

20 - FUEL SUPPLY

SAFETY PRECAUTIONS

CAUTION:

- Fuel system is under pressure! Before opening system, place clean rags around the connection. Then release pressure by carefully loosening the connection.
- Vehicles with FSI engine: The engine section of the fuel system, after high pressure pump, is under extremely high pressure! When working on engine or fuel injection system, pressure must be relieved to residual pressure before opening high pressure components -->
 - 24 - FUEL INJECTION SYSTEM for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - 24 - MULTIPOINT FUEL INJECTION (MPI) for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - 24 - MULTIPOINT FUEL INJECTION (MPI) for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - 24 - MULTIPOINT FUEL INJECTION (MPI) for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

The following steps should be taken before beginning work on 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 safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

- Open fuel filler flap briefly and then close again.

When removing and installing components from full or partially full fuel tanks, the following must be observed:

- The fuel tank may only be partially full. How much fuel can remain in the fuel tank may be read in respective work description. Empty fuel tank if necessary --> Fuel tank, emptying.
- 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 m³ /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. Empty fuel tank if necessary --> **Fuel tank, emptying.**

RULES FOR CLEANLINESS

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 system is open: Do not work with compressed air. Do not move vehicle unless absolutely necessary.

FUEL TANK WITH ATTACHMENTS

Fuel tank with attachments, assembly overview

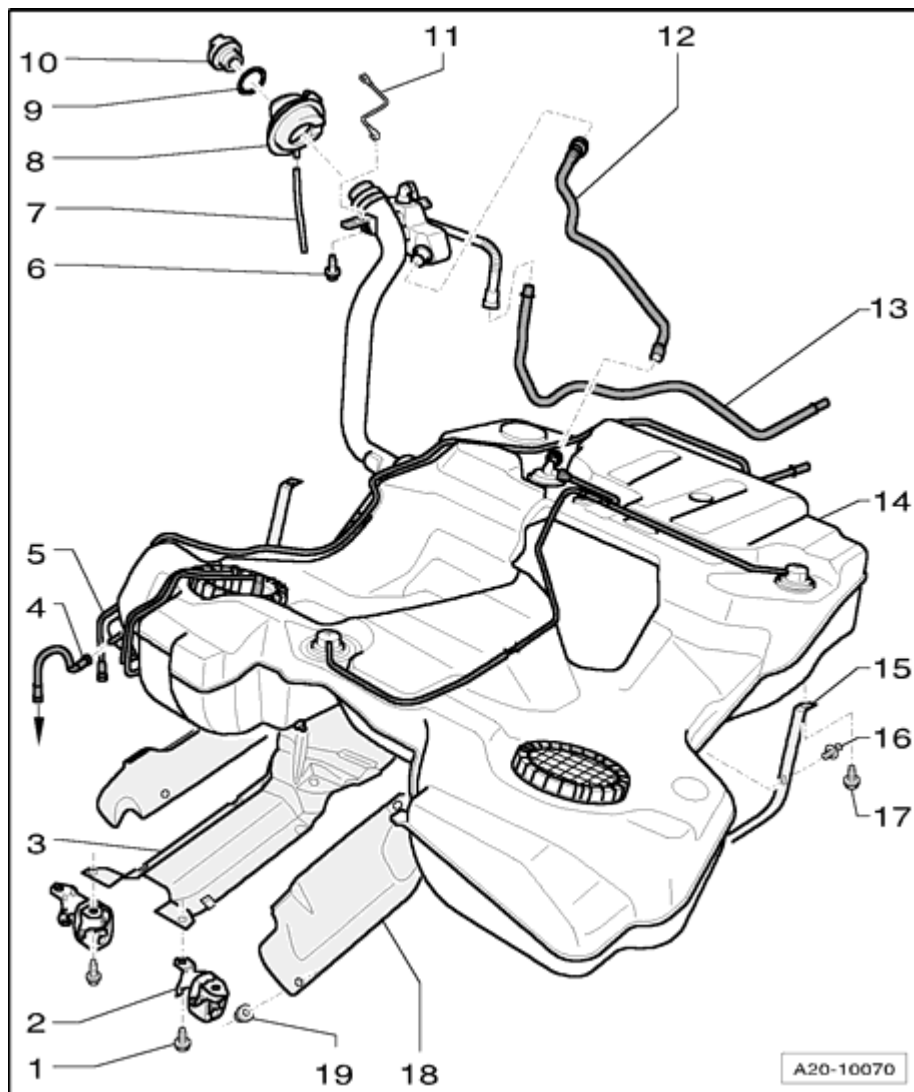


Fig. 1: Fuel Tank With Attachments, Assembly Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt

- 23 Nm

2 - Suspended mount

- For exhaust system

3 - Carrier plate

4 - Fuel line

- From fuel filter to engine

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

5 - Vent 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

6 - Bolt

- Serves to secure fuel filler neck and Ground (GND) connection - **11** -
- 23 Nm

7 - Overflow hose

- Hooked onto wheel housing liner

8 - Rubber gasket**9 - Gasket**

- Replace if damaged

10 - Cap

- Attached to tank flap unit with fastening device

11 - Ground (GND) connection

- For discharging electrostatic charge
- Installed location **Installation position of Ground (GND) connection**
- Ensure connectors are securely seated and wiring is fastened with bolt for fuel filler tube - **6** -
- 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 - Vent line**13 - Vent line**

- To EVAP canister

14 - Fuel tank

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

15 - Securing strap

16 - Spreader clip

17 - Bolt

- 23 Nm

18 - Heat shield for fuel tank

19 - Nut

- 2 Nm

Installation position of Ground (GND) connection

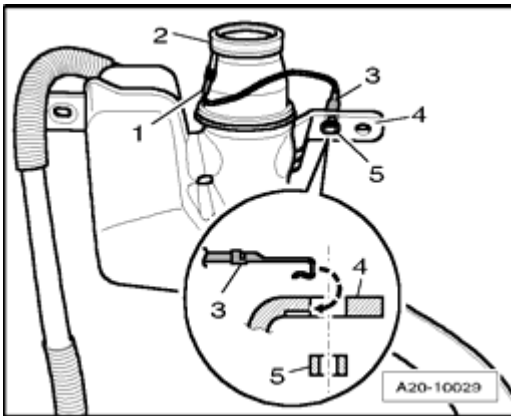


Fig. 2: Installation Position Of Ground (GND) Connection

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route Ground (GND) connection as shown in **Fig. 2**.
- First, engage contact - **3** - of Ground (GND) connection into securing opening on fuel tank - **4** - and then press in spacer bushing - **5** -.
- Ensure connector of Ground (GND) connection - **1** - fits securely 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:

- Specified value: approx. 0 ohms.

Fuel tank, emptying

A - Emptying a fuel tank more than $\frac{1}{4}$ / filled --> A - Emptying a fuel tank more than 1/4 filled.

B - Emptying a fuel tank less than $\frac{1}{4}$ filled --> **B - Emptying a fuel tank less than 1/4 filled.**

Special tools, testers and auxiliary items required

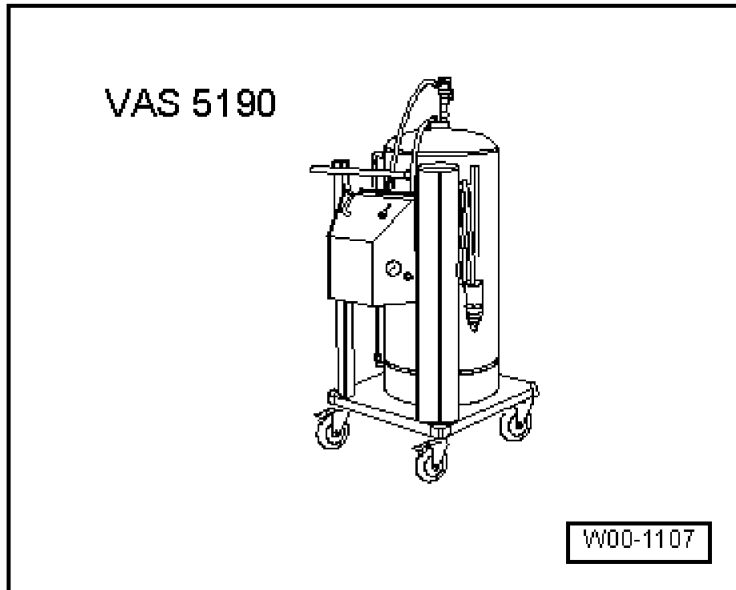


Fig. 3: Identifying Fuel Siphoning Unit VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuel siphoning unit VAS 5190

Work procedure

Observe safety precautions --> **Safety precautions.**

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

CAUTION: Observe safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

- Switch off ignition.
- Release fuel tank flap.

Sedan:

- Fold luggage compartment floor upward.

Wagon:

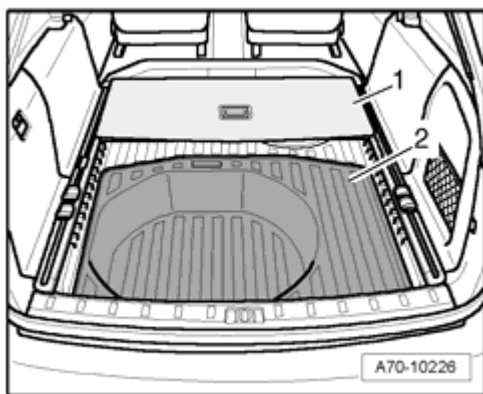


Fig. 4: Identifying Luggage Compartment Cargo Floor & Spare Wheel Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove luggage compartment cargo floor - 1 - and spare wheel cover - 2 -.

All:

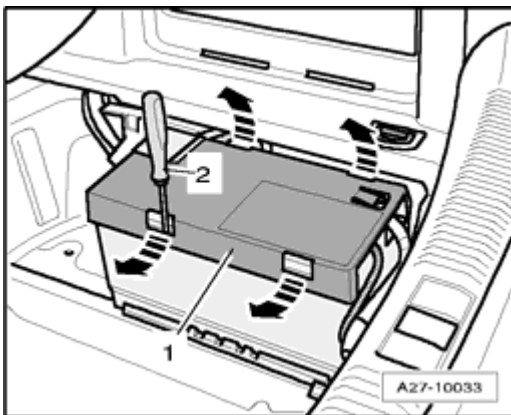


Fig. 5: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining clips - **arrows** - with a screwdriver - 2 - and remove cover - 1 -.

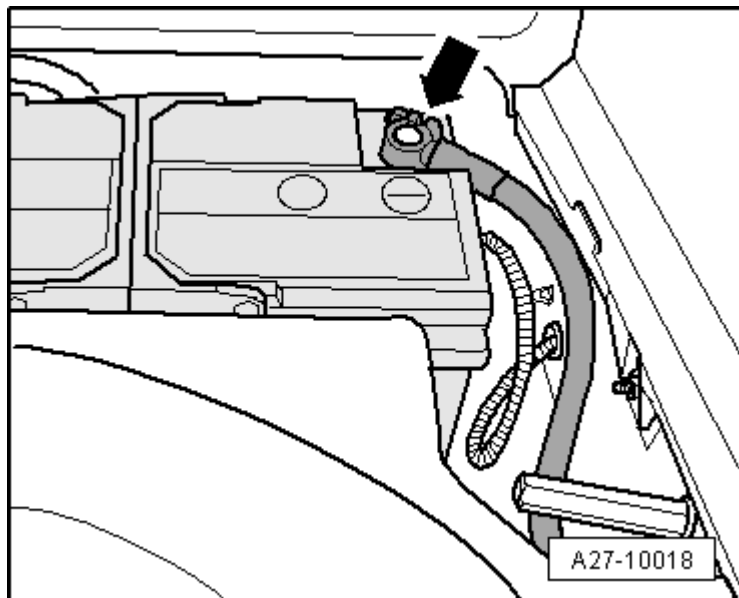


Fig. 6: Disconnecting Ground (GND) Strap At Battery Ground (GND) Terminal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) strap at battery Ground (GND) terminal - **arrow** -.

CAUTION: Secure Fuel Extraction Unit VAS 5190 Ground (GND) wire to a bare area of the chassis.

A - Emptying a fuel tank more than 1/4 filled

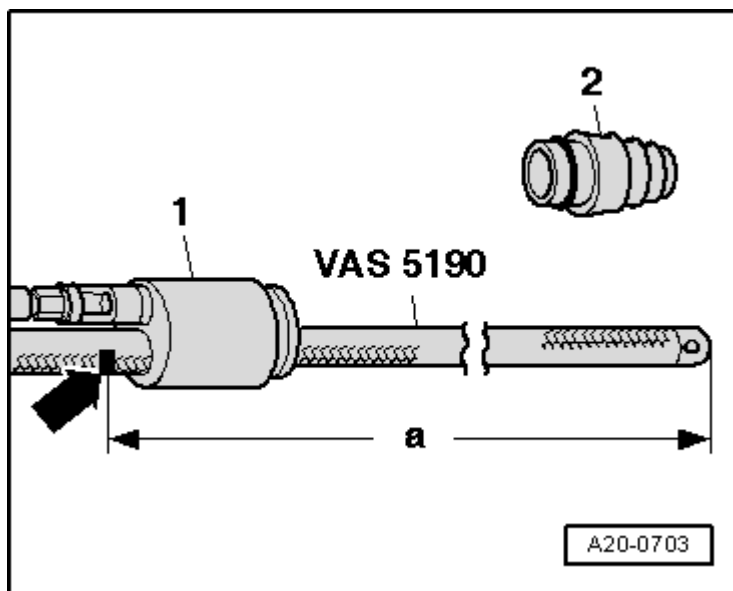


Fig. 7: Fuel Siphoning Device VAS 5190
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cone piece - **2** - from Fuel Extraction Unit VAS 5190 shaft piece - **1** -.
- Using insulating tape, apply a mark - **arrow** - on hose at length - **a** - = 1,365 mm from end of suction hose.

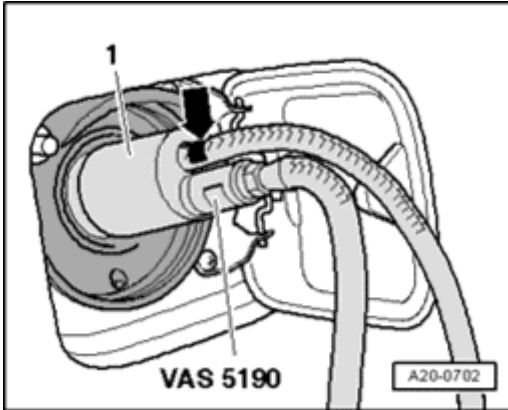


Fig. 8: Installing Fuel Siphoning Device VAS 5190 Onto Fuel Filler Tube Of Fuel Tank
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel filler cap from fuel filler tube.
- Attach shaft piece - **1** - of Fuel Extraction Unit VAS 5190 to fuel filler tube of fuel tank.
- Slide suction hose as far into fuel tank until mark applied earlier - **arrow** - stands on shaft piece.
- Empty fuel tank as much as possible via fuel filler tube.
- Carefully pull out suction hose.
- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing.**
- Extract residual fuel in right chamber of fuel tank through opening of fuel filler tube.
- Push hose into left chamber of fuel tank and extract residual fuel.

NOTE:

- If using a siphoning device without shaft piece, proceed principally in the same manner.

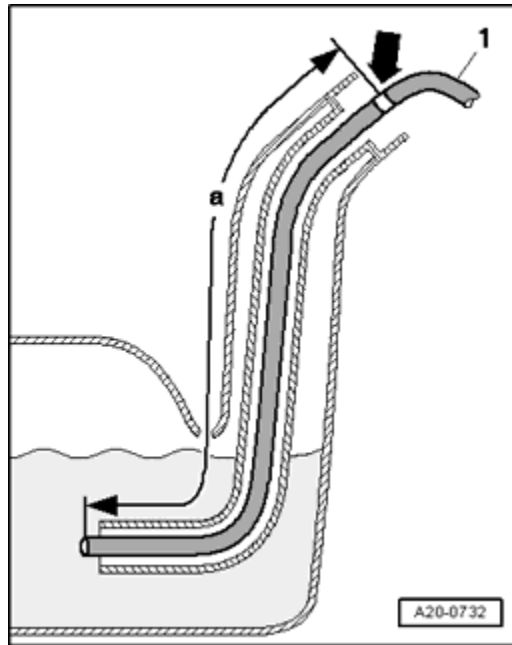


Fig. 9: Sliding Suction Hose As Far Into Fuel Tank Until Mark Applied Earlier Meets Fuel Filler Tube

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In this case, apply a mark - arrow - using insulating tape on hose at length - a - = 1300 mm from end of suction hose - 1 -. 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.

B - Emptying a fuel tank less than 1/4 filled

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing.**
- Extract fuel in right chamber of fuel tank through opening of fuel filler tube.
- Push hose into left chamber of fuel tank and extract residual fuel.

Fuel tank with attachments, removing and installing

Special tools, testers and auxiliary items required

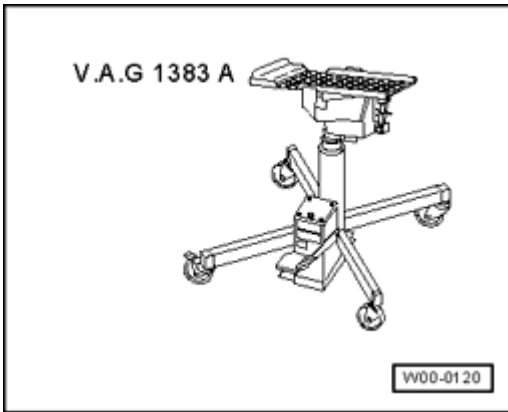


Fig. 10: Identifying Engine/Transmission Jack V.A.G. 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Removing

Observe safety precautions --> Safety precautions.

Observe rules for cleanliness --> Rules for cleanliness.

CAUTION: • For removal, fuel tank must be empty for weight reasons. Empty fuel tank if necessary. Procedure --> Fuel tank, emptying.

CAUTION: Observe safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

- Switch off ignition.
- Release fuel tank flap.
- Fold rear seat right backrest forward, if necessary.

Sedan:

- Remove luggage compartment floor trim.

Wagon:

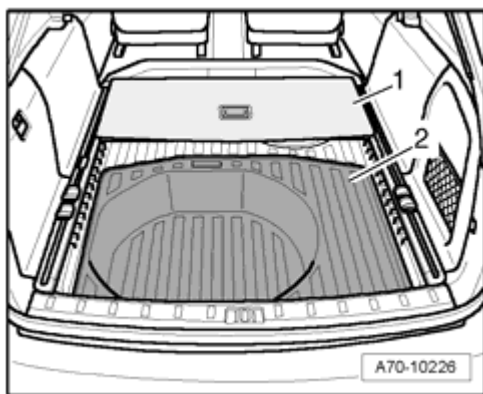


Fig. 11: Identifying Luggage Compartment Cargo Floor & Spare Wheel Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove luggage compartment cargo floor - 1 - and spare wheel cover - 2 -.

All:

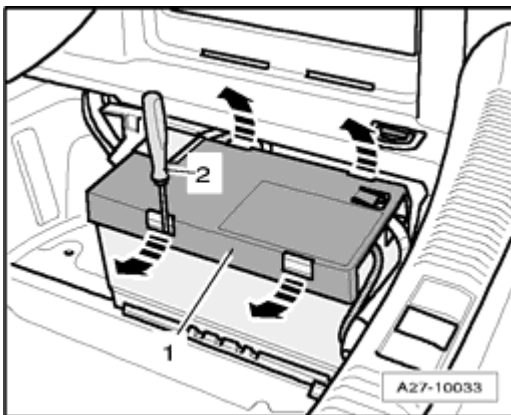


Fig. 12: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining clips - **arrows** - with a screwdriver - 2 - and remove cover - 1 -.

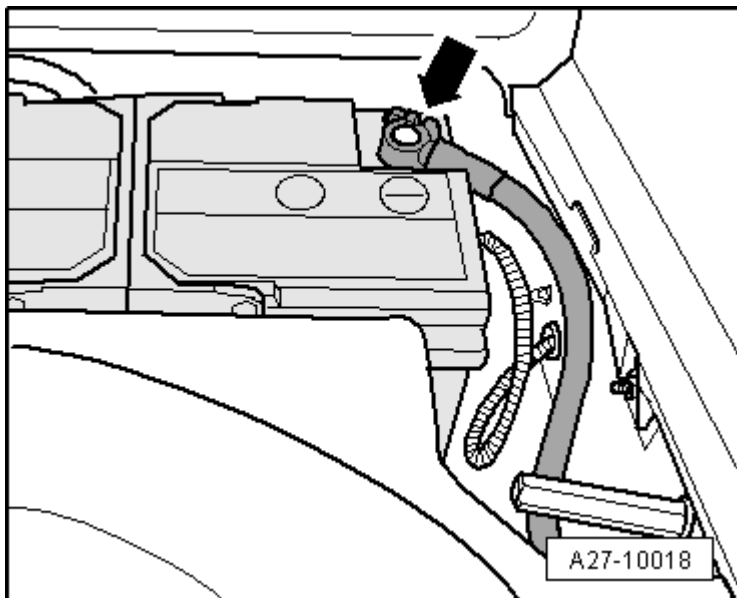


Fig. 13: Disconnecting Ground (GND) Strap At Battery Ground (GND) Terminal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) strap at battery Ground (GND) terminal - **arrow** -.

Wagon:

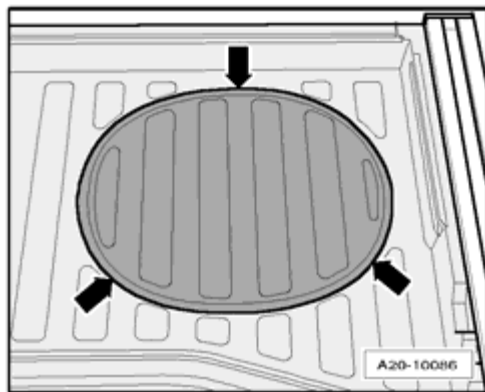


Fig. 14: Unclipping Right Sealing Flange Cover Retainers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles without air suspension, unclip right sealing flange cover retainers - **arrow** -.

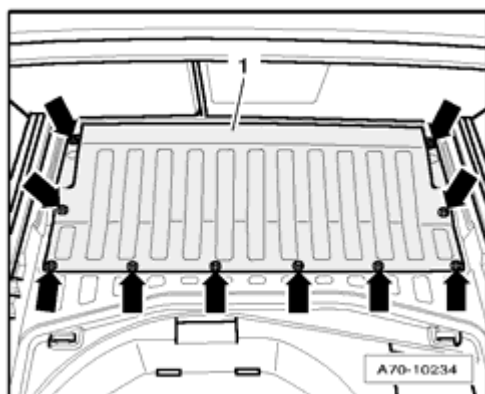


Fig. 15: Removing Spreader Pins And Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles with air suspension, remove spreader pins - **arrows** - and remove cover - **1** -.

All:

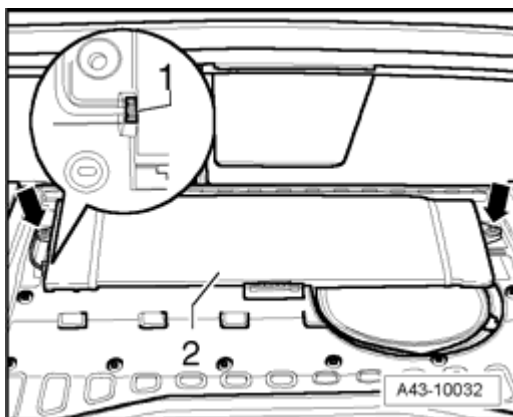


Fig. 16: Removing Pressure Tank And Set Aside With Line Connected

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles with air suspension, remove bolts - **arrows** -.
- Remove pressure tank - **2** - and set aside with line connected - **1** -.

NOTE:

- **Do not stretch or kink line.**

Sedan:

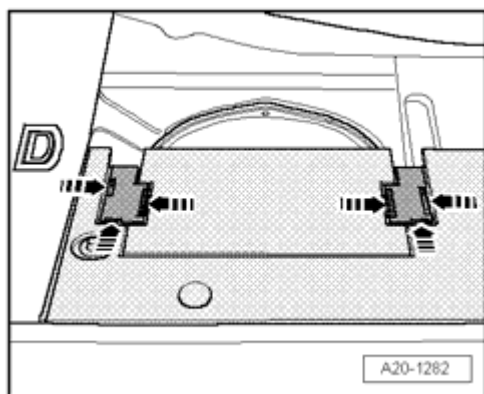


Fig. 17: Releasing Retaining Tabs

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining tabs - **arrows** -.

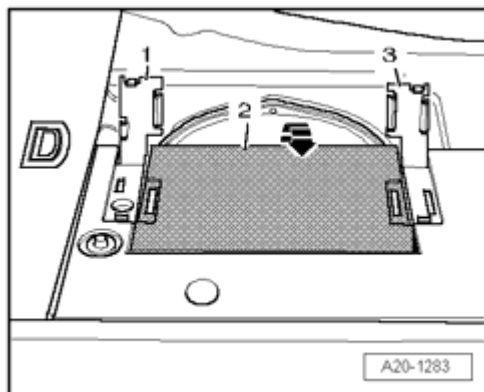


Fig. 18: Folding Open Retaining Tabs Toward Rear & Folding Cover Toward Front

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fold open retaining tabs - **1** - and - **3** - toward rear.
- Fold cover - **2** - toward front - **arrow** -.

All:

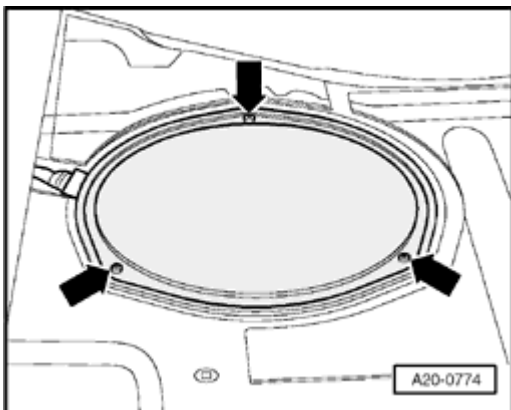


Fig. 19: Removing Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover - **arrows** -.

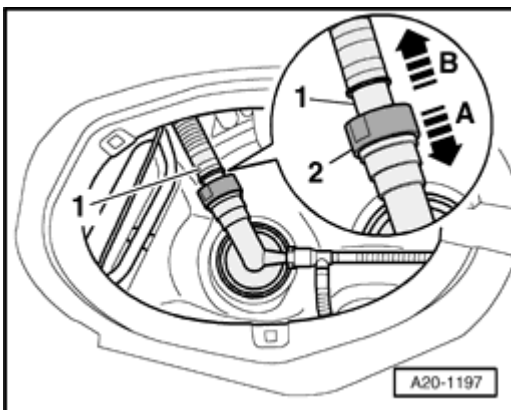


Fig. 20: Disconnecting Ventilation Line

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

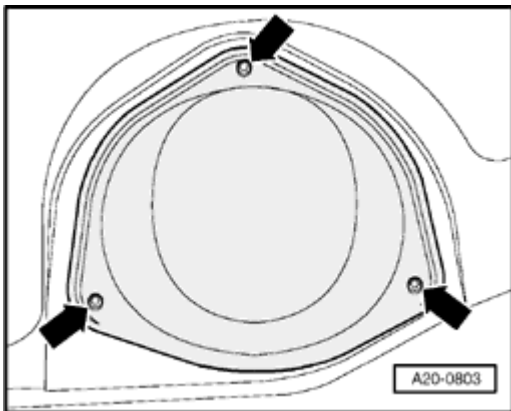


Fig. 21: Removing Cover Bolts For Locking Flange

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for right locking flange - **arrows** - .

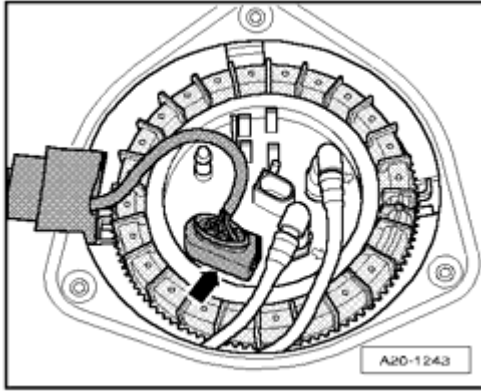


Fig. 22: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - **arrow** - at locking flange.
- Open fuel tank flap.
- Clean area around fuel filler tube.

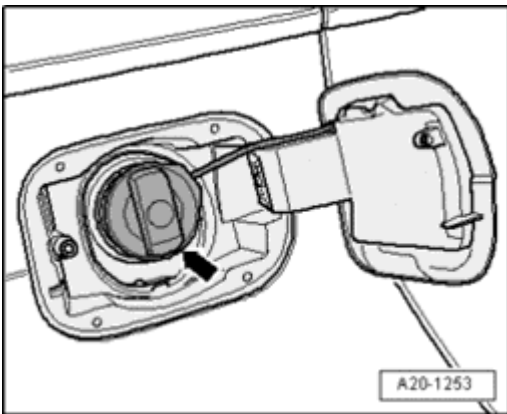


Fig. 23: Removing Fuel Filler Cap From Fuel Filler Tube
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel filler cap - **arrow** - from fuel filler tube.
- Close off opening of fuel filler tube with a clean piece of foam to prevent dirt from falling in.

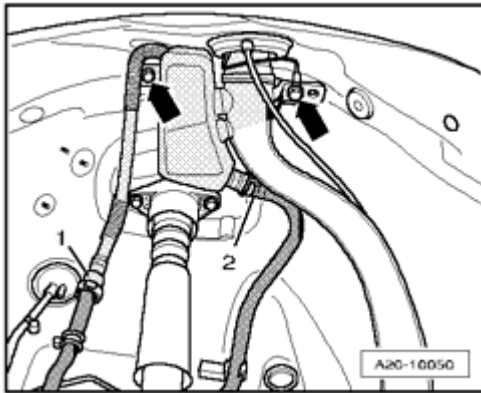


Fig. 24: Pulling Vent Lines Off From Fuel Filler Tube By Pressing Release Buttons & Unfastening Bolts For Fuel Filler Tube

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear wheel.
- Remove right rear wheel housing liner --> **66 - EXTERIOR EQUIPMENT** .
- Pull vent lines - 1 - and - 2 - off from fuel filler tube by pressing release buttons.
- Unfasten bolts - **arrows** - for fuel filler tube.

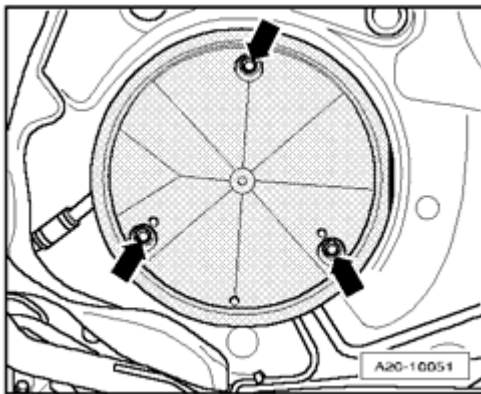


Fig. 25: Removing Bolts And Cover For EVAP Canister

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove cover for EVAP canister.
- Secure EVAP canister by hand-tightening unfastened bolts.

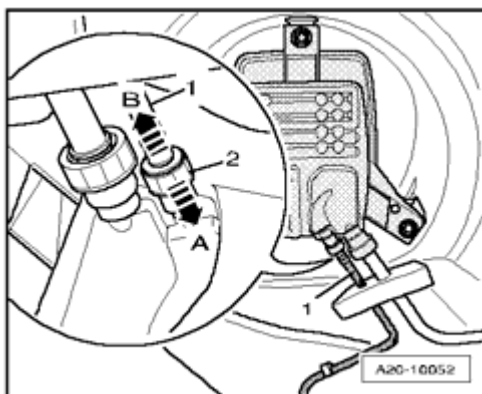


Fig. 26: Disconnecting Vent Line

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

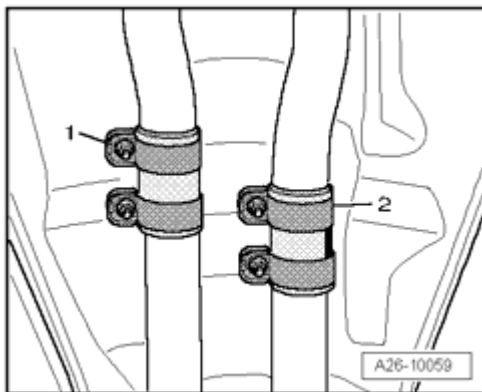


Fig. 27: Loosening Clamping Sleeves

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen clamping sleeves - 1 - and - 2 -.
- Push clamping sleeves rearward to separate exhaust system.

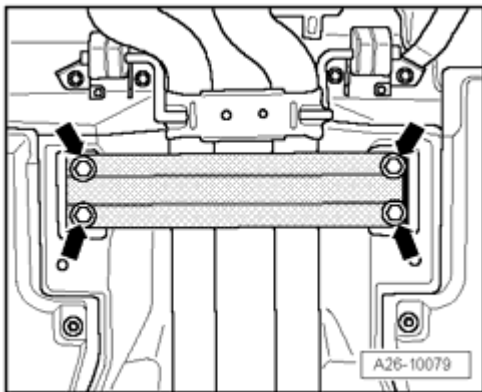


Fig. 28: Removing Rear Cross Member

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear cross member - **arrows** -.

NOTE:

- **A second technician is required to remove rear portion of exhaust system.**

- Unhook exhaust system from retaining loops and remove rear portion of exhaust system.

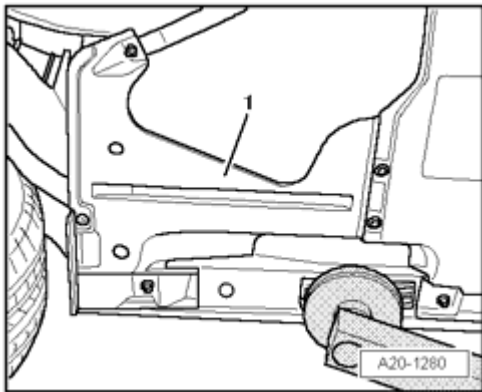


Fig. 29: Removing Left Rear Cover On Bottom Of Vehicle Floor

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left rear cover - **1** - on bottom of vehicle floor.

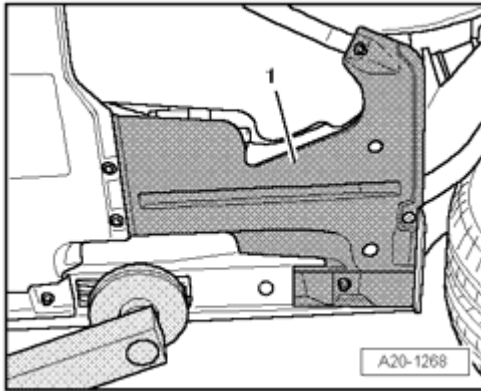


Fig. 30: Removing Right Rear Cover On Bottom Of Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear cover - 1 - on bottom of vehicle floor.

Vehicles with all wheel drive:

- Remove driveshaft -->
 - 39 FINAL DRIVE, REAR DIFFERENTIAL for REAR FINAL DRIVE 01R
 - 39 - FINAL DRIVE, DIFFERENTIAL for REAR FINAL DRIVE 0AR

All:

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

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

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

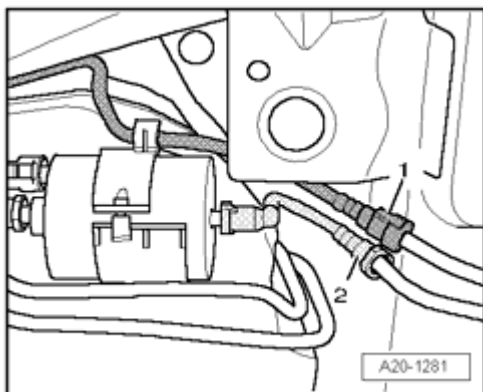


Fig. 31: Separating Fuel Line And Ventilation Line At Right Front From Fuel Tank
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate fuel line - 1 - and right vent 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.

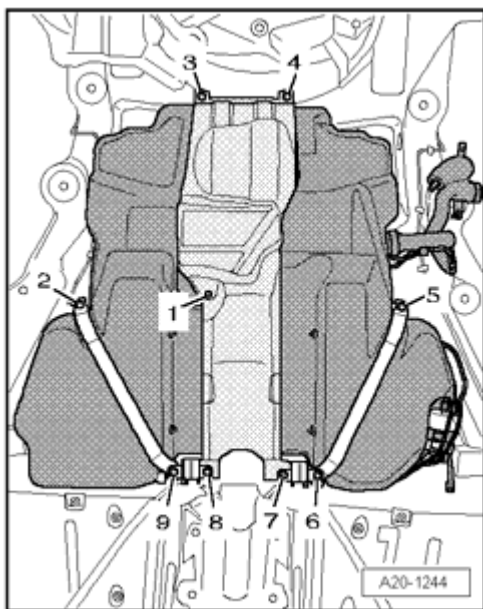


Fig. 32: Removing Bolts & Lowering Fuel Tank With Engine/Transmission Jack V.A.G 1383 A
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - 1 to 9 -.
- Lower fuel tank with Engine/transmission jack V.A.G 1383 A , thereby guiding it by hand.

Installing

- Tightening torques --> **Fuel tank with attachments, assembly overview.**

Installation is in reverse order of removal, note the following:

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

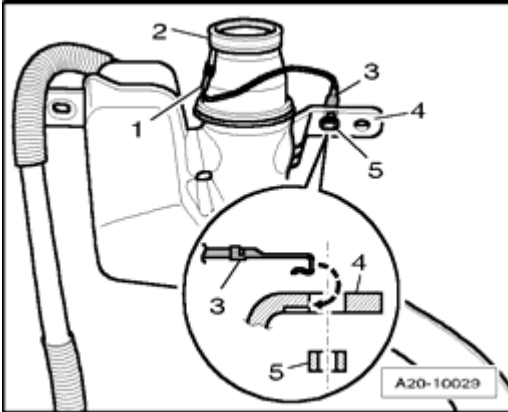


Fig. 33: Installation Position Of Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check if Ground (GND) wiring on both connections show signs of oxidation. If necessary, remove.
- Check installation position of Ground (GND) connection:
 - The connector - 1 - must be securely attached to metal ring - 2 -.
 - The contact - 3 - must be attached into fuel tank - 4 - and be secured with spacer bushing - 5 -.

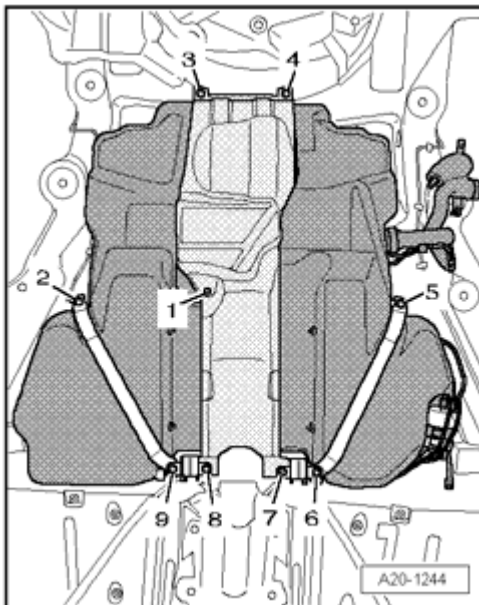


Fig. 34: Fastening Mounting Straps And Carrier Plate

- 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.
- Fasten mounting straps and carrier plate - **1 to 9** -.

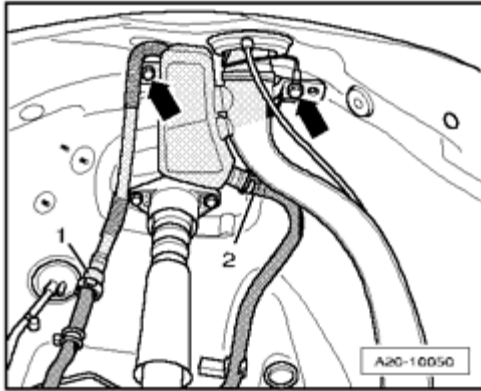


Fig. 35: Fastening Fuel Filler Tube With Ground (GND) Connection
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten fuel filler tube with Ground (GND) connection - **arrows** -.

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

- **Specified value: approx. 0 ohms.**

- Secure vent lines - **1** - and - **2** - to fuel filler tube.
- Install rear axle --> **42 - REAR SUSPENSION** .

Vehicles with all wheel drive:

- Install driveshaft -->
 - **39 FINAL DRIVE, REAR DIFFERENTIAL** for REAR FINAL DRIVE 01R
 - **39 - FINAL DRIVE, DIFFERENTIAL** for REAR FINAL DRIVE 0AR

All:

- Install rear part of exhaust system -->
 - **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): BAT, BNK

- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BVJ
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 5.2 LITER 10-CYL. 4V ENGINE MECHANICAL ENGINE CODE(S): BXA

- Install right rear wheel housing liner --> **66 - EXTERIOR EQUIPMENT** .
- Install EVAP canister cover --> **Evaporative emissions (EVAP) canister, removing and installing**
- Install rear seat bench --> **72 - SEAT - FRAMES** .
- Install pressure tank --> **43 - SELF LEVELING SUSPENSION** .
- Connect battery. Observe safety precautions after connecting battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

FUEL DELIVERY UNIT AND FUEL LEVEL SENSOR (VEHICLES WITH FRONT AND ALL WHEEL DRIVE)

Fuel delivery unit and fuel level sensor, assembly overview



1 - Fuel delivery unit

- Fuel pump electrical, checking --> **Fuel pump electrical, checking**
- Removing and installing --> **Fuel delivery unit, removing and installing**
- Checking residual pressure -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPFI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION

IGNITION, ENGINE CODE(S): BXA

2 - Fuel Level Sensor G

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

3 - Threaded ring

4 - Seal

- Replace
- Install dry

5 - Union nut

- Use ring nut wrench T40068 for removal and installation
- Replace
- 120 Nm

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 - 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

8 - Electrical harness connector

- For Transfer Fuel Pump (FP) G6

- For Fuel Level Sensor G and Fuel Level Sensor 2 G169

9 - Electrical harness connector

- For Fuel Level Sensor 2 G169

10 - Fuel delivery line

- From suction jet pump to fuel delivery unit
- Clipped into fuel delivery unit
- Secure to suction jet pipe with a total of 3 cable ties

11 - Union nut

- Use ring nut wrench T40068 for removal and installation
- Replace
- 120 Nm

12 - Seal

- Replace
- Install dry

13 - Threaded ring

14 - Suction jet pump

- Suction jet pump, checking --> **Suction jet pump**
- Removing and installing --> **Suction jet pump, removing and installing**

15 - 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**

16 - Suction jet pipe

- From fuel pump to suction jet pump
- To disconnect, press release button on connection piece
- Secure on fuel delivery line with a total of 3 cable ties

Fuel pump electrical, checking

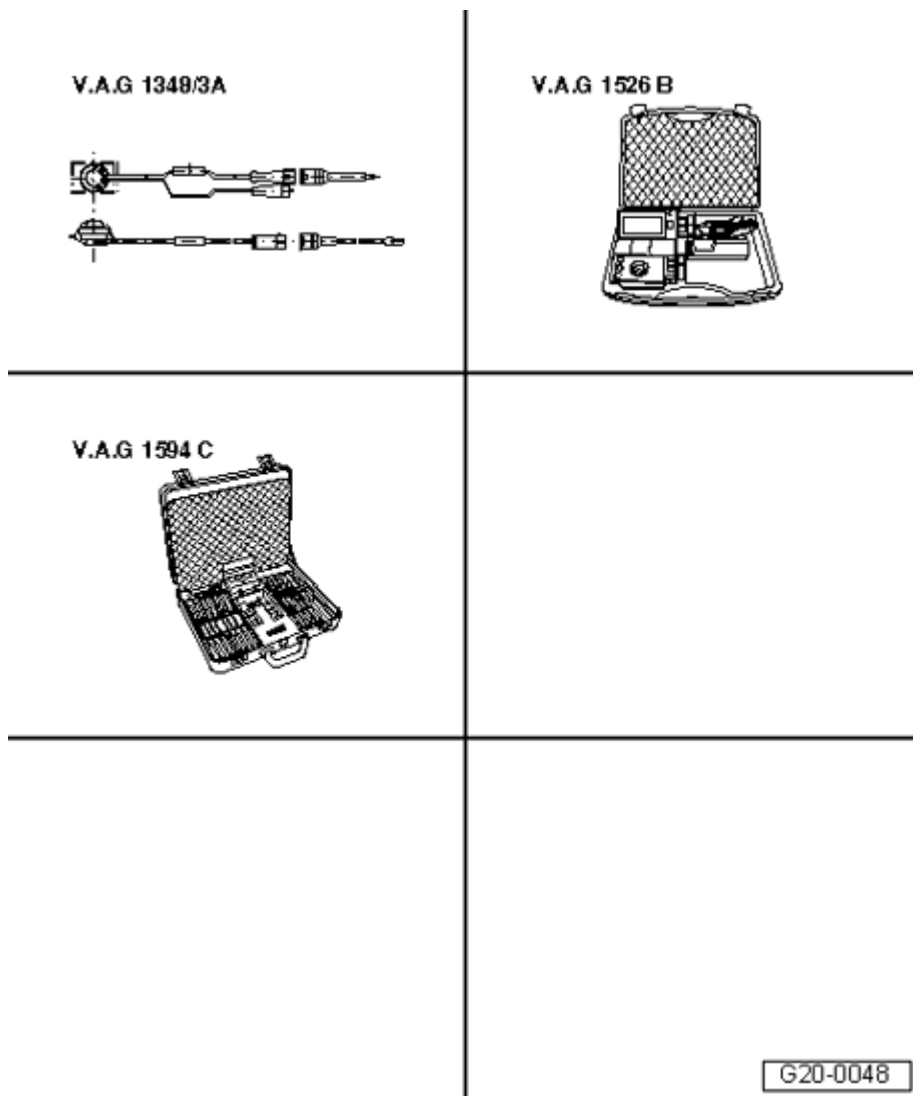


Fig. 37: Identifying Special Tools - Fuel Pump Electrical, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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 1526C
- Connector test set V.A.G 1594C

Work procedure

- Battery voltage min. 12.5 V.

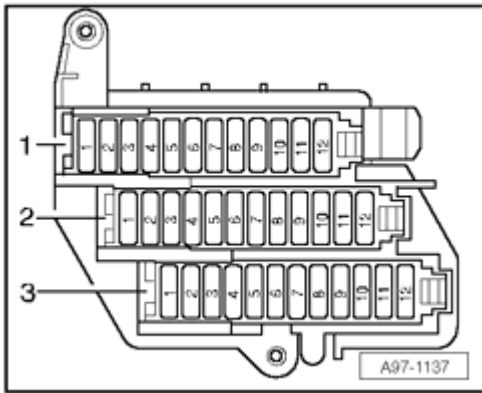


Fig. 38: Identifying Fuse 1 Of Right Fuse Panel In Center Bracket Of Instrument Panel Is OK
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse 1 of right fuse panel in center bracket of instrument panel - **2** - is OK.

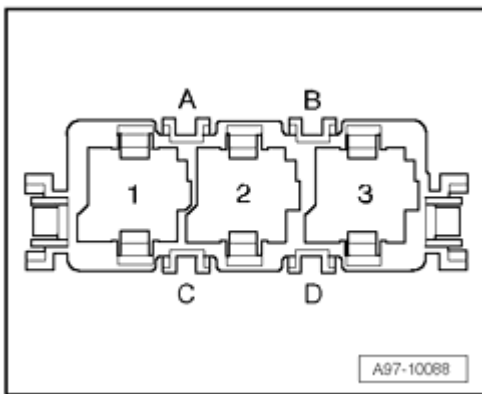


Fig. 39: Identifying Vehicles With MPI Engine: Fuel Pump (FP) Relay J17 In Relay And Fuse Carrier, In Left E-Box Is OK
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicles with MPI engine: Fuel Pump (FP) Relay J17 in relay and fuse carrier, position - **2** - in left E-Box is OK.

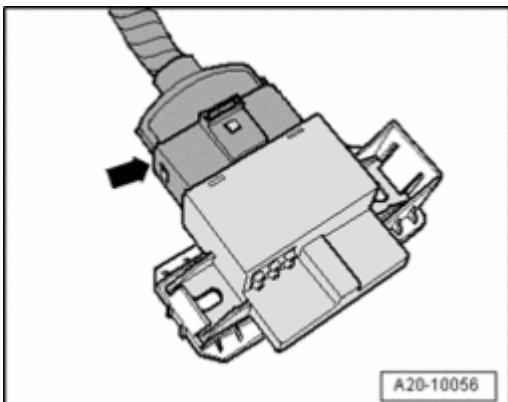


Fig. 40: Identifying Fuel Pump (FP) Control Module J538

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 FSI engine.**
- Fuel filter OK.
- Ignition switched off.

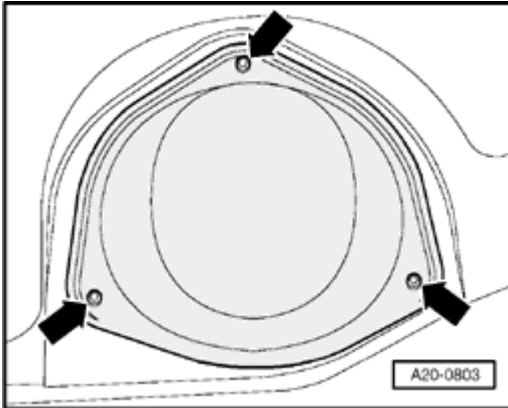


Fig. 41: Removing Cover Bolts For Locking Flange

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Unbolt cover for right locking flange - **arrows** - .

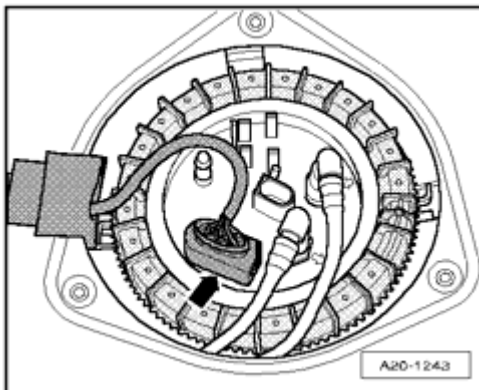


Fig. 42: Disconnecting Electrical Harness Connector At Locking Flange

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

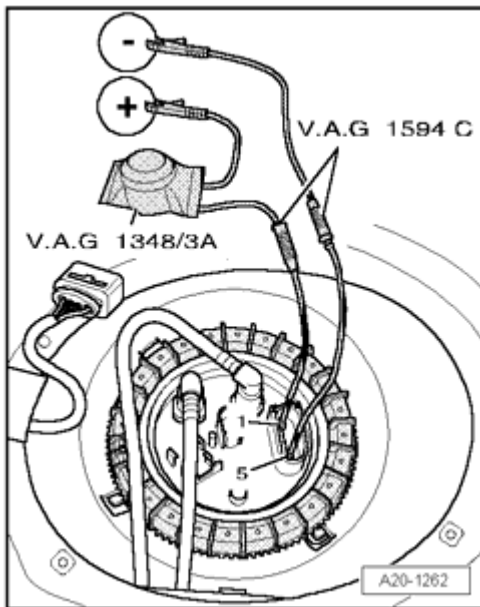


Fig. 43: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-2 With An Adapter Cable From Connector Test Set V.A.G 1594C At Terminal

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Remote Control V.A.G 1348/3A with Adapter Cable V.A.G 1348/3-2 with an adapter cable from Connector Test Set V.A.G 1594C at terminal - 1 -.
- Connect contact - 5 - to vehicle ground (GND) using a jumper cable from the connector test set V.A.G 1594C.
- Connect alligator clip to battery "+".
- Press the switch on the remote control.
- Running noise of pump must be audible.

NOTE:

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

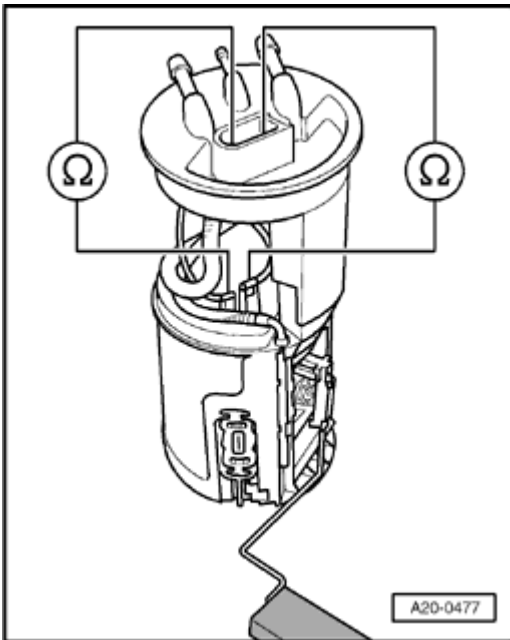


Fig. 44: Checking Electrical Circuit Between Terminals Of Fuel Delivery Unit And Fuel Pump For Continuity

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 the electrical wiring between the 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

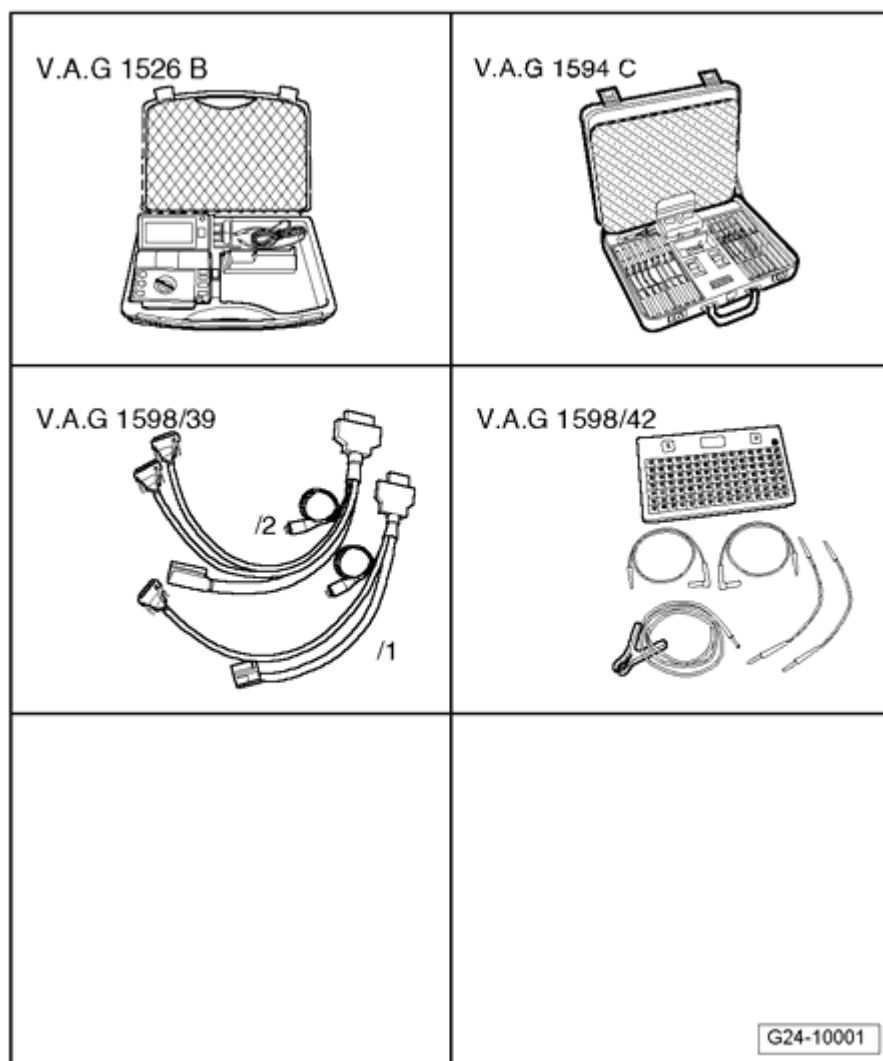


Fig. 45: Identifying Special Tools - Fuel Pump (FP) Control Module J538 , Checking - Vehicles With FSI Engine

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

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

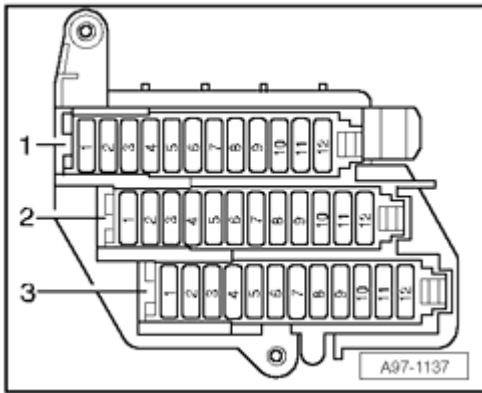


Fig. 46: Identifying Fuse 1 Of Right Fuse Panel In Center Bracket Of Instrument Panel Is OK
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Work procedure

- Battery voltage min. 12.5 V.
- Fuse 1 of right fuse panel in center bracket of instrument panel - 2 - is OK.
- Ignition switched off.

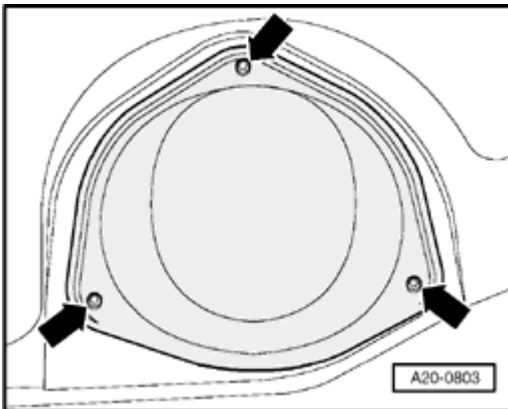


Fig. 47: Removing Cover Bolts For Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Unbolt cover for right locking flange - **arrows** - .

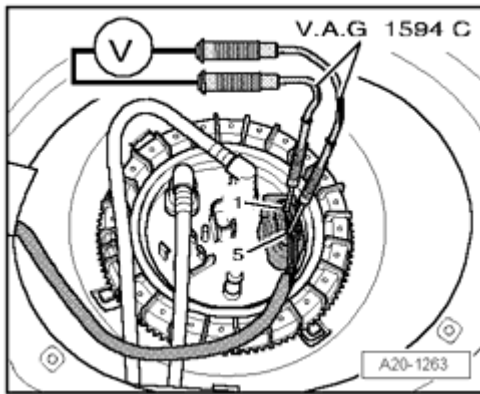


Fig. 48: Connecting Hand Multimeter V.A.G 1526C With Measuring Probes And Connector Adapters From Connector Test Set V.A.G 1594C Between Clamp
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- For voltage testing, connect the hand multimeter V.A.G 1526C with measuring probes and connector adapters from the connector test set V.A.G 1594C between clamp - 1 - and - 5 -, as shown in the illustration. The electrical connection remains connected.

NOTE:

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

- Start engine.
- Specified value at start and in idle: 4 to 5 V.
- Depress accelerator pedal completely and then release it (brief throttle burst).
- Specified value: The voltage value must first rise slightly, then fall and then rise again to the value previously read.

If the reading does not result as described:

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

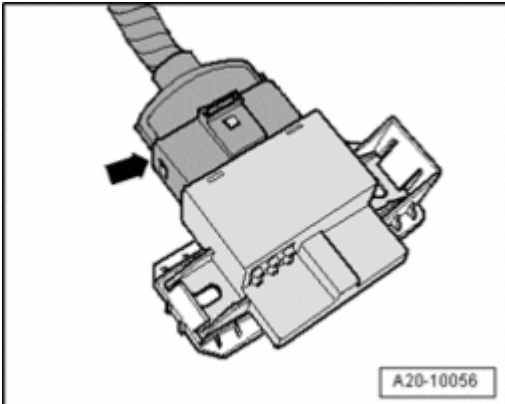


Fig. 49: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

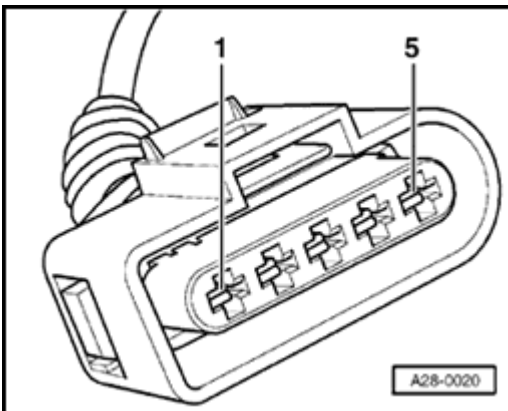


Fig. 50: Connecting Multimeter Between Terminal Of Harness Connector For Voltage Measurement
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect multimeter between terminal - 3 - and - 4 - of harness connector for voltage measurement.
- Switch ignition on.
- Specified value: approx. battery voltage.

If the specification is not obtained:

- Repair open circuit in wiring according to wiring diagram.

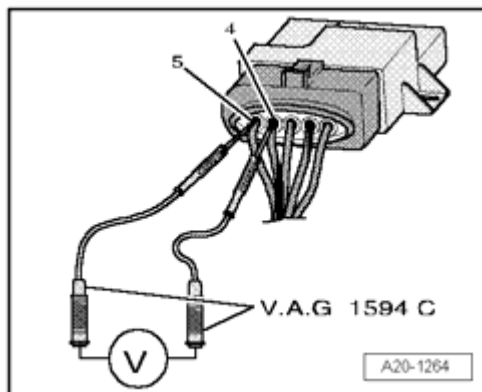


Fig. 51: Connecting Multimeter With Measuring Probes And Connector Adapters From Connector Test Set V.A.G 1594 C Between Clamp

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Fuel Pump (FP) Control Module J538 activation, checking

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

NOTE:

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

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

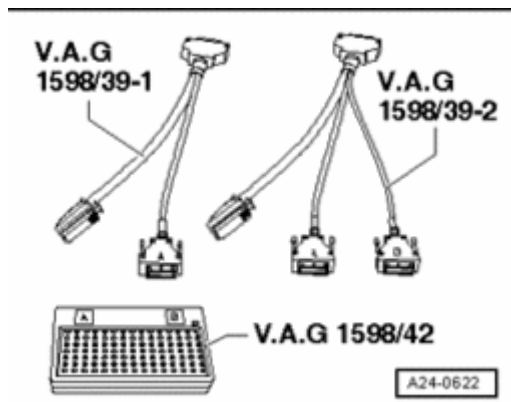


Fig. 52: Connecting Test Box V.A.G 1598/42 To Wiring Harness With Adapter Cable V.A.G 1598/39-1 Or Adapter Cable V.A.G 1598/39-2

Courtesy of VOLKSWAGEN UNITED STATES, INC.

If the reading does not result as described:

- Switch off ignition.
- Connect Test Box V.A.G 1598/42 to wiring harness with adapter cable V.A.G 1598/39-1 or V.A.G 1598/39-2 ; engine control module (ECM) is not connected. Clamp test box Ground (GND) clip to battery negative terminal -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

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

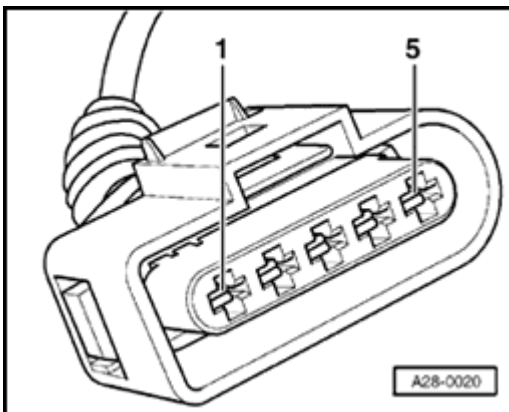


Fig. 53: Connecting Multimeter Between Terminal Of Harness Connector For Voltage Measurement

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
- 5 -	B 35

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

If no malfunctions are detected:

- Replace the Fuel Pump (FP) Control Module J538.

Fuel Pump (FP) Control Module J538 , removing and installing - Vehicles with FSI engine

Removing

Observe safety precautions --> Safety precautions.

Observe rules for cleanliness --> Rules for cleanliness.

CAUTION: • To lower, fuel tank must be empty for weight reasons. Empty fuel tank if necessary. Procedure --> Fuel tank, emptying.

CAUTION: Observe safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

- Switch off ignition.
- Release the fuel tank flap.

Sedan:

- Fold the luggage compartment floor upward.

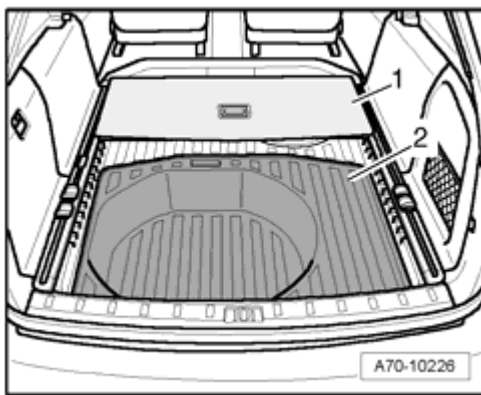


Fig. 54: Identifying Luggage Compartment Cargo Floor & Spare Wheel Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Wagon:

- Remove luggage compartment cargo floor - 1 - and spare wheel cover - 2 -.

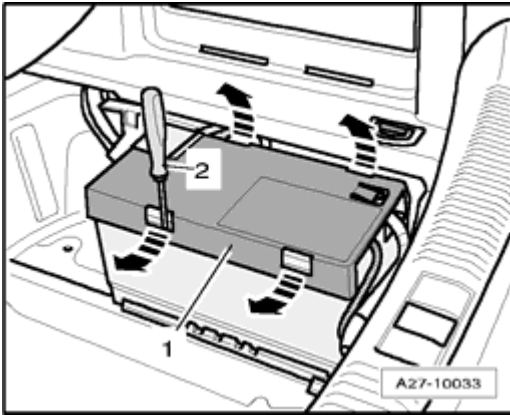


Fig. 55: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

All:

- Release the retaining clips - **arrows** - with a screwdriver - **2** - and remove the cover - **1** -.

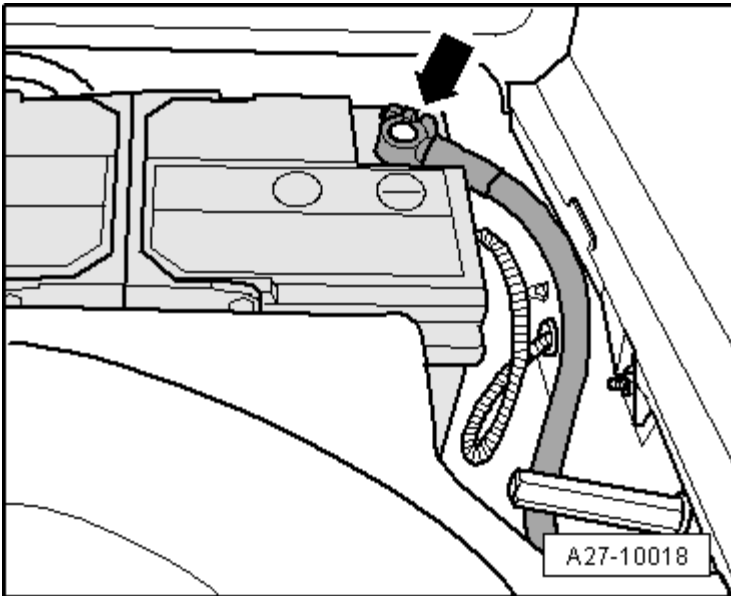


Fig. 56: Disconnecting Ground (GND) Strap At Battery Ground (GND) Terminal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) strap at battery Ground (GND) terminal - **arrow** -.

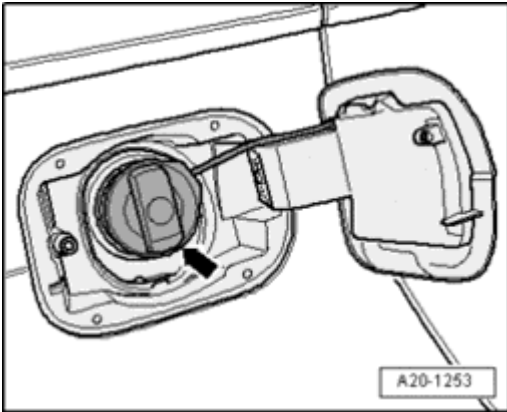


Fig. 57: Removing Fuel Filler Cap From Fuel Filler Tube
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open the fuel tank flap.
- Clean the area around the fuel filler tube.
- Remove fuel filler cap - **arrow** - from fuel filler tube.
- Close off the opening of the fuel filler tube with a clean piece of foam to prevent dirt from falling in.

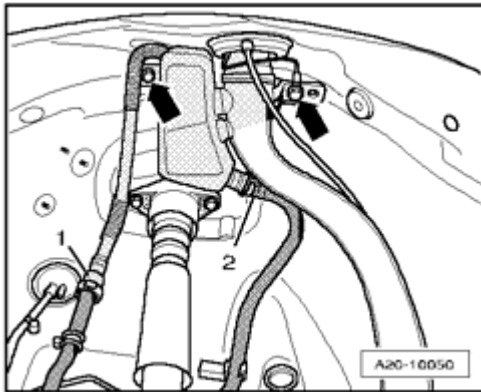


Fig. 58: Pulling Vent Lines Off From Fuel Filler Tube By Pressing Release Buttons & Unfastening Bolts For Fuel Filler Tube
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear wheel.
- Remove rear right wheel housing liner --> **66 - EXTERIOR EQUIPMENT** .
- Pull vent line - **2** - off from fuel filler tube by pressing the release buttons.

NOTE:

- **Ignore - 1 - .**

- Unfasten the bolts - **arrows** - for fuel filler tube.

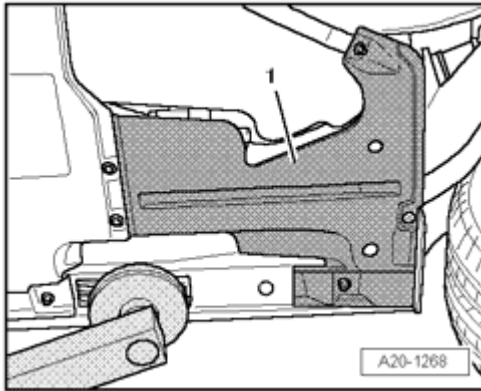


Fig. 59: Removing Right Rear Cover On Bottom Of Vehicle Floor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right rear cover - 1 - on bottom of vehicle floor.

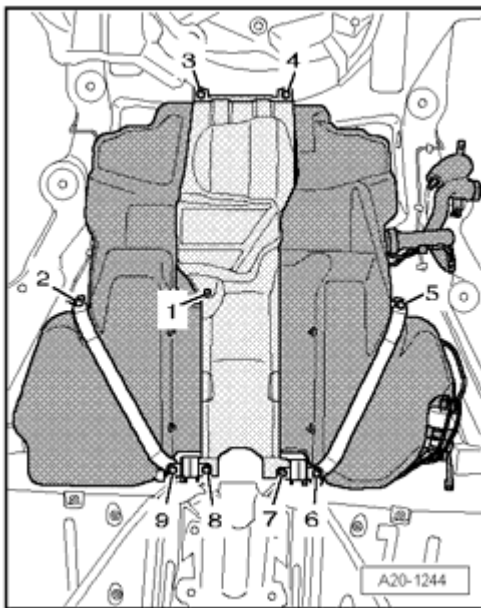


Fig. 60: Removing Bolts & Lowering Fuel Tank With Engine/Transmission Jack V.A.G 1383 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

CAUTION: • For weight reasons, fuel tank must be empty when lowering.

- Loosen bolts - 1, 2, 3, 4, 8, 9 - a maximum of 8 turns.
- Remove bolts - 5, 6, 7 -.

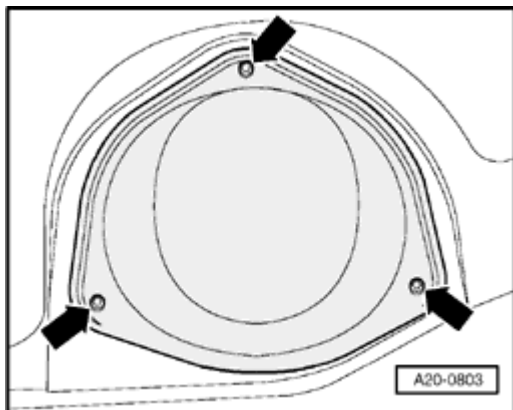


Fig. 61: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Unbolt cover for right locking flange - **arrows** - .

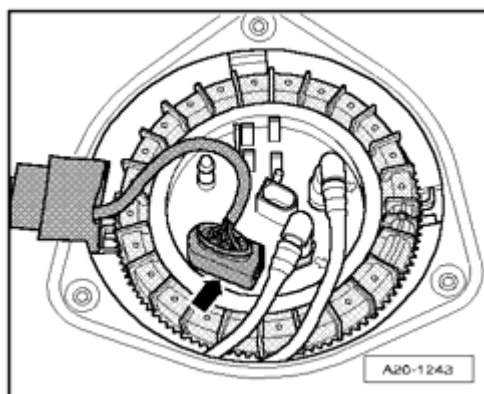


Fig. 62: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

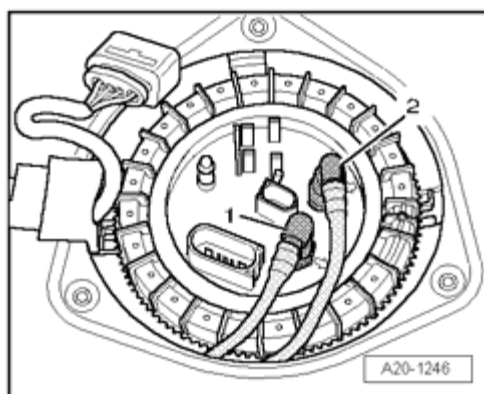


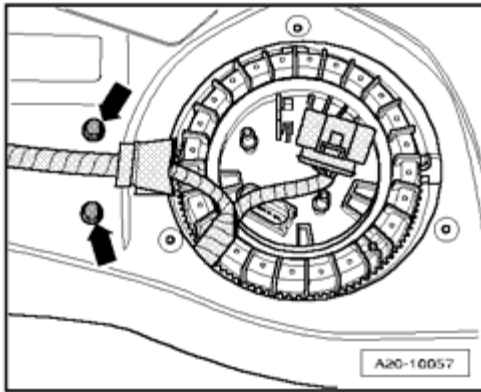
Fig. 63: Identifying Fuel Supply Line & Fuel Return Line

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark the fuel supply line - 1 - and fuel return 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 the release buttons.

**Fig. 64: Removing Bolts & Fuel Pump (FP) Control Module J538 With Bracket**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove the bolts - **arrows** -.
- Remove Fuel Pump (FP) Control Module J538 with bracket.

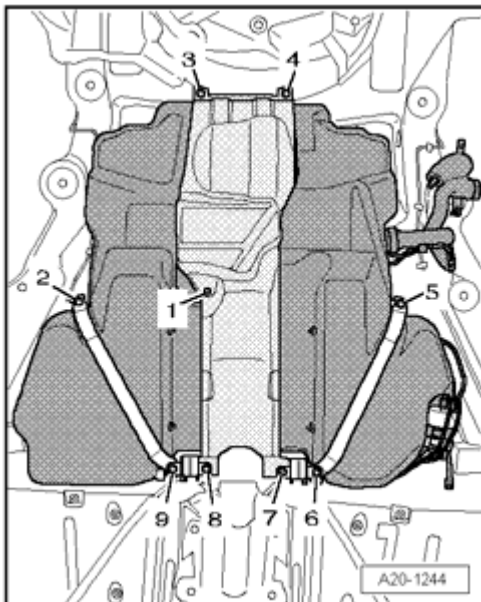


Fig. 65: Fastening Mounting Straps And Carrier Plate

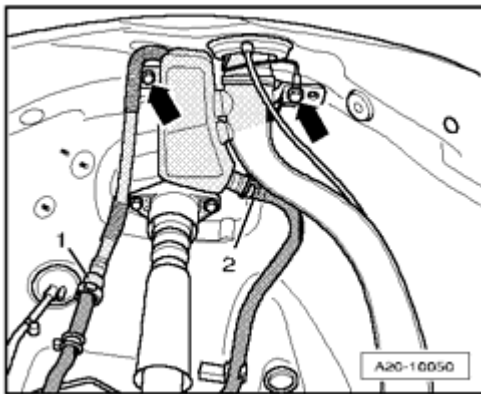
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installing

- Tightening torques --> **Fuel tank with attachments, assembly overview.**

Installation is performed in the reverse order of removal, noting the following:

- Fasten mounting straps and carrier plate - **1 to 9** -.

**Fig. 66: Pulling Vent Lines Off From Fuel Filler Tube By Pressing Release Buttons & Unfastening Bolts For Fuel Filler Tube**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fasten the fuel filler tube with ground (GND) connection - **arrows** -.

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

- Specified value: approx. 0 ohms.

- Secure vent line - **2** - to fuel filler tube.

NOTE:

- Ignore - **1** -.

- Install rear right wheel housing liner --> **66 - EXTERIOR EQUIPMENT** .
- Install rear seat bench --> **72 - SEAT - FRAMES** .
- Connect battery. Observe safety precautions after connecting battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

Torque specifications

2006 Audi A6 Quattro

ENGINE Fuel Supply System

Component	Nm
Bracket for Fuel Pump (FP) Control Module J538 to body	4

Fuel pump, vehicles with 6-cyl. and 8-cyl. engine, checking delivery rate

Special tools, testers and auxiliary items required

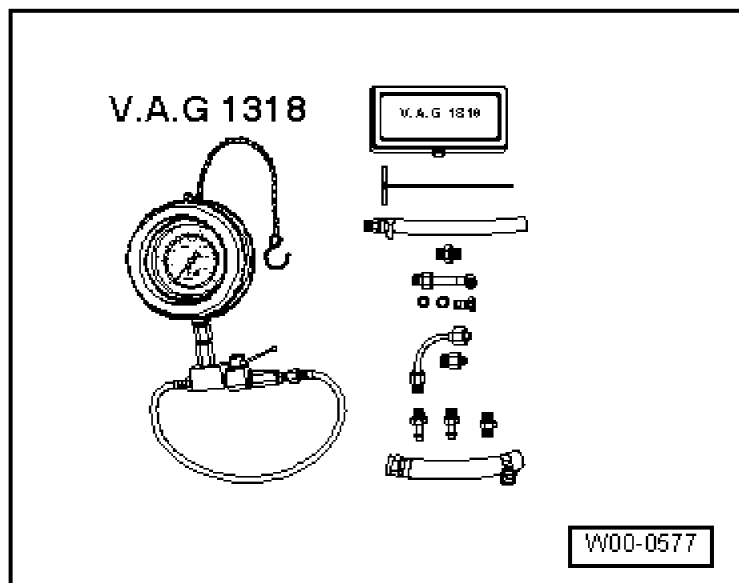


Fig. 67: Identifying Pressure Gauge V.A.G 1318
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge K-Jetronic V.A.G 1318
- Pressure gauge adapter V.A.G 1318/10-12

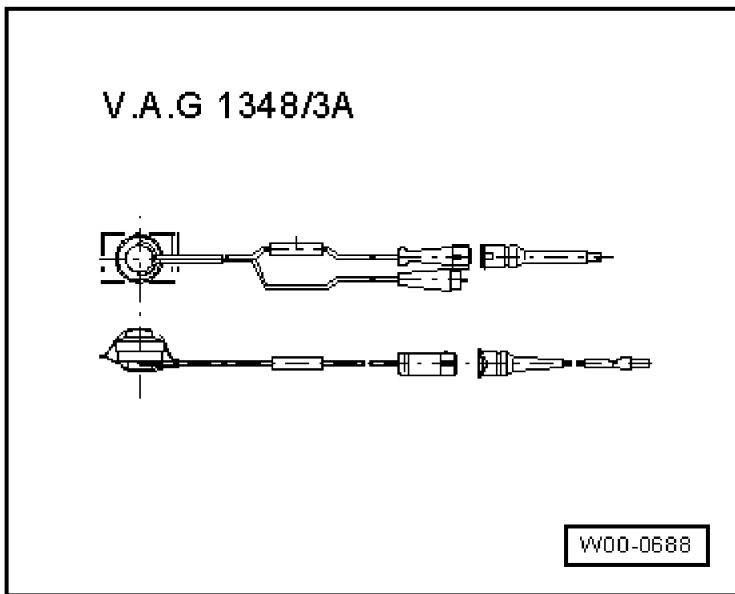


Fig. 68: Identifying Remote Control Connection V.A.G 1348/3A
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

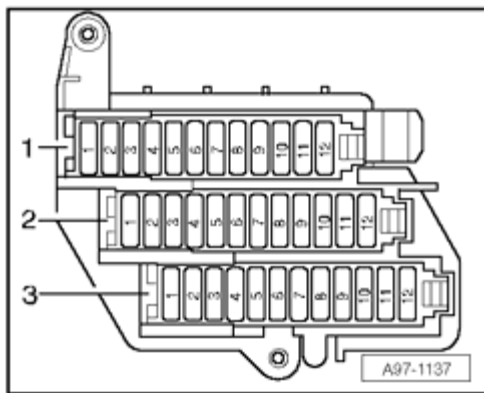


Fig. 69: Identifying Fuse 1 Of Right Fuse Panel In Center Bracket Of Instrument Panel Is OK
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Work procedure

- Battery voltage min. 12.5 V.
- Fuse 1 of right fuse panel in center bracket of instrument panel - **2** - is OK.
- Ignition switched off.

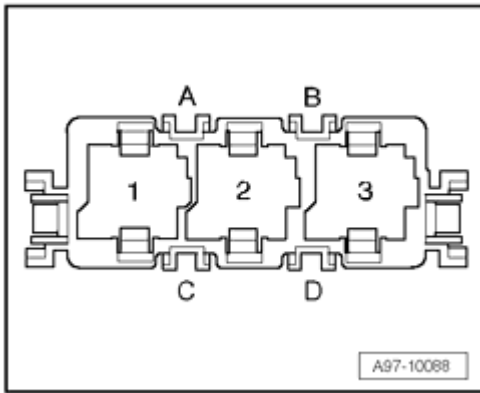


Fig. 70: Identifying Vehicles With MPI Engine: Fuel Pump (FP) Relay J17 In Relay And Fuse Carrier, In Left E-Box Is OK

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicles with MPI engine: Fuel Pump (FP) Relay J17 in relay and fuse carrier, position - **2** - in left E-Box is OK.

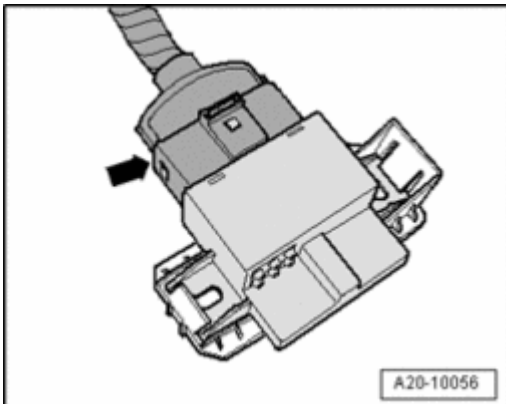


Fig. 71: Identifying Fuel Pump (FP) Control Module J538

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 FSI engine.**
- Fuel filter OK.
- Fuel tank at least $\frac{1}{4}$ filled.
- Ignition switched off.

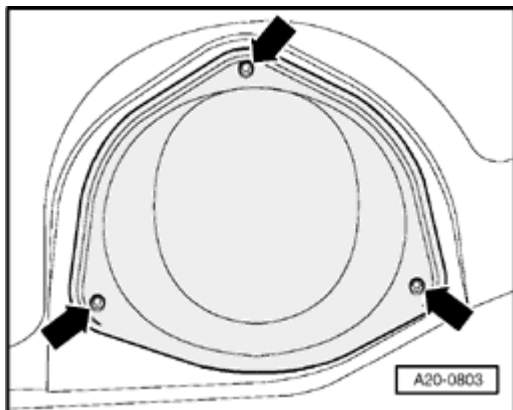


Fig. 72: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for right locking flange - **arrows** - .

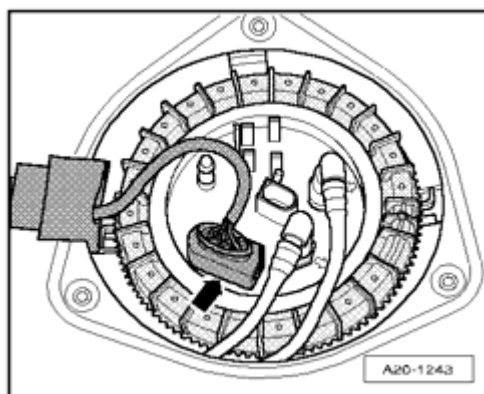


Fig. 73: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

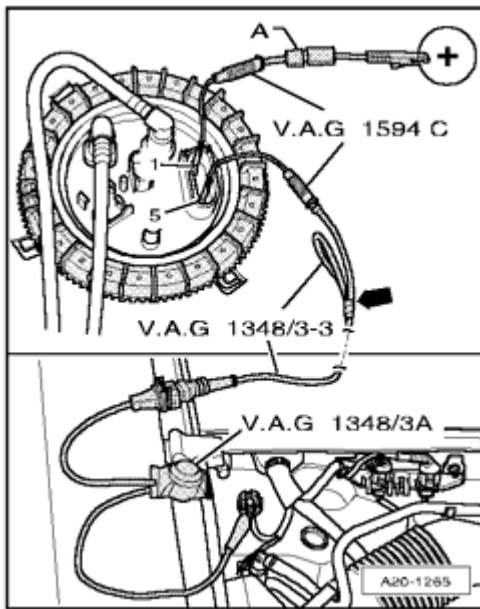


Fig. 74: Connecting Remote Control Connection V.A.G 1348/3 A With Connection V.A.G 1348/3-3 To Contact Using An Adapter Cable From Connector Test Set V.A.G 1594 C

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Remote Control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3 with an adapter cable from Connector Test Set V.A.G 1594C at terminal - 5 -.
- Cover 2nd connector terminal of adapter cable V.A.G 1348/3-3 with insulating tape to prevent short circuit - **arrow** -.
- Route Remote Control V.A.G 1348/3A switch forward in engine compartment.
- Connect alligator clip to Ground (GND) point in engine compartment.
- Connect contact - 1 - to battery "+" using a self-made adapter cable. For safety reasons, install a fuse - A - (10 A) in wiring.
- Remove fuel filler cap from fuel filler tube.

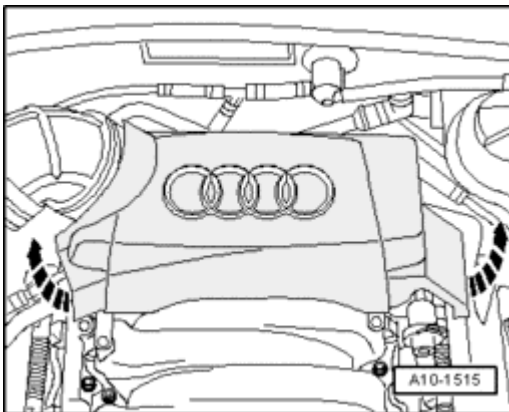


Fig. 75: Pulling Rear Engine Cover Off

- Pull rear engine cover off - **arrows** -.

Vehicles with 8-cyl. engine:

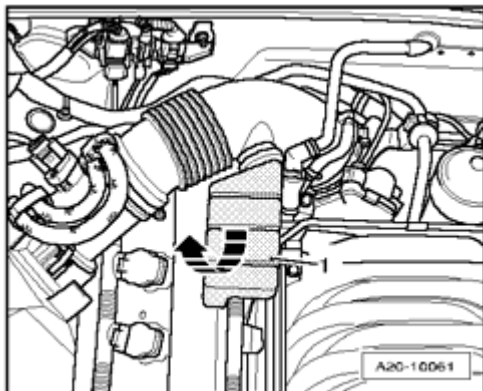


Fig. 76: Pull resonator - 1 - upward - arrow - and unclip it
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull resonator - **1** - upward - **arrow** - and unclip it.

All:

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

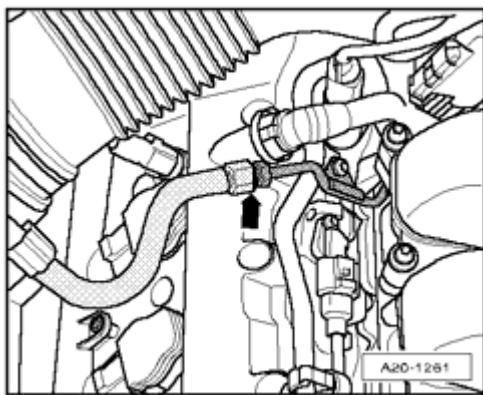


Fig. 77: Disconnecting Fuel Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- Shown in illustration on a vehicle with 6-cyl. engine.

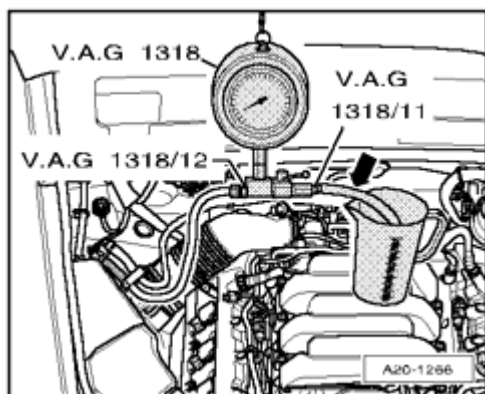


Fig. 78: Connecting Pressure Gauge V.A.G 1318 To Fuel Line Using Adapter V.A.G 1318/11 And V.A.G 1318/12

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Fuel Inj. Pressure Gauge-CIS V.A.G 1318 with Adapter V.A.G 1318/11 and V.A.G 1318/12 in fuel line.
- Push an assisting hose - **arrow** - onto it and hold it into 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.
- Specified value: 4 bar positive pressure.
- From this point on do not move position of shut-off tap.
- Empty measuring container.
- Press switch on remote control for 15 seconds.

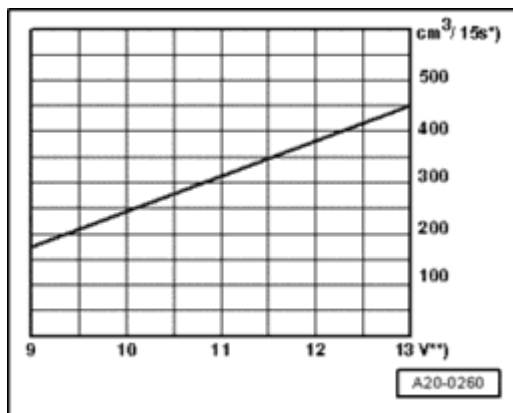


Fig. 79: Delivery Rate Diagram

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is 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 in reverse order of removal, note the following:

- Attach fuel line to engine -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

Fuel pump delivery rate, vehicles with 8-cyl. FSI engine, checking

Special tools, testers and auxiliary items required

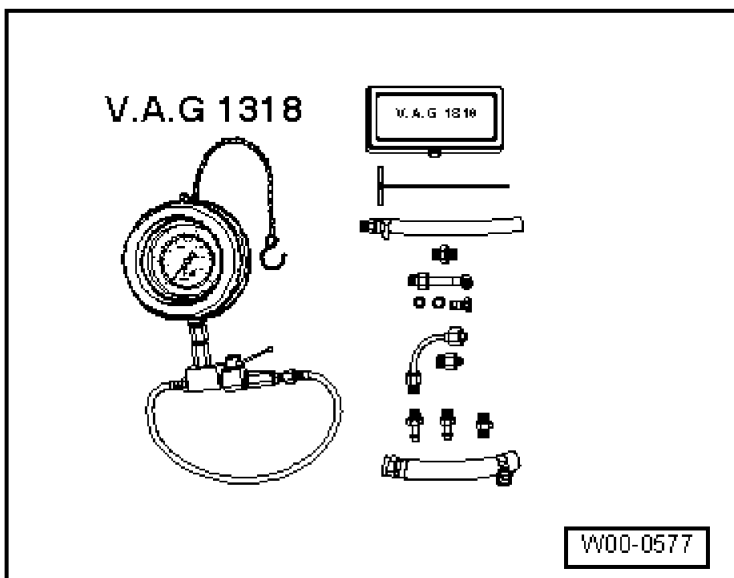
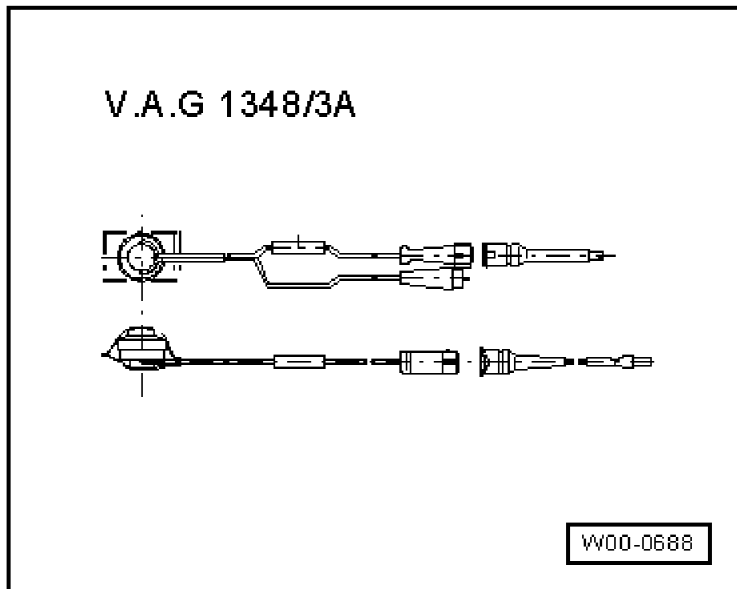


Fig. 80: Identifying Pressure Gauge V.A.G 1318

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge K-Jetronic V.A.G 1318
- Pressure gauge adapter V.A.G 1318/10-12

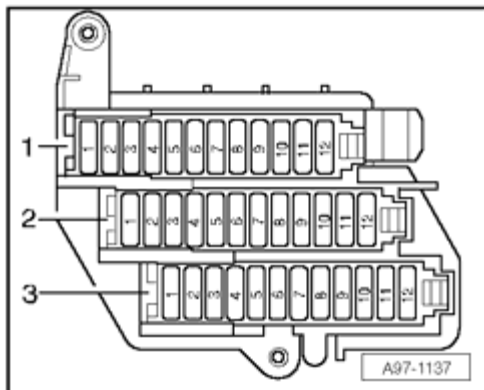
**Fig. 81: Identifying Remote Control Connection V.A.G 1348/3A**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Work procedure

- Battery voltage min. 12.5 V.

**Fig. 82: Identifying Fuse 1 Of Right Fuse Panel In Center Bracket Of Instrument Panel Is OK**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse 1 of right fuse panel in center bracket of instrument panel - 2 - is OK.

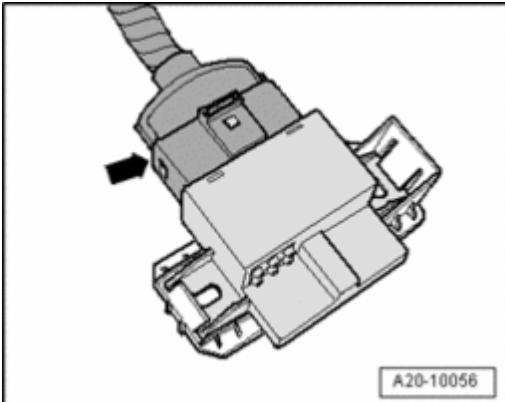


Fig. 83: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 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 $\frac{1}{4}$ filled.
- Ignition switched off.

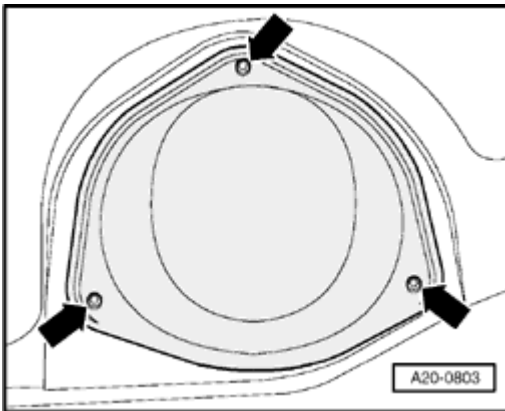


Fig. 84: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for right locking flange - **arrows** - .

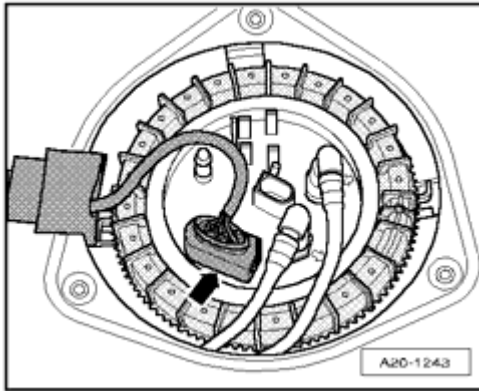


Fig. 85: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

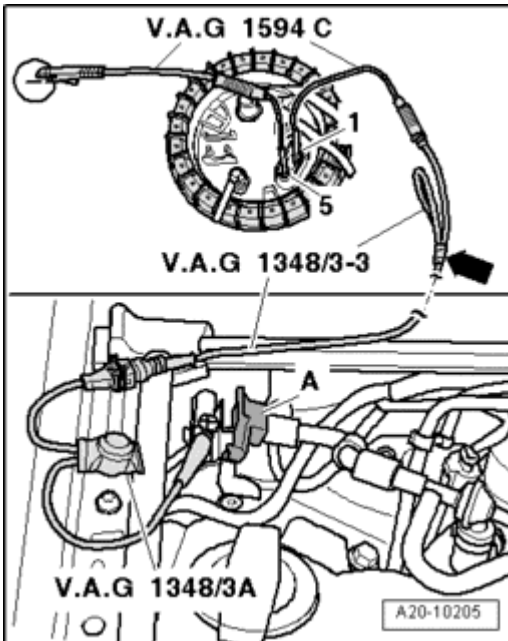


Fig. 86: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-3 With An Adapter Cable From Connector Test Set V.A.G 1594C At Terminal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Remote Control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3 with an adapter cable from Connector Test Set V.A.G 1594C at terminal - **1** -.
- Cover 2nd connector terminal of adapter cable V.A.G 1348/3-3 with insulating tape to prevent short circuit - **arrow** -.
- Route Remote Control V.A.G 1348/3A switch forward in engine compartment.
- Release retaining clip and open cover - **A** - over positive terminal pick-off.

- Connect alligator clip to positive terminal pick-off (+).
- Connect contact - **5** - to vehicle Ground (GND) using a jumper cable from connector test set V.A.G 1594C.
- Remove fuel filler cap from fuel filler tube.



Fig. 87: Pulling Rear Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull rear engine cover - **arrows** - off.

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

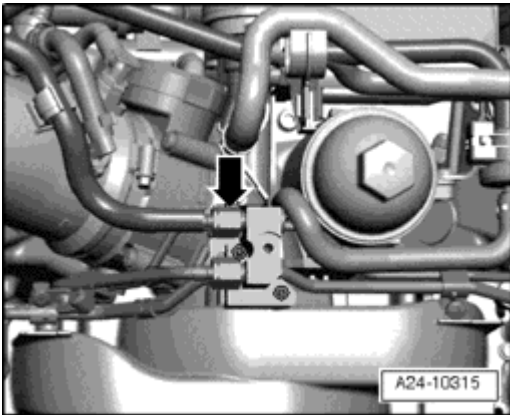


Fig. 88: Disconnecting Fuel Line

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

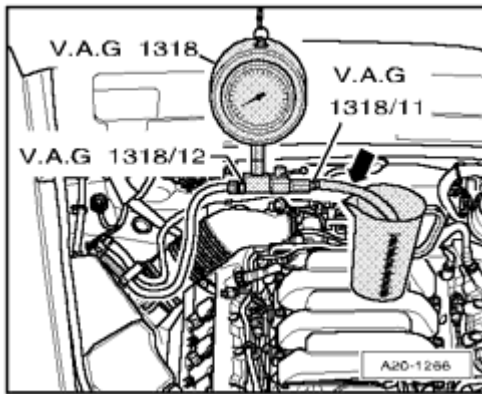


Fig. 89: Connecting Pressure Gauge V.A.G 1318 To Fuel Line Using Adapter V.A.G 1318/11 And V.A.G 1318/12

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Fuel Inj. Pressure Gauge-CIS V.A.G 1318 with Adapter V.A.G 1318/11 and V.A.G 1318/12 in fuel line.
- Push an assisting hose - **arrow** - and hold it into a measuring container.
- Open shut-off valve of pressure gauge.
- The lever points in direction of flow.
- Generate pressure in fuel system by pressing the remote control switch and slowly closing shut-off valve of pressure gauge.
- Specified value: 4 bar positive pressure.
- From this point on do not move position of shut-off tap.
- Empty measuring container.
- Press switch on remote control for 15 seconds.

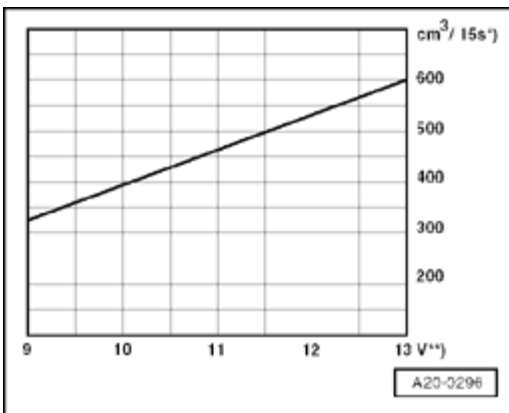


Fig. 90: Delivery Rate Diagram

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Voltage at fuel pump with engine stopped and pump running is 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 in reverse order of removal, note the following:

- Attach fuel line to engine -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

Fuel pump (vehicles with 10-cyl. engine (Audi S6)), checking delivery rate

Special tools, testers and auxiliary items required

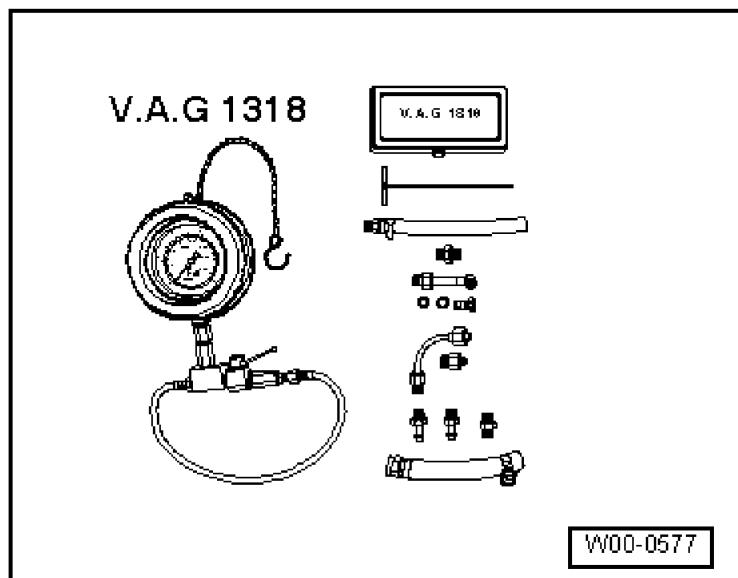


Fig. 91: Identifying Pressure Gauge V.A.G 1318

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pressure gauge K-Jetronic V.A.G 1318
- Pressure gauge adapter V.A.G 1318/10-12

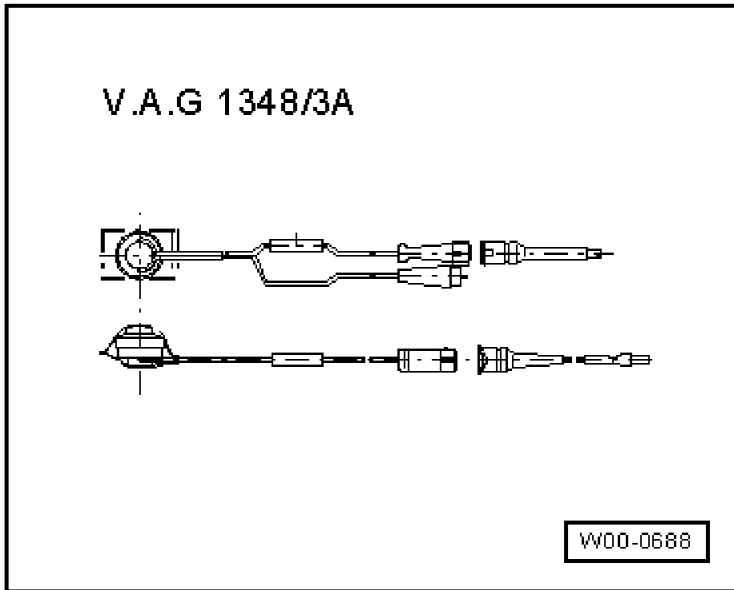


Fig. 92: Identifying Remote Control Connection V.A.G 1348/3A

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Work procedure

- Battery voltage min. 12.5 V.

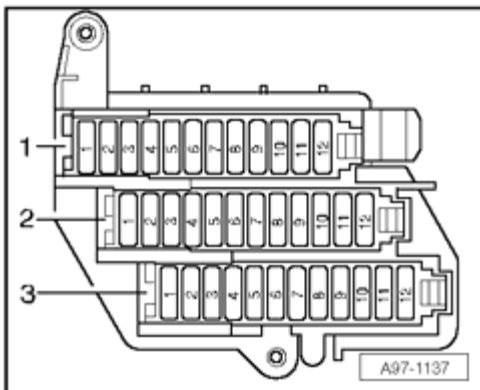


Fig. 93: Identifying Fuse 1 Of Right Fuse Panel In Center Bracket Of Instrument Panel Is OK

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fuse 1 of right fuse panel in center bracket of instrument panel - 2 - is OK.

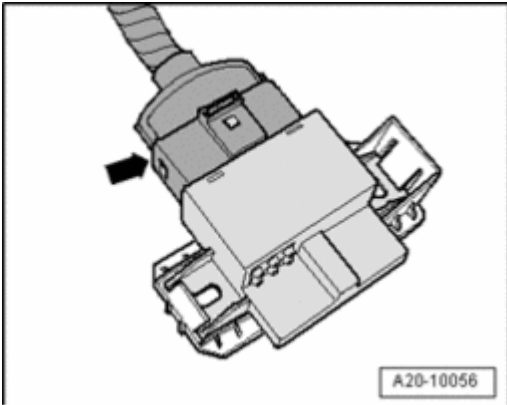


Fig. 94: Identifying Fuel Pump (FP) Control Module J538
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 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 $\frac{1}{4}$ filled.
- Ignition switched off.

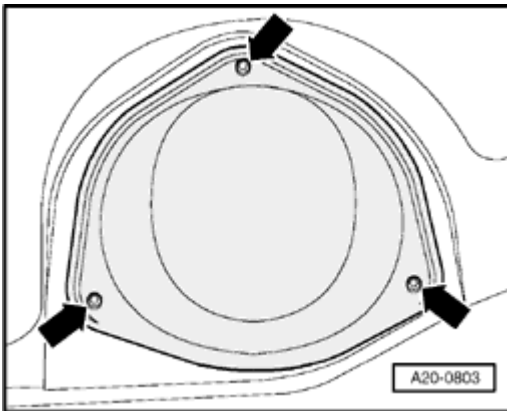


Fig. 95: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for right locking flange - **arrows** - .

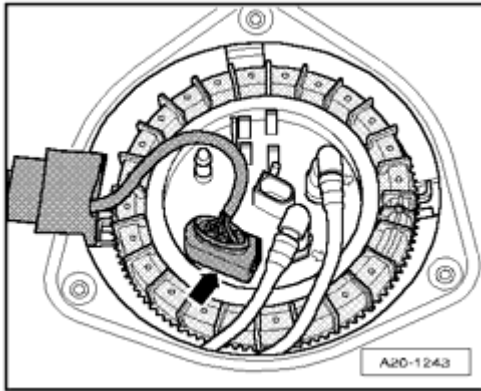


Fig. 96: Disconnecting Electrical Harness Connector At Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

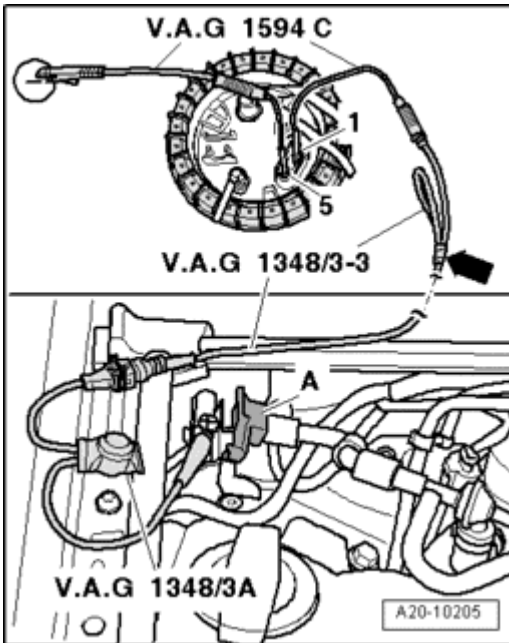


Fig. 97: Connecting Remote Control V.A.G 1348/3A With Adapter Cable V.A.G 1348/3-3 With An Adapter Cable From Connector Test Set V.A.G 1594C At Terminal
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Remote Control V.A.G 1348/3A with adapter cable V.A.G 1348/3-3 with an adapter cable from Connector Test Set V.A.G 1594C at terminal - **1** -.
- Cover 2nd connector terminal of adapter cable V.A.G 1348/3-3 with insulating tape to prevent short circuit - **arrow** -.
- Route Remote Control V.A.G 1348/3A switch forward in engine compartment.
- Release retaining clip and open cover - **A** - over positive terminal pick-off.

- Connect alligator clip to positive terminal pick-off (+).
- Connect contact - 5 - to vehicle Ground (GND) using a jumper cable from connector test set V.A.G 1594C.
- Remove fuel filler cap from fuel filler tube.

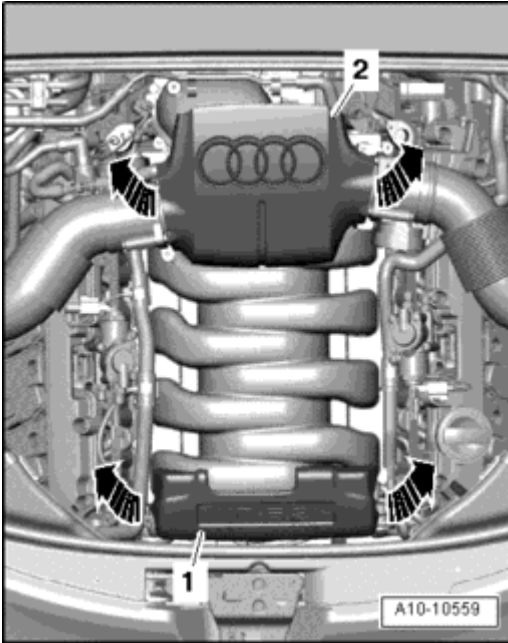


Fig. 98: Removing Rear Engine Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - 2 - - arrows -.

NOTE:

- Ignore - 1 -.

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

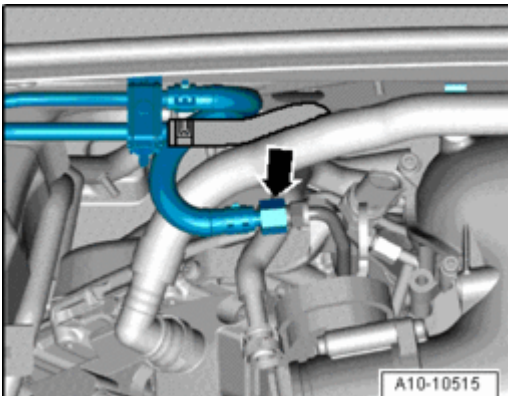
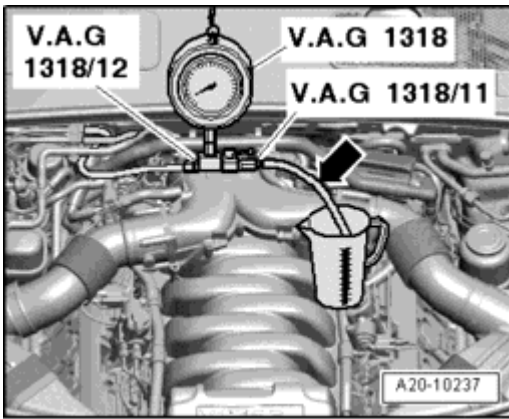


Fig. 99: Disconnecting Fuel Line On Fuel Rail

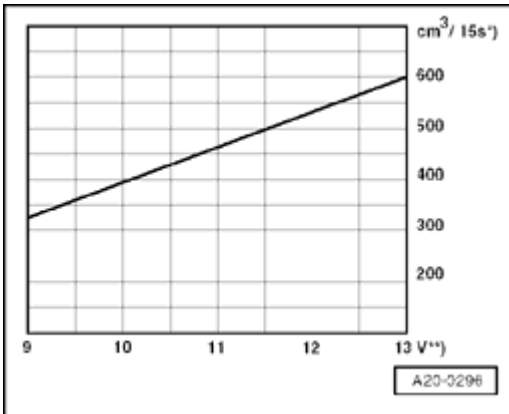
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect fuel line - **arrow** - on fuel rail.

**Fig. 100: Connecting Fuel Inj. Pressure Gauge-CIS V.A.G 1318 With Adapter V.A.G 1318/11 And V.A.G 1318/12 In Fuel Line**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Fuel Inj. Pressure Gauge-CIS V.A.G 1318 with Adapter V.A.G 1318/11 and V.A.G 1318/12 in fuel line.
- Push an assisting hose - **arrow** - onto it and hold it into 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.
- Specified value: 4 bar positive pressure.
- From this point on do not move position of shut-off tap.
- Empty measuring container.
- Press switch on remote control for 15 seconds.

**Fig. 101: Delivery Rate Diagram**

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- Voltage at fuel pump with engine stopped and pump running is 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 in reverse order of removal, note the following:

- Attach fuel line to fuel rail -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

Fuel delivery unit, removing and installing

Special tools, testers and auxiliary items required

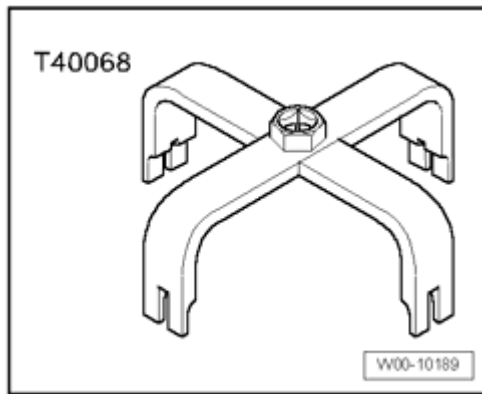


Fig. 102: Ring Nut Wrench T40068

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ring nut wrench T40068

Removing

Observe safety precautions --> **Safety precautions.**

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 $\frac{1}{4}$. Empty fuel tank if necessary. Procedure --> **Fuel tank, emptying.**

- If necessary, move front seats completely forward.

CAUTION: Observe safety precautions when disconnecting the battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL .**

- Switch off ignition.

Sedan:

- Fold luggage compartment floor upward.

Wagon:

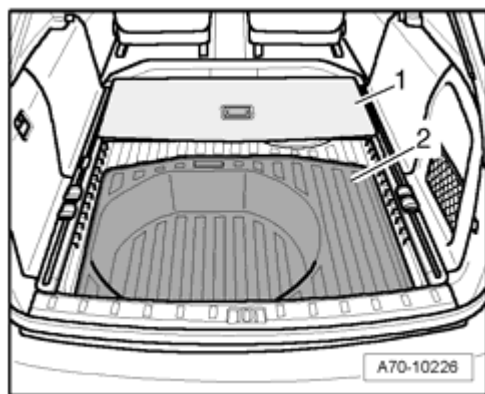


Fig. 103: Identifying Luggage Compartment Cargo Floor & Spare Wheel Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove luggage compartment cargo floor - 1 - and spare wheel cover - 2 -.

All:

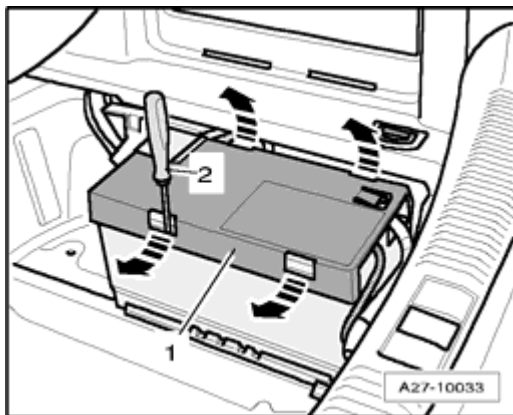


Fig. 104: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining clips - **arrows** - with a screwdriver - 2 - and remove cover - 1 -.

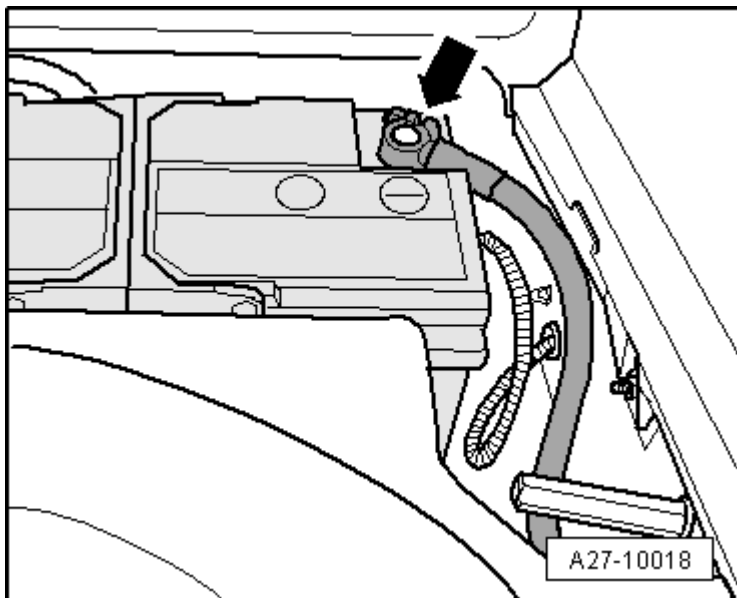


Fig. 105: Disconnecting Ground (GND) Strap At Battery Ground (GND) Terminal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) strap at battery Ground (GND) terminal - **arrow** -.

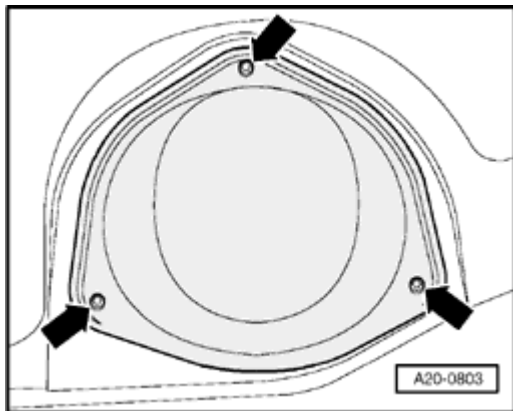


Fig. 106: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for right locking flange - **arrows** -.

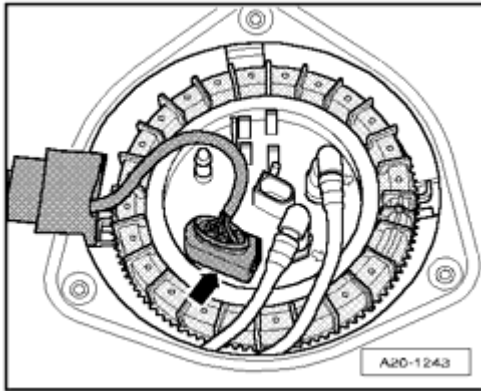


Fig. 107: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

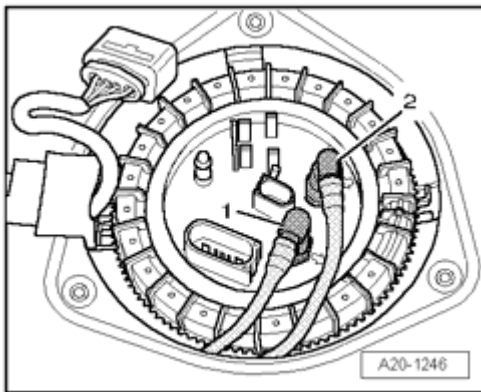


Fig. 108: Identifying Fuel Supply Line & Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

CAUTION:

- To remove the fuel delivery unit, the fuel tank may only be filled to a maximum of $\frac{1}{4}$. Otherwise, a large amount of fuel will spill out.

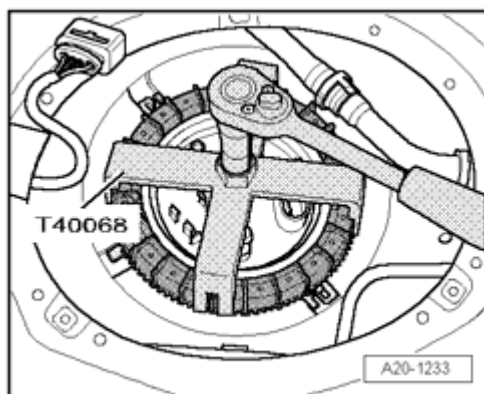


Fig. 109: Removing/Tightening Union Nut For Right Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove union nut using Ring nut spanner T40068.

NOTE:

- When union nut is loosened, plastic catch on threaded ring breaks off - ignore.

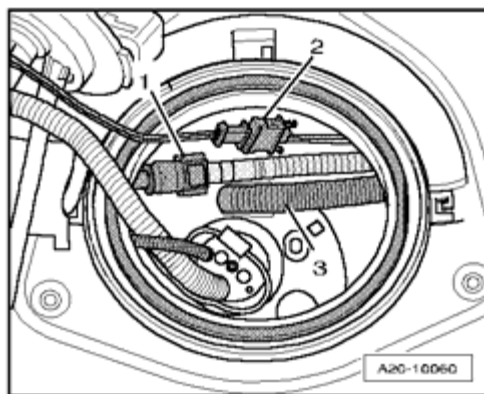


Fig. 110: Identifying Electrical Harness Connector, Suction Jet Pipe & Fuel Delivery Line
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull right locking flange of fuel delivery unit out of opening in fuel tank and set aside with lines still connected.
- Through opening in fuel tank, disconnect electrical harness connector - 2 - for Fuel Level Sensor 2 G169.
- Disconnect suction jet pipe - 1 - to suction jet pump by pressing release button.
- Disengage fuel delivery line - 3 -.
- 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

- Tightening torque --> Fuel delivery unit and fuel level sensor, assembly overview.

Installation is in reverse order of removal, noting the following:

NOTE:

- **Always replace seal and union nut.**
- **When inserting fuel delivery unit, be sure not to bend floater arm of fuel level sensor G.**
- **Ensure fuel hoses are seated securely.**

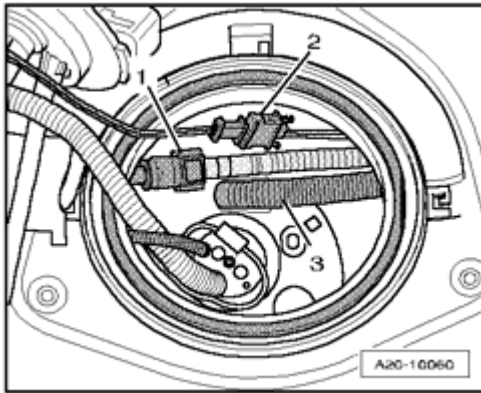


Fig. 111: Identifying Electrical Harness Connector, Suction Jet Pipe & Fuel Delivery Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert fuel delivery unit into fuel tank with locking flange set aside.
- Attach fuel delivery line - **3** -.
- Push suction jet pipe - **1** - onto suction jet pump until it engages audibly.
- Connect electrical connector - **2** - for Fuel Level Sensor 2 G169.

Make sure fuel hoses are routed correctly:

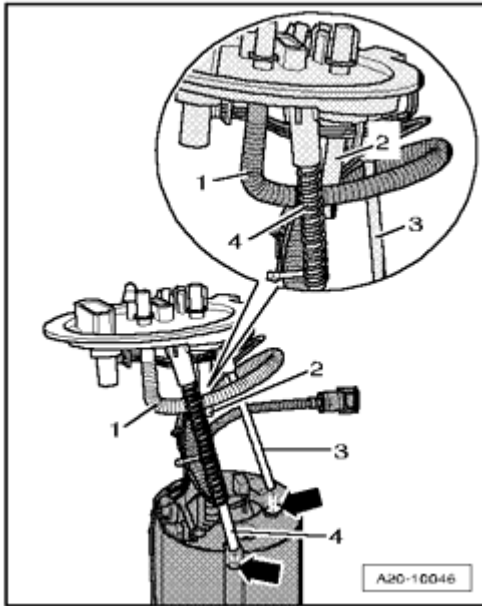


Fig. 112: Identifying Fuel Supply Line, Guide Tube & Supports For Fuel Return Line
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The fuel supply line - 1 - must be routed between the guide tube - 4 - and supports - 2 - for fuel return line. Also, it must be routed around outside of the guide tube - 3 -.
- Insert guide tubes - 3 - and - 4 - of the 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.

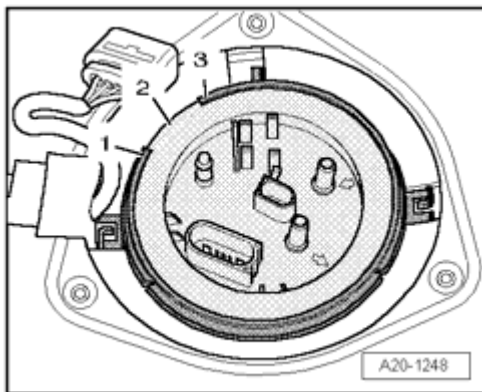


Fig. 113: Tab On Locking Flange Must Lie Between Tabs On Threaded Ring
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - 2 - on locking flange must lie between tabs - 1 - and - 3 - on threaded ring.

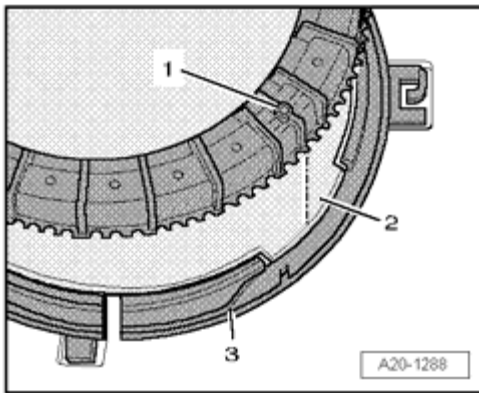


Fig. 114: Positioning Union Nut So Double Ridge Of Ribs Aligns With Tab Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- To install, position union nut so that the double ridge - 1 - of the ribs aligns with tab - 2 - of the locking flange. This will make it easier for union nut to engage beginning of thread - 3 -.

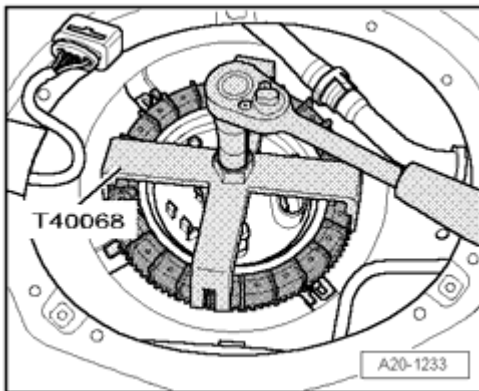


Fig. 115: Removing/Tightening Union Nut For Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten union nut for right locking flange.

CAUTION: When tightening union nut, make sure the locking flange does not turn with it, otherwise the locking flange seal may not be secure.

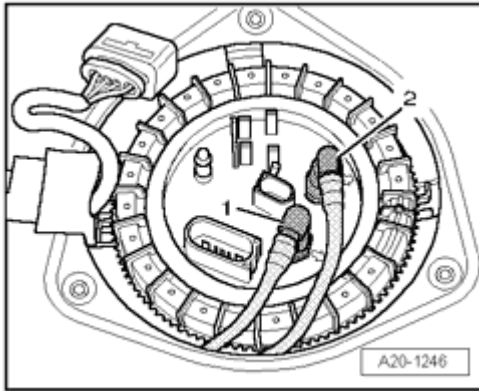


Fig. 116: Identifying Fuel Supply Line & Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install fuel supply line - **1** - and fuel return line - **2** - according to the marking.
- Connect electrical harness connector.
- Install rear seat bench --> **72 - SEAT - FRAMES** .
- Connect battery. Observe safety precautions after connecting battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

Fuel Level Sensor G , checking

Special tools, testers and auxiliary items required



Fig. 117: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526C



Fig. 118: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594C

Work procedure

- Remove rear seat bench --> **72 - SEAT - FRAMES** .

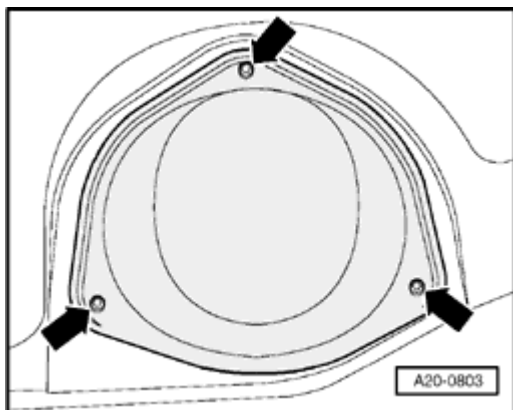


Fig. 119: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for right locking flange - **arrows** - .

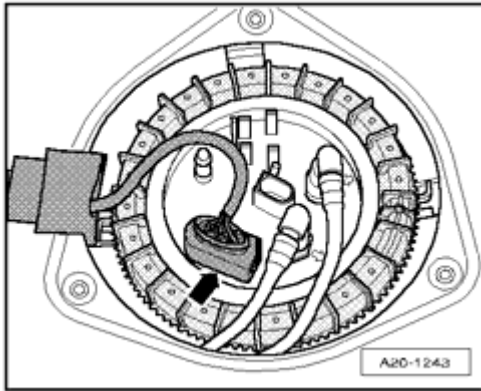


Fig. 120: Disconnecting Electrical Harness Connector At Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

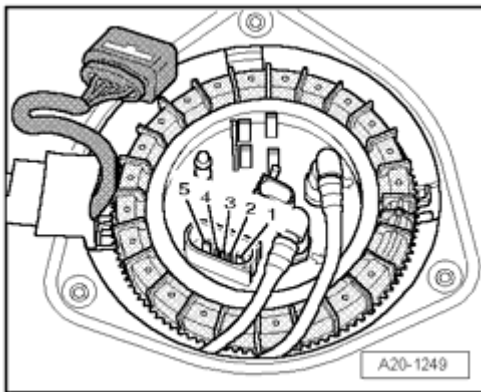


Fig. 121: Connecting Multimeter Between Terminal For Resistance Measurement
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect multimeter between terminal - 2 - and - 3 - for resistance measurement.

Fuel Level Sensor G installed:

- Sensor at lower stop: approx. 760 to 1003 ohms.
- Sensor at upper stop: approx. 70 to 105 ohms.

NOTE:

- If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is an 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 gauge sensor removed, the following values are obtained because of the greater deflection of the floater arm:

Fuel Level Sensor G removed:

- Sensor at lower stop: approx. 1004 ohms.
- Sensor at upper stop: approx. 50 ohms.

Assembly is in reverse order of removal, note the following:

- Install rear seat bench --> **72 - SEAT - FRAMES** .

Fuel Level Sensor G , 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.

Observe safety precautions --> **Safety precautions**.

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

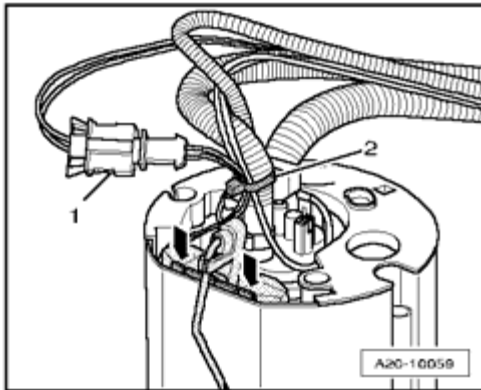


Fig. 122: Identifying Cable Ties, Electrical Connection & Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove fuel delivery unit --> **Fuel delivery unit, removing and installing**.
- Cut cable ties - **2** - and separate electrical connection - **1** -.
- Release retaining tabs - **arrows** - with a screwdriver and pull fuel gauge sensor G upward and out.

Installing

Installation is in reverse order of removal, note the following:

NOTE:

- During installation, the cable ties must be re-installed at the same location.

- Insert fuel gauge sensor G in guides on the fuel delivery unit and push down until it engages.
- Connect electrical connection and check that it is securely engaged.
- Install fuel delivery unit **Installing** , observing notes for connecting battery.

Fuel Level Sensor 2 G169 , checking

Special tools, testers and auxiliary items required



Fig. 123: Portable Multimeter V.A.G 1526C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Portable multimeter V.A.G 1526C



Fig. 124: Identifying Connector Test Set V.A.G 1594 C
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connector test set V.A.G 1594C

Work procedure

- Remove rear seat bench --> **72 - SEAT - FRAMES** .

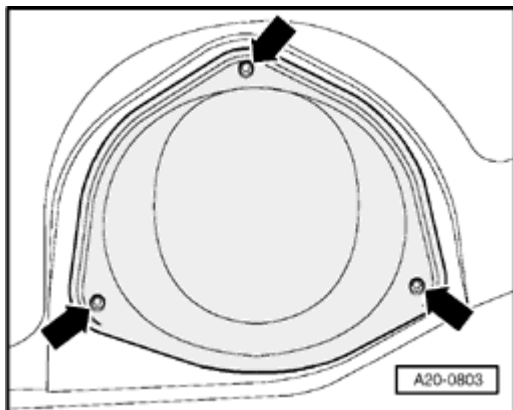


Fig. 125: Removing Cover Bolts For Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for right locking flange - **arrows** -.

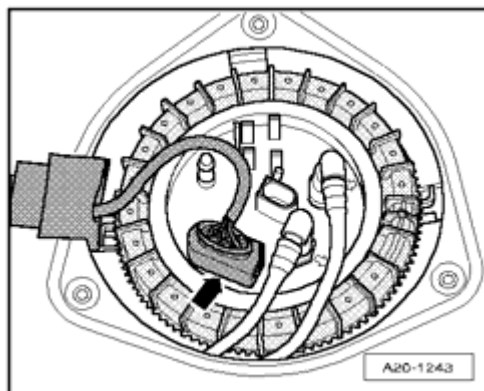


Fig. 126: Disconnecting Electrical Harness Connector At Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

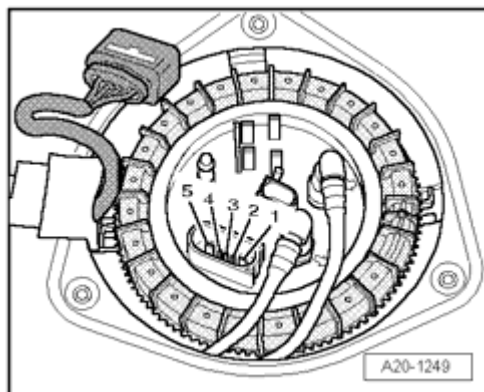


Fig. 127: Connecting Multimeter Between Terminal For Resistance Measurement

- Connect multimeter between terminal - 3 - and - 4 - for resistance measurement.

Fuel Level Sensor 2 G169 installed:

- Sensor at lower stop: approx. 790 to 975 ohms.
- Sensor at upper stop: approx. 50 to 86 ohms.

NOTE:

- If measured value is 0 ohms there is a short circuit. If measured value is infinity ohms there is an 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 gauge sensor removed, the following values are obtained because of the greater deflection of the floater arm:

Fuel Level Sensor 2 G169 removed:

- Sensor at lower stop: approx. 1004 ohms.
- Sensor at upper stop: approx. 50 ohms.

Assembly is in reverse order of removal, note the following:

- Install rear seat bench --> 72 - SEAT - FRAMES .

Fuel Level Sensor 2 G169 , removing and installing

Special tools, testers and auxiliary items required

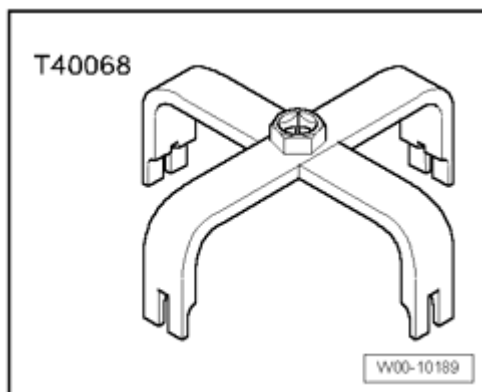


Fig. 128: Ring Nut Wrench T40068

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ring nut wrench T40068

Removing

Observe safety precautions --> Safety precautions.

Observe rules for cleanliness --> Rules for cleanliness.

CAUTION:

- To remove Fuel Level Sensor 2 G169 , the fuel tank may only be filled to a maximum of $\frac{1}{4}$. Empty fuel tank if necessary. Procedure --> Fuel tank, emptying.
- Observe safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

- Switch off ignition.

Sedan:

- Fold luggage compartment floor upward.

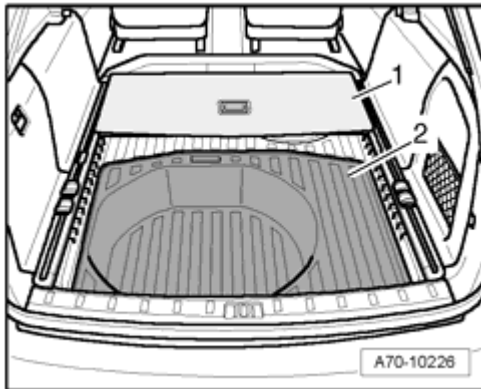
Wagon:

Fig. 129: Identifying Luggage Compartment Cargo Floor & Spare Wheel Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove luggage compartment cargo floor - **1** - and spare wheel cover - **2** -.

All:

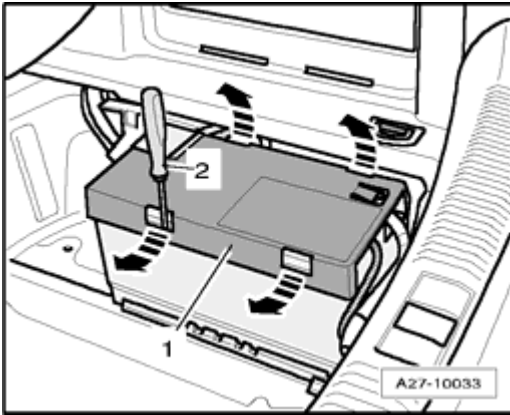


Fig. 130: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining clips - **arrows** - with a screwdriver - **2** - and remove cover - **1** -.

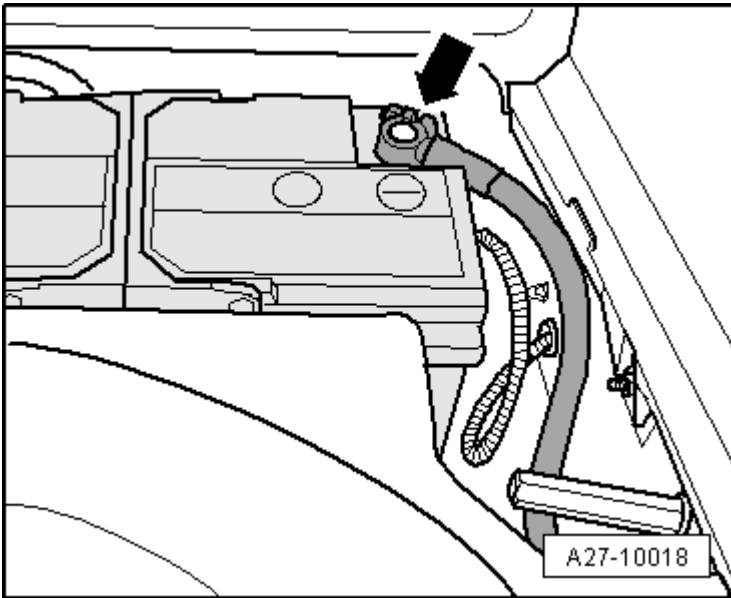


Fig. 131: Disconnecting Ground (GND) Strap At Battery Ground (GND) Terminal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) strap at battery Ground (GND) terminal - **arrow** -.

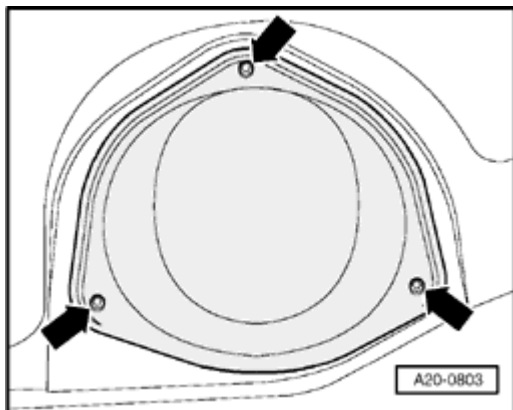


Fig. 132: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for left locking flange - **arrows** - .

CAUTION:

- The fuel level sensor 2 G169 may only be removed when fuel tank is maximum $\frac{1}{4}$ full. Otherwise, a large amount of fuel will spill out.

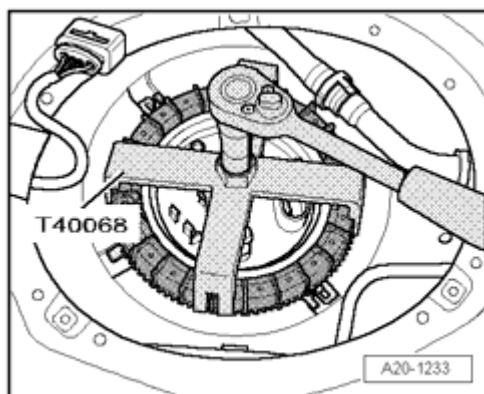


Fig. 133: Removing/Tightening Union Nut For Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left union nut using Ring nut spanner T40068.

NOTE:

- When union nut is loosened, plastic catch on threaded ring breaks off - ignore.

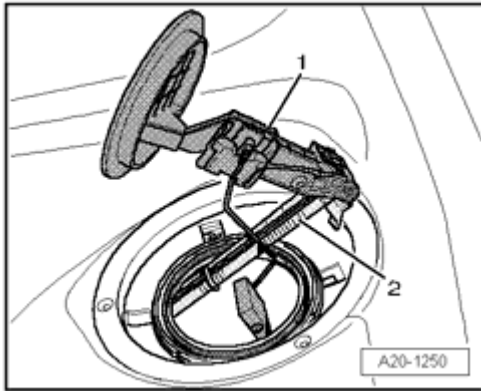


Fig. 134: Pulling Fuel Level Sensor 2 G169 And Suction Jet Pump Partially Out Of Fuel Tank Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pull Fuel Level Sensor 2 G169 - **1** - and 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.

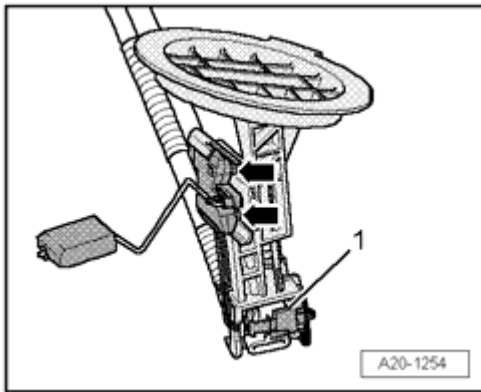


Fig. 135: Separating Electrical Connector & Releasing Retaining Tabs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unclip suction jet pump from locking flange.
- Separate electrical connector - **1** -.
- Release retaining tabs - **arrows** - with a screwdriver and remove Fuel Level Sensor 2 G169.

Installing

- Tightening torque --> **Fuel delivery unit and fuel level sensor, assembly overview.**

Installation is in reverse order of removal, noting following:

NOTE:

•

- Insert Fuel Level Sensor 2 G169 in guides on locking flange and press in until it engages.
- Connect electrical connection and check that it is securely engaged.
- Clip suction jet pump to locking flange so that it is audibly engaged.
- Check whether fuel delivery line is connected to suction jet pump with at least 3 cable ties.

NOTE:

- When inserting, be sure not to bend floater arm of Fuel Level Sensor 2 G169.

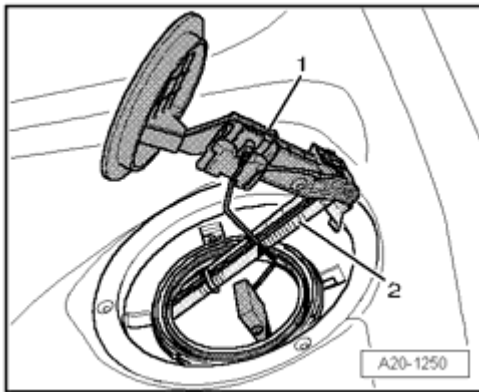


Fig. 136: Pulling Fuel Level Sensor 2 G169 And Suction Jet Pump Partially Out Of Fuel Tank Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully insert Fuel Level Sensor 2 G169 in fuel tank opening.
- Install new locking flange seal dry.
- Press locking flange down against spring pressure and bring it into installation position.

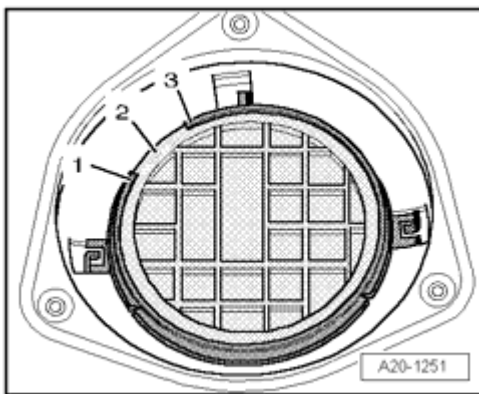


Fig. 137: Identifying Tabs & Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - 2 - on locking flange must lie between tabs - 1 - and - 3 - on threaded ring.

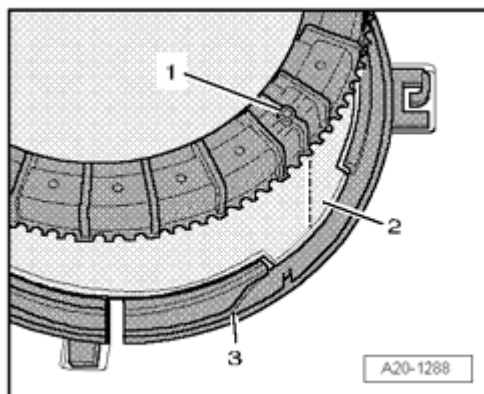


Fig. 138: Positioning Union Nut So Double Ridge Of Ribs Aligns With Tab Of Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- To install, position union nut so that the double ridge - 1 - of the ribs aligns with tab - 2 - of the locking flange. This will make it easier for union nut to engage beginning of thread - 3 -.

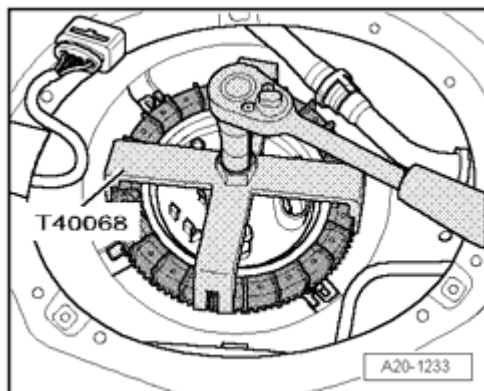


Fig. 139: Removing/Tightening Union Nut For Right Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten union nut for left locking flange.

CAUTION: When tightening union nut, make sure the locking flange does not turn with it, otherwise the locking flange seal may not be secure.

- Install rear seat bench --> 72 - SEAT - FRAMES .
- Connect battery. Observe safety precautions after connecting battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

Suction jet pump

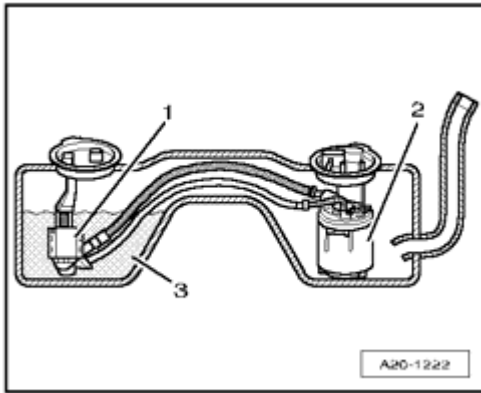


Fig. 140: Identifying Suction Jet Pump Function

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 right baffle housing of 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 $\frac{1}{4}$ filled.

If suction jet pump does not function, up to 20 liters of fuel (up to approx. $\frac{1}{4}$ tank) remain in left chamber of fuel tank, because it can not be extracted by fuel delivery unit.

If vehicle stops running, although fuel tank is approx. $\frac{1}{4}$ 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:

Suction jet pump, removing and installing

Special tools, testers and auxiliary items required

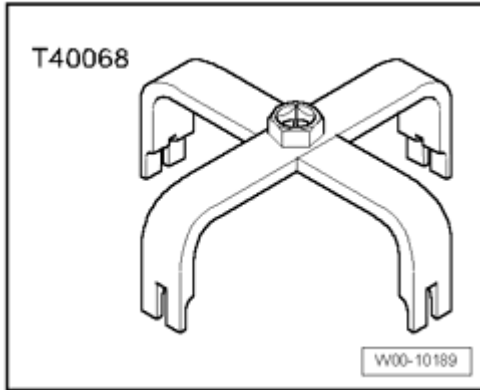


Fig. 141: Ring Nut Wrench T40068

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ring nut wrench T40068

Removing

Observe safety precautions --> Safety precautions.

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 $\frac{1}{4}$. Empty fuel tank if necessary. Procedure --> Fuel tank, emptying.

- If necessary, move front seats completely forward.

CAUTION: Observe safety precautions when disconnecting the battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

- Switch off ignition.

Sedan:

- Fold luggage compartment floor upward.

Wagon:

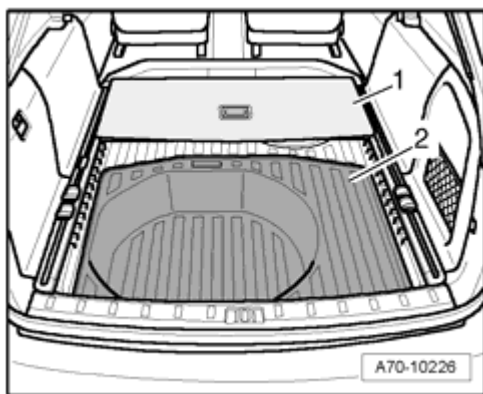


Fig. 142: Identifying Luggage Compartment Cargo Floor & Spare Wheel Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove luggage compartment cargo floor - 1 - and spare wheel cover - 2 -.

All:

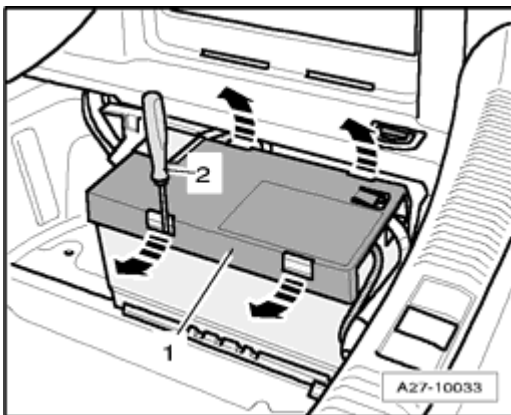


Fig. 143: Releasing Retaining Clips With A Screwdriver And Removing Battery Ground Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining clips - **arrows** - with a screwdriver - 2 - and remove cover - 1 -.

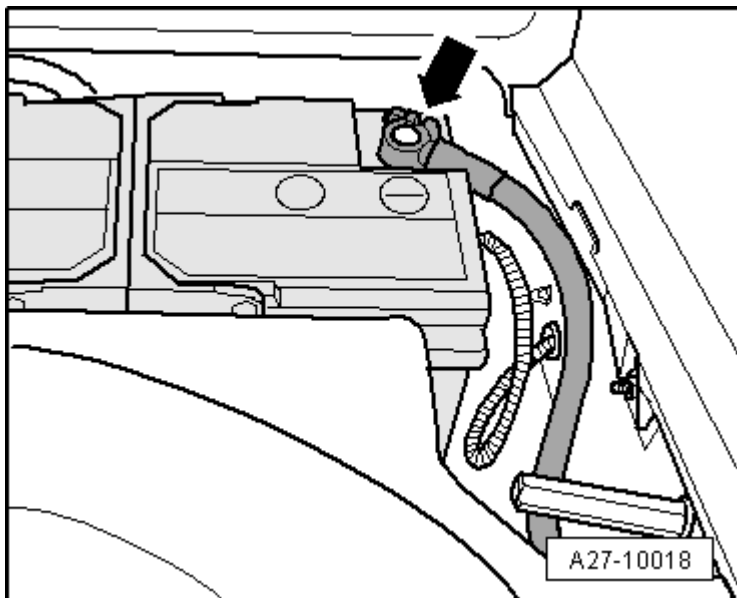


Fig. 144: Disconnecting Ground (GND) Strap At Battery Ground (GND) Terminal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect Ground (GND) strap at battery Ground (GND) terminal - **arrow** -.

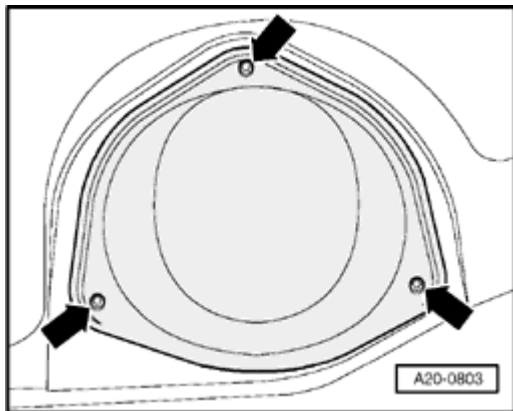


Fig. 145: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for right locking flange - **arrows** -.

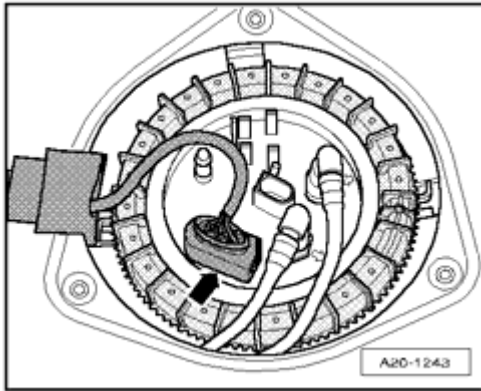


Fig. 146: Disconnecting Electrical Harness Connector At Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

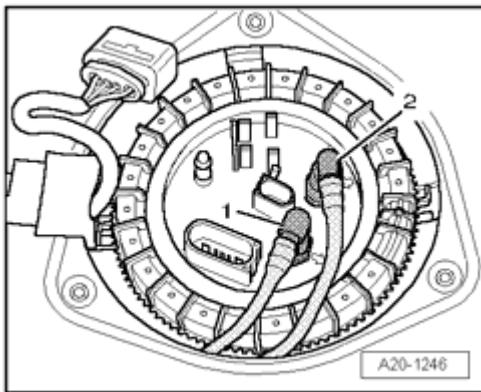


Fig. 147: Identifying Fuel Supply Line & Fuel Return Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

CAUTION:

- To remove the suction jet pump, the fuel tank may only be filled to a maximum of $\frac{1}{4}$. Otherwise, a large amount of fuel will spill out.

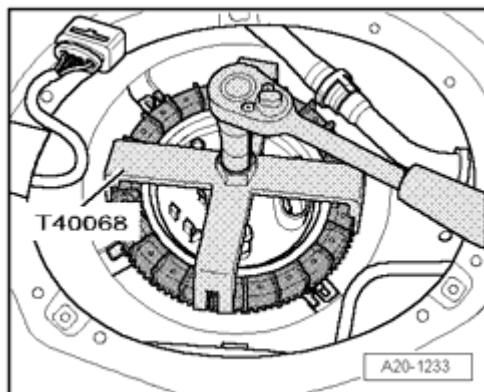


Fig. 148: Removing/Tightening Union Nut For Right Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right union nut using Ring nut spanner T40068.

NOTE:

- When union nut is loosened, plastic catch on threaded ring breaks off - ignore.

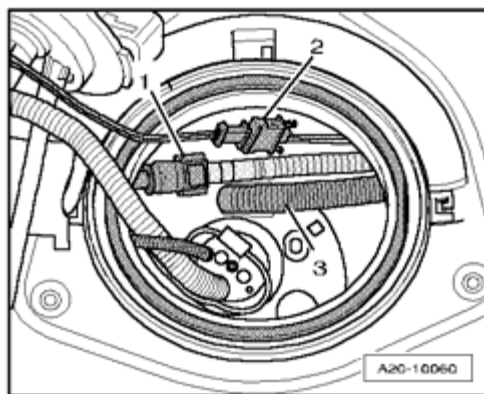


Fig. 149: Identifying Electrical Harness Connector, Suction Jet Pipe & Fuel Delivery Line
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull right locking flange of fuel delivery unit out of opening in fuel tank and set aside with lines still connected.
- Through opening in the fuel tank, disconnect electrical harness connector - 2 - for Fuel Level Sensor 2 G169.
- Disconnect suction jet pipe - 1 - to suction jet pump by pressing release button.
- Disengage fuel delivery line - 3 -.

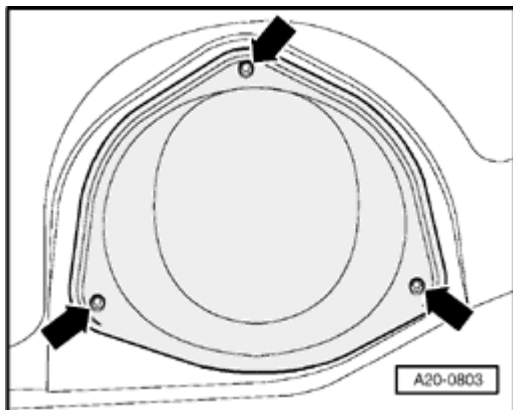


Fig. 150: Removing Cover Bolts For Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover for left locking flange - **arrows** -.

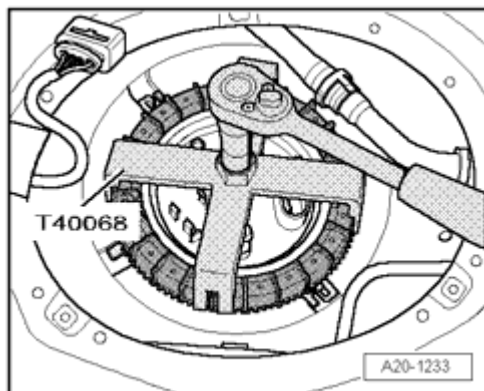


Fig. 151: Removing/Tightening Union Nut For Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left union nut using Ring nut spanner T40068.

NOTE:

- When union nut is loosened, plastic catch on threaded ring breaks off - ignore.

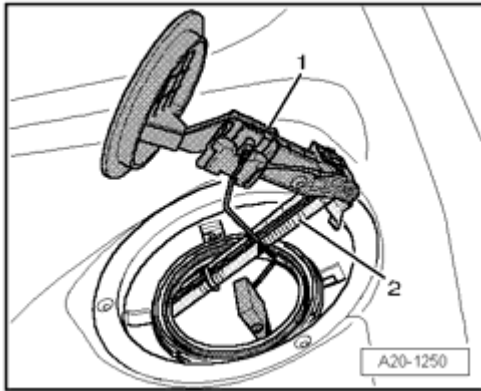


Fig. 152: Pulling Fuel Level Sensor 2 G169 And Suction Jet Pump Partially Out Of Fuel Tank Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pull Fuel Level Sensor 2 G169 - 1 - 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

- Tightening torque --> Fuel delivery unit and fuel level sensor, assembly overview.

Installation is in reverse order of removal, note the following:

NOTE:

- Always replace seals and union nuts.

- Clip suction jet pump to locking flange so that it is audibly engaged.
- Check whether fuel delivery line is connected to suction jet pipe with at least 3 cable ties.

NOTE:

- When inserting, be sure not to bend floater arm of Fuel Level Sensor 2 G169.

- Push suction jet pump with lines at left side of vehicle into fuel tank opening.

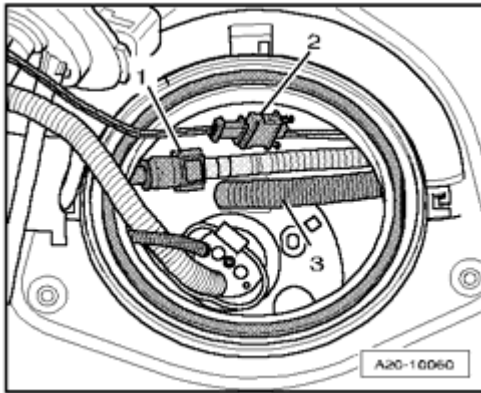


Fig. 153: Identifying Electrical Harness Connector, Suction Jet Pipe & Fuel Delivery Line
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach into fuel tank opening on right side of vehicle and pull suction jet pump with lines into installed position.
- Attach fuel delivery line - 3 -.
- Push suction jet pipe - 1 - onto suction jet pump until it engages audibly.
- Connect electrical connector - 2 - for Fuel Level Sensor 2 G169.

Make sure fuel hoses are routed correctly:

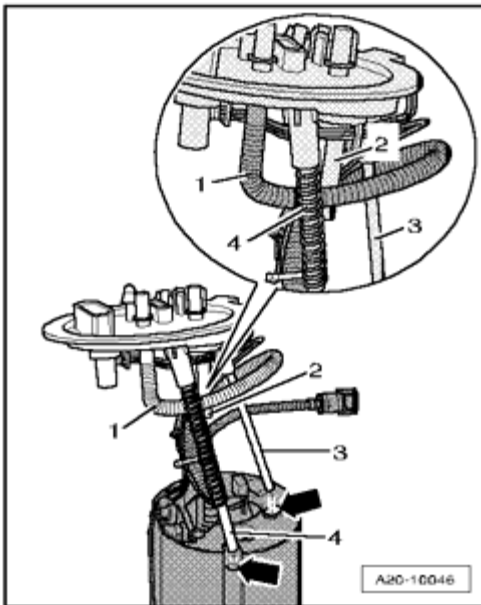


Fig. 154: Identifying Fuel Supply Line, Guide Tube & Supports For Fuel Return Line
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 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.

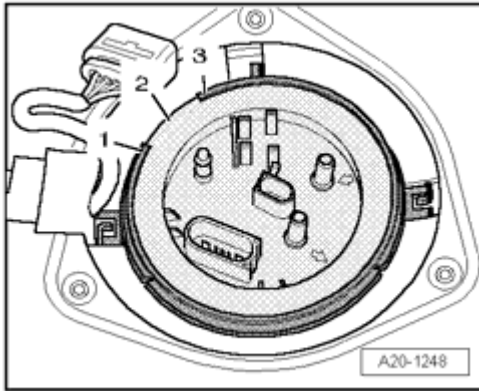


Fig. 155: Tab On Locking Flange Must Lie Between Tabs On Threaded Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tab - 2 - on locking flange must lie between tabs - 1 - and - 3 - on threaded ring.

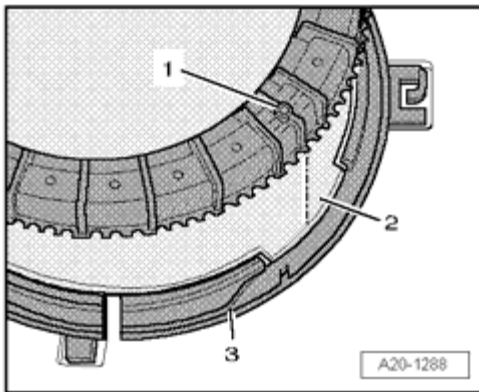


Fig. 156: Positioning Union Nut So Double Ridge Of Ribs Aligns With Tab Of Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- To install, position union nut so that the double ridge - 1 - of the ribs aligns with tab - 2 - of the locking flange. This will make it easier for union nut to engage beginning of thread - 3 -.

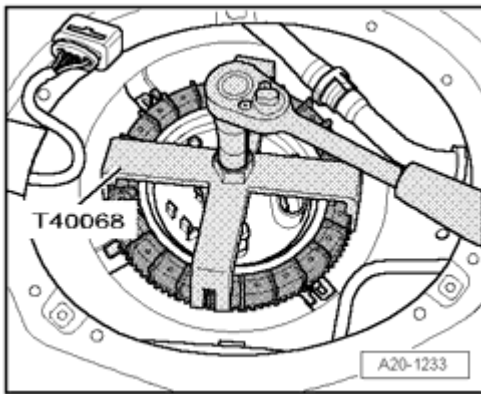


Fig. 157: Removing/Tightening Union Nut For Right Locking Flange
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten union nut for right locking flange.

CAUTION: When tightening union nut, make sure the locking flange does not turn with it, otherwise the locking flange seal may not be secure.

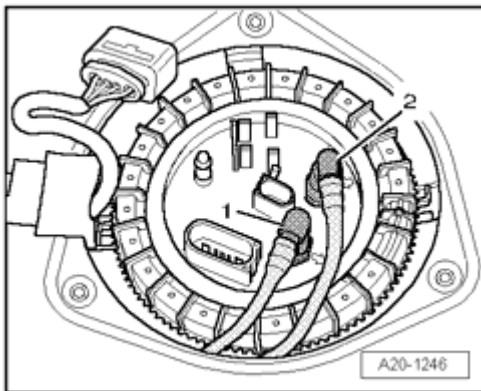


Fig. 158: Identifying Fuel Supply Line & Fuel Return Line
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install fuel supply line - 1 - and fuel return line - 2 - according to the marking.
- Connect electrical harness connector.

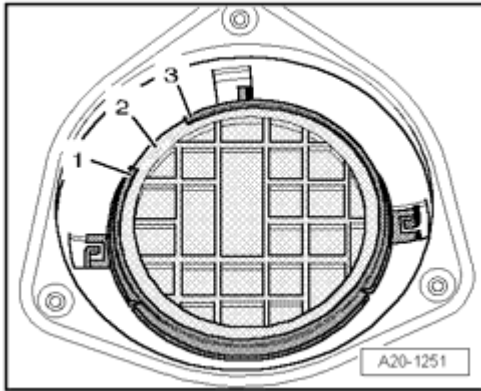


Fig. 159: Identifying Tabs & Locking Flange

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.
- Tab - 2 - on locking flange must lie between tabs - 1 - and - 3 - on threaded ring.

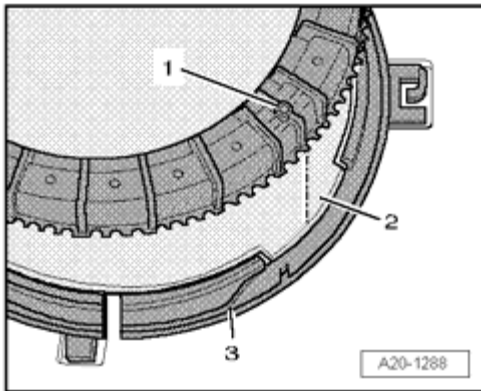


Fig. 160: Positioning Union Nut So Double Ridge Of Ribs Aligns With Tab Of Locking Flange

Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- To install, position union nut so that the double ridge - 1 - of the ribs aligns with tab - 2 - of the locking flange. This will make it easier for union nut to engage beginning of thread - 3 -.

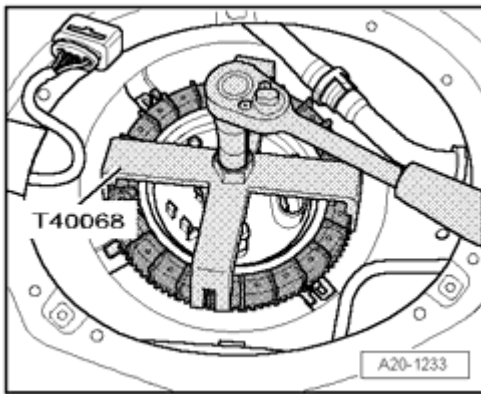


Fig. 161: Removing/Tightening Union Nut For Right Locking Flange
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten union nut for left locking flange.

CAUTION: When tightening union nut, make sure the locking flange does not turn with it, otherwise the locking flange seal may not be secure.

- Install rear seat bench --> 72 - SEAT - FRAMES .
- Connect battery. Observe safety precautions after connecting battery --> 27 - STARTER, GENERATOR, CRUISE CONTROL .

FUEL FILTER

Fuel filter (vehicles with front and all wheel drive), assembly overview

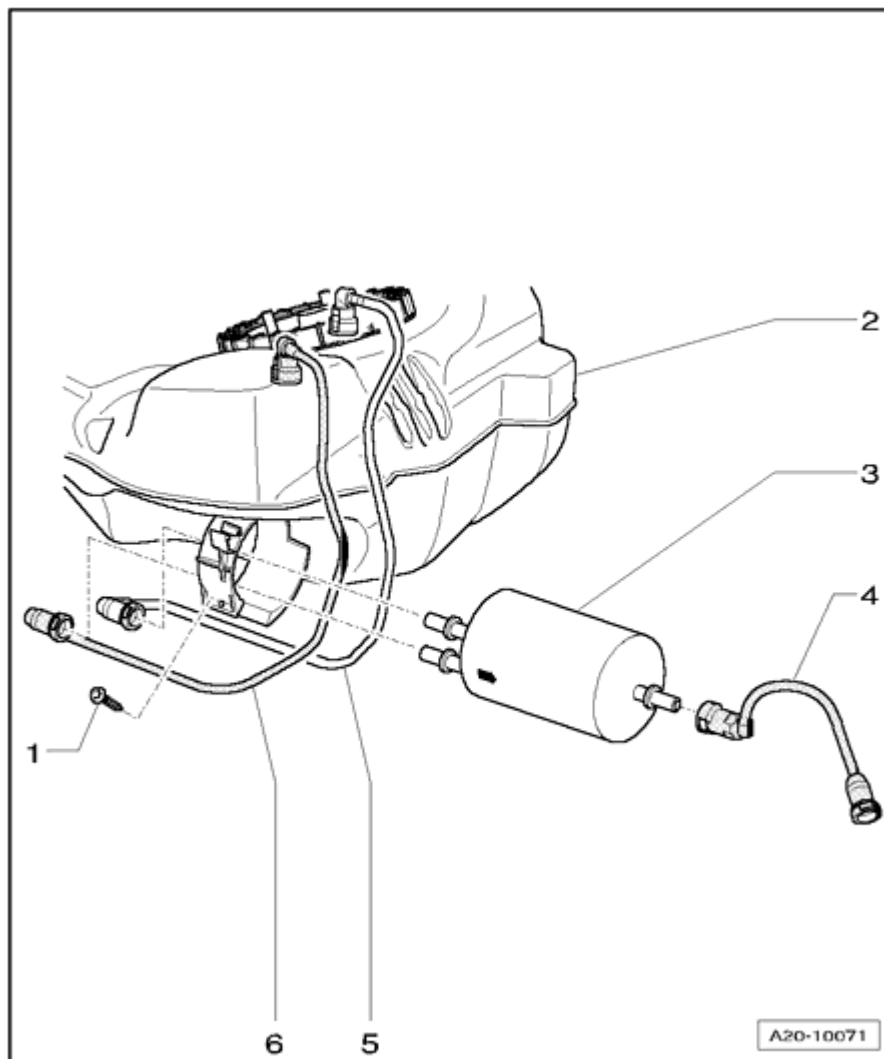


Fig. 162: Fuel Filter (Vehicles With Front And All Wheel Drive), Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt

- 1.2 Nm

2 - Fuel tank with bracket

- For fuel filter

3 - Fuel filter with pressure regulator

- FSI engine: 6 bar pressure
- MPI engine: 4 bar pressure
- Direction of flow is marked with arrows

- Do not interchange connections
- Removing and installing --> **Fuel filter, removing and installing**
- Installed location **Installed location:**

4 - Fuel line

- To engine
- To disconnect, press release button on connection piece

5 - Fuel return line

- To fuel tank
- To disconnect, press release button on connection piece

6 - Fuel supply line

- From fuel tank
- To disconnect, press release button on connection piece

Fuel filter, removing and installing**Special tools, testers and auxiliary items required**

- Drip tray

Removing

Observe safety precautions --> **Safety precautions.**

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

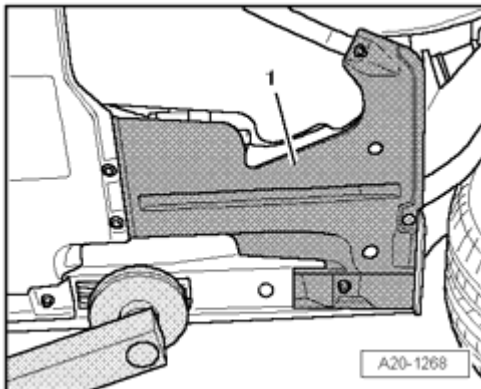


Fig. 163: Removing Right Rear Cover On Bottom Of Vehicle Floor

- Remove right rear cover - 1 - next to fuel tank.

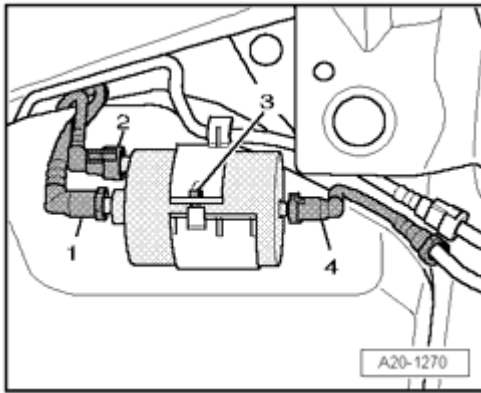


Fig. 164: Disconnecting Fuel Lines, Bolts & Fuel Filter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place drip tray under fuel filter.

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

- Disconnect fuel lines - 1 - , - 2 - and - 4 - by pressing release buttons.
- 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 marked on filter housing with arrows.

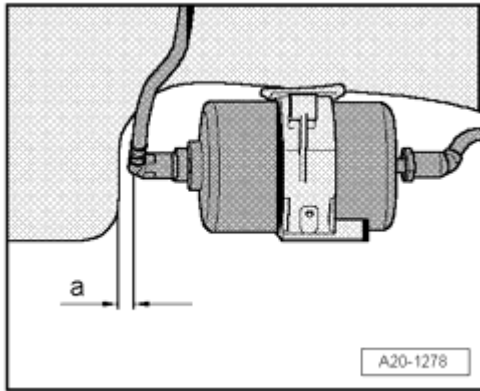


Fig. 165: Distance Between Fuel Return Line At Fuel Filter And Fuel Tank
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Distance - **a** - = 10 to 14 mm between fuel return line at fuel filter and fuel tank.

FUEL SYSTEM, BLEEDING

Fuel system, bleeding

To prevent damage to catalytic converter the fuel system must be bled after repair work on fuel lines or on fuel filter.

Bleed fuel supply system -->

- **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
- **24 - MULTIPOINT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
- **24 - MULTIPOINT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
- **24 - MULTIPOINT FUEL INJECTION (MFI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

EVAP CANISTER/LEAK DETECTION SYSTEM

EVAP canister system/Leak detection system, assembly overview

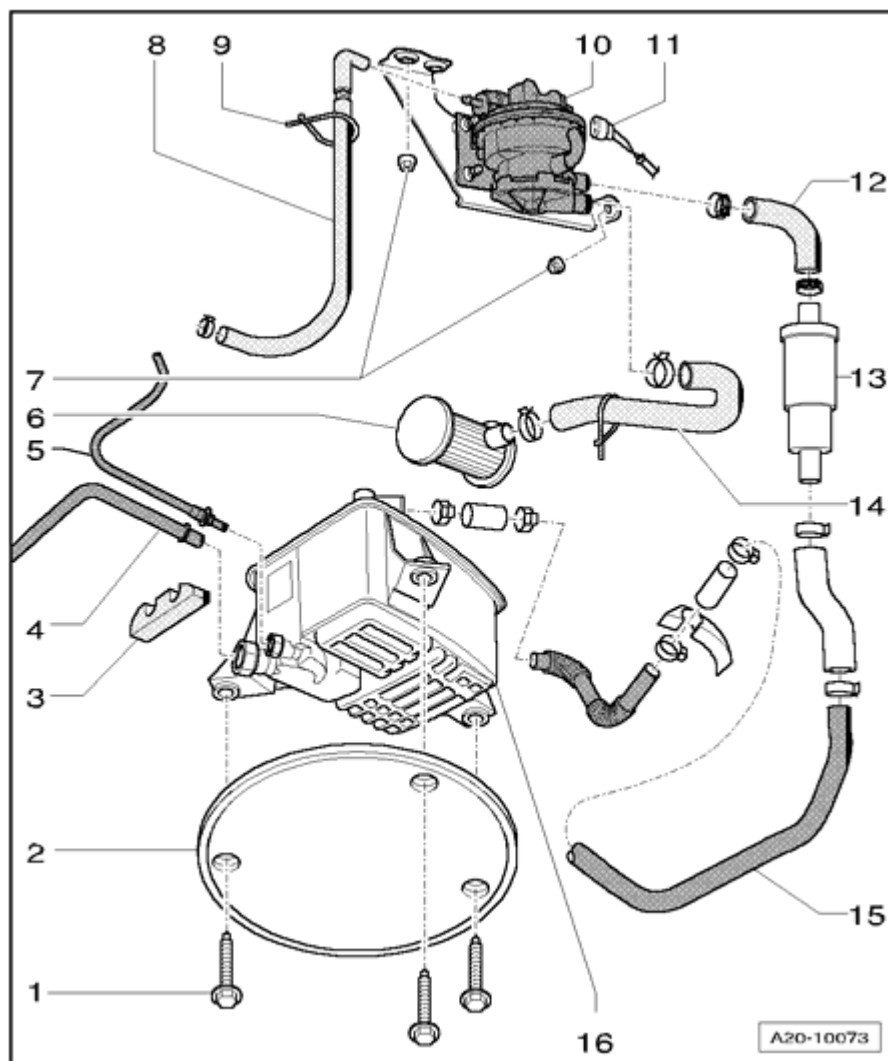


Fig. 166: EVAP Canister System/Leak Detection System, Assembly Overview
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt

- 19 Nm

2 - Cover

- for EVAP canister

3 - Sealing piece

4 - Vent line

- From fuel tank filler tube

- To remove, press release ring on EVAP canister

5 - Vent line

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

6 - Air filter housing

- For Leak detection pump (LDP) V144
- No maintenance schedule

7 - Nut

- 4 Nm

8 - Vacuum line

- Engine/Leak Detection Pump (LDP) V144

9 - Cable tie

- To fasten vacuum line to bracket for leak detection pump

10 - Leak detection pump (LDP) V144

- Component location: In left rear wheel housing behind wheel housing liner
- Checking: Vehicles with 8-cyl. MPI engine --> **Leak Detection Pump (LDP) V144 (vehicles with 8-cyl. MPI engine), checking** , vehicles with FSI engine --> **Leak Detection Pump (LDP) V144 (vehicles with FSI engine), checking**
- Removing and installing --> **Leak Detection Pump (LDP) V144 , removing and installing**

11 - Electrical harness connector

- Black

12 - Connecting hose

- Leak diagnosis pump/EVAP filter
- Pressure side

13 - EVAP filter

14 - Connecting hose

- Leak diagnosis pump/air filter

15 - Connecting pipe

- EVAP filter/EVAP canister

16 - EVAP canister

- Component location: Bottom of spare wheel well
- Removing and installing --> **Evaporative emissions (EVAP) canister, removing and installing**

Evaporative emissions (EVAP) canister, removing and installing

NOTE: • Checking for leaks --> **Diagnostic leak test, performing.**

Removing

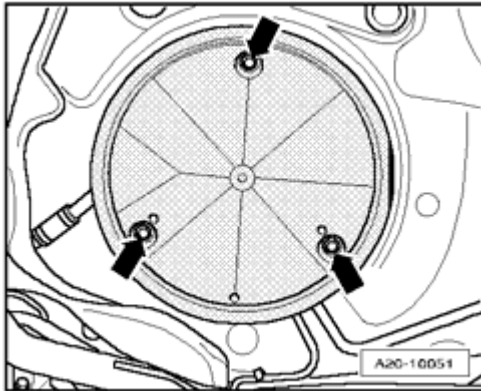


Fig. 167: Removing Bolts And Cover For EVAP Canister
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - and remove cover for EVAP canister.
- Secure EVAP canister by hand-tightening unfastened bolts.
- Remove sealing pieces above vent lines.

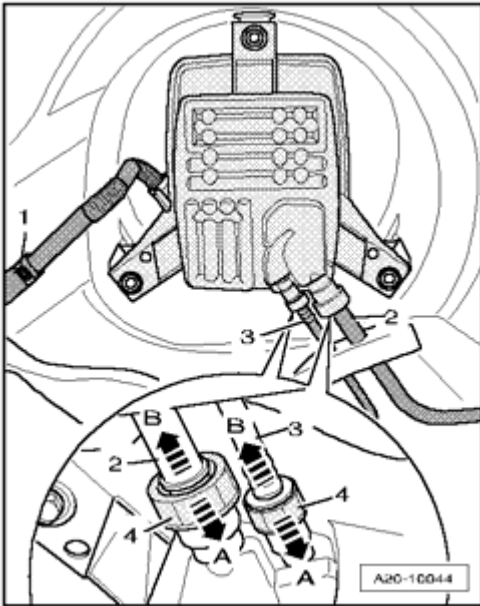


Fig. 168: Pull off vent lines

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate hose connection - **1** - at vent line.
- Pull off vent lines - **2** - and - **3** -. Do this by pressing releasing rings - **4** - approx. 2 mm in direction - **arrows A** - and simultaneously pulling vent line off - **arrows B** -.
- Unfasten and remove EVAP canister.

Installing

- Tightening torque --> EVAP canister system/Leak detection system, assembly overview.

Installation is in reverse order of removal, note the following:

NOTE:

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

Hose routing, EVAP/leak detection system

NOTE:

- **The diagram shows the hose routing on a 6-cyl. engine for example.**

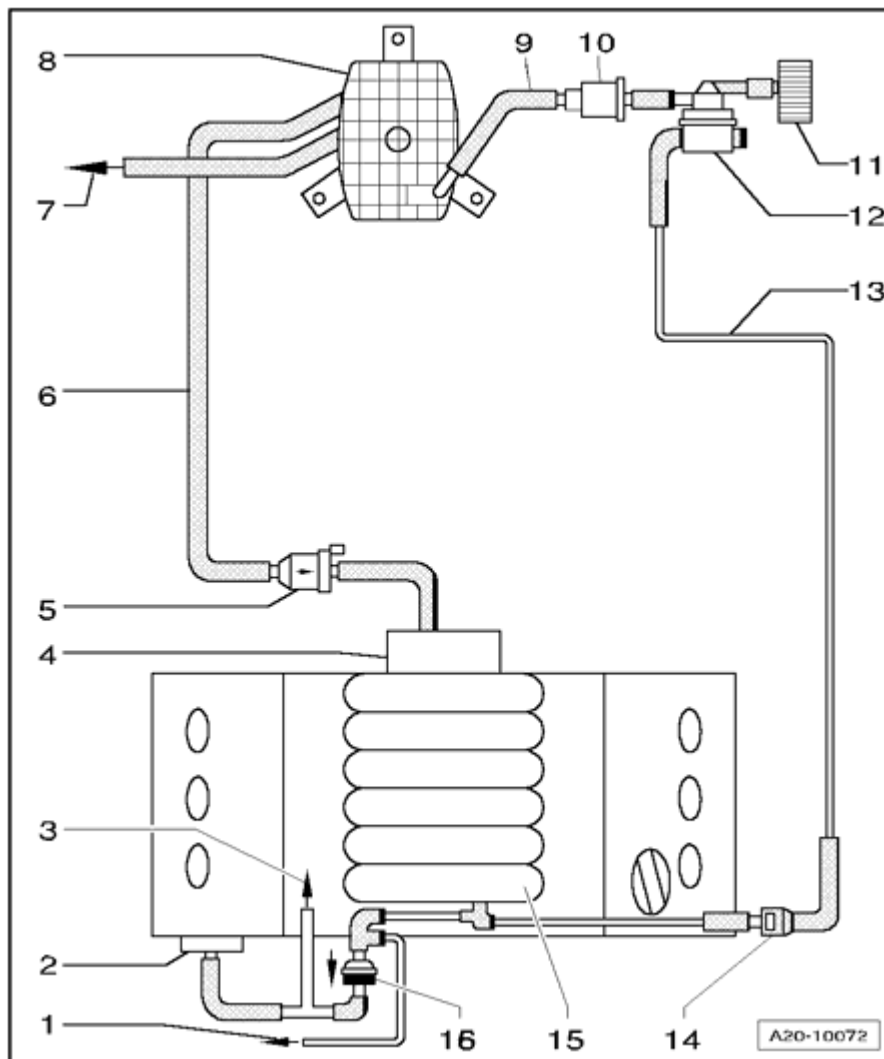


Fig. 169: Hose Routing, EVAP/Leak Detection System
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 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 Solenoid Valve N80
 - Component location: Right front in engine compartment

6 - Vent 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 - Vent line

- To fuel tank filler tube

8 - EVAP canister

- Component 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

- Component location: In left rear wheel housing behind wheel housing liner
- Checking --> **Leak Detection Pump (LDP) V144 (vehicles with FSI engine), checking**
- Removing and installing --> **Leak Detection Pump (LDP) V144 , removing and installing**

13 - Vacuum line

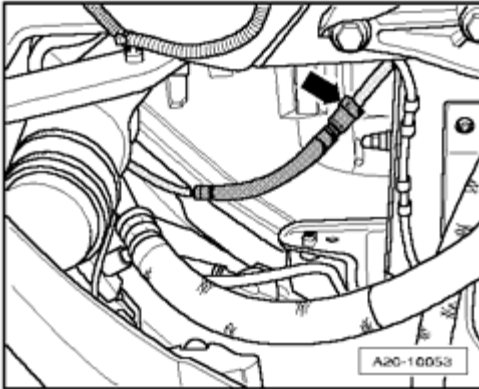
- Engine/Leak Detection Pump (LDP) V144

14 - Separating point

- Component location **Separation point location**

15 - Intake manifold**16 - Non-return valve**

- Installed location: - **Arrow** - points in direction of flow

Separation point location**Fig. 170: 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.

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 by the mechanical vacuum pump.

- When leak detection is activated, the diaphragm pump pumps fuel system up to 20 to 30 mbar. The pump diaphragm is then moved out so that the reed contact at the operating rod remains in the "open" position.
- During leak diagnosis, the reed contact is monitored to check if it remains open within 15 seconds. This indicates system is sealed.
- If pressure falls (indicating a leak), the diaphragm moves back and 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 reed contact is closed again. From that, the control module can recognize a "small leak" (smaller than 1 mm in diameter) or a "large leak".

The leak detection is activated automatically, shortly after each cold start (under 35° C) and a drive faster than 10 km/h. In case a fault is detected, a DTC will be stored to memory. The Malfunction Indicator Lamp (MIL) in instrument cluster lights up if the malfunction is recognized for 2 subsequent starts. Leak diagnosis can also be activated using Vehicle Diagnosis, Testing and Information System VAS 5051 --> **Diagnostic leak test,**

Automatic leak detection system

With 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 Vehicle Diagnosis, Testing and Information System VAS 5051 in measured value block 071 --> **Diagnostic leak test, performing**.

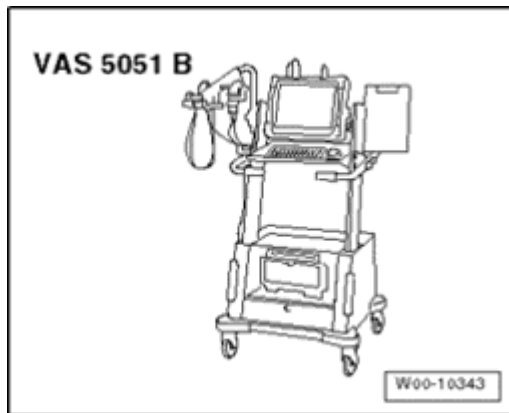
Diagnostic leak test, performing**Special tools, testers and auxiliary items required**

Fig. 171: Identifying Vehicle Diagnostic, Testing, And Information System VAS 5051
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

NOTE:

- **Secure all hose connections using hose clamps appropriate for the model type .**
- **Replace seals and gaskets when performing repair work.**

Work procedure

- Parking brake engaged.
- 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.

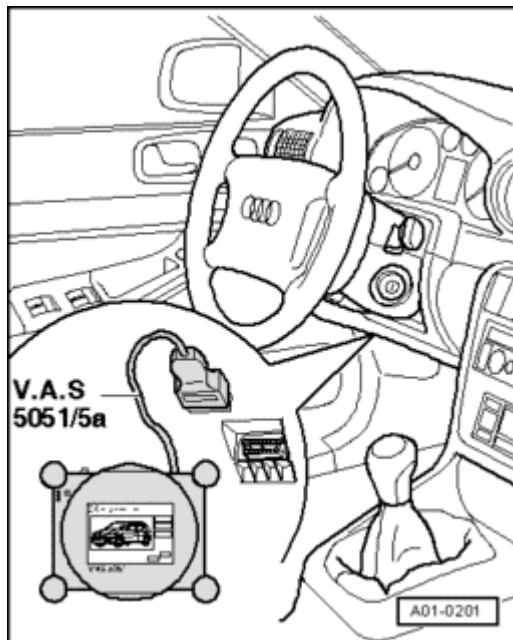


Fig. 172: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnosis, Testing and Information System VAS 5051 connected.
- No faults in DTC memory.
- Intake air temperature less than 90° C --> Display group 004, display field 4.
- Coolant temperature less than 95° C --> Display group 004, display field 3.

Observe safety precautions --> **Safety precautions.**

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

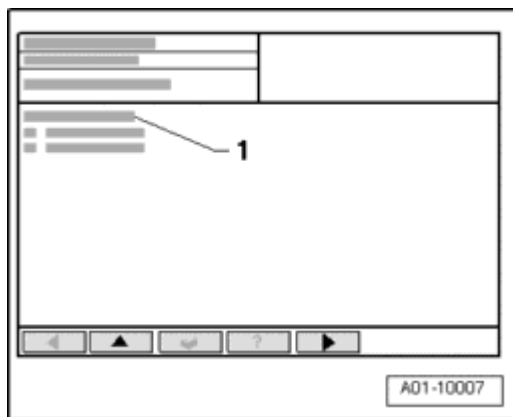


Fig. 173: Display On VAS 5051 - "On Board Diagnostic (OBD)"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "On Board Diagnostic" in selection - 1 - and activate by tapping --> button.

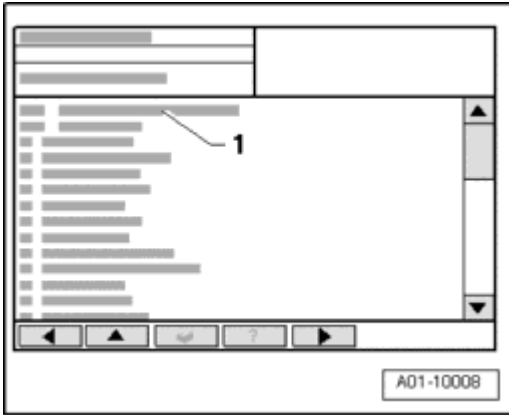


Fig. 174: Display On VAS 5051 - "01 - Engine Electronics"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "01 - Engine Electronics" vehicle system in selection - 1 - and activate by tapping --> button.

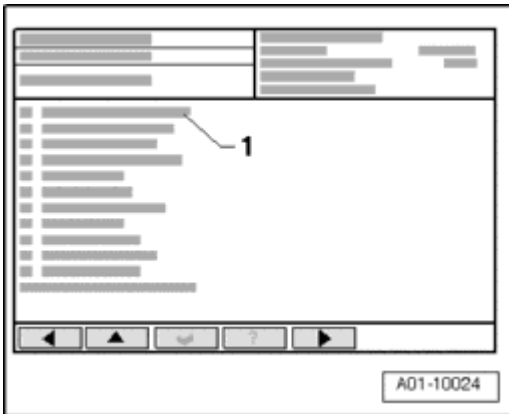


Fig. 175: Display On VAS 5051 - "006 - Basic Setting"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "006 - Basic Setting" function in selection - 1 - and activate by pressing --> button.

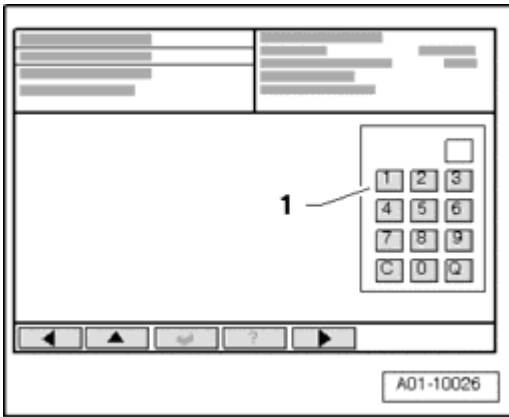


Fig. 176: Display On VAS 5051 - "Display Group 140"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- In button field - 1 - , press buttons 7 1 for "display group 071" and confirm entry by pressing Q button.



Fig. 177: Display On VAS 5051 - (Read-Out For Fuel Pressure In Fuel Rail)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Check reading in display field - 1 - .
- Specified value: "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.

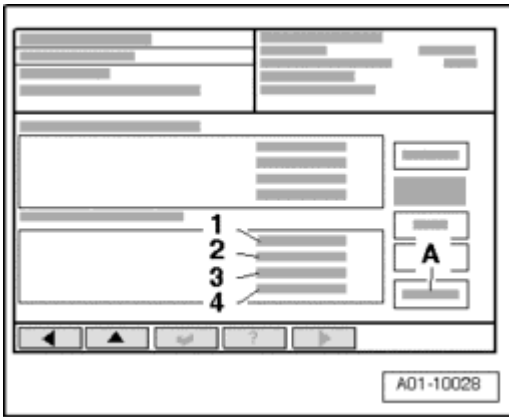


Fig. 178: Identifying Basic Setting Activate Button

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Display on VAS 5051 :

- Check reading in display field - 4 -.
- Specified value: "Test ON".

System test takes several minutes.

- Check reading in display field - 4 -.
- Specified value: "Syst.O.K.".

System is sealed, test is ended.

- End function "006 - Basic setting" by pressing <-- button.

Fault indication

If a malfunction was recognized during the system test, the malfunction is indicated afterward.

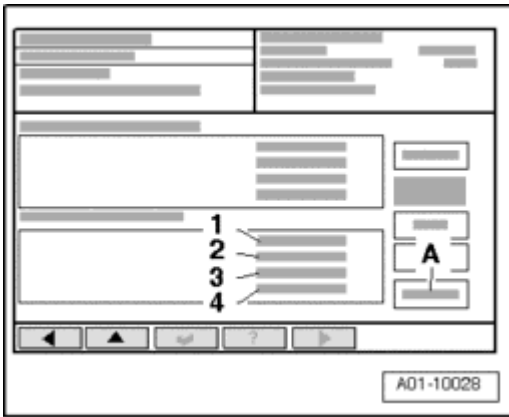


Fig. 179: Identifying Basic Setting Activate Button
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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 "006 - Basic setting" by pressing <-- button.

If system has recognized a small or large leak:

- Check fuel supply and tank ventilation systems for leaks **Checking fuel supply and tank ventilation systems for leaks**.
- Afterwards, perform leak diagnosis again.

Checking fuel supply and tank ventilation systems for leaks

NOTE:

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

- Switch off ignition.
- Check whether fuel filler cap of fuel tank was completely sealed for test.
- Check whether seal of fuel filler cap was damaged or crimped. Replace if necessary.
- Fold rear seat right backrest forward, if necessary.

Wagon:

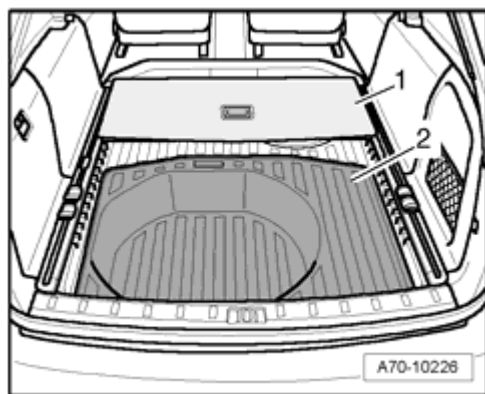


Fig. 180: Identifying Luggage Compartment Cargo Floor & Spare Wheel Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove luggage compartment cargo floor - 1 -.

NOTE:

- Ignore - 2 -.

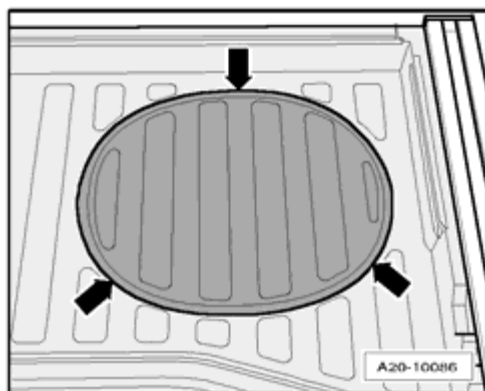


Fig. 181: Unclipping Right Sealing Flange Cover Retainers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles without air suspension, unclip right sealing flange cover retainers - **arrow** -.

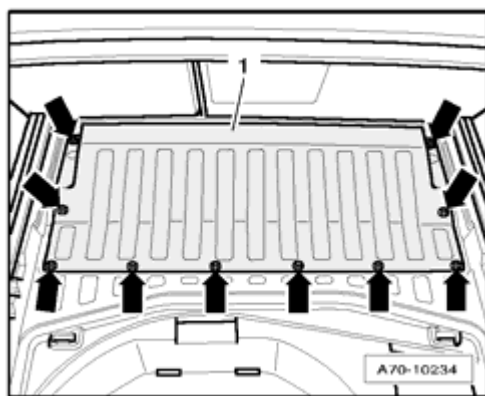


Fig. 182: Removing Spreader Pins And Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles with air suspension, remove spreader pins - **arrows** - and remove cover - **1** -.

All:

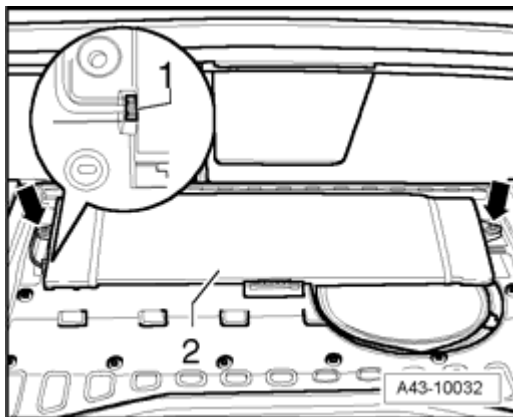


Fig. 183: Removing Pressure Tank And Set Aside With Line Connected

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On vehicles with air suspension, remove bolts - **arrows** -.
- Remove pressure tank - **2** - and set aside with line - **1** - connected.

NOTE:

- **Do not stretch or kink line.**

Sedan:

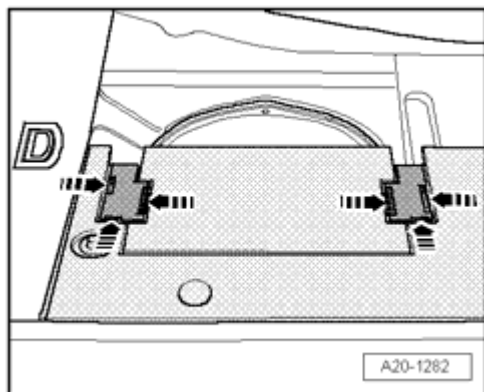


Fig. 184: Releasing Retaining Tabs

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release retaining tabs - **arrows** -.

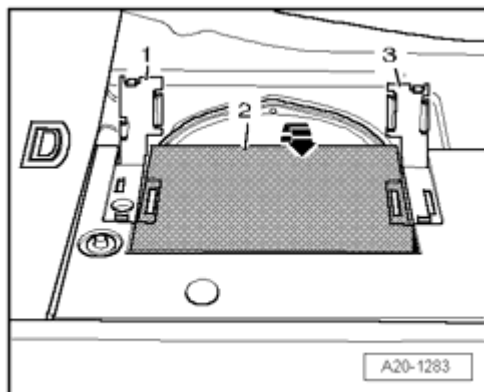


Fig. 185: Folding Open Retaining Tabs Toward Rear & Folding Cover Toward Front

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fold open retaining tabs - **1** - and - **3** - toward rear.
- Fold cover - **2** - toward front - **arrow** -.

All:

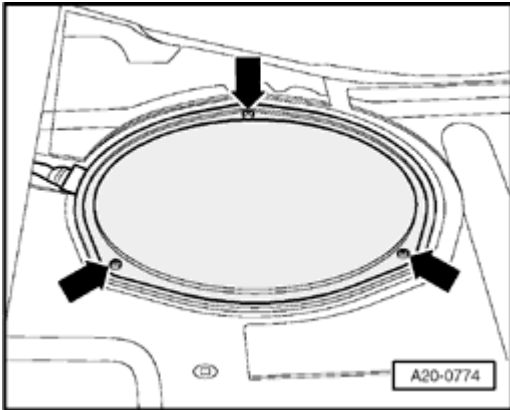


Fig. 186: Removing Cover

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover - **arrows** -.

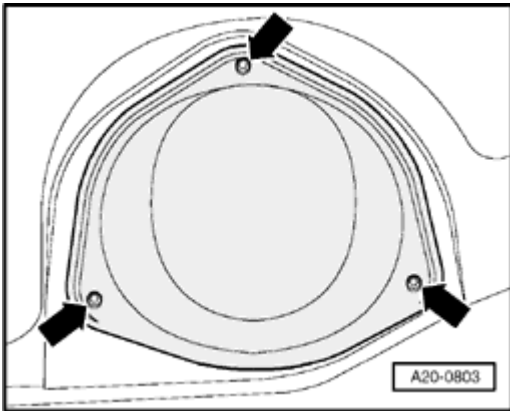


Fig. 187: Removing Cover Bolts For Locking Flange

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear seat bench --> **72 - SEAT - FRAMES** .
- Remove cover for locking flange, left and right - **arrows** -.

NOTE:

- Observe installation notes for locking flanges Installing and Installing.

All:

- Check whether seals under locking flanges are OK and union nuts 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
 - Lines from EVAP canister to Leak Detection Pump (LDP) V144.
 - Line from fuel tank to EVAP canister (below cover for EVAP canister).

2006 Audi A6 Quattro

ENGINE Fuel Supply System

- 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 pressure in the system. At leaking areas, bubbles will form.**

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

- Fuel tank
- EVAP canister
- Leak detection pump (LDP) V144
- Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80

NOTE:

- **Due to the form or function of the components, leaking areas may not always be localized by spraying on leak detection spray. It may be necessary to clamp off the relevant component using Hose Clamps Up to 25 mm dia. 3094 and initiate tank leak detection diagnostic. If the leak is no longer indicated, the component that was clamped off is faulty. If clamped off directly at the leak detection pump and a leak is still indicated, the leak detection pump itself is leaking.**

Leak Detection Pump (LDP) V144 (vehicles with 8-cyl. MPI engine), checking

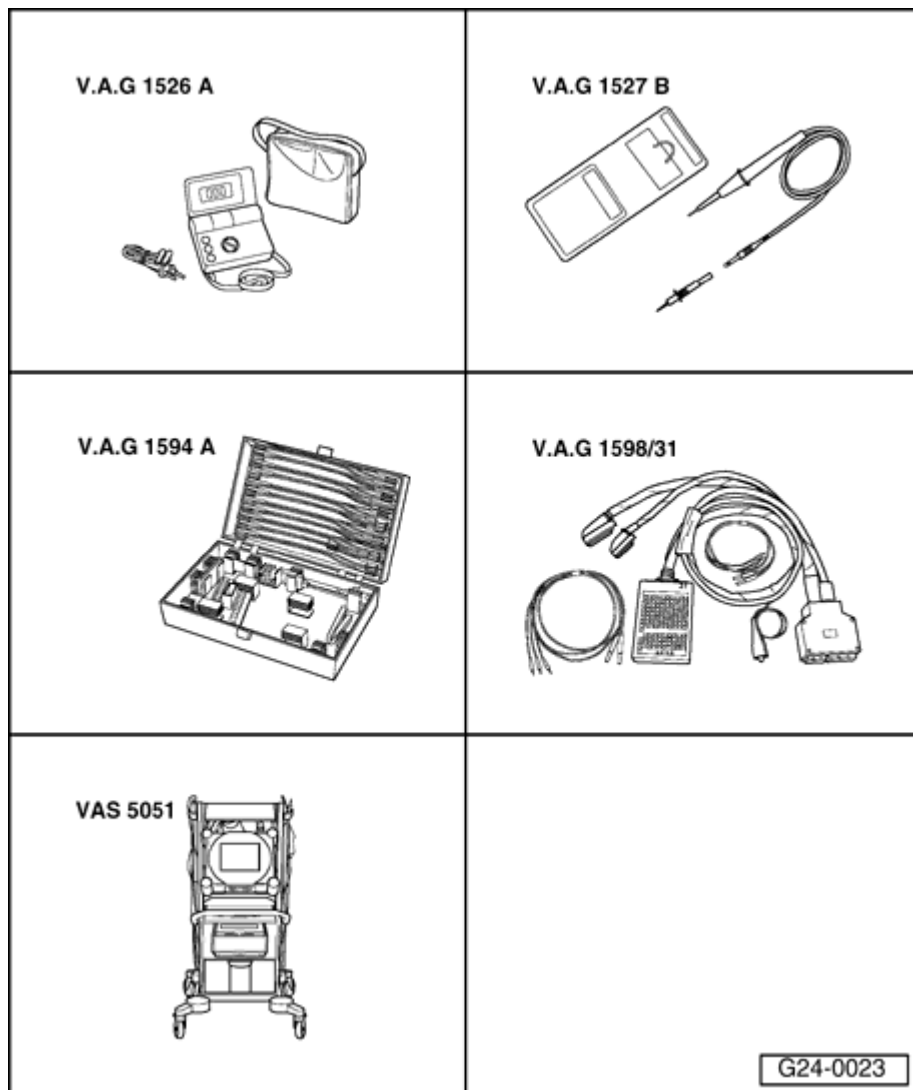


Fig. 188: Identifying Special Tools - Leak Detection Pump (LDP) V144 (Vehicles With 8-Cyl. MPI Engine), Checking

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Portable multimeter V.A.G 1526C
- Voltage tester V.A.G 1527B
- Connector test set V.A.G 1594C
- Adapter cable, 121-pin V.A.G 1598/31
- Vehicle diagnostic, testing, and information system VAS 5051

Work procedure

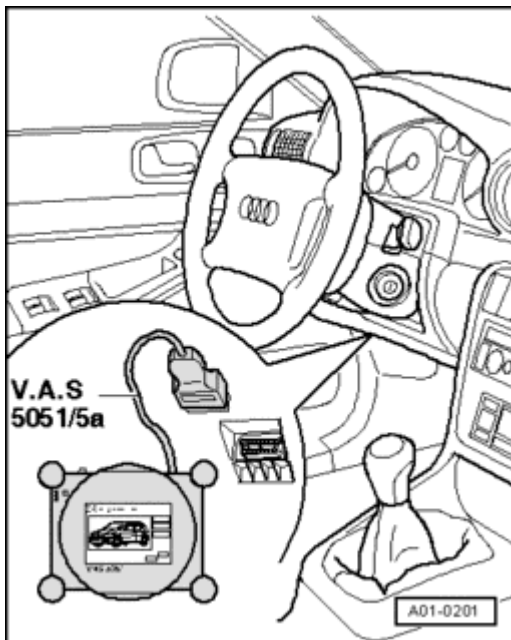


Fig. 189: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnosis, Testing and Information System VAS 5051 connected.

Check activation

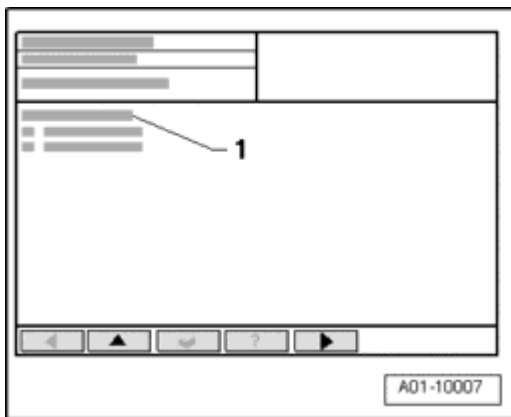


Fig. 190: Display On VAS 5051 - "On Board Diagnostic (OBD)"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "On Board Diagnostic" in selection - **1** - and activate by tapping --> button.

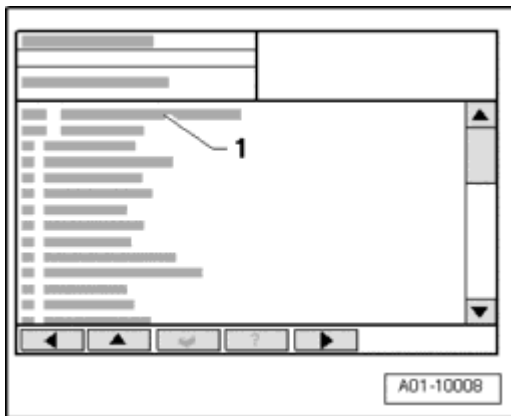


Fig. 191: Display On VAS 5051 - "01 - Engine Electronics"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "01 - Engine Electronics" vehicle system in selection - **1** - and activate by tapping --> button.

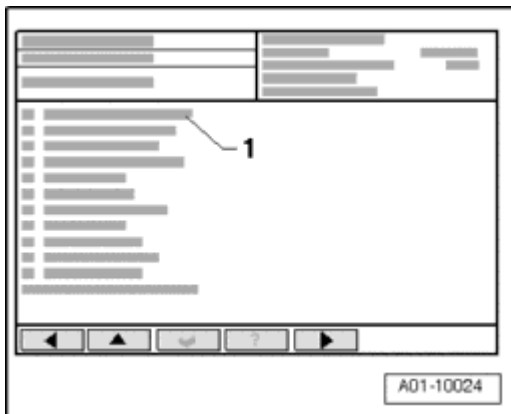


Fig. 192: Display On VAS 5051 - "006 - Basic Setting"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "005 - Output Diagnostic Test Mode (DTM)" function in selection - **1** - and activate by pressing --> button.

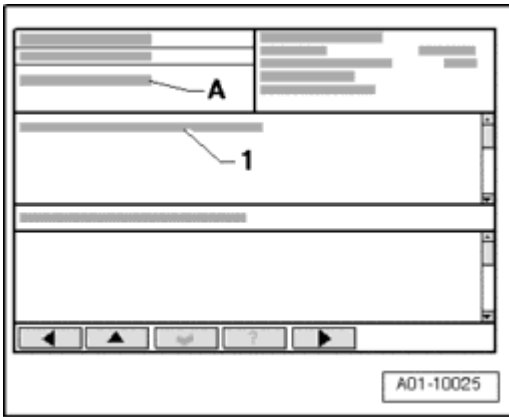


Fig. 193: Display On VAS 5051 - Output Diagnostic Test Mode Waiting & Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80

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 Solenoid Valve N80

- Press --> button repeatedly, until Leak Detection Pump (LDP) V144 is activated.

NOTE:

- **Operating noise of Leak Detection Pump (LDP) is audible at left rear wheel housing.**

- End function "005 - output Diagnostic Test Mode (DTM)" by pressing <-- button.
- Select "022 - End output" function in selection.
- 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.

Checking internal resistance

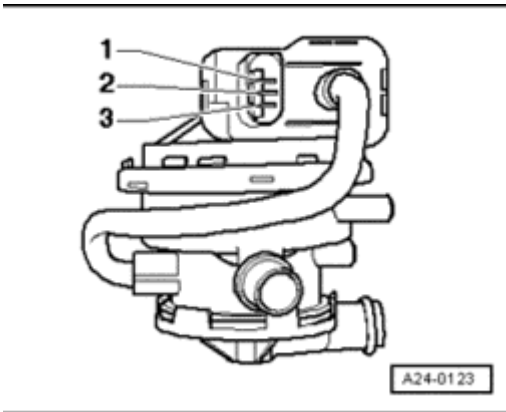


Fig. 194: Locating 3-Pin Connector At Fuel System Leak Detection Pump V144
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526C 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

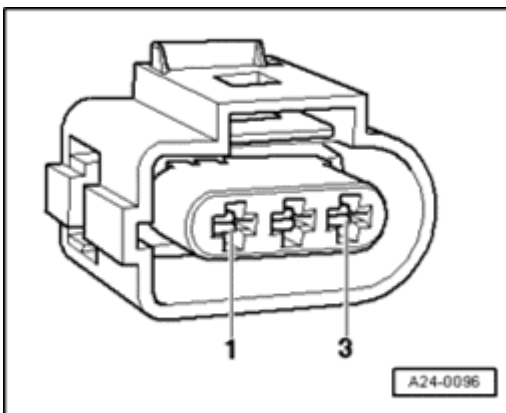


Fig. 195: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- Voltage for leak detection pump is supplied via Motronic Engine Control Module (ECM) Power Supply Relay J271.
- Fuse for leak detection pump OK

- Connect voltage tester V.A.G 1527B as follows:

Harness connector Terminal	Measure to
- 3 -	Engine Ground (GND)

- Briefly operate starter.
- LED must light up.

If LED does not light up:

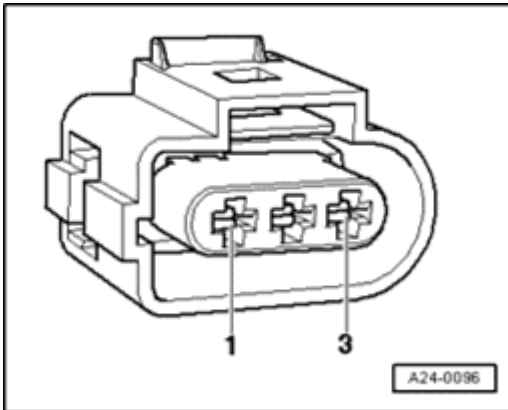


Fig. 196: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 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.
- Repair open circuit in wiring according to wiring diagram.

Checking output wiring

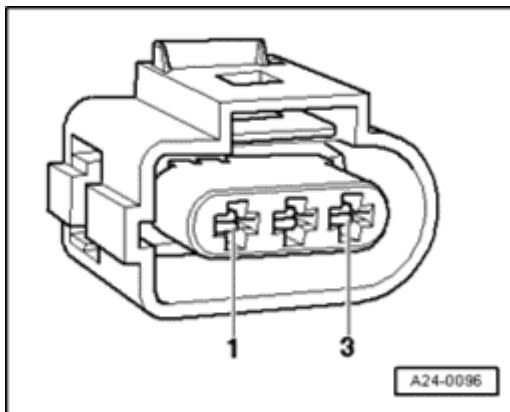


Fig. 197: Identifying 3-Pin Connector Terminals 1 & 3
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect voltage tester V.A.G 1527B as follows:

Harness connector Terminal	Measure to
- 2 -	Battery positive (B+)

- Initiate output Diagnostic Test Mode (DTM) **Check activation**.

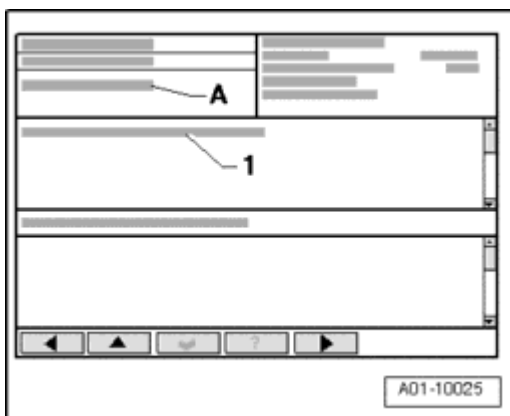


Fig. 198: Display On VAS 5051 - Output Diagnostic Test Mode Waiting & Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

A - Output diagnostic test mode waiting, advancing by switching required

1 - Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80

- Press --> key repeatedly, until leak detection pump for fuel system is activated.
- LED must blink.

If LED does not blink:

- End function "005 - output Diagnostic Test Mode (DTM)" by pressing <-- button.
- Select "022 - End output" function in selection.
- Switch off ignition.

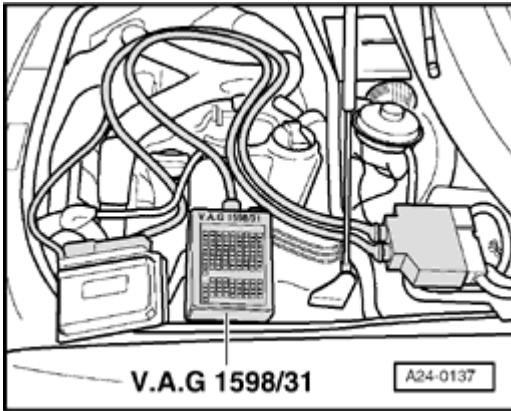


Fig. 199: Connecting Test Box VAG1598/31 To Engine Control Module Wiring Harness
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Adapter cable, 121-pin V.A.G 1598/31 to wiring harness connectors, do not connect engine control module. Connect Ground (GND) clip at test box to Ground (GND) (not visible in illustration) -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

CAUTION: To avoid damaging electronic components, switch to the corresponding measuring range and observe all test conditions before connecting the test leads.

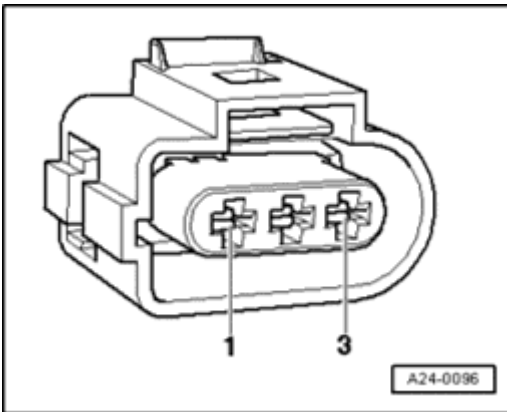


Fig. 200: Identifying 3-Pin Connector Terminals 1 & 3
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Harness connector Terminal	V.A.G 1598/31 Bushing
- 2 -	A 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 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

Checking input wiring

- Switch off ignition.

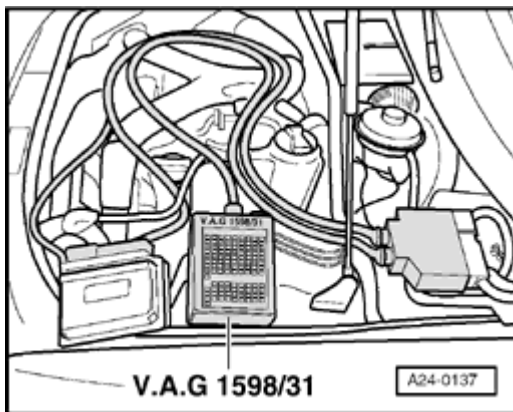


Fig. 201: Connecting Test Box VAG1598/31 To Engine Control Module Wiring Harness
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Adapter cable, 121-pin V.A.G 1598/31 to wiring harness connectors, do not connect engine control module. Connect Ground (GND) clip at test box to Ground (GND) (not visible in illustration) -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

CAUTION: To avoid damaging electronic components, switch to the corresponding measuring range and observe all test conditions before connecting the test leads.

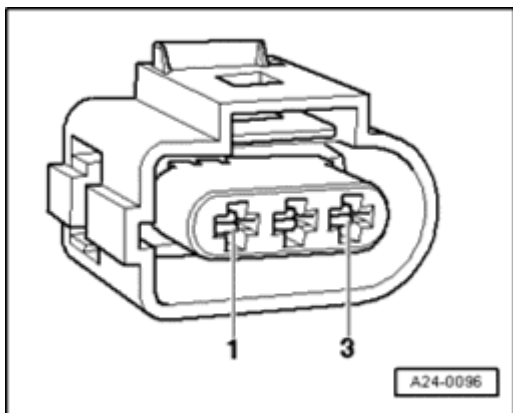


Fig. 202: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2006 Audi A6 Quattro

ENGINE Fuel Supply System

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

Harness connector Terminal	V.A.G 1598/31 Bushing
- 1 -	A 80

- Repair wiring open circuit or short circuit according to wiring diagram.
- Observe procedures for after re-connecting engine control module (ECM) -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MPI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

Leak Detection Pump (LDP) V144 (vehicles with FSI engine), checking

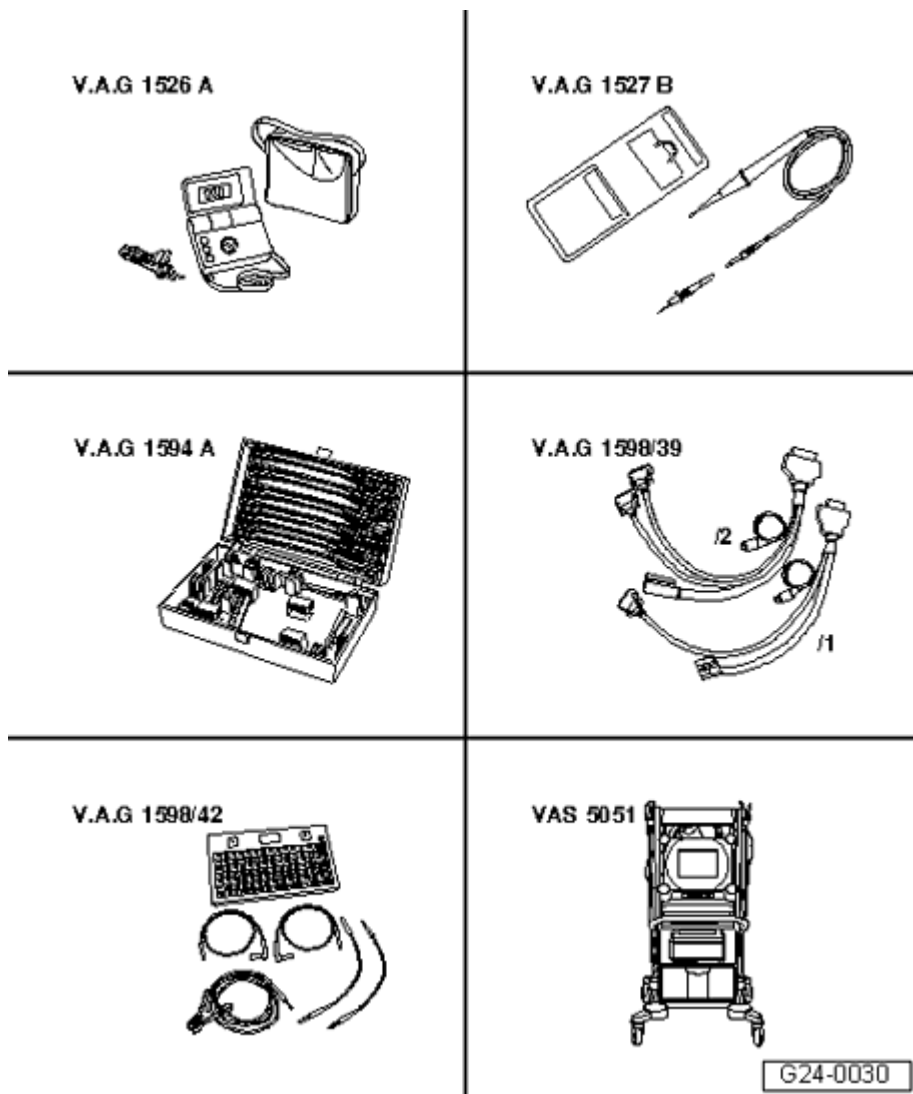


Fig. 203: Identifying Special Tools - Leak Detection Pump (LDP) V144 (Vehicles With FSI Engine), Checking

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Portable multimeter V.A.G 1526C
- Voltage tester V.A.G 1527B
- Connector test set V.A.G 1594C
- Adapter cable V.A.G 1598/39
- Test box V.A.G 1598/42
- Vehicle diagnostic, testing, and information system VAS 5051

Work procedure

- Ignition switched on.

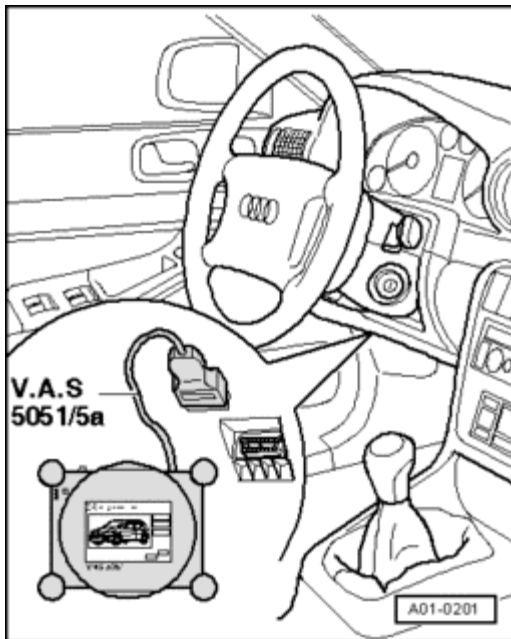


Fig. 204: Connecting Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnosis, Testing and Information System VAS 5051 connected.

Check activation

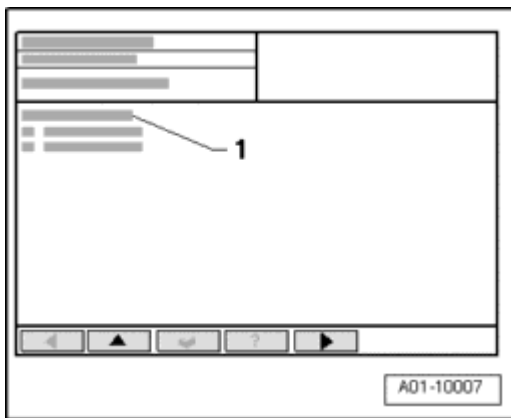


Fig. 205: Display On VAS 5051 - "On Board Diagnostic (OBD)"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "On Board Diagnostic" in selection - **1** - and activate by tapping --> button.

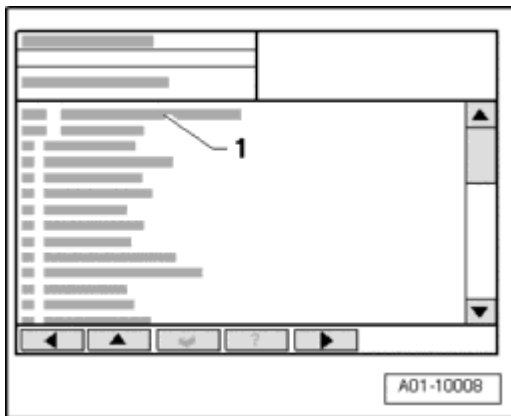


Fig. 206: Display On VAS 5051 - "01 - Engine Electronics"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "01 - Engine Electronics" vehicle system in selection - **1** - and activate by tapping --> button.

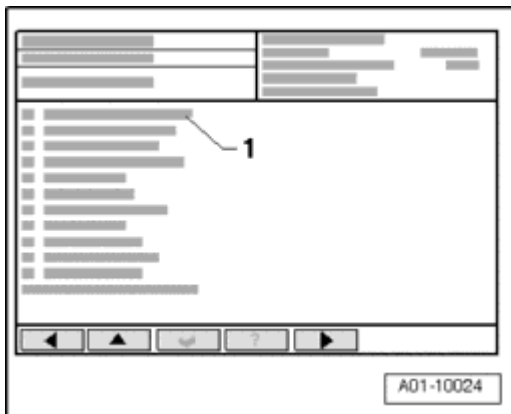


Fig. 207: Display On VAS 5051 - "006 - Basic Setting"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "005 - Output Diagnostic Test Mode (DTM)" function in selection - **1** - and activate by pressing --> button.

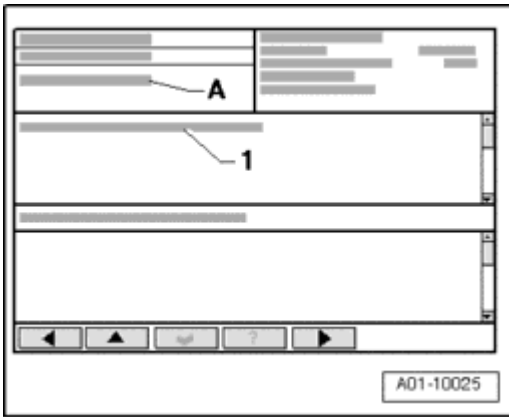


Fig. 208: Display On VAS 5051 - Output Diagnostic Test Mode Waiting & Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

A - Output diagnostic test mode waiting, advancing by switching required

1 - Component designation of current activated actuator

- Press --> button repeatedly, until Leak Detection Pump (LDP) V144 is activated.

NOTE:

- **Operating noise of Leak Detection Pump (LDP) is audible at left rear wheel housing.**

- End function "005 - output Diagnostic Test Mode (DTM)" by pressing <-- button.
- Select "022 - End output" function in selection.
- 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

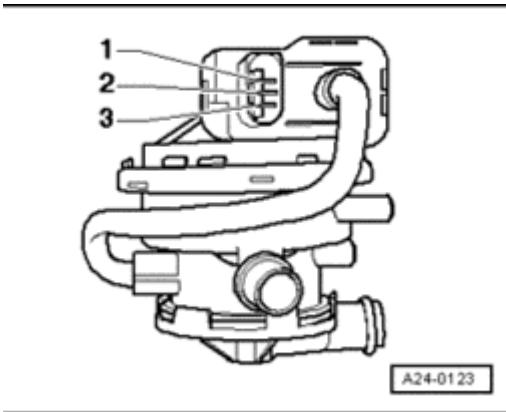


Fig. 209: Locating 3-Pin Connector At Fuel System Leak Detection Pump V144
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect hand multimeter V.A.G 1526C 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

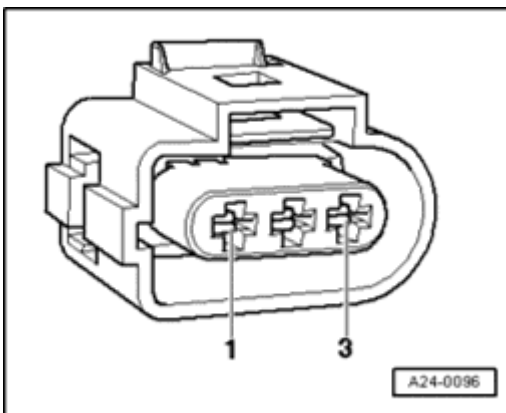


Fig. 210: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- Voltage for leak detection pump is supplied via Motronic Engine Control Module (ECM) Power Supply Relay J271.
- Fuse for leak detection pump OK

- Connect voltage tester V.A.G 1527B as follows:

Harness connector Terminal	Measure to
- 3 -	Engine Ground (GND)

- Briefly operate starter.
- LED must light up.

If LED does not light up:

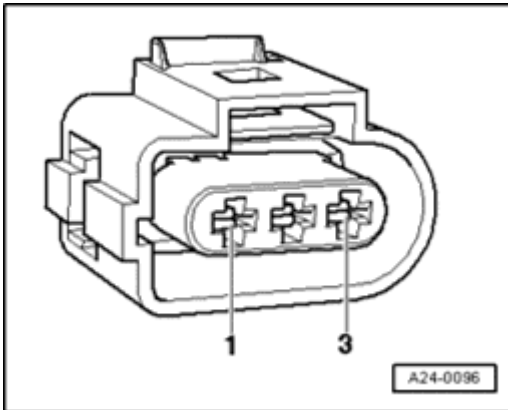


Fig. 211: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- 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.
- Repair open circuit in wiring according to wiring diagram.

Checking output wiring

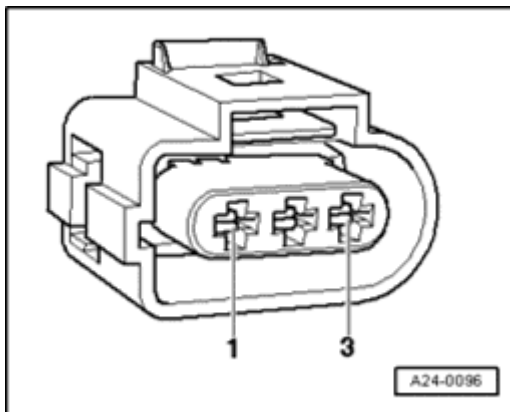


Fig. 212: Identifying 3-Pin Connector Terminals 1 & 3
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect voltage tester V.A.G 1527B as follows:

Harness connector Terminal	Measure to
- 2 -	Battery positive (B+)

- Initiate output Diagnostic Test Mode (DTM) **Check activation**.

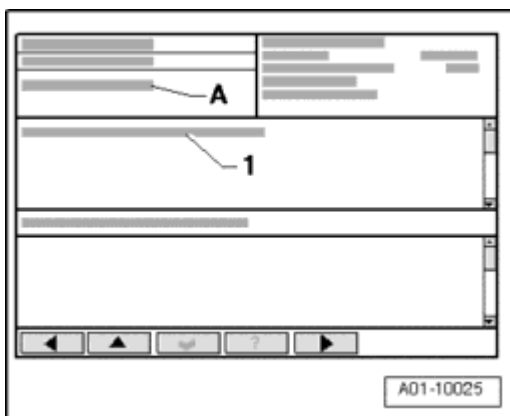


Fig. 213: Display On VAS 5051 - Output Diagnostic Test Mode Waiting & Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

A - Output diagnostic test mode waiting, advancing by switching required

1 - Evaporative Emission (EVAP) Canister Purge Solenoid Valve N80

- Press --> button repeatedly, until Leak Detection Pump (LDP) V144 is activated.
- LED must blink.

If LED does not blink:

- End function "005 - output Diagnostic Test Mode (DTM)" by pressing <-- button.
- Select "022 - End output" function in selection.
- Switch off ignition.

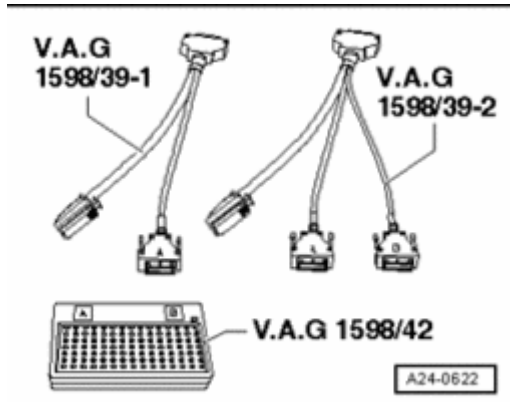


Fig. 214: Connecting Test Box V.A.G 1598/42 To Wiring Harness With Adapter Cable V.A.G 1598/39-1 Or Adapter Cable V.A.G 1598/39-2

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 V.A.G 1598/39-2. Clamp test box Ground (GND) clip to battery negative terminal. The procedure will indicate whether engine control module is to be connected to 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.

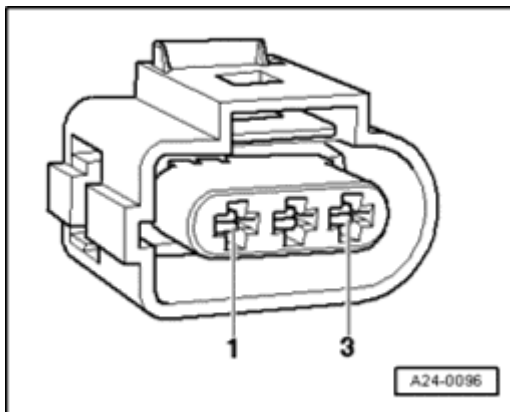


Fig. 215: Identifying 3-Pin Connector Terminals 1 & 3

Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

2006 Audi A6 Quattro

ENGINE Fuel Supply System

Engine	Harness connector Terminal	V.A.G 1598/42 Bushing
6-cyl. 3.2L FSI	- 2 -	B 24
8-cyl. 4.2L FSI	- 2 -	B 10
10-cyl. 5.2L FSI	- 2 -	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 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MFI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

Checking input wiring

- Switch off ignition.

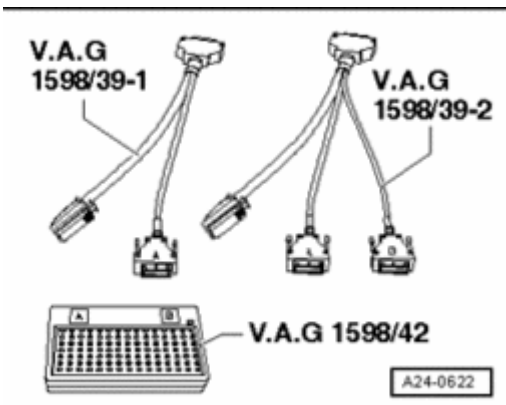


Fig. 216: Connecting Test Box V.A.G 1598/42 To Wiring Harness With Adapter Cable V.A.G 1598/39-1 Or Adapter Cable V.A.G 1598/39-2

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 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.

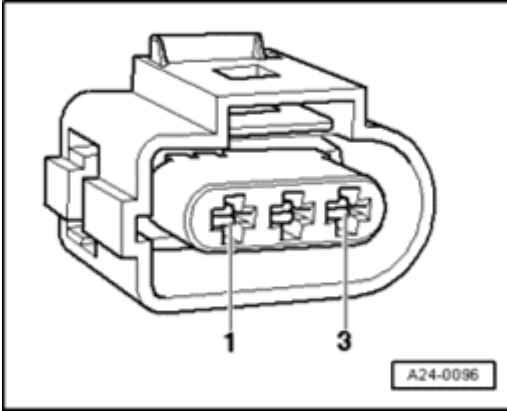


Fig. 217: Identifying 3-Pin Connector Terminals 1 & 3
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Engine	Harness connector Terminal	V.A.G 1598/42 Bushing
6-cyl. 3.2L FSI	- 1 -	B 20
8-cyl. 4.2L FSI	- 1 -	B 40
10-cyl. 5.2L FSI	- 1 -	B 40

- Repair wiring open circuit or short circuit according to wiring diagram.
- Observe procedures for after re-connecting engine control module (ECM) -->
 - **24 - FUEL INJECTION SYSTEM** for 3.2 V6 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BKH
 - **24 - MULTIPOINT FUEL INJECTION (MFI)** for 4.2 LITER V8 4V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BVJ
 - **24 - MULTIPOINT FUEL INJECTION (MFI)** for 4.2 LITER V8 5V FUEL INJECTION AND IGNITION, ENGINE CODE(S): BAT, BNK
 - **24 - MULTIPOINT FUEL INJECTION (MFI)** for 5.2 LITER 10-CYL. 4V FUEL INJECTION IGNITION, ENGINE CODE(S): BXA

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.

- Remove left rear wheel.
- Remove left rear wheel housing liner --> **66 - EXTERIOR EQUIPMENT** .

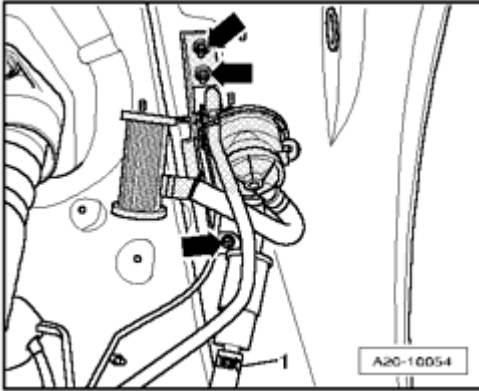


Fig. 218: Removing Ventilation Hose & Nuts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ventilation hose - 1 -.
- Remove nuts - **arrows** -.
- Disengage diagnostic pump with bracket.

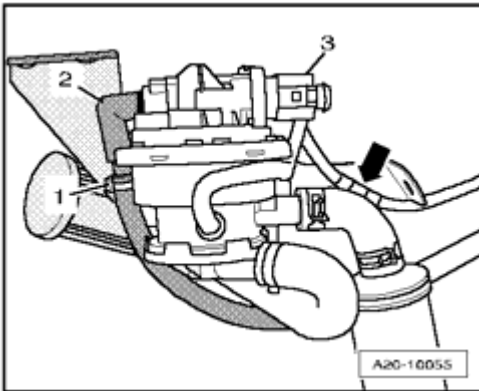


Fig. 219: Disconnecting Electrical Harness Connector With Ignition Switched Off And Free Up Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical harness connector - 3 - with ignition switched off and free up wire - **arrow** -.
- Cut cable ties - 1 - and disconnect hose - 2 -.

Installing

- Tightening torque --> **EVAP canister system/Leak detection system, assembly overview.**

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 -.

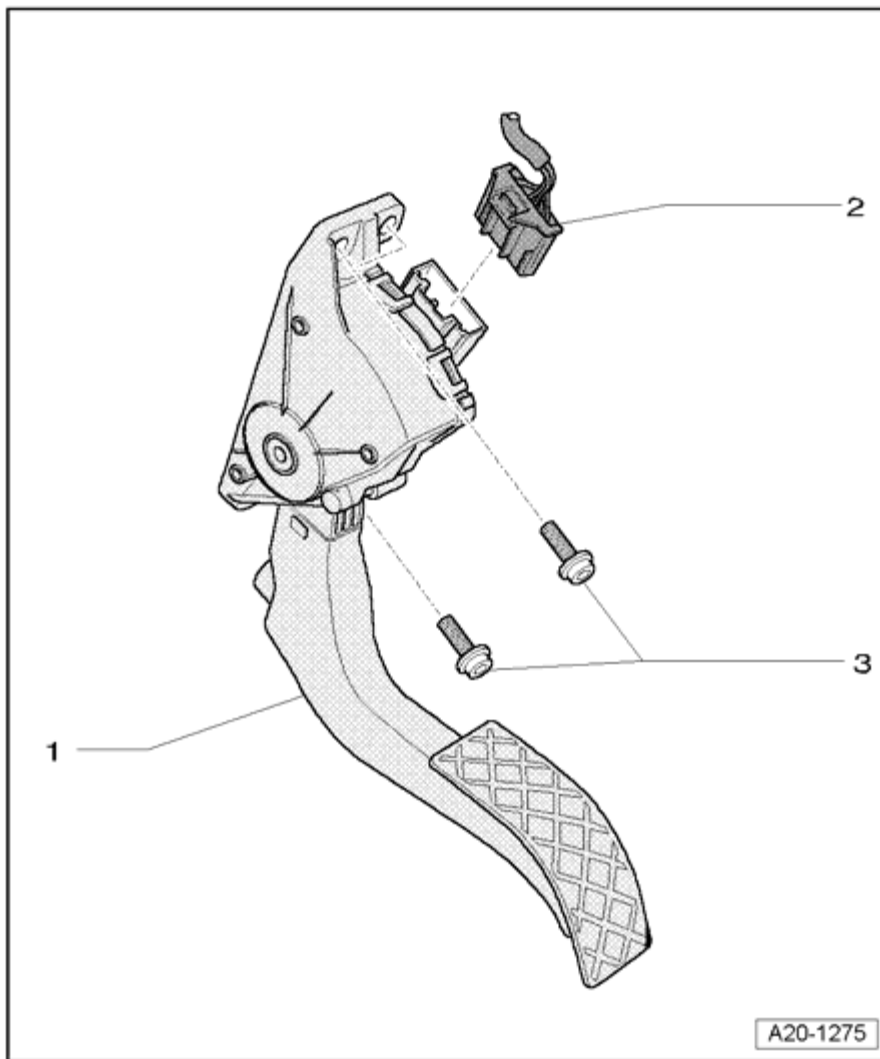
ACCELERATOR MECHANISM**Accelerator pedal module, assembly overview**

Fig. 220: 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 - Electrical harness connector

3 - Bolt

- 9 Nm

Accelerator pedal module with Throttle Position (TP) sensors, removing and installing

Removing

- Remove drivers side lower instrument panel cover --> **68 - INTERIOR EQUIPMENT** .

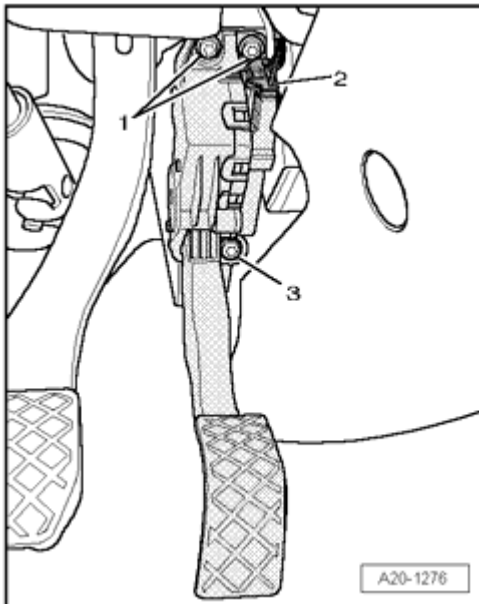


Fig. 221: Disconnecting Accelerator Pedal Module Electrical Connector & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connector - **2** -.
- Remove bolts - **1** - and - **3** -.
- Remove accelerator pedal module.

Installing

- Tightening torque --> **Accelerator pedal module, assembly overview.**

Installation is in reverse order of removal, note the following:

- Install drivers side lower instrument panel cover --> **68 - INTERIOR EQUIPMENT** .

Vehicles with automatic transmission:

If the throttle position sensor or engine control module are replaced in vehicles with automatic transmission, the kick-down function must be adapted --> **Adapting kick-down function after replacing throttle position sensor or engine control module.**

Adapting kick-down function after replacing throttle position sensor or engine control module

NOTE:

- If the throttle position sensor or engine control module is replaced in vehicles with automatic transmission, the kick-down function must be adapted.

Special tools, testers and auxiliary items required

Fig. 222: Identifying Vehicle Diagnostic, Testing, And Information System VAS 5051
Courtesy of VOLKSWAGEN UNITED STATES, INC.

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

Work procedure

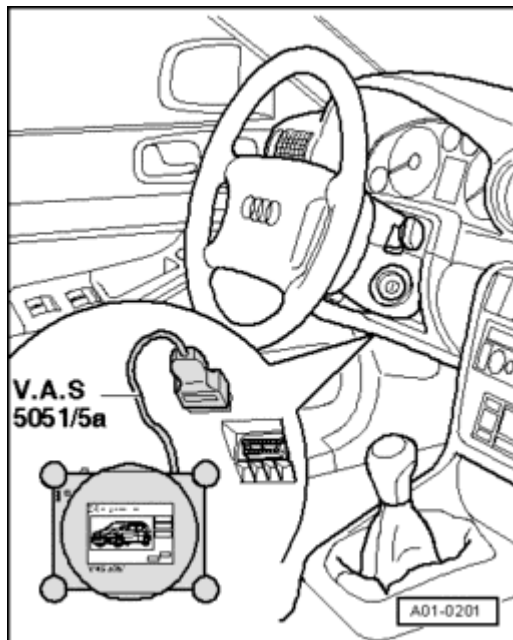


Fig. 223: Connecting Data Link Connector (DLC)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle Diagnosis, Testing and Information System VAS 5051 connected with Diagnostic Cable VAS 5051/5A , Vehicle Self-Diagnosis selected.
- No faults in DTC memory.
- Engine not running, ignition switched on.

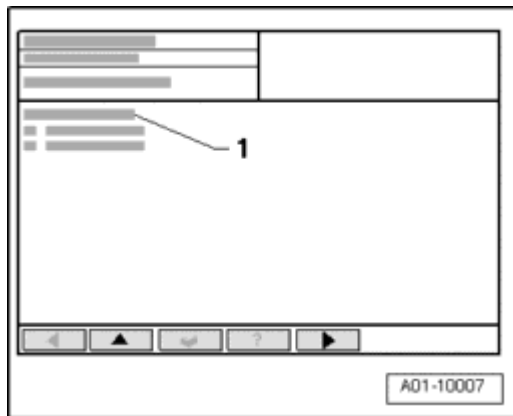


Fig. 224: Display On VAS 5051 - "On Board Diagnostic (OBD)"

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "On Board Diagnostic" in selection - **1** - and activate by tapping --> button.

2006 Audi A6 Quattro

ENGINE Fuel Supply System

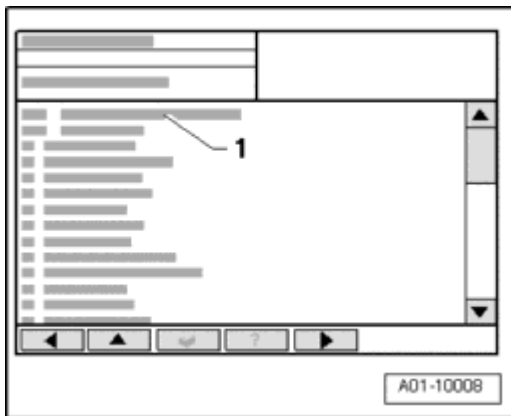


Fig. 225: Display On VAS 5051 - "01 - Engine Electronics"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "01 - Engine Electronics" vehicle system in selection - **1** - and activate by tapping --> button.

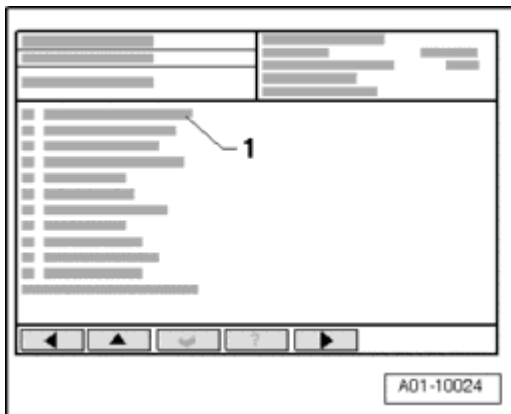


Fig. 226: Display On VAS 5051 - "006 - Basic Setting"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Tap "006 - Basic Setting" function in selection - **1** - and activate by pressing --> button.

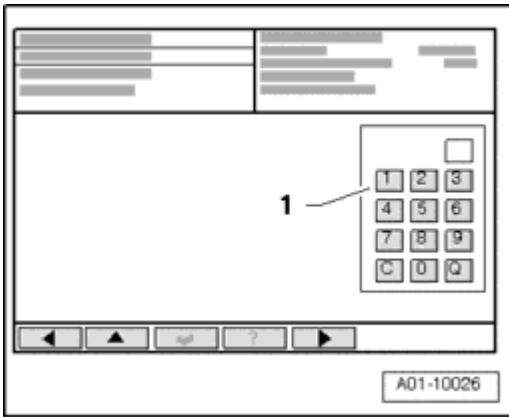


Fig. 227: Display On VAS 5051 - "Display Group 140"
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- In button field - 1 - , press buttons 6 3 for "display group 063" and confirm entry by pressing Q button.
- Activate basic setting by pressing Activate button - A -.

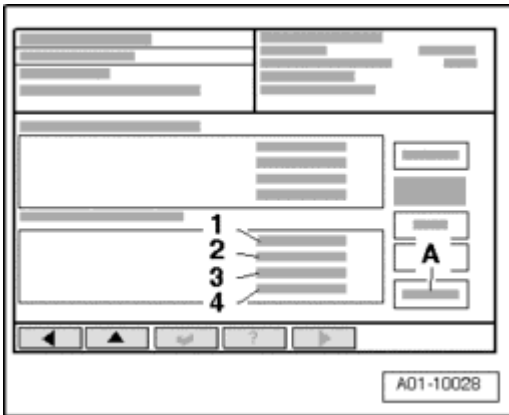


Fig. 228: Identifying Basic Setting Activate Button
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Display on VAS 5051 :

- Check indication in display fields - 3 - and - 4 -.
- After display "Activate kick-down" appears, depress gas pedal all the way down beyond kick-down point and hold it there.

Display field	Explanations
3	Kickdown
4	• Operate • ADP in progress

2006 Audi A6 Quattro

ENGINE Fuel Supply System

- Specified value: ADP OK

If "ERROR" is displayed: Check DTC Memory

NOTE:

- **"ERROR" could be displayed e.g. if the accelerator pedal is not immediately depressed after prompting the VAS 5051 or if the accelerator pedal is released during adaptation, even though adaptation had not been completed. Exit the function "006 - Basic setting" by pressing <-- button and perform adaptation again.**

- End function "006 - Basic setting" by pressing <-- button.
- Select "022 - End output" function in selection.
- Turn ignition off and disconnect Data Link Connector (DLC).