

Issue no. 08/2022

Overheating of the engine due to a defective expansion tank cap

Often, the cause of excessive coolant temperature is a defective cooling circuit. When it comes to failure diagnostics, potential sources of malfunction should be systematically checked, and even a rather insignificant component should not be overlooked.

Typical causes

Here are a few common causes of excessive coolant temperature:

- The thermostat is defective and no longer opens.
- The coolant pump is damaged, perhaps due to a defect on the pump wheel or sliding shroud (see TM 01/2021).
- The radiator is clogged, perhaps by external impurities and/or internal deposits or sealants.
- The cooling system isn't properly ventilated (there is air trapped in the cooling circuit).
- The radiator fan is defective.

- The temperature sensor doesn't work correctly and indicates incorrect temperature values.
- The temperature switch is defective and doesn't trigger the radiator fan.
- The coolant hoses have kinks or constrictions.

Frequently overlooked

A component that is often overlooked during troubleshooting, although it is also largely responsible for the correct coolant temperature, is the expansion tank cap. Most expansion tank caps are fitted with a valve that ensures the necessary pressure in the cooling system. The opening pressure of this valve is precisely defined and is determined by the vehicle or engine. If this valve does not work correctly, not enough pressure is built up in the cooling system, the coolant starts boiling earlier, and the engine can overheat. If the expansion tank is cracked or has burst because of excessive pressure, not only the tank, but also its cap must be replaced.

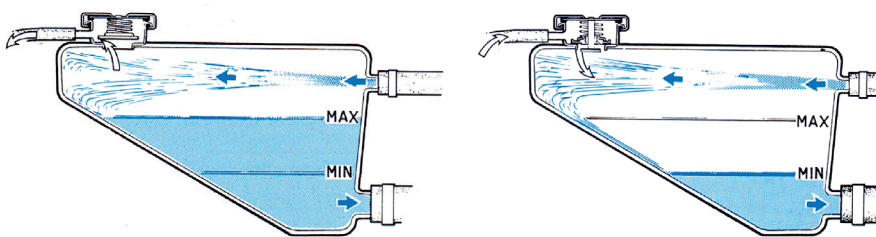


Figure 1: When the pressure is too high, the valve in the cap opens (left). When cooling down, a second valve ensures pressure equalization.



Figure 2: Pressure can also be applied to test the valve in the cap by using special adapters.

Important!

When troubleshooting, the cap of the expansion tank should always be inspected both when it is warm and when it is cold; its valve should be tested for correct function by applying pressure.