1 Expansion tank
2 Heater core
3 RH cylinder head
4 Cylinder block
5 Throttle
6 Engine oil cooler
7 RHeater manifold
8 LH cylinder head
9 Transmission fluid cooler
10 Check valve
11 Thermostat
12 Radiator
13 Coolant pump
14 Auxiliary radiator
15 Connection with SC cooling system
16 Bleed screw

When the engine is running, the coolant is circulated around the engine cooling system by the coolant pump. From the coolant pump, coolant flows through the cylinder heads and the engine oil cooler into the cylinder block and the heater manifold. In the cylinder block, the coolant flows forwards to the outlet tube. When the coolant is cold, the thermostat is closed and the coolant flows direct from the outlet tube back to the coolant pump. Once the coolant reaches operating temperature the thermostat begins to open, to control system temperature, and coolant flows from the outlet tube to the coolant pump via the radiator and, on SC vehicles, the auxiliary radiator. When the thermostat is open, the coolant flow through the radiator(s) also generates a coolant flow through the transmission fluid cooler. From the heater manifold the coolant flows through the electronic throttle and the heater core, in parallel circuits that are unaffected by the position of the thermostat. From the electronic throttle, the coolant merges with bleed coolant from the coolant pump and the outlet tube and flows to the expansion tank. From the heater core, the coolant flows back to the inlet of the coolant pump. Expansion and contraction of the coolant is accommodated by an air space in the expansion tank and the compliance of the flexible hoses.If the coolant level in the expansion tank decreases below a predetermined value, the level sensor connects a ground to the instrument cluster, which activates the appropriate warning. For additional information, refer to 413-01 Instrument Cluster. The cooling fan is operated by a fan control module integrated into the cooling fan motor. The fan control module regulates the voltage, and thus speed, of the cooling fan motor in response to a PWM (pulse width modulation) signal from the ECM. The ECM calculates the required fan speed from the engine temperature, A/C (air conditioning) system pressure and transmission fluid temperature. Under hot operating conditions, the fan may continue to operate for 4 minutes after the engine has been switched off.