COOLING SYSTEM

1528-01

GENERAL INFORMATION

1. SPECIFICATIONS

Category			Specifications	Remarks
Cooler	Type		Forced circulation / water-cooled	-
Radiator	Coolant flow type		Cross flow	
	Core size (mm)		A/T: 480W*460H*16T M/T: 480W*460H*11T	
Electric fan	Type		Electric	
	Capacity	A/T	200 W	
		M/T	150 W	
	Control type		Resistor type (low/high)	
Coolant reservoir tank	Capacity		1.6 L	
	Cap type / pressure		Screw type / 1.4bar	
Thermostat	Type		Wax pellet type	
	Opening temperature		90 ± 2°C	
	Fully open temperature		100°C	
Coolant	Anti-freeze		SYC1025 (LCC)	
	Mixing ratio (water:antifreeze)		50:50	
	Coolant capacity		Approx. 6.5 L	

2. PRECAUTIONS

CAUTION

- If 100% of anti-freeze is added, the water pump vane can be damaged and thermal conductivity can be decreased resulting in poor circulation in the cooling system which leads to overheated engine.
- Use of non-recommended coolant could form scales in the cooling system because of chemical reaction. This restricts the flow in the cooling system and causes overheating and seizure of the engine.
- Hot coolant or steam can spray out with great force when the coolant reservoir tank cap is opened while the engine is running or hot, causing serious burns.
- To open the coolant reservoir cap, wrap the cap with a wet towel or thick cloth after the engine has been cooled down sufficiently.
- If cold water is added while the engine is overheated, the engine or radiator can be deformed.
- Anti-freeze can damage the painted surface. Avoid contact with the painted surface.
- Anti-freeze and water should be mixed in proper mixture ratio. Never add only water when the coolant runs low.
- If the anti-freeze concentration is too low, there is a danger of freeze-up. If the anti-freeze concentration is too high, it will reduce the cooling capacity of the system, resulting in overheating of the engine.

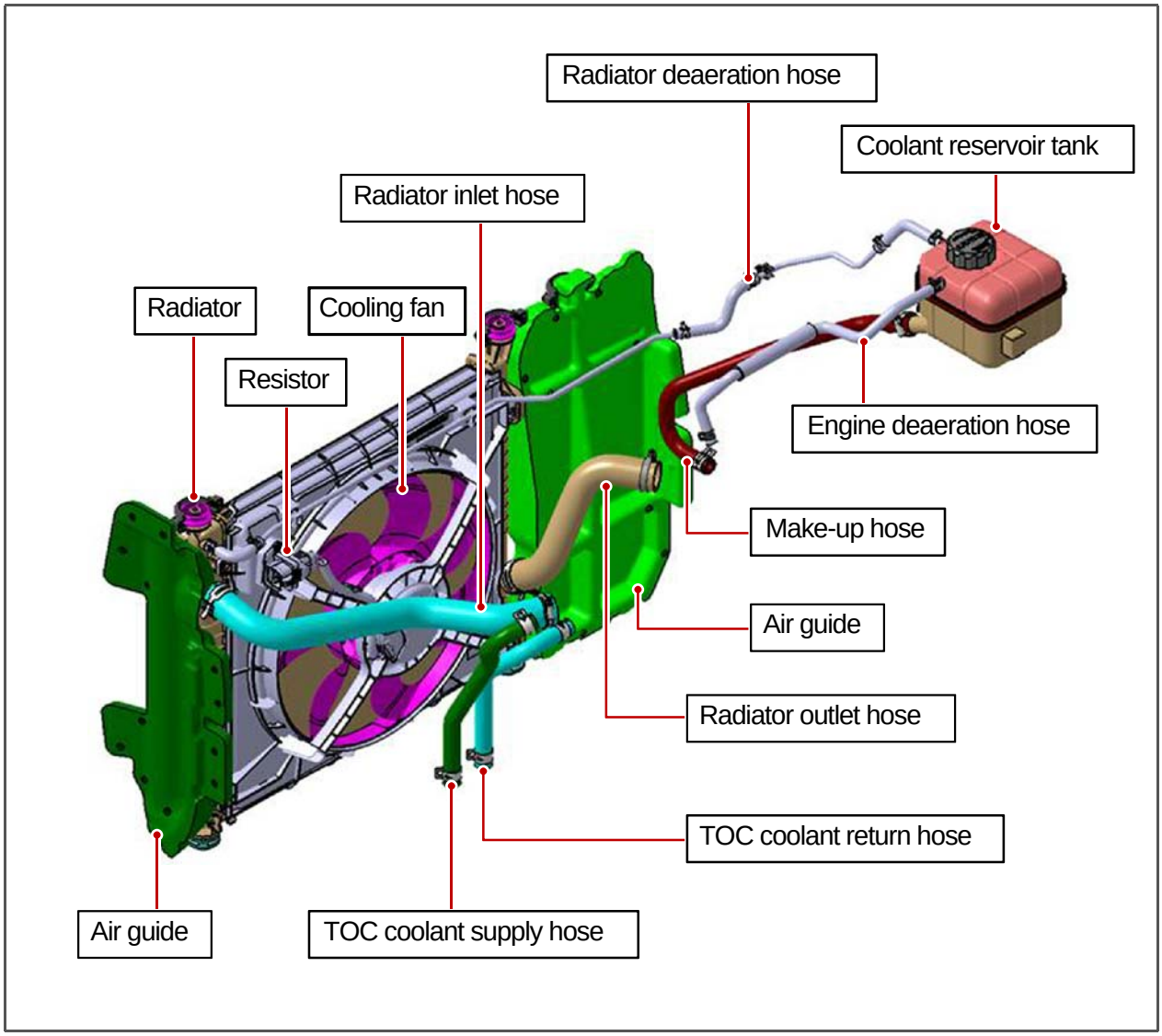
Modification basis	
Application basis	
Affected VIN	

OVERVIEW AND OPERATING PROCESS

1. OVERVIEW

The cooling system of the engine dissipates the heat generated by the running engine. The coolant is forced to circulate by the water pump and cooled down in the radiator by heat exchange between the coolant and the fresh air taken in through the fan. Properly cooled down coolant in the radiator flows into the engine to maintain the optimized engine operating temperature. For a vehicle with A/T, the coolant also flows into the transmission oil cooler (TOC) of the A/T through the heater core and absorbs the heat enough to maintain the best operating temperature. The electric fan is equipped with a resistor. The engine ECU controls the 2 electric fan relays which determine the speed of the fan (high speed and low speed). It also controls the A/C compressor and electric fan according to the operation of A/C.

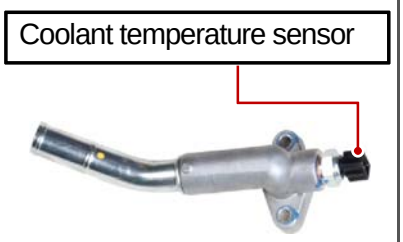
2. COMPONENTS



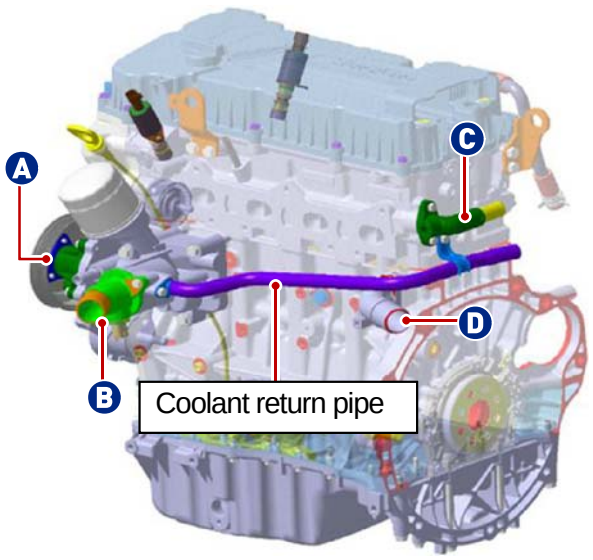
A Water pump

B Thermostat

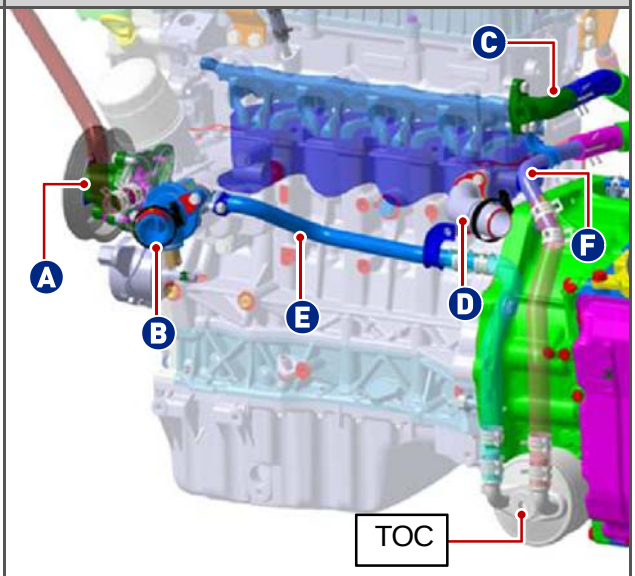
C Cylinder head outlet port



For a vehicle with M/T



For a vehicle with A/T



D Cylinder block outlet port

E TOC coolant return pipe

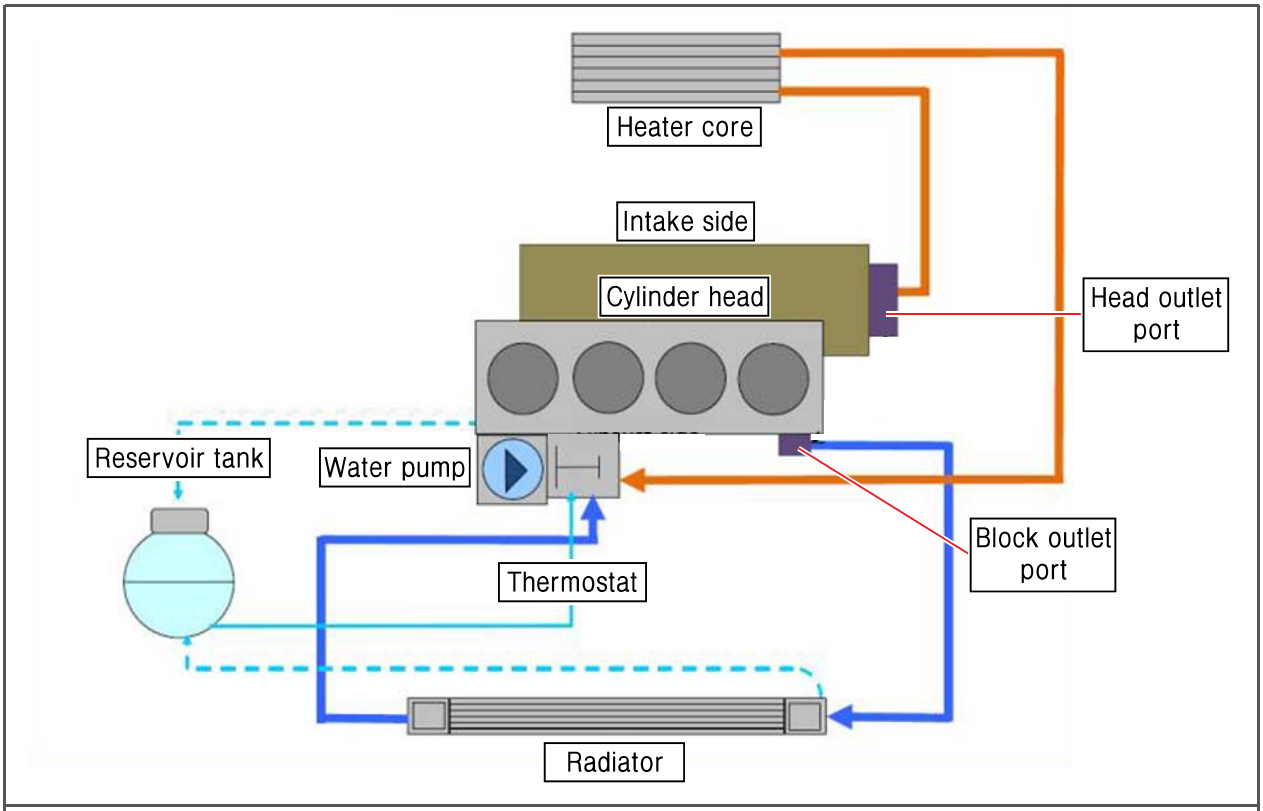
F TOC coolant supply pipe

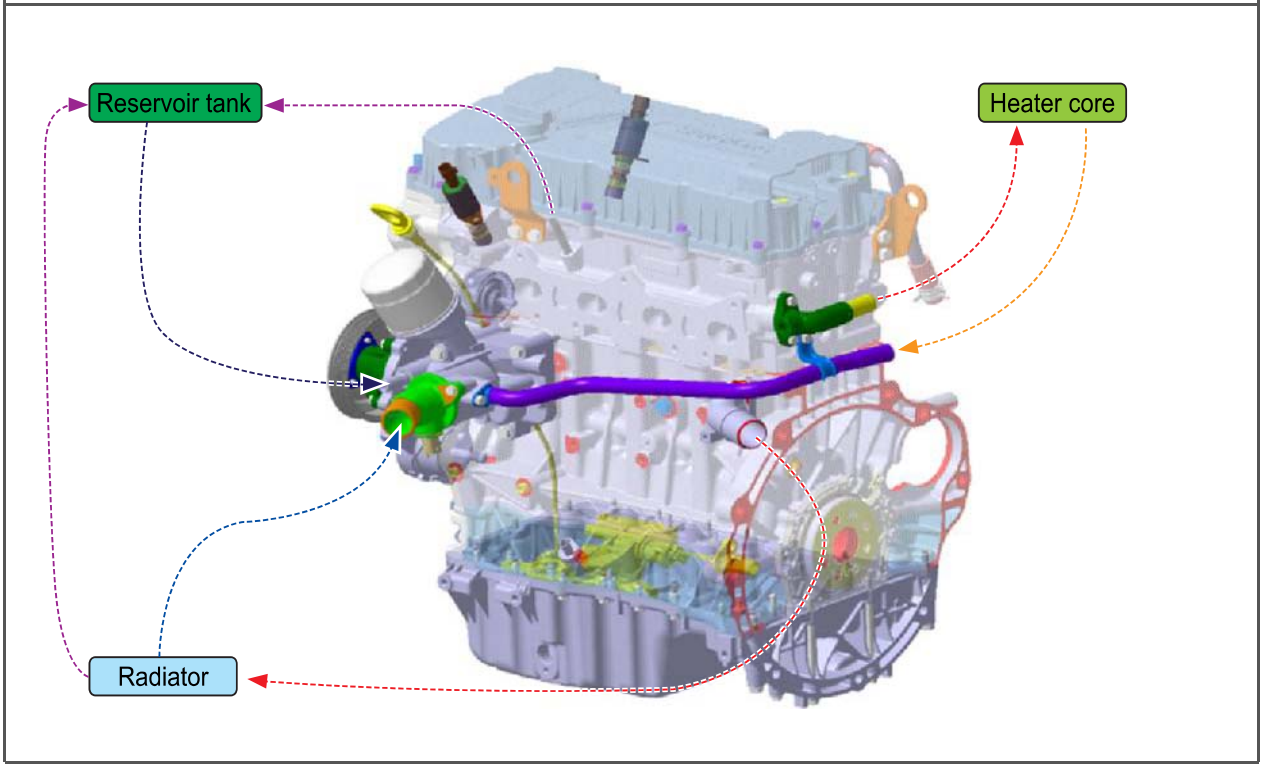
Modification basis	
Application basis	
Affected VIN	

3. OPERATING PROCESS

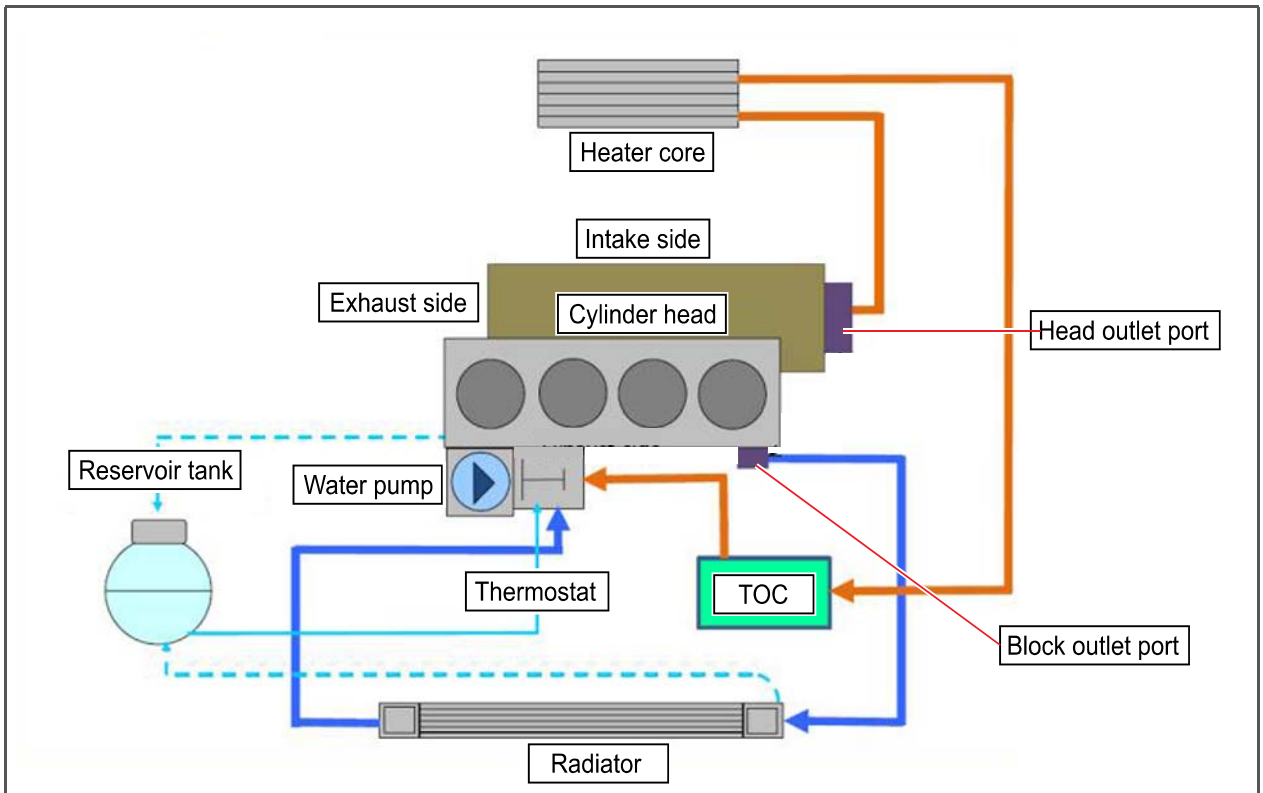
1) System Diagram

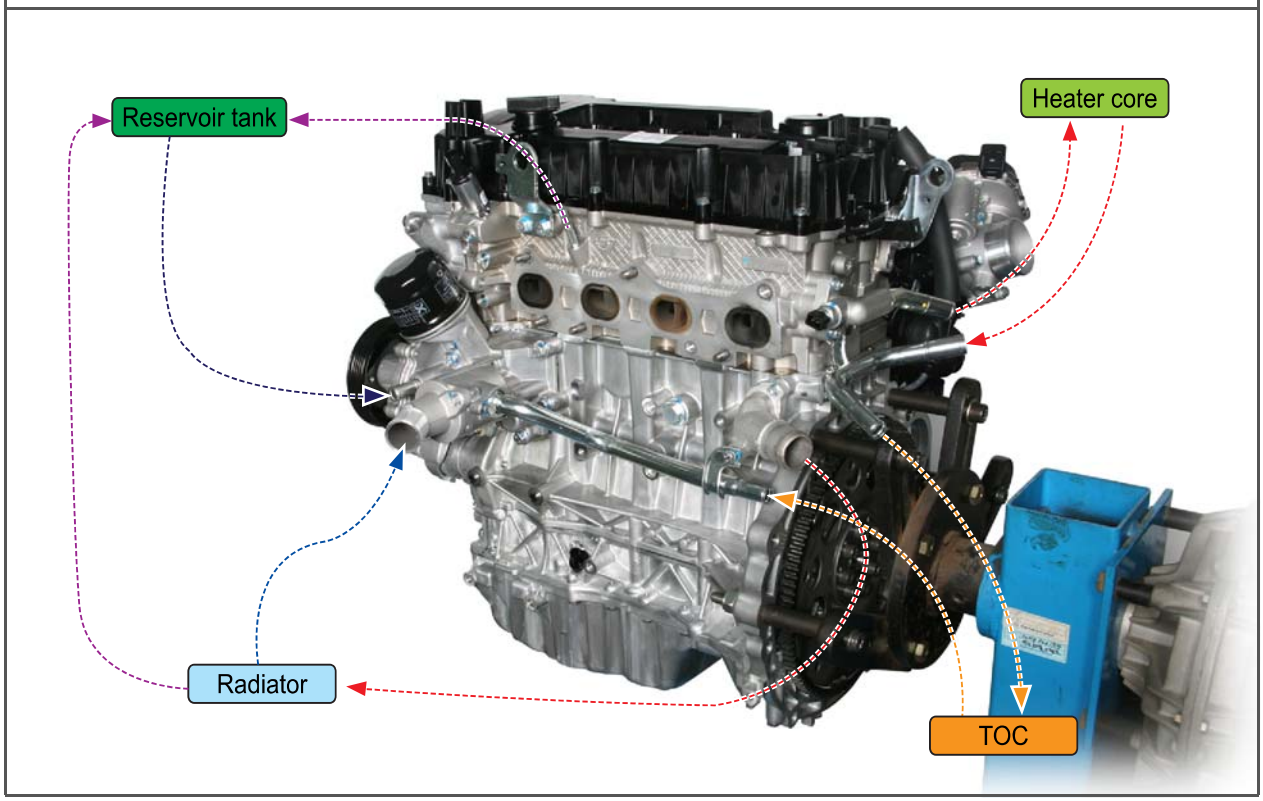
▶ **For a vehicle with M/T**





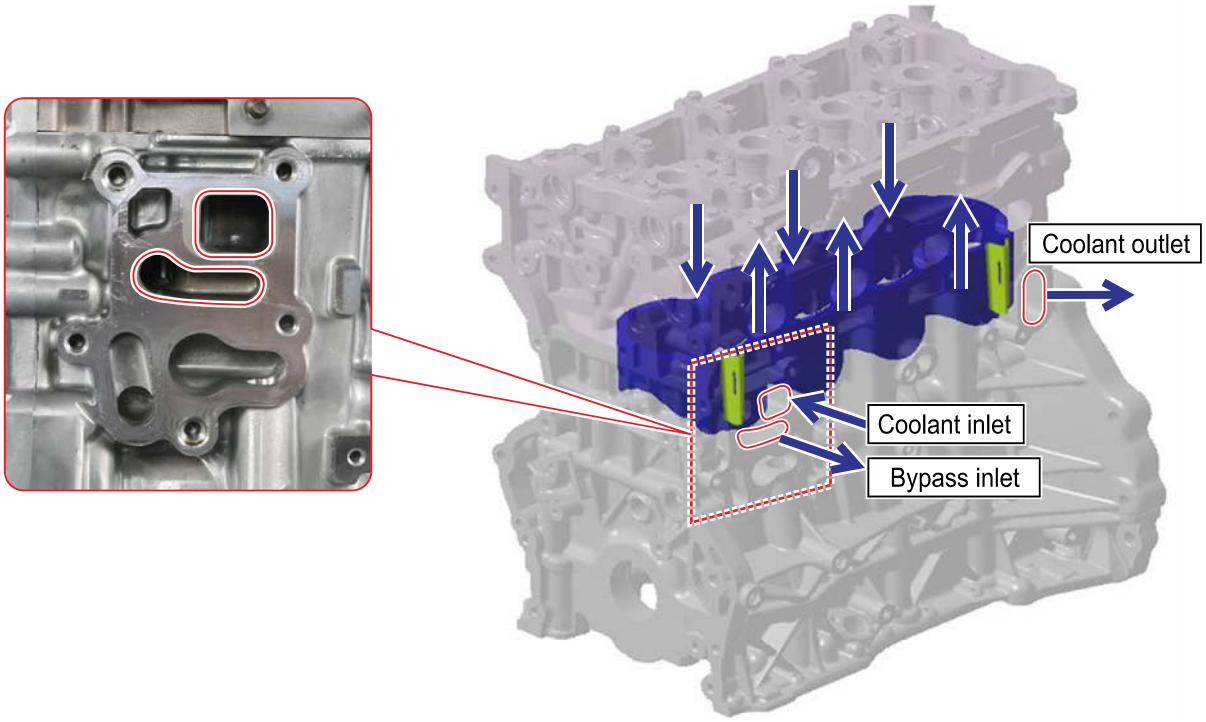
▶ **For a vehicle with A/T**

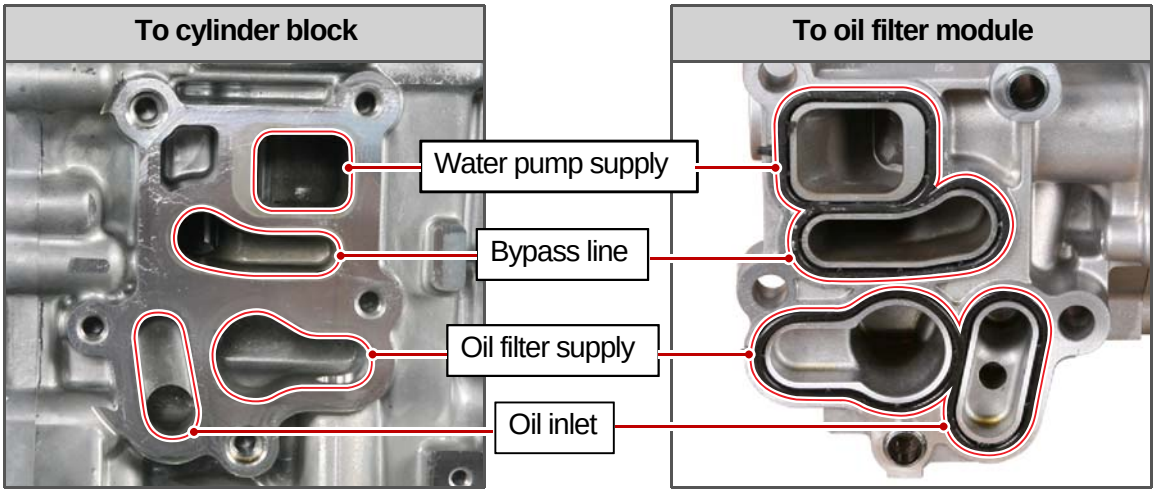




Modification basis	
Application basis	
Affected VIN	

▶ Flow in cooling system



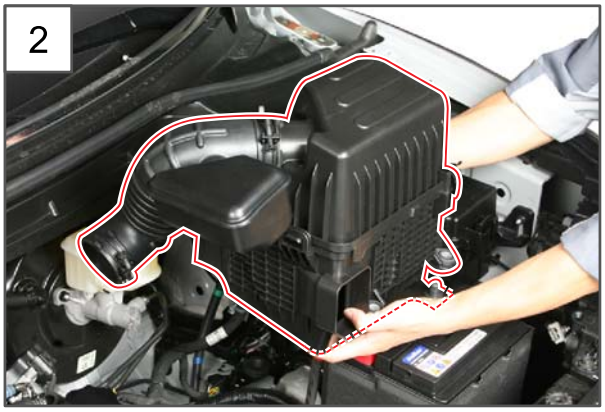


NOTE

- Oil filter supply: Cylinder block to oil filter, Before filtering
- Oil inlet: Oil filter to cylinder block, After filtering

Modification basis	
Application basis	
Affected VIN	

2

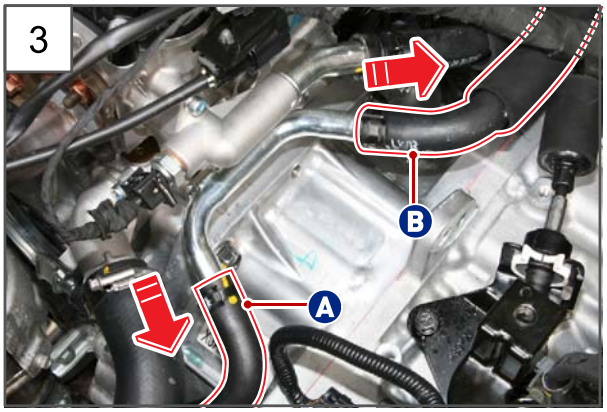


2. Remove the air cleaner assembly.

NOTE

Refer to "AIR CLEANER ASSEMBLY" under "REMOVAL AND INSTALLATION" subsection of "INTAKE SYSTEM" section in "G16DF ENGINE" chapter.

3

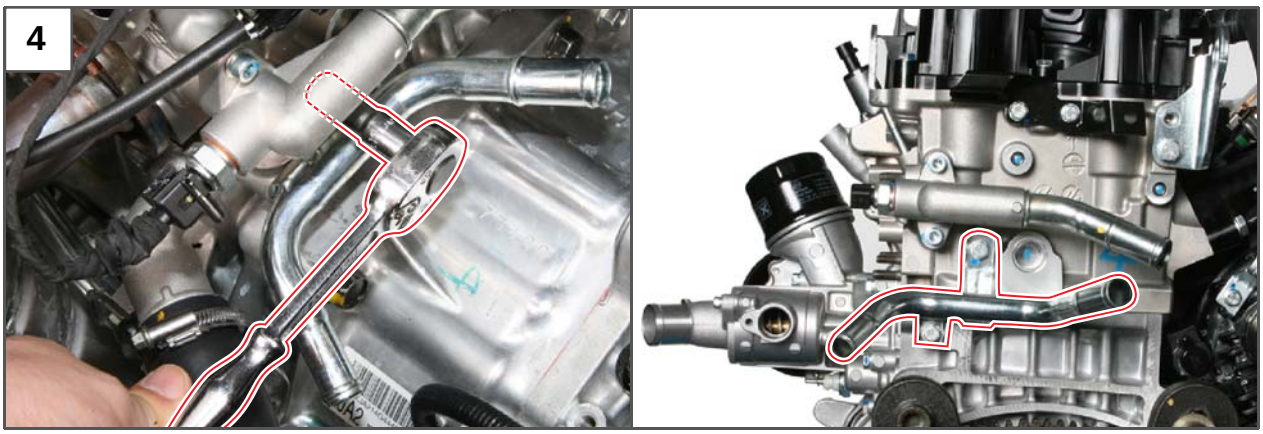


3. Disconnect the TOC coolant supply hose (A) and heater lower hose (B) from the TOC coolant supply pipe.

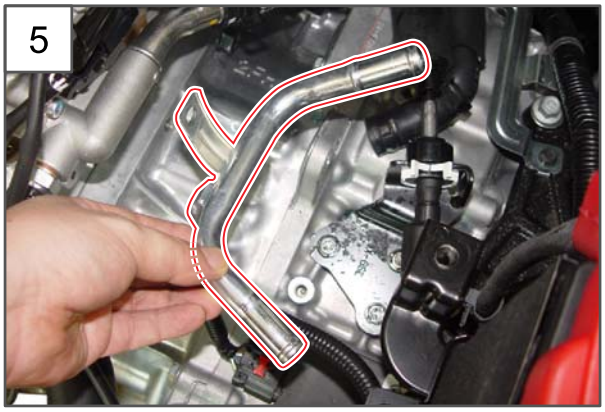
4. Unscrew the 2 mounting bolts (10 mm) for the TOC coolant supply pipe.

Tightening torque 10 ± 1.0 Nm

4



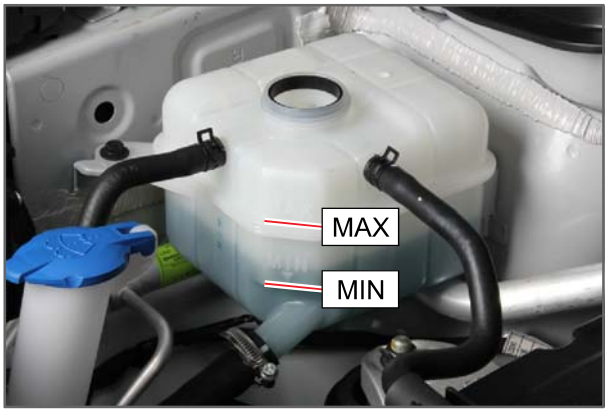
5



5. Remove the TOC coolant supply pipe.

6

6. Install in the reverse order of removal.



NOTE

- Install the TOC coolant supply pipe and fill the coolant reservoir tank with the coolant. Start the engine so that the engine speed reaches 1,500 to 2,000 rpm. After that, bleed the air from the cooling system and add coolant again.
- Fit the coolant reservoir tank pressure cap. After warming up the engine (thermostat open), check if the coolant level reaches to the MAX mark. If not, refill the coolant. (within 10 mm in relation to MAX mark)

Modification basis	
Application basis	
Affected VIN	