20 - FUEL SUPPLY SYSTEM

NOTES FOR PERFORMING WORK ON FUEL SUPPLY SYSTEM

Safety precautions when working on fuel supply system

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

The following steps should be taken before beginning work on the fuel supply system:

CAUTION: Place lighters, as well as lighters of others in the area, out of reach. The lighter can ignite fuel vapors.

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

- Disconnect battery Ground (GND) strap with ignition switched off.
- Open fuel filler cap briefly and then close again.

When removing and installing components from a full or partially full fuel tanks, note the following:

- 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. Drain fuel tank if necessary. Procedure: Vehicles with front wheel drive up to 06.03 --> **Fuel tank, draining** , Vehicles with front wheel drive from 07.03 to 10.04 --> **Fuel tank, draining** , Vehicles with front wheel drive as of 11.04 --> **Fuel tank, draining** , Vehicles with all wheel drive up to 06.03 --> **Fuel tank, draining** , Vehicles with all wheel drive from 07.03 to 10.04 --> **Fuel tank, draining** , Vehicles with all wheel drive as of 11.04 --> **Fuel tank, draining**.
- Before starting work, switch on exhaust extraction system and place an extraction hose close to the installation opening of fuel tank to extract escaping fuel fumes. If no exhaust extraction system is available, a radial fan (as long as motor is not in air flow) with a displacement greater than 15 m^3 /h can be used.
- Prevent fuel from contacting skin! Wear fuel-resistant gloves!

Note the following when removing and installing fuel tank:

- Fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure: Vehicles with front wheel drive up to 06.03 --> **Fuel tank, draining** , Vehicles with front wheel drive from 07.03 to 10.04 --> **Fuel tank, draining** , Vehicles with front wheel drive as of 11.04 --> **Fuel tank, draining** , Vehicles

cardiagn.com

with all wheel drive up to 06.03 --> **Fuel tank, draining** , Vehicles with all wheel drive from 07.03 to 10.04 --> **Fuel tank, draining** , Vehicles with all wheel drive as of 11.04 --> **Fuel tank, draining**.

Rules for cleanliness

When working on the fuel supply/injection system, pay careful attention to the following rules of cleanliness:

- Thoroughly clean all connections and the surrounding area before disconnecting.
- Place parts that have been removed on a clean surface and cover them. Do not use fluffy cloths!
- Carefully cover over opened components or seal, if repairs are not performed immediately.
- Only install clean components: Only unpack replacement parts immediately prior to installation. Do not use parts that have been stored unpackaged (e.g. in tool boxes etc.).
- When the system is open: Do not work with compressed air. Do not move vehicle unless absolutely necessary.

FUEL TANK, VEHICLES WITH FRONT WHEEL DRIVE UP TO 06.03

Fuel tank with attachments, assembly overview

NOTE:

- **The fuel system shown in illustration is for vehicles with 6-cyl. engine.**

cardiagn.com

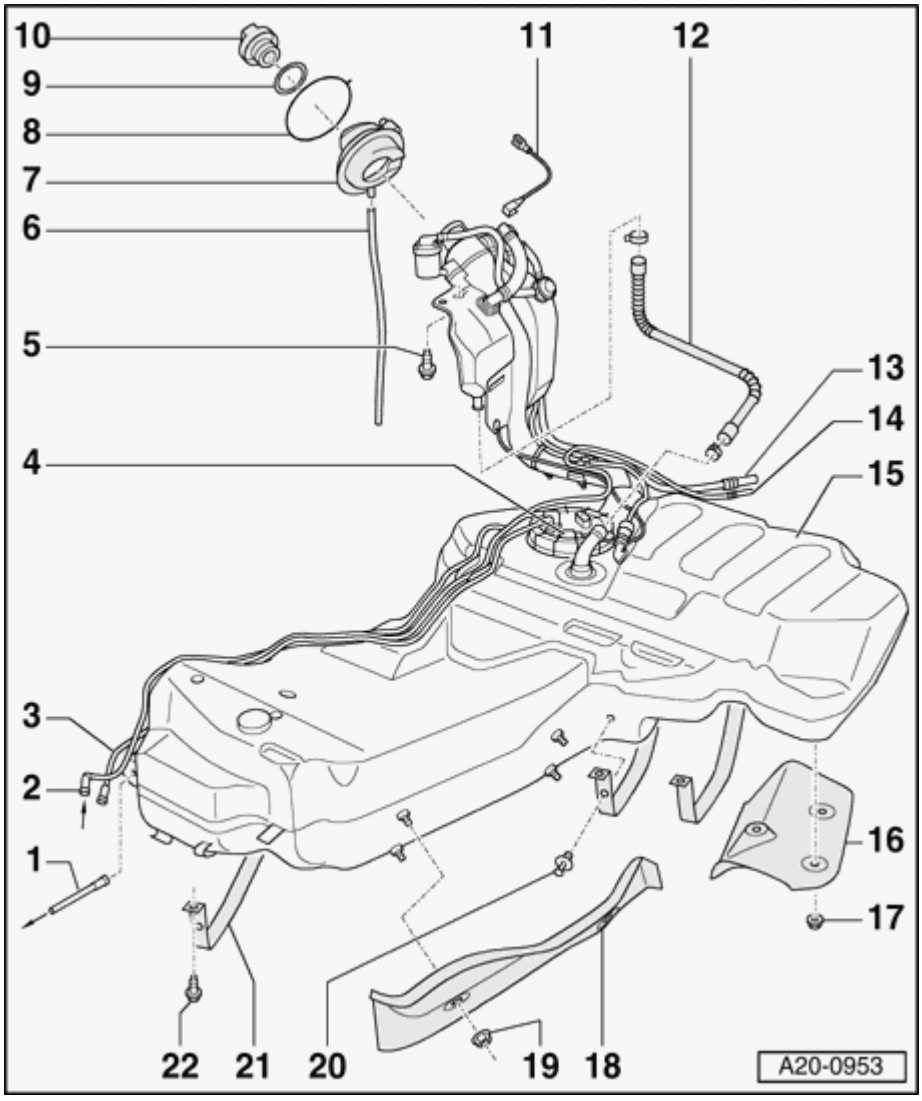


Fig. 1: Fuel Tank With Attachments, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel supply line

- From fuel filter
- To engine
- Do not kink
- To disconnect, press release button on connection piece

2 - Fuel return line

- From engine
- Do not kink
- To disconnect, press release button on connection piece

cardiagn.com

- Clipped in on fuel tank

3 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Do not kink
- To disconnect, press release button on connection piece
- Clipped in on fuel tank

4 - Electrical harness connector

- For Fuel Tank Lock Switch F314
- Checking electrical --> **Fuel Tank Lock Switch F314 , checking**

5 - 23 Nm

6 - Overflow hose

- Engage in wheelhousing

7 - Rubber gasket

8 - Circlip

9 - Oil seal

- Replace if damaged

10 - Filler cap

11 - Ground (GND) connection

- For discharging electrostatic charge
- Installed position/check requirements **Installation position of Ground (GND) connection**
- After installing, check electrical connection of metal ring at fuel filler tube to a bare area of chassis using Ohm meter - Specified value: approx. 0ohms

12 - Ventilation line

13 - Ventilation line

- From gravity valve to EVAP canister
- To remove, press release ring on EVAP canister

14 - Ventilation line

cardiagn.com

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- To remove, press release ring on EVAP canister
- Clipped in on fuel tank

15 - Fuel tank

- Removing and installing --> **Fuel tank with attachments, removing and installing**

16 - Heat shield

- For fuel tank

17 - 2 Nm

18 - Heat shield

- For fuel tank

19 - 2 Nm

20 - Spreader clip

21 - Securing strap

- Note different lengths

22 - 23 Nm

Installation position of Ground (GND) connection

cardiagn.com

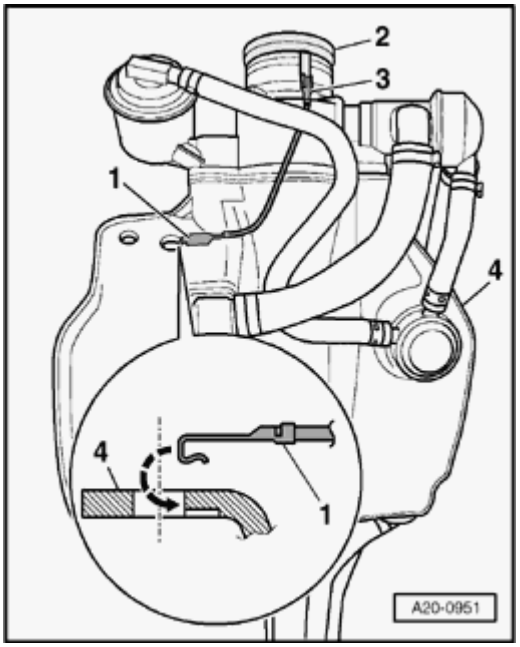


Fig. 2: Identifying Connector Is Securely Attached To Metal Ring & Contact Is Hooked Into Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route Ground (GND) connection as shown in illustration.
- Engage Ground (GND) connection contact - **1** - into opening on fuel tank - **4** -.
- Make sure that Ground (GND) connection connector - **3** - is secured at metal ring - **2** - of fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

Fuel tank, draining

Special tools, testers and auxiliary items required

cardiagn.com

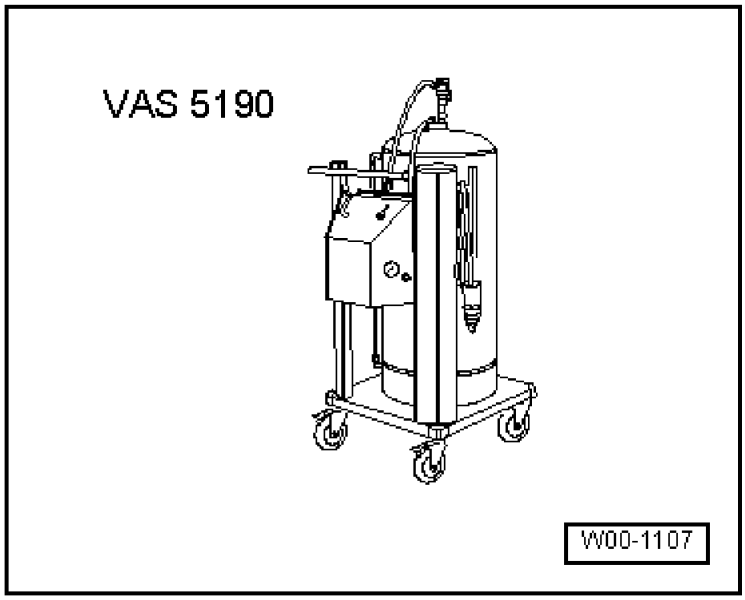


Fig. 3: Identifying Fuel Extraction Unit VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Fuel siphoning unit VAS 5190

Work procedure

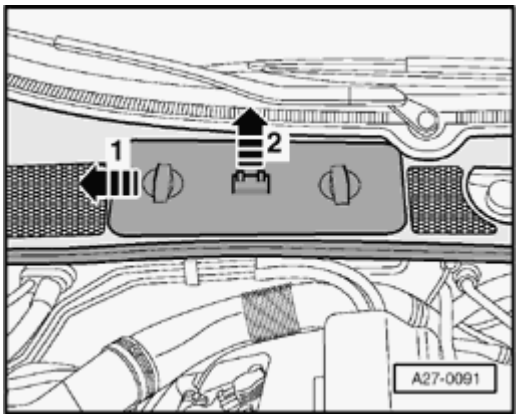
Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.



cardiagn.com

Fig. 4: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward the right - **arrow 1** - and remove it upward - **arrow 2** -.

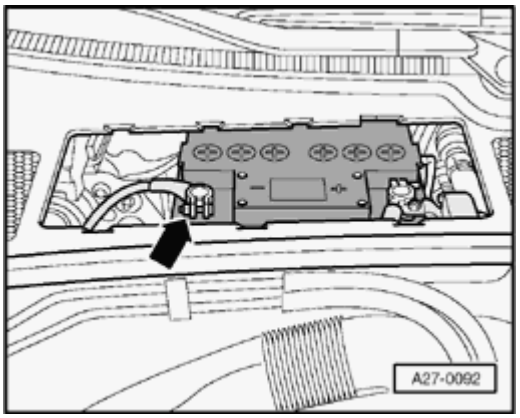


Fig. 5: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

CAUTION: Secure Ground (GND) wire of fuel extraction unit VAS 5190 to a bare area of the chassis.

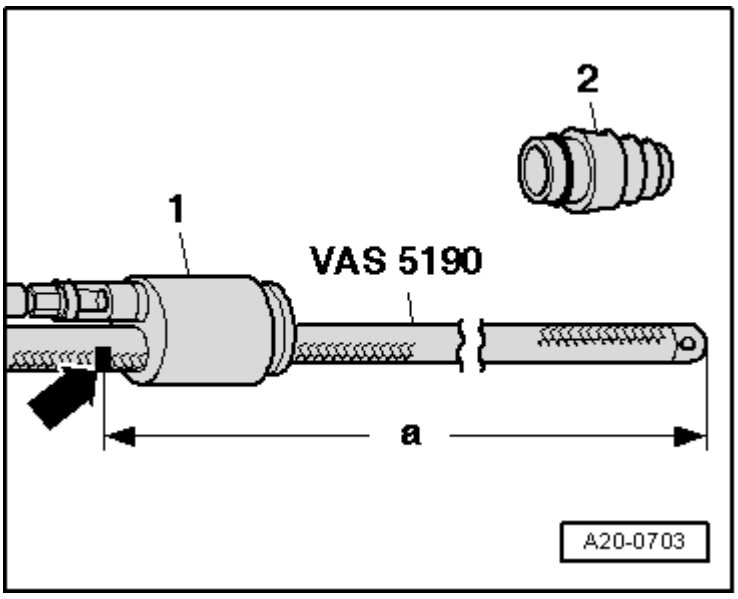


Fig. 6: Pulling Cone Piece From Shaft Piece Of Fuel Siphoning Device VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull cone piece - **2** - from shaft piece - **1** - of fuel siphoning device VAS 5190.
- Using insulating tape, apply a mark - **arrow** - on hose at length - **a** - = 1,465 mm from end of suction

cardiagn.com

hose.

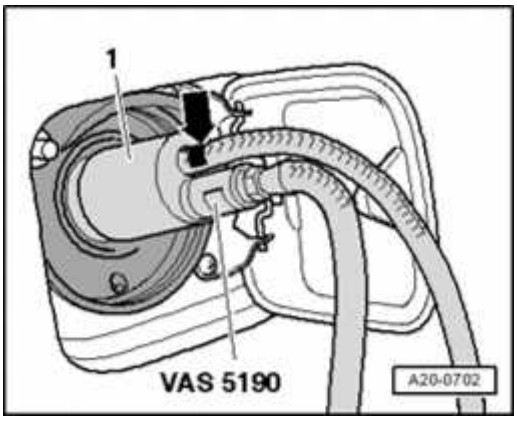


Fig. 7: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel filler cap from fuel filler tube.
- Screw shaft piece - **1** - of fuel extraction unit VAS 5190 on to fuel filler tube of fuel tank.
- Push suction hose as far into fuel tank until the mark applied earlier - **arrow** - is positioned on shaft piece.

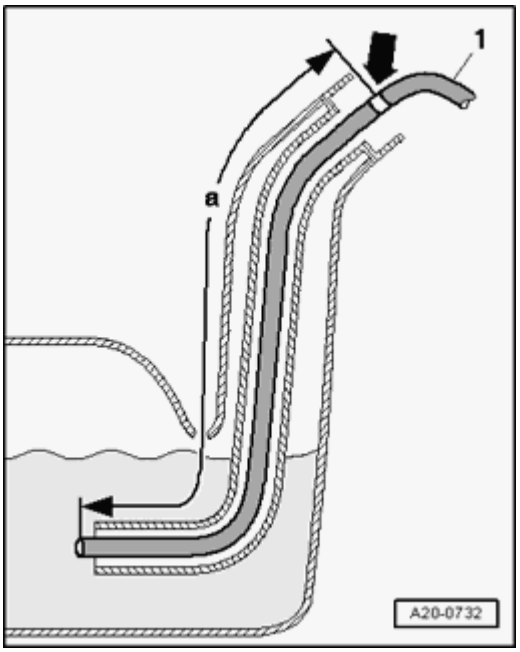


Fig. 8: Sliding Suction Hose As Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **If using a siphoning device without a shaft piece, proceed basically in the same manner.**
- **In this case, apply a mark - arrow - using insulating tape on hose at length - a - = 1,400 mm from end of suction hose. The suction hose is inserted**

cardiagn.com

correctly when the marking applied earlier stands opposite the lip of fuel filler tube.

- **If the hose can only be inserted with difficulty, coat it thinly with engine oil. Never use lubricants containing silicon.**

- Drain fuel tank through fuel filler tube.
- Carefully pull out suction hose.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Fuel tank with attachments, removing and installing

Special tools, testers and auxiliary items required

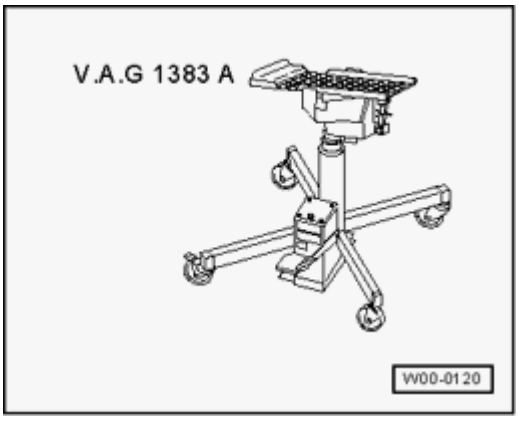


Fig. 9: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Engine/transmission jack V.A.G 1383 A

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **For removal, the fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**

CAUTION:

- **Observe procedures for disconnecting battery -->**

cardiagn.com

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

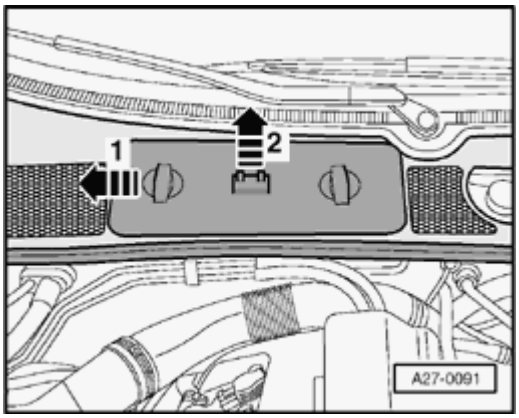


Fig. 10: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

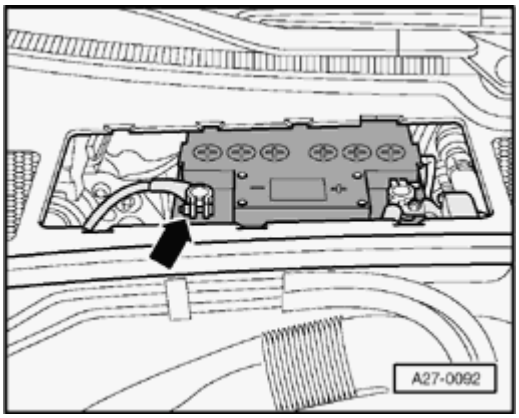


Fig. 11: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler cap briefly and then close again.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

cardiagn.com

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

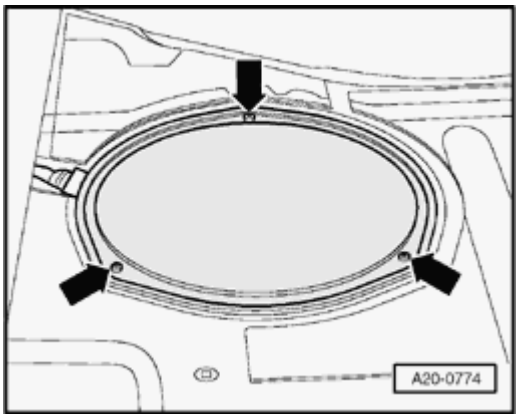


Fig. 12: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange - **arrows** - in luggage compartment.

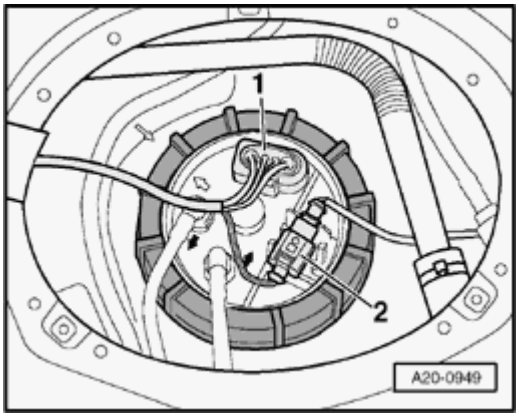


Fig. 13: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.
- Disconnect electrical connector - **2** -.

cardiagn.com

Vehicles with hose connection:

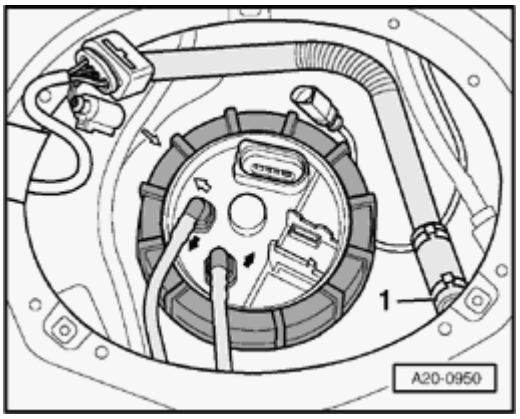


Fig. 14: Disconnecting Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation line - **1** -.

Vehicles with connection coupling:

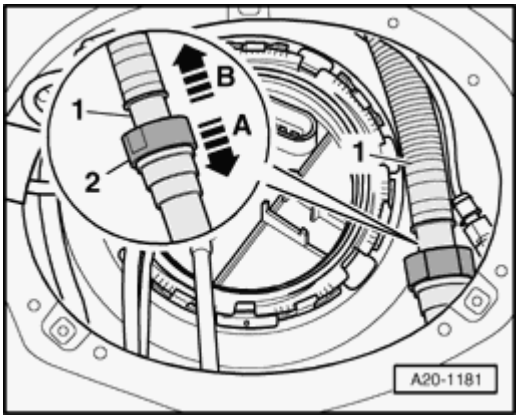


Fig. 15: Disconnecting Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation line - **1** -. Do this by pressing releasing ring - **2** - approx. 2 mm in direction of - **arrow A** - and simultaneously pulling ventilation line off - **arrow B** -.

All models:

cardiagn.com

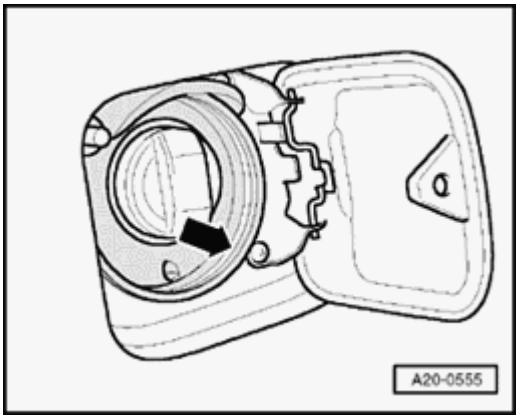


Fig. 16: Opening Tank Flap And Cleaning Area Around Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open tank flap and clean area around fuel filler tube.

NOTE:

- **Do not remove fuel cap.**

- Pry tensioning ring - **arrow** - out from rubber gasket and press rubber gasket through toward inside.

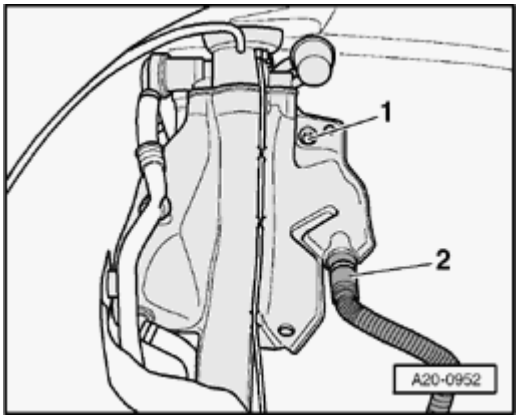


Fig. 17: Disconnecting Ventilation Line From Fuel Filler Tube & Removing Bolts For Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear wheel.
- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Disconnect ventilation line - **2** - from fuel filler tube.
- Remove bolts - **1** - for fuel filler tube.

cardiagn.com

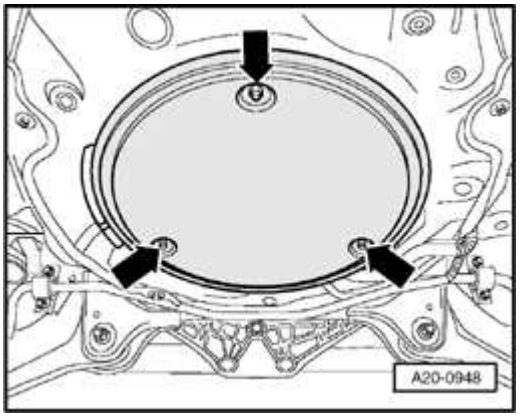


Fig. 18: Removing EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.

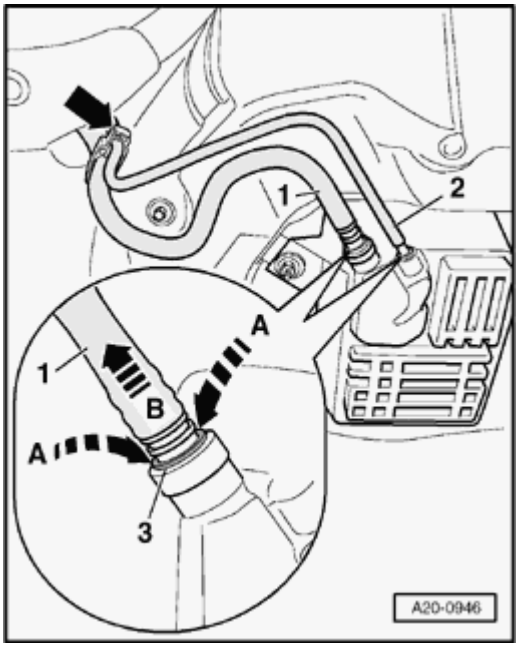


Fig. 19: Removing Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ventilation lines - **1** - and - **2** -. Do this by pressing releasing ring - **3** - in direction of - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Unclip ventilation lines at top from bracket - **arrow** -.

cardiagn.com

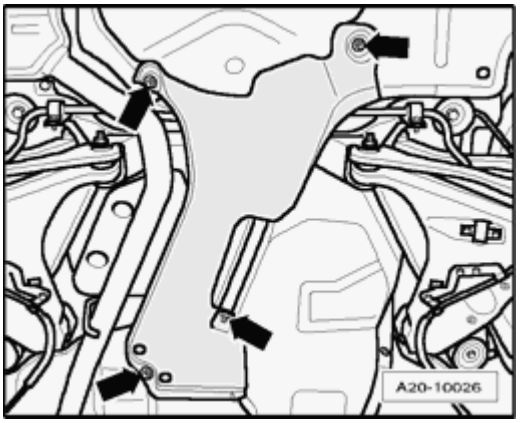


Fig. 20: Removing Vehicle Floor Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove vehicle floor cover - **arrows** -.

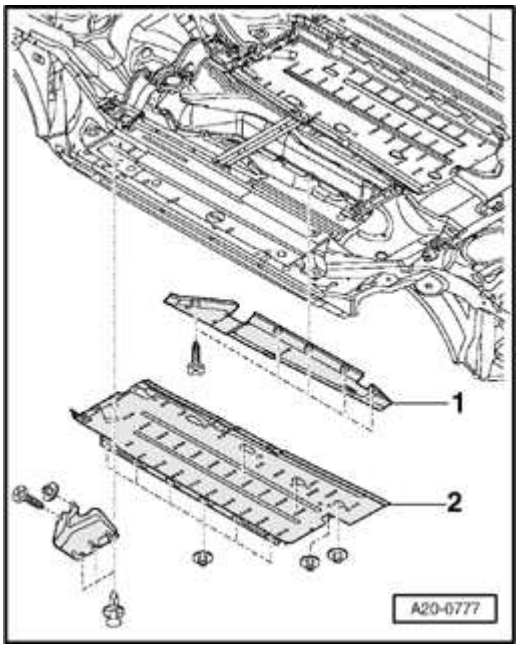


Fig. 21: Removing Covers For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove covers - **1** - and - **2** - for vehicle floor.
- Remove rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN

cardiagn.com

- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

CAUTION: Before removing the subframe bolts, secure the vehicle against falling over (e.g. load the luggage compartment with approx. 50 kg).

- Remove rear axle --> **42 - REAR SUSPENSION** .

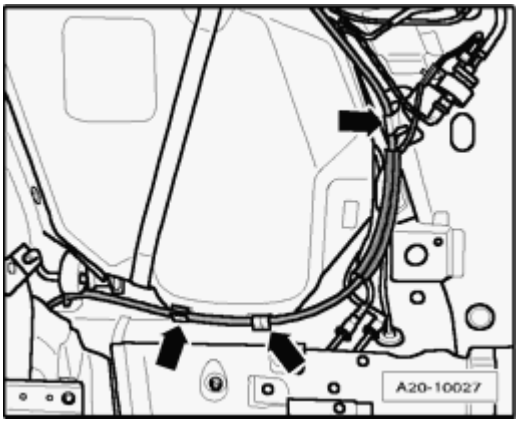


Fig. 22: Disconnecting Right Parking Brake Cable At Front Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect right parking brake cable at front of fuel tank at the areas indicated with - **arrows** -.

Fuel system with return line:

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

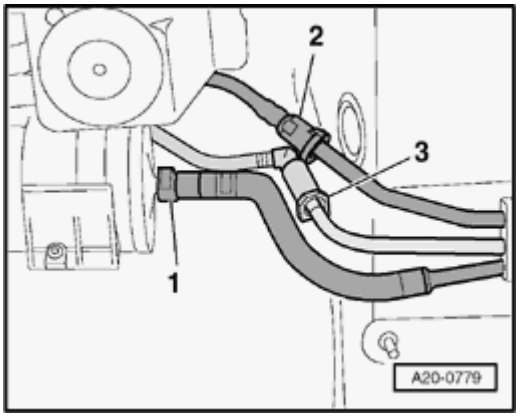


Fig. 23: Disconnecting Fuel Supply Line From Fuel Filter & Fuel Return Line And Ventilation Line At Connection Point
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel supply line - **1** - from fuel filter, by pressing release buttons. Catch escaping fuel.
- Disconnect fuel return line - **3** - and ventilation line - **2** - at connection point, by pressing release buttons.

Fuel system without return line:

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

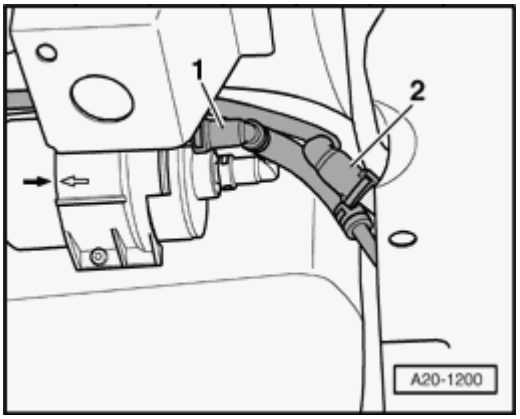


Fig. 24: Separating Ventilation Line And Fuel Line From Right Front Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate ventilation line - **2** - and fuel line - **1** - from right front of fuel tank, by pressing release buttons.

All models:

- Place engine/transmission jack V.A.G 1383 A under fuel tank for support.

CAUTION:

cardiagn.com

- **For weight reasons, fuel tank must be empty for removal.**

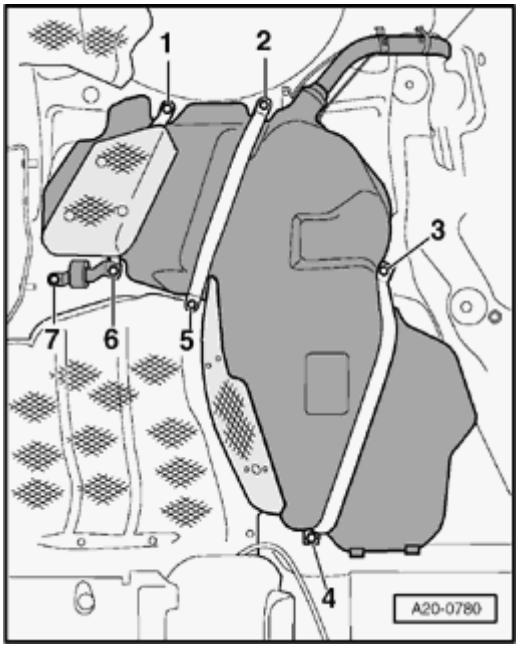


Fig. 25: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 7** -.
- Lower fuel tank using engine/transmission jack V.A.G 1383 A.

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**

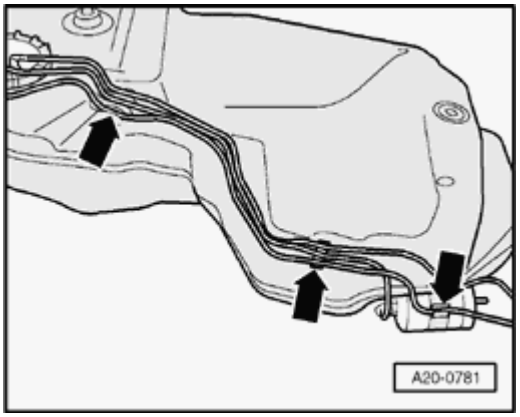


Fig. 26: Identifying Fuel And Ventilation Lines Are Properly Clipped To Fuel Tank

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make sure fuel and ventilation lines are properly clipped to fuel tank - **arrows** -.
- Check if Ground (GND) wiring on both connections show signs of oxidation. If necessary, remove.
- Check installation position of Ground (GND) connection:

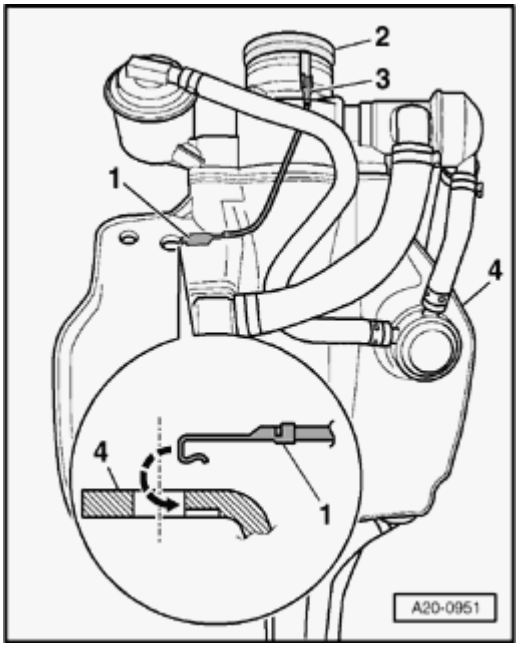


Fig. 27: Identifying Connector Is Securely Attached To Metal Ring & Contact Is Hooked Into Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The connector - **3** - must be securely attached to metal ring - **2** -.
- The contact - **1** - must be hooked into fuel tank - **4** -.

- Position fuel tank with mounting straps to vehicle floor using engine/transmission jack V.A.G 1383 A.
- Make sure fuel tank is positioned so that the filler tube can be correctly guided into opening of the body.

cardiagn.com

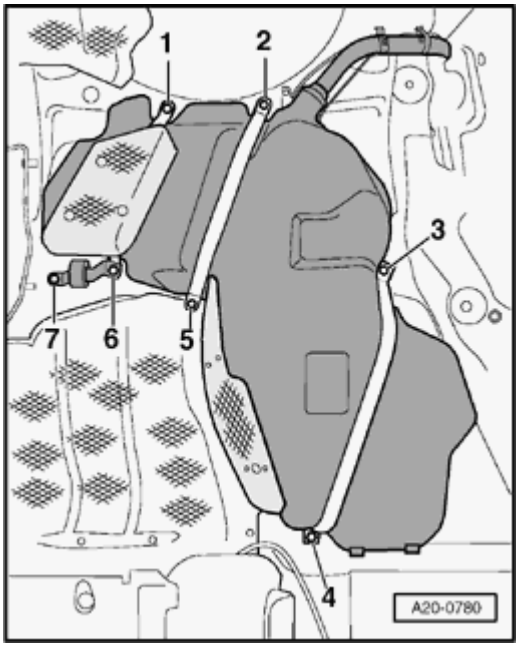


Fig. 28: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First tighten fuel tank at securing points - **2, 5, 3, 4** - and then at - **1, 6, 7** -.
- Fasten fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

- Install rear axle --> **42 - REAR SUSPENSION** .
- Install rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

cardiagn.com

- Install right rear wheel housing liner, by fastening bolts for fuel filler tube -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

  .

Torque specifications

Component	Nm
Tension straps at body	23
Fuel filler tube to body	23
EVAP canister cover	9

Fuel delivery unit and fuel level sensor, assembly overview

NOTE:

- **Fuel delivery unit shown in illustration is for vehicles with 6-cyl. engine.**

cardiagn.com

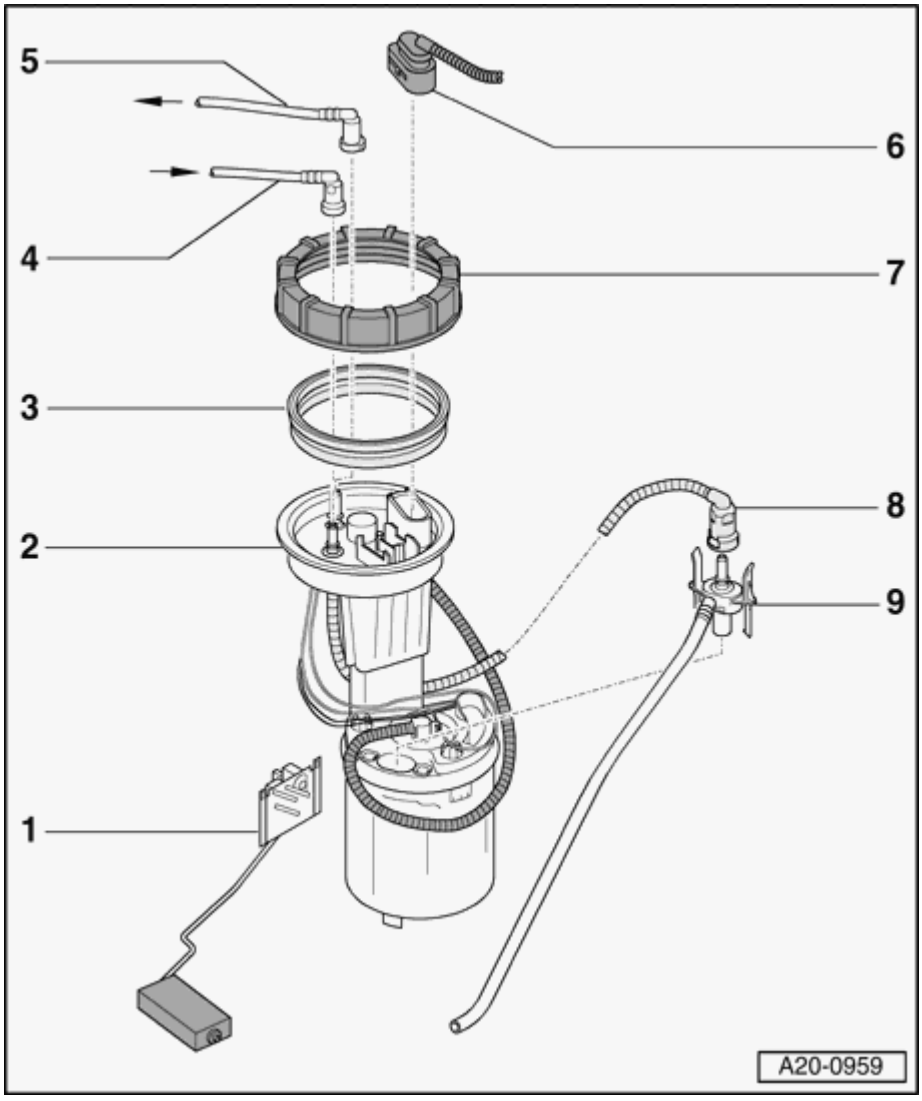


Fig. 29: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel Level Sensor G

- Resistance values, checking --> **Fuel Level Sensor G , checking**
- Removing and installing --> **Fuel Level Sensor G , removing and installing**

2 - Fuel delivery unit

- Fuel pump electrical, checking --> **Fuel pump electrical, checking**
- Checking residual pressure -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL

cardiagn.com

INJECTION IGNITION, ENGINE CODE(S): BPG, BWT

- **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
- **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

- Removing and installing --> **Fuel delivery unit, removing and installing**

3 - Seal

- Always replace
- Install dry

4 - Fuel return line

- Mark before removing
- To disconnect, press release button on connection piece
- Do not kink
- Note direction of arrow (fuel supply or return) on locking flange when installing

- Clipped in on fuel tank

5 - Fuel supply line

- Mark before removing
- To disconnect, press release button on connection piece
- Do not kink
- Note direction of arrow (fuel supply or return) on locking flange when installing

- Clipped in on fuel tank

6 - Electrical harness connector

- For Fuel level sensor G
- For Transfer Fuel Pump (FP) G6

7 - Union nut, 80 Nm

- Use ring nut wrench 3217 for removal and installation

cardiagn.com

8 - Suction jet pipe

- To disconnect, press release button on connection piece

9 - Suction jet pump

Fuel pump electrical, checking

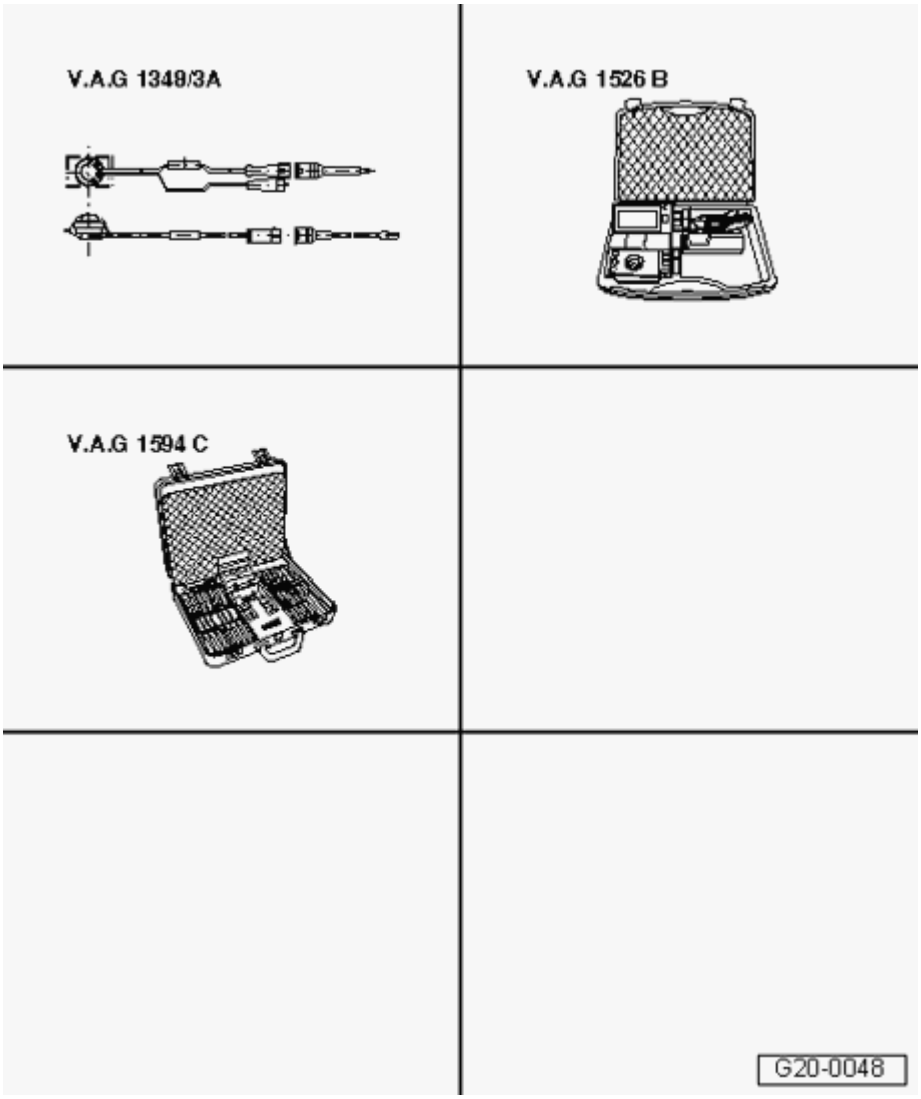


Fig. 30: Identifying Special Tools - Fuel Pump Electrical, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Remote control connection V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Portable multimeter V.A.G 1526 B
- Connector test set V.A.G 1594 C

cardiagn.com

Test conditions

- Battery voltage at least 12.5 V.
- Fuse on fuse panel S228 (position 28) OK.

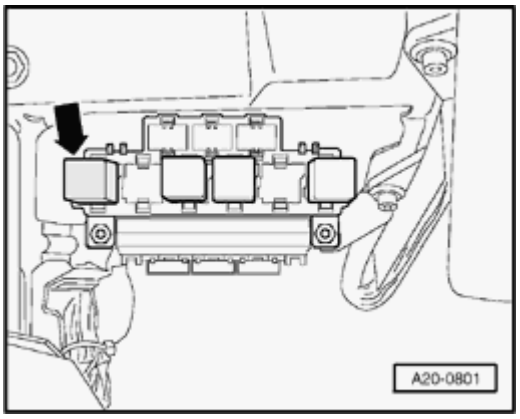


Fig. 31: Installed Location On 9-Socket Relay Carrier In Driver Footwell
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Relay J17 - **arrow** - at position 1 in 9-socket relay carrier behind driver side storage compartment is OK.
- Fuel filter OK
- Ignition switched off.

Test sequence

- Open fuse box cover on left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

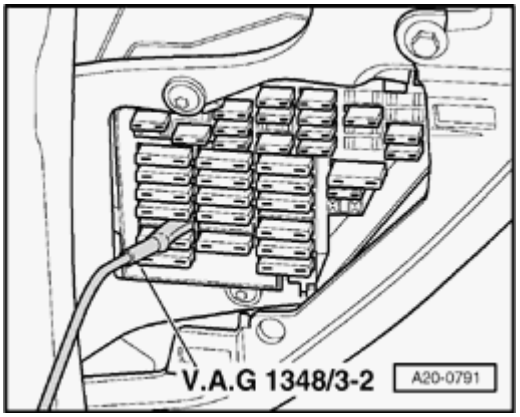


Fig. 32: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of

cardiagn.com

S228.

- Connect alligator clip to vehicle battery (+).
- Press remote control switch.

- Running noise of pump must be audible.

NOTE:

- **Fuel Pump (FP) runs quietly. Avoid surrounding noises while testing the fuel pump.**

If no operating noise can be heard:

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

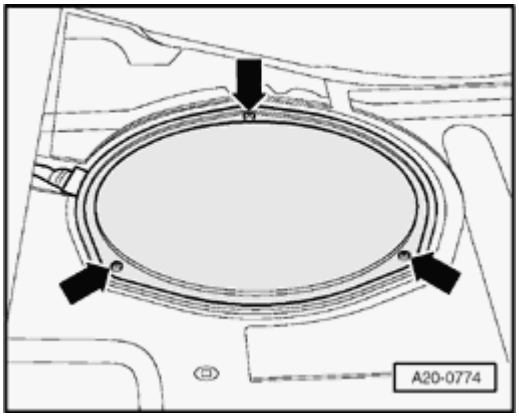


Fig. 33: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Unbolt locking flange cover in luggage compartment - **arrows** -.

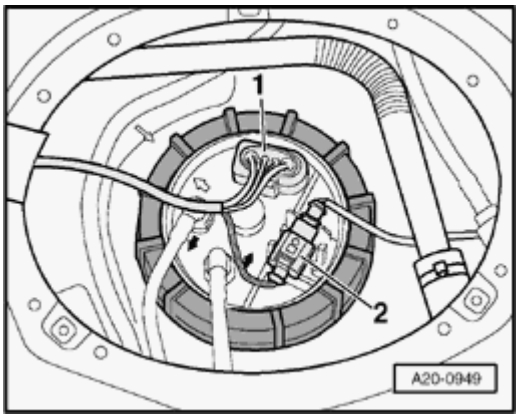


Fig. 34: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.

NOTE:

- **Ignore - 2 -.**

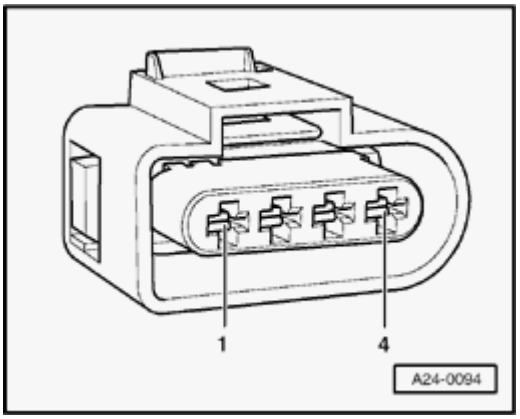


Fig. 35: Identifying Connector Terminals 1 And 4
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **1** - and - **4** - for voltage measurement.
- Press switch on remote control.

- Specification: approx. battery voltage.

If specification is not obtained:

- Repair open circuit in wiring according to wiring diagram.

cardiagn.com

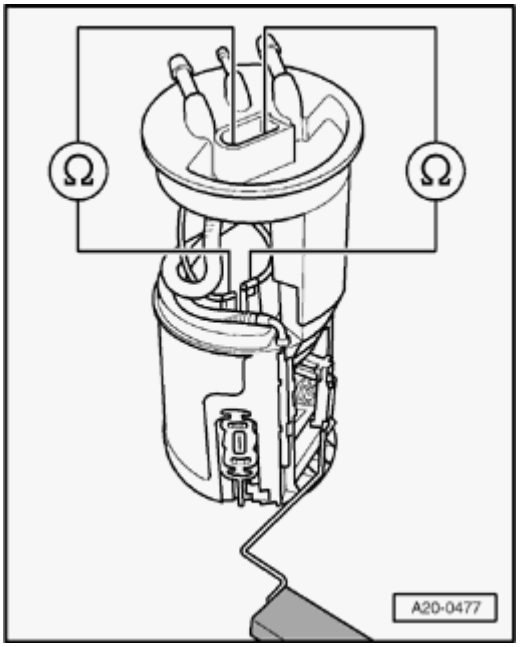


Fig. 36: Checking Electrical Circuit Between Terminals Of Fuel Delivery Unit And Fuel Pump For Continuity
Courtesy of VOLKSWAGEN UNITED STATES, INC.

If specified value is obtained, although no running-noise can be heard at pump:

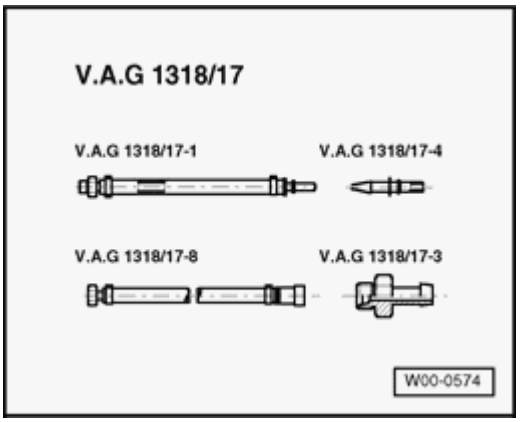
- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.
- Check if electrical wiring between flange and fuel pump is connected and has continuity.

If no malfunction is detected in wires, Fuel Pump (FP) is faulty - replace fuel pump.

- Install fuel delivery unit **Installing**.

Delivery rate of fuel pump, checking (vehicles with 1.8L turbo engine)

Special tools, testers and auxiliary items required



cardiagn.com

Fig. 37: Adapter V.A.G 1318/17-1 From Adapter Set V.A.G 1318/17
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Adapter V.A.G 1318/17-1 from adapter set V.A.G 1318/17

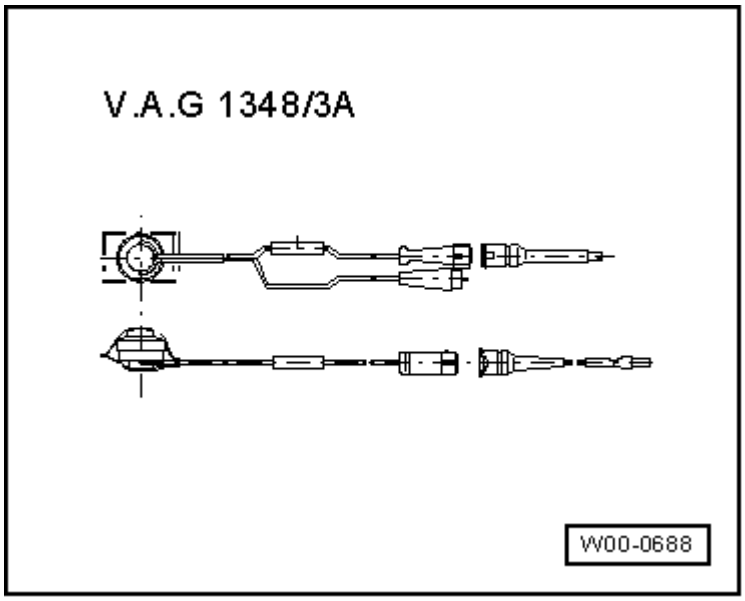


Fig. 38: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Fuel pressure regulator OK, checking -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS

cardiagn.com

- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

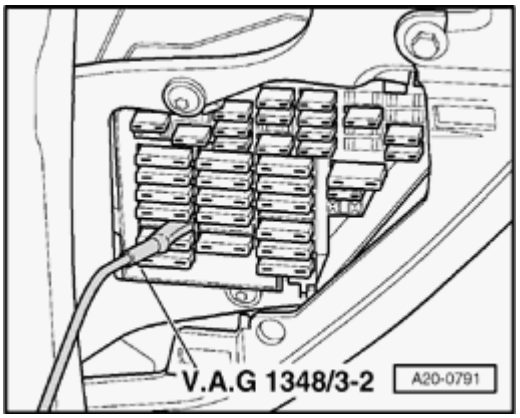


Fig. 39: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery positive (+).
- Remove fuel filler cap from fuel filler tube.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->

cardiagn.com

- **70 - INTERIOR TRIM**
- **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

.

All models:

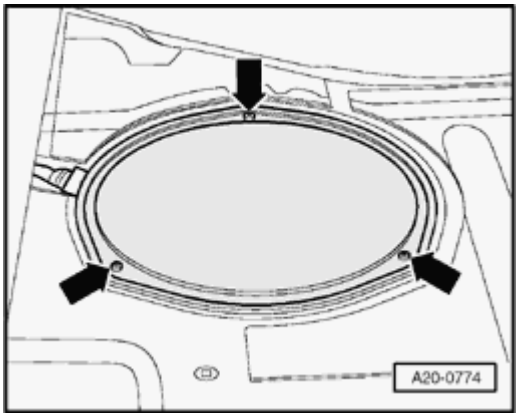


Fig. 40: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt locking flange cover - **arrows** - in luggage compartment.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

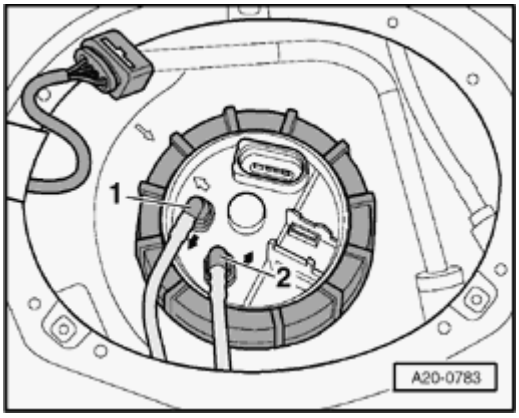


Fig. 41: Identifying Fuel Return Line & Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel return line - **2** - by pressing release buttons.

NOTE:

- **Ignore - 1 -.**

cardiagn.com

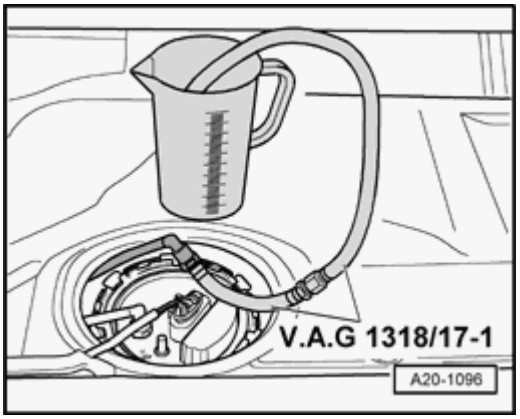


Fig. 42: Fuel Line From The High Pressure Fuel Gauge Connected To The Disconnected Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect adapter V.A.G 1318/17-1 to disconnected fuel return line and hold it in a measuring container.
- Press switch on remote control for 15 seconds.

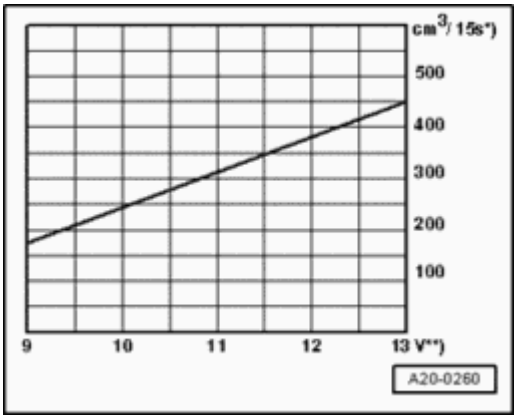


Fig. 43: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Assembly is in reverse order of removal. Note the following:

- Install fuel return line.

Delivery rate of fuel pump, checking (vehicles with 6-cyl. MPI-engine)

Special tools, testers and auxiliary items required

cardiagn.com

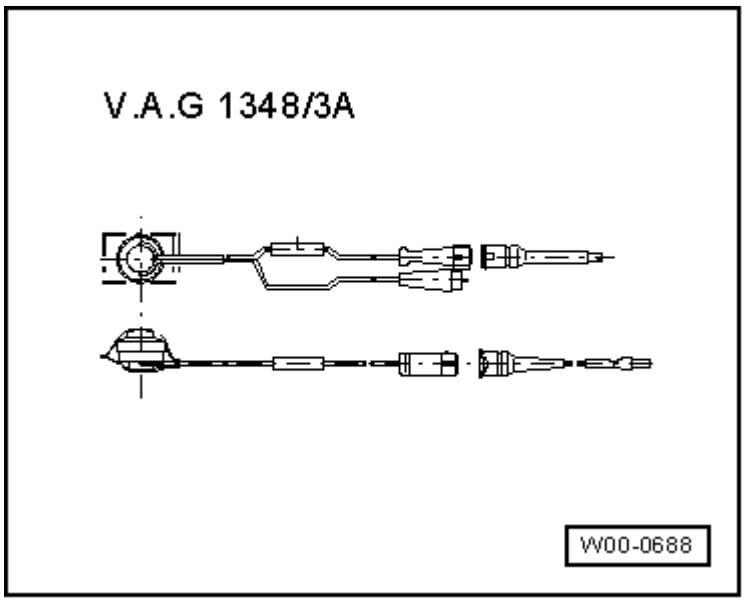


Fig. 44: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Fuel pressure regulator OK, checking -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

  .

- Ignition switched off.

cardiagn.com

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

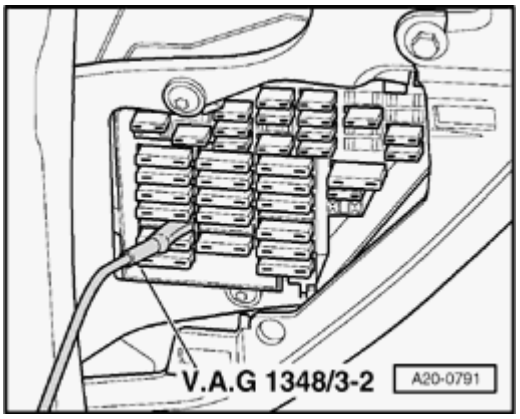


Fig. 45: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery positive (+).
- Remove fuel filler cap from fuel filler tube.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Disconnect fuel return hose from line connection on fuel rail line.

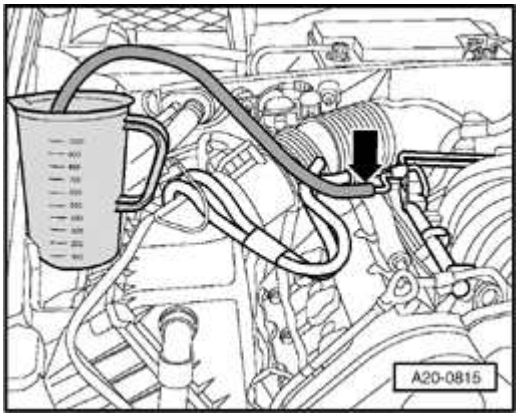


Fig. 46: Connecting Extension Hose Onto Fuel Rail And Hold It In Measuring Container
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Connect extension hose - **arrow** - onto fuel rail and hold it in a measuring container.
- Press switch on remote control for 15 seconds.

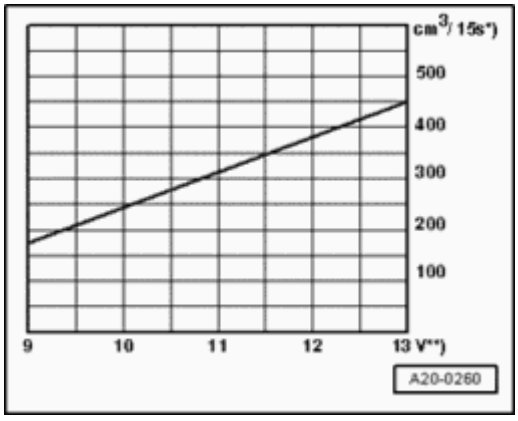


Fig. 47: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Assembly is in reverse order of removal. Note the following:

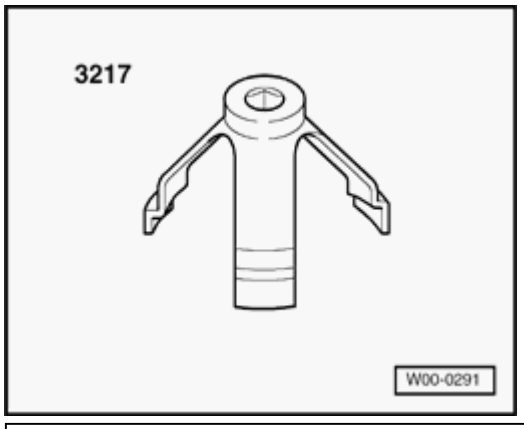
NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**

- Install fuel return hose.

Fuel delivery unit, removing and installing

Special tools, testers and auxiliary items required



cardiagn.com

Fig. 48: Identifying Ring Nut Spanner 3217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ring nut wrench 3217

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the fuel delivery unit, the fuel tank may only be filled to a maximum of $^{3}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

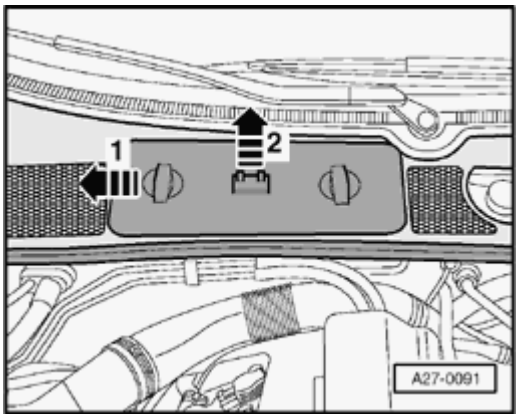


Fig. 49: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

cardiagn.com

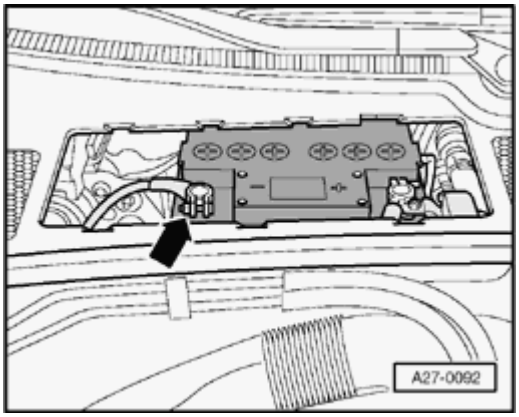


Fig. 50: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

cardiagn.com

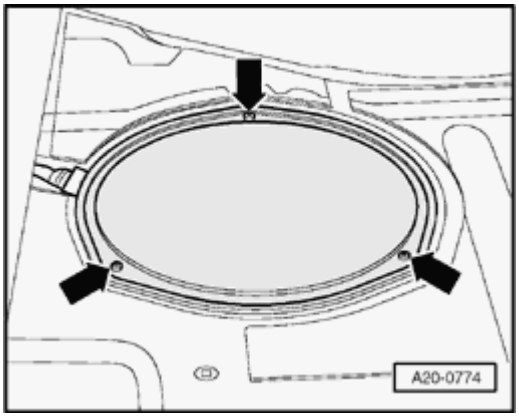


Fig. 51: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt locking flange cover in luggage compartment - **arrows** -.

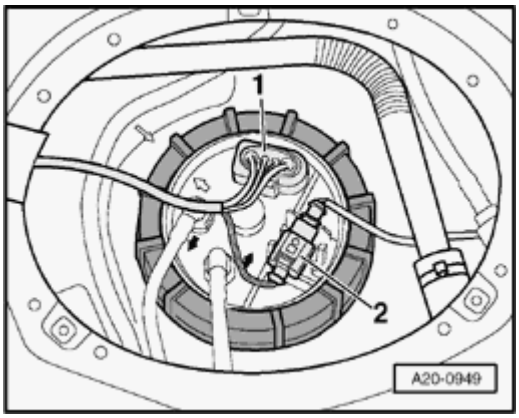


Fig. 52: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

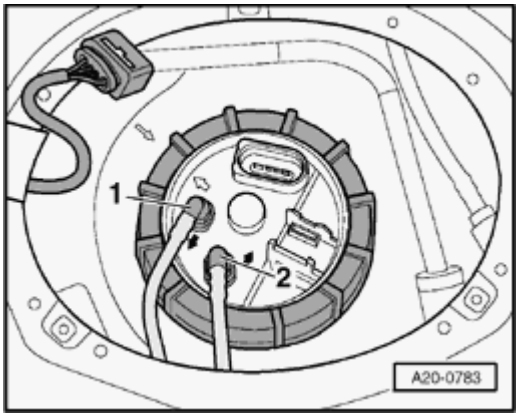


Fig. 53: Identifying Fuel Return Line & Fuel Return Line

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark fuel supply line - **1** - and fuel return line - **2** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Pull both lines from locking flange, by pressing release buttons.

Vehicles with 1.8L Turbo engine:

- Also separate ventilation line to fuel filter at locking flange, by pressing release buttons.

All models:

CAUTION: Fuel delivery unit may only be removed when fuel tank is maximum $^{3}/_{4}$ filled. Otherwise, a large amount of fuel will spill out.

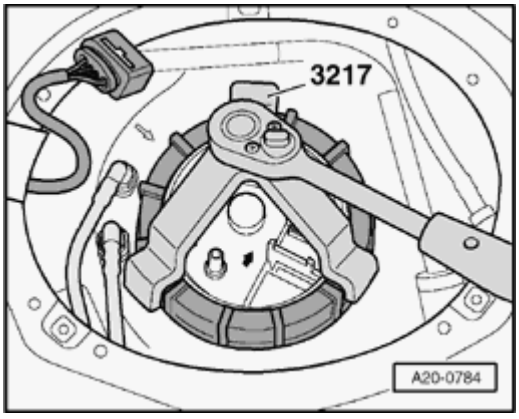


Fig. 54: Removing/Installing Union Nut Using Ring Nut Wrench 3217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nut using Ring nut wrench 3217.

cardiagn.com

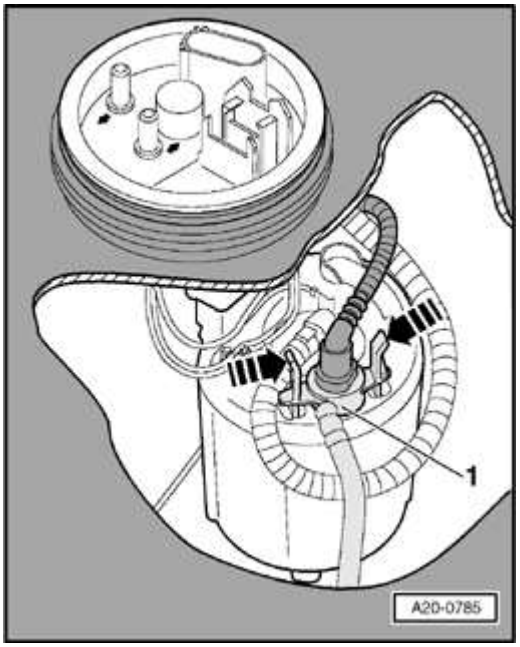


Fig. 55: Lifting Fuel Delivery Unit Slightly Out Of Fuel Tank Opening And Removing Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lift fuel delivery unit slightly out of fuel tank opening and remove seal.
- If fuel delivery unit is still inserted in fuel tank, slide locking flange slightly to side.
- Reach through gap between locking flange and installation opening in fuel tank and release suction jet pump - **1** -.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown.**

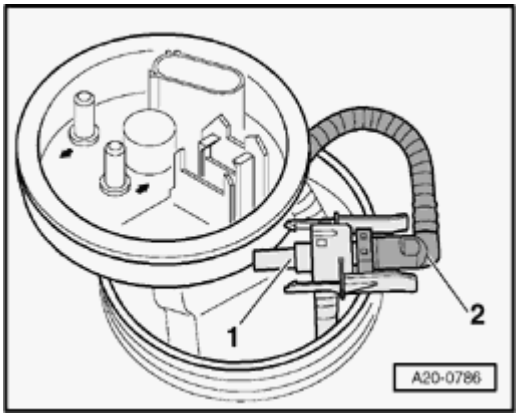


Fig. 56: Identifying Suction Jet Pump & Suction Jet Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lift suction jet pump - **1** - upward with suction jet pipe - **2** - still connected.
- Disconnect suction jet line from suction jet pump by pressing release button.
- Remove suction jet pump.

cardiagn.com

- Remove fuel delivery unit.

NOTE:

- **When removing fuel delivery unit, be sure not to bend floater arm of Fuel Level Sensor G.**
- **Be aware that fuel is still in the fuel delivery unit.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When installing fuel delivery unit, be sure not to bend floater arm of fuel level sensor G.**
- **Make sure fuel hose is seated securely.**

- Insert fuel delivery unit into fuel tank.

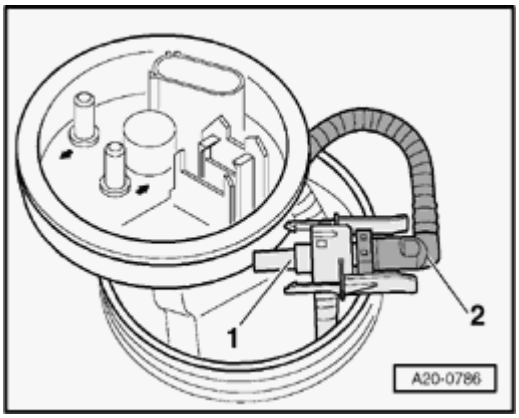


Fig. 57: Identifying Suction Jet Pump & Suction Jet Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect suction jet line - **2** - to connection for suction jet pump - **1** -.

cardiagn.com

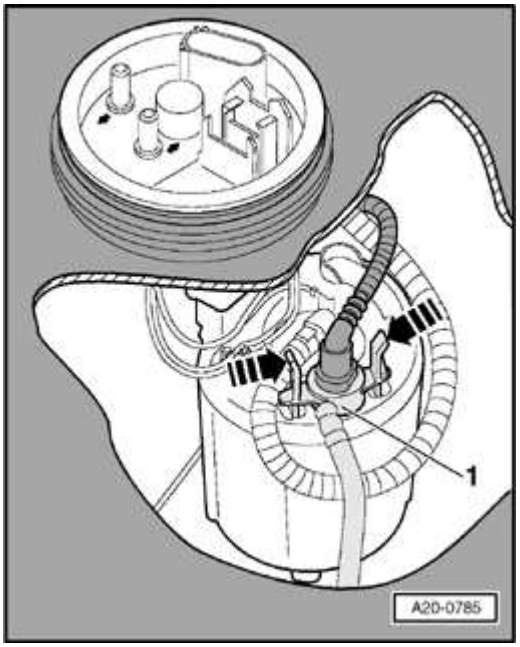


Fig. 58: Lifting Fuel Delivery Unit Slightly Out Of Fuel Tank Opening And Removing Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clip in suction jet pump - **1** - on fuel delivery unit. To do so, insert hand into gap between locking flange and installation opening of fuel tank.
- Suction jet pump must engage audibly.
- Verify that the suction jet pump is securely engaged.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown.**

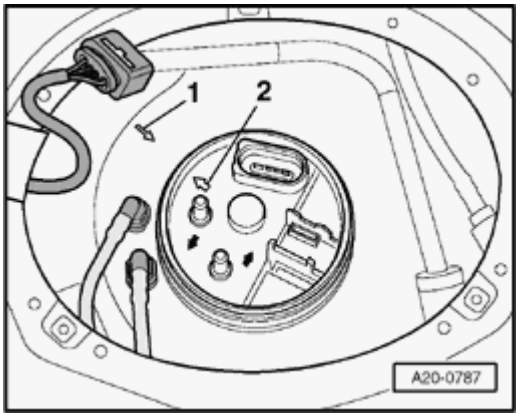


Fig. 59: Identifying Marking On Locking Flange Align With Marking On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install new locking flange seal dry.
- Press locking flange down against spring pressure and bring it into installation position.

cardiagn.com

- Marking - **2** - on locking flange must align with marking - **1** - on fuel tank.

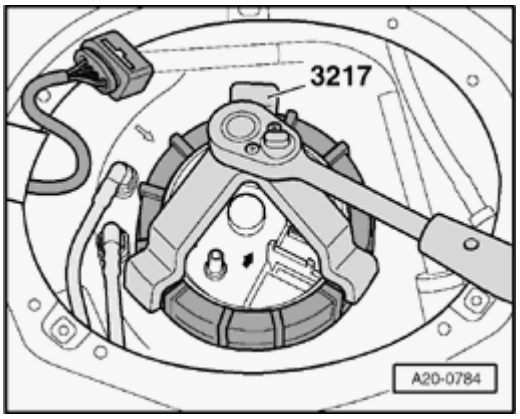


Fig. 60: Removing/Installing Union Nut Using Ring Nut Wrench 3217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten union nut for locking flange.

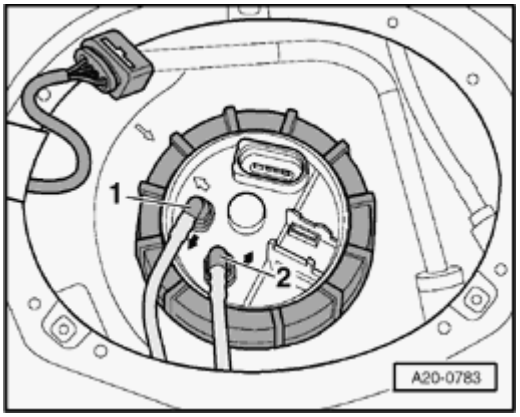


Fig. 61: Identifying Fuel Return Line & Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install fuel supply line - **1** - and fuel return line - **2** - according to marking.

Vehicles with 1.8L Turbo engine:

- Also, install ventilation line to fuel filter at locking flange.

All models:

- Connect electrical harness connector.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

cardiagn.com

.

Torque specifications

Component	Nm
Union nut for fuel delivery unit	80

Fuel Level Sensor G , checking

Special tools, testers and auxiliary items required

Fig. 62: Identifying Multimeter V.A.G 1526B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 B

Fig. 63: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

cardiagn.com

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

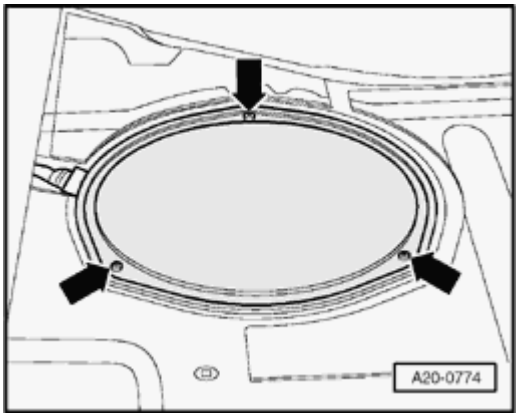


Fig. 64: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt locking flange cover in luggage compartment - **arrows** -.

cardiagn.com

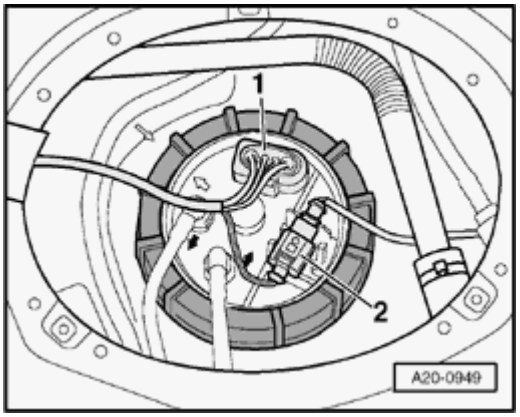


Fig. 65: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.

NOTE:

- **Ignore - 2 -.**

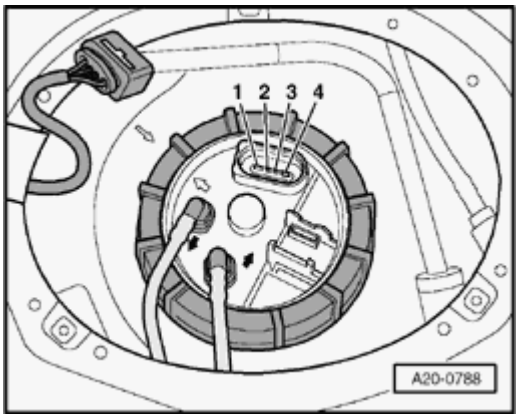


Fig. 66: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	300 to 310 ohms	53.5 to 59 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values for "tank full" or "tank empty" , the fuel delivery unit must be removed --> Fuel delivery unit, removing and installing and the sensor float must be placed in upper or lower end position.**
- **With fuel level sensor G removed, the following values are obtained**

cardiagn.com

because of the greater deflection of the floater arm:

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	271 to 296 ohms	55 to 69 ohms

Fuel Level Sensor G , removing and installing

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.

CAUTION: Before remove electrical connectors on Fuel Level Sensor G , first release contact retaining tabs.

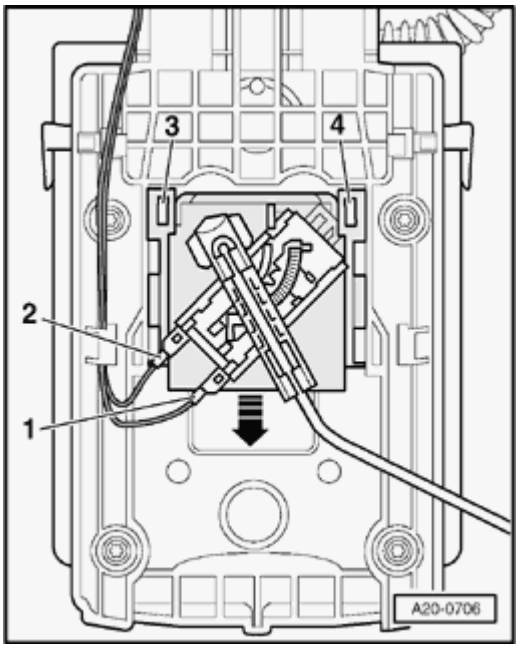


Fig. 67: Releasing Connectors & Lifting Up Retaining Lugs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical connectors - **1** - and - **2** - and disconnect them.
- Pry on retaining tabs - **3** - and - **4** - with a screwdriver and pull fuel level sensor G off downward - **arrow** -.

Installing

cardiagn.com

Installation is in reverse order of removal. Note the following:

- Insert fuel level sensor G into guides on fuel delivery unit and push up until it engages.
- Connect electrical connections and check that they are securely engaged.
- Install fuel delivery unit **Installing**.

Fuel Tank Lock Switch F314 , checking

The Fuel Tank Lock Switch F314 consists of a reed contact on fuel filler tube and a fuel tank cap with an embedded magnet. If fuel tank cap is not fully screwed on, the reed contact switches on an indicator in the instrument cluster.

Special tools, testers and auxiliary items required

Fig. 68: Identifying Multimeter V.A.G 1526B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 B

Fig. 69: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

cardiagn.com

Test sequence

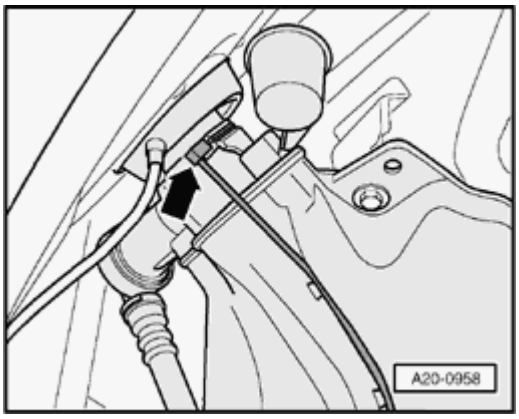


Fig. 70: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If indicator is lit, check the following points in order:

- Fuel tank cap is completely screwed on.
- Correct fuel tank cap (Identification: Threads are gray in color).
- Switch - **arrow** - at fuel filler tube is fully inserted.
- Electrical switch is faulty.

- Wiring connection to instrument cluster is faulty (check according to schematics).

Fuel Tank Lock Switch F314 , checking electrical

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

cardiagn.com

All models:

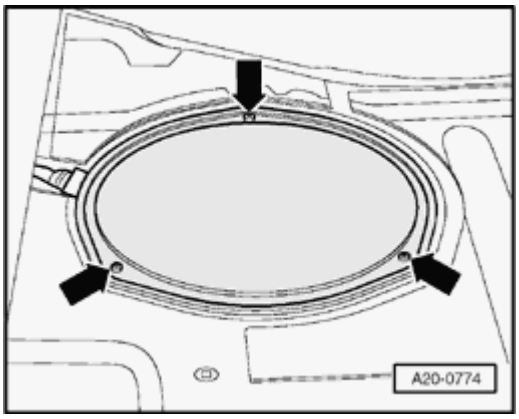


Fig. 71: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt locking flange cover in luggage compartment - **arrows** -.

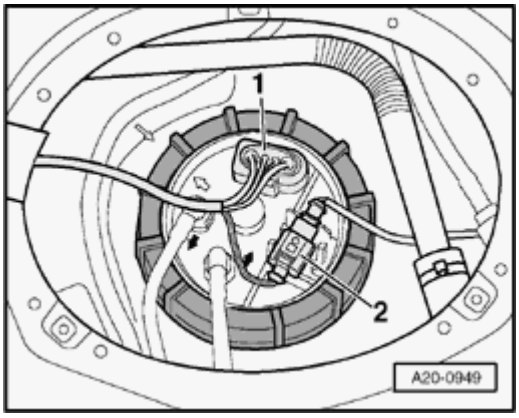


Fig. 72: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **2** -.

NOTE:

- **Ignore - 1 -.**

cardiagn.com

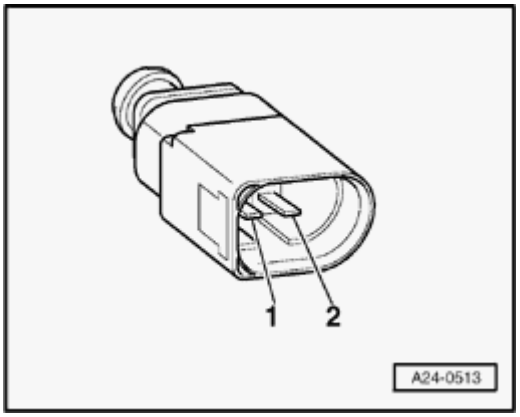


Fig. 73: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **1** - and - **2** - for resistance measurement.

Fuel tank cap	Specified value
Screwed on tight	infinity ohms
Not or incorrectly screwed on	Less than 1 ohms

If specifications are not obtained:

- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

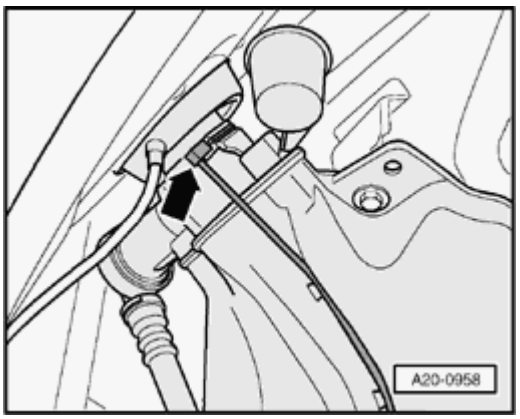


Fig. 74: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace Fuel Tank Lock Switch F314 - **arrow** - , by unclipping and clipping in switch and electrical wiring at fuel filler tube.

cardiagn.com

FUEL TANK, VEHICLES WITH FRONT WHEEL DRIVE FROM 07.03 TO 10.04

Fuel tank with attachments, assembly overview

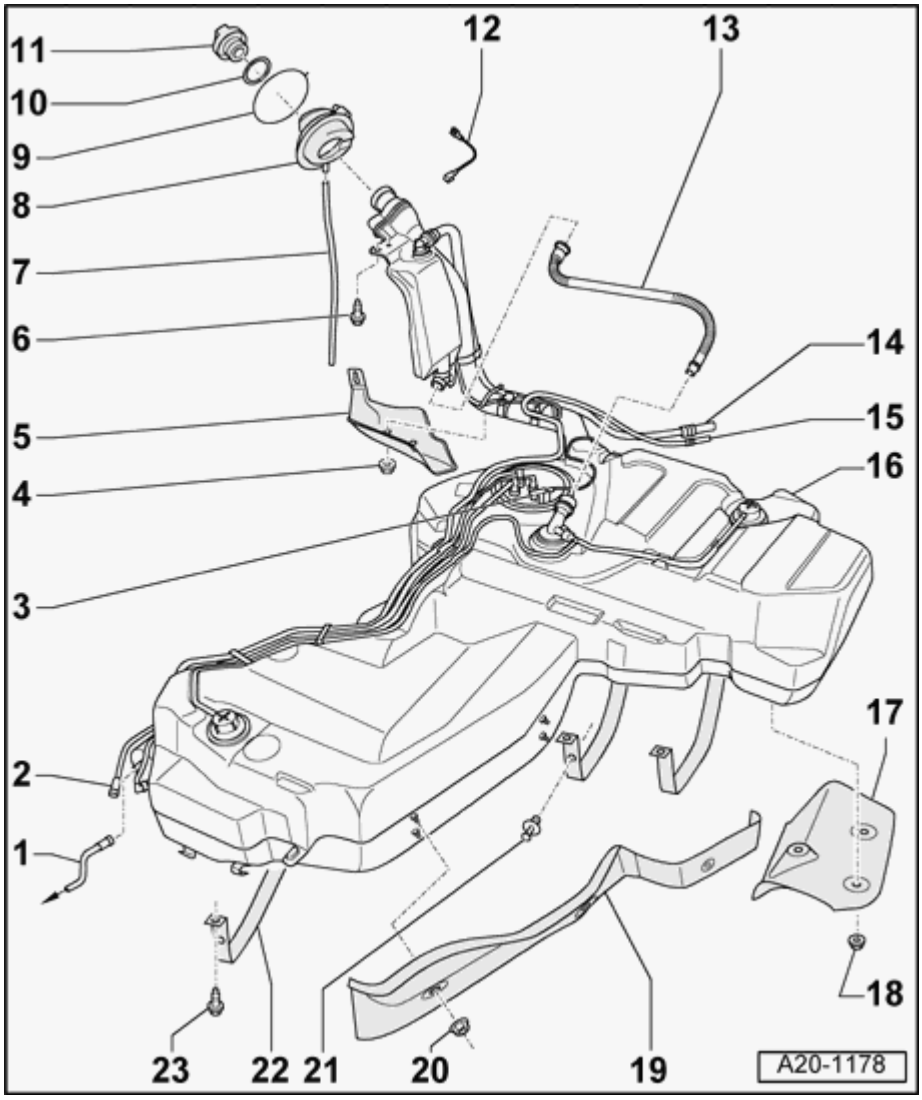


Fig. 75: Fuel Tank With Attachments, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel line

- From fuel filter
- To engine
- Do not kink
- To disconnect, press release button on connection piece

2 - Ventilation line

cardiagn.com

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Do not kink
- To disconnect, press release button on connection piece
- Clipped in on fuel tank

3 - Electrical harness connector

- For Fuel Tank Lock Switch F314
- Checking electrical --> **Fuel Tank Lock Switch F314 , checking**

4 - 2 Nm

5 - Heat shield

- For fuel delivery connection

6 - 23 Nm

7 - Overflow hose

- Engage in wheelhousing

8 - Rubber pan

9 - Circlip

10 - Oil seal

- Replace if damaged

11 - Cap

12 - Ground (GND) connection

- For discharging electrostatic charge
- Installed position/check requirements **Installation position of Ground (GND) connection**
- After installing, check electrical connection of metal ring at fuel filler tube to a bare area of chassis using Ohm meter - Specified value: approx. 0ohms

13 - Ventilation line

14 - Ventilation line

- From gravity valve to EVAP canister
- To remove, press release ring on EVAP canister

cardiagn.com

15 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- To remove, press release ring on EVAP canister
- Clipped in on fuel tank

16 - Fuel tank

- Removing and installing --> **Fuel tank with attachments, removing and installing**

17 - Heat shield

- For fuel tank

18 - 2 Nm

19 - Heat shield

- For fuel tank

20 - 2 Nm

21 - Spreader clip

22 - Securing strap

- Observe varying lengths

23 - 23 Nm

Installation position of Ground (GND) connection

cardiagn.com

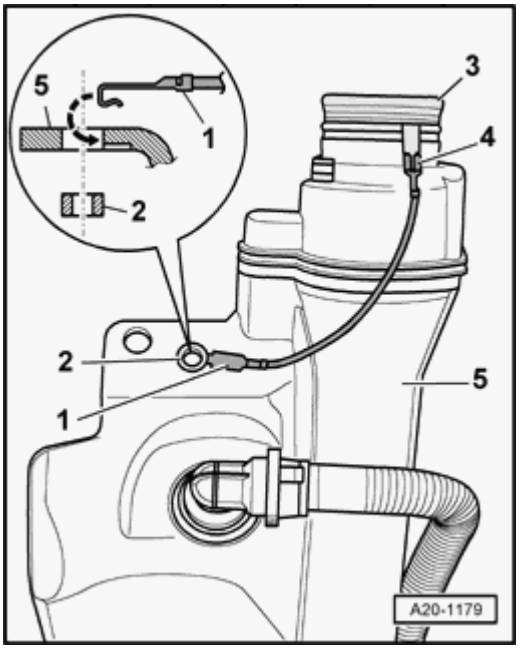


Fig. 76: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route Ground (GND) connection as shown in .
- First, hook Ground (GND) contact - **1** - connection into securing hole on fuel tank - **5** - and then press in spacer bushing - **2** -.
- Make sure connector of Ground (GND) connection - **4** - fits securely at metal ring - **3** - of fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

Fuel tank, draining

Special tools, testers and auxiliary items required

cardiagn.com

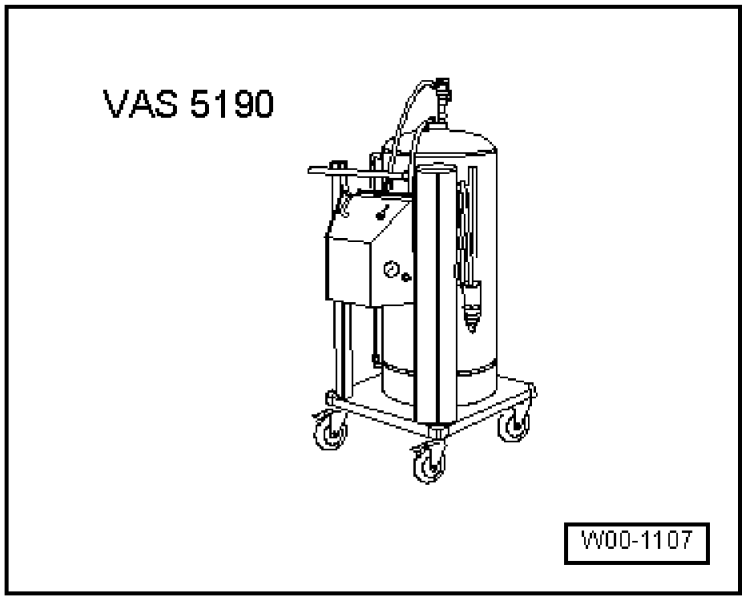


Fig. 77: Identifying Fuel Extraction Unit VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel siphoning unit VAS 5190

Work procedure

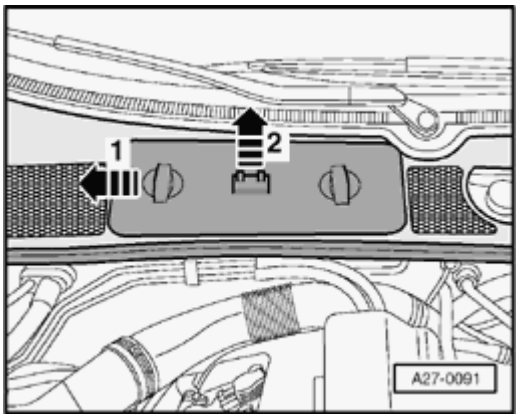
Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.



cardiagn.com

Fig. 78: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

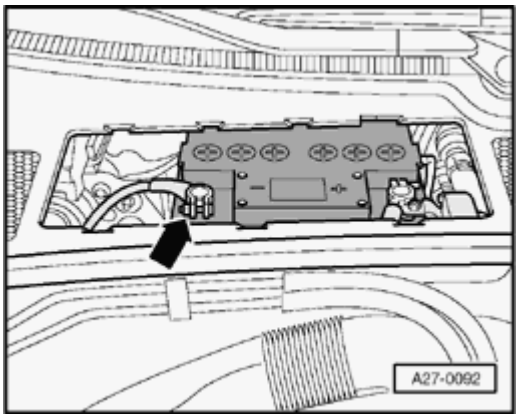


Fig. 79: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

CAUTION: Secure Ground (GND) wire of fuel extraction unit VAS 5190 to a bare metal part on the chassis.

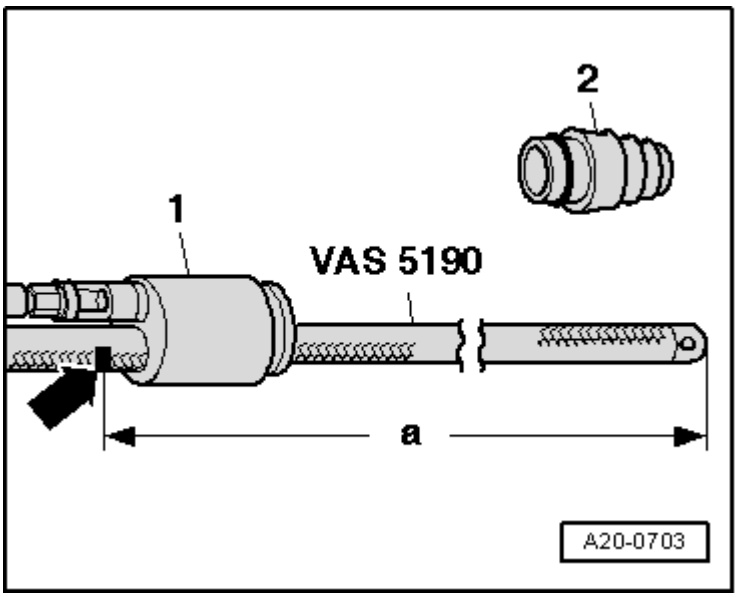


Fig. 80: Pulling Cone Piece From Shaft Piece Of Fuel Siphoning Device VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull cone piece - **2** - from shaft end - **1** - of fuel siphoning device VAS 5190.
- Using insulating tape, apply a mark - **arrow** - on hose at length - **a** - = 1,465 mm from end of suction

cardiagn.com

hose.

- Remove fuel filler cap from fuel filler tube.

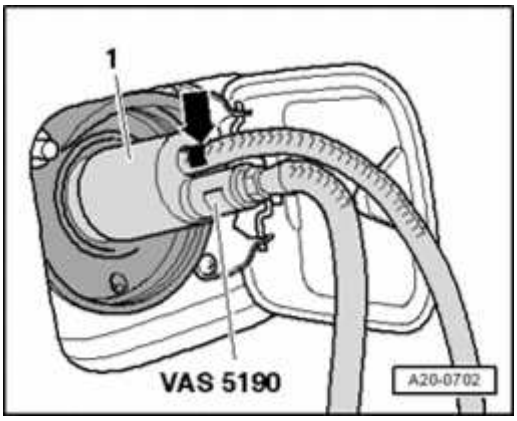


Fig. 81: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw shaft end - **1** - of fuel siphoning device VAS 5190 on to fuel filler tube of fuel tank.
- Push suction hose as far into fuel tank until the mark applied earlier - **arrow** - is positioned on shaft end.

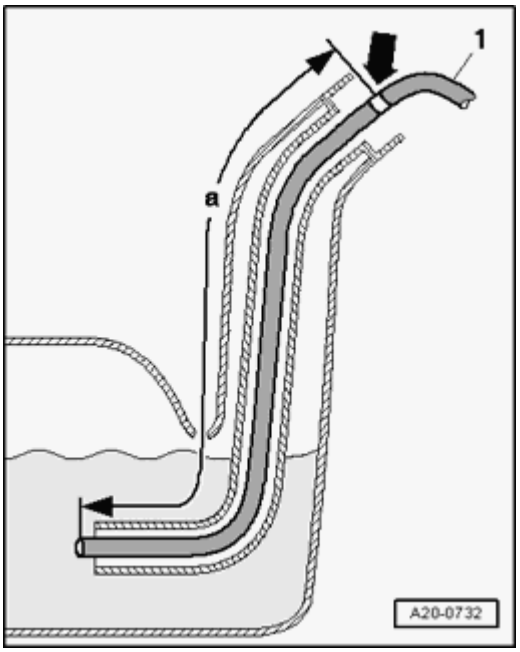


Fig. 82: Sliding Suction Hose As Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **If using a siphoning device without shaft end, proceed basically in the same manner.**
- **In this case, apply a mark - arrow - using insulating tape on hose at length - a - = 1,400 mm from end of suction hose. The suction hose is inserted**

cardiagn.com

correctly when the marking applied earlier stands opposite the lip of fuel filler tube.

- **If the hose can only be inserted with difficulty, coat it thinly with engine oil. Never use lubricants containing silicon.**

- Drain fuel tank through fuel filler tube.
- Carefully pull out suction hose.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Fuel tank with attachments, removing and installing

Special tools, testers and auxiliary items required

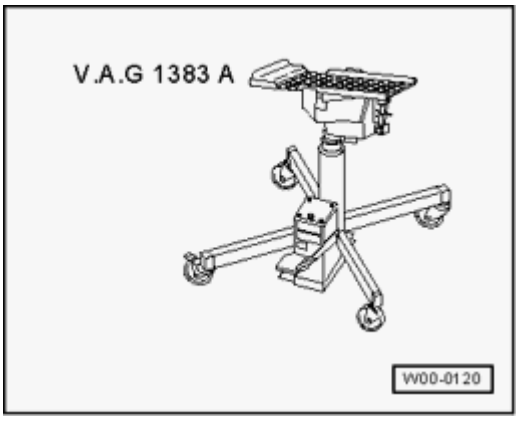


Fig. 83: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/transmission jack V.A.G 1383 A

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **For removal, fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**

CAUTION:

- **Observe procedures for disconnecting battery -->**

cardiagn.com

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

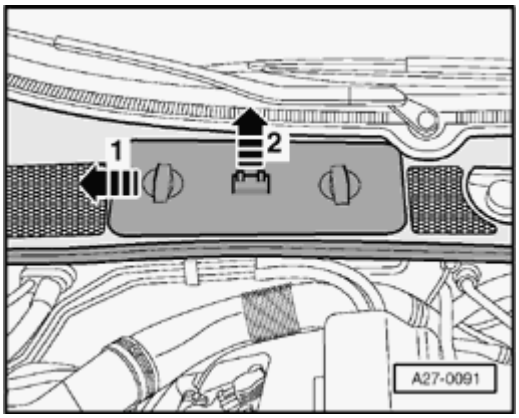


Fig. 84: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

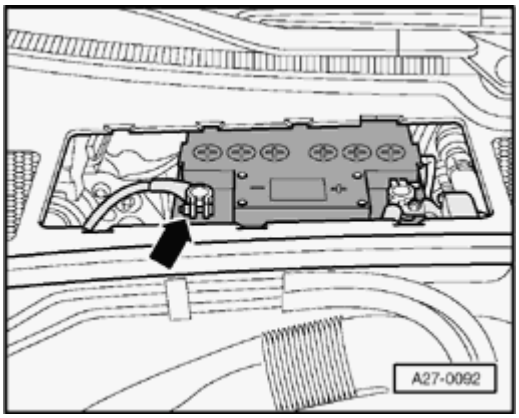


Fig. 85: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler cap briefly and then close again.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward the right rear seat backrest, if necessary.

Wagon:

cardiagn.com

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

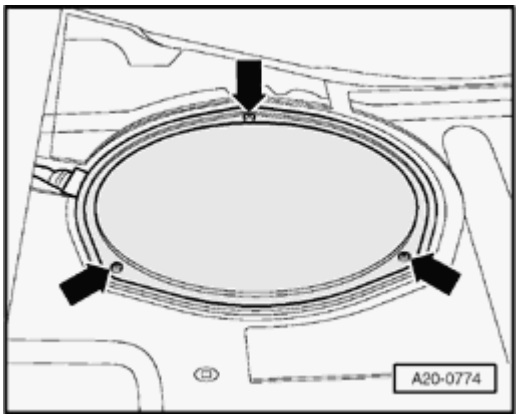


Fig. 86: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

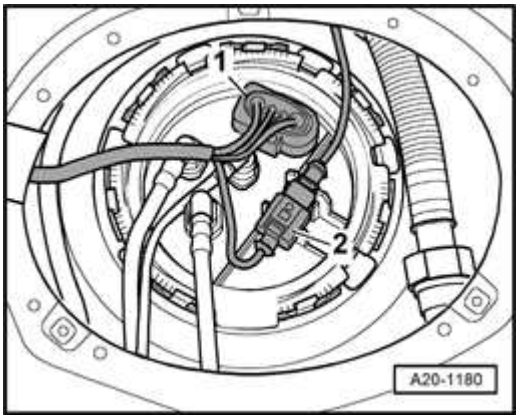


Fig. 87: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.
- Disconnect electrical connector - **2** -.

cardiagn.com

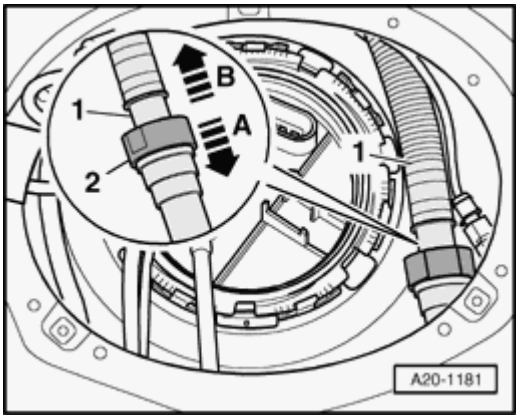


Fig. 88: Disconnecting Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate ventilation line - **1** -. Do this by pressing the releasing ring - **2** - approx. 2 mm in direction - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Open tank flap and clean the area around fuel filler tube.

NOTE:

- **Do not remove fuel cap.**

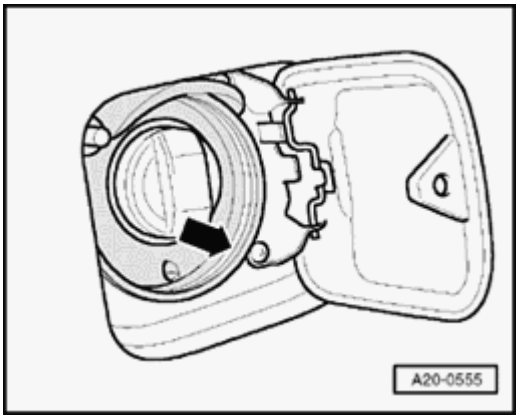


Fig. 89: Opening Tank Flap And Cleaning Area Around Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry tensioning ring - **arrow** - out from rubber gasket and press rubber gasket through toward the inside.
- Remove right rear wheel.
- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

cardiagn.com

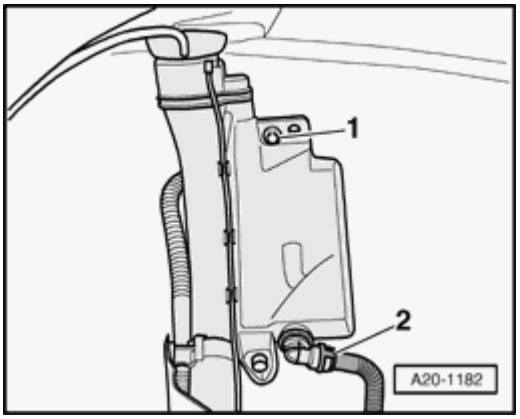


Fig. 90: Removing Ventilation Line From Fuel Filler Tube & Bolts For Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ventilation line - **2** - from fuel filler tube by pressing release buttons.
- Remove bolts - **1** - for fuel filler tube.

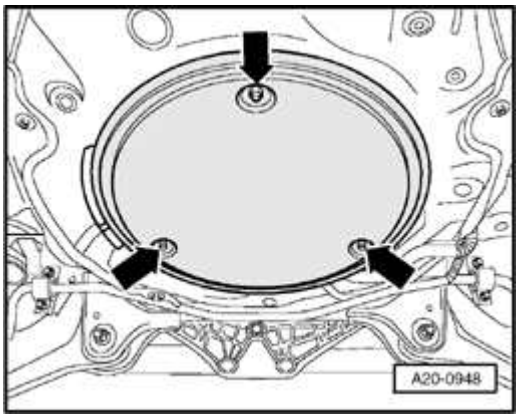


Fig. 91: Removing EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.

cardiagn.com

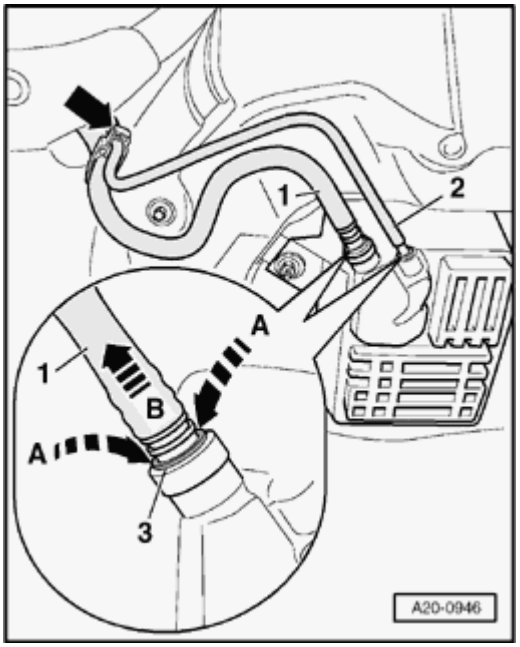


Fig. 92: Removing Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ventilation lines - **1** - and - **2** -. Do this by pressing the releasing ring - **3** - in direction of - **arrow A** - and simultaneously pulling off ventilation line - **arrow B** -.
- Unclip ventilation lines - **A** - at top from bracket - **arrow** -.

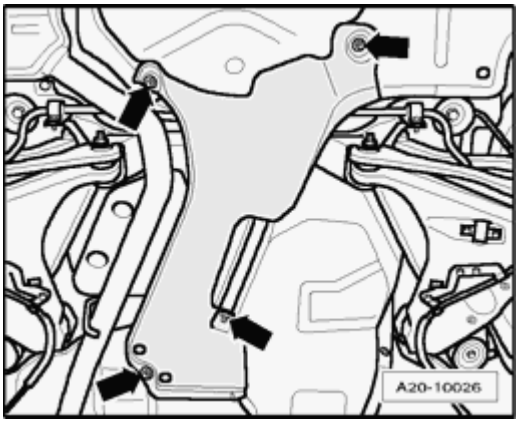


Fig. 93: Removing Vehicle Floor Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for vehicle floor - **arrows** -.

cardiagn.com

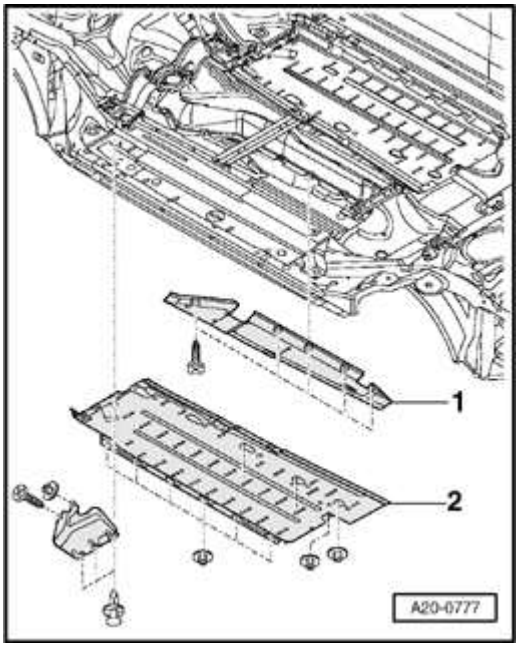


Fig. 94: Removing Covers For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove covers - **1** - and - **2** - for vehicle floor.
- Remove rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

CAUTION: Before removing the subframe bolts, secure the vehicle against falling over (e.g. load the luggage compartment with approx. 50 kg).

- Remove rear axle --> **42 - REAR SUSPENSION** .

cardiagn.com

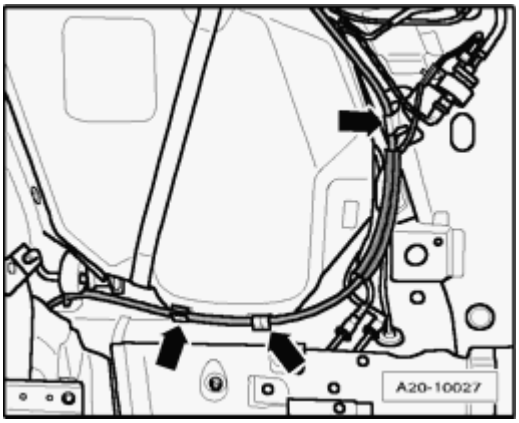


Fig. 95: Disconnecting Right Parking Brake Cable At Front Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect right parking brake cable at front of fuel tank at areas indicated with - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

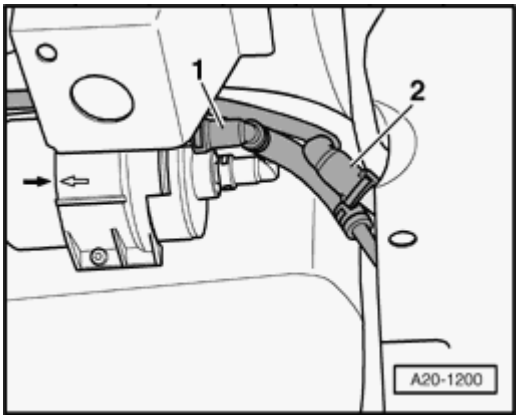


Fig. 96: Separating Ventilation Line And Fuel Line From Right Front Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation line - **2** - and fuel line - **1** - from right front of fuel tank, by pressing release buttons.
- Place engine/transmission jack V.A.G 1383 A under fuel tank for support.

CAUTION:

- **For weight reasons, fuel tank must be empty for removal.**

cardiagn.com

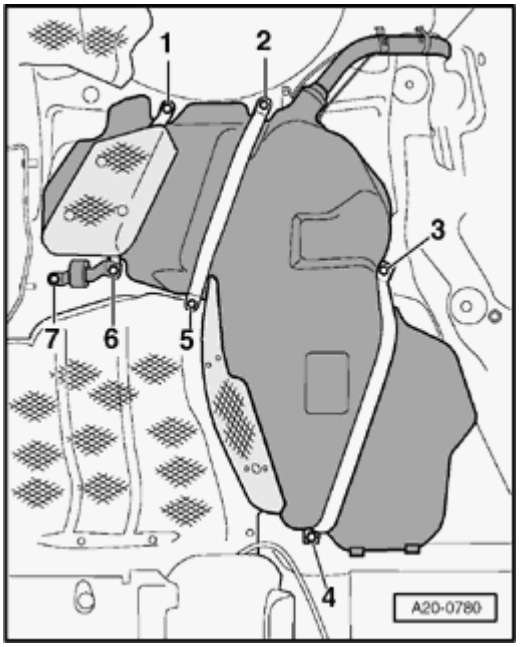


Fig. 97: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 7** -.
- Lower fuel tank using engine/transmission jack V.A.G 1383 A.

Installing

Installation is in reverse order of removal. Note the following:

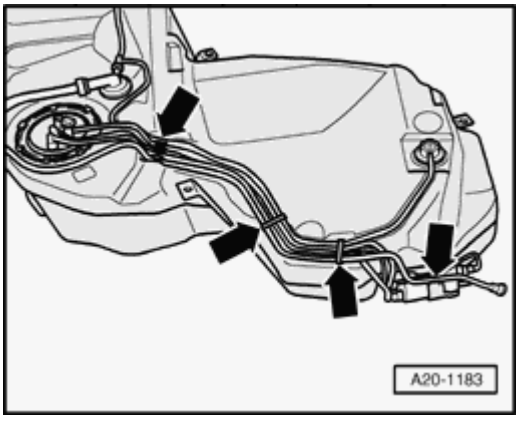


Fig. 98: Identifying Fuel And Ventilation Lines Are Properly Clipped To Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make sure fuel and ventilation lines are properly clipped to fuel tank - **arrows** -.
- Check if Ground (GND) wiring on both connections show signs of oxidation. If necessary, remove.
- Check installation position of Ground (GND) connection:

cardiagn.com

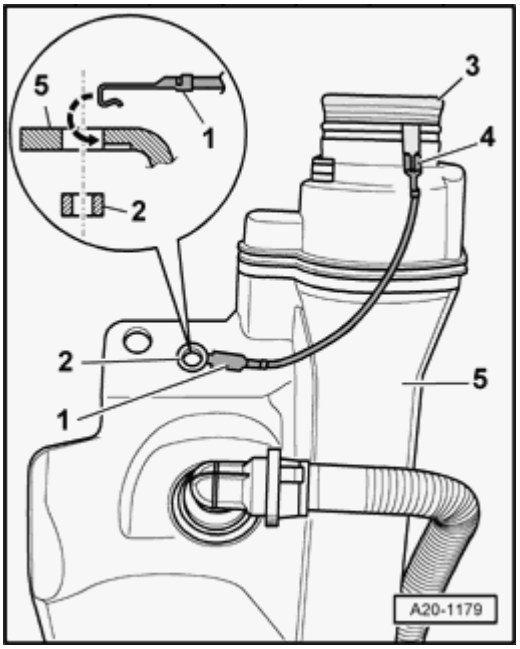


Fig. 99: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector - **4** - must be securely attached to metal ring - **3** -.
- Contact - **1** - must be attached into fuel tank - **5** - and be secured with spacer bushing - **2** -.

- Position fuel tank with mounting straps to vehicle floor using engine/transmission jack V.A.G 1383 A.
- Make sure fuel tank is positioned so that the filler tube can be correctly guided into opening of the body.

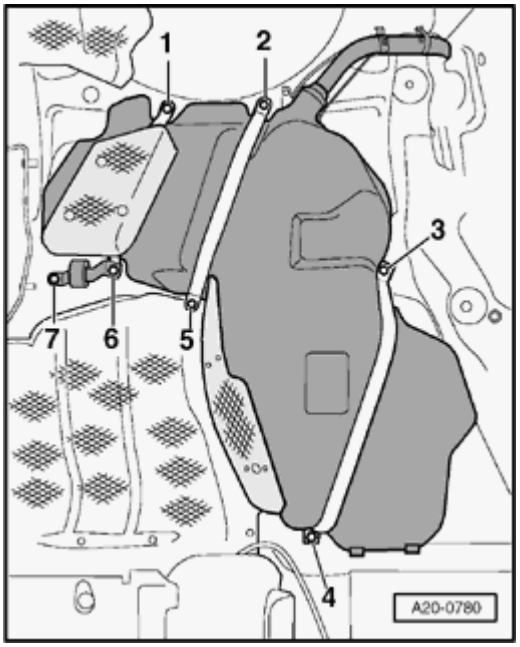


Fig. 100: Identifying Fuel Tank Bolts

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First tighten fuel tank at securing points - **2, 5, 3, 4** - and then at - **1, 6, 7** -.
- Fasten fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a bare metal portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

- Install rear axle --> **42 - REAR SUSPENSION** .
- Install rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  .
- Install right rear wheel housing liner, thereby fastening bolt for fuel filler tube -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

  .

Torque specifications

Component	Nm
Tension straps at body	23
Fuel filler tube to body	23
EVAP canister cover	9

cardiagn.com

Fuel delivery unit and Fuel level sensor, assembly overview

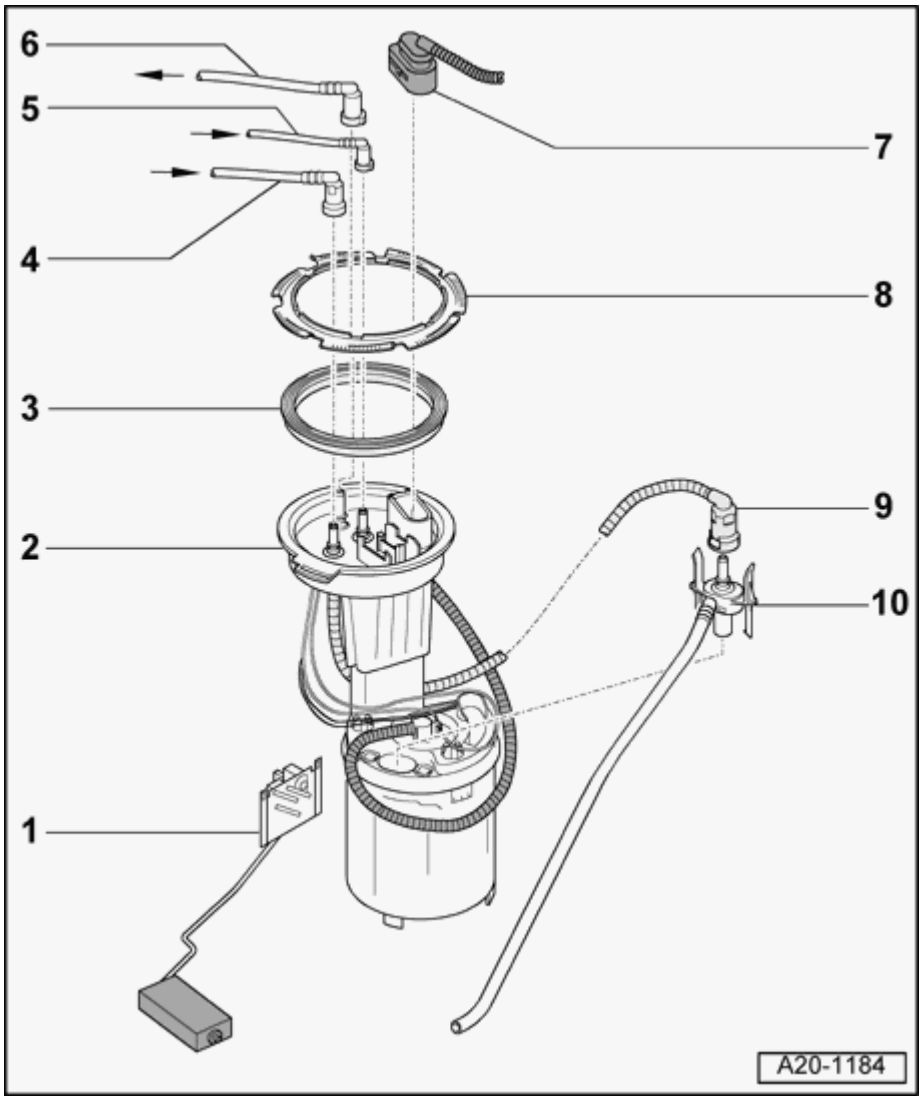


Fig. 101: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel Level Sensor G

- Resistance values, checking --> **Fuel Level Sensor G , testing**
- Removing and installing --> **Fuel Level Sensor G , removing and installing**

2 - Fuel delivery unit

- Fuel pump electrical, checking --> **Fuel pump electrical, checking**
- Checking residual pressure -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB

cardiagn.com

- **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
- **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
- **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

- Removing and installing --> **Fuel delivery unit, removing and installing**

3 - Oil seal

- Replace
- Install dry

4 - Fuel return line

- From fuel filter
- Mark before removing
- To disconnect, press release button on connection piece
- Do not kink

- Note direction of arrow (fuel supply or return) on locking flange when installing
- Clipped in on fuel tank

5 - Ventilation line

- From fuel pressure regulator in fuel filter
- To disconnect, press release button on connection piece
- Do not kink
- Clipped in on fuel tank

6 - Fuel supply line

- To fuel filter
- Mark before removing
- To disconnect, press release button on connection piece
- Do not kink

- Note direction of arrow (fuel supply or return) on locking flange when installing

cardiagn.com

- Clipped in on fuel tank

7 - Electrical harness connector

- For Fuel level sensor G
- For Transfer Fuel Pump (FP) G6

8 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

9 - Suction jet pipe

- To disconnect, press release button on connection piece

10 - Suction jet pump

Fuel pump electrical, checking

cardiagn.com

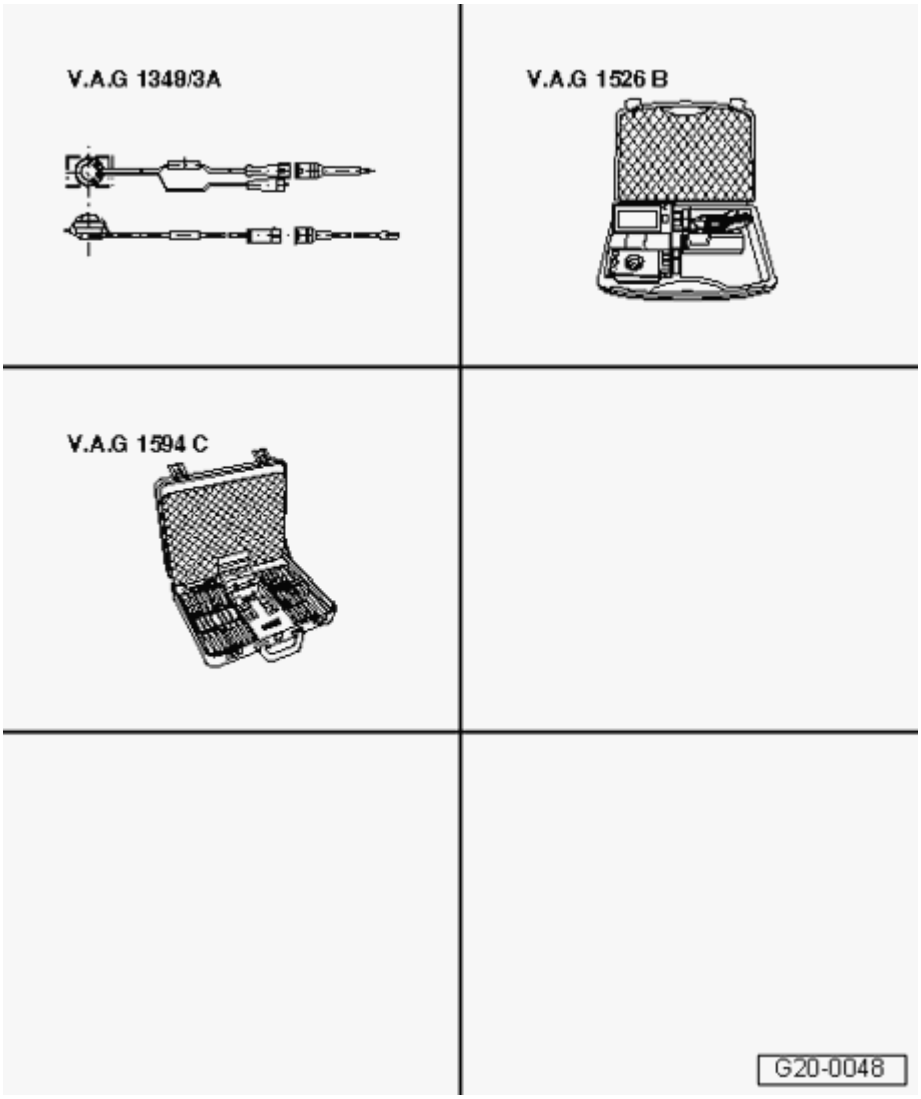


Fig. 102: Identifying Special Tools - Fuel Pump Electrical, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Portable multimeter V.A.G 1526 B
- Connector test set V.A.G 1594 C

Test conditions

- Battery voltage at least 12.5 V.
- Fuse on fuse panel S228 (position 28) OK.

cardiagn.com

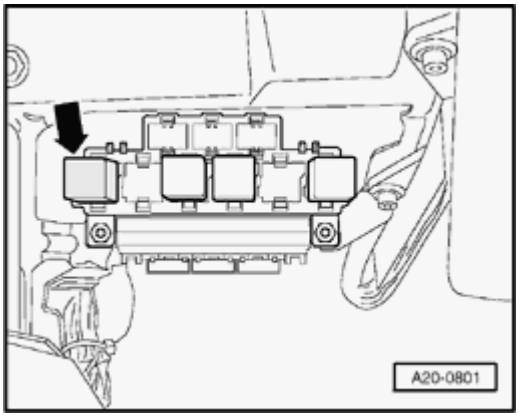


Fig. 103: Installed Location On 9-Socket Relay Carrier In Driver Footwell
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Relay J17 - **arrow** - at position 1 in 9-socket relay carrier behind driver side storage compartment is OK.
- Fuel filter OK
- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

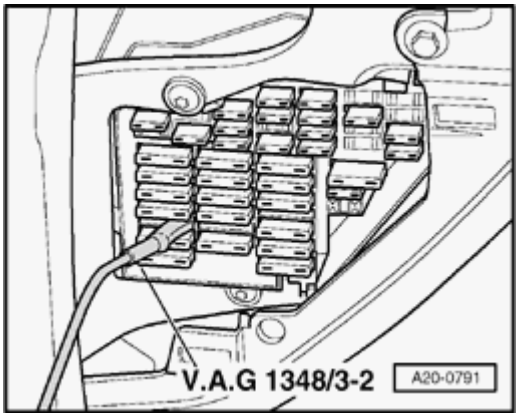


Fig. 104: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).
- Press switch on remote control.

- Running noise of pump must be audible.

cardiagn.com

NOTE:

- **Fuel Pump (FP) runs quietly. Avoid surrounding noises while testing the fuel pump.**

If no operating noise can be heard:

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

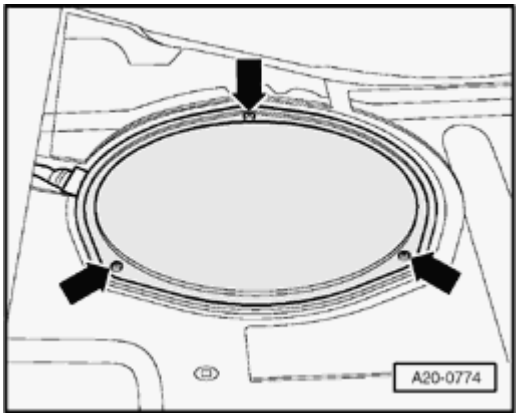


Fig. 105: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt locking flange cover in luggage compartment - **arrows** -.

cardiagn.com

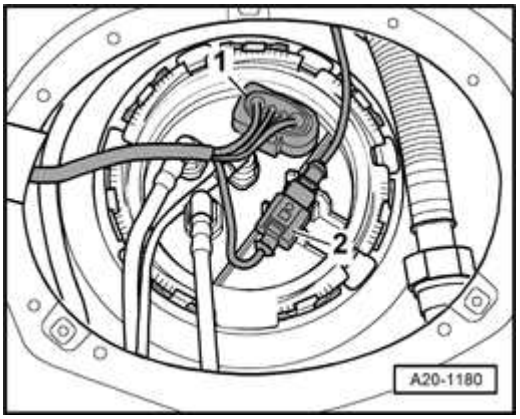


Fig. 106: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.

NOTE:

- **Ignore - 2 -.**

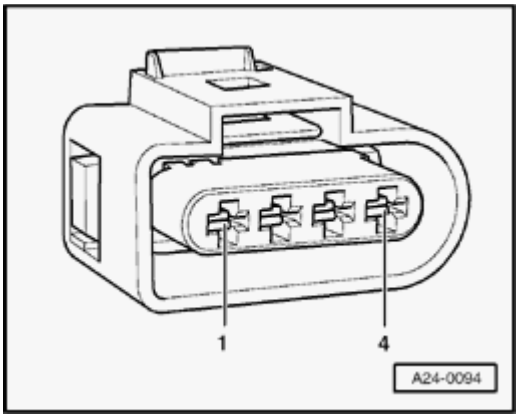


Fig. 107: Identifying Connector Terminals 1 And 4
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **1** - and - **4** - for voltage measurement.
- Press switch on remote control.

- Specification: approx. battery voltage.

If specification is not obtained:

- Repair open circuit in wiring according to wiring diagram.

cardiagn.com

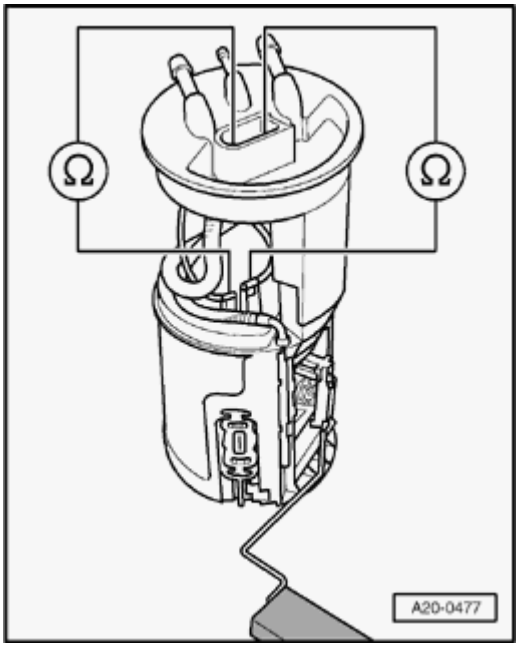


Fig. 108: Checking Electrical Circuit Between Terminals Of Fuel Delivery Unit And Fuel Pump For Continuity
Courtesy of VOLKSWAGEN UNITED STATES, INC.

If specified value is obtained, although no running-noise can be heard at pump:

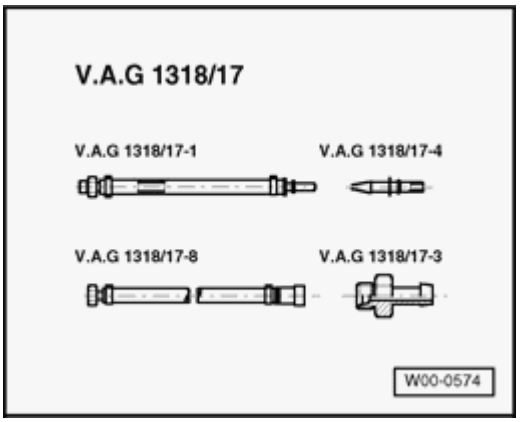
- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.
- Check if electrical wiring between flange and fuel pump is connected and has continuity.

If no malfunction is detected in wires, Fuel Pump (FP) is faulty. Replace fuel pump.

- Install fuel delivery unit **Installing**.

Delivery rate of fuel pump, checking (vehicles with 1.8L Turbo engine and 6-cyl. MPI-engine)

Special tools, testers and auxiliary items required



cardiagn.com

Fig. 109: Adapter V.A.G 1318/17-1 From Adapter Set V.A.G 1318/17
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Adapter V.A.G 1318/17-1 from adapter set V.A.G 1318/17

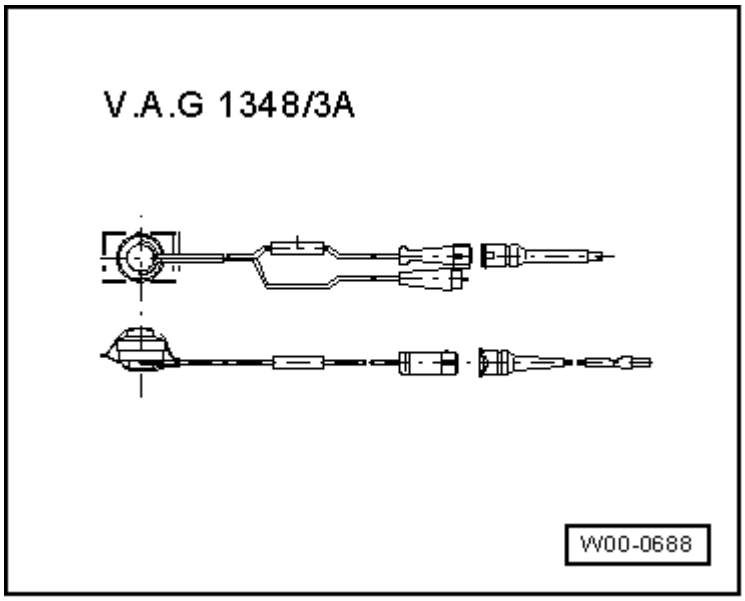


Fig. 110: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Fuel pressure regulator OK, checking -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS

cardiagn.com

- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

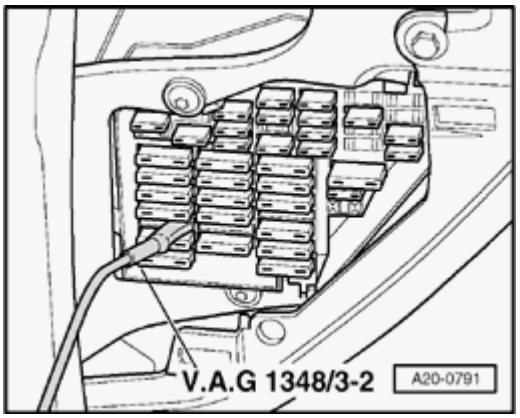


Fig. 111: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).
- Remove fuel filler cap from fuel filler tube.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward the right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->

cardiagn.com

- **70 - INTERIOR TRIM**
- **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

.

All models:

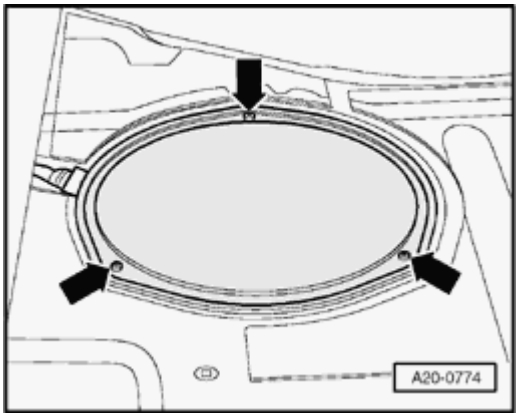


Fig. 112: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

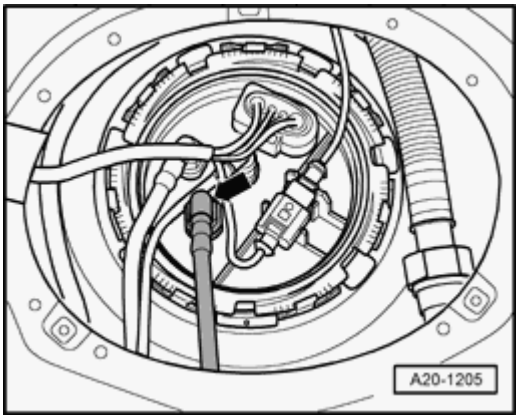


Fig. 113: Disconnecting Fuel Return Line By Pressing Release Buttons
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel return line - **arrow** - by pressing release buttons.

cardiagn.com

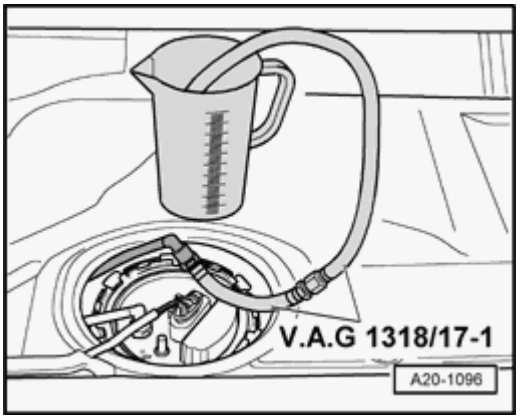


Fig. 114: Fuel Line From The High Pressure Fuel Gauge Connected To The Disconnected Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect adapter V.A.G 1318/17-1 to disconnected fuel line and hold it in a measuring container.
- Press switch on remote control for 15 seconds.

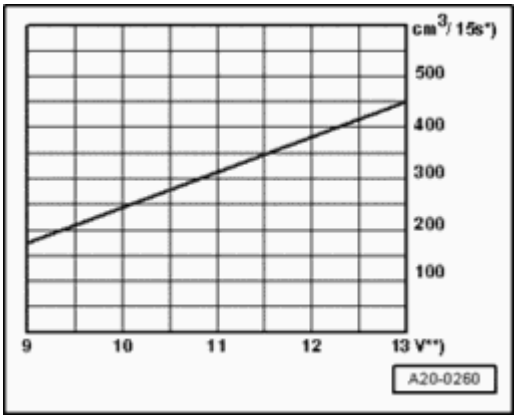


Fig. 115: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Assembly is in reverse order of removal. Note the following:

- Install fuel return line.

Fuel delivery unit, removing and installing

Special tools, testers and auxiliary items required

cardiagn.com

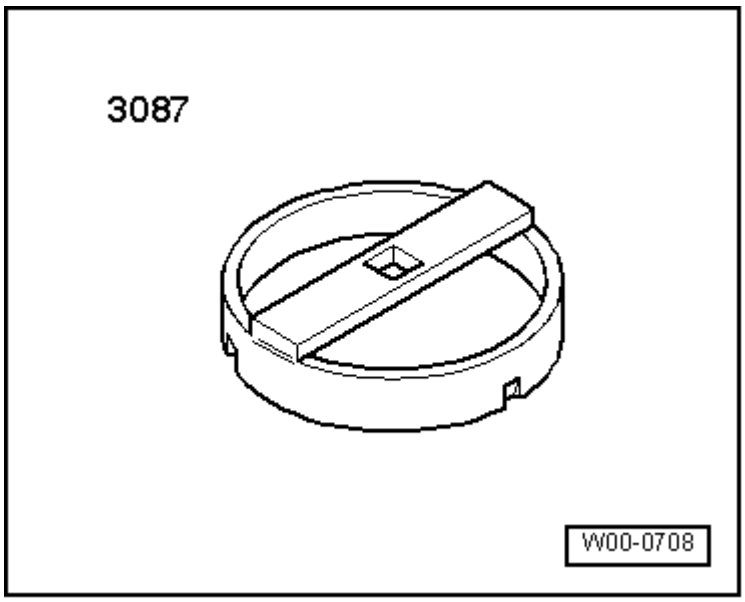


Fig. 116: Wrench 3087
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the fuel delivery unit, the fuel tank may only be filled to a maximum of $^{3}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

cardiagn.com

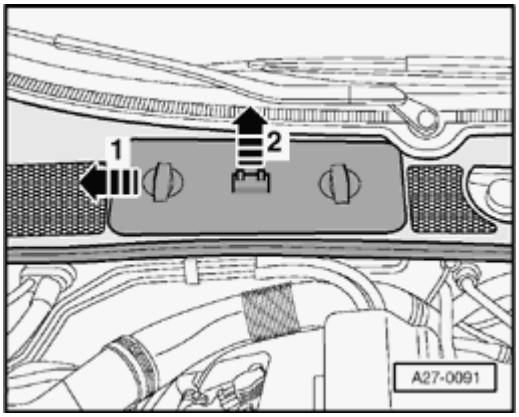


Fig. 117: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

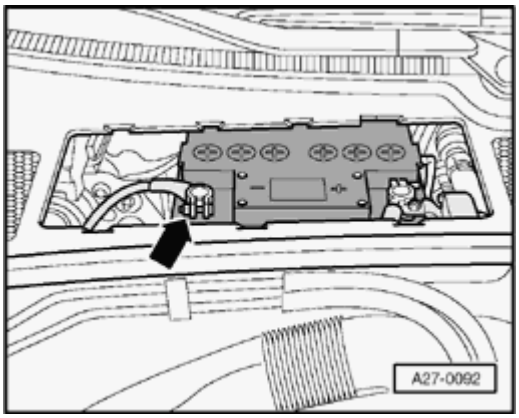


Fig. 118: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward the right rear seat backrest of, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->

cardiagn.com

- **70 - INTERIOR TRIM**
- **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

.

All models:

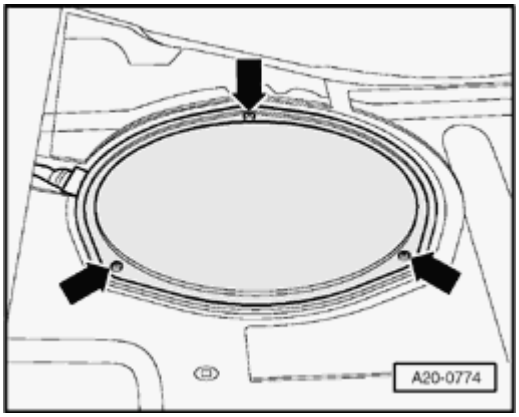


Fig. 119: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

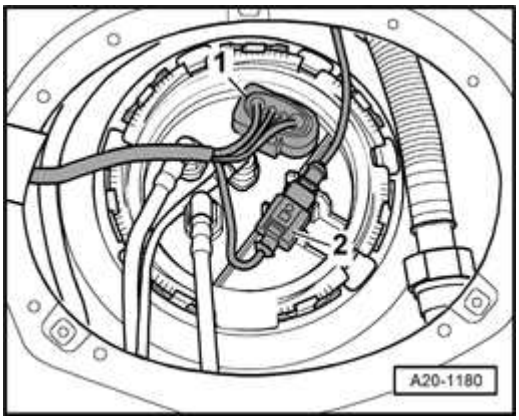


Fig. 120: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.
- Disconnect electrical harness connector - **2** - and lay it aside.

cardiagn.com

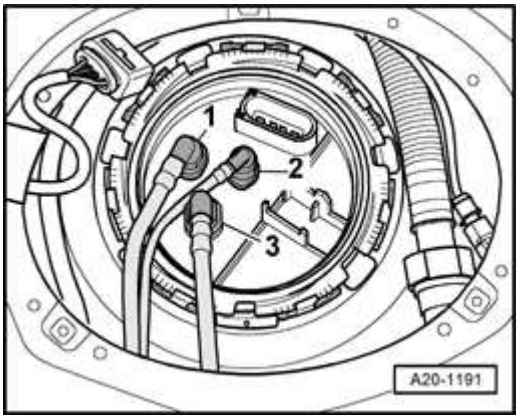


Fig. 121: Identifying Fuel Supply Line & Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark fuel supply line - **1** - and fuel return line - **3** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Pull both lines from locking flange, by pressing release buttons.
- Disconnect ventilation line - **2** - by pressing release buttons.

CAUTION: Fuel delivery unit may only be removed when fuel tank is maximum $^{3}/_{4}$ filled. Otherwise, a large amount of fuel will spill out.

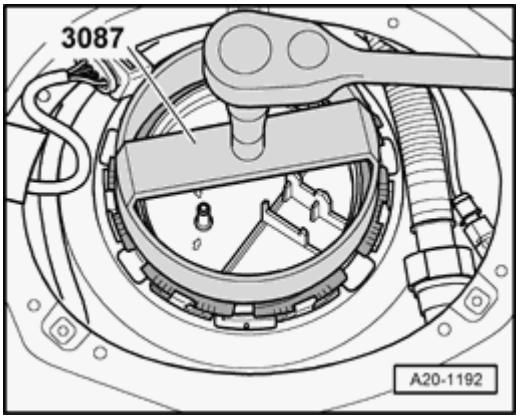


Fig. 122: Removing/Installing Locking Ring Using Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Lift fuel delivery unit slightly out of the fuel tank opening and remove seal.
- If fuel delivery unit is still inserted in fuel tank, slide fuel delivery unit with locking flange slightly to the side.

cardiagn.com

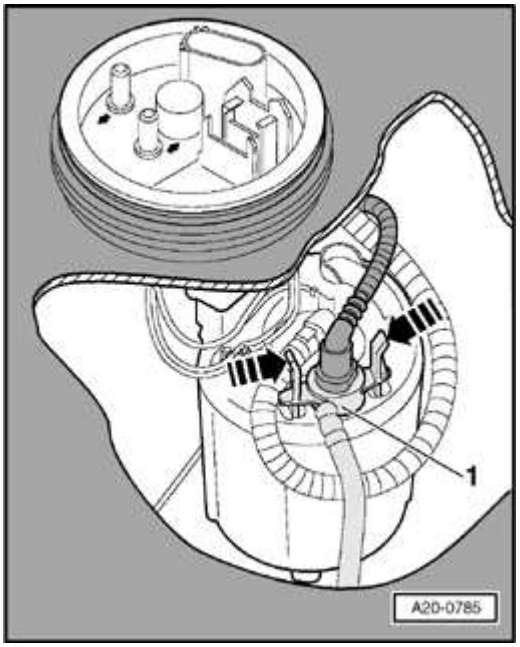


Fig. 123: Lifting Fuel Delivery Unit Slightly Out Of Fuel Tank Opening And Removing Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach through gap between locking flange and installation opening in fuel tank and release suction jet pump - **1** -.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown.**

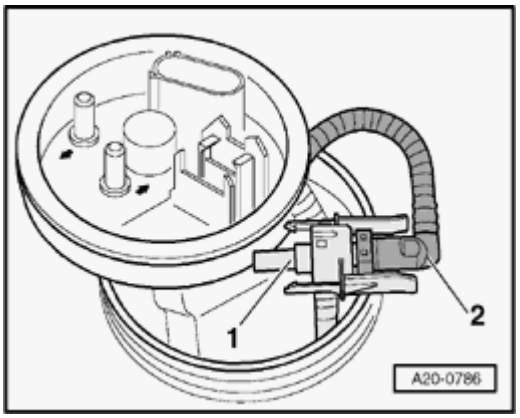


Fig. 124: Identifying Suction Jet Pump & Suction Jet Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull suction jet pump - **1** - upward with suction jet pipe - **2** - still connected.
- Disconnect suction jet pipe from suction jet pump by pressing release button.
- Remove suction jet pump.
- Remove fuel delivery unit.

cardiagn.com

NOTE:

- **When removing fuel delivery unit, be sure not to bend floater arm of Fuel Level Sensor G.**
- **Be aware that fuel is still in the fuel delivery unit.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When installing fuel delivery unit, be sure not to bend floater arm of fuel level sensor G.**
- **Make sure fuel hose is seated securely.**

- Insert fuel delivery unit into fuel tank.

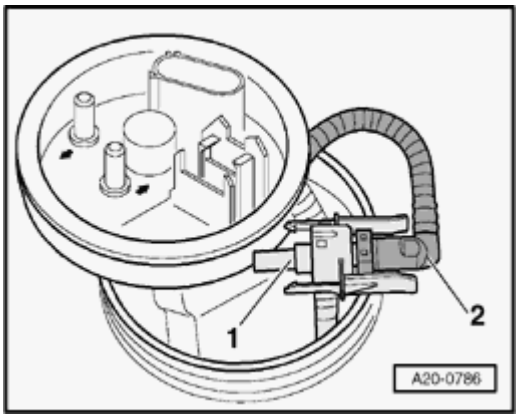


Fig. 125: Identifying Suction Jet Pump & Suction Jet Pipe
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect suction jet pipe - **2** - to connection for suction jet pump - **1** -.

cardiagn.com

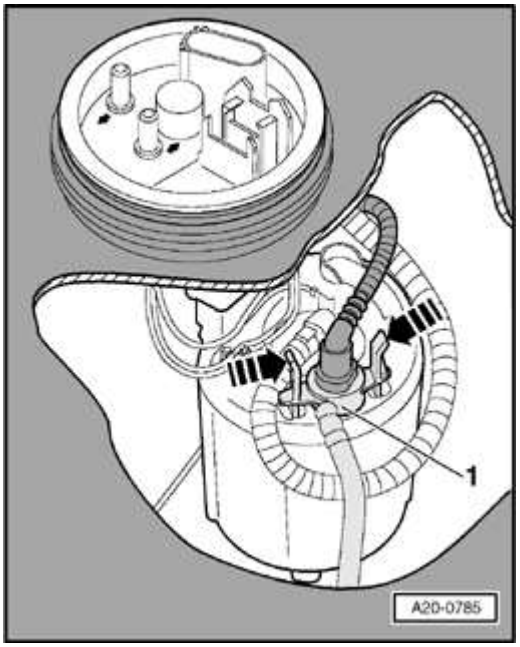


Fig. 126: Lifting Fuel Delivery Unit Slightly Out Of Fuel Tank Opening And Removing Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clip in suction jet pump - **1** - on fuel delivery unit. To do so, insert hand into gap between locking flange and installation opening of fuel tank.
- Suction jet pump must engage audibly.
- Verify that the suction jet pump is securely engaged.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown.**

- Install new locking flange seal dry.
- Press locking flange down against spring pressure and bring it into installation position.

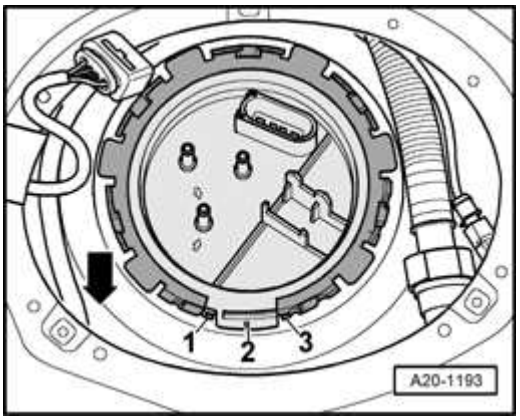


Fig. 127: Identifying Tab On Locking Flange Lie Between Tabs N Fuel Tank

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

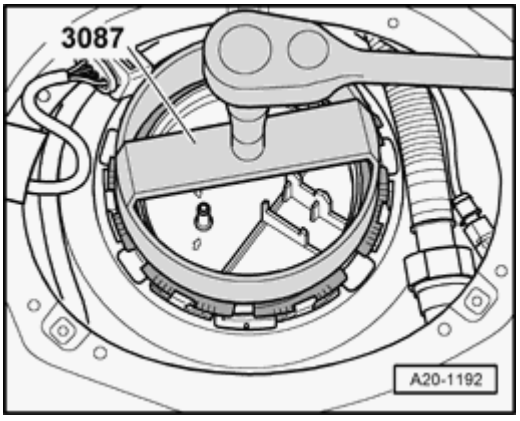


Fig. 128: Removing/Installing Locking Ring Using Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.

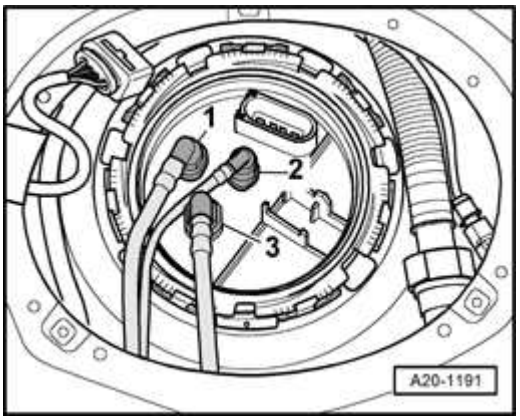


Fig. 129: Identifying Fuel Supply Line & Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install fuel supply line - **1** - and fuel return line - **3** - according to the marking.
- Install ventilation line - **2** -.
- Connect electrical harness connector.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

cardiagn.com

.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit	145

Fuel Level Sensor G , testing

Special tools, testers and auxiliary items required

Fig. 130: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 C

Fig. 131: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

cardiagn.com

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

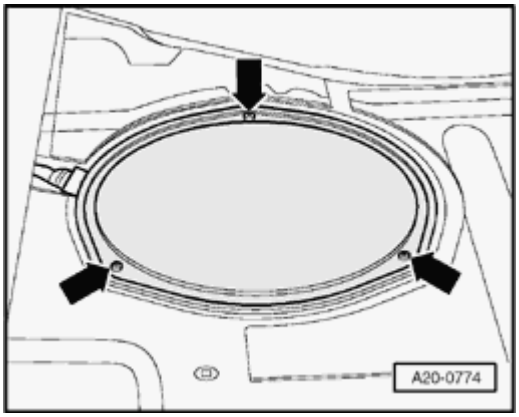


Fig. 132: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking flange cover in luggage compartment - **arrows** -.

cardiagn.com

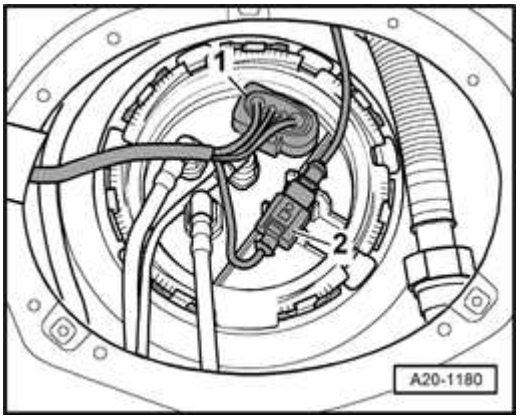


Fig. 133: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at locking flange.

NOTE:

- **Ignore - 2 -.**

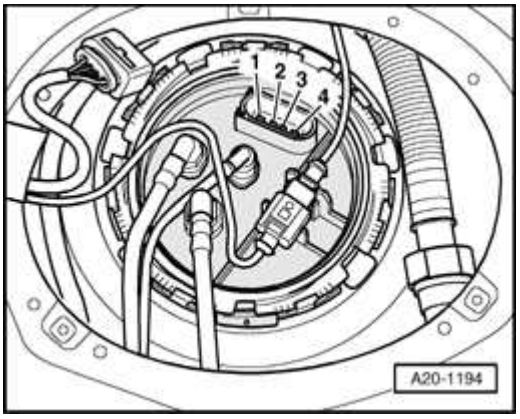


Fig. 134: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	300 to 310 ohms	53.5 to 59 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the fuel delivery unit must be removed --> Fuel delivery unit, removing and installing and the floater of the sensor must be placed in upper or lower end position.**
- **With fuel level sensor G removed, the following values are obtained**

cardiagn.com

because of the greater deflection of the floater arm:

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	271 to 296 ohms	55 to 69 ohms

Fuel Level Sensor G , removing and installing

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.

CAUTION: Before remove electrical connectors on Fuel Level Sensor G , first release contact retaining tabs.

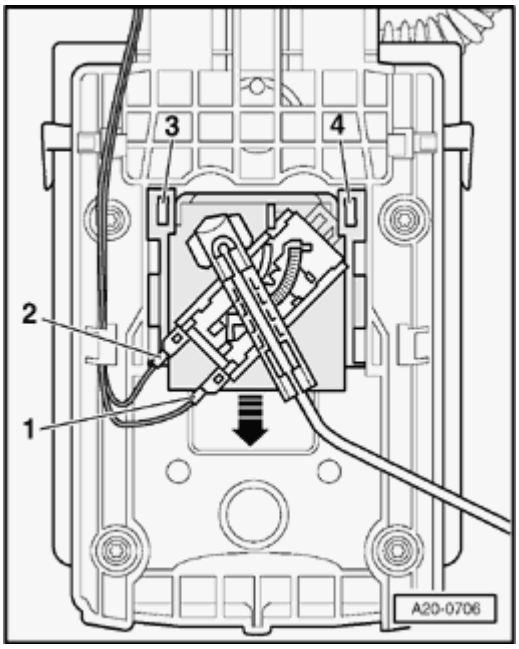


Fig. 135: Releasing Connectors & Lifting Up Retaining Lugs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical connector retaining tabs - **1** - and - **2** - and disconnect them.
- Pry on retaining tabs - **3** - and - **4** - with a screwdriver and pull fuel level sensor G off downward - **arrow** -.

Installing

cardiagn.com

Installation is in reverse order of removal. Note the following:

- Insert fuel level sensor G into guides on fuel delivery unit and push up until it engages.
- Connect electrical connections and check that they are securely engaged.
- Install fuel delivery unit **Installing**.

Fuel Tank Lock Switch F314 , checking

The Fuel Tank Lock Switch F314 consists of a reed contact on fuel filler tube and a fuel tank cap with an embedded magnet. If fuel tank cap is not fully screwed on, the reed contact switches on an indicator in instrument cluster.

Special tools, testers and auxiliary items required

Fig. 136: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 C

Fig. 137: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

cardiagn.com

- If indicator is lit, check the following points in order:

- Fuel tank cap is completely screwed on.
- Correct fuel tank cap (Identification: Threads are gray in color).

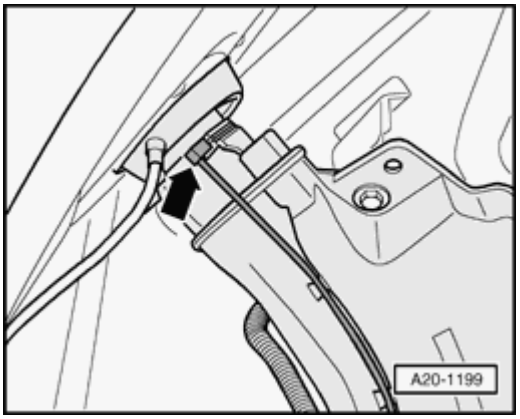


Fig. 138: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Switch - **arrow** - at fuel filler tube is fully inserted.
- Electrical malfunction in switch.
- Wiring connection to instrument cluster is faulty (check according to schematics).

Fuel Tank Lock Switch F314 , checking electrical

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

cardiagn.com

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

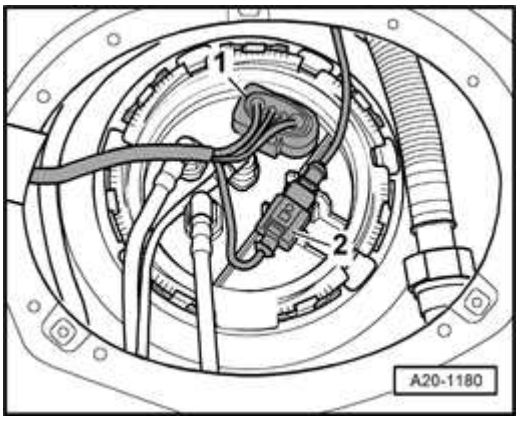


Fig. 139: Identifying Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **2** -.

NOTE:

- **Ignore - 1 -.**

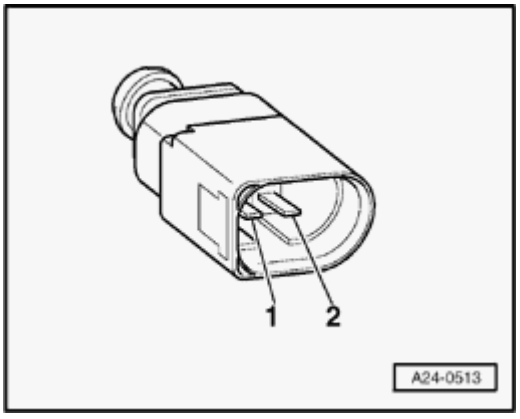


Fig. 140: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 between terminal - **1** - and - **2** - for resistance measurement.

Fuel tank cap	Specified value
Screwed on tight	infinity ohms
Not or incorrectly screwed on	Less than 1 ohms

If specifications are not obtained:

- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**

cardiagn.com

- **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

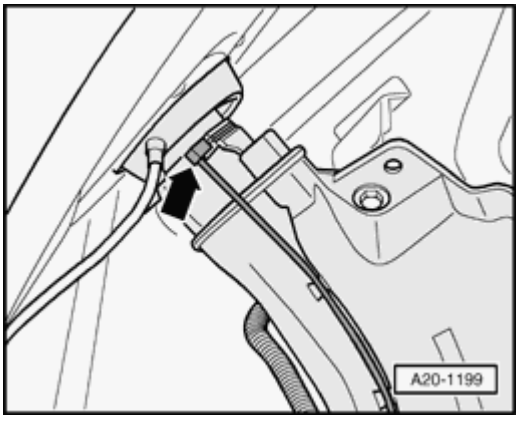


Fig. 141: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace Fuel Tank Lock Switch F314 - **arrow** - , thereby unclipping and clipping in switch and electrical wiring at fuel filler tube.

FUEL TANK, VEHICLES WITH FRONT WHEEL DRIVE AS OF 11.04

Fuel tank with attachments, assembly overview

cardiagn.com

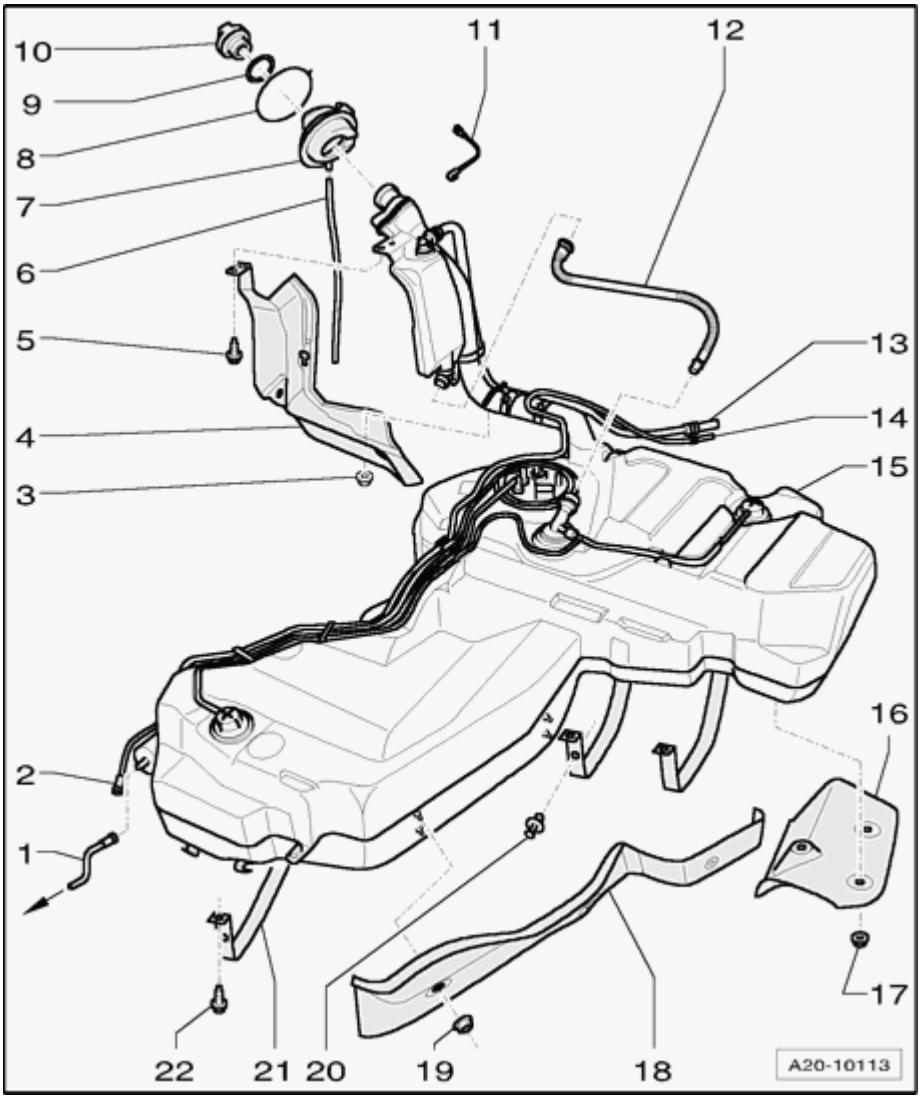


Fig. 142: Fuel Tank With Attachments, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel line

- From fuel filter
- To engine
- Do not kink
- To disconnect, press release button on connection piece

2 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Do not kink
- To disconnect, press release button on connection piece

cardiagn.com

- Clipped in on fuel tank

3 - 2 Nm

4 - Tire protection shield

- For fuel delivery connection

5 - 23 Nm

6 - Overflow hose

- Engage in wheelhousing

7 - Rubber gasket

8 - Circlip

9 - Seal

- Replace if damaged

10 - Cap

11 - Ground (GND) connection

- For discharging electrostatic charge
- Installed position/check requirements **Installation position of Ground (GND) connection**
- After installing, check electrical connection of metal ring at fuel filler tube to a bare area of chassis using Ohm meter - Specified value: approx. 0 ohms

12 - Ventilation line

13 - Ventilation line

- From gravity valve to EVAP canister
- To remove, press release ring on EVAP canister

14 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- To remove, press release ring on EVAP canister
- Clipped in on fuel tank

15 - Fuel tank

cardiagn.com

- Removing and installing --> **Fuel tank with attachments, removing and installing**

16 - Heat shield

- For fuel tank

17 - 2 Nm

18 - Heat shield

- For fuel tank

19 - 2 Nm

20 - Spreader clip

21 - Securing strap

- Observe varying lengths

22 - 23 Nm

Installation position of Ground (GND) connection

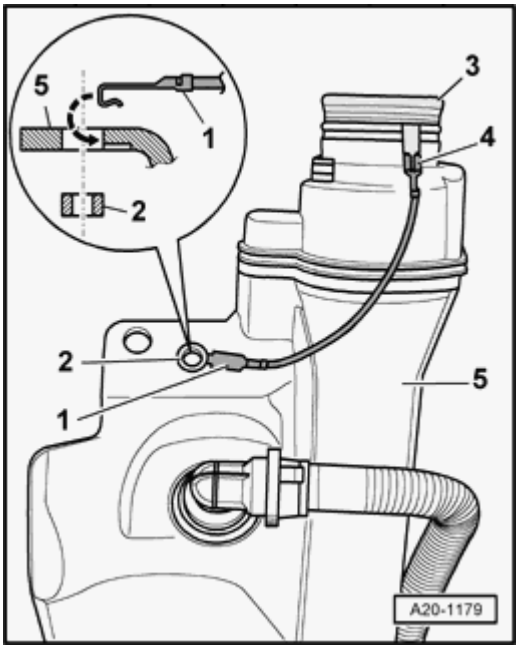


Fig. 143: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route Ground (GND) connection as shown in .

cardiagn.com

- First hook Ground (GND) connection contact - **1** - into securing hole on fuel tank - **5** - and then press in spacer bushing - **2** -.
- Make sure Ground (GND) connector connection - **4** - fits securely at metal ring - **3** - of fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

Fuel tank, draining

Special tools, testers and auxiliary items required

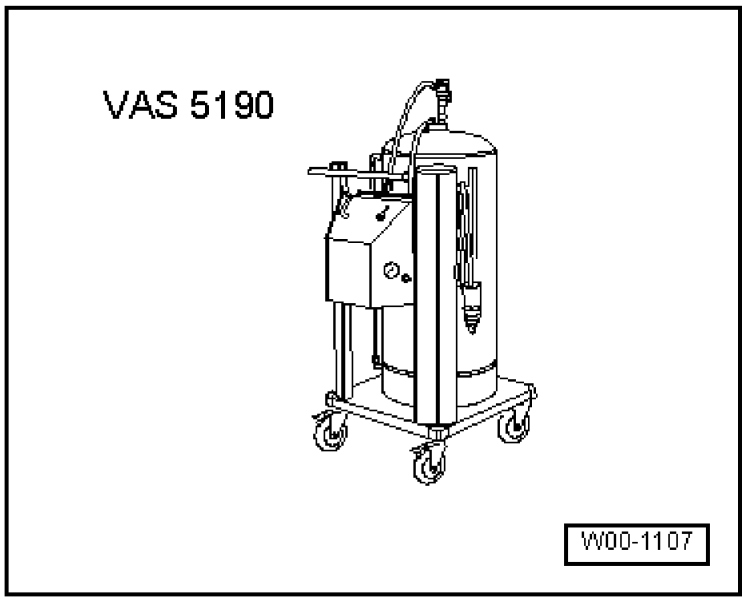


Fig. 144: Identifying Fuel Extraction Unit VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel siphoning unit VAS 5190

Work procedure

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

cardiagn.com

.

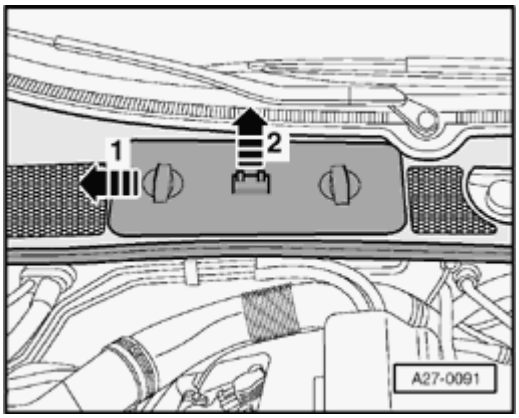


Fig. 145: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

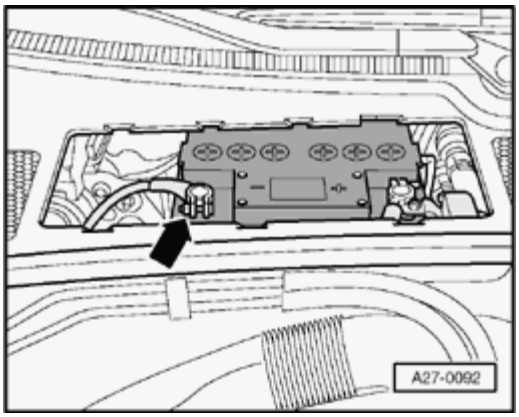


Fig. 146: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

CAUTION: Secure Ground (GND) wire of fuel extraction unit VAS 5190 to a bare area of the chassis.

cardiagn.com

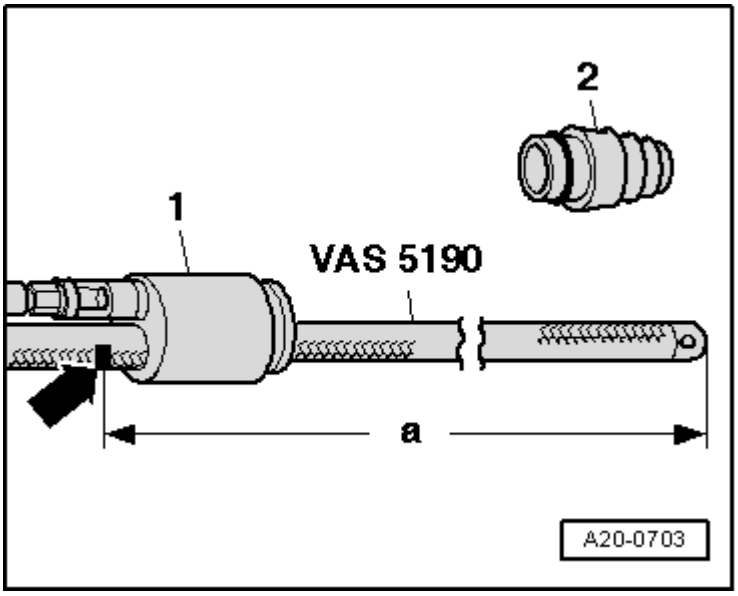


Fig. 147: Pulling Cone Piece From Shaft Piece Of Fuel Siphoning Device VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull cone piece - **2** - from shaft end - **1** - of fuel extraction unit VAS 5190.
- Using insulating tape, apply a mark - **arrow** - on hose at length - **a** - = 1,465 mm from end of suction hose.

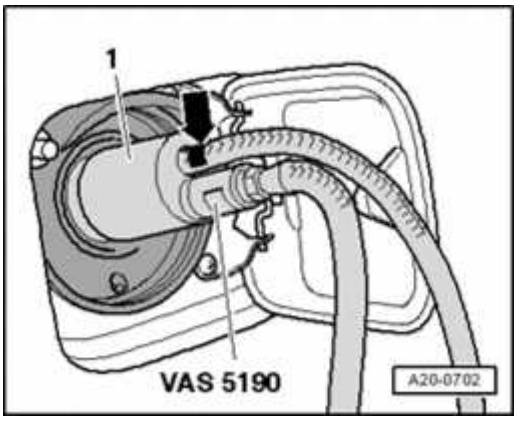


Fig. 148: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel filler cap from fuel filler tube.
- Screw shaft piece - **1** - of fuel extraction unit VAS 5190 on to fuel filler tube of fuel tank.
- Push suction hose as far into fuel tank until the mark applied earlier - **arrow** - is positioned on shaft end.

NOTE:

- **If using a siphoning device without shaft end, proceed basically in the same manner.**

cardiagn.com

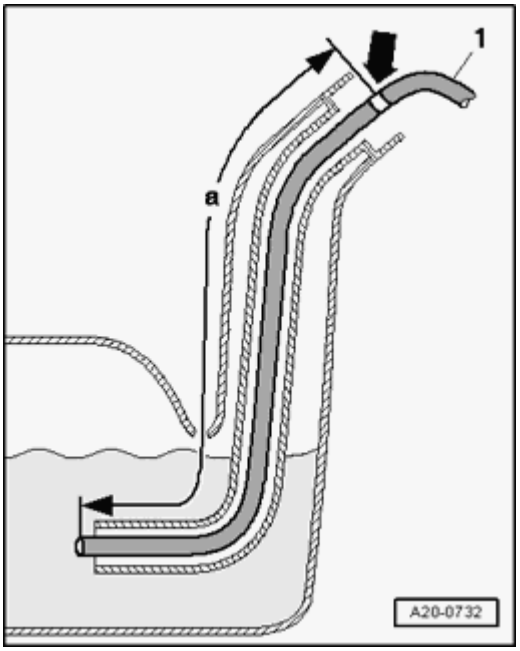


Fig. 149: Sliding Suction Hose As Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In this case, apply a mark - **arrow** - using insulating tape on hose at length - **a** - = 1,400 mm from end of suction hose. The suction hose is inserted correctly when the marking applied earlier stands opposite the lip of fuel filler tube.
- If the hose can only be inserted with difficulty, coat it thinly with engine oil. Never use lubricants containing silicon.

- Drain fuel tank through fuel filler tube.
- Carefully pull out suction hose.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Fuel tank with attachments, removing and installing

Special tools, testers and auxiliary items required

cardiagn.com

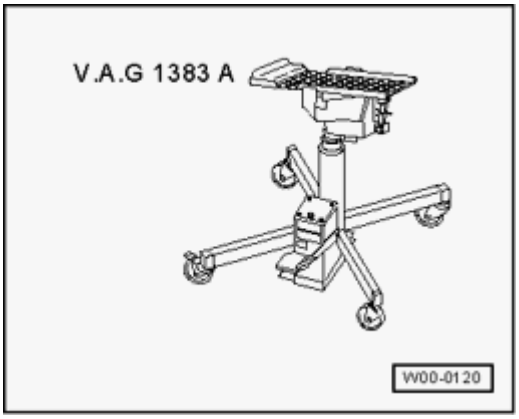


Fig. 150: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/transmission jack V.A.G 1383 A

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **For removal, the fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

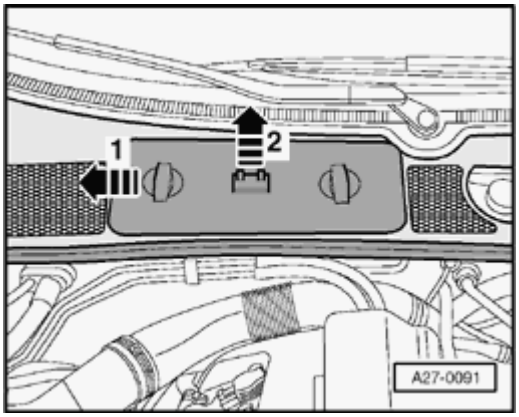


Fig. 151: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

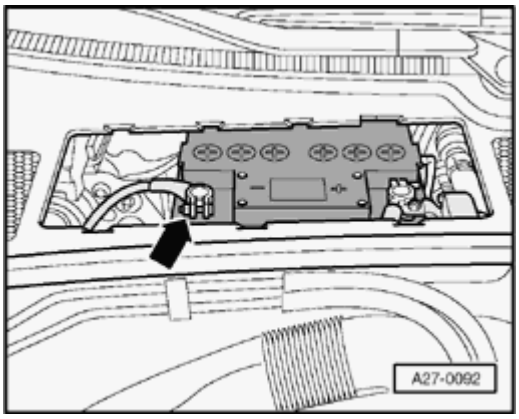


Fig. 152: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- **All:**
- Open fuel filler flap briefly and then close again.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

cardiagn.com

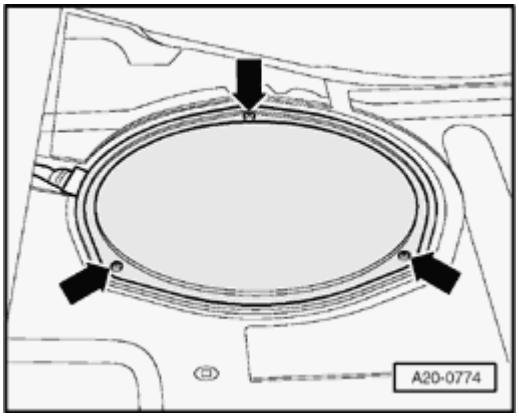


Fig. 153: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt locking flange cover in luggage compartment - **arrows** -.

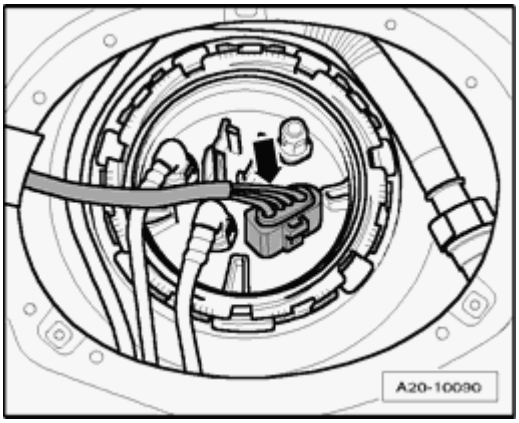


Fig. 154: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.

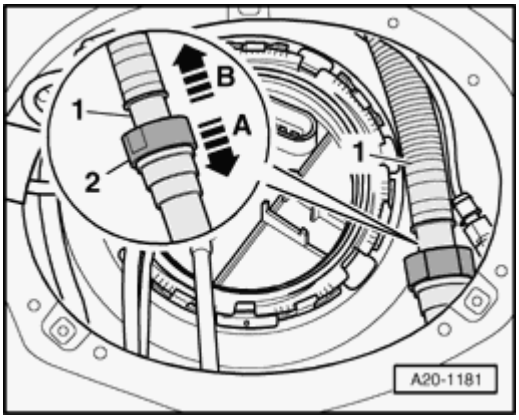


Fig. 155: Disconnecting Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Disconnect ventilation line - **1** -. Do this by pressing releasing ring - **2** - approx. 2 mm in direction of - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Open tank flap and clean area around fuel filler tube.

NOTE:

- **Do not remove fuel cap.**

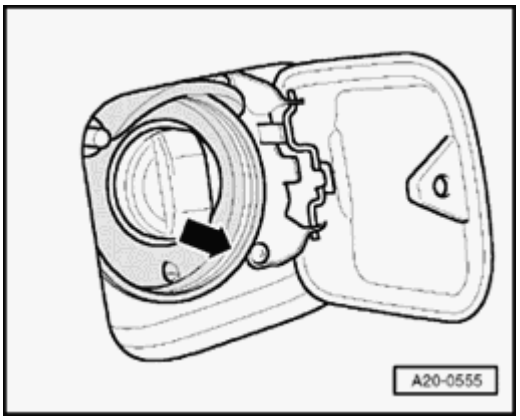


Fig. 156: Opening Tank Flap And Cleaning Area Around Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry tensioning ring - **arrow** - out from rubber gasket and press rubber gasket through toward inside.

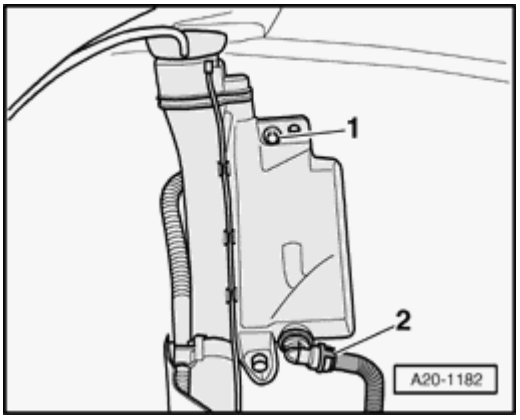


Fig. 157: Removing Ventilation Line From Fuel Filler Tube & Bolts For Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear wheel.
- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Pull ventilation line - **2** - off from fuel filler tube by pressing release buttons.
- Remove bolts - **1** - for fuel filler tube.

cardiagn.com

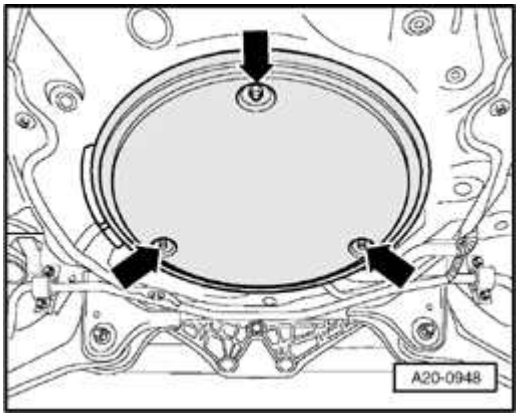


Fig. 158: Removing EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.

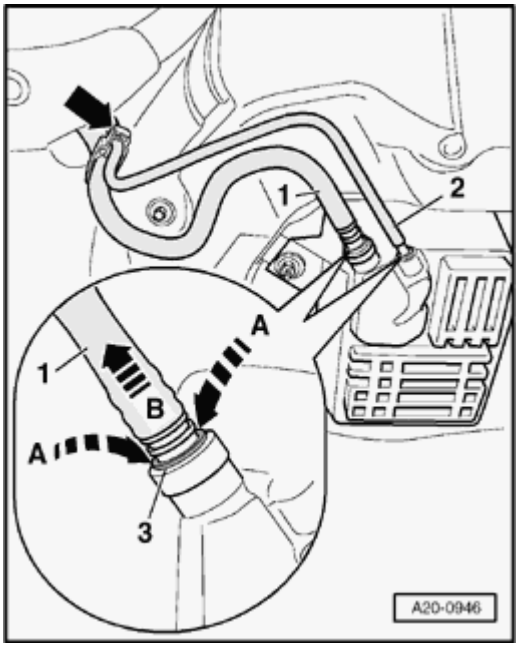


Fig. 159: Removing Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation lines - **1** - and - **2** -. Do this by pressing releasing ring - **3** - in direction of - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Unclip ventilation lines - **A** - at top from bracket - **arrow** -.

cardiagn.com

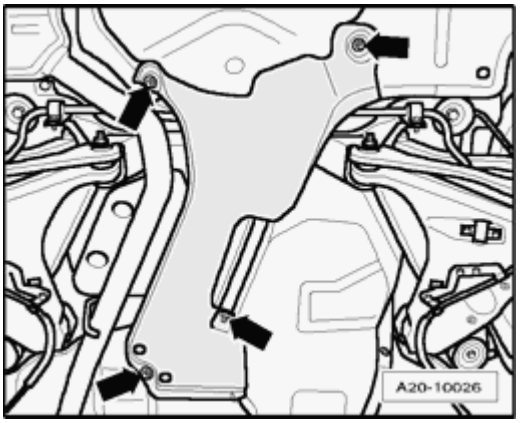


Fig. 160: Removing Vehicle Floor Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for vehicle floor - **arrows** -.

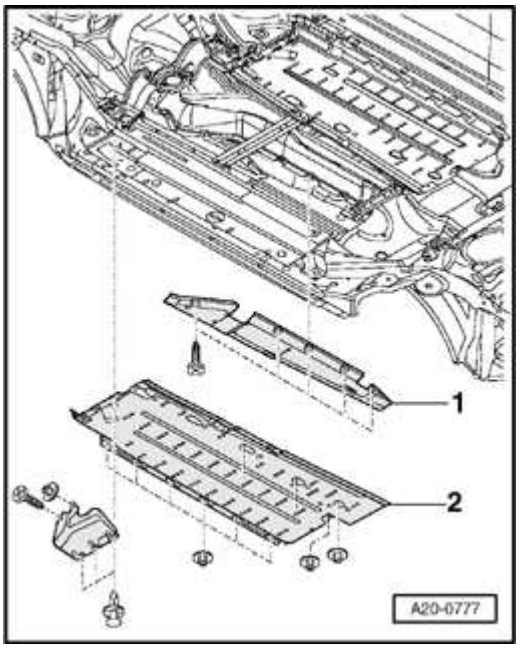


Fig. 161: Removing Covers For Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove covers - **1** - and - **2** - for vehicle floor.
- Remove rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN

cardiagn.com

- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

CAUTION: Before removing the subframe bolts, secure the vehicle against falling over (e.g. load the luggage compartment with approx. 50 kg).

- Remove rear axle --> **42 - REAR SUSPENSION** .

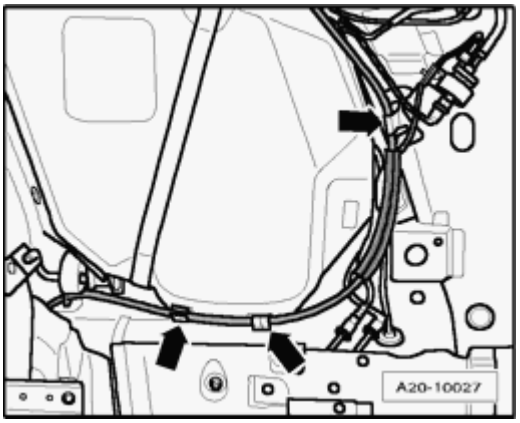
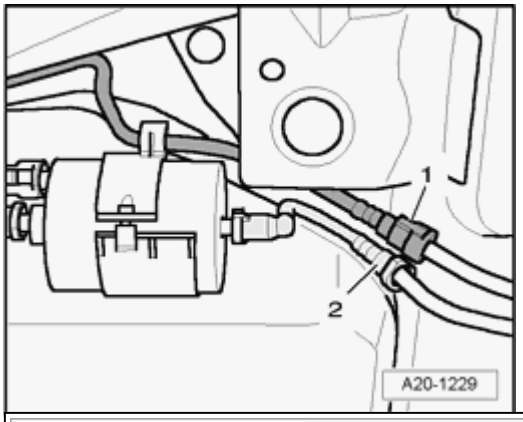


Fig. 162: Disconnecting Right Parking Brake Cable At Front Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect right parking brake cable at front of fuel tank at areas indicated with - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.



cardiagn.com

Fig. 163: Separating Ventilation Line And Fuel Line From Right Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate ventilation line - **1** - and fuel line - **2** - from right of fuel tank, by pressing release buttons.
- Place engine/transmission jack V.A.G 1383 A under fuel tank for support.

CAUTION:

- **For weight reasons, fuel tank must be empty for removal.**

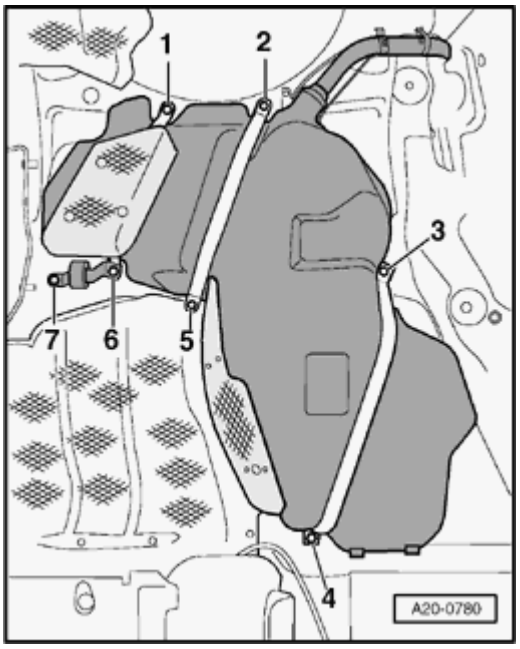


Fig. 164: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 to 7** -.
- Lower fuel tank using engine/transmission jack V.A.G 1383 A.

Installing

Installation is in reverse order of removal. Note the following:

cardiagn.com

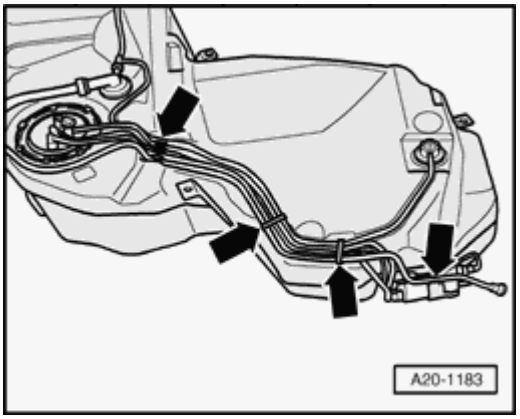


Fig. 165: Identifying Fuel And Ventilation Lines Are Properly Clipped To Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make sure fuel and ventilation lines are properly clipped to fuel tank - **arrows** -.
- Check if ground (GND) wiring on both connections show signs of oxidation. If necessary, remove.
- Check installation position of ground (GND) connection:

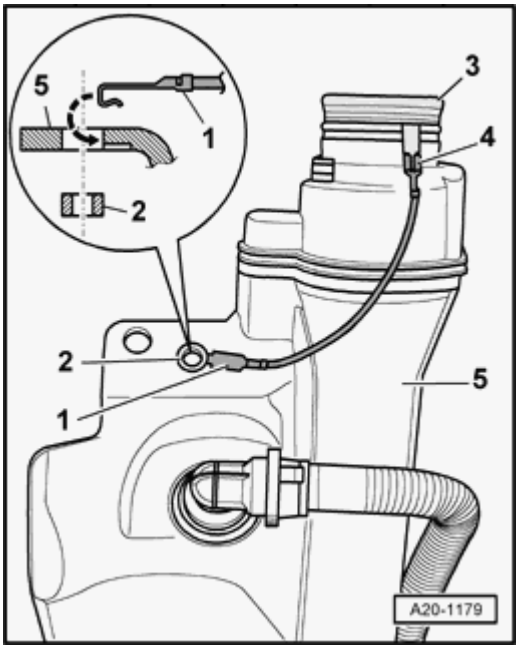


Fig. 166: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector - **4** - must be securely attached to metal ring - **3** -.
- Contact - **1** - must be attached into fuel tank - **5** - and be secured with spacer bushing - **2** -.

- Position fuel tank with mounting straps to vehicle floor using engine/transmission jack V.A.G 1383 A.
- Make sure fuel tank is positioned so that the filler tube can be correctly guided into opening of the body.

cardiagn.com

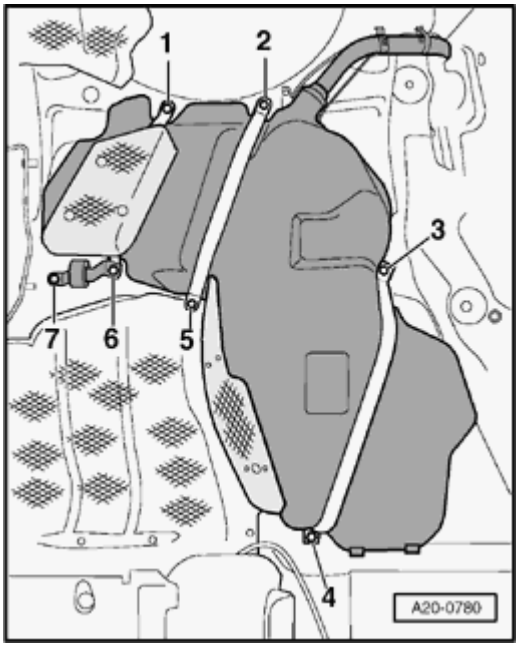


Fig. 167: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First tighten fuel tank at securing points - **2, 5, 3, 4** - and then at - **1, 6, 7** -.
- Fasten fuel filler tube.

CAUTION: After installing, check electrical connection of the metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 ohms.**

- Install rear axle --> **42 - REAR SUSPENSION** .
- Install rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

cardiagn.com

- Install right rear wheel housing liner, by fastening screws for fuel filler tube -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

  .

Torque specifications

Component	Nm
Tension straps at body	23
Fuel filler tube to body	23
EVAP canister cover	9

Fuel delivery unit and Fuel level sensor, assembly overview

cardiagn.com

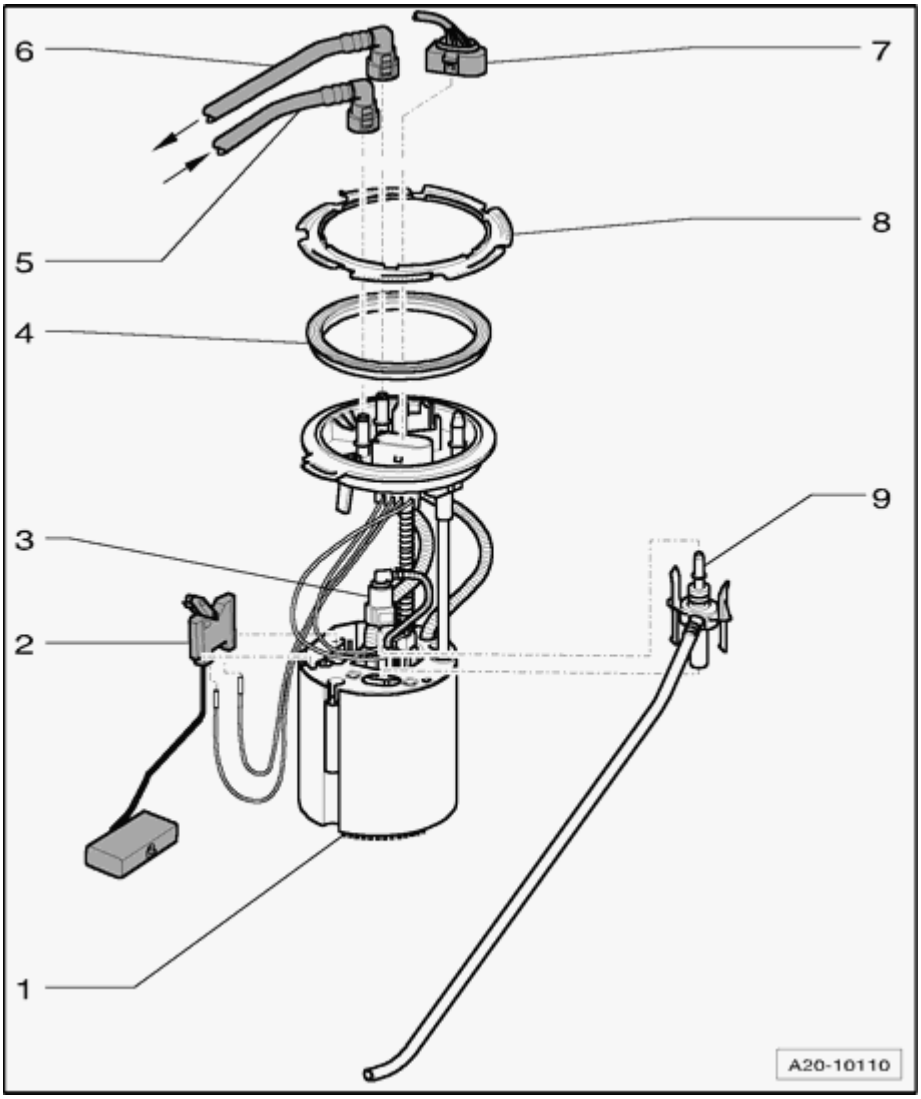


Fig. 168: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel delivery unit

- Fuel pump electrical, checking --> **Fuel pump electrical, checking**
- Removing and installing --> **Fuel delivery unit, removing and installing**

2 - Fuel Level Sensor G

- Resistance values, checking --> **Fuel level sensor G , checking**
- Removing and installing --> **Fuel level sensor G , removing and installing**

3 - Suction jet pipe

- To disconnect, press release button on connection piece

cardiagn.com

4 - Seal

- Replace
- Install dry

5 - Fuel return line

- From fuel filter
- Mark before removing
- To disconnect, press release button on connection piece
- Do not kink

- Note direction of arrow (fuel supply or return) on locking flange when installing
- Clipped in on fuel tank

6 - Fuel supply line

- To fuel filter
- Mark before removing
- To disconnect, press release button on connection piece
- Do not kink

- Note direction of arrow (fuel supply or return) on locking flange when installing
- Clipped in on fuel tank

7 - Electrical harness connector

- For Fuel level sensor G
- For Transfer Fuel Pump (FP) G6

8 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

9 - Suction jet pump

Fuel pump electrical, checking

cardiagn.com

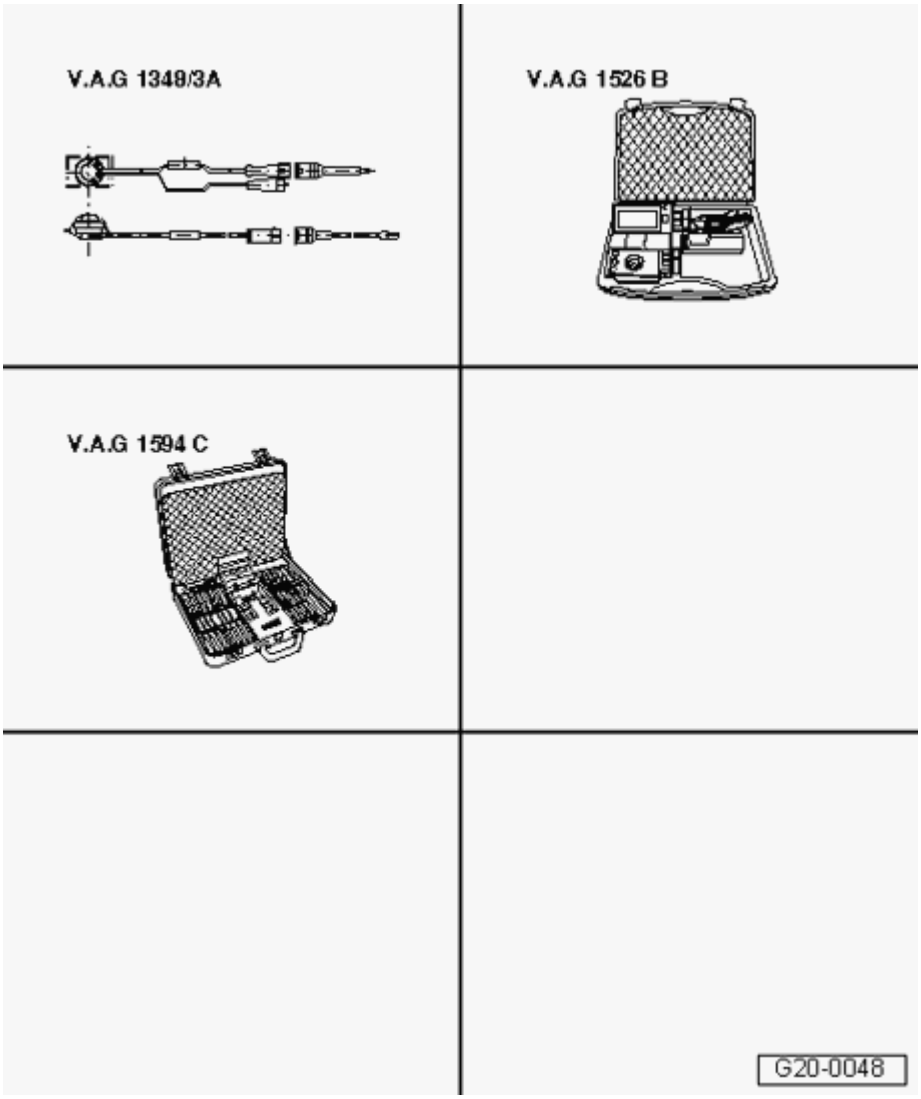


Fig. 169: Identifying Special Tools - Fuel Pump Electrical, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Portable multimeter V.A.G 1526 B
- Connector test set V.A.G 1594 C

Test conditions

- Battery voltage at least 12.5 V.

cardiagn.com

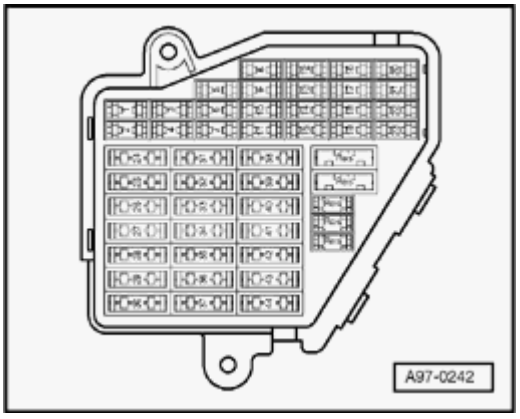


Fig. 170: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.

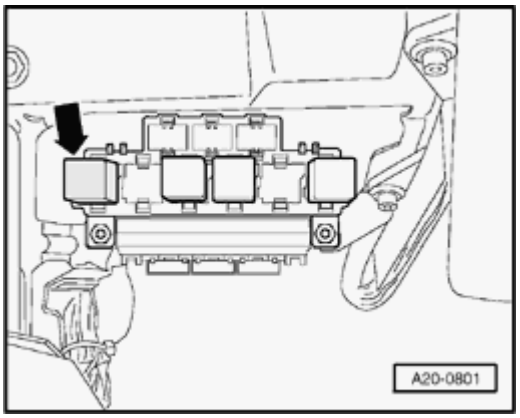


Fig. 171: Installed Location On 9-Socket Relay Carrier In Driver Footwell
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicles with MPI engine: Fuel Pump (FP) Relay J17 - **arrow** - at position 1 in 9-socket relay carrier behind driver side storage compartment is OK.

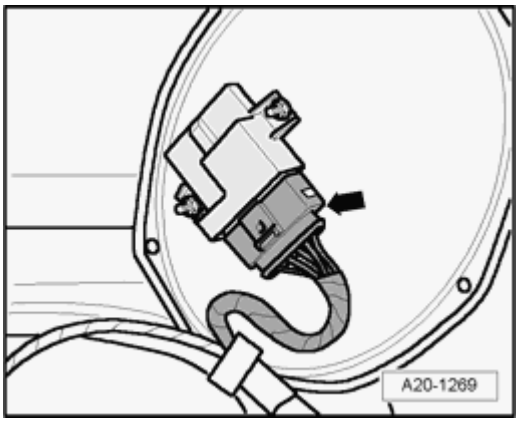


Fig. 172: Identifying Fuel Pump (FP) Control Module J538 Electrical Harness Connector

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicles with FSI engine: Fuel Pump (FP) Control Module J538 OK; check --> **Fuel Pump (FP) Control Module J538 , checking (vehicles with FSI engine)**.
- Fuel filter OK
- Ignition switched off.

Test sequence

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

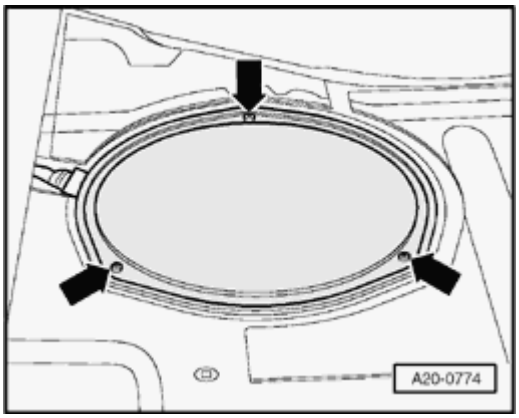


Fig. 173: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

cardiagn.com

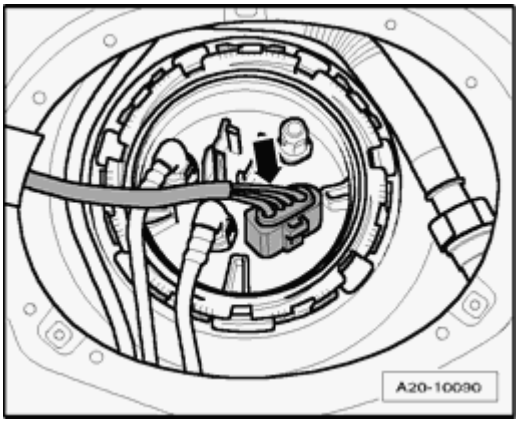


Fig. 174: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.

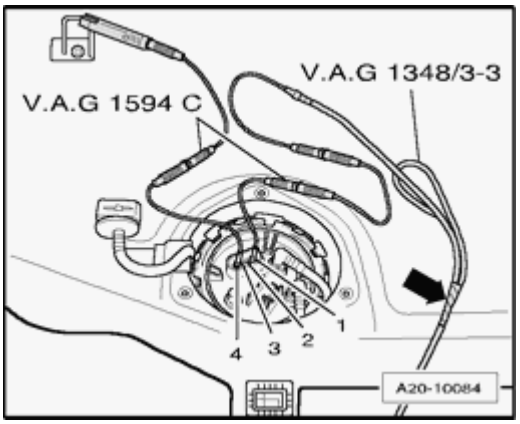


Fig. 175: Connecting Other End Of Hand Held Remote Starter (Jumper) To Vehicle Battery (+)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3 A with connection V.A.G 1348/3-3 to contact - **1** - using an adapter cable from connector test set V.A.G 1594 C.
- Using insulating tape, tape over the second contact of connection V.A.G 1348/3-3 to prevent a short circuit - **arrow** -.
- Connect contact - **4** - to vehicle Ground (GND) using a jumper cable from connector test set V.A.G 1594 C.
- Connect alligator clip to vehicle battery (+).
- Press switch on remote control.

- Running noise of pump must be audible.

NOTE:

- **Fuel Pump (FP) runs quietly. Avoid surrounding noises while testing the fuel pump.**

cardiagn.com

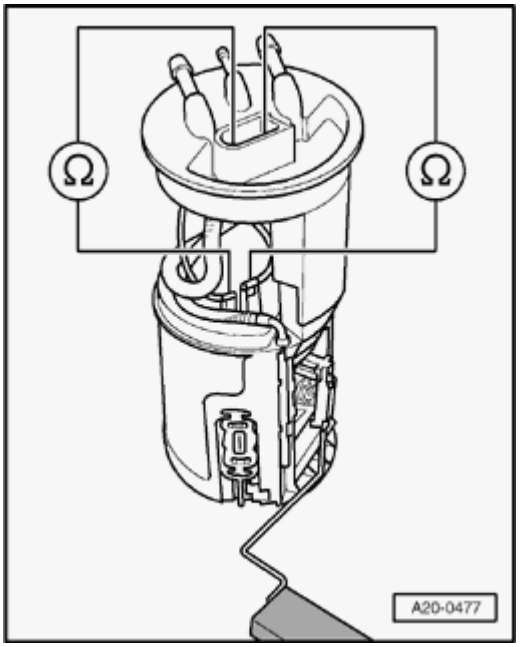


Fig. 176: Checking Electrical Circuit Between Terminals Of Fuel Delivery Unit And Fuel Pump For Continuity
Courtesy of VOLKSWAGEN UNITED STATES, INC.

If no operating noise can be heard:

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.
- Check if electrical wiring between flange and fuel pump is connected and has continuity.

If no malfunction is detected in wires, Fuel Pump (FP) is faulty - replace fuel pump.

- Install fuel delivery unit **Installing**.

Fuel Pump (FP) Control Module J538 , checking (vehicles with FSI engine)

cardiagn.com

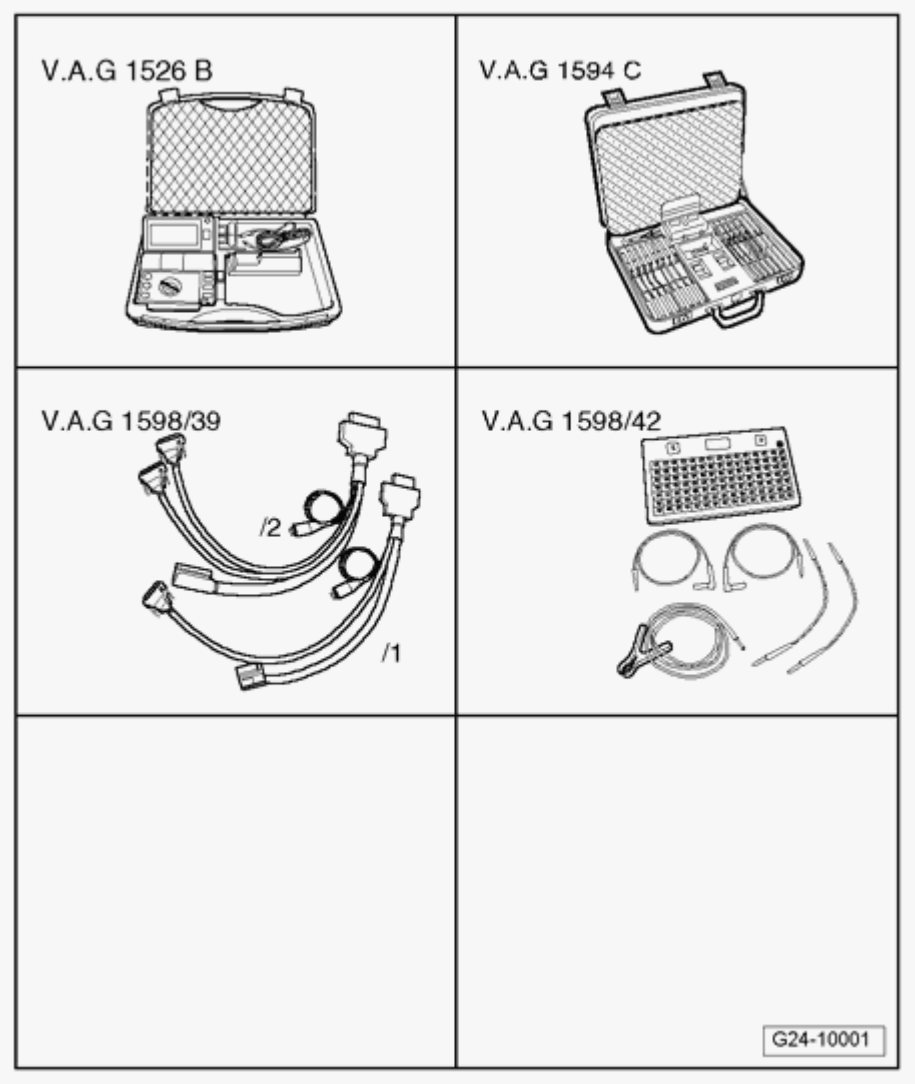


Fig. 177: Identifying Special Tools - Fuel Pump (FP) Control Module J538 , Checking (Vehicles With FSI Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Portable multimeter V.A.G 1526
- Connector test set V.A.G 1594
- Adapter cable V.A.G 1598/39
- Test box V.A.G 1598/42

Test conditions

- Battery voltage at least 12.5 V.

cardiagn.com

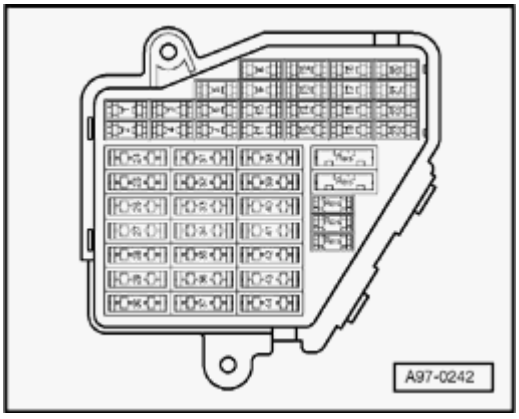


Fig. 178: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.
- Ignition switched off.

Check voltage supply for Fuel Pump (FP) (from Fuel Pump (FP) Control Module J538)

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward the right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

cardiagn.com

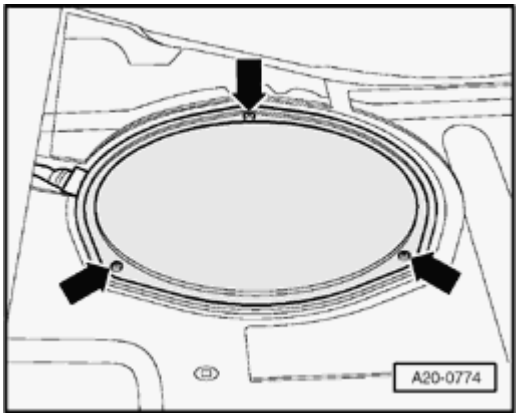


Fig. 179: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

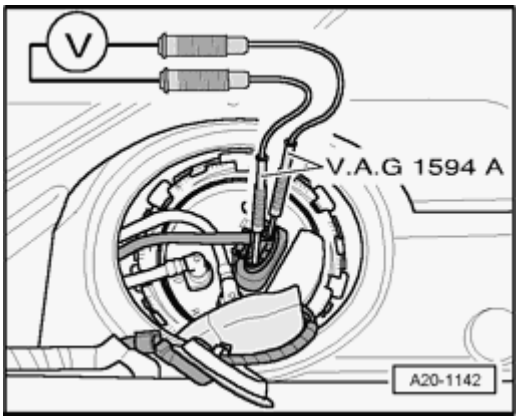


Fig. 180: Connecting Hand Multimeter V.A.G 1526 B With Measuring Probes And Connector Adapters From Connector Test Set V.A.G 1594 C Or V.A.G 1594 A Between Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fold protective boot back.
- For voltage testing, connect hand multimeter V.A.G 1526 B with measuring probes and connector adapters from connector test set V.A.G 1594 C or V.A.G 1594 A between clamp - **1** - and - **4** - , as shown in illustration. The electrical connection remains connected.

NOTE:

- **Connector sockets are numbered respectively on the rear side of the connector.**

- Start engine.
- Specified value during start and while running at idle: 4 to 5.7 V.
- Depress accelerator pedal completely and then release it (brief throttle burst).

cardiagn.com

- Specification: The voltage value must first rise slightly, then fall and then rise again to the previously read value.

If reading does not result as described:

- Check voltage supply and activation of Fuel Pump (FP) Control Module J538.

Check voltage supply for Fuel Pump (FP) Control Module J538

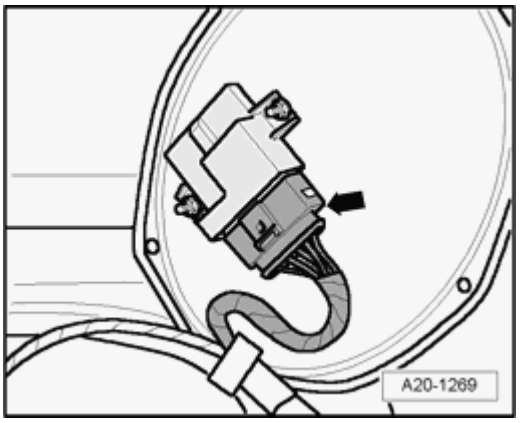


Fig. 181: Identifying Fuel Pump (FP) Control Module J538 Electrical Harness Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - on Fuel Pump (FP) Control Module J538.

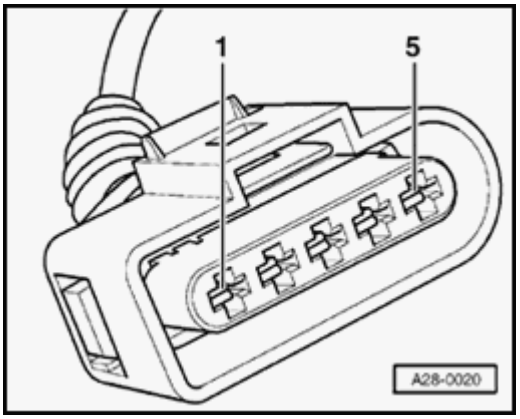


Fig. 182: Identifying Engine Control Module (ECM) 5-pin Connector Terminals 1 & 5
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect multimeter between terminal - **3** - and - **4** - of harness connector for voltage measurement.
- Switch ignition on.

- Specification: approx. battery voltage.

If specification is not obtained:

cardiagn.com

- Repair open circuit in wiring according to wiring diagram.

Check activation of Fuel Pump (FP) Control Module J538

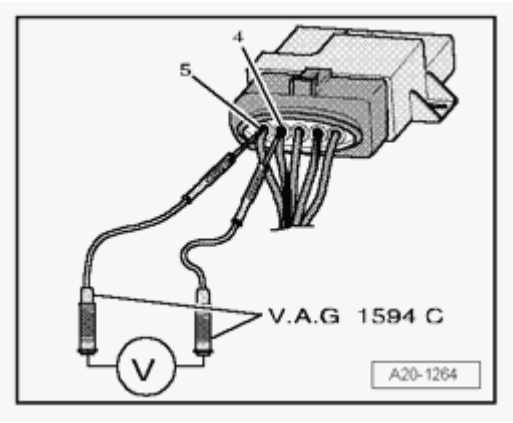


Fig. 183: Connecting Multimeter With Measuring Probes And Connector Adapters From Connector Test Set V.A.G 1594 C Between Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- For voltage testing, connect multimeter with measuring probes and connector adapters from connector test set V.A.G 1594 C between clamp - **4** - and - **5** - , as shown in illustration. The electrical connection remains connected.

NOTE:

- **Connector sockets are numbered respectively on the rear side of the connector.**

- Start engine.
- Specified value during start and while running at idle: approx. 5.0 V.
- Depress accelerator pedal completely and then release it (brief throttle burst).
- Specification: The voltage value must first rise slightly, then fall and then rise again to the previously read value.

If reading does not result as described:

- Switch off ignition.

cardiagn.com

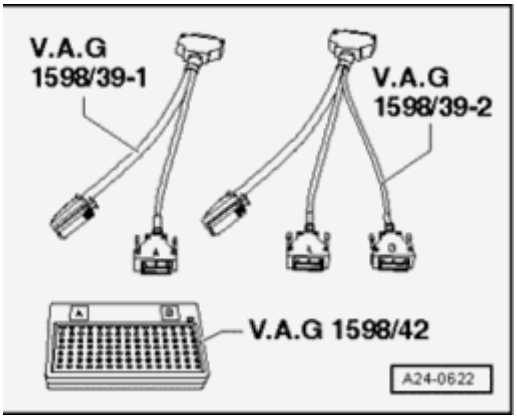


Fig. 184: Connecting Test Box V.A.G 1598/42 To Wiring Harness With Adapter Cable V.A.G 1598/39-1 Or Adapter Cable V.A.G 1598/39-2
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect test box V.A.G 1598/42 to wiring harness with adapter cable V.A.G 1598/39-1 or adapter cable V.A.G 1598/39-2 ; engine control module (ECM) remains connected. Clamp test box Ground (GND) clip to battery negative terminal -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

CAUTION: To avoid damaging electronic components, set measuring range before connecting test leads and observe all test requirements.

cardiagn.com

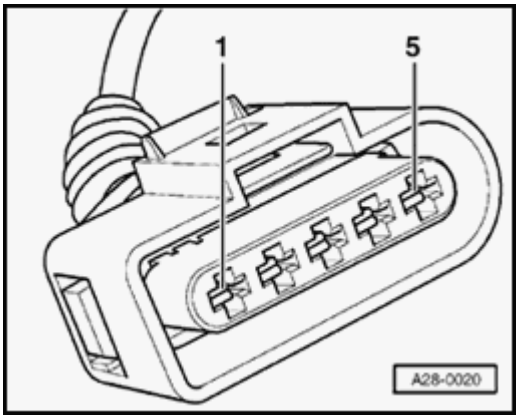


Fig. 185: Identifying Engine Control Module (ECM) 5-pin Connector Terminals 1 & 5
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following wire connection for open circuit and short circuit to Ground (GND) and B+:

Vehicles with 4-cyl. TFSI-engine:

Harness connector Terminal	Test box V.A.G 1598/42 Socket
- 5 -	B 27

Vehicles with 6-cyl. FSI-engine:

Harness connector Terminal	Test box V.A.G 1598/42 Socket
- 5 -	B 35

- Repair wiring open circuit or short circuit according to wiring diagram.

If no malfunctions are detected:

- Replace Fuel Pump (FP) Control Module J538.

Delivery rate of fuel pump, checking (vehicles with 4-cyl. TFSI-engine)

Special tools, testers and auxiliary items required

cardiagn.com

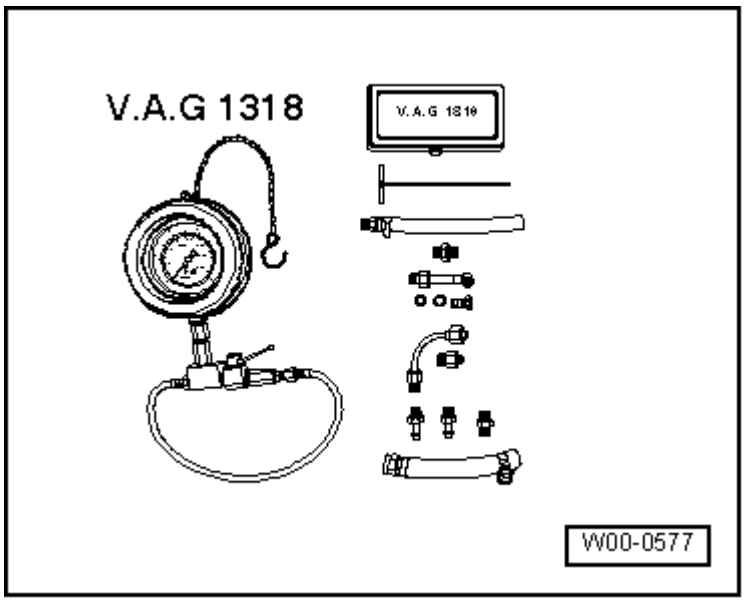


Fig. 186: Identifying Pressure Gauge V.A.G 1318
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge V.A.G 1318
- Adapter V.A.G 1318/11
- Adapter V.A.G 1318/12

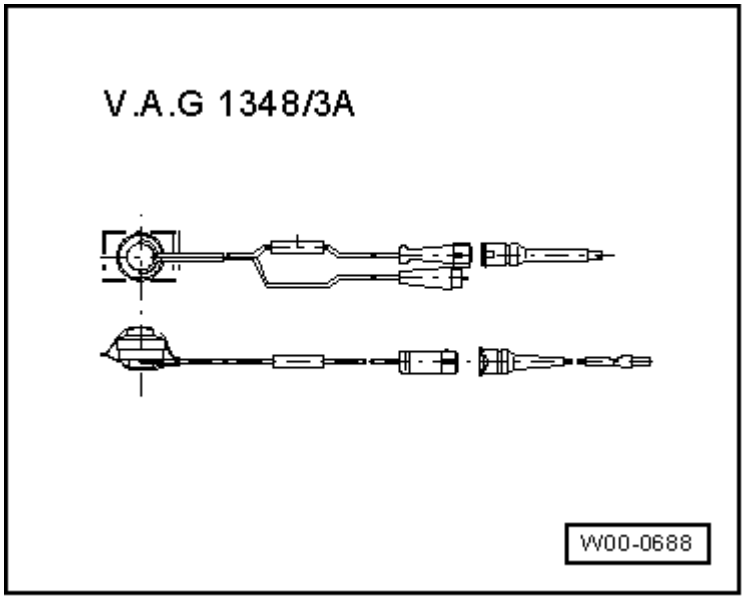


Fig. 187: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Fuel-resistant measuring container

cardiagn.com

Test conditions

- Battery voltage at least 12.5 V.

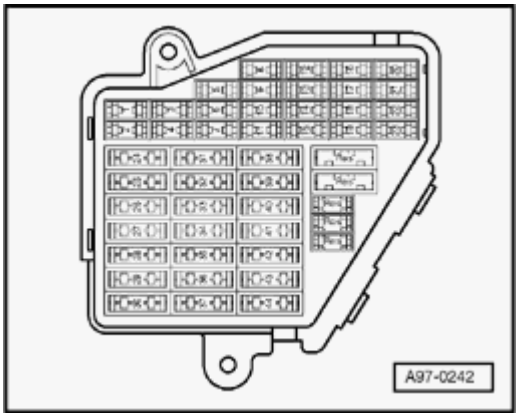


Fig. 188: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.

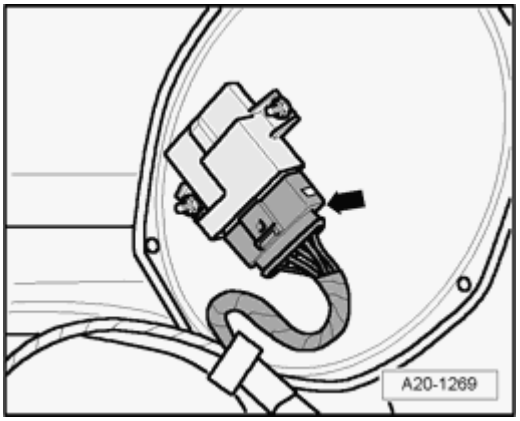


Fig. 189: Identifying Fuel Pump (FP) Control Module J538 Electrical Harness Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Control Module J538 OK; check --> **Fuel Pump (FP) Control Module J538 , checking (vehicles with FSI engine)**.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Ignition switched off.

Test sequence

Sedan:

cardiagn.com

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

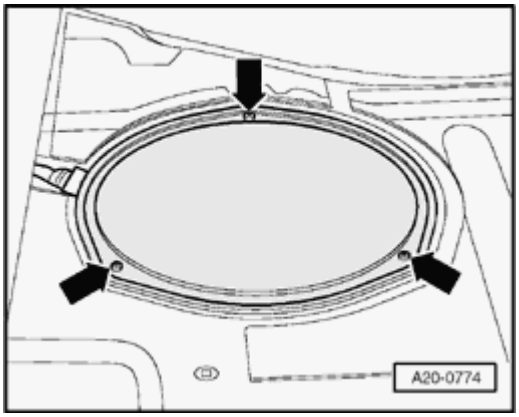
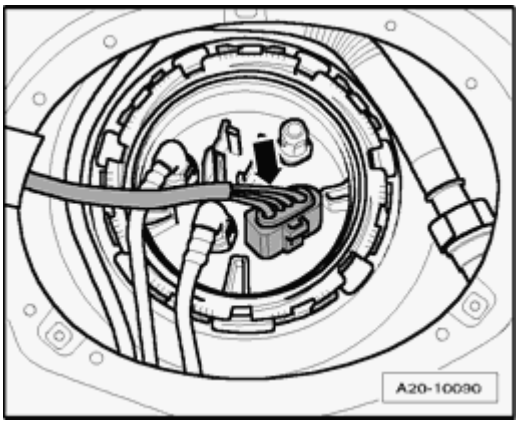


Fig. 190: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.



cardiagn.com

Fig. 191: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.

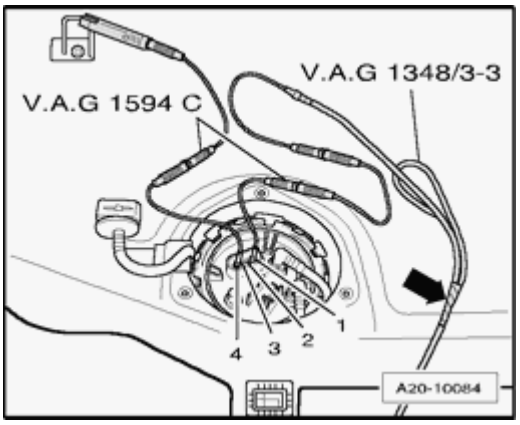


Fig. 192: Connecting Other End Of Hand Held Remote Starter (Jumper) To Vehicle Battery (+)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3 A with connection V.A.G 1348/3-3 to contact - **1** - using an adapter cable from connector test set V.A.G 1594 C.
- Using insulating tape, tape over the second contact of connection V.A.G 1348/3-3 to prevent a short circuit - **arrow** -.
- Connect contact - **4** - to vehicle Ground (GND) using a jumper cable from connector test set V.A.G 1594 C.
- Connect alligator clip to vehicle battery (+).

- Remove fuel filler cap from fuel filler tube.

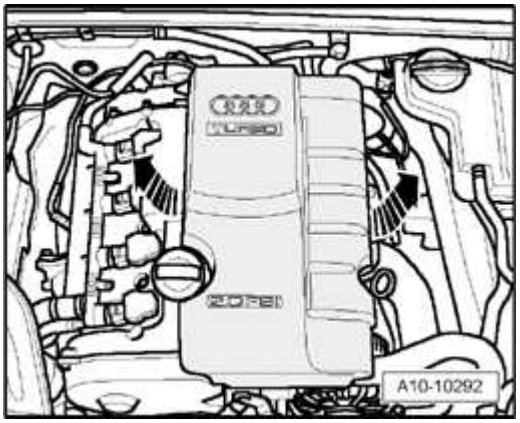


Fig. 193: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.

cardiagn.com

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

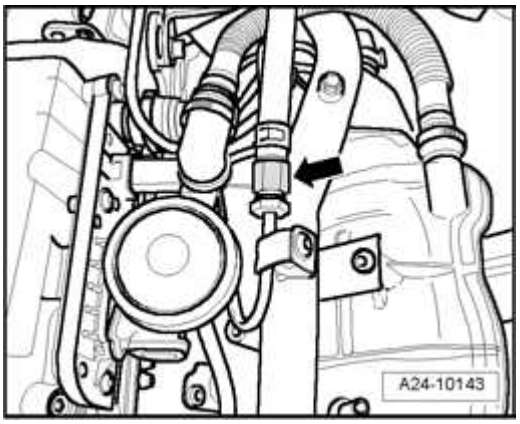


Fig. 194: Disconnecting Fuel Line From Line Connection On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **arrow** - from line connection on engine.

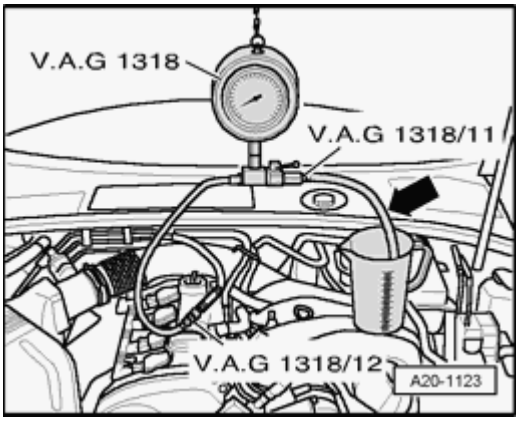


Fig. 195: Connecting Pressure Gauge V.A.G 1318 To Fuel Supply Line Using Adapters V.A.G 1318/11 And V.A.G 1318/12
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect pressure gauge V.A.G 1318 to fuel supply line using adapters V.A.G 1318/11 and V.A.G 1318/12.
- Connect extension hose - **arrow** - to pressure gauge and hold it in a measuring container.
- Open shut-off valve of pressure gauge. The lever points in direction of flow.
- Generate pressure in fuel system by pressing switch of the remote control and slowly closing shut-off valve of the pressure gauge.

- Specification: 4 bar positive pressure.

cardiagn.com

- From this point on do not move position of shut-off valve.
- Empty measuring container.
- Press switch on remote control for 15 seconds.

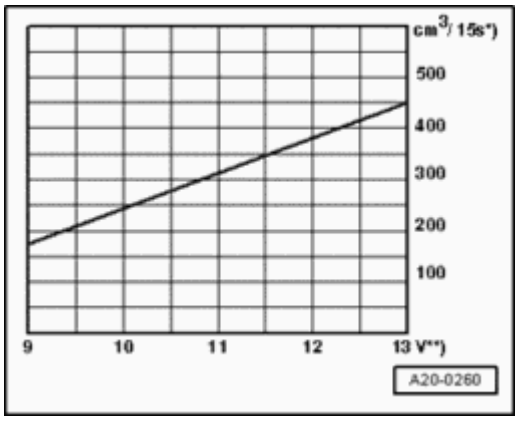


Fig. 196: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Installation is in reverse order of removal. Note the following:

- Install fuel line.

Torque specifications

Component	Nm
Fuel line to fuel rail	22

Delivery rate of fuel pump, checking (vehicles with 6-cyl. MPI-engine)

Special tools, testers and auxiliary items required

cardiagn.com

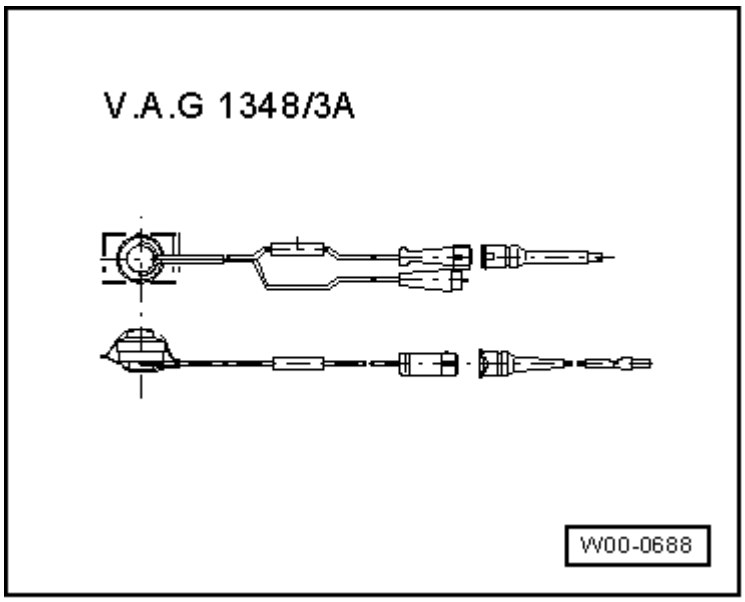


Fig. 197: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Fuel pressure regulator OK, checking -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

  .

- Ignition switched off.

cardiagn.com

Test sequence

- Open cover of fuse box at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

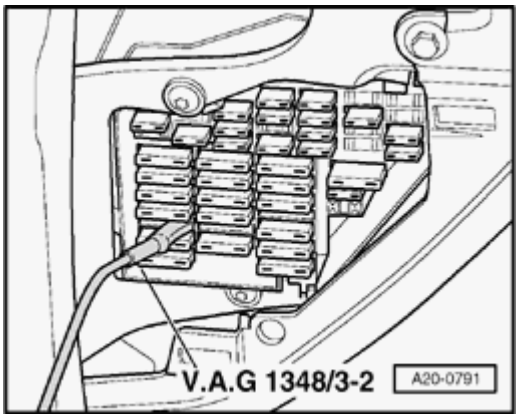


Fig. 198: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).
- Remove fuel filler cap from fuel filler tube.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Disconnect fuel return hose from line connection on fuel rail pipe.

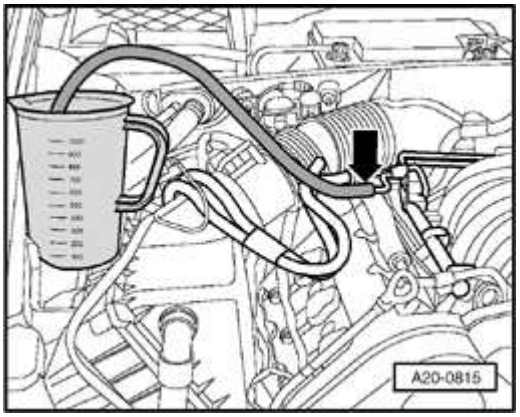


Fig. 199: Connecting Extension Hose Onto Fuel Rail And Hold It In Measuring Container
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Connect assisting hose onto fuel rail - **arrow** - and hold it in a measuring container.
- Press switch on remote control for 15 seconds.

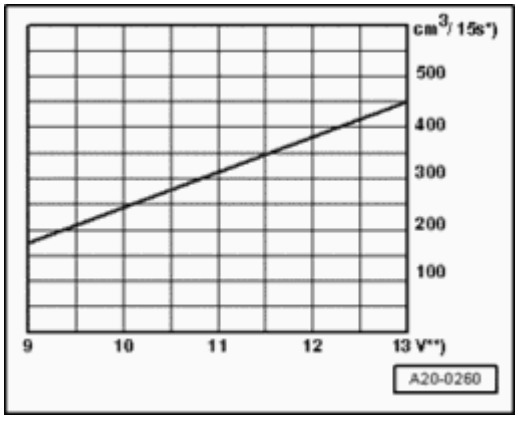


Fig. 200: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Installation is in reverse order of removal. Note the following:

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**

- Install fuel return hose.

Delivery rate of fuel pump, checking (vehicles with 6-cyl. FSI-engine)

Special tools, testers and auxiliary items required

cardiagn.com

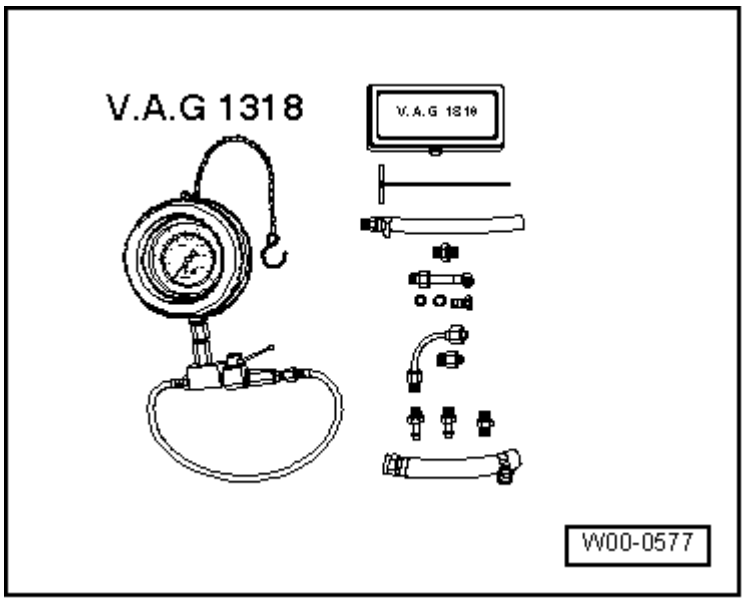


Fig. 201: Identifying Pressure Gauge V.A.G 1318
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge V.A.G 1318
- Adapter V.A.G 1318/11
- Adapter V.A.G 1318/12

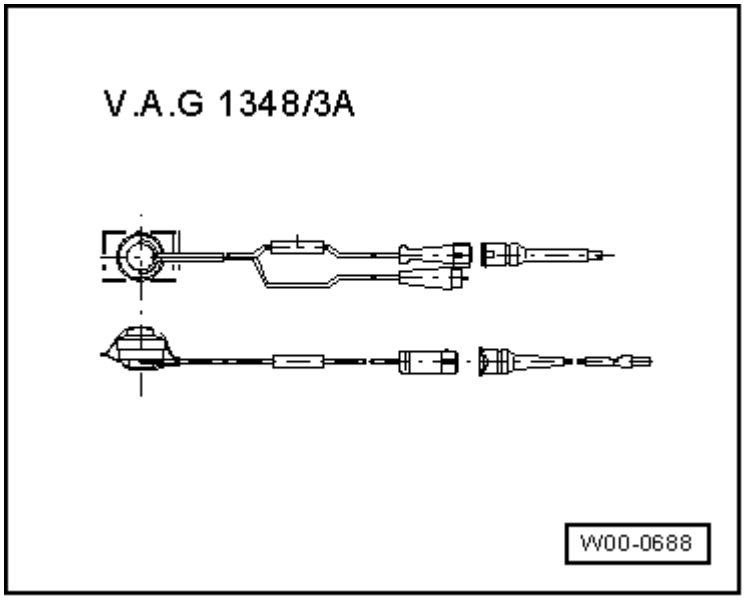


Fig. 202: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Fuel-resistant measuring container

cardiagn.com

Test conditions

- Battery voltage at least 12.5 V.

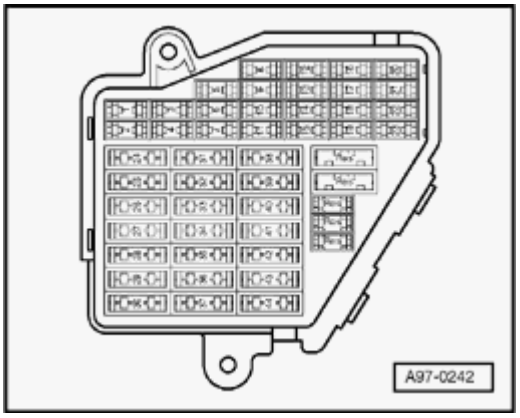


Fig. 203: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.

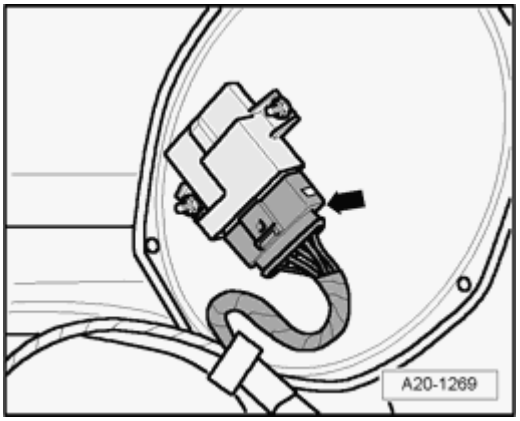


Fig. 204: Identifying Fuel Pump (FP) Control Module J538 Electrical Harness Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Control Module J538 OK; checking --> **Fuel Pump (FP) Control Module J538 , checking (vehicles with FSI engine)**.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Ignition switched off.

Test sequence

Sedan:

cardiagn.com

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

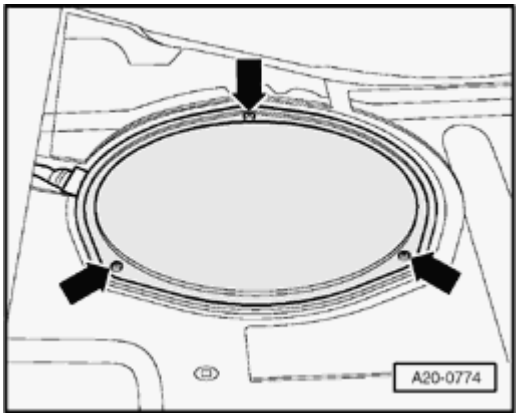
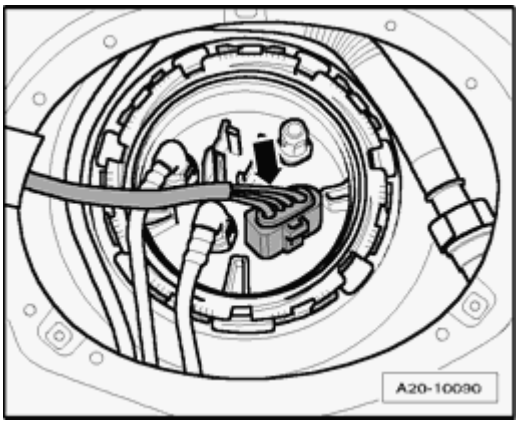


Fig. 205: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.



cardiagn.com

Fig. 206: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.

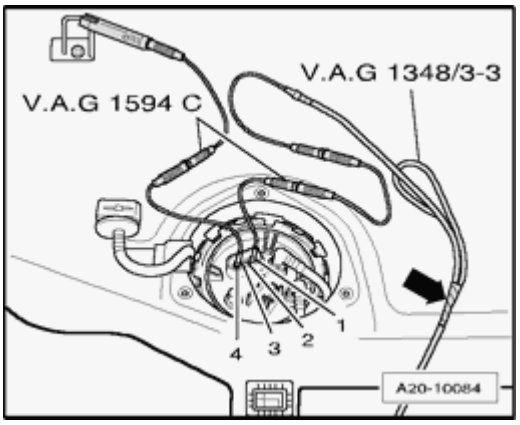


Fig. 207: Connecting Other End Of Hand Held Remote Starter (Jumper) To Vehicle Battery (+)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3 A with connection V.A.G 1348/3-3 to contact - **1** - using an adapter cable from connector test set V.A.G 1594 C.
- Using insulating tape, tape over the second contact of connection V.A.G 1348/3-3 to prevent a short circuit - **arrow** -.
- Connect contact - **4** - to vehicle ground (GND) using a jumper cable from connector test set V.A.G 1594 C.
- Connect alligator clip to vehicle battery (+).

- Remove fuel filler cap from fuel filler tube.

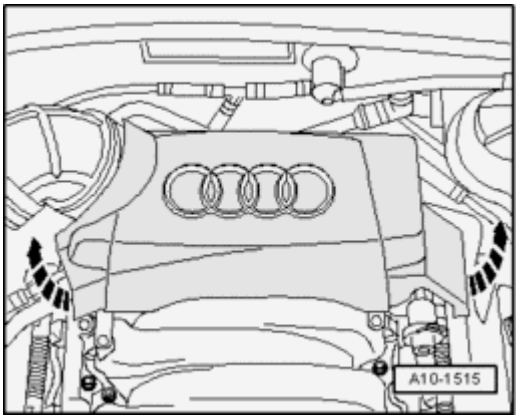


Fig. 208: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.

cardiagn.com

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

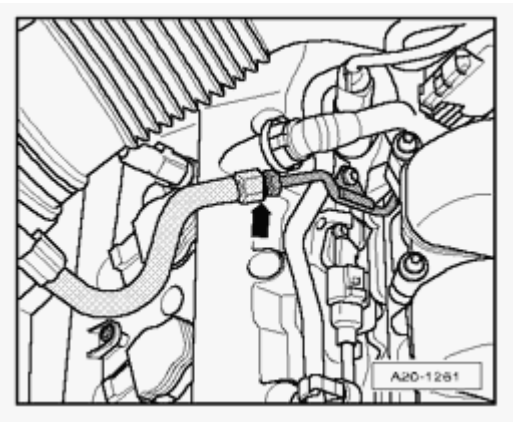


Fig. 209: Disconnecting Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **arrow** -.

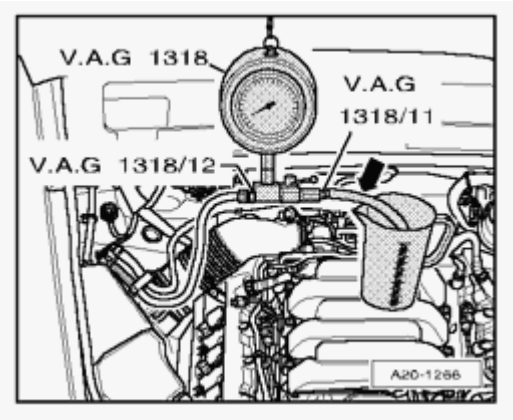


Fig. 210: Connecting Pressure Gauge V.A.G 1318 To Fuel Line Using Adapter V.A.G 1318/11 And V.A.G 1318/12
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect pressure gauge V.A.G 1318 to fuel line using adapter V.A.G 1318/11 and V.A.G 1318/12.
- Connect extension hose - **arrow** - to pressure gauge and hold it in a measuring container.
- Open shut-off valve of pressure gauge. The lever points in direction of flow.
- Generate pressure in fuel system by pressing switch of remote control and slowly closing shut-off valve of the pressure gauge.

- Specification: 4 bar positive pressure.

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

cardiagn.com

- Empty measuring container.
- Press switch on remote control for 15 seconds.

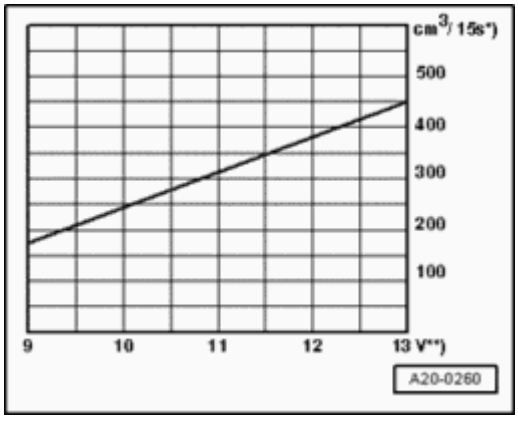


Fig. 211: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

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

- Fuel lines pinched.
- Fuel filter clogged.
- Fuel pump faulty.

Installation is in reverse order of removal.

Torque specifications

Component	Nm
Fuel line to fuel rail	22

Fuel delivery unit, removing and installing

Special tools, testers and auxiliary items required

cardiagn.com

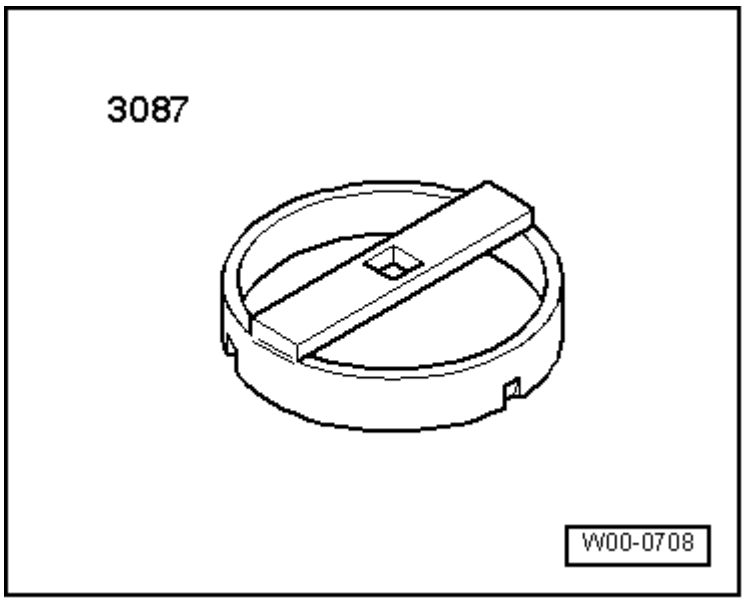


Fig. 212: Wrench 3087
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the fuel delivery unit, the fuel tank may only be filled to a maximum of $^{3}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

cardiagn.com

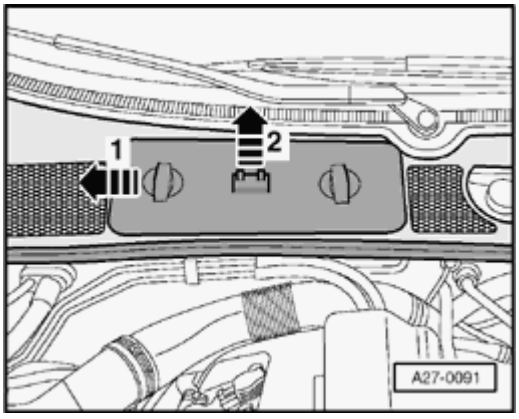


Fig. 213: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

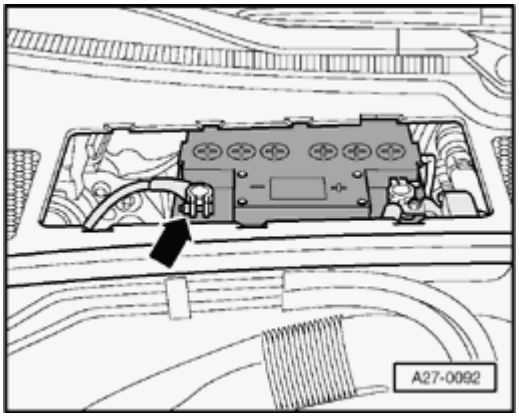


Fig. 214: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->

cardiagn.com

- **70 - INTERIOR TRIM**
- **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

.

All models:

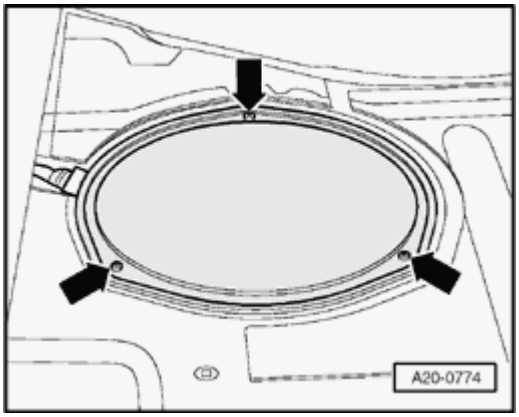


Fig. 215: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

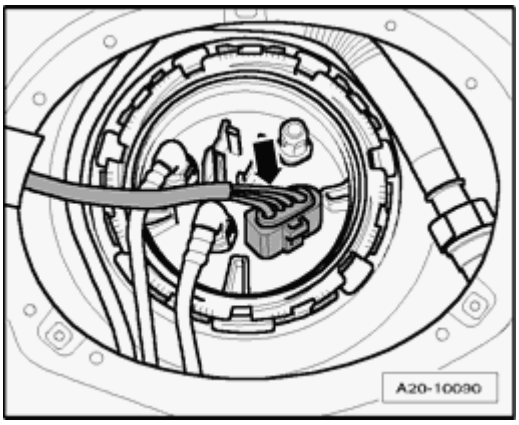


Fig. 216: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.

cardiagn.com

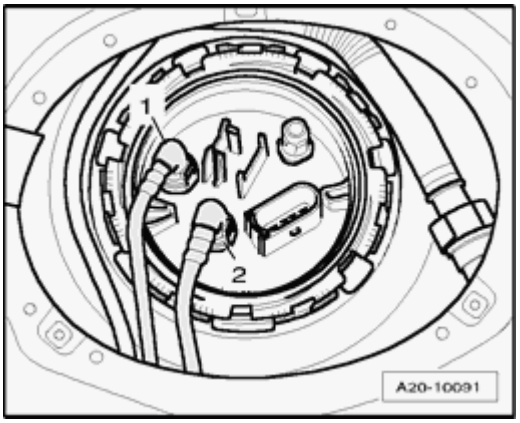


Fig. 217: Identifying Fuel Supply Line And Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark fuel supply line - **1** - and fuel return line - **2** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Pull both lines from locking flange, by pressing release buttons.

CAUTION: The fuel delivery unit may only be removed when fuel tank is maximum $^{3}/_{4}$ filled. Otherwise, a large amount of fuel will spill out.

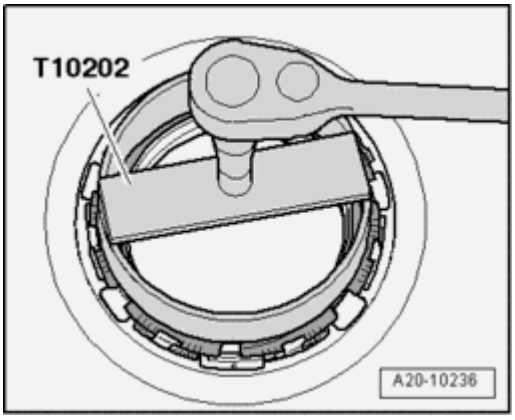


Fig. 218: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring with wrench T10202.
- Lift fuel delivery unit slightly out of fuel tank opening and remove seal.

cardiagn.com

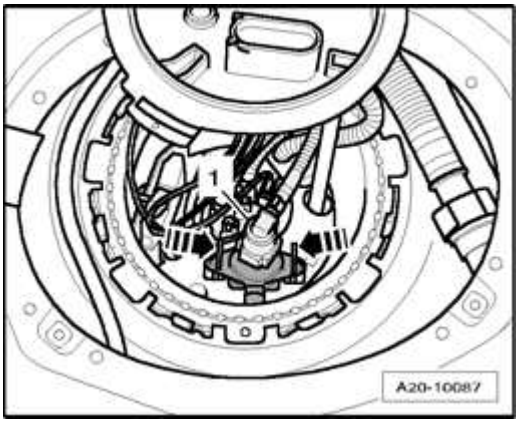


Fig. 219: Removing/Installing Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If fuel delivery unit is still inserted in fuel tank, slide locking flange slightly to side.
- Reach through the gap between locking flange and installation opening in fuel tank and pull off suction jet line - **1** - from suction jet pump, by pressing release button.
- Release suction jet pump - **arrows** - and remove it.
- Remove fuel delivery unit.

NOTE:

- **When removing fuel delivery unit, be sure not to bend floater arm of fuel level sensor G.**
- **Be aware that fuel is still in the fuel delivery unit.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When installing fuel delivery unit, be sure not to bend floater arm of fuel level sensor G.**
- **Make sure fuel hoses are seated securely.**

cardiagn.com

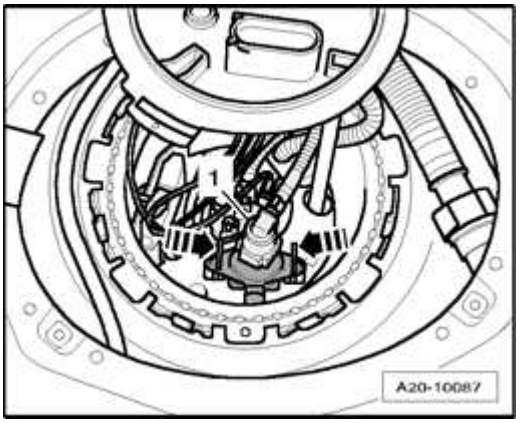


Fig. 220: Removing/Installing Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert fuel delivery unit into fuel tank.
- Clip in suction jet pump on fuel delivery unit. To do so, insert hand into gap between locking flange and installation opening of fuel tank.

- Suction jet pump must engage audibly.

- Verify that the suction jet pump is securely engaged.
- Push suction jet pipe - **1** - onto connection of suction jet pump until it engages audibly.
- Install new locking flange seal dry.
- Press locking flange down against spring pressure and bring it into installation position.

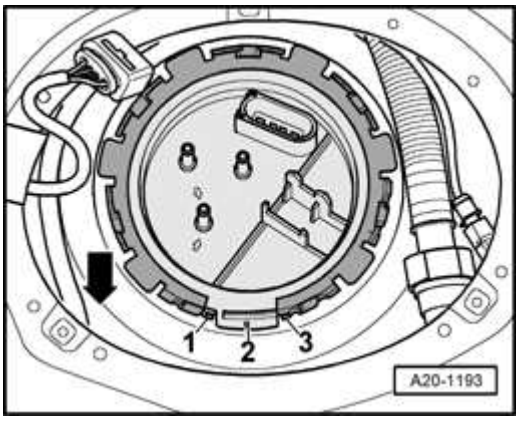


Fig. 221: Identifying Tab On Locking Flange Lie Between Tabs N Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

cardiagn.com

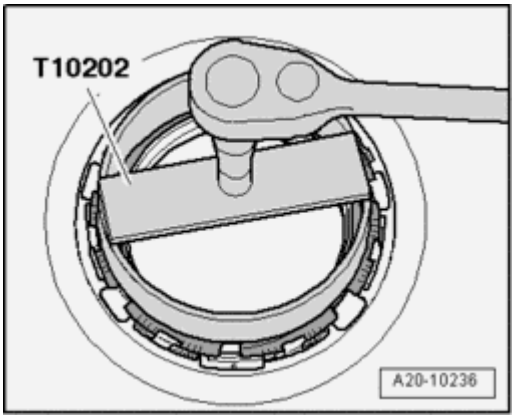


Fig. 222: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.

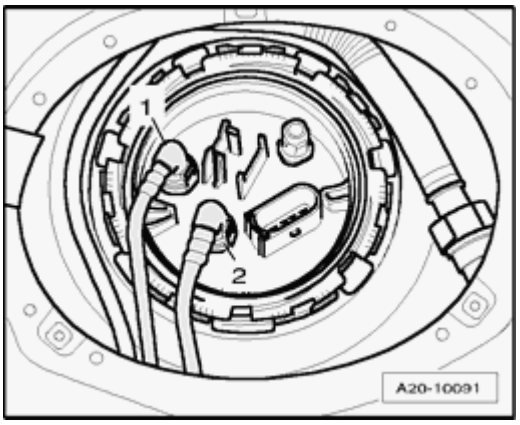


Fig. 223: Identifying Fuel Supply Line And Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install fuel supply line - **1** - and fuel return line - **2** - according to marking.
- Connect electrical harness connector.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit	145

Fuel pump adaptation after replacing fuel delivery unit, (vehicles with 4-cyl. TFSI engine)

cardiagn.com

Special tools, testers and auxiliary items required

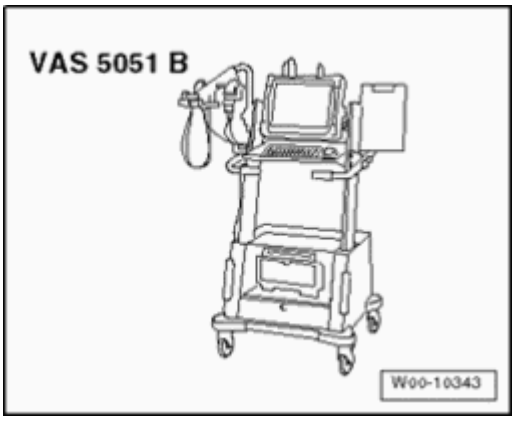


Fig. 224: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle diagnostic, testing, and information system VAS 5051 (VAS 5051 B version shown as example only)

NOTE:

- **If the fuel pump is replaced, the fuel pump should be adapted to the engine control module on vehicles with 4-cyl. TFSI engine to check the repair.**

Work procedure

- Vehicle Diagnostic, Testing and Information System VAS 5051 connected, On-board diagnostics and vehicle system "01 Engine electronics" selected.
- No DTCs in DTC memory.
- Engine running at idle.

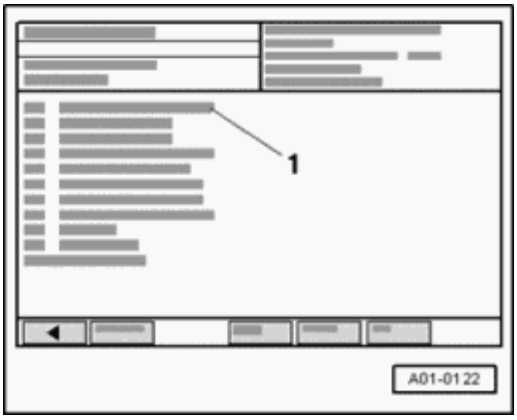


Fig. 225: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

cardiagn.com

- In selection - **1** - , click on the diagnostic function "04 - Basic Setting".

Fig. 226: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Select function "103" in button field - **2** - for "display group 103" and press Q to confirm input.

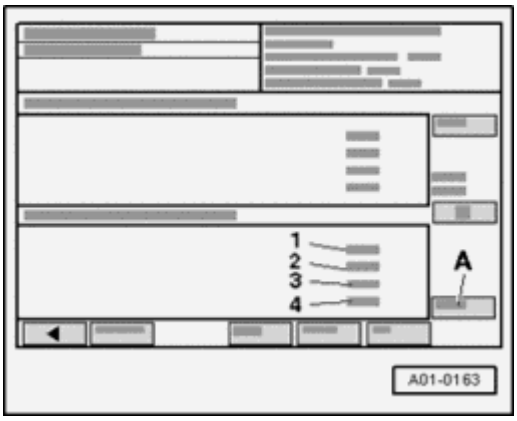


Fig. 227: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Activate basic setting by pressing Activate button - **A** -.

Display on VAS 5051 :

- Check indication in display field - **4** -.

Scan tool display: "ADP in progress". After the fuel pump adaptation is completed, the display shows "ADP OK".

NOTE:

- **If "ADP not OK" is displayed: Check DTC Memory.**

cardiagn.com

- End function "04 - Basic setting" by pressing <-- button.
- From selection, click on the diagnostic function "06 - End output".
- Turn ignition off and disconnect diagnostic connection.

Fuel level sensor G , checking

Special tools, testers and auxiliary items required

Fig. 228: Identifying Multimeter V.A.G 1526B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526

Fig. 229: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

Sedan:

- Remove carpeting in luggage compartment.

cardiagn.com

- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

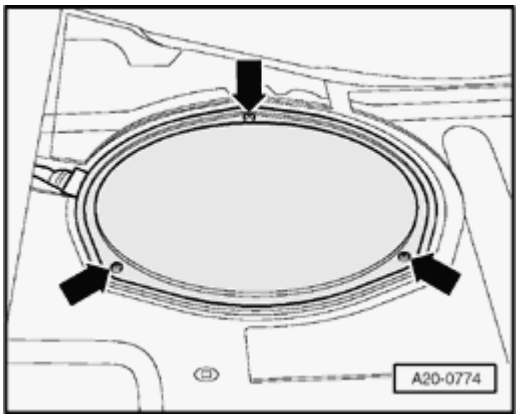


Fig. 230: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

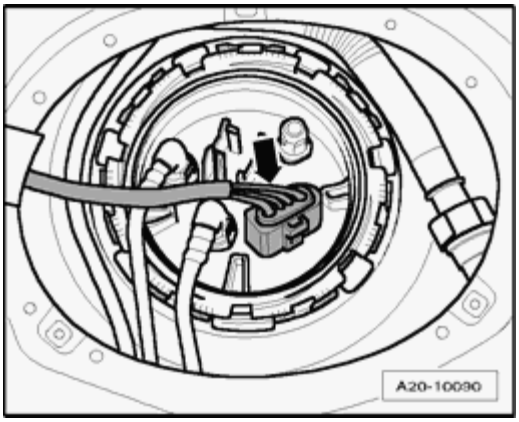


Fig. 231: Disconnecting Electrical Harness Connector At Locking Flange

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.

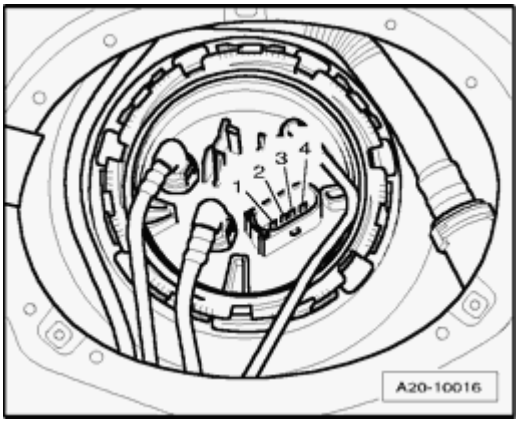


Fig. 232: Connecting hand multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	300 to 310 ohms	53.5 to 59 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the fuel delivery unit must be removed --> Fuel delivery unit, removing and installing and the floater of the sensor must be placed in upper or lower end position.**
- **With fuel level sensor G removed, the following values are obtained because of the greater deflection of the floater arm:**

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel level sensor G	271 to 296 ohms	55 to 69 ohms

Installation is in reverse order or removal.

Fuel level sensor G , removing and installing

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

cardiagn.com

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.

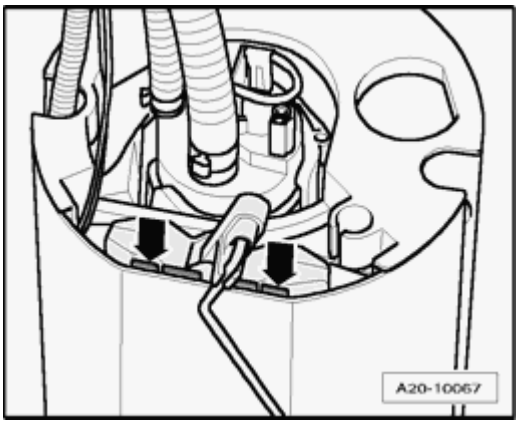


Fig. 233: Identifying Fuel Level Sensor G Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining tabs - **arrows** - with a screwdriver and pull Fuel Level Sensor G upward and out.

CAUTION: Before remove electrical connectors on Fuel Level Sensor G , first release contact retaining tabs.

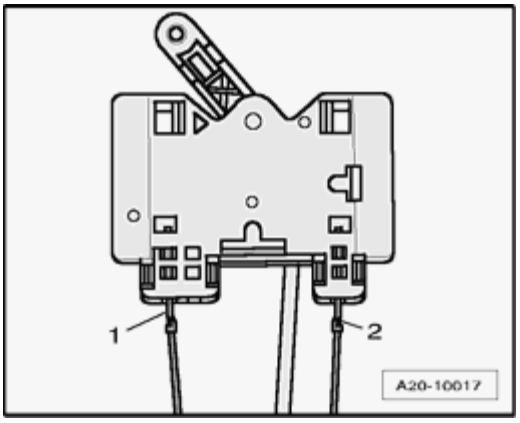


Fig. 234: Identifying Fuel Level Sensor G Electrical Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical connectors - **1** - and - **2** - and disconnect them.

Installing

Installation is in reverse order of removal. Note the following:

- Connect electrical connections - **1** - and - **2** - and check that they are securely engaged.
- Insert fuel level sensor G in guides on fuel delivery unit and push down until it engages.
- Install fuel delivery unit **Installing** , observing notes for connecting battery -->

cardiagn.com

- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
- **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

FUEL TANK, VEHICLES WITH ALL WHEEL DRIVE UP TO 06.03

Fuel tank with attachments, assembly overview

NOTE:

- **The fuel system with return line is shown in illustration.**

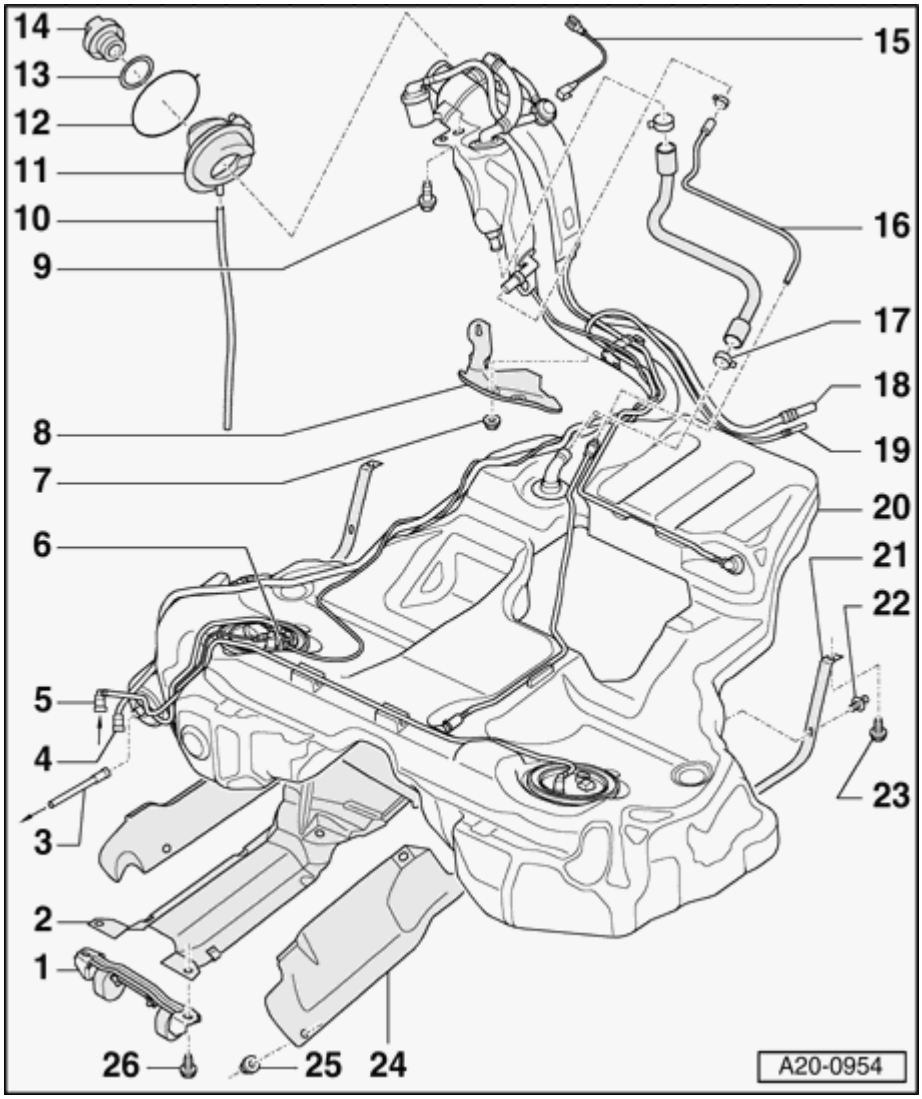


Fig. 235: Fuel Tank With Attachments, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bracket

cardiagn.com

- For exhaust system

2 - Carrier plate

3 - Fuel supply line

- From fuel filter
- To engine
- Do not kink
- To disconnect, press release button on connection piece

4 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Do not kink
- To disconnect, press release button on connection piece
- Clipped in on fuel tank

5 - Fuel return line

- From engine
- Clipped in on fuel tank

6 - Electrical harness connector

- For Fuel Tank Lock Switch F314
- Checking electrical --> **Fuel Tank Lock Switch F314 , checking**

7 - 2 Nm

8 - Heat shield

- For fuel delivery connection

9 - 23 Nm

10 - Overflow hose

11 - Rubber gasket

12 - Circlip

13 - Seal

cardiagn.com

- Replace if damaged

14 - Cap

15 - Ground (GND) connection

- For discharging electrostatic charge
- Installed position/check requirements **Position of Ground (GND) connection**
- After installing, check electrical connection of metal ring at fuel filler tube to a bare area of chassis using Ohm meter - Specified value: approx. 0 ohms

16 - Ventilation line

17 - Spring clip

18 - Ventilation line

- From gravity valve to EVAP canister
- To remove, press release ring on EVAP canister

19 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- To remove, press release ring on EVAP canister
- Clipped in on fuel tank

20 - Fuel tank

- Removing and installing --> **Fuel tank with attachments, removing and installing**

21 - Securing strap

22 - Spreader clip

23 - 23 Nm

24 - Heat shield

- For fuel tank

25 - 2 Nm

26 - 23 Nm

Position of Ground (GND) connection

cardiagn.com

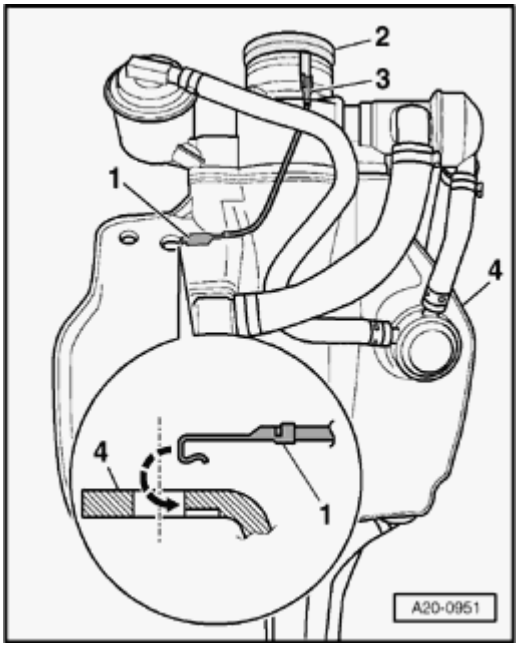


Fig. 236: Identifying Connector Is Securely Attached To Metal Ring & Contact Is Hooked Into Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

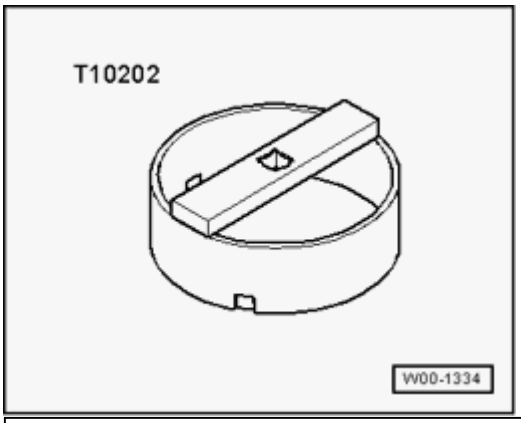
- Route Ground (GND) connection as shown in .
- Hook Ground (GND) connection contact - **1** - into opening on fuel tank - **4** -.
- Make sure Ground (GND) connection connector - **3** - fits securely at metal ring - **2** - of fuel filler tube.

CAUTION: After installing, check electrical connection of the metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

Fuel tank, draining

Special tools, testers and auxiliary items required



cardiagn.com

Fig. 237: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

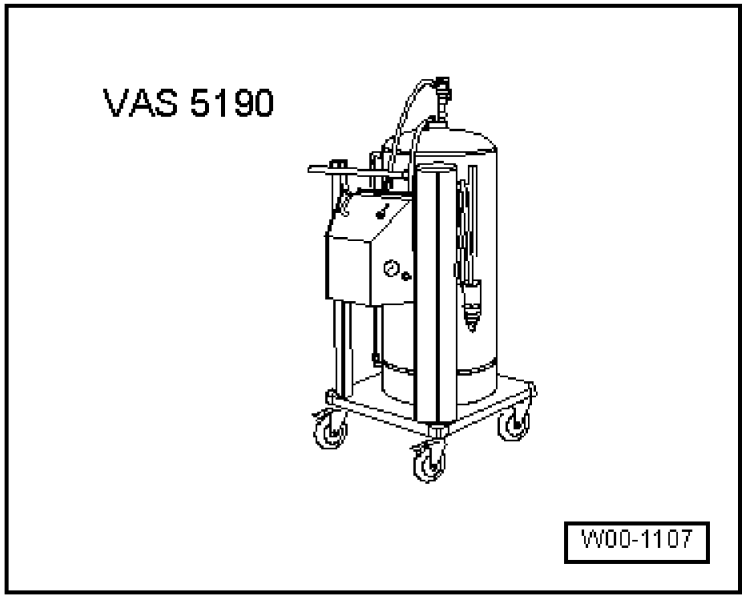


Fig. 238: Identifying Fuel Extraction Unit VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel siphoning unit VAS 5190

Work procedure

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

cardiagn.com

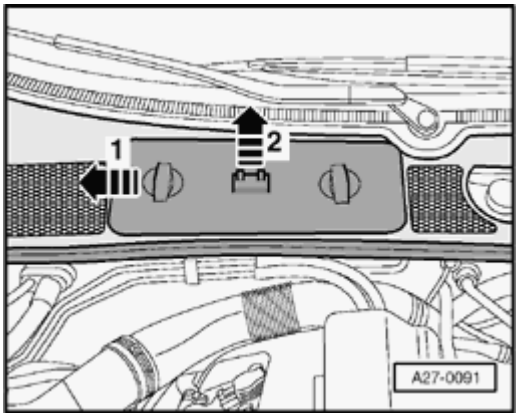


Fig. 239: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

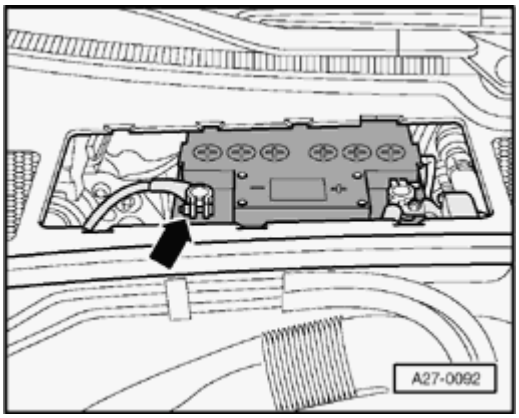


Fig. 240: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

CAUTION: Secure Ground (GND) wire of fuel extraction unit VAS 5190 to a bare area of the chassis.

cardiagn.com

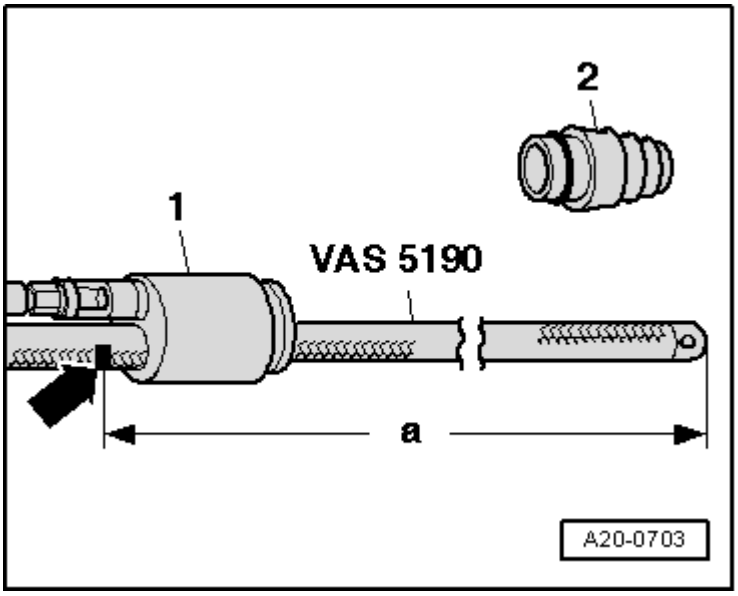


Fig. 241: Pulling Cone Piece From Shaft Piece Of Fuel Siphoning Device VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull cone piece - **2** - from shaft end - **1** - of fuel extraction unit VAS 5190.
- Using insulating tape, apply a mark - **arrow** - on hose at length - **a** - = 1,865 mm from end of suction hose.

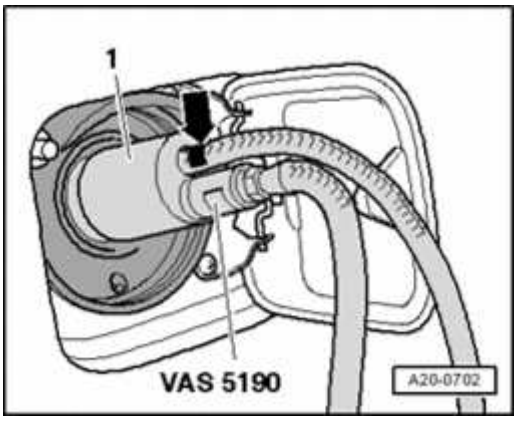


Fig. 242: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel filler cap from fuel filler tube.
- Screw shaft end - **1** - of fuel siphoning device VAS 5190 on to fuel filler tube of fuel tank.
- Push suction hose as far into fuel tank until the mark applied earlier - **arrow** - is positioned on shaft end.

cardiagn.com

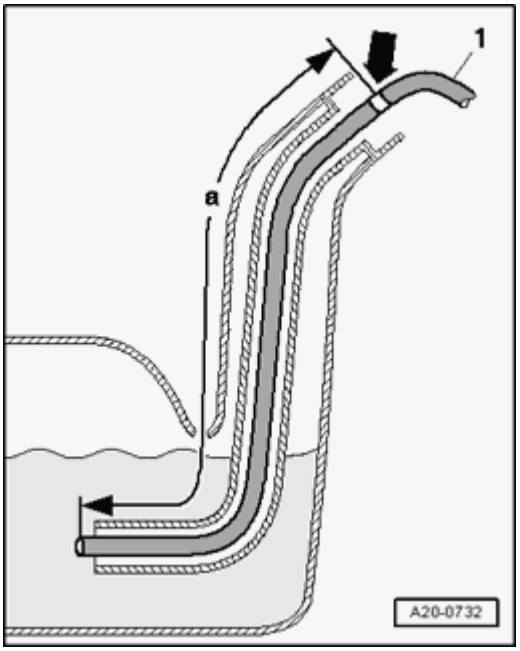


Fig. 243: Sliding Suction Hose As Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **If using a siphoning device without shaft end, proceed basically in the same manner.**
- **In this case, apply a mark - arrow - using insulating tape on hose at length - a - = 1,800 mm from end of suction hose. The suction hose is inserted correctly when the marking applied earlier stands opposite the lip of fuel filler tube.**
- **If the hose can only be inserted with difficulty, coat it thinly with engine oil. Never use lubricants containing silicon.**

- Drain fuel tank through fuel filler tube as much as possible.
- Carefully pull out suction hose.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

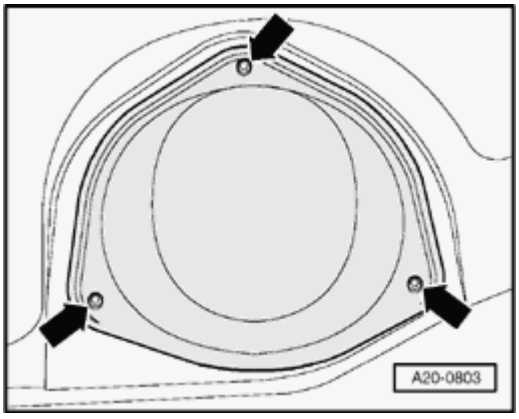


Fig. 244: Unbolting Cover For Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

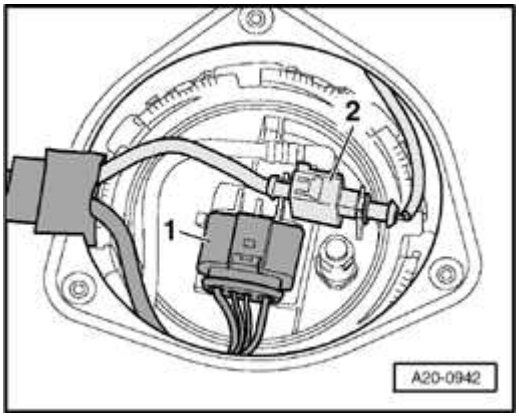


Fig. 245: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

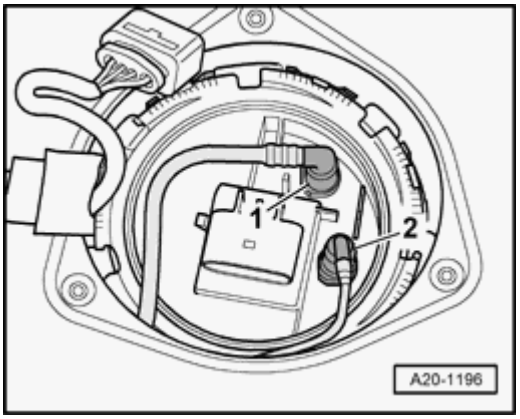


Fig. 246: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from locking flange by pressing release button.

Vehicles with 1.8L Turbo engine:

- Separate ventilation line - **2** - to fuel filter at locking flange, by pressing release buttons.

All models:

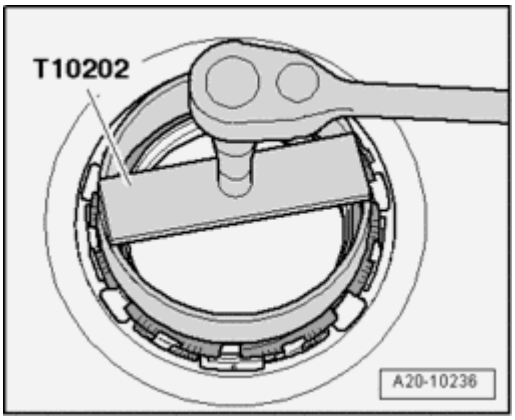


Fig. 247: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring with wrench T10202.

cardiagn.com

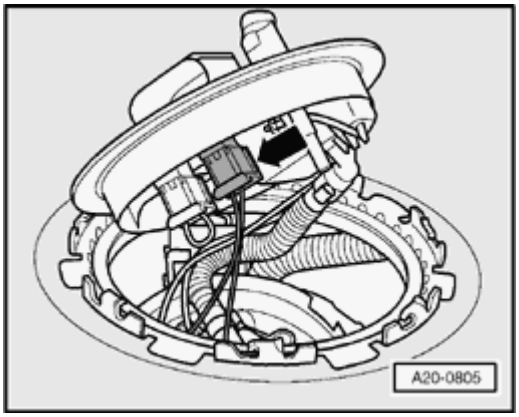


Fig. 248: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull locking flange and sealing ring from opening of fuel tank.
- Separate electrical connection on inner side of locking flange - **arrow** -.

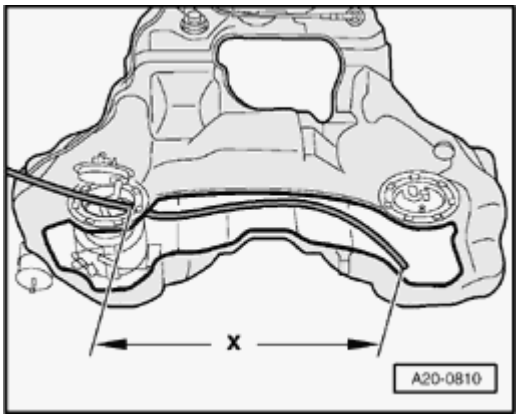


Fig. 249: Inserting Suction Hose Through Right Opening Of Fuel Tank Into Left Fuel Tank Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert suction hose, a dimension of - **x** - = 800 mm in length, through right opening of fuel tank into left fuel tank chamber.
- Drain left fuel tank chamber.
- Install right locking flange again **Installing** , observing notes for connecting battery.

Fuel tank with attachments, removing and installing

Special tools, testers and auxiliary items required

cardiagn.com

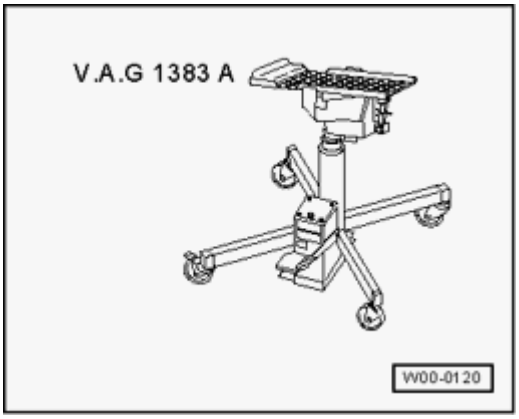


Fig. 250: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/transmission jack V.A.G 1383 A

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **For removal, fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

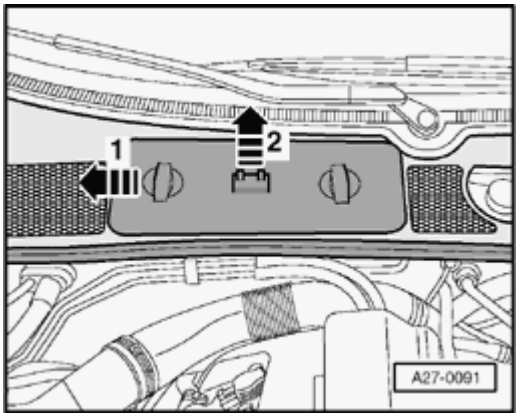


Fig. 251: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

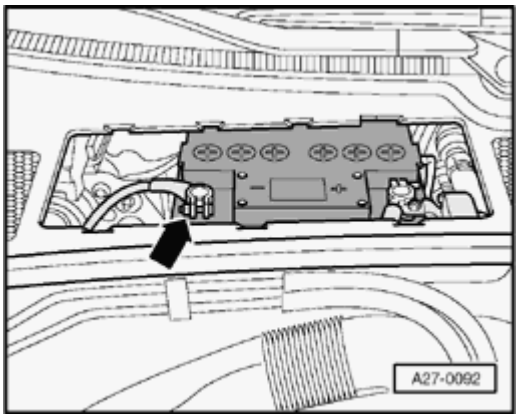


Fig. 252: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

cardiagn.com

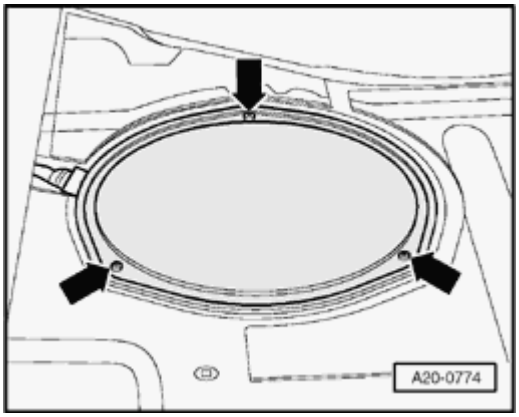


Fig. 253: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

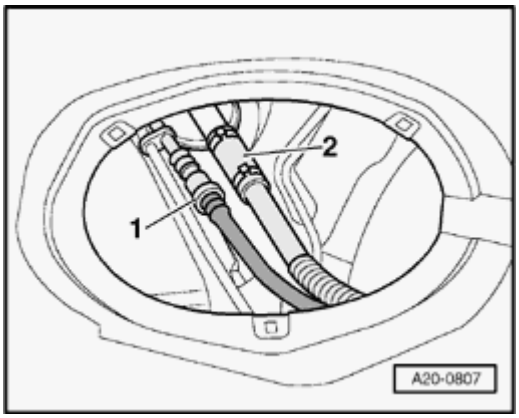


Fig. 254: Disconnecting Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation line - **1** - by pressing release button.
- Disconnect ventilation line - **2** -.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

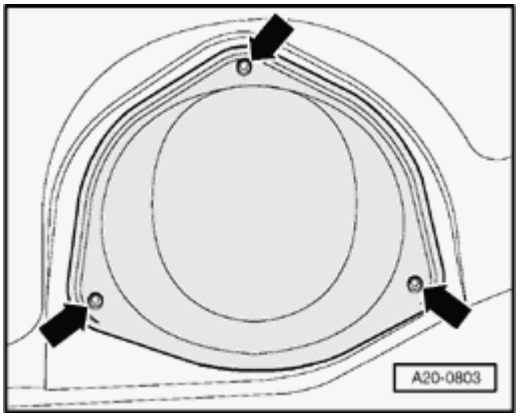


Fig. 255: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange, left and right - **arrows** -.

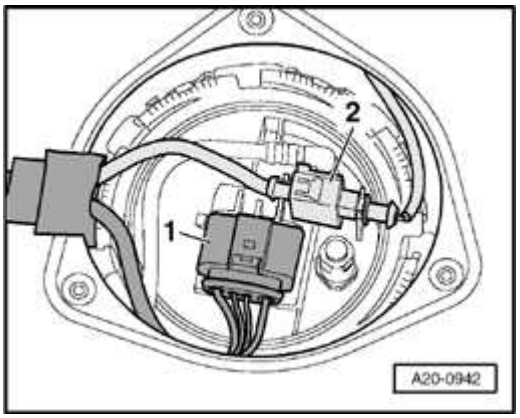


Fig. 256: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disconnect electrical connector - **2** -.

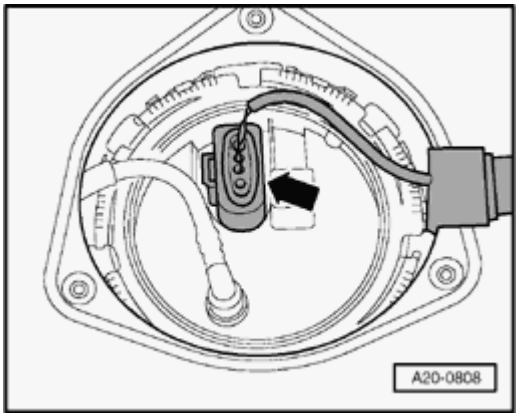


Fig. 257: Disconnecting Electrical Harness Connector At Left Locking Flange

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

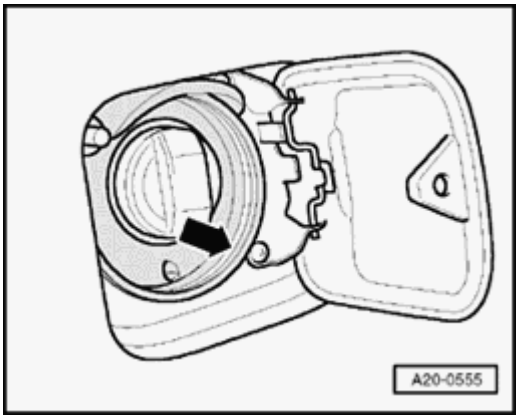


Fig. 258: Opening Tank Flap And Cleaning Area Around Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open tank flap and clean area around fuel filler tube.

NOTE:

- **Do not remove fuel cap.**

- Pry tensioning ring - **arrow** - out from rubber gasket and press rubber gasket through toward inside.

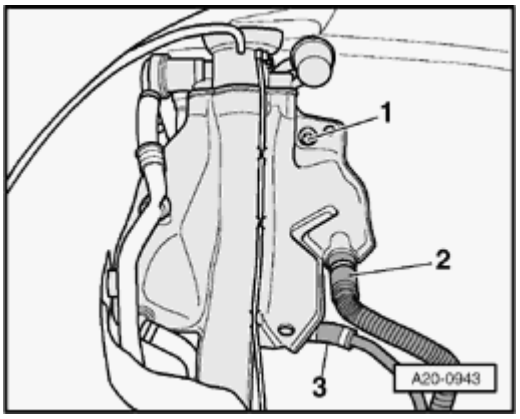


Fig. 259: Removing Ventilation Lines At Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear wheel.
- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Remove ventilation lines - **2** - and - **3** - at fuel filler tube.

cardiagn.com

- Remove - **1** - for fuel filler tube.

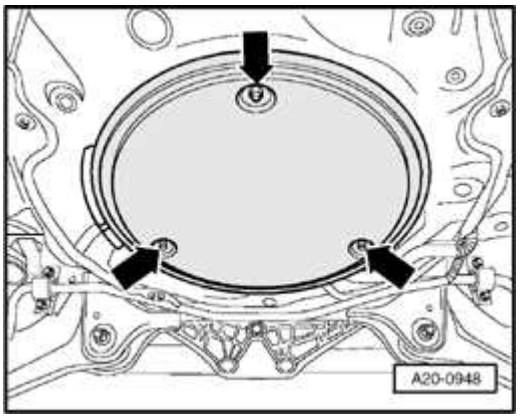


Fig. 260: Removing EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.

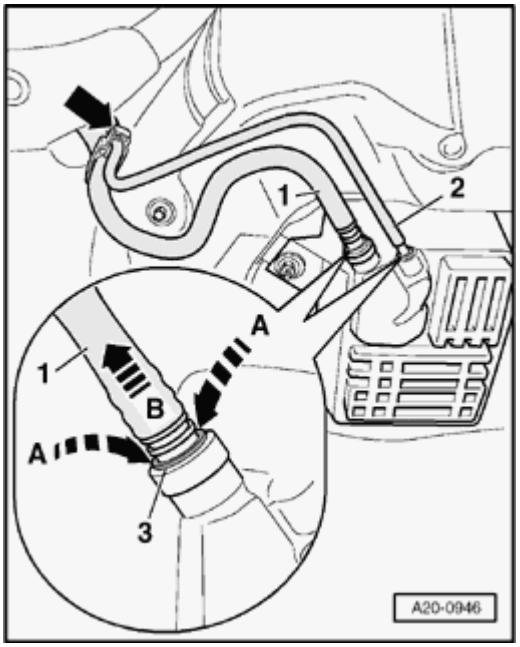


Fig. 261: Removing Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation lines - **1** - and - **2** -. Do this by pressing releasing ring - **3** - in direction of - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Unclip ventilation lines - **A** - at top from bracket - **arrow** -.
- Remove rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB

cardiagn.com

- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
- **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

- Remove drive shaft -->
  - **39 FINAL DRIVE, DIFFERENTIAL**
  - **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR

.

CAUTION: Before removing the subframe bolts, secure the vehicle against falling over (e.g. load the luggage compartment with approx. 50 kg).

- Remove rear axle --> **42 - REAR SUSPENSION** .

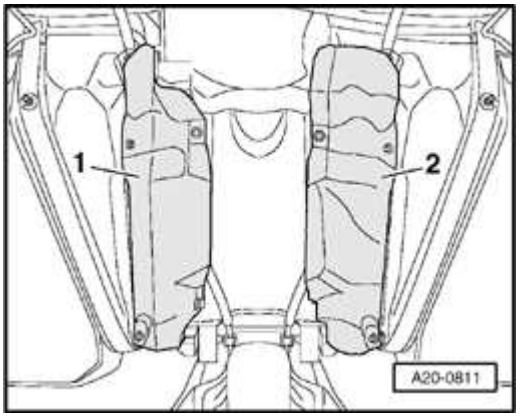


Fig. 262: Removing Heat Shields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shields - **1** - and - **2** -.

cardiagn.com

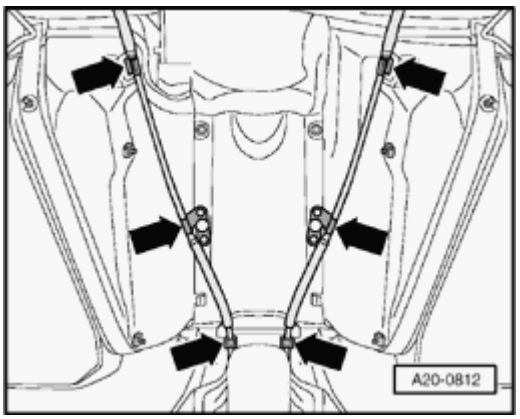


Fig. 263: Disconnecting Parking Brake Cables
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect parking brake cables at positions indicated by - **arrows** -.

Fuel system with return line:

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

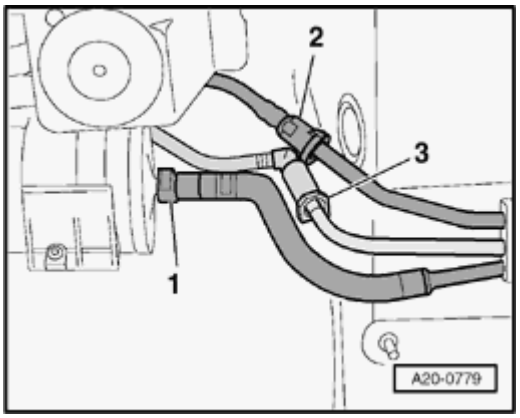


Fig. 264: Disconnecting Fuel Supply Line From Fuel Filter & Fuel Return Line And Ventilation Line At Connection Point
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel supply line - **1** - from fuel filter, by pressing release buttons. Catch escaping fuel.
- Disconnect fuel return line - **3** - and ventilation line - **2** - at connection point, by pressing release buttons.

Fuel system without return line:

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

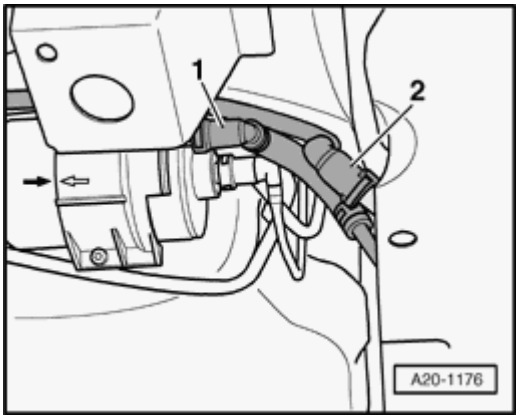


Fig. 265: Disconnecting Fuel Line And Right Ventilation Line From Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - and right ventilation line - **2** - from fuel tank, by pressing release buttons.

All models:

- Place engine/transmission jack V.A.G 1383 A under fuel tank for support.

CAUTION:

- **For weight reasons, fuel tank must be empty for removal.**

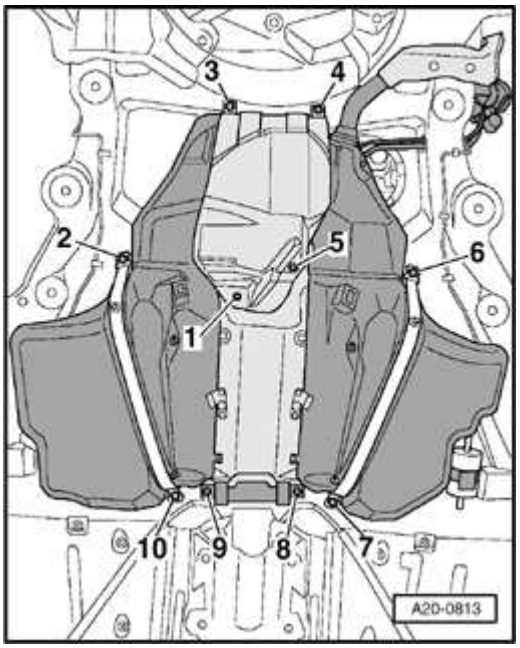


Fig. 266: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 10** -.

cardiagn.com

- Lower fuel tank with engine/transmission jack VA.G. 1383 A , by guiding it by hand.

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**

- Make sure the fuel and ventilation lines are properly clipped to the fuel tank.
- Check if Ground (GND) wiring on both connections show signs of oxidation. If necessary, remove.
- Check installation position of Ground (GND) connection:

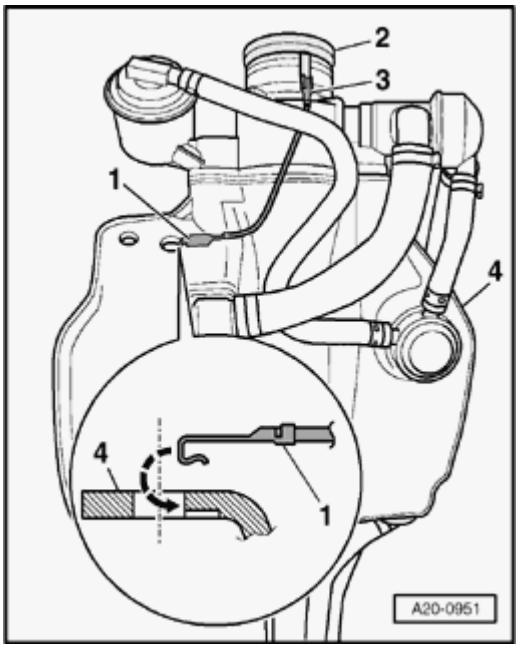


Fig. 267: Identifying Connector Is Securely Attached To Metal Ring & Contact Is Hooked Into Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The connector - **3** - must be securely attached to metal ring - **2** -.
- The contact - **1** - must be hooked into fuel tank - **4** -.

- Position fuel tank with mounting straps and carrier plate to vehicle floor using engine/transmission jack V.A.G 1383 A.
- Make sure fuel tank is positioned so that the filler tube can be correctly guided into opening of the body.

cardiagn.com

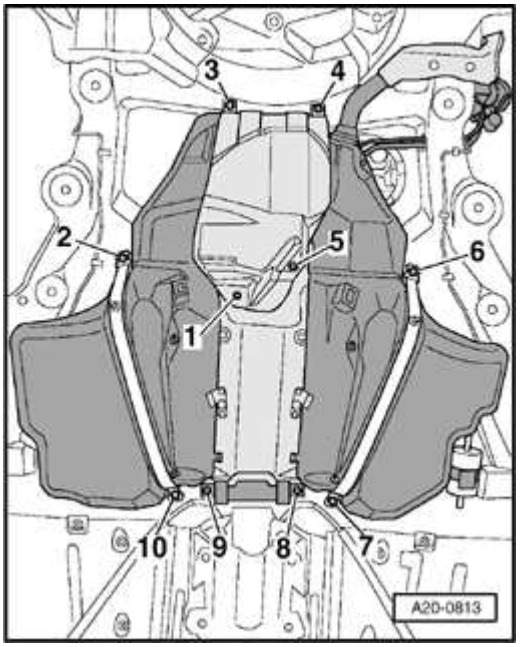


Fig. 268: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten mounting straps and carrier plate - **1 through 10** -.
- Fasten fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

- Install rear axle --> **42 - REAR SUSPENSION** .
- Install drive shaft -->
  - **39 FINAL DRIVE, DIFFERENTIAL**
  - **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR

  .
- Install rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE

cardiagn.com

MECHANICAL, ENGINE CODE(S): BNS

- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

- Install right rear wheel housing liner, thereby fastening bolt for fuel filler tube -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Mounting straps and carrier plate for fuel tank to body	23
Fuel filler tube to body	23
EVAP canister cover	9

Fuel delivery unit and Fuel level sensor, assembly overview

Part 1 (right chamber)

cardiagn.com

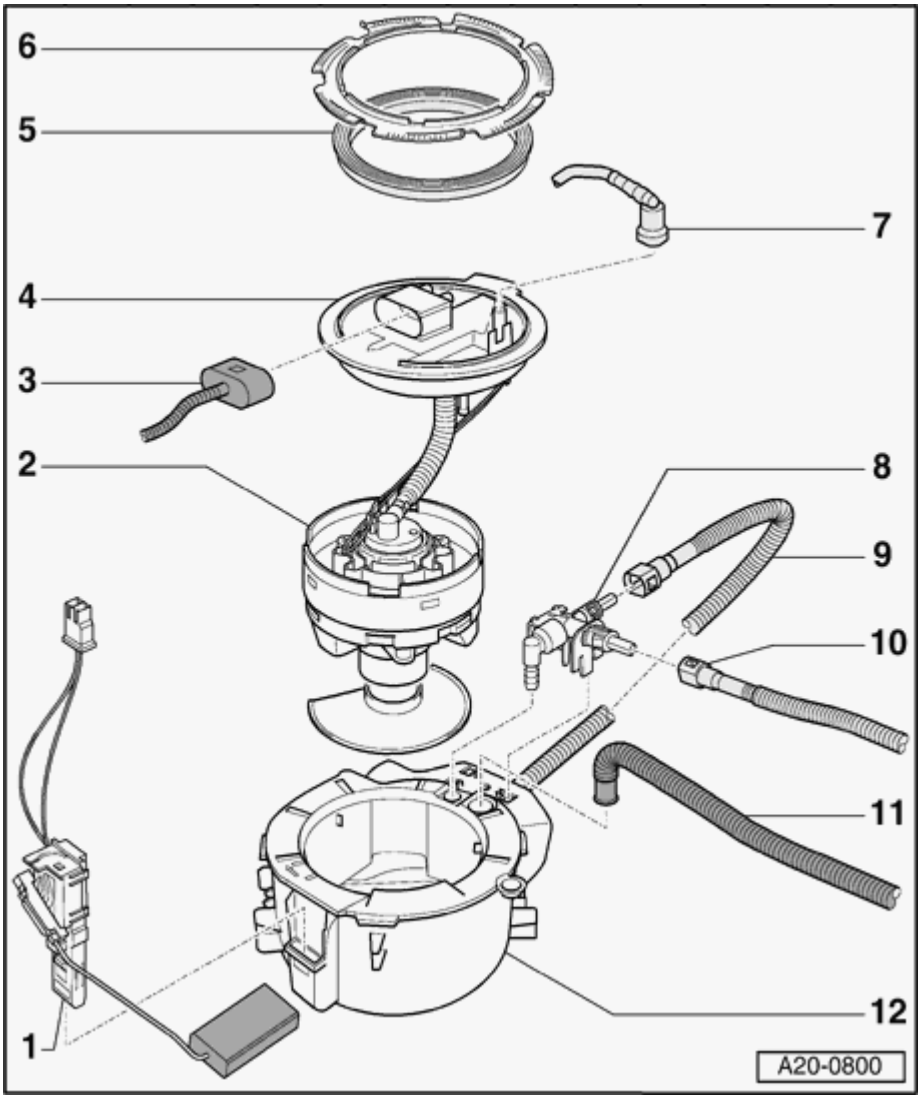


Fig. 269: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview (Part 1 (Right Chamber))
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel Level Sensor G

- Clipped onto baffle housing in fuel tank
- Resistance values, checking --> **Fuel Level Sensor G , checking**
- Removing and installing --> **Fuel Level Sensor G , removing and installing**

2 - Fuel delivery unit

- Different versions, allocation
- Can only be replaced together with flange
- Fuel pump electrical, checking --> **Fuel pump electrical, checking**
- Checking residual pressure -->

cardiagn.com

- **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
- **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
- **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

- Removing and installing --> **Fuel delivery unit, removing and installing**

3 - Electrical harness connector

- For Fuel level sensor G
- For Transfer Fuel Pump (FP) G6

4 - Locking flange

- For fuel delivery unit
- Cannot be replaced separately
- Installed location --> **Fig. 304**

5 - Seal

- Replace
- Install dry

6 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

7 - Fuel line

- To fuel filter
- To disconnect, press release button on connection piece
- Do not kink
- Clipped in on fuel tank

cardiagn.com

8 - Distribution piece

- Different versions, allocation
- Clipped in on baffle housing with catches
- To remove, press toward right so that catches disengage and lift upward

9 - Suction jet pipe

- To suction jet pump in baffle housing

10 - Suction jet pipe

- From left locking flange

11 - Fuel delivery line

- From suction jet pump, left side

12 - Baffle housing

- With suction jet pump

Part 2 (left chamber)

cardiagn.com

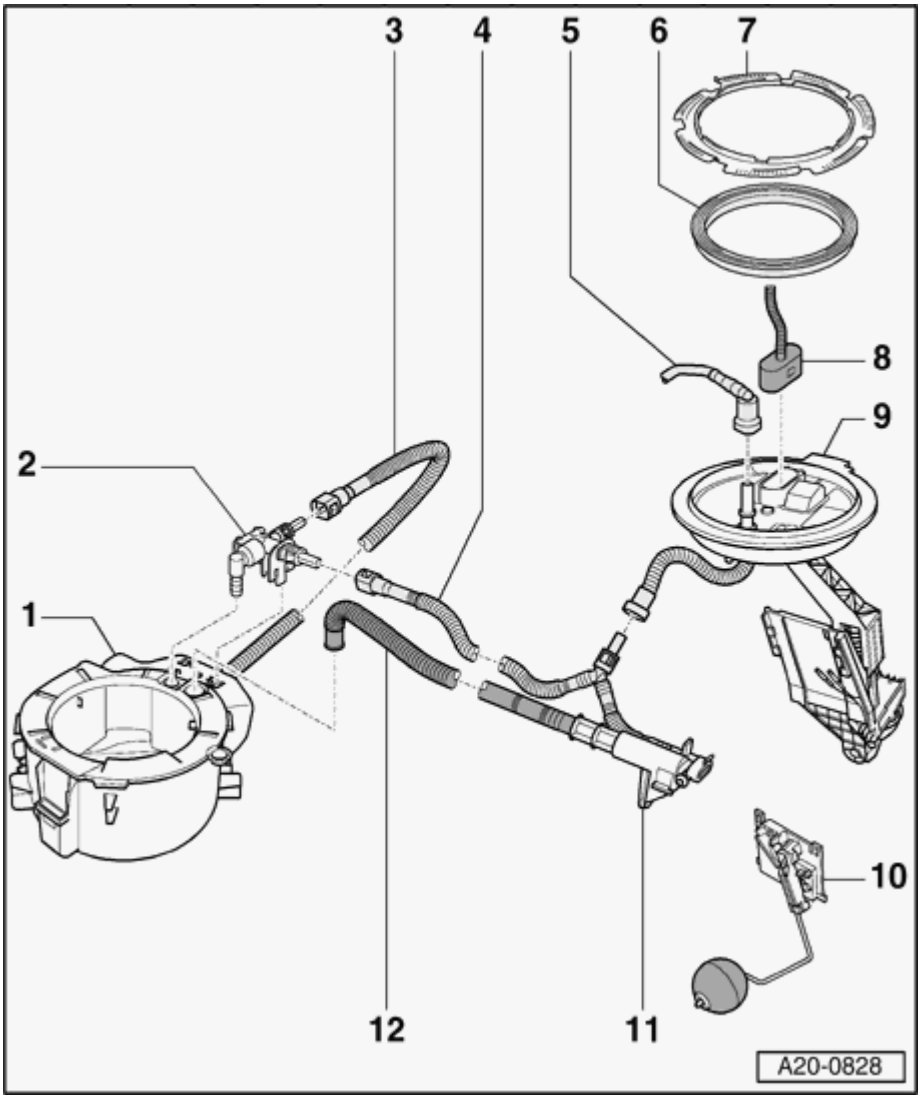


Fig. 270: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview (Part 1 (Right Chamber))
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Baffle housing

- With suction jet pump

2 - Distribution piece

- Different versions, allocation
- Clipped in on baffle housing with catches
- To remove, press toward right so that catches disengage and lift upward

3 - Suction jet pipe

- To suction jet pump in baffle housing

cardiagn.com

4 - Suction jet pipe

- From left locking flange

5 - Fuel line

- From engine/from fuel filter
- To disconnect, press release button on connection piece
- Do not kink
- Clipped in on fuel tank

6 - Oil seal

- Replace
- Install dry

7 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

8 - Electrical harness connector

- For Fuel Level Sensor 2 G169

9 - Locking flange

- Installed location **Installing**

10 - Fuel Level Sensor 2 G169

- Resistance values, checking --> **Fuel Level Sensor 2 G169 , checking**
- Removing and installing --> **Fuel Level Sensor 2 G169 , removing and installing**

11 - Suction jet pump

- With lines
- Different versions, allocation
- Secured to locking flange
- Function --> **Suction jet pump, function**

- Removing and installing --> **Suction jet pump in left fuel tank chamber, removing and installing**

12 - Fuel delivery line

cardiagn.com

- From suction jet pump, left side

Fuel pump electrical, checking

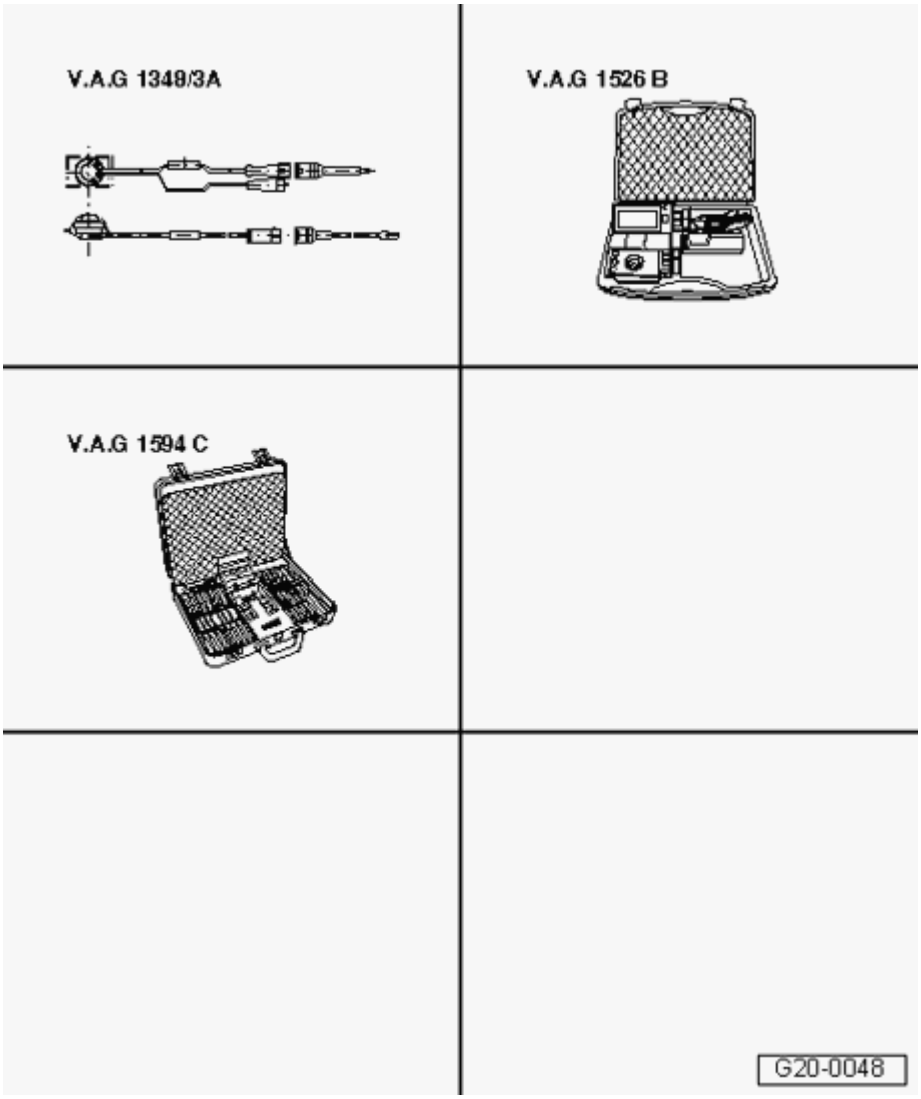


Fig. 271: Identifying Special Tools - Fuel Pump Electrical, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Portable multimeter V.A.G 1526
- Connector test set V.A.G 1594

Test conditions

- Battery voltage at least 12.5 V.

cardiagn.com

- Fuse on fuse panel S228 (position 28) OK.

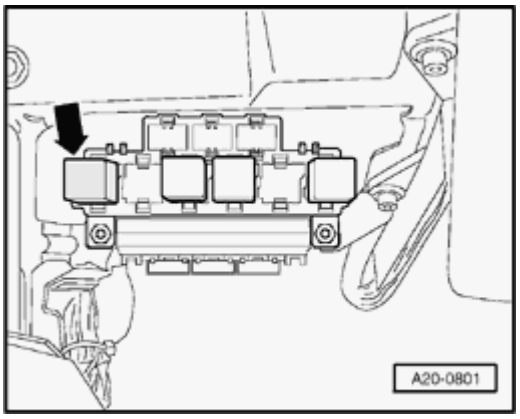


Fig. 272: Installed Location On 9-Socket Relay Carrier In Driver Footwell
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Relay J17 - **arrow** - at position 1 in 9-socket relay carrier behind driver side storage compartment is OK.
- Fuel filter OK
- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

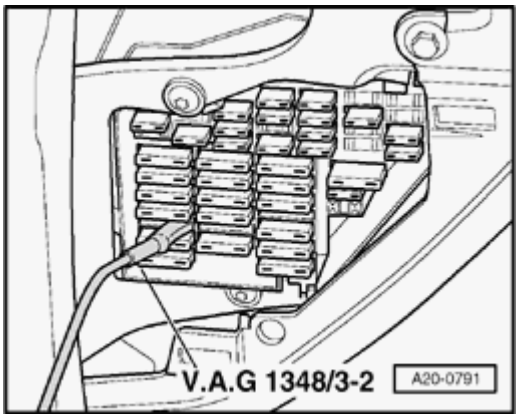


Fig. 273: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).

cardiagn.com

- Press switch on remote control.

- Running noise of pump must be audible.

NOTE:

- **Fuel Pump (FP) runs quietly. Avoid surrounding noises while testing the fuel pump.**

If no operating noise can be heard:

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

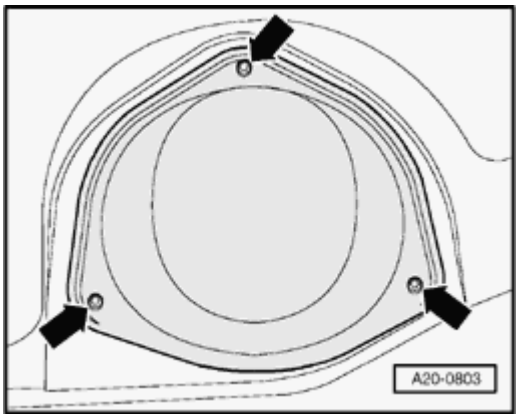


Fig. 274: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

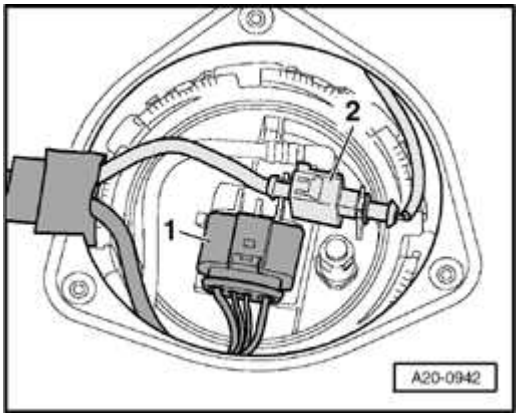


Fig. 275: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Disconnect electrical harness connector - **1** - at right locking flange.

NOTE:

- **Ignore - 2 -.**

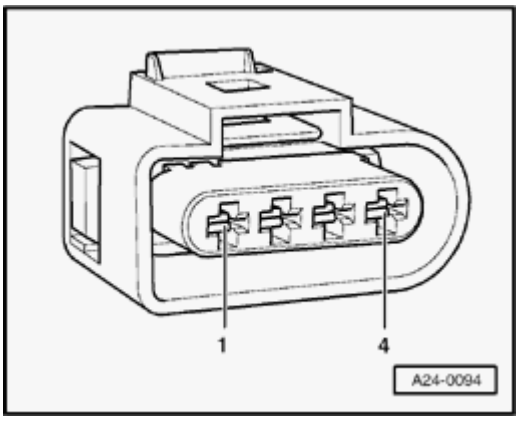


Fig. 276: Identifying Connector Terminals 1 And 4
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 between terminal - **1** - and - **4** - for voltage measurement.
- Press switch on remote control.

- Specification: approx. battery voltage.

If specification is not obtained:

- Repair open circuit in wiring according to wiring diagram.

If specified value is obtained, although no running-noise can be heard at pump:

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.

cardiagn.com

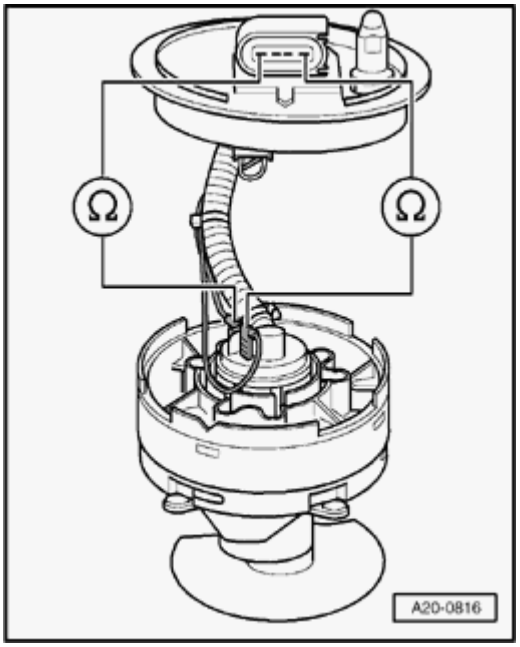


Fig. 277: Checking If Electrical Wiring Between Flange And Fuel Pump Is Connected And Has Continuity
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check if electrical wiring between flange and fuel pump is connected and has continuity.

If no malfunction is detected in wires, Fuel Pump (FP) is faulty - replace fuel pump.

- Install fuel delivery unit **Installing**.

Fuel pump delivery quantity, checking (vehicles with 1.8L Turbo engine)

Special tools, testers and auxiliary items required

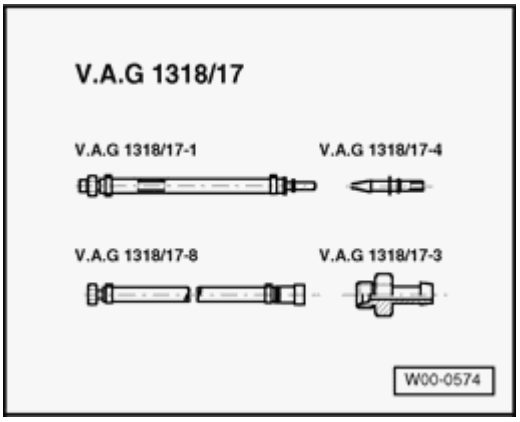


Fig. 278: Adapter V.A.G 1318/17-1 From Adapter Set V.A.G 1318/17
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Adapter V.A.G 1318/17-1 from adapter set V.A.G 1318/17

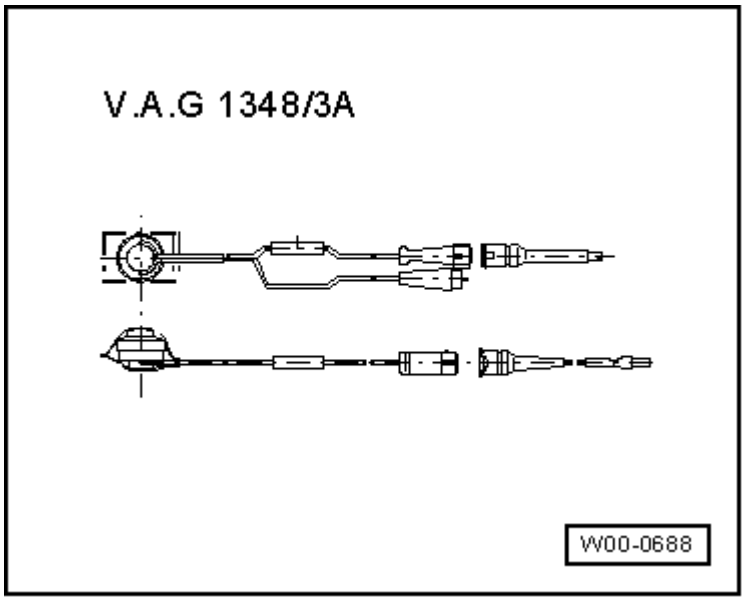


Fig. 279: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Fuel pressure regulator OK, checking --> **24 MULTIPORT FUEL INJECTION (MFI)** .
- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

cardiagn.com

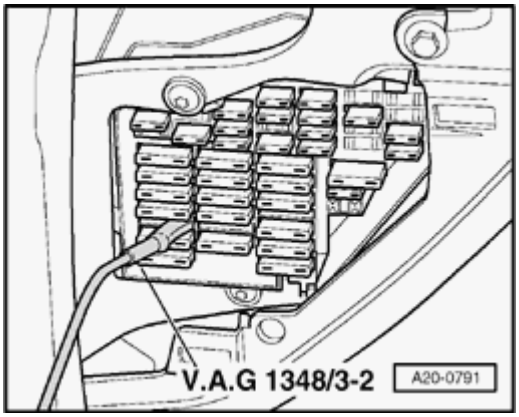


Fig. 280: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).
- Remove fuel filler cap from fuel filler tube.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

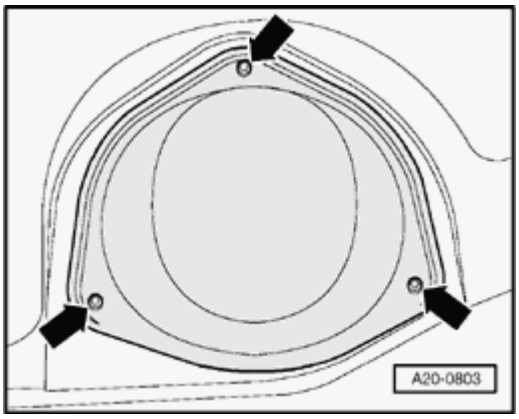


Fig. 281: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

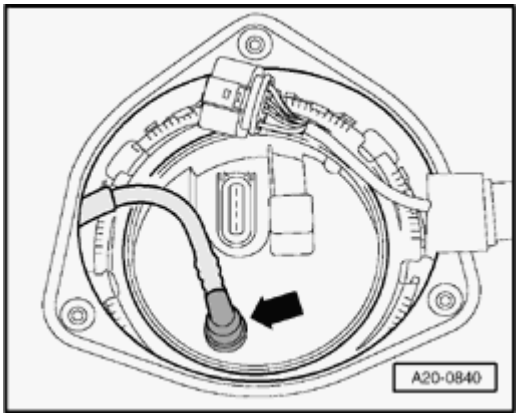


Fig. 282: Pulling Fuel Line Off From Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull fuel line - **arrow** - off from left locking flange, by pressing release button.

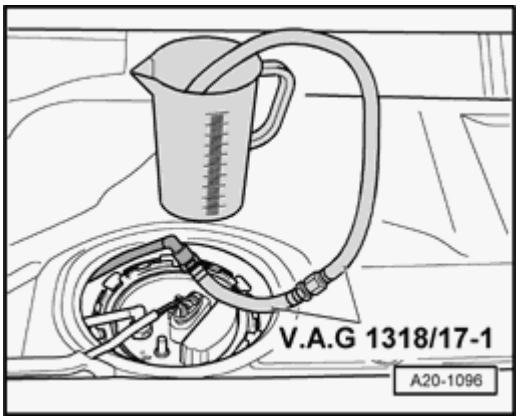
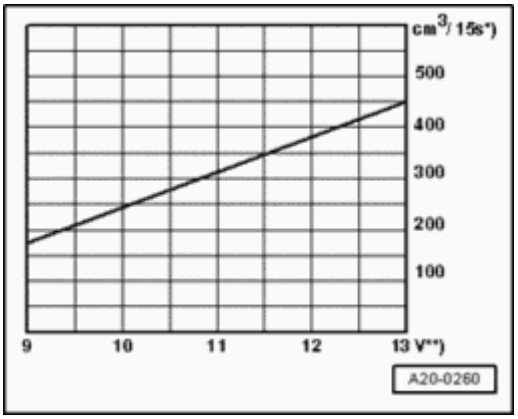


Fig. 283: Connecting Adapter V.A.G 1318/17-1 To Disconnected Fuel Line And Hold It In A Measuring Container
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect adapter V.A.G 1318/17-1 to disconnected fuel line and hold it in a measuring container.
- Press switch on remote control for 15 seconds.



cardiagn.com

Fig. 284: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Installation is in reverse order of removal. Note the following:

- Install fuel line.

Delivery rate of fuel pump, checking (vehicles with 6-cyl. MPI-engine)

Special tools, testers and auxiliary items required

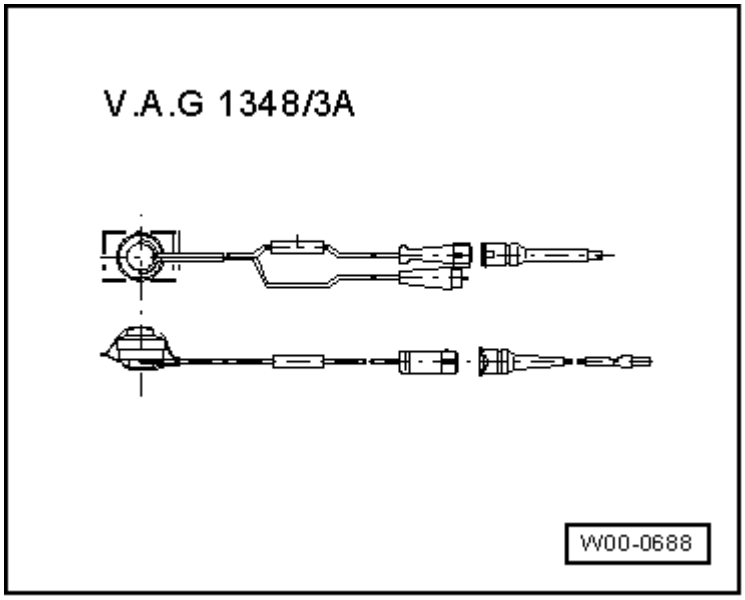


Fig. 285: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^1/_4$ filled.
- Fuel pressure regulator OK, checking -->

cardiagn.com

- **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
- **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
- **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

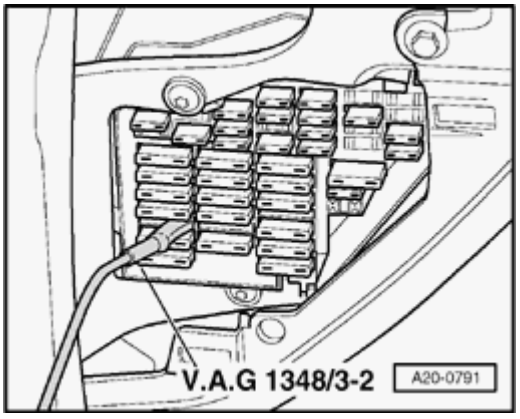


Fig. 286: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to the right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).
- Remove fuel filler cap from fuel filler tube.

CAUTION: Fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the

cardiagn.com

connection.

- Disconnect fuel return hose from line connection on fuel rail pipe.

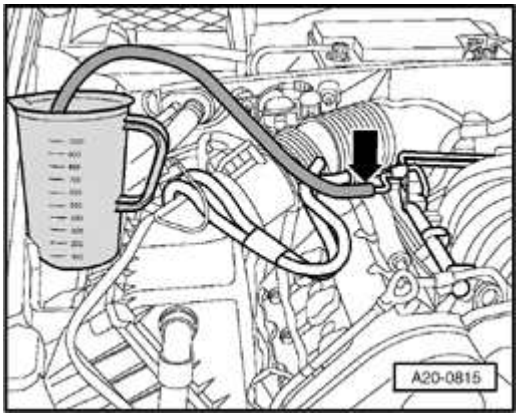


Fig. 287: Connecting Extension Hose Onto Fuel Rail And Hold It In Measuring Container
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect extension hose onto fuel rail - **arrow** - and hold it in a measuring container.
- Press switch on remote control for 15 seconds.

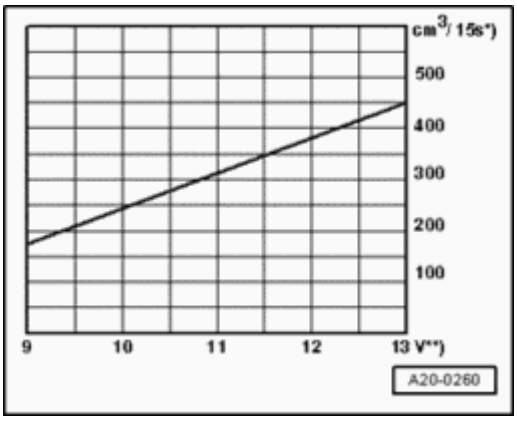


Fig. 288: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Assembly is performed in the reverse order of removal. Note the following:

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**

cardiagn.com

- Install fuel return hose.

Fuel delivery unit, removing and installing

Special tools, testers and auxiliary items required

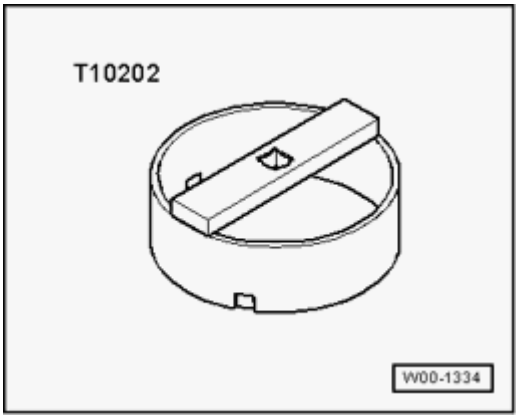


Fig. 289: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

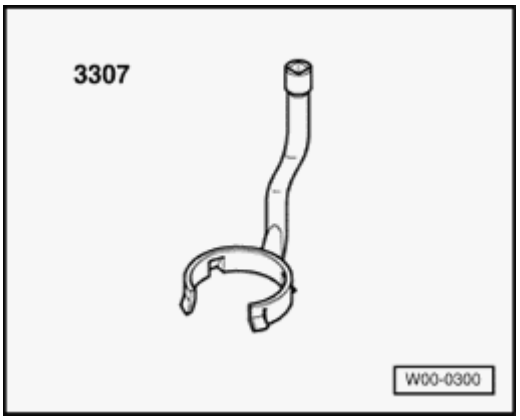


Fig. 290: Fuel Pump Wrench 3307
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel pump wrench 3307

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the fuel delivery unit, the fuel tank may only be filled to a**

cardiagn.com

maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

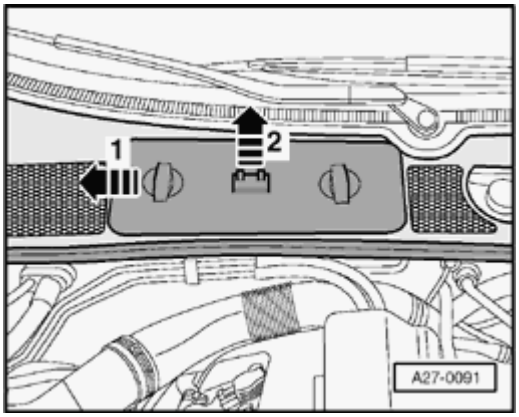


Fig. 291: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

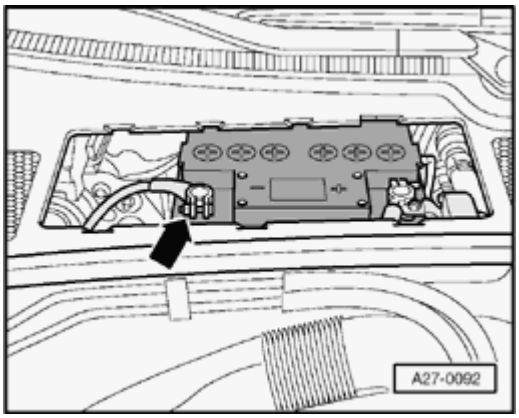


Fig. 292: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.

cardiagn.com

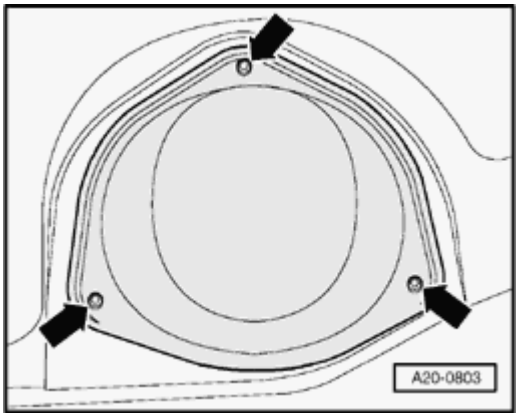


Fig. 293: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Unbolt cover for right locking flange - **arrows** -.

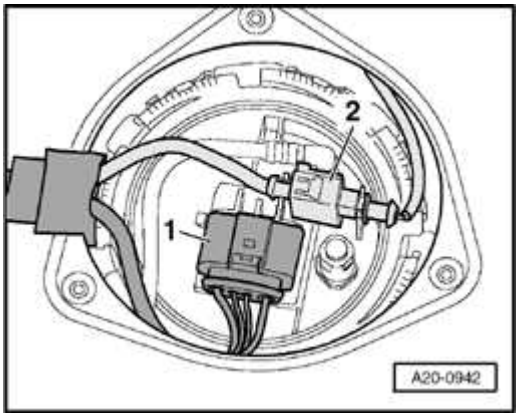


Fig. 294: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

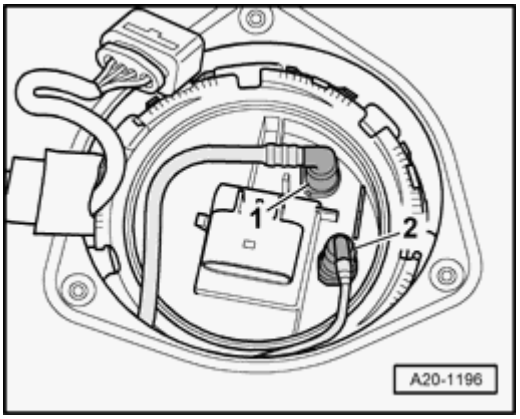


Fig. 295: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from locking flange by pressing release button.

Vehicles with 1.8L Turbo engine:

- Disconnect ventilation line - **2** - to fuel filter at locking flange, by pressing the release buttons.

All models:

CAUTION: The fuel delivery unit may only be removed when fuel tank is maximum $^1/_4$ filled. Otherwise, a large amount of fuel will spill out.

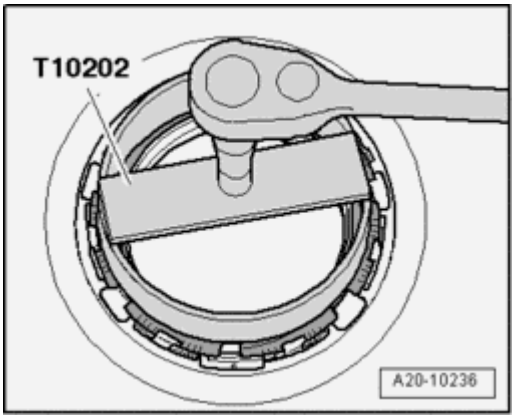


Fig. 296: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

cardiagn.com

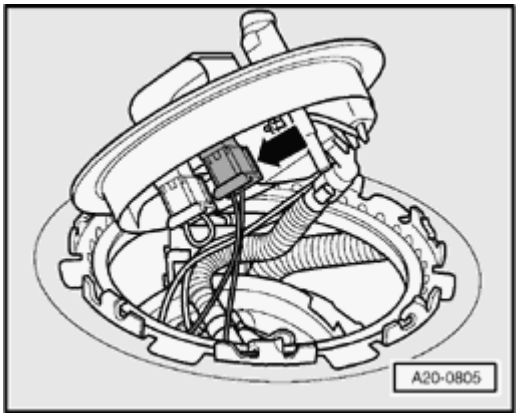


Fig. 297: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connection on inner side of locking flange - **arrow** -.

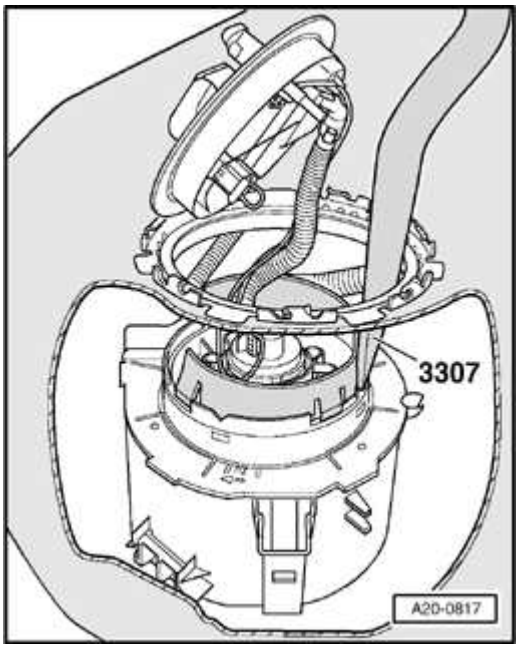


Fig. 298: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown in the following illustration.**

- Guide fuel pump wrench 3307 through the fuel tank opening and place it on the fuel delivery unit.
- Release fuel delivery unit with fuel pump wrench 3307 , thereby turning approx. 15 ° toward left until stop (bayonet connection).

cardiagn.com

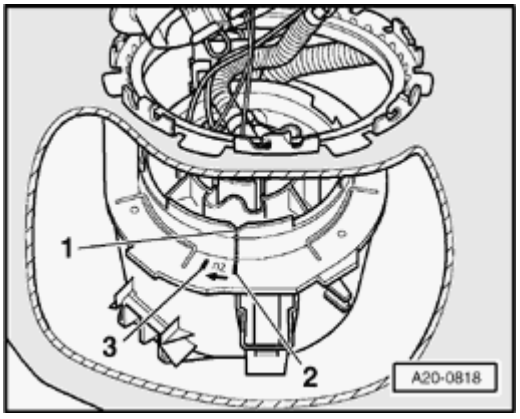


Fig. 299: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Notch - **1** - aligns with marking - **2** -.

- Remove fuel delivery unit.

NOTE:

- **Be aware that fuel is still in the fuel delivery unit.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**

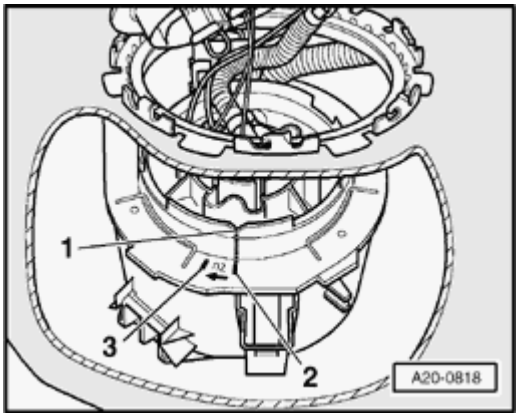


Fig. 300: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert fuel delivery unit into baffle housing in tank so that the notch - **1** - at fuel delivery unit aligns with marking - **2** - at baffle housing.

- Fuel delivery unit can be pressed downward significantly and noticeably.

cardiagn.com

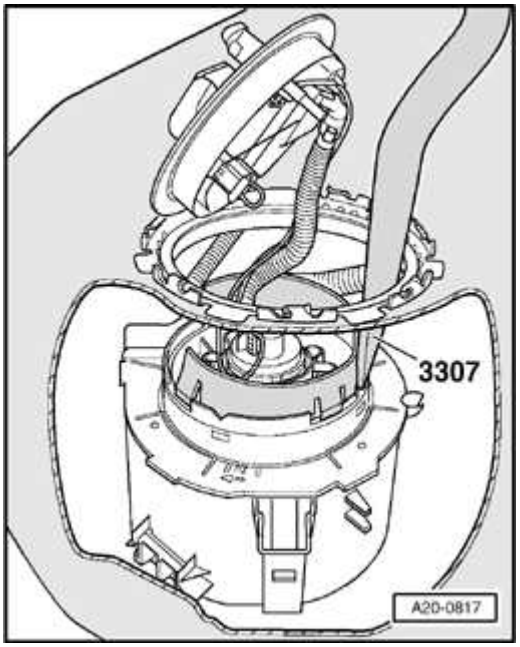


Fig. 301: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide fuel pump wrench 3307 through fuel tank opening and place it on fuel delivery unit.

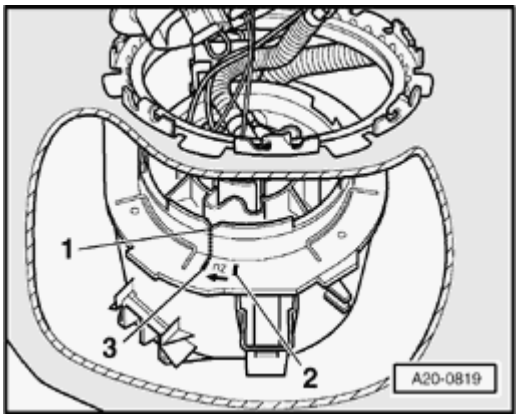


Fig. 302: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten fuel delivery unit using fuel pump wrench 3307 , thereby turning approx. 15 ° toward right until stop (bayonet connection).

- Notch - **1** - aligns with marking - **3** -.

cardiagn.com

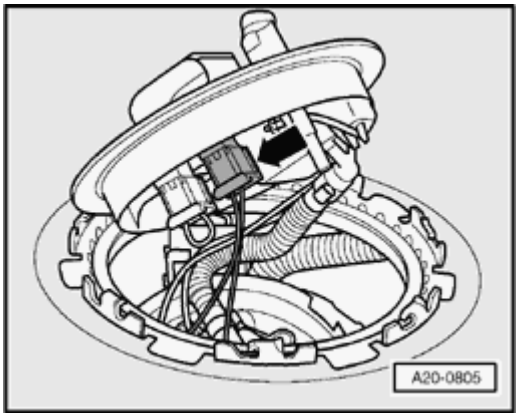


Fig. 303: Connecting Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect electrical connection - **arrow** - on inner side of locking flange.
- Install new locking flange seal dry.
- Bring locking flange to installation position.

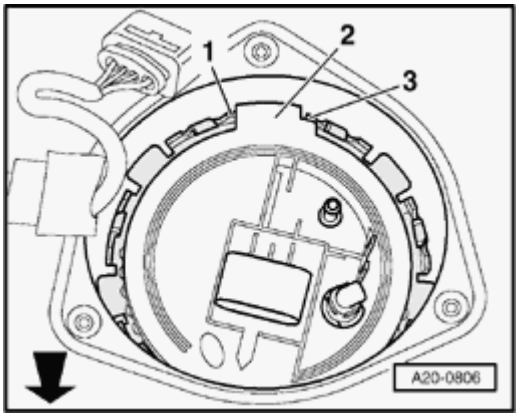


Fig. 304: Identifying Tab On Locking Flange Lies Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

cardiagn.com

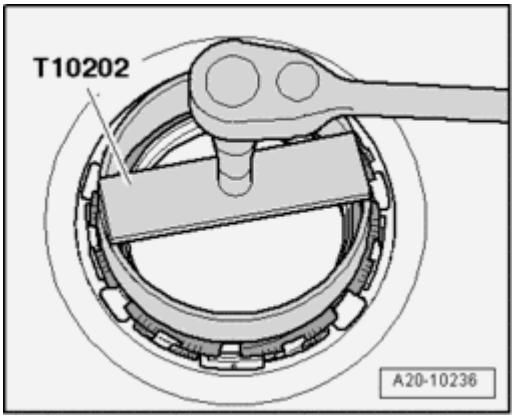


Fig. 305: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit	145

Fuel Level Sensor G , checking

Special tools, testers and auxiliary items required

Fig. 306: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Portable multimeter V.A.G 1526 C

Fig. 307: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

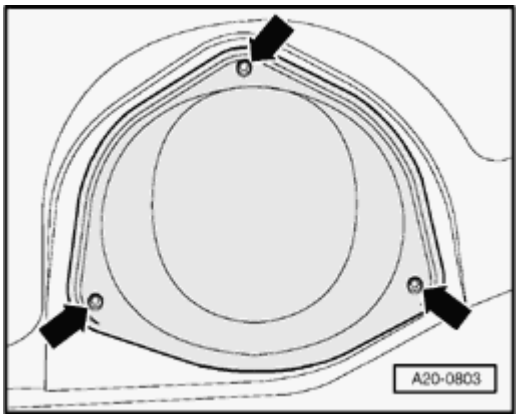


Fig. 308: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

cardiagn.com

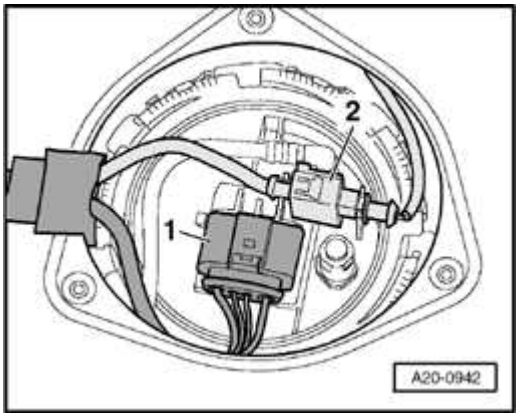


Fig. 309: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.

NOTE:

- **Ignore - 2 -.**

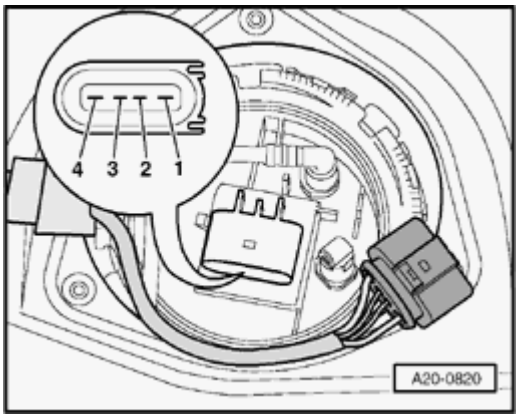


Fig. 310: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	295 to 305 ohms	56 to 68 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the fuel level sensor G must be removed --> Fuel Level Sensor G , removing and installing and the floater of the sensor must be placed in upper or lower end position.**
- **With fuel level sensor G removed, the following values are obtained**

cardiagn.com

because of the greater deflection of the floater arm:

Sender removed	Sender at lower stop	Sensor at upper stop
Fuel Level Sensor G	295 to 305 ohms	52.7 to 57.9 ohms

Fuel Level Sensor G , removing and installing

Special tools, testers and auxiliary items required

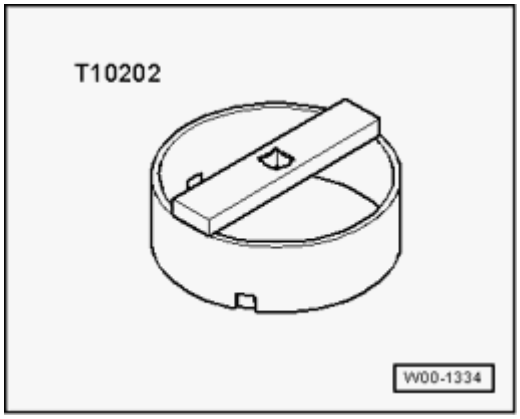


Fig. 311: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the locking flange, the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

cardiagn.com

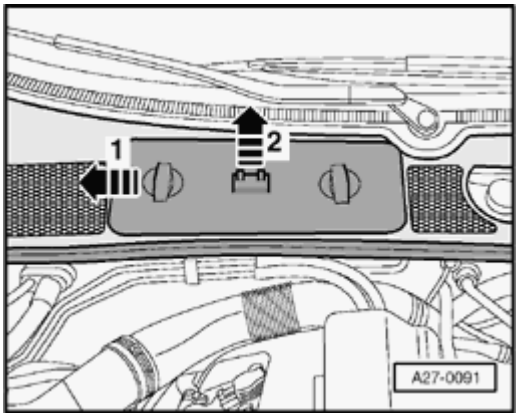


Fig. 312: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

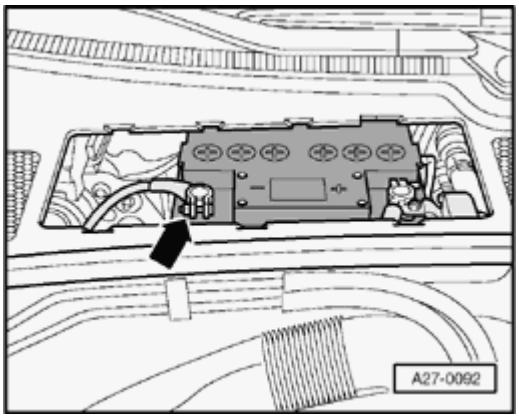


Fig. 313: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

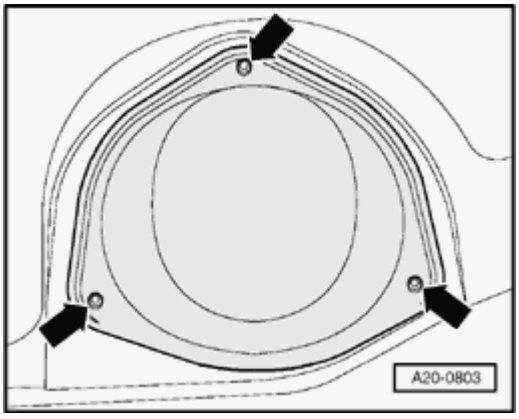


Fig. 314: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

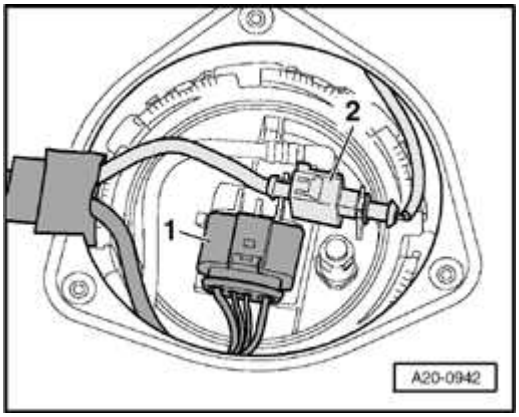


Fig. 315: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

CAUTION: Fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

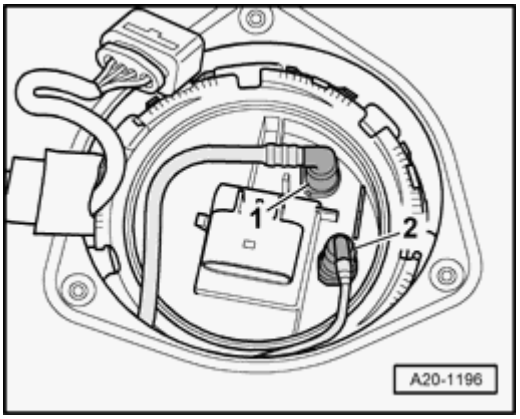


Fig. 316: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from locking flange by pressing release button.

Vehicles with 1.8L Turbo engine:

- Disconnect ventilation line - **2** - to fuel filter at locking flange, by pressing release buttons.

All models:

CAUTION: Locking flange may only be opened when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

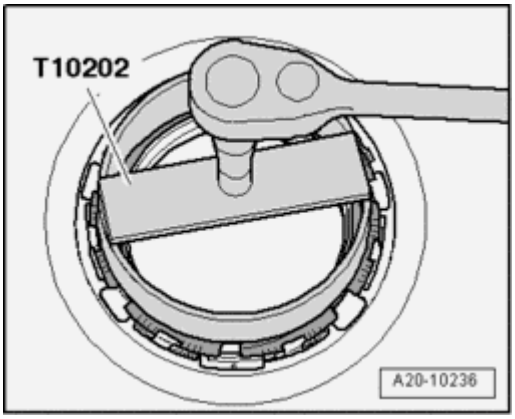


Fig. 317: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

cardiagn.com

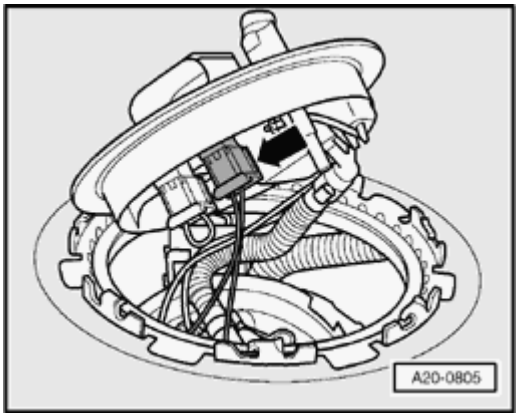


Fig. 318: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connection on inner side of locking flange - **arrow** -.

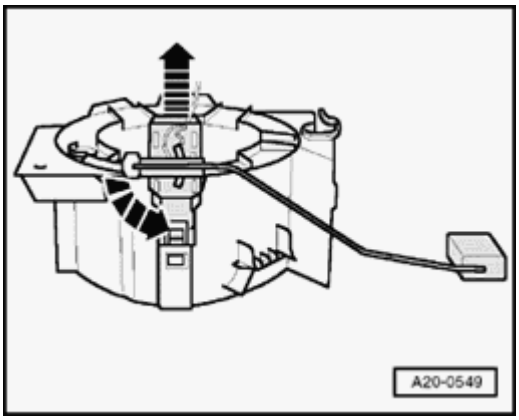


Fig. 319: Pressing Retaining Tab To Pull Out Fuel Level Sensor G From Guide In Baffle Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- While pressing retaining tab, pull out fuel level sensor G from guide in baffle housing - **arrows** -.

NOTE:

- **To improve clarity, the baffle housing is shown without the fuel tank.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**

cardiagn.com

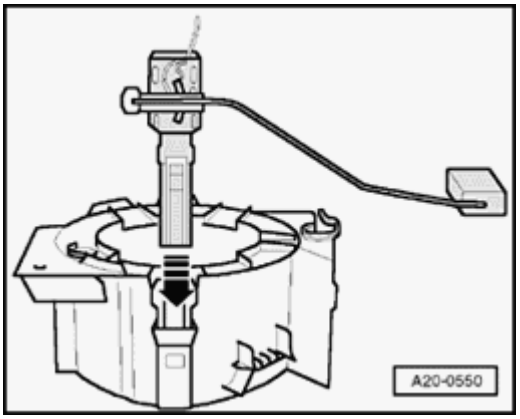


Fig. 320: Placing Fuel Level Sensor G Into Guide In Outer Part Of Baffle Housing And Pressing It Downward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place fuel level sensor G into guide in outer part of baffle housing and press it downward - **arrow** - until it is audibly engaged.

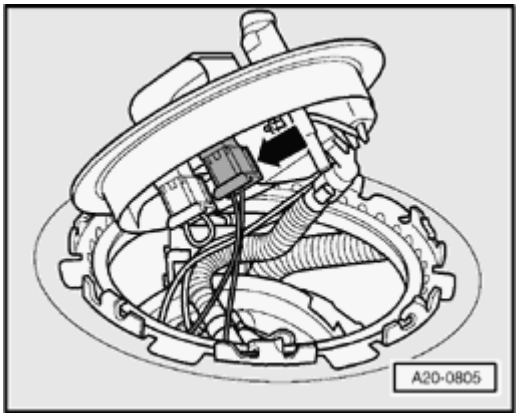


Fig. 321: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect electrical connection - **arrow** - on inner side of locking flange.
- Install new locking flange seal dry.
- Bring locking flange to installation position.

cardiagn.com

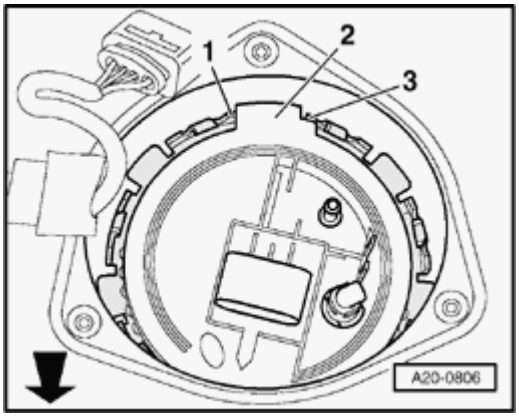


Fig. 322: Identifying Tab On Locking Flange Lies Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

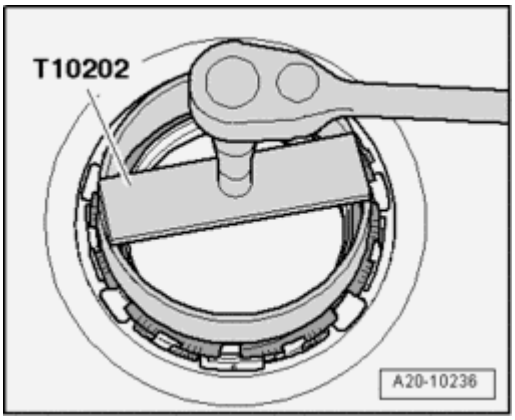


Fig. 323: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit	145

cardiagn.com

Fuel Level Sensor 2 G169 , checking

Special tools, testers and auxiliary items required

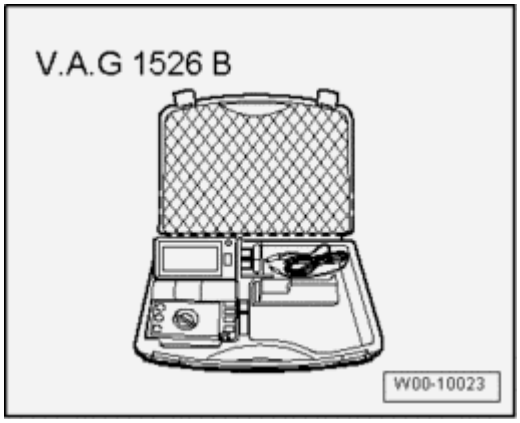


Fig. 324: Identifying Multimeter V.A.G 1526B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 B

Fig. 325: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

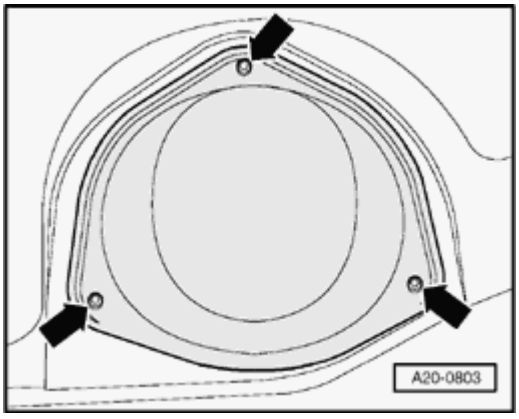


Fig. 326: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

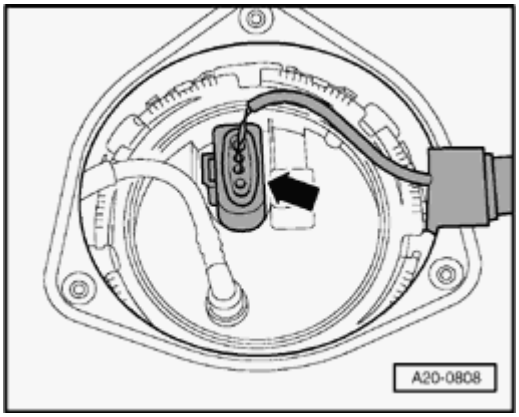


Fig. 327: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

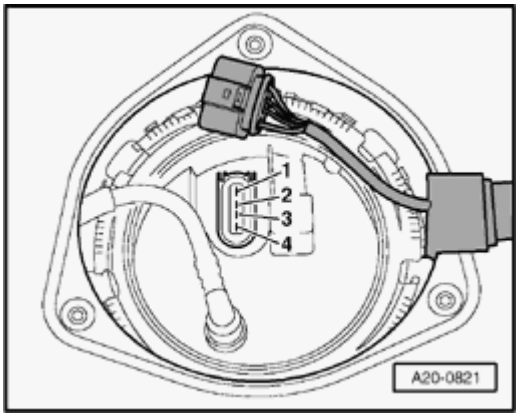


Fig. 328: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Connect hand multimeter V.A.G 1526 B between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor 2 G169	275 to 296 ohms	47 to 65 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the fuel level sensor 2 G169 must be removed --> Fuel Level Sensor 2 G169 , removing and installing and the sensor floater must be placed in upper or lower end position.**
- **With Fuel Level Sensor 2 G169 removed, the following values are obtained because of the greater deflection of the floater arm:**

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor 2 G169	295 to 305 ohms	45.5 to 48.1 ohms

Fuel Level Sensor 2 G169 , removing and installing

Special tools, testers and auxiliary items required

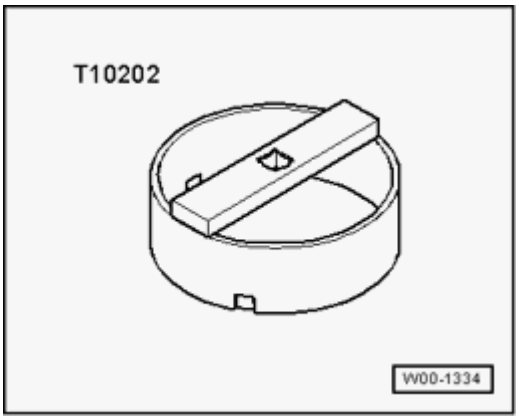


Fig. 329: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

cardiagn.com

- **To remove fuel level sensor 2 G169 , the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

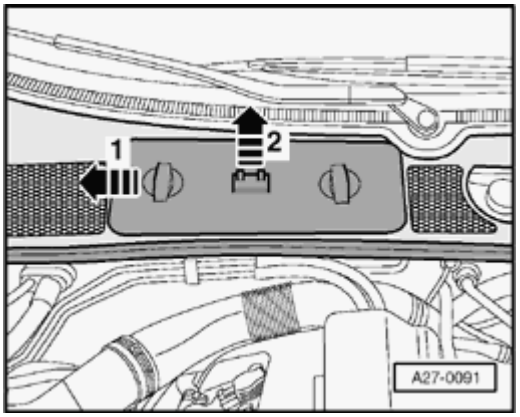


Fig. 330: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

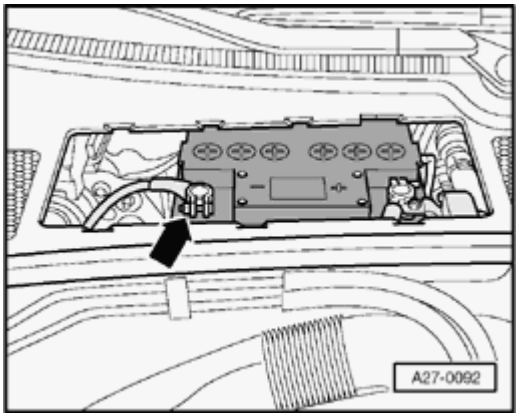


Fig. 331: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**

cardiagn.com

- **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

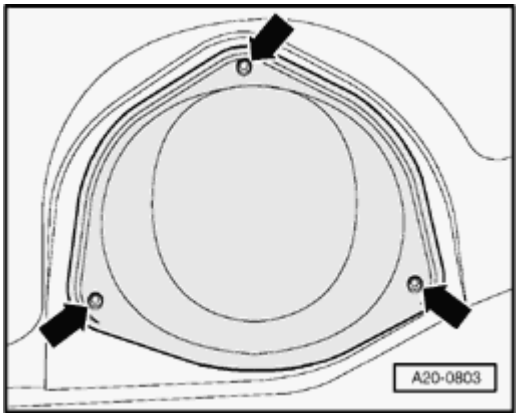


Fig. 332: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

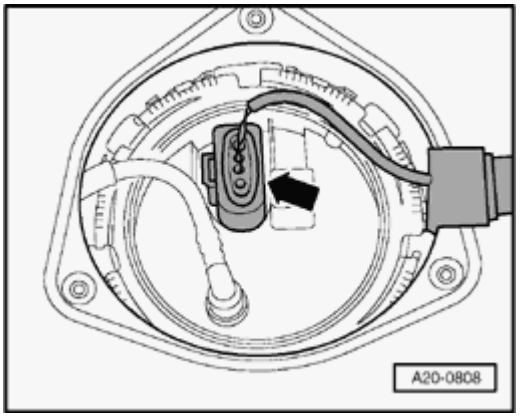


Fig. 333: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

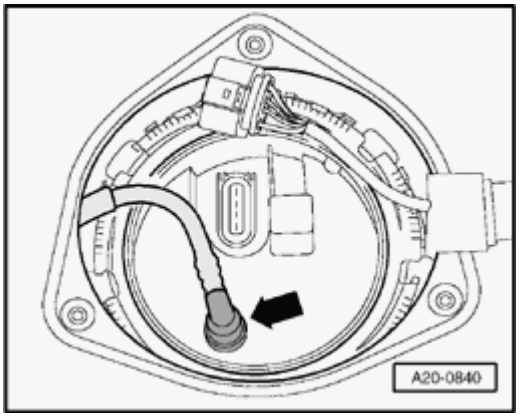


Fig. 334: Pulling Fuel Line Off From Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull fuel line - **arrow** - off from left locking flange, by pressing release button.

CAUTION: The fuel level sensor 2 G169 may only be removed when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

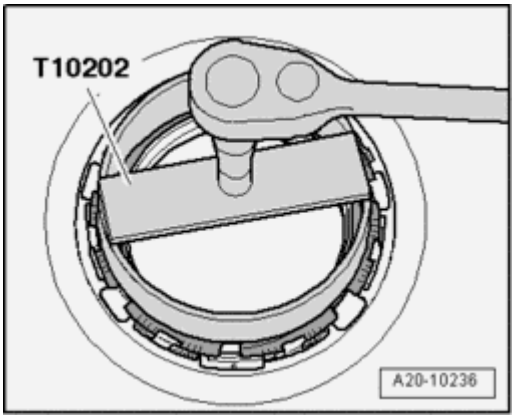


Fig. 335: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left locking ring using wrench T10202.
- Carefully pull locking flange with Fuel Level Sensor 2 G169 and seal slightly out of fuel tank opening.

cardiagn.com

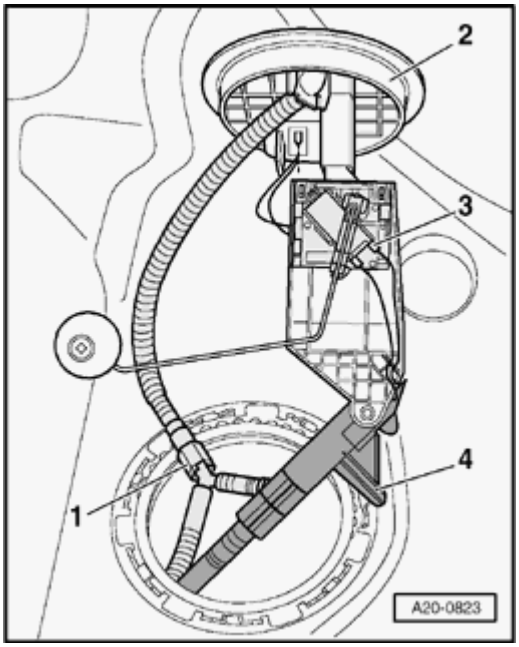


Fig. 336: Identifying Fuel Line, Locking Flange, Fuel Level Sensor 2 G169 & Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- First remove fuel line - **1** - from fuel tank.
- Pivot locking flange - **2** - with fuel level sensor 2 G169 - **3** - and suction jet pump - **4** - out of fuel tank opening.

NOTE:

- **When removing, be sure not to bend floater arm of fuel level sensor 2 G169.**

- Unclip suction jet pump from locking flange with Fuel Level Sensor 2 G169.

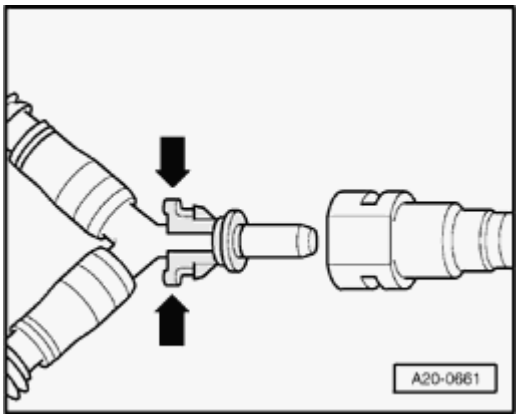


Fig. 337: Press Release Buttons And Separate Fuel Hose At Y-Fitting
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press release buttons - **arrows** - and separate fuel hose at the Y-fitting.

cardiagn.com

- Remove locking flange with fuel level sensor 2 G169.

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When installing, be sure not to bend floater arm of fuel level sensor 2 G169.**
- **Make sure fuel hose is seated securely.**

- Install new locking flange seal dry.
- Bring locking flange to installation position.

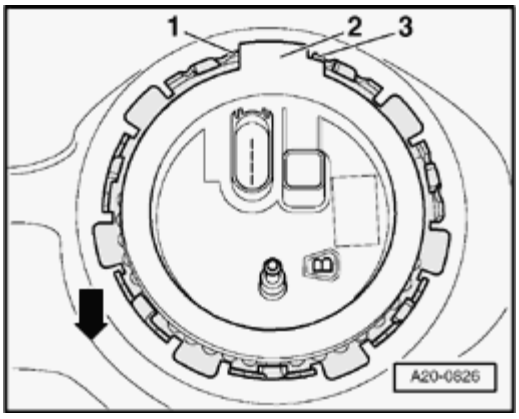


Fig. 338: Identifying Tab On Locking Flange Must Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

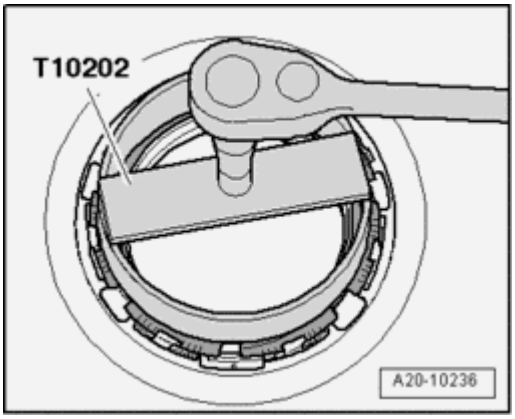


Fig. 339: Removing/Installing Locking Ring With Wrench T10202

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Locking ring for Fuel Level Sensor 2 G169 locking flange	145

Suction jet pump, function

NOTE:

- **- Arrow - points in direction of travel.**

cardiagn.com

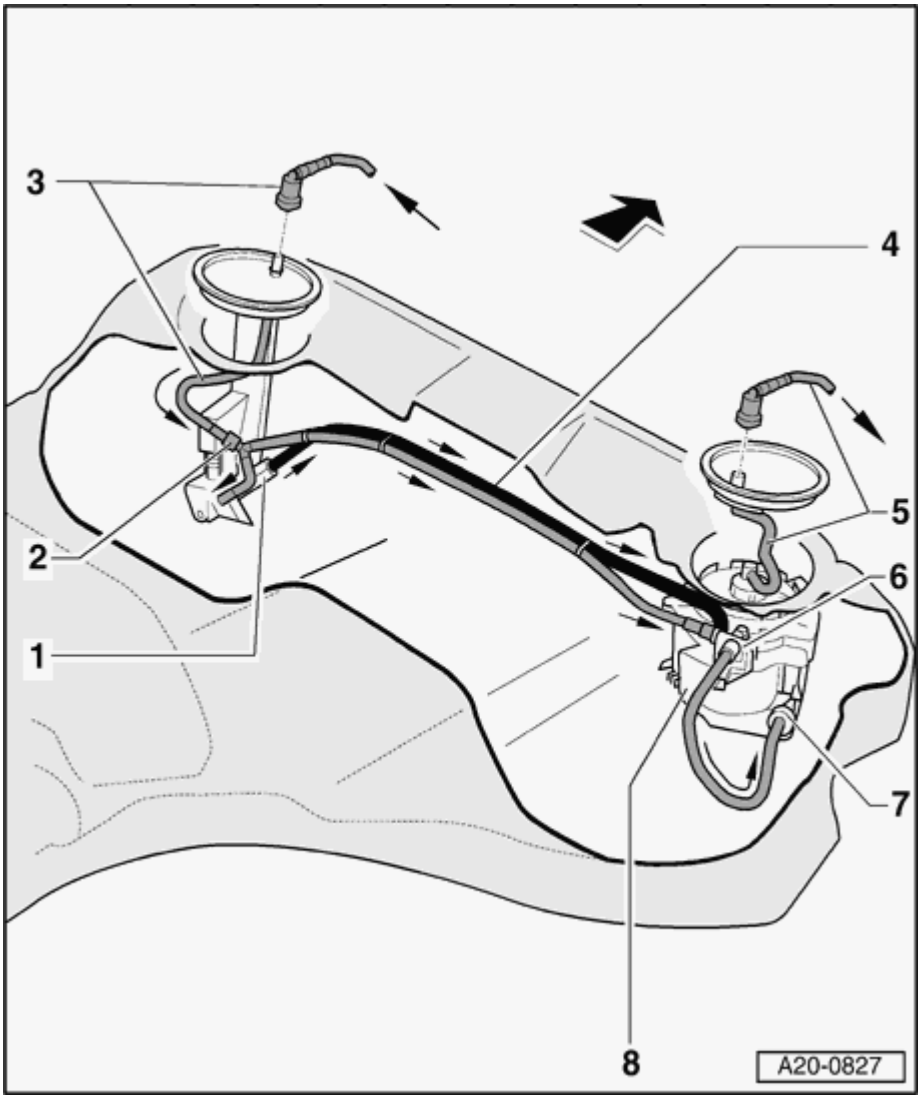


Fig. 340: Suction Jet Pump, Function
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Left suction jet pump

- The fuel tank in a vehicle with all-wheel drive is divided into a left and right chamber.
- To move the volume of fuel from the left fuel tank chamber to right baffle housing - **8** - of the fuel delivery unit, a suction jet pump - **1** - is utilized.
- A second suction jet pump - **7** - is positioned in the right fuel tank chamber and improves fuel supply to the baffle housing of the fuel delivery unit.
- Function of the suction jet pumps is based on a simple physical principle: A suction jet from the fuel return line - **3** - is compressed by a nozzle in the suction jet pumps - **1** - and - **7** - and is thereby accelerated. This acceleration causes the surrounding fuel to be drawn in and be forced to the baffle housing of the fuel delivery unit. The right suction jet pump - **7** - delivers directly into the baffle housing, the left suction jet pump - **1** - via a separate line - **4** -.

cardiagn.com

- The fuel from the return line is distributed to both suction jet pumps via the Y-fitting - **2** -. The distribution piece - **6** - limits the pressure in the lines to the suction jet pumps to approx. 1 bar. Excess fuel is guided into the baffle housing via a direct line.

Suction jet pump in left fuel tank chamber, removing and installing

Special tools, testers and auxiliary items required

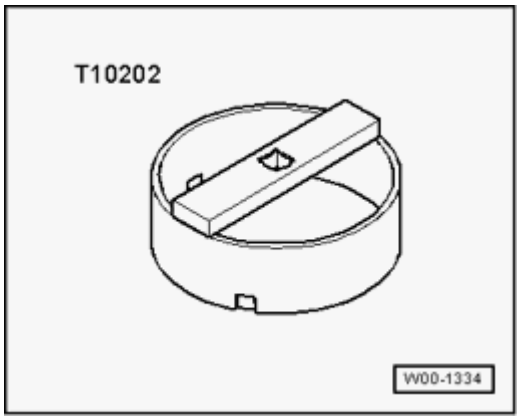


Fig. 341: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

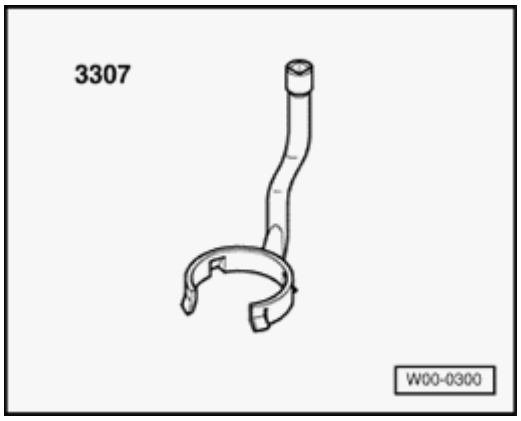


Fig. 342: Fuel Pump Wrench 3307
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel pump wrench 3307

Removing

NOTE:

- **The following describes removal of suction jet pump for left half of fuel tank. The suction jet pump on the right side of the fuel tank is a component of the baffle housing and cannot be replaced separately.**

cardiagn.com

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the suction jet pump for the left fuel tank chamber, the fuel tank may only be filled to a maximum of $^{1}/_{4}$ full. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

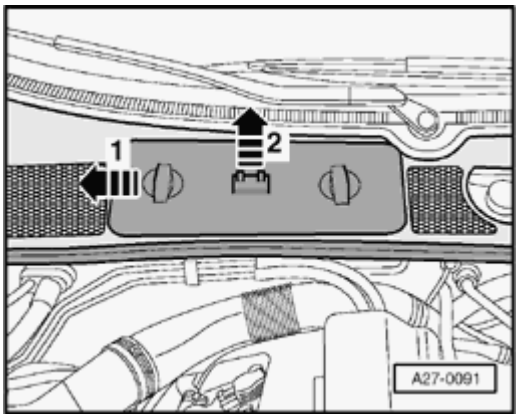


Fig. 343: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

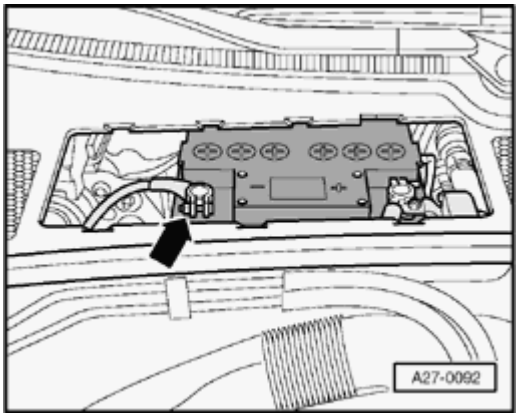


Fig. 344: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

cardiagn.com

- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

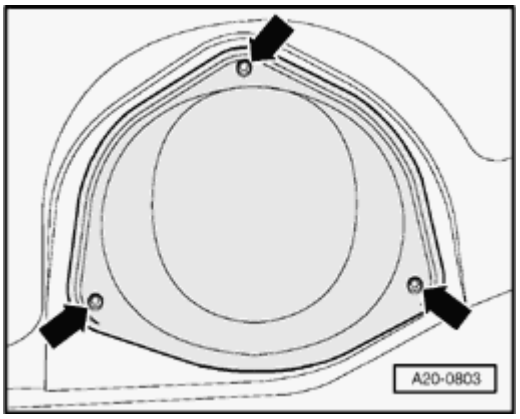


Fig. 345: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

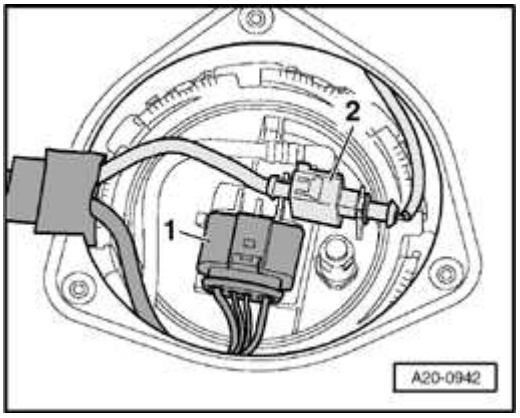


Fig. 346: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

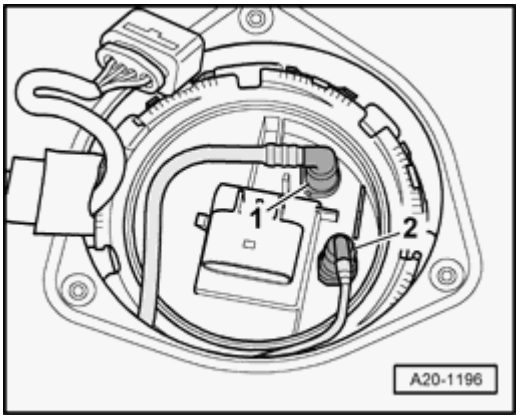


Fig. 347: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from right locking flange by pressing release button.

Vehicles with 1.8L Turbo engine:

- Disconnect ventilation line - **2** - to fuel filter at locking flange, by pressing release buttons.

All models:

CAUTION: Locking flange may only be opened when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

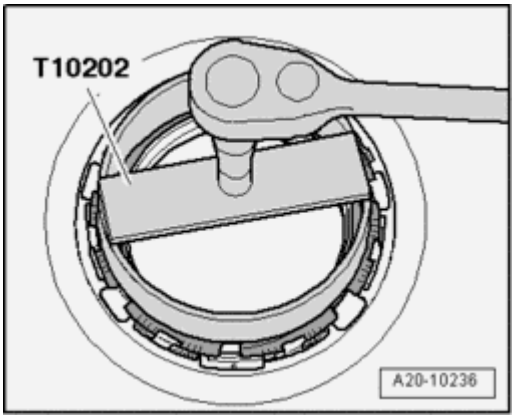


Fig. 348: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.

cardiagn.com

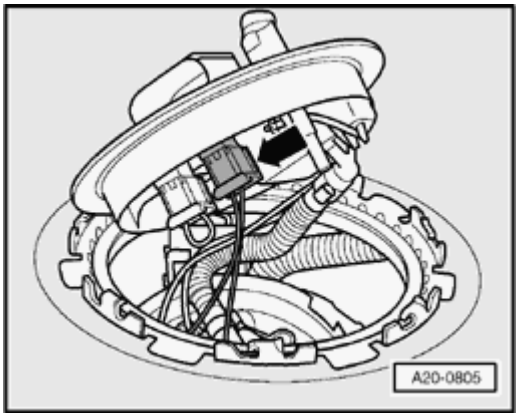


Fig. 349: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull locking flange and sealing ring from opening of fuel tank.
- Disconnect electrical connection on inner side of locking flange - **arrow** -.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown in the following illustration.**

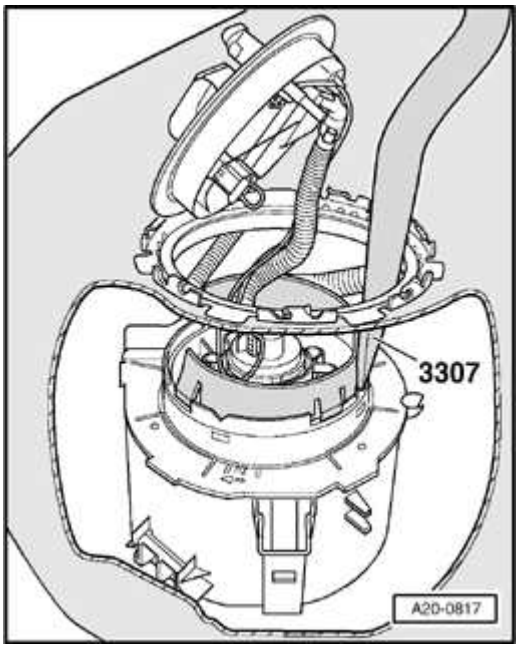


Fig. 350: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide fuel pump wrench 3307 through fuel tank opening and place it on fuel delivery unit.
- Release fuel delivery unit with fuel pump wrench 3307 , thereby turning approx. 15 ° toward left until stop (bayonet connection).

cardiagn.com

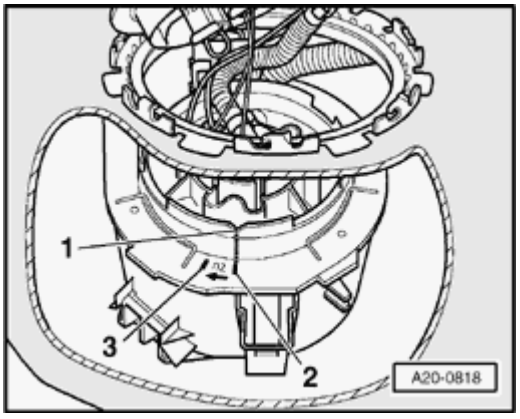


Fig. 351: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Notch - **1** - aligns with marking - **2** -.

- Remove fuel delivery unit.

NOTE:

- **Be aware that fuel is still in the fuel delivery unit.**

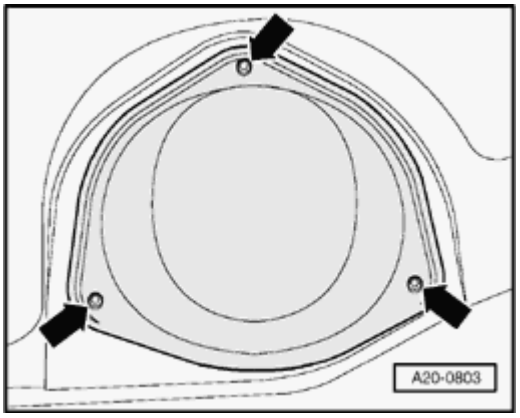


Fig. 352: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

cardiagn.com

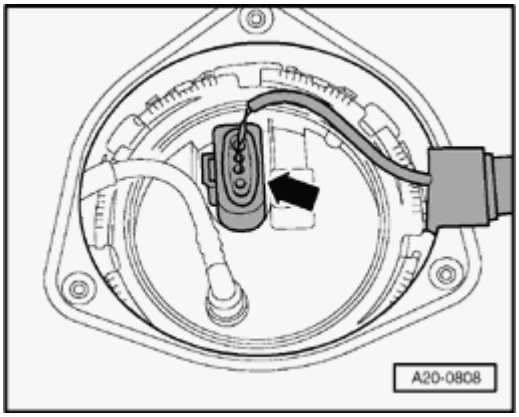


Fig. 353: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

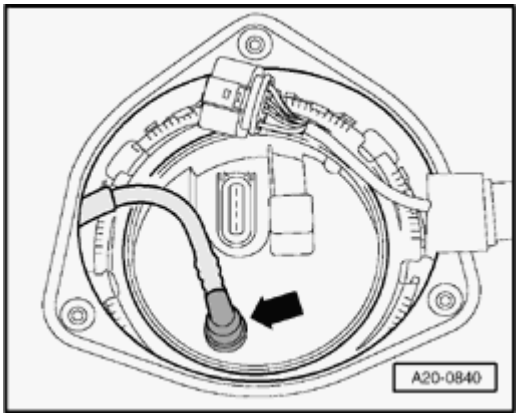


Fig. 354: Pulling Fuel Line Off From Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull fuel line - **arrow** - off from left locking flange, by pressing release button.

cardiagn.com

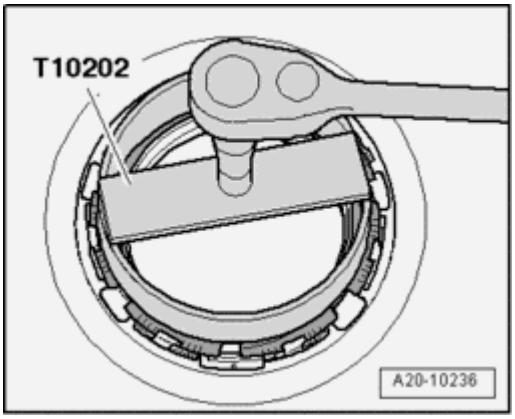


Fig. 355: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left locking ring using wrench T10202.
- Carefully pull locking flange with Fuel Level Sensor 2 G169 and seal slightly out of fuel tank opening.

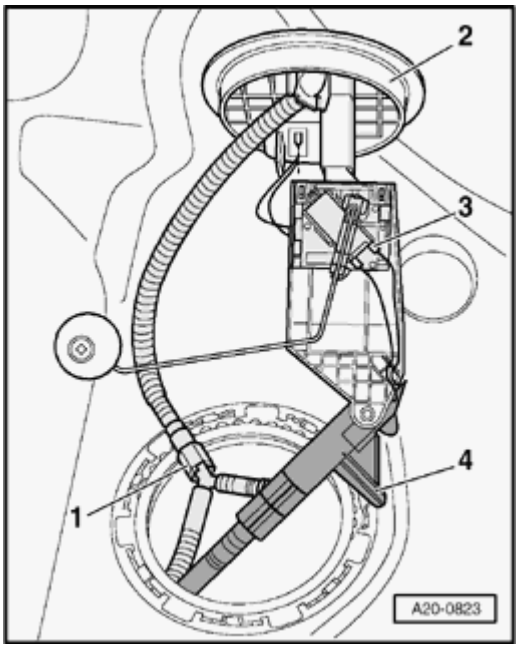


Fig. 356: Identifying Fuel Line, Locking Flange, Fuel Level Sensor 2 G169 & Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel line - **1** - from fuel tank.
- Pivot locking flange - **2** - with fuel level sensor 2 G169 - **3** - and suction jet pump - **4** - out of the fuel tank opening.

NOTE:

- **When removing, be sure not to bend floater arm of fuel level sensor 2 G169.**

cardiagn.com

- Unclip suction jet pump from locking flange with Fuel Level Sensor 2 G169.

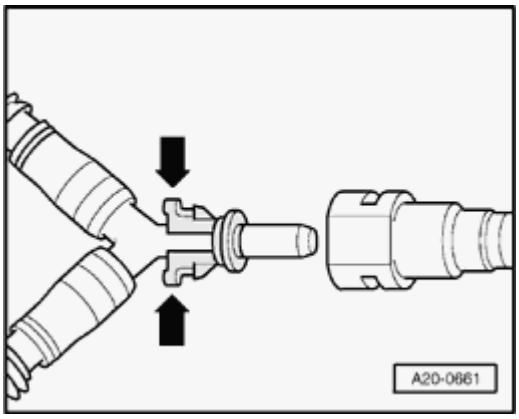


Fig. 357: Press Release Buttons And Separate Fuel Hose At Y-Fitting
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press release buttons - **arrows** - and separate fuel hose at the Y-fitting.

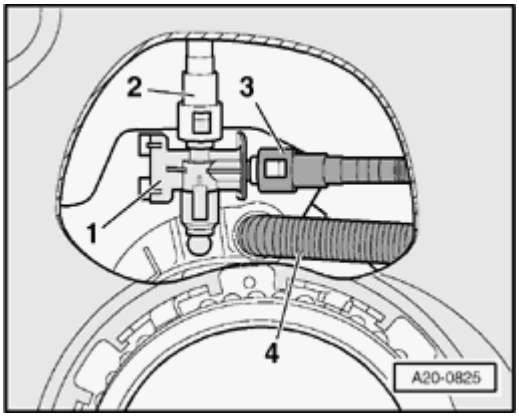


Fig. 358: Identifying Suction Jet Line, Distribution Piece, Fuel Return Line & Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach into fuel tank opening on right side of vehicle and pull suction jet line - **4** - out of baffle housing.
- Push distribution piece - **1** - toward right and unclip it from the baffle housing.
- Disconnect fuel return line - **3** - at distribution piece - **1** -.

NOTE:

- **The fuel line - 2 - remains connected.**

- Reach into fuel tank opening on left side of vehicle and pull suction jet pump with lines out toward the left.

Installing

Installation is in reverse order of removal. Note the following:

cardiagn.com

NOTE:

- **Replace seals.**
- **Make sure fuel hoses are seated securely.**

- Push suction jet pump with lines at left side of vehicle into fuel tank opening.
- Reach into fuel tank opening on right side of vehicle and pull suction jet pump with lines into installed position.

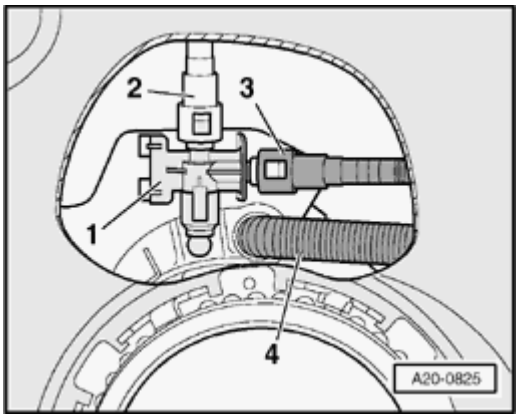


Fig. 359: Identifying Suction Jet Line, Distribution Piece, Fuel Return Line & Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push fuel return line - **3** - on at distribution piece - **1** - , until hose couplings are engaged.
- Clip distribution piece to baffle housing.
- Insert fuel delivery line - **4** - into corresponding hole of baffle housing.

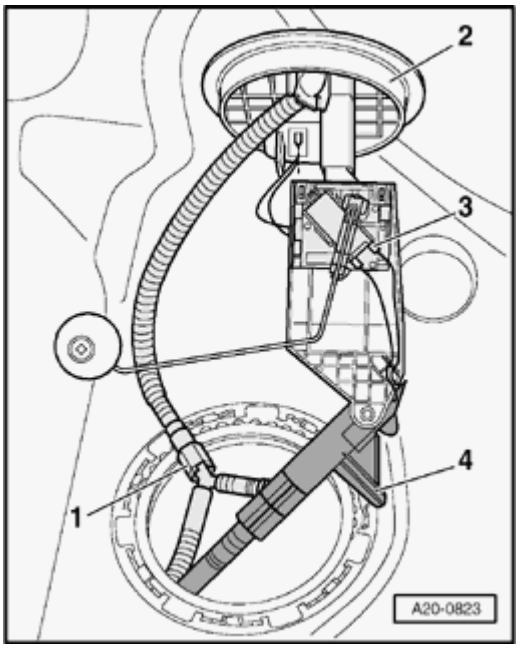


Fig. 360: Identifying Fuel Line, Locking Flange, Fuel Level Sensor 2 G169 & Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Clip suction jet pump - **4** - to locking flange - **2** - of fuel level sensor 2 G169 , and connect fuel line to Y-coupling - **1** -.

NOTE:

- **When installing, be sure not to bend floater arm of fuel level sensor 2 G169.**

- Install new locking flange seal dry.
- Bring locking flange of Fuel Level Sensor 2 G169 to installation position.

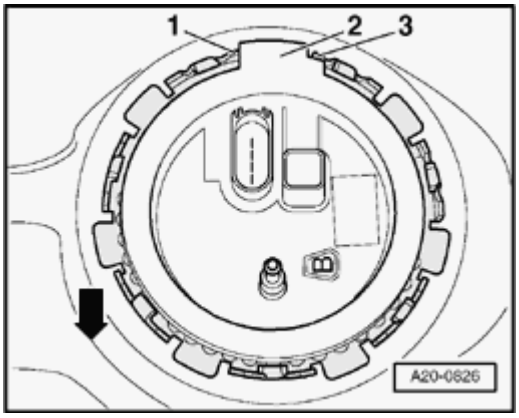


Fig. 361: Identifying Tab On Locking Flange Must Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

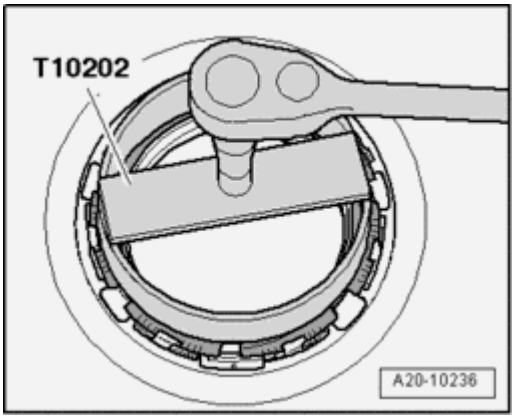


Fig. 362: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.

NOTE:

cardiagn.com

- **To improve clarity, a cross-sectional view of the fuel tank is shown in the following illustration.**

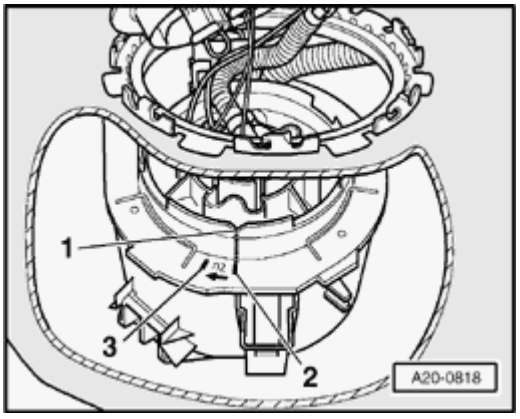


Fig. 363: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert fuel delivery unit into baffle housing in tank so that the notch - **1** - at fuel delivery unit aligns with marking - **2** - at baffle housing.

- Fuel delivery unit can be pressed downward significantly and noticeably.

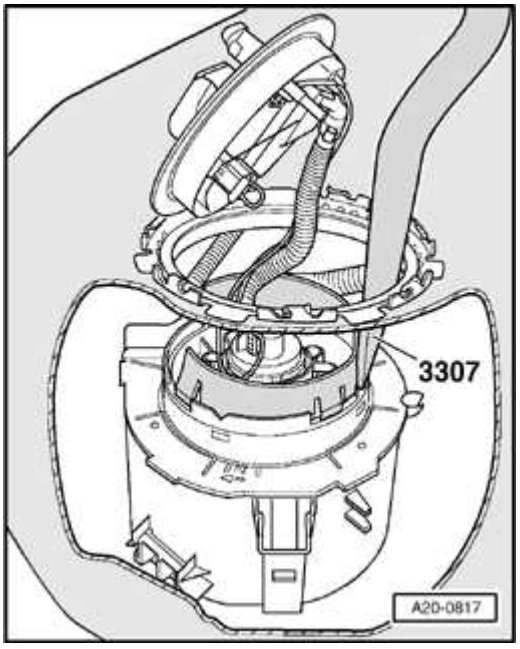


Fig. 364: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide fuel pump wrench 3307 through fuel tank opening and place it on fuel delivery unit.

cardiagn.com

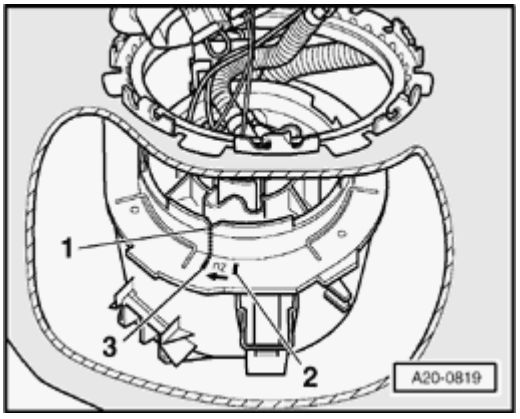


Fig. 365: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten fuel delivery unit with fuel pump wrench 3307 , thereby turning approx. 15 ° toward right until stop (bayonet connection).

- Notch - **1** - aligns with marking - **3** -.

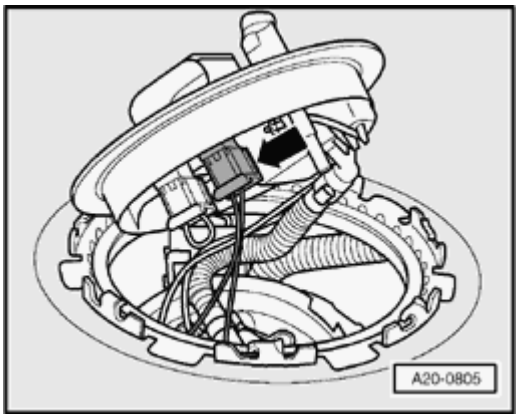


Fig. 366: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect electrical connection - **arrow** - on inner side of locking flange.
- Install new locking flange seal dry.
- Bring locking flange to installation position.

cardiagn.com

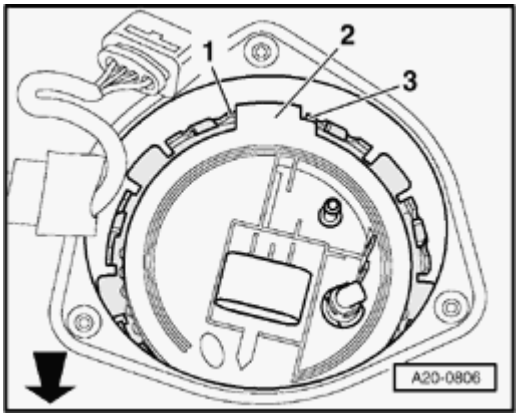


Fig. 367: Identifying Tab On Locking Flange Lies Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

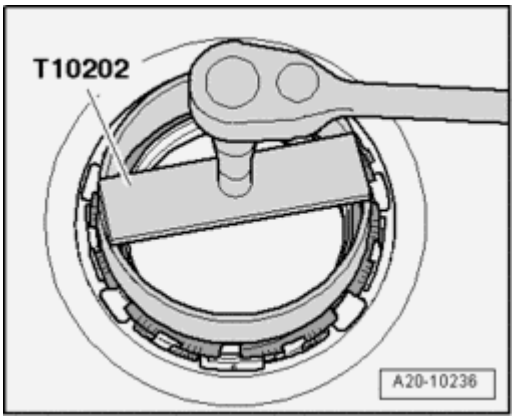


Fig. 368: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Lock ring for fuel delivery unit and locking flange of Fuel Level Sensor 2 G169	145

cardiagn.com

Fuel Tank Lock Switch F314 , checking

The Fuel Tank Lock Switch F314 consists of a reed contact on fuel filler tube and a fuel tank cap with an embedded magnet. If fuel tank cap is not fully screwed on, the reed contact switches on an indicator in the instrument cluster.

Special tools, testers and auxiliary items required

Fig. 369: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 C

Fig. 370: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

- If indicator is lit, check the following points in order:

- Fuel tank cap is completely screwed on.
- Correct fuel tank cap (Identification: Threads are gray in color).

cardiagn.com

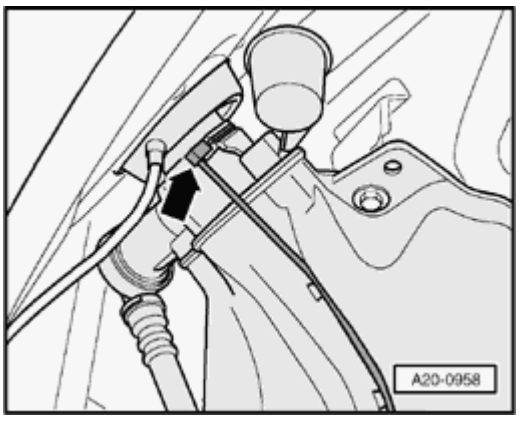


Fig. 371: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Switch - **arrow** - at fuel filler tube is fully inserted.
- Electrical malfunction in switch.
- Wiring connection to instrument cluster is faulty (check according to schematics).

Fuel Tank Lock Switch F314 , checking electrical

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

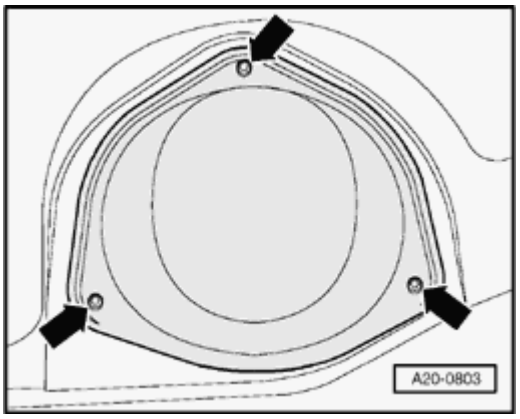


Fig. 372: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

cardiagn.com

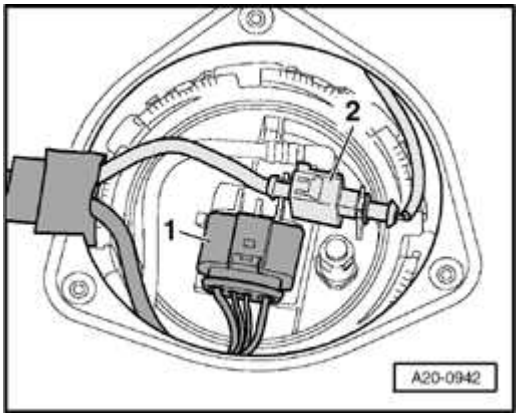


Fig. 373: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **2** -.

NOTE:

- **Ignore - 1 -.**

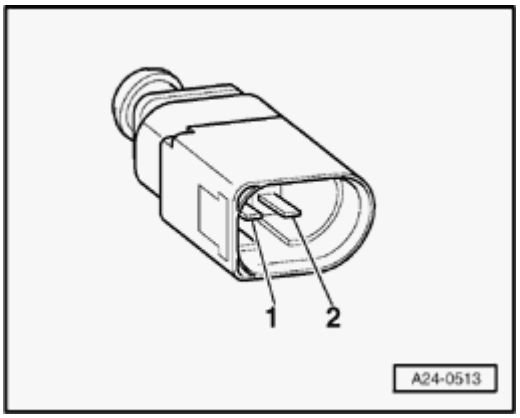


Fig. 374: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **1** - and - **2** - for resistance measurement.

Fuel tank cap	Specified value
Screwed on tight	infinity ohms
Not or incorrectly screwed on	Less than 1 ohms

If specifications are not obtained:

- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

cardiagn.com

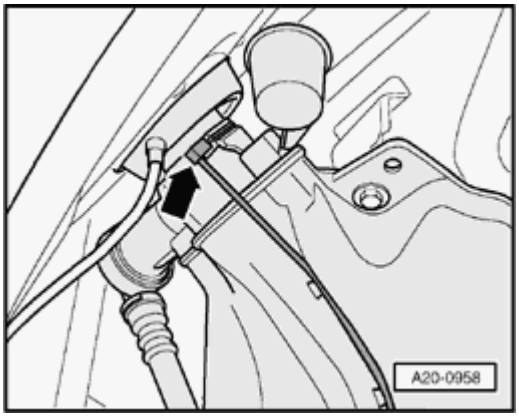


Fig. 375: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace Fuel Tank Lock Switch F314 - **arrow** - , thereby unclipping and clipping in the switch and electrical wiring at fuel filler tube.

FUEL SUPPLY SYSTEM, VEHICLES WITH ALL WHEEL DRIVE FROM 07.03 TO 10.04

Fuel tank with attachments, component overview

cardiagn.com

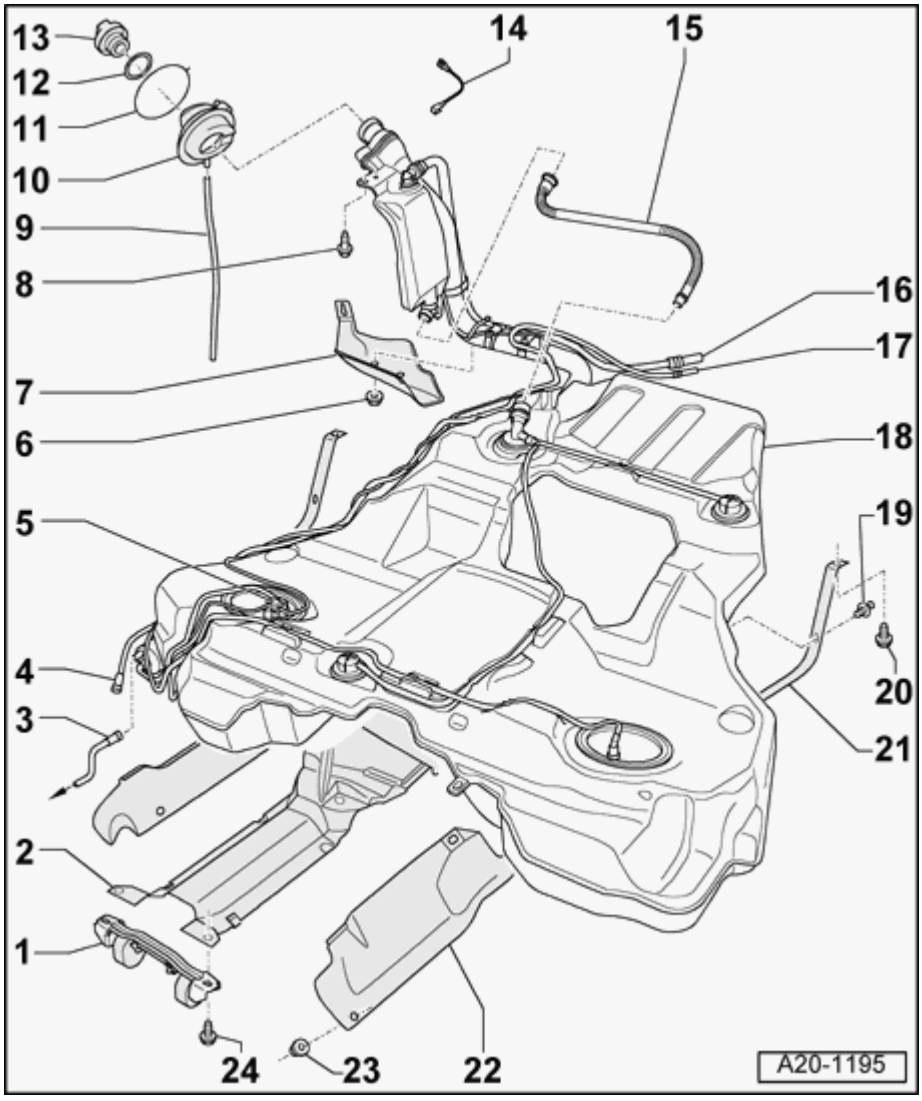


Fig. 376: Fuel Tank With Attachments, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bracket

- For exhaust system

2 - Carrier plate

3 - Fuel line

- From fuel filter
- To engine
- Do not kink
- To disconnect, press release button on connection piece

cardiagn.com

4 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Do not kink
- To disconnect, press release button on connection piece
- Clipped in on fuel tank

5 - Electrical harness connector

- For Fuel Tank Lock Switch F314
- Checking electrical --> **Fuel Tank Lock Switch F314 , checking**

6 - 2 Nm

7 - Heat shield

- For fuel delivery connection

8 - 23 Nm

9 - Overflow hose

10 - Rubber gasket

11 - Circlip

12 - Seal

- Replace if damaged

13 - Cap

14 - Ground (GND) connection

- For discharging electrostatic charge
- Installed position/check requirements **Installation position of Ground (GND) connection**
- After installing, check electrical connection of metal ring at fuel filler tube to a bare area of chassis using Ohm meter - Specified value: approx. 0ohms

15 - Ventilation line

16 - Ventilation line

- From gravity valve to EVAP canister
- To remove, press release ring on EVAP canister

cardiagn.com

17 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- To remove, press release ring on EVAP canister
- Clipped in on fuel tank

18 - Fuel tank

- Removing and installing --> **Fuel tank with attachments, removing and installing**

19 - Spreader clip

20 - 23 Nm

21 - Securing strap

22 - Heat shield

- For fuel tank

23 - 2 Nm

24 - 23 Nm

Installation position of Ground (GND) connection

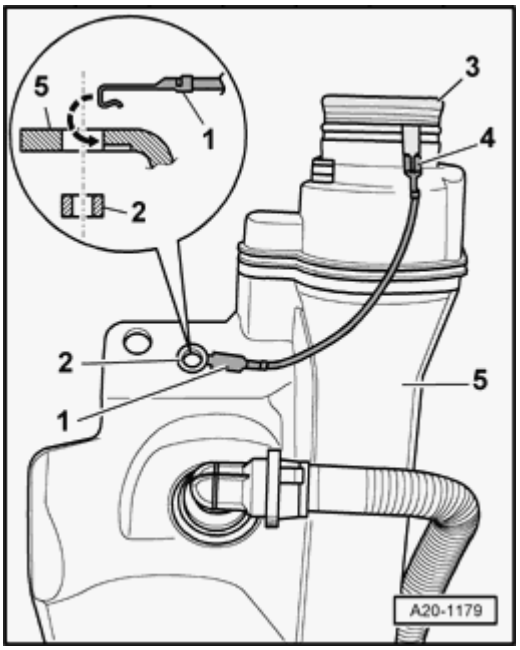


Fig. 377: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Route Ground (GND) connection as shown in illustration.
- First hook Ground (GND) connection contact - **1** - into securing hole on fuel tank - **5** - and then press in spacer bushing - **2** -.
- Make sure connector of Ground (GND) connection - **4** - fits securely at metal ring - **3** - of fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

Fuel tank, draining

Special tools, testers and auxiliary items required

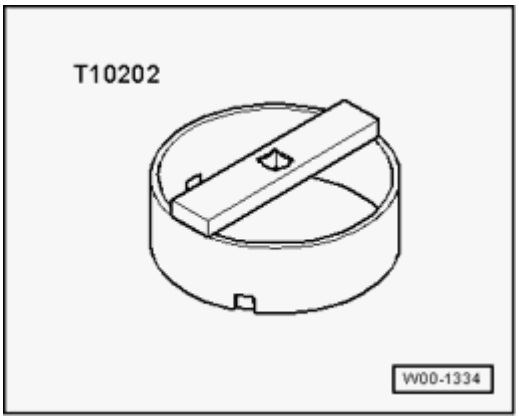


Fig. 378: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

cardiagn.com

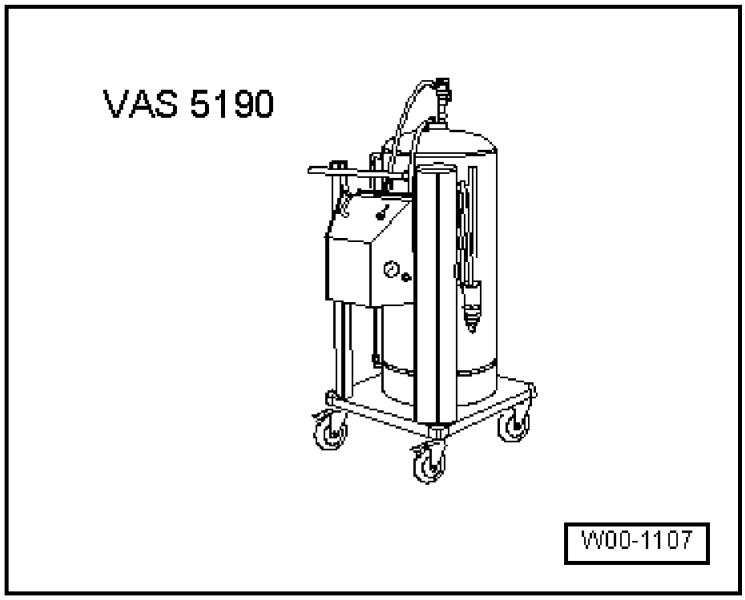


Fig. 379: Identifying Fuel Extraction Unit VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel siphoning unit VAS 5190

Work procedure

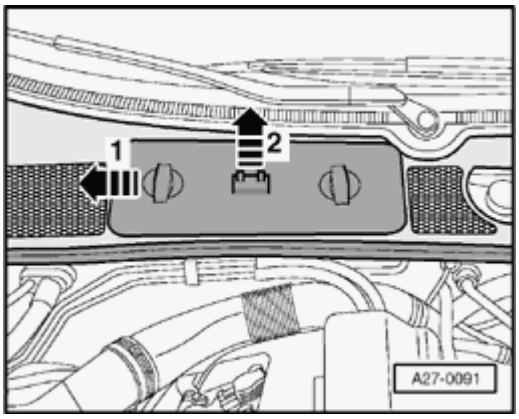
Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.



cardiagn.com

Fig. 380: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

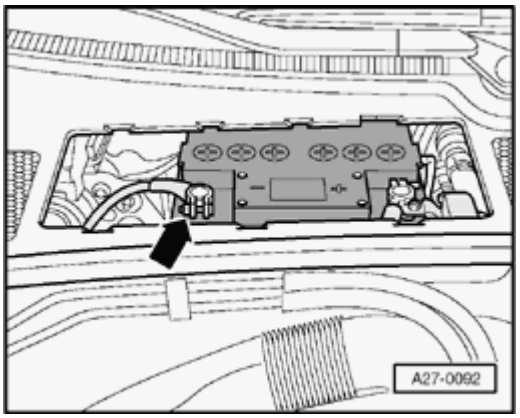


Fig. 381: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

CAUTION: Secure Ground (GND) wire of fuel extraction unit VAS 5190 to a bare area of the chassis.

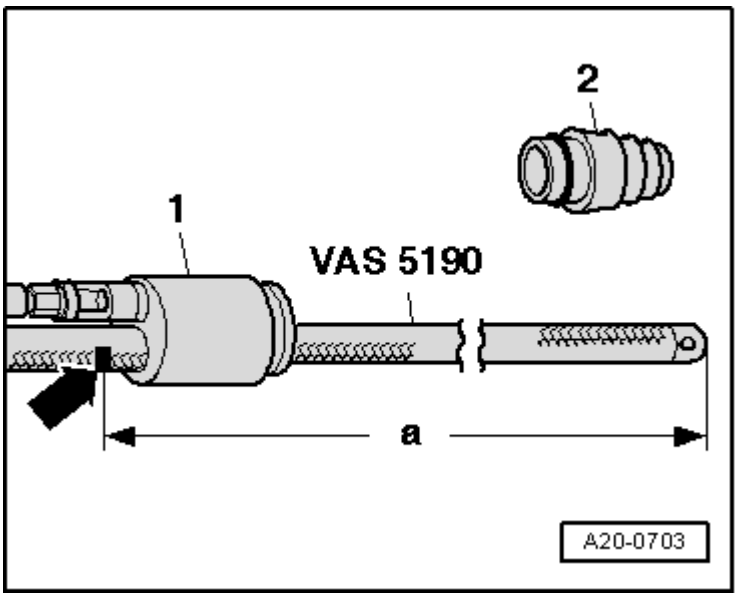


Fig. 382: Pulling Cone Piece From Shaft Piece Of Fuel Siphoning Device VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull cone piece - **2** - from shaft end - **1** - of fuel extraction unit VAS 5190.
- Using insulating tape, apply a mark - **arrow** - on hose at length - **a** - = 1,865 mm from end of suction

cardiagn.com

hose.

- Remove fuel filler cap from fuel filler tube.

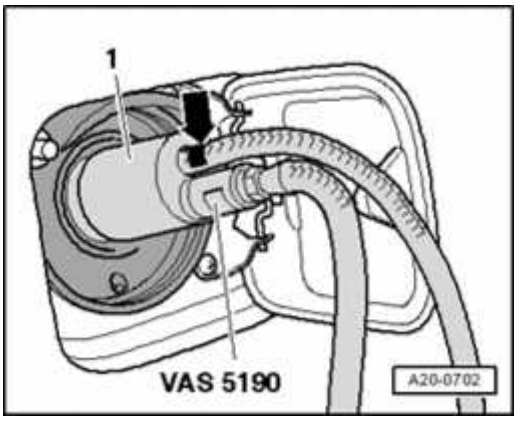


Fig. 383: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw shaft end - **1** - of fuel extraction unit VAS 5190 on to fuel filler tube of fuel tank.
- Push suction hose as far into fuel tank until mark applied earlier - **arrow** - is positioned on shaft end.

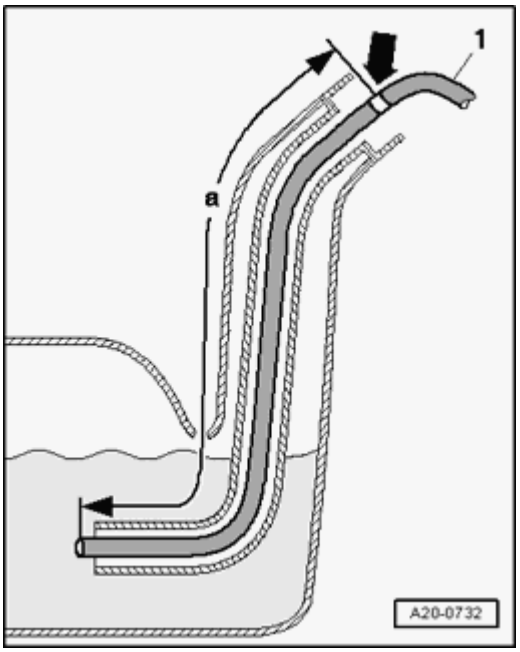


Fig. 384: Sliding Suction Hose As Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **If using a siphoning device without shaft end, proceed basically in the same manner.**
- **In this case, apply a mark - arrow - using insulating tape on hose at length - a - = 1,800 mm from end of suction hose. The suction hose is inserted**

cardiagn.com

correctly when the marking applied earlier stands opposite the lip of fuel filler tube.

- **If the hose can only be inserted with difficulty, coat it thinly with engine oil. Never use lubricants containing silicon.**

- Drain fuel tank through fuel filler tube as much as possible.
- Carefully pull out suction hose.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

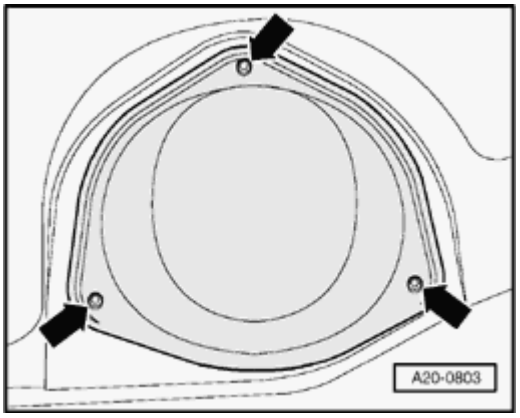


Fig. 385: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

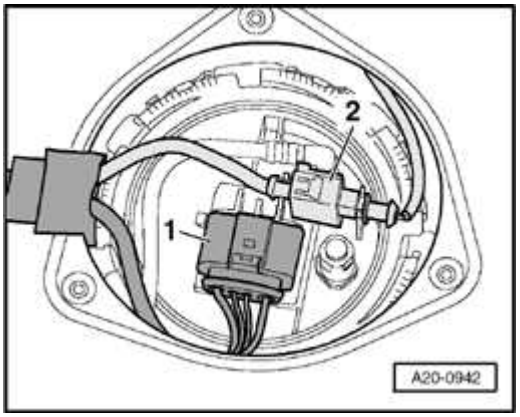


Fig. 386: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

cardiagn.com

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

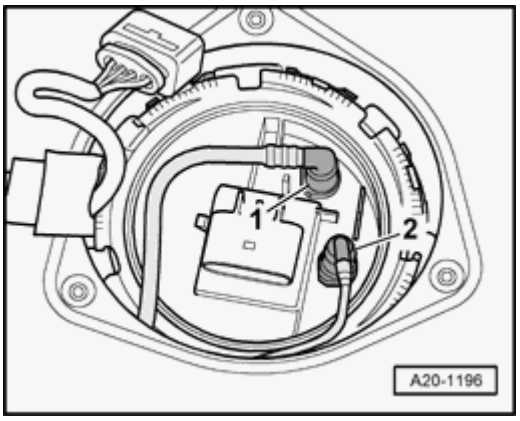


Fig. 387: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from locking flange by pressing release button.
- Disconnect ventilation line - **2** - by pressing release buttons.

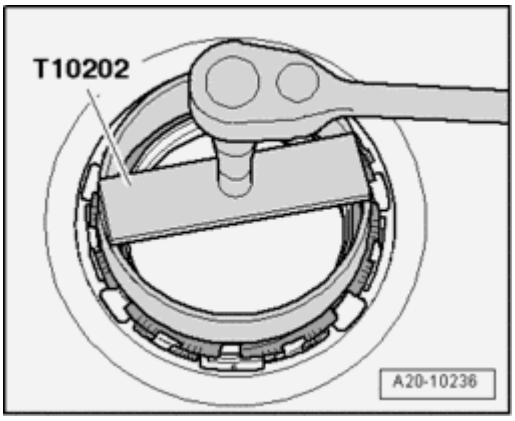


Fig. 388: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring with wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

cardiagn.com

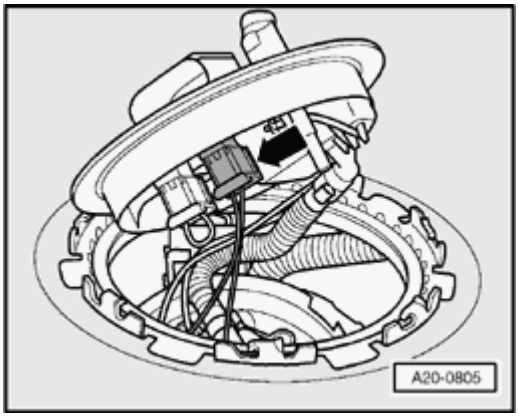


Fig. 389: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connection on the inner side of the locking flange - **arrow** -.

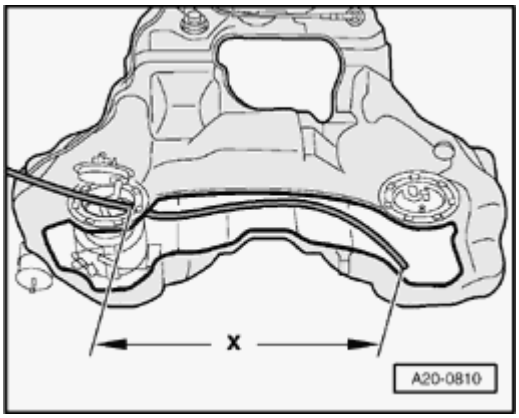


Fig. 390: Inserting Suction Hose Through Right Opening Of Fuel Tank Into Left Fuel Tank Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert suction hose, a dimension of - **x** - = 800 mm in length, through right opening of fuel tank into left fuel tank chamber.
- Drain left fuel tank chamber.
- Install right locking flange again **Installing** , observing notes for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Fuel tank with attachments, removing and installing

Special tools, testers and auxiliary items required

cardiagn.com

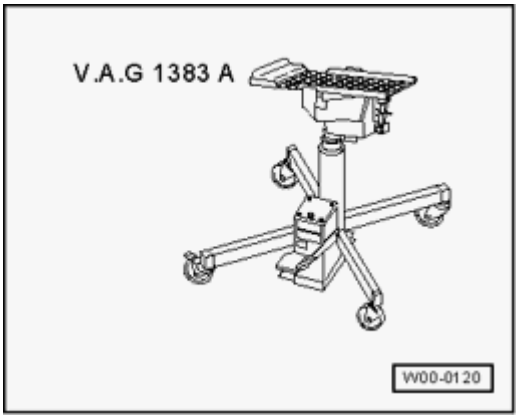


Fig. 391: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/transmission jack V.A.G 1383 A

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **For removal, fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

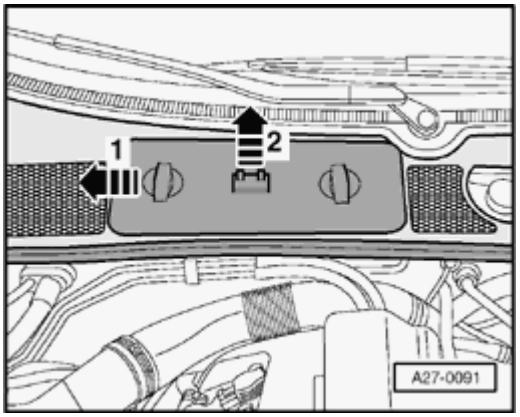


Fig. 392: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

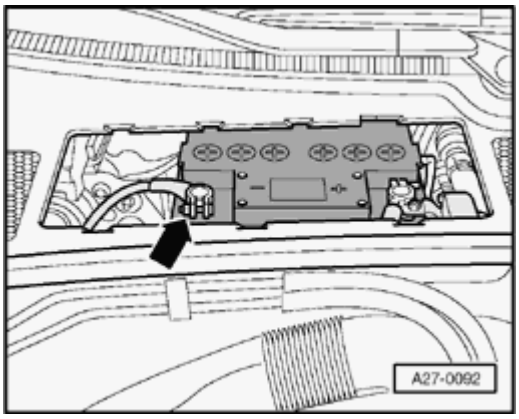


Fig. 393: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

cardiagn.com

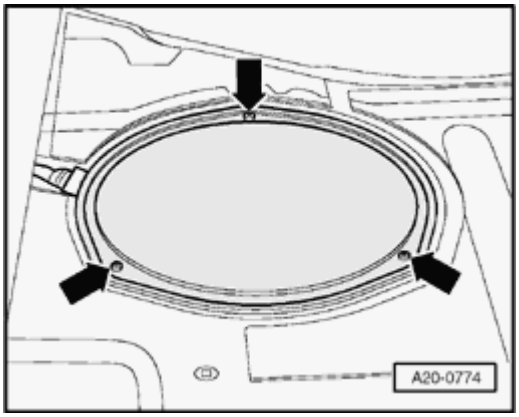


Fig. 394: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

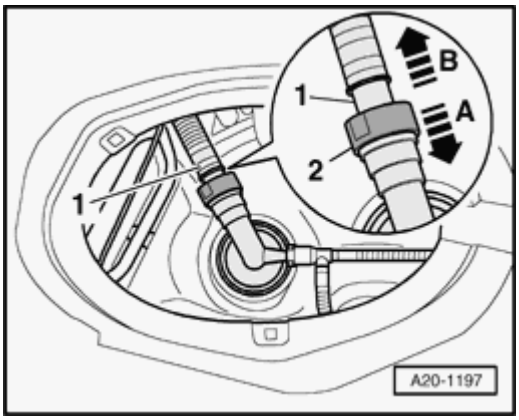


Fig. 395: Disconnecting Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation line - **1** -. Do this by pressing releasing ring - **2** - approx. 2 mm in direction of - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

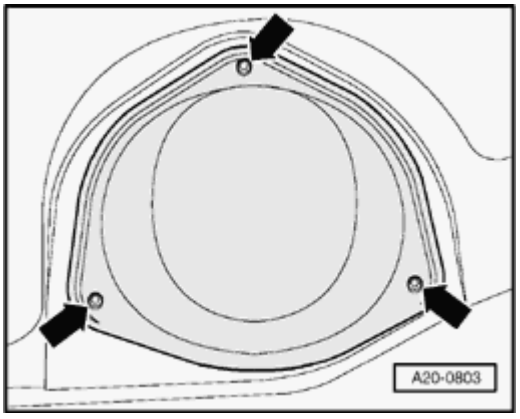


Fig. 396: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange, left and right - **arrows** -.

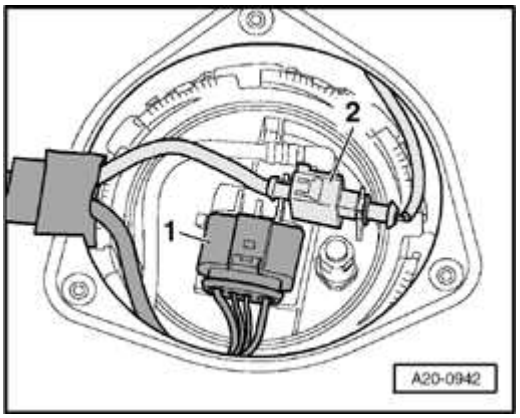


Fig. 397: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disconnect electrical connector - **2** -.

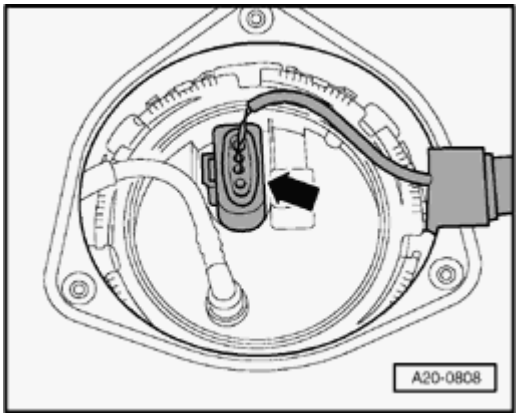


Fig. 398: Disconnecting Electrical Harness Connector At Left Locking Flange

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.
- Open tank flap and clean area around fuel filler tube.

NOTE:

- **Do not remove fuel cap.**

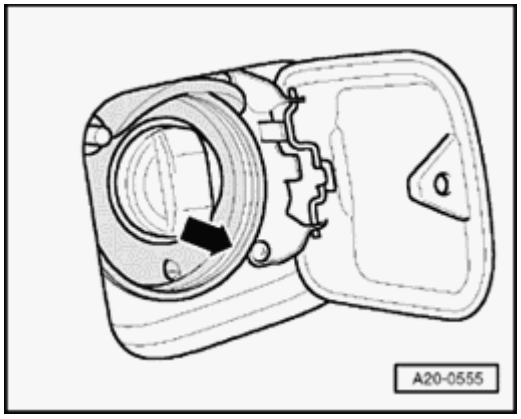


Fig. 399: Opening Tank Flap And Cleaning Area Around Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry tensioning ring - **arrow** - out from rubber gasket and press rubber gasket through toward the inside.
- Remove right rear wheel.
- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

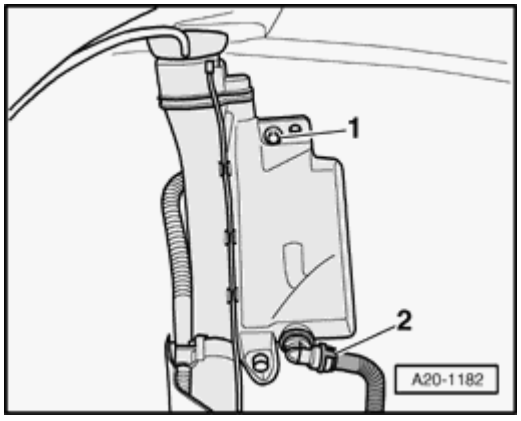


Fig. 400: Removing Ventilation Line From Fuel Filler Tube & Bolts For Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ventilation line - **2** - from fuel filler tube by pressing release buttons.

cardiagn.com

- Remove bolt - **1** - for fuel filler tube.

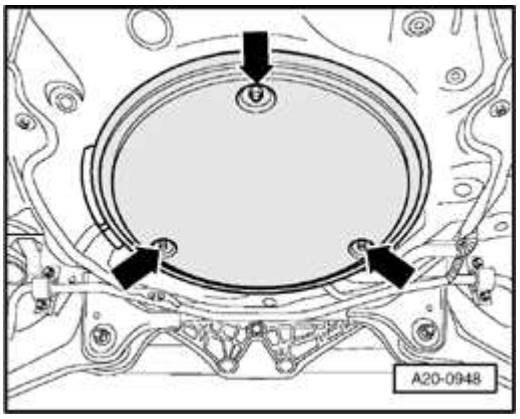


Fig. 401: Removing EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.

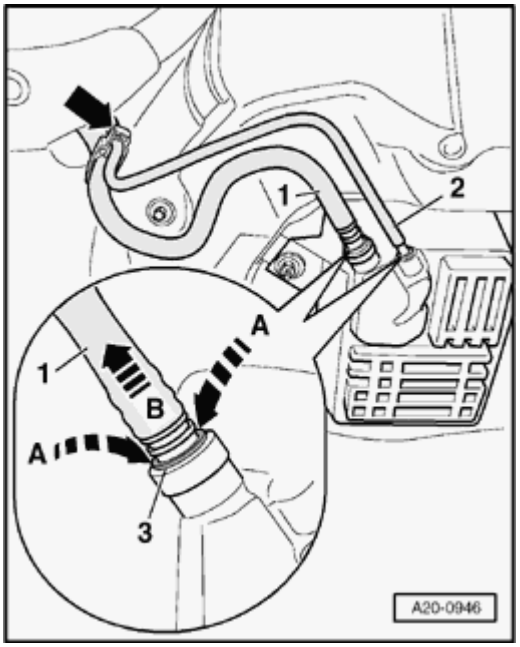


Fig. 402: Removing Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation lines - **1** - and - **2** -. Do this by pressing releasing ring - **3** - in direction of - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Unclip ventilation lines - **A** - at top from bracket - **arrow** -.
- Remove rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB

cardiagn.com

- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
- **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

- Remove drive shaft -->
  - **39 FINAL DRIVE, DIFFERENTIAL**
  - **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR

.

CAUTION: Before removing the subframe bolts, secure the vehicle against falling over (e.g. load the luggage compartment with approx. 50 kg).

- Remove rear axle --> **42 - REAR SUSPENSION** .

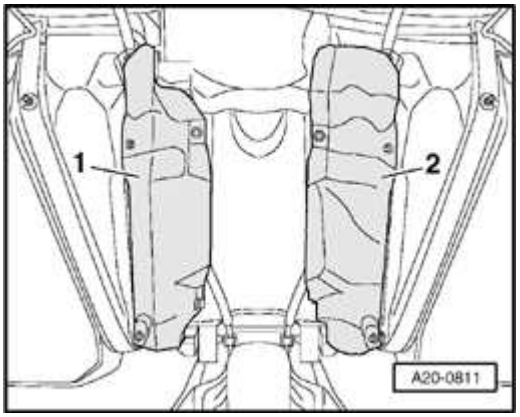


Fig. 403: Removing Heat Shields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shields - **1** - and - **2** -.

cardiagn.com

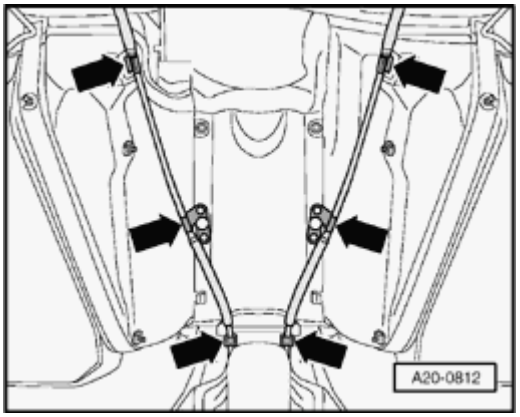


Fig. 404: Disconnecting Parking Brake Cables
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect parking brake cables at positions indicated by - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

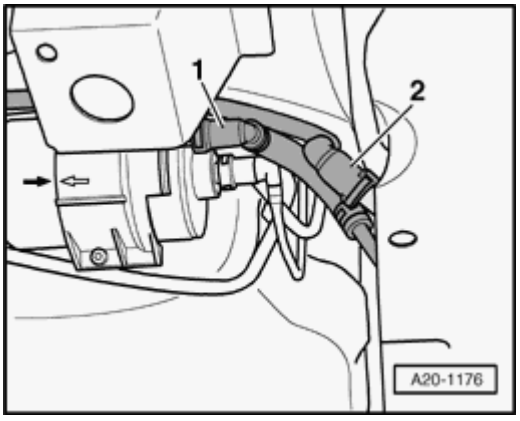


Fig. 405: Disconnecting Fuel Line And Right Ventilation Line From Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - and right ventilation line - **2** - from fuel tank, by pressing release buttons.
- Place engine/transmission jack V.A.G 1383 A under fuel tank for support.

CAUTION:

- **For weight reasons, fuel tank must be empty for removal.**

cardiagn.com

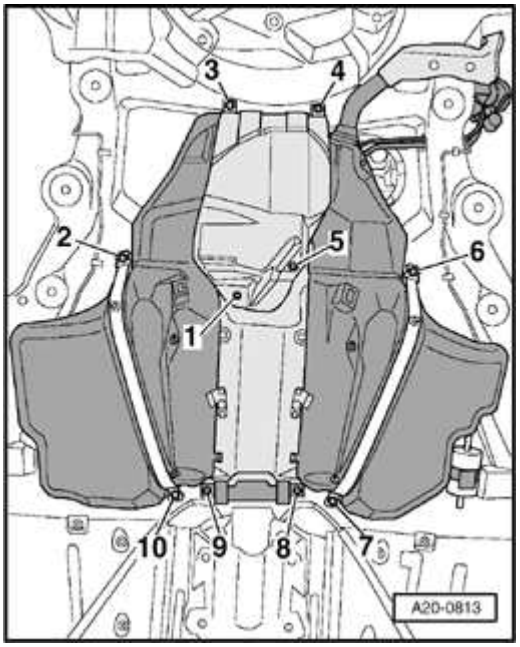


Fig. 406: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 10** -.
- Lower fuel tank using engine/transmission jack V.A.G 1383 A.

Installing

Installation is in reverse order of removal. Note the following:

- Make sure fuel and ventilation lines are properly clipped to fuel tank.
- Check if Ground (GND) wiring on both connections show signs of oxidation. If necessary, remove.
- Check installation position of Ground (GND) connection:

cardiagn.com

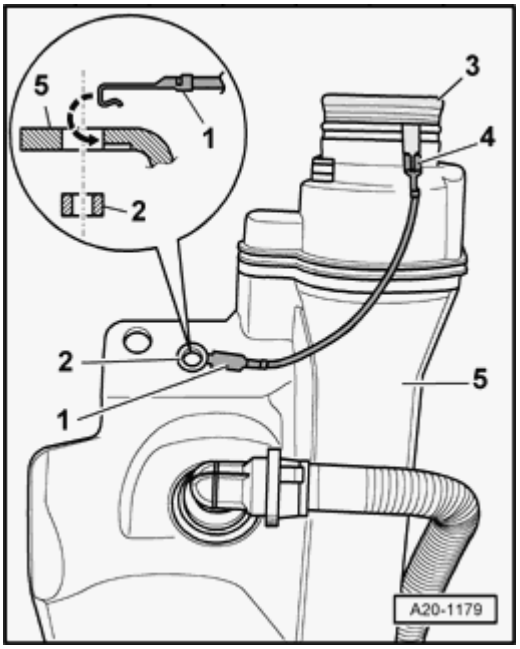
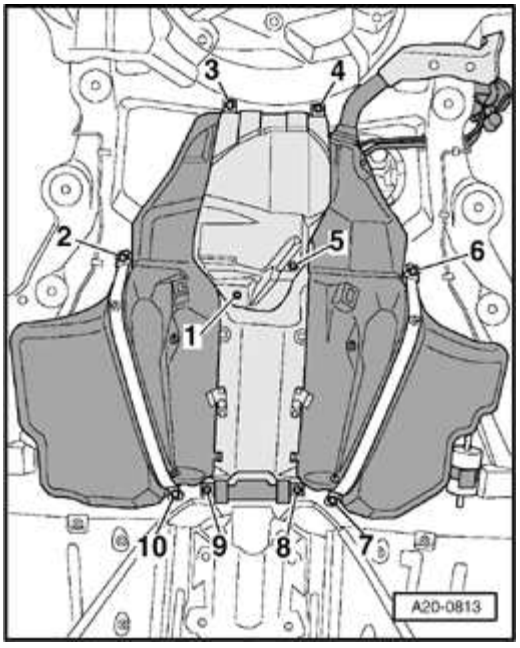


Fig. 407: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The connector - **4** - must be securely attached to metal ring - **3** -.
- The contact - **1** - must be attached into fuel tank - **5** - and be secured with spacer bushing - **2** -.

- Position fuel tank with mounting straps and carrier plate to vehicle floor using engine/transmission jack V.A.G 1383 A.
- Make sure fuel tank is positioned so that the filler tube can be correctly guided into opening of the body.



cardiagn.com

Fig. 408: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten mounting straps and carrier plate - **1 through 10** -.
- Fasten fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

- Install rear axle --> **42 - REAR SUSPENSION** .
- Install drive shaft -->
  - **39 FINAL DRIVE, DIFFERENTIAL**
  - **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR

  .
- Install rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  .
- Install right rear wheel housing liner, thereby fastening fuel filler tube screws -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

  .

cardiagn.com

Torque specifications

Component	Nm
Mounting straps and carrier plate for fuel tank to body	23
Fuel filler tube to body	23
EVAP canister cover	9

Fuel delivery unit and fuel level sensor, assembly overview

Part 1 (right chamber)

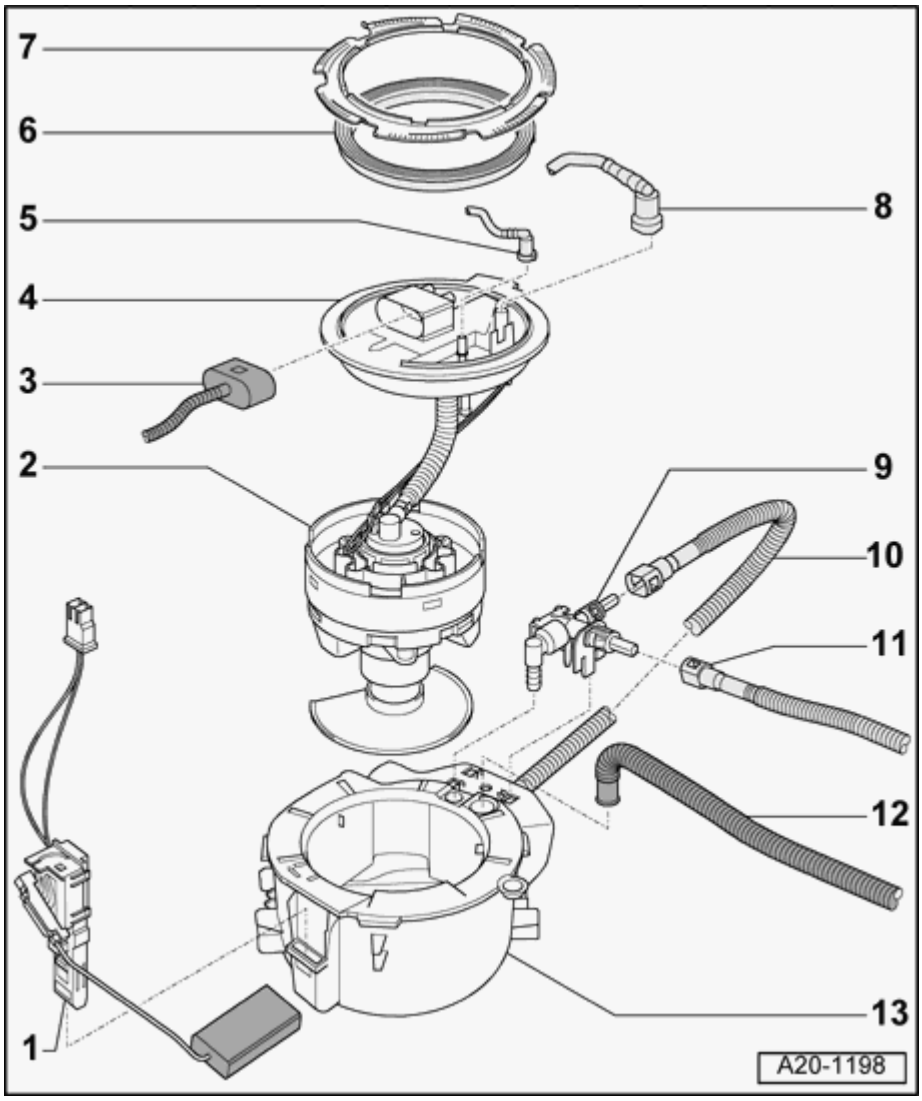


Fig. 409: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview (Part 1 (Right Chamber))
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel Level Sensor G

cardiagn.com

- Clipped onto baffle housing in fuel tank
- Resistance values, checking --> **Fuel Level Sensor G , checking**
- Removing and installing --> **Fuel Level Sensor G , removing and installing**

2 - Fuel delivery unit

- Different versions, allocation
- Can only be replaced together with flange
- Fuel pump electrical, checking --> **Fuel pump electrical, checking**
- Checking residual pressure -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF
- Removing and installing --> **Fuel delivery unit, removing and installing**

3 - Electrical harness connector

- For Fuel level sensor G
- For Transfer Fuel Pump (FP) G6

4 - Locking flange

- For fuel delivery unit
- Cannot be replaced separately
- Installed location --> **Fig. 440**

5 - Ventilation line

- From fuel pressure regulator in fuel filter
- To disconnect, press release button on connection piece
- Do not kink
- Clipped in on fuel tank

cardiagn.com

6 - Seal

- Replace
- Install dry

7 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

8 - Fuel supply line

- To fuel filter
- To disconnect, press release button on connection piece
- Do not kink
- Clipped in on fuel tank

9 - Distribution piece

- Different versions, allocation
- Clipped in on baffle housing with catches
- To remove, press toward right so that catches disengage and lift upward

10 - Fuel line

- To suction jet pump in baffle housing

11 - Fuel return line

- From left locking flange

12 - Fuel delivery line

- From suction jet pump, right side

13 - Baffle housing

- With suction jet pump

Part 2 (left chamber)

cardiagn.com

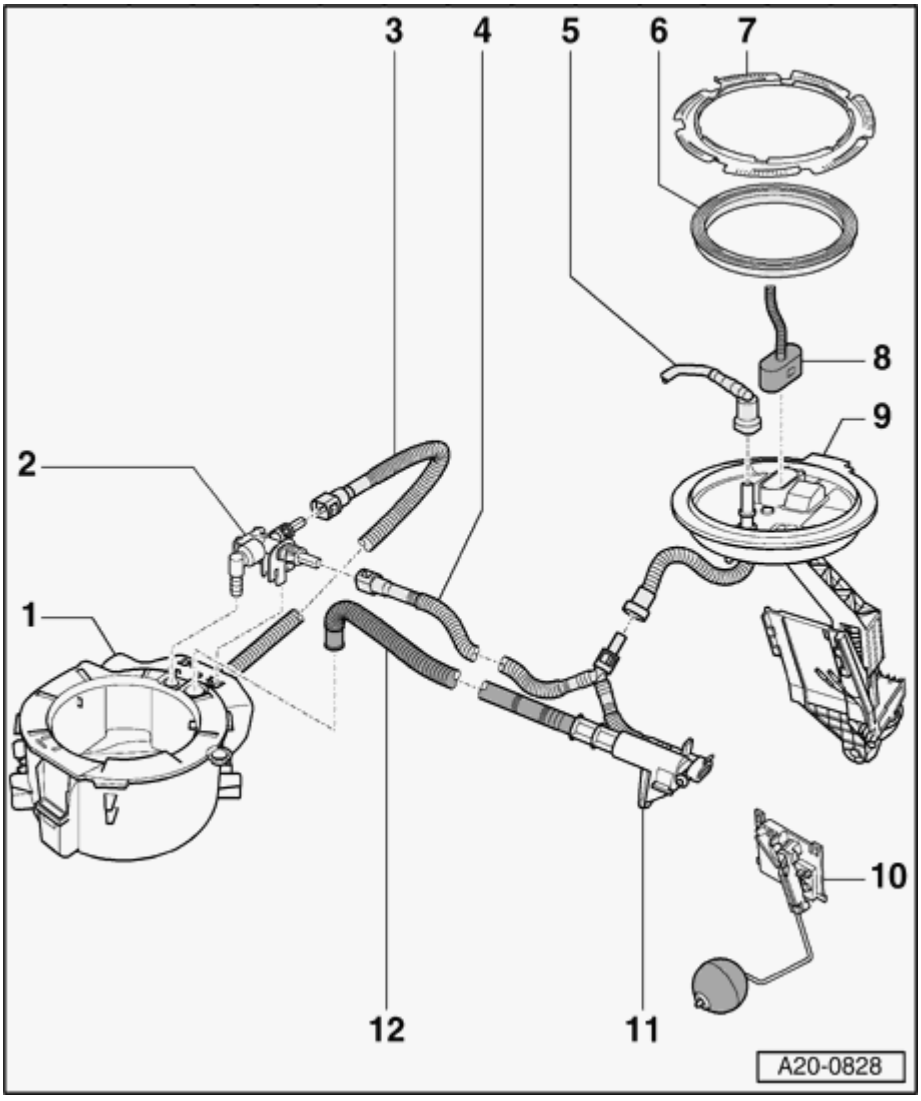


Fig. 410: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview (Part 2 (Left Chamber))
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Baffle housing

- With suction jet pump

2 - Distribution piece

- Different versions, allocation
- Clipped in on baffle housing with catches
- To remove, press toward right so that catches disengage and lift upward

3 - Fuel line

- To suction jet pump in baffle housing

cardiagn.com

4 - Fuel return line

- From left locking flange

5 - Fuel return line

- From engine/from fuel filter
- To disconnect, press release button on connection piece
- Do not kink
- Clipped in on fuel tank

6 - Seal

- Replace
- Install dry

7 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

8 - Electrical harness connector

- For Fuel Supply Sensor 2 G169

9 - Locking flange

- Installed location **Installing**

10 - Fuel supply sensor 2 G169

- Resistance values, checking --> **Fuel Level Sensor 2 G169 , checking**
- Removing and installing --> **Fuel Level Sensor 2 G169 , removing and installing**

11 - Suction jet pump

- With lines
- Different versions, allocation
- Secured to locking flange
- Function --> **Suction jet pump, function**

- Removing and installing --> **Suction jet pump in left fuel tank chamber, removing and installing**

12 - Fuel delivery line

cardiagn.com

- From suction jet pump, right side

Fuel pump electrical, checking

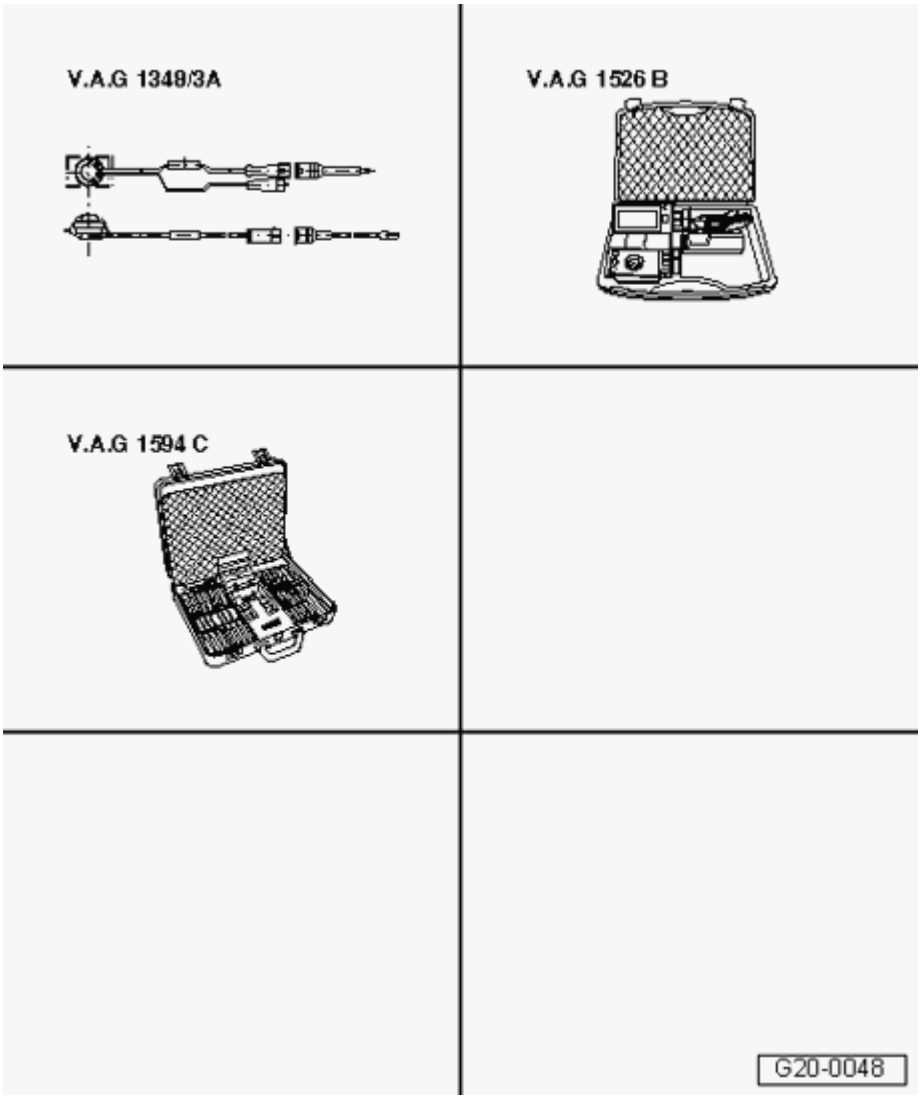


Fig. 411: Identifying Special Tools - Fuel Pump Electrical, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Portable multimeter V.A.G 1526 B
- Connector test set V.A.G 1594 C

Test conditions

- Battery voltage at least 12.5 V.

cardiagn.com

- Fuse on fuse panel S228 (position 28) OK.

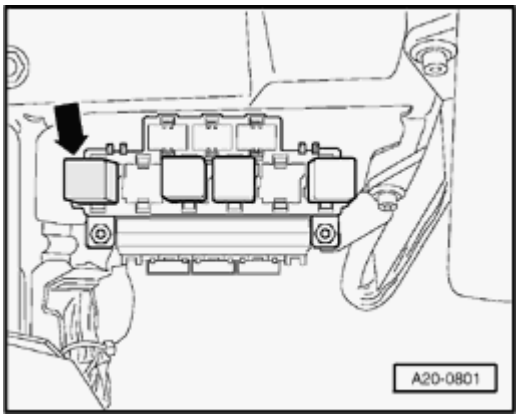


Fig. 412: Installed Location On 9-Socket Relay Carrier In Driver Footwell
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Relay J17 - **arrow** - at position 1 in 9-socket relay carrier behind the driver side storage compartment is OK.
- Fuel filter OK
- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

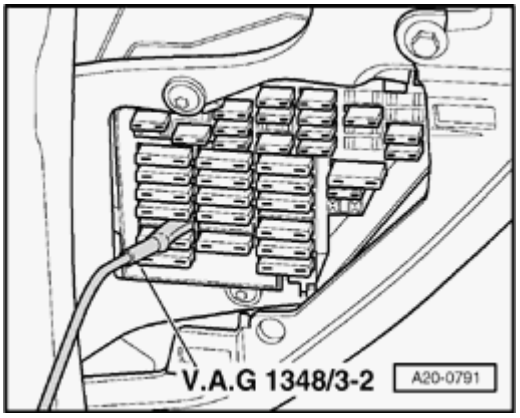


Fig. 413: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to the right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).

cardiagn.com

- Press switch on remote control.
- Running noise of pump must be audible.

NOTE:

- **Fuel Pump (FP) runs quietly. Avoid surrounding noises while testing the fuel pump.**

If no operating noise can be heard:

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

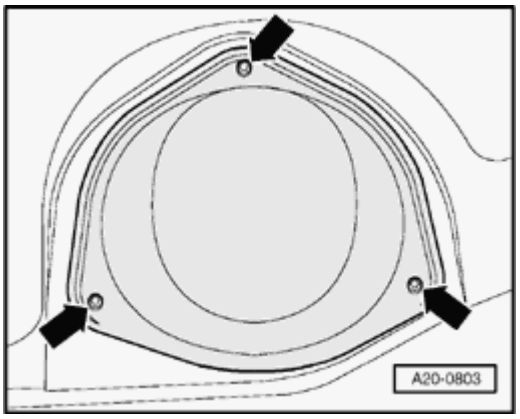


Fig. 414: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

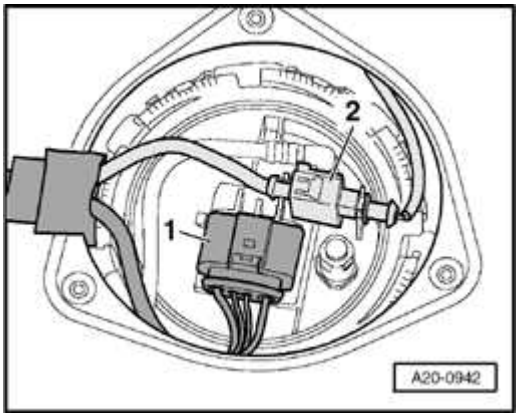


Fig. 415: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Disconnect electrical harness connector - **1** - at right locking flange.

NOTE:

- **Ignore - 2 -.**

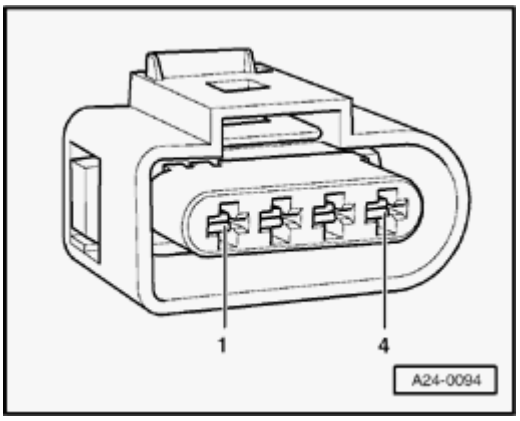


Fig. 416: Identifying Connector Terminals 1 And 4
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 B between terminal - **1** - and - **4** - for voltage measurement.
- Press switch on remote control.

- Specification: approx. battery voltage.

If specification is not obtained:

- Repair open circuit in wiring according to wiring diagram.

If specified value is obtained, although no running-noise can be heard at pump:

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.

cardiagn.com

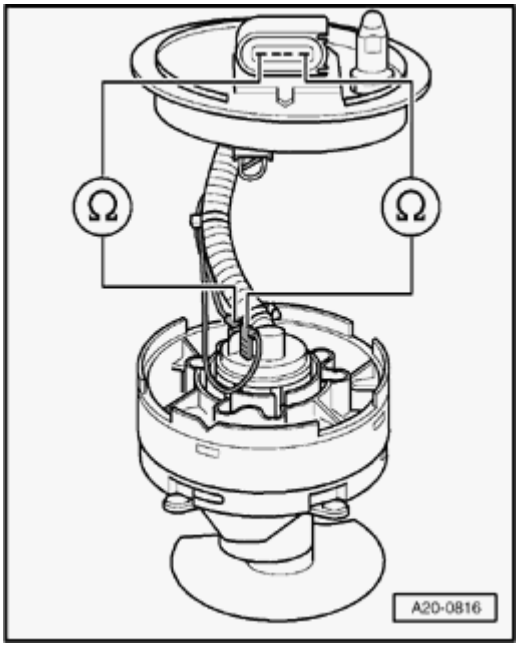


Fig. 417: Checking If Electrical Wiring Between Flange And Fuel Pump Is Connected And Has Continuity
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check if electrical wiring between flange and fuel pump is connected and has continuity.

If no malfunction is detected in wires, Fuel Pump (FP) is faulty - replace fuel pump.

- Install fuel delivery unit **Installing**.

Fuel Pump (FP) delivery quantity, checking

Special tools, testers and auxiliary items required

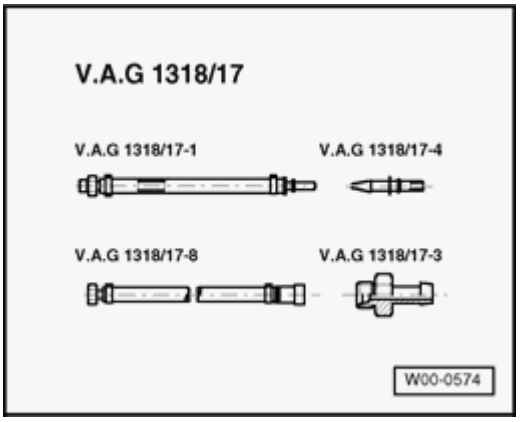


Fig. 418: Adapter V.A.G 1318/17-1 From Adapter Set V.A.G 1318/17
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Adapter V.A.G 1318/17-1 from adapter set V.A.G 1318/17

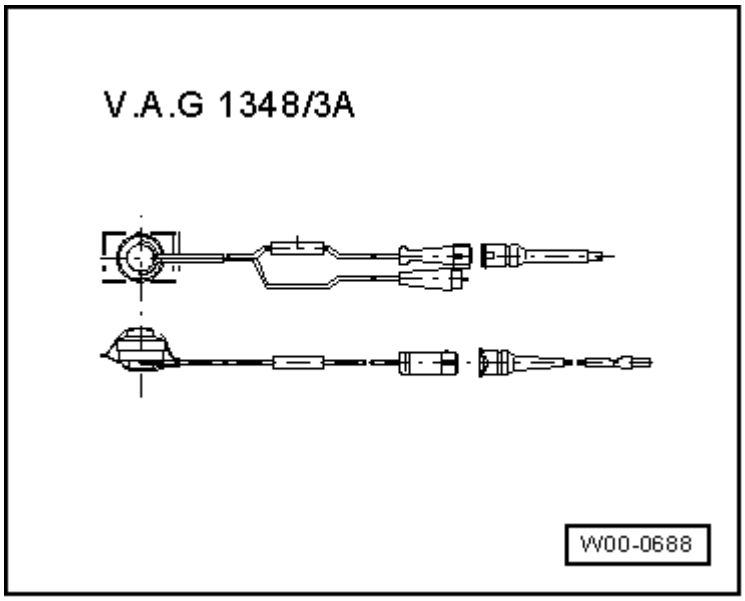


Fig. 419: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Fuel pressure regulator OK, checking -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

cardiagn.com

- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

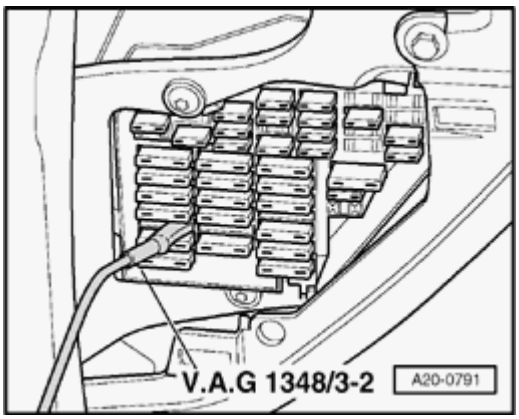


Fig. 420: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of S228.
- Connect alligator clip to vehicle battery (+).
- Remove fuel filler cap from fuel filler tube.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

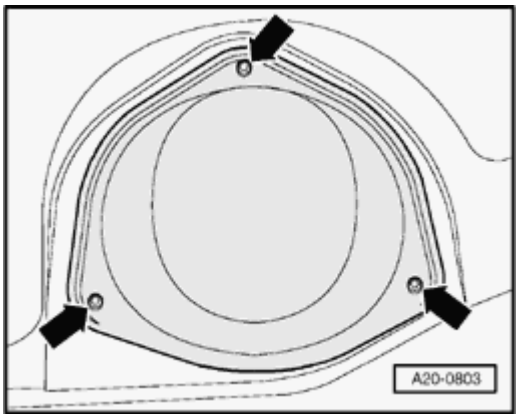


Fig. 421: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Unbolt cover for left locking flange - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

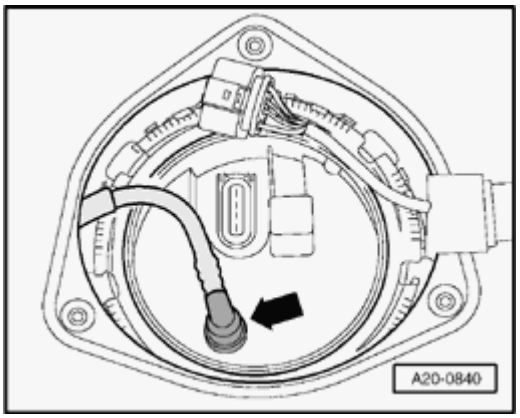


Fig. 422: Pulling Fuel Line Off From Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull fuel line - **arrow** - off from left locking flange, by pressing release button.

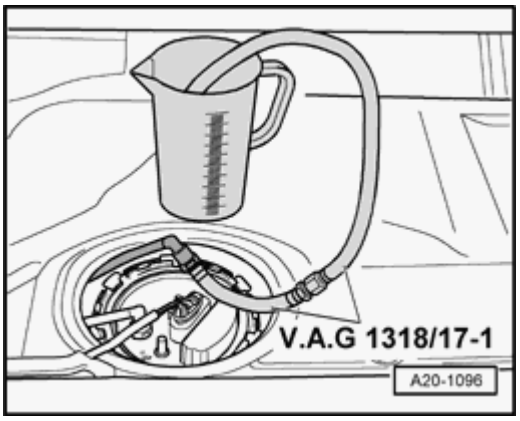


Fig. 423: Fuel Line From The High Pressure Fuel Gauge Connected To The Disconnected Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect adapter V.A.G 1318/17-1 to disconnected fuel line and hold it in a measuring container.
- Press switch on remote control for 15 seconds.

cardiagn.com

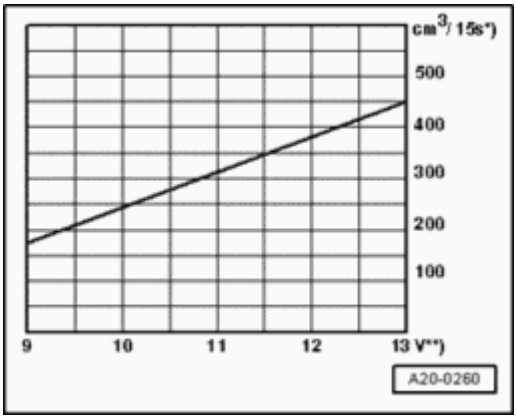


Fig. 424: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Installation is in reverse order of removal. Note the following:

- Install fuel return line.
- Install rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

Fuel delivery unit, removing and installing

Special tools, testers and auxiliary items required

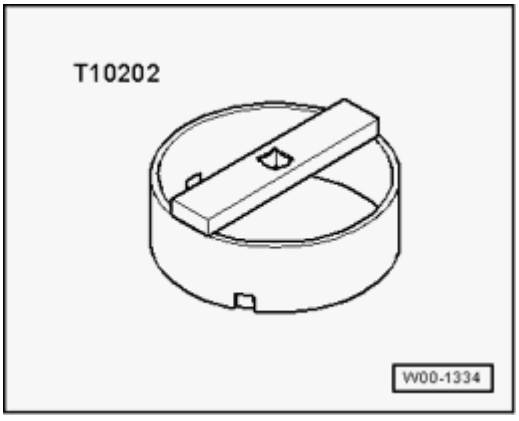


Fig. 425: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Wrench T10202

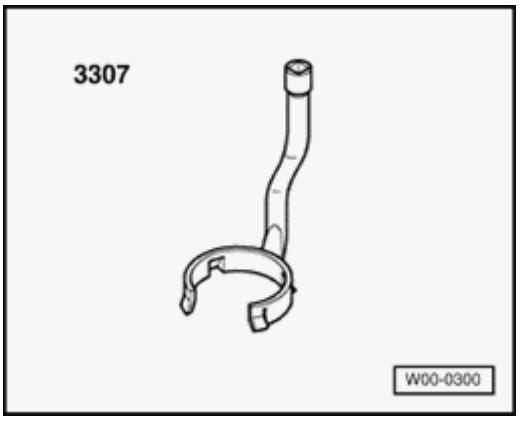


Fig. 426: Fuel Pump Wrench 3307
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel pump wrench 3307

Removing

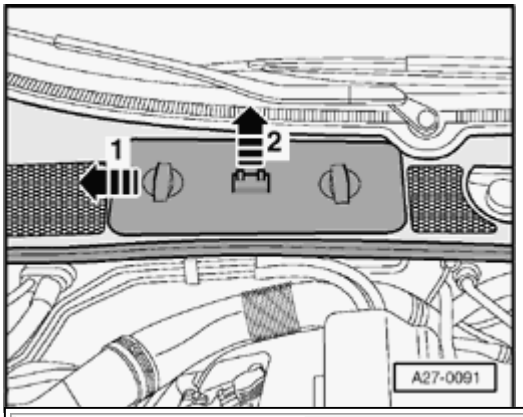
Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the fuel delivery unit, the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.



cardiagn.com

Fig. 427: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

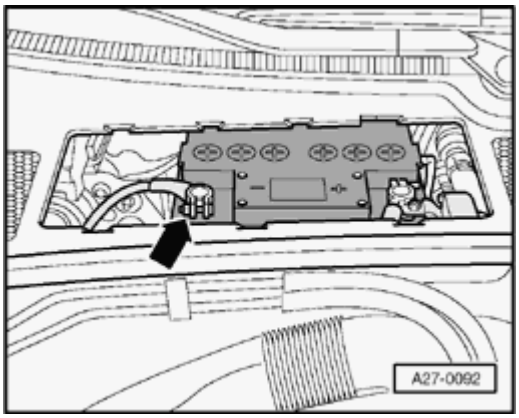


Fig. 428: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

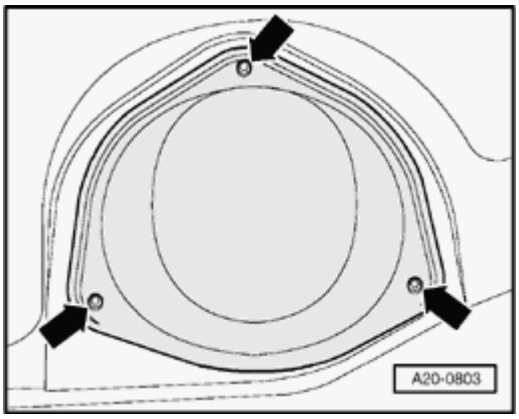


Fig. 429: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

cardiagn.com

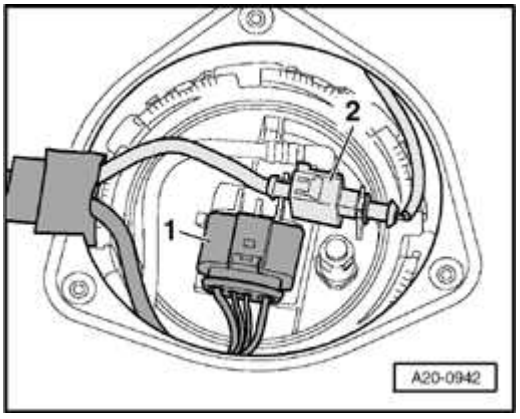


Fig. 430: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

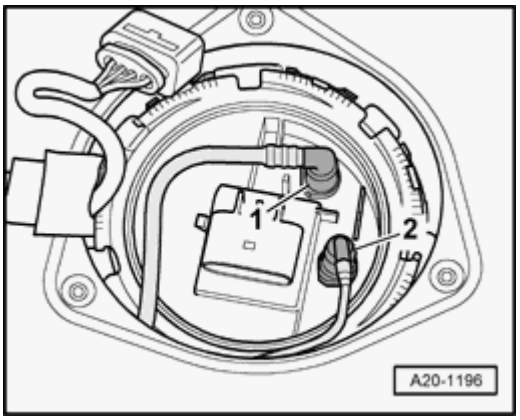


Fig. 431: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from locking flange by pressing release button.
- Disconnect ventilation line - **2** - by pressing release buttons.

CAUTION: Locking flange may only be opened when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

cardiagn.com

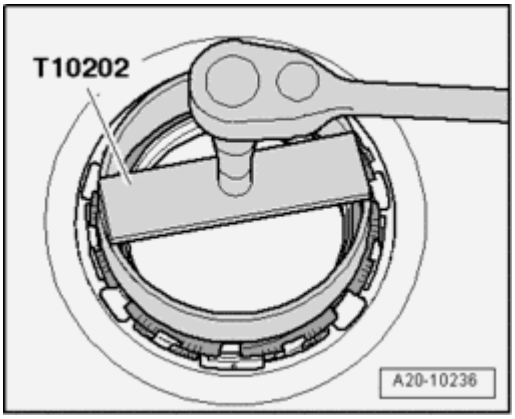


Fig. 432: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

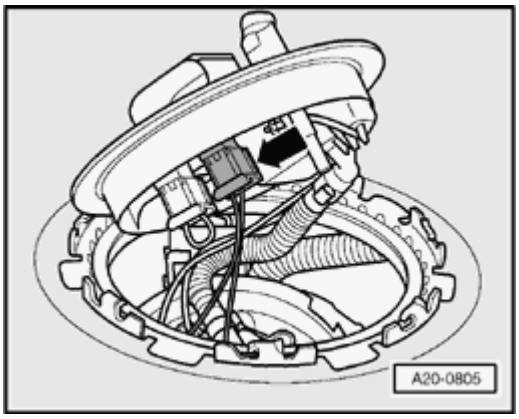


Fig. 433: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connection on the inner side of the locking flange - **arrow** -.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown in the following illustration.**

cardiagn.com

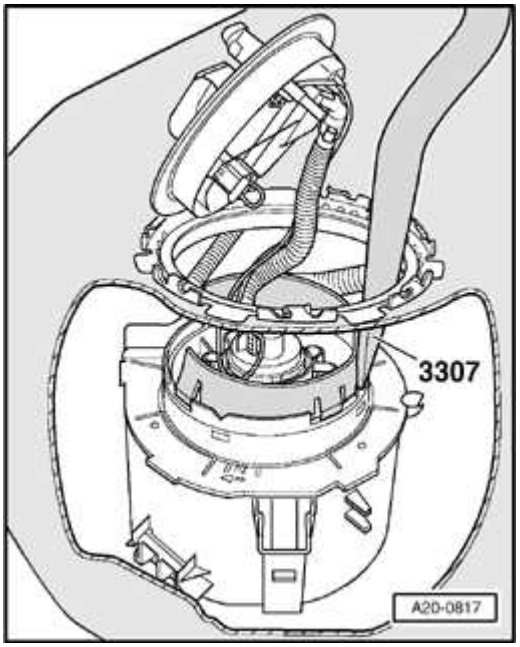


Fig. 434: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide fuel pump wrench 3307 through fuel tank opening and place it on fuel delivery unit.
- Release fuel delivery unit with fuel pump wrench 3307 , thereby turning approx. 15 ° toward left until stop (bayonet connection).

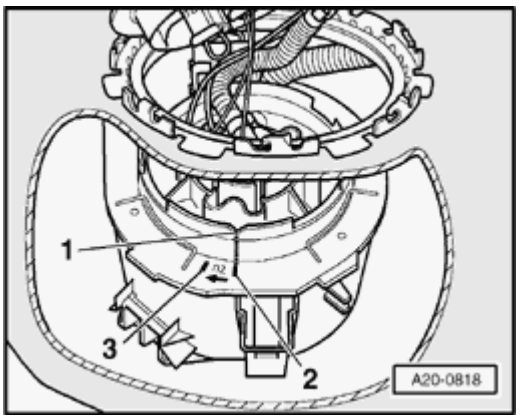


Fig. 435: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Notch - **1** - aligns with marking - **2** -.

- Remove fuel delivery unit.

NOTE:

- **Be aware that fuel is still in the fuel delivery unit.**

cardiagn.com

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**

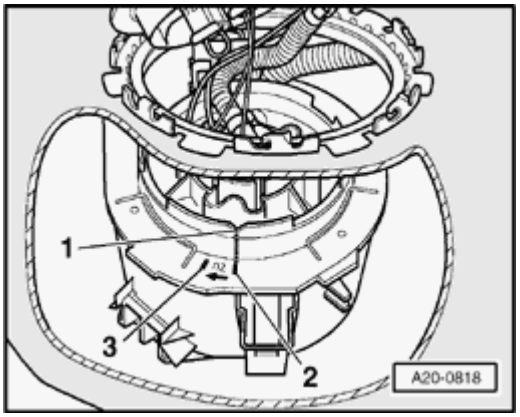


Fig. 436: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert fuel delivery unit into baffle housing in tank so that the notch - **1** - at fuel delivery unit aligns with marking - **2** - at baffle housing.

- Fuel delivery unit can be pressed downward significantly and noticeably.

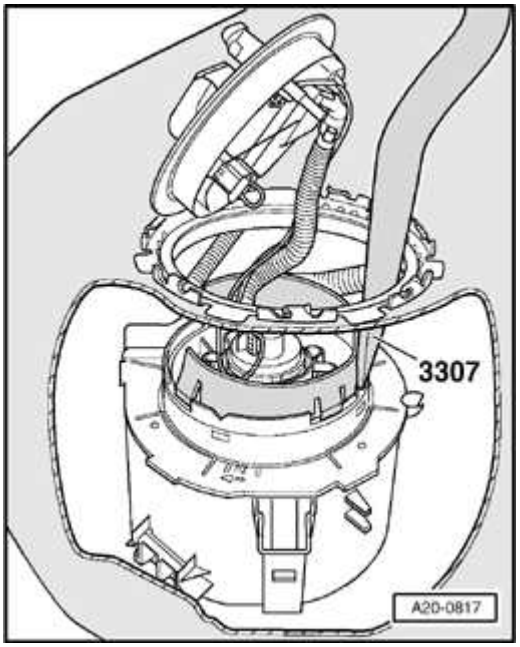


Fig. 437: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Guide fuel pump wrench 3307 through fuel tank opening and place it on fuel delivery unit.
- Fasten fuel delivery unit with fuel pump wrench 3307 , thereby turning approx. 15 ° toward right until stop (bayonet connection).

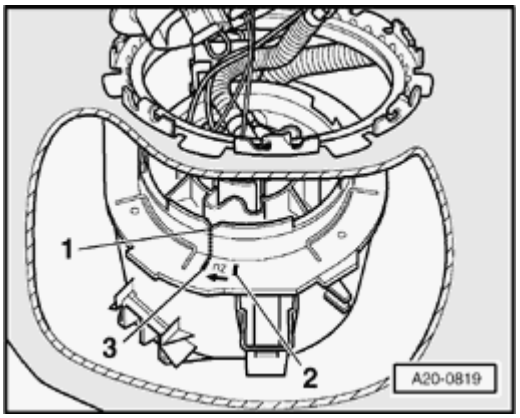


Fig. 438: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Notch - **1** - aligns with marking - **3** -.

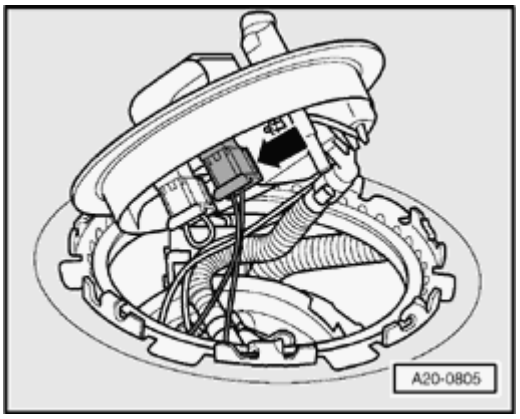


Fig. 439: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect electrical connection - **arrow** - on inner side of locking flange.
- Install new locking flange seal dry.
- Bring locking flange to installation position.

cardiagn.com

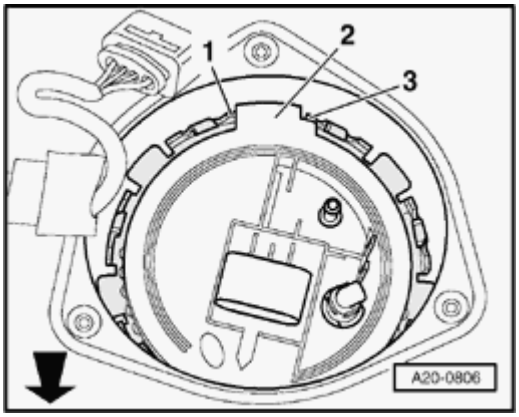


Fig. 440: Identifying Tab On Locking Flange Lies Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

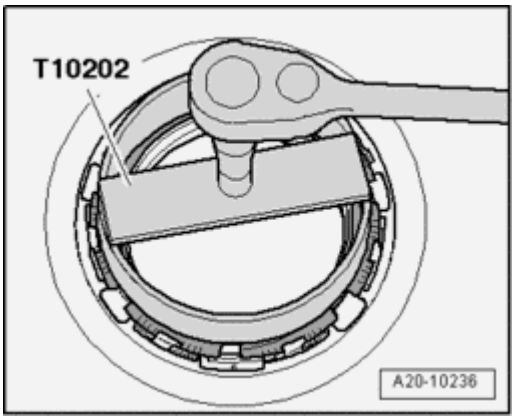


Fig. 441: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit	145

cardiagn.com

Fuel Level Sensor G , checking

Special tools, testers and auxiliary items required

Fig. 442: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 C

Fig. 443: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

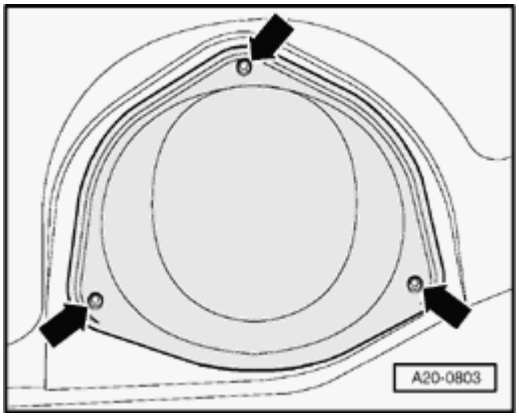


Fig. 444: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

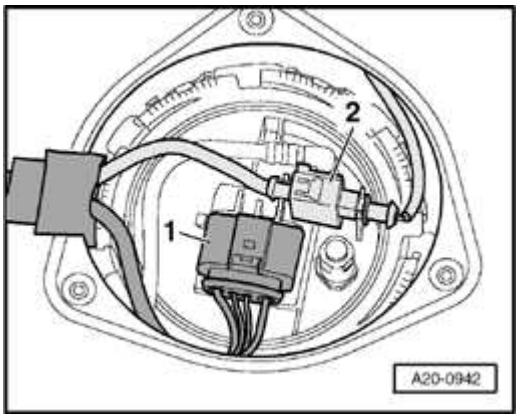
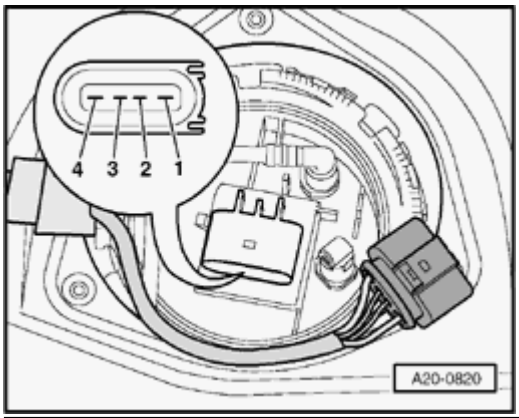


Fig. 445: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.

NOTE:

- **Ignore - 2 -.**



cardiagn.com

Fig. 446: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	295 to 305 ohms	56 to 68 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the fuel level sensor G must be removed --> Fuel Level Sensor G , removing and installing and the floater of the sensor must be pivoted to the upper or lower end position.**
- **With fuel level sensor G removed, the following values are obtained because of the greater deflection of the floater arm:**

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	295 to 305 ohms	52.7 to 57.9 ohms

Fuel Level Sensor G , removing and installing

Special tools, testers and auxiliary items required

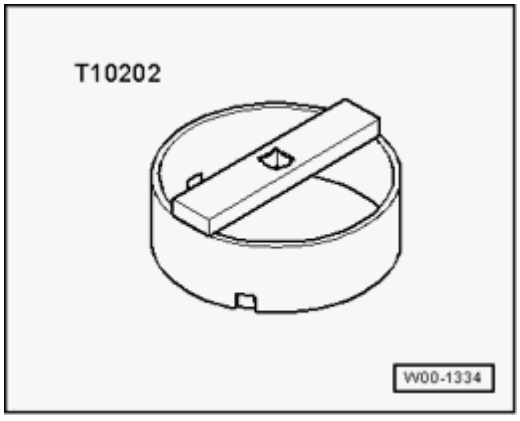


Fig. 447: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

cardiagn.com

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the locking flange, the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

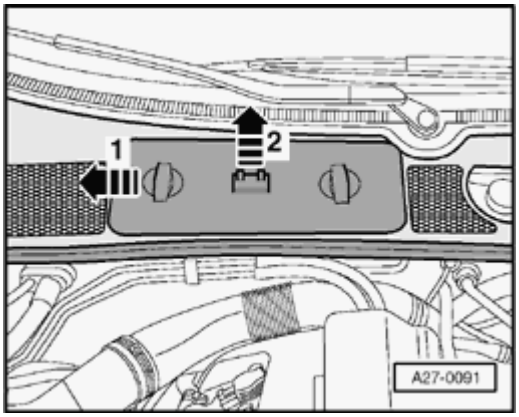


Fig. 448: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

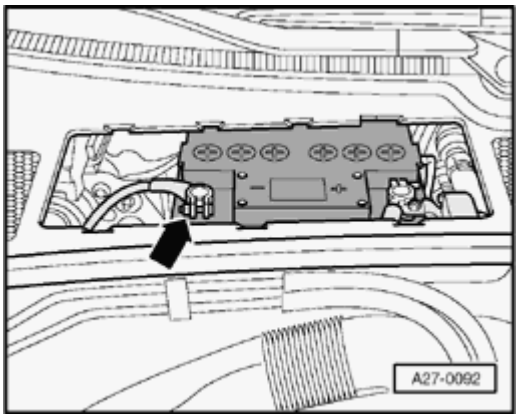


Fig. 449: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.

cardiagn.com

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

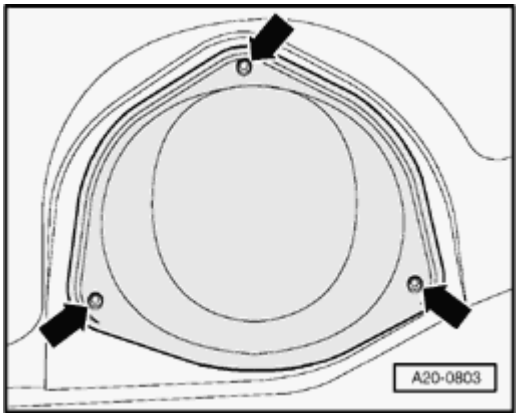


Fig. 450: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

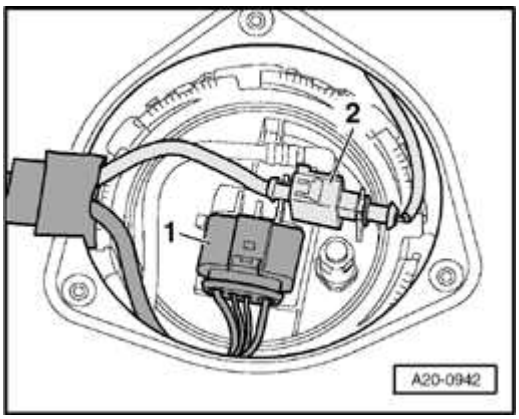


Fig. 451: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

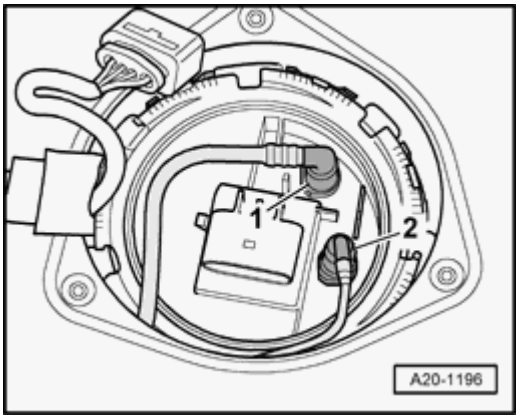


Fig. 452: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from locking flange by pressing release button.
- Disconnect ventilation line - **2** - by pressing release buttons.

CAUTION: Locking flange may only be opened when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

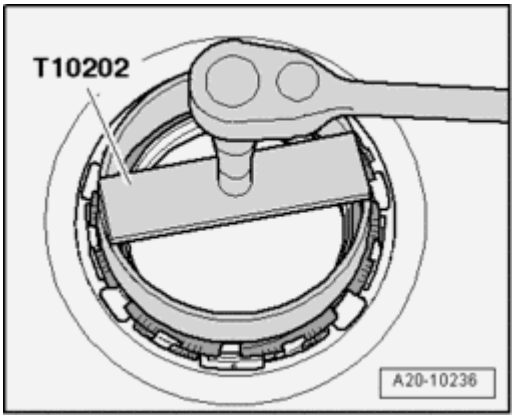


Fig. 453: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

cardiagn.com

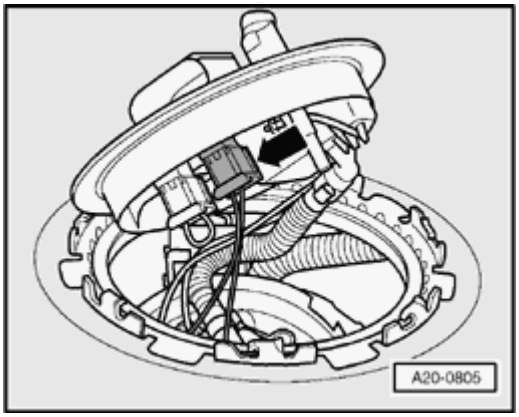


Fig. 454: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connection on inner side of locking flange - **arrow** -.

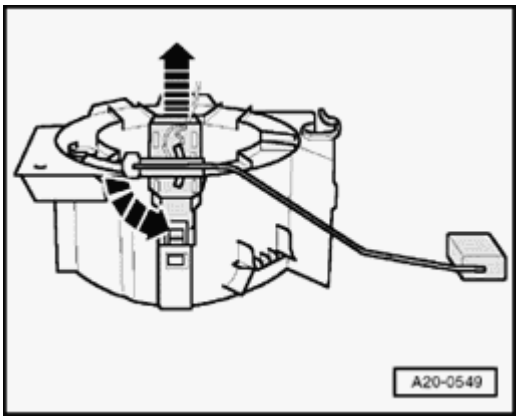


Fig. 455: Pressing Retaining Tab To Pull Out Fuel Level Sensor G From Guide In Baffle Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- While pressing retaining tab, pull out fuel level sensor G from guide in baffle housing - **arrows** -.

NOTE:

- **To improve clarity, the baffle housing is shown without the fuel tank.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**

cardiagn.com

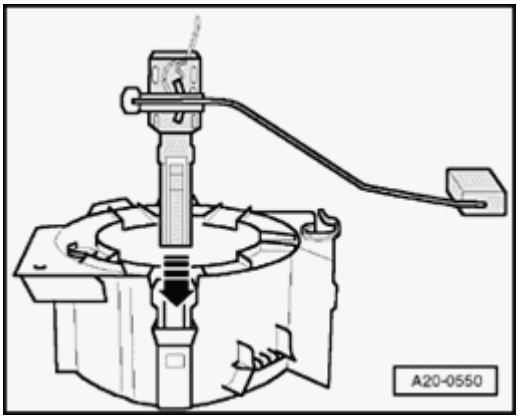


Fig. 456: Placing Fuel Level Sensor G Into Guide In Outer Part Of Baffle Housing And Pressing It Downward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place fuel level sensor G into guide in outer part of baffle housing and press it downward - **arrow** - until it is audibly engaged.

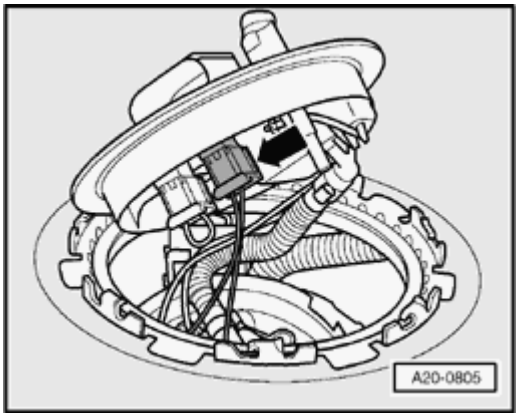


Fig. 457: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect electrical connection - **arrow** - on inner side of locking flange.
- Install new locking flange seal dry.
- Bring locking flange to installation position.

cardiagn.com

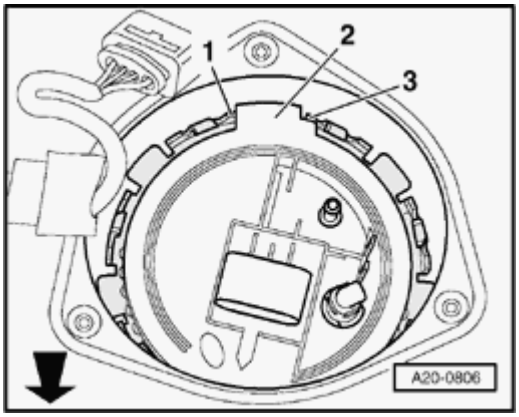


Fig. 458: Identifying Tab On Locking Flange Lies Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

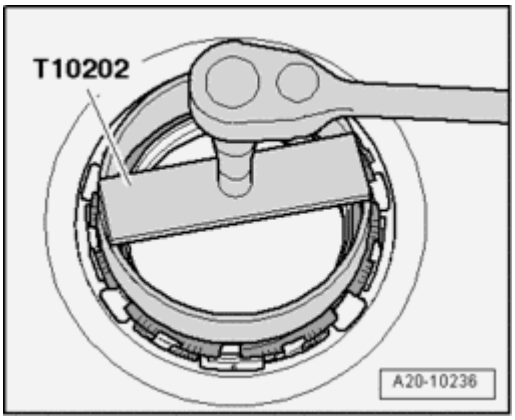


Fig. 459: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit	145

cardiagn.com

Fuel Level Sensor 2 G169 , checking

Special tools, testers and auxiliary items required

Fig. 460: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 C

Fig. 461: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

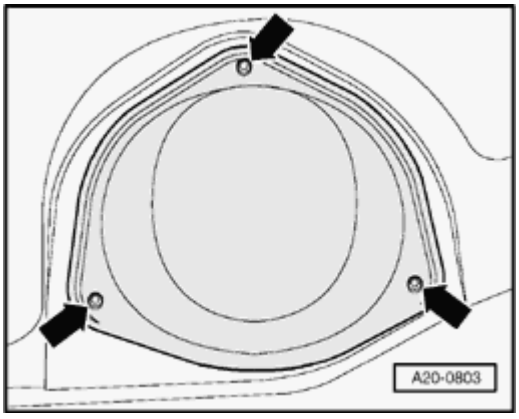


Fig. 462: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

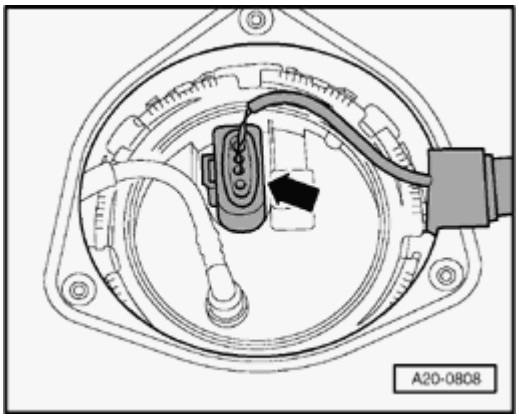


Fig. 463: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

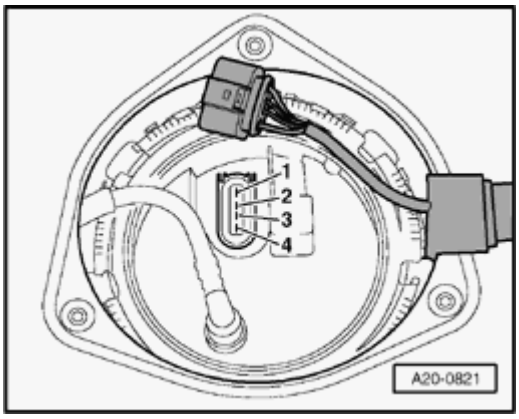


Fig. 464: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Connect hand multimeter V.A.G 1526 between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor 2 G169	275 to 296 ohms	47 to 65 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the Fuel Level Sensor 2 G169 must be removed --> Fuel Level Sensor 2 G169 , removing and installing and the floater of the sensor must be placed in upper or lower end position.**
- **With Fuel Level Sensor 2 G169 removed, the following values are obtained because of the greater deflection of the floater arm:**

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor 2 G169	295 to 305 ohms	45.5 to 48.1 ohms

Fuel Level Sensor 2 G169 , removing and installing

Special tools, testers and auxiliary items required

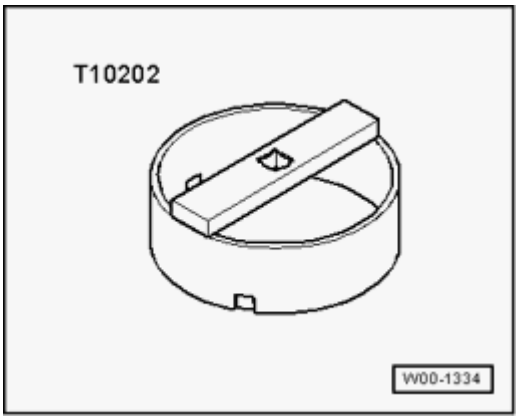


Fig. 465: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

cardiagn.com

- **To remove fuel level sensor 2 G169 , the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

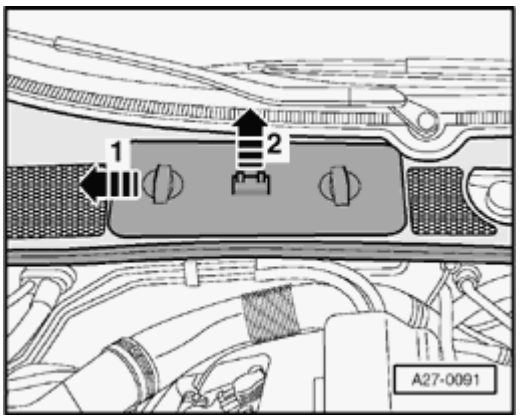


Fig. 466: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

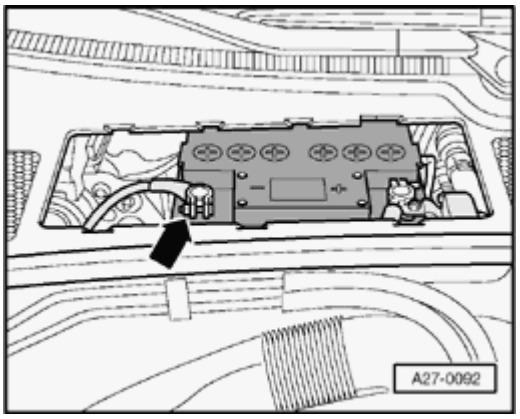


Fig. 467: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.
- Open fuel filler flap briefly and then close again.

cardiagn.com

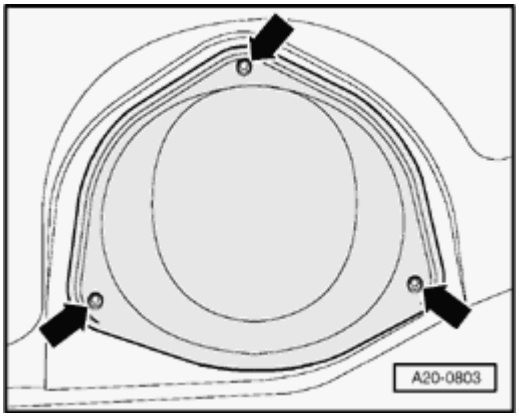


Fig. 468: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Unbolt cover for left locking flange - **arrows** -.

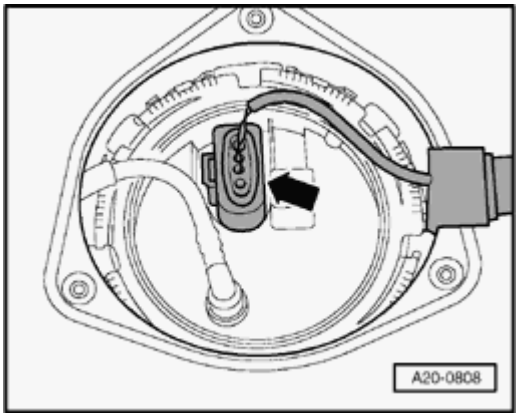


Fig. 469: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

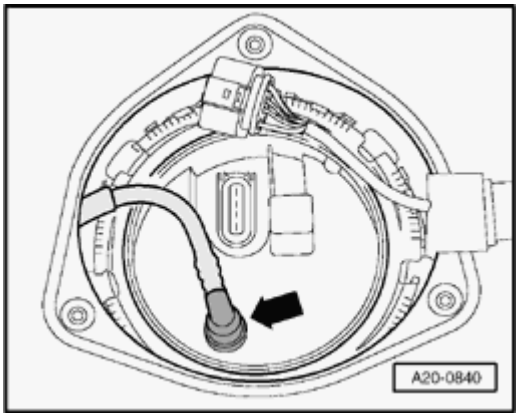


Fig. 470: Pulling Fuel Line Off From Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull fuel line - **arrow** - off from left locking flange, by pressing release button.

CAUTION: The fuel level sensor 2 G169 may only be removed when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

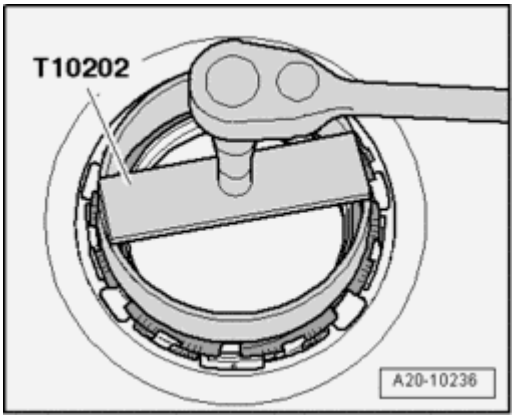


Fig. 471: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left locking ring using wrench T10202.
- Carefully pull locking flange with Fuel Level Sensor 2 G169 and seal slightly out of fuel tank opening.

cardiagn.com

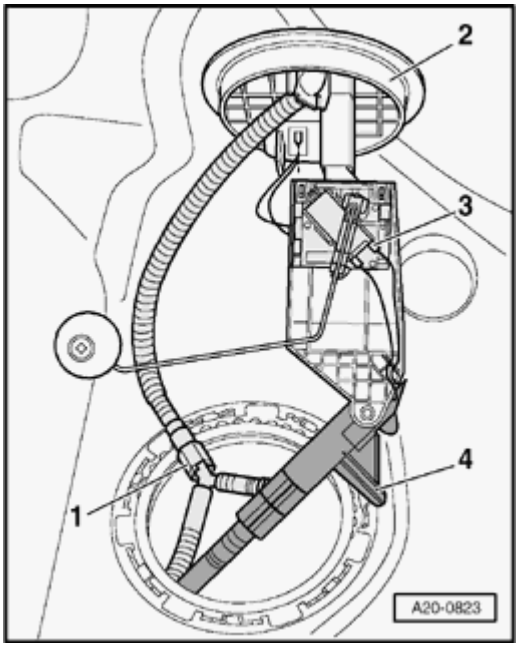


Fig. 472: Identifying Fuel Line, Locking Flange, Fuel Level Sensor 2 G169 & Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel line - **1** - from fuel tank.
- Pivot locking flange - **2** - with fuel level sensor 2 G169 - **3** - and suction jet pump - **4** - out of fuel tank opening.

NOTE:

- **When removing, be sure not to bend floater arm of fuel level sensor 2 G169.**

- Unclip suction jet pump from locking flange with Fuel Level Sensor 2 G169.

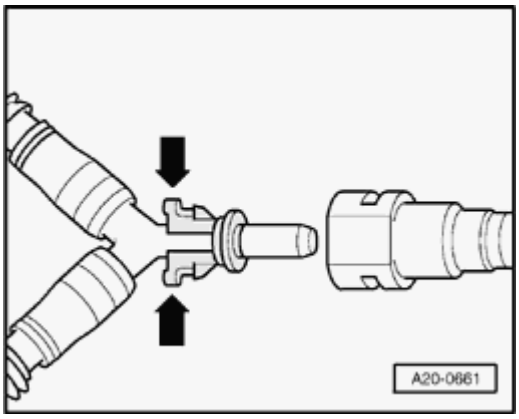


Fig. 473: Press Release Buttons And Separate Fuel Hose At Y-Fitting
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press release buttons - **arrows** - and separate fuel hose at the Y-fitting.

cardiagn.com

- Remove locking flange with fuel level sensor 2 G169.

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When installing, be sure not to bend floater arm of fuel level sensor 2 G169.**
- **Make sure fuel hose is seated securely.**

- Install new locking flange seal dry.
- Bring locking flange to installation position.

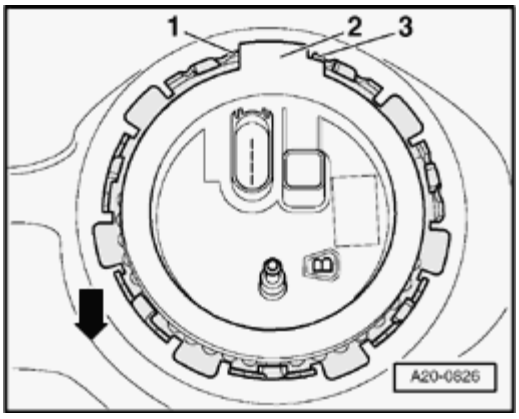


Fig. 474: Identifying Tab On Locking Flange Must Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

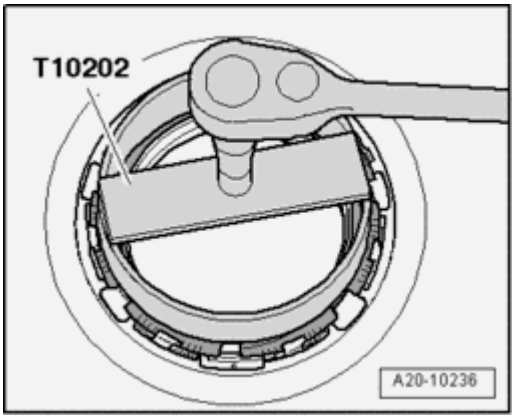


Fig. 475: Removing/Installing Locking Ring With Wrench T10202

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Lock ring for locking flange of fuel level sensor 2 G169	145

Suction jet pump, function

NOTE:

- **- Arrow - points in direction of travel.**

cardiagn.com

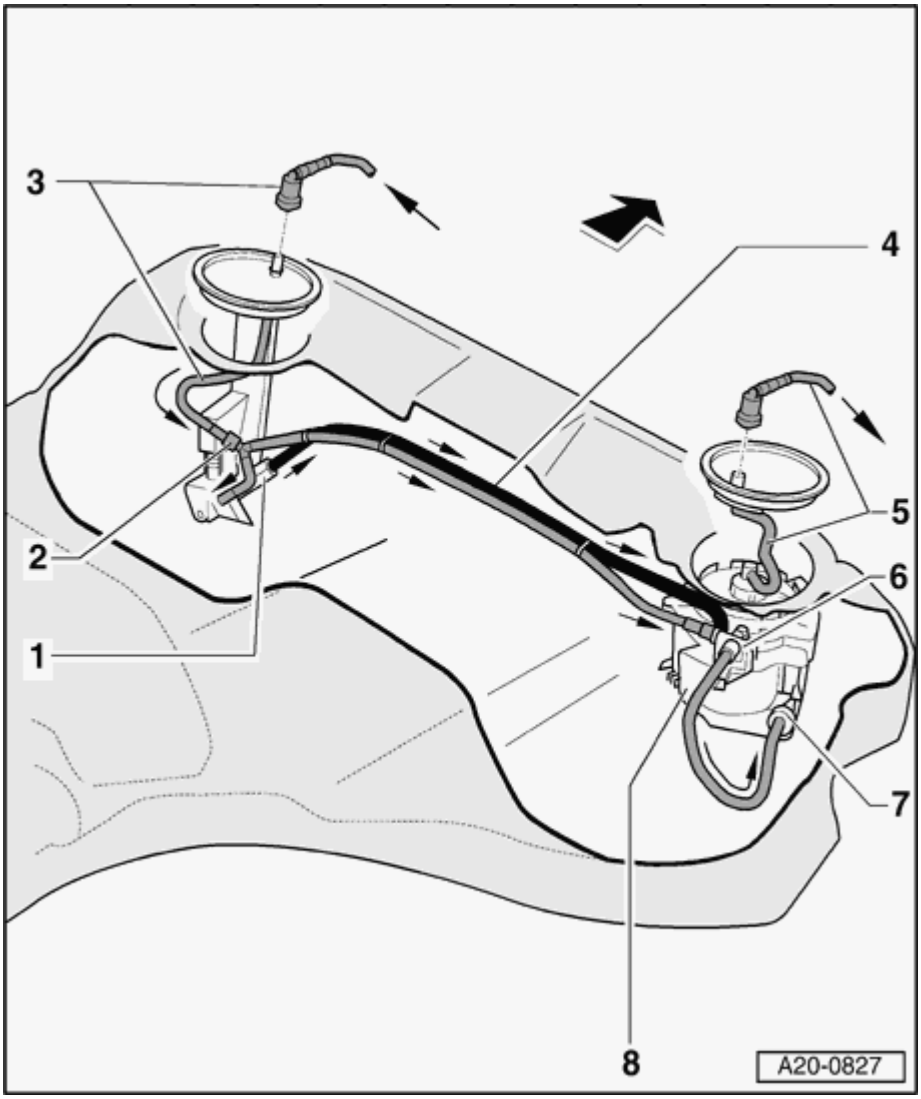


Fig. 476: Suction Jet Pump, Function
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Left suction jet pump

- The fuel tank in a vehicle with all-wheel drive is divided into a left and right chamber.
- To move the volume of fuel from the left fuel tank chamber to the right baffle housing - **8** - of the fuel delivery unit, a suction jet pump - **1** - is utilized.
- A second suction jet pump - **7** - is positioned in the right fuel tank chamber and improves the fuel supply to the baffle housing of the fuel delivery unit.
- Function of the suction jet pumps is based on a simple physical principle: A suction jet from the fuel return line - **3** - is compressed by a nozzle in the suction jet pumps - **1** - and - **7** - and is thereby accelerated. This acceleration causes the surrounding fuel to be drawn in and be forced to the baffle housing of the fuel delivery unit. The right suction jet pump - **7** - delivers directly into the baffle housing, the left suction jet pump - **1** - via a separate line - **4** -.

cardiagn.com

- The fuel from the return line is distributed to both suction jet pumps via the Y-fitting - **2** -. The distribution piece - **6** - limits the pressure in the lines to the suction jet pumps to approx. 1 bar. Excess fuel is guided into the baffle housing via a direct line.

Suction jet pump in left fuel tank chamber, removing and installing

Special tools, testers and auxiliary items required

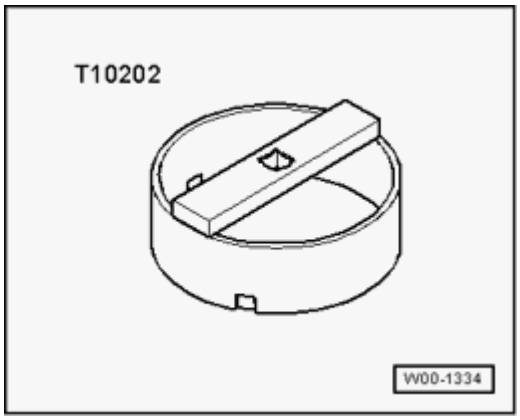


Fig. 477: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

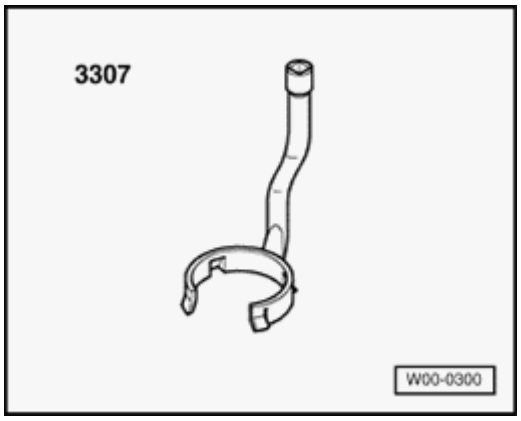


Fig. 478: Fuel Pump Wrench 3307
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel pump wrench 3307

Removing

NOTE:

- **The following describes removal of suction jet pump for left half of fuel tank. The suction jet pump for the right side of the fuel tank is a component of the baffle housing and cannot be replaced separately.**

cardiagn.com

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the suction jet pump for the left fuel tank chamber, the fuel tank may only be filled to a maximum of $^{1}/_{4}$ full. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

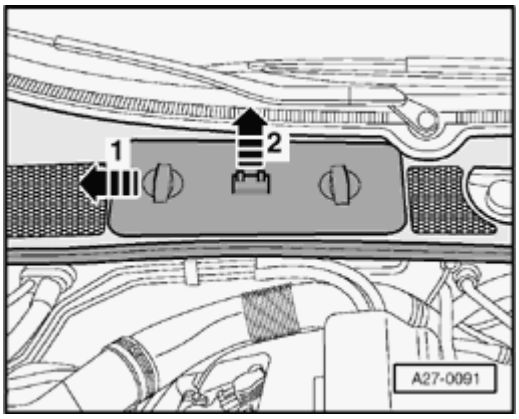


Fig. 479: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

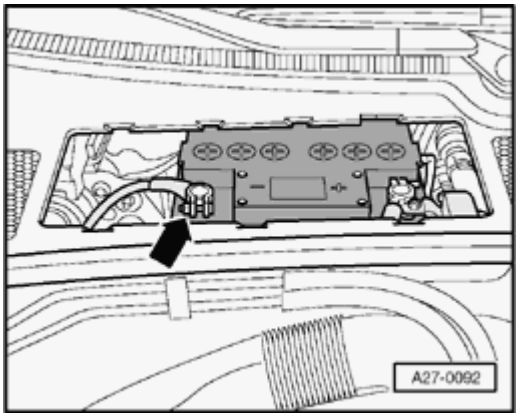


Fig. 480: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

cardiagn.com

- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

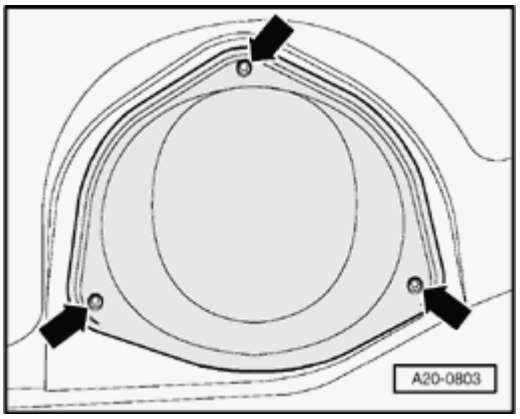


Fig. 481: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

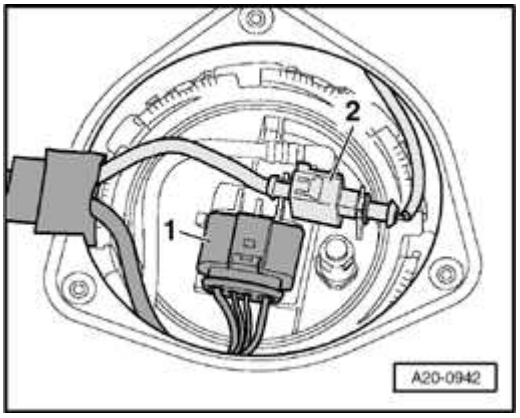


Fig. 482: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **1** - at right locking flange.
- Disengage electrical harness connector - **2** - and lay it aside.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

cardiagn.com

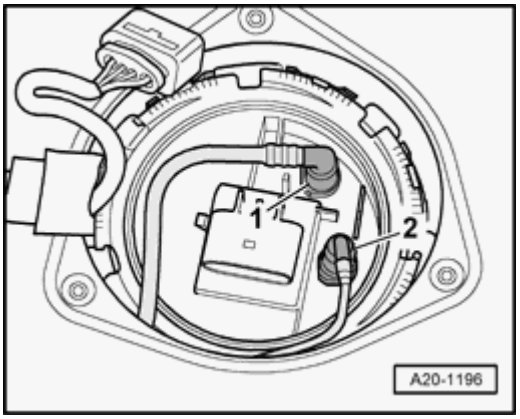


Fig. 483: Identifying Fuel Line & Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **1** - from right locking flange by pressing release button.
- Disconnect ventilation line - **2** - by pressing release buttons.

CAUTION: Locking flange may only be opened when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

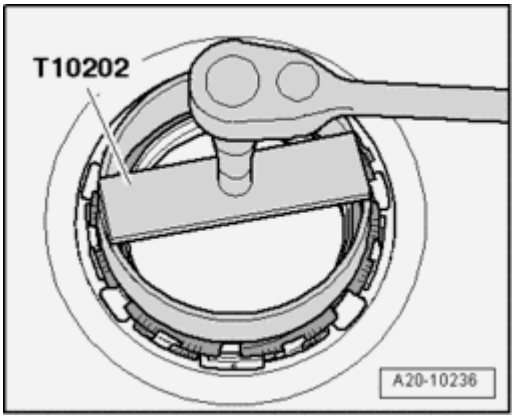


Fig. 484: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.

cardiagn.com

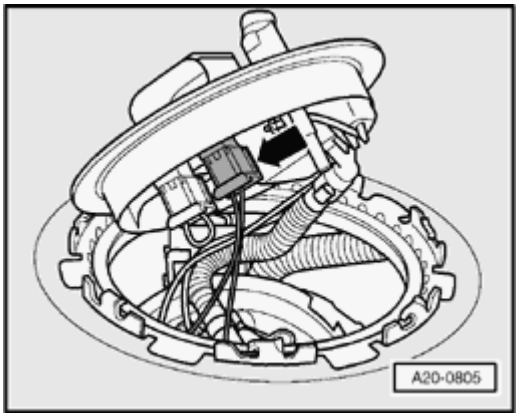


Fig. 485: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull locking flange and sealing ring from opening of fuel tank.
- Disconnect electrical connection on inner side of locking flange - **arrow** -.

NOTE:

- **To improve clarity, a cross-sectional view of the fuel tank is shown in the following illustration.**

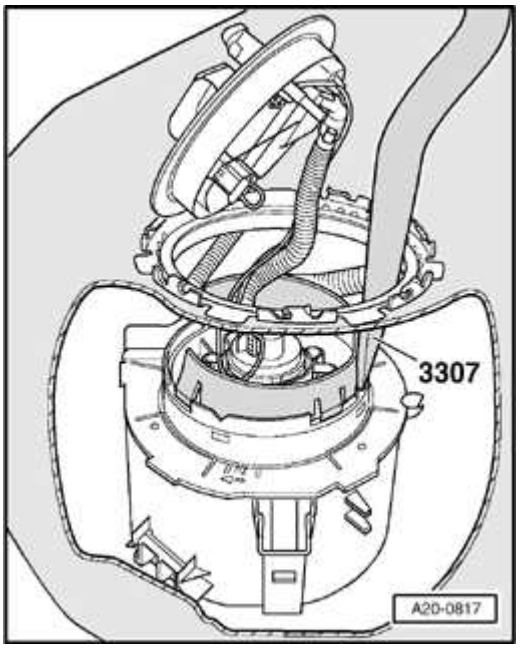


Fig. 486: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide fuel pump wrench 3307 through fuel tank opening and place it on fuel delivery unit.
- Release fuel delivery unit with fuel pump wrench 3307 , thereby turning approx. 15 ° toward left until stop (bayonet connection).

cardiagn.com

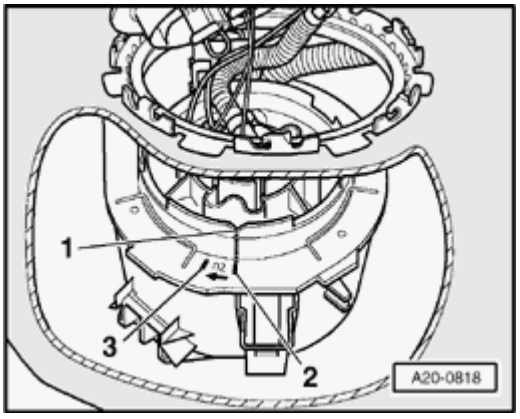


Fig. 487: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Notch - **1** - aligns with marking - **2** -.

- Remove fuel delivery unit.

NOTE:

- **Be aware that fuel is still in the fuel delivery unit.**

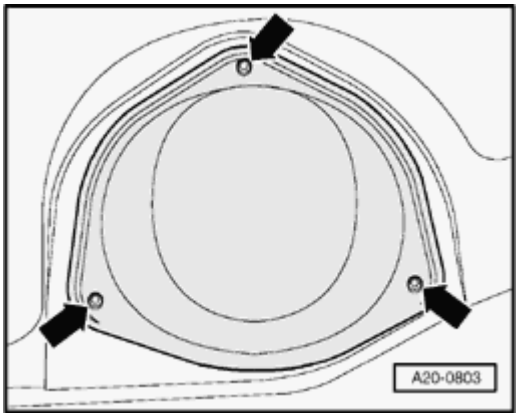


Fig. 488: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

cardiagn.com

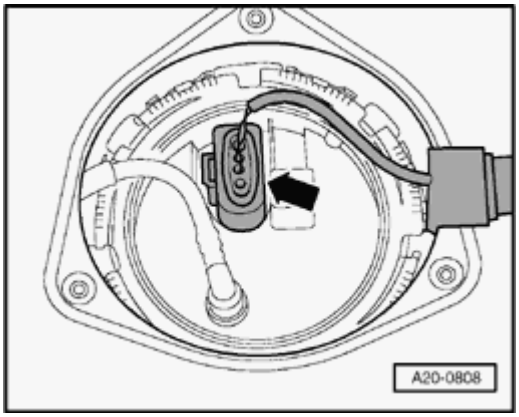


Fig. 489: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

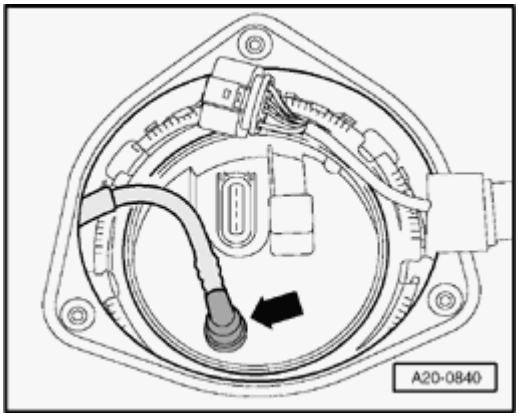


Fig. 490: Pulling Fuel Line Off From Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull fuel line - **arrow** - off from left locking flange, by pressing release button.

cardiagn.com

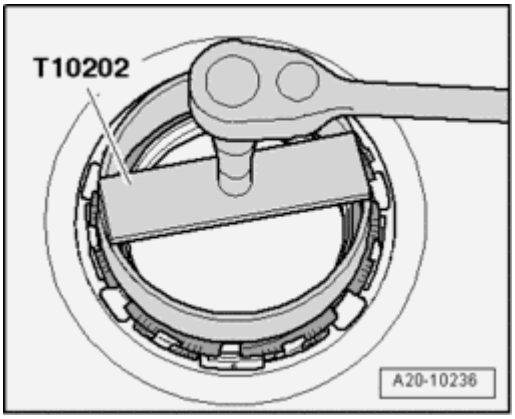


Fig. 491: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left locking ring using wrench T10202.

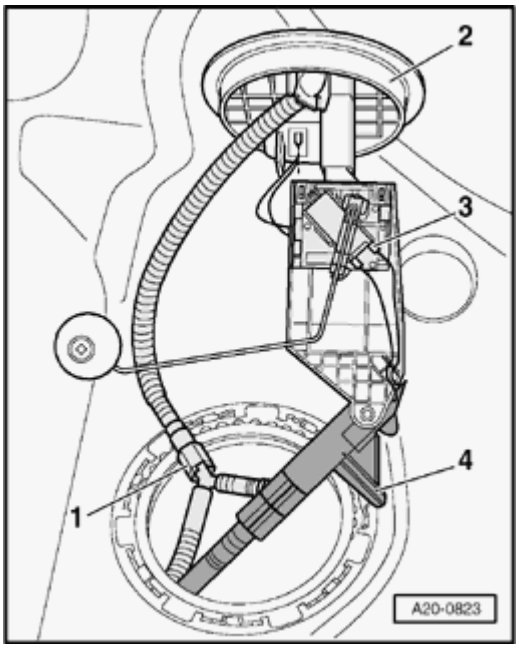


Fig. 492: Identifying Fuel Line, Locking Flange, Fuel Level Sensor 2 G169 & Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pull locking flange with Fuel Level Sensor 2 G169 and seal slightly out of fuel tank opening.
- Remove fuel line - **1** - from fuel tank.
- Pivot locking flange - **2** - with fuel level sensor 2 G169 - **3** - and suction jet pump - **4** - out of fuel tank opening.

NOTE:

- **When removing, be sure not to bend floater arm of fuel level sensor 2 G169.**

cardiagn.com

- Unclip suction jet pump from locking flange with Fuel Level Sensor 2 G169.

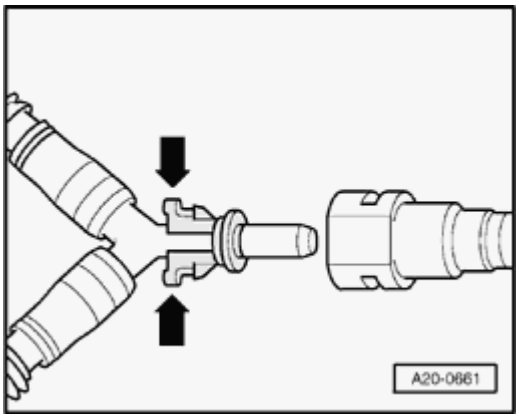


Fig. 493: Press Release Buttons And Separate Fuel Hose At Y-Fitting
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press release buttons - **arrows** - and separate fuel hose at the Y-fitting.

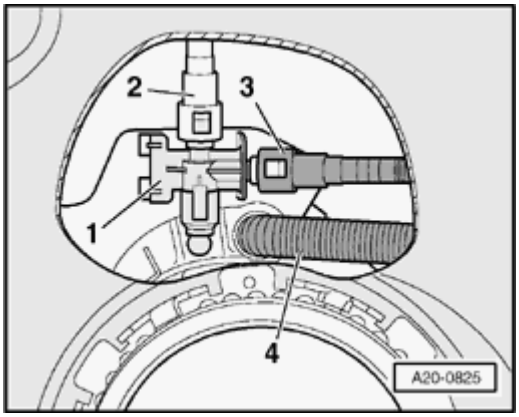


Fig. 494: Identifying Suction Jet Line, Distribution Piece, Fuel Return Line & Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach into fuel tank opening on right side of vehicle and pull suction jet line - **4** - out of baffle housing.
- Push distribution piece - **1** - toward right and unclip it from baffle housing.
- Disconnect fuel return line - **3** - at distribution piece - **1** -.

NOTE:

- **The fuel line - 2 - remains connected.**

- Reach into fuel tank opening on left side of vehicle and pull suction jet pump with lines out toward left.

Installing

Installation is in reverse order of removal. Note the following:

cardiagn.com

NOTE:

- **Replace seals.**
- **Make sure fuel hoses are seated securely.**

- Push suction jet pump with lines at left side of vehicle into fuel tank opening.
- Reach into fuel tank opening on right side of vehicle and pull suction jet pump with lines into installed position.

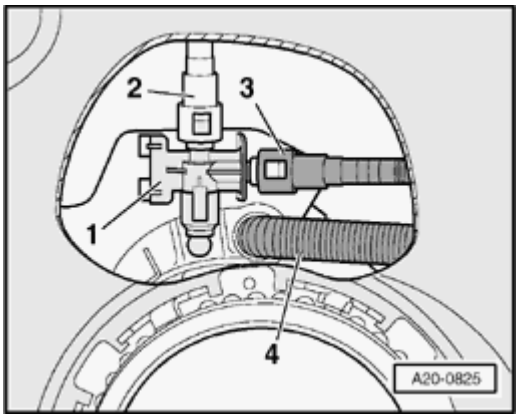


Fig. 495: Identifying Suction Jet Line, Distribution Piece, Fuel Return Line & Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push fuel return line - **3** - on at distribution piece - **1** - , until hose couplings are engaged.
- Clip distribution piece to baffle housing.
- Insert fuel delivery line - **4** - into corresponding hole of baffle housing.

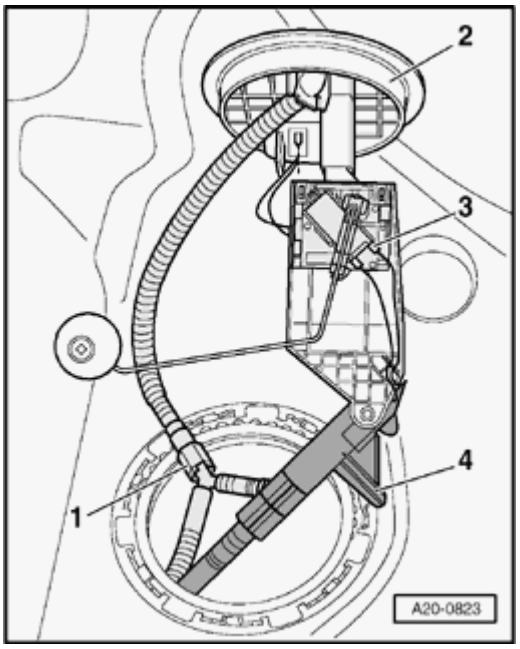


Fig. 496: Identifying Fuel Line, Locking Flange, Fuel Level Sensor 2 G169 & Suction Jet Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Clip suction jet pump - **4** - to locking flange - **2** - of fuel level sensor 2 G169 , and connect fuel line to Y-coupling - **1** -.

NOTE:

- **When installing, be sure not to bend floater arm of fuel level sensor 2 G169.**

- Install new locking flange seal dry.
- Bring locking flange of Fuel Level Sensor 2 G169 to installation position.

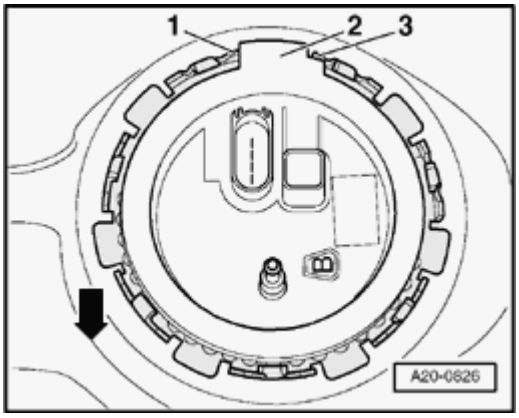


Fig. 497: Identifying Tab On Locking Flange Must Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

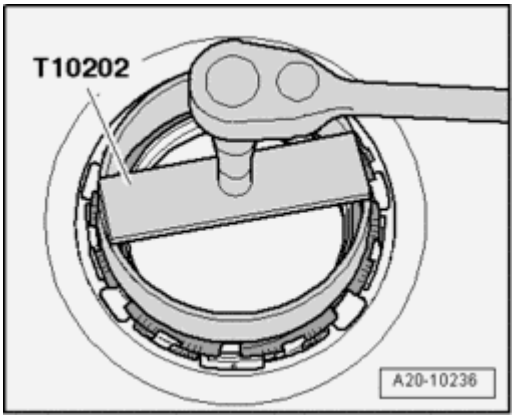


Fig. 498: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.

NOTE:

cardiagn.com

- **To improve clarity, a cross-sectional view of the fuel tank is shown in the following illustration.**

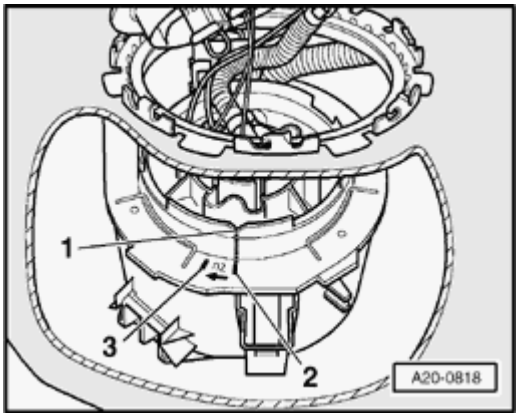


Fig. 499: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert fuel delivery unit into baffle housing in tank so that the notch - **1** - at the fuel delivery unit aligns with marking - **2** - at baffle housing.

- Fuel delivery unit can be pressed downward significantly and noticeably.

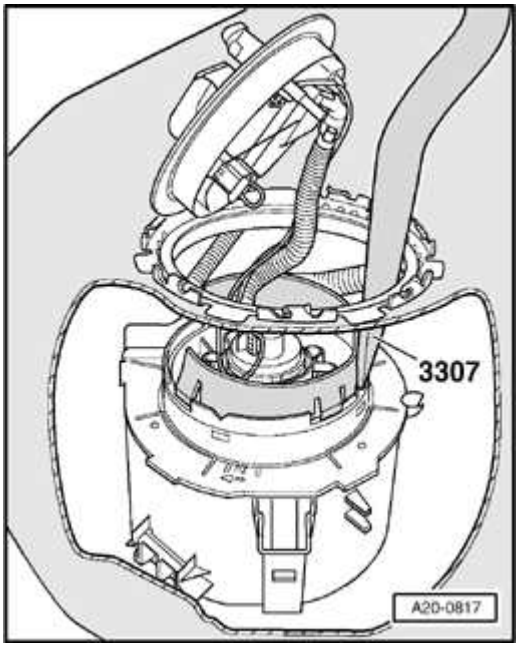


Fig. 500: Guiding Fuel Pump Wrench 3307 Through Fuel Tank Opening And Placing It On Fuel Delivery Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Guide fuel pump wrench 3307 through fuel tank opening and place it on fuel delivery unit.
- Fasten fuel delivery unit with fuel pump wrench 3307 , thereby turning approx. 15 ° toward right until

cardiagn.com

stop (bayonet connection).

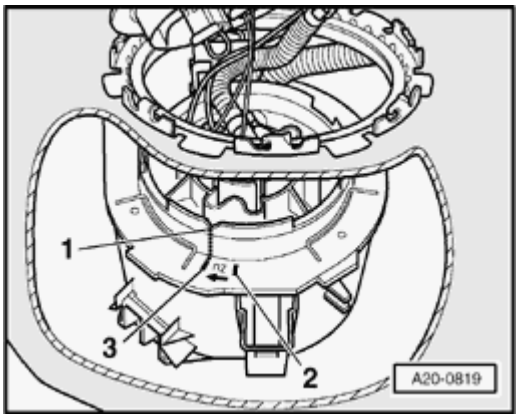


Fig. 501: Identifying Notch Aligns With Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Notch - **1** - aligns with marking - **3** -.

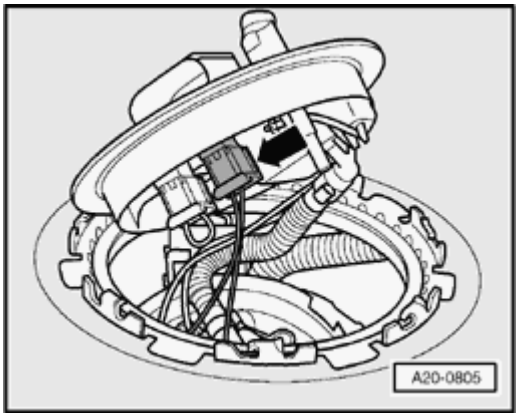


Fig. 502: Separating Electrical Connection On Inner Side Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect electrical connection - **arrow** - on inner side of locking flange.
- Install new locking flange seal dry.
- Bring locking flange to installation position.

cardiagn.com

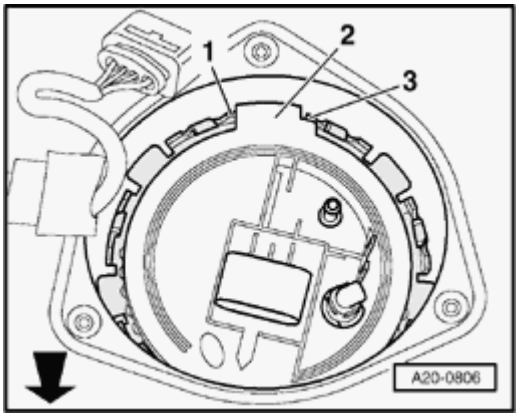


Fig. 503: Identifying Tab On Locking Flange Lies Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

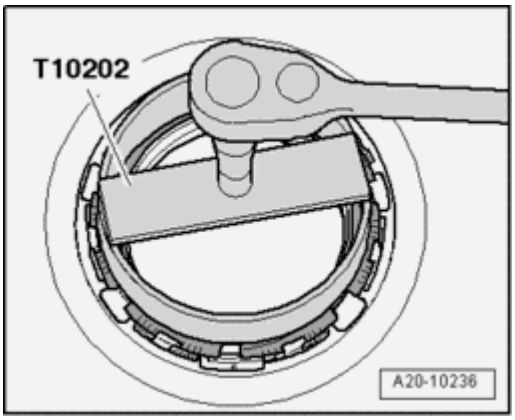


Fig. 504: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit or Fuel Level Sensor 2 G169 locking flange	145

cardiagn.com

Fuel Tank Lock Switch F314 , checking

The Fuel Tank Lock Switch F314 consists of a reed contact on fuel filler tube and a fuel tank cap with an embedded magnet. If fuel tank cap is not fully screwed on, the reed contact switches on an indicator in instrument cluster.

Special tools, testers and auxiliary items required

Fig. 505: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 C

Fig. 506: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

- If indicator is lit, check the following points in order:

- Fuel tank cap is completely screwed on.
- Correct fuel tank cap (Identification: Threads are gray in color).

cardiagn.com

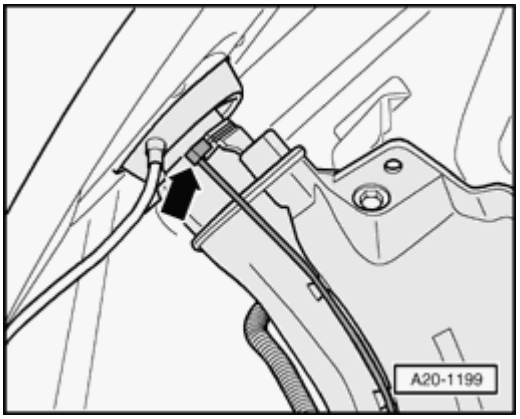


Fig. 507: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Switch - **arrow** - at fuel filler tube is fully inserted.
- Electrical malfunction in switch.
- Wiring connection to instrument cluster is faulty (check according to schematics).

Fuel Tank Lock Switch F314 , checking electrical

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

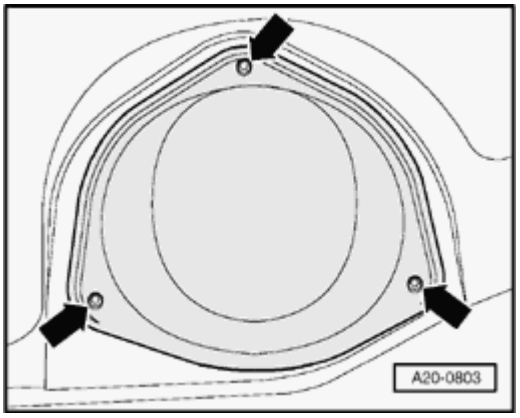


Fig. 508: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

cardiagn.com

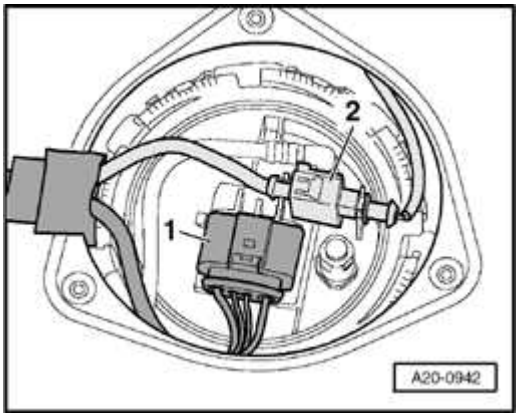


Fig. 509: Identifying Right Locking Flange Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **2** -.

NOTE:

- **Ignore - 1 -.**

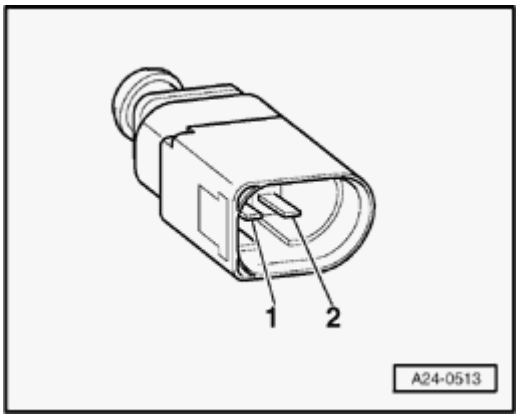


Fig. 510: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 between terminal - **1** - and - **2** - for resistance measurement.

Fuel tank cap	Specified value
Screwed on tight	Less than 1 ohms
Not or incorrectly screwed on	infinity ohms

If specifications are not obtained:

- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

cardiagn.com

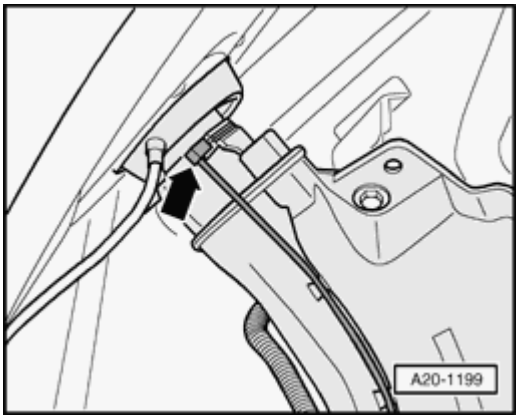


Fig. 511: Identifying Switch At Fuel Filler Tube Is Fully Inserted
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace Fuel Tank Lock Switch F314 - **arrow** - , thereby unclipping and clipping in the switch and electrical wiring at fuel filler tube.

FUEL SUPPLY SYSTEM, VEHICLES WITH ALL WHEEL DRIVE AS OF 11.04

Fuel tank with attachments, assembly overview

cardiagn.com

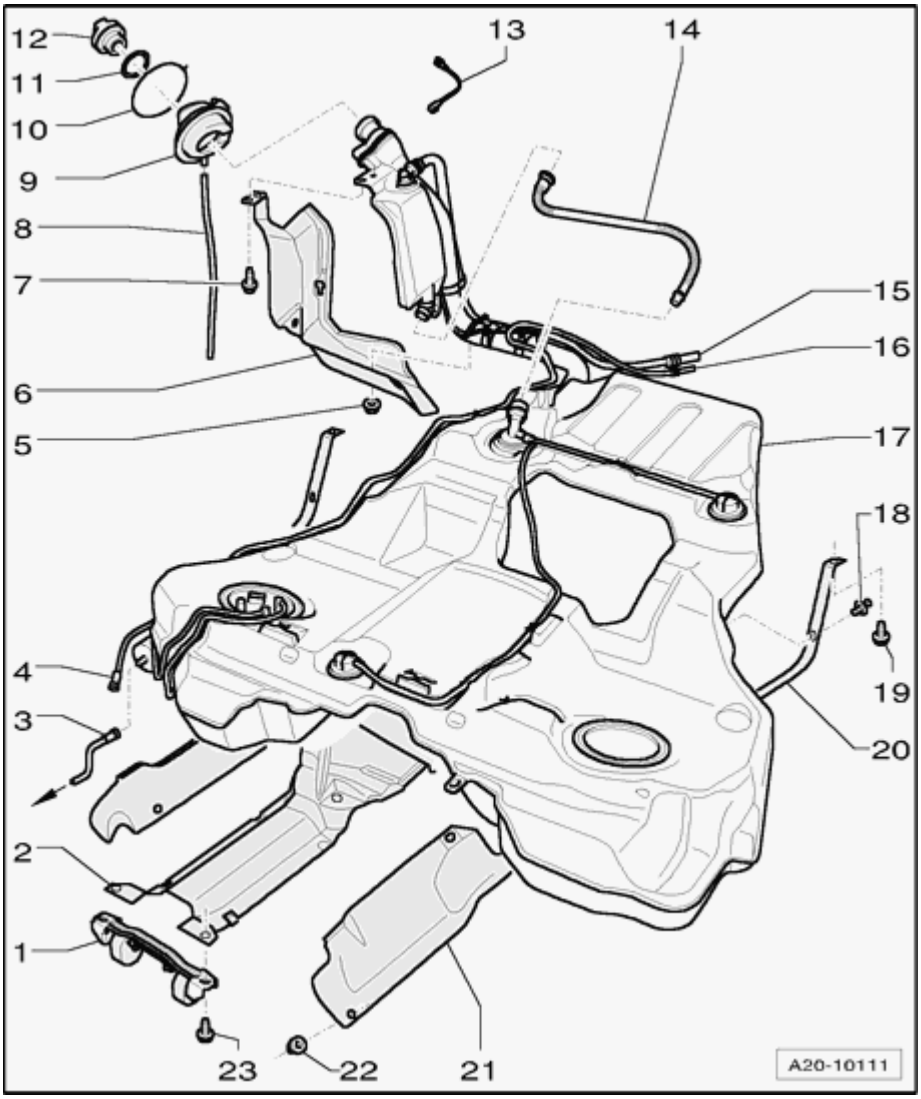


Fig. 512: Fuel Tank With Attachments, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bracket

- For exhaust system

2 - Carrier plate

3 - Fuel line

- From fuel filter
- To engine
- Do not kink
- To disconnect, press release button on connection piece

cardiagn.com

4 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Do not kink
- To disconnect, press release button on connection piece
- Clipped in on fuel tank

5 - 2 Nm

6 - Tire protection shield

- For fuel delivery connection

7 - 23 Nm

8 - Overflow hose

9 - Rubber gasket

10 - Circlip

11 - Seal

- Replace if damaged

12 - Cap

13 - Ground (GND) connection

- For discharging electrostatic charge
- Installed position/check requirements **Installation position of Ground (GND) connection**
- After installing, check electrical connection of metal ring at fuel filler tube to a bare area of chassis using Ohm meter - Specified value: approx. 0ohms

14 - Ventilation line

15 - Ventilation line

- From gravity valve to EVAP canister
- To remove, press release ring on EVAP canister

16 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- To remove, press release ring on EVAP canister

cardiagn.com

- Clipped in on fuel tank

17 - Fuel tank

- Removing and installing --> **Fuel tank with attachments, removing and installing**

18 - Spreader clip

19 - 23 Nm

20 - Securing strap

21 - Heat shield

- For fuel tank

22 - 2 Nm

23 - 23 Nm

Installation position of Ground (GND) connection

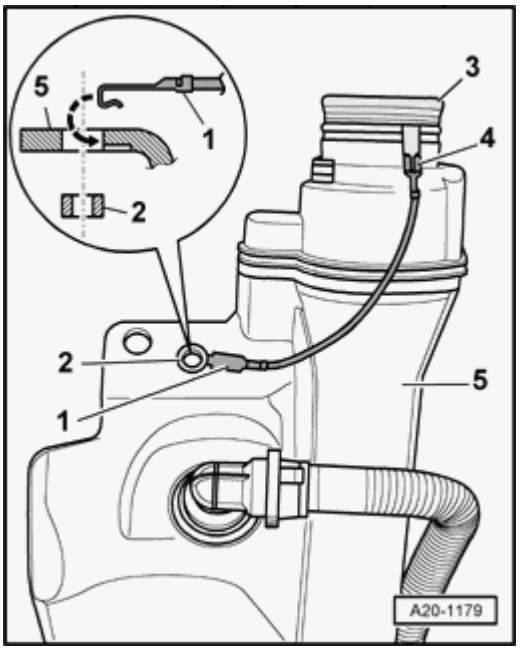


Fig. 513: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route Ground (GND) connection as shown in .
- First hook Ground (GND) connection contact - **1** - into securing hole on fuel tank - **5** - and then press in spacer bushing - **2** -.

cardiagn.com

- Make sure connector of Ground (GND) connection - **4** - fits securely at metal ring - **3** - of fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

Fuel tank, draining

Special tools, testers and auxiliary items required

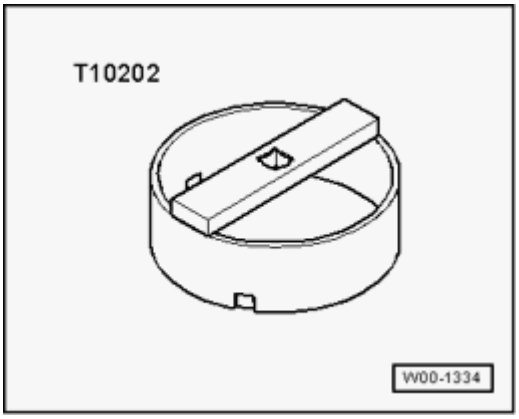


Fig. 514: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

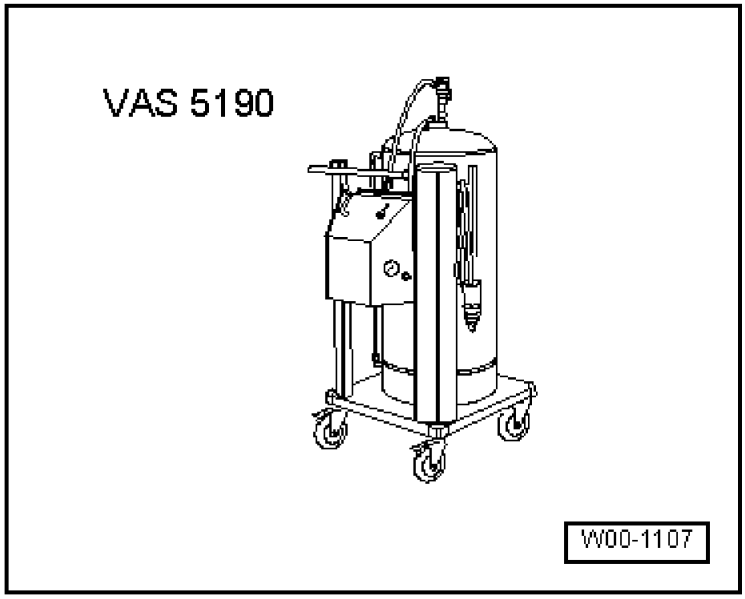


Fig. 515: Identifying Fuel Extraction Unit VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Fuel siphoning unit VAS 5190

Work procedure

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

All except Audi RS4:

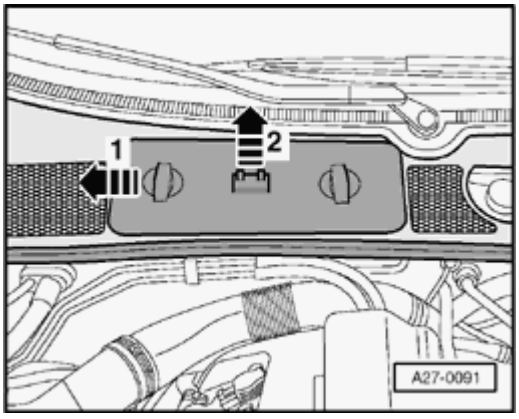


Fig. 516: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

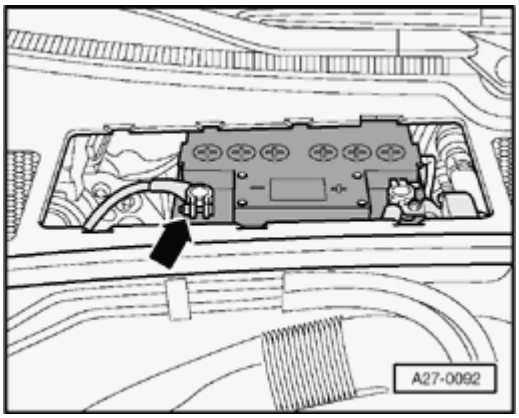


Fig. 517: Locating Battery Ground Strap

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Audi RS4:

- Raise luggage compartment floor covering and secure.

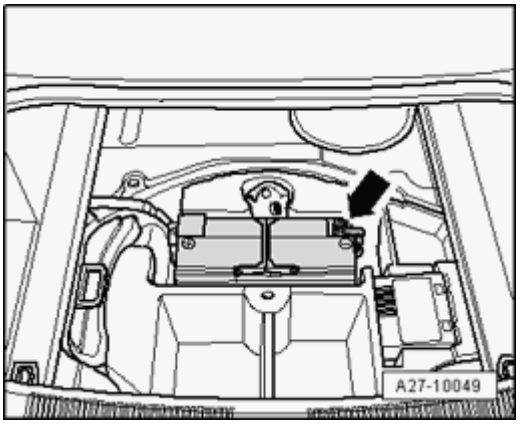
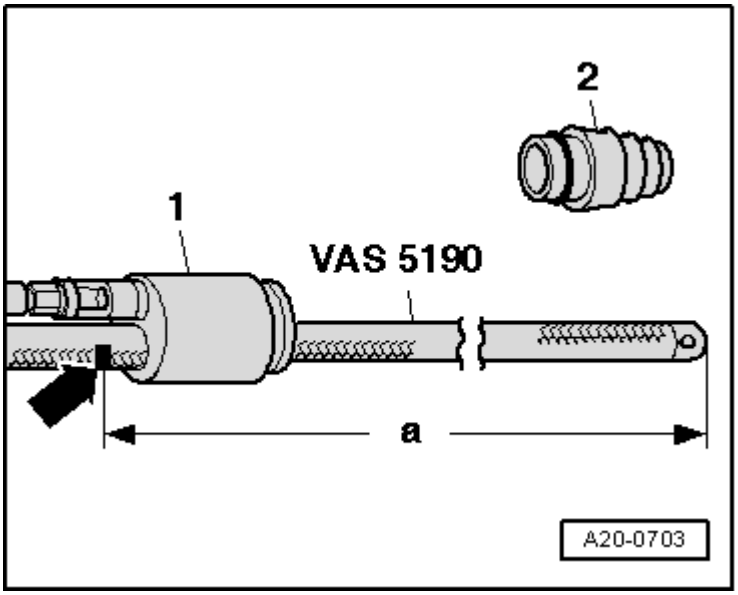


Fig. 518: Disconnecting Battery Ground (GND) Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

All:

CAUTION: Secure Ground (GND) wire of fuel extraction unit VAS 5190 to a bare area of the chassis.



cardiagn.com

Fig. 519: Pulling Cone Piece From Shaft Piece Of Fuel Siphoning Device VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull cone piece - **2** - from shaft end - **1** - of fuel extraction unit VAS 5190.
- Using insulating tape, apply a mark - **arrow** - on hose at length - **a** - = 1,865 mm from end of suction hose.
- Remove fuel filler cap from fuel filler tube.

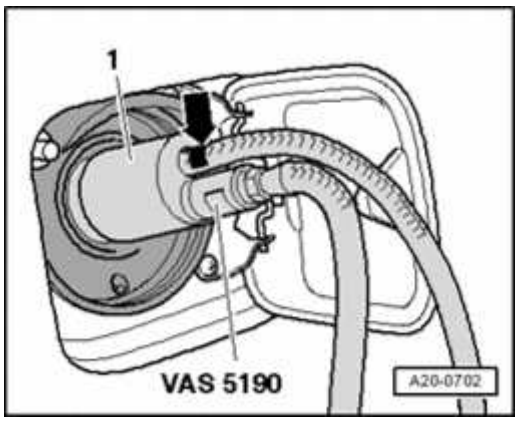


Fig. 520: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Screw shaft end - **1** - of fuel extraction unit VAS 5190 on to fuel filler tube of fuel tank.
- Push suction hose as far into fuel tank until mark applied earlier - **arrow** - is positioned on shaft end.

NOTE:

- **If using a siphoning device without shaft end, proceed basically in the same manner.**

cardiagn.com

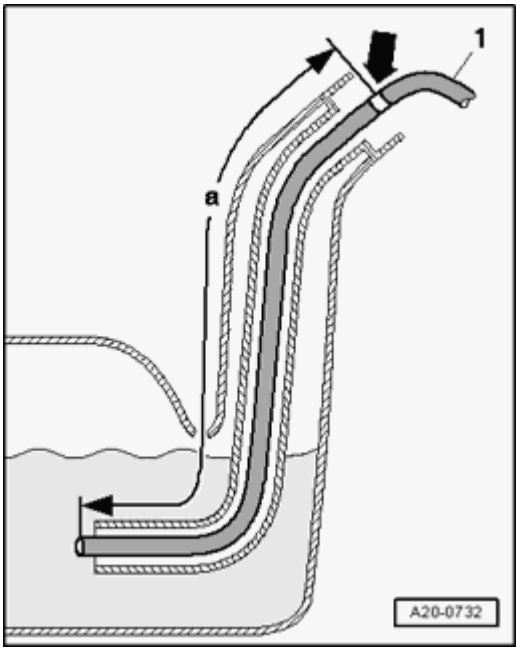
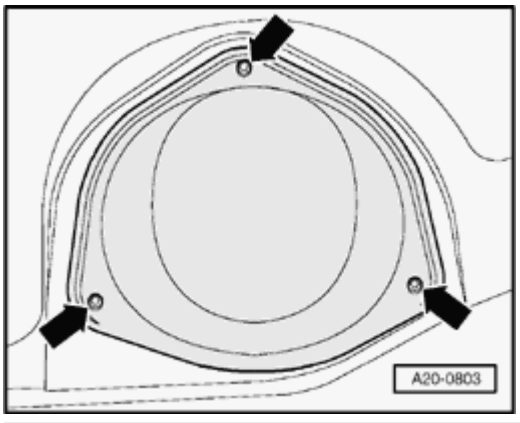


Fig. 521: Sliding Suction Hose As Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In this case, apply a mark - **arrow** - using insulating tape on hose at length - **a** - = 1,800 mm from end of suction hose. The suction hose is inserted correctly when the marking applied earlier stands opposite the lip of fuel filler tube.
- If the hose can only be inserted with difficulty, coat it thinly with engine oil. Never use lubricants containing silicon.

- Drain fuel tank through fuel filler tube as much as possible.
- Carefully pull out suction hose.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.



cardiagn.com

Fig. 522: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.
- Disconnect electrical harness connector - **arrow** - at right locking flange.

Audi RS4:

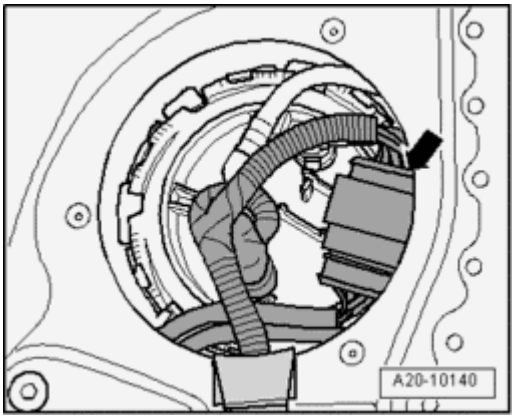


Fig. 523: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up electrical connector - **arrow** - for Fuel Pump (FP) Control Module J538 and disconnect.

All:

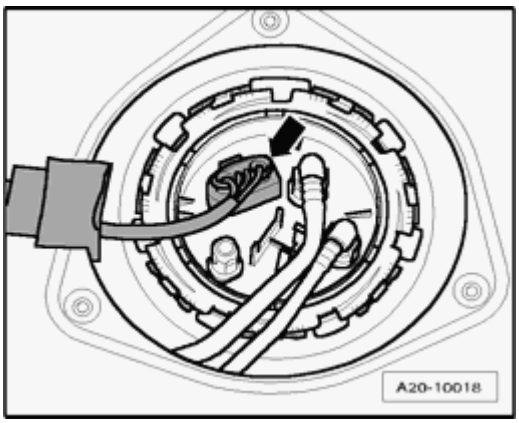


Fig. 524: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.

cardiagn.com

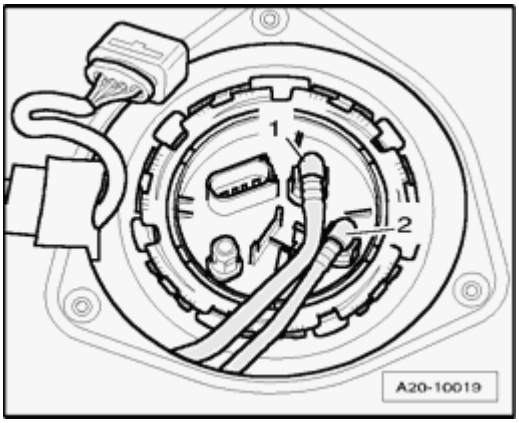


Fig. 525: Identifying Fuel Return Line And Fuel Supply Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark fuel return line - **1** - and fuel supply line - **2** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Pull both lines from locking flange, by pressing release buttons.

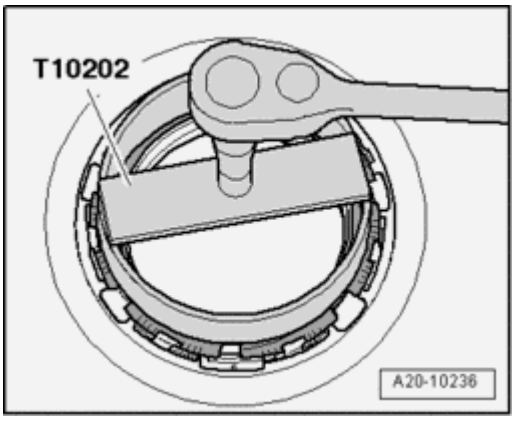


Fig. 526: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

cardiagn.com

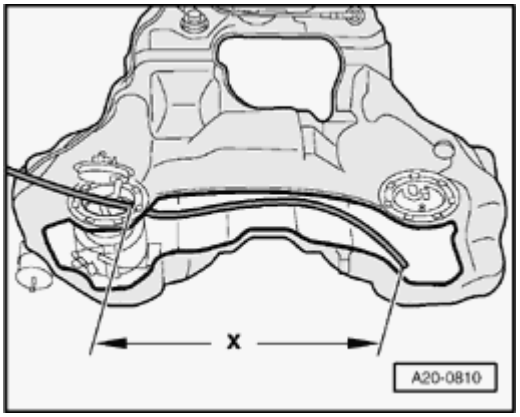


Fig. 527: Inserting Suction Hose Through Right Opening Of Fuel Tank Into Left Fuel Tank Chamber
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert suction hose, a dimension of - **x** - = 800 mm in length, through right opening of fuel tank into left fuel tank chamber.
- Drain left fuel tank chamber.
- Install right locking flange again **Installing** , observing notes for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Fuel tank with attachments, removing and installing

Special tools, testers and auxiliary items required

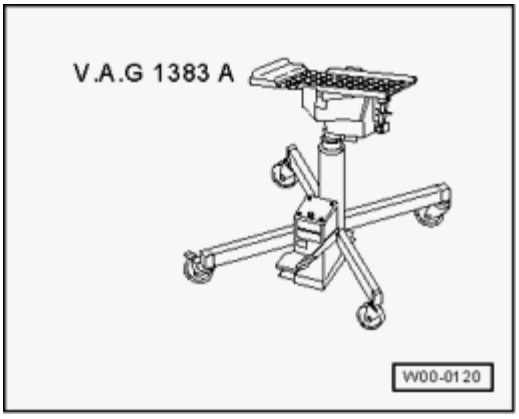


Fig. 528: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Engine/transmission jack V.A.G 1383 A

Removing

cardiagn.com

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **For removal, fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

All except Audi RS4:

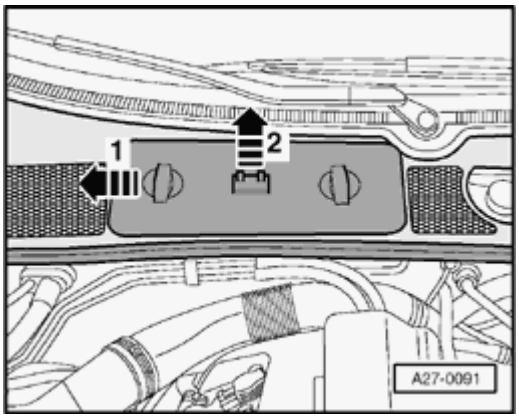


Fig. 529: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

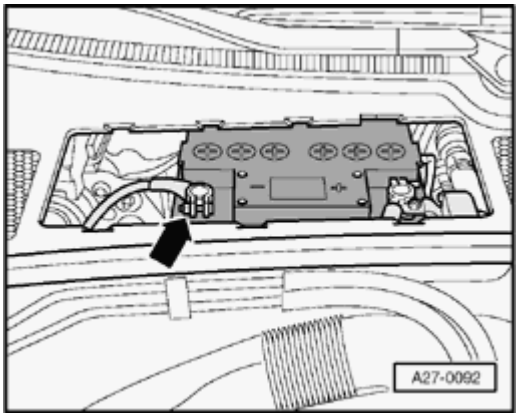


Fig. 530: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Audi RS4:

- Remove carpeting in luggage compartment.

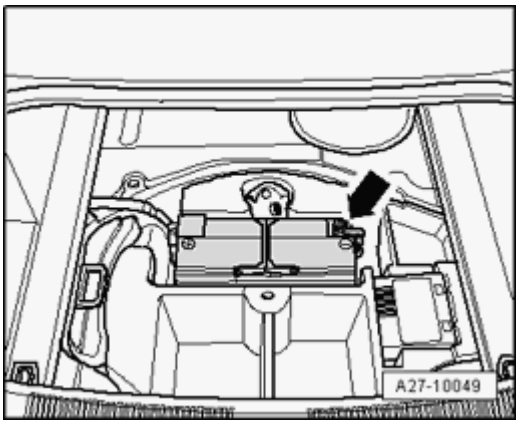


Fig. 531: Disconnecting Battery Ground (GND) Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

All:

- Open fuel filler flap briefly and then close again.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

cardiagn.com

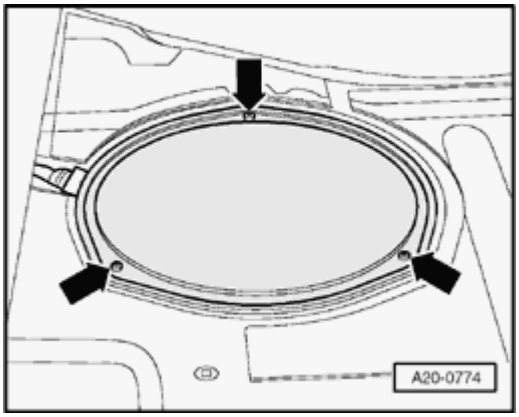


Fig. 532: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

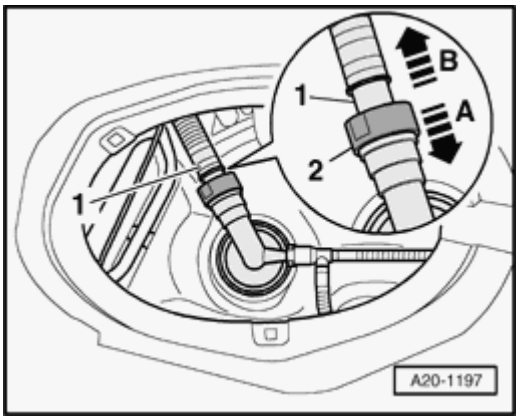


Fig. 533: Disconnecting Ventilation Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate ventilation line - **1** -. Do this by pressing the releasing ring - **2** - approx. 2 mm in direction of - **arrow A** - and simultaneously pulling ventilation line off - **arrow B** -.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

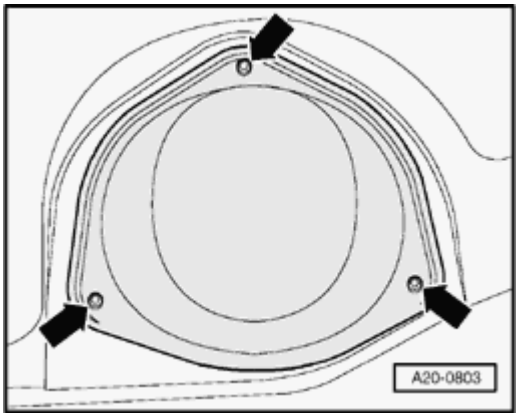


Fig. 534: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange, left and right - **arrows** -.

Audi RS4:

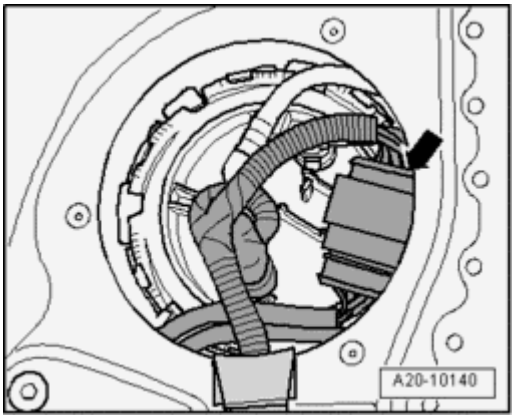


Fig. 535: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical wires with connector - **arrow** - from locking flange opening and lay them aside.

All:

cardiagn.com

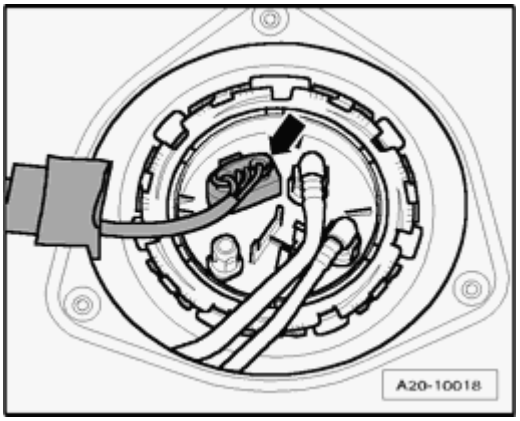


Fig. 536: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.

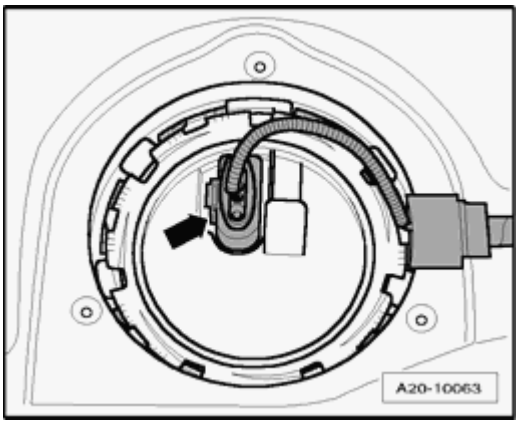


Fig. 537: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.
- Open tank flap and clean area around fuel filler tube.

NOTE:

- **Do not remove fuel cap.**

cardiagn.com

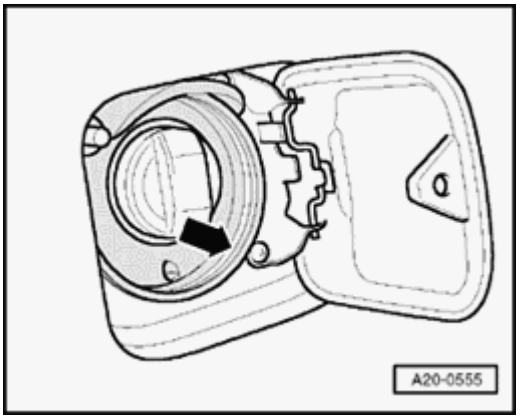


Fig. 538: Opening Tank Flap And Cleaning Area Around Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry tensioning ring - **arrow** - out from rubber gasket and press rubber gasket through toward inside.
- Remove right rear wheel.
- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

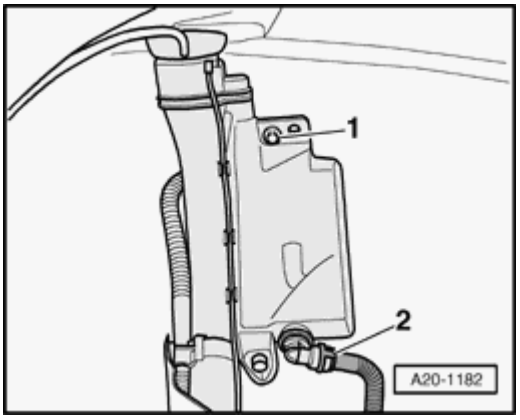


Fig. 539: Removing Ventilation Line From Fuel Filler Tube & Bolts For Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull ventilation line - **2** - off from fuel filler tube by pressing release buttons.
- Remove bolt - **1** - for fuel filler tube.

cardiagn.com

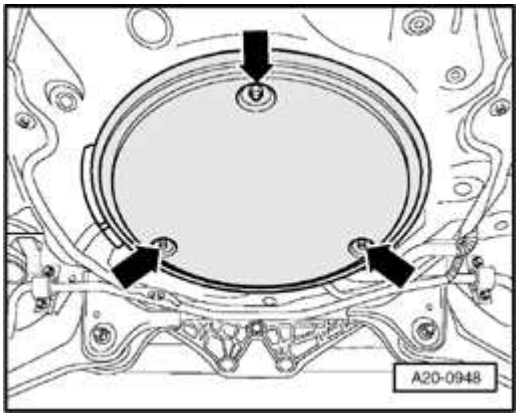


Fig. 540: Removing EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.

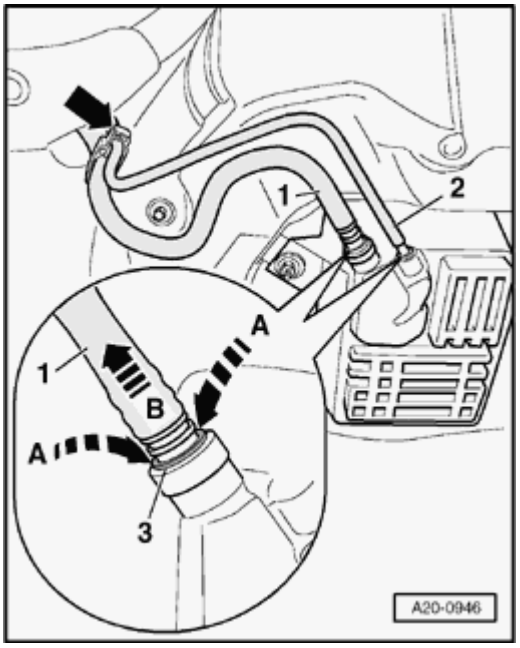


Fig. 541: Removing Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate ventilation lines - **1** - and - **2** -. Do this by pressing releasing ring - **3** - in direction of - **arrow A** - and simultaneously pulling ventilation line - **arrow B** - off.
- Unclip ventilation lines - **A** - at top from bracket - **arrow** -.

Audi RS4:

cardiagn.com

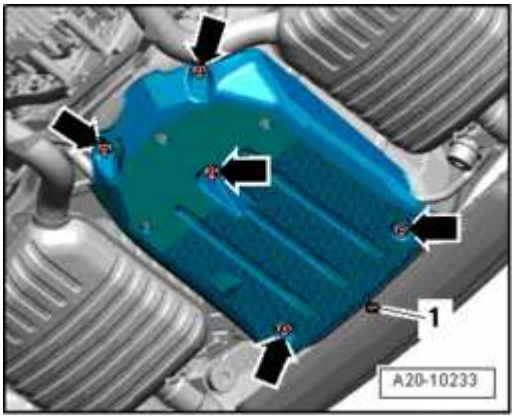


Fig. 542: Removing Bolts & EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **1** -.
- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.
- Disconnect purge lines - **1** - and ventilation lines - **2** - by pressing the release button.

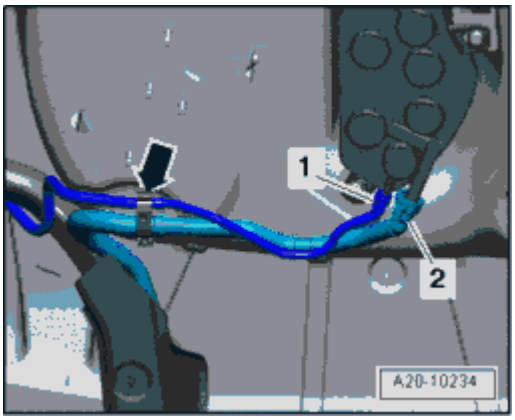


Fig. 543: Unclipping Lines From Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unclip lines from bracket - **arrow** -.

All:

- Remove rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL,

cardiagn.com

ENGINE CODE(S): BKH

- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

- Remove drive shaft -->
  - **39 FINAL DRIVE, DIFFERENTIAL**
  - **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR

.

CAUTION: Before removing the subframe bolts, secure the vehicle against falling over (e.g. load the luggage compartment with approx. 50 kg).

- Remove rear axle --> **42 - REAR SUSPENSION** .

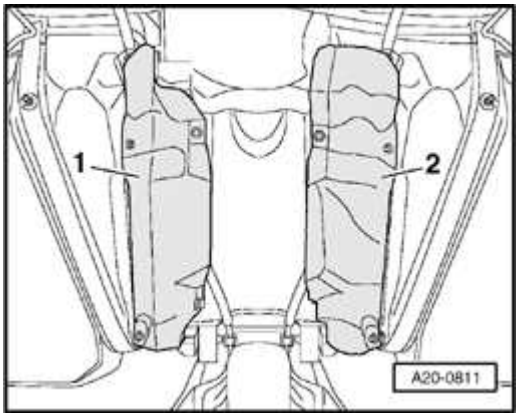
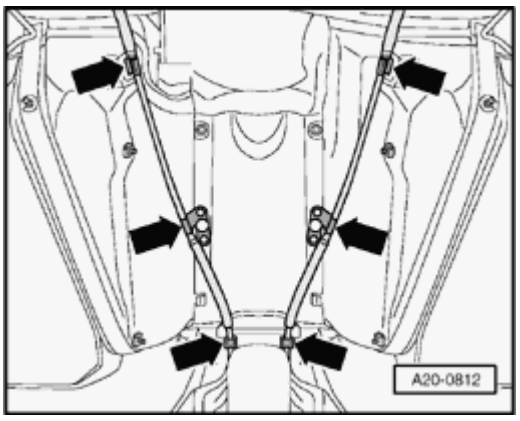


Fig. 544: Removing Heat Shields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove heat shields - **1** - and - **2** -.



cardiagn.com

Fig. 545: Disconnecting Parking Brake Cables
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect parking brake cables at positions indicated by - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

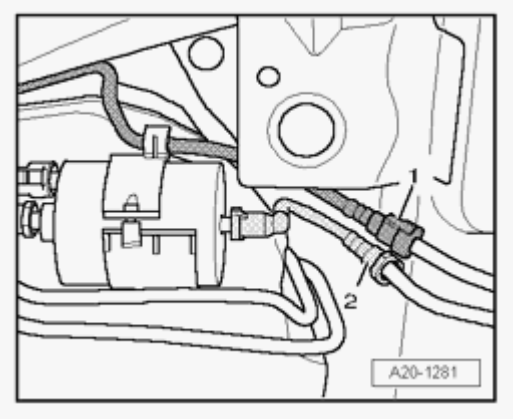


Fig. 546: Separating Fuel Line And Ventilation Line At Right Front From Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate fuel line - **2** - and ventilation line - **1** - at right front from fuel tank, by pressing release buttons.
- Place engine/transmission jack V.A.G 1383 A under fuel tank for support.

CAUTION:

- **For weight reasons, fuel tank must be empty for removal.**

cardiagn.com

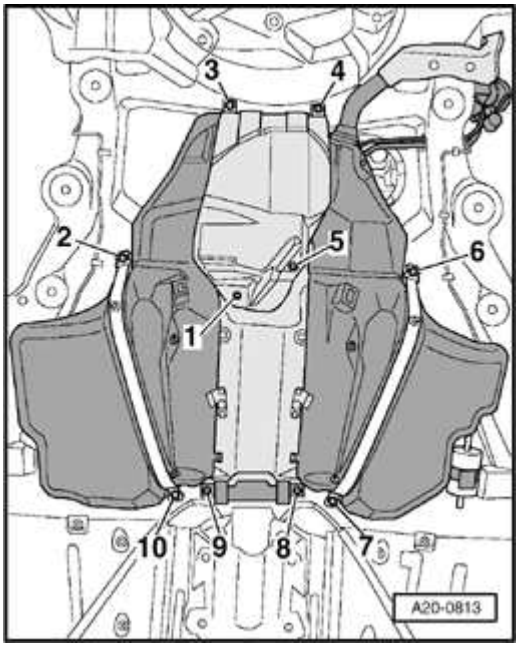


Fig. 547: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1 through 10** -.
- Lower fuel tank using engine/transmission jack V.A.G 1383 A by guiding it by hand.

Installing

Installation is in reverse order of removal. Note the following:

- Make sure fuel and ventilation lines are properly clipped to fuel tank.
- Check if the Ground (GND) wiring on both connections show signs of oxidation. If necessary, remove.
- Check installation position of Ground (GND) connection:

cardiagn.com

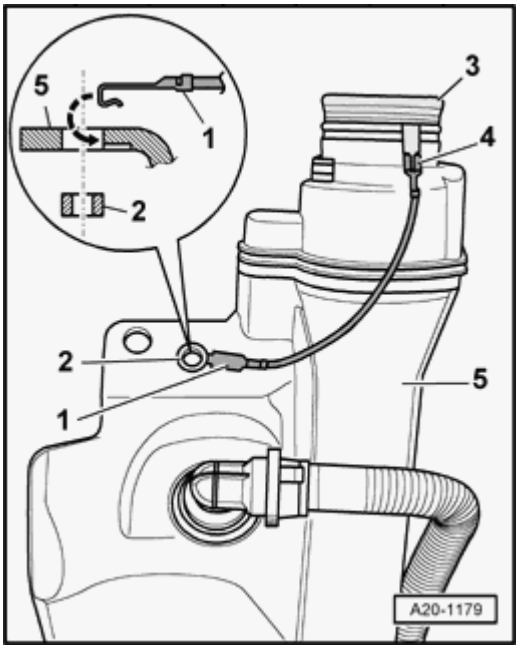
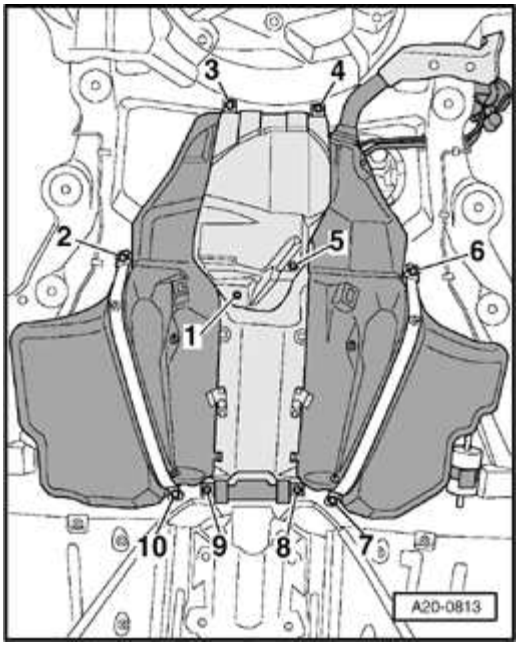


Fig. 548: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector - **4** - must be securely attached to metal ring - **3** -.
- Contact - **1** - must be attached into fuel tank - **5** - and be secured with spacer bushing - **2** -.

- Position fuel tank with mounting straps and carrier plate to vehicle floor using engine/transmission jack V.A.G 1383 A.
- Make sure fuel tank is positioned so that the filler tube can be correctly guided into opening of body.



cardiagn.com

Fig. 549: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten mounting straps and carrier plate - **1 through 10** -.
- Fasten fuel filler tube.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 Ohm.**

- Install rear axle --> **42 - REAR SUSPENSION** .
- Install drive shaft -->
  - **39 FINAL DRIVE, DIFFERENTIAL**
  - **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR

  .
- Install rear part of exhaust system -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  .
- Install right rear wheel housing liner, thereby fastening the bolt for fuel filler tube -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

  .

cardiagn.com

Torque specifications

Component		Nm
Mounting straps and carrier plate for fuel tank to body		23
Fuel filler tube to body		23
EVAP canister cover		9
Audi RS4: EVAP canister cover	Nut	2.3
	Bolt	2

Fuel delivery unit and fuel level sensor, assembly overview

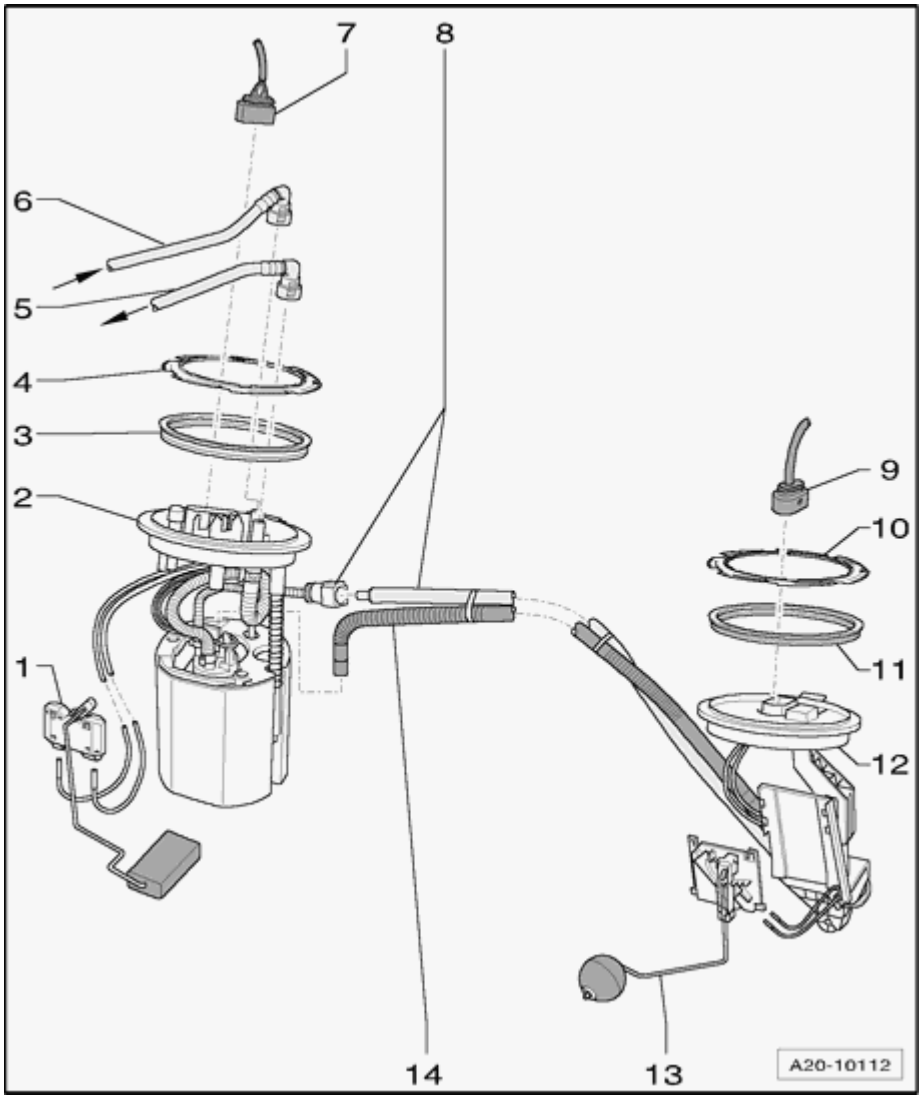


Fig. 550: Fuel Delivery Unit And Fuel Level Sensor, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Fuel Level Sensor G

cardiagn.com

- Resistance values, checking --> **Fuel Level Sensor G , checking**
- Removing and installing --> **Fuel Level Sensor G , removing and installing**

2 - Fuel delivery unit

- Different versions, allocation
- Fuel pump electrical, checking --> **Fuel pump electrical, checking**
- Checking residual pressure -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF
- Removing and installing --> **Fuel delivery unit, removing and installing**

3 - Seal

- Replace
- Install dry

4 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

5 - Fuel supply line

- To fuel filter
- Do not kink
- Mark before removing
- To remove from locking flange, press release button on connecting piece
- Note direction of arrow (fuel supply or return) on locking flange when installing
- Clipped in on fuel tank

cardiagn.com

6 - Fuel return line

- From fuel filter
- Do not kink
- Mark before removing
- To remove from locking flange, press release button on connecting piece
- Note direction of arrow (fuel supply or return) on locking flange when installing
- Clipped in on fuel tank

7 - Electrical harness connector

- For Fuel level sensor G
- For Transfer Fuel Pump (FP) G6

8 - Suction jet pipe

- From fuel pump to suction jet pump
- To disconnect, press release button on connection piece

9 - Electrical harness connector

- For Fuel Level Sensor 2 G169

10 - Locking ring

- Use wrench T10202 to remove and install
- Tighten to 145 Nm

11 - Seal

- Replace
- Install dry

12 - Suction jet pump

- Suction jet pump, checking --> **Suction jet pump**
- Removing and installing --> **Suction jet pump, removing and installing**

13 - Fuel Level Sensor 2 G169

- Resistance values, checking --> **Fuel Level Sensor 2 G169 , checking**
- Removing and installing --> **Fuel Level Sensor 2 G169 , removing and installing**

cardiagn.com

14 - Fuel delivery line

- From suction jet pump to fuel delivery unit
- Clipped into fuel delivery unit

Fuel pump electrical, checking

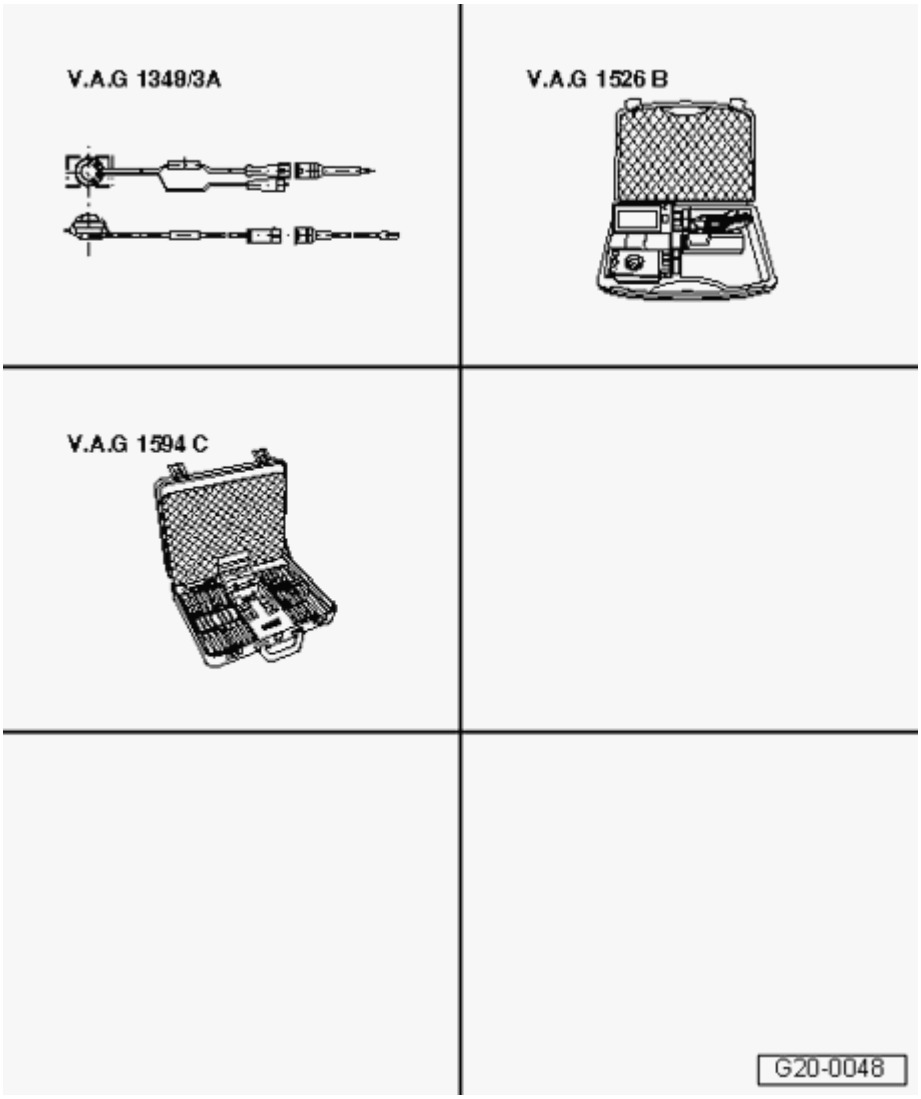


Fig. 551: Identifying Special Tools - Fuel Pump Electrical, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Portable multimeter V.A.G 1526 B
- Connector test set V.A.G 1594 C

cardiagn.com

Test conditions

- Battery voltage at least 12.5 V.

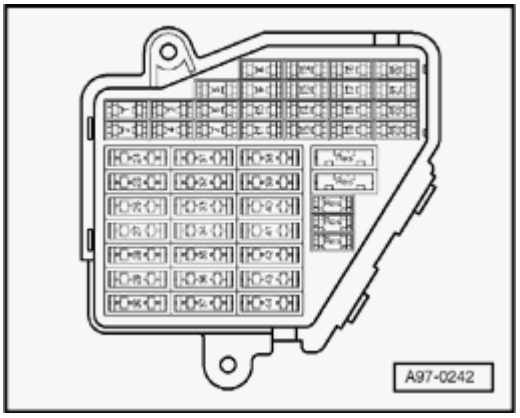


Fig. 552: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.

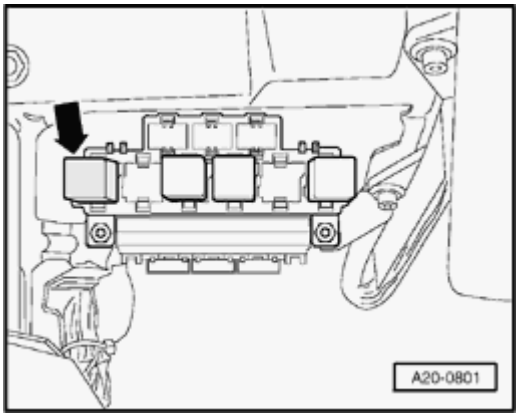


Fig. 553: Installed Location On 9-Socket Relay Carrier In Driver Footwell
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicles with MPI engine: Fuel Pump (FP) Relay J17 - **arrow** - at position 1 in 9-socket relay carrier behind driver side storage compartment is OK.

cardiagn.com

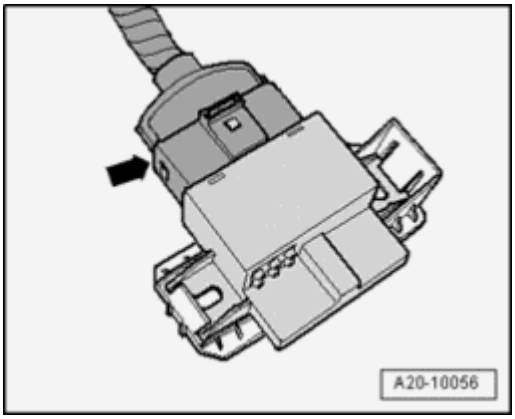


Fig. 554: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicles with FSI engine: Fuel Pump (FP) Control Module J538 OK; checking --> **Fuel Pump (FP) Control Module J538 , checking (vehicles with 4-cyl. TFSI engine)**.
- Fuel filter OK
- Ignition switched off.

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

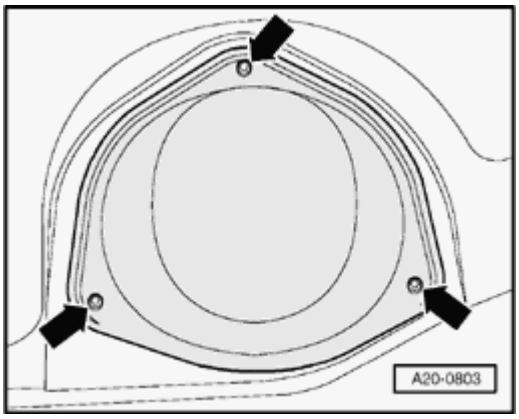


Fig. 555: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

Audi RS4:

cardiagn.com

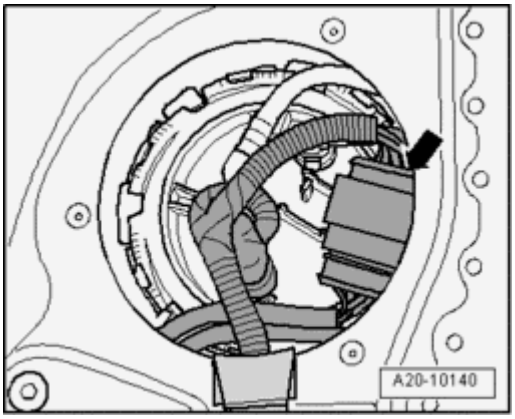


Fig. 556: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical wires with connector - **arrow** - from locking flange opening and lay them aside.

All:

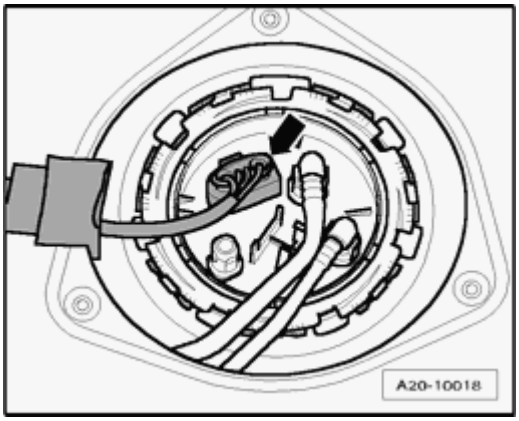
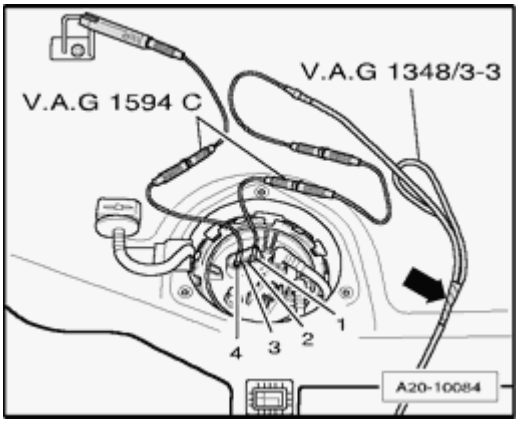


Fig. 557: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.



cardiagn.com

Fig. 558: Connecting Other End Of Hand Held Remote Starter (Jumper) To Vehicle Battery (+)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3 A with connection V.A.G 1348/3-3 to contact - **1** - using an adapter cable from connector test set V.A.G 1594 C.
- Using insulating tape, tape over the second contact of connection V.A.G 1348/3-3 to prevent a short circuit - **arrow** -.
- Connect contact - **4** - to vehicle Ground (GND) using a jumper cable from the connector test set V.A.G 1594 C.
- Connect alligator clip to vehicle battery (+).
- Press switch on remote control.

- Running noise of pump must be audible.

NOTE:

- **Fuel Pump (FP) runs quietly. Avoid surrounding noises while testing the fuel pump.**

If no operating noise can be heard:

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.

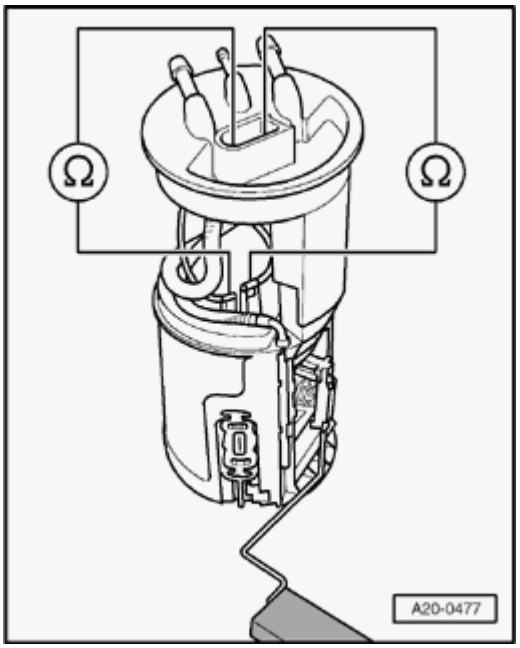


Fig. 559: Checking Electrical Circuit Between Terminals Of Fuel Delivery Unit And Fuel Pump For Continuity
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check if electrical wiring between flange and fuel pump is connected and has continuity.

cardiagn.com

If no malfunction is detected in wires, Fuel Pump (FP) is faulty - replace fuel pump.

- Install fuel delivery unit **Installing**.

Fuel Pump (FP) Control Module J538 , checking (vehicles with 4-cyl. TFSI engine)

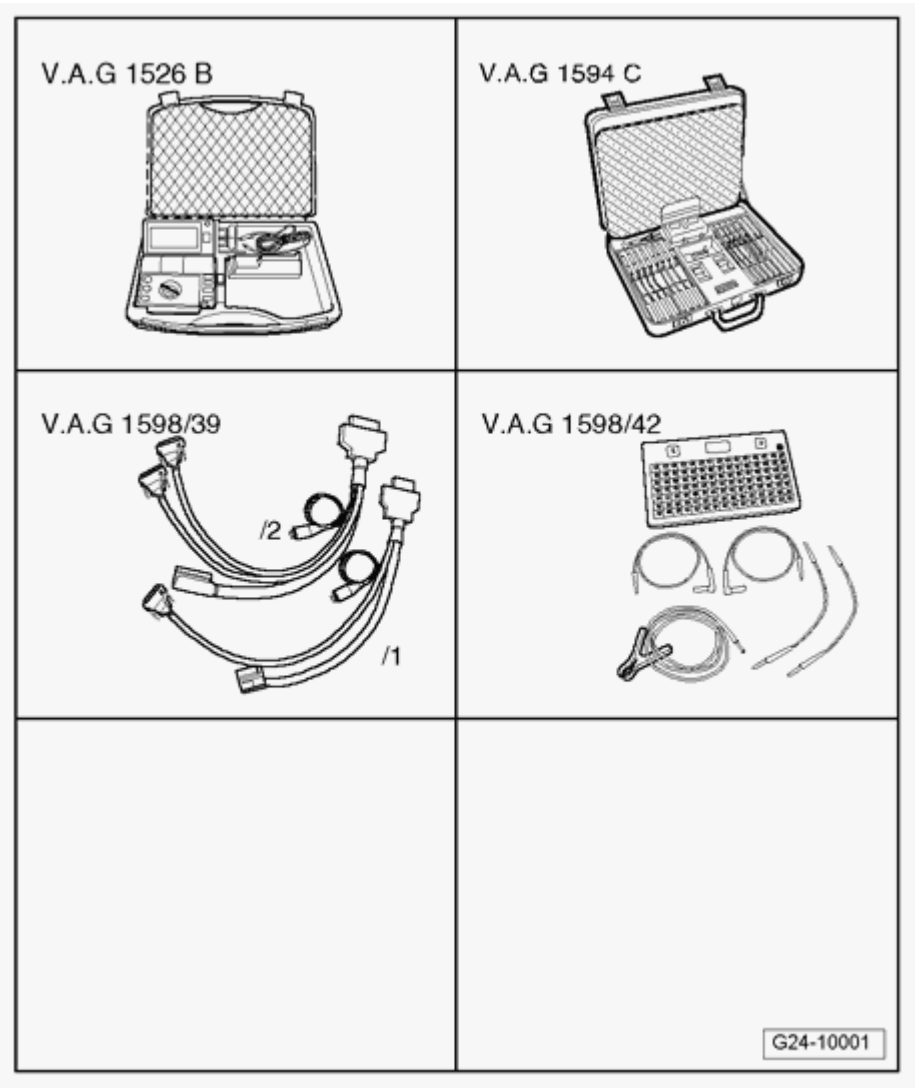


Fig. 560: Identifying Special Tools - Fuel Pump (FP) Control Module J538 , Checking (Vehicles With 4-Cyl. TFSI Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Portable multimeter V.A.G 1526 B
- Connector test set V.A.G 1594 C
- Adapter cable V.A.G 1598/39
- Test box V.A.G 1598/42

cardiagn.com

Test conditions

- Battery voltage at least 12.5 V.

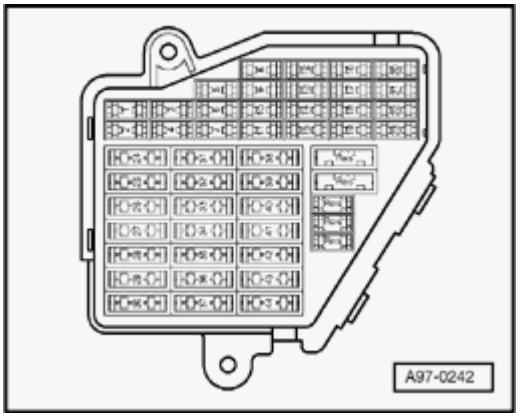


Fig. 561: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.
- Ignition switched off.

Check voltage supply for Fuel Pump (FP) (from Fuel Pump (FP) Control Module J538)

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

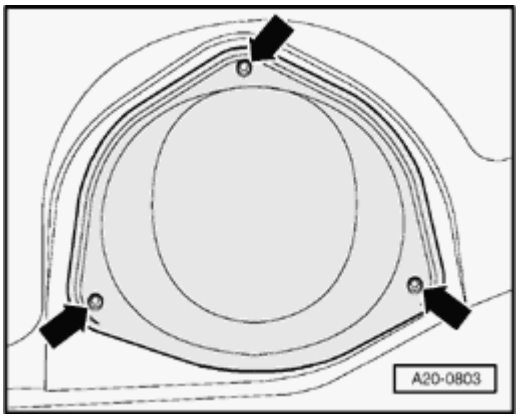


Fig. 562: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.
- Fold protective boot back.

cardiagn.com

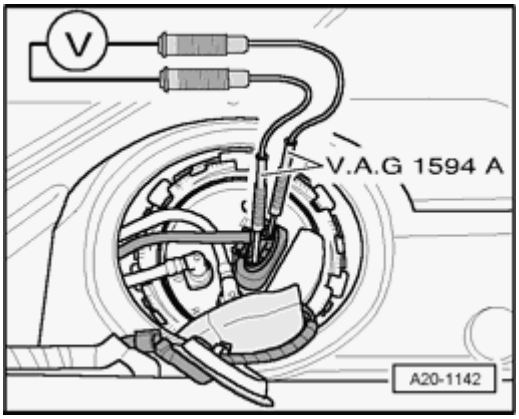


Fig. 563: Connecting Hand Multimeter V.A.G 1526 B With Measuring Probes And Connector Adapters From Connector Test Set V.A.G 1594 C Or V.A.G 1594 A Between Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- For voltage testing, connect the hand multimeter V.A.G 1526 B with measuring probes and connector adapters from the connector test set V.A.G 1594 C or V.A.G 1594 A between clamp **- 1 -** and **- 4 -** , as shown in illustration. The electrical connection remains connected.

NOTE:

- **Connector sockets are numbered respectively on the rear side of the connector.**

- Start engine.
- Specified value during start and while running at idle: 4 to 5.7 V.
- Depress accelerator pedal completely and then release it (brief throttle burst).
- Specification: The voltage value must first rise slightly, then fall and then rise again to the previously read value.

If the reading does not result as described:

- Check voltage supply and activation of Fuel Pump (FP) Control Module J538.

Check voltage supply for Fuel Pump (FP) Control Module J538

- Remove Fuel Pump (FP) Control Module J538 --> **Fuel Pump (FP) Control Module J538 , removing and installing**.

cardiagn.com

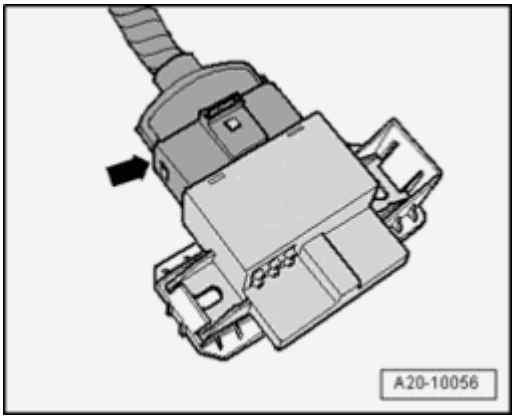


Fig. 564: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - on Fuel Pump (FP) Control Module J538.

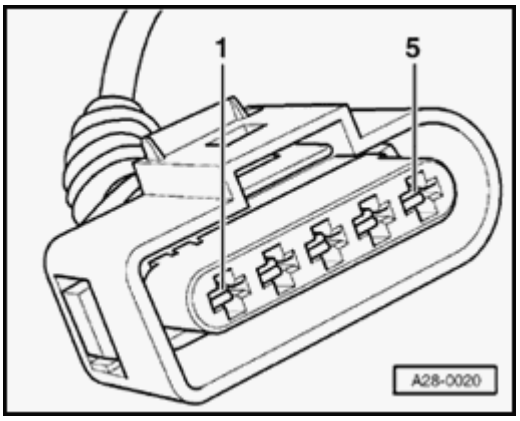


Fig. 565: Identifying Engine Control Module (ECM) 5-pin Connector Terminals 1 & 5
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect multimeter between terminal - **3** - and - **4** - of harness connector for voltage measurement.
- Switch ignition on.

- Specification: approx. battery voltage.

If specification is not obtained:

- Repair open circuit in wiring according to wiring diagram.

Check activation of Fuel Pump (FP) Control Module J538

- Remove protective cap.

cardiagn.com

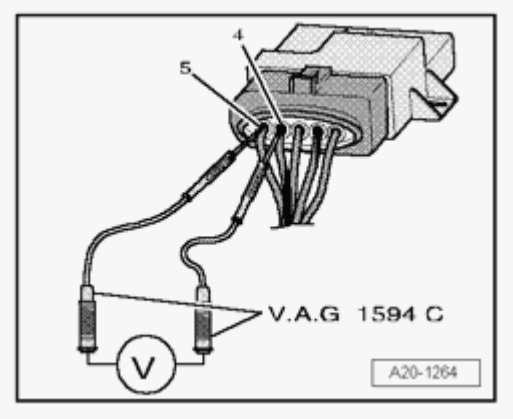


Fig. 566: Connecting Multimeter With Measuring Probes And Connector Adapters From Connector Test Set V.A.G 1594 C Between Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- For voltage testing, connect the multimeter with measuring probes and connector adapters from the connector test set V.A.G 1594 C between clamp - **4** - and - **5** - , as shown in illustration. The electrical connection remains connected.

NOTE:

- **Connector sockets are numbered respectively on the rear side of the connector.**

- Start engine.
- Specified value during start and while running at idle: approx. 5.0 V.
- Depress accelerator pedal completely and then release it (brief throttle burst).
- Specification: The voltage value must first rise slightly, then fall and then rise again to the previously read value.

If the reading does not result as described:

- Switch off ignition.

cardiagn.com

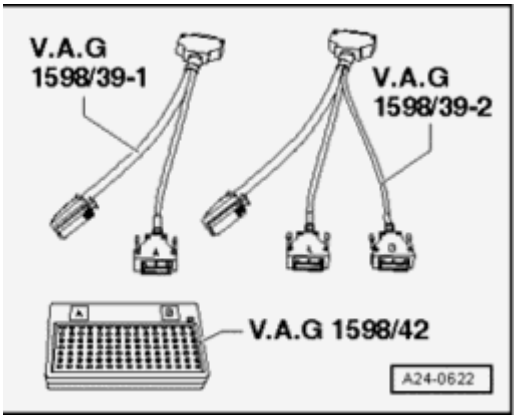


Fig. 567: Connecting Test Box V.A.G 1598/42 To Wiring Harness With Adapter Cable V.A.G 1598/39-1 Or Adapter Cable V.A.G 1598/39-2
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect test box V.A.G 1598/42 to wiring harness with adapter cable V.A.G 1598/39-1 or adapter cable V.A.G 1598/39-2 ; engine control module (ECM) remains connected. Clamp test box Ground (GND) clip to battery negative terminal -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

CAUTION: To avoid damaging electronic components, set measuring range before connecting test leads and observe all test requirements.

cardiagn.com

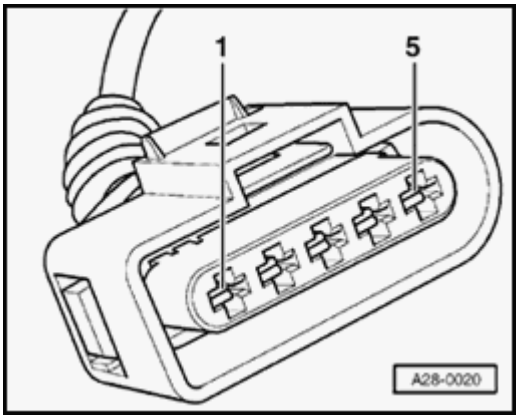


Fig. 568: Identifying Engine Control Module (ECM) 5-pin Connector Terminals 1 & 5
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following wire connection for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	Test box V.A.G 1598/42 Socket
- 5 -	B 27

- Repair wiring open circuit or short circuit according to wiring diagram.

If no malfunctions are detected:

- Replace Fuel Pump (FP) Control Module J538.

Fuel Pump (FP) Control Module J538 , checking (vehicles with 6-cyl. and 8-cyl. FSI engine)

Fuel Pump (FP) Control Module J538 is checked in "Guided Fault Finding" with Vehicle Diagnostic, Testing and Information System VAS 5051.

Fuel Pump (FP) Control Module J538 , removing and installing

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To lower, fuel tank must be empty for weight reasons. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**

CAUTION:

- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for**

cardiagn.com

ELECTRICAL EQUIPMENT, CABRIOLET

.

All except Audi RS4:

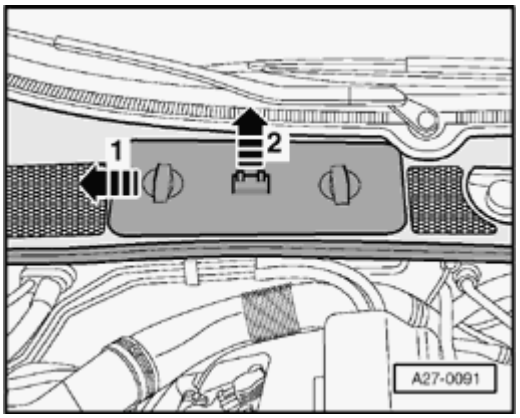


Fig. 569: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

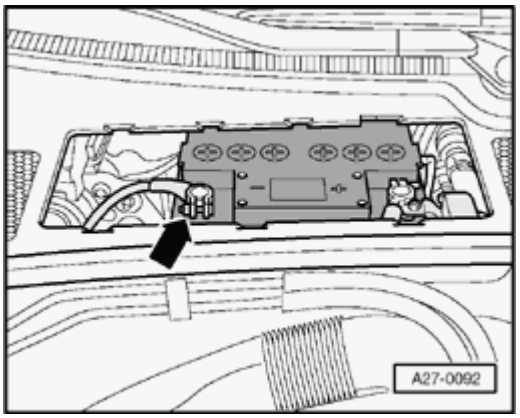


Fig. 570: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Audi RS4:

- Raise luggage compartment floor covering and secure.

cardiagn.com

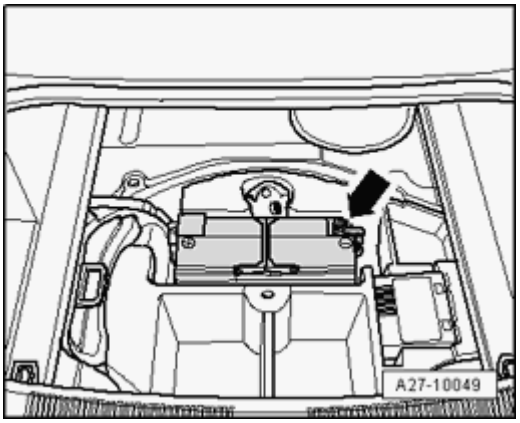


Fig. 571: Disconnecting Battery Ground (GND) Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

All:

- Open tank flap and clean area around fuel filler tube.

NOTE:

- **Do not remove fuel cap.**

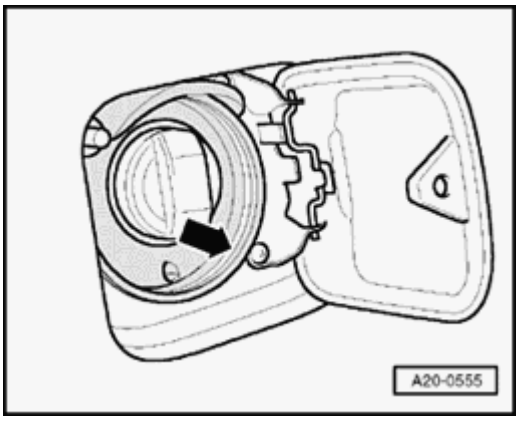


Fig. 572: Opening Tank Flap And Cleaning Area Around Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry tensioning ring - **arrow** - out from rubber gasket and press rubber gasket through toward inside.
- Remove right rear wheel.
- Remove right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

cardiagn.com

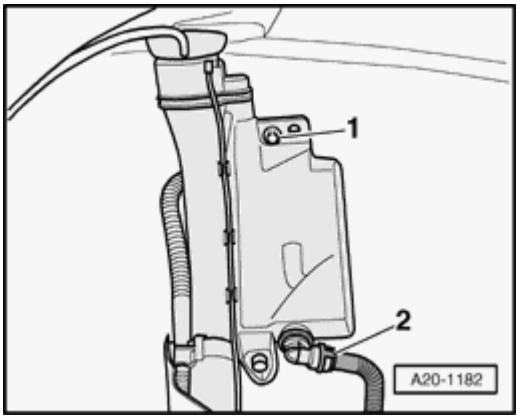


Fig. 573: Removing Ventilation Line From Fuel Filler Tube & Bolts For Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unfasten bolts - **1** - for fuel filler tube.

NOTE:

- **Ignore - 2 -.**

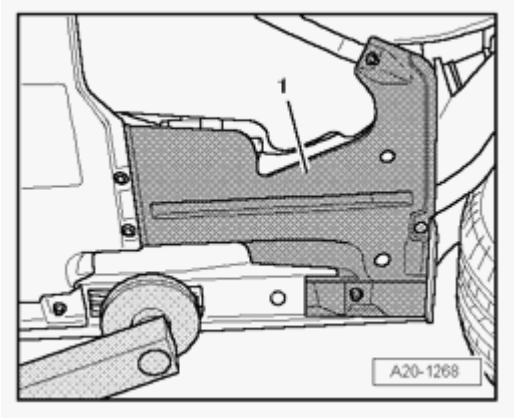


Fig. 574: Removing Right Rear Cover On Bottom Of Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear cover - **1** - on bottom of vehicle floor.

CAUTION:

- **For weight reasons, fuel tank must be empty when lowering.**

cardiagn.com

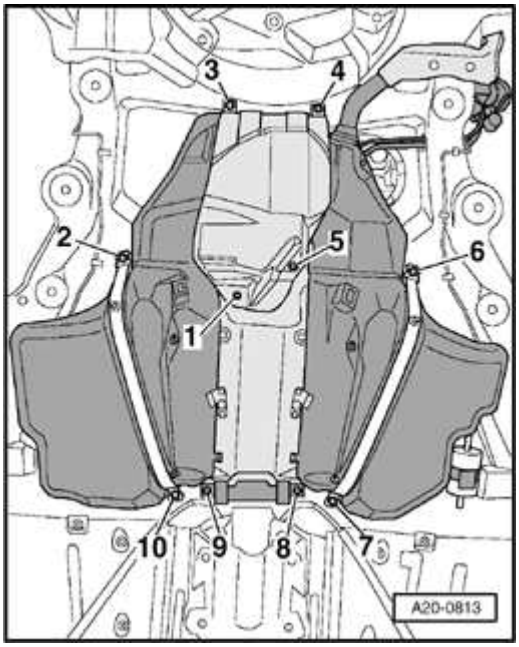


Fig. 575: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen screws - **1, 2, 3, 4, 5, 9, 10** - a maximum of 8 turns.
- Remove bolts - **6, 7, 8** -.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

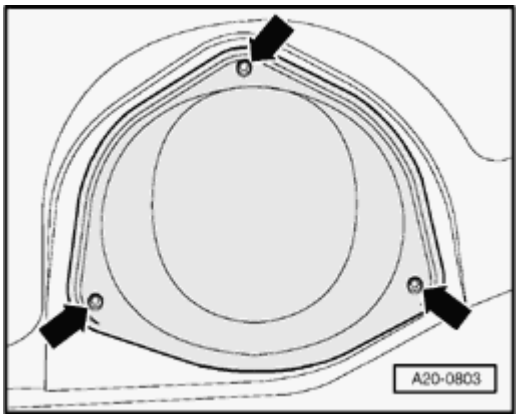


Fig. 576: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

Audi RS4:

cardiagn.com

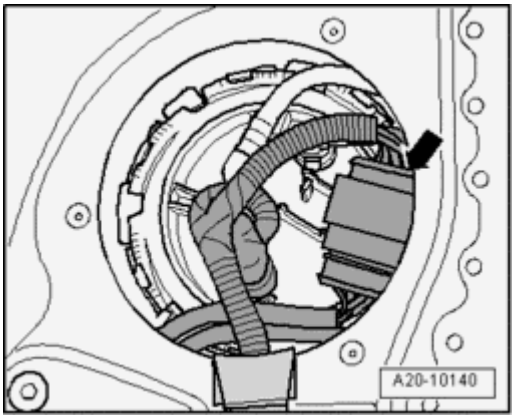


Fig. 577: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up electrical connector - **arrow** - for Fuel Pump (FP) Control Module J538 and disconnect.

All:

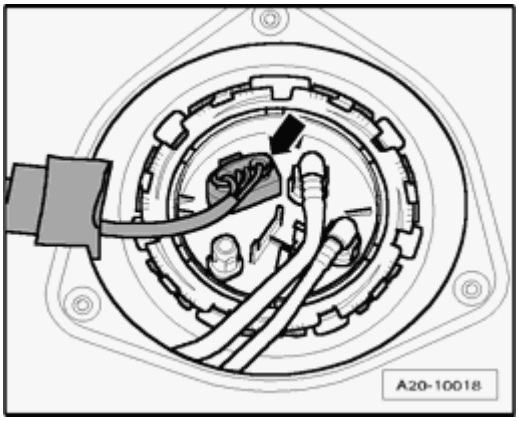
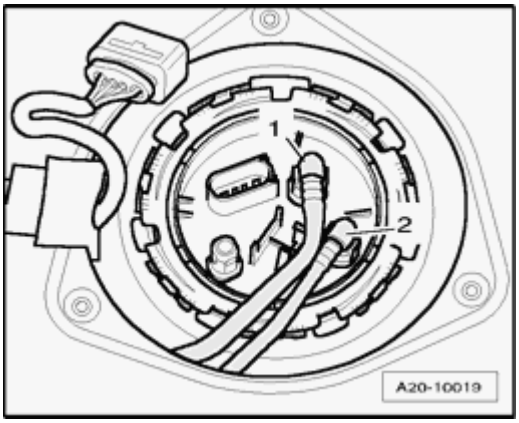


Fig. 578: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.



cardiagn.com

Fig. 579: Identifying Fuel Return Line And Fuel Supply Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark fuel return line - **1** - and fuel supply line - **2** -.

CAUTION: Fuel system is under pressure! Before opening system, place clean rags around the connection. Then release pressure by carefully loosening the connection.

- Pull both lines from locking flange, by pressing release buttons.

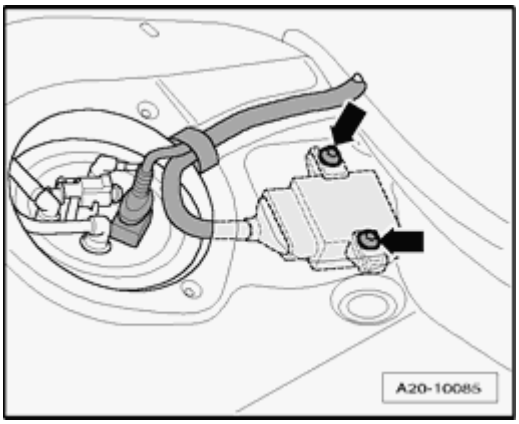


Fig. 580: Removing Bolts & Fuel Pump (FP) Control Module J538 Between Fuel Tank And Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** -.
- Remove Fuel Pump (FP) Control Module J538 between fuel tank and vehicle floor.

Installing

Installation is in reverse order of removal. Note the following:

cardiagn.com

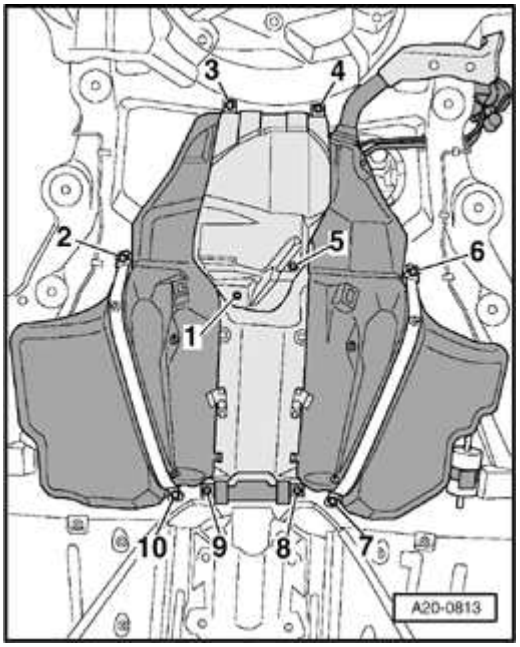


Fig. 581: Identifying Fuel Tank Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten mounting straps and carrier plate - **1 through 10** -.

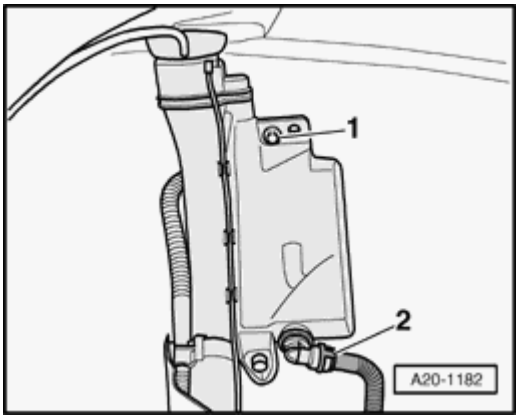


Fig. 582: Removing Ventilation Line From Fuel Filler Tube & Bolts For Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten fuel filler tube with Ground (GND) connection using bolt - **1** -.

CAUTION: After installing, check electrical connection of metal ring at fuel filler tube to a blank portion of chassis using Ohm meter:

- **Specification: approx. 0 ohms.**

NOTE:

- **Ignore - 2 -.**

cardiagn.com

- Install right rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

  .
- Install rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

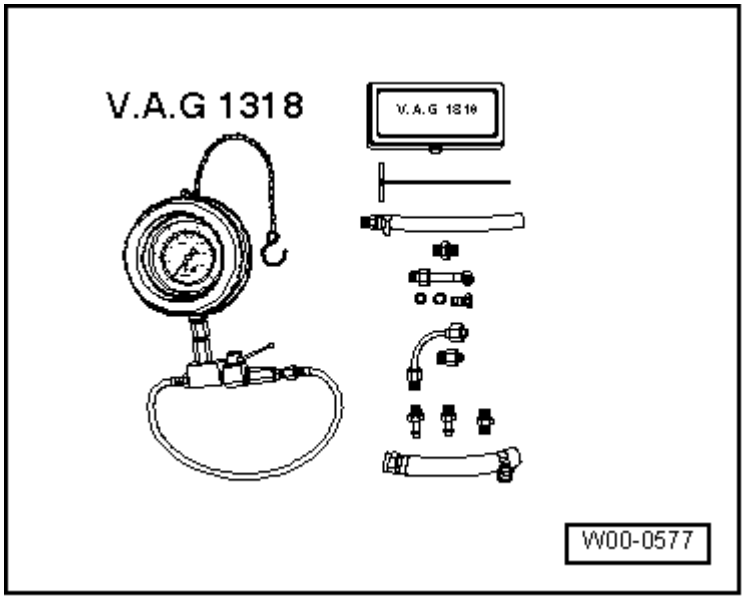
  .

Torque specifications

Component	Nm
Mounting straps and carrier plate for fuel tank to body	23
Fuel filler tube to wheel housing	23
Fuel Pump (FP) Control Module J538 to body	2.5

Fuel pump delivery quantity, checking (vehicles with 4-cyl. TFSI-engine)

Special tools, testers and auxiliary items required



cardiagn.com

Fig. 583: Identifying Pressure Gauge V.A.G 1318
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge V.A.G 1318
- Adapter V.A.G 1318/11
- Adapter V.A.G 1318/12

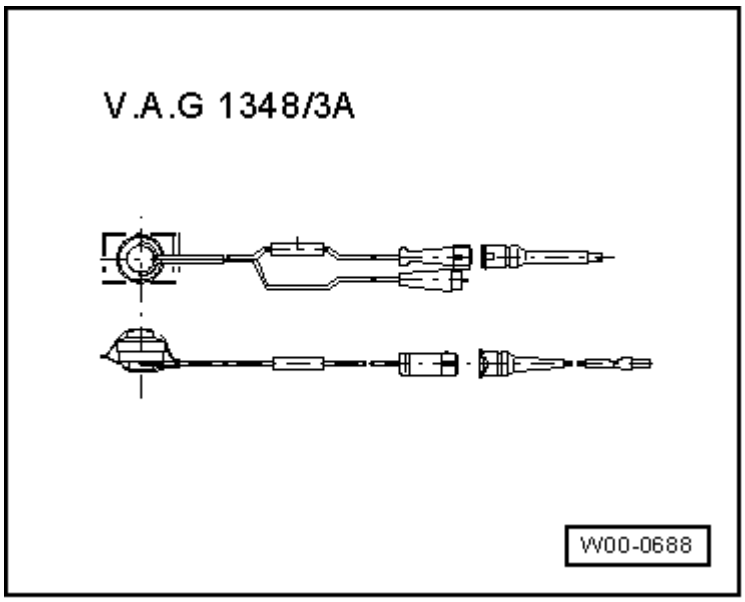
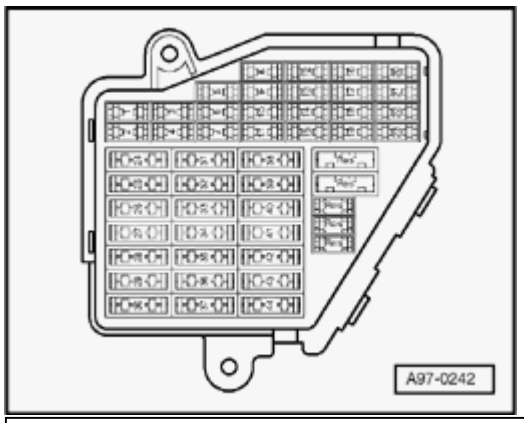


Fig. 584: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK



cardiagn.com

Fig. 585: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.

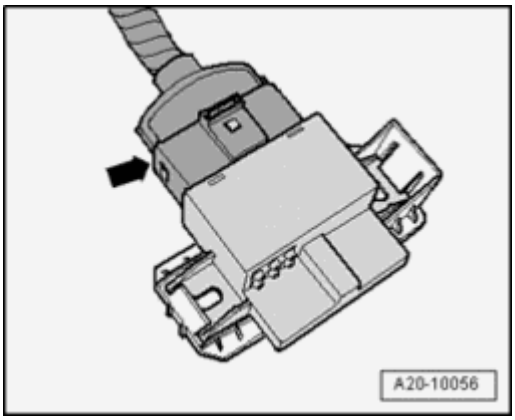


Fig. 586: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Control Module J538 OK; check --> **Fuel Pump (FP) Control Module J538 , checking (vehicles with 4-cyl. TFSI engine)**.
- Fuel tank at least $^{1}/_{4}$ filled.
- Ignition switched off.

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

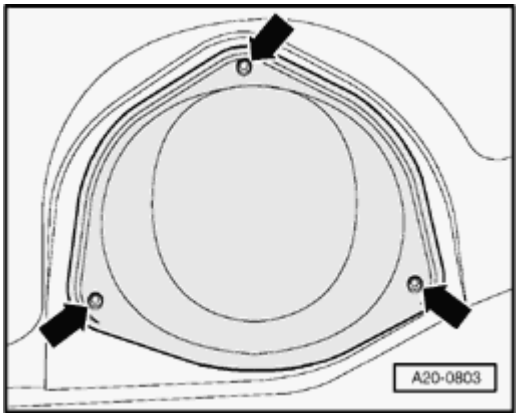


Fig. 587: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Unbolt cover for left locking flange - **arrows** -.

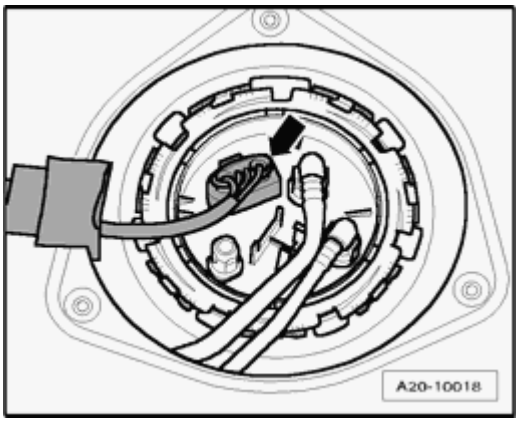


Fig. 588: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.

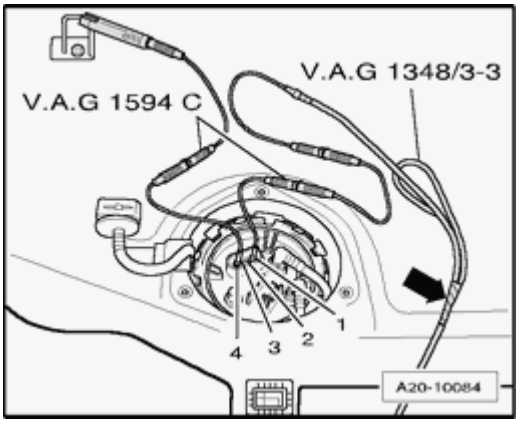


Fig. 589: Connecting Other End Of Hand Held Remote Starter (Jumper) To Vehicle Battery (+)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3 A with connection V.A.G 1348/3-3 to contact - **1** - using an adapter cable from connector test set V.A.G 1594 C.
- Using insulating tape, tape over the second contact of connection V.A.G 1348/3-3 to prevent a short circuit - **arrow** -.
- Connect contact - **4** - to vehicle Ground (GND) using a jumper cable from connector test set V.A.G 1594 C.
- Connect alligator clip to vehicle battery (+).

- Remove fuel filler cap from fuel filler tube.

cardiagn.com

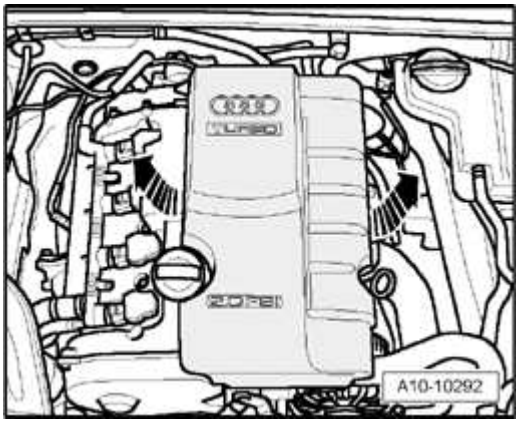


Fig. 590: Removing Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove engine cover - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

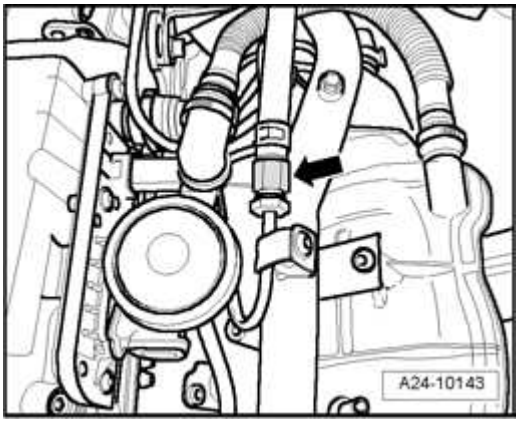


Fig. 591: Disconnecting Fuel Line From Line Connection On Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **arrow** - from line connection on engine.

cardiagn.com

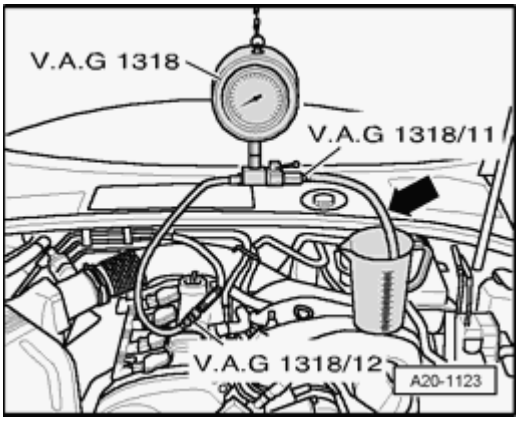


Fig. 592: Connecting Pressure Gauge V.A.G 1318 To Fuel Supply Line Using Adapters V.A.G 1318/11 And V.A.G 1318/12
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect pressure gauge V.A.G 1318 to fuel supply line using adapters V.A.G 1318/11 and V.A.G 1318/12.
- Connect extension hose - **arrow** - to pressure gauge and hold it in a measuring container.
- Open shut-off valve of pressure gauge. The lever points in direction of flow.
- Generate pressure in fuel system by pressing switch of remote control and slowly closing shut-off valve of pressure gauge.

- Specification: 4 bar positive pressure.

- From this point on do not move position of shut-off valve.
- Empty measuring container.
- Press switch on remote control for 15 seconds.

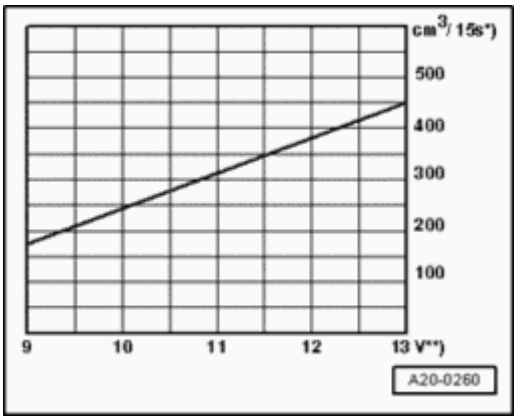


Fig. 593: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

cardiagn.com

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Installation is in reverse order of removal. Note the following:

- Install the fuel line.

Torque specifications

Component	Nm
Fuel line to fuel rail	22

Fuel pump delivery quantity, checking (vehicles with 6-cyl. FSI-engine)

Special tools, testers and auxiliary items required

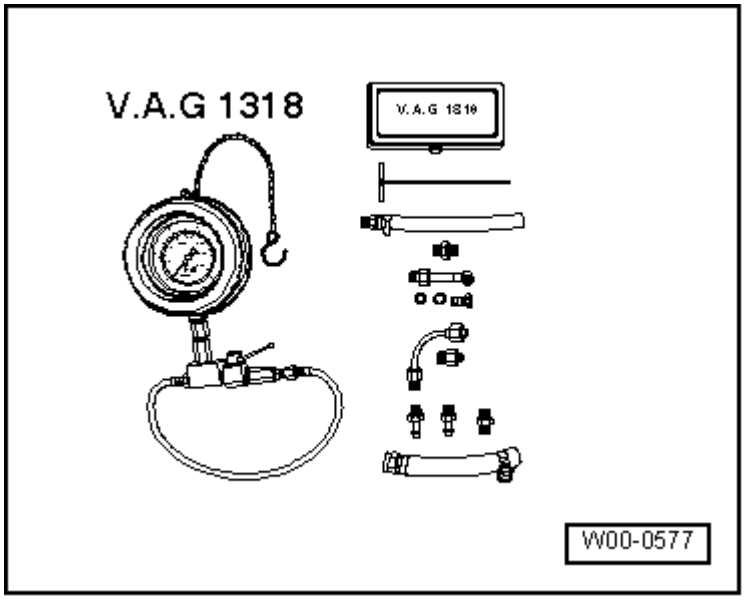


Fig. 594: Identifying Pressure Gauge V.A.G 1318
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge V.A.G 1318
- Adapter V.A.G 1318/11
- Adapter V.A.G 1318/12

cardiagn.com

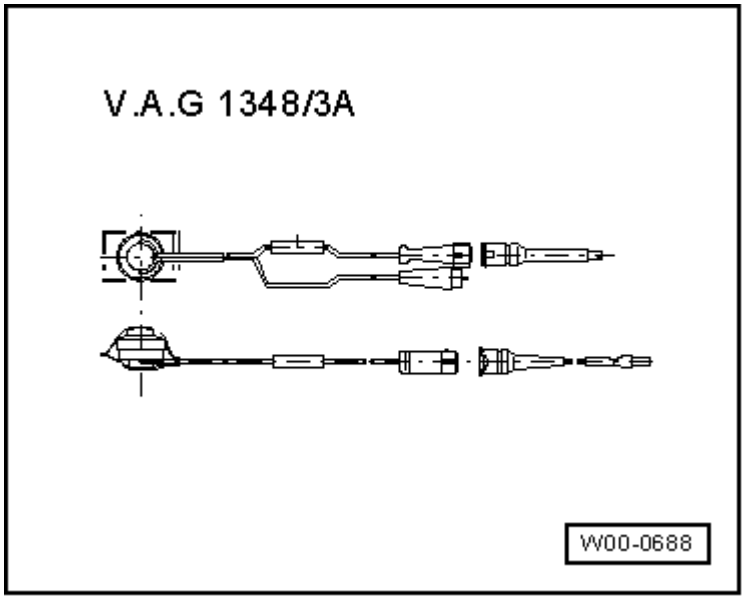


Fig. 595: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Fuel-resistant measuring container

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK

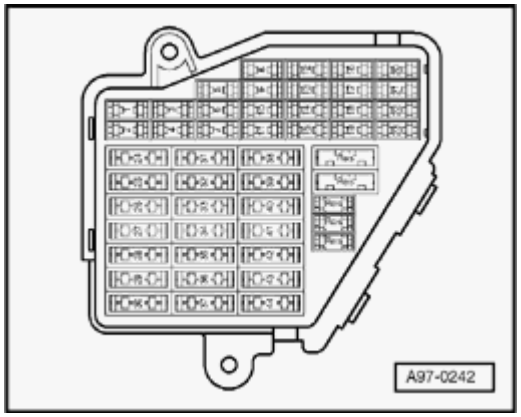


Fig. 596: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.

cardiagn.com

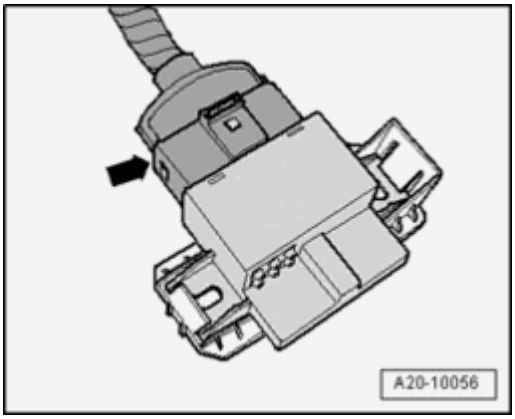


Fig. 597: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Control Module J538 OK; check --> **Fuel Pump (FP) Control Module J538 , checking (vehicles with 4-cyl. TFSI engine)**.
- Fuel tank at least $^{1}/_{4}$ filled.
- Ignition switched off.

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

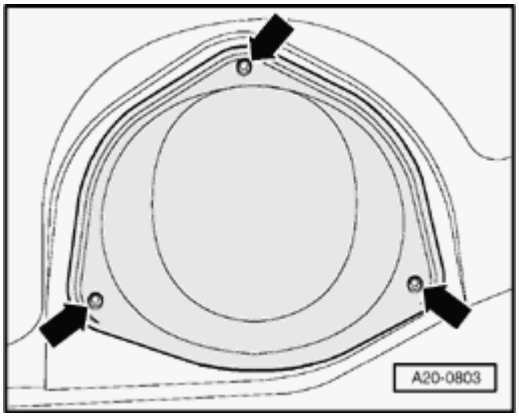


Fig. 598: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

cardiagn.com

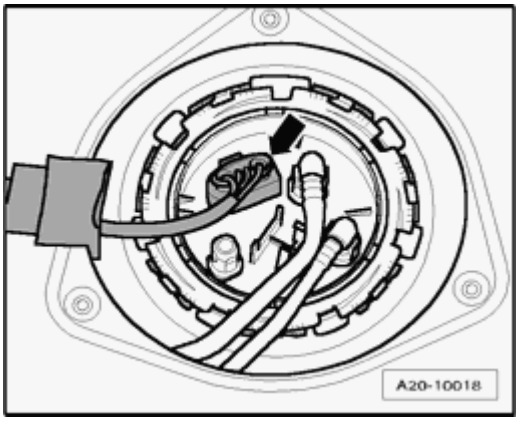


Fig. 599: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.

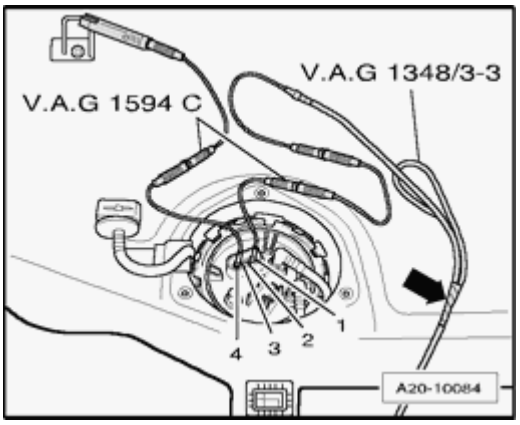


Fig. 600: Connecting Other End Of Hand Held Remote Starter (Jumper) To Vehicle Battery (+)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3 A with connection V.A.G 1348/3-3 to contact - **1** - using an adapter cable from connector test set V.A.G 1594 C.
- Using insulating tape, tape over the second contact of connection V.A.G 1348/3-3 to prevent a short circuit - **arrow** -.
- Connect contact - **4** - to vehicle ground (GND) using a jumper cable from connector test set V.A.G 1594 C.
- Connect alligator clip to vehicle battery (+).

- Remove fuel filler cap from fuel filler tube.

cardiagn.com

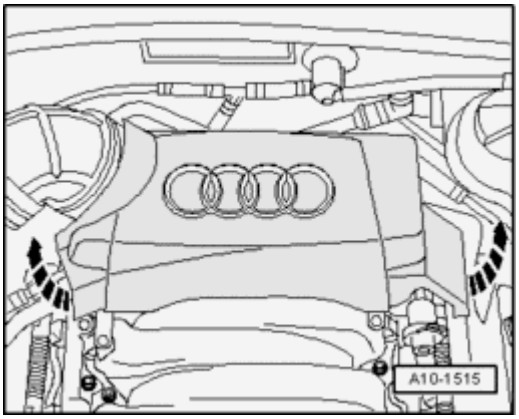


Fig. 601: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

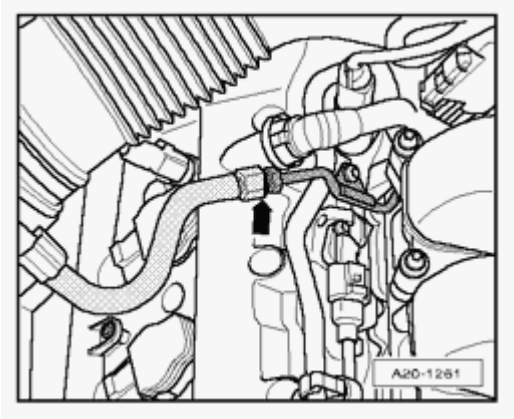


Fig. 602: Disconnecting Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **arrow** -.

cardiagn.com

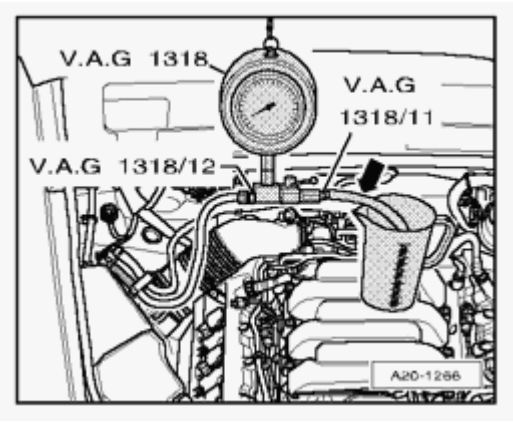


Fig. 603: Connecting Pressure Gauge V.A.G 1318 To Fuel Line Using Adapter V.A.G 1318/11 And V.A.G 1318/12
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect pressure gauge V.A.G 1318 to fuel line using adapter V.A.G 1318/11 and V.A.G 1318/12.
- Connect extension hose - **arrow** - to pressure gauge and hold it in a measuring container.
- Open pressure gauge shut-off valve. The lever points in direction of flow.
- Generate pressure in fuel system by pressing switch of remote control and slowly closing shut-off valve of pressure gauge.

- Specification: 4 bar positive pressure.

- From this point on do not move position of shut-off valve.
- Empty measuring container.
- Press switch on remote control for 15 seconds.

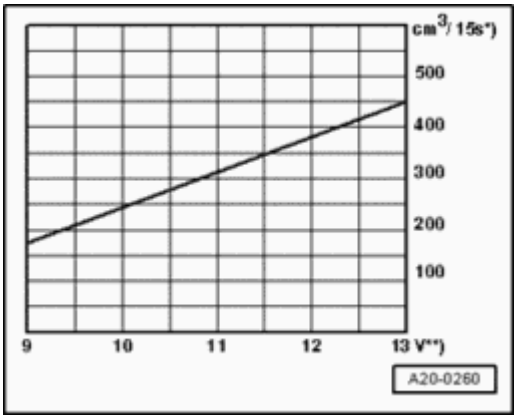


Fig. 604: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

cardiagn.com

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

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

- Fuel lines pinched.
- Fuel filter clogged.
- Fuel pump faulty.

Installation is in reverse order of removal.

- Install the fuel line.

Torque specifications

Component	Nm
Fuel line to fuel rail	22

Fuel pump delivery quantity, checking (vehicles with 8-cyl. MPI-engine)

Special tools, testers and auxiliary items required

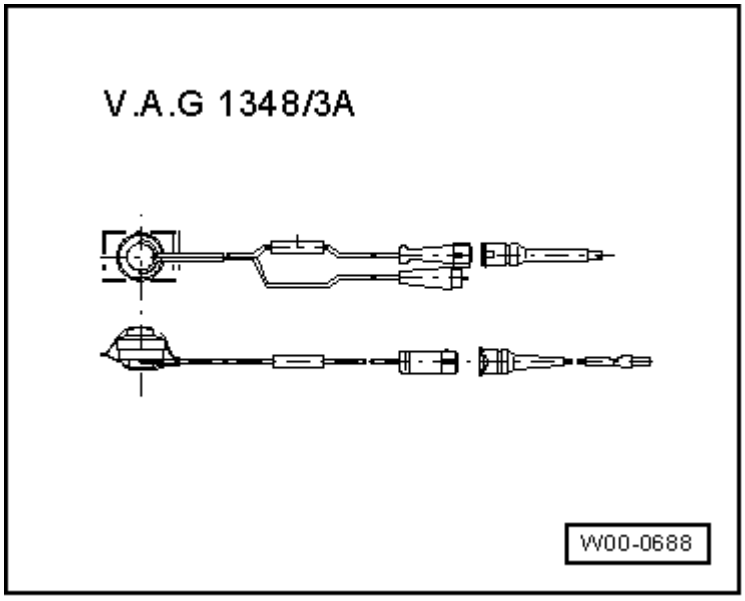


Fig. 605: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2
- Fuel pump delivery quantity, checking

cardiagn.com

Test conditions

- Battery voltage at least 12.5 V.
- Fuel filter OK
- Fuel tank at least $^{1}/_{4}$ filled.
- Fuel pressure regulator OK, checking -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

  .
- Ignition switched off.

Test sequence

- Open fuse box cover at left side of instrument cluster.
- Pull out fuse on fuse panel S228 (left row, 5th large fuse from top).

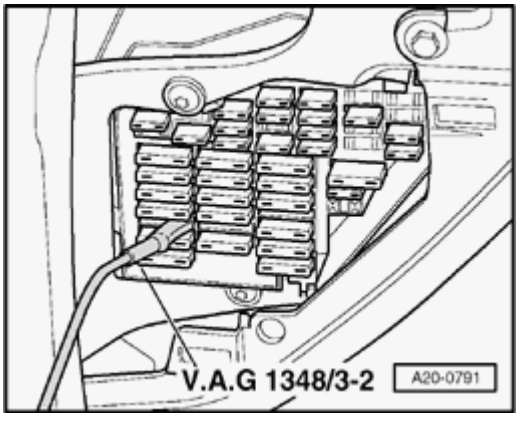


Fig. 606: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 To Right Socket Terminal Of S228
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-2 to right socket terminal of

cardiagn.com

S228.

- Connect alligator clip to vehicle battery (+).
- Remove fuel filler cap from fuel filler tube.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

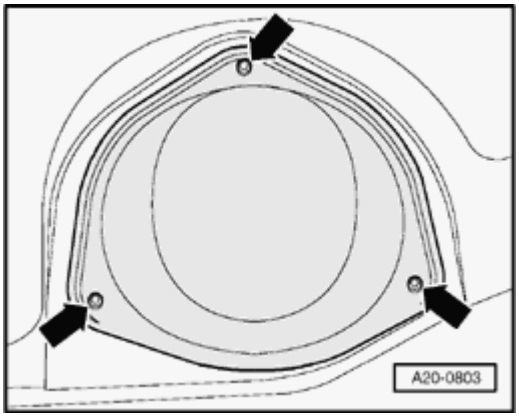


Fig. 607: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

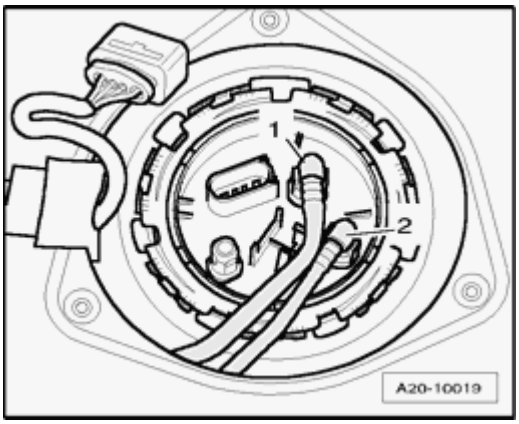


Fig. 608: Identifying Fuel Return Line And Fuel Supply Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel return line - **1** - by pressing release buttons.

cardiagn.com

NOTE:

- **Ignore - 2 -.**

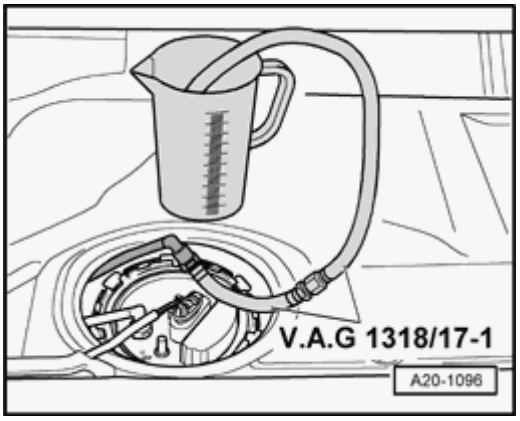


Fig. 609: Fuel Line From The High Pressure Fuel Gauge Connected To The Disconnected Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect adapter V.A.G 1318/17-1 to disconnected fuel return line and hold it in a measuring container.
- Press switch on remote control for 15 seconds.

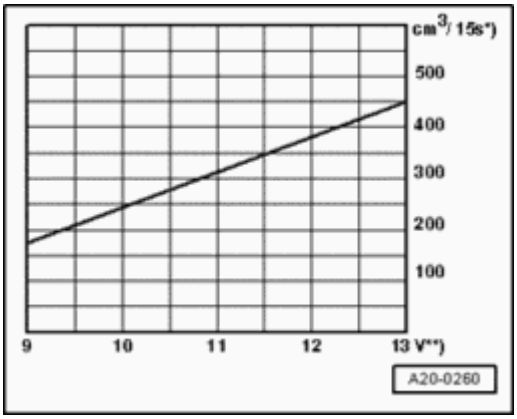


Fig. 610: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

Installation is in reverse order of removal. Note the following:

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**

cardiagn.com

- Install fuel return hose.

Fuel pump delivery quantity, checking (vehicles with 8-cyl. FSI-engine (Audi RS4))

Special tools, testers and auxiliary items required

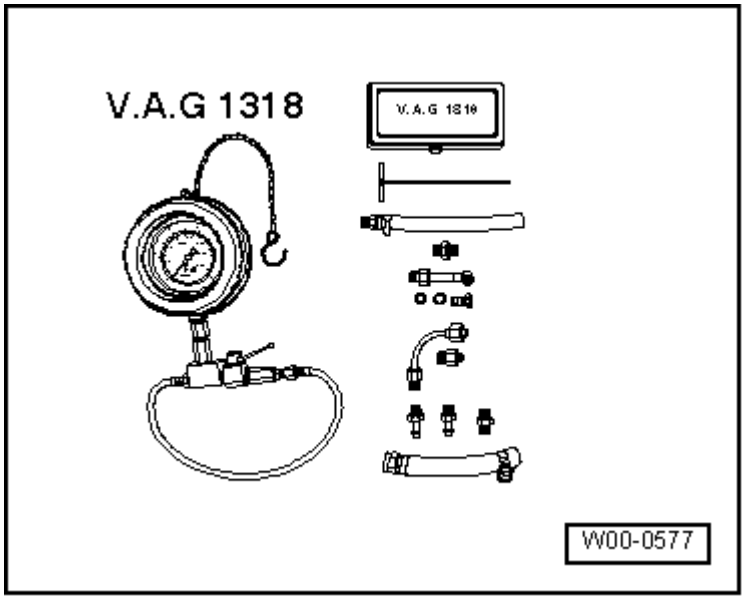
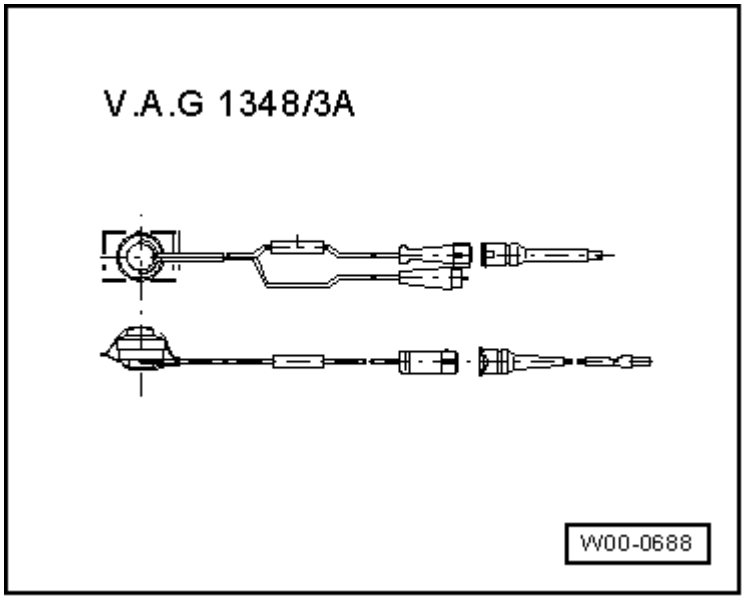


Fig. 611: Identifying Pressure Gauge V.A.G 1318
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge V.A.G 1318
- Adapter V.A.G 1318/11
- Adapter V.A.G 1318/12



cardiagn.com

Fig. 612: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remote control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3
- Fuel-resistant measuring container

Test conditions

- Battery voltage min. 12.5 V.
- Fuel filter OK.

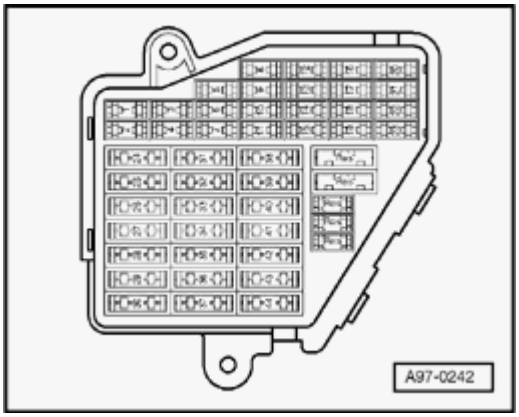


Fig. 613: Identifying Main Fuse Panel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse on fuse panel S228 (position 28) OK.

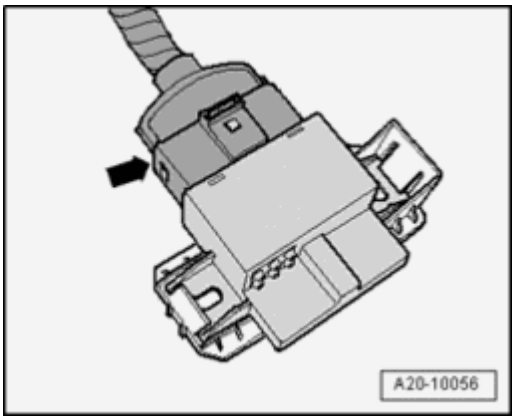


Fig. 614: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel Pump (FP) Control Module J538 OK.
- Fuel tank at least $^{1}/_{4}$ filled.
- Ignition switched off.

cardiagn.com

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

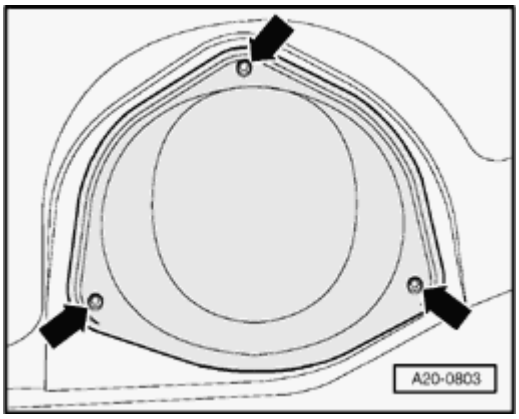


Fig. 615: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

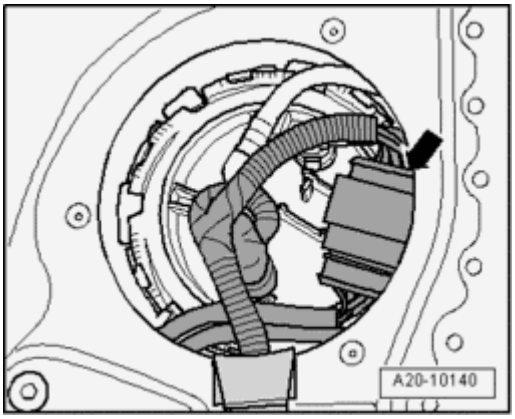


Fig. 616: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical wires with connector - **arrow** - from locking flange opening and lay them aside.

cardiagn.com

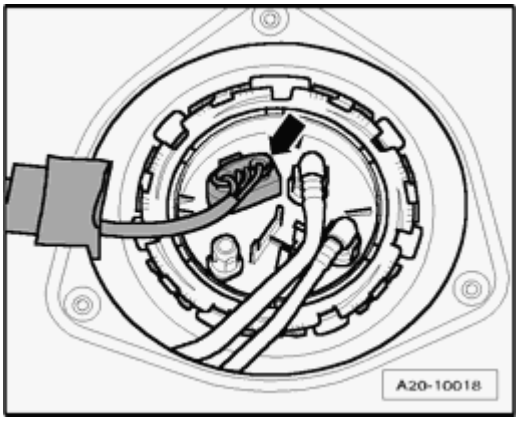


Fig. 617: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.

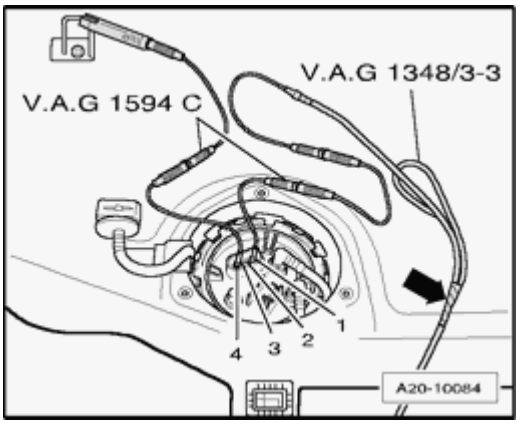


Fig. 618: Connecting Other End Of Hand Held Remote Starter (Jumper) To Vehicle Battery (+)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect remote control V.A.G 1348/3 A with connection V.A.G 1348/3-3 to contact - **1** - using an adapter cable from the connector test set V.A.G 1594 C.
- Using insulating tape, tape over the second contact of connection V.A.G 1348/3-3 to prevent a short circuit - **arrow** -.
- Connect contact - **4** - to vehicle Ground (GND) using a jumper cable from the connector test set V.A.G 1594.

cardiagn.com

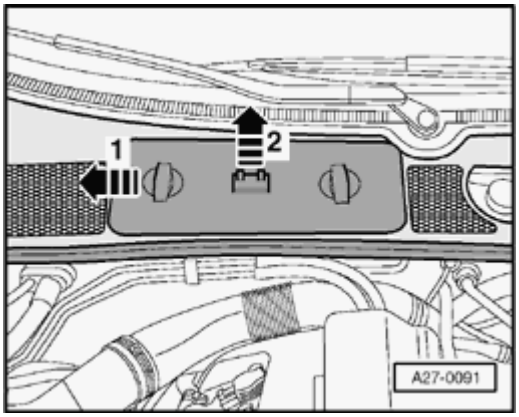


Fig. 619: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over positive terminal pick-off to the right - **arrow 1** - and remove it upward - **arrow 2** -.

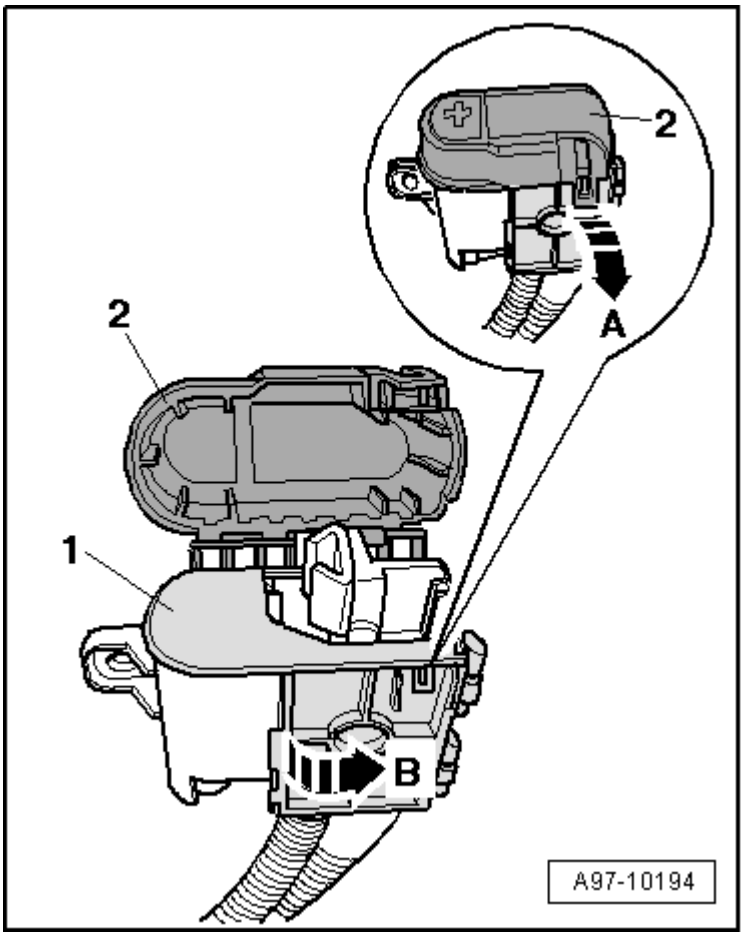


Fig. 620: Releasing Retaining Clip And Opening Cover Over Positive Terminal Pick-Off
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining clip - **arrow A** - and open cover - **2** - over positive terminal pick-off.

cardiagn.com

- Connect alligator clip to positive terminal pick-off (+).

NOTE:

- **Ignore - 1 - and - arrows B -.**

- Remove fuel filler cap from fuel filler tube.

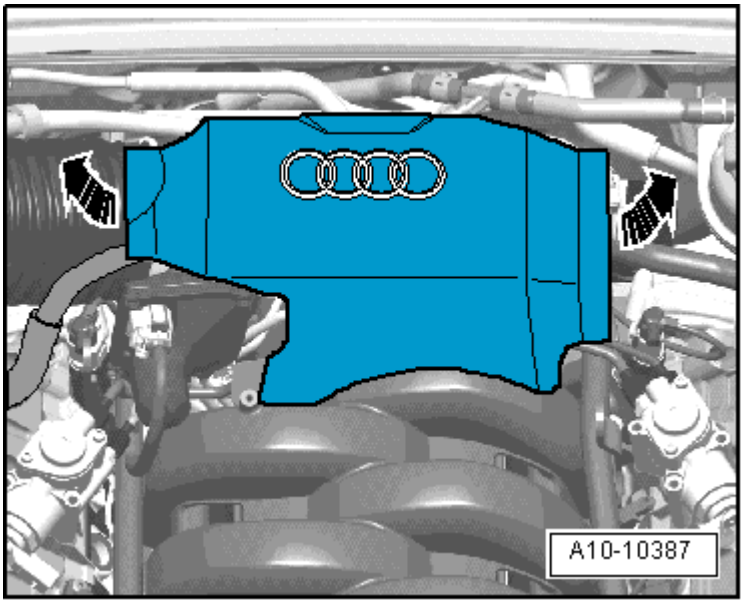


Fig. 621: Pulling Rear Engine Cover Off
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull rear engine cover off - **arrows** -.

CAUTION: Fuel system is under pressure! Before opening system, place clean rags around the connection. Then release pressure by carefully loosening the connection.

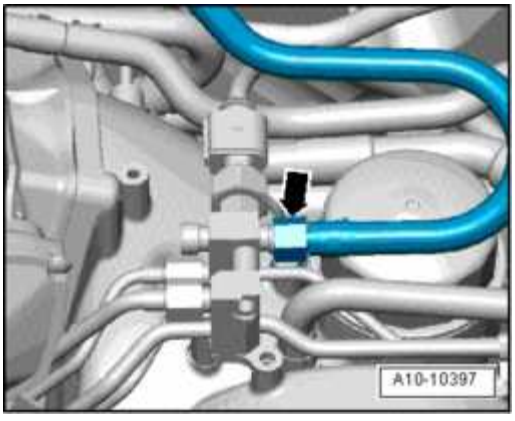


Fig. 622: Disconnecting Fuel Line At Fuel Rail
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Disconnect fuel line at fuel rail - **arrow** -.

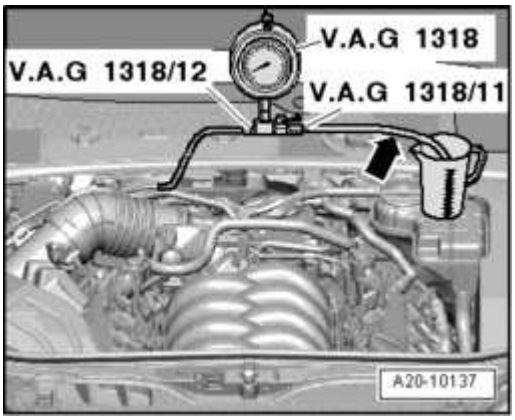


Fig. 623: Connecting Pressure Gauge V.A.G 1318 To Fuel Line Using Adapter V.A.G 1318/11 And V.A.G 1318/12
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect pressure gauge V.A.G 1318 to fuel line using adapter V.A.G 1318/11 and V.A.G 1318/12.
- Connect assisting hose - **arrow** - to pressure gauge and hold it in a measuring container.
- Open shut-off valve of pressure gauge. The lever points in the direction of flow.
- Generate pressure in fuel system by pressing the switch of the remote control and slowly closing shut-off valve of the pressure gauge.

- Specification: 4 bar positive pressure.

- From this point on do not move position of shut-off valve.
- Empty measuring container.
- Press switch on remote control for 15 seconds.

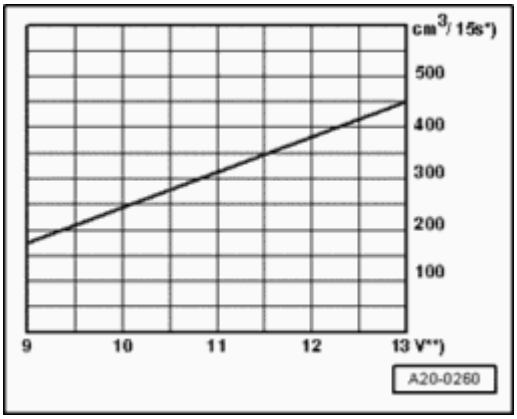


Fig. 624: Delivery Rate Diagram
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

cardiagn.com

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is approx. 2 volts less than battery voltage.**

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

- Fuel lines pinched.
- Fuel filter clogged.
- Fuel pump faulty.

Assembly is performed in reverse order.

- Install fuel line.

Torque specifications

Component	Nm
Fuel line to fuel rail	28

Fuel delivery unit, removing and installing

Special tools, testers and auxiliary items required

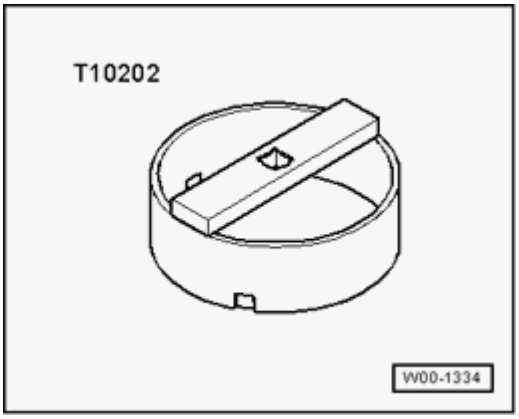


Fig. 625: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

cardiagn.com

CAUTION:

- **To remove the fuel delivery unit, the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

All except Audi RS4:

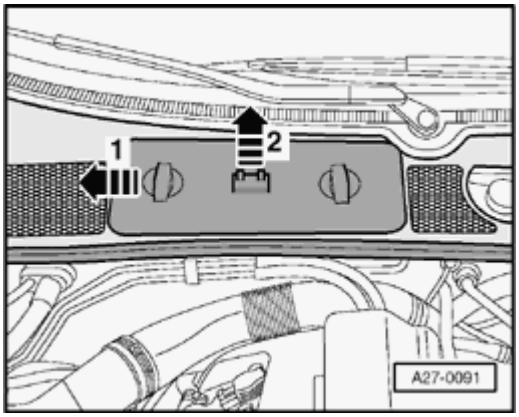


Fig. 626: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

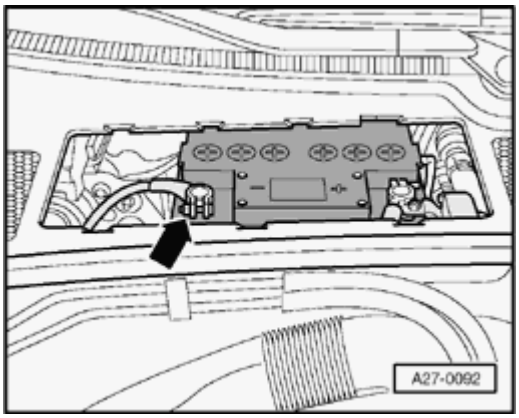


Fig. 627: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Audi RS4:

cardiagn.com

- Raise luggage compartment floor covering and secure.

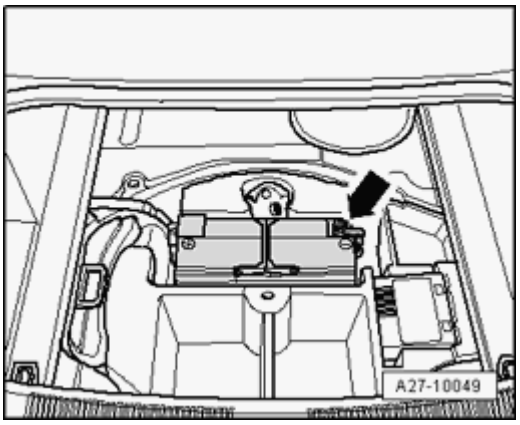


Fig. 628: Disconnecting Battery Ground (GND) Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

All:

- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

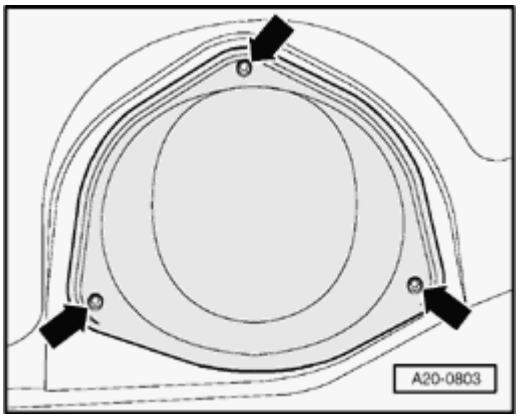


Fig. 629: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

Audi RS4:

cardiagn.com

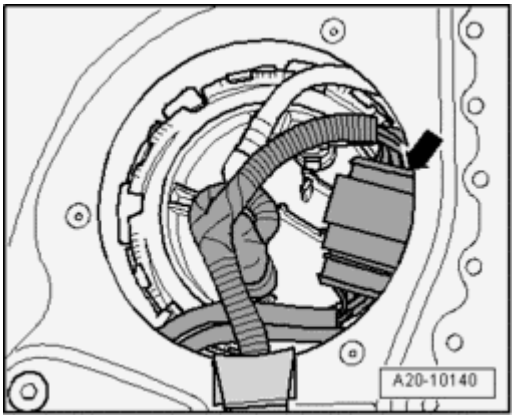


Fig. 630: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up electrical connector - **arrow** - for Fuel Pump (FP) Control Module J538 and disconnect.

All:

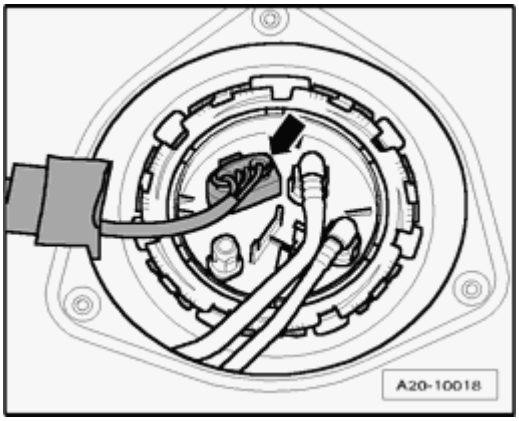
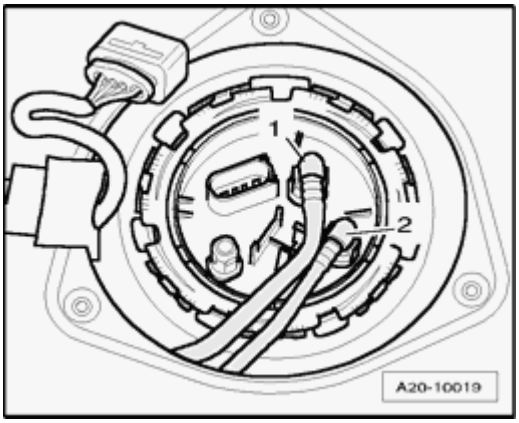


Fig. 631: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.



cardiagn.com

Fig. 632: Identifying Fuel Return Line And Fuel Supply Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark fuel return line - **1** - and fuel supply line - **2** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Pull both lines from locking flange, by pressing release buttons.

CAUTION: Locking flange may only be opened when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

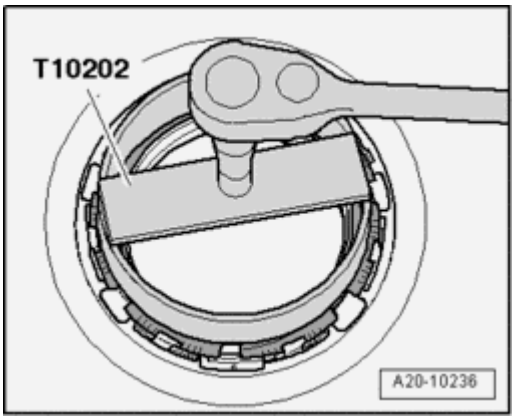


Fig. 633: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Remove locking flange and seal from opening in fuel tank and lay aside locking flange with lines still connected.

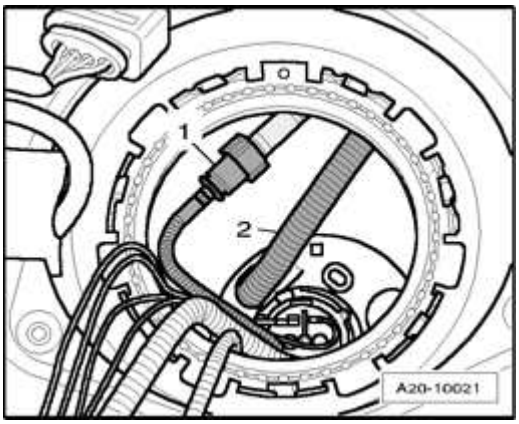


Fig. 634: Identifying Suction Jet Pipe & Fuel Delivery Line

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect suction jet pipe - **1** - to suction jet pump by pressing release button.
- Disengage fuel delivery line - **2** -.
- Remove fuel delivery unit.

NOTE:

- **When removing fuel delivery unit, be sure not to bend floater arm of Fuel Level Sensor G.**
- **Be aware that fuel is still in the fuel delivery unit.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When inserting fuel delivery unit, be sure not to bend Fuel Level Sensor G.**
- **Make sure fuel hoses are seated securely.**

- Insert fuel delivery unit into fuel tank with locking flange set aside.
- Attach fuel delivery line - **2** -.
- Push suction jet pipe - **1** - onto suction jet pump until it engages audibly.

Make sure fuel hoses are routed correctly:

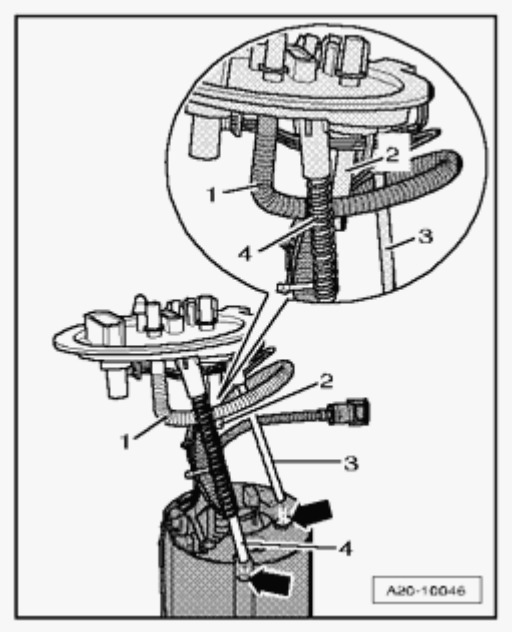


Fig. 635: Identifying Fuel Supply Line, Guide Tube & Supports For Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- The fuel supply line - **1** - must be routed between guide tube - **4** - and supports - **2** - for fuel return line. Also, it must be routed around outside of guide tube - **3** -.

  - Insert guide tubes - **3** - and - **4** - of locking flange into guide holes - **arrows** - of fuel delivery unit.

NOTE:

- **To improve clarity, the fuel delivery unit is shown without the fuel tank.**

  - Install new locking flange seal dry.
  - Press locking flange down against spring pressure and bring it into installation position.

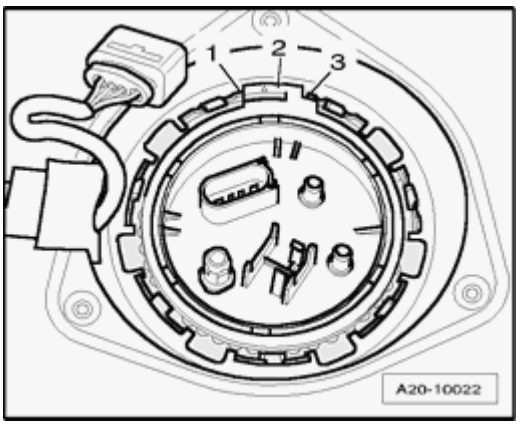


Fig. 636: Identifying Tab On Locking Flange Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

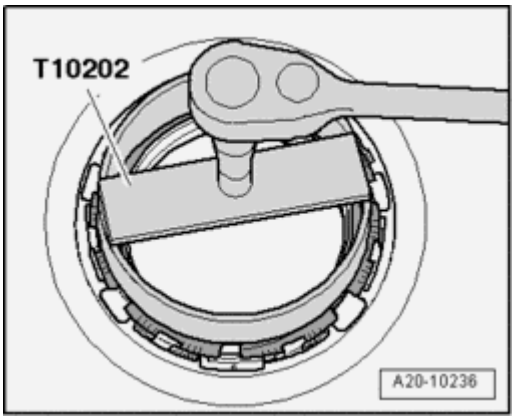


Fig. 637: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - Tighten locking ring.
  - Connect battery. Observe safety precautions after connecting battery -->
    - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
    - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL

cardiagn.com

EQUIPMENT, CABRIOLET

.

- After replacing fuel delivery unit, there should be a fuel pump adaptation on vehicles with 4-cyl. TFSI engine --> **Fuel pump adaptation after replacing fuel delivery unit, (vehicles with 4-cyl. TFSI engine)**.

Torque specifications

Component	Nm
Locking ring for fuel delivery unit	145

Fuel pump adaptation after replacing fuel delivery unit, (vehicles with 4-cyl. TFSI engine)

Special tools, testers and auxiliary items required

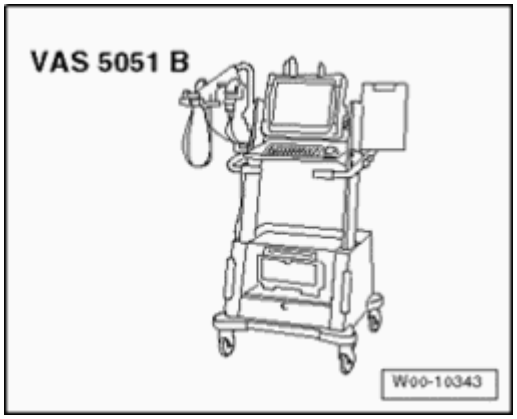


Fig. 638: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle diagnostic, testing, and information system VAS 5051 (VAS 5051 B version shown as example only)

NOTE:

- **If the fuel pump is replaced, the fuel pump should be adapted to the engine control module on vehicles with 4-cyl. TFSI engine to check the repair.**

Work procedure

- Vehicle Diagnostic, Testing and Information System VAS 5051 connected, On-Board Diagnostics (OBD) and vehicle system "01 Engine electronics" selected.
- No DTCs in DTC memory.
- Engine running at idle.

cardiagn.com

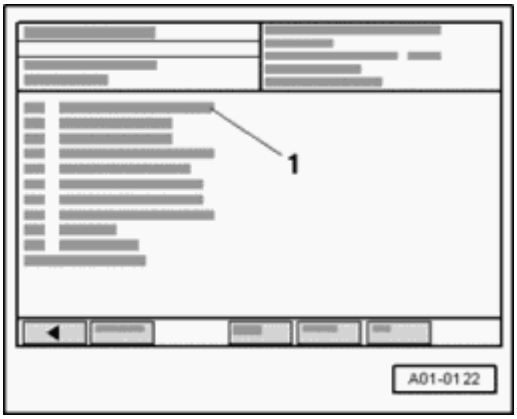


Fig. 639: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- In selection - **1** - , click on diagnostic function "04 - Basic Setting".

Fig. 640: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Select function "103" in button field - **2** - for "display group 103" and press Q to confirm input.

cardiagn.com

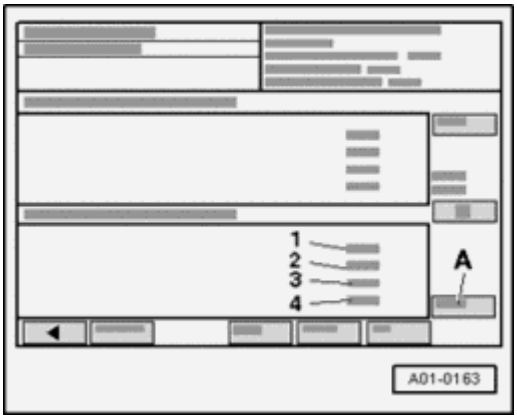


Fig. 641: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Activate basic setting by pressing Activate button - **A** -.

Display on VAS 5051 :

- Check indication in display field - **4** -.

Scan tool display: "ADP in progress". After fuel pump adaptation is completed, the display shows "ADP OK".

NOTE:

- **If "ADP not OK" is displayed: Check DTC Memory.**

- End function "04 - Basic setting" by pressing <-- button.
- From selection, click on diagnostic function "06 - End output".
- Turn ignition off and disconnect diagnostic connection.

Fuel Level Sensor G , checking

Special tools, testers and auxiliary items required

Fig. 642: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Portable multimeter V.A.G 1526 C

Fig. 643: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

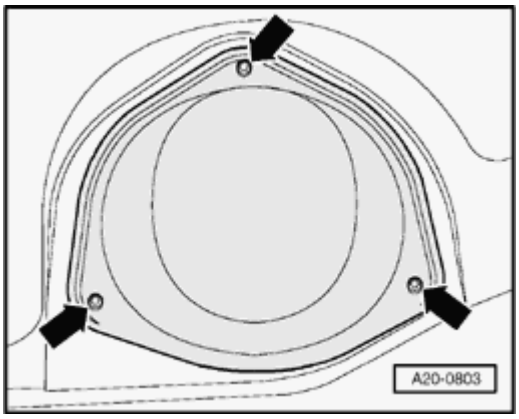


Fig. 644: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

Audi RS4:

cardiagn.com

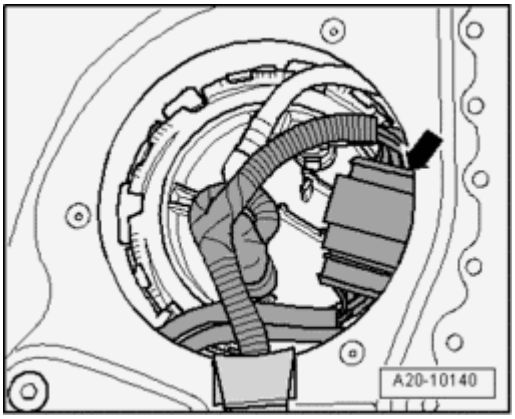


Fig. 645: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove electrical wires with connector - **arrow** - from locking flange opening and lay them aside.

All:

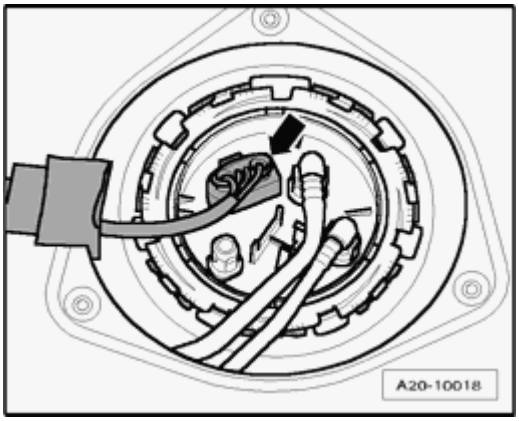
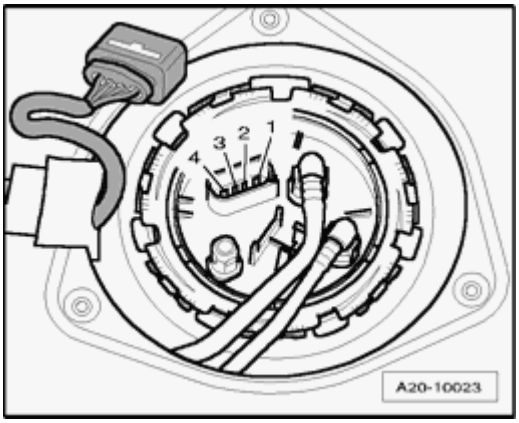


Fig. 646: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.



cardiagn.com

Fig. 647: Connecting Hand Multimeter V.A.G 1526 C Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 C between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	295 to 305 ohms	56 to 68 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the fuel level sensor G must be removed --> Fuel Level Sensor G , removing and installing and the floater of the sensor must be pivoted to the upper or lower end position.**
- **With fuel level sensor G removed, the following values are obtained because of the greater deflection of the floater arm:**

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor G	295 to 305 ohms	52.7 to 57.9 ohms

Fuel Level Sensor G , removing and installing

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.

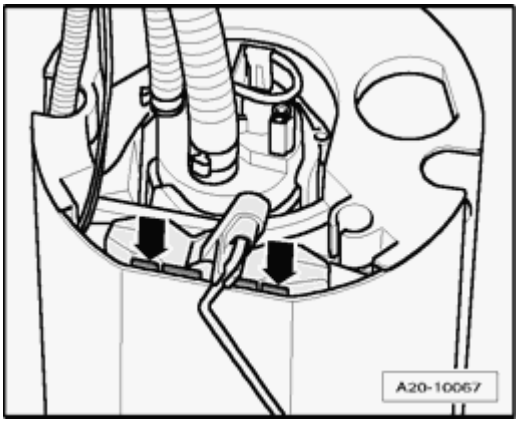


Fig. 648: Identifying Fuel Level Sensor G Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Release retaining tabs - **arrows** - with a screwdriver and pull Fuel Level Sensor G upward and out.

CAUTION: Before remove electrical connectors on Fuel Level Sensor G , first release contact retaining tabs.

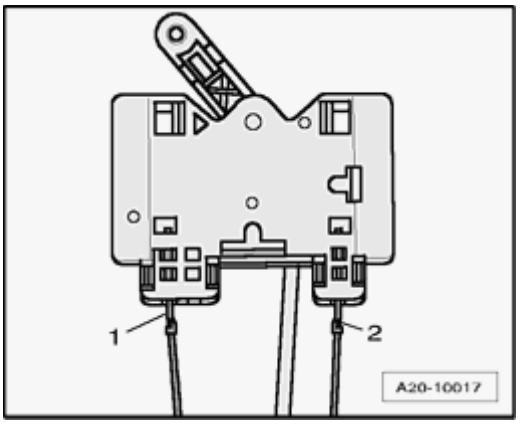


Fig. 649: Identifying Fuel Level Sensor G Electrical Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage electrical connectors - **1** - and - **2** - and disconnect them.

Installing

Installation is in reverse order of removal. Note the following:

- Connect electrical connections - **1** - and - **2** - and check that they are securely engaged.
- Insert Fuel Level Sensor G in the guides on fuel delivery unit and push down until it engages.
- Install fuel delivery unit **Installing** , observing notes for connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Fuel Level Sensor 2 G169 , checking

Special tools, testers and auxiliary items required

cardiagn.com

Fig. 650: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526 C

Fig. 651: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594 C

Test sequence

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

cardiagn.com

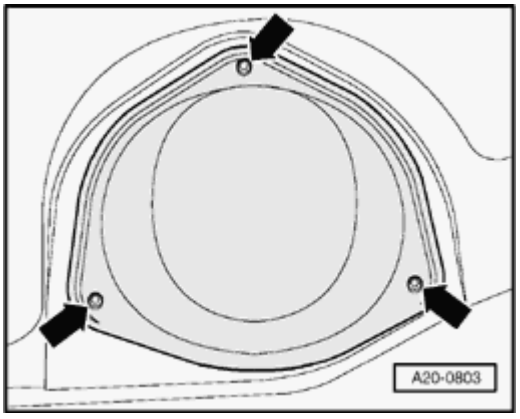


Fig. 652: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

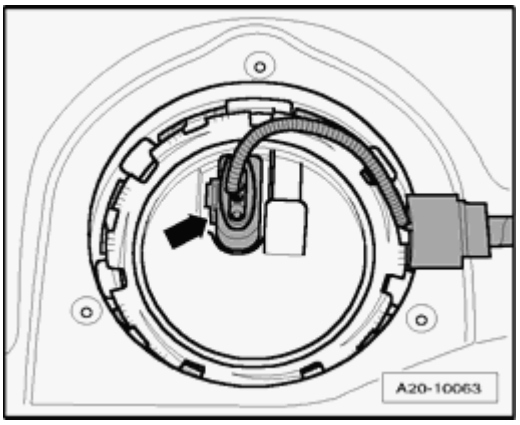


Fig. 653: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

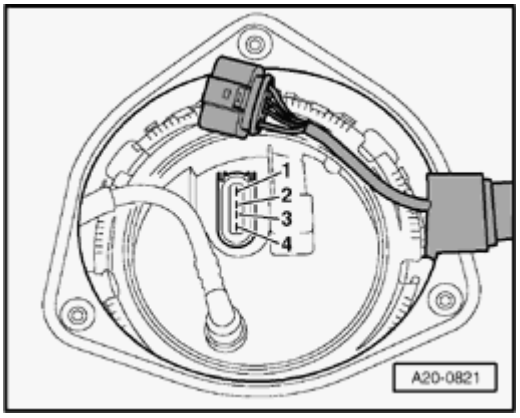


Fig. 654: Connecting Hand Multimeter V.A.G 1526 B Between Terminal For Resistance Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Connect hand multimeter V.A.G 1526 C between terminal - **2** - and - **3** - for resistance measurement.

Sensor installed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor 2 G169	275 to 296 ohms	47 to 65 ohms

NOTE:

- **If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is and open circuit in the wiring.**
- **To check resistance values "tank full" or "tank empty" , the Fuel Level Sensor 2 G169 must be removed --> Fuel Level Sensor 2 G169 , removing and installing and the sensor floater must be placed in upper or lower end position.**
- **With Fuel Level Sensor 2 G169 removed, the following values are obtained because of the greater deflection of the floater arm:**

Sensor removed	Sensor at lower stop	Sensor at upper stop
Fuel Level Sensor 2 G169	295 to 305 ohms	45.5 to 48.1 ohms

Fuel Level Sensor 2 G169 , removing and installing

Special tools, testers and auxiliary items required

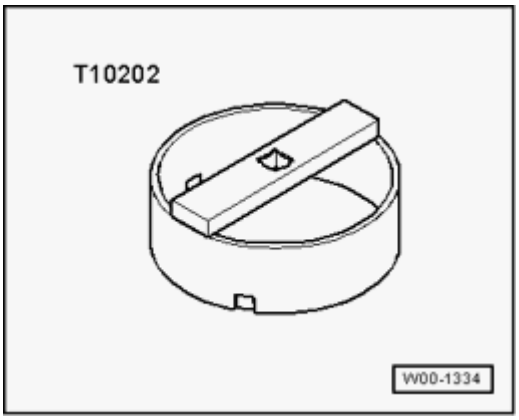


Fig. 655: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

cardiagn.com

- **To remove fuel level sensor 2 G169 , the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

All except Audi RS4:

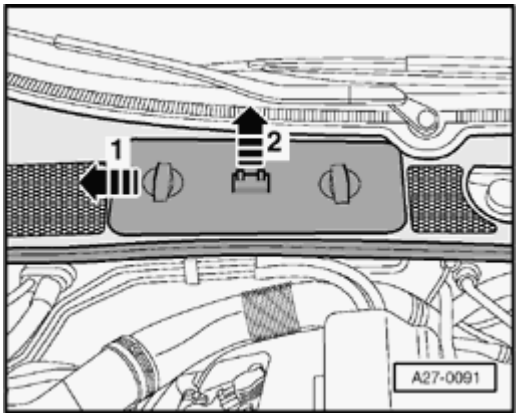


Fig. 656: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

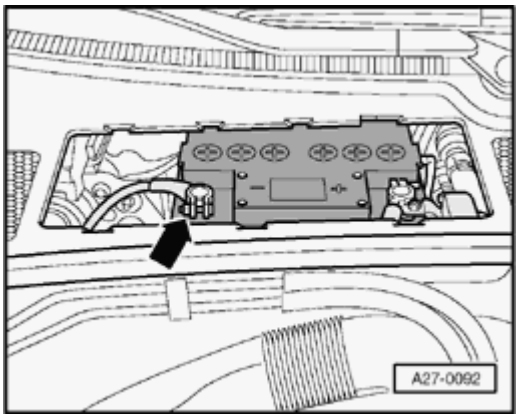


Fig. 657: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect battery Ground (GND) strap - **arrow** -.

Audi RS4:

cardiagn.com

- Raise luggage compartment floor covering and secure.

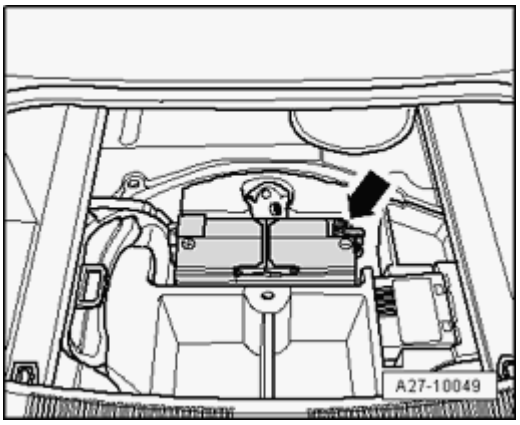


Fig. 658: Disconnecting Battery Ground (GND) Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

All:

- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

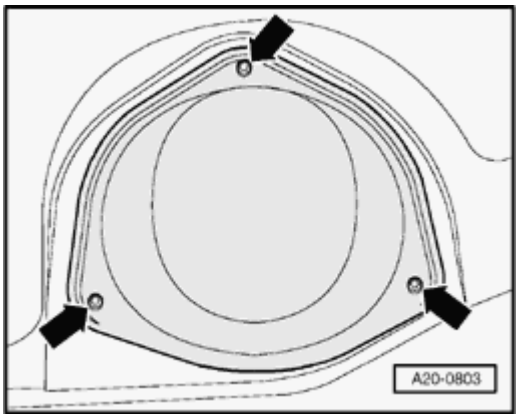


Fig. 659: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

cardiagn.com

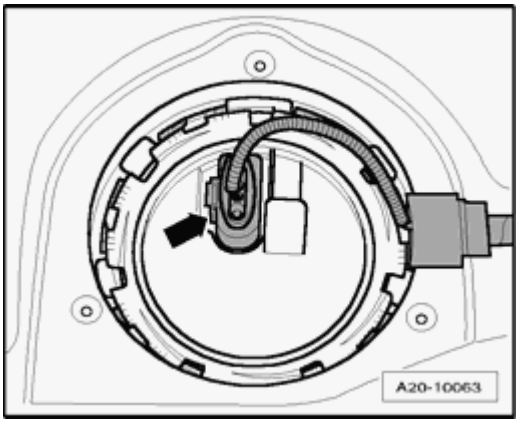


Fig. 660: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

CAUTION: The fuel level sensor 2 G169 may only be removed when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

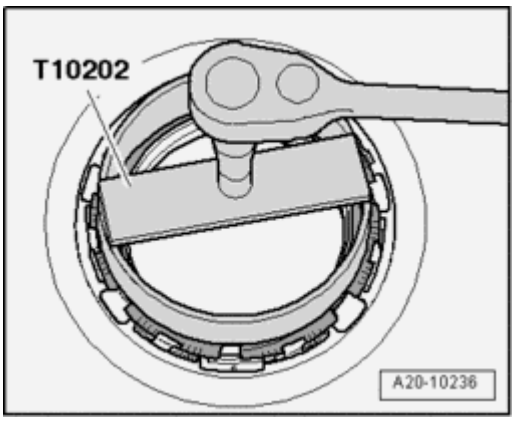


Fig. 661: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left locking ring using wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

cardiagn.com

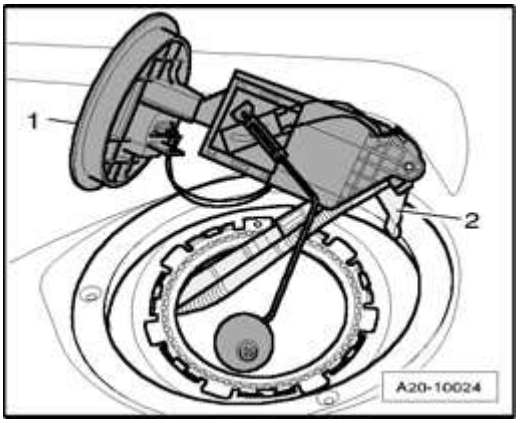


Fig. 662: Carefully Pull Locking Flange With Fuel Level Sensor 2 G169 With Suction Jet Pump Partially Out Of Fuel Tank Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pull locking flange - **1** - with fuel level sensor 2 G169 with suction jet pump - **2** - partially out of fuel tank opening.

NOTE:

- **When removing, be sure not to bend floater arm of fuel level sensor 2 G169.**

- Unclip suction jet pump from locking flange with Fuel Level Sensor 2 G169.
- Remove locking flange with fuel level sensor 2 G169.

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When installing, be sure not to bend floater arm of fuel level sensor 2 G169.**

- Clip suction jet pump to locking flange so that it is audibly engaged.
- Carefully insert Fuel Level Sensor 2 G169 into fuel tank opening.
- Install new locking flange seal dry.
- Press locking flange down against spring pressure and bring it into installation position.

cardiagn.com

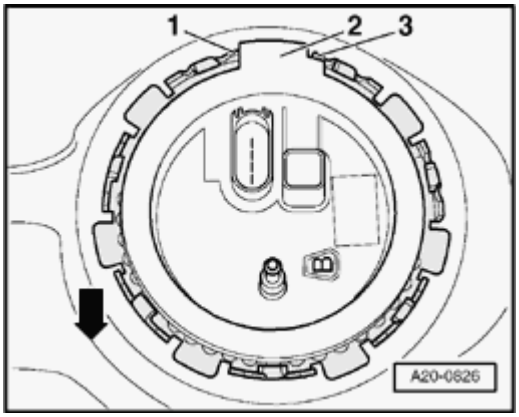


Fig. 663: Identifying Tab On Locking Flange Must Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

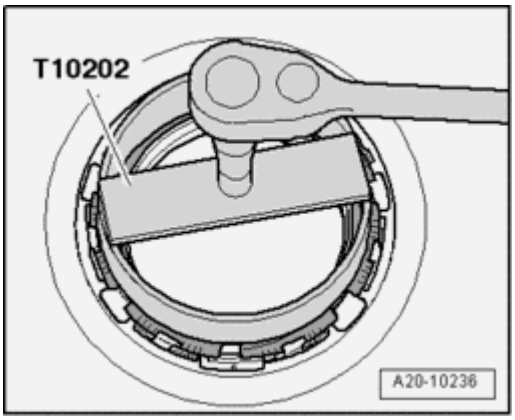


Fig. 664: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Lock ring for locking flange of fuel level sensor 2 G169	145

cardiagn.com

Suction jet pump

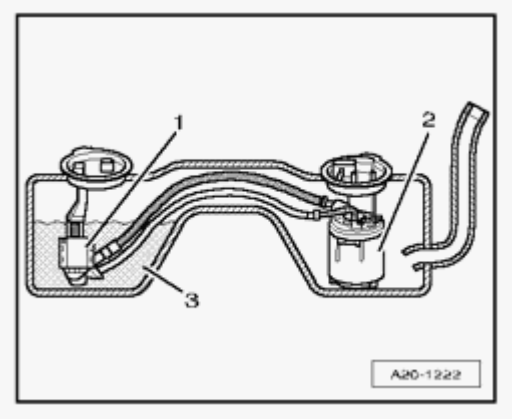


Fig. 665: Identifying Suction Jet Pump Function
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The fuel tank in a vehicle with all-wheel drive is divided into a left and right chamber. To move the volume of fuel from the left fuel tank chamber - **3** - to the right baffle housing of the fuel delivery unit - **2** - , a suction jet pump - **1** - is utilized.

Function of suction jet pump

Function of the suction jet pump is based on a simple physical principle: A suction jet from the electrical fuel pump is compressed by a nozzle in the suction jet pump and is thereby accelerated. This acceleration causes the surrounding fuel to be drawn in and be forced to the baffle housing of the fuel delivery unit.

Malfunctions of faulty suction jet pump

CAUTION: If suction jet pump is faulty, the vehicle can stop running due to lack of fuel, though the fuel tank is up to $^{1}/_{4}$ filled.

If suction jet pump does not function, up to 20 liters of fuel (up to approx.$^{1}/_{4}$ tank) remain in left chamber of fuel tank, because it can not be extracted by the fuel delivery unit.

If vehicle stops running, although the fuel tank is approx.$^{1}/_{4}$ filled, proceed as follows:

- Check fuel pump --> **Fuel pump electrical, checking**.

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

- Fill fuel tank with approx. 5 liters of fuel.
- Start engine.

If engine starts now:

cardiagn.com

- Replace suction jet pump --> **Suction jet pump, removing and installing**.

Suction jet pump, removing and installing

Special tools, testers and auxiliary items required

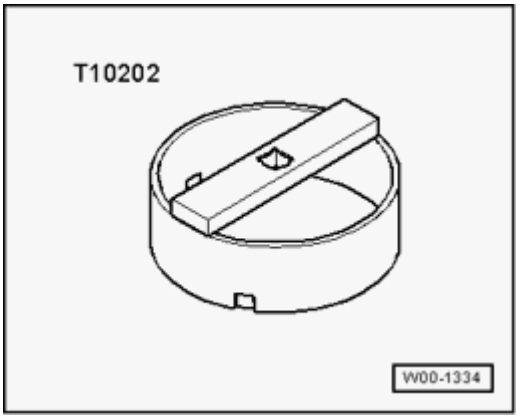


Fig. 666: Identifying Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wrench T10202

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

CAUTION:

- **To remove the suction jet pump, the fuel tank may only be filled to a maximum of $^{1}/_{4}$. Drain fuel tank if necessary. Procedure --> Fuel tank, draining.**
- **Observe procedures for disconnecting battery -->**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL for ELECTRICAL EQUIPMENT, CABRIOLET**

.

All except Audi RS4:

cardiagn.com

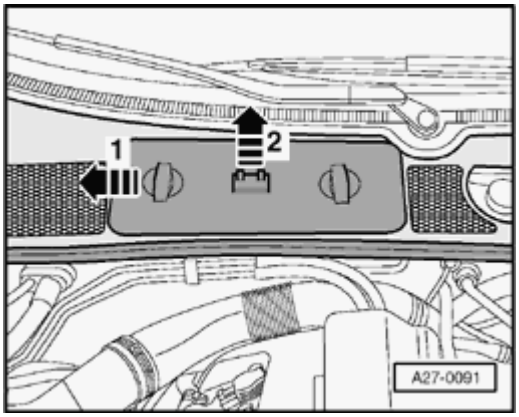


Fig. 667: Pushing Cover Over Battery Toward Right And Removing It Upward
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push cover over battery toward right - **arrow 1** - and remove it upward - **arrow 2** -.

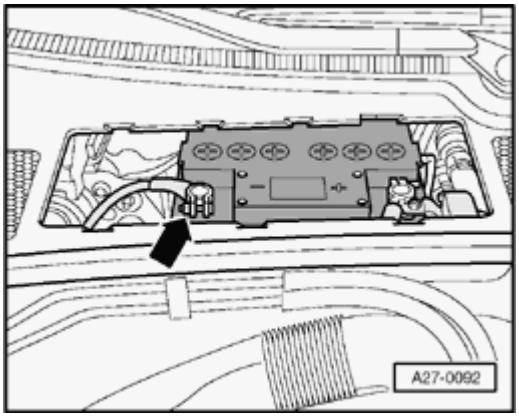


Fig. 668: Locating Battery Ground Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

Audi RS4:

- Raise luggage compartment floor covering and secure.

cardiagn.com

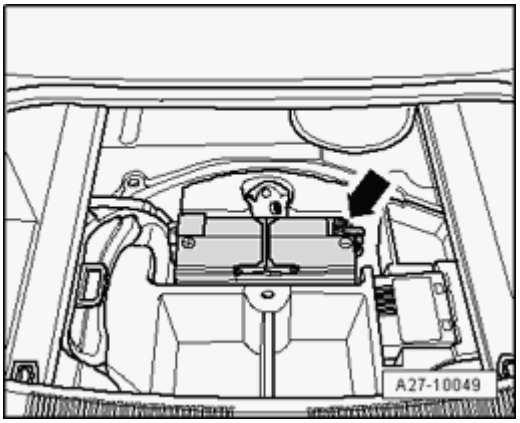


Fig. 669: Disconnecting Battery Ground (GND) Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With ignition switched off, disconnect Battery Ground (GND) strap - **arrow** -.

All:

- Open fuel filler flap briefly and then close again.
- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

.

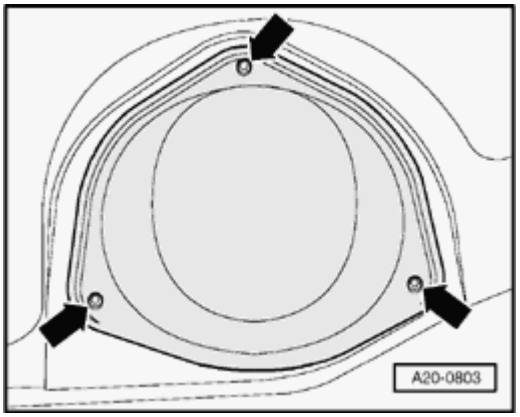


Fig. 670: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for right locking flange - **arrows** -.

Audi RS4:

cardiagn.com

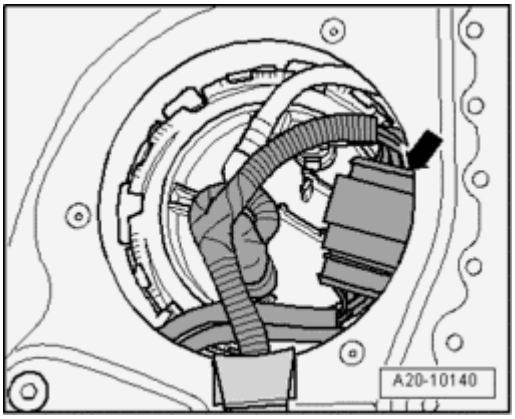


Fig. 671: Removing Electrical Wires With Connector From Locking Flange Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Free up electrical connector - **arrow** - for Fuel Pump (FP) Control Module J538 and disconnect.

All:

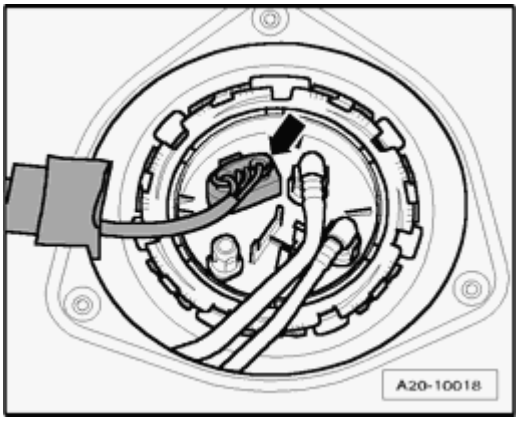
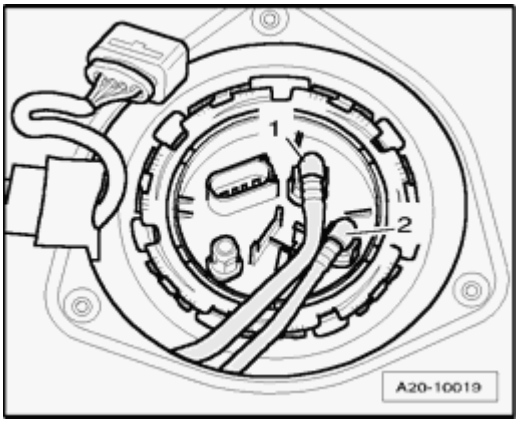


Fig. 672: Disconnecting Electrical Harness Connector At Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at right locking flange.



cardiagn.com

Fig. 673: Identifying Fuel Return Line And Fuel Supply Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark fuel return line - **1** - and fuel supply line - **2** -.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

- Pull both lines from locking flange, by pressing release buttons.

CAUTION: Locking flange may only be opened when fuel tank is maximum $^{1}/_{4}$ full. Otherwise, a large amount of fuel will spill out.

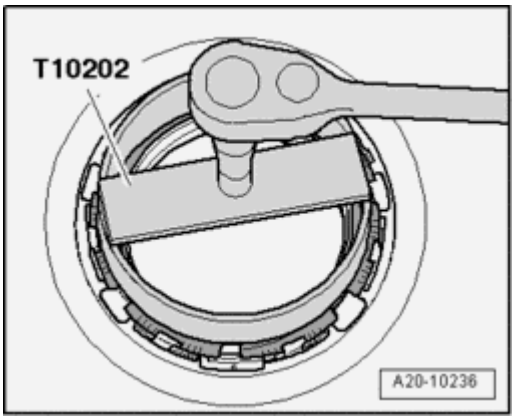


Fig. 674: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring using wrench T10202.
- Remove locking flange and seal from opening in fuel tank and lay aside locking flange with lines still connected.

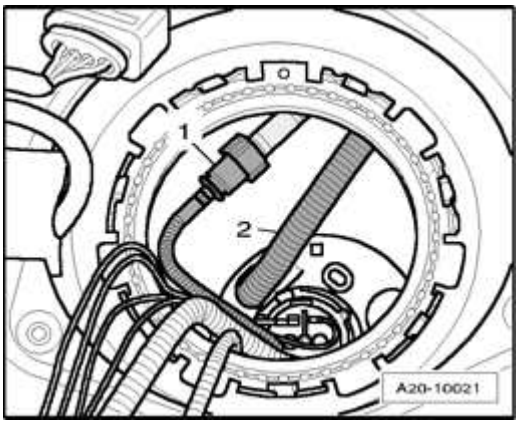


Fig. 675: Identifying Suction Jet Pipe & Fuel Delivery Line

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect suction jet pipe - **1** - to suction jet pump by pressing release button.
- Disengage fuel delivery line - **2** -.

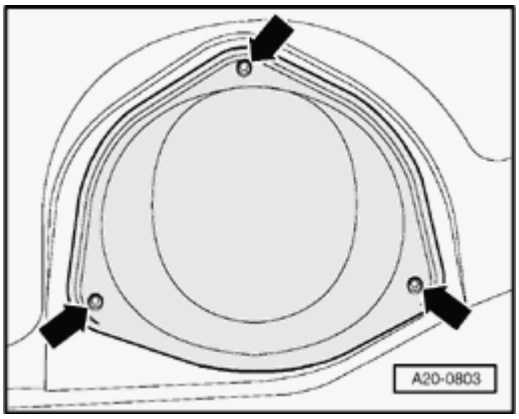


Fig. 676: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for left locking flange - **arrows** -.

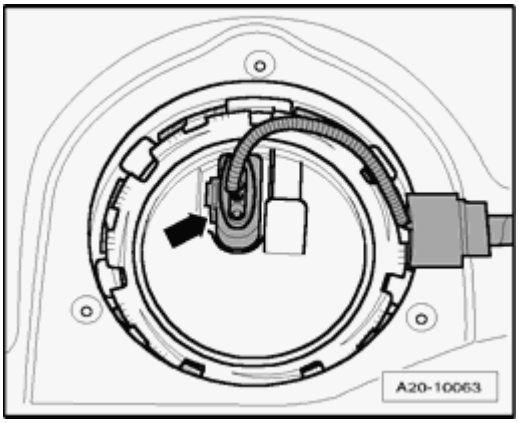


Fig. 677: Disconnecting Electrical Harness Connector At Left Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at left locking flange.

cardiagn.com

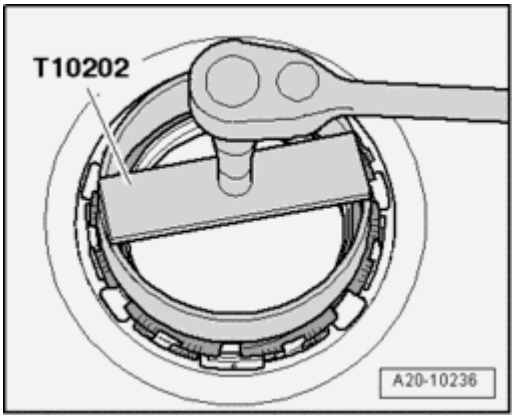


Fig. 678: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove locking ring on left using wrench T10202.
- Pull locking flange and sealing ring from opening of fuel tank.

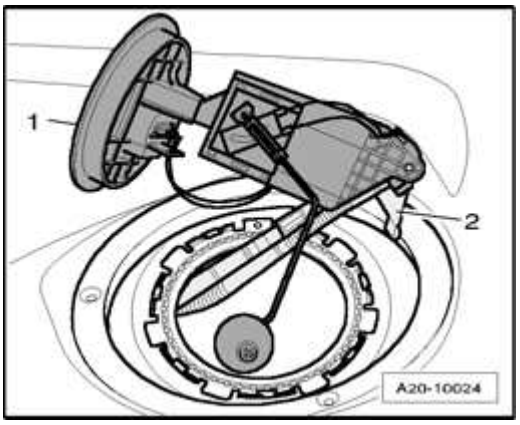


Fig. 679: Carefully Pull Locking Flange With Fuel Level Sensor 2 G169 With Suction Jet Pump Partially Out Of Fuel Tank Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pull the locking flange - **1** - with fuel level sensor 2 G169 with suction jet pump - **2** - toward left and out of fuel tank opening.

NOTE:

- **When removing, be sure not to bend floater arm of fuel level sensor 2 G169.**

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Replace seal.**
- **When installing, be sure not to bend floater arm of fuel level sensor 2**

cardiagn.com

G169.

- Push suction jet pump with lines at left side of vehicle into fuel tank opening.
- Reach into fuel tank opening on right side of vehicle and pull suction jet pump with lines into installed position.

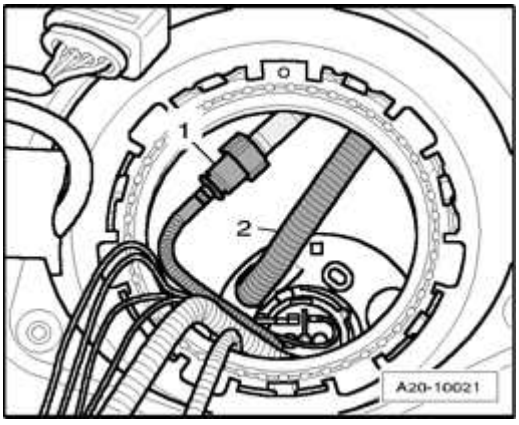


Fig. 680: Identifying Suction Jet Pipe & Fuel Delivery Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach fuel delivery line - **2** -.
- Push suction jet pipe - **1** - onto suction jet pump until it engages audibly.

Make sure fuel hoses are routed correctly:

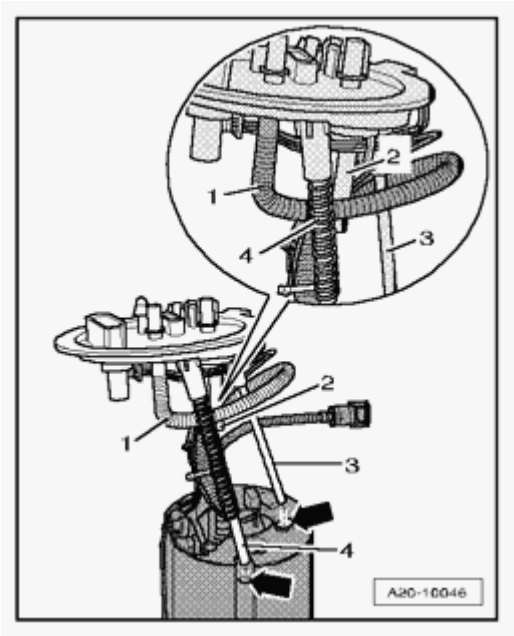


Fig. 681: Identifying Fuel Supply Line, Guide Tube & Supports For Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- The fuel supply line - **1** - must be routed between guide tube - **4** - and supports - **2** - for fuel return line. Also, it must be routed around outside of guide tube - **3** -.

  - Insert guide tubes - **3** - and - **4** - of locking flange into guide holes - **arrows** - of fuel delivery unit.

NOTE:

- **To improve clarity, the fuel delivery unit is shown without the fuel tank.**

  - Install new locking flange seal dry.
  - Press locking flange down against spring pressure and bring it into installation position.

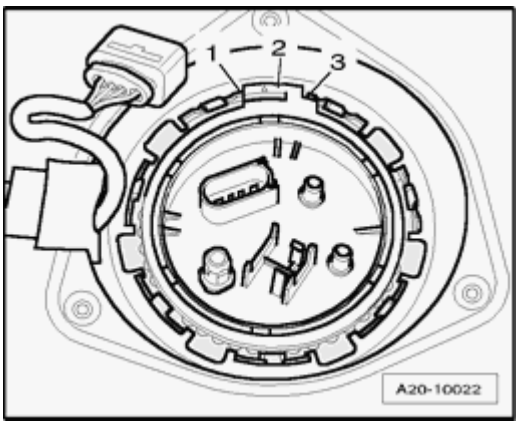


Fig. 682: Identifying Tab On Locking Flange Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

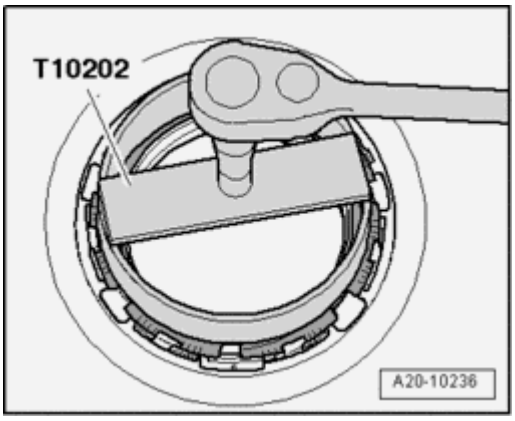


Fig. 683: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - Tighten right locking ring.

cardiagn.com

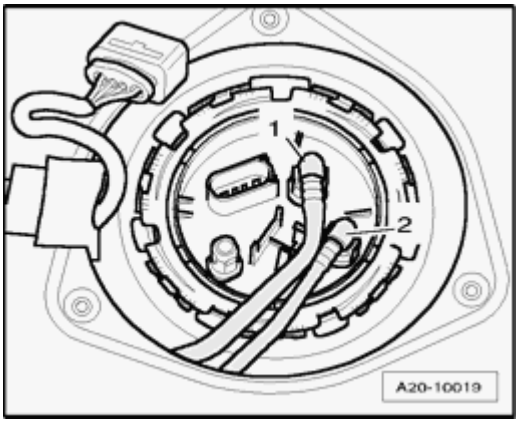


Fig. 684: Identifying Fuel Return Line And Fuel Supply Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install fuel supply line - **2** - and fuel return line - **1** - according to the marking.
- Connect electrical harness connector.
- Install new locking flange seal dry.
- Press locking flange down against spring pressure and bring it into installation position.

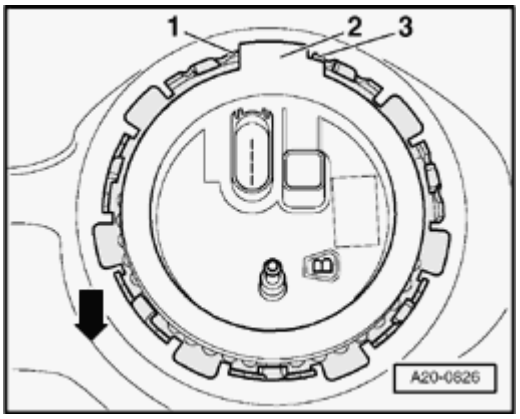


Fig. 685: Identifying Tab On Locking Flange Must Lie Between Tabs On Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - **2** - on locking flange must lie between tabs - **1** - and - **3** - on fuel tank.

NOTE:

- **- Arrow - points in direction of travel.**

cardiagn.com

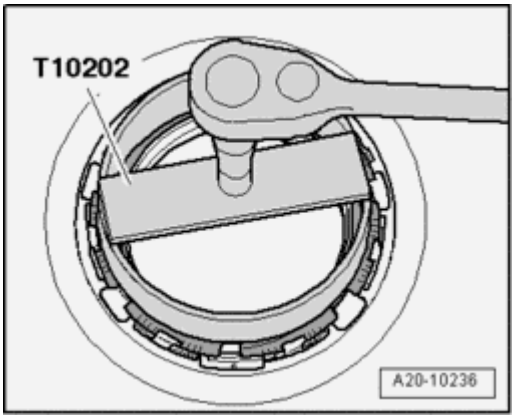


Fig. 686: Removing/Installing Locking Ring With Wrench T10202
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten left locking ring.
- Connect battery. Observe safety precautions after connecting battery -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

Torque specifications

Component	Nm
Lock ring for fuel delivery unit and locking flange of Fuel Level Sensor 2 G169	145

FUEL FILTER, SERVICING

Fuel filter, removing and installing (fuel system with return line)

Special tools, testers and auxiliary items required

- Drip tray

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

cardiagn.com

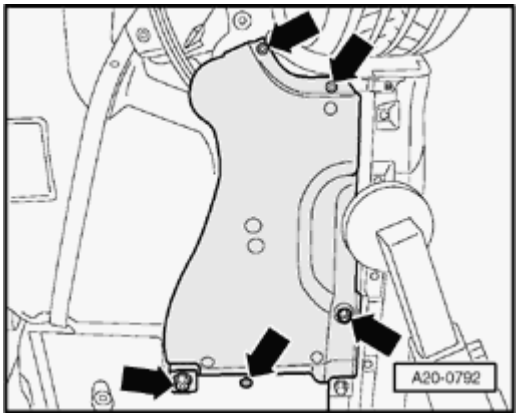


Fig. 687: Removing Right Cover Next To Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right cover next to fuel tank - **arrows** -.
- Place drip tray under fuel filter.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

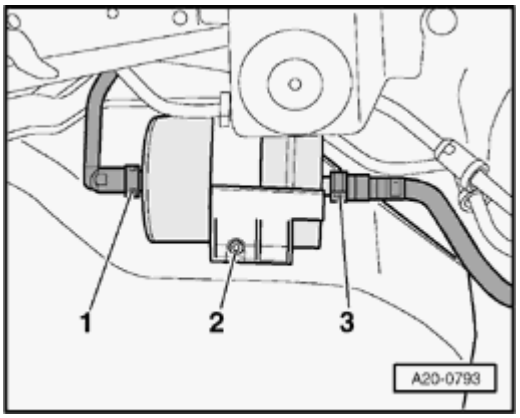


Fig. 688: Identifying Fuel Lines, Bolts & Fuel Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel lines - **1** - and - **3** - by pressing release buttons.
- Remove bolts - **2** -.
- Remove fuel filter.

Installing

Installation is in reverse order of removal. Note the following:

Installed location:

cardiagn.com

- The direction of flow is indicated on filter housing with arrows.

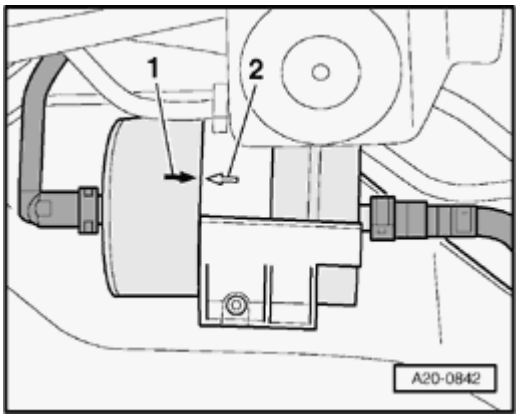


Fig. 689: Identifying Arrow Markings Are Across From Each Other
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The arrow markings - **1** - and - **2** - must be across from each other.

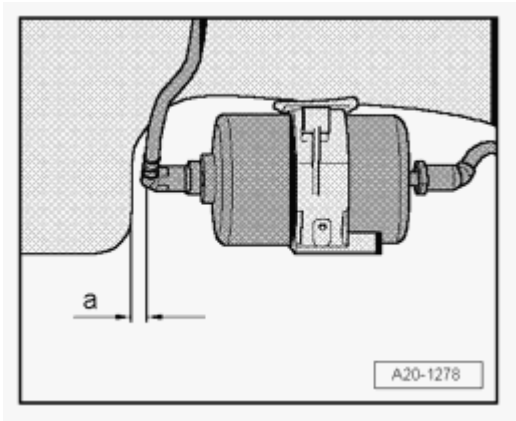


Fig. 690: Distance Between Fuel Return Line At Fuel Filter And Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Distance between fuel return line at fuel filter and fuel tank.

- Front wheel drive: - **a** - = 6 to 10 mm.
- All wheel drive: - **a** - = 3 to 7 mm.

Torque specifications

Component	Nm
Retaining clamp for fuel filter	1.2

Fuel filter, removing and installing (fuel system without return flow)

Special tools, testers and auxiliary items required

cardiagn.com

- Drip tray

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

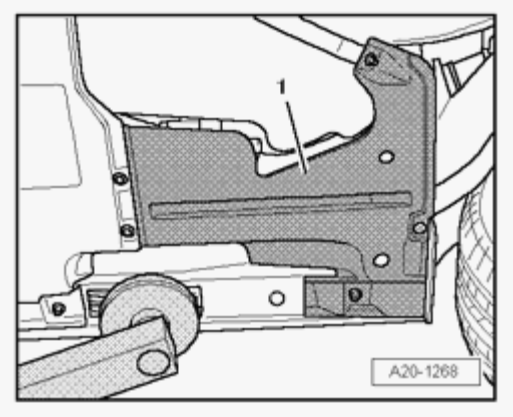


Fig. 691: Removing Right Rear Cover On Bottom Of Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear cover - **1** - next to fuel tank.
- Place drip tray under the fuel filter.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection area. Then release pressure by carefully loosening the connection.

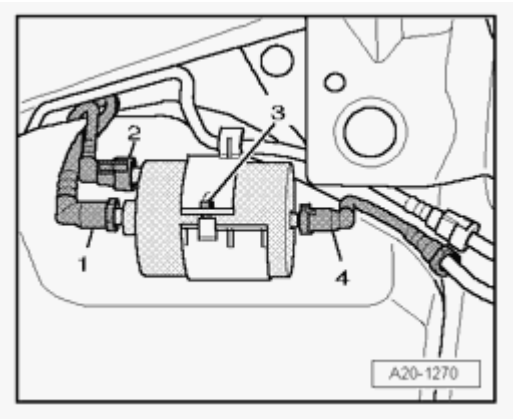


Fig. 692: Disconnecting Fuel Lines, Bolts & Fuel Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel lines - **1** - , - **2** - and - **4** - by pressing release buttons.

cardiagn.com

- Remove bolts - **3** -.
- Remove fuel filter.

NOTE:

- **Shown in illustration on a vehicle with front wheel drive.**

Installing

Installation is in reverse order of removal. Note the following:

Installed location:

- The direction of flow is indicated on filter housing with arrows.

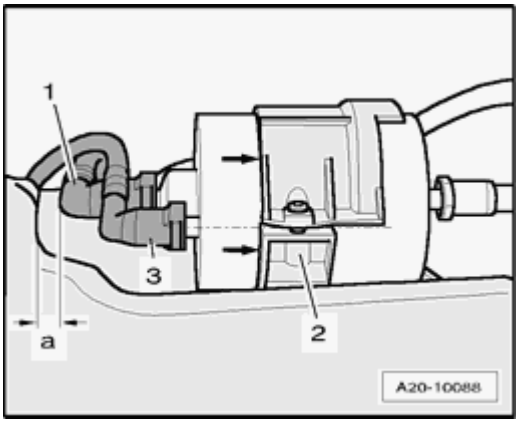


Fig. 693: Identifying Connection "IN" For Fuel Supply Line Are At Same Height Of The Threaded Connection On Filter Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles with front wheel drive, connection "IN" for fuel supply line - **3** - must be at same height of the threaded connection on filter bracket - **2** -.

Distance between fuel return line at fuel filter and fuel tank.

- Front wheel drive: - **a** - = 6 to 10 mm.
- All wheel drive: - **a** - = 3 to 7 mm.

Torque specifications

Component	Nm
Retaining clamp for fuel filter	1,2

Fuel filter, removing and installing (vehicles with 1.8L Turbo engine)

Special tools, testers and auxiliary items required

cardiagn.com

- Drip tray

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

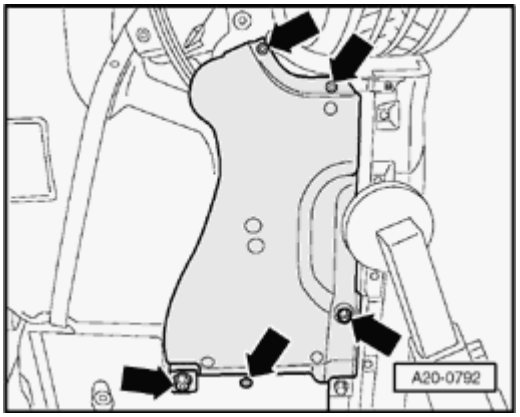


Fig. 694: Removing Right Cover Next To Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right cover next to fuel tank - **arrows** -.
- Place drip tray under the fuel filter.

CAUTION: The fuel system is under pressure! Before opening system, place rags around the connection. Then release pressure by carefully loosening the connection.

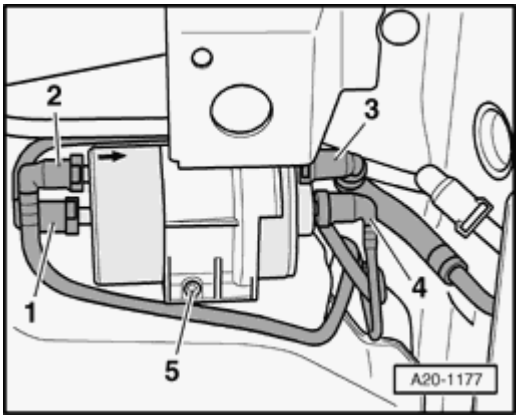


Fig. 695: Disconnecting Following Fuel Lines At Fuel Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect the following fuel lines at fuel filter:

cardiagn.com

1. Return line
2. Supply line from fuel tank
3. Supply line to engine
4. Ventilation line

- Remove bolts - **5** -.
- Remove fuel filter.

NOTE:

- **Shown in illustration on a vehicle with all wheel drive.**

Installing

Installation is in reverse order of removal. Note the following:

- Direction of flow is marked with arrows.

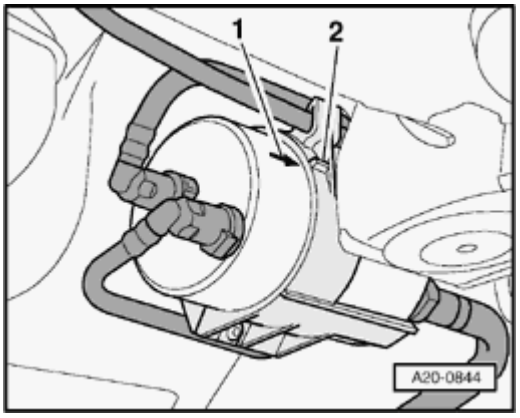


Fig. 696: Identifying Marking On Bracket Must Align With Arrow Marking On Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The marking - **2** - on bracket must align with arrow marking - **1** - on filter.

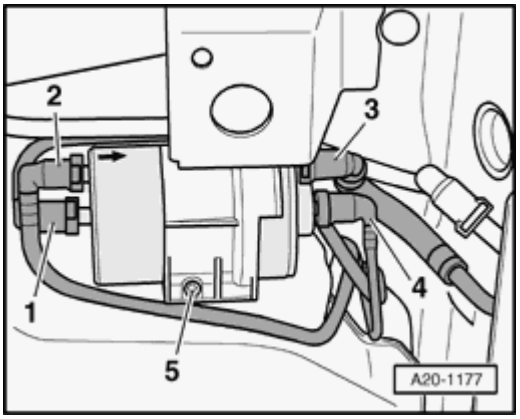


Fig. 697: Disconnecting Following Fuel Lines At Fuel Filter

cardiagn.com

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install fuel lines according to markings.

1 -	Return line	"RL"
2 -	Supply line from fuel tank	"VL"
3 -	Supply line to engine	"MOTOR"
4 -	Ventilation line	"E"

NOTE:

- **Shown in illustration on a vehicle with all wheel drive.**

Torque specifications

Component	Nm
Retaining clamp for fuel filter	1.2

FUEL SYSTEM, BLEEDING (1.8L TURBO ENGINE)

Fuel system, bleeding (1.8L Turbo engine)

- To prevent damage to catalytic converter, the fuel system without return line must be bled after repair work on fuel lines or on fuel filter. The vehicle must only be started after bleeding it first.
- Fuel system, bleeding -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

EVAP CANISTER/LEAK DETECTION SYSTEM, SERVICING (FRONT AND ALL WHEEL DRIVE VEHICLES)

EVAP canister/leak detection system, assembly overview

cardiagn.com

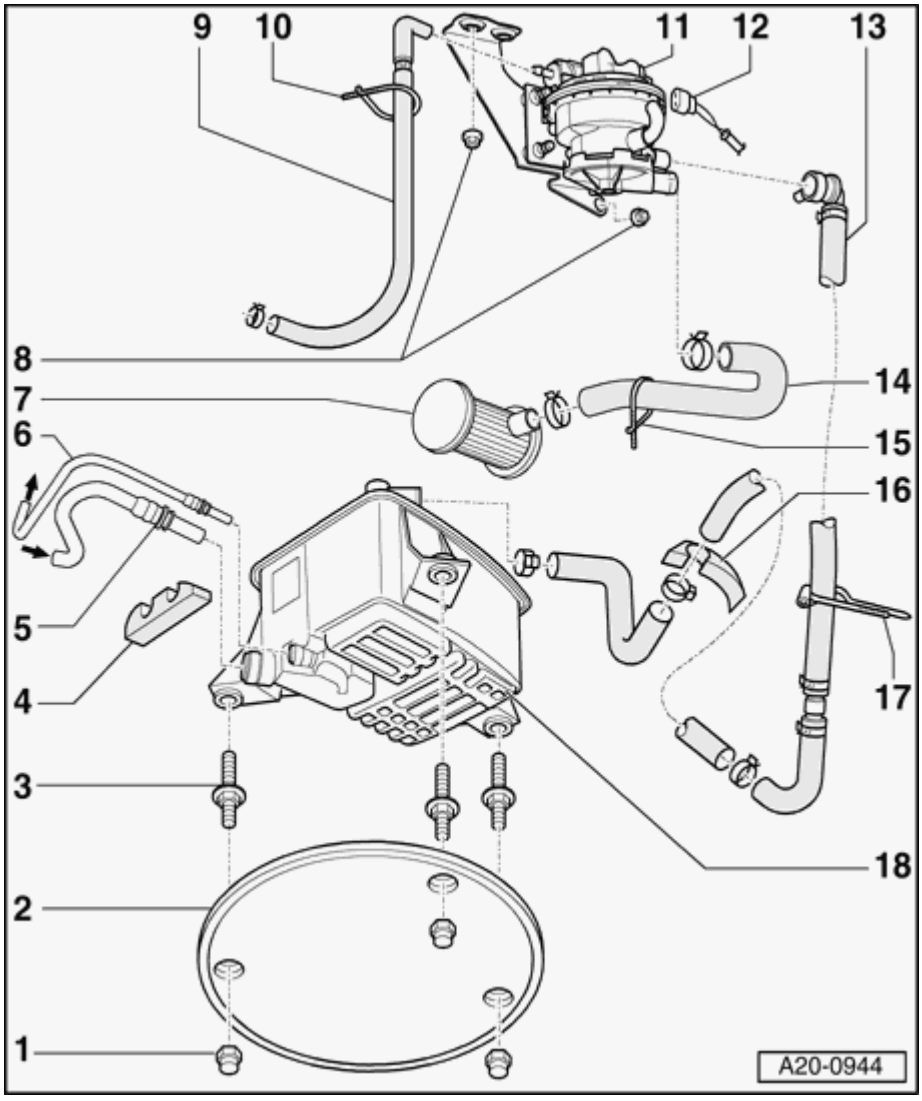


Fig. 698: EVAP Canister/Leak Detection System, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Cap nut, 9 Nm

2 - Cover

- For EVAP canister

3 - Stud bolt, 16 Nm

4 - Sealing piece

5 - Ventilation line

- From gravity valve at fuel tank

cardiagn.com

- To remove, press release ring on EVAP canister

6 - Ventilation line

- To evaporative emission (EVAP) canister purge regulator valve N80
- To remove, press release ring on EVAP canister

7 - Air filter housing

- For leak detection pump (LDP) V144
- No maintenance schedule

8 - 4 Nm

9 - Vacuum line

- To leak detection pump (LDP) V144

10 - Cable tie

- To fasten vacuum line to bracket for leak detection pump

11 - Leak detection pump (LDP) V144

- Component location: In left rear wheel housing behind wheel housing liner
- Checking --> **Leak Detection Pump (LDP) V144 , checking (vehicles with MPI-engine)**
- Removing and installing --> **Leak Detection Pump (LDP) V144 , removing and installing**

12 - Electrical harness connector

13 - Connecting hose

- Leak detection pump/EVAP canister
- Pressure side
- To remove at leak detection pump, press release button on connection

14 - Connecting hose

- Leak diagnosis pump/air filter

15 - Cable tie

- To fasten hose to bracket of leak detection pump

16 - Sealing piece

cardiagn.com

17 - Cable tie

- To fasten connecting hose to wheel housing

18 - EVAP canister

- Component location: Bottom of spare wheel well
- Vehicles as of 11.04: With EVAP filter **EVAP filter - Vehicles as of 11.04**
- Removing and installing --> **Evaporative emissions (EVAP) canister, removing and installing**

EVAP filter - Vehicles as of 11.04

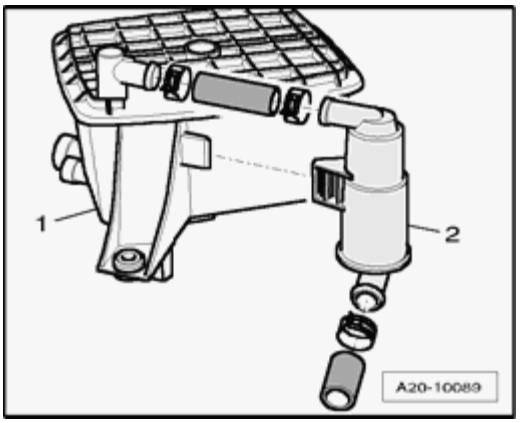


Fig. 699: EVAP Filter - Vehicles As Of 11.04
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Evaporative emissions (EVAP) canister, removing and installing

NOTE:

- **Checking for leaks --> Diagnostic leak test, performing.**

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

cardiagn.com

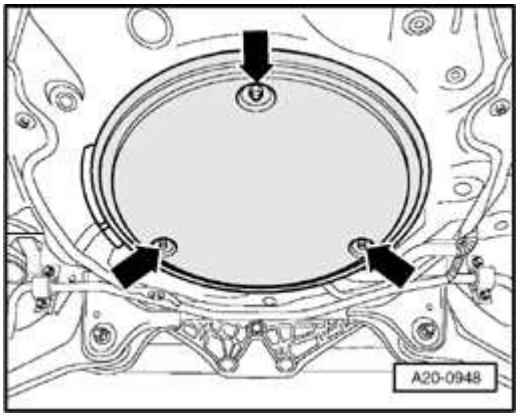


Fig. 700: Removing EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove EVAP canister cover at bottom of spare wheel well - **arrows** -.
- Remove sealing pieces above ventilation lines.

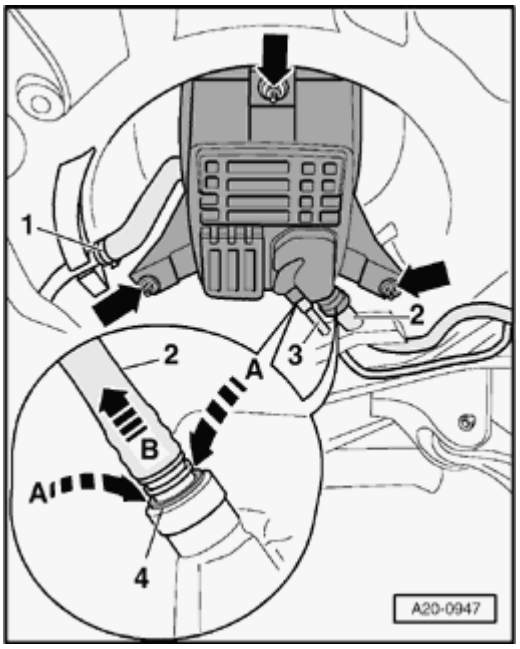


Fig. 701: Separating Ventilation Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect hose connection - **1** - at ventilation line.

NOTE:

- **For vehicles with EVAP filter EVAP filter - Vehicles as of 11.04**

- Separate ventilation lines - **2** - and - **3** -. Do this by pressing releasing ring - **4** - in direction - **arrow A** - and simultaneously pulling ventilation line off - **arrow B** -.
- Remove stud bolts - **arrows** - and remove EVAP canister.

cardiagn.com

Installing

Installation is in reverse order of removal. Note the following:

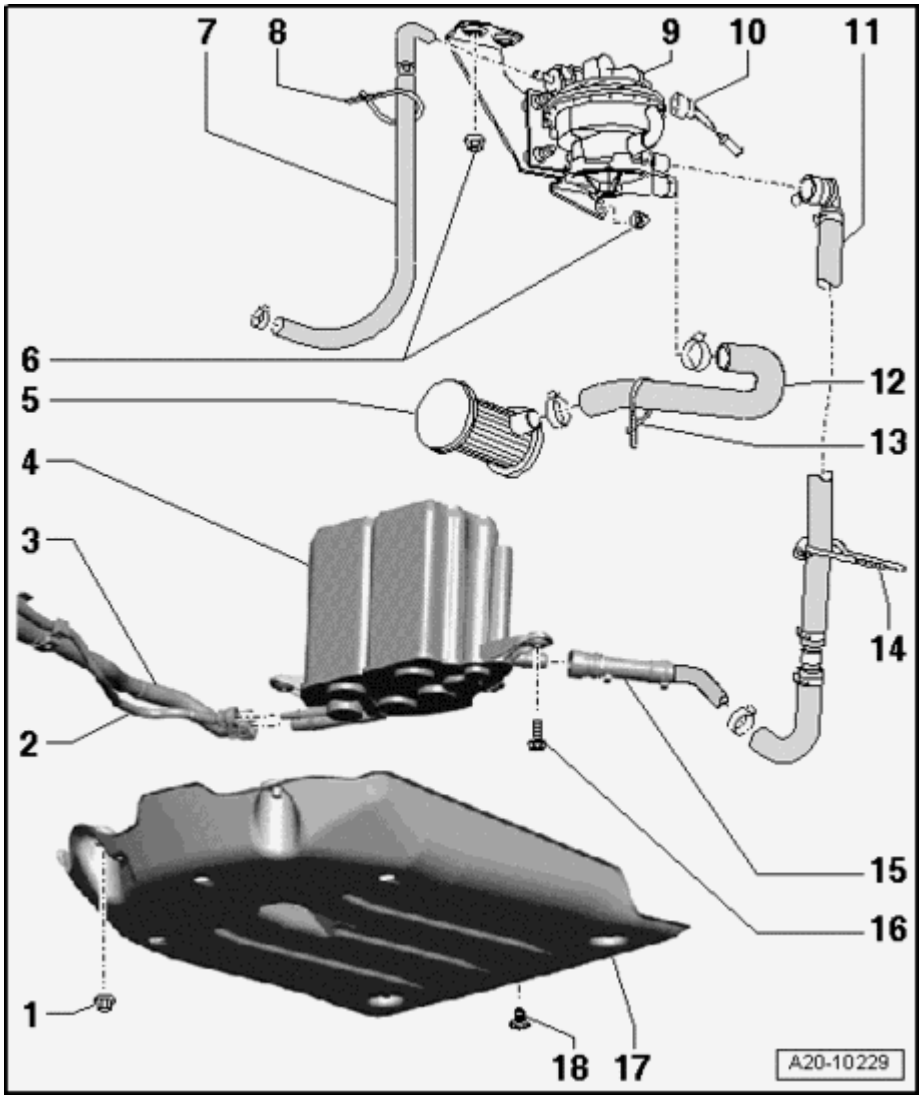
NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**

Torque specifications

Component	Nm
EVAP canister to body	16
EVAP canister cover	9

EVAP canister/leak detection system, 8-cyl. FSI engine (Audi RS4), component overview



cardiagn.com

Fig. 702: EVAP Canister/Leak Detection System, 8-Cyl. FSI Engine (Audi RS4), Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Nut, 2.3 Nm

2 - Purge line

- To Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- To disconnect, press release button on connector

3 - Vent line

- From gravity valve at fuel tank
- To disconnect, press release button on connector

4 - EVAP canister

- Location: Bottom of spare wheel well
- Removing and installing --> **EVAP canister, removing and installing (8-cyl. FSI engine (Audi RS4))**

5 - Air filter housing

- For Leak detection pump (LDP) V144
- No maintenance schedule

6 - 4 Nm

7 - Vacuum line

- To Leak detection pump (LDP) V144

8 - Cable tie

- To fasten vacuum line to bracket for leak detection pump

9 - Leak detection pump (LDP) V144

- Component location: In left rear wheel housing behind wheel housing liner
- Checking --> **Leak Detection Pump (LDP) V144 , checking (vehicles with MPI-engine)**
- Removing and installing --> **Leak Detection Pump (LDP) V144 , removing and installing**

10 - Electrical harness connector

11 - Leak detection line

cardiagn.com

- Leak detection pump/EVAP canister
- Pressure side
- To remove from leak detection pump, press release button on connection

12 - Connecting hose

- Leak diagnosis pump/air filter

13 - Cable tie

- To fasten hose to bracket of leak detection pump

14 - Cable tie

- To fasten connecting hose to wheel housing

15 - Leak detection line

- Leak detection pump/EVAP canister
- Pressure side
- To disconnect, press release button on connector

16 - Bolt, 9 Nm

17 - EVAP canister cover

18 - Bolt, 2 Nm

EVAP canister, removing and installing (8-cyl. FSI engine (Audi RS4))

NOTE:

- **Checking for leaks --> Diagnostic leak test, performing.**

Removing

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

Observe rules for cleanliness --> **Rules for cleanliness**.

cardiagn.com

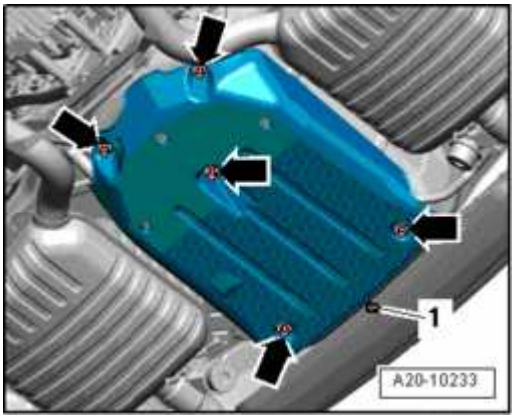


Fig. 703: Removing Bolts & EVAP Canister Cover At Bottom Of Spare Wheel Well
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** -.
- Remove EVAP canister cover from bottom of spare wheel well - **arrows** -.

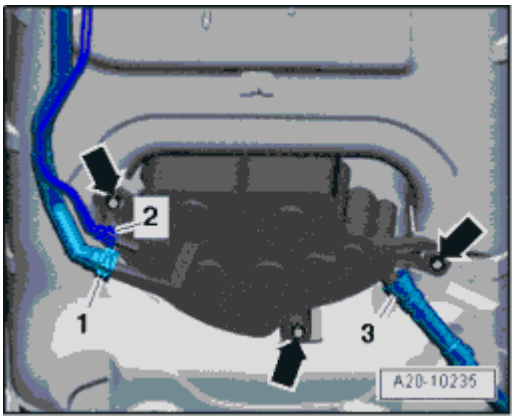


Fig. 704: Identifying Ventilation Lines, Purge Lines, Screws, EVAP Canister & Leak Detection Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect ventilation lines - **1** - and purge lines - **2** - by pressing release button.
- Remove screws - **arrows** - and remove EVAP canister from spare wheel well.
- Disconnect leak detection line - **3** - by pressing release button.

Installing

Installation is performed in reverse order of removal.

Torque specifications

Component		Nm
EVAP canister to body		9
EVAP canister cover	Nut	2.3

cardiagn.com

	Bolt	2

Hose routing, EVAP canister/leak detection system - 1.8L Turbo engine

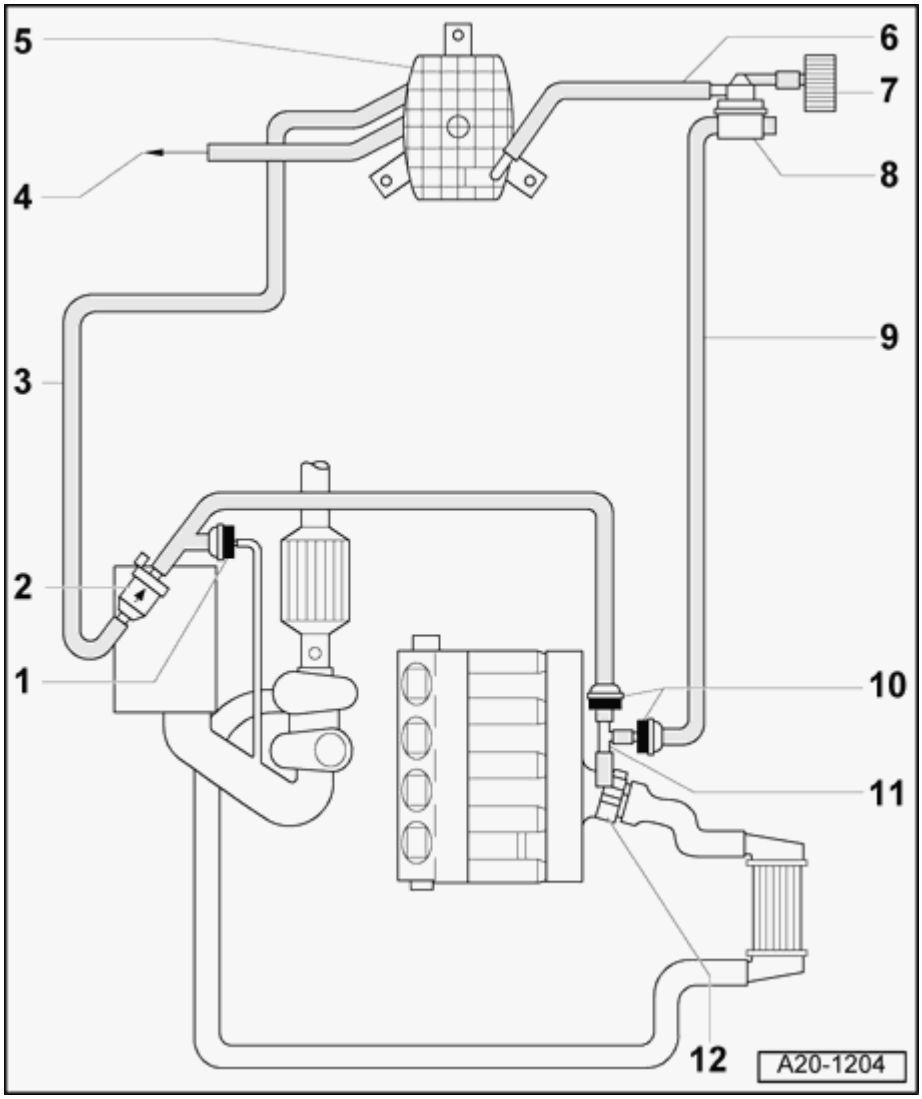


Fig. 705: Hose Routing, EVAP Canister/Leak Detection System Overview - 1.8L Turbo Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Check valve

- Installed location: Arrow on valve points in direction of flow

2 - Evaporative Emission (EVAP) Canister Purge Regulator Valve N80

- Location: Right front in engine compartment

3 - Ventilation line

cardiagn.com

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Installed location: At right beneath vehicle floor
- Secured to fuel tank in fuel tank area

4 - Ventilation line

- To gravity valve at fuel tank

5 - EVAP canister

- Location: Bottom of spare wheel well
- Removing and installing --> **Evaporative emissions (EVAP) canister, removing and installing**

6 - Connecting hose

- Leak detection pump (LDP)/EVAP canister
- Pressure side

7 - Air filter housing

- For leak detection pump (LDP) V144

8 - Leak detection pump (LDP) V144

- Location: In left rear wheel housing behind wheel housing liner
- Check using "Guided Fault Finding"
- Checking --> **Leak Detection Pump (LDP) V144 , checking (vehicles with MPI-engine)**
- Removing and installing --> **Leak Detection Pump (LDP) V144 , removing and installing**

9 - Vacuum line

- Leak detection pump/Throttle valve control module

10 - Check valves

- Installed location: Arrow on valve points in direction of flow

11 - T-piece

- Location **Installation position of T-piece**

12 - Throttle valve control module J338

Installation position of T-piece

cardiagn.com

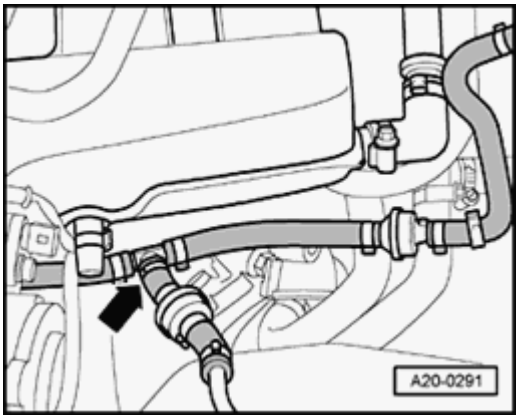


Fig. 706: Installation Position Of T-Piece
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Hose routing, EVAP canister/leak detection system - 1.8L Turbo engine

Hose routing, EVAP canister/leak detection system 6-cyl. (MPI-engine)

cardiagn.com

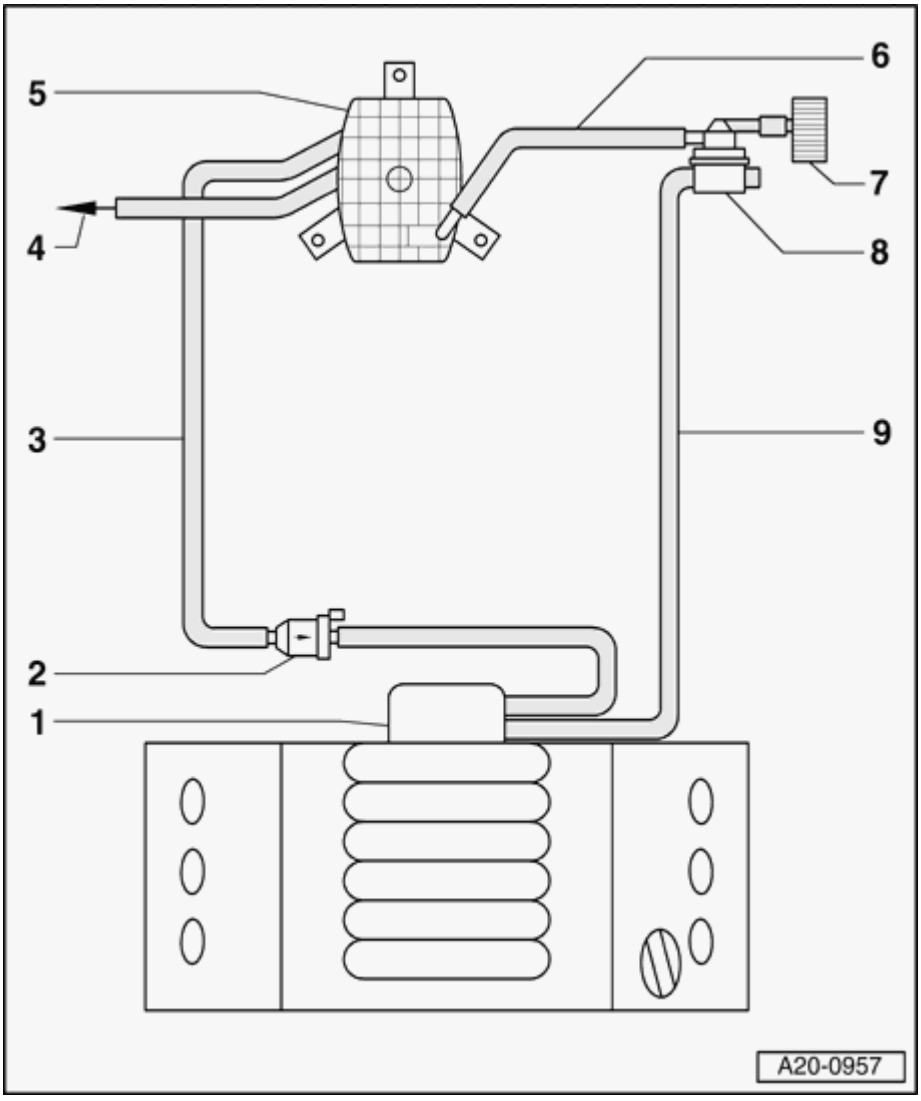


Fig. 707: Hose Routing, EVAP Canister/Leak Detection System 6-Cyl. Overview (MPI-Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Throttle valve control module J338

2 - Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80

- Location: Right front in engine compartment

3 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Installed location: At right beneath vehicle floor
- Secured to fuel tank in fuel tank area

4 - Ventilation line

cardiagn.com

- To gravity valve at fuel tank

5 - EVAP canister

- Location: Bottom of spare wheel well
- Removing and installing --> **Evaporative emissions (EVAP) canister, removing and installing**

6 - Connecting hose

- Leak detection pump/EVAP canister
- Pressure side

7 - Air filter housing

- For leak detection pump (LDP) V144

8 - Leak detection pump (LDP) V144

- Location: In left rear wheel housing behind wheel housing liner
- Check using "Guided Fault Finding"
- Checking --> **Leak Detection Pump (LDP) V144 , checking (vehicles with MPI-engine)**
- Removing and installing --> **Leak Detection Pump (LDP) V144 , removing and installing**

9 - Vacuum line

- To leak detection pump (LDP) V144

Hose routing, EVAP canister/leak detection system (6-cyl. FSI-engine)

cardiagn.com

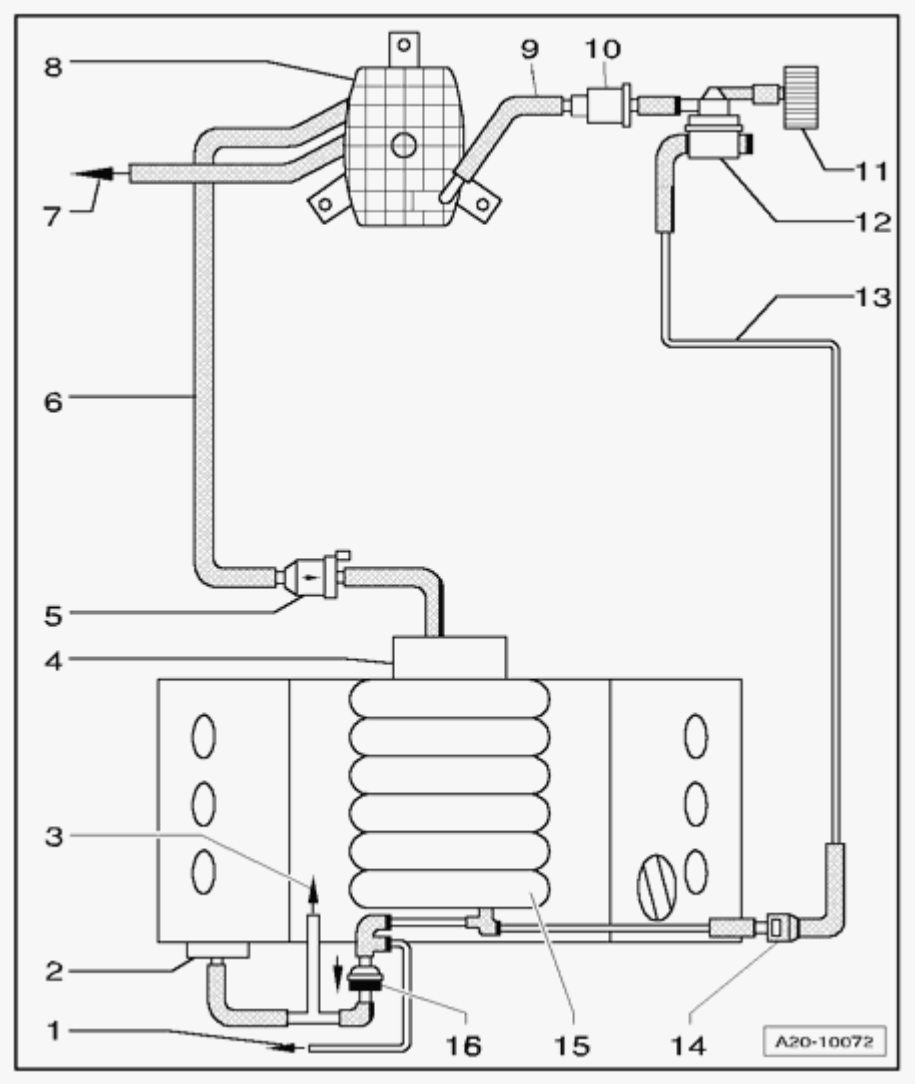


Fig. 708: Hose Routing, EVAP Canister/Leak Detection System Overview (6-Cyl. FSI-Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - To Intake Air Switch-over valve N335

2 - Vacuum pump

- For brake booster

3 - To brake booster

4 - Throttle valve control module J338

5 - Evaporative emission (EVAP) canister purge regulator valve N80

- Location: Right front in engine compartment

cardiagn.com

6 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Installed location: At right beneath vehicle floor
- Secured to fuel tank in fuel tank area

7 - Ventilation line

- To fuel tank filler tube

8 - EVAP canister

- Location: Bottom of spare wheel well
- Removing and installing --> **Evaporative emissions (EVAP) canister, removing and installing**

9 - Connecting hose

- Pressure side

10 - EVAP filter

11 - Air filter housing

- For leak detection pump (LDP) V144

12 - Leak detection pump (LDP) V144

- Location: In left rear wheel housing behind wheel housing liner
- Checking --> **Leak Detection Pump (LDP) V144 , checking (vehicles with MPI-engine)**
- Removing and installing --> **Leak Detection Pump (LDP) V144 , removing and installing**

13 - Vacuum line

- Engine/Leak Detection Pump (LDP) V144

14 - Separating point

- Location **Separation point location**

15 - Intake manifold upper part

16 - Check valve

- Installed location: - **Arrow** - points in direction of flow

cardiagn.com

Separation point location

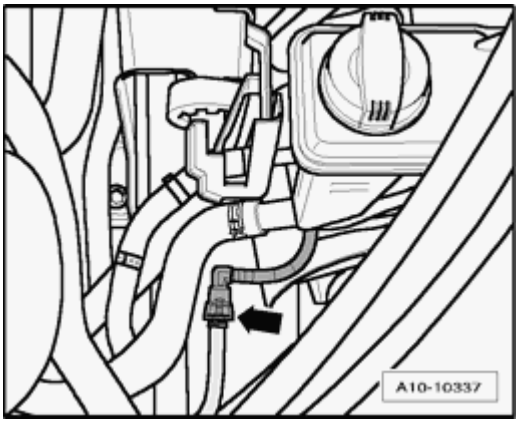


Fig. 709: Separation Point Location
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The separating point - **arrow** - is located at lower left of engine compartment.

- To disconnect, press release button on connection piece.

Hose routing, EVAP canister/leak detection system (8-cyl. MPI-engine)

cardiagn.com

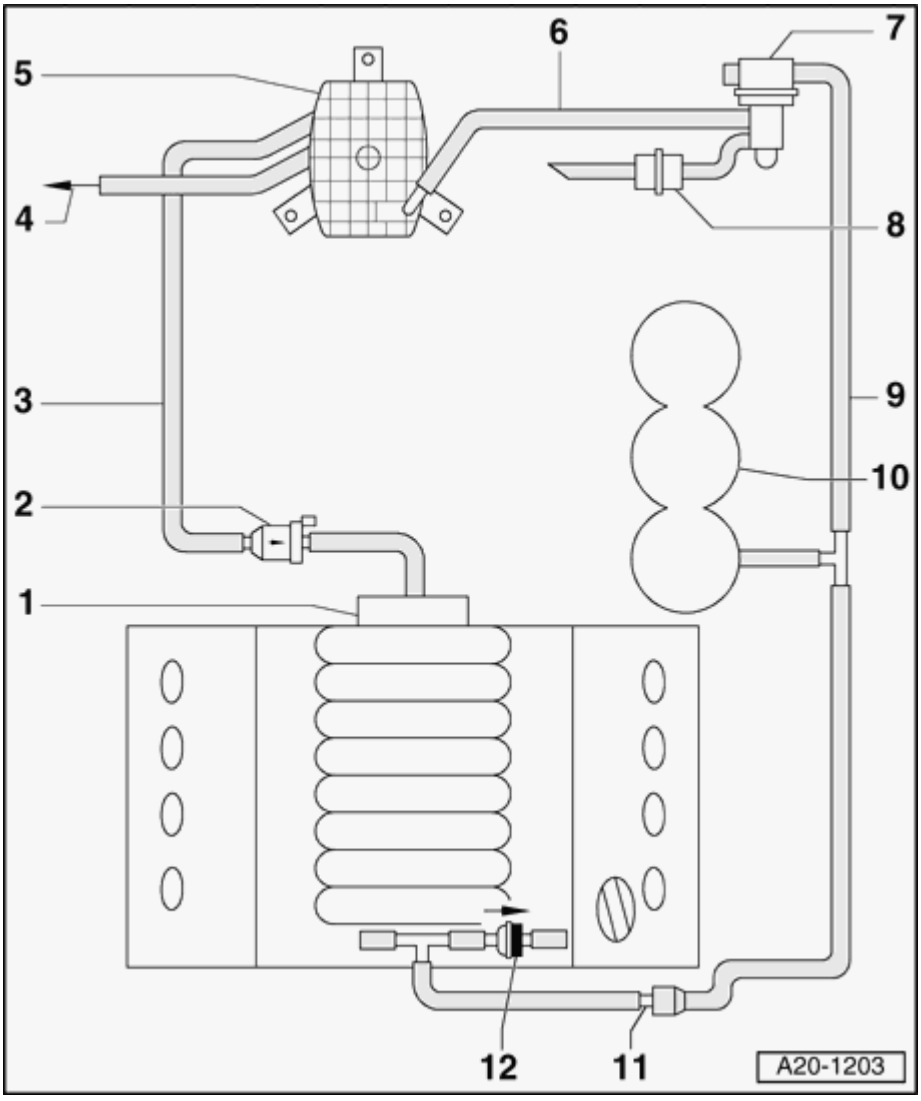


Fig. 710: Hose Routing, EVAP Canister/Leak Detection System Overview (8-Cyl. MPI-Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Throttle valve control module J338

2 - Evaporative emission (EVAP) canister purge regulator valve N80

- Location: Right front in engine compartment
- Checking --> **24 MULTIPORT FUEL INJECTION (MFI)**

3 - Ventilation line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Installed location: At right beneath vehicle floor
- Secured to fuel tank in fuel tank area

cardiagn.com

4 - Ventilation line

- To gravity valve at fuel tank

5 - EVAP canister

- Location: Bottom of spare wheel well

6 - Connecting hose

- Leak detection pump/EVAP canister
- Pressure side

7 - Leak detection pump (LDP) V144

- Location: In left rear wheel housing behind wheel housing liner
- Check using "Guided Fault Finding"

8 - Air filter housing

- For leak detection pump (LDP) V144

9 - Vacuum line

- To leak detection pump (LDP) V144

10 - Vacuum reservoir

- For leak detection pump (LDP) V144
- Location: In left front wheel housing behind wheel housing liner

11 - Separating point

- Location **Separation point location**

12 - Check valve

- Installed location: - **Arrow** - points in direction of flow

Separation point location

cardiagn.com

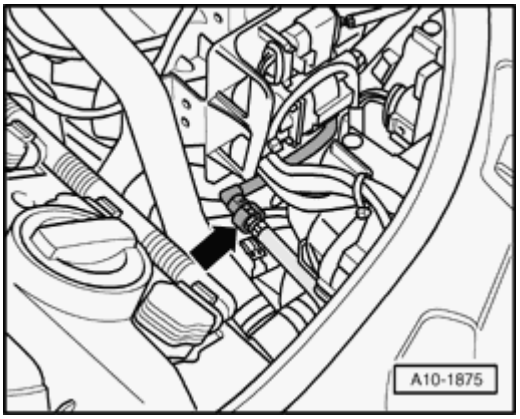


Fig. 711: Separation Point Location
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The separating point - **arrow** - is located at left of engine compartment.

- To disconnect, press release button on connection piece.

Hose routing, EVAP canister/leak detection system (8-cyl. FSI engine (Audi RS4))

cardiagn.com

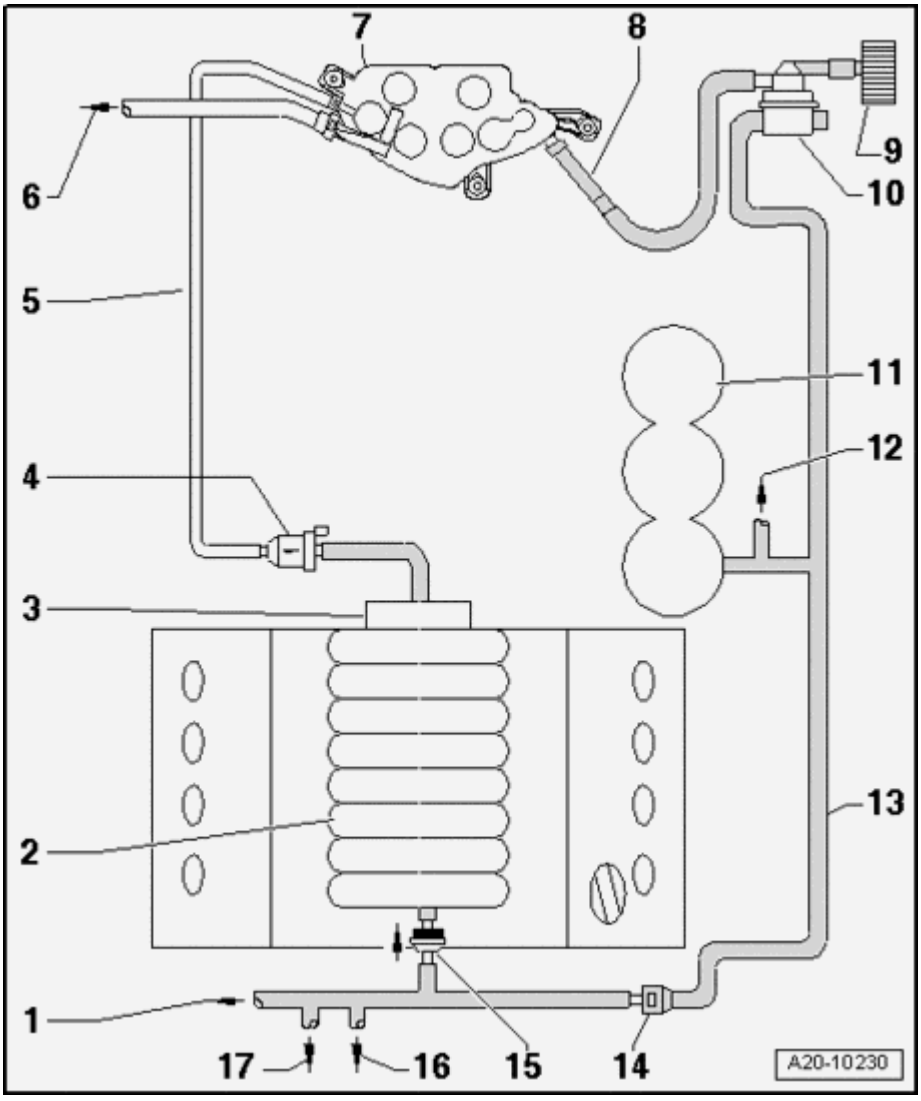


Fig. 712: Hose Routing, EVAP Canister/Leak Detection System (8-Cyl. FSI Engine (Audi RS4))
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - To air filter housing

2 - Intake manifold

3 - Throttle valve control module J338

4 - Evaporative Emission (EVAP) Canister Purge Solenoid Valve 1 N80

- Component location: At front in engine compartment
- Checking -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL

cardiagn.com

INJECTION IGNITION, ENGINE CODE(S): BPG, BWT

- **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
- **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

5 - Purge line

- From EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80
- Installed location: At right beneath vehicle floor
- Secured to fuel tank in fuel tank area

6 - Vent line

- To gravity valve at fuel tank

7 - EVAP canister

- Location: Bottom of spare wheel well

8 - Leak detection line

- Leak detection pump/EVAP canister
- Pressure side

9 - Air filter housing

- For Leak detection pump (LDP) V144

10 - Leak detection pump (LDP) V144

- Location: In left rear wheel housing behind wheel housing liner
- Check using "Guided Fault Finding"

11 - Vacuum reservoir

- For Leak detection pump (LDP) V144
- Location: In left front wheel housing behind wheel housing liner

12 - To vacuum diaphragm for exhaust flap

cardiagn.com

13 - Vacuum line

- To Leak detection pump (LDP) V144

14 - Separating point

- Location **Separation point location**

15 - Check valve

- Installed location: - **Arrow** - points in direction of flow

16 - For Secondary Air Injection (AIR) Solenoid Valve N112

17 - To Intake Manifold Runner Control (IMRC) Valve N316

Separation point location

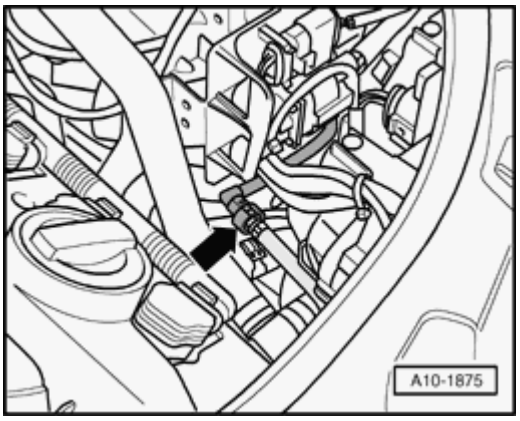


Fig. 713: Separation Point Location
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The separating point - **arrow** - is located at left of engine compartment.

- To disconnect, press release button on connection piece.

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 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 engine intake stroke.

cardiagn.com

- When leak detection is activated, the diaphragm pump pumps the fuel system up to 20 to 30 mbar. The pump membrane is then moved outward, thereby setting the reed contact at the actuation rod to 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 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".

Leak diagnostic is activated automatically shortly following every engine start. If a malfunction is determined, an entry is made to the DTC 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, test and information system VAS 5051 A --> **Diagnostic leak test, performing**.

Automatic leak detection system

With the engine running, the engine control module may perform a leak diagnosis at specific intervals.

It can be determined if an automatic leak diagnosis was recently performed by using the vehicle diagnosis, test and information system VAS 5051 A in measuring value block 071 --> **Diagnostic leak test, performing**.

Diagnostic leak test, performing

Special tools, testers and auxiliary items required

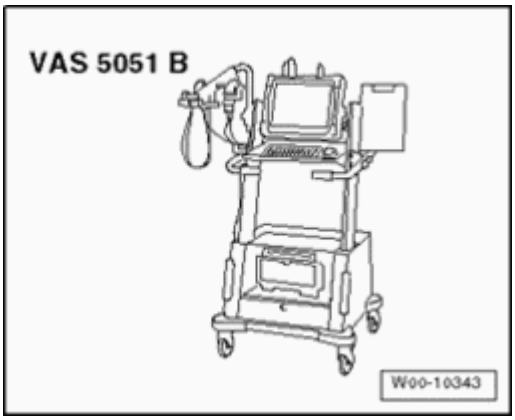


Fig. 714: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnostic, Testing and Information System VAS 5051 with diagnostic cable VAS 5051/5A (VAS 5051 B version shown as example only)

Observe safety precautions --> **Safety precautions when working on fuel supply system**.

cardiagn.com

Observe rules for cleanliness --> **Rules for cleanliness**.

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**
- **Replace O-rings and gaskets when performing repair work.**

Test conditions

- Parking brake is applied.
- Vehicles with manual transmission: Shift lever in neutral.
- Vehicles with automatic transmission: Selector lever in position "P" or "N".
- Engine running at idle speed or with brakes actuated and accelerator fully depressed (elevated engine RPM).
- Electrical consumers switched off (Radiator fan must not run during test).
- Air conditioning system switched off.

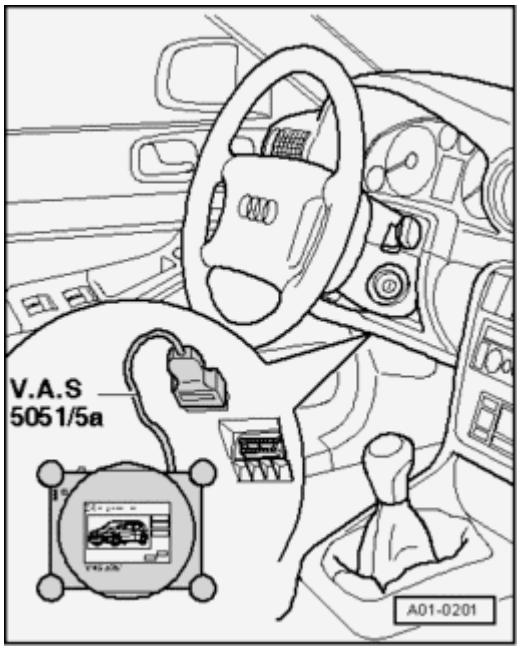


Fig. 715: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnostic, Testing and Information System VAS 5051 connected, On-board diagnostics and Data Link Connector DLC "01 Engine electronics" selected.
- No DTCs in DTC memory.
- Intake air temperature less than 90 ° C --> Measuring value block 004, display field 4.
- Coolant temperature less than 95 ° C --> Measuring value block 004, display field 3.

cardiagn.com

- Throttle valve angle less than 10 ° C --> Measuring value block 003, display field 3.

Test sequence

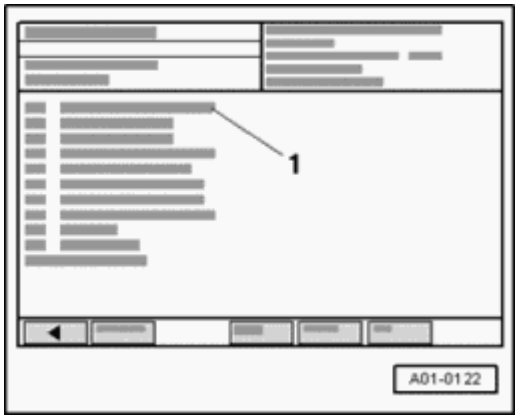


Fig. 716: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- In selection - **1** - , click on diagnostic function "04 - Basic Setting".

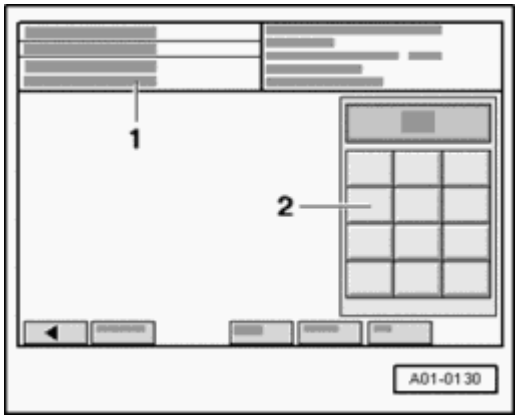


Fig. 717: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

1 - Enter display group

- Select function "071" in button field - **2** - for "display group number 071" and press Q to confirm input.

cardiagn.com

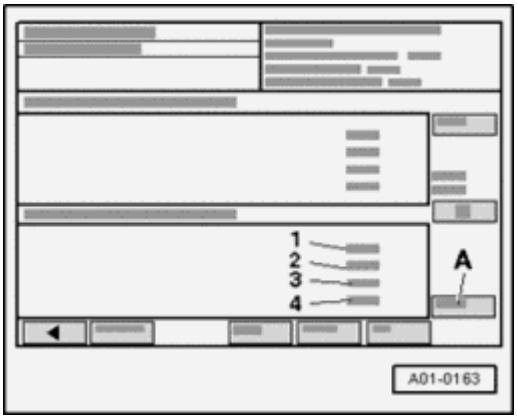


Fig. 718: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Check reading in display field - **1** -.
- Specification: "Reed closed."

NOTE:

- **If "Reed closed" is displayed, continue test.**
- **If the reading on the display shows "Reed open" : Briefly open the cap of the fuel tank to relieve pressure - thereby the reed contact will close again.**

- Activate basic setting by pressing Activate button - **A** -.
- Check reading in display field - **4** -.
- Specification: "Test ON"

The system test takes several minutes.

- Check reading in display field - **4** -.
- Specification: "Syst.O.K."

The system is sealed, the test is ended.

- End function "04 - Basic setting" by pressing <-- button.

Fault indication

If a malfunction was recognized during the system test, the malfunction is indicated afterward.

cardiagn.com

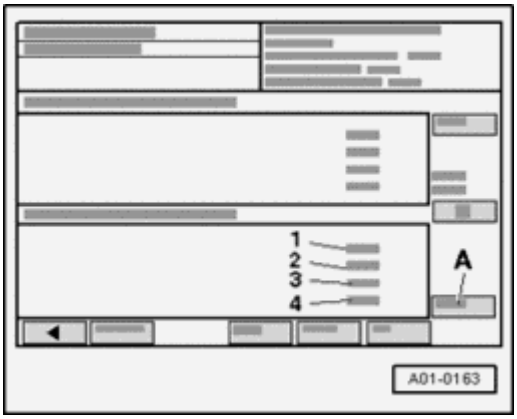


Fig. 719: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

On VAS 5051 display in display field - **4**- - :

- In case of malfunction: Syst. n.O.K.
  - Check readings of diagnosis in display field - **2** -.
- "Small leak" or "Large leak"
  - End function "04 - Basic setting" by pressing <-- button.

If the system has recognized a small or large leak:

- Check fuel supply and tank ventilation systems for leaks --> **Fuel supply and tank ventilation systems, checking for leaks**.
- Afterwards, perform the leak diagnosis again.

Fuel supply and tank ventilation systems, checking 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 leak was successfully repaired.**

- Switch off ignition.
- Check whether fuel filler cap was completely sealed for test.
- Check whether fuel filler cap seal was damaged or crimped. Replace if necessary.

Sedan:

- Remove carpeting in luggage compartment.
- Fold forward right rear seat backrest, if necessary.

cardiagn.com

Wagon:

- Remove left 1/3 backrest -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .
- Remove left side luggage compartment trim and dirt tray -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .

All models:

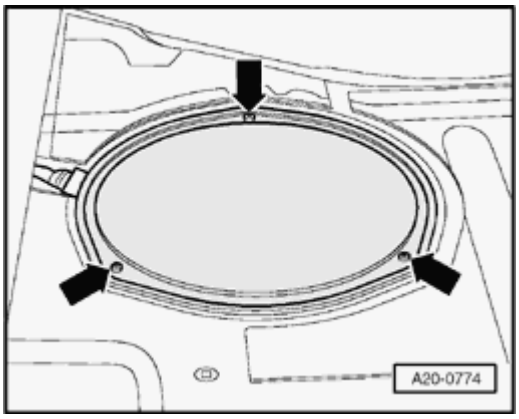


Fig. 720: Unbolting Cover For Locking Flange In Luggage Compartment
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange in luggage compartment - **arrows** -.

Vehicles with all wheel drive:

- Remove rear seat bench -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

  .

cardiagn.com

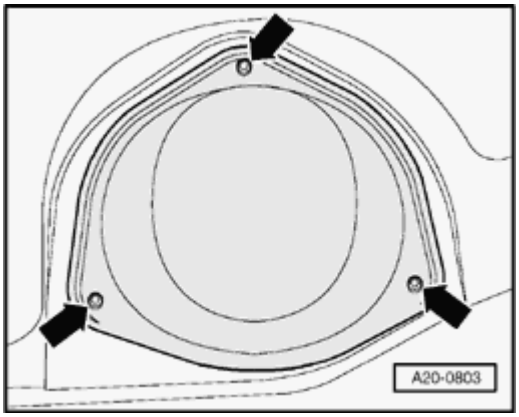


Fig. 721: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt cover for locking flange, left and right - **arrows** -.

All models:

NOTE:

- **Observe installation notes for locking flanges:**
- **Vehicles with front wheel drive up to 06.03 Installing ;**
- **Vehicles with front wheel drive from 07.03 to 10.04 Installing ;**
- **Vehicles with front wheel drive as of 11.04: Installing ;**
- **Vehicles with all wheel drive up to 06.03 Right Installing , left Installing ;**
- **Vehicles with all wheel drive from 07.03 to 10.04: Right Installing , left Installing ;**
- **Vehicles with all wheel drive as of 11.04: Right Installing , left Installing.**

- Check whether seals under locking flanges are OK and lock rings are properly tightened on fuel tank. Also check fuel line connections.
- Visually check all wires and hose connections of fuel supply system and replace leaking lines, e.g.:

- Line from EVAP canister to Evaporative Emission (EVAP) Canister Purge Regulator Valve N80 (in engine compartment).
- Lines from EVAP canister to Leak Detection Pump (LDP) V144.
- Line from fuel tank to EVAP canister (below cover 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 non-flammable, environmentally compliant leak detection spray. For this, initiate leak diagnostic several times in sequence to build up**

cardiagn.com

pressure in the system. At leaking areas, bubbles will form.

- Visually inspect fuel system components and tank ventilation system:

- Fuel tank
- EVAP canister
- Leak detection pump (LDP) V144
- Evaporative emission (EVAP) canister purge regulator valve N80

NOTE:

- **Because of shape or function of these components it is not always possible to find leaks by applying spray. It may be necessary to clamp off the relevant component using hose clamps up to diameter 25 mm 3094 and initiate leak detection diagnostic. If the leak is no longer detected, the component that was clamped off is faulty. If clamp is placed directly on the diagnostic pump and a leak is still detected, then the diagnostic pump itself is leaking**

EVAP system, checking using tester KLI 9210

Introduction

The KLI 9210 EVAP tester allows testing using nitrogen to pressurize the EVAP system and a smoke generator or ultrasonic tester to locate the source of EVAP system concerns.

This procedure is intended as a general guide for the use of the EVAP tester. EVAP systems vary between models.

Special tools, testers and auxiliary items required

- VAS 5051 or VAS 5052 diagnostic tester
- KLI 9210 EVAP system tester (set to 14 in. H_2O)
- Light source (for viewing smoke)
- Hose Clamps up to 25 mm dia. 3094 or equivalent

Using the KLI 9210 EVAP system tester --> Tester operating instructions

Calibrating the KLI 9210 tester

Determine the vehicle leak threshold:

- Up to and including M.Y. 1999 leak threshold = 0.040 in.
- From M.Y. 2000 leak threshold = 0.020 in.

cardiagn.com

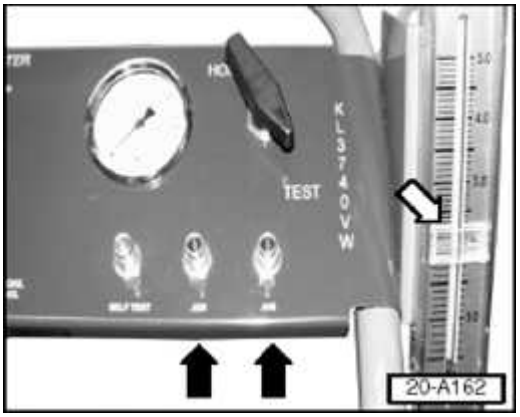


Fig. 722: Identifying Flow Meter Flag At Indicated Value On Flow Meter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach test hose to appropriate pre-set port (black arrows).
- Turn control valve from "Hold" to "Test".
- Set flow meter flag (white arrow) at indicated value on flow meter.
- Turn control valve to "Hold" ; remove test hose.

Testing the fuel cap

- Remove fuel cap.

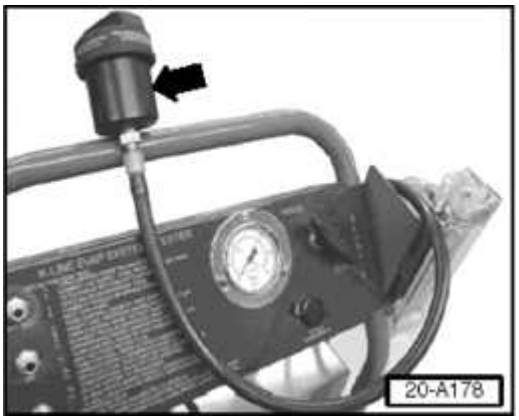


Fig. 723: Fuel Cap Receiver Connect To Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect fuel cap receiver (arrow) to hose.
- Screw fuel cap tightly to cap receiver.
- Turn control valve to "Test" pressurizing cap.
- Turn valve to "Hold".
- Watch pressure gauge for drop in pressure from 14 inches H_2O.

cardiagn.com

If no pressure drop is indicated:

- Proceed to checking Leak Detection Pump (LDP) V144 for internal leaks.

If pressure drop is indicated:

- Replace fuel cap and re-test.
- Proceed to Checking Leak Detection Pump (LDP) V144 for internal leaks.

Checking Leak Detection Pump (LDP) V144 for internal leaks

Basically, in the following procedure the EVAP system will be filled with smoke, the engine started and the LDP activated using the VAS 5051 or VAS 5052. With the LDP activated, and after clearing initial smoke away from the LDP area using compressed air, the system is then filled with smoke again and rechecked for smoke at the LDP filter.

Conditions

- Ignition switched off
- LDP is visible --> Component Locations

Fig. 724: Tester Hose Connected To Fuel Filler Neck
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tester hose connected to fuel filler neck
- VAS 5051 or VAS 5052 Diagnostic tool connected to vehicle
- Smoke generator connected to battery

- Turn KLI 9210 valve to "Test" and use smoke generator trigger to fill system with smoke (wait until smoke is coming out of the LDP filter).
- Start engine.
- From VAS 5051 Start-up screen, select "Vehicle self diagnosis".

cardiagn.com

Fig. 725: Display Screen - Select Diagnostic Function
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Select vehicle system "01 - Engine electronics".

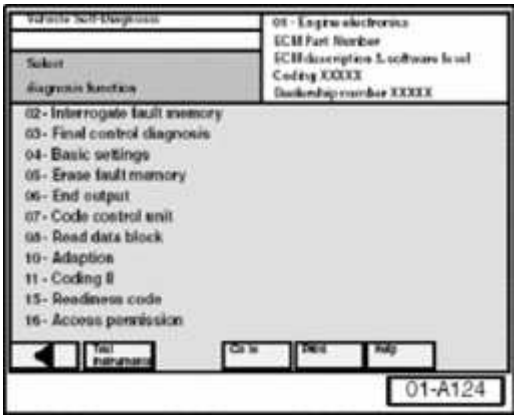


Fig. 726: Display Screen - 01 - Engine Electronics
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Select Diagnosis Function "04 - Basic settings".

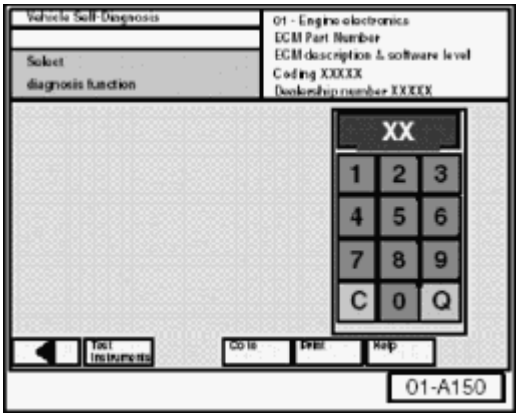


Fig. 727: Display Screen - 01 - Engine Electronics, Basic Settings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Input appropriate display group from table below on keypad.

Engine code	Display group
AEB, AEG, AFP, AHA, APH, ATQ, ATW, AUG, AWD, AWM, AWP, AWV, AWW, BDC, BDF, BEV, BGD, BGJ	071
AVH, AZG, BAP, BBW, BDP	202

- Press "Q" on keypad to confirm.

LDP should activate

If LDP does not activate:

For some vehicles using Display group 202 a similar screen appears indicating "Test Off".

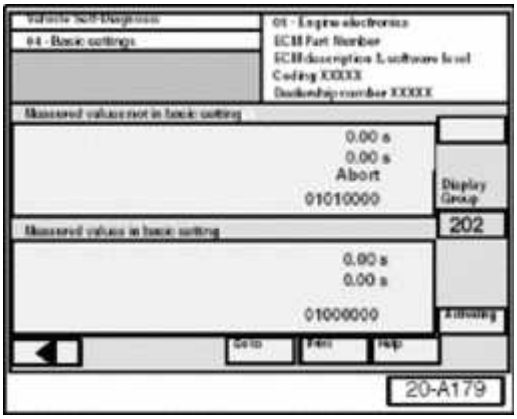


Fig. 728: Display Screen - 01 - Engine Electronics, Basic Settings, LDP Activated
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Select "Activating" button.

If LDP does not activate:

- Check electrical connections to LDP.
- Check vacuum source to LDP.

If LDP activates:

cardiagn.com

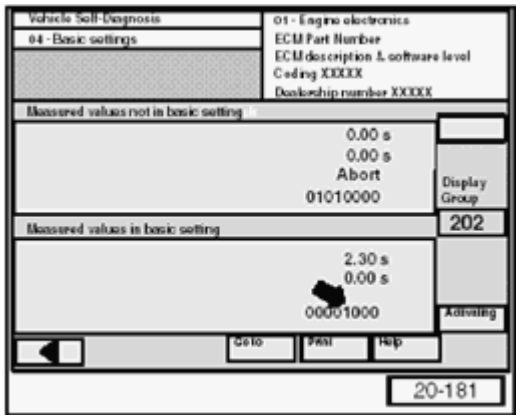


Fig. 729: Identifying Display Screen - 01 - Engine Electronics, Basic Settings, LDP Activated, "1" In Position 5
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A similar screen appears, Test is "ON" (indicated by a "1" in position 5, - **arrow** -).

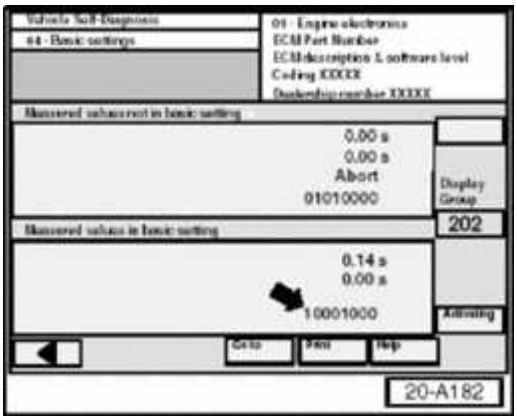


Fig. 730: Identifying Display Screen - 01 - Engine Electronics, Basic Settings, LDP Activated, Position 1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Position 1 - **arrow** - alternates between "0" and "1" during pump operation.

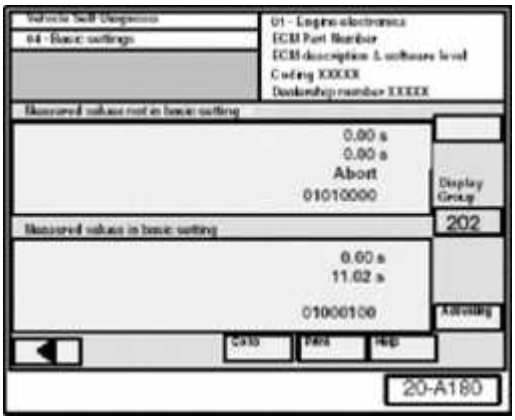


Fig. 731: Identifying Display Screen - 01 - Engine Electronics, Basic Settings, LDP Activated, "1" In

cardiagn.com

Position 6 And "0" In Position 8
Courtesy of VOLKSWAGEN UNITED STATES, INC.

If test is OK:

Indicated by "1" in position 6 and a "0" in position 8 as shown.

LDP has activated and the system is pressurized.

- Using a compressed air blow gun, clear area near LDP and LDP filter of any residual smoke.

If the test aborts and DTCs other than for small or large leaks are stored:

- Check and repair according to DTC listed in DTC table for appropriate engine code.

When "Check end" is indicated on VAS 5051 or VAS 5052 :

NOTE:

- **Only check LDP during "Check end" phase when "Test OK" was indicated.**

- Use smoke generator trigger to fill system with smoke again.
- Check for smoke doming from LDP filter and LDP hose connections.

- Smoke coming from filter indicates a faulty LDP
- Smoke coming from LDP outlet or hose indicates a faulty hose or clamp

- Make repairs as necessary and check with smoke again.

- No smoke coming from filter indicates LDP is OK and leak is somewhere else in EVAP system

NOTE:

- **If the KLI 9210 EVAP system tester is connected in "Test" mode and Basic settings (using Self Diagnosis) and Fault finding are activated, a false "System OK" message may be generated.**

If the LDP is OK and a DTC was stored for the EVAP system:

- Switch ignition off.
- Continue checking EVAP system as follows:

Checking EVAP system for leaks

cardiagn.com

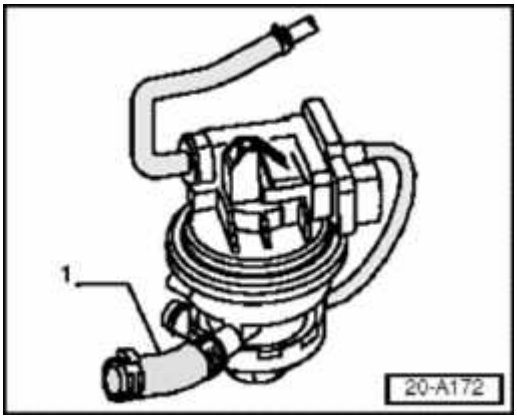


Fig. 732: Identifying Leak Detection Pump (LDP) Outlet Hose (EVAP side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clamp off LDP outlet (EVAP side) - **1** - using Hose Clamps up to 25 mm dia. 3094 or equivalent.

CAUTION: Clamp only soft rubber lines when isolating a leak. To avoid risk of damage, never clamp hard plastic lines!

- Turn control valve from "Hold" to "Test".
- Allow fuel system to pressurize.

NOTE:

- **Fuel system pressurization depends on volume of fuel system and amount of fuel in tank.**

If fuel system pressurization does not stabilize:

- Verify that all fuel system outlets have been sealed before continuing.

NOTE:

- **Any flow shown on flow meter indicates a leak. Flow below flow meter flag set at vehicle leak standard may indicate a sporadic DTC.**

If flow meter on tester registers flow near or above pre-set pressure:

- Clamp off hose leading from EVAP canister purge regulator valve N80 to intake manifold.

If flow stops:

- Replace EVAP canister purge regulator valve N80 and repeat test before continuing.

If meter indicates no flow after test:

- Perform quality check and return vehicle to customer.

cardiagn.com

If flow continues:

- Use smoke generator trigger to charge fuel system with smoke again.
- Inspect complete EVAP system for escaping smoke.

NOTE:

- **It may be necessary to move, twist, or wiggle EVAP components around to reproduce leak.**

If leak cannot be found using smoke:

Fig. 733: Identifying Ultrasonic Tester
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Locate leak with ultrasonic tester.

- General search: tester only
- Localized search: tester with extension wand (left)

If leak cannot be located:

- Disconnect and plug or clamp shut EVAP lines to isolate fuel tank using Hose Clamps up to 25 mm dia. 3094 or equivalent before continuing.

CAUTION: Clamp only soft rubber lines when isolating a leak. To avoid risk of damage, never clamp hard plastic lines!

If flow stops:

cardiagn.com

- Reconnect EVAP lines and search area that was isolated.

When leak has been located:

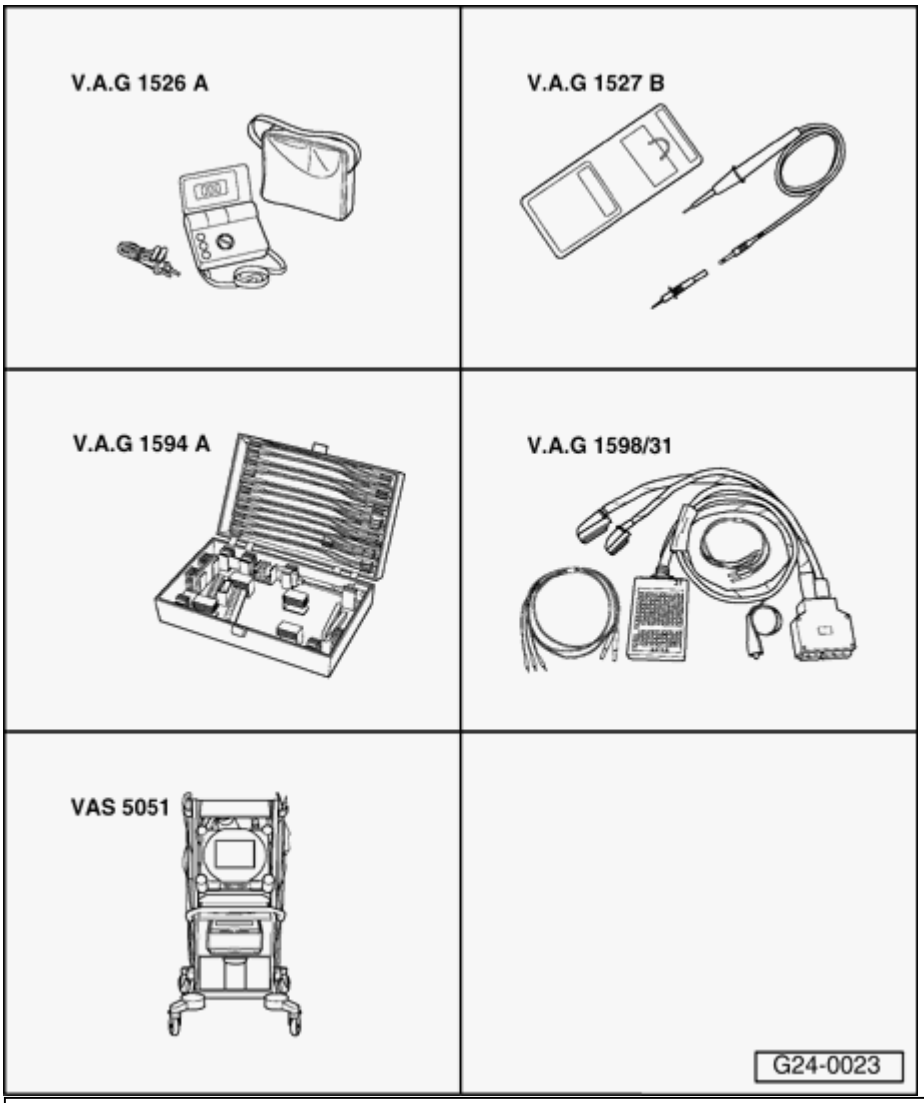
- Repair leak and repeat EVAP system test.

NOTE:

- **Because leak may be at top of fuel tank, it may not be possible to locate through fuel pump/sending unit access plate.**
- **Lower fuel tank if necessary to locate leak.**

CAUTION: Do not return vehicle to the customer without having performed a proper diagnosis and repair.

Leak Detection Pump (LDP) V144 , checking (vehicles with MPI-engine)



cardiagn.com

Fig. 734: Identifying Special Tools - Leak Detection Pump (LDP) V144 , Checking (Vehicles With MPI-Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Hand multimeter V.A.G 1526 A or V.A.G 1526 B
- Voltage tester V.A.G 1527 B
- Connector test kit V.A.G 1594 A or V.A.G 1594 C
- Test box V.A.G 1598/31
- Vehicle Diagnostic, Testing and Information System VAS 5051 A with diagnostic cable VAS 5051/5 A

Test conditions

- Ignition switched on.

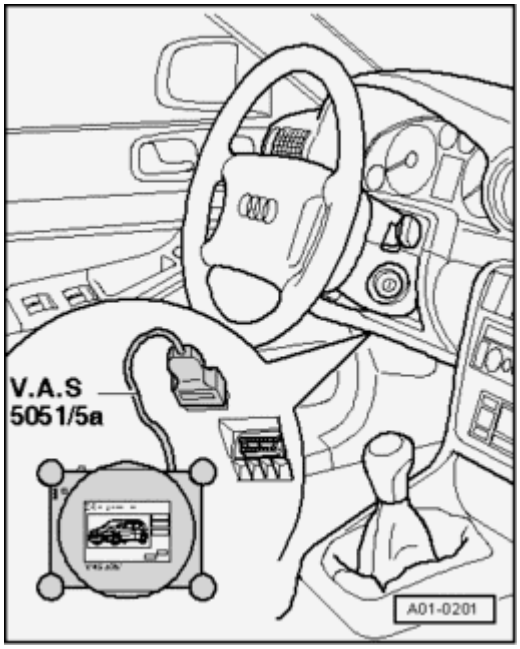


Fig. 735: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnostic, Testing and Information System VAS 5051 A connected, On-board diagnostics and Data Link Connector DLC "01 Engine electronics" selected.

Check activation

cardiagn.com

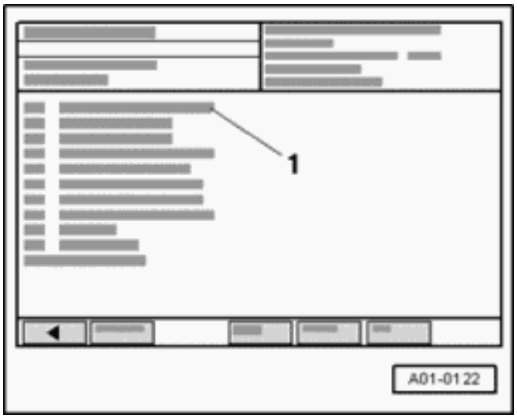


Fig. 736: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- In selection - **1** - , click on diagnostic function "03 - Output Diagnostic Test Mode (DTM)".

Fig. 737: Display On VAS 5051 - (1st Control Element In Test & Evaporative Emission (EVAP) Canister Purge Regulator Valve-N80-)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

A - Output diagnostic test mode waiting, Advancing by switching required

1 - Evaporative Emission (EVAP) Canister Purge Regulator Valve N80

- Press --> button repeatedly until leak detection pump for fuel system is activated

NOTE:

- **Operating noise of Leak Detection Pump (LDP) is audible at left rear wheelhousing.**

- End function "03 - output Diagnostic Test Mode (DTM)" by pressing <-- button.

cardiagn.com

- From selection, click on diagnostic function "06 - End output".
- Switch off ignition.

If Leak Detection Pump (LDP) for fuel system is not activated (no operating noise audible):

- Remove leak detection pump (LDP) V144 --> **Leak Detection Pump (LDP) V144 , removing and installing** and disconnect electrical connection.

Checking internal resistance

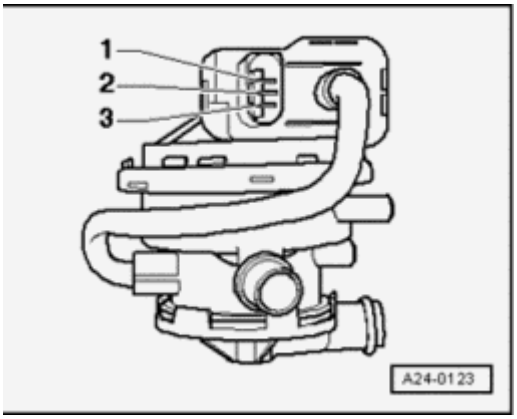


Fig. 738: Locating 3-Pin Connector At Fuel System Leak Detection Pump V144
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526 A or V.A.G 1526 B for resistance measurement as follows.

Leak detection pump (LDP) Terminal	Specified value
- 1 - + - 3 -	640 to 720 ohms
- 2 - + - 3 -	15 to 17 ohms

If specifications are not obtained:

- Replace Leak Detection Pump (LDP) V144 --> **Leak Detection Pump (LDP) V144 , removing and installing**.

If specified values are achieved:

- Check voltage supply of leak detection pump **Checking voltage supply** .

Checking voltage supply

cardiagn.com

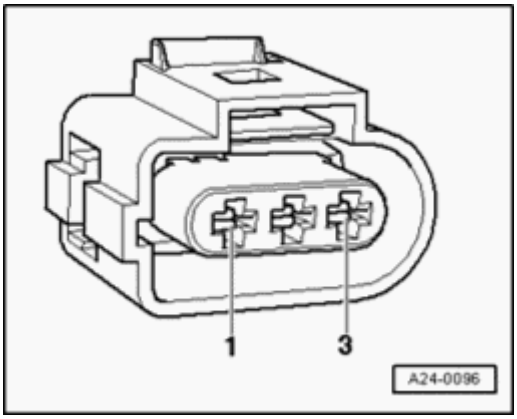


Fig. 739: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Voltage is supplied to the leak detection pump via the Fuel Pump (FP) relay J17.**

Test conditions

- Fuse for leak detection pump OK
- Connect voltage tester V.A.G 1527 B as follows:

Harness connector Terminal	Measure to
- 3 -	Engine Ground (GND)

- Briefly operate starter.
- LED must light up.

If LED does not light up:

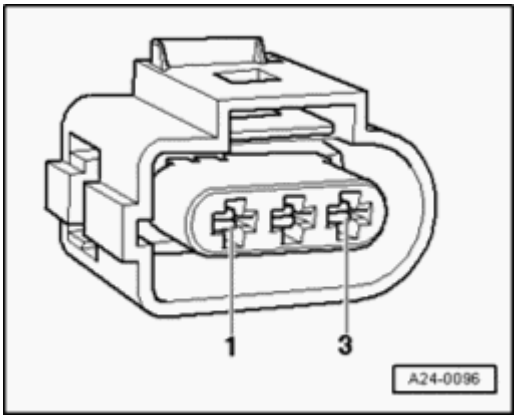


Fig. 740: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

- Check electrical harness connection from terminal **- 3 -** via fuse to Fuel Pump (FP) Relay J17 for open circuit according to wiring diagram.
- Repair open circuit in wiring according to wiring diagram.

Checking output wiring

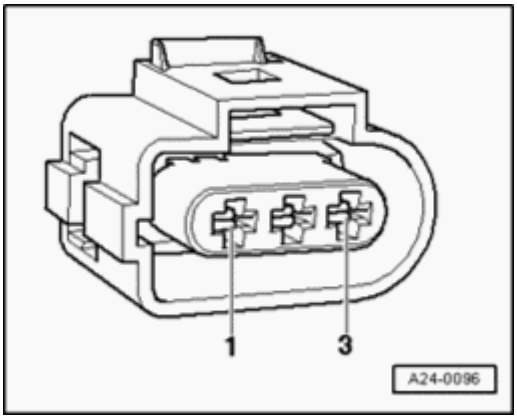


Fig. 741: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect voltage tester V.A.G 1527 B as follows:

Harness connector Terminal	Measure to
- 2 -	Battery positive (B+)

- Initiate output Diagnostic Test Mode (DTM) **Check activation** .

Fig. 742: Display On VAS 5051 - (1st Control Element In Test & Evaporative Emission (EVAP) Canister Purge Regulator Valve-N80-)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

A - Output diagnostic test mode waiting, Advancing by switching required

cardiagn.com

1 - Evaporative Emission (EVAP) Canister Purge Regulator Valve N80

- Press --> button repeatedly until leak detection pump for fuel system is activated
- LED must blink.

If LED does not blink:

- End function "03 - output Diagnostic Test Mode (DTM)" by pressing <-- button.
- From selection, click on the diagnostic function "06 - End output".
- Switch off ignition.

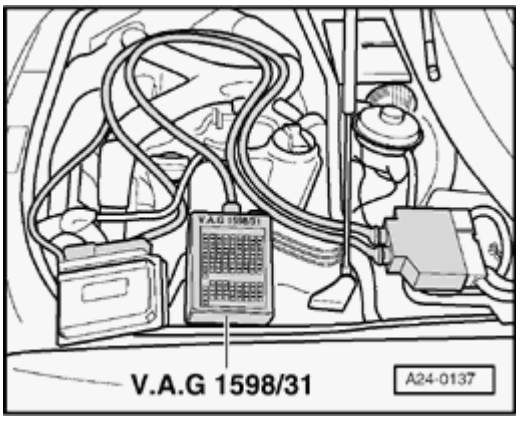


Fig. 743: Connecting Test Box V.A.G 1598/31 To Wiring Harness Connectors, With Engine Control Module (ECM) Not Connected
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect test box V.A.G 1598/31 to wiring harness connectors, with Engine Control Module (ECM) not connected. Connect Ground (GND) clip at test box to Ground (GND) (not visible in illustration) -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

CAUTION: To avoid damaging electronic components, switch to the corresponding

cardiagn.com

measuring range and observe all test conditions before connecting the test leads.

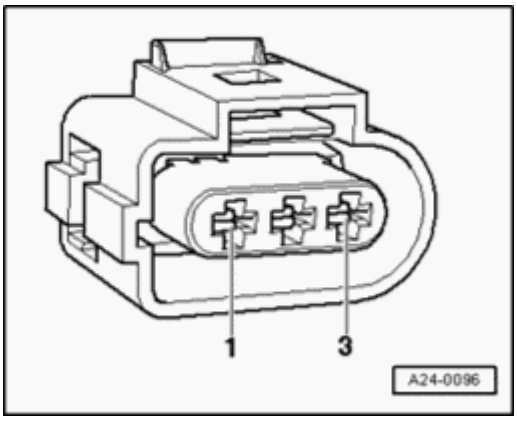


Fig. 744: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following wire connection for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	Test box V.A.G 1598/31 Socket
- 2 -	25

- Repair wiring open circuit or short circuit according to wiring diagram.

If no malfunction is found, but leak diagnosis pump is not functional during output diagnostic test mode:

- Replace Leak Detection Pump (LDP) V144 --> **Leak Detection Pump (LDP) V144 , removing and installing**.
- Observe procedures for after re-connecting engine control module (ECM) -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

Checking input wiring

cardiagn.com

- Switch off ignition.

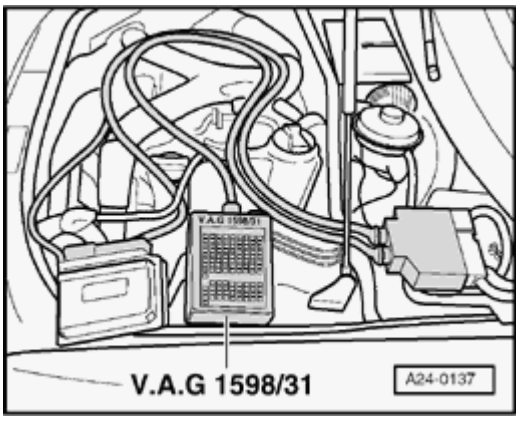


Fig. 745: Connecting Test Box V.A.G 1598/31 To Wiring Harness Connectors, With Engine Control Module (ECM) Not Connected
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect test box V.A.G 1598/31 to wiring harness connectors, with Engine Control Module (ECM) not connected. Connect Ground (GND) clip at test box to Ground (GND) (not visible in illustration) -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

CAUTION: To avoid damaging electronic components, switch to the corresponding measuring range and observe all test conditions before connecting the test leads.

cardiagn.com

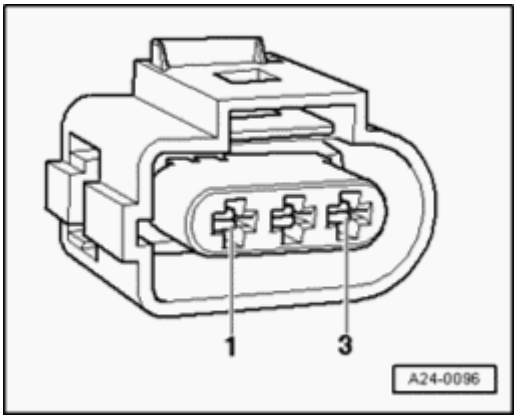


Fig. 746: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following wire connection for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	Test box V.A.G 1598/31 Socket
- 1 -	80

- Repair wiring open circuit or short circuit according to wiring diagram.
- Observe procedures for after re-connecting engine control module (ECM) -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

Leak Detection Pump (LDP) V144 , checking (vehicles with FSI and TFSI-engine)

cardiagn.com

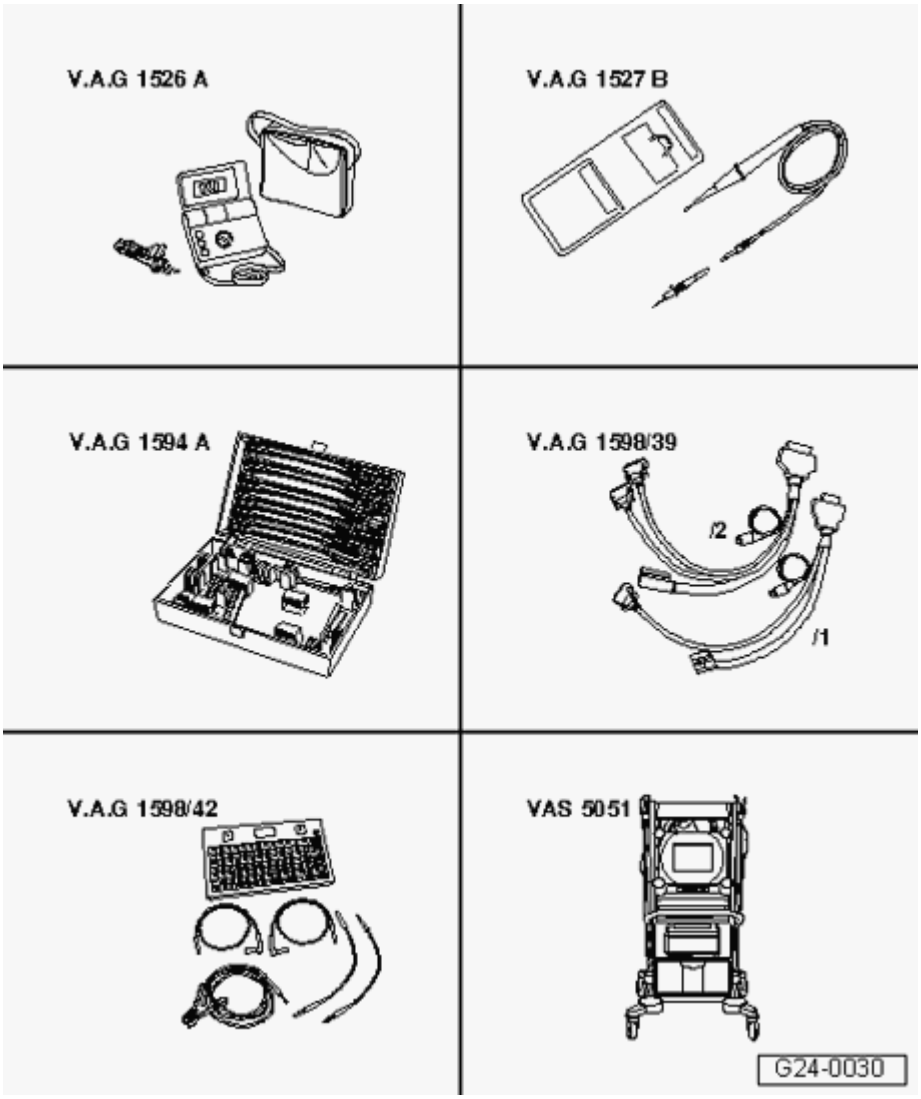


Fig. 747: Identifying Special Tools - Leak Detection Pump (LDP) V144 , Checking (Vehicles With FSI And TFSI-Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Hand multimeter V.A.G 1526 A or V.A.G 1526 B
- Voltage tester V.A.G 1527 B
- Connector test kit V.A.G 1594 A or V.A.G 1594 C
- Adapter cable V.A.G 1598/39
- Test box V.A.G 1598/42
- Vehicle Diagnostic, Testing and Information System VAS 5051 with diagnostic cable VAS 5051/5 A

Test conditions

cardiagn.com

- Ignition switched on.

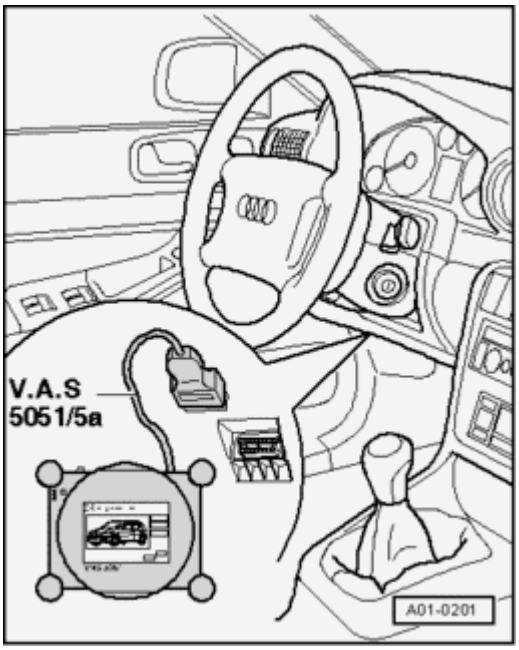


Fig. 748: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnostic, Testing and Information System VAS 5051 with diagnostic cable VAS 5051/5 A connected, On-board diagnostics and Data Link Connector DLC "01 Engine electronics" selected.

Check activation

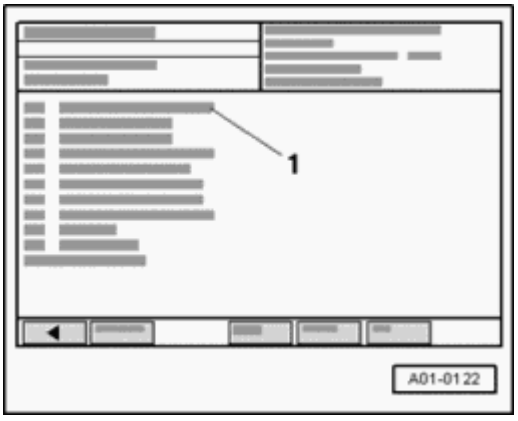


Fig. 749: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- In selection - **1** - , click on diagnostic function "03 - Output Diagnostic Test Mode (DTM)".

cardiagn.com

Fig. 750: Display On VAS 5051 - (1st Control Element In Test & Evaporative Emission (EVAP) Canister Purge Regulator Valve-N80-)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

A - Output diagnostic test mode waiting, advancing by switching required

1 - Evaporative Emission (EVAP) Canister Purge Regulator Valve N80

- Press --> button repeatedly until leak detection pump for fuel system is activated

NOTE:

- **Operating noise of Leak Detection Pump (LDP) is audible at left rear wheelhousing.**

- End function "03 - output Diagnostic Test Mode (DTM)" by pressing <-- button.
- From selection, click on diagnostic function "06 - End output".
- Switch off ignition.

If Leak Detection Pump (LDP) for fuel system is not activated (no operating noise audible):

- Remove leak detection pump (LDP) V144 --> **Leak Detection Pump (LDP) V144 , removing and installing** and disconnect the electrical connection.

cardiagn.com

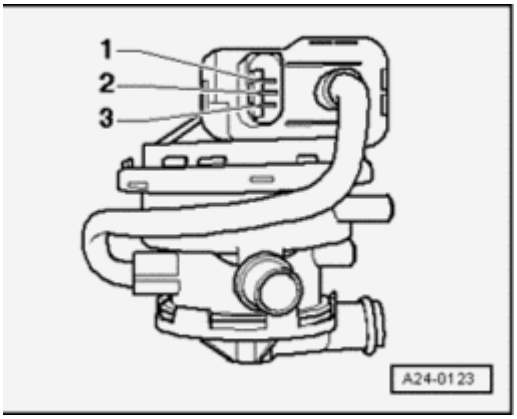


Fig. 751: Locating 3-Pin Connector At Fuel System Leak Detection Pump V144
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Checking internal resistance

- Connect hand multimeter V.A.G 1526 A or V.A.G 1526 B for resistance measurement as follows.

Leak detection pump (LDP) Terminal	Specified value
- 1 - + - 3 -	640 to 720 ohms
- 2 - + - 3 -	15 to 17 ohms

If specifications are not obtained:

- Replace Leak Detection Pump (LDP) V144 --> **Leak Detection Pump (LDP) V144 , removing and installing**.

If specified values are achieved:

- Check voltage supply of leak detection pump **Checking voltage supply**.

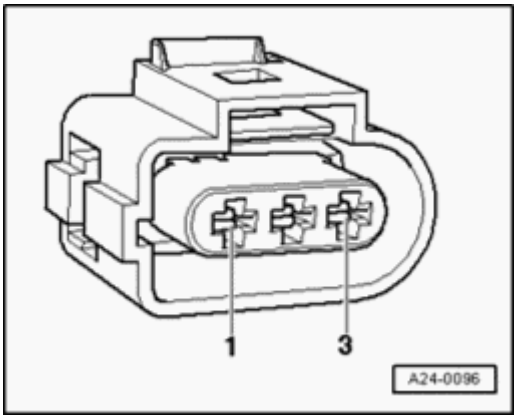


Fig. 752: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

cardiagn.com

Checking voltage supply

NOTE:

- **Voltage for leak detection pump is supplied via Motronic Engine Control Module (ECM) Power Supply Relay J271.**

Test conditions

- Fuse for leak detection pump OK

- Connect voltage tester V.A.G 1527 B as follows:

Harness connector Terminal	Measure to
- 3 -	Engine Ground (GND)

- Briefly operate starter.

- LED must light up.

If LED does not light up:

- Check electrical harness connection from terminal - **3** - via fuse to Motronic Engine Control Module (ECM) Power Supply Relay J271 for open circuit according to wiring diagram.

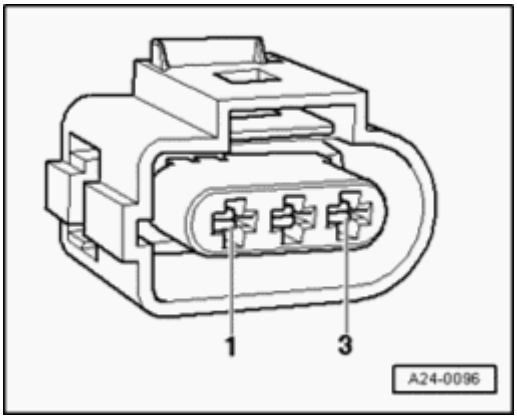


Fig. 753: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Repair open circuit in wiring according to wiring diagram.

Checking output wiring

- Connect voltage tester V.A.G 1527 B as follows:

Harness connector Terminal	Measure to
- 2 -	Battery positive (B+)

cardiagn.com

- Initiate output Diagnostic Test Mode (DTM) **Check activation**.

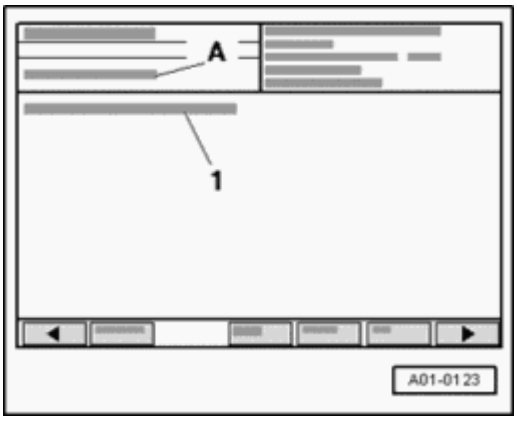


Fig. 754: Display On VAS 5051 - (1st Control Element In Test & Evaporative Emission (EVAP) Canister Purge Regulator Valve-N80-)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

A - Output diagnostic test mode waiting, Advancing by switching required

1 - Evaporative Emission (EVAP) Canister Purge Regulator Valve N80

- Press --> button repeatedly until leak detection pump for fuel system is activated

- LED must blink.

If LED does not blink:

- End function "03 - output Diagnostic Test Mode (DTM)" by pressing <-- button.
- From selection, click on diagnostic function "06 - End output".
- Switch off ignition.

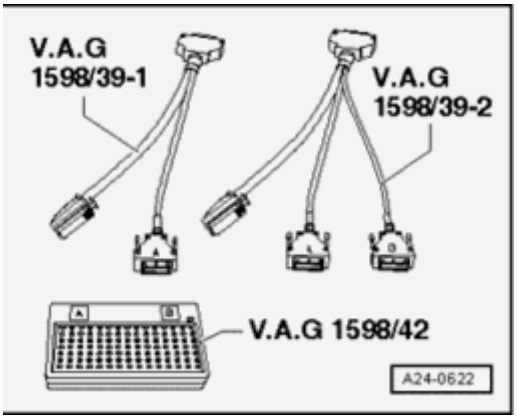


Fig. 755: Connecting Test Box V.A.G 1598/42 To Wiring Harness With Adapter Cable V.A.G 1598/39-1

cardiagn.com

Or Adapter Cable V.A.G 1598/39-2
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect test box V.A.G 1598/42 to wiring harness with adapter cable V.A.G 1598/39-1 or adapter cable V.A.G 1598/39-2. Clamp test box Ground (GND) clip to battery negative terminal. The procedure will indicate whether the engine control module is to be connected to the test box or not.

CAUTION: To avoid damaging electronic components, switch to the corresponding measuring range and observe all test conditions before connecting the test leads.

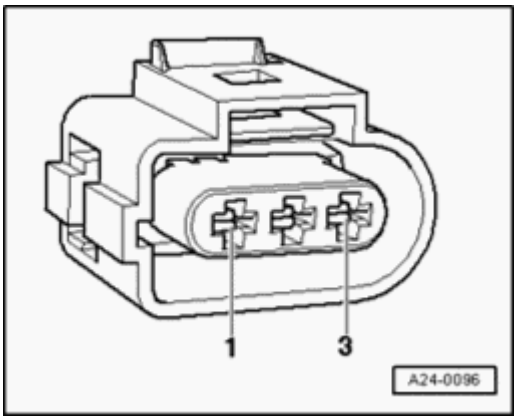


Fig. 756: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following wire connection for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	V.A.G 1598/42 Bushing
- 2 -	4-Cyl. TFSI: B 8
6-Cyl. FSI: B 24	
8-cyl. FSI - Audi RS4: A 55	

- Repair wiring open circuit or short circuit according to wiring diagram.

If no malfunction is found, but leak diagnosis pump is not functional during output diagnostic test mode:

- Replace Leak Detection Pump (LDP) V144 --> **Leak Detection Pump (LDP) V144 , removing and installing**.
- Observe procedures for after re-connecting engine control module (ECM) -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION &

cardiagn.com

IGNITION, ENGINE CODE(S): AVK, BGN

- **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
- **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

Checking input wiring

- Switch off ignition.

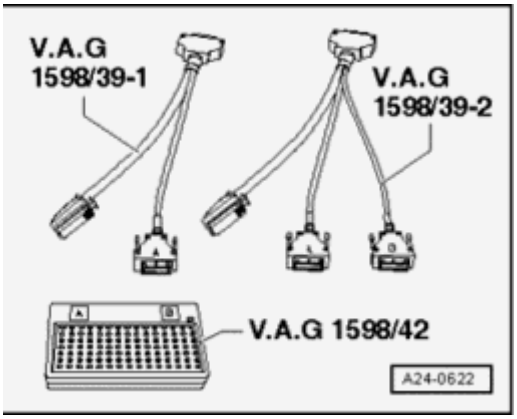


Fig. 757: Connecting Test Box V.A.G 1598/42 To Wiring Harness With Adapter Cable V.A.G 1598/39-1 Or Adapter Cable V.A.G 1598/39-2
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect test box V.A.G 1598/42 to wiring harness with adapter cable V.A.G 1598/39-1 or adapter cable V.A.G 1598/39-2. Clamp test box Ground (GND) clip to battery negative terminal. The procedure will indicate whether the engine control module is to be connected to the test box or not.

CAUTION: To avoid damaging electronic components, switch to the corresponding measuring range and observe all test conditions before connecting the test leads.

cardiagn.com

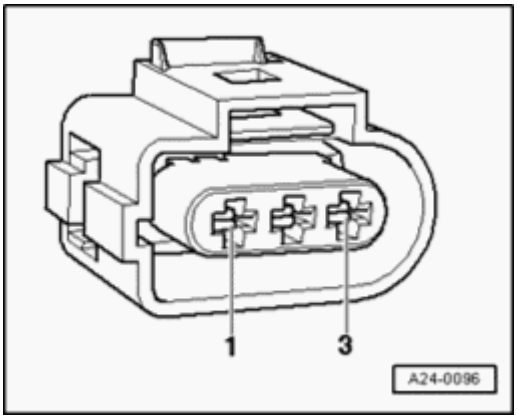


Fig. 758: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check the following wire connection for open circuit and short circuit to Ground (GND) and B+:

Harness connector Terminal	V.A.G 1598/42 Bushing
- 1 -	4-cyl. TFSI: B 48
6-cyl. FSI: B 24	
8-cyl. FSI - Audi RS4: B 40	

- Repair wiring open circuit or short circuit according to wiring diagram.
- Observe procedures for after re-connecting engine control module (ECM) -->
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 1.8 LITER 4-CYL. 5V TURBO FUEL INJECTION & IGNITION, ENGINE CODE(S): AMB
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO FUEL INJECTION IGNITION, ENGINE CODE(S): BPG, BWT
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 3.0 LITER 6-CYL. 5V FUEL INJECTION & IGNITION, ENGINE CODE(S): AVK, BGN
  - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BNS
  - **24 MULTIPORT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BHF

.

Leak Detection Pump (LDP) V144 , removing and installing

Removing

NOTE:

- **All cable ties which are opened or cut open when removing, must be replaced in the same position when installing.**

cardiagn.com

- Remove left rear wheel.
- Remove left rear wheel housing liner -->
  - **66 EXTERIOR EQUIPMENT**
  - **66 - EXTERIOR EQUIPMENT** for BODY EXTERIOR - CABRIOLET

.

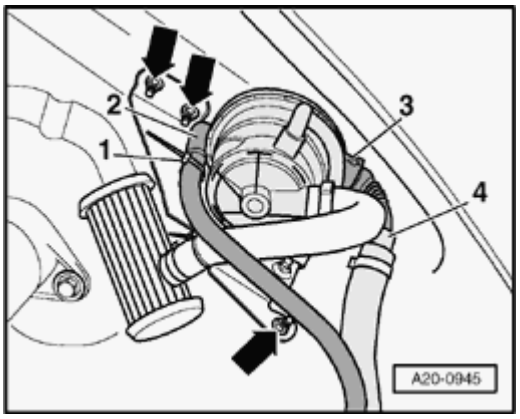


Fig. 759: Identifying Nuts, Hose Coupling, Electrical Connector & Leak Detection Pump With Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **arrows** -.
- Detach leak detection pump with bracket.
- Disconnect electrical connector - **3** - with ignition switched off.
- Disconnect hose coupling - **4** - by pressing release button.

- Cut cable ties - **1** - and disconnect the hose - **2** -.

Installing

Installation is in reverse order of removal. Note the following:

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**
- **During installation, the cable ties must be re-installed at the same location.**

- Secure hose - **2** - to bracket of leak detection pump with cable tie - **1** -.

Torque specifications

Component	Nm
Bracket for leak detection pump to wheel housing	4

ACCELERATOR LINKAGE, SERVICING

cardiagn.com

Accelerator pedal module, assembly overview

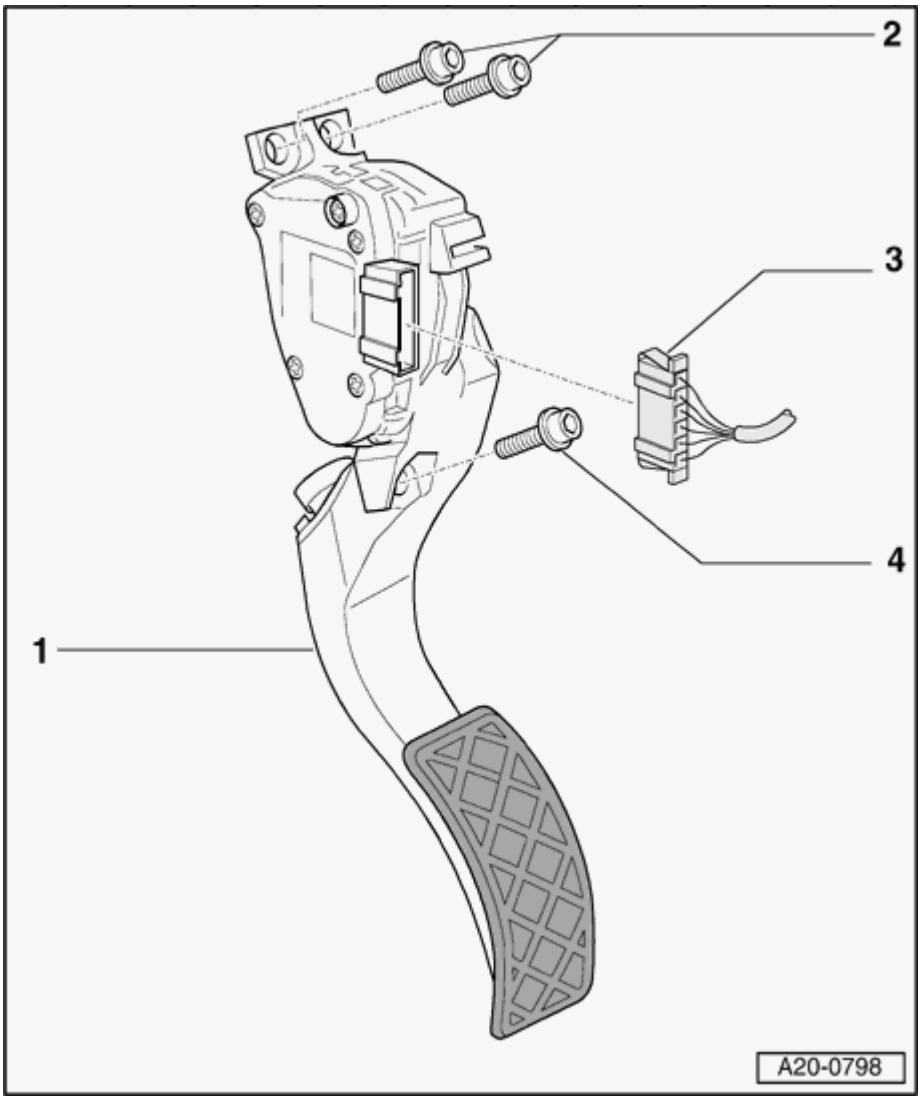


Fig. 760: Accelerator Pedal Module, Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Accelerator pedal module

- With Throttle Position (TP) Sensor G79 and Accelerator Pedal Position Sensor 2 G185
- Removing and installing --> **Accelerator pedal module with Throttle Position (TP) sensors, removing and installing**

2 - 10 Nm

3 - Electrical harness connector

4 - 10 Nm

cardiagn.com

Accelerator pedal module with Throttle Position (TP) sensors, removing and installing

Removing

- Remove driver side storage tray -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

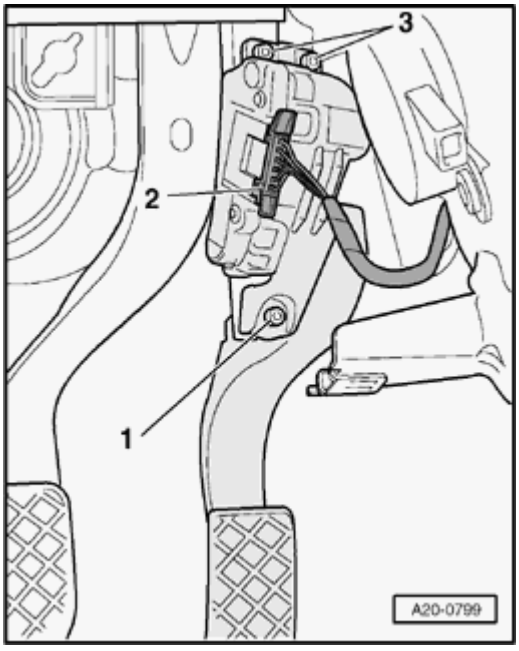


Fig. 761: Checking Electrical Harness Connector For Damage, Corrosion, Lose Or Broken Terminals
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **2** -.
- Remove bolts - **1** - and - **3** -.
- Remove accelerator pedal module.

Installing

Installation is in reverse order of removal. Note the following:

- Install driver side storage tray -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

Vehicles with automatic transmission:

cardiagn.com

On vehicles with automatic transmission, the kick-down function must be adapted if the throttle position sensor or engine control module are replaced --> **Kick-down function, adapting after replacing gas pedal module or engine control module (ECM)**.

Torque specifications

Component	Nm
Accelerator pedal module to pedal mount	10

Kick-down function, adapting after replacing gas pedal module or engine control module (ECM)

NOTE:

- **If the throttle position sensor or engine control module are replaced in vehicles with automatic transmission, the kick-down function must be adapted.**

Special tools, testers and auxiliary items required

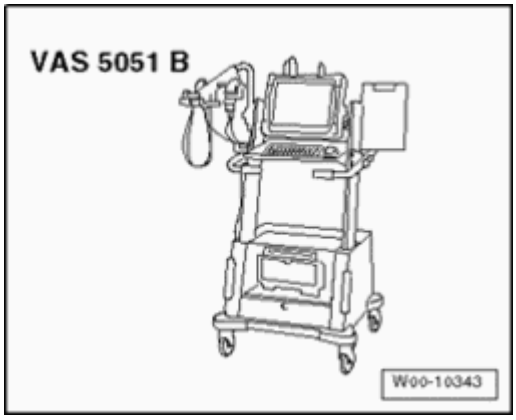


Fig. 762: Identifying Vehicle Diagnosis, Testing And Information System VAS 5051B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle diagnostic, testing, and information system VAS 5051 (VAS 5051 B version shown as example only)

cardiagn.com

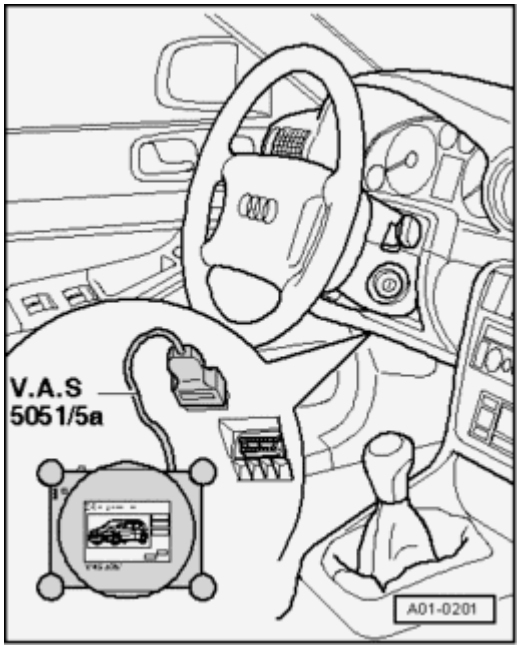


Fig. 763: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Test conditions

- Vehicle Diagnostic, Testing and Information System VAS 5051 connected, On-board diagnostics and Data Link Connector DLC "01 Engine electronics" selected.
- Engine not running, ignition switched on.
- No DTCs in DTC memory.

Work procedure

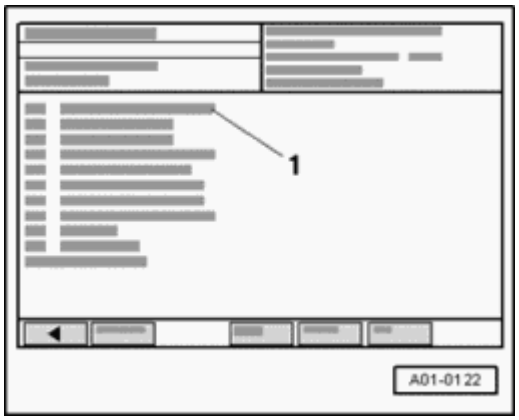


Fig. 764: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

cardiagn.com

- In selection - **1** - , click on diagnostic function "04 - Basic Setting".

Fig. 765: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 A :

- Select "063" in button field - **2** - for "display group 063" and confirm input by pressing Q button.

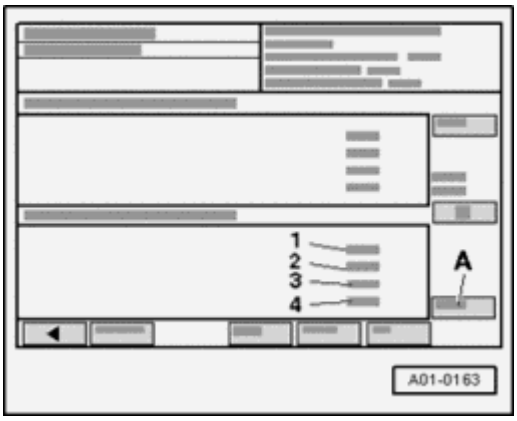


Fig. 766: Diagnostic System VAS 5051: Display - Display Fields
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Activate basic setting by pressing Activate button.
- Check readings in display field - **3** - and - **4** -.

Scan tool display: "Operate kick-down".

- Depress accelerator pedal completely past kick-down point and hold depressed.

Scan tool display: "Kick-down ADP running". After kick-down adaptation is completed, the display shows "Kick-down ADP OK".

cardiagn.com

NOTE:

- **If "Kick-down ERROR" is displayed: Check DTC Memory.**
- **"ERROR" could be displayed e.g. if the accelerator pedal is not immediately depressed after prompting the tester or if the accelerator pedal is released during adaptation, even though adaptation had not been completed. Exit the function "04 - Basic setting" by pressing <-- button and perform adaptation again.**

- End function "04 - Basic setting" by pressing <-- button.
- From selection, click on the diagnostic function "06 - End output".
- Turn the ignition off and disconnect the diagnostic connection.

cardiagn.com