SECTION CO

ENGINE COOLING SYSTEM

CONTENTS

QG18DE

QR25DE

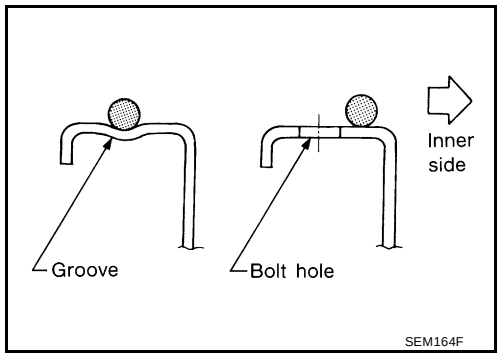
PRECAUTIONS

PFP:00001

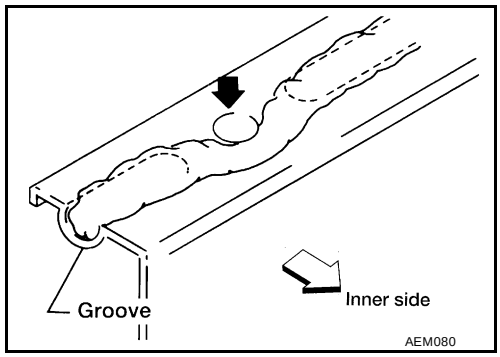
Liquid Gasket Application Procedure

EBS006BP

1. Use a scraper to remove all traces of old RTV Silicone Sealant from mating surfaces and grooves. Also, completely clean any oil from these areas.
2. Apply a continuous bead of Genuine RTV Silicone Sealant or equivalent to the mating surfaces. Refer to GI-44, "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS" .
   - For oil pan, be sure RTV Silicone Sealant diameter is 3.5 to 4.5 mm (0.138 to 0.177 in).
   - For areas except oil pan, be sure RTV Silicone Sealant diameter is 2.0 to 3.0 mm (0.079 to 0.118 in).



3. Apply RTV Silicone Sealant around the inner side of bolt holes (unless otherwise specified).



4. Assembly should be done within 5 minutes after coating.
5. Wait at least 30 minutes before refilling the engine with the recommended oil and coolant. Refer to MA-13, "RECOMMENDED FLUIDS AND LUBRICANTS" .

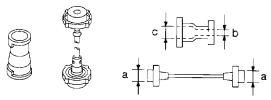
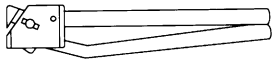
PREPARATION

PFP:00002

Special Service Tools

EBS006BQ

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

Tool number (Kent-Moore No.) Tool name	Description
EG17650301 (J33984-A) Radiator cap tester adapter  NT564	Adapting radiator cap tester to radiator filler neck **a: 28 (1.10) via.** **b: 31.4 (1.236) via.** **c: 41.3 (1.626) via.** 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

OVERHEATING CAUSE ANALYSIS

PFP:00012

Troubleshooting Chart

EBS006BR

	Symptom		Check items	
Cooling system parts malfunction	Poor heat transfer	Water pump malfunction	Worn or loose drive belt	—
		Thermostat stuck closed	Coolant circulation	
		Damaged fins	Dust contamination or paper clogging	
			Mechanical damage	
		Clogged radiator cooling tube	Excess foreign material (rust, dirt, sand, etc.)	
	Reduced air flow	Cooling fan does not operate	Engine cooling fans	—
		High resistance to fan rotation		
		Damaged fan blades		
		Damaged radiator shroud	Radiator shroud	—
	Engine runs hot	Improper coolant mixture ratio	Coolant quality, viscosity	—
		Poor coolant quality		—
	Insufficient coolant	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

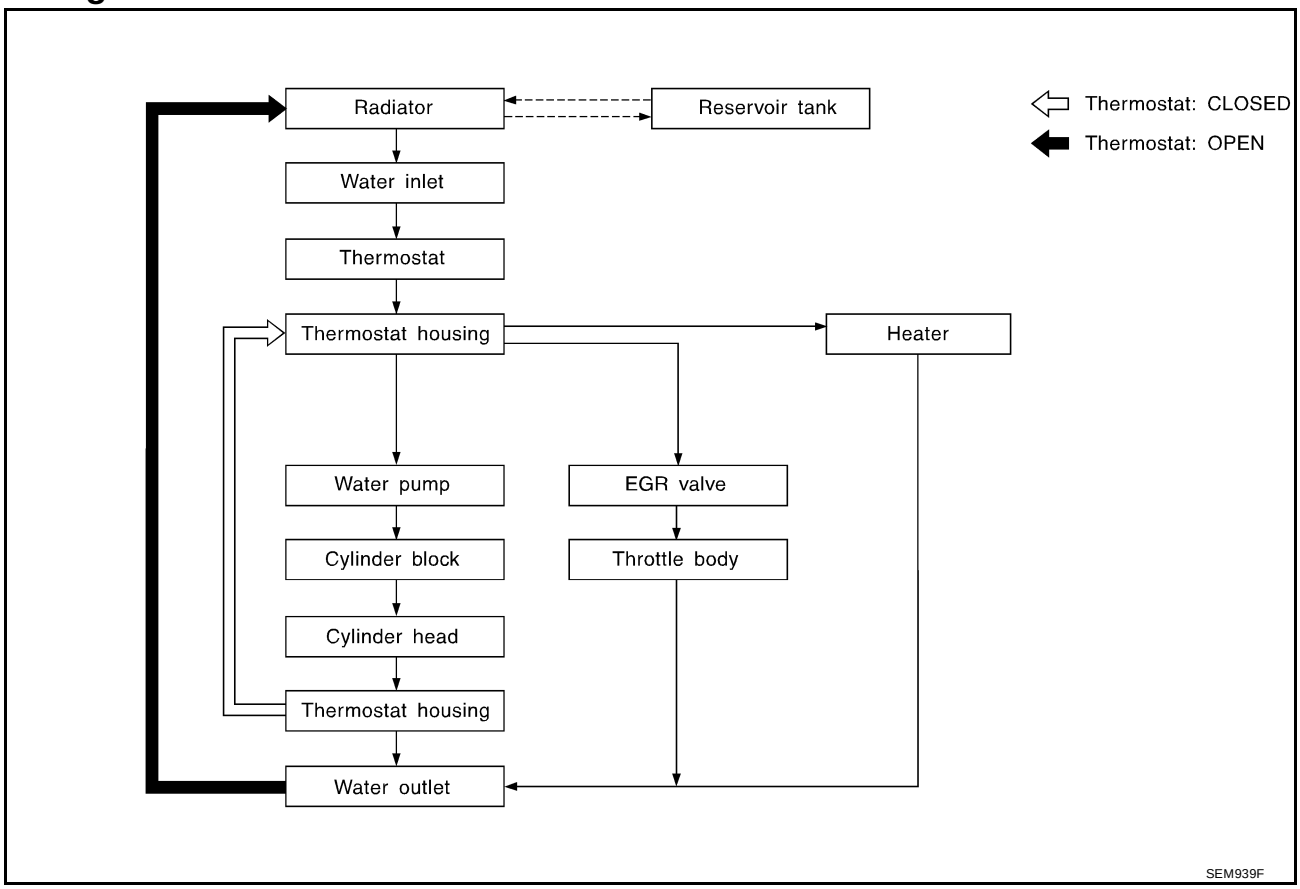
	Symptom		Check items	
Except cooling system parts malfunction	Over heating engine	Overload on engine	Abusive driving	High engine RPM under no load
				Driving in low gear for extended time
				Driving at extremely high speed
			Powertrain system malfunction	—
			Installed improper size wheels and tires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

COOLING SYSTEM

PFP:21020

Cooling Circuit

EBS006BS



ENGINE COOLANT

PFP:KQ100

System Check

EBS006BT

WARNING:
Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure fluid 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 down and turning it all the way.

CHECKING COOLING SYSTEM HOSES

Check hoses for the following:

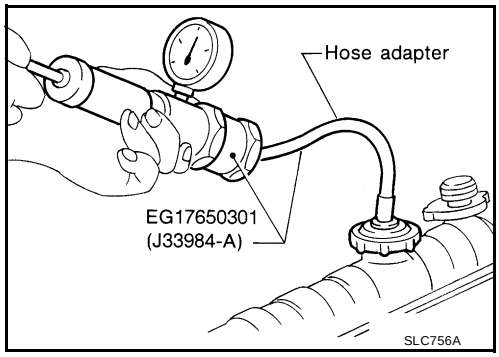
- Improper attachment
- Leaks
- Cracks
- Damage
- Loose connections
- Chafing
- Deterioration

CHECKING COOLING SYSTEM FOR LEAKS

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

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

CAUTION:
Higher pressure than specified may cause radiator damage.



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, radiator 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 downward.
2. Apply water again to all radiator core surfaces once per minute.
3. Stop washing when clear water flows off of the radiator.
4. Blow air into the back side of radiator core vertically downward.
   - Use compressed air lower than 490 kPa (5 kg/cm^2 , 71 psi) and keep distance more than 300 mm (11.8 in).
5. Blow air again into all the radiator core surfaces once per minute until no water sprays out.

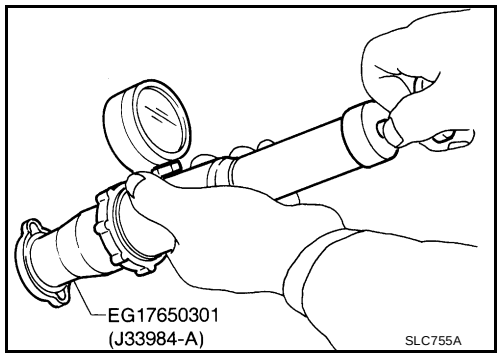
CHECKING RADIATOR CAP

- To check radiator cap, apply pressure to cap with a tester.

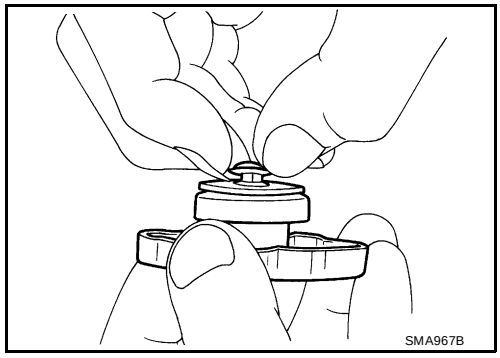
Radiator cap relief pressure

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

Limit **: 59 - 98 kPa (0.6 - 1.0 kg/cm^2 , 9 - 14 psi)**



- Pull the negative pressure valve to open it.
  Check that it closes completely when released.



Refilling Engine Coolant

EBS006BU

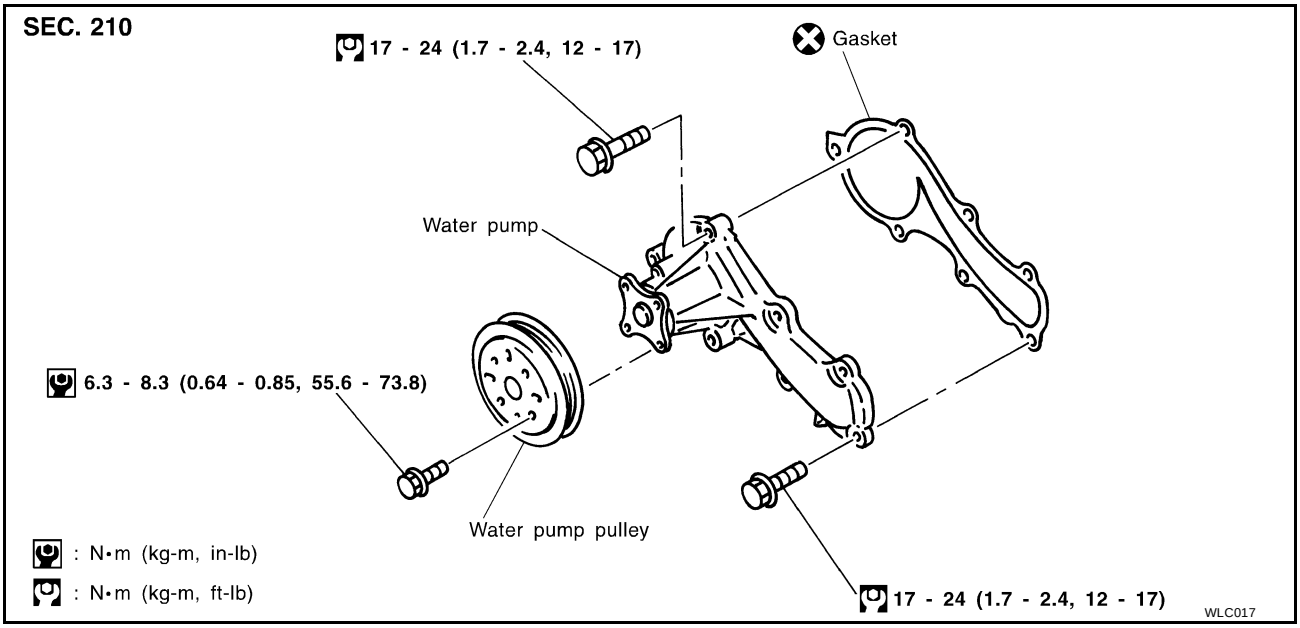
Changing the engine coolant is part of the required maintenance of the engine. Refer to MA-16, "REFILLING ENGINE COOLANT" .

WATER PUMP

PFP:21020

Removal and Installation

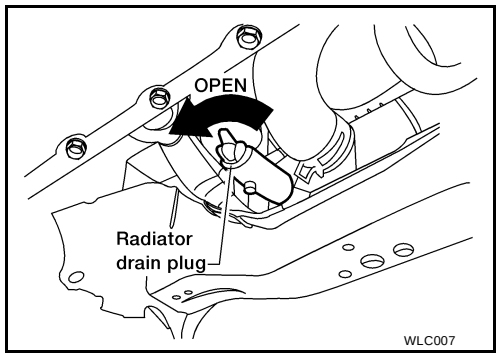
EBS006BV

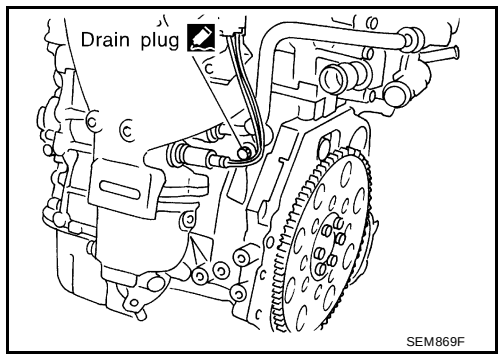


CAUTION:

- **When removing water pump assembly, be careful not to get coolant on drive belt.**
- **Water pump cannot be disassembled and should be replaced as a unit.**
- **After installing water pump, check for leaks using radiator cap tester. Refer to CO-8, "CHECKING COOLING SYSTEM FOR LEAKS" .**

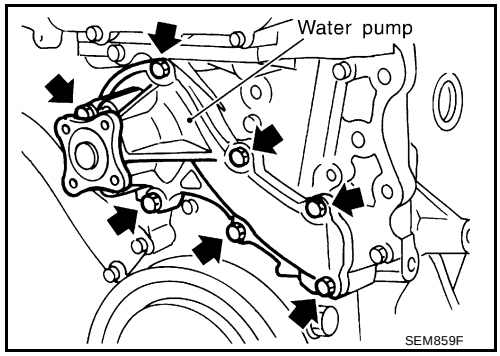
1. Drain engine coolant.
   Refer to MA-15, "DRAINING ENGINE COOLANT" .





2. Remove front RH wheel.
3. Remove engine side cover.
4. Remove drive belts and idler pulley.
5. Loosen water pump pulley bolts.
6. Remove water pump pulley.

7. Remove the water pump bolts.
8. Remove the water pump.
   - Remove RTV Silicone Sealant from water pump and mating surface of cylinder block using a scraper.
9. Installation is in the reverse order of removal.
   - When applying RTV Silicone Sealant to mating surface of water pump, use Genuine RTV Silicone Sealant or equivalent. Refer to GI-44, "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS" .
   - When filling radiator with coolant, refer to MA-16, "REFILLING ENGINE COOLANT" .
   - When installing drive belts, refer to MA-15, "Checking Drive Belts" .

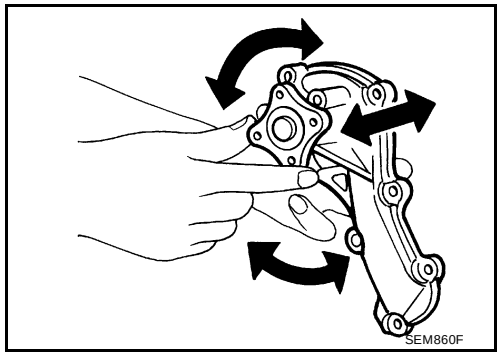


Inspection

EBS006BW

1. Rotate water pump shaft, replace the water pump as necessary.

- **Check body assembly and vane for rust or corrosion.**
- **Check for rough operation due to excessive end play.**

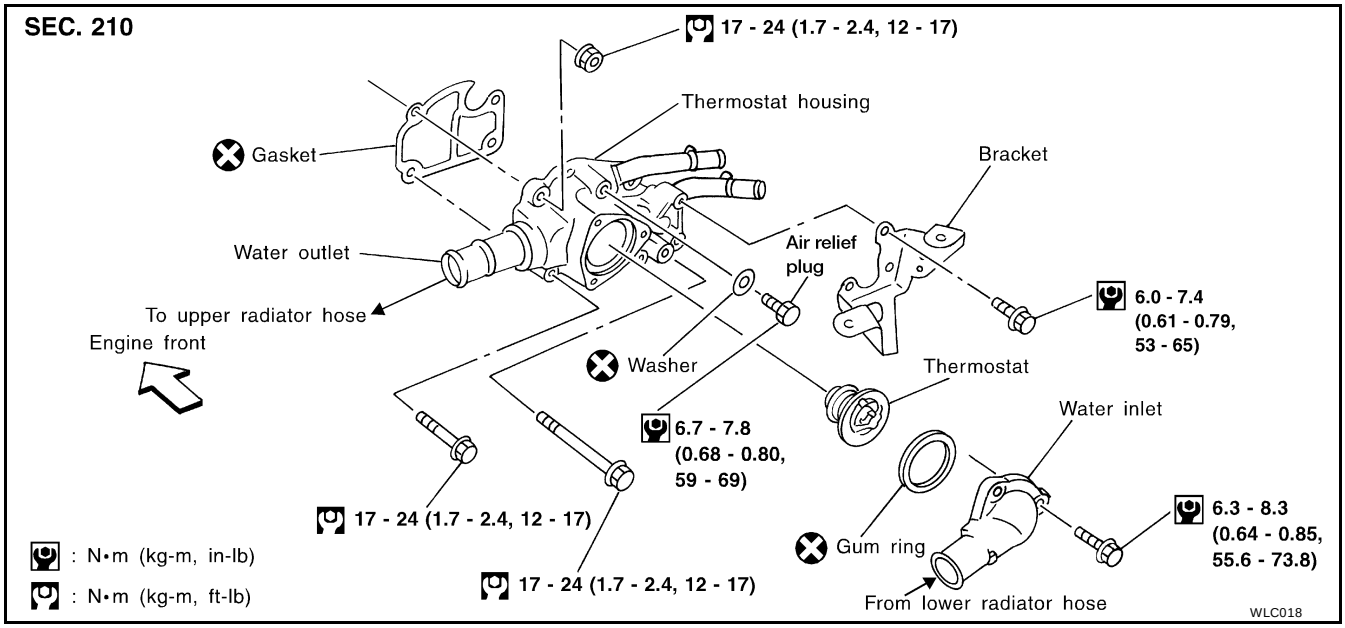


THERMOSTAT AND THERMOSTAT HOUSING

PFP:21200

Removal and Installation

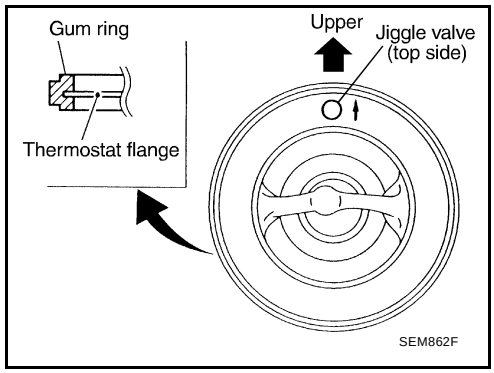
EBS006BX



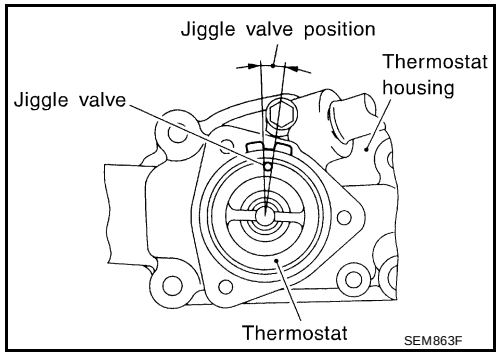
CAUTION:

Be careful not to spill coolant over the engine compartment. Use a rag to absorb any spilled coolant.

1. Drain engine coolant. Refer to MA-15, "DRAINING ENGINE COOLANT" .
2. Disconnect the lower radiator hose.
3. Remove water inlet thermostat housing, then remove the thermostat.
4. Before installing the thermostat, make sure the gum ring is properly seated around the thermostat.



5. Install thermostat with jiggle valve or air bleeder at upper side.
6. Refill engine coolant. Refer to MA-16, "REFILLING ENGINE COOLANT" .
   After installation, run engine for a few minutes, and check for any coolant leaks.

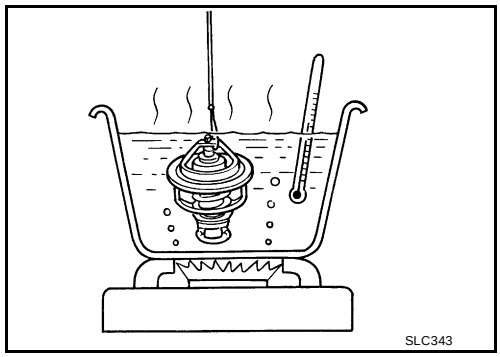


Inspection

EBS006BY

1. Check for valve seating condition at normal room temperature. The valve should seat tightly all the way around. If the valve is warped or stuck open, replace the thermostat.
2. Suspend the thermostat, by a string caught in the closed valve, in boiling water while monitoring the temperature.

Valve opening temperature °C (°F)	76.5° (170°)
Valve lift mm/°C (in/°F)	More than 9/90° (0.35/194°)



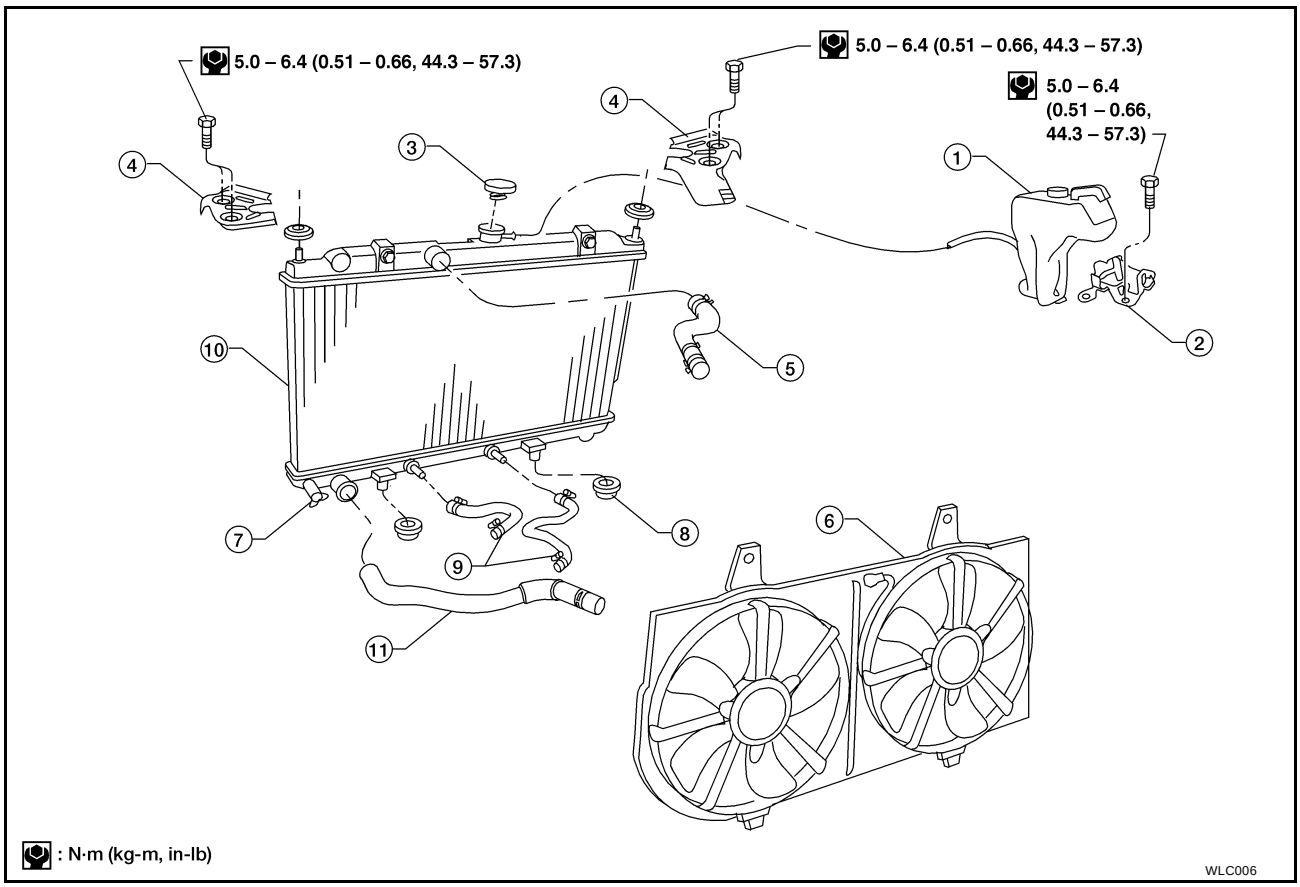
3. Check the temperature at which the valve begins to open and falls from the string. Check the total valve lift when the valve opens completely.
4. Then check if valve closes at 5°C (41°F) below valve opening temperature.

RADIATOR

PFP:21400

Removal and Installation

EBS006BZ



1. Reservoir tank
2. Reservoir tank bracket
3. Radiator cap
4. Mounting bracket
5. Upper radiator hose
6. Cooling fans
7. Radiator drain plug
8. Mounting rubber
9. Oil cooler hose (A/T models)
10. Radiator
11. Lower radiator hose

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns can occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly push down and turn it a quarter of a turn to allow the built-up pressure to escape. Carefully remove the cap by pushing down and turning it the rest of the way.

REMOVAL

1. Drain engine coolant. Refer to MA-15, "DRAINING ENGINE COOLANT" .
2. Remove the air duct and air cleaner assembly.
3. Disconnect the A/T oil cooler hoses (if equipped) and install a blind plug in the hoses to prevent A/T oil loss.
4. Disconnect the upper and lower radiator hoses and mounting bracket.
5. Remove the radiator and radiator fan assembly as one unit.

CAUTION:

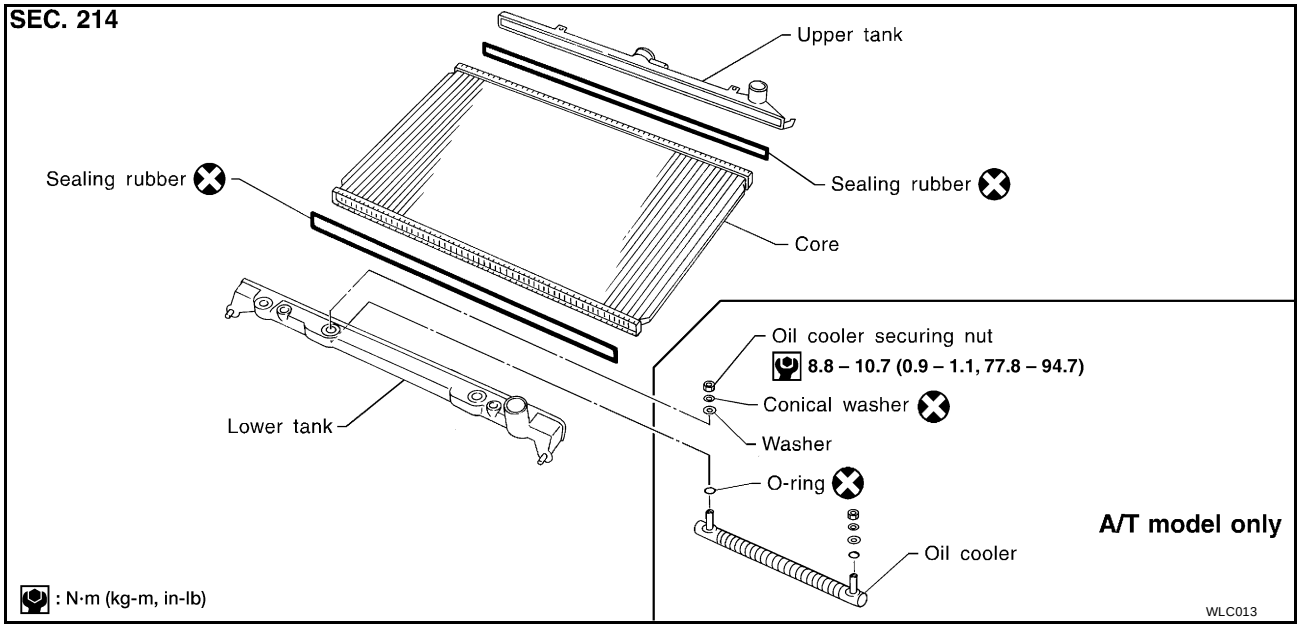
Do not damage or scratch the radiator core when removing.

INSTALLATION

1. Installation is in the reverse order of removal.

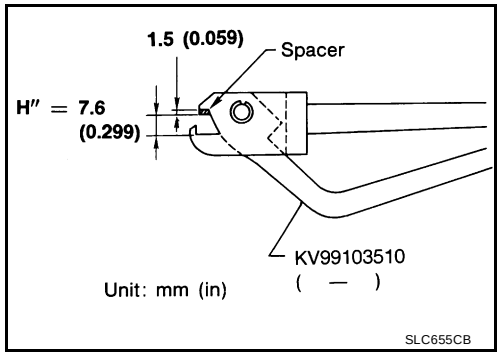
Disassembly and Assembly

EBS006C0



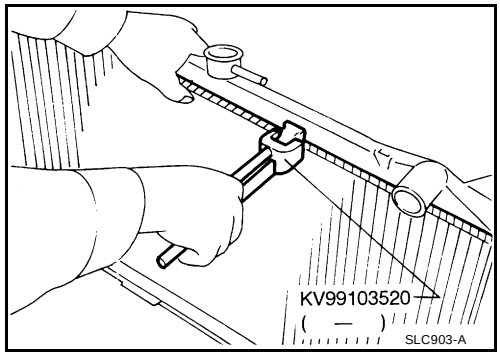
PREPARATION

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.



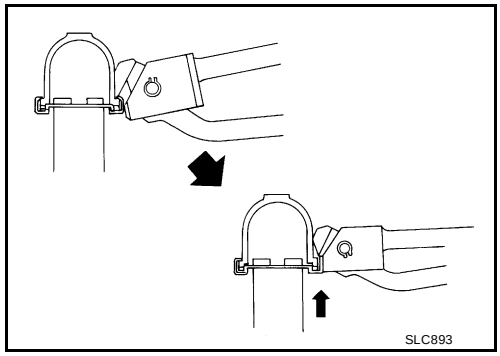
DISASSEMBLY

1. Remove tank with Tool.



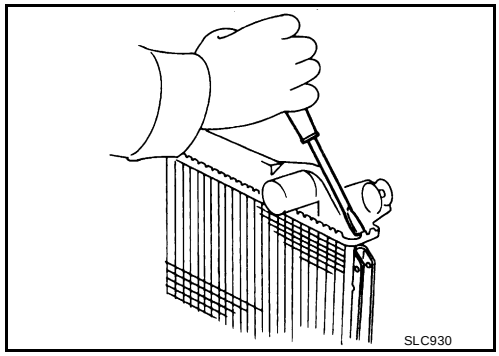
- Grip the crimped edge and bend it upwards so that Tool slips off.

Do not bend excessively.

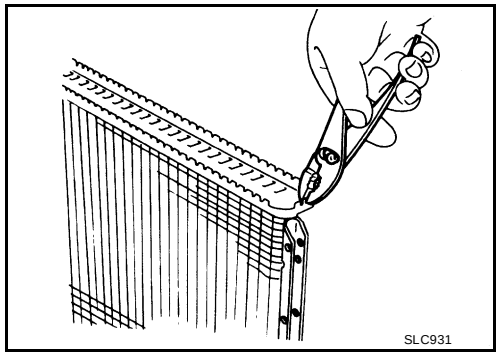


- In areas where Tool cannot be used, use a screwdriver to bend the edge up.

Be careful not to damage tank.



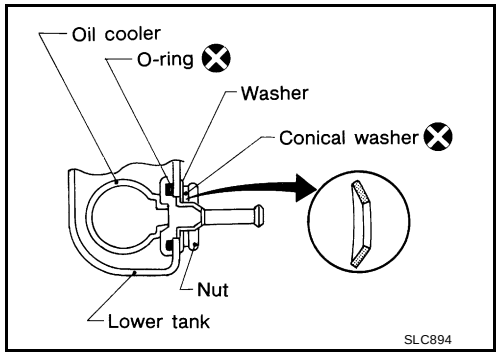
2. Make sure the edge stands straight up.
3. Remove oil cooler from tank (A/T model only).



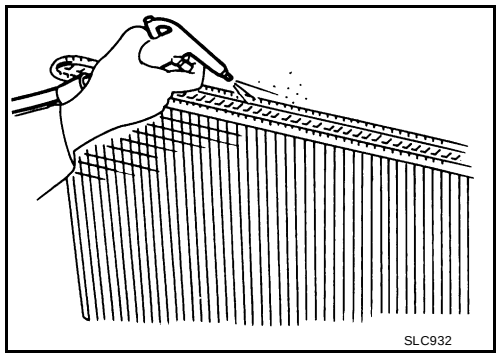
ASSEMBLY

1. Install oil cooler (A/T model only).

- **Pay attention to direction of conical washer.**

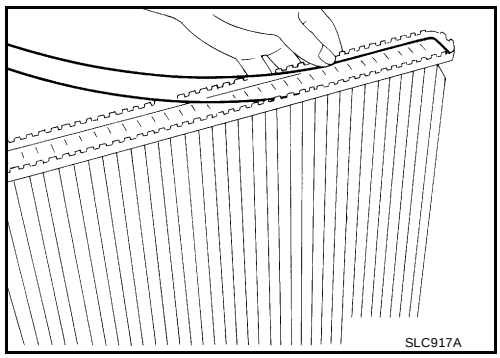


2. Clean contact portion of tank.

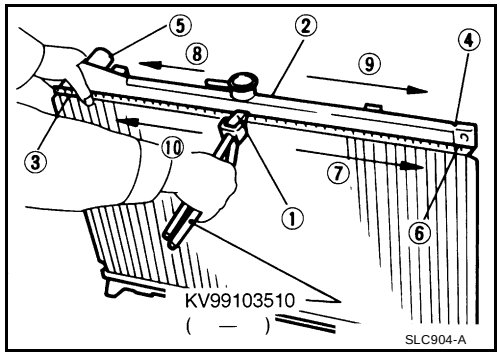


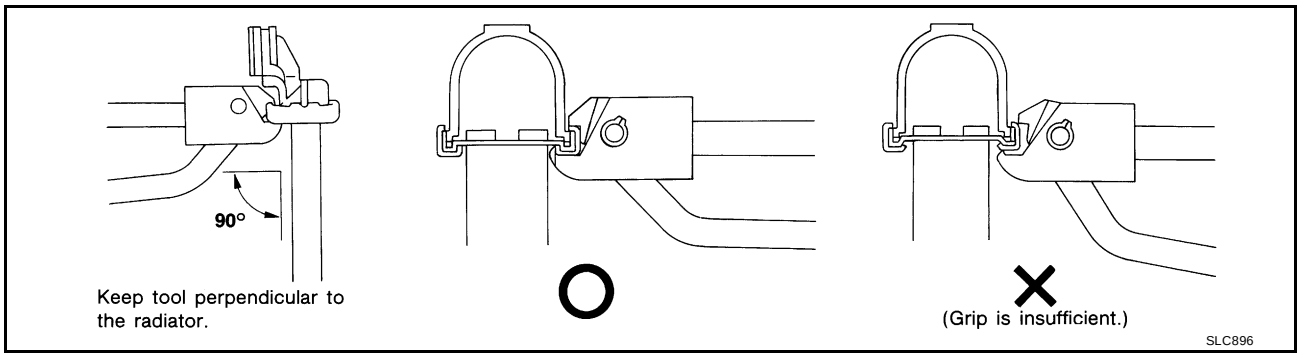
3. Install sealing rubber.

- **Push it in with fingers.**
- **Be careful not to twist sealing rubber.**

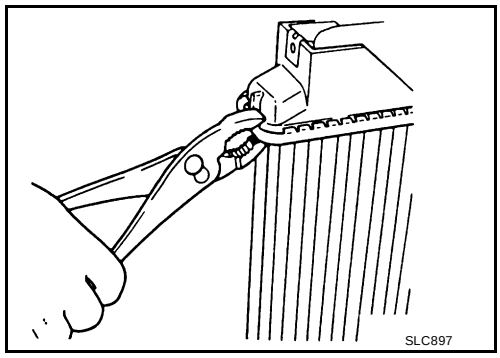


4. Crimp the tank rim in a specified sequence with the Tool.





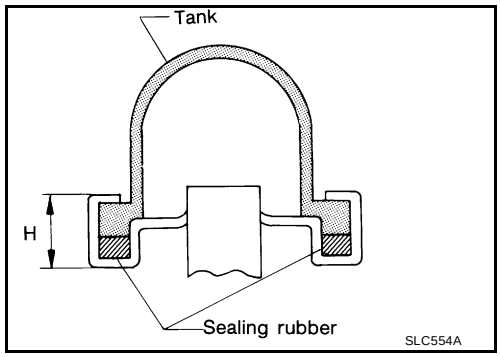
- Use pliers in the locations where the Tool cannot be used.



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

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

6. Check for any coolant leakage. Refer to CO-8, "CHECKING COOLING SYSTEM FOR LEAKS" .

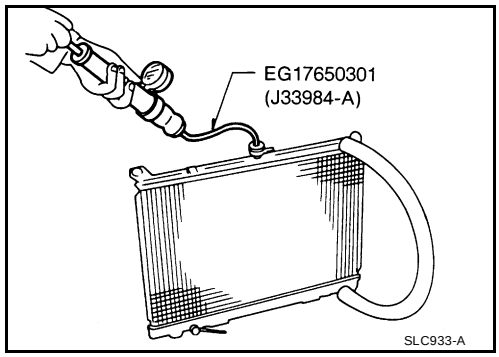


Inspection

EBS006C1

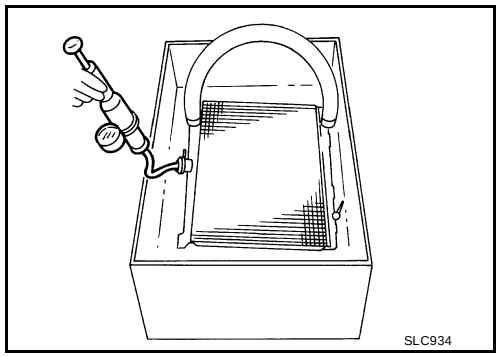
1. Apply pressure with Tool.

Specified pressure : 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 as well (A/T model only).

2. Check for leaks in dip tank.

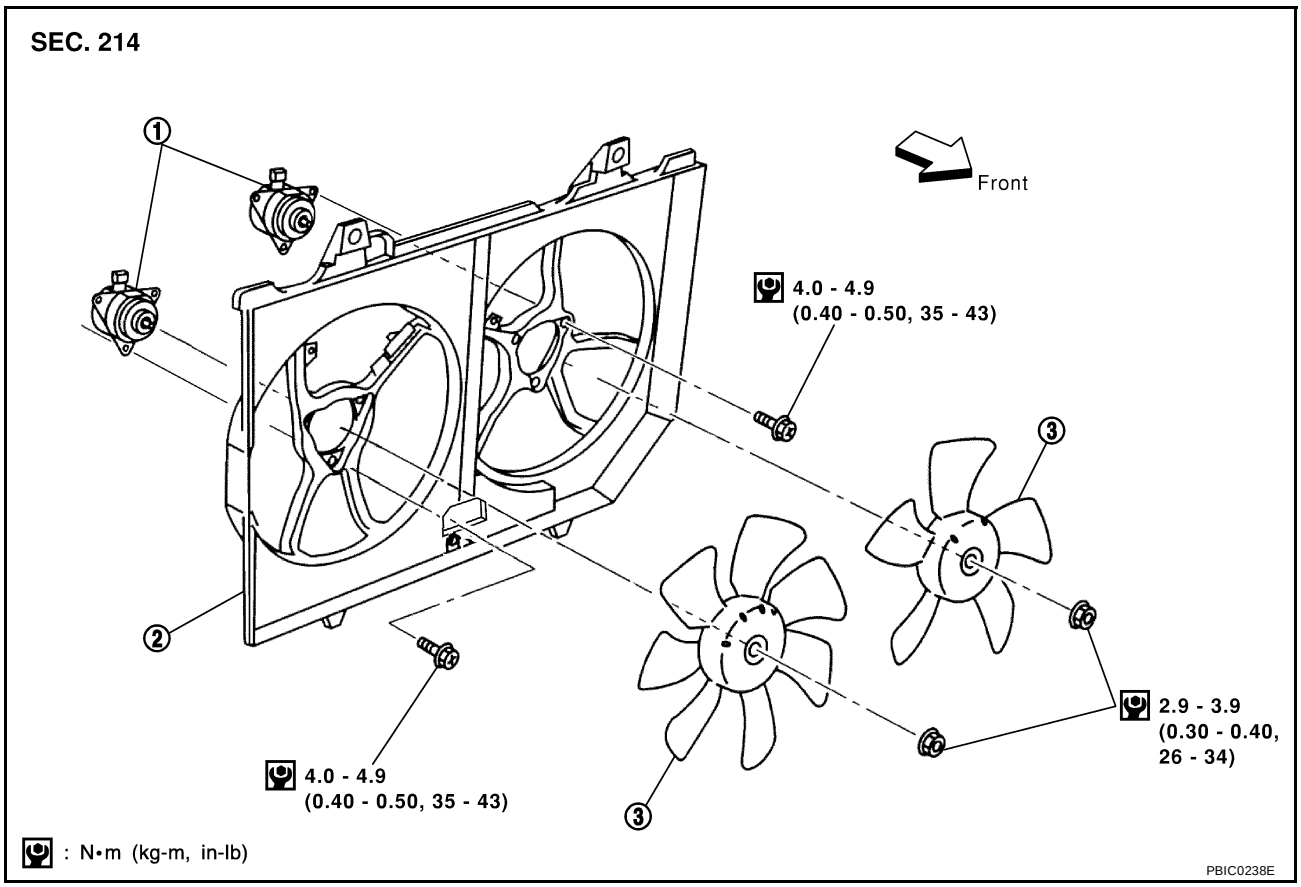


COOLING FAN

PFP:21486

Disassembly and Assembly

EBS006C2



1. Cooling fan motors
2. Cooling fan shroud
3. Cooling fan blades

DISASSEMBLY

1. Remove the radiator and cooling fan assembly. Refer to CO-14, "Removal" .
2. Remove the cooling fan shroud assembly from the radiator.
3. Remove the cooling fan blades from the shroud.
4. Remove cooling fan motors from the shroud.

ASSEMBLY

- Assembly is in the reverse order of disassembly.

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Capacity

EBS00G44

Coolant capacity (without reservoir tank)	A/T	5.9 ℓ (6 1/4 qt.)
	M/T	6.0 ℓ (6 3/8 qt.)
Reservoir tank coolant capacity (at MAX level)		0.7 ℓ (3/4 qt.)

Thermostat

EBS006C3

Valve opening temperature °C (°F)	76.5° (170°)
Valve lift mm/°C (in/°F)	More than 9/90° (0.35/194°)

Radiator

EBS006C4

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

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

PRECAUTIONS

PFP:00001

Precautions For Liquid Gasket

EBS006C5

REMOVAL OF LIQUID GASKET

- After removing the mounting bolts and nuts, disconnect and remove the RTV Silicone Sealant using a seal cutter.

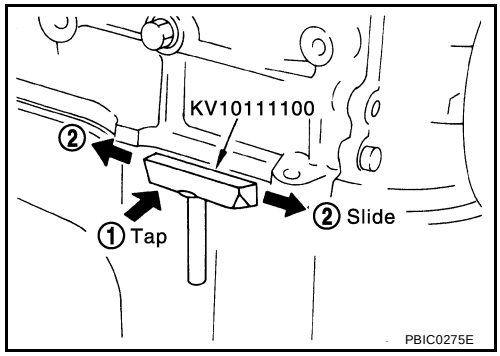
CAUTION:

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 gasket applied area.

CAUTION:

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

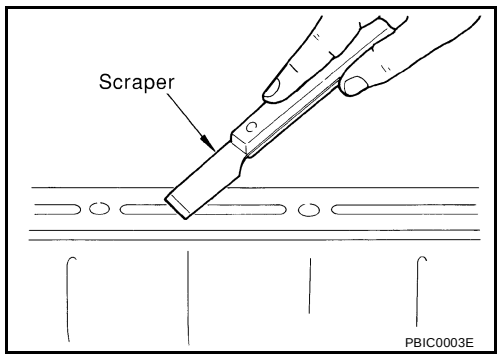


LIQUID GASKET APPLICATION PROCEDURE

1. Using a scraper, remove the old RTV Silicone Sealant adhering to the application surface and the mating surface.

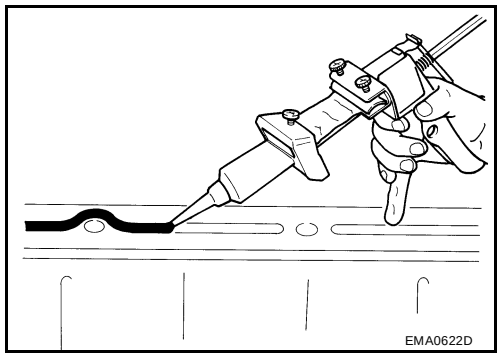
- Remove the RTV Silicone Sealant completely from the groove of the application surface, mounting bolts, and bolt holes.

2. Thoroughly clean the application surface and the mating surface to remove adhering moisture, grease and foreign material.
3. Attach the RTV Silicone Sealant container to the tube presser. **Use Genuine RTV Silicone Sealant or equivalent. Refer to** **GI-44, "RECOMMENDED CHEMICAL PRODUCTS AND SEALANTS"** .

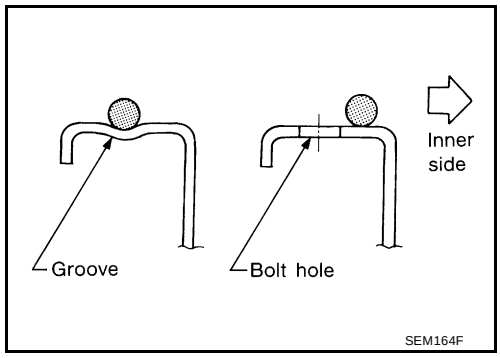


4. Apply the RTV Silicone Sealant without breaks to the specified location with the specified dimensions.

- If there is a groove for the RTV Silicone Sealant application, apply the gasket to the groove.



- As for the bolt holes, normally apply the RTV Silicone Sealant inside the holes. Occasionally, it should be applied outside the holes.
- Within five minutes of RTV Silicone Sealant application, install the mating component.
- If the RTV Silicone Sealant protrudes, wipe it off immediately.
- Do not retighten after the installation.
- After 30 minutes or more have passed from the installation, fill the engine with the specified oil and coolant. Refer to MA-13, "RECOMMENDED FLUIDS AND LUBRICANTS" .



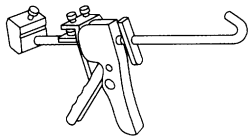
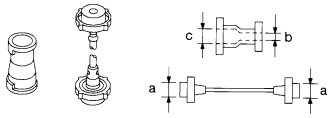
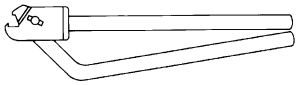
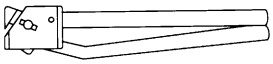
PREPARATION

PFP:00002

Special Service Tools

EBS006C6

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

Tool number (Kent-Moore No.) Tool name	Description
WS39930000 (-) Tube presser  S-NT052	Pressing the tube of liquid gasket
EG17650301 (J33984-A) Radiator cap tester adapter  S-NT564	Adapting radiator cap tester to radiator filler neck **a: 28 (1.10) diameter** **b: 31.4 (1.236) diameter** **c: 41.3 (1.626) diameter** 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

OVERHEATING CAUSE ANALYSIS

PFP:00012

Troubleshooting Chart

EBS006C7

	Symptom		Check items	
Cooling system parts malfunction	Poor heat transfer	Water pump malfunction	Worn or loose drive belt	—
		Thermostat stuck closed	Coolant ciculation	
		Damaged fins	Dust contamination or paper clogging	
			Mechanical damage	
		Clogged radiator cooling tube	Excess foreign material (rust, dirt, sand, etc.)	
	Reduced air flow	Cooling fan does not operate	Engine cooling fans	—
		High resistance to fan rotation		
		Damaged fan blades		
		Damaged radiator shroud	Radiator shroud	—
	Engine runs hot	Improper coolant mixture ratio	Coolant quality, viscosity	—
		Poor coolant quality		—
	Insufficient coolant	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

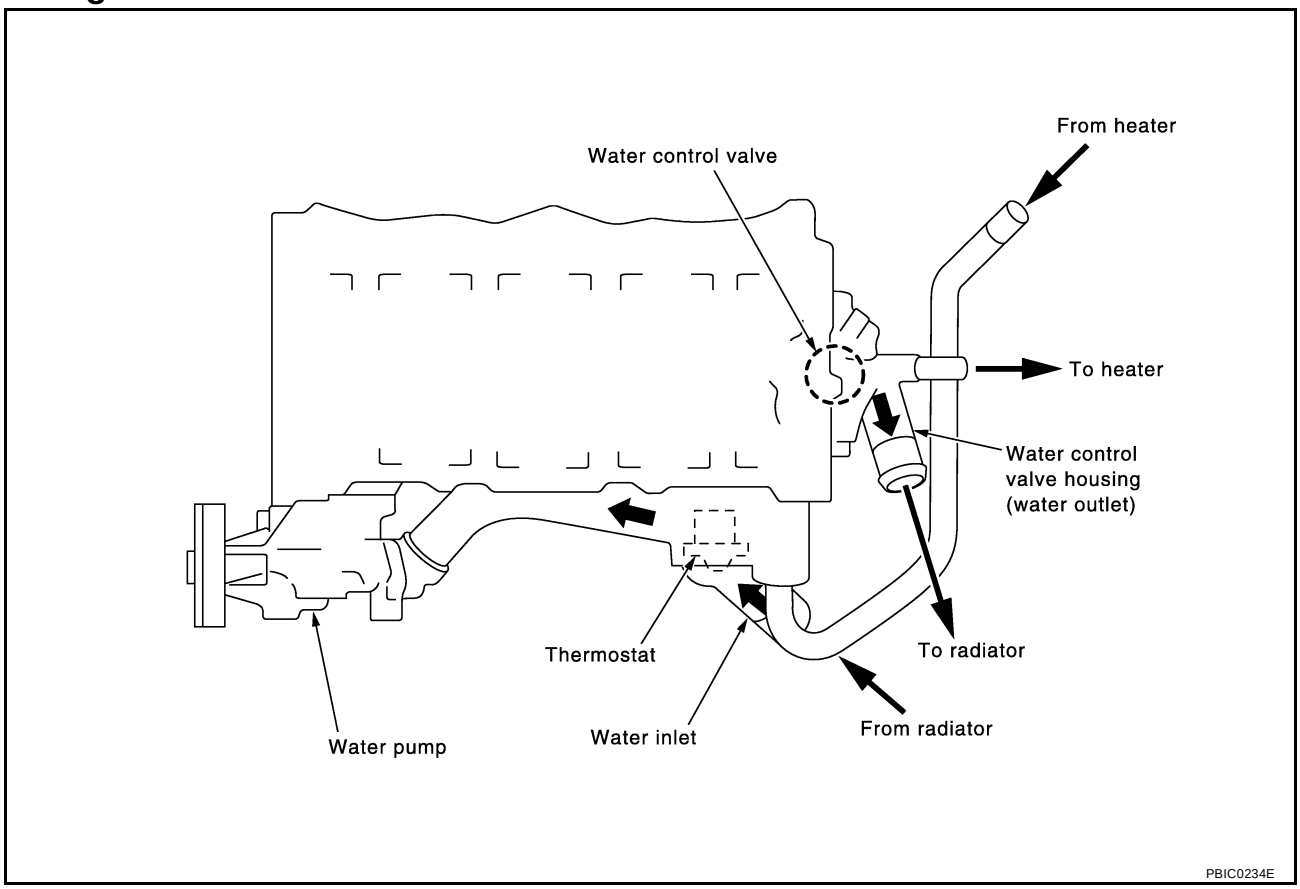
	Symptom		Check items	
Except cooling system parts malfunction	—	Overload on engine	Abusive driving	High engine rpm under no load
				Driving in low gear for extended time
				Driving at extremely high speed
			Powertrain system malfunction	—
			Installed improper size wheels and tires	
			Dragging brakes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

COOLING SYSTEM

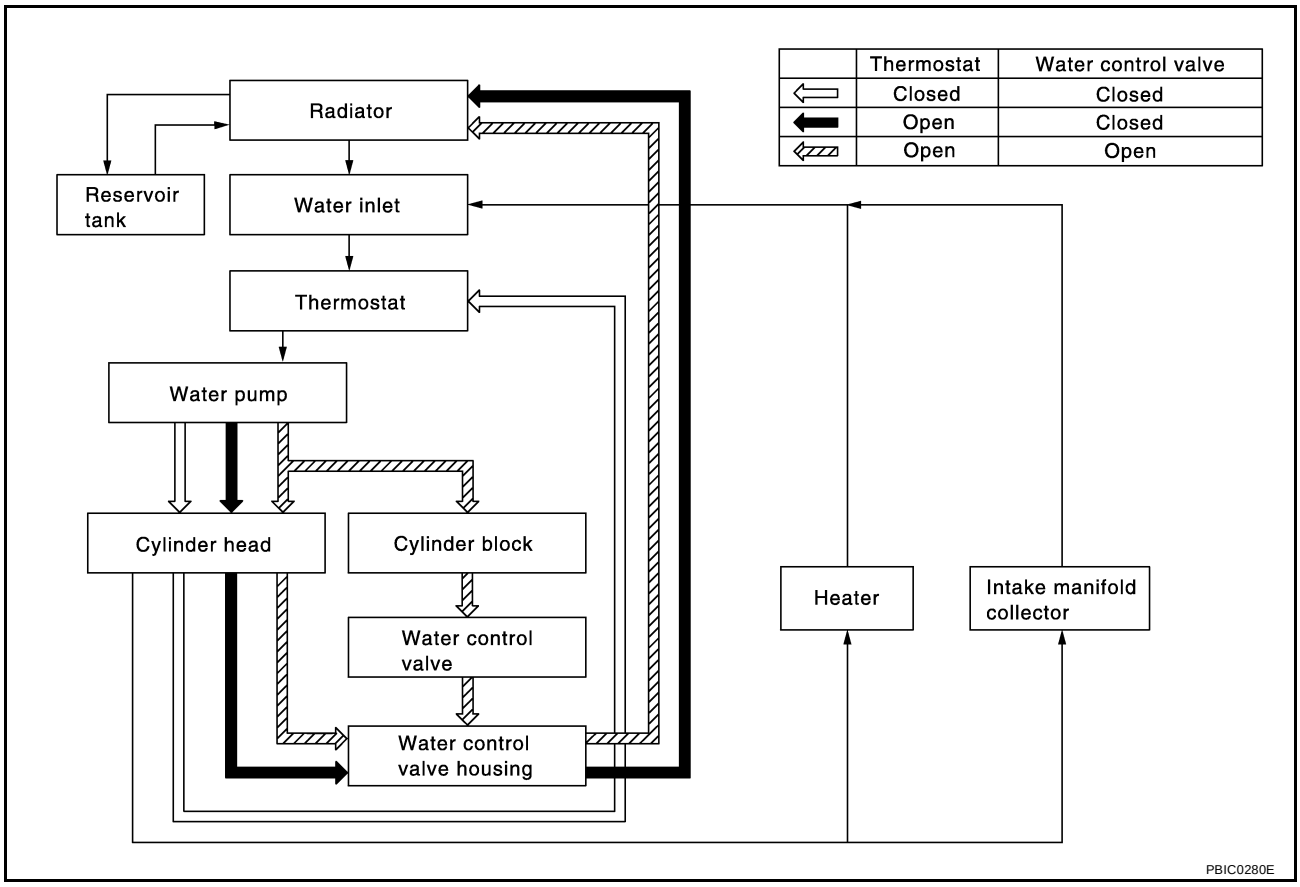
PFP:21020

Cooling Circuit

EBS006C8



PBIC0234E



PBIC0280E

ENGINE COOLANT

PFP:KQ100

System Check

EBS00G45

WARNING:
Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure fluid 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 down and turning it all the way.

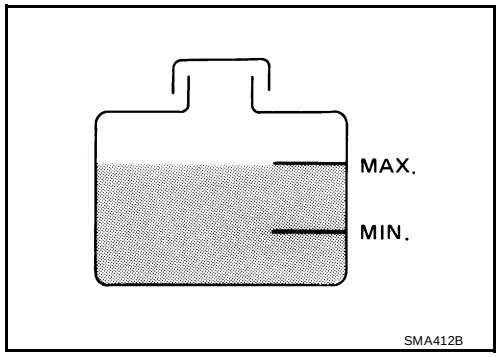
CHECKING COOLING SYSTEM HOSES

Check hoses for the following:

- Improper attachment
- Leaks
- Cracks
- 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.
- Adjust coolant level if it is too much or too little.



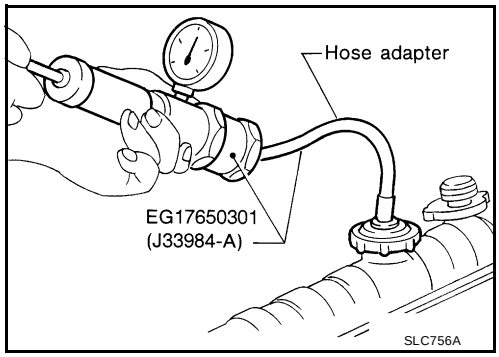
CHECKING COOLING SYSTEM FOR LEAKS

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 coolant escaping from the radiator.

CAUTION:
Higher pressure than specified may cause radiator damage.



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, radiator shroud and horns. Then tape the harness and connectors to prevent water from entering.

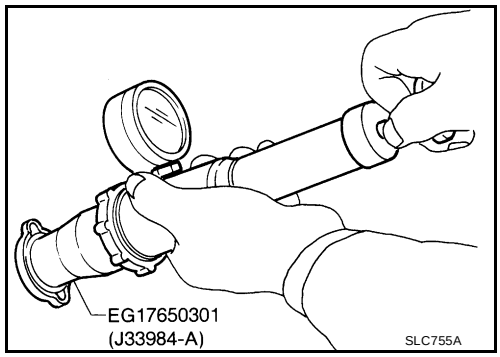
1. Apply water by hose to the back side of the radiator core vertically downward.
2. Apply water again to all radiator core surfaces once per minute.
3. Stop washing when clear water flows off of the radiator.
4. Blow air into the back side of radiator core vertically downward.
   - Use compressed air lower than 490 kPa (5 kg/cm^2 , 71 psi) and keep distance more than 300 mm (11.8 in).

5. Blow air again into all the radiator core surfaces once per minute until no water sprays out.
6. Check for leakage.

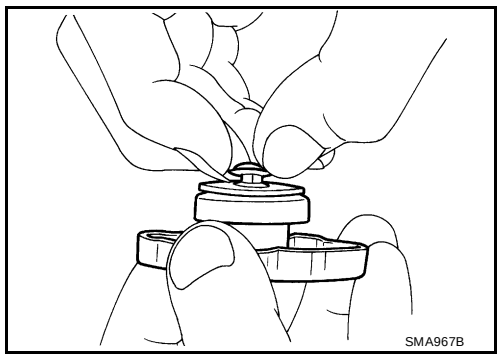
CHECKING RADIATOR CAP

- To check radiator cap, apply pressure to cap with a tester.

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 , 14 psi)**



- Pull the negative pressure valve to open it.
- Check that it closes completely when released.



Refilling Engine Coolant

EBS00G46

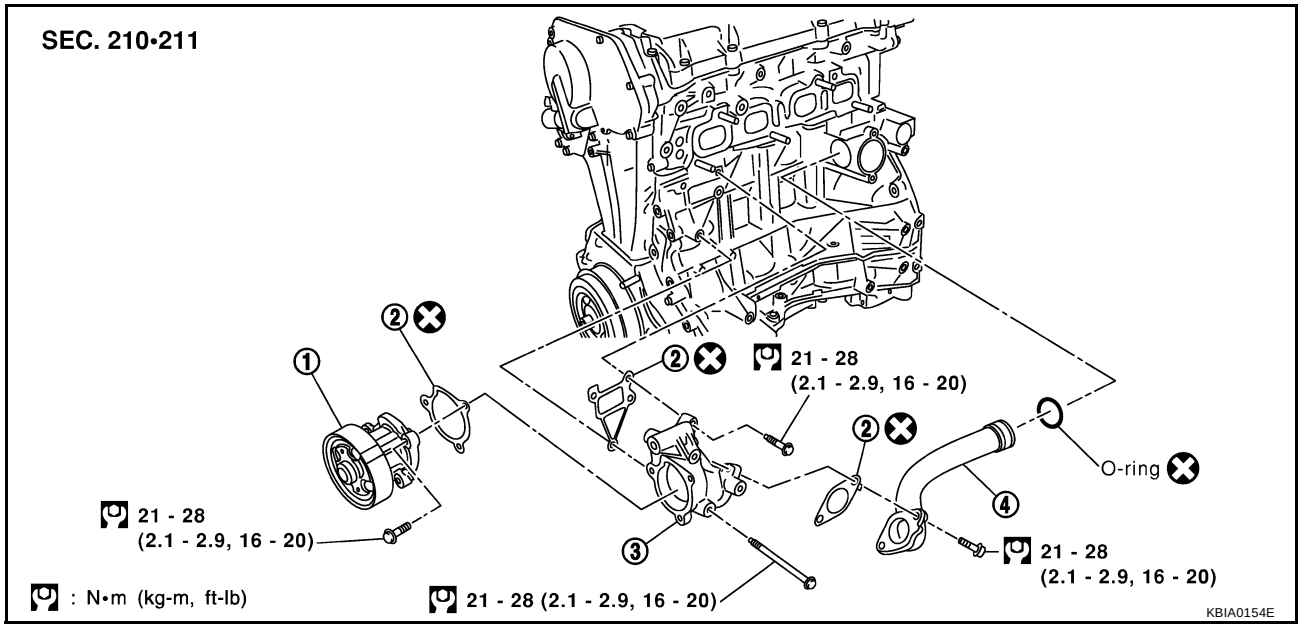
Changing the engine coolant is part of the required maintenance of the engine. Refer to MA-23, "REFILLING ENGINE COOLANT" .

WATER PUMP

PFP:21020

Removal and Installation

EBS006CB



1. Water pump
2. Gasket
3. Water pump housing
4. Water pipe

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

REMOVAL

Water Pump

1. Drain the engine coolant. Refer to MA-23, "DRAINING ENGINE COOLANT" .
   CAUTION:
   Perform when the engine is cold.
2. Remove the alternator. Refer to SC-32, "Removal" .
3. Remove the water pump.
   - Coolant will leak from the cylinder block, have a drain pan in position.

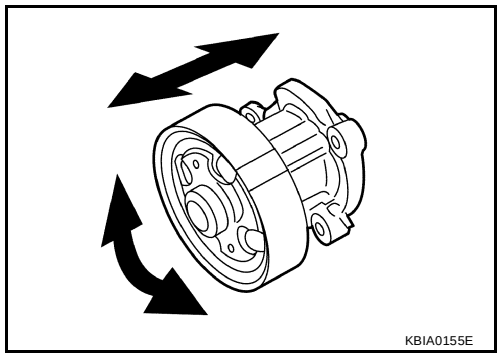
   CAUTION:
   - **Handle the water pump vane so that it does not contact any other parts.**
   - **The water pump cannot be disassembled and should be replaced as a unit.**
4. Remove the water pipe mounting bolts.
5. Remove the water pump housing from the engine block. Use a new gasket for installation.

Water Pipe

1. Remove the water pump.
2. Remove the exhaust manifold. Refer to EX-3, "Removal and Installation" .
3. Remove the water pipe from the thermostat housing.

INSPECTION AFTER REMOVAL

- Visually check that there is no significant dirt or rust on the water pump body and vane.
- Check that there is no play when rotating the vane shaft, and that it turns smoothly when rotated by hand.
- If necessary, replace the water pump as an assembly.



INSTALLATION

Installation is in the reverse order of removal.

NOTE:
When inserting the water pipe end into the thermostat housing, apply coolant to the O-ring seal and install immediately.

INSPECTION AFTER INSTALLATION

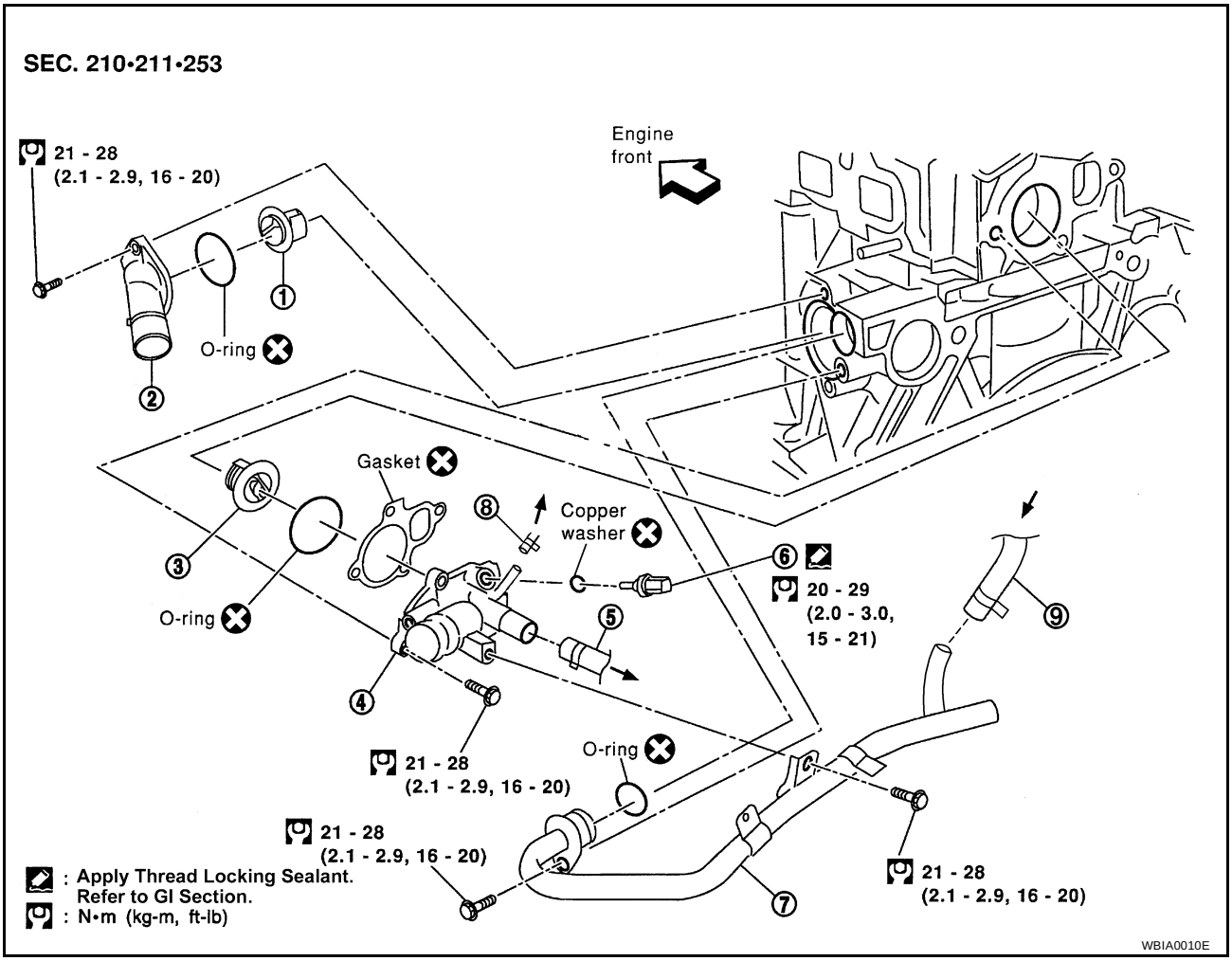
After installing the water pump and pipe, check for leaks using the radiator cap tester. Refer to CO-26, "CHECKING COOLING SYSTEM FOR LEAKS" .

THERMOSTAT AND THERMOSTAT HOUSING

PFP:21200

Removal and Installation

EBS006CC



1. Thermostat
2. Water inlet housing
3. Water control valve
4. Water outlet housing
5. Heater hose
6. Water temperature sensor
7. Heater pipe
8. Throttle body coolant inlet
9. Throttle body coolant outlet

WARNING:

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

CAUTION:

Perform when the engine cold.

REMOVAL

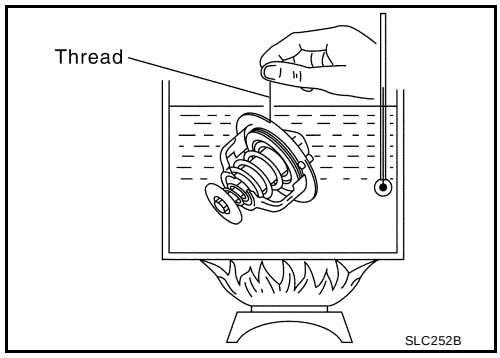
Thermostat

1. Drain engine coolant. Refer to MA-23, "DRAINING ENGINE COOLANT" .
2. Remove the lower radiator hose from the water inlet housing.
3. Remove the water inlet housing.
4. Remove the thermostat.

Water Control Valve

1. Drain engine coolant. Refer to MA-23, "DRAINING ENGINE COOLANT" .
2. Remove the upper radiator hose, heater pipe, and heater hose.
3. Remove the water outlet housing.
4. Remove the water control valve.

INSPECTION AFTER REMOVAL



- Place a string so that it is caught in the valve of the thermostat (or water control valve) and suspend it in boiling water. It must be fully immersed in the water.
- The valve opening temperature is the temperature at which the valve plate begins to rise from the top plate causing the thermostat to fall off of the string.
- Continue heating the water and thermostat to check the full-open valve lift distance.

  NOTE:
  The full-open lift amount standard temperature for the thermostat (water control valve) is the reference value.
- After checking the full-open lift amount, lower the water temperature and check the valve closing temperature.

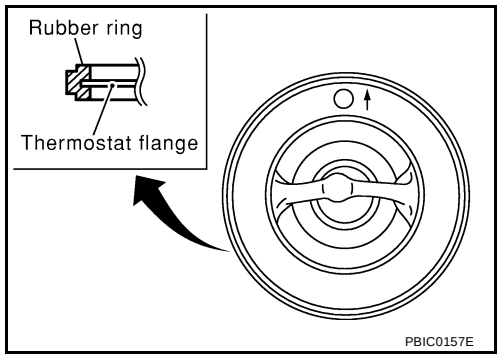
Standard Values

Component	Thermostat	Water control valve
Valve opening temperature	80.5 - 83.5°C (177 - 182° F)	93.5 - 96.5°C (200 - 206°F)
Full-open lift amount	More than 8 mm/ 95°C (0.315 in/ 203 °F)	More than 8 mm/ 108°C (0.315 in/ 226 ° F)
Valve closing temperature	77°C (171°F)	90°C (194° F)

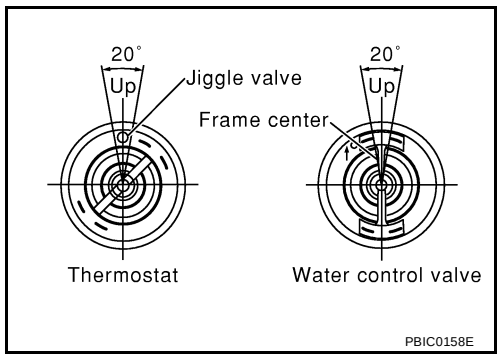
INSTALLATION

- Installation is in the reverse order of removal.

Thermostat and Water Control Valve



- Install the thermostat and water control valve with the whole circumference of each flange fitting securely inside the rubber ring. (The example in the figure shown is 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° of vertical.

Heater Pipe

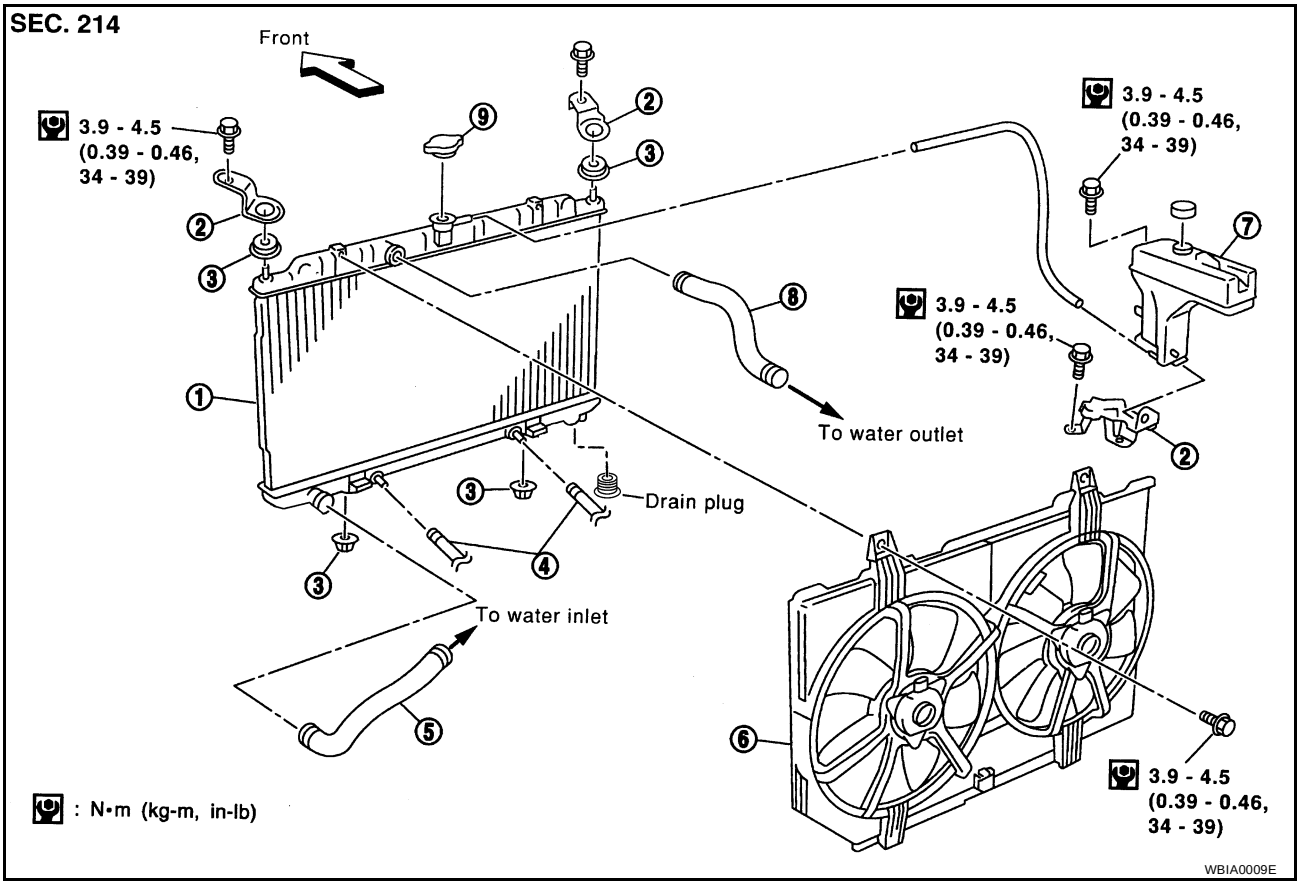
- Apply clean coolant to the heater pipe O-ring, and immediately install the heater pipe into the installation holes.

RADIATOR

PFP:21400

Removal and Installation

EBS006CD



1. Radiator
2. Bracket
3. Mounting rubber
4. A/T oil cooler hose (if equipped)
5. Radiator hose (lower)
6. Cooling fan assembly
7. Reservoir tank
8. Radiator hose (upper)
9. Radiator filler cap

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure 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 down and turning it three-quarters around.

REMOVAL

1. Drain the engine coolant. Refer to MA-23, "DRAINING ENGINE COOLANT" .
2. Remove the air duct with air cleaner assembly.
3. Disconnect A/T oil cooler hoses (if equipped).
   - Install a blind plug to avoid leakage of A/T oil.
4. Disconnect the radiator upper hose, lower hose, and mounting bracket.
5. Remove the radiator and cooling fan assembly

CAUTION:

- **Do not damage or scratch radiator core when removing.**

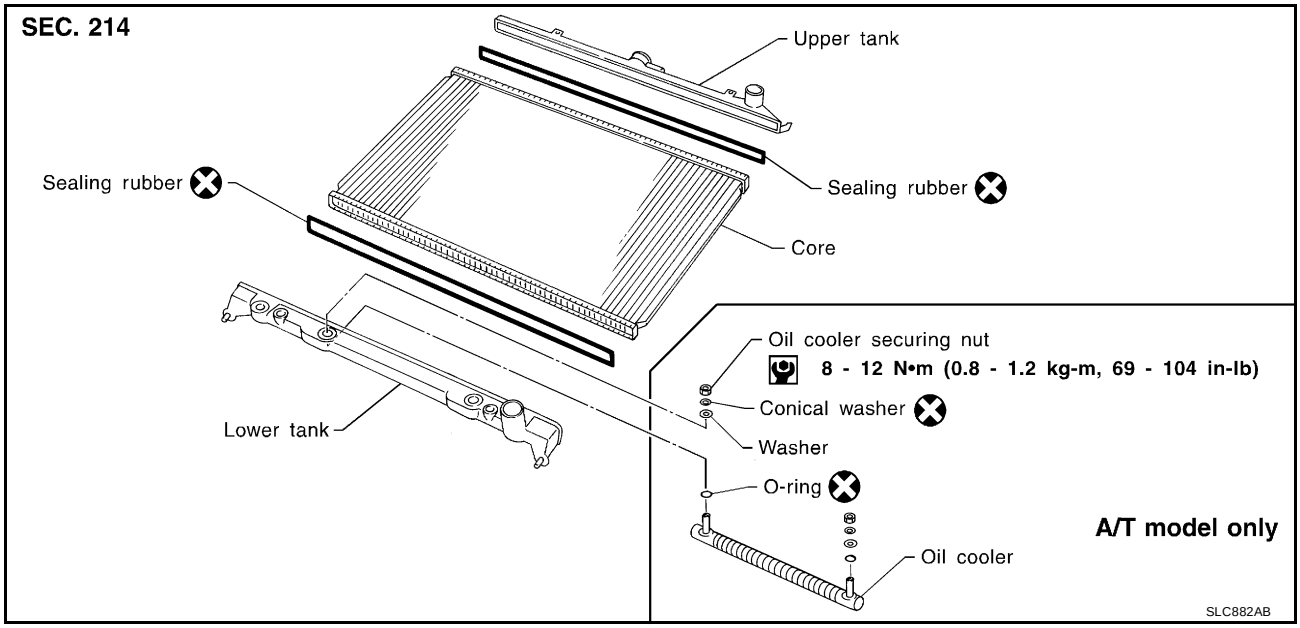
INSTALLATION

Installation is in the reverse order of removal.

- After installation, run the engine until it reaches full operating temperature and check for any cooling system leaks. Repair any leaks as necessary.

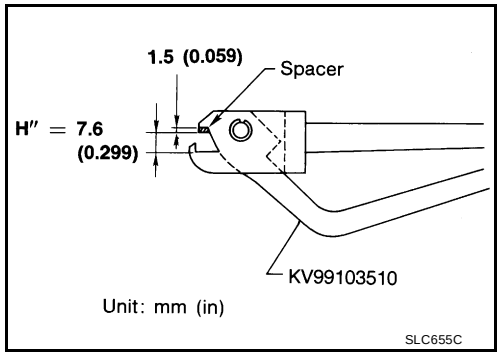
Disassembly and Assembly

EBS006CE



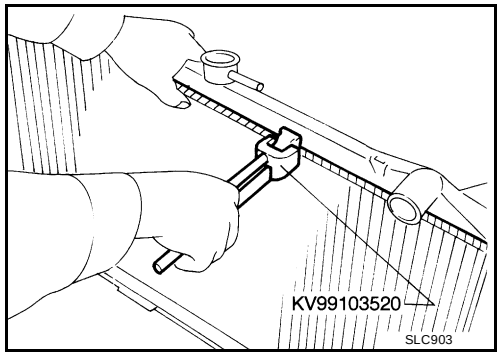
PREPARATION

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.

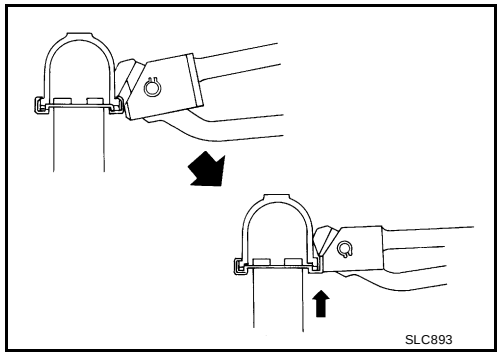


DISASSEMBLY

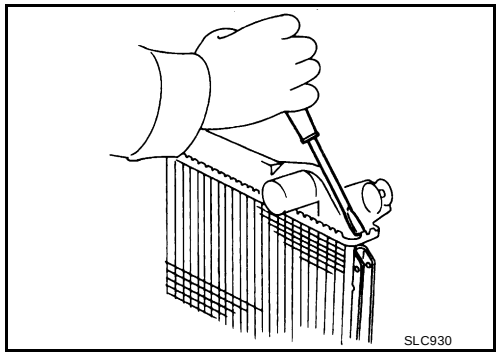
1. Remove tank with Tool.



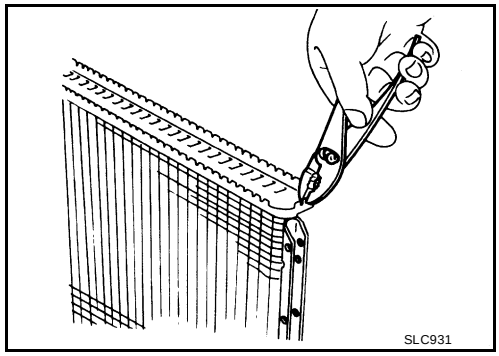
- Grip the crimped edge and bend it upwards so that the Tool slips off.
  Do not bend excessively.



- In areas where Tool cannot be used, use a screwdriver to bend the edge up.
  Be careful not to damage tank.

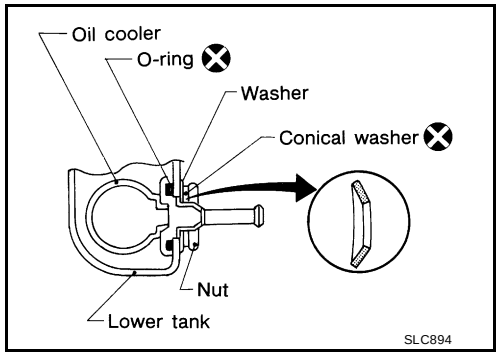


2. Make sure the edge stands straight up.
3. Remove oil cooler from tank (A/T model only).

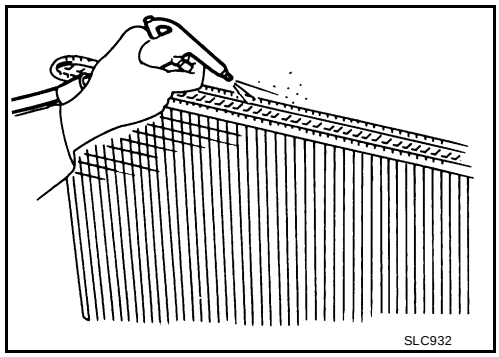


ASSEMBLY

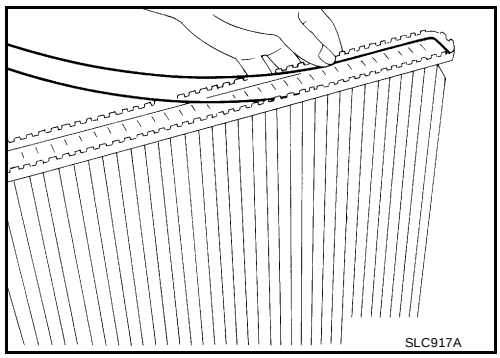
1. Install oil cooler (A/T model only).
   - **Pay attention to direction of conical washer.**



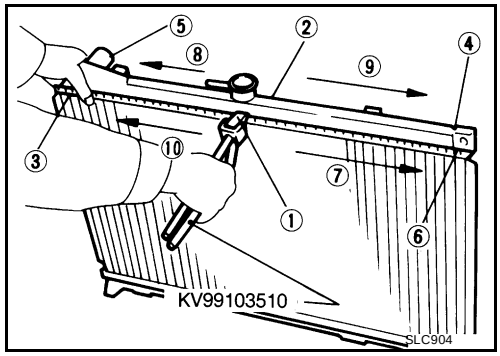
2. Clean contact portion of tank.

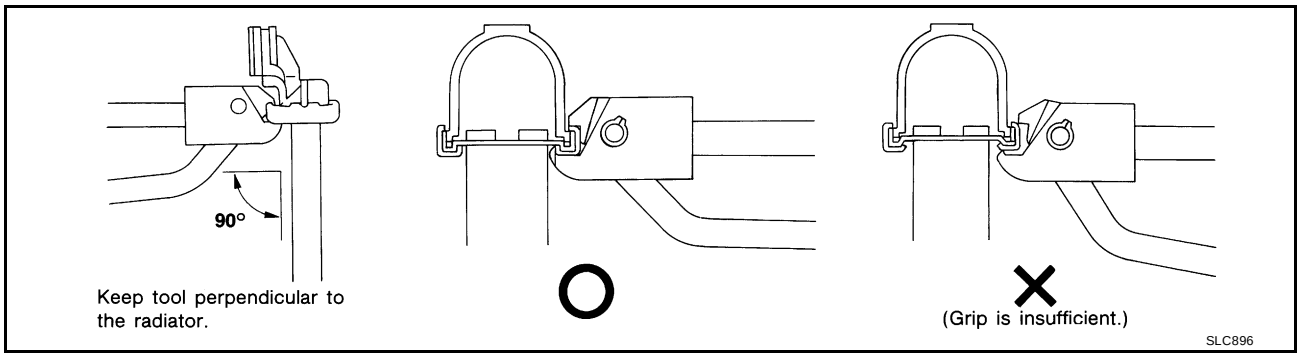


3. Install sealing rubber.
   - **Push it in with fingers.**
   - **Be careful not to twist sealing rubber.**

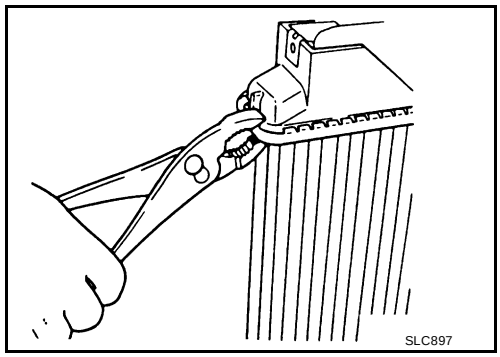


4. Crimp tank in specified sequence with Tool.





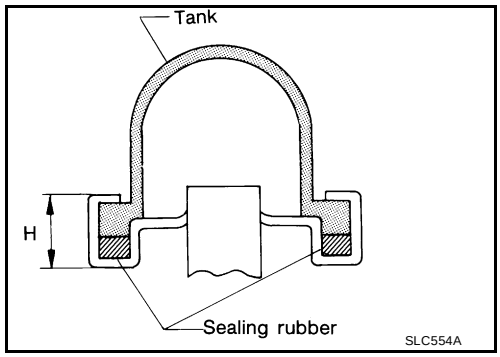
- Use pliers in the locations where Tool cannot be used.



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-26, "CHECKING COOLING SYSTEM FOR LEAKS"** **.**

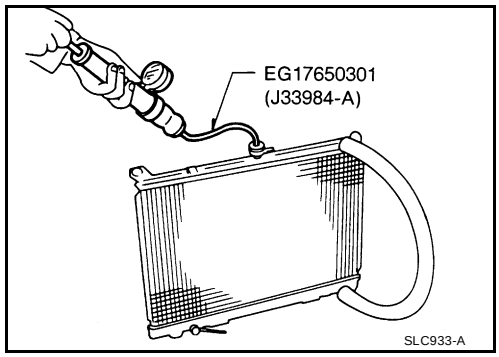


Inspection

EBS00G48

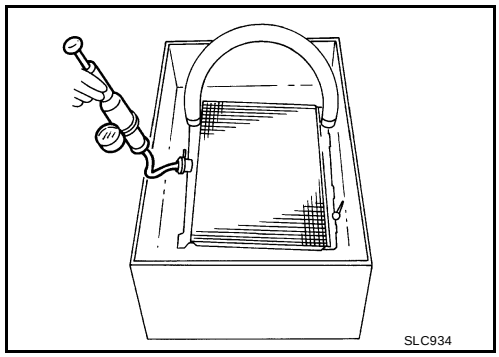
1. Apply pressure with Tool.

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 as well (A/T model only).

2. Check for leaks in dip tank.

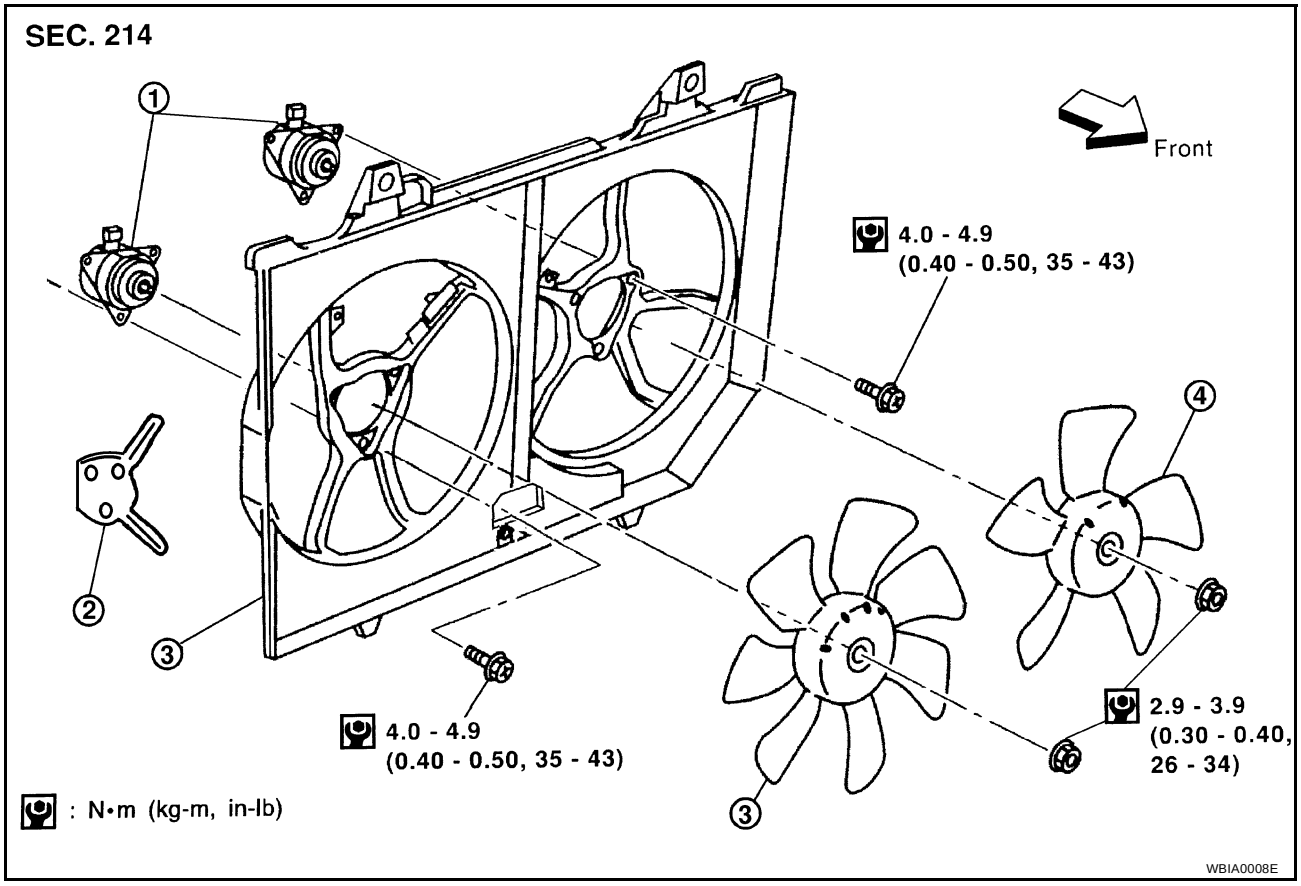


COOLING FAN

PFP:21060

Disassembly and Assembly

EBS006CG



1. Cooling fan motor
2. Insulator
3. Cooling fan shroud
4. Cooling fan blade

DISASSEMBLY

1. Remove the radiator and cooling fan assembly. Refer to CO-32, "REMOVAL" .
2. Remove the cooling fan shroud from the radiator.
3. Remove the cooling fan blades from the cooling fan motors.
4. Remove the insulator.
5. Remove the cooling fan motors from the fan shroud.

ASSEMBLY

- Assembly is in the reverse order of disassembly.

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Capacity

EBS006CH

Coolant capacity with reservoir tank (MAX level)	Approximately 6.3 ℓ (6 qt.)

Thermostat

EBS006CI

Valve opening temperature	80.5 - 83.5°C (177 - 182°F)
Valve lift	More than 8 mm / 95°C (0.315 in / 203°F)

Water Control Valve

EBS006CJ

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

Radiator

EBS006CK

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