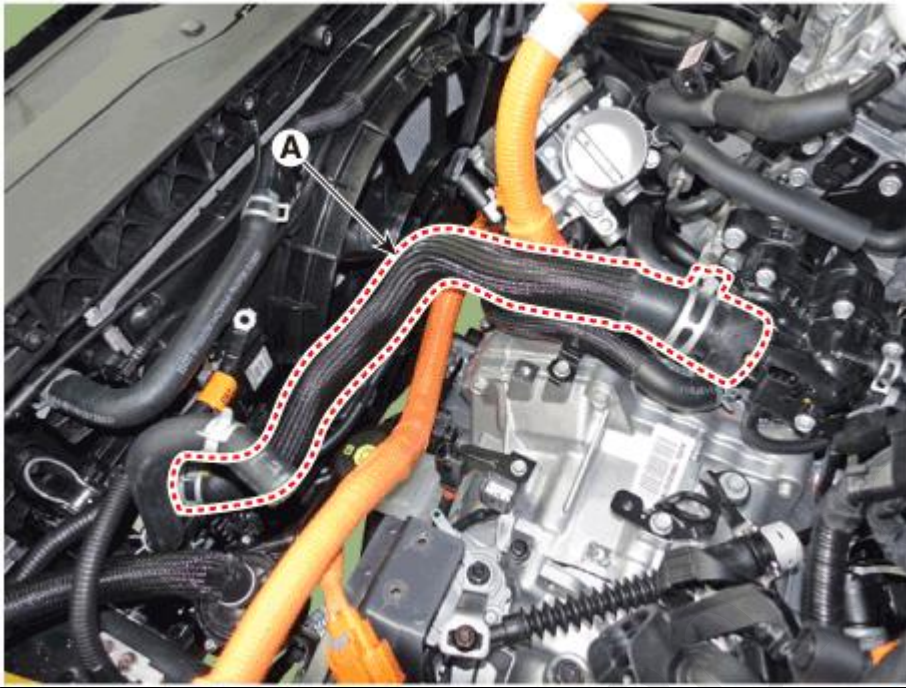


Removal and installation

Water Temperature Control Assembly

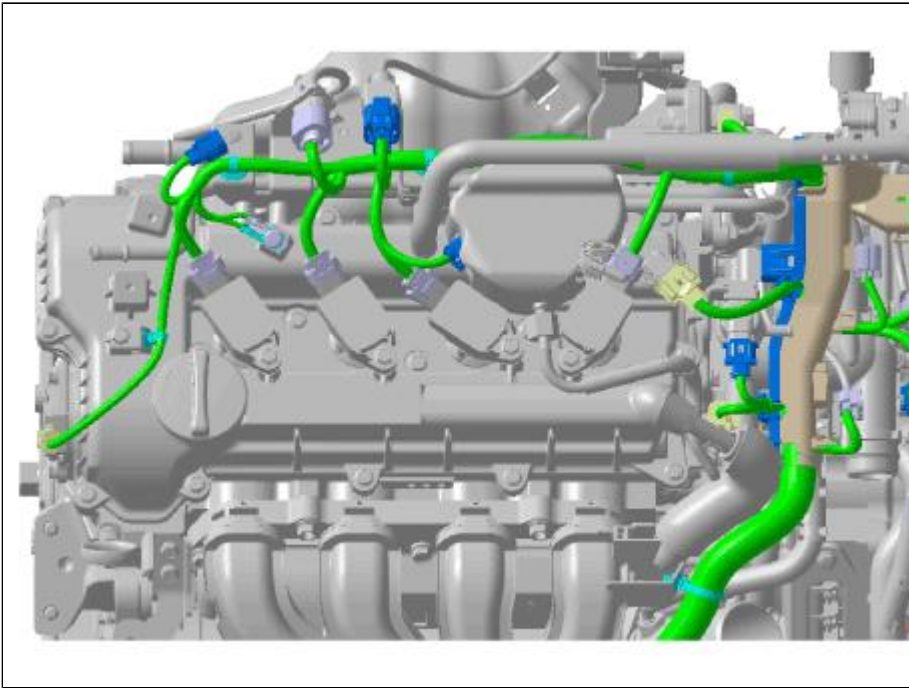
1. Disconnect the battery positive terminal.
2. Loosen the drain plug, and drain the engine coolant. Remove the reservoir cap to help drain the coolant faster.
(Refer to Cooling System - "Coolant")
3. Remove the air cleaner assembly.
(Refer to Intake and Exhaust System - "Air Cleaner")
4. Disconnect the radiator upper hose (A).



5. Disconnect the heater hoses (A).



6. Disconnect the wiring connectors and harness clamps and remove the connector brackets around the water temperature control assembly.



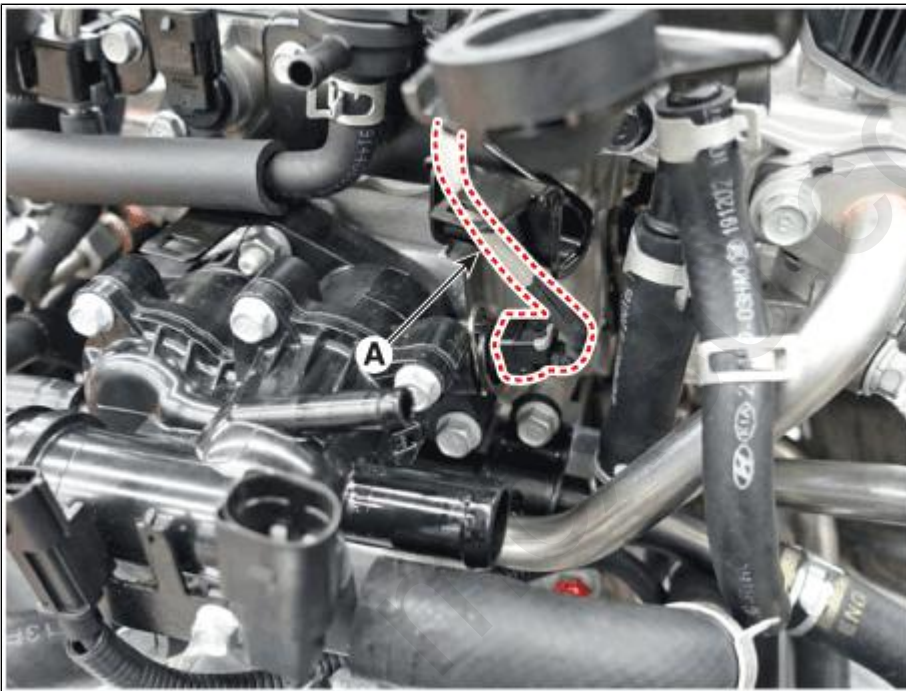
7. Disconnect the degassing hose (A) and EGR cooler hose (B).



8. Disconnect the oil cooler hose (A).



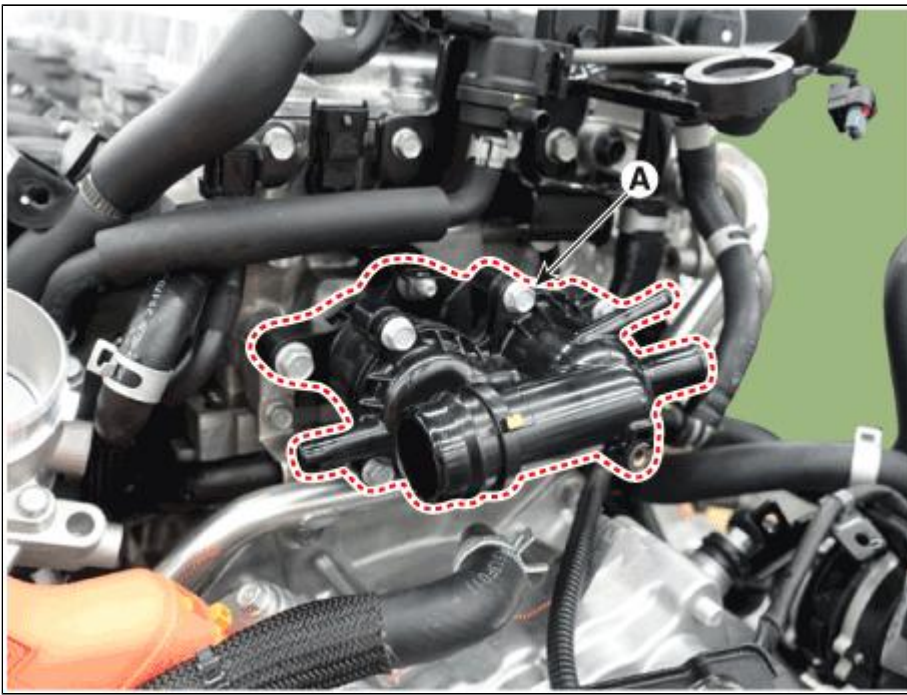
9. Disconnect the water temperature sensor connector (A).



10. Remove the water temperature control assembly (A).

Tightening torque :

18.6 - 23.5 N.m (1.9 - 2.4 kgf.m, 13.7 - 17.4 lb-ft)



⚠ CAUTION

- ⌘ When you use current-carrying bolts and nuts for the coolant temperature control assembly, use the ⌀ specified bolts and nuts.
- ⌘ Before mounting the coolant temperature control assembly, clean the contact surface.
⌀
- ⌘ Before mounting the coolant temperature control assembly, make sure that the thermostat for separate ⌀ cooling is not open or closed stuck due to foreign substance.

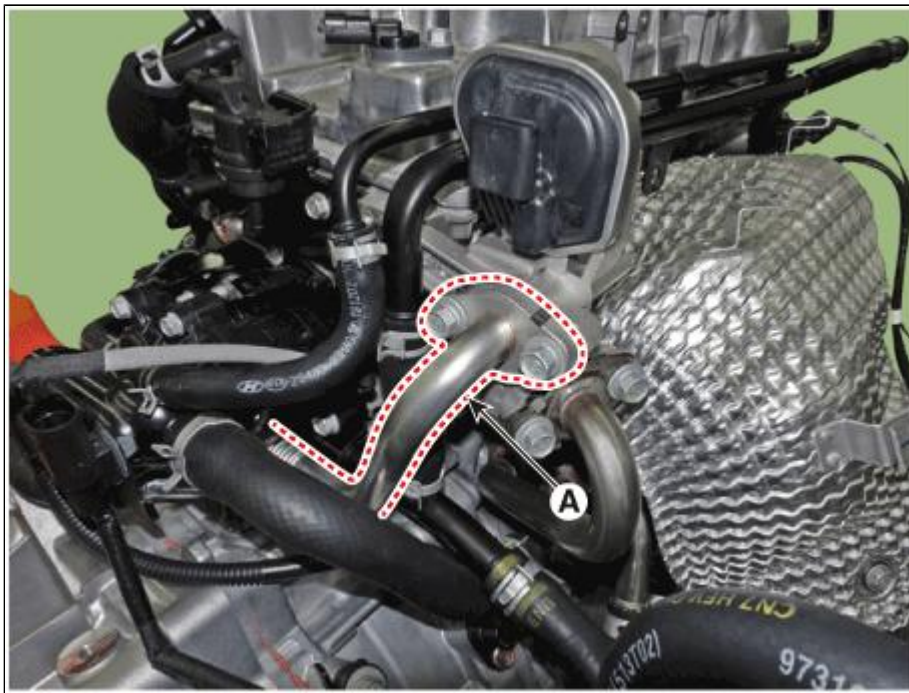
11. Install in the reverse order of removal.

Heater Pipe

1. Disconnect the battery positive terminal.
2. Loosen the drain plug, and drain the engine coolant. Remove the reservoir cap to help drain the coolant faster.
(Refer to Cooling System - "Coolant")
3. Remove the air cleaner assembly.
(Refer to Intake and Exhaust System - "Air Cleaner")
4. Remove the water temperature control assembly.
(Refer to Cooling System - "Water Temperature Control Assembly")
5. Remove the intake manifold.
(Refer to Intake and Exhaust System - "Intake Manifold")
6. Remove the electric EGR control valve cooler pipe (A).

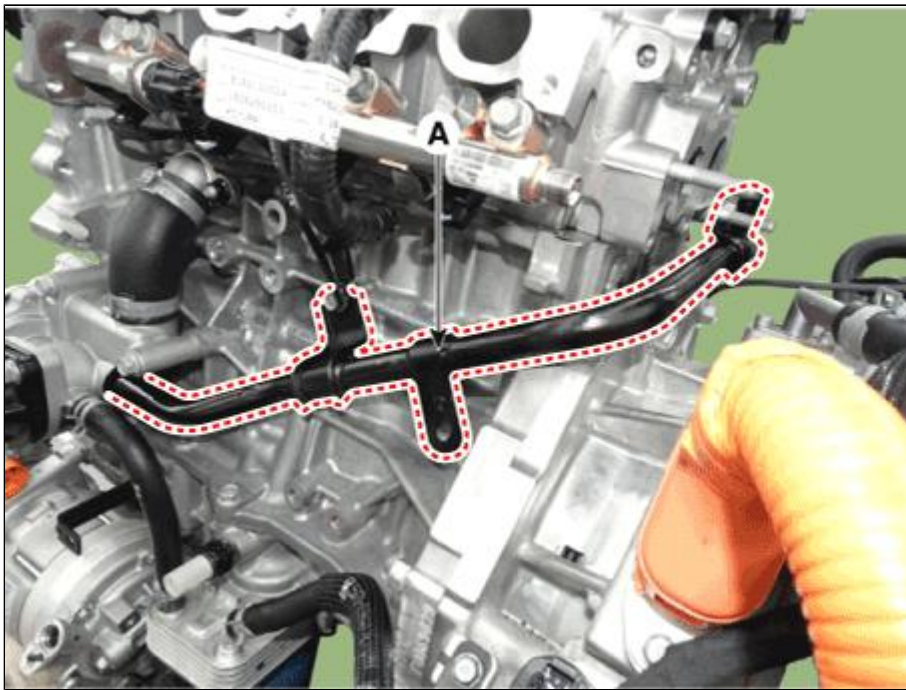
Tightening torque :

18.6 - 23.5 N.m (1.9 - 2.4 kgf.m, 13.7 - 17.4 lb-ft)



7. Remove the heater pipe (A).

Tightening torque :
18.6 - 23.5 N.m (1.9 - 2.4 kgf.m, 13.7 - 17.4 lb-ft)



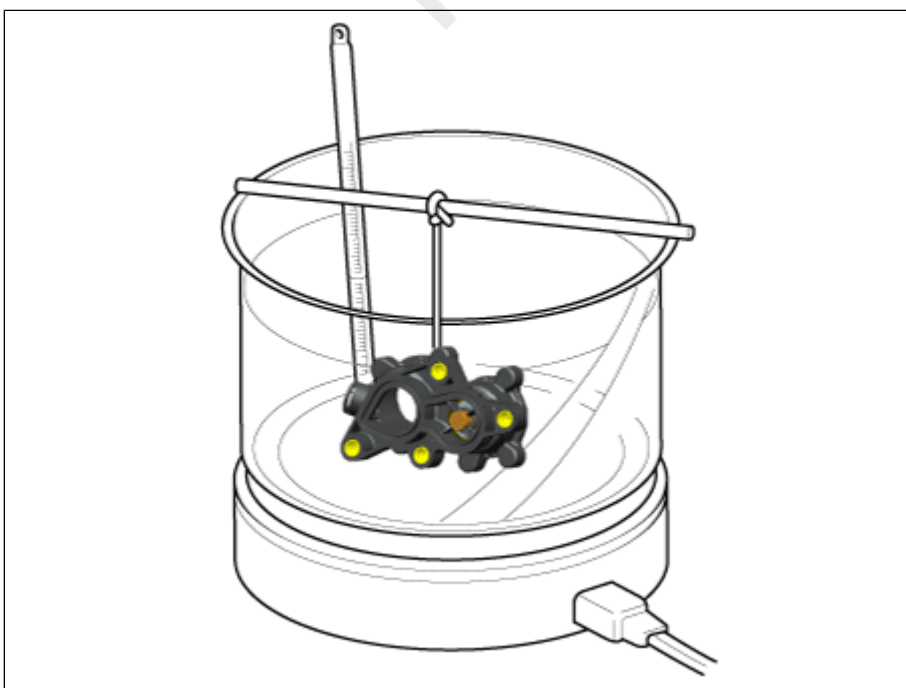
⚠ CAUTION

- â When assembling the heater pipe, make sure that there is no foreign substance in the O-ring gasket.
- ç Be sure to apply antifreeze on the O-ring gasket before inserting the heater pipe to the water pump housing.

8. Install in the reverse order of removal.
9. Fill the radiator with coolant and check for leaks.
(Refer to Cooling System - "Coolant")
10. Start engine and check for leaks.
11. Recheck the coolant level.

Inspection

1. Remove the outlet fitting, coolant temperature sensor, bracket and gasket from the coolant temperature control assembly.
2. Submerge the coolant temperature control assembly with the thermostat in the antifreeze and heat the antifreeze slowly.



3. Check the valve opening temperature.

Valve opening temperature :

105 $\pm$ 1.5 $^{\circ}$ C (221.0 $\pm$ 2.7 $^{\circ}$ F)

Full opening temperature : 120 $^{\circ}$ C (248 $^{\circ}$ F)

If the valve opening temperature is not as specified, replace the thermostat.

4. Check the valve lift.

Valve lift : 8 mm(0.3 in) or more at 120 $^{\circ}$ C (248 $^{\circ}$ F)

If the valve lift is not as specified, replace the thermostat.

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