VOLVO PENTA

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Service Bulletin

Group	Number	Version
26-0	**136**	**4**

Cooling System, Cleaning

Industrial Engines, Marine Diesel Engines

Cooling System, Cleaning

Description:

This bulletin covers the Volvo Penta recommendations on how to perform cleaning and/or flushing of an engine coolant system.
It is based on today's best knowledge and collected experiences.

The recommended procedures are aiming to be used on the internal coolant system of an engine.

For sea water side and for other specific component cleaning there are other specific recommendations.

In case of high engine temperatures, the engine cooling system may be need cleaned with the aid of a cleaning solution. High engine temperatures could arise for example, after a long period of operation or by using water with high mineral concentrations or other type of contaminations in the cooling system.

NOTICE! Visible particles or sediment in the cooling system, for example the bottom of the expansion tank are normally no reason for concern.

Water quality

Always use clean water which complies with the requirements in Volvo standard 1285,1.
As to its technical content, this standard conforms to ASTM D 4985-94.
This standard describes how water is to be composed when it is used together with Volvo's original coolant (VCS) or (VCS-2) in the cooling systems of Volvo diesel engines.
If these requirements are not complied with, i.e. corrosion could occur, which would lead to degenerated cooling performance.

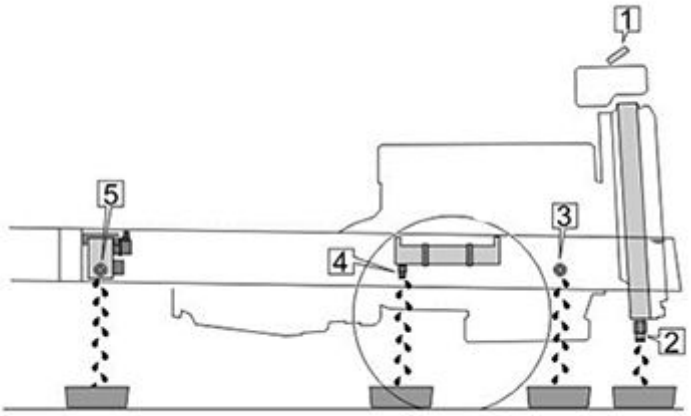
Description	Value	Method
Total number of solid particles	< 300 ppm	ASTM D5907-18
Total hardness	< 120 ppm or 7 °dH	ASTM D 1126-17
Chloride	< 40 ppm	ASTM D 512-12
Sulfate	< 100 ppm	ASTM D 516-16
pH value	6,5-8,5	ASTM D 1293-18
Silicon	< 20 ppm	ASTM D 859-16
Iron	< 0,10 ppm	ASTM D 1068-15
Manganese	< 0,05 ppm	ASTM D 858-17
Electrical conductivity	< 400 S/cm	ASTM D 1125-14
Organic content, COD-Mn	< 8 ppm	ISO 15705:2002(E)

Prerequisite:

NOTICE! It is necessary to empty correctly the entire cooling circuit before proceeding to the cleaning step.

This chapter is a general description in how to drain the cooling system of an engine application. Illustrations in this instruction may differ from the model being worked on.

Open the expansion tank cap (**1**) to facilitate drainage.
Drain coolant from radiator (**2**).
Drain coolant from engine (**3**).
Drain coolant from i.e. charge air cooler (**4**).
Try also to locate and drain other possible draining positions as i.e. a cab heater or similar (**5**).



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IMPORTANT! Glycol is poisonous and environmentally hazardous. Hand in the coolant for a treatment at a recycling station. Properly close and reassemble all draining valves and plugs when the system is completely drained.

IMPORTANT! Hot fluids and hot surfaces can cause burns.

IMPORTANT! Cleaning must not be carried out if there is any risk of the cooling system freezing.

Recommended cleaning solution : Ready mix VCS or VCS–2 (40%-50%) (Volvo Coolant).

Procedure:

1 Drain the engine cooling system thoroughly.

2 Clean the Heat exchanger according to workshop manual “Heat exchanger, cleaning”.

3 Fill the cooling system with the ready mixed VCS or VCS-2.

4 Run the engine for about 20 minutes on relatively high load
(it is normally possible to utilize the engine for regular operation during the cleaning process).
It is important that the temperature of the coolant is high enough to open the thermostat.
If thermostat does not open, parts of the cooling system will not be cleaned.
Make sure that any heater controls are set to maximum during running.
Otherwise, these parts of the system will not be cleaned sufficiently.

5 Drain the coolant system with the ready mixed coolant fluid completely.

6 Fill the cooling system with new ready mixed VCS or VCS-2 and run for another 20 minutes on relatively high load.

7 Drain the coolant system with the ready mixed coolant fluid completely again.

8 Refill the system with the new ready mixed VCS or VCS-2 (minimum 40% concentration).