

Workshop Manual

Audi A6 2011 ➤

Audi A7 Sportback 2011 ➤

Fuel supply system, diesel engines									
Engine ID	CLAB	CLAA	CDU C	CGL C	CGL D	CMG B	CGQ B	CKV B	CGL E
	CKV C	CDU D	CPN B	CTC B	CTC C	CVU A	CRT D	CRT E	CRT F
	CVU B	CNH A	CSU E	CSU D	CZJA	CZV B	CZV D	CZV E	CZV A
	CZV C	CZVF	DDC A	DDD A	DDC B				

Edition 06.2016

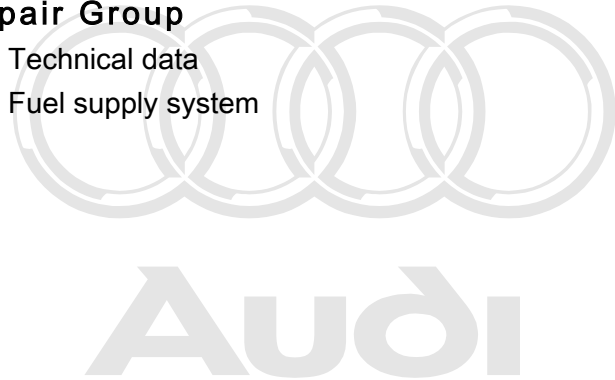
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List of Workshop Manual Repair Groups

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

(ARL004739; Edition 06.2016)

⇒ [“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 3](#)

⇒ [“1.3 Safety precautions when using testers and measuring instruments during a road test”, page 3](#)

⇒ [“1.4 Safety precautions when working on the SCR system”, page 4](#)

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.*

- ◆ *Wear protective gloves.*

- ◆ *Wear safety goggles.*

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.*

- ◆ *Wear protective gloves.*

- ◆ *Wear safety goggles.*

Health risk: avoid skin contact with fuel.

- ◆ *Avoid skin contact with fuel. Wear fuel-resistant gloves.*

Escaping fuel can cause a risk.

- ◆ *The power supply for the fuel system pressurisation pump - G6- must be disconnected before opening the fuel system, since -G6- will be activated briefly when the driver's door is opened with the battery still connected.*

- ◆ *Disconnect power supply by removing fuse for fuel pump control unit - J538- /fuel delivery unit ⇒ Current flow diagrams, Electrical fault finding and Fitting locations, or disconnect battery.*

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

- ◆ 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 9](#).

- ◆ 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).



WARNING

Risk of accident caused by weight of fuel tank

- ◆ ***Fuel tank must be empty when installing and removing to reduce weight. Drain fuel tank if necessary ⇒ [page 9](#) .***

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

- ◆ Persons wearing a cardiac pacemaker must at all times maintain a safe distance from high-voltage components such as injectors and gas-discharge headlights.
- ◆ Always switch off the ignition before connecting or disconnecting tester cables or electrical wiring for the injection or glow plug system.
- ◆ Do not open any fuel line connections while the engine is running.
- ◆ Always switch off ignition before washing engine.
- ◆ When installing, note colour coding of plug-in connectors.
- ◆ Plug-in connectors should engage audibly when connecting.
- ◆ Pull plug-in connectors to check that they are correctly engaged.
- ◆ Erase any entries in event memory resulting from testing or installation ⇒ Vehicle diagnostic tester, Guided Functions, then Interrogate event memory.

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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.*

Automatic drawing back of reducing agent

- After the ignition is switched off, the reducing agent is automatically drawn back into the reducing agent 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 4** .*

2 Repair instructions

⇒ [“2.1 Rules for cleanliness”, page 5](#)

⇒ [“2.2 Test conditions”, page 5](#)

⇒ [“2.3 Contact corrosion”, page 5](#)

⇒ [“2.4 Routing and attachment of pipes, hoses and wiring”, page 6](#)

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2.1 Rules for cleanliness

Even small amounts of dirt can cause malfunctions. When working on the fuel supply system and injection system, pay careful attention to the following basic rules:

- ◆ 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.
- ◆ Make sure that no diesel fuel comes into contact with other components in the engine compartment. If necessary, clean immediately.

2.2 Test conditions

- Battery in standby mode ⇒ Electrical system; Rep. gr. 27 ; Battery; Charging battery .
- Fuses for fuel pump/ fuel pump relay - J17- / fuel pump control unit - J538- OK ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Fuel pump relay - J17- OK; checking in Guided Fault Finding ⇒ Vehicle diagnostic tester.
- 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.

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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2.4 Routing and attachment of pipes, hoses and wiring



Caution

Risk of damage to pipes/hoses/wiring.

- ◆ *The original routing must be restored when installing any kind of pipes/hoses/wiring.*
- ◆ *Due to the restricted space in the engine compartment, it is important to ensure sufficient clearance from all moving or hot components.*

20 – Fuel supply system

1 Fuel tank

⇒ [“1.1 Exploded view - fuel tank”, page 7](#)

⇒ [“1.2 Draining fuel tank”, page 9](#)

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

⇒ [“1.4 Deactivating misfuelling prevention device”, page 15](#)

1.1 Exploded view - fuel tank

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1 - Bolt

- ☐ 20 Nm

2 - Securing strap

- ☐ Mounting components
⇒ [page 9](#)

3 - Buffer

- ☐ Mounting components
⇒ [page 9](#)

4 - Spacer sleeve

- ☐ Mounting components
⇒ [page 9](#)

5 - Fuel supply line

- ☐ To fuel filter
- ☐ Do not kink
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 33](#)

6 - Fuel return line

- ☐ From engine/fuel cooler
- ☐ Do not kink
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 33](#)

7 - Protective plate

- ☐ For fuel filler neck
- ☐ Installed according to vehicle version

8 - Bolt

- ☐ 20 Nm

9 - Bolt

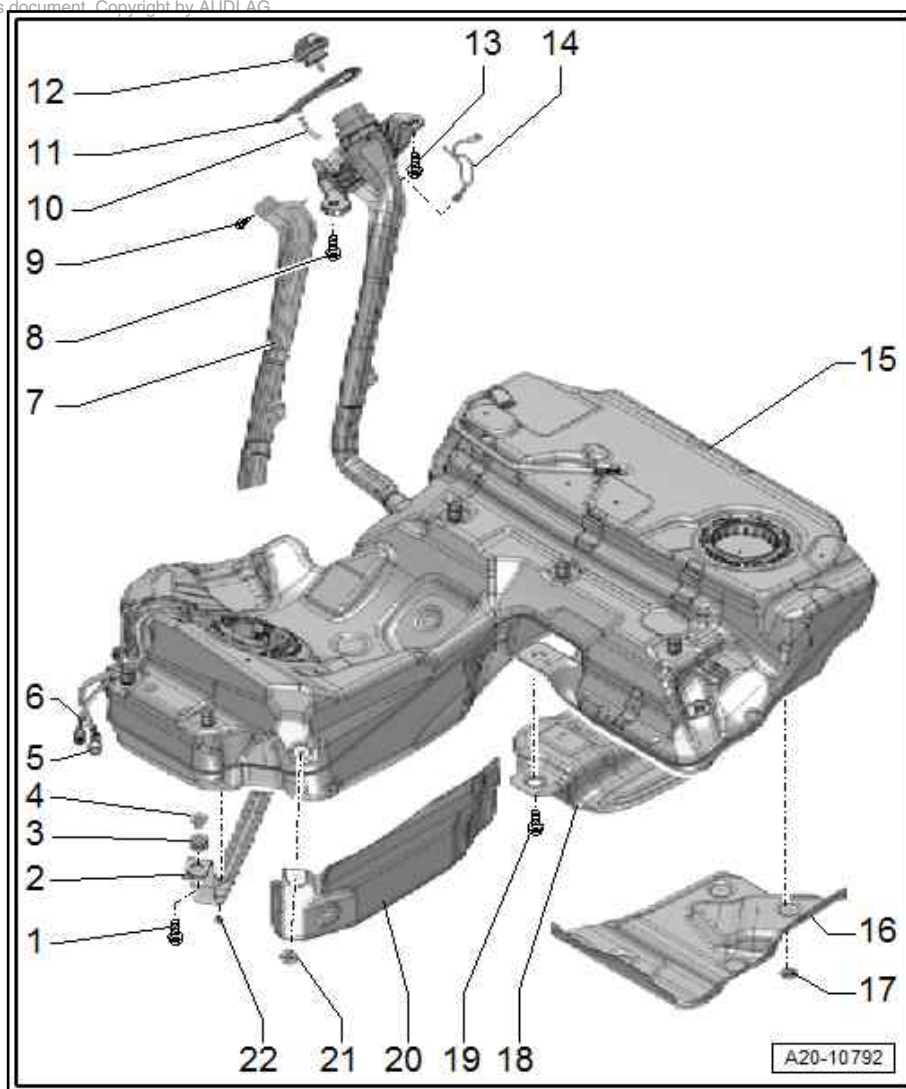
- ☐ 2 Nm

10 - Overflow hose

11 - Tank flap unit

12 - Filler cap

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



13 - Bolt

- ☐ To secure fuel filler neck
- ☐ To eliminate electrostatic charge ⇒ [page 9](#)
- ☐ 20 Nm

14 - Earth connection

- ☐ To eliminate electrostatic charge
- ☐ Note installation position and refer to notes ⇒ [page 9](#)

15 - Fuel tank

- ☐ Removing and installing ⇒ [page 10](#)
- ☐ Vehicles with SCR system: with filler neck for reducing agent ⇒ [page 8](#)
- ☐ Note SVM code (refer to ⇒ Electronic parts catalogue)

16 - Heat shield

- ☐ For fuel tank

17 - Locking washer

- ☐ For heat shield
- ☐ 2 Nm

18 - Support bracket

19 - Bolt

- ☐ 20 Nm

20 - Heat shield

- ☐ For fuel tank

21 - Locking washer

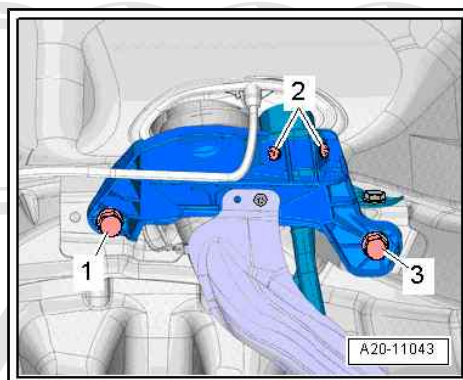
- ☐ For heat shield
- ☐ 2 Nm

22 - Fastener

- ☐ For securing strap

Filler neck for reducing agent for vehicles with SCR system - tightening torque

- Tighten bolts -2- for filler neck for reducing agent to 2.5 Nm.



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Earth connection for fuel filler neck

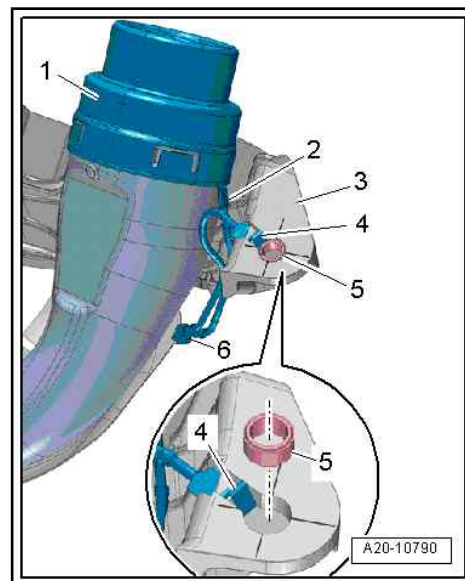
- Route earth connection as shown in illustration.
- Make sure that the following connectors are securely seated:
 - ◆ Connector -2- for earth connection on threaded ring -1- of fuel filler neck
 - ◆ Connector -6- for earth connection on protective cover for fuel filler neck.
- Engage contact tab -4- of earth connection in mounting hole on fuel tank -3- and press in spacer bush -5-.



WARNING

Safety risk due to electrostatic discharge.

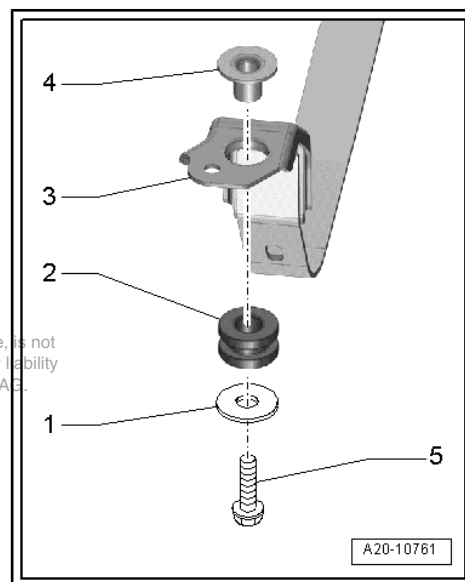
- ◆ **After installation, use an ohmmeter to check the electrical connection between the threaded ring on the fuel filler neck and a bare metal part on the body.**
- **Specification: approx. 0 Ω**



Mounting components for securing strap

- 1 - Washer (front left inside only)
- 2 - Buffer
- 3 - Securing strap
- 4 - Spacer sleeve
- 5 - Bolt

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1.2 Draining fuel tank

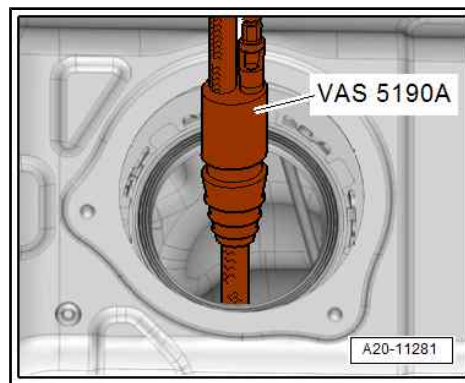
Special tools and workshop equipment required

- ◆ Fuel extractor - VAS 5190A-



Procedure

- Observe safety precautions ➔ [page 1](#) .
- Observe rules for cleanliness ➔ [page 5](#) .
- Remove flange for fuel gauge sender 2 - G169- ➔ [page 28](#) .
- Extract fuel from both fuel tank chambers through opening for fuel gauge sender 2 using fuel extractor - VAS 5190A- .
- Install flange for fuel gauge sender 2 - G169- ➔ [page 28](#) .



1.3 Removing and installing fuel tank

Special tools and workshop equipment required

- ♦ Engine and gearbox jack - V.A.G 1383 A-



Removing

- Observe safety precautions ➔ [page 1](#) .
- Observe rules for cleanliness ➔ [page 5](#) .



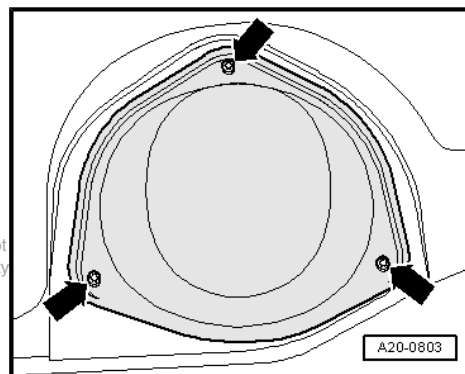
WARNING

Risk of accident caused by weight of fuel tank

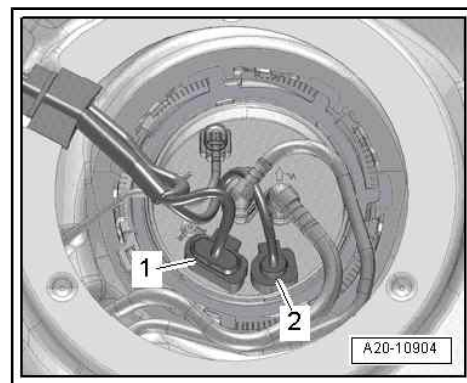
- ♦ *Fuel tank must be empty when it is removed.*

- Drain fuel tank ➔ [page 9](#) .
- Remove rear seat bench ➔ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .
- Fold insulating mat to one side in vicinity of cover for fuel tank flange.
- Unscrew bolts -arrows- and remove cover for flange.

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- Release retainer catches and unplug electrical connectors -1- and -2- on flange.



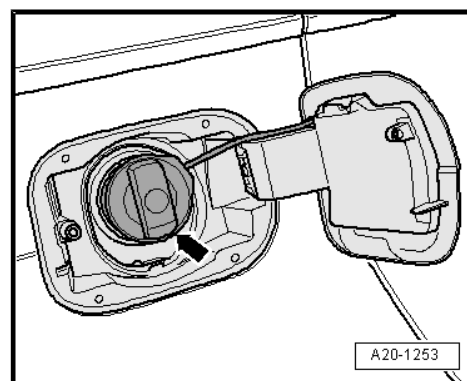
- Open tank flap.
- Clean area around fuel filler neck.
- Remove filler cap -arrow- for fuel filler neck.



Note

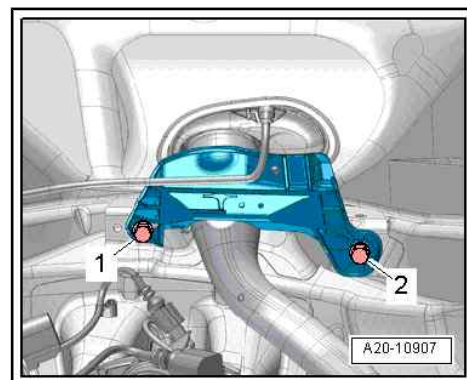
Seal off opening of fuel filler neck with a clean plug to prevent dirt from entering.

- Remove rear wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .



Vehicles without SCR system:

- Remove bolts -1- and -2- for fuel filler neck.



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Vehicles with SCR system:

- Depending on vehicle version, bolts -2- for filler neck for reducing agent must be removed.
- Remove bolts -1- and -3- for fuel filler neck.

All vehicles (continued):

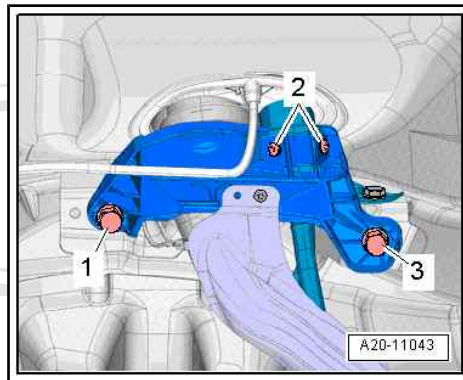
- Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencer; Exploded view - silencer .



WARNING

The vehicle can tip over on the lifting platform when the rear axle is removed.

- ◆ **BEFORE loosening the subframe bolts, take steps to ensure that the vehicle does not tip forwards on the lifting platform ⇒ Running gear, axles, steering; Rep. gr. 42; Subframe; Exploded view - subframe .**



- Remove subframe together with attached components ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe .
- Remove heat shield for exhaust system (centre) ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Removing and installing heat shield for floor .



WARNING

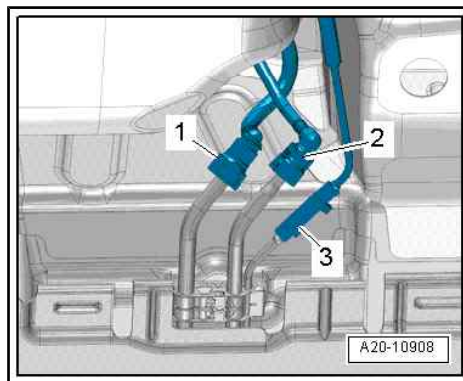
The fuel can become extremely hot. This can cause injuries.

- ◆ **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.**
- ◆ **Wear protective gloves.**
- ◆ **Wear safety goggles.**

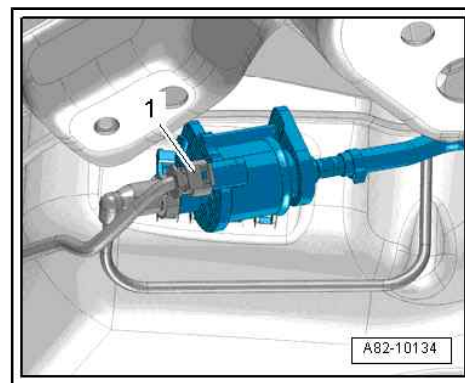
Risk of injury - fuel system operates under pressure.

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

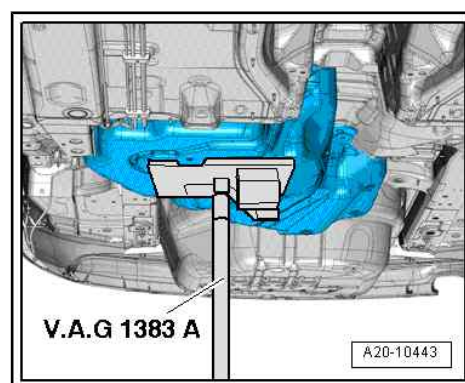
- Vehicles with auxiliary heater: Disconnect fuel line -3- for metering pump.
- Disconnect fuel lines -1 and 2-. Disconnecting plug-in connectors ⇒ [page 33](#)



- Vehicles with auxiliary heater: Unplug electrical connector -1- at metering pump.



- Position engine and gearbox jack - V.A.G 1383 A- 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.



WARNING

Risk of accident caused by weight of fuel tank

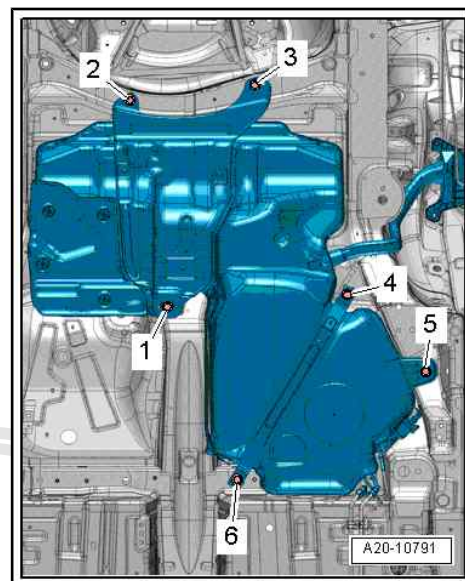
◆ *Fuel tank must be empty when it is removed.*

- Remove bolts -1 ... 6-.
- Then lower fuel tank using engine and gearbox jack - V.A.G 1383 A- , simultaneously guiding fuel tank down by hand.



Note

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



Installing

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

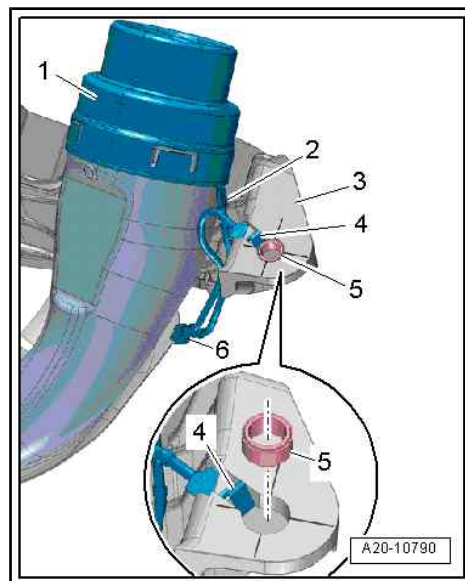
- Check earth wire for traces of oxidation at connectors; remove any oxidation if necessary.
- Check that the following connectors are securely seated:
 - ◆ Connector -2- for earth connection on threaded ring -1- of fuel filler neck
 - ◆ Connector -6- for earth connection on protective cover for fuel filler neck.
- Engage contact tab -4- of earth connection in mounting hole on fuel tank -3- and press in spacer bush -5-.



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**

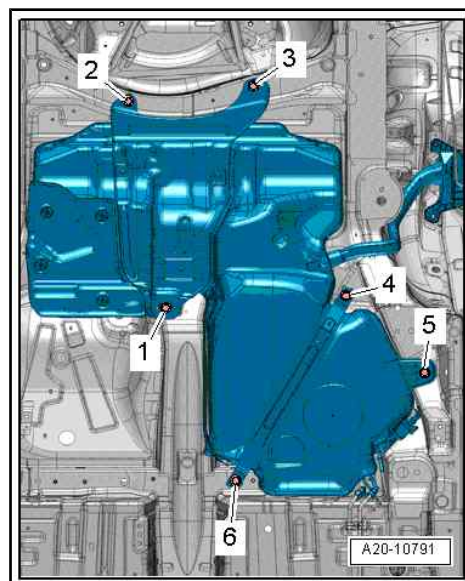


- Check that fuel lines are clipped onto fuel tank.
- Position fuel tank with securing strap and support bracket on underbody using engine and gearbox jack - V.A.G 1383 A- .
- When installing fuel tank, make sure that fuel filler neck is correctly inserted into opening on body.
- Tighten bolts -1 ... 6- for securing strap and support bracket.
- Install cover for flange ➔ [page 18](#) .
- Install rear seat bench ➔ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .
- Vehicles with auxiliary heater: Bleed fuel line to metering pump - V54- (fill line with fuel) ➔ Auxiliary/supplementary heater; Rep. gr. 82 ; Fuel supply system .



Note

Note SVM code (refer to ➔ *Electronic parts catalogue*).



Tightening torques

- ◆ ➔ ["1.1 Exploded view - fuel tank", page 7](#)
- ◆ ➔ [Fig. "Filler neck for reducing agent for vehicles with SCR system - tightening torque", page 8](#)
- ◆ ➔ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe
- ◆ ➔ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Exploded view - heat shield
- ◆ ➔ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers
- ◆ ➔ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear)

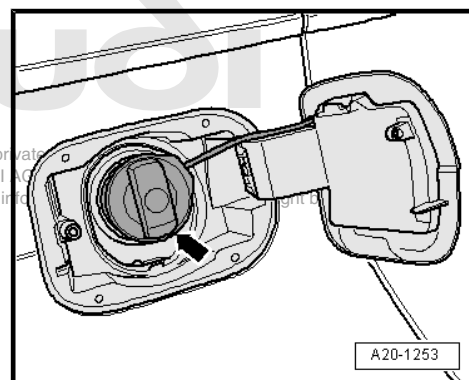
1.4 Deactivating misfuelling prevention device

Special tools and workshop equipment required

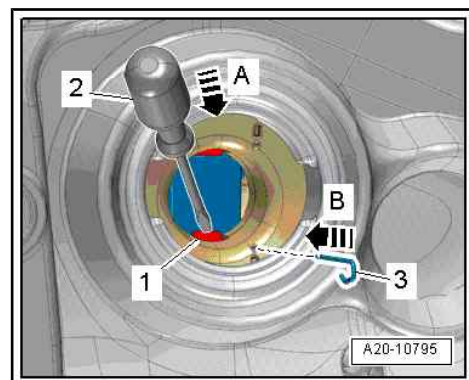
- ◆ Retainer (2x) ⇒ Electronic parts catalogue

Procedure

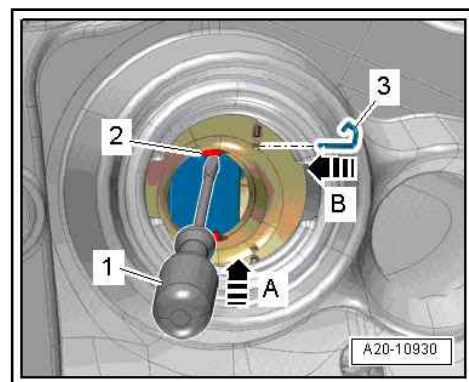
- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 5](#) .
- Open tank flap.
- Clean area around fuel filler neck.
- Remove filler cap -arrow- for fuel filler neck.



- Use screwdriver -2- to press back bottom release tab -1- -arrow A-.
- Insert retainer -3- in hole in filler neck -arrow B- and press in until it engages audibly.



- Use screwdriver -1- to press back top release tab -2- -arrow A-.
- Insert retainer -3- in hole in filler neck -arrow B- and press in until it engages audibly.



2 Fuel delivery unit/fuel gauge senders

⇒ "2.1 Exploded view - fuel delivery unit/fuel gauge senders",
page 16

⇒ "2.2 Removing and installing fuel delivery unit/fuel gauge senders", page 18

⇒ "2.3 Checking fuel gauge sender G ", page 23

⇒ "2.4 Removing and installing fuel gauge sender G ",
page 25

⇒ "2.5 Checking fuel gauge sender 2 G169 ", page 26

⇒ "2.6 Removing and installing fuel gauge sender 2 G169 ", page
28

2.1 Exploded view - fuel delivery unit/fuel gauge senders

1 - Fuel gauge sender - G-

- ☐ Checking resistance values ⇒ page 23
- ☐ Removing and installing ⇒ page 25

2 - Flange

- ☐ Removing and installing ⇒ page 18

3 - Seal

- ☐ Renew
- ☐ Install dry

4 - Locking ring

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

5 - Electrical connector

- ☐ For fuel gauge sender - G- and fuel gauge sender 2 - G169-

6 - Electrical connector

- ☐ For fuel system pressurisation pump - G6-

7 - Electrical connector

- ☐ For fuel pump control unit - J538-

8 - Fuel pump control unit - J538-

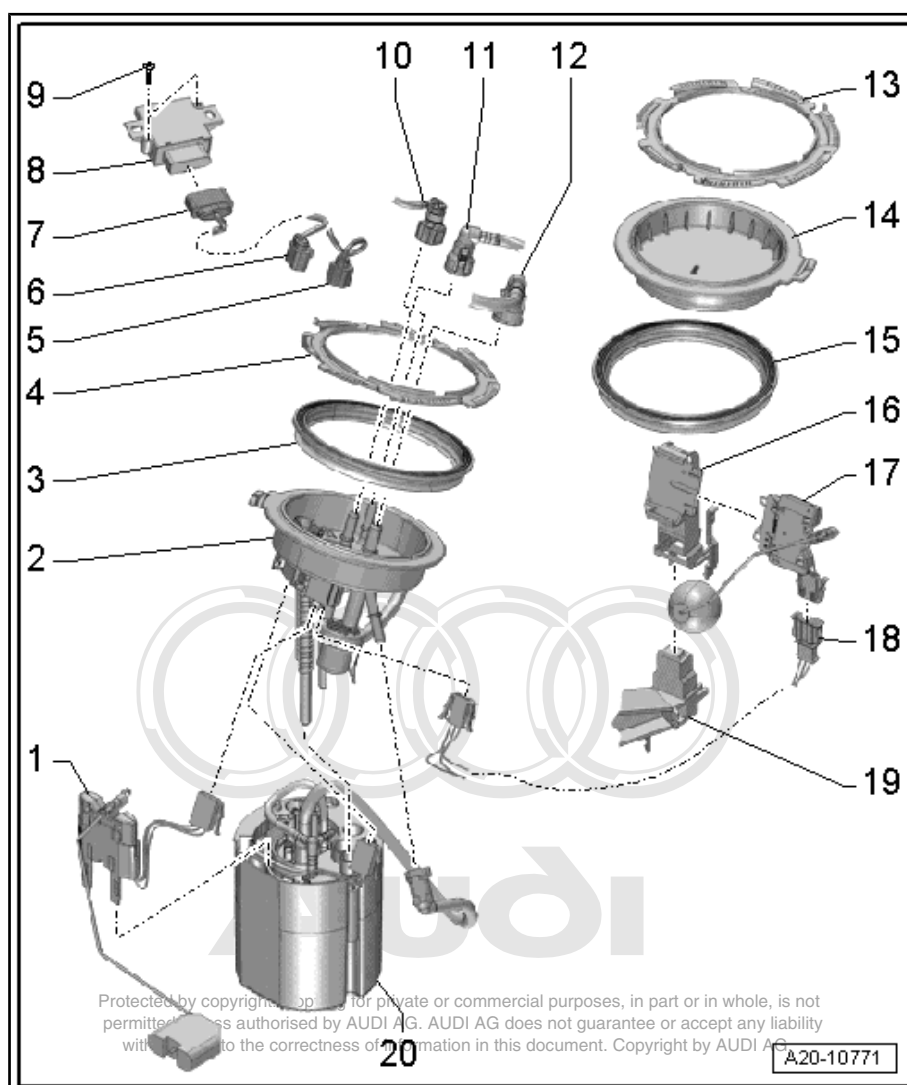
- ☐ Removing and installing ⇒ page 51
- ☐ Checking in Guided Fault Finding ⇒ Vehicle diagnostic tester

9 - Bolt

- ☐ 1.6 Nm

10 - Fuel line to metering pump for auxiliary heater

- ☐ Different versions



- ☐ Do not kink
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 33](#)

11 - Fuel return line

- ☐ From engine
- ☐ Do not kink
- ☐ Note direction of arrow (fuel supply or fuel return system) on flange when installing
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 33](#)

12 - Fuel supply line

- ☐ To fuel filter
- ☐ Do not kink
- ☐ Note direction of arrow (fuel supply or fuel return system) on flange when installing
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors ⇒ [page 33](#)

13 - Locking ring

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

- ☐ Removing and installing ⇒ [page 28](#)

15 - Seal

- ☐ Renew
- ☐ Install dry

16 - Bracket

- ☐ For fuel gauge sender 2 - G169-

17 - Fuel gauge sender 2 - G169-

- ☐ Checking resistance values ⇒ [page 26](#)
- ☐ Removing and installing ⇒ [page 28](#)

18 - Electrical wire

- ☐ For fuel gauge sender 2 - G169-
- ☐ Located in fuel tank
- ☐ To renew electrical wire, cut off both ends with connectors as close as possible to last attachment points. Route new wire parallel to old wiring (old wire remains in fuel tank)

19 - Mounting

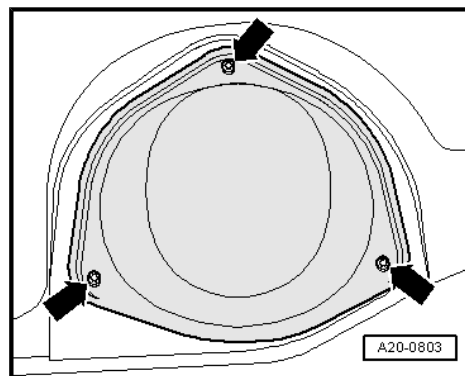
- ☐ Welded to fuel tank

20 - 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 18](#)
- ☐ Put at least 5 litres of fuel into tank after installing

Cover for flange on fuel tank - tightening torque

- Tighten bolts -arrows- for cover to 1.5 Nm.



2.2 Removing and installing fuel delivery unit/fuel gauge senders

Special tools and workshop equipment required

- ◆ Wrench - T10202-



Removing

- Observe safety precautions ➔ [page 1](#) .
- Observe rules for cleanliness ➔ [page 5](#) .

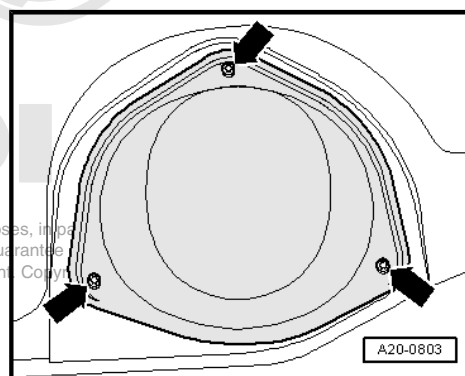


WARNING

Danger! Fuel may escape.

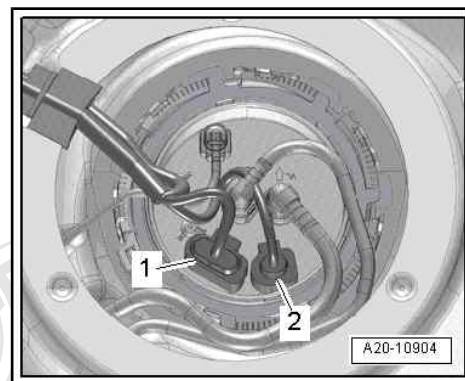
- ◆ ***The fuel tank must not be more than 1/4 full when removing the fuel delivery unit, otherwise a large amount of fuel will escape.***

- Drain fuel tank if necessary ➔ [page 9](#) .
- Move front right seat all the way forwards.
- Remove rear seat bench ➔ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .
- Fold insulating mat to one side in vicinity of cover for fuel tank flange.
- Unscrew bolts -arrows- and remove cover for flange.



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- Release retainer catches and unplug electrical connectors -1- and -2- on flange.



WARNING

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

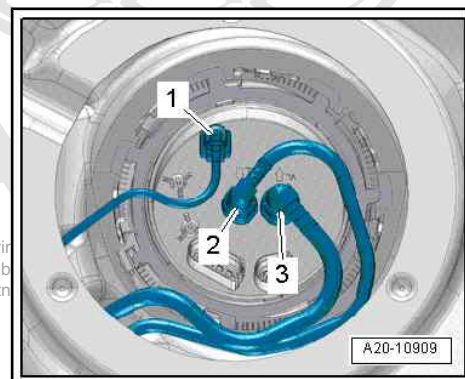
- ◆ *In extreme cases the temperature of the fuel lines and the fuel can be up to 100 °C after the engine is switched off. Allow the fuel to cool down before disconnecting the lines - danger of scalding.*

- ◆ *Wear protective gloves.*

- ◆ *Wear safety goggles.*

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.*



- Disconnect fuel lines -2 and 3-. Disconnecting plug-in connectors ➔ [page 33](#)
- Vehicles with auxiliary heater: Disconnect fuel line -1- for metering pump. Disconnecting plug-in connectors ➔ [page 33](#)



WARNING

Danger! Fuel may escape.

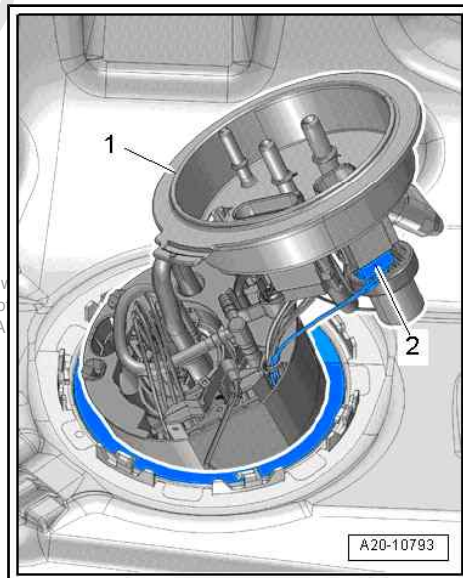
- ◆ *The fuel tank must not be more than 1/4 full when removing the fuel delivery unit, otherwise a large amount of fuel will escape.*

- Remove locking ring using wrench - T10202- .



- Pull flange slightly out of opening in fuel tank and detach seal.
- Release retainer catch and unplug electrical connector -2-.
- Carefully pull flange -1- with fuel lines out of opening in fuel tank.

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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 -2- with fuel gauge sender -1- out through opening in fuel tank.



Note

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

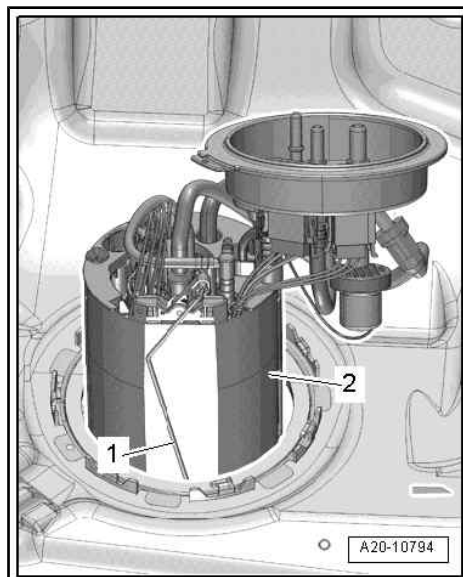
Installing

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

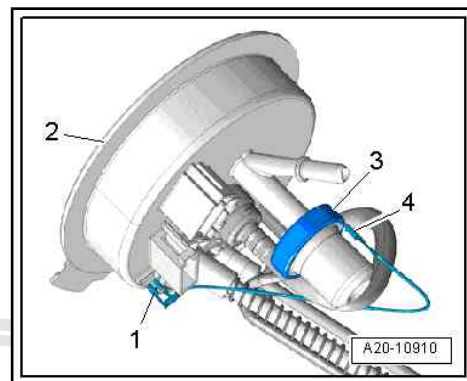


Note

- ◆ Renew seal.
- ◆ Ensure that fuel hoses are securely seated.
- ◆ Take care not to bend float arm of fuel gauge sender -G- when fitting fuel delivery unit.



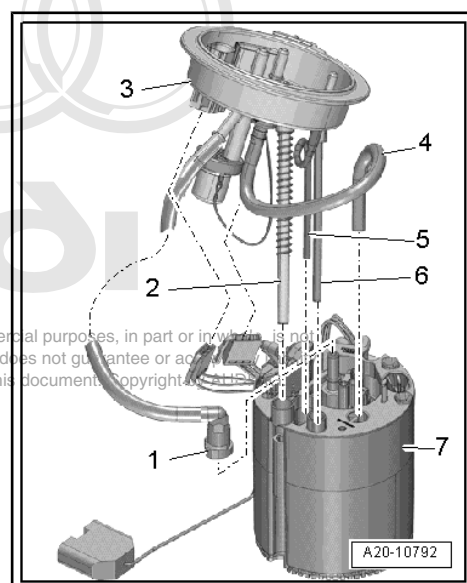
- Route earth wire as shown in illustration.
- 1 - Earth wire to flange
- 2 - Flange
- 3 - Fuel pressure regulator
- 4 - Earth wire to fuel pressure regulator



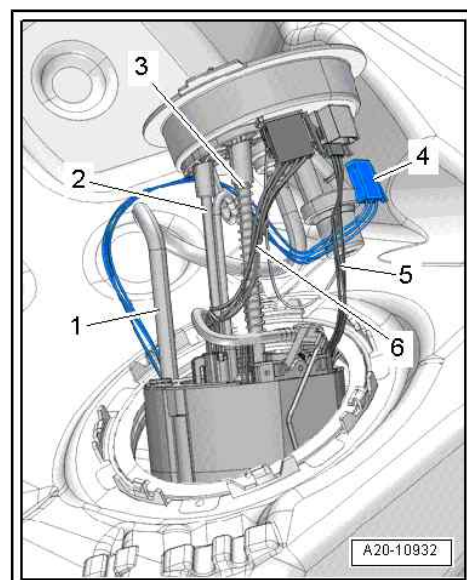
Make sure fuel hoses are properly routed:

- Connect fuel supply hose -1- to fuel delivery unit -7-.
- Insert fuel supply hose -4- into guide on fuel delivery unit -7-.
- Fit guide tubes -2- and -6- with spring of flange -3- in guides on fuel delivery unit.
- Vehicles with auxiliary heater: Make sure that suction pipe -5- leading to metering pump is correctly inserted in guide on fuel delivery unit.

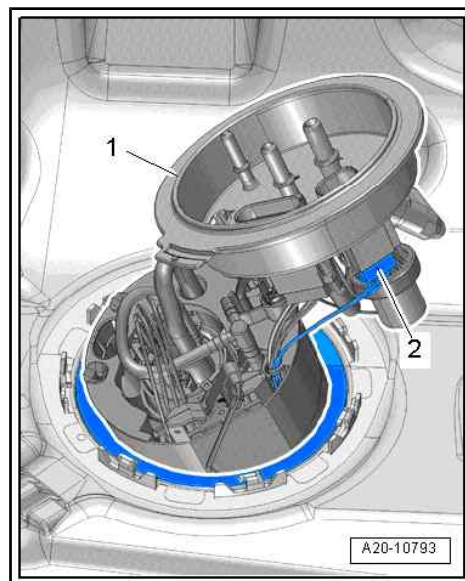
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- Guide electrical wiring for fuel gauge sender 2 - G169- out of fuel tank.
- Carefully insert fuel delivery unit with fuel gauge sender - G- in fuel tank.
- Make sure electrical wiring for fuel gauge sender 2 - G169- is properly routed:
- Guide electrical wiring -4- for fuel gauge sender 2 - G169- through next to guide tubes -2- and -3- and over fuel supply hose -1-.
- Guide electrical wiring -4- past electrical wiring -5- for fuel gauge sender - G- and -6- for fuel system pressurisation pump - G6- .

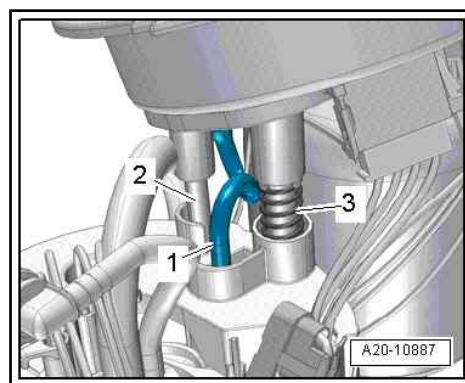


- Plug in electrical connector -2- for fuel gauge sender 2 - G169- at flange -1- and make sure it is correctly engaged.



Check:

- Guide tubes -2- and -3- of flange must be inserted in guides on fuel delivery unit.
- Vehicles with auxiliary heater: Suction pipe -1- leading to metering pump for auxiliary heater must be inserted in guide on fuel delivery unit.



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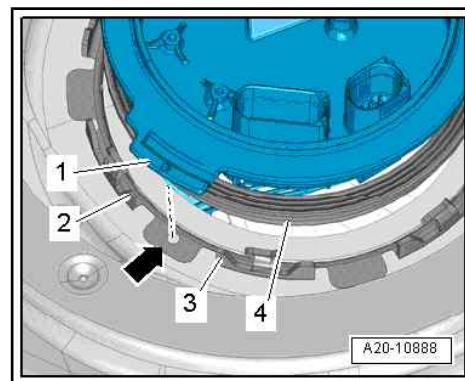
- Install new seal -4- for flange (seal must be installed dry).



Caution

Leakage risk

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



- Fit flange in correct installation position.
- Lug -1- on flange must point towards hole -arrow- on locking ring and must be between tabs -2 and 3- on fuel tank.
- Connect fuel lines so they engage audibly.
- Plug in electrical connectors and make sure they are securely engaged.
- Install cover for flange ⇒ [page 18](#) .
- 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.
- Vehicles with auxiliary heater: Let auxiliary heater run with full load for 10 minutes to bleed fuel line leading to metering pump.

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - fuel delivery unit/fuel gauge senders”, page 16](#)

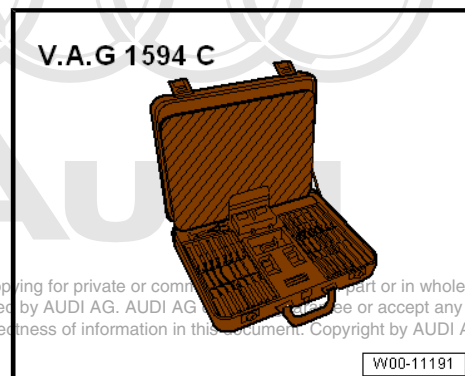
2.3 Checking fuel gauge sender - G-

Special tools and workshop equipment required

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



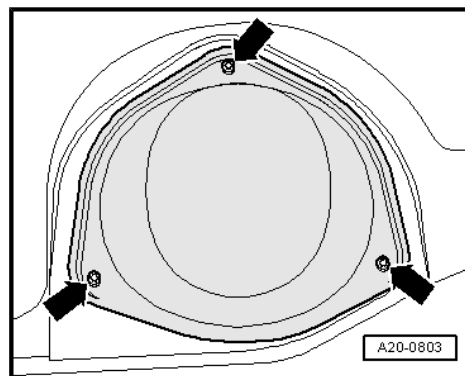
- ◆ Auxiliary measuring set - V.A.G 1594C-



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Procedure

- Move front right seat all the way forwards.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .
- Fold insulating mat to one side in vicinity of cover for fuel tank flange.
- Unscrew bolts -arrows- and remove cover for flange.

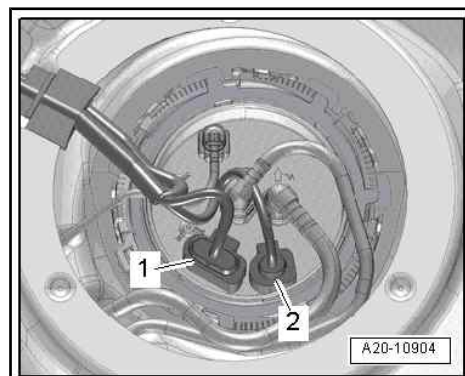


- Release retainer catch and unplug electrical connector -2- on flange.



Note

Disregard -item 1-.



Fuel gauge sender - G- installed:



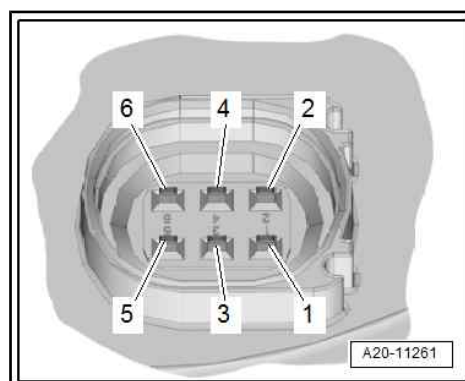
Note

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
2 + 4	254 ... 276 Ω	53 ... 71 Ω
2 + 6	86 ... 64 Ω	287 ... 269 Ω
4 + 6 ¹⁾	approx. 340 Ω	approx. 340 Ω

1) Sender in any position



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Fuel gauge sender - G- removed:



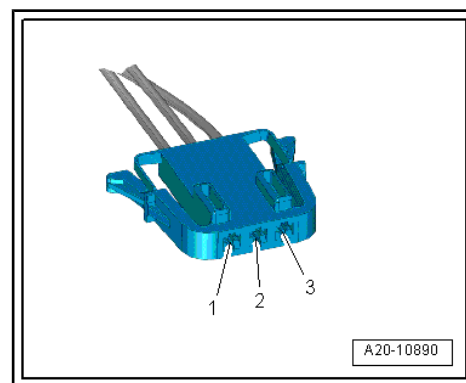
Note

- ◆ 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 delivery unit 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 + 3	max. 53.4 Ω	at least 272.7 Ω
2 + 3	at least 272.7 Ω	max. 53.4 Ω
1 + 2 ¹⁾	approx. 340 Ω	approx. 340 Ω
1) Sender in any position		

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

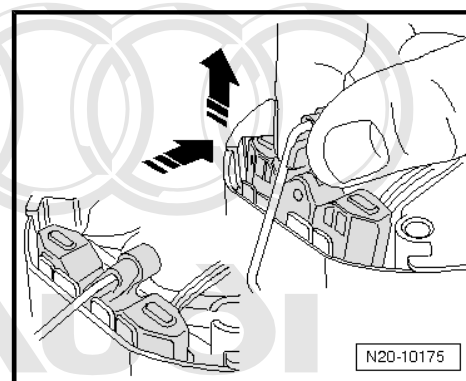
- ◆ Large differences in test readings
- ◆ Reading: 0 Ω (short circuit)
- ◆ Reading ∞ Ω (open circuit)
- ◆ No fault in electrical wiring
- Removing and installing fuel delivery unit/fuel gauge senders
 ⇒ [page 18](#)



2.4 Removing and installing fuel gauge sender - G-

Removing

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 5](#) .
- Remove fuel delivery unit ⇒ [page 18](#) .
- Pull fuel gauge sender - G- inwards slightly and then lift out -arrows-.

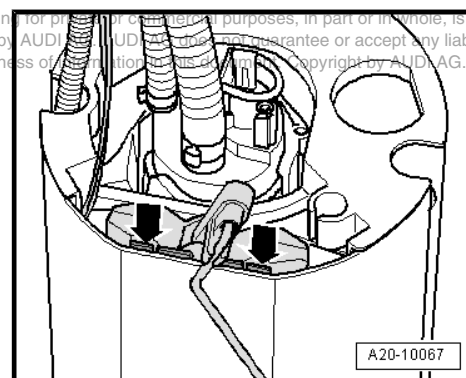


- If necessary, release retaining tabs -arrows- using a screwdriver.
- Release retainer catch and unplug electrical connector on flange.

Installing

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

- Insert fuel gauge sender - G- into guides on fuel delivery unit and press downwards until it clicks into place.
- Plug in electrical connector and make sure it is correctly engaged.
- Install fuel delivery unit ⇒ [page 18](#) .



2.5 Checking fuel gauge sender 2 - G169-

Special tools and workshop equipment required

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



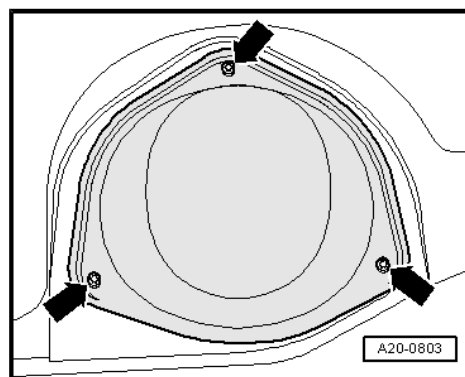
- ◆ Auxiliary measuring set - V.A.G 1594C-



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Procedure

- Move front left seat all the way forwards.
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .
- Fold insulating mat to one side in vicinity of cover for fuel tank flange.
- Unscrew bolts -arrows- and remove cover for flange.



- Release retainer catch and unplug electrical connector -2- on flange.

i Note

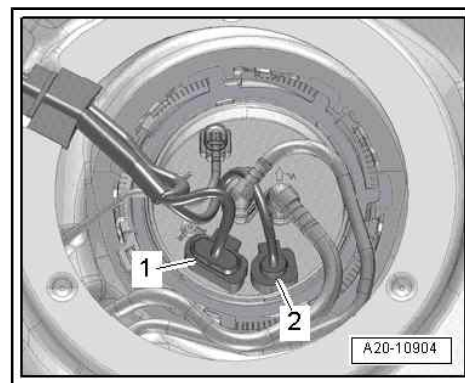
Disregard -item 1-.



Caution

Risk of incorrect measurements.

- ◆ *When measuring the resistance values when the tank is "empty", the results may be incorrect because there could be some fuel left in the side chamber of the fuel tank. To attain the measured values specified below the remaining fuel must be drawn out of the tank after opening the flange ➔ [page 28](#).*

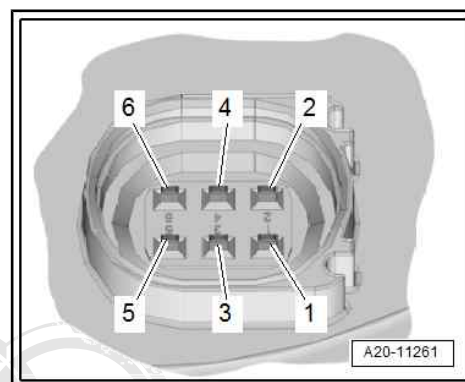


With fuel gauge sender 2 - G169- installed:

i 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	65 ltr. tank:		75 ltr. tank:	
	Tank empty	Tank full	Tank empty	Tank full
1 + 3	249 ... 286 Ω	51 ... 146 Ω	249 ... 286 Ω	51 ... 90 Ω
1 + 5	54 ... 91 Ω	289 ... 194 Ω	54 ... 91 Ω	289 ... 250 Ω
3 + 5 ¹⁾	approx. 340 Ω	approx. 340 Ω	approx. 340 Ω	approx. 340 Ω
¹⁾ Sender in any position				

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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 gauge sender 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 + 3	max. 55 Ω	at least 281.8 Ω
2 + 3	at least 281.8 Ω	max. 55 Ω
1 + 2 ¹⁾	approx. 340 Ω	approx. 340 Ω
¹⁾ Sender in any position		

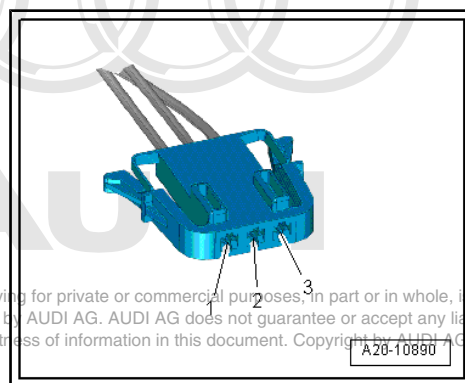
Fuel gauge sender 2 - G169- is defective in the following cases:

- ◆ 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 28](#) .

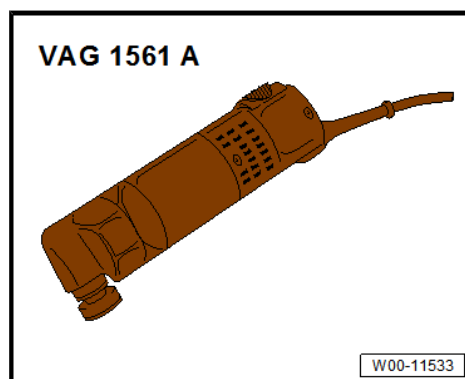
2.6 Removing and installing fuel gauge sender 2 - G169-

Special tools and workshop equipment required

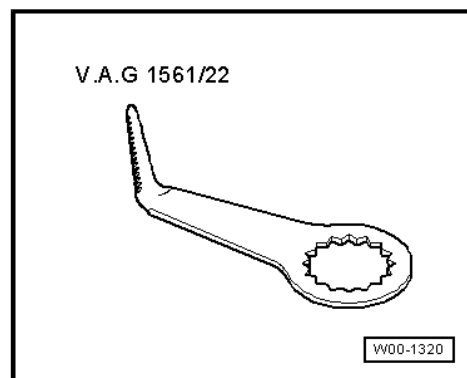
- ◆ Removal wedge - 3409-



- ◆ Electric cutter - V.A.G 1561A-



- ◆ Blade (L-shaped, 25.4 mm) - V.A.G 1561/22-



- ◆ Wrench - T10202-



- ◆ Adhesive sealant ⇒ Electronic parts catalogue

Removing

- Observe safety precautions ⇒ [page 1](#) .
- Observe rules for cleanliness ⇒ [page 5](#) .
- Remove luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing luggage compartment floor .

A7 Sportback:

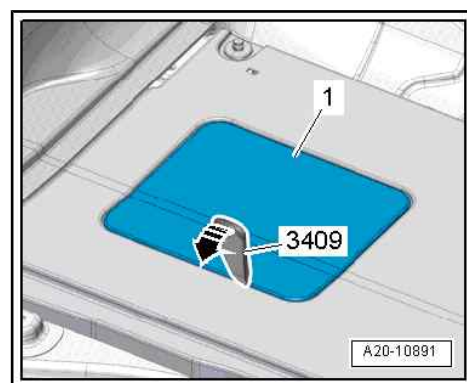
- Remove front section of rear shelf ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing rear shelf .

Vehicles with folding rear seat backrest:

- Fold down rear seat backrests.

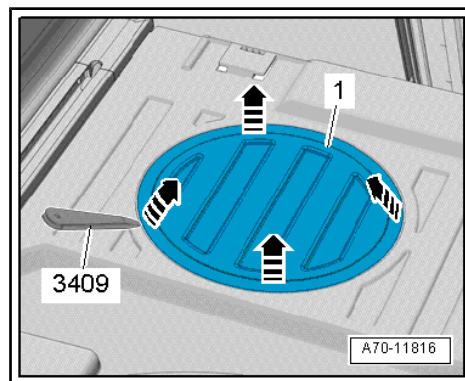
A6 saloon, A7 Sportback:

- Unclip cover -1- with removal wedge - 3409- -arrow- and detach.



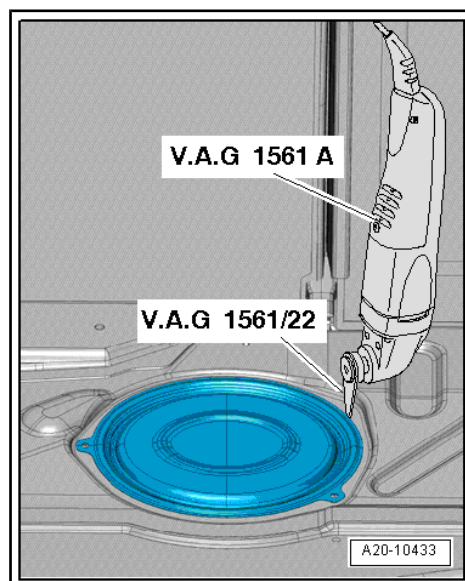
A6 Avant:

- Unclip cover -1- for flange at retainers -arrows- using removal wedge - 3409- and detach.

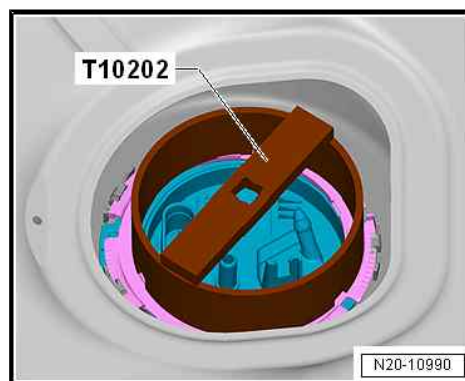


All vehicles (continued):

- Use electric cutter - V.A.G 1561A- and blade (L-shaped, 25.4 mm) - V.A.G 1561/22- to cut through adhesive sealant around cover for flange.
- Detach cover for flange.
- Repair painted surfaces ⇒ Paintwork manual .
- Apply anti-corrosion coating as necessary ⇒ Surface treatment/chemical materials .



- Remove locking ring using wrench - T10202- .
- Pull flange out of opening in fuel tank.
- Take seal out of opening in fuel tank.



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- Reach into opening in fuel tank and release fuel gauge sender 2 - G169- by pressing catches -arrows-.
- Pull fuel gauge sender 2 - G169- -item 1- upwards off mounting 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.

Installing

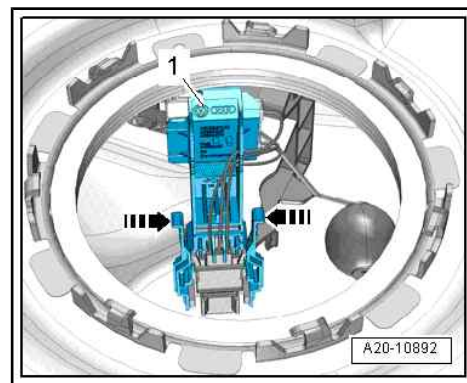
Installation is carried out in the reverse order; note the following:

 Note

◆ *Renew seal.*

◆ *When inserting, make sure you do not bend float arm of fuel gauge sender.*

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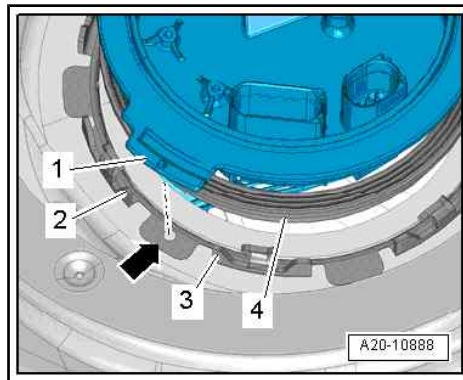
- Install new seal -4- for flange (seal must be installed dry).



Caution

Leakage risk

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



- Fit flange in correct installation position.
- Lug -1- on flange must point towards hole -arrow- on locking ring and must be between tabs -2 and 3- on fuel tank.
- Just before re-installing cover for flange, trim down remaining adhesive sealing material on cover for flange and on body with carpet knife to give a smooth surface; do NOT remove sealant completely.



Note

The remaining material serves as a bonding surface when applying the new adhesive sealing material.



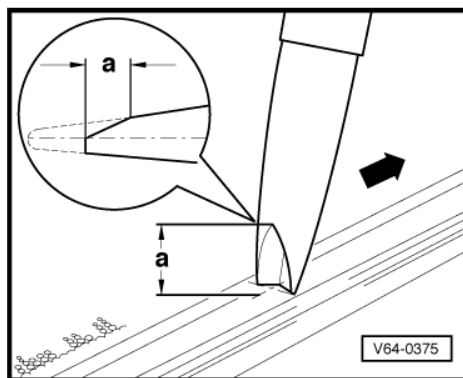
Caution

Apply adhesive thoroughly to ensure safe bonding.

- ◆ **Keep bonding surface clean and free from grease.**
- ◆ **Do not trim bonding surface until shortly before installation.**
- ◆ **Do not prime bonding surface and do not treat with cleaning fluid.**
- ◆ **Application of primer is only required when fitting a new cover for flange.**

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- Cut off tip of nozzle of adhesive sealant cartridge as shown in illustration.
- Dimension -a- = 7 mm
- Apply new sealant bead onto trimmed-down adhesive sealant on cover for flange and fit cover.
- Two holes on cover face towards rear of vehicle.
- Install luggage compartment floor ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing luggage compartment floor .
- Install front section of rear shelf ⇒ General body repairs, interior; Rep. gr. 70 ; Passenger compartment trim panels; Removing and installing rear shelf .



Tightening torques

- ◆ ⇒ ["2.1 Exploded view - fuel delivery unit/fuel gauge senders", page 16](#)

3 Plug-in connectors

⇒ ["3.1 Disconnecting plug-in connectors", page 33](#)

3.1 Disconnecting plug-in connectors

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 33](#).

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.

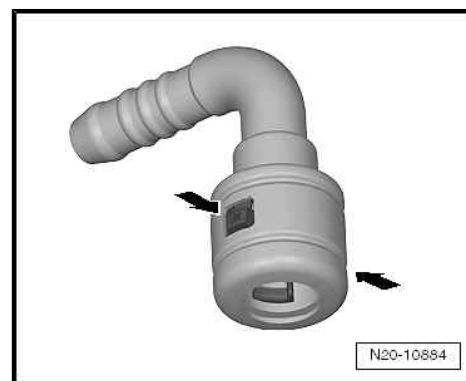
Risk of injury to eyes and skin caused by fuel.

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.

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Version 1

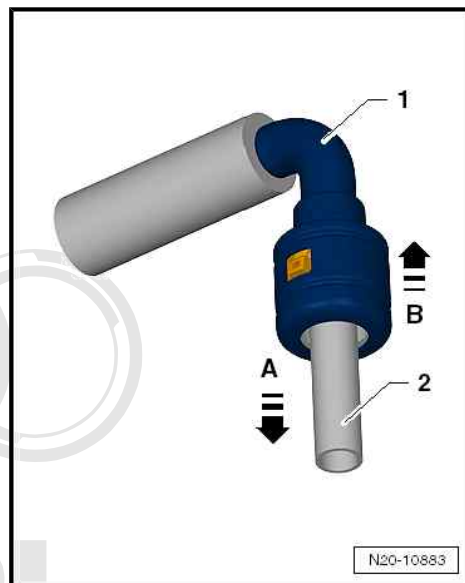
- ◆ Plug-in connector with release tabs -arrows- on both sides



N20-10884

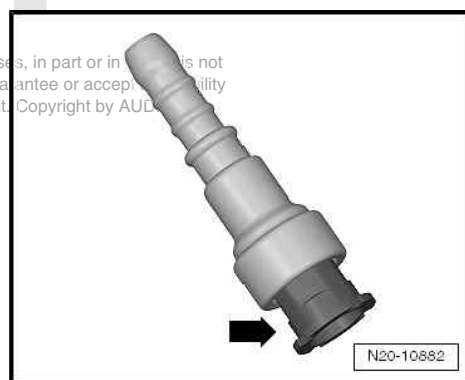
Disconnecting

- 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 33](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.



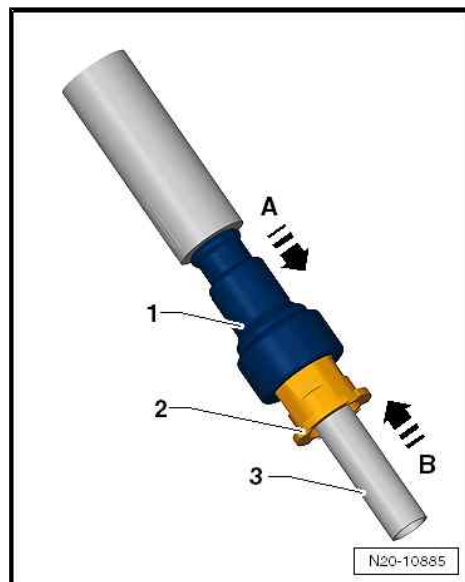
Version 2

- ◆ 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 33](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

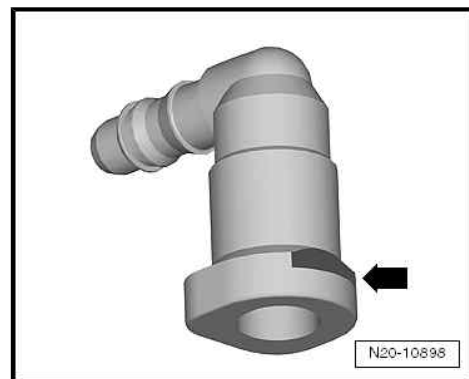


Version 3

- ◆ 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 33](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

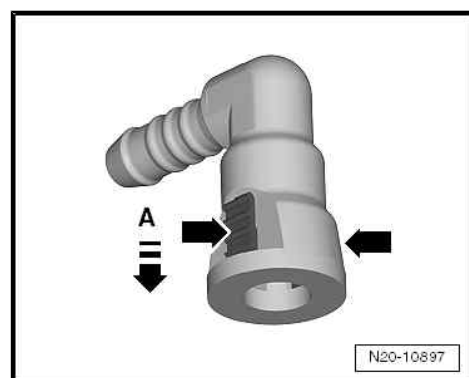


Version 4

- ◆ 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 33](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

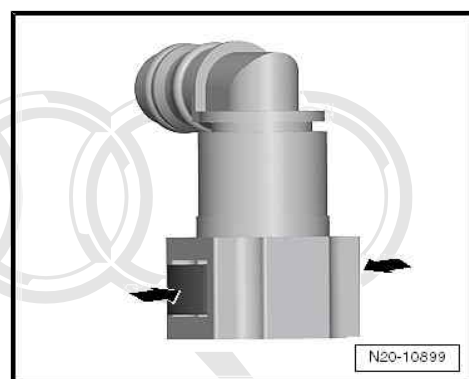


Version 5

- ◆ 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 33](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.

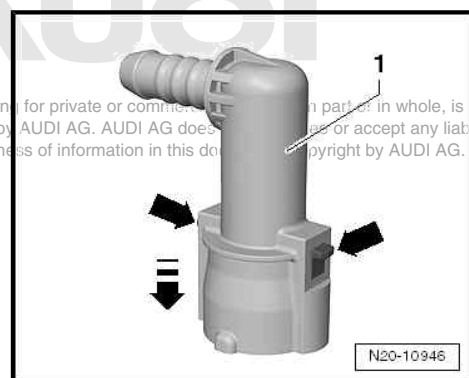


Version 6

- ◆ 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 33](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.



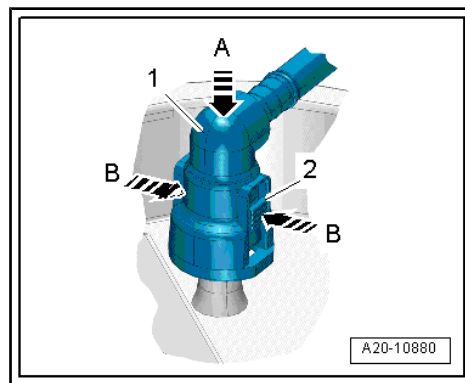
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Version 7

- ◆ 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 33](#) .
- Plug-in connectors should engage audibly when connecting.
- Check that plug-in connector is securely seated by pulling at it.



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4 Fuel cooler

⇒ [“4.1 Exploded view - fuel cooler”, page 37](#)

⇒ [“4.2 Removing and installing fuel cooler”, page 37](#)

4.1 Exploded view - fuel cooler



Note

The fuel cooler is located on the underbody (right-side).

1 - Bolt

- ☐ 3x
- ☐ 1.5 Nm

2 - Fuel cooler

- ☐ Removing and installing
⇒ [page 37](#)

3 - Spring-type clip

4 - Fuel return line

- ☐ From engine

5 - Fuel line to metering pump for auxiliary heater

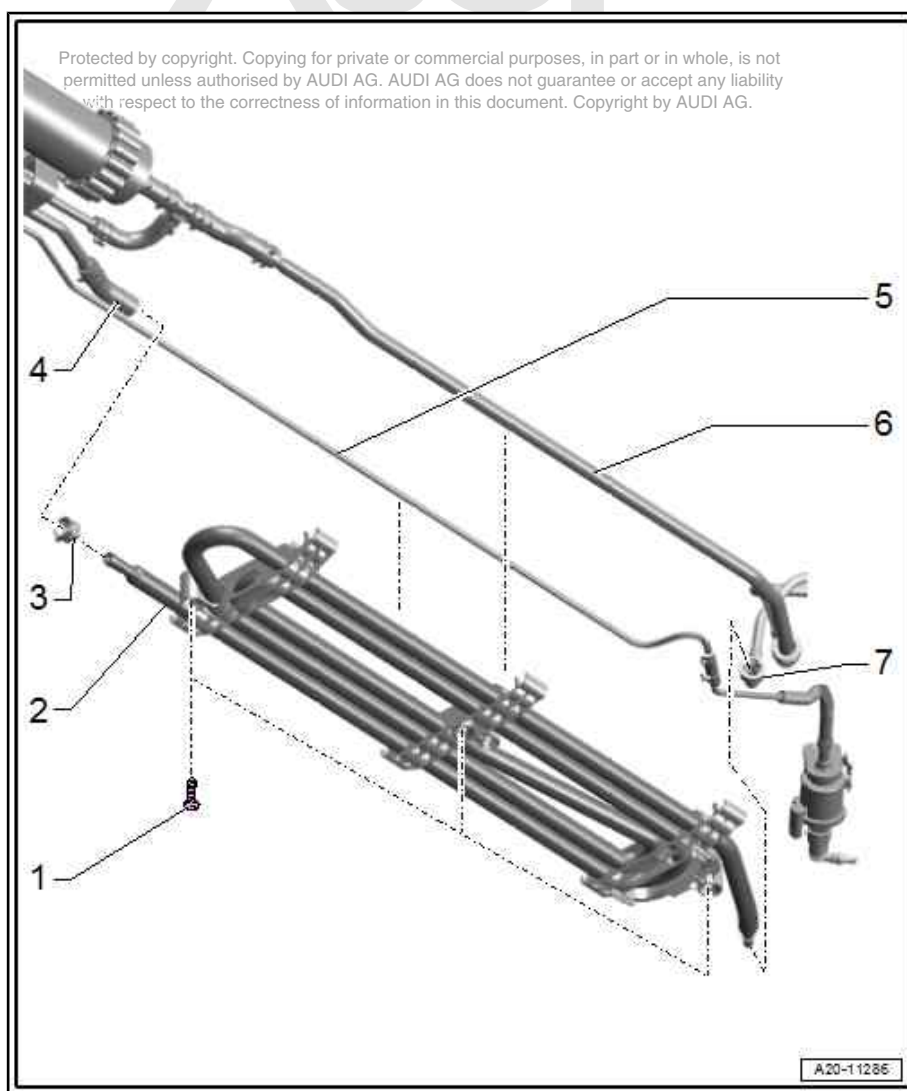
- ☐ Different versions
- ☐ Clipped onto fuel cooler

6 - Fuel supply line

- ☐ To fuel filter
- ☐ Clipped onto fuel cooler

7 - Fuel return line

- ☐ To fuel tank
- ☐ Clipped onto fuel tank
- ☐ Disconnecting and connecting plug-in connectors
⇒ [page 33](#)



4.2 Removing and installing fuel cooler

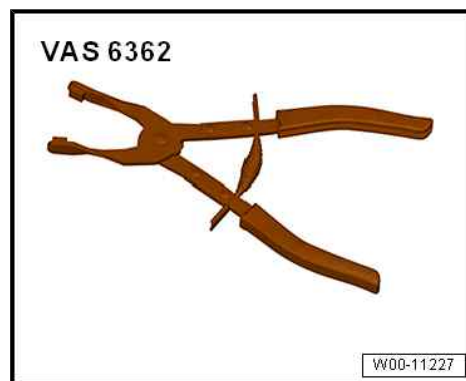


Note

The fuel cooler is located on the underbody (right-side).

Special tools and workshop equipment required

- ◆ Hose clip pliers - VAS 6362-



- ◆ Drip tray
- ◆ Protective gloves
- ◆ Safety goggles

Removing

- Observe rules for cleanliness ➔ [page 5](#) .
- Remove underbody trim (right-side) ➔ 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 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.***
- ◆ ***Wear protective gloves.***
- ◆ ***Wear safety goggles.***

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.***



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- Place drip tray under fuel cooler.
- Detach fuel return line -7- from front of fuel cooler.
- Detach fuel return line -3- from rear of fuel cooler. Disconnecting plug-in connectors ⇒ [page 33](#)
- Remove bolts -2, 4 and 6-.
- Unclip fuel lines -1 and 5- from fuel cooler -arrows- and detach fuel cooler.

Installing

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



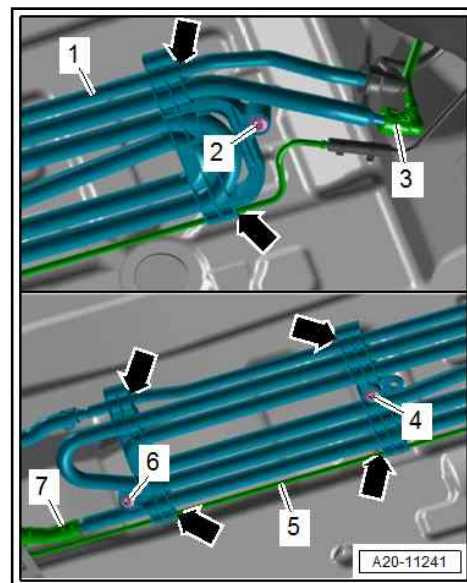
Note

Secure all hose connections with the correct version of spring-type clips (same as original equipment) ⇒ [Electronic parts catalogue](#) .

Tightening torques

- ◆ ⇒ [“4.1 Exploded view - fuel cooler”, page 37](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim

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5 Fuel filter

⇒ ["5.1 Exploded view - fuel filter", page 40](#)

⇒ ["5.2 Removing and installing fuel filter", page 42](#)

⇒ ["5.3 Removing and installing water level sender G120 ", page 42](#)

5.1 Exploded view - fuel filter

⇒ ["5.1.1 Exploded view - fuel filter \(vehicles with horizontal fuel filter\)", page 40](#)

⇒ ["5.1.2 Exploded view - fuel filter \(vehicles with vertical fuel filter\)", page 41](#)

5.1.1 Exploded view - fuel filter (vehicles with horizontal fuel filter)

1 - Bracket

- ☐ For fuel filter

2 - Nut

- ☐ 2.1 Nm

3 - Spring-type clip

4 - Fuel supply line

- ☐ From fuel tank
- ☐ Clipped onto underbody

5 - Fuel supply line

- ☐ To engine
- ☐ Clipped onto underbody

6 - Spring-type clip

7 - Fuel hose

8 - Spring-type clip

9 - Rubber mounting

- ☐ For fuel filter

10 - Fuel filter

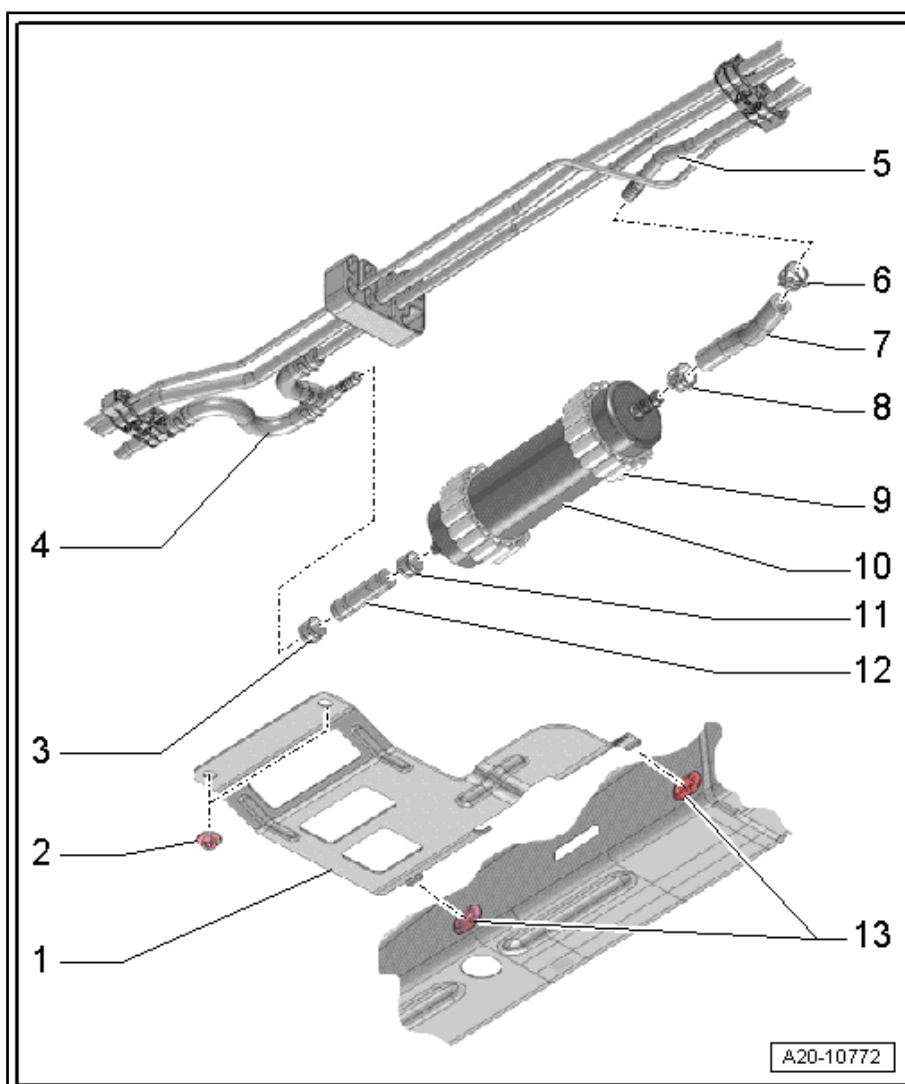
- ☐ Flow direction is marked by arrows
- ☐ Do not interchange connections
- ☐ Removing and installing
⇒ [page 42](#)
- ☐ Fitting location: on underbody (right-side as seen in direction of travel)

11 - Spring-type clip

12 - Fuel hose

13 - Rubber grommet

- ☐ Inserted in body



5.1.2 Exploded view - fuel filter (vehicles with vertical fuel filter)

1 - Fuel supply line

- ☐ To engine
- ☐ Clipped onto underbody

2 - Fuel return line

- ☐ From engine
- ☐ Clipped onto underbody

3 - Seal

4 - Filter element

- ☐ Fitting location: on underbody (left-side as seen in direction of travel)
- ☐ Removing and installing
 ⇒ Maintenance ; Booklet 411 ; Maintenance; Fuel filter: renewing

5 - Bolt

- ☐ 10 Nm

6 - Water level sender - G120

- ☐ Removing and installing
 ⇒ [page 42](#)

7 - Seal

8 - Bolt

- ☐ 9 Nm

9 - Fuel filter housing

10 - Nut

- ☐ 5 Nm

11 - Bolt

- ☐ 20 Nm

12 - Electrical wiring harness

- ☐ For water level sender - G120-
- ☐ For heating element

13 - Spring-type clip

- ☐ Renew

14 - Fuel supply line

- ☐ To engine

15 - Fuel supply line

- ☐ From fuel tank
- ☐ Clipped onto underbody

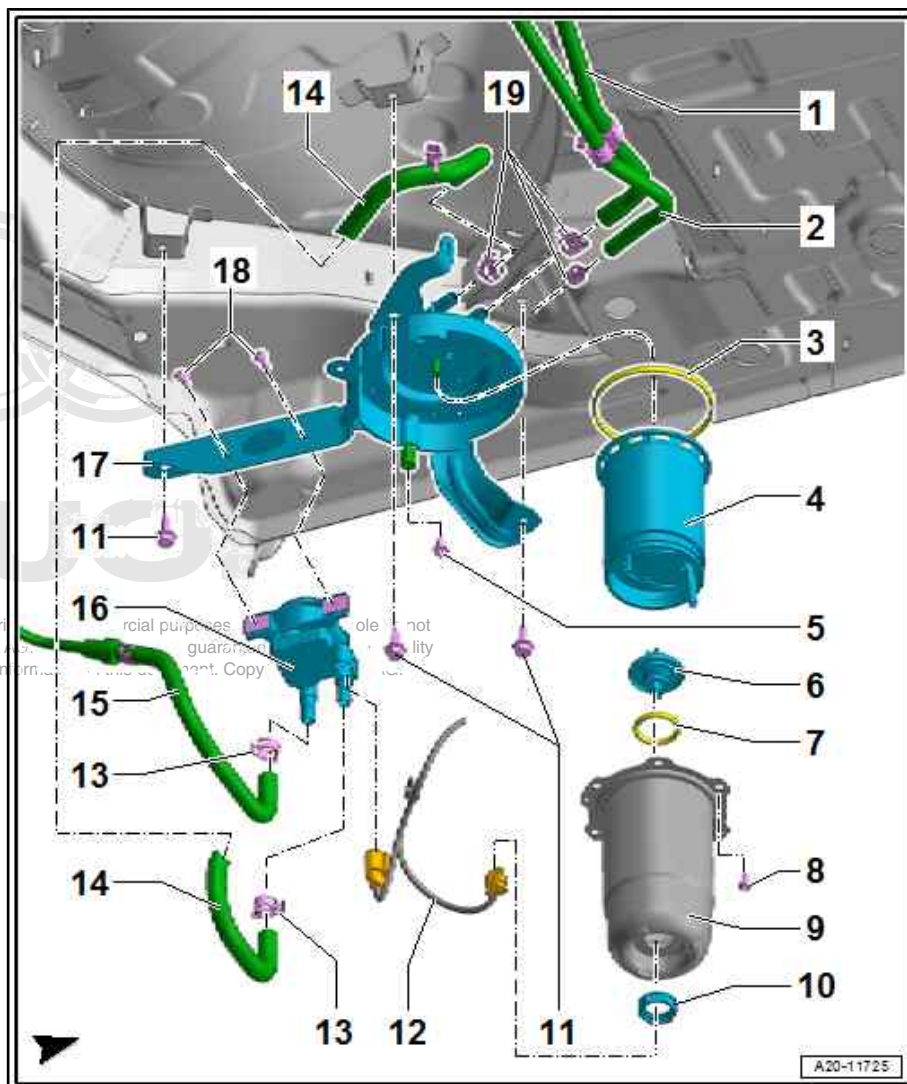
16 -

17 - Bracket

- ☐ For fuel filter

18 - Bolt

- ☐ 9 Nm



19 - Spring-type clip

- ☐ Renew

5.2 Removing and installing fuel filter

⇒ [“5.2.1 Removing and installing fuel filter - vehicles with horizontal fuel filter”, page 42](#)

⇒ [“5.2.2 Removing and installing fuel filter - vehicles with vertical fuel filter”, page 42](#)

5.2.1 Removing and installing fuel filter - vehicles with horizontal fuel filter

Removing and installing fuel filter ⇒ Maintenance ; Booklet 411 ; Maintenance; Fuel filter: renewing

5.2.2 Removing and installing fuel filter - vehicles with vertical fuel filter

Removing and installing fuel filter ⇒ Maintenance ; Booklet 411 ; Maintenance; Fuel filter: renewing

5.3 Removing and installing water level sender - G120-

Removing

- Observe safety precautions ⇒ [page 1](#) .
- ~~Observe rules for cleanliness ⇒ [page 5](#)~~
- ~~Remove underbody trim (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .~~
- Remove filter element ⇒ Maintenance ; Booklet 411 ; Maintenance; Fuel filter: renewing .
- Remove nut -1- and take water level sender - G120- out of filter housing.

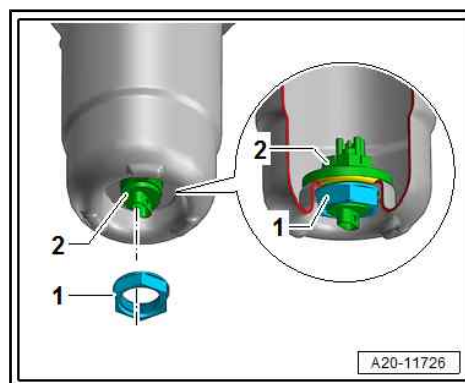
Installing

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

- Fill/bleed fuel system ⇒ Rep. gr. 23 ; Injection system; Filling and bleeding fuel system .

Tightening torques

⇒ [“5.1.2 Exploded view - fuel filter \(vehicles with vertical fuel filter\)”, page 41](#)



6 Accelerator mechanism

⇒ “6.1 Exploded view - accelerator pedal module”, page 43

⇒ “6.2 Removing and installing accelerator pedal module with accelerator position sender G79 / G185”, page 44

6.1 Exploded view - accelerator pedal module

1 - Accelerator pedal module

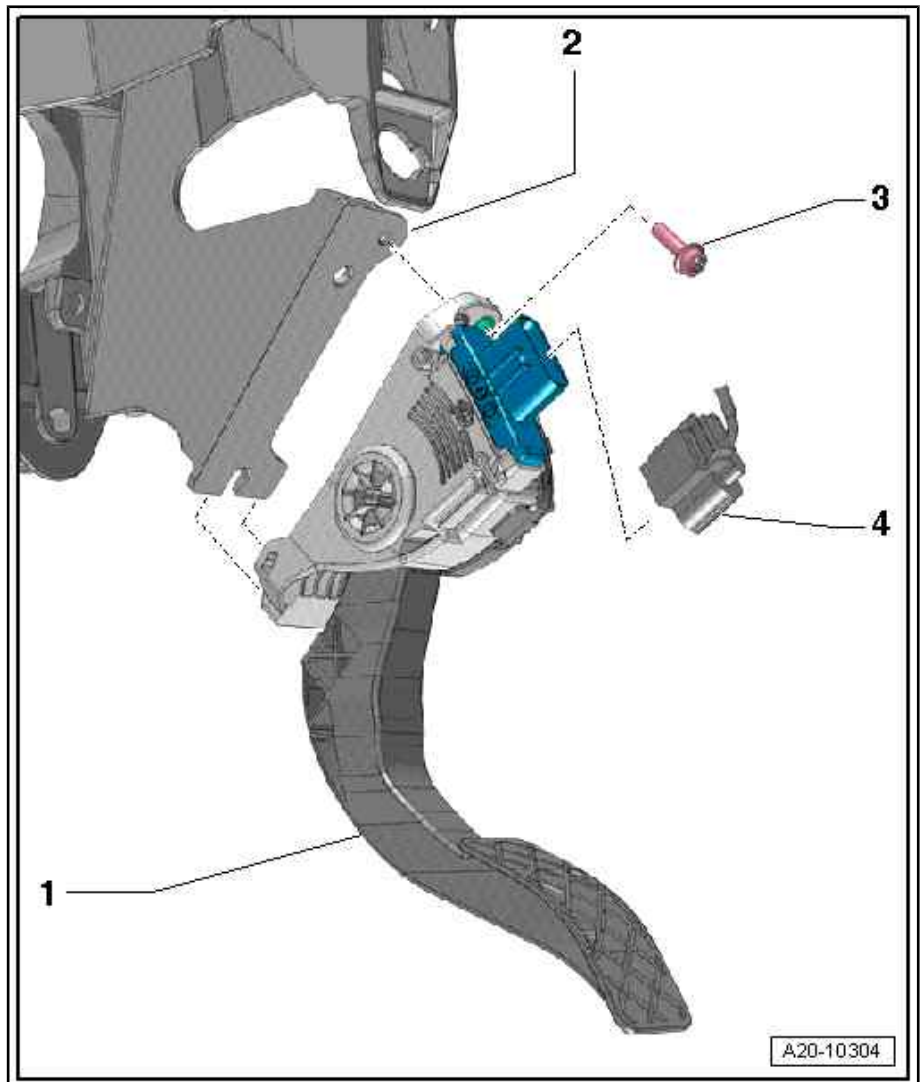
- ☐ With accelerator position sender - G79- and accelerator position sender 2 - G185-
- ☐ Checking in Guided Fault Finding ⇒ Vehicle diagnostic tester
- ☐ Depending on engine/ gearbox type, adaption may need to be performed in “Guided Functions” mode after renewal. If this menu item is available in “Guided Functions”, perform adaption ⇒ Vehicle diagnostic tester.
- ☐ Removing and installing
⇒ [page 44](#)

2 - Pedal bracket

3 - Bolt

- ☐ 8 Nm

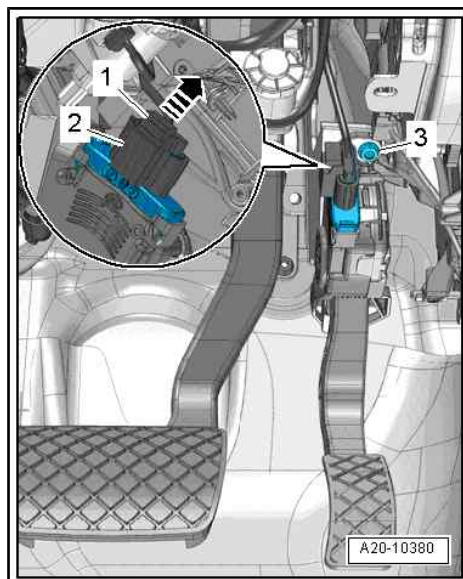
4 - Electrical connector



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

Removing

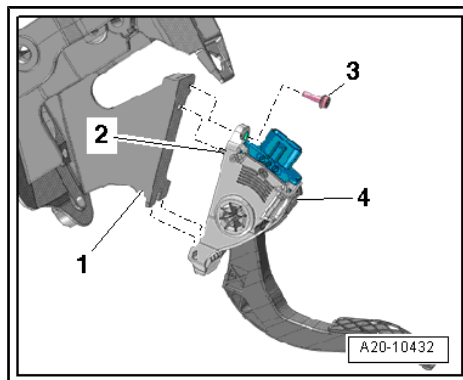
- Remove dash panel cover (bottom, driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Shelves / trim panels; Removing and installing dash panel cover (driver side) .
- Push release tab -1- upwards -arrow- and unplug electrical connector -2-.
- Remove bolt -3- and take out accelerator pedal module downwards.



Installing

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

- Attach accelerator pedal module -4- to bottom of pedal bracket -1-, insert centring pin -2- and tighten bolt -3-.
- Install dash panel cover (bottom, driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Shelves / trim panels; Removing and installing dash panel cover (driver side) .
- Depending on engine/gearbox type, adaption may need to be performed in “Guided Functions” mode after renewal. If this menu item is available in “Guided Functions”, perform adaption ⇒ Vehicle diagnostic tester.



Tightening torques

- ♦ ⇒ [“6.1 Exploded view - accelerator pedal module”, page 43](#)



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7 Fuel pump

⇒ [“7.1 Checking fuel system pressurisation pump G6”, page 45](#)

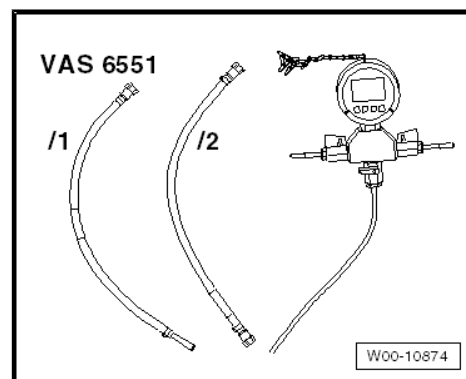
⇒ [“7.2 Removing and installing fuel pump control unit J538”, page 51](#)

7.1 Checking fuel system pressurisation pump - G6-

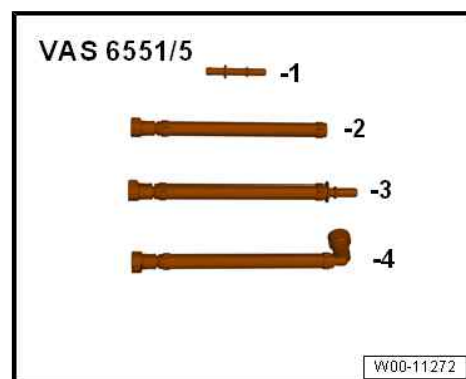
Special tools and workshop equipment required

- ◆ Pressure tester (diesel) - VAS 6551-

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- ◆ Adapter set - VAS 6551/5-



- ◆ Pressure control valve - VAS 6551/6-



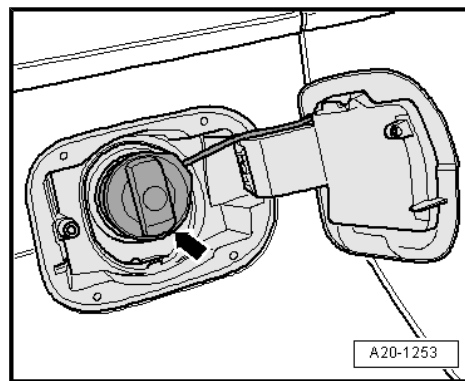
- ◆ Vehicle diagnostic tester
- ◆ Fuel-resistant measuring container

A - Checking fuel delivery rate

Note

The test procedure for the 3.0 ltr. TDI engine is shown as an example.

- Observe test conditions ➔ [page 5](#) .
- Open tank flap.
- Remove filler cap -arrow- for fuel filler neck.



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.
- ◆ Wear protective gloves.
- ◆ Wear safety goggles.

Risk of injury - fuel system operates under high pressure.

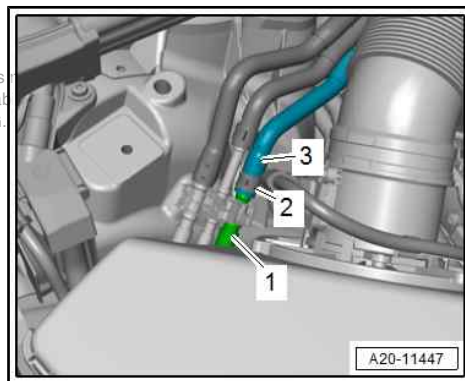
- ◆ To reduce the pressure in the fuel system, wrap a clean cloth around the connection and carefully loosen the connection.

- Release hose clip -2- and detach fuel supply hose -3- leading to high-pressure pump from fuel supply line -1-.

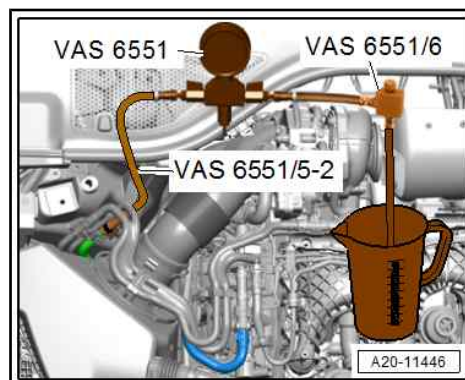
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Note

If the connection point is not accessible, the air cleaner housing must be removed in order to carry out the following work steps ➔ Rep. gr. 23 ; Air cleaner; Removing and installing air cleaner housing .



- Connect pressure tester (diesel) - VAS 6551- to fuel supply line with connecting line - VAS 6551/5-2- and secure with hose clip.
- Attach pressure control valve - VAS 6551/6- and hold end of hose into fuel-resistant measuring container.



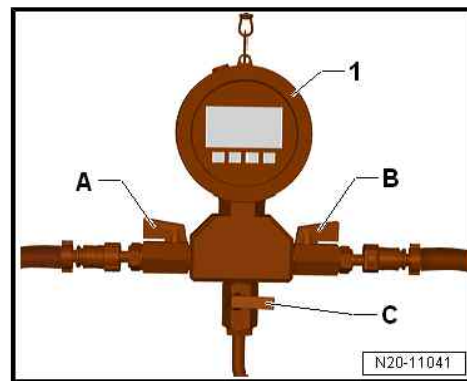
- Switch on pressure tester (diesel) - VAS 6551- -item 1- by pressing **On/Off** button.



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: 4 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 750 cm³/15 sec.

If the minimum delivery rate is attained:

- ◆ Fuel supply line with fuel filter 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 50](#) .

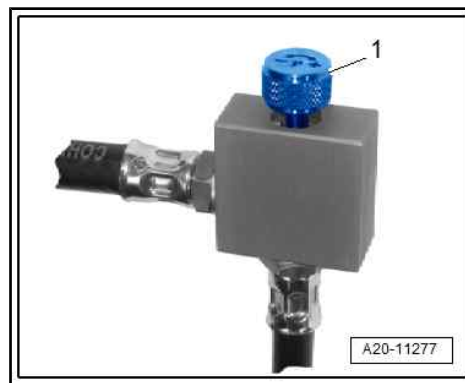
If minimum delivery rate is not achieved, check for the following causes:

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



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

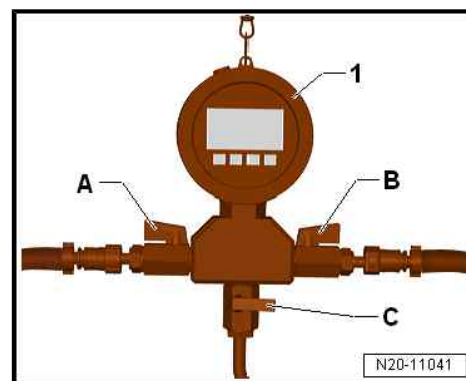
- Leave measuring equipment connected in the same way as for measuring the fuel delivery rate.
- Vehicle diagnostic tester still connected.
- Switch on pressure tester (diesel) - VAS 6551- -item 1- by pressing **On/Off** button.
- Open cut-off valve -A-.
- Lever must point in direction of flow.



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 6.0 bar

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

- ◆ Blocked fuel filter or crushed fuel supply line.

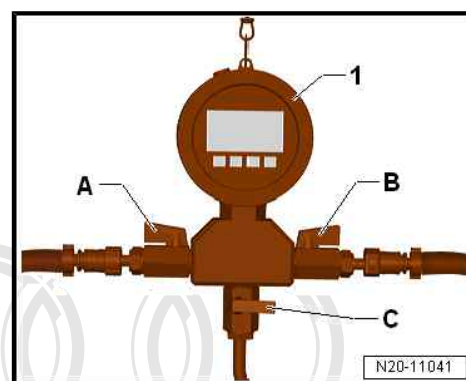
If specification is not attained:

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

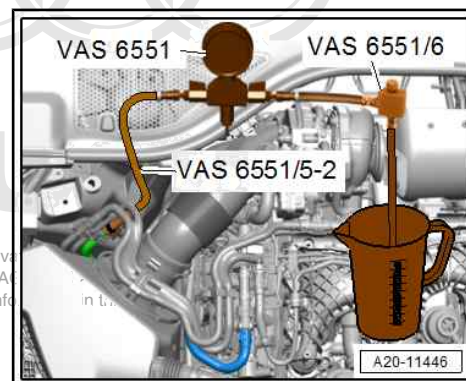


Note

- ◆ *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.



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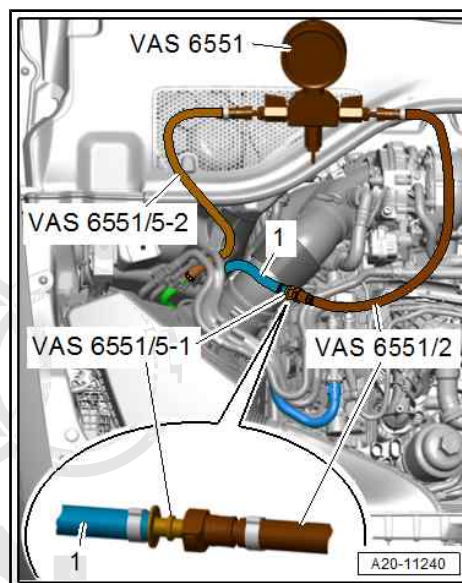
C - Pressure test for entire system

- Fuel delivery rate and pressure test on fuel supply line OK
- Connecting line - VAS 6551/5-2- connected to fuel supply line and to pressure tester (diesel) - VAS 6551- .
- Vehicle diagnostic tester connected.
- Attach connection fitting - VAS 6551/5-1- to fuel supply hose -1- leading to high-pressure pump, secure with hose clip and attach connecting line - VAS 6551/2- .
- Attach connecting line - VAS 6551/2- to pressure tester (diesel) - VAS 6551- .



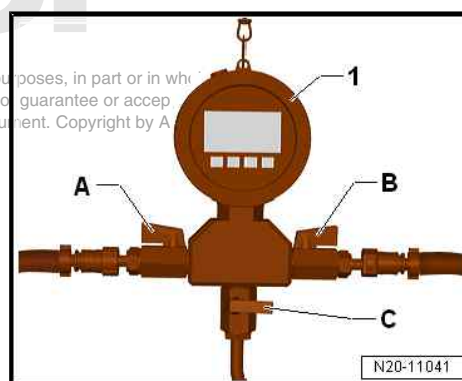
Note

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.

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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: 3.8 ... 5.8 bar

If the indicated value is below the specification, although the fuel delivery rate was OK:

- ◆ Relief valve in high-pressure pump not OK

If the indicated value is higher than the specification (more than 6 bar):

- ◆ Fuel return line blocked or crushed.

Assembling

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

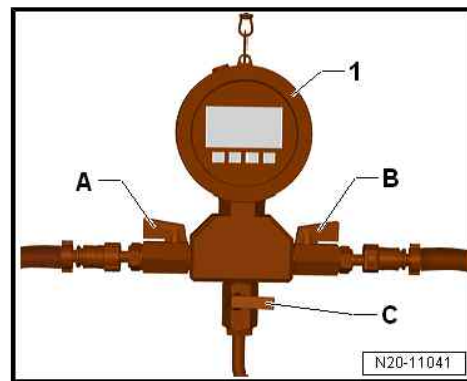
- The ignition must be switched off.



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



7.2 Removing and installing fuel pump control unit - J538-

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Removing

- Observe safety precautions ➔ [page 1](#) .
- Observe rules for cleanliness ➔ [page 5](#) .



Caution

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

- ◆ *Observe notes on procedure for disconnecting the battery.*

- Disconnect earth wire from battery terminal ➔ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .



WARNING

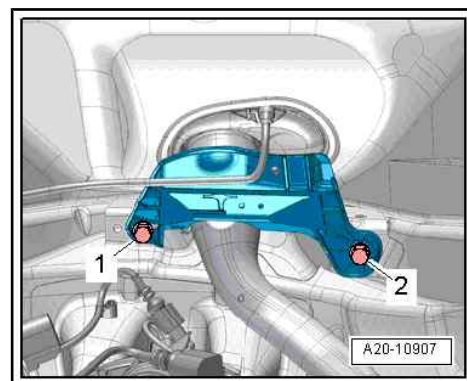
Risk of accident caused by weight of fuel tank

- ◆ *Fuel tank must be empty when lowering it.*

- Drain fuel tank ➔ [page 9](#) .
- Remove rear wheel housing liner (right-side) ➔ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .

Vehicles without SCR system:

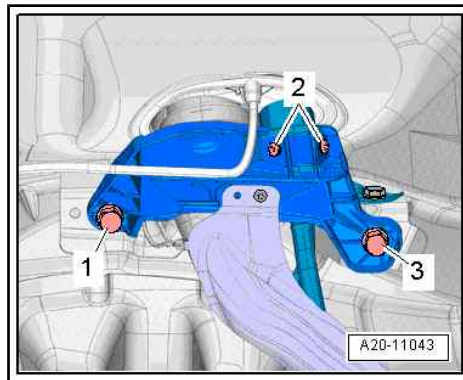
- Remove bolts -1- and -2- for fuel filler neck.



Vehicles with SCR system:

- Depending on vehicle version, bolts -2- for filler neck for reducing agent must be removed.
- Remove bolts -1- and -3- for fuel filler neck.

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All vehicles (continued):



WARNING

Risk of accident caused by weight of fuel tank

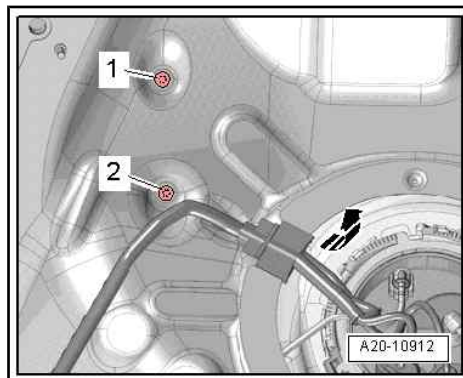
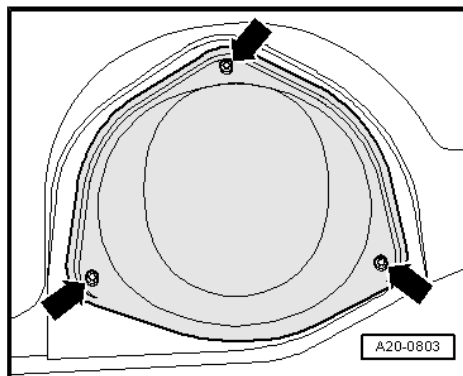
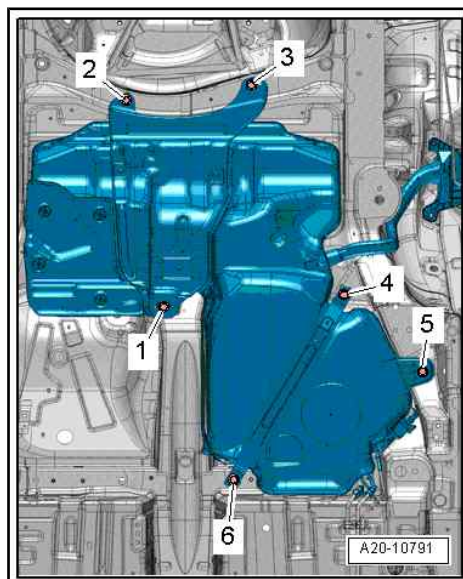
◆ *Fuel tank must be empty when lowering it.*

- Remove bolts -1 ... 6-.



Note

- ◆ *The fuel tank is lowered onto the subframe.*
- ◆ *The fuel tank is shown without the subframe for illustration purposes.*
- Remove rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/ individual seats .
- Fold insulating mat to one side in vicinity of cover for fuel tank flange.
- Unscrew bolts -arrows- and remove cover for flange.
- Remove bolts -1- and -2-.
- Guide fuel pump control unit - J538- out towards interior between fuel tank and underbody -arrow-.

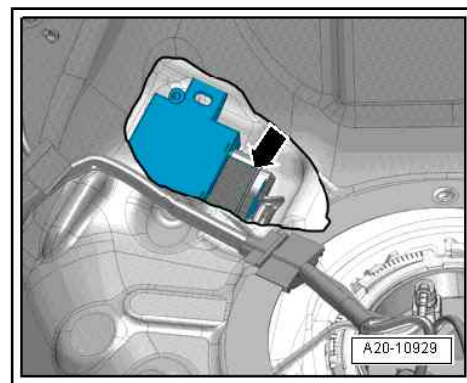


- Unplug electrical connector -arrow- and detach fuel pump control unit - J538- .

Installing

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

- Install cover for flange ⇒ [page 18](#) .
- Install rear seat bench ⇒ General body repairs, interior; Rep. gr. 72 ; Rear seats; Removing and installing seat bench/individual seats .
- Connect battery and perform steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .



Tightening torques

- ◆ ⇒ [“2.1 Exploded view - fuel delivery unit/fuel gauge senders”, page 16](#)
- ◆ ⇒ [“1.1 Exploded view - fuel tank”, page 7](#)
- ◆ ⇒ [Fig. ““Filler neck for reducing agent for vehicles with SCR system - tightening torque””, page 8](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear)



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