Repair Manual
Golf 2009 ➤
Golf Plus 2009 ➤

Fuel Supply - Gasoline Engines									
Engine ID	CDLG	CAVB	CAVC	CAVD	CBZA	CBZB	CBTA	CBUA	CTHD
	CTKA								

Edition 04.2019

List of Workshop Manual Repair Groups

Repair Group

00 - General, Technical Data

20 - Fuel Supply

Contents

00 – General, Technical Data

1 Safety Precautions

(Edition 04.2019)

⇒ "1.1 Safety Precautions when Working on Fuel Supply System", page 1

⇒ "1.3 Safety Precautions during Road Test with Testing Equipment", page 2

⇒ "1.2 Safety Precautions when Working on Vehicles with Start/Stop System", page 1

1.1 Safety Precautions when Working on Fuel Supply System

WARNING

There is a risk of injury due to the fuel being under pressure.

The fuel system is under pressure. Injuries are possible from fuel spraying out.

Before opening the fuel system:

– Wear protective eyewear.

– Wear safety gloves.

– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

WARNING

Leaking fuel increases the risk of fire.

When the battery is connected, the door contact switch activates the fuel pump when opening the driver door. Leaking fuel may ignite and start a fire.

– Before opening the fuel system, cut off the power supply to the fuel pump.

1.2 Safety Precautions when Working on Vehicles with Start/Stop System

WARNING

There is a risk of injury due to the engine starting unexpectedly.

The engine may start unexpectedly on vehicles with an activated Start/Stop System. A message in the instrument cluster indicates whether the Start/Stop System is activated.

– Deactivate the Start/Stop System: switch off the ignition.

1.3 Safety Precautions during Road Test with Testing Equipment

WARNING

There is a risk of injury when testing equipment is not secured.

If the front passenger airbag deploys during an accident, unsecured testing equipment becomes a dangerous projectile.

– Secure the testing equipment on the rear seat.

or

– Have a second technician operate the testing equipment on the rear seat.

2 Engine Specifications

Codes		CBZA	CBZB	CAVB	CAVC	CAVD
Emissions values		EU 5	EU 5	EU 5	EU 5	EU 5
Displacement	liters	1.2	1.2	1.4	1.4	1.4
Output	kW	63	77	125	103	118
Research Octane Number (RON)		95 unleaded	95 unleaded	95 unleaded	95 unleaded	95 unleaded

Codes		CDLG	CBTA	CBUA	CTHD, CTKA
Emissions values		EU 5	Tier2/BIN5 (US states)	SULEV	EU 5
Displacement	liters	2.0	2.5	2.5	1.4
Output	kW	173	125	125	118
Research Octane Number (RON)		95 unleaded	95 unleaded [1)]	95 unleaded [1)]	95 unleaded

[1)] 91 RON may be used if necessary but the performance will be reduced.

3 General Information

⇒ “3.1 Guidelines for Clean Working Conditions on Parking/Auxiliary Heater and Fuel System”, page 4

3.1 Guidelines for Clean Working Conditions on Parking/Auxiliary Heater and Fuel System

Follow these “rules” when working on the fuel supply/injection system:

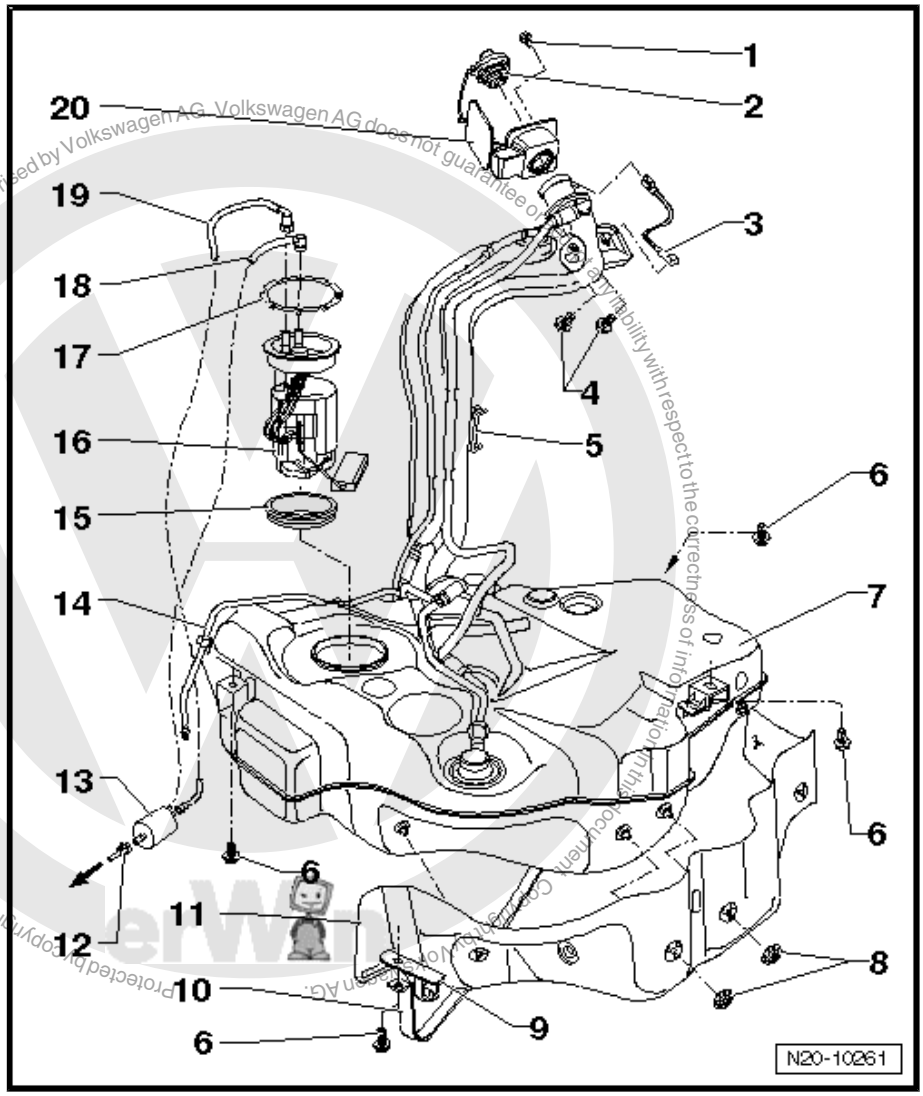
- Thoroughly clean the connection points and the surrounding area before loosening.
- Place the removed parts on a clean surface and cover them. Only use lint-free cloths.
- Carefully cover or seal opened components if the repair is not performed immediately.
- Only install clean parts: remove the replacement parts from their packaging just before installing them. Do not use parts that have been loosely stored or unpackaged (for example, in tool boxes etc.).
- Do not work with compressed air when the system is open.
- Do not move the vehicle.
- Immediately seal off any open lines and connections with clean plugs, for example, taken from the Engine Bung Set - VAS6122- .
- Protect any disconnected connectors from dirt and moisture, and only connect them when they are completely dry.

20 – Fuel Supply

1 Fuel Tank

1.1 Overview - Fuel Tank

1.1.1 Overview - Fuel Tank, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA



1 - Bolt

2 - Cap

- ❑ Replace if damaged.

3 - Ground Connection

- ❑ Make sure it is secure.

4 - Bolt

- ❑ 10 Nm

5 - Cable Guide

6 - Bolt

- ❑ 25 Nm
- ❑ Always replace
- ❑ Only use bolts with loose washers to secure the fuel tank mounting straps. If other bolts are used, the mounting straps could twist when the bolts are tightened. Bolts. Refer to the Parts Catalog.

7 - Fuel Tank

- ❑ Support with the Engine and Gearbox Jack - VAS6931- when removing.
- ❑ Removing and installing. Refer to ⇒ “1.2.1 Fuel Tank, Removing and Installing, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 9 .

8 - Lock Washer

9 - Exhaust System Bracket

10 - Mounting Strap

- ❑ Pay attention to the installation position.

11 - Heat Shield

- ❑ There are different versions

12 - Supply Line

- ❑ To the Fuel Rail
- ❑ Make sure it is secure.

13 - Fuel Filter

- ❑ The arrow points in the flow direction.

14 - Bleeder Line

- ❑ Attached to the side of the fuel tank
- ❑ Make sure it is secure.

15 - Seal

- ❑ Always replace
- ❑ Insert dry into the fuel tank opening
- ❑ Coat with fuel only when installing the flange.

16 - Fuel Delivery Unit

- ❑ Removing and installing. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
- ❑ Fuel Pump, Checking. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .
- ❑ Pay attention to the fuel tank installation position. Refer to ⇒ Fig. “Fuel Delivery Unit Flange Installation Position”“ , page 7 .
- ❑ With Fuel Level Sensor - G-
- ❑ Fuel Level Sensor - G- , Removing and installing. Refer to ⇒ “2.3 Fuel Level Sensor G , Removing and Installing”, page 31 .

17 - Locking Ring

- ❑ 110 Nm
- ❑ Make sure it is secure.
- ❑ Remove and install with the Wrench - Fuel Sending Unit - T10202-

18 - Supply Line

- ❑ Black
- ❑ Attached to the side of the fuel tank
- ❑ Make sure it is secure.
- ❑ Open at the separating point. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

19 - Return Line

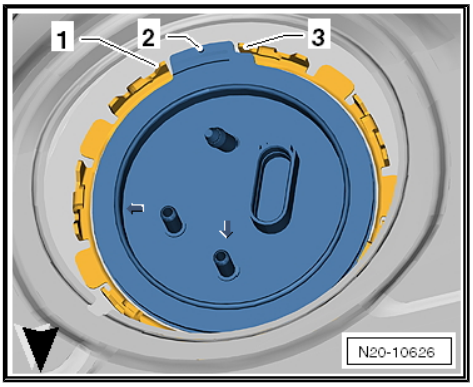
- ❑ Blue
- ❑ Attached to the side of the fuel tank
- ❑ Make sure it is secure.
- ❑ Open at the separating point. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

20 - Fuel Filler Door Unit

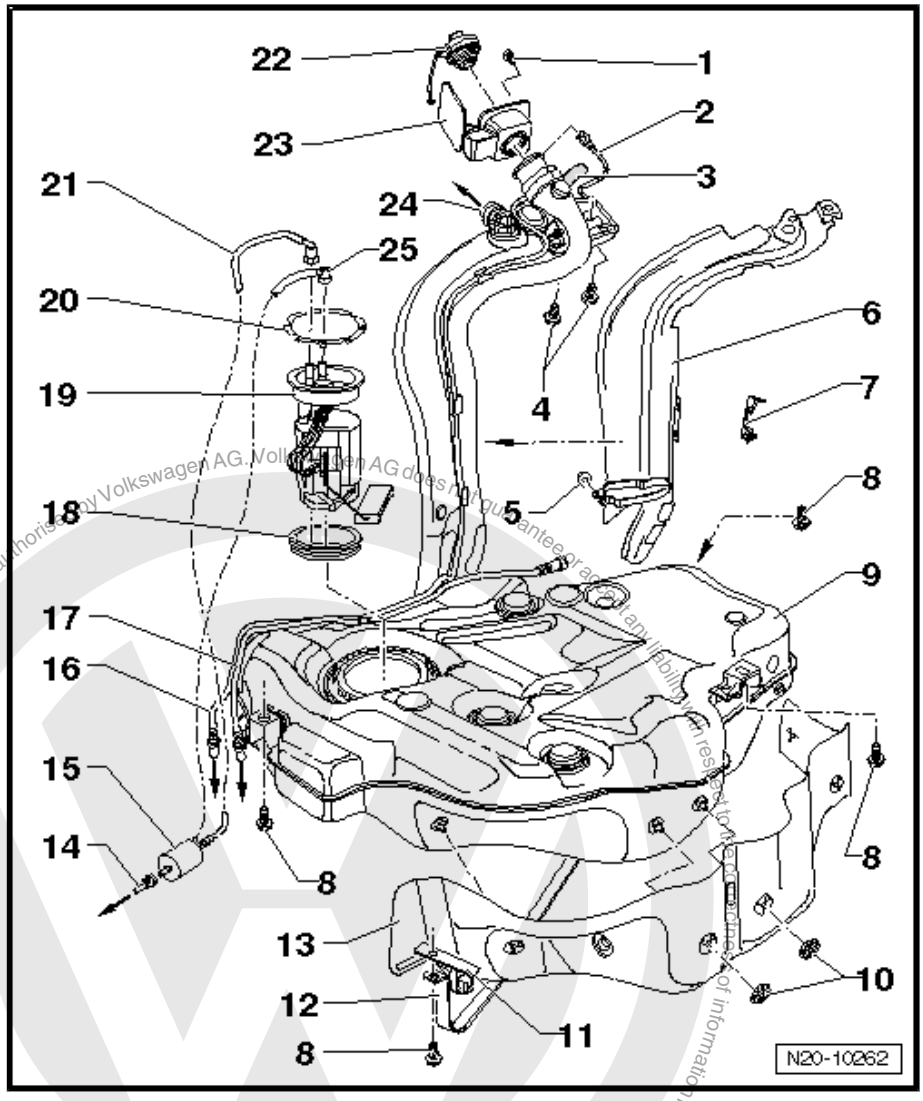
- ❑ With rubber gasket
- ❑ Removing and installing. Refer to ⇒ Body Exterior; Rep. Gr. 55 ; Fuel Filler Door Unit; Fuel Filler Door Unit, Removing and Installing .

Fuel Delivery Unit Flange Installation Position

- The tab -2- on sealing flange must lie between tabs -1 and 3- on the fuel tank.
- The -arrow- points in the direction of travel.



1.1.2 Overview - Fuel Tank, Engine Codes CBTA and CBUA



1 - Bolt

2 - Ground Connection

- ❑ Make sure it is secure.

3 - Vacuum Line

- ❑ To the Leak Detection Pump - V144-

4 - Bolt

- ❑ 10 Nm

5 - Rivet

6 - Protective Plate

- ❑ Riveted to lower clamp at factory
- ❑ When replacing fuel tank, lay protective plate on filler tube and rivet clamp The holes of the protective plate must be congruent to the holes on the filler tube.

7 - Cable Guide

- ❑ For the ABS line
- ❑ Clipped to the shield

8 - Bolt

- ❑ 25 Nm
- ❑ Always replace
- ❑ Only use bolts with loose washers to secure the fuel tank mounting straps. If other bolts are used, the mounting straps could twist when the bolts are tightened.

9 - Fuel Tank

- ❑ Removing and installing. Refer to ⇒ “1.2.2 Fuel Tank, Removing and Installing, Engine Codes CBTA and CBUA”, page 13 .

10 - Lock Washer

11 - Exhaust System Bracket

12 - Mounting Strap

- ❑ Pay attention to the installation position.

13 - Heat Shield

14 - Supply Line

- ❑ To the Fuel Rail
- ❑ Make sure it is secure.
- ❑ Open at the separating point. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

15 - Fuel Filter

- ❑ Installed position: the arrow points in the flow direction.
- ❑ Removing and installing. Refer to ⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

16 - Vacuum Line

- ❑ From the Leak Detection Pump - V144- to the intake manifold
- ❑ Clipped to the fuel tank
- ❑ Make sure it is secure.

17 - Bleeder Line

- ❑ From EVAP canister to EVAP Canister Purge Regulator Valve 1 - N80-
- ❑ Clipped to the fuel tank
- ❑ Make sure it is secure.

18 - Seal

- ❑ Always replace
- ❑ Insert dry into the fuel tank opening
- ❑ Coat the inside of seal with fuel only before installing the fuel delivery unit.

19 - Fuel Delivery Unit

- ❑ Removing and installing. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
- ❑ Fuel Pump, Checking. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .
- ❑ Note the installation position in the fuel tank. Refer to ⇒ Fig. ““Fuel Delivery Unit Installation Position”“ , page 9 .
- ❑ With Fuel Level Sensor - G-
- ❑ Fuel Level Sensor - G- , Removing and installing. Refer to ⇒ “2.3 Fuel Level Sensor G , Removing and Installing”, page 31 .
- ❑ Clean strainer if contaminated.

20 - Locking Ring

- ❑ 110 Nm
- ❑ Make sure it is secure.
- ❑ Remove and install with the Wrench - Fuel Sending Unit - T10202- .

21 - Return Line

- ❑ Blue
- ❑ Attached to the side of the fuel tank
- ❑ Make sure it is secure.
- ❑ Open at the separating point. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

22 - Cap

- ❑ Replace the seal if damaged.

23 - Fuel Filler Door Unit

- ❑ With rubber gasket
- ❑ Removing and installing. Refer to ⇒ Body Exterior; Rep. Gr. 55 ; Fuel Filler Door Unit

24 - To the EVAP Canister

25 - Supply Line

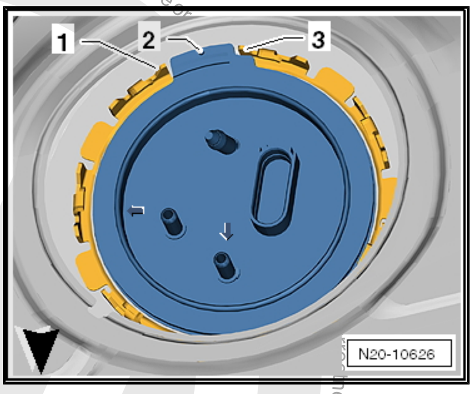
- ❑ Black
- ❑ Attached to the side of the fuel tank

❑ Make sure it is secure.

❑ Open at the separating point. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

Fuel Delivery Unit Installation Position

The tab -2- on the fuel delivery unit must lie between the guides -1 and 3-.



Note

- *The -arrow- points in the direction of travel.*
- *The fuel delivery unit can only be installed in this position.*

1.2 Fuel Tank, Removing and Installing

⇒ “1.2.1 Fuel Tank, Removing and Installing, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 9

⇒ “1.2.2 Fuel Tank, Removing and Installing, Engine Codes CBTA and CBUA”, page 13

1.2.1 Fuel Tank, Removing and Installing, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region

Special tools and workshop equipment required

- Torque Wrench, 6-50Nm - VAG1331A-
- Engine and Gearbox Jack - VAS6931-

Removing the fuel tank:

– Pay attention to the safety precautions. Refer to ⇒ “1.1 Safety Precautions when Working on Fuel Supply System”, page 1 .

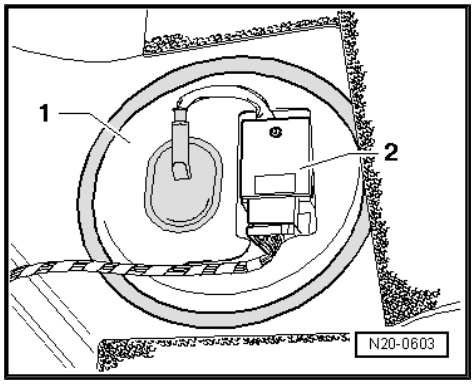
– Follow the guidelines for clean working conditions. Refer to ⇒ “3.1 Guidelines for Clean Working Conditions on Parking/Auxiliary Heater and Fuel System”, page 4 .

– Remove the bolts from the fuel filler door unit and then remove the fuel filler door unit. Refer to ⇒ Body Exterior; Rep. Gr. 55 ; Fuel Filler Door Unit .

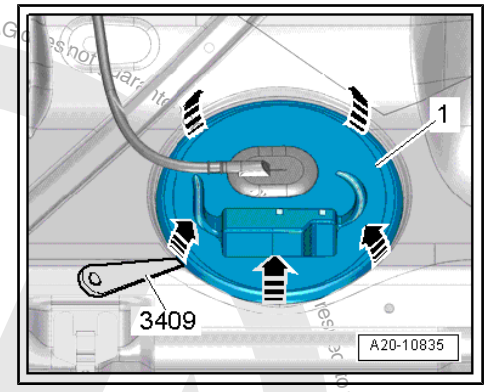
– Drain fuel tank and clean fuel filler tube and surrounding area. Refer to ⇒ “1.3 Fuel Tank, Draining”, page 16 .

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

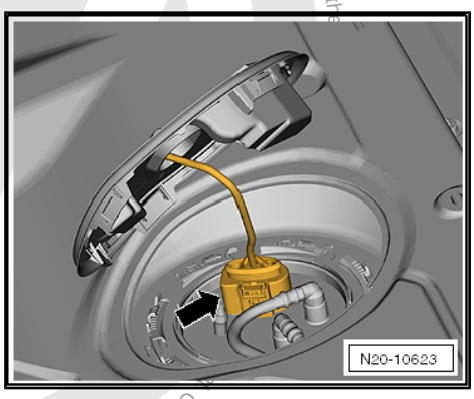
– Remove the cover -1- with the Fuel Pump Control Module - J538- -2- from the fuel delivery unit.



– Unclip the cover -1- at the tabs -arrows- using the -3409-.



– Disconnect the connector -arrow-.



Note

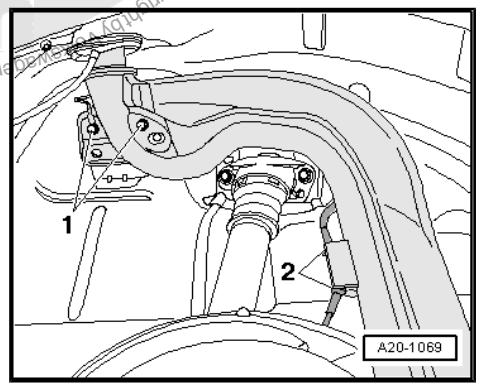
Disconnect the connector from the Metering Pump - V54- if the vehicle has an auxiliary heater.

– Remove the right rear wheel. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Wheels, Tires; Wheel, Changing .

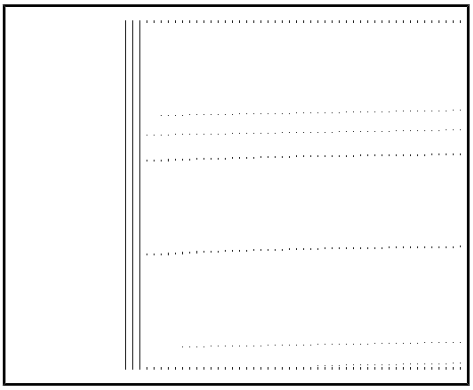
– Remove the right rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Wheel Housing Liner, Removing and Installing .

– Remove the bolts -1- from the filler neck on the body.

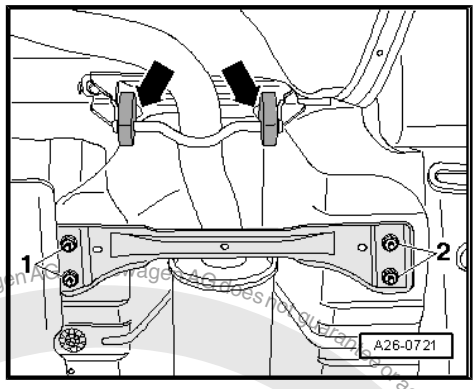
– Unclip the wire on the filler neck -2-.



– Loosen the clamping sleeve -arrows-.



– Remove the nuts -1- and -2- and the rear underbody cross-member.



Note

A second technician is needed to help remove the rear section of the exhaust system.

– Remove the center and rear mufflers. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

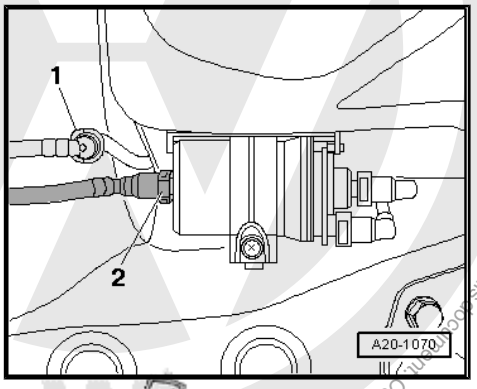
CAUTION

The fuel system is under pressure.

Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

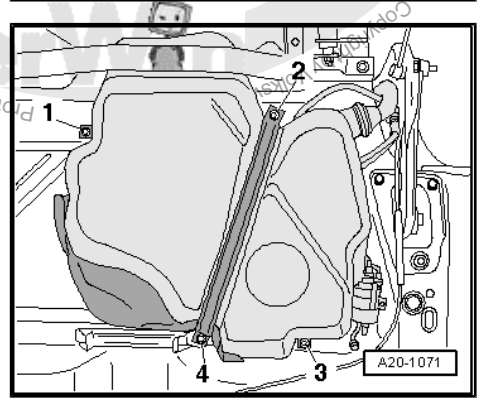
– Disconnect the vent line -1- white and supply line -2- black at the connecting point. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



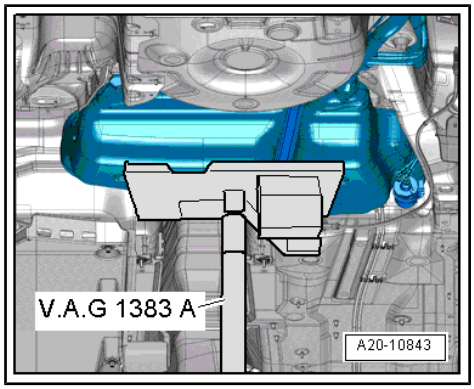
Note

If the vehicle has an auxiliary heater, disconnect the fuel line for the Metering Pump - V54- .

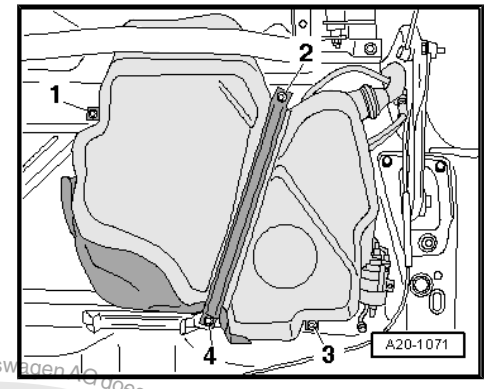
– Remove the bolts -1- and -3-.



– Place the -VAS6931- under the fuel tank for support.



– Remove the bolts -2- and -4-.



Note

A second technician is required to remove the fuel tank.

– Lower the fuel tank and remove it from the body.

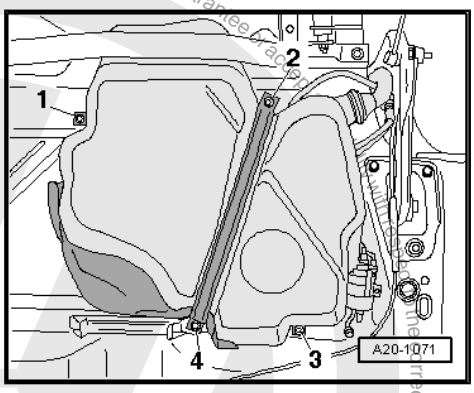
Installing:

Install in reverse order of removal. Note the following:

– Thread the filler neck between the rear axle, with the help of a second technician.

– Lift the fuel tank slowly into its installation position.

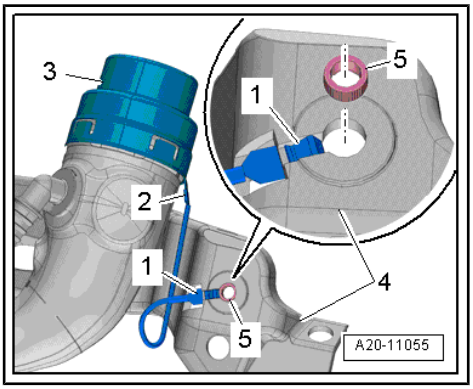
– Secure the fuel tank with the bolts -1- through -4-.



Note

- *Only use bolts with loose washers to secure the fuel tank mounting straps. This prevents the mounting straps from twisting when tightening the bolts.*
- *The connector couplings must »audibly« engage when locking.*
- *Note the color coding when installing the connector coupling. Refer to ⇒ page 34 !*
- *Pull on the connector coupling to check for secure fit.*
- *Disconnect the connector couplings. Refer to ⇒ "3.1 Connector Couplings, Disconnecting", page 34 .*
- Pay attention to the ground connection installation position.
- Make sure to guide the fuel filler neck correctly into the opening in the body.
- Position the fuel tank together with the mounting strap on the underbody using the -VAS6931- .
- Make sure the vent and fuel lines are routed without kinks.
- Make sure the line connections are secure.
- Make sure the supply, return and breather lines are still clipped to the fuel tank after the fuel tank has been installed.

– Pay attention to the ground connection installation position.
– Check the ground cable for traces of oxidation on the connectors. Remove any oxidation if necessary.
• The connector -2- must be securely attached to the metal ring -3-.
• The contact -1- must be engaged in the fuel tank -4- and secured with the spacer -5-.
– After installing, check the connection with an ohmmeter. Check the connection between the metal ring on the fuel filler neck to an empty area on the body. Specified value is approximately 0 Ohm.



WARNING

Risk of the fuel tank exploding when starting the fuel pump.
Severe injuries and burns are possible.
– After installing a new or completely empty fuel tank, immediately fill with at least 5 liters of fuel.

– Fill at least five liters of fuel in the fuel tank.

Tightening Specification

Component	Tightening Specification
Fuel tank filler tube to the body	10 Nm
Fuel tank to the underbody	25 Nm
Bench Seat	Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .
Exhaust System	Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .
Fuel Filler Door Unit	Refer to ⇒ Body Exterior; Rep. Gr. 55 ; Fuel Filler Door Unit; Fuel Filler Door Unit, Removing and Installing .

1.2.2 Fuel Tank, Removing and Installing, Engine Codes CBTA and CBUA

Special tools and workshop equipment required

♦ Torque Wrench, 6-50Nm - VAG1331A-

Removing

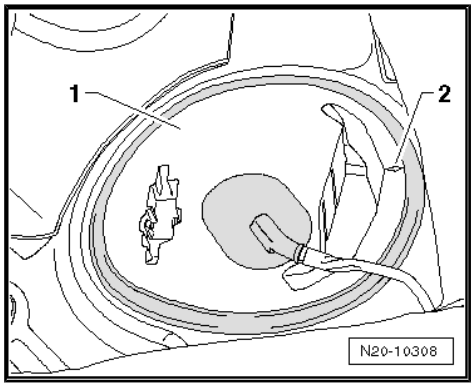
• Fuel tank may be a maximum of $^{1}/_{4}$ full.

Note

Drain the fuel tank using the Fuel Extractor Unit - VAS5190A- . Refer to ⇒ “1.3 Fuel Tank, Draining”, page 16 .

– Pay attention to the safety precautions. Refer to ⇒ “1.1 Safety Precautions when Working on Fuel Supply System”, page 1 .
– Follow the guidelines for clean working conditions. Refer to ⇒ “3.1 Guidelines for Clean Working Conditions on Parking/ Auxiliary Heater and Fuel System”, page 4 .

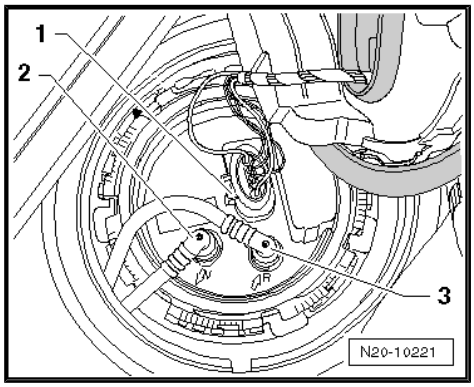
– Remove the wheel lock adapter from the luggage compartment.
– Open the fuel filler door and remove the fuel filler cap.
– Remove the bolts from the fuel filler door unit and then remove the fuel filler door unit. Refer to ⇒ Body Exterior; Rep. Gr. 55 ; Fuel Filler Door Unit .
– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat, Removing and Installing .
– Unclip the cover -1- on the fuel delivery unit. The arrow -2- points in the direction of travel.



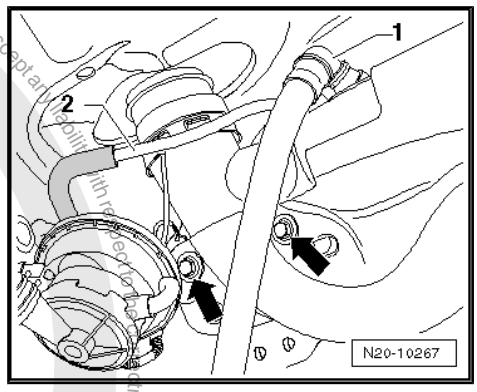
Note

Disconnect the connector from the Metering Pump - V54- if the vehicle has an auxiliary heater.

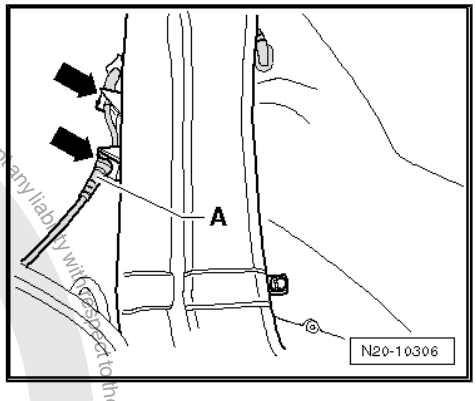
– Disconnect the connector -1- from the fuel delivery unit.
– Remove the right rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner .



– Disconnect the connectors -1 and 2-.
– Remove the fuel filler tube -arrows- from the body.



– Remove the ABS line -A- from the bracket -arrows-.

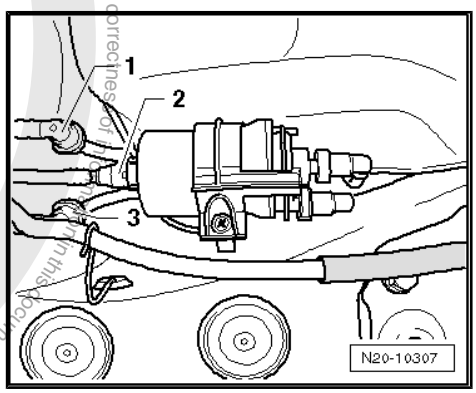


– Remove the exhaust system.

WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
– Wear protective eyewear.
– Wear safety gloves.
– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

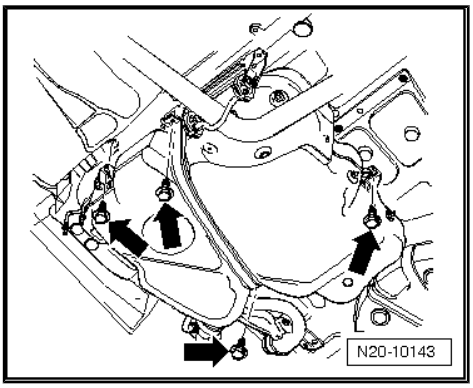
– Disconnect the white vent line -1-, the black supply line -2- and the green vacuum line for the Leak Detection Pump - V144- -3- at the connection point. Disconnect the connector couplings. Refer to
➤ “3.1 Connector Couplings, Disconnecting”, page 34 .



Note

A second technician will be needed to support the fuel tank.

– Remove the mounting strap and bolts -arrows-.



– Remove the fuel tank.

Installing

Install in reverse order of removal. Note the following:

- Make sure the vent and fuel lines are routed without kinks.
- Do not confuse the supply line and the return line (the supply line is black and the return line is blue).
- Make sure the line connections are secure.
- Make sure the lines are still attached to the fuel tank after installing the fuel tank.

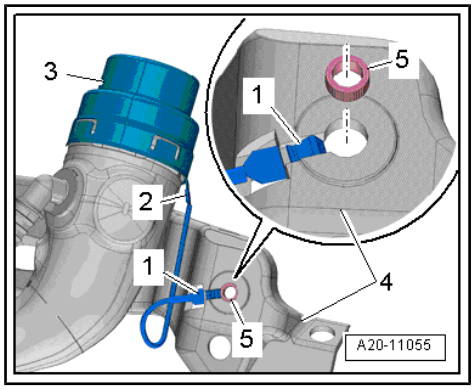
– Pay attention to the ground connection installation position.

– Check the ground cable for traces of oxidation on the connectors. Remove any oxidation if necessary.

• The connector -2- must be securely attached to the metal ring -3-.

• The contact -1- must be engaged in the fuel tank -4- and secured with the spacer -5-.

– After installing, check the connection with an ohmmeter. Check the connection between the metal ring on the fuel filler neck to an empty area on the body. Specified value is approximately 0 Ohm.



WARNING

Risk of the fuel tank exploding when starting the fuel pump.

Severe injuries and burns are possible.

– After installing a new or completely empty fuel tank, immediately fill with at least 5 liters of fuel.

– Fill at least five liters of fuel in the fuel tank.

– Bleed the fuel system. Refer to ⇒ Rep. Gr. 23 ; Fuel Preparation, Fuel Injection; Fuel Injection System; Fuel System, Filling/Bleeding .

– Connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery, Disconnecting and Connecting .

Tightening specification:

Component	Nm
Fuel tank to body - M 6	10
Fuel tank to body - M 6 ♦ Replace the bolts.	25

1.3 Fuel Tank, Draining

⇒ “1.3.1 Fuel Tank, Draining with Fuel Pump Installed”, page 16 .

⇒ “1.3.2 Fuel Tank, Emptying when More Than 3/4 Full, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 19

⇒ “1.3.3 Fuel Tank, Emptying when More Than 3/4 Full, Engine Codes CBTA and CBUA”, page 20

⇒ “1.3.4 Fuel Tank, Draining When Less Than 3/4 Full”, page 22

1.3.1 Fuel Tank, Draining with Fuel Pump Installed

Special tools and workshop equipment required

♦ Trim Removal Wedge - 3409-

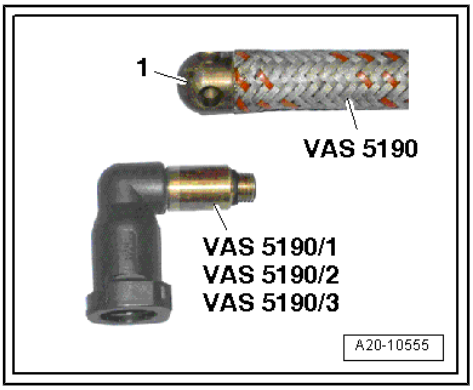
♦ Injection Rate Comparison Meter Kit - Remote Cable - VAG1348/3A-

♦ Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-

♦ Fuel Extractor - VAS5190-

♦ Fuel Extraction Unit - VAS5190A-

- Fuel Extraction Adapter - VAS5190-



Note

If the -VAS5190- has a suction hose with a mounted tip, then replace this with one that has a tip which screws on.

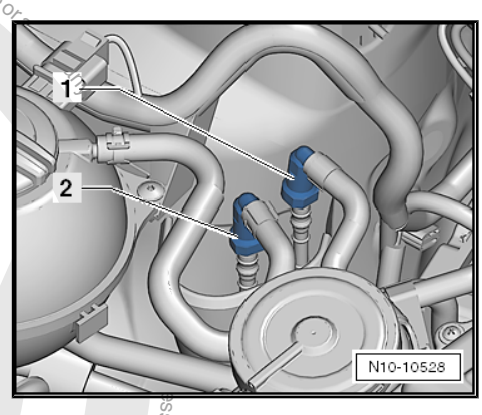
Note

- *The connector couplings must »audibly« engage when locking.*
- *Note the color coding when installing the connector coupling. Refer to ⇒ page 34 !*
- *Pull on the connector coupling to check for secure fit.*
- *Disconnect the connector couplings. Refer to ⇒ "3.1 Connector Couplings, Disconnecting", page 34 .*

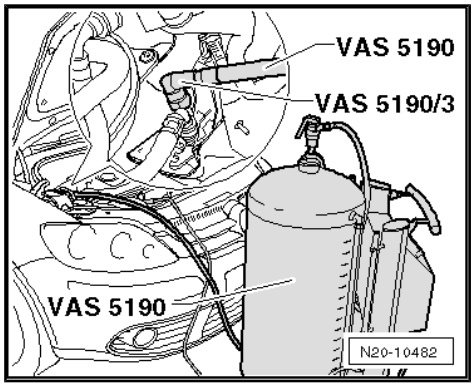
WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

- Remove the supply line (metal coupling) -1-. Disconnect the connector couplings. Refer to ⇒ "3.1 Connector Couplings, Disconnecting", page 34 .
- Collect leaking fuel with a cleaning cloth.



– Connect the -VAS5190- and -VAS5190/3- to the fuel supply line.



WARNING

Risk of a fire due to leaking fuel.

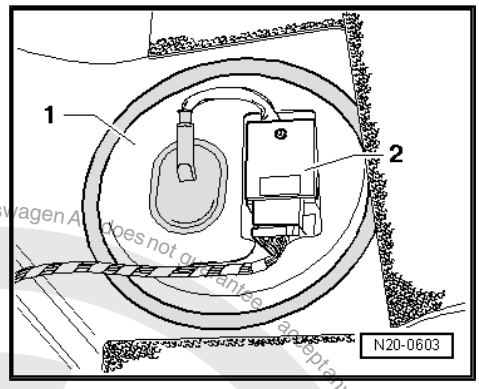
Severe injuries and burns are possible.

- **Make sure all connected lines are securely in place by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**

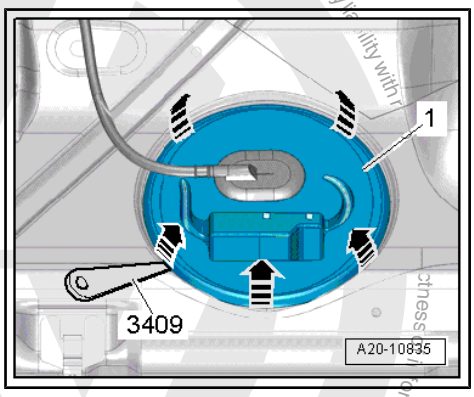
– Attach the ground wire of the Fuel Extractor Unit to a bare area on the body.

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

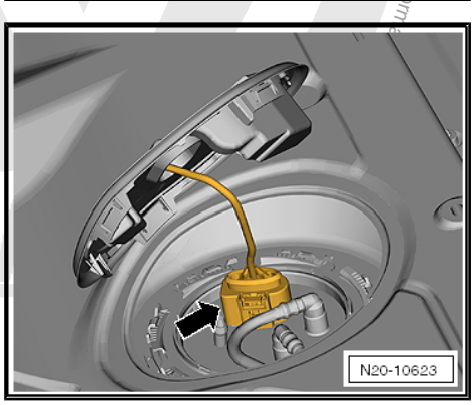
– If equipped, remove the Fuel Pump Control Module - J538- -2- from the cover -1-.



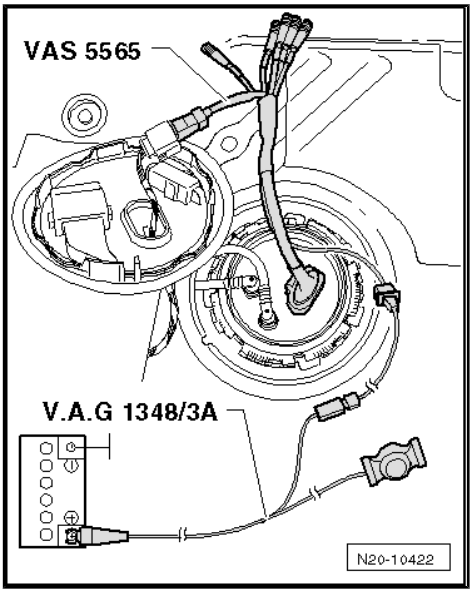
– Unclip the sealing flange cover -1- at the tabs in direction of -arrows- using the -3409- .



– Disconnect the connector -arrow-.



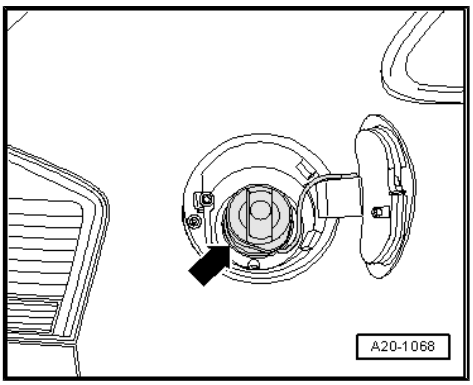
– Attach the -VAS5565- to the connector and to the fuel delivery unit.
– Connect the -VAG1348/3A- to the -VAS5565- and battery positive.



Note

This step allows the fuel pump to run when the engine is not running.

– Open the fuel filler door.
– Remove the cap -arrow- from the fuel filler neck.



CAUTION

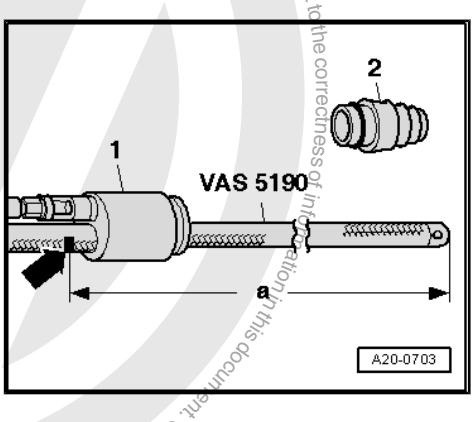
There is a risk of destroying the fuel pump if it runs dry.
– Never let the fuel pump run »dry«.

1.3.2 Fuel Tank, Emptying when More Than 3/4 Full, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region

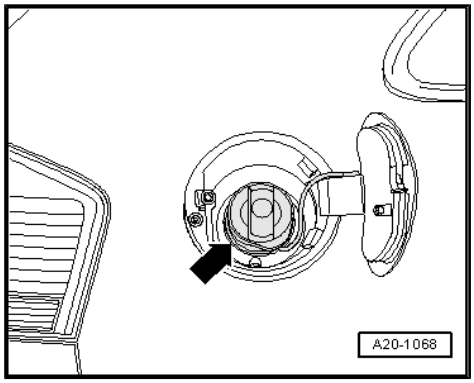
Special tools and workshop equipment required

- Fuel Extractor - VAS5190A-
- Fuel Extraction Unit - VAS5190A- (not illustrated) for E 85 - fuel.

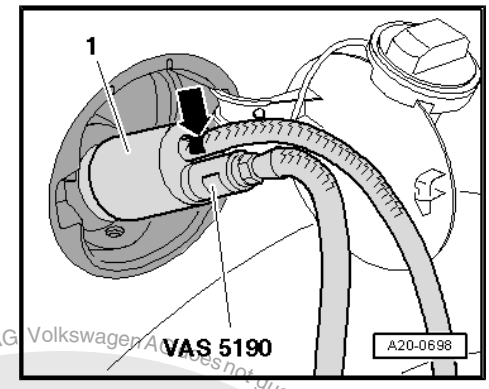
– Remove the cone piece -2- from the shaft piece -1- on the -VAS5190- .
– Make a marking -arrow- 1180 mm (distance -a-) from the end of the suction hose.
– Use insulating tape.



– Open the fuel filler door.

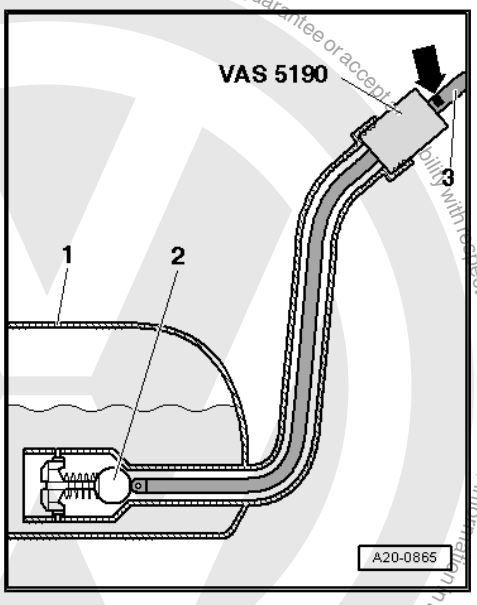


– Remove the cap -arrow- from the fuel filler neck.
– Attach the ground wire of the Fuel Extractor Unit to a bare area on the body.
– Attach the shaft piece -1- from the -VAS5190- to the filler neck on the fuel tank.
– Slide the suction hose into the fuel tank far enough so the mark applied earlier -arrow- is aligned with the shaft piece.



Note

There is a ball valve -2- located at the lower end of the filler neck in the fuel tank -1- that must not be damaged by the suction hose -3-. Only slide the hose in as far as the mark that was made earlier -arrow-.



– Drain the fuel tank as much as possible through the filler neck.
– Carefully remove the suction hose.

Note

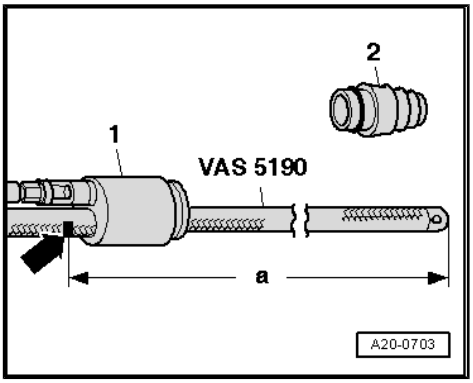
- *When no more fuel can be extracted, the fuel tank is only emptied enough so that the sensor flange can be opened safely. The tank may be removed while containing the remaining fuel.*
- *Drain the fuel tank completely. Refer to* *⇒ "1.3.4 Fuel Tank, Draining When Less Than 3/4 Full", page 22* *.*

1.3.3 Fuel Tank, Emptying when More Than 3/4 Full, Engine Codes CBTA and CBUA

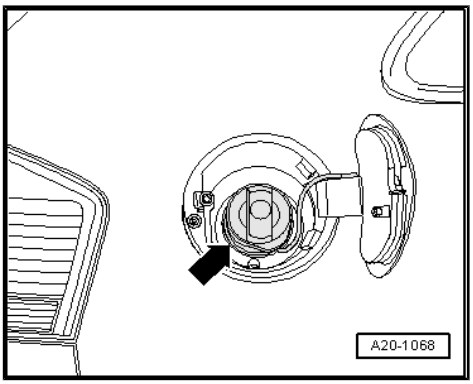
Special tools and workshop equipment required

- Fuel Extractor - VAS5190A-
- Fuel Extraction Unit - VAS5190A- (not illustrated) for E 85 - fuel.

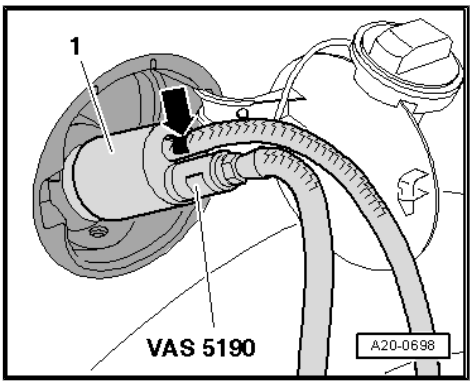
– Remove the cone piece -2- from the shaft piece -1- on the -VAS5190- .
– Make a marking -arrow- 1500 mm (distance -a-) from the end of the suction hose.
– Use insulating tape.

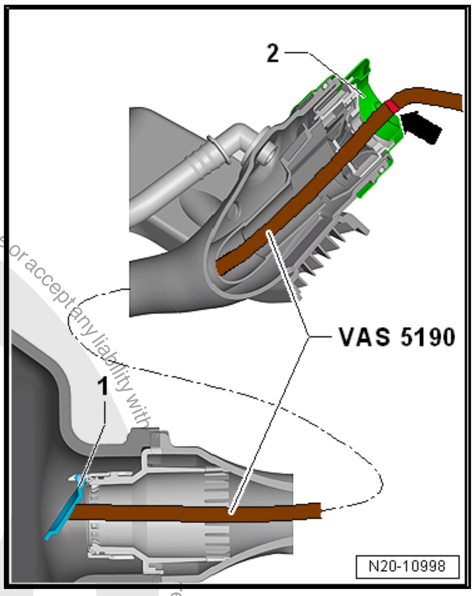


– Open the fuel filler door.



– Remove the cap -arrow- from the fuel filler neck.
– Attach the shaft piece -1- from the -VAS5190- to the filler neck on the fuel tank.
– Attach the ground wire of the Fuel Extractor Unit to a bare area on the body.
– Slide the suction hose into the fuel tank far enough so the mark applied earlier -arrow- is aligned with the shaft piece.





– Slide the suction hose from the Fuel Extraction Unit into the fuel tank until the previously made mark -arrow- meets the filler neck -2-.

– Drain the fuel tank as much as possible through the filler neck.

Note

- *A valve -1- is located in the fuel tank on the lower end of the filler neck. It must not be damaged by the suction hose. Only slide the hose in as far as the mark that was made earlier -arrow-.*
- *Do not use force to remove the suction hose if it gets stuck on the check valve.*
- *In this case, remove the fuel delivery unit and manually hold the check valve open. When doing this, make sure the arm does not come in contact with the fuel.*

– Carefully remove the suction hose.

Note

- *When no more fuel can be extracted, the fuel tank is only emptied enough so that the sensor flange can be opened safely.*
- *Drain the fuel tank completely. Refer to* *⇒ "1.3.4 Fuel Tank, Draining When Less Than 3/4 Full", page 22 .*

1.3.4 Fuel Tank, Draining When Less Than 3/4 Full

Special tools and workshop equipment required

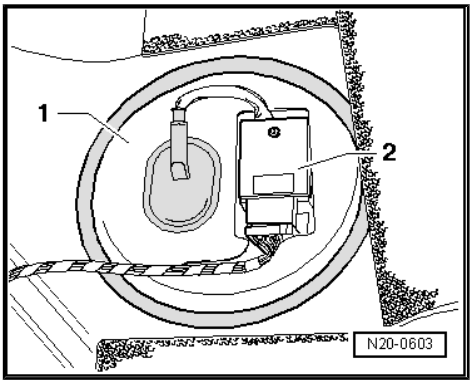
- Trim Removal Wedge - 3409-
- Wrench - Fuel Sending Unit - T10202-
- Torque Wrench, 40-200Nm - VAG1332A-
- Fuel Extractor - VAS5190A-
- Fuel Extraction Unit - VAS5190A- for E 85 - fuel.

Note

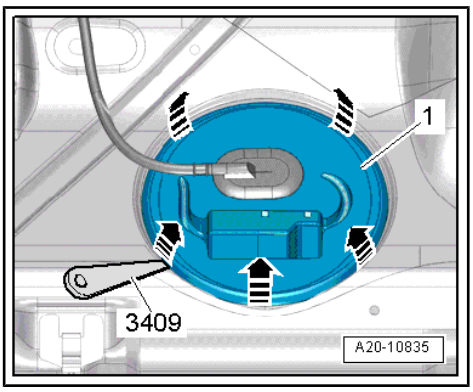
- *The connector couplings must »audibly« engage when locking.*
- *Note the color coding when installing the connector coupling. Refer to* *⇒ page 34 !*
- *Pull on the connector coupling to check for secure fit.*
- *Disconnect the connector couplings. Refer to* *⇒ "3.1 Connector Couplings, Disconnecting", page 34 .*

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

– If equipped, remove the Fuel Pump Control Module - J538- -2- from the cover -1-.



– Unclip the sealing flange cover -1- at the tabs in direction of -arrows- using the -3409- .



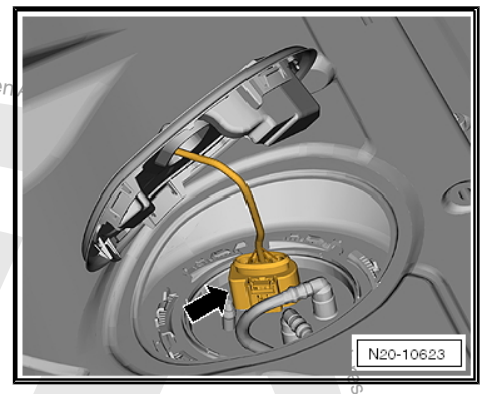
– Disconnect the connector -arrow-.

WARNING

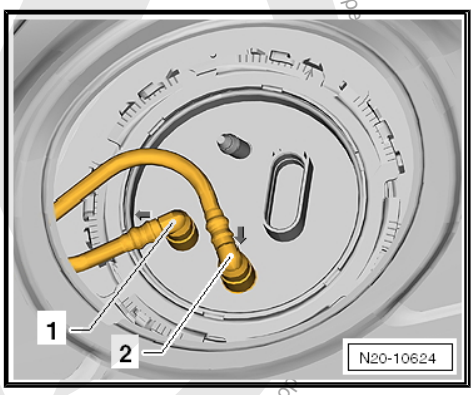
The fuel system is under pressure.

Risk of injury from fuel spraying out.

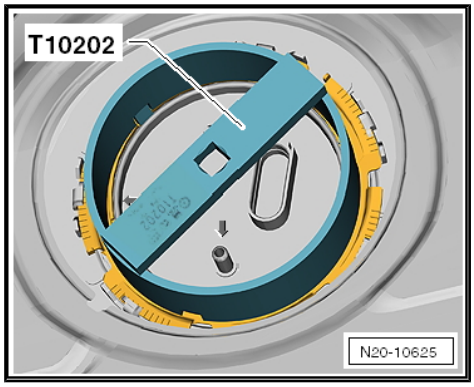
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**



– Release the fuel lines -1 and 2- from the flange and remove them. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



– Open the locking ring using the -T10202- .
– Do not bend the -T10202- and push hard on the locking ring. If the key slides off, the fuel delivery unit can be damaged.
– Carefully lift the fuel delivery unit flange.
– Insert the suction hose for the -VAS5190- as deep as possible into the fuel tank.
– Attach the ground wire of the Fuel Extractor Unit to a bare area on the body.
– Extract the fuel.



If the fuel tank was just drained, then reinstall the fuel delivery unit. Refer to
⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

Tightening Specification

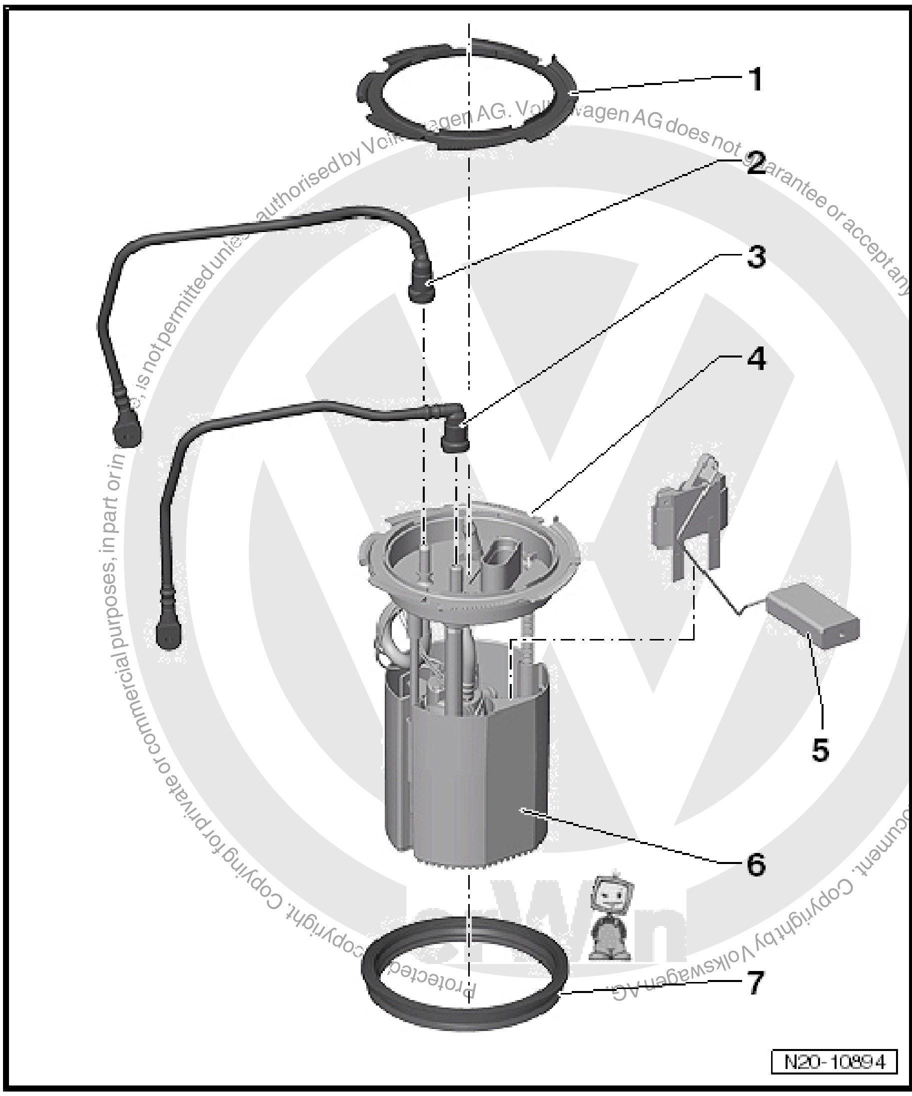
- Refer to
⇒ “2.1 Overview - Fuel Delivery Unit/Fuel Level Sensor”, page 25
- Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .
- Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .
- Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 82 ; Parking/Auxiliary Heater; Overview - Parking/Interior Auxiliary Heater .

2 Fuel Delivery Unit/Fuel Level Sensor

2.1 Overview - Fuel Delivery Unit/Fuel Level Sensor

Note

- *The connector couplings must »audibly« engage when locking.*
- *Note the color coding when installing the connector coupling. Refer to ⇒ page 34 !*
- *Pull on the connector coupling to check for secure fit.*
- *Disconnect the connector couplings. Refer to ⇒ “3 Connector Couplings”, page 34 .*
- *Hose connections are secured with either spring or hose clamps.*
- *Replace the locking clamps with spring clamps.*
- *Fuel hoses at engine must only be secured with spring-type clips. The use of clamps or screw-type clamps is not permitted.*
- *The Hose Clip Pliers - VAS6340- are recommended for installing spring clamps.*



1 - Locking Ring

- ❑ 110 Nm

2 - Supply Line

- ❑ Black
- ❑ Attached to the side of the fuel tank
- ❑ Check for secure fit

3 - Return Line

- ❑ Blue
- ❑ Attached to the side of the fuel tank
- ❑ Check for secure fit

4 - Flange

- ❑ For the fuel delivery unit
- ❑ Note the installation position of the flange on fuel tank. Refer to ⇒ Fig. ““Sealing Flange Installation Position”“ , page 26 .

5 - Fuel Level Sensor - G-

- ❑ Removing and installing. Refer to ⇒ “2.3 Fuel Level Sensor G , Removing and Installing”, page 31 .

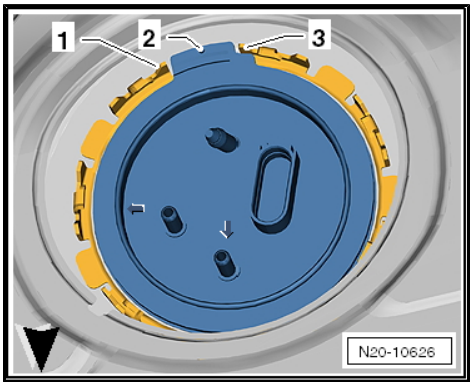
6 - Fuel Delivery Unit

- ❑ Removing and installing. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
- ❑ With the Transfer Fuel Pump - G6-
- ❑ Fuel Pump, Checking. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .

7 - Seal

- ❑ Always replace
- ❑ Insert dry into the fuel tank opening
- ❑ Coat with fuel only when installing the flange

Sealing Flange Installation Position



– Press the sealing flange downward against the spring force and move the sealing flange into the installation position.

- The tab -2- on sealing flange must lie between tabs -1 and 3- on the fuel tank.
- The -arrow- points in the direction of travel.

2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing

Special tools and workshop equipment required

- Wrench - Fuel Sending Unit - T10202-
- Torque Wrench, 40-200Nm - VAG1332A-
- Trim Removal Wedge - 3409-

Note

- *After removing the fuel delivery unit, check the fuel tank for visible contamination and clean if necessary.*
- *The connector couplings must »audibly« engage when locking.*
- *Note the color coding when installing the connector coupling. Refer to ⇒ page 34 !*
- *Pull on the connector coupling to check for secure fit.*
- *Disconnect the connector couplings. Refer to ⇒ "3.1 Connector Couplings, Disconnecting", page 34 .*
- *Hose connections are secured with either spring or hose clamps.*
- *Replace the locking clamps with spring clamps.*
- *Fuel hoses at engine must only be secured with spring-type clips. The use of clamps or screw-type clamps is not permitted.*
- *The -VAS6340- are recommended for installing spring clamps.*

Removing

Note

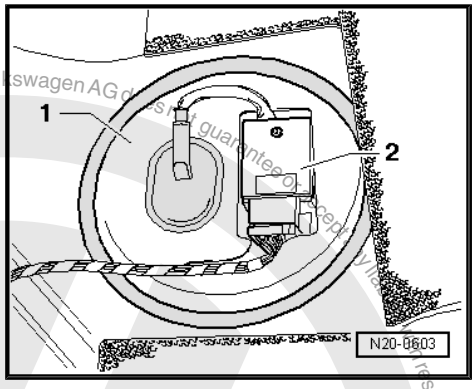
- *Overview - Fuel Tank. Refer to ⇒ "1.1 Overview - Fuel Tank", page 5 .*
- *The fuel tank may be a maximum of $^{3}/_{4}$ full. This ensures the fuel level is below the fuel delivery unit flange.*

– Drain the fuel tank using the -VAS5190- . Refer to ⇒ "1.3 Fuel Tank, Draining", page 16 .

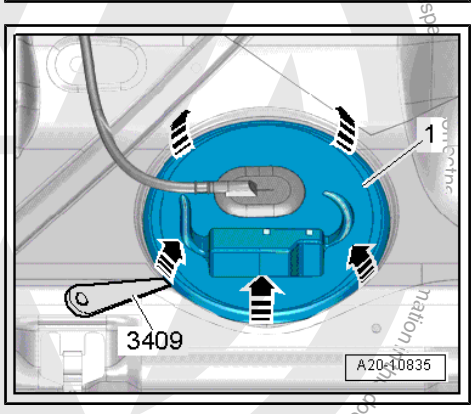
– Disconnect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .

– Remove the rear bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

– If equipped, remove the Fuel Pump Control Module - J538- -2- from the cover -1-.



– Unclip the sealing flange cover -1- at the tabs in direction of -arrows- using the -3409- .



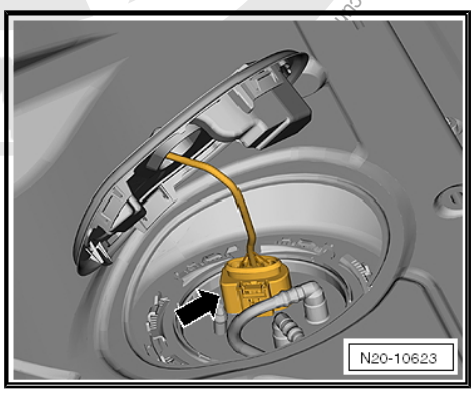
– Disconnect the connector -arrow-.

WARNING

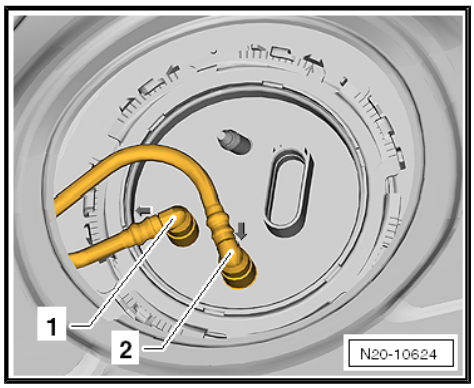
The fuel system is under pressure.

Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**



– Remove the fuel lines -1 and 2- from the flange. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

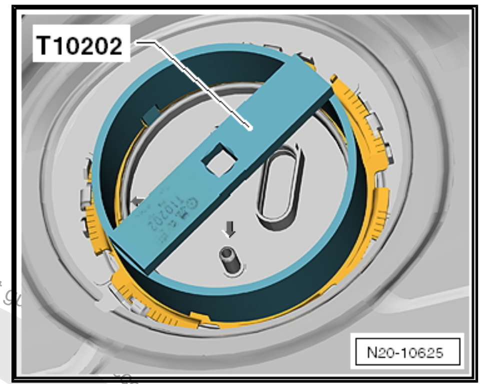


Note

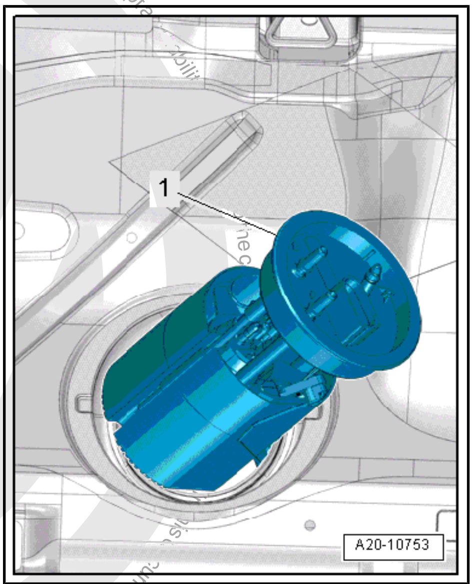
If the vehicle has an auxiliary heater, disconnect the connector and the fuel line for the Metering Pump - V54- .

– Open the locking ring using the -T10202- and lift the flange slightly.

– Do not bend the -T10202- and push hard on the locking ring. If the key slides off, the fuel delivery unit can be damaged.



– Remove the fuel delivery unit -1- and the gasket from the opening in the fuel tank.



Note

- *If the delivery unit is being replaced, the old delivery unit must be emptied before disposing of it.*
- *Follow all waste disposal regulations.*
- *Check the fuel tank for contamination.*

Installing:

Note

- *Pay attention to the installed position of all the components.*
- *Pay attention to the installed position of the fuel extraction line for the auxiliary heater. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 82 ; Fuel Supply; Fuel Supply Component Location Overview .*
- *The connector couplings must »audibly« engage when locking.*
- *Note the color coding when installing the connector coupling. Refer to ⇒ page 34 !*
- *Pull on the connector coupling to check for secure fit.*
- *Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .*

– Replace the seal.

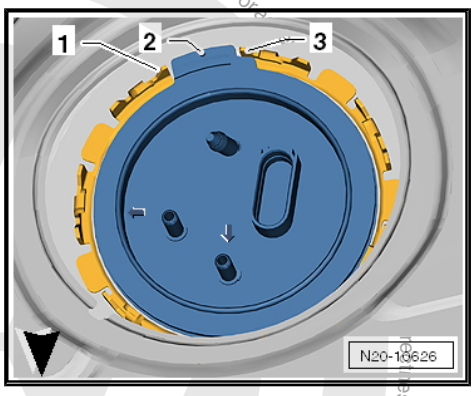
– Insert the dry fuel delivery unit gasket into the opening in the fuel tank.

– Coat the inside of the gasket with fuel.

– Make sure the fuel level sensor is not bent when installing the fuel delivery unit.

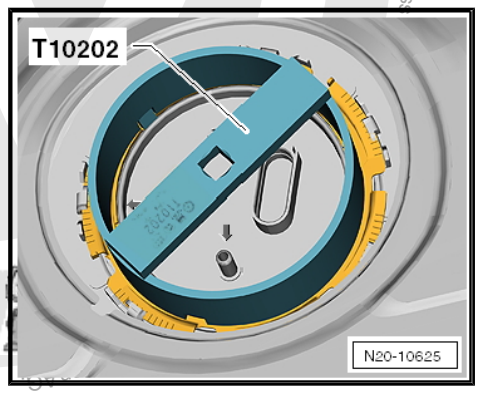
– Press the sealing flange downward against the spring force and move the sealing flange into the installation position.

- The tab -2- on sealing flange must lie between tabs -1 and 3- on the fuel tank.
- The -arrow- points in the direction of travel.



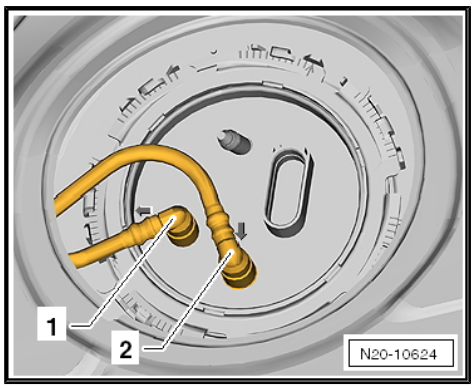
– Tighten the locking ring using the -T10202- .

– Do not bend the -T10202- and push hard on the locking ring. If the key slides off, the fuel delivery unit can be damaged.



– Connect the supply line -1- (black).

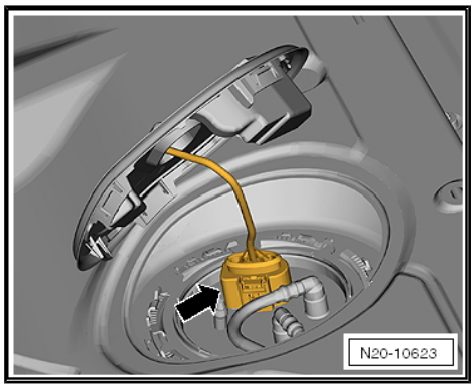
– Connect the return line -2- (blue or has blue markings).



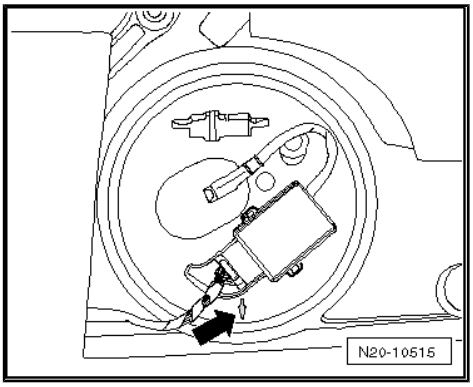
– Connect the connector -arrow-.

– Pull on the connectors and connector couplings to check if them for secure fit.

The rest of the assembly is performed in reverse order. Note the following:



- Check the installed location of the parking heater fuel line. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 82 ; Parking/Auxiliary Heater; Overview - Parking/Auxiliary Heater .
- The -arrow- on the cover points in the direction of travel.



Tightening Specification

- Refer to ⇒ "2.1 Overview - Fuel Delivery Unit/Fuel Level Sensor", page 25
- Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .
- Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Disconnecting and Connecting .
- Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 82 ; Parking/Auxiliary Heater; Overview - Parking/Interior Auxiliary Heater .

2.3 Fuel Level Sensor - G- , Removing and Installing

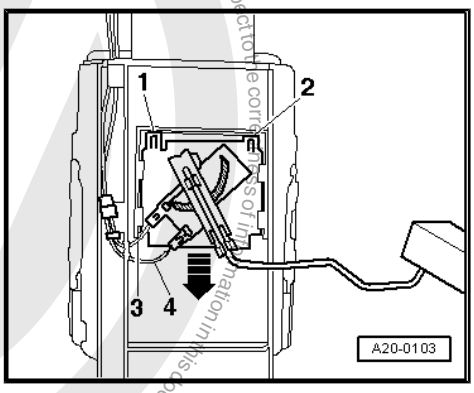
Note

- *As a running change, the fuel delivery unit has an updated Fuel Gauge Sensor - G- .*
- *After removing the fuel delivery unit, check which version of the Fuel Gauge Sensor - G- is installed.*

– Remove the fuel delivery unit. Refer to ⇒ "2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing", page 27 .

Version 1

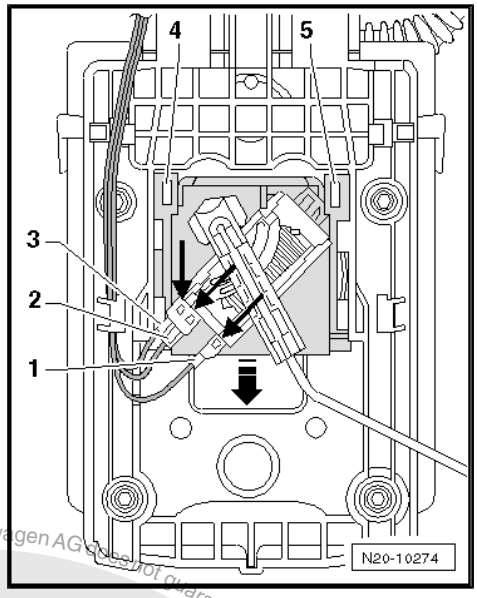
– Write down the cable color coding for reinstallation.
– Release and remove the connector from the wires -3 and 4-.
– Pry off the mounting tabs -1 and 2- using screwdriver and remove sender for fuel gauge towards bottom -arrows-.



Installing:

– Check the color coding.
– Pull on the connectors to make sure they are secure.
– Insert the fuel level sensor into the guides on the fuel delivery unit and push upward until it engages.

Version 2:

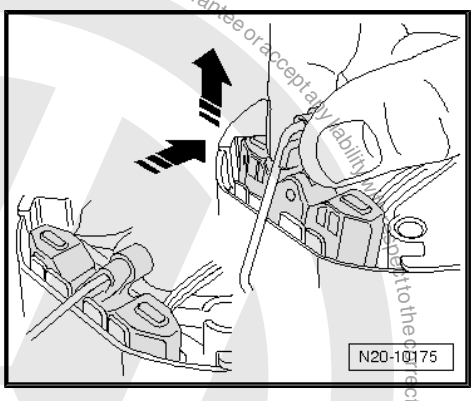


– Write down the cable color coding for reinstallation.
– Release the connectors -arrows- and disconnect the wires -1 through 3-.
– Lift the retaining tabs -4 and 5- with a screwdriver and pull the Fuel Gauge Sensor - G- downward and off -arrow-.

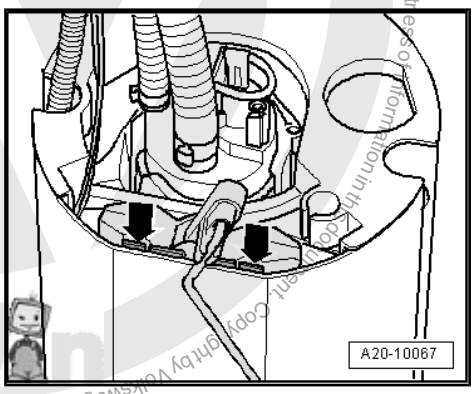
Installing:

– Insert the Fuel Level Sensor - G- into the guides on the fuel delivery unit and push upward until it engages.
– Check the color coding.
– Connect the connector.
– Pull on the connectors to make sure they are secure.

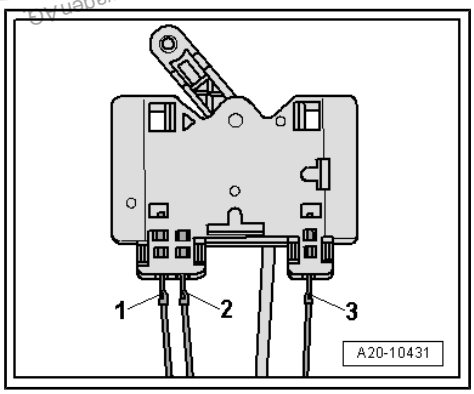
Version 3:



– Press the Fuel Gauge Sensor - G- slightly to the side and pull it upward at the same time.



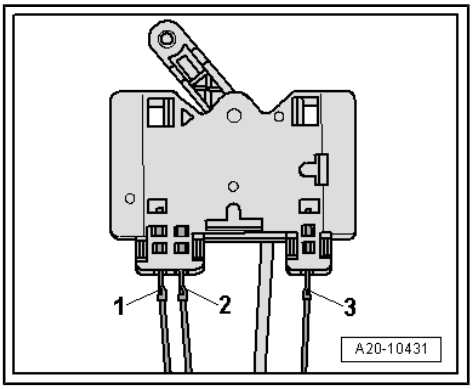
– If the sensor cannot be released as described, push the tabs -arrows- slightly to the side.



– Write down the cable color coding for reinstallation.
– Disconnect the connectors -1 through 3-.
– Bend the hooks back.

Installing:

- Connect the connectors -1 through 3-.
- Check the color coding.
- Pull on the connectors to make sure they are secure.
- Insert the Fuel Level Sensor - G- into the guide on the fuel delivery unit and push downward until it engages.



Continuation for All Vehicles

- Install the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

3 Connector Couplings

⇒ “3.1 Connector Couplings, Disconnecting”, page 34

3.1 Connector Couplings, Disconnecting

Special tools and workshop equipment required

- Lever - Fuel Line - T10468-

Connector Coupling Allocation

Note

The connector couplings for fuel, vacuum and bleeder lines are color-coded. There is either a colored dot on the connector coupling or the release button is the corresponding color.

Connector Coupling	Color Coding on Connector Coupling
Fuel supply	Black
Fuel Return Line	Blue
Bleeder	White
Vacuum	Green

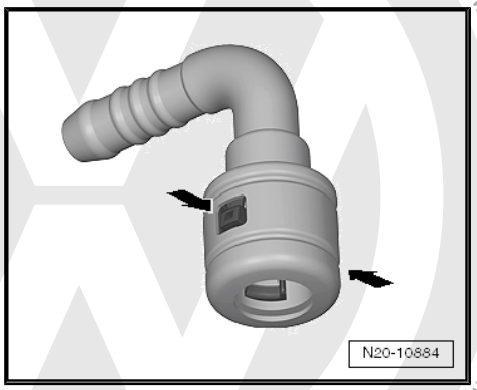
WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

Version 1

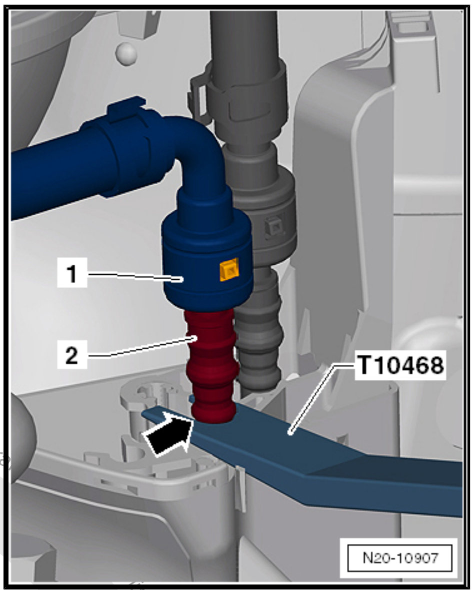
Connector coupling with right and left release buttons -arrows-.

Opening



It is necessary to counterhold the fuel separating point -1-.

– Insert the -T10468- between the heat shield and the fuel line stop -arrow- -2- and counterhold it.



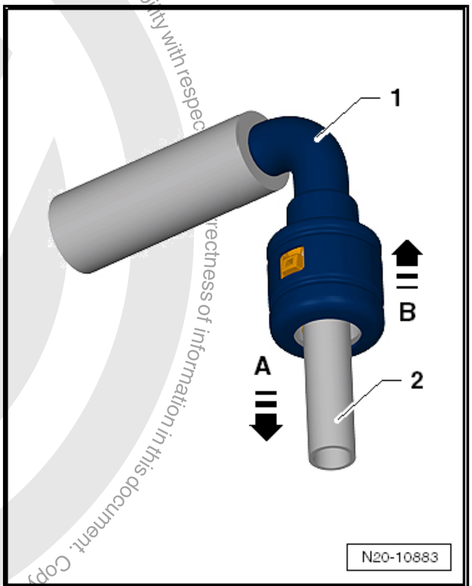
Continuation for all separating points on the fuel system:

– Push the connector coupling -1- in the direction of -arrow A-.

– Press the release buttons and disconnect the connector coupling -1- in the direction of -arrow B- from the fuel line -2-.

Pay attention to the color coding during installation. Refer to ⇒ page 34 .

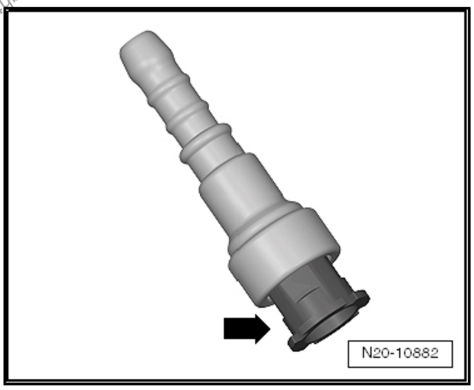
– Pull on the connector coupling to check for secure fit.



Version 2

Connector coupling with pull release -arrow-.

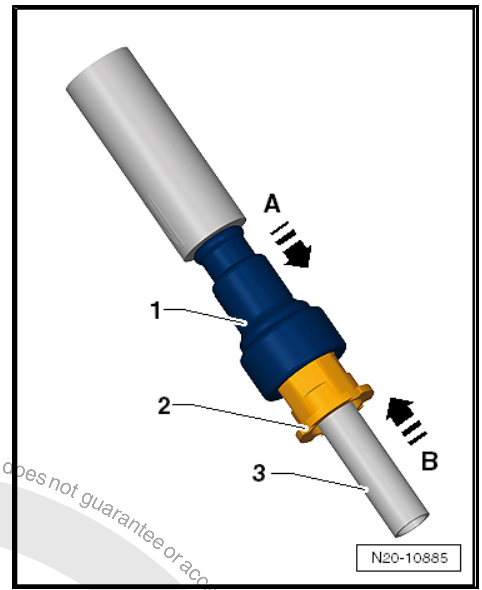
Opening



– Push the connector coupling -1- in the direction of -arrow A-.
– Pull the pull release -2- in the direction of -arrow B-.
– Pull the connector coupling -1- off the fuel line -3- in the direction of -arrow B-.

Pay attention to the color coding during installation. Refer to ⇒ page 34 .

– Pull on the connector coupling to check for secure fit.



Version 3

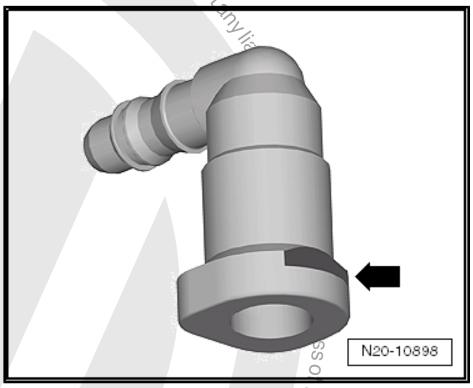
Connector coupling with front button -arrow-.

Opening

– Press the release button -arrow- and disconnect the connector coupling.

Note the color coding when installing. Refer to ⇒ page 34 .

– Pull on the connector coupling to check for secure fit.



Version 4

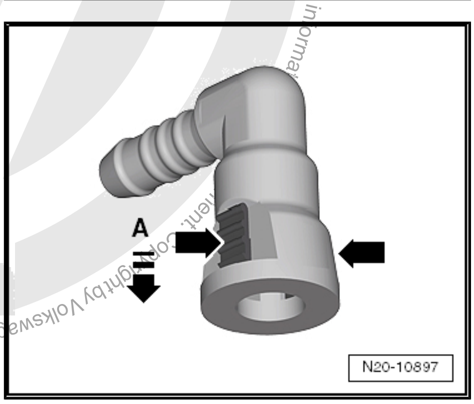
Connector coupling with right and left release buttons -arrows-:

Opening

– Push the connector coupling in the direction of -arrow A-.
– Press the release buttons -arrows- and remove the connector coupling.

Note the color coding when installing. Refer to ⇒ page 34 .

– Pull on the connector coupling to check for secure fit.



Version 5

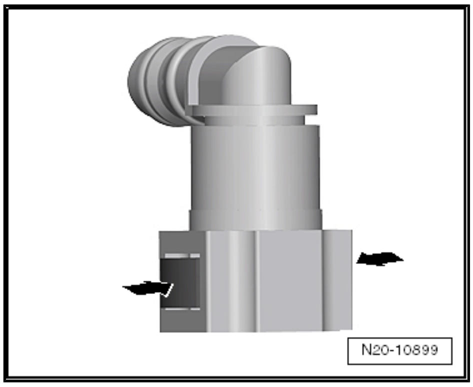
Connector coupling with right and left release buttons -arrows-.

Opening

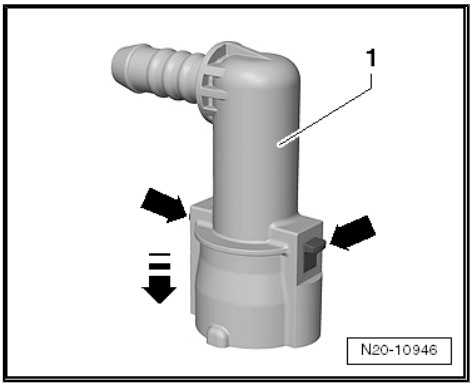
– Press the release buttons -arrows- and remove the connector coupling.

Pay attention to the color coding during installation. Refer to ⇒ page 34 .

– Pull on the connector coupling to check for secure fit.



Version 6



Connector coupling with right and left release buttons -arrows-.

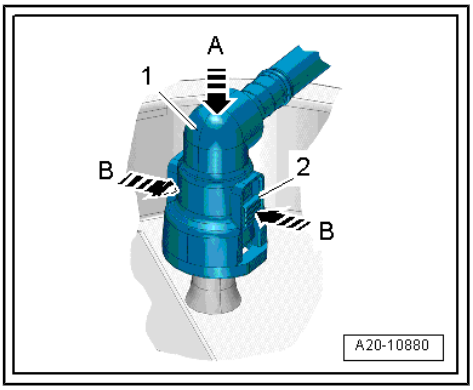
Opening

– Press the connector coupling in the direction of -arrow-.
– Press and hold the release buttons -arrows-.
– Disconnect the connector coupling.

Note the color coding when installing. Refer to ⇒ page 34 .

– Pull on the connector coupling to check for secure fit.

Version 7



Connector coupling -1- with right and left release buttons -2-:

Opening

– Press the connector coupling -1- in direction of -arrow A- and hold it down.
– Push the release buttons -2- in the direction of -arrow B- and remove the connector coupling -1-.

Note the color coding when installing. Refer to ⇒ page 34 .

The connector couplings must »audibly« engage when locking.

– Pull on the connector coupling to check for secure fit.

WARNING

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– Make sure all connected lines are securely in place by pulling on them.
– Remove any cleaning cloths soaked in fuel from the vehicle area.

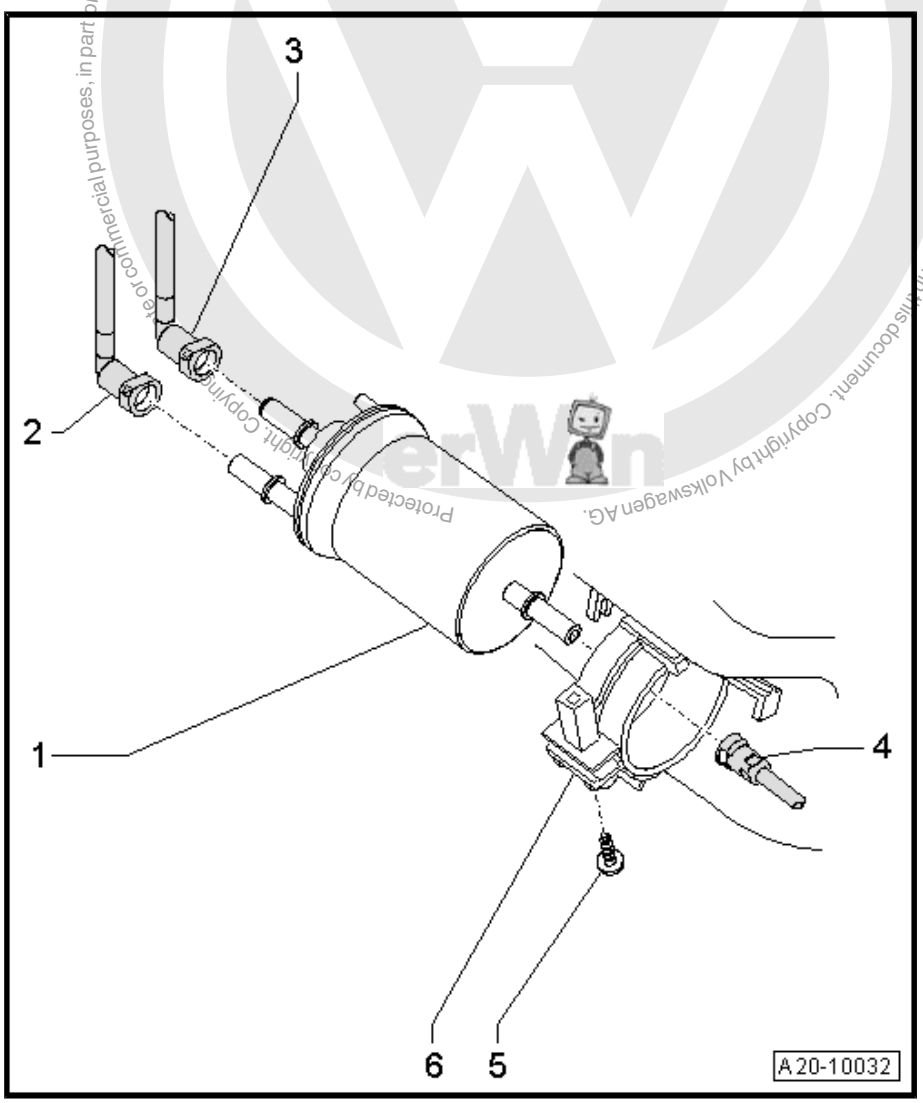
4 Fuel Filter

⇒ “4.1 Overview - Fuel Filter”, page 38

⇒ “4.2 Fuel Filter, Removing and Installing”, page 38

4.1 Overview - Fuel Filter

The fuel filter in the non-return fuel system has a pressure relief valve. In this system, only the supply line is routed forward to the engine compartment.



1 - Fuel Filter

- ❑ with fuel regulating valve
- ❑ The direction of flow is marked with arrows
- ❑ Do not switch the connections
- ❑ Installed position: pin on filter housing must engage in recess of guide on filter bracket. Refer to ⇒ page 39 .
- ❑ Removing and installing. Refer to ⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

2 - Fuel Supply Line

- ❑ Black
- ❑ From the fuel tank
- ❑ Removing. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

3 - Fuel Return Line

- ❑ Blue
- ❑ To the fuel tank
- ❑ Removing. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

4 - Fuel Line

- ❑ Black
- ❑ To the engine
- ❑ Removing. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

5 - Bolt

- ❑ 3 Nm

6 - Bracket for Fuel Filter

- ❑ Secured on the fuel tank

4.2 Fuel Filter, Removing and Installing

Special tools and workshop equipment required

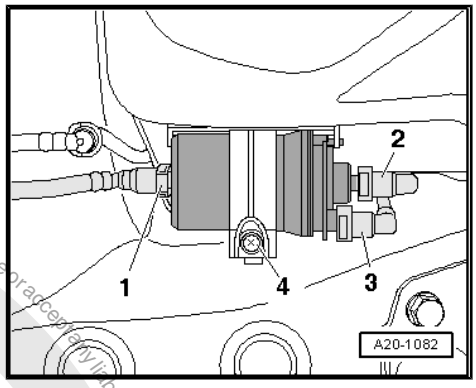
♦ Drip Tray

Removing

– Pay attention to the safety precautions. Refer to ⇒ “1 Safety Precautions”, page 1 .

– Follow the guidelines for clean working conditions. Refer to ⇒ “3.1 Guidelines for Clean Working Conditions on Parking/ Auxiliary Heater and Fuel System”, page 4 .

– Place the drip tray under the fuel filter.



WARNING

The fuel system is under pressure.

Risk of injury from fuel spraying out.

– Wear protective eyewear.

– Wear safety gloves.

– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

– Disconnect fuel lines -1, 2 and 3-. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

– Remove the bolt -4-.

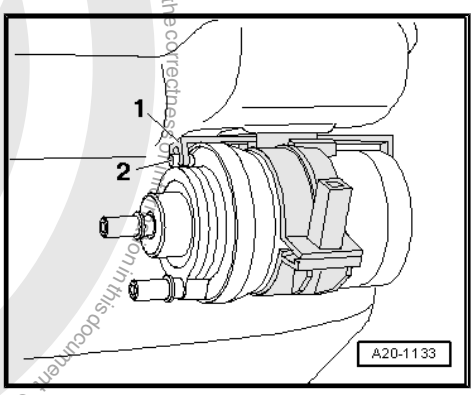
– Remove the fuel filter.

Installing

Install in reverse order of removal and note the following:

Installed Position:

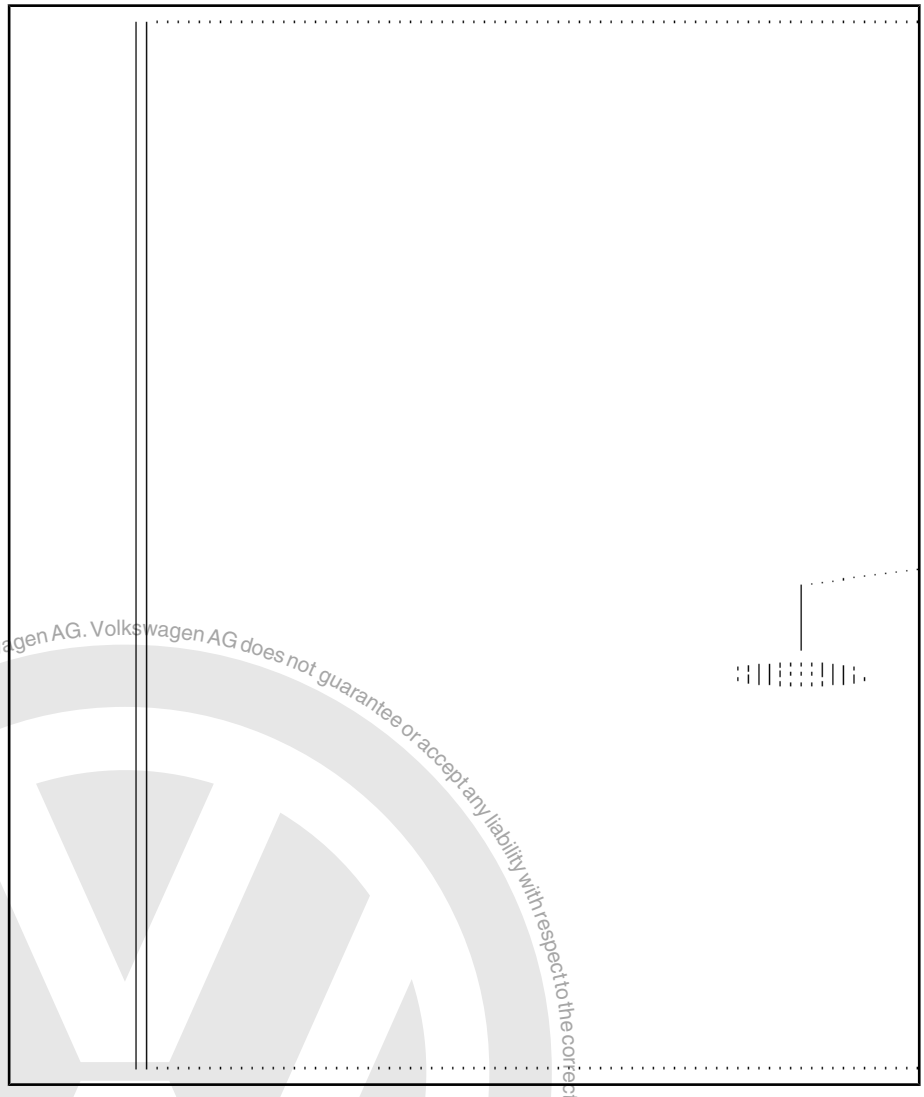
- Tightening specification. Refer to ⇒ “4.1 Overview - Fuel Filter”, page 38 .
- The flow direction is marked on the filter housing with arrows.
- The pin -2- on filter housing must engage in recess of the guide -1- on filter bracket.



5 EVAP System

5.1 Overview - EVAP System

5.1.1 Overview - EVAP System, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region



1 - EVAP Canister

- ❑ Component location: in the engine compartment on the right side

2 - Pressure Retaining Valve with Connecting Hose

3 - Connecting Hose

- ❑ Make sure it is secure.
- ❑ From the fuel tank
- ❑ Removing. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

4 - Nut

- ❑ 10 Nm

5 - EVAP Canister Purge Regulator Valve 1 - N80-

- ❑ The valve is closed when the ignition is off
- ❑ Valve is activated (pulsed) by the engine control module when the engine is warm

6 - Connecting Hose

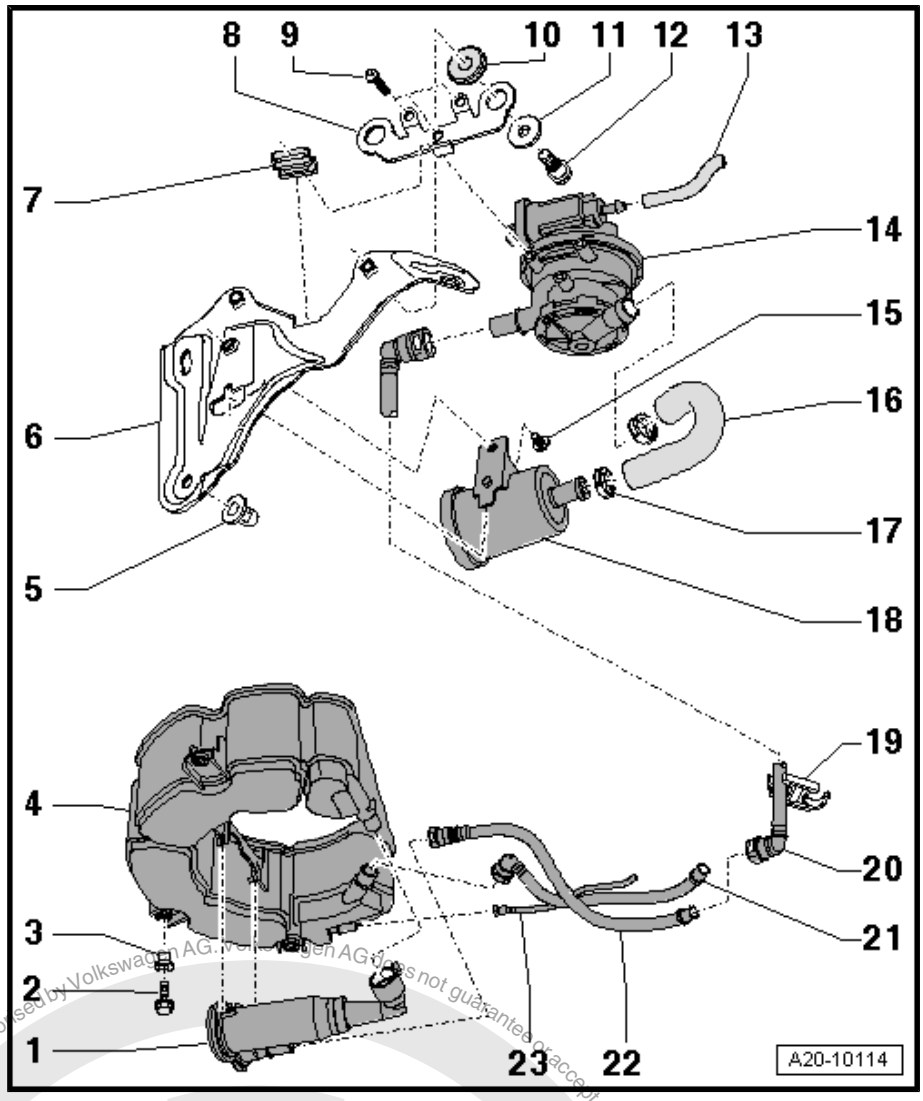
- ❑ to Intake Manifold
- ❑ Make sure it is secure.

7 - Bracket

- ❑ For the EVAP canister

8 - Vent Hole

5.1.2 Overview - EVAP System, Engine Codes CBTA and CBUA



1 - EVAP Canister

- ❑ Only installed with engine code CBUA

2 - Bolt

- ❑ 8 Nm

3 - Bushing

4 - EVAP Canister

- ❑ Installed location: in the bottom of the spare tire well
- ❑ Removing and installing. Refer to ⇒ “5.2 EVAP Canister, Removing and Installing, Engine Codes CBTA and CBUA”, page 43 .

5 - Nut

- ❑ 6 Nm

6 - Bracket

7 - Mount

8 - Bracket

9 - Bolt

- ❑ 4 Nm

10 - Rubber Grommet

11 - Washer

12 - Bolt

- ❑ 8 Nm

13 - Bleeder Line

- ❑ To the engine

14 - Leak Detection Pump - V144-

- ❑ Component location: under the wheel housing liner in the right rear wheel housing
- ❑ Check using the Vehicle Diagnostic Tester .
- ❑ Removing and installing. Refer to ⇒ “5.6 Leak Detection Pump, Removing and Installing, Engine Codes CBTA and CBUA”, page 55 .

15 - Bolt

- ❑ 4 Nm

16 - Connecting Hose

17 - Clamp

18 - Air Filter

- ❑ For the Leak Detection Pump - V144-
- ❑ No maintenance schedule

19 - Bracket

20 - Connecting Pipe

- ❑ Clip onto the bracket.
- ❑ To disconnect, press the release button on the connecting piece

21 - Bleeder Line

- ❑ To Fuel Tank Filler Tube
- ❑ To disconnect, press the release button on the connecting piece

22 - Bleeder Line

- ❑ To disconnect, press the release button on the connecting piece

23 - Bleeder Line

- ❑ To the EVAP Canister Purge Regulator Valve 1 - N80-
- ❑ To disconnect, press the release button on the connecting piece

5.2 EVAP Canister, Removing and Installing, Engine Codes CBTA and CBUA

Special tools and workshop equipment required

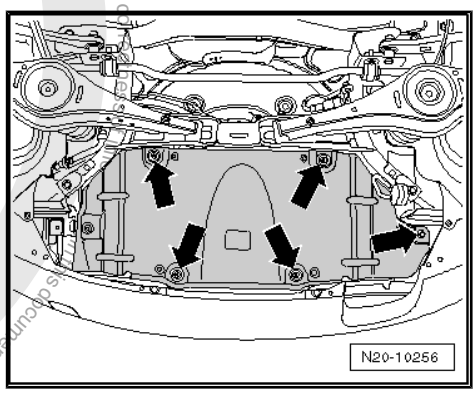
- ♦ Engine and Gearbox Jack - VAS6931-

Removing

– Remove the center and rear mufflers. Refer to ⇒ Rep. Gr. 26 ; Exhaust Pipes/Mufflers; Overview - Muffler .

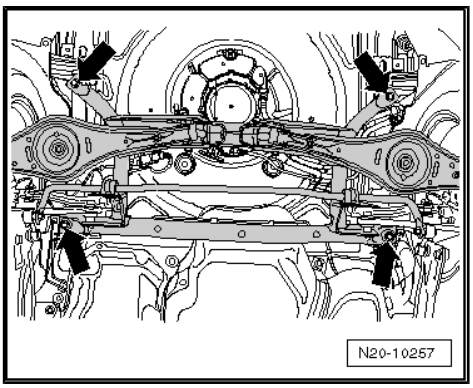
– Remove the heat shield -arrows-.

– Place the -VAG1383A- under the rear axle for support.



– Loose the rear axle bolts -arrows- and remove them about 20 mm.

– Lower the rear axle using the -VAS6931- .

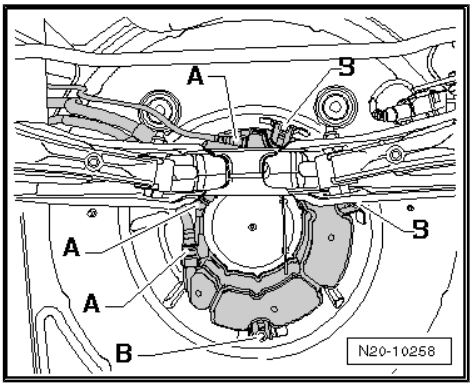


– Press the release button and disconnect the vent lines -A-.

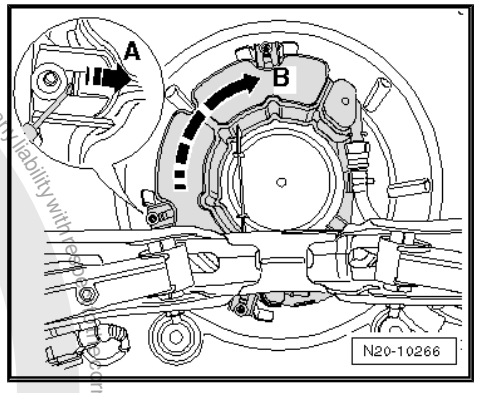
– Remove the bolts -B-.

– Release the tab -A- with a screwdriver.

– Turn the EVAP canister approximately 90° to the right -B-.



– Remove the EVAP canister.



Installing:

Install in reverse order of removal and note the following:

– Attach the breather lines until they click into place.

– Install the rear axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 42 .

Tightening Specification

♦ Refer to
⇒ “5.1.2 Overview - EVAP System, Engine Codes CBTA and CBUA”, page 42

5.3 Fuel Tank Venting, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region

Special tools and workshop equipment required

♦ Hand Vacuum Pump - VAS6213-

♦ Pressure Tester Kit - VAS6550-

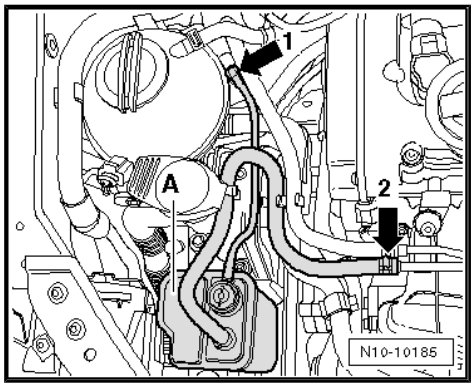
♦ Pressure Tester Kit - Adapter Set - Fitting - VAS6550/3-1-

Test conditions:

• The ignition must be off.

Test sequence:

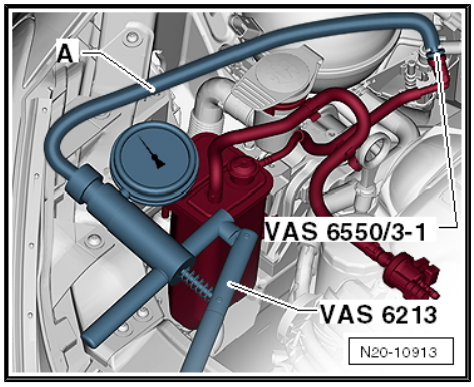
– Remove the breather line -1-. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



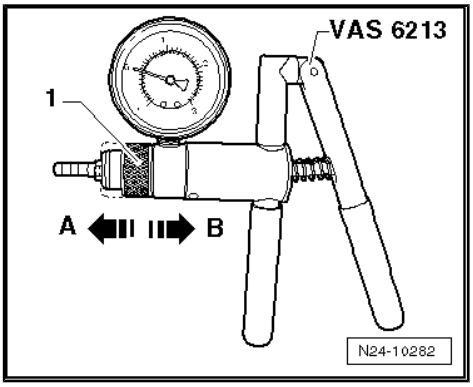
– Connect the -VAS6213- to the vent line to the EVAP canister as shown.

– Secure the -VAS6550/3-1- on the vent line.

– Connect the -VAS6213- and the -VAS6550/3-1- using a commercially available hose -A-.



– Set the slide ring -1- on the -VAS6213- to position -B- for “pressure”.



Vent Hose on EVAP Canister, Checking

– Clamp off the hose between the EVAP canister and EVAP Canister Purge Regulator Valve 1 - N80- -item 5- ⇒ Item 5 (page 41) .

– Create approximately 0.1 bar (1.45 psi) pressure using the -VAS6213- .

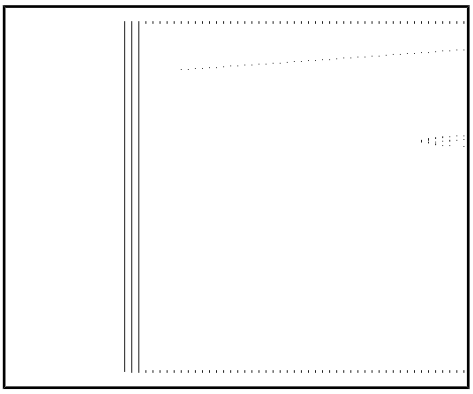
• If the pressure »cannot« be built:

– The vent connection is OK.

If the pressure increases:

– Check the vent hole on the EVAP canister -item 8- ⇒ Item 8 (page 41) for contamination and clean it if necessary.

EVAP canister, checking for leaks



– Clamp off the hose between the EVAP canister and EVAP Canister Purge Regulator Valve 1 - N80- -item 5- ⇒ Item 5 (page 41) .

– Seal the vent hole -arrow- and press the -VAS6213- several times.

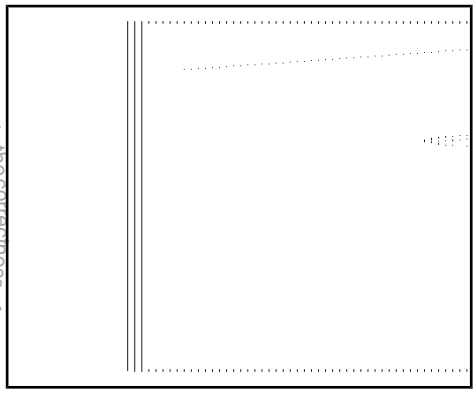
– Create approximately 0.1 bar (1.45 psi) pressure using the -VAS6213- .

If the pressure does not increase:

– Check the lines and connections on the EVAP canister with a commercially available leak detection spray.

– If no error is determined replace the EVAP canister. Refer to ⇒ “5.1.1 Overview - EVAP System, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 40 .

Check the EVAP Canister Purge Regulator Valve 1 - N80- for leaks.



• The hose between the EVAP canister and EVAP Canister Purge Regulator Valve 1 - N80- -item 5- ⇒ Item 5 (page 41) must not be sealed.

– Seal the vent hole -arrow-.

– Create approximately 0.1 bar (1.45 psi) pressure using the -VAS6213- .

If the pressure does not increase.

– Check the hose between EVAP canister and EVAP Canister Purge Regulator Valve 1 - N80- using a commercially available leak detection spray.

– If no malfunction can be found replace the EVAP Canister Purge Regulator Valve 1 - N80- .

5.4 Fuel System, Checking for Leaks, Engine Codes CBTA and CBUA

5.4.1 Fuel System, Checking for Leaks

Special tools and workshop equipment required

- Evaporative Emissions Tester - KLI9210-
- Evaporative Emissions Tester - Adapter 55 - KLI9210/55-1-
- Vehicle Diagnostic Tester
- Hose Clamps - Up To 25 mm - 3094-

The connector couplings for fuel, vacuum and bleeder lines are color-coded. There is either a colored dot on the connector coupling or the release button is the corresponding color.

Connector Coupling	Color Coding on Connector Coupling
Fuel supply	Black
Fuel Return Line	Blue
Bleeder	White
Vacuum	Green

Test Conditions:

- The Leak Detection Pump - V144- detected a leak.
- Guided Fault Finding was performed using the Vehicle Diagnostic Tester .

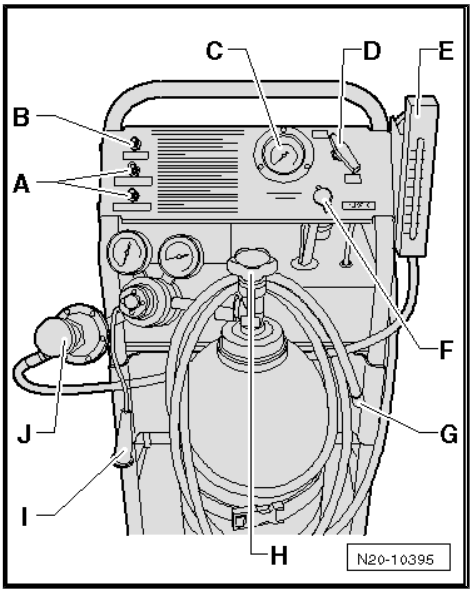
Prepare the -KLI9210- :

Note

Depending on the version, the appearance of the -KLI9210- may vary.

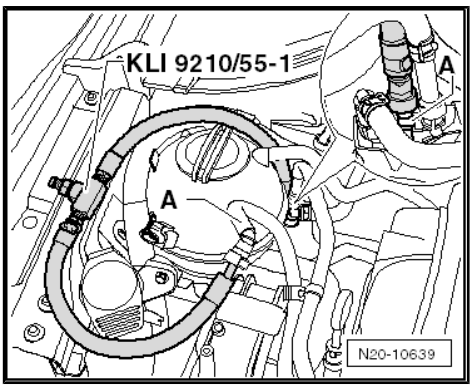
– Check on the -KLI9210- whether there is enough fluid in the smoke generator.

– Set the valve -D- to “Hold”.
– Open the nitrogen bottle -H-.
– Connect the measuring hose -G- to the self-test connection -B-.
– Set the valve -D- to “Test”.
– Using the pressure reducer -J-, adjust the pressure to 10 in. H2O (25 mbar (0.36 psi)).
– Set the valve -D- to “Hold”.
– The pressure must now be maintained a minimum of two minutes. If the pressure is not maintained, check the tester.

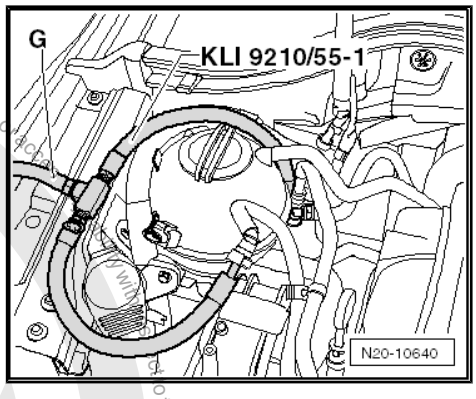


Fuel System, Checking for Leaks:

– Connect the -KLI9210/55-1- on the breather line -A- (color identification: white).

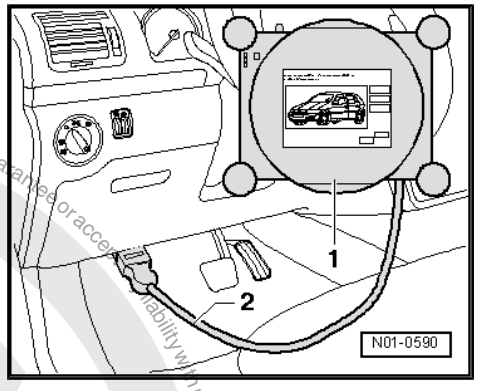


– Connect the measuring hose -G- from the -KLI9210- to the -KLI9210/55-1- .
– Set the valve -D- to “Hold”.



– Connect the Vehicle Diagnostic Tester to the vehicle.
– Start the engine and let it run at idle.
– Select the Guided Functions mode on the Vehicle Diagnostic Tester .
– Select the “Check tank ventilation system for leaks” guided function.
– Start the test.
– Watch the pressure gauge on the -KLI9210- during the test.

• The Leak Detection Pump - V144- must pump the fuel system up to minimum 18 mbar (0.26 psi) (7 in. H2O).

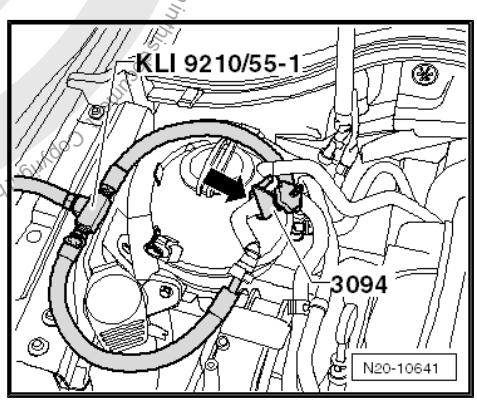


The minimum pressure is not reached, but the pressure reached does not decrease:

– Turn off the ignition and perform a pressure retention test. Refer to ⇒ page 48 .
– If there is no decrease in pressure, check the vacuum supply for the Leak Detection Pump - V144- . Refer to ⇒ “5.4.4 Leak Detection Pump, Checking Vacuum Supply”, page 52 .

If the minimum pressure is not reached again and the pressure that is reached decreases immediately:

– Clamp off the hose to the EVAP Canister Purge Regulator Valve 1 - N80- with the -3094- -arrow-.
– Repeat the test. If the minimum pressure was reached, replace the EVAP Canister Purge Regulator Valve 1 - N80- .



If the minimum pressure is not reached again and the pressure that is reached decreases immediately:

– There is a leak in the fuel system: perform the test “Check for Leak In Fuel System”. Refer to ⇒ “5.4.2 Fuel System Leak Detection”, page 50 .

If the Minimum Pressure is Reached, Turn off the Ignition.

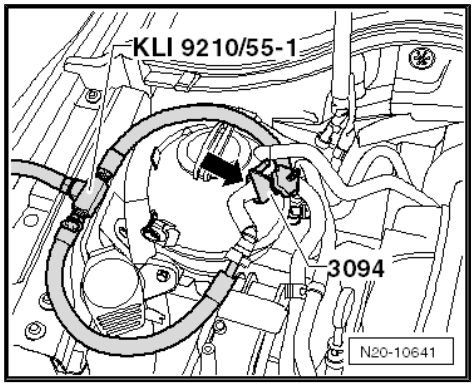
The valve in the Leak Detection Pump - V144- is now closed. The pressure is held.

– Watch the pressure gauge:

If the pressure does not decrease, perform a pressure retention test to locate any possible pinhole leaks. Refer to ⇒ page 48 .

If the pressure decreases, clamp off the hose to the EVAP Canister Purge Regulator Valve 1 - N80- with the -3094- -arrow-.

– If the pressure stops falling, replace the EVAP Canister Purge Regulator Valve 1 - N80- .

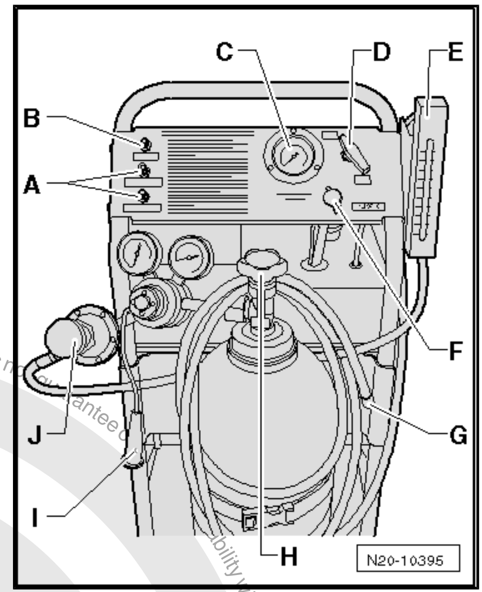


If the pressure continues to fall, perform the “leak test in fuel system”. Refer to ⇒ “5.4.2 Fuel System Leak Detection”, page 50 .

Pressure Retention Test

– Set the valve -D- to “Test”. Increase the current pressure until it reaches 10 in. H2O (25 mbar) (0.36 psi).

– Watch the pressure gauge -C- and the flow meter -E-. The fuel system is filled if the flow rate decreases and the pressure increases to 10 in. H2O (25 mbar) (0.36 psi).



Note

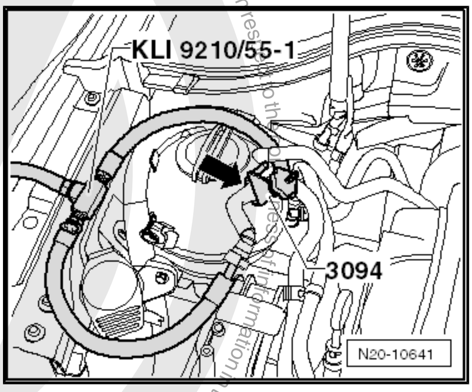
Depending on the level in the fuel tank, this procedure may take up to three minutes.

– After the pressure has stabilized, set the valve -D- to “Hold”.

• The pressure must not drop below 8 in. H2O (20 mbar) (0.29 psi) after five minutes.

If the Pressure is Not Maintained for Five Minutes, the Leak Should be Localized as Follows:

– First check EVAP Canister Purge Regulator Valve 1 - N80- for leaks. Clamp off the hose to the EVAP Canister Purge Regulator Valve 1 - N80- with the -3094- -arrow-.

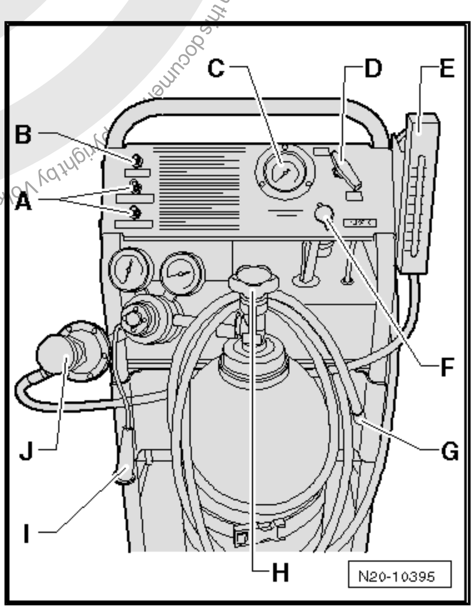


– Set the valve -D- to “Test” and repeat the pressure test.

– Watch the pressure gauge and the flow meter. The fuel system is filled if the flow rate decreases and the pressure increases to 10 in. H2O (25 mbar) (0.36 psi).

– After the pressure has stabilized, set the valve -D- to “Hold”.

– If the pressure stops falling, replace the EVAP Canister Purge Regulator Valve 1 - N80- .



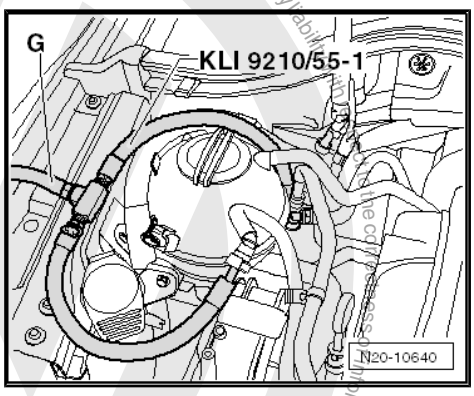
If the pressure continues to fall, perform the “leak test in fuel system”. Refer to ⇒ “5.4.2 Fuel System Leak Detection”, page 50 .

After completing the work, perform the “Check tank ventilation system for leaks” guided function with the Vehicle Diagnostic Tester .

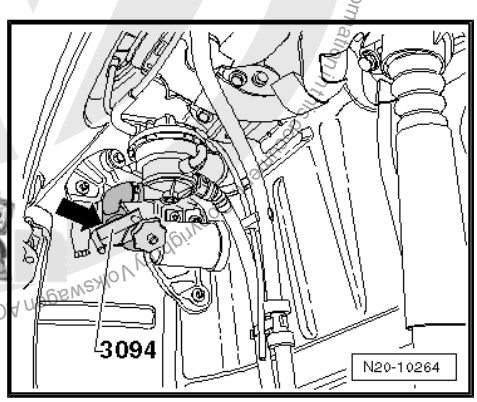
5.4.2 Fuel System Leak Detection

Test Conditions:

- The procedure “Fuel System, Checking for Leaks” is performed. Refer to
⇒ “5.4 Fuel System, Checking for Leaks, Engine Codes CBTA and CBUA”, page 46 .
- The -KLI9210- must be connected to the vehicle with the -KLI9210/55-1- .



– Connect the -KLI9210- to the vehicle battery.
– Remove the right rear wheel housing liner.
– Clamp off the hose between the Leak Detection Pump - V144- and the air filter -arrow-.



– Set the valve -D- to “Test”.

– Watch the pressure gauge -C- and the flow meter -E-. The fuel system is filled if the flow rate decreases and the pressure increases to 10 in. H2O (25 mbar) (0.36 psi).

– After the pressure has stabilized, set the valve -D- to “Hold”.

• The pressure must not drop below 8 in. H2O (20 mbar) (0.29 psi) after five minutes.

– If the pressure stops falling, replace the Leak Detection Pump - V144- .

If the pressure is not maintained for a minimum of five minutes or if no pressure is built up, localize the leak as follows:

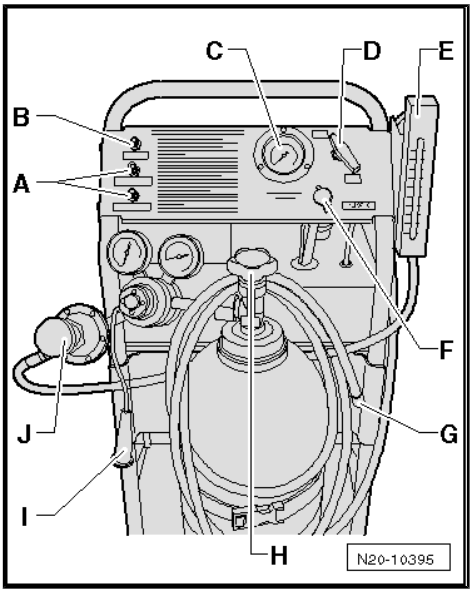
– Fill the fuel system with smoke.

– Set the valve -D- to “Test” again.

– While the fuel system is being filled, press smoke generator button -I- for approximately one minute.

The fuel system is now under pressure and filled with smoke.

– Check all fuel system lines and hoses for escaping smoke. Also check the fuel cap.



Note

- *Illuminate the components and hoses with a strong flood light, the smoke will be more visible.*
- *To check for leaks at accessible locations, also use an ultrasonic measuring device or commercially available leak detection spray.*
- *Depending on how long fault finding lasts, the smoke generator button may need to be pressed again. This ensures there is enough smoke present in the fuel system.*
- *The installation opening inside the passenger compartment must be opened to check the flange on the fuel pump and fuel filter.*

– Replace any leaking hoses or components.

After completing the work, perform the “Check tank ventilation system for leaks” guided function with the Vehicle Diagnostic Tester .

5.4.3 EVAP System, Function Overview

1 - EVAP Canister

2 - Adapter Hose - KLI9210/55-1- Component Location

- ❑ During the leak test in fuel system

3 - EVAP Canister Purge Regulator Valve 1 - N80-

4 - Bleeder Line

- ❑ Throttle Valve Control Module - J338-

5 - Solenoid Valve

- ❑ For the Leak Detection Pump - V144-

6 - Vacuum Line

- ❑ To Intake Manifold

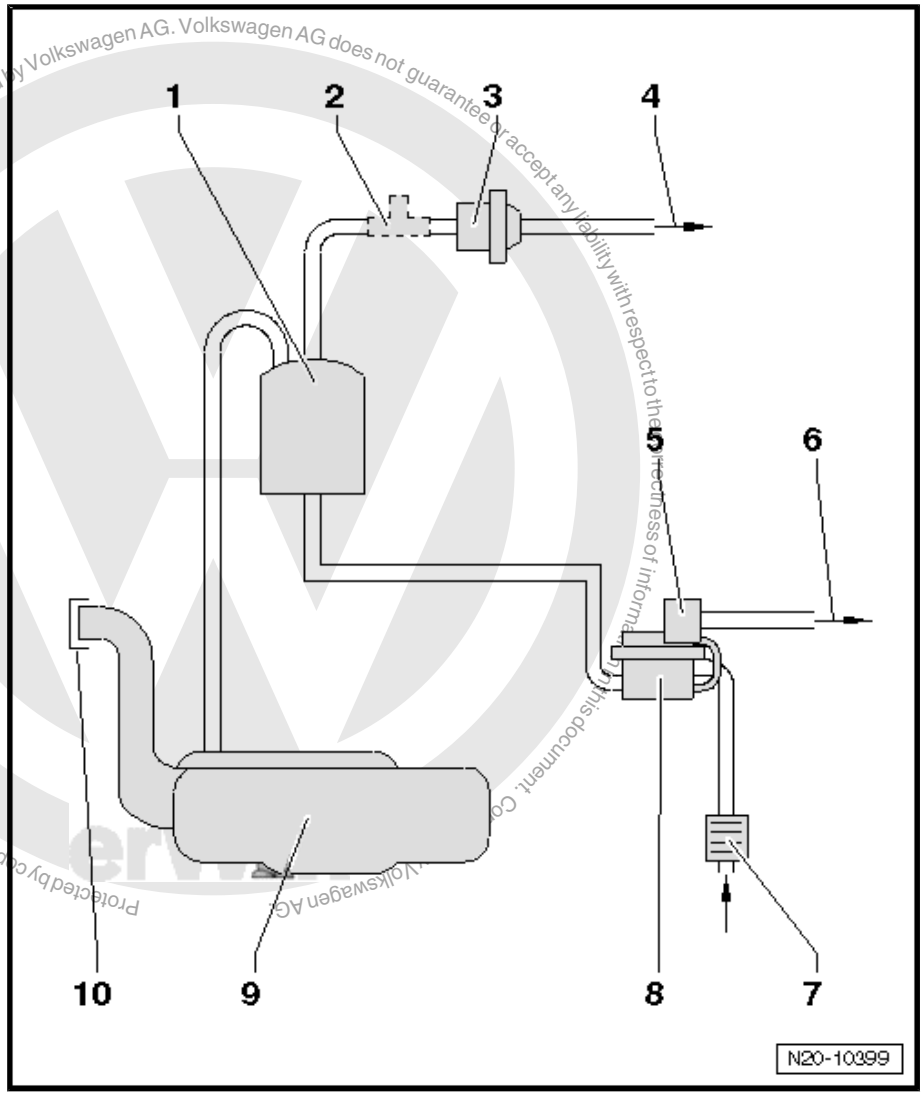
7 - Air Filter

- ❑ For the Leak Detection Pump - V144-

8 - Leak Detection Pump - V144-

9 - Fuel Tank

10 - Cap



5.4.4 Leak Detection Pump, Checking Vacuum Supply

Special tools and workshop equipment required

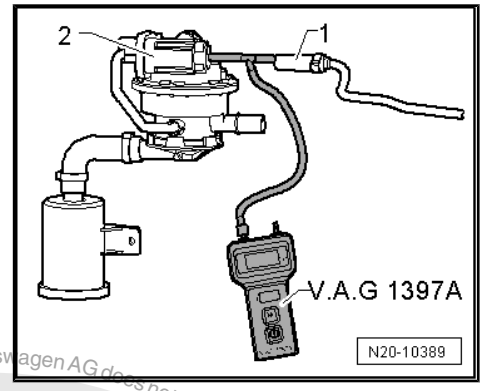
- ♦ Digital Pressure Sensor - VAG1397B-
- ♦ T-Connection - 251 201 346-
- ♦ Hose 6 mm diameter

Note

Leak Detection Pump - V144- installed location: inside the right rear wheel housing under the wheel housing liner.

– Remove the right rear wheel. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Wheels, Tires; Wheel, Changing .

– Remove the right rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Wheel Housing Liner, Removing and Installing .



– Remove the vacuum line -1- from the Leak Detection Pump - V144- .
– Connect the -VAG1397A- , with the T-connection and the 6 mm diameter hose from between the vacuum line -1- and the Leak Detection Pump - V144- -2-.
– Switch on the measuring range I (absolute pressure measurement).
– Connect the Vehicle Diagnostic Tester and start the engine.
– Select the Guided Functions mode on the Vehicle Diagnostic Tester .
– Select the “Check tank ventilation system for leaks” guided function.
– Start the test.
– During the test, pay attention to the display on the -VAG1397A- .

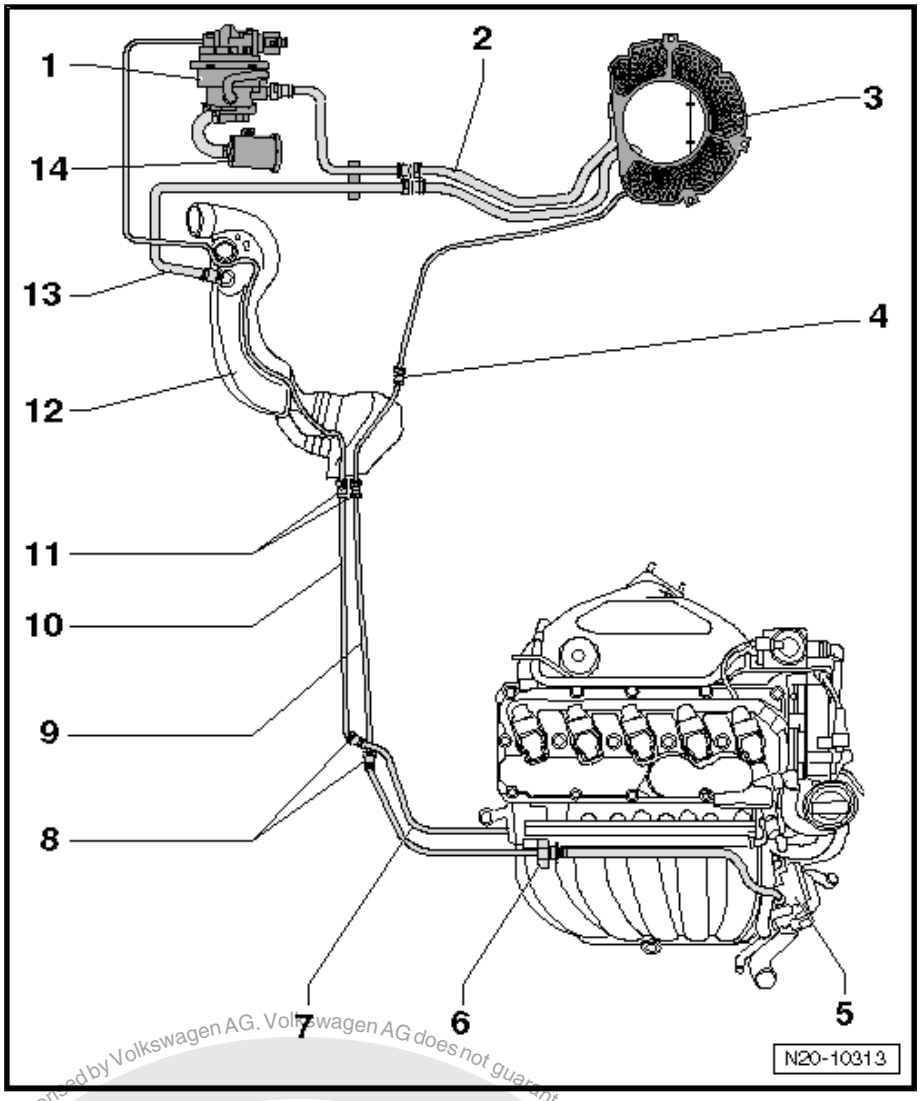
• The pressure must pulsate and must not rise above 0.700 bar (10.15 psi) (absolute pressure) during the test.

– If the pressure rises above 0.700 bar (10.15 psi) during the test, the vacuum supply is too low. Check vacuum line to intake manifold for kinks or blockages.

5.5 Overview Plan - EVAP System, Engine Codes CBTA and CBUA

⇒ “5.5.1 Overview Plan - EVAP System, Engine Codes CBTA and CBUA”, page 53

5.5.1 Overview Plan - EVAP System, Engine Codes CBTA and CBUA



1 - Leak Detection Pump - V144-

- Component location: under the wheel housing liner in the right rear wheel housing
- Check using the Vehicle Diagnostic Tester .
- Removing and installing. Refer to ⇒ “5.2 EVAP Canister, Removing and Installing, Engine Codes CBTA and CBUA”, page 43 .

2 - Connecting Line

- From the Leak Detection Pump - V144- to the EVAP canister.
- Clip onto the bracket.

3 - EVAP Canister

- Installed location: in the bottom of the spare tire well
- A filter is also installed with engine code CBUA -item 1- ⇒ Item 1 (page 42)
- Removing and installing. Refer to ⇒ “5.2 EVAP Canister, Removing and Installing, Engine Codes CBTA and CBUA”, page 43 .

4 - Separating Point

- On the right rear of the fuel tank

5 - Throttle Valve Control Module - J338-

- Removing and installing. Refer to ⇒ Fuel Preparation, Fuel Injection; Rep. Gr. 24 .

6 - EVAP Canister Purge Regulator Valve 1 - N80-

- Check using the Vehicle Diagnostic Tester .

7 - Vacuum Line

- Connected to the intake manifold

8 - Separating Point

- On the right side of the engine compartment under the coolant expansion tank

9 - Bleeder Line

- White
- From EVAP canister to EVAP Canister Purge Regulator Valve 1 - N80-
- Installed position: on the right side the underbody
- Secured on the fuel tank.

10 - Vacuum Line

- Green
- From the engine to the Leak Detection Pump - V144- .
- Installed position: on the right side the underbody
- Secured on the fuel tank.

11 - Separating Point

- ❑ In front of the fuel tank on the right side, near the fuel filter

12 - Filler Neck

13 - Bleeder Line

- ❑ From the filler neck to the EVAP canister

14 - Air Filter

- ❑ For the Leak Detection Pump - V144-

5.6 Leak Detection Pump, Removing and Installing, Engine Codes CBTA and CBUA

Removing

– Remove the right rear wheel. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Wheels, Tires; Wheel, Changing .

– Remove the right rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Wheel Housing Liner, Removing and Installing .

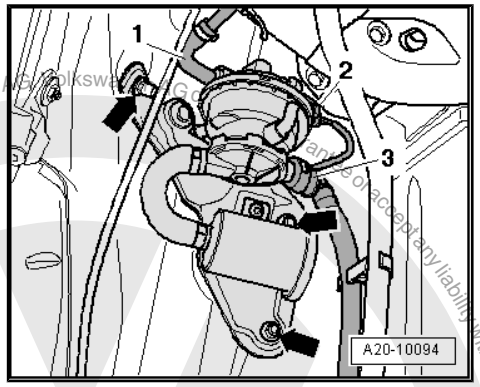
– Disconnect the vacuum line -1-.

– Release and disconnect the connector -2-.

– Press the release button and disconnect the vent line -3-.

– Remove the nuts -arrows-.

– Disengage the leak detection pump with the bracket.



Installing:

Install in reverse order of removal and note the following:

- The breather line -3- must engage audibly.

– Install the right rear wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Wheel Housing Liner, Removing and Installing .

– Install the right rear wheel. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Wheels, Tires; Changing a Wheel .

Tightening Specification

◆ Refer to
⇒ “5.1.2 Overview - EVAP System, Engine Codes CBTA and CBUA”, page 42

◆ Refer to ⇒ Body Exterior; Rep. Gr. 66 ; Wheel Housing Liner; Wheel Housing Liner, Removing and Installing .

◆ Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44 ; Wheel and Tire Guide; Wheel, Changing .

6 Accelerator Mechanism

6.1 Overview - Accelerator Mechanism

1 - Connector

- ❑ Black 6-pin

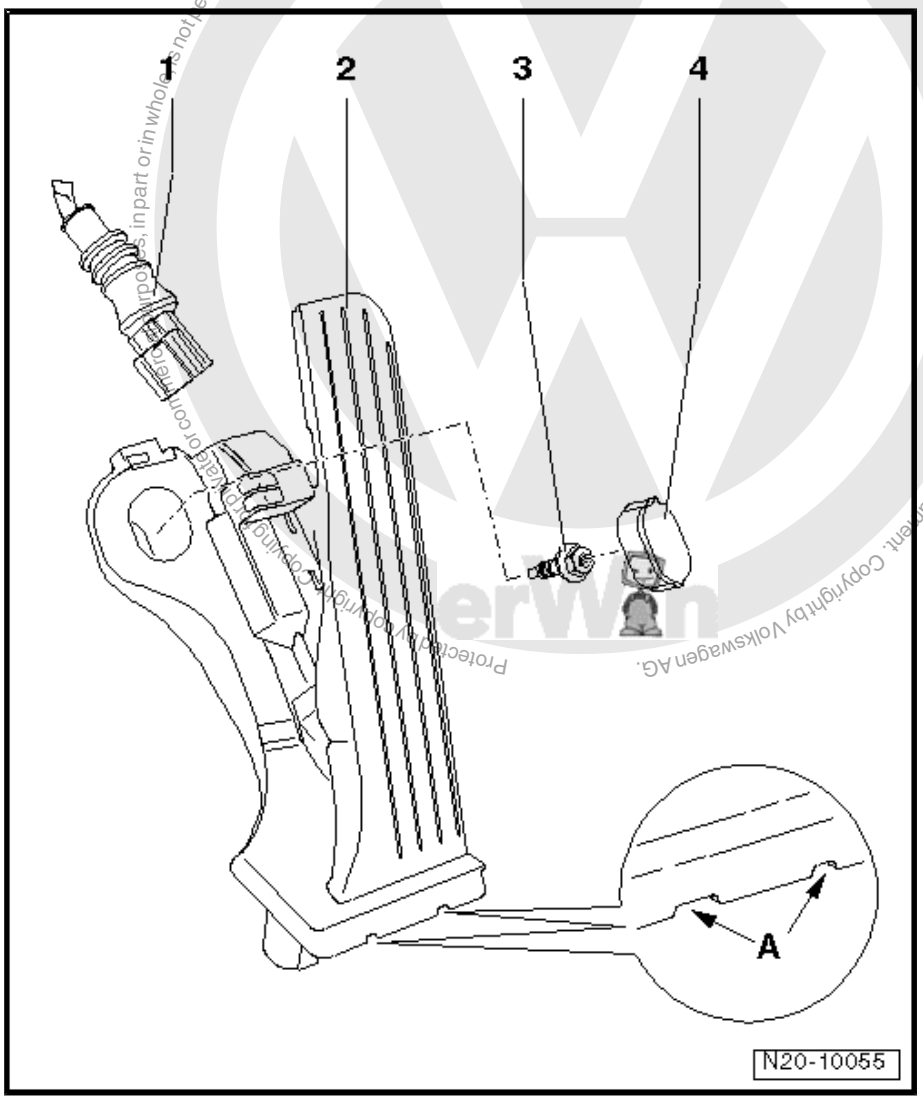
2 - Accelerator Pedal Position Sensor - G79- and Accelerator Pedal Position Sensor 2 - G185-

- ❑ Openings -A- for the release tool
- ❑ To remove, remove the driver footwell trim panel.
- ❑ Accelerator Pedal Module, Removing and installing. Refer to ⇒ “6.2 Accelerator Pedal Module, Removing and Installing”, page 56 .

3 - Bolt

- ❑ 10 Nm

4 - Cap



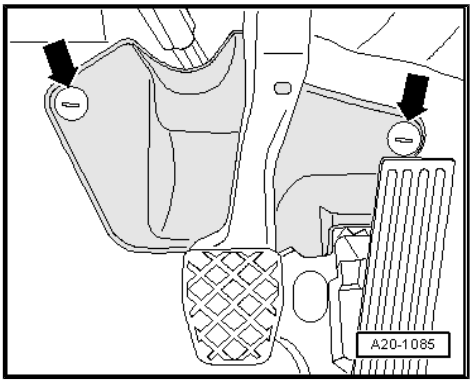
6.2 Accelerator Pedal Module, Removing and Installing

Special tools and workshop equipment required

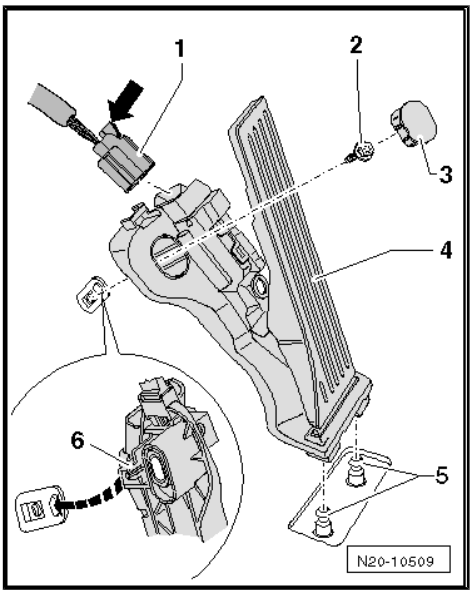
- ♦ Accelerator Pedal Module Release Tool - T10238-

Removing

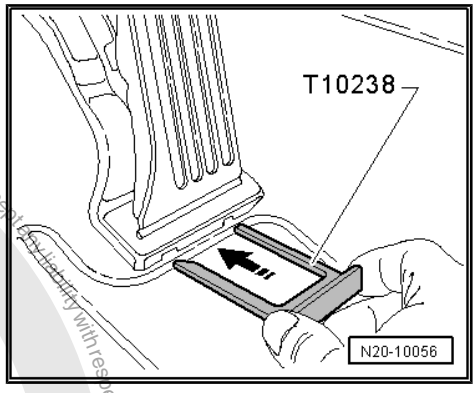
– Remove the steering column cover -arrows-.



– Pry off the cap -3- using a screwdriver.
– Remove the bolt -2-.
– Disconnect the connector -1-.
– Install the - T10238- all the way into the opening as illustrated.



– Remove the accelerator pedal module.



Installing

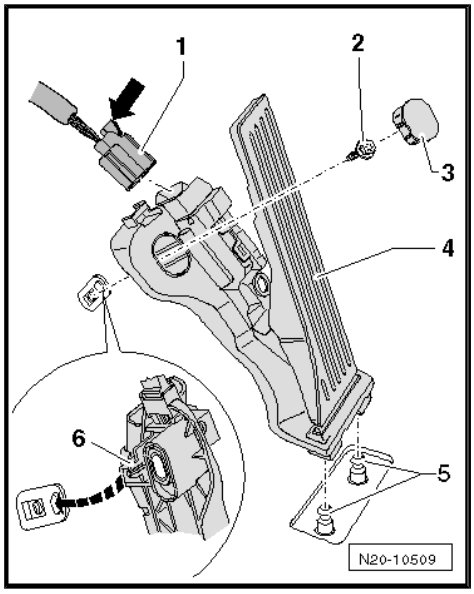
– Connect the connector -2- to the accelerator pedal module -5-.

– Push the accelerator pedal module onto the retaining pin -5-.

– Insert the centering pin -6- into the hole on the underbody.

– Secure the accelerator pedal module with the bolt -2-.

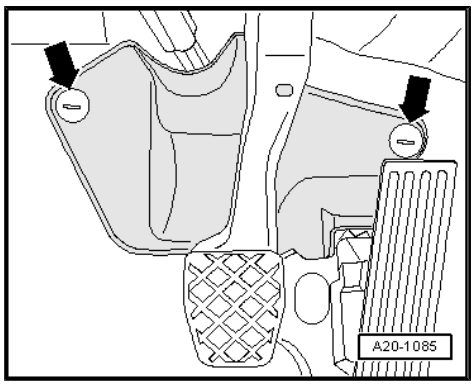
– Install the cap -3-.



– Install the steering column cover -arrows-.

– If the accelerator pedal module was replaced, adapt it to the engine control module using the Vehicle Diagnostic Tester in “Guided Functions”.

– If the accelerator pedal module was replaced on vehicles with an automatic transmission, then the kick down function must be adapted using the Vehicle Diagnostic Tester in “Guided Functions”.



Tightening specification:

◆ Refer to
⇒ “6.2 Accelerator Pedal Module, Removing and Installing”, page 56

7 Fuel Pump

7.1 Fuel Pump, Checking

7.1.1 Checking Function and Voltage Supply, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region

Special tools and workshop equipment required

- Trim Removal Wedge - 3409-
- Multimeter, for example Analog/Digital Multimeter - FLU83III-
- Connector Test Set - VAG1594D-
- Vehicle Diagnostic Tester

Test conditions:

- The battery voltage must be at least 11.5 V. Charge if necessary. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Charging.
- Fuse for Fuel Pump Control Module - J538- is OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Fuel Pump Control Module - J538- is OK. Use the Vehicle Diagnostic Tester .

Test sequence:

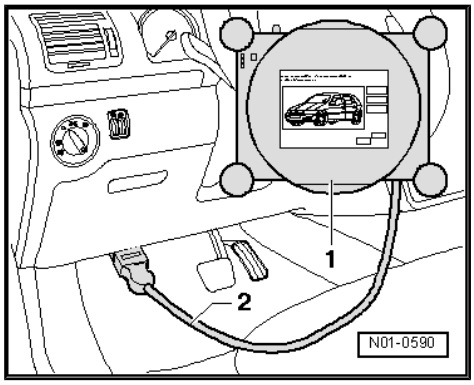
– Connect the vehicle diagnostic tester -1- as follows:

– Connect the diagnostic cable connector -2- to the data link connector inside the driver footwell.

– Switch the ignition on.

– Select `output diagnostic test mode` for the fuel pump in the Vehicle Diagnostic Tester .

The fuel pump must now accelerate slowly up to the maximum RPM.



Note

- *The output diagnostic test mode checks the fuel pump function.*
- *The fuel pump is now activated.*
- *The fuel pump runs very quietly.*
- *If the output diagnostic test mode is performed several times in succession, the engine may need to be started briefly before repeating the output diagnostic test mode.*

– Switch off the ignition.

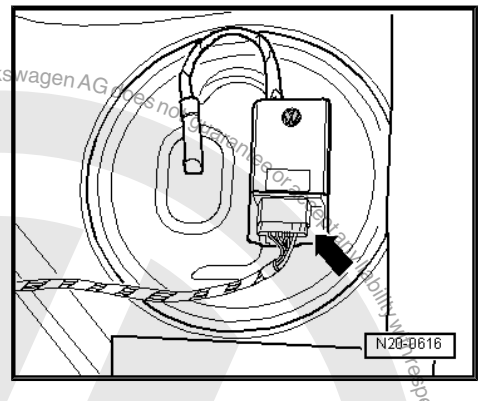
If the fuel pump does not start:

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

– Pull on the connector on the Fuel Pump Control Module - J538- without pushing the locking mechanism to make sure it is secure. Repeat the fuel pump function test if the connector was not connected correctly. Refer to ⇒ page 60 .

– Release and remove the connector from the Fuel Pump Control Module - J538- .

– Check the contacts on the connector and on the Fuel Pump Control Module - J538- for damage.

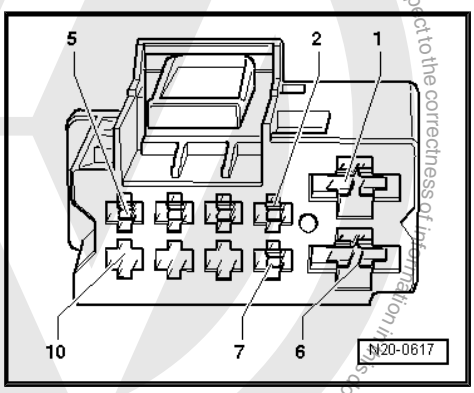


– Check the voltage supply between contacts -1- and -6- using Multimeter .

- Specified value: approximately battery voltage

Voltage supply not OK:

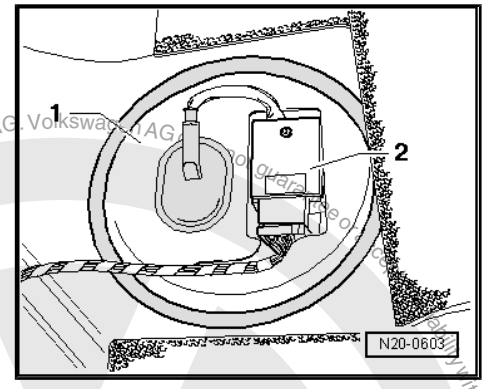
– Locate and repair the open circuit according to the wiring diagram. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.



Voltage supply OK:

– Unclip the right sealing flange cover -1- at the tabs using the -3409- .

– Remove the cover -1- with the Fuel Pump Control Module - J538- -2- from the fuel delivery unit.



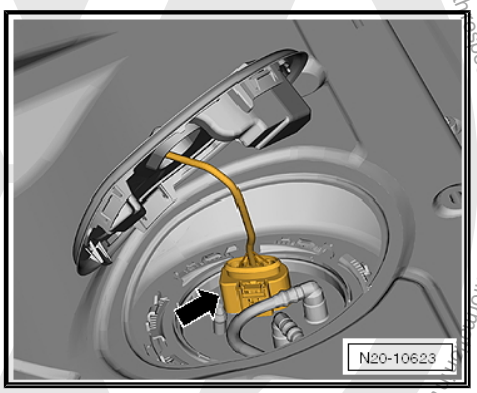
– Pull on the connector -arrow- without pressing the release to make sure the connection is secure.

– Repeat the fuel pump function test if the connector was not connected correctly. Refer to ⇒ page 60 .

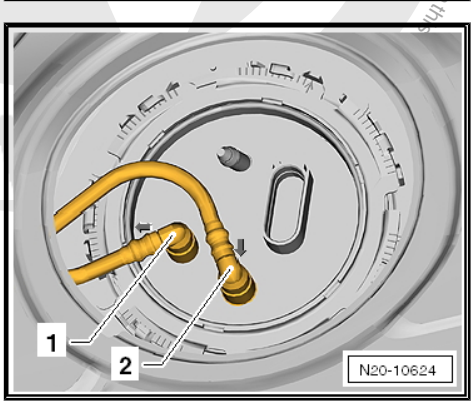
– Release and disconnect the connector -arrow-.

– Check the contacts on the connector and on the fuel delivery unit for damage.

– Check the wiring harness between the Fuel Pump Control Module - J538- and the fuel delivery unit. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.



– Remove the fuel lines -1- and -2- from the flange. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



CAUTION

The fuel system is under pressure.

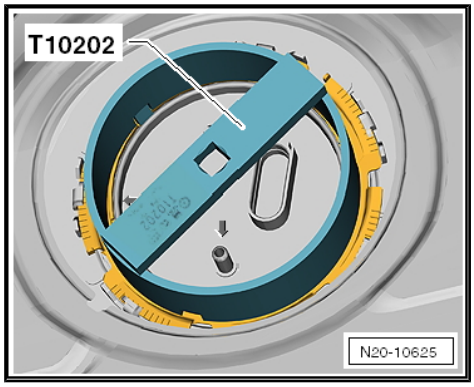
Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

Vehicles with Parking Heater:

– If the vehicle has an auxiliary heater, disconnect the connector and the fuel line for the Metering Pump - V54- .

Continuation for All Vehicles:



– Drain the fuel tank. Refer to ⇒ “1.3 Fuel Tank, Draining”, page 16 .

– Open the locking ring using the -T10202- .

– Do not bend the -T10202- and push hard on the locking ring. If the key slides off, the fuel delivery unit can be damaged.

– Lift the fuel delivery unit flange.

– Check if the wiring between the flange and fuel pump is connected.

– Inspect the contacts for damage.

If an open circuit is not detected:

– If the fuel pump is faulty, replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

7.1.2 Function and Voltage Supply, Checking, Engine Codes CBTA and CBUA

Special tools and workshop equipment required

- Trim Removal Wedge - 3409-
- Multimeter; for example Analog/Digital Multimeter - FLU83III-
- Connector Test Set - VAG1594D-
- Vehicle Diagnostic Tester

Test conditions:

- The battery voltage must be at least 11.5 V. Charge if necessary. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Charging .
- Fuel Pump Relay - J17- OK. Use the Vehicle Diagnostic Tester .
- Fuel pump fuse OK; for the fuse assignment. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

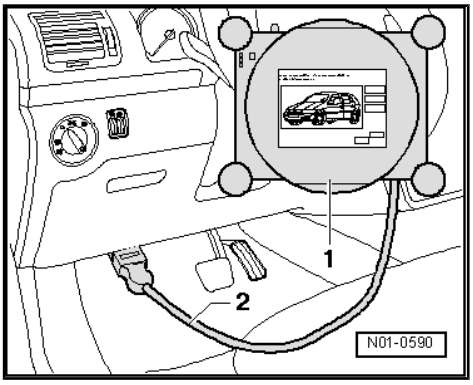
Test Sequence:

– Pay attention to the safety precautions. Refer to ⇒ “1 Safety Precautions”, page 1 .

– Follow the guidelines for clean working conditions. Refer to ⇒ “3.1 Guidelines for Clean Working Conditions on Parking/ Auxiliary Heater and Fuel System”, page 4 .

– Connect the vehicle diagnostic tester -1- as follows:
– Connect the diagnostic cable connector -2- to the data link connector inside the driver footwell.
– Switch the ignition on.
– Select `output diagnostic test mode` for the fuel pump in the Vehicle Diagnostic Tester .

The fuel pump must now accelerate slowly up to the maximum RPM.



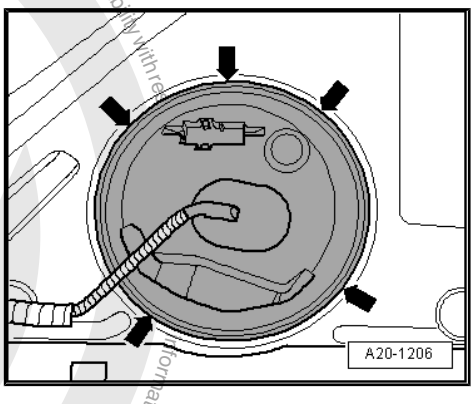
Note

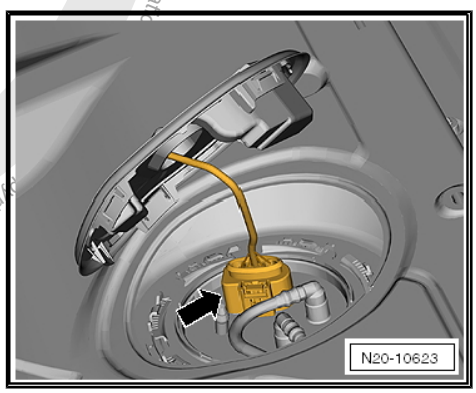
- *The output diagnostic test mode checks the fuel pump function.*
- *The fuel pump is now activated.*
- *The fuel pump runs very quietly.*
- *If the output diagnostic test mode is performed several times in succession, the engine may need to be started briefly before repeating the output diagnostic test mode.*

– Switch off the ignition.

If the Fuel Pump Does Not Start:

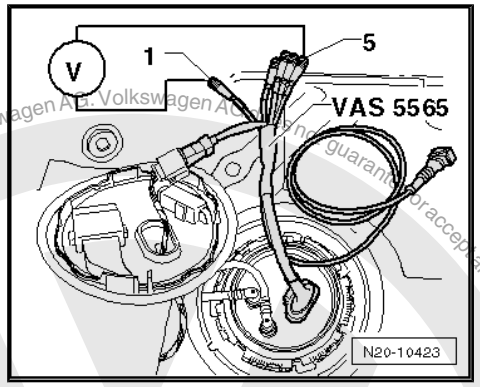
– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .
– Unclip the right sealing flange cover at the tabs -arrows- using the -3409- .





– Pull on the connector -arrow- without pressing the release to make sure the connection is secure.
– Repeat the fuel pump function test if the connector was not connected correctly. Refer to ⇒ page 62 .
– Release and disconnect the connector -arrow-.
– Check the contacts on the connector and on the fuel delivery unit for damage.

– Connect the -VAS5565- to the connector and to the fuel delivery unit.
– Connect an Analog/Digital Multimeter to the wires -1 and 5- on the -VAS5565- .
– Repeat the fuel pump function test. Refer to ⇒ page 62 .
• Specified value: approximately the battery voltage.

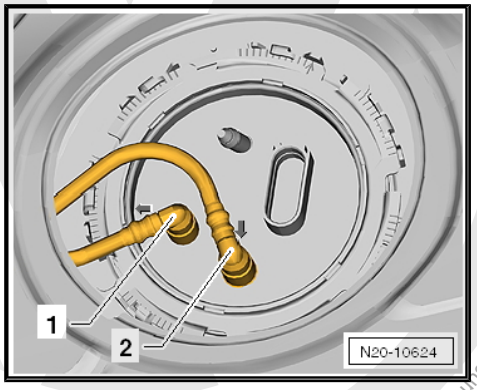


Voltage supply not OK:

– Locate and repair the open circuit according to the wiring diagram. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

Voltage supply OK:

– Remove the fuel lines -1- and -2- from the flange. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

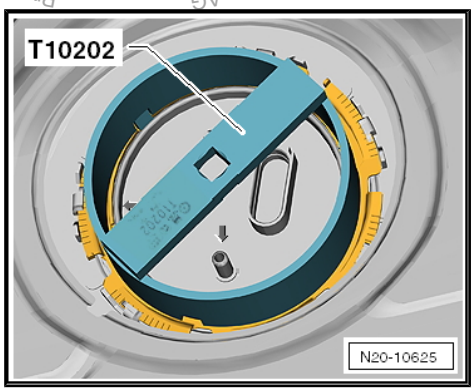
The fuel system is under pressure.
Risk of injury from fuel spraying out.
– Wear protective eyewear.
– Wear safety gloves.
– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

Vehicles with Parking Heater:

– If the vehicle has an auxiliary heater, disconnect the connector and the fuel line for the Metering Pump - V54- .

Continuation for All Vehicles:

– Drain the fuel tank. Refer to ⇒ “1.3 Fuel Tank, Draining”, page 16 .
– Open the locking ring using the -T10202- .
– Do not bend the -T10202- and push hard on the locking ring. If the key slides off, the fuel delivery unit can be damaged.
– Check if the wiring between the flange and fuel pump is connected.
– Inspect the contacts for damage.



If an Open Circuit Is Not Detected:

– If the fuel pump is faulty, replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region

Special tools and workshop equipment required

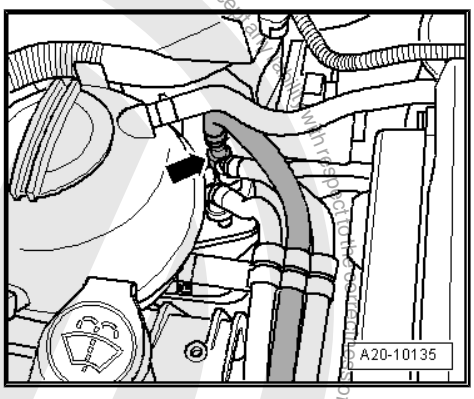
♦ Pressure Tester Kit - VAS6550-
♦ Trim Removal Wedge - 3409-

♦ Vehicle Diagnostic Tester

Test Conditions

- Power supply is OK.

– Remove the supply line -1-. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
– Wear protective eyewear.
– Wear safety gloves.
– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

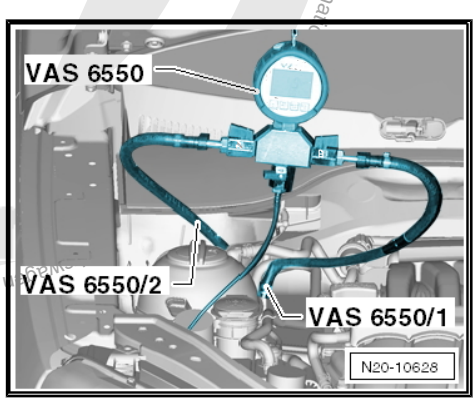
– Collect leaking fuel with a cleaning cloth.

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .

– Connect the fuel line to the fuel tank with the -VAS6550- via the -VAS6550/2- .

– Connect the -VAS6550/1- to the fuel supply line to the engine.

– Connect the -VAS6550/1- to the connection -B- on the -VAS6550- .



WARNING

Risk of a fire due to leaking fuel.
Severe injuries and burns are possible.
– Before the test, check if all connected lines are securely connected by pulling on them.
– Remove any cleaning cloths soaked in fuel from the vehicle area.

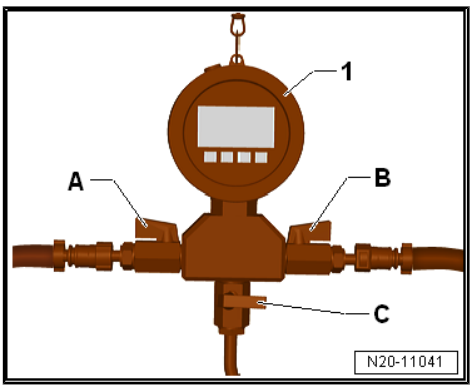
– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.

– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.

– Connect the Vehicle Diagnostic Tester
.

– Activate the fuel pump with the engine electronic with the output diagnostic test mode.



Note

♦ *The fuel pump is now activated to build up the fuel pressure.*

♦ *If the output diagnostic test mode is performed several times in succession, the engine may need to be started briefly before repeating the output diagnostic test mode.*

– Read the fuel pressure on the pressure gauge.

Specified Value:

Engine code	Fuel Pressure Specified
CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA	4.0 to 7.0 bar (58.01 to 101.52 psi)

If the fuel pressure is OK, check the residual pressure. Refer to
⇒ “7.1.5 Residual Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 73 .

If the Specified Value is Exceeded:

– Check the return line between the fuel filter and the fuel pump for kinks or blockages. Refer to
⇒ “1.1 Overview - Fuel Tank”, page 5 .

If no fault is detected in the wiring:

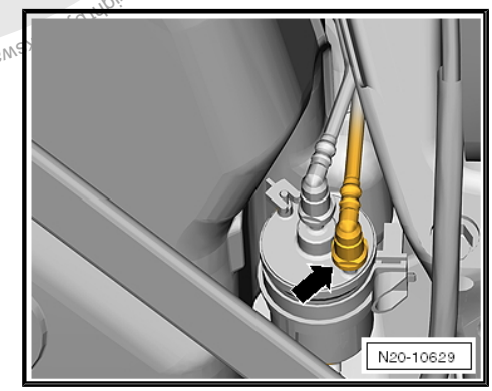
– Pressure relief valve in fuel filter faulty, replace the fuel filter. Refer to
⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

If the Specified Value is not Obtained:

Check the fuel pressure in front of the fuel filter as follows:

Fuel Pressure, Checking Before Fuel Filter:

– Disconnect the fuel supply line -arrow- from the fuel filter. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



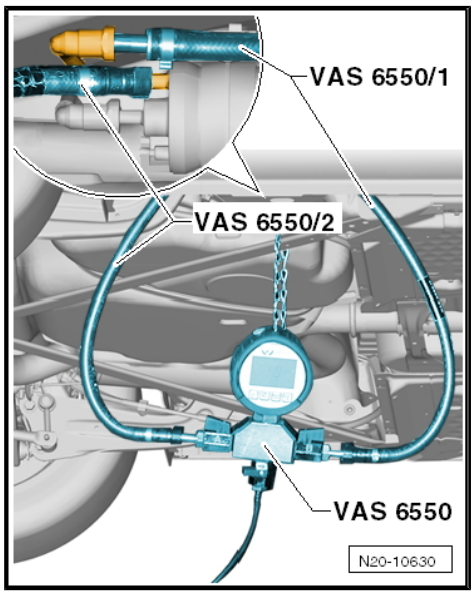
WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel filter and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .

– Connect the -VAS6550/1- to the connection -B- on the -VAS6550- .



WARNING

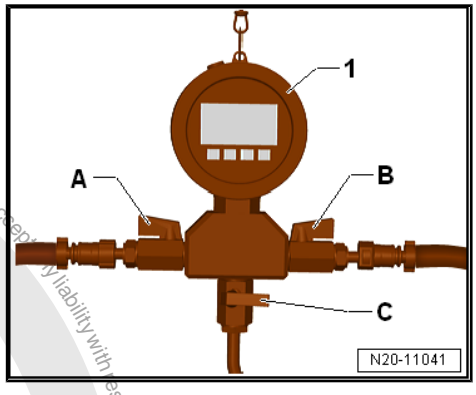
Risk of a fire due to leaking fuel.
Severe injuries and burns are possible.
- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.

– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.

– Repeat fuel pump output diagnostic test mode to reduce the fuel pressure. Refer to ⇒ page 65 .



If the Specified Value is Obtained:

– Check the fuel line between the fuel filter and the engine compartment for possible kinks or blockages.

– Check the fuel line between the fuel filter and the engine compartment for leaks and damage.

If No Error is Detected:

– If the fuel filter is blocked, replace the fuel filter. Refer to ⇒ "4.2 Fuel Filter, Removing and Installing", page 38 .

– Pressure relief valve in fuel filter faulty, replace the fuel filter. Refer to ⇒ "4.2 Fuel Filter, Removing and Installing", page 38 .

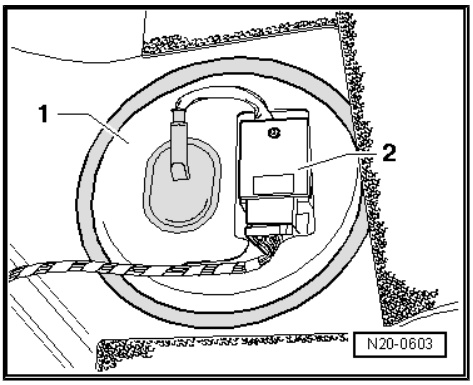
If the Specified Value is Not Obtained:

Proceed as follows to check the fuel pressure at the fuel delivery unit:

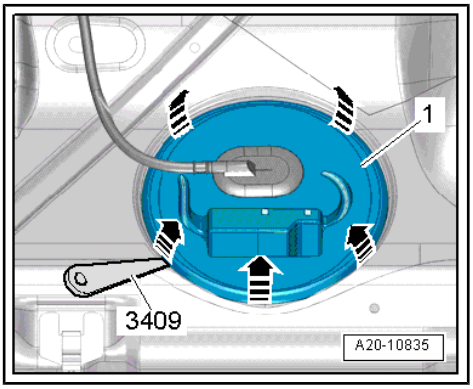
Checking the Fuel Pressure at the Fuel Delivery Unit:

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

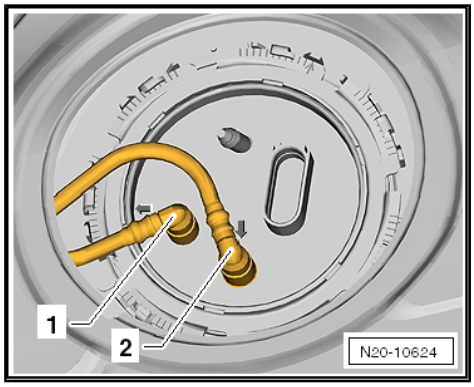
– Remove the cover -1- with the Fuel Pump Control Module - J538- -2- from the fuel delivery unit.



– Unclip the right cover -1- at the tabs in direction of -arrows- using the -3409- .



– Pull the fuel line -1- off the flange. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

The fuel system is under pressure.

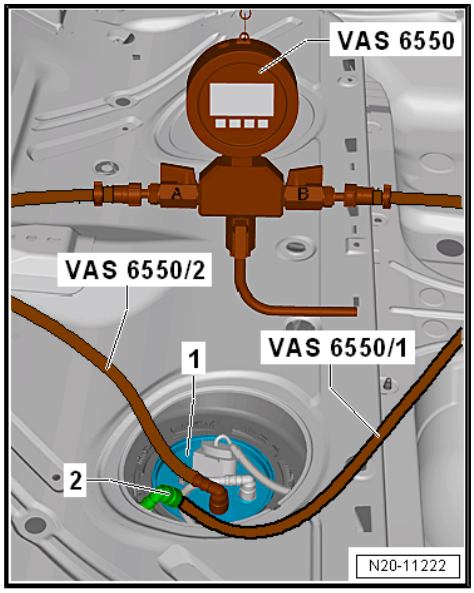
Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel delivery unit and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .

– Connect the -VAS6550/2- between the connection -A- on the -VAS6550- and the fuel delivery unit -1-.

– Connect the -VAS6550/1- between the connection -B- on the -VAS6550- and the fuel supply line -2-.



CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

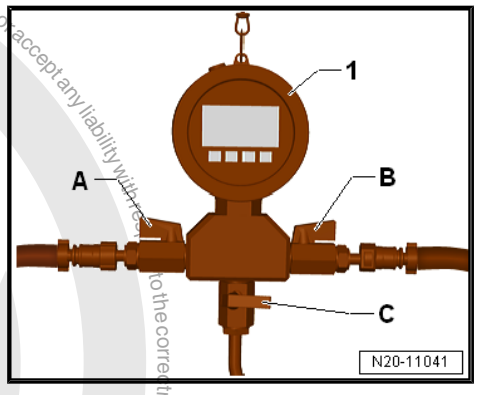
- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.

– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.

– Repeat fuel pump output diagnostic test mode to reduce the fuel pressure. Refer to ⇒ page 65 .

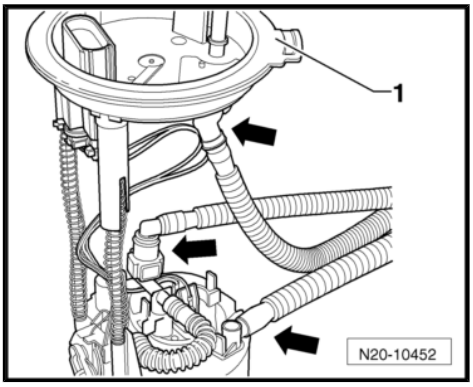


If the Specified Value is Obtained:

– Check the fuel lines for possible restrictions (kinks) or blockages.

– Check the fuel line for leaks and damage.

If the Specified Value is Not Obtained:



– Remove the fuel delivery unit and inspect it for debris. Refer to
⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Make sure all the hoses are connected -arrows-.
– Check the fuel lines for possible restrictions (kinks) or blockages.
– Check the fuel lines for leaks and damage.

If No Error can be Found:

– If the fuel pump is faulty, replace the fuel delivery unit. Refer to
⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

7.1.4 Fuel Pressure, Checking, Engine Codes CBTA and CBUA

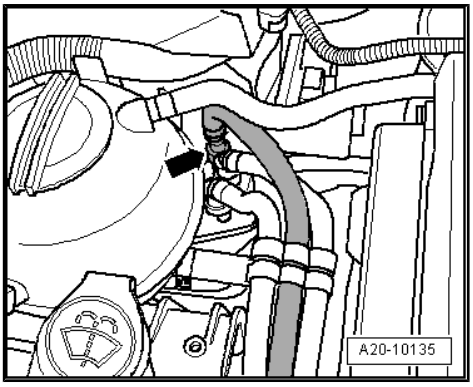
Special tools and workshop equipment required

- ♦ Pressure Tester Kit - VAS6550-
- ♦ Trim Removal Wedge - 3409-
- ♦ Vehicle Diagnostic Tester

Test Conditions

- Power supply is OK.

– Remove the supply line -1-. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

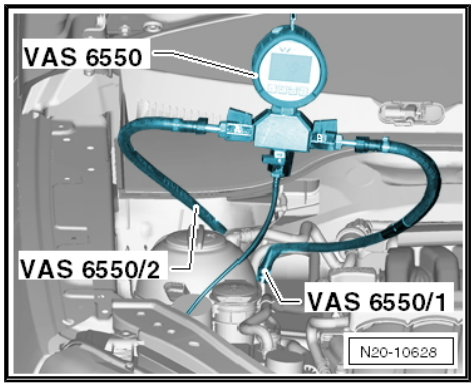


WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
– Wear protective eyewear.
– Wear safety gloves.
– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

– Collect leaking fuel with a cleaning cloth.

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .
– Connect the fuel line to the fuel tank with the -VAS6550- via the -VAS6550/2- .
– Connect the -VAS6550/1- to the fuel supply line to the engine.
– Connect the -VAS6550/1- to the connection -B- on the -VAS6550- .



WARNING

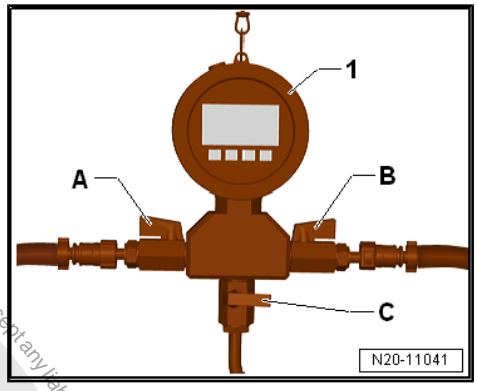
Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**
– **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Connect the Vehicle Diagnostic Tester .
– Activate the fuel pump with the engine electronic with the output diagnostic test mode.



Note

- *The fuel pump is now activated to build up the fuel pressure.*
- *If the output diagnostic test mode is performed several times in succession, the engine may need to be started briefly before repeating the output diagnostic test mode.*

– Read the fuel pressure on the pressure gauge.

Specified Value:

Engine Code	Fuel Pressure
CBTA and CBUA	3.5 and 4.5 bar (50.76 to 65.27 psi)

If the fuel pressure is OK, check the residual pressure. Refer to
⇒ “7.1.5 Residual Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 73 .

If the Specified Value is Exceeded:

– Check the return line between the fuel filter and the fuel pump for kinks or blockages. Refer to
⇒ “1.1 Overview - Fuel Tank”, page 5 .

If no fault is detected in the wiring:

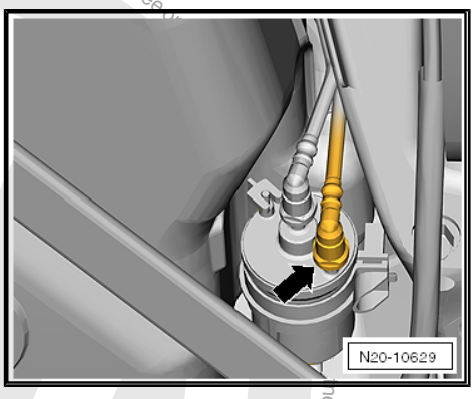
– Pressure relief valve in fuel filter faulty, replace the fuel filter. Refer to
⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

If the Specified Value is not Obtained:

Check the fuel pressure in front of the fuel filter as follows:

Fuel Pressure, Checking before Fuel Filter:

– Disconnect the fuel supply line -arrow- from the fuel filter. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

The fuel system is under pressure.

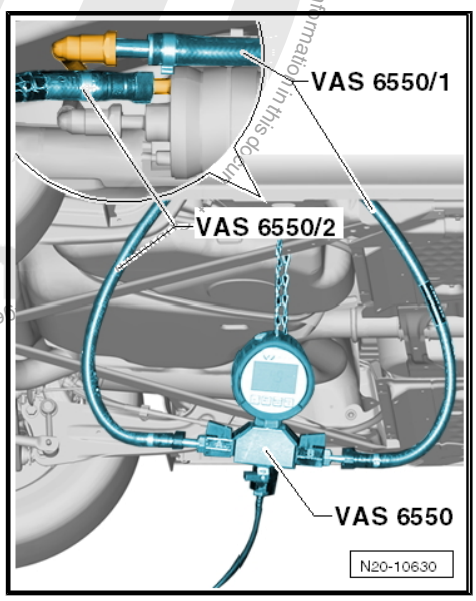
Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel filter and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .

– Connect the -VAS6550/1- to the connection -B- on the -VAS6550- .



WARNING

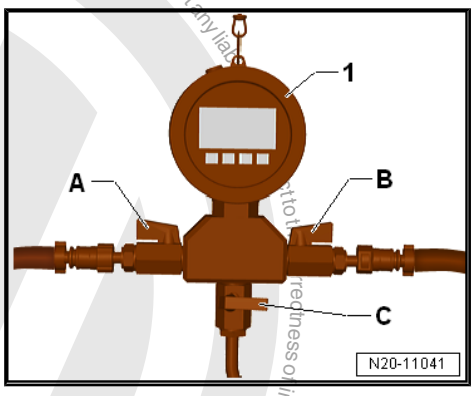
Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Repeat fuel pump output diagnostic test mode to reduce the fuel pressure. Refer to ⇒ page 70 .



If the Specified Value is Obtained:

– Check the fuel line between the fuel filter and the engine compartment for possible kinks or blockages.
– Check the fuel line between the fuel filter and the engine compartment for leaks and damage.

If No Error is Detected:

– If the fuel filter is blocked, replace the fuel filter. Refer to ⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .
– Pressure relief valve in fuel filter faulty, replace the fuel filter. Refer to ⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

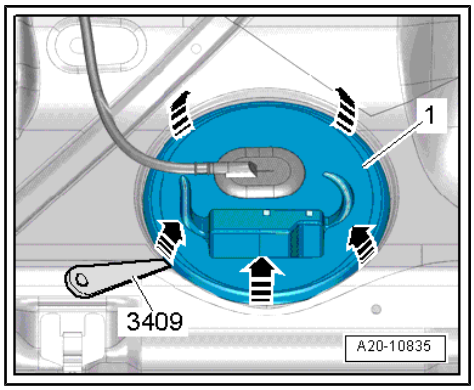
If the Specified Value is Not Obtained:

Proceed as follows to check the fuel pressure at the fuel delivery unit:

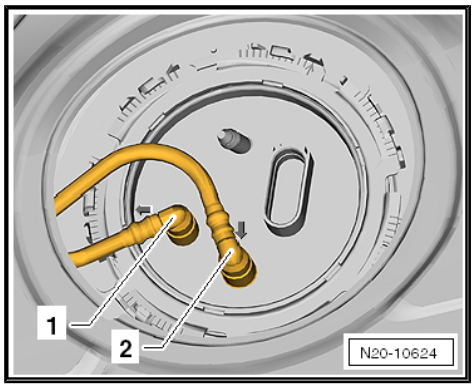
Checking the Fuel Pressure at the Fuel Delivery Unit:

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

– Unclip the right cover -1- at the tabs in direction of -arrows- using the -3409- .



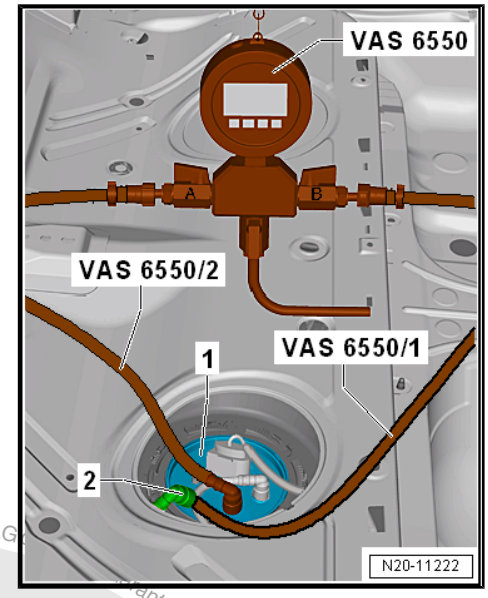
– Pull the fuel line -1- off the flange. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel delivery unit and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .
– Connect the -VAS6550/2- between the connection -A- on the -VAS6550- and the fuel delivery unit -1-.
– Connect the -VAS6550/1- between the connection -B- on the -VAS6550- and the fuel supply line -2-.



WARNING

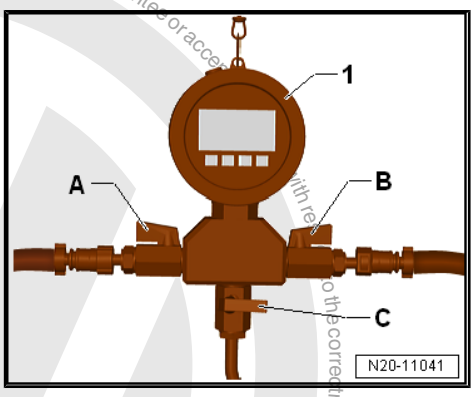
Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**
– **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Repeat fuel pump output diagnostic test mode to reduce the fuel pressure. Refer to ⇒ page 65 .

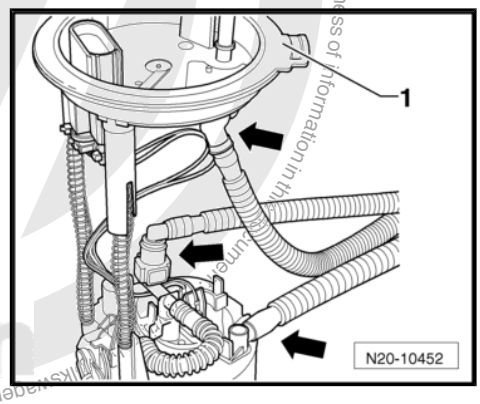


If the Specified Value is Obtained:

– Check the fuel lines for possible restrictions (kinks) or blockages.
– Check the fuel line for leaks and damage.

If the Specified Value is Not Obtained:

– Remove the fuel delivery unit and inspect it for debris. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Make sure all the hoses are connected -arrows-.
– Check the fuel lines for possible restrictions (kinks) or blockages.
– Check the fuel lines for leaks and damage.



If No Error can be Found:

– If the fuel pump is faulty, replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

7.1.5 Residual Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region

Special tools and workshop equipment required

♦ Pressure Tester Kit - VAS6550-
♦ Trim Removal Wedge - 3409-

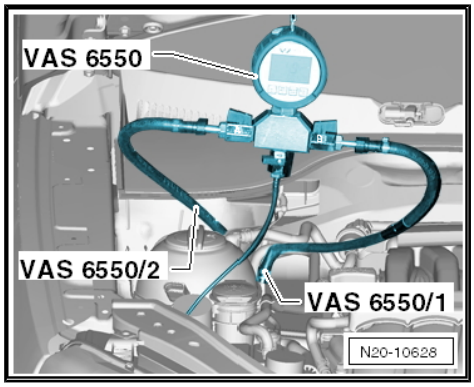
- Vehicle Diagnostic Tester

Test conditions:

- Voltage supply OK. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .
- Fuel pressure is OK. Refer to ⇒ “7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region”, page 64 .

– Connect the -VAS6550/2- between the fuel line from the fuel tank and the shut-off valve -B- on the -VAS6550- .

– Connect the -VAS6550/1- between the fuel line leading to the engine and the shut-off valve -B- on the -VAS6550- .



CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– Before the test, check if all connected lines are securely connected by pulling on them.

– Remove any cleaning cloths soaked in fuel from the vehicle area.

– Pull on the connector couplings to check them for secure fit.

Test sequence:

– Activate the fuel pump using the output diagnostic test mode to build the fuel pressure.

Note

- *The fuel pump is now activated to build up the fuel pressure.*
- *If the output diagnostic test mode is performed several times in succession, the engine may need to be started briefly before repeating the output diagnostic test mode.*

– Read the fuel pressure on the pressure gauge.

Specified value:

Engine code	Fuel Pressure
CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA	greater than or equal to 4.0 (58.01 psi)

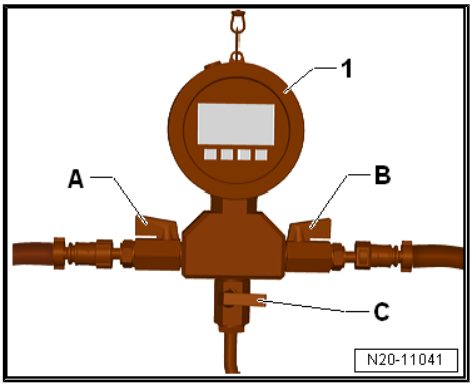
– End the OBD and turn off the ignition.

- Observe the decrease in pressure on the pressure gauge. After 10 minutes the pressure must not drop more than approximately 1 bar (14.5 psi).

If the pressure drops:

– Check all of the fuel lines for leaks and damage.

If no error is detected:



- Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
- The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.
- Activate the fuel pump using the output diagnostic test mode to build the fuel pressure.
- Close the shut-off valve -B- on the pressure gauge immediately after the pressure has been reached. The lever is perpendicular to the flow direction.

If the pressure drops again (Leak on fuel tank side):

Proceed as follows to check the fuel filter residual pressure. Refer to ⇒ page 75 .

If the pressure stops decreasing now (leak on the engine side):

Note

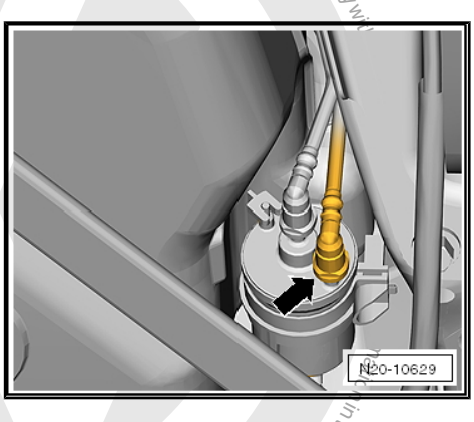
Look for the leak on the engine-side. Repeat the residual pressure check. Close the shut-off valve -A- this time to determine if there actually is a leak on the engine side.

- If there is a leak on the engine-side, check the fuel pipes and high pressure pump for leaks.

If no malfunction is found check the fuel injectors for leaks.

- Remove the spark plugs. Open the shut-off valves -A- and -B-. Activate the fuel pump with the output diagnostic test mode.
- Check through the spark plug hole if fuel is collecting on the piston crown due to a leaking fuel injector.

Checking the residual pressure at the fuel filter:

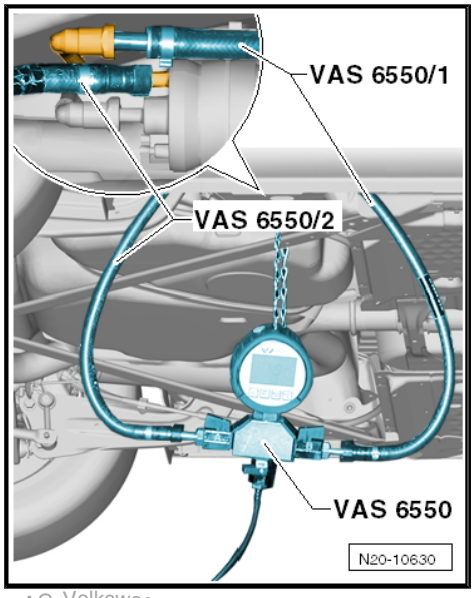


- Disconnect the fuel supply line -arrow- from the fuel filter. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

CAUTION

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel filter and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .
– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .
– Connect the -VAS6550/1- to the connection -B- on the -VAS6550- .



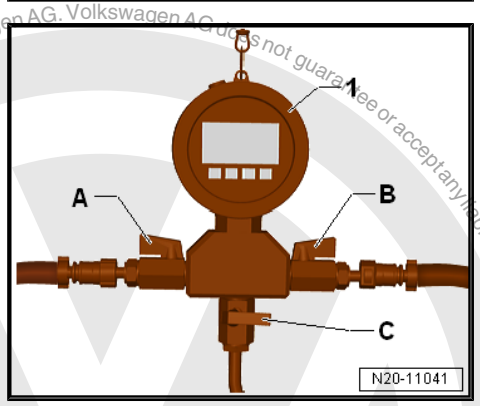
CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**
– **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.



– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.
– Repeat the residual pressure check. Refer to ⇒ page 74 .
– Close the shut-off valve -A- once the pressure has been reached.
– Observe the decrease in pressure on the pressure gauge. After 10 minutes the pressure must not drop more than approximately 1 bar (14.5 psi).

If the pressure no longer decreases:

– Check the fuel line to the engine for leaks.
– Check the fuel filter for leaks.

If no faults are detected:

– Pressure relief valve in fuel filter faulty, replace the fuel filter. Refer to ⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

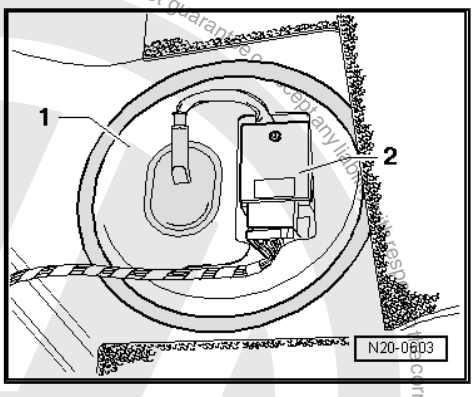
If the pressure drops:

Proceed as follows to check the fuel delivery unit residual pressure:

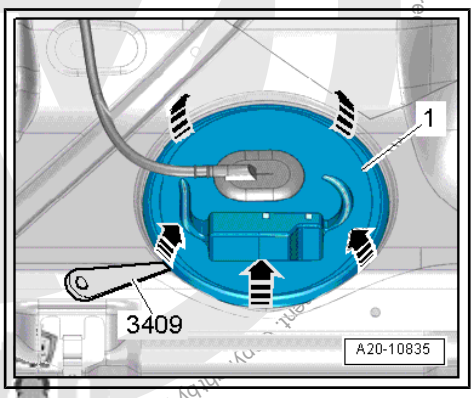
Residual Pressure in Fuel Delivery Unit, Checking:

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

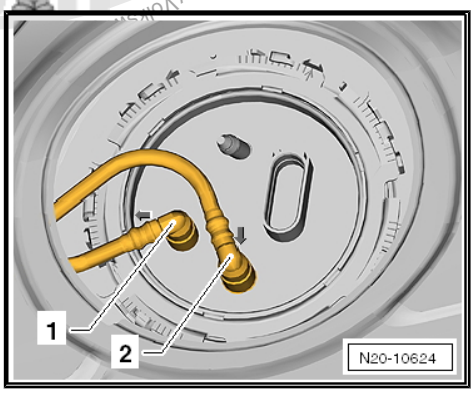
– Remove the Fuel Pump Control Module - J538- -2- from the cover -1-.



– Unclip the right cover -1- at the tabs -arrows- using the -3409- .



– Pull the fuel line -1- off the flange. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



CAUTION

The fuel system is under pressure.

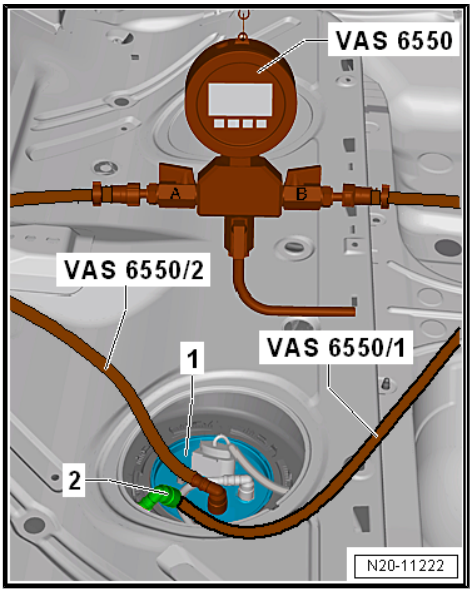
Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel delivery unit and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .

– Connect the -VAS6550/2- between the connection -A- on the -VAS6550- and the fuel delivery unit -1-.

– Connect the -VAS6550/1- between the connection -B- on the -VAS6550- and the fuel supply line -2-.



CAUTION

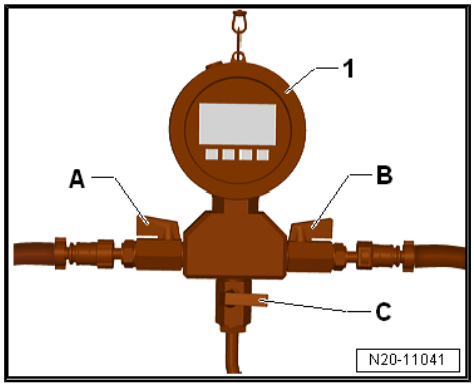
Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.
– Repeat the residual pressure check. Refer to ⇒ page 74 .
– Close the shut-off valve -B- once the pressure has been reached.
– Observe the decrease in pressure on the pressure gauge. After 10 minutes the pressure must not drop more than approximately 1 bar (14.5 psi).

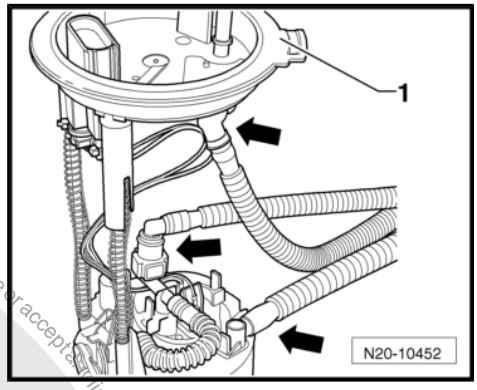


If the pressure does not drop:

– Check the fuel line to the fuel filter for leaks.

If the pressure drops:

– Remove the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Make sure all the hoses are connected -arrows-.
– Check the fuel lines for leaks and damage.



If no error can be found:

– If the pressure retention valve in the fuel pump is faulty, replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

7.1.6 Residual Pressure, Checking, Engine Codes CBTA and CBUA

Special tools and workshop equipment required

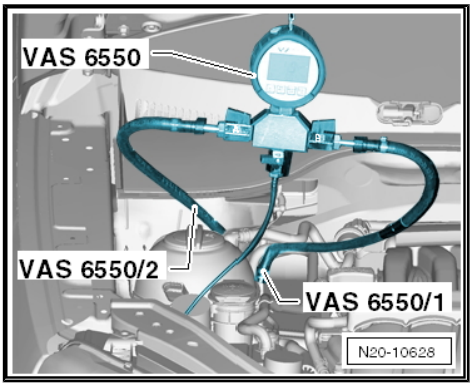
♦ Pressure Tester Kit - VAS6550-
♦ Trim Removal Wedge - 3409-
♦ Vehicle Diagnostic Tester

Test conditions:

• Voltage supply OK. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .
• Fuel pressure is OK. Refer to ⇒ “7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region”, page 64 .

– Connect the -VAS6550/2- between the fuel line from the fuel tank and the shut-off valve -B- on the -VAS6550- .

– Connect the -VAS6550/1- between the fuel line leading to the engine and the shut-off valve -B- on the -VAS6550- .



WARNING

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**

– **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

Test Sequence:

– Activate the fuel pump using the output diagnostic test mode to build the fuel pressure.

Note

- *The fuel pump is now activated to build up the fuel pressure.*
- *If the output diagnostic test mode is performed several times in succession, the engine may need to be started briefly before repeating the output diagnostic test mode.*

– Read the fuel pressure on the pressure gauge.

Specified Value:

Engine code	Fuel Pressure Specified Value
CBTA and CBUA	greater than or equal to 3.5 (50.76 psi)

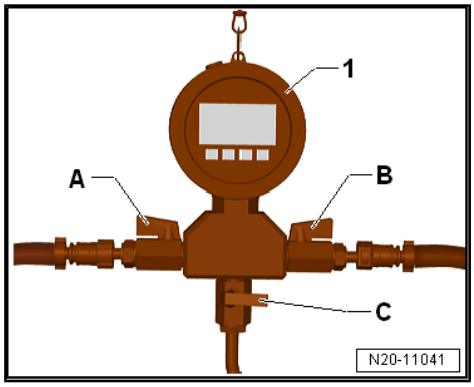
– End the OBD and turn off the ignition.

• Observe the decrease in pressure on the pressure gauge. After 10 minutes the pressure must not drop more than 1 bar (14.5 psi).

If the Pressure Drops:

– Check all of the fuel lines for leaks and damage.

If No Error Is Detected:



- Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
- The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
- Activate the fuel pump using the output diagnostic test mode to build the fuel pressure.
- Close the shut-off valve -B- on the pressure gauge immediately after the pressure has been reached. The lever is perpendicular to the flow direction.

If the Pressure Drops Again (Leak on Fuel Tank Side):

Proceed as follows to check the fuel filter residual pressure. Refer to ⇒ page 80 .

If the Pressure Stops Decreasing Now (Leak on the Engine Side):

Note

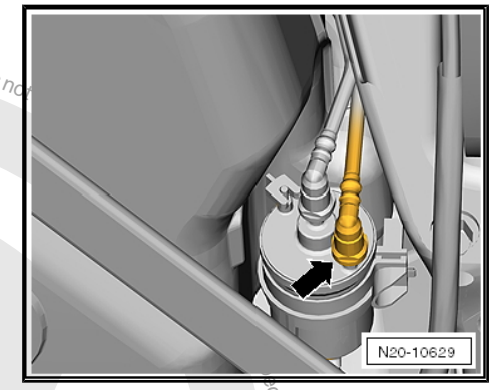
Look for the leak on the engine-side. Repeat the residual pressure check. Close the shut-off valve -A- this time to determine if there actually is a leak on the engine side.

- If there is a leak on the engine-side, check the fuel pipes and high pressure pump for leaks.

If no malfunction is found check the fuel injectors for leaks.

- Remove the spark plugs. Open the shut-off valves -A and B-. Activate the fuel pump with the output diagnostic test mode.
- Check through the spark plug hole if fuel is collecting on the piston crown due to a leaking fuel injector.

Checking the Residual Pressure at the Fuel Filter:

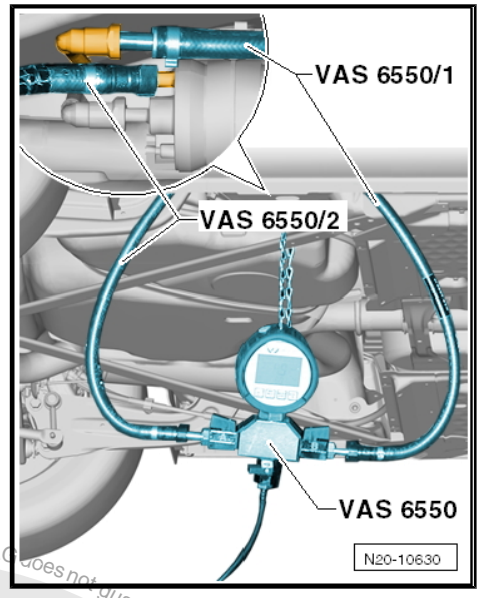


- Disconnect the fuel supply line -arrow- from the fuel filter. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel filter and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .
– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .
– Connect the -VAS6550/1- to the connection -B- on the -VAS6550- .



WARNING

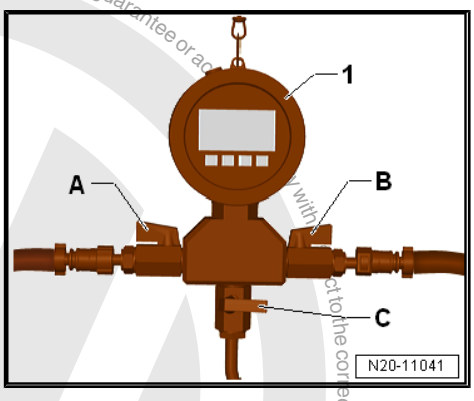
Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**
– **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Repeat the residual pressure check. Refer to ⇒ page 79 .
– Close the shut-off valve -A- once the pressure has been reached.
– Observe the decrease in pressure on the pressure gauge. The pressure must not drop below 3.0 bar (43.51 psi) after 10 minutes.



If the Pressure No Longer Decreases:

– Check the fuel line to the engine for leaks.
– Check the fuel filter for leaks.

If no faults are detected:

– Pressure relief valve in fuel filter faulty, replace the fuel filter. Refer to ⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

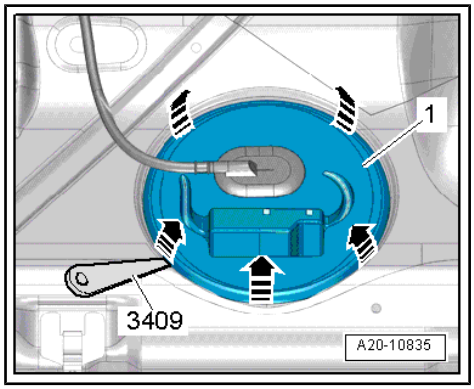
If the Pressure Drops:

Proceed as follows to check the fuel delivery unit residual pressure:

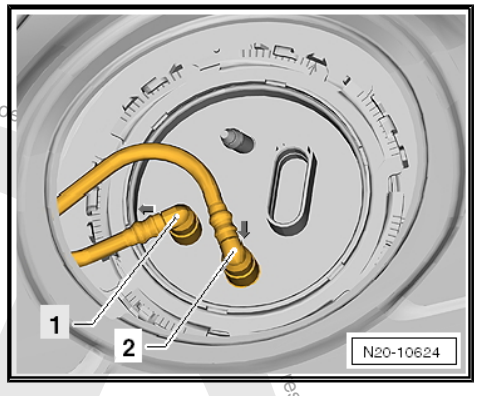
Residual Pressure in Fuel Delivery Unit, Checking:

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

– Unclip the right cover -1- at the tabs in direction of -arrows- using the -3409- .



– Pull the fuel line -1- off the flange. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

The fuel system is under pressure.

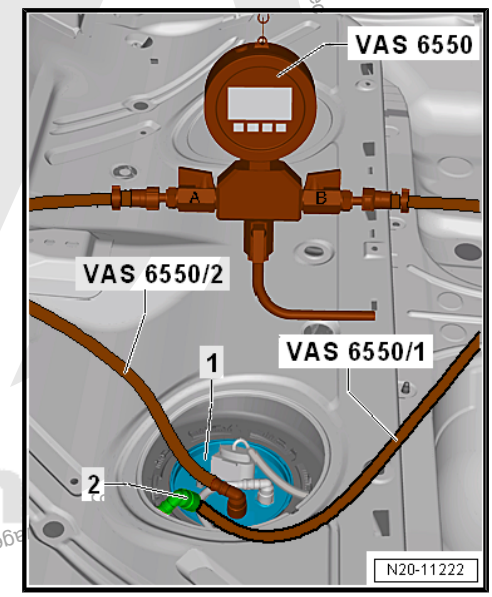
Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- between the fuel delivery unit and the fuel supply line using the -VAS6550/1- and the -VAS6550/2- .

– Connect the -VAS6550/2- between the connection -A- on the -VAS6550- and the fuel delivery unit -1-.

– Connect the -VAS6550/1- between the connection -B- on the -VAS6550- and the fuel supply line -2-.



WARNING

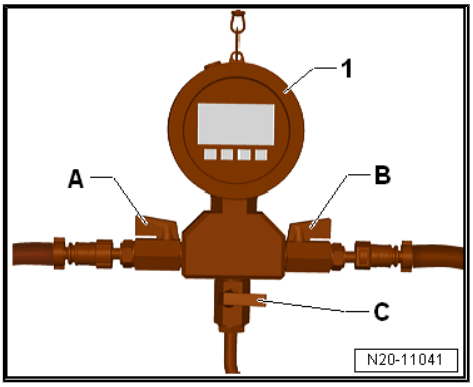
Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Repeat the residual pressure check. Refer to ⇒ page 74 .
– Close the shut-off valve -B- once the pressure has been reached.
– Observe the decrease in pressure on the pressure gauge. The pressure must not drop below 3.0 bar (43.51 psi) after 10 minutes.

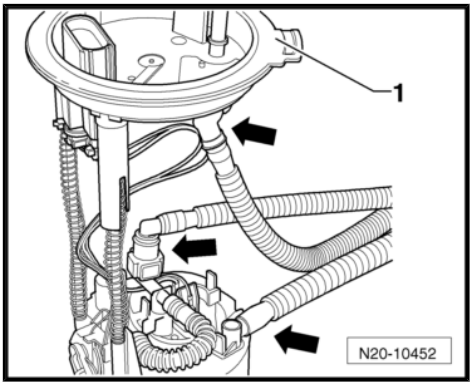


If the Pressure Does Not Drop:

– Check the fuel line to the fuel filter for leaks.

If the Pressure Drops:

– Remove the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Make sure all the hoses are connected -arrows-.
– Check the fuel lines for leaks and damage.



If No Error Can be Found:

– If the pressure retention valve in the fuel pump is faulty, replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

7.1.7 Fuel Pressure, Checking while Driving, Engine Code CDLG

Special tools and workshop equipment required

- Pressure Tester Kit - VAS6550-
- Trim Removal Wedge - 3409-
- Vehicle Diagnostic Tester
- Vehicle Diagnosis System - Connection Lead - VAS5051/66-

Note

- *If there are concerns about the driving behavior, the cause may be low fuel pressure. Malfunctions in the high pressure area can also be caused by low pressure. With this test the high pressure fuel and the low pressure fuel are checked during a road test. The high pressure fuel is read out of the engine/motor control module. The fuel pressure is measured through the -VAS6550- and sent to the Vehicle Diagnostic Tester .*
- *This test can be a component of “Guided Fault Finding” if there is a DTC memory entry. It can also be started in the Vehicle Diagnostic Tester through the “Function and component selection”.*

Note

If driving is still impaired with the fuel tank is maximum 1/4 full, then perform a fuel delivery test with the fuel tank only 1/4 full or with very little fuel in the fuel tank.

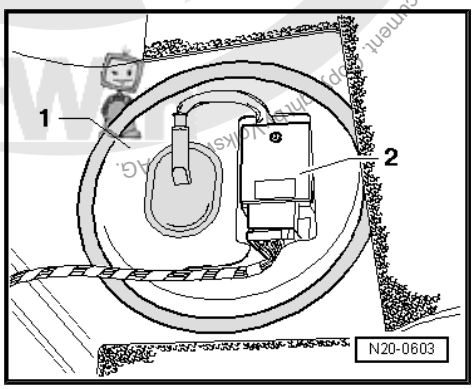
Test Conditions:

- Voltage supply OK. Refer to ⇒ "7.1 Fuel Pump, Checking", page 59 .
- Fuel pressure is OK. Refer to ⇒ "7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region", page 64 .
- The battery voltage must be at least 11.5 V. Charge if necessary. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Charging .
- Fuse for Fuel Pump Control Module - J538- is OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Fuel Pump Control Module - J538- is OK. Use the Vehicle Diagnostic Tester .
- Fuel Pump Relay - J17- OK. Use the Vehicle Diagnostic Tester .
- Fuel pump fuse OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Pull on the connector without pressing the release to make sure the connection is secure. Repeat the fuel pump function test if the connector was not connected correctly.
- Fuel level inside the fuel tank is above the reserve

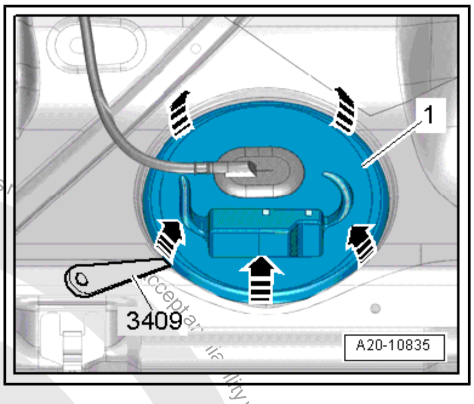
Checking the Fuel Pressure While Driving:

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

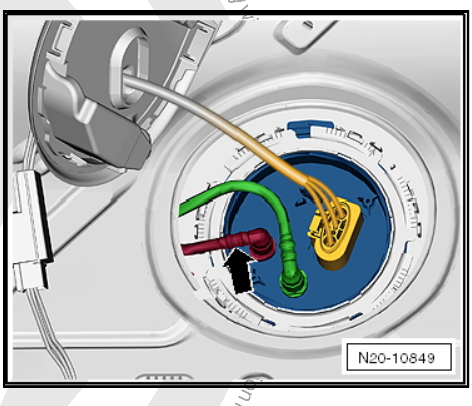
– Remove the Fuel Pump Control Module - J538- -2- from the cover -1-.



– Unclip the right cover -1- at the tabs in direction of -arrows- using the -3409- .



– Disconnect the supply line -arrow-. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

The fuel system is under pressure.

Risk of injury from fuel spraying out.

– Wear protective eyewear.

– Wear safety gloves.

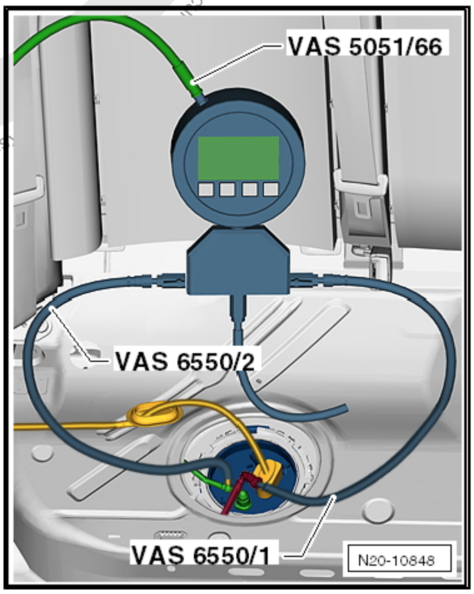
– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

– Wipe up any leaking fuel with a cloth.

– Connect the -VAS6550- to the fuel supply line with the -VAS6550/1- .

– Connect the -VAS6550- to the fuel delivery unit with the -VAS6550/2- .

– Connect the -VAS5051/66- to the -VAS6550- and the Vehicle Diagnostic Tester .



WARNING

Risk of a fire due to leaking fuel.

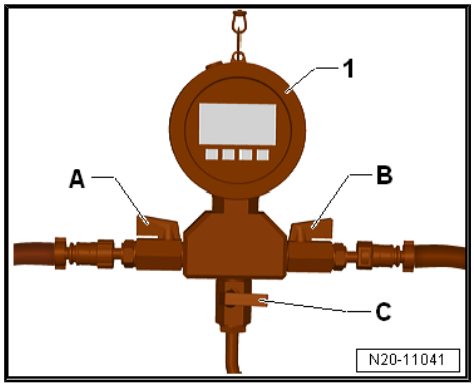
Severe injuries and burns are possible.

– Before the test, check if all connected lines are securely connected by pulling on them.

– Remove any cleaning cloths soaked in fuel from the vehicle area.

– Pull on the connector couplings to check them for secure fit.

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Switch on the -VAS6550- .



Perform the Pressure Test with the “Guided Fault Finding”.

– Follow the instructions displayed on the Vehicle Diagnostic Tester .

WARNING

There is a risk of injury when testing equipment is not secured.

If the front passenger airbag deploys during an accident, unsecured testing equipment becomes a dangerous projectile.

– Secure the testing equipment on the rear seat.

or

– Have a second technician operate the testing equipment on the rear seat.

7.1.8 Fuel Delivery Rate, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region

Special tools and workshop equipment required

- Trim Removal Wedge - 3409-
- Injection Rate Comparison Meter Kit - Remote Cable - VAG1348/3A-
- Multimeter, for example Analog/Digital Multimeter - FLU83III-
- Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-
- Pressure Tester Kit - VAS6550-
- Pressure Tester Kit - Regulator Valve - VAS6550/4-
- Vehicle Diagnostic Tester
- Measuring container, three liter

Note

If driving is still impaired with the fuel tank is maximum 1/4 full, then perform a fuel delivery test with the fuel tank only 1/4 full or with very little fuel in the fuel tank.

Test conditions:

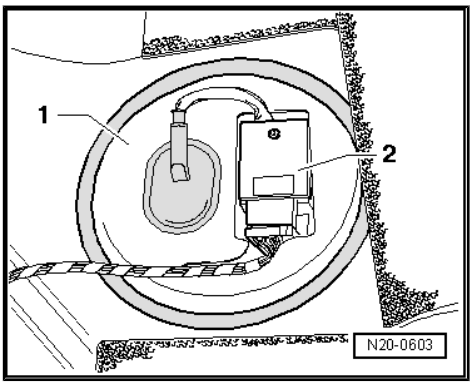
- Voltage supply OK. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .
- Fuel pressure is OK. Refer to ⇒ “7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region”, page 64 .
- The battery voltage must be at least 11.5 V. Charge if necessary. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Charging .

- Fuse for Fuel Pump Control Module - J538- is OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Fuel Pump Control Module - J538- is OK. Use the Vehicle Diagnostic Tester .
- Fuel Pump Relay - J17- OK. Use the Vehicle Diagnostic Tester .
- Fuel pump fuse OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Pull on the connector without pressing the release to make sure the connection is secure. Repeat the fuel pump function test if the connector was not connected correctly.
- Fuel level inside the fuel tank is above the reserve

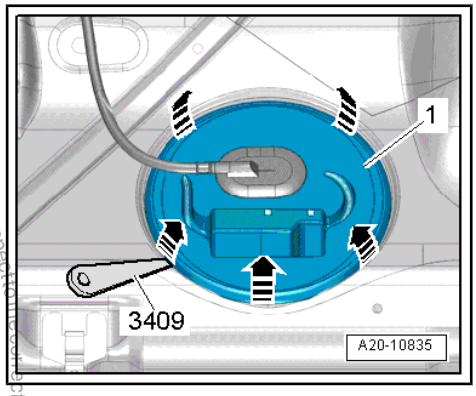
Fuel Delivery Rate in Engine Compartment, Checking:

– Remove the rear bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

– Remove the Fuel Pump Control Module - J538- -2- from the cover -1-.

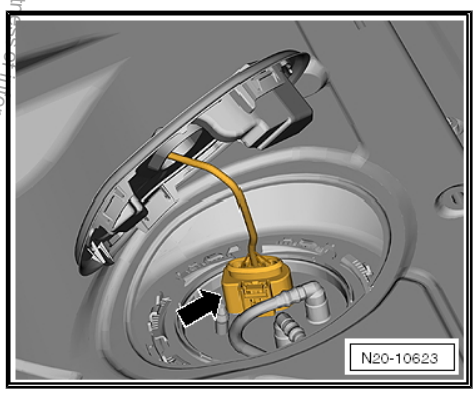


– Unclip the cover -1- at the tabs -arrows- using the -3409- .

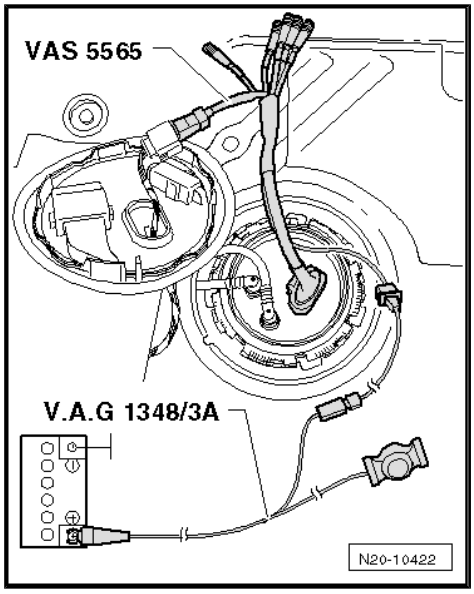


– Release and disconnect the connector -arrow-.

– Check the contacts on the connector and on the fuel delivery unit for damage.



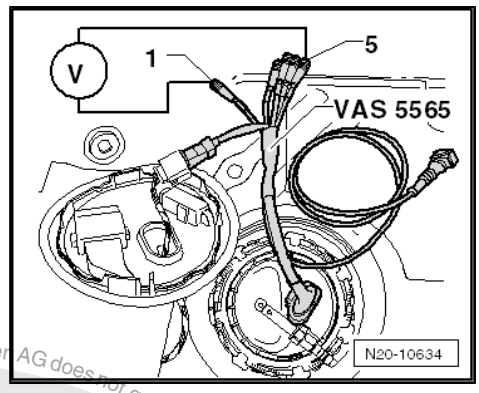
– Attach the -VAS5565- to the connector and to the fuel delivery unit.
– Connect the -VAG1348/3A- to the -VAS5565- and the battery positive terminal clamp in the engine compartment.



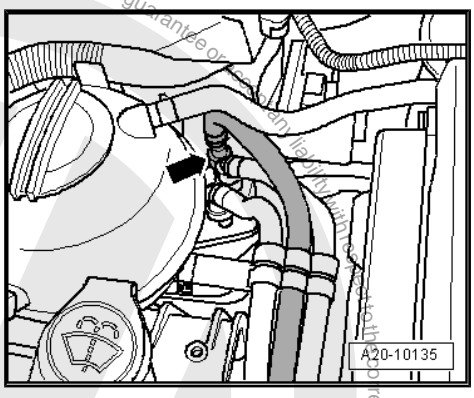
Note

This step allows the fuel pump to run when the engine is not running.

– The fuel pump delivery rate is dependent on the battery voltage. Also connect the Multimeter to the wires -1- and -5- in the -VAS5565- .



– Remove the supply line -1-. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

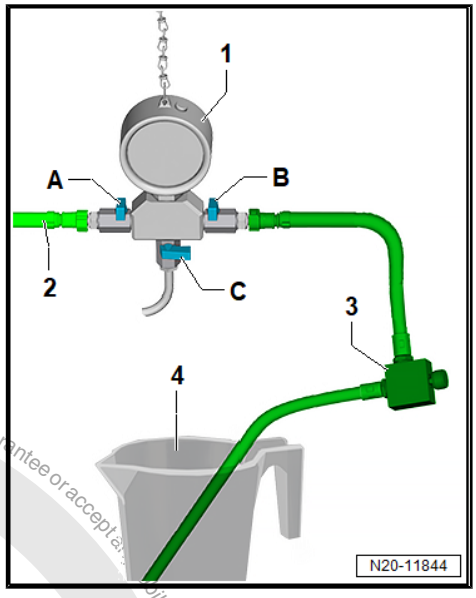


CAUTION

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Collect leaking fuel with a cleaning cloth.
– Connect the -VAS6550- with the -VAS6550/2- to the fuel supply line from the fuel tank.

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- -1-.
– Connect the -VAS6550/4- -3- to the connection -B- on the -VAS6550- .
– Place the measuring container outside of the vehicle and make sure it is securely positioned. Use suitable service equipment for this.
– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.
– Have a second technician ensure the end of the hose stays in the measuring container during the test.



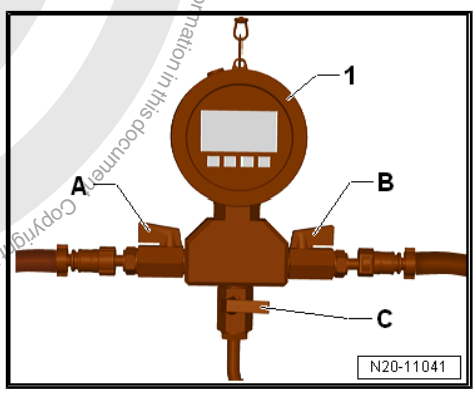
CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**
- **Place the measuring container outside of the vehicle and make sure it is securely positioned.**
- **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**

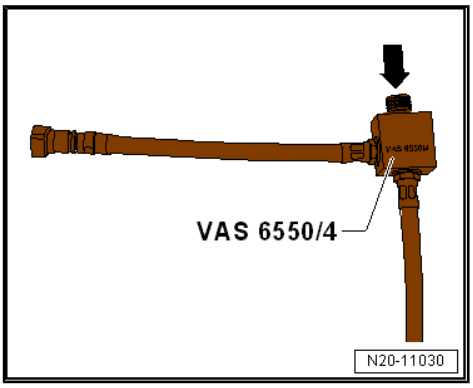
– Pull on the connector couplings to check them for secure fit.
– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.
– Push the -VAG1348/3A- .



Note

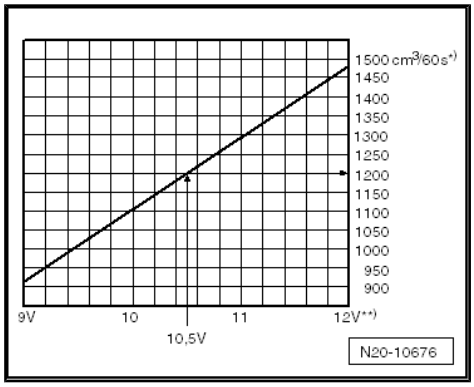
The Transfer Fuel Pump - G6- is activated!

– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.
– From this point on do not move the adjustment wheel.
– Empty the measuring container.
– Press the remote control for 60 seconds while measuring the fuel pump voltage.



– Compare the delivered quantity of fuel with the specified value in the table.

Axis designation	Unit
Fuel delivery rate	cm ^{3}
Fuel pump voltage when the engine is idling and the pump is running	Volt



Example:

During test, a voltage of 10.5 Volts is measured. This results in a minimum fuel delivery rate of approximately 1200 cm^3/60 s.

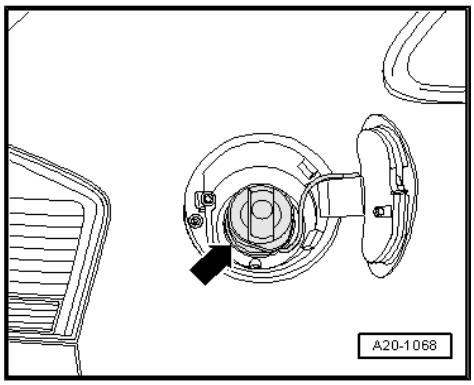
If the specified value is not obtained:

– Open the fuel filler door unit.

– Clean the area around the fuel filler neck.

– Remove the cap -arrow- for the fuel filler neck.

– Check the fuel delivery rate again. Refer to ⇒ page 87 .



If the specified value is obtained:

– Check the fuel tank breather. Refer to ⇒ “5 EVAP System”, page 40 .

If the specified value is not obtained:

– Check the fuel lines for possible restrictions (kinks) or blockages.

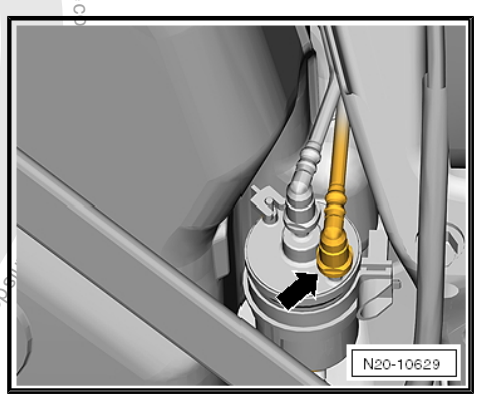
– Check the fuel lines for leaks and damage.

If no error can be found:

Proceed as follows to check the fuel delivery rate to the fuel filter.

Checking the fuel delivery rate to the fuel filter:

1 Disconnect the fuel supply line -arrow- from the fuel filter. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



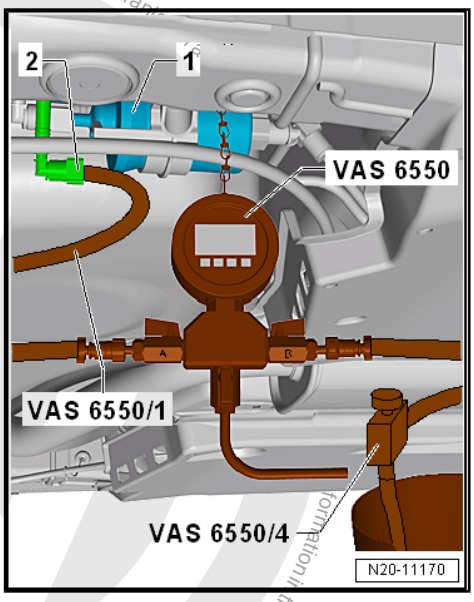
CAUTION

The fuel system is under pressure.

Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- to the fuel supply line -2- with the -VAS6550/1- .
– Connect the -VAS6550/1- to the connection -A- on the -VAS6550- .
– Connect the -VAS6550/4- to the connection -B- on the -VAS6550- .
– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.



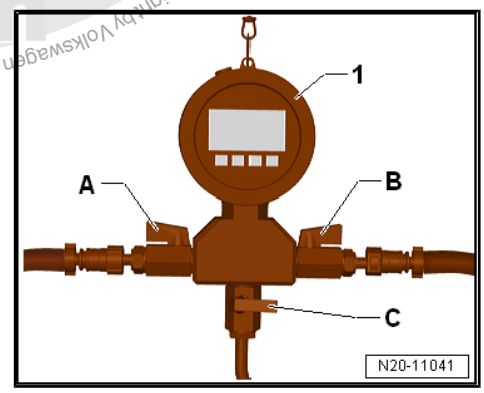
CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**
– **Remove any cleaning cloths soaked in fuel from the vehicle area.**
– **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**

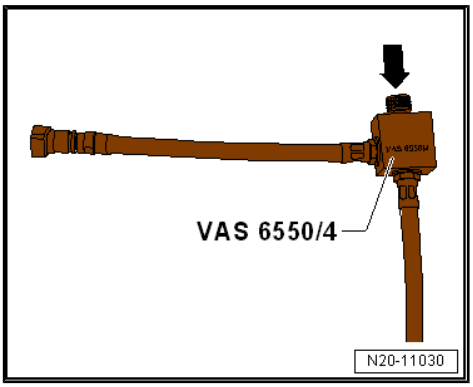
– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.
– Push the -VAG1348/3A- .



Note

The Transfer Fuel Pump - G6- is activated!

– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.
– From this point on do not move the adjustment wheel.
– Empty the measuring container.
– Press the remote control for 60 seconds while measuring the fuel pump voltage.



If the specified value is obtained:

– Check the fuel line to the engine for possible kinks or blockages.
– Check the fuel line to the engine for leaks and damage.

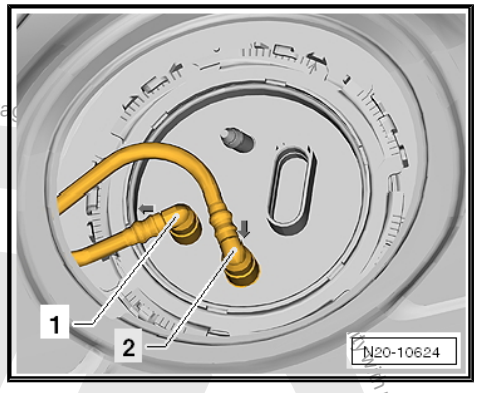
If no malfunction was detected:

– Replace the fuel filter. Refer to ⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

If the specified value is not obtained:

Check the fuel delivery rate on the fuel delivery unit as follows:

Fuel Delivery Rate, Checking on Fuel Delivery Unit:



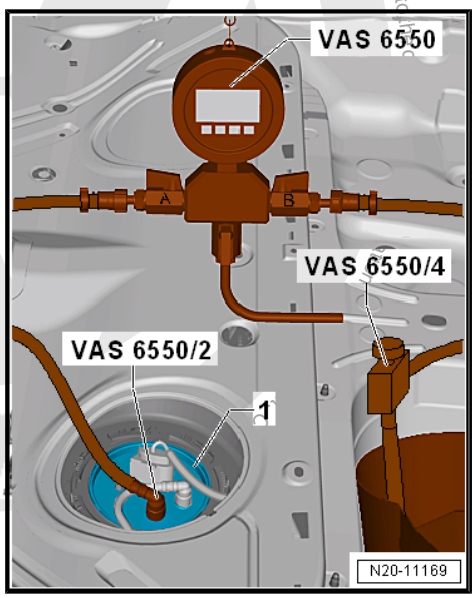
– Pull the fuel line -1- off the flange. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34.

CAUTION

The fuel system is under pressure.

Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**



– Connect the -VAS6550- to the fuel delivery unit -1- with the -VAS6550/2- .

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .

– Connect the -VAS6550/4- to the connection -B- on the -VAS6550- .

– Place the measuring container outside of the vehicle and make sure it is securely positioned. Use suitable service equipment for this.

– Have a second technician make sure it is securely positioned.

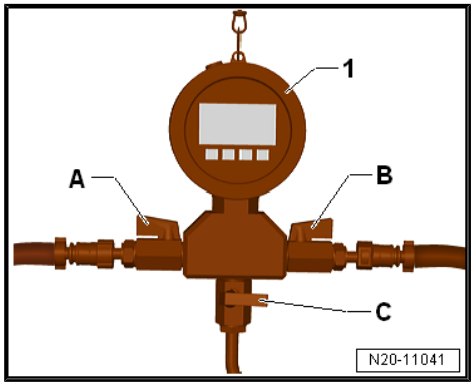
– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.

CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**
- **Place the measuring container outside of the vehicle and make sure it is securely positioned.**
- **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**



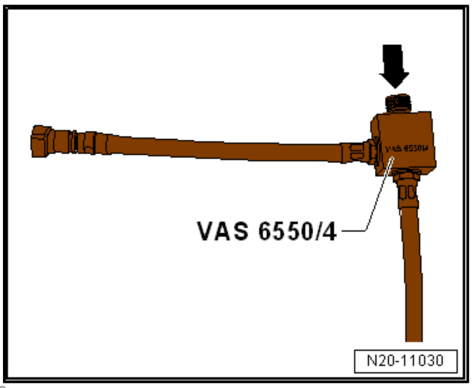
– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.

– The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.

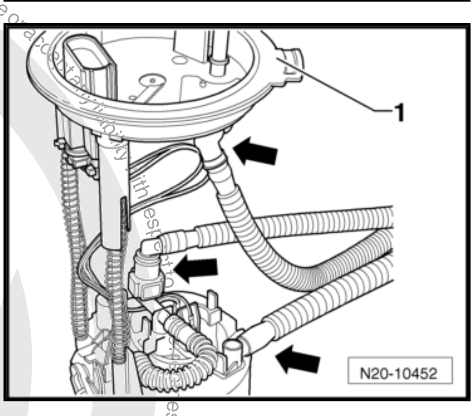
– Push the -VAG1348/3A- .

Note

The Transfer Fuel Pump - G6- is activated!



– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.
– From this point on do not move the adjustment wheel.
– Empty the measuring container.
– Press the remote control for 60 seconds while measuring the fuel pump voltage.



If the specified value is not obtained:

– Remove the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Check the fuel lines for possible restrictions (kinks) or blockages.
– Remove the fuel delivery unit and check the filter screen for contamination.
– Check the fuel lines for leaks and damage.
– Check whether the hose connections -arrows- to the fuel delivery unit -1- are connected.

If no malfunction was detected:

– Check the current draw of the fuel pump. Refer to ⇒ “7.1.11 Current Draw, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 106 .

If no faults were found while checking the current draw:

– Replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

If the fuel delivery rate was reach, even though a fault in the fuel supply is still suspected (for example, intermittent loss of fuel supply):

– Check the current draw of the fuel pump. Refer to ⇒ “7.1.11 Current Draw, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 106 .

7.1.9 Fuel Delivery Rate, Checking, Engine Code CDLG, Not for North American Region

Special tools and workshop equipment required

♦ Trim Removal Wedge - 3409-
♦ Injection Rate Comparison Meter Kit - Remote Cable - VAG1348/3A-
♦ Multimeter, for example Analog/Digital Multimeter - FLU83III-
♦ Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-
♦ Pressure Tester Kit - VAS6550-
♦ Pressure Tester Kit - Regulator Valve - VAS6550/4-

- Vehicle Diagnostic Tester
- Measuring container, three liter

Note

If driving is still impaired with the fuel tank is maximum 1/4 full, then perform a fuel delivery test with the fuel tank only 1/4 full or with very little fuel in the fuel tank.

Test conditions:

- Voltage supply OK. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .
- Fuel pressure is OK. Refer to ⇒ “7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region”, page 64 .
- The battery voltage must be at least 11.5 V. Charge if necessary. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Charging .
- Fuse for Fuel Pump Control Module - J538- is OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Fuel Pump Control Module - J538- is OK. Use the Vehicle Diagnostic Tester .
- Fuel Pump Relay - J17- OK. Use the Vehicle Diagnostic Tester .
- Fuel pump fuse OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Pull on the connector without pressing the release to make sure the connection is secure. Repeat the fuel pump function test if the connector was not connected correctly.
- Fuel level inside the fuel tank is above the reserve

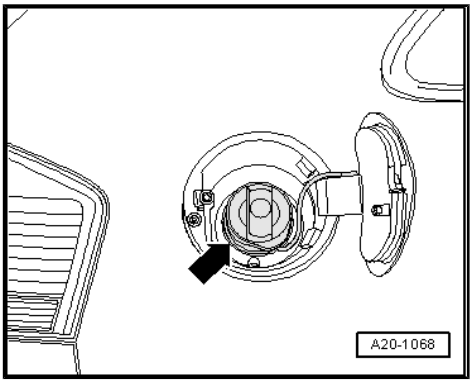
Checking fuel delivery rate, quick test for vehicles with engine code CDLG:

Note

- *The fuel delivery rate is first checked in the engine compartment with the “Check fuel delivery rate, quick test” Guided Function. Perform a second measurement on the fuel delivery unit flange if the fuel delivery rate is not attained.*
- *If driving is still impaired with the fuel tank is maximum 1/4 full, then perform a fuel delivery test with the fuel tank only 1/4 full or with very little fuel in the fuel tank.*

– Connect the Vehicle Diagnostic Tester to the vehicle.
– Select `Guided Functions` in the Vehicle Diagnostic Tester .
– Perform the vehicle identification.
– Select `engine`.
– Select `check fuel delivery rate, quick test`.
– Follow the instructions displayed on the Vehicle Diagnostic Tester .

If the specified value is not obtained:



- Open the fuel filler door unit.
- Clean the area around the fuel filler neck.
- Remove the cap -arrow- for the fuel filler neck.
- Repeat checking the fuel delivery rate, quick test. Refer to ⇒ page 94 .

If the specified value is obtained:

- Check the fuel tank breather. Refer to ⇒ “5 EVAP System”, page 40 .

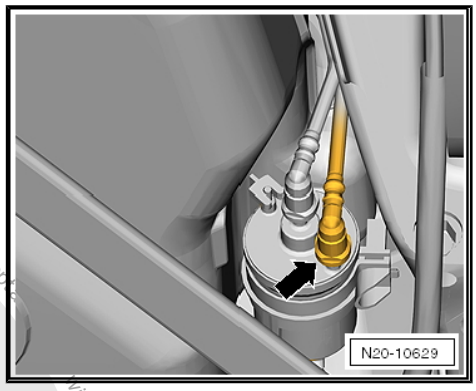
If the specified value is not obtained:

- Check the fuel lines for possible restrictions (kinks) or blockages.
- Check the fuel lines for leaks and damage.

If no error can be found:

Proceed as follows to check the fuel delivery rate to the fuel filter.

Checking the fuel delivery rate to the fuel filter:



- Disconnect the fuel supply line -arrow- from the fuel filter. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

CAUTION

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- to the fuel supply line -2- with the -VAS6550/1- .

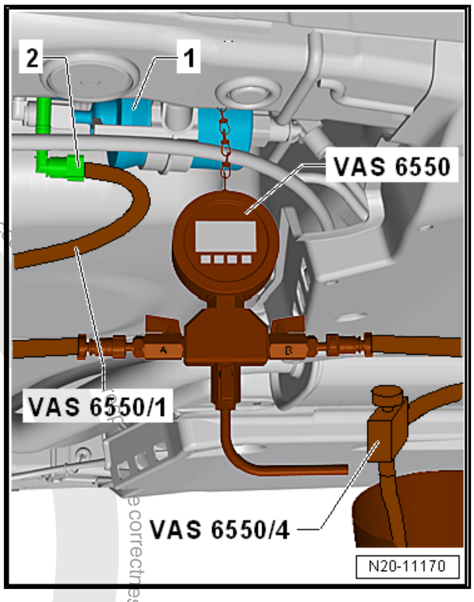
– Connect the -VAS6550/1- to the connection -A- on the -VAS6550- .

– Connect the -VAS6550/4- to the connection -B- on the -VAS6550- .

– Place the measuring container outside of the vehicle and make sure it is securely positioned. Use suitable service equipment for this.

– Have a second technician make sure it is securely positioned.

– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.



CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**

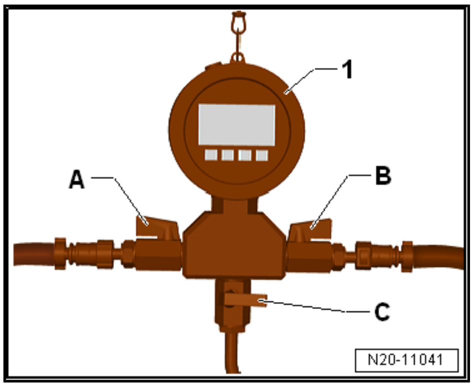
– **Remove any cleaning cloths soaked in fuel from the vehicle area.**

– **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**

– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.

– The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.

– Push the -VAG1348/3A- .



Note

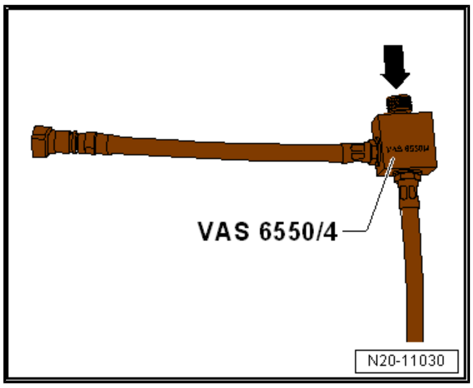
The Transfer Fuel Pump - G6- is activated!

– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.

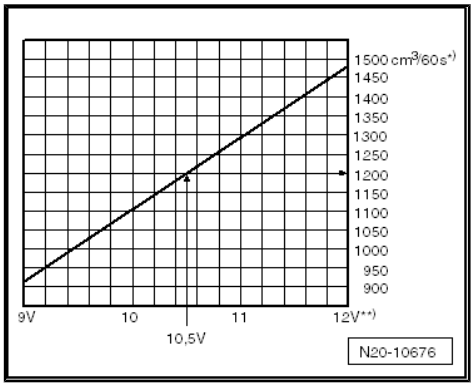
– From this point on do not move the adjustment wheel.

– Empty the measuring container.

– Press the remote control for 60 seconds while measuring the fuel pump voltage.



– Compare the delivered quantity of fuel with the specified value in the table.



Axis designation	Unit
Fuel delivery rate	cm 3
Fuel pump voltage when the engine is idling and the pump is running	Volt

Example:

During test, a voltage of 10.5 Volts is measured. This results in a minimum fuel delivery rate of approximately 1200 cm^3/60 s.

If the specified value is obtained:

– Check the fuel line to the engine for possible kinks or blockages.

– Check the fuel line to the engine for leaks and damage.

If no malfunction was detected:

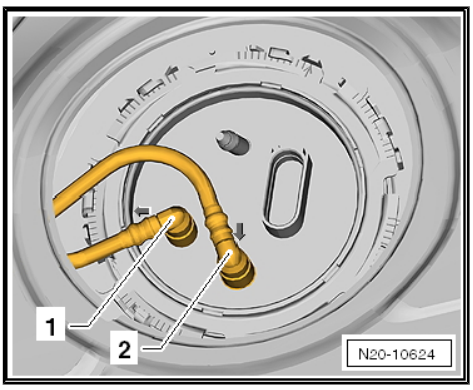
– Replace the fuel filter. Refer to
⇒ “4.2 Fuel Filter, Removing and Installing”, page 38 .

If the specified value is not obtained:

Check the fuel delivery rate on the fuel delivery unit as follows:

Fuel Delivery Rate, Checking on Fuel Delivery Unit:

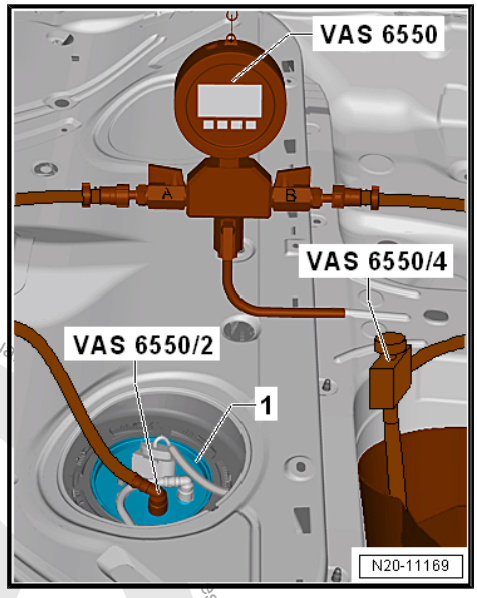
– Pull the fuel line -1- off the flange. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



CAUTION

The fuel system is under pressure.
Risk of injury from fuel spraying out.
– Wear protective eyewear.
– Wear safety gloves.
– Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.

– Connect the -VAS6550- to the fuel delivery unit -1- with the -VAS6550/2- .
– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .
– Connect the -VAS6550/4- to the connection -B- on the -VAS6550- .
– Place the measuring container outside of the vehicle and make sure it is securely positioned. Use suitable service equipment for this.
– Have a second technician make sure it is securely positioned.
– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.



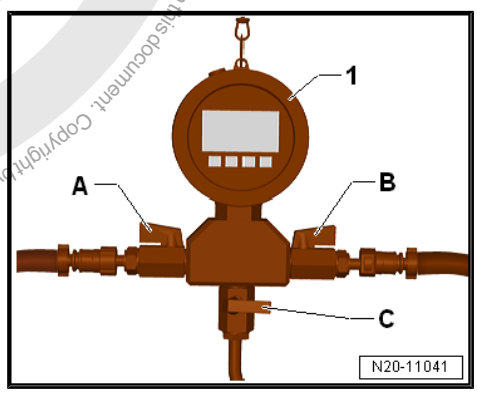
CAUTION

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**
- **Place the measuring container outside of the vehicle and make sure it is securely positioned.**
- **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**

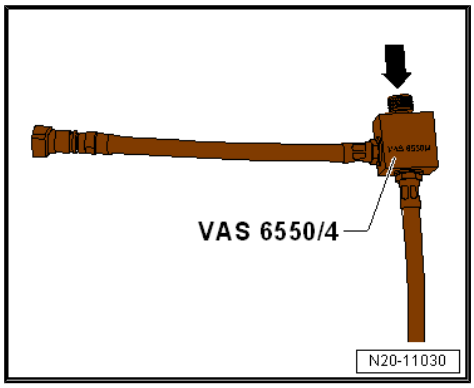
– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A- and -B- on the Pressure Tester Kit -1- are open.
– Push the -VAG1348/3A- .

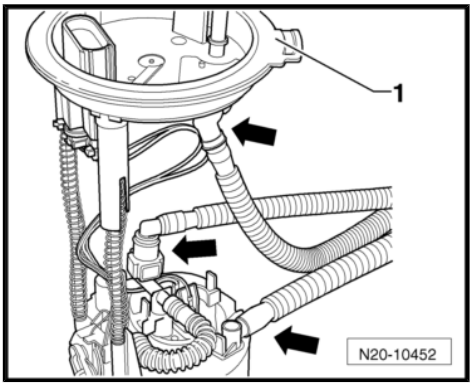


Note

The Transfer Fuel Pump - G6- is activated!

– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.
– From this point on do not move the adjustment wheel.
– Empty the measuring container.
– Press the remote control for 60 seconds while measuring the fuel pump voltage.





If the specified value is not obtained:

– Remove the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

– Check the fuel lines for possible restrictions (kinks) or blockages.

– Remove the fuel delivery unit and check the filter screen for contamination.

– Check the fuel lines for leaks and damage.

– Check whether the hose connections -arrows- to the fuel delivery unit -1- are connected.

If no malfunction was detected:

– Check the current draw of the fuel pump. Refer to ⇒ “7.1.11 Current Draw, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 106 .

If no faults were found while checking the current draw:

– Replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

If the fuel delivery rate was reach, even though a fault in the fuel supply is still suspected (for example, intermittent loss of fuel supply):

– Check the current draw of the fuel pump. Refer to ⇒ “7.1.11 Current Draw, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region”, page 106 .

7.1.10 Fuel Delivery Rate, Checking, Engine Codes CBTA and CBUA

Special tools and workshop equipment required

- Trim Removal Wedge - 3409-
- Injection Rate Comparison Meter Kit - Remote Cable - VAG1348/3A-
- Multimeter, for example Analog/Digital Multimeter - FLU83III-
- Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-
- Pressure Tester Kit - VAS6550-
- Pressure Tester Kit - Regulator Valve - VAS6550/4-
- Vehicle Diagnostic Tester
- Measuring container, three liter

Note

If driving is still impaired with the fuel tank is maximum 1/4 full, then perform a fuel delivery test with the fuel tank only 1/4 full or with very little fuel in the fuel tank.

Test Conditions:

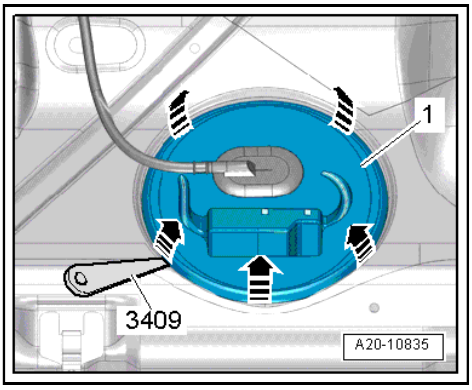
- Voltage supply OK. Refer to ⇒ “7.1 Fuel Pump, Checking”, page 59 .

- Fuel pressure is OK. Refer to ⇒ “7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region”, page 64 .
- The battery voltage must be at least 11.5 V. Charge if necessary. Refer to ⇒ Electrical Equipment; Rep. Gr. 27 ; Battery; Battery, Charging .
- Fuse for Fuel Pump Control Module - J538- is OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Fuel Pump Control Module - J538- is OK. Use the Vehicle Diagnostic Tester .
- Fuel Pump Relay - J17- OK. Use the Vehicle Diagnostic Tester .
- Fuel pump fuse OK. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- Pull on the connector without pressing the release to make sure the connection is secure. Repeat the fuel pump function test if the connector was not connected correctly.
- Fuel level inside the fuel tank is above the reserve.

Fuel Delivery Rate in Engine Compartment, Checking:

– Remove the rear bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

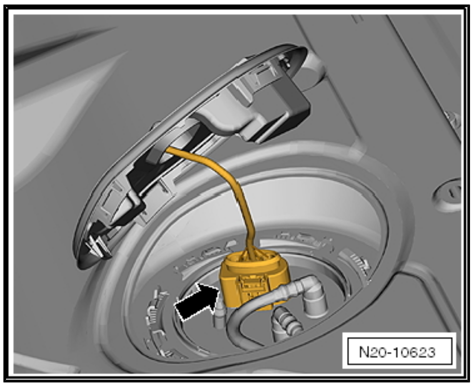
– Unclip the cover -1- at the tabs in direction of -arrows- using the -3409- .



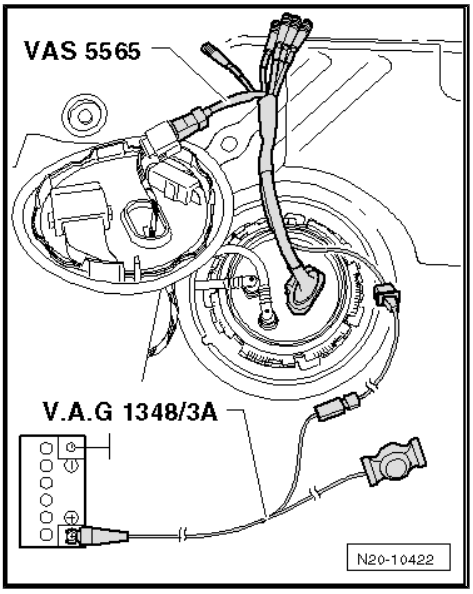
– Pull on the connector -arrow- without pressing the release to make sure the connection is secure. Repeat the fuel pump function test if the connector was not connected correctly.

– Release and disconnect the connector -arrow-.

– Check the contacts on the connector and on the fuel delivery unit for damage.



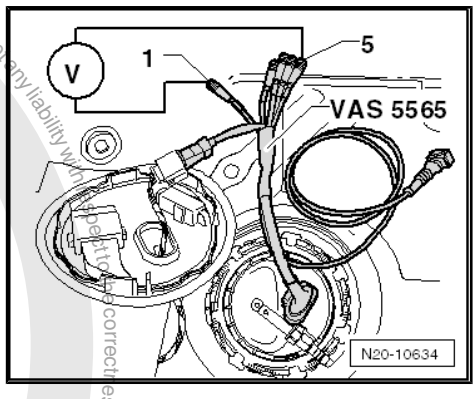
– Attach the -VAS5565- to the connector and to the fuel delivery unit.
– Connect the -VAG1348/3A- to the -VAS5565- and the battery positive terminal clamp in the engine compartment.



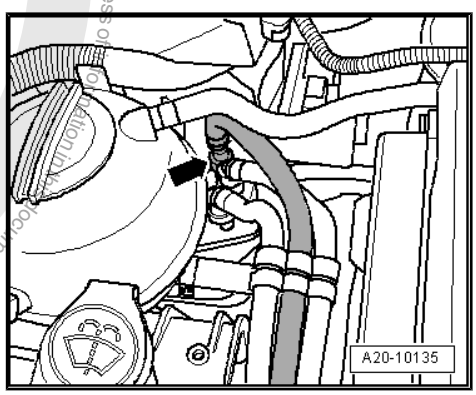
Note

This step allows the fuel pump to run when the engine is not running.

– The fuel pump delivery rate is dependent on the battery voltage. Also connect the -FLU83III- to the wires -1 and 5- on the -VAS5565- .



– Remove the supply line -1-. Disconnect the connector couplings. Refer to
⇒“3.1 Connector Couplings, Disconnecting”, page 34 .

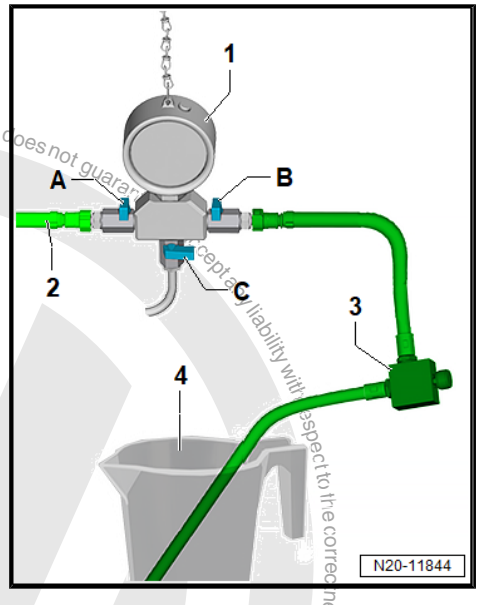


WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Collect leaking fuel with a cleaning cloth.
– Connect the -VAS6550- with the -VAS6550/2- to the fuel supply line from the fuel tank.

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- -1-.
– Connect the -VAS6550/4- -3- to the connection -B- on the -VAS6550- .
– Place the measuring container outside of the vehicle and make sure it is securely positioned. Use suitable service equipment for this.
– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.
– Have a second technician ensure the end of the hose stays in the measuring container during the test.



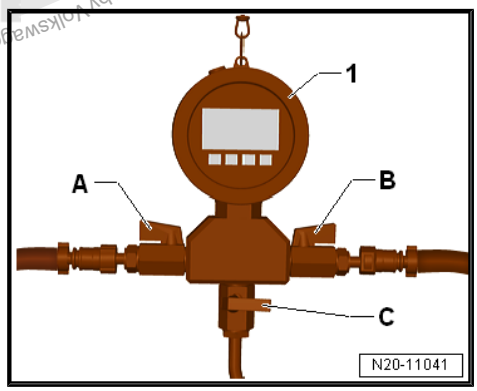
WARNING

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**
- **Place the measuring container outside of the vehicle and make sure it is securely positioned.**
- **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**

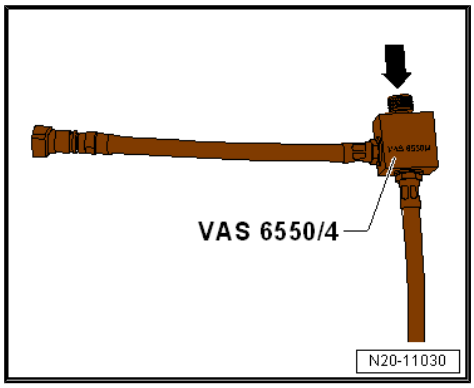
– Pull on the connector couplings to check them for secure fit.
– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Push the -VAG1348/3A- .



Note

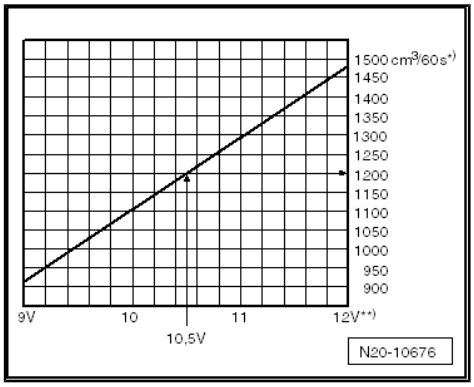
The Transfer Fuel Pump - G6- is activated!

– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.
– From this point on do not move the adjustment wheel.
– Empty the measuring container.
– Press the remote control for 60 seconds while measuring the fuel pump voltage.



– Compare the delivered quantity of fuel with the specified value in the table.

Axis Designation	Unit
Fuel delivery rate	cm ^{3}
Fuel pump voltage when the engine is idling and the pump is running	Volt

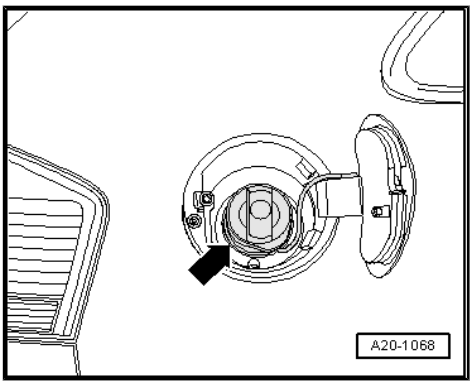


Example:

During test, a voltage of 10.5 Volts is measured. This results in a minimum fuel delivery rate of approximately 1200 cm^3/60 s.

If the Specified Value is Not Obtained:

– Open the fuel filler door unit.
– Clean the area around the fuel filler neck.
– Remove the cap -arrow- for the fuel filler neck.
– Check the fuel delivery rate again. Refer to ⇒ page 87 .



If the Specified Value is Obtained:

– Check the fuel tank breather. Refer to ⇒ “5 EVAP System”, page 40 .

If the Specified Value is Not Obtained:

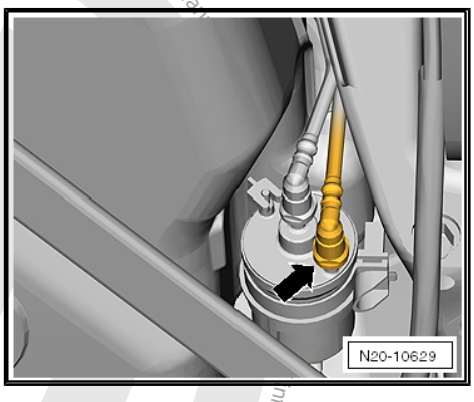
– Check the fuel lines for possible restrictions (kinks) or blockages.
– Check the fuel lines for leaks and damage.

If No Error Can be Found:

Proceed as follows to check the fuel delivery rate to the fuel filter.

Checking the Fuel Delivery Rate to the Fuel Filter:

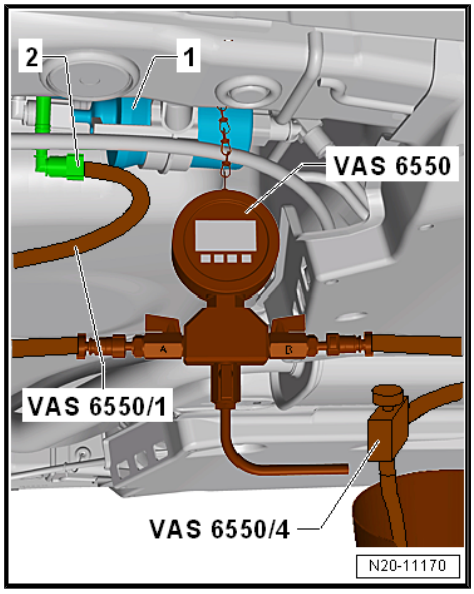
– Disconnect the fuel supply line -arrow- from the fuel filter. Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .



WARNING

The fuel system is under pressure.
Risk of injury from fuel spraying out.
– **Wear protective eyewear.**
– **Wear safety gloves.**
– **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**

– Connect the -VAS6550- to the fuel supply line -2- with the -VAS6550/1- .
– Connect the -VAS6550/1- to the connection -A- on the -VAS6550- .
– Connect the -VAS6550/4- to the connection -B- on the -VAS6550- .
– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.



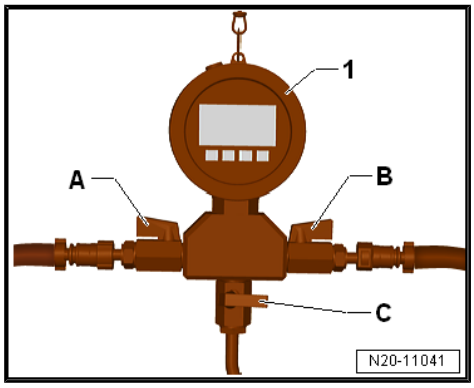
WARNING

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

– **Before the test, check if all connected lines are securely connected by pulling on them.**
– **Remove any cleaning cloths soaked in fuel from the vehicle area.**
– **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**

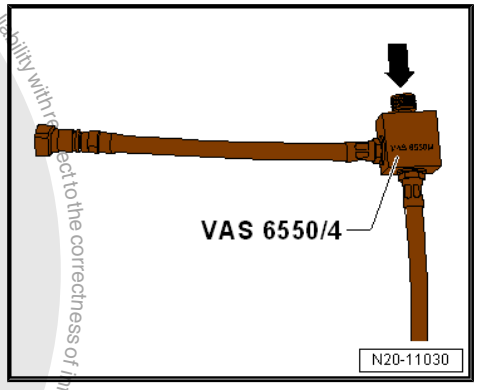
– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.
– Push the -VAG1348/3A- .



Note

The Transfer Fuel Pump - G6- is activated!

– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.
– From this point on do not move the adjustment wheel.
– Empty the measuring container.
– Press the remote control for 60 seconds while measuring the fuel pump voltage.



If the Specified Value is Obtained:

– Check the fuel line to the engine for possible kinks or blockages.
– Check the fuel line to the engine for leaks and damage.

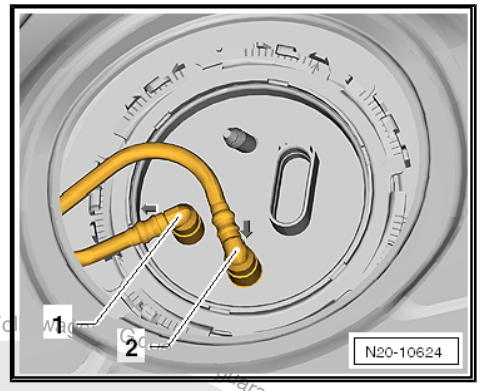
If no malfunction was detected:

– Replace the fuel filter. Refer to ⇒“4.2 Fuel Filter, Removing and Installing”, page 38 .

If the Specified Value is Not Obtained:

Check the fuel delivery rate on the fuel delivery unit as follows:

Fuel Delivery Rate, Checking on Fuel Delivery Unit:



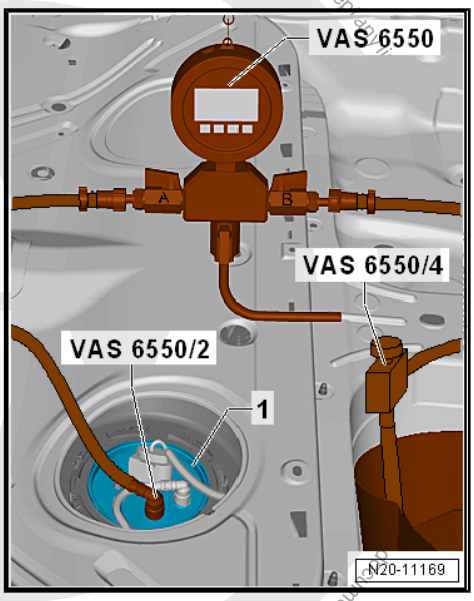
– Pull the fuel line -1- off the flange. Disconnect the connector couplings. Refer to
⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .

WARNING

The fuel system is under pressure.

Risk of injury from fuel spraying out.

- **Wear protective eyewear.**
- **Wear safety gloves.**
- **Reduce the pressure: place clean cloths around the connection point and carefully open the connection point.**



– Connect the -VAS6550- to the fuel delivery unit -1- with the -VAS6550/2- .

– Connect the -VAS6550/2- to the connection -A- on the -VAS6550- .

– Connect the -VAS6550/4- to the connection -B- on the -VAS6550- .

– Place the measuring container outside of the vehicle and make sure it is securely positioned. Use suitable service equipment for this.

– Have a second technician make sure it is securely positioned.

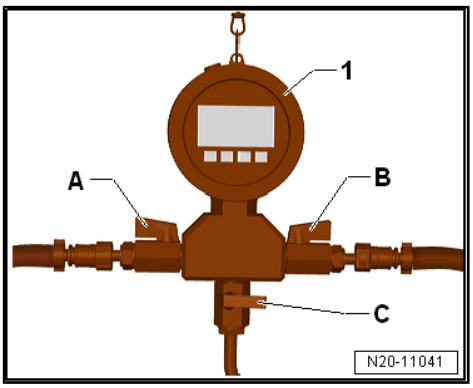
– Hold the open end of the hose coming from the pressure regulating valve in a measuring container. Have a second technician hold the measuring container and hose so they are secure.

WARNING

Risk of a fire due to leaking fuel.

Severe injuries and burns are possible.

- **Before the test, check if all connected lines are securely connected by pulling on them.**
- **Remove any cleaning cloths soaked in fuel from the vehicle area.**
- **Place the measuring container outside of the vehicle and make sure it is securely positioned.**
- **With the help of a second technician, make sure the end of the hose stays in the measuring container and the measuring container does not tip over during the test.**



– Make sure that the drain valve -C- on the Pressure Tester -1- is closed.

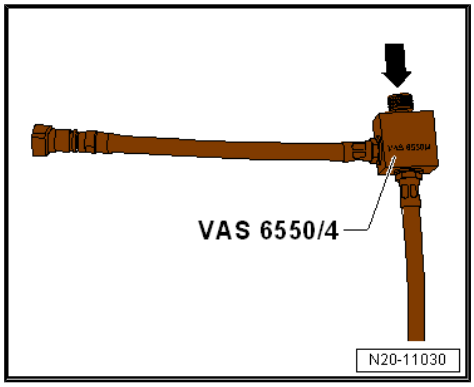
– The shut-off valves -A and B- on the Pressure Tester Kit -1- are open.

– Push the -VAG1348/3A- .

Note

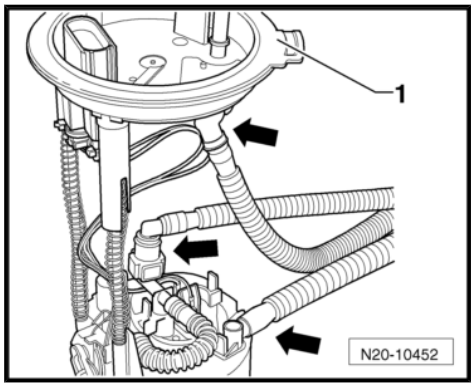
The Transfer Fuel Pump - G6- is activated!

– Adjust the pressure to 4.0 bar (58.01 psi) with the adjustment wheel on the Pressure Regulating Valve -arrow-.
– From this point on do not move the adjustment wheel.
– Empty the measuring container.
– Press the remote control for 60 seconds while measuring the fuel pump voltage.



If the Specified Value is Not Obtained:

– Remove the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Check the fuel lines for possible restrictions (kinks) or blockages.
– Remove the fuel delivery unit and check the filter screen for contamination.
– Check the fuel lines for leaks and damage.
– Check whether the hose connections -arrows- to the fuel delivery unit -1- are connected.



If No Malfunction was Detected:

– Check the current draw of the fuel pump. Refer to ⇒ “7.1.12 Current Draw, Checking, Engine Codes CBTA and CBUA”, page 108 .

If no faults were found while checking the current draw:

– Replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27

If the fuel delivery rate was reach, even though a fault in the fuel supply is still suspected (for example, intermittent loss of fuel supply):

– Check the current draw of the fuel pump. Refer to ⇒ “7.1.12 Current Draw, Checking, Engine Codes CBTA and CBUA”, page 108 .

7.1.11 Current Draw, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, Not for North American Region

Special tools and workshop equipment required

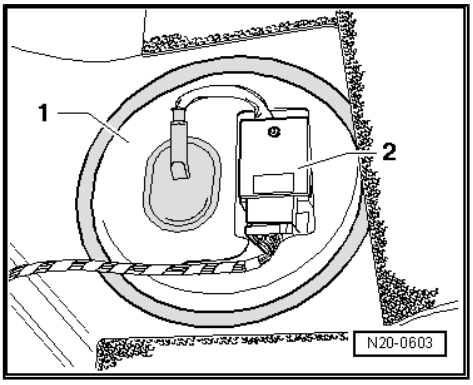
- Trim Removal Wedge - 3409-
- Multimeter, for example Analog/Digital Multimeter - FLU83III-
- Pickup Clamp such as Pickup Clamp - VAG1526B/2-
- Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-

Note

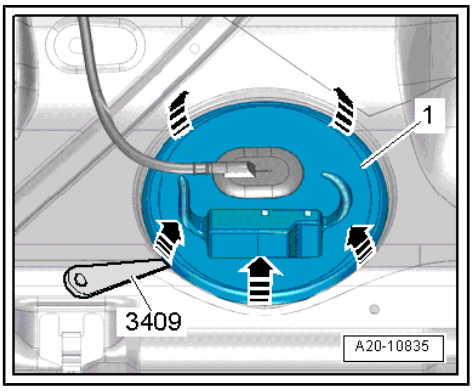
- *The connector couplings must »audibly« engage when locking.*
- *Note the color coding when installing the connector coupling. Refer to ⇒ page 34 !*
- *Pull on the connector coupling to check for secure fit.*
- *Disconnect the connector couplings. Refer to ⇒ "3.1 Connector Couplings, Disconnecting", page 34 .*

– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .

– Remove the cover -1- with the Fuel Pump Control Module - J538- -2- from the fuel delivery unit.



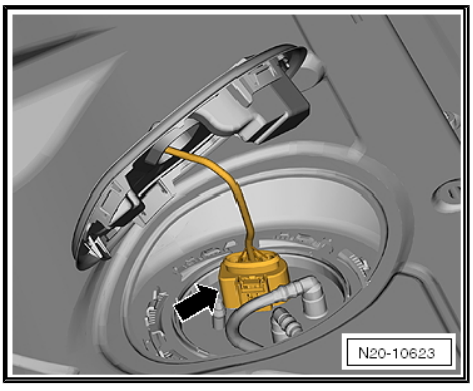
– To do this, unclip the cover -1- at the tabs -arrows- using the -3409- .



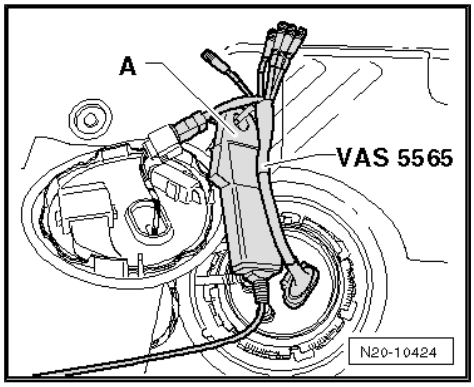
– Pull on the connector -arrow- without pressing the release to make sure the connection is secure. Repeat the fuel pump function test if the connector was not connected correctly.

– Release and disconnect the connector.

– Check the contacts on the connector and on the fuel delivery unit for damage.



– Attach the -VAS5565- to the connector and to the fuel delivery unit.
– Connect the current probe -A- to the red cable labeled “current probe” for the -VAS5565- .
– Start the engine and let it run.
– Measure the current draw of the fuel pump.
• Specified value: maximum 9 amps



Note

♦ *The fuel pump starting current may be higher than the specified value briefly when starting the engine.*

♦ *If the malfunction in the fuel system only occurs sporadically, the test can also be performed during a road test. A second person is required to do this.*

If the current draw is exceeded:

– Check the fuel lines for possible restrictions (kinks) or blockages.
– Remove the fuel delivery unit and inspect it for debris. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Fuel Pressure, Checking. Refer to ⇒ “7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region”, page 64 .

If no malfunction was detected:

– Replace the fuel delivery unit. Refer to ⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

7.1.12 Current Draw, Checking, Engine Codes CBTA and CBUA

Special tools and workshop equipment required

♦ Trim Removal Wedge - 3409-
♦ Multimeter, for example Analog/Digital Multimeter - FLU83III-
♦ Pickup Clamp such as Pickup Clamp - VAG1526B/2-
♦ Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-

Note

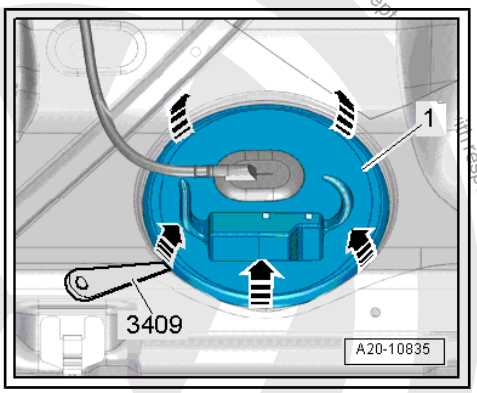
♦ *The connector couplings must »audibly« engage when locking.*

♦ *Note the color coding when installing the connector coupling. Refer to ⇒ page 34 !*

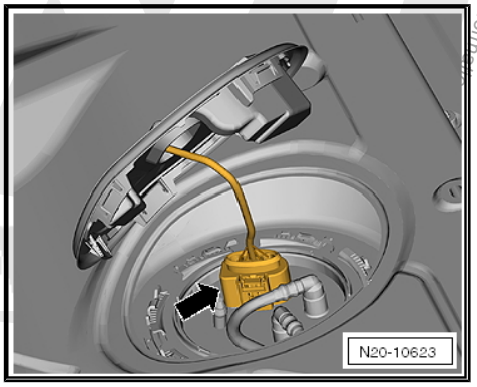
♦ *Pull on the connector coupling to check for secure fit.*

♦ *Disconnect the connector couplings. Refer to ⇒ “3.1 Connector Couplings, Disconnecting”, page 34 .*

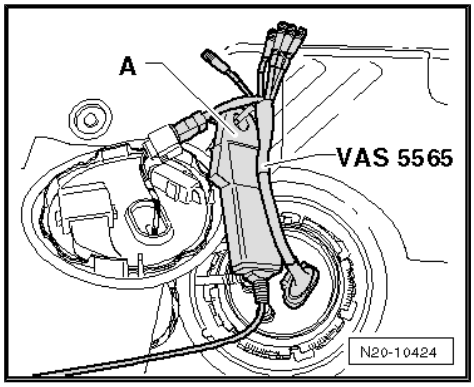
– Remove the bench seat. Refer to ⇒ Body Interior; Rep. Gr. 72 ; Rear Seats; Bench Seat / Single Seats, Removing and Installing .
– To do this, unclip the cover -1- at the tabs in direction of -arrows- using the -3409- .



– Pull on the connector -arrow- without pressing the release to make sure the connection is secure. Repeat the fuel pump function test if the connector was not connected correctly.
– Release and disconnect the connector.
– Check the contacts on the connector and on the fuel delivery unit for damage.



– Attach the -VAS5565- to the connector and to the fuel delivery unit.
– Connect the current probe -A- to the red cable labeled “current probe” for the -VAS5565- .
– Start the engine and let it run.
– Measure the current draw of the fuel pump.
• Specified value: maximum 9 amps



Note

♦ *The fuel pump starting current may be higher than the specified value briefly when starting the engine.*

♦ *If the malfunction in the fuel system only occurs sporadically, the test can also be performed during a road test. A second person is required to do this.*

If the Current Draw is Exceeded:

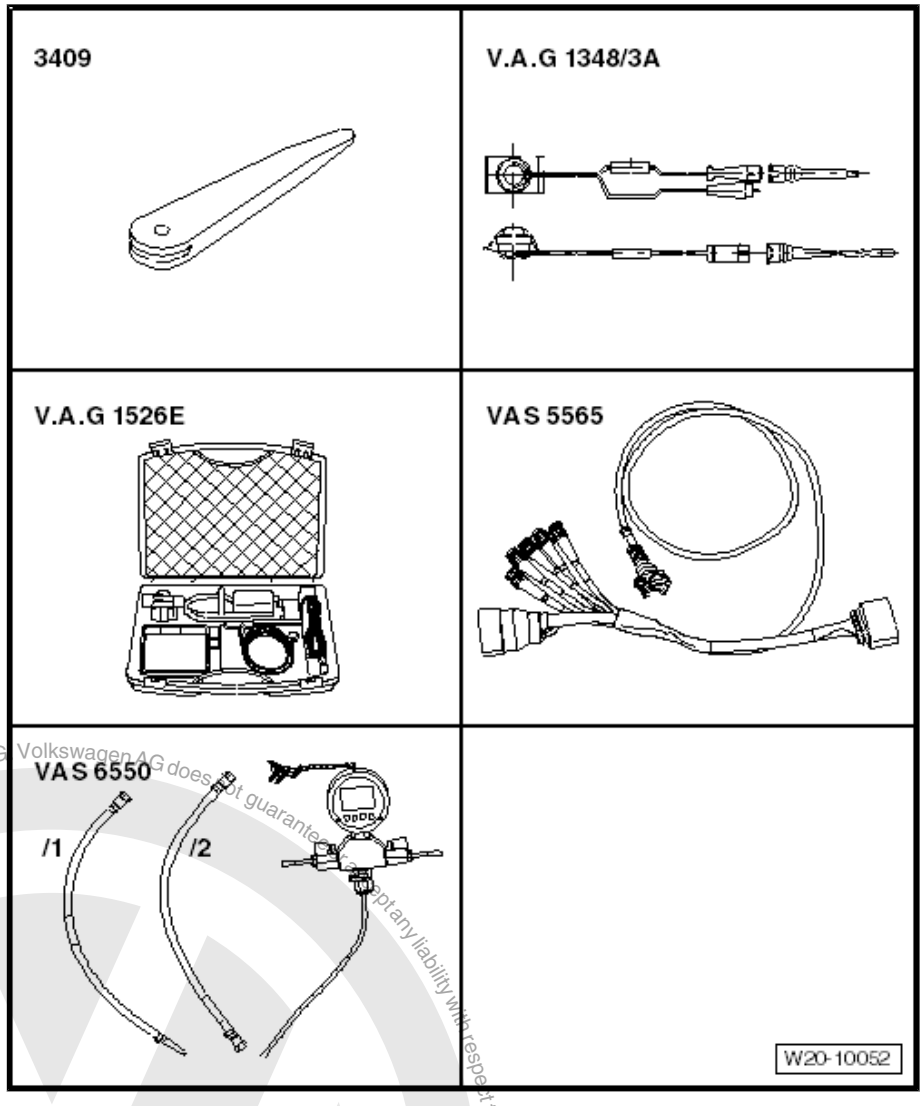
– Check the fuel lines for possible restrictions (kinks) or blockages.
– Remove the fuel delivery unit and inspect it for debris. Refer to
⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .
– Fuel Pressure, Checking. Refer to
⇒ “7.1.3 Fuel Pressure, Checking, Engine Codes CDLG, CAVB, CAVC, CAVD, CBZA, CBZB, CTHD and CTKA, North American Region”, page 64 .

If No Malfunction was Detected:

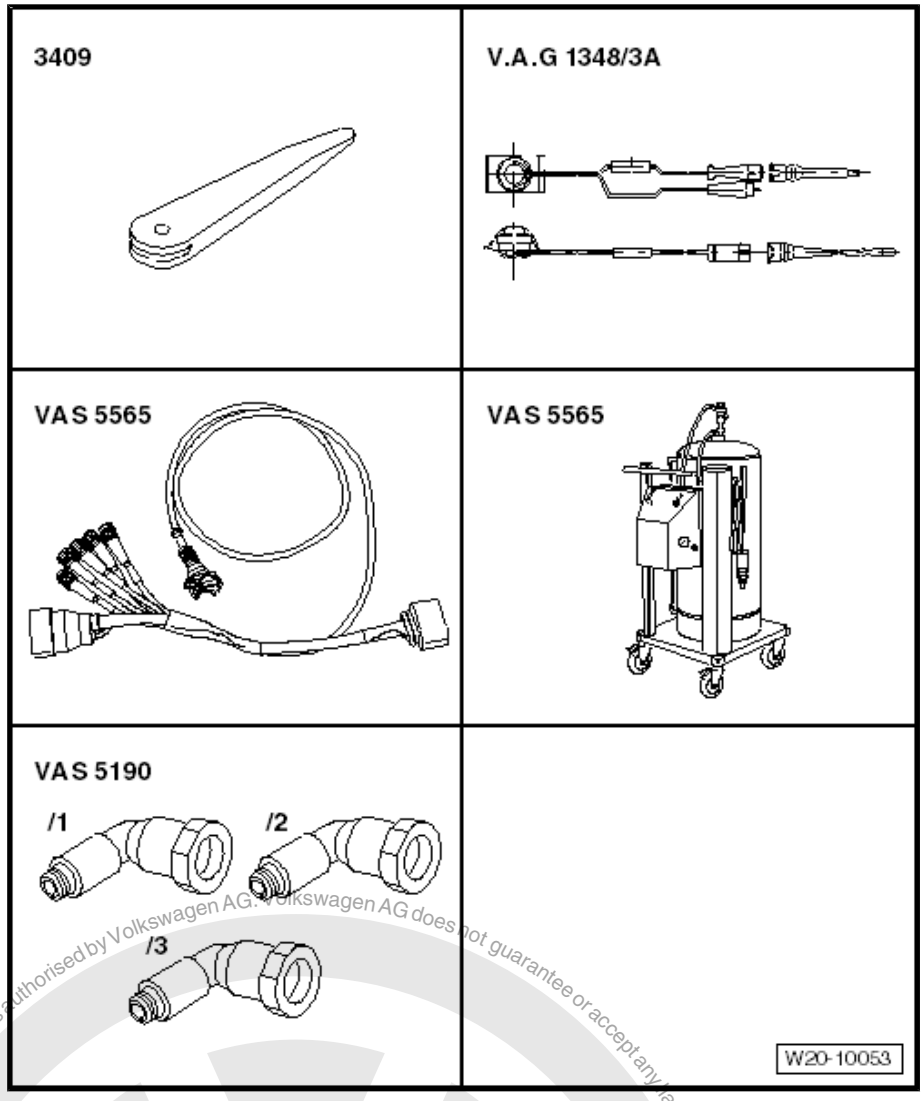
– Replace the fuel delivery unit. Refer to
⇒ “2.2 Fuel Delivery Unit/Fuel Level Sensor, Removing and Installing”, page 27 .

8 Special Tools

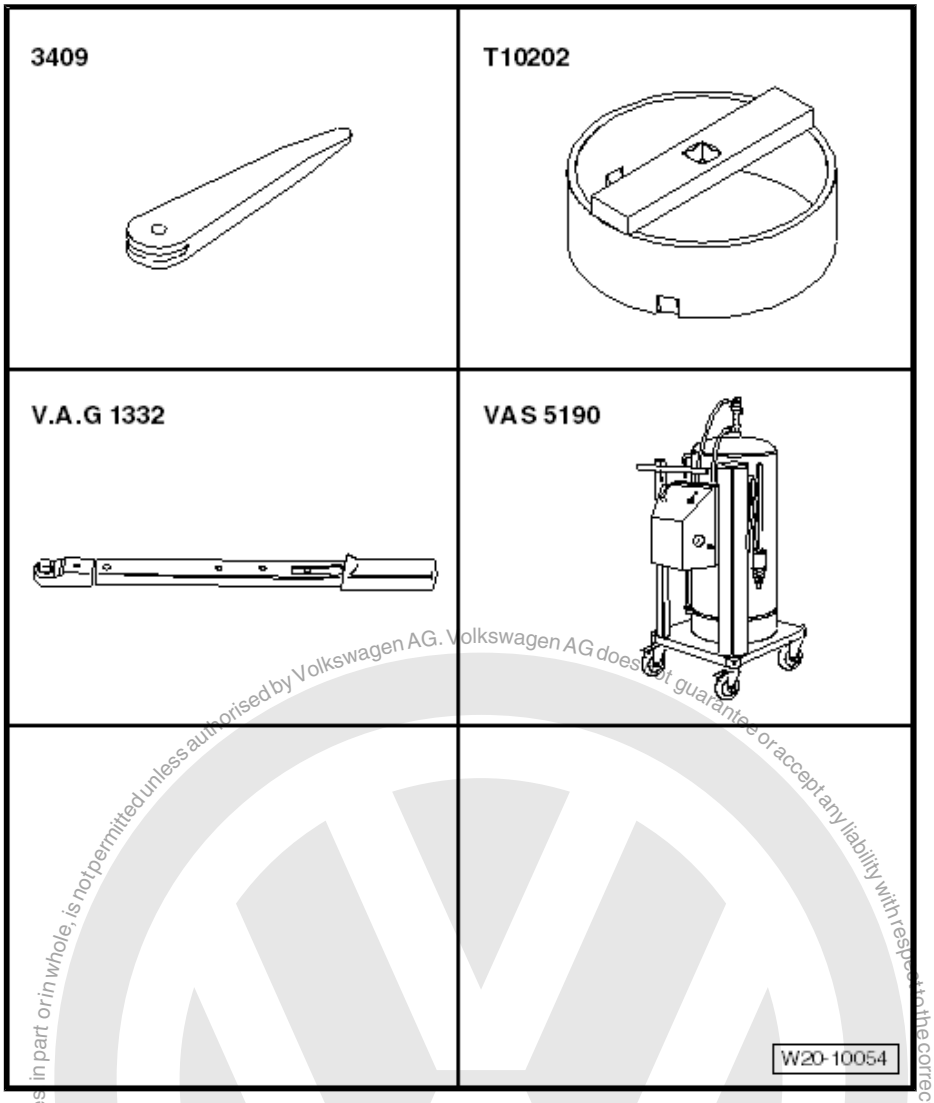
Special tools and workshop equipment required



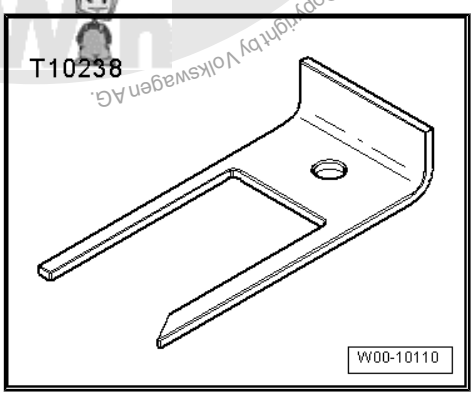
- Trim Removal Wedge - 3409-
- Injection Rate Comparison Meter Kit - Remote Cable - VAG1348/3A-
- Analog/Digital Multimeter - FLU83III-
- Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-
- Pressure Tester Kit - VAS6550-



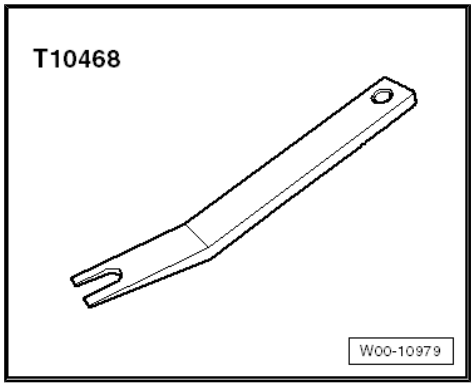
- Trim Removal Wedge - 3409-
- Injection Rate Comparison Meter Kit - Remote Cable - VAG1348/3A-
- Vehicle Diagnostic Tester - Test Adapter - 5 Pin - VAS5565-
- Fuel Extracting Device - VAS5190-
- Fuel Extraction - Adapter Set - VAS5190/10-



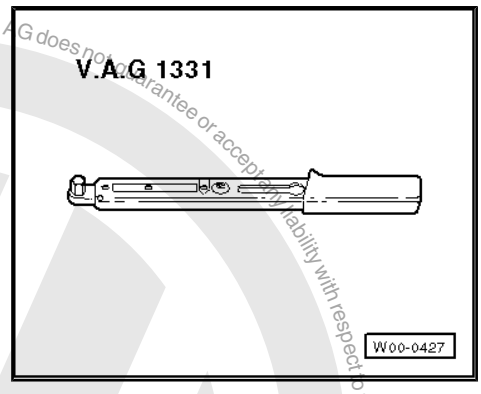
- Trim Removal Wedge - 3409-
- Wrench - Fuel Sending Unit - T10202-
- Torque Wrench 1332 40-200Nm - VAG1332-
- Fuel Extracting Device - VAS5190-
- Evaporative Emissions Tester - KLI9210-
- Evaporative Emissions Tester - Adapter 55 - KLI9210/55-1-
- Accelerator Pedal Module Release Tool - T10238-



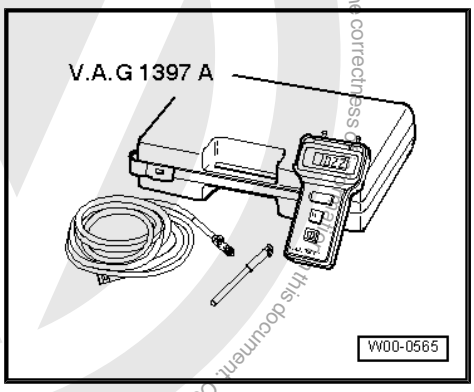
- Lever - Fuel Line - T10468-



- Torque Wrench 1331 5-50Nm - VAG1331-

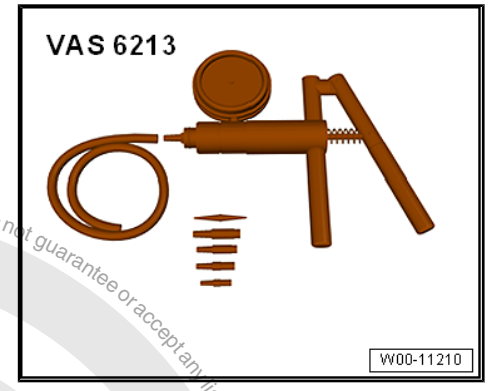


- Turbocharger Tester Kit - VAG1397A-

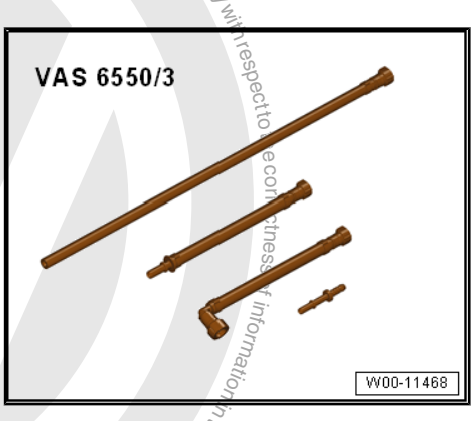


- Pickup Clamp - VAG1526B/2-
- Connector Test Set - VAG1594D-

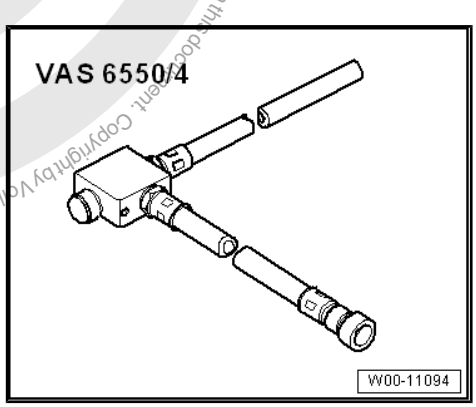
- Hand Vacuum Pump - VAS6213-



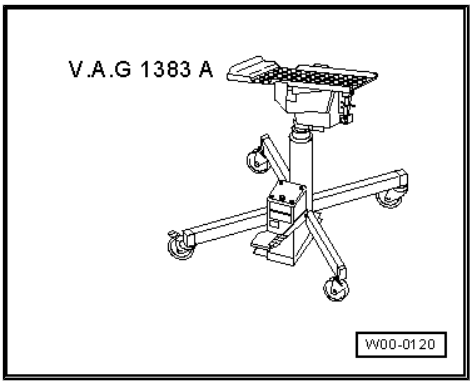
- Fuel Extractor Unit - VAS5190A-
- Pressure Tester Kit - Adapter Set - Fitting - VAS6550/3-1-



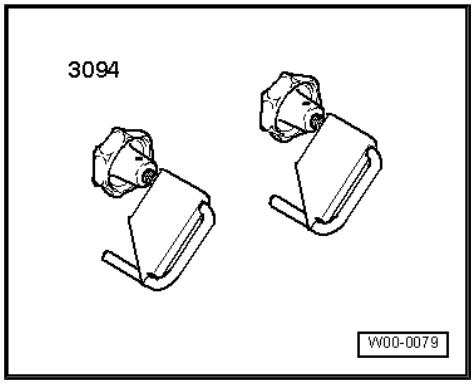
- Pressure Regulator Valve - VAS6550/4-



- Engine and Gearbox Jack - VAS6931- or -VAG1383A-



- Hose Clamps - Up To 25 mm - 3094-



9 Revision History

DRUCK NUMBER: K0059051721

Factory Edition	Edit Edition	Job Type	Feedback	Notes	Quality Checked By
04.2019	07/23/2019	Factory Update	N/A		Eric P.
08.2018	09/27/2018	Factory Update	N/A		Eric P.
05.2014	07/23/2014	Factory Update	N/A		Tom Perry

Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.

- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.

- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.

- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Volkswagen Factory Approved Scan Tool (ST).

- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.

- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.

- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it

- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.

- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.

- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.

- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.

- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

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Version 2.0

Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.

- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.

- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.

- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.

- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.

- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.

- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.

- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.

- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.

- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.

- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).

- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

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Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.

- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the Volkswagen Factory Approved Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.

- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.

- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

back OK

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