Cooling System

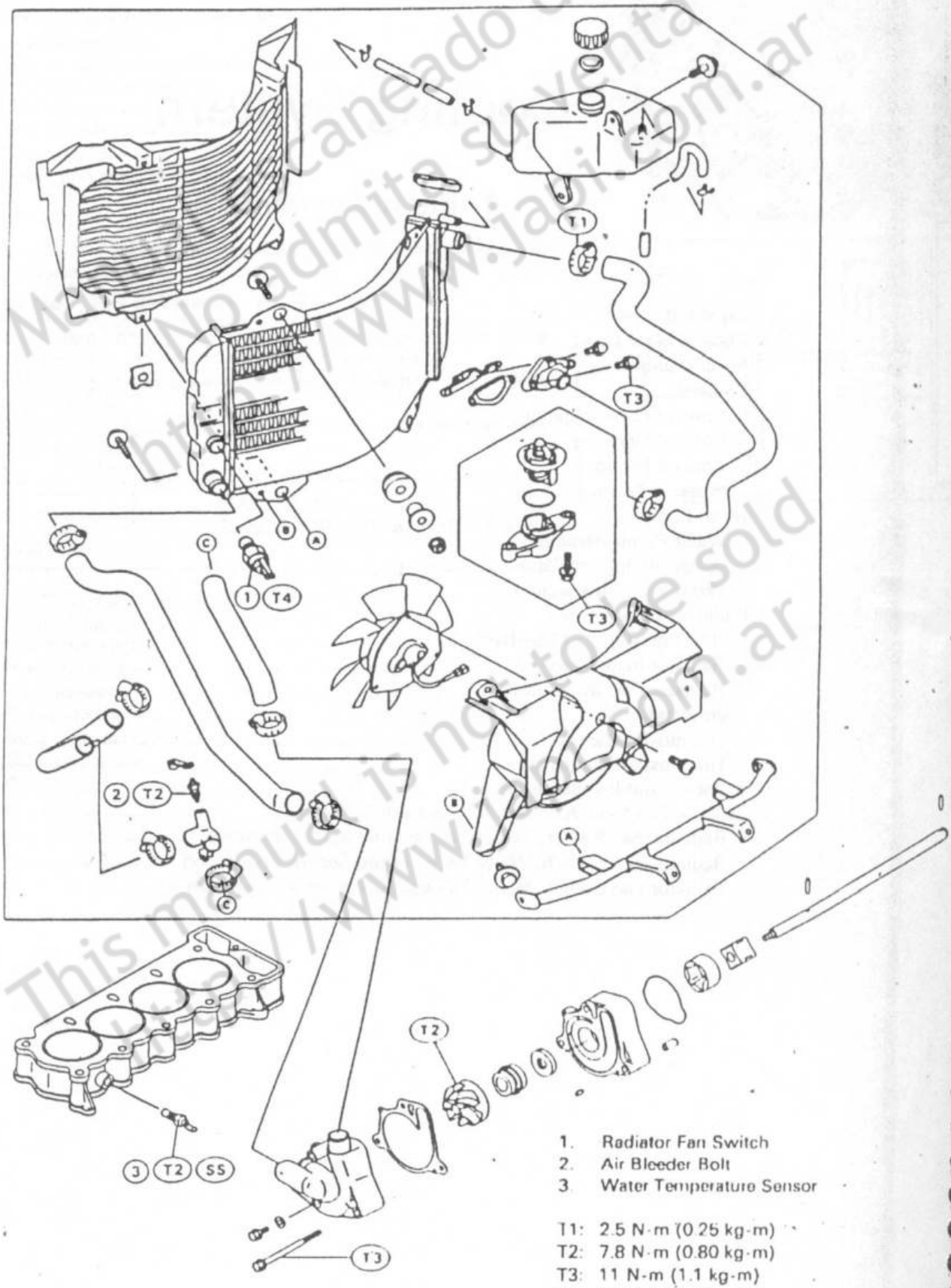
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Exploded View



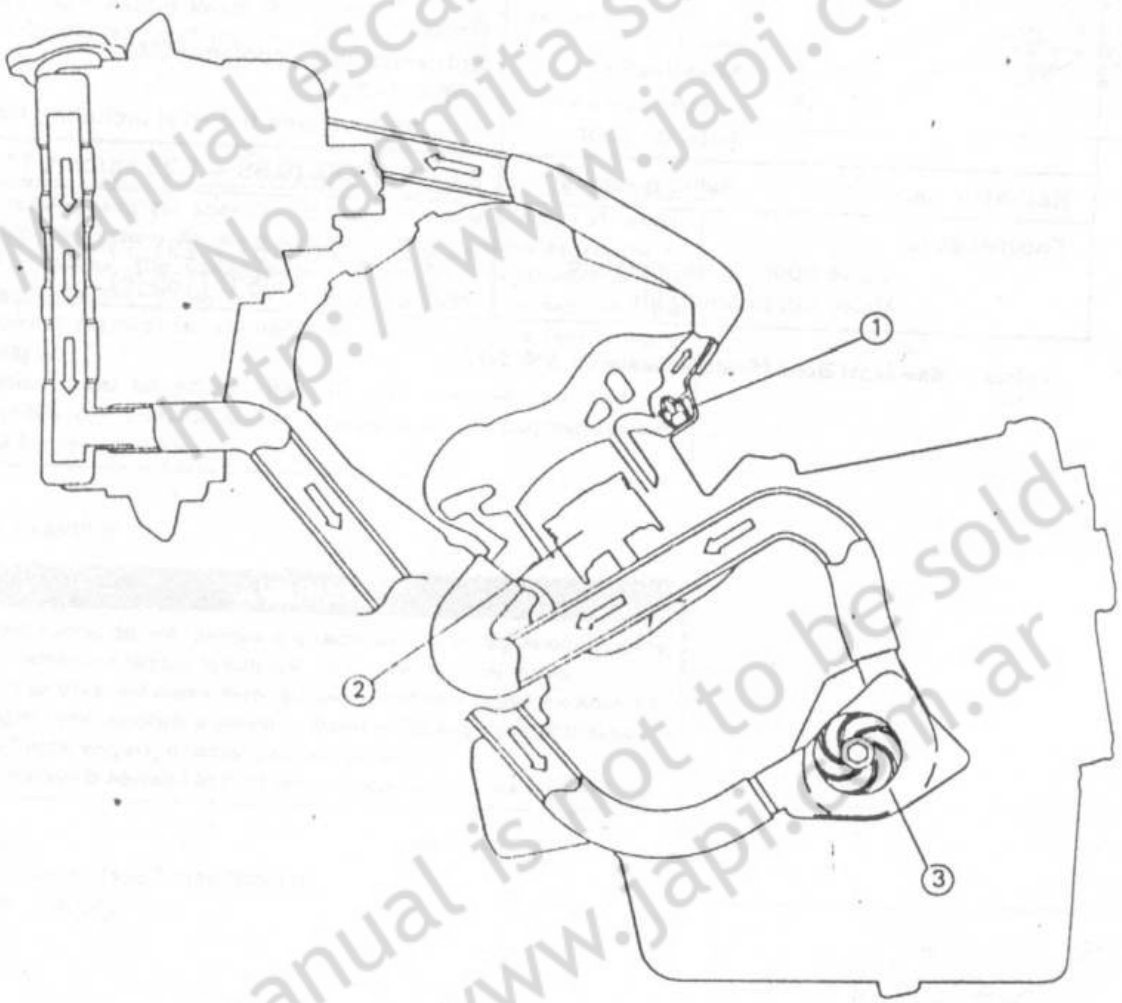
1. Radiator Fan Switch
2. Air Bleeder Bolt
3. Water Temperature Sensor

T1: 2.5 N·m (0.25 kg-m)
T2: 7.8 N·m (0.80 kg-m)
T3: 11 N·m (1.1 kg-m)
T4: 18 N·m (1.8 kg-m)

SS: Apply silicone sealant.

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Coolant Flow Chart



1. Thermostat
2. Piston
3. Water Pump Impeller

Thermostat:
When the engine is cold, the thermostat is closed so that the coolant flow is restricted through the air bleeder hole, causing the engine to warm up more quickly.

Reserve Tank:
When the engine is very hot, the pressure valve in the radiator cap allows air and vapor to escape into the reserve tank. When the engine cools down, the pressure drop draws the vacuum valve (another small valve) open, admitting coolant from the reserve tank into the radiator.

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Specifications

Item		Standard
Coolant provided when shipping:		
	Type	Permanent type antifreeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminum engines and radiators)
	Color	Green
	Mixed ratio	Soft water 50%, coolant 50%
	Freezing point	−35°C (−31°F)
	Total amount	1.2L (reserve tank full level including radiator and engine)
Radiator cap	Relief pressure:	93 ~ 123 kPa (0.95 ~ 1.25 kg/cm², 14 ~ 18 psi)
Thermostat:		
	Valve opening temperature	69.5 ~ 72.5°C (157 ~ 291 °F)
	Valve full opening lift	3mm or more @85°C (185 °F)

Sealant – Kawasaki Bond (Silicone Sealant): 56019-120

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Coolant

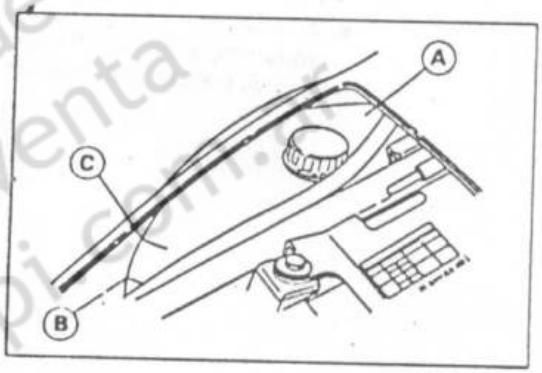
Coolant Level Inspection

NOTE

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

● Check the coolant level in the reserve tank [A] with the motorcycle held perpendicular.

★ If the coolant level is lower than the "L" (Low) level line [B], add coolant to the "F" (Full) level line [C].



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 alone 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.

Coolant Draining

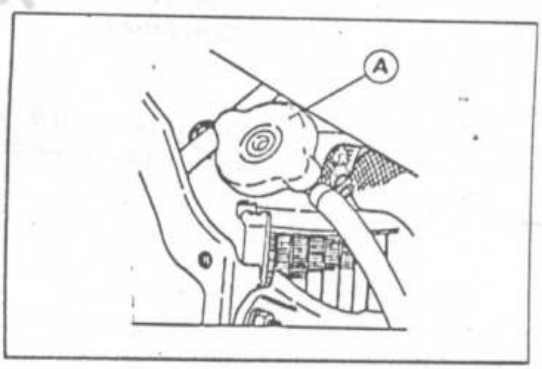
⚠WARNING

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 on 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.

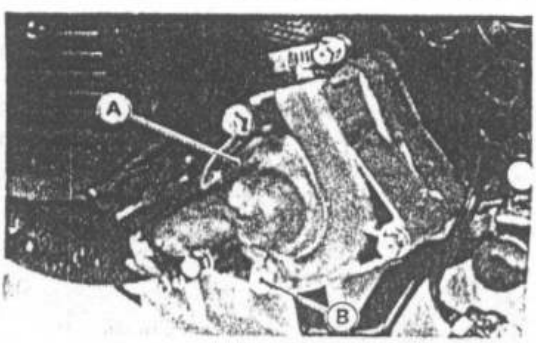
Since coolant is harmful to the human body, do not use for drinking.

● Remove:
Lower Fairings (see Frame chapter)
Radiator Cap [A]



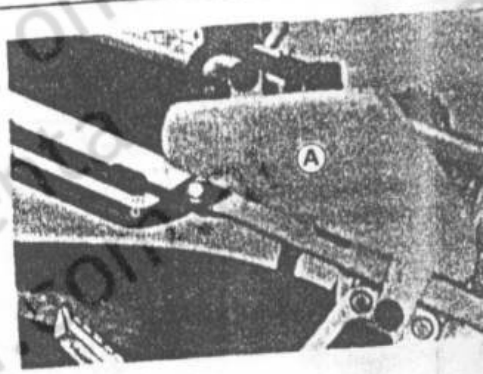
● Place a container under the drain plug [B] at the bottom of the water pump [A].

● Drain the coolant from the radiator and engine by removing the drain plug.



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● Remove:
Mounting Bolts and Reserve Tank [A]
● Remove the cap and pour the coolant into a container.



Coolant Filling

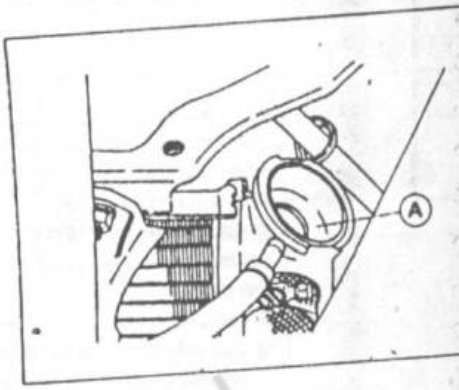
● Tighten the drain plug.

Torque – Drain Plug: 11 N·m (1.1 kg-m)

● Fill the radiator up to the radiator filler neck [A] with coolant, and install the radiator cap.

NOTE

○ *Pour in the coolant slowly so that it can expel the air from the engine and radiator.*



● Fill the reserve tank up to the "F" level line 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.

Water and Coolant Mixture Ratio (Recommended)

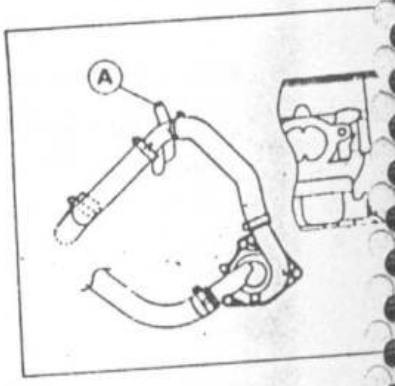
Soft Water	:	50%
Coolant	:	50%
Freezing Point	:	−35°C (−31°F)
Total Amount	:	1.2 L

NOTE

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

● Loosen each air bleeder bolt until the coolant begins to flow out the air bleeder bolt hole (that is, when all the remaining air has been forced out).
[A] Water Pipe Air Bleeder Bolt
[B] Cylinder Head Air Bleeder Bolt
● Tighten each air bleeder bolt

Torque – Water Pipe Air Bleeder Bolt: 7.8 N·m (0.80 kg-m)



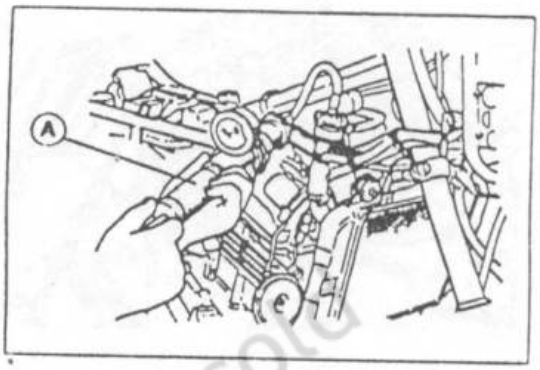
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● Start the engine, warm it up thoroughly until the radiator fan turns on and then stop the engine.
● Check the coolant level in the reserve tank after the engine cools down.
★ If the coolant level is lower than the "L" level line, add coolant to the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

CAUTION
Do not add more coolant above the "F" level line.

Pressure Testing

● Remove the right inner fairing (see Frame chapter).
● Remove the radiator cap, and install a cooling system pressure tester [A] on the filler neck.



NOTE

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

● Build up pressure in the system carefully until the pressure reaches 123 kPa (1.25 kg/cm², 18 psi).

CAUTION
During pressure testing, do not exceed the pressure for which the system is designed. The maximum pressure is 123 kPa (1.25 kg/cm², 18 psi).

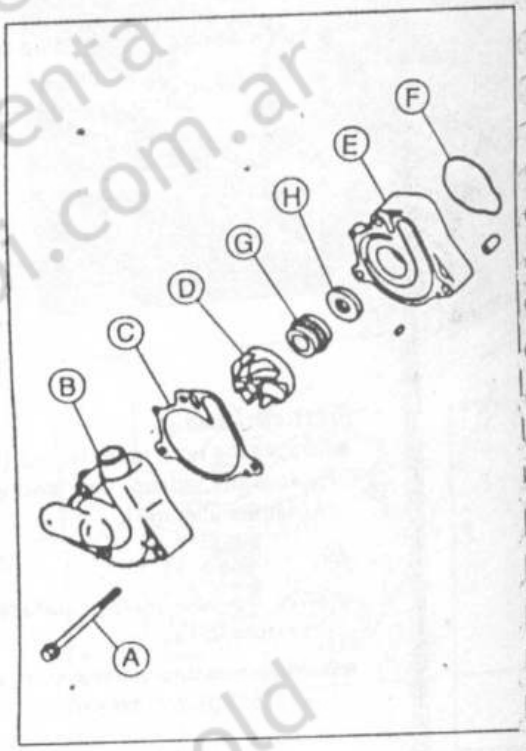
● Watch the gauge for at least 6 seconds.
★ If the pressure holds steady, the system is all right.
★ If the pressure drops soon, check for leaks.

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Water Pump

Water Pump Removal

- Drain:
  Coolant (see Coolant Draining)
  Engine Oil (see Engine Lubrication System chapter)
- Remove:
  Water Hose
  Water Pump Cover Bolts [A]
  Water Pump Cover [B]
  Gasket [C]
  Impeller [D]
  Water Pump Body [E]
  O-ring [F]
  [G] Mechanical Seal
  [H] Oil Seal



Water Pump Installation

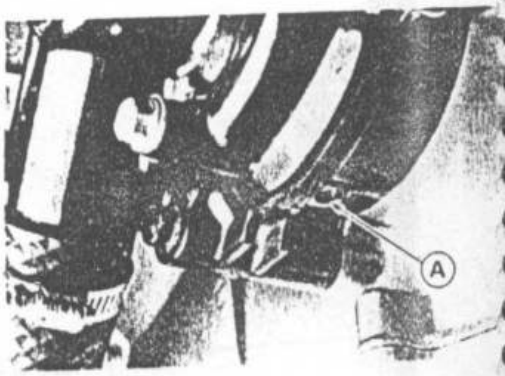
- Check the O-ring on the water pump body and replace it with a new one if damaged.
- Replace the pump cover gasket with a new one.
- Tighten the impeller and cover bolts.

Torque – Water Pump Impeller : 7.8 N·m (0.80 kg·m)
Water Pump Cover Bolts : 11 N·m (1.1 kg·m)

Water Pump Inspection

- Check the drainage outlet passage [A] at the side of the water pump body for coolant leaks.

★If the mechanical seal is damaged, the coolant leaks through the seal and drains through the passage. Replace the water pump unit with a new one.



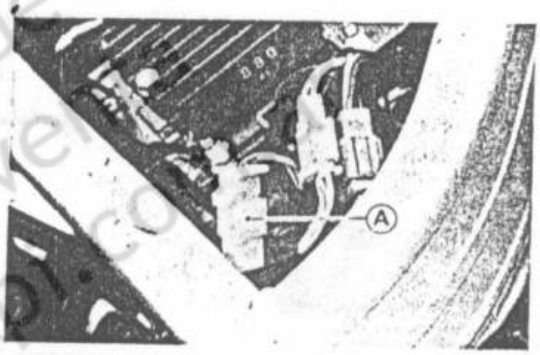
- Visually inspect the impeller.

★If the surface is corroded, or if the blades are damaged, replace the water pump unit with a new one.

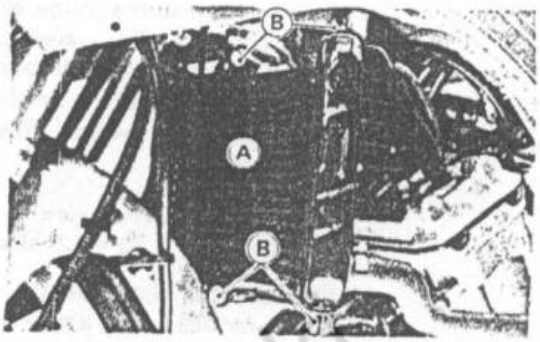
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Radiator, Radiator Fan

Radiator, Radiator Fan Removal



- Remove:
  - Fuel Tank (see Fuel System chapter)
  - Lower Fairings (see Frame chapter)
  - Coolant (see Coolant Draining)
  - Radiator Fan Motor Lead Connector [A]
  - Radiator Fan Switch lead Connector
  - Radiator Hoses
  - Radiator Mounting Bolts [B]
  - Radiator [A]



Radiator Inspection

- Check the radiator core.

★If there are obstructions to air flow, remove them.

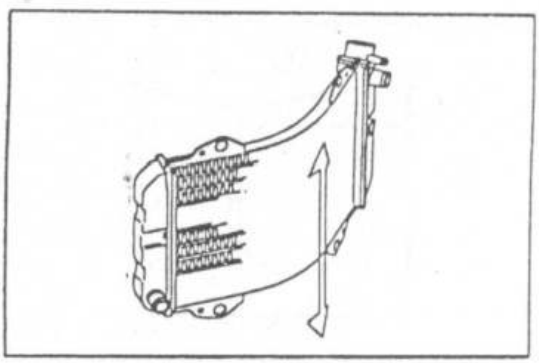
★If the corrugated fins are deformed, carefully straighten them.

★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.

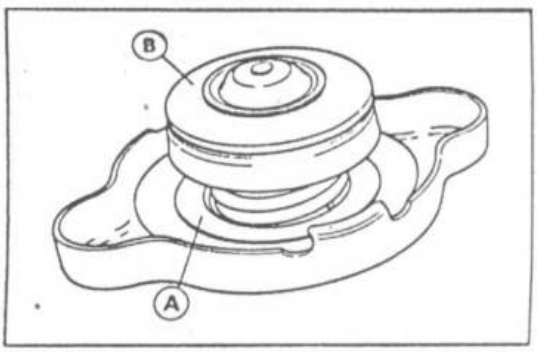
1) **Keep the steam gun away more than 0.5 m from the radiator core.**
2) **Hold the steam gun perpendicular to the core surface.**
3) **Run the steam gun vertically following the core fin direction. Running it horizontally may damage the fin.**



Radiator Cap Inspection

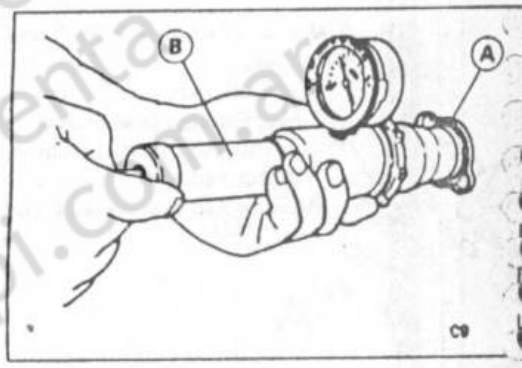
- Check the condition of the top [A] and bottom [B] valve seals.

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



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● Install the cap [A] on a cooling system pressure tester [B].



NOTE

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

● Watching the pressure gauge, slowly pump the pressure tester to build up the pressure. The gauge pointer must remain within the relief pressure range in the table below at least 6 seconds. Continue to pump the tester until the relief valve opens, indicated by the gauge pointer flicks downward. The relief valve must open within the specified range.

Radiator Cap Relief Pressure

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

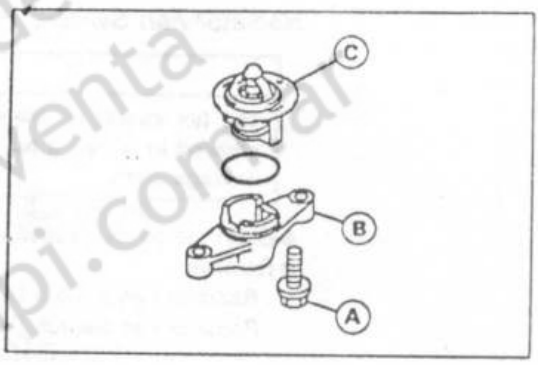
★ If the cap cannot hold the specified pressure, or if it holds too much pressure, replace it with a new one.

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Thermostat

Thermostat Removal

●Remove:
Coolant (see Coolant Draining)
Fuel Tank (see Fuel System chapter)
Air Cleaner Housing (see Fuel System chapter)
Bolts [A] and Thermostat Housing Cover [B]
Thermostat [C]

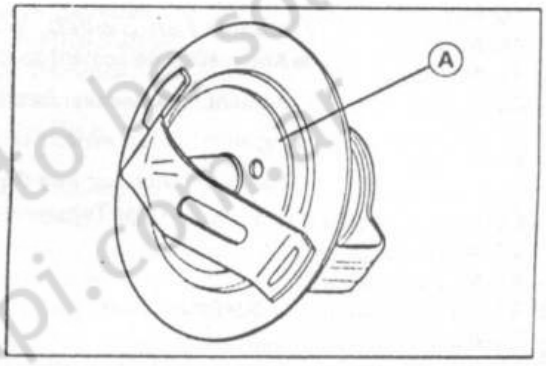


Thermostat Installation

●Be sure to install the O-ring on the housing cover
●Fill the radiator with coolant.

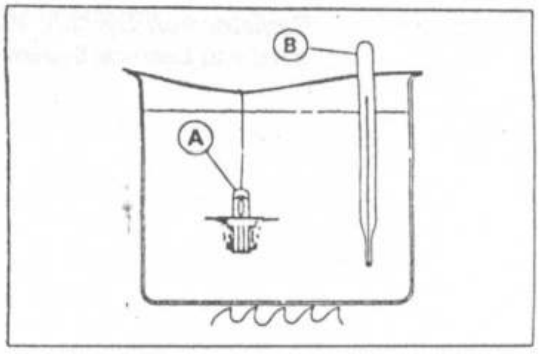
Thermostat Inspection

●Remove the thermostat, and inspect the thermostat valve [A] at room temperature.
★If the valve is open, replace the thermostat with a new one.



●To check valve opening temperature, suspend the thermostat [A] in a container of water and raise the temperature of the water
[B] Thermometer
★If the measurement is out of the specified range, replace the thermostat with a new one.

Thermostat Valve Opening Temperature
69.5 ~ 72.5°C (157 ~ 163°F)



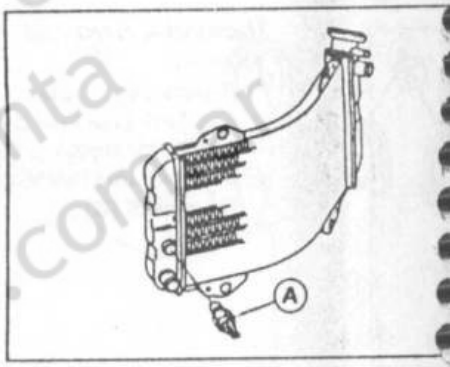
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Radiator Fan Switch, Water Temperature Sensor

Radiator Fan Switch, Water Temperature Sensor Removal

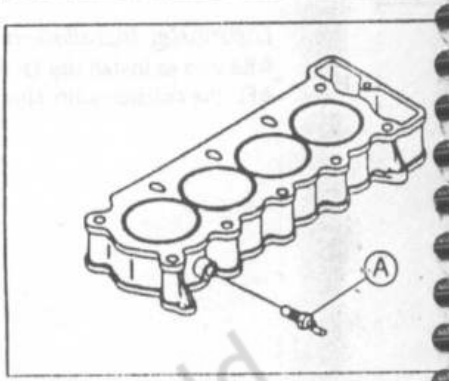
CAUTION

The fan switch or the water temperature sensor should never be allowed to fall on a hard surface. Such a shock to their parts can damage them.



- Drain the coolant (see Coolant Draining).
- Remove:
  Radiator Fan Switch Lead Connectors
  Radiator Fan Switch [A]

  Water Temperature Sensor Lead Connector
  Water Temperature Sensor [A]



Radiator Fan Switch, Water Temperature Sensor Installation

- Apply silicone sealant to the threads of the water temperature sensor.

  Sealant – **Kawasaki Bond (Silicone Sealant): 56019-120**

- Tighten the fan switch and water temperature sensor.

  Torque – **Radiator Fan Switch : 18 N-m (1.8 kg-m)**
  Water Temperature Sensor : 7.8 N-m (0.80 kg-m)

Radiator Fan Switch, Water Temperature Sensor Inspection

- Refer to Electrical System chapter for these inspection.

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