

ENGINE

Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

20 FUEL SUPPLY SYSTEM

GENERAL INFORMATION

SAFETY PRECAUTIONS

FUEL SYSTEM

Note the following when working on the fuel system:

WARNING: There is a risk of injury because the fuel is under very high pressure.

- Reduce the fuel pressure down to residual pressure before opening the high pressure area of the fuel injection system.
- To reduce the remaining residual pressure, place a clean cloth around the connector and carefully loosen connector.

-- Procedures before opening the high pressure fuel injection system. Refer to [For engine(s) CALA] General Information or to [For engine(s) CAEB] General Information or to [For engine(s) CCBA] General Information .

To prevent personal injury and damage to the injection and ignition system, observe the following:

- Turn off the ignition before disconnecting and connecting the wiring for the injection and ignition system. This includes tester cables as well.
- Wash the engine only when the ignition is turned off.
- If electrical connectors were disconnected and the engine was started, then malfunctions have been stored in the engine control modules. **Generate readiness code** in **Guided Functions** vehicle diagnosis tester.

CAUTION: Danger of causing damage to other electronic components when disconnecting the battery.

- Complete the steps for disconnecting the battery.
- Always turn off the ignition before disconnecting the battery.

-- Disconnect the battery. Refer to Removal and Installation .

Carry out the following measures before starting work on the fuel supply:

WARNING: Danger of explosion due to cell phones.

- **Keep cell phones out of reach in the work space area.**

CAUTION: Danger of causing damage to electronic components.

- **Complete the steps for disconnecting the battery.**

- Disconnect the battery. Refer to **Removal and Installation**.
- Open the fuel filler flap briefly and then close it again.

Note the following when removing and installing components from a filled or partially filled fuel tank:

- The fuel tank may only be partially full. How much fuel can remain in the fuel tank may be read in the respective work description. Empty the fuel tank, if necessary. Refer to **FUEL TANK, DRAINING**.
- Before starting work, turn on the exhaust extraction system and place an extraction hose close to the installation opening of the fuel tank to extract escaping fuel fumes. If no exhaust extraction system is available, a radial fan (as long as the motor is not in air flow) with a displacement greater than 15 m³ /h can be used.
- Prevent fuel from contacting skin! Wear fuel-resistant gloves!

Note the following when removing and installing the fuel tank:

- Fuel tank must be empty for weight reasons. Empty the fuel tank, if necessary. Refer to **FUEL TANK, DRAINING**.

TEST DRIVES WITH THE USE OF TEST AND MEASURING DEVICES

If testing equipment must be used during a road test, observe the following:

WARNING: Distraction and testing equipment that is not secured properly can cause accidents.

The passenger airbag could pose a risk if it deploys in a collision.

- **Operating testing equipment while driving causes it to shift position.**
- **There is an increased risk of injury due to unsecured testing equipment.**
- **Always secure testing equipment on the rear seat using a strap and have a second person in the rear seat to operate it.**

CLEAN WORKING CONDITIONS

Even a little contamination can lead to faults. When working on the fuel supply and fuel injection system, observe the following guidelines for a clean working environment:

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Before loosening, connections and surrounding areas must be cleaned thoroughly with engine or brake cleaner, and then the cleaned area must be dried completely.
- Immediately seal off lines and connections with clean plugs or protective caps.
- Place removed parts on a clean surface and cover them. Use lint-free cloths.
- Carefully cover or plug unpacked components if repairs cannot be performed immediately.
- Only install clean components: Remove the replacement parts from their packaging just prior to installing them. Do not use parts that have been stored outside of their original packaging (for example in tool boxes etc.).
- When the system is open: Do not work with compressed air. Do not move vehicle unless absolutely necessary.
- Protect the disconnected connectors from dirt and moisture and only connect when they are dry.

TEST CONDITIONS

- Battery voltage at least 12.5 V.
- Fuse for fuel pump OK
- Fuel pump control module -J538- OK; checking, refer to **Fuel Pump Control Module -J538-, CHECKING.**
- Fuel pump relay -J17-
- Fuel tank minimum $\frac{1}{4}$ full.
- Fuel filter OK.
- Fuel lines OK (not plugged, not kinked).
- The ignition is off.

CONTACT CORROSION

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

For this reason, only connecting elements with a special surface coating are installed.

In addition, rubber or plastic parts and adhesive are made of materials that do not conduct electricity.

If you are not sure about the suitability of parts, install new parts.

NOTE: Only original replacement parts are recommended, they are checked and compatible with aluminum.

It is recommended to use Audi accessories.

Damage resulting from contact corrosion is not covered by the warranty.

FUEL TANK, DRAINING

Special tools and workshop equipment required

- Fuel Extraction Device VAS 5190

Procedure

-- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.

-- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

CAUTION: Danger of causing damage to other electronic components when disconnecting the battery.

- Complete the steps for disconnecting the battery.

-- Disconnect the battery. Refer to **Removal and Installation** .

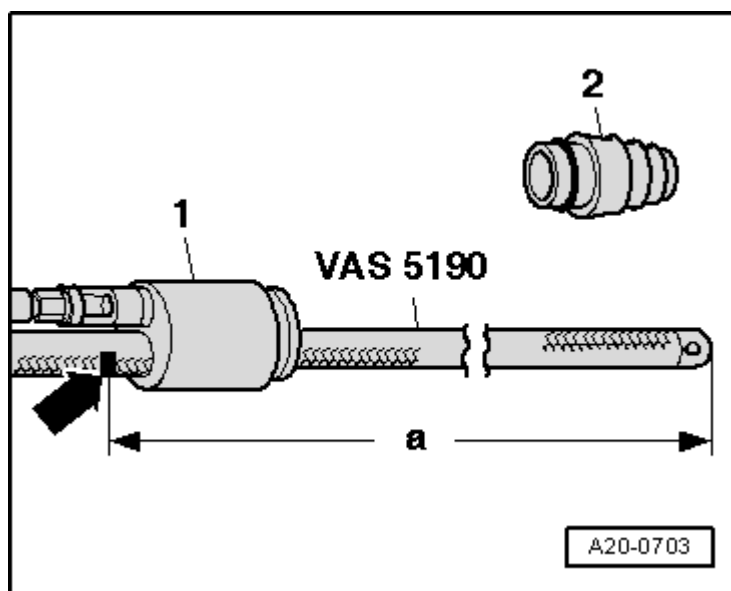


Fig. 1: Disconnecting Tapered Adapter From Shaft End Of VAS 5190
Courtesy of AUDI OF AMERICA, LLC

WARNING: Risk of explosion due to electrostatic charge.

- Secure the VAS 5190 Ground (GND) wire to a bare area of the chassis.

-- Remove the cone piece -2- from the shaft piece -1- on the VAS 5190.

-- Attach insulating tape -arrow- to the hose at a distance -a- = 1,300 mm from the end of the suction hose.

-- Remove the cover from the fuel filler tube.

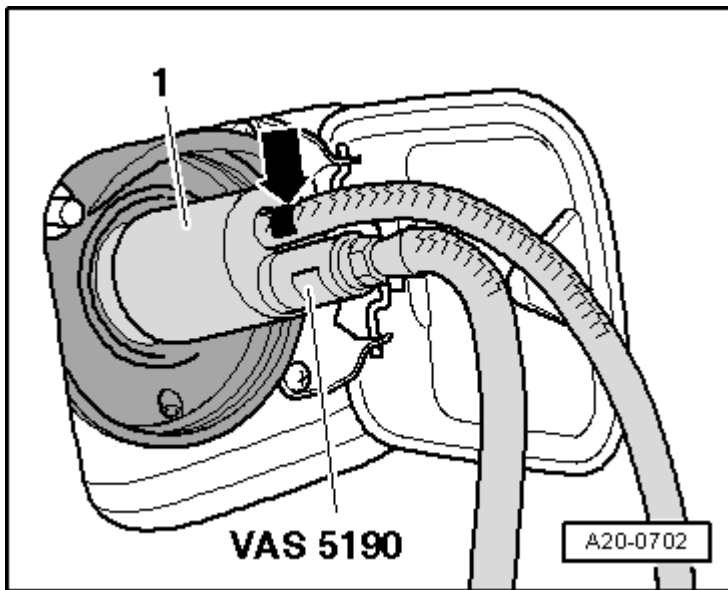


Fig. 2: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of AUDI OF AMERICA, LLC

- Install the adapter -1- for the VAS 5190 on the fuel filler tube.
- Slide the suction hose into the fuel tank far enough so the mark applied earlier -arrow- is aligned with the shaft piece.
- Empty the fuel tank through the fuel filler tube.
- Remove the extracting hose carefully.

NOTE: Proceed the same way if the fuel siphoning device available does not have a shaft piece.

In this case, apply a mark -arrow- using insulating tape on a hose at length -a- = 1235 mm from end of suction hose -1-. The suction hose is inserted correctly when the marking applied earlier aligns with the lip of the fuel filler neck.

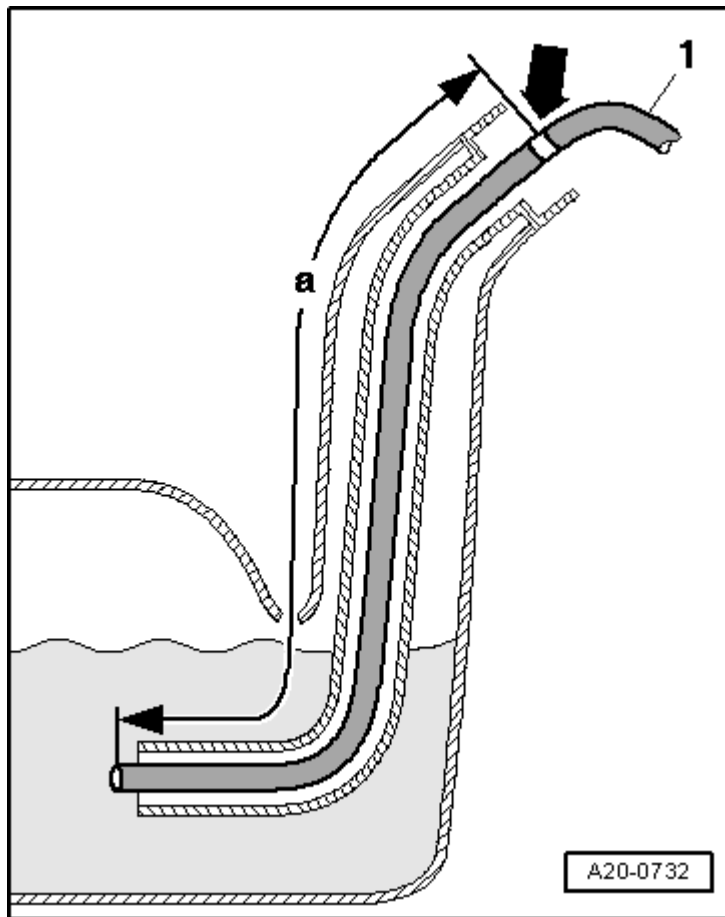


Fig. 3: Identifying Suction Hose Placed Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube
Courtesy of AUDI OF AMERICA, LLC

Coat the hose with a thin layer of engine oil if it is difficult to insert. Never use lubricants containing silicon.

FUEL SYSTEM, BLEEDING

- Due to the engine design and the fuel supply pump installed in the fuel tank, do not bleed the fuel system.
- The fuel system bleeds itself when the starter is operated.

LEAK DETECTION SYSTEM

Function

The leak detection system recognizes leaks in the complete fuel system, including the fuel tank, EVAP canister and Evaporative Emission (EVAP) canister purge regulator valve 1 -N80-.

On the mechanical side, the leak detection system consists mainly of a vacuum-driven diaphragm pump, that is equipped with a reed contact on the actuation rod of the pump diaphragm. The pump is supplied with vacuum

via the mechanical vacuum pump or the engine intake stroke.

- When the leak detection is activated, the diaphragm pump pumps the fuel system up to 20 to 30 mbar. The pump diaphragm is then moved out so that the reed contact at the operating rod remains in the "open" position.
- During leak diagnosis, the reed contact is monitored to check if it remains open within 15 seconds. This indicates the system is sealed.
- If pressure falls (indicating a leak), the diaphragm moves back and the reed contact closes.
- If reed contact closes within 15 seconds of the leak detection time, a further test is performed: In this case the diaphragm pump pumps 4 times again. The Engine Control Module (ECM) measures the time for each of the 4 pumps until the reed contact is closed again. From that, the control module can recognize a "small leak" (smaller than 1 mm in diameter) or a "large leak".

The leak detection is activated automatically, shortly after each cold engine start (under 35 °C (95 °F)) and a continual drive faster than 10 km/h. In case a fault is detected, a Diagnostic Trouble Code (DTC) will be stored to memory. The Malfunction Indicator Lamp (MIL) in the instrument cluster lights up if the malfunction is recognized for 2 subsequent starts. Leak diagnosis can also be activated using the vehicle diagnosis, testing and information system VAS 5051B. Refer to **LEAK DETECTION TEST, PERFORMING**.

NOTE: **After the cold start, the leak detection can repeated up to 10 times within the first 20 minutes.**

It can be determined if an automatic leak diagnosis was recently performed in measuring value block 071. Refer to LEAK DETECTION TEST, PERFORMING.

DESCRIPTION AND OPERATION

ACCELERATOR PEDAL MODULE OVERVIEW

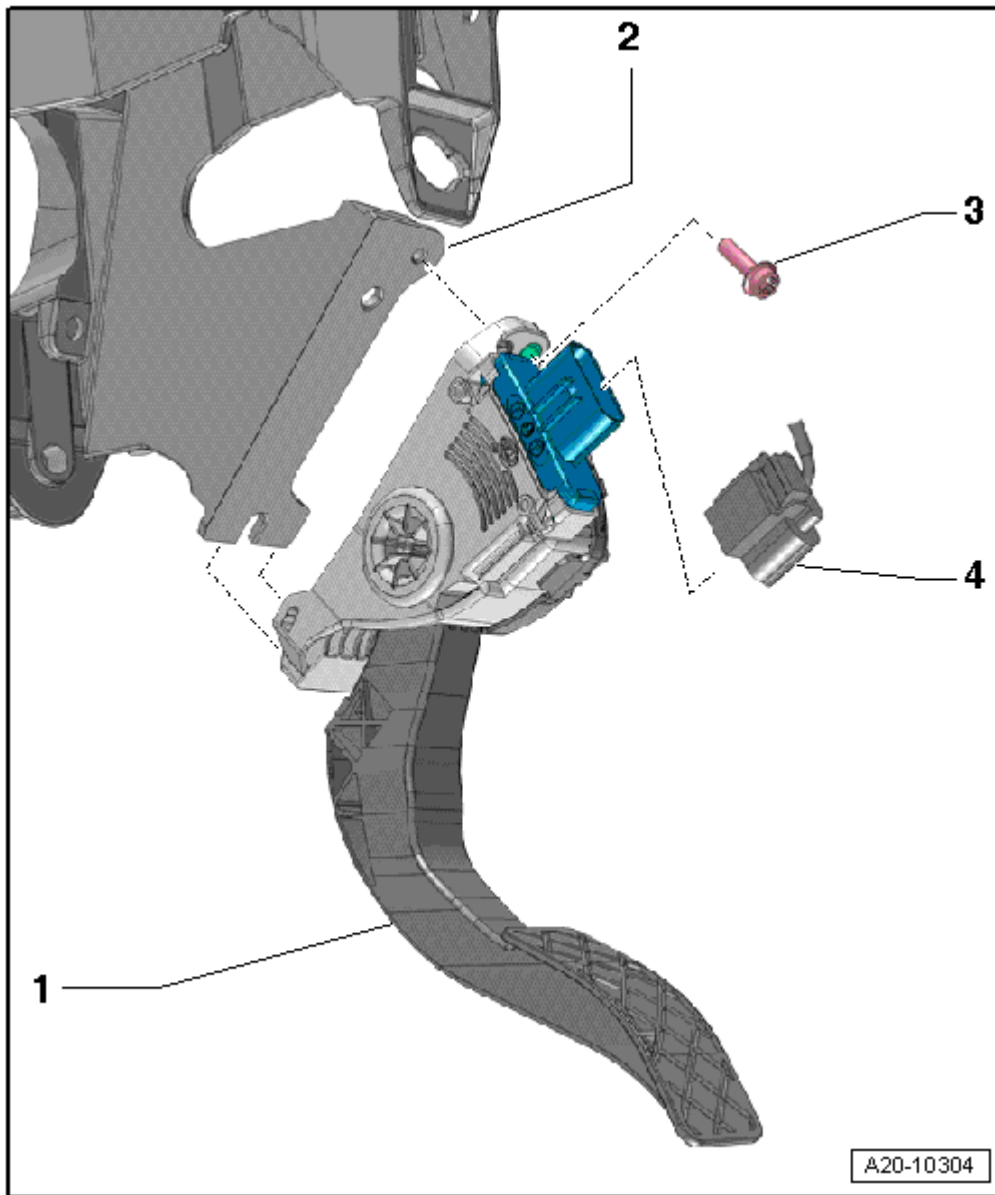


Fig. 4: Accelerator Pedal Module Overview

Courtesy of AUDI OF AMERICA, LLC

1. Accelerator Pedal Module
 - With accelerator pedal position sensor -G79- and accelerator pedal position sensor 2 -G185-
 - Removing and installing, refer to **ACCELERATOR PEDAL MODULE WITH ACCELERATOR PEDAL POSITION SENSOR**
 - Perform after the first kick-down adaptation in **Guided Functions** see vehicle diagnostic tester.
2. Pedal Bracket
3. Bolt
 - 8 Nm
4. Connector

FUEL TANK WITH ATTACHMENTS OVERVIEW

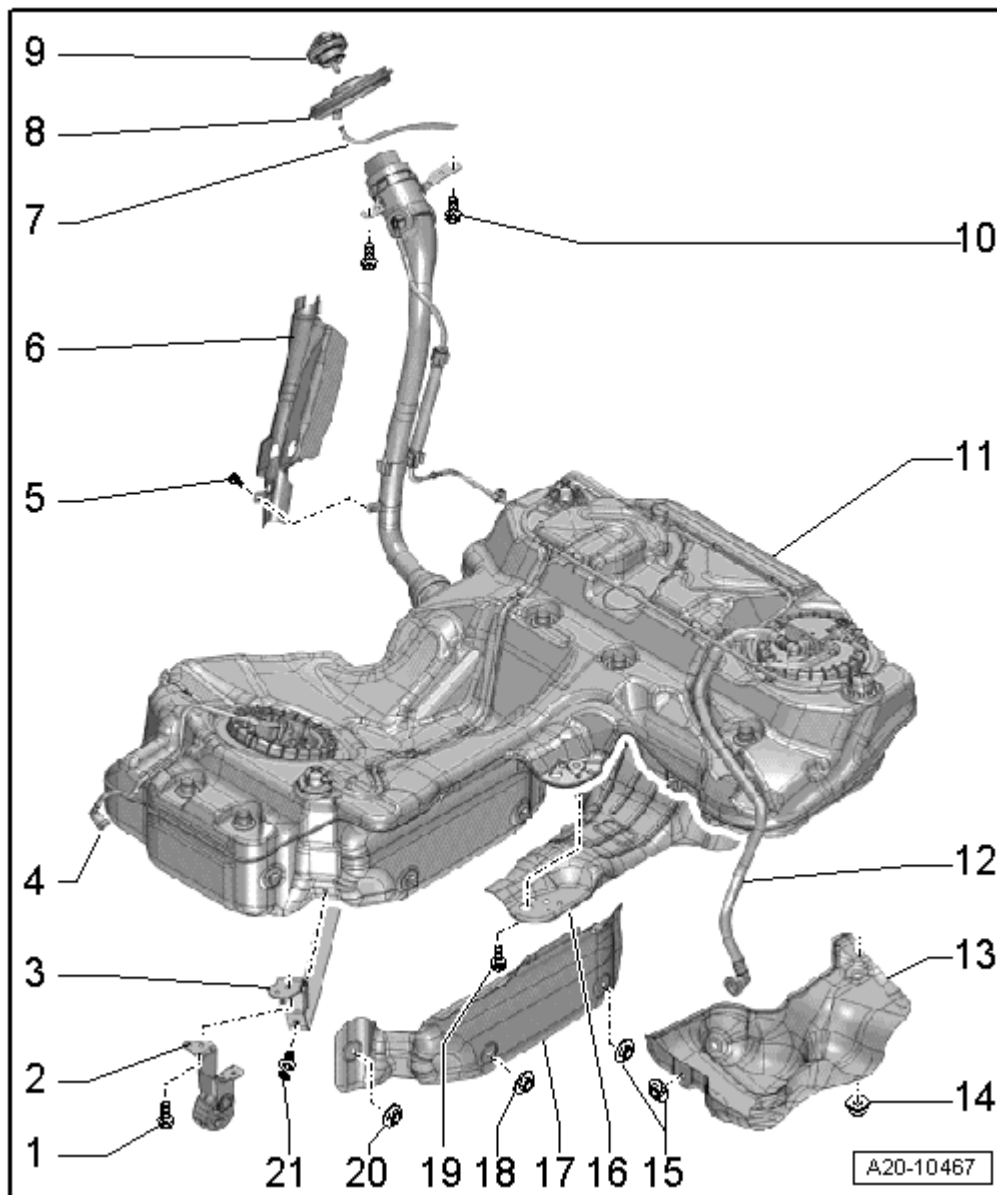


Fig. 5: Fuel Tank With Attachments Overview
Courtesy of AUDI OF AMERICA, LLC

1. Bolt
 - Tightening specification, refer to [For transmission(s) 0AW] [For engine(s) CALA] Description and Operation or to [For engine(s) CAEB] Description and Operation or to [For engine(s) CCBA] Description and Operation
2. Exhaust System Suspended Mount
3. Mounting Strap
4. Fuel Line
 - From the fuel filter to the engine

- Do not kink
 - Clipped to the fuel tank
 - To disconnect, press release button on connection piece
5. Bolt
 - 8 Nm
 6. Protective Plate
 - For the fuel filler tube
 7. Overflow Hose
 - Attached to the bumper bracket
 8. Rubber Gasket
 9. Fuel Cap
 - Turn until it clicks and locks.
 - Attached to tank flap unit with fastening device
 10. Bolt
 - 20 Nm
 - To attach the fuel filler neck
 - For discharging electrostatic charge, refer to **Fig. 7**
 11. Fuel Tank
 - Removing and installing, refer to **FUEL TANK WITH ATTACHMENTS**
 12. Vent Line
 - To the EVAP canister
 - Do not kink
 - To disconnect, press release button on connection piece
 - Clipped to the fuel tank
 13. Fuel Tank Heat Shield
 14. Nut
 - 2 Nm
 15. Nut
 - 2 Nm
 16. Carrier Plate
 17. Fuel Tank Heat Shield
 18. Nut
 - 2 Nm
 19. Bolt
 - 20 Nm
 20. Nut
 - 2 Nm
 21. Expanding Clip

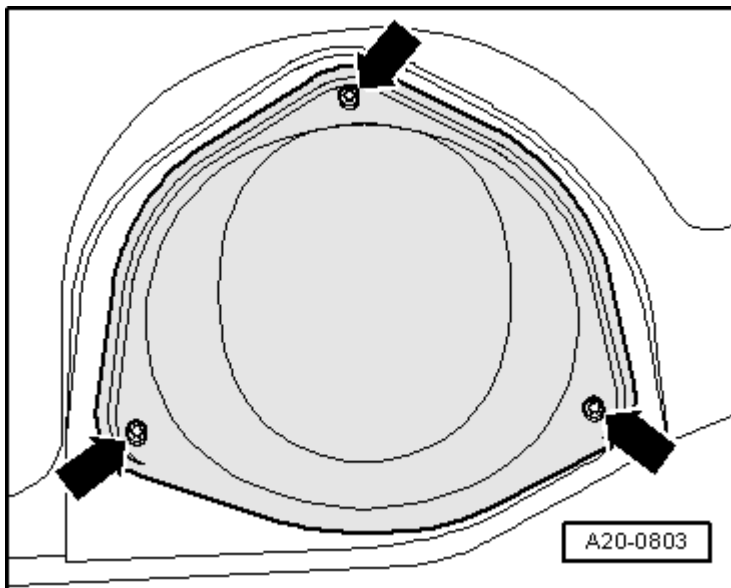


Fig. 6: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

-- Tighten bolts -arrows- to 1.5 Nm.

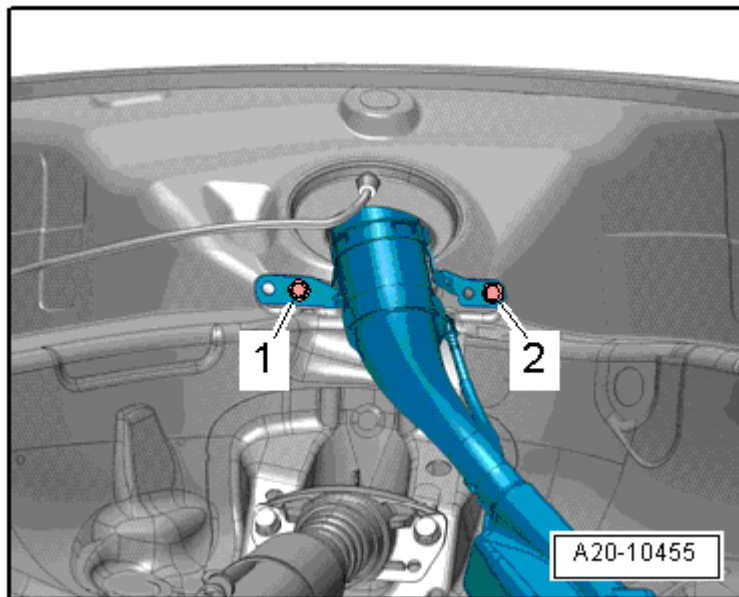


Fig. 7: Fuel Filler Tube Ground (GND) Connection
Courtesy of AUDI OF AMERICA, LLC

-- Make sure the filler tube threaded connections -1 and 2- are free of corrosion so the GND connection to the body is not affected.

WARNING: Risk of explosion due to electrostatic charge.

- ## FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR OVERVIEW



- Electric fuel pump, checking, refer to **ELECTRIC FUEL PUMP, CHECKING**
- Removing and installing, refer to **FUEL DELIVERY UNIT**

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Fill the fuel tank with at least 5 liters of fuel after installing
 - Holding pressure, checking, refer to **[For engine(s) CALA] Diagnosis and Testing** or to **[For engine(s) CAEB] Diagnosis and Testing** or to **[For engine(s) CCBA] Diagnosis and Testing**
2. Threaded Ring
 3. Seal
 - Replace
 - Install dry
 4. Union Nut
 - 120 Nm
 - Replace
 - Use fuel tank sender unit tool T40068A for loosening and tightening
 5. Fuel Line
 - To the engine
 - Do not kink
 - To remove from locking flange, press release button
 - Clipped to the fuel tank
 6. Connector
 - For the transfer fuel pump -G6- and fuel level sensor -G-
 7. Connector
 - For the Fuel Pump (FP) control module -J538-
 8. Spring Nut
 9. Fuel Pump (FP) Control Module -J538-
 - Removing and installing, refer to **Fuel Pump Control Module -J538-**
 10. Bolt
 - 2.5 Nm
 11. Connector
 - For fuel level sensor 2 -G169-
 12. Vent Line
 - To the EVAP canister
 - Do not kink
 - To remove from locking flange, press release button
 - Clipped to the fuel tank
 13. Union Nut
 - 120 Nm
 - Replace
 - Use fuel tank sender unit tool T40068A for loosening and tightening
 14. Seal
 - Replace

- Install dry
- 15. Threaded Ring
- 16. Locking Flange
 - With the fuel level sensor 2 -G169-
- 17. Vent Line
 - To remove from locking flange, press release button
 - Clipped to the fuel tank
- 18. Vent Line
 - To remove from locking flange, press release button
 - Clipped to the fuel tank
- 19. Fuel Level Sensor 2 -G169-
 - Check the resistance values. Refer to **Fuel Level Sensor 2 -G169-, CHECKING**
 - Removing and installing, refer to **Fuel Level Sensor 2 -G169-**
 - Fill the fuel tank with at least 5 liters of fuel after installing
- 20. Suction Line
 - Removing and installing, refer to **SUCTION LINE**
 - Fill the fuel tank with at least 5 liters of fuel after installing
- 21. Connector
 - For fuel level sensor 2 -G169-
- 22. Fuel Level Sensor -G-
 - Check the resistance values. Refer to **Fuel Level Sensor -G-, CHECKING**
 - Removing and installing, refer to **Fuel Level Sensor -G-**

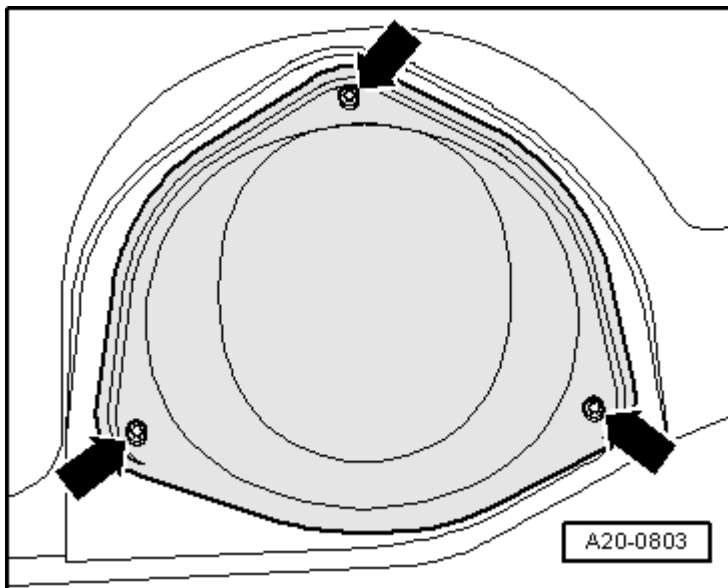


Fig. 9: Removing Cover Bolts For Locking Flange
 Courtesy of AUDI OF AMERICA, LLC

-- Tighten bolts -arrows- to 1.5 Nm.

FUEL FILTER OVERVIEW

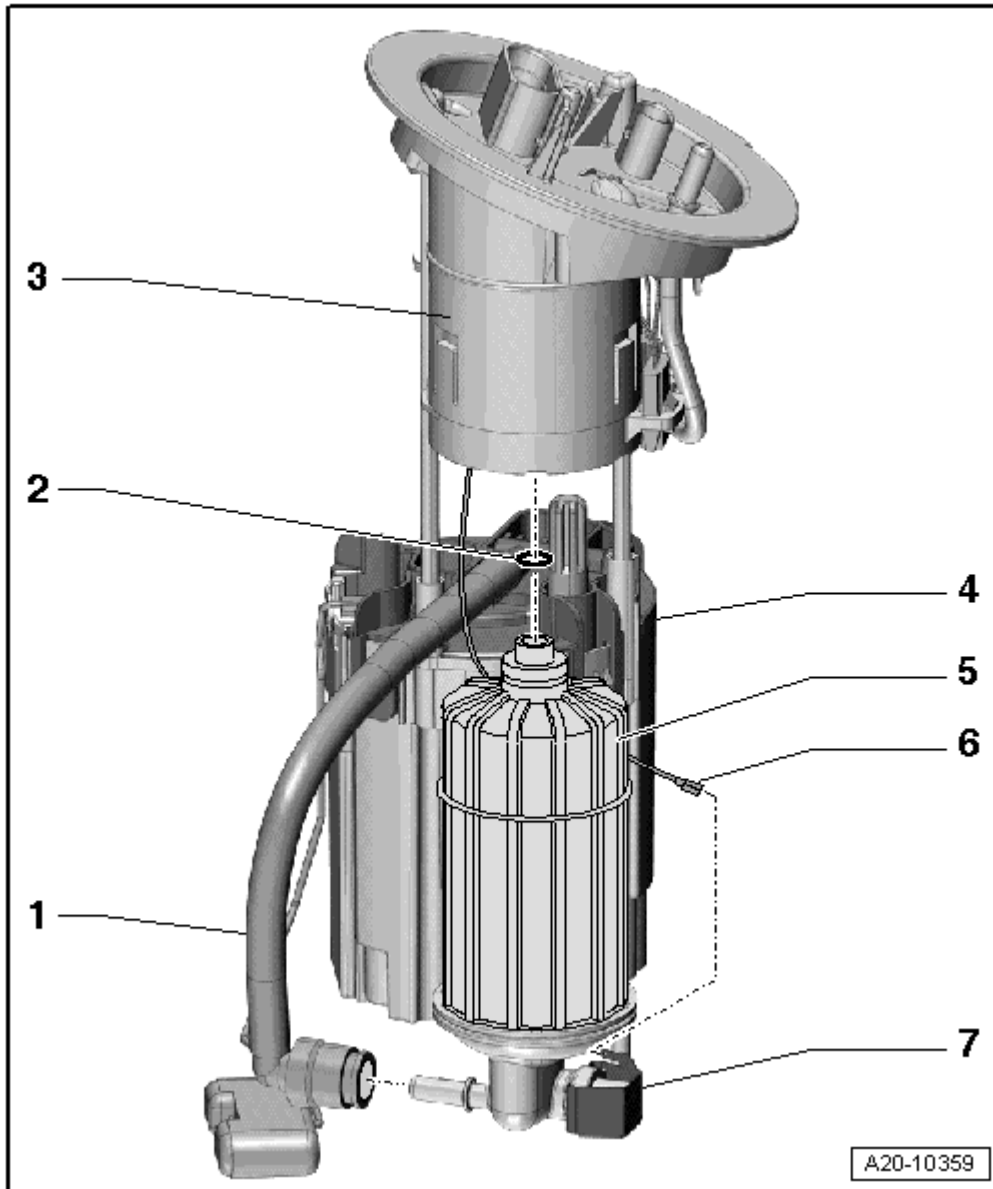


Fig. 10: Fuel Filter Overview

Courtesy of AUDI OF AMERICA, LLC

1. Fuel Line
 - To disconnect, press release button on connection piece
2. O-ring
 - Replace
3. Locking Flange
4. Fuel Delivery Unit

5. Fuel Filter
 - Removing and installing, refer to **FUEL FILTER**
6. Ground Wire
 - Connect to the retaining plate
7. Fuel Pressure Regulator Retaining Plate
 - With a Ground (GND) connection

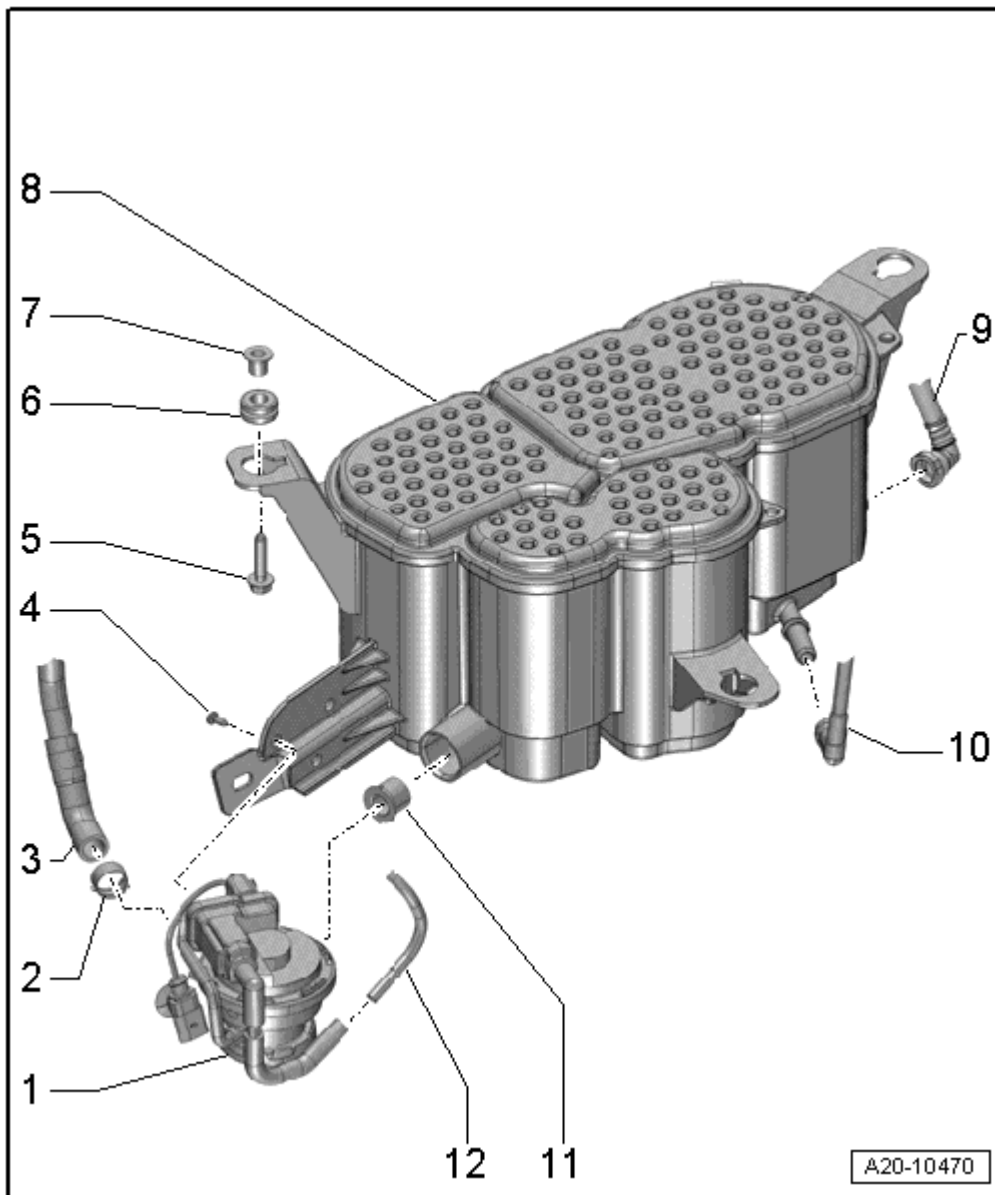
EVAP CANISTER AND LEAK DETECTION SYSTEM OVERVIEW

Fig. 11: EVAP Canister And Leak Detection System Overview
Courtesy of AUDI OF AMERICA, LLC

1. Leak Detection Pump -V144-
 - Installed location: On the left side at the back of the underbody under the cover
 - Check in **Guided Fault Finding** vehicle diagnostic tester
 - Removing and installing, refer to **Leak Detection Pump -V144-**
 - Leak detection pump air filter, removing and installing, refer to **Leak Detection Pump -V144-AIR FILTER**
2. Clamp
 - Must be appropriate for the model type.
3. Vent Line
4. Bolt
 - 4 Nm
5. Bolt
 - 16 Nm
6. Rubber Grommet
7. Bushing
8. Evaporative Emission (EVAP) Canister
 - Installed location: In the bottom of the spare wheel well
 - Removing and installing, refer to **EVAP CANISTER**
9. Vent Line
 - To the locking flange on the fuel tank
 - To disconnect, press release button on connection piece
10. Vent Line
 - To EVAP canister purge regulator valve 1 -N80-
 - To disconnect, press release button on connection piece
11. Gasket
12. Vacuum Line
 - To the engine

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

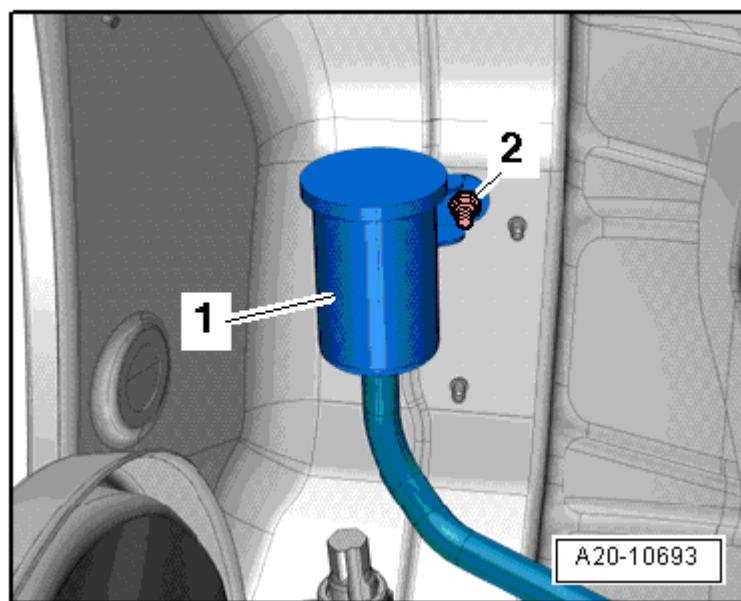


Fig. 12: Leak Detection Pump -V144- Air Filter - Tightening Specification
Courtesy of AUDI OF AMERICA, LLC

-- Tighten the nut -2- to 5 Nm.

EVAP CANISTER AND LEAK DETECTION SYSTEM HOSE DIAGRAM - ENGINE CODE(S): CAEB & CPMA

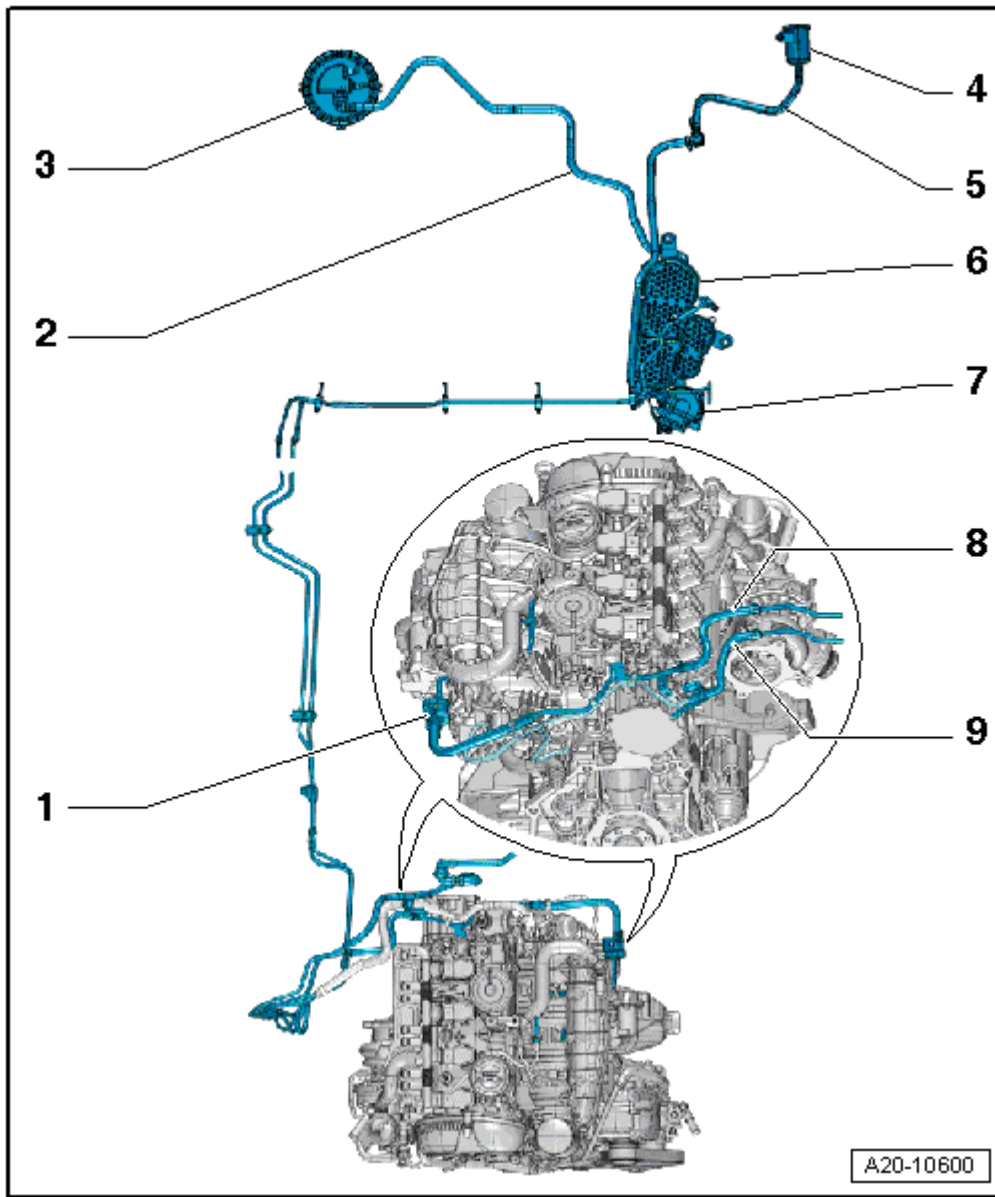


Fig. 13: EVAP Canister And Leak Detection System Hose Diagram

Courtesy of AUDI OF AMERICA, LLC

1. Evaporative Emission (EVAP) Canister Purge Regulator Valve 1 -N80-
2. Vent Line
 - From the fuel tank locking flange to the EVAP canister
 - Clipped into brackets under the vehicle underbody
3. Fuel Tank Locking Flange
4. Air Filter
 - For the leak detection pump -V144-
5. Connecting Line
 - From the leak detection pump to the air filter

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Clipped into brackets under the vehicle underbody
- 6. EVAP Canister
 - Installed location: Under the luggage compartment floor
 - Removing and installing, refer to **EVAP CANISTER**
- 7. Leak Detection Pump -V144-
 - Installed location: On the EVAP canister under the bottom of the luggage compartment
 - Check in **Guided Fault Finding** see vehicle diagnostic tester
 - Removing and installing, refer to **Leak Detection Pump -V144-**
- 8. Vent Line
 - From the EVAP canister to EVAP canister purge regulator valve 1
 - Clipped into brackets under the vehicle underbody
- 9. Vacuum Line
 - From the engine to the leak detection pump
 - Clipped into brackets under the vehicle underbody

EVAP CANISTER AND LEAK DETECTION SYSTEM HOSE DIAGRAM - ENGINE CODE(S): CALA & CCBA & CGXC

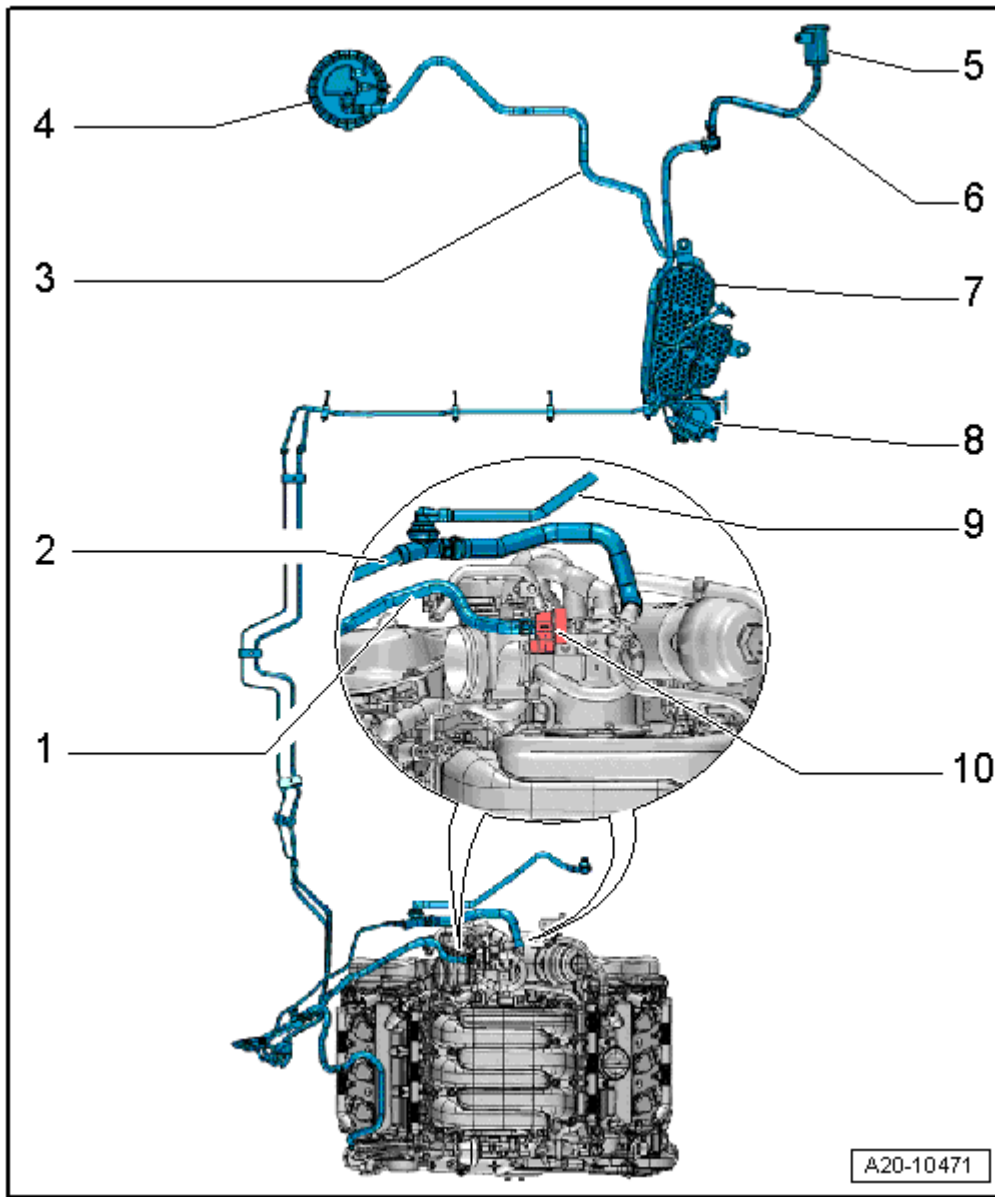


Fig. 14: EVAP Canister And Leak Detection System Hose Diagram

Courtesy of AUDI OF AMERICA, LLC

1. Vent Line
 - From the EVAP canister to EVAP canister purge regulator valve 1
 - Clipped into brackets under the vehicle underbody
2. Vacuum Line
 - From the engine to the leak detection pump
 - Clipped into brackets under the vehicle underbody
3. Vent Line
 - From the fuel tank locking flange to the EVAP canister
 - Clipped into brackets under the vehicle underbody

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

4. Fuel Tank Locking Flange
5. Air Filter
 - For the leak detection pump -V144-
6. Connecting Line
 - From the leak detection pump to the air filter
 - Clipped into brackets under the vehicle underbody
7. EVAP Canister
 - Installed location: Under the luggage compartment floor
 - Removing and installing, refer to **EVAP CANISTER**
8. Leak Detection Pump -V144-
 - Installed location: On the EVAP canister under the bottom of the luggage compartment
 - Check in **Guided Fault Finding** see vehicle diagnostic tester
 - Removing and installing, refer to **Leak Detection Pump -V144-**
9. To Brake Booster
10. Evaporative Emission (EVAP) Canister Purge Regulator Valve 1 -N80-

EVAP CANISTER AND LEAK DETECTION SYSTEM HOSE DIAGRAM - ENGINE CODE(S): CAUA & CFSA

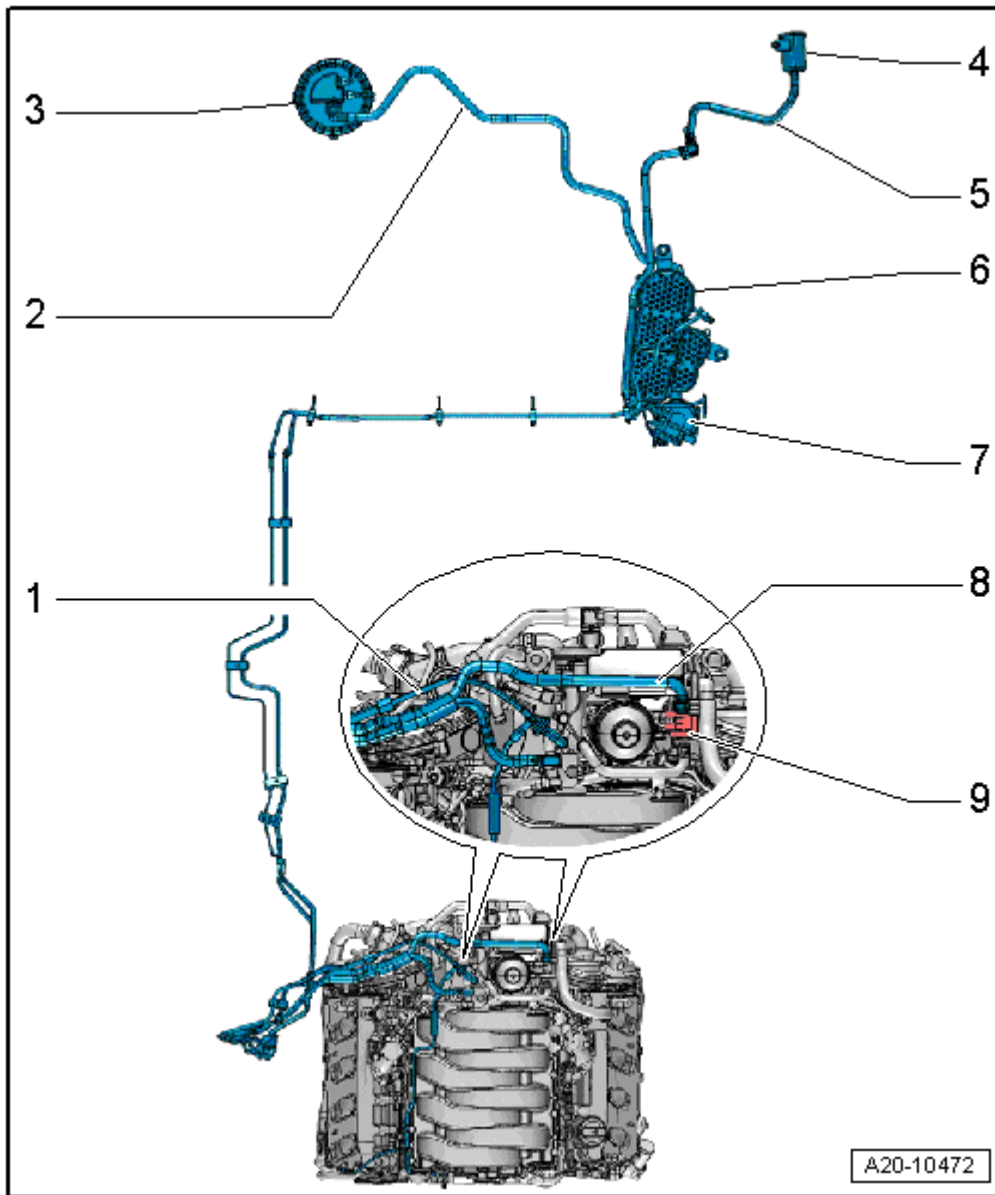


Fig. 15: EVAP Canister And Leak Detection System Hose Diagram

Courtesy of AUDI OF AMERICA, LLC

1. Vacuum Line
 - From the engine to the leak detection pump -V144-
 - Clipped into brackets under the vehicle underbody
2. Vent Line
 - From the fuel tank locking flange to the EVAP canister
 - Clipped into brackets under the bottom of the luggage compartment
3. Fuel Tank Locking Flange
4. Air Filter
 - For the leak detection pump

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

5. Connecting Line

- From the leak detection pump to the EVAP canister
- Clipped into brackets under the vehicle underbody

6. Evaporative Emission (EVAP) Canister

- Installed location: Under the luggage compartment floor
- Removing and installing, refer to **EVAP CANISTER**

7. Leak Detection Pump -V144-

- Installed location: On the EVAP canister under the bottom of the luggage compartment
- Check in **Guided Fault Finding** see vehicle diagnostic tester
- Removing and installing, refer to **Leak Detection Pump -V144-**

8. Vent Line

- From the EVAP canister to EVAP canister purge regulator valve 1 -N80-
- Clipped into brackets under the vehicle underbody

9. EVAP Canister Purge Regulator Valve 1 -N80-

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Components	Fastener Size	Nm
Accelerator Pedal Module Mounting Bolt	-	8
EVAP Canister Mounting Bolt	-	16
Fuel Delivery Unit Union Nut ¹	-	120
Fuel Filler Neck to Body Mounting Bolt	-	20
Fuel Pump Control Module Mounting Bolt	-	2.5
Fuel Tank Securing Strap Mounting Bolt	-	20
Heat Shield for Fuel Tank Mounting Nut	-	2
Leak Detection Pump Air Filter Mounting Nut	-	5
Leak Detection Pump to EVAP Canister Mounting Bolt ²		
	-	4
	-	16
Locking Flange Cover Mounting Bolt	-	1.5
Protective Plate for Fuel Filler Tube	-	8
• ¹ Replace after removal. • ² For bolt tightening clarification, refer to <u>EVAP CANISTER AND LEAK DETECTION SYSTEM OVERVIEW</u> and see items -4 and 5-		

DIAGNOSIS AND TESTING

ELECTRIC FUEL PUMP, CHECKING

Special tools and workshop equipment required

- Remote Control V.A.G 1348/3A with Adapter Cable V.A.G 1348/3-2
- Remote Control for VAG 1348 V.A.G 1348/3-3
- Multimeter V.A.G 1526D
- Connector Test Set V.A.G 1594C

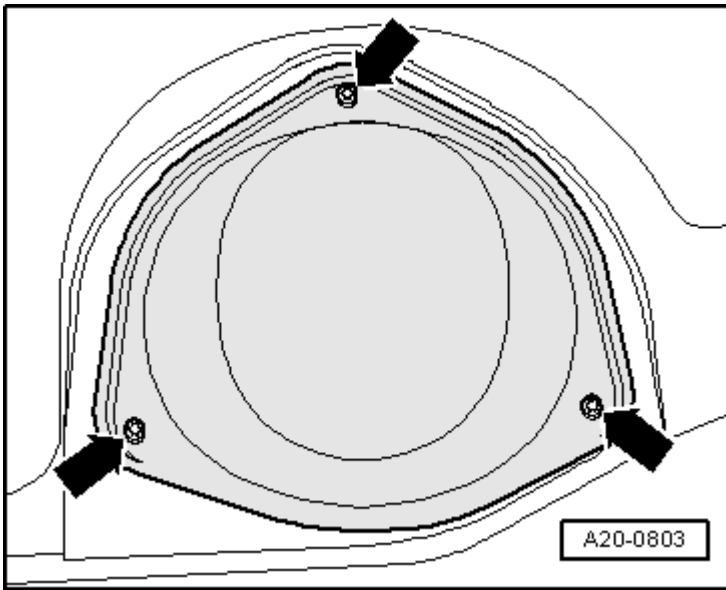
Procedure

Fig. 16: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

- Follow all test requirements. Refer to **TEST CONDITIONS**.
- Remove the rear bench seat. Refer to **Removal and Installation** .
- Remove the locking flange cover -arrows-.
- Disconnect the connector -1- on the locking flange.

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

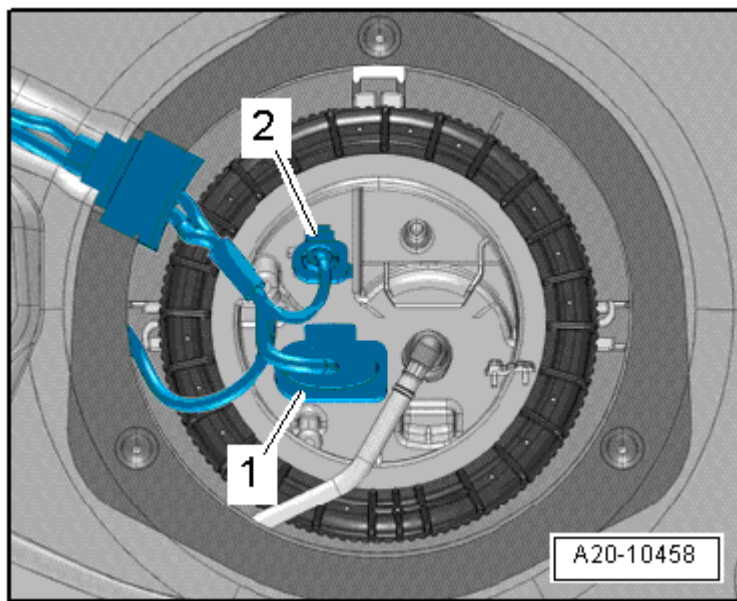
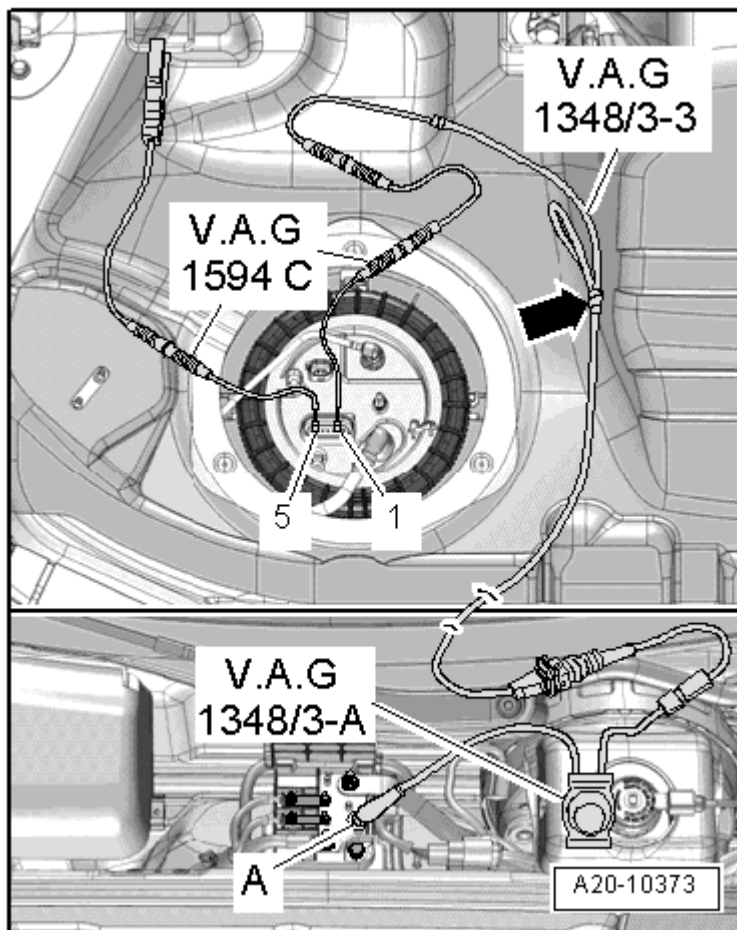


Fig. 17: Disconnecting Connector

Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

-- Connect the V.A.G 1348/3A using the V.A.G 1348/3-3 and cable from the V.A.G 1594C to the terminal -1-.



**Fig. 18: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal -
1-**

Courtesy of AUDI OF AMERICA, LLC

- Tape adapter cable connector terminal V.A.G 1348/3-3 with insulating tape -arrow- to prevent a short circuit.
- Connect connector terminal -5- with an adapter cable from V.A.G 1594C to chassis ground.
- Route V.A.G 1348/3A toward front in engine compartment.

Vehicle through 05.08

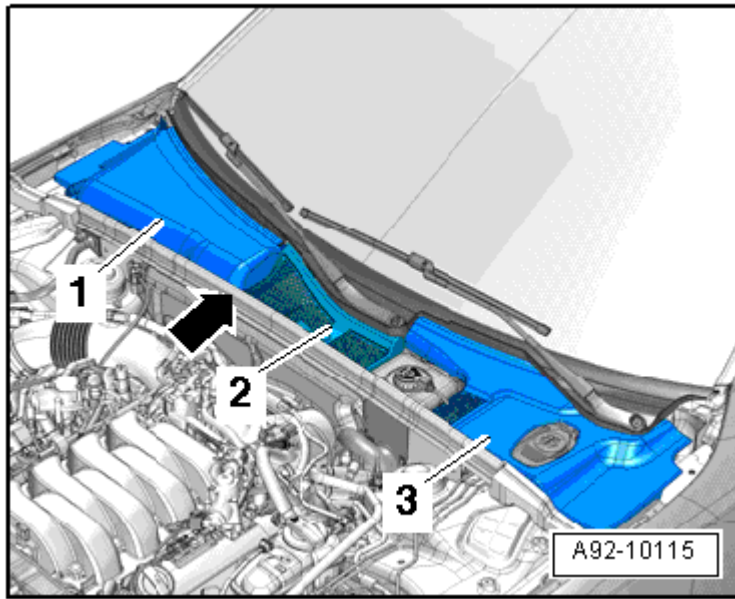


Fig. 19: Removing Plenum Chamber Covers
 Courtesy of AUDI OF AMERICA, LLC

-- Unclip the plenum chamber cover -2- and remove it.

NOTE: Ignore -1 and 3- and -arrows-.

Vehicles from 06.08

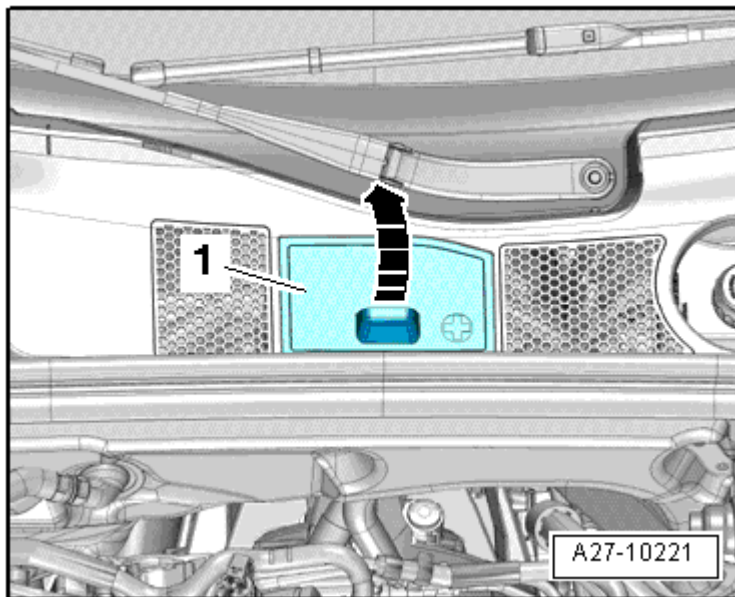


Fig. 20: Removing Cover
 Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover -1- on the handle -arrow-.

All Vehicles

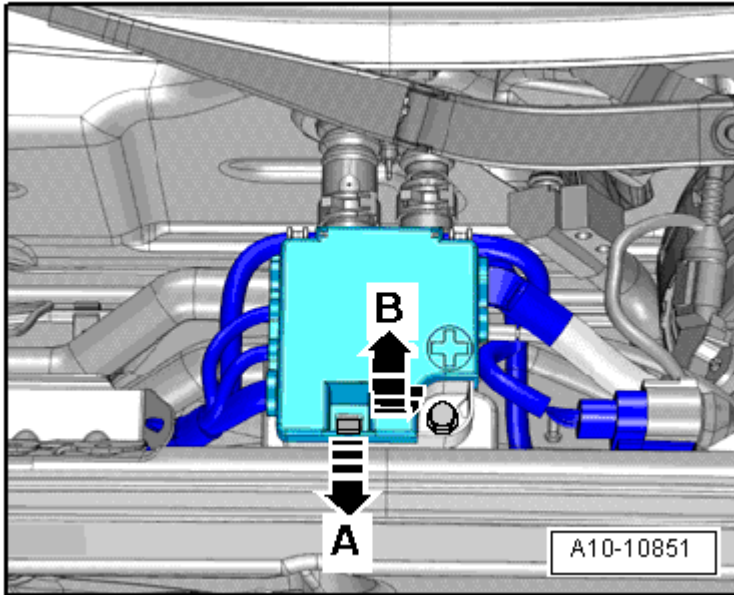


Fig. 21: Opening Terminal Box Cover
Courtesy of AUDI OF AMERICA, LLC

-- Release the retainer -arrow A- and open the cover -arrow B-.

-- Connect the alligator clip to the battery jump start terminal -U6- -A- in the terminal 30 wire junction 2 - TV22- in the plenum chamber.

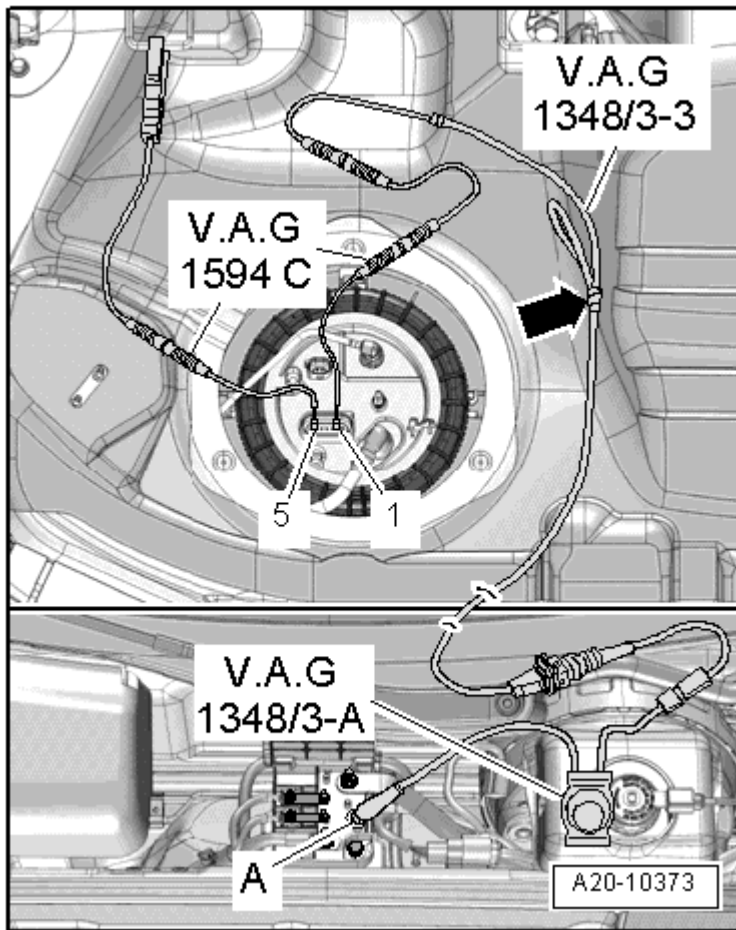


Fig. 22: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal - 1-

Courtesy of AUDI OF AMERICA, LLC

-- Press the button of the remote control.

- Running noise of pump must be audible.

NOTE: Because the fuel pump runs quietly, avoid ambient noise during the test.

-- When the operating noise is no longer audible, remove the fuel delivery unit. Refer to **FUEL DELIVERY UNIT**.

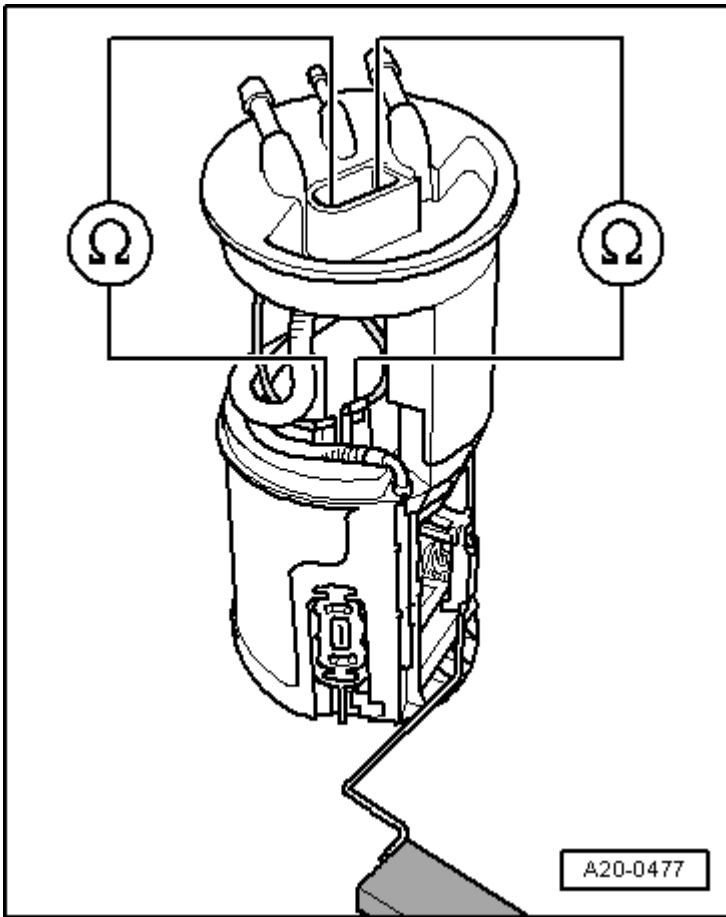


Fig. 23: Checking Electrical Circuit Between Terminals And Of Fuel Delivery Unit For Resistance
 Courtesy of AUDI OF AMERICA, LLC

-- Check the electrical wires between the locking flange and the fuel pump to make sure they are connected and routed correctly.

-- If no fault is detected in the electrical wires, replace the fuel delivery unit.

-- Install the fuel delivery unit while following the information on connecting the battery **FUEL DELIVERY UNIT**.

FUEL PUMP CONTROL MODULE -J538-, CHECKING

- On vehicles with the FSI engine, the fuel pump is supplied with voltage via the Fuel Pump (FP) control module.
- FP control module testing occurs in **Guided Fault Finding** operating mode see vehicle diagnostic tester.

FUEL PUMP DELIVERY RATE, CHECKING - ENGINE CODE(S): CAEB & CPMA

Special tools and workshop equipment required

- Fuel Inj. Pressure Gauge-CIS V.A.G 1318

- Adapter V.A.G 1318/11
- Adapter V.A.G 1318/17-1 from Adapter for VAG 1318 V.A.G 1318/17
- Fuel Line Feed Adapter V.A.G 1318/23
- Remote Control V.A.G 1348/3A with Adapter Cable V.A.G 1348/3-3
- Connector Test Set V.A.G 1594C
- Measuring Container, Fuel-Resistant

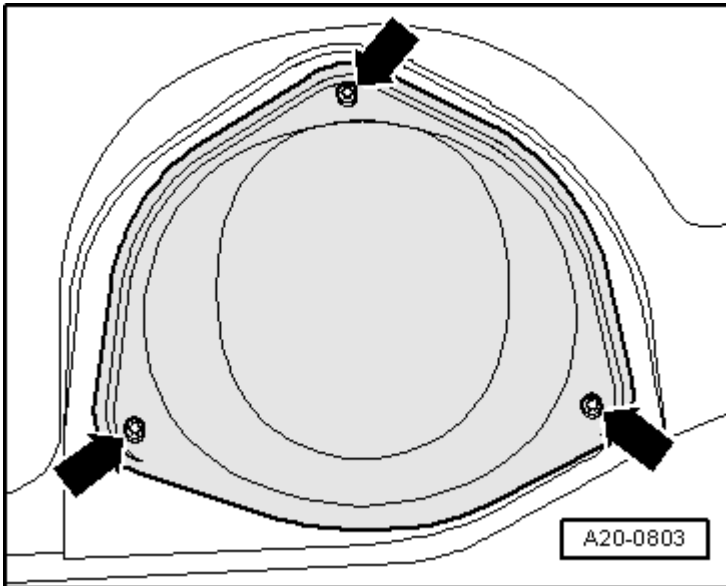
Procedure

Fig. 24: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

- Follow all test requirements. Refer to **TEST CONDITIONS**.
- Remove the rear bench seat. Refer to **Removal and Installation** .
- Remove the locking flange cover -arrows-.
- Disconnect the connector -1- on the locking flange.

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

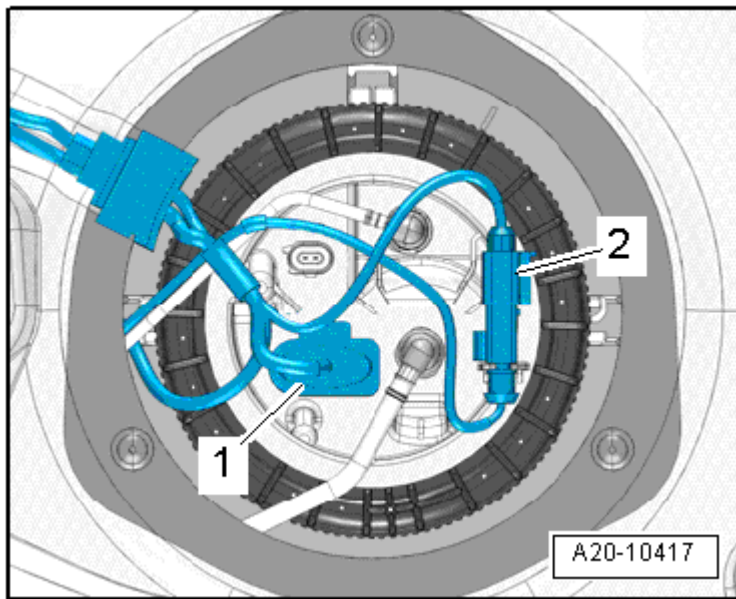


Fig. 25: Identifying Locking Flange Components
Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

-- Connect the V.A.G 1348/3A using the V.A.G 1348/3-3 and cable from the V.A.G 1594C to the terminal -1-.

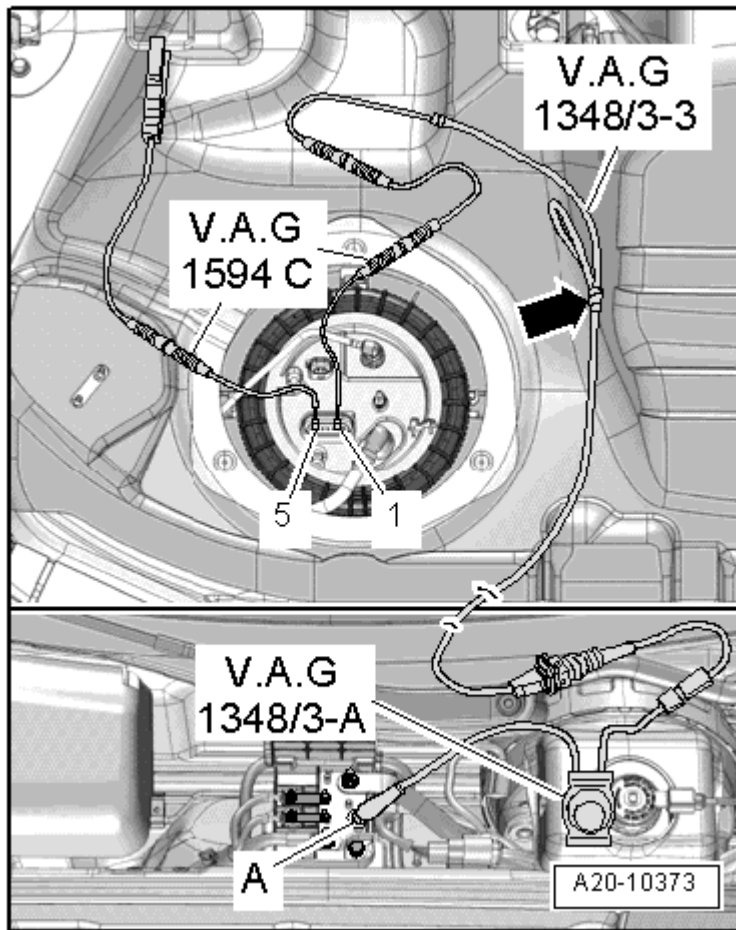


Fig. 26: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal - 1-

Courtesy of AUDI OF AMERICA, LLC

- Tape adapter cable connector terminal V.A.G 1348/3-3 with insulating tape -arrow- to prevent a short circuit.
- Connect the connector terminal -5- to the chassis ground with an adapter cable from the V.A.G 1594C.
- Route V.A.G 1348/3A toward the front in engine compartment.

Vehicle through 05.08

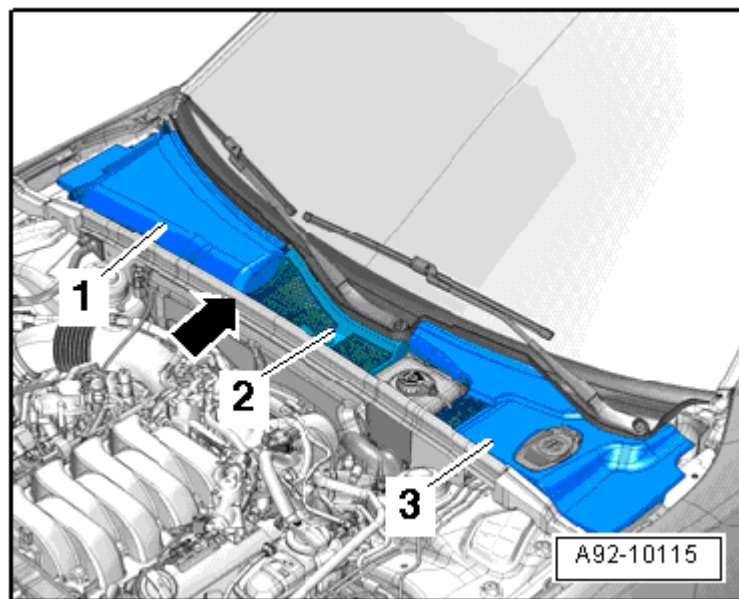


Fig. 27: Removing Plenum Chamber Covers
 Courtesy of AUDI OF AMERICA, LLC

-- Unclip the plenum chamber cover -2- and remove it.

NOTE: Ignore -1 and 3- and -arrows-.

Vehicles from 06.08

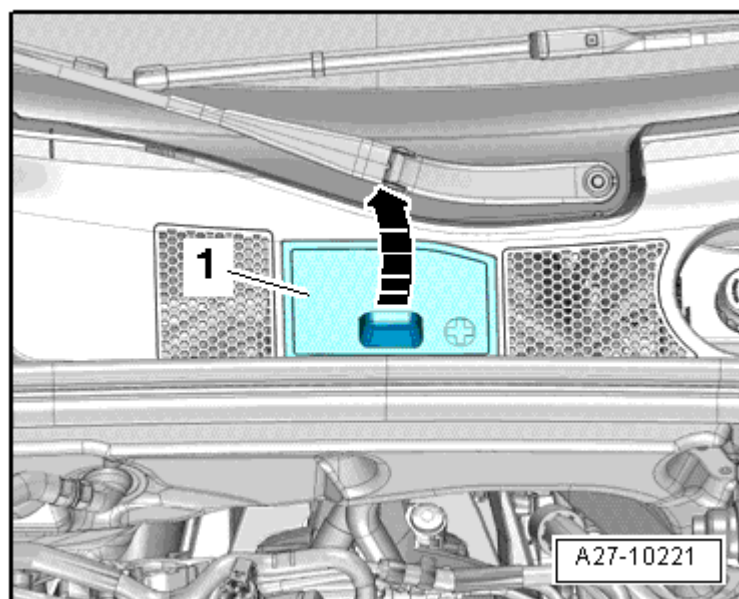


Fig. 28: Removing Cover
 Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover -1- on the handle -arrow-.

All Vehicles

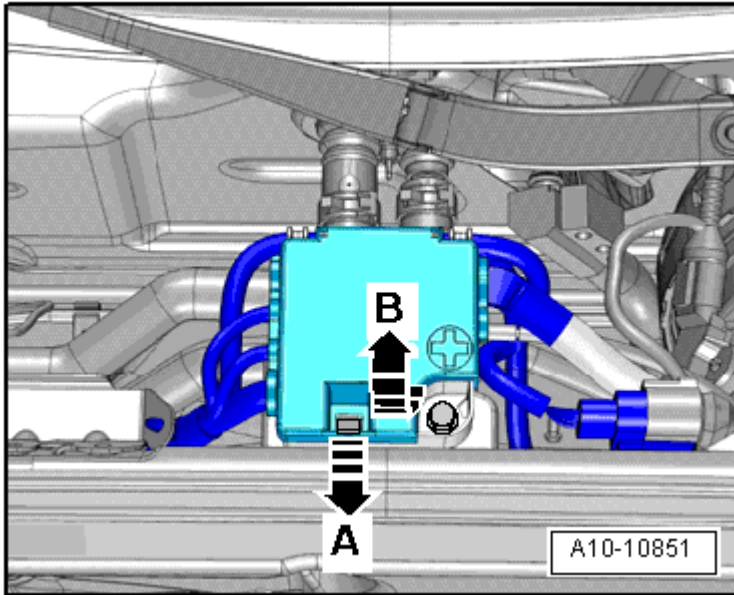


Fig. 29: Opening Terminal Box Cover
Courtesy of AUDI OF AMERICA, LLC

-- Release the retainer -arrow A- and open the cover -arrow B-.

-- Connect the alligator clip to the battery jump start terminal -U6- -A- in the terminal 30 wire junction 2 - TV22- in the plenum chamber.

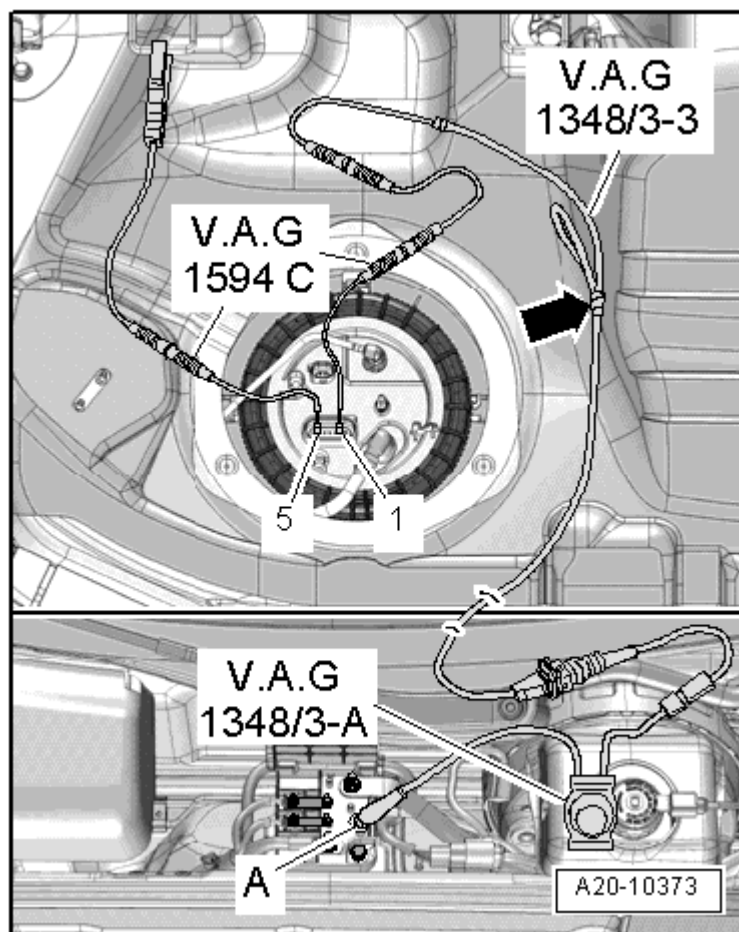


Fig. 30: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal - 1-

Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover from the fuel filler tube.

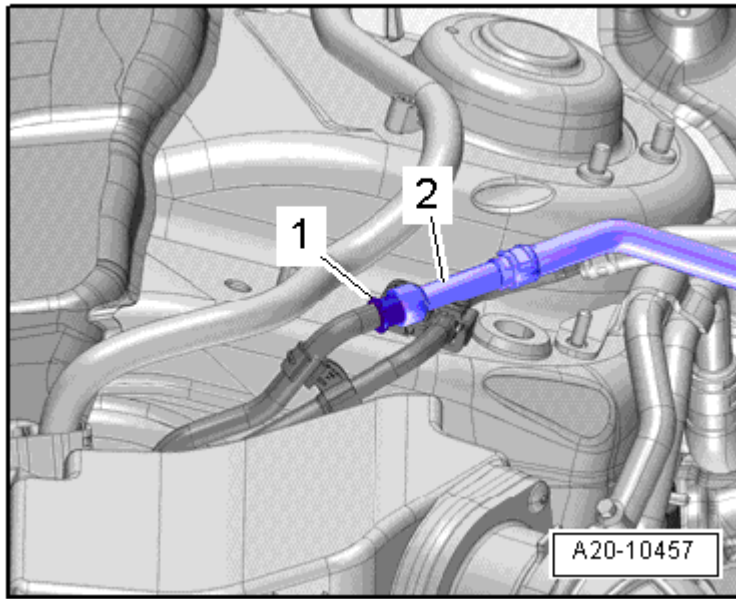


Fig. 31: Identifying Fuel Line

Courtesy of AUDI OF AMERICA, LLC

WARNING: There is a risk of injury because the fuel is under high pressure.

- To reduce pressure in the fuel system, lay a clean cloth around the connector and carefully loosen connector.

-- Pull the release ring -1- and disconnect the fuel line -2-.

-- Attach V.A.G 1318/23 and V.A.G 1318/17-1 to V.A.G 1318.

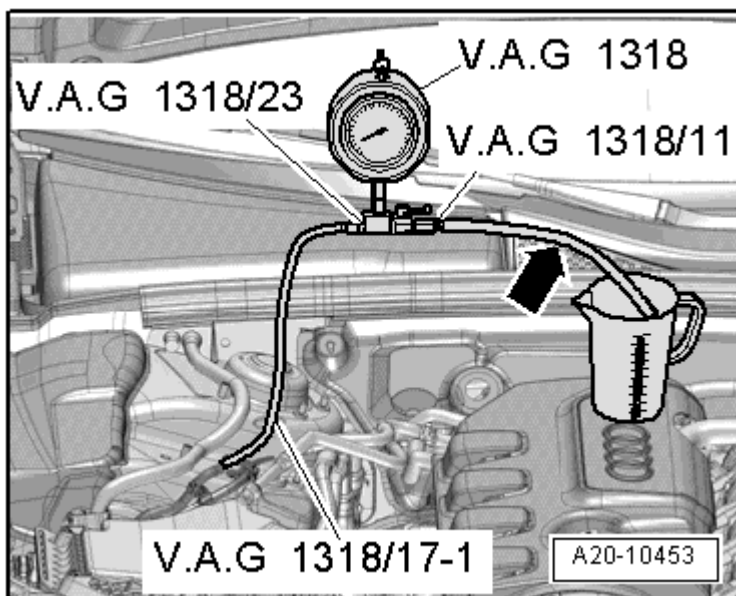
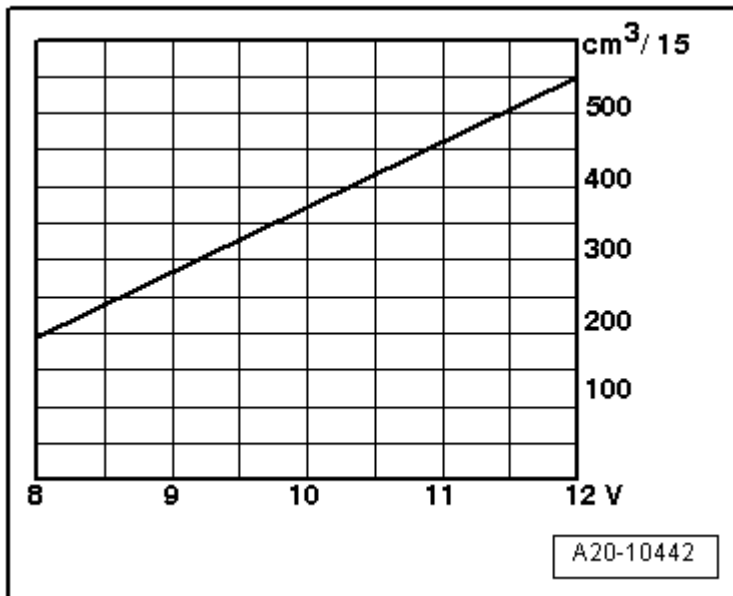


Fig. 32: Checking Fuel Pressure

Courtesy of AUDI OF AMERICA, LLC

- Install the V.A.G 1318/17-1 on the disconnected fuel supply line.
- Attach V.A.G 1318/11 to V.A.G 1318.
- Push an assisting hose -arrow- onto it and hold it into a measuring container.
- Open the shut-off valve on the pressure gauge.
 - The lever points in the direction of flow.
- Generate pressure in the fuel system by pressing the switch on the remote control and slowly closing the shut-off valve on the pressure gauge.
 - Specified value: 4 bar positive pressure.
- From this point on do not move position of shut-off valve.
- Empty measuring container.
- Press the remote control switch for 15 seconds.

**Fig. 33: Identifying Fuel Delivery Rate In Diagram**

Courtesy of AUDI OF AMERICA, LLC

- Compare quantity of the fuel delivered with minimum delivery rate in the diagram (cm³ /15 s).

NOTE: Voltage at the fuel pump with the engine stopped and pump running is approximate 2 volts less than battery voltage.

If the minimum delivery quantity is not obtained, the following malfunctions may be present:

- The fuel lines are pinched.
- The fuel filter is clogged.
- The fuel pump is faulty.

Assemble in reverse order of disassembling. Note the following:

- Install the right locking flange cover. Refer to **Fig. 9**.
- Install the rear bench seat. Refer to **Removal and Installation**.

FUEL PUMP DELIVERY RATE, CHECKING - ENGINE CODE(S): CALA, CCBA & CGXC

Special tools and workshop equipment required

- Fuel Inj. Pressure Gauge-CIS V.A.G 1318
- Adapter V.A.G 1318/10-12 and Adapter V.A.G 1318/15
- Remote Control V.A.G 1348/3A with Adapter Cable V.A.G 1348/3-3
- Connector Test Set V.A.G 1594C
- Measuring Container, Fuel-Resistant

Procedure

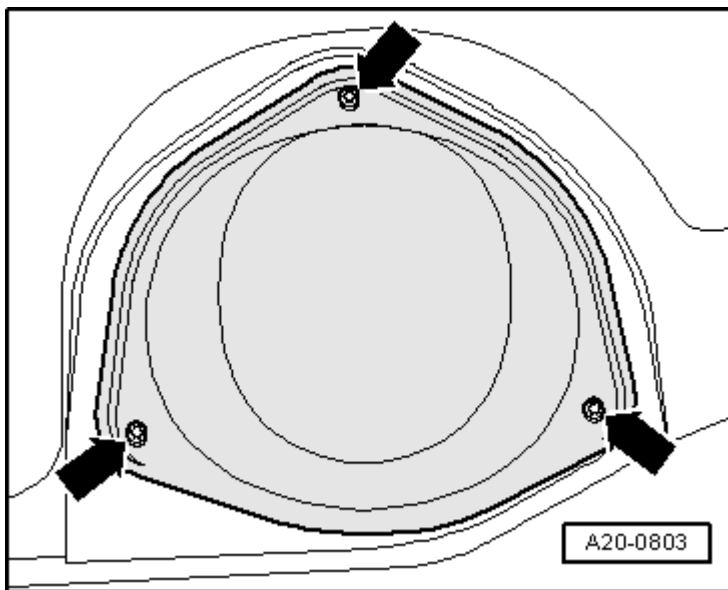


Fig. 34: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Follow all test requirements. Refer to **TEST CONDITIONS**.
- Remove the rear bench seat. Refer to **Removal and Installation** .
- Remove the locking flange cover -arrows-.
- Disconnect the connector -1- on the locking flange.

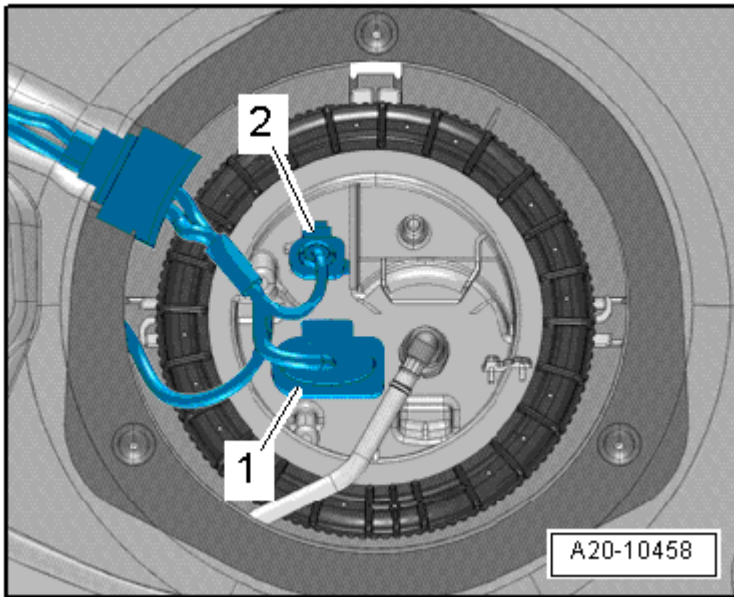
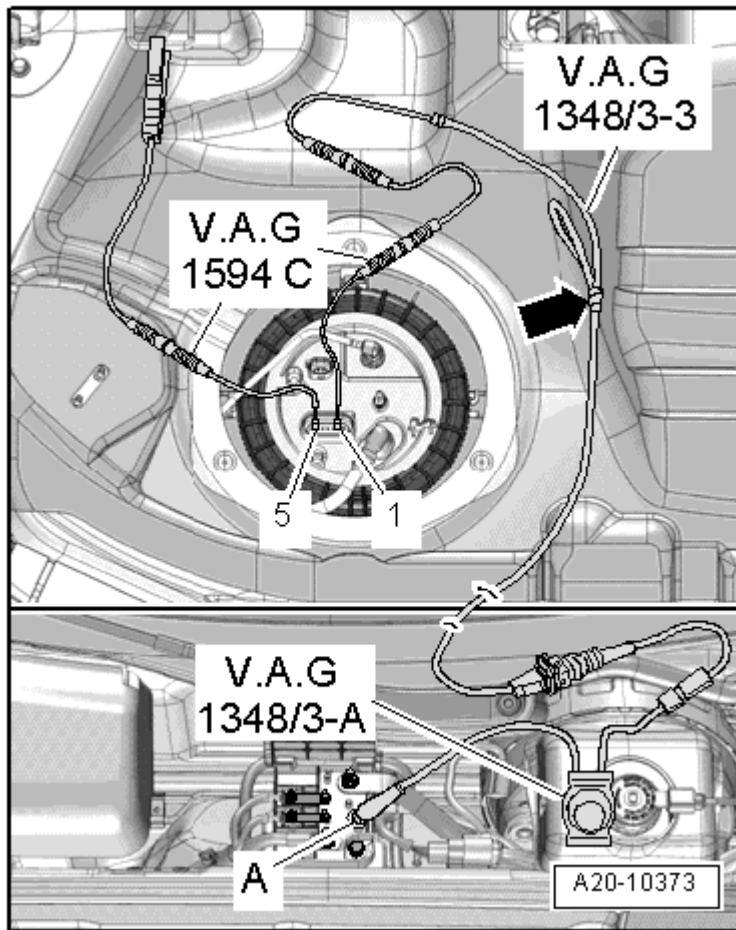


Fig. 35: Disconnecting Connector
Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

- Connect the V.A.G 1348/3A using the V.A.G 1348/3-3 and cable from the V.A.G 1594C to the terminal -1-.



**Fig. 36: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal -
1-**

Courtesy of AUDI OF AMERICA, LLC

- Tape adapter cable connector terminal V.A.G 1348/3-3 with insulating tape -arrow- to prevent a short circuit.
- Connect the connector terminal -5- to the chassis ground with an adapter cable from the V.A.G 1594C.
- Route V.A.G 1348/3A toward the front in engine compartment.

Vehicle through 05.08

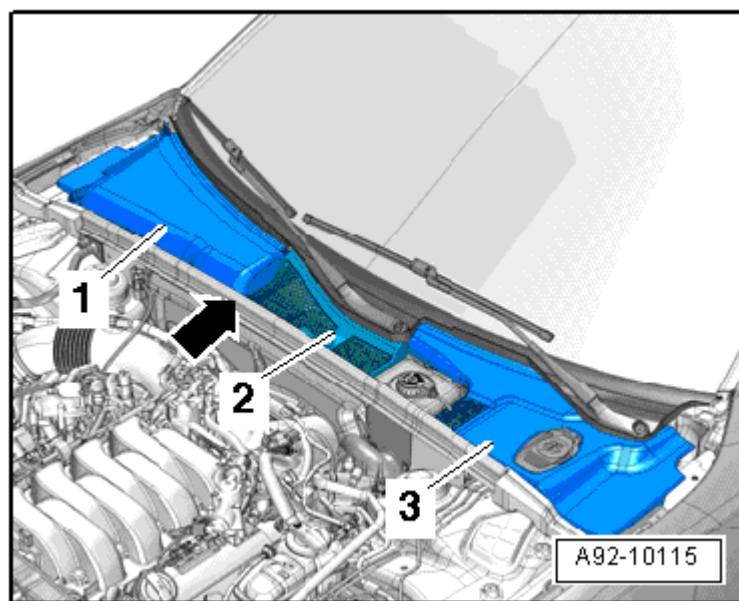


Fig. 37: Removing Plenum Chamber Covers
Courtesy of AUDI OF AMERICA, LLC

-- Unclip the plenum chamber cover -2- and remove it.

NOTE: Ignore -1 and 3- and -arrows-.

Vehicles from 06.08

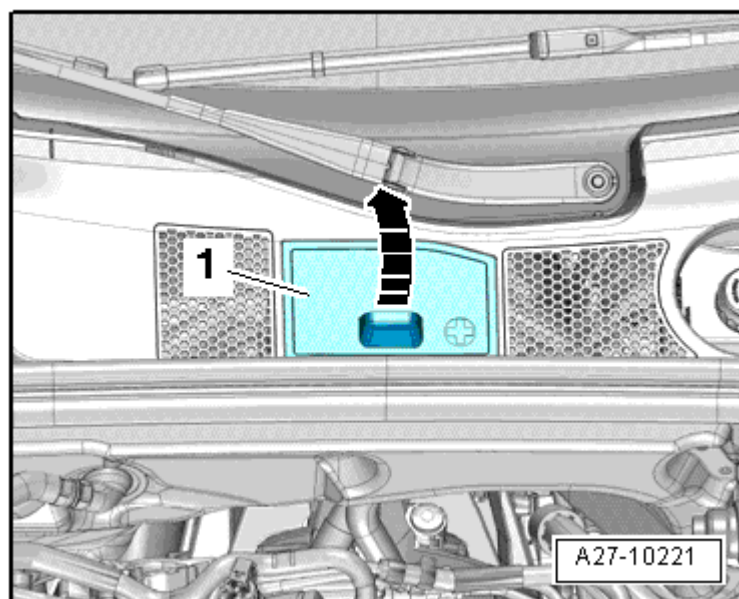


Fig. 38: Removing Cover
Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover -1- on the handle -arrow-.

All Vehicles

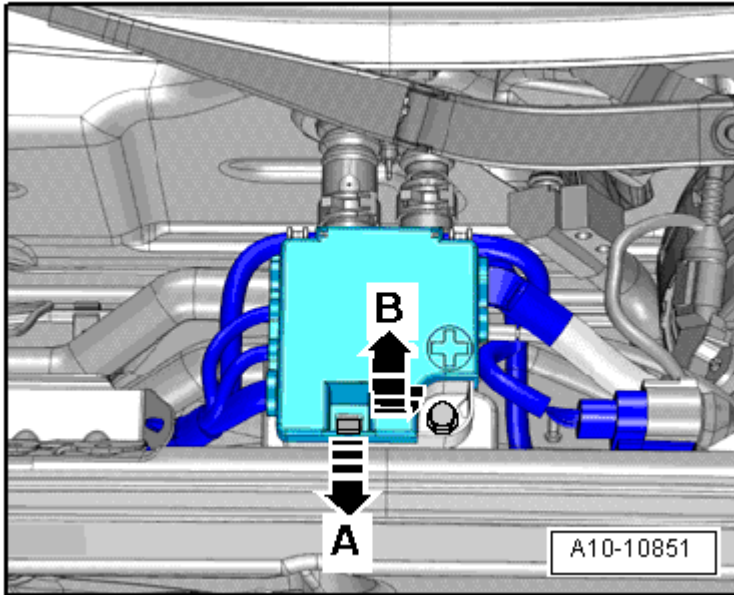


Fig. 39: Opening Terminal Box Cover
Courtesy of AUDI OF AMERICA, LLC

-- Release the retainer -arrow A- and open the cover -arrow B-.

-- Connect the alligator clip to the battery jump start terminal -U6- -A- in the terminal 30 wire junction 2 - TV22- in the plenum chamber.

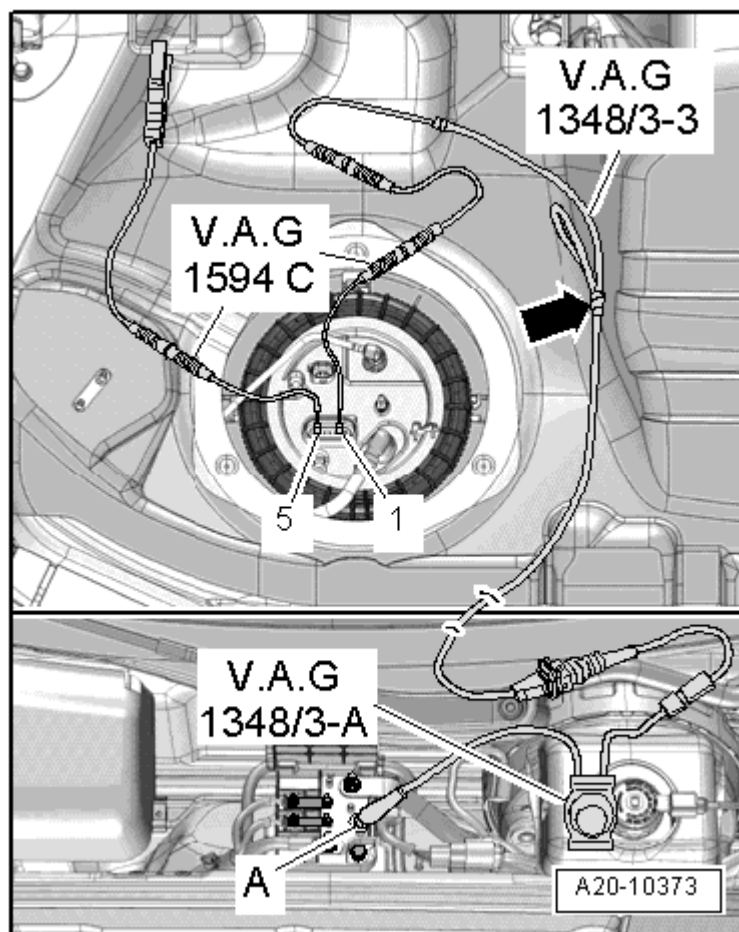


Fig. 40: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal - 1-

Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover from the fuel filler tube.

-- Remove the air duct -arrows-.

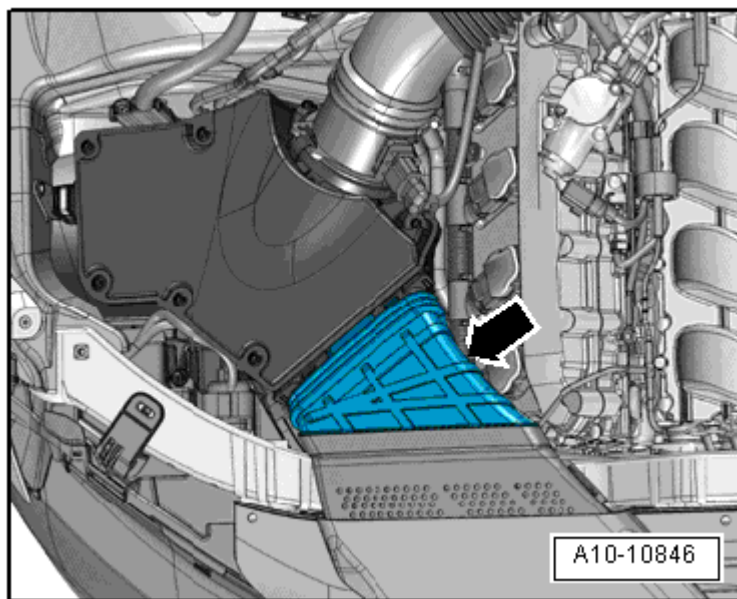


Fig. 41: Removing Air Duct

Courtesy of AUDI OF AMERICA, LLC

-- Remove the vacuum hose -3- from the connection on the air guide pipe.

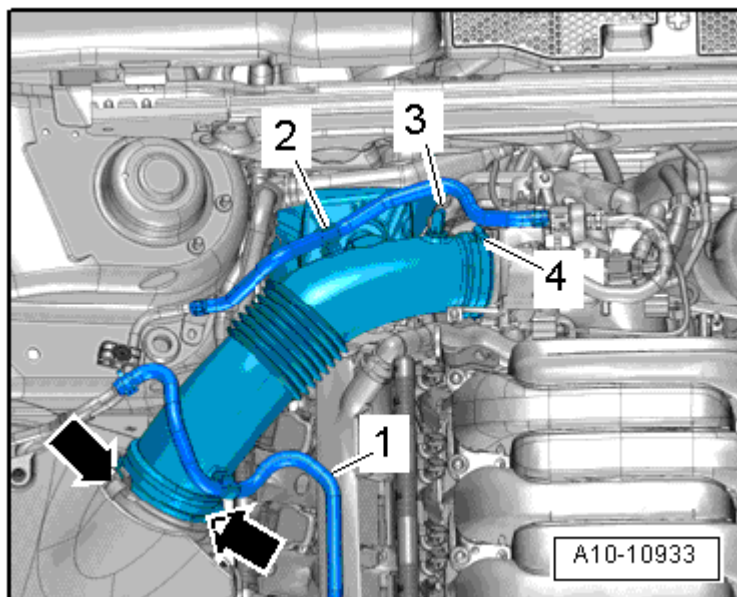


Fig. 42: Removing Vacuum Hose

Courtesy of AUDI OF AMERICA, LLC

-- Remove the air guide pipe by loosening the hose clamp -4- and opening the clips -arrows-.

NOTE: Ignore -1 and 2-.

-- Disconnect the vacuum line -1-.

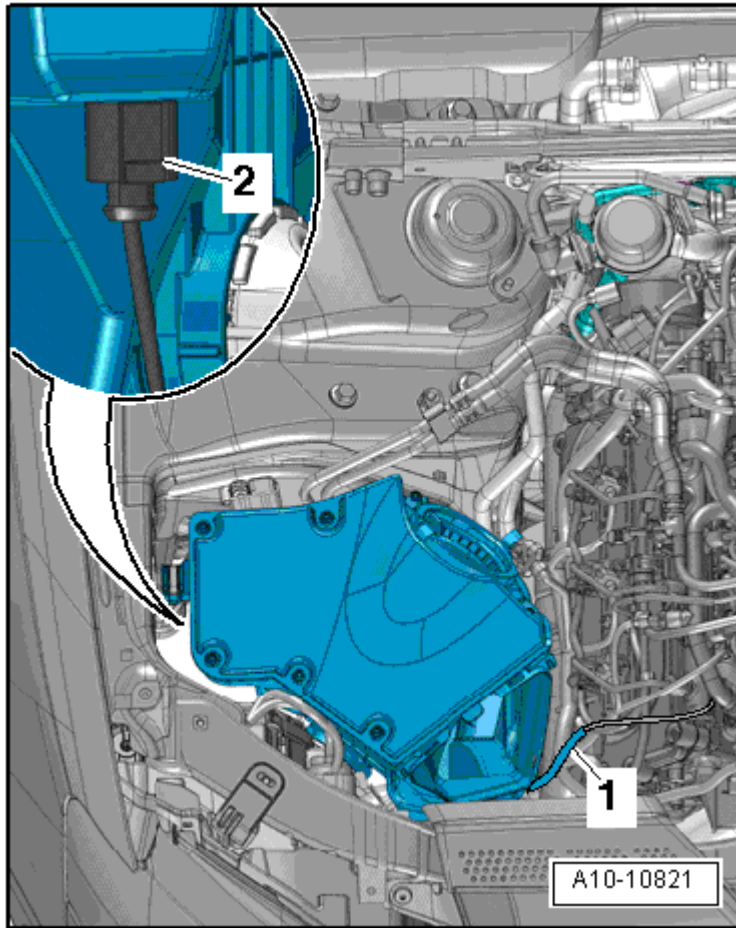


Fig. 43: Removing Air Filter Housing
Courtesy of AUDI OF AMERICA, LLC

-- Remove the air filter housing and, if applicable, disconnect the electrical connector -2- on the rear side at the intake air switch-over valve -N335-.

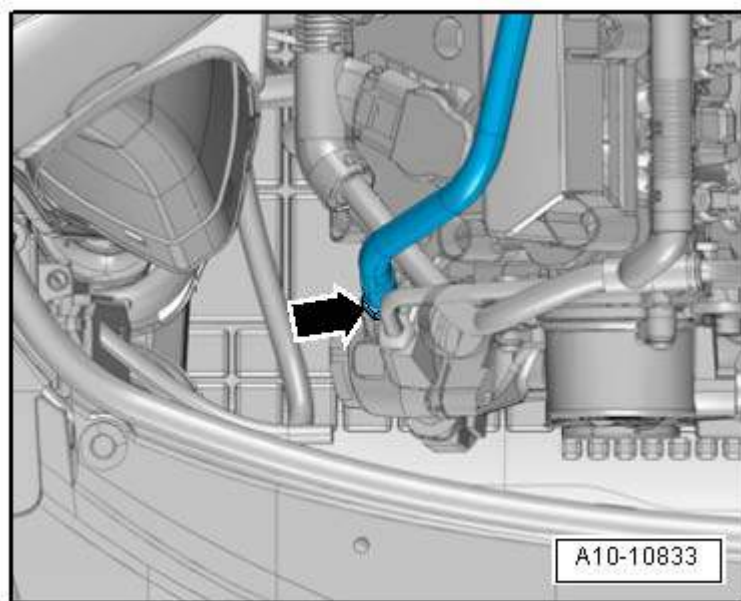


Fig. 44: Identifying Fuel Supply Hose
Courtesy of AUDI OF AMERICA, LLC

WARNING: There is a risk of injury because the fuel is under high pressure.

- To reduce pressure in the fuel system, lay a clean cloth around the connector and carefully loosen connector.

-- Remove the fuel supply line from the high pressure pump -arrow-.

-- Connect the V.A.G 1318 with the V.A.G 1318/11 and V.A.G 1318/15 in the fuel line.

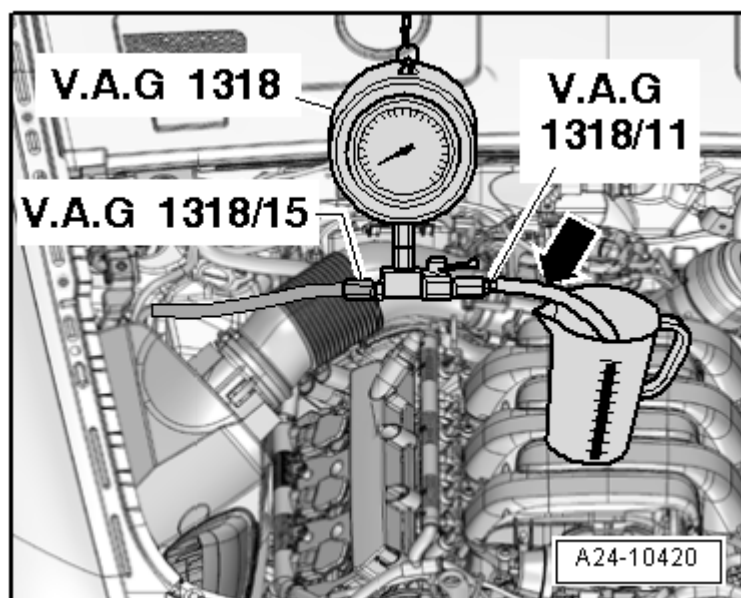


Fig. 45: Connecting V.A.G 1318 With V.A.G 1318/11 And V.A.G 1318/15 In Fuel Line
 Courtesy of AUDI OF AMERICA, LLC

- Push an assisting hose -arrow- onto it and hold it into a measuring container.
- Open the shut-off valve on the pressure gauge.
 - The lever points in the direction of flow.
- Generate pressure in the fuel system by pressing the switch on the remote control and slowly closing the shut-off valve on the pressure gauge.
 - Specified value: 4 bar positive pressure.
- From this point on do not move position of shut-off valve.
- Empty measuring container.
- Press the remote control switch for 15 seconds.

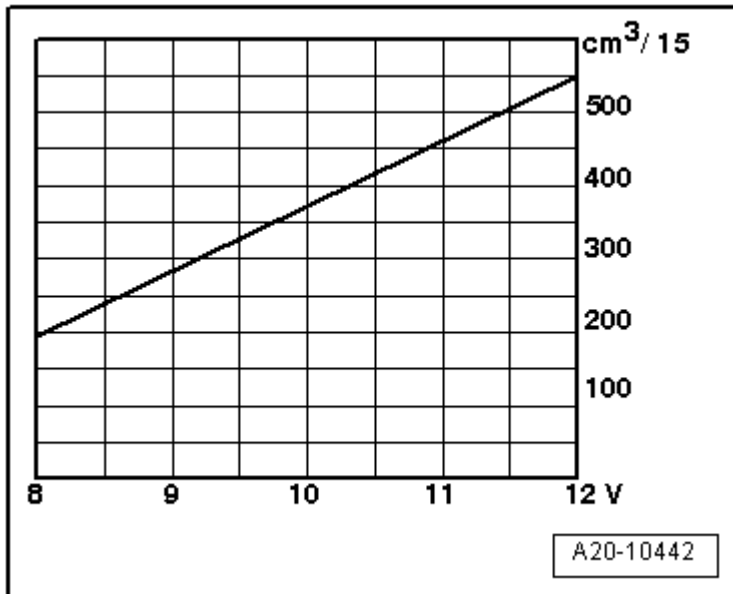


Fig. 46: Compare Quantity Of Fuel Delivered With Minimum Delivery Rate In Diagram
 Courtesy of AUDI OF AMERICA, LLC

- Compare quantity of fuel delivered with minimum delivery rate in diagram ($\text{cm}^3/15 \text{ s}$).

NOTE: Voltage at the fuel pump with engine stopped and pump running is approximate. 2 volts less than battery voltage.

If minimum delivery quantity is not obtained, the following malfunctions may be present:

- The fuel lines are pinched.
- The fuel filter is clogged.
- The fuel pump is faulty.

Assemble in reverse order of disassembling. Note the following:

NOTE: **Secure all hose connections with hose clamps of the same type as those equipped by the factory.**

-- Install the right locking flange cover. Refer to **Fig. 9**.

-- Install the rear bench seat. Refer to **Removal and Installation** .

-- Install the air filter housing. Refer to **[For engine(s) CALA] Removal and Installation** or to **[For engine(s) CCBA] Removal and Installation** .

FUEL PUMP DELIVERY RATE, CHECKING - ENGINE CODE(S): CAUA

Special tools and workshop equipment required

- Fuel Inj. Pressure Gauge-CIS V.A.G 1318
- Remote Control V.A.G 1348/3A with Adapter Cable V.A.G 1348/3-2
- Measuring Container, Fuel-Resistant

Procedure

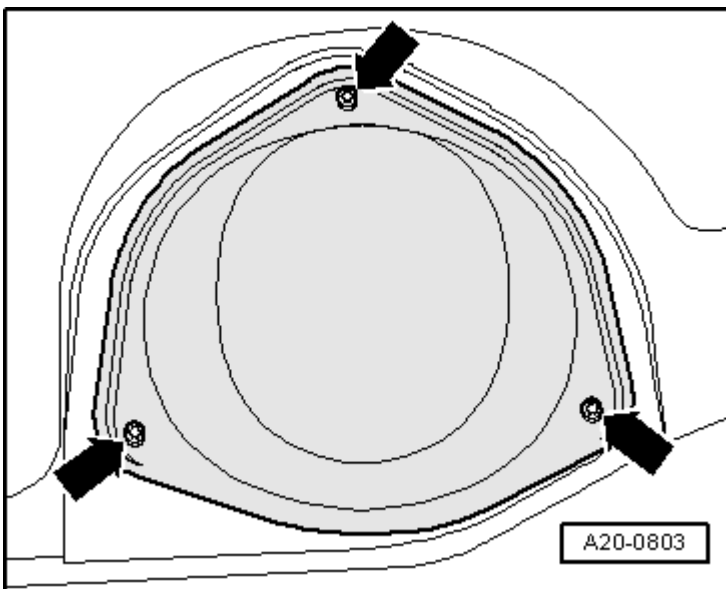


Fig. 47: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Follow all test requirements. Refer to **TEST CONDITIONS**.
- Remove the rear bench seat. Refer to **Removal and Installation** .
- Remove the locking flange cover -arrows-.
- Disconnect the connector -1- on the locking flange.

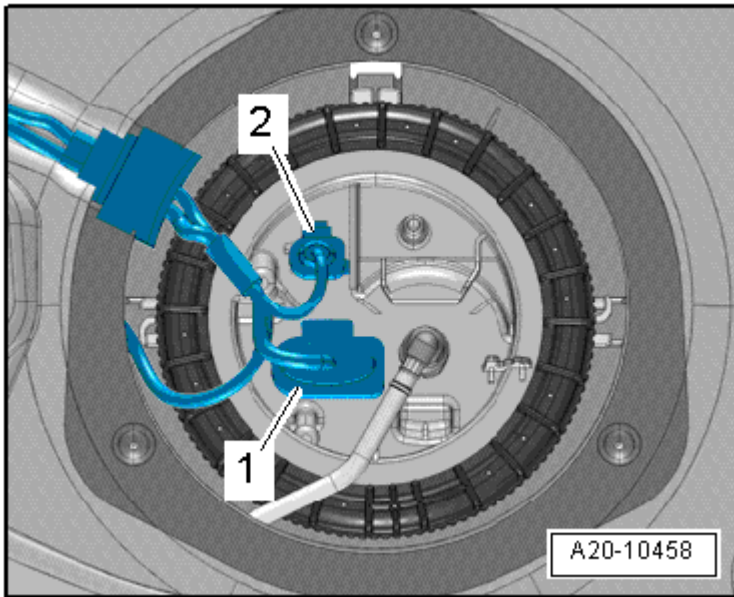
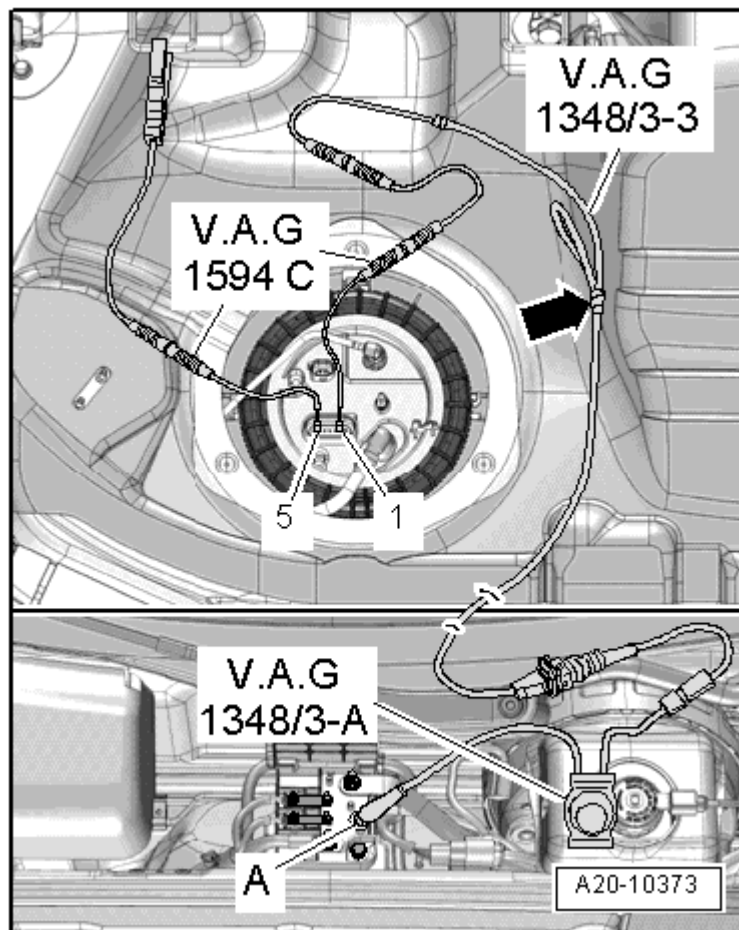


Fig. 48: Disconnecting Connector
Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

- Connect the V.A.G 1348/3A using the V.A.G 1348/3-3 and cable from the V.A.G 1594C to the terminal -1-.



**Fig. 49: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal -
1-**

Courtesy of AUDI OF AMERICA, LLC

- Tape adapter cable connector terminal V.A.G 1348/3-3 with insulating tape -arrow- to prevent a short circuit.
- Connect connector terminal -5- with an adapter cable from V.A.G 1594C to chassis ground.
- Route V.A.G 1348/3A toward front in engine compartment.

Vehicle through 05.08

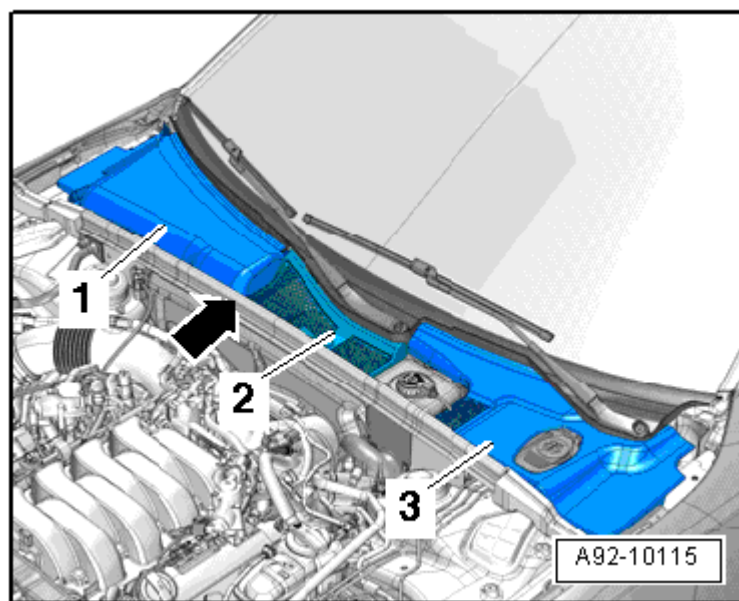


Fig. 50: Removing Plenum Chamber Covers
Courtesy of AUDI OF AMERICA, LLC

-- Unclip the plenum chamber cover -2- and remove it.

NOTE: Ignore -1 and 3- and -arrows-.

Vehicles from 06.08

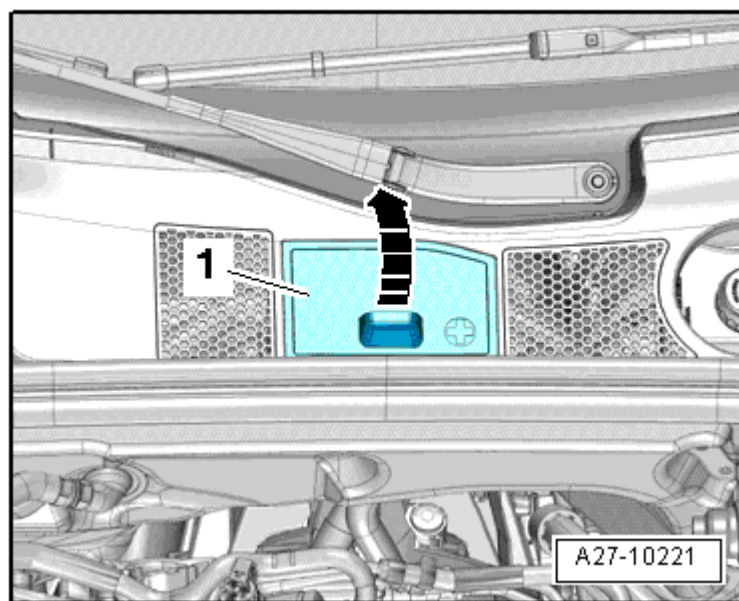


Fig. 51: Removing Cover
Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover -1- on the handle -arrow-.

All Vehicles

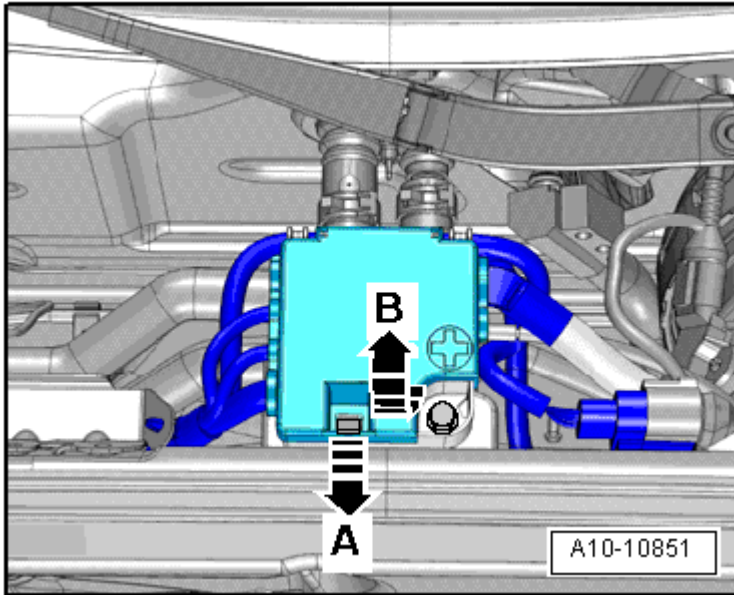
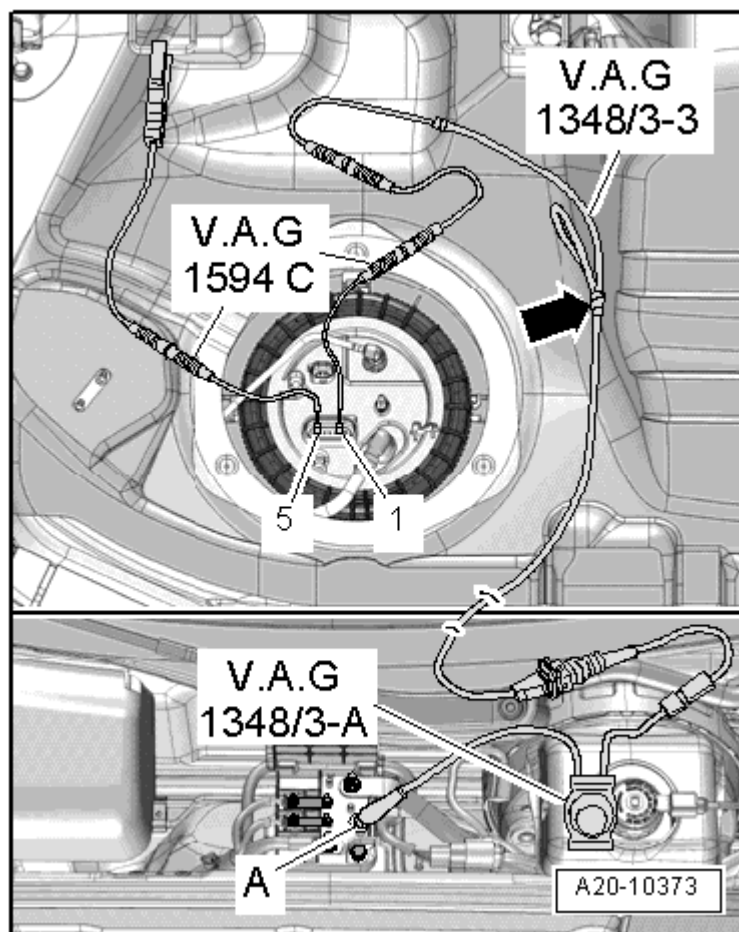


Fig. 52: Opening Terminal Box Cover
Courtesy of AUDI OF AMERICA, LLC

-- Release the retainer -arrow A- and open the cover -arrow B-.

-- Connect the alligator clip to the battery jump start terminal -U6- -A- in the terminal 30 wire junction 2 - TV22- in the plenum chamber.



**Fig. 53: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal -
1-**

Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover from the fuel filler tube.

-- Remove the engine cover -arrows-.

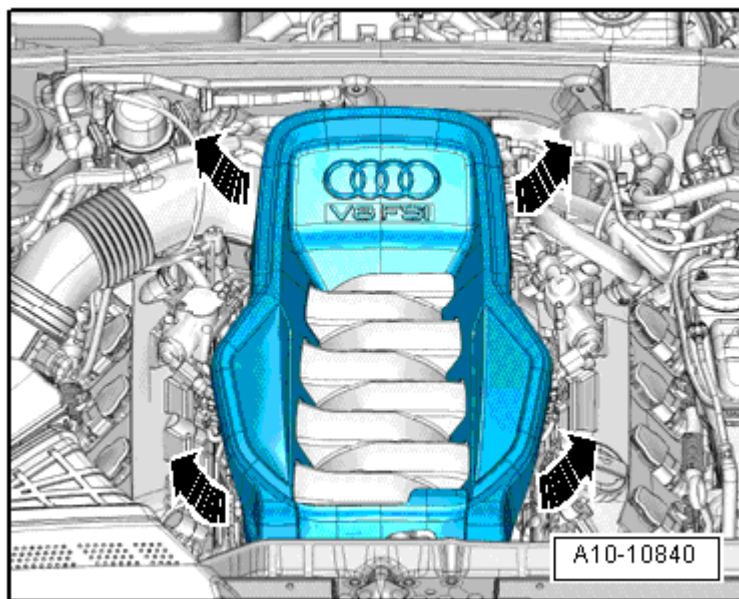


Fig. 54: Removing Engine Cover

Courtesy of AUDI OF AMERICA, LLC

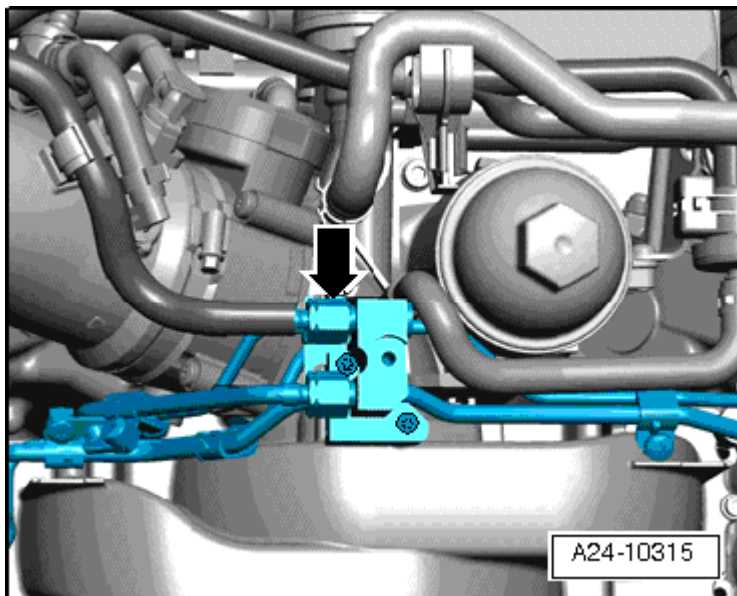


Fig. 55: Disconnecting Fuel Line

Courtesy of AUDI OF AMERICA, LLC

WARNING: There is a risk of injury because the fuel is under high pressure.

- To reduce the pressure in the fuel system, lay a clean cloth around the connector and carefully loosen connector.

-- Disconnect the fuel line -arrow-.

-- Connect the V.A.G 1318 with the V.A.G 1318/11 and V.A.G 1318/12 in the fuel line.

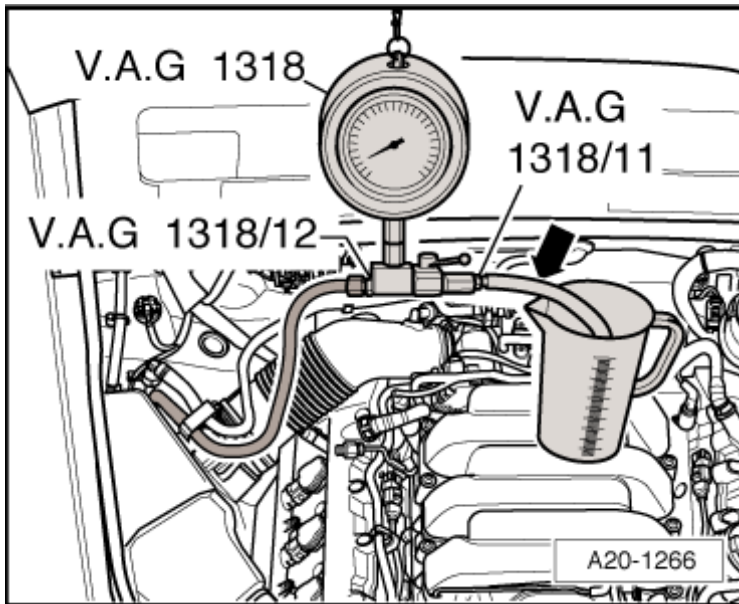


Fig. 56: Connecting Fuel Inj. Pressure Gauge-CIS V.A.G 1318 With Adapter V.A.G 1318/11 And V.A.G 1318/12 In Fuel Line

Courtesy of AUDI OF AMERICA, LLC

-- Push an assisting hose -arrow- onto it and hold it into a measuring container.

-- Open the shut-off valve on the pressure gauge.

- The lever points in the direction of flow.

-- Generate pressure in the fuel system by pressing the switch on the remote control and slowly closing the shut-off valve on the pressure gauge.

- Specified value: 4 bar positive pressure.

-- From this point on do not move position of shut-off valve.

-- Empty measuring container.

-- Press the remote control switch for 15 seconds.

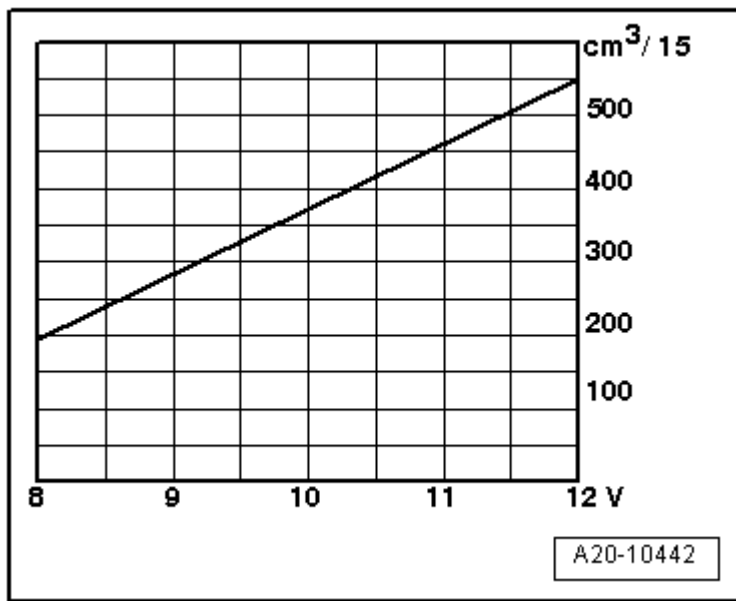


Fig. 57: Compare Quantity Of Fuel Delivered With Minimum Delivery Rate In Diagram
 Courtesy of AUDI OF AMERICA, LLC

-- Compare quantity of fuel delivered with minimum delivery rate in diagram ($\text{cm}^3 / 15 \text{ s}$).

NOTE: Voltage at the fuel pump with engine stopped and pump running is approximate. 2 volts less than battery voltage.

If minimum delivery quantity is not obtained, the following malfunctions may be present:

- The fuel lines are pinched.
- The fuel filter is clogged.
- The fuel pump is faulty.

Assemble in reverse order of disassembling. Note the following:

-- Attach the fuel line to the fuel rail. Refer to [For engine(s) CALA] Description and Operation or to [For engine(s) CAEB] Description and Operation or to [For engine(s) CCBA] Description and Operation .

-- Install the right locking flange cover. Refer to Fig. 6.

-- Install the rear bench seat. Refer to Removal and Installation .

FUEL PUMP DELIVERY RATE, CHECKING - ENGINE CODE(S): CFSA

Special tools and workshop equipment required

- Fuel Inj. Pressure Gauge-CIS V.A.G 1318
- Adapter V.A.G 1318/11

- Adapter Set V.A.G 1318/17A
- Fuel Line Feed Adapter V.A.G 1318/23
- Remote Control V.A.G 1348/3A with Adapter Cable V.A.G 1348/3-3
- Connector Test Set V.A.G 1594C
- Measuring Container, Fuel-Resistant

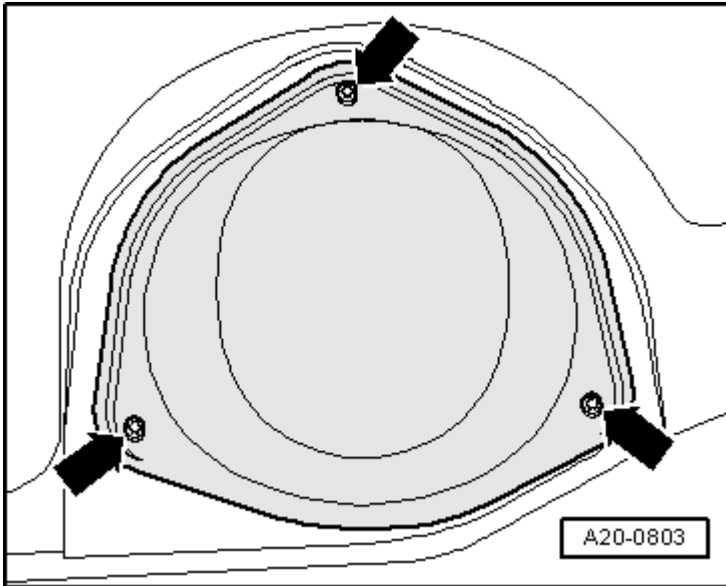
Procedure

Fig. 58: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

- Follow all test requirements. Refer to **TEST CONDITIONS**.
- Remove the rear bench seat. Refer to **Removal and Installation** .
- Remove the locking flange cover -arrows-.
- Disconnect the connector -1- on the locking flange.

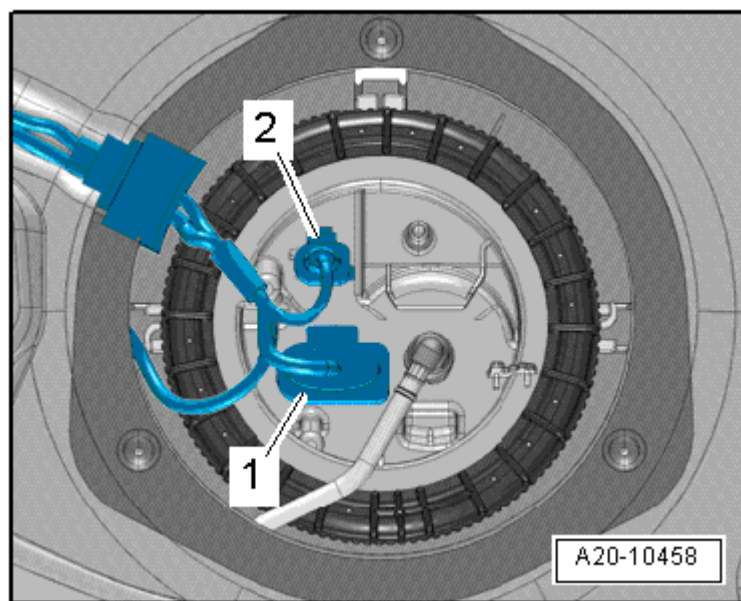


Fig. 59: Disconnecting Connector

Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

-- Remove the cover -1- on the handle -arrow-.

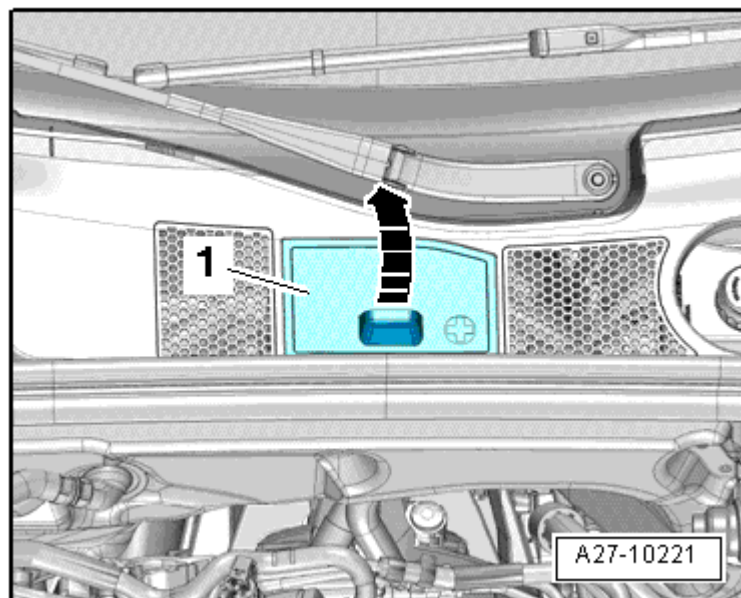
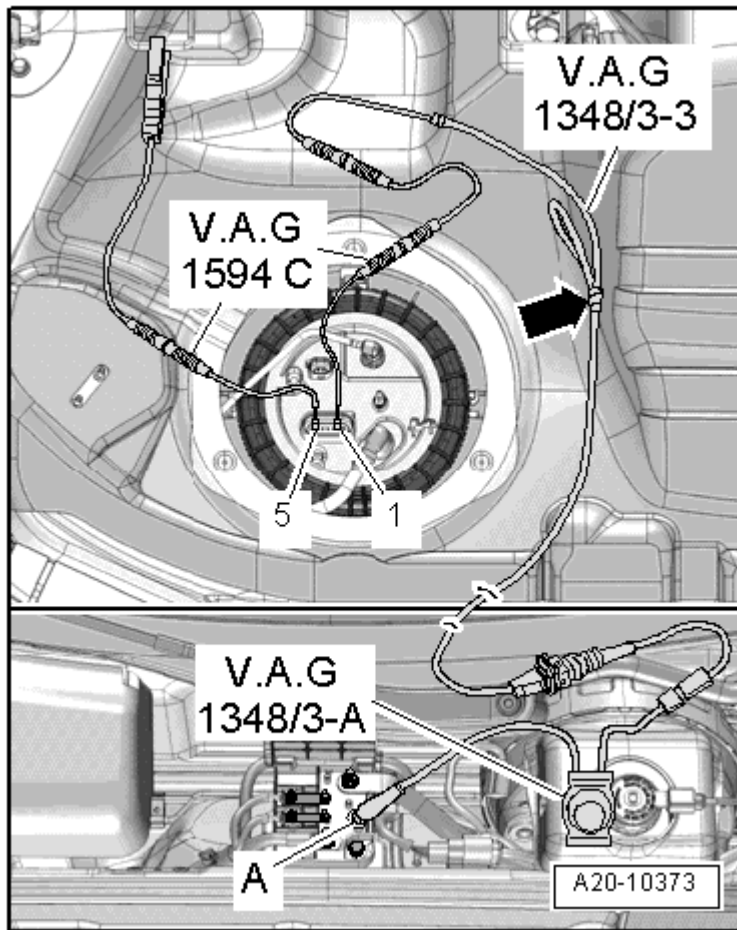


Fig. 60: Removing Cover

Courtesy of AUDI OF AMERICA, LLC

-- Connect the V.A.G 1348/3A using the V.A.G 1348/3-3 and cable from the V.A.G 1594C to the terminal -1-.



**Fig. 61: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal -
1-**

Courtesy of AUDI OF AMERICA, LLC

- Tape adapter cable connector terminal V.A.G 1348/3-3 with insulating tape -arrow- to prevent a short circuit.
- Connect connector terminal -5- with an adapter cable from V.A.G 1594C to chassis ground.
- Route V.A.G 1348/3A toward front in engine compartment.
- Release the retainer -arrow A- and open the cover -arrow B-.

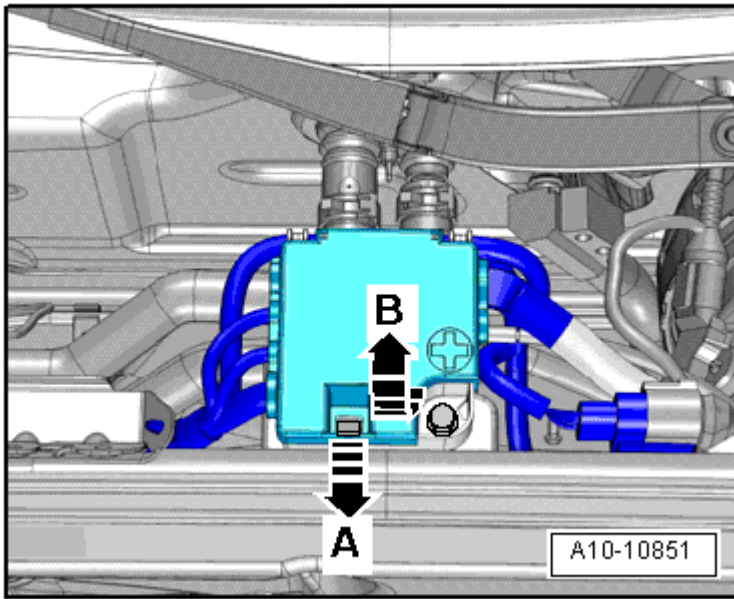
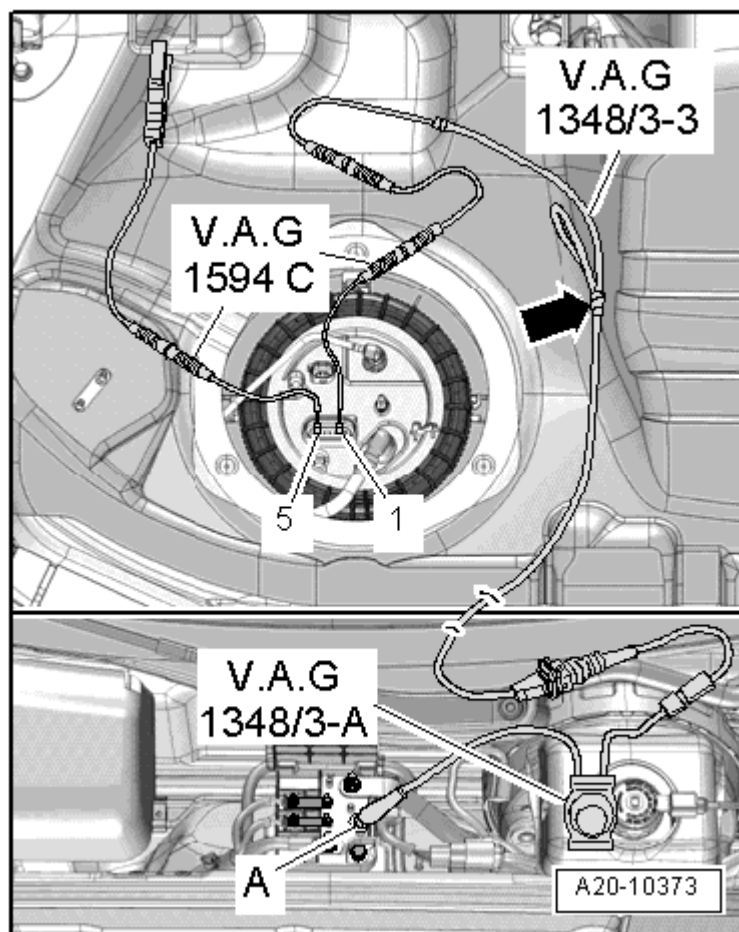


Fig. 62: Opening Terminal Box Cover
Courtesy of AUDI OF AMERICA, LLC

-- Connect the alligator clip to the battery jump start terminal -U6- -A- in the terminal 30 wire junction 2 - TV22- in the plenum chamber.



**Fig. 63: Connecting V.A.G 1348/3A Using V.A.G 1348/3-3 And Cable From V.A.G 1594C To Terminal -
1-**

Courtesy of AUDI OF AMERICA, LLC

-- Remove the cover from the fuel filler tube.

-- Remove the engine cover -arrows-.

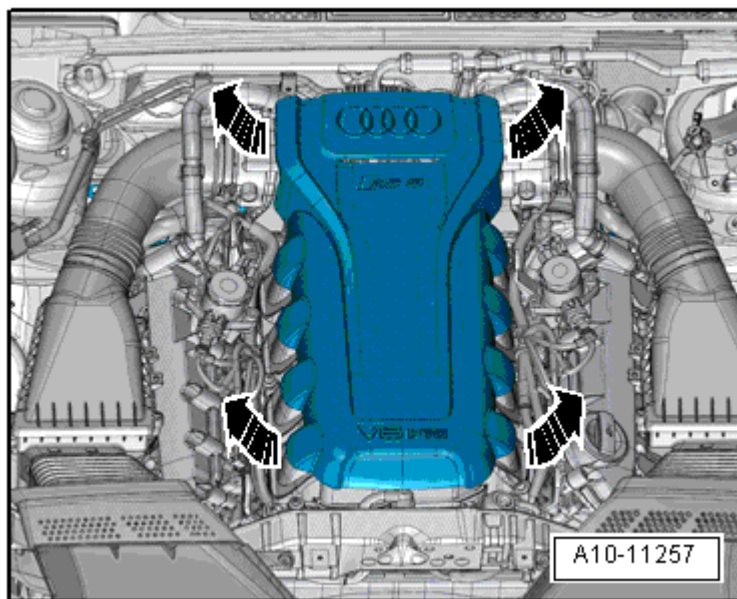
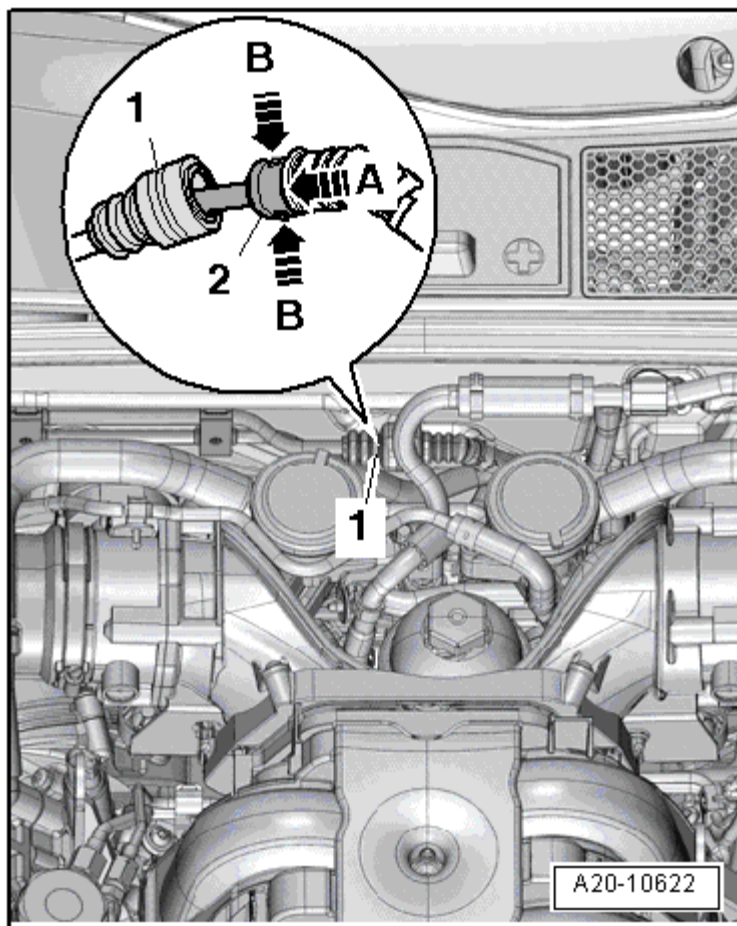
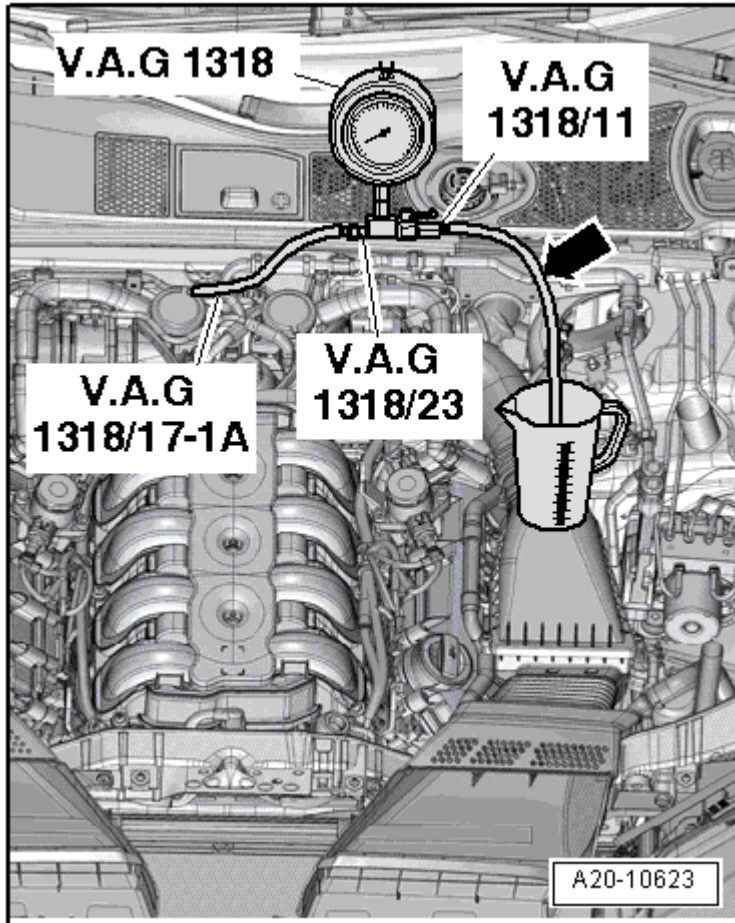


Fig. 64: Removing Engine Cover
Courtesy of AUDI OF AMERICA, LLC



WARNING: There is a risk of injury because the fuel is under high pressure.

- Disconnect the fuel line by first folding the boot -1- downward.
- First push the hose coupling -2- downward -arrow A-, then press the release buttons -arrow B-.
- Remove the hose coupling with the release buttons pressed.
- Connect the V.A.G 1318/23 and V.A.G 1318/17-1A to the V.A.G 1318.



-- V.A.G 1318/17-1A installed on the removed fuel line.

-- Connect the V.A.G 1318/11 to the V.A.G 1318.

-- Push an assisting hose -arrow- onto it and hold it into a measuring container.

-- Open the shut-off valve on the pressure gauge.

- The lever points in the direction of flow.

-- Generate pressure in the fuel system by pressing the switch on the remote control and slowly closing the shut-off valve on the pressure gauge.

- Specified value: 4 bar positive pressure.

-- From this point on do not move position of shut-off valve.

-- Empty measuring container.

-- Press the remote control switch for 15 seconds.

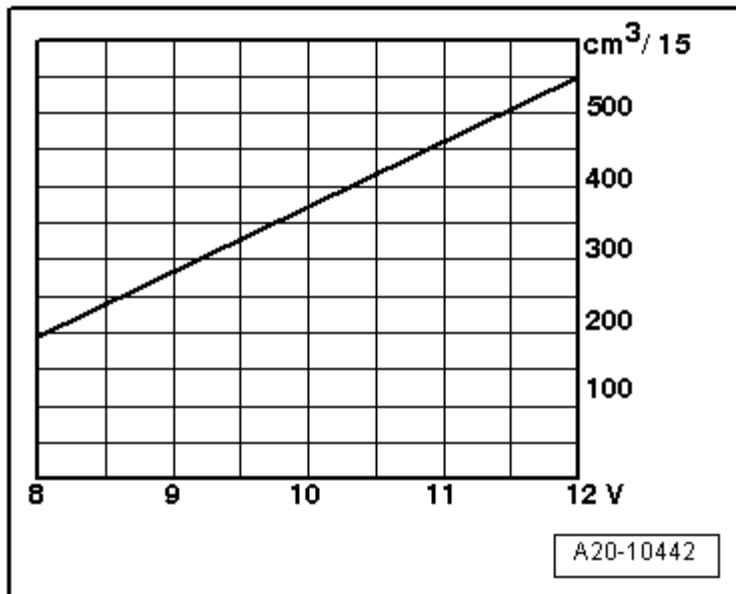


Fig. 67: Compare Quantity Of Fuel Delivered With Minimum Delivery Rate In Diagram
 Courtesy of AUDI OF AMERICA, LLC

-- Compare quantity of fuel delivered with minimum delivery rate in diagram ($\text{cm}^3 / 15 \text{ s}$).

NOTE: Voltage at fuel pump with engine stopped and pump running is approximate. 2 volts less than battery voltage.

If minimum delivery quantity is not obtained, the following malfunctions may be present:

- The fuel lines are pinched.
- The fuel filter is clogged.
- The fuel pump is faulty.

Assemble in reverse order of disassembling. Note the following:

-- Attach the fuel line to the fuel rail. Refer to **[For engine(s) CALA] Description and Operation** or to **[For engine(s) CAEB] Description and Operation** or to **[For engine(s) CCBA] Description and Operation** .

-- Install the right locking flange cover. Refer to **Fig. 6**.

-- Install the rear bench seat. Refer to **Removal and Installation** .

FUEL LEVEL SENSOR -G-, CHECKING

Special tools and workshop equipment required

- Multimeter V.A.G 1526D
- Connector Test Set V.A.G 1594C

Procedure

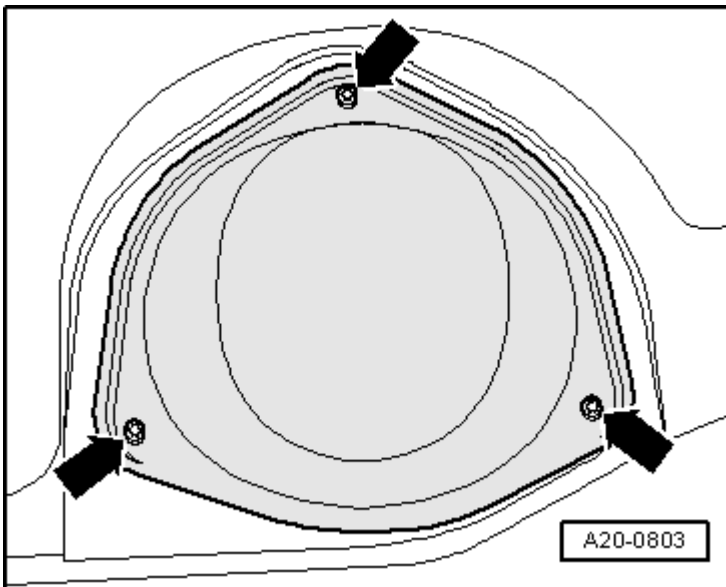


Fig. 68: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

-- Remove the rear bench seat. Refer to **Removal and Installation** .

-- Remove the locking flange cover -arrows-.

-- Disconnect the connector -1- on the locking flange.

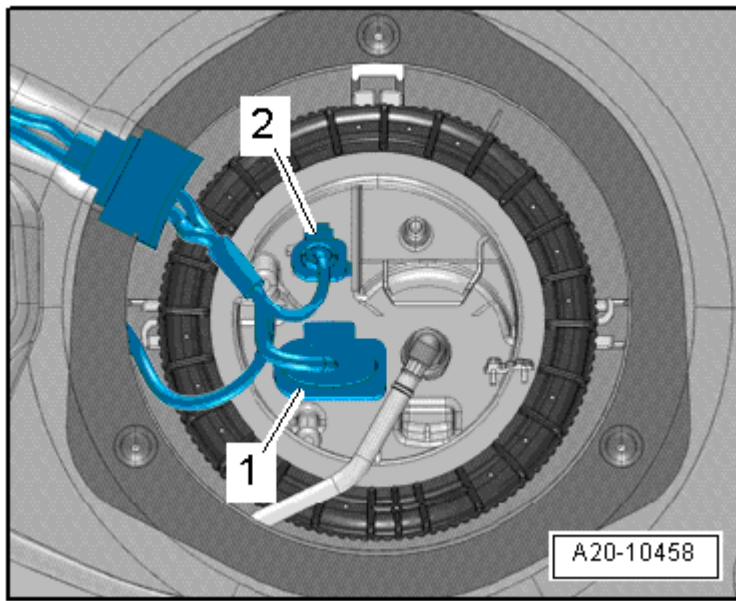


Fig. 69: Disconnecting Connector
Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

-- Connect the multimeter to measure the resistance between contacts -2 and 4-.

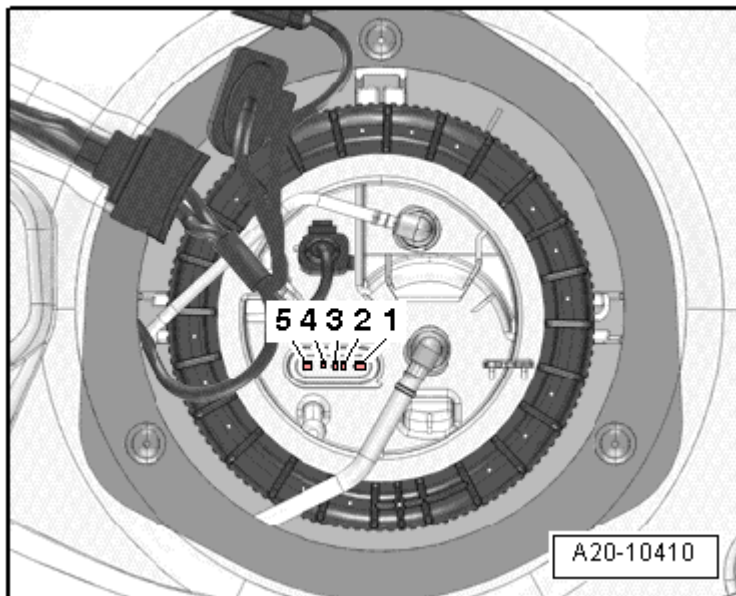


Fig. 70: Connecting Multimeter To Measure The Resistance Between Contacts
Courtesy of AUDI OF AMERICA, LLC

Fuel level sensor installed:

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Sensor at lower stop: approximately 280 ohms.
- Sensor at upper stop: approximately 65 ohms.

NOTE: If measured value is 0 ohms there is a short circuit. If measured value is there is and open circuit in the wiring.

To check resistance values "tank full" or "tank empty", the fuel delivery unit must be removed. Refer to FUEL DELIVERY UNIT and the sensor floater must be placed in upper or lower end position.

With fuel level sensor removed, the following values are obtained because of the greater deflection of the floater arm:

Fuel level sensor removed:

- Sensor at lower stop: approximately 288 ohms.
- Sensor at upper stop: approximately 57 ohms.

-- Connect the multimeter to measure the resistance between contacts -3 and 4--.

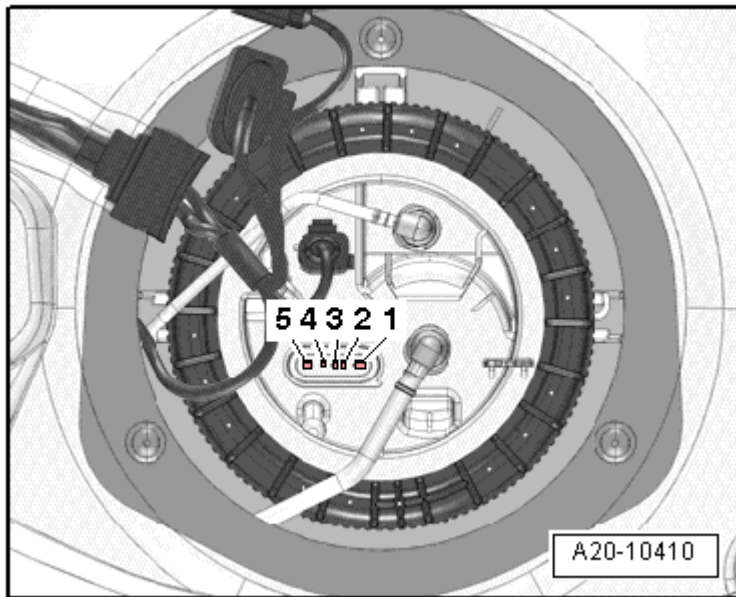


Fig. 71: Connecting Multimeter To Measure Resistance Between Contacts
Courtesy of AUDI OF AMERICA, LLC

Fuel level sensor installed or removed:

- Any sensor position: approximately 340 ohms.

Assemble in reverse order of disassembling. Note the following:

- Install the right locking flange cover. Refer to **Fig. 6**.
- Install the rear bench seat. Refer to **Removal and Installation** .

FUEL LEVEL SENSOR 2 -G169-, CHECKING**Special tools and workshop equipment required**

- Multimeter V.A.G 1526D
- Connector Test Set V.A.G 1594C

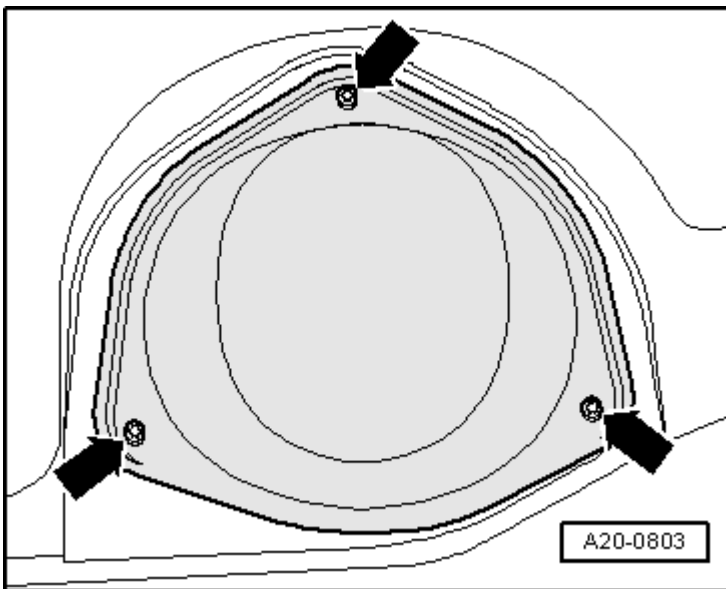
Procedure

Fig. 72: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

NOTE: The electric wires for fuel level sensor 2 are routed to the fuel pump locking flange inside the fuel tank.

- Remove the rear bench seat. Refer to **Removal and Installation** .
- Remove the locking flange cover -arrows-.
- Disconnect the connectors -1 and 2- on the locking flange.

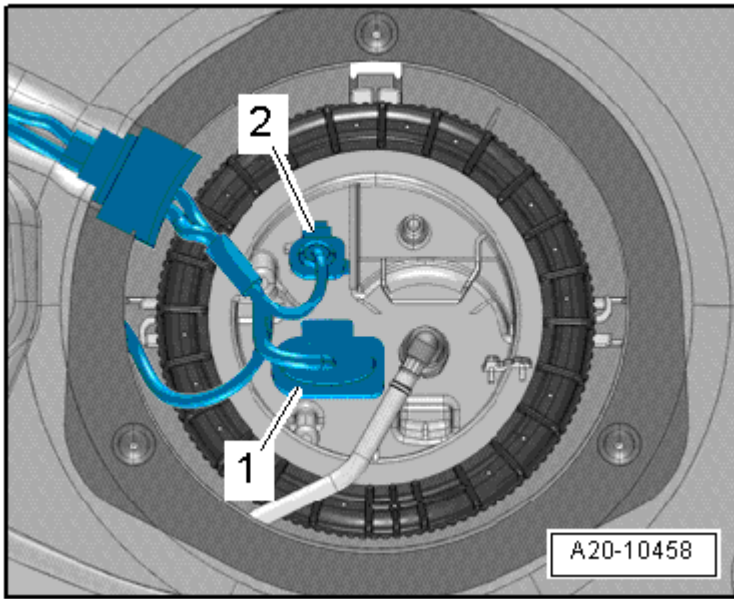


Fig. 73: Disconnecting Connector

Courtesy of AUDI OF AMERICA, LLC

-- Connect the multimeter for the resistance measurement between terminal -2- on the connector -A- and terminal -2- on the connector -B-.

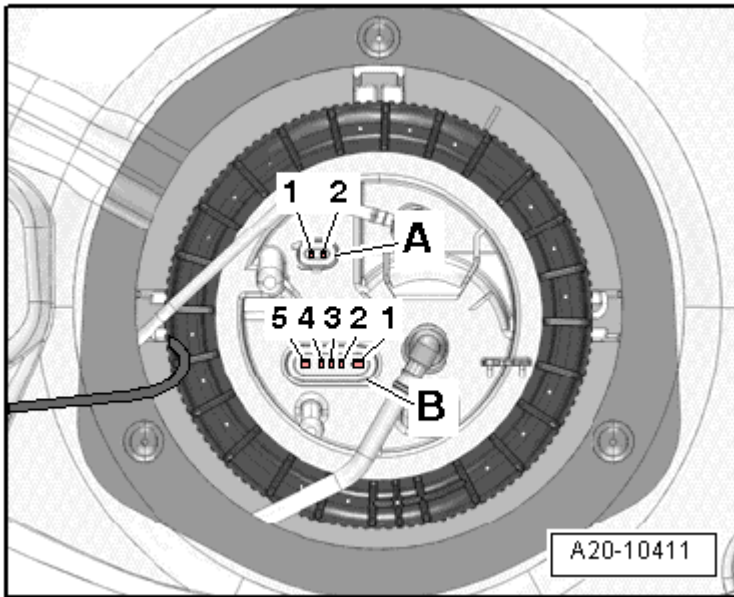


Fig. 74: Connecting Multimeter For Resistance Measurement Between Terminals

Courtesy of AUDI OF AMERICA, LLC

Fuel level sensor 2 installed:

- Sensor at lower stop: approximately 290 ohms.

- Sensor at upper stop: approximately 45 ohms.

NOTE: If measured value is 0 ohms there is a short circuit. If measured value is there is and open circuit in the wiring.

To check resistance values "tank full" or "tank empty", the fuel level sensor 2 must be removed and the sensor floater must be placed in upper or lower end position. Refer to Fuel Level Sensor 2 -G169-

With the fuel level sensor removed, the following values are obtained because of the greater deflection of the floater arm:

Fuel level sensor 2 removed:

- Sensor at lower stop: approximately 290 ohms.
- Sensor at upper stop: approximately 16 ohms.

-- Connect the multimeter between terminals -1 and 2- on connector -A- to measure the resistance.

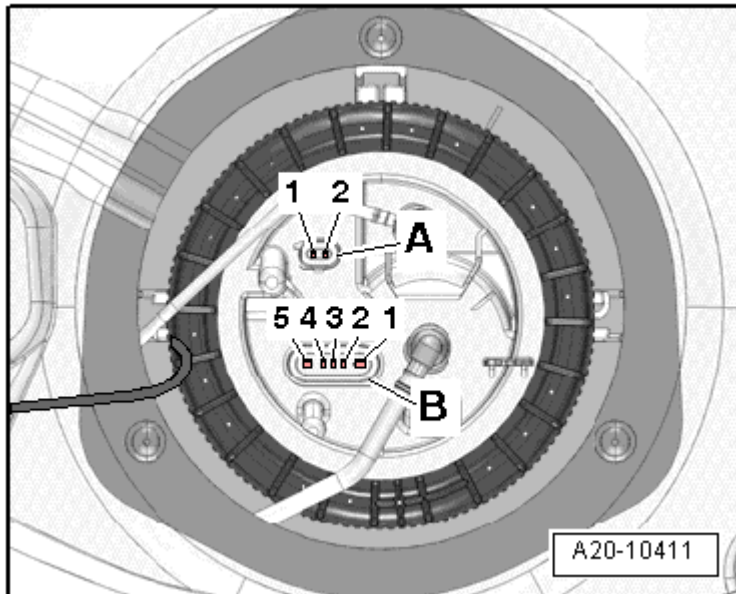


Fig. 75: Connecting Multimeter Between Terminals
Courtesy of AUDI OF AMERICA, LLC

Fuel level sensor 2 installed or removed:

- Any sensor position: approximately 340 ohms.

Assemble in reverse order of disassembling. Note the following:

-- Install the right locking flange cover. Refer to Fig. 6.

-- Install the rear bench seat. Refer to **Removal and Installation** .

LEAK DETECTION TEST, PERFORMING

Special tools and workshop equipment required

- Hose Clamps Up to 25 mm Dia. 3094

Diagnostic leak test occurs in **Guided Fault Finding** see vehicle diagnostic tester.

Checking fuel supply and tank ventilation systems for leaks.

NOTE: The following describes individual areas in the fuel supply and ventilation systems where leaks are possible. After repairing a possible leak, perform a leak test to ensure that the leak was successfully repaired.

-- Turn off the ignition.

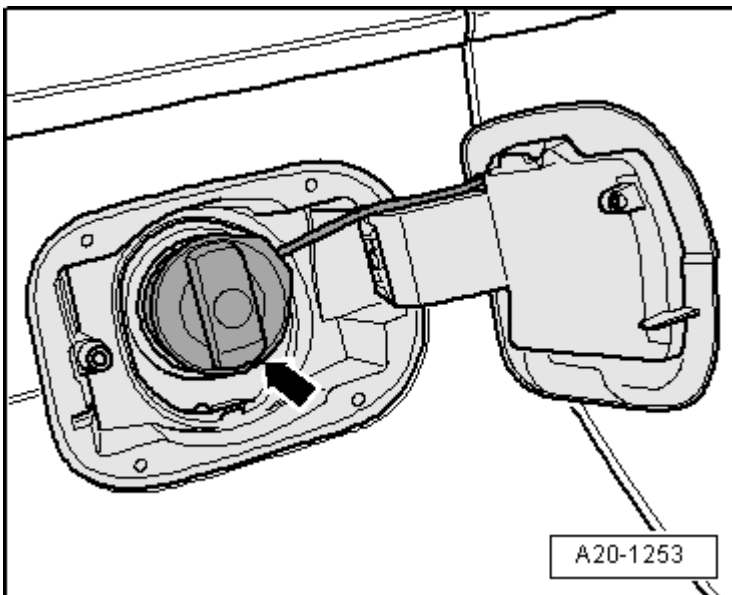


Fig. 76: Removing Fuel Filler Cap From Fuel Filler Tube
Courtesy of AUDI OF AMERICA, LLC

-- Check if the fuel tank locking cap -arrow- was closed completely during the test.

-- Check whether the seal of the fuel filler cap was damaged or crimped. Replace if necessary.

-- Remove the rear bench seat. Refer to **Removal and Installation** .

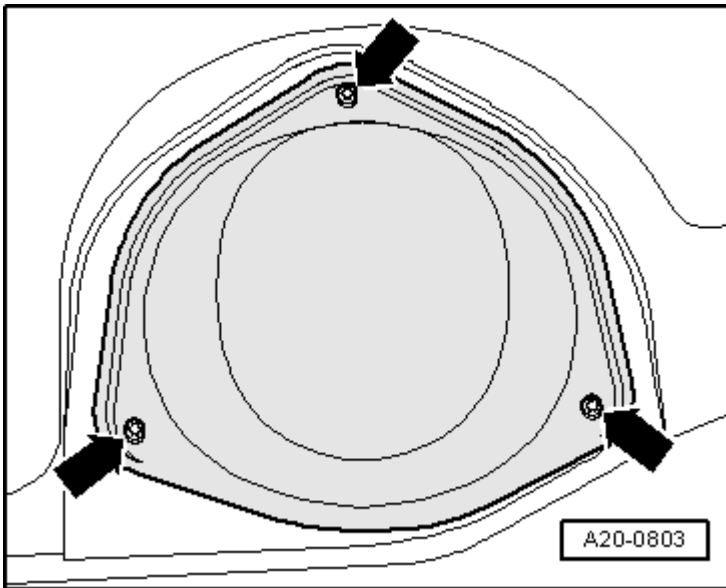


Fig. 77: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

-- Remove the locking flange cover -arrows-.

NOTE: Observe installation notes for locking flanges FUEL DELIVERY UNIT.

-- Check if the sealing rings under the locking flanges are OK or if the locking rings on the locking flange are tightened correctly on the fuel tank. Also check the fuel line connections.

-- Visually check all lines and hose connections on the fuel system and replace leaking lines such as:

- Line from EVAP canister to Evaporative Emission (EVAP) canister purge regulator valve -N80-
- Lines from EVAP canister to Leak Detection Pump (LDP) -V144-.
- Line from fuel tank to EVAP canister (below heat shield for EVAP canister).
- Lines for tank ventilation (beneath right rear wheel housing liner).
- Fuel lines to engine.

NOTE: Leaks at lines and components of tank system can sometimes be located using a nonflammable, environmentally compliant leak detection spray. For this, initiate leak diagnostic several times in sequence to build up pressure in the system. At leaking areas, bubbles will form.

-- Perform a visual inspection on the fuel system components and tank ventilation system:

- Fuel tank
- EVAP canister
- LDP

- EVAP canister purge regulator valve 1

NOTE: Due to the form or function of the components, leaking areas may not always be localized by spraying on leak detection spray. It may be necessary to clamp off the relevant component using 3094 and initiate tank leak detection diagnostic. If the leak is no longer indicated, the component that was clamped off is defective. If clamped off directly at the leak detection pump and a leak is still indicated, the leak detection pump itself is leaking.

REMOVAL AND INSTALLATION

FUEL TANK WITH ATTACHMENTS

Special tools and workshop equipment required

- Engine-/Gearbox Jack V.A.G 1383 A

Removing

-- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.

-- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

CAUTION: Danger of causing damage to other electronic components when disconnecting the battery.

- Complete the steps for disconnecting the battery.

-- Disconnect the battery. Refer to **Removal and Installation** .

WARNING: Risk of accident due to the weight of the fuel tank.

- The fuel tank must be empty when removing it.

-- Drain the fuel tank. Refer to **FUEL TANK, DRAINING**.

-- Remove the rear bench seat. Refer to **Removal and Installation** .

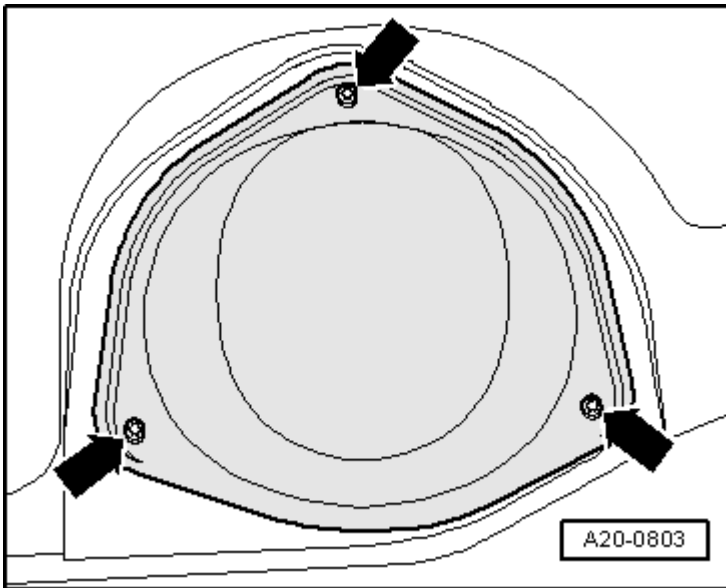


Fig. 78: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

- Remove the locking flange cover -arrows-.
- Disconnect the connectors -1 and 2- on the locking flange.

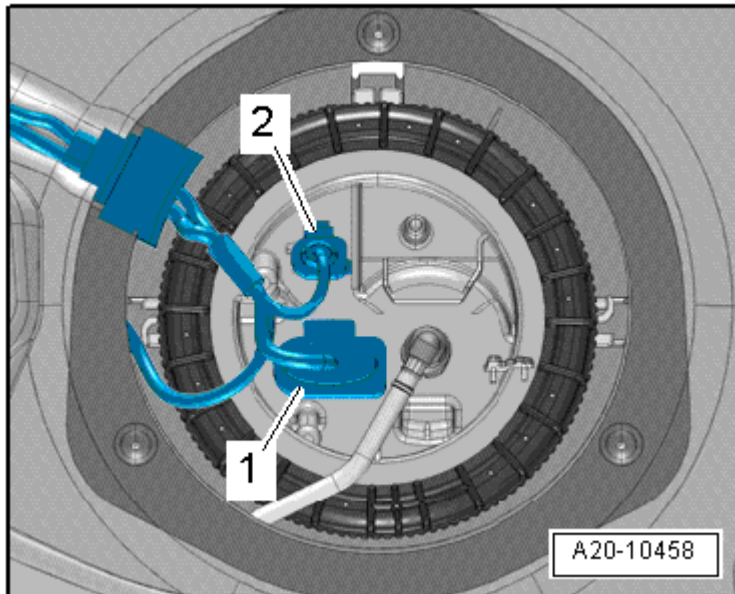


Fig. 79: Disconnecting Connector
Courtesy of AUDI OF AMERICA, LLC

- Open the fuel filler door.

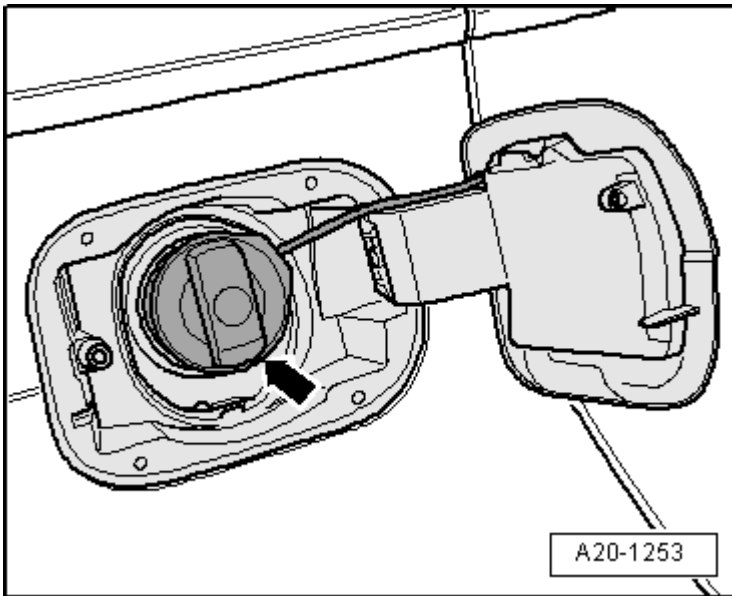


Fig. 80: Removing Fuel Filler Cap From Fuel Filler Tube
Courtesy of AUDI OF AMERICA, LLC

- Clean the area around the fuel filler tube.
- Remove the locking cap -arrow- from the fuel filler tube.

NOTE: To prevent dirt from entering the fuel tank, seal the opening with a clean foam piece.

- Remove the right rear wheel. Refer to **Removal and Installation** .

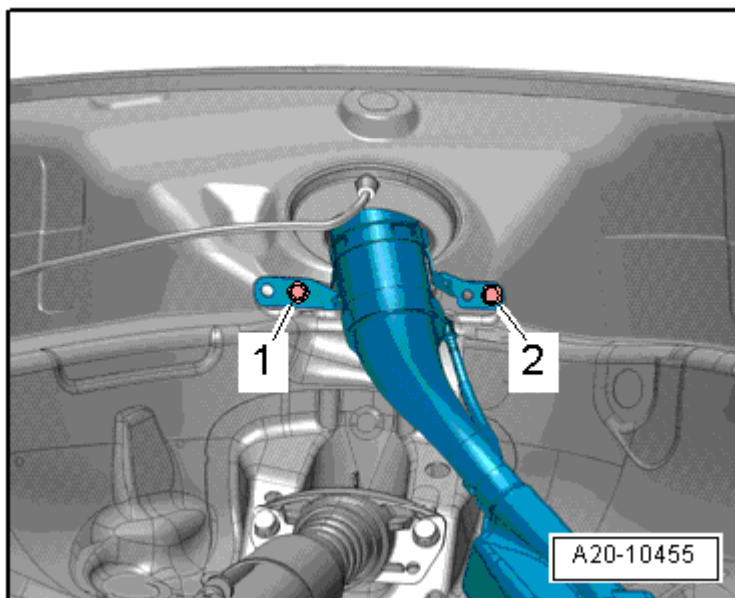


Fig. 81: Fuel Filler Tube Ground (GND) Connection

Courtesy of AUDI OF AMERICA, LLC

-- Remove right rear wheel housing liner. Refer to **Removal and Installation** .

-- Remove fuel filler tube bolts -1 and 2-.

-- Remove the rear section of the exhaust system. Refer to **[For transmission(s) 0AW] [For engine(s) CALA] Description and Operation** or to **[For engine(s) CAEB] Description and Operation** or to **[For engine(s) CCBA] Description and Operation** .

WARNING: Risk of the vehicle tipping on the hoist with the rear axle removed.

- Secure the vehicle on a hoist before loosening the subframe bolts (for example, load the luggage compartment with about 50 kg).

-- Remove the rear axle. Refer to **Removal and Installation** .

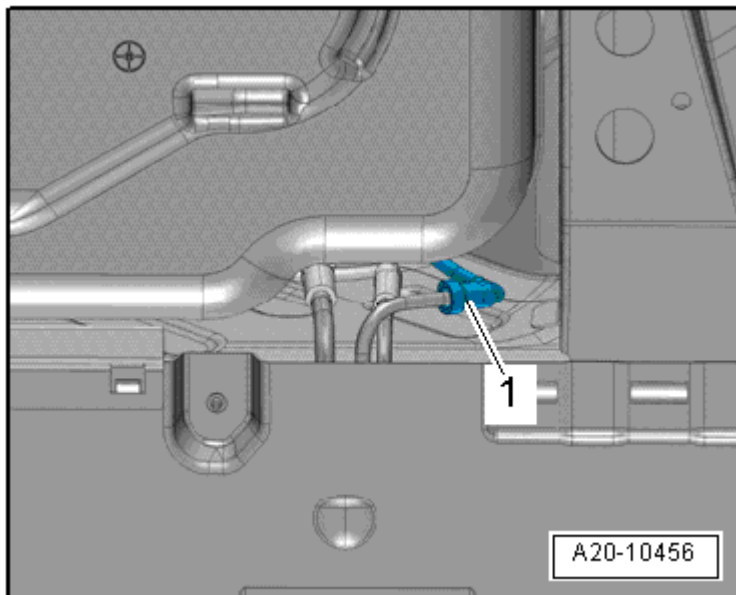


Fig. 82: Identifying Right Front Fuel Line -1-
Courtesy of AUDI OF AMERICA, LLC

WARNING: There is a risk of injury because the fuel is under high pressure.

- To reduce the pressure in the fuel system, lay a clean cloth around the connector and carefully loosen connector.

-- Press the release button and disconnect the right front fuel line -1- from the fuel tank.

-- Disconnect the vent line -1- on the left of the Evaporative Emission (EVAP) canister by pressing the release button.

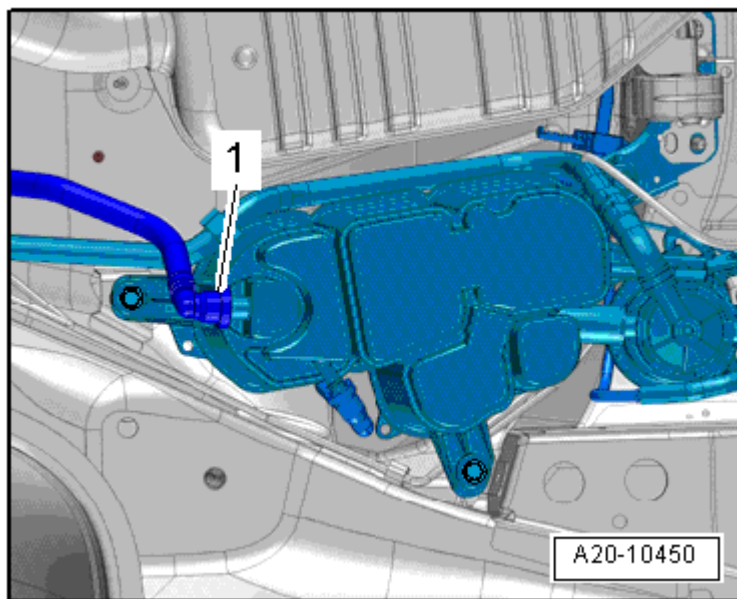


Fig. 83: Disconnecting Vent Line
Courtesy of AUDI OF AMERICA, LLC

-- Place the V.A.G 1383 A under the fuel tank for support.

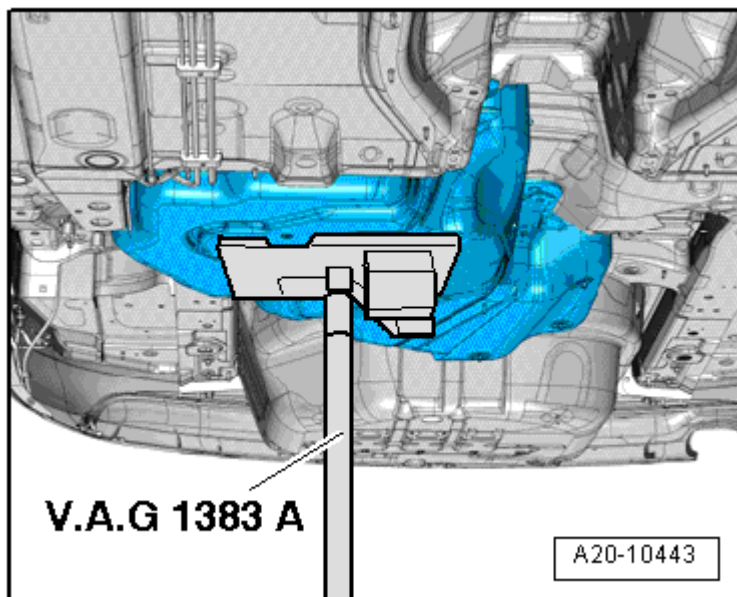


Fig. 84: Supporting Fuel Tank Using V.A.G 1383 A
Courtesy of AUDI OF AMERICA, LLC

-- Support fuel tank using the V.A.G 1383 A.

WARNING: Risk of accident due to the weight of the fuel tank.

- The fuel tank must be empty when removing it.

-- Remove bolts -1 through 5- and remove the accessory assembly bracket -6-.

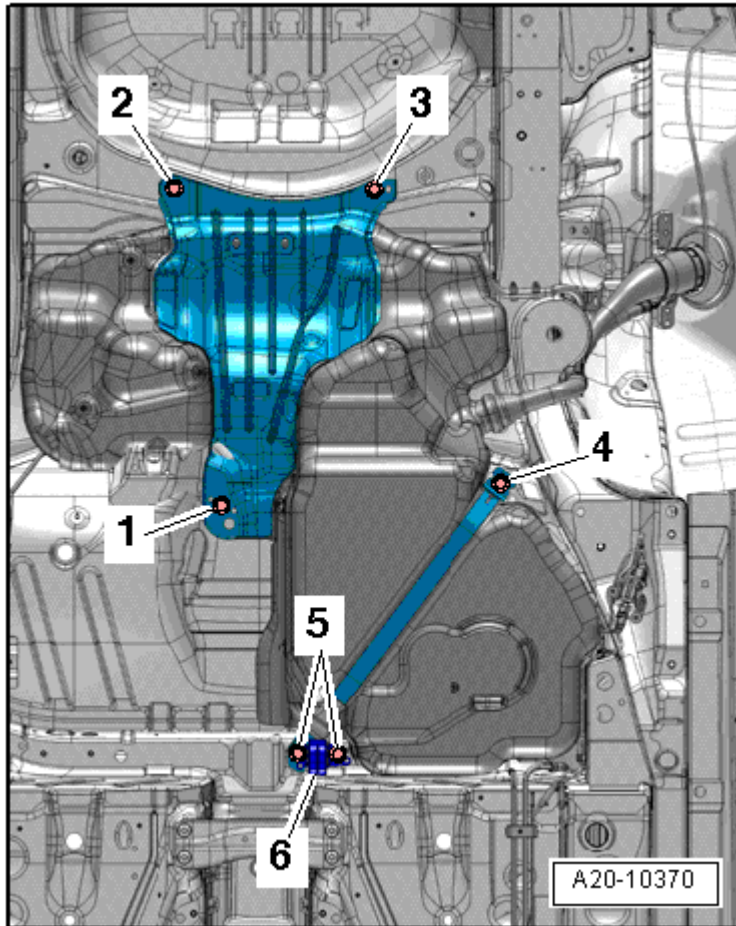


Fig. 85: Removing Bolts And Remove Accessory Assembly Bracket
 Courtesy of AUDI OF AMERICA, LLC

-- Lower the fuel tank with the V.A.G 1383 A while guiding it by hand.

Installing

- Tightening specification, refer to **FUEL TANK WITH ATTACHMENTS OVERVIEW**.

Install in reverse order of removal. Note the following:

-- Make sure the fuel and vent lines are clipped to the fuel tank properly.

-- Position the fuel tank with the mounting strap and carrier plate on the vehicle underbody using the V.A.G 1383 A.

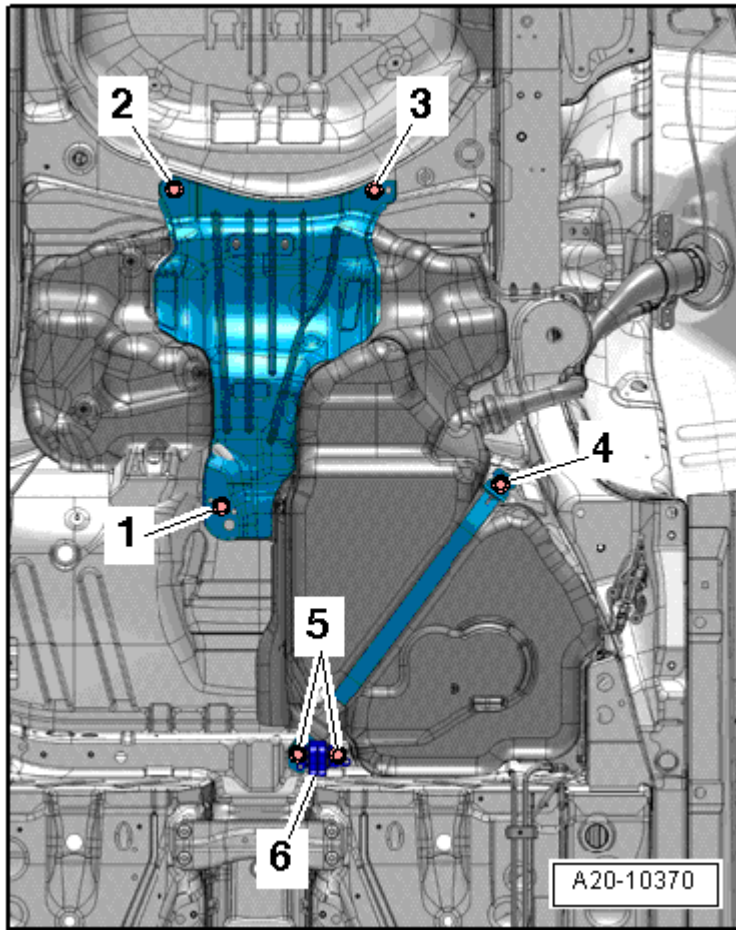


Fig. 86: Removing Bolts And Remove Accessory Assembly Bracket

Courtesy of AUDI OF AMERICA, LLC

- Make sure the fuel tank is positioned so that the filler tube can be guided into the opening of the body correctly.
- Install the exhaust system bracket -6- and tighten the mounting strap and carrier plate bolts -1 through 5-.
- Make sure the filler tube threaded connections -1 and 2- are free of corrosion so the ground connection to the body is not affected.

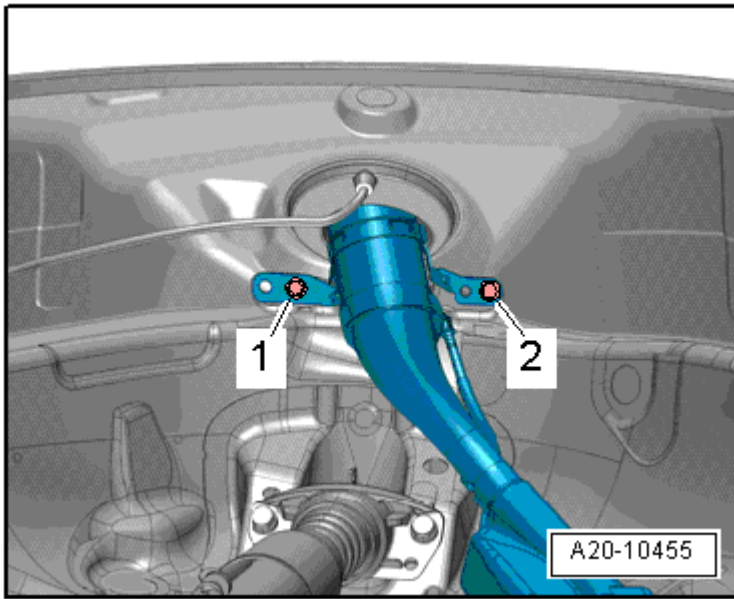


Fig. 87: Fuel Filler Tube Ground (GND) Connection
Courtesy of AUDI OF AMERICA, LLC

-- Tighten the fuel filler tube bolts -1 and 2-.

WARNING: Risk of explosion due to electrostatic charge.

- After installing, check electrical connection on the fuel filler neck metal ring to an empty spot on the body using an Ohm meter.
- Specified value: approximately 0 ohms.

-- Install the rear axle. Refer to Removal and Installation .

-- Install the rear section of the exhaust system. Refer to [For transmission(s) 0AW] [For engine(s) CALA] Description and Operation or to [For engine(s) CAEB] Description and Operation or to [For engine(s) CCBA] Description and Operation .

-- Install the right rear wheel housing liner. Refer to Removal and Installation .

-- Mount the rear wheel. Refer to Removal and Installation .

-- Install the right locking flange cover. Refer to Fig. 6.

-- Install the rear bench seat. Refer to Removal and Installation .

-- Connect the battery. Be sure to read the procedures after connecting the battery. Refer to Removal and Installation .

FUEL PUMP CONTROL MODULE -J538-

Special tools and workshop equipment required

- Fuel Tank Sender Unit Tool T40068 A

Removing

- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.
- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

WARNING: Danger due to escaping fuel.

- To prevent large quantities of fuel from draining from the Fuel Pump (FP) control module when removing, the fuel tank may only be a maximum of $\frac{1}{4}$ full.

- Empty the fuel tank if necessary. Refer to **FUEL TANK, DRAINING**.
- Move the passenger seat all the way forward if necessary.

CAUTION: Danger of causing damage to other electronic components when disconnecting the battery.

- Complete the steps for disconnecting the battery.

- Disconnect the battery. Refer to **Removal and Installation** .
- Remove the rear bench seat. Refer to **Removal and Installation** .

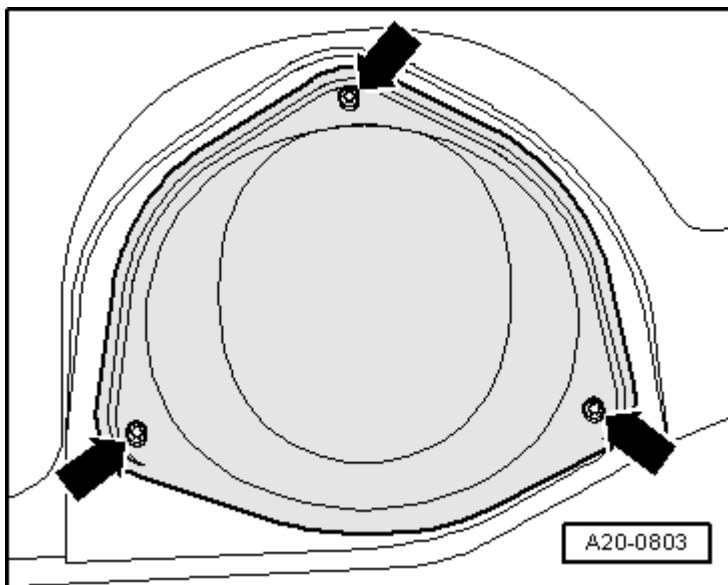


Fig. 88: Removing Cover Bolts For Locking Flange

Courtesy of AUDI OF AMERICA, LLC

- Remove the locking flange cover -arrows-.
- Disconnect the connectors -1 and 2- on the locking flange.

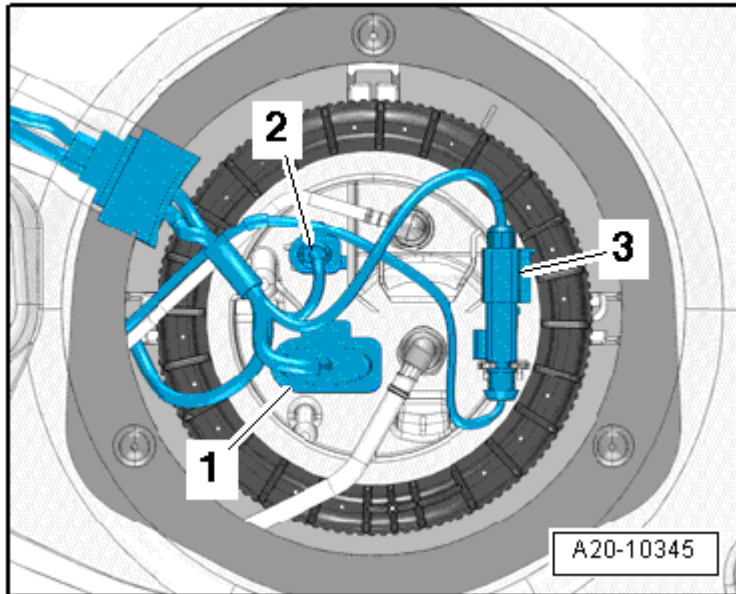


Fig. 89: Disconnecting Connectors

Courtesy of AUDI OF AMERICA, LLC

- If necessary, disengage the electrical connector -3- to the auxiliary heater metering pump at the locking flange and lay it aside.

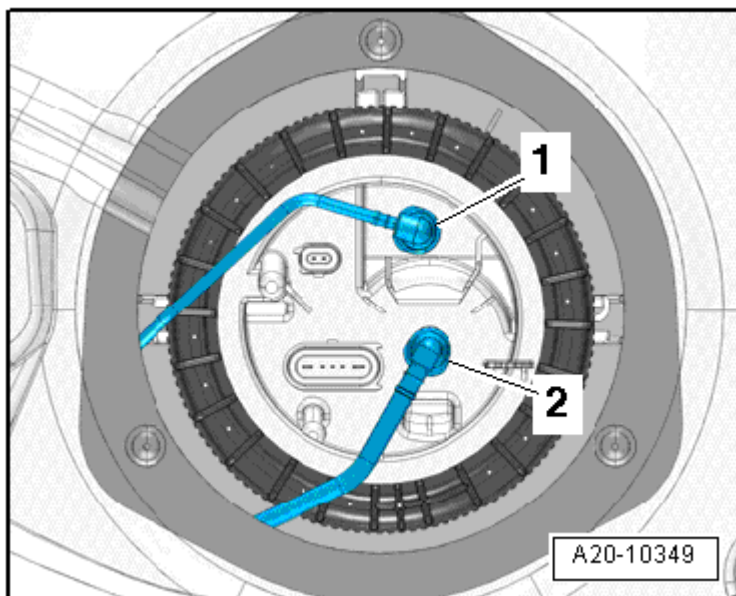


Fig. 90: Disconnecting Connectors

Courtesy of AUDI OF AMERICA, LLC

WARNING: There is a risk of injury because the fuel is under high pressure.

- To reduce pressure in the fuel system, lay a clean cloth around the connector and carefully loosen connector.

-- Disconnect the fuel line -2- at the locking flange by pressing the release button.

-- If necessary, disconnect the fuel line -1- to the auxiliary heater metering pump at the locking flange by pressing the release button.

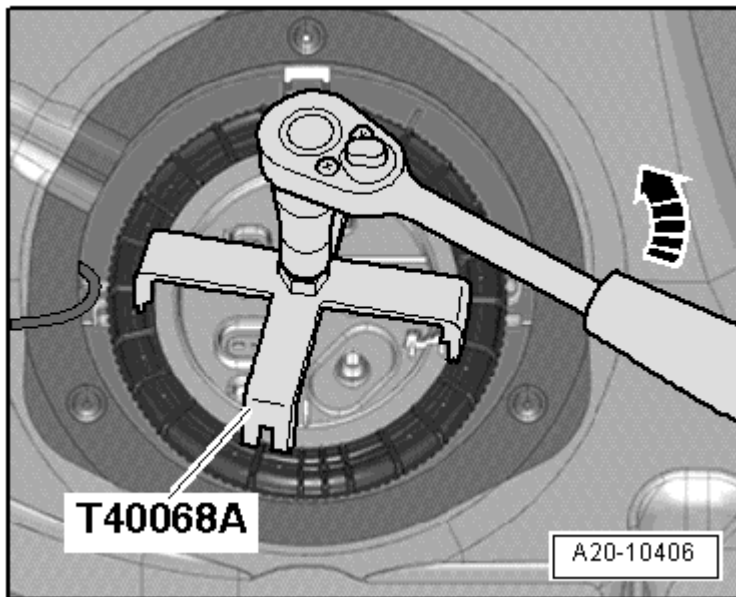


Fig. 91: Removing Union Nut With T40068
Courtesy of AUDI OF AMERICA, LLC

WARNING: Danger due to escaping fuel.

- To prevent large quantities of fuel from leaking out of the locking flange when removing, the fuel tank may only be a maximum of $\frac{1}{4}$ full.

-- Use a T40068 A to remove the union nut -arrow-.

NOTE: The plastic catch on the threaded ring breaks off when the union nut is loosened.

-- Cover the fuel tank opening with a clean cardboard box -1- to prevent dirt from falling into it.

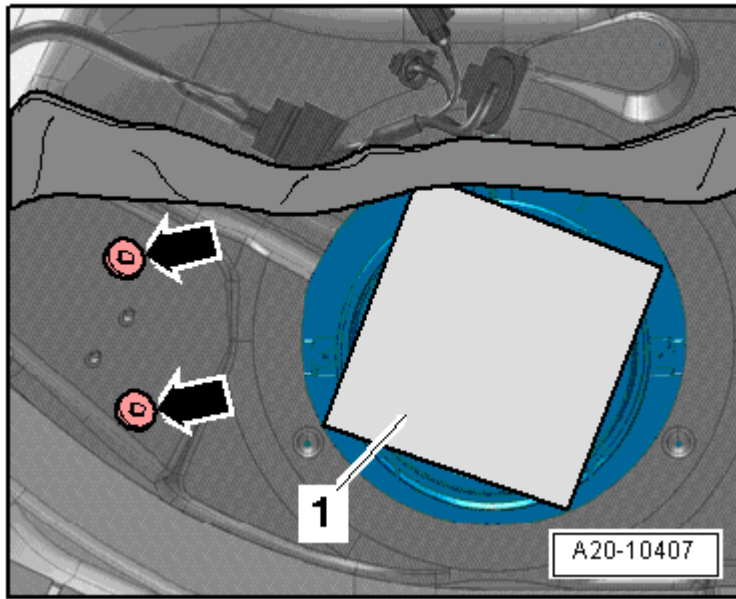


Fig. 92: Covering Fuel Tank Opening With A Clean Cardboard Box
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows-.

-- Pull the FP control module -1- in between the fuel tank and vehicle underbody.

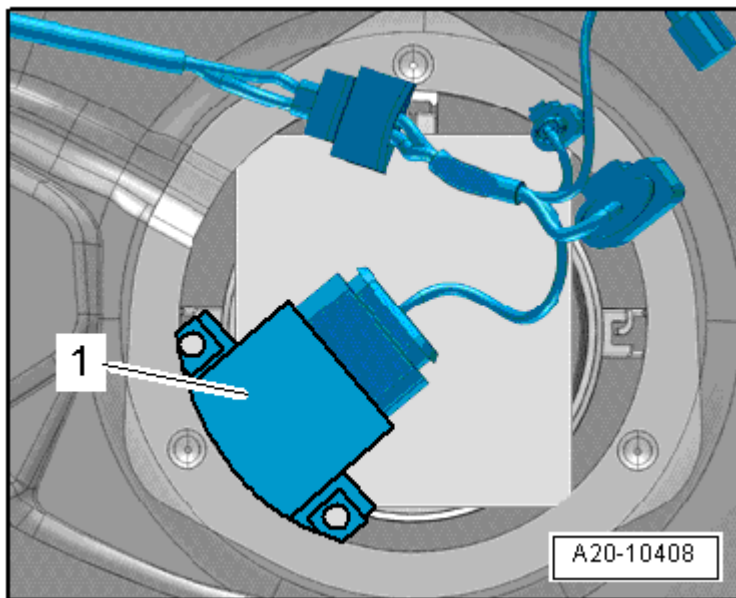


Fig. 93: Fuel Pump (FP) Control Module -J538- -1-
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the connector and remove the fuel pump control module.

Installing

- Tightening specification, refer to **FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR OVERVIEW**.

Install in reverse order of removal. Note the following:

NOTE: **Replace the sealing ring and the union nut.**

-- Bring the FP control module into the installation position and tighten it.

-- Place the union nut -1- on your left arm and push the locking flange -2- forcefully into installation position with your left hand -arrow-.

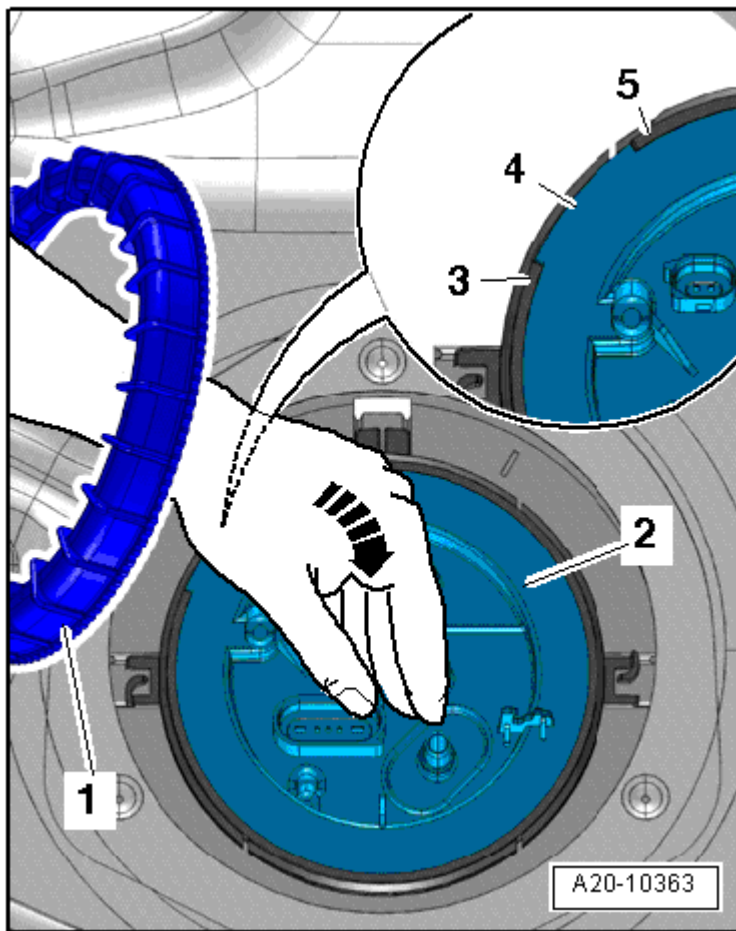


Fig. 94: Placing Union Nut On Your Left Arm And Push Locking Flange Forcefully Into Installation Position With Your Left Hand

Courtesy of AUDI OF AMERICA, LLC

- The tab -4- on the locking flange must be between the tabs -3 and 5- on threaded ring.

-- Slide the union nut -1- off your left arm using your right hand while your left hand keeps holding the locking flange -2- down firmly -arrow-.

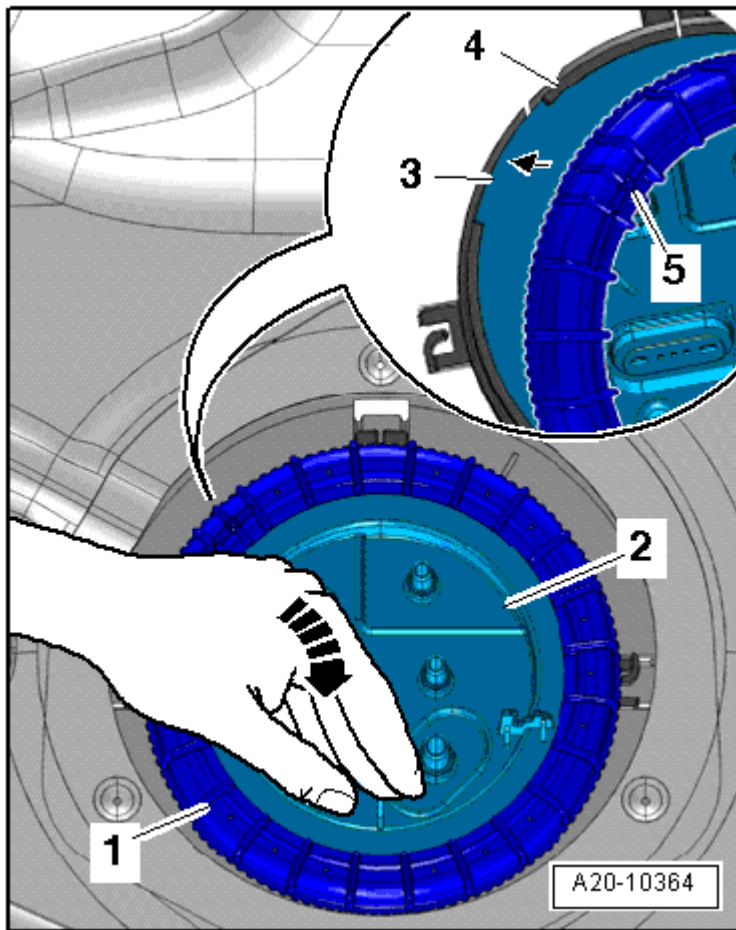


Fig. 95: Sliding Union Nut Off Your Left Arm Using Your Right Hand While Your Left Hand Keeps Holding Locking Flange Down Firmly
Courtesy of AUDI OF AMERICA, LLC

-- Position the union nut -1- with your right hand so the double ridge -5- on the ribs is over the lug -3- on the locking flange (approximately "10 o'clock" position). This makes sure the union nut engages at the beginning of the threads immediately when tightening it -4-.

-- Press the locking flange down firmly -arrow-.

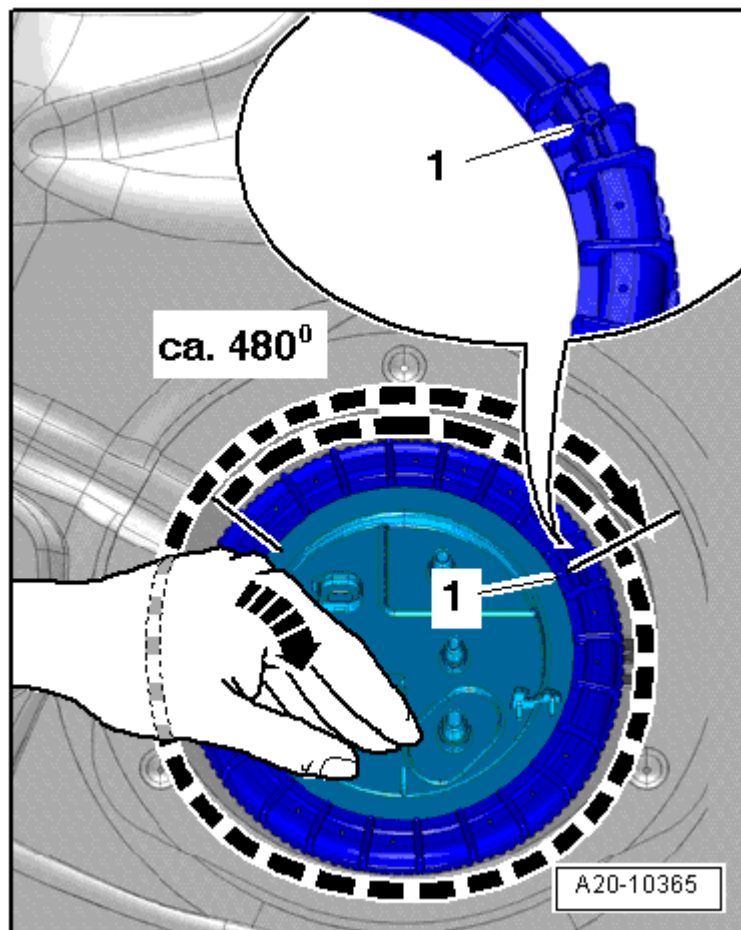


Fig. 96: Turning Union Nut Approximately 480° With Your Right Hand Until Double Ridge Is In Approximately "2 O'clock Position"

Courtesy of AUDI OF AMERICA, LLC

-- Turn the union nut approximately 480° with your right hand until the double ridge -1- is in approximately "2 o'clock position" while keeping the locking flange pressed down firmly with your left hand.

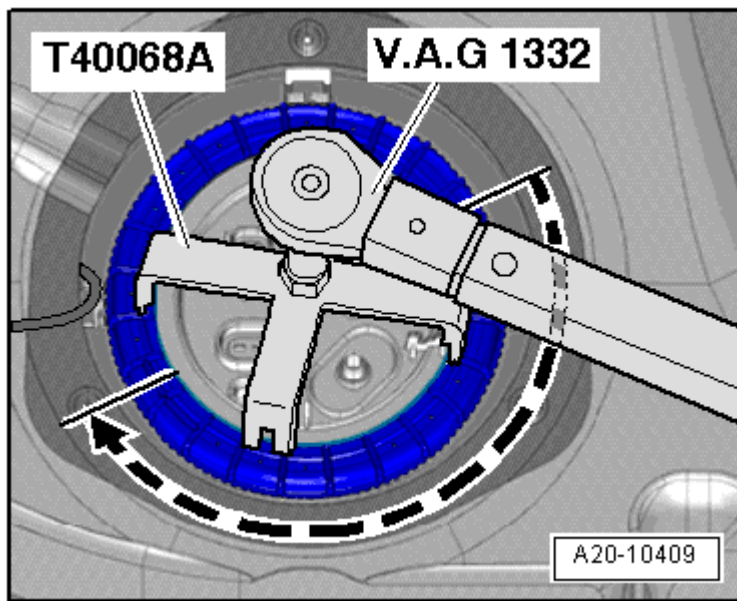


Fig. 97: Pressing Locking Flange Down Firmly When Tightening Union Nut So It Does Not Rotate Too
Courtesy of AUDI OF AMERICA, LLC

CAUTION: There Is A Risk Of Locking Flange Threaded Connection Leaking

- Press the locking flange down firmly when tightening the union nut so it does not rotate too.

-- Tighten the union nut using T40068 A.

- Verification: The double ridge -1- must now be between "7 and 8 o'clock".

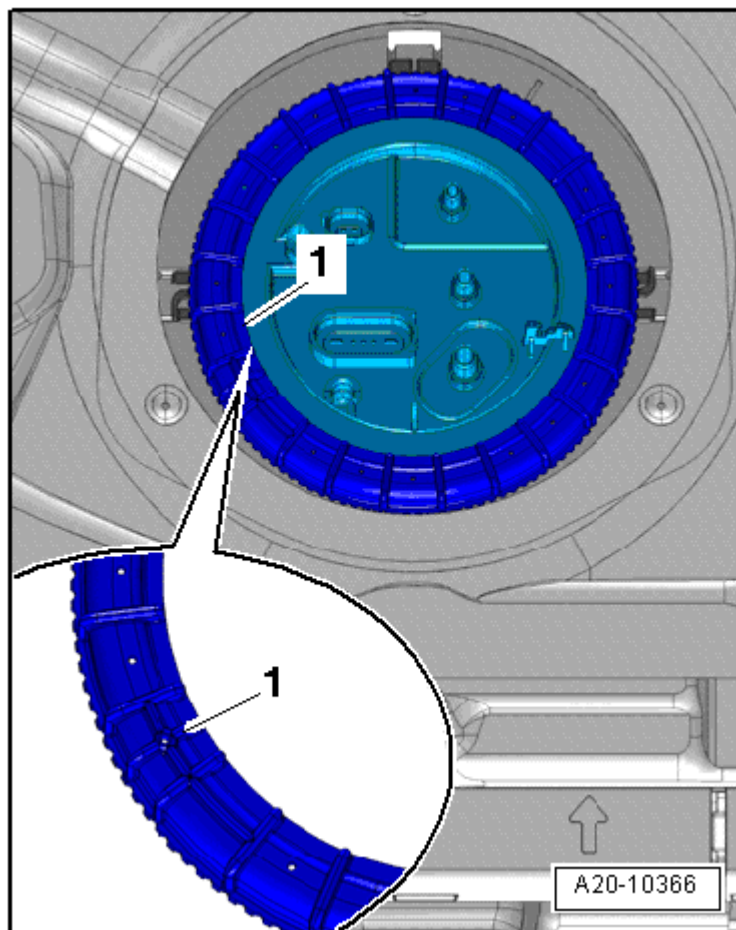


Fig. 98: Double Ridge -1- Must Now Be Between "7 And 8 O'clock"
Courtesy of AUDI OF AMERICA, LLC

-- Connect fuel lines -1 and 2--.

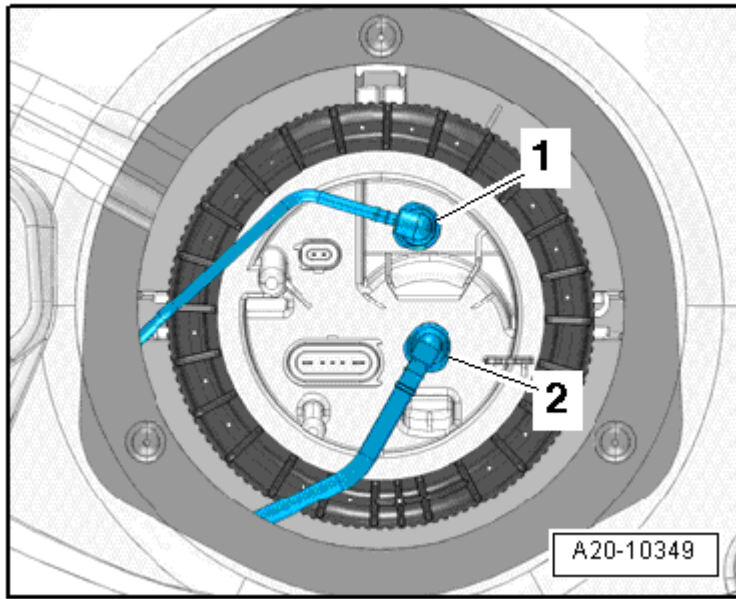


Fig. 99: Connecting Fuel Lines -1 And 2-
Courtesy of AUDI OF AMERICA, LLC

- Connect the connectors.
- Install the right locking flange cover. Refer to **Fig. 6**.
- Install the rear bench seat. Refer to **Removal and Installation** .
- Connect the battery. Be sure to read the procedures after connecting the battery. Refer to **Removal and Installation** .

FUEL DELIVERY UNIT

Special tools and workshop equipment required

- Fuel Tank Sender Unit Tool T40068 A

REMOVING

- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.
- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

WARNING: Danger due to escaping fuel.

- To prevent large quantities of fuel from leaking from the fuel delivery unit when removing, the fuel tank may only be a maximum of $\frac{1}{4}$ full.

-- Empty the fuel tank if necessary. Refer to **FUEL TANK, DRAINING**.

-- Move the passenger seat all the way forward if necessary.

CAUTION: Danger of causing damage to other electronic components when disconnecting the battery.

- Complete the steps for disconnecting the battery.

-- Disconnect the battery. Refer to **Removal and Installation** .

-- Remove the rear bench seat. Refer to **Removal and Installation** .

-- Remove the locking flange cover -arrows-.

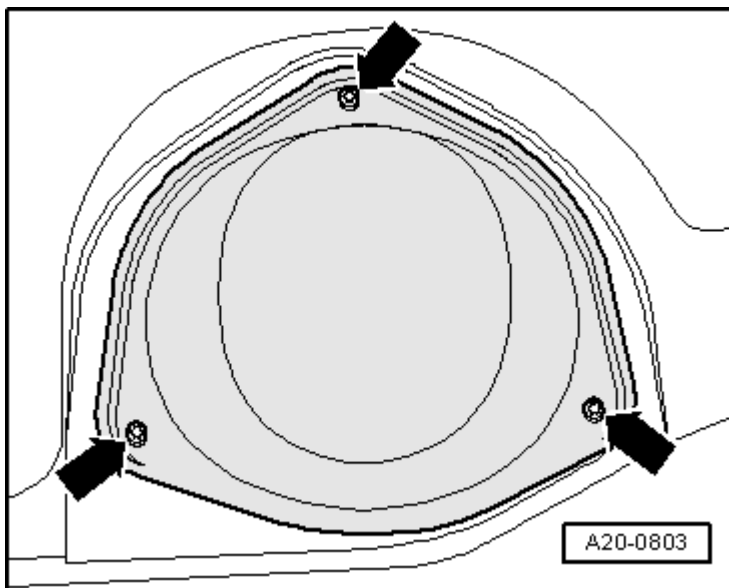
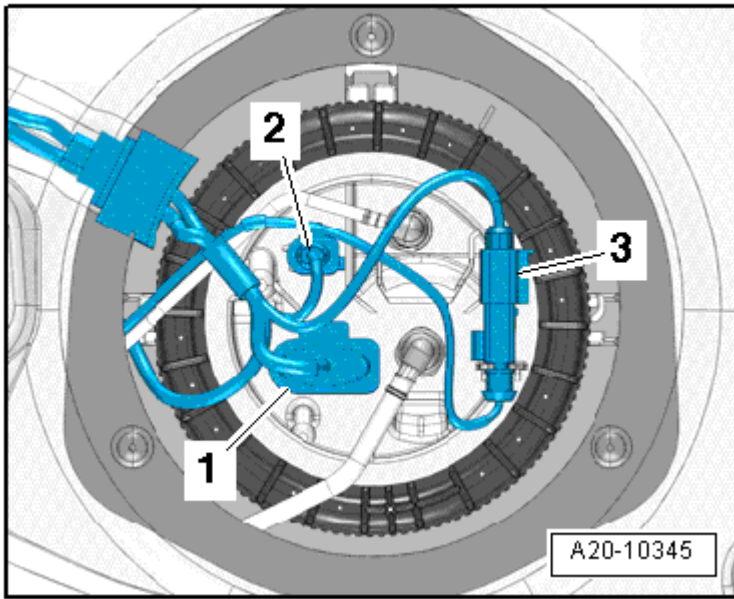


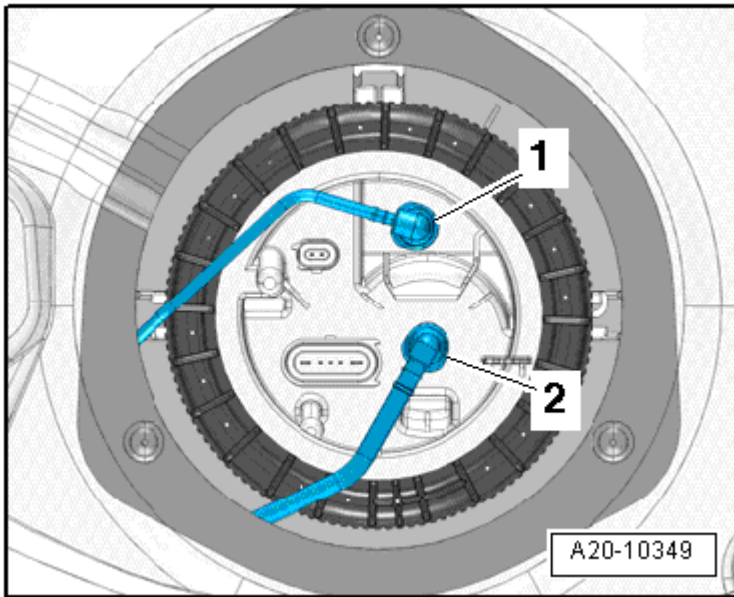
Fig. 100: Removing Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the connectors -1 and 2- on the locking flange.

**Fig. 101: Disconnecting Connectors**

Courtesy of AUDI OF AMERICA, LLC

-- If necessary, disengage the electrical connector -3- to the auxiliary heater metering pump at the locking flange and lay it aside.

**Fig. 102: Identifying Fuel Lines**

Courtesy of AUDI OF AMERICA, LLC

WARNING: There is a risk of injury because the fuel is under high pressure.

- To reduce the pressure in the fuel system, lay a clean cloth around

the connector and carefully loosen connector.

-- Disconnect the fuel line -2- at the locking flange by pressing the release button.

-- If necessary, disconnect the fuel line -1- to the auxiliary heater metering pump at the locking flange by pressing the release button.

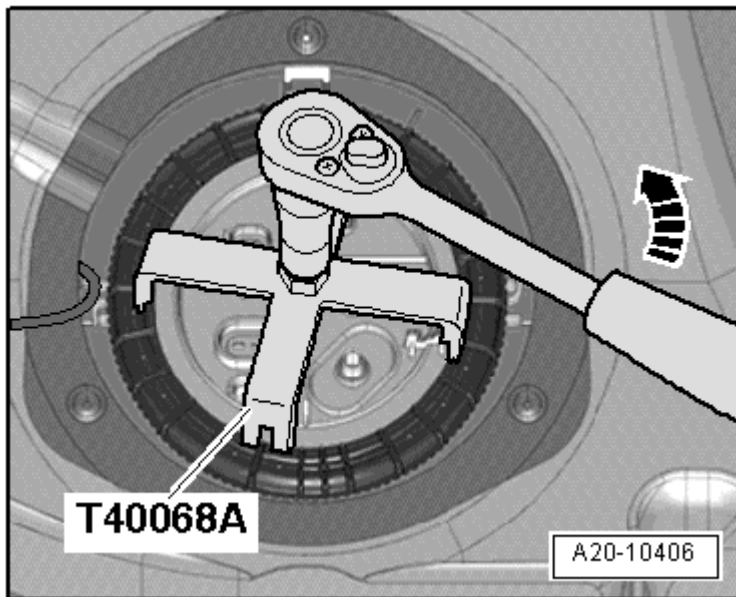


Fig. 103: Removing Union Nut With T40068

Courtesy of AUDI OF AMERICA, LLC

WARNING: Danger due to escaping fuel.

- To prevent large quantities of fuel from leaking from the fuel delivery unit when removing, the fuel tank may only be a maximum of $\frac{1}{4}$ full.

-- Use a T40068 A to remove the union nut -arrow-.

NOTE: The plastic catch on the threaded ring breaks off when the union nut is loosened.

-- Remove the locking flange -2- with fuel filter from the fuel tank and tip it slightly to the left side of the vehicle.

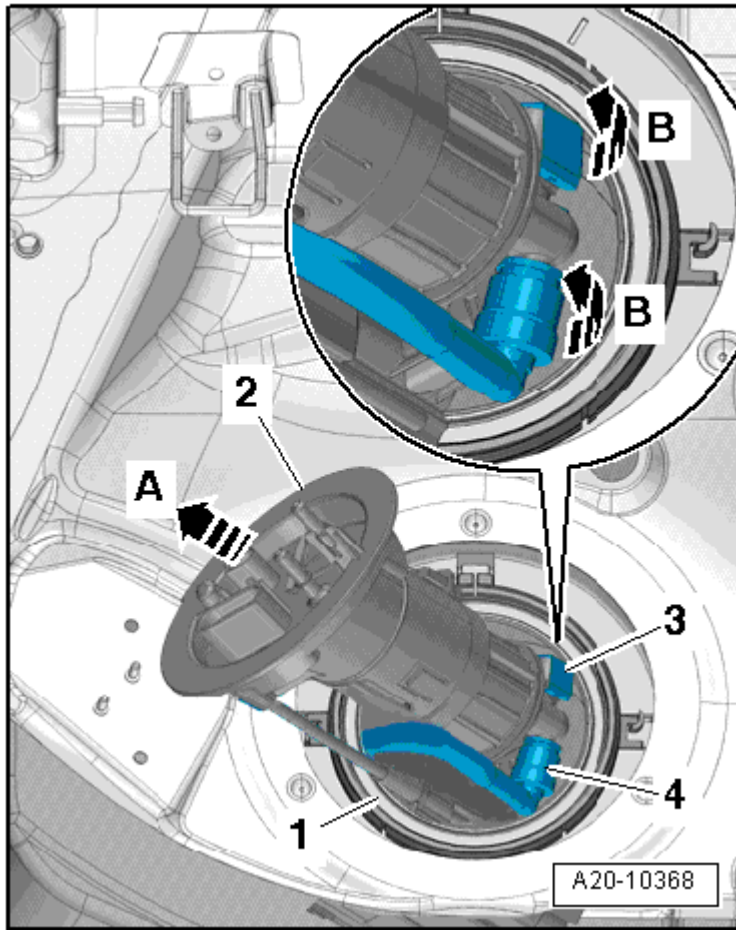


Fig. 104: With Fuel Filter From Fuel Tank Tip It Slightly To Left Side Of Vehicle
 Courtesy of AUDI OF AMERICA, LLC

-- Remove the seal -1-.

-- Pull the locking flange with fuel filter away from the fuel delivery unit slightly -arrow A-.

-- At the same time, tilt the locking flange with the fuel filter out of the fuel tank -B arrows-, being especially careful of the retaining plate with the ground connection -3- and the fuel line -4-.

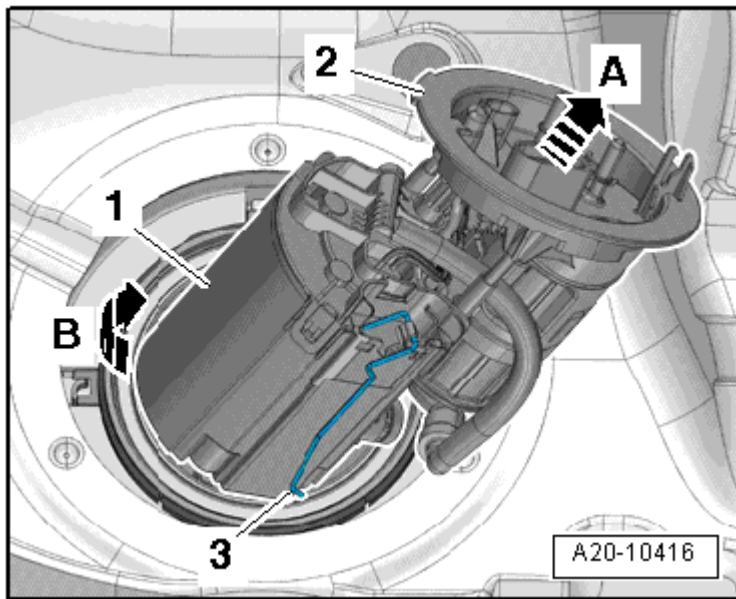


Fig. 105: Pulling Locking Flange -2- With Fuel Filter Away From Fuel Delivery Unit -1- Slightly Again - Arrow A-

Courtesy of AUDI OF AMERICA, LLC

WARNING: There is a risk of fuel leaking out from the filled fuel delivery unit.

- Lay cloths below to catch the leaking fuel.

-- Pull the locking flange -2- with the fuel filter away from the fuel delivery unit -1- slightly again -arrow A-.

-- Tilt the fuel delivery unit to the left side of the vehicle -arrow B- and pull it out of the fuel tank slightly.

NOTE: When removing fuel delivery unit, be sure not to bend floater arm on the fuel level sensor -G-.

-- Remove the fuel level sensor -3- from the fuel tank opening.

-- Remove the suction line -3- by pressing the release -1-.

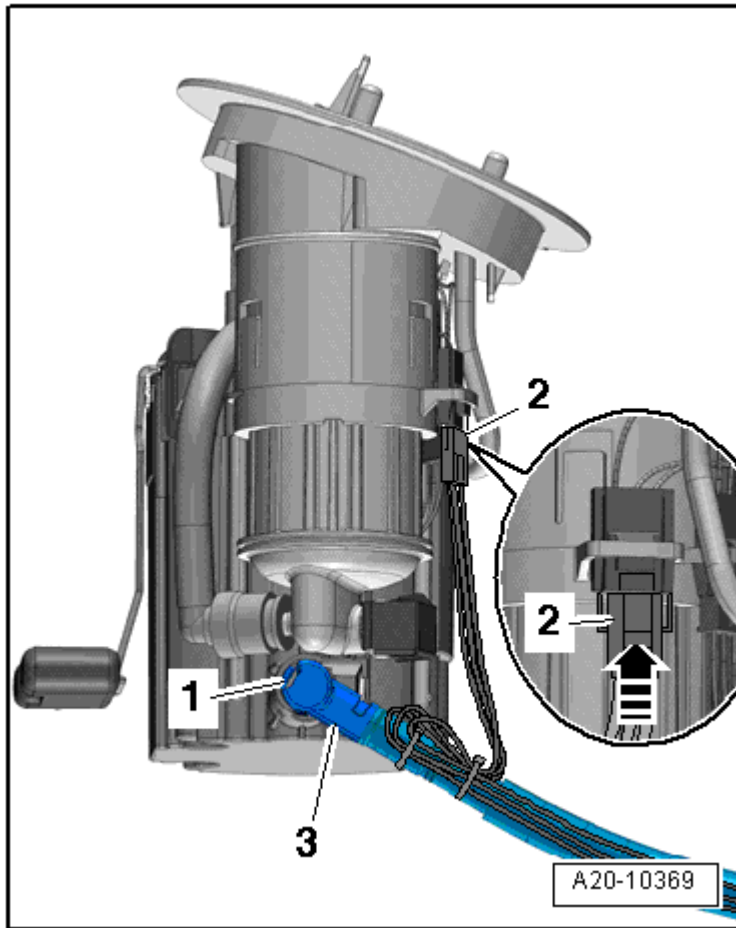


Fig. 106: Removing Suction Line By Pressing Release
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the connector -2- for the fuel level sensor 2 -G169- by pressing the release -arrow-.

NOTE: The illustration shows the fuel delivery unit with the fuel tank.

INSTALLING

- Tightening specification, refer to **FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR OVERVIEW**.

Install in reverse order of removal. Note the following:

NOTE: Replace the sealing ring and the union nut.

When inserting the fuel delivery unit, do not bend the floater arm on the fuel level sensor.

Make sure the fuel hoses are secure.

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Guide the suction line -3- out of the fuel tank and connect it until it engages audibly.
- Connect the electrical connector -2- for the fuel level sensor 2.
- Make sure the ground wire -arrow- is connected securely to the fuel pressure regulator retaining plate.

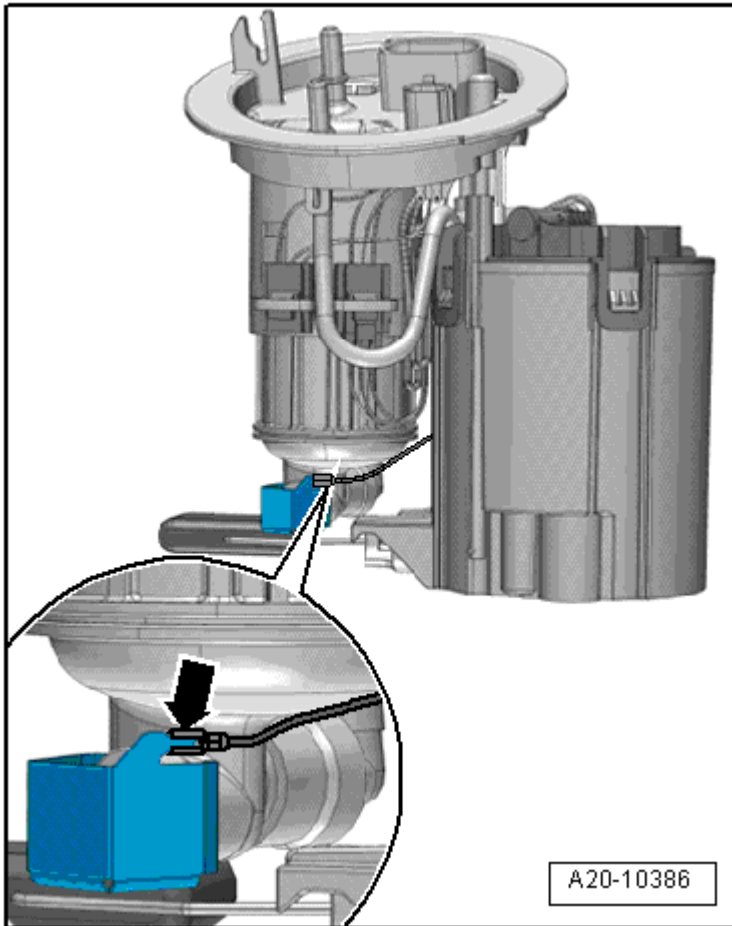


Fig. 107: Identifying Ground Wire Is Connected Securely To Fuel Pressure Regulator Retaining Plate
Courtesy of AUDI OF AMERICA, LLC

- Insert the fuel level sensor -3- in the fuel tank.

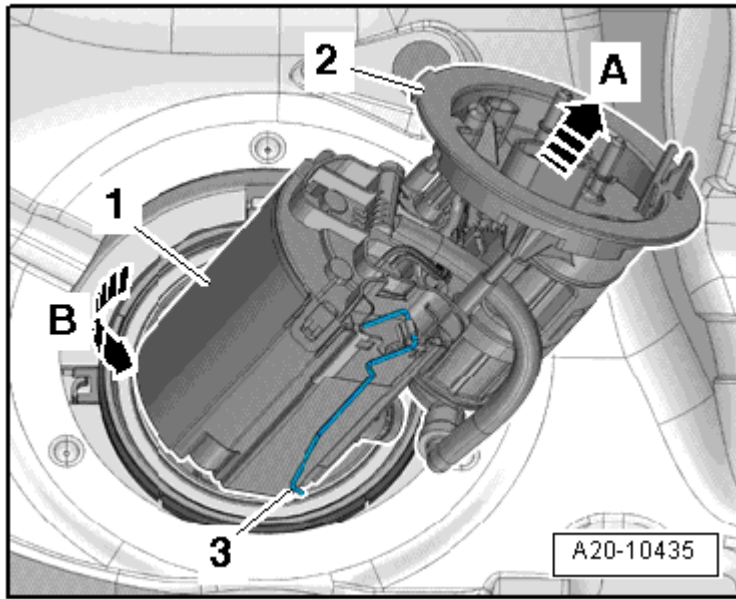


Fig. 108: Inserting Fuel Level Sensor In Fuel Tank
Courtesy of AUDI OF AMERICA, LLC

- Pull the locking flange -2- with the fuel filter away from the fuel delivery unit -1- slightly again -arrow A-.
- Bend the fuel delivery unit to the left side of the vehicle and tilt it into the fuel tank -arrow B- while being careful of the fuel level sensor -3-.
- Pull the locking flange -2- with the fuel filter away from the fuel delivery unit slightly -arrow A-.

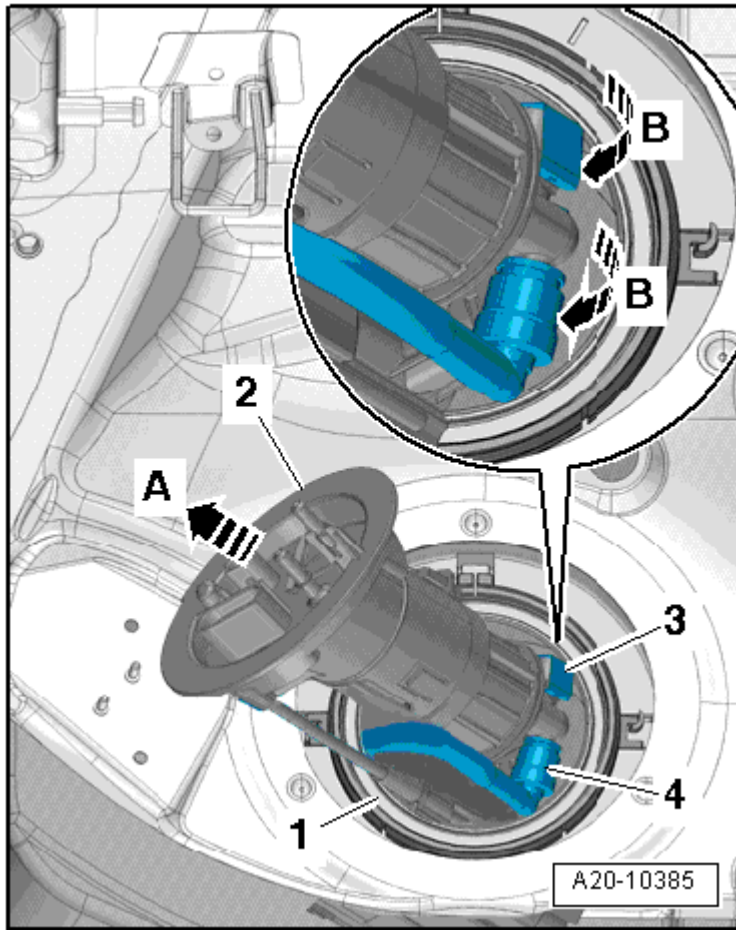


Fig. 109: Tilt Locking Flange With Fuel Filter Into Fuel Tank
 Courtesy of AUDI OF AMERICA, LLC

-- At the same time, tilt the locking flange with the fuel filter into the fuel tank -B arrows-, being especially careful of the retaining plate with the ground connection -3- and the fuel line -4-.

-- Stretch the new sealing ring -1- over the locking flange and insert it in the groove on the fuel tank.

-- Place the union nut -1- on your left arm and push the locking flange -2- forcefully into installation position with your left hand -arrow-.

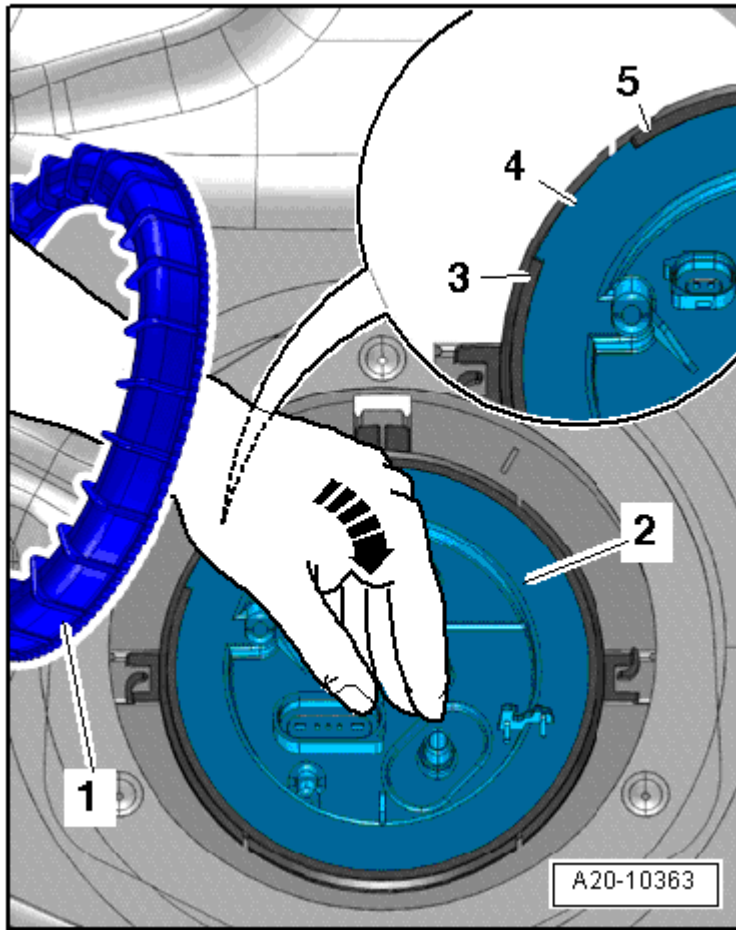


Fig. 110: Placing Union Nut On Your Left Arm And Push Locking Flange Forcefully Into Installation Position With Your Left Hand

Courtesy of AUDI OF AMERICA, LLC

- The tab -4- on the locking flange must be between the tabs -3 and 5- on the threaded ring.

-- Slide the union nut -1- off your left arm using your right hand while your left hand keeps holding the locking flange -2- down firmly -arrow-.

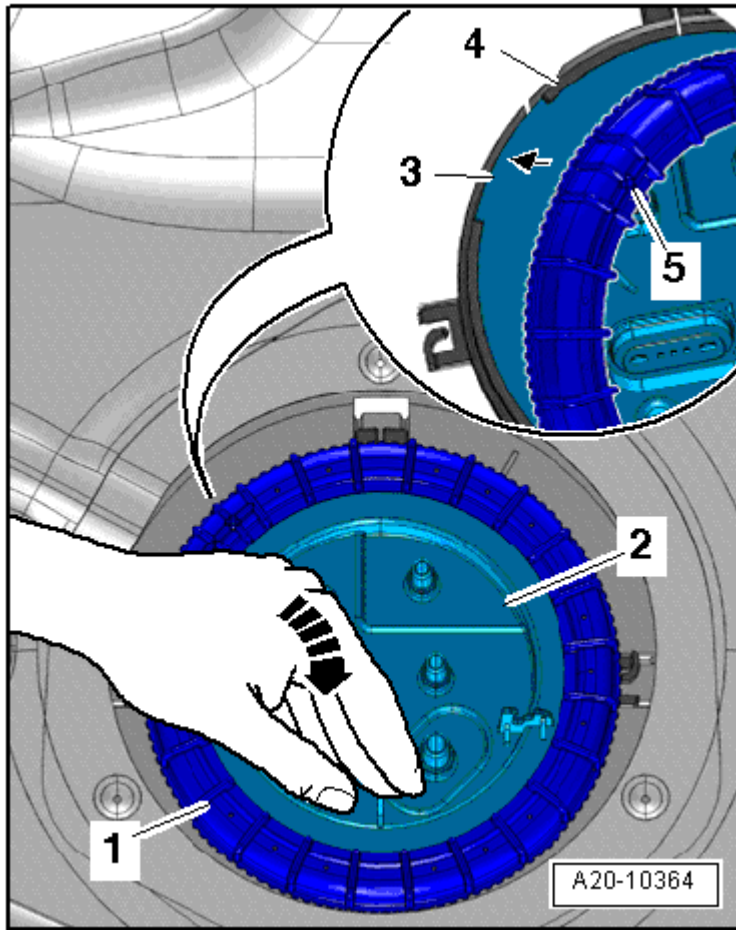


Fig. 111: Sliding Union Nut Off Your Left Arm Using Your Right Hand While Your Left Hand Keeps Holding Locking Flange Down Firmly

Courtesy of AUDI OF AMERICA, LLC

-- Position the union nut -1- with your right hand so the double ridge -5- on the ribs is over the lug -3- on the locking flange (approximately "10 o'clock" position). This makes sure the union nut engages at the beginning of the threads immediately when tightening it -4-.

-- Press the locking flange down firmly -arrow-.

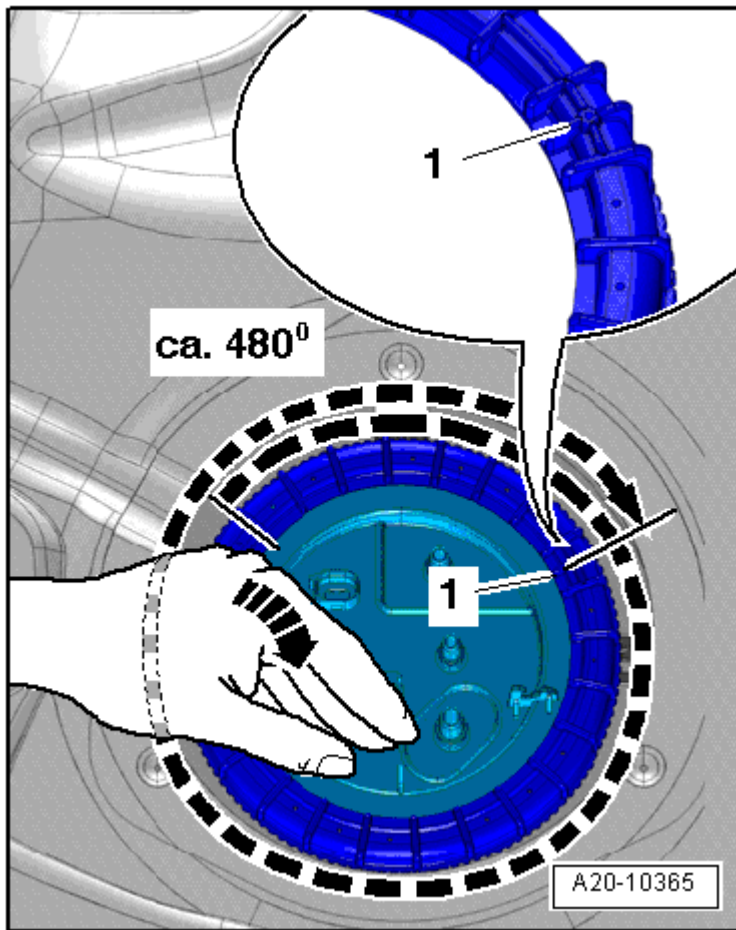


Fig. 112: Turning Union Nut Approximately 480° With Your Right Hand Until Double Ridge Is In Approximately "2 O'clock Position"

Courtesy of AUDI OF AMERICA, LLC

-- Turn the union nut approximately 480° with your right hand until the double ridge -1- is in approximately "2 o'clock position" while keeping the locking flange pressed down firmly with your left hand.

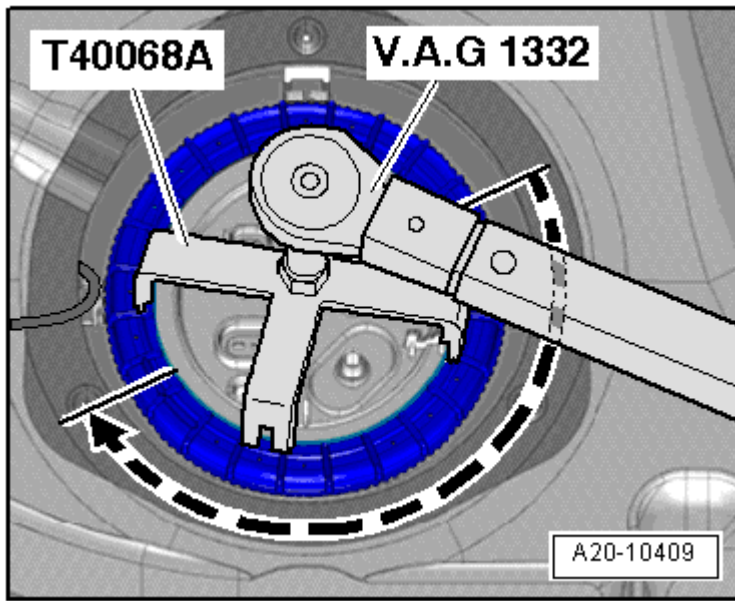


Fig. 113: Pressing Locking Flange Down Firmly When Tightening Union Nut So It Does Not Rotate Too
Courtesy of AUDI OF AMERICA, LLC

CAUTION: There is a risk of the locking flange threaded connection leaking.

- Press the locking flange down firmly when tightening the union nut so it does not rotate too.

-- Tighten the union nut using T40068 A.

- Verification: The double ridge -1- must now be between "7 and 8 o'clock".

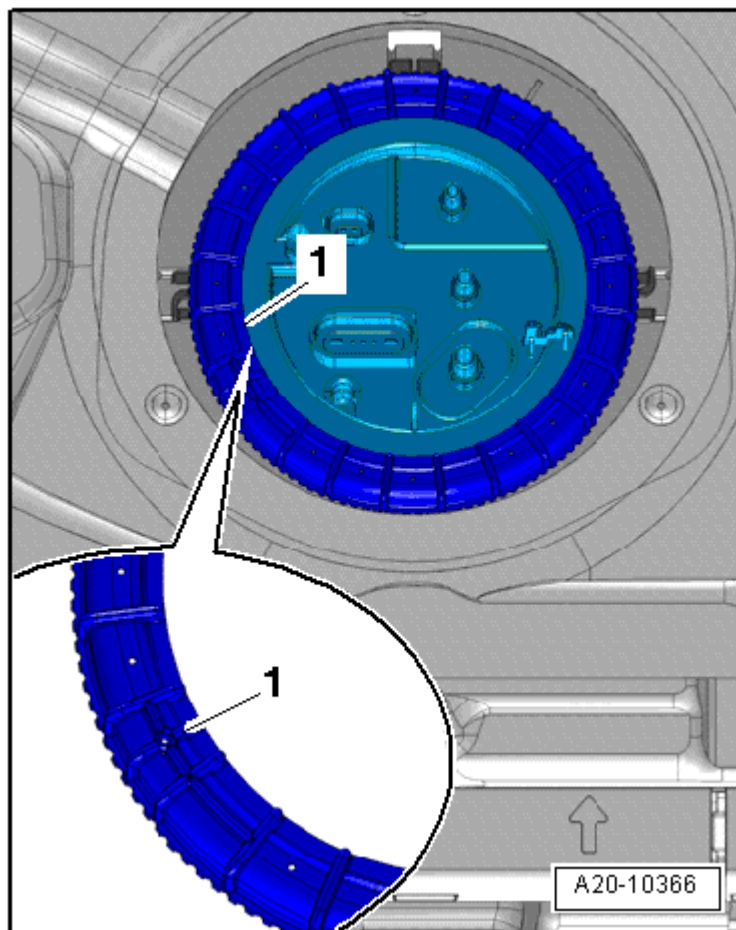


Fig. 114: Double Ridge -1- Must Now Be Between "7 And 8 O'clock"
Courtesy of AUDI OF AMERICA, LLC

-- Connect fuel lines -1 and 2--.

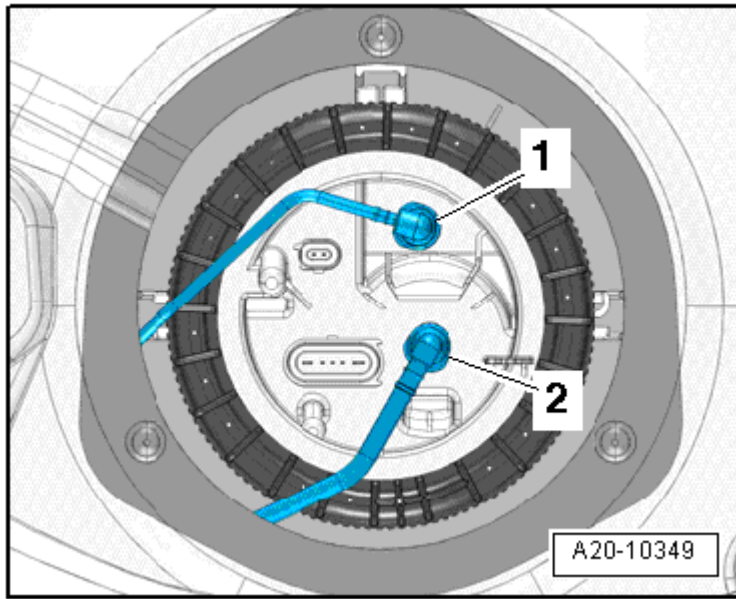


Fig. 115: Connecting Fuel Lines
Courtesy of AUDI OF AMERICA, LLC

- Connect the connectors.
- Install the right locking flange cover. Refer to **Fig. 6**.
- Install the rear bench seat. Refer to **Removal and Installation**.
- Connect the battery. Be sure to read the procedures after connecting the battery. Refer to **Removal and Installation**.
- After installing fuel delivery unit, fill vehicle with at least 5 liters of fuel.

FUEL LEVEL SENSOR -G-

Removing

- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.
- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

NOTE: During installation, the cable ties must be installed at the same location.

- Remove the fuel delivery unit. Refer to **FUEL DELIVERY UNIT**.
- Disconnect the connector -4- by pressing the release -arrow-.

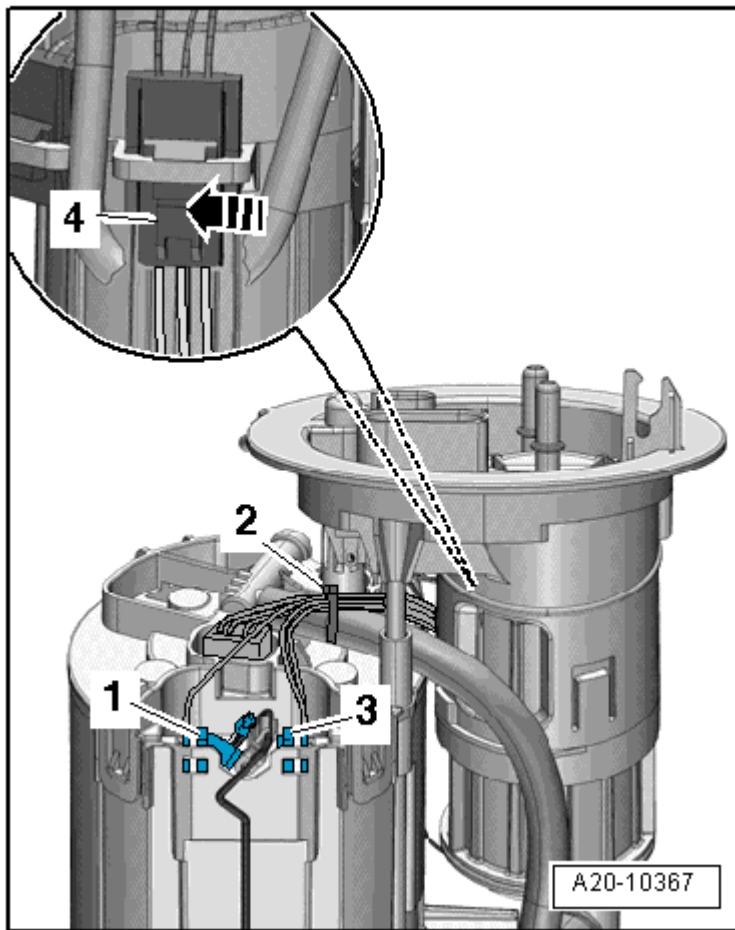


Fig. 116: Disconnecting Connector

Courtesy of AUDI OF AMERICA, LLC

- Cut through the cable ties -2- and free up the electrical connector.
- Release the retaining tabs -1 and 3- and remove the fuel level sensor upward.

Installing

Install in reverse order of removal. Note the following:

- Insert the fuel level sensor in the guides on the fuel delivery unit and push down until it engages.
- Connect the connector. Make sure it is secure.
- Install the fuel delivery unit while following the information on connecting the battery **FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR OVERVIEW.**

FUEL LEVEL SENSOR 2 -G169-

Special tools and workshop equipment required

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

- Window Cutter V.A.G 1561A
- Blade (L-shaped, 25.4mm) V.A.G 1561/22
- Fuel Tank Sender Unit Tool T40068 A
- Sealant.

REMOVING

- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.
- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

WARNING: Danger due to escaping fuel.

- To prevent large quantities of fuel from leaking from the fuel level sensor when removing, the fuel tank may only be a maximum of $\frac{1}{4}$ full.

- Empty the fuel tank if necessary. Refer to **FUEL TANK, DRAINING**.

CAUTION: Danger of causing damage to other electronic components when disconnecting the battery.

- Complete the steps for disconnecting the battery.

- Disconnect the battery. Refer to **Removal and Installation**.
- Fold the rear bench seat back rest forward.

A4 Sedan, A5 Cabrio and Coupe

- Remove the loading aid frame. Refer to **Removal and Installation**.

A4 Avant

- Remove the front luggage compartment floor (vehicle tool box). Refer to **Removal and Installation**.

All Vehicles

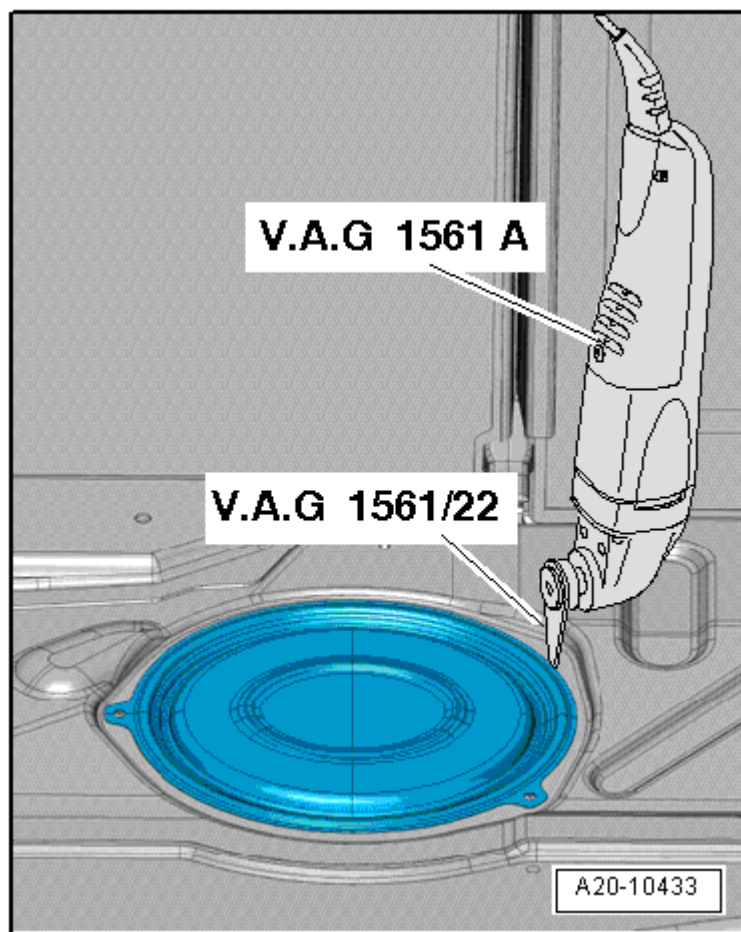


Fig. 117: Cutting Through Sealing Around Locking Flange Cover With V.A.G 1561A And V.A.G 1561/22
Courtesy of AUDI OF AMERICA, LLC

- Cut through the sealing around the locking flange cover with the V.A.G 1561A and V.A.G 1561/22.
- Remove the locking flange cover.
- Repair damaged painted surfaces.
- Apply corrosion protection if necessary.
- Disconnect the vent lines -1, 2 and 3- on the locking flange by pressing the release buttons.

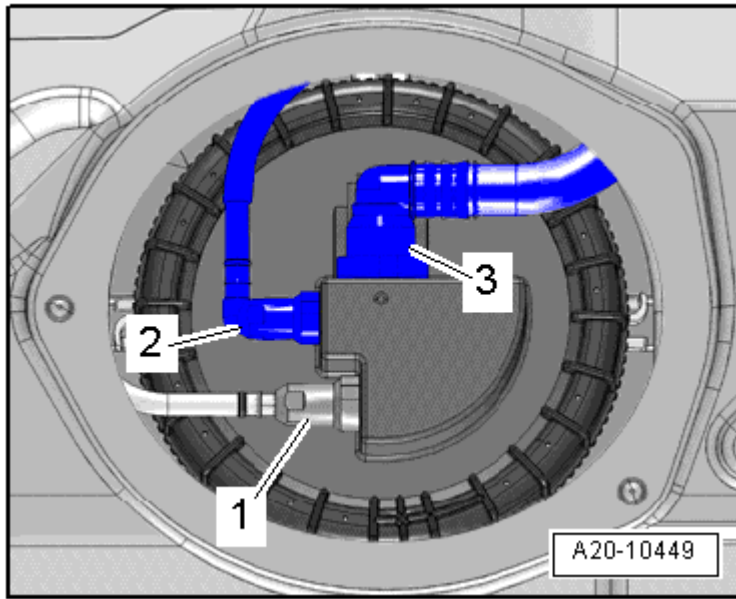


Fig. 118: Disconnecting Vent Lines

Courtesy of AUDI OF AMERICA, LLC

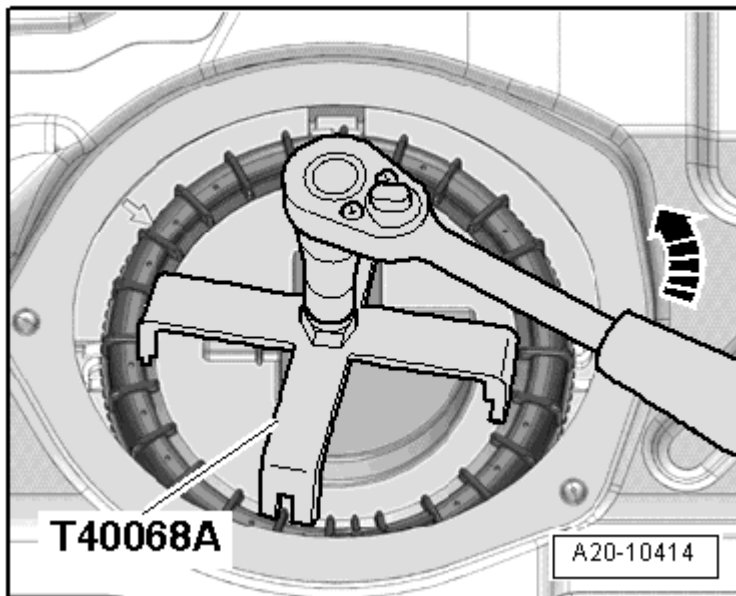


Fig. 119: Using T40068 A To Remove Union Nut -Arrow-

Courtesy of AUDI OF AMERICA, LLC

WARNING: Danger due to escaping fuel.

- To prevent large quantities of fuel from leaking from the fuel level sensor when removing, the fuel tank may only be a maximum of $\frac{1}{4}$ full.

-- Use a T40068 A to remove the union nut -arrow-.

NOTE: The plastic catch on the threaded ring breaks off when the union nut is loosened.

-- Carefully remove the fuel level sensor 2 -3- from the fuel tank opening.

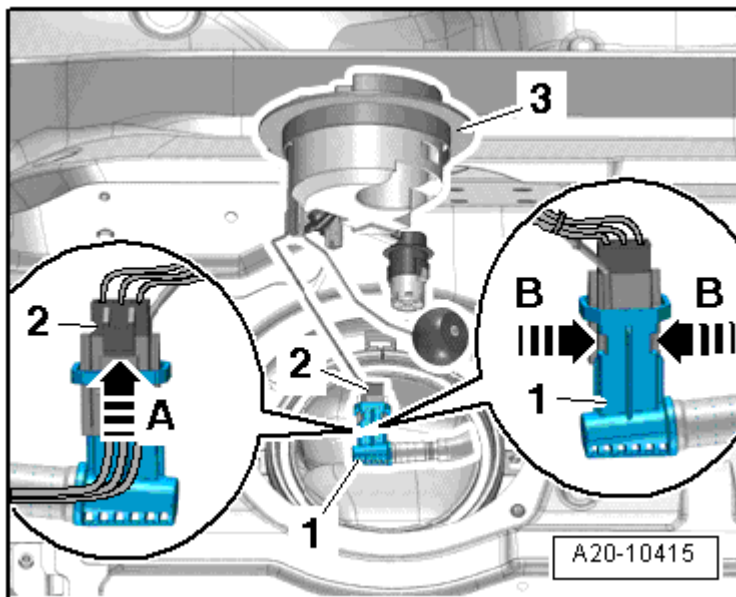


Fig. 120: Removing Fuel Level Sensor
Courtesy of AUDI OF AMERICA, LLC

NOTE: When removing, be sure not to bend floater arm of fuel level sensor 2.

-- Disconnect the connector -2- by pressing the release -arrow A-.

-- Press the bracket together with needle nose pliers -B arrows- and remove the suction line -1-.

INSTALLING

- Tightening specification, refer to **FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR OVERVIEW**.

Install in reverse order of removal. Note the following:

NOTE: Replace the sealing ring and the union nut.

-- Install the suction line -1- until it engages audibly.

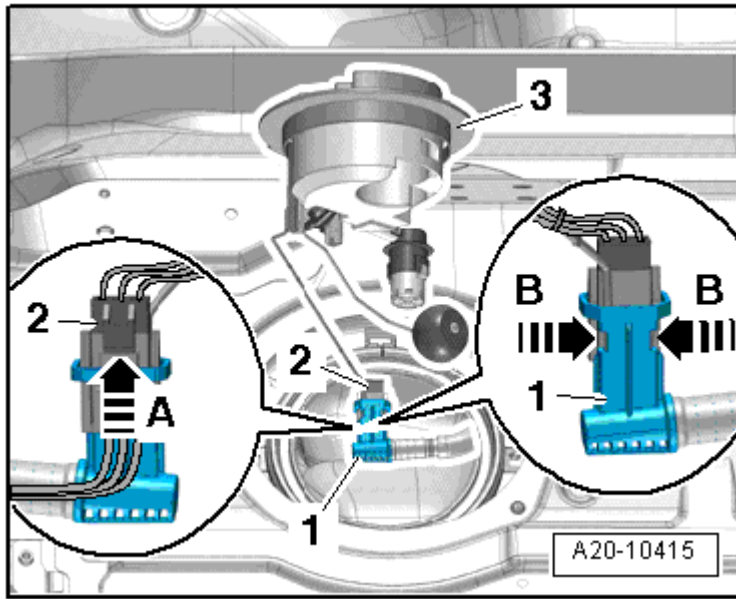


Fig. 121: Installing Suction Line
Courtesy of AUDI OF AMERICA, LLC

-- Connect the electrical connector -2- and make sure it engages.

NOTE: When inserting, be sure not to bend floater arm on fuel level sensor 2.

-- Carefully insert the fuel level sensor 2 -3- in the fuel tank opening.

-- Stretch the new sealing ring over the locking flange and insert it in the groove on the fuel tank.

-- Place the union nut -1- on your left arm and push the locking flange -2- forcefully into installation position with your left hand -arrow-.

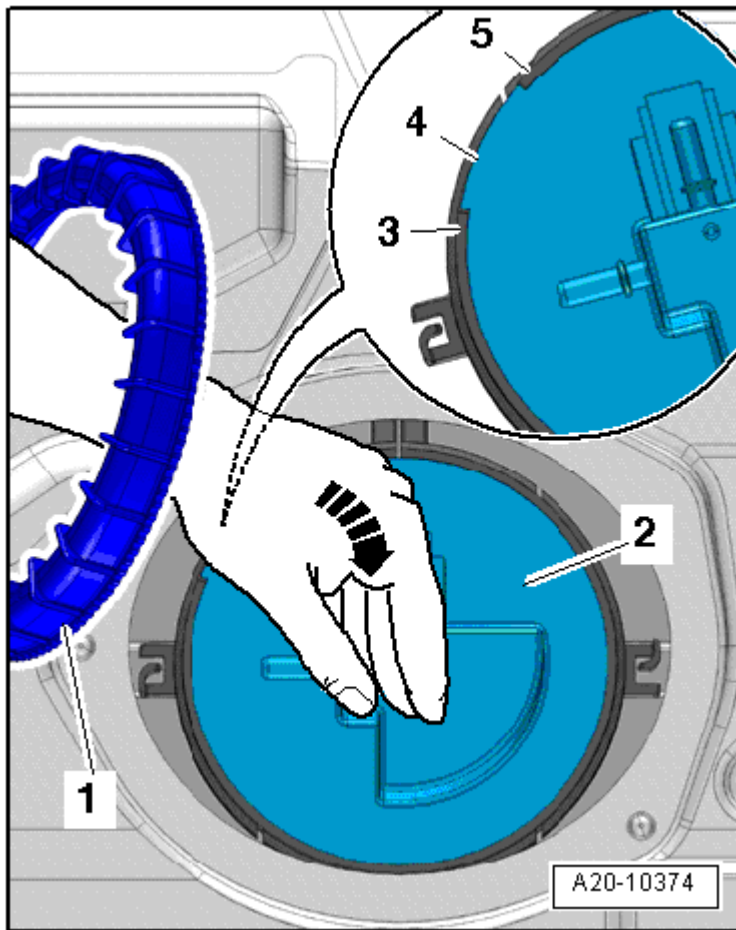


Fig. 122: Placing Union Nut On Your Left Arm And Push Locking Flange
Courtesy of AUDI OF AMERICA, LLC

- The tab -4- on the locking flange must be between the tabs -3 and 5- on threaded ring.

-- Slide the union nut -1- off your left arm using your right hand while your left hand keeps holding the locking flange -2- down firmly -arrow-.

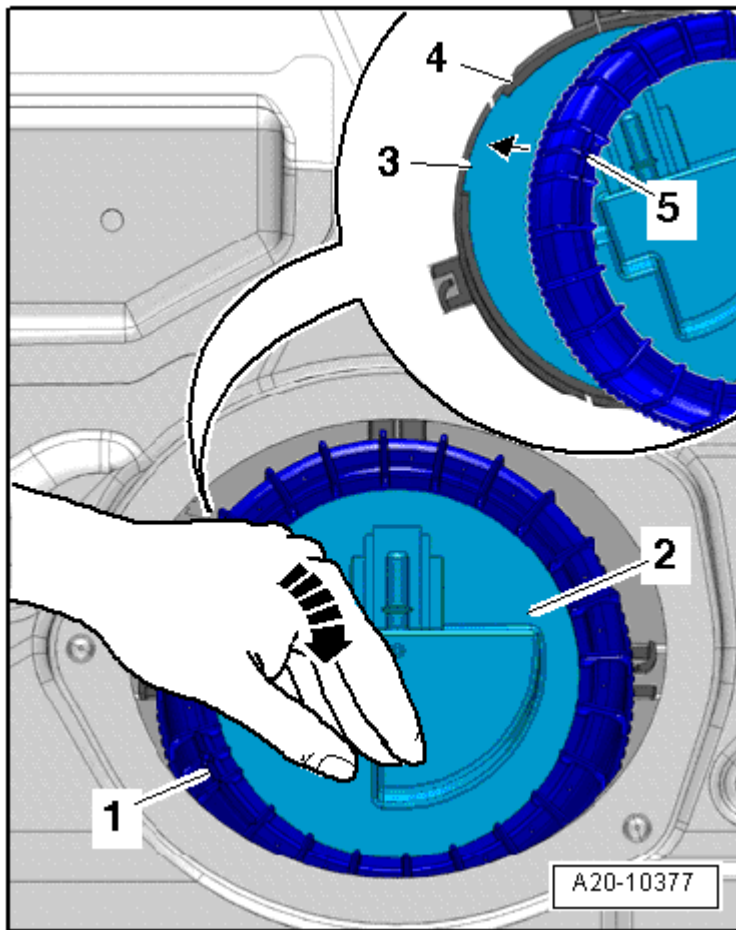


Fig. 123: Sliding Union Nut Off Your Left Arm Using Your Right Hand While Your Left Hand Keeps Holding Locking Flange Down Firmly
Courtesy of AUDI OF AMERICA, LLC

-- Position the union nut -1- with your right hand so the double ridge -5- on the ribs is over the lug -3- on the locking flange (approximately "10 o'clock" position). This makes sure the union nut engages at the beginning of the threads immediately when tightening it -4-.

-- Press the locking flange down firmly -arrow-.

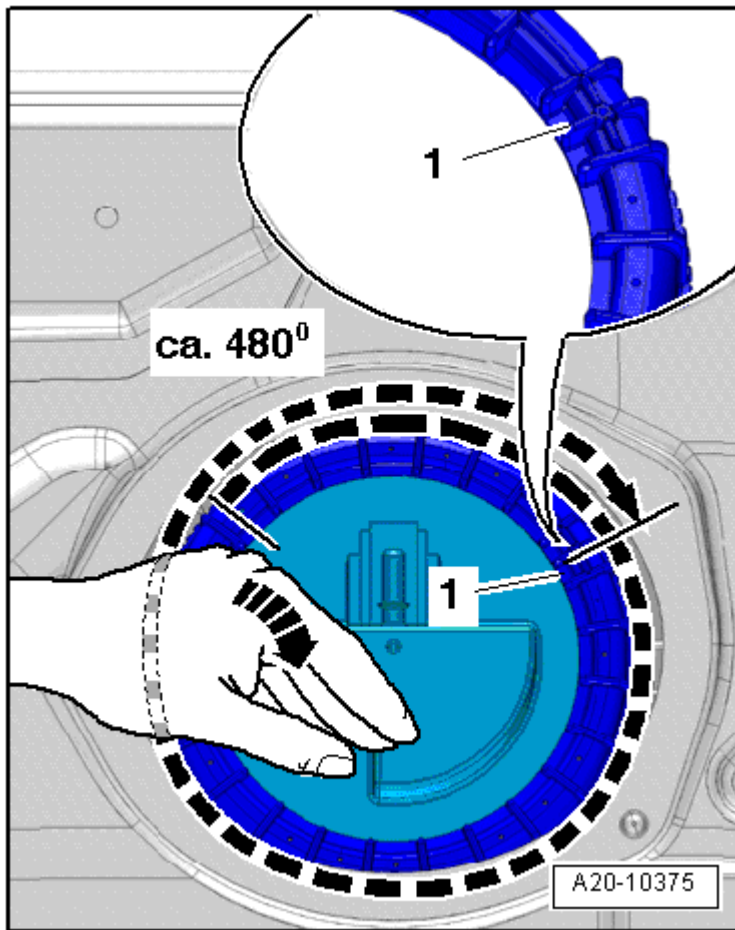


Fig. 124: Pressing Locking Flange Down Firmly
Courtesy of AUDI OF AMERICA, LLC

-- Turn the union nut approximately 480° with your right hand until the double ridge -1- is in approximately "2 o'clock position" while keeping the locking flange pressed down firmly with your left hand.

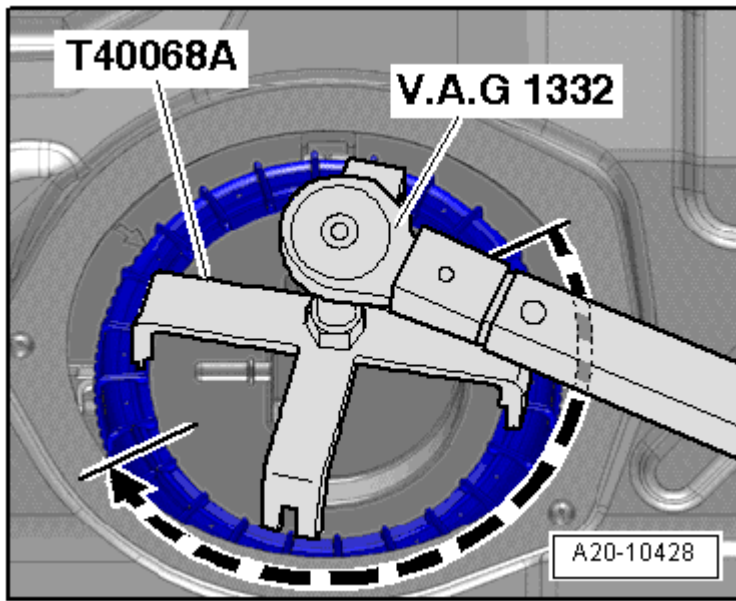


Fig. 125: Turning Union Nut Approximately 480° With Your Right Hand Until Double Ridge -1- Is In Approximately "2 O'clock Position"

Courtesy of AUDI OF AMERICA, LLC

CAUTION: There is a risk of the locking flange threaded connection leaking.

- Press the locking flange down firmly when tightening the union nut so it does not rotate too.

-- Tighten the union nut using T40068 A.

- Verification: The double ridge -1- must now be between "7 and 8 o'clock".

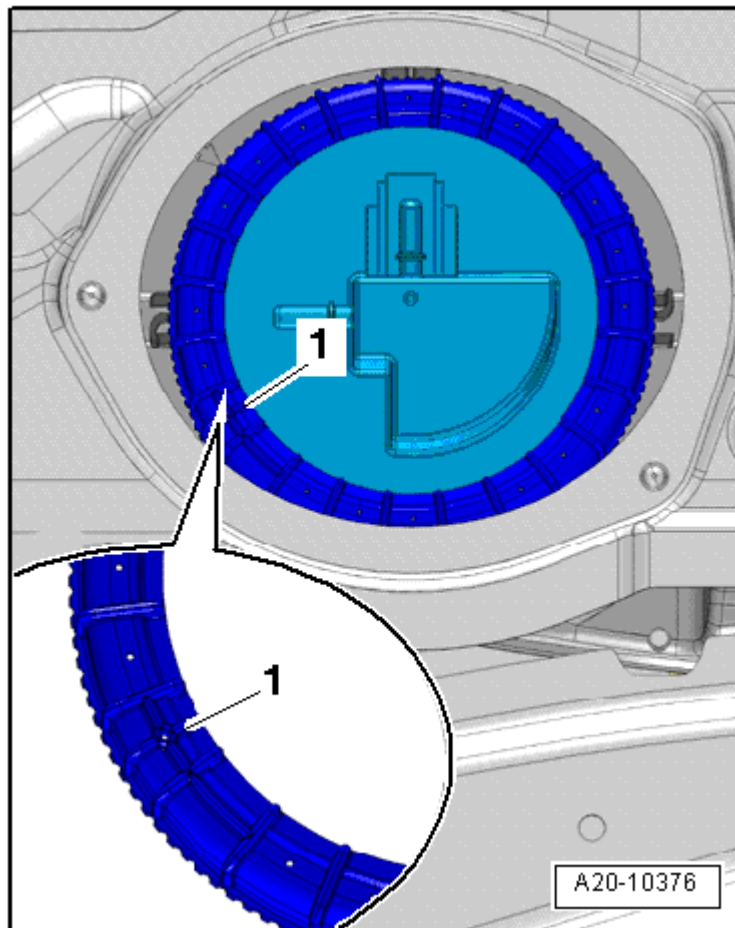


Fig. 126: Double Ridge -1- Must Now Be Between "7 And 8 O'clock"

Courtesy of AUDI OF AMERICA, LLC

-- Shortly before installing the locking flange cover, smooth out the rest of the sealant on the cover and on the body with a carpet knife but do not remove it completely.

NOTE: The remaining material acts as an adhesive base for the new sealant that will be applied.

CAUTION: Danger of poor adhesion.

- Keep the adhesive surface free of dirt and grease.
- Cut back the adhesive surface shortly before installing.
- Do not prime the adhesive surfaces and do not treat them with cleaning solution.
- Applying primer is only necessary if a new locking flange cover will be used.

-- Cut the sealant cartridge nozzle as shown in the illustration.

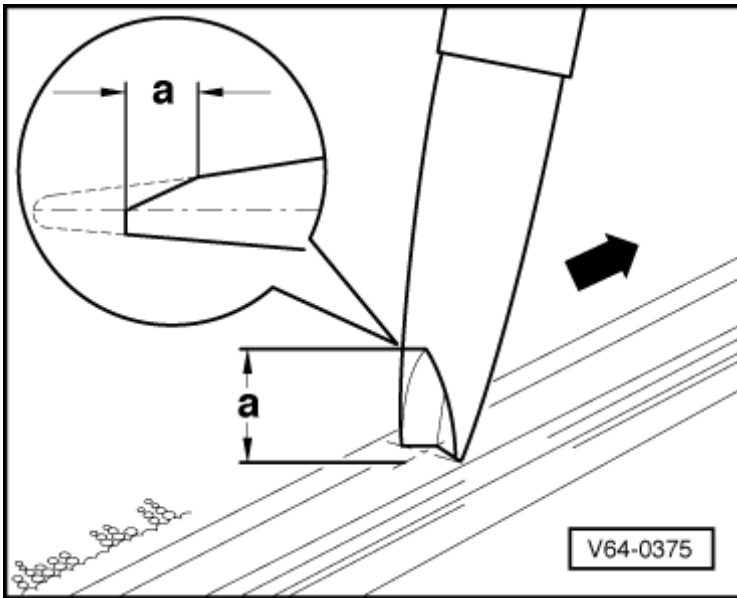


Fig. 127: Nozzle Tip Cut

Courtesy of AUDI OF AMERICA, LLC

- Dimension -a- = 7 mm.

-- Apply a new sealant bead to the smoothed sealant on the locking flange cover and insert the cover.

- The arrow on the cover must point in the direction of travel.

-- Install the loading aid frame. Refer to **Removal and Installation** .

-- Connect the battery. Be sure to read the procedures after connecting the battery. Refer to **Removal and Installation** .

-- After installing the fuel level sensor 2, fill the vehicle with at least 5 liters of fuel.

SUCTION LINE

Removing

-- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.

-- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

-- Remove the fuel delivery unit. Refer to **FUEL DELIVERY UNIT**.

-- Remove the fuel level sensor 2 -G169-. Refer to **Fuel Level Sensor 2 -G169-**.

-- Carefully remove the fuel level sensor 2 -3- with the suction line -1- from the fuel tank opening.

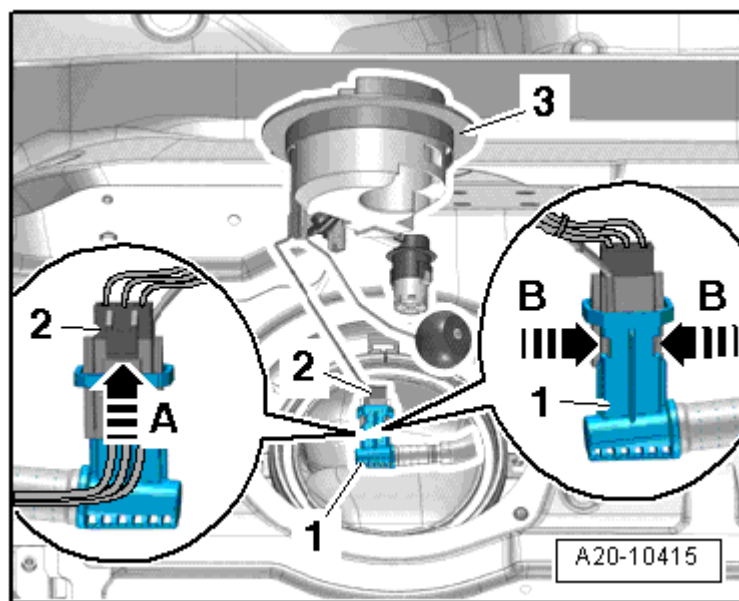


Fig. 128: Carefully Remove Fuel Level Sensor
 Courtesy of AUDI OF AMERICA, LLC

NOTE: When removing, be sure not to bend floater arm of fuel level sensor 2.

-- Disconnect the connector -2- by pressing the release -arrow A-.

-- Press the bracket together with needle nose pliers -B arrows- and remove the suction line.

Installing

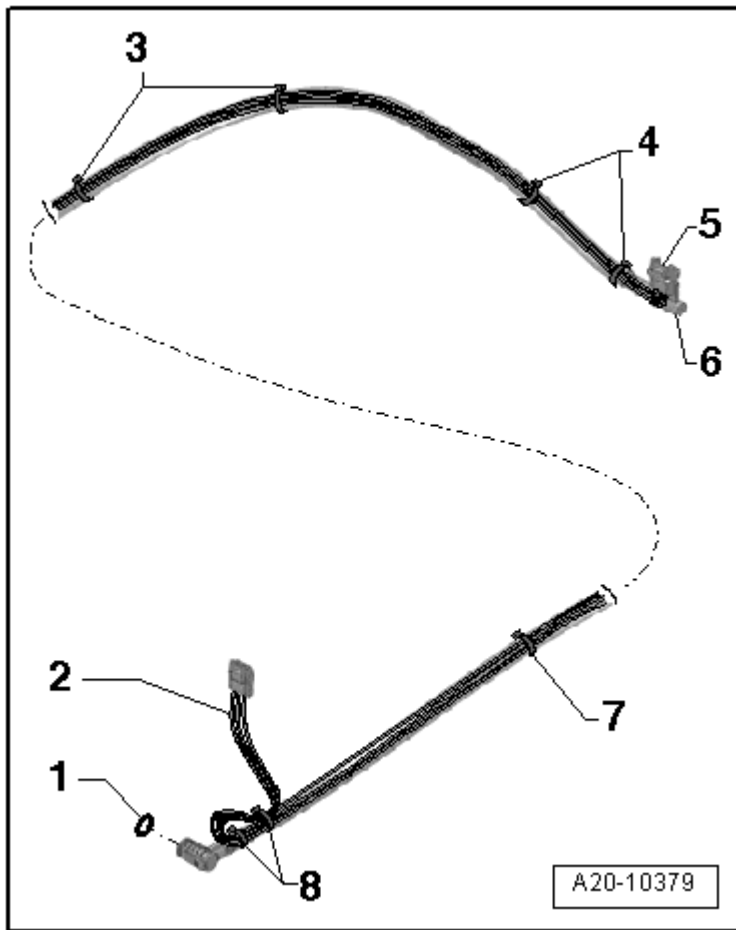


Fig. 129: Identifying Prepare Suction Line For Installation -6-
 Courtesy of AUDI OF AMERICA, LLC

Install in reverse order of removal. Note the following:

-- Prepare the suction line for installation -6- :

- The electrical connector -5- must be clipped onto the suction line -6- as shown in the illustration.
- The electrical wires -2- and the suction line must be secured with a total of 7 cable ties items -3, 4, 7 and 8-.
- The O-ring -1- must be installed on the suction line.

-- Install the suction line -1- until it engages audibly.

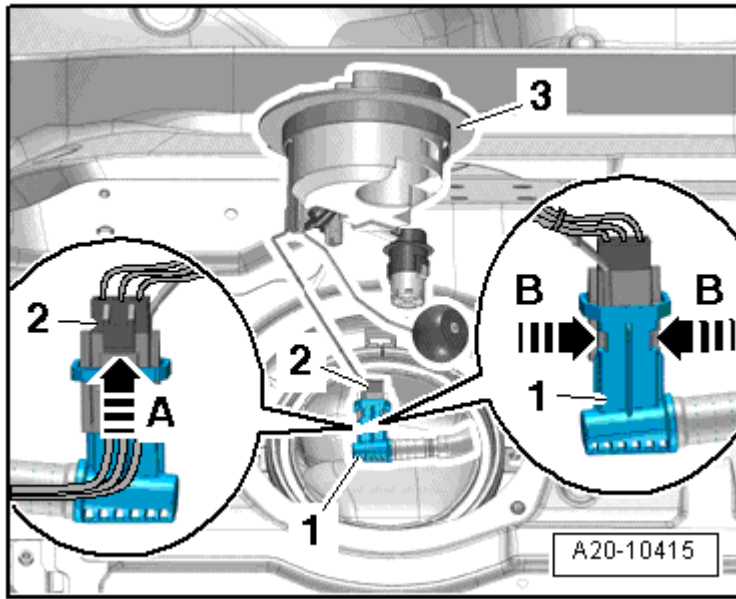


Fig. 130: Installing Suction Line
 Courtesy of AUDI OF AMERICA, LLC

-- Connect the electrical connector -2- and make sure it engages.

NOTE: When inserting, do not bend the floater arm on the fuel level sensor 2 -3-.

-- Slide the suction line from the luggage compartment into the fuel tank opening.

-- Stretch the new sealing ring over the locking flange and insert it in the groove on the fuel tank.

-- Reach into the front fuel tank opening and pull the suction line into the installation position.

-- Install fuel level sensor 2 **Fuel Level Sensor 2 -G169-, CHECKING.**

-- Install the fuel delivery unit **FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR OVERVIEW.**

-- Connect the battery. Be sure to read the procedures after connecting the battery. Refer to **Removal and Installation** .

-- After installing the suction line, fill the vehicle with at least 5 liters of fuel.

FUEL FILTER

Removing

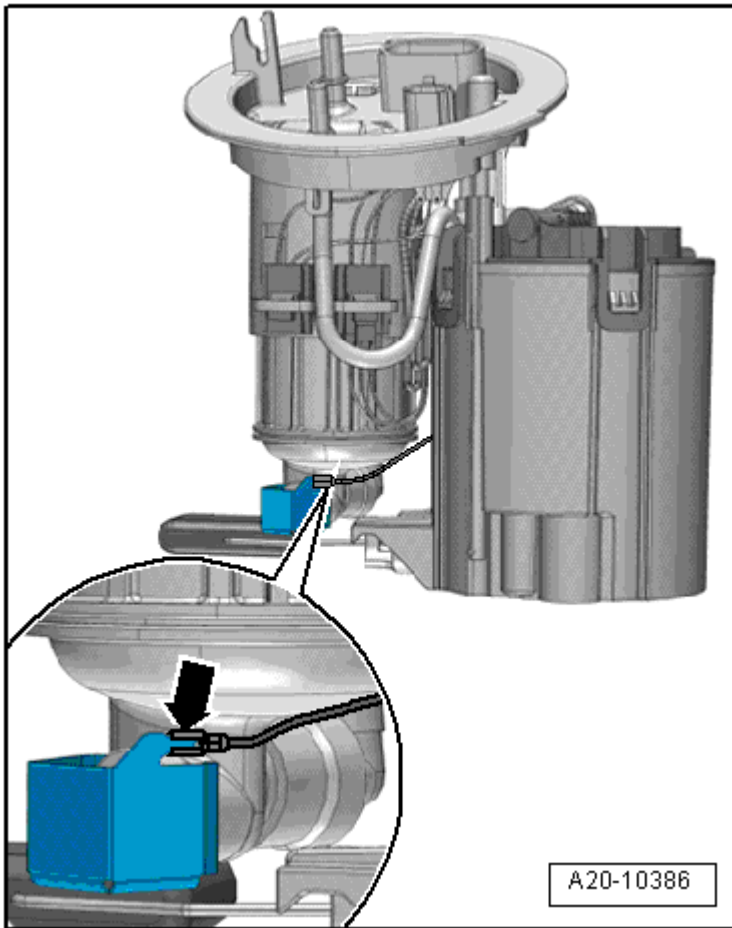


Fig. 131: Identifying Fuel Filter

Courtesy of AUDI OF AMERICA, LLC

- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.
- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.
- Remove the fuel delivery unit. Refer to **FUEL DELIVERY UNIT**.
- Disconnect the Ground (GND) connection -arrow- on the fuel pressure regulator retaining plate.
- Remove the fuel line -1- by pressing the release button.

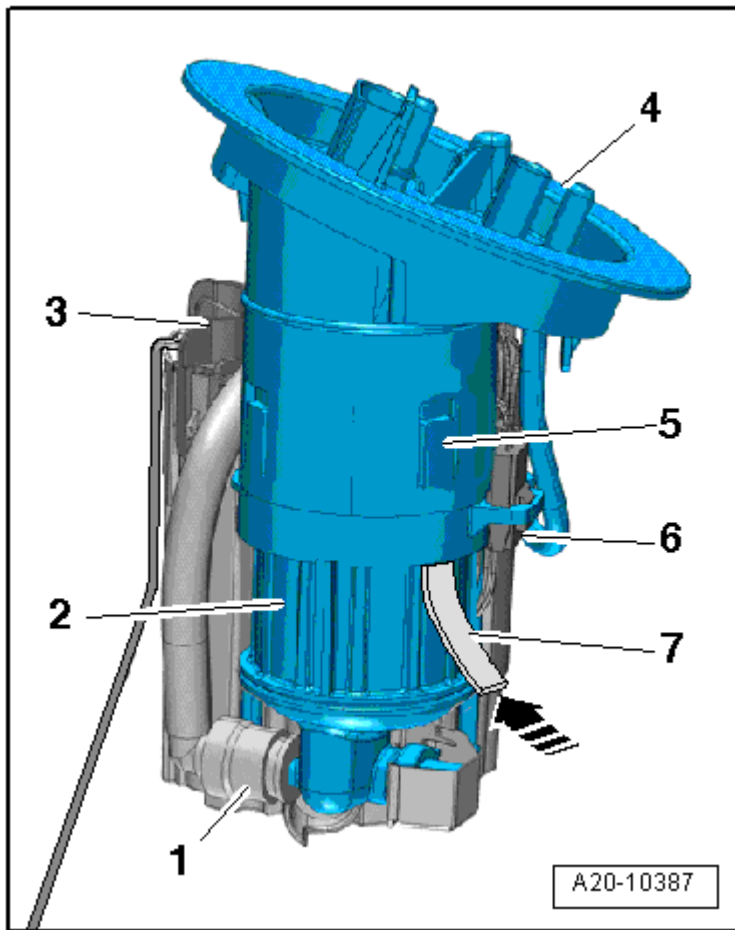


Fig. 132: Removing Fuel Line

Courtesy of AUDI OF AMERICA, LLC

- Disconnect the connector -6- for the fuel level sensor G.
- Disconnect the fuel pump electrical connector at the fuel pump.
- Remove the locking flange -4- with the fuel filter upward out of the fuel delivery unit -3-.
- Release a total of 3 retaining tabs -5- by sliding 3 release bars -7- (with the fuel filter parts set) -arrow-.
- Pull the fuel filter -2- down out of the locking flange.

Installing

Install in reverse order of removal. Note the following:

NOTE: Replace the O-ring.

- Insert the fuel filter into the guides on the locking flange and press it in until it engages.

NOTE: The fuel filter can only be inserted in one position.

-- Install the fuel delivery unit **FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR OVERVIEW**.

EVAP CANISTER

NOTE: Checking for leaks, refer to **LEAK DETECTION TEST, PERFORMING**.

Removing

-- Follow all safety precautions. Refer to **SAFETY PRECAUTIONS**.

-- Follow the guidelines for clean working conditions. Refer to **CLEAN WORKING CONDITIONS**.

-- Remove the left rear underbody panel. Refer to **Removal and Installation** .

-- Disconnect the connector -6-.

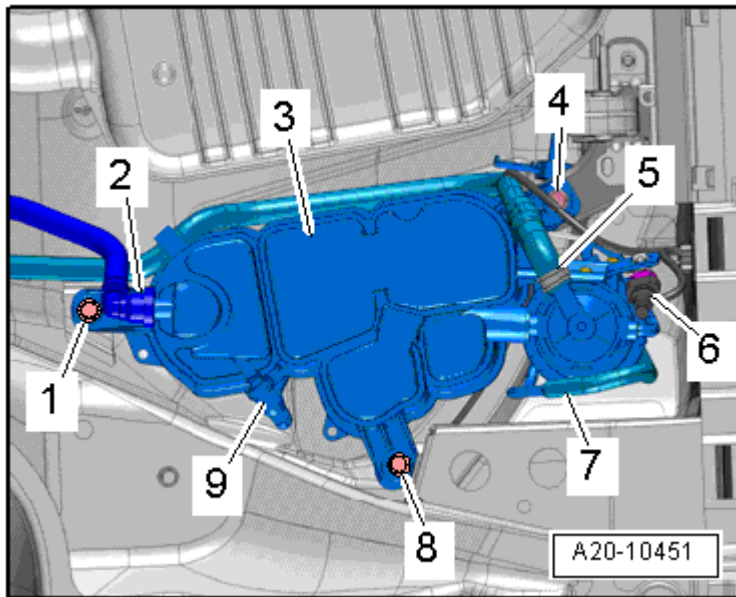


Fig. 133: Removing EVAP Lines

Courtesy of AUDI OF AMERICA, LLC

-- Remove the air line -5-.

-- Remove the vent line -7-.

-- Disconnect the vent line -9- to the Evaporative Emission (EVAP) canister purge regulator valve 1 -N80- by pressing the release button.

-- Disconnect the vent line -2- to the fuel tank by pressing the release button.

-- Remove the bolts -1, 4 and 8- and the EVAP canister -3-.

Installing

- Tightening specification, refer to **EVAP CANISTER AND LEAK DETECTION SYSTEM OVERVIEW**.

Install in reverse order of removal. Note the following:

-- Connect the air and vent lines until they engage audibly.

LEAK DETECTION PUMP -V144-

Removing

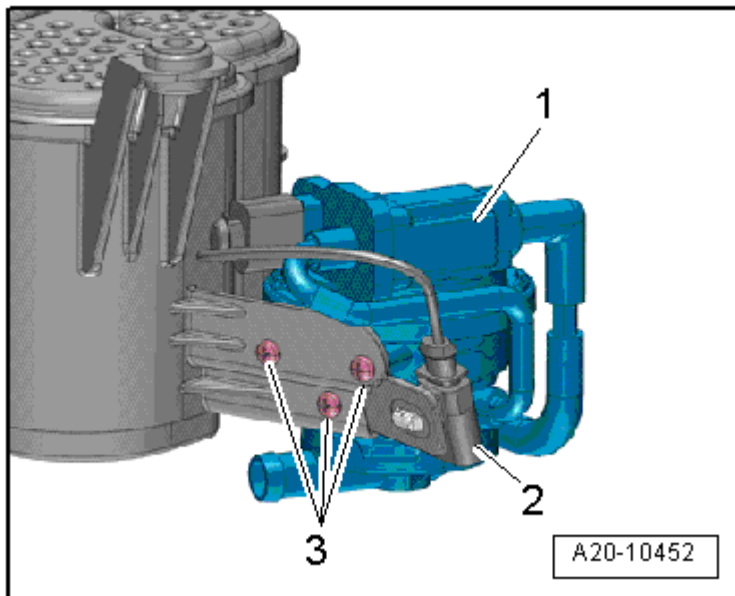


Fig. 134: Removing EVAP Canister Bolts
Courtesy of AUDI OF AMERICA, LLC

-- Remove the Evaporative Emission (EVAP) canister. Refer to **EVAP CANISTER**.

-- Free up the electrical connector -2-.

-- Remove the bolts -3-.

-- Unclip the diagnosis pump -1- from the bracket on the EVAP canister.

Installing

- Tightening specification, refer to **EVAP CANISTER AND LEAK DETECTION SYSTEM OVERVIEW**.

Install in reverse order of removal. Note the following:

NOTE: Replace the gasket.

-- Install the EVAP canister. Refer to EVAP CANISTER.

LEAK DETECTION PUMP -V144- AIR FILTER

Removing

-- Follow all safety precautions. Refer to SAFETY PRECAUTIONS.

-- Follow the guidelines for clean working conditions. Refer to CLEAN WORKING CONDITIONS.

-- Remove the left rear wheel. Refer to Removal and Installation .

-- Remove the left rear wheel housing liner. Refer to Removal and Installation .

-- Press the release button and remove the vent line -arrow-.

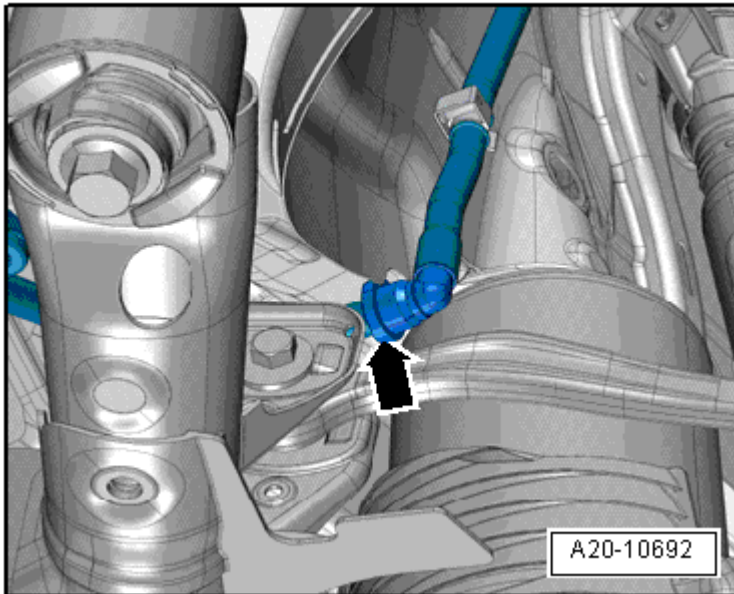


Fig. 135: Pressing Release Button And Remove Vent Line
Courtesy of AUDI OF AMERICA, LLC

-- Remove the nut -2- and remove the -1- leak detection pump air filter.

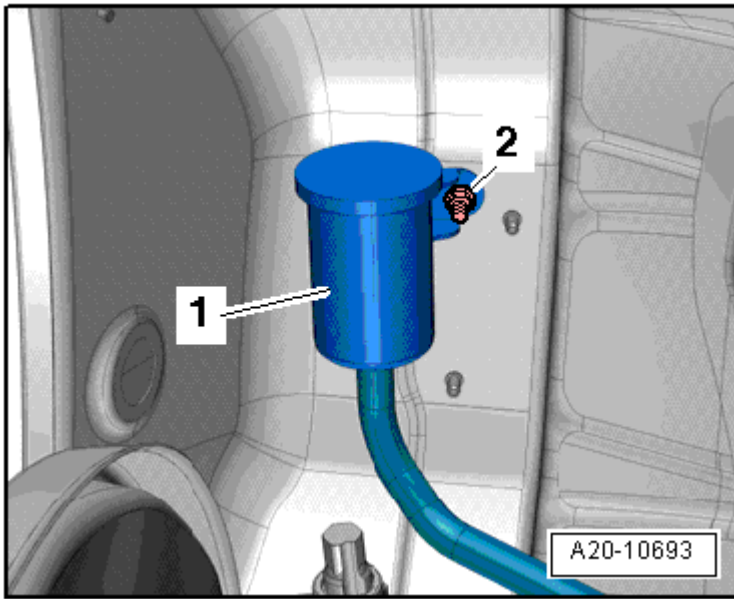


Fig. 136: Leak Detection Pump -V144- Air Filter - Tightening Specification
Courtesy of AUDI OF AMERICA, LLC

Installing

Install in reverse order of removal. Note the following:

- Tighten the nut for the leak detection pump air filter. Refer to **Fig. 12**.
- Install the left rear wheel housing liner. Refer to **Removal and Installation** .
- Mount the rear wheel. Refer to **Removal and Installation** .

ACCELERATOR PEDAL MODULE WITH ACCELERATOR PEDAL POSITION SENSOR

Removing

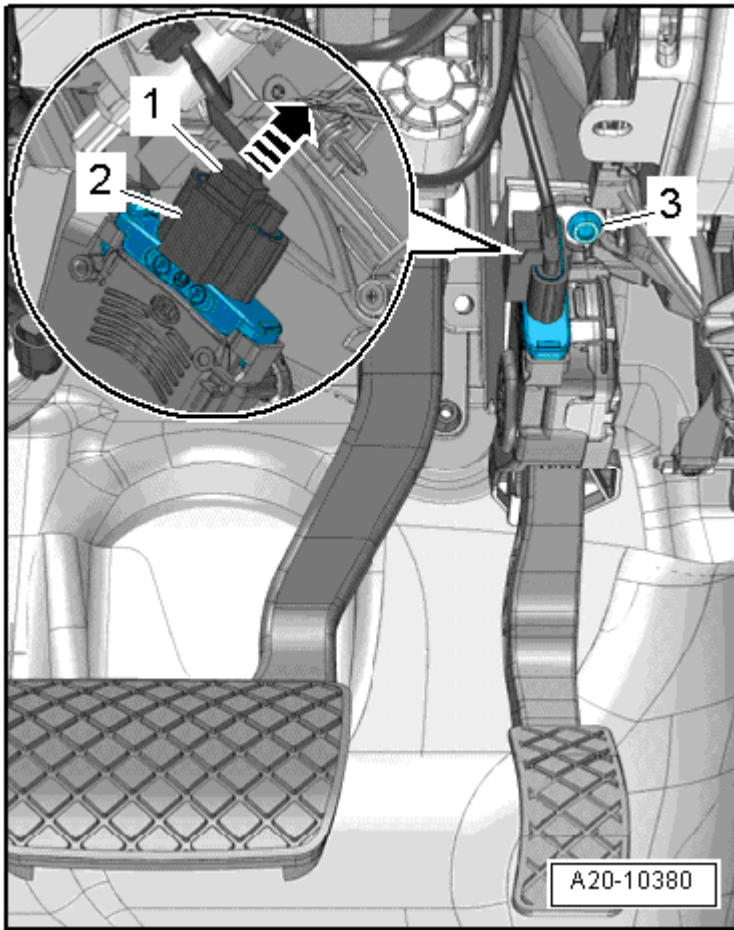


Fig. 137: Location Accelerator Pedal Position Sensor -G79- /Accelerator Pedal Position Sensor 2 -G185-
 Courtesy of AUDI OF AMERICA, LLC

- Remove the lower instrument panel cover on the driver side. Refer to **Removal and Installation** .
- Disconnect the connector -2- by pressing the release -1- up -arrow-.
- Remove the bolt -3- and remove the accelerator pedal module downward.

Installing

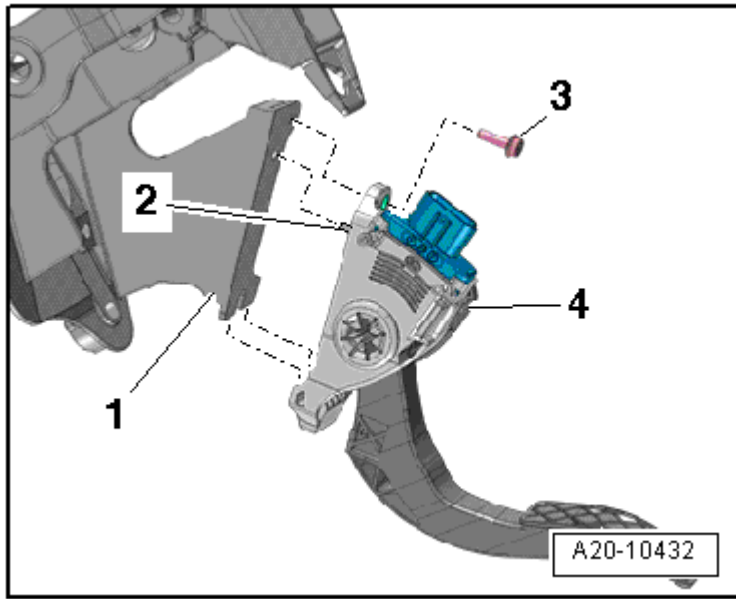


Fig. 138: Accelerator Pedal Module With Accelerator Pedal Position Sensor
Courtesy of AUDI OF AMERICA, LLC

- Tightening specification, refer to **ACCELERATOR PEDAL MODULE OVERVIEW**.

Install in reverse order of removal. Note the following:

- Engage the accelerator pedal module -4- on the bottom of the pedal bracket -1-, insert the centering pin -2- and tighten the bolt -3-.
- Install the lower instrument panel cover on the driver side. Refer to **Removal and Installation** .
- Perform after the first kick-down adaptation in **Guided Functions** vehicle diagnostic tester.

SPECIAL TOOLS

2012 Audi S4

ENGINE Fuel Supply System - Engine Code(s): CAEB, CALA & CCBA (Sedan)

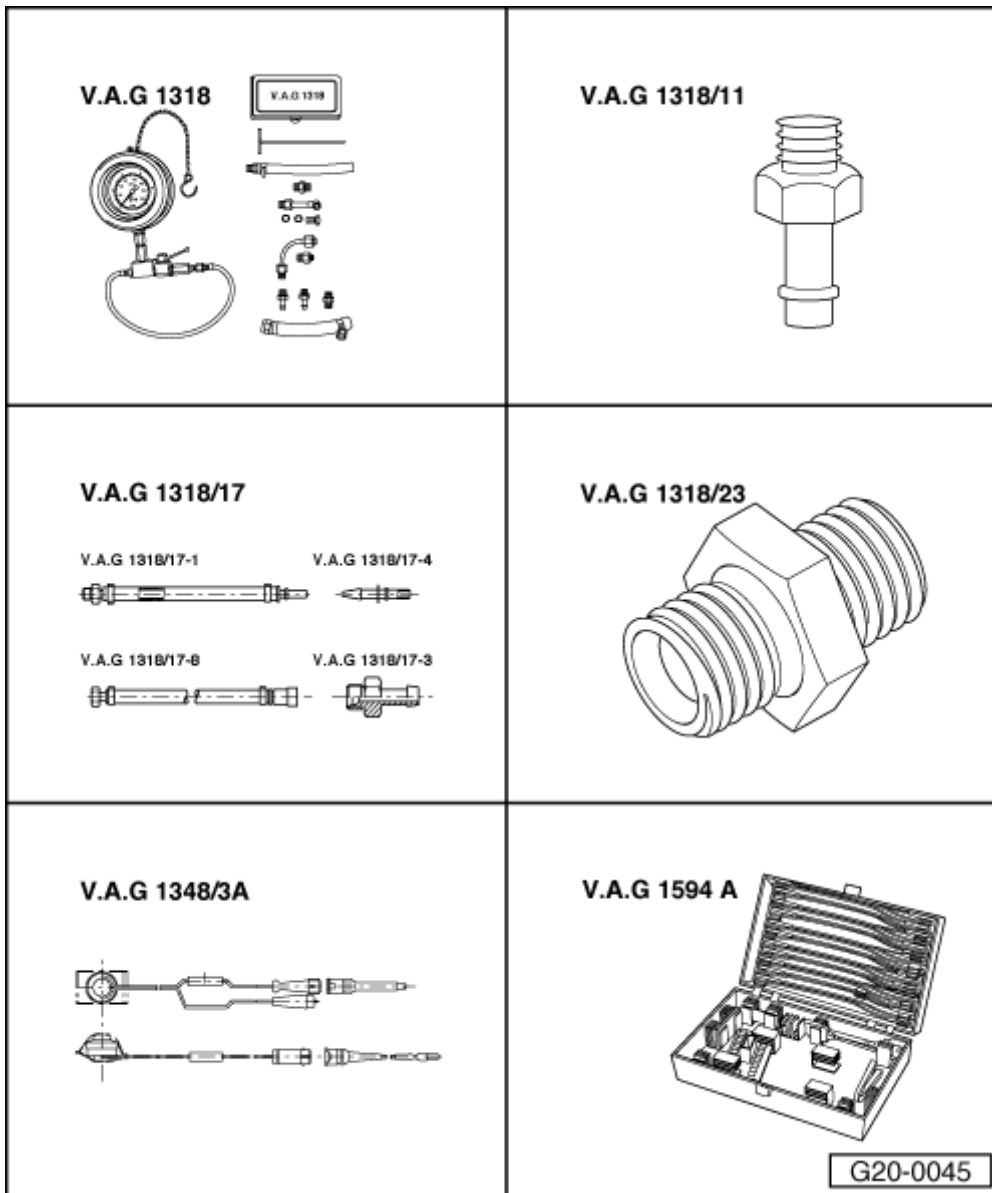


Fig. 139: Identifying Special Tools -- Fuel Pressure And Residual Pressure Before High Pressure Pump, Checking

Courtesy of AUDI OF AMERICA, LLC

Special tools and workshop equipment required

- Fuel Inj. Pressure Gauge-CIS V.A.G 1318
- Adapter V.A.G 1318/11
- Adapter V.A.G 1318/17-1 from Adapter for VAG 1318 V.A.G 1318/17
- Fuel Line Feed Adapter V.A.G 1318/23
- Remote Control V.A.G 1348/3A with Adapter Cable V.A.G 1348/3-3
- Connector Test Set V.A.G 1594C
- Measuring Container, Fuel-Resistant

Special tools and workshop equipment required

- Fuel Tank Sender Unit Tool T40068 A

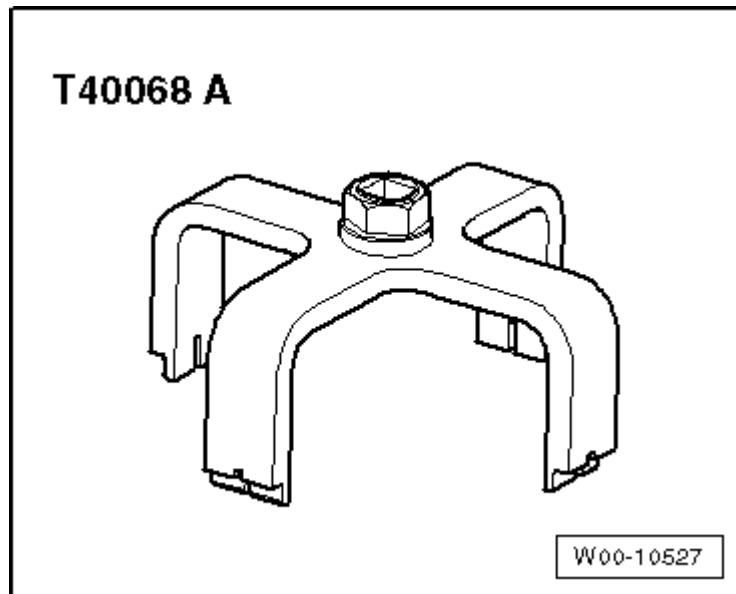


Fig. 140: Fuel Tank Sender Unit Tool T40068 A
Courtesy of AUDI OF AMERICA, LLC

- Adapter V.A.G 1318/10-12 and Adapter V.A.G 1318/15

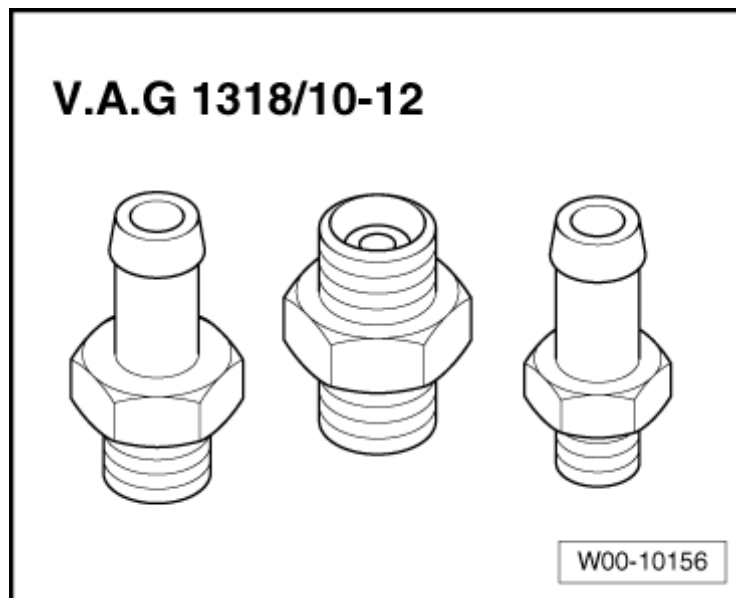


Fig. 141: Adapter Set V.A.G 1318/17A
Courtesy of AUDI OF AMERICA, LLC

- Adapter Set V.A.G 1318/17A

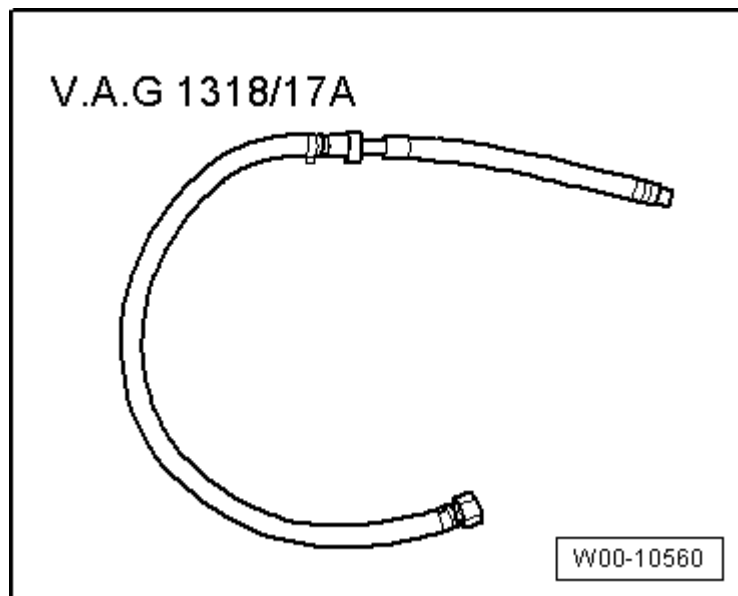


Fig. 142: Fuel Line Feed Adapter V.A.G 1318/23
Courtesy of AUDI OF AMERICA, LLC

- Fuel Line Feed Adapter V.A.G 1318/23

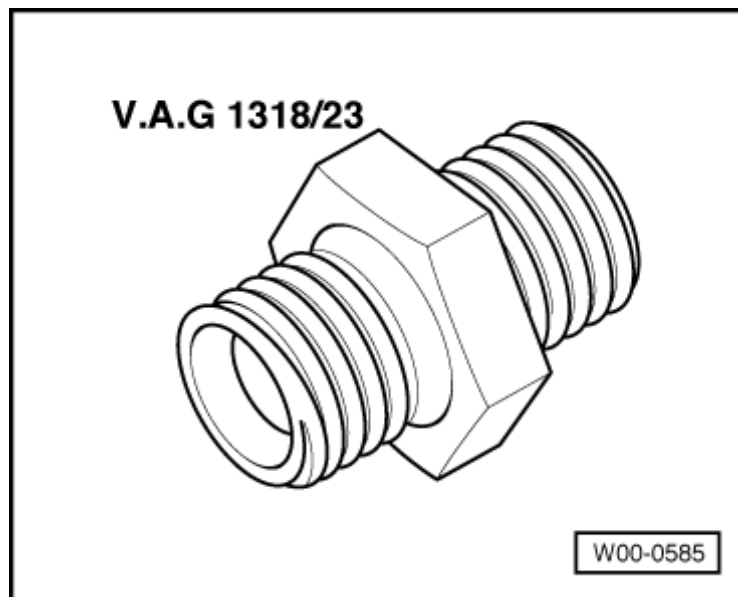


Fig. 143: Engine-/Gearbox Jack V.A.G 1383 A
Courtesy of AUDI OF AMERICA, LLC

- Engine-/Gearbox Jack V.A.G 1383 A

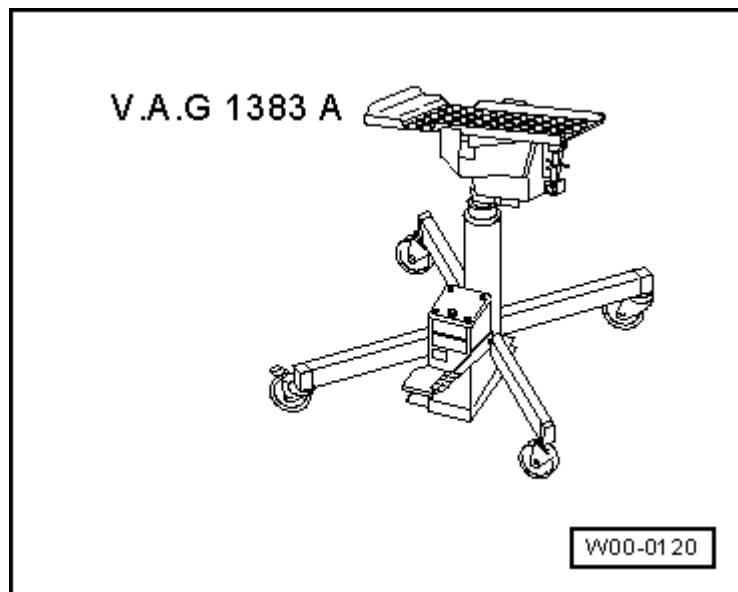


Fig. 144: Engine & Transmission Jack VAG 1383 A
Courtesy of AUDI OF AMERICA, LLC

- Multimeter V.A.G 1526D



Fig. 145: Hand held Multi-Meter V.A.G 1526 D
Courtesy of AUDI OF AMERICA, LLC

- Window Cutter V.A.G 1561A

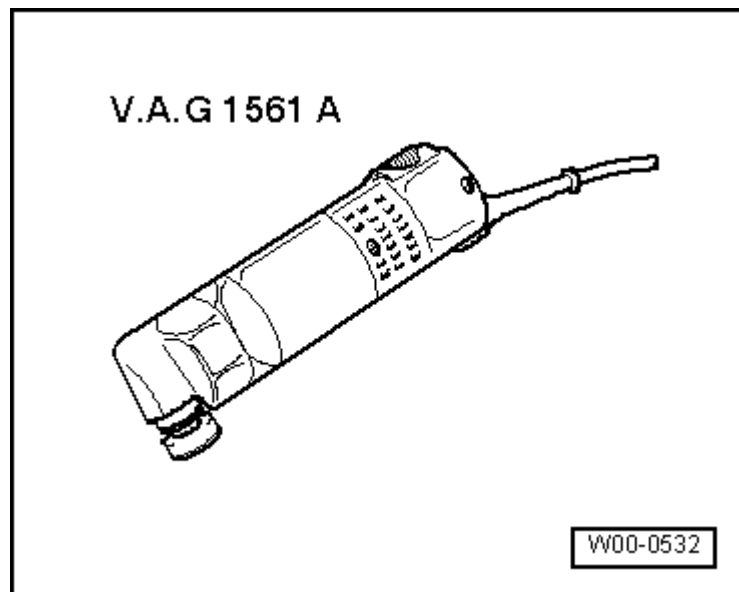


Fig. 146: Identifying Electric Knife V.A.G 1561 A
Courtesy of AUDI OF AMERICA, LLC

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

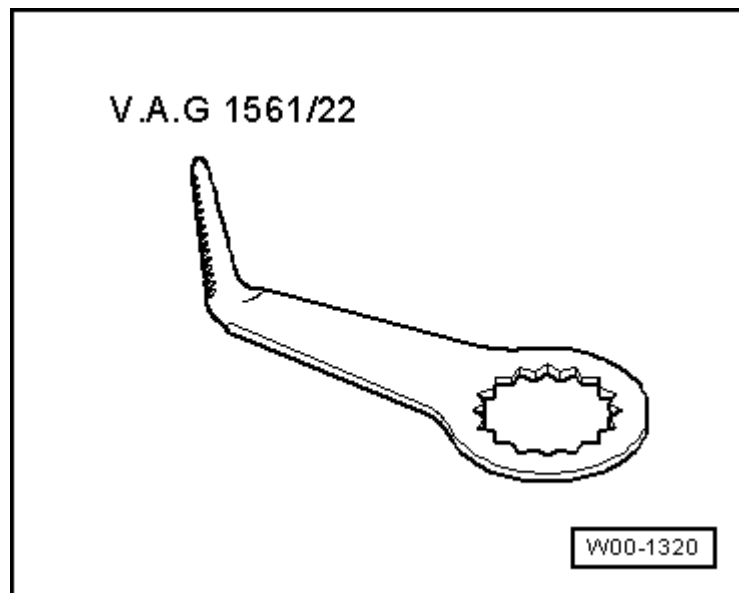


Fig. 147: Cutting Blade (L-Shaped, 25.4 mm) V.A.G 1561/22
Courtesy of AUDI OF AMERICA, LLC

- Fuel Extraction Device VAS 5190

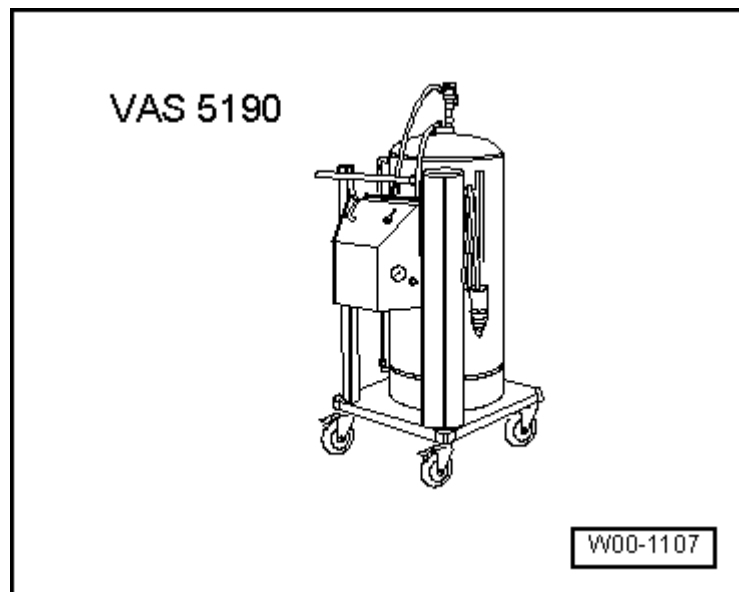


Fig. 148: Fuel Siphoning Unit VAS 5190
Courtesy of AUDI OF AMERICA, LLC

- Not illustrated:
- Hose Clamps Up to 25 mm Dia. 3094
- Adapter Cable V.A.G 1348/3-2

Edition 2 8 2012