SECTION CO
ENGINE COOLING SYSTEM

CONTENTS

PRECAUTIONS

PFP:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

EBS00LUD

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.**

Precautions for Liquid Gasket

EBS0024Y

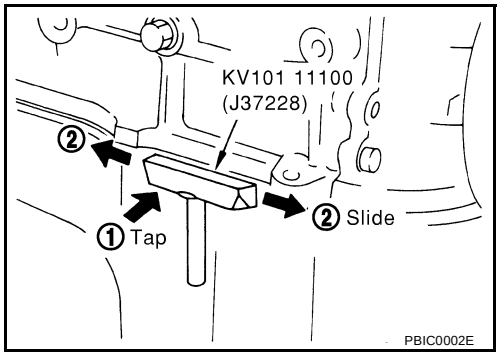
REMOVAL OF LIQUID GASKET SEALING

- After removing the mounting bolts and nuts, separate the mating surface using a seal cutter and remove the old liquid gasket sealing.

  CAUTION:
  Be careful not to damage the mating surfaces.

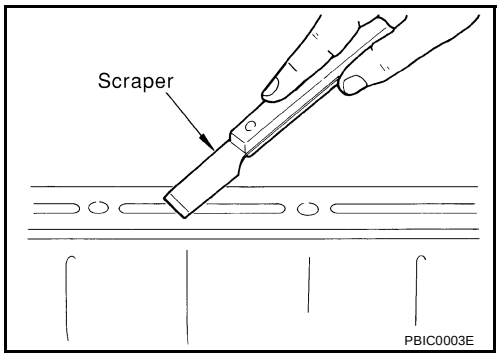
- In areas where the cutter is difficult to use, use a plastic hammer to lightly tap the area where the liquid gasket is applied.

  CAUTION:
  If for some unavoidable reason a tool such as a flat-bladed screwdriver is used, be careful not to damage the mating surfaces.

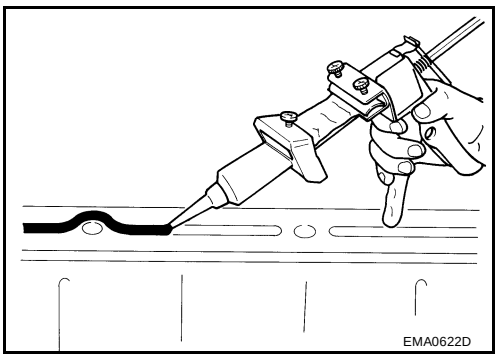


LIQUID GASKET APPLICATION PROCEDURE

1. Using a scraper, remove the old liquid gasket adhering to the liquid gasket application surface and the mating surface.
   - Remove the liquid gasket completely from the groove of the liquid gasket application surface, mounting bolts, and bolt holes.
2. Wipe the liquid gasket application surface and the mating surface with white gasoline (lighting and heating use) to remove adhering moisture, grease and foreign materials.
3. Attach the liquid gasket tube to the tube presser.
   Use Genuine Thread Sealant or equivalent. Refer to GI-46, "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS" .

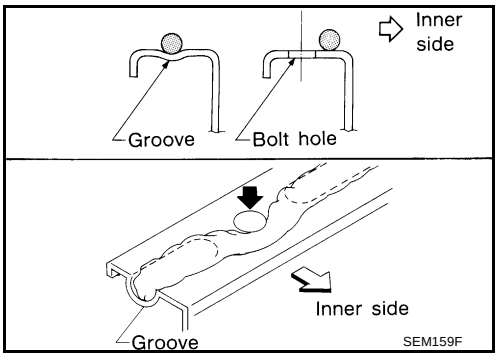


4. Apply the liquid gasket without breaks to the specified location with the specified dimensions.
   - If there is a groove for the liquid gasket application, apply the liquid gasket to the groove.



   - As for the bolt holes, normally apply the 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 the liquid gasket protrudes, wipe it off immediately.
   - Do not retighten after the installation.
   - After 30 minutes or more have passed from the installation, fill the engine oil and engine coolant.

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



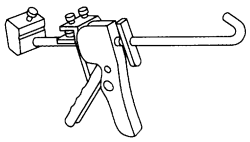
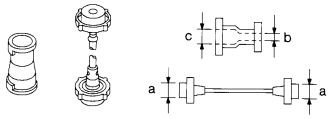
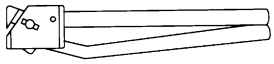
PREPARATION

PFP:00002

Special Service Tools

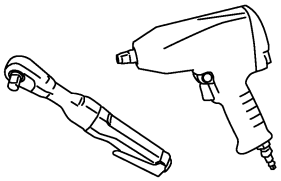
EBS00256

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  S-NT052	Pressing the tube of liquid gasket
EG17650301 (J33984-A) Radiator cap tester adapter  S-NT564	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)
KV99103510 (–) Radiator plate pliers A  S-NT224	Installing radiator upper and lower tanks
KV99103520 (–) Radiator plate pliers B  S-NT225	Removing radiator upper and lower tanks

Commercial Service Tools

EBS003G1

Tool name	Description
Power tool  PBIC0190E	Loosening bolts and nuts

OVERHEATING CAUSE ANALYSIS

PFP:00012

Troubleshooting Chart

EBS00257

	Symptom		Check items	
Cooling system parts malfunction	Poor heat transfer	Water pump malfunction	Worn or loose drive belt	—
		Thermostat stuck closed	—	
		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	—	Engine coolant density	—
	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

OVERHEATING CAUSE ANALYSIS

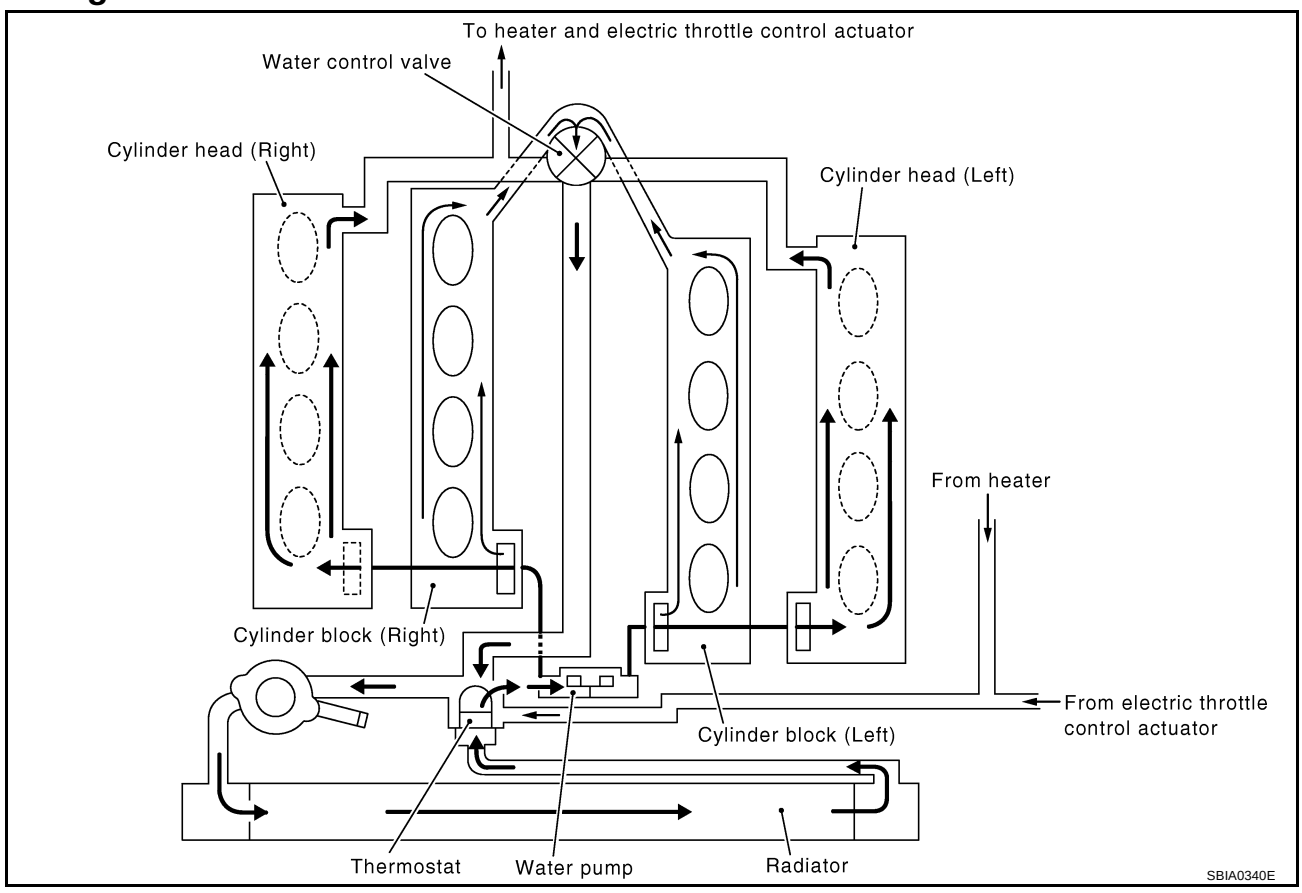
	Symptom		Check items	
Except cooling system parts malfunction	—	Overload on engine	Abusive driving	High engine rpm under no load
				Driving in low gear for extended time
				Driving at extremely high speed
			Powertrain system malfunction	—
			Installed improper size wheels and tires	
			Dragging brakes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

COOLING SYSTEM

PFP:21020

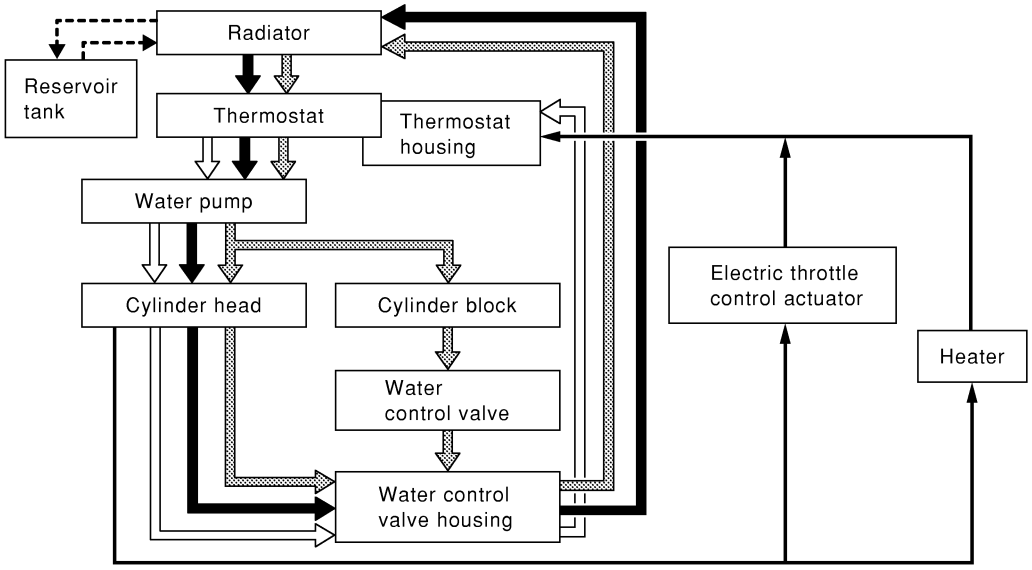
Cooling Circuit

EBS001KG



System Drawing

EBS00KMZ



	Thermostat	Water control valve
⇦	Closed	Closed
◀	Open	Closed
⇦	Open	Open

PBIC0160E

ENGINE COOLANT

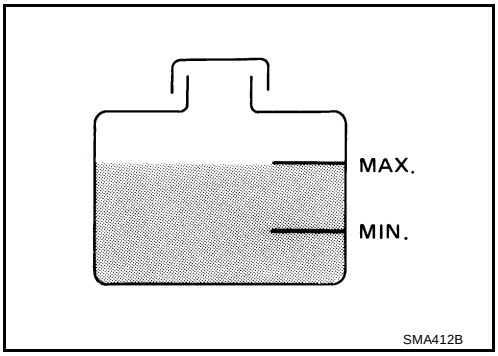
PFP:KQ100

Inspection

EBS001KH

LEVEL CHECK

- Check if the reservoir tank engine coolant level within MIN to MAX When engine is cool.
- Adjust engine coolant if too much or too little.



LEAK CHECK

To check for leakage, apply pressure to the cooling system with a tester.

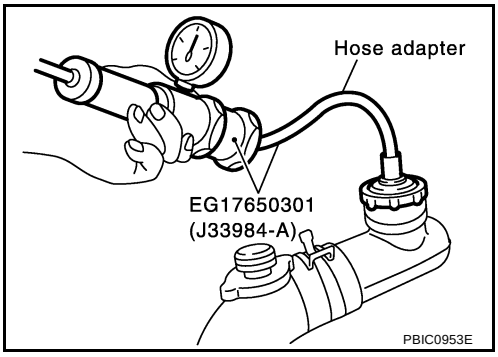
Testing pressure : 157 kPa (1.6 kg/cm^2 , 23 psi)

WARNING:

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

CAUTION:

Higher pressure than specified may cause radiator damage.



Changing Engine Coolant

EBS00250

WARNING:

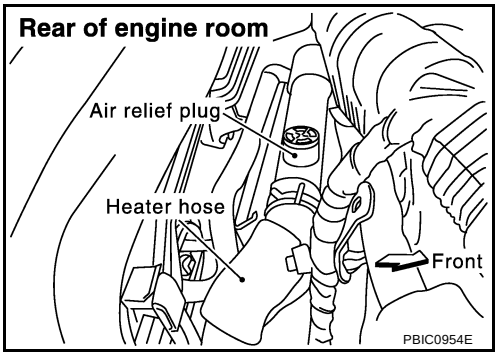
- **To avoid being scalded, never change the engine coolant when the engine is hot.**
- **Wrap a thick cloth around cap and carefully remove the cap. First, turn the cap a quarter of a turn to release built-up pressure. Then turn the cap all the way.**

DRAINING ENGINE COOLANT

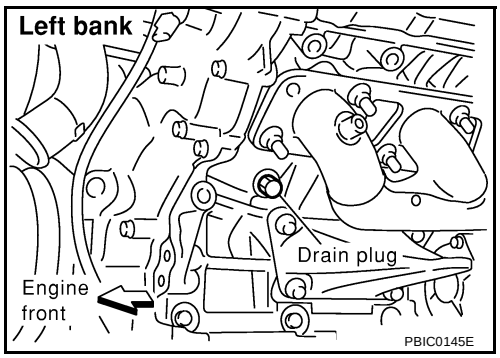
1. Remove engine undercover with power tool.
2. Open radiator drain plug at the bottom of radiator, and remove radiator cap.
   - **Be careful not to allow engine coolant to contact drive belts.**

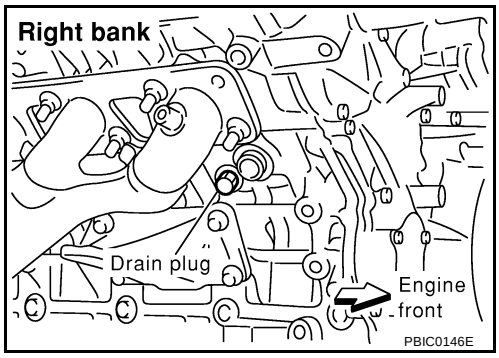
When draining all the engine coolant in the system, also perform the following steps.

3. Remove air relief plug on heater hose.



4. Drain engine coolant from both sides of cylinder block when draining all the engine coolant in the system.





5. Check drained engine coolant for contaminants such as rust, corrosion or discoloration.
   If contaminated, flush engine cooling system. Refer to CO-11, "FLUSHING COOLING SYSTEM" .
6. Remove reservoir tank, drain engine coolant, then clean reservoir tank.

REFILLING ENGINE COOLANT

1. Install reservoir tank if removed, and radiator drain plug.

   Radiator drain plug:

   : 0.78 - 1.56 N·m (0.08 - 0.16 kg-m, 7 - 14 in-lb)

2. Install cylinder block drain plugs if removed.
   - Apply thread sealant to the thread of cylinder block drain plugs.
     Use Genuine Thread Sealant or equivalent. Refer to GI-46, "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS" .

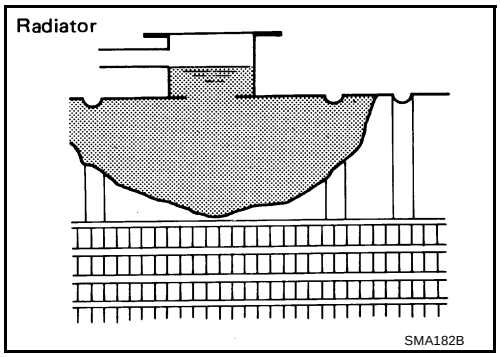
   Cylinder block drain plug:

   : 14.7 - 24.5 N·m (1.5 - 2.5 kg-m , 11 - 18 ft-lb)

3. Fill radiator and reservoir tank to specified level.
   - **Use genuine Nissan anti-freeze engine coolant or equivalent mixed with water (distilled or demineralized). Refer to MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS" .**

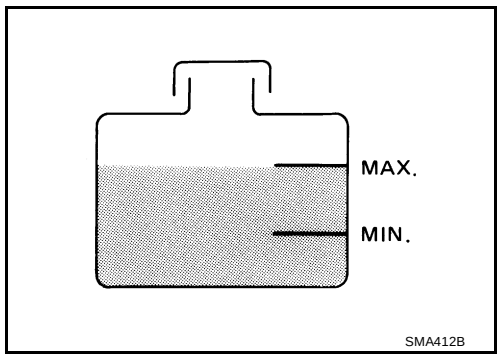
     Engine coolant capacity (With reservoir tank):

     Approximately 9.8 ℓ (10-3/8 US qt, 8-5/8 Imp qt)



Reservoir tank capacity:

0.8 ℓ (7/8 US qt, 3/4 Imp qt)



- **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.**
- When engine coolant overflows air relief hole on heater hose, install air relief plug.

4. Warm up engine to normal operating temperature with radiator cap installed.
5. Run engine at 3,000 rpm for 10 seconds and return to idle speed.
   - Repeat two or three times.
     Watch engine coolant temperature gauge so as not to overheat the engine.
6. Stop engine and cool down to less than approximately 50°C (122°F).
   - Cool down using a fan to reduce the time.
   - If necessary, refill radiator up to filler neck with engine coolant.
7. Refill reservoir tank to MAX level line with engine coolant.
8. Repeat steps 4 through 7 two or more times with radiator cap installed until engine coolant level no longer drops.
9. Check cooling system for leaks with engine running.
10. 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.
11. Repeat step 8 three times.
12. If sound is heard, bleed air from cooling system by repeating steps 4 through 7 until engine coolant level no longer drops.
    - **Clean excess engine coolant from engine.**

FLUSHING COOLING SYSTEM

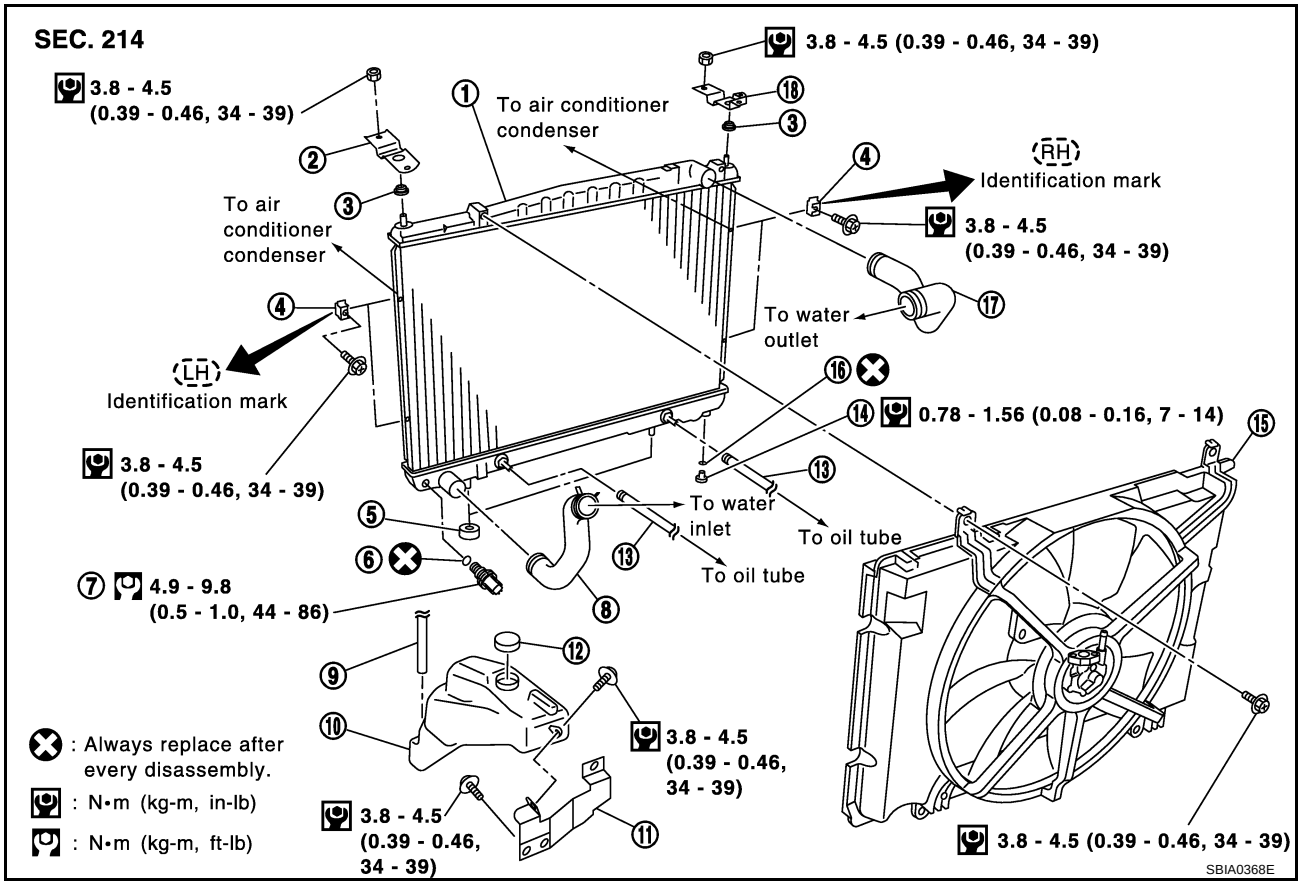
1. Fill radiator with water until water spills from the air relief hole, then close air relief plug. Fill radiator and reservoir tank with water and reinstall radiator cap.
2. Run engine and warm it up to normal operating temperature.
3. Rev engine two or three times under no-load.
4. Stop engine and wait until it cools down.
5. Drain water.
6. Repeat steps 1 through 5 until clear water begins to drain from radiator.

RADIATOR

PFP:21400

Removal and Installation

EBS001KJ



1.	Radiator	2.	Bracket	3.	Mounting rubber
4.	Clip	5.	Mounting rubber	6.	O-ring
7.	Engine coolant temperature sensor	8.	Radiator hose (lower)	9.	Reservoir tank hose
10.	Reservoir tank	11.	Bracket	12.	Cap
13.	A/T oil cooler hose	14.	Drain plug	15.	Cooling fan shroud
16.	O-ring	17.	Radiator hose (upper)	18.	Bracket

WARNING:

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

REMOVAL

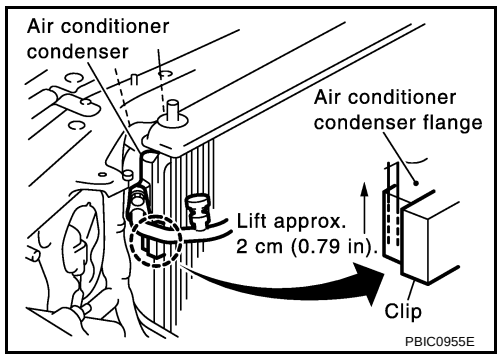
1. Drain engine coolant from the radiator. Refer to CO-9, "Changing Engine Coolant" .

   CAUTION:

   Perform when the engine is cold.
2. Remove cooling fan shroud. Refer to CO-18, "Removal and Installation" .
3. Remove A/T oil cooler hoses.
   - Install blind plug to avoid leakage of A/T fluid.
4. Remove bolts of both right/left end of radiator core (2 bolts for each).

5. Lift the air conditioner condenser up approximately 2 cm (0.79 in).
   Remove the clips from the right and left flange parts of the air conditioner condenser.

   CAUTION:
   To avoid putting a load on the air conditioner piping, be careful not to lift too much.



6. Lift up and remove the radiator.

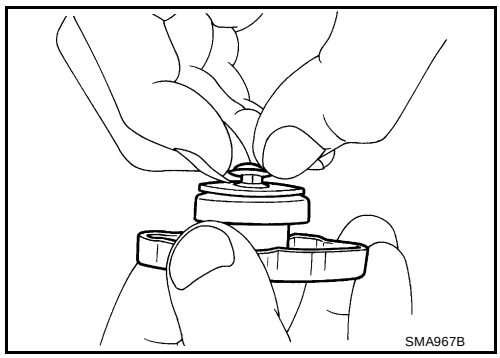
   CAUTION:
   - **Do not damage or scratch radiator core when removing.**
   - **After removing the radiator, fix the air conditioner condenser on the vehicle side with a rope or similar means. This is to prevent a load being applied to the air conditioner piping.**

INSTALLATION

- Install in the reverse order of removal.
- Align ID marks to install clips of both right/left end of radiator core. Refer to radiator component illustration on top page.

CHECKING RADIATOR CAP

1. Pull the negative pressure valve to open it, and check that it close completely when released.
   - Check that there is no dirt or damage on the valve seat of the radiator cap negative-pressure valve.
   - Check that there are no abnormalities in the opening and closing conditions of the negative-pressure valve.

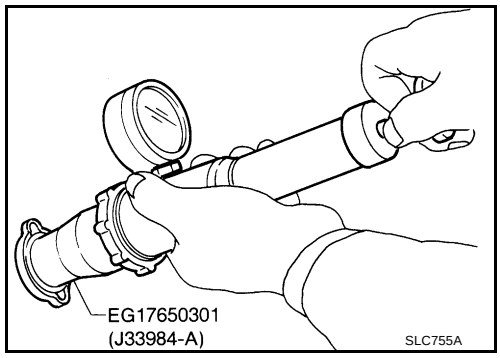


2. Check radiator cap relief pressure.

   Standard : 78 - 98 kPa (0.8 - 1.0 kg/cm^2 , 11 - 14 psi)

   Limit : 59 kPa (0.6 kg/cm^2 , 9 psi)

   - When connecting the radiator cap to the radiator cap tester adapter (SST) and radiator cap tester (Commercial service tool).
   - 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.



CHECKING RADIATOR

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

- Be careful not to bend or damage the radiator fins.
- When radiator is cleaned without removal, remove all surrounding parts such as cooling fan shroud and horns. Then tape the harness and connectors to prevent water from entering.

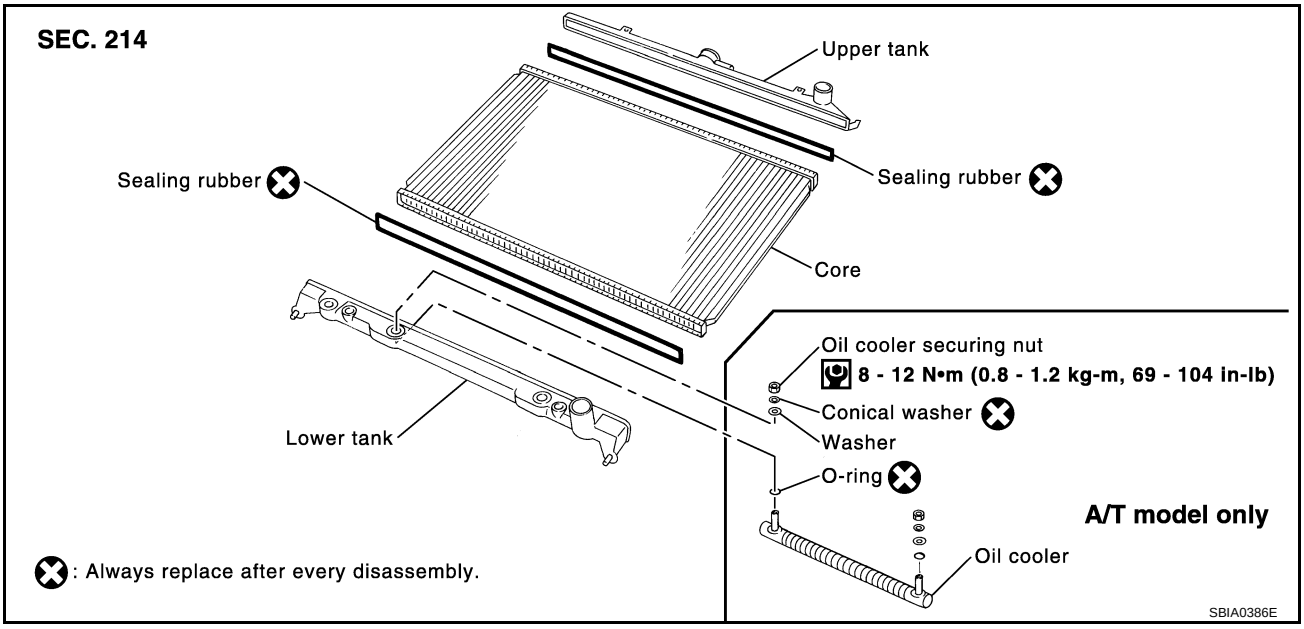
1. Apply water by hose to the back side of the radiator core vertically down ward.
2. Apply water again to all radiator core surfaces once per minute.
3. Stop washing if any stains no longer flow out from the radiator.
4. Blow air into the back side of radiator core vertically down ward.
   - Use compressed air lower than 490 kPa (5 kg/cm^2 , 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.

RADIATOR (ALUMINUM TYPE)

PFP:21460

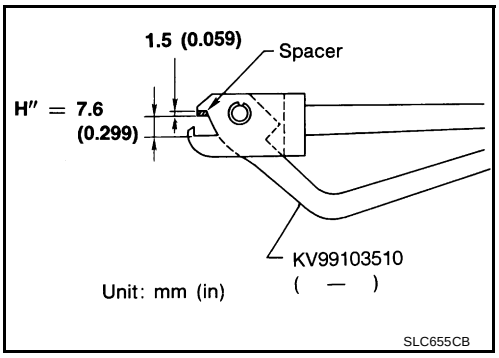
Disassembly and Assembly

EBS003P4



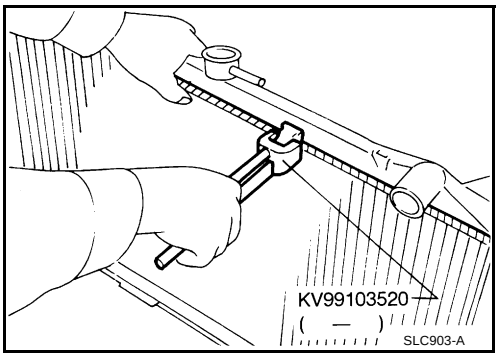
PREPARATION

1. Attach the spacer to the tip of the radiator plate pliers A. Spacer specification: 1.5 mm (0.059 in) thick x 18 mm (0.71 in) wide x 8.5 mm (0.335 in) long.
2. Make sure that when radiator plate pliers A are closed dimension H″ is approx. 7.6 mm (0.299 in).
3. Adjust dimension H″ with the spacer, if necessary.



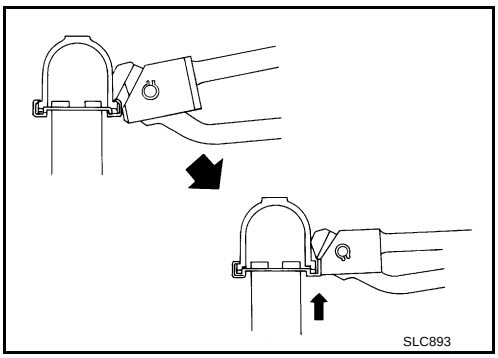
DISASSEMBLY

1. Remove upper or lower tanks with SST.



- Grip the crimped edge and bend it upwards so that SST slips off.

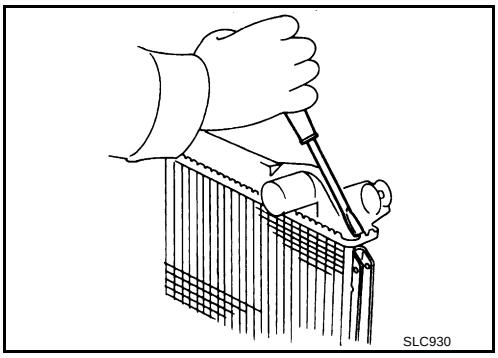
Do not bend excessively.



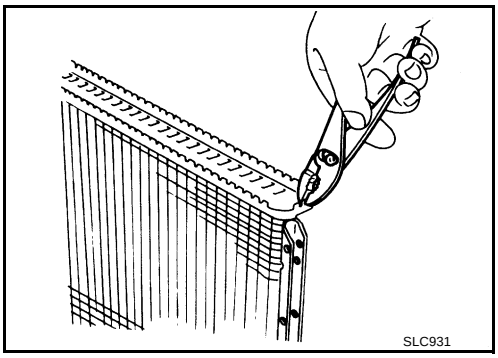
- In areas where Tool cannot be used, use a screwdriver to bend the edge up.

Be careful not to damage tank.

2. Remove sealing rubber.



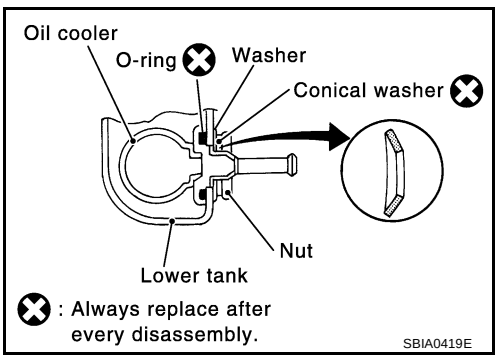
3. Make sure the edge stands straight up.
4. Remove oil cooler from tank.



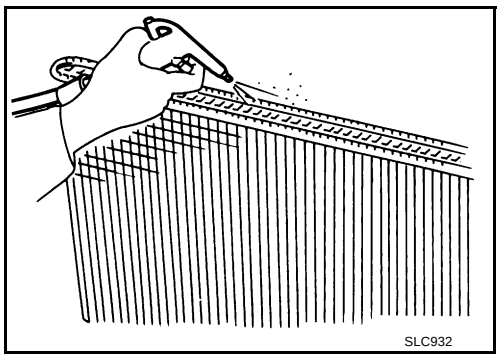
ASSEMBLY

1. Install oil cooler.

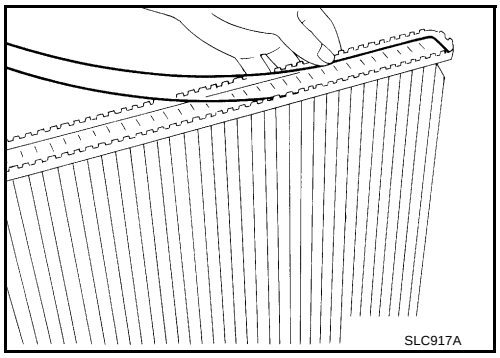
Pay attention to direction of conical washer.



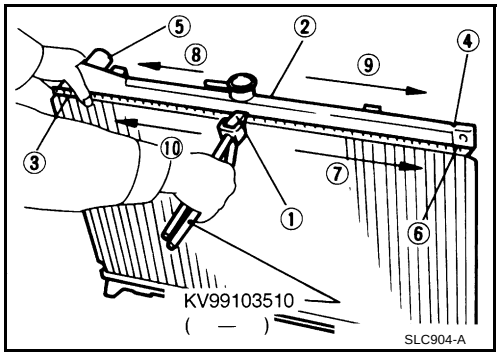
2. Clean contact portion of tank.

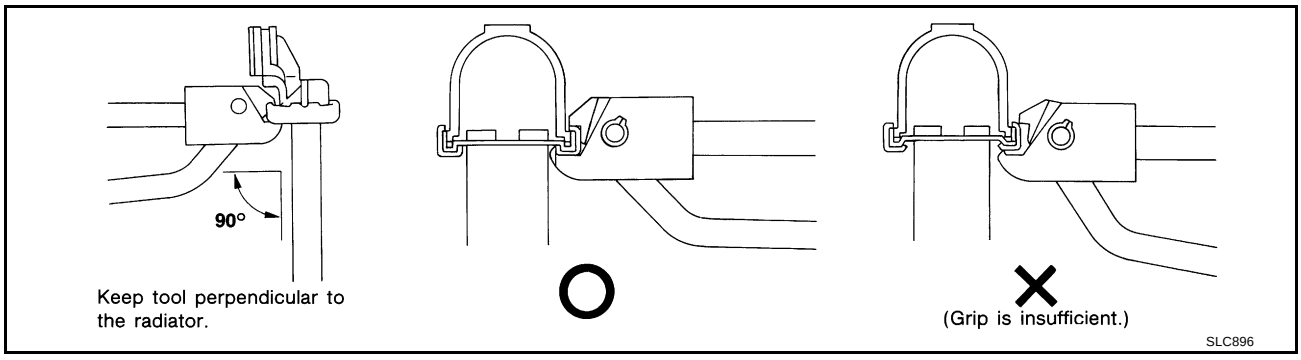


3. Install sealing rubber.
   Push it in with fingers.
   Be careful not to twist sealing rubber.

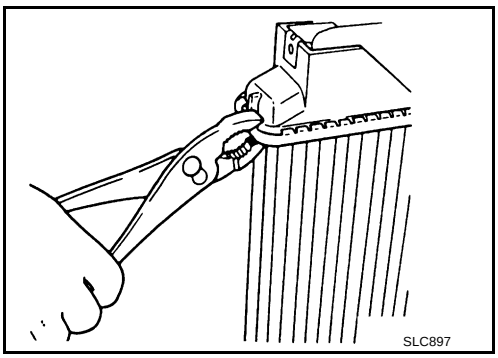


4. Caulk tank in specified sequence with SST.





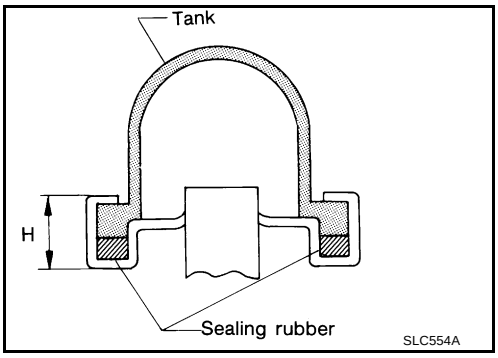
- Use pliers in the locations where radiator plate pliers A [SST: KV99103510 (–)] cannot be used.



5. Make sure that the rim is completely crimped down.

   Standard height “H” : 8.0 - 8.4 mm (0.315 - 0.331 in)

6. Confirm that there is no leakage.
   Refer to CO-17, "INSPECTION" .

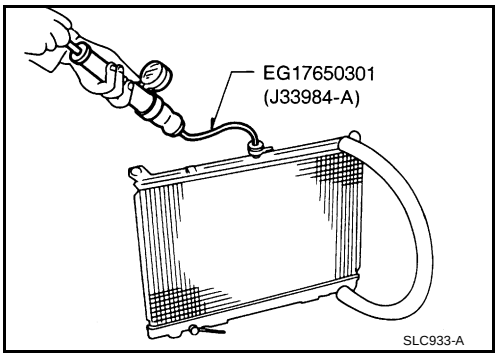


INSPECTION

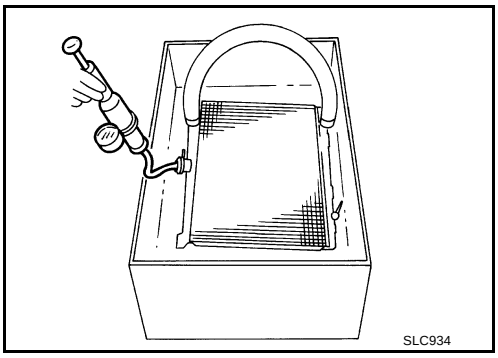
1. Apply pressure with SST.

   Specified pressure value : 157 kPa (1.6 kg/cm^2 , 23 psi)

   WARNING:
   To prevent the risk of the hose coming undone while under pressure, securely fasten it down with a hose clamp.
   Attach a hose to the oil cooler to seal its inlet and outlet.



2. Check for leakage by soaking radiator in water container.

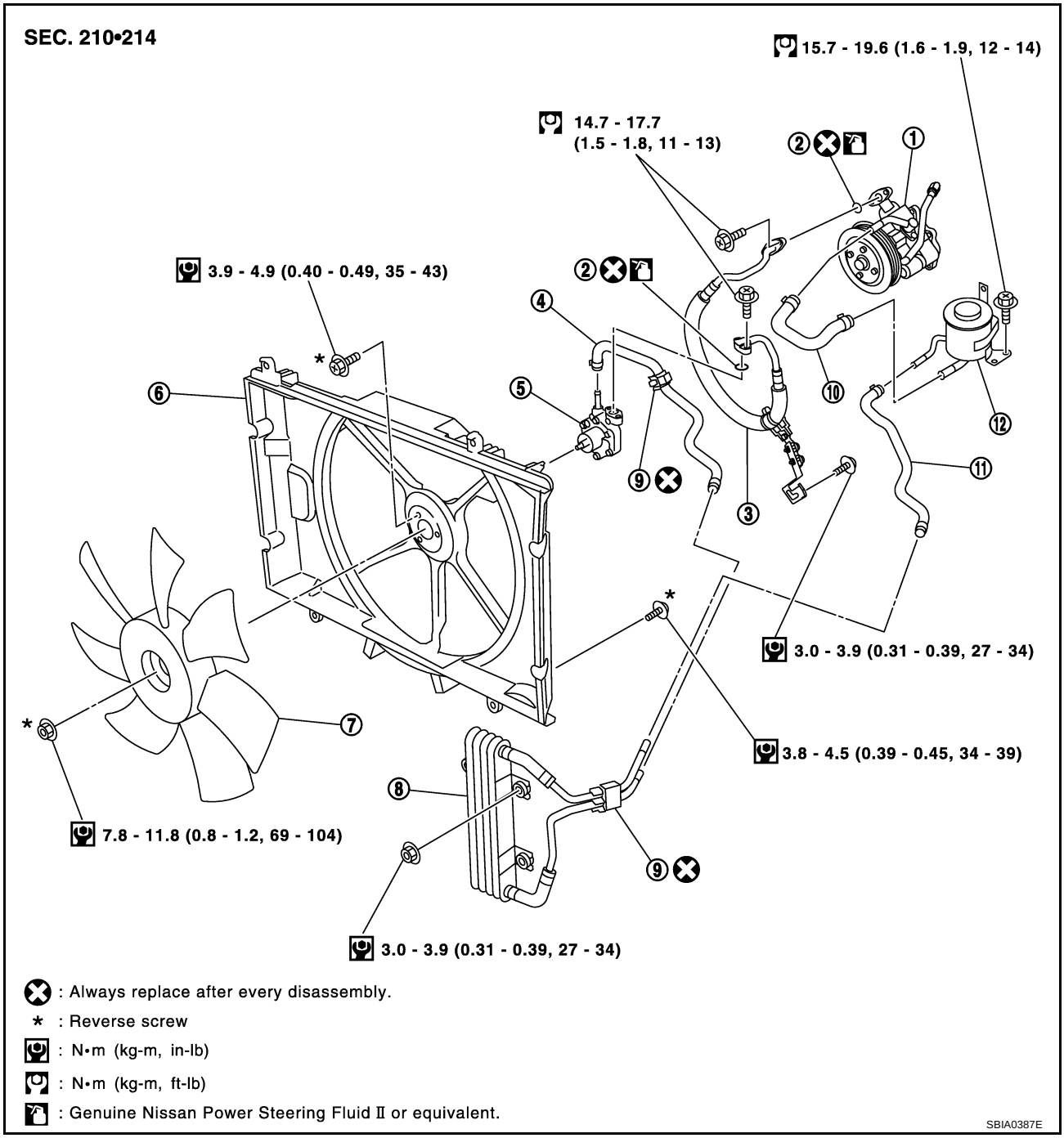


COOLING FAN

PFP:21140

Removal and Installation

EBS002O4



1.	Cooling fan pump (with water pump) (Do not disassemble.)	2.	O-ring	3.	Fluid hose
4.	Fluid hose	5.	Cooling fan motor (Do not disassemble.)	6.	Cooling fan shroud
7.	Fan	8.	Cooling fan fluid cooler	9.	Clip
10.	Fluid hose	11.	Fluid hose	12.	Reservoir tank

REMOVAL

1. Remove air duct and air cleaner case. Refer to EM-15, "Removal and Installation" .
2. Remove engine undercover with power tool.
3. Drain engine coolant from the radiator. Refer to CO-9, "Changing Engine Coolant" .

CAUTION:
- **Perform when the engine is cold.**
- **Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure fluid escaping from the radiator.**

4. Remove battery.
5. Remove the vacuum tank from the front of the engine.
6. Disconnect the radiator hoses (upper/lower).
7. Remove the following parts from the fan shroud: coolant temperature sensor harness, coolant reservoir tank hose, A/T oil cooler hose, mounting bolts for the cooling fan fluid hose bracket.
8. Drain the cooling fan fluid.
   - Because there is no drain plug on the reservoir tank or piping, drain the fluid from the reservoir tank oil inlet and pipe division points.
   - Prepare a container with a volume of approximately 1 ℓ (2-1/8 US pt, 1-3/4 Imp pt) to drain the fluid into.
9. Remove the cooling fan fluid reservoir tank.
10. Disconnect the hoses between the cooling fan motor and cooling fan pump (joined with the water pump), and the hose between the cooling fan motor and the oil cooler.
    - Fluid will leak, so have shop cloths ready.
11. Remove the cooling fan shroud mounting bolts.
12. Remove the radiator mounting bracket. With the radiator moved toward the vehicle front, lift up and remove the cooling fan.

CAUTION:
- **Be careful not to scratch or damage the radiator core.**
- **When removing the cooling fan pump, remove it together with the water pump. (They can not be separated.) Refer to CO-22, "Removal and Installation" .**
- **When removing the cooling fan fluid cooler, be careful not to scratch or damage the air conditioner condenser core.**

INSPECTION AFTER REMOVAL

- Turning oil cooling fan motor shaft by hands check if it rotates smoothly without looseness.
- Check visually for fluid leakage from cooling fan motor.
- For oil pump inspection, refer to CO-22, "WATER PUMP" .

INSTALLATION

Install in the reverse order of removal referring the following.

- For bleeding the air from the cooling system, refer to CO-10, "REFILLING ENGINE COOLANT" .

Attaching the fluid pipe fixing clip

If the fluid pipe fixing clip has been removed from the installation holes, it must be replaced with a new clip.

Adding cooling fan fluid and bleeding air

The procedure below is for adding cooling fan fluid and bleeding air from the piping.

CAUTION:
- **Do not reuse the used fluid which was drained out.**
- **Use genuine Nissan Power Steering Fluid or equivalent. Refer to MA-11, "RECOMMENDED FLUIDS AND LUBRICANTS" .**

NOTE:

The total fluid volume is 777 ml (26.3 US floz, 27.4 Imp floz) (with the cold maximum on the level gauge when the engine is cold).

1. Add fluid to the reservoir tank until the fluid reaches the upper limit of the “HOT” level on the level gauge. For the fluid level, refer to CO-20, "INSPECTION AFTER INSTALLATION" .
2. Start the engine.
3. Run the engine at idle speed for a few minutes. Then check the fluid level. If the level has decreased, add fluid.

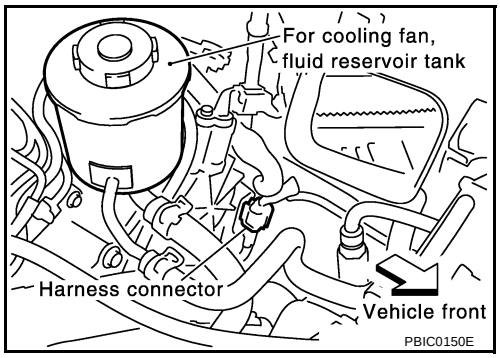
CAUTION:
- **Be careful not to touch the fan while it is rotating.**
- **Be sure to add fluid as necessary. If the fluid runs out in the reservoir tank, air will be taken in.**

NOTE:

- With the engine operating, the reservoir tank cap can be removed to check the fluid level.
- Immediately after starting, certain noise will come from the fluid pump. This is caused by air taken in to the piping and will gradually disappear.

4. Continue with step 3 until the level of the fluid stops decreasing.
5. Stop the engine and disconnect the harness connector for the cooling fan speed control solenoid valve.

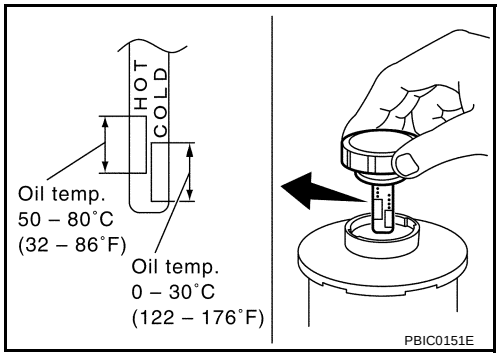
   NOTE:
   When the solenoid valve harness is disconnected, the fan will operate at full speed.
6. Start the engine. Repeat step 3 until the fluid level stops decreasing and air bubbles stop coming out.
7. Stop the engine. Connect the harness connector for the cooling fan speed control solenoid valve.



INSPECTION AFTER INSTALLATION

- Check that there is no fluid leakage from any hose connection or any other part.
- Check the fluid level with the level gauge on the reservoir tank cap. If there is too much or too little, adjust the amount of fluid.
- Check that under the fluid temperature conditions below, the fluid level is within the “COLD” or “HOT” range on the level gauge.

  COLD : Fluid temperature 0 - 30 °C (32 - 86 °F)
  HOT : Fluid temperature 50 - 80 °C (122 - 176 °F)



NOTE:

- There is no specified timing for replacing the fluid.
- Refer to EC-571, "DTC P1480 COOLING FAN SPEED CONTROL SOLENOID VALVE" for control of cooling fan.

Disassembly and Assembly

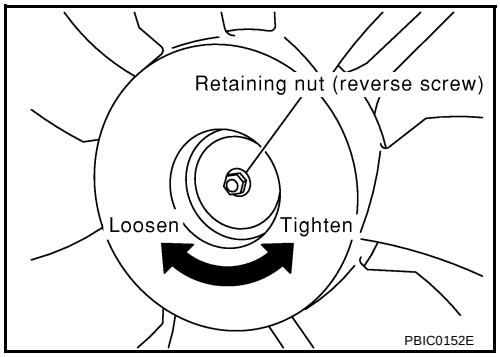
EBS0037K

DISASSEMBLY

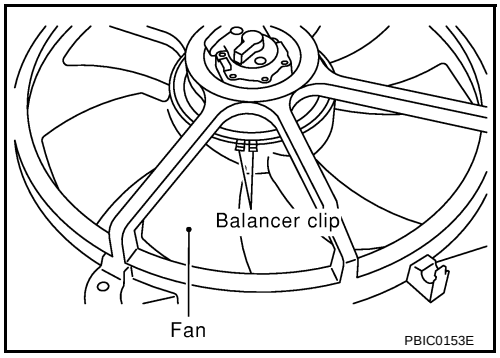
1. Remove fan.

   CAUTION:

   - **Reverse screws are used for the fan attachment nuts. When removing or attaching, turn the nut the opposite way as for a normal screw.**
   - **Do not remove the balancer clip from the fan.**
   - **For the case if the balancer clip is removed, make an alignment mark for the installation position on the fan side.**



2. Remove cooling fan motor from cooling fan shroud.



ASSEMBLY

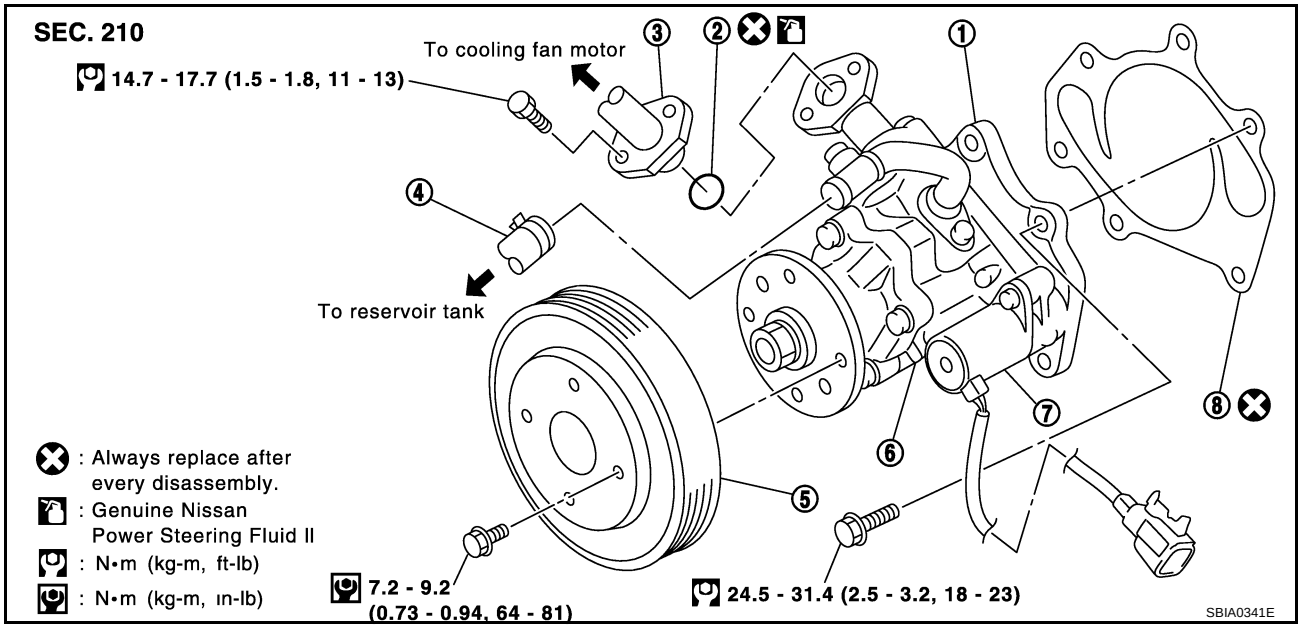
Assemble in the reverse order of disassembly.

WATER PUMP

PFP:21020

Removal and Installation

EBS001KN



1. Water pump (Do not disassemble.)
2. O-ring
3. Fluid hose (feed side)
4. Fluid hose (return side)
5. Water pump pulley
6. Cooling fan pump (Do not disassemble.)
7. Cooling fan speed control solenoid valve (Do not disassemble.)
8. Gasket

WARNING:

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

REMOVAL

1. Drain engine coolant so that no engine coolant comes out from water pump fitting hole.

   CAUTION:

   Perform when the engine is cold.
2. Remove below the parts.
   - Engine undercover
   - Air duct and engine room cover
     For removing engine room cover, refer to EM-11, "Removal and Installation" .
   - Alternator, water pump and A/C compressor belt
     For removing drive belt, refer to EM-13, "Removal and Installation" .

   CAUTION:

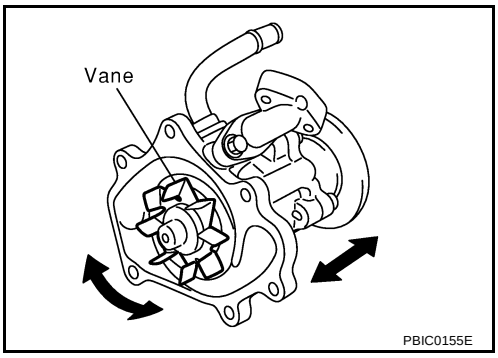
   Leave the fixed auto tensioner pulley in its fixed position when removing the drive belt.
3. Disconnect the harness connector for the cooling fan speed control solenoid valve (joined with the water pump).
4. Remove the water pump pulley.
5. Disconnect the cooling fan fluid hose.
   - Because there is no drain plug, drain the fluid from the hose separation point.
   - Prepare a receptacle with a volume of approximately 1 ℓ (2-1/8 US pt, 1-3/4 Imp pt).
6. Remove the water pump.
   - Engine coolant will leak from the cylinder block, so have a receptacle ready below.

   CAUTION:
   - **Handle the water pump vane so that it does not contact any other parts.**

- **Do not disassemble the water pump (including the cooling fan pump and cooling fan speed control solenoid valve).**

INSPECTION AFTER REMOVAL

- Visually check that there is no significant dirt or rusting on the water pump body and vane.
- Check that there is no looseness in the vane shaft, and that it turns smoothly when rotated by hand.
- Visually check that there is no fluid leakage from the cooling fan pump part and the cooling fan speed control solenoid valve part.
- If there are any unusualness, replace the water pump assembly.



INSTALLATION

- Install in the reverse order of removal.
- Apply Genuine Nissan Power Steering Fluid II (the cooling fan fluid) or equivalent to the O-ring of the cooling fan fluid hose (on the feed side). Then insert the O-ring to the water pump so that it does not come out of the attachment groove.
- For bleeding the air from the cooling system, refer to CO-10, "REFILLING ENGINE COOLANT" .
- For bleeding the air from the cooling fan fluid, refer to CO-19, "INSTALLATION" .

INSPECTION AFTER INSTALLATION

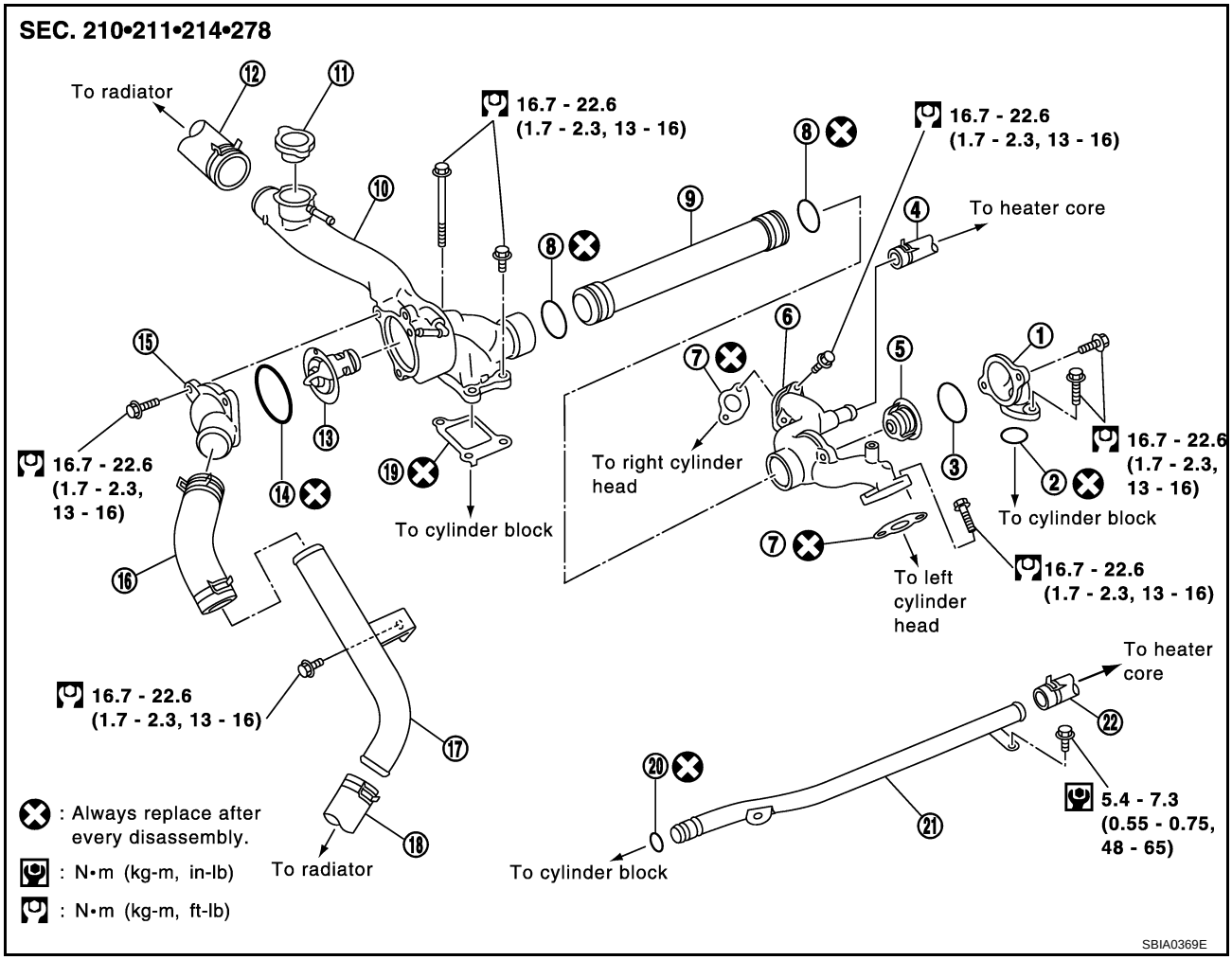
- After installing water pump, check for leaks for engine coolant using radiator cap tester. Refer to CO-9, "LEAK CHECK" .
- Start the engine. Visually check that there is no leaks of the engine coolant and cooling fan fluid.

THERMOSTAT AND WATER CONTROL VALVE

PFP:21200

Removal and Installation

EBS001I1



1.	Water connector	2.	O-ring	3.	Rubber ring
4.	Heater hose	5.	Water control valve	6.	Rear water outlet
7.	Gasket	8.	O-ring	9.	Water outlet pipe
10.	Thermostat housing	11.	Radiator cap	12.	Radiator upper hose
13.	Thermostat	14.	Rubber ring	15.	Water inlet
16.	Water suction hose	17.	Water suction pipe	18.	Radiator lower hose
19.	Gasket	20.	O-ring	21.	Heater pipe
22.	Heater hose				

WARNING:

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

REMOVAL

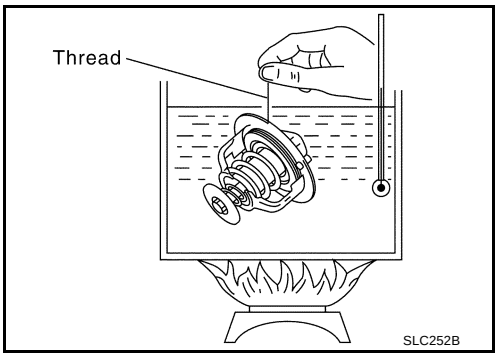
1. Drain engine coolant from the radiator. Refer to CO-9, "Changing Engine Coolant" .

   CAUTION:

   Perform when the engine is cold.
2. Remove air duct and engine room cover. For removing engine room cover, refer to EM-11, "Removal and Installation" .
3. Remove water suction hose from water inlet side.
4. Remove water inlet and thermostat.
5. Remove intake manifold upper and intake manifold lower.
6. Remove water connector and water control valve.

7. Disconnect fuel injector harness, and remove thermostat housing, water outlet pipe, rear water outlet and heater pipe (between left and right banks).

INSPECTION AFTER REMOVAL



- Place a thread so that it is caught in the valves of the thermostat and water control valve. Immerse fully in a container filled with water. Heat while stirring. (The example in the figure shows the thermostat.)
- The valve opening temperature is the temperature at which the valve opens and 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.

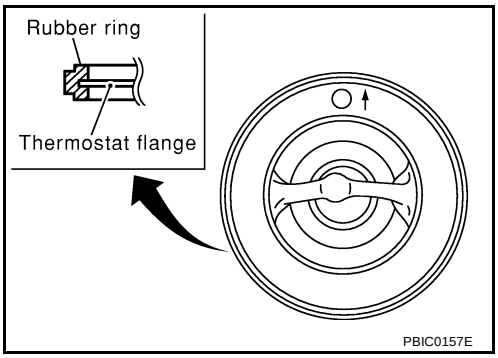
Standard values

	Thermostat	Water control valve
Valve opening temperature	80 - 84°C (176 - 183° F)	93.5 - 96.5°C (200 - 206°F)
Full-open lift amount	More than 10 mm/ 95°C (0.39 in/ 203 °F)	More than 8 mm/ 108°C (0.315 in/ 226 ° F)
Valve closing temperature	77°C (171°F) or higher	90°C (194° F) or higher

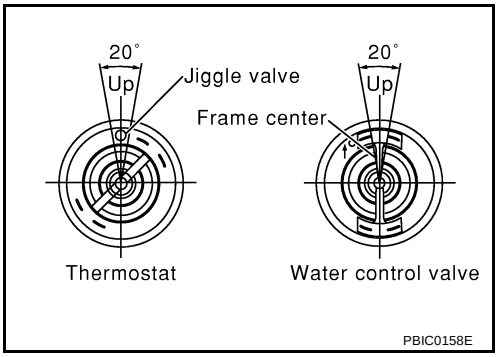
INSTALLATION

Install in the reverse order of removal.

Installation of thermostat and water control valve



- Install the thermostat and water control valve with the whole circumference of each flange part fit securely inside the rubber ring. (The example in the figure shows the thermostat.)



- Install the thermostat with the jiggle-valve facing upwards. (The position deviation may be within the range of ±10°)
- Install the water control valve with the up-mark facing up and the frame center part facing upwards. (The position deviation may be within the range of ±10°)

Installation of water outlet pipe and heater pipe

First apply a neutral detergent to the O-rings, then quickly insert the insertion parts of the water outlet pipe and heater pipe into the installation holes.

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Standard and Limit

EBS003Q8

CAPACITY

Engine coolant capacity [With reservoir tank (MAX level)]	Approximately 9.8 ℓ (10-3/8 US qt, 8-5/8 Imp qt)
Reservoir tank	0.8 ℓ (7/8 US qt, 3/4 Imp qt)
Cooling fan fluid capacity	777 mℓ (26.3 US floz, 27.4 Imp floz)

THERMOSTAT

Valve opening temperature	80 - 84°C (176 - 183°F)
Valve lift	More than 10 mm/95°C (0.39 in/203°F)
Valve closing temperature	77°C (171°F) or higher

WATER CONTROL VALVE

Valve opening temperature	93.5 - 96.5°C (200 - 206°F)
Valve lift	More than 8 mm/108°C (0.315 in/226°F)
Valve closing temperature	90°C (194°F) or higher

RADIATOR

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

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

Tightening Torque

EBS002NI

Unit: N·m (kg-m, ft-lb)
Unit: N·m (kg-m, in-lb)*

Cylinder block drain plug	14.7 - 24.5 (1.5 - 2.5, 11 - 18)
Radiator mounting bracket Radiator drain plug Engine coolant temperature sensor Cooling fan shroud Reservoir tank bracket	3.8 - 4.5 (0.39 - 0.46, 34 - 39)* 0.78 - 1.56 (0.08 - 0.16, 7 - 14)* 4.9 - 9.8 (0.5 - 1.0, 44 - 86)* 3.8 - 4.5 (0.39 - 0.46, 34 - 39)* 3.8 - 4.5 (0.39 - 0.46, 34 - 39)*
Oil cooler securing nut (A/T model only)	8 - 12 (0.8 - 1.2, 69 - 104)*
Fan Fan motor Cooling fan fluid cooler Fluid hose Reservoir tank (Cooling fan pump)	7.8 - 11.8 (0.80 - 1.2, 70 - 104)* 3.9 - 4.9 (0.40 - 0.50, 35 - 43)* 3.0 - 3.9 (0.31 - 0.40, 27 - 34)* 14.7 - 17.7 (1.5 - 1.8, 11 - 13) 15.7 - 19.6 (1.6 - 1.9, 12 - 14)
Water pump pulley Water pump	7.2 - 9.2 (0.73 - 0.94, 64 - 81)* 24.5 - 31.4 (2.5 - 3.2, 18 - 23)
Water inlet Thermostat housing Rear water outlet Water connector (Water control valve cover) Water suction pipe Heater pipe	16.7 - 22.6 (1.7 - 2.3, 13 - 16) 16.7 - 22.6 (1.7 - 2.3, 13 - 16) 16.7 - 22.6 (1.7 - 2.3, 13 - 16) 16.7 - 22.6 (1.7 - 2.3, 13 - 16) 16.7 - 22.6 (1.7 - 2.3, 13 - 16) 5.4 - 7.3 (0.55 - 0.75, 48 - 65)*