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ENGINE

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19 COOLING SYSTEM

GENERAL INFORMATION

COOLANT SYSTEM

WARNING: The coolant system is under pressure when the engine is warm.

Risk of scalding due to hot steam and hot coolant.

Reduce pressure by covering the coolant expansion tank cap with a cloth and open carefully.

NOTE: Secure all hose connections with hose clamps appropriate for the model.

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

DRAINING AND FILLING

Special tools and workshop equipment required

- Adapter -V.A.G 1274/8-
- Drip Tray for -VAS 6100- -VAS 6208-
- Hose Clip Pliers -V.A.G 1921-
- Cooling System Charge Unit -VAS 6096-
- Refractometer -T10007-

Draining

WARNING: The coolant system is under pressure when the engine is warm.

Risk of scalding due to hot steam and hot coolant.

Reduce pressure by covering the coolant expansion tank cap with a cloth and open carefully.

- -- Open the coolant expansion tank cap.
- -- Remove the noise insulation. Refer to **Description and Operation** .

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Passat, CC, GTI and Eos

-- Loosen the clamps -items 1 and 2-, remove the charge air hose and seal the charge air cooler with a clean cloth.



Fig. 1: Identifying Charge Air Hose And Clamps Courtesy of VOLKSWAGEN UNITED STATES, INC.

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



Fig. 2: Identifying ECT Electrical Connector Courtesy of VOLKSWAGEN UNITED STATES, INC.

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- -- Place the drip tray fro -VAS 6100- -VAS 6208- under the engine.
- -- Remove the lower coolant hose -1- from the radiator and allow the coolant to drain.
- -- Remove the lower coolant hose from the after-run coolant pump -V51- -arrow- and allow the coolant to drain.



Fig. 3: Identifying Coolant Hose After-Run Coolant Pump V51 Courtesy of VOLKSWAGEN UNITED STATES, INC.

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Fig. 4: Identifying After-Run Coolant Pump V51 Bracket Bolt -2-

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Courtesy of VOLKSWAGEN UNITED STATES, INC.

-- Remove the after-run coolant pump bracket bolt -2-.

NOTE: The after-run coolant pump stays in the installed position.

-- Remove the coolant hose -1-.



Fig. 5: Identifying Coolant Hoses Courtesy of VOLKSWAGEN UNITED STATES, INC.

-- Remove the lower coolant hose from the after-run coolant pump -arrow- and allow the coolant to drain.

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Fig. 6: Identifying Coolant Hose After-Run Coolant Pump V51 Courtesy of VOLKSWAGEN UNITED STATES, INC.

Filling

NOTE: The water portion of the coolant influences the effectiveness of the coolant. Volkswagen has decided to define the water quality used in the cooling system based on the different mixtures, countries and regional requirements. For this reason, we recommend using distilled water for older models when adding coolant or filling the coolant for the first time. On newer models (from MY 10), distilled water is required.

CAUTION: Only use distilled water for mixing with G12 plus-plus. Using distilled water provides optimum corrosion protection.

NOTE: Only use coolant additive G12 plus-plus that conforms to TL -VW 774 G-.

Coolant additives with the note "conforming to TL -VW 774 G-" prevent frost and corrosion damage, scaling and also raise boiling point of coolant. 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

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seasons and in warmer countries. The coolant additive portion must be at least 40%.

If for climatic reasons a greater frost protection is required, the amount of coolant additive can be increased, but only up to 60% (frost protection to about -40 °C (-40 °F), as otherwise frost protection is reduced again and cooling effectiveness is also reduced.

The refractometer -T10007- is recommended for determining freeze protection density.

If the radiator, heater core, cylinder head or cylinder head gasket is replaced, do not reuse the old coolant.

Recommended Mixture Ratios

Frost Protection to	Anti-Freeze	G 12 Plus-Plus ⁽¹⁾	Distilled Water ⁽¹⁾
-25 °C (-13 °F) -35 °C (-31 °F)	40% 50%	3.2 liters 4.0 liters	4.8 liters 4.0 liters
(1) The amount of coolant may vary depending on vehicle equipment.			

-- Connect the lower coolant hose -1- to the radiator.



Fig. 7: Identifying ECT Electrical Connector Courtesy of VOLKSWAGEN UNITED STATES, INC.

-- Install the charge air hose.