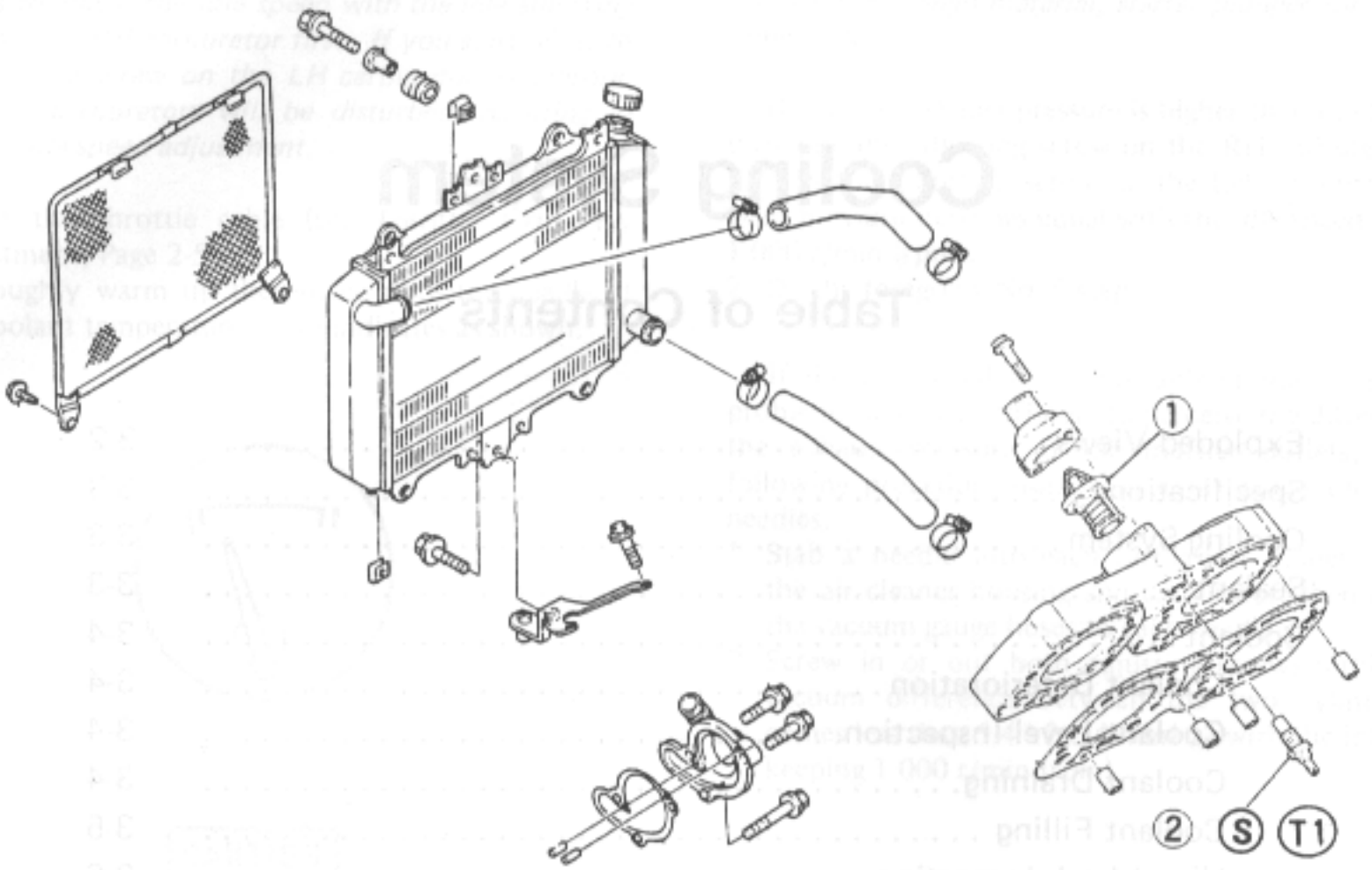
Cooling System

3

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Exploded View



1. Thermostat
2. Coolant Temperature Sensor
3. Drain Plug

O : Apply oil.

S : Apply silicone sealant (Kawasaki Bond: 56019-120).

T1: 15 N-m (1.5 kg-m, 11.0 ft-lb)

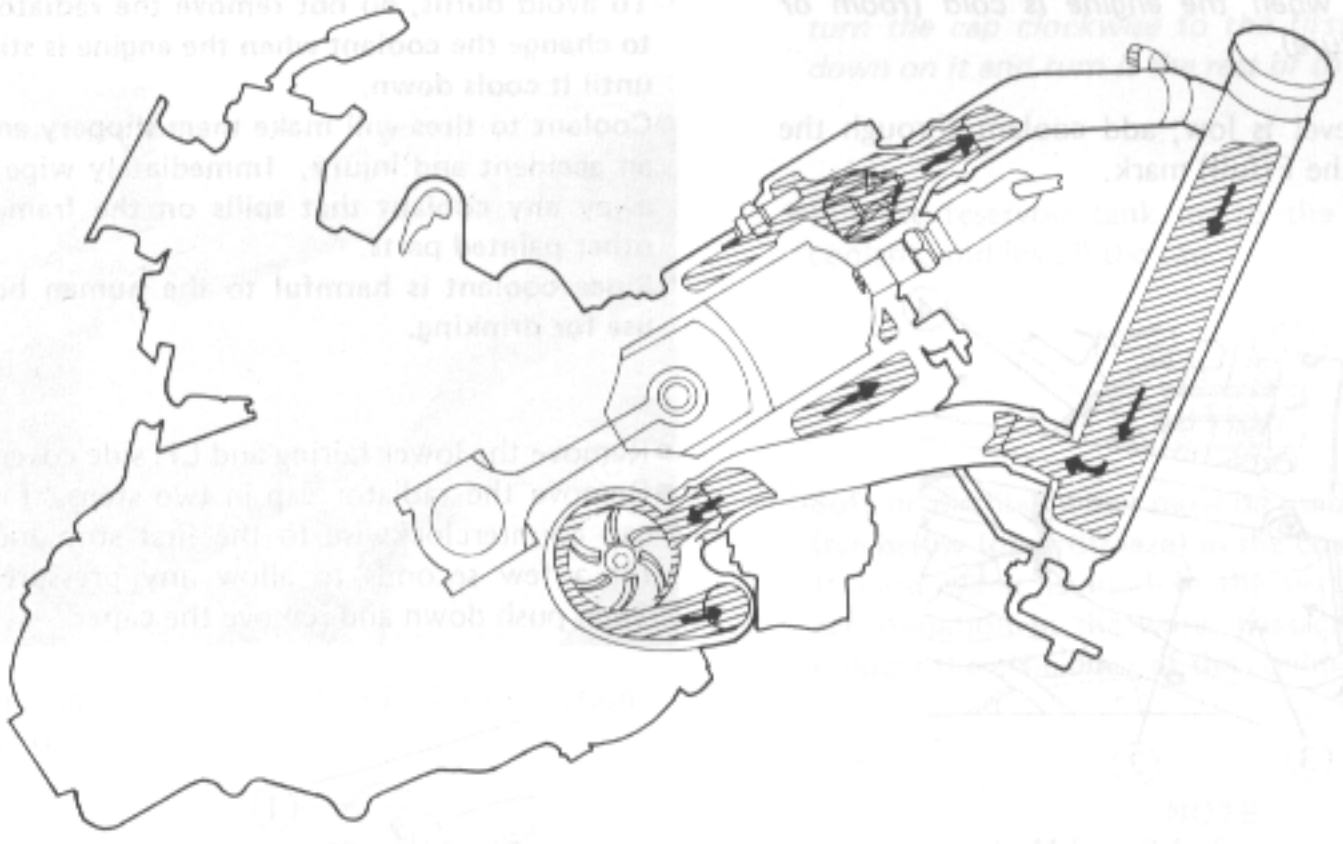
T2: 17 N-m (1.7 kg-m, 12.0 ft-lb)

T3: 9.8 N-m (1.0 kg-m, 87 in-lb)

Specifications

Item	Standard
Coolant Provided when Shipping:	
Type	Permanent type of antifreeze for aluminum engine and radiator
Color	Green
Mixed ratio	Soft water 50%, coolant 50%
Freezing point	–35°C (–31°F)
Total amount	1.5 L (Up to reservoir tank full level)
Radiator Cap:	
Relief pressure	93 – 123 kPa (0.95 – 1.25 kg/cm², 14 – 18 psi)
Thermostat:	
Valve opening temperature	63.5 – 66.5°C (147 – 153°F)
Valve full open lift	not less than 6 mm @80°C (176°F)

Cooling System



Sealant

Kawasaki Bond (Silicone Sealant): 56019-120

Coolant

Coolant Deterioration

- Visually inspect the coolant in the reservoir tank.

○If whitish cotton-like wafts are observed, aluminum parts in the cooling system are corroded. If the coolant is brown, iron or steel parts are rusting. In either case, flush the cooling system.

○If the coolant gives off an abnormal smell when changing, check for a cooling system leak. It may be caused by exhaust gas leaking into the cooling system.

NOTE

○*Be sure to inspect the coolant at the reservoir tank. If the coolant is checked by removing the radiator cap, the air must be bled from the cooling system.*

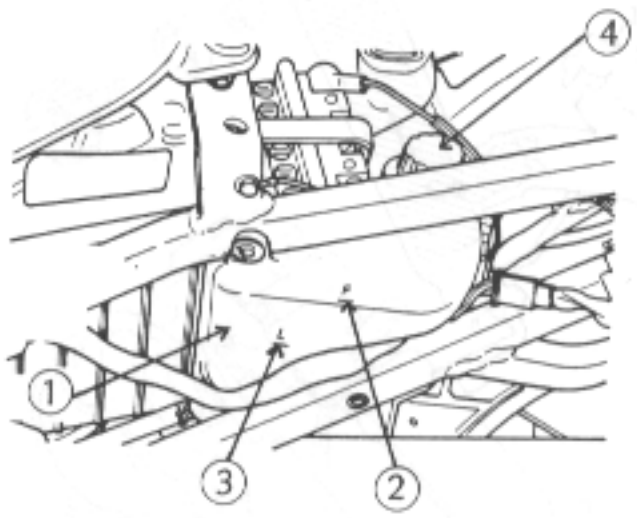
Coolant Level Inspection

- Situate the motorcycle so that it is level gauge on the reservoir tank. The coolant level should be between the F(full) and the L(low) marks.

NOTE

○*Check the level when the engine is cold (room or ambient temperature).*

★If the coolant level is low, add coolant through the filler opening to the F(full) mark.



1. Reservoir Tank
2. F(Full) Mark
3. L(Low) Mark
4. Cap

CAUTION

○**For refilling, add the specified mixture of coolant and soft water. Adding water alone dilutes the coolant and degrades its anticorrosion properties. The diluted coolant can attack the aluminum engine parts. In an emergency, soft water can be added. But the diluted coolant must be returned to the correct mixture ratio within a few days.**

○**If coolant must be added often, or the reservoir tank has run completely dry; there is probably leakage in the cooling system. Check the system for leaks (see Visual Leak Inspection, and Pressure Testing).**

Coolant Draining

The coolant should be changed periodically to ensure long engine life.

CAUTION

○**Use coolant containing corrosion inhibitors made specifically for aluminum engines and radiators in accordance with the instructions of the manufactures (see Coolant Filling section).**

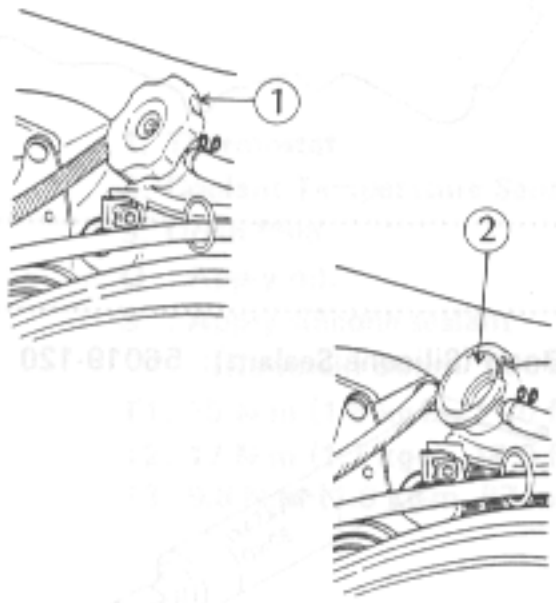
WARNING

○**To avoid burns, do not remove the radiator cap or try to change the coolant when the engine is still hot. Wait until it cools down.**

○**Coolant to tires will make them slippery and can cause an accident and injury. Immediately wipe up or wash away any coolant that spills on the frame, engine or other painted parts.**

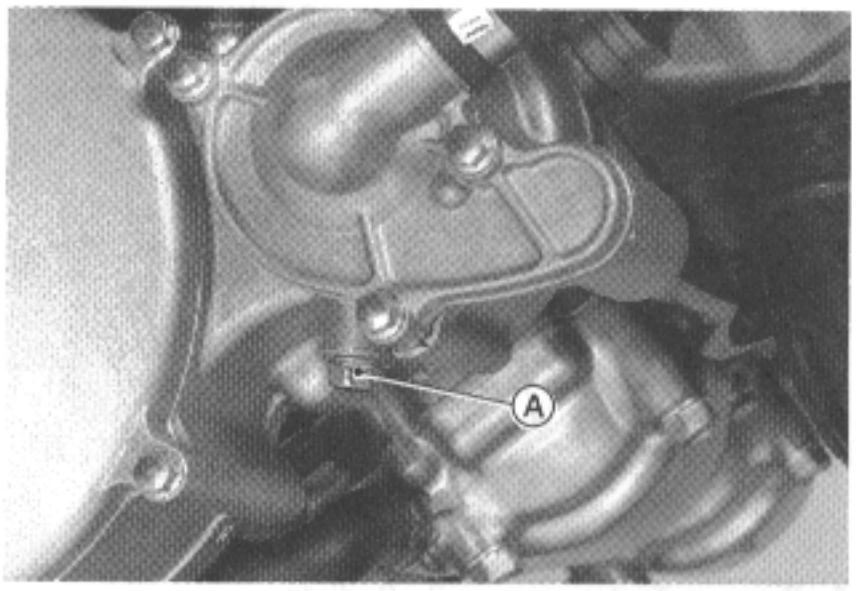
○**Since coolant is harmful to the human body, do not use for drinking.**

- Remove the lower fairing and LH side cover.
- Remove the radiator cap in two steps. First turn the cap counterclockwise to the first stop and wait there for a few seconds to allow any pressure to escape. Then push down and remove the cap.



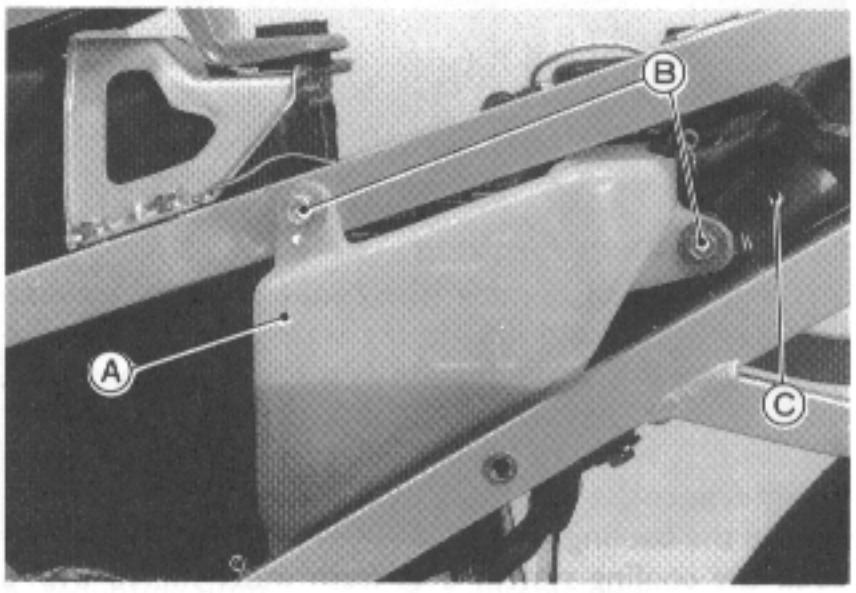
1. Radiator Cap
2. Filler Neck

●Drain the coolant from the radiator and engine by removing the drain plug at the bottom of the water pump body.



A. Drain Plug

●Remove the rear fender front section (see Frame chapter).
●Remove the reservoir tank and pour the coolant into a suitable container.



A. Reservoir Tank
B. Mounting Bolt
C. Rear Fender Front Section

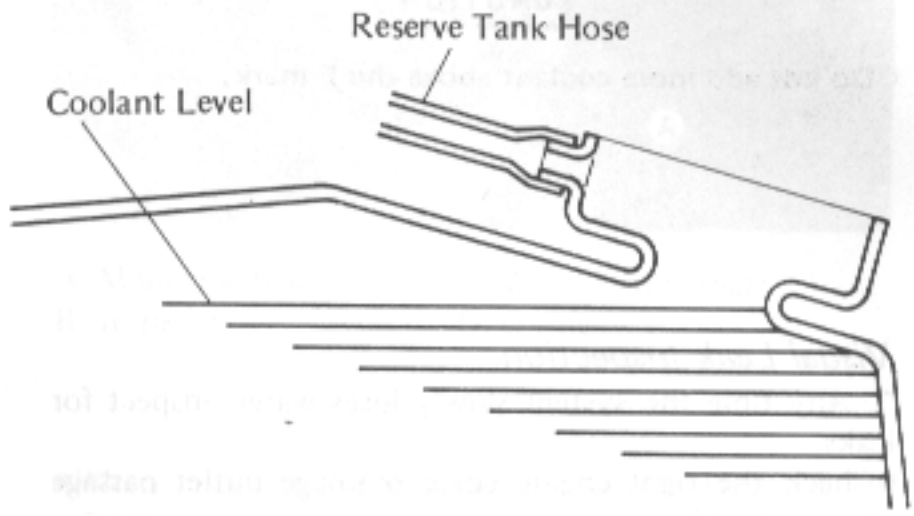
●Inspect the old coolant for color and smell.

Coolant Filling

●Install the drain plugs. Always replace the gaskets with new ones, if they are damaged.
●Tighten the drain plugs to the specification (see General Information chapter).

●Fill the radiator up to the bottom of the radiator filler neck with coolant, and install the cap turning it clockwise about 1/4 turn.

Radiator Filler Neck



NOTE

○*Pour in the coolant slowly so that it can expel the air from the engine and radiator.*
○*The radiator cap must be installed in two steps. First turn the cap clockwise to the first stop. Then push down on it and turn it the rest of the way.*

●Fill the reservoir tank up to the F(full) mark with coolant, and install the cap.

CAUTION

○**Soft or distilled water must be used with the antifreeze (see below for antifreeze) in the cooling system.**
○**If hard water is used in the system, it causes scales accumulation in the water passages, and considerably reduces the efficiency of the cooling system.**

NOTE

○*Choose a suitable mixture ratio by referring to the coolant manufacturer's directions.*

The coolant provided when shipping

Type: Permanent type antifreeze for aluminum engine and radiator
Color: Green
Mixed ratio: Soft water 50%, Coolant 50%
Freezing point: –35°C (–31°F)
Total amount: 1.5 L (up to F(full) mark)

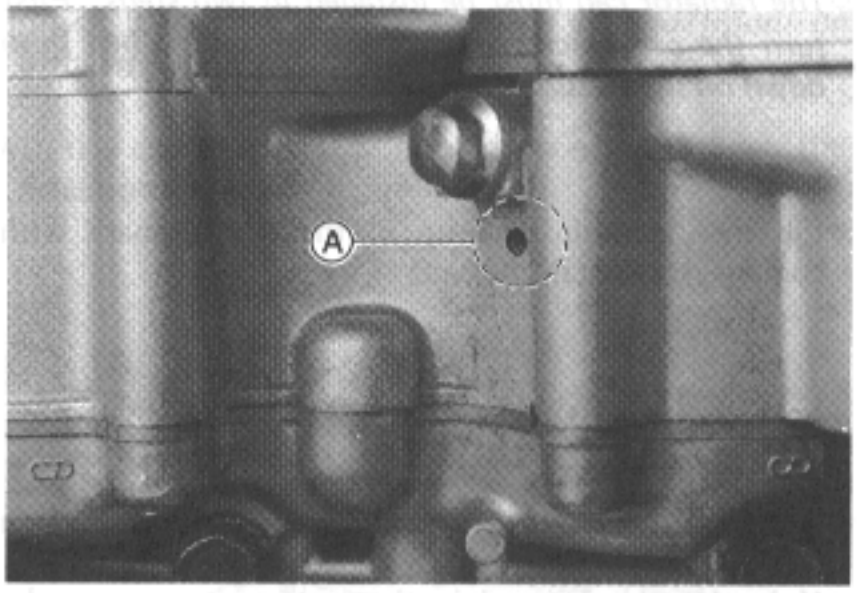
●Start the engine, warm it up thoroughly until the radiator fan turns on and then stop the engine.
●Check the coolant level in the reservoir tank after the engine cools down.
★If the coolant level is lower than the L mark, add coolant up to the F mark.

CAUTION

○**Do not add more coolant above the F mark.**

Visual Leak Inspection

Any time the system slowly loses water, inspect for leaks.
●Check the right engine cover drainage outlet passage for coolant leaks.
★If the mechanical seal is damaged, the coolant leaks through the seal and drains through the passage. Disassemble the water pump and remove the mechanical seal.
★If there are no apparent leaks, pressure test the system.



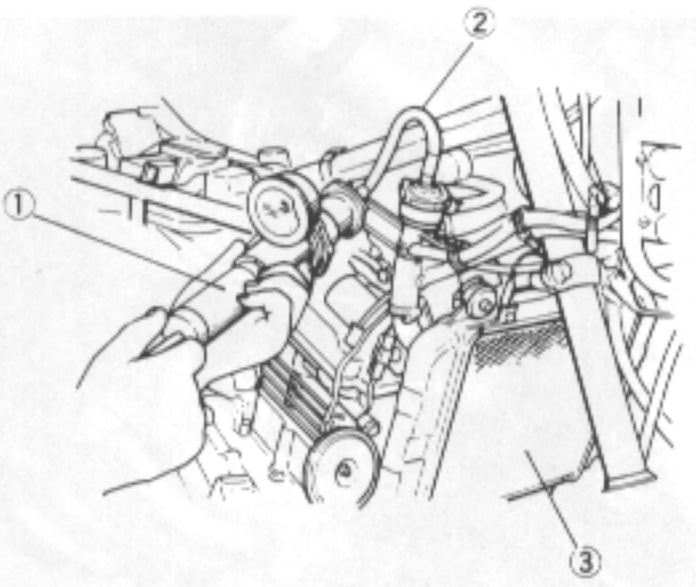
A. Drainage Outlet Passage

Cooling System Pressure Testing

CAUTION

○**During pressure testing, do not exceed the pressure for which the system is designed. The maximum pressure is 108 kPa (1.1 kg/cm², 16 psi).**

●Remove the radiator cap, and install a cooling system pressure tester on the radiator filler neck.
●Wet the cap sealing surfaces with water or coolant to prevent pressure leaks.
●Build up pressure in the system carefully until the pressure reaches 108 kPa (1.1 kg/cm², 16 psi).
●Watch the gauge for at least 6 seconds. If the pressure holds steady, the system is all right.



1. Pressure Tester
2. Adapter
3. Radiator

●Remove the pressure tester, replenish the coolant, and install the radiator cap.
★If the pressure drops and no external source is found, check for internal leaks. Droplets in the engine oil indicate internal leakage. Check the cylinder head gasket and the water pump mechanical seal.

Cooling System Flushing

Over a period of time, the cooling system accumulates rust, scale, and lime in the water jacket and radiator. When this accumulation is suspected or observed, flush the cooling system. If this accumulation is not removed, it will clog up the water passage and considerably reduce the efficiency of the cooling system.
●Drain the cooling system.
●Fill the cooling system with fresh water mixed with a flushing compound.

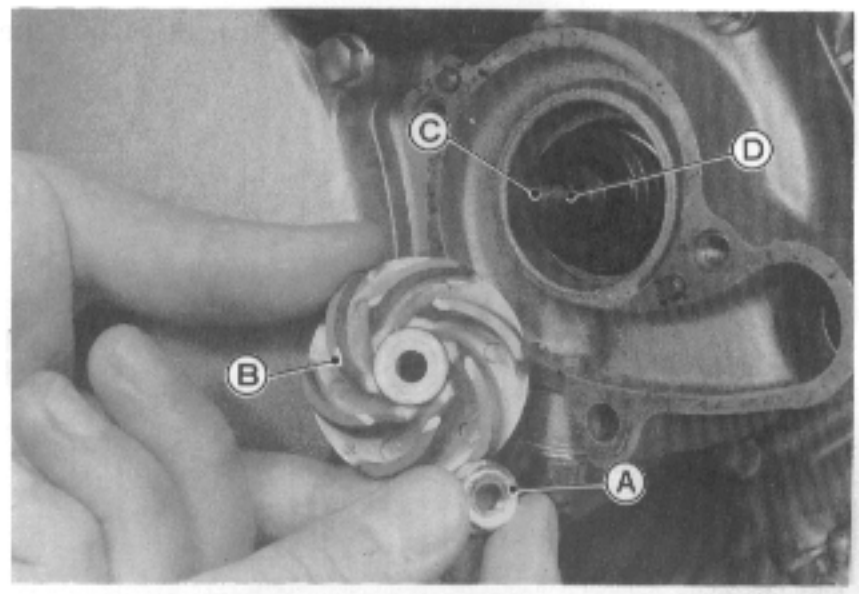
CAUTION

○**Do not use a flushing compound which is harmful to the aluminum engine and radiator. Carefully follow the instructions supplied by the manufacturer of the cleaning product.**

●Warm up the engine, and run it at normal operating temperature for about ten minutes.
●Stop the engine, and drain the cooling system.
●Fill the system with fresh water.
●Warm up the engine and drain the system.
●Repeat the previous two steps once more.
●Fill the system with a permanent type coolant, and bleed the air from the system.

Disassembly and Assembly Precautions

- Prior to disassembly of cooling system parts (radiator, thermostat, pump, sensor, etc.), wait until coolant cools down and drain coolant.
- After assembling and filling the system with coolant, bleed the air form the system.



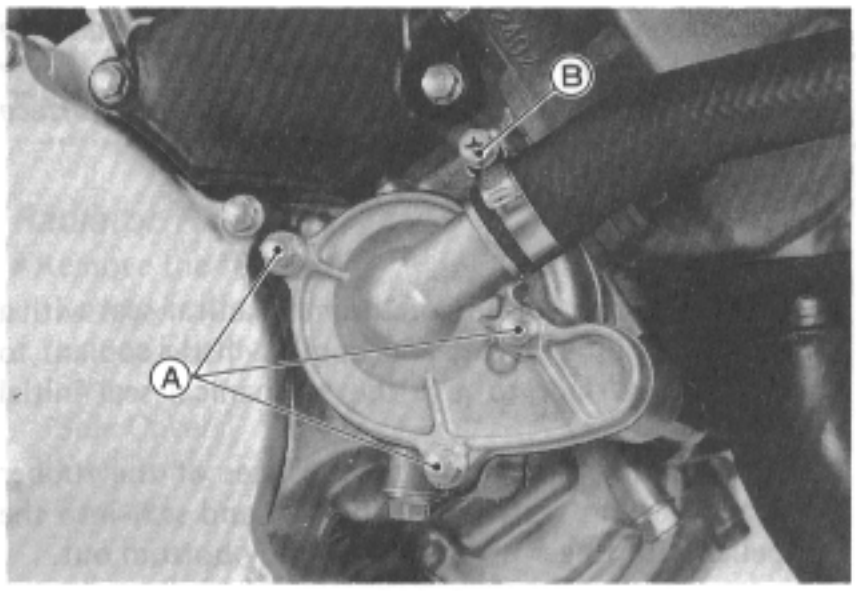
A. Mounting Nut
B. Impeller
C. Water Pump Shaft
D. O-ring

- When installing the impeller, replace the O-ring if it is damaged.

Water Pump, Mechanical Seal

Pump Cover Removal

- Drain the coolant.
- Remove the following.



A. Mounting Bolts
B. Loosen clamp.

Water Pump Disassembly

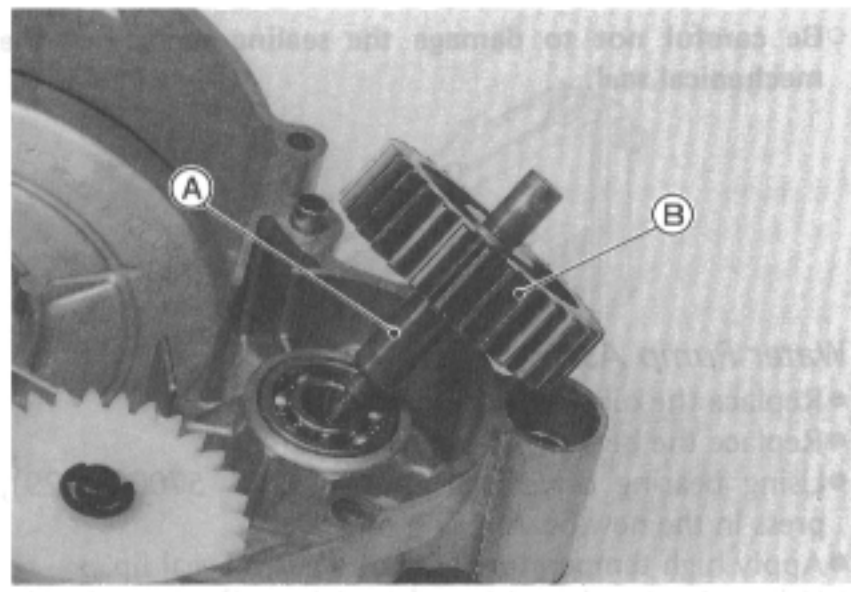
- Remove the water pump cover.
- Remove the right engine cover (see Engine Right Side chapter).
- Remove the water pump impeller.

Pump Impeller Removal/Installation Notes

CAUTION

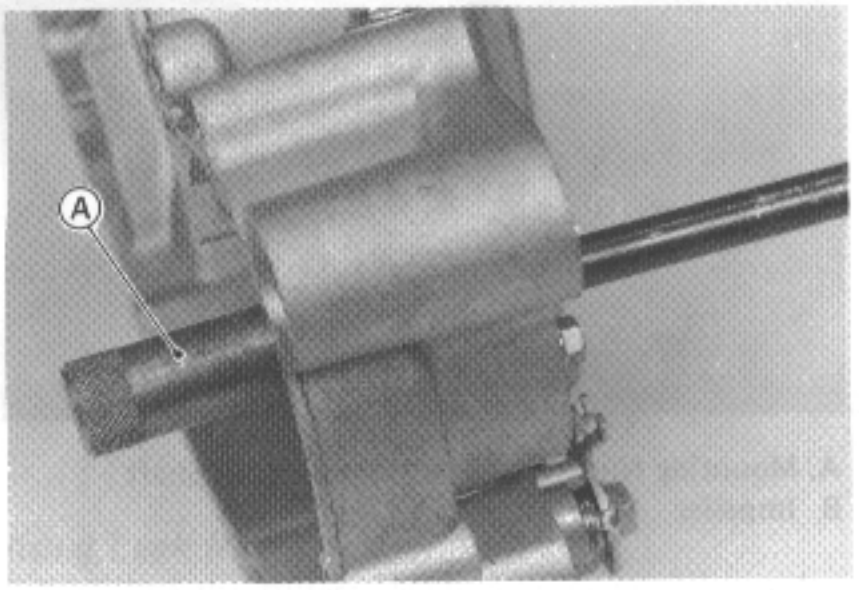
○The impeller has an O-ring. Turn the impeller clockwise during installation, and counterclockwise during removal. This is to prevent impeller O-ring damage by the shaft threads.

- Unscrew the mounting nut end remove the impeller.



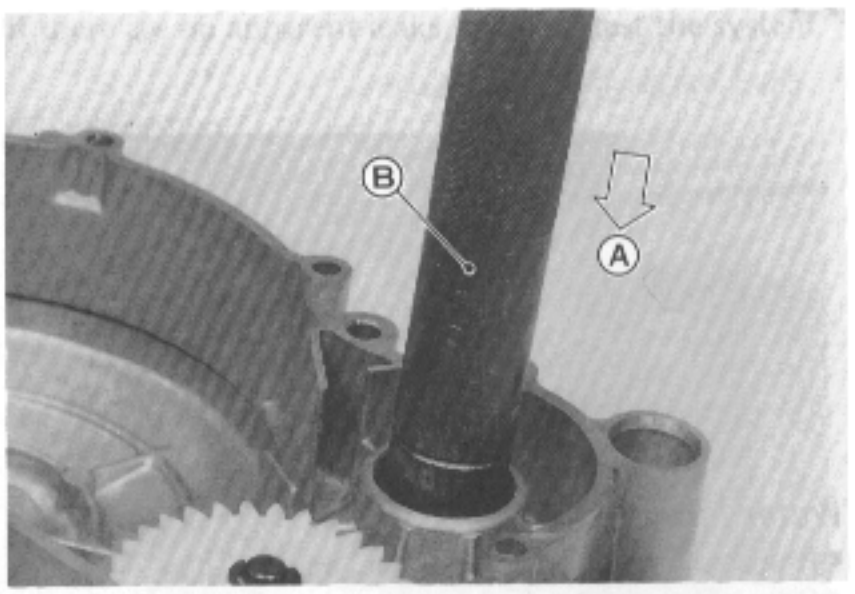
A. Water Pump Shaft
B. Water Pump Driven Gear

●Using bearing remover set (special tool), drive out the bearing.



A. Bearing Remover Set: 57001-1264

●Using bearing driver set (special tool), press out the mechanical seal and oil seal.



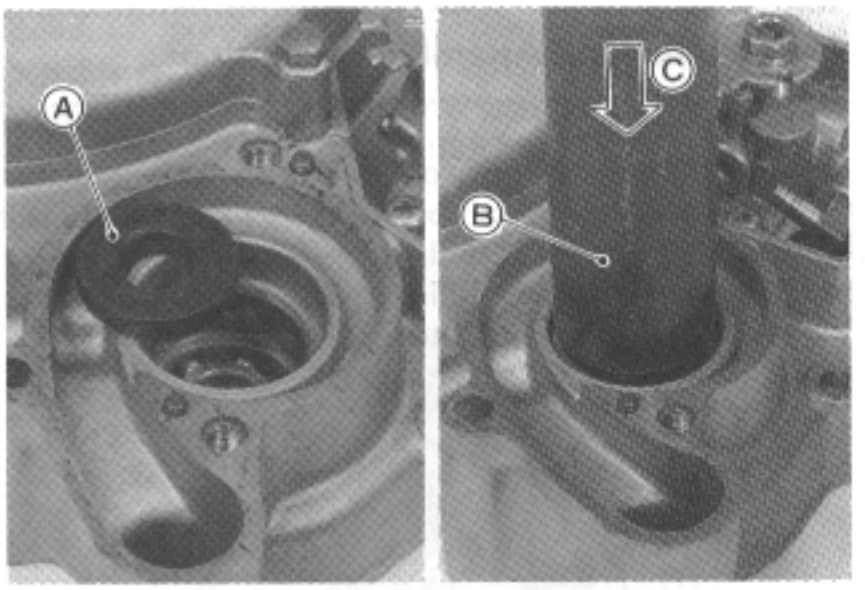
A. Press
B. Bearing Driver Set: 57001-1129

CAUTION

○Be careful not to damage the sealing surface of the mechanical seal.

Water Pump Assembly Notes

●Replace the oil seal if it is damaged.
●Replace the bearing with a new one.
●Using bearing driver set (special tool: 57001-1129), press in the new bearing and oil seal.
●Apply high temperature grease to the oil seal lip.
●Using the bearing driver (special tool), press in the mechanical seal.



A. Oil Seal
B. Bearing Driver: 57001-382
C. Press

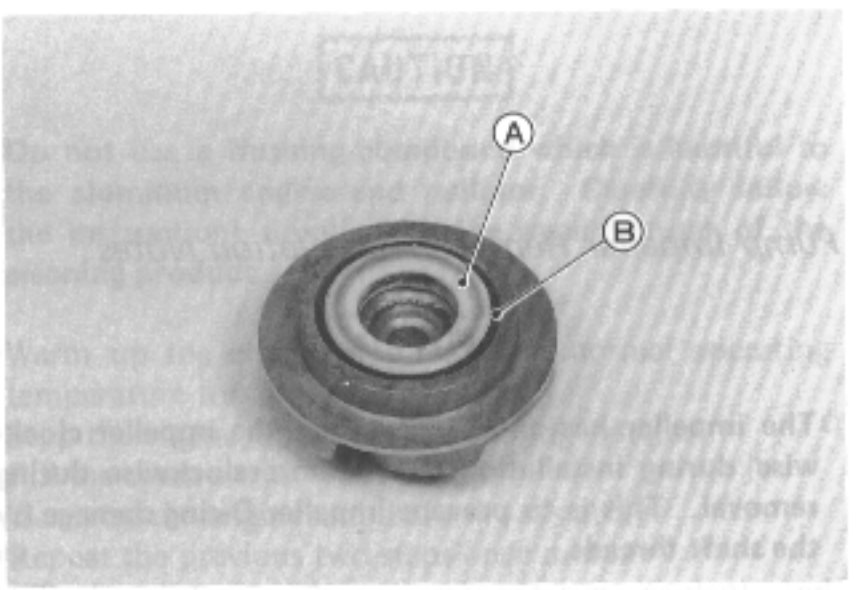
CAUTION

○Do not block the coolant draining outlet passage with the mechanical seal by pressing it too deep into the right engine cover.

NOTE

○Since the replacement mechanical seal has an adhesive coated body, do not apply a liquid gasket – silver (Kawasaki Bond: 92104-002) to the exterior surface of the body.

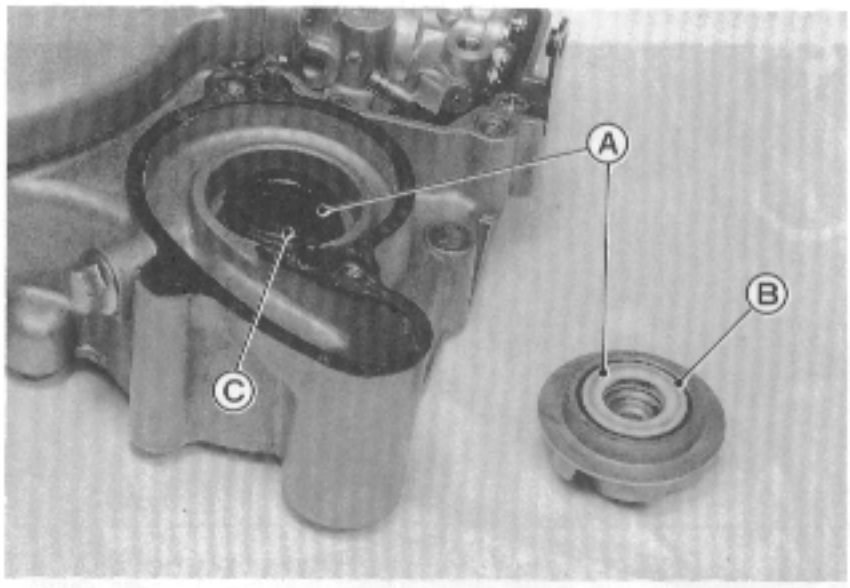
●Clean the sliding surface of the mechanical seal with a high flash-point solvent, and apply a little coolant to the sliding surface to give the mechanical seal initial lubrication.
●After applying coolant to the surfaces of the rubber seal and sealing seat, install the seal and seat into the impeller with finger pressure until they bottom out.



A. Sealing Seat B. Rubber Seal

Mechanical Seal Inspection

- Visually inspect the mechanical seal.
- ★If any one of the parts is damaged, replace the mechanical seal as a unit.
- ○The sealing seat and rubber seal may be removed easily by hand.

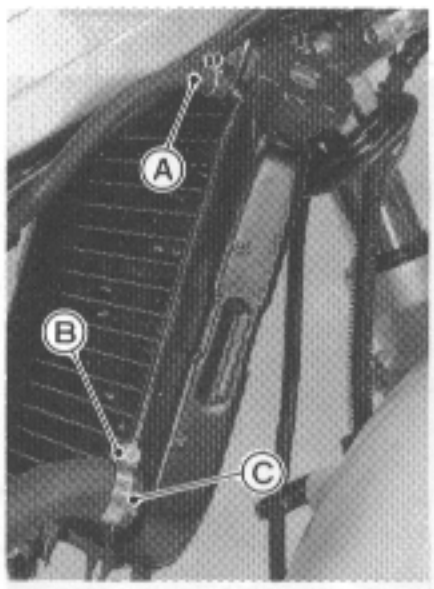


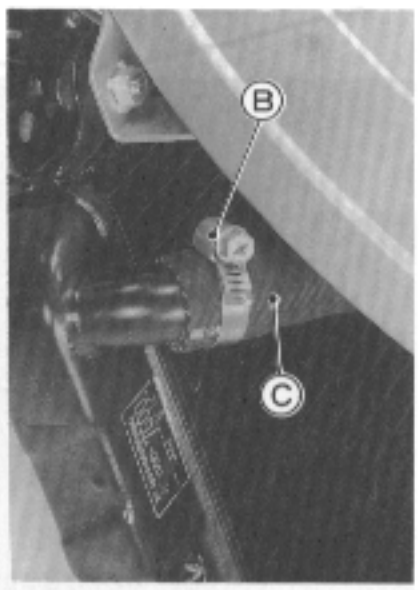
A. Impeller Sealing Seat Surface
B. Rubber Seal
C. Mechanical Seal Diaphragm

Radiator

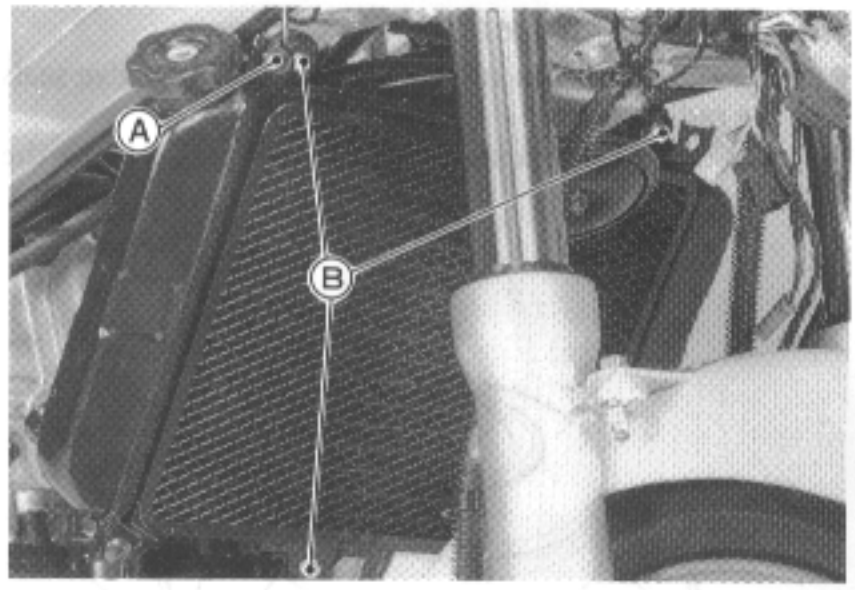
Radiator Removal

- Remove the following.
  - Lower Fairing
  - Upper Fairing
  - Seat
  - Side Covers
  - Fuel Tank
  - Coolant





A. Reservoir Tank Hose End
B. Clamp (Loosen)
C. Radiator Hose End



A. Clutch Cable Clamp Mounting Bolt
B. Radiator Mounting Bolt

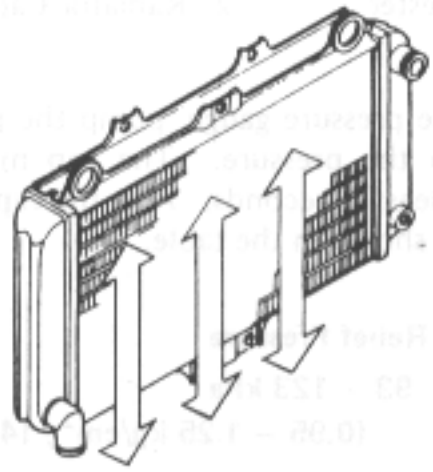
Radiator Inspection

- Check the radiator core.
- ★If there are obstructions to air flow, remove them.
- ★If the corrugated fins are deformed, carefully straighten them.
- ★If the air passages of the radiator core are blocked more than 20% by unremovable obstructions or irreparably deformed fins, replace the radiator with a new one.

CAUTION

○When cleaning the radiator with steam cleaner, be careful of the following to prevent radiator damage.

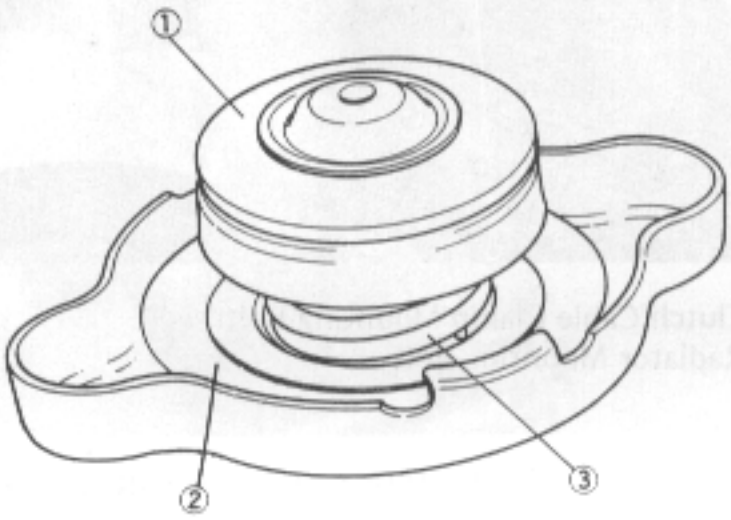
1) Keep the steam gun away more than 0.5 m from the radiator core.
2) Hold the steam gun perpendicular to the core surface.
3) Run the steam gun horizontally following the core fin direction.. Running it vertically may damage the fin.



Radiator Cap Inspection

●Check the condition of the top and bottom valve seals of the radiator cap.

★If any one of them shows visible damage, replace the cap.

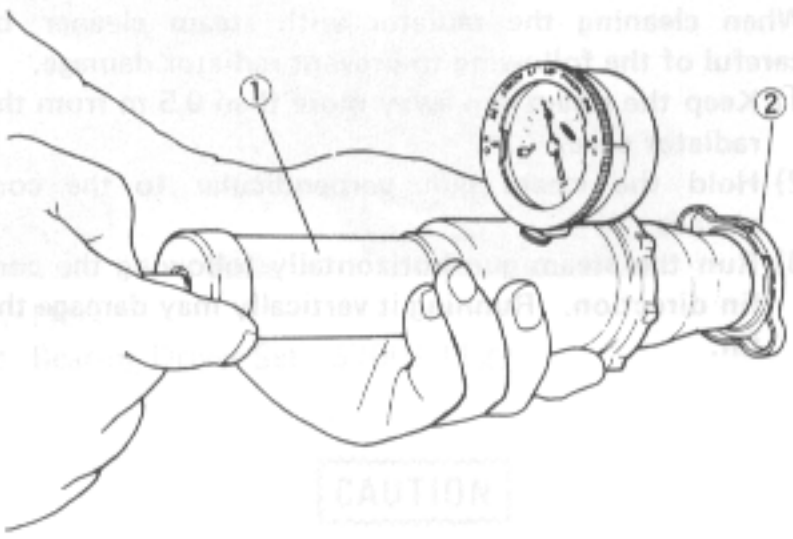


1. Bottom Valve Seal
2. Top Valve Seal
3. Valve Spring

●Install the cap on a cooling system pressure tester.

NOTE

○*Wet the cap sealing surfaces with water or coolant to prevent pressure leaks.*



1. Pressure Tester
2. Radiator Cap

●Watching the pressure gauge, pump the pressure tester to build up the pressure. The cap must retain the pressure at least 6 seconds. Also the cap must open at the pressure shown in the table.

Radiator Cap Relief Pressure

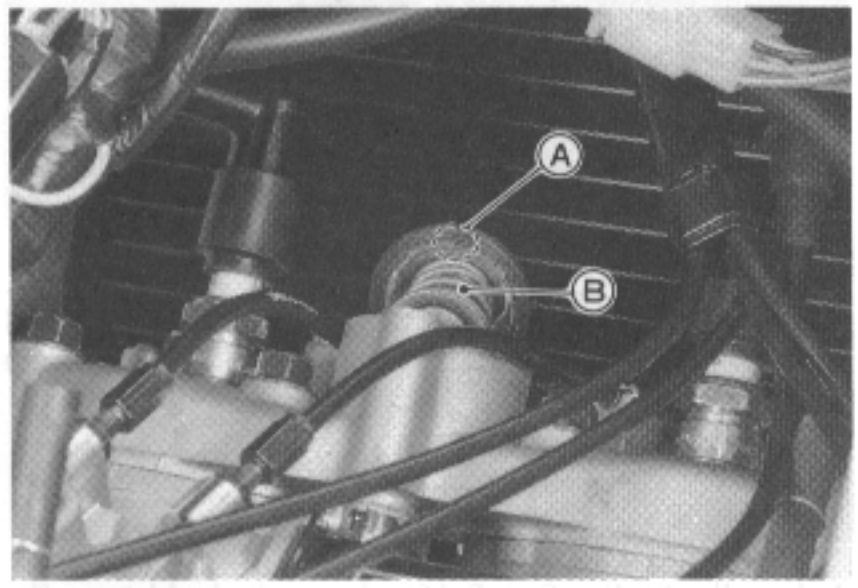
Standard: 93 – 123 kPa
(0.95 – 1.25 kg/cm², 14 – 18 psi)

★If the cap cannot hold the specified pressure, or if it holds too much pressure, replace it with a new one.

Thermostat

Thermostat Installation Note

●Install the thermostat so that the air bleeder hole is on top with the engine installed in the frame.



A. Thermostat
B. Air Bleeder Hole

Thermostat Inspection

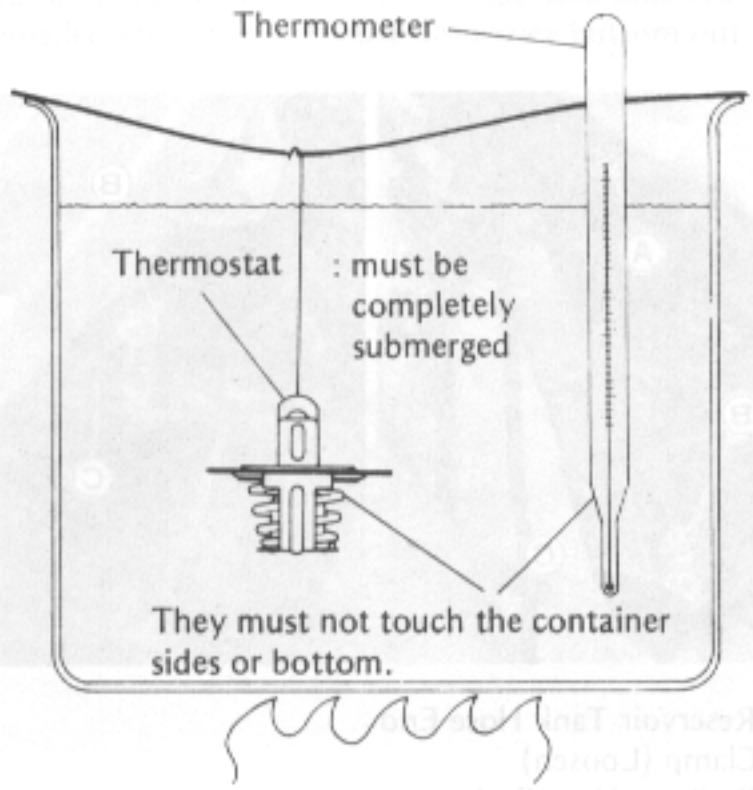
●Remove the thermostat, and inspect the thermostat valve at room temperature.

★If the valve is open, replace the valve with a new one.

●To check valve opening temperature, suspend the thermostat and an accurate thermostat in a container of water.

○Place the container over a source of heat and gradually raise the temperature of the water while stirring the water gently.

Valve Opening Temperature Measurement



●Watch the valve. As soon as the valve starts to open, note the temperature.
★If it is out of the service limit range, replace the thermostat.

Thermostat Valve Opening Temperature

63.5 – 66.5°C (147 – 153°F)

Water Temperature Sensor

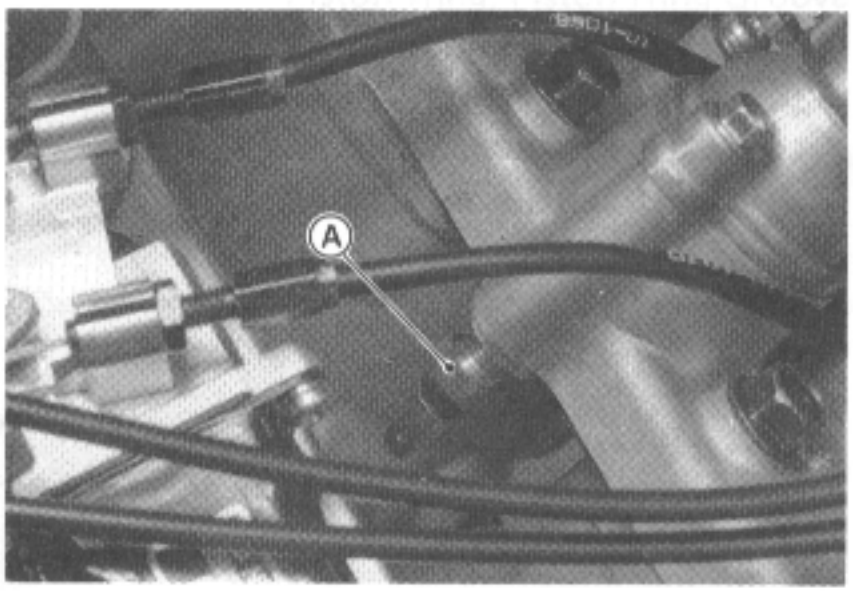
Removal Caution

CAUTION

○**The water temperature sensor should never be allowed to fall on a hard surface. Such a shock to these parts can damage them.**

Installation Notes

●Apply silicone sealant (Kawasaki Bond: 56019-120) to the threads of sensor.
●Tighten the sensor to the specified torque (see General Information chapter).



A. Water Temperature Sensor