SECTION CO
ENGINE COOLING SYSTEM

CONTENTS

MRA8DE

PRECAUTION 2

PRECAUTIONS 2
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 2
Precaution for Liquid Gasket 2

PREPARATION 4

PREPARATION 4
Special Service Tool 4
Commercial Service Tool 4

SYSTEM DESCRIPTION 6

DESCRIPTION 6
Engine Cooling System Schematic 6

SYMPTOM DIAGNOSIS 9

OVERHEATING CAUSE ANALYSIS 9
Troubleshooting Chart 9

PERIODIC MAINTENANCE 11

ENGINE COOLANT 11
System Inspection 11
Changing Engine Coolant 13

REMOVAL AND INSTALLATION 15

RADIATOR 15
Exploded View 15
Removal and Installation 15
Inspection 16

COOLING FAN 17
Component 17
Removal and Installation 17

WATER PUMP 19
Exploded View 19
Removal and Installation 19

THERMOSTAT AND THERMOSTAT HOUSING 21
Exploded View 21
Removal and Installation of Thermostat 21
Removal and Installation of Thermostat Housing 22
Inspection 23

WATER OUTLET 24
Exploded View 24
Removal and Installation 25

SERVICE DATA AND SPECIFICATIONS (SDS) 27

SERVICE DATA AND SPECIFICATIONS (SDS) 27
Periodical Maintenance Specification 27
Radiator 27
Thermostat 27
Water Control Valve 27

PRECAUTION

PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000012787818

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, it is recommended that all maintenance and repair be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper repair, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SR section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery or batteries, and wait at least three minutes before performing any service.**

Precaution for Liquid Gasket

INFOID:0000000012787819

REMOVAL OF LIQUID GASKET

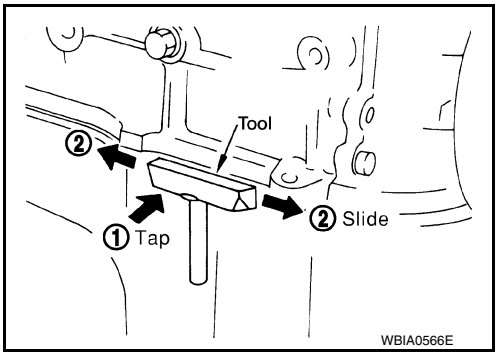
CAUTION:

Do not damage the mating surfaces.

- After removing the bolts and nuts, separate the mating surface and remove the old liquid gasket using Tool.

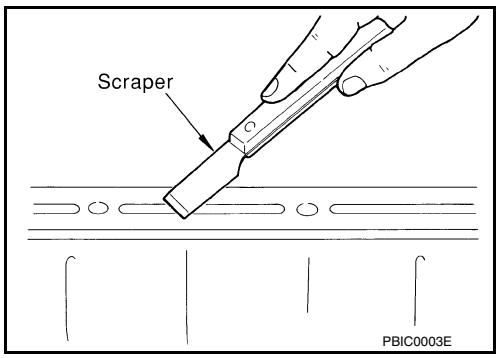
Tool number : KV10111100 (J-37228)

- Tap the seal cutter to insert it (1).
- In areas where the Tool is difficult to use, lightly tap to slide it (2).

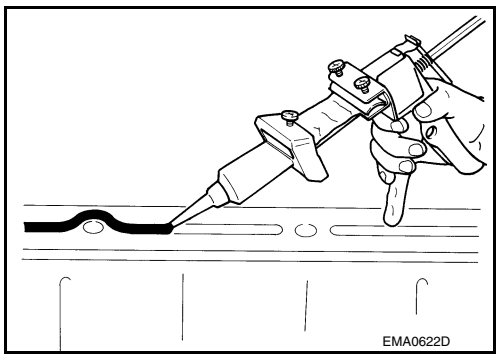


LIQUID GASKET APPLICATION PROCEDURE

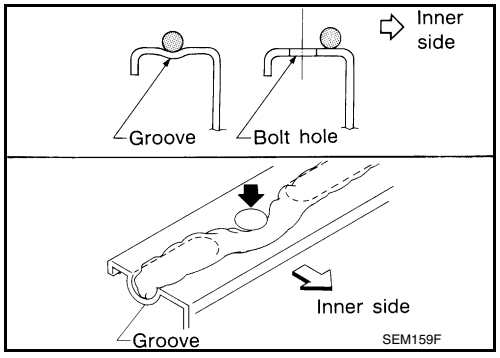
1. Remove the old liquid gasket adhering to the gasket application surface and the mating surface using suitable tool.
   - Remove the liquid gasket completely from the groove of the liquid gasket application surface, bolts, and bolt holes.
2. Thoroughly clean the mating surfaces and remove adhering moisture, grease and foreign material.



3. Attach the liquid gasket tube to the suitable tool.
   Use Genuine RTV Silicone Sealant or equivalent. Refer to GI-22, "Recommended Chemical Products and Sealants".
4. Apply the liquid gasket without breaks to the specified location with the specified dimensions.



- If there is a groove for the liquid gasket application, apply the liquid gasket to the groove.
- Normally apply the liquid gasket on the inside edge of the bolt holes. Also apply to the outside edge of the bolt holes when specified in the procedure.
- Within five minutes of liquid gasket application, install the mating component.
- If the liquid gasket protrudes, wipe it off immediately.
- Do not retighten after the installation.
- Wait 30 minutes or more after installation before refilling the engine with oil or coolant.



CAUTION:
If there are more specific instructions in the procedures contained in this manual concerning liquid gasket application, observe them.

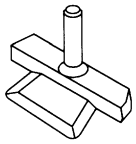
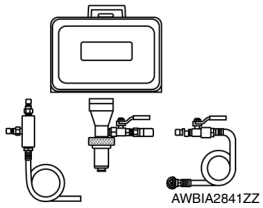
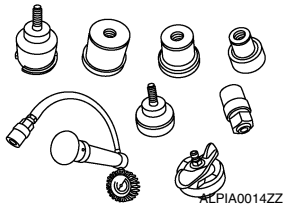
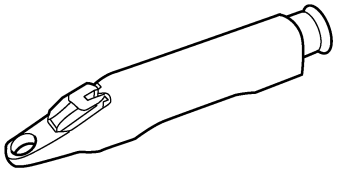
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000012787820

The actual shape of the tools may differ from those illustrated here.

Tool number (TechMate No.) Tool name	Description
KV10111100 (J-37228) Seal cutter  NT046	Removing chain tensioner cover and water pump cover
KV991J0070 (J-45695-A) Coolant refill tool  AWBIA2841ZZ	Refilling engine cooling system
— (J-51771) Cooling system pressure test kit  ALPIA0014ZZ	Checking cooling system and radiator cap
— (J-23688) Engine coolant refractometer  WBIA0539E	Checking concentration of ethylene glycol in engine coolant

Commercial Service Tool

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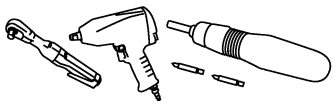
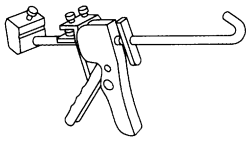
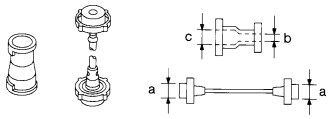
(TechMate No.) Tool name	Description
(—) Power tool  PIIB1407E	Loosening nuts, screws and bolts
(—) Tube presser  S-NT052	Pressing the tube of liquid gasket
(J-33984-A) Radiator pressure adapter  S-NT564	Adapting cooling system pressure tester to radiator cap and reservoir tank cap **a: 28 (1.10) dia.** **b: 31.4 (1.236) dia.** **c: 41.3 (1.626) dia.** Unit: mm (in)

SYSTEM DESCRIPTION

DESCRIPTION

Engine Cooling System Schematic

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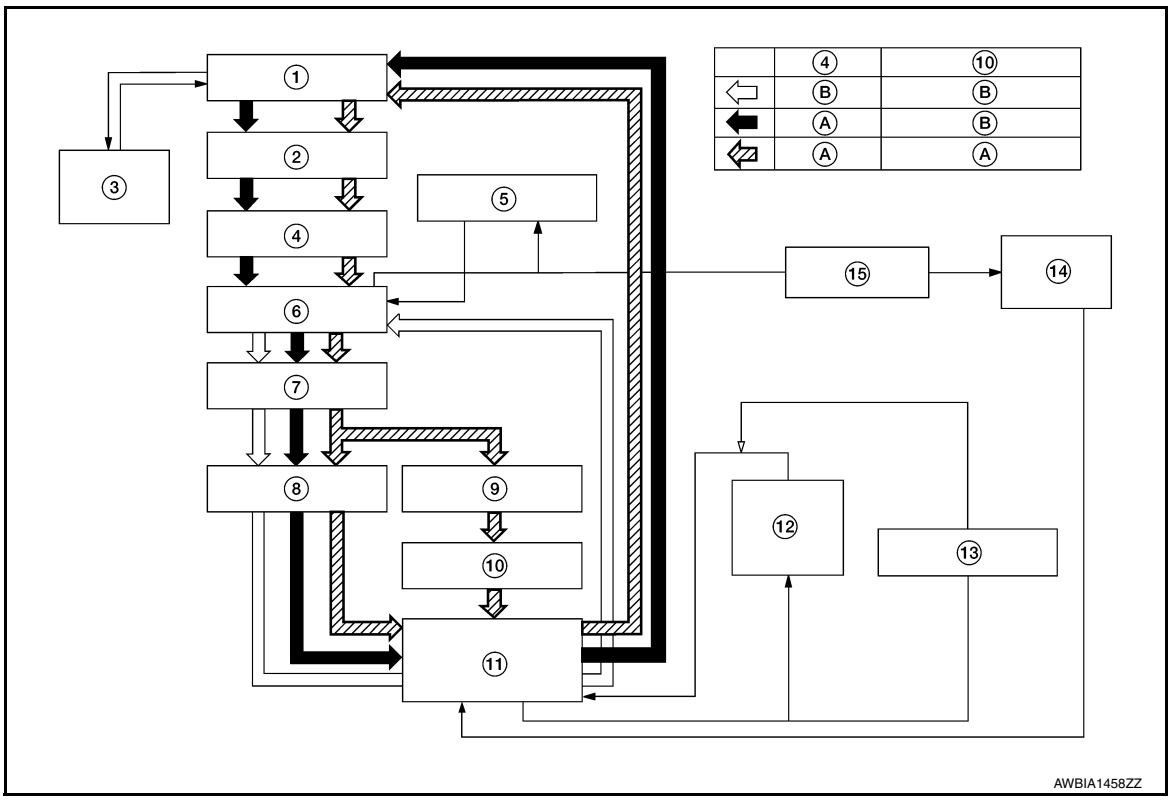
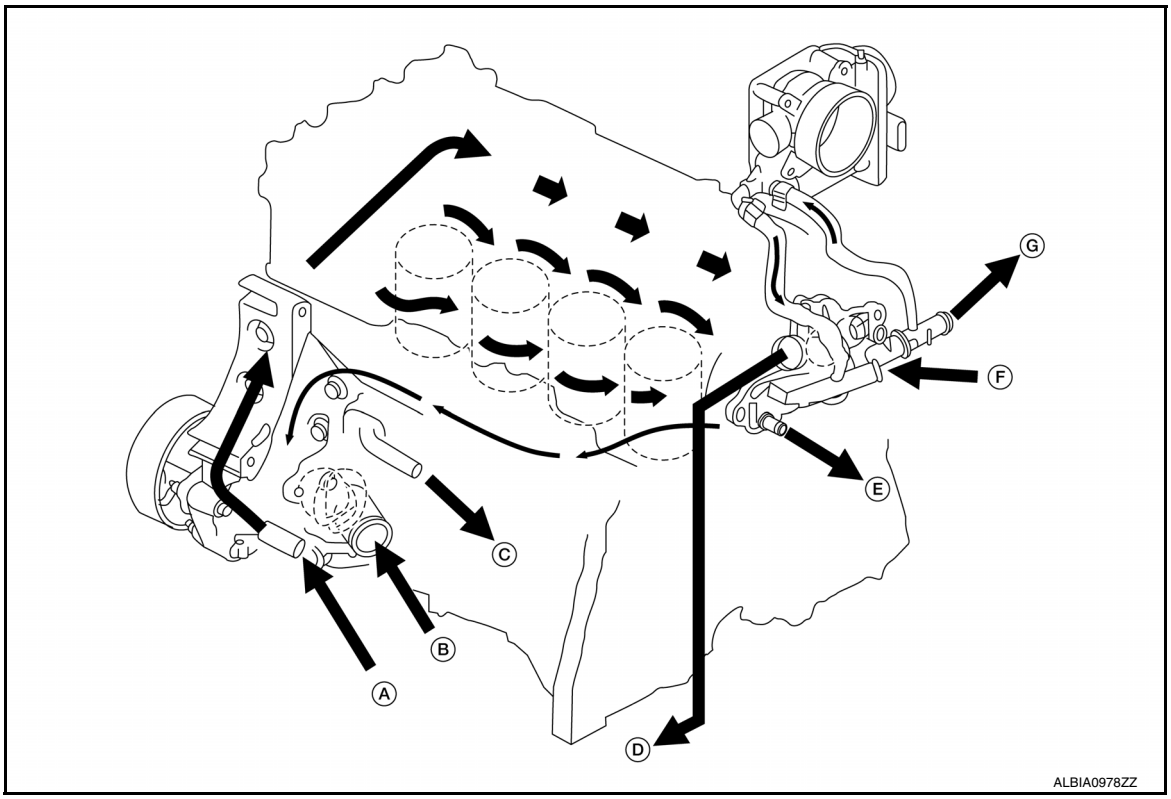
CVT MODELS



1. Radiator
2. Water inlet
3. Reservoir tank
4. Thermostat
5. Engine oil cooler
6. Thermostat housing
7. Water pump
8. Cylinder head
9. Cylinder block
10. Water control valve
11. Water outlet
12. Heater
13. Electric throttle control actuator
14. CVT oil warmer
15. Heater thermostat

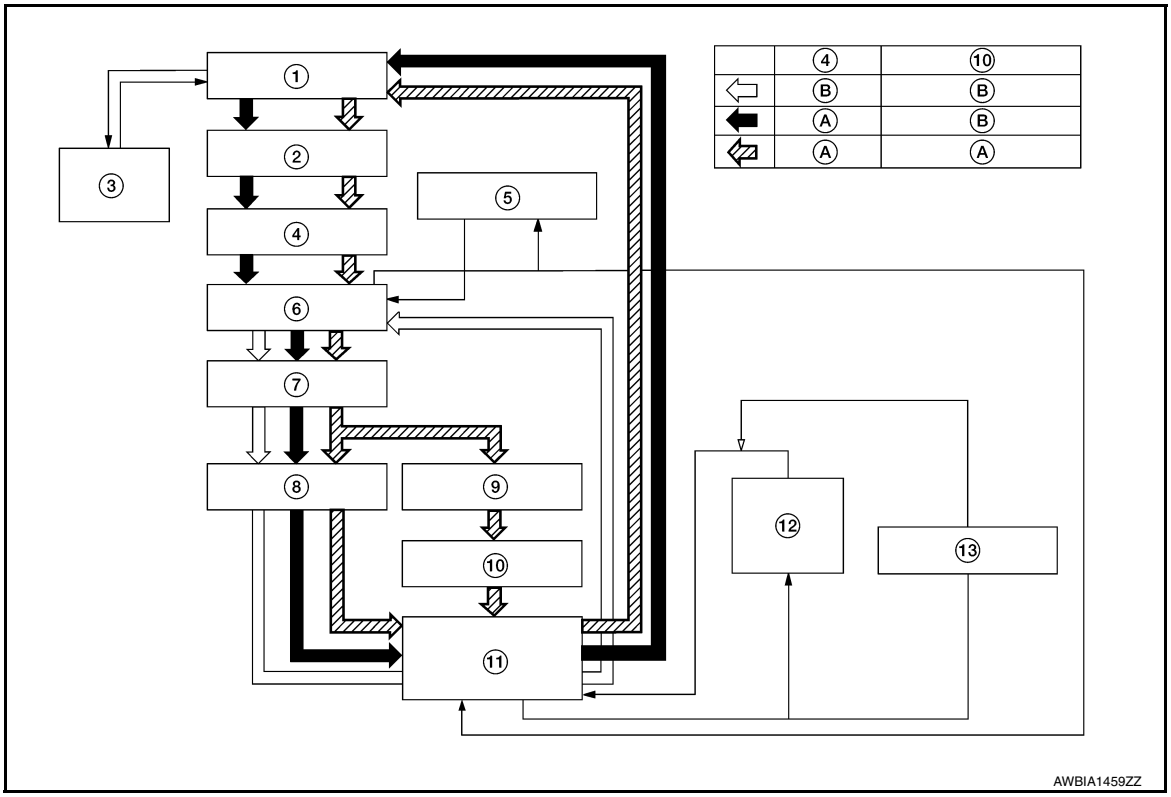
A. Open
B. Closed

CVT MODELS



A. From heater thermostat
B. From radiator
C. To engine oil cooler
D. To filler neck
E. To CVT oil warmer
F. From heater core
G. To heater core

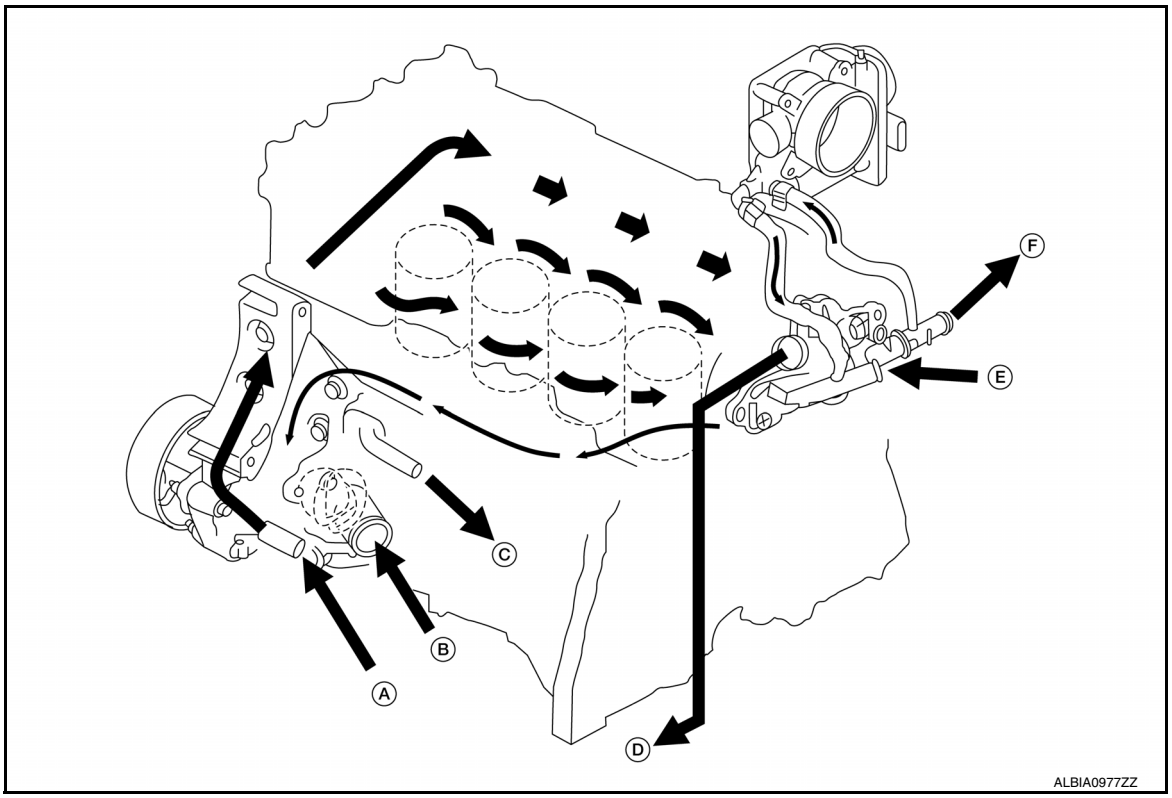
M/T MODELS



1. Radiator
2. Water inlet
3. Reservoir tank
4. Thermostat
5. Engine oil cooler
6. Thermostat housing

7. Water pump
8. Cylinder head
9. Cylinder block
10. Water control valve
11. Water outlet
12. Heater
13. Electric throttle control actuator
A. Open
B. Closed

M/T MODELS



A. From heater thermostat
B. From radiator
C. To engine oil cooler
D. To filler neck
E. From heater core
F. To heater core

SYMPTOM DIAGNOSIS

OVERHEATING CAUSE ANALYSIS

Troubleshooting Chart

INFOID:0000000012787823

	Symptom		Check items	
Cooling system parts malfunction	Poor heat transfer	Water pump malfunction	Worn or loose drive belt	—
		Thermostat stuck closed	Engine coolant circulation	
		Damaged fins	Dust contamination or rock clogging	
			Mechanical damage	
		Clogged radiator cooling tube	Excess foreign material (rust, dirt, sand, etc.)	
	Reduced air flow	Cooling fan does not operate	Fan shroud and motor assembly	—
		High resistance to fan rotation		
		Damaged fan blades		
	Damaged radiator shroud	—	Radiator shroud	—
	Improper engine coolant mixture ratio	—	Engine coolant viscosity	—
	Poor engine coolant quality	—	Periodic maintenance	—
	Insufficient engine coolant	Engine coolant leaks	Cooling hose	Loose clamp
				Cracked hose
			Water pump	Poor sealing
			Radiator cap	Loose
				Poor sealing
			Radiator	O-ring for damage, deterioration or improper fitting
				Cracked radiator tank
				Cracked radiator core
			Reservoir tank	Cracked reservoir tank
		Overflowing reservoir tank	Exhaust gas leaks into cooling system	Cylinder head deterioration
				Cylinder head gasket deterioration

	Symptom		Check items	
Except cooling system parts malfunction	—	Overload on engine	Abusive driving	High engine rpm under no load
				Driving in low gear for extended time
				Driving at extremely high speed
			Powertrain system malfunction	—
			Installed improper size wheels and tires	
			Dragging brakes	
			Improper ignition timing	
	Blocked or restricted air flow	Blocked radiator grille	Installed car brassiere	—
		Blocked bumper	Mud contamination or paper clogging	
		Blocked radiator		
		Blocked condenser		
		Installed large fog lamp		

PERIODIC MAINTENANCE

ENGINE COOLANT

System Inspection

INFOID:0000000012787824

WARNING:
- **Do not remove the radiator cap or reservoir tank cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the cooling system.**
- **When removing the radiator cap or reservoir tank cap, wrap a thick cloth around the cap and slowly turn it a quarter turn to allow built-up pressure to escape. Then carefully remove the cap by turning it all the way.**

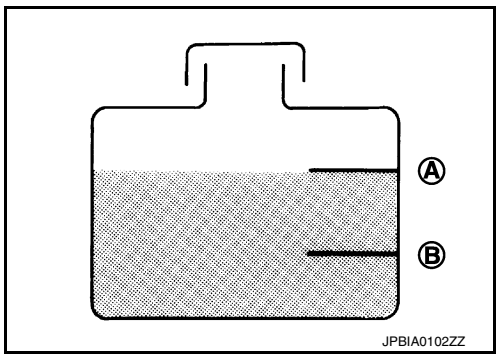
CHECKING COOLING SYSTEM HOSES

Check hoses for the following:
- Improper attachment
- Leaks
- Cracks
- Dents
- Bulges
- Internal obstruction
- Damage
- Loose connections
- Chafing
- Deterioration

CHECKING RESERVOIR LEVEL

- Check if the reservoir tank coolant level is within MIN to MAX when the engine is cool.

(A) : MAX
(B) : MIN



- Adjust coolant level (if necessary), to ensure that the engine coolant level is within the MIN to MAX range.

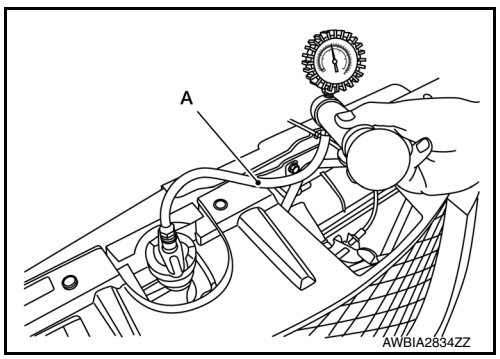
CAUTION:
Refill Genuine NISSAN Long Life Antifreeze/Coolant (blue) or equivalent in its quality mixed with water (distilled or demineralized). Refer to MA-12, "Fluids and Lubricants".

CHECKING COOLING SYSTEM FOR LEAKS

WARNING:
- **Do not remove the radiator cap or reservoir tank cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the cooling system.**
- **When removing the radiator cap or reservoir tank cap, wrap a thick cloth around the cap and slowly turn it a quarter turn to allow built-up pressure to escape. Then carefully remove the cap by turning it all the way.**

To check the cooling system for leaks, apply pressure to the cooling system using Tool (A).

Tool number (A) : — (J-51771)
Leakage test pressure : Refer to CO-27, "Radiator".



CAUTION:
Higher testing pressure than specified may cause radiator damage.
NOTE:
- If engine coolant decreases, replenish radiator with engine coolant. Refer to MA-12, "Fluids and Lubricants".
- If anything is found, repair or replace damaged parts.

CHECKING RADIATOR CAP

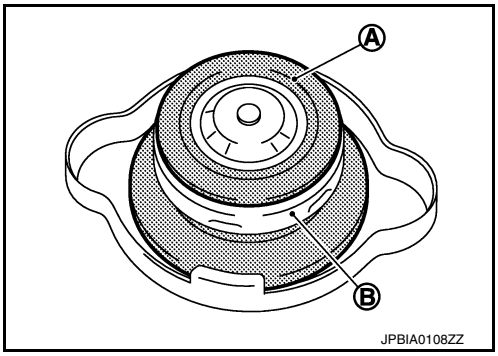
WARNING:

- **Do not remove the radiator cap or reservoir tank cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the cooling system.**
- **When removing the radiator cap or reservoir tank cap, wrap a thick cloth around the cap and slowly turn it a quarter turn to allow built-up pressure to escape. Then carefully remove the cap by turning it all the way.**

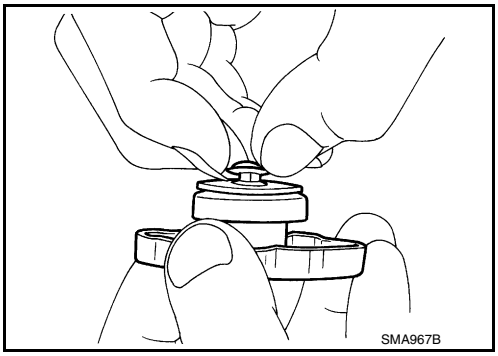
- Check the pressure valve of the radiator cap.
- Replace the radiator cap if the metal plunger (B) on the pressure valve cannot be seen around the edge of the rubber gasket (A).
- Replace the radiator cap if there is damage or deposits of foreign material on the rubber gasket or pressure valve.

CAUTION:

Thoroughly wipe out the radiator filler neck to remove any waxy residue or foreign material.



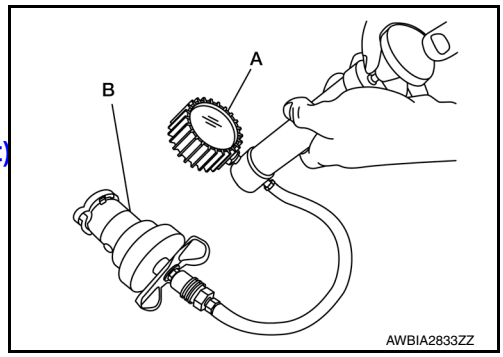
- Check the negative-pressure valve of the radiator cap.
- Replace the radiator cap if the negative-pressure valve does not close completely when pulled open and released.
- Replace the radiator cap if there is damage or deposits of foreign material on the valve seat of the negative-pressure valve.
- Replace the radiator cap if there is an abnormality in the operation of the negative-pressure valve.



- Check radiator cap relief pressure.
- Check the radiator cap relief pressure using Tool (A) and suitable tool (B).

Tool number (A)	**: —**	**(J-51771)**
Tool number (B) (commercially available)	**: —**	**(J-33984-A or equivalent)**
Radiator cap relief pressure	**: Refer to CO-27, "Radiator".**	

- When connecting the radiator cap to suitable tool (B), apply water or coolant to the radiator cap seal surface.
- Replace the radiator cap if the radiator cap relief pressure is outside of specification.



CHECKING RADIATOR

Check radiator for mud or clogging. If necessary, clean radiator as follows.

CAUTION:

- **Be careful not to bend or damage the radiator fins.**
- **When radiator is cleaned on-vehicle, remove surrounding parts in order to access the radiator core. Tape the harness and harness connectors to prevent water from entering.**

1. Spray water to the back side of the radiator core using a side to side motion from the top down.
2. Stop spraying when debris no longer flows from radiator core.
3. Blow air into the back side of radiator core using a side to side motion from the top down.
   - Use compressed air lower than 490 kPa (5 kg/cm^2, 71 psi) and keep distance more than 30 cm (11.8 in).
4. Continue to blow air until no water sprays out.

5. Check for engine coolant leaks. Repair as necessary.

Changing Engine Coolant

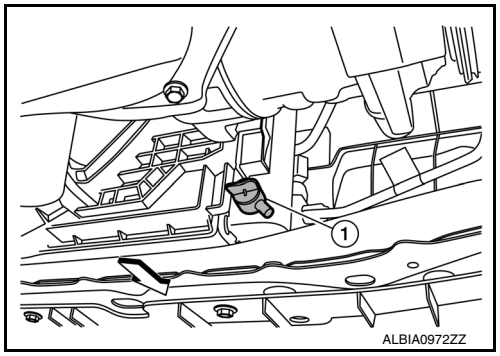
INFOID:0000000012787825

WARNING:

- **Do not remove the radiator cap or reservoir tank cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the cooling system.**
- **When removing the radiator cap or reservoir tank cap, wrap a thick cloth around the cap and slowly turn it a quarter turn to allow built-up pressure to escape. Then carefully remove the cap by turning it all the way.**

DRAINING ENGINE COOLANT

1. Remove the engine under cover. Refer to EXT-31, "ENGINE UNDER COVER : Exploded View".
2. Open the radiator drain plug (1) at the bottom of the radiator and remove the radiator filler cap. This is the only step required when partially draining the cooling system (radiator only).
   CAUTION:
   - **Do not spill engine coolant on the drive belt.**
   - **Perform this step when the engine is cold.**



3. Follow this step for heater core removal/replacement only. Disconnect the upper heater hose at the engine side and apply moderate air pressure [103.46 kPa (1.055 kg/cm^2, 15 psi) maximum air pressure] into the hose for 30 seconds to blow the excess engine coolant out of the heater core.
4. When draining all of the engine coolant in the system, remove the reservoir tank and drain the engine coolant, then clean the reservoir tank before installation.
   CAUTION:
   - **Do not allow the engine coolant to contact the drive belt.**
   - **Perform this step when engine is cold.**
5. When draining all of the engine coolant in the system for engine removal or repair, remove the engine coolant drain plugs on the cylinder block.
6. Check the drained engine coolant for contaminants such as rust, corrosion or discoloration.
   If the engine coolant is contaminated, flush the engine cooling system.

REFILLING ENGINE COOLANT

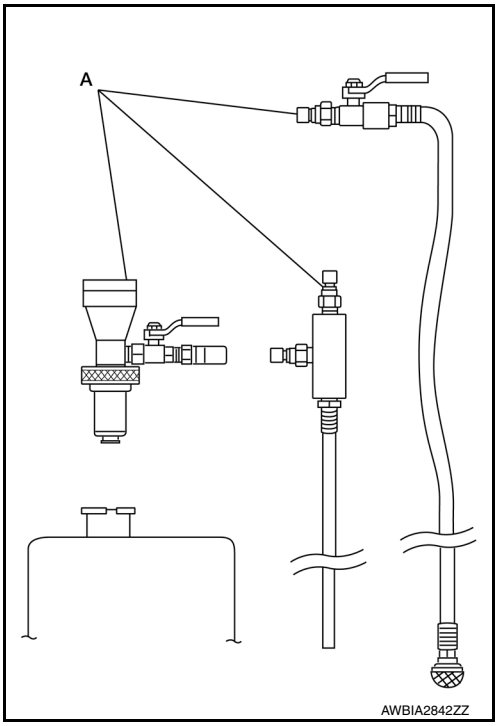
1. Install the following, if removed:
   - Cylinder block drain plugs, refer to EM-94, "Exploded View".
   - Reservoir tank, refer to CO-15, "Exploded View".
   - Cooling system hoses, refer to CO-15, "Exploded View".
   - Radiator drain plug, refer to CO-15, "Exploded View".
2. Set the vehicle heater controls to the full HOT and heater ON positions. Turn the vehicle ignition ON with the engine OFF as necessary to activate the heater mode.

3. Fill the cooling system with engine coolant using Tool (A), following the manufacturer's instructions included with the tool.

Tool number (A) : KV991J0070 (J-45695-A)
Engine Coolant : Refer to MA-12, "Fluids and Lubricants".

CAUTION:
- **Use recommended coolant or equivalent.**
- **Do not use any cooling system additives such as radiator sealer. Additives may clog the cooling system and cause damage to the engine, transmission or cooling system.**
- **The compressed air supply must be equipped with an air dryer.**

4. Remove the Tool (A) and top off the cooling system with engine coolant as necessary.



5. Install the radiator cap and reservoir tank cap.
6. Run the engine until it reaches normal operating temperature.
CAUTION:
Do not allow the engine to exceed normal operating temperature or engine damage may occur.
7. Stop the engine and allow it to cool.
8. Check the engine coolant level and adjust if necessary.

FLUSHING COOLING SYSTEM

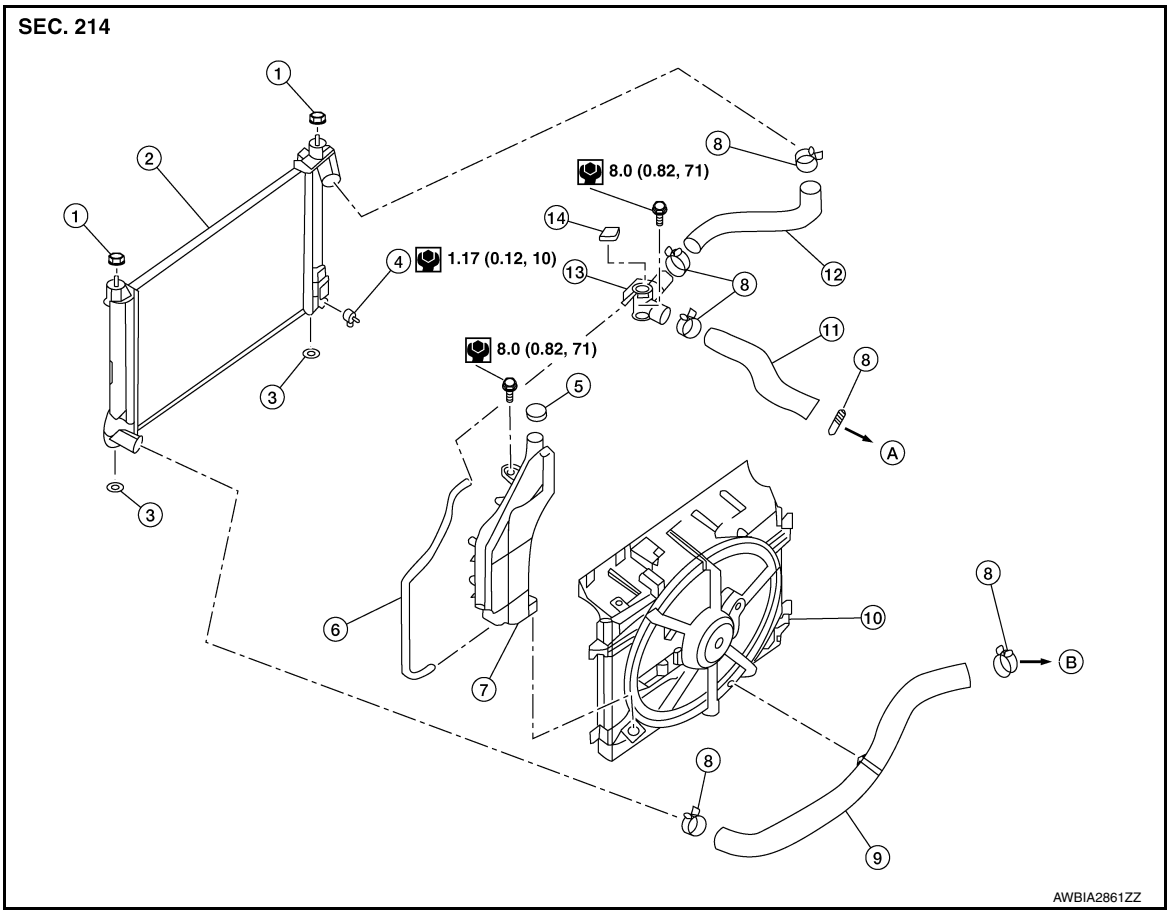
1. Fill the radiator from the filler neck above the radiator upper hose and reservoir tank with clean water and reinstall the radiator filler cap.
2. Run the engine until it reaches normal operating temperature.
3. Rev the engine two or three times under no-load.
4. Stop the engine and wait until it cools down.
5. Drain the water from the system.
6. Repeat steps 1 through 5 until clear water begins to drain from the radiator.

REMOVAL AND INSTALLATION

RADIATOR

Exploded View

INFOID:0000000012787826



1. Mounting rubber (upper)	2. Radiator	3. Mounting rubber (lower)
4. Radiator drain plug	5. Reservoir tank cap	6. Reservoir tank hose
7. Reservoir tank	8. Clamp	9. Radiator hose (lower)
10. Fan shroud and motor assembly	11. Radiator hose (upper)	12. Filler neck hose
13. Filler neck	14. Radiator filler cap	A. To water outlet
B. To water inlet		

Removal and Installation

INFOID:0000000012787827

WARNING:

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing it down and turning it all the way.

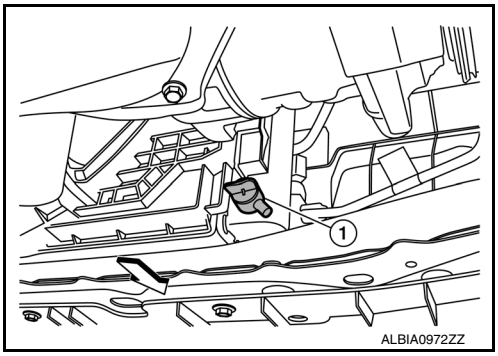
NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Disconnect the negative battery terminal. Refer to PG-74, "Removal and Installation (Battery)".
2. Remove fan shroud and motor assembly. Refer to CO-17, "Removal and Installation".

3. Remove radiator cap, open radiator drain plug (1) and drain engine coolant from radiator. Refer to CO-13, "Changing Engine Coolant".
   CAUTION:
   - **Perform this step when the engine is cold.**
   - **Do not spill engine coolant on the drive belt.**



4. Remove radiator hose (lower). Refer to CO-15, "Exploded View".
5. Remove condenser bolts from radiator.
6. Remove the radiator from the vehicle.
   CAUTION:
   Be careful not to damage radiator core and condenser assembly core.

INSTALLATION

Installation is in the reverse order of removal.

- After installation, refill engine coolant and check for leaks. Refer to CO-13, "Changing Engine Coolant" and CO-11, "System Inspection".

CAUTION:
Do not spill engine coolant in engine compartment. Use a shop cloth to absorb engine coolant.
NOTE:
When installing radiator core support (upper), check that both upper and lower mounts of radiator and air conditioner condenser are inserted in the mounting holes of radiator core support (upper, lower).

Inspection

INFOID:0000000012787828

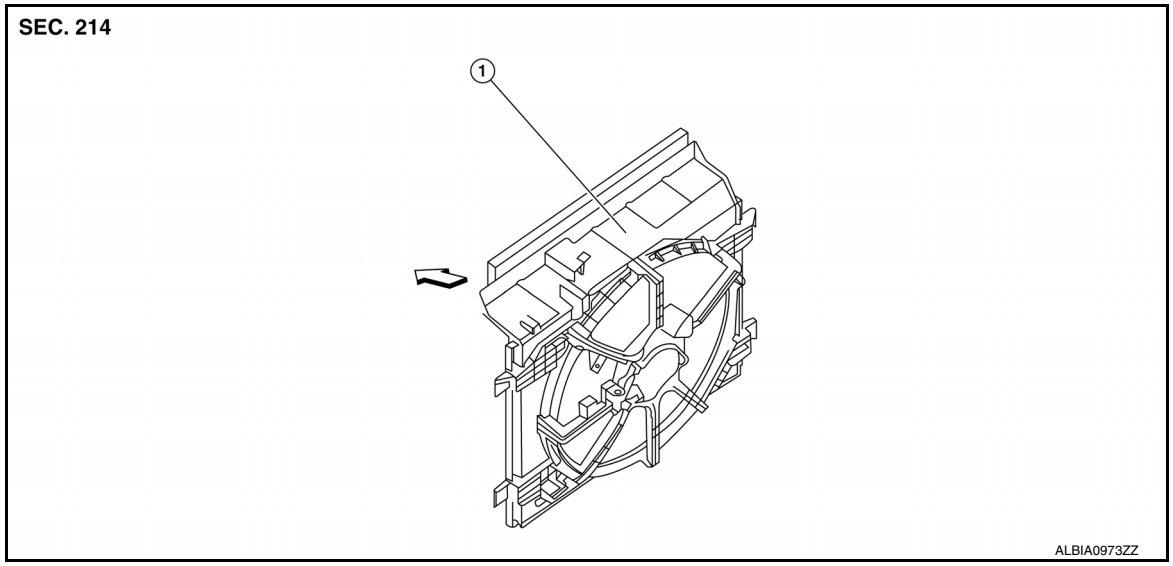
INSPECTION AFTER INSTALLATION

- Check that the reservoir tank cap is tightened.
- Check for engine coolant leaks. Refer to CO-11, "System Inspection".
- Start and warm up the engine. Visually check that there are no engine coolant or CVT fluid leaks.

COOLING FAN

Component

INFOID:0000000012787829



1. Fan shroud and motor assembly ⇦ Front

Removal and Installation

INFOID:0000000012787830

WARNING:
Do not remove the radiator cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing it down and turning it all the way.
NOTE:
- When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.
- Replace the fan shroud and motor assembly as a unit. Do not replace cooling fan motor or cooling fan blade separately.

REMOVAL

1. Remove engine under cover. Refer to EXT-31, "ENGINE UNDER COVER : Exploded View".
2. Partially drain engine coolant from the radiator. Refer to CO-13, "Changing Engine Coolant".
   CAUTION:
   - **Perform this step when the engine is cold.**
   - **Do not spill engine coolant on the drive belt.**
3. Remove the radiator core support cover. Refer to EXT-23, "Removal and Installation".
4. Remove the hood lock assembly from radiator core support (upper). Refer to DLK-144, "HOOD ASSEMBLY : Removal and Installation".
5. Remove the radiator core support (upper) bolts, then remove the radiator core support (upper). Refer to CO-15, "Exploded View".
6. Disconnect filler neck hose from radiator and radiator hose (upper) from water inlet.
7. Remove filler neck screws from fan shroud and motor assembly, then remove filler neck with attached hoses.
8. Remove reservoir tank and reservoir tank hose.
9. Disconnect the harness connector from fan shroud and motor assembly.
10. Remove fan shroud and motor assembly.

INSTALLATION

Installation is in the reverse order of removal.

- After installation refill engine coolant and check for leaks. Refer to CO-13, "Changing Engine Coolant" and CO-11, "System Inspection".

CAUTION:

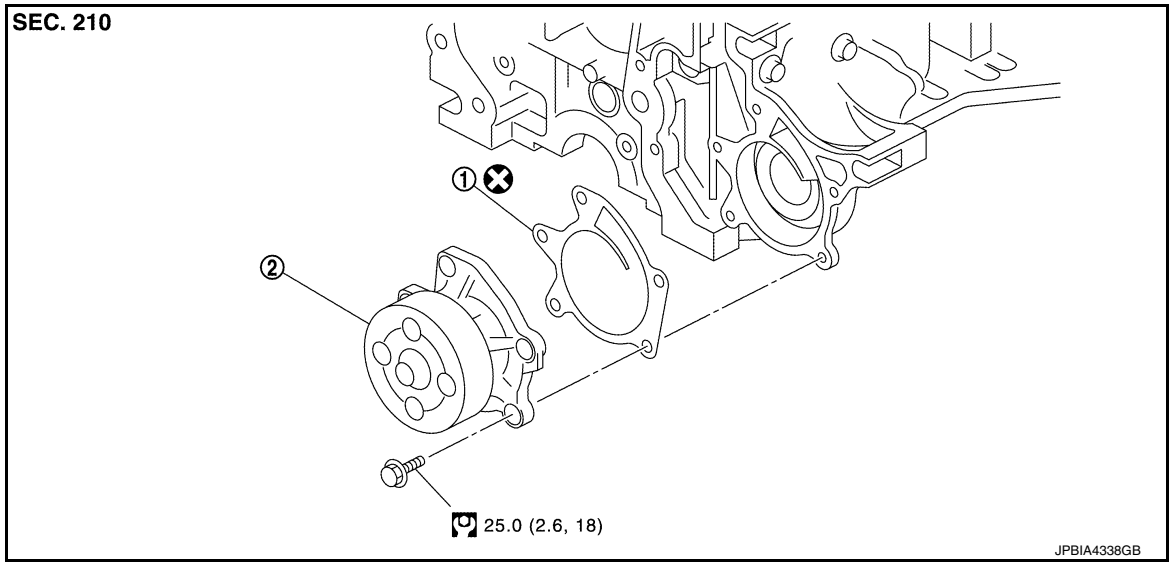
Do not spill engine coolant in engine compartment. Use a shop cloth to absorb engine coolant.

- Fan shroud and motor assembly is controlled by ECM. Refer to EC-63, "On Board Diagnosis Function".

WATER PUMP

Exploded View

INFOID:0000000012787831



1. Gasket
2. Water pump

Removal and Installation

INFOID:0000000012787832

WARNING:
Do not remove the radiator cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing it down and turning it all the way.

CAUTION:
- **When removing water pump assembly, be careful not to get engine coolant on drive belt.**
- **Water pump cannot be disassembled and should be replaced as a unit.**
- **After installing water pump, connect hose and clamp securely, then check for leaks using radiator cap tester.**

NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Disconnect the negative battery terminal. Refer to PG-74, "Removal and Installation (Battery)".
2. Remove fan shroud and motor assembly. Refer to CO-17, "Removal and Installation".
   CAUTION:
   - **Perform this step when the engine is cold.**
   - **Do not spill engine coolant on the drive belt.**
3. Partially remove front fender protector (RH). Refer to EXT-27, "FENDER PROTECTOR : Exploded View".
4. Remove drive belt. Refer to EM-15, "Removal and Installation".
5. Remove generator. Refer to CHG-29, "Removal and Installation".
6. Remove water pump bolts, then remove water pump and gasket.
   - Engine coolant will leak from cylinder block, so have a receptacle ready below.

   CAUTION:
   - **Handle water pump vane so that it does not contact any other parts.**
   - **Water pump cannot be disassembled and should be replaced as an assembly.**

INSTALLATION

Installation is in the reverse order of removal.

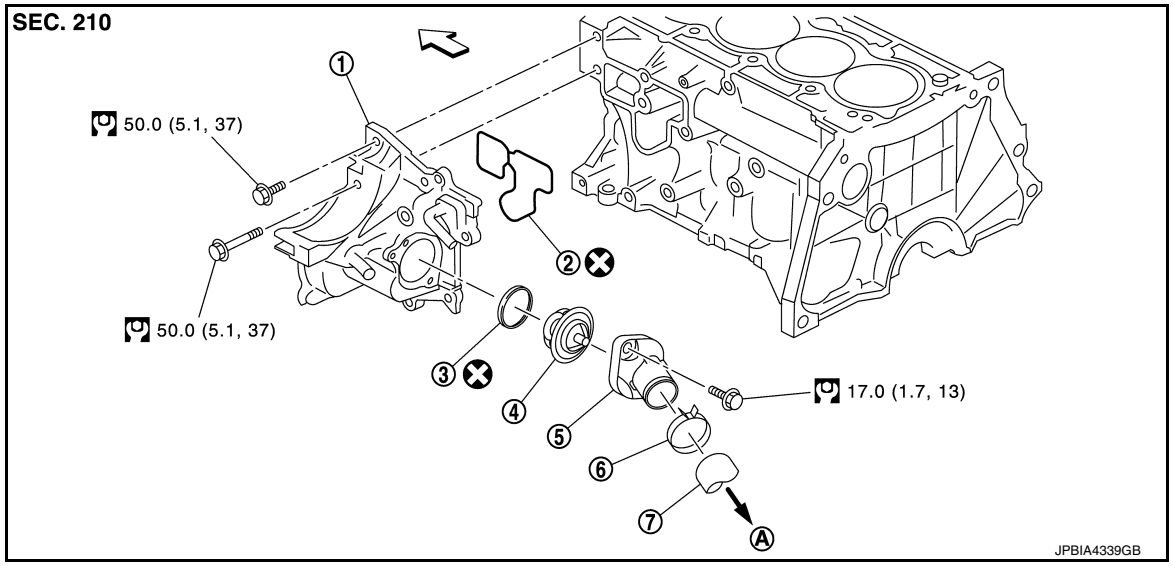
CAUTION:

Do not reuse gasket.

THERMOSTAT AND THERMOSTAT HOUSING

Exploded View

INFOID:0000000012787833



1.	Thermostat housing	2.	Gasket	3.	Rubber ring
4.	Thermostat	5.	Water inlet	6.	Clamp
7.	Radiator hose (upper)	A.	To radiator	⇦	Engine front

Removal and Installation of Thermostat

INFOID:0000000012787834

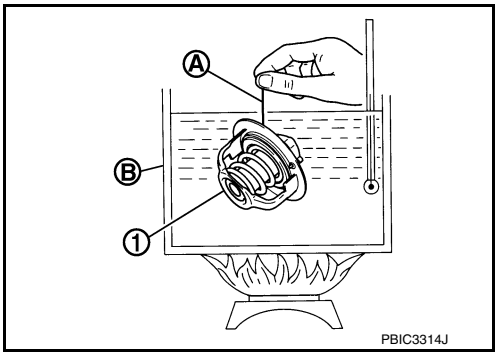
WARNING:
Do not remove the radiator cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing it down and turning it all the way.
NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Remove engine under cover. Refer to EXT-31, "ENGINE UNDER COVER : Exploded View".
2. Drain engine coolant from radiator. Refer to CO-13, "Changing Engine Coolant".
   CAUTION:
   - **Perform this step when the engine is cold.**
   - **Do not spill engine coolant on the drive belt.**
3. Disconnect radiator hose (lower) from water inlet side. Refer to CO-15, "Exploded View".
4. Remove water inlet bolts, then remove water inlet and thermostat.

INSPECTION AFTER REMOVAL

- Place a thread (A) so that it is caught in the valves of the thermostat (1). Immerse fully in a container (B) filled with water. Heat while stirring.
- The valve opening temperature is the temperature at which the valve opens and the thermostat falls from the thread.
- Continue heating. Check the full-open lift amount.
  NOTE:
  The full-open lift amount standard temperature for the thermostat is the reference value.
- After checking the full-open lift amount, lower the water temperature and check the valve closing temperature.



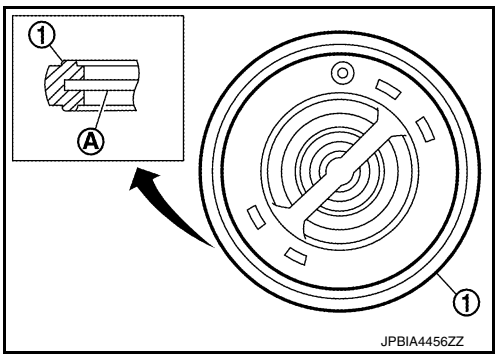
Thermostat	Standard Values
Valve opening temperature	Refer to CO-27, "Thermostat"
Full-open lift amount	Refer to CO-27, "Thermostat"
Valve closing temperature	Refer to CO-27, "Thermostat"

- If valve setting at measured values are out of standard range, replace thermostat.

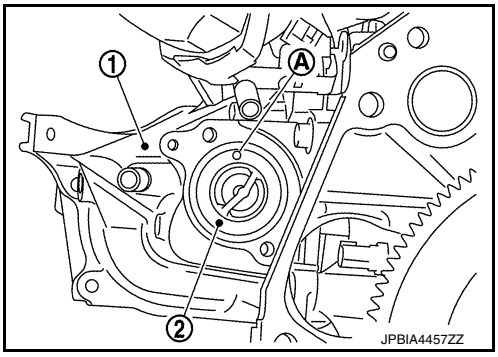
INSTALLATION

Installation is in the reverse order of removal.

- Install the thermostat with the whole circumference of the flange (A) fitting securely inside the rubber ring (1).
  CAUTION:
  Do not reuse rubber ring.



- Install the thermostat (2) into the thermostat housing (1) with the jiggle valve (A) facing upwards. The position deviation may be within the range of ±10°.
- After installation, refill engine coolant and check for leaks. Refer to CO-13, "Changing Engine Coolant" and CO-11, "System Inspection".



Removal and Installation of Thermostat Housing

INFOID:0000000012787835

REMOVAL

1. Remove the generator. Refer to CHG-29, "Removal and Installation".
2. Partially remove the fender protector (LH). Refer to EXT-28, "FENDER PROTECTOR : Removal and Installation - Front Fender Protector".
3. Remove the thermostat housing bolts, then remove the thermostat housing.
4. Remove thermostat (if necessary). Refer to CO-21, "Removal and Installation of Thermostat".
5. Remove water pump (if necessary). Refer to CO-19, "Removal and Installation".

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse gasket.**

- **Do not spill engine coolant on the drive belt.**

Inspection

INFOID:0000000012787836

INSPECTION AFTER INSTALLATION

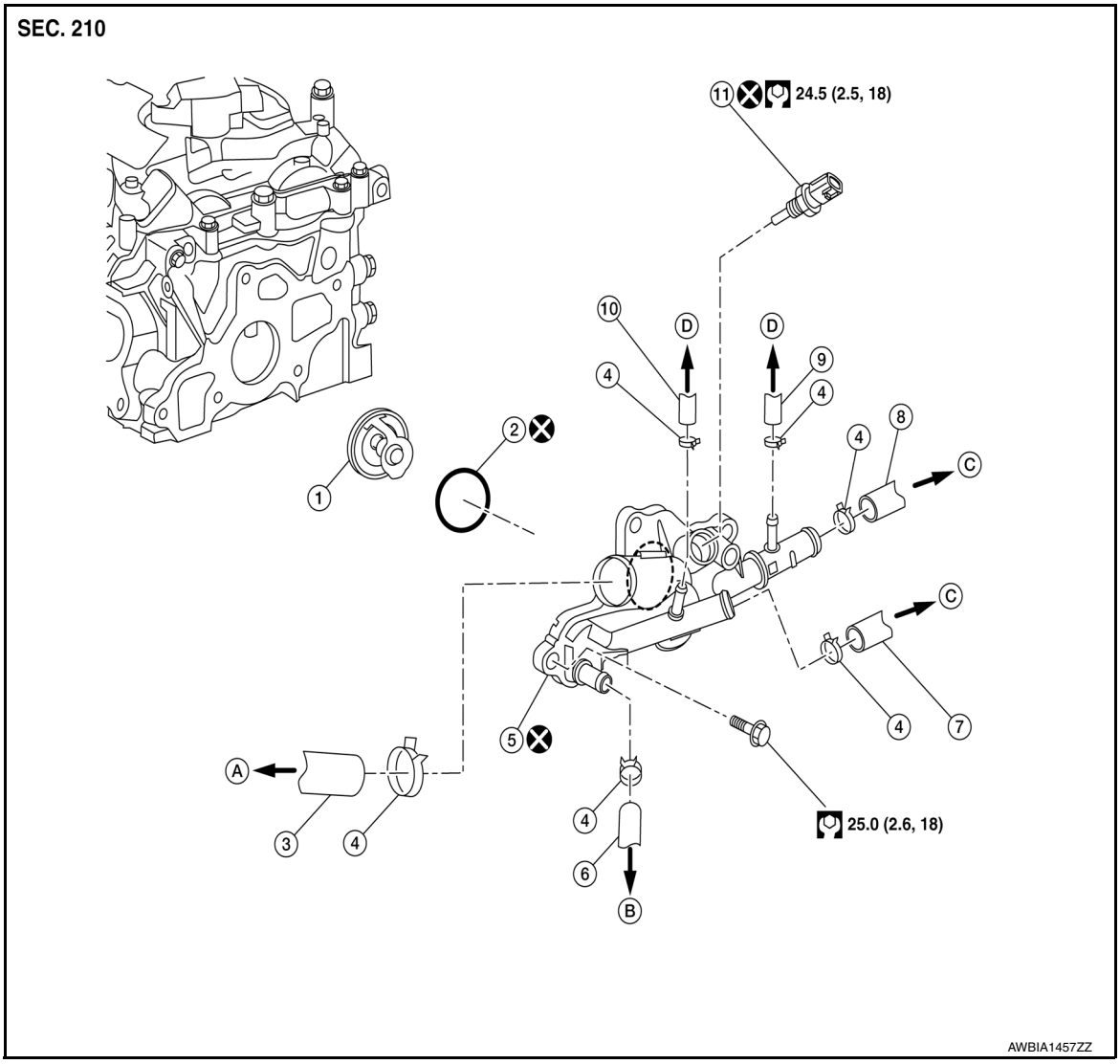
After installation, refill engine coolant and check for leaks. Refer to CO-11, "System Inspection" and CO-13, "Changing Engine Coolant".

WATER OUTLET

Exploded View

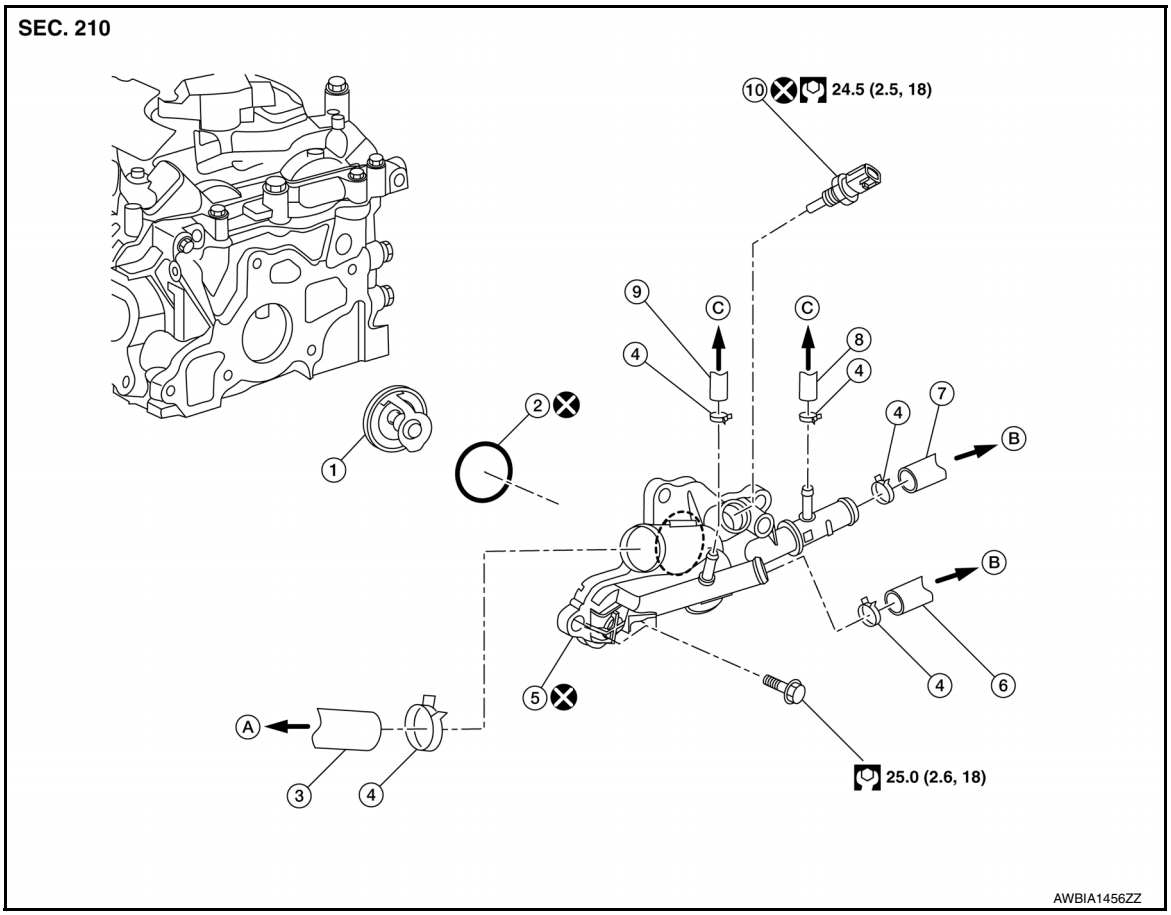
INFOID:0000000012787837

CVT MODELS



1.	Water control valve	2.	Rubber ring	3.	Radiator hose (upper)
4.	Clamp	5.	Water outlet	6.	CVT oil warmer hose (outlet)
7.	Heater hose (inlet)	8.	Heater hose (outlet)	9.	Electric throttle control actuator hose (outlet)
10.	Electric throttle control actuator hose (inlet)	11.	Engine coolant temperature sensor	A.	To filler neck
B.	To CVT oil warmer	C.	To heater core	D.	To electric throttle control actuator

M/T MODELS



1.	Water control valve	2.	Rubber ring	3.	Radiator hose (upper)
4.	Clamp	5.	Water outlet	6.	Heater hose (inlet)
7.	Heater hose (outlet)	8.	Electric throttle control actuator hose (outlet)	9.	Electric throttle control actuator hose (inlet)
10.	Engine coolant temperature sensor	A.	To filler neck	B.	To heater core
C.	To electric throttle control actuator				

Removal and Installation

INFOID:0000000012787838

WARNING:
Do not remove the radiator cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by pushing it down and turning it all the way.
NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

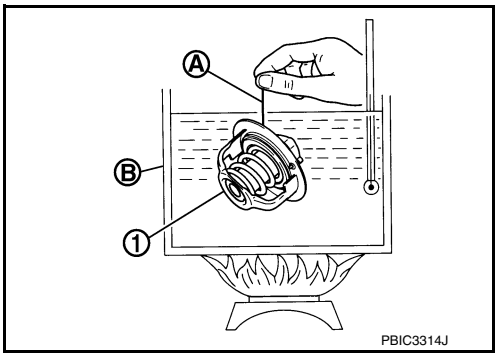
REMOVAL

1. Remove the battery. Refer to PG-74, "Removal and Installation (Battery)".
2. Drain engine coolant from radiator. Refer to CO-13, "Changing Engine Coolant".
   CAUTION:
   - **Perform this step when the engine is cold.**
   - **Do not spill engine coolant on the drive belt.**
3. Remove air cleaner and air duct. EM-25, "Removal and Installation".
4. Disconnect the harness connector from engine coolant temperature sensor.
5. Remove radiator hose (upper), water hoses and heater hoses from water outlet.
6. Remove water outlet bolts and remove water outlet and rubber ring with water control valve.

7. Remove engine coolant temperature sensor from water outlet (if necessary).

INSPECTION AFTER REMOVAL

- Place a thread (A) so that it is caught in the valves of the water control valve (1). Immerse fully in a container (B) filled with water. Heat while stirring.
- The valve opening temperature is the temperature at which the valve opens and the water control valve falls from the thread.
- Continue heating. Check the full-open lift amount.
  NOTE:
  The full-open lift amount standard temperature for the water control valve is the reference value.
- After checking the full-open lift amount, lower the water temperature and check the valve closing temperature.



water control valve	Standard Values
Valve opening temperature	Refer to CO-27, "Thermostat"
Full-open lift amount	Refer to CO-27, "Thermostat"
Valve closing temperature	Refer to CO-27, "Thermostat"

- If valve setting at measured values are out of standard range, replace water control valve.

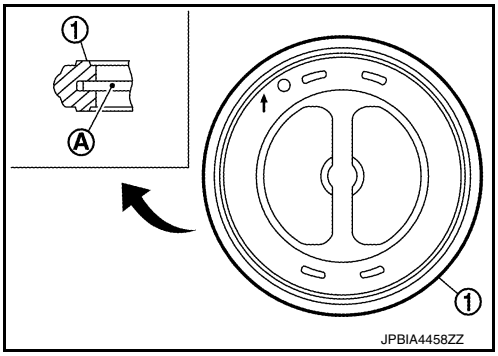
INSTALLATION

Installation is in the reverse order of removal.

Use Genuine RTV Silicone Sealant or equivalent. Refer to MA-12, "Fluids and Lubricants".

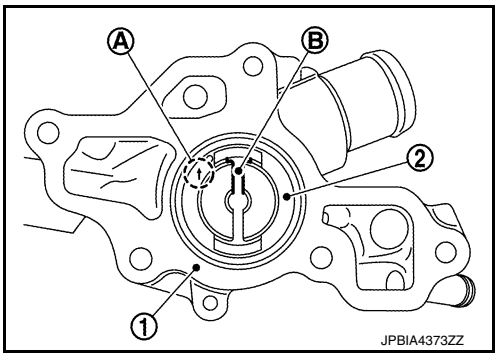
CAUTION:

- **Do not reuse rubber-ring.**
- **Do not reuse water outlet.**
- **If removed, do not reuse engine coolant temperature sensor.**
- **Do not spill engine coolant in engine compartment. Use a shop cloth to absorb engine coolant.**
- Install water control valve with the rubber ring (1) groove fit onto water control valve flange (A).



- Install water control valve (2) with the arrow (A) facing up, and the frame center part (B) facing engine.

(1) : Water outlet



INSPECTION AFTER INSTALLATION

After installation, refill engine coolant and check for leaks. Refer to CO-11, "System Inspection" and CO-13, "Changing Engine Coolant".

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

Periodical Maintenance Specification

INFOID:0000000012787839

ENGINE COOLANT CAPACITY (APPROXIMATE)

Unit: ℓ (US qt, Imp qt)

Engine coolant capacity (With reservoir tank at “MAX” level)	CVT models	6.6 (7, 5-7/8)
	M/T models	
Reservoir tank engine coolant capacity (At “MAX” level)		0.6 (5/8, 1/2)

Radiator

INFOID:0000000012787840

Unit: kPa (kg/cm^2, psi)

Cap relief pressure	Standard	88 ± 9.8 (0.90 ± 0.10, 12.8 ± 1.42)
	LImit	59 (0.6, 9)
Leakage testing pressure		156 (1.6, 23)

Thermostat

INFOID:0000000012787841

Standard

Valve opening temperature	80.5 - 83.5°C (177 - 182°F)
Maximum valve lift	8.0 mm/95°C (0.315 in/203°F)
Valve closing temperature	77°C (171°F)

Water Control Valve

INFOID:0000000012787842

Standard

Valve opening temperature	93.5 - 96.5°C (200 - 206°F)
Maximum valve lift	8.0 mm/108°C (0.315 in/226°F)
Valve closing temperature	90°C (194°F)