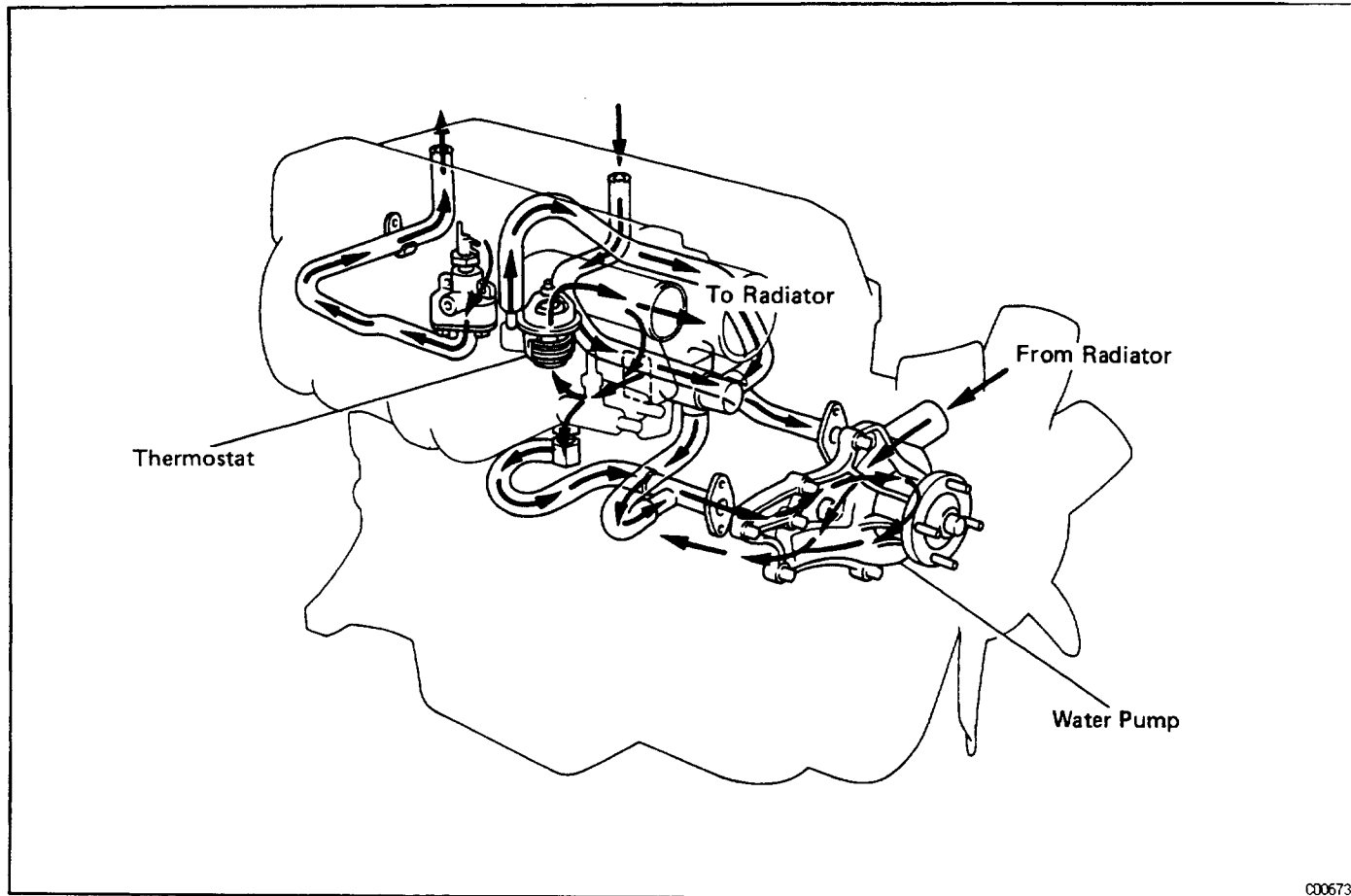


COOLING SYSTEM

DESCRIPTION

This engine utilizes a pressurized water faced circulation cooling system which includes a thermostat mounted on the outlet side.

OPERATION



RADIATOR CAP

The radiator cap is a pressure type cap which seals the radiator, resulting in pressurization of the radiator as the coolant expands. The pressurization prevents the coolant from boiling even when the coolant temperature exceeds 100°C (212°F). A relief valve (pressurization valve) and a vacuum valve (negative pressure valve) are built into the radiator cap. When the pressure generated inside the cooling system exceeds the limit (coolant temperature: $110\text{--}120^{\circ}\text{C}$ ($230\text{--}248^{\circ}\text{F}$) pressure: $58.8\text{--}103.0\text{ kPa}$ ($0.6\text{--}1.05\text{ kgf/cm}^2$, $8.5\text{--}14.9\text{ psi}$) the relief valve is opened by the pressure and lets steam escape through pipe. The vacuum valve opens to allow atmospheric air to enter to alleviate the vacuum which develops in the cooling system after the engine is stopped and the coolant temperature drops.

RESERVOIR TANK

The reservoir tank is used to catch coolant which overflows the cooling system as a result of volumetric expansion when the coolant is heated. When the coolant temperature drops, the coolant in the reservoir tank returns to the radiator, thus keeping the radiator full at all times and avoiding needless coolant loss. To find out if the coolant needs to be replenished, check the reservoir tank level.


WATER PUMP

The water pump is used for forced circulation of coolant through the cooling system. It is mounted on the front of the timing chain cover and driven by a V belt.

THERMOSTAT

The thermostat is a wax type and is mounted in the water outlet housing. The thermostat includes a type of automatic valve operated by fluctuations in the coolant temperature. When the coolant temperature drops, the valve closes, preventing the circulation of coolant through the engine and thus permitting the engine to warm up rapidly. When the coolant temperature has risen, the valve opens, allowing the coolant in the engine to circulate through the radiator. Wax inside the thermostat expands when heated and contracts when cooled. Heating the wax thus generates pressure which overpowers the force of the spring which keeps the valve closed, thus opening the valve. When the wax cools, its contraction allows the force of the spring to take effect once more, closing the valve. The thermostat in this engine operates at a temperature of 88°C (190°F).

PREPARATION**RECOMMENDED TOOLS**

	09082-00050 TOYOTA Electrical Tester Set	
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EQUIPMENT

Heater	
Radiator cap tester	
Thermometer	
Torque wrench	