

2. LUBRICATION

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SERVICE INFORMATION

⚠ WARNING

- If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.*

CAUTION

- Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.*

GENERAL

- The oil pump can be serviced after removing the engine from the frame.

SPECIFICATIONS

Engine oil

Oil capacity	2.8 lit (2.94 US qt, 2.46 Imp qt) after disassembly. 2.3 lit (2.43 US qt, 2.02 Imp qt) at oil filter and oil change. 2.2 lit (2.32 US qt, 1.94 Imp qt) after draining.															
Oil recommendation	<p>HONDA 4 stroke oil or equivalent API service classification: SE or SF VISCOSITY: SAE 10W—40</p> <p>Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.</p> <div><p>OIL VISCOSITIES</p><p>The chart displays four horizontal bars representing different oil grades and their suitable temperature ranges. The top bar is SAE 20W-50, followed by SAE 20W-40, then SAE 10W-40, and the bottom bar is SAE 10W-30. The x-axis has two scales: Fahrenheit (°F) from 0 to 100 and Celsius (°C) from -20 to 40.</p><table><caption>Oil Viscosities Temperature Ranges</caption><tr><th>SAE Grade</th><th>Approx. Temp Range (°F)</th><th>Approx. Temp Range (°C)</th></tr><tr><td>SAE 20W-50</td><td>0 - 100</td><td>-20 - 40</td></tr><tr><td>SAE 20W-40</td><td>0 - 90</td><td>-20 - 35</td></tr><tr><td>SAE 10W-40</td><td>-10 - 80</td><td>-20 - 30</td></tr><tr><td>SAE 10W-30</td><td>-10 - 70</td><td>-20 - 25</td></tr></table></div>	SAE Grade	Approx. Temp Range (°F)	Approx. Temp Range (°C)	SAE 20W-50	0 - 100	-20 - 40	SAE 20W-40	0 - 90	-20 - 35	SAE 10W-40	-10 - 80	-20 - 30	SAE 10W-30	-10 - 70	-20 - 25
SAE Grade	Approx. Temp Range (°F)	Approx. Temp Range (°C)														
SAE 20W-50	0 - 100	-20 - 40														
SAE 20W-40	0 - 90	-20 - 35														
SAE 10W-40	-10 - 80	-20 - 30														
SAE 10W-30	-10 - 70	-20 - 25														

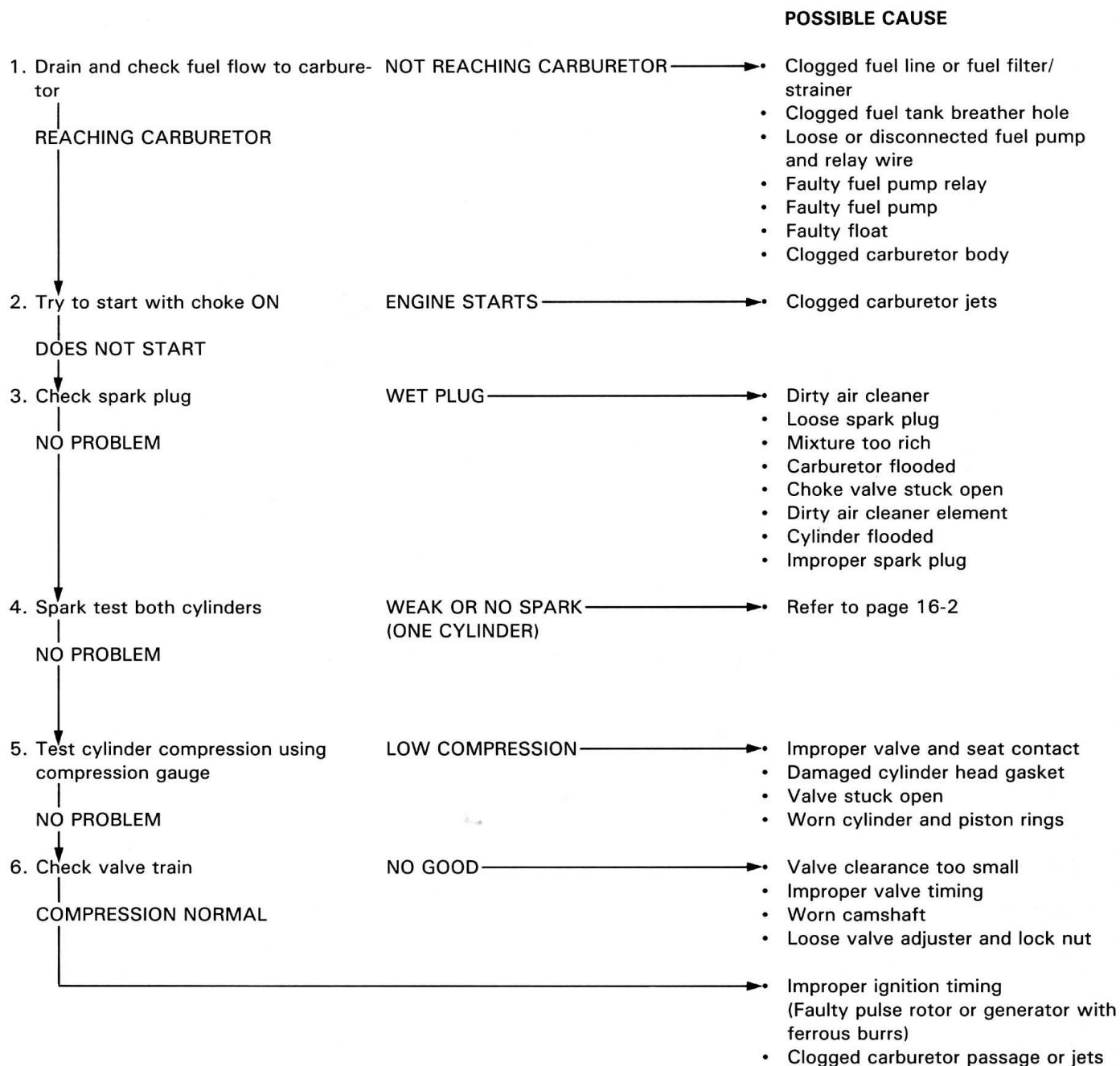
Oil pump

ITEM	STANDARD	SERVICE LIMIT
Rotor tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)
Pump body clearance	0.15-0.22 mm (0.006-0.009 in)	0.35 mm (0.014 in)
Pump end clearance	0.02-0.07 mm (0.001-0.003 in)	0.10 mm (0.004 in)
Oil pressure	441 kPa (4.5 kg/cm ² , 64 psi) at 6,000 rpm (80°C/176°F)	—

TORQUE VALUES

Oil pressure switch	12 N•m (1.2 kg-m, 9 ft-lb) Apply sealant to the threads
Engine oil drain bolt	35 N•m (3.5 kg-m, 25 ft-lb)
Oil filter	10 N•m (1.0 kg-m, 7.2 ft-lb)

ENGINE IS HARD TO START OR SOON STOPS



ENGINE OIL LEVEL

Place the motorcycle on its center stand and shift into neutral.

Start the engine and let it idle for a few minutes.

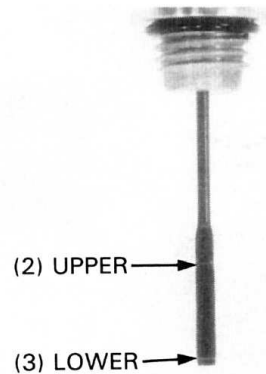
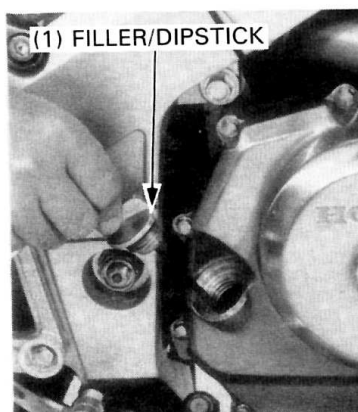
Stop the engine, remove the oil filler cap/dipstick and wipe it clean.

Check the oil level with the oil filler cap/dipstick by inserting it without screwing it in.

NOTE

- Do not screw the cap in when making this check.

If the oil level is below the lower level mark on the dipstick, fill to the upper level mark with the recommended oil. Check the O-ring for damage.



ENGINE OIL CHANGE

NOTE

- Change the engine oil with the engine warm and the motorcycle on its side stand to assure complete and rapid draining.

Remove the oil filler cap/dipstick and drain bolt. With the engine stop switch OFF, start the starter motor for few seconds to drain any oil which may be left in the engine.

NOTE

- Do not operate the motor for more than few seconds.

After the oil has drained, check that the drain bolt sealing washer is in good condition, and install the bolt.

TORQUE: 35 N·m (3.5 kg-m, 25 ft-lb)

Fill the crankcase with the correct quantity of the recommended oil.

OIL CAPACITY:

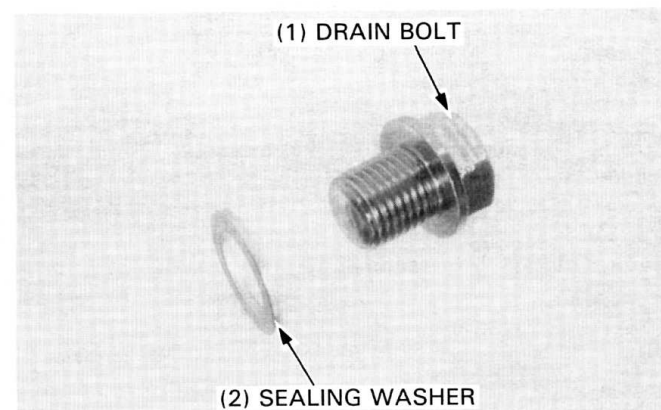
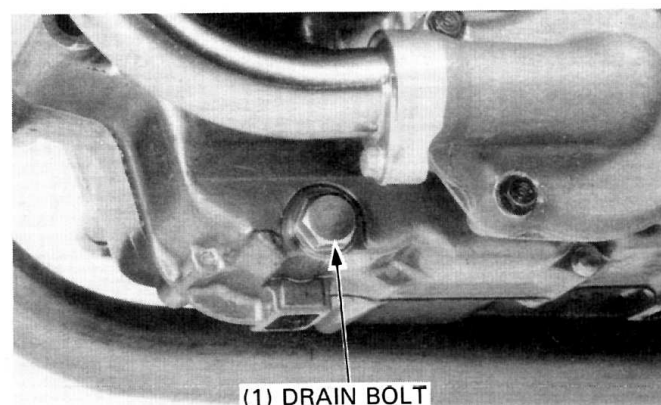
- 2.8 lit (2.94 US qt, 2.46 Imp qt) after disassembly
- 2.3 lit (2.43 US qt, 2.02 Imp qt) at oil filter and oil change
- 2.2 lit (2.32 US qt, 1.94 Imp qt) after draining

RECOMMENDED OIL: Honda 4-stroke oil or equivalent
API service classification: SE or SF
VISCOSITY: SAE 10W-40

Install the oil filler cap/dipstick. Start the engine and let it idle for 2-3 minutes.

Stop the engine and wait a few minutes, then check that the oil level is at the upper level mark.

Check that there are no oil leaks.



LUBRICATION

OIL FILTER CHANGE

Drain the engine oil (page 2-3).

CAUTION

- *Do not replace the oil filter when the exhaust system is hot.*

Remove the drive sprocket cover (page 8-2).

Remove the oil filter with a filter wrench.

TOOL:

Oil filter wrench 07HAA—PJ70100

Apply oil to the new oil filter O-ring and install the new oil filter.
Tighten the oil filter with a filter wrench.

TORQUE: 10 N·m (1.0 kg-m, 7.2 ft-lb)

Fill the engine with recommended oil (page 2-3).

OIL PRESSURE CHECK

Warm the engine up to normal operating temperature (approximately 80°C/176°F).

Stop the engine.

⚠ WARNING

- *If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area.*
- *The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.*

Remove the oil pressure switch cover and disconnect the switch wire.

Remove the oil pressure switch and connect an oil pressure gauge attachment and gauge to the pressure switch hole.
Check the oil level.

TOOLS:

Oil pressure gauge attachment 07510—4220100 or equivalent commercially available in U.S.A.
Oil pressure gauge 07506—3000000 or equivalent commercially available in U.S.A.

Start the engine and check the oil pressure at 6,000 rpm.

OIL PRESSURE:

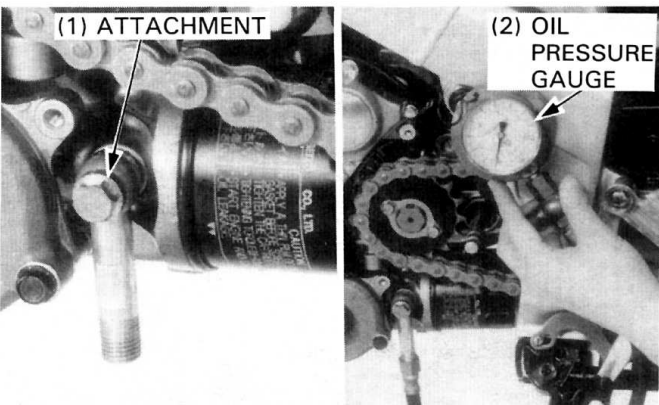
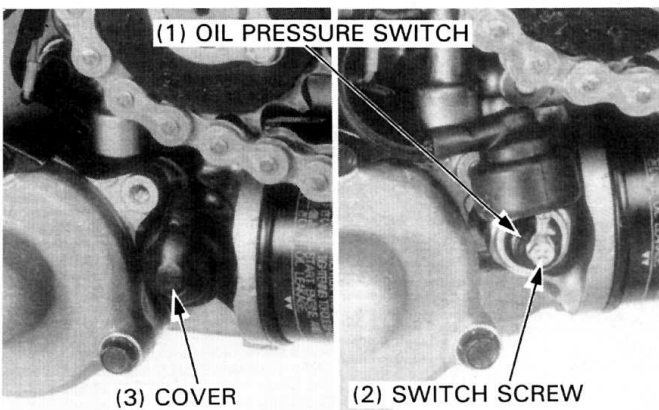
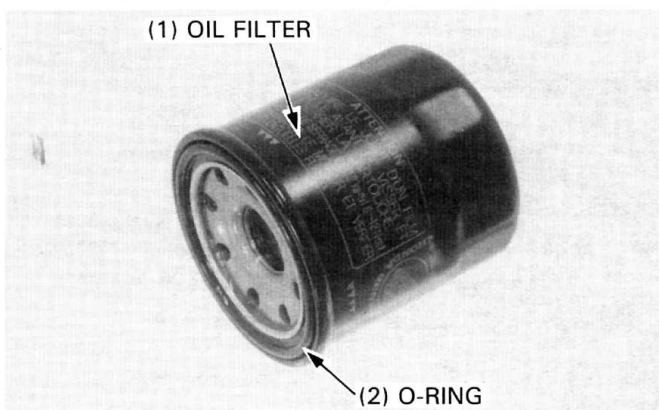
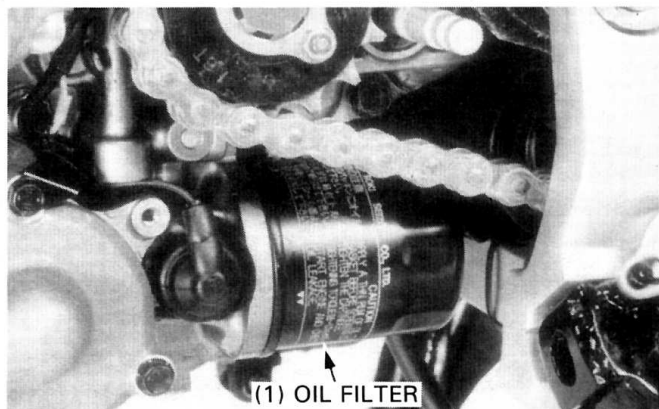
441 kPa (4.5 kg/cm², 64 psi) at 6,000 rpm (80°C/176°F)

Stop the engine.

Apply 3-BOND® sealant or equivalent to the pressure switch threads and install.

TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)

Connect the oil pressure switch wire and start the engine.
Check that the oil pressure warning indicator goes out after one or two seconds. If the oil pressure warning indicator stays on, stop the engine immediately and determine the cause.

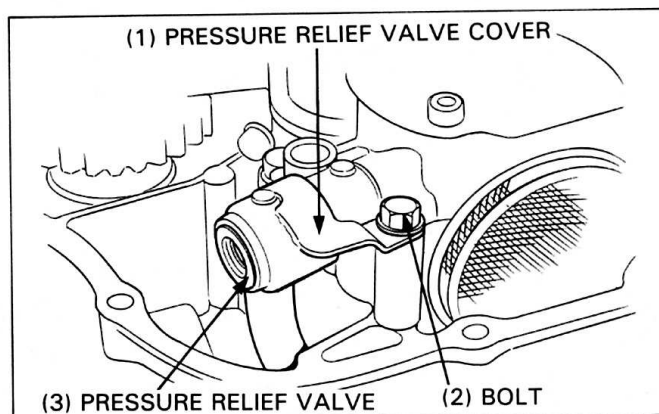


OIL PUMP/RELIEF VALVE

REMOVAL

Separate the crankcase (Section 11).

Remove the bolt and pressure relief valve cover.
Remove the pressure relief valve from the oil pump.



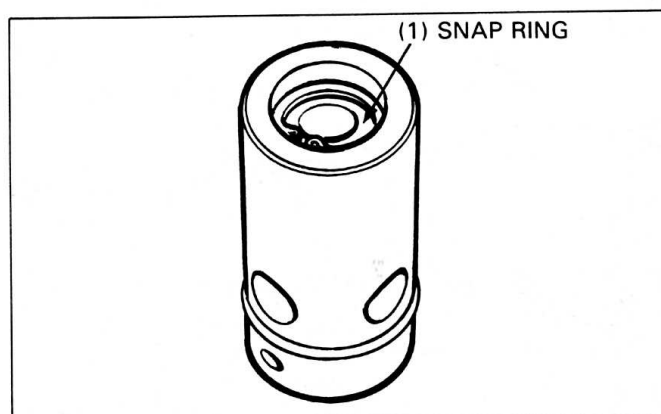
DISASSEMBLY

Remove the snap ring and disassemble the relief valve.

TOOL:

Snap ring pliers

07914—3230001



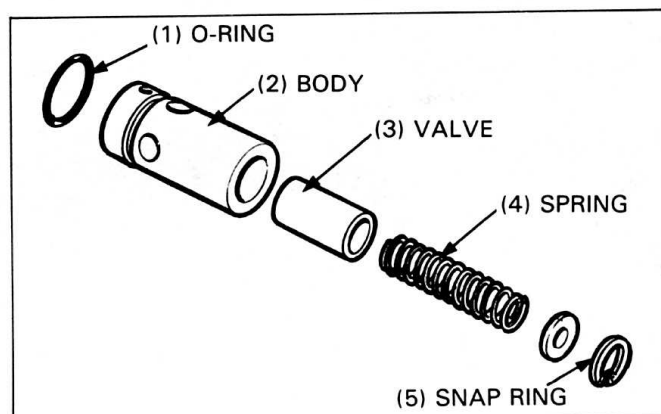
INSPECTION

Check the spring, O-ring and valve for fatigue, wear or damage.

Check the body for clogging or damage.

Clean all the parts and assemble them in the reverse order of disassembly.

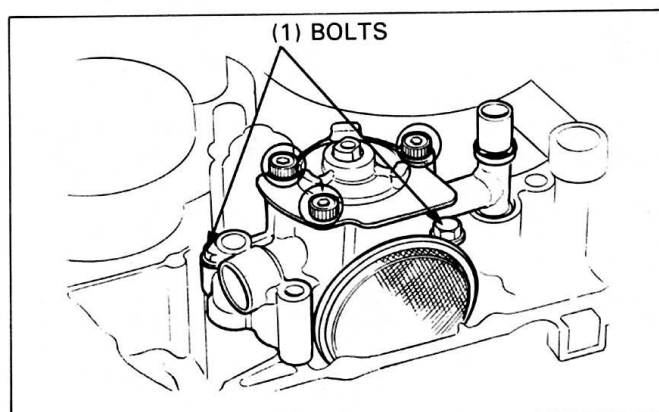
Replace the relief valve, if necessary, as an assembly.



OIL PUMP REMOVAL/DISASSEMBLY

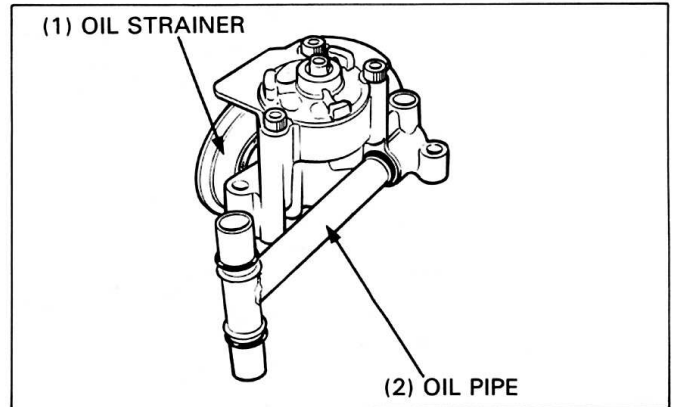
Remove the oil pump by removing two mounting bolts.

Remove the dowel pins and O-rings.



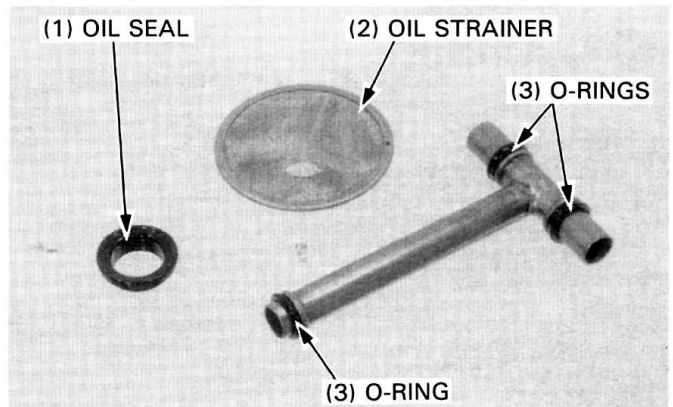
LUBRICATION

Remove the oil strainer and oil pipe from the oil pump.



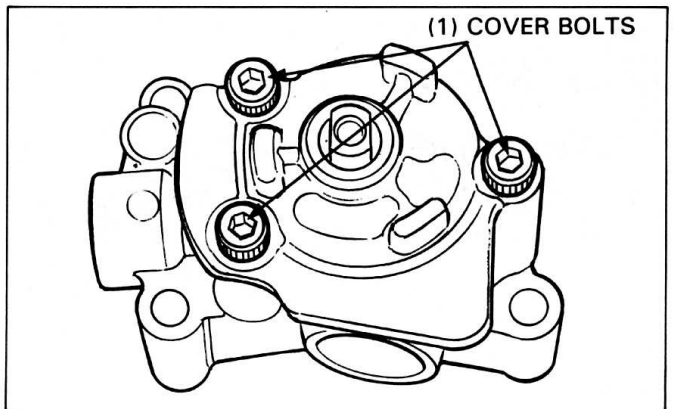
Check the O-rings and oil seal for fatigue or damage.

Clean the oil strainer and oil pipe with non-flammable or high flash point solvent.



Remove the three cover bolts.

Disassemble the parts and clean them with non-flammable or high flash point solvent.

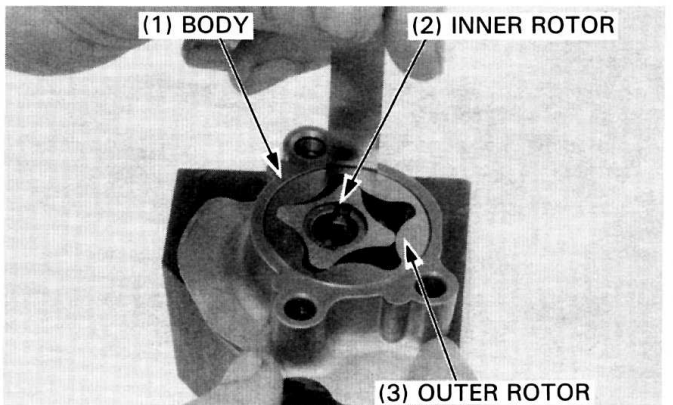


INSPECTION

Install the outer and inner rotors to the pump body.

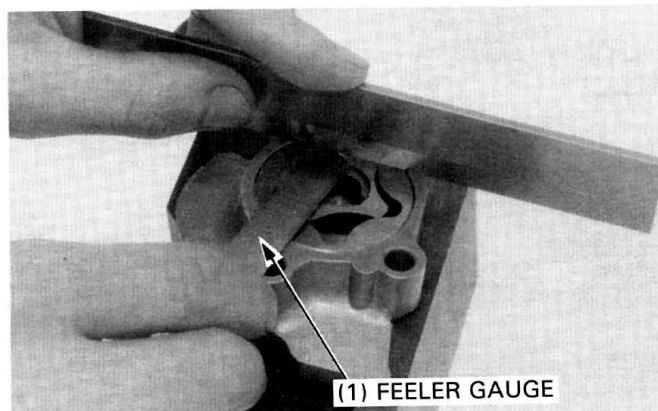
Measure the outer rotor-to-pump body clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)



Remove the oil pump shaft from the oil pump and measure the pump end clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

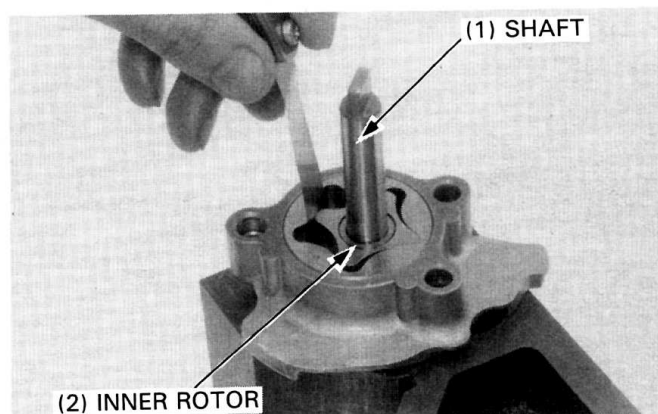


Temporarily install the shaft in the pump body.

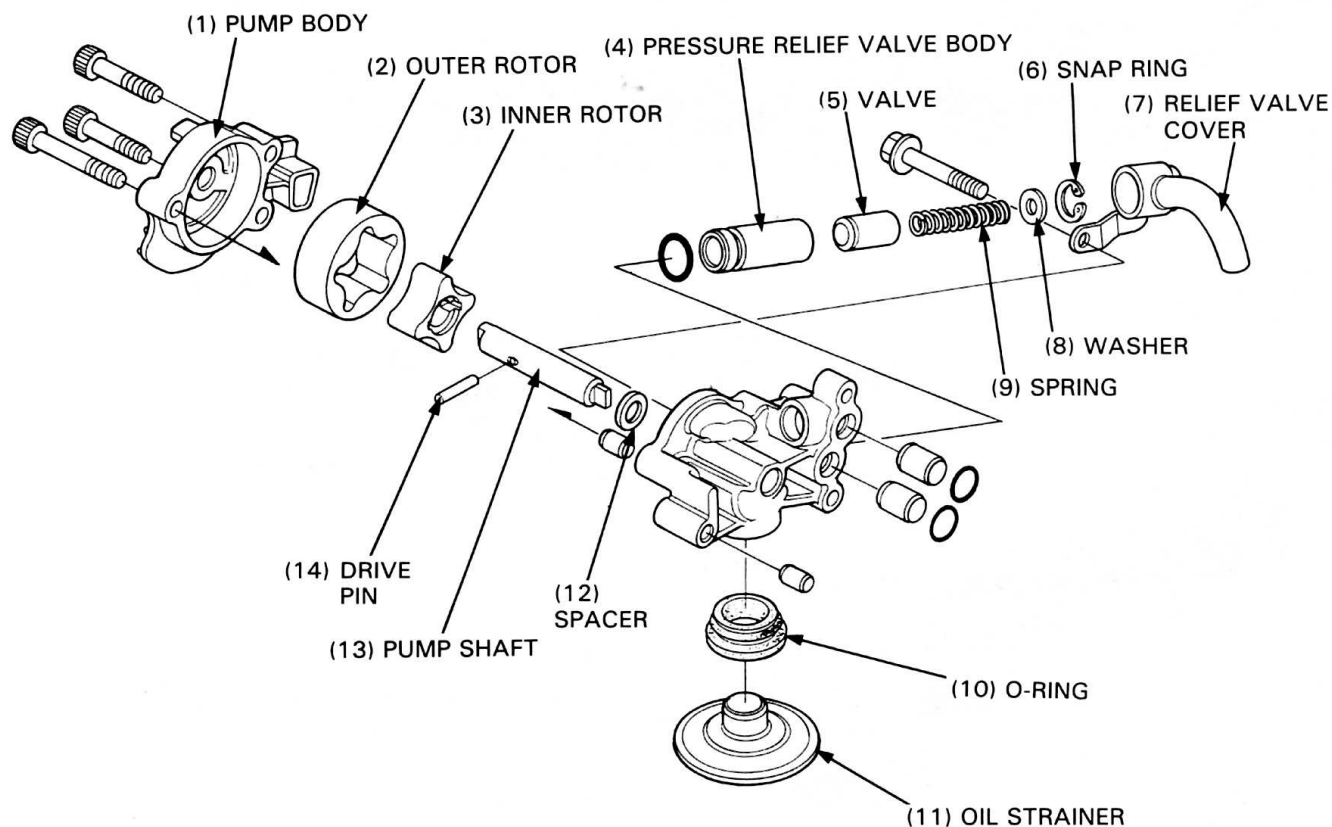
Measure the inner rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)

Replace the oil pump, if necessary as an assembly.



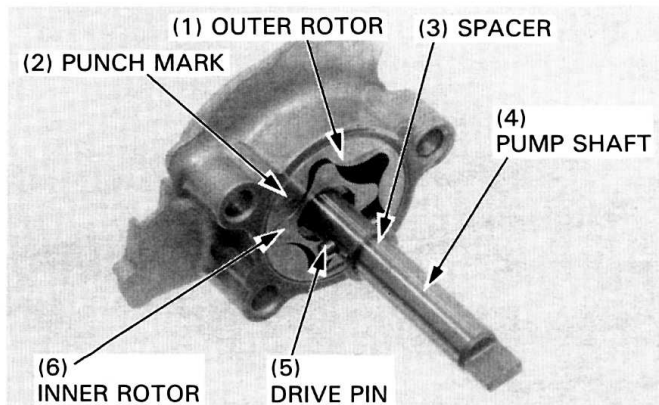
ASSEMBLY



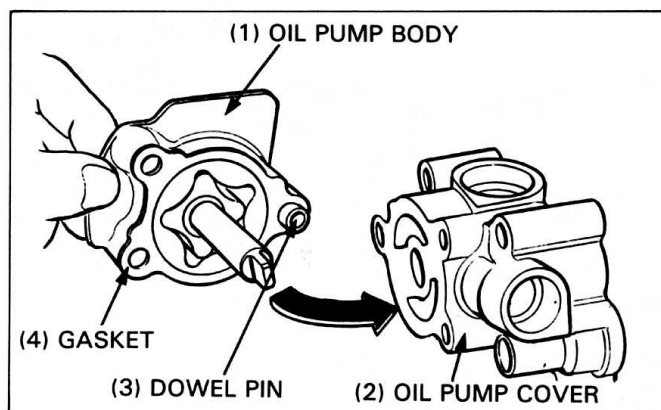
LUBRICATION

Install the outer rotor in the pump body with the punch mark facing the cover, then install the inner rotor. Install the drive pin and spacer on the shaft.

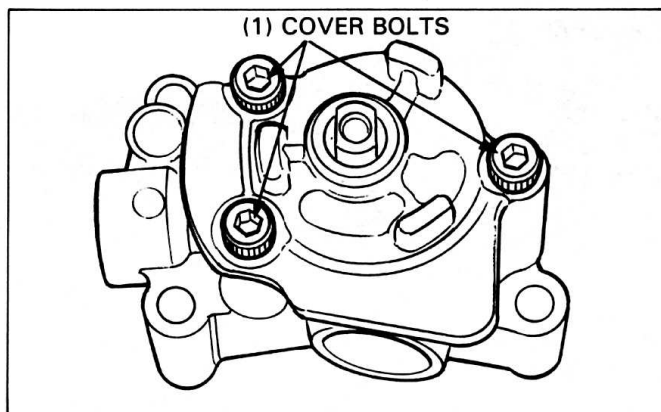
Install the shaft in the body, aligning the drive pin with the inner rotor groove.



Install the dowel pin and a new gasket on the pump body, then install the cover.



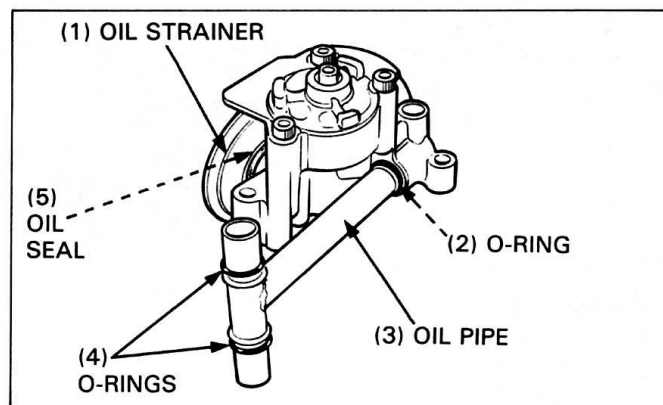
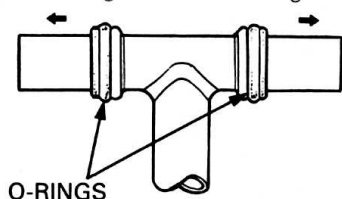
Tighten the cover bolts securely.



Install the O-rings, oil seal, oil strainer and oil pipe on the oil pump.

CAUTION

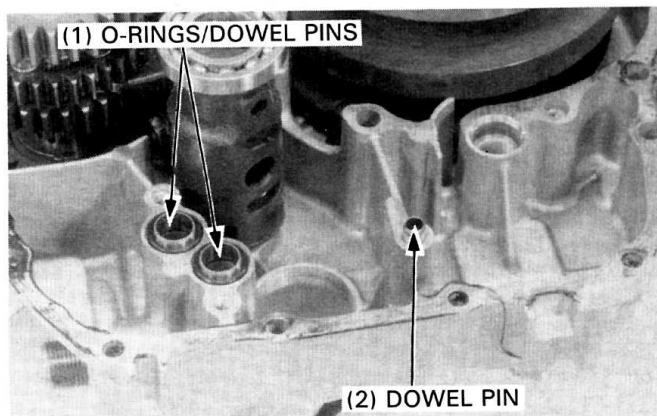
- Install the O-rings on the oil pipe with the tapered side facing out as shown, or the engine will be damaged.



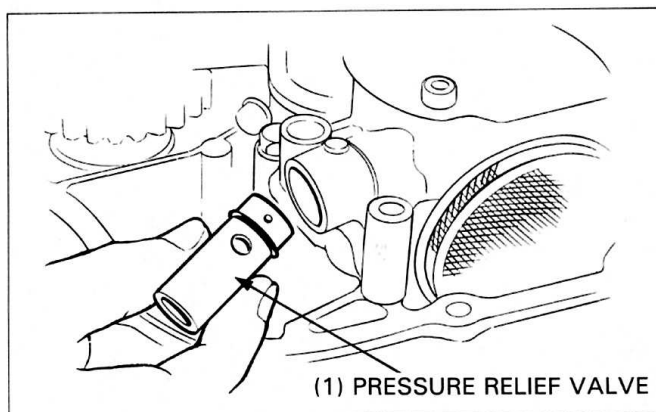
INSTALLATION

Install the dowel pins and new O-rings.

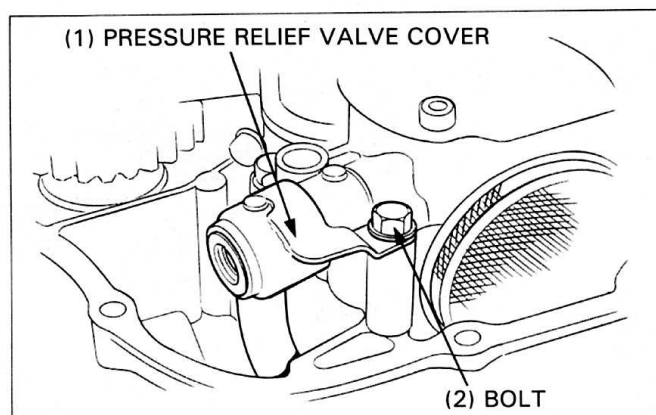
Install the oil pump as an assembly.



Assemble the pressure relief valve and install it in the oil pump.



Install the pressure relief valve cover with the bolt.
Assemble the crankcase (Section 11).



LUBRICATION

CONTROL CABLE LUBRICATION

Periodically disconnect the throttle and choke cable at their upper ends. Thoroughly lubricate the cables and their pivot points with a commercially available cable lubricant or a light weight oil.

LUBRICATION POINTS

Use general purpose grease when not otherwise specified here.

Apply oil or grease to the other sliding surfaces and cables not shown here.

