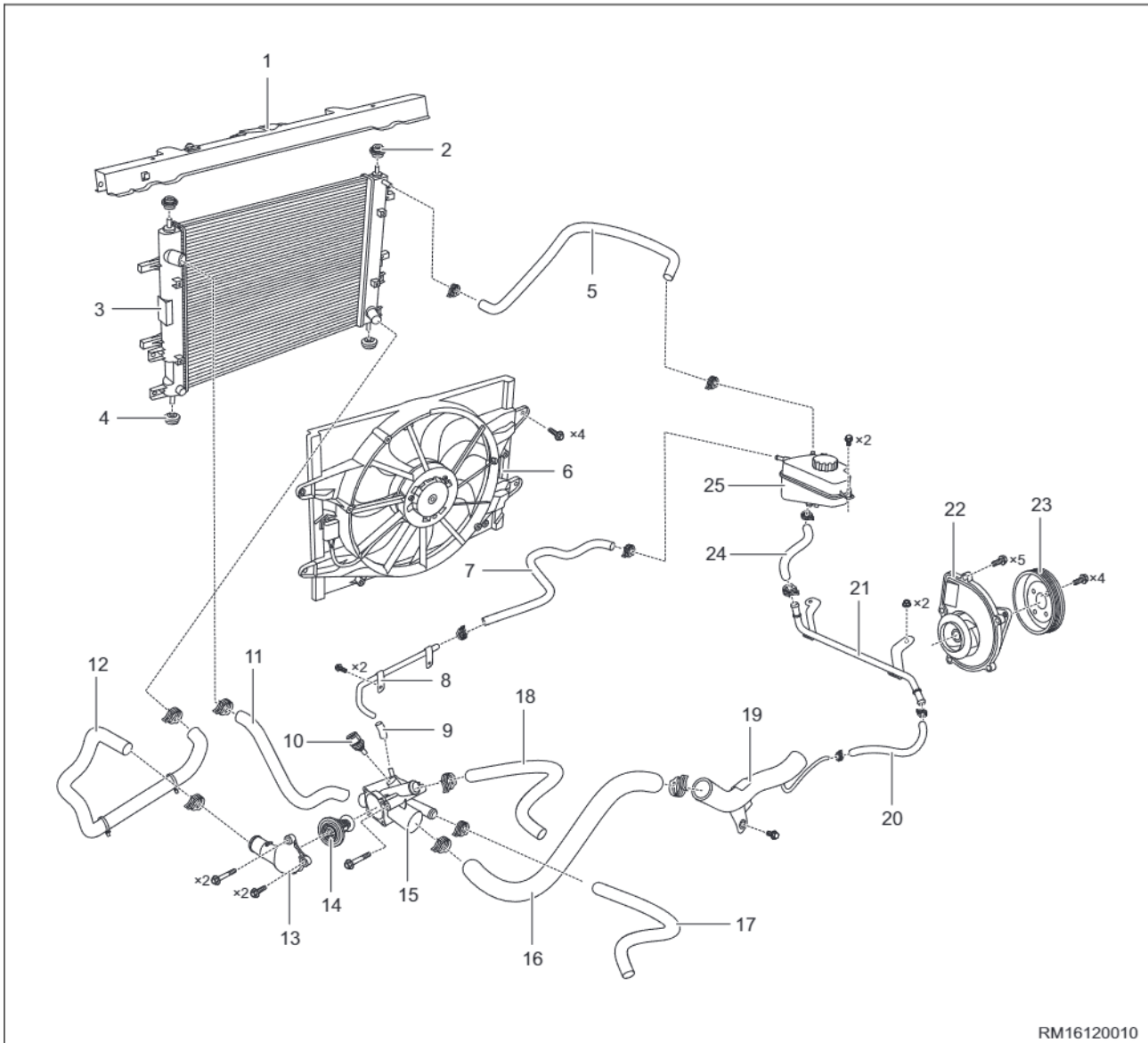


SQRE4G16 COOLING SYSTEM

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GENERAL INFORMATION

Description



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1 - Tank Upper Crossmember Assembly	2 - Rubber Bushing
3 - Radiator Assembly	4 - Rubber Cushion
5 - Radiator Discharge Hose	6 - Cooling Fan Assembly
7 - Engine Discharge Hose	8 - Discharge Steel Pipe
9 - Discharge Hose	10 - Coolant Temperature Sensor
11 - Engine Outlet Pipe	12 - Engine Inlet Pipe
13 - Thermostat Housing	14 - Thermostat
15 - Thermostat Seat	16 - Small Circulation Hose
17 - Heater Inlet Pipe	18 - Heater Outlet Pipe
19 - Cooling Water Pipe I Assembly	20 - Expansion Tank - Water Pump Pipe III
21 - Expansion Tank - Water Pump Pipe II	22 - Water Pump Assembly
23 - Water Pump Pulley	24 - Expansion Tank - Water Pump Pipe I
25 - Expansion Tank	

Engine cooling system adjusts engine operating temperature by the flow of coolant and makes engine operate normally under various operating conditions.

Engine cooling system is a forced circulation system, which supplies circulation pressure for cooling system by water pump and forces coolant to circulate in the engine cylinder block, and distributes excessive heat to radiator by the flow of coolant, and radiates it to the air by cooling fan. Also, engine cooling system provides heat to the heater core in cabin to improve driving comfort.

Specifications

Torque Specifications

Description	Torque (N·m)
Hood Lock Assembly Fixing Bolt	9 ± 1
Tank Upper Crossmember Assembly Fixing Bolt	7 ± 1
Expansion Tank Fixing Bolt	7 ± 1
Thermostat Housing Fixing Bolt	$8 + 3$
Vacuum Booster Pipe Fixing Bolt	$8 + 3$
Thermostat Seat Fixing Bolt	$8 + 3$
Coolant Temperature Sensor	14 ± 1
Cooling Fan Relay Box Fixing Bolt	7 ± 1
Cooling Fan Assembly Fixing Bolt	7 ± 1
Transmission Cooling Pipe Fixing Bolt	7 ± 1
Coupling Bolt Between Radiator Assembly and Condenser	7 ± 1
Transmission Oil Pipe Hollow Bolt	32 ± 3
Water Pump Pulley Fixing Bolt	$20 + 5$
Water Pump Assembly Fixing Bolt	$8 + 3$

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Coolant Capacity

Item	Capacity (L)
Cooling System	8

Coolant Concentration

G11 Additive	Soft Water
50%	50%

Coolant Freezing Point

Item	Freezing Point Value (°C)
Coolant	-35

Cooling System Test Pressure

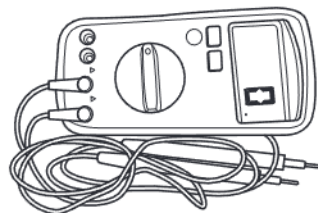
Item	Test Pressure (bar)
Cooling System (Test Pressure)	1.3 ± 0.2



Tools

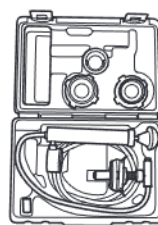
General Tools

Digital Multimeter



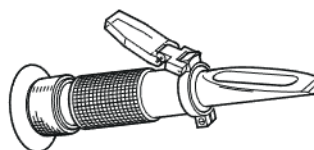
RCH0000002

Cooling System Pressure Tester



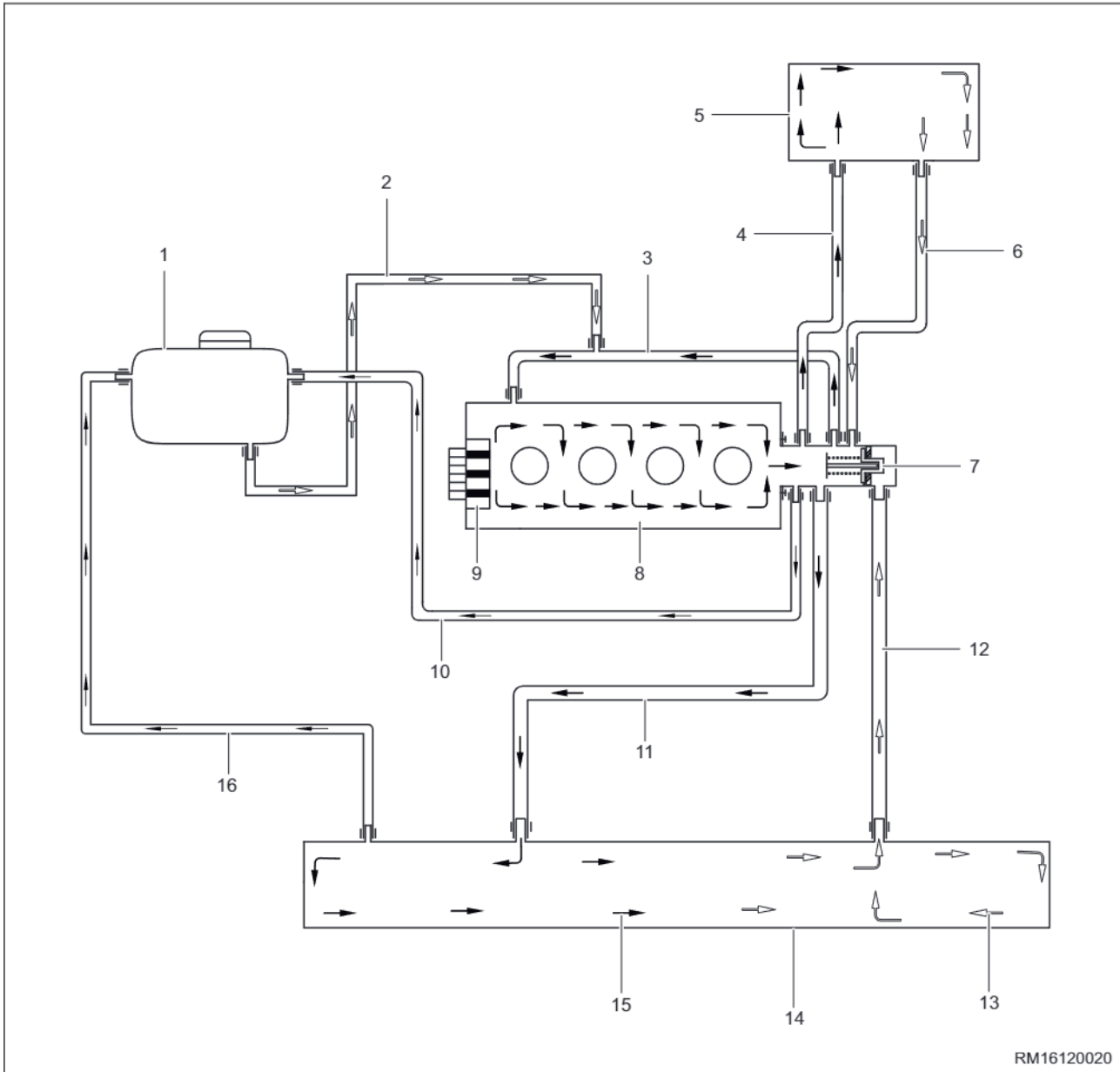
RCH0000055

Freezing Point Tester



RCH0000007

Cooling System Operation Flowchart



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1 - Expansion Tank	2 - Expansion Tank Outlet Pipe
3 - Small Circulation Water Pipe	4 - Heater Inlet Pipe
5 - Heater Core	6 - Heater Outlet Pipe
7 - Thermostat	8 - Cylinder Block
9 - Water Pump	10 - Engine Discharge Pipe
11 - Engine Outlet Pipe	12 - Engine Inlet Pipe
13 - Hollow Arrow (Indicates Low Temperature Coolant)	14 - Radiator
15 - Black Solid Arrow (Indicates High Temperature Coolant)	16 - Radiator Discharge Hose

Small circulation: when coolant temperature is below $82 \pm 2^{\circ}\text{C}$, thermostat closes. Coolant only circulates inside the cylinder block, and warms up other engine parts that need heat. Water pump assembly circulates engine coolant through cylinder block, electronic throttle assembly, oil cooler assembly and cylinder head. The coolant does not radiate heat through radiator.

Large circulation: when coolant temperature is higher than $103 \pm 1^{\circ}\text{C}$, thermostat opens fully, and all coolant, which flows out of cylinder block, enters radiator where coolant heat is lost. The heat-radiated coolant returns to cylinder block for circulation by water pump. Due to the heat lost in radiator, engine coolant temperature decreases quickly to prevent engine from overheating.

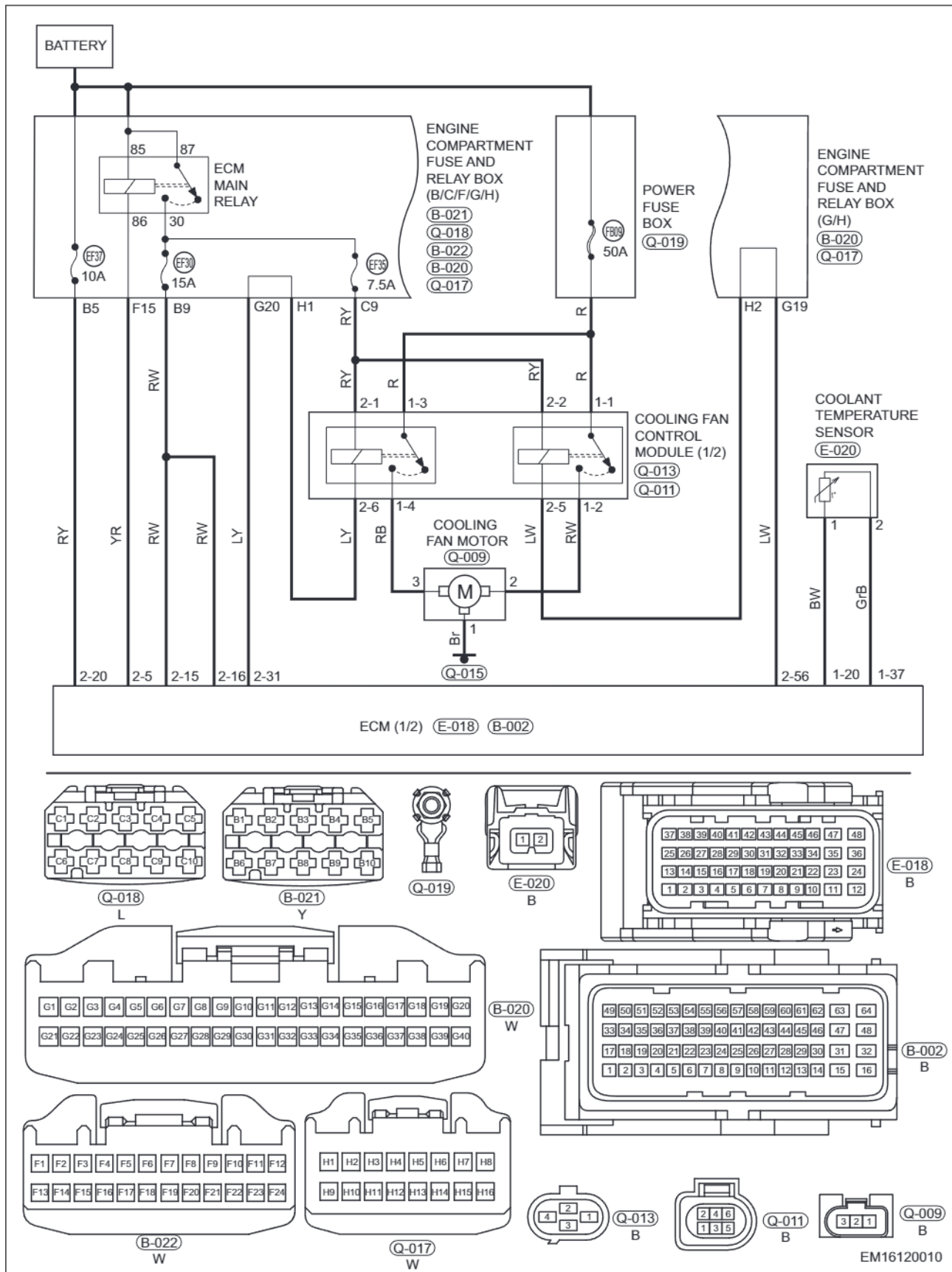
For CVT model, coolant will enter the side passage of radiator assembly under large circulation, so that the temperature of transmission oil in transmission decreases.

When engine operates properly, the cooling fan operates under the following conditions:

- If engine coolant temperature sensor malfunctions, cooling fan keeps rotating when engine operates properly.
- When A/C compressor is operating, the cooling fan operates at low speed.
- When A/C compressor is operating and receives request from A/C pressure switch, the cooling fan operates at high speed.
- When coolant temperature is higher than 96°C , the cooling fan starts to operate at low speed.
- When coolant temperature is higher than 102°C , the cooling fan starts to operate at high speed.
- When coolant temperature is below 99°C , the cooling fan stops operating at high speed.
- When coolant temperature is below 93°C , the cooling fan stops operating at low speed.

Circuit Diagram

Cooling System



DIAGNOSIS & TESTING

Problem Symptoms Table

HINT:

Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair or adjust faulty components, or replace as necessary.

Symptom	Suspected Area	See page
Insufficient coolant	Coolant pipe (deteriorated and leaked)	-
	Expansion tank (leaked)	12-18
	Radiator (leaked)	12-28
	Heater core assembly (leaked)	31-98
	Thermostat (improperly sealed)	12-20
	Thermostat seat (cracked and damaged)	12-22
	Water pump (bearing loose and leaked)	12-30
	Engine cylinder head gasket (damaged)	7-54
	Engine cylinder head (water jacket leaked)	7-51
	Engine cylinder block (water jacket leaked)	7-74
Engine overheating	Low coolant level	12-14
	Air resistance exists in pipe	-
	Expansion tank cap (damaged)	-
	Cooling fan relay box	12-24
	Cooling fan	12-25
	Radiator	12-28
	Thermostat	12-20
	Leakage in engine	-
Unable to reach normal engine temperature	Cooling fan relay box	12-24
	Cooling fan (constantly operating)	12-25
	Thermostat	12-20
Cooling fan does not operate or abnormal air speed	Cooling fan relay box	12-24
	Cooling fan	12-25
	Wire harness	-
	Engine Control Module (ECM) failure	06-281

Cooling System Leakage Test

WARNING

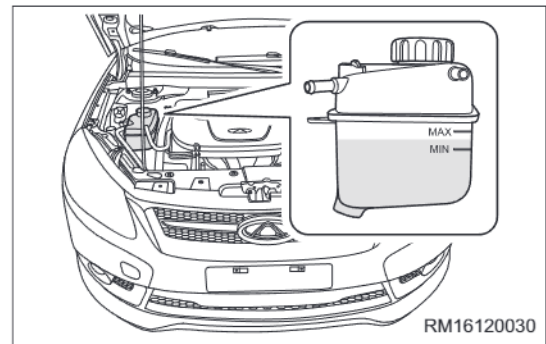
- Always make sure engine is cold before operating cooling system. Never open expansion tank cap or remove drain cock plug, when engine is operating or cooling system overheats. The overheated engine coolant and steam with high-pressure may flow out and cause serious personal injury.

CAUTION

- When testing cooling system, please pressurize the system to specified pressure. Otherwise, it may damage system components.
- Before testing cooling system, do not perform operation until coolant temperature drops to normal level. Otherwise, it may cause scald.

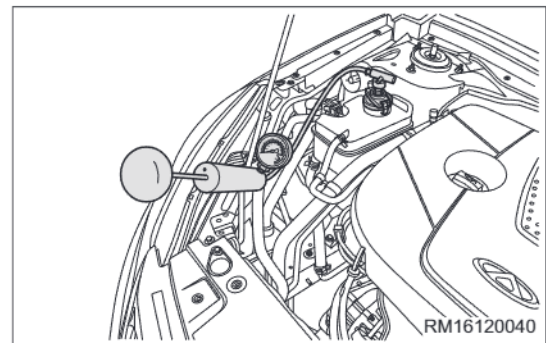
Test Procedures

- Turn off all electrical equipment and the ignition switch.
- Check if coolant level is between "MAX" and "MIN" lines.
If coolant level is below "MIN" line, add coolant.



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- Connect the cooling system pressure tester to coolant pressure release cap opening (expansion tank cap opening) and tighten it slowly.



CAUTION

- Make sure there is no leakage in connecting part of coolant system pressure tester, in order to avoid pressure leakage during test.

- Pressurize cooling system to 1.3 ± 0.2 bar with the cooling system pressure tester, and then observe the pressure changes. If system pressure does not drop within 2 minutes, it indicates there is no leakage in system. If pressure changes greatly, it indicates that there is a leakage in system; find the leaking area and perform troubleshooting.

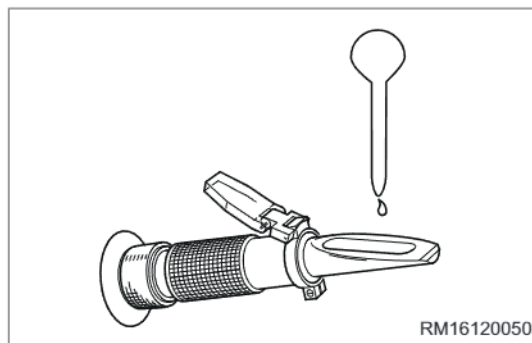
Coolant Concentration Test

CAUTION

- DO NOT mix different colors or types of coolant.
- Please select coolant which is suitable for local climate in different areas.
- Please read measured value at the scale line. In order to distinguish the scale line more clearly, drip a drop of water on the glass of freezing point tester with a pipette, then the scale line can be clearly distinguished via a "waterline".

Test Procedures

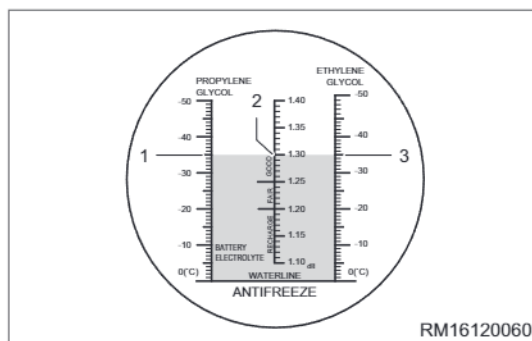
1. As shown in illustration, drip a drop of coolant on the glass of freezing point tester with a pipette, and then observe freezing point value of coolant.



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2. As shown in illustration, observe scale 3 of freezing point tester to read ethylene glycol coolant freezing point value. The freezing point value must be kept at -35°C or lower.

If freezing point is beyond the specified value, replace the coolant.



HINT:

Scale 1 is used to measure the freezing point value of propylene glycol coolant, and scale 2 is used to measure the battery electrolyte concentration.

ON-VEHICLE SERVICE

Coolant Replacement

Coolant Draining

WARNING

- Always make sure engine is cold before operating cooling system. Never open expansion tank cap or remove drain cock plug, when engine is operating or cooling system overheats. The overheated engine coolant and steam with high-pressure may flow out and cause serious personal injury.
- If your body contacts coolant accidentally, clean it with water immediately. If it is serious, please go to hospital.

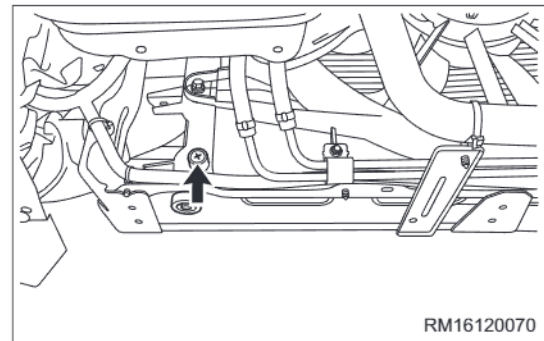
CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the expansion tank cap when engine temperature and radiator temperature are low.
4. Remove the engine lower protector assembly ([See page 49-22](#)).
5. Put a coolant collector under the vehicle, rotate the radiator drain cock plug (arrow) and drain the coolant in radiator and expansion tank.

HINT:

Put a drainage device or similar tool at the radiator outlet, so that coolant can flow into the collector smoothly.



6. After coolant stops flowing, retighten the radiator drain cock plug.

CAUTION

- Tighten drain cock plug to prevent leakage.

ENVIRONMENTAL PROTECTION

- Wasted coolant should be handled by the specialized department according to local laws and regulations. Never discard it at will.

Coolant Adding

Only use coolant that meets Chery specifications.

Coolant Capacity

Item	Capacity (L)
Cooling System	8

Coolant Concentration

G11 Additive	Soft Water
50%	50%

WARNING

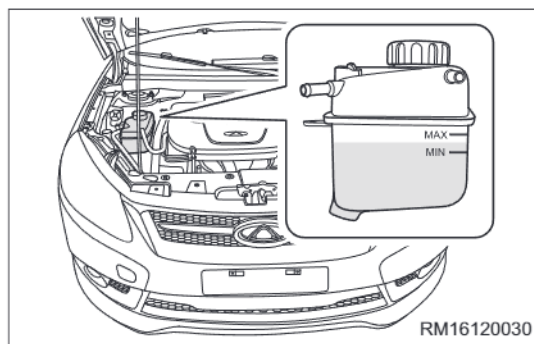
- If it is necessary to add coolant when engine is hot, loosen expansion tank cap slightly first to release internal pressure and loosen the cap completely after waiting for a while, and then add coolant.
- If your body contacts coolant accidentally, clean it with water immediately. If it is serious, please go to hospital.

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CAUTION

- DO NOT use inferior coolant.
- DO NOT mix different colors or types of coolant.
- Be careful when adding coolant; avoid spilling coolant on any area of engine.

1. Open the expansion tank cap and add coolant until coolant level reaches the "MAX" line.



2. Tighten the expansion tank cap, start and run the engine. Maintain engine speed between 2000 and 2500 rpm to warm up the engine until cooling fan operates.

 CAUTION

- If there is no coolant in expansion tank after engine just starts, perform the followings:
 - Stop engine;
 - Wait until coolant cools down;
 - Add coolant to "MAX" line on expansion tank.
 - Run the engine at 2500 rpm until coolant level becomes stable.
3. Stop the engine and wait until coolant temperature drops to the ambient temperature. Check that coolant level is between "MAX" and "MIN" lines. If coolant level is below the "MIN" line, repeat all the above procedures. If coolant level is above the "MAX" line, drain coolant until the level is between "MAX" and "MIN" lines.

Tank Upper Crossmember Assembly

Removal

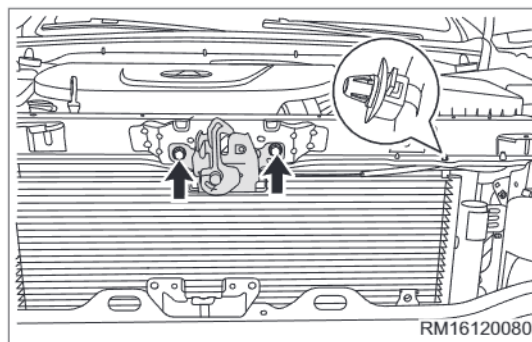
⚠ WARNING

- Perform removal procedures with engine compartment at low temperature, after cooling fan stops completely; otherwise rotating cooling fan or hot components of engine compartment may cause serious injury.

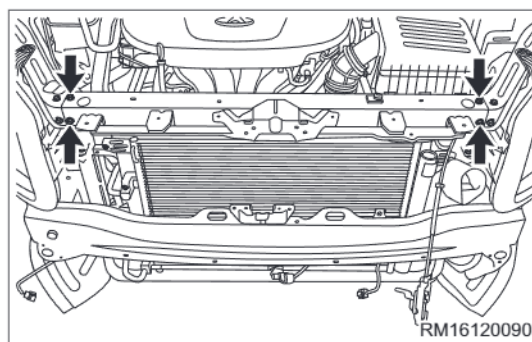
👁 CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

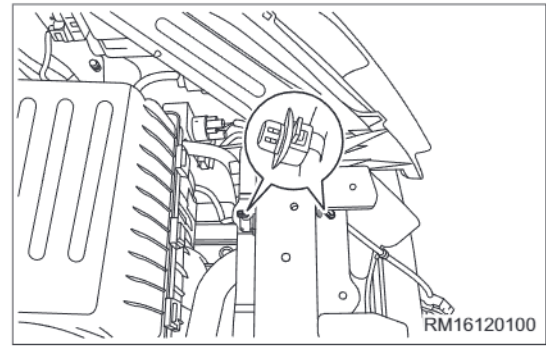
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the front bumper assembly (See page 49-8).
4. Remove the tank upper crossmember assembly.
 - a. Remove 2 fixing bolts (arrow) from hood lock assembly.
(Tightening torque: $9 \pm 1 \text{ N}\cdot\text{m}$)
 - b. Remove the hood lock cable fixing clips from tank upper crossmember.



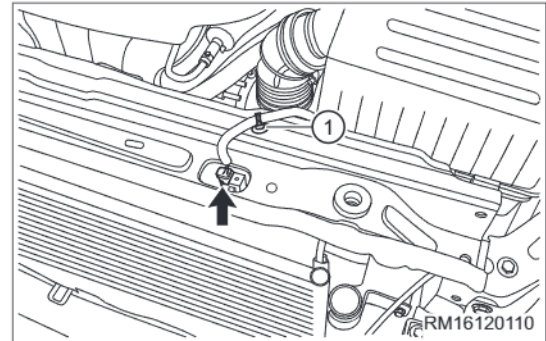
- c. Remove 4 fixing bolts (arrow) from tank upper crossmember assembly.
(Tightening torque: $7 \pm 1 \text{ N}\cdot\text{m}$)



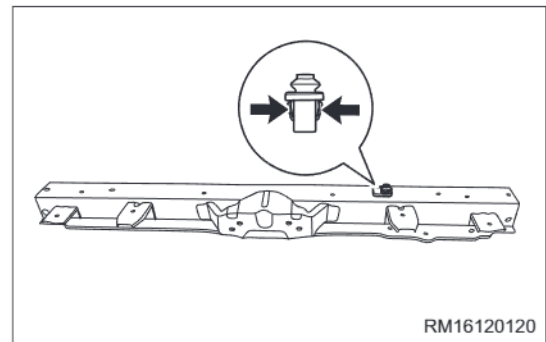
- d. Remove the engine compartment contact switch fixing clips from tank upper crossmember.



- e. Turn over the tank upper crossmember, and disconnect the engine compartment contact switch connector (arrow).
- f. Remove the engine compartment contact switch fixing clip (1) from tank upper crossmember, and move away the engine compartment contact switch wire harness.



- g. Remove the tank upper crossmember assembly.
5. Remove the engine compartment contact switch from tank upper crossmember in direction of arrow as shown in illustration.



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Installation

Installation is in the reverse order of removal.

Expansion Tank

Removal

⚠ WARNING

- Always make sure engine is cold before operating cooling system. Never open expansion tank cap or remove drain cock plug, when engine is operating or cooling system overheats. The overheated engine coolant and steam with high-pressure may flow out and cause serious personal injury.
- If your body contacts coolant accidentally, clean it with water immediately. If it is serious, please go to hospital.

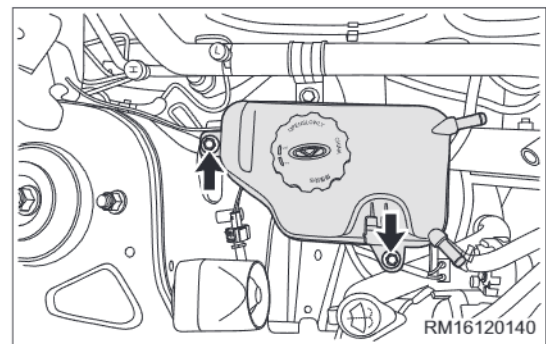
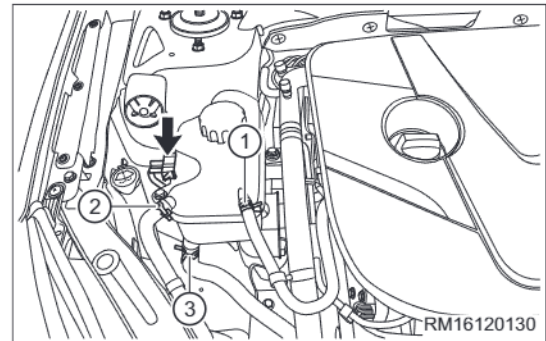
👁 CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Drain the coolant ([See page 12-13](#)).
4. Remove the expansion tank.

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- a. Disconnect the coolant temperature sensor connector (arrow).
- b. Loosen the elastic clamp (1) and disconnect the connection between expansion tank and engine discharge hose.
- c. Loosen the elastic clamp (2) and disconnect the connection between expansion tank and radiator discharge hose.
- d. Loosen the elastic clamp (3) and disconnect the connection between expansion tank and expansion tank outlet hose.
- e. Remove 2 fixing bolts (arrow) from expansion tank.
(Tightening torque: 7 ± 1 N·m)



- f. Remove the expansion tank from expansion tank bracket.

Installation

Installation is in the reverse order of removal.

CAUTION

- Check that coolant has been added to the specified level after installation.

Thermostat

Removal

⚠ WARNING

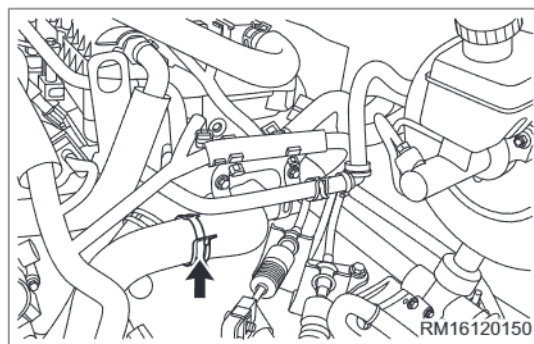
- Always make sure engine is cold before operating cooling system. Never open expansion tank cap or remove drain cock plug, when engine is operating or cooling system overheats. The overheated engine coolant and steam with high-pressure may flow out and cause serious personal injury.
- If your body contacts coolant accidentally, clean it with water immediately. If it is serious, please go to hospital.

👁 CAUTION

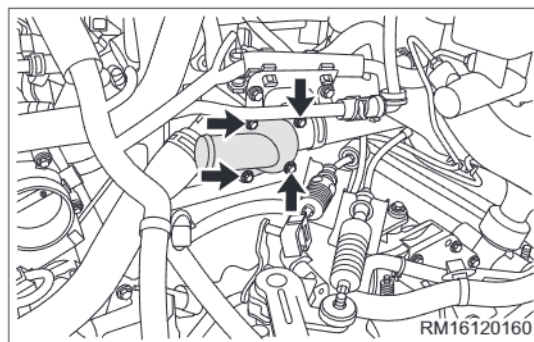
- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

12

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover.
4. Remove the battery (See page 16-7).
5. Remove the battery tray bracket (See page 16-9).
6. Drain the coolant (See page 12-13).
7. Remove the thermostat.
 - a. Loosen the elastic clamp (arrow) and disconnect the connection between engine inlet hose and thermostat housing.



- b. Remove 4 fixing bolts (arrow) from thermostat housing.
(Tightening torque: 8 + 3 N·m)



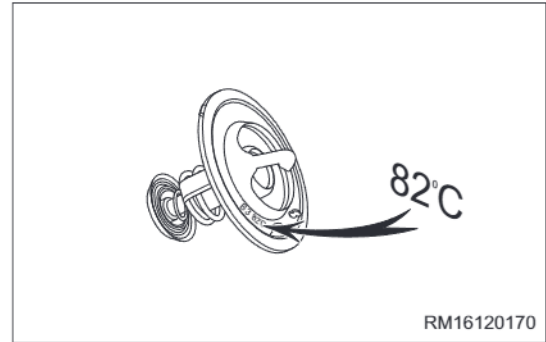
- c. Remove the thermostat housing and remove the thermostat from thermostat seat.

Inspection

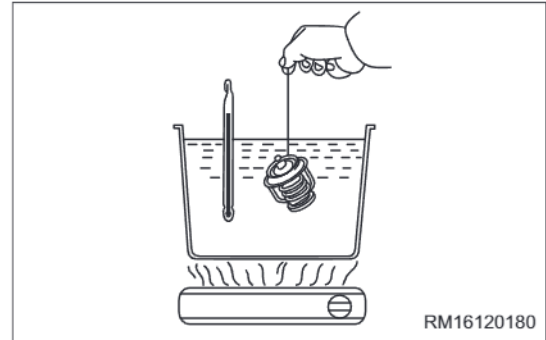
1. Check the opening temperature and maximum lift of thermostat.

HINT:

Valve opening temperature is engraved in the thermostat.



- a. Soak the thermostat in water, heat water gradually and perform inspection.
 - Opening temperature of thermostat is 82°C.
 - Maximum lift of thermostat is no less than 8 mm.
 - Temperature is 97°C when thermostat opens fully.



- b. Check that thermostat closes when thermostat temperature is low (5°C lower than opening temperature).
- c. If above conditions are not met, replace the thermostat.

12

Installation

Installation is in the reverse order of removal.

CAUTION

- Check that coolant has been added to the specified level after installation.

Thermostat Seat

Removal

⚠ WARNING

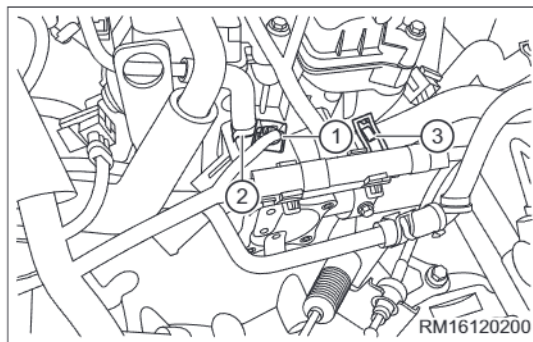
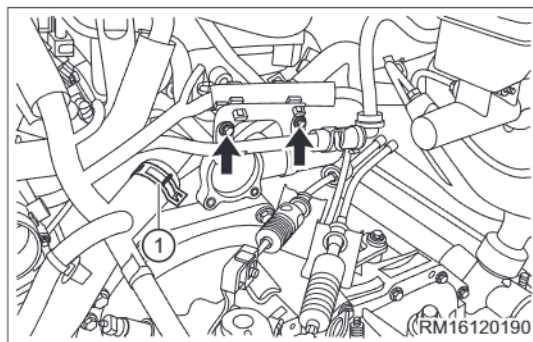
- Always make sure engine is cold before operating cooling system. Never open expansion tank cap or remove drain cock plug, when engine is operating or cooling system overheats. The overheated engine coolant and steam with high-pressure may flow out and cause serious personal injury.
- If your body contacts coolant accidentally, clean it with water immediately. If it is serious, please go to hospital.

👁 CAUTION

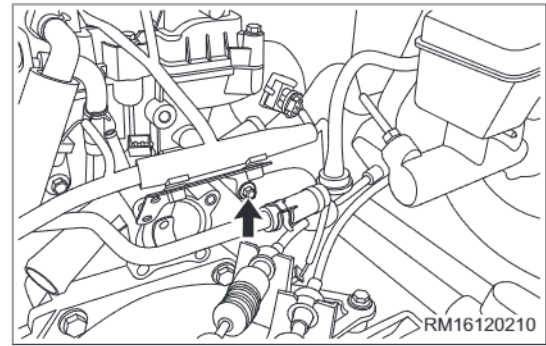
- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

12

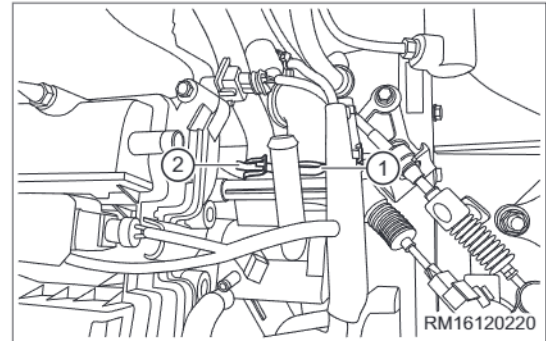
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover.
4. Remove the battery ([See page 16-7](#)).
5. Remove the battery tray ([See page 16-9](#)).
6. Drain the coolant ([See page 12-13](#)).
7. Remove the thermostat ([See page 12-20](#)).
8. Remove the thermostat seat.
 - a. Loosen the elastic clamp (1) and disconnect the connection between engine outlet hose and thermostat seat.
 - b. Remove 2 fixing bolts (arrow) from vacuum booster pipe.
(Tightening torque: $8 + 3 \text{ N}\cdot\text{m}$)
 - c. Disconnect the coolant temperature sensor connector (1).
 - d. Loosen the elastic clamp (2) and disconnect the connection between engine discharge hose and thermostat seat.
 - e. Loosen the elastic clamp (3) and disconnect the connection between heater outlet hose and thermostat seat.



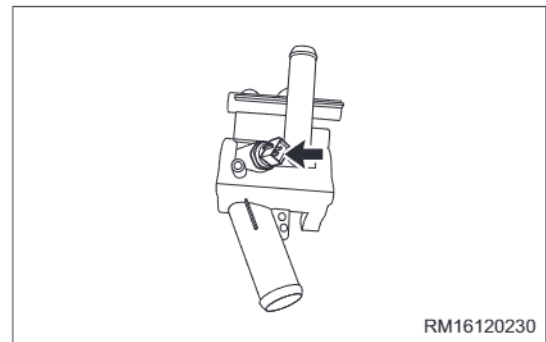
- f. Remove the fixing bolt (arrow) from thermostat seat.
(Tightening torque: $8 + 3 \text{ N}\cdot\text{m}$)



- g. Loosen the hose clamp (1) and disconnect the connection between small circulation outlet hose and thermostat seat.
h. Loosen the hose clamp (2) and disconnect the connection between heater inlet hose and thermostat seat.



- i. Remove the thermostat seat and thermostat seat O-ring.
9. Remove the coolant temperature sensor (arrow) from thermostat seat.
(Tightening torque: $14 \pm 1 \text{ N}\cdot\text{m}$)



12

Installation

Installation is in the reverse order of removal.

CAUTION

- Check that coolant has been added to the specified level after installation.
- Replace thermostat seat O-ring with a new one during installation, and removed thermostat seat O-ring cannot be reused.

Cooling Fan Relay Box

Removal

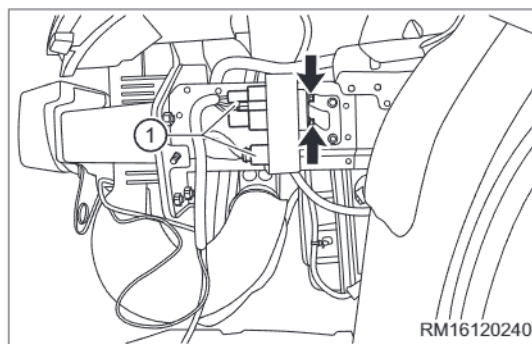
WARNING

- Perform removal procedures with engine compartment at low temperature, after cooling fan stops completely; otherwise rotating cooling fan or hot components of engine compartment may cause serious injury.

CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Check the cooling fan relay box.
 - a. Disconnect the cooling fan relay box connectors (1).
 - b. Remove 2 fixing bolts (arrow) from cooling fan relay box.
(Tightening torque: $7 \pm 1 \text{ N}\cdot\text{m}$)



- c. Remove the cooling fan relay box from cooling fan relay box bracket.

Installation

Installation is in the reverse order of removal.

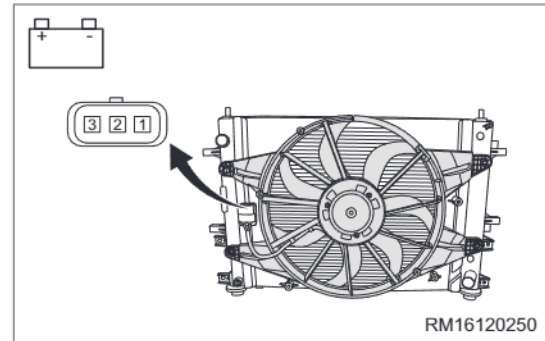
Cooling Fan Assembly

On-vehicle Inspection

1. Apply battery voltage to the specified connector terminals of cooling fan respectively according to the table below, and check that cooling fan operates smoothly when applying battery voltage.

Multimeter Condition	Condition	Specified Condition
Battery positive (+) - Terminal 2 Battery negative (-) - Terminal 1	Always	Operates smoothly
Battery positive (+) - Terminal 3 Battery negative (-) - Terminal 1	Always	Operates smoothly

If inspection result is not as specified, replace the cooling fan assembly.



Removal

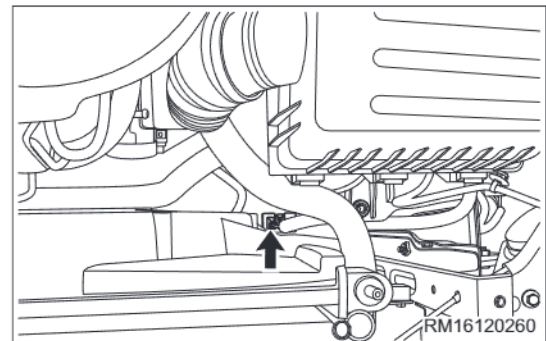
⚠ WARNING

- Perform removal procedures with engine compartment at low temperature, after cooling fan stops completely; otherwise rotating cooling fan or hot components of engine compartment may cause serious injury.

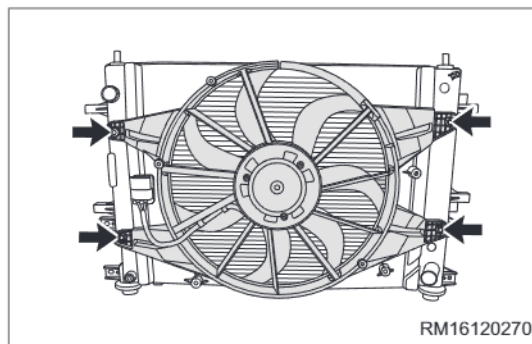
👁 CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

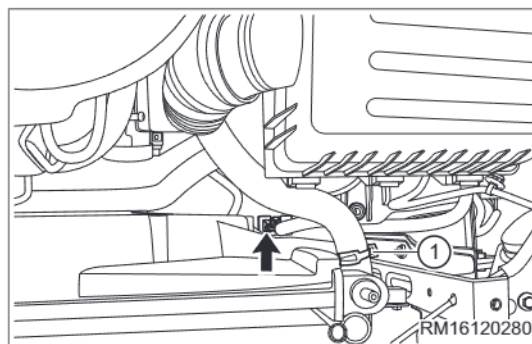
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the cooling fan assembly (for MT model).
 - a. Disconnect the cooling fan connector (arrow).



- b. Remove 4 fixing bolts (arrow) from cooling fan assembly.
(Tightening torque: 7 ± 1 N·m)

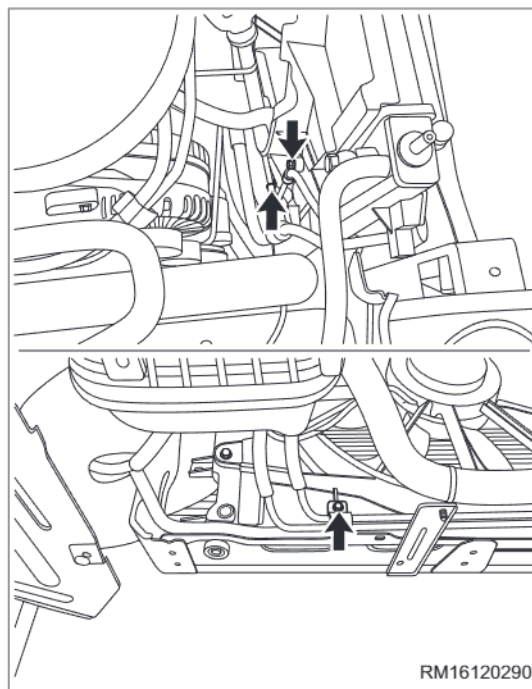


- c. Remove the cooling fan assembly from radiator assembly.
4. Remove the cooling fan assembly (for CVT model).
 - a. Drain the coolant (See page 12-13).
 - b. Loosen the elastic clamp (1) and disconnect the connection between engine outlet hose and radiator.
 - c. Disconnect the cooling fan connector (arrow).

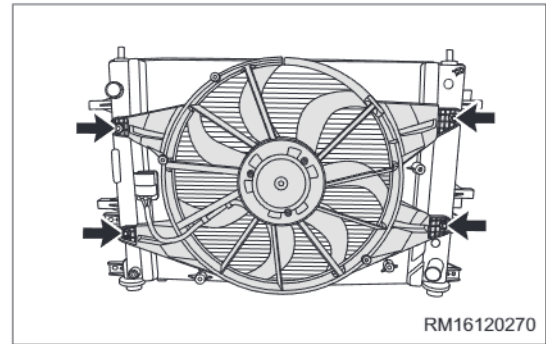


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- d. Remove 3 fixing bolts (arrow) of transmission cooling pipe from cooling fan assembly.
(Tightening torque: 7 ± 1 N·m)



- e. Remove 4 fixing bolts (arrow) from cooling fan assembly.
(Tightening torque: 7 ± 1 N·m)



- f. Remove the cooling fan assembly from radiator assembly.

Installation

Installation is in the reverse order of removal.

CAUTION

- Check that coolant has been added to the specified level after installation.

Radiator Assembly

Removal

⚠ WARNING

- Always make sure engine is cold before operating cooling system. Never open expansion tank cap or remove drain cock plug, when engine is operating or cooling system overheats. The overheated engine coolant and steam with high-pressure may flow out and cause serious personal injury.
- If your body contacts coolant accidentally, clean it with water immediately. If it is serious, please go to hospital.

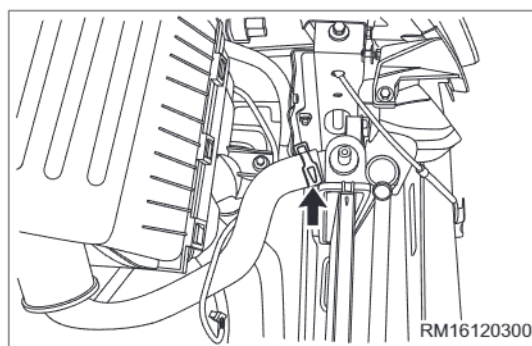
👁 CAUTION

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

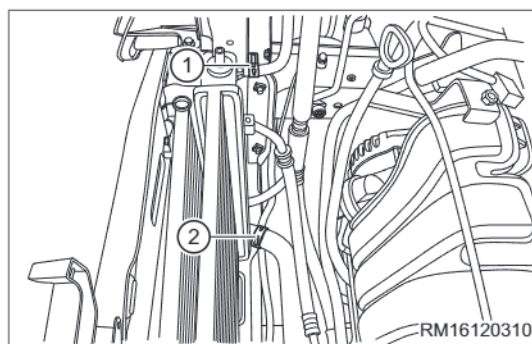
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1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the front bumper assembly (See page 49-8).
4. Remove the tank upper crossmember assembly (See page 12-16).
5. Drain the coolant (See page 12-13).
6. Remove the cooling fan assembly (See page 12-25).
7. Remove the radiator assembly (for MT model).

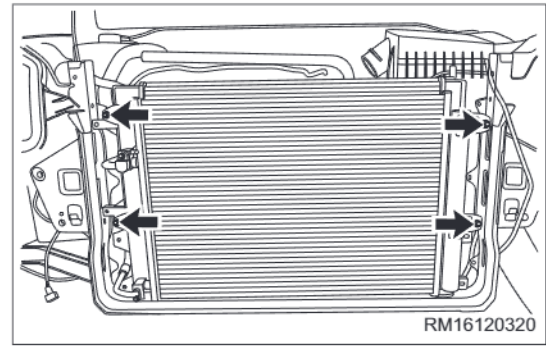
- a. Loosen the elastic clamp (arrow) and disconnect the connection between engine outlet hose and radiator assembly.



- b. Loosen the elastic clamp (1) and disconnect the connection between radiator discharge pipe and radiator assembly.
- c. Loosen the elastic clamp (2) and disconnect the connection between engine inlet pipe and radiator assembly.



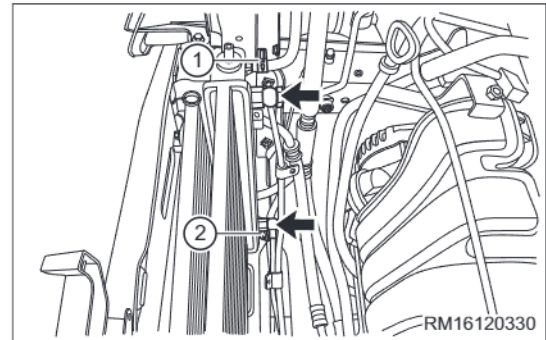
- d. Remove 4 coupling bolts (arrow) between radiator assembly and condenser.
(Tightening torque: 7 ± 1 N·m)



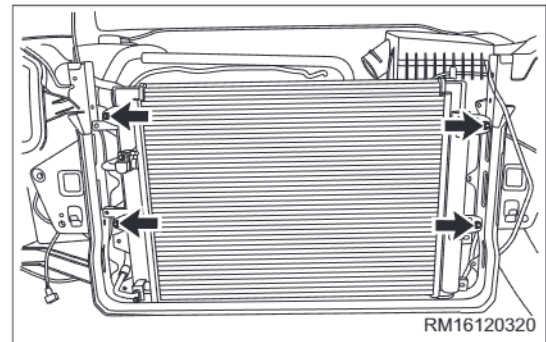
- e. Remove the radiator assembly.

8. Remove the radiator assembly (for CVT model).

- a. Loosen and remove 2 hollow bolts (arrow) on transmission oil pipe.
(Tightening torque: 32 ± 3 N·m)
- b. Loosen the elastic clamp (1) and disconnect the connection between radiator discharge hose and radiator assembly.
- c. Loosen the elastic clamp (2) and disconnect the connection between engine inlet hose and radiator assembly.



- d. Remove 4 coupling bolts (arrow) between radiator assembly and condenser.
(Tightening torque: 7 ± 1 N·m)



- e. Remove the radiator assembly.

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Installation

Installation is in the reverse order of removal.

Water Pump Assembly

Removal

⚠ WARNING

- Always make sure engine is cold before operating cooling system. Never open expansion tank cap or remove drain cock plug, when engine is operating or cooling system overheats. The overheated engine coolant and steam with high-pressure may flow out and cause serious personal injury.
- If your body contacts coolant accidentally, clean it with water immediately. If it is serious, please go to hospital.

👁 CAUTION

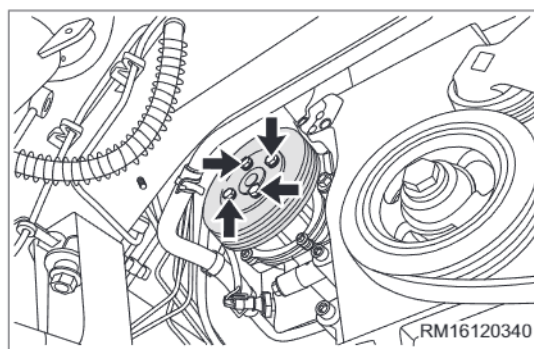
- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover.
4. Remove the engine lower protector assembly (See page 49-22).
5. Drain the coolant (See page 12-13).
6. Move away the accessory drive belt (See page 7-21).

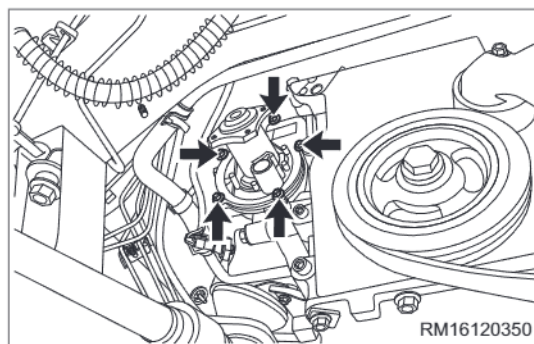
HINT:

Loosen the water pump pulley fixing bolts with a wrench, before moving away the accessory drive belt.

7. Remove the water pump assembly.
 - a. Remove 4 fixing bolts (arrow) from water pump pulley, and remove the water pump pulley. (Tightening torque: $20 + 5 \text{ N}\cdot\text{m}$)



- b. Remove 5 fixing bolts (arrow) from water pump assembly. (Tightening torque: $8 + 3 \text{ N}\cdot\text{m}$)

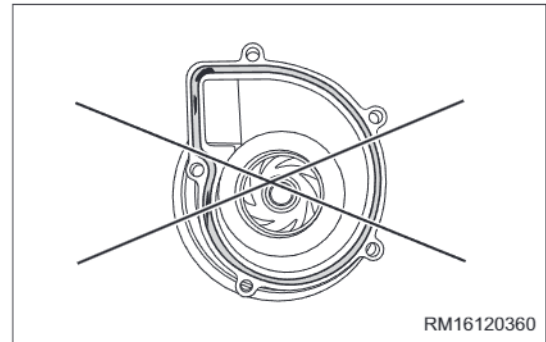


- c. Remove the water pump assembly and seal ring.

Inspection

1. Check the water pump seal ring.

Check water pump seal ring for wear or deterioration. If wear or deterioration is found, replace the seal ring.



2. Check the water pump assembly.

Check the water pump assembly carefully. If any of the following occurs, replace the water pump assembly immediately:

- Contact surface between water pump assembly and oil filter module assembly is uneven.
- Impeller of water pump assembly is damaged.
- Bearing of water pump assembly is loose.
- There is abnormal noise when water pump assembly works.

Installation

Installation is in the reverse order of removal.

CAUTION

- Clean installation surface of water pump assembly.
- If water pump is damaged, replace rather than attempt to repair it.
- Check that coolant has been added to the specified level after installation.
- Perform cooling system pressure test after adding coolant, to check cooling system for leakage.

