

2012-2013 ENGINE

Cooling System - Forte/Forte Koup

COOLANT

REPAIR PROCEDURES

Replacement And Air Bleeding

WARNING: Never remove the radiator cap when the engine is hot. Serious scalding could be caused by hot fluid under high pressure escaping from the radiator.

CAUTION: When pouring engine coolant, be sure to shut the relay box lid and not to let coolant spill on the electrical parts or the paint. If any coolant spills, rinse it off immediately.

1. Make sure the engine and radiator are cool to the touch.
2. Remove radiator cap.
3. Loosen the drain plug, and drain the coolant.
4. Tighten the radiator drain plug securely.
5. After draining engine coolant in the reservoir tank, clean the tank.
6. Fill the radiator with water through the radiator cap and tighten the cap.

NOTE: To most effectively bleed the air, pour the water slowly and press on the upper/lower radiator hoses.

7. Start the engine and allow to come to normal operating temperature. Wait for the cooling fans to turn on several times. Accelerate the engine to aid in purging trapped air. Shut engine off.
8. Wait until the engine is cool.
9. Repeat steps 1 to 8 until the drained water runs clear.
10. Fill fluid mixture with coolant and water (5 : 5) (Tropical region - 4:6) slowly through the radiator cap. Push the upper/lower hoses of the radiator so as to bleed air easily.

NOTE:

- Use only genuine antifreeze/coolant.
- For best corrosion protection, the coolant concentration must be maintained year-round at 35% minimum. Coolant concentrations less than 35% may not provide sufficient protection against corrosion or freezing.
- Coolant concentrations greater than 60% will impair cooling efficiency and are not recommended.

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CAUTION:

- **Do not mix different brands of antifreeze/coolants.**
- **Do not use additional rust inhibitors or antirust products; they may not be compatible with the coolant.**

11. Start the engine and run until coolant circulates.

When the cooling fan operates and coolant circulates, refill coolant through the radiator cap.

12. Repeat step 11 until the cooling fan operates 3 ~ 5 times and bleed air sufficiently out of the cooling system.
13. Install the radiator cap and fill the reservoir tank to the "MAX" line with coolant.
14. Run the vehicle under idle until the cooling fan operates 2 ~ 3 times.
15. Stop the engine and wait coolant gets cool.
16. Repeat 10 to 15 until the coolant level doesn't fall any more, bleed air out of the cooling system.

NOTE:

It takes time to bleed out all the air in the cooling system. Refill coolant when coolant gets cool completely, recheck the coolant level in the reservoir tank for 2~3 days after replacing coolant.

Coolant capacity : 6.3 L (6.6 US qt, 5.4 Imp qt)

WATER PUMP

COMPONENTS AND COMPONENTS LOCATION

Components

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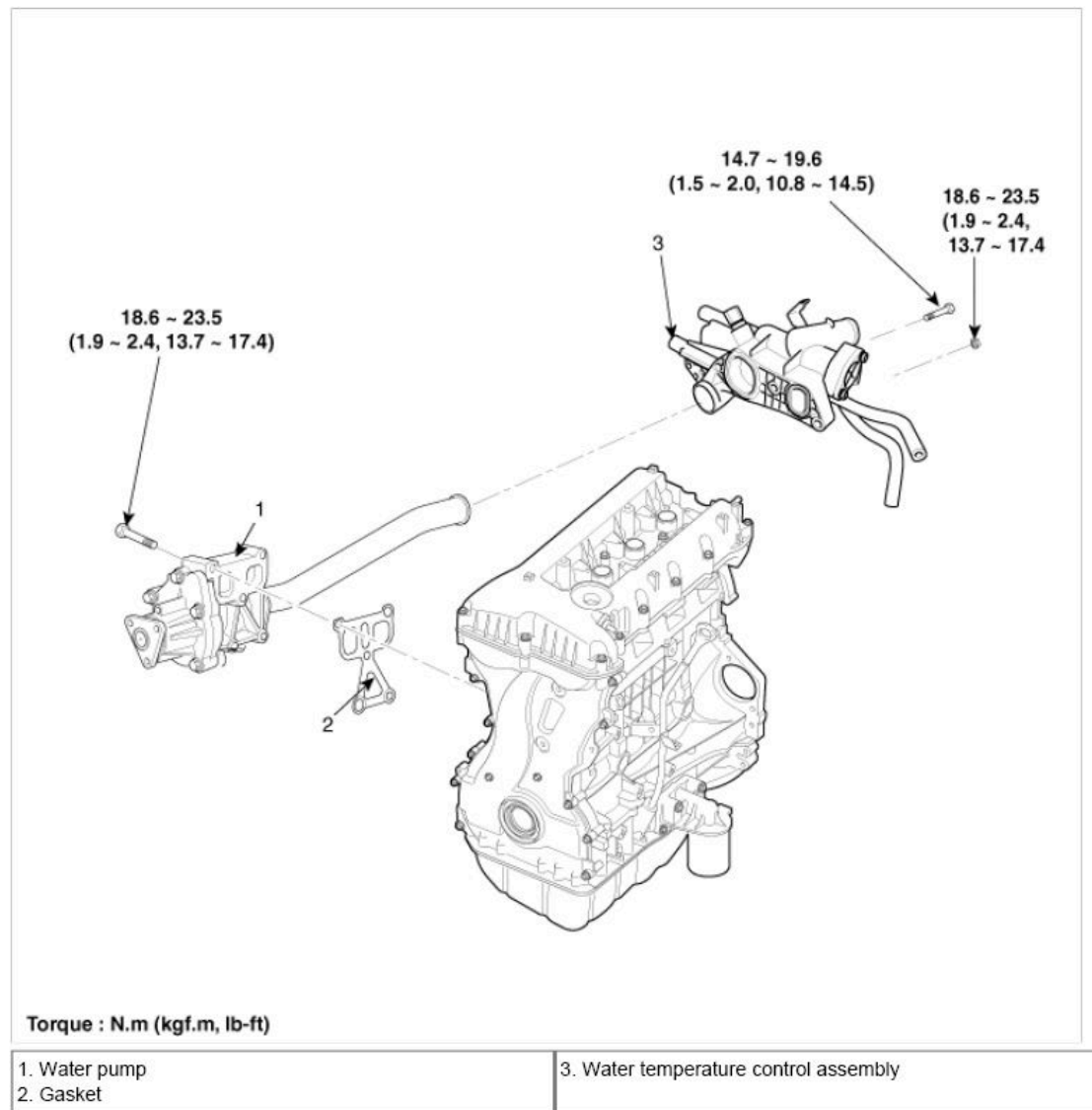


Fig. 1: Water Pump Components With Torque Specifications
Courtesy of KIA MOTORS AMERICA, INC.

REPAIR PROCEDURES

Removal

1. Loosen the drain plug (A), and then drain the engine coolant.

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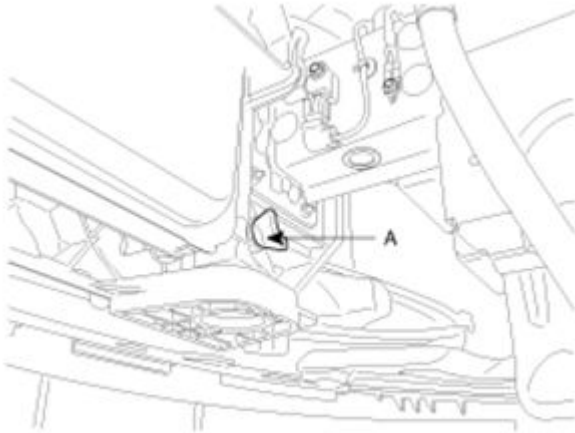


Fig. 2: Drain Plug

Courtesy of KIA MOTORS AMERICA, INC.

2. Remove the drive belt (A).

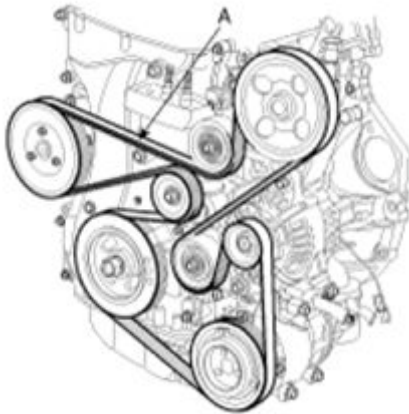


Fig. 3: Drive Belt Routing

Courtesy of KIA MOTORS AMERICA, INC.

3. Remove the water inlet pipe nut.
4. Remove the water pump (A) and the water pump gasket.

Tightening torque:

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

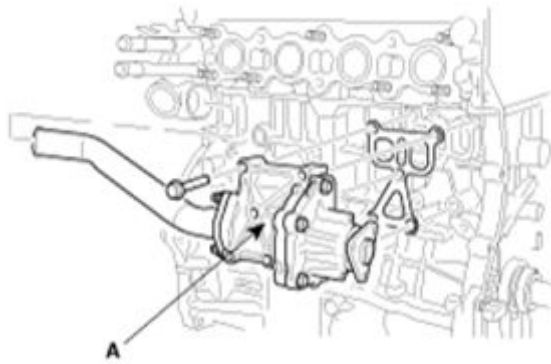


Fig. 4: Water Pump

Courtesy of KIA MOTORS AMERICA, INC.

5. Installation is reverse order of removal with a new water pump gasket.

Inspection

1. Check each part for cracks, damage or wear, and replace the coolant pump assembly if necessary.
2. Check the bearing for damage, abnormal noise and sluggish rotation, and replace the coolant pump assembly if necessary.
3. Check for coolant leakage. If coolant leaks from hole, the seal is defective. Replace the coolant pump assembly.

NOTE: A small amount of "weeping" from the bleed hole is normal.

TROUBLESHOOTING

Water Pump

WATER PUMP TROUBLESHOOTING CHART

Symptoms		Possible Causes		Remedy
Coolant leakage	<ul style="list-style-type: none">From the bleed hole of the water pump	Visually check	<ul style="list-style-type: none">Check leaks after about ten-minute warming up.	<ul style="list-style-type: none">If coolant still leaks, replace a water pump.
				<ul style="list-style-type: none">If leakage stops, reuse the water pump (Do not replace the pump with a new one).
	<ul style="list-style-type: none">From gaskets or bolts		<ul style="list-style-type: none">Check the tightening of the water pump mounting bolts.	<ul style="list-style-type: none">Retighten the mounting bolts.
			<ul style="list-style-type: none">Check damage of gaskets or	<ul style="list-style-type: none">Replace the gasket and clean dust off.