

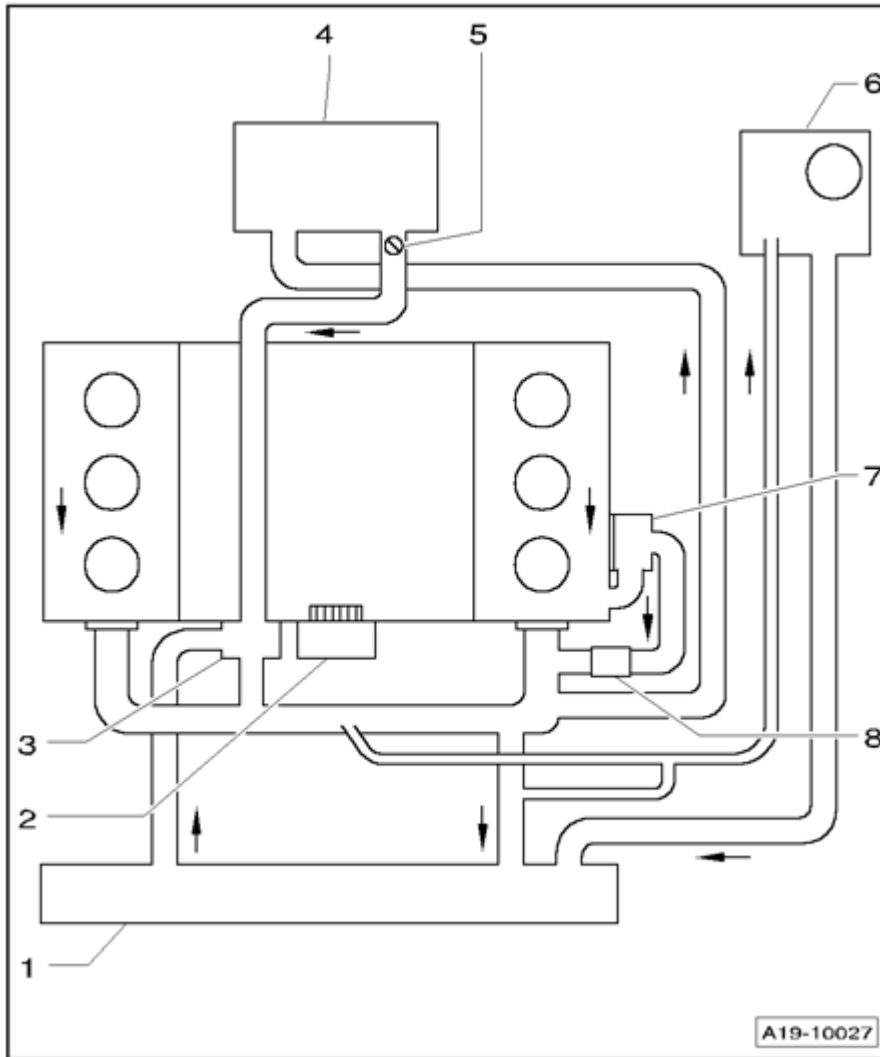
Coolant Hose Connection Diagram**Coolant Hose Connection Diagram**

Fig. 496: Coolant Hose Connection Diagram
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Radiator

- Removing and installing --> **Oil Cooler, Removing and Installing**
- Renew coolant after replacing

2 - Coolant pump

- Removing and installing --> **Coolant Pump, Removing and Installing**

3 - Coolant thermostat

- Removing and installing --> **Coolant Thermostat, Removing and Installing**
- Checking --> **Thermostat, Checking**

4 - Heater core

- Replace coolant after replacing

5 - Bleeder screw

6 - Expansion tank

- With sealing cap
- Pressure relief valve in cap, checking

7 - Oil cooler

- Replace coolant after replacing
- Removing and installing --> **Oil Cooler, Removing and Installing**

8 - After-run coolant pump V51

- Only for vehicles in countries with hot climates

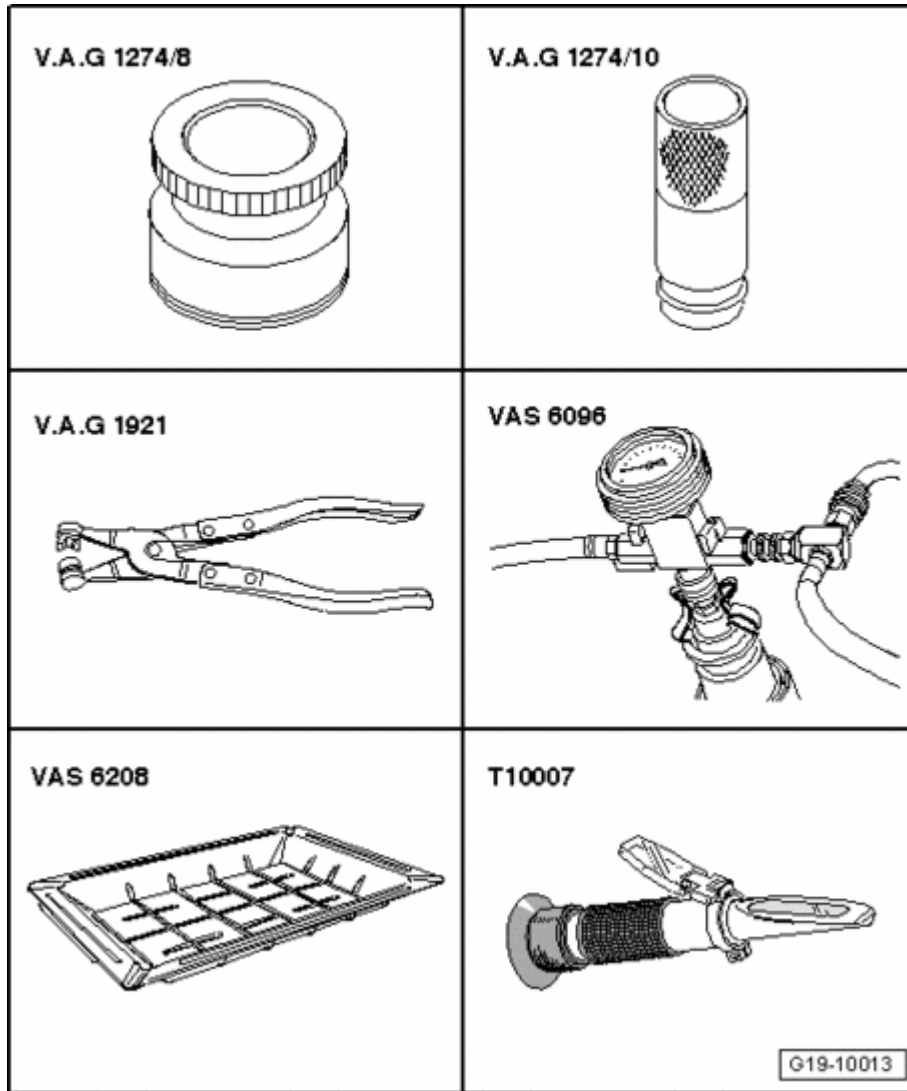
Cooling System, Draining and Filling**Cooling System, Draining and Filling**

Fig. 497: Identifying Special Tools - Cooling System, Draining And Filling
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Adapter V.A.G 1274/8
- Adapter V.A.G 1274 tester V.A.G 1274/10
- Hose clamp pliers V.A.G 1921
- Cooling system charge unit VAS 6096

- Drip tray for workshop crane VAS 6208
- Refractometer T10007

Draining

NOTE: • Drained coolant must be stored in a clean container for disposal or reuse.



CAUTION: Cover cap of expansion tank with rag and open carefully, as hot steam i.e. hot coolant may escape when opening.

- Open cap of coolant expansion tank.

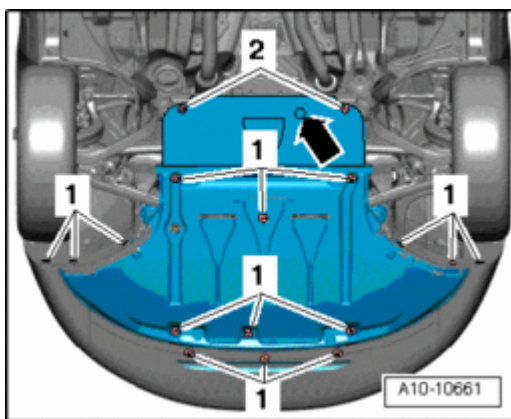


Fig. 498: Identifying Noise Insulation And Mountings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove noise insulation and mountings - **1, 2** - - **arrow** - where present.
- Place drip tray for workshop crane VAS 6208 under engine.

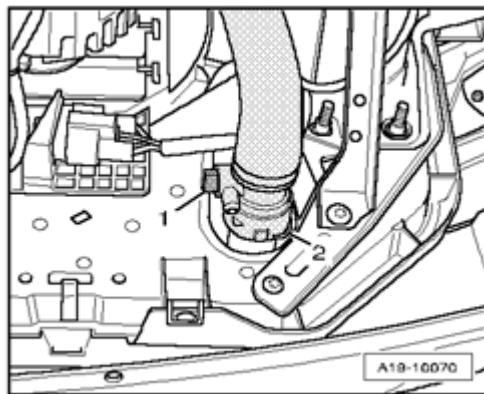


Fig. 499: Identifying Drain Plug & Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open drain plug - **1** - and allow coolant to drain.

NOTE: • Ignore - **2** -.

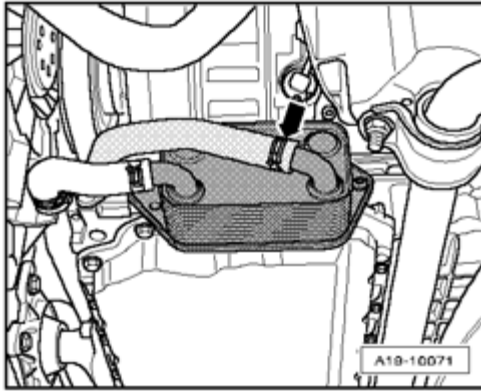


Fig. 500: Disconnecting Coolant Hose From Oil Cooler
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect coolant hose - **arrow** - from oil cooler and drain remaining coolant.

Filling

- Ignition switched off.

NOTE:

- The cooling system is filled all year round with a mixture of frost and corrosion protection additives and water.
- Use only *coolant additive Plus G 012 A8F A1* (short: G12+) "according to TL VW 774 F". 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.
- G12+ and coolant additives with the designation "according to TL VW 774 F" reduce frost and corrosion damage as well as lime deposits. They also raise the boiling point. For this reason the system must be filled all year round with frost and corrosion protection additives.
- 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 to about -25 C (in arctic climatic countries to about -35 C).
- 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%.
- If for climatic reasons greater frost protection is required, the amount of G12+ can be increased, but only up to 60% (frost protection to about -40 C), otherwise frost protection and cooling effectiveness will be reduced.
- Only clean drinking water may be used for mixing coolant.
- If the radiator, heater core, cylinder head and cylinder head gasket or cylinder block is replaced, completely replace the engine coolant.
- Dirty coolant must not be re-used.

- For coolant G12+ , use refractometer T10007 to test frost protection in cooling system.
- Secure all hose connections with hose clamps appropriate for the model .
- Replace seal.

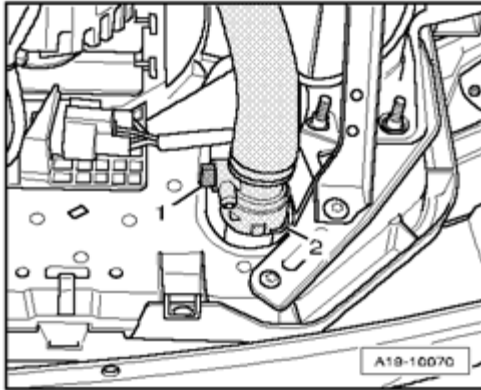


Fig. 501: Identifying Drain Plug & Coolant Hose
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Close drain plug - 1 -.

NOTE:

- Ignore - 2 -.

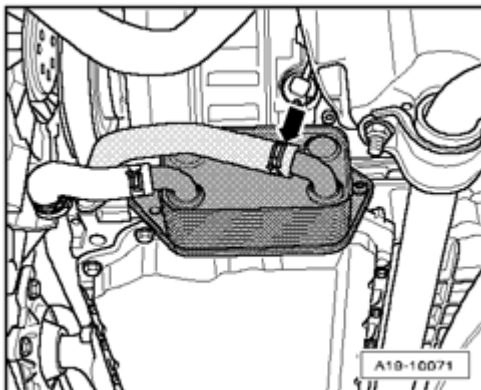


Fig. 502: Disconnecting Coolant Hose From Oil Cooler
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect coolant hose to oil cooler - **arrow** -.

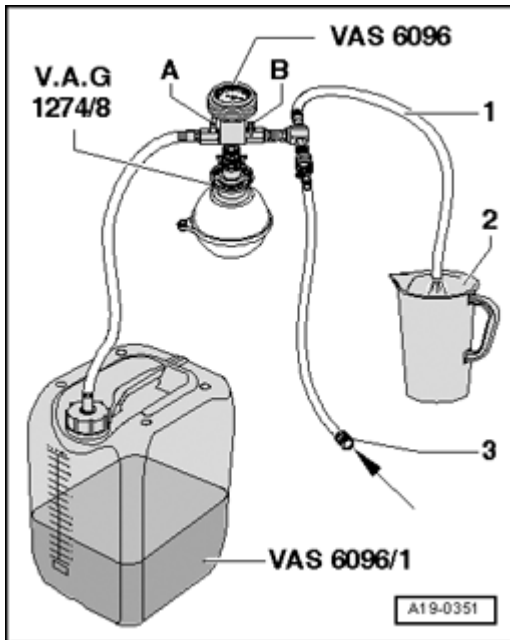


Fig. 503: Filling Reservoir VAS 6096/1 With At Least 12 Liters Of Premixed Coolant
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fill replacement reservoir VAS 6096/1 with at least 12 liters of pre-mixed coolant with correct mixture ratio:
 - G12+ (40%) and water (60%) for freeze protection down to -25 C
 - G12+ (50%) and water (50%) for freeze protection down to -35 C
 - G12+ (60%) and water (40%) for freeze protection down to -40 C
- Place air outlet hose - **1** - into a small container - **2** -. (A small amount of coolant is drawn off which should be reserved with the discharged air.)
- Close both valves - **A** - and - **B** - by turning lever perpendicular to direction of flow.
- Connect hose - **3** - to pressurized air.
- Pressure: 6 to 10 bar pressure.

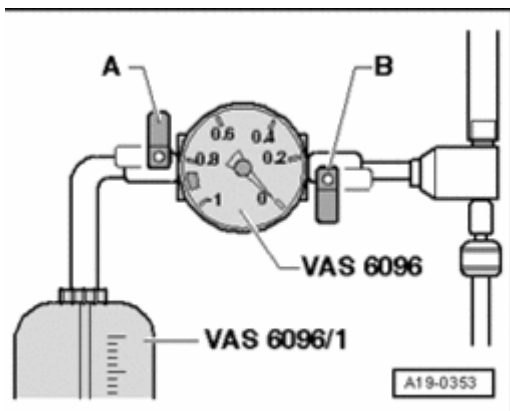


Fig. 504: Cooling System, Draining And Filling
 Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open valve - **B** - , turn lever in direction of flow to do this.

A vacuum is created in the cooling system by the suction jet pump.

- Needle on the instrument display must travel into the green region.
- Also briefly open valve - **A** - , turn lever in direction of flow to do this, so that hose of the replacement reservoir VAS 6096/1 is filled with coolant.
- Close valve - **A** - again.
- Let valve - **B** - remain 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 display must remain in green region, then vacuum in cooling system is sufficient for subsequent filling.

If needle stands below the green region, repeat procedure.

If the vacuum decreases, cooling system is leaking.

- Disconnect pressurized air hose.
- Open valve - **A** - .

The vacuum in the cooling system has the effect of extracting coolant from coolant reservoir VAS 6096/1 ; cooling system is filled.

- Remove cooling system charge unit VAS 6096 from coolant expansion tank.

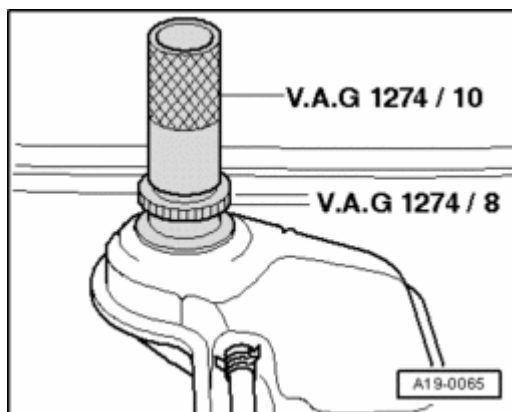


Fig. 505: Connecting Adapter For Cooling System Tester V.A.G 1274/10 To Adapter V.A.G 1274/8

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect adapter for VAG1274 tester V.A.G 1274/10 to adapter V.A.G 1274/8.

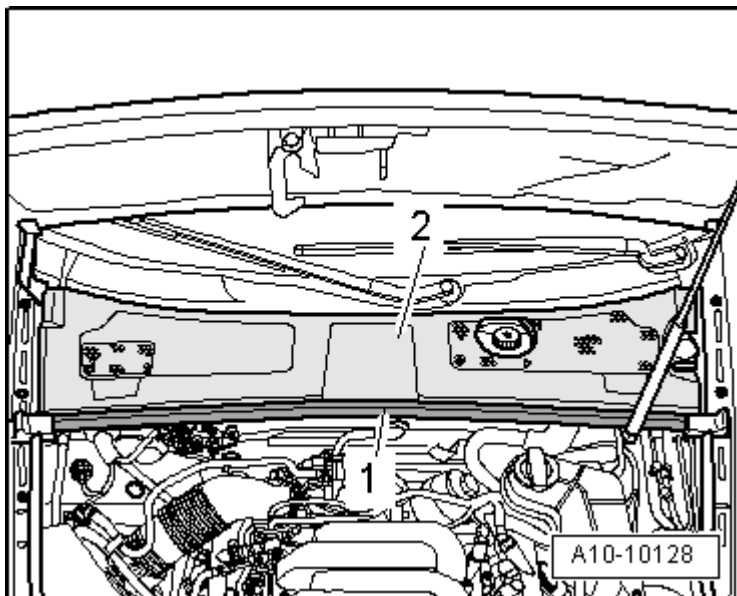


Fig. 506: Removing Rubber Seal For Plenum Chamber Cover & Plenum Chamber Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rubber seal - **1** - for plenum chamber cover.
- Remove plenum chamber cover - **2** -.

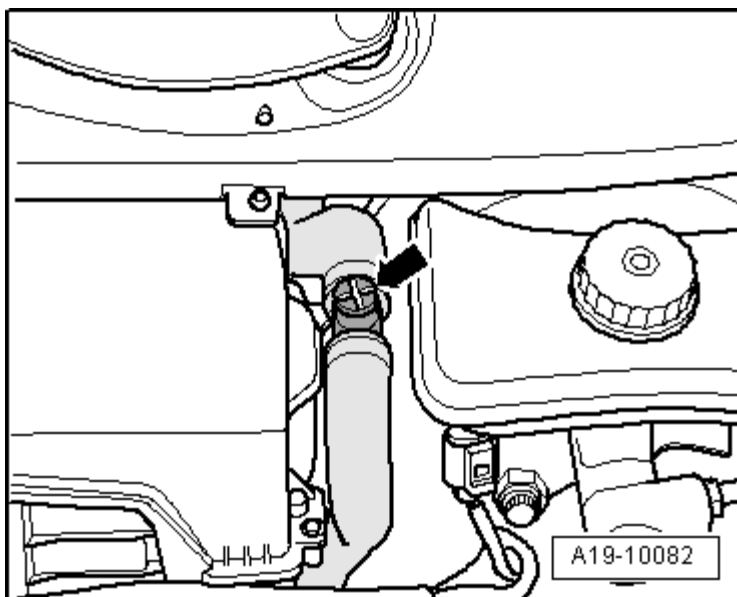


Fig. 507: Opening Bleeder Screw
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open bleeder screw - **arrow** -.

- Fill up coolant until it escapes from the coolant hose bleeder hole.
- Close bleeder screw.
- If present, switch on auxiliary heater for about 30 seconds.

- Twist cap for expansion tank closed.
- Start engine.
- Set heating air conditioning system to "HI" on both sides.
- Let engine run at 2000 RPM for 3 minutes.

- Let engine run at idle long enough until both large coolant hoses on main cooler are warm.
- Let engine run at 2000 RPM for 1 minute.
- Turn off engine and allow it to cool off.

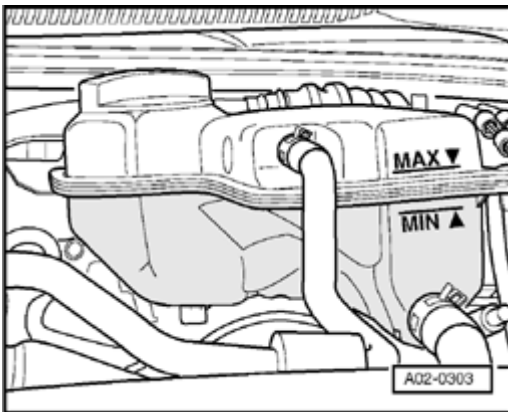


Fig. 508: Checking Coolant Level

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check coolant level.

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

Thermostat, Coolant Pump, Connecting Pieces, Component Overview

Thermostat, Coolant Pump, Connecting Pieces, Component Overview

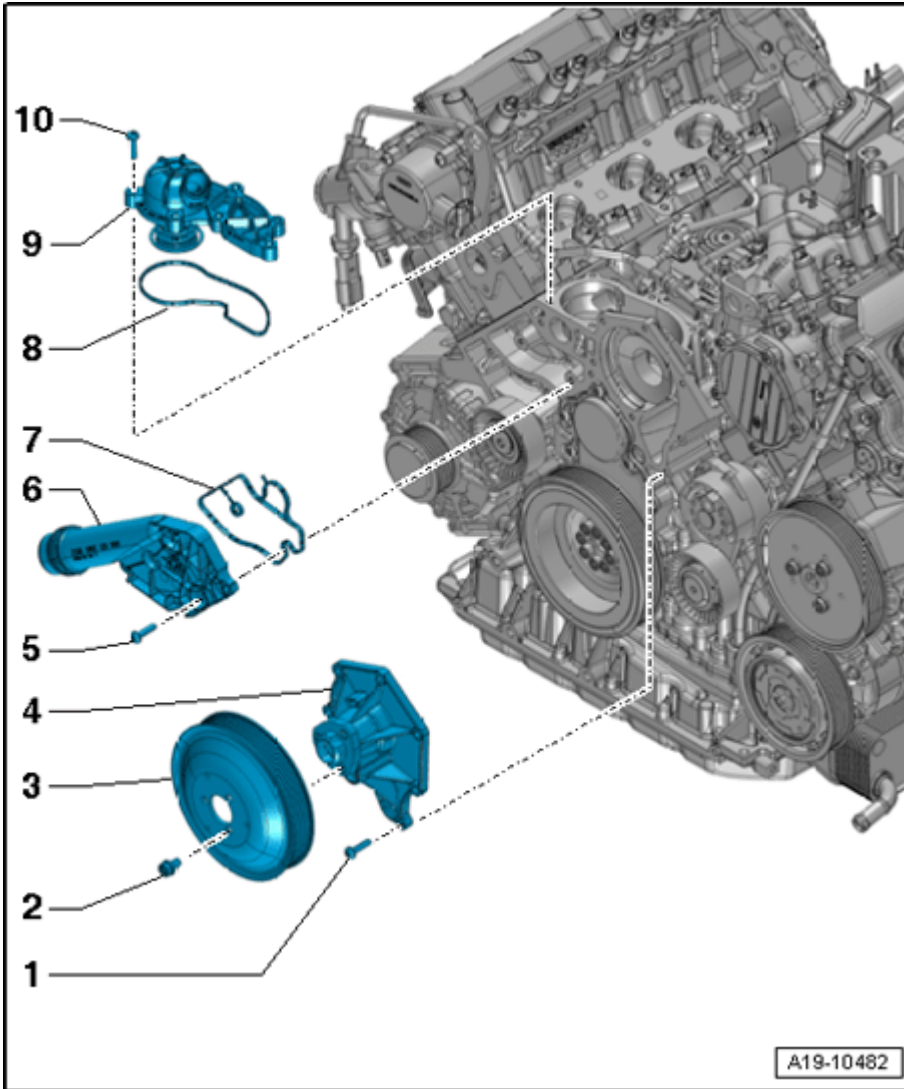


Fig. 509: Thermostat, Coolant Pump, Connecting Pieces, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - 9 Nm

2 - 20 Nm

3 - Ribbed belt pulley for coolant pump

4 - Coolant pump

- With gasket
- Removing and installing --> **Coolant Pump, Removing and Installing**

5 - 9 Nm

6 - Connecting piece

- For coolant hose

7 - Gasket

- Replace

8 - Gasket

- Different versions
- Replace

9 - Coolant thermostat

- Removing and installing --> **Coolant Thermostat, Removing and Installing**
- Checking --> **Thermostat, Checking**

10 - 9 Nm