

SECTION

CO

ENGINE COOLING SYSTEM

CONTENTS

KA24DE	VG33E and VG33ER
PRECAUTIONS 3	PRECAUTIONS 18
Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 3	Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 18
Precautions for Liquid Gasket 3	Precautions for Liquid Gasket 18
REMOVAL OF LIQUID GASKET 3	REMOVAL OF LIQUID GASKET 18
LIQUID GASKET APPLICATION PROCEDURE... 3	LIQUID GASKET APPLICATION PROCEDURE.. 19
PREPARATION 5	PREPARATION 20
Special Service Tools 5	Special Service Tools 20
OVERHEATING CAUSE ANALYSIS 6	OVERHEATING CAUSE ANALYSIS 21
Troubleshooting Chart 6	Troubleshooting Chart 21
COOLING SYSTEM 7	COOLING SYSTEM 22
Cooling Circuit 7	Cooling Circuit 22
ENGINE COOLANT 8	ENGINE COOLANT 23
System Check 8	System Check 23
CHECKING COOLING SYSTEM HOSES 8	CHECKING COOLING SYSTEM HOSES 23
CHECKING RADIATOR 8	CHECKING RADIATOR 23
CHECKING COOLING SYSTEM FOR LEAKS.... 8	CHECKING COOLING SYSTEM FOR LEAKS... 23
CHECKING RADIATOR CAP 8	CHECKING RADIATOR CAP 23
Refilling Engine Coolant 9	Refilling Engine Coolant 24
WATER PUMP 10	WATER PUMP 25
Removal 10	Removal 25
Inspection 11	Inspection 26
Installation 11	Installation 26
THERMOSTAT 13	THERMOSTAT 28
Removal 13	Removal 28
Inspection 13	Inspection 28
Installation 13	Installation 29
RADIATOR 14	RADIATOR 30
Components 14	Components 30
Removal and Installation 14	Removal and Installation 30
Inspection 15	Inspection 31
COOLING FAN (CRANKSHAFT DRIVEN) 16	COOLING FAN (CRANKSHAFT DRIVEN) 32
Removal and Installation 16	Removal and Installation 32
Inspection 16	Inspection 32
SERVICE DATA AND SPECIFICATIONS (SDS) 17	
Thermostat 17	
Radiator 17	

SERVICE DATA AND SPECIFICATIONS (SDS) 33
Thermostat 33
Radiator 33

PRECAUTIONS

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

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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 REMOVAL OF LIQUID GASKET

EBS00EZY

- After removing the mounting bolts and nuts, separate the mating surface using a seal cutter and remove the sealant.

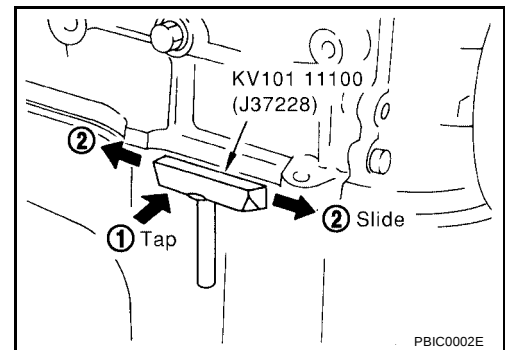
CAUTION:

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 areas where the sealant is applied.

CAUTION:

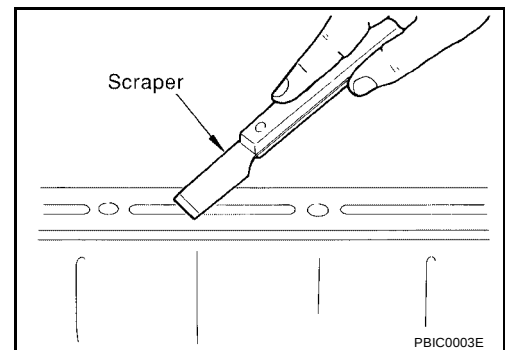
If for some unavoidable reason a tool such as a flat-bladed screwdriver is used, be careful not to damage the mating surfaces.



LIQUID GASKET APPLICATION PROCEDURE

1. Using a scraper, remove the old sealant adhering to the mating surface.
 - Remove the sealant completely from the groove, mounting bolts, and bolt holes.
2. Clean the mating surface thoroughly to remove adhering moisture, grease and foreign materials.
3. Install the sealant tube into the tube presser.

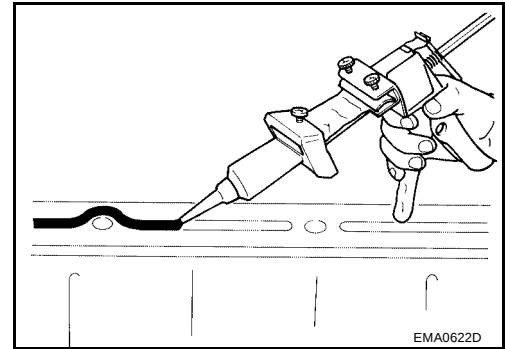
Use Genuine Silicone RTV or equivalent. Refer to [GI-42, "Recommended Chemical Products and Sealants"](#).



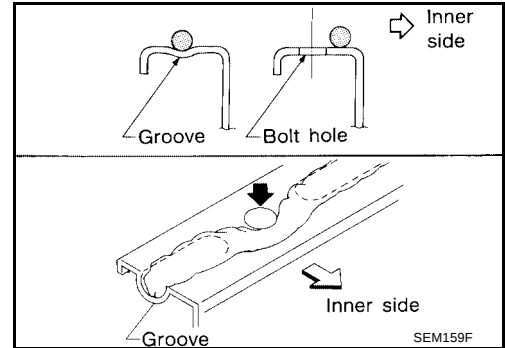
PRECAUTIONS

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



- As for the bolt holes, normally apply the sealant inside the holes. If specified, it should be applied outside the holes. Make sure to read the instructions in this manual.
- Within five minutes of sealant application, install the mating component.
- If the 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 correct oil and coolant. Refer to [MA-12](#), "[Recommended Fluids and Lubricants](#)".



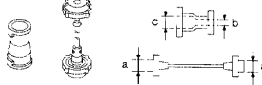
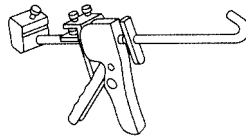
CAUTION:

If there are specific instructions in the service manual, observe them.

PREPARATION

Special Service Tools

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	CO
EG17650301 (J33984-A) Radiator cap tester adapter  NT564	Adapting radiator cap tester to radiator filler neck a: 28 (1.10) dia. b: 31.4 (1.236) dia. c: 41.3 (1.626) dia. Unit: mm (in)	C D
WS39930000 (—) Tube presser  NT052	Pressing the tube of liquid gasket	E F G

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OVERHEATING CAUSE ANALYSIS

[KA24DE]

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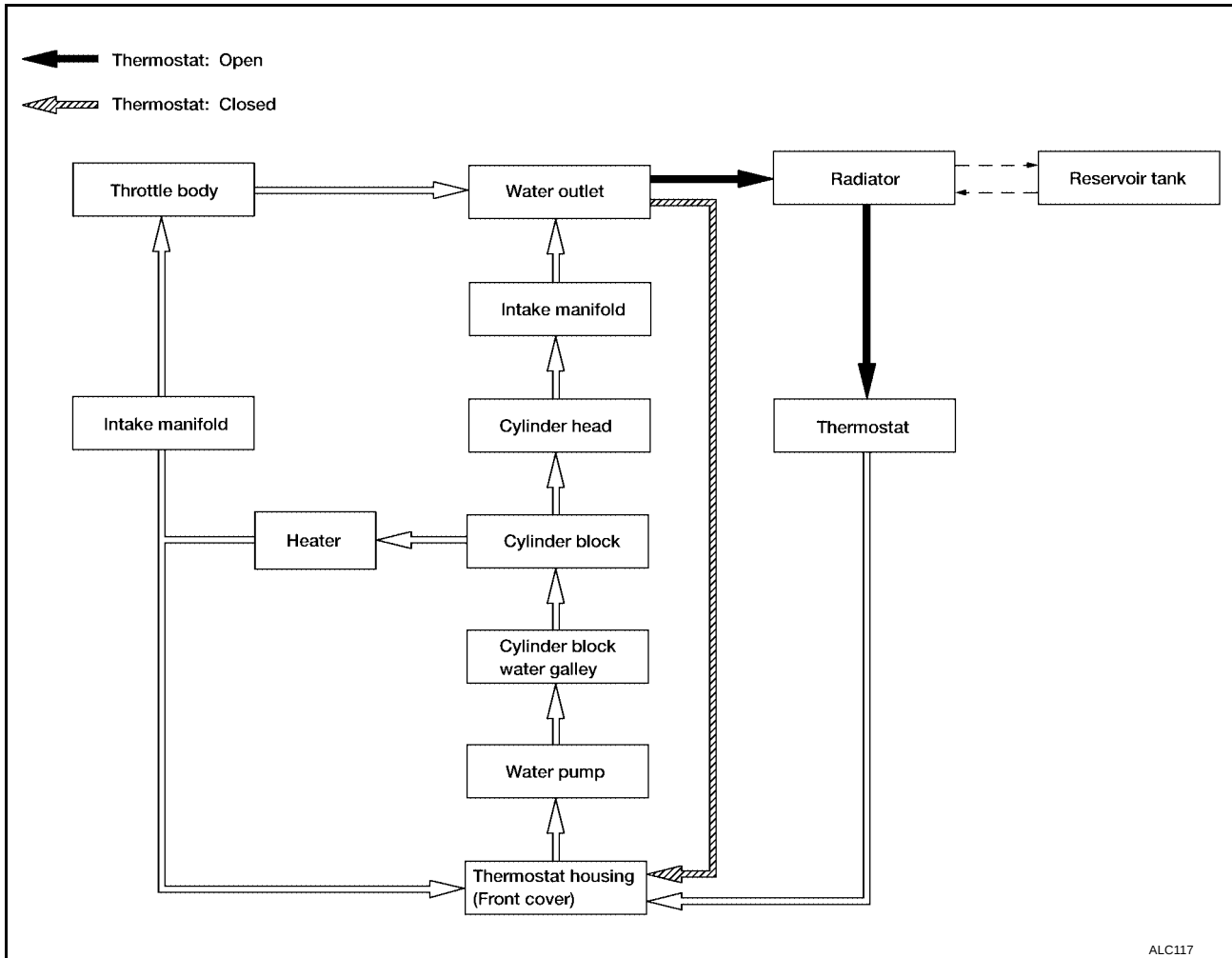
OVERHEATING CAUSE ANALYSIS

Troubleshooting Chart

	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 rock clogging	
			Mechanical damage	
		Clogged radiator cooling tube	Excess foreign material (rust, dirt, sand, etc.)	
	Reduced air flow	Fan coupling does not operate	Fan and coupling	—
		High resistance to fan rotation		
		Damaged fan blades		
	Damaged radiator shroud	—	—	—
	Improper coolant mixture ratio	—	—	—
	Poor coolant quality	—	Periodic maintenance	—
	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
Except cooling system parts malfunction	—	Overload on engine	Abusive driving	High engine rpm under no load
				Driving in low gear for extended time
				Driving at extremely high speed
		Powertrain system malfunction	—	
		Installed improper size wheels and tires		
		Dragging brakes		
		Improper ignition timing		
	Blocked or restricted air flow	Blocked radiator grille	Installed car brassiere	—
		Blocked bumper	Mud contamination or paper clogging	
		Blocked radiator		
		Blocked condenser		
		Installed large fog lamp		

COOLING SYSTEM

Cooling Circuit



ENGINE COOLANT

System Check

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 radiator cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the radiator cap by turning it all the way.

CHECKING COOLING SYSTEM HOSES

- Check hoses for improper attachment, leaks, cracks, damage, chafing and deterioration.

CHECKING RADIATOR

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

CAUTION:

- Be careful not to bend or damage the radiator fins.
 - When radiator is cleaned without removal, remove all surrounding parts such as cooling fan, radiator shroud and horns.
 - Tape the harness 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 water flows clear coming out of the radiator.
 4. Blow air into the back side of radiator core vertically downward.
 - Use compressed air lower than 490 kPa (5 kg/cm², 71 psi) and keep the air hose end more than 30 cm (11.8 in) away from the core.
 5. Blow air again into all the radiator core surfaces once per minute until no water blows out and the core is dry.

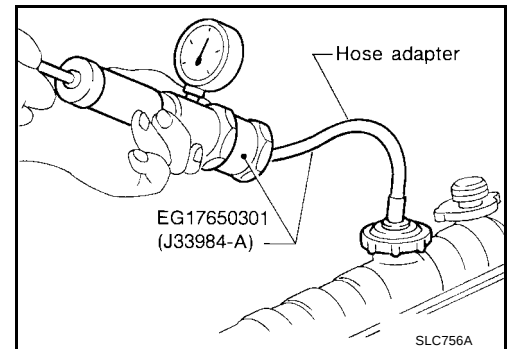
CHECKING COOLING SYSTEM FOR LEAKS

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

CAUTION:

Higher pressure than specified may cause radiator damage.

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



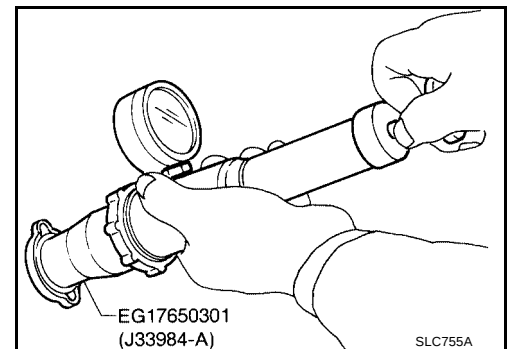
CHECKING RADIATOR CAP

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

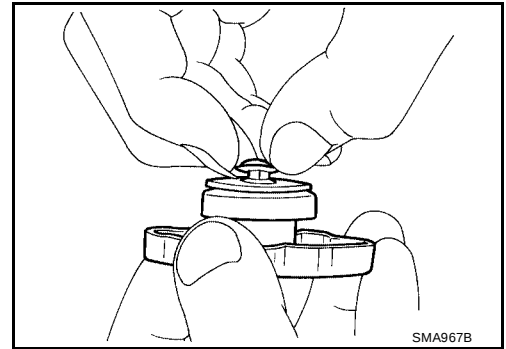
Radiator cap relief pressure

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

Limit : 59 kPa (0.6 kg/cm², 9 psi)



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



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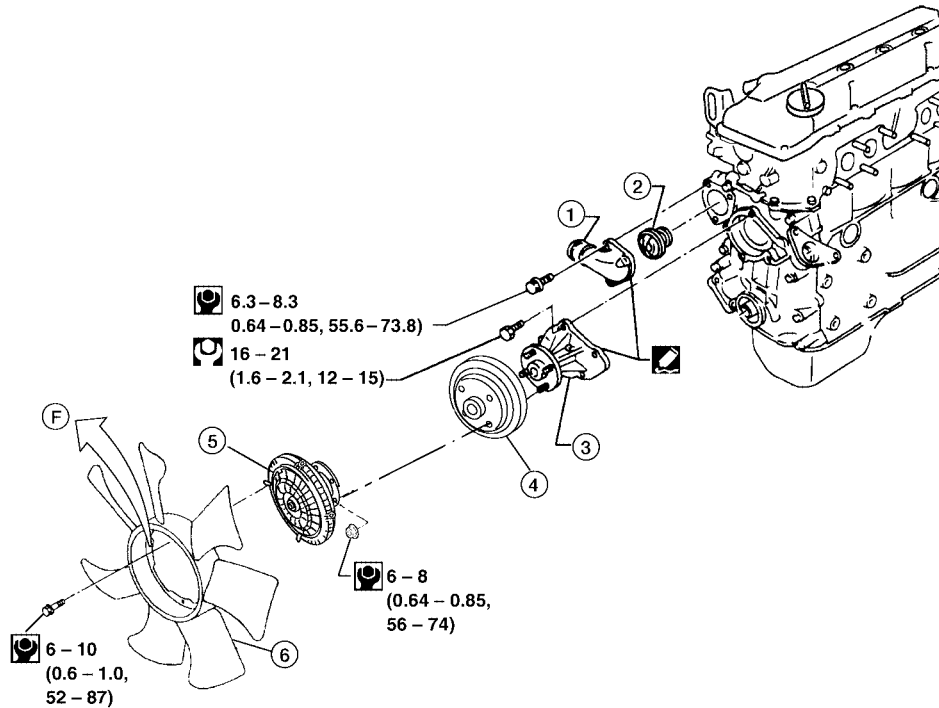
Refilling Engine Coolant

For details on refilling the engine cooling system, refer to [MA-17, "REFILLING ENGINE COOLANT"](#).

WATER PUMP

Removal

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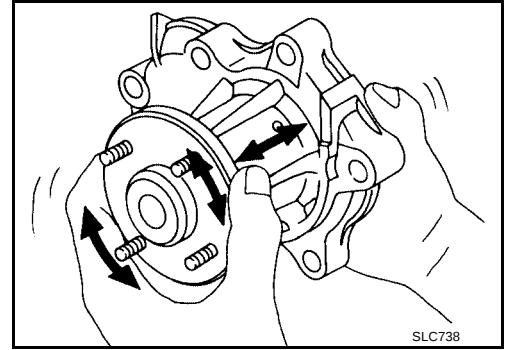
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|----------------------|-----------------|---------------|
| 1. Water inlet | 2. Thermostat | 3. Water pump |
| 4. Water pump pulley | 5. Fan coupling | 6. Fan |

CAUTION:

- When removing water pump assembly, be careful not to get coolant on drive belts.
 - Water pump cannot be disassembled and should be replaced as a unit.
 - After installing water pump, connect hose and clamp securely. Check for leaks using radiator cap tester.
1. Drain coolant from engine.
Refer to [MA-16, "DRAINING ENGINE COOLANT"](#).
 2. Remove fan coupling with fan.
 3. Remove power steering pump drive belt, generator drive belt, and A/C compressor drive belt.
 4. Remove water pump pulley.
 5. Remove water pump.

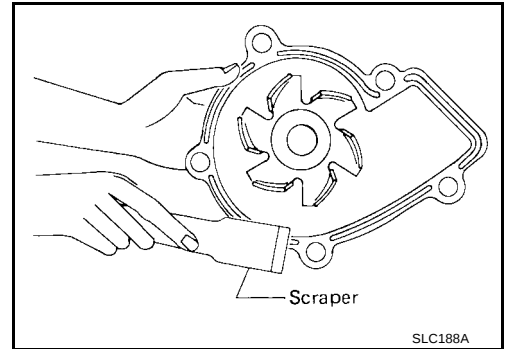
Inspection

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

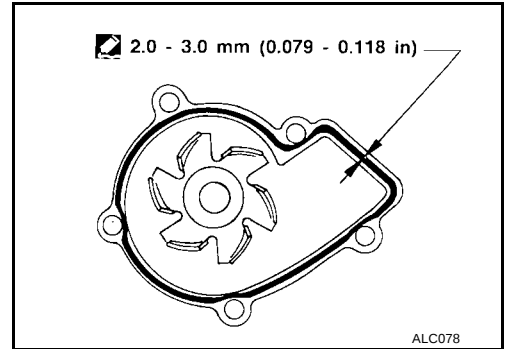


Installation

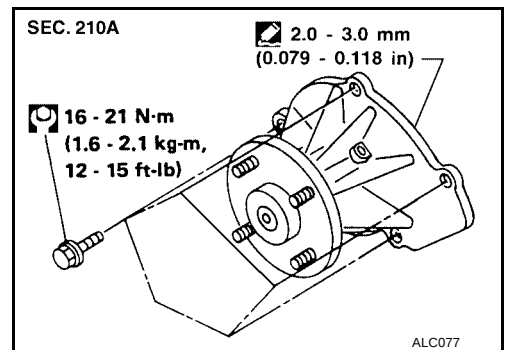
1. Use a scraper to remove liquid gasket from water pump.
 - Also remove traces of liquid gasket from mating surface of cylinder block.



2. Apply a continuous bead of liquid gasket to mating surface of water pump.
 - Use Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-42, "Recommended Chemical Products and Sealants"](#).



3. Install water pump. Tighten water pump bolts to specification as shown.

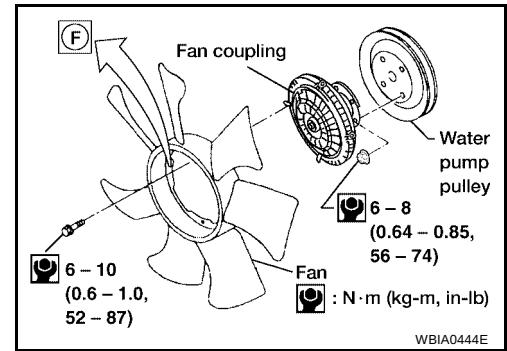


4. Install water pump pulley.
5. Install power steering pump drive belt, generator drive belt, and A/C compressor drive belt. Refer to [MA-15, "Checking Drive Belts"](#).

WATER PUMP

[KA24DE]

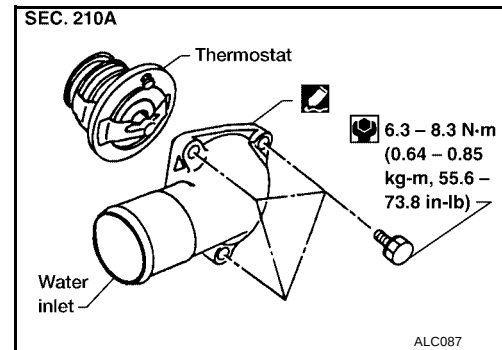
6. Install fan with fan coupling.
7. Refill engine cooling system. Refer to [MA-17, "REFILLING ENGINE COOLANT"](#).



THERMOSTAT

Removal

- Be careful not to spill coolant over engine compartment. Use a rag to absorb coolant.
1. Drain coolant from engine. Refer to [MA-16, "DRAINING ENGINE COOLANT"](#).
 2. Remove air cleaner and air duct assembly.
 3. Remove water hose from water inlet housing.
 4. Remove water inlet housing, then take out thermostat.

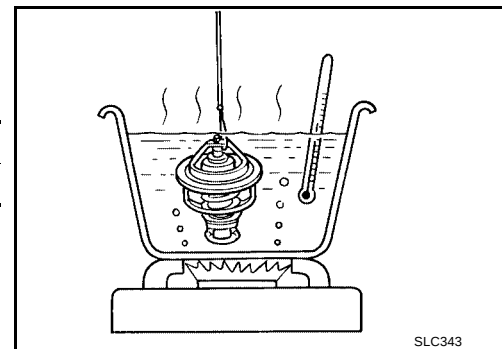


Inspection

1. Check valve seating condition at normal room temperature. It should seat tightly.
2. Check valve opening temperature and valve lift.

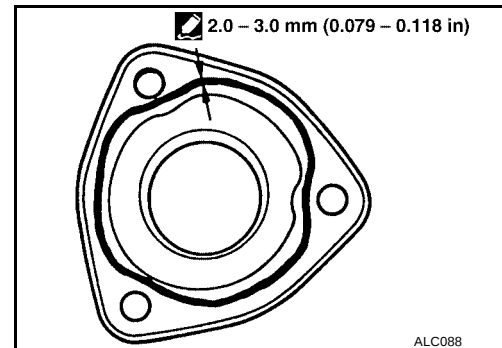
Valve opening temperature	76.5°C (170°F)
Valve lift	More than 8 mm/90°C (0.31 in/194°F)

3. Check if valve closes at 5°C (9°F) below valve opening temperature.

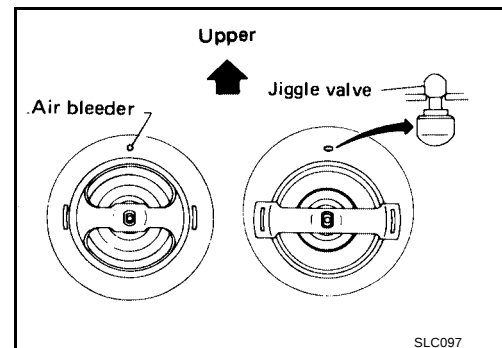


Installation

1. Use a scraper to remove old liquid gasket from water inlet.
 - Also remove traces of liquid gasket from mating surface of front cover.
2. Apply a continuous bead of liquid gasket to mating surface of water inlet.
 - Use Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-42, "Recommended Chemical Products and Sealants"](#).



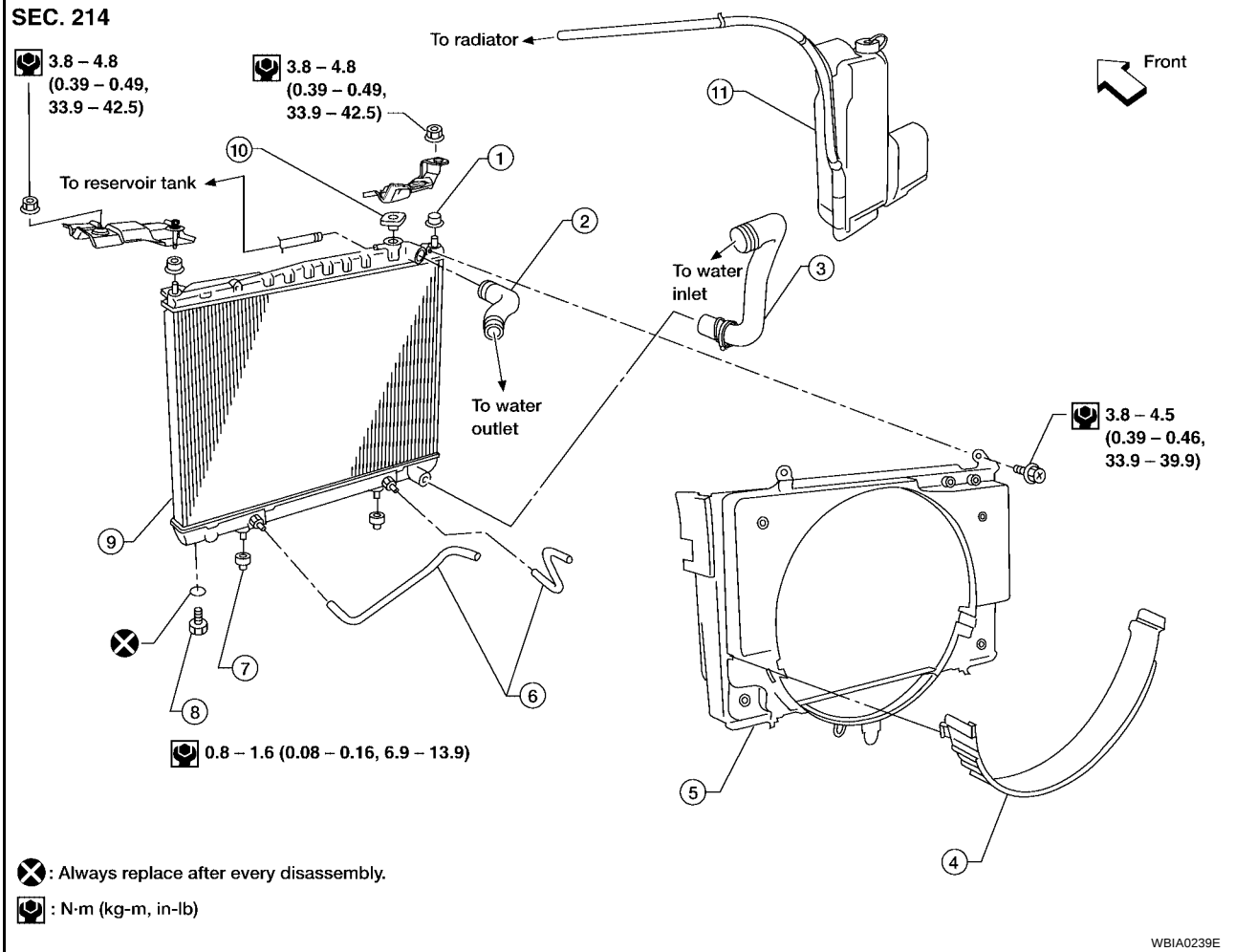
3. Install thermostat with jiggle valve or air bleeder at upper side.
 4. Install water inlet housing.
 5. Install water hose to water inlet housing.
 6. Install air cleaner and air duct assembly.
 7. Refill engine cooling system. Refer to [MA-17, "REFILLING ENGINE COOLANT"](#).
- After installation, run engine for a few minutes and check for leaks.



RADIATOR

Components

SEC. 214



- | | | |
|--------------------------|--------------------------|-------------------------|
| 1. Mounting rubber | 2. Radiator upper hose | 3. Radiator lower hose |
| 4. Radiator lower shroud | 5. Radiator upper shroud | 6. A/T oil cooler hoses |
| 7. Mounting rubber | 8. Radiator drain plug | 9. Radiator |
| 10. Radiator filler cap | 11. Radiator reservoir | |

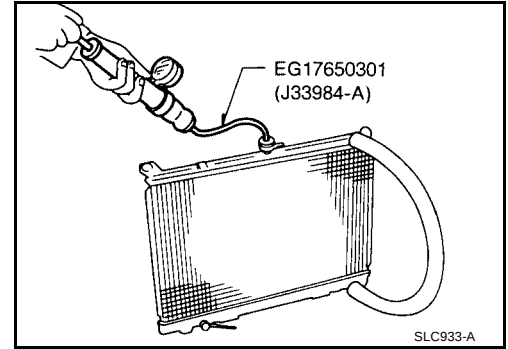
Removal and Installation

1. Remove undercover.
2. Drain coolant from radiator. Refer to [MA-16, "DRAINING ENGINE COOLANT"](#).
3. Disconnect upper and lower radiator hoses.
4. Remove air cleaner and air duct assembly.
5. Remove lower radiator shroud.
6. Remove radiator shroud.
7. Remove A/T oil cooler hoses (A/T models only).
8. Disconnect coolant reservoir hose.
9. Remove radiator.
10. After replacing radiator, install all parts in reverse order of removal.
11. Refill engine coolant. Refer to [MA-17, "REFILLING ENGINE COOLANT"](#).
 - After installation, run engine for a few minutes, and check for leaks.

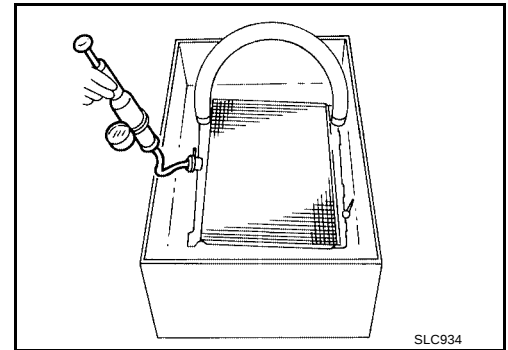
Inspection

1. Apply pressure with Tool.

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



2. Check radiator for leaks in water tank by looking for bubbles.



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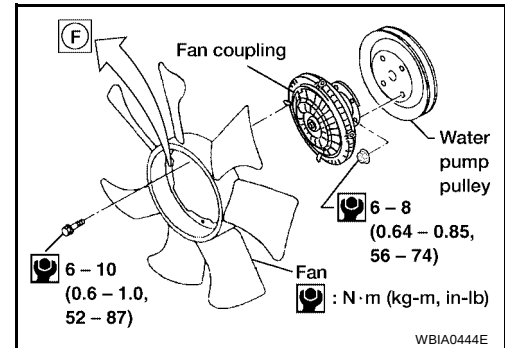
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COOLING FAN (CRANKSHAFT DRIVEN)

Removal and Installation

- Do not release the drive belt tension by removing the fan/water pump pulley.
- Fan coupling cannot be disassembled and should be replaced as a unit. If front mark **F** is present, install fan so that side marked **F** faces the front.
- Install the drive belt only after the fan and fan coupling to water pump flange bolts/nuts have been properly tightened.
- Proper alignment of these components is essential. Improper alignment will cause them to wobble and may eventually cause the fan to separate from the water pump, causing extensive damage.



WBIA0444E

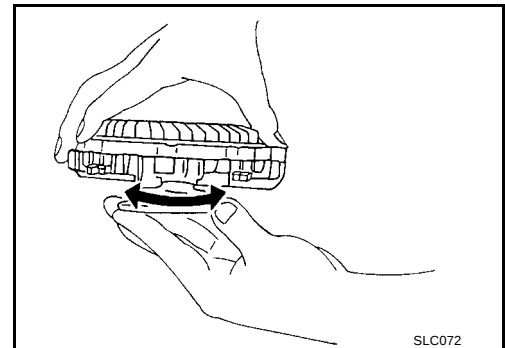
Inspection

EBS00F0E

WARNING:

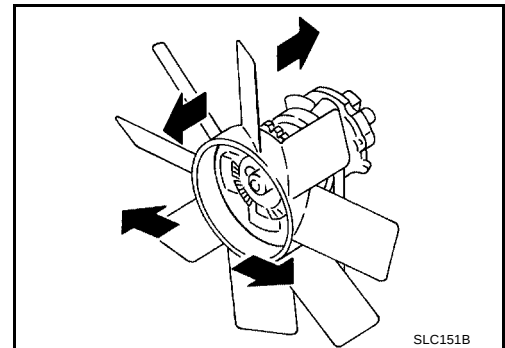
When the engine is running, keep hands and clothing away from moving parts such as drive belts and fan.

- Check fan coupling for rough operation, wobbling, oil leakage or bent bimetal fins.



SLC072

- After assembly, verify the fan does not wobble or flap while the engine is running.



SLC151B

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

Thermostat

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Valve opening temperature	76.5°C (170°F)
Valve lift	More than 8 mm/90°C (0.31 in/194°F)

Radiator

EBS00F0G

Unit: kPa (kg/cm² , 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)

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PRECAUTIONS

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

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WARNING:

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- 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 REMOVAL OF LIQUID GASKET

EBS00F01

- After removing the mounting bolts and nuts, separate the mating surface using a seal cutter and remove the sealant.

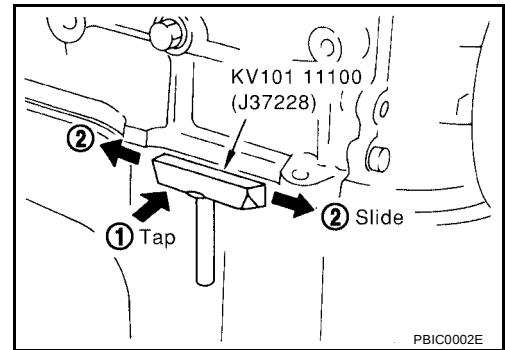
CAUTION:

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 areas where the sealant 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.



Precautions for Liquid Gasket REMOVAL OF LIQUID GASKET

EBS00F0J

- After removing the mounting bolts and nuts, separate the mating surface using a seal cutter and remove the sealant.

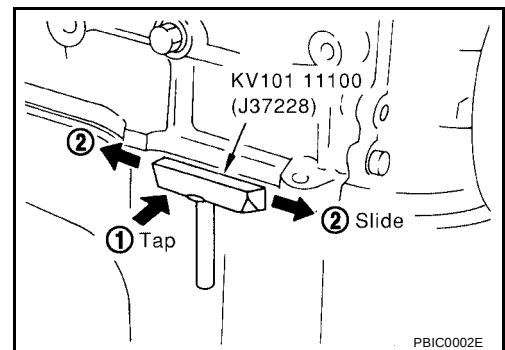
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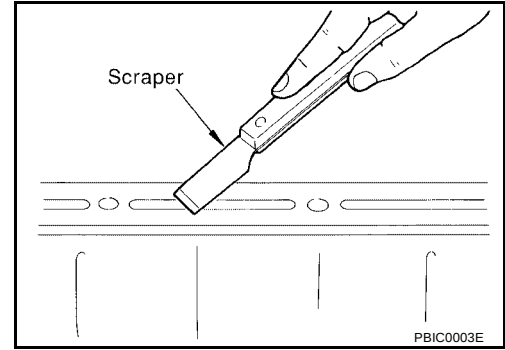


PRECAUTIONS

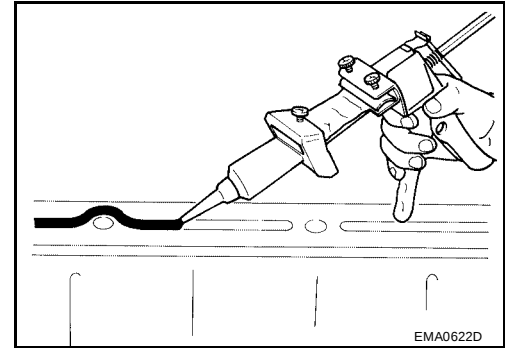
[VG33E and VG33ER]

LIQUID GASKET APPLICATION PROCEDURE

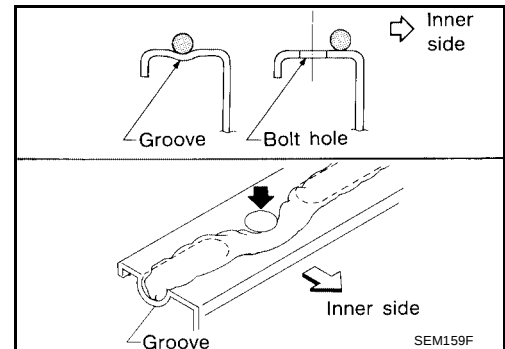
1. Using a scraper, remove the old sealant adhering to the mating surface.
 - Remove the sealant completely from the groove, mounting bolts, and bolt holes.
2. Clean the mating surface thoroughly to remove adhering moisture, grease and foreign materials.
3. Install the sealant tube into the tube presser.
Use Genuine Silicone RTV or equivalent. Refer to [GI-42, "Recommended Chemical Products and Sealants"](#).



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



- As for the bolt holes, normally apply the sealant inside the holes. If specified, it should be applied outside the holes. Make sure to read the instructions in this manual.
- Within five minutes of sealant application, install the mating component.
- If the 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 correct oil and coolant. Refer to [MA-12, "Recommended Fluids and Lubricants"](#).



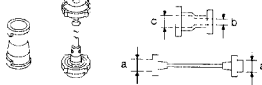
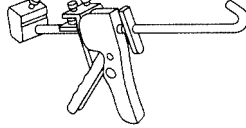
CAUTION:

If there are specific instructions in the service manual, observe them.

PREPARATION

Special Service Tools

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) dia. b: 31.4 (1.236) dia. c: 41.3 (1.626) dia. Unit: mm (in)
WS39930000 (—) Tube presser	 NT052	Pressing the tube of liquid gasket

OVERHEATING CAUSE ANALYSIS

[VG33E and VG33ER]

OVERHEATING CAUSE ANALYSIS

PFP:00012

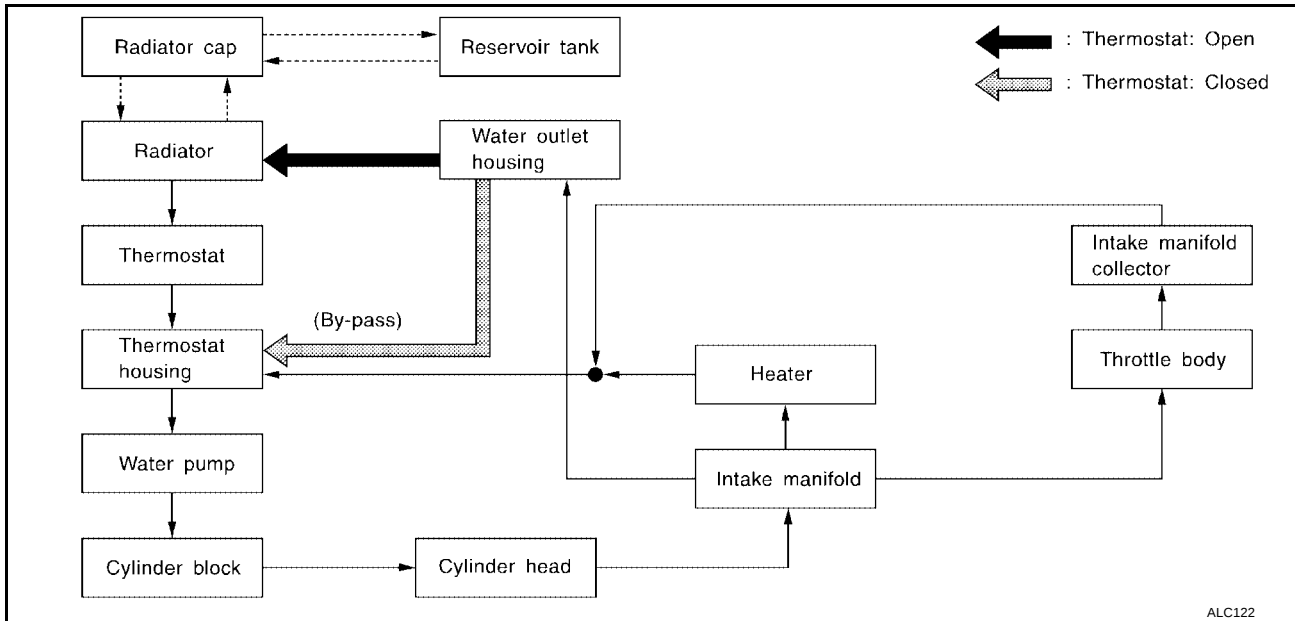
Troubleshooting Chart

EBS00GJH

	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 rock clogging	
			Mechanical damage	
		Clogged radiator cooling tube	Excess foreign material (rust, dirt, sand, etc.)	
	Reduced air flow	Fan coupling does not operate	Fan and coupling	—
		High resistance to fan rotation		
		Damaged fan blades		
	Damaged radiator shroud	—	—	—
	Improper coolant mixture ratio	—	—	—
	Poor coolant quality	—	Periodic maintenance	—
	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
Except cooling system parts malfunction	—	Overload on engine	Abusive driving	High engine rpm under no load
				Driving in low gear for extended time
				Driving at extremely high speed
		Powertrain system malfunction	—	
				Installed improper size wheels and tires
				Dragging brakes
				Improper ignition timing
	Blocked or restricted air flow	Blocked radiator grille	Installed car brassiere	—
		Blocked bumper	Mud contamination or paper clogging	
		Blocked radiator		
		Blocked condenser		
Installed large fog lamp				

COOLING SYSTEM

Cooling Circuit



ENGINE COOLANT

System Check

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 turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CHECKING COOLING SYSTEM HOSES

Check hoses for improper attachment, leaks, cracks, damage, loose connections, chafing and deterioration.

CHECKING RADIATOR

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

CAUTION:

- Be careful not to bend or damage the radiator fins.
 - When radiator is cleaned without removal, remove all surrounding parts such as cooling fan, radiator shroud and horns.
 - Tape the harness 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 water flows clear coming out from the radiator.
 4. Blow air into the back side of radiator core vertically downward.
 - Use compressed air lower than 490 kPa (5 kg/cm², 71 psi) and keep the air hose end more than 30 cm (11.8 in) away from the core.
 5. Blow air again into all the radiator core surfaces once per minute until no water blows out and the core is dry.

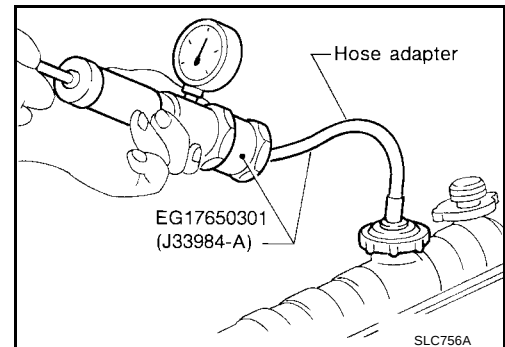
CHECKING COOLING SYSTEM FOR LEAKS

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

CAUTION:

Higher pressure than specified may cause radiator damage.

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



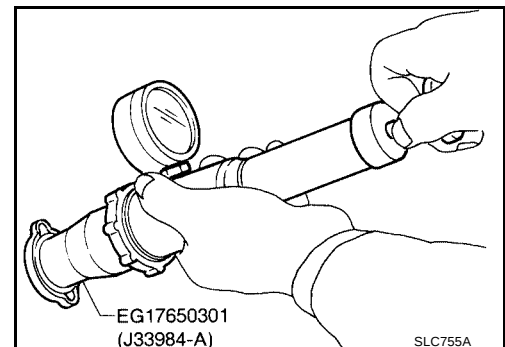
CHECKING RADIATOR CAP

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

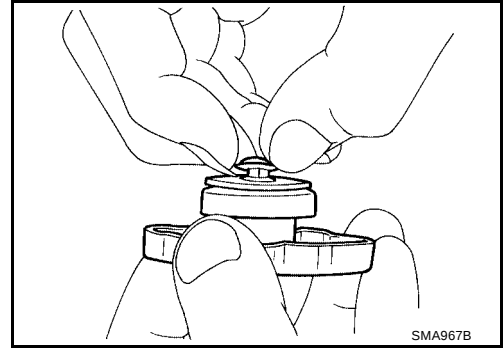
Radiator cap relief pressure

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

Limit : 59 kPa (0.6 kg/cm², 9 psi)



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



EBS00F00

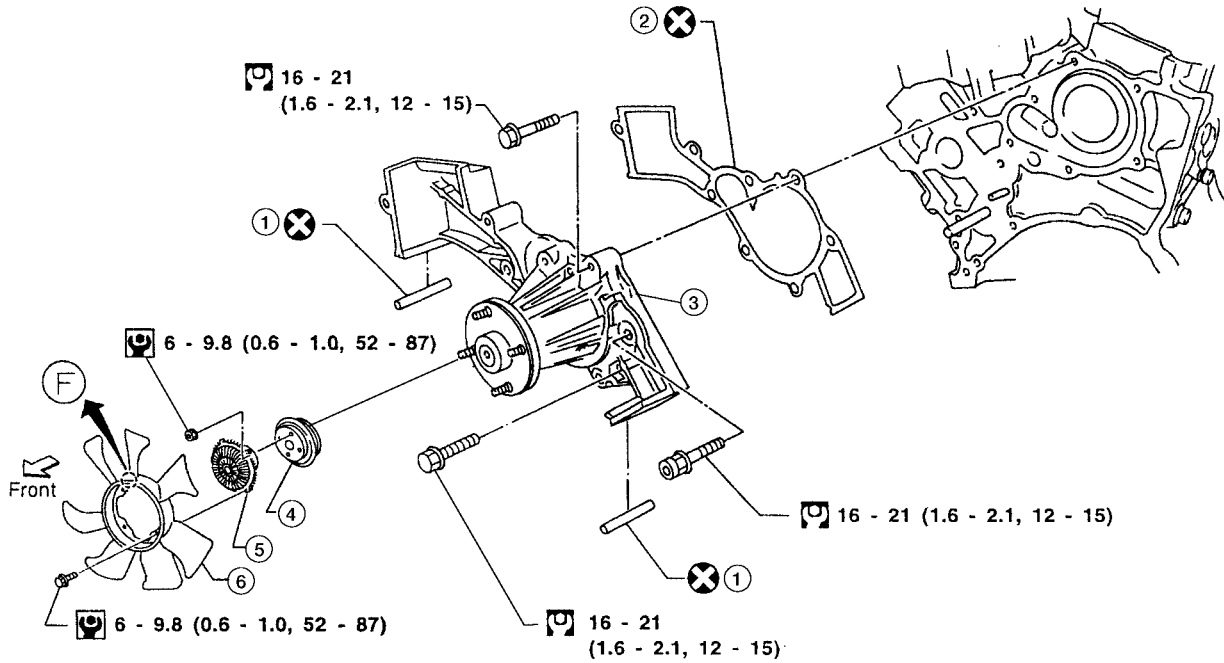
Refilling Engine Coolant

For details on refilling the engine cooling system, refer to [MA-26. "REFILLING ENGINE COOLANT"](#) .

WATER PUMP

Removal

SEC. 210



: N·m (kg-m, in-lb)

: Front mark

: N·m (kg-m, ft-lb)

: Always replace after every disassembly.

- | | | |
|----------------------|-----------------|----------------|
| 1. Rubber seal | 2. Gasket | 3. Water pump |
| 4. Water pump pulley | 5. Fan coupling | 6. Cooling fan |

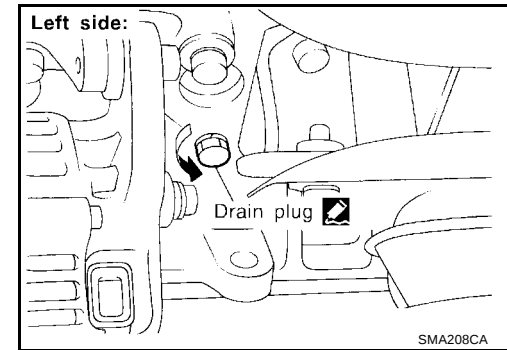
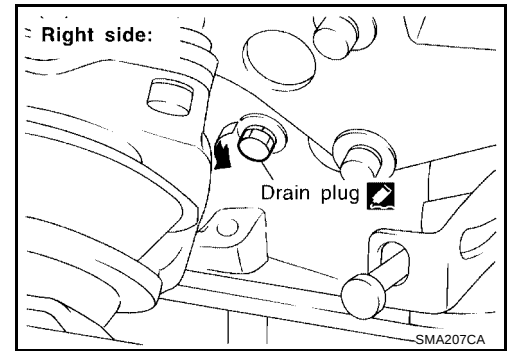
CAUTION:

- When removing water pump assembly, be careful not to get coolant on timing belt.
- Water pump cannot be disassembled and should be replaced as a unit.
- After installing water pump, connect hose and clamp securely, then check for leaks using radiator cap tester.
- To avoid deforming timing cover, make sure there is adequate clearance between it and the hose clamp.

WATER PUMP

[VG33E and VG33ER]

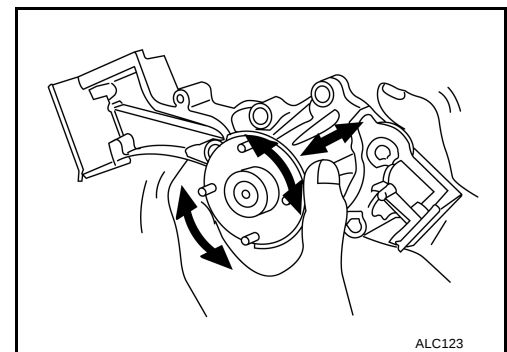
1. Drain coolant from drain plugs on both sides of cylinder block and radiator. Refer to [MA-26, "DRAINING ENGINE COOLANT"](#)



2. Remove radiator hoses (upper and lower) and fan shroud. Refer to [CO-30, "RADIATOR"](#).
3. Remove fan coupling with fan.
4. Remove drive belts. Refer to [MA-24, "Checking Drive Belts"](#).
5. Remove water pump pulley.
6. Remove crankshaft pulley and front (upper and lower) belt cover. Refer to [EM-89, "TIMING BELT"](#).
7. Remove water pump.

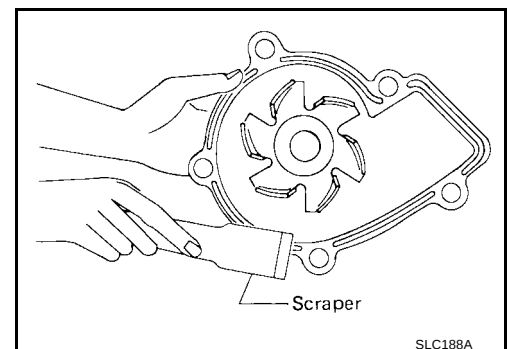
Inspection

1. Check for badly rusted or corroded body assembly and vanes.
2. Check for rough operation due to excessive end play.



Installation

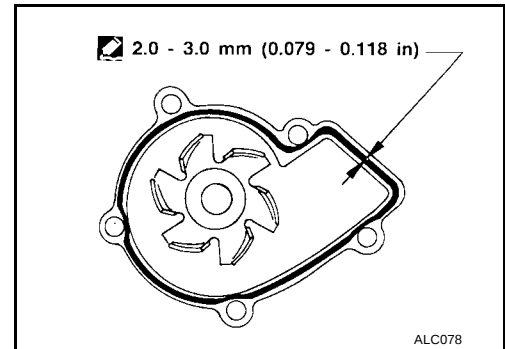
1. Use a scraper to remove liquid gasket from water pump.
 - Also remove traces of liquid gasket from mating surface of cylinder block.



WATER PUMP

[VG33E and VG33ER]

2. Apply a continuous bead of liquid gasket to mating surface of water pump.
 - Use Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-42, "Recommended Chemical Products and Sealants"](#).



3. Installation is in the reverse order of removal.
 - When filling the radiator with coolant, refer to [MA-26, "REFILLING ENGINE COOLANT"](#).
 - When installing the drive belts, refer to [MA-24, "Checking Drive Belts"](#).

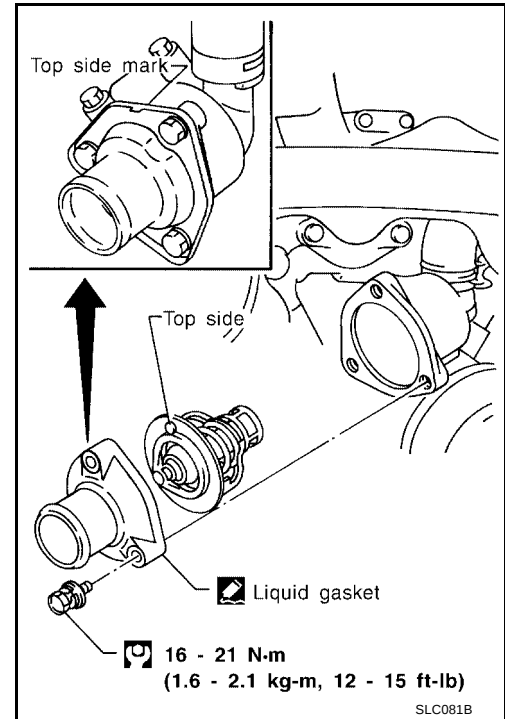
THERMOSTAT

PFP:21200

EBS00F0S

Removal

- Be careful not to spill coolant over engine compartment. Use a rag to absorb coolant.
1. Drain engine coolant. Refer to [MA-26, "DRAINING ENGINE COOLANT"](#) .
 2. Remove radiator hoses (upper and lower) and fan shroud.
 3. Remove drive belts and pulley bracket.
 4. Remove water inlet and thermostat assembly.

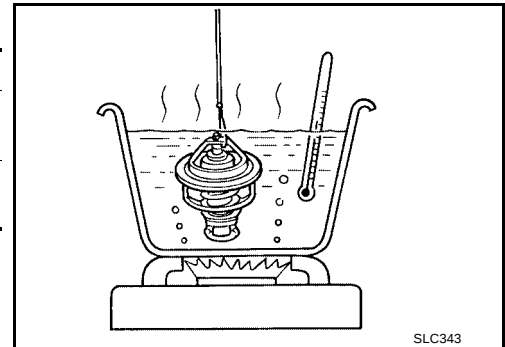


Inspection

EBS00F0T

1. Check the thermostat valve seating condition at ordinary room temperature. The valve should seat tightly.
2. Check valve opening temperature and valve lift.

Description	VG33E	VG33ER
Valve opening temperature °C (°F)	82 (180)	76.5 (170)
Valve lift mm/°C (in/°F)	More than 10/95 (0.39/203)	More than 8 mm/90°C (0.31 in/194°F)

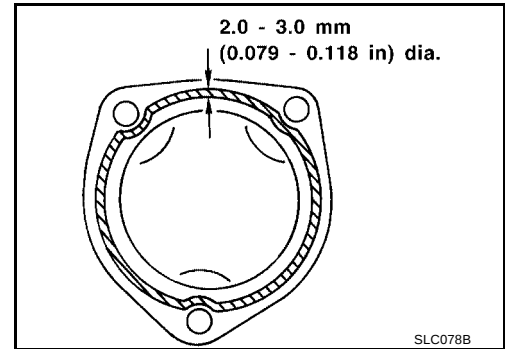


3. Check if valve closes at 5°C (9°F) below valve opening temperature.

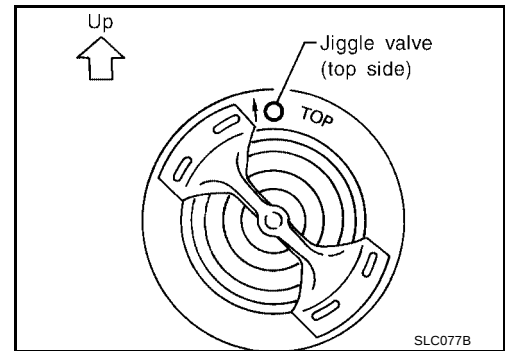
Installation

1. Use a scraper to remove old liquid gasket from water inlet and engine mating surfaces.
2. Apply a continuous bead of liquid gasket to mating surface of water inlet.

- Use **Genuine Anaerobic Liquid Gasket** or equivalent. Refer to [GI-42, "Recommended Chemical Products and Sealants"](#).

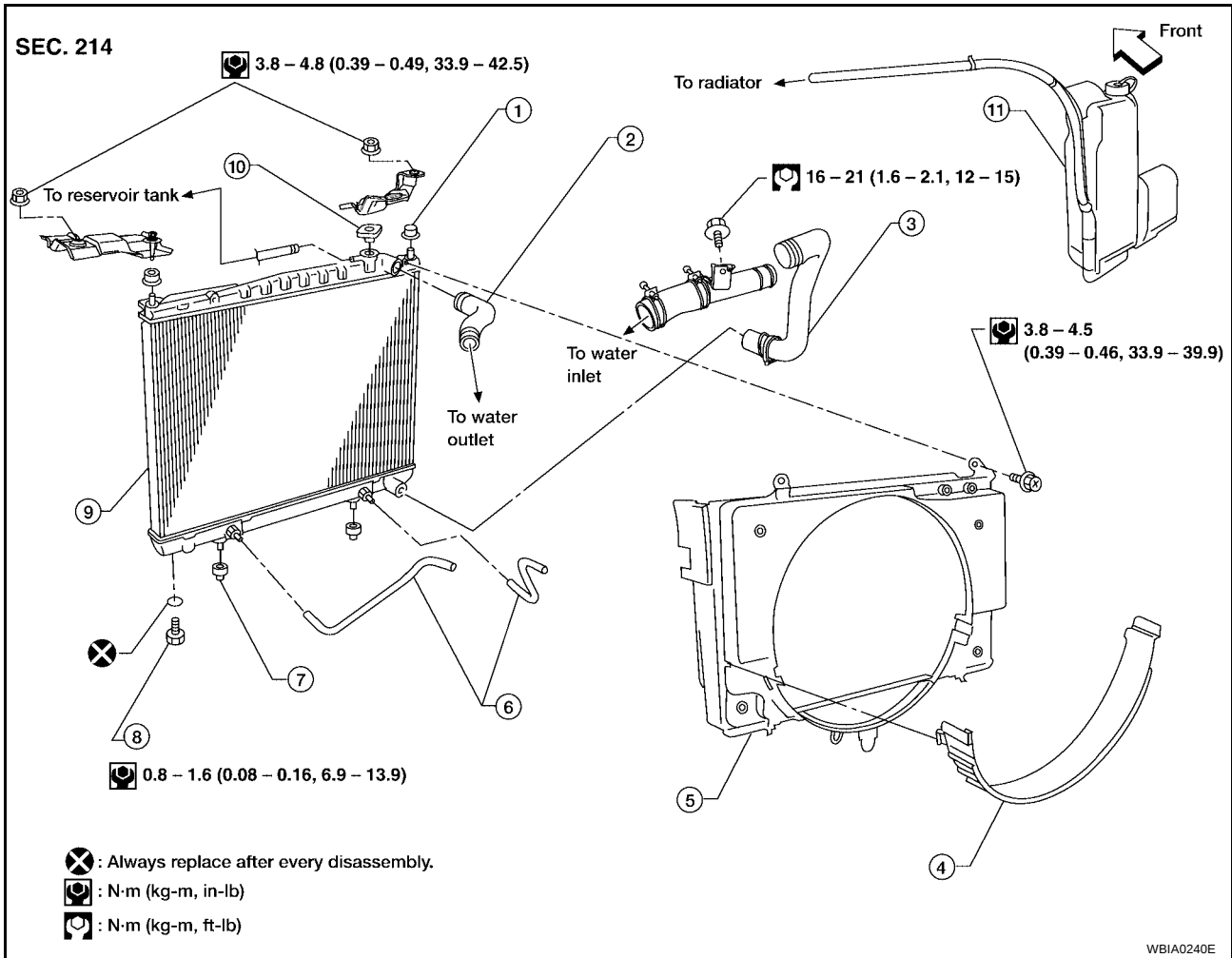


3. Install thermostat with jiggle valve or air bleeder at upper side.
 4. Install water inlet housing.
 5. Install pulley bracket and drive belts.
 6. Install radiator hoses (upper and lower) and fan shroud.
 7. Refill engine coolant. Refer to [MA-26, "REFILLING ENGINE COOLANT"](#).
- After installation, run engine for a few minutes, and check for leaks.



RADIATOR

Components



- | | | |
|--------------------------|--------------------------|-------------------------|
| 1. Mounting rubber | 2. Radiator upper hose | 3. Radiator lower hose |
| 4. Radiator lower shroud | 5. Radiator upper shroud | 6. A/T oil cooler hoses |
| 7. Mounting rubber | 8. Radiator drain plug | 9. Radiator |
| 10. Radiator filler cap | 11. Radiator reservoir | |

Removal and Installation

1. Remove undercover.
2. Drain coolant from radiator drain plug. Refer to [MA-26, "DRAINING ENGINE COOLANT"](#).
3. Remove air duct (from mass air flow sensor to throttle body).
4. Disconnect radiator upper and lower hoses.
5. Remove A/T oil cooler hoses, if equipped.
6. Remove radiator lower shroud.
7. Disconnect reservoir tank hose.
8. Remove the radiator.
9. After repairing or replacing the radiator as necessary, installation is in the reverse order of removal.
10. Refill the engine cooling system. Refer to [MA-26, "REFILLING ENGINE COOLANT"](#).
 - After installation, run the engine until it reaches operating temperature and check the system for leaks.

RADIATOR

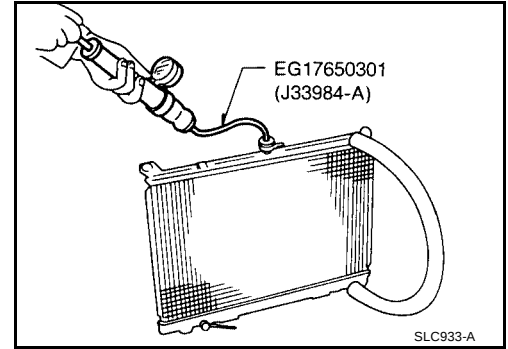
[VG33E and VG33ER]

EBS00F0X

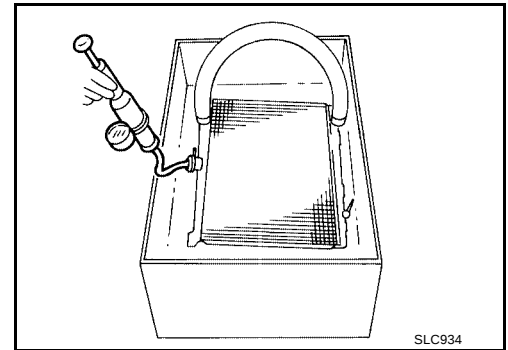
Inspection

1. Apply pressure with Tool.

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



2. Check radiator for leaks in water tank by looking for bubbles.



A

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C

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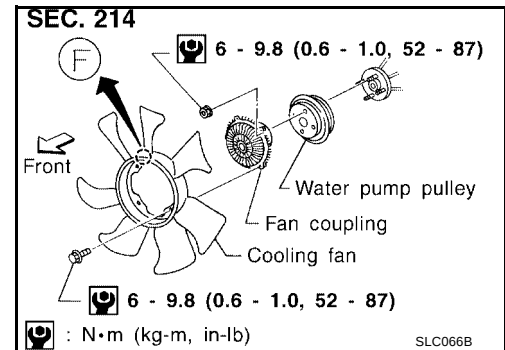
COOLING FAN (CRANKSHAFT DRIVEN)

PFP:21060

Removal and Installation

EBS00F0Y

- Do not release the drive belt tension by removing the fan/water pump pulley.
- Fan coupling cannot be disassembled and should be replaced as a unit. If front mark **F** is present, install fan so that side marked **F** faces the front.
- Install the drive belt only after the fan and fan coupling to water pump flange bolts/nuts have been properly torqued.
- Proper alignment of these components is essential. Improper alignment will cause them to wobble and may eventually cause the fan to separate from the water pump causing extensive damage.



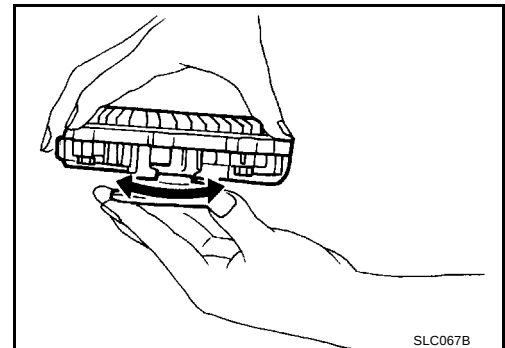
Inspection

EBS00F0Z

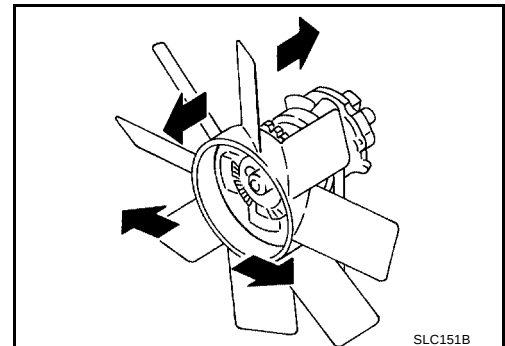
WARNING:

When the engine is running, keep hands and clothing away from moving parts such as drive belts and fan.

- Check fan coupling for rough operation, wobbling, oil leakage or bent bimetal fins.



- After assembly, verify the fan does not wobble or flap while the engine is running.



SERVICE DATA AND SPECIFICATIONS (SDS)
[VG33E and VG33ER]

SERVICE DATA AND SPECIFICATIONS (SDS) PFP:00030
Thermostat EBS00F10

Description	VG33E	VG33ER
Valve opening temperature °C (°F)	82 (180)	76.5 (170)
Valve lift mm/°C (in/°F)	More than 10/95 (0.39/203)	More than 8 mm/90°C (0.31 in/194°F)

Radiator EBS00F11
Unit: kPa (kg/cm² , 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)

