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CO
C
D
E
F
G
H
I
J
K
L
M
N
O
P

SECTION CO

ENGINE COOLING SYSTEM

CONTENTS

| | | | | |
|--------------------------------------------------------------------------------------------------|----|----------------------------------------------------|----|--|
| SERVICE INFORMATION | 2 | Checking Radiator Cap | 13 | |
| PRECAUTIONS | 2 | Checking Radiator | 13 | |
| Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" | 2 | COOLING FAN | 14 | |
| Precaution Necessary for Steering Wheel Rotation After Battery Disconnect | 2 | Component (Models with A/C) | 14 | |
| Precaution for Liquid Gasket | 2 | Component (Models without A/C) | 14 | |
| PREPARATION | 4 | Removal and Installation | 15 | |
| Special Service Tool | 4 | DISASSEMBLY AND ASSEMBLY | 15 | |
| Commercial Service Tool | 4 | WATER PUMP | 16 | |
| OVERHEATING CAUSE ANALYSIS | 5 | Component | 16 | |
| Troubleshooting Chart | 5 | Removal and Installation | 16 | |
| COOLING SYSTEM | 7 | THERMOSTAT | 17 | |
| Cooling Circuit | 7 | Component | 17 | |
| ENGINE COOLANT | 8 | Removal and Installation | 17 | |
| Inspection | 8 | WATER OUTLET AND WATER CONTROL VALVE | 19 | |
| Changing Engine Coolant | 8 | Component | 19 | |
| RADIATOR | 11 | Removal and Installation | 19 | |
| Component | 11 | SERVICE DATA AND SPECIFICATIONS (SDS) | 22 | |
| Removal and Installation | 11 | Standard and Limit | 22 | |

PRECAUTIONS

< SERVICE INFORMATION >

SERVICE INFORMATION

PRECAUTIONS

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

INFOID:000000001702522

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. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS 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, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, 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 SRS 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.

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:000000001702523

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NATS (NISSAN ANTI-THEFT SYSTEM).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NATS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

Precaution for Liquid Gasket

INFOID:000000001702524

REMOVAL OF LIQUID GASKET SEALING

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

PRECAUTIONS

< SERVICE INFORMATION >

Tool number : KV10111100 (J-37228)

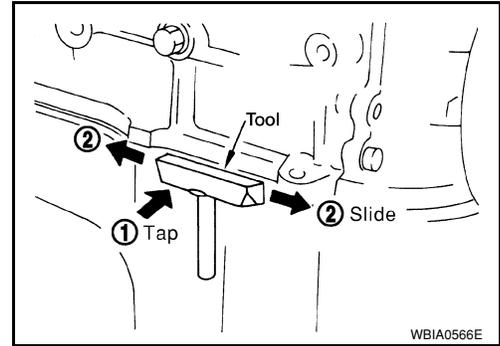
CAUTION:

Be careful not to damage the mating surfaces.

- Tap Tool to insert it (1), and then slide it by tapping on the side (2) as shown.
- In areas where Tool is difficult to use, use plastic hammer to lightly tap the parts, to remove it.

CAUTION:

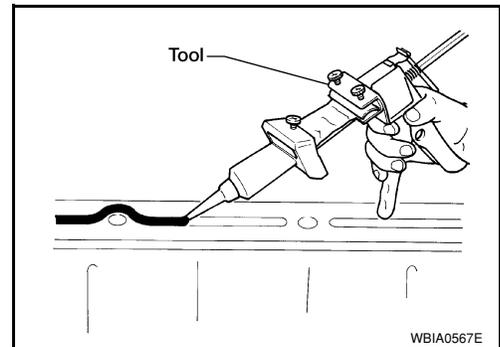
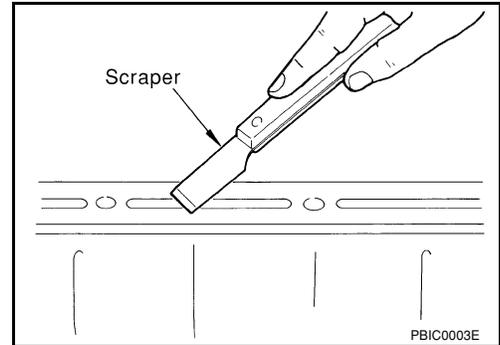
If for some unavoidable reason suitable tool such as screw-driver is used, be careful not to damage the mating surfaces.



LIQUID GASKET APPLICATION PROCEDURE

1. Remove old liquid gasket adhering to the liquid gasket application surface and the mating surface, using scraper.
 - Remove 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 materials.
3. Attach liquid gasket tube to Tool.

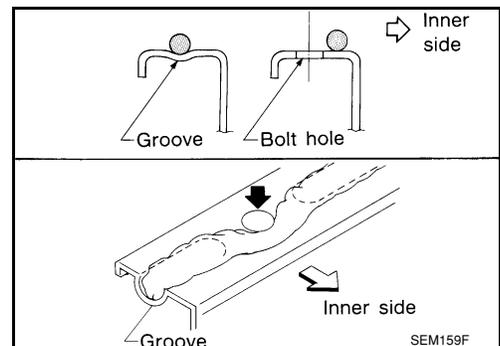
Tool number : WS39930000 (—)



Use Genuine RTV Silicone Sealant or equivalent. Refer to [GI-42, "Recommended Chemical Product and Sealant"](#).

4. Apply liquid gasket without breaks to the specified location with the specified dimensions.
 - If there is a groove for the liquid gasket application, apply liquid gasket to the groove.

- As for the bolt holes, normally apply liquid gasket inside the holes. Occasionally, it should be applied outside the holes. Make sure to read the text of service manual.
- Within five minutes of liquid gasket application, install the mating component.
- If liquid gasket protrudes, wipe it off immediately.
- Do not retighten nuts or bolts after the installation.
- After 30 minutes or more have passed from the installation, fill engine oil and engine coolant.



CAUTION:

If there are specific instructions in this manual, observe them.

PREPARATION

< SERVICE INFORMATION >

PREPARATION

Special Service Tool

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The actual shapes of Kent-Moore tools may from those of special service tools illustrated here.

| Tool number (Kent-Moore No.) Tool name | Description |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS39930000 (—) Tube pressure | Pressing the tube of liquid gasket |
| EG17650301 (J-33984-A) Radiator cap tester adapter | Adapting radiator cap tester to radiator cap and radiator filler neck a: 28 (1.10) dia. b: 31.4 (1.236) dia. c: 41.3 (1.626) dia. Unit: mm (in) |
| KV10111100 (J-37228) Seal cutter | Removing chain tensioner cover and water pump cover |
| — (J-23688) Engine coolant refractometer | Checking concentration of ethylene glycol in engine coolant |

Commercial Service Tool

INFOID:000000001702526

| Tool name | Description |
|---------------------|------------------------------------|
| Radiator cap tester | Checking radiator and radiator cap |

OVERHEATING CAUSE ANALYSIS

< SERVICE INFORMATION >

OVERHEATING CAUSE ANALYSIS

Troubleshooting Chart

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| | | Symptom | Check items | |
|----------------------------------|---------------------------------------|------------------------------------------------------|--------------------------------------------------|--------------|
| Cooling system parts malfunction | Poor heat transfer | Water pump malfunction | Worn or loose drive belt | — |
| | | Thermostat stuck closed | Thermostat | |
| | | Damaged fins | Dust contamination or paper clogging | |
| | | | Physical damage | |
| | | Clogged radiator cooling tube | Excess foreign material (rust, dirt, sand, etc.) | |
| | Reduced air flow | Cooling fan does not operate | Fan assembly | — |
| | | High resistance to fan rotation | | |
| | | Damaged fan blades | | |
| | | Damaged radiator shroud | — | — |
| | | Improper engine coolant mixture ratio | — | — |
| | | Poor engine coolant quality | — | — |
| | 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 | | |

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OVERHEATING CAUSE ANALYSIS

< SERVICE INFORMATION >

| | | 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 | |
| | | | Power train system malfunction | | |
| | | | Installed improper size wheels and tires | | |
| | | | Dragging brakes | | |
| | Blocked or restricted air flow | Blocked radiator grille | Blocked bumper | — | — |
| | | | Installed front bumper fascia cover | | |
| | | | Mud contamination or paper clogging | | |
| | | | Blocked air flow | Blocked radiator | |
| | | | | Blocked condenser | |
| | | | | Installed large fog lamp | |

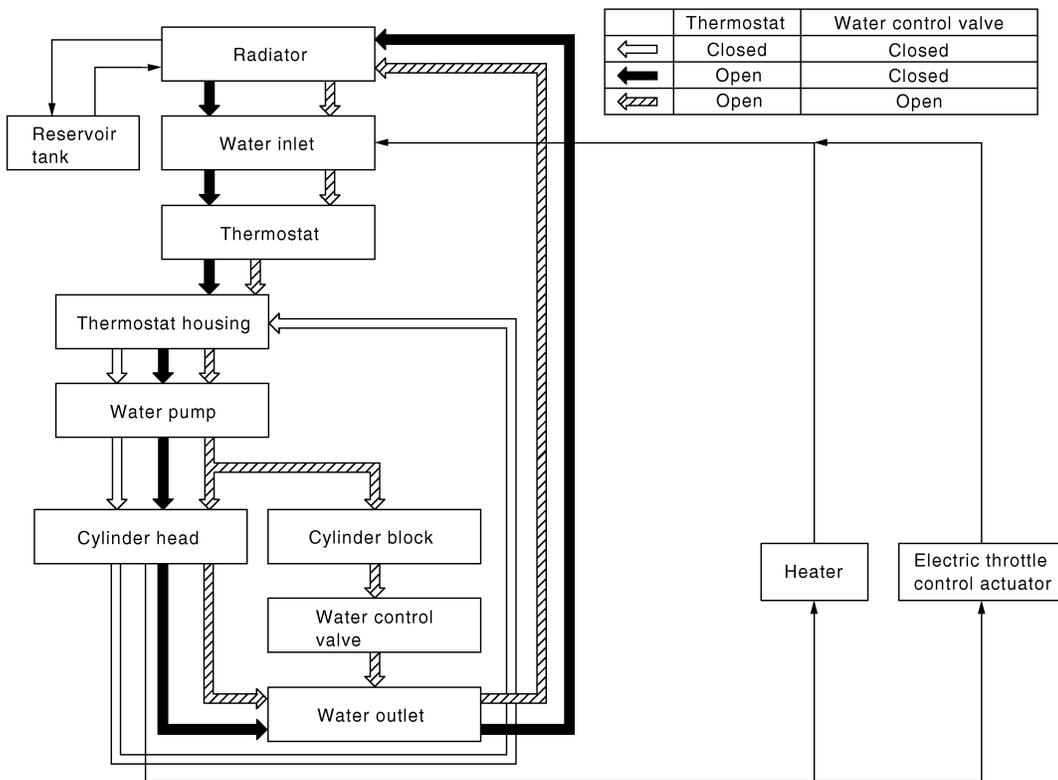
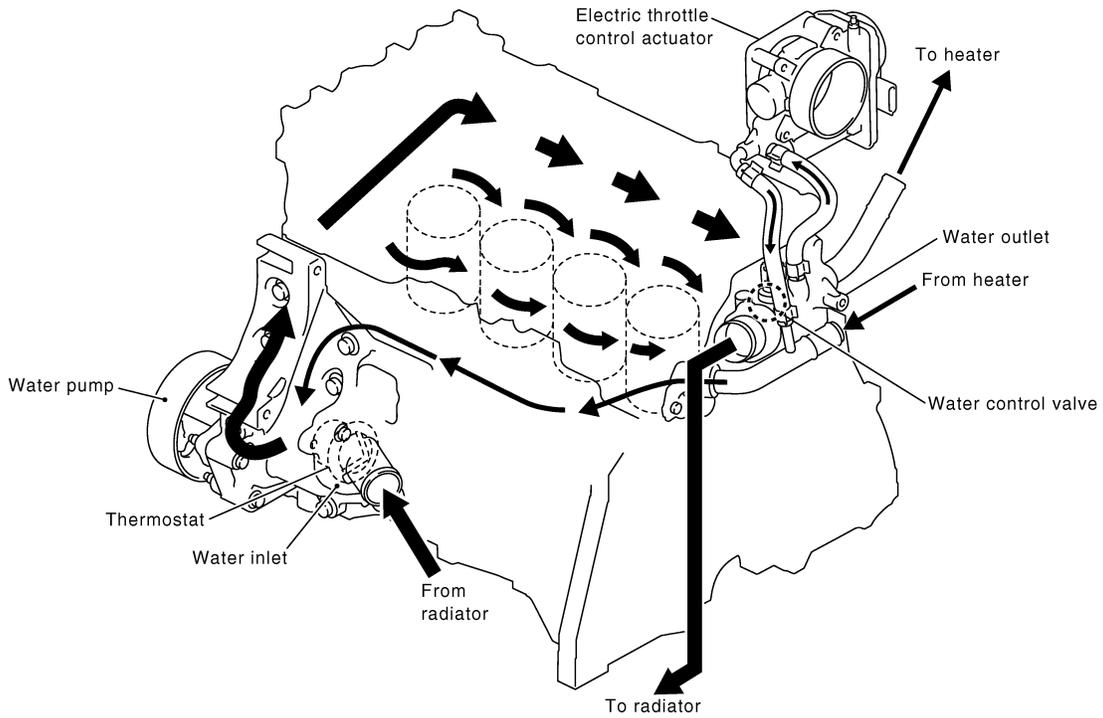
COOLING SYSTEM

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COOLING SYSTEM

Cooling Circuit

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ENGINE COOLANT

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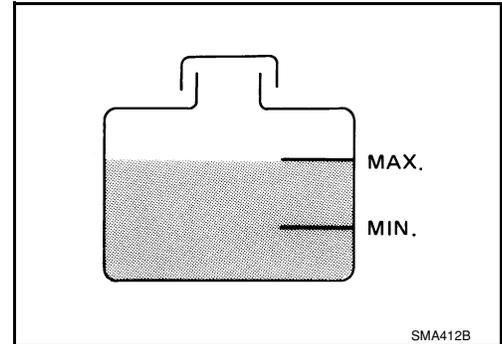
ENGINE COOLANT

Inspection

INFOID:000000001702529

LEVEL CHECK

- Check if the reservoir tank engine coolant level is within the “MIN” to “MAX” range when engine is cool.
- Adjust the engine coolant level as necessary.



CHECKING COOLING SYSTEM FOR LEAKS

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

Tool number : EG17650301 (J-33984-A)

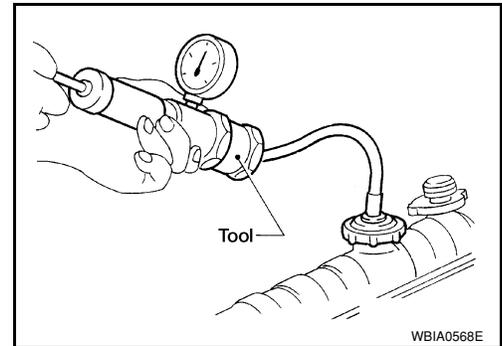
Testing pressure : 157 kPa (1.6 kg/cm², 23 psi)

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator.

CAUTION:

Higher pressure than specified may cause radiator damage.



Changing Engine Coolant

INFOID:000000001702530

WARNING:

- To avoid being scalded, do not change engine coolant when engine is hot.
- Wrap a thick cloth around radiator cap and carefully remove the cap. First, turn the cap a quarter of a turn to release built-up pressure. Then turn the cap all the way.
- Be careful not to allow engine coolant to contact drive belt.

DRAINING ENGINE COOLANT

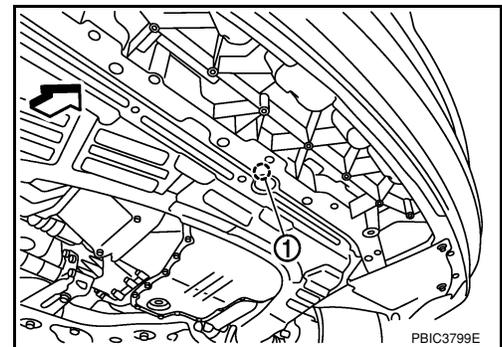
1. Open radiator drain plug (1) at the bottom of radiator, and then remove radiator cap.

- ← Front

When drain all of engine coolant in the system, open water drain plug on cylinder block. Refer to [EM-76](#).

CAUTION:

- Perform this step when engine is cold.
- Do not spill engine coolant on drive belt.



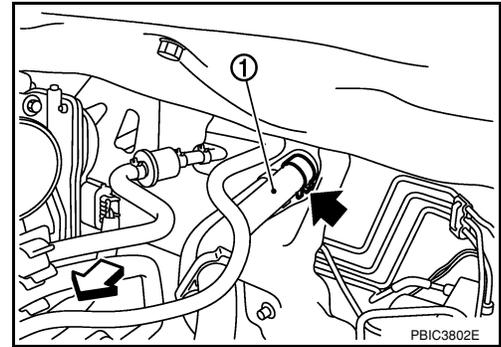
2. Remove reservoir tank as necessary, and drain engine coolant and clean reservoir tank before installing. Refer to [CO-11](#).
3. Check drained engine coolant for contaminants such as rust, corrosion or discoloration. If contaminated, flush the engine cooling system. Follow the "FLUSHING COOLING SYSTEM" procedure.

REFILLING ENGINE COOLANT

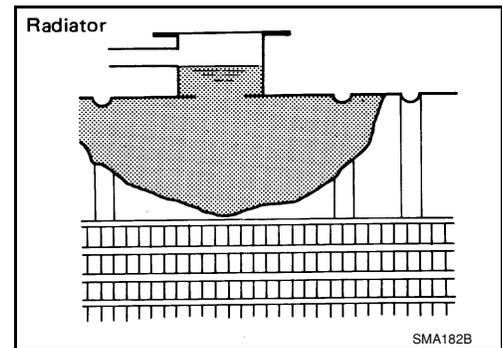
ENGINE COOLANT

< SERVICE INFORMATION >

1. Install reservoir tank if removed. Refer to [CO-11](#).
2. Install radiator drain plug.
 - If water drain plug on cylinder block is removed, close and tighten it. Refer to [EM-76](#).**CAUTION:**
Be sure to clean radiator drain plug and install with new O-ring. Refer to [CO-11, "Component"](#).
3. Make sure that each hose clamp has been firmly tightened.
4. Remove air duct assembly. Refer to [EM-16](#).
5. Disconnect heater hose (1) at position (←) as shown.
 - ← Front
 - Reposition heater hose as high as possible.



6. Fill radiator and reservoir tank to specified level.
 - Pour engine coolant through engine coolant filler neck slowly of less than 2 ℓ (2 1/8 US qt, 1-3/4 Imp qt) a minute to allow air in system to escape.
 - Use NISSAN Genuine Engine Coolant or equivalent mixed with water (distilled or demineralized). Fill cooling system to specification. Refer to [MA-10](#).
 - When engine coolant overflows disconnected heater hose, connect heater hose, and continue filling the engine coolant, if heater hose is disconnected.
7. Install radiator cap.
8. Install air duct assembly. Refer to [EM-16](#).
9. Warm up until opening thermostat. Standard for warming-up time is approximately 10 minutes at 3,000 rpm.
 - Make sure thermostat opening condition by touching radiator hose (lower) to see a flow of warm water.**CAUTION:**
Watch water temperature gauge so as not to overheat the engine.
10. Stop engine and cool down to less than approximately 50°C (122°F).
 - Cool down using fan to reduce the time.
 - If necessary, refill radiator up to filler neck with engine coolant.
11. Refill reservoir tank to "MAX" level line with engine coolant.
12. Repeat steps 6 through 11 two or more times with radiator cap installed until engine coolant level no longer drops.
13. Check cooling system for leaks with engine running.
14. Warm up engine, and check for sound of engine coolant flow while running engine from idle up to 3,000 rpm with heater temperature controller set at several position between "COOL" and "WARM".
 - Sound may be noticeable at heater unit.
15. Repeat step 14 three times.
16. If sound is heard, bleed air from cooling system by repeating steps 6 through 11 until engine coolant level no longer drops.



FLUSHING COOLING SYSTEM

1. Install reservoir tank if removed. Refer to [CO-11](#).
2. Install radiator drain plug.
 - If water drain plug on cylinder block is removed, close and tighten it. Refer to [EM-76](#).**CAUTION:**
Be sure to clean radiator drain plug and install with new O-ring. Refer to [CO-11, "Component"](#).

ENGINE COOLANT

< SERVICE INFORMATION >

3. Fill radiator and reservoir tank with water and reinstall radiator cap.
4. Run engine and warm it up to normal operating temperature.
5. Rev engine two or three times under no-load.
6. Stop engine and wait until it cools down.
7. Drain water from the cooling system. Refer to [CO-8, "Changing Engine Coolant"](#).
8. Repeat steps 1 through 7 until clear water begins to drain from radiator.

RADIATOR

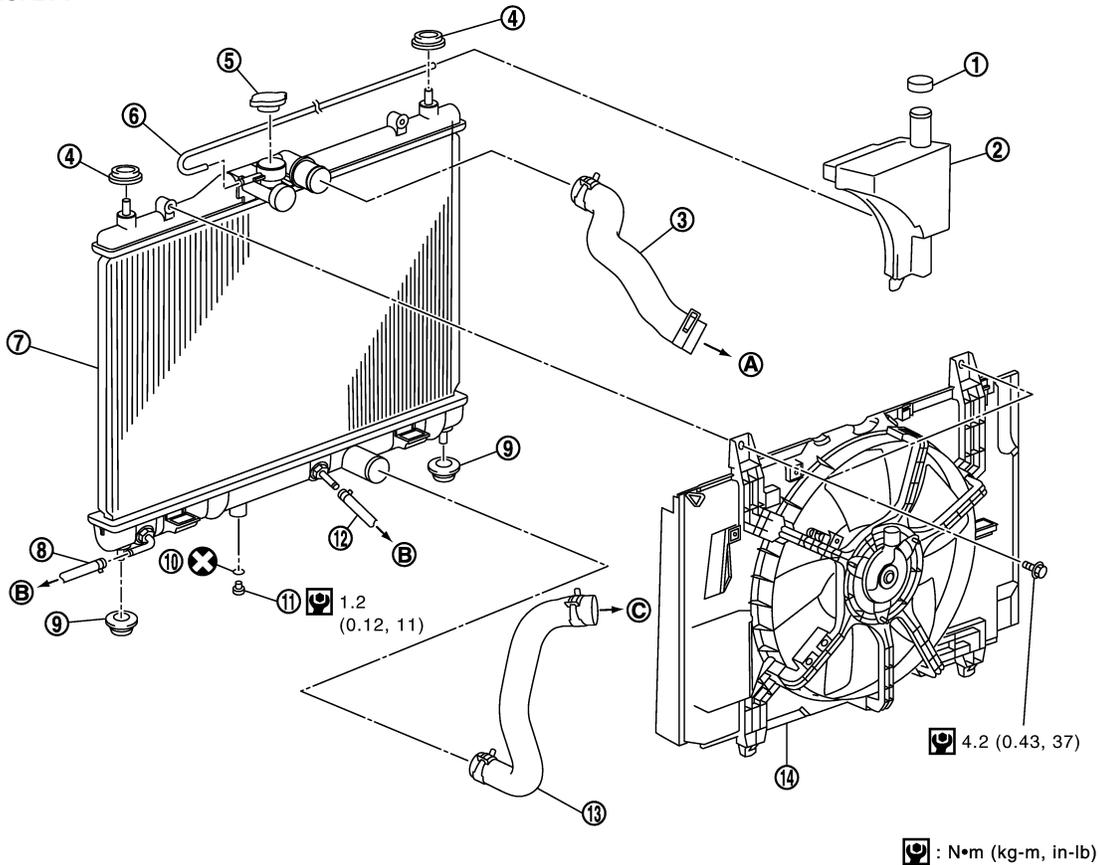
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RADIATOR

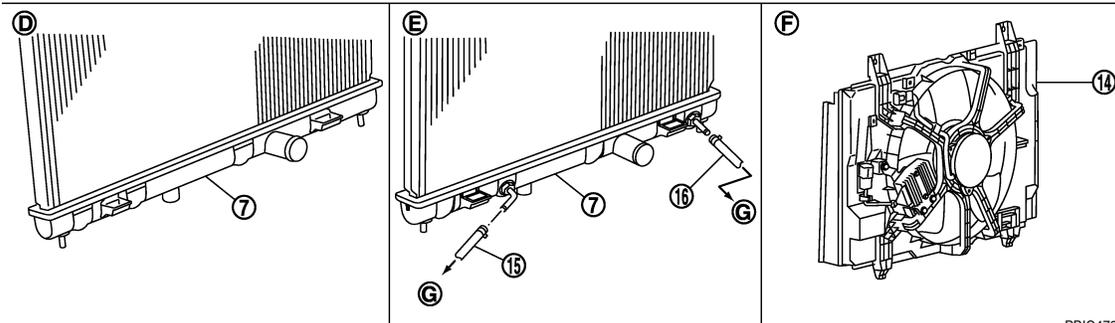
Component

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SEC. 214



: N•m (kg-m, in-lb)



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|----------------------------|--------------------------|----------------------------|
| 1. Reservoir tank cap | 2. Reservoir tank | 3. Radiator hose (upper) |
| 4. Mounting rubber (upper) | 5. Radiator cap | 6. Reservoir tank hose |
| 7. Radiator | 8. A/T fluid cooler hose | 9. Mounting rubber (lower) |
| 10. O-ring | 11. Radiator drain plug | 12. A/T fluid cooler hose |
| 13. Radiator hose (lower) | 14. Cooling fan assembly | 15. CVT fluid cooler hose |
| 16. CVT fluid cooler hose | A. To water outlet | B. To A/T |
| C. To water inlet | D. M/T models | E. CVT models |
| F. Models with A/C | G. To CVT | |

Removal and Installation

INFOID:000000001702532

WARNING:

RADIATOR

< SERVICE INFORMATION >

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

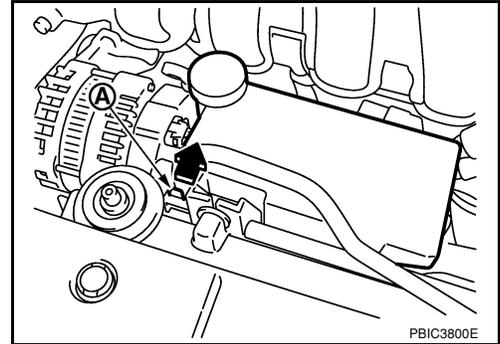
REMOVAL

1. Drain engine coolant from radiator. Refer to [CO-8, "Changing Engine Coolant"](#).

CAUTION:

- Perform this step when engine is cold.
- Do not spill engine coolant on drive belt.

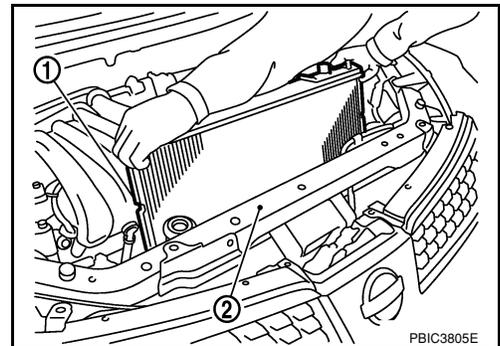
2. Remove air duct (inlet). Refer to [EM-16](#).
3. Remove reservoir tank as follows:
 - a. Disconnect reservoir tank hose.
 - b. Release the tab (A) in the direction shown by the arrow (←).
 - c. Lift up while removing the reservoir tank hose, and remove it.



4. Disconnect harness connector from fan motors, and move harness to aside.
5. Disconnect CVT or A/T fluid cooler hoses if equipped.
 - Install plug to avoid leakage of CVT or A/T fluid if equipped.
6. Remove radiator hoses (upper and lower).
7. Remove radiator core support cover. Refer to [BL-19](#).
8. Remove radiator core support (upper) bolts, bolts of stationary part on the radiator core support side and clip. Lift radiator from radiator (upper) mount part of radiator core support (upper) (2).
9. Move radiator assembly (1) to the rearward direction of vehicle, and then lift it upward to remove.

CAUTION:

Do not damage or scratch A/C condenser if equipped and radiator core when removing.



INSTALLATION

Installation is the reverse order of removal.

CAUTION:

Do not damage or scratch A/C condenser if equipped and radiator core when removing.

INSPECTION AFTER INSTALLATION

- Check for leaks of engine coolant. Refer to [CO-8, "Inspection"](#).
- Start and warm up engine. Visually check if there is no leaks of engine coolant and CVT or A/T fluid if equipped. Refer to [CVT-13](#) or [AT-15](#).

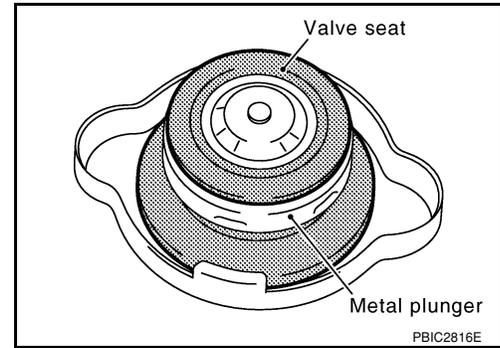
RADIATOR

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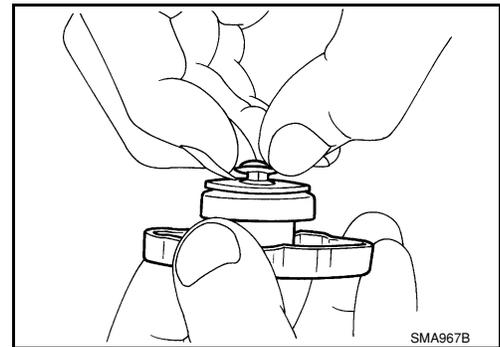
Checking Radiator Cap

INFOID:000000001702533

- Check valve seat of radiator cap.
- Check if valve seat is swollen to the extent that the edge of the plunger cannot be seen when watching it vertically from the top.
- Check if valve seat has no soil and damage.



- Pull negative-pressure valve to open it, and make sure that it is completely closed when released.
- Make sure that there is no dirt or damage on the valve seat of radiator cap negative-pressure valve.
- Make sure that the valve operates properly in the opening and closing conditions.



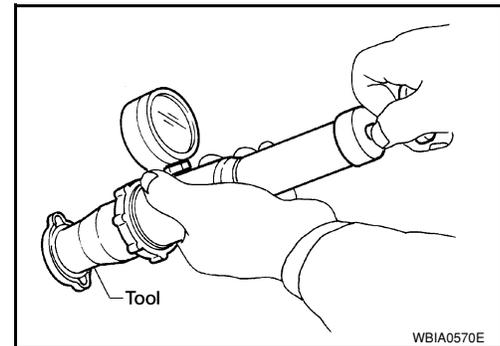
- Check radiator cap relief pressure using Tool.

Tool number : EG17650301 (J-33984-A)

Standard: 78 – 98 kPa (0.78 - 0.98 bar, 0.8 – 1.0 kg/cm², 11 – 14 psi)

Limit: 59 kPa (0.59 bar, 0.6 kg/cm², 9 psi)

- When connecting the radiator cap to the tester, apply water or coolant to the cap seal surface.
- Replace the radiator cap if there is an abnormality in the negative-pressure valve, or if the open-valve pressure is outside of the standard values.



- Replace radiator cap if there it does not comply to specifications to the above three checks.

CAUTION:

When installing radiator cap, thoroughly wipe out the radiator filler neck to remove any waxy residue or foreign material.

Checking Radiator

INFOID:000000001702534

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

- Be careful not to bend or damage radiator fins.
 - When radiator is cleaned without removal, remove all surrounding parts such as cooling fan, radiator shroud and horns. Then tape harness and connectors to prevent water from entering.
1. Apply water by hose to the back side of the radiator core vertically downward.
 2. Apply water again to all radiator core surface once per minute.
 3. Stop washing if any stains no longer flow out from radiator.
 4. Blow air into the back side of radiator core vertically downward.
 - Use compressed air lower than 490 kPa (4.9 bar, 5 kg/cm², 71 psi) and keep distance more than 30 cm (11.8 in).
 5. Blow air again into all the radiator core surfaces once per minute until no water sprays out.

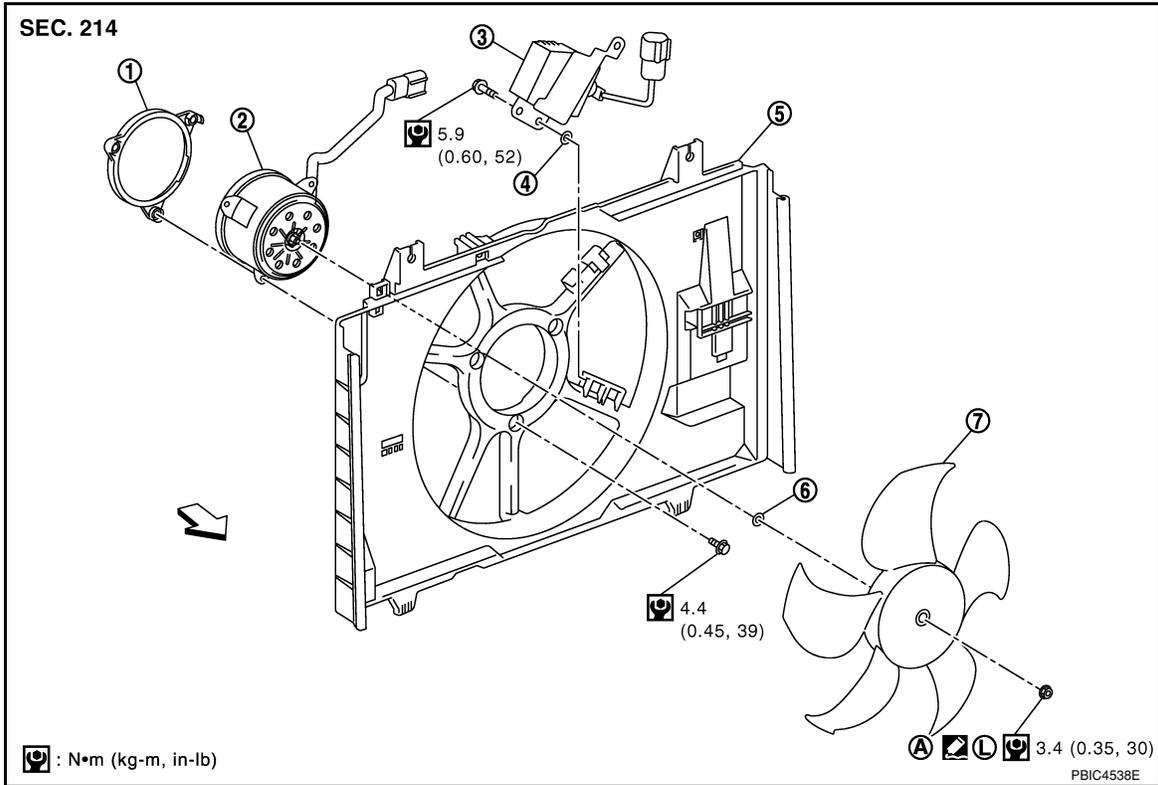
COOLING FAN

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COOLING FAN

Component (Models with A/C)

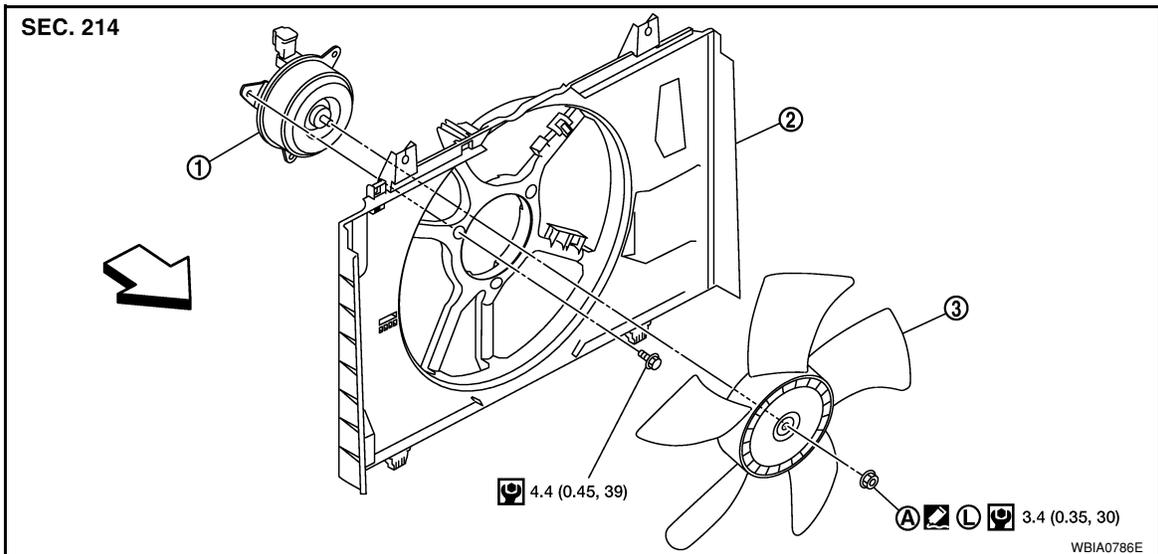
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|--------------------|-----------------------------|-------------------------------|
| 1. Fan motor cover | 2. Fan motor | 3. Cooling fan control module |
| 4. Washer | 5. Fan shroud | 6. Washer |
| 7. Cooling fan | A. Apply on fan motor shaft | ← Front |

Component (Models without A/C)

INFOID:000000001702536



- | | | |
|-----------------------------|---------------|----------------|
| 1. Fan motor | 2. Fan shroud | 3. Cooling fan |
| A. Apply on fan motor shaft | ← Front | |

COOLING FAN

< SERVICE INFORMATION >

Removal and Installation

INFOID:000000001702537

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REMOVAL

1. Drain engine coolant from radiator. Refer to [CO-8, "Changing Engine Coolant"](#).

CAUTION:

- Perform this step when engine is cold.
- Do not spill engine coolant on drive belt.

2. Remove air duct (inlet). Refer to [EM-16, "Component"](#).
3. Remove reservoir tank. Refer to [CO-11, "Component"](#).
4. Disconnect radiator hose (upper) at radiator side. Refer to [CO-11, "Component"](#).
5. Disconnect harness connectors from fan motor, and move harness to aside.
6. Remove cooling fan assembly.

CAUTION:

Be careful not to damage or scratch the radiator core.

INSTALLATION

Installation is the reverse order of removal.

- Cooling fans are controlled by ECM. For details, refer to [EC-412](#).

CAUTION:

Be careful not to damage or scratch the radiator core.

DISASSEMBLY AND ASSEMBLY

INFOID:000000001702538

Disassembly

1. Remove cooling fan from fan motor.
2. Remove fan motor from fan shroud.

Inspection After Disassembly

Inspect cooling fan for crack or unusual bend.

- If anything is found, replace cooling fan.

Assembly

Assembly is the reverse order of disassembly.

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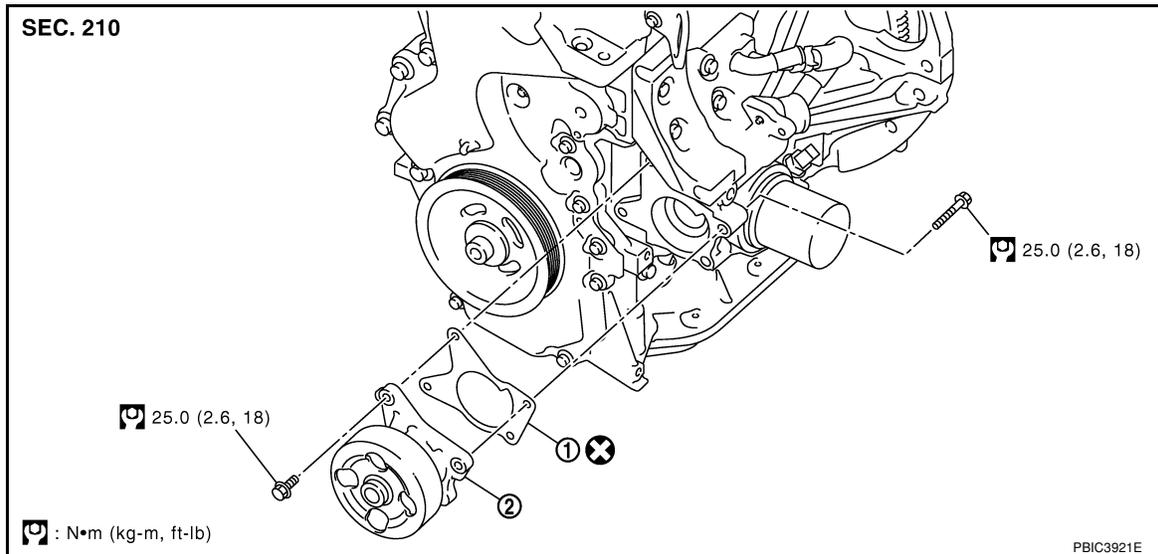
WATER PUMP

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WATER PUMP

Component

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1. Gasket

2. Water pump

Removal and Installation

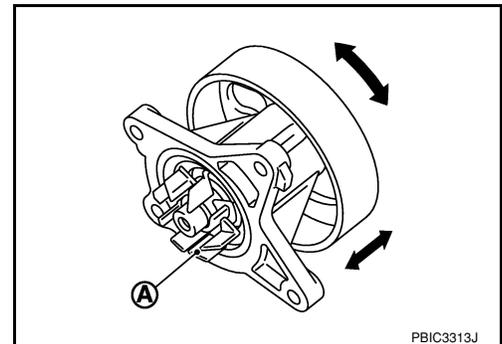
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REMOVAL

1. Drain engine coolant. Refer to [CO-8. "Changing Engine Coolant"](#).
CAUTION:
Perform this step when the engine is cold.
2. Remove drive belt auto-tensioner. Refer to [EM-37](#).
3. Remove water pump.
CAUTION:
 - Handle water pump vane so that it does not contact any other parts.
 - Water pump cannot be disassembled and should be replaced as a unit.

INSPECTION AFTER REMOVAL

- Visually check that there is no significant dirt or rusting on water pump body and vane (A).
- Make sure that there is no looseness in vane shaft, and that it turns smoothly when rotated by hand.
- Replace water pump, if necessary.



INSTALLATION

Installation is in the reverse order of removal.

INSPECTION AFTER INSTALLATION

- Check for leaks of engine coolant. Refer to [CO-8. "Inspection"](#).
- Start and warm up the engine. Visually check if there is no leaks of engine coolant.

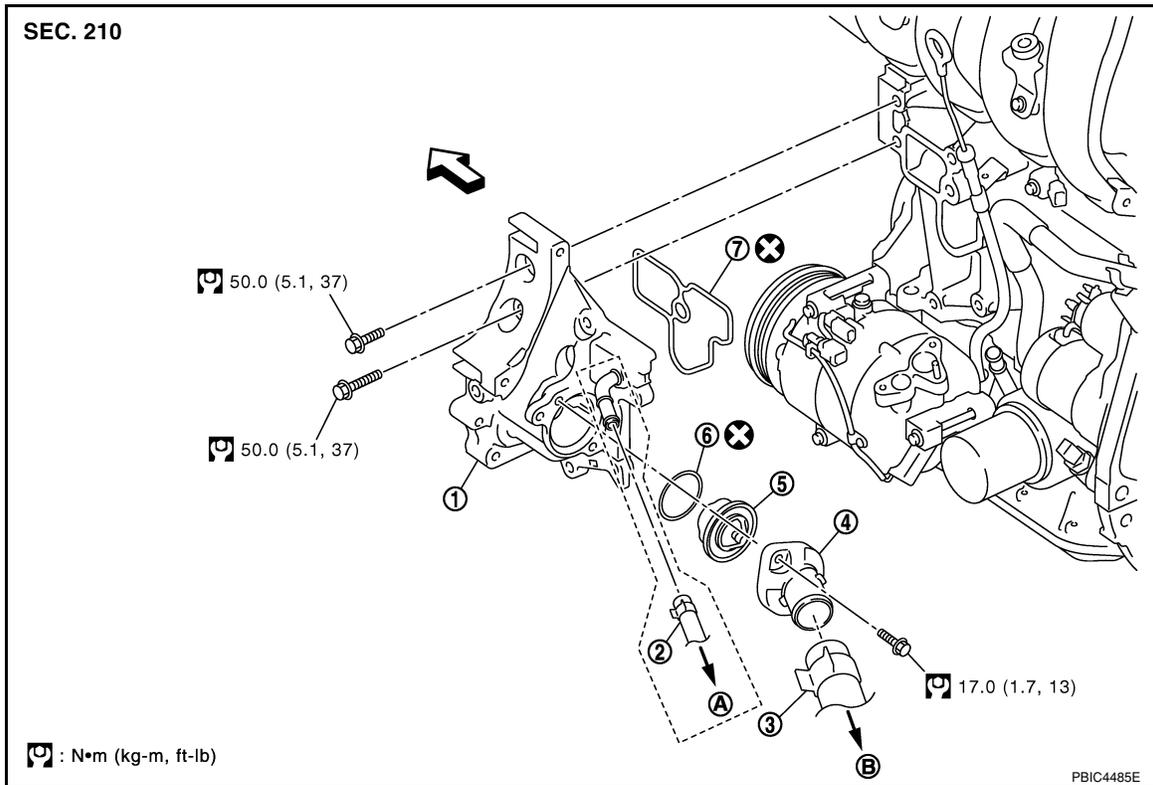
THERMOSTAT

< SERVICE INFORMATION >

THERMOSTAT

Component

INFOID:000000001702541



- | | | |
|-----------------------|----------------------------------------|--------------------------|
| 1. Thermostat housing | 2. Water hose (models with oil cooler) | 3. Radiator hose (lower) |
| 4. Water inlet | 5. Thermostat | 6. Rubber ring |
| 7. Gasket | A. To oil cooler | B. To radiator |

↶ Engine front

Removal and Installation

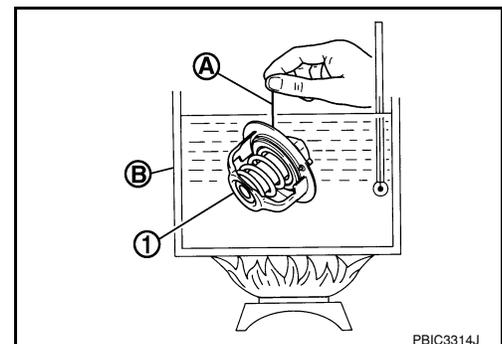
INFOID:000000001702542

REMOVAL

1. Drain engine coolant. Refer to [CO-8. "Changing Engine Coolant"](#).
2. Remove water inlet.
3. Remove thermostat.
4. Remove water pump. Refer to [CO-16](#).
5. Remove thermostat housing.

INSPECTION AFTER REMOVAL

- Place a thread (A) so that it is caught in the valves of 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 falls from the thread.
- Continue heating. Check the full open valve lift amount.
- After checking the maximum valve lift amount, lower the water temperature and check the valve closing temperature.



THERMOSTAT

< SERVICE INFORMATION >

| Items | Thermostat |
|---------------------------|------------------------------|
| Valve opening temperature | 80.5 - 83.5°C (177 - 182°F) |
| Maximum valve lift | 8 mm/ 95°C (0.315 in/ 203°F) |
| Valve closing temperature | 77°C (171°F) |

- If out of the specification, replace thermostat.

INSTALLATION

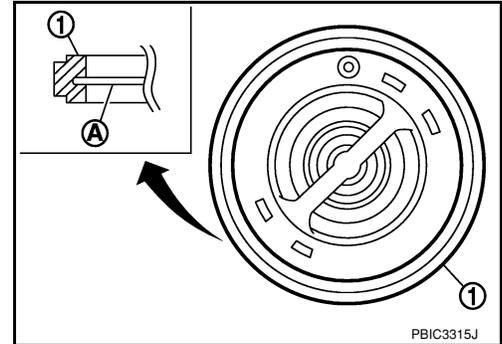
Installation is in the reverse order of removal.

Thermostat

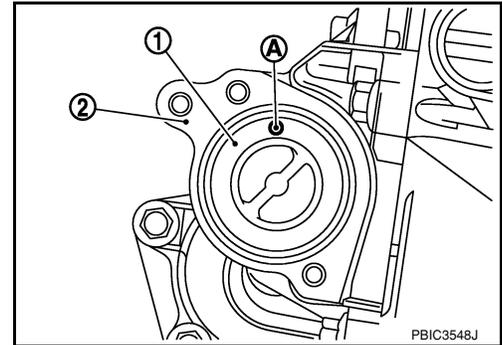
CAUTION:

Replace the rubber ring with a new one.

- Install thermostat while making rubber ring (1) groove fit to thermostat flange (A) around the whole circumference.



- Install thermostat (1) into the thermostat housing (2) with jiggle valve (A) facing upwards.



Thermostat Housing

CAUTION:

Replace the rubber ring with a new one.

- Securely insert the rubber ring into the mating groove of thermostat housing and install it.
- Install the thermostat housing to the cylinder block without displacing the gasket from the gasket position.

INSPECTION AFTER INSTALLATION

- Check for leaks of engine coolant. Refer to [CO-8. "Inspection"](#).
- Start and warm up the engine. Visually check for engine coolant leaks.

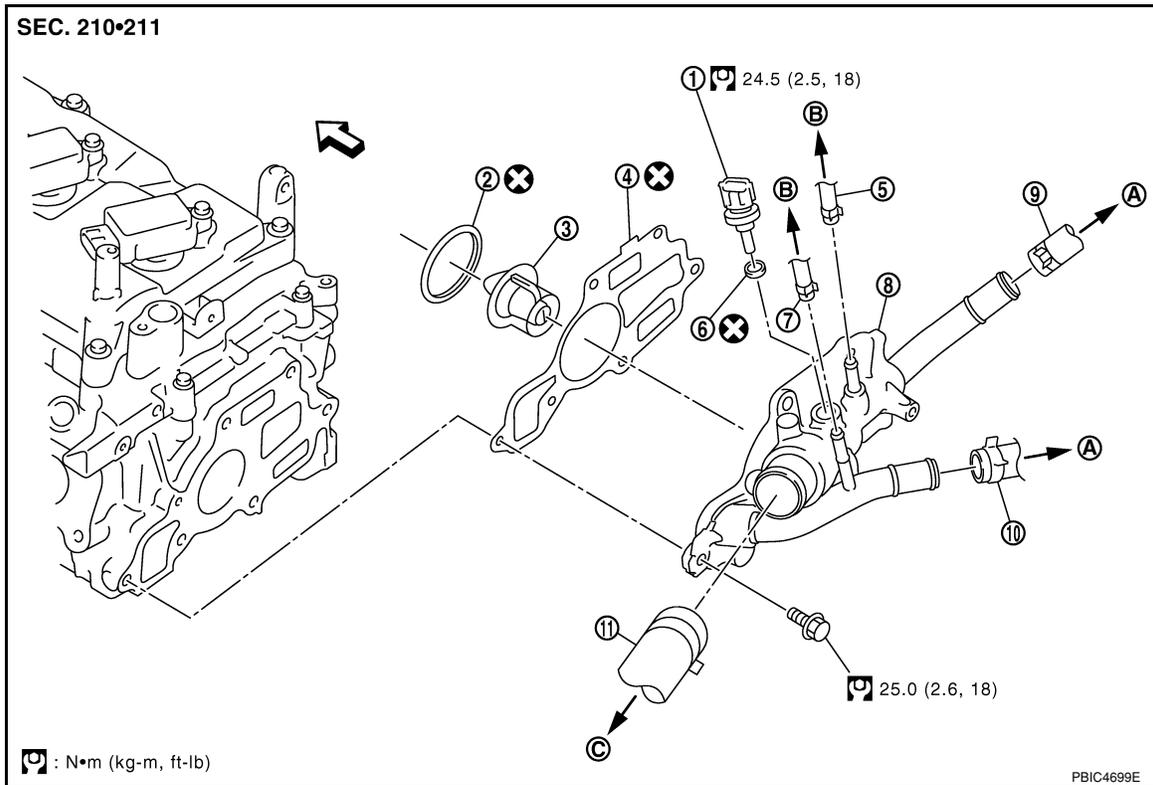
WATER OUTLET AND WATER CONTROL VALVE

< SERVICE INFORMATION >

WATER OUTLET AND WATER CONTROL VALVE

Component

INFOID:000000001702543



- | | | |
|--------------------------------------|------------------------------------------|------------------------|
| 1. Engine coolant temperature sensor | 2. Rubber ring | 3. Water control valve |
| 4. Gasket | 5. Water hose | 6. Gasket |
| 7. Water hose | 8. Water outlet | 9. Heater hose |
| 10. Heater hose | 11. Radiator hose (upper) | ⇐ Front |
| A. To heater | B. To electric throttle control actuator | C. To radiator |

Removal and Installation

INFOID:000000001702544

REMOVAL

1. Drain engine coolant. Refer to [CO-8, "Changing Engine Coolant"](#).
CAUTION:
Perform this step when the engine is cold.
2. Remove air duct. Refer to [EM-16, "Component"](#).
3. Remove radiator hose (upper). Refer to [CO-11, "Component"](#).
4. Remove heater hoses and water hoses.
5. Remove water outlet.
6. Remove water control valve.
7. Remove engine coolant temperature sensor, if necessary.
CAUTION:
 - Handle carefully to avoid any shock to engine coolant temperature sensor.
 - Replace the gasket with a new one.

INSPECTION AFTER REMOVAL

WATER OUTLET AND WATER CONTROL VALVE

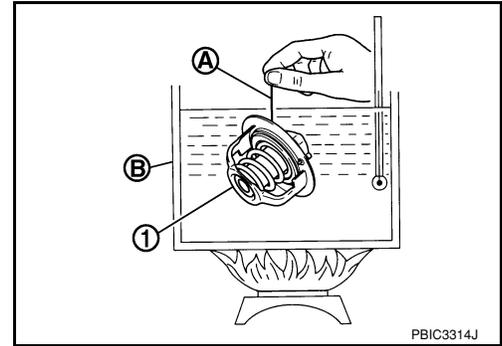
< SERVICE INFORMATION >

- Place a thread (A) so that it is caught in the valves of 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 falls from the thread.
- Continue heating. Check the full open valve lift amount.

NOTE:

The maximum valve lift amount standard temperature for water control valve is the reference value.

- After checking the maximum valve lift amount, lower the water temperature and check the valve closing temperature.



| | |
|---------------------------|-------------------------------|
| Valve opening temperature | 93.5 - 96.5°C (200 - 206°F) |
| Maximum valve lift | 8 mm/ 108°C (0.315 in/ 226°F) |
| Valve closing temperature | 90°C (194°F) |

- If out of the specification, replace water control valve.

INSTALLATION

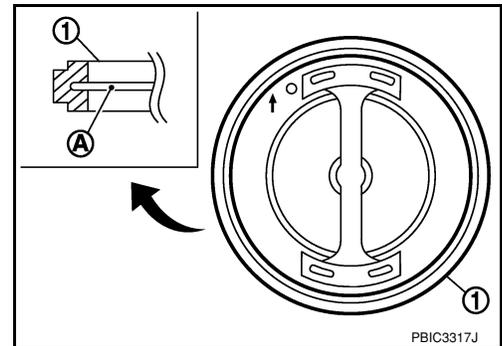
Installation is in the reverse order of removal.

Water Control Valve

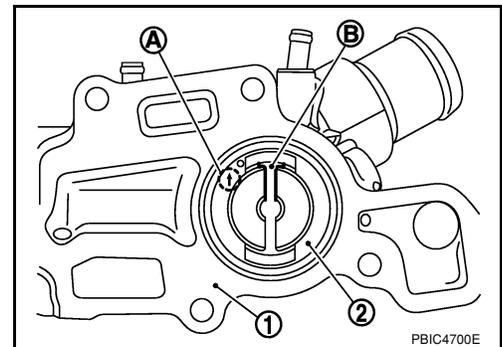
CAUTION:

Replace the rubber ring with a new one.

- Install water control valve while making rubber ring (1) groove fit to water control valve flange (A) around the whole circumference.



- While the mark (A) points to up, install water control valve (2) with frame center (B) facing straight upward into water outlet (1).



Water Outlet

Install the water control valve to the cylinder head without displacing the valve from the valve position.

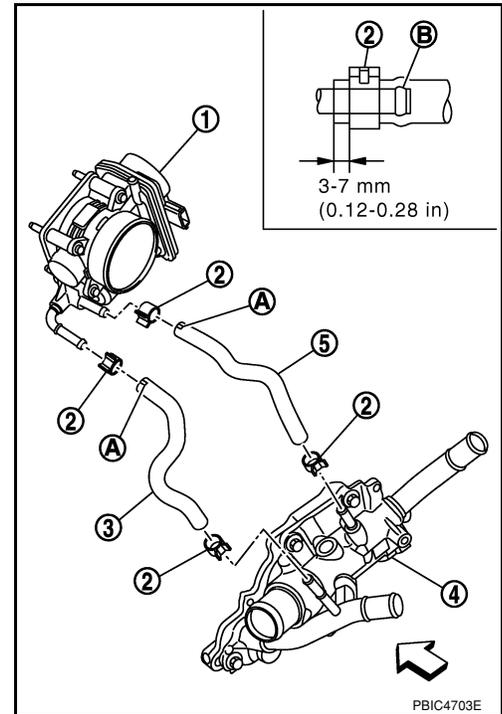
Water Hoses

WATER OUTLET AND WATER CONTROL VALVE

< SERVICE INFORMATION >

Install water hoses (3),(5) as shown.

- Electric throttle control actuator (1)
- Clamp (2)
- Water outlet (4)
- Paint mark (A)
- Clamp shall not interfere with the bulged area (B)



INSPECTION AFTER INSTALLATION

- Check for leaks of engine coolant. Refer to [CO-8. "Inspection"](#).
- Start and warm up the engine. Visually check if there is no leaks of engine coolant.

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

SERVICE DATA AND SPECIFICATIONS (SDS)

Standard and Limit

INFOID:000000001702545

CAPACITY

Unit: ℓ (US qt, Imp qt)

| | |
|--------------------------------------------------------------|--------------------------|
| Engine coolant capacity (with reservoir tank at "MAX" level) | Approx. 6.8 (7 1/4, 6.0) |
|--------------------------------------------------------------|--------------------------|

THERMOSTAT

| | |
|---------------------------|------------------------------|
| Valve opening temperature | 80.5 - 83.5°C (177 - 182°F) |
| Maximum valve lift | 8 mm/ 95°C (0.315 in/ 203°F) |
| Valve closing temperature | 77°C (171°F) |

WATER CONTROL VALVE

| | |
|---------------------------|-------------------------------|
| Valve opening temperature | 93.5 - 96.5°C (200 - 206°F) |
| Maximum valve lift | 8 mm/ 108°C (0.315 in/ 226°F) |
| Valve closing temperature | 90°C (194°F) |

RADIATOR

Unit: kPa (bar, kg/cm², psi)

| | | |
|-----------------------|----------|------------------------------------------|
| Cap relief pressure | Standard | 78 - 98 (0.78 - 0.98, 0.8 - 1.0, 11- 14) |
| | Limit | 59 (0.59, 0.6, 9) |
| Leakage test pressure | | 157 (1.57, 1.6, 23) |