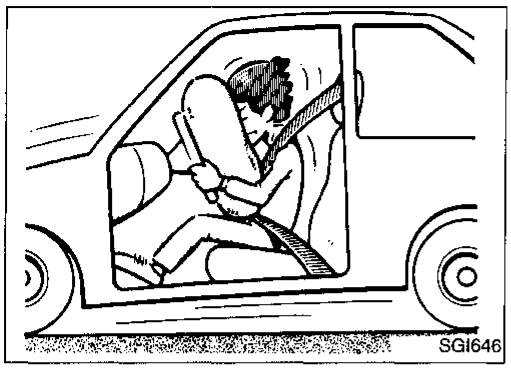
SECTION LC

CONTENTS

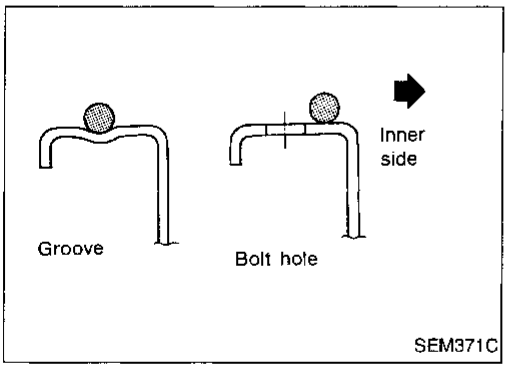

SGI646

Precautions for Supplemental Restraint System "AIR BAG"

The Supplemental Restraint System "Air Bag", used along with a seat belt, helps to reduce the risk or severity of injury to the driver and front passenger in a frontal collision. The Supplemental Restraint System consists of air bag modules (located in the center of the steering wheel and on the instrument panel on the passenger side), a diagnosis sensor unit, warning lamp, wiring harness and spiral cable. Information necessary to service the system safely is included in the **RS section** of this Service Manual.

WARNING:

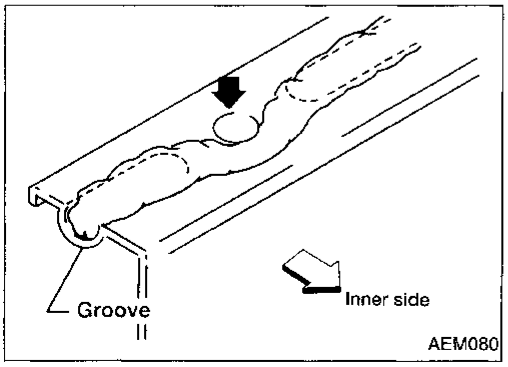
- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system.**
- **All SRS electrical wiring harnesses and connectors are covered with yellow outer insulation. Do not use electrical test equipment on any circuit related to the SRS "Air Bag".**



SEM371C

Liquid Gasket Application Procedure

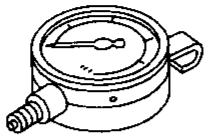
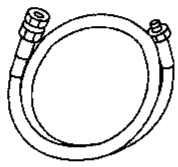
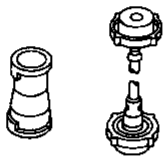
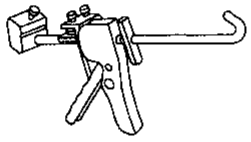
a. Use a scraper to remove all traces of old liquid gasket from mating surfaces and grooves. Also, completely clean any oil from these areas.
b. Apply a continuous bead of liquid gasket to mating surfaces. (Use Genuine Liquid Gasket or equivalent.)
   - For oil pan, be sure liquid gasket diameter is 3.5 to 4.5 mm (0.138 to 0.177 in).
   - For areas except oil pan, be sure liquid gasket diameter is 2.0 to 3.0 mm (0.079 to 0.118 in).



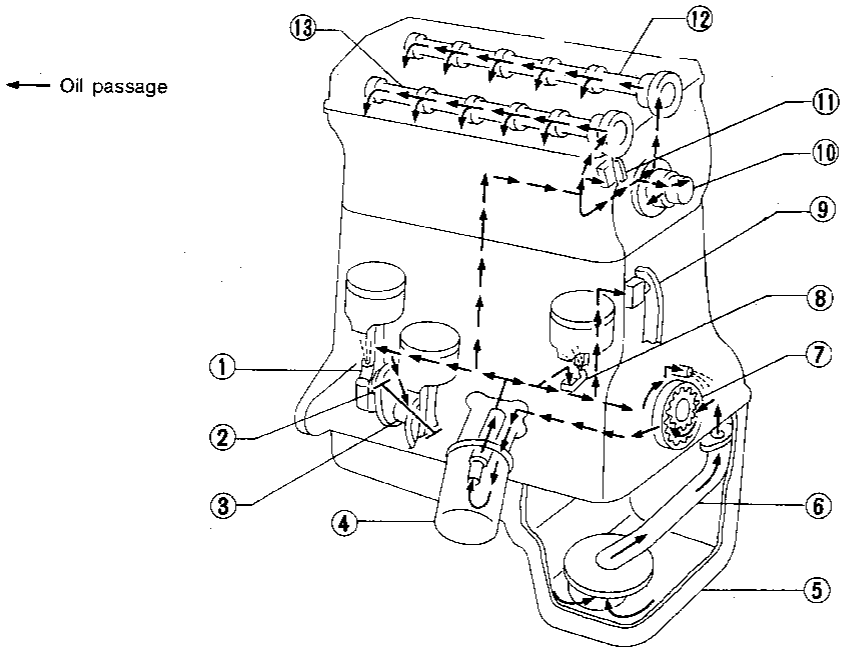
AEM080

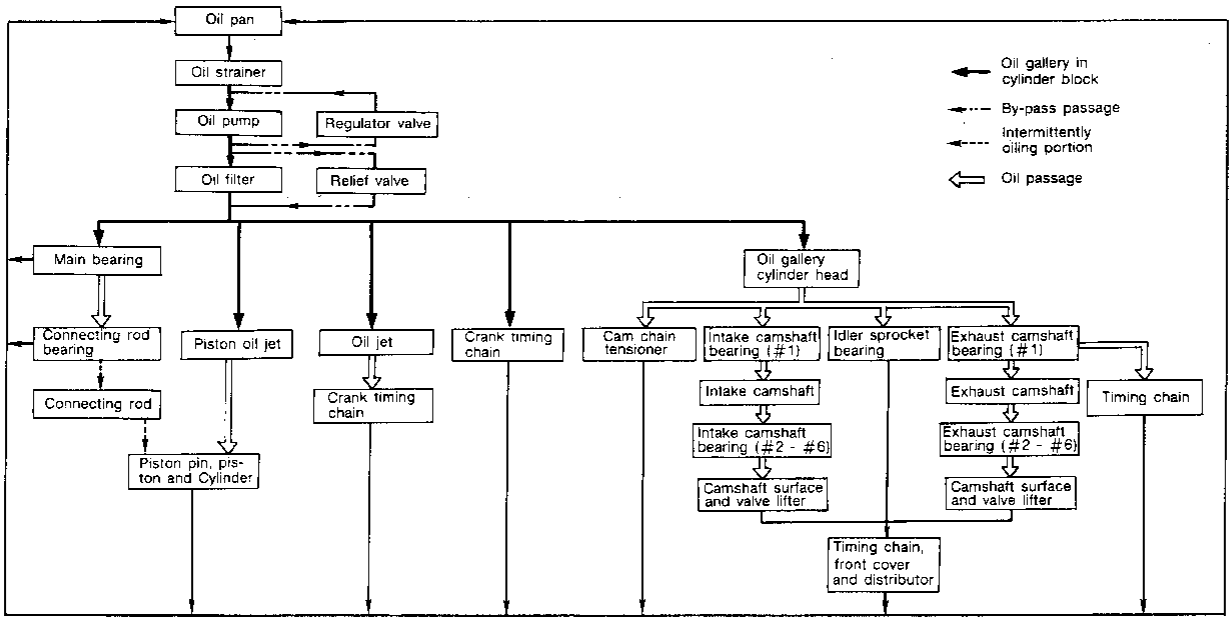
c. Apply liquid gasket around the inner side of bolt holes (unless otherwise specified).
d. Assembly should be done within 5 minutes after coating.
e. Wait at least 30 minutes before refilling engine oil and engine coolant.

Special Service Tools

Tool number (Kent-Moore No.) Tool name	Description	
ST25051001 (J25695-1) Oil pressure gauge		
ST25052000 (J25695-2) Hose		Adapting oil pressure gauge to cylinder block
EG17650301 (J33984-A) Radiator cap tester adapter		Adapting radiator cap tester to radiator filler neck
WS39930000 (—) Tube presser		Pressing the tube of liquid gasket

Lubrication Circuit





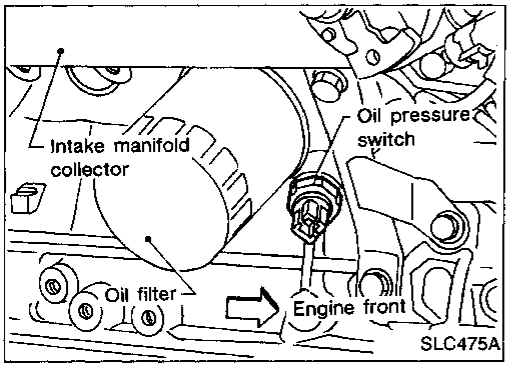
SLC749A

① Connecting rod
② Connecting rod bearing
③ Main bearing
④ Oil filter
⑤ Oil pan
⑥ Oil strainer
⑦ Oil pump
⑧ Piston oil jet
⑨ Timing chain tensioner
⑩ Idler sprocket
⑪ Upper timing chain tensioner
⑫ Exhaust camshaft
⑬ Intake camshaft

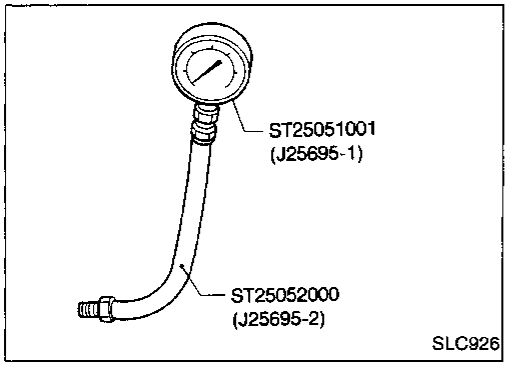
Oil Pressure Check

WARNING:

- **Be careful not to burn yourself, as the engine and oil may hot.**
- **Oil pressure check should be done with selector lever in "Neutral" position for M/T. Put selector lever in "Park" position for A/T.**



1. Check oil level.
2. Remove oil pressure switch.

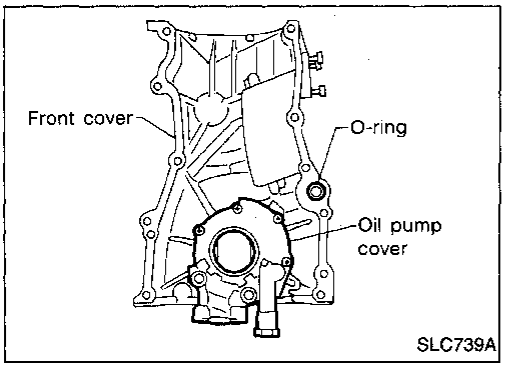


3. Install pressure gauge.
4. Start engine and warm it up to normal operating temperature.
5. Check oil pressure with engine running under no-load.

Engine speed	Approximate discharge pressure kPa (kg/cm^2, psi)
Idle speed	More than 78 (0.8, 11)
3,000 rpm	412 - 481 (4.2 - 4.9, 60 - 70)

If difference is extreme, check oil passage and oil pump for oil leaks.

6. Install oil pressure switch with sealant.



Oil Pump

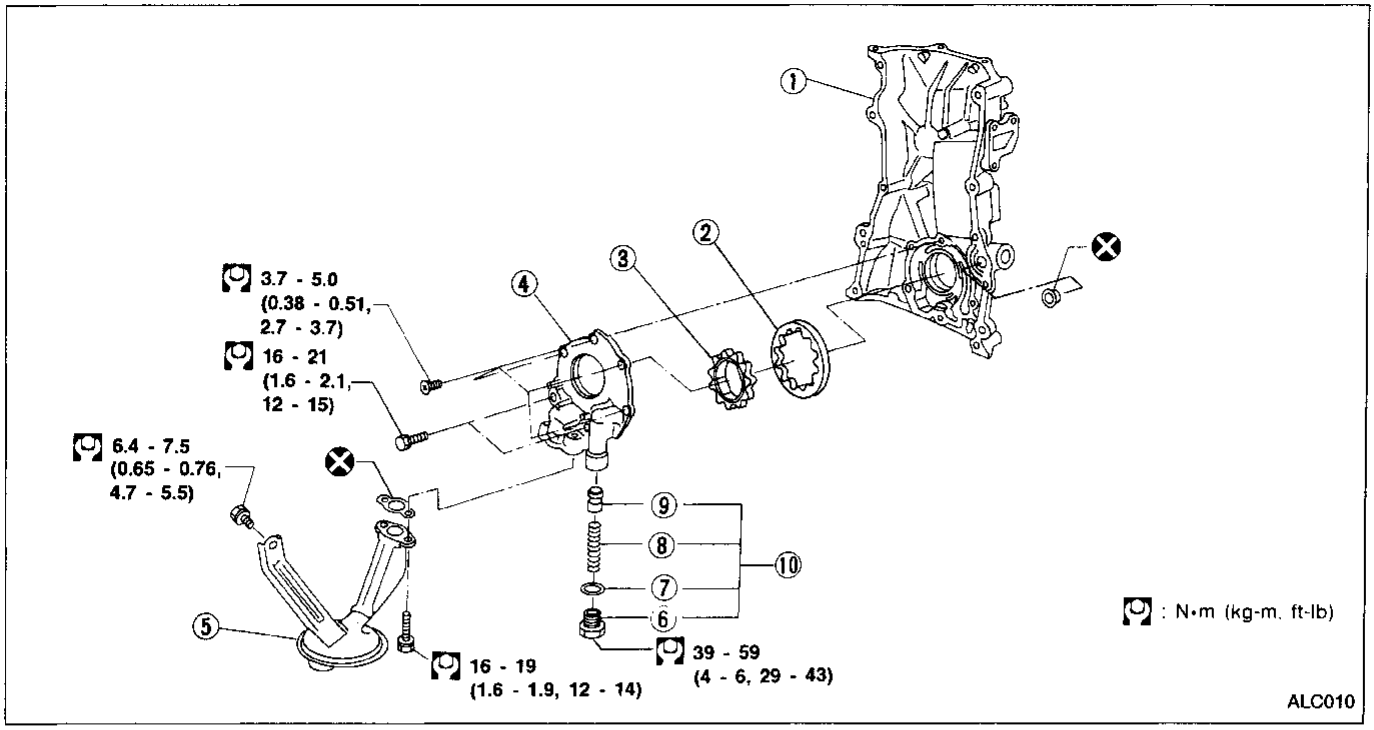
REMOVAL

1. Remove front cover.

Refer to EM section ("Removal", "TIMING CHAIN").

2. Remove oil pump cover.

Oil Pump (Cont'd)

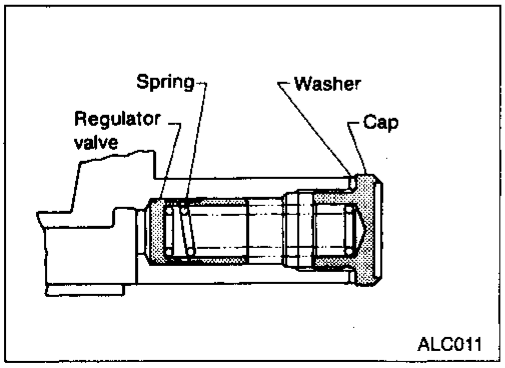


① Front cover
② Outer gear
③ Inner gear
④ Oil pump cover
⑤ Oil strainer
⑥ Cap
⑦ Washer
⑧ Spring
⑨ Regulator valve
⑩ Regulator valve assembly

INSTALLATION

Install in the reverse order of removal.

- **Always replace oil seals and gaskets with new ones. Refer to EM section ("OIL SEAL REPLACEMENT").**
- **When installing oil pump, apply engine oil to inner and outer gears.**

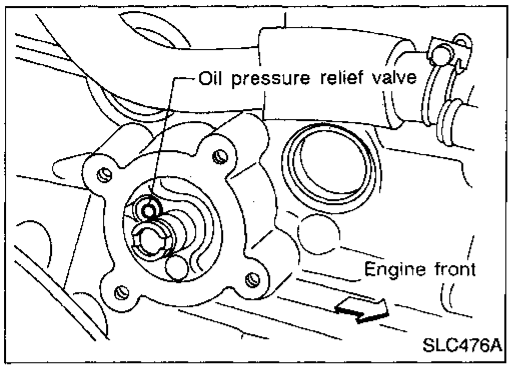


REGULATOR VALVE INSPECTION

1. Visually inspect components for wear and damage.
2. Check oil pressure regulator valve sliding surface and valve spring.
3. Coat regulator valve with engine oil. Check that it falls smoothly into the valve hole by its own weight.

If damaged, replace regulator valve set or oil pump assembly.

Oil Pump (Cont'd)



OIL PRESSURE RELIEF VALVE INSPECTION

Inspect oil pressure relief valve for movement, cracks and breaks by pushing the ball. If replacement is necessary, remove valve by prying it out with a suitable tool.
Install a new valve in place by tapping it.

OIL PUMP INSPECTION

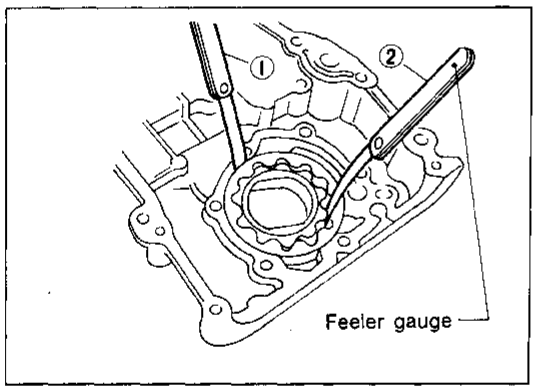
Using a feeler gauge, check the following clearances.

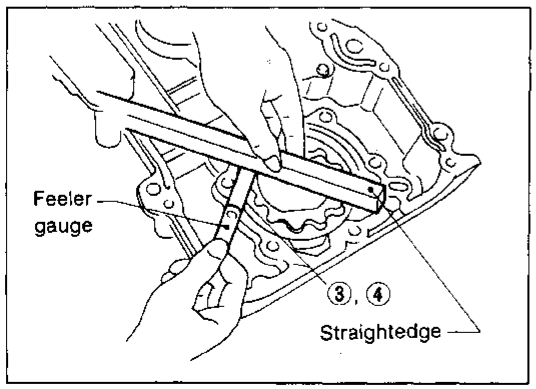
Standard clearance:

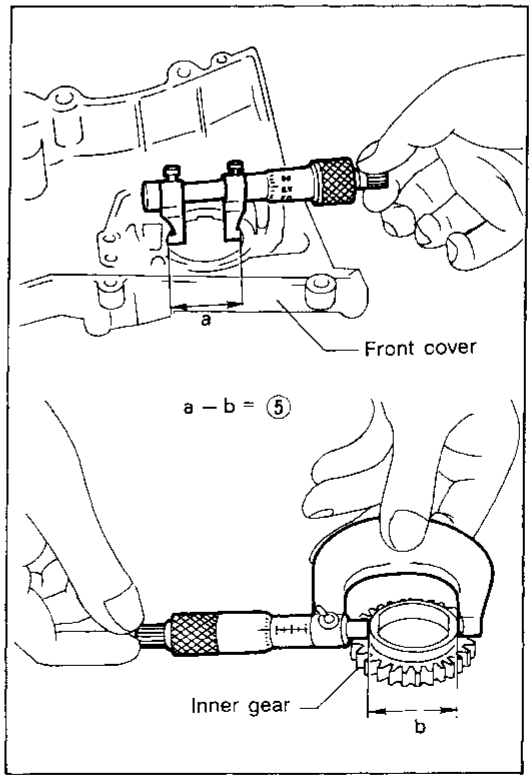
Unit: mm (in)

Body to outer gear clearance ①	0.114 - 0.20 (0.0045 - 0.0079)
Inner gear to outer gear tip clearance ②	0.04 - 0.18 (0.0016 - 0.0071)
Cover to inner gear clearance ③	0.05 - 0.09 (0.0020 - 0.0035)
Cover to outer gear clearance ④	0.05 - 0.11 (0.0020 - 0.0043)
Inner gear to brazed portion clearance ⑤	0.045 - 0.091 (0.0018 - 0.0036)

- **If the tip clearance (②) exceeds the limit, replace gear set.**
- **If body to gear clearances (①, ③, ④, ⑤) exceed the limit, replace front cover assembly.**

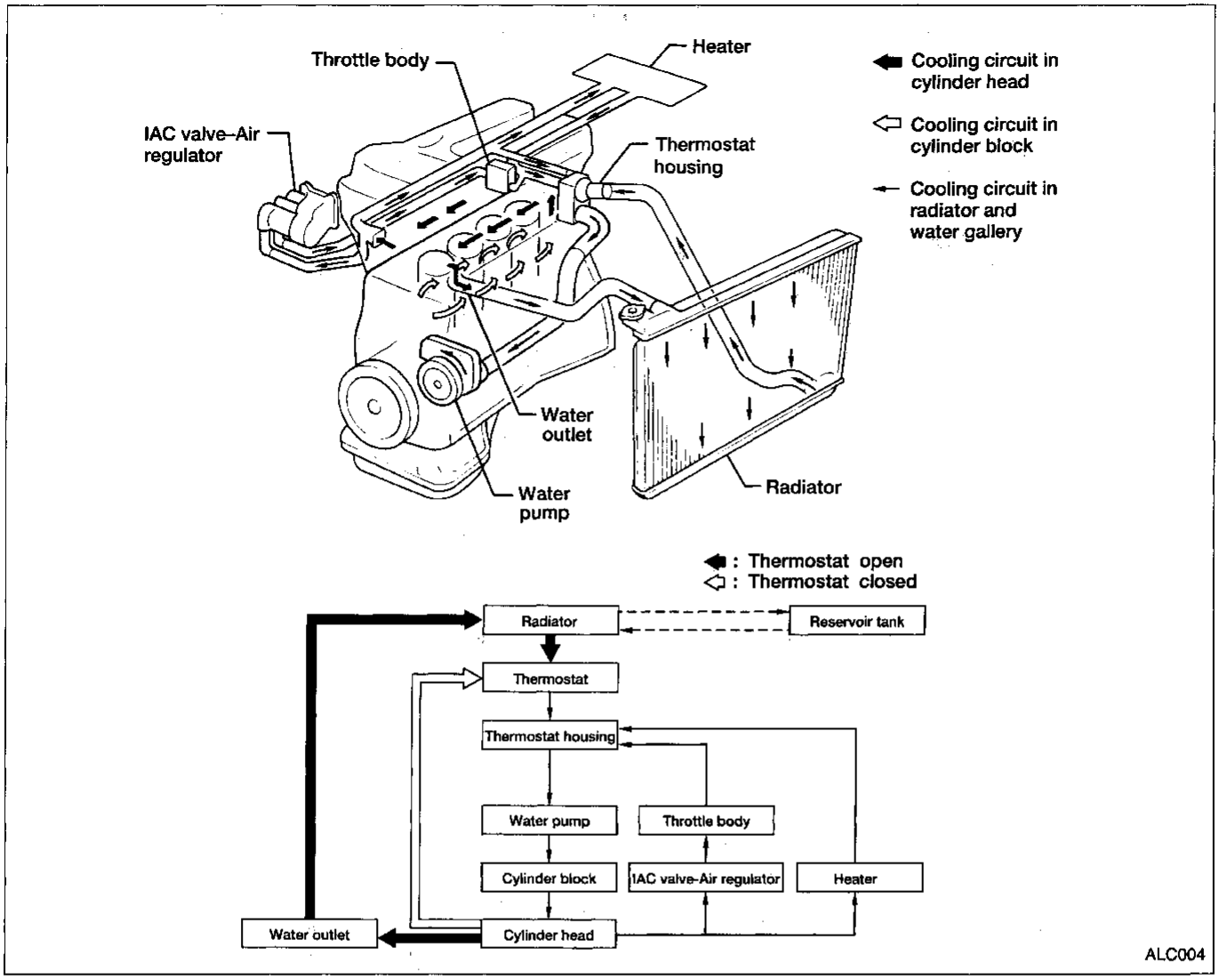






SLC741A

Cooling Circuit



System Check

WARNING:

Never remove the radiator cap when the engine is hot; serious burns could be caused by high pressure coolant escaping from the radiator.

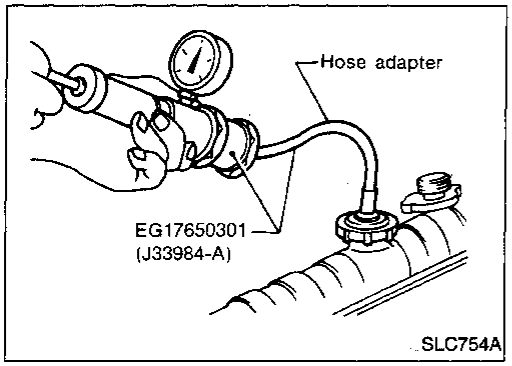
Wrap a thick cloth around the cap and slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CHECKING COOLING SYSTEM HOSES

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

System Check (Cont'd)

CHECKING COOLING SYSTEM FOR LEAKS

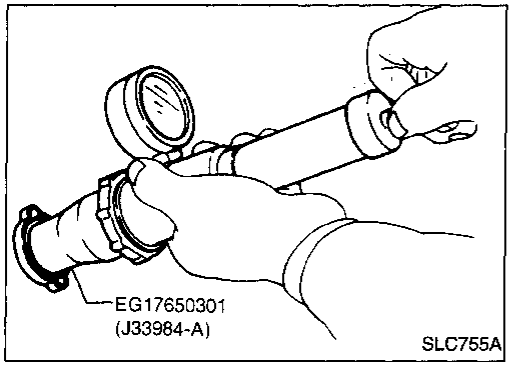


To check for leakage, apply pressure to the cooling system with a tester.

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

CAUTION:
Higher than the specified pressure may cause radiator damage.

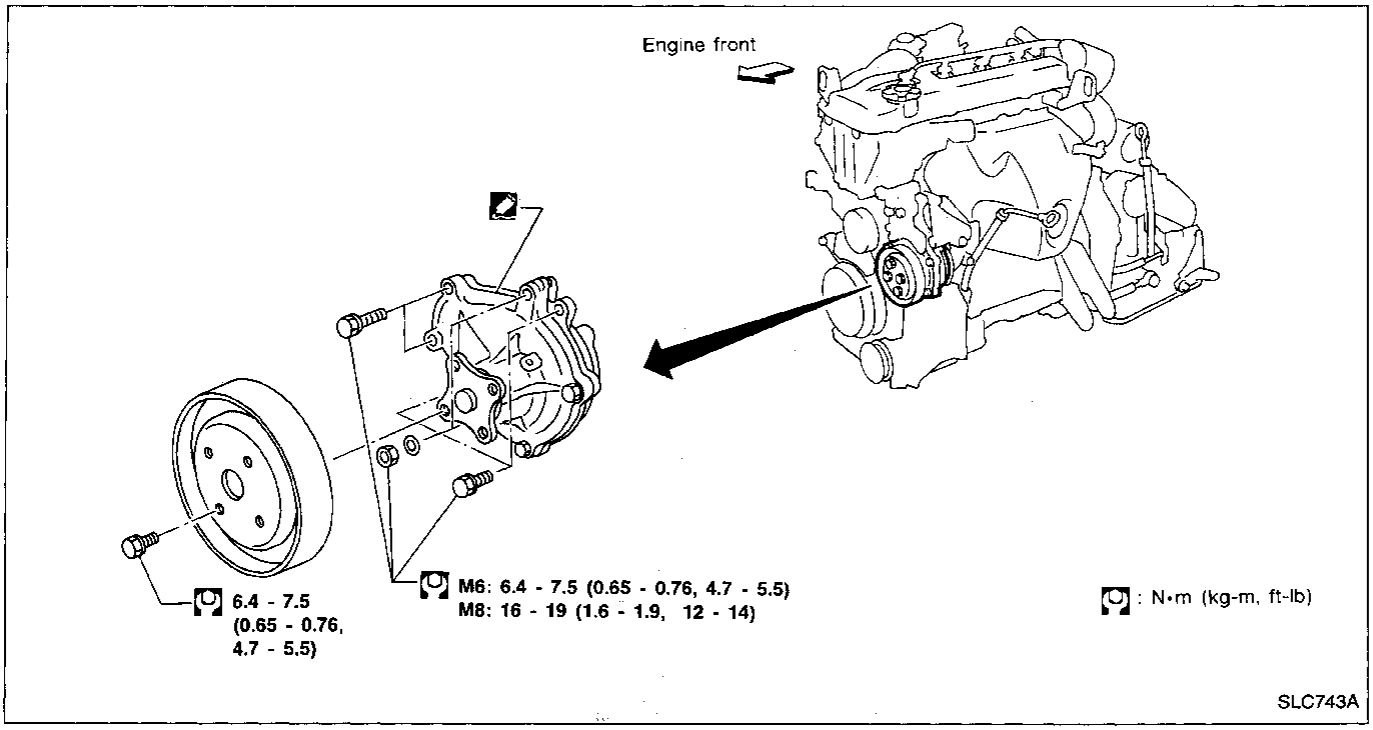
CHECKING RADIATOR CAP



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)

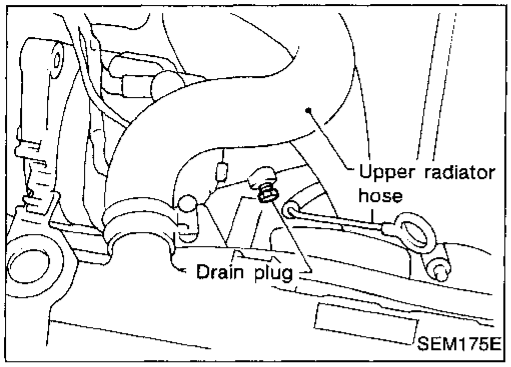
Water Pump



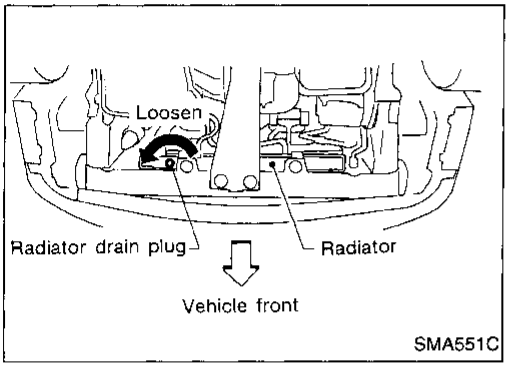
CAUTION:
- **When removing water pump assembly, be careful not to get coolant on drive belt.**
- **Water pump cannot be disassembled and should be replaced as a unit.**
- **After installing water pump, connect hose and clamp securely, then check for leaks using radiator cap tester.**

Water Pump (Cont'd)

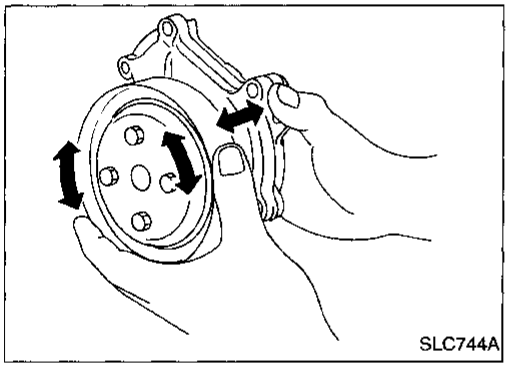
REMOVAL



1. Drain coolant from drain plug on water pipe and radiator. Refer to MA section ("Changing Engine Coolant").
2. Remove generator and air compressor.
3. Remove water pump.

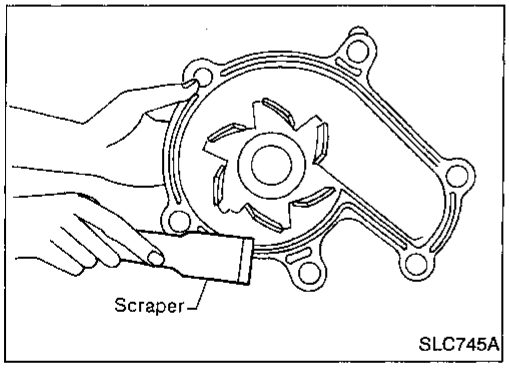


INSPECTION

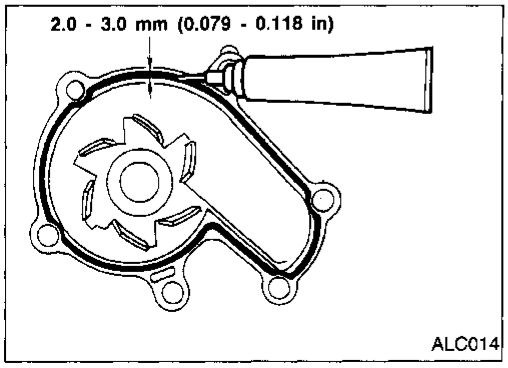


1. Check for badly rusted or corroded vanes and body assembly.
2. Check for rough operation due to excessive end play.

INSTALLATION



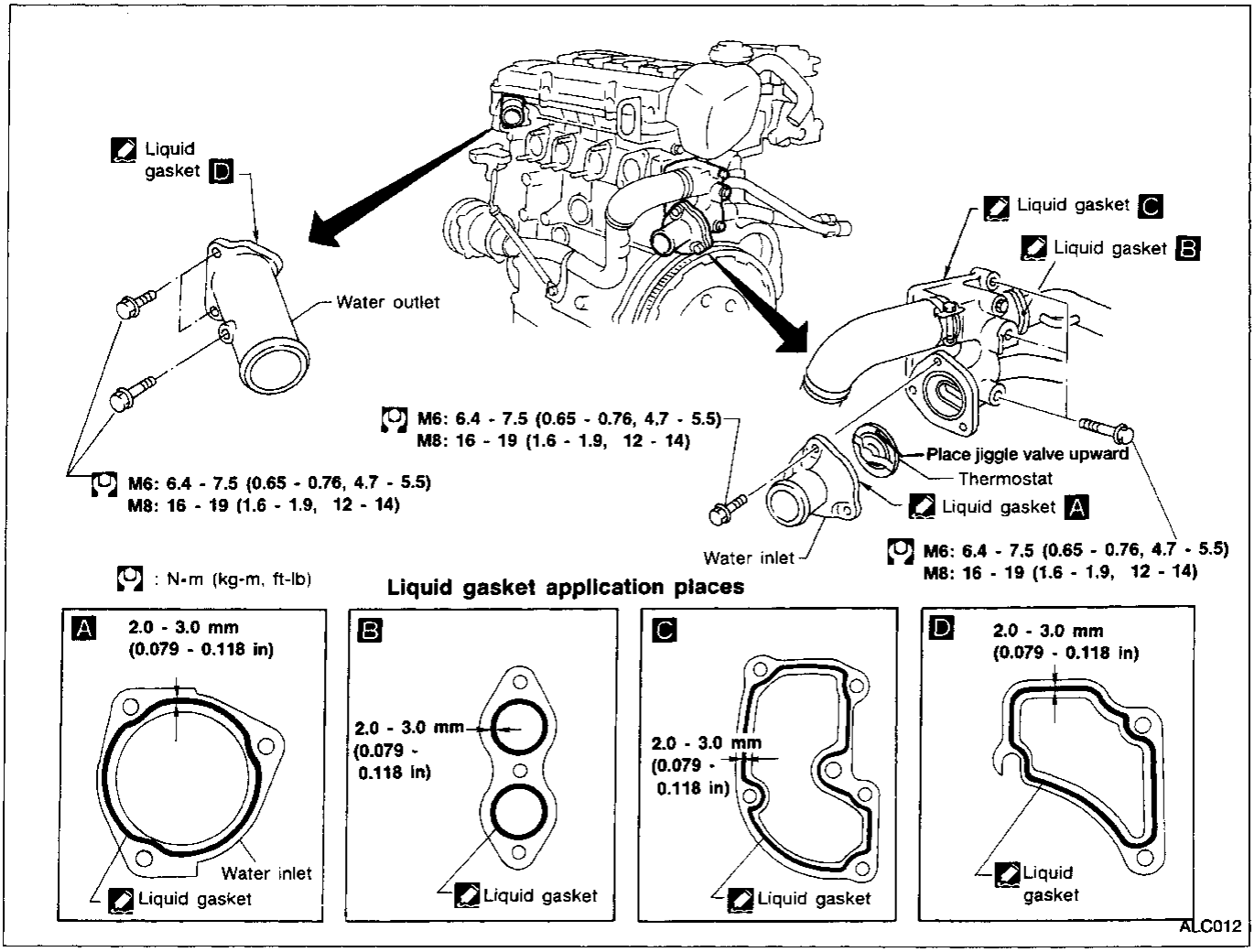
1. Use a scraper to remove old liquid gasket from water outlet.
- Also remove traces of liquid gasket from mating surface of cylinder block.

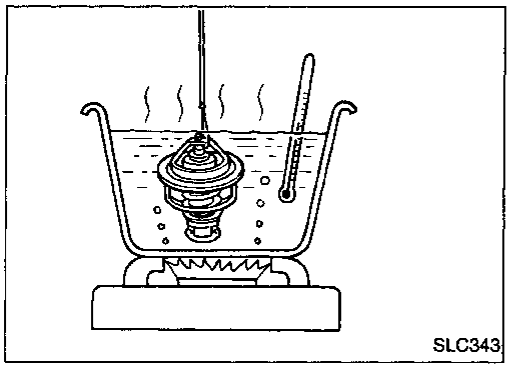


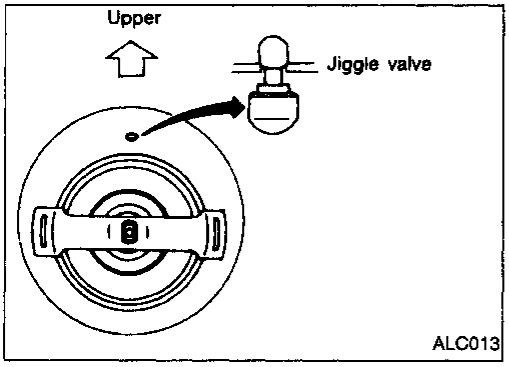
2. Apply a continuous bead of liquid gasket to mating surface of water pump.
- Use genuine liquid gasket or equivalent.

When filling radiator with coolant, refer to MA section ("Changing Engine Coolant"). When installing drive belts, refer to MA section ("Checking Drive Belts").

Thermostat







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

INSPECTION

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

		Standard
Valve opening temperature	°C (°F)	76.5 (170)
Maximum valve lift	mm/°C (in/°F)	10/90 (0.39/194)

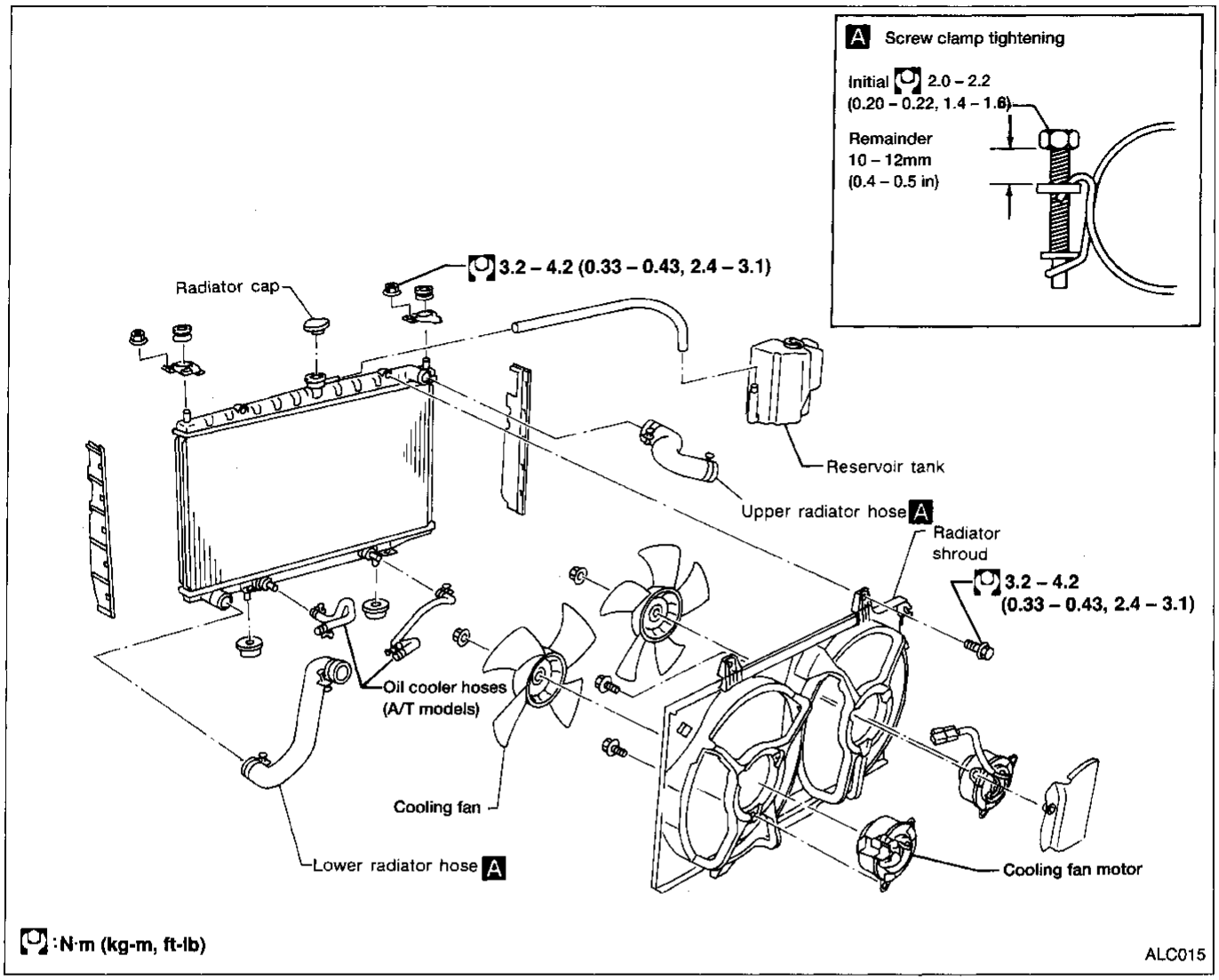
3. Then check if valve is closed at 5°C (9°F) below valve opening temperature.

INSTALLATION

Install thermostat with jiggle valve or air bleeder at upper side.

- **Apply a continuous bead of liquid gasket to mating surface of water inlet.**
- **After installation, run engine for a few minutes, and check for leaks.**

Radiator



CAUTION:
When filling radiator with coolant, refer to MA section ("Changing Engine Coolant").

Overheating Cause Analysis

	Symptom		Check items	
Cooling system parts manfunction	Poor heat transfer	Water pump malfunction	Worn or loose drive belt	—
		Thermostat stuck closed	—	
		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.	—	—
		High resistance to fan rotation		
		Damaged fan blades		
	Damaged radiator shroud	—	—	—
	Improper coolant mixture ratio	—	—	—
	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
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	—	
		Installed large fog lamp		

Engine Lubrication System

Oil pressure check

Engine speed	Approximate discharge pressure kPa (kg/cm^2, psi)
Idle speed	More than 78 (0.8, 11)
3,000 rpm	412 - 481 (4.2 - 4.9, 60 - 70)

Oil pump

Unit: mm (in)

Body to outer gear clearance	.....	0.114 - 0.20 (0.0045 - 0.0079)
Inner gear to outer gear tip clearance	.....	0.04 - 0.18 (0.0016 - 0.0071)
Cover to inner gear clearance	.....	0.05 - 0.09 (0.0020 - 0.0035)
Cover to outer gear clearance	.....	0.05 - 0.11 (0.0020 - 0.0043)
Inner gear to brazed portion clearance	.....	0.045 - 0.091 (0.0018 - 0.0036)

Engine Cooling System

Thermostat

Valve opening temperature	°C (°F)	76.5 (170)
Max. valve lift	mm/°C (in/°F)	10/90 (0.39/194)

Radiator

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)