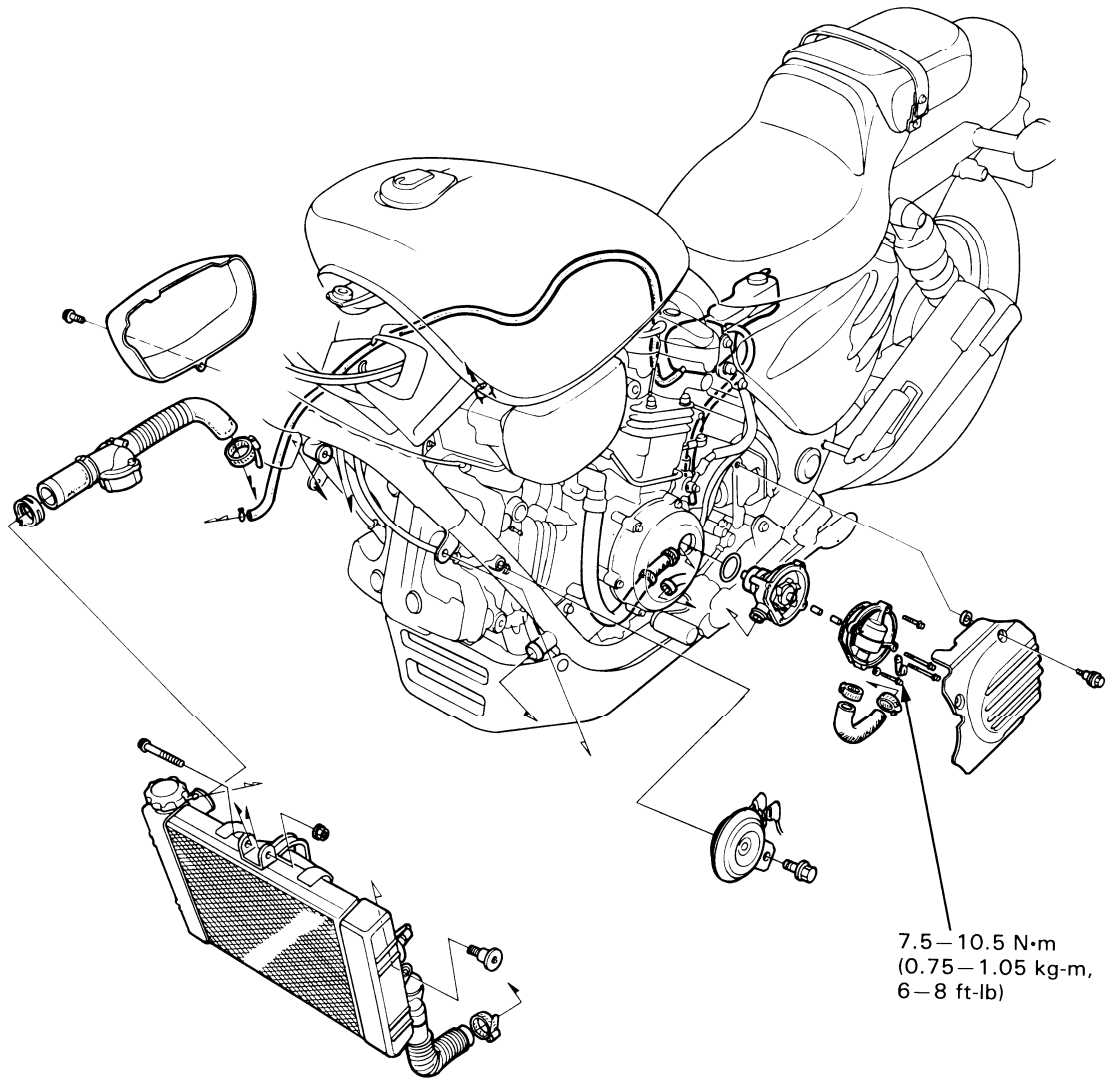

7.5—10.5 N·m
(0.75—1.05 kg-m,
6—8 ft-lb)

6. COOLING SYSTEM

SERVICE INFORMATION

GENERAL

WARNING

- *Do not remove the radiator cap when the engine is hot. The coolant is under pressure and severe scalding could result. The engine must be cool before servicing the cooling system.*

- Use only distilled water and ethylene glycol in the cooling system. A 50—50 mixture is recommended for maximum corrosion protection. Do not use alcohol-based antifreeze.
- Add coolant at the reserve tank. Do not remove the radiator cap except to refill or drain the system.
- All cooling system service can be made with the engine in the frame.
- Avoid spilling coolant on painted surfaces.
- After servicing the system, check for leaks with a cooling system tester.
- Refer to section 19 for fan motor thermostatic switch and temperature sensor inspections.

SPECIFICATIONS

Radiator cap relief pressure	0.75—1.05 kg/cm² (10.7—14.9 psi)
Freezing point (Hydrometer test)	55% Distilled water + 45% ethylene glycol: −32°C (−25°F) 50% Distilled water + 50% ethylene glycol: −37°C (−34°F) 45% Distilled water + 55% ethylene glycol: −44.5°C (−48°F)
Coolant capacity: Radiator and engine Reserve tank Total system	 2.4 liters (2.5 U.S. qt. 2.11 Imp qt.) 0.4 liters (0.48 U.S. qt. 0.35 Imp qt.) 2.8 liters (3.0 U.S. qt. 2.4 Imp qt.)
Thermostat	Begins to open: 80° to 84°C (176° to 183°F) Valve lift: Minimum of 8 mm at 95°C (0.315 in. at 203°F)
Boiling point (with 50—50 mixture)	Unpressurized: 107,7°C (226°F) Cap on, pressurized: 125.6°C (258°F)

TORQUE

Water pump cover bolts	7.5—10.5 N·m (0.75—1.05 kg-m, 6—8 ft-lb)

TOOL

Special

Cooling system tester	Commercially available

TROUBLESHOOTING

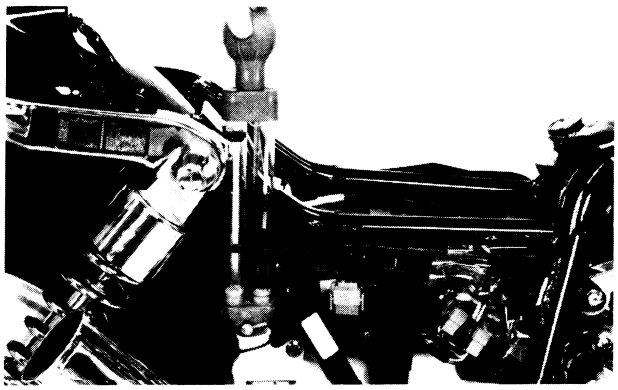
Engine temperature too high
- Faulty temperature gauge or gauge sensor
- Thermostat stuck closed
- Faulty radiator cap
- Insufficient coolant
- Passages blocked in radiator, hoses, or water jacket

Cooling fan motor does not turn
- Broken or loose subfuse
- Faulty fan motor
- Faulty thermostatic switch
- Poor contact or open circuit in harness
- Faulty water pump

Engine temperature too low
- Faulty temperature gauge or gauge sensor
- Thermostat stuck open

Coolant leaks
- Faulty pump mechanical seal
- Deteriorated O-rings

SYSTEM TESTING



COOLANT

Remove the both seats and right side cover.
Test the coolant mixture with an antifreeze tester.
For maximum corrosion protection, a 50 50% solution of ethylene glycol and distilled water is recommended.

RADIATOR CAP INSPECTION

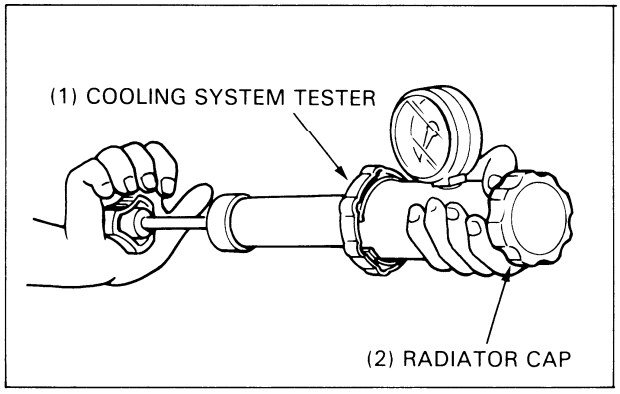
Remove the radiator cap screw and radiator cap.

WARNING

- ***Be sure the engine is cool before removing the cap.***

Pressure test the radiator cap. Replace the radiator cap if it does not hold pressure, or if relief pressure is too high or too low. It must hold specified pressure for at least six seconds.

TOOL:
COOLING SYSTEM TESTER (COMMERCIALLY AVAILABLE)



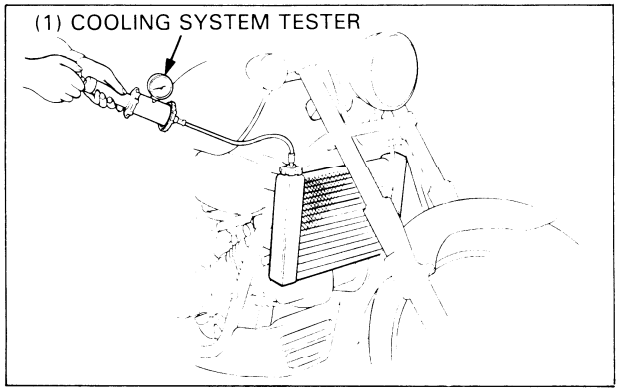
NOTE

- Before installing the cap on the tester, wet the sealing surfaces.

RADIATOR CAP RELIEF PRESSURE:
75—105 kPa (0.75—1.05 kg/cm², 10.7—14.9 psi)

SYSTEM INSPECTION

TOOL:
COOLING SYSTEM TESTER (COMMERCIALLY AVAILABLE)



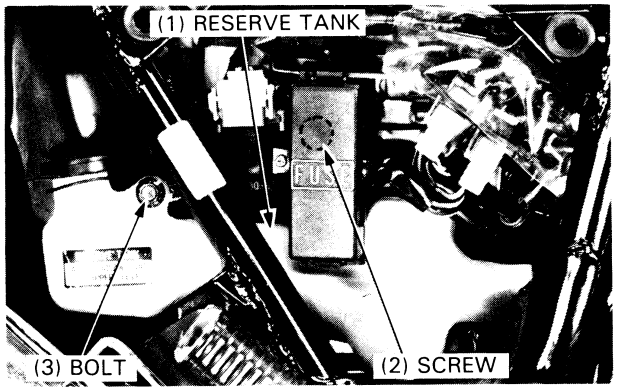
Pressurize the radiator, engine and hoses, and check for leaks.

CAUTION

- *Excessive pressure can damage the radiator. Do not exceed 1.05 kg/cm² (14.9 psi).*

Repair or replace components if the system will not hold specified pressure for at least six seconds.

COOLANT REPLACEMENT



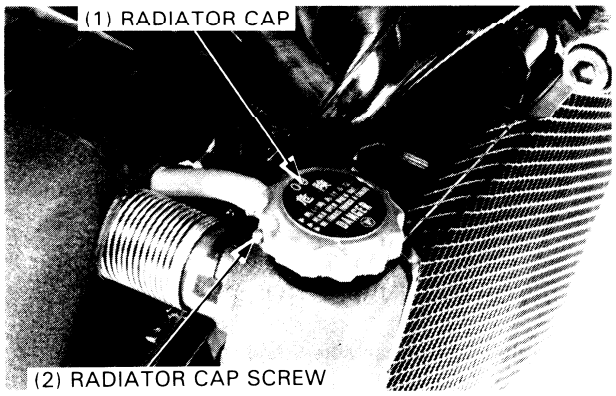
Remove the right side cover.
Remove the fuse case.
Remove the connector holder plate attaching screw and slide the plate.
Remove the reserve tank mounting bolt and tank from the frame, then drain the coolant.

Reinstall the reserve tank, connector holder plate and fuse case.
Fill the coolant to the reserve tank (page 3-10).

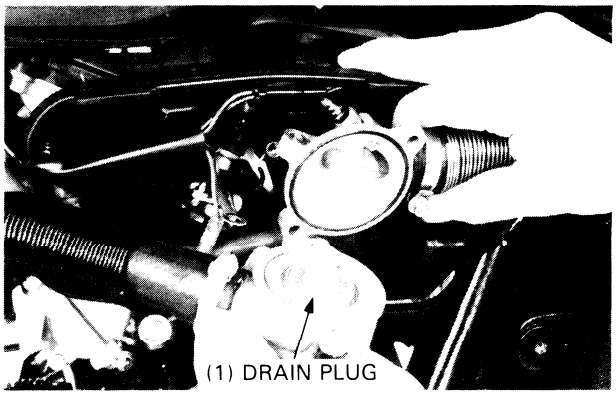
CAUTION

- *The engine must be cool before servicing the cooling system, or severe scalding may result.*

Remove the radiator cap screw and radiator cap.

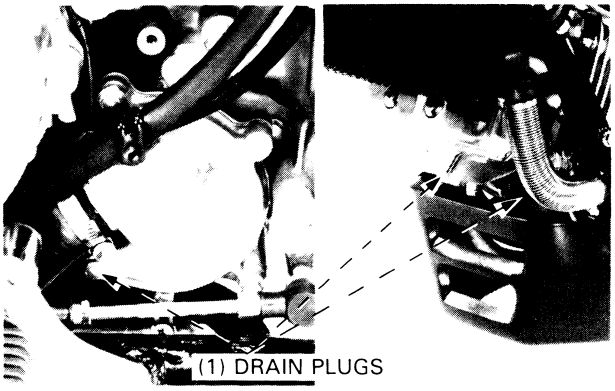


Remove the left rear cover and lower cowl.
Drain the coolant from the system by removing the drain bolt on the lower left sub frame.



Drain the coolant from the engine; remove the drain bolt at the water pump cover and cylinder heads.
Reinstall the drain plug and bolts.
Fill the system with a 50—50 mixture of distilled water and ethylene glycol.
Bleed air from the radiator.

- Start the engine and run until there are no air bubbles in the coolant, and the level stabilizes.
- Stop the engine and add coolant up to the proper level if necessary.
- Reinstall the radiator cap.
- Check the level of coolant in the reserve tank and fill to the correct level if the level is low.
- Install the side cover, seats and tank.



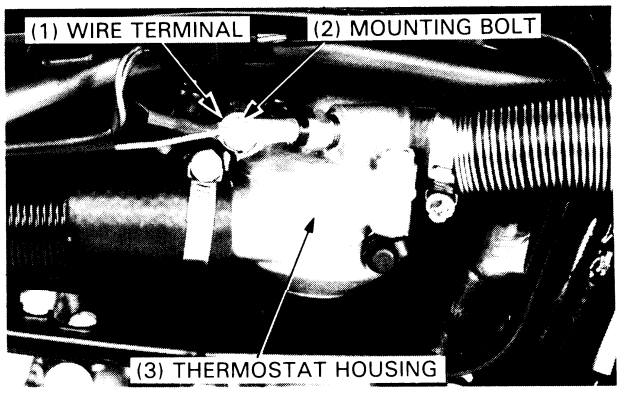
THERMOSTAT

REMOVAL

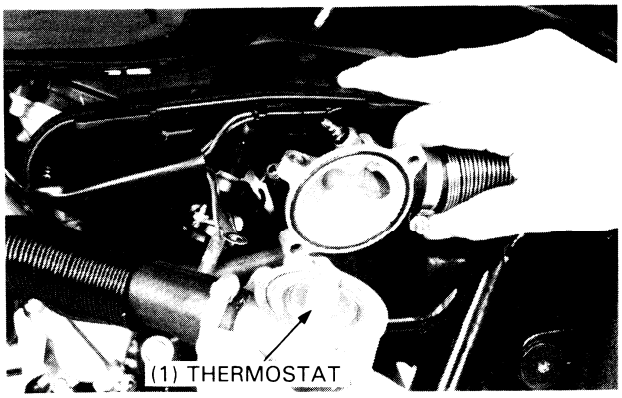
Remove the coolant drain plug, and drain the coolant (page 6-2).
Remove the right air chamber cover.

Disconnect the wire connector from the temperature sensor.
Remove the thermostat mounting bolt and thermostat housing.

Remove the thermostat housing cover and removing the two cover bolts.

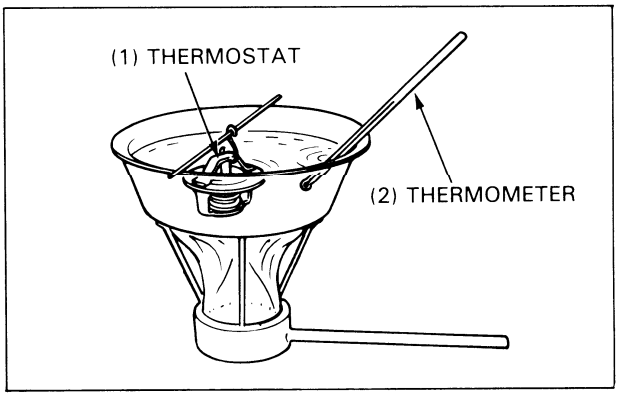


Remove the thermostat from the housing.
Make sure that the O-ring is not damaged or deteriorated.



INSPECTION

Inspect the thermostat visually for damage.
Suspend the thermostat in heated water to check its operation.
Do not let the thermostat or thermometer touch the pan, or false readings will result.
Replace the thermostat if valve stays open at room temperature, or if it responds at temperatures other than those specified.

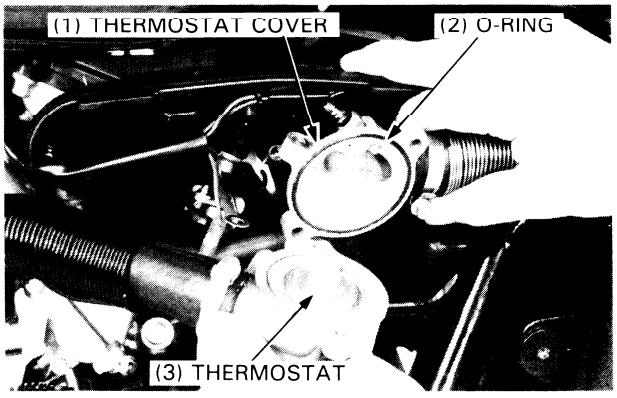


Technical Data

Start to open	80° to 84°C (176° – 183°F)
Valve lift	8 mm minimum (0.31 in) when heated to 95°C (203°F) for five minutes.

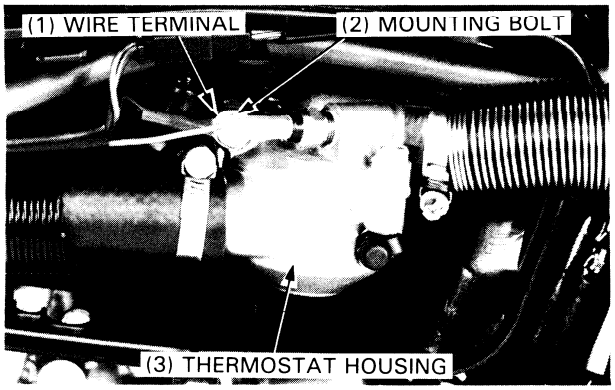
INSTALLATION

Install a new O-ring on the thermostat housing cover and insert the thermostat into the housing.
Install the thermostat housing cover and tighten the bolts.



Secure the thermostat housing to the air chamber attaching the ground wire terminal with the mounting bolt.

Connect the wire connector.



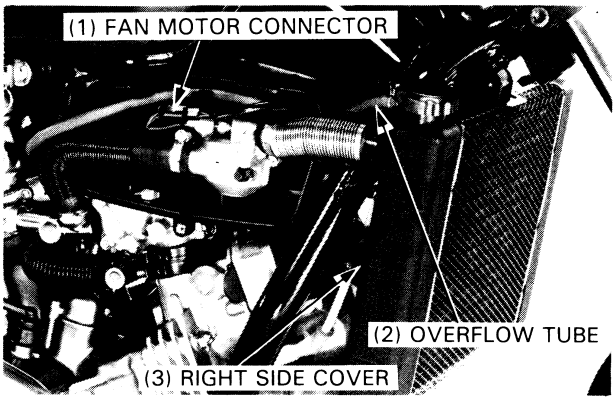
Install the right air chamber cover.
Fill the cooling system (page 6-3).

RADIATOR/COOLING FAN

REMOVAL

Remove the drain plug and drain the coolant (page 6-3).

Disconnect the overflow tube at the radiator filler neck.
Remove the right air chamber cover (page 6-3).
Disconnect the fan motor connector.
Remove the radiator right side cover.

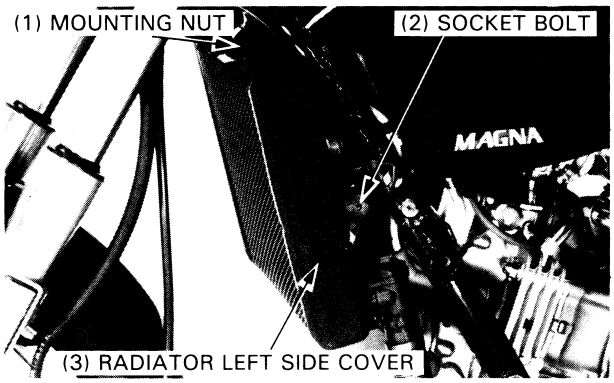


Disconnect the horn wire terminals from the horn, then remove the horn.

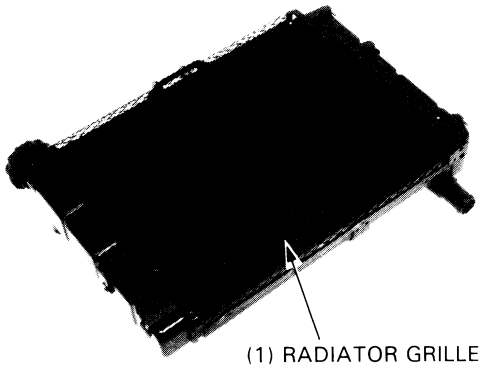
Remove the radiator left side cover.
Remove the radiator socket bolts and upper mounting nut.
Remove the radiator while pulling the upper and lower hoses off.

CAUTION

- *Be careful not to damage the radiator fins during removal.*

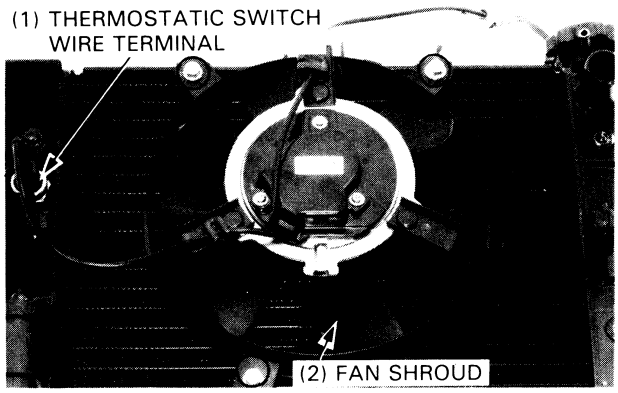


Remove the radiator grill.



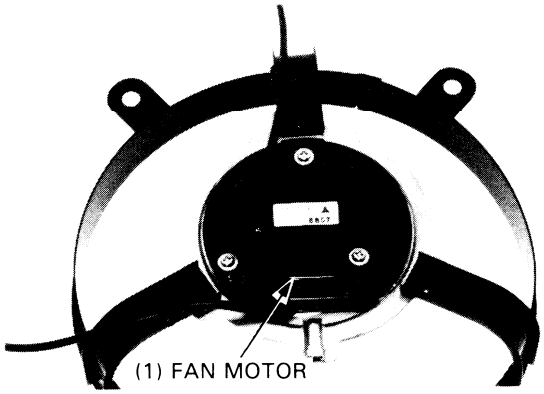
DISASSEMBLY

Disconnect the thermostatic switch wire terminal.
Remove the fan shroud with the fan and motor by removing three bolts.



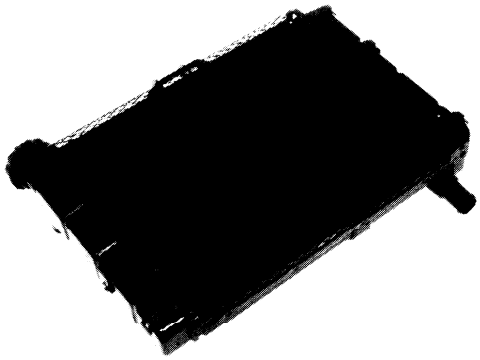
Remove the fan blade nut and washer.
Remove the cooling fan from the motor shaft.

Remove the fan motor from the shroud by removing the three nuts.



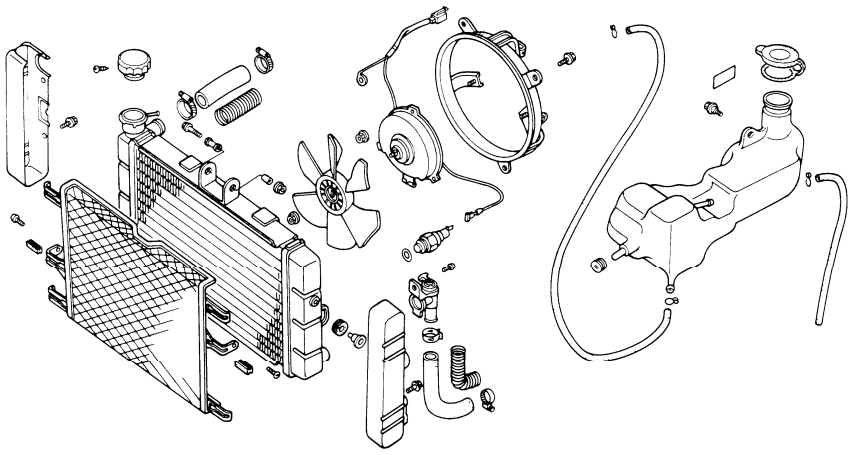
RADIATOR INSPECTION

Inspect the radiator soldered joints and seams for leaks.
Blow dirt out from between core fins with compressed air.
If insects, etc,. are clogging the radiator, wash them off with low pressure water.



ASSEMBLY/INSTALLATION

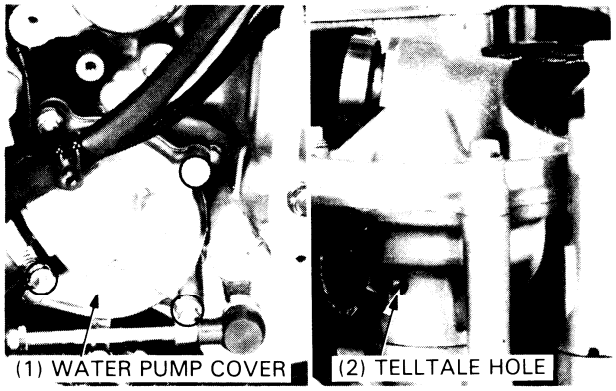
Assemble and install the radiator in the reverse order of removal.
After installation, fill the cooling system (page 6-3).



WATER PUMP

MECHANICAL SEAL INSPECTION

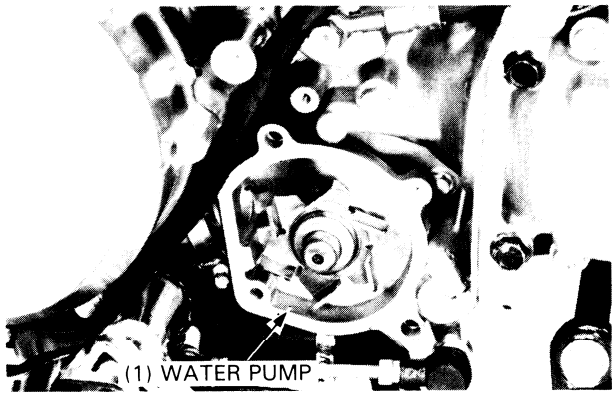
Remove the crankcase rear cover.
Inspect the telltale hole for signs of coolant leakage.
Replace the water pump as an assembly if necessary.



REMOVAL

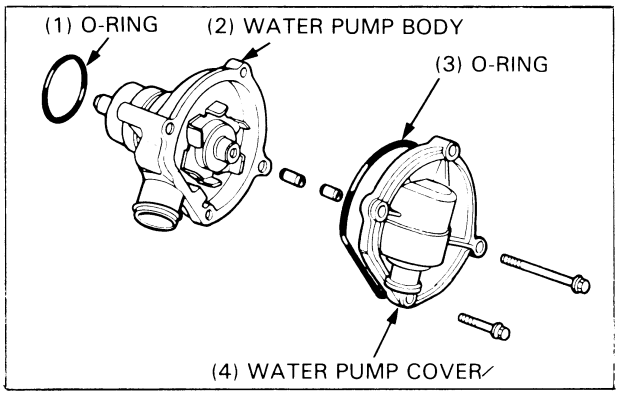
Remove the drain plug from the lower left frame and drain the coolant.
Remove the drain bolt at the water pump and drain the coolant from the cylinders.
Disconnect the water hose from the water pump cover.
Remove the water pump cover bolts and cover.

Disconnect the water hose from the water pump body.
Pull water pump off the crankcase.



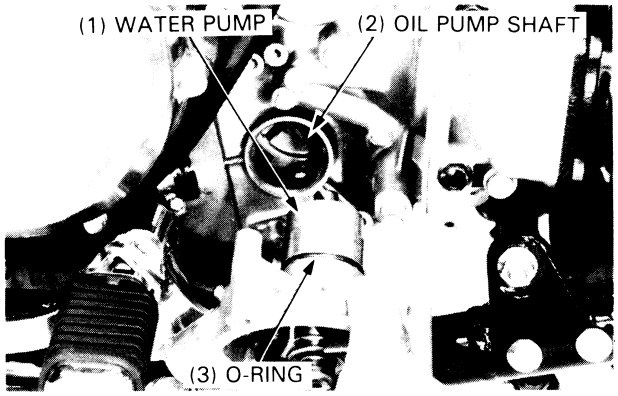
INSPECTION

Check the water pump for leakage or bearing deterioration.
Replace the water pump as an assemble if necessary.

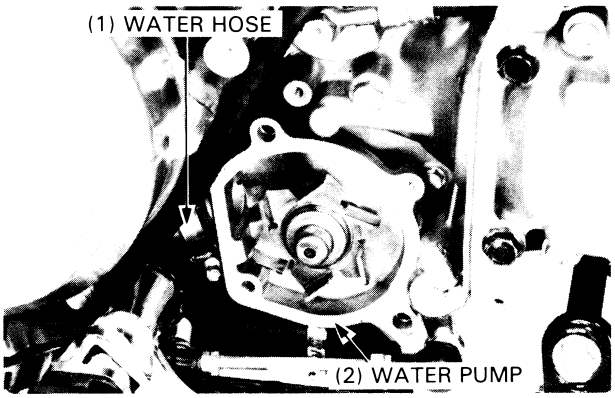


INSTALLATION

Apply a coat of clean engine oil to a new O-ring and install it in the water pump groove.
Align the water pump shaft groove with the oil pump shaft and insert the water pump in the crankcase.

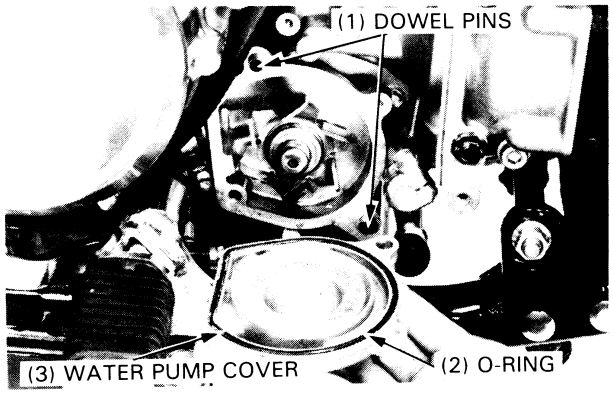


Connect the water hose to the water pump body and tighten the hose band.



Install the dowel pins and install a new O-ring in the groove of the water pump cover.
Install the water pump cover and torque the bolts.

TORQUE: 7.5—10.5 N·m (0.75—1.05 kg-m, 6—8 ft-lb)



Connect the water hose and tighten all the hose bands.
Install the crankcase rear cover.
Tighten the drain plug at the left sub-frame.
Fill the system with a 50—50 mixture of distilled water and ethylene glycol (page 6-3).