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**BMW 3-Series 320i & 320xi (12-14), 325i, 325xi, 330i & 330xi (06) & 328i & 328xi (07-14) Haynes Online Manual**

## 1 General information and precautions

The cooling system is of the pressurized type, comprising a pump, an aluminum crossflow radiator, a cooling fan, and a thermostat. The system functions as follows: Cold coolant from the radiator passes through the hose to the coolant pump where it is pumped around the cylinder block and head passages. After cooling the cylinder bores, combustion surfaces and valve seats, the coolant reaches the underside of the thermostat, which is initially closed. The coolant passes through the heater and is returned through the cylinder block to the coolant pump.

When the engine is cold, the coolant circulates only through the cylinder block, cylinder head, expansion tank and heater. When the coolant reaches a predetermined temperature, the thermostat opens and the coolant passes through to the radiator. On some models, the thermostat opening and closing is controlled by the engine management PCM and a heating element within the wax capsule of the thermostat. This allows fine control of the engine running temperature, resulting in less emissions, and better fuel economy. As the coolant circulates through the radiator, it is cooled by the inrush of air when the vehicle is in forward motion. Airflow is supplemented by the action of the cooling fan. Upon reaching the radiator, the coolant is now cooled and the cycle is repeated.

Two different fan configurations are used, depending on model. On some engines, the fan is electrically-operated, and mounted on the engine side of the radiator. Others are equipped with a belt-driven cooling fan. The belt is driven by the crankshaft pulley via a viscous fluid coupling. The viscous coupling varies the fan speed, according to engine temperature. At low temperatures, the coupling provides very little resistance between the fan and pump pulley so only a slight amount of drive is transmitted to the cooling fan. As the temperature of the coupling increases, so does its internal resistance, increasing drive to the cooling fan.

The coolant pump is driven by an integral electric motor, which is under the control of the engine management PCM.

Refer to [Section 10](#) for information on the air conditioning system.

**Warning:**

Do not attempt to remove the expansion tank filler cap or disturb any part of the cooling system while the engine is hot, as there is a high risk of scalding. If the expansion tank filler cap must be removed before the engine and radiator have fully cooled (even though this is not recommended), the pressure in the cooling system must first be relieved. Cover the cap with a thick layer of cloth, to avoid scalding, and slowly unscrew the filler cap until a hissing sound can be heard. When the hissing has stopped, indicating that the pressure has reduced, slowly unscrew the filler cap until it can be removed; if more hissing sounds are heard, wait until they have stopped before unscrewing the cap completely. Keep well away from the filler cap opening at all times .

**Warning:**

Do not allow antifreeze to come into contact with skin or painted surfaces of the vehicle. Rinse off spills immediately with plenty of water. Never leave antifreeze lying around in an open container or in a puddle in the driveway or on the garage floor. Children and pets are attracted by its sweet smell. Antifreeze can be fatal if ingested.

**Warning:**

Refer to Section 10 for precautions to be observed when working on models equipped with air conditioning.

**Warning:**

On models equipped with lifetime coolant, never reuse the coolant. If the cooling system is partially drained, the corrosion protection effect of the coolant is significantly reduced. If a large quantity of coolant is removed, the entire cooling system must be drained and refilled with new coolant. If a small amount (under a quart), is drained, new fluid must be used to replace the coolant drained from the system.