

ENGINE

3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

19 COOLING SYSTEM

GENERAL INFORMATION

COOLANT, DRAINING AND FILLING

Special tools and workshop equipment required

- Adapter V.A.G 1274/8
- Adapter for V.A.G 1274 tester V.A.G 1274/10
- Cooling System Charge Unit VAS 6096
- DRIP TRAY FOR VAS 6100 VAS 6208
- Hose Clip Pliers VAS 6362
- Refractometer T10007
- Hose Clip Pliers VAS 6340

DRAINING

NOTE: Collect escaping coolant in a clean container for disposal or reuse.

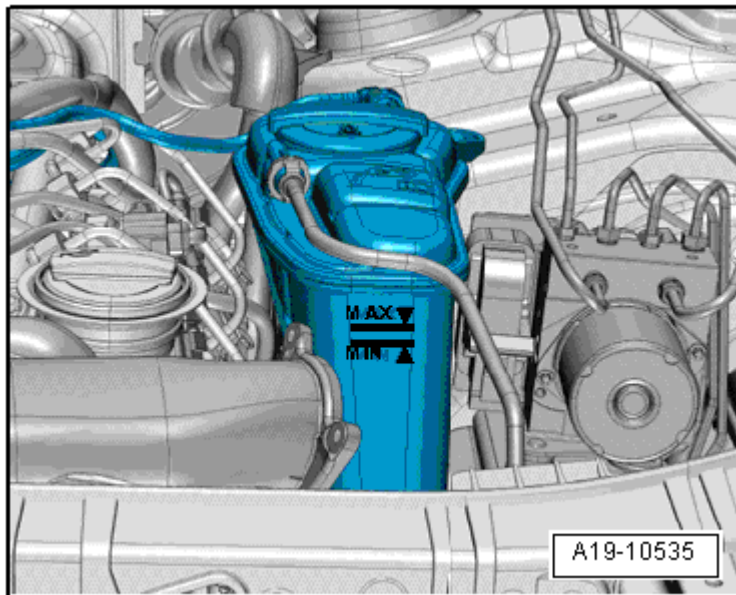


Fig. 1: Identifying Coolant Reservoir Marking
Courtesy of AUDI OF AMERICA, LLC

WARNING: Risk of scalding due to hot steam and hot coolant.

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

- The coolant system is under pressure when the engine is warm.
- Cover the coolant reservoir cap with a cloth and then open it slowly to release the pressure.

-- Open the coolant reservoir cap.

-- Remove the front noise insulation -1-. Refer to Description and Operation .

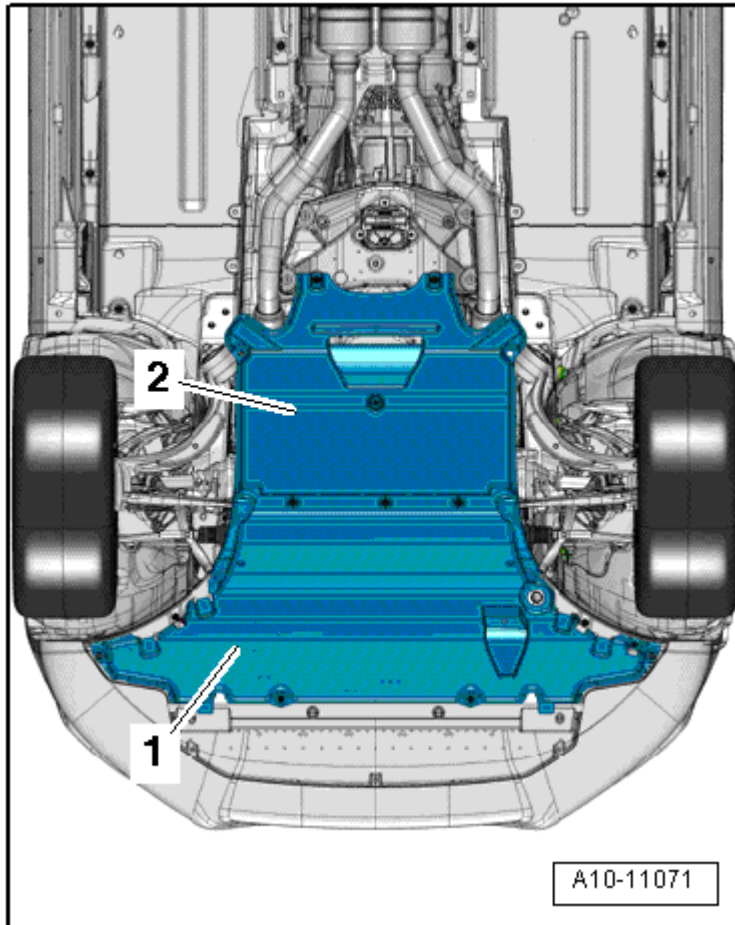


Fig. 2: Identifying Front Noise Insulation
Courtesy of AUDI OF AMERICA, LLC

-- Place the VAS 6208 under the engine.

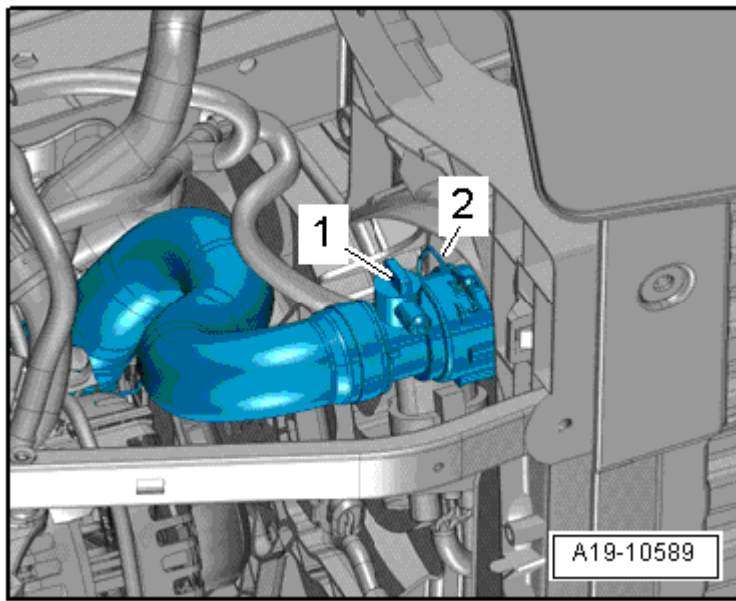


Fig. 3: Identifying Drain Plug And Draining Coolant
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-- Remove the drain plug -1- and drain the coolant.

NOTE: Ignore -2-.

-- Loosen the hose clamp -arrow-, remove the coolant hose from the oil cooler and drain the coolant.

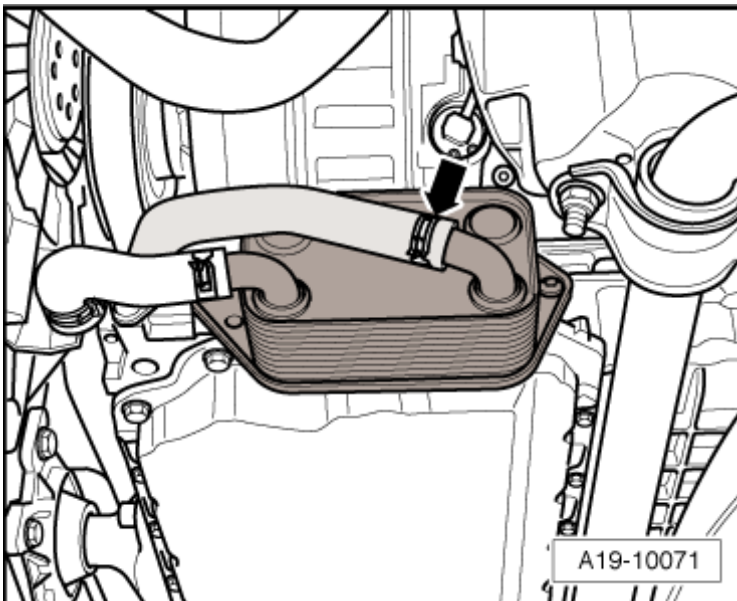


Fig. 4: Disconnecting Coolant Hose From Oil Cooler
Courtesy of AUDI OF AMERICA, LLC

NOTE: The engine is not shown in the following illustrations.

Vehicles with Left Front Coolant Pipes, Version 1

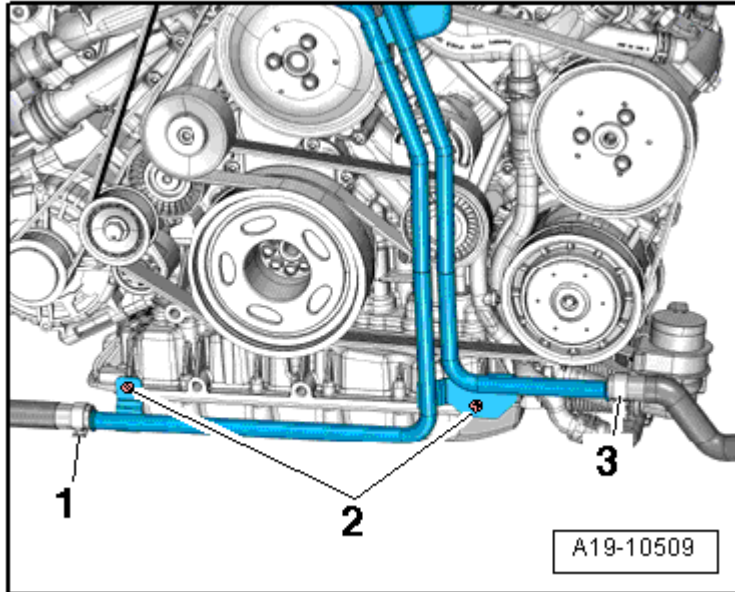


Fig. 5: Identifying Hose Clamps -1 And 3- & Left Front Coolant Hose
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-- Loosen the hose clamps -1 and 3-, remove the left front coolant hoses from the coolant pipes and drain any remaining coolant.

NOTE: Ignore -2-.

Vehicles with Left Front Coolant Pipes, Version 2

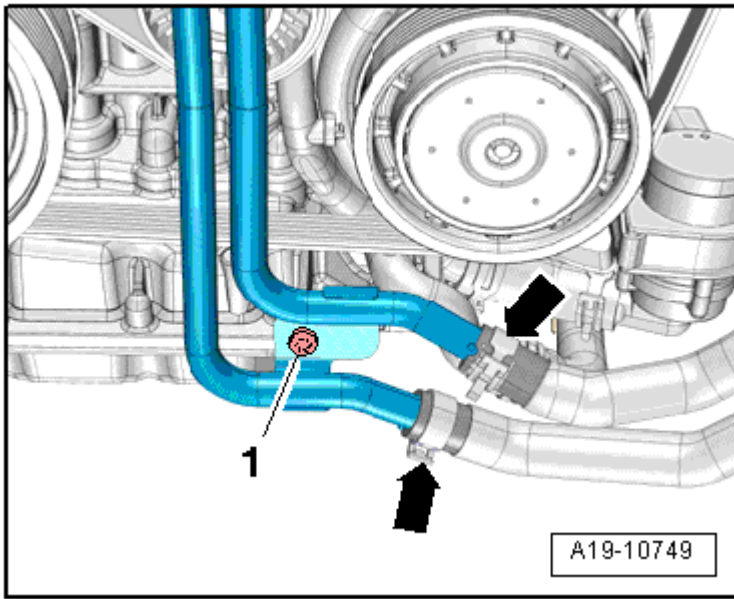


Fig. 6: Locating Lower Coolant Pipe Bolt
Courtesy of AUDI OF AMERICA, LLC

-- Loosen the clamps -arrows-, drain any remaining coolant and then remove the coolant hoses from the left front coolant pipes.

NOTE: Ignore -1-.

FILLING

- Ignition turned off

NOTE: The cooling system is filled year year-round with a mixture of water and coolant additive.

Use only the coolant additive approved for this engine. Other coolant additives may above all reduce the corrosion protection effect significantly. The damage resulting from this may lead to loss of coolant and consequently to severe engine damage.

The coolant additive prevents frost and corrosion damage as well as lime deposits. It also raises the boiling temperature. The cooling system must be filled with coolant additive year-round.

Because of its high boiling point, the coolant improves engine reliability under heavy loads, particularly in countries with tropical climates.

Protection against frost must be assured down to approximately -25 °C (-13 °F) (in arctic climatic countries down to approximately -35 °C (-31 °F)).

The coolant concentration must not be reduced by adding water even in warmer seasons and in warmer countries. The coolant additive portion must be at least 40%.

When stronger freeze protection is needed due to the climate, the portion of coolant additive can be increased. It can be increased up to 60% (freeze protection down to -40 °C (-40 °F)). If it is increased even more, the freeze protection and cooling effect are decreased.

Only use clean drinking water for mixing coolant.

Only reuse drained coolant if the radiator, the heater heat exchanger, cylinder head, cylinder head gasket or cylinder block were not replaced.

Dirty coolant may not be used again.

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

Replace the O-rings for the bleeder screws on the charge air coolers.

Use the T10007 to determine the level of freeze protection in the coolant system.

-- Close the drain plug -1-.

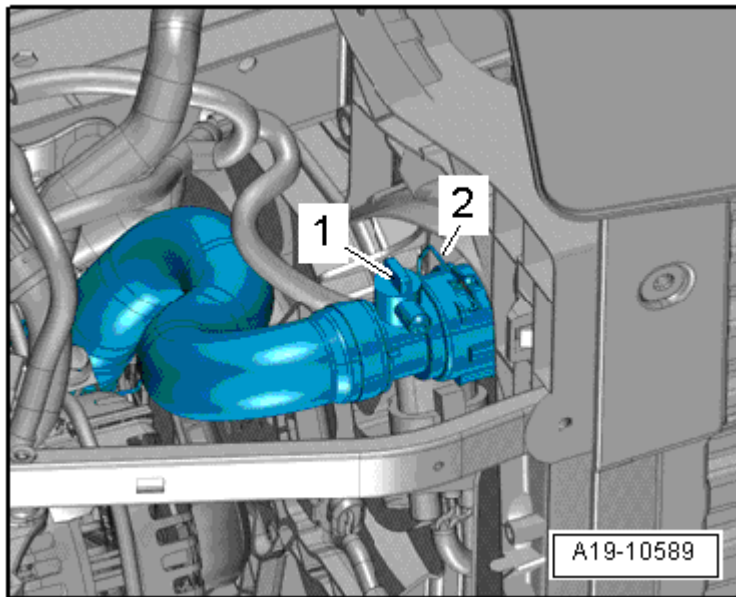


Fig. 7: Identifying Drain Plug And Draining Coolant
Courtesy of AUDI OF AMERICA, LLC

-- Install the coolant hose on the engine oil cooler -arrow-.

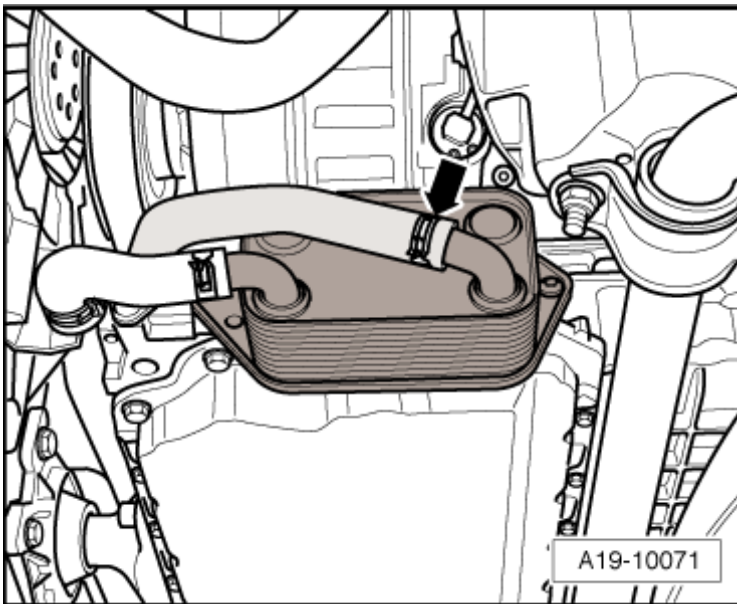


Fig. 8: Disconnecting Coolant Hose From Oil Cooler
Courtesy of AUDI OF AMERICA, LLC

Vehicles with Left Front Coolant Pipes, Version 1

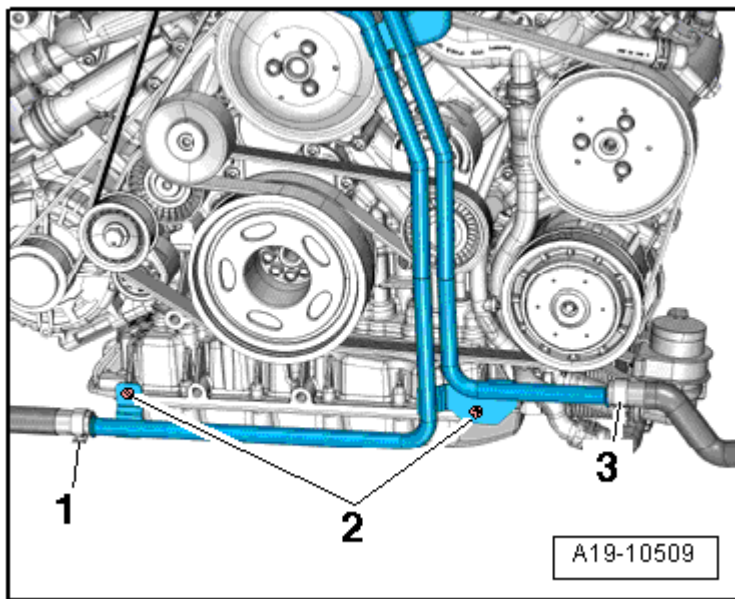


Fig. 9: Identifying Hose Clamps -1 And 3- & Left Front Coolant Hose
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-- Install the coolant hoses -1 and 3- to the left front coolant pipes.

Vehicles with Left Front Coolant Pipes, Version 2

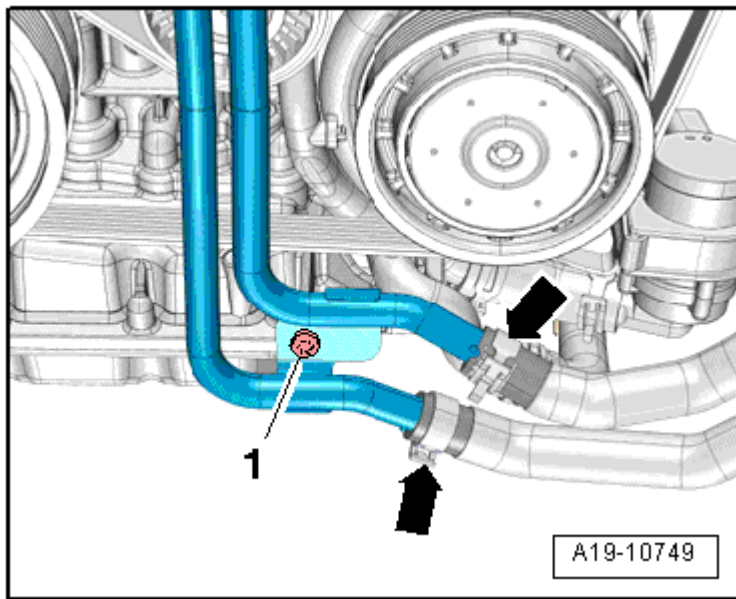


Fig. 10: Locating Lower Coolant Pipe Bolt
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-- Attach the coolant hoses -arrows- to the left front coolant pipes.

All Vehicles

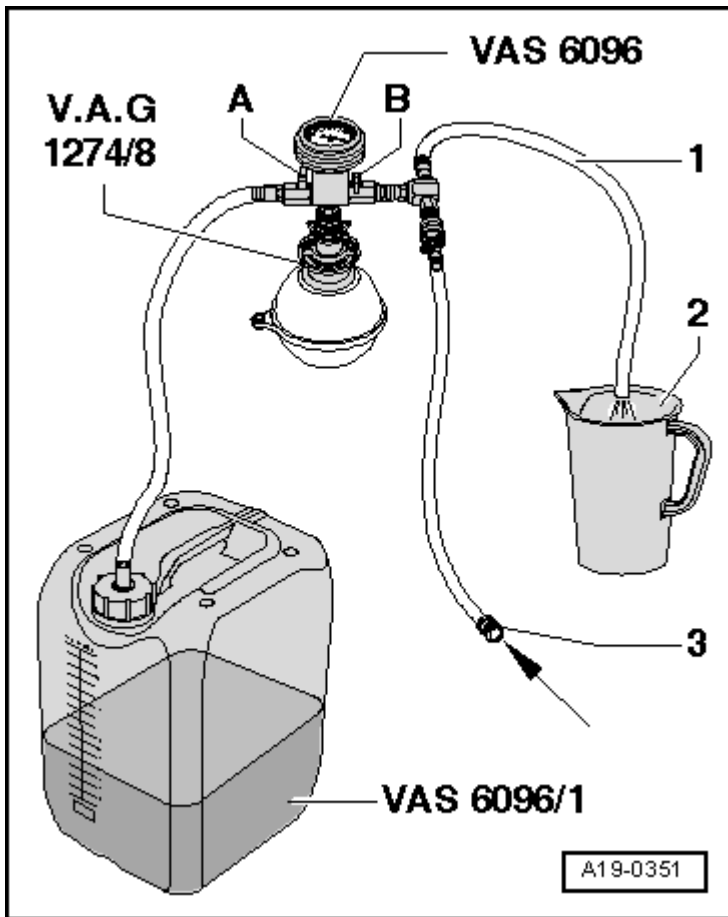


Fig. 11: Filling Coolant Reservoir Of Cooling System Charge Unit VAS 6096 With At Least 15 Liters Of Pre-Mixed Coolant

Courtesy of AUDI OF AMERICA, LLC

-- Fill the coolant reservoir in the VAS 6096 with 12 liters of coolant having the correct mixture ratio:

- Coolant additive (40%) and water (60%) for freeze protection down to -25 °C (-13 °F)
- Coolant additive (50%) and water (50%) for freeze protection down to -35 °C (-31 °F)
- For the correct coolant additive.

-- Attach V.A.G 1274/8 to coolant reservoir.

-- Install the VAS 6096 on the V.A.G 1274/8.

-- Place air outlet -1- in a small container -2-.

NOTE: A small amount of coolant which should be collected is drawn off with the discharged air.

-- Close valves -A and B- by turning lever at a right angle to direction of flow.

-- Connect hose -3- to compressed air.

- Pressure: 6 to 10 bar pressure.

-- Open valve -B- by turning level in direction of flow.

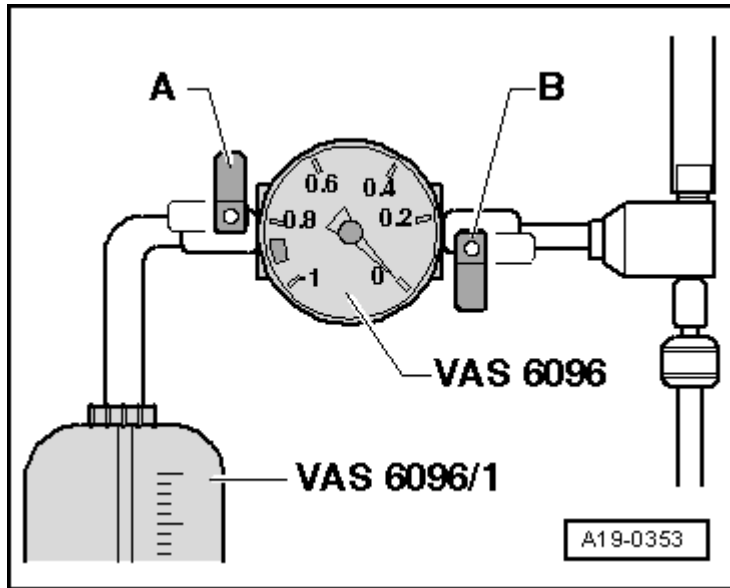


Fig. 12: Identifying Cooling System, Draining And Filling
Courtesy of AUDI OF AMERICA, LLC

- A further vacuum is created in the cooling system by the suction jet pump. Needle on the instrument display must travel into the green region.

-- Briefly open valve -A- by turning lever in direction of flow so that the hose on VAS 6096 coolant reservoir fills with coolant.

-- Close valve -A- again.

-- Leave valve -B- open another 2 minutes.

- A further vacuum is created in the cooling system by the suction jet pump. Needle on the instrument display must still remain in the green region.

-- Close valve -B-.

- Needle in the display instrument must remain in the green region, then the sufficient vacuum in the cooling system is obtained for the upcoming filling.

NOTE: If needle stands below the green area, repeat procedure.

If pressure falls, check coolant system for leaks.

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

-- Remove pressurized air hose.

-- Open valve -A-.

- Coolant is extracted from the VAS 6096 coolant reservoir by pressure in the coolant system and the system is filled.

-- Remove VAS 6096 form V.A.G 1274/8 on coolant reservoir.

-- Connect the V.A.G 1274/10 to the V.A.G 1274/8.

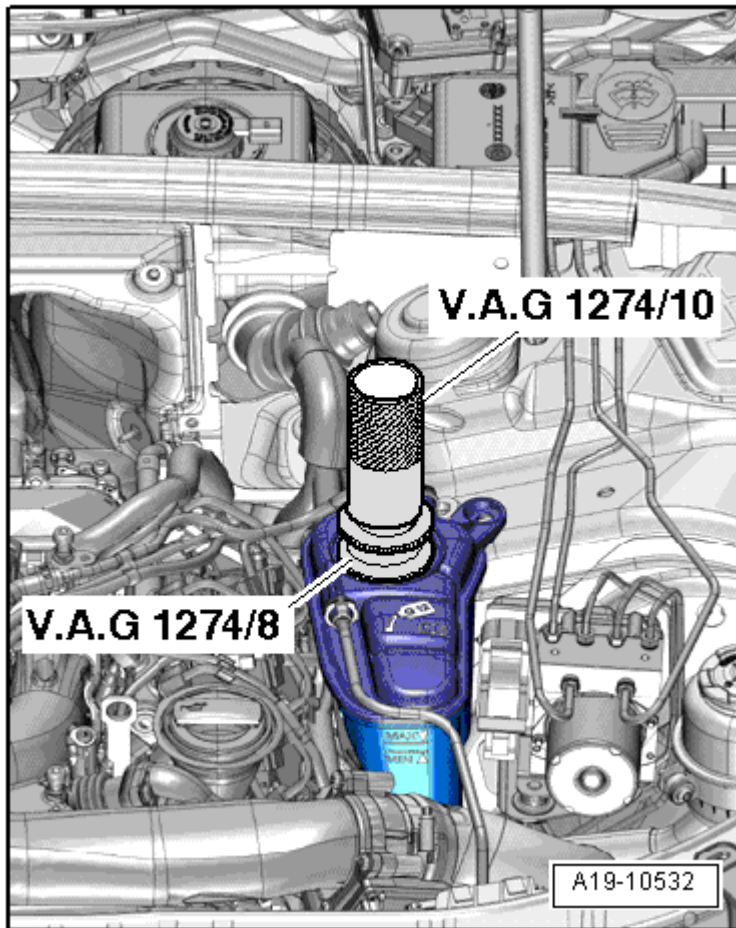


Fig. 13: Identifying V.A.G 1274/10 & V.A.G 1274/8
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-- Fill the coolant until the coolant system tester tube is full. Fill again during the bleeding procedure if necessary.

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

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

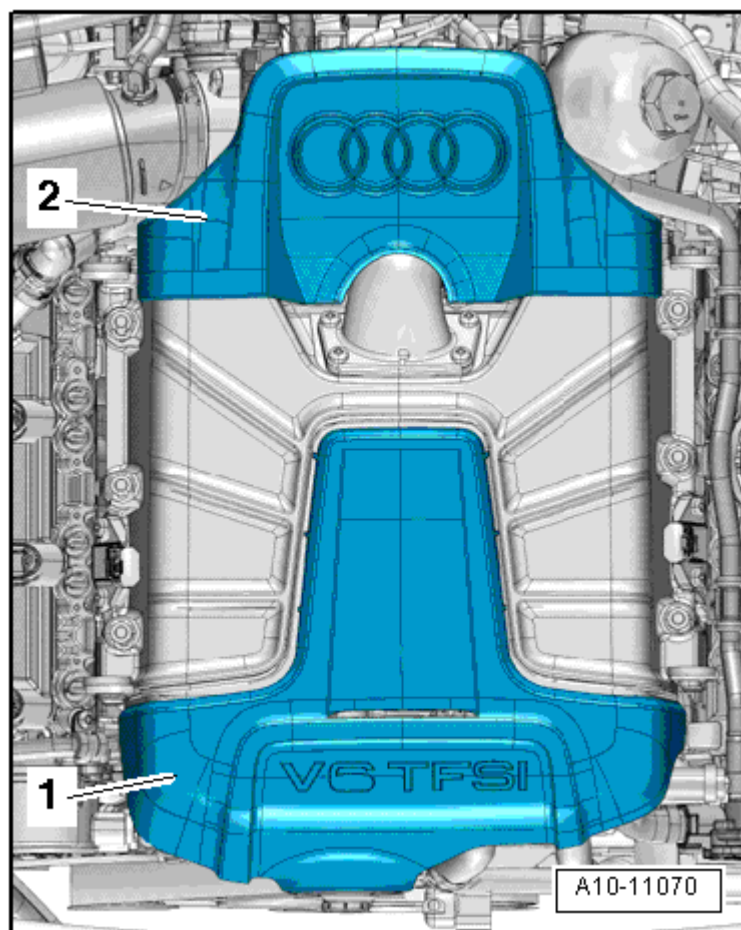


Fig. 14: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

NOTE: Use a cloth to catch any leaking coolant.

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

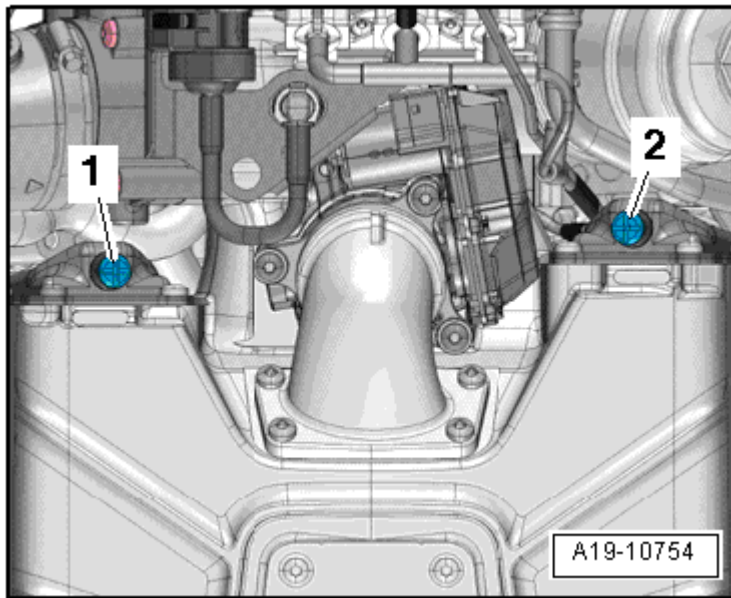


Fig. 15: Identifying Bleeder Screws -1 And 2-
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- Open the bleeder screws -1 and 2- one after the other until coolant starts to come out.
- Close the bleeder screw.
- Remove the seal from the plenum chamber bulkhead.

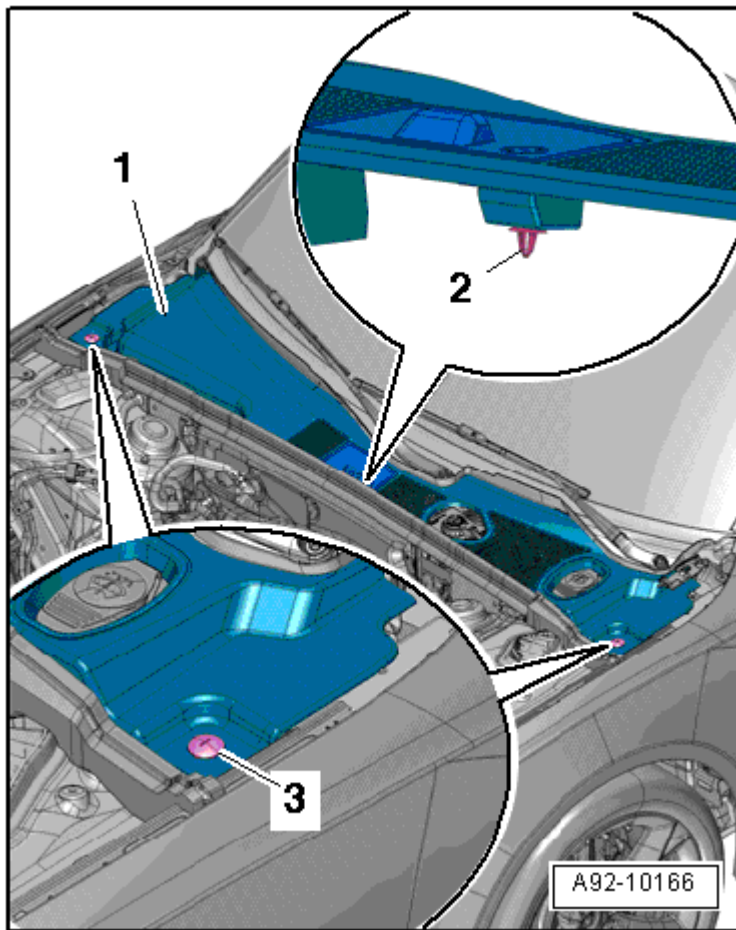


Fig. 16: Identifying Plenum Chamber Cover, Removal
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-- Remove the plenum chamber cover. Refer to **Removal and Installation** .

-- Disconnect the heat exchanger coolant hose and pull it back until coolant starts to drain out of the bleed hole - arrow- in the coolant hose.

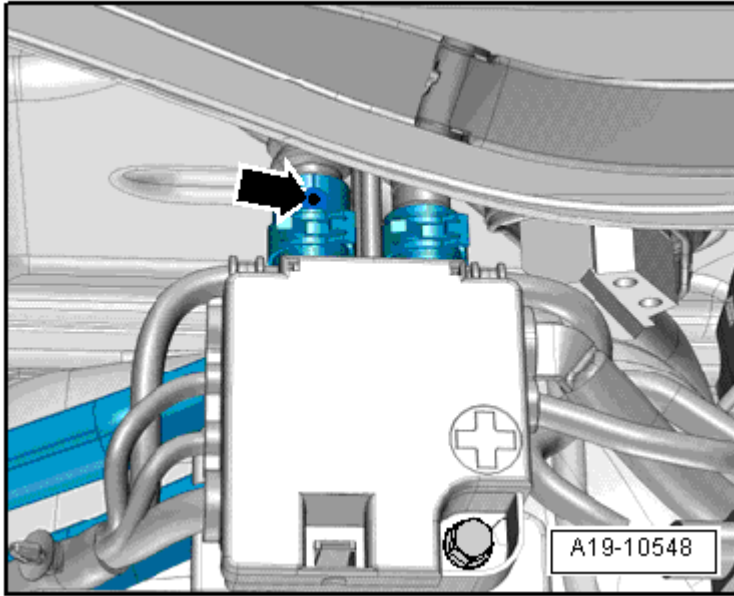


Fig. 17: Locating Heat Exchanger Bleeder Hole
Courtesy of AUDI OF AMERICA, LLC

- Slide the coolant hose onto the connection and secure with a spring clamp.
- If the vehicle has an auxiliary heater, switch it on for about 30 seconds.
- Turn the coolant reservoir cap until it closes completely.
- Start the engine.
- Set the temperature to "HI" for all zones and set the fan speed (0).
- Press the **AC** button to turn off the Air Conditioning (A/C) compressor.
 - The LED in the button must not come on.
- Run the engine at 2000 RPM for 3 minutes.
- Run the engine at idle until both large coolant hoses on the radiator are warm.
- Run the engine at 2000 RPM for 2 minutes.
- Turn off engine and allow it to cool off.
- Install the noise insulation. Refer to **Description and Operation** .

CHECK THE COOLANT LEVEL.

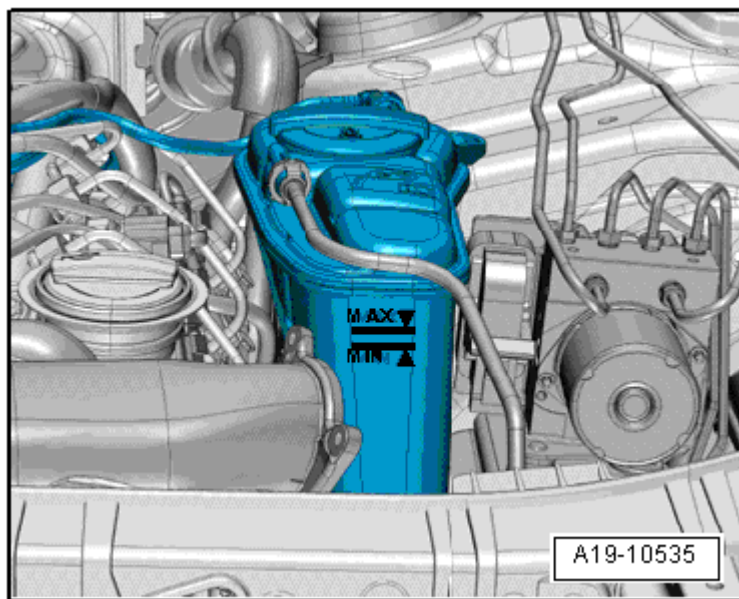


Fig. 18: Identifying Coolant Reservoir Marking
Courtesy of AUDI OF AMERICA, LLC

- With the engine cold, coolant level must be at MAX marking.
- Coolant level may be above MAX marking with engine at operating temperature.

DESCRIPTION AND OPERATION

AFTER-RUN COOLANT PUMP -V51- OVERVIEW

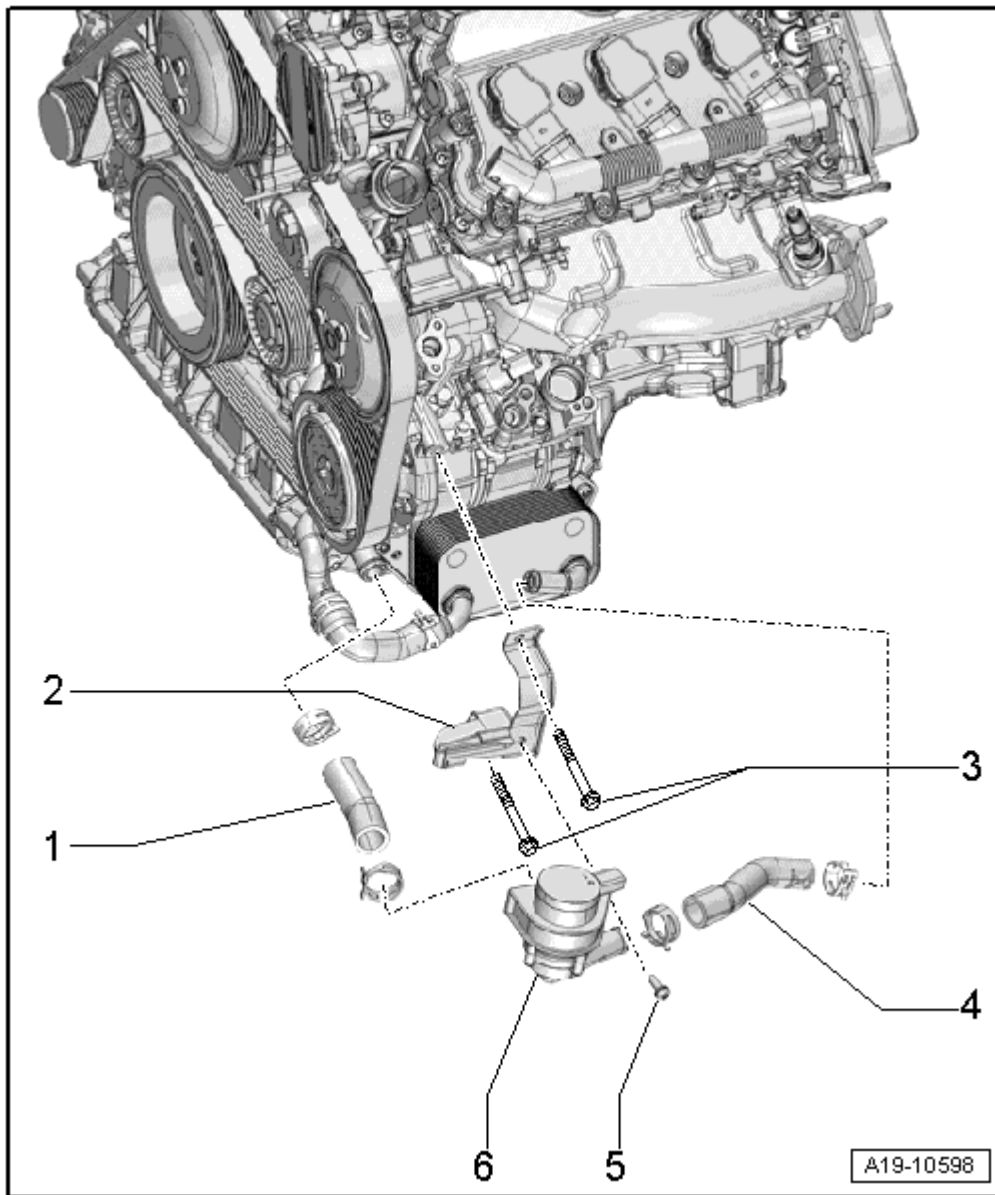


Fig. 19: Identifying After-Run Coolant Pump -V51- Overview

Courtesy of AUDI OF AMERICA, LLC

1. Coolant Hose
2. Bracket
3. Bolts
 - 9 Nm
4. Coolant Hose
5. Bolt
 - 4 Nm
6. After-Run Coolant Pump -V51-
 - Removing and installing, refer to **After-Run Coolant Pump -V51-**

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

COOLANT HOSE CONNECTION DIAGRAM

WARNING: Risk of scalding due to hot steam and hot coolant.

- The coolant system is under pressure when the engine is warm.
- Cover the coolant reservoir cap with a cloth and then open it slowly to release the pressure.

Danger of personal injury due to the coolant fan turning on by itself.

- Disconnect the connectors before working near the fan shroud.

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

The arrows on the coolant pipes and ends of coolant hoses must align.

NOTE: Blue = large coolant circuit.

Red = small coolant circuit.

Orange = coolant circuit for the charge air cooler.

Brown = heating circuit.

The arrows show the coolant flow direction.

Vehicles without Auxiliary Heater

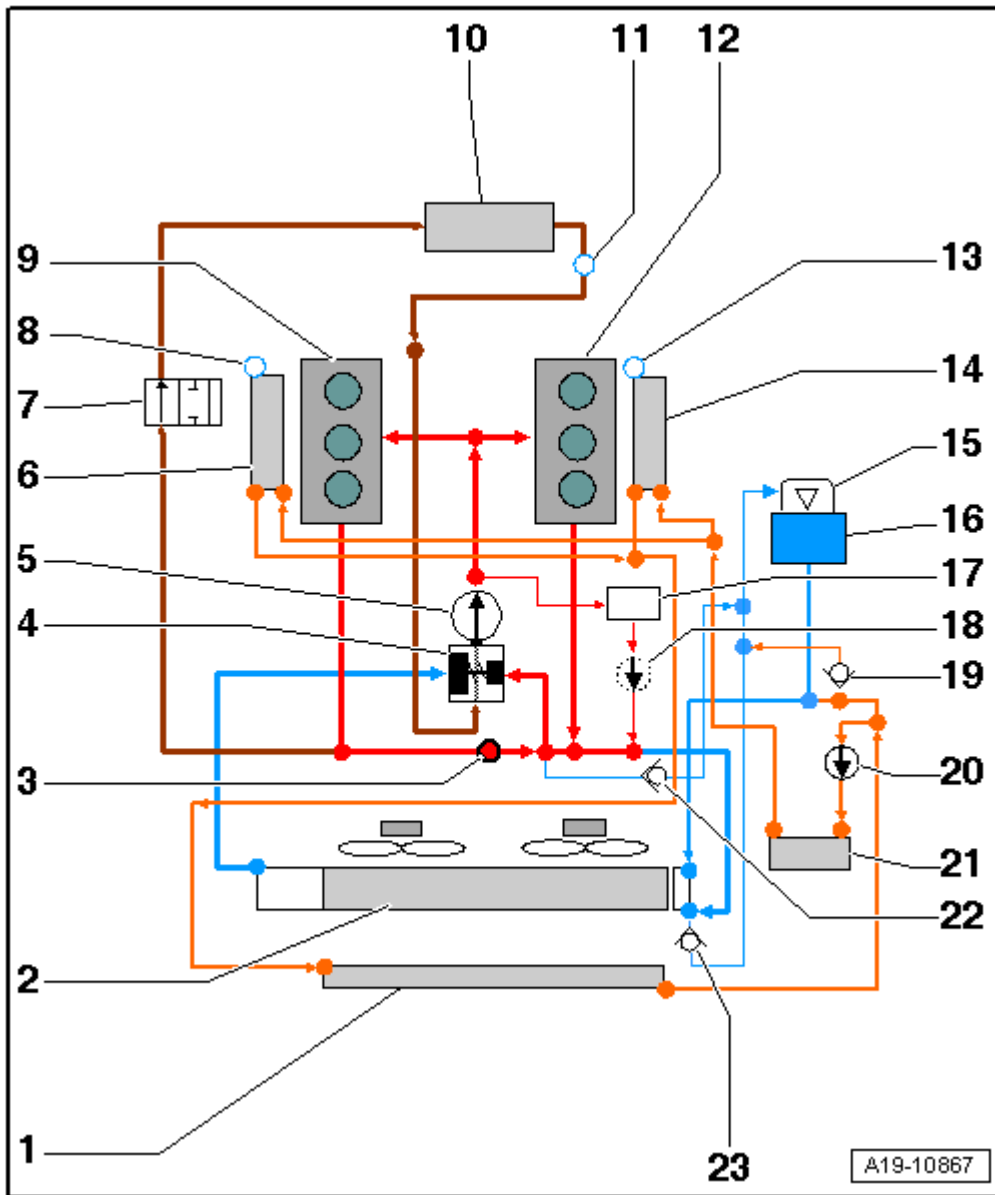


Fig. 20: Identifying Vehicles Without Auxiliary Heater

Courtesy of AUDI OF AMERICA, LLC

1. Front Charge Air Cooling Circuit Radiator
 - Change coolant after replacing
2. Radiator
 - Vehicles with dual clutch transmission: With integrated ATF cooler
 - Change coolant after replacing
3. Coolant Temperature Sensor -G62-
4. Coolant Thermostat
5. Coolant pump
6. Charge Air Cooler on the Right Side

- inside the compressor housing
 - change coolant after replacing
7. Coolant Switch-Off Valve
 - is controlled by the auxiliary heater exhaust gas sensor -N422-
 - The auxiliary heater exhaust gas sensor -N422- is controlled by the Climatronic control module - J255-
 - Removing and installing, refer to **Air Conditioning**
 8. Bleeder Screw
 9. Cylinder Head Bank 1 (right)
 - change coolant after replacing
 10. Heat Exchanger for Heater Unit
 - Removing and installing, refer to **Removal and Installation**
 - change coolant after replacing
 11. Bleeder Hole
 12. Cylinder Head Bank 2 (left)
 - change coolant after replacing
 13. Bleeder Screw
 14. Left Charge Air Cooler
 - Inside the compressor housing
 - Change coolant after replacing
 15. Coolant Reservoir Cap
 - Pressure relief valve, checking **PRESSURE RELIEF VALVE IN CAP, CHECKING**
 16. Coolant Reservoir
 17. Engine Oil Cooler
 18. After-Run Coolant Pump -V51-
 - Depending on country
 19. Non-Return Valve
 - In the coolant hose
 20. Charge Air Coolant Pump -V188-
 21. Left Charge Air Cooling Circuit Radiator
 - change coolant after replacing
 22. Non-Return Valve
 - In the coolant hose
 23. Non-Return Valve
 - In the coolant hose

COOLANT PIPES OVERVIEW**Version 1**

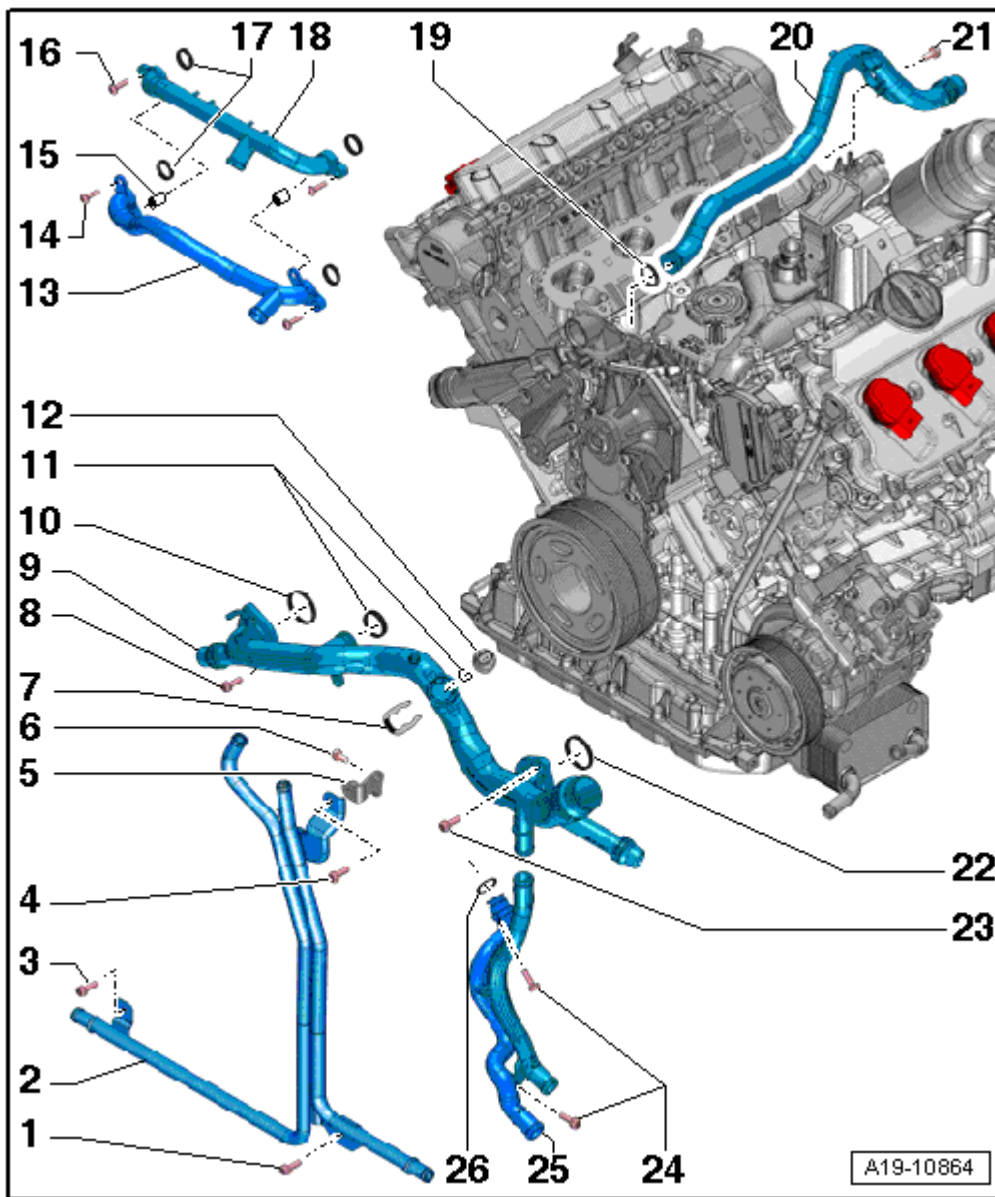


Fig. 21: Identifying Coolant Pipes

Courtesy of AUDI OF AMERICA, LLC

1. Bolt
 - 9 Nm
2. Left Front Coolant Pipes
 - Removing and installing, refer to **LEFT FRONT COOLANT PIPES**
3. Bolt
 - 9 Nm
4. Bolt
 - 9 Nm
5. Bracket

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

6. Bolt
 - 22 Nm
7. Retaining Clip
8. Bolt
 - 9 Nm
9. Front Coolant Pipe
 - Removing and installing, refer to **FRONT COOLANT PIPE**
10. Seal
 - Replace
11. O-ring
 - Replace
12. Coolant Temperature Sensor -G62-
 - Removing and installing, refer to **Engine Coolant Temperature Sensor -G62-**
13. Lower Coolant Pipe on the Supercharger
 - With -17-, removing and installing **SUPERCHARGER COOLANT PIPES**
14. Bolt
 - 5 Nm
15. Alignment Bushing
 - Quantity: 2
16. Bolt
 - 5 Nm
17. Seals
 - Replace
18. Upper Coolant Pipe on the Supercharger
 - With -11-, removing and installing **SUPERCHARGER COOLANT PIPES**
19. O-ring
 - Replace
20. Upper Coolant Pipe
 - Removing and installing, refer to **UPPER COOLANT PIPE**
21. Bolt
 - 9 Nm
22. Gasket
 - Replace
23. Bolt
 - 9 Nm
24. Bolts
 - 9 Nm
25. Left Coolant Pipes

- Removing and installing, refer to **LEFT COOLANT PIPES**

26. O-ring

- Replace

Version 2

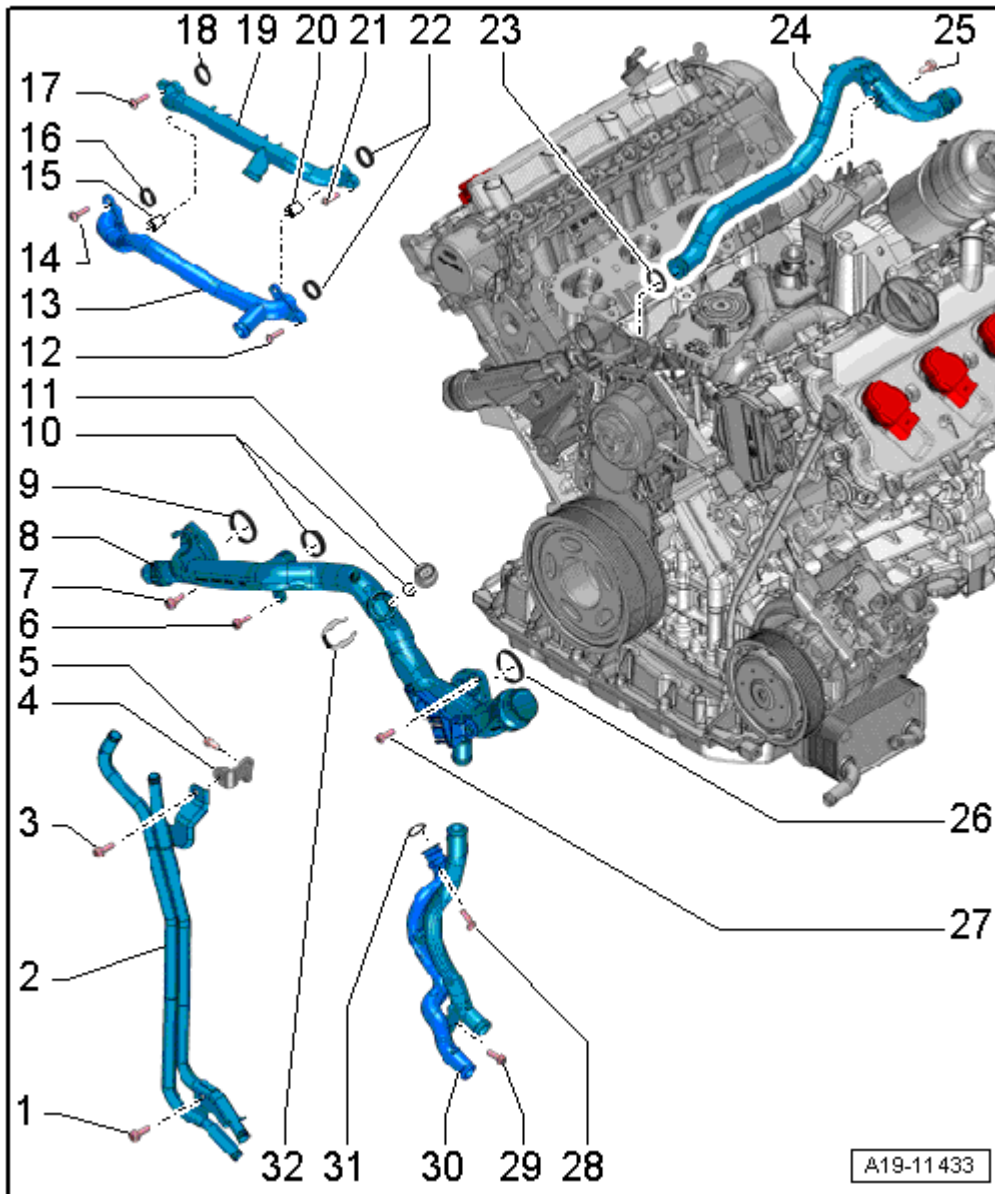


Fig. 22: Identifying Version 2

Courtesy of AUDI OF AMERICA, LLC

1. Bolt

- 9 Nm

2. Left Front Coolant Pipes

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

- Removing and installing, refer to **LEFT FRONT COOLANT PIPES**
- 3. Bolt
 - 9 Nm
- 4. Bracket
- 5. Bolt
 - 22 Nm
- 6. Bolt
 - 9 Nm
- 7. Bolt
 - 9 Nm
- 8. Front Coolant Pipe
 - Removing and installing, refer to **FRONT COOLANT PIPE**
- 9. Seal
 - Replace
- 10. O-ring
 - Replace
- 11. Engine Coolant Temperature (ECT) Sensor -G62-
 - Removing and installing, refer to **Engine Coolant Temperature Sensor -G62-**
- 12. Bolt
 - 5 Nm
- 13. Lower Coolant Pipe on the Supercharger
 - With -19-, removing and installing, refer to **SUPERCHARGER COOLANT PIPES**
- 14. Bolt
 - 5 Nm
- 15. Alignment Bushing
- 16. Gasket
 - Replace
- 17. Bolt
 - 5 Nm
- 18. Gasket
 - Replace
- 19. Upper Coolant Pipe on the Supercharger
 - With -13-, removing and installing **SUPERCHARGER COOLANT PIPES**
- 20. Alignment Bushing
- 21. Bolt
 - 5 Nm
- 22. Seals
 - Replace

23. O-ring
 - Replace
24. Upper Coolant Pipe
 - Removing and installing, refer to UPPER COOLANT PIPE
25. Bolt
 - 9 Nm
26. Gasket
 - Replace
27. Bolt
 - 9 Nm
28. Bolt
 - 9 Nm
29. Bolt
 - 9 Nm
30. Left Coolant Pipes
 - Removing and installing, refer to LEFT COOLANT PIPES
31. O-ring
 - Replace
32. Retaining Clip

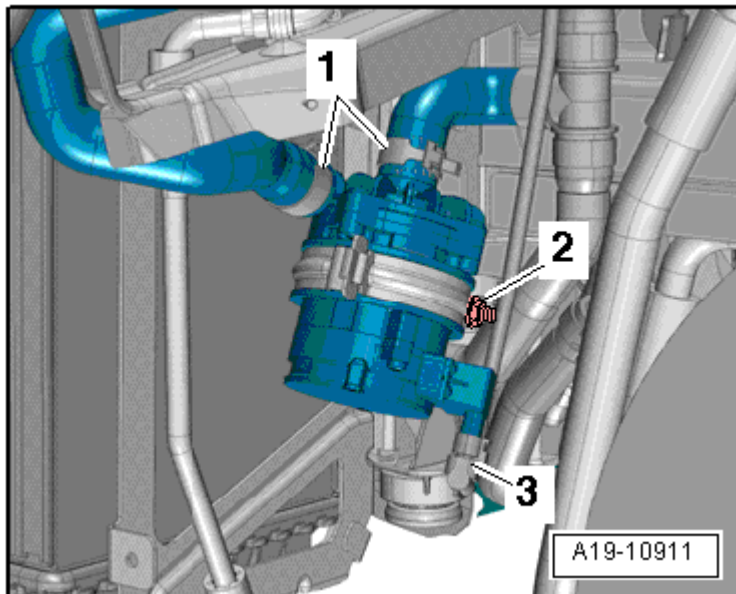


Fig. 23: Identifying Charge Air Cooling Pump -V188- And Nut
 Courtesy of AUDI OF AMERICA, LLC

-- Tighten the nut -2- to 9 Nm.

COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW

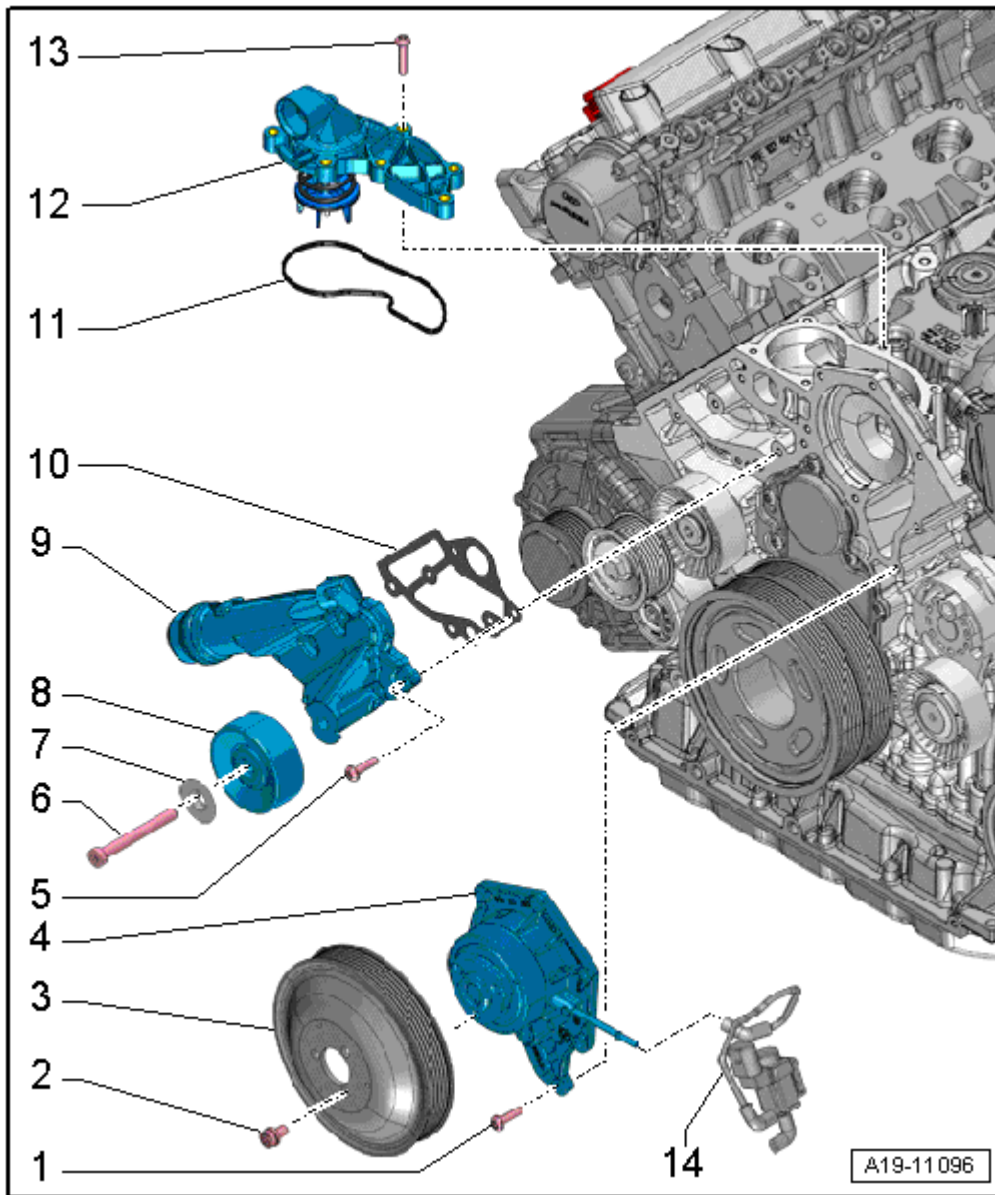


Fig. 24: Identifying Coolant Pump, Thermostat And Connecting Piece Overview
 Courtesy of AUDI OF AMERICA, LLC

1. Bolt
 - 9 Nm
2. Bolt
 - 20 Nm
3. Ribbed Belt Pulley for Coolant Pump
4. Coolant Pump
 - With gasket

- Removing and installing, refer to **COOLANT PUMP**
- 5. Bolt
 - 9 Nm
- 6. Bolt
 - Tightening specification, refer to item 2: **SUPERCHARGER RIBBED BELT DRIVE OVERVIEW**
- 7. Washer
- 8. Idler Roller for Ribbed Belt
- 9. Connecting Piece
 - For coolant hose
- 10. Gasket
 - Replace
- 11. Gasket
 - Replace
- 12. Coolant Thermostat
 - Removing and installing, refer to **COOLANT THERMOSTAT**
 - Checking, refer to **COOLANT THERMOSTAT, CHECKING**
- 13. Bolt
 - 9 Nm
- 14. Cylinder Head Coolant Valve -N489-

RADIATOR AND COOLANT FAN OVERVIEW

WARNING: Danger of personal injury due to the coolant fan turning on by itself.

- Disconnect the connectors before working near the fan shroud.

Radiator, Front Charge Air Cooling Circuit Radiator, Fan Shroud and Radiator Fan - Version 1

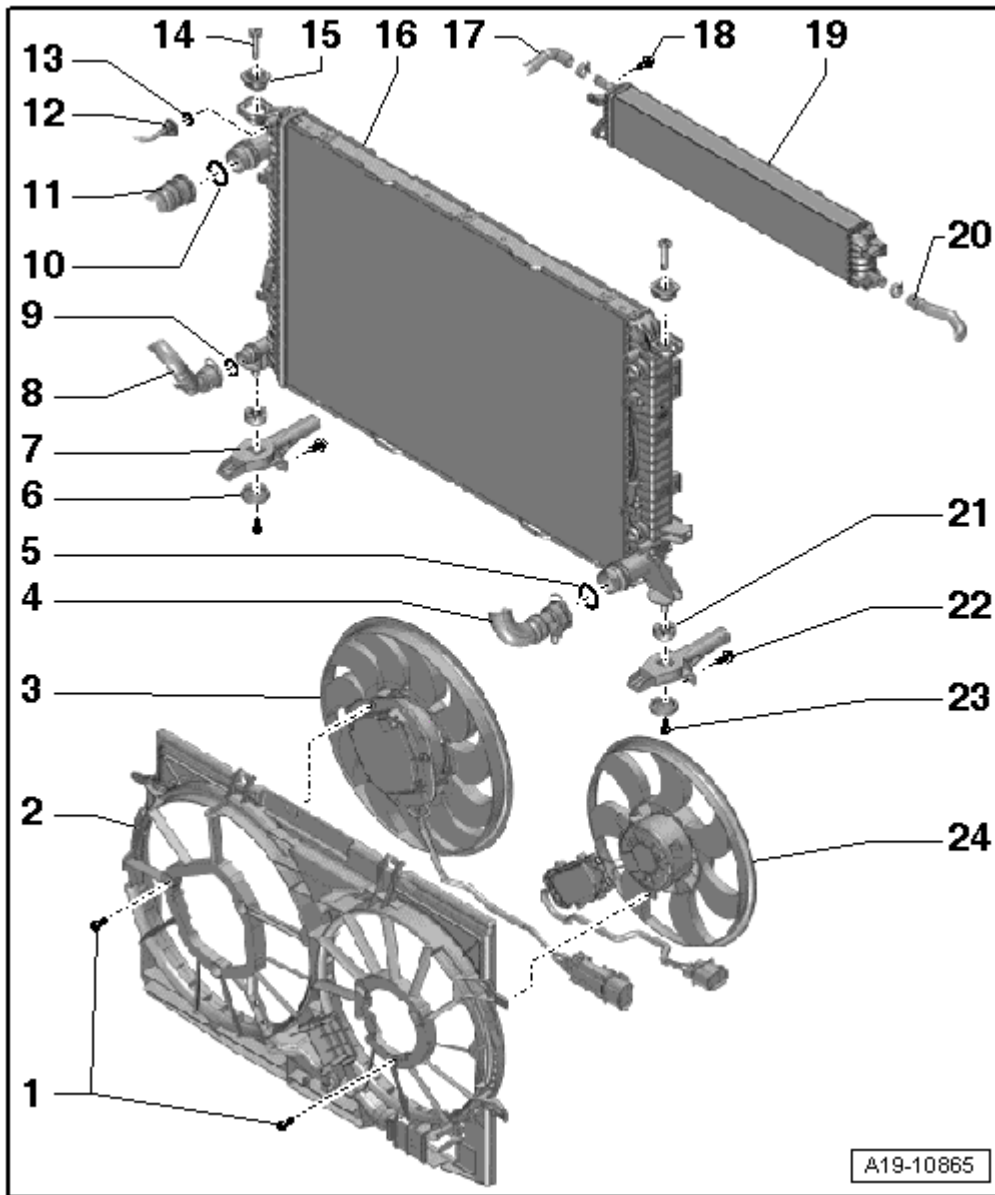


Fig. 25: Identifying Radiator And Coolant Fan

Courtesy of AUDI OF AMERICA, LLC

1. Bolt
 - 4.5 Nm
2. Fan Shroud
 - Removing and installing together with the radiator, refer to **RADIATOR AND FAN SHROUD**
3. Coolant Fan -V7-
 - With coolant fan control module -J293-
 - Removing and installing, refer to **Coolant Fan -V7- AND Coolant Fan 2 -V177-, VERSION 1**
4. Coolant Hose
 - Lift the retaining clamp to remove

- Connect to the radiator, refer to **Fig. 28**
- 5. O-ring
 - Replace
- 6. Rubber Buffer
- 7. Radiator Bracket
- 8. Coolant Hose
 - Lift the retaining clamp to remove
 - Connect to the radiator, refer to **Fig. 28**
- 9. O-ring
 - Replace
- 10. O-ring
 - Replace
- 11. Coolant Hose
 - Lift the retaining clamp to remove
 - Connect to the radiator, refer to **Fig. 28**
- 12. Coolant Hose
 - Lift the retaining clamp to remove
 - Connect to the radiator, refer to **Fig. 28**
- 13. O-ring
 - Replace
- 14. Retaining Pin
 - Disengage and remove using screwdriver
- 15. Rubber Bushing
 - For radiator
- 16. Radiator
 - Removing and installing with the fan shroud, refer to **RADIATOR AND FAN SHROUD**
 - Change coolant after replacing
- 17. Coolant Hose
- 18. Bolt
 - 4.5 Nm
- 19. Front Charge Air Cooling Circuit Radiator
 - Removing and installing, refer to **FRONT CHARGE AIR COOLING CIRCUIT RADIATOR**
- 20. Coolant Hose
- 21. Rubber Bushing
 - For radiator
- 22. Bolt
 - 5 Nm
- 23. Bolt

- 4.5 Nm

24. Radiator Fan 2 -V177-

- Removing and installing, refer to Coolant Fan -V7- AND Coolant Fan 2 -V177-, VERSION 1

Fan Shroud and Radiator Fan - Version 2

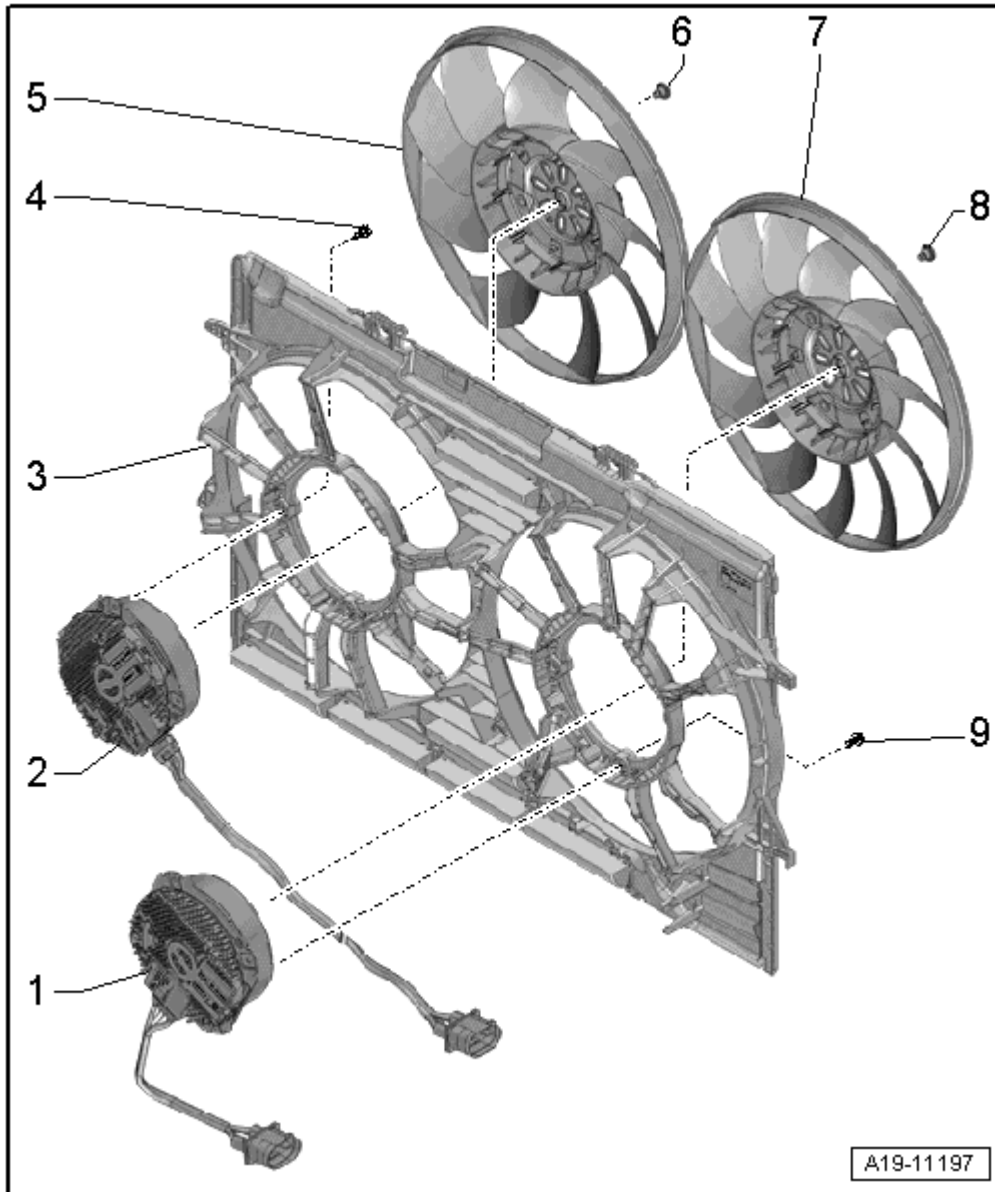


Fig. 26: Identifying Fan Shroud And Radiator Fan

Courtesy of AUDI OF AMERICA, LLC

1. Coolant Fan -V7-

- With coolant fan control module -J293-
- Removing and installing, refer to Coolant Fan -V7- AND Coolant Fan 2 -V177-, VERSION 1

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

2. Radiator Fan 2 -V177-
 - With coolant fan control module 2 -J671-
 - Removing and installing, refer to **Coolant Fan -V7- AND Coolant Fan 2 -V177-, VERSION 1**
3. Fan Shroud
4. Bolt
 - 3.5 Nm
5. Fan Wheel
 - The bolt must lock into the hole.
6. Bolt
 - 5 Nm
7. Fan Wheel
 - The bolt must lock into the hole.
8. Bolt
 - 5 Nm
9. Bolt
 - 3.5 Nm

Left Charge Air Cooling Circuit Radiator

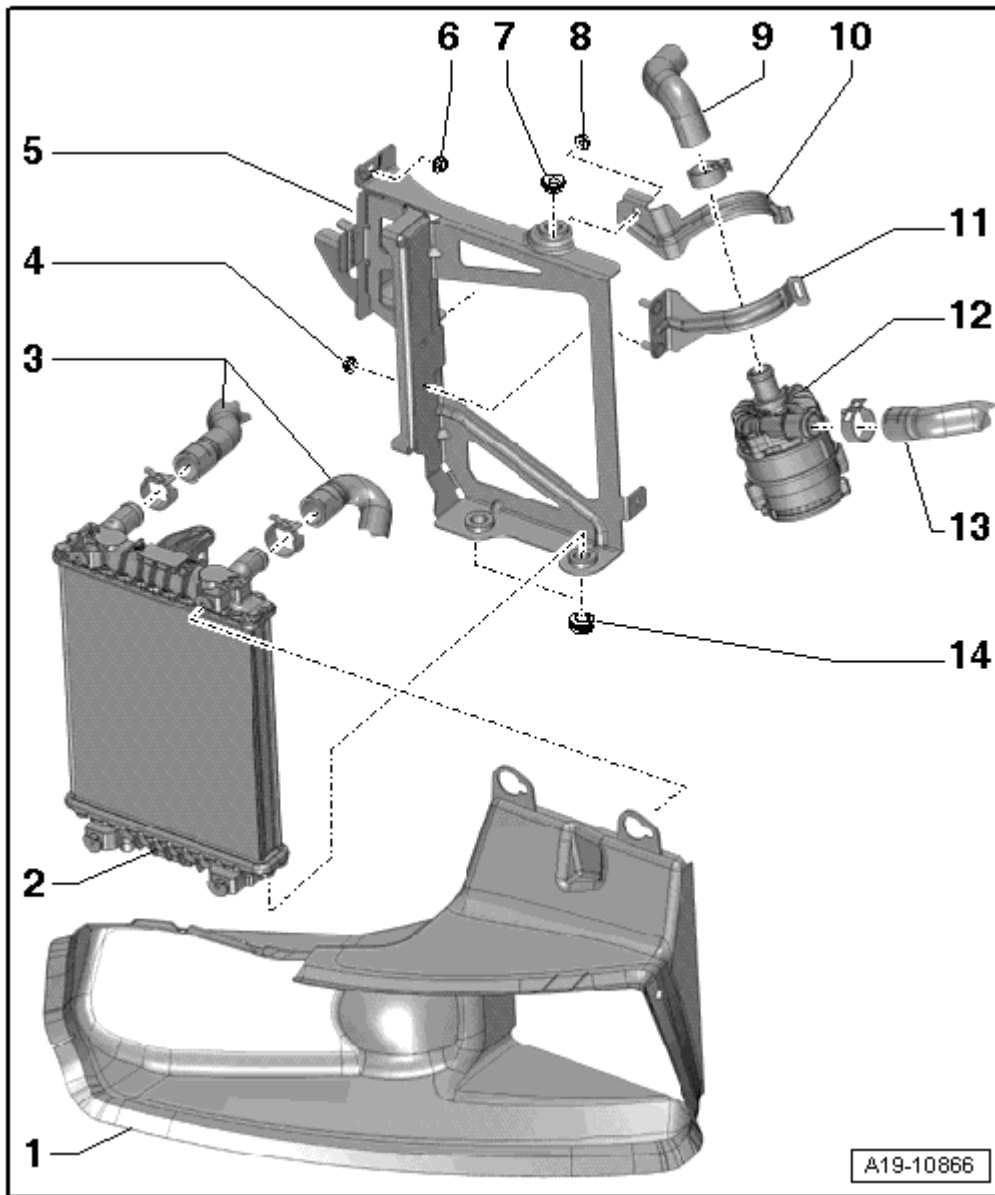


Fig. 27: Identifying Left Charge Air Cooling Circuit Radiator

Courtesy of AUDI OF AMERICA, LLC

1. Air Guide
2. Left Charge Air Cooling Circuit Radiator
 - Removing and installing, refer to **LEFT CHARGE AIR COOLING CIRCUIT RADIATOR**
3. Coolant Hoses
4. Nut
 - 9 Nm
5. Bracket
6. Nut
 - 9 Nm

7. Rubber Bushing
 - For radiator
8. Nut
 - 9 Nm
9. Coolant Hose
10. Bracket
11. Bracket
12. Charge Air Coolant Pump -V188-
 - Removing and installing, refer to **Charge Air Cooling Pump -V188-**
13. Coolant Hose
14. Rubber Bushing
 - For radiator

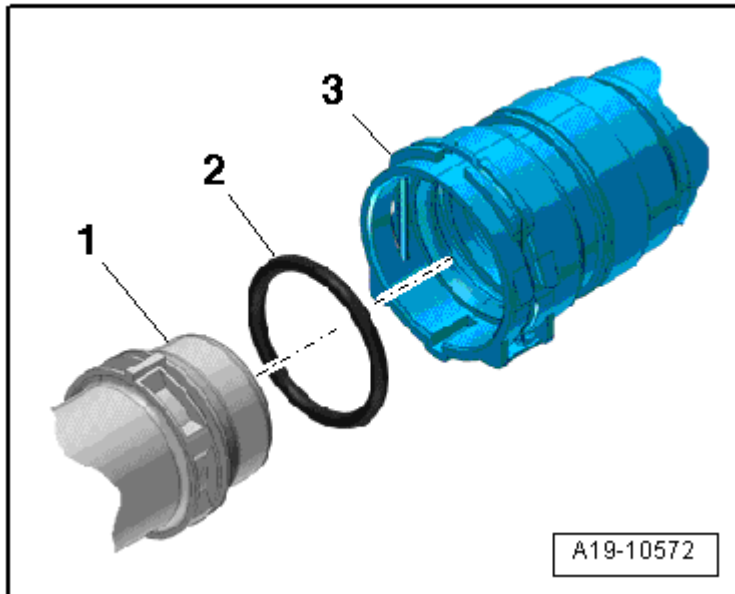


Fig. 28: Connecting Coolant Hose To Coupling
Courtesy of AUDI OF AMERICA, LLC

- Remove the old O-ring -2- in the coolant hose -3-.
- Coat the new O-ring with coolant and install it in the coolant hose.
- Press the coolant hose onto the connection -1- until it engages audibly.
- Press the coolant hose on again and pull to make sure the connection is engaged correctly.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

Component	Fastener Size	Nm
After-Run Coolant Pump to Engine	-	4
Bracket for After-Run Coolant Pump to Engine	-	9
Bracket for Front Left Coolant Pipes	-	22
Bracket for Left Charge Air Cooling Circuit Radiator, Nut	-	9
Bracket for Charge Air Coolant Pump, Nut	-	9
Connecting Piece for Coolant Hose	-	9
Coolant Thermostat	-	9
Coolant Pump	-	9
Fan Shroud, Version 1	-	4.5
Fan Shroud, Version 2	-	3.5
Front Charge Air Cooling Circuit Radiator	-	4.5
Front Coolant Pipe	-	9
Idler roller for ribbed belt	-	42
Left Front Coolant Pipes	-	9
Lower Coolant Pipe on the Supercharger	-	5
Radiator Bracket ¹		
	-	4.5
	-	5
Ribbed Belt Pulley for Coolant Pump	-	20
Upper Coolant Pipe	-	9
Upper Coolant Pipe on the Supercharger	-	5
¹ For bolt tightening clarification, refer to <u>RADIATOR AND COOLANT FAN OVERVIEW</u> and see items -22 and 23-		

Charge Air Cooling Pump -V188-, Tightening Specifications

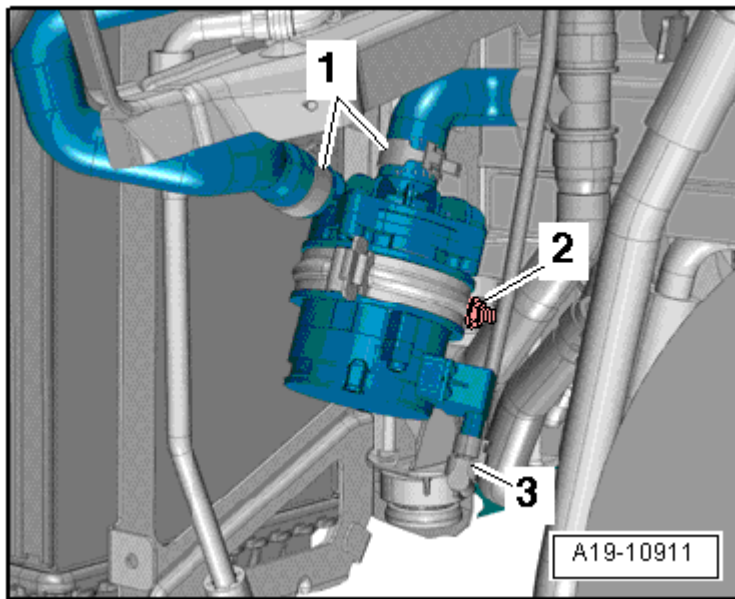


Fig. 29: Identifying Charge Air Cooling Pump -V188- And Nut
Courtesy of AUDI OF AMERICA, LLC

-- Tighten the nut -2- to 9 Nm.

DIAGNOSIS AND TESTING

COOLING SYSTEM, CHECKING FOR LEAKS

Special tools and workshop equipment required

- Cooling System Tester V.A.G 1274 B
- Adapter V.A.G 1274/8
- Adapter V.A.G 1274/9

Procedure

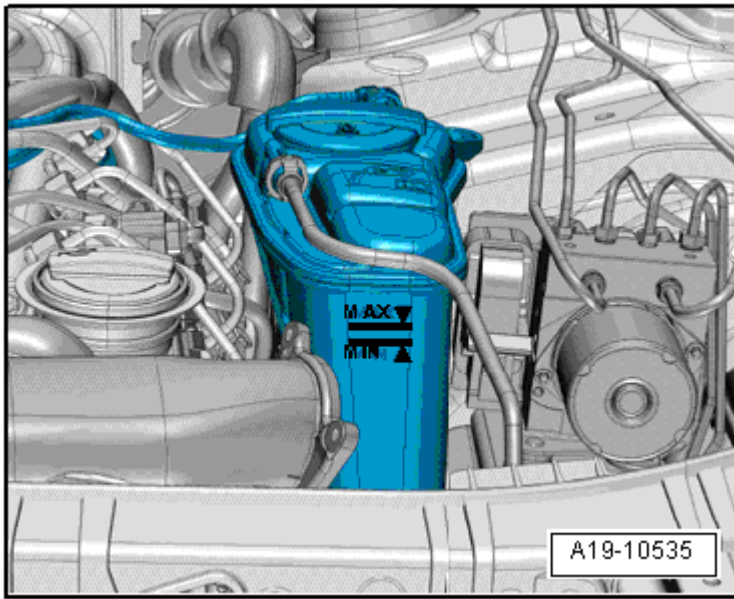


Fig. 30: Identifying Coolant Reservoir Marking
Courtesy of AUDI OF AMERICA, LLC

- Engine at operating temperature.

WARNING: Risk of scalding due to hot steam and hot coolant.

- The coolant system is under pressure when the engine is warm.
- Reduce pressure by covering coolant reservoir cap with a cloth and carefully opening.

-- Open the coolant reservoir cap.

-- Position V.A.G 1274 B with V.A.G 1274/8 on coolant reservoir.

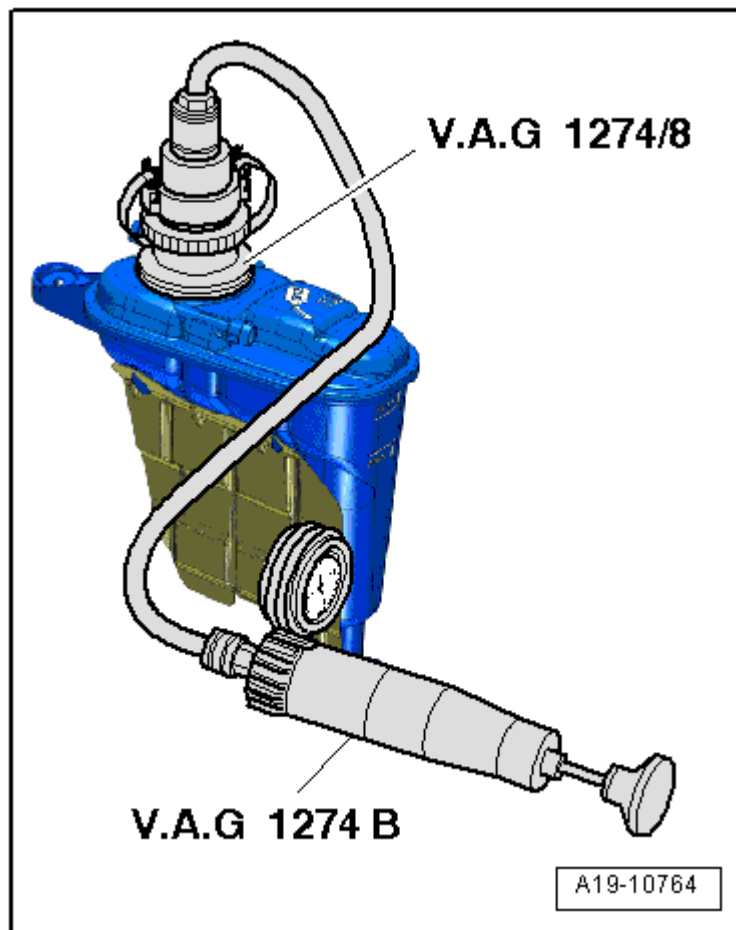


Fig. 31: V.A.G 1274 B & V.A.G 1274/8
Courtesy of AUDI OF AMERICA, LLC

- Generate approximately 1 bar pressure using the cooling system tester hand pump.
- If pressure falls, search for leaks and correct problem.

PRESSURE RELIEF VALVE IN CAP, CHECKING

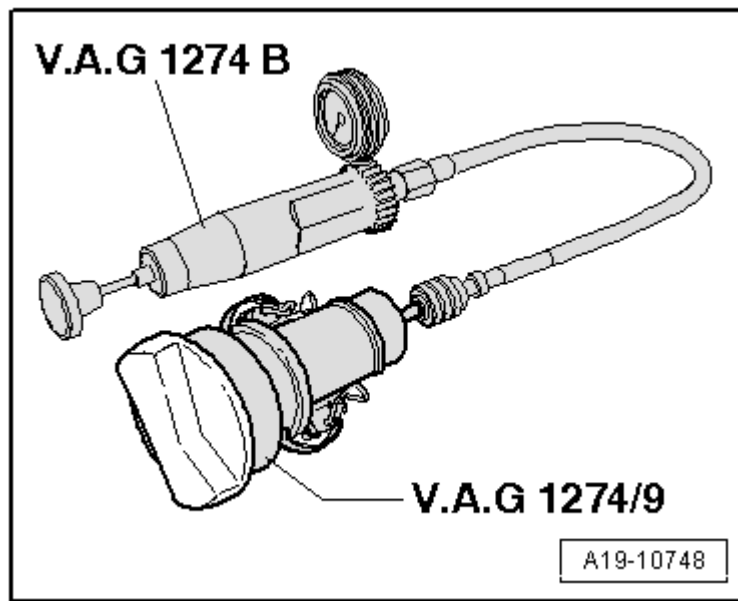


Fig. 32: Connecting Connector Piece V.A.G 1274 B/1 To Cooling System Tester V.A.G 1274 B Using Connecting Hose

Courtesy of AUDI OF AMERICA, LLC

- Attach V.A.G 1274 B with V.A.G 1274/9 to sealing cap.
- Generate pressure with cooling system tester hand pump.
 - The pressure release valve must open at 1.4 to 1.6 bar.
- If pressure relief valve does not open as specified, replace cap.

COOLANT THERMOSTAT, CHECKING

- Heat up the removed thermostat in water.

Opening Begins	Opening Ends	Opening Lift
Approximately 87 °C (189 °F)	Approximately 102° C (216 °F) ¹⁾	Minimum. 8 mm
• ¹⁾ Cannot be tested.		

REMOVAL AND INSTALLATION

AFTER-RUN COOLANT PUMP -V51-

Special tools and workshop equipment required

- Drip Tray for VAS 6100 VAS 6208
- Hose Clip Pliers VAS 6340

Removing

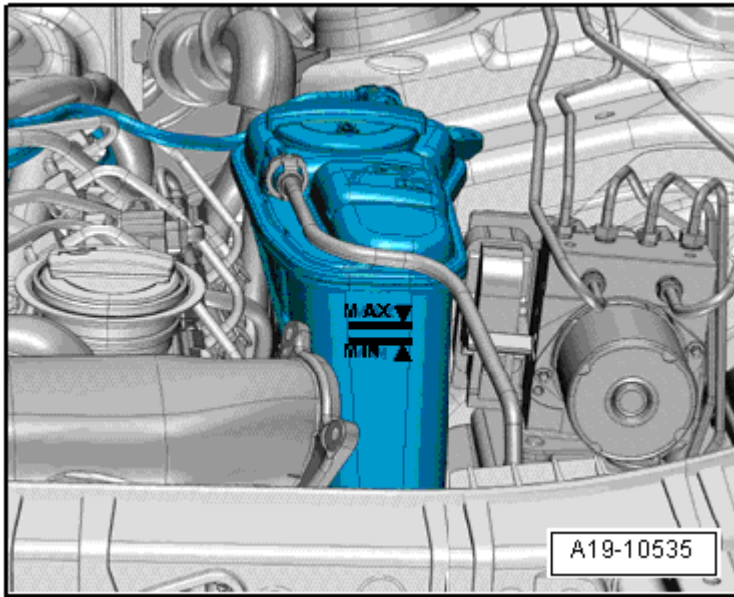


Fig. 33: Identifying Coolant Reservoir Marking

Courtesy of AUDI OF AMERICA, LLC

WARNING: Risk of scalding due to hot steam and hot coolant.

- The coolant system is under pressure when the engine is warm.
- Reduce pressure by covering coolant reservoir cap with a cloth and carefully opening.

-- Open the coolant reservoir cap.

-- Remove the front noise insulation -1-. Refer to **Description and Operation** .

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

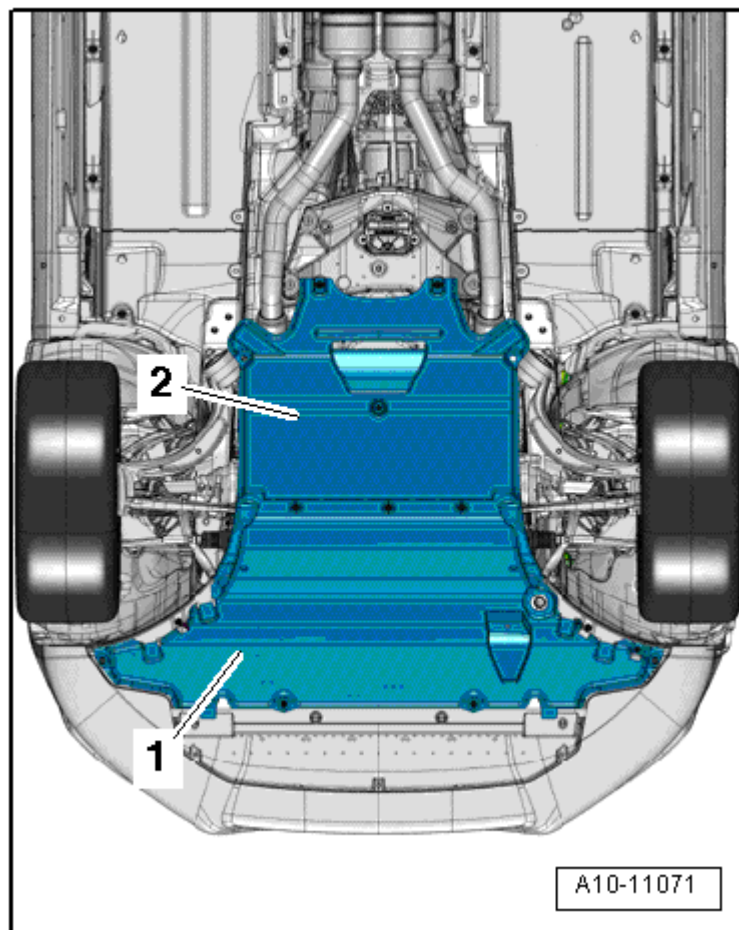


Fig. 34: Identifying Front Noise Insulation
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the connector -2- and remove the bolt -1-.

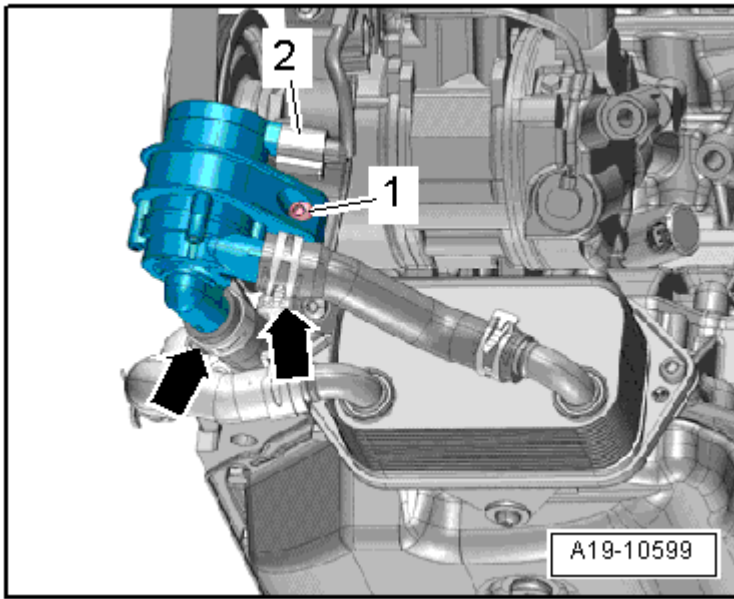


Fig. 35: Location After-Run Coolant Pump -V51-
Courtesy of AUDI OF AMERICA, LLC

- Place the VAS 6208 under the engine.
- Open the clamps -arrows- and remove the after-run coolant pump from the coolant hoses.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **After-Run Coolant Pump -V51- OVERVIEW**.

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

- Fill with coolant. Refer to **FILLING**.
- Install the noise insulation. Refer to **Description and Operation** .

CHARGE AIR COOLING PUMP -V188-

Special tools and workshop equipment required

- Hose Clamps Up to 25 mm Dia. 3094
- Hose Clip Pliers VAS 6362

Removing

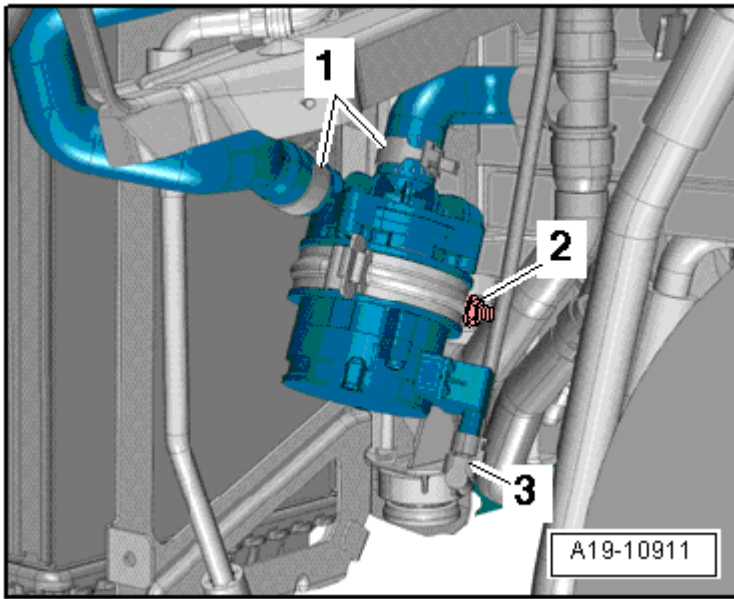


Fig. 36: Identifying Charge Air Cooling Pump -V188- And Nut
 Courtesy of AUDI OF AMERICA, LLC

- Remove the left front wheel. Refer to **Removal and Installation** .
- Remove the left front wheel housing liner. Refer to **Removal and Installation** .
- Disconnect the connector -3-.
- Remove nut -2- and bracket.
- Clamp off the coolant hoses on the charge air cooling pump with the 3094.
- Loosen the hose clamps -1-, remove the coolant hoses and then remove the charge air cooling pump.

Installing

Install in reverse order of removal. Note the following:

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

- Tighten the nut the charge air cooling pump bracket. Refer to **Fig. 23**.
- Install the front wheel housing liner. Refer to **Removal and Installation** .
- Install the front wheels. Refer to **Removal and Installation** .
- Fill with coolant. Refer to **FILLING**.

COOLANT FAN -V7- AND COOLANT FAN 2 -V177-, VERSION 1

Removing

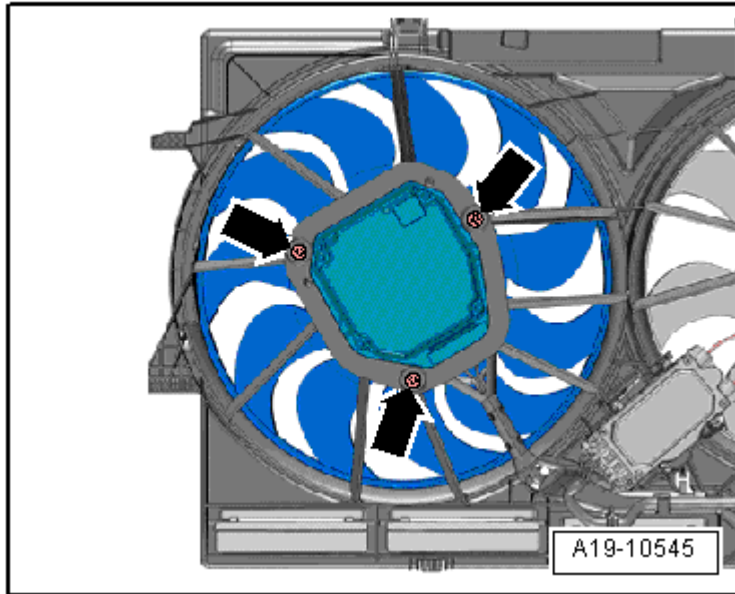


Fig. 37: Identifying Coolant Fan

Courtesy of AUDI OF AMERICA, LLC

- Cooler with fan shroud, removing. Refer to **RADIATOR AND FAN SHROUD**.
- Remove the bolts -arrows- on the coolant fan (left)
- Free up the wiring harness and remove the radiator fan.
- Remove the bolts -arrows- on the right coolant fan 2.

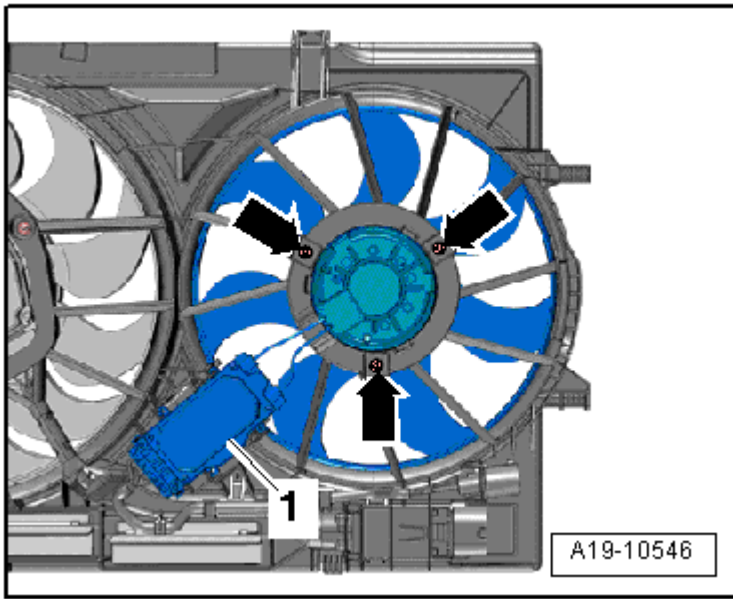


Fig. 38: Identifying Bolts On Right Coolant Fan
Courtesy of AUDI OF AMERICA, LLC

-- Free up the wiring harness.

-- Unclip the coolant fan control module -1- from the fan shroud and remove the fan with the control module.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **RADIATOR AND COOLANT FAN OVERVIEW**.

-- Install the cooler with the fan shroud. Refer to **RADIATOR AND FAN SHROUD**.

COOLANT FAN -V7- AND COOLANT FAN 2 -V177-, VERSION 2

Removing

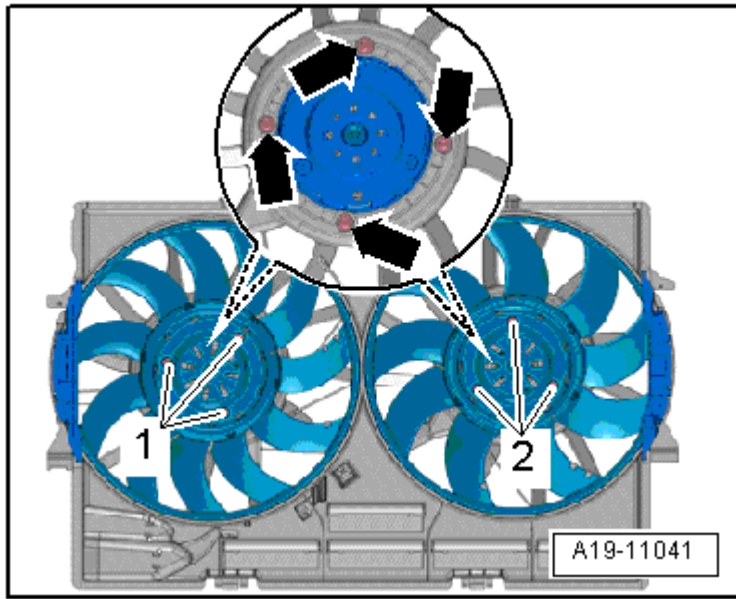


Fig. 39: Identifying Coolant Fan 2

Courtesy of AUDI OF AMERICA, LLC

NOTE: When installing, bring all cable ties back to same positions.

-- Remove the fan shroud:

- Audi A4 refer to **RADIATOR AND FAN SHROUD**.

-- Remove the bolts -1 or 2- and remove the fan wheel.

-- Remove the radiator fan bolts -arrows-.

-- Free up the wiring harness and remove the radiator fan.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **RADIATOR AND COOLANT FAN OVERVIEW**.

-- Pay attention to the installed position of the fan wheel:

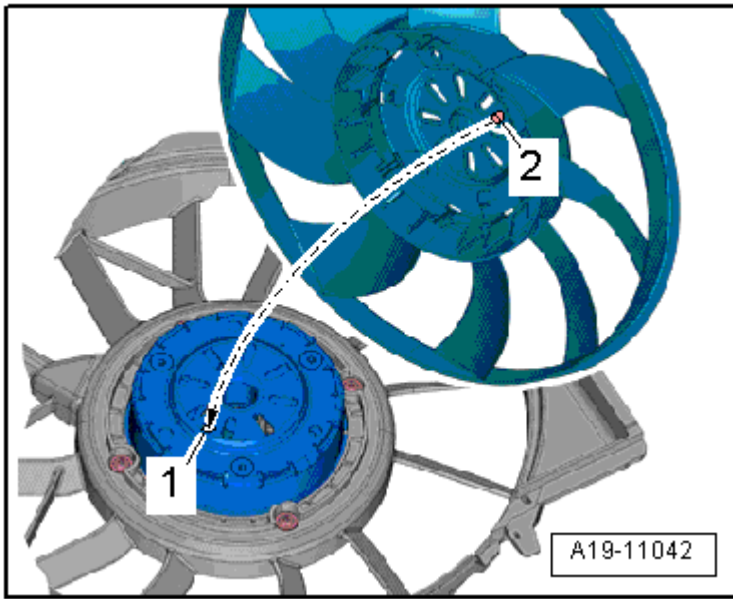


Fig. 40: Identifying Position Of Fan Wheel
Courtesy of AUDI OF AMERICA, LLC

- The bolt -2- must lock into the hole -1-.

-- Install the fan shroud:

- Audi A4 refer to **RADIATOR AND FAN SHROUD**.

COOLANT PUMP

Special tools and workshop equipment required

- Spanner Wrench 3212

Removing

-- Drain the coolant. Refer to **COOLANT, DRAINING AND FILLING**.

-- Remove the front left coolant pipes. Refer to **LEFT FRONT COOLANT PIPES**.

-- Remove the bolts -1 and 2- and the coolant pipes.

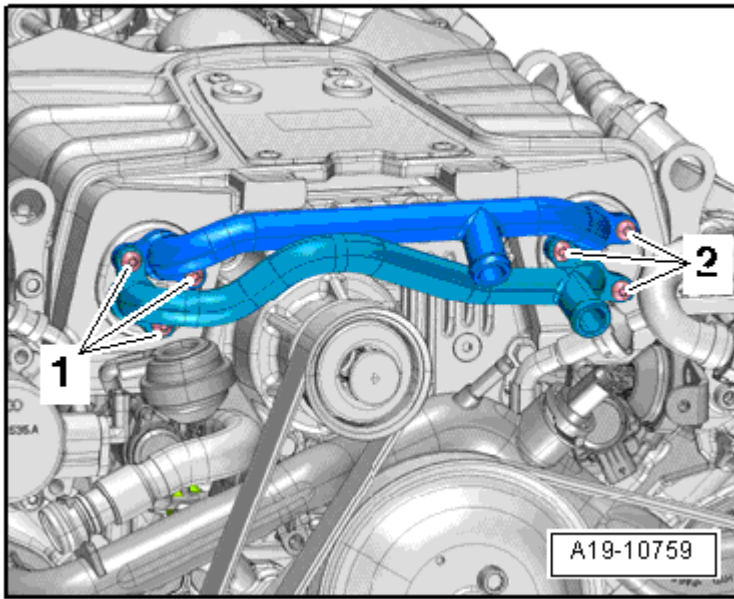


Fig. 41: Identifying Coolant Pipes To Supercharger
Courtesy of AUDI OF AMERICA, LLC

-- Remove the ribbed belt from the Air Conditioning (A/C) compressor but do not remove it completely:

- **RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING**
- **RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING**

-- Remove the coolant hose -arrow- from the front coolant pipe by lifting the retaining clamp.

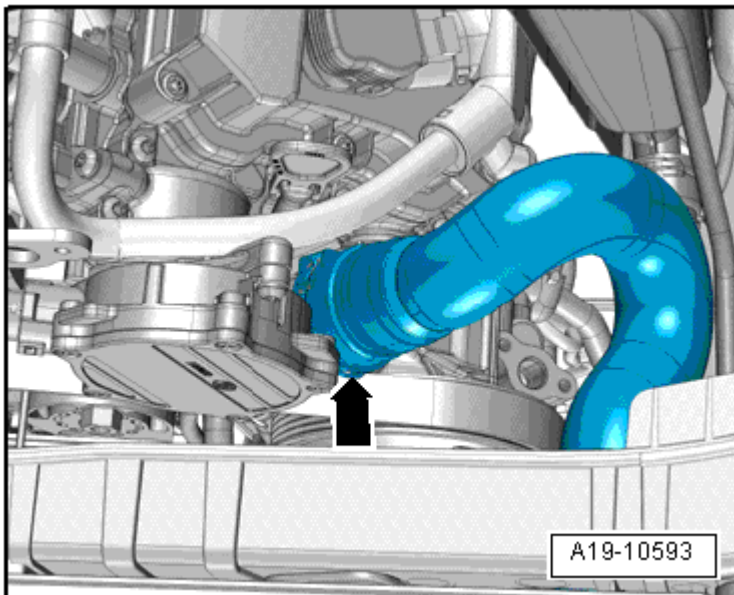


Fig. 42: Identifying Coolant Hose From Front Coolant Pipe By Lifting Retaining Clamp
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts for the coolant pump ribbed belt pulley, using a 3212 to counter hold.

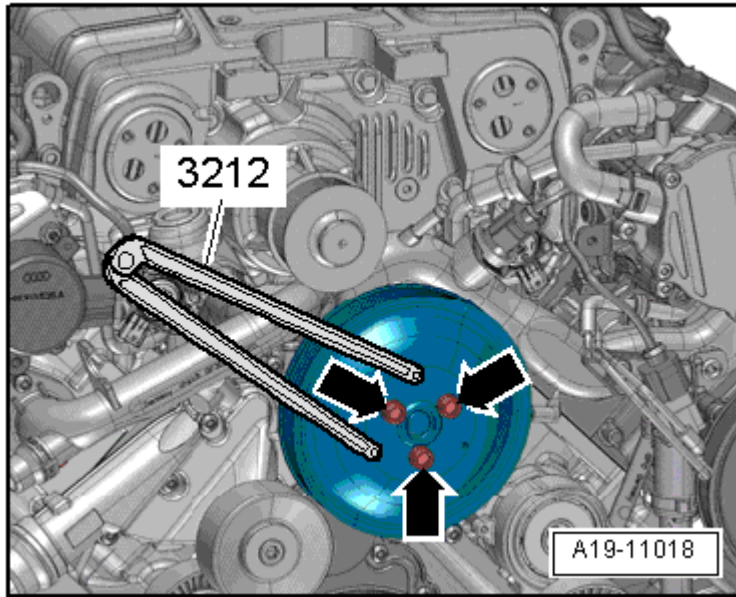


Fig. 43: Identifying Coolant Pump Ribbed Belt Pulley Bolts Using 3212 To Counterhold For Removal
Courtesy of AUDI OF AMERICA, LLC

Vehicles with Hydraulic Power Steering

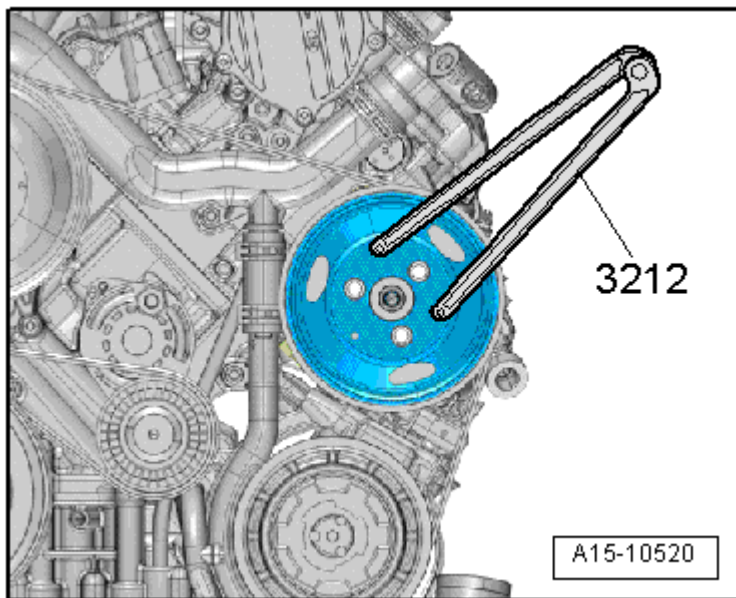


Fig. 44: Identifying Coolant Pump Pulley Bolts
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts for the coolant pump ribbed belt pulley, using a 3212 to counter hold.

Vehicles with Electro-Mechanical Power Steering

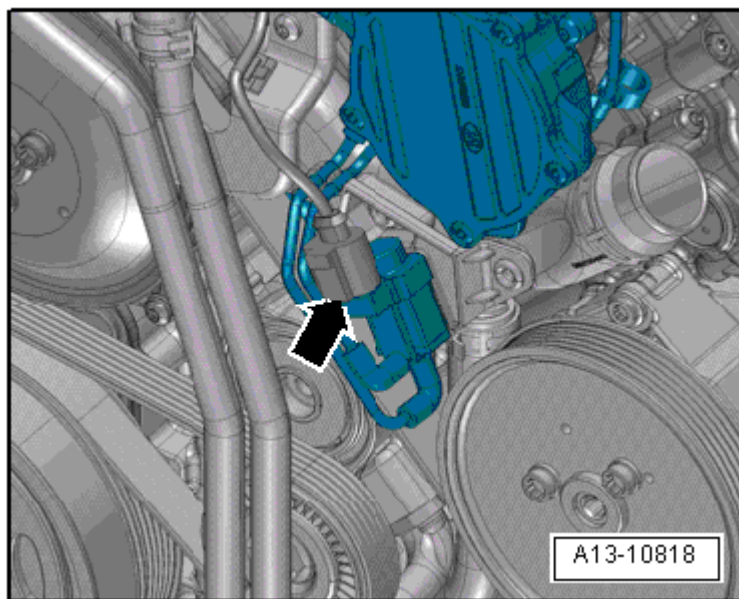


Fig. 45: Identifying Cylinder Head Coolant Valve And Bracket
Courtesy of AUDI OF AMERICA, LLC

- Remove the cylinder head coolant valve -N489- -arrow- from the bracket and move it to the side.
- Disconnect vacuum hose -1-.

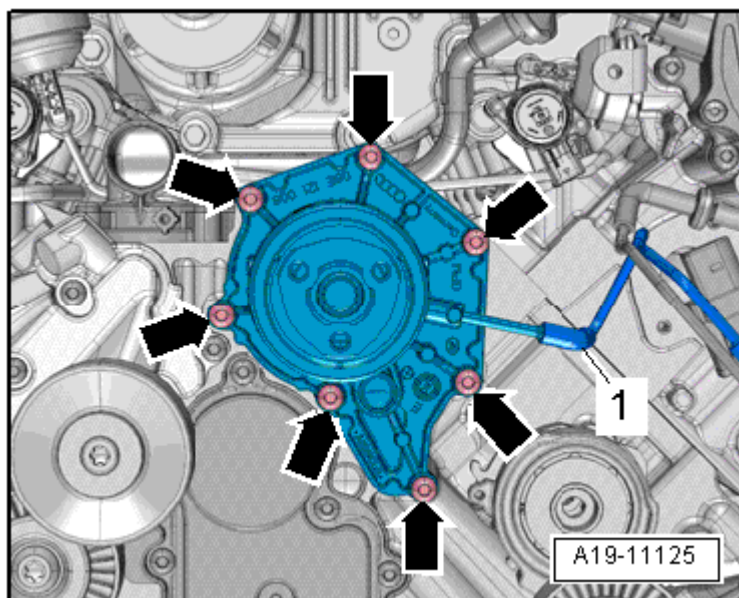


Fig. 46: Identifying Coolant Pump
Courtesy of AUDI OF AMERICA, LLC

All Vehicles

NOTE: Use a cloth to catch any leaking coolant.

-- Remove the coolant pump bolts -arrows- and the coolant pump.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW**.

-- Clean any oil or grease off the sealing surfaces.

-- Install the power steering pump ribbed belt pulley. Refer to **Removal and Installation** .

-- Connect the coolant hose to the coupling. Refer to **Fig. 28**.

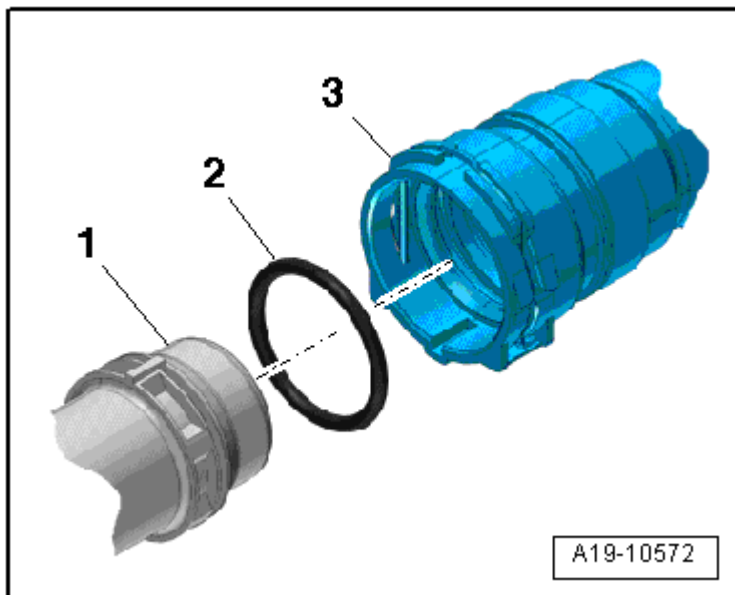


Fig. 47: Connecting Coolant Hose To Coupling
Courtesy of AUDI OF AMERICA, LLC

-- Installing the ribbed belt:

- **RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING**
- **RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING**

-- Install the coolant pipes. Refer to **COOLANT PIPES OVERVIEW**.

-- Fill with coolant **FILLING**.

COOLANT THERMOSTAT**Removing**

- Drain the coolant. Refer to COOLANT, DRAINING AND FILLING.
- Remove the supercharger. Refer to SUPERCHARGER .
- Remove the front coolant pipe. Refer to FRONT COOLANT PIPE.

NOTE: Place a cloth underneath to catch any coolant leaking out.

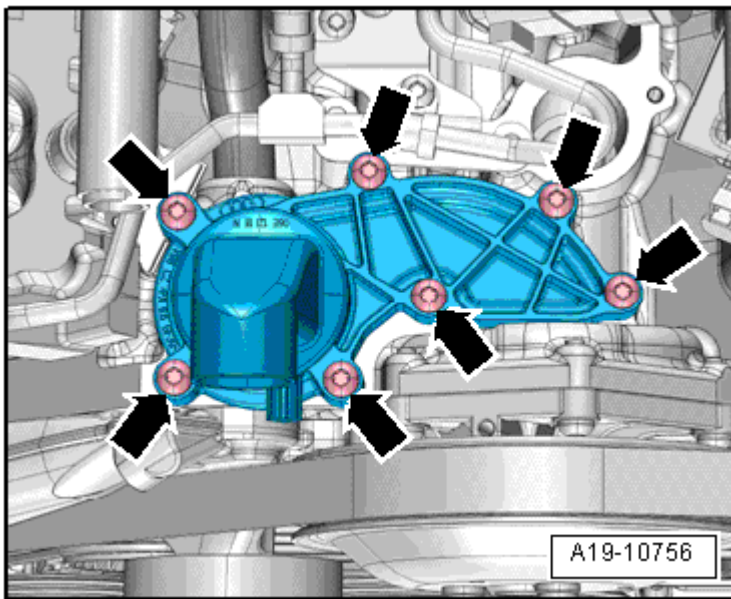


Fig. 48: Identifying Coolant Thermostat And Bolts
Courtesy of AUDI OF AMERICA, LLC

- Remove the bolts -arrows-.
- Remove the coolant thermostat with the connections.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW.

NOTE: Replace the gasket.

- Install front coolant pipe. Refer to FRONT COOLANT PIPE.

-- Install the supercharger. Refer to **SUPERCHARGER** .

-- Fill with coolant **FILLING**.

ENGINE COOLANT TEMPERATURE SENSOR -G62-

Removing

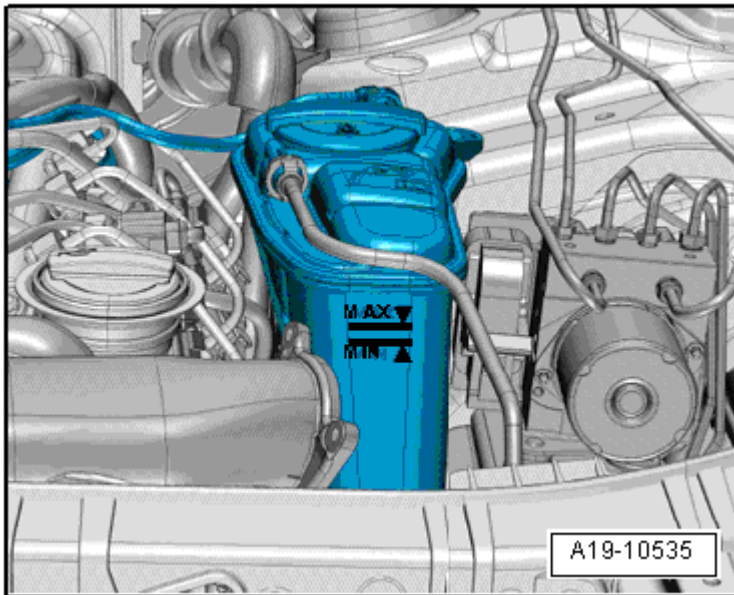


Fig. 49: Identifying Coolant Reservoir Marking
Courtesy of AUDI OF AMERICA, LLC

- Engine cold.

-- Quickly open the coolant reservoir cap and release any remaining pressure in the cooling system and then close it again.

-- Remove the front engine cover -1- upward.

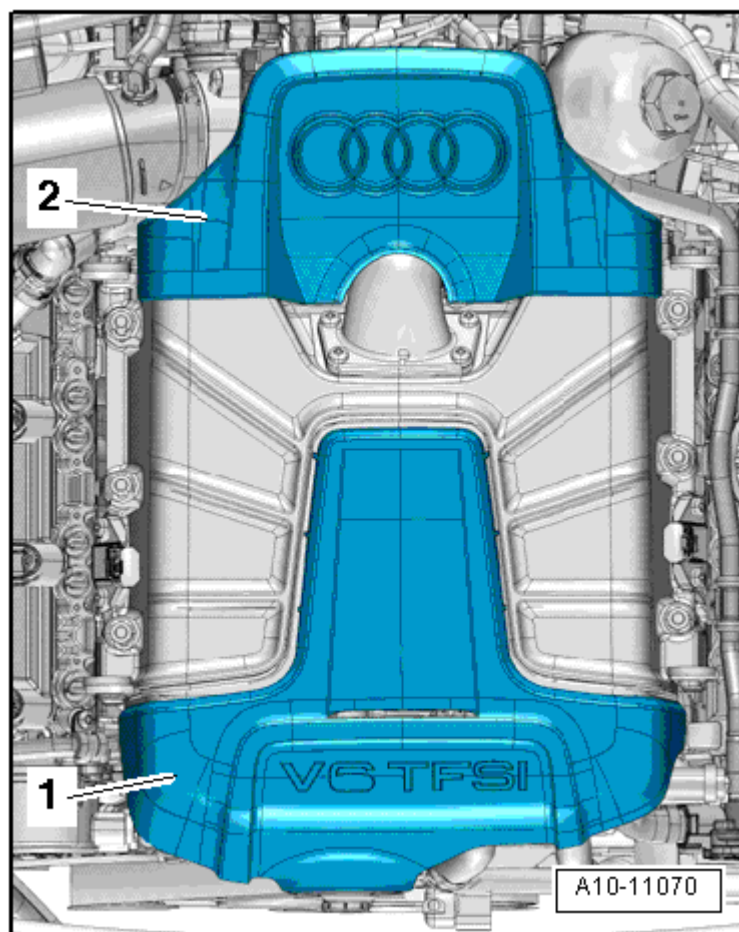


Fig. 50: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the connector -1- from the Engine Coolant Temperature (ECT) sensor -G62-.

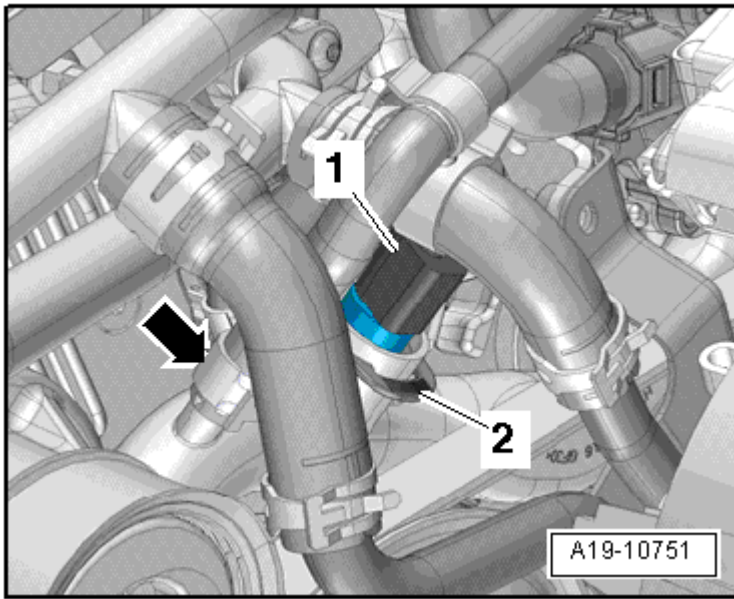


Fig. 51: Identifying Engine Coolant Temperature (ECT) Sensor -G62- And Clip
Courtesy of AUDI OF AMERICA, LLC

NOTE: Use a cloth to catch any leaking coolant.

-- Remove the clip -2- and the ECT sensor.

NOTE: Ignore -arrow-.

Installing

Install in reverse order of removal. Note the following:

NOTE: Replace the O-ring.

To prevent coolant loss, install the ECT sensor immediately into the connection.

-- Check the coolant level **FILLING**.

FRONT CHARGE AIR COOLING CIRCUIT RADIATOR

Special tools and workshop equipment required

- Hose Clamps Up to 25 mm Dia. 3094
- Drip Tray for VAS 6100 VAS 6208

Removing

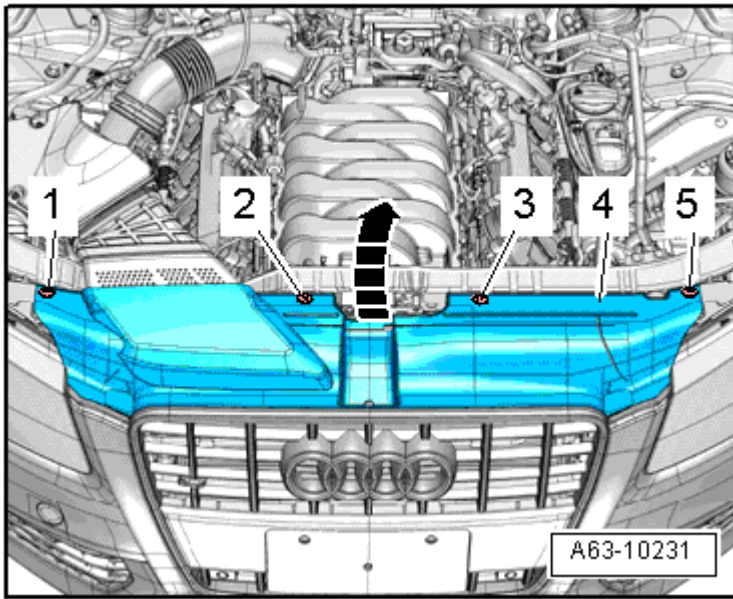


Fig. 52: Identifying Front Lock Carrier Cover
Courtesy of AUDI OF AMERICA, LLC

- Remove the lock carrier cover -4-. Refer to **Removal and Installation** .
- Remove the bolts -arrows-.

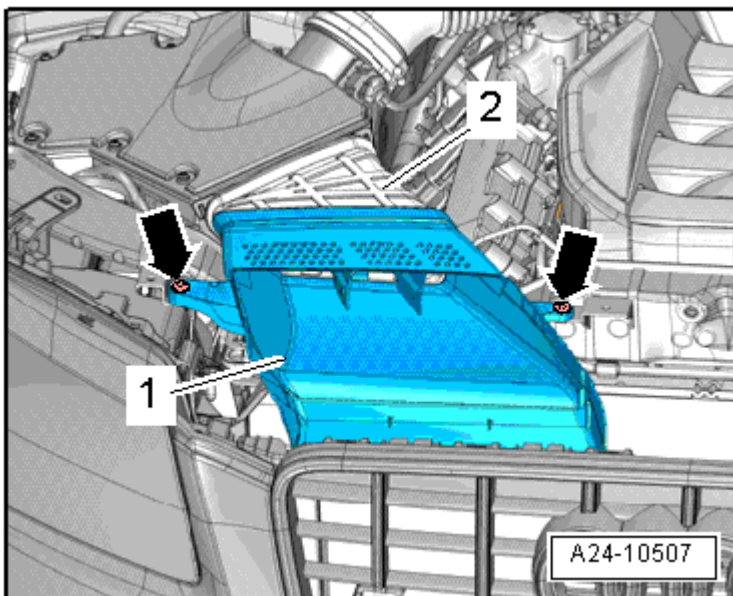


Fig. 53: Identifying Air Duct Components
Courtesy of AUDI OF AMERICA, LLC

- Remove the air duct -1- from the air filter housing intermediate flange -2-.
- Remove the bumper cover end plate. Refer to "Front Bumper" in **Removal and Installation** .

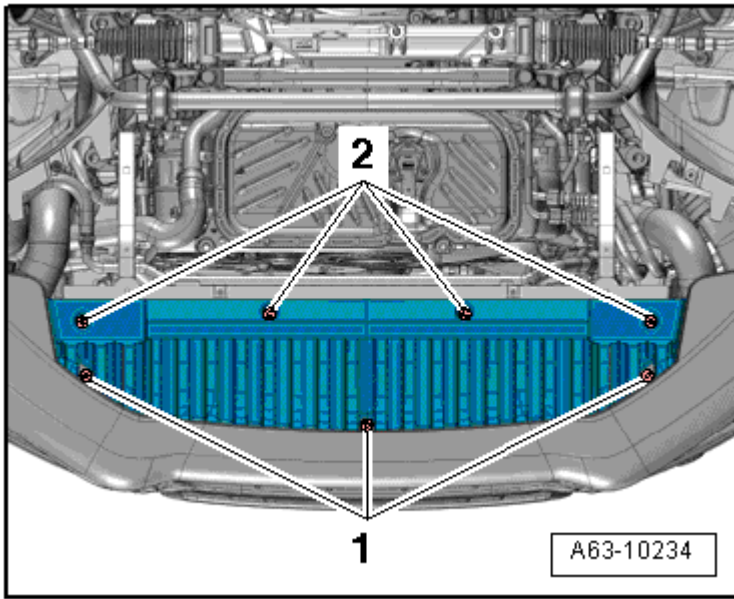


Fig. 54: Identifying Bolts And Bumper Cover End Panel
 Courtesy of AUDI OF AMERICA, LLC

-- Remove the left and right air intake grille -1-. Refer to "Front Bumper" in **Removal and Installation** .

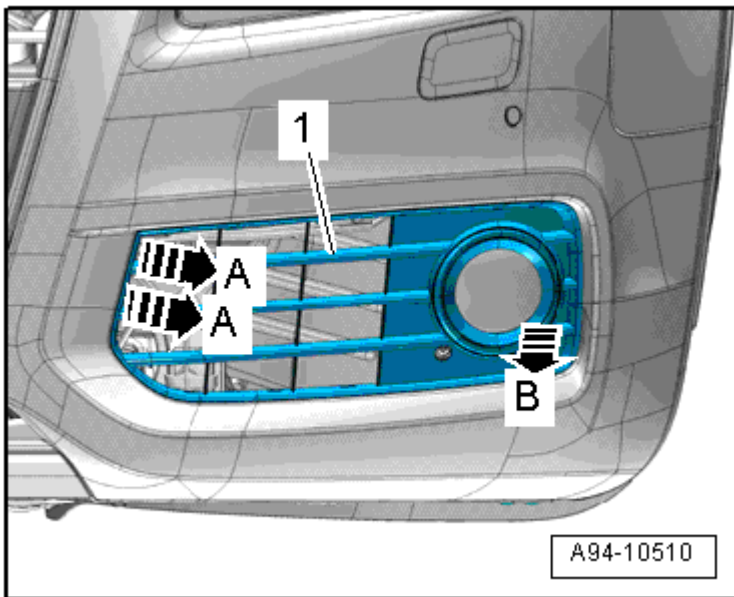


Fig. 55: Releasing Clamps And Remove Air Intake Grille
 Courtesy of AUDI OF AMERICA, LLC

NOTE: The bumper is not shown in the following illustrations.

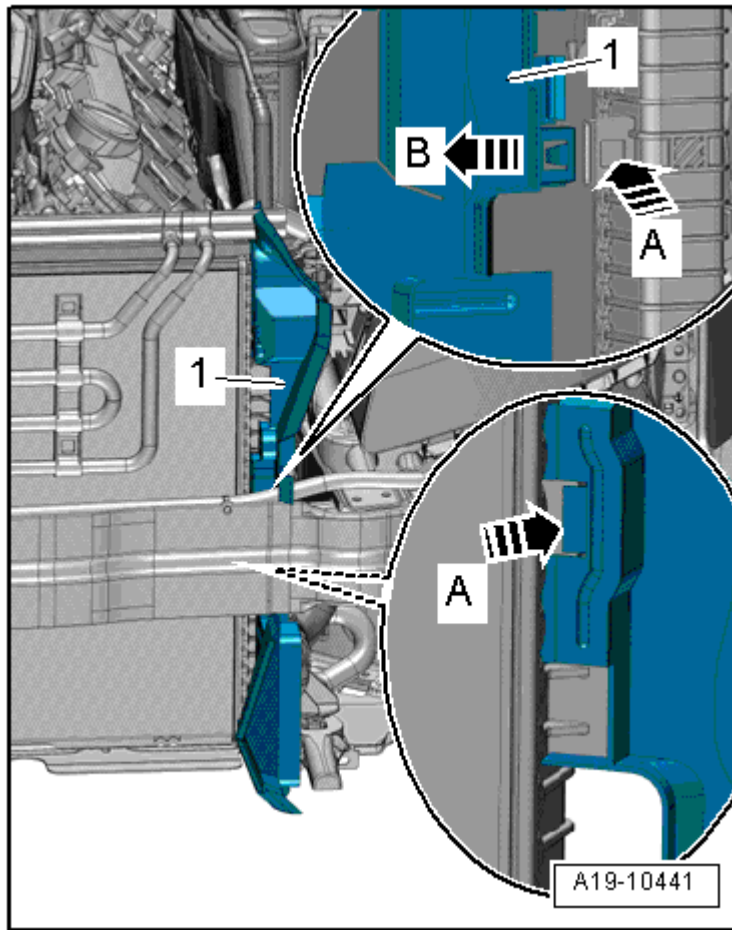


Fig. 56: Locating Left & Right Air Duct Tabs
Courtesy of AUDI OF AMERICA, LLC

-- Release the retaining tabs -A arrows- and tilt the left and right air ducts -1- toward the center of the vehicle - arrow B-.

-- Place the VAS 6208 under the front charge air cooling circuit radiator.

Vehicles with Version 2 Front Charge Air Cooling Circuit Radiator

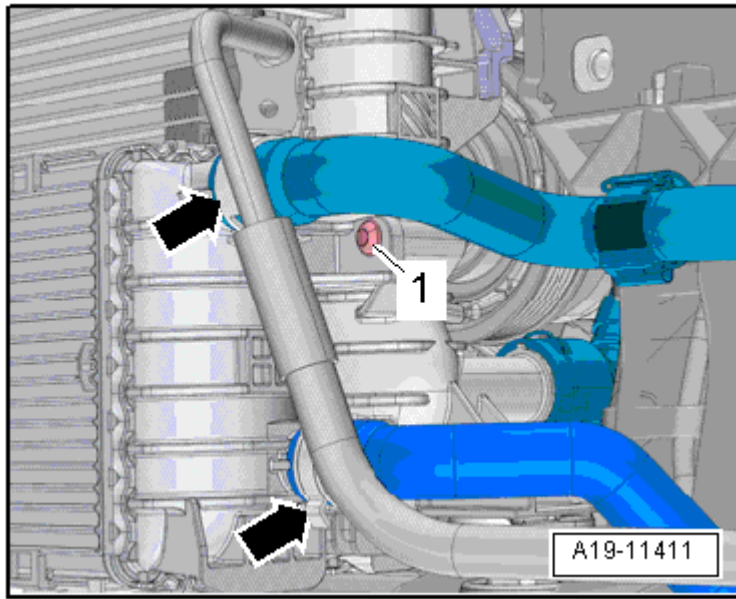


Fig. 57: Disconnecting Coolant Hoses And 3094
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect and remove the coolant hoses and 3094, to do this, loosen the hose clamps -arrows-.

Vehicles with Version 1 Front Charge Air Cooling Circuit Radiator

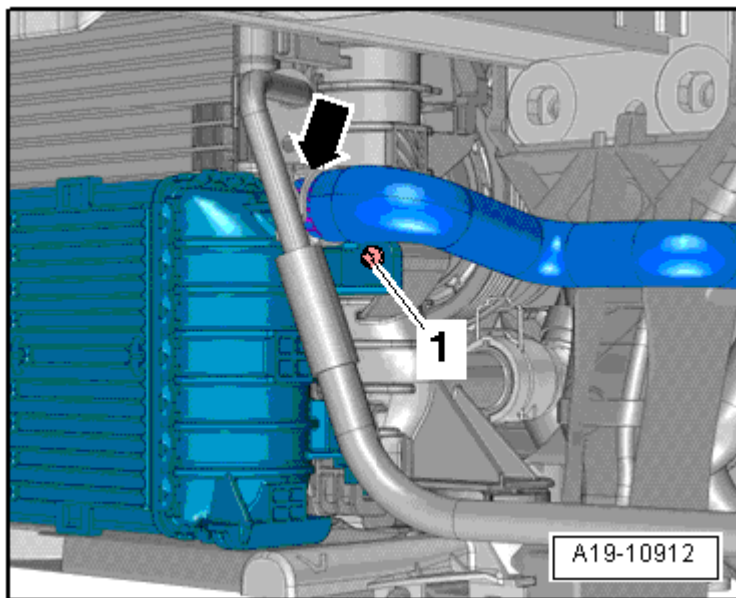


Fig. 58: Loosening Hose Clamps -Arrows- And Remove Bolt -1-
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect and remove the coolant hose and 3094, to do this, loosen the hose clamps -arrows-.

-- Remove the bolt -1-.

-- Open the clamp -1-. Then remove both the coolant hose and the 3094

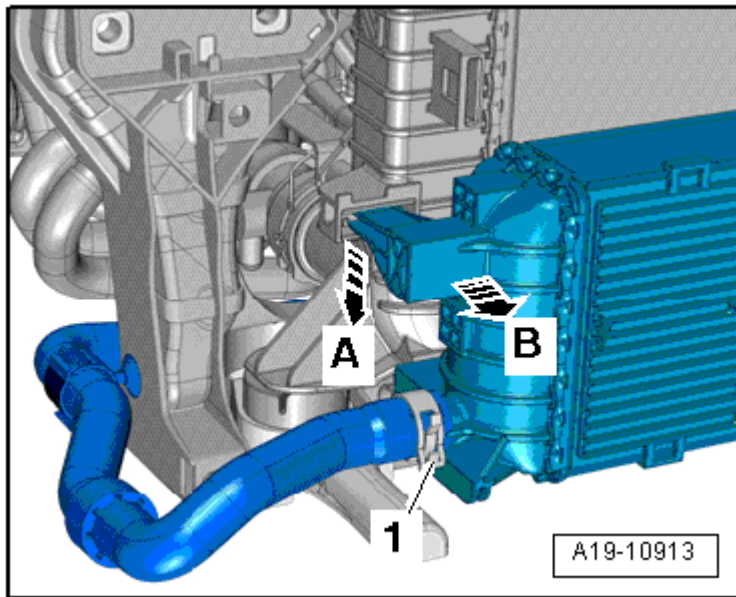


Fig. 59: Opening Clamp To Remove Both Coolant Hose
Courtesy of AUDI OF AMERICA, LLC

All Vehicles

-- Press the catch downward -arrow A- and move the front charge air cooling circuit radiator in direction of -arrow B-.

-- Remove the front charge air cooling circuit radiator from the radiator -arrows A- and move it in direction of -arrow B-.

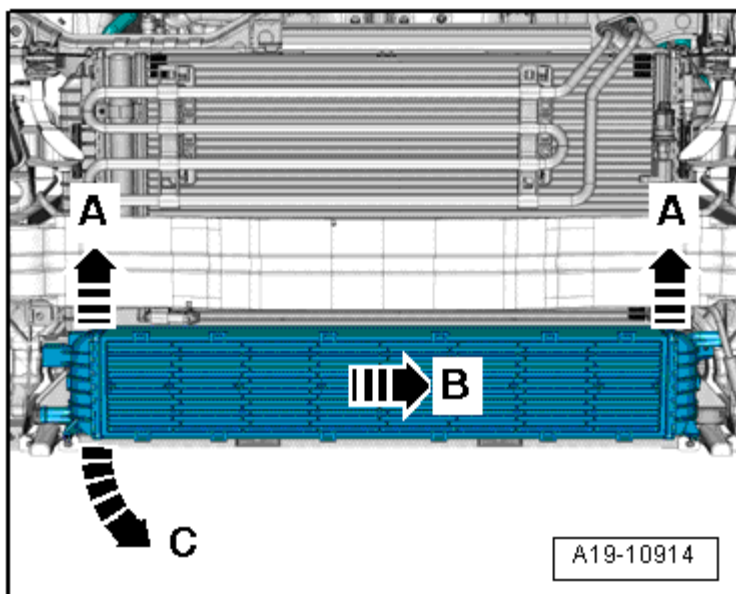


Fig. 60: Identifying Front Charge Air Cooling Circuit Radiator From Radiator**Courtesy of AUDI OF AMERICA, LLC**

-- Remove the front charge air cooling circuit radiator downward from the right side -arrow C-.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **RADIATOR AND COOLANT FAN OVERVIEW**.

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

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

-- Install the air duct on the air filter housing intermediate flange. Refer to **Removal and Installation** .

-- Install the lock carrier cover. Refer to **Removal and Installation** .

-- Fill with coolant **FILLING**.

NOTE: **All of the coolant must be changed if the radiator was replaced.**

FRONT COOLANT PIPE**Special tools and workshop equipment required**

- Spanner Wrench 3212
- Hose Clip Pliers VAS 6362

Removing

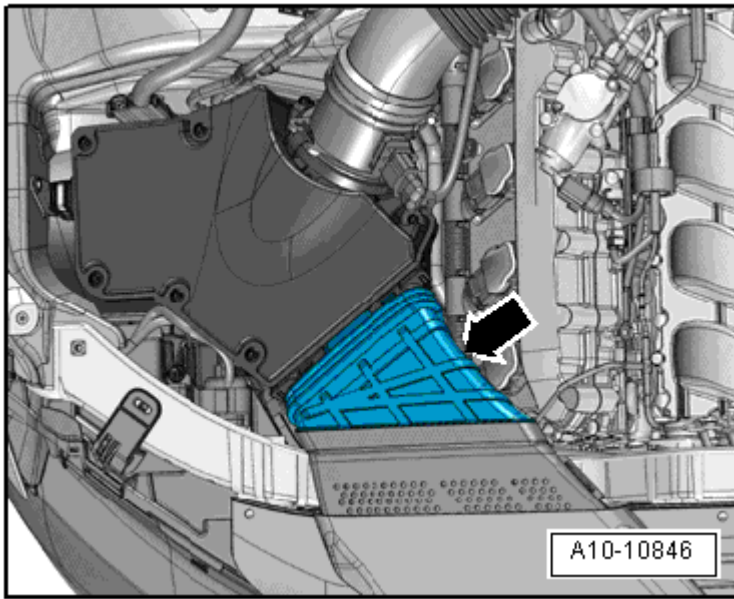


Fig. 61: Identifying Air Duct

Courtesy of AUDI OF AMERICA, LLC

-- Drain the coolant. Refer to **COOLANT, DRAINING AND FILLING** remove the after-run coolant pump - V51-, refer to **After-Run Coolant Pump -V51-**.

-- Remove the air duct -arrows-.

-- Remove the front left coolant pipes. Refer to **LEFT FRONT COOLANT PIPES**.

-- Removing the ribbed belt:

- **RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING**
- **RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING**

-- Remove vacuum pump. Refer to **Removal and Installation** .

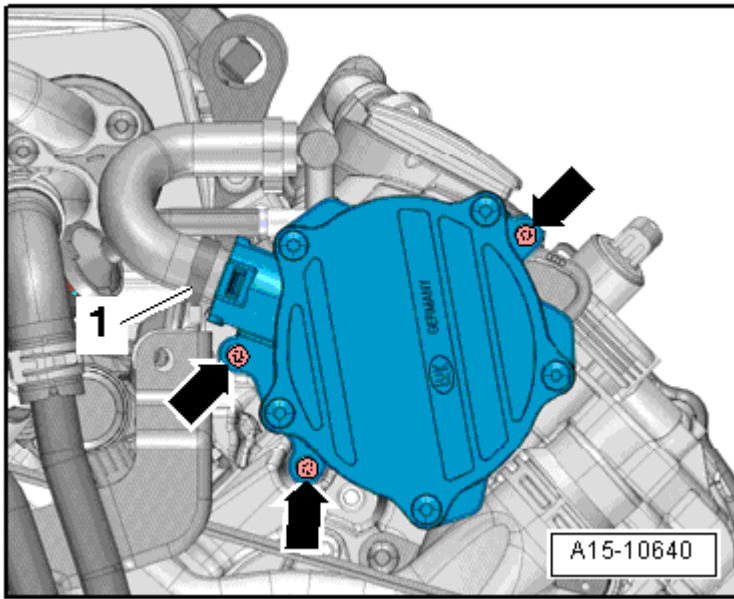


Fig. 62: Identifying Vacuum Pump
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts for the coolant pump ribbed belt pulley, using a 3212 to counter hold.

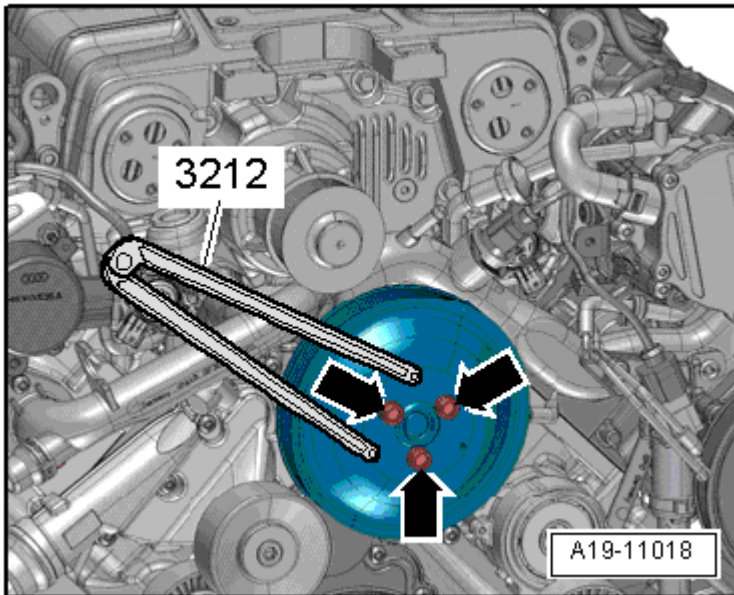


Fig. 63: Identifying Coolant Pump Ribbed Belt Pulley Bolts Using 3212 To Counterhold For Removal
Courtesy of AUDI OF AMERICA, LLC

-- Remove the ribbed belt pulley.

-- Disconnect the connector -1- for the wiring leading to the Air Conditioning (A/C) compressor clutch solenoid.

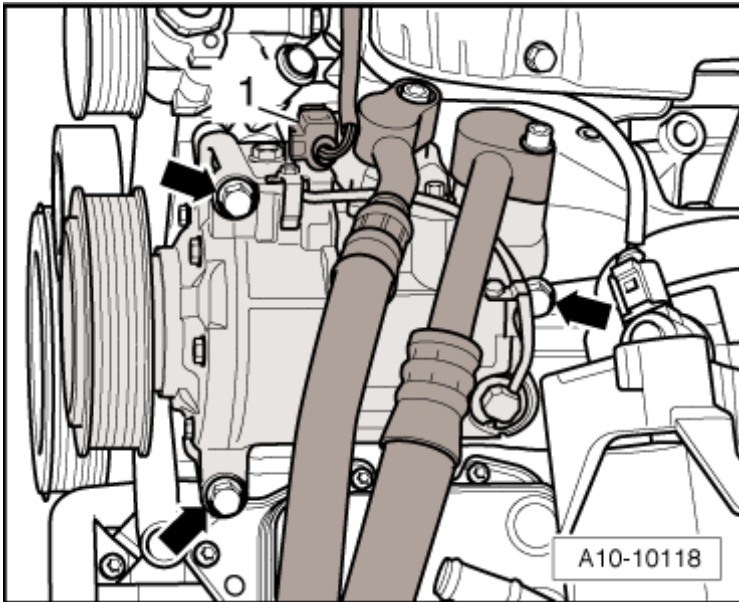


Fig. 64: Disconnecting Connector For Wiring To Air Conditioning Compressor Clutch Solenoid
Courtesy of AUDI OF AMERICA, LLC

WARNING: Refrigerant can cause serious personal injury.

- Do not open the air conditioning refrigerant circuit.

-- Remove A/C compressor bolts -arrows-.

CAUTION: Danger of damaging the refrigerant lines and hoses.

- Do not stretch, kink or bend refrigerant lines and hoses.

-- Remove the A/C compressor from the bracket and move it to the side with the lines still connected.

-- Loosen the hose clamp -3- and remove the left coolant pipe bolts -1 and 2-.

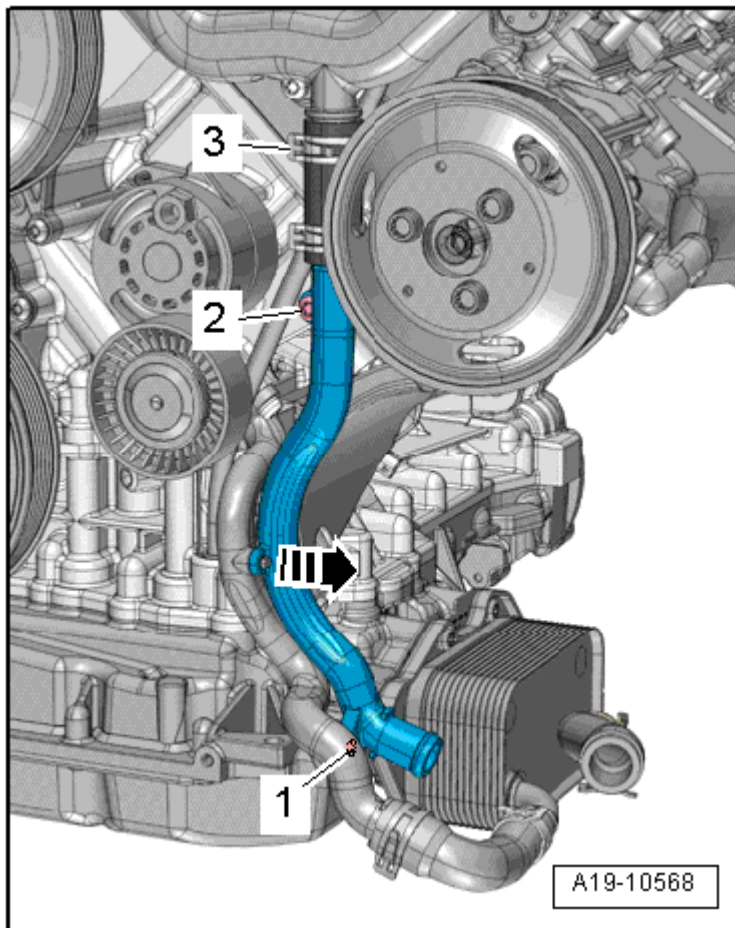


Fig. 65: Loosening Hose Clamp To Remove Left Coolant Pipe Bolts
Courtesy of AUDI OF AMERICA, LLC

- Tip the coolant pump to the left slightly -arrow- and remove it from the upper coolant pipe.
- Remove the bolt -arrow- and remove the left front coolant pipe bracket.

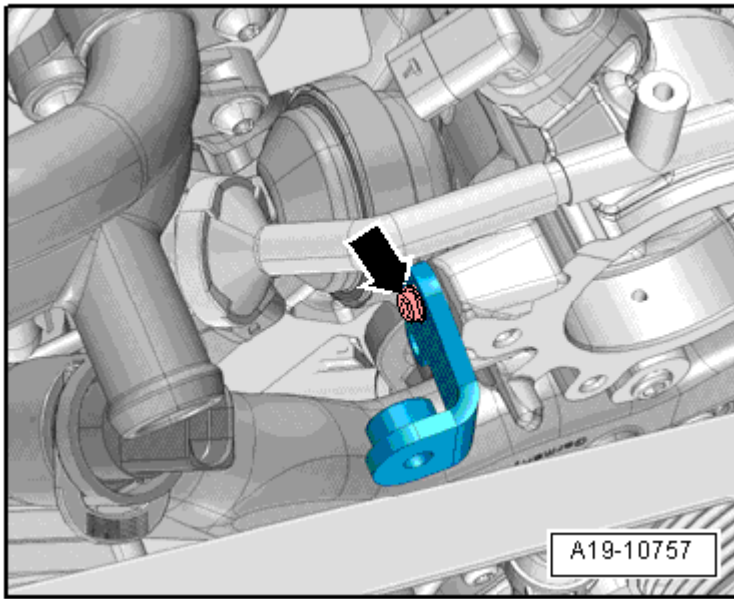


Fig. 66: Identifying Bolt And Left Front Coolant Pipe Bracket
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the connector -3- from the Engine Coolant Temperature (ECT) sensor -G62-.

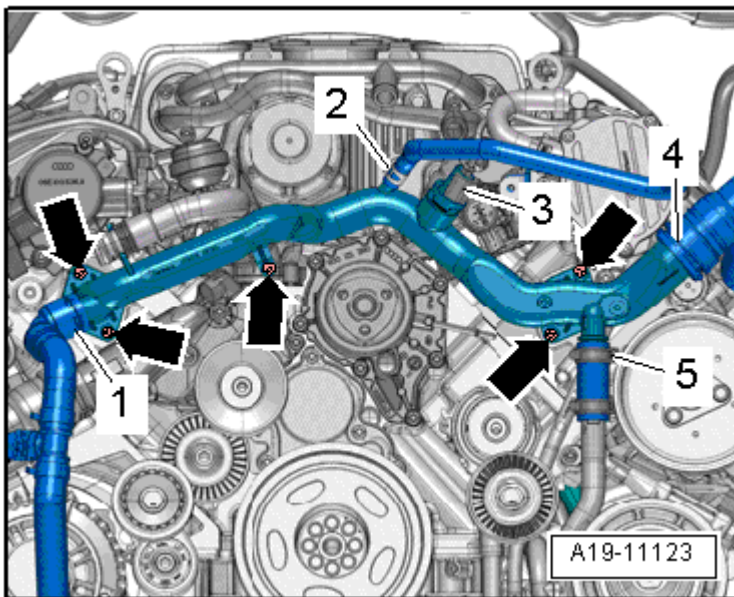


Fig. 67: Disconnecting Engine Coolant Temperature Sensor Connector
Courtesy of AUDI OF AMERICA, LLC

-- Open the clamps and remove the coolant hoses -1 and 4-.

-- Loosen the clamp -2- and remove the upper coolant hose.

-- Loosen the hose clamp -5-.

-- Remove the bolts -arrows- and the front coolant pipe.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **COOLANT PIPES OVERVIEW**.

NOTE: **Replace the gaskets and O-rings.**

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

-- Clean or smooth the seal and O-ring sealing surfaces.

-- Coat the sealing rings and O-rings with coolant and then mount them on the coolant pipe.

-- Connect the coolant hose to the coupling. Refer to **Fig. 28**.

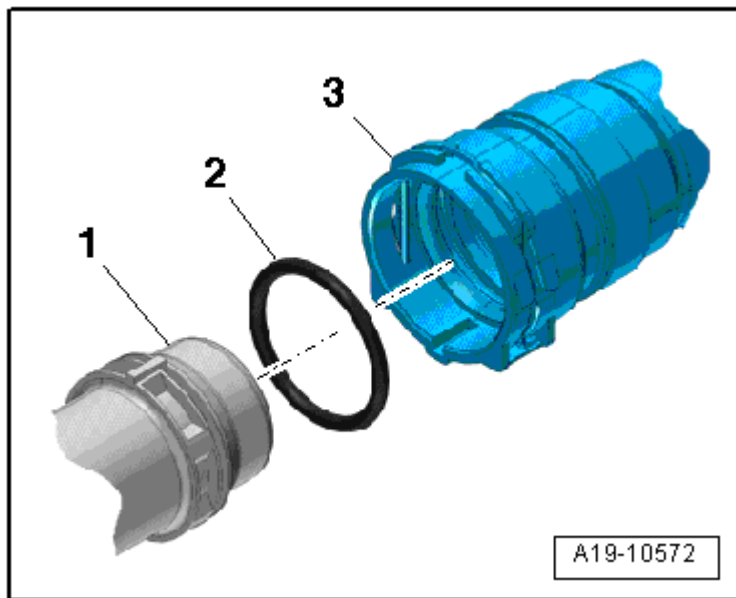


Fig. 68: Connecting Coolant Hose To Coupling
Courtesy of AUDI OF AMERICA, LLC

-- Install the left coolant pipes. Refer to **LEFT COOLANT PIPES**.

-- Install A/C compressor. Refer to **Removal and Installation** .

-- Install the coolant pump ribbed belt pulley. Refer to **COOLANT PUMP, COOLANT THERMOSTAT AND CONNECTING PIECE OVERVIEW**.

-- Install the vacuum pump. Refer to **Removal and Installation** .

-- Installing the ribbed belt:

- **RIBBED BELT, VEHICLES WITH HYDRAULIC POWER STEERING**
- **RIBBED BELT, VEHICLES WITH ELECTRO-MECHANICAL POWER STEERING**

-- Install the left front coolant pipes. Refer to **LEFT FRONT COOLANT PIPES**.

-- Install after-run coolant pump -V51-. Refer to **After-Run Coolant Pump -V51-**.

-- Fill with coolant **FILLING**.

LEFT CHARGE AIR COOLING CIRCUIT RADIATOR

Special tools and workshop equipment required

- Hose Clamps Up to 25 mm Dia. 3094
- Drip Tray for VAS 6100 VAS 6208

Removing

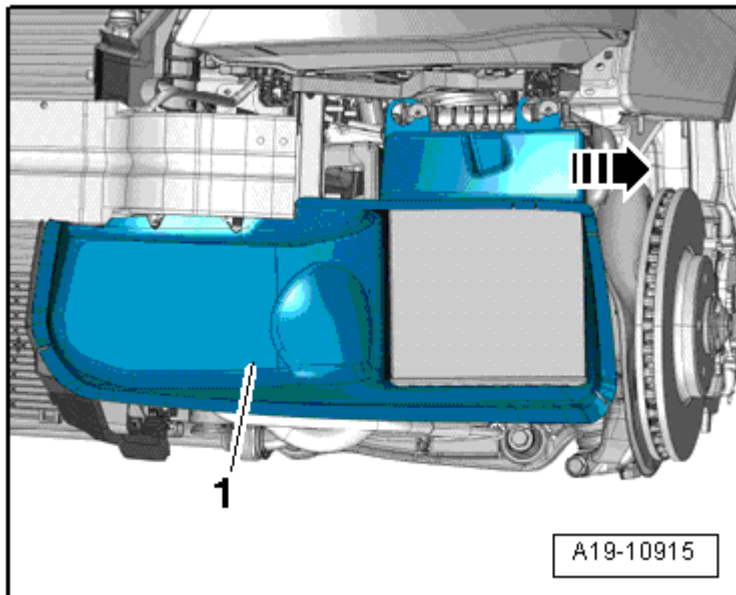


Fig. 69: Identifying Front Bumper Cover
Courtesy of AUDI OF AMERICA, LLC

-- Remove front bumper cover. Refer to **Removal and Installation** .

-- Remove the left front wheel. Refer to **Removal and Installation** .

- Remove the left front wheel housing liner. Refer to **Removal and Installation** .
- Remove the air duct -1- -arrow-.
- Remove the nuts -arrows- and lower the bracket -1- with the left charge air cooling circuit radiator just a little.

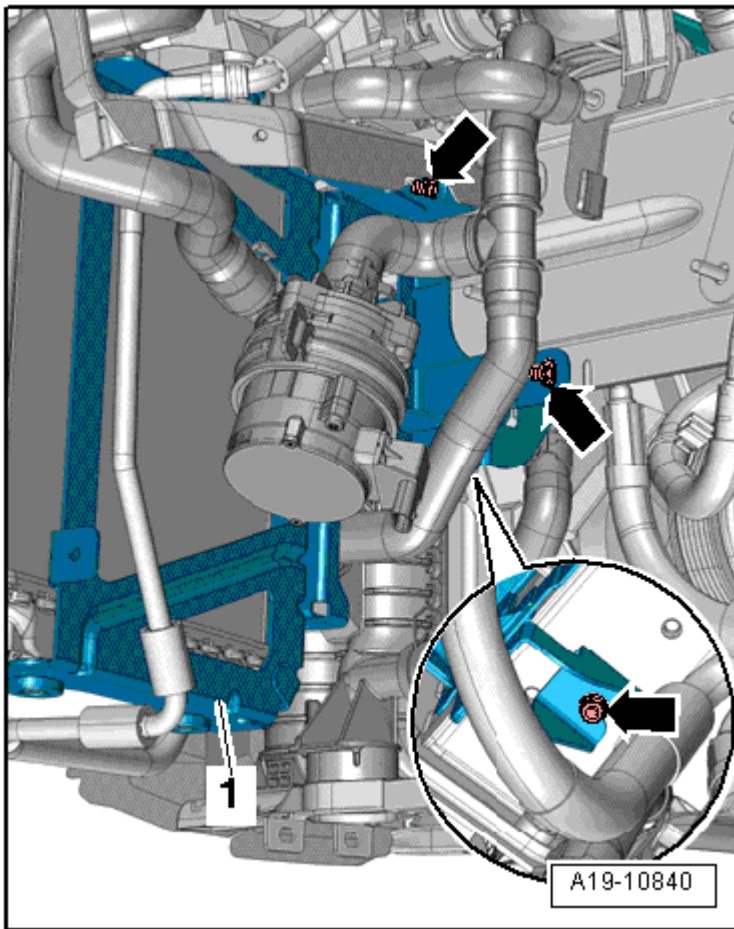


Fig. 70: Identifying Nuts And Lower Bracket
Courtesy of AUDI OF AMERICA, LLC

- Place the VAS 6208 under the left front charge air cooling circuit radiator.

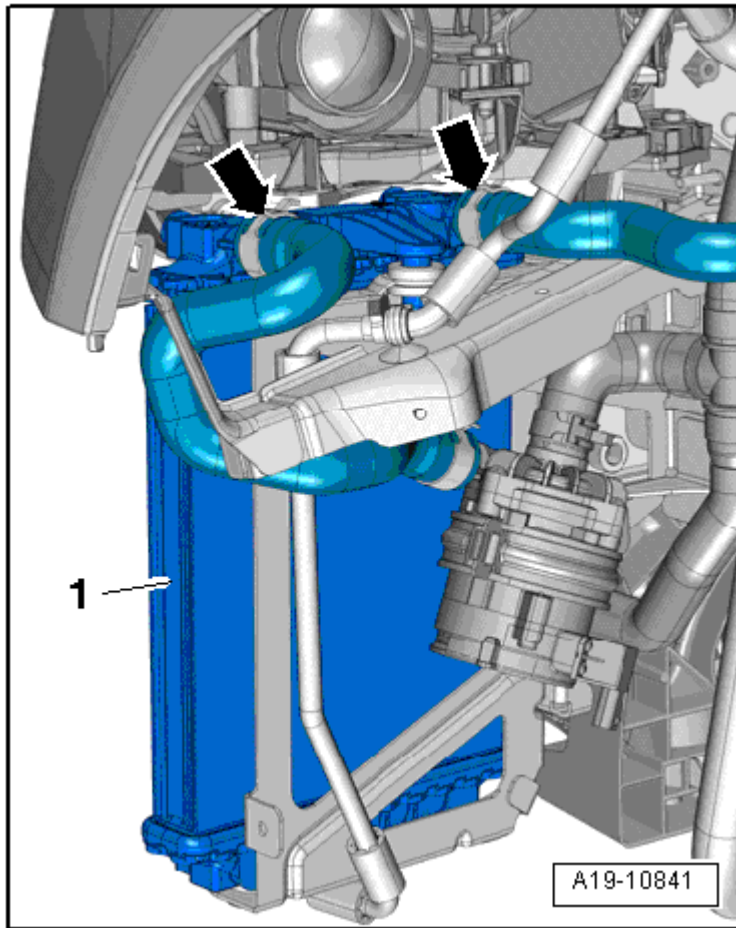


Fig. 71: Identifying Left Charge Air Radiator

Courtesy of AUDI OF AMERICA, LLC

- Disconnect and remove the coolant hoses and 3094, to do this, loosen the hose clamps -arrows-.
- Remove the left charge air cooling circuit radiator -1- upward from the bracket.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **RADIATOR AND COOLANT FAN OVERVIEW**.

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

- Install the front wheel housing liner. Refer to **Removal and Installation** .
- Install the front wheel. Refer to **Removal and Installation** .

-- Install front bumper. Refer to **Removal and Installation** .

-- Fill with coolant **FILLING**.

NOTE: All of the coolant must be changed if the radiator was replaced.

LEFT COOLANT PIPES

Special tools and workshop equipment required

- Hose Clip Pliers VAS 6362

Removing

-- Drain the coolant. Refer to **COOLANT, DRAINING AND FILLING** remove the after-run coolant pump - V51-. Refer to **After-Run Coolant Pump -V51-**.

-- Remove Air Conditioning (A/C) compressor. Refer to **Removal and Installation** .

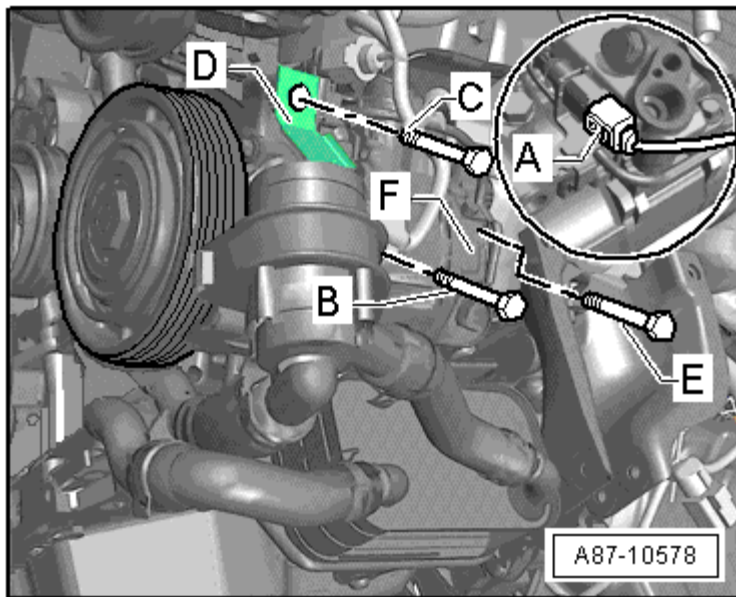


Fig. 72: Identifying A/C Compressor & Bolts
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows- and the A/C compressor bracket.

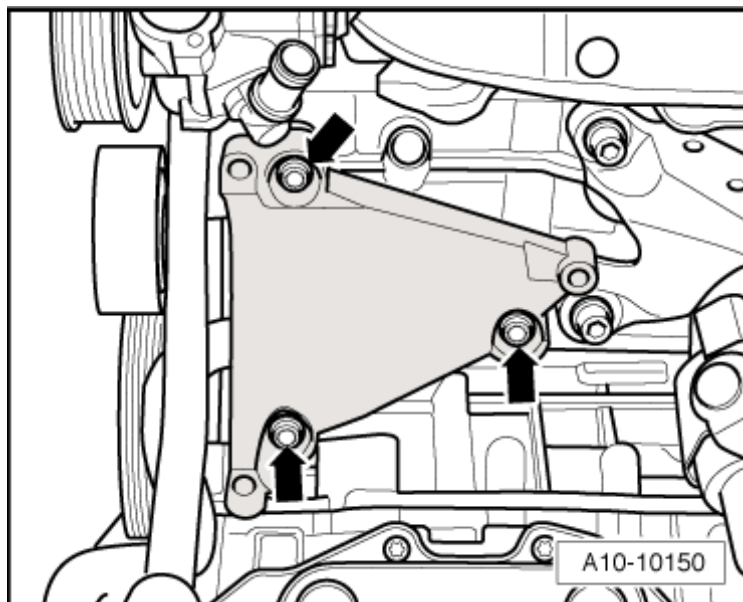


Fig. 73: Locating A/C Compressor Bracket Bolts
Courtesy of AUDI OF AMERICA, LLC

-- Remove the bolts -arrows-.

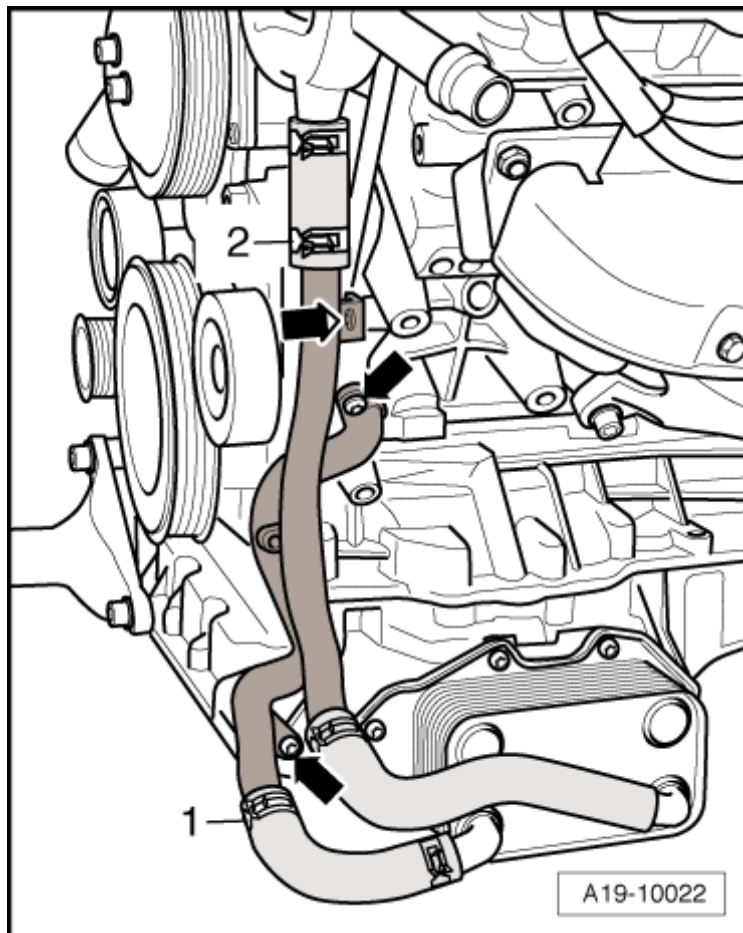


Fig. 74: Identifying Coolant Pipe Bolts And Clamps

Courtesy of AUDI OF AMERICA, LLC

-- Remove the coolant pipes from the coolant hoses by loosening the hose clamps -1 and 2-.

NOTE: The installation location is shown with the power steering pump removed.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **COOLANT PIPES OVERVIEW**.

NOTE: Replace the O-ring.

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

-- Clean and smooth the O-ring sealing surface.

-- Coat the O-ring with coolant and slide it onto the coolant pipe.

-- Install the A/C compressor bracket. Refer to **RIBBED BELT DRIVE, VEHICLES WITH HYDRAULIC POWER STEERING OVERVIEW** .

-- Install A/C compressor. Refer to **Removal and Installation** .

-- Install after-run coolant pump. Refer to **After-Run Coolant Pump -V51-**.

-- Fill with coolant **FILLING**.

LEFT FRONT COOLANT PIPES**Special tools and workshop equipment required**

- Hose Clamps Up to 25 mm Dia. 3094
- Drip Tray for VAS 6100 VAS 6208
- Hose Clip Pliers VAS 6362

Removing

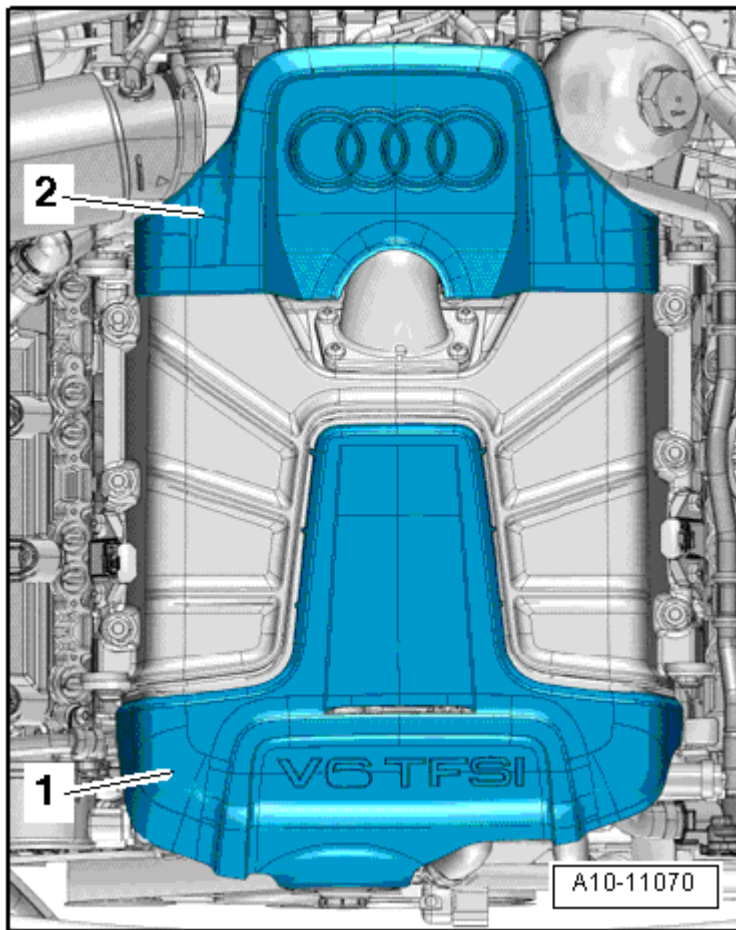


Fig. 75: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Remove the front engine cover -1- upward.
- Remove the front noise insulation -1-. Refer to **Description and Operation** .

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

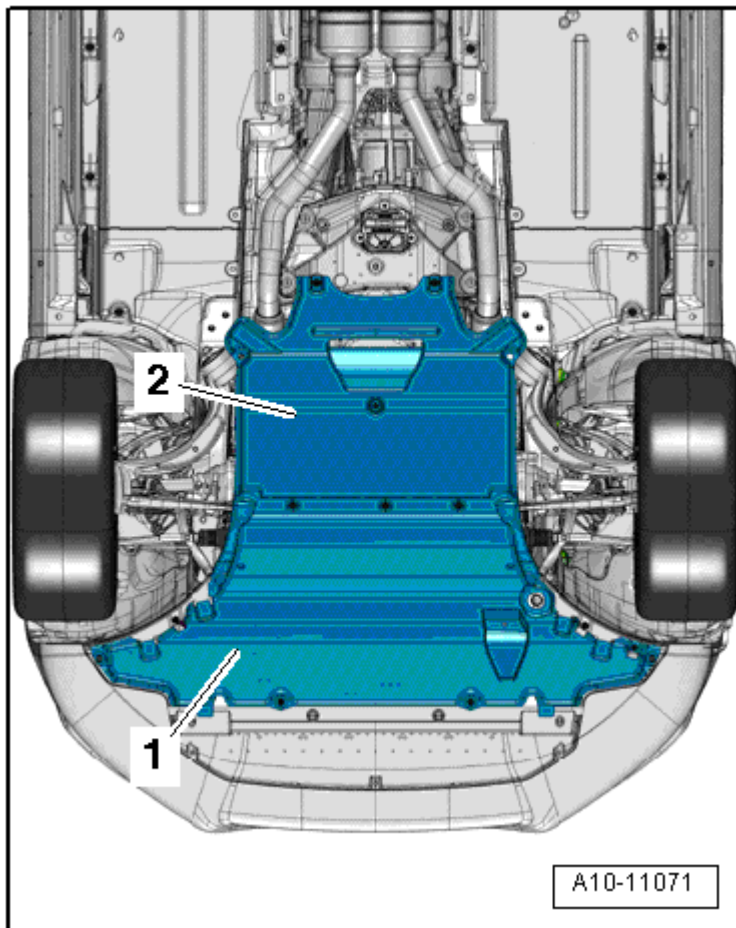


Fig. 76: Identifying Front Noise Insulation
Courtesy of AUDI OF AMERICA, LLC

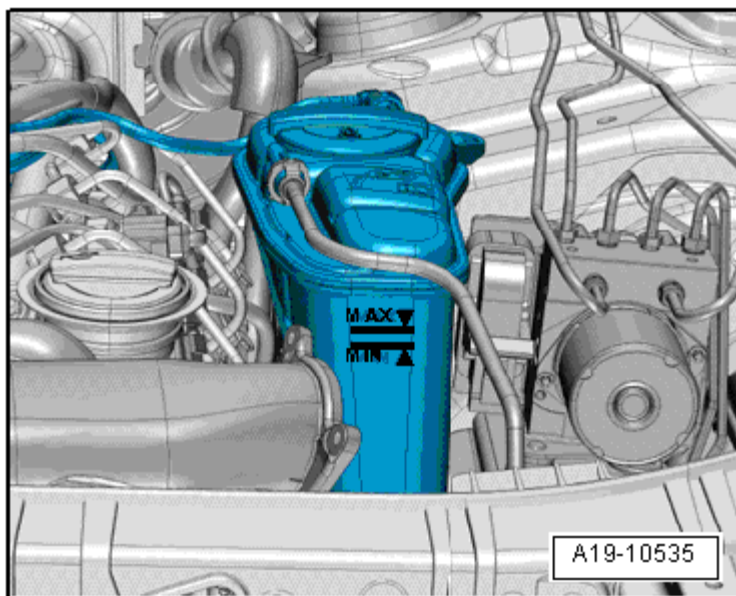


Fig. 77: Identifying Coolant Reservoir Marking

Courtesy of AUDI OF AMERICA, LLC

WARNING: Risk of scalding due to hot steam and hot coolant.

- The coolant system is under pressure when the engine is warm.
- Cover the coolant reservoir cap with a cloth and then open it slowly to release the pressure.

-- Open the coolant reservoir cap.

-- Place the VAS 6208 under the engine.

NOTE: The engine is not shown in the following illustrations.

Vehicles with Left Front Coolant Pipes, Version 1

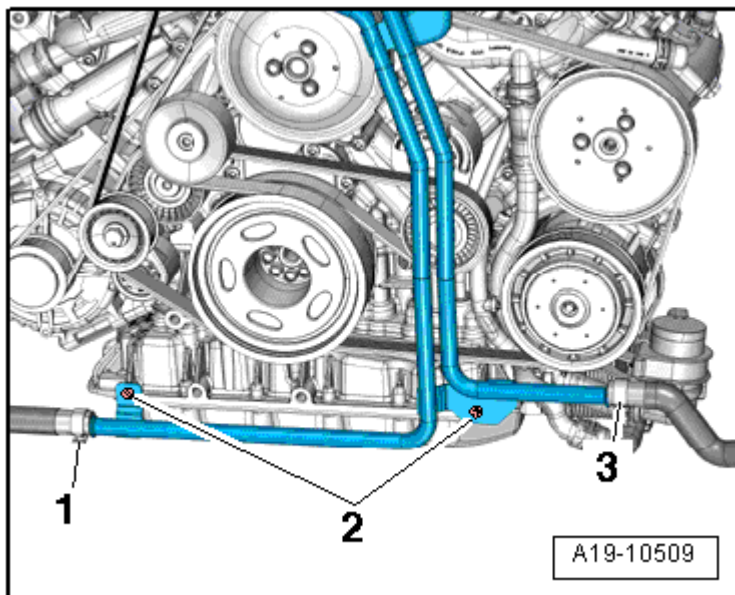


Fig. 78: Identifying Hose Clamps -1 And 3- & Left Front Coolant Hose

Courtesy of AUDI OF AMERICA, LLC

-- Loosen the hose clamps -1 and 3-, then close off the coolant hoses with the 3094 and remove them from the left front coolant pipes.

-- Remove the bolts -2-.

Vehicles with Left Front Coolant Pipes, Version 2

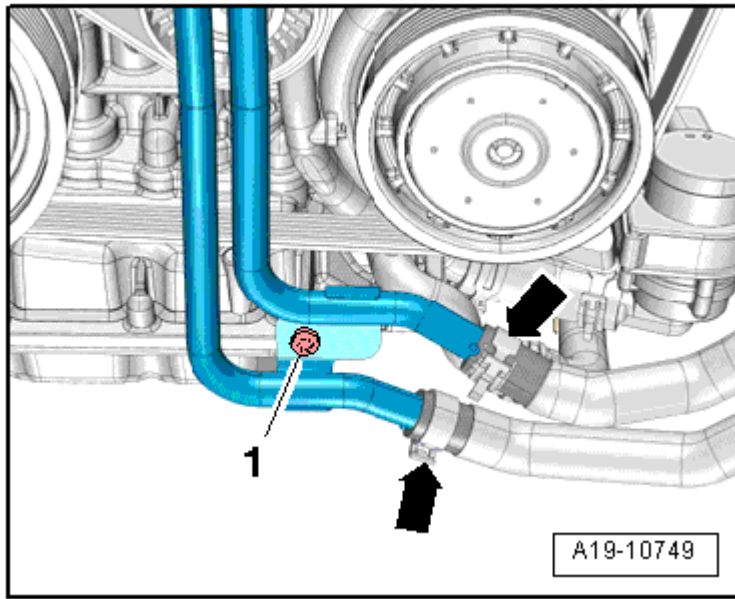


Fig. 79: Locating Lower Coolant Pipe Bolt
Courtesy of AUDI OF AMERICA, LLC

-- Disconnect the coolant hoses with the 3094 and remove them from the left front coolant pipes by loosening the clamps -arrows-.

-- Remove the bolt -1-.

All Vehicles

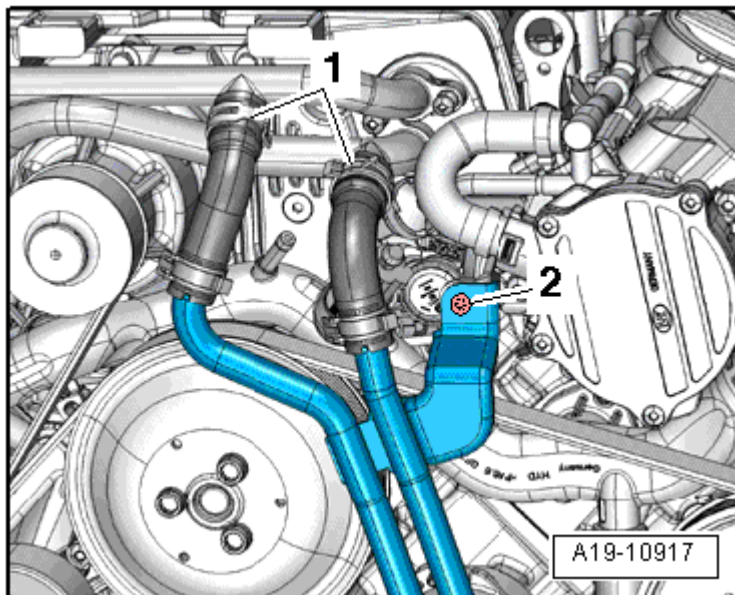


Fig. 80: Identifying Coolant Pipes
Courtesy of AUDI OF AMERICA, LLC

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

- Loosen the hose clamps -1- and remove the coolant hoses from the coolant pipes on the A/C compressor.
- Remove the bolt -2-.
- Remove the front left coolant pipes downward.

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **COOLANT PIPES OVERVIEW**.

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

- Fill with coolant **FILLING**.
- Install the noise insulation. Refer to **Description and Operation** .

RADIATOR AND FAN SHROUD

NOTE: **The radiator and fan shroud can only be removed and installed together.**

It is not possible to remove the Air Conditioning (A/C) condenser from the radiator with the refrigerant pipes still connected on new models. This is described under "version 2".

Special tools and workshop equipment required

- Used Oil Collection and Extraction Device V.A.G 1782 for vehicles with S-Tronic transmission 0B5
- Engine Bung Set VAS 6122 for vehicles with S-Tronic transmission 0B5
- Drip Tray for VAS 6100 VAS 6208

Removing

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

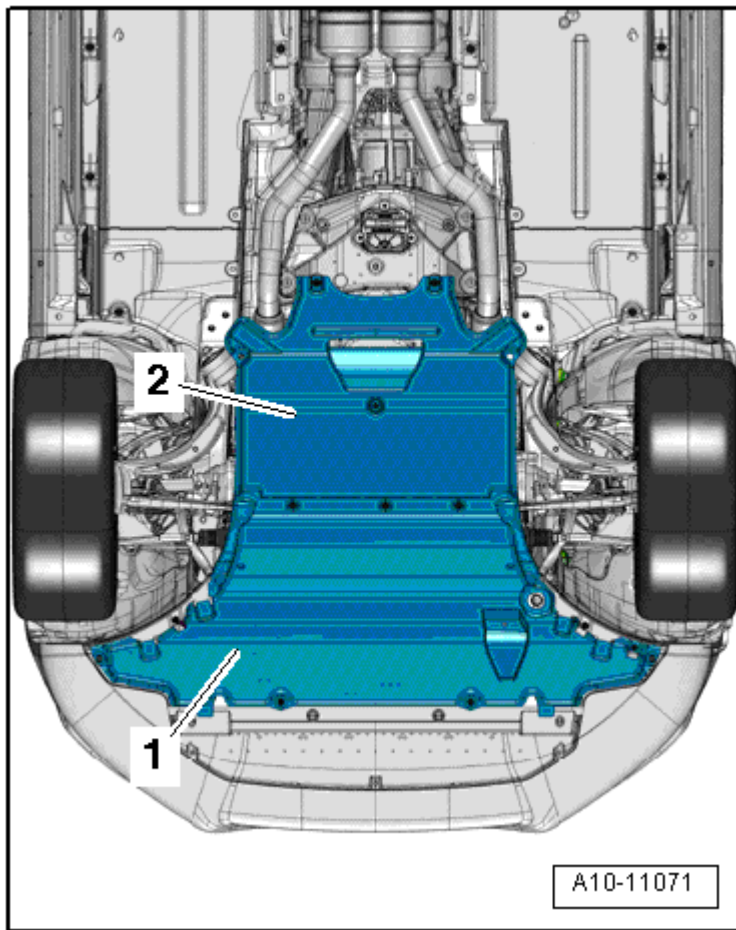


Fig. 81: Identifying Front Noise Insulation

Courtesy of AUDI OF AMERICA, LLC

- Remove the front noise insulation -1-. Refer to **Description and Operation** .
- Remove the impact member -5-. Refer to **Removal and Installation** .

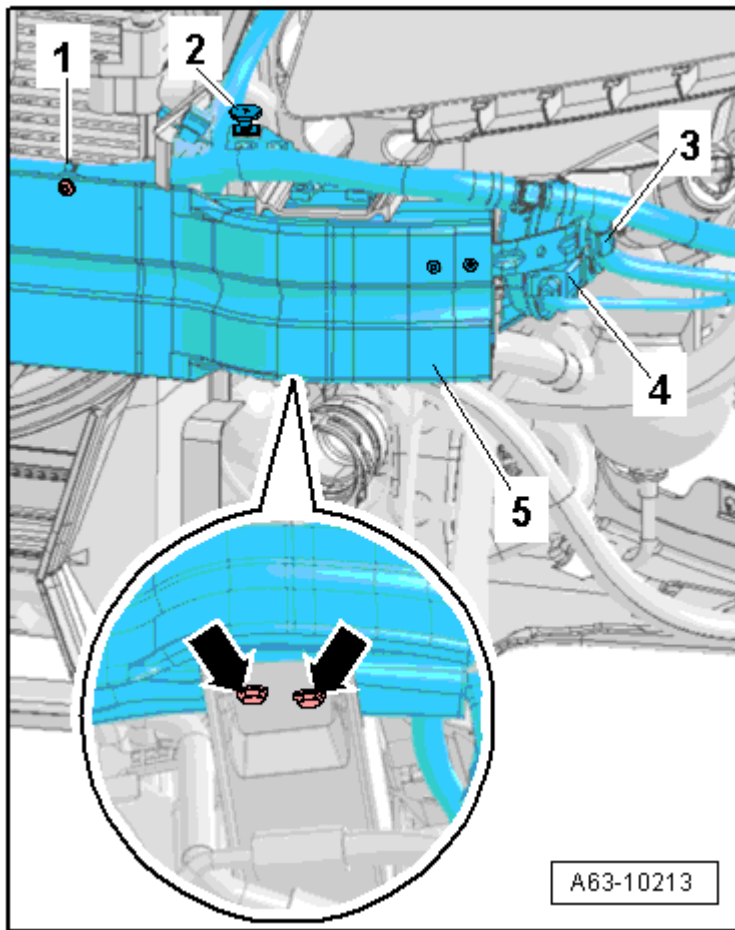


Fig. 82: Identifying Cable Tie -1-, Bumper Cover Spacer -2-, Electrical Wiring Harness -3-, Electrical Connector -4- & Impact Bar -5-

Courtesy of AUDI OF AMERICA, LLC

-- Remove the front charge air cooling circuit radiator. Refer to **FRONT CHARGE AIR COOLING CIRCUIT RADIATOR**.

Vehicles with Version 2 Refrigerant Pipes

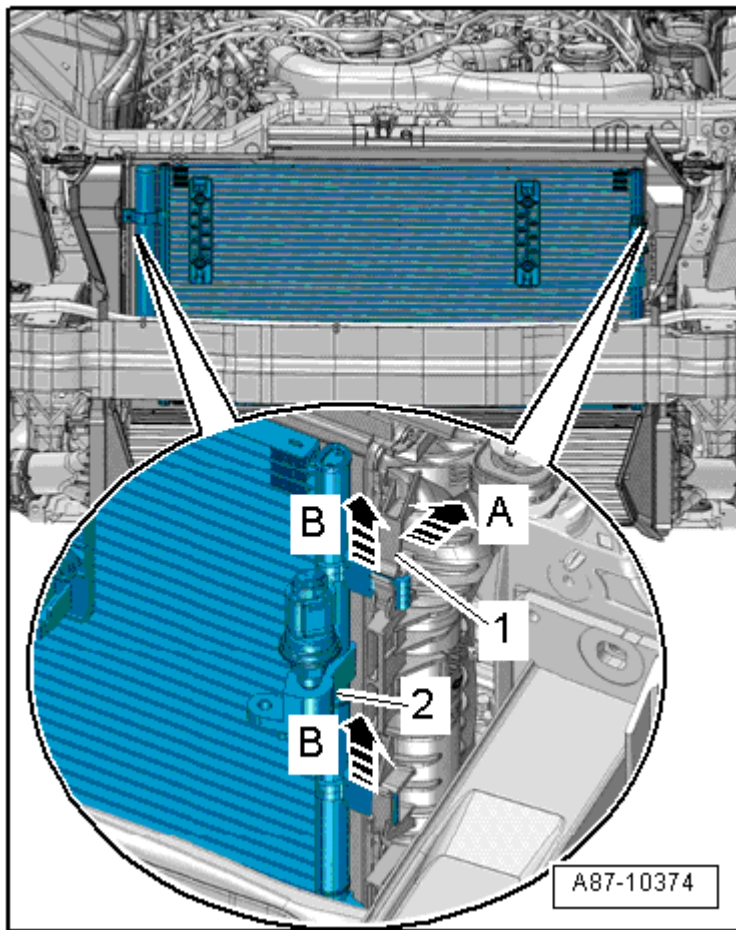


Fig. 83: Identifying Condenser

Courtesy of AUDI OF AMERICA, LLC

-- Remove the condenser. Refer to "Refrigerant Circuit" in **Removal and Installation** .

Audi A4

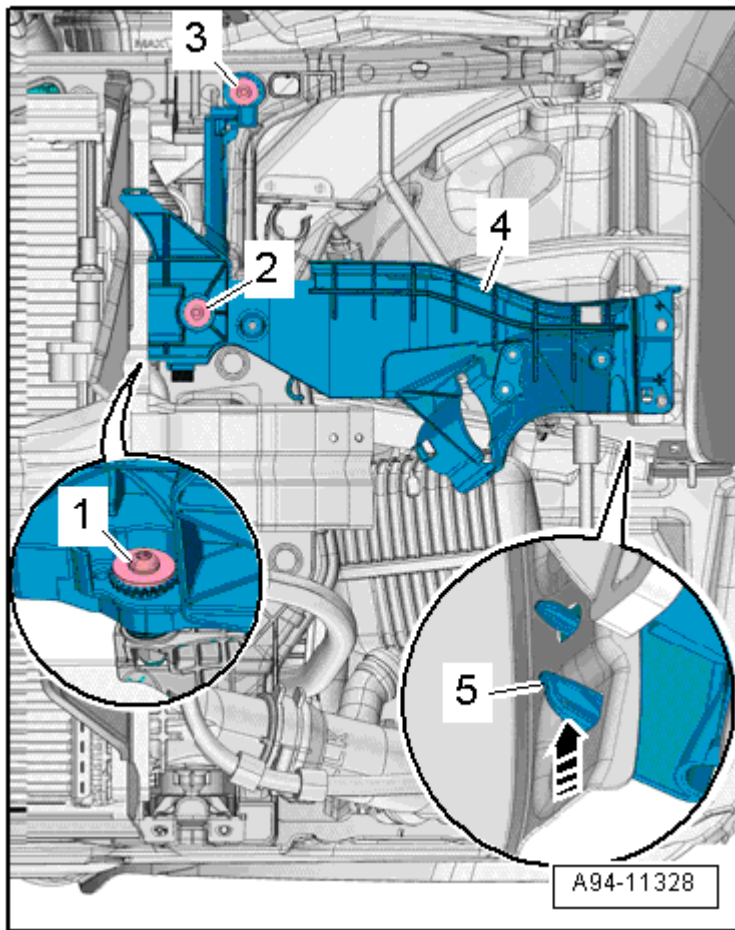


Fig. 84: Headlamp Housing Mount Bracket

Courtesy of AUDI OF AMERICA, LLC

-- Remove the headlamp housing mount. Refer to **Description and Operation** .

All Vehicles

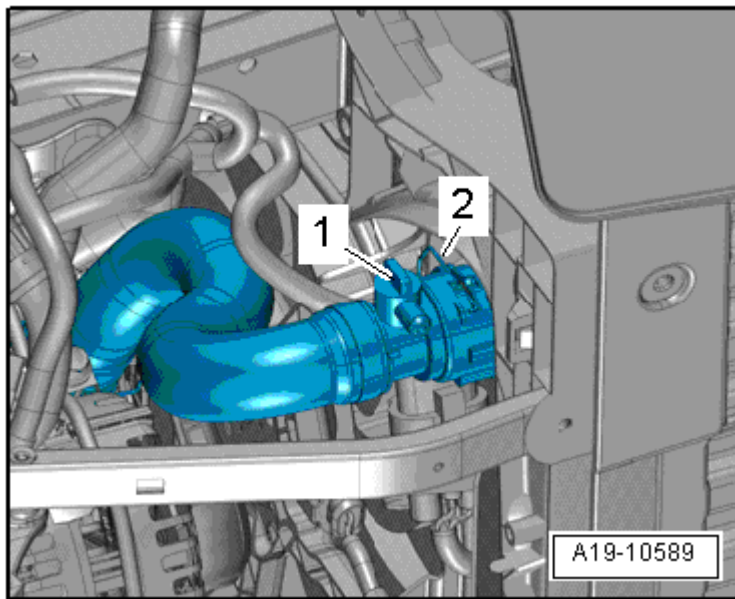


Fig. 85: Identifying Drain Plug And Draining Coolant
Courtesy of AUDI OF AMERICA, LLC

- Place the VAS 6208 under the engine.
- Remove the drain plug -1- and drain the coolant.
- Lift the clip -2- and disconnect the coolant hose from the radiator.
- Lift the clamp -arrow- and remove the connection from the radiator.

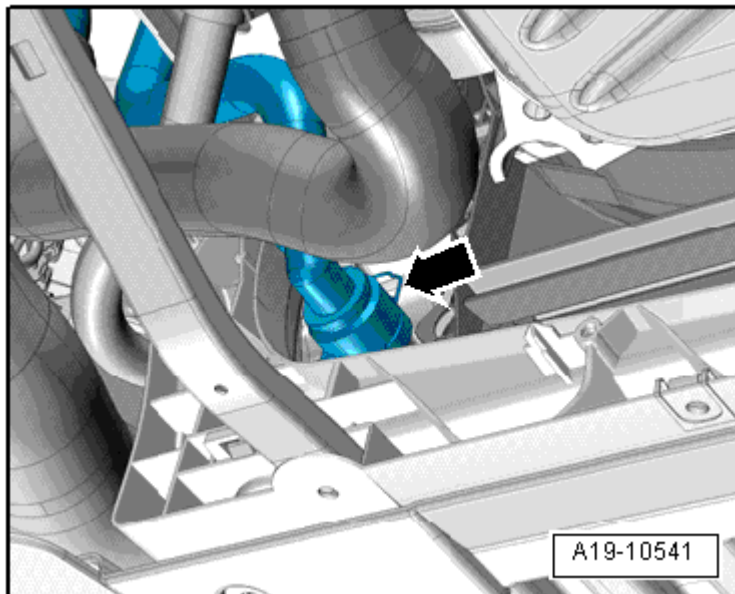


Fig. 86: Identifying Connection
Courtesy of AUDI OF AMERICA, LLC

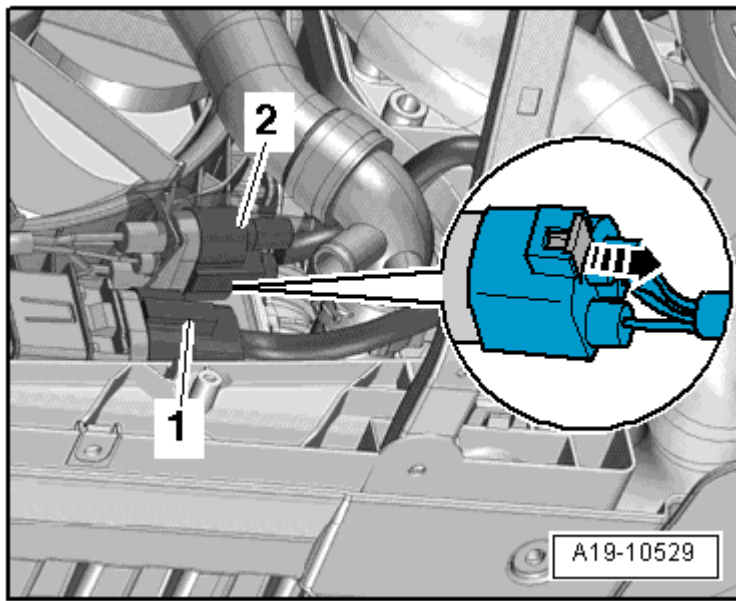


Fig. 87: Freeing Up Electrical Wiring Harness
Courtesy of AUDI OF AMERICA, LLC

WARNING: Danger of personal injury due to the coolant fan turning on by itself.

- **Disconnect the connectors before working near the fan shroud.**

-- Disconnect the radiator fan electrical connectors -1 and 2-, to do this, push the clamp to the rear -arrow- and push the release down.

Vehicles with S-Tronic Transmission 0B5

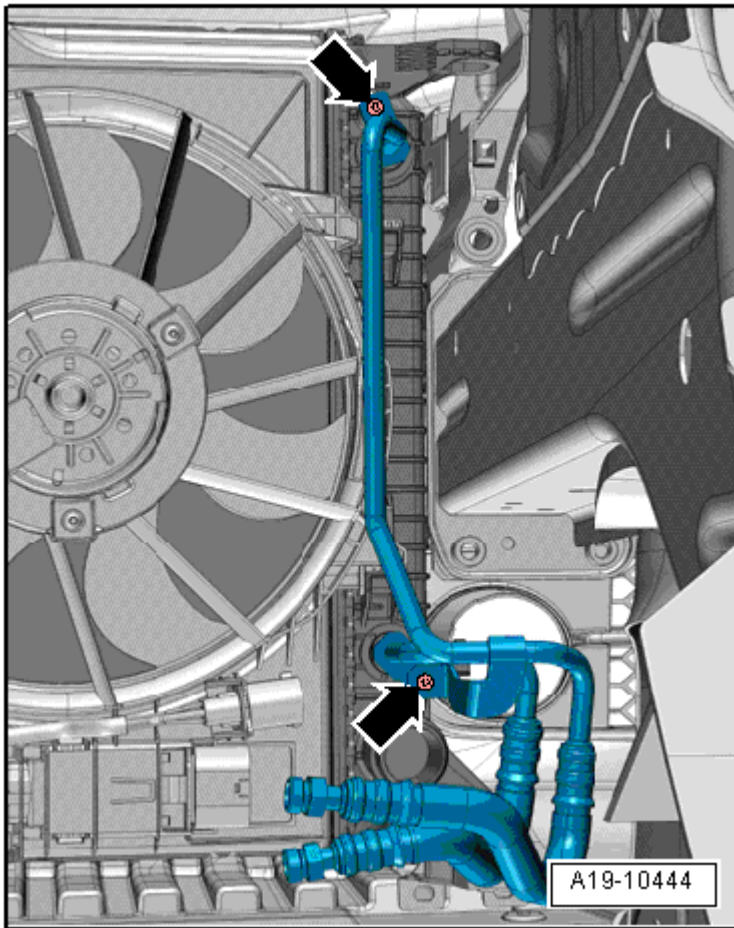


Fig. 88: Identifying ATF Transmission Lines

Courtesy of AUDI OF AMERICA, LLC

-- Place the V.A.G 1782 under the disconnection point.

NOTE: Follow the rules for clean working conditions when working on the transmission. Refer to **CLEAN WORKING CONDITIONS** .

-- Remove the bolts -arrow- and disconnect the ATF lines from the transmission.

NOTE: To prevent ATF from leaking, secure all ATF lines to the top of the longitudinal member.

-- Seal any open lines and connections with a clean plug from the VAS 6122.

All Vehicles

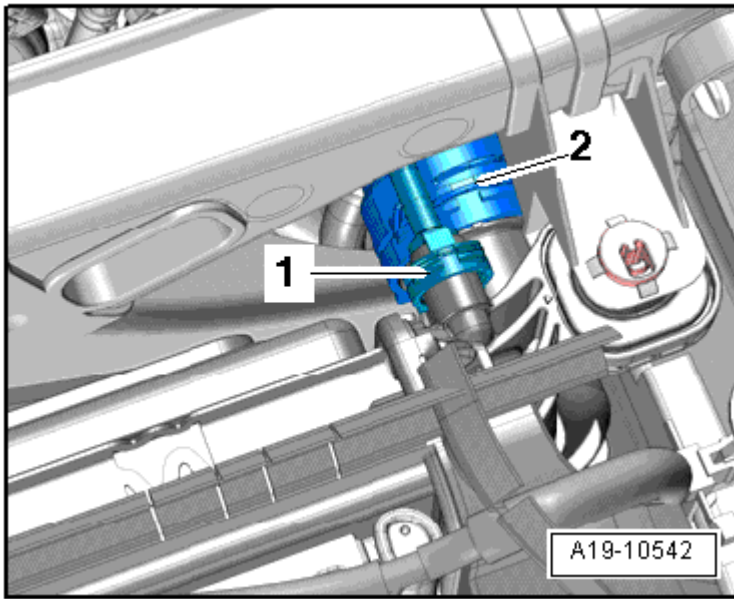


Fig. 89: Identifying Intermediate Flange
Courtesy of AUDI OF AMERICA, LLC

- Open the clamps -1 and 2- and remove the connection from the radiator.
- Remove the bolts -arrows-.

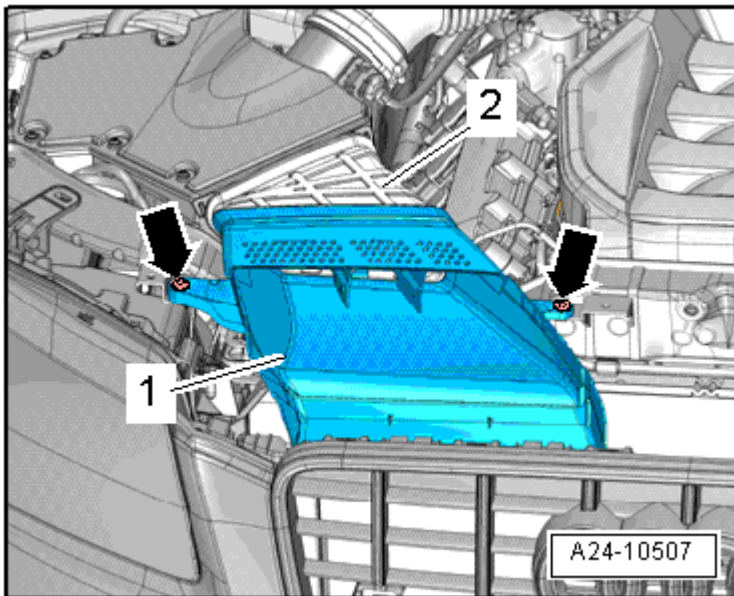


Fig. 90: Identifying Air Duct Components
Courtesy of AUDI OF AMERICA, LLC

- Remove the air duct -1- from the air filter housing intermediate flange -2-.

Vehicles with Hydraulic Power Steering

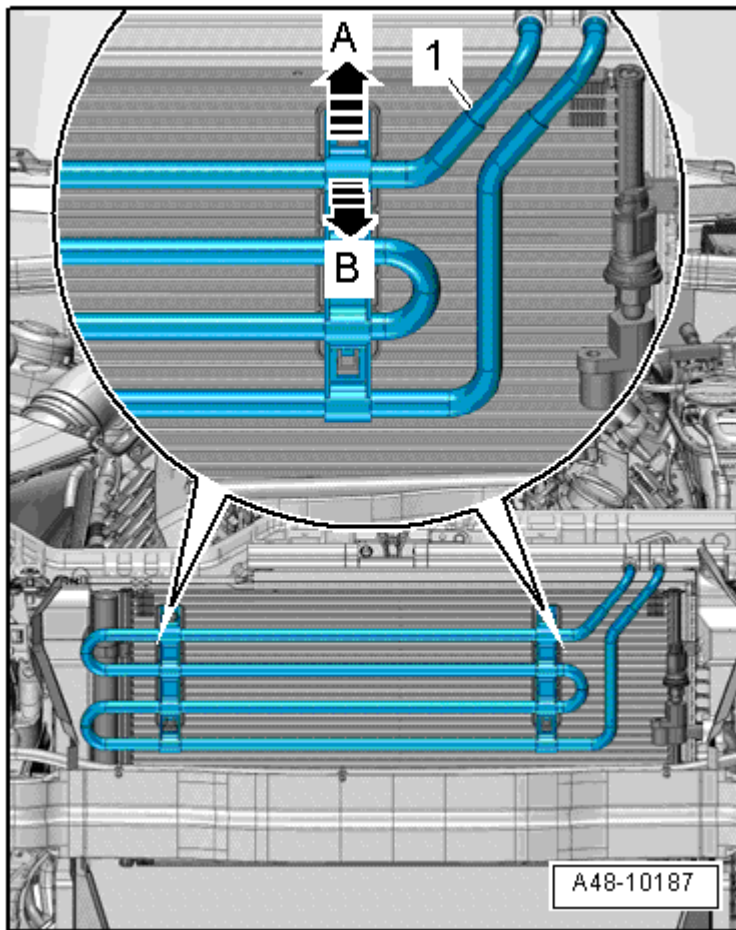


Fig. 91: Unlocking Retaining Clamps -Arrow A- And Move Power Steering Cooling Coil -1- Forward - Arrow B-

Courtesy of AUDI OF AMERICA, LLC

-- If applicable, release the clamps -arrow A- and tilt the power steering coolant hose -1- forward -arrow B-.

-- Pull the power steering coolant hose upward off the condenser and lay it on the engine.

All Vehicles

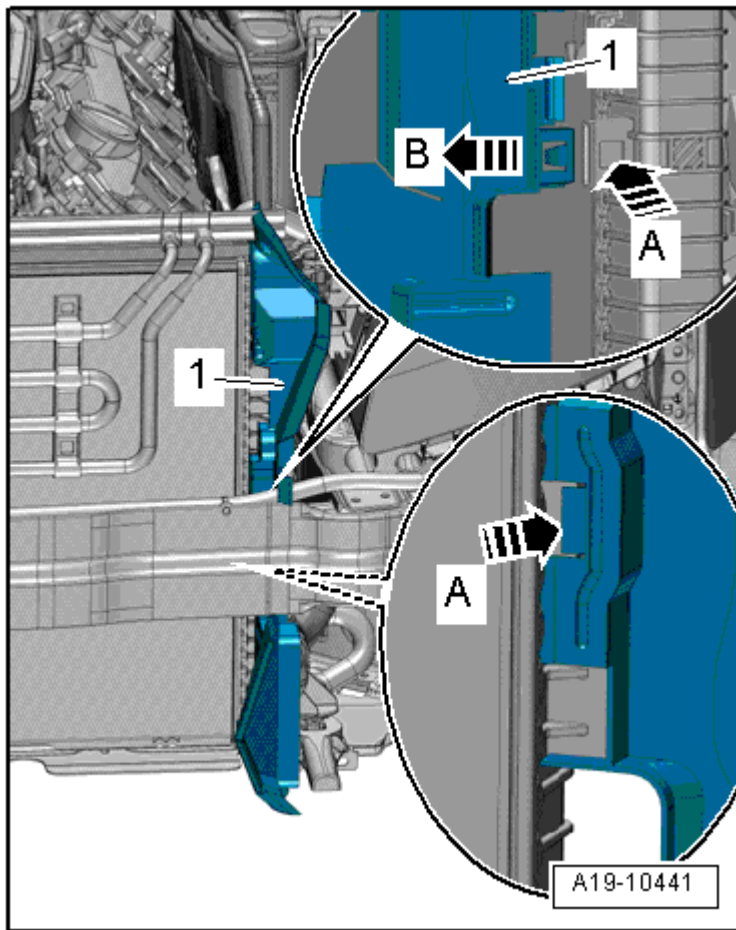


Fig. 92: Locating Left & Right Air Duct Tabs
Courtesy of AUDI OF AMERICA, LLC

- Release the retaining tabs -A arrows- and remove the left and right air ducts -1- upward -arrow B-.
- Release the left and right radiator retaining pins and remove by pulling upward -arrows-.

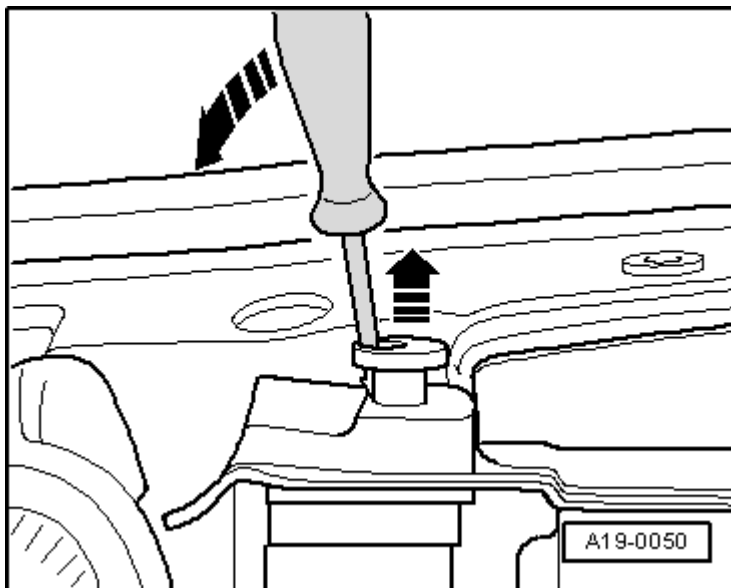


Fig. 93: Loosening Both Radiator Retaining Bolts, Pull Up And Remove
Courtesy of AUDI OF AMERICA, LLC

-- Remove the left and right bolts -1- and remove the radiator bracket with the radiator from the lock carrier - arrow-.

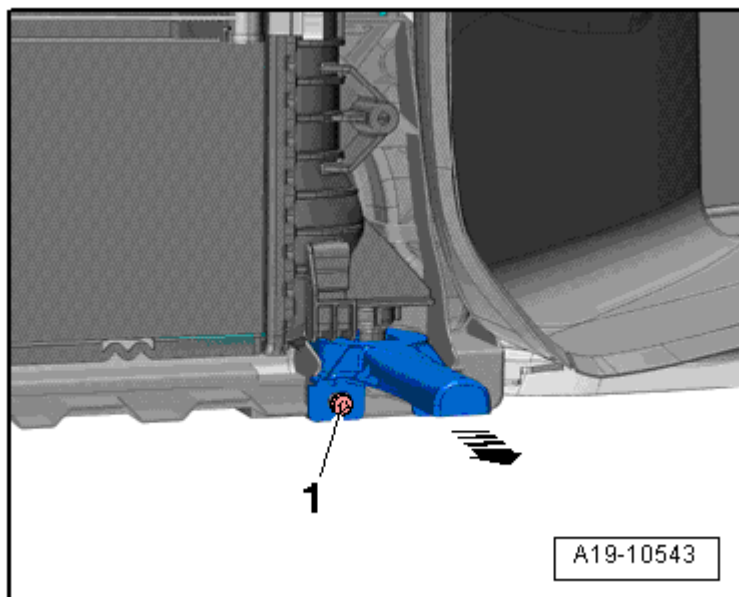


Fig. 94: Identifying Radiator Lock Carrier
Courtesy of AUDI OF AMERICA, LLC

-- Lower the radiator slightly.

Vehicles with Version 1 Refrigerant Pipes

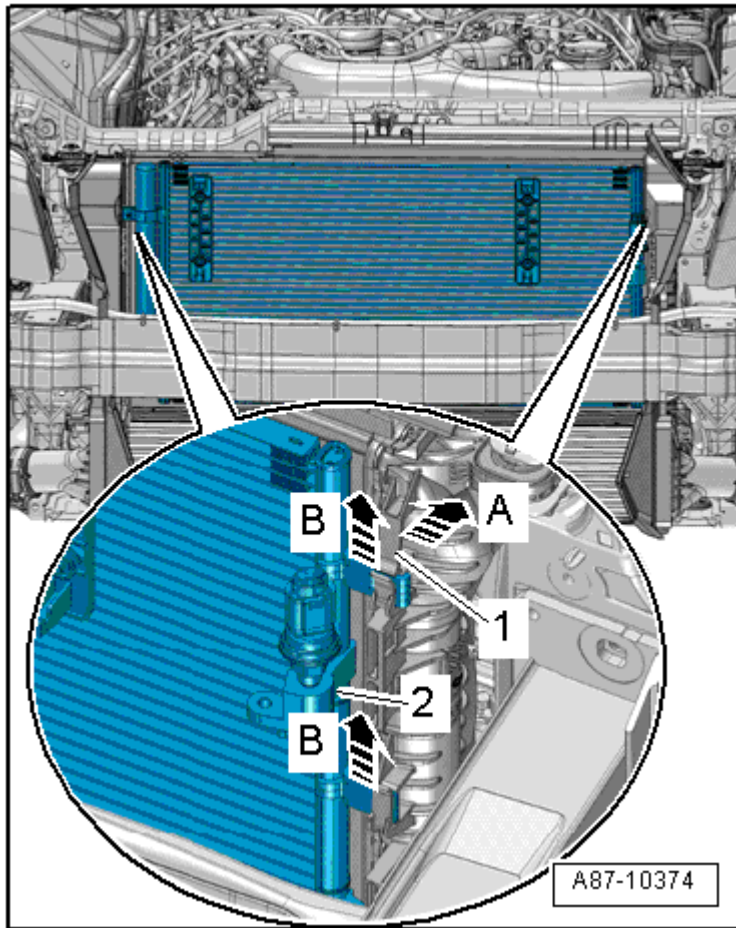


Fig. 95: Identifying Condenser

Courtesy of AUDI OF AMERICA, LLC

CAUTION: There is a risk of damaging the condenser and refrigerant lines and hoses.

- Do not stretch, kink or bend refrigerant lines and hoses.

-- Have a second technician release the retaining clamps -1- in the direction of -arrow A- and remove the condenser -2- upward out of the mounts on the radiator -B arrows-.

-- Tilt the condenser forward with the refrigerant lines still connected.

All Vehicles

-- Remove the radiator.

-- Press the fan shroud left and right locking tabs at the same time -arrow- and remove the fan shroud upward from the radiator.

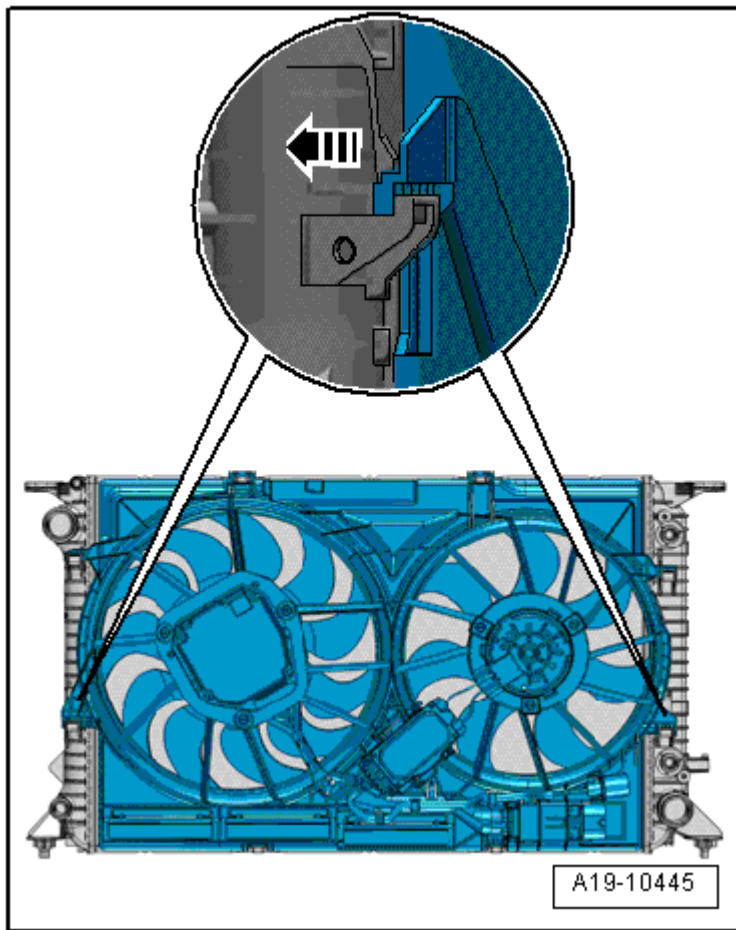


Fig. 96: Identifying Fan Shroud And Right Locking Tabs, Removal
Courtesy of AUDI OF AMERICA, LLC

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **RADIATOR AND COOLANT FAN OVERVIEW**.

NOTE: If there are small impressions on the fins, refer to **COOLERS AND CONDENSERS** .

- Install the air duct on the air filter housing intermediate flange. Refer to **Removal and Installation** .
- Vehicles with S-Tronic transmission 0B5: Tighten the ATF pipes. Refer to **Removal and Installation** .
- Connect the coolant hose to the coupling. Refer to **Fig. 28**.

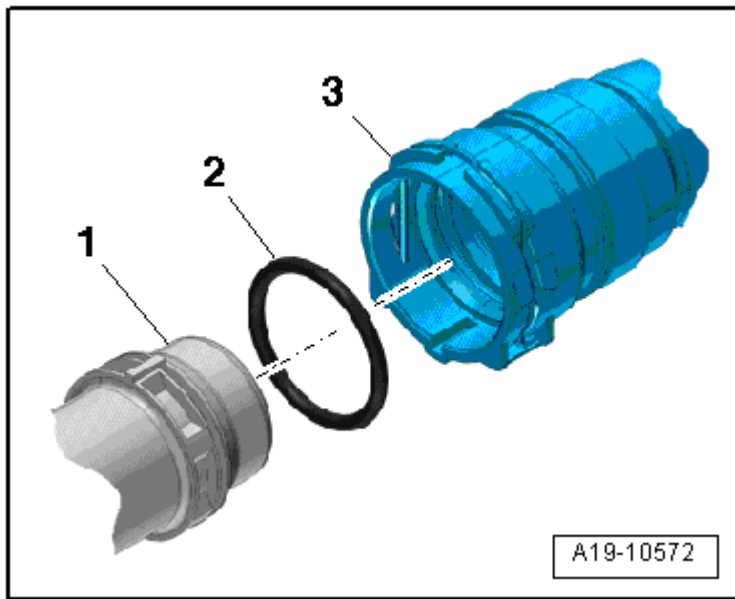


Fig. 97: Connecting Coolant Hose To Coupling
Courtesy of AUDI OF AMERICA, LLC

- Install the front charge air cooling circuit radiator. Refer to **FRONT CHARGE AIR COOLING CIRCUIT RADIATOR**.
- Audi A4: Install the headlamp housing mount. Refer to **Removal and Installation** .
- Install condenser. Refer to "Refrigerant Circuit" in **Removal and Installation** .
- Install the impact member. Refer to **Removal and Installation** .
- Fill with coolant **FILLING**.

NOTE: All of the coolant must be changed if the radiator was replaced.

- Vehicles with S-Tronic transmission 0B5: Check the ATF level. Refer to **General Information** .

SUPERCHARGER COOLANT PIPES

Special tools and workshop equipment required

- Hose Clamps up to 25 mm Dia. 3094
- Drip Tray for VAS 6100 VAS 6208
- Hose Clip Pliers VAS 6362

Removing

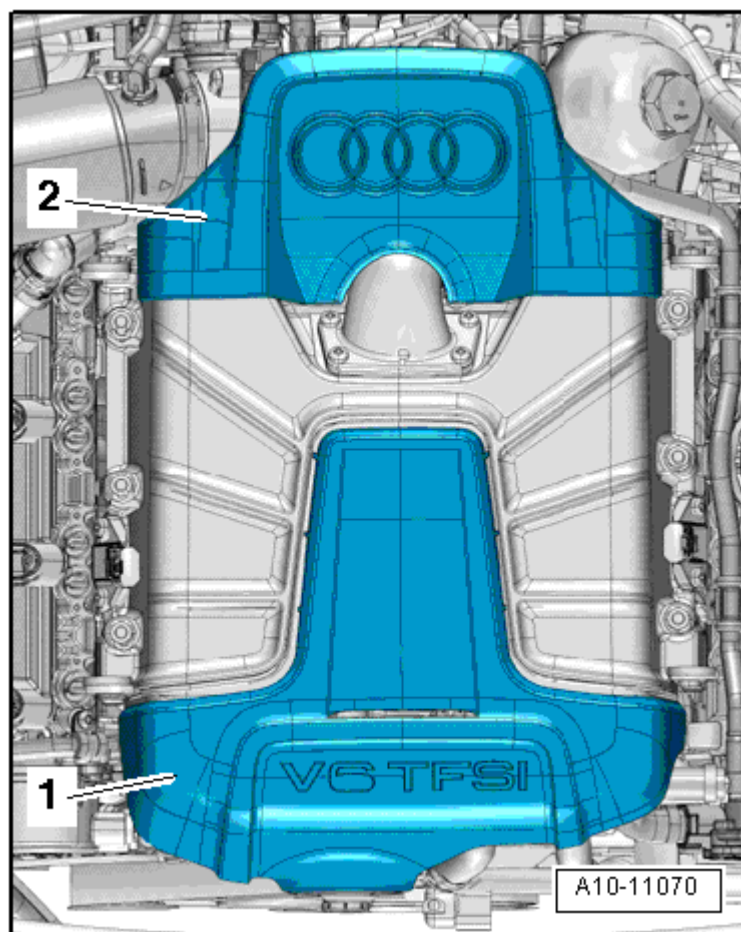


Fig. 98: Identifying Engine Cover -1- And -2-
Courtesy of AUDI OF AMERICA, LLC

- Remove the front engine cover -1- upward.
- Remove the front noise insulation -1-. Refer to **Description and Operation** .

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

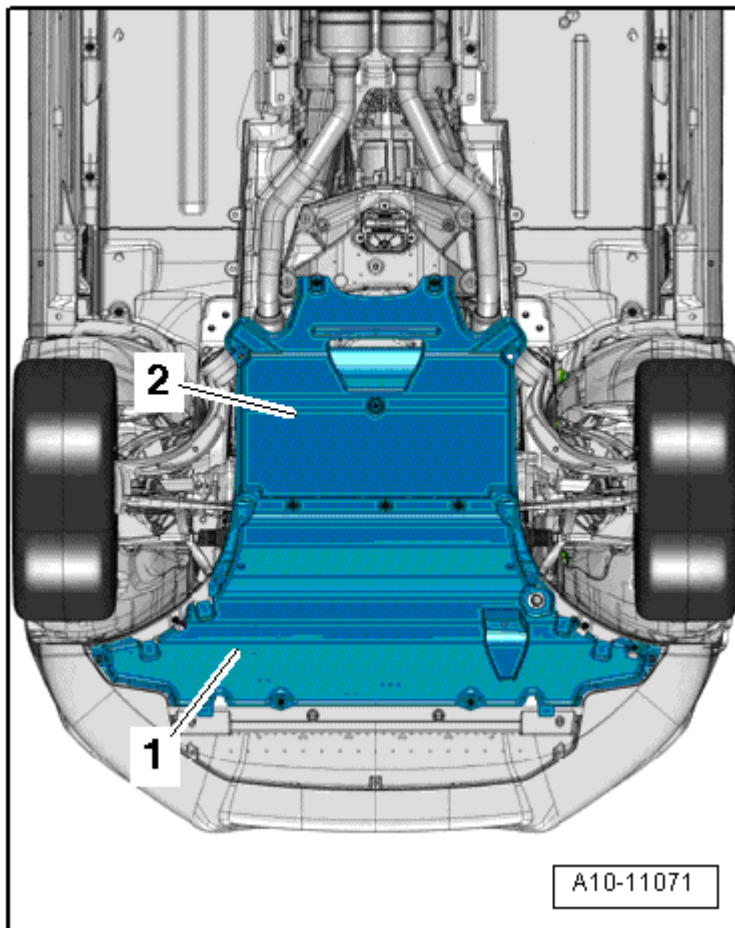


Fig. 99: Identifying Front Noise Insulation
Courtesy of AUDI OF AMERICA, LLC

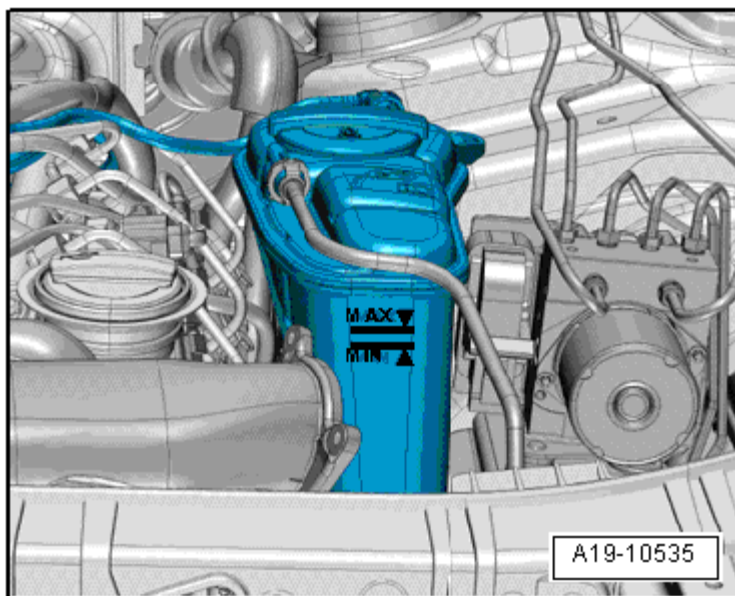


Fig. 100: Identifying Coolant Reservoir Marking

Courtesy of AUDI OF AMERICA, LLC

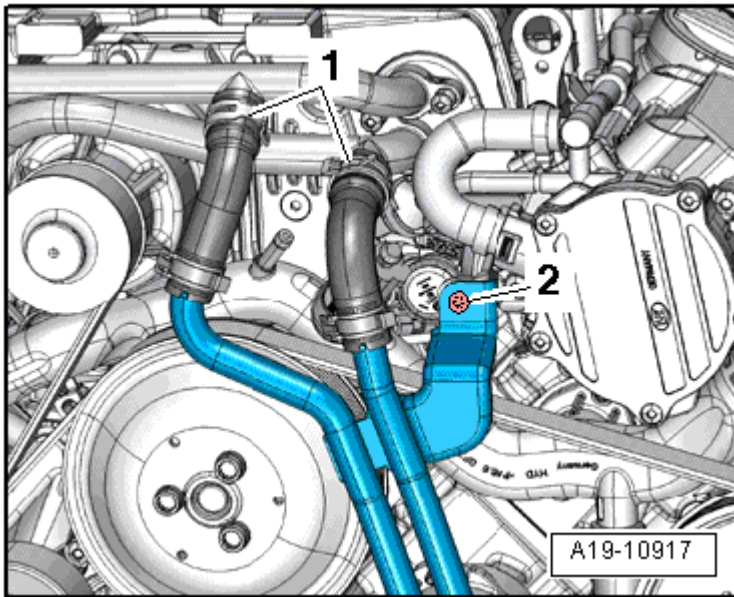
WARNING: Risk of scalding due to hot steam and hot coolant.

- The coolant system is under pressure when the engine is warm.
- Cover the coolant reservoir cap with a cloth and then open it slowly to release the pressure.

-- Open the coolant reservoir cap.

-- Place the VAS 6208 under the engine.

-- Disconnect the coolant hoses with the 3094 and remove them from the left front coolant pipes on the supercharger by loosening the clamps -1-.

**Fig. 101: Identifying Coolant Pipes**

Courtesy of AUDI OF AMERICA, LLC

NOTE: Ignore -2-.

-- Remove the bolts -1 and 2- and the coolant pipes.

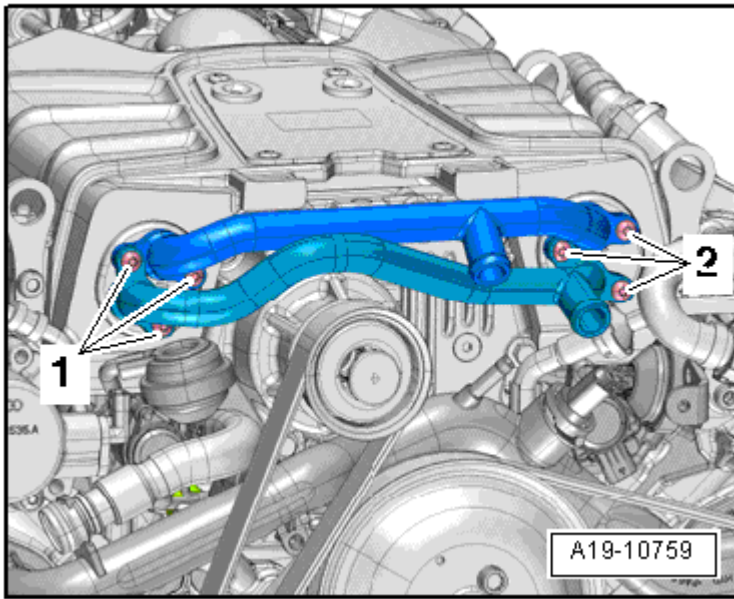


Fig. 102: Identifying Coolant Pipes To Supercharger
Courtesy of AUDI OF AMERICA, LLC

Installing

Install in reverse order of removal. Note the following:

- Tightening specifications, refer to **COOLANT PIPES OVERVIEW**.

NOTE: **Replace the seals**

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

-- Fill with coolant. Refer to **FILLING**.

-- Install the noise insulation. Refer to **Description and Operation** .

UPPER COOLANT PIPE

Removing

NOTE: **When installing, bring all cable ties back to same positions.**

-- Drain the coolant. Refer to **COOLANT, DRAINING AND FILLING**.

-- Remove the right lower section of the intake manifold. Refer to **Removal and Installation** .

-- Remove the nuts -arrows- and the high pressure line protective plate -1-.

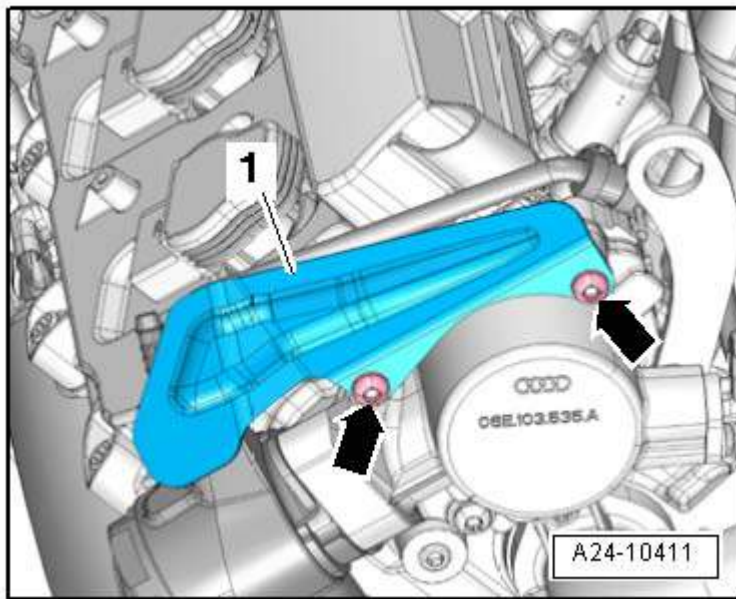


Fig. 103: Identifying Protective Plate -1- And Nuts -Arrows-
Courtesy of AUDI OF AMERICA, LLC

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

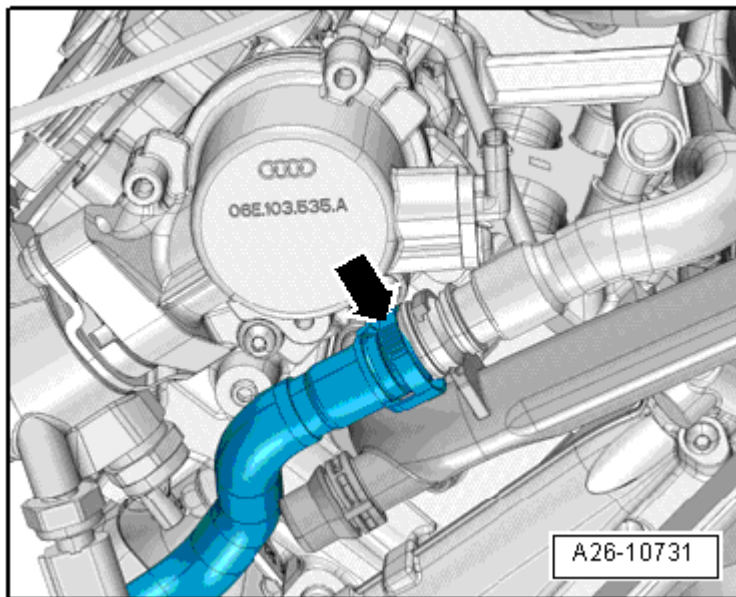


Fig. 104: Identifying Front Air Hose -Arrow
Courtesy of AUDI OF AMERICA, LLC

-- Remove the threaded connection -1-.

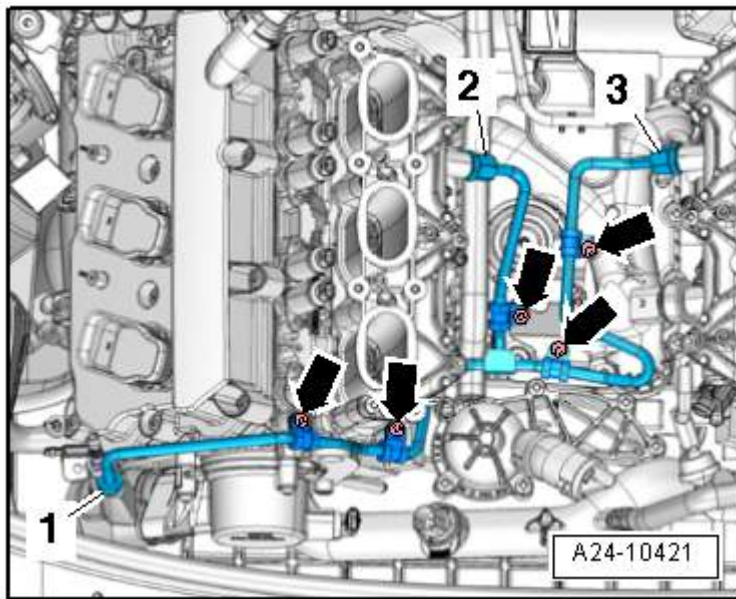


Fig. 105: Identifying Retaining Plates Bolts -Arrows- And Union Nuts -2 And 3-
Courtesy of AUDI OF AMERICA, LLC

- Loosen the union nuts -2 and 3- by counter holding at the connections.
- Remove the bolts -arrows- on the retaining plates and the high pressure line.

NOTE: Lay a cloth below the coolant pipe to catch escaping coolant.

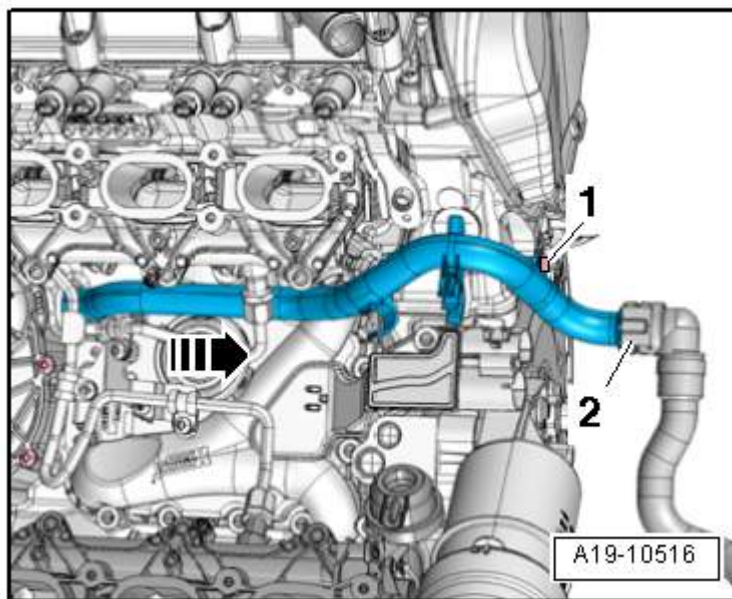


Fig. 106: Identifying Coolant Pipe Clamp And Bolt
Courtesy of AUDI OF AMERICA, LLC

- Open the clamp -2- and remove the coolant hose from the coolant pipe.
- Remove the bolt -1- and remove the coolant pipe back out of the cylinder block -arrow-.

Installing

Install in reverse order of removal. Note the following:

- Tightening specification, refer to **COOLANT PIPES OVERVIEW**.

NOTE: Replace the O-rings.

- Clean and smooth the O-ring sealing surface.
- Coat the O-ring with coolant and slide it onto the coolant pipe.
- Connect the coolant hose to the coupling. Refer to **Fig. 28**.

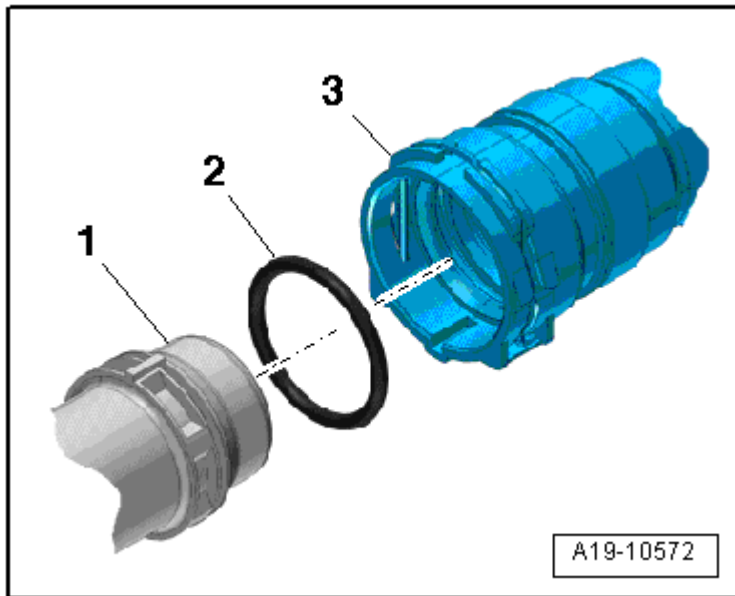


Fig. 107: Connecting Coolant Hose To Coupling
Courtesy of AUDI OF AMERICA, LLC

- Install the high pressure line and the lower intake manifold. Refer to **Removal and Installation**.
- Fill with coolant **FILLING**.

SPECIAL TOOLS

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

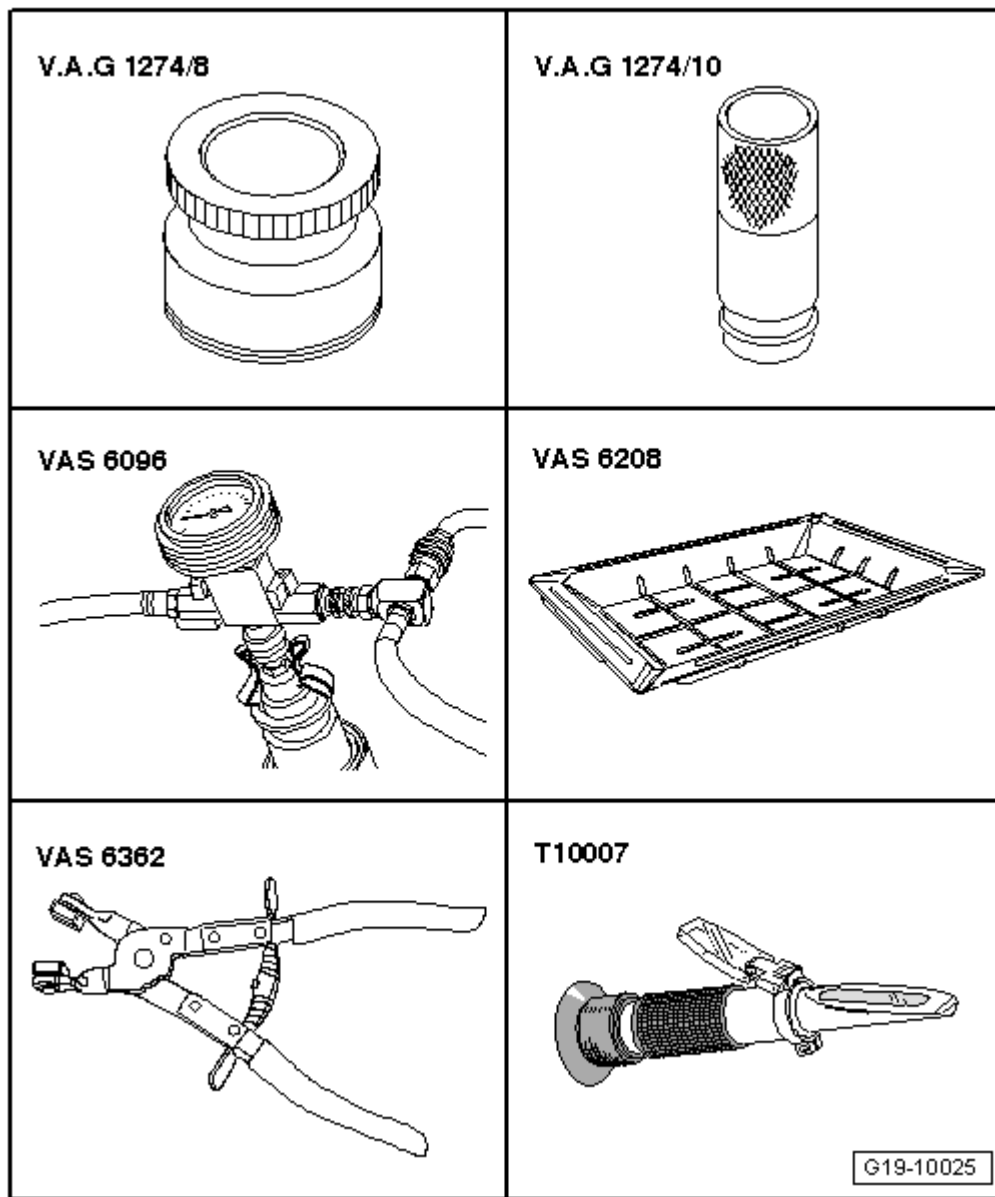


Fig. 108: Identifying Special Tools -- Coolant, Draining And Filling
Courtesy of AUDI OF AMERICA, LLC

Special tools and workshop equipment required

- Adapter V.A.G 1274/8
- Adapter for V.A.G 1274 tester V.A.G 1274/10
- Cooling System Charge Unit VAS 6096
- Drip Tray for VAS 6100 VAS 6208
- Hose Clip Pliers VAS 6362
- Refractometer T10007

Special tools and workshop equipment required

- Hose Clamps Up to 25 mm Dia. 3094

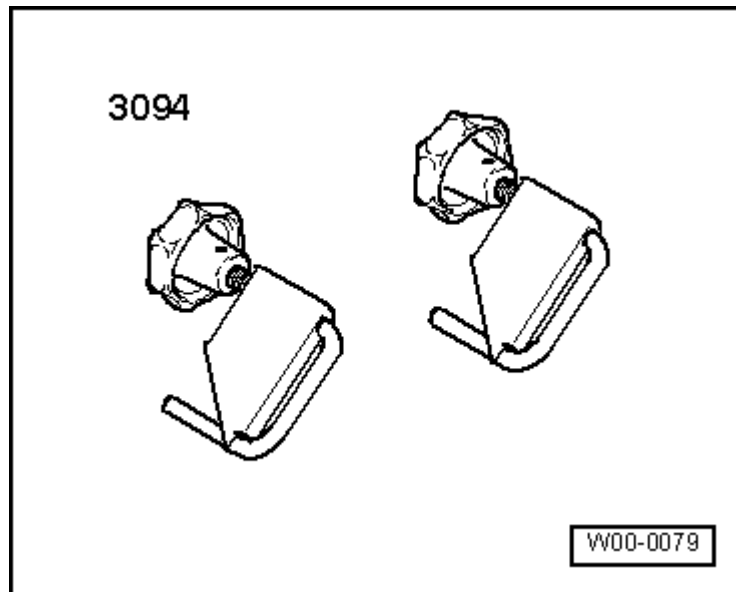


Fig. 109: Identifying Hose Clamps 3094
Courtesy of AUDI OF AMERICA, LLC

- Spanner Wrench 3212

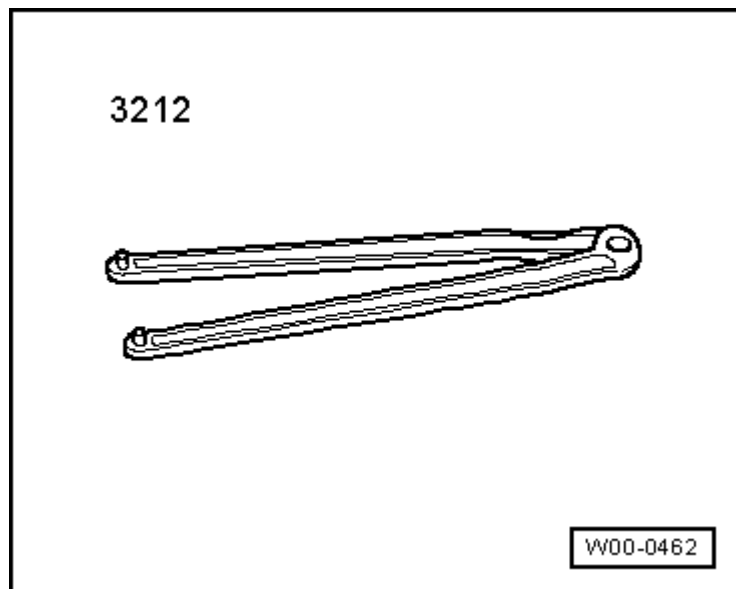


Fig. 110: Identifying Special Tool - Spanner Wrench 3212
Courtesy of AUDI OF AMERICA, LLC

- Cooling System Tester V.A.G 1274 B

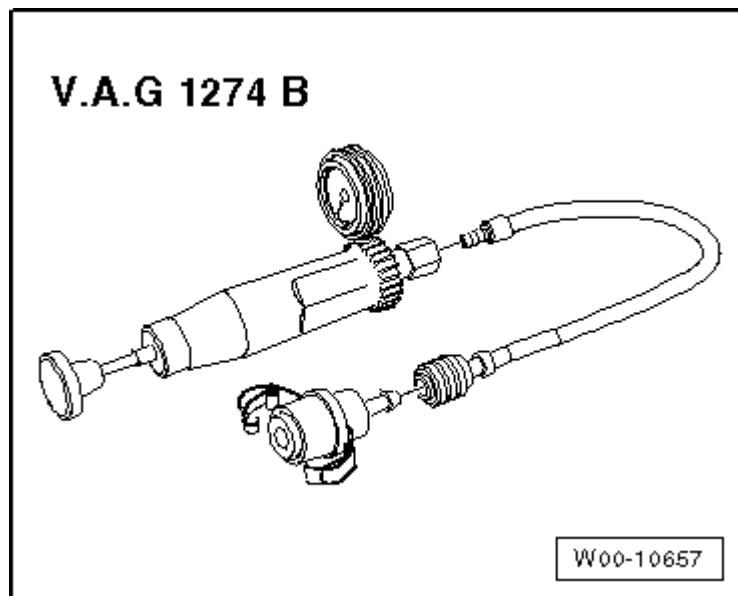


Fig. 111: Identifying Cooling System Tester V.A.G 1274 B
Courtesy of AUDI OF AMERICA, LLC

- Adapter V.A.G 1274/9

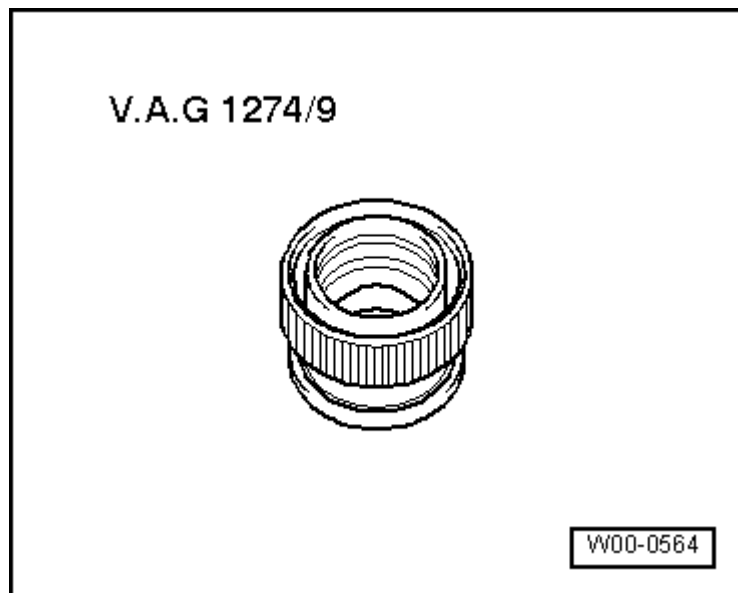


Fig. 112: Identifying Adapter V.A.G 1274/9
Courtesy of AUDI OF AMERICA, LLC

- Used Oil Collection and Extraction Device V.A.G 1782

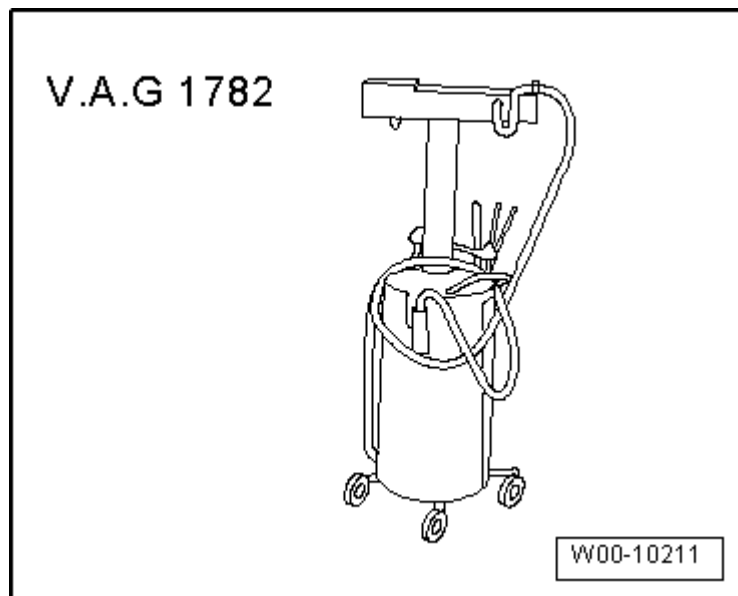


Fig. 113: Identifying Oil Extractor V.A.G 1782
Courtesy of AUDI OF AMERICA, LLC

- Engine Bung Set VAS 6122

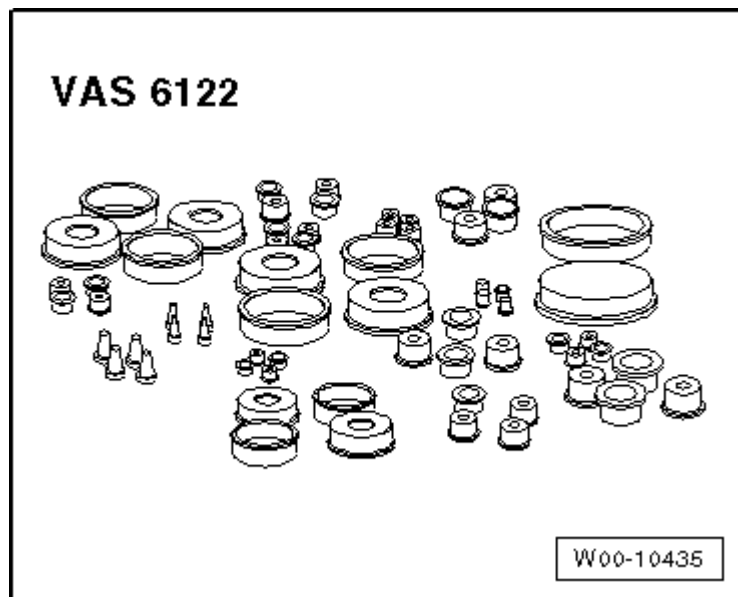


Fig. 114: Identifying Engine Bung Set Plugs VAS 6122
Courtesy of AUDI OF AMERICA, LLC

- Hose Clip Pliers VAS 6340

2012 Audi S4

ENGINE 3.0 Liter - Cooling System - Engine Code(s): CCBA (Sedan)

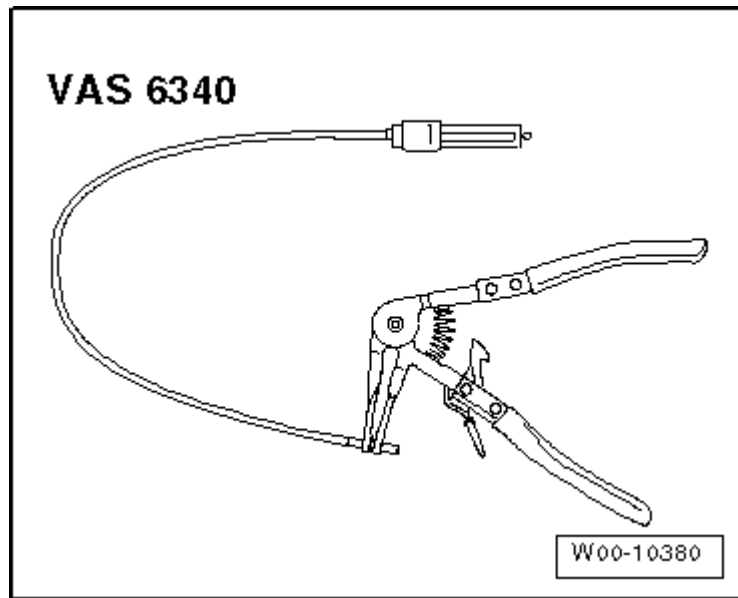


Fig. 115: Identifying Hose Clamp Pliers VAS 6340
Courtesy of AUDI OF AMERICA, LLC