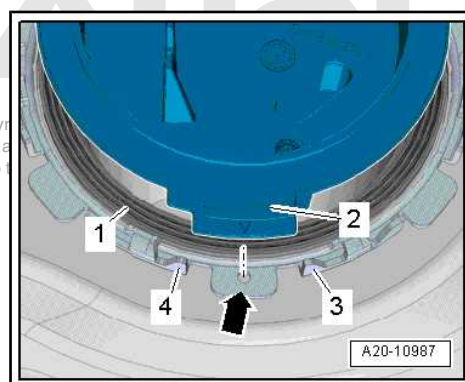


Caution

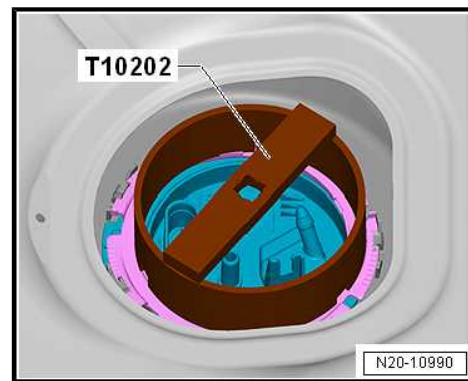
Leakage risk

- ◆ The seal must not be pinched or damaged when installing the flange.

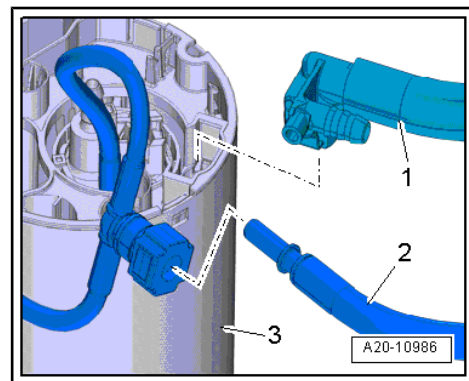
- Fit flange in correct installation position.
- Lug -2- on flange must point towards hole -arrow- on locking ring and must be between tabs -3 and 4- on fuel tank.



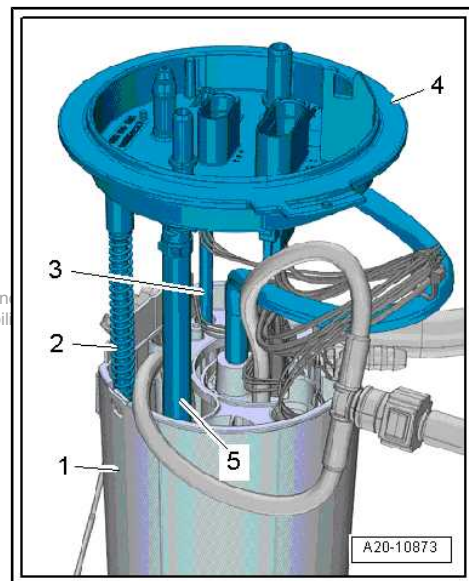
- Fit locking ring and secure using wrench - T10202- .



- Reach through opening in fuel tank and clip supply line -1- onto fuel delivery unit -3- so it engages audibly.
- Connect supply line for suction-jet pump -2- so it engages audibly.
- Press supply line for suction-jet pump and supply line in again and then pull to check that plug-in connectors are correctly engaged.



- Route fuel hoses and electrical wiring as shown in illustration.
- Position flange -4- with guide tubes -2- and -3- and fuel return pipe -5- on fuel delivery unit -1-.
- Insert guide tubes and fuel return pipe into guides as shown in illustration.



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- Install new seal -1- for flange (seal must be installed dry).

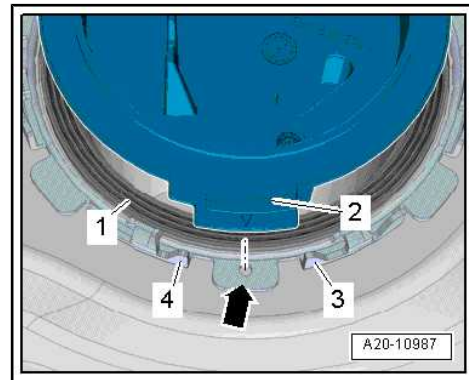


Caution

Leakage risk

- ◆ **The seal must not be pinched or damaged when installing the flange.**

- Fit flange in correct installation position.
- Lug -2- on flange must point towards hole -arrow- on locking ring and must be between tabs -3 and 4- on fuel tank.
- Press flange down against spring pressure.



- Fit locking ring and secure using wrench - T10202- .
- Connect fuel lines so they engage audibly.
- Press fuel lines in again and then pull to check that plug-in connectors are correctly engaged.

Further installation is carried out in the reverse order; note the following:

- Install rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .
- Put at least 5 litres of fuel into tank after installing fuel delivery unit.

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - fuel delivery unit/fuel gauge senders”, page 20](#)

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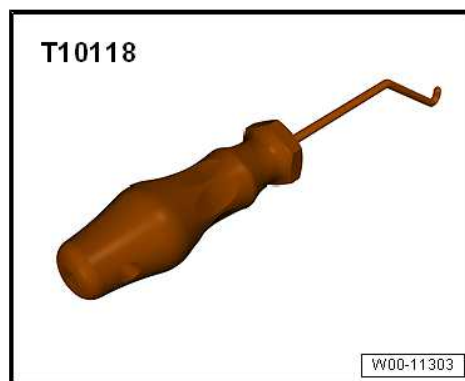
5.3 Removing and installing fuel pump control unit - J538-

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



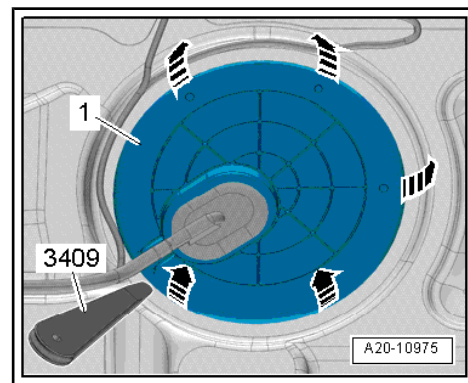
- ◆ Assembly tool - T10118-



Removing

- Move front seats all the way forwards.
- Switch off ignition.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .

- Unclip cover -1- for flange (right-side) at retainers -arrows- using removal wedge - 3409- .



- Feel for recess -arrow- on connector with your finger and hook assembly tool - T10118- into recess.
- Release retaining catches -1- with your finger or a screwdriver and at the same time pull fuel pump control unit - J538- -item 2- out of mounting using assembly tool - T10118- .
- Guide fuel pump control unit - J538- out towards interior between fuel tank and underbody.

Installing

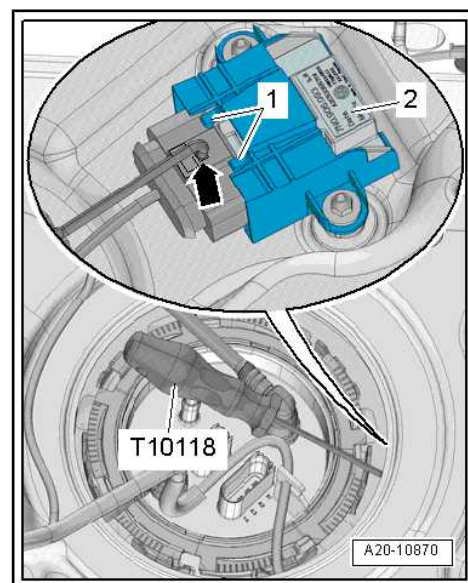
- Insert fuel pump control unit - J538- into mounting and press down until it clicks into place.

Remaining installation steps are carried out in reverse sequence; note the following:



Note

When plugging in electrical connectors, make sure they engage correctly.



- Install rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .



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6 Accelerator mechanism

⇒ ["6.1 Exploded view - accelerator pedal module", page 56](#)

⇒ ["6.2 Removing and installing accelerator pedal module with accelerator position sender G79 / G185", page 56](#)

6.1 Exploded view - accelerator pedal module

1 - Bolt

- ☐ 9 Nm

2 - Mounting

- ☐ For accelerator pedal module

3 - Electrical connector

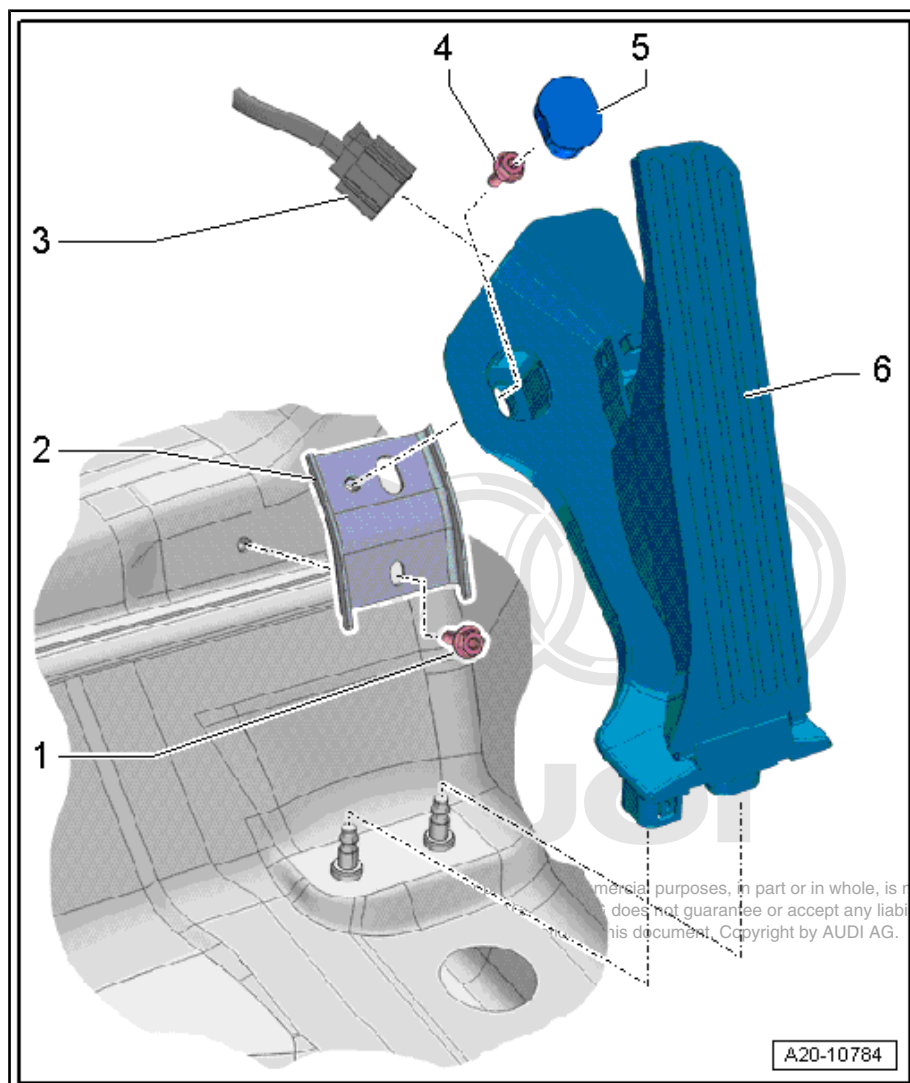
4 - Bolt

- ☐ 9 Nm

5 - Cap

6 - Accelerator pedal module

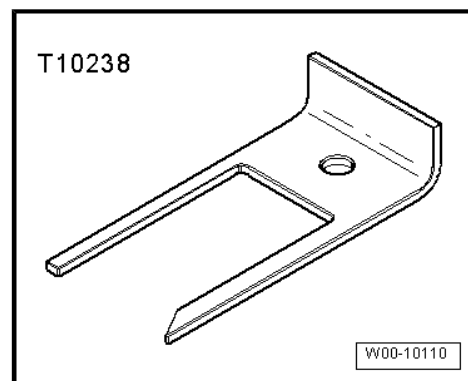
- ☐ With accelerator position sender - G79- and accelerator position sender 2 - G185-
- ☐ Removing and installing
⇒ [page 56](#)
- ☐ Adaption may be required after renewing, depending on engine/ gearbox combination
- ☐ If this menu item is available in "Guided Functions", perform adaption
⇒ Vehicle diagnostic tester



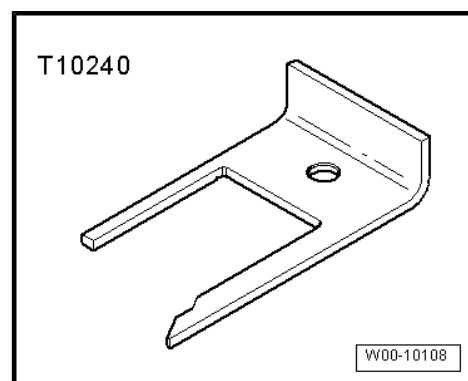
6.2 Removing and installing accelerator pedal module with accelerator position sender -G79- / -G185-

Special tools and workshop equipment required

- ◆ For LHD vehicles: release tool - T10238-

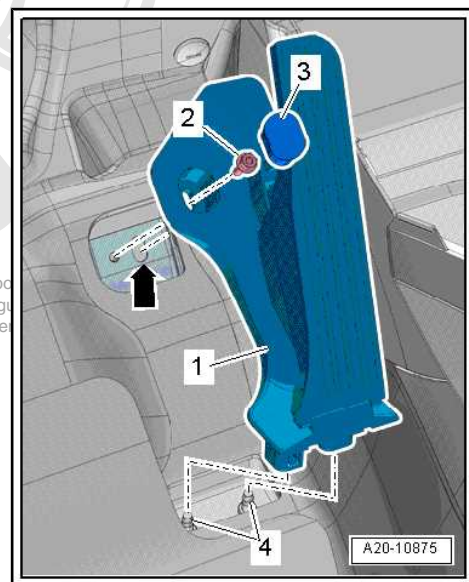


- ◆ For RHD vehicles: release tool - T10240-



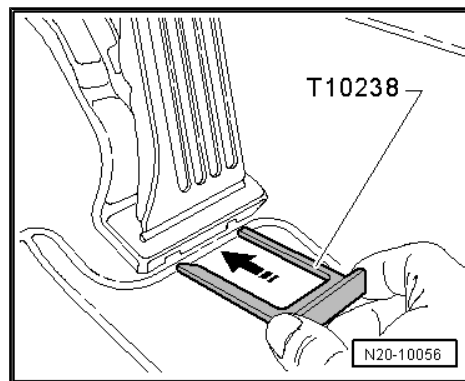
Removing

- Remove steering column cover ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Exploded view - foot rest and floor covering .
- Using a screwdriver, pry off cap -3- and remove bolt -2- beneath cap.
- Detach accelerator pedal module from mounting -arrow-.
- Unclip accelerator pedal module -1- from securing pins -4- and lift off.



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- To do so, slide release tool - T10238- (or release tool - T10240- for RHD vehicles) fully into slots provided -arrow-, as shown.



- Push release tab -1- upwards -arrow- and unplug electrical connector -2- at accelerator pedal module.

Installing

Installation is carried out in the reverse order; note the following:



Note

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When plugging in electrical connectors, make sure they engage correctly.

- Install steering column cover ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Exploded view - foot rest and floor covering .



Note

- ◆ *Adaption must be carried out after renewing, depending on engine/gearbox combination.*
- ◆ *If this menu item is available in "Guided Functions", perform adaption ⇒ Vehicle diagnostic tester.*

Tightening torques

- ◆ ⇒ ["6.1 Exploded view - accelerator pedal module", page 56](#)

