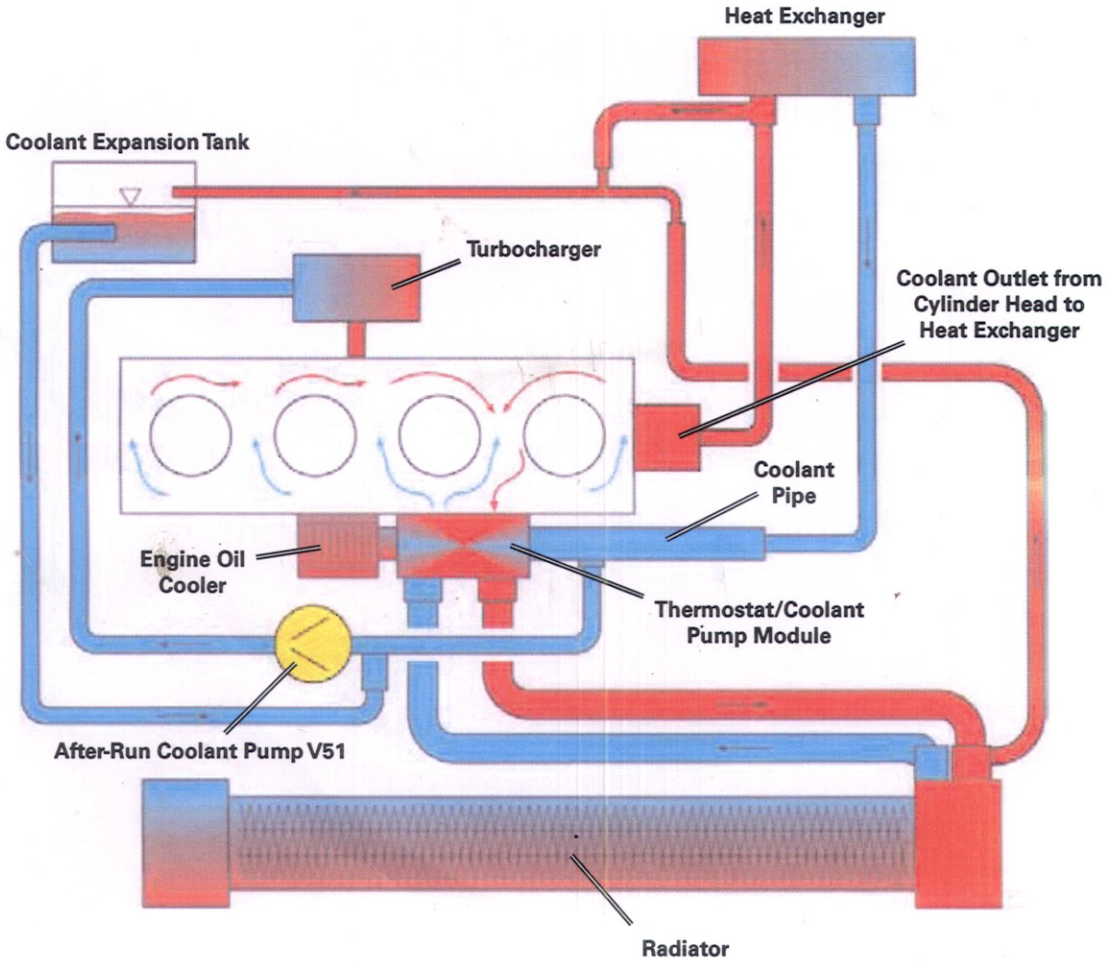
Engine Cooling System

The engine uses a cross-flow cooling system. Engine coolant first flows to the front of the engine from the coolant pump. The coolant is then distributed along ducts and circulates around the cylinders. After circulating through the cylinder head, the coolant is routed back to the radiator via the thermostat housing or recirculated through the coolant pump if the thermostat is closed.

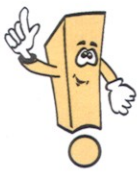
The heat exchanger and turbocharger are part of the engine cooling circuit. The engine oil cooler is connected directly to the cylinder block through its mounting subframe.

After-Run Coolant Pump V51 protects the turbocharger bearings from overheating after engine shut-off.

The pump is activated by the engine control module based on programmed characteristic maps.

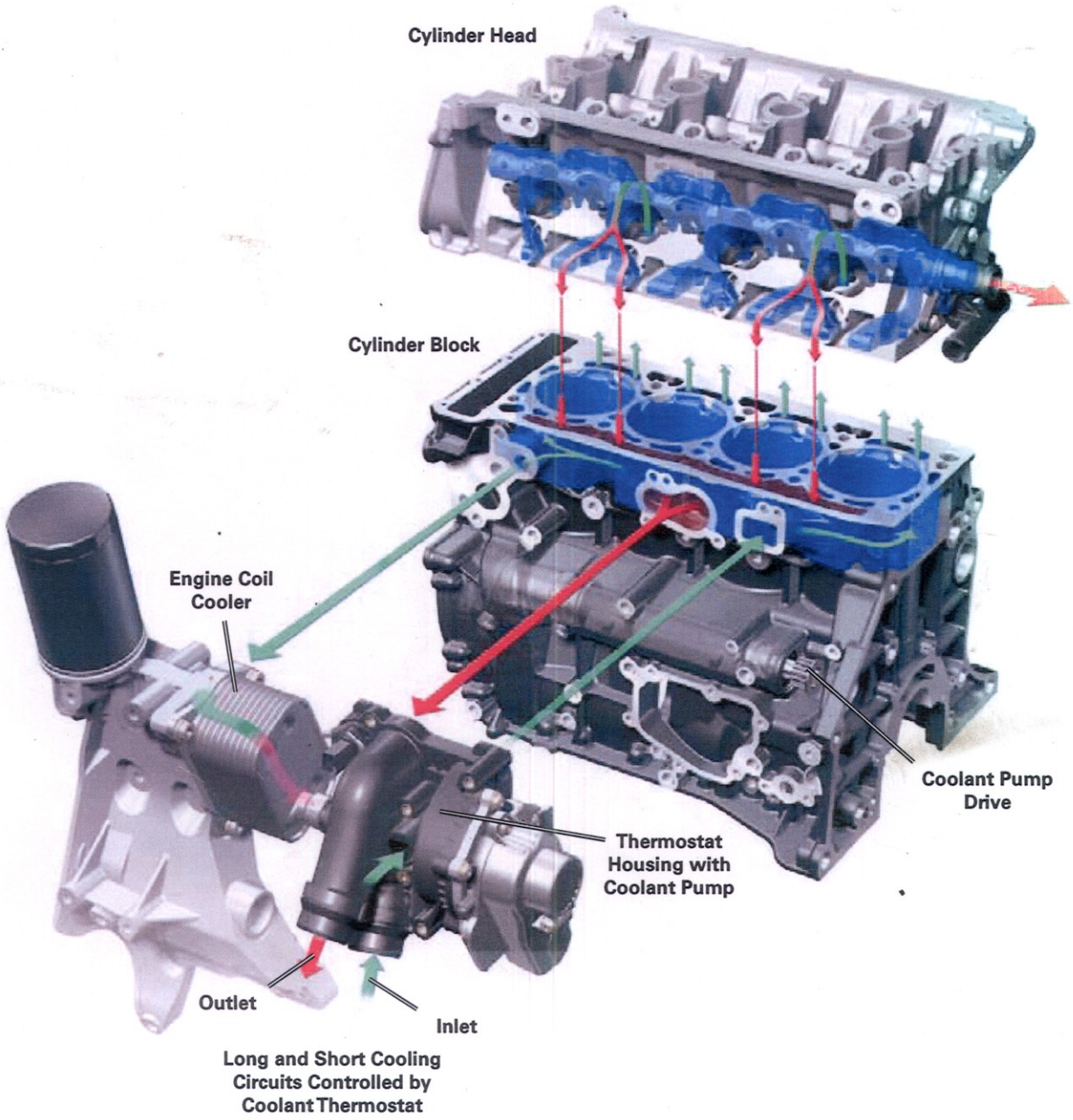


Note



Vehicle coolant systems are dependent on model equipment installed. For vehicle specific information, please consult the relevant Repair Manual.

Cooling System



Coolant Pump

The coolant pump, temperature sensor, and coolant thermostat are integrated in a common housing made of duroplastic.

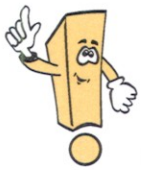
This housing is attached to the cylinder block below the intake manifold.

A drive gear at the end of the balance shaft drives the coolant pump via a toothed belt. The larger drive gear on the pump acts as a speed reducer. A fan wheel is attached to the coolant pump drive gear to cool the toothed belt.

The coolant pump impeller is made of plastic and has a special vane contour which permits high engine speeds with low risk of pump cavitation.

The thermostat begins to open at 203°F *(95°C)* and is fully open at 221°F *(105°C)*.

Note



The tension of the coolant pump drive belt is defined by the installation position of the coolant pump and cannot be adjusted. In the event of coolant pump failure, the housing must also be replaced.

The toothed belt drive gear of the coolant pump has a left-hand thread.