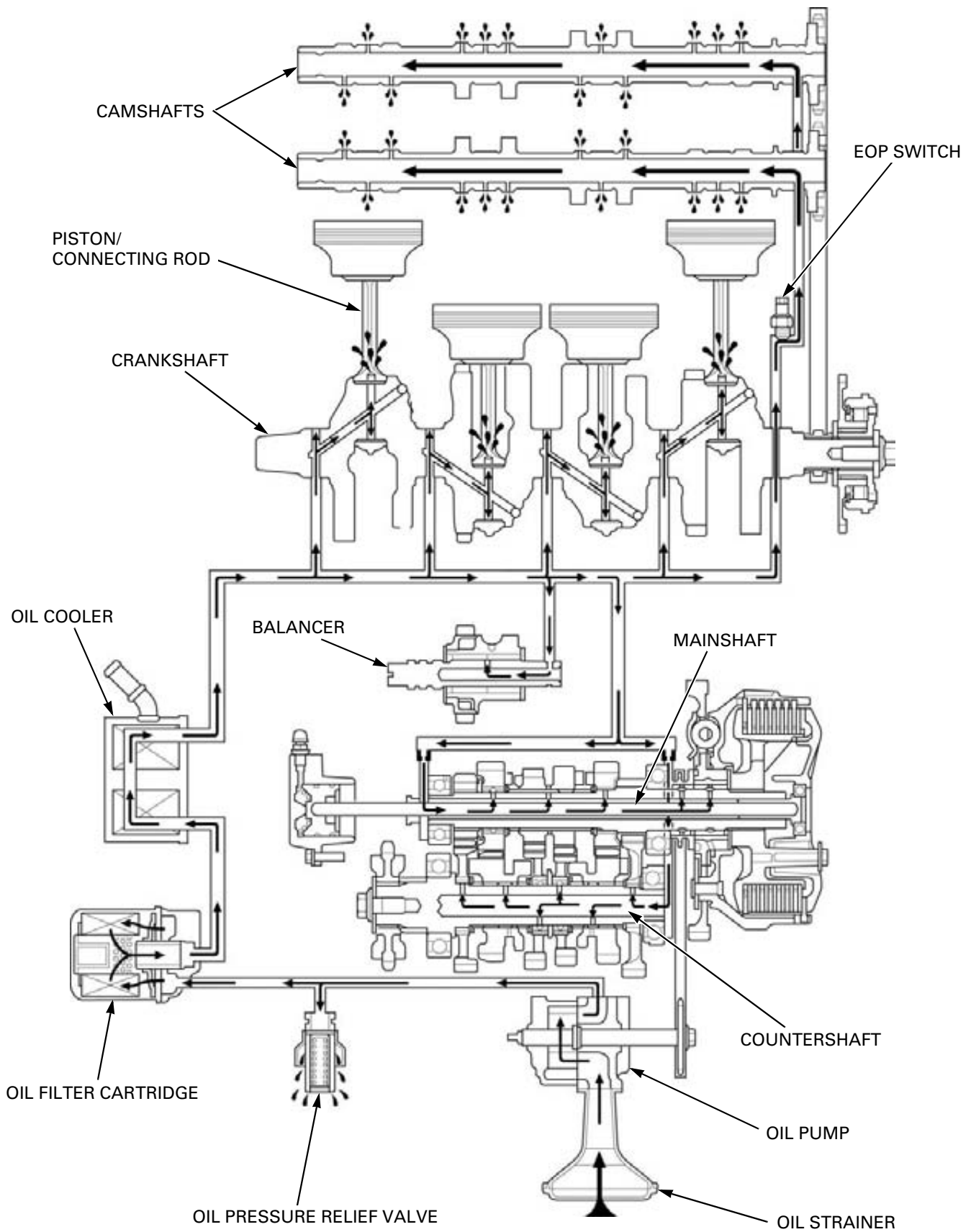


5. LUBRICATION SYSTEM

LUBRICATION SYSTEM DIAGRAM	5-2	OIL STRAINER/ PRESSURE RELIEF VALVE	5-6
SERVICE INFORMATION	5-3	OIL PUMP	5-8
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OIL PRESSURE INSPECTION.....	5-5		

LUBRICATION SYSTEM

LUBRICATION SYSTEM DIAGRAM



SERVICE INFORMATION

GENERAL

⚠ 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.

- The oil pump can be serviced with the engine installed in the frame.
- The service procedures in this section must be performed with the engine oil drained.
- When removing and installing the oil pump, use care not to allow dust or dirt to enter the engine.
- If any portion of the oil pump is worn beyond the specified service limits, replace the oil pump as an assembly.
- After the oil pump has been installed, check that there are no oil leaks and that oil pressure is correct.

SPECIFICATIONS



ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	2.7 liter (2.9 US qt, 2.4 Imp qt)	–
	After oil filter change	3.5 liter (3.7 US qt, 3.1 Imp qt)	–
	After disassembly	3.6 liter (3.8 US qt, 3.2 Imp qt)	–
Engine oil		Suggested oil: Honda "4-stroke motorcycle oil" or an equivalent Oil recommendation: API classification: SG or higher (except oils labeled as energy conserving on the circular API service label) Viscosity: SAE 10W-30 JASO T 903 standard: MA	–
Oil pressure at EOP (engine oil pressure) switch		510 kPa (5.2 kgf/cm ² , 74 psi) at 6,000 min ⁻¹ (rpm)/(80°C/176°F)	–
Oil pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.15 – 0.21 (0.006 – 0.008)	0.35 (0.014)
	Side clearance	0.04 – 0.09 (0.002 – 0.004)	0.17 (0.007)

TORQUE VALUES

- | | | |
|-------------------------------|-------------------------------|---------------------------------------|
| Oil pump assembly bolt | 8 N·m (0.8 kgf·m, 5.9 lbf·ft) | CT bolt |
| Oil pump driven sprocket bolt | 15 N·m (1.5 kgf·m, 11 lbf·ft) | Apply a locking agent to the threads. |

LUBRICATION SYSTEM

TOOLS

<p>Oil pressure gauge set 07506-3000001</p>  <p>or equivalent commercially available.</p>	<p>Oil pressure gauge attachment 07406-0030000</p>  <p>or equivalent commercially available.</p>
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TROUBLESHOOTING

Oil level too low

- Oil consumption
- External oil leak
- Worn piston rings
- Improperly installed piston rings
- Worn cylinders
- Worn valve stem seals
- Worn valve guide

Low oil pressure

- Oil level low
- Clogged oil strainer
- Internal oil leak
- Incorrect oil being used

No oil pressure

- Oil level too low
- Oil pressure relief valve stuck open
- Broken oil pump drive chain
- Broken oil pump drive or driven sprocket
- Damaged oil pump
- Internal oil leak

High oil pressure

- Oil pressure relief valve stuck closed
- Clogged oil filter, oil cooler gallery or metering orifice
- Incorrect oil being used

Oil contamination

- Oil or filter not changed often enough
- Worn piston rings

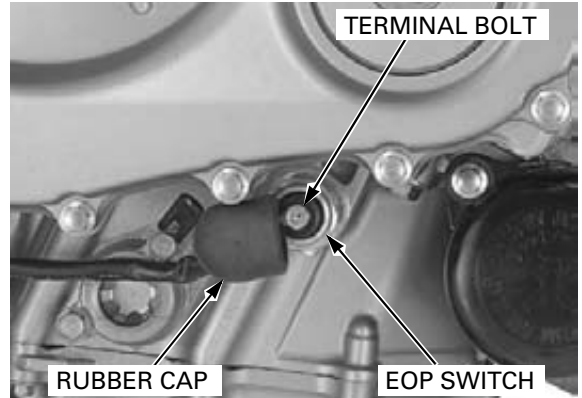
Oil emulsification

- Blown cylinder head gasket
- Leaky coolant passage
- Entry of water

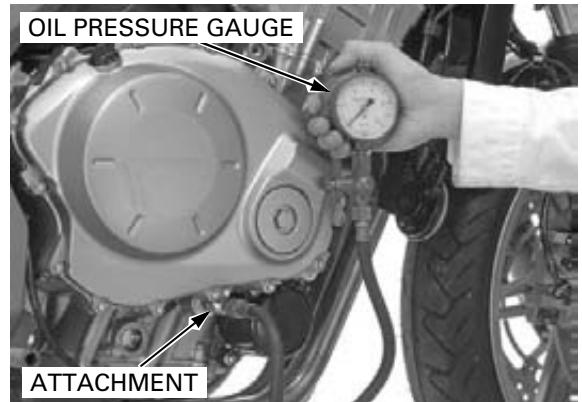
OIL PRESSURE INSPECTION

If the oil pressure indicator light remains on while the engine is running, check the indicator system before checking the oil pressure.

Remove the rubber cap from the EOP switch.
 Remove the terminal bolt and disconnect the EOP switch wire.
 Remove the EOP switch while holding the switch base.



Install the oil pressure gauge attachment to the switch base.
 Connect the oil pressure gauge to the oil pressure gauge attachment.



TOOLS:

- Oil pressure gauge set** **07506-3000001 or equivalent commercially available**
- Oil pressure gauge attachment** **07406-0030000 or equivalent commercially available**

Check the oil level and add the recommended oil if necessary (page 4-16).

Warm the engine to normal operating temperature (approximately 80°C/176°F) and increase the engine speed to 6,000 min⁻¹ (rpm) and read the oil pressure.

OIL PRESSURE:

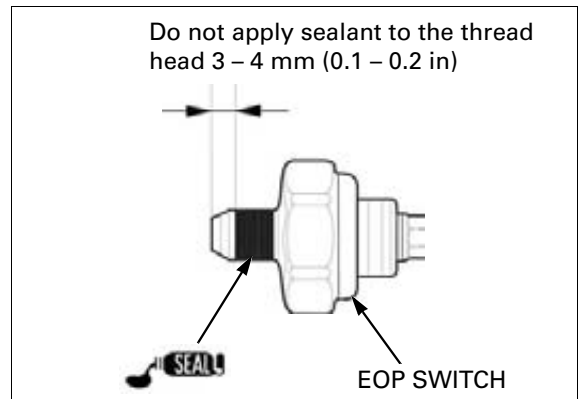
510 kPa (5.2 kgf/cm², 74 psi) at 6,000 min⁻¹ (rpm)/ (80°C/176°F)

Stop the engine and remove the tools.

Apply a sealant (Three Bond 1207B) to the EOP switch threads as shown.

Install the EOP switch (page 21-19).

Check the oil level and add the recommended oil if the level is below the lower level line (page 4-16).

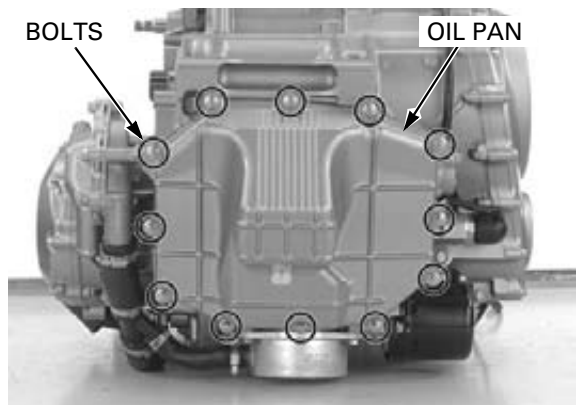


LUBRICATION SYSTEM

OIL STRAINER/PRESSURE RELIEF VALVE

REMOVAL

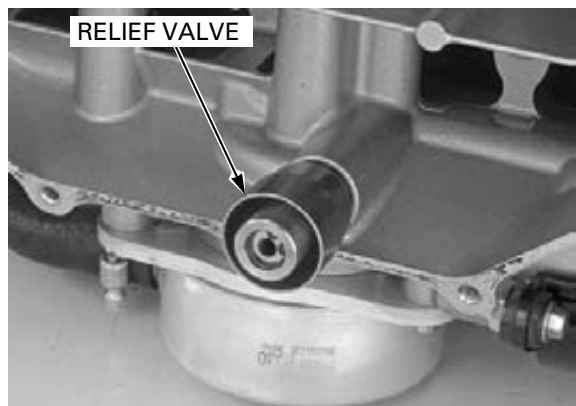
Drain the engine oil (page 4-16).
Remove the exhaust pipe (page 3-13).
Remove the flange bolts and the oil pan.



Remove the oil strainer and packing.
Clean the oil strainer screen.



Remove the pressure relief valve and O-ring.

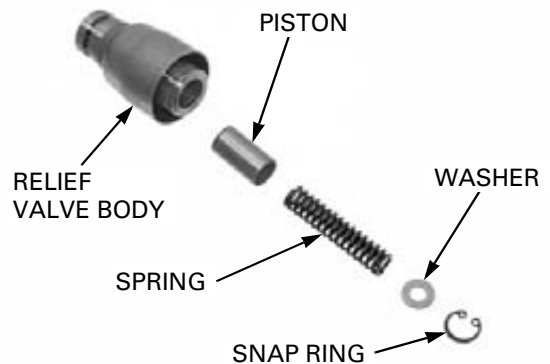


INSPECTION

Check the operation of the pressure relief valve by pushing on the piston.
Disassemble the relief valve by removing the snap ring.

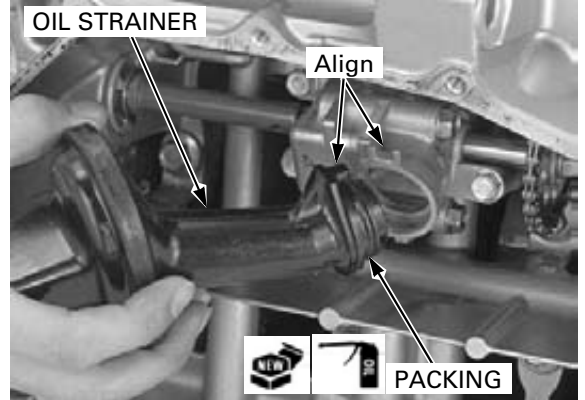
Inspect the piston for wear, unsmooth movement or damage.
Inspect the spring for fatigue or damage.

Assemble the relief valve in the reverse order of disassembly.

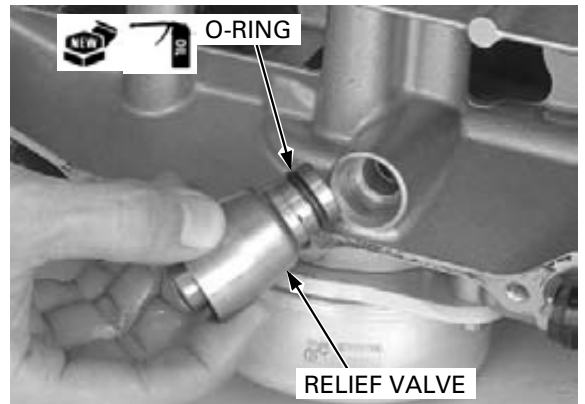


INSTALLATION

Apply oil to new packing and install it onto the oil strainer flange.
 Install the oil strainer into the oil pump while aligning the oil strainer boss with the groove of the oil pump.



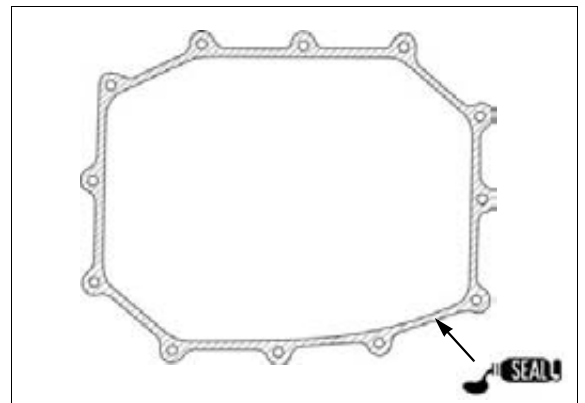
Apply oil to new O-ring and install it onto the relief valve.
 Install the relief valve into the crankcase.



Clean the oil pan mating surface thoroughly.

Do not apply more sealant than necessary.

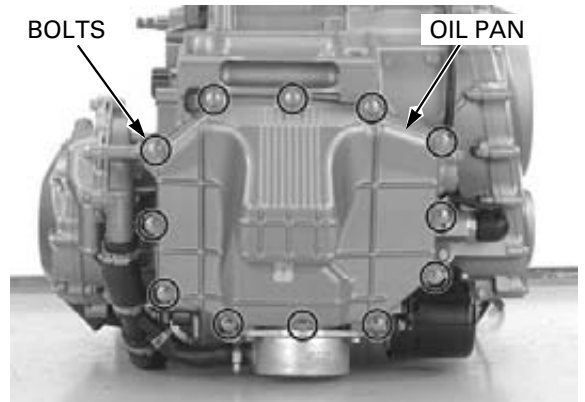
Apply sealant (Three Bond 1207B or an equivalent) to the mating surface.



Install the oil pan onto the lower crankcase.
 Install the flange bolts.
 Tighten the bolts in a crisscross pattern in two to three steps.

Install the exhaust pipe (page 3-13).
 Fill the crankcase with the recommended oil (page 4-16).

After installation, check that there are no oil leaks.



LUBRICATION SYSTEM

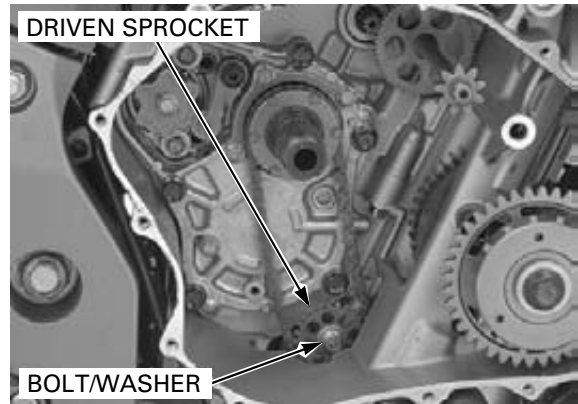
OIL PUMP

REMOVAL

Drain the engine oil (page 4-16).

Remove the clutch (page 10-17).

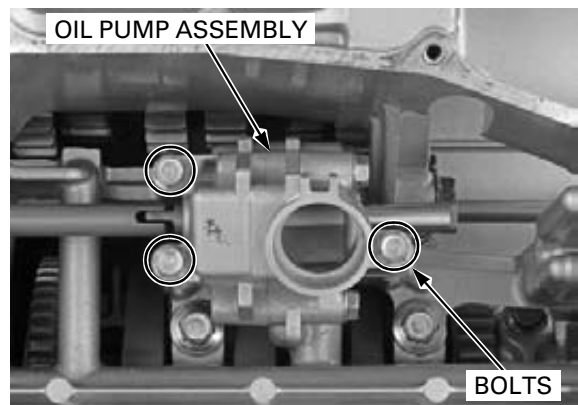
Remove the bolt/washer and oil pump driven sprocket.



Remove the oil pan (page 5-6).

Remove the following:

- Oil pump mounting bolts
- Oil pump assembly
- Dowel pins
- Oil pass collar/O-ring

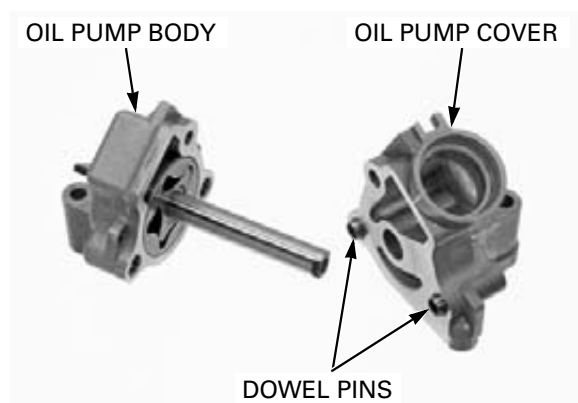


DISASSEMBLY

Remove the oil pump assembly bolts.

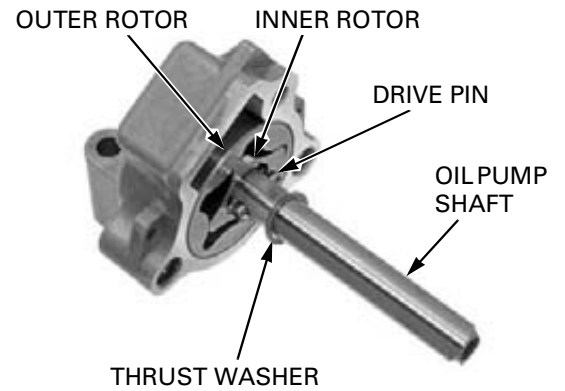


Remove the oil pump cover and dowel pins.



Remove the thrust washer, drive pin, oil pump shaft, outer rotor and inner rotor from the oil pump body.

Clean all disassembly parts thoroughly.



INSPECTION

If any portion of the oil pump is worn beyond the service limit, replace the oil pump as an assembly.

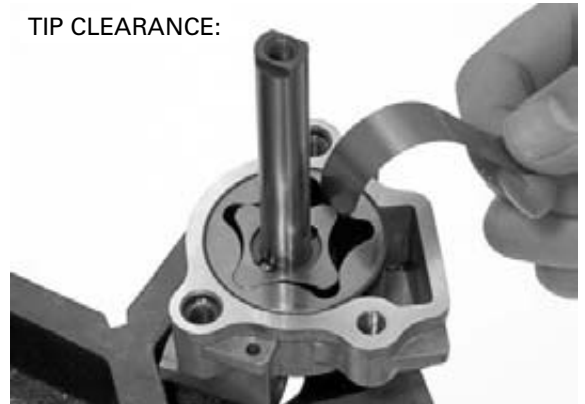
Temporarily install the outer and inner rotors into the oil pump body.

Temporarily install the drive pin and oil pump shaft.

Measure the rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)

TIP CLEARANCE:



Measure the pump body clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)

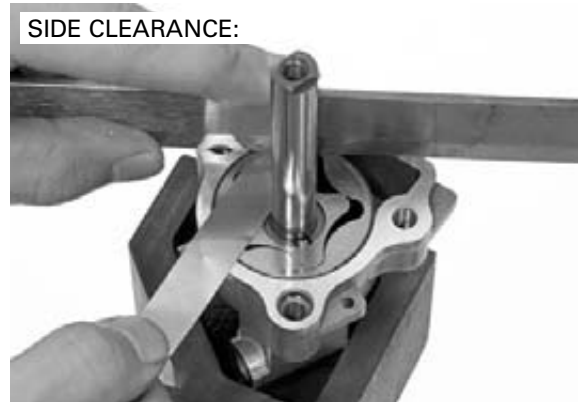
BODY CLEARANCE:



Measure the side clearance using a straight edge and feeler gauge.

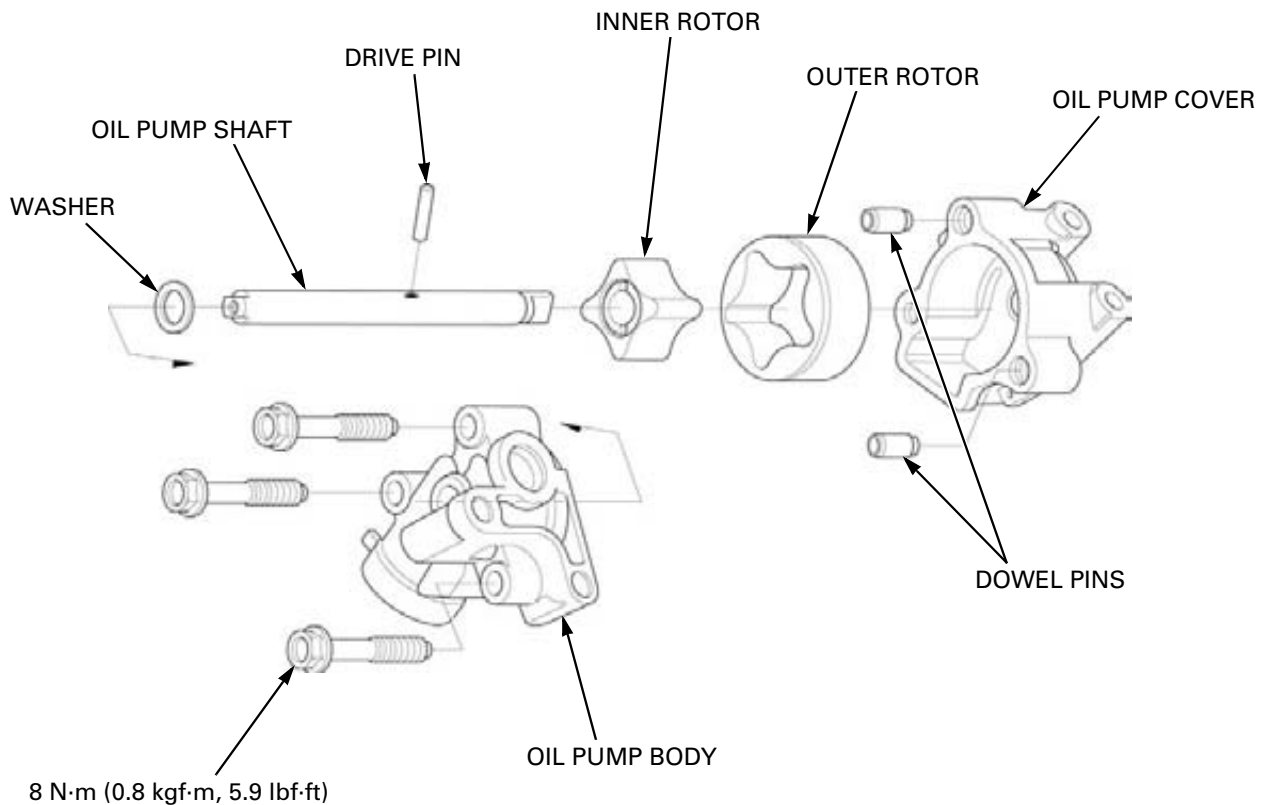
SERVICE LIMIT: 0.17 mm (0.007 in)

SIDE CLEARANCE:

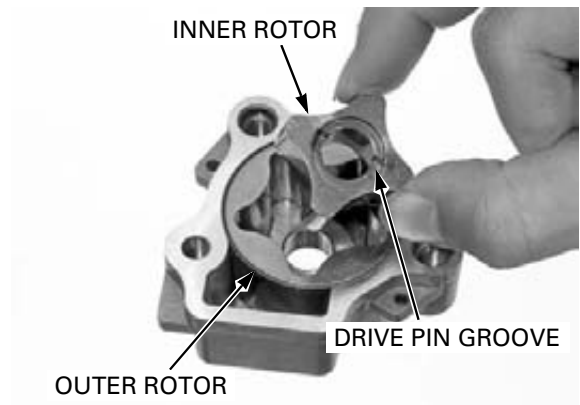


LUBRICATION SYSTEM

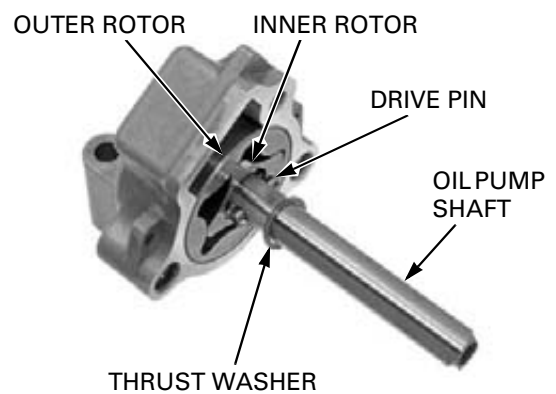
ASSEMBLY



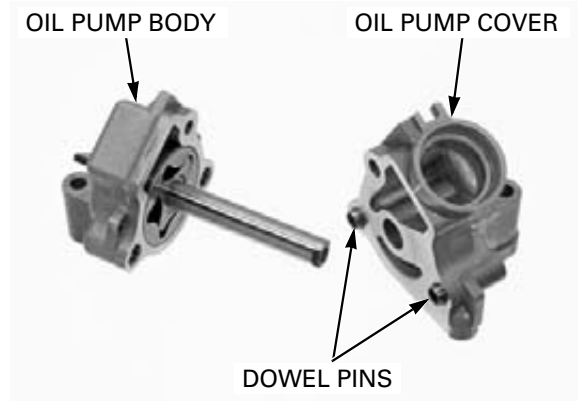
Dip all parts in clean engine oil.
Install the outer rotor into the oil pump body.
Install the inner rotor into the outer rotor with its drive pin groove facing the oil pump cover.



Install the oil pump shaft through the inner rotor and oil pump body.
Install the drive pin into the hole in the oil pump shaft and align the drive pin with the groove in the inner rotor.
Install the thrust washer.



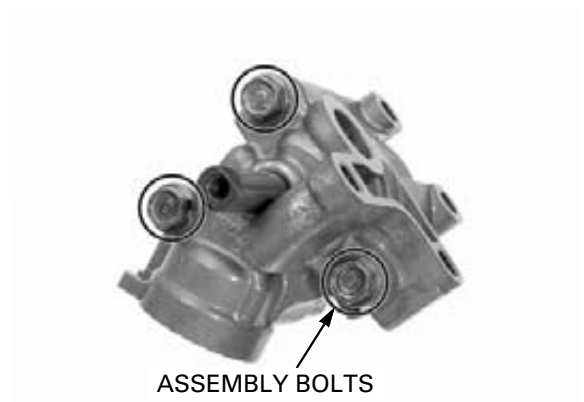
Install the dowel pins into the oil pump cover.
Install the oil pump cover to the oil pump body.



Install and tighten the oil pump assembly bolts to the specified torque.

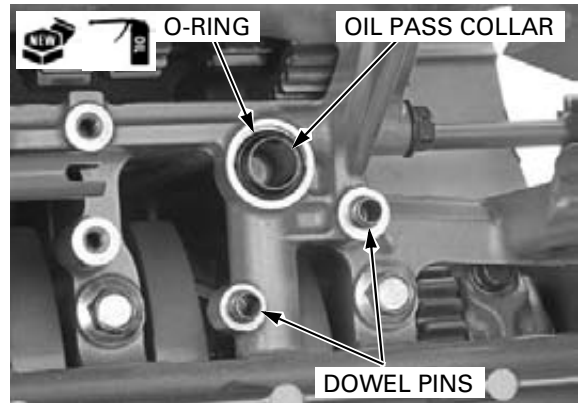
TORQUE: 8 N·m (0.8 kgf·m, 5.9 lbf·ft)

Check the oil pump operation by turning the pump shaft.
If necessary, reassemble the oil pump.

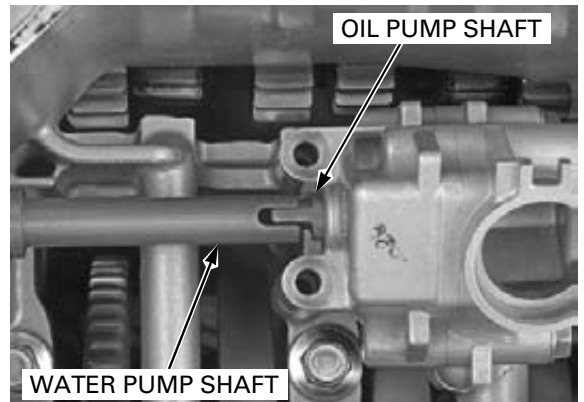


INSTALLATION

Install the dowel pins.
Apply oil to new O-ring and install it with the oil pass collar.

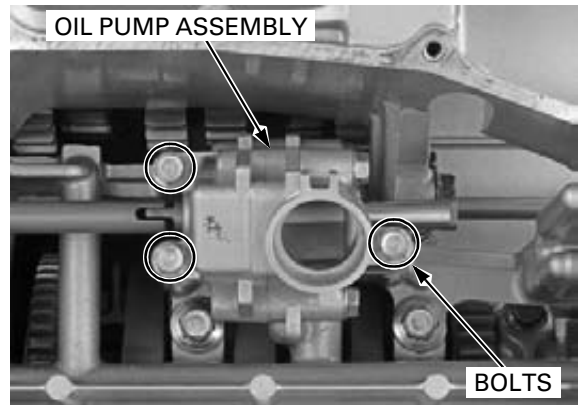


Install the oil pump assembly onto the crankcase while aligning the oil pump shaft lug with the water pump shaft groove by turning the oil pump shaft.



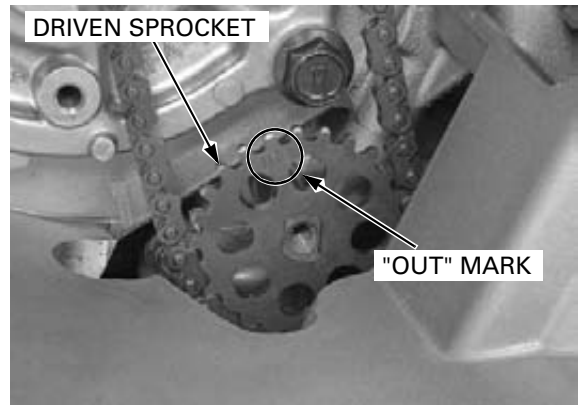
LUBRICATION SYSTEM

Install and tighten the flange bolts securely.



Apply oil to the oil pump driven sprocket and drive chain

Install the driven sprocket with its "OUT" mark facing out.



Apply a locking agent to the oil pump driven sprocket bolt threads.

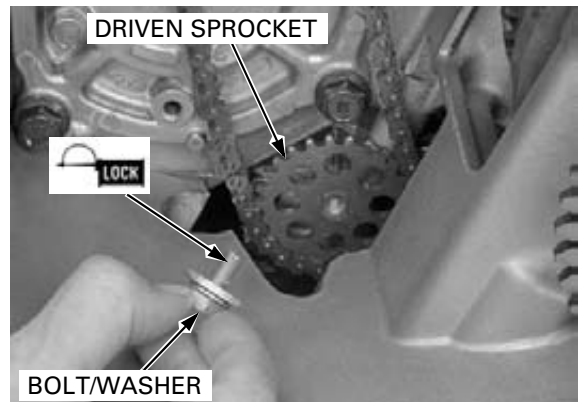
Install and tighten the driven sprocket bolt/washer to the specified torque.

TORQUE: 15 N-m (1.5 kgf-m, 11 lbf-ft)

Install the right crankcase cover (page 10-24).

After installation, fill the crankcase with the recommended oil (page 4-16) and check that there is no oil leaks.

Check the oil pressure (page 5-5).



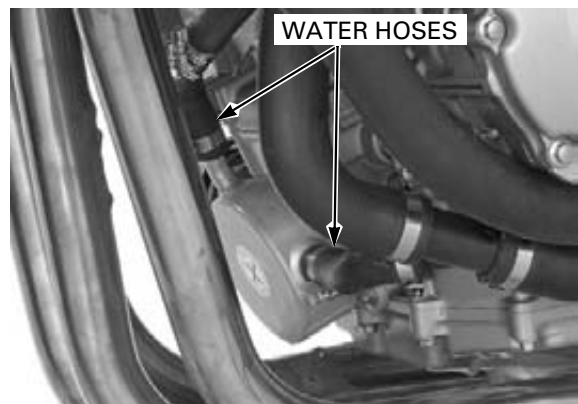
OIL COOLER

REMOVAL

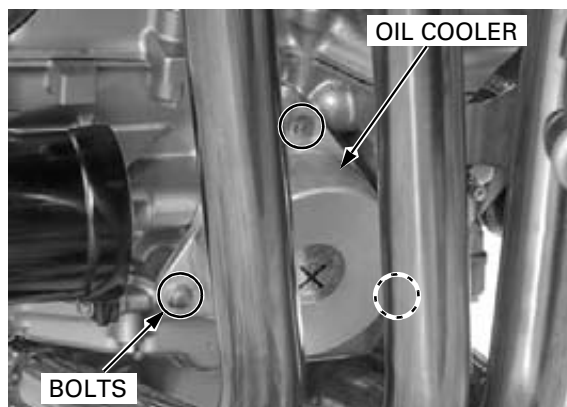
Drain the engine oil (page 4-16).

Drain the coolant from the system (page 7-7).

Loosen the hose band screws and disconnect the oil cooler water hoses from the oil cooler.

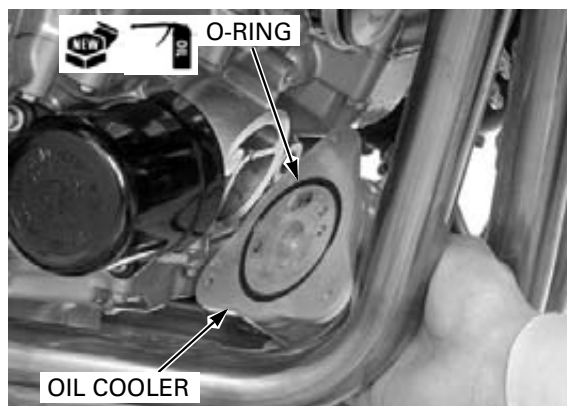


Remove the three bolts and the oil cooler.
Remove the O-ring from the oil cooler.
Check the oil cooler for damage.

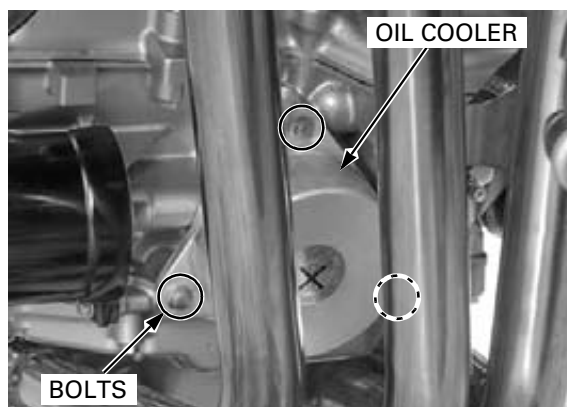


INSTALLATION

Coat a new O-ring with engine oil and install it into the oil cooler groove.

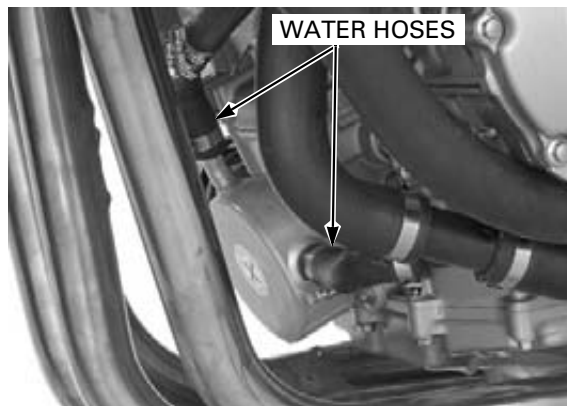


Install the oil cooler onto the crankcase.
Install and tighten the three bolts.



Connect the oil cooler water hoses to the oil cooler and tighten the hose clamp screws securely.

Fill the crankcase with the recommended oil (page 4-16) and check that there is no oil leaks.
Fill the cooling system and bleed any air (page 7-7).



MEMO
