ENGINE COOLING SYSTEM

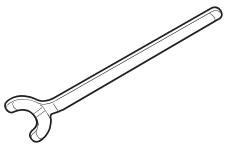
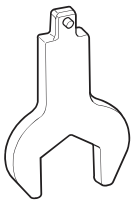
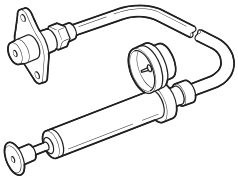
2110-01

GENERAL

1. GENERAL SPECIFICATIONS

Application		Unit	Gasoline Engine
Cooling system	Type	-	Water cooling forced circulation
Coolant	Capacity	L	11.3
Thermostat	Type	-	Wax pellet type
	Initial opening temp.	°C (°F)	82 (180)
	Fully opening temp.	°C (°F)	95 (203)
	Fully closing temp.	°C (°F)	80 (176)
	Stroke	mm	7
Cooling fan	Type	-	Electric cooling
	Blades	-	5
	Diameter	mm	320
	Low speed ON temp.	°C (°F)	95 (203)
	Low speed OFF temp.	°C (°F)	90 (194)
	High speed ON temp.	°C (°F)	105 (221)
	High speed OFF temp.	°C (°F)	100 (212)
	High speed ON temp. (By A/C pressure)	kPa (psi)	269.8 (1860)
Coolant reservoir	Pressure valve opening pressure	kPa (psi)	118 ~ 147 (17.1 ~ 21.3)
	Vacuum valve opening pressure	kPa (psi)	9.8 (1.4)
Water pump	Type	-	Turbo centrifugal
	Impeller diameter	mm	65
	Impeller blades	-	8
Radiator	Type	-	Cross-flow
	Core width	mm	701
	Core height	mm	372
	Core thickness	mm	18
	Minimum radiation capability	Kcal/h	45,000
Coolant temperature gauge	Resistance (at 50°C (122°F))	Ω	185.2
	Resistance (at 80°C (176°F))	Ω	47.4
	Resistance (at 105°C (221°F))	Ω	28.2
Engine coolant temperature sensor	Resistance (at 20°C (68°F))	K Ω	3.33 ~ 37.8
	Resistance (at 80°C (176°F))	K Ω	0.32 ~ 0.35
Anti-freeze agent	Type	-	ALUTEC-P78
	Mixture of water and good quality ethylene glycol-base anti-freeze	-	50 : 50

2. SPECIAL TOOLS AND EQUIPMENT

Name and Part Number	Name and Part Number
A9910 0060A (111 589 00 40 00) Holder 	A9910 0070A (111 589 02 01 00) Open End Wrench 
A9921 0012A (124 589 15 21 00) Leakage Te ster 	A9910 0150A (603 589 00 40 00) Fan Clutch Holder 

Modification basis	
Application basis	
Affected VIN	

3. FASTENER TIGHTENING SPECIFICATIONS

Application	Nm	Lb-Ft	Lb-In
Automatic transmission oil cooler pipe	20	15	-
Automatic transmission oil cooler pipe mounting bolt	3 ~ 7	-	27 ~ 62
Coolant drain plug	30	22	-
Cooling fan bolt	9 ~ 11	-	80 ~ 97
Cooling fan shroud bolt	3 ~ 7	-	27 ~ 62
Engine hanger bracket and coolant outlet port bolt	22.5 ~ 27.5	16.6 ~ 20.3	-
Radiator mounting bracket bolt	3 ~ 7	-	27 ~ 62
Thermostat cover bracket bolt	9 ~ 11	-	80 ~ 97
Viscous clutch mounting bolt	40.5 ~ 49.5	29.8 ~ 36.5	-
Water pump mounting bolt	22.5 ~ 27.5	16.6 ~ 20.3	-

OVERVIEW AND OPERATION PROCESS

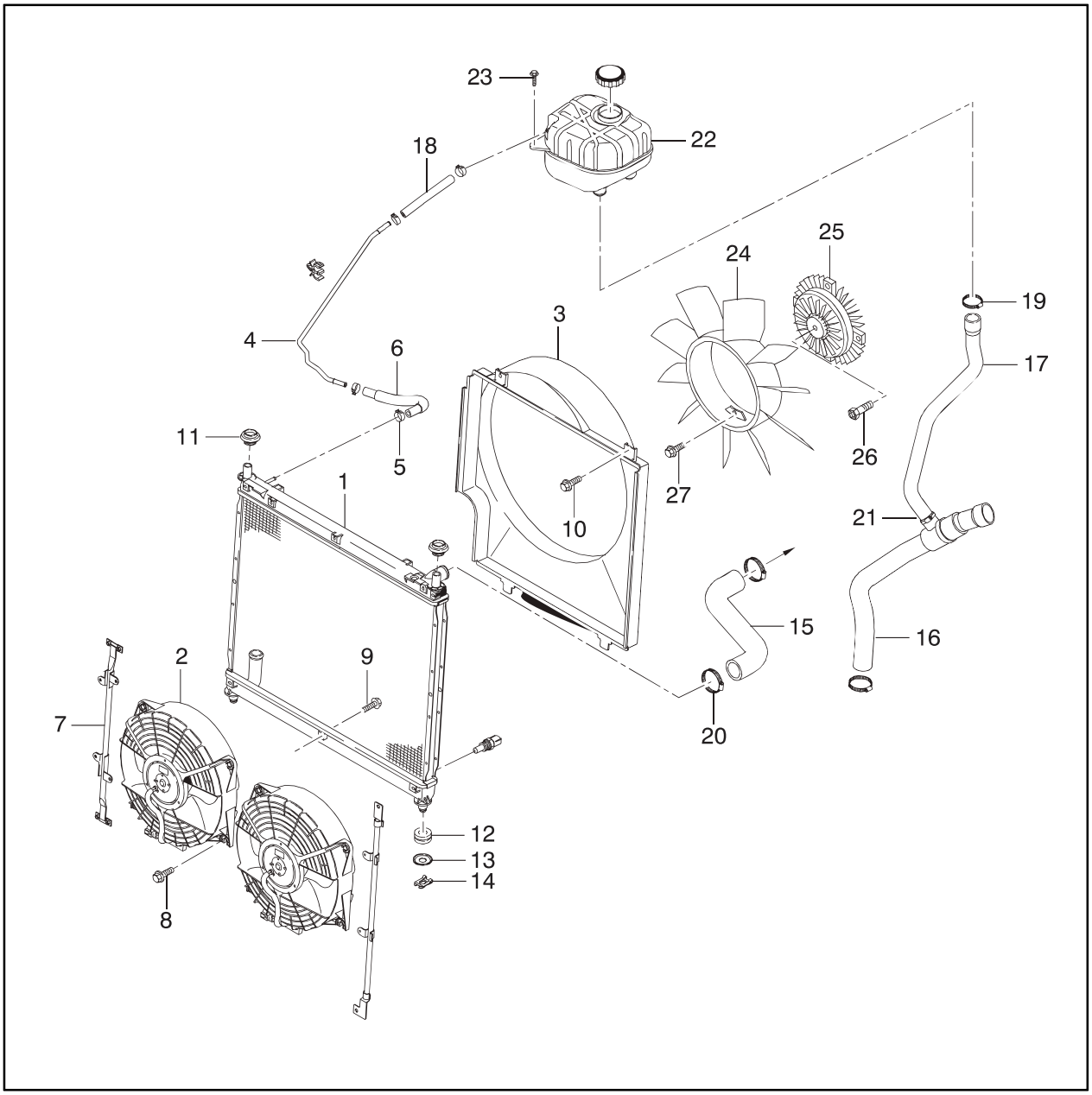
1. GENERAL DESCRIPTION

The cooling system maintains the engine temperature at an efficient level during all engine operating conditions. When the engine is cold, the cooling system cools the engine slowly or not at all. This slow cooling of the engine allows the engine to warm up quickly. The cooling system includes a radiator and recovery subsystem, cooling fans, a thermostat and housing, a water pump, and a water pump drive belt. The timing belt drives the water pump. All components must function properly for the cooling system to operation. The water pump draws the coolant from the radiator.

The coolant then circulates through water jackets in the engine block, the intake manifold, and the cylinder head. When the coolant reaches the operating temperature of the thermostat, the thermostat opens. The coolant then goes back to the radiator where it cools. This system directs some coolant through the hoses to the heat core. This provides for heating and defrosting. The coolant reservoir is connected to the radiator to recover the coolant displaced by expansion from the high temperatures. The coolant reservoir maintains the correct coolant level. The cooling system for this vehicle has no radiator cap or filler neck. The coolant is added to the cooling system through the coolant reservoir.

Modification basis	
Application basis	
Affected VIN	

2. COMPONENT LOCATOR



1. Radiator
2. Electric fan
3. Shroud
4. Deaeration tube
5. Clamp
6. Deaeration hose (radiator)
7. Electric fan mounting bracket
8. Bolt (M6, 8 pieces)
9. Bolt (M6, 4 pieces)
10. Bolt (M6, 4 pieces)
11. Upper radiator insulator
12. Lower radiator insulator
13. Plate
14. Clip
15. Inlet hose
16. Outlet hose
17. 3 way hose
18. Deaeration hose (reserver tank)
19. Clamp
20. Clamp
21. Make up hose holder
22. Reserver tank
23. Bolt (M6, 2 piece)
24. Cooling fan
25. Viscous clutch
26. Bolt (M6, 1 piece)
27. Bolt (M6, 3 piece)

Modification basis	
Application basis	
Affected VIN	