

ENGINE

3.0 Liter - Multiport Fuel Injection - Engine Code(s): CCBA (Sedan)

MULTIPOINT FUEL INJECTION

GENERAL INFORMATION

SAFETY PRECAUTIONS

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

WARNING: Improperly secured testing and measuring equipment and distraction during a road test increase the risk of an accident.

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

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

CAUTION: • Always follow the instructions when disconnecting the battery. Refer to Removal and Installation .

Note the following when working on the fuel system:

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

- The fuel pressure must be reduced to residual pressure before opening the high pressure area of the fuel injection system. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.
- To reduce remaining residual pressure, place a clean cloth around the connector and carefully loosen the connector.

-- Procedures before opening the high pressure fuel injection system. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

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

- Individuals with a pacemaker must not stay in the danger area of high voltage systems, for example ignition systems, xenon light.
- Turn off the ignition before disconnecting and connecting the wiring for the injection and ignition system. This includes tester cables as well.

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- Fuel lines must not be opened when the engine is running.
- Only clean the engine with the ignition turned off.
- While testing it is possible that there may be some faults stored in the Engine Control Module (ECM). After completing all testing and repairs, check the Diagnostic Trouble Code (DTC) memory. If a fault has been stored:

CLEAN WORKING CONDITIONS

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

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

ON BOARD DIAGNOSTICS

- The Engine Control Module (ECM) is equipped with On Board Diagnostics (OBD). Before repairs such as fault finding, check the Diagnostic Trouble Code (DTC) memory first. Also the vacuum hoses and connections must be checked (unmetered air).
- Fuel hoses in engine compartment must only be secured with spring-type clips. The use of clamp or screw type clips is not permissible.
- For the electric components to work properly, a voltage of at least 11.5 volts is required.
- Do not use sealants containing siliCone. Particles of siliCone drawn into the engine, will not be burnt in the engine and damage the oxygen sensor.
- The vehicles have a crash fuel shut-off. It reduces the risk of fire in an accident because the fuel Pump relay switches the fuel Pump off.
- If it is difficult to disconnect the connectors, use a release Tool f/ rev. light switch conn.T40138.

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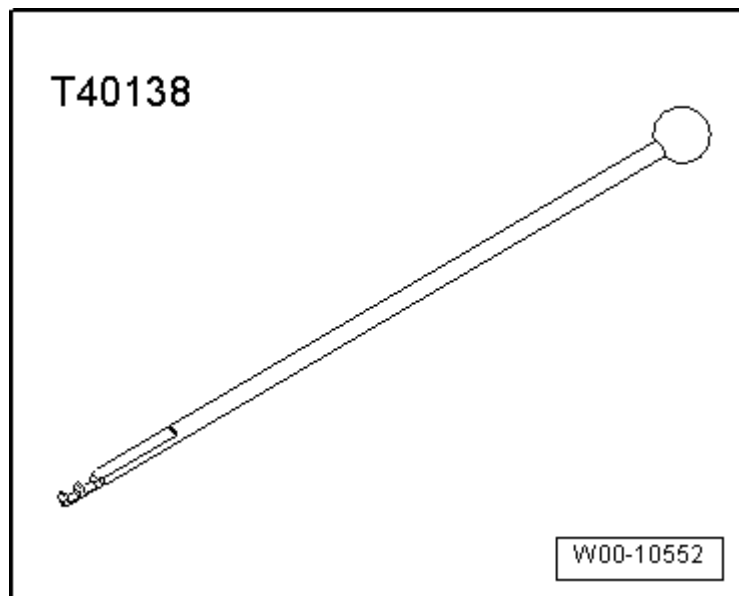


Fig. 1: Identifying Special Tool T40138
Courtesy of AUDI OF AMERICA, LLC

DESCRIPTION AND OPERATION

AIR FILTER OVERVIEW

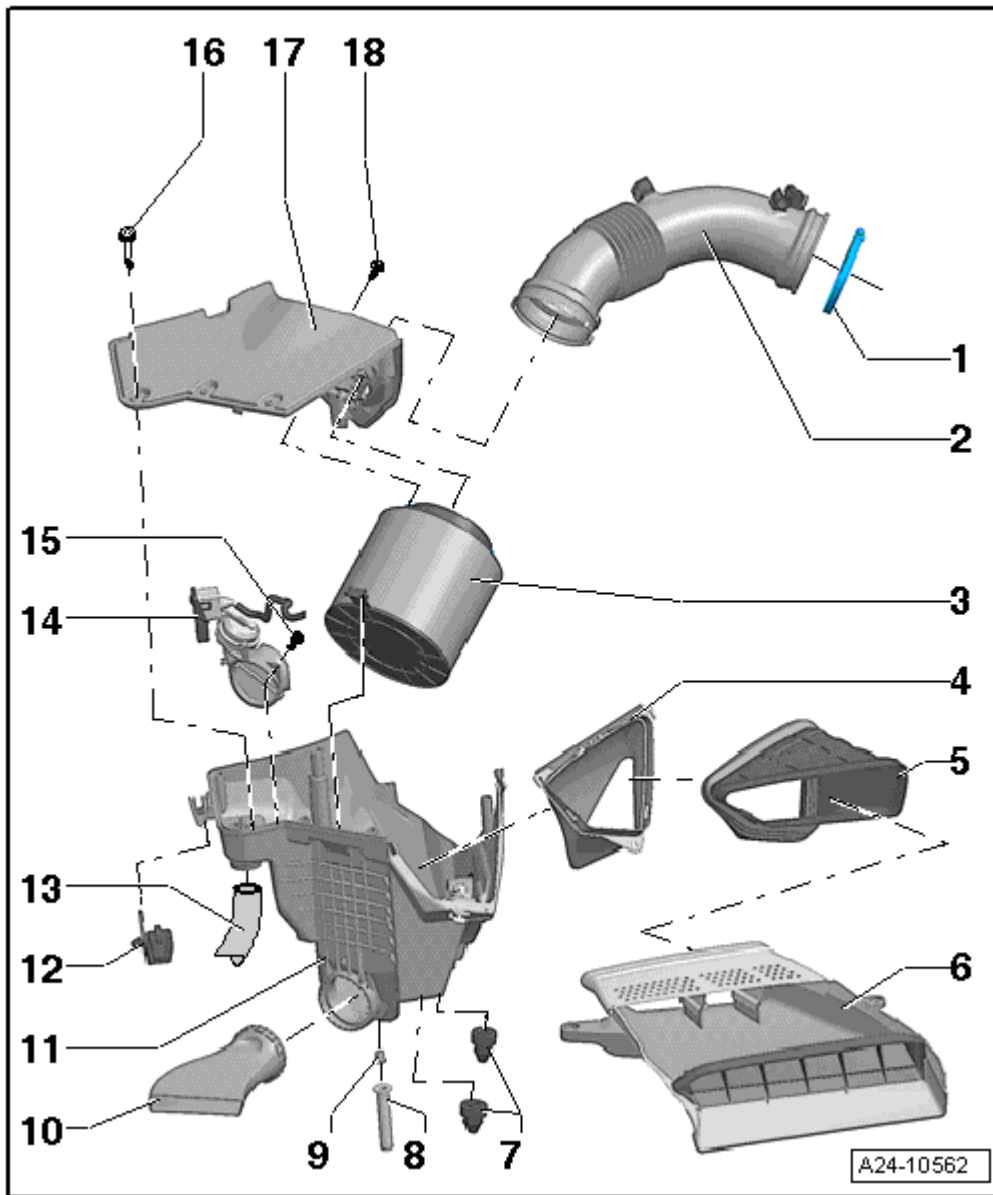


Fig. 2: Identifying Air Filter Overview

Courtesy of AUDI OF AMERICA, LLC

1. Hose Clamp
2. Air Guide Hose
 - To throttle valve control module -J338-
 - Pay attention to the marking when installing (the arrow points toward the throttle valve control module bolt)
3. Air Filter
 - Always use an original air filter
 - For the maintenance interval, refer to **MAINTENANCE, DIAGNOSIS**
 - Removing and installing, refer to **AIR FILTER**

- Clean snow screen also (if present)
- 4. Air Guide
 - Clipped into upper section of air filter
 - Clean air duct of dirt and leaves
- 5. Air Guide
 - Clean air duct of dirt and leaves
- 6. Air Guide
 - To lock carrier
 - Clean air duct of dirt and leaves
- 7. Rubber Grommet
- 8. Water Drain Hose
 - Clean water drain hose of dirt and leaves
- 9. Water Drain Hose Guide
- 10. Warm Air Intake (only installed in countries with hot climates)
 - Slide the warm air intake into the air filter as far as the stop and then turn it clockwise until it engages.
- 11. Air Filter Housing Lower Section
 - Clean the lower section of the air filter from salt, dirt and leaves.
 - Check for water drain for dirt; clean if necessary.
- 12. Air Filter Housing Lower Section Mount
- 13. Secondary Air Injection (AIR) Pump Intake Hose
 - Not installed on all vehicles
- 14. Intake Air Switch-Over Valve -N335-
 - Not installed on all vehicles
 - The valve is installed but is not functional
- 15. Bolt
 - For the intake air switch-over valve -N335-
- 16. Bolt
- 17. Air Filter Upper Section
 - Clean the upper section of the air filter from salt, dirt and leaves.
- 18. Bolt
 - For securing the air filter element

COMPONENT LOCATION OVERVIEW**Engine Compartment, Right**

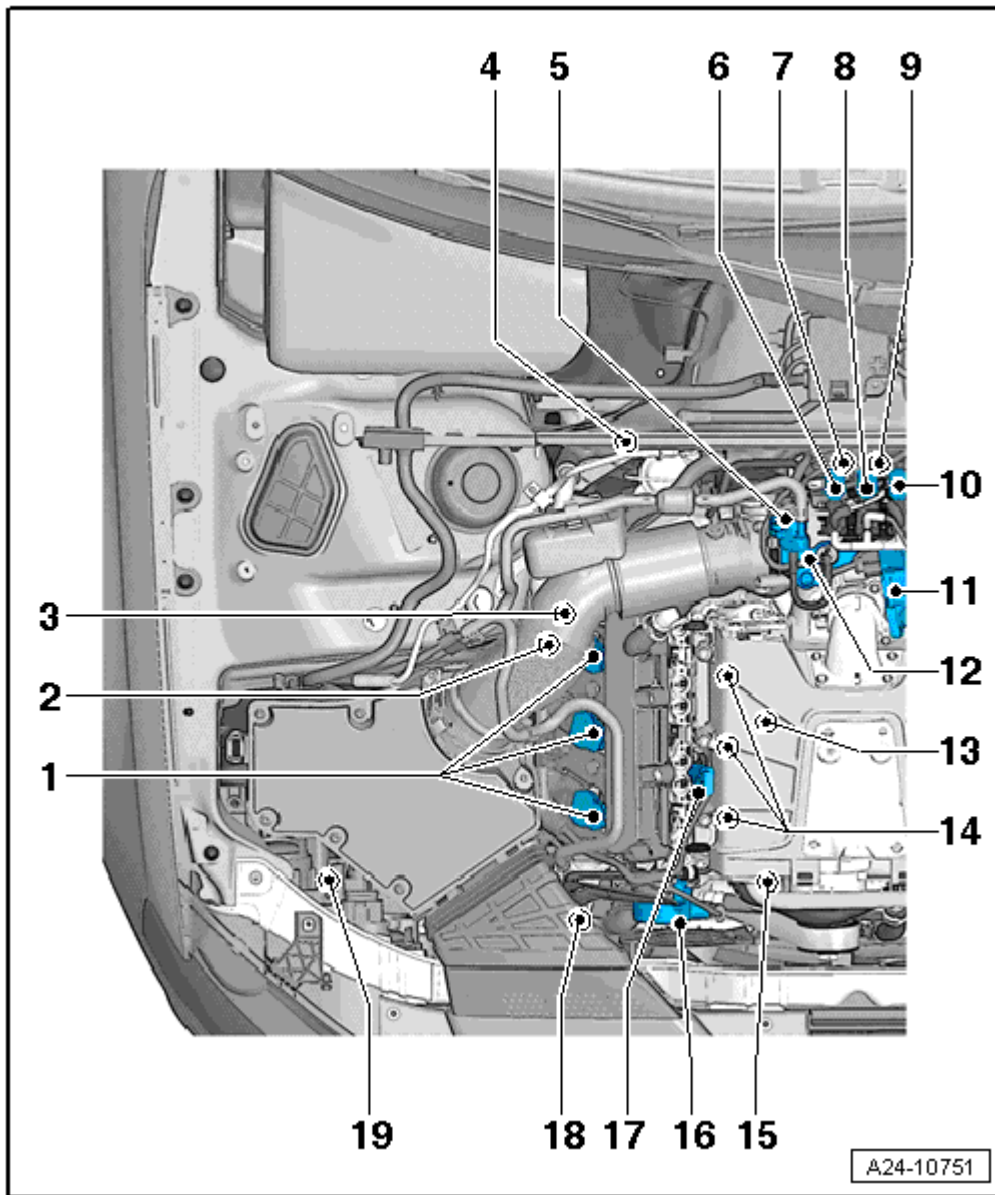


Fig. 3: Identifying Right Engine Compartment, Component Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Ignition Coils, Cylinder Bank 1
 - Ignition coil 1 with power output stage -N70-
 - Ignition coil 2 with power output stage -N127-
 - Ignition coil 3 with power output stage -N291-
 - Removing and installing, refer to **IGNITION COILS**
2. Heated Oxygen Sensor (HO2S) -G39- with Oxygen Sensor (O2S) Heater -Z19-
 - 55 Nm
 - Component location, refer to **Fig. 29**
 - Connector location, refer to **Fig. 27**

- Removing and installing, refer to **Heated Oxygen Sensor -G39-**
- 3. Camshaft Adjustment Valve 1 -N205-
 - Component location, refer to **Fig. 15**
- 4. Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC) -G130- with Heater for Oxygen Sensor (O2S) 1 after Catalytic Converter -Z29-
 - 55 Nm
 - Component location, refer to **Fig. 29**
 - Connector location, refer to **Fig. 27**
 - Removing and installing, refer to **Oxygen Sensor after Three Way Catalytic Converter -G130-**
- 5. Secondary Air Injection (AIR) Sensor 1 -G609-
 - Component location, refer to **Description and Operation**
- 6. Secondary Air Injection (AIR) Solenoid Valve -N112-
 - Component location, refer to **Fig. 10**
- 7. Intake Air Temperature (IAT) Sensor -G42- /Manifold Absolute Pressure (MAP) Sensor -G71-
- 8. Intake Manifold Runner (IMR) Control Valve -N316-
 - Component location, refer to **Fig. 10**
- 9. Evaporative Emission (EVAP) Canister Purge Regulator Valve 1 -N80-
 - Component location, refer to **Fig. 12**
- 10. Secondary Air Injection (AIR) Solenoid Valve 2 -N320-
 - Component location, refer to **Fig. 10**
- 11. Control Valve Control Unit -J808-
 - Component location, refer to **Fig. 14**
 - After replacing the control valve control unit perform an **Adaptation** in **Guided Functions** . Refer to the vehicle diagnostic tester.
 - Removing and installing, refer to **Control Valve Control Unit -J808-**
- 12. Throttle Valve Control Module -J338-
 - Component location, refer to **Fig. 13**
 - After replacing the throttle valve control module perform an **Adaptation** in **Guided Functions** . Refer to the vehicle diagnostic tester.
 - Removing and installing, refer to **Throttle Valve Control Module -J338-**
- 13. Knock Sensor (KS) 1 -G61-
 - Component location, refer to **Fig. 17**
 - Connector location, refer to **Fig. 9**
- 14. Fuel Injectors, Cylinder Bank 1
 - Cylinder 1 fuel injector -N30-
 - Cylinder 2 fuel injector -N31-
 - Cylinder 3 fuel injector -N32-
 - Removing and installing, refer to **FUEL INJECTORS**

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15. Intake Manifold Runner (IMR) Position Sensor -G336-
 - Component location, refer to **Fig. 21**
16. Camshaft Position (CMP) Sensor -G40-
 - Component location, refer to **Fig. 15**
17. Charge Air Pressure Sensor -G31- / Intake Air Temperature (IAT) Sensor -G72-
 - Component location, refer to **Fig. 25**
18. High Pressure Pump
 - With fuel metering valve -N290-
 - With low fuel pressure sensor -G410-
 - Component location, refer to **Fig. 23**
 - Removing and installing, refer to **HIGH PRESSURE Pump**
19. Secondary Air Injection (AIR) Pump Motor -V101-
 - Component location, refer to **Fig. 31**

Engine Compartment, Left

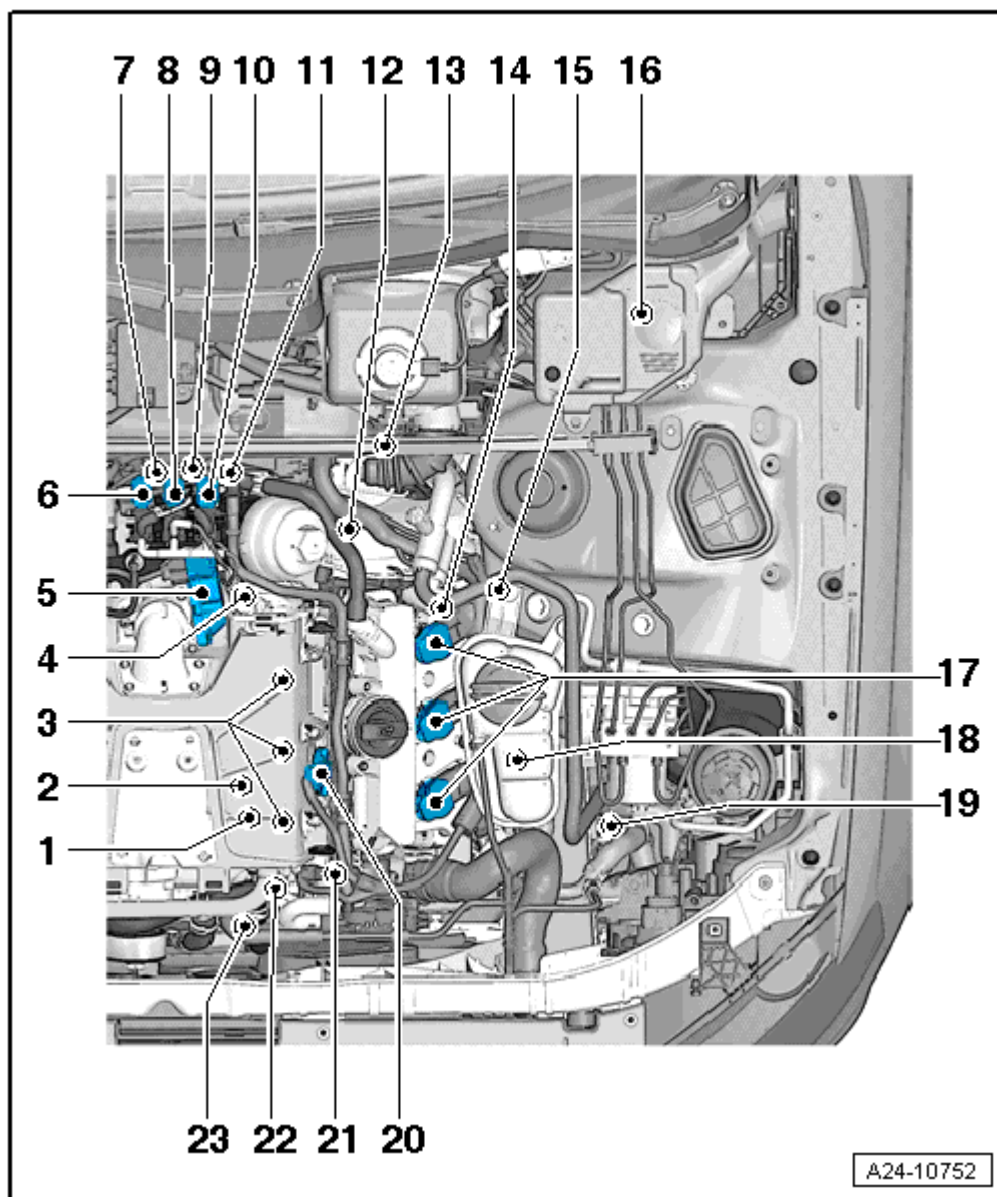


Fig. 4: Identifying Left Engine Compartment, Component Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Fuel Pressure Sensor -G247-
 - 22 Nm
 - Component location, refer to **Fig. 18**
 - Oil the threads
2. Knock Sensor (KS) 2 -G66-
 - Component location, refer to **Fig. 18**
 - Connector location, refer to **Fig. 9**
3. Fuel Injectors, Cylinder Bank 2
 - Cylinder 4 Fuel Injector -N33-

- Cylinder 5 Fuel Injector -N83-
 - Cylinder 6 Fuel Injector -N84-
 - Removing and installing, refer to **FUEL INJECTORS**
4. Reduced Oil Pressure Switch -F378-
 - Component location, refer to **Fig. 19**
 5. Control Valve Control Unit -J808-
 - Component location, refer to **Fig. 14**
 - Removing and installing, refer to **Control Valve Control Unit -J808-**

-- After replacing the control valve control unit perform an **Adaptation** in **Guided Functions** using the vehicle diagnostic tester.
 6. Secondary Air Injection (AIR) Solenoid Valve -N112-
 - Component location, refer to **Fig. 10**
 7. Intake Air Temperature (IAT) Sensor -G42- /Manifold Absolute Pressure (MAP) Sensor -G71-
 - Component location, refer to **Fig. 11**
 8. Intake Manifold Runner (IMR) Control Valve -N316-
 - Component location, refer to **Fig. 10**
 9. Evaporative Emission (EVAP) Canister Purge Regulator Valve 1 -N80-
 10. Secondary Air Injection (AIR) Solenoid Valve 2 -N320-
 - Component location, refer to **Fig. 10**
 11. Oil Pressure Switch -F22-
 - Component location, refer to **Fig. 8**
 12. Engine Speed (RPM) Sensor -G28-
 - 9 Nm
 - Component location, refer to **Fig. 24**
 - Removing and installing, refer to **Engine Speed Sensor -G28-**
 13. Oxygen Sensor 2 after Catalytic Converter -G131- with Heater for Oxygen Sensor 2 after Catalytic Converter -Z30-
 - 55 Nm
 - Component location, refer to **Fig. 30**
 - Connector location, refer to **Fig. 28**
 - Removing and installing, refer to **Oxygen Sensor 2 after Catalytic Converter -G131-**
 14. Camshaft Adjustment Valve 2 -N208-

Component location, refer to **Fig. 16**
 15. Heated Oxygen Sensor 2 -G108- with Oxygen Sensor 2 Heater -Z28-
 - 55 Nm
 - Component location, refer to **Fig. 30**

- Connector location, refer to **Fig. 28**
 - Removing and installing, refer to **Heated Oxygen Sensor 2 -G108-**
16. Engine Control Module (ECM) -J623-
- Component location, refer to **Fig. 5**
 - Removing and installing, refer to **Engine Control Module -J623-**
- After replacing, perform an **Adaptation** in **Guided Functions** using the vehicle diagnostic tester.
17. Ignition Coils, Cylinder Bank 2
- Ignition Coil 4 with Power Output Stage -N292-
 - Ignition Coil 5 with Power Output Stage -N323-
 - Ignition Coil 6 with Power Output Stage -N324-
 - Removing and installing, refer to **IGNITION COILS**
18. Oil Pressure Regulation Valve -N428-
- Component location, refer to **Fig. 20**
19. After-Run Coolant Pump -V51-
- Not installed in all versions
 - Component location, refer to **Fig. 32**
20. Intake Air Temperature (IAT) Temperature Sensor 2 -G430- /Charge Air Pressure Sensor 2 -G447-
- Component location, refer to **Fig. 25**
21. Camshaft Position (CMP) Sensor 2 -G163-
- Component location, refer to **Fig. 16**
22. Intake Manifold Runner (IMR) Position Sensor 2 -G512-
- Component location, refer to **Fig. 21**
 - After replacing, perform an **Adaptation** in **Guided Functions** using the vehicle diagnostic tester.
23. Engine Coolant Temperature (ECT) Sensor -G62-
- Component location, refer to **Fig. 22**

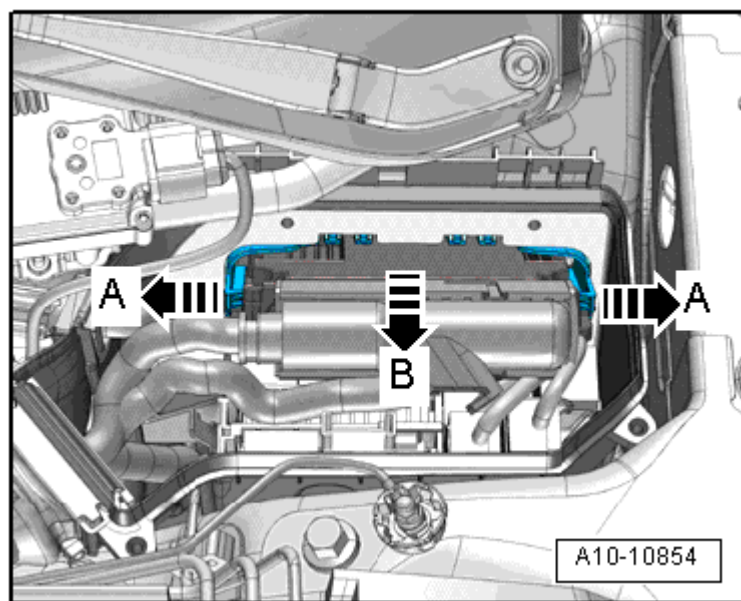


Fig. 5: Identifying Engine Control Module (ECM)
Courtesy of AUDI OF AMERICA, LLC

- in the left E-box in the engine compartment.

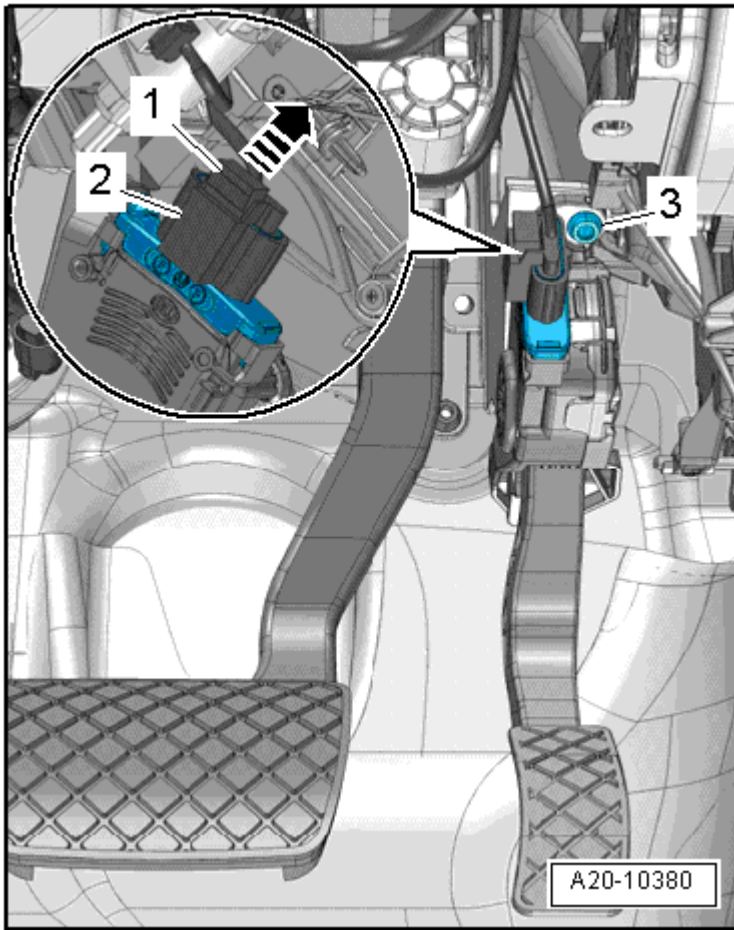


Fig. 6: Locating Accelerator Pedal Position Sensor -G79- /Accelerator Pedal Position Sensor 2 -G185-
Courtesy of AUDI OF AMERICA, LLC

2) - Connector

NOTE: The accelerator pedal position sensor and accelerator pedal position sensor 2 are integrated in the gas pedal module and cannot be replaced individually.

Removing and installing, refer to **Removal and Installation** .

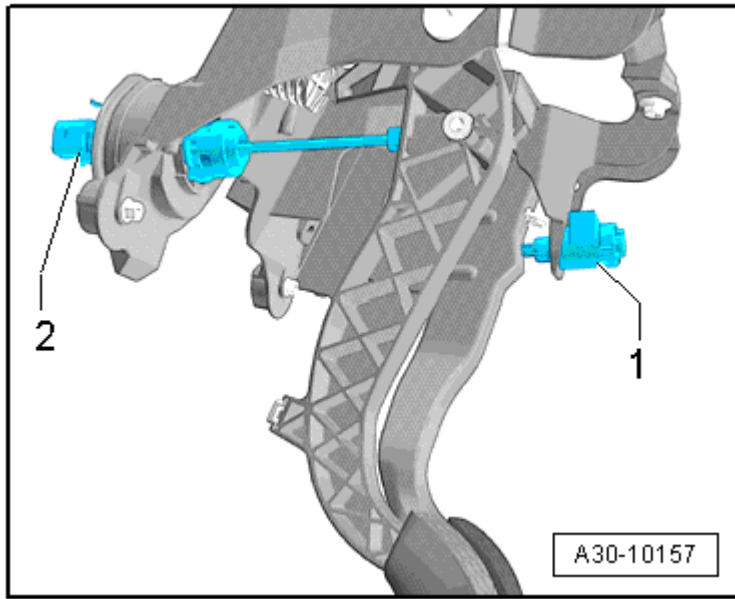


Fig. 7: Locating Pedal Bracket Components
Courtesy of AUDI OF AMERICA, LLC

1) - Brake lamp switch -F- /brake pedal switch -F47-

2) - Clutch position sensor -G476- integrated functionality: clutch pedal starter interlock switch -F194- and clutch pedal switch -F36-

NOTE: To ensure that they are absolutely securely seated, the switches may only be installed once.

Removing and installing, refer to **Removal and Installation** .

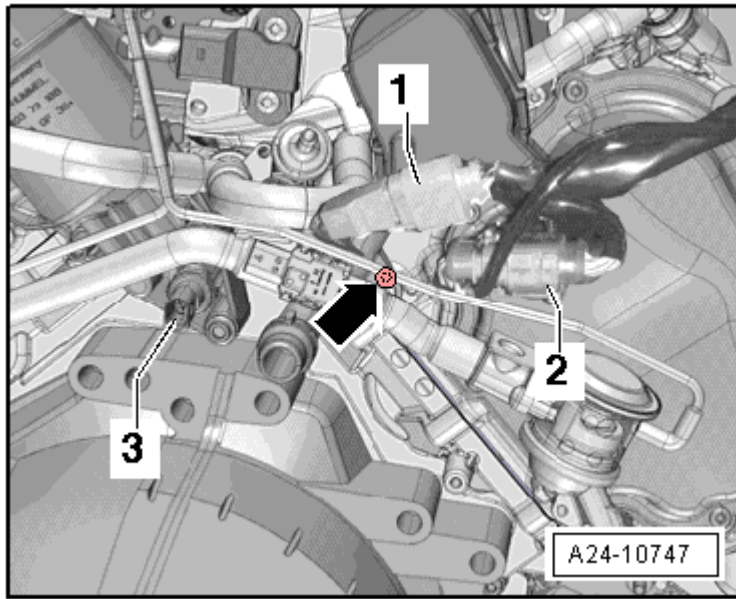


Fig. 8: Locating Components On Engine
Courtesy of AUDI OF AMERICA, LLC

1. To Knock Sensor (KS) 1 -G61-
2. To the fuel injectors, cylinder bank 1
3. Oil pressure switch -F22-

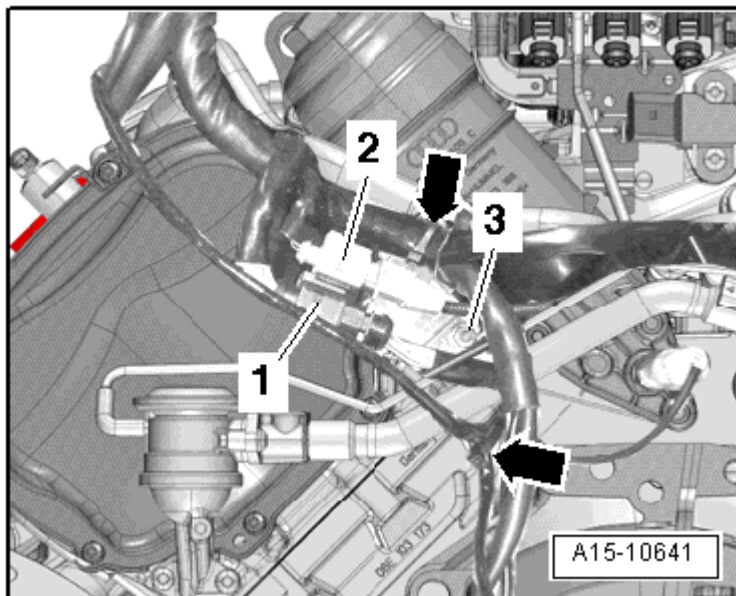


Fig. 9: Identifying Electrical Connectors On Left Rear Of Engine
Courtesy of AUDI OF AMERICA, LLC

1. To cylinder bank 2 fuel injectors and to fuel pressure sensor -G247-
2. To Knock Sensor (KS) 2 -G66-

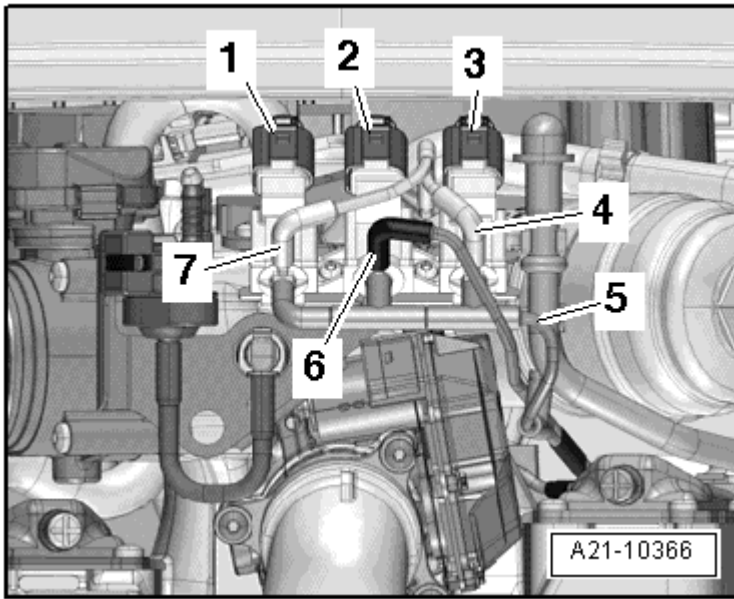


Fig. 10: Locating Secondary Air Injection Solenoid Valve And Intake Manifold Runner Control (IMRC) Valve -N316-

Courtesy of AUDI OF AMERICA, LLC

1. Secondary Air Injection (AIR) solenoid valve -N112-
 2. Intake Manifold Runner (IMR) control valve -N316-
 3. Secondary Air Injection (AIR) solenoid valve 2 -N320-
- Behind, on the supercharger with the charge air cooler.

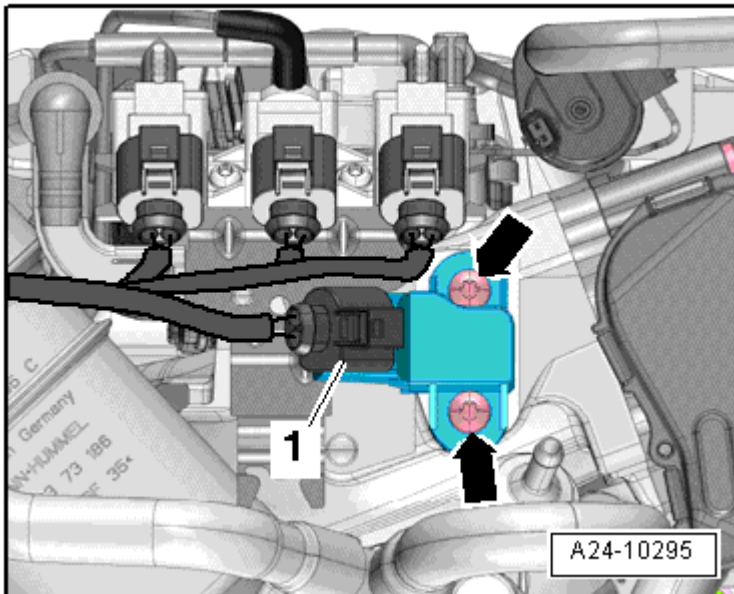


Fig. 11: Identifying Connector -1- & Intake Air Temperature Sensor/Manifold Absolute Pressure Sensor Bolts

Courtesy of AUDI OF AMERICA, LLC

1. Intake Air Temperature (IAT) sensor -G42- /Manifold Absolute Pressure (MAP) sensor -G71-
 - Behind, on the supercharger with the charge air cooler.

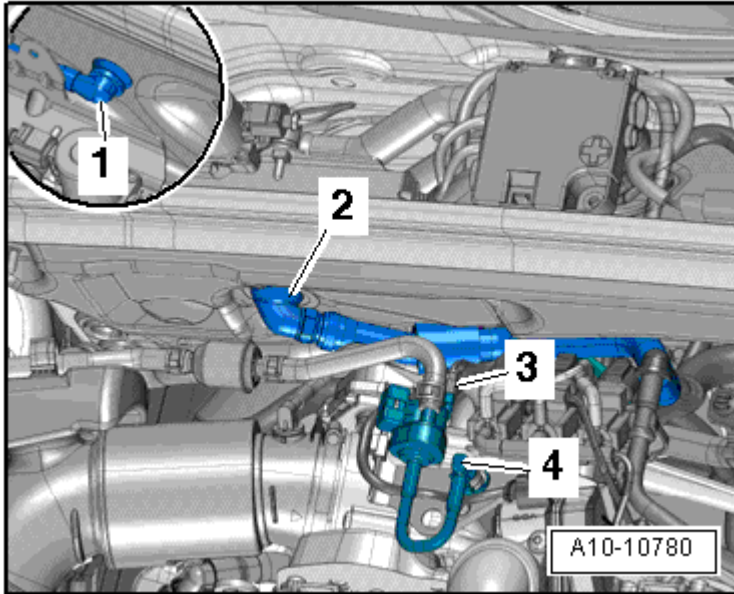


Fig. 12: Identifying Evaporative Emission (EVAP) Canister Purge Regulator Valve 1 -N80- -3- Connector
Courtesy of AUDI OF AMERICA, LLC

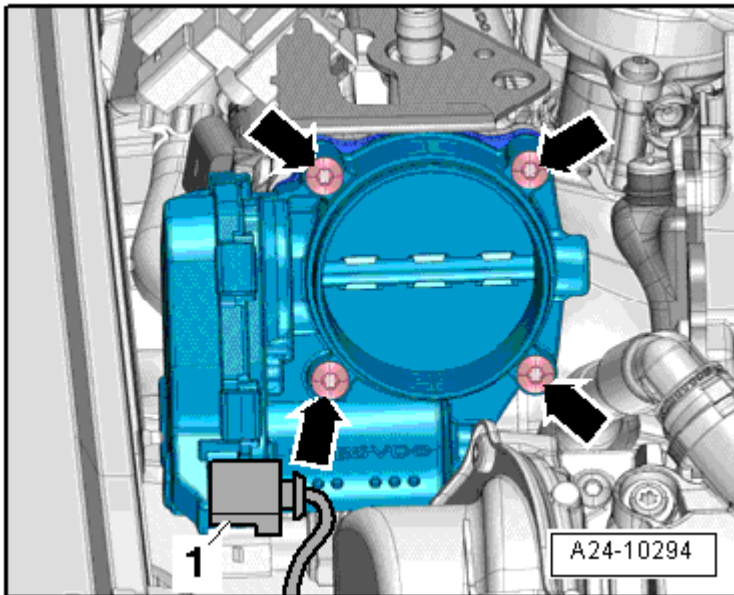


Fig. 13: Locating Throttle Valve Control Module -J338-
Courtesy of AUDI OF AMERICA, LLC

- Behind the supercharger.

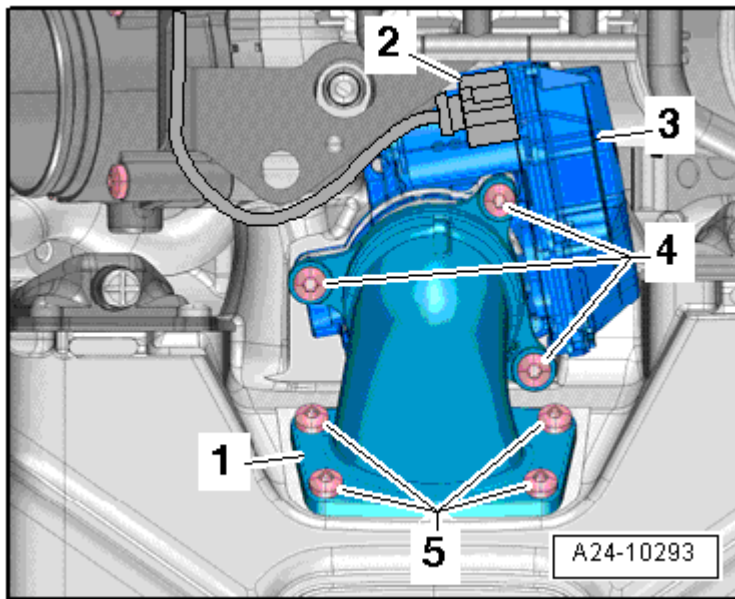


Fig. 14: Locating Control Valve Control Unit -J808-
Courtesy of AUDI OF AMERICA, LLC

- 3) - Control valve control unit
- Behind the supercharger.

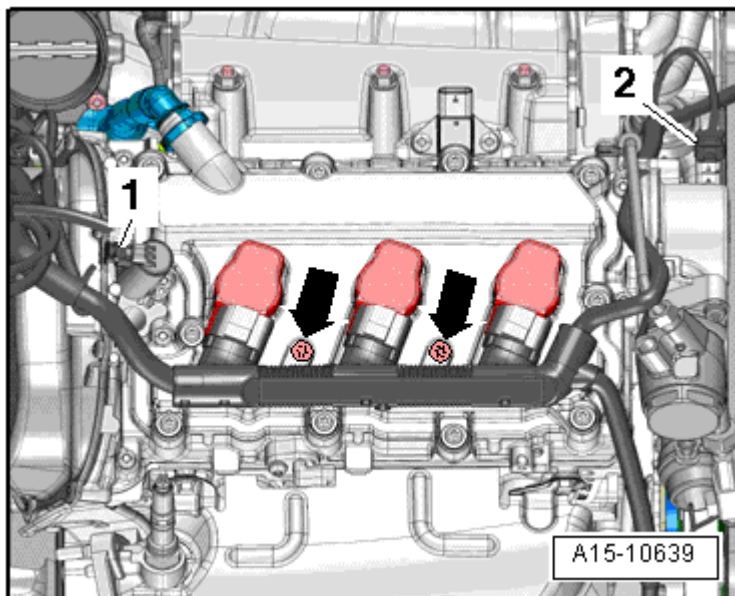


Fig. 15: Identifying Camshaft Position Sensor And Exhaust Camshaft Control Valve Cylinder Bank 1 (Right)

Courtesy of AUDI OF AMERICA, LLC

1. Camshaft adjustment valve 1 -N205-

2. Camshaft Position (CMP) sensor -G40-

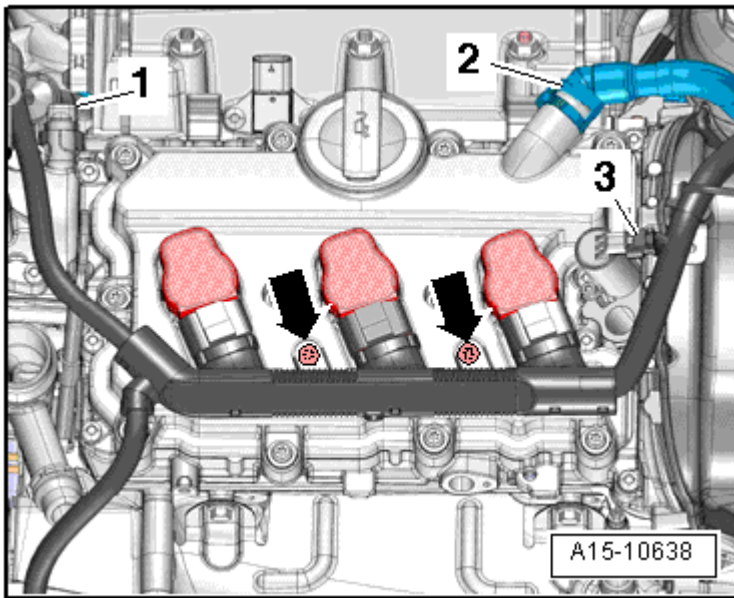


Fig. 16: Identifying CMP Sensor And Exhaust Camshaft Control Valve Cylinder Bank 2 (Left)
Courtesy of AUDI OF AMERICA, LLC

1) - Camshaft Position (CMP) sensor 2 -G163-

3) - Camshaft adjustment valve 2 -N208-

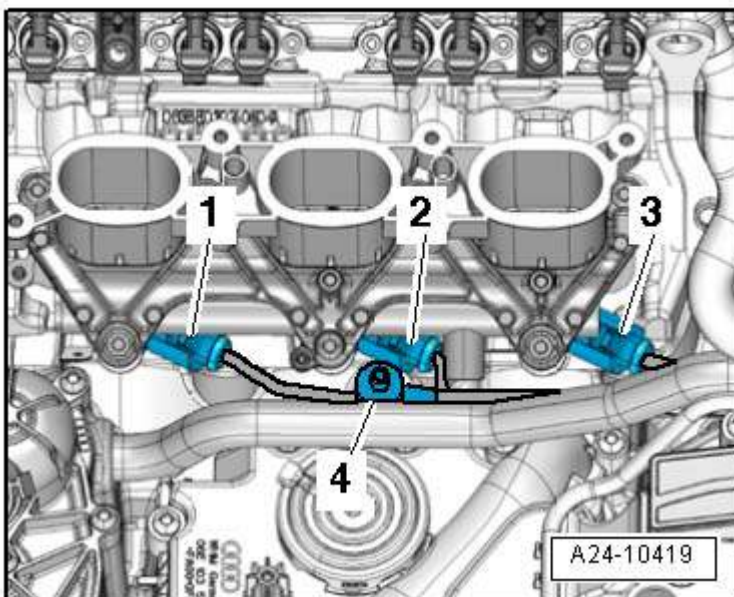


Fig. 17: Locating Components Under Intake Manifold Lower Section, Cylinder Bank 1 (Right)
Courtesy of AUDI OF AMERICA, LLC

1. Cylinder 1 fuel injector -N30-
2. Cylinder 2 fuel injector -N31-
3. Cylinder 3 fuel injector -N32-
4. Knock sensor 1 -G61-

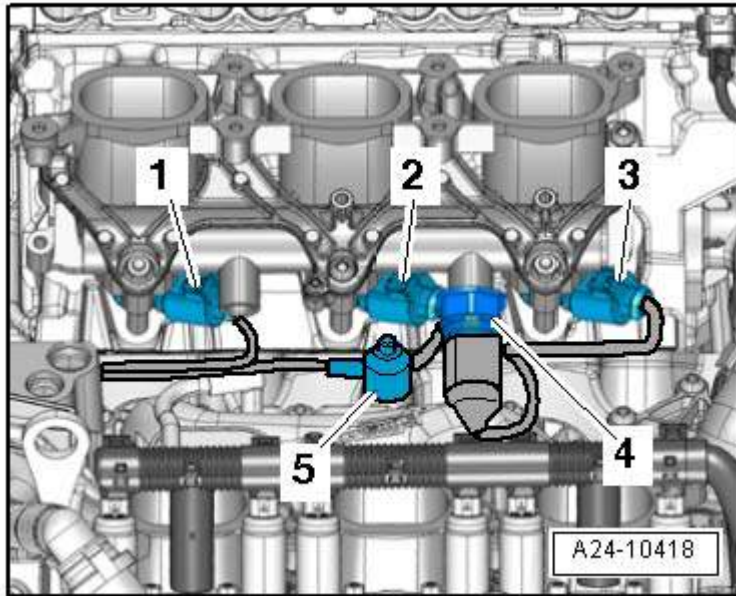


Fig. 18: Locating Components Under Intake Manifold Lower Section, Cylinder Bank 2 (Left)
Courtesy of AUDI OF AMERICA, LLC

1. Cylinder 6 fuel injector -N84-
2. Cylinder 5 fuel injector -N83-
3. Cylinder 4 fuel injector -N33-
4. Fuel pressure sensor -G247-
5. Knock Sensor (KS) 2 -G66-

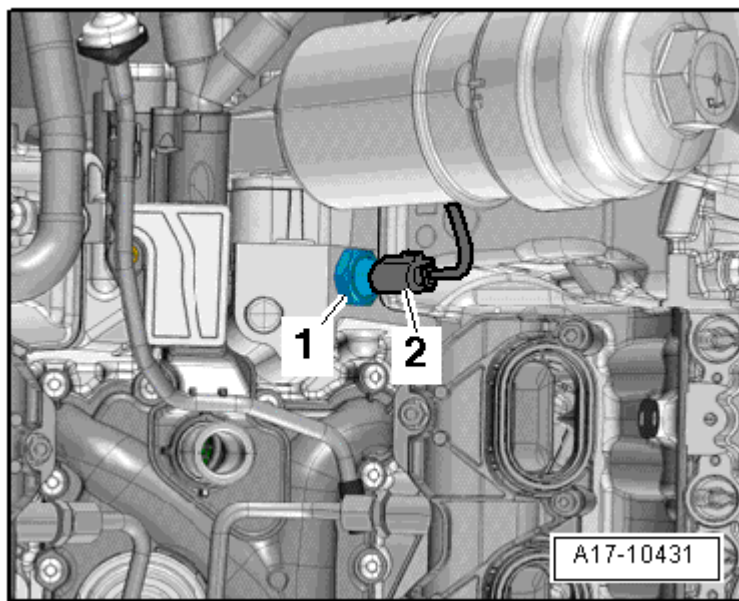


Fig. 19: Identifying Reduced Oil Pressure Switch -F378-
Courtesy of AUDI OF AMERICA, LLC

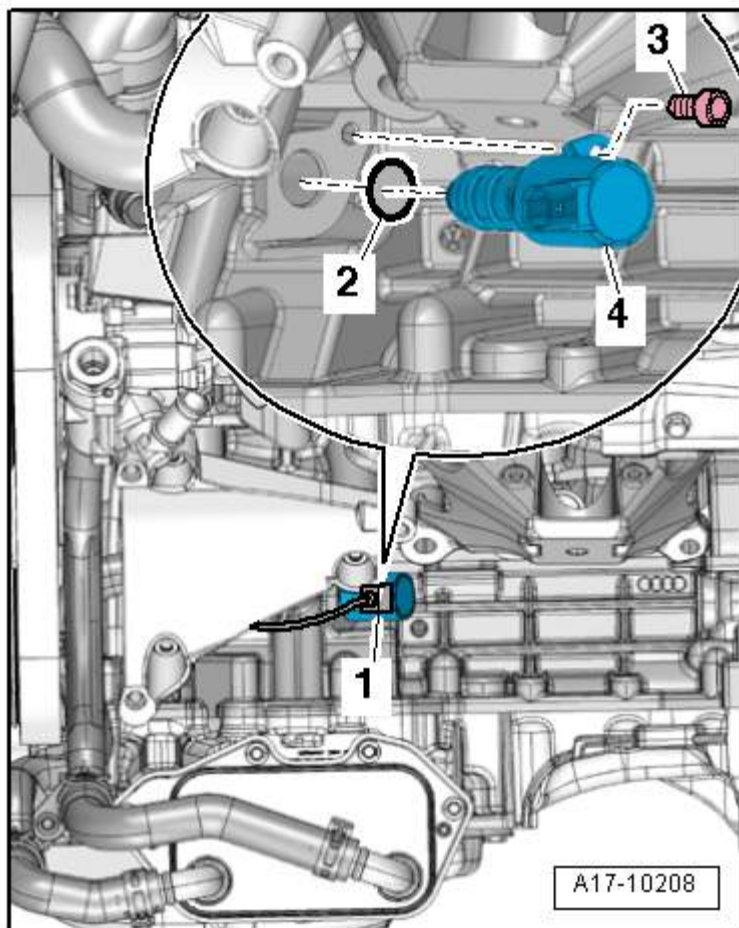


Fig. 20: Identifying Oil Pressure Regulation Valve -N428-
Courtesy of AUDI OF AMERICA, LLC

4) - Oil pressure regulation valve -N428-

- Left side, underneath on the engine.

Removing and installing, refer to **Removal and Installation** .

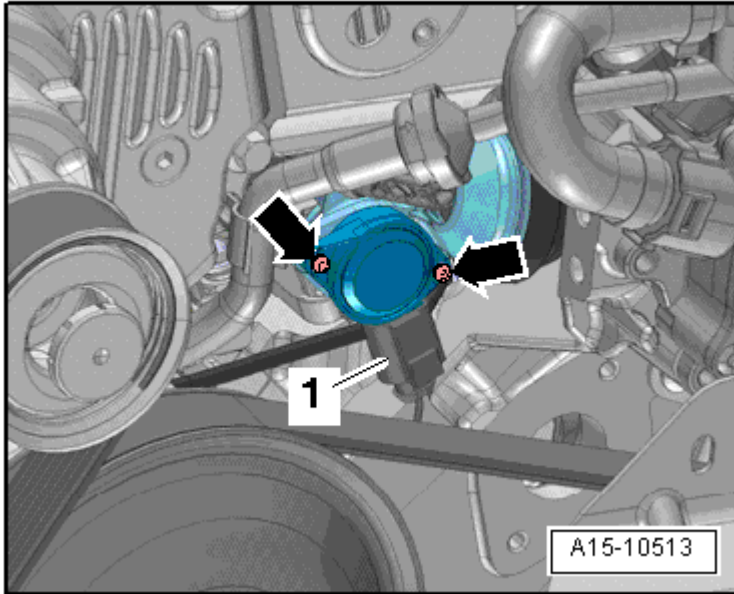


Fig. 21: Identifying Intake Manifold Runner Position Sensor -G336-
Courtesy of AUDI OF AMERICA, LLC

- At the front on the left lower section of the intake manifold.

NOTE: The intake manifold runner position sensor -G336- is installed as a mirror image.

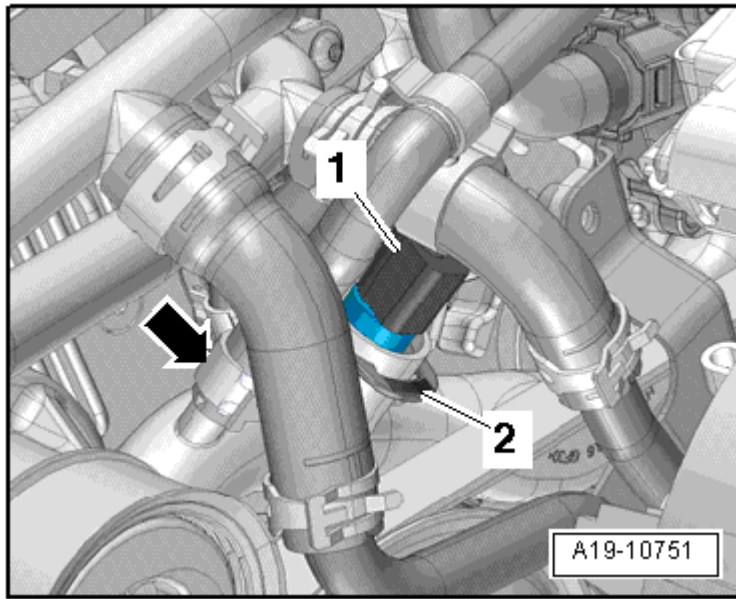


Fig. 22: Identifying Engine Coolant Temperature (ECT) Sensor -G62- And Clip
Courtesy of AUDI OF AMERICA, LLC

1. ECT sensor
 - At front on engine.

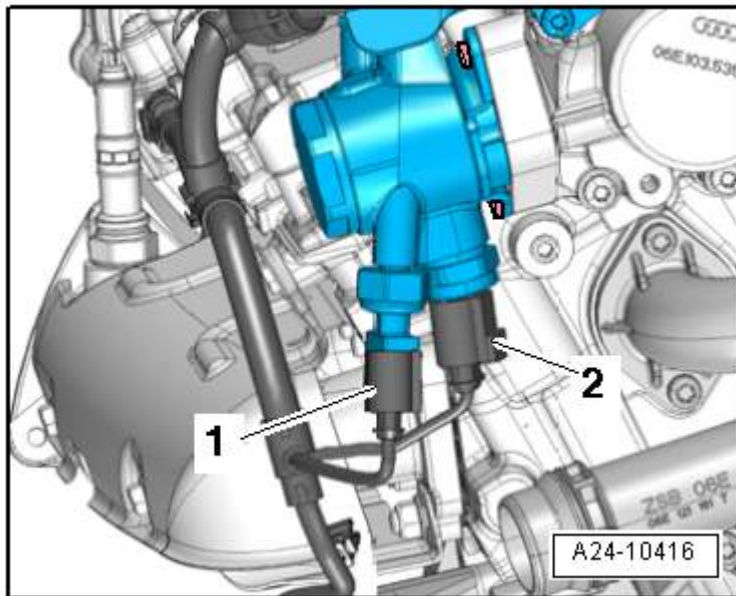


Fig. 23: Locating High Pressure Pump Components
Courtesy of AUDI OF AMERICA, LLC

1. Low fuel pressure sensor -G410-
2. Fuel metering valve -N290-

- At right side of the cylinder head

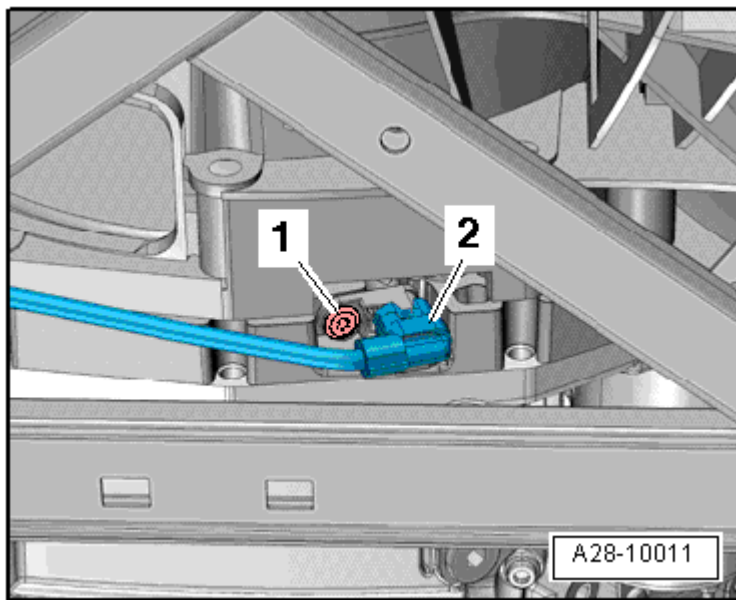


Fig. 24: Locating Engine Speed (RPM) Sensor -G28-
Courtesy of AUDI OF AMERICA, LLC

- installed in the transmission housing from behind

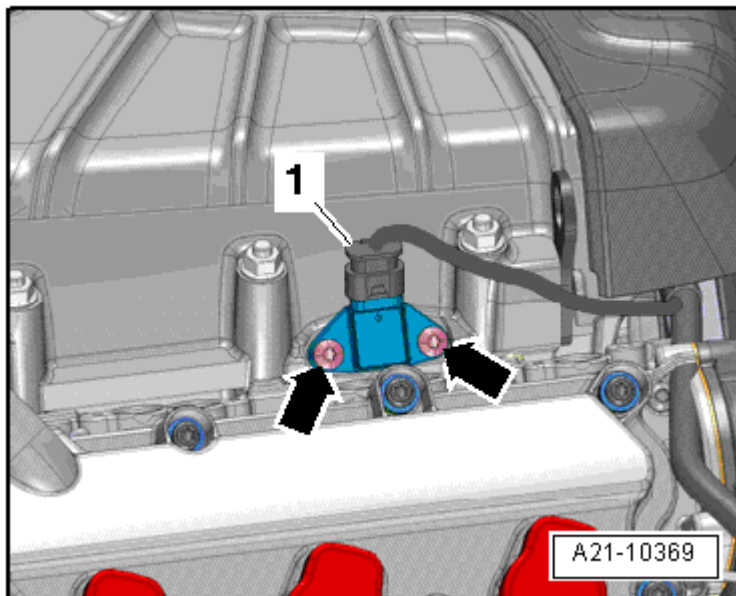


Fig. 25: Locating Charge Air Pressure Sensor -G31- /Intake Manifold Temperature Sensor -G72-
Courtesy of AUDI OF AMERICA, LLC

- On the right side, on the supercharger with the charge air cooler.

NOTE: The intake air temperature sensor 2 -G430- / charge air pressure sensor 2 - G447- are arranged as mirror image of each other.

Removing and installing, refer to Removal and Installation .

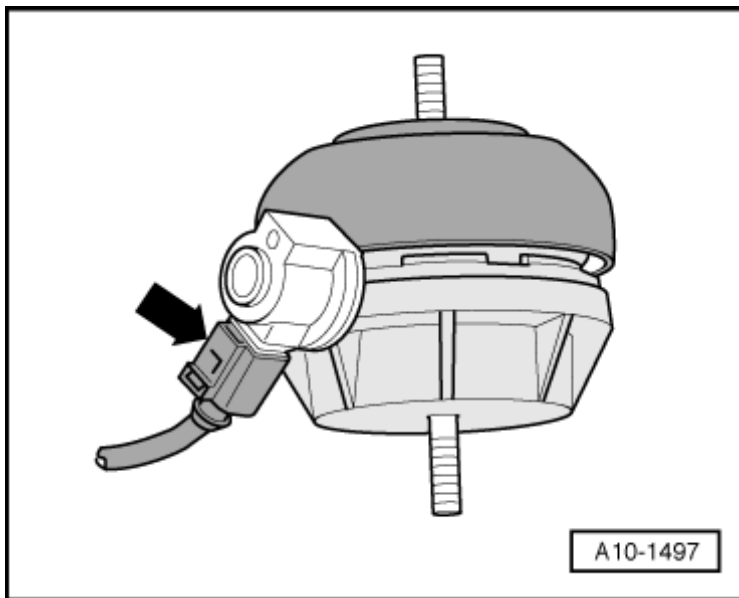


Fig. 26: Locating Leak Detection Pump (LDP) N144 Or Right Electro-Hydraulic Engine Mount Solenoid Valve N145

Courtesy of AUDI OF AMERICA, LLC

- On the left and right engine mounts -arrow-.

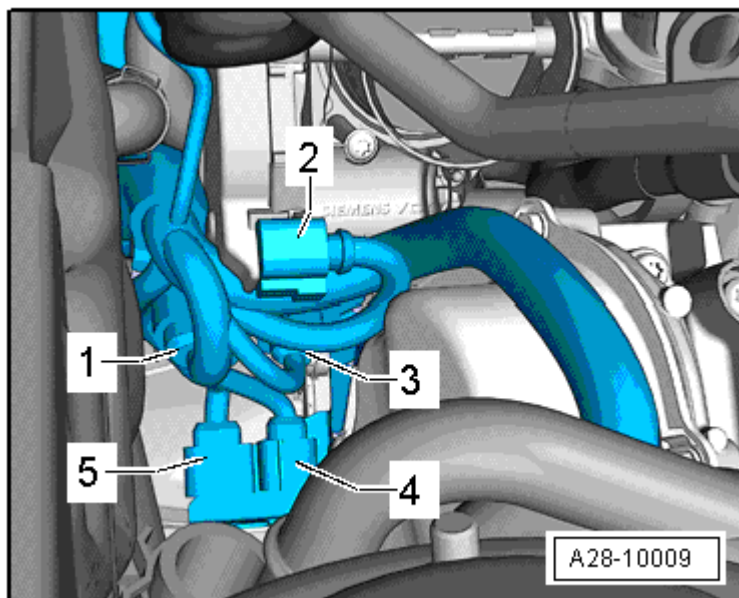


Fig. 27: Identifying Oxygen Sensor Electrical Connectors On Cylinder Bank 1 (Right)

Courtesy of AUDI OF AMERICA, LLC

1. For the fuel injectors (cylinder bank 1)
2. Throttle valve control module -J338-
3. KS 1 -G61-
4. For the Heated Oxygen Sensor (HO2S) -G39- with Oxygen Sensor (O2S) Heater -Z19-
5. For oxygen sensor after three way catalytic converter -G130- with heater for oxygen sensor 1 after catalytic converter -Z29-

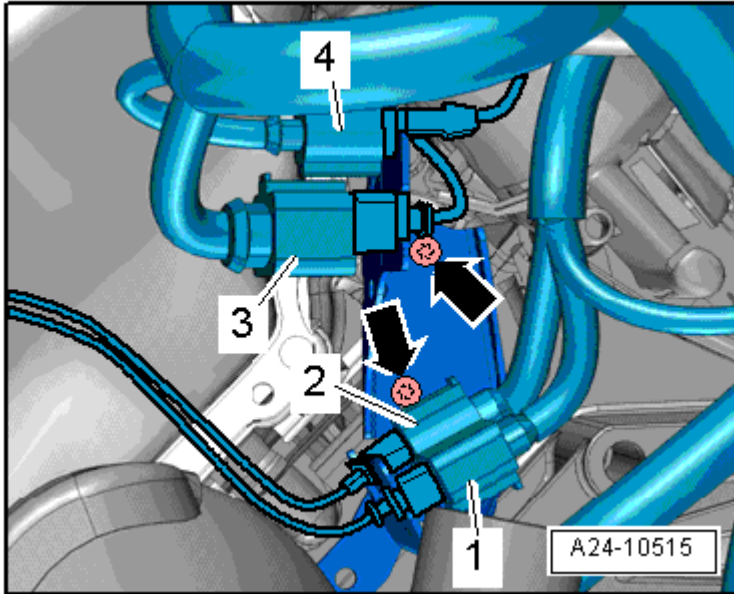


Fig. 28: Identifying Connector Bracket
Courtesy of AUDI OF AMERICA, LLC

1. For Oxygen Sensor (O2S) 2 after catalytic converter -G131- with heater for O2S 2 after catalytic converter -Z30-
2. For the Heated Oxygen Sensor (HO2S) 2 -G108- with O2S 2 heater -Z28-
3. For the fuel injectors (cylinder bank 2) and for the fuel pressure sensor -G247-
4. For knock sensor 2 -G66-

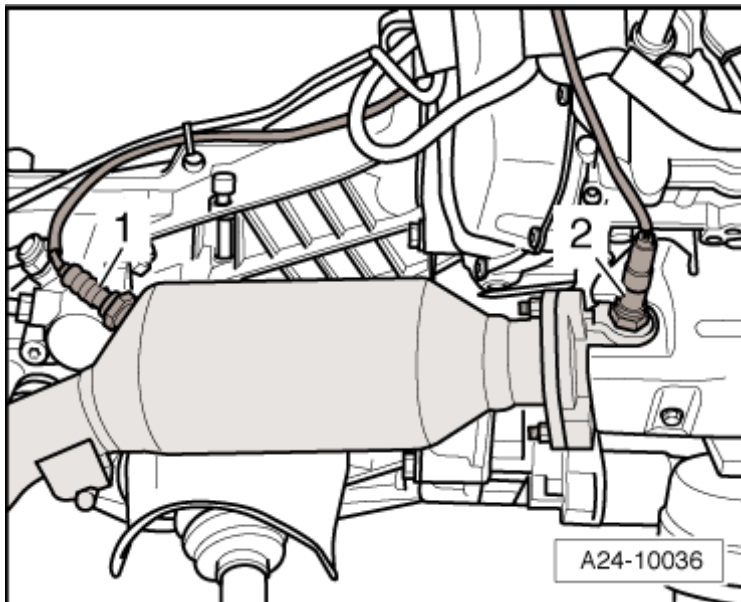


Fig. 29: Identifying Oxygen Sensors Location, Cylinder Bank 1 (Right)
Courtesy of AUDI OF AMERICA, LLC

1. Oxygen Sensor (O2S) after three way catalytic converter -G130- with heater for O2S 1 after catalytic converter -Z29-
2. Heated Oxygen Sensor (HO2S) -G39- with Oxygen Sensor (O2S) Heater -Z19-

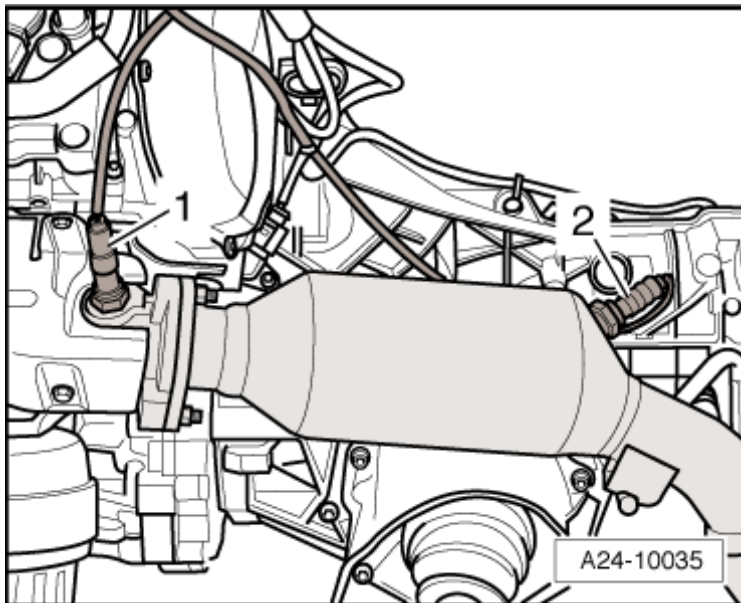


Fig. 30: Using Ring Spanner Set 3337 To Remove Oxygen Sensor
Courtesy of AUDI OF AMERICA, LLC

1. Heated oxygen sensor 2 -G108- with oxygen sensor 2 heater -Z28-
2. O2S 2 after catalytic converter -G131- with heater for O2S 2 after catalytic converter -Z30-

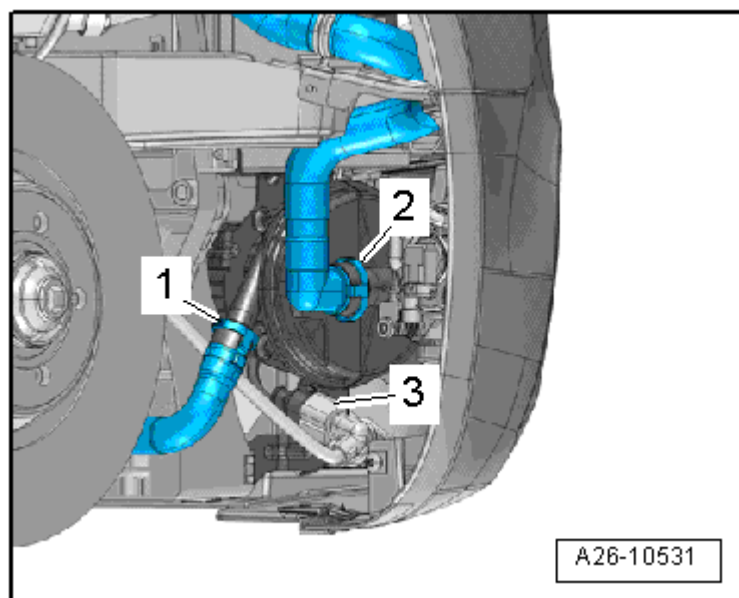


Fig. 31: Locating Secondary Air Injection (AIR) Pump Motor -V101-
Courtesy of AUDI OF AMERICA, LLC

- Under the right headlamp.

Removing and Installing, refer to **Removal and Installation** .

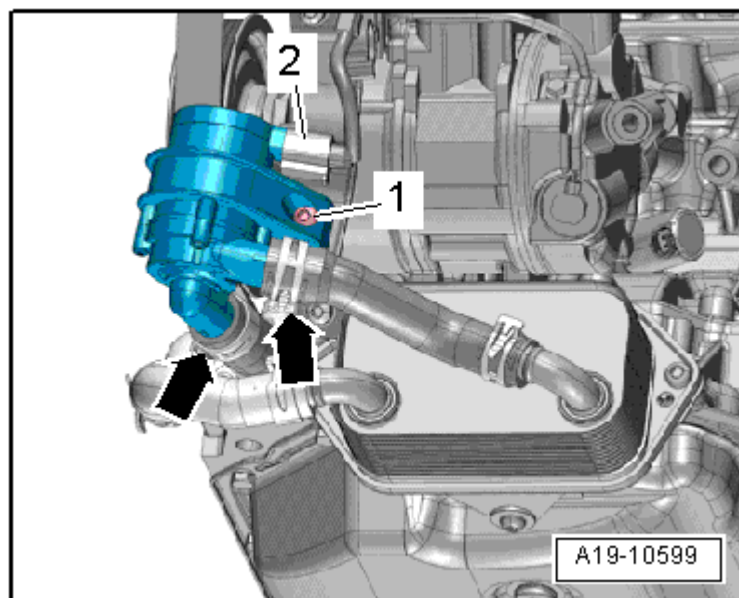


Fig. 32: Locating After-Run Coolant Pump -V51-
Courtesy of AUDI OF AMERICA, LLC

- Left side, at the front, on the engine

NOTE: Not all versions have an after-run coolant Pump. It is only for extreme hot climate countries.

Removing and installing, refer to Removal and Installation .

HIGH PRESSURE PUMP OVERVIEW

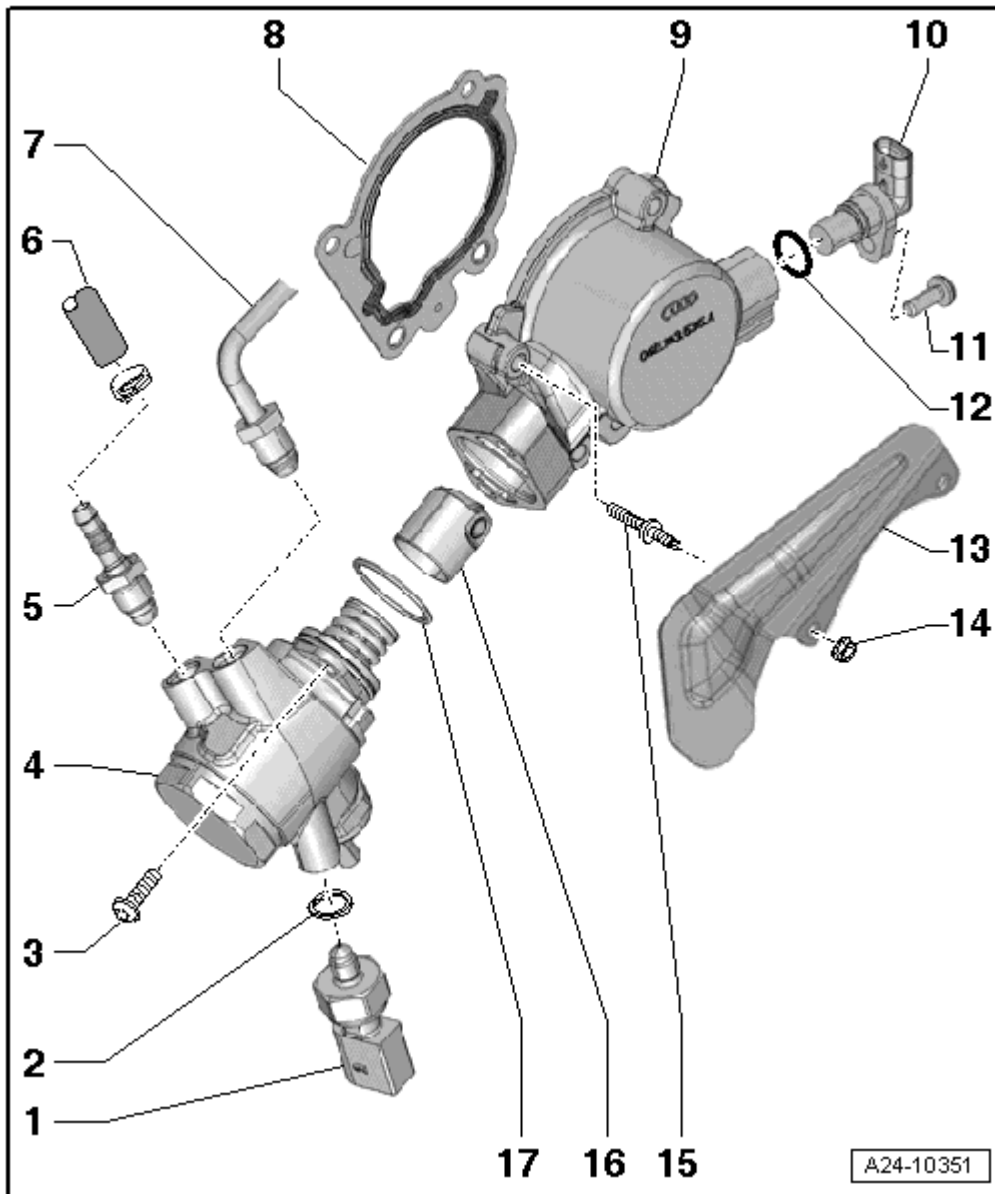


Fig. 33: Identifying High Pressure Pump Overview
Courtesy of AUDI OF AMERICA, LLC

1. Low Fuel Pressure Sensor -G410-
 - 15 Nm
2. Seal

- Replace
3. Bolt
 - Tighten by hand in a diagonal sequence and then tighten to 5 Nm
 - Final tightening specification: 20 Nm
 - Do not tilt the high pressure Pump
 4. High Pressure Pump
 - With fuel metering valve -N290-
 - Removing and installing, refer to **HIGH PRESSURE Pump**
 - Do not disassemble
 5. Threaded Connection
 - 27 Nm
 - Connectors should not show any signs of damage
 6. Fuel Supply Hose
 - Low pressure side
 7. High Pressure Fuel Line
 - 27 Nm

WARNING: Do not let fuel come into contact with skin.

- **The fuel pressure must be reduced to residual pressure before opening the high pressure area of the fuel injection system. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.**
- Reduce the fuel pressure in the high pressure area, refer to **RELEASING PRESSURE IN HIGH PRESSURE AREA.**
 - Removing and installing, refer to **HIGH PRESSURE LINE.**
8. Gasket
 - Replace
 9. Housing
 10. Camshaft Position (CMP) Sensor -G40-
 - Removing and installing, refer to **Camshaft Position Sensor -G40- / Camshaft Position Sensor 2 -G163-**
 11. Bolt
 - 9 Nm
 12. O-ring
 - Replace
 - Lubricate O-rings with clean engine oil before installing
 13. Protective Plate
 - For high pressure line

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14. Nut
 - 9 Nm
15. Double Bolt
 - 9 Nm
16. Roller Tappet
 - Can be installed in one position only
 - Lubricate O-rings with clean engine oil before installing
17. O-ring
 - Replace
 - Lubricate O-rings with clean engine oil before installing

LOWER INTAKE MANIFOLD SECTION OVERVIEW

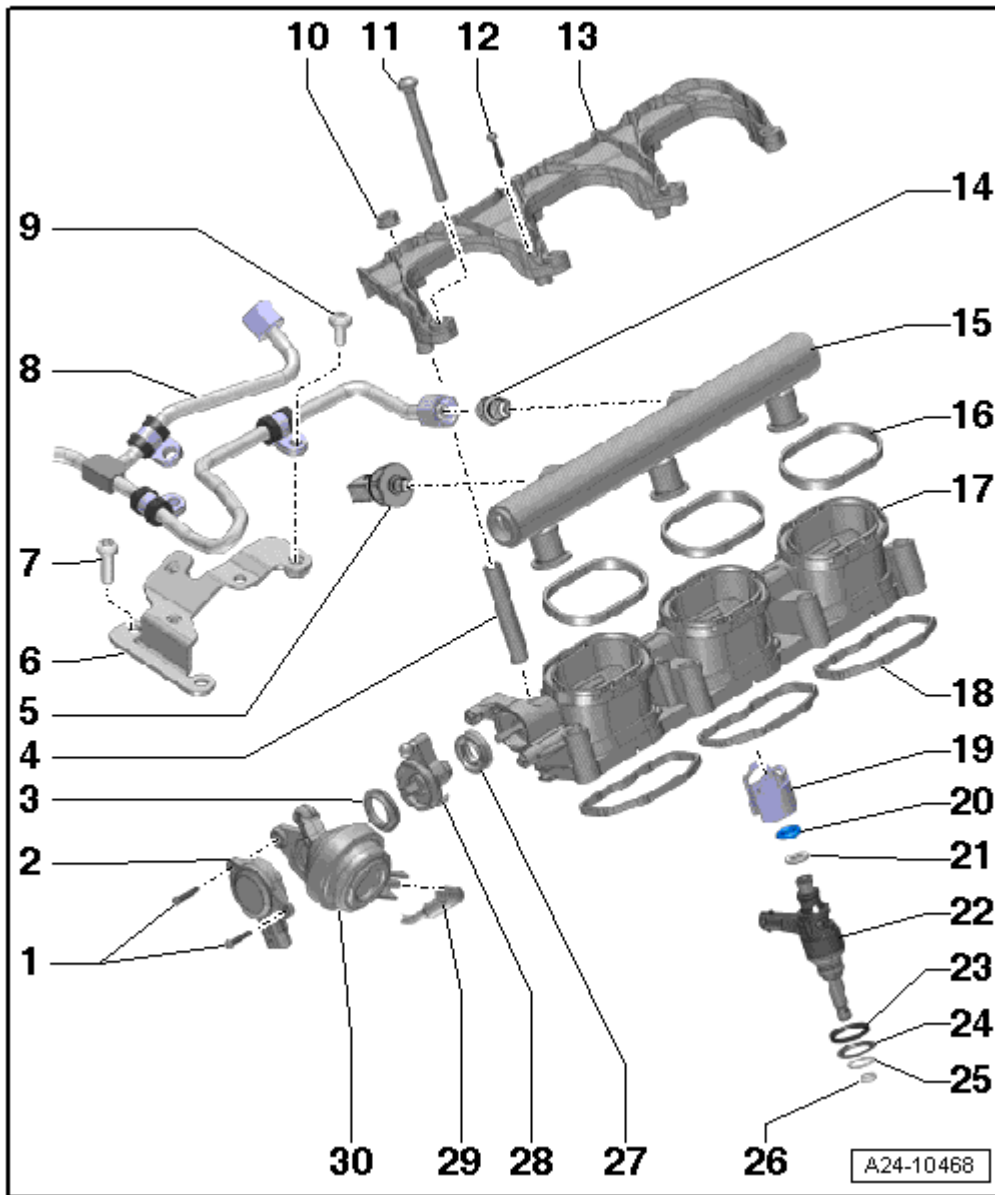


Fig. 34: Identifying Lower Intake Manifold Section Overview

Courtesy of AUDI OF AMERICA, LLC

1. Bolts
 - 2.5 Nm
2. Intake Manifold Runner (IMR) Position Sensor
 - Left intake manifold runner position sensor 2 -G512-, right intake manifold runner position sensor - G336-
3. Seal
 - Replace if damaged
 - Lift out with screwdriver to replace
 - Press in by hand

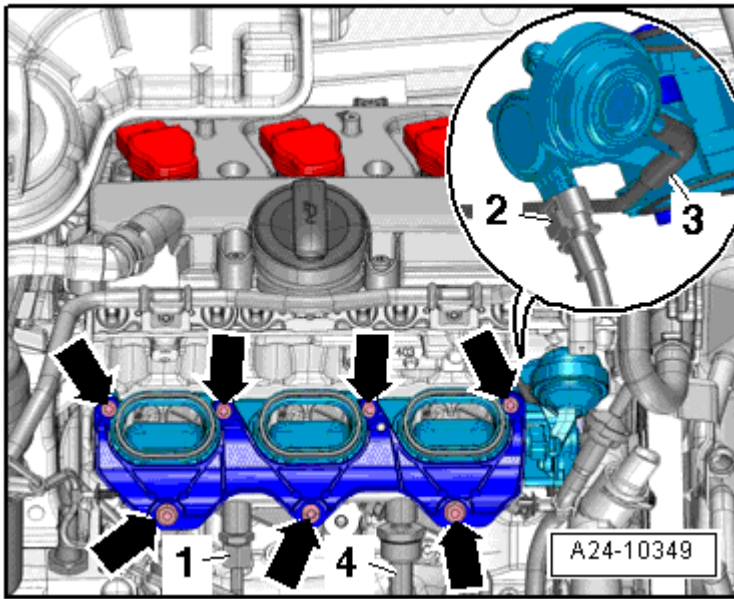
4. Sleeve
5. Fuel Pressure Sensor -G247-
 - 22 Nm
 - Oil the threads
6. Bracket
7. Bolt
 - 9 Nm
8. High-Pressure Lines
 - 27 Nm

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

- The fuel pressure must be reduced to residual pressure before opening the high pressure area of the fuel injection system. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

- Reduce the fuel pressure in the high pressure area, refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.
 - Connectors should not show any signs of damage
 - Do not change the shape of the line
 - Removing and installing, refer to HIGH PRESSURE LINE
 - Counter hold the connecting pieces when loosening and tightening fuel line
 - Tighten fuel line connecting pieces before installing the fuel line
9. Bolt
 - 9 Nm
 10. Nut
 - 9 Nm
 11. Bolt
 - 9 Nm
 12. Bolt
 - 2.5 Nm
 13. Fuel Rail Retaining Bracket
 14. Threaded Connection
 - 40 Nm
 15. Fuel Rail
 16. Gasket
 - Replace
 17. Intake Manifold Lower Section

- Removing and installing, refer to **INTAKE MANIFOLD LOWER SECTION, WITH FUEL RAIL**
 - The intake manifold flaps must be completely open when installing the intake manifold lower section
18. Gasket
 - Replace
 19. Support Ring
 - Make sure it fits correctly.
 - The fuel rail wields force via the support ring to hold the fuel injector tightly in the cylinder head.
 20. O-ring
 - Replace
 - Coat with clean engine oil
 21. Spacer Ring
 - Replace if damaged
 22. Fuel Injector
 - Removing and installing, refer to **FUEL INJECTORS**
 23. Upper Sealing Washer
 24. Lower Sealing Washer
 25. Locking Ring
 26. Combustion Chamber Seal
 - Removing and installing, refer to **FUEL INJECTORS**
 27. Seal
 - Replace if damaged
 - Lift out with screwdriver to replace
 - Press in by hand
 28. Actuator Lever
 - For the vacuum actuator
 29. Vacuum Hose
 - To Intake Manifold Runner Control (IMRC) valve -N316-
 30. Intake Manifold Runner Control Vacuum Actuator

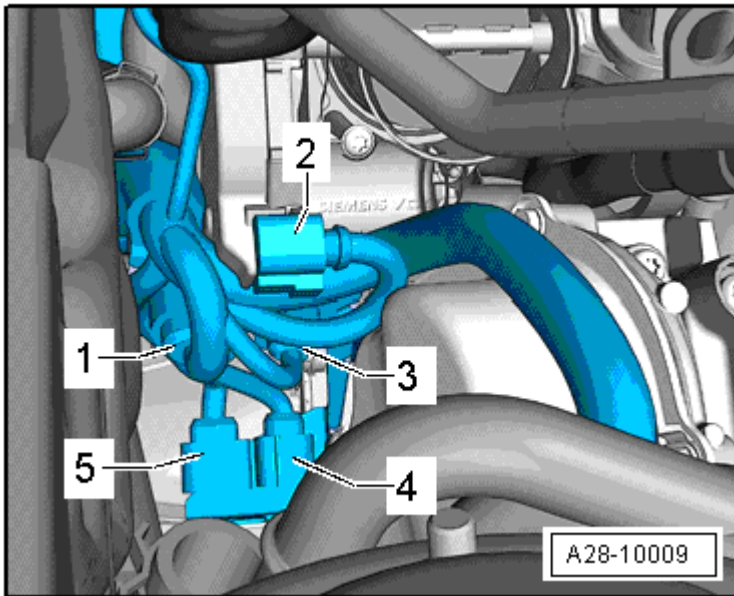


**Fig. 35: Locating Manifold Lower Section Bolts -Arrows-
Courtesy of AUDI OF AMERICA, LLC**

-- Tighten the bolts and nuts -arrows- in a diagonal sequence on the intake manifold lower section and in steps.

- 10 Nm

OXYGEN SENSORS OVERVIEW



**Fig. 36: Identifying Oxygen Sensor Electrical Connectors On Cylinder Bank 1 (Right)
Courtesy of AUDI OF AMERICA, LLC**

1. For the fuel injectors (cylinder bank 1)

2. Throttle valve control module -J338-
3. Knock Sensor (KS) 1 -G61-
4. For the Heated Oxygen Sensor (HO2S) -G39- with Oxygen Sensor (O2S) heater -Z19-
5. For O2S after three way catalytic converter -G130- with heater for O2S 1 after catalytic converter -Z29-

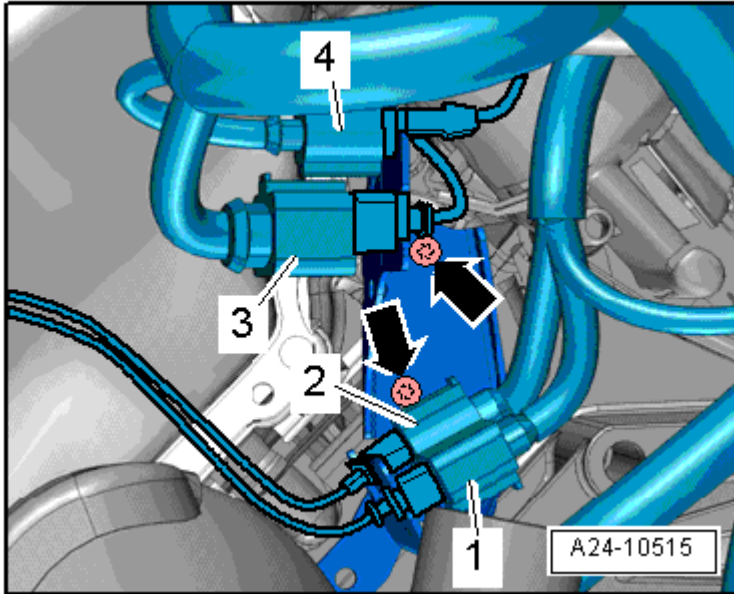


Fig. 37: Identifying Connector Bracket
Courtesy of AUDI OF AMERICA, LLC

1. For Oxygen Sensor (O2S) 2 after Three Way Catalytic Converter (TWC) -G131- with heater for oxygen sensor 2 after catalytic converter -Z30-
2. For the Heated Oxygen Sensor (HO2S) 2 -G108- with oxygen sensor 2 heater -Z28-
3. For the fuel injectors (cylinder bank 2) and fuel pressure sensor -G247-
4. For Knock Sensor (KS) 2 -G66-

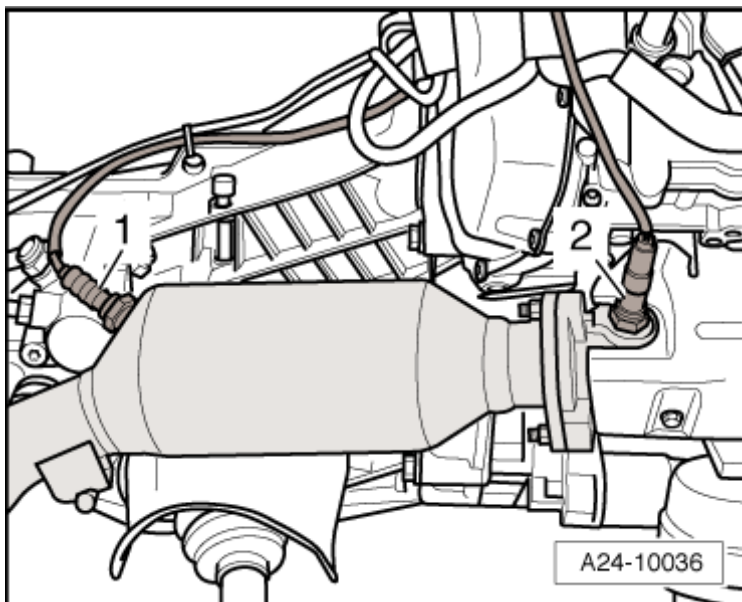


Fig. 38: Identifying Oxygen Sensors Location, Cylinder Bank 1 (Right)
Courtesy of AUDI OF AMERICA, LLC

1. Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC) -G130- with heater for Oxygen Sensor (O2S) 1 after catalytic converter -Z29-
 2. Heated Oxygen Sensor (HO2S) -G39- with Oxygen Sensor (O2S) Heater -Z19-
- Tightening Specifications: 55 Nm

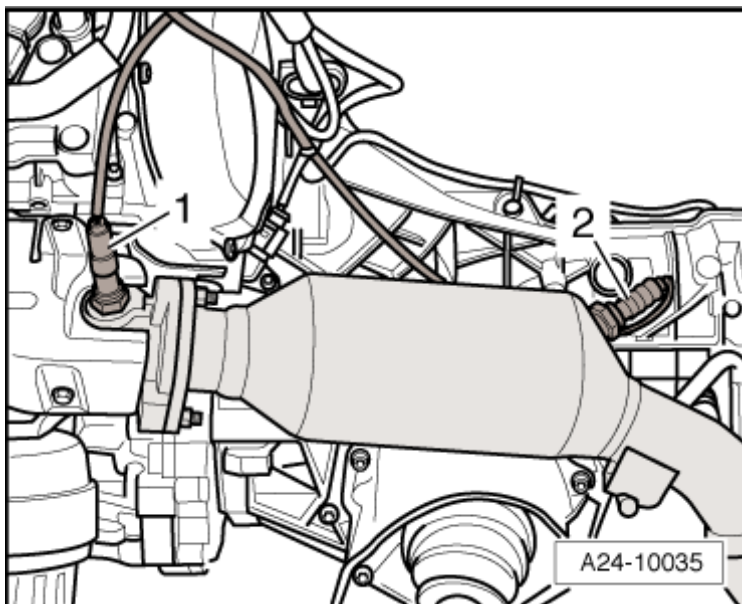


Fig. 39: Using Ring Spanner Set 3337 To Remove Oxygen Sensor
Courtesy of AUDI OF AMERICA, LLC

1. Heated oxygen sensor 2 -G108- with Oxygen Sensor (O2S) 2 heater -Z28-

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2. Oxygen Sensor (O2S) 2 after catalytic converter -G131- with heater for Oxygen Sensor (O2S) 2 after catalytic converter -Z30-

- Tightening Specifications: 55 Nm

NOTE:

- Coat new oxygen sensors with an assembly paste.
- When installing the previous oxygen sensor, coat the thread with hot bolt paste.
- Assembly paste or hot bolt paste must not enter the slots on the oxygen sensor body.
- Always install the oxygen sensor wire in the same location so it does not come into contact with the exhaust pipe.
- When installing, bring all cable ties back to the same positions.

Heated Oxygen Sensor (HO2S) -G39- and Oxygen Sensor (O2S) Heater -Z19-, removing and installing, refer to Heated Oxygen Sensor -G39-.

Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC) -G130- with heater for Oxygen Sensor (O2S) 1 after catalytic converter -Z29-, removing and installing, refer to Oxygen Sensor after Three Way Catalytic Converter -G130-.

Heated Oxygen Sensor (HO2S) 2 -G108- with Oxygen Sensor (O2S) 2 heater -Z28-, refer to Heated Oxygen Sensor 2 -G108-.

Oxygen Sensor (O2S) 2 after catalytic converter -G131- with heater for Oxygen Sensor (O2S) 2 after catalytic converter -Z30-, refer to Oxygen Sensor 2 after Catalytic Converter -G131-.

RELEASING PRESSURE IN HIGH PRESSURE AREA

CAUTION:

- The fuel injection system is separated into a high-pressure section (maximum approximately 120 bar) and a low-pressure section (approximately 6 bar).
- Before opening the high pressure area, fuel pressure must be reduced to a residual pressure of approximately 6 bar. The procedure for this is as follows.

High Fuel Pressure, Reducing

- Connect a vehicle diagnosis tester.
- Start engine and run at idle speed.
- Select "engine electronics" in OBD.
- Then select "Measured values".

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-- Select "Fuel pressure" from the list.

- Specified value: between 35 and 45 bar

-- Pry the cover -1- on the left and right of the instrument panel off, for example using the trim removal Wedge 3409 -arrow-.

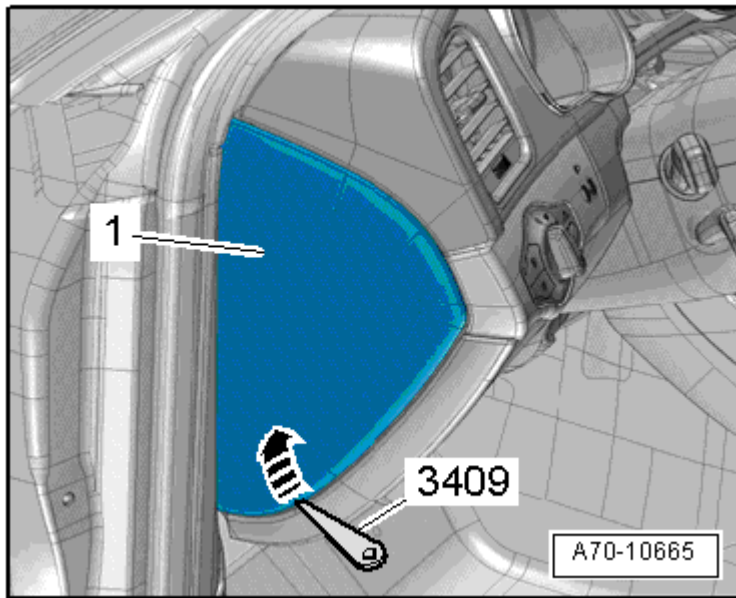


Fig. 40: Identifying Instrument Panel Cover, Removal
Courtesy of AUDI OF AMERICA, LLC

-- While the engine is idling, remove the fuse -in the fuse holder inside the instrument panel on the driver side- from the Fuel Pump (FP) control module -J538-. Refer to the appropriate SYSTEM WIRING DIAGRAMS information.

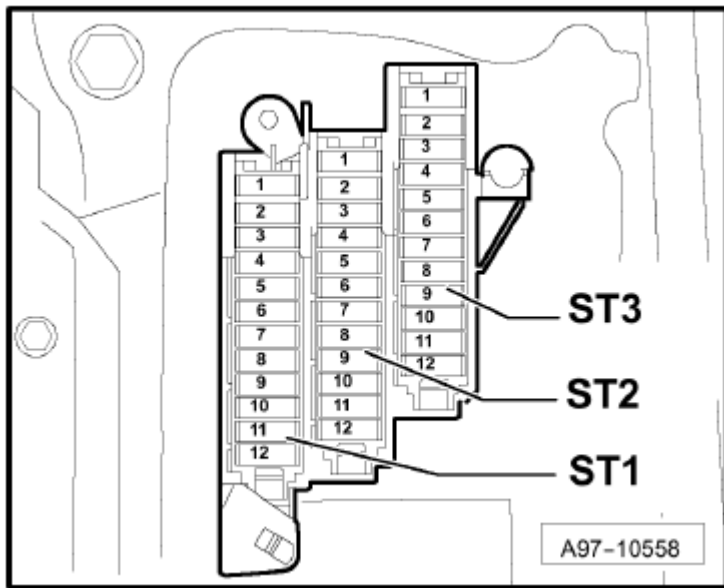


Fig. 41: Identifying Fuse Carrier

Courtesy of AUDI OF AMERICA, LLC

NOTE: By removing fuse, the voltage supply to terminal 30 for the FP Control Module is interrupted.

-- Check the fuel pressure displayed.

- The fuel pressure decreases rapidly because the mechanical high pressure Pump is no longer supplied with fuel from the transfer fuel Pump -G6-.

-- Turn off the ignition as soon as the fuel pressure has decreased to approximately 8 bar.

NOTE: The fuel pressure must not drop below 6 bar, because otherwise the engine will shut off (risk of catalytic converter damage).

The fuel rail will continue to be filled with fuel, but it will no longer be under high pressure.

WARNING: Do not let fuel come into contact with skin.

- The fuel lines will continue to be filled with fuel, but will no longer be under high pressure. Wear protective goggles and protective clothing when opening the fuel system.
- Before opening the high pressure system, place a cloth around the connection.

-- After reducing fuel pressure, place a clean cloth around the connection and open the high pressure system immediately. Escaping fuel must be absorbed.

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NOTE: If the high pressure system is not opened immediately, the pressure will increase because of post-heating.

-- Lay clean cloths around connectors and catch escaping fuel.

Final Procedures

-- Install the fuse.

-- Install the instrument panel cover. Refer to **Removal and Installation** .

-- Erase the Diagnostic Trouble Code (DTC) memory and generate the readiness code in the Engine Control Module (ECM) in "Guided Functions".

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Components	Fastener Size	Nm
Bracket for High-Pressure Lines	-	9
Camshaft Position (CMP) Sensor	-	9
E-box Cover	-	3.5
Engine Speed (RPM) Sensor	-	9
Fuel Pressure Sensor ²	-	22
Fuel Rail Threaded Connection	-	40
High Pressure Fuel Line	-	27
High-Pressure Lines	-	9
High Pressure Pump ³	-	20
Intake Manifold Runner Position Sensor	-	2.5
Low Fuel Pressure Sensor	-	15
Oxygen Sensor	-	55
Protective Plate for High Pressure Line, Nut	-	9
Double Bolt	-	9
Retaining Bracket for Fuel Rail ¹		
	-	2.5
	-	9
Threaded Support for High Pressure Pump	-	27
Throttle Valve Control Module	-	10
¹ For bolt tightening clarification, refer to <u>LOWER INTAKE MANIFOLD SECTION OVERVIEW</u> and see items -10, 11 and 12- ² Oil the threads ³ Tighten by hand in a diagonal sequence and then tighten to 5 Nm		

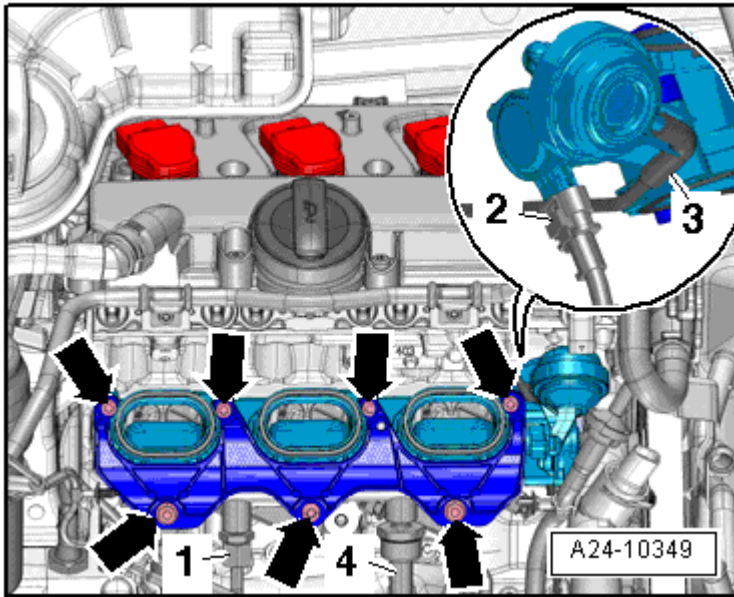
Tightening Specification, Intake Manifold Lower Section

Fig. 42: Locating Manifold Lower Section Bolts -Arrows-
 Courtesy of AUDI OF AMERICA, LLC

-- Tighten the bolts and nuts -arrows- in a diagonal sequence on the intake manifold lower section and in steps.

- 10 Nm

TEST DATA

3.0L TFSI Engine	
Engine idle speed	Cannot be adjusted, it is regulated by idle stabilization
Fuel pressure before high-pressure pump	3.0 to 6.0 bar pressure
Fuel pressure after high-pressure pump	30 to 125 bar pressure

DIAGNOSIS AND TESTING

FUEL PRESSURE AND RESIDUAL PRESSURE BEFORE HIGH PRESSURE PUMP, CHECKING**Special Tools and workshop equipment required**

- Fuel Inj. Pressure Gauge-CIS V.A.G 1318
- Adapter V.A.G 1318/10-12
- Connector Test Set V.A.G 1594C
- Remote Control V.A.G 1348/3A with Remote Control for VAG 1348 V.A.G 1348/3-3
- Measuring container, fuel-resistant

Test Conditions

- Battery voltage at least 12.5 Volts
- Fuel filter OK.
- Fuel tank minimum $\frac{1}{4}$ full.
- Fuel Pump (FP) control module -J538- OK; for checking, refer to **Diagnosis and Testing** .
- Ignition turned off

Fuel Pressure, Checking

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

-- Remove the cover from the locking flange -arrows-.

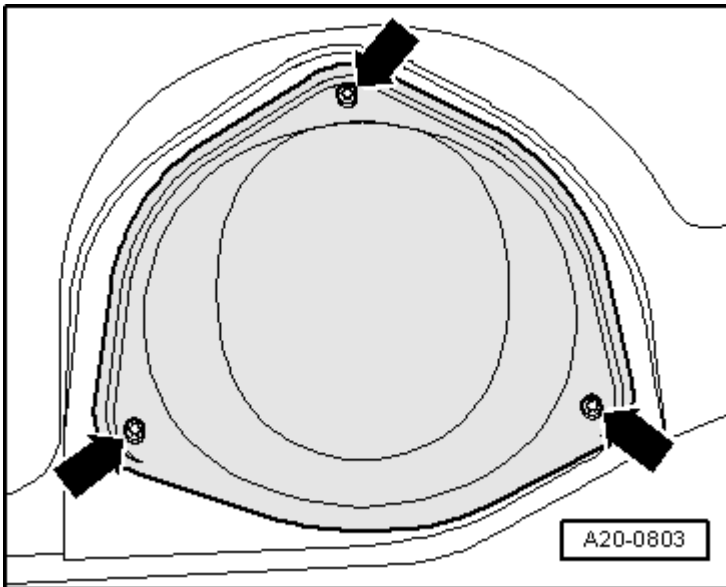


Fig. 43: Identifying Cover Bolts For Locking Flange
Courtesy of AUDI OF AMERICA, LLC

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

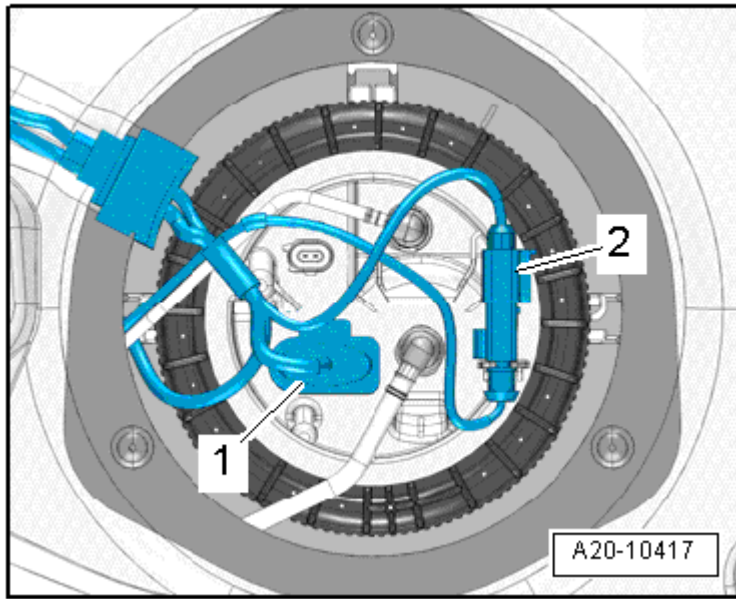


Fig. 44: Identifying Locking Flange Components
Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

- Connect the V.A.G 1348/3A with V.A.G 1348/3-3 with an adapter cable from the V.A.G 1594C at terminal -1-.
- Using insulating tape, tape over the second terminal on the V.A.G 1348/3-3 -arrow- to prevent a short circuit.

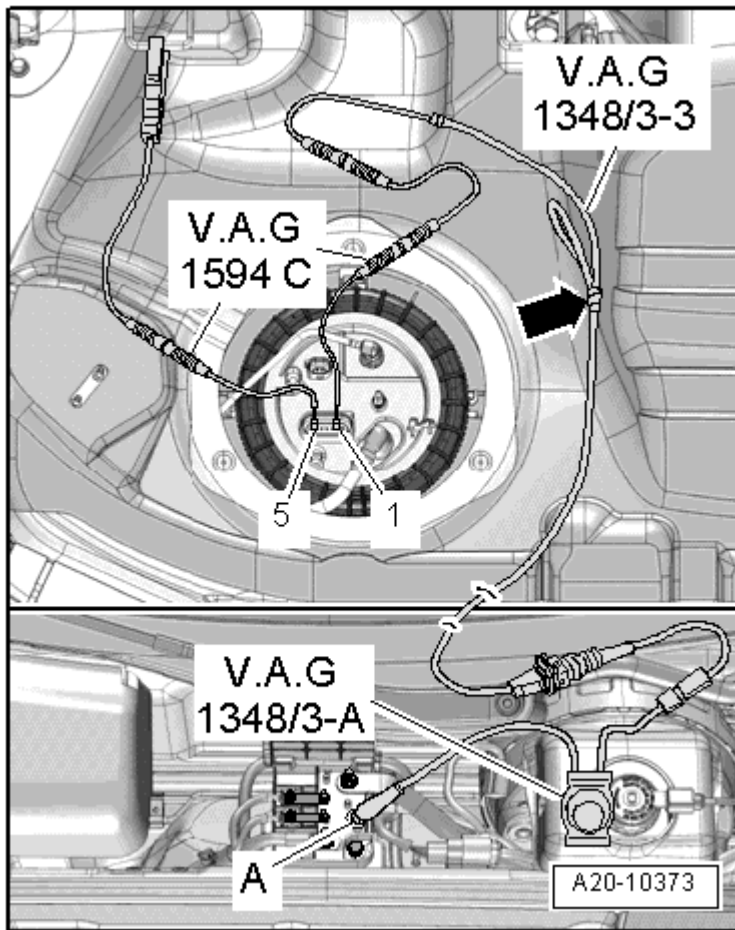


Fig. 45: Identifying Special Fuel Pump Tools

Courtesy of AUDI OF AMERICA, LLC

- Connect terminal -5- to the vehicle ground using a jumper cable from the V.A.G 1594C.
- Route V.A.G 1348/3A switch forward in engine compartment.
- Remove the seal -arrow-.

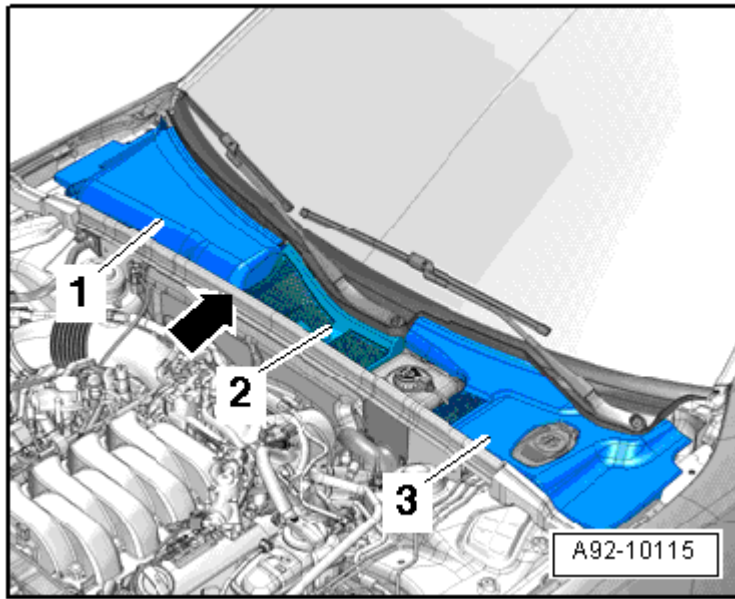


Fig. 46: Identifying Plenum Chamber Covers
Courtesy of AUDI OF AMERICA, LLC

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

NOTE: Ignore -1 and 3-.

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

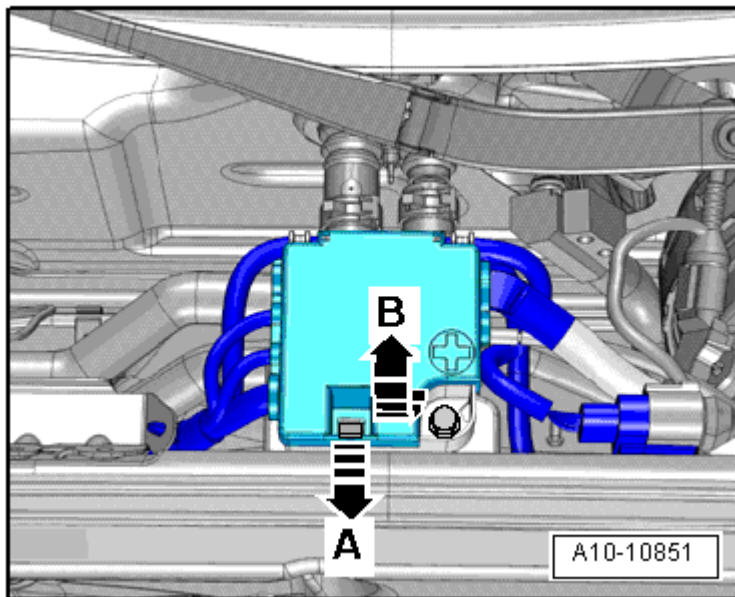


Fig. 47: Opening Terminal Box Cover
Courtesy of AUDI OF AMERICA, LLC

-- Connect the V.A.G 1348/3A to -A- in the terminal box inside the plenum chamber (battery positive). For safety reasons, install a fuse (10 A) in the wiring connection.

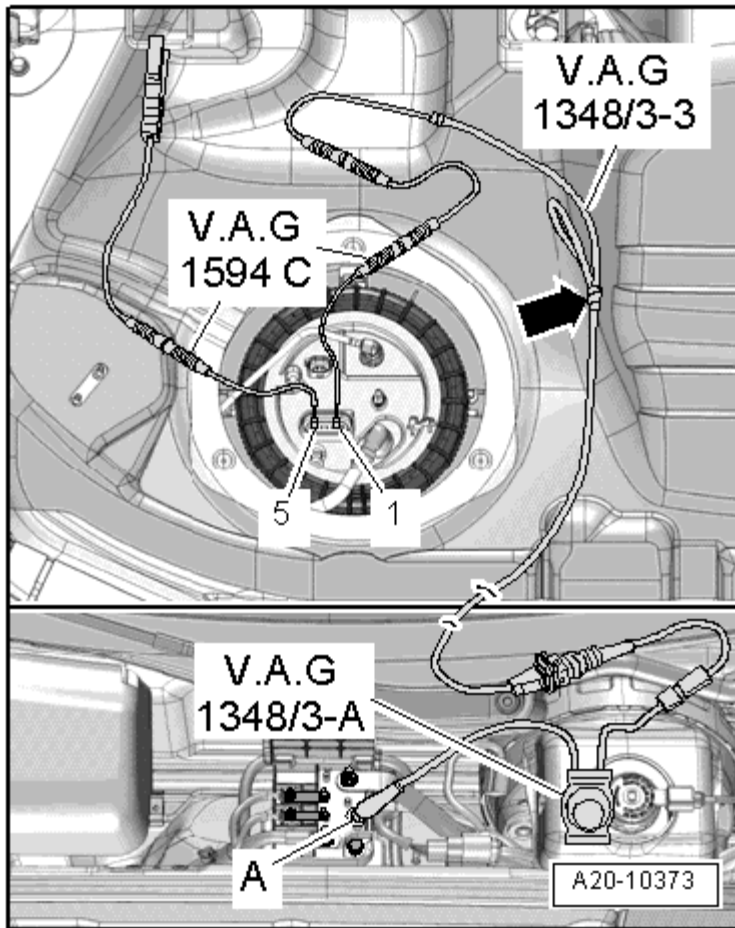


Fig. 48: Identifying Special Fuel Pump Tools
 Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows-, remove the air guides -1 and 2-.

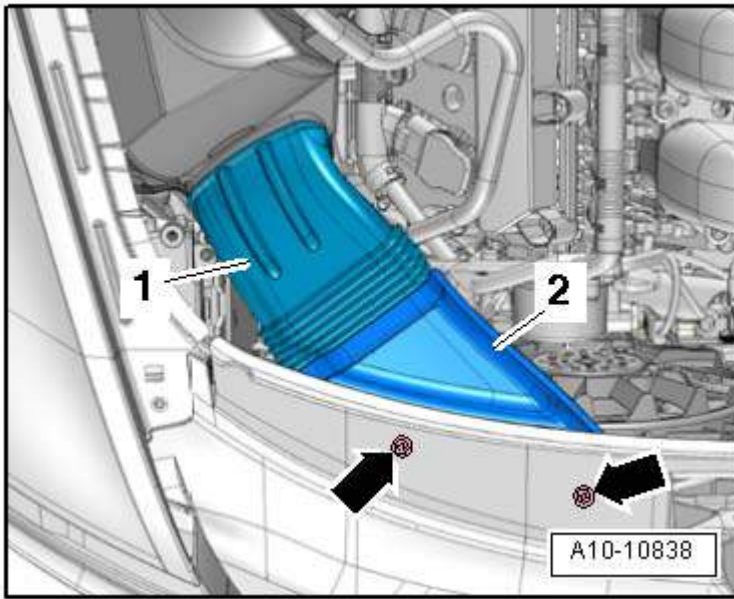


Fig. 49: Identifying Air Guide Components
Courtesy of AUDI OF AMERICA, LLC

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

- The fuel pressure must be reduced to residual pressure before opening the high pressure area of the fuel injection system. Refer to **RELEASING PRESSURE IN HIGH PRESSURE AREA.**

-- Reduce fuel pressure in high pressure area. Refer to **RELEASING PRESSURE IN HIGH PRESSURE AREA.**

-- Remove the fuel supply hose from the high pressure Pump -arrow- and free it up.

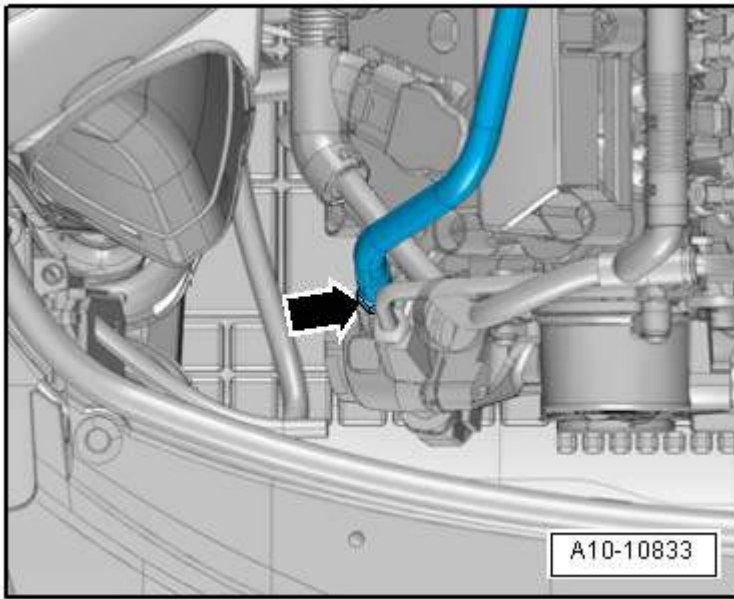


Fig. 50: Identifying Fuel Supply Hose
Courtesy of AUDI OF AMERICA, LLC

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

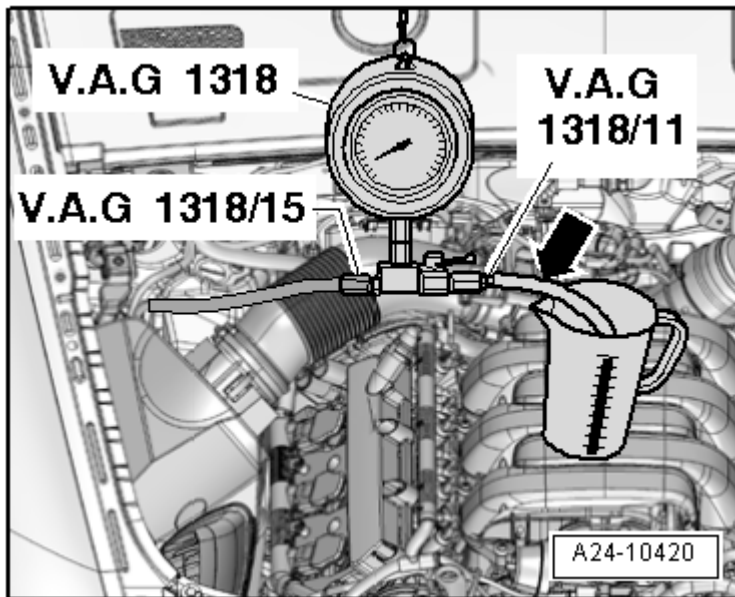


Fig. 51: Identifying Special Fuel Supply Tools
Courtesy of AUDI OF AMERICA, LLC

-- Connect assisting hose -arrow- on the pressure gauge and hold in a measuring container.

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

- The lever points in the direction of flow.

-- Bleed the fuel system by briefly pressing the remote control.

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

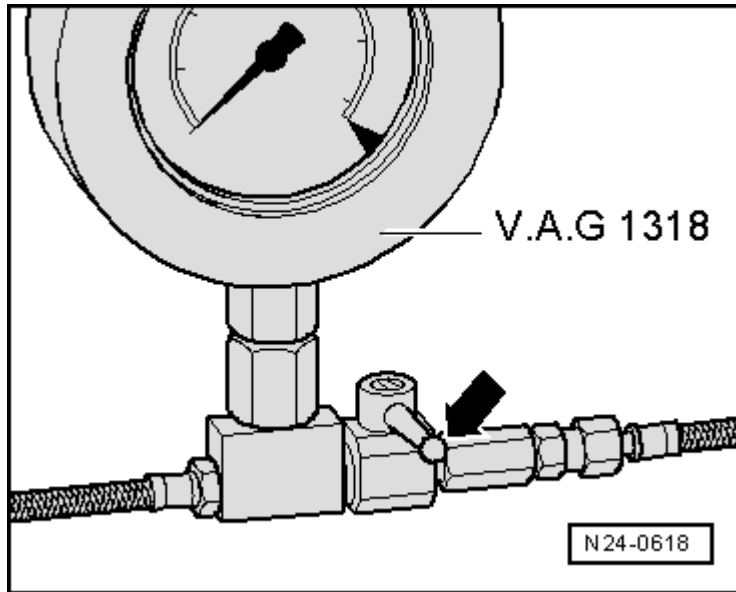


Fig. 52: Closing Pressure Gauge Cut-Off Valve
Courtesy of AUDI OF AMERICA, LLC

- Lever stands perpendicular to direction of flow -arrow-.

-- Press the remote control switch long enough until the pressure gauge stops registering an increase in pressure.

- Specified value: approximately 6 bar

-- If the specified value is not reached, check the fuel Pump delivery rate. Refer to **Diagnosis and Testing** .

Residual Pressure, Checking

-- Check for leaks and constant pressure, watch the manometer to see if there is a drop in pressure.

- After 10 minutes there must be a residual pressure of at least 3 bar.

If the holding pressure drops below 3 bar:

- Check connection between pressure gauge and fuel line for leaks.
- Check pressure gauge for leaks.
- Check fuel lines and their connections for leaks.
- Replace the fuel filter with an integrated fuel pressure regulator, refer to **Removal and Installation** .
- Fuel Pump check-valve is faulty, refer to **Diagnosis and Testing** .

Assembling

Assemble in reverse order of disassembling. Note the following:

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

- **Before disconnecting pressure gauge, release pressure by opening shut-off valve. Hold a container under the connection.**

-- Connect the fuel supply hose -arrow- to the high pressure Pump. Make sure the hose is clean.

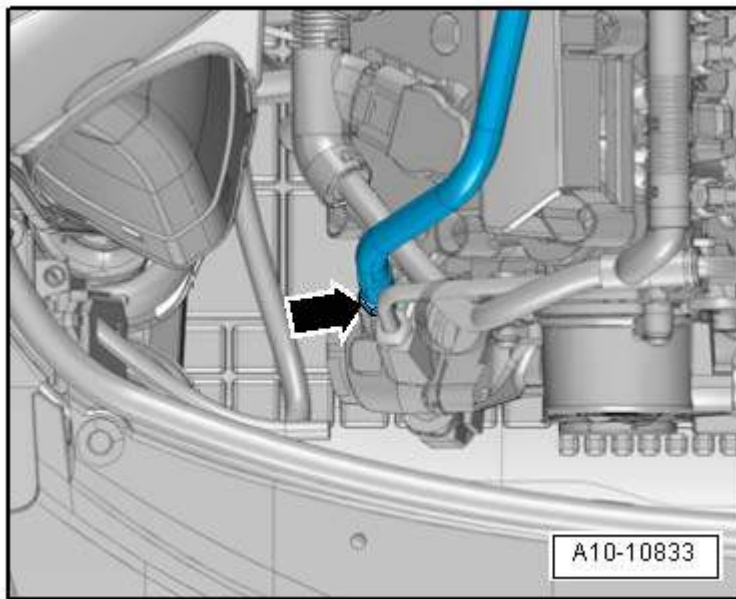


Fig. 53: Identifying Fuel Supply Hose
Courtesy of AUDI OF AMERICA, LLC

- Tightening Specifications: High pressure Pump assembly overview, refer to **HIGH PRESSURE Pump OVERVIEW**

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

NOTE: Check fuel system for leaks.

FUEL SYSTEM, PERFORMING LEAK TEST

Proceed as follows:

- Let the engine run a few minutes at a moderate speed.
- Turn off the ignition.
- Check the entire fuel system for leaks.

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- If there are leaks in spite of correct tightening specifications, the corresponding component must be replaced.
- Then perform a road test and depress the accelerator pedal all the way at least one time.
- Then check the high pressure area again for leaks.

VACUUM SYSTEM, CHECKING

Special Tools and workshop equipment required

- Hand Vacuum Pump VAS 6213

Procedure

- Check all vacuum lines in the vacuum system for:
 - Cracks
 - Damage caused by animals
 - Crimps
 - Leaks
- Check the vacuum line leading to and from the solenoid valve.
- If there is a fault, check the vacuum lines for the named component, but also all the vacuum lines to the other components.
- If using the VAS 6213 does not produce any pressure or if the pressure drops again right away, then check the hand vacuum Pump and the connection hoses for leaks.

WIRING AND COMPONENTS, CHECKING WITH TEST BOX 105 PIN V.A.G 1598/42

Special Tools and workshop equipment required

- Adapter Lead - V.A.G 1598/39-1-
- Adapter Lead - V.A.G 1598/39-2-
- Test Box 105 Pin - V.A.G 1598/42-

NOTE:

- The test box has 105 terminals. The connection cable can be separated from the test box. This means that as the new Engine Control Module (ECM) connectors are introduced in the future, only a new cable must be designed and no longer the entire test box.
- The smaller of the two connectors on the ECM is assigned with terminals 1 to 60. The larger of the two connectors is assigned with terminals 1 to 94.

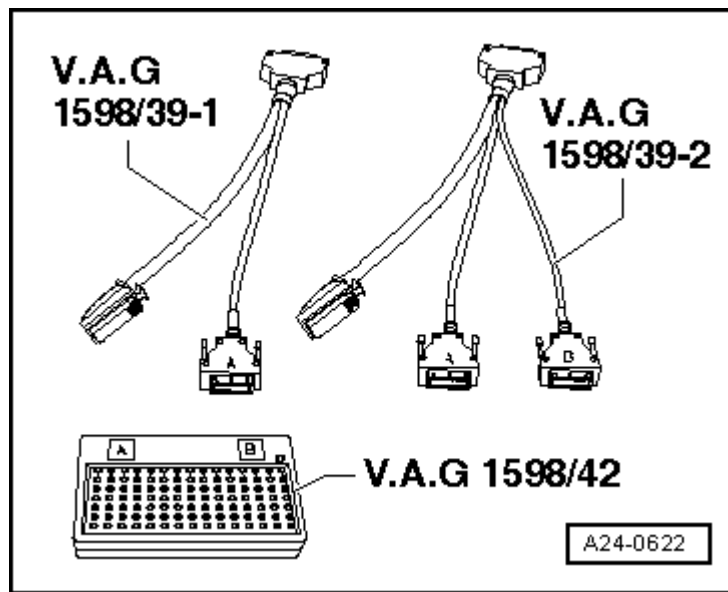


Fig. 54: Identifying Adapter Cable V.A.G 1598/39 & Test Box V.A.G 1598/42
 Courtesy of AUDI OF AMERICA, LLC

- For testing at the 60-pin harness connection, the - V.A.G 1598/39-1- is connected to the test box with connector "A". Components of the 60-pin harness connection, refer to the appropriate **SYSTEM WIRING DIAGRAMS** information.
- For testing at the 94-pin harness connection, the - V.A.G 1598/39-2- is connected to the test box with connectors "A and B". Components of the 94-pin harness connection, refer to the appropriate **SYSTEM WIRING DIAGRAMS** information.
- The V.A.G 1598/42 is designed so that it can be connected simultaneously to the ECM harness and the ECM itself.
- This is advantageous because the electronic engine control remains fully functional (for example measurement of signals with engine running) when the test box is attached.
- The procedures will indicate whether the ECM is to remain connected to the test box or not.

Procedure

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

-- The ECM must be removed to disconnect the ECM multi-pin connectors. Refer to **Engine Control Module - J623-**.

-- Connect - V.A.G 1598/42- to wiring harness with - V.A.G 1598/39-1- or - V.A.G 1598/39-2-. Clamp test box

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Ground (GND) clip to battery negative terminal. The procedure will indicate whether the ECM is to be connected to the test box or not.

-- Connect the test box ground clip on the negative terminal clamp in the engine compartment.

NOTE: **The procedure will indicate whether the ECM is to be connected to the test box or not.**

-- Perform test as described in respective repair procedure.

Installing ECM

Install in reverse order of removal.

-- The ECM must be installed with a housing.

-- Clean threaded holes for shear bolts of locking compound residue. Cleaning can be performed with a thread cutter (tap).

-- Always use new shear bolts.

Perform the following work after the ECM is reconnected:

-- Check the Diagnostic Trouble Code (DTC) memory.

REMOVAL AND INSTALLATION

AIR FILTER

Removing

-- Remove the air guide hose from the air filter housing by opening the clips -arrows-.

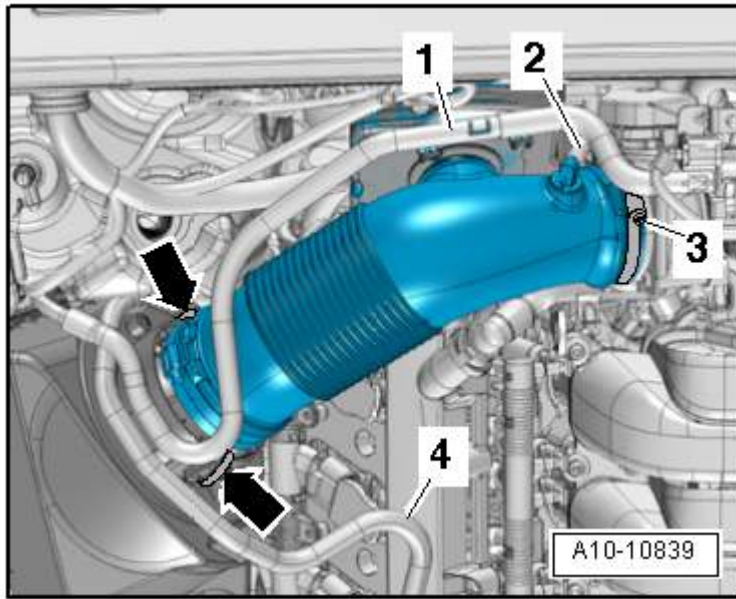


Fig. 55: Opening Expanding Clamps

Courtesy of AUDI OF AMERICA, LLC

-- Remove the screws -arrows- from the air filter upper section and remove it.

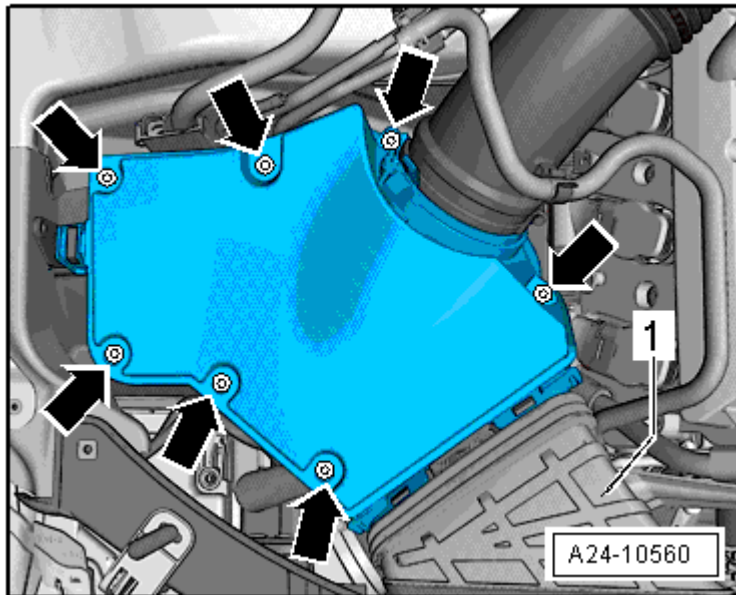


Fig. 56: Identifying Vacuum Hose

Courtesy of AUDI OF AMERICA, LLC

NOTE:

- Always use an original air filter.
- Use a siliCone -free lubricant for installing the air guide hose.
- Secure all hose connections using hose clamps appropriate for the model

type.

-- Check the water drain hose -arrow- in the lower section of the air filter for dirt and contamination (clean if necessary).

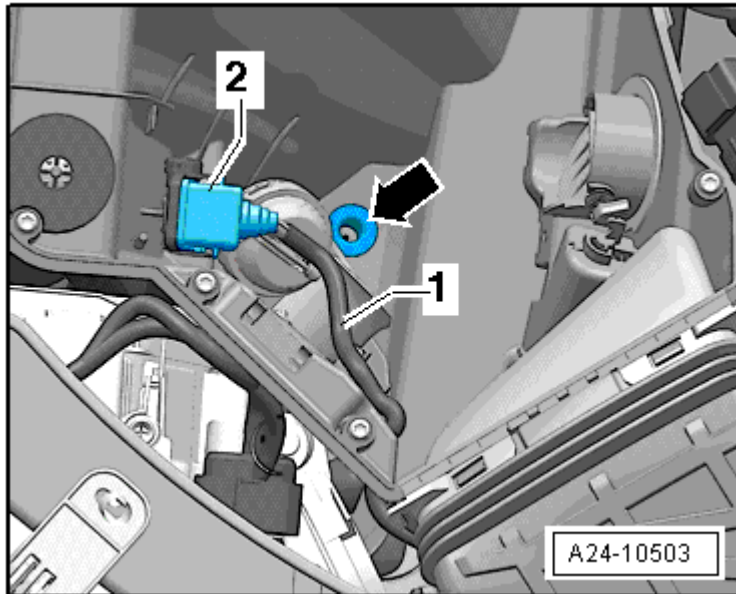


Fig. 57: Retaining Strap For The Air Filter Unit
Courtesy of AUDI OF AMERICA, LLC

- Clean air filter housing (upper and lower sections) of salt residue, dirt or leaves (use vacuum cleaner if necessary).
- Check the intake channels up to the air filter for dirt.
- When installing the air filter, make sure it is centered in the air filter housing upper section.
- Assemble the new air filter with the air filter housing upper section.

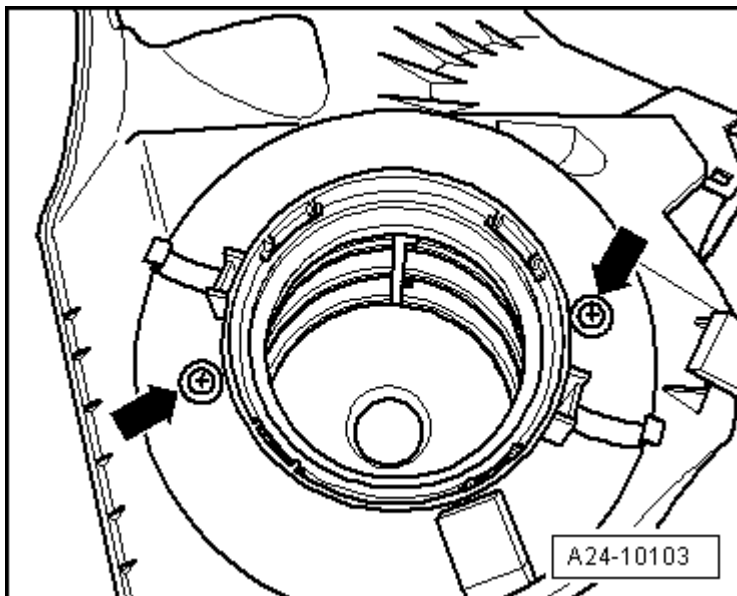


Fig. 58: Identifying Air Filter Insert Securing Screws
 Courtesy of AUDI OF AMERICA, LLC

-- The tab on the air filter element -1- must align with the tab on the air filter housing -2-.

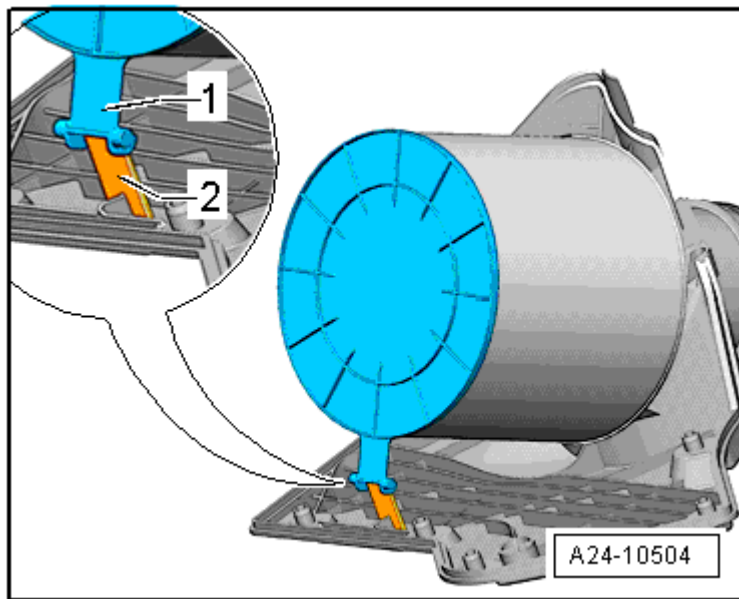


Fig. 59: Identifying Upper Section Of Air Filter Housing
 Courtesy of AUDI OF AMERICA, LLC

-- Set the upper section of the air filter housing onto lower section of the air filter housing, without using much force.

NOTE: Make sure the air filter housing upper section is installed correctly into the groove in the lower section before tightening the screws.

- Then, fasten the upper section of the air filter housing to the lower section of the air filter housing.
- Make sure the air guide hoses are secure.
- Further installation is in the reverse sequence to removal.

CONTROL VALVE CONTROL UNIT -J808-**Removing**

- Remove the rear engine cover -2- upward.

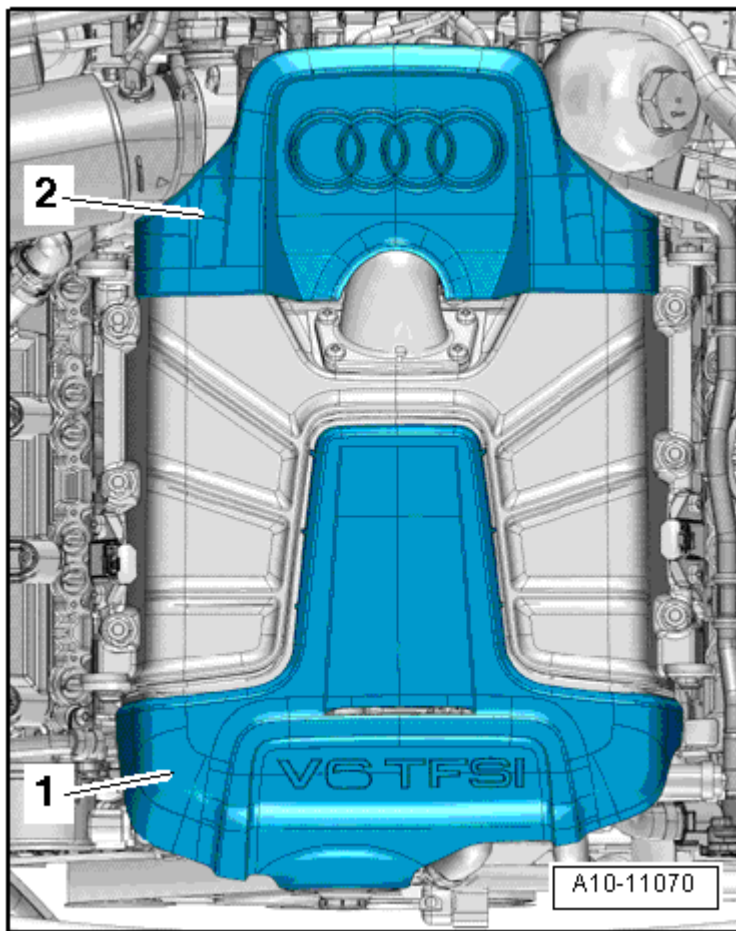


Fig. 60: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Disconnect the connector -3- from the control valve control module.

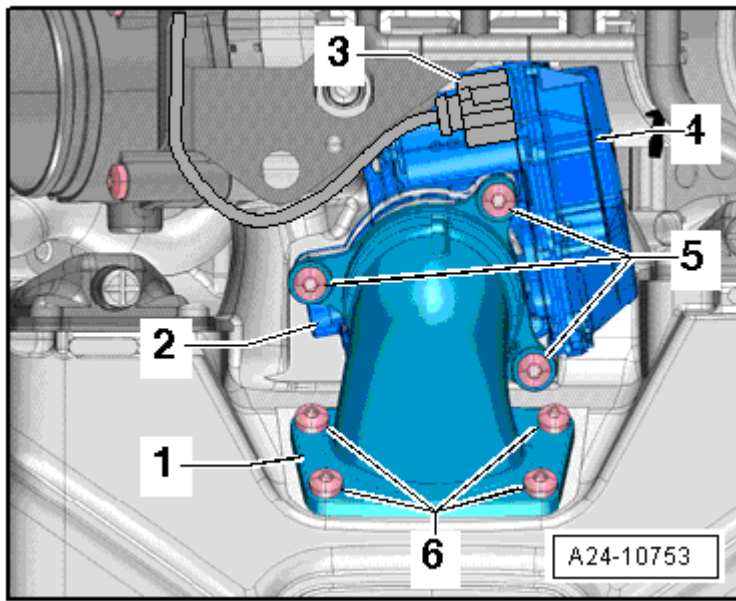


Fig. 61: Identifying Control Valve Control Unit -J808- - Tightening Sequence
Courtesy of AUDI OF AMERICA, LLC

- Remove the bolts -5 and 6-.
- Remove the bypass connection -1- with the adapter -2- and control valve control module -4-.

Installing

Install in reverse order, paying attention to the following:

NOTE: Replace the O-rings.

- Install the bypass connection -1- with the adapter -2- and control valve control module -4-. Use new O-rings.

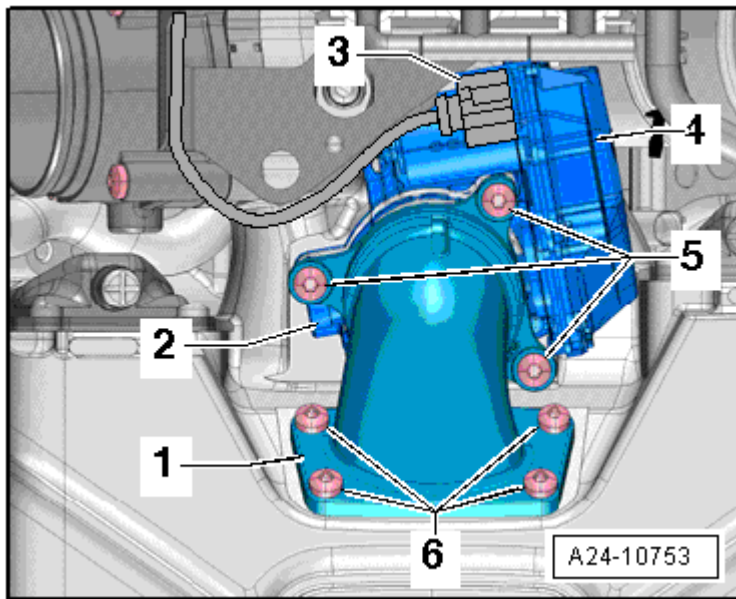


Fig. 62: Identifying Control Valve Control Unit -J808- - Tightening Sequence
 Courtesy of AUDI OF AMERICA, LLC

-- Install the bolts -5 and 6- hand-tight.

-- First tighten the bolts -6- to the tightening specification.

- Tightening Specifications: 10 Nm

-- Then tighten the bolts -5- to the same tightening specification.

-- Connect the connector -3-.

-- After replacing the control valve control module perform an **Adaptation** in **Guided Functions** using a vehicle diagnostic tester.

ENGINE CONTROL MODULE -J623-

Special Tools and workshop equipment required

- Hot Air Blower VAS 1978/14A with Nozzle Attachment from the Wiring Harness Repair Set VAS 1978 B
- Small commercially available locking pliers

NOTE:

- Some Engine Control Modules (ECMs) are not equipped with a protective housing. The removal and installation of the protective housing depends on the engine and transmission combination.
- The ECM -1- is bolted to a protective housing -5-. To make removing the shear bolts -4- for the retaining tabs -2- more difficult, the threads are

coated with locking compound.

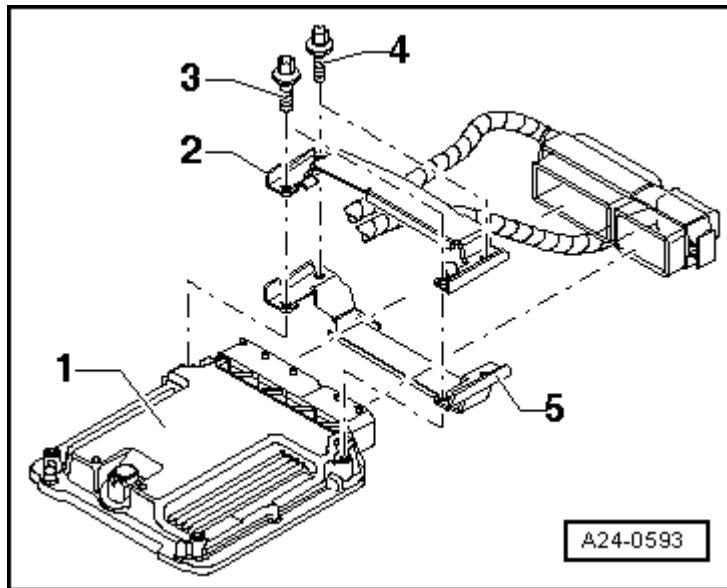


Fig. 63: Identifying Engine Control Module (ECM), Protective Housing, Retaining Tabs & Shear Bolts
Courtesy of AUDI OF AMERICA, LLC

- The protective housing must be removed to disconnect the connectors from the ECM.

Removing

- If the ECM was replaced, select diagnostic object "Replacing engine control module " in "Guided Functions". Use a vehicle diagnosis tester.
- Turn the ignition and remove the ignition key.
- Pull the plenum chamber cover rubber seal in front of the nut -1- slightly.

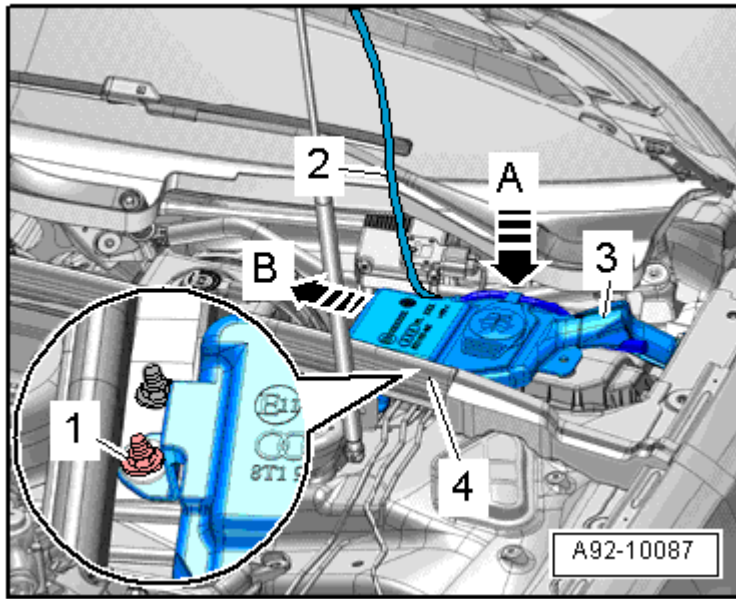


Fig. 64: Disengaging Wiring Harness
Courtesy of AUDI OF AMERICA, LLC

- Disengage the wiring harness -2- at the mounts -A-.
- Remove nut -1-.
- Remove the filler neck -3- with the filler tube from the washer fluid reservoir and the opening in the body.
- Remove the bolts -arrows- and the cover from the E-box.

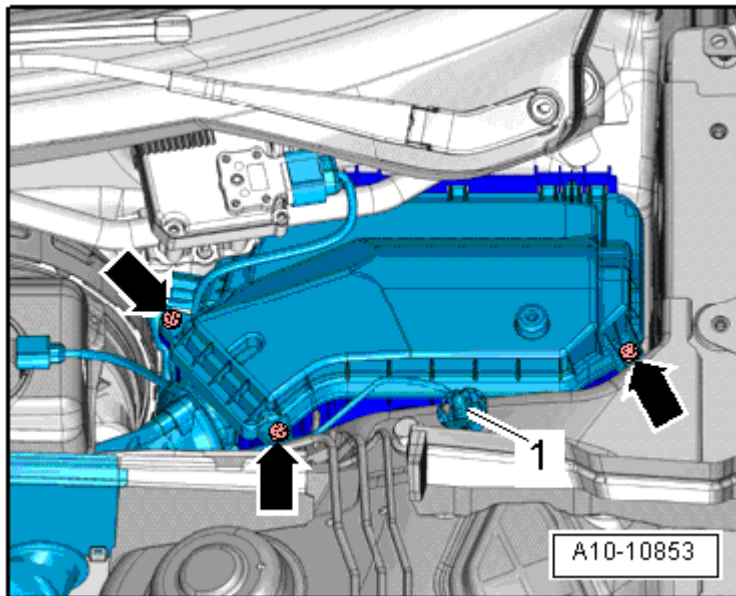


Fig. 65: Identifying E-Box Bolts & Cover
Courtesy of AUDI OF AMERICA, LLC

-- Release the retainers -A arrows- and remove the ECM -arrow B-.

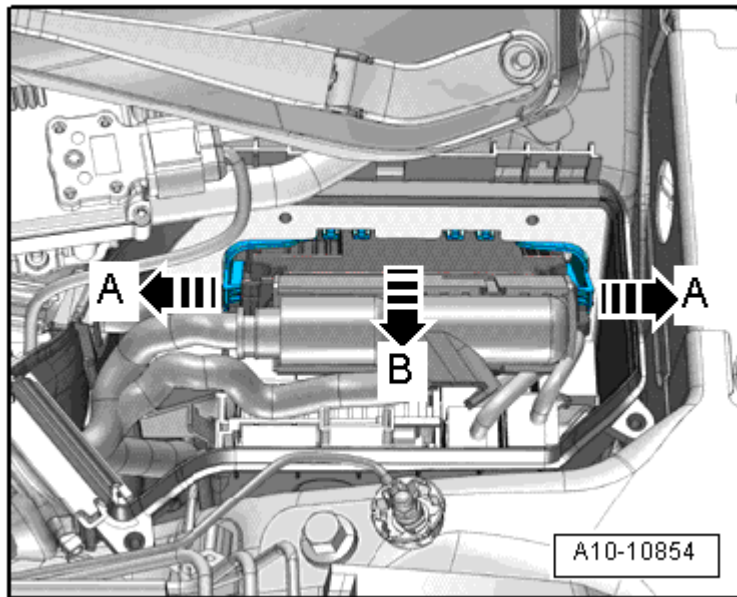


Fig. 66: Identifying Engine Control Module (ECM)

Courtesy of AUDI OF AMERICA, LLC

The ECM -1- is secured in a metal housing -5- with retaining tabs -2- and shear bolts -3 and 4- to make it harder to access it.

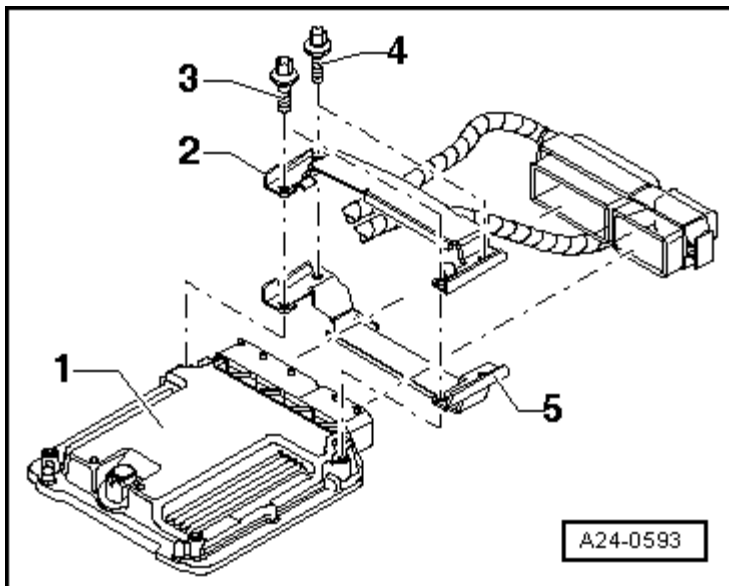


Fig. 67: Identifying Engine Control Module (ECM), Protective Housing, Retaining Tabs & Shear Bolts

Courtesy of AUDI OF AMERICA, LLC

The threads of the shear bolts -4- (that are not screwed into the ECM) are coated with a locking compound. For this reason, the threads must be heated with the heat gun to remove both bolts.

The threads on both ECM shear bolts -3- are not coated with locking compound. The threads in the ECM housing must not be heated and do not require to be heated (unintentional heating of the ECM).

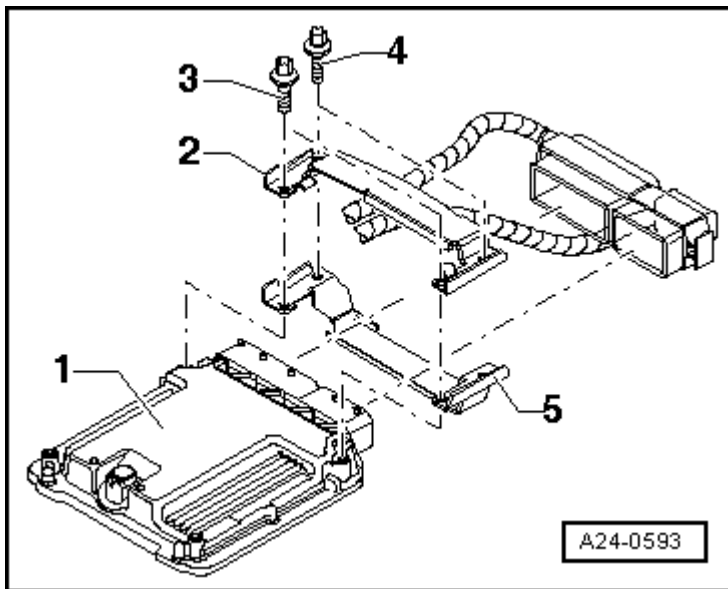


Fig. 68: Identifying Engine Control Module (ECM), Protective Housing, Retaining Tabs & Shear Bolts
Courtesy of AUDI OF AMERICA, LLC

-- Set the adjustment on the heat gun as shown in the illustration, with the temperature potentiometer -2- Set to maximum heat and the two-stage airflow switch -3- Set to level 3.

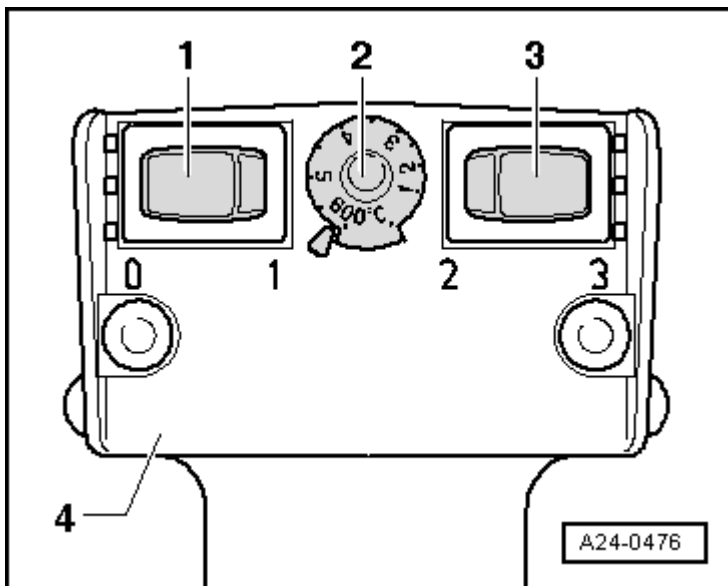


Fig. 69: Identifying Controls For Temperature Adjustment And Air Quantity
Courtesy of AUDI OF AMERICA, LLC

WARNING: By heating the threads, the retaining tabs, shear bolts and parts of the metal housing become very hot. Do not burn yourself on this! Make sure

that only the threads are heated as much as possible, and not any of the surrounding parts. Possibly cover these parts.

-- Warm threads on connector-side shear bolts for approximately 25 to 30 seconds.

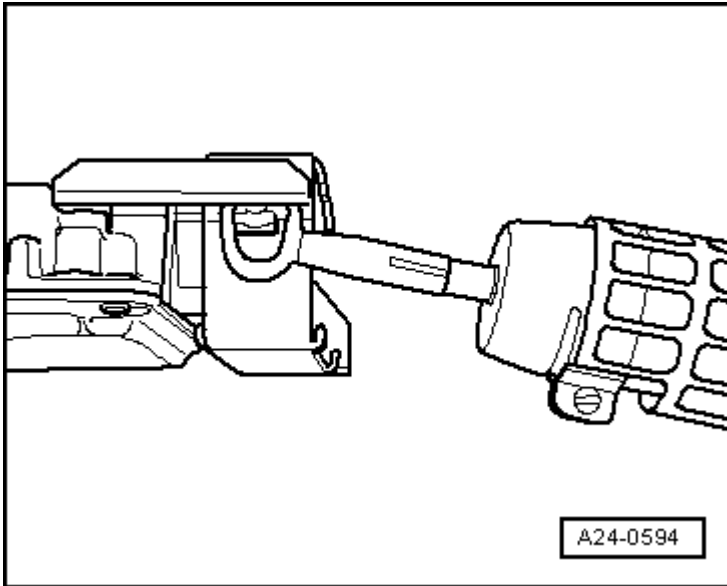


Fig. 70: Using Heat Gun To Direct Heat Gun Nozzle At Shear Bolt Of Retaining Tab
Courtesy of AUDI OF AMERICA, LLC

-- Remove shear bolts with locking pliers (see direction of -arrow-).

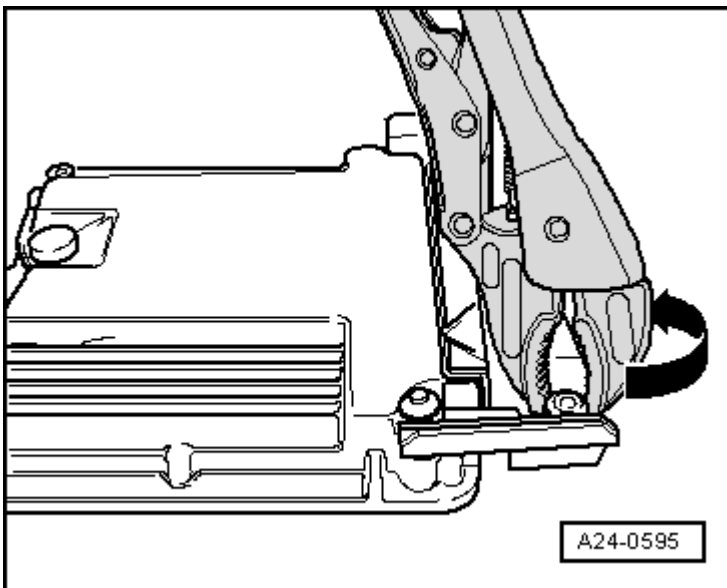


Fig. 71: Identifying Locking Pliers And Shear Bolt
Courtesy of AUDI OF AMERICA, LLC

-- The shear bolts installed in the ECM do not need to be heated for removal. They can be removed without

heat.

- Disconnect metal retainers from the ECM connectors.
- Disengage the connectors from the ECM and disconnect the connector.
- Remove old ECM and install the new ECM.

Installing

Install in reverse order of removal.

- The ECM must be installed with a housing.
- Clean threaded holes for shear bolts of locking compound residue. Cleaning can be performed with a thread cutter (tap).
- Always use new shear bolts.
 - Tightening Specifications: E-box cover bolts: 3.5 Nm

Perform the following step after installing a new engine control module:

- Activate the ECM in "Guided Functions" under "replace engine control module". Use a vehicle diagnosis tester for this.

FUEL INJECTORS

Special Tools and workshop equipment required

- Tool Set T10133
- Puller T10133/2A
- Hammer T10133/3
- Nylon Cylinder Brush T10133/4
- Assembly Cone T10133/5
- Assembly Sleeve T10133/6
- Sizing Sleeve T10133/7
- Sizing Sleeve T10133/8
- Removal Tool T10133/16

Removing

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

- The fuel pressure must be reduced to residual pressure before

opening the high pressure area of the fuel injection system. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

-- Reduce the fuel pressure in high pressure area. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

-- Remove the supercharger. Refer to Removal and Installation .

-- Remove the affected intake manifold lower section. Refer to INTAKE MANIFOLD LOWER SECTION, WITH FUEL RAIL.

-- Position the T10133/2A in the groove on the fuel injector.

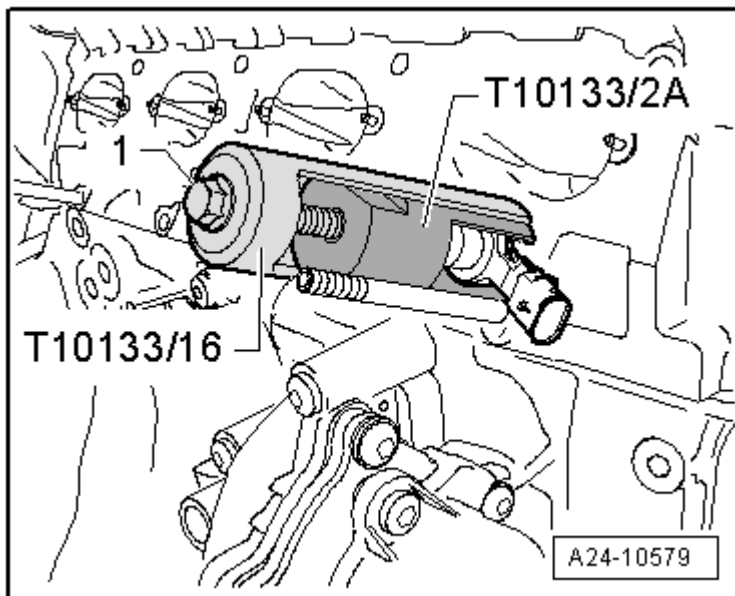


Fig. 72: Identifying Position Of Puller T10133/2A In Groove On Fuel Injector & Trim Removal Wedge T10133/16

Courtesy of AUDI OF AMERICA, LLC

-- Then position the T10133/16 and remove the fuel injector by loosening the bolt -1-.

Disassemble the Fuel Injector

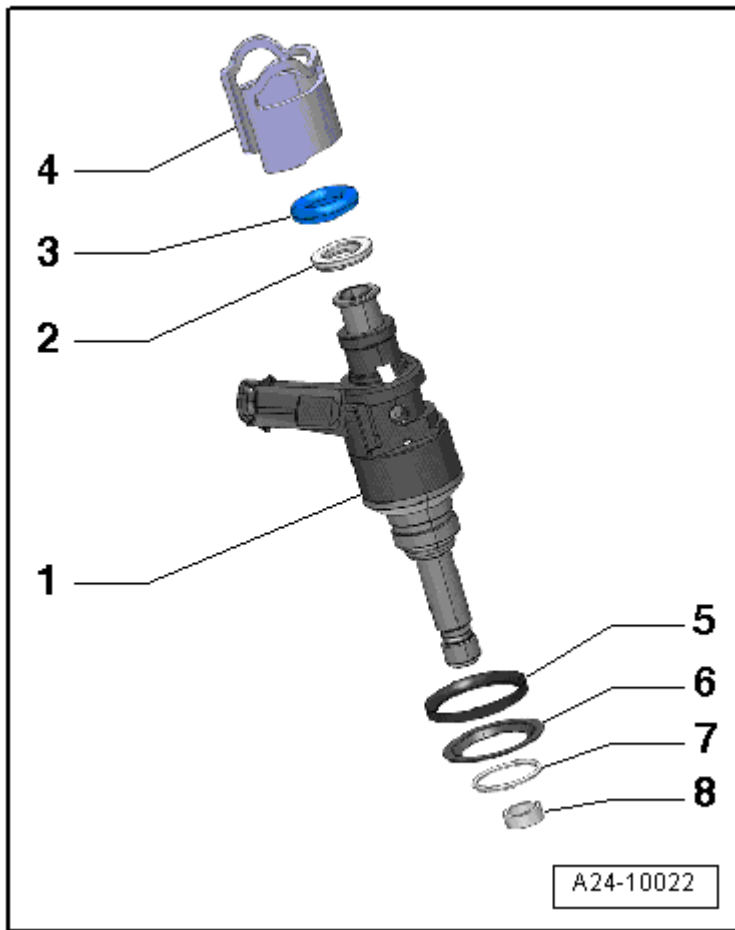


Fig. 73: Identifying Fuel Injector Components

Courtesy of AUDI OF AMERICA, LLC

- Remove the support ring -4-, O-ring -3- and spacer ring -2- from the fuel injector -1-.
- Remove the circlip -7- and upper sealing washer -5- and lower sealing washer -6-.
- Carefully remove the old combustion chamber seal -8- by cutting the sealing ring with a knife and prying it open with a small screwdriver.
- Make sure that the groove of the fuel injector does not become damaged. If the groove is damage, the fuel injector must be replaced.

Installing

NOTE:

- Replace combustion chamber seal and O-ring.
- Replace spacer ring if damaged.
- Lightly coat the fuel injector O-rings with clean engine oil.
- Install the cylinder at the same cylinder.

-- Clean the bore in cylinder head with T10133/4.

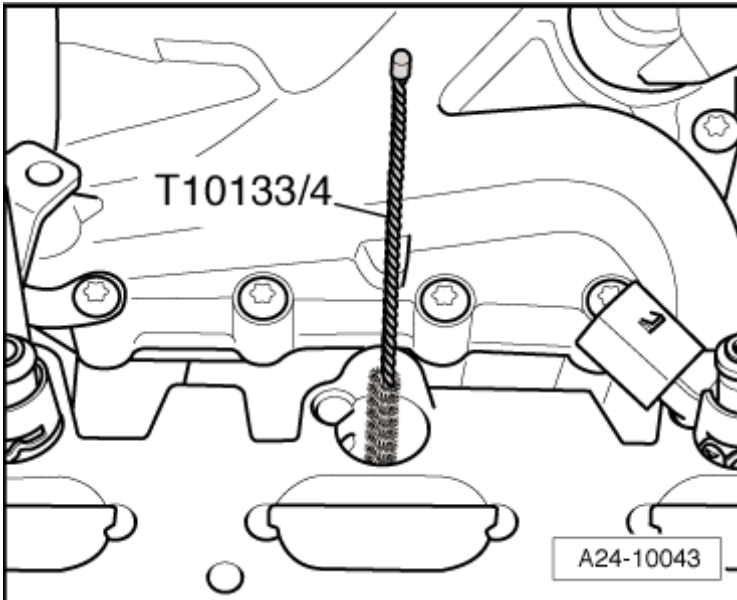


Fig. 74: Cleaning Bore In Cylinder Head With Nylon Cylinder Brush T10133/4
 Courtesy of AUDI OF AMERICA, LLC

-- Place the T10133/5 with a new combustion chamber seal -1- from the repair Set onto the fuel injector -2-.

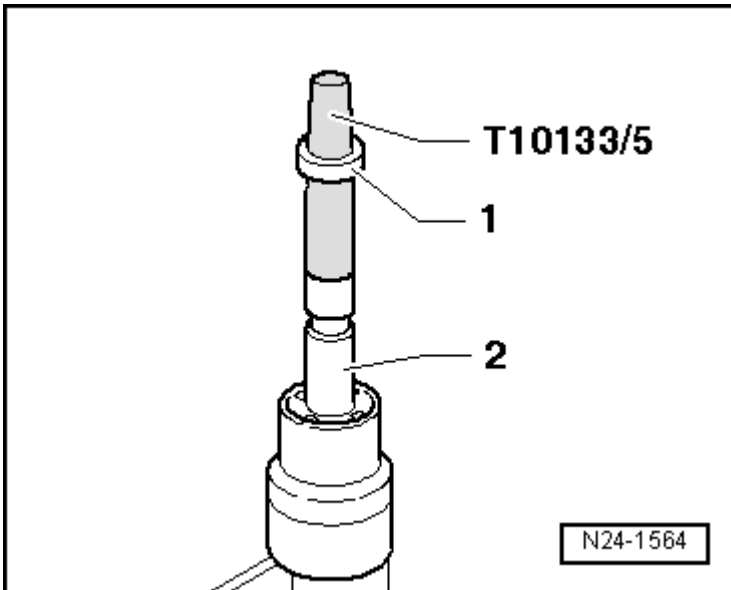


Fig. 75: Identifying Assembly Cone T10133/5, New Teflon Seal And Fuel Injector
 Courtesy of AUDI OF AMERICA, LLC

-- Slide the combustion chamber seal as far possible onto the T10133/5 using T10133/6.

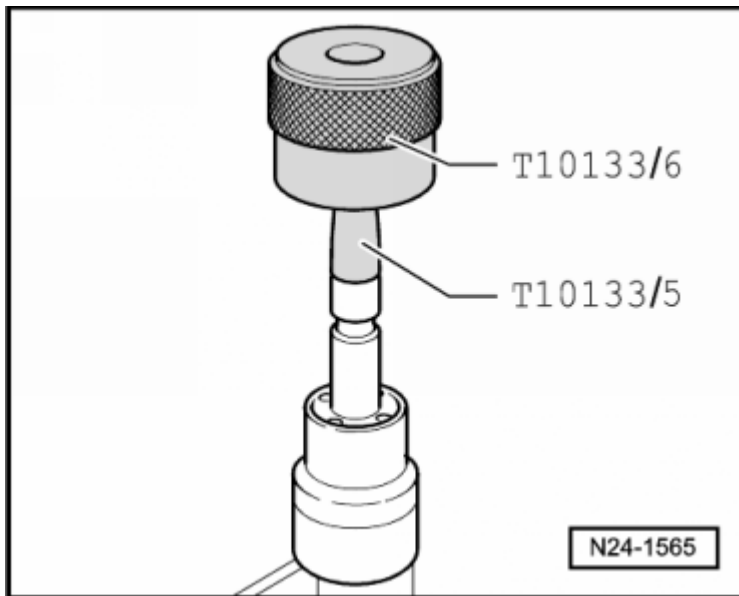


Fig. 76: Identifying Combustion Chamber Seal Inserted On Assembly Cone T10133/5 Using Assembly Sleeve T10133/6

Courtesy of AUDI OF AMERICA, LLC

-- Turn the T10133/6 around and slide the combustion chamber seal into groove.

NOTE: When pushing the combustion chamber seal onto the fuel injector, the seal spreads open. Therefore after pushing it on, it must be tightened again in 2 steps, as follows.

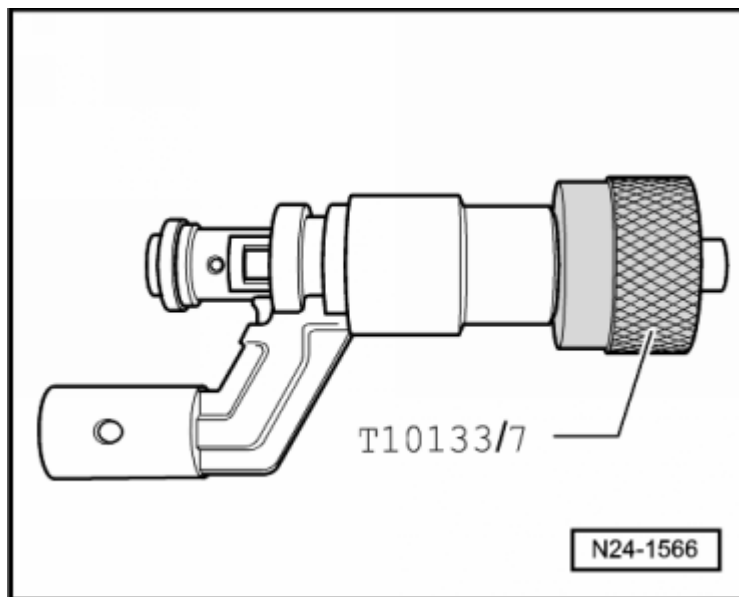


Fig. 77: Identifying Calibrating Sleeve T10133/7 Pressed On To Fuel Injector Until It Stops

Courtesy of AUDI OF AMERICA, LLC

2012 Audi S4

ENGINE 3.0 Liter - Multiport Fuel Injection - Engine Code(s): CCBA (Sedan)

- Press the T10133/7 with a slight turning motion (approximately 180°) onto the fuel injector until it stops.
- Pull the T10133/7 off again, turning it in the opposite direction.
- Press the T10133/8 with a slight turning motion (approximately 180°) onto the fuel injector until it stops.

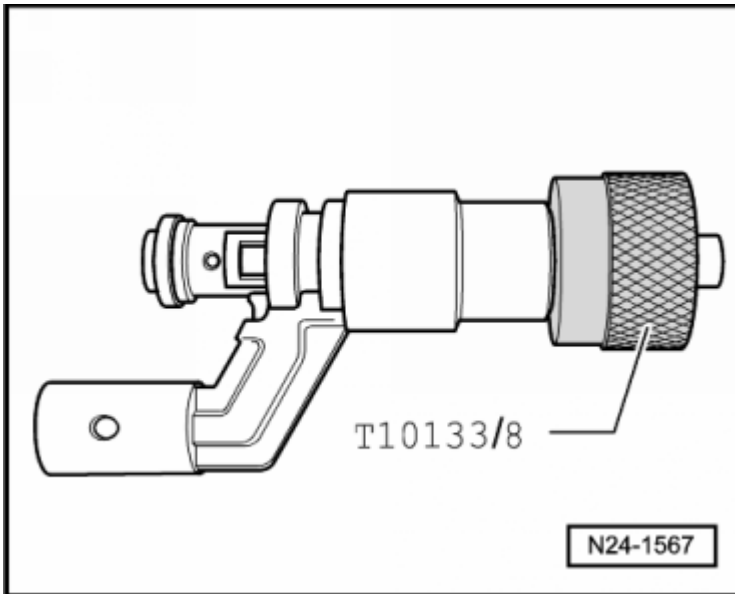


Fig. 78: Identifying Calibrating Sleeve T10133/8 Pressed On To Fuel Injector Until It Stops
Courtesy of AUDI OF AMERICA, LLC

- Pull the T10133/8 off again, turning it in the opposite direction.
- Install the parts from the repair Set on the injector valve -1- :

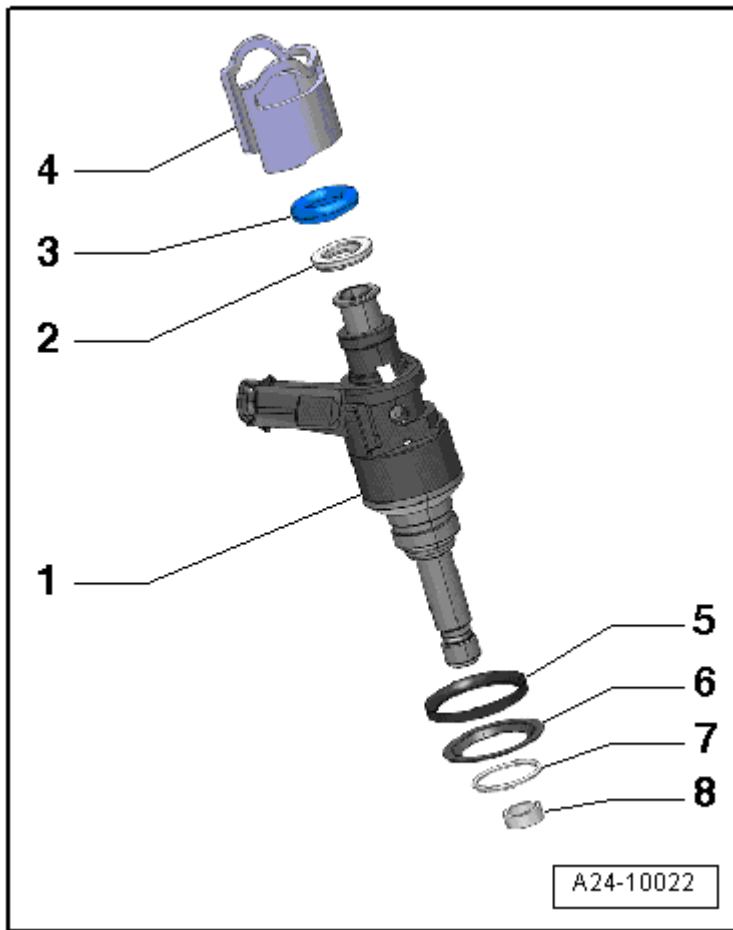


Fig. 79: Identifying Fuel Injector Components

Courtesy of AUDI OF AMERICA, LLC

2 - Spacer ring

3 - O-ring

4 - Support ring

5 - Upper sealing washer - note installation position

6 - Lower sealing washer - note installation position

7 - Circlip - do not overstretch

-- Coat the new O-ring with clean engine oil before installing.

NOTE: **The combustion chamber seal -8- must not be oiled.**

-- Press the fuel injector by hand into the bore in the cylinder head (free of oil and grease) until it stops. Make

sure the fuel injectors are positioned correctly in cylinder head.

NOTE:

- The fuel injector must not be difficult to install. If necessary, wait as the seal continues to pull itself together.
- Check the fuel injectors for correct seating and installation position in cylinder head.
- If it is difficult to install the fuel injector by hand use the T10133/2A -2- with the T10133/3.

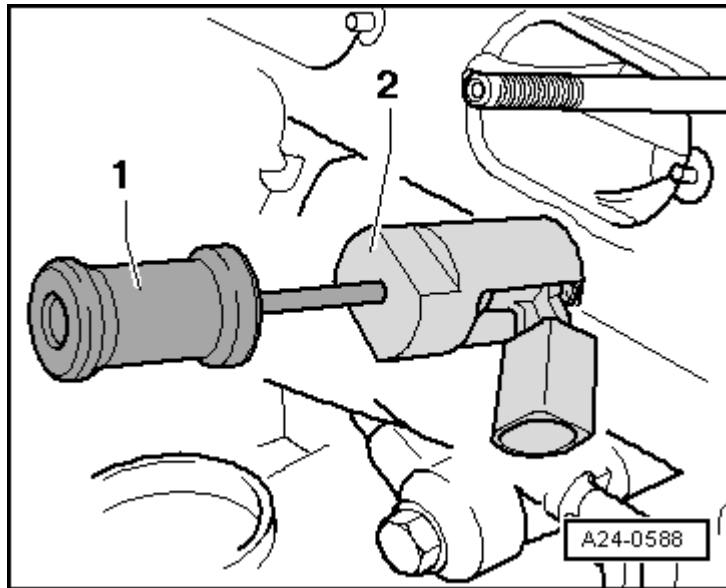


Fig. 80: Identifying Installation Hammer T10133/3 To Puller T10133/2
Courtesy of AUDI OF AMERICA, LLC

- The electrical connection of the fuel injector must engage in the intended recess of the cylinder head.
- Coat the high pressure fuel injector O-rings with clean engine oil so they are easier to guide into the fuel rail.
- Replace all seals.

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

-- Install the lower intake manifold section. Refer to **INTAKE MANIFOLD LOWER SECTION, WITH FUEL RAIL.**

-- Install the supercharger. Refer to **Removal and Installation** .

HEATED OXYGEN SENSOR -G39-

Special Tools and workshop equipment required

- Ring Spanner 7-Piece Set 3337

Removing

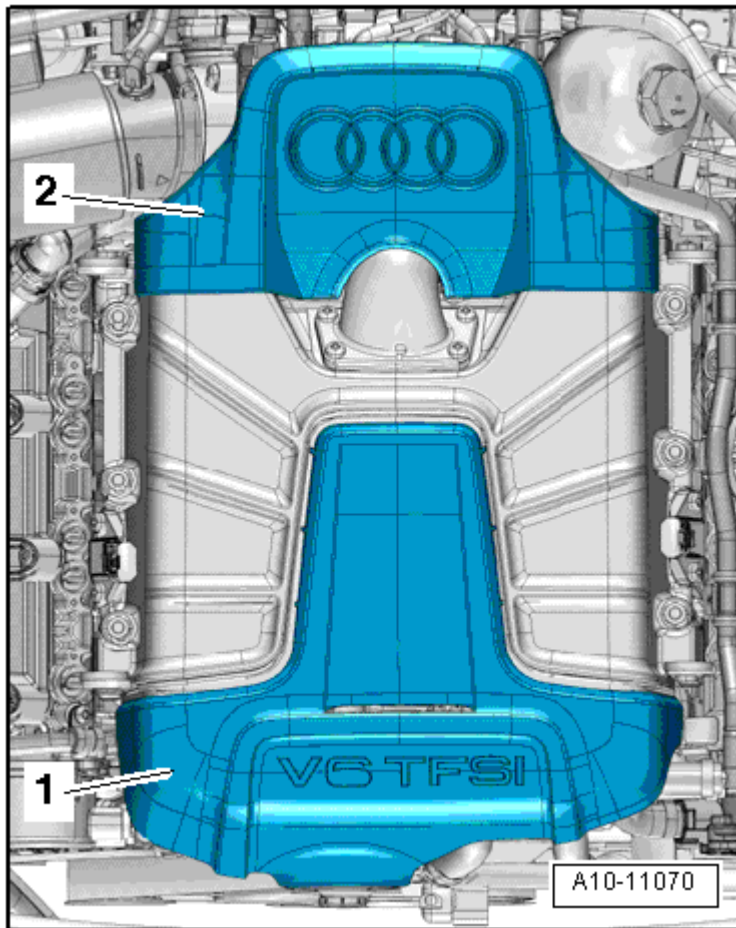


Fig. 81: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

-- Remove the rear engine cover -2- upward.

-- Free up the fuel line -4- and hose connection -1- from the EVAP canister on the air filter housing and on the air guide tube.

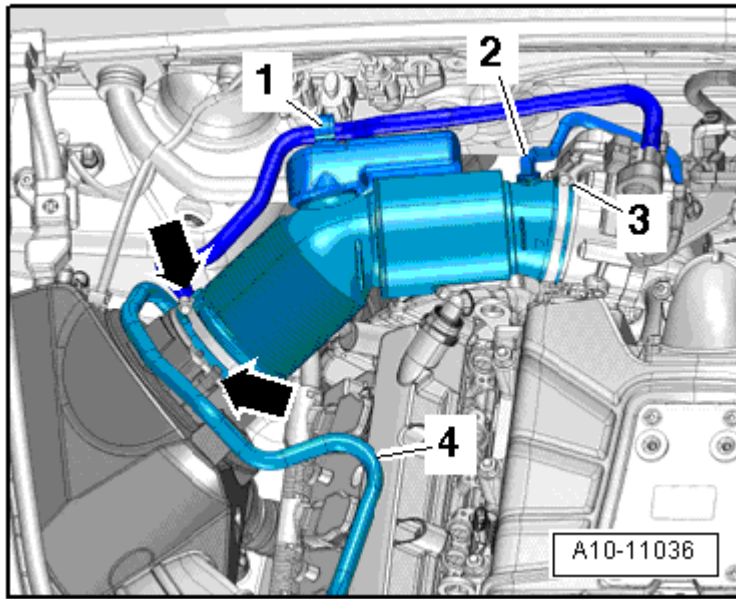


Fig. 82: Identifying Free Up Fuel Line
Courtesy of AUDI OF AMERICA, LLC

- Remove the vacuum hose -2- from the air guide hose connection.
- Remove the air guide pipe by loosening the hose clamp -3- and opening the clips -arrows-.
- Remove the air filter housing lower section. Refer to **AIR FILTER**.
- Disconnect the connector -4- on the Heated Oxygen Sensor (HO2S) 2 -G39- and free up the wire.

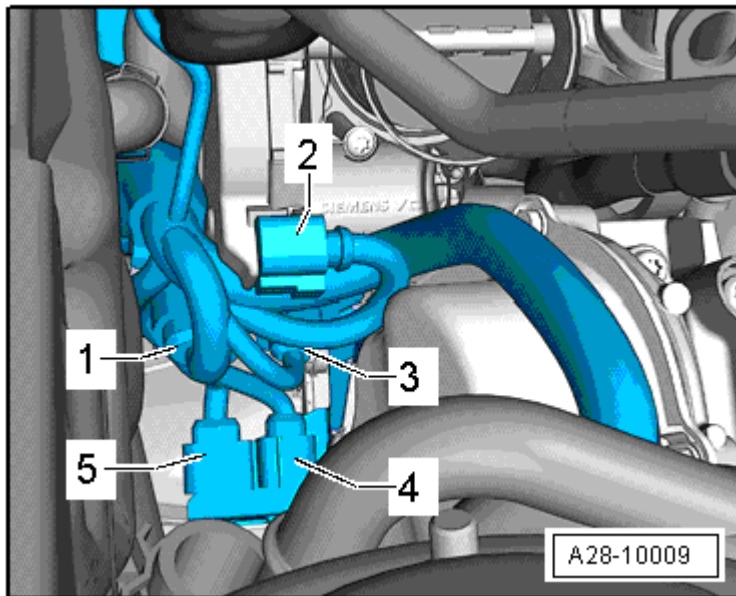


Fig. 83: Identifying Oxygen Sensor Electrical Connectors On Cylinder Bank 1 (Right)
Courtesy of AUDI OF AMERICA, LLC

-- Remove the HO2S 2 -2- using a Tool from the 3337.

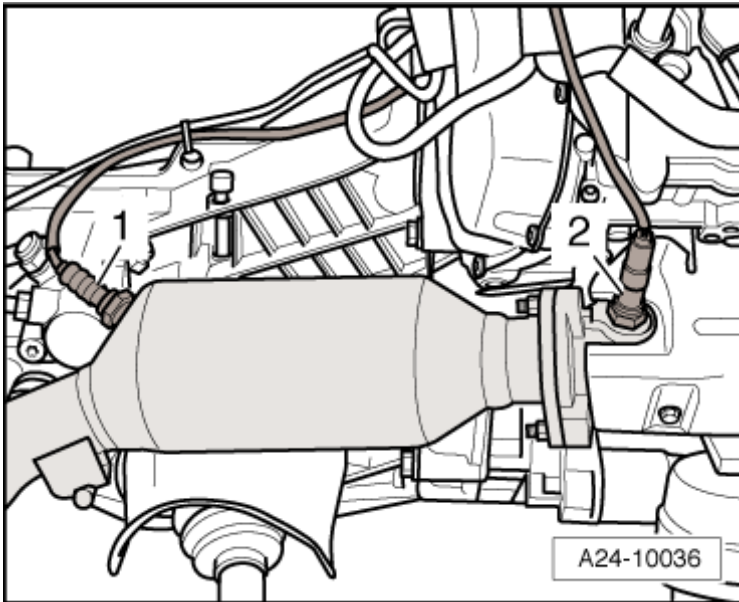


Fig. 84: Identifying Oxygen Sensors Location, Cylinder Bank 1 (Right)

Courtesy of AUDI OF AMERICA, LLC

NOTE: To provide a better illustration, component location is shown from behind with engine removed.

Installing

Install in reverse order, paying attention to the following:

- NOTE:**
- Coat new oxygen sensors with an assembly paste.
 - When installing the previous oxygen sensor, coat the thread with hot bolt paste.
 - Assembly paste or hot bolt paste must not enter the slots on the oxygen sensor body.
 - Always install the oxygen sensor wire in the same location so it does not come into contact with the exhaust pipe.
 - When installing, bring all cable ties back to same positions.
- Tightening specifications: Heated oxygen sensors, assembly overview, refer to **OXYGEN SENSORS OVERVIEW**

HEATED OXYGEN SENSOR 2 -G108-

Special Tools and workshop equipment required

- Ring Spanner 7-Piece Set 3337

Removing

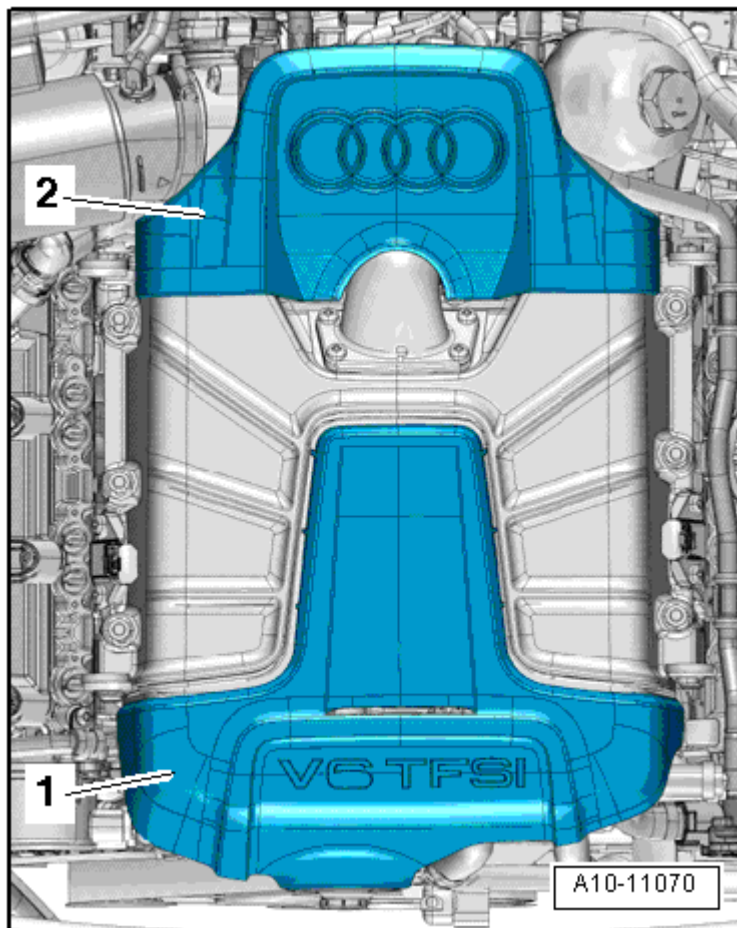


Fig. 85: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Remove the rear engine cover -2- upward.
- Remove bolt -arrow-.

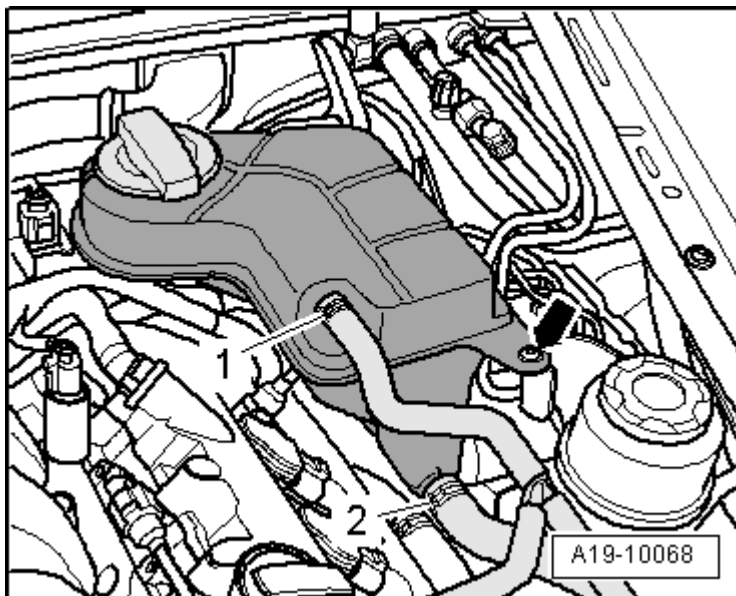


Fig. 86: Identifying Coolant Hoses At Coolant Expansion Tank
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the electrical connector to the engine coolant level warning switch -F66- on the bottom of the coolant reservoir and lay the reservoir aside with the coolant hoses -1 and 2- attached.

-- Disconnect the connector -2- on the Heated Oxygen Sensor (HO2S) 2 -G108- and free up the wire.

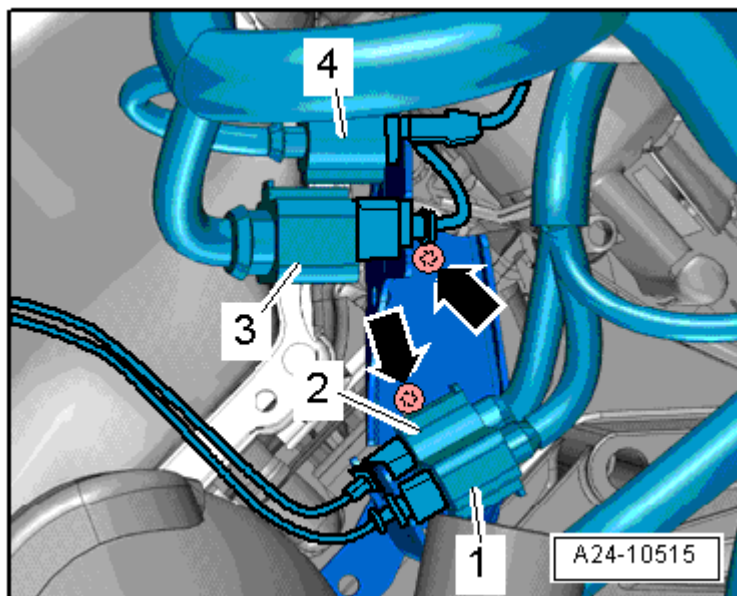


Fig. 87: Identifying Connector Bracket
Courtesy of AUDI OF AMERICA, LLC

-- Remove the HO2S 2 -1- using a Tool from the 3337.

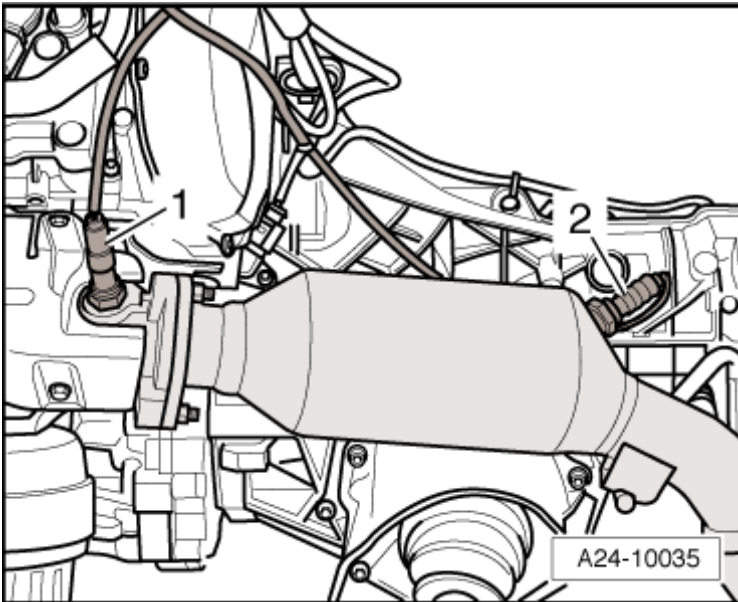


Fig. 88: Using Ring Spanner Set 3337 To Remove Oxygen Sensor
Courtesy of AUDI OF AMERICA, LLC

NOTE: To provide a better illustration, component location is shown from behind with engine removed.

Installing

Install in reverse order, paying attention to the following:

- NOTE:**
- Coat new oxygen sensors with an assembly paste.
 - When installing the previous oxygen sensor, coat the thread with hot bolt paste.
 - Assembly paste or hot bolt paste must not enter the slots on the oxygen sensor body.
 - Always install the oxygen sensor wire in the same location so it does not come into contact with the exhaust pipe.
 - When installing, bring all cable ties back to same positions.
- Tightening specifications: Heated oxygen sensors, assembly overview, refer to **OXYGEN SENSORS OVERVIEW**

HIGH PRESSURE LINE

Special Tools and workshop equipment required

- Torque Wrench 5-50 Nm V.A.G 1331
- Tool Insert, AF 17 V.A.G 1331/6

Removing

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

- Reduce the fuel pressure down to residual pressure before opening the high pressure area of the fuel injection system.

-- Reduce fuel pressure in high pressure area. Refer to **RELEASING PRESSURE IN HIGH PRESSURE AREA**.

-- Remove the supercharger. Refer to **Removal and Installation** .

-- Remove the front secondary air hose -arrow- from its bracket and disconnect it; to do this, press the release buttons.

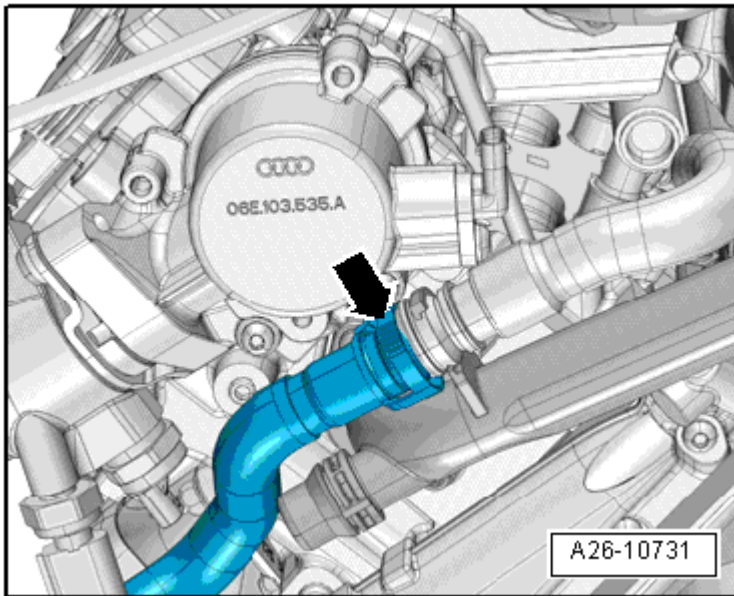


Fig. 89: Identifying Front Air Hose -Arrow-, Removal
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows- and move the intake manifold runner position sensor -G336- and the intake flap vacuum actuator to the side.

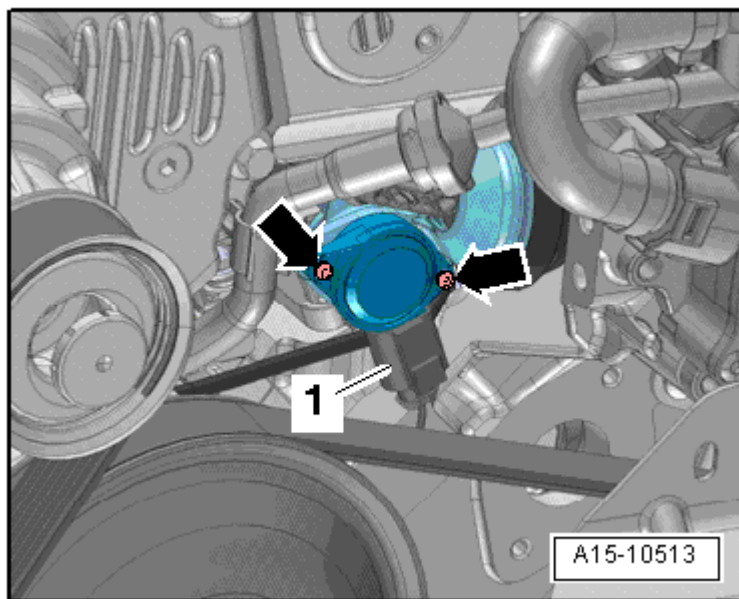


Fig. 90: Identifying Intake Manifold Runner Position Sensor -G336-
Courtesy of AUDI OF AMERICA, LLC

NOTE:

- Ignore -1-.
- Cylinder bank 2 (left) is shown in the illustration.

-- Remove the bolts -arrows- and threaded connection -1-.

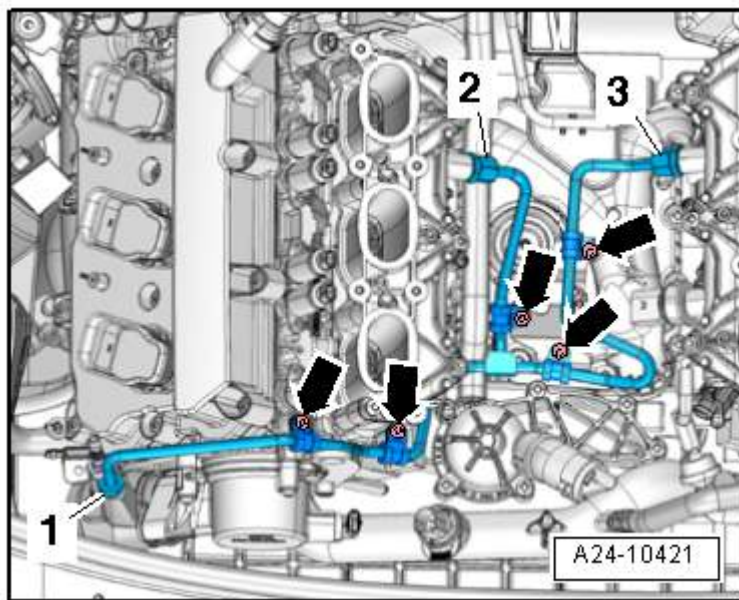


Fig. 91: Identifying Bolts -Arrows- And Threaded Connection -1 & Union Nuts - 2 And 3-
Courtesy of AUDI OF AMERICA, LLC

-- Remove the union nuts -2 and 3- while counter holding the threaded connection.

NOTE: Do not change the bent shape of the high pressure line.

Installing

- Tightening specifications: High pressure Pump assembly overview, refer to **HIGH PRESSURE Pump OVERVIEW**

NOTE:

- High pressure line connections must not show any signs of damage.
- Do not change the bent shape of the high pressure line.

-- First tighten the union nut by hand making sure that it contact the high pressure line free-of-stress.

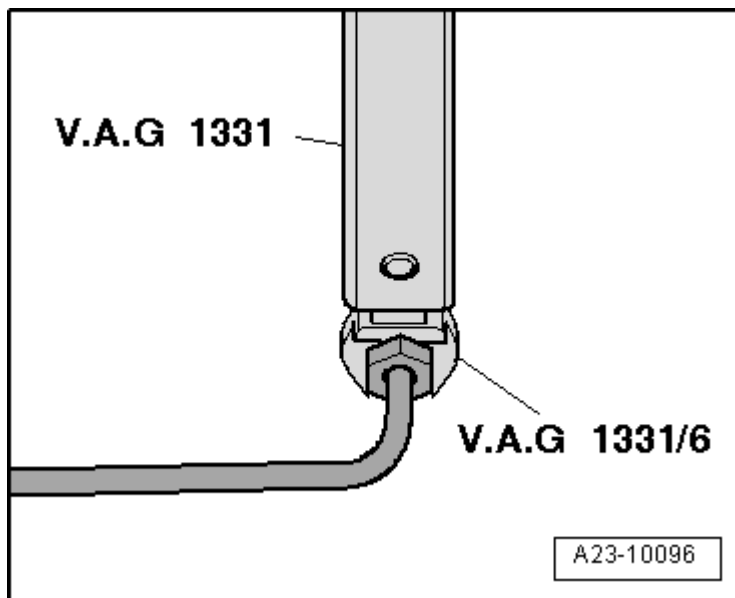


Fig. 92: Identifying SW 17 Union Nut At Fuel Rail, Torque Wrench V.A.G 1331 And SW 17 Socket V.A.G 1331/6

Courtesy of AUDI OF AMERICA, LLC

-- Counter hold the fuel rail using an open-end wrench on the threaded connection and tighten the union nut using a V.A.G 1331 and a V.A.G 1331/6.

-- First tighten the bolt of the retaining strap, after that, the high pressure line is tightened.

-- Install the supercharger. Refer to **Removal and Installation** .

HIGH PRESSURE PUMP

Special Tools and workshop equipment required

- Torque Wrench 5-50 Nm V.A.G 1331
- Ratchet, Reversible V.A.G 1331/1

- Socket Insert AF 14 V.A.G 1331/8

Removing

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

- The fuel pressure must be reduced to residual pressure before opening the high pressure area of the fuel injection system. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

NOTE:

- The high pressure Pump can only be removed and installed when the engine is cold.
- When installing, make sure that no dirt enters the fuel system.
- Catch escaping fuel with a rag.
- The O-ring must always be replaced.
- High-pressure fuel lines must always be fastened free of tension.

-- Reduce fuel pressure in high pressure area. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

-- Remove the air duct -1-.

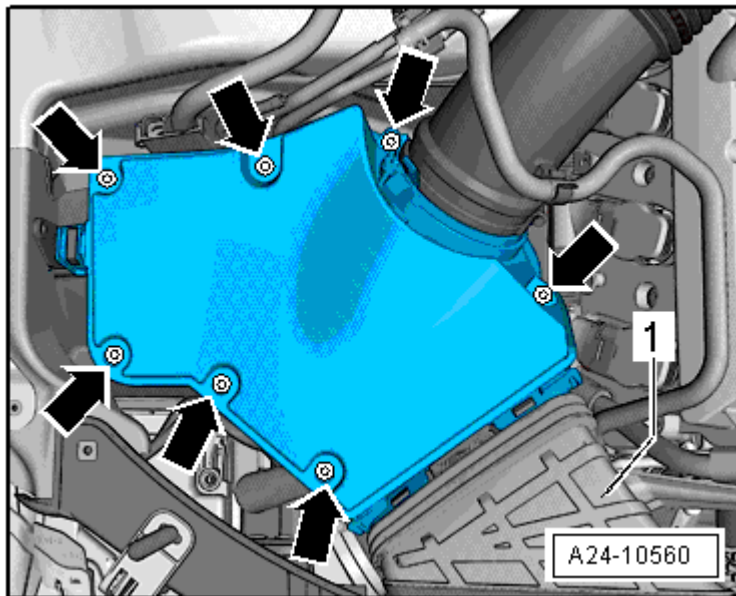


Fig. 93: Identifying Vacuum Hose

Courtesy of AUDI OF AMERICA, LLC

-- Remove the nuts -arrows- and the protective plate -1-.

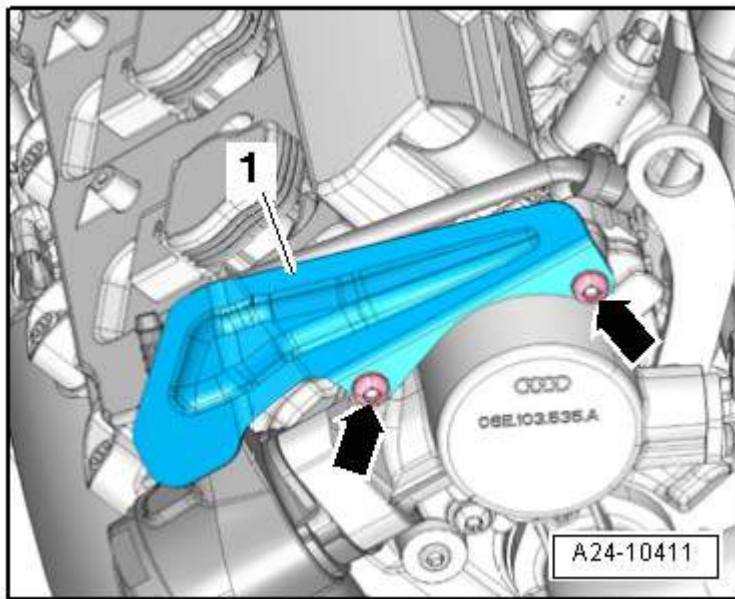


Fig. 94: Identifying Protective Plate -1- And Nuts -Arrows-
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the connectors -1 and 6--.

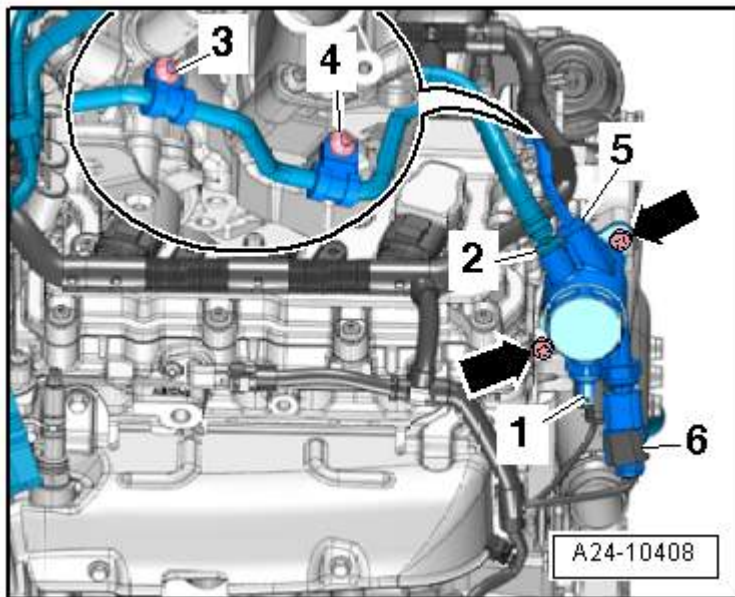


Fig. 95: Identifying High-Pressure Fuel Pump Components
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolt -3- on the retaining clamp.

-- Remove the threaded connections -2 and 5--.

-- Remove the bolts -arrows--.

-- Carefully pull out the high-pressure fuel Pump. The Sleeve can remain installed.

NOTE:

- Do not change bent shape.
- Ignore -4-.

Installing

Install in reverse order, paying attention to the following:

NOTE:

- High pressure line connections must not show any signs of damage.
- Do not bend the high pressure line to a different angle.

-- Replace the O-ring for the high-pressure Pump.

-- Check the plunger -1- for damage and replace it if necessary.

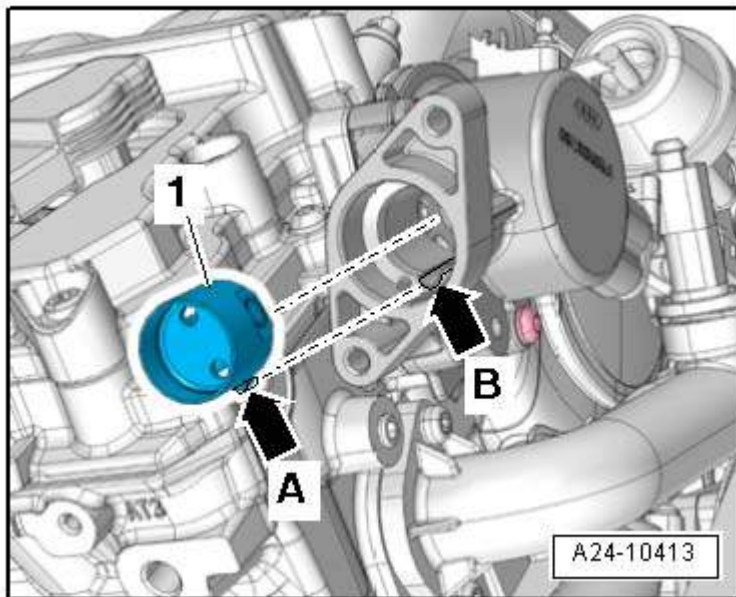


Fig. 96: Identifying Inserting Plunger -1- With Tab -Arrow A- Into Guide -Arrow B-
Courtesy of AUDI OF AMERICA, LLC

-- Coat the plunger with oil and insert it with the tab -arrow A- in the guide -arrow B-.

-- Rotate the crankshaft in the direction of engine rotation at the vibration damper bolt while pressing the roller tappet into the cylinder head until it reaches the deepest point.

-- Only lift the high pressure line slightly to insert the high pressure Pump.

-- Tighten the bolts on the high pressure Pump hand-tight.

-- Tighten the bolts crosswise with the required torque.

- Tightening specifications: High pressure Pump assembly overview, refer to **HIGH PRESSURE Pump OVERVIEW**

-- Install the high pressure line -2 and 5-. Refer to **HIGH PRESSURE LINE**.

-- Connect the connectors -1 and 6-.

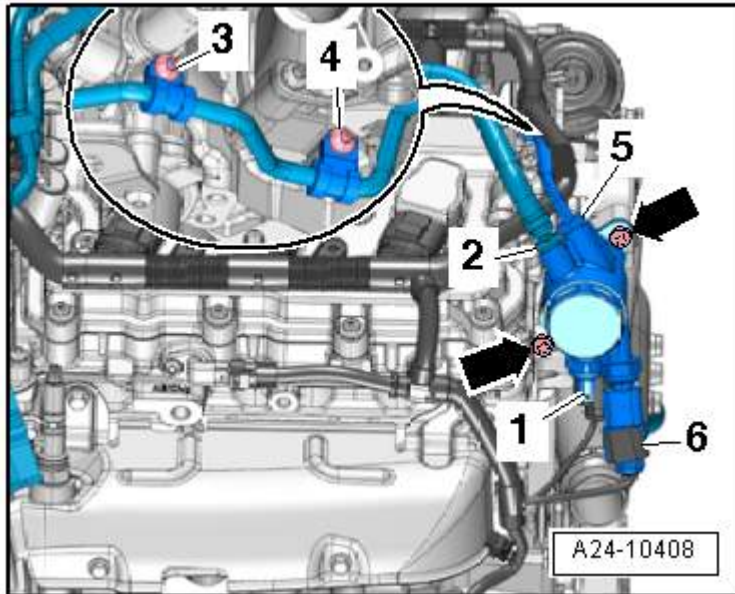


Fig. 97: Identifying High-Pressure Fuel Pump Components

Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolt -3- on the clamp.

NOTE: Check fuel system for leaks.

INTAKE MANIFOLD LOWER SECTION, WITH FUEL RAIL

Special Tools and workshop equipment required

- Torque Wrench 5-50 Nm V.A.G 1331
- Ring Spanner Insert V.A.G 1331/2
- Hand Vacuum Pump VAS 6213

Removing

NOTE: The following removal and installation procedure is for the left lower section of the intake manifold. The procedure for the other side is identical.

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

- The fuel pressure must be reduced to residual pressure before opening the high pressure area of the fuel injection system. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

-- Reduce the fuel pressure in high pressure area. Refer to RELEASING PRESSURE IN HIGH PRESSURE AREA.

-- Remove the supercharger. Refer to Removal and Installation .

-- Push the vacuum hoses to the side.

-- Disconnect the fuel pressure sensor -G247- connector -4-.

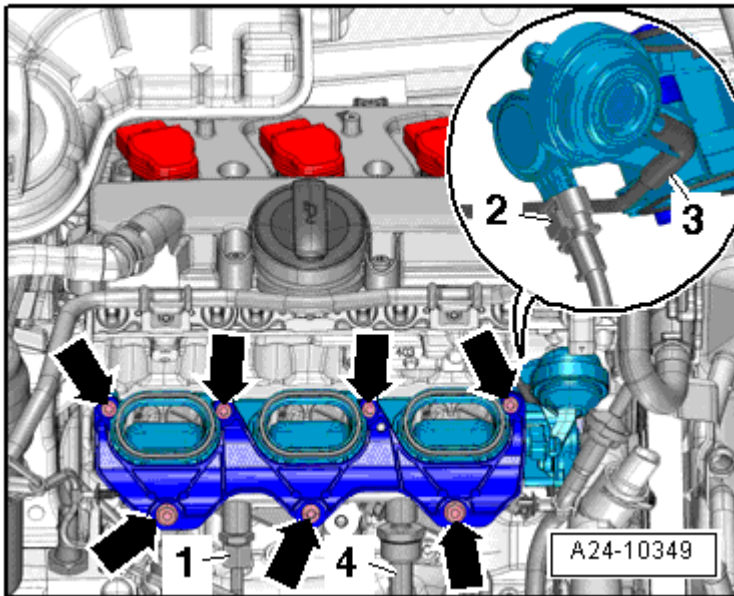


Fig. 98: Locating Manifold Lower Section Bolts -Arrows-
Courtesy of AUDI OF AMERICA, LLC

-- Remove the union nut -1- while counter holding the threaded connection.

-- Remove the bolts and nuts -arrows- and remove the lower intake manifold section and fuel rail.

-- Disconnect the connector -2- on the intake manifold runner position sensor and remove the vacuum hose -3-.

CAUTION: The engine could be destroyed.

- Cover the intake channels with a clean cloth to prevent small particles from getting into the engine through the intake channels in the cylinder heads.

Installing

Install in reverse order, paying attention to the following:

NOTE:

- If a fuel injector was removed from the cylinder head, then the Teflon® seal must be replaced.
- Replace the seals and the O-rings.
- Coat the fuel injector O-rings lightly with clean engine oil.

Move the intake manifold flaps in direction of -arrow- when installing the intake manifold lower section.

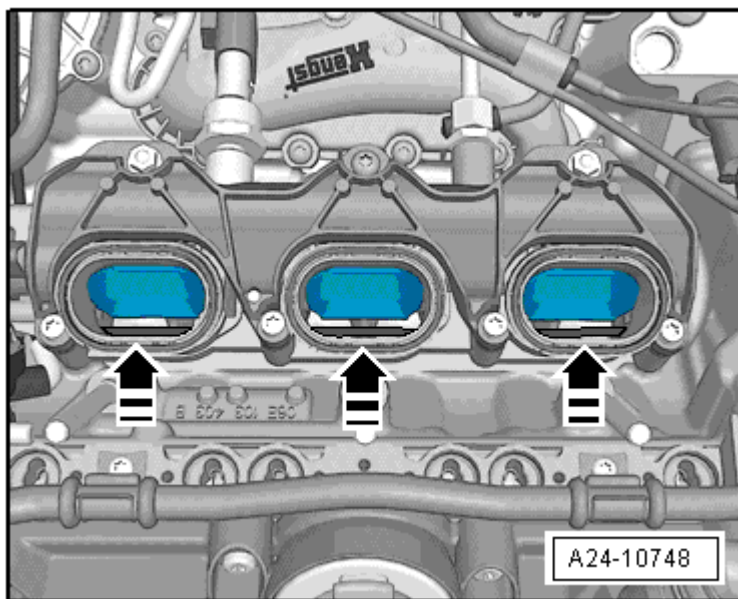


Fig. 99: Identifying Intake Manifold Flaps
Courtesy of AUDI OF AMERICA, LLC

-- Connect VAS 6213 to intake manifold runner control vacuum actuator, as shown in the illustration.

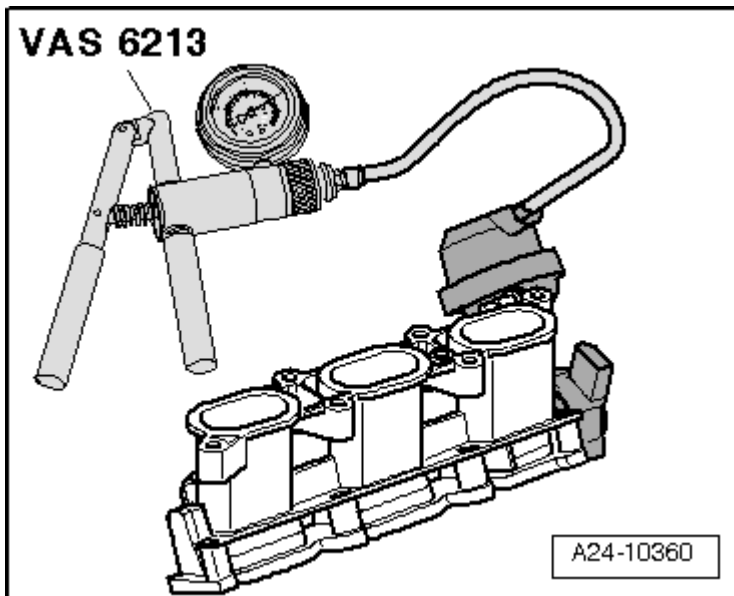


Fig. 100: Connecting Hand Vacuum Pump VAS 6213 To Intake Manifold Runner Control Vacuum Actuator

Courtesy of AUDI OF AMERICA, LLC

-- Generate vacuum using hand vacuum Pump.

- The intake flaps are opened.

NOTE: If the intake manifold flaps are not opened, they may get jammed when installing the intake manifold lower section on the cylinder head.

-- Press the intake manifold lower section evenly on the fuel injectors.

-- Tighten the bolts and nuts in a diagonal sequence on the intake manifold lower section according to the tightening specification.

- Intake manifold lower section tightening specification. Refer to **Fig. 35**.

-- Remove hand vacuum Pump from the intake manifold runner control vacuum actuator.

-- Connect the fuel pressure sensor connector -4-.

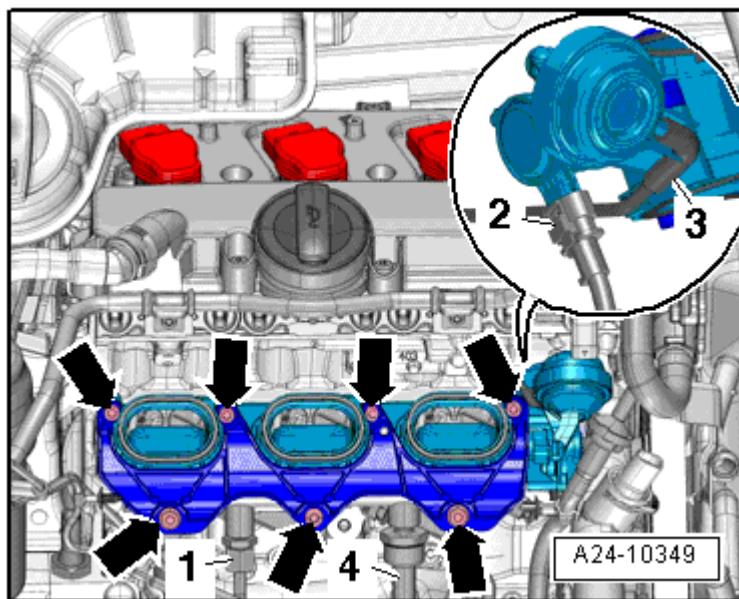


Fig. 101: Locating Manifold Lower Section Bolts -Arrows-
Courtesy of AUDI OF AMERICA, LLC

-- Counter hold the threaded connection and tighten the union nut -1-.

- Tightening Specifications: Intake manifold lower section assembly overview, refer to **LOWER INTAKE MANIFOLD SECTION OVERVIEW**

-- Make sure the high pressure line is free of tension.

-- Install the supercharger. Refer to **Removal and Installation** .

OXYGEN SENSOR AFTER THREE WAY CATALYTIC CONVERTER -G130-

Special Tools and workshop equipment required

- Ring Spanner 7-Piece Set 3337

Removing

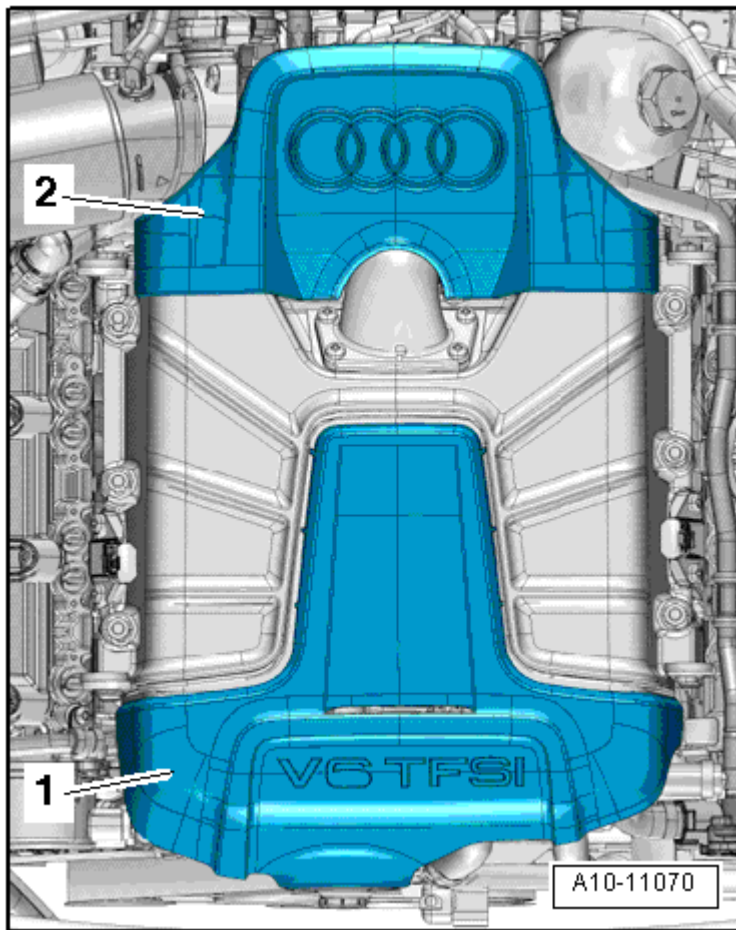


Fig. 102: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

-- Remove the rear engine cover -2- upward.

-- Free up the fuel line -4- and hose connection -1- from the Evaporative Emission (EVAP) canister on the air filter housing and on the air guide tube.

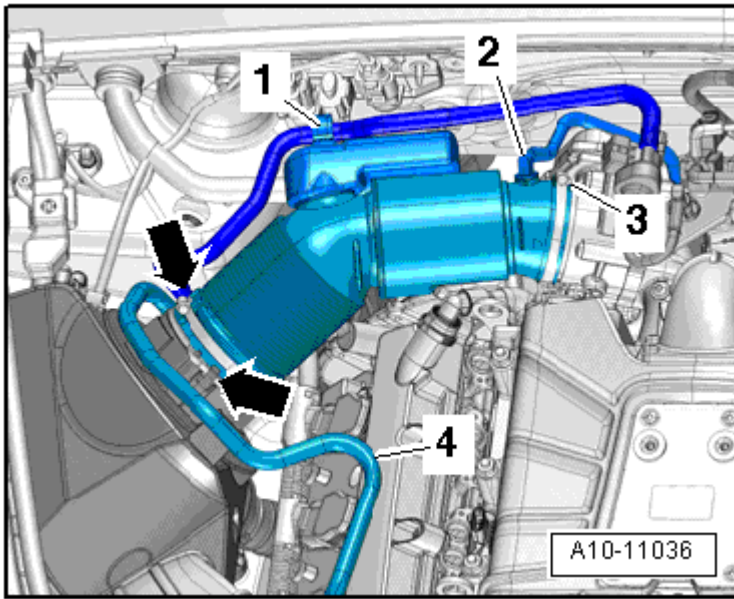


Fig. 103: Identifying Free Up Fuel Line
Courtesy of AUDI OF AMERICA, LLC

- Remove the vacuum hose -2- from the air guide hose connection.
- Remove the air guide pipe by loosening the hose clamp -3- and opening the clips -arrows-.
- Remove the air filter housing lower section. Refer to **AIR FILTER**.
- Disconnect the connector -5- on the Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC) and free up the wire.

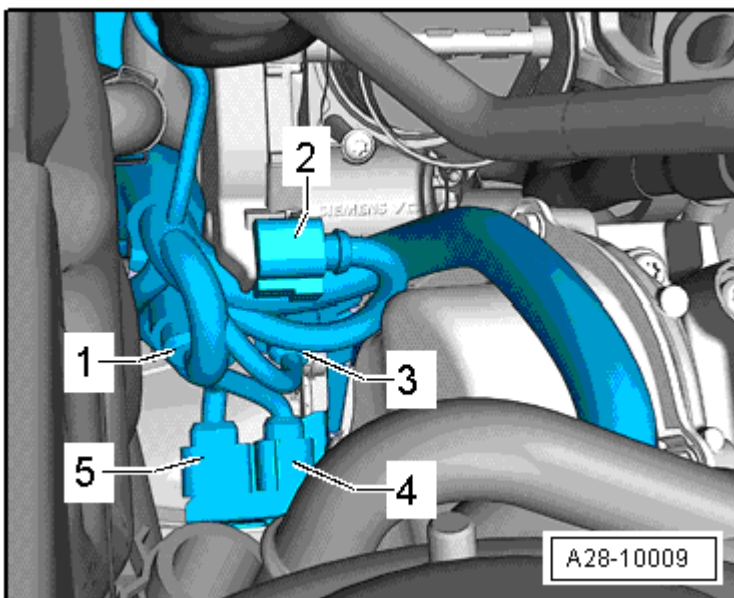


Fig. 104: Identifying Oxygen Sensor Electrical Connectors On Cylinder Bank 1 (Right)

Courtesy of AUDI OF AMERICA, LLC

-- Remove the O2S after TWC converter -3- using a Tool from the 3337.

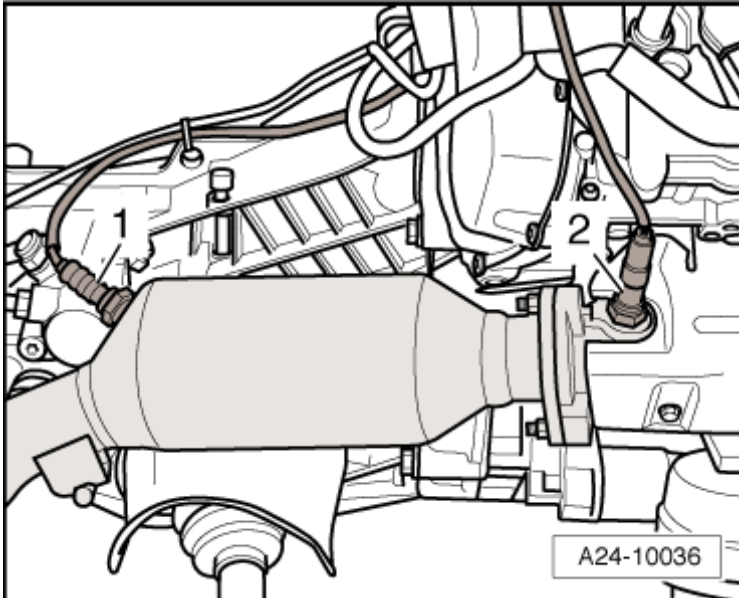


Fig. 105: Identifying Oxygen Sensors Location, Cylinder Bank 1 (Right)

Courtesy of AUDI OF AMERICA, LLC

NOTE: To provide a better illustration, component location is shown from behind with engine removed.

Installing

Install in reverse order, paying attention to the following:

- NOTE:**
- Coat new oxygen sensors with an assembly paste.
 - When installing the previous oxygen sensor, coat the thread with hot bolt paste.
 - Assembly paste or hot bolt paste must not enter the slots on the oxygen sensor body.
 - Always install the oxygen sensor wire in the same location so it does not come into contact with the exhaust pipe.
 - When installing, bring all cable ties back to same positions.
- Tightening specifications: Heated oxygen sensors, assembly overview, refer to **OXYGEN SENSORS OVERVIEW**

OXYGEN SENSOR 2 AFTER CATALYTIC CONVERTER -G131-

Special Tools and workshop equipment required

- Ring Spanner 7-Piece Set 3337

Removing

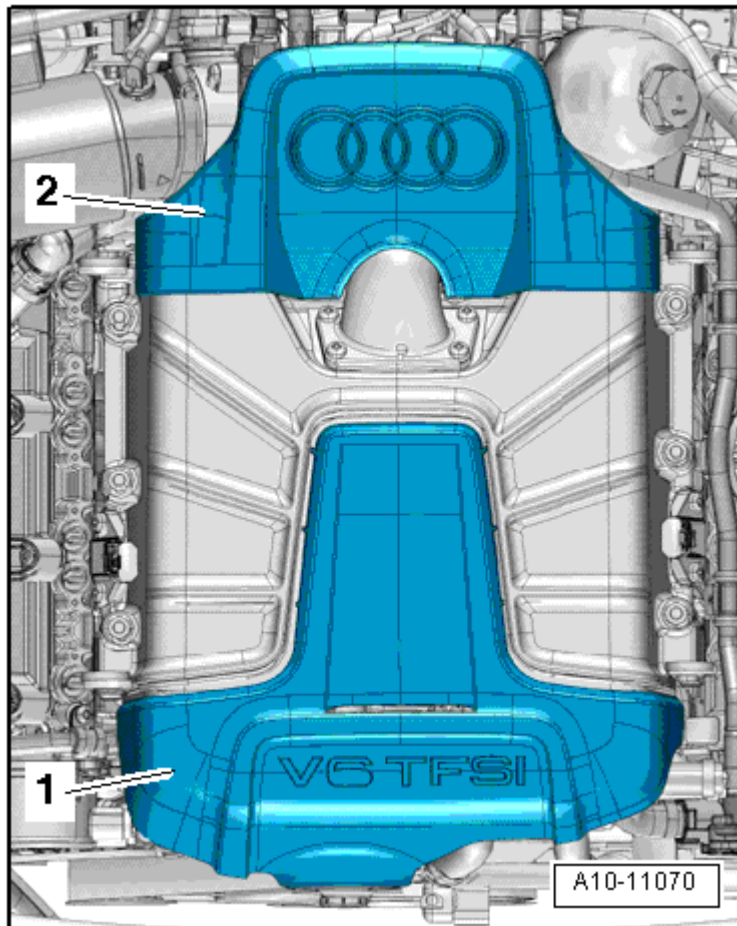


Fig. 106: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Remove the rear engine cover -2- upward.
- Remove bolt -arrow-.

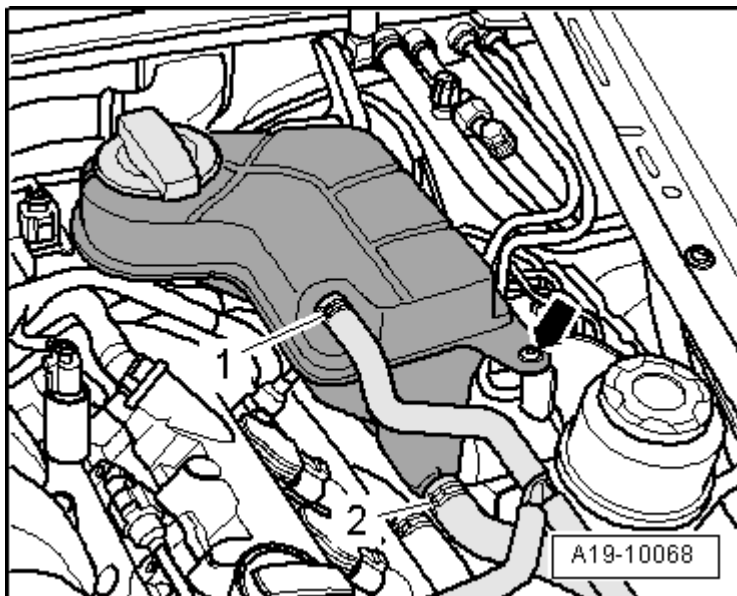


Fig. 107: Identifying Coolant Hoses At Coolant Expansion Tank
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the electrical connector to the engine coolant level warning switch -F66- on the bottom of the coolant reservoir and lay the reservoir aside with the coolant hoses -1- and -2- attached.

-- Disconnect the connector -1- on the Oxygen Sensor (O2S) 2 after catalytic converter and free up the wire.

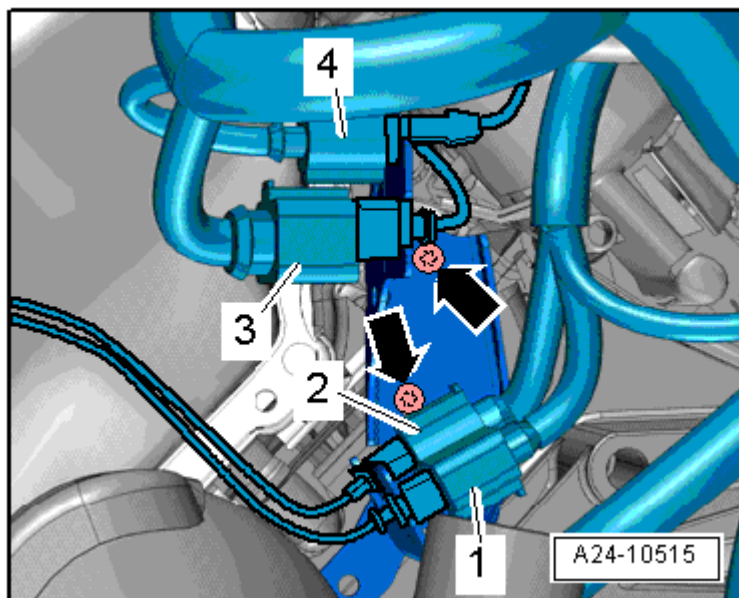


Fig. 108: Identifying Connector Bracket
Courtesy of AUDI OF AMERICA, LLC

-- Remove the noise insulation, to do this, loosen the mounting parts -1, 2, arrow-.

2012 Audi S4

ENGINE 3.0 Liter - Multiport Fuel Injection - Engine Code(s): CCBA (Sedan)

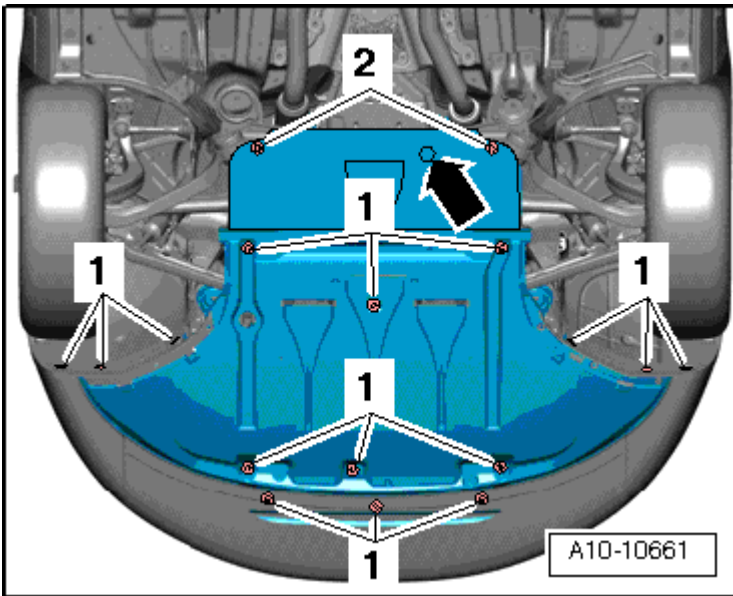


Fig. 109: Identifying Noise Insulation And Mountings
Courtesy of AUDI OF AMERICA, LLC

-- Remove the O2S 2 after catalytic converter -2- using a Tool from the 3337.

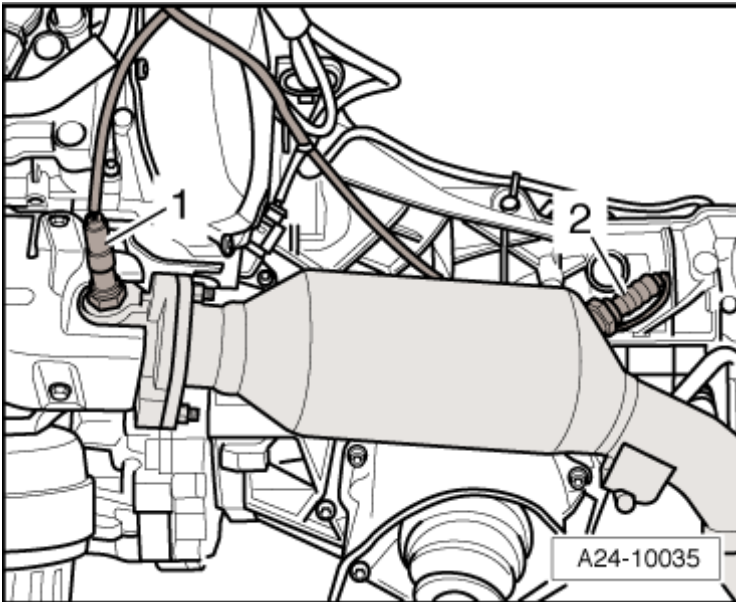


Fig. 110: Using Ring Spanner Set 3337 To Remove Oxygen Sensor
Courtesy of AUDI OF AMERICA, LLC

NOTE: To provide a better illustration, component location is shown from behind with engine removed.

Installing

2012 Audi S4

ENGINE 3.0 Liter - Multiport Fuel Injection - Engine Code(s): CCBA (Sedan)

Install in reverse order, paying attention to the following:

NOTE:

- Coat new oxygen sensors with an assembly paste.
 - When installing the previous oxygen sensor, coat the thread with hot bolt paste.
 - Assembly paste or hot bolt paste must not enter the slots on the oxygen sensor body.
 - Always install the oxygen sensor wire in the same location so it does not come into contact with the exhaust pipe.
 - When installing, bring all cable ties back to same positions.
- Tightening specifications: Heated oxygen sensors, assembly overview, refer to **OXYGEN SENSORS OVERVIEW**

-- Install the noise insulation. Refer to "Underbody Trim" in **Description and Operation** .

THROTTLE VALVE CONTROL MODULE -J338-

Removing

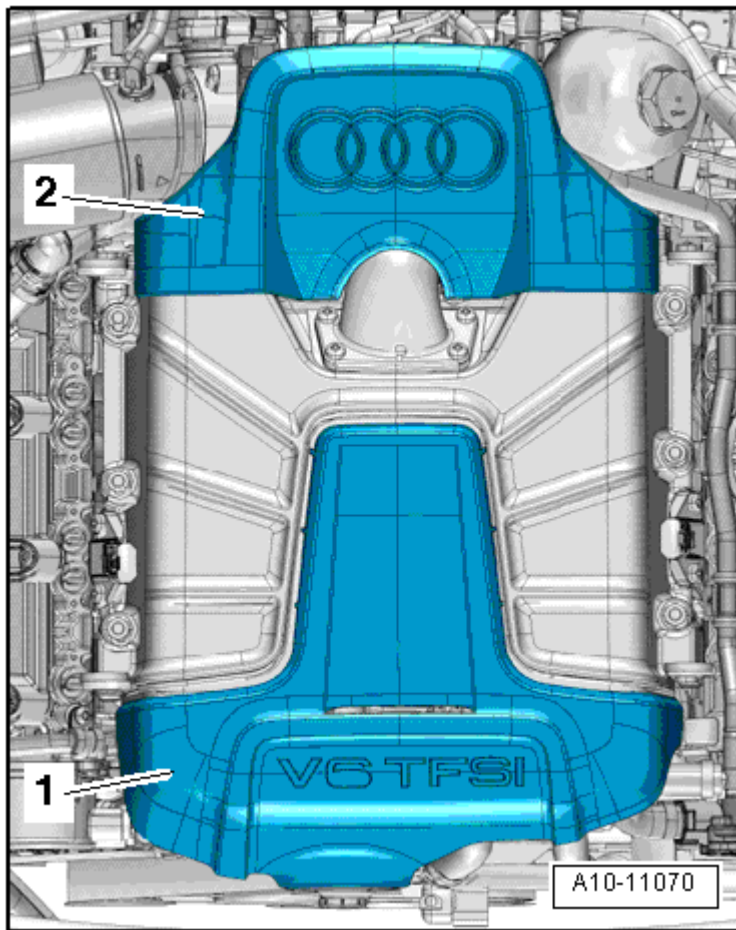


Fig. 111: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

-- Remove the rear engine cover -2- upward.

-- Free up the fuel line -4- and hose connection -1- from the Evaporative Emission (EVAP) canister on the air filter housing and on the air guide tube.

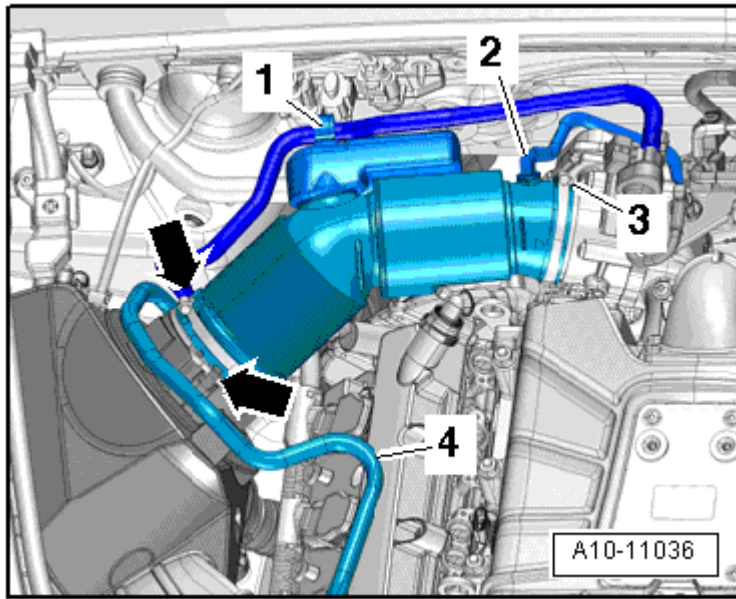


Fig. 112: Identifying Free Up Fuel Line
Courtesy of AUDI OF AMERICA, LLC

- Remove the vacuum hose -2- from the air guide hose connection.
- Remove the air guide pipe by loosening the hose clamp -3- and opening the clips -arrows-.
- Disconnect the connector -1-.

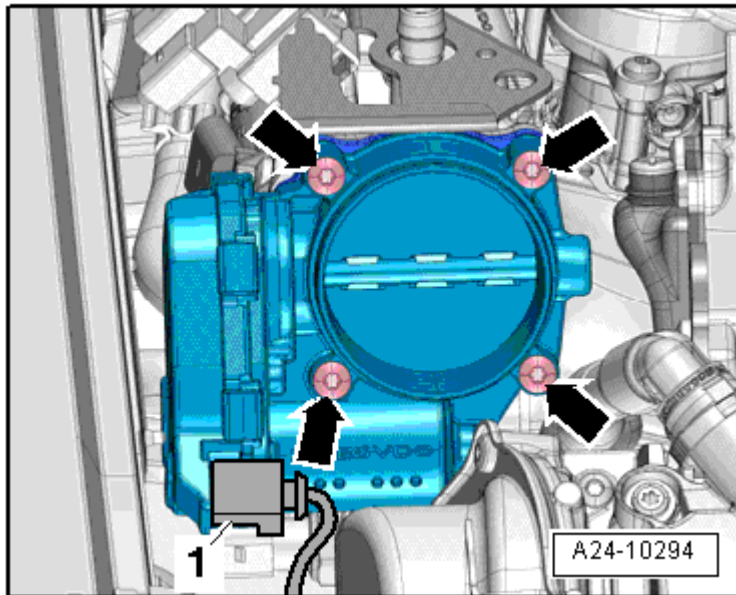


Fig. 113: Locating Throttle Valve Control Module -J338-
Courtesy of AUDI OF AMERICA, LLC

- Remove bolts -arrows- and remove throttle valve control module with the intermediate flange.

CAUTION: The engine could be destroyed.

- Cover the intake channel with a clean cloth to prevent small particles from getting into the supercharger.

Installing

Install in reverse order, paying attention to the following:

NOTE: Replace the O-rings.

-- Install the intermediate flange -2- and O-rings into the supercharger -1- -left arrows-.

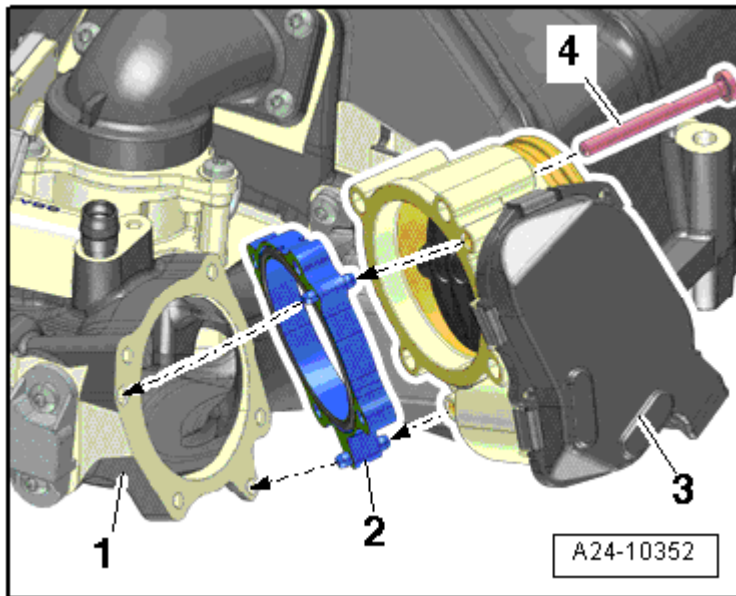


Fig. 114: Identifying Throttle Valve Control Module
Courtesy of AUDI OF AMERICA, LLC

-- Install the throttle valve control module -3- on the intermediate flange -right arrows-.

- Tightening specification: 10 Nm

-- After replacing the throttle valve control module perform an **Adaptation in Guided Functions** using a vehicle diagnostic tester.

SPECIAL TOOLS

Special Tools and workshop equipment required

- Ring Spanner 7-Piece Set 3337

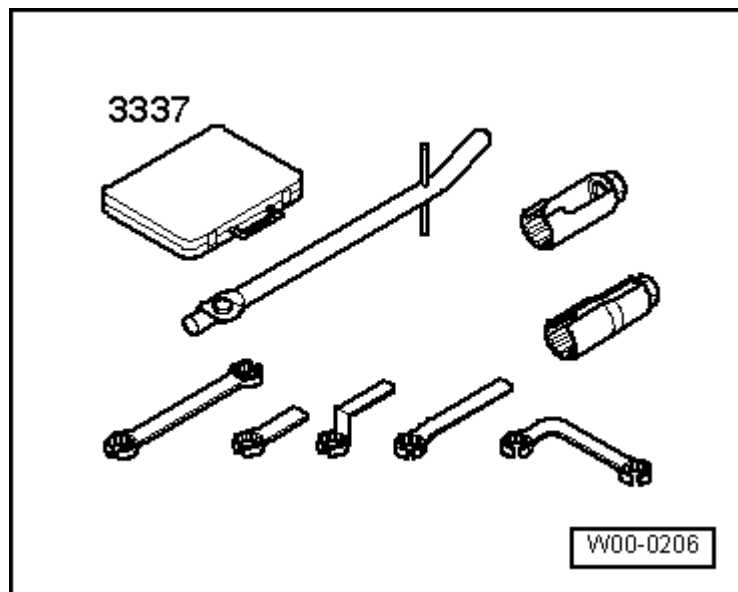


Fig. 115: Identifying Oxygen Sensor Ring Spanner 3337
Courtesy of AUDI OF AMERICA, LLC

- Tool Set T10133

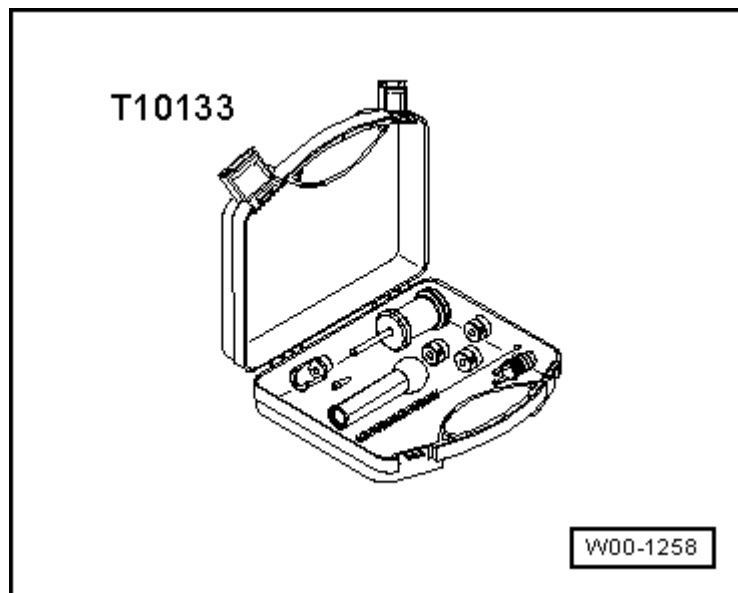


Fig. 116: Identifying Tool Set T10133
Courtesy of AUDI OF AMERICA, LLC

- Release Tool f/ Rev. Light Switch Conn.T40138

2012 Audi S4

ENGINE 3.0 Liter - Multiport Fuel Injection - Engine Code(s): CCBA (Sedan)

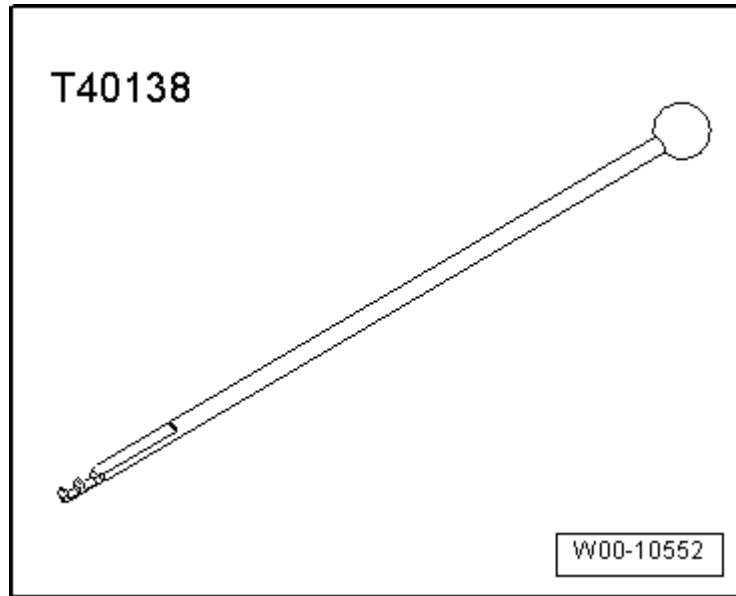


Fig. 117: Identifying T40138
Courtesy of AUDI OF AMERICA, LLC

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

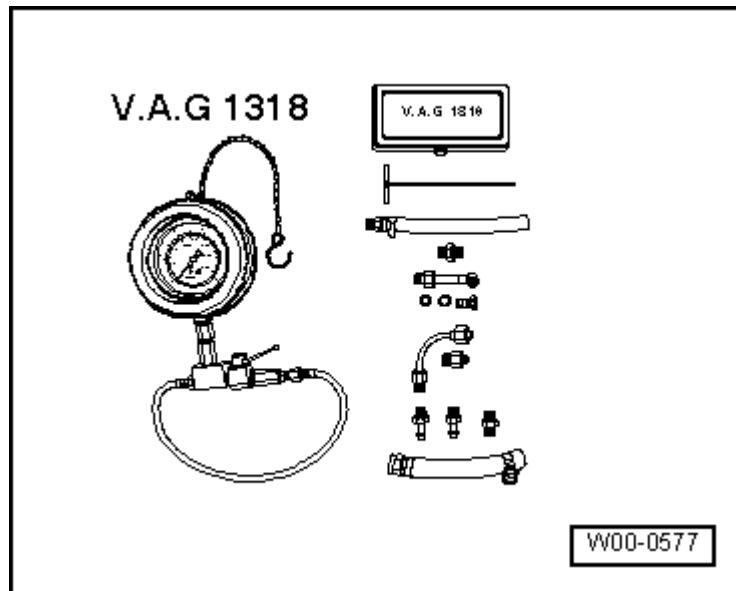


Fig. 118: Identifying Fuel Inj. Pressure Gauge-CIS K-Jetronic V.A.G 1318 With Adapters V.A.G 1318/11, V.A.G 1318/17 And V.A.G 1318/23
Courtesy of AUDI OF AMERICA, LLC

- Adapter V.A.G 1318/10-12
- Torque Wrench 5-50 Nm V.A.G 1331

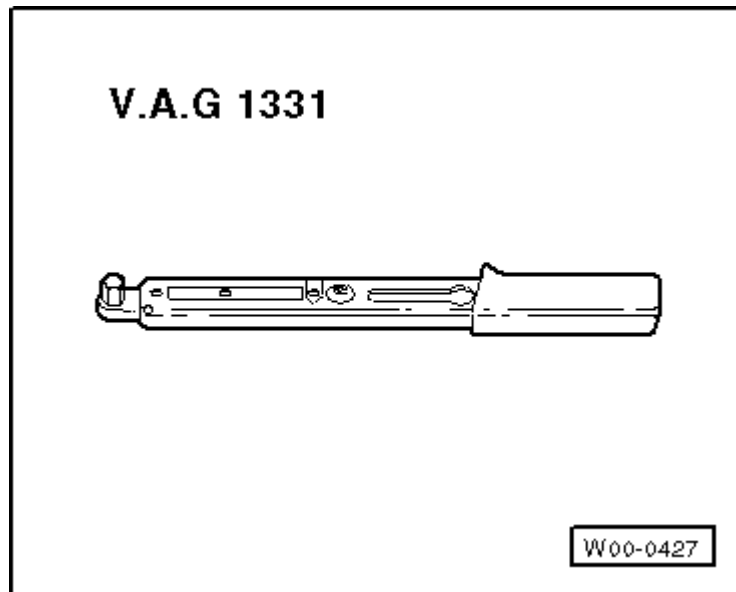


Fig. 119: Identifying Torque Wrench (5 To 50 Nm) V.A.G 1331
Courtesy of AUDI OF AMERICA, LLC

- Ratchet, Reversible V.A.G 1331/1

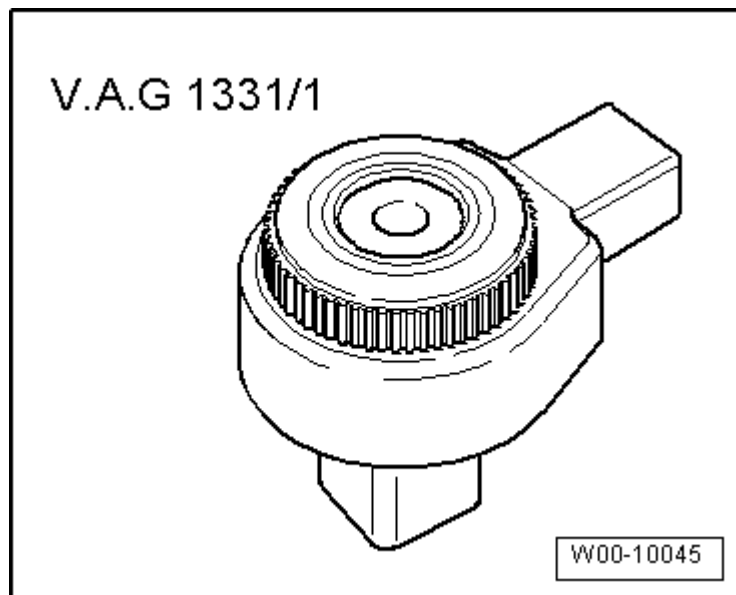


Fig. 120: Identifying Ratchet, Reversible V.A.G 1331/1
Courtesy of AUDI OF AMERICA, LLC

- Tool Insert, AF 17 V.A.G 1331/6

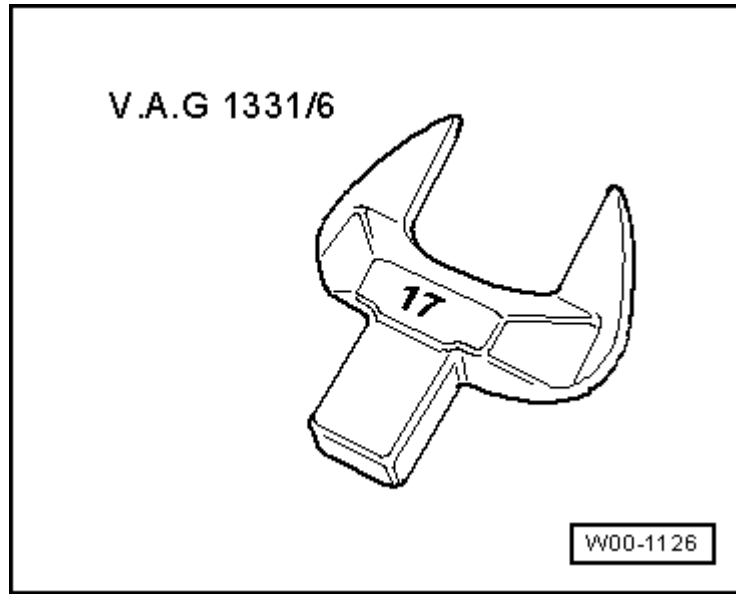


Fig. 121: Identifying Assembly Tool SW 17 V.A.G 1331/6
Courtesy of AUDI OF AMERICA, LLC

- Remote Control V.A.G 1348/3A with Remote Control for VAG 1348 V.A.G 1348/3-3

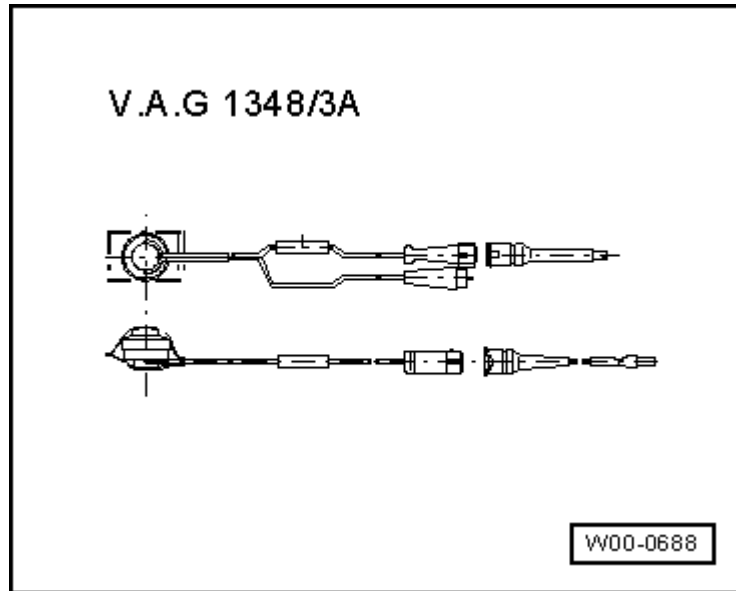


Fig. 122: Identifying Remote Control Connection V.A.G 1348/3A
Courtesy of AUDI OF AMERICA, LLC

- Adapter Lead - V.A.G 1598/39-1-
- Adapter Lead - V.A.G 1598/39-2-
- Test Box 105 Pin - V.A.G 1598/42-

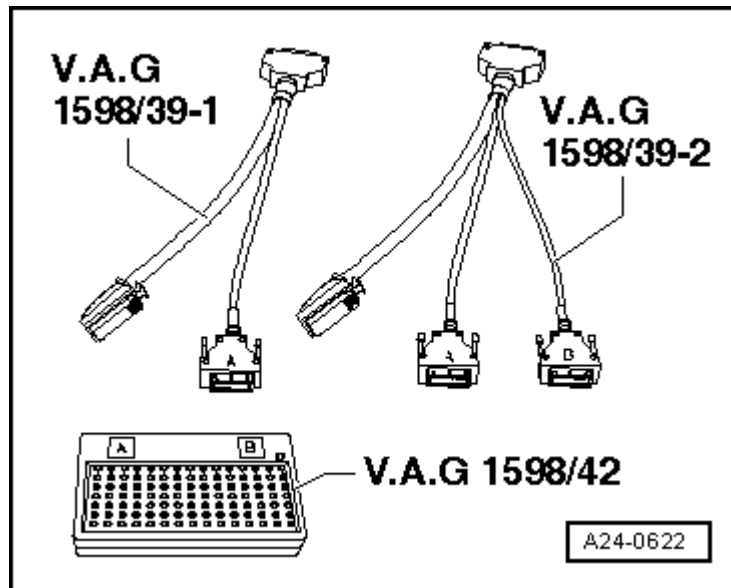


Fig. 123: Identifying Adapter Cable V.A.G 1598/39 & Test Box V.A.G 1598/42
 Courtesy of AUDI OF AMERICA, LLC

- Hot Air Blower VAS 1978/14A -1- with Nozzle Attachment -2- from the Wiring Harness Repair Set VAS 1978 B
- Small commercially available locking pliers -3-

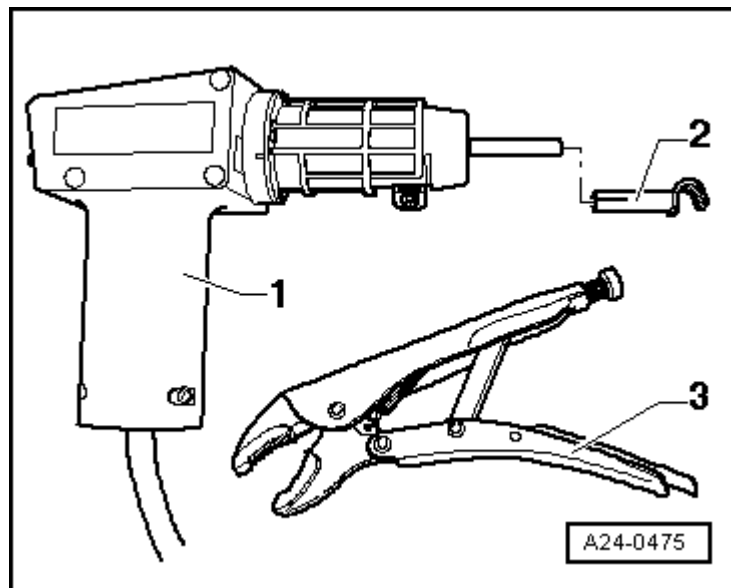


Fig. 124: Identifying Heat Gun, Adapter Nozzle And Pliers
 Courtesy of AUDI OF AMERICA, LLC

- Hand Vacuum Pump VAS 6213

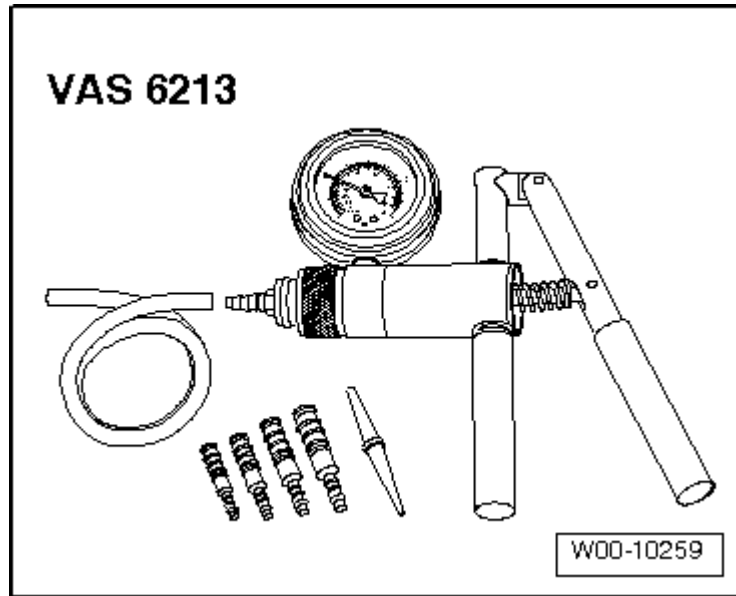


Fig. 125: Identifying Hand Vacuum Pump VAS 6213
Courtesy of AUDI OF AMERICA, LLC

- Not illustrated:
- Trim Removal Wedge 3409
- Puller T10133/2A
- Hammer T10133/3
- Nylon Cylinder Brush T10133/4
- Assembly Cone T10133/5
- Assembly Sleeve T10133/6
- Sizing Sleeve T10133/7
- Sizing Sleeve T10133/8
- Removal Tool T10133/16
- Ring Spanner Insert V.A.G 1331/2
- Socket Insert AF 14 V.A.G 1331/8
- Connector Test Set V.A.G 1594C