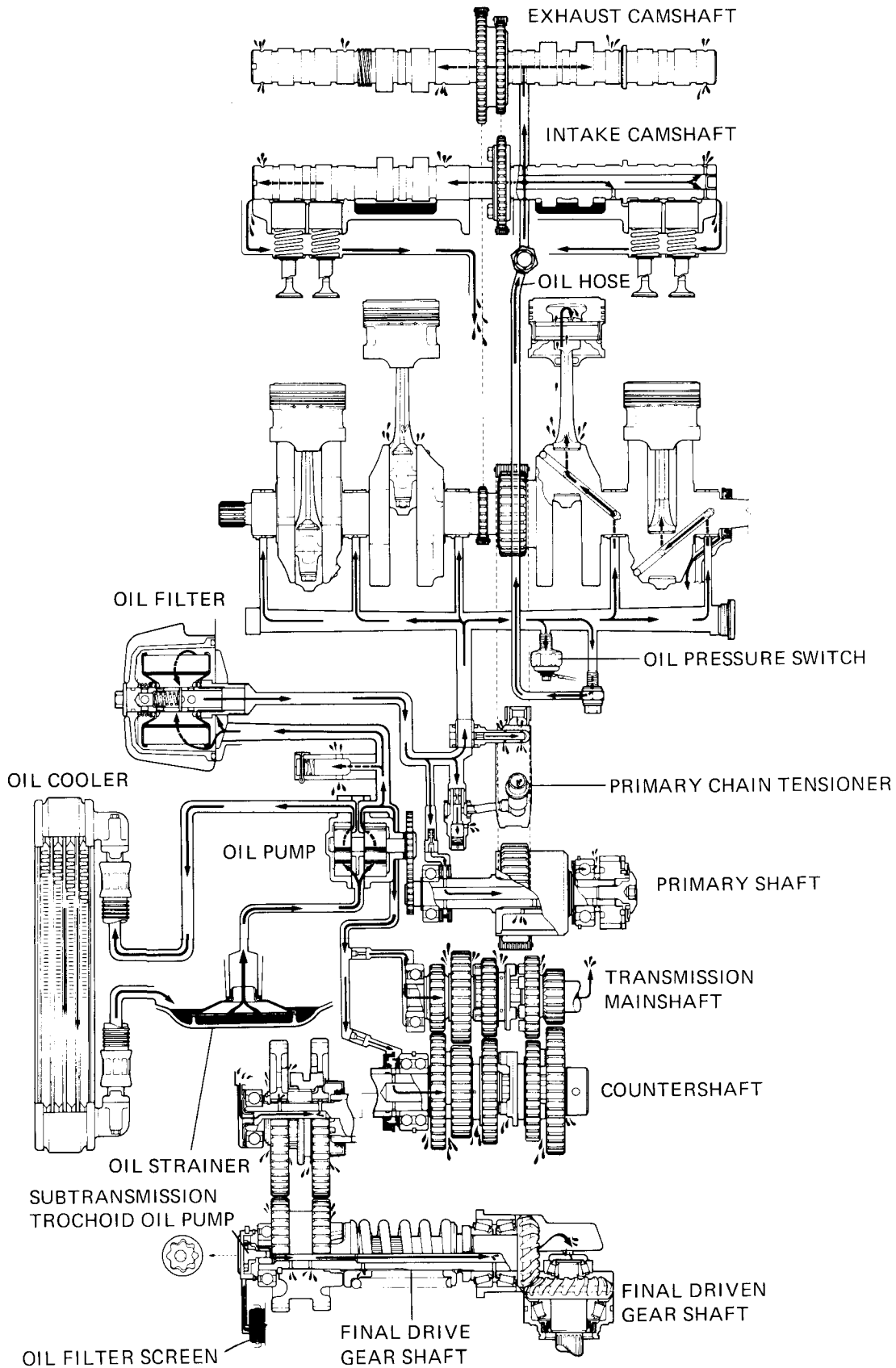




ENGINE LUBRICATION  
DIAGRAM





SERVICE INFORMATION	2- 1	OIL PUMP	2- 5
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ENGINE OIL LEVEL	2- 3	<CHASSIS LUBRICATION>	
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## SERVICE INFORMATION

### GENERAL INSTRUCTIONS

Oil pressure relief valve: See Section 13 (CRANKSHAFT/PRIMARY SHAFT).

### SPECIFICATIONS

#### Engine oil

Oil capacity	3.5 lit (3.7 US qt, 3.0 Imp qt) at change 4.5 lit (4.7 US qt, 3.9 Imp qt) at disassembly	
Oil recommendation	<p>Use HONDA 4-STROKE OIL or equivalent. API SERVICE CLASSIFICATION: SE 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>	<p><b>OIL VISCOSITIES</b></p>
Oil pump delivery	Engine 41 lit (43 US qt, 36 Imp qt)/min. at 7,000 rpm Cooler 18 lit (19 US qt, 16 Imp qt)/min. at 7,000 rpm	
Oil pressure (at oil pressure switch)	5.5 kg/cm <sup>2</sup> (78 psi) at 7,000 rpm (80°C/176°F)	

#### Oil pump service data

	Standard	Service limit
Rotor tip clearance (Engine/Cooler)	0.15 mm (0.059 in)	0.20 mm (0.008 in)
Pump body clearance (Engine/Cooler)	0.15-0.22 mm (0.059-0.087 in)	0.35 mm (0.014 in)
Pump end clearance (Engine/Cooler)	0.02-0.07 mm (0.008-0.028 in)	0.10 mm (0.004 in)

#### Subtransmission

Oil capacity	600 cc (20.4 oz)	
Recommended oil	Hypoid gear oil	SAE #80

#### Final drive gear

Oil capacity	150 cc (5.1 oz)		
Recommended oil	Hypoid gear oil	Above 5°C/41°F	SAE #90
		Below 5°C/41°F	SAE #80



## TOOLS

### Special

Oil Pressure Gauge	07506-3000000
Oil Pressure Gauge Attachment	07510-4220100

### Common

Driver handle A	07749-0010000	or 07949-6110000
Bearing driver outer 52 x 55 mm	07746-0010400	or 07946-9370100

## TORQUE VALUES

Engine oil drain plug	3.5-4.0 kg-m (25-29 ft-lb)
Engine oil filter bolt	2.8-3.2 kg-m (20-23 ft-lb)
Oil pressure switch	1.5-2.0 kg-m (11-14 ft-lb) Apply Loctite ®
Subtransmission oil drain bolt	1.6-2.0 kg-m (12-14 ft-lb)
Subtransmission oil level check bolt	3.5-4.5 kg-m (25-33 ft-lb)
Subtransmission cover	3.0-3.4 kg-m (22-25 ft-lb)

## TROUBLESHOOTING

### Oil level too low

1. External oil leaks
2. Worn piston rings
3. Worn valve guide or seal

### Oil contamination

1. Oil or filter not changed often enough
2. Head gasket faulty
3. Worn piston rings

### High oil pressure

1. Pressure relief valve stuck open
2. Plugged oil filter, gallery, or metering or orifice
3. Incorrect oil being used

### No oil pressure

1. Oil level low
2. Oil pump drive gear broken
3. Oil pump faulty
4. Internal oil leakage

### Low oil pressure

1. Oil level low
2. Pressure relief valve stuck open
3. Plugged oil pick-up screen
4. Oil pump worn
5. External oil leaks



## ENGINE LUBRICATION

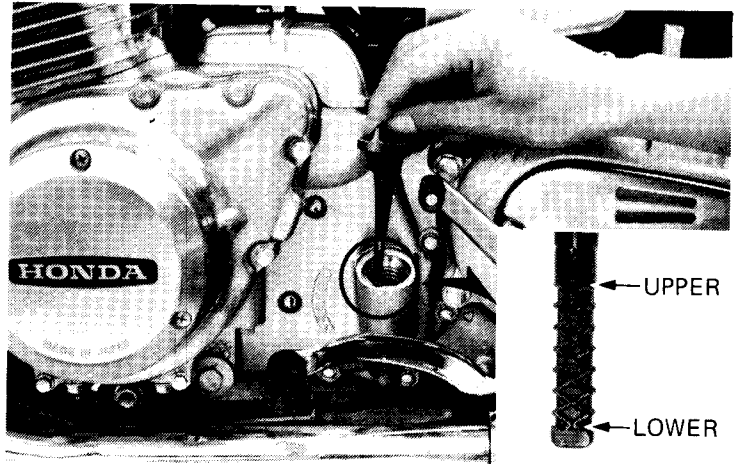
### ENGINE OIL LEVEL

Run the engine and allow to idle for 2-3 minutes.

Stop the engine and support the motorcycle on the center stand. Check the oil level with the filler cap dipstick after a few minutes. Do not screw in the cap when making this check.

If the level is below the lower level mark on the dipstick, fill to the upper level mark.

Check the oil pressure warning light. This light should go off when the engine starts. If it does not, check the oil pump function and/or oil circuit.



### ENGINE OIL & FILTER CHANGE

#### NOTE

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

Warm the engine to normal operating temperature.

Stop the engine.  
Place the motorcycle on its center stand.  
Remove the oil filler cap, drain plug and oil filter bolt and drain the oil.

Make sure that the sealing washer on the drain plug and the O-rings on the oil filter bolt and oil filter cover are in good condition.

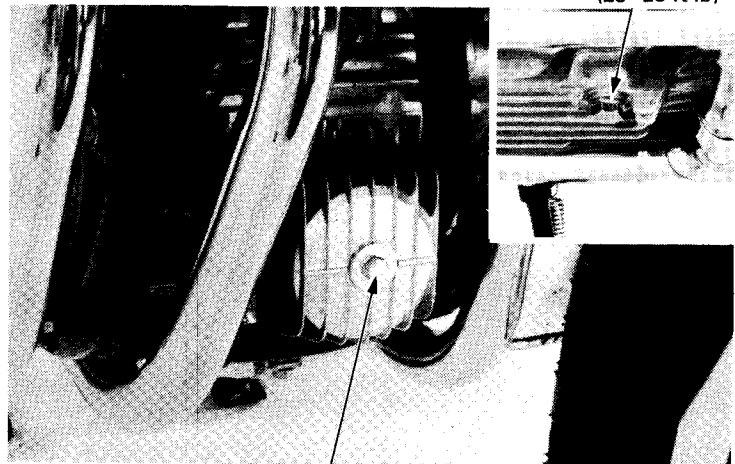
After completely draining, replace the oil filter and install the oil filter bolt and drain plug.

Fill the crankcase with 3.5 lit (3.7 US qt, 3.0 Imp qt) of the recommended oil.

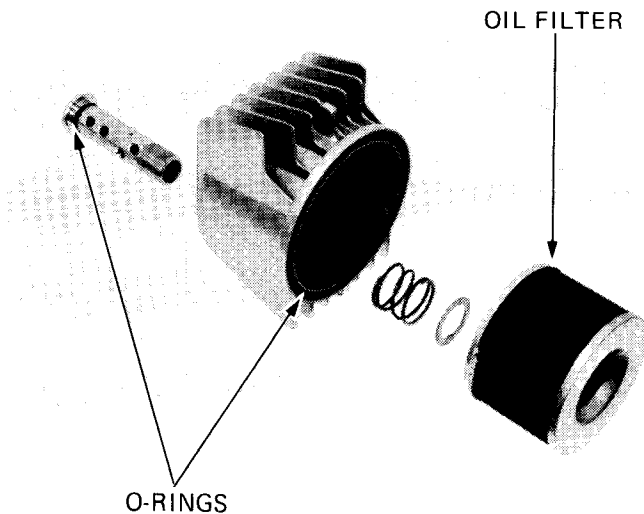
Install the oil filler cap.  
Start the engine and let it idle for 2-3 minutes.  
Stop the engine.

Add the recommended oil to the upper level.  
Make sure that there are no oil leaks.

DRAIN PLUG  
3.5-4.0 kg-m  
(25-29 ft-lb)



OIL FILTER BOLT  
2.8-3.3 kg-m (20-23 ft-lb)



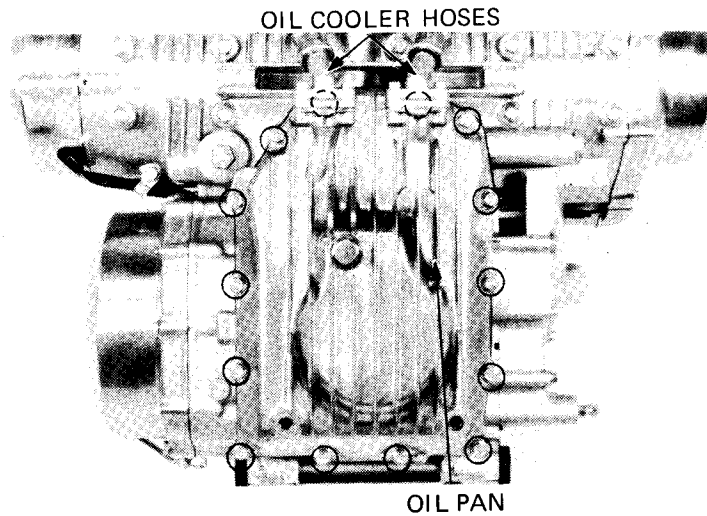


## OIL STRAINER CLEANING

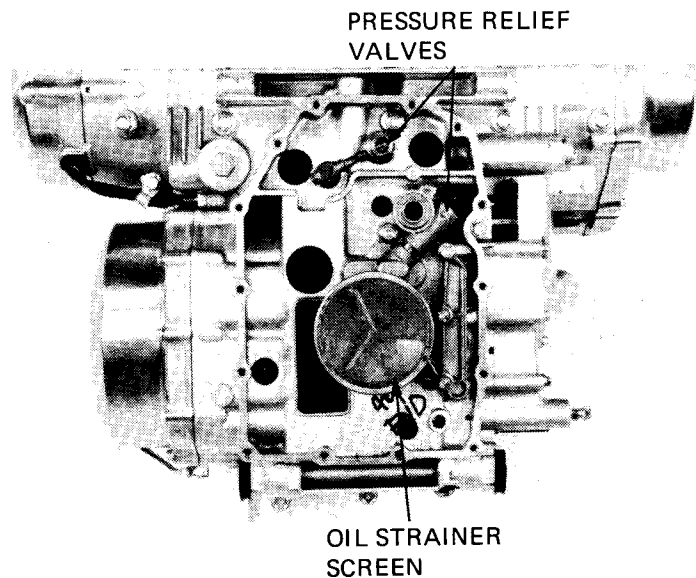
### NOTE

The oil strainer can be removed with the engine mounted in the frame.

- Remove the oil filler cap, drain plug and oil filter bolt.
- Remove the exhaust pipes.
- Disconnect the oil cooler hoses.
- Remove the oil pan bolts and oil pan.



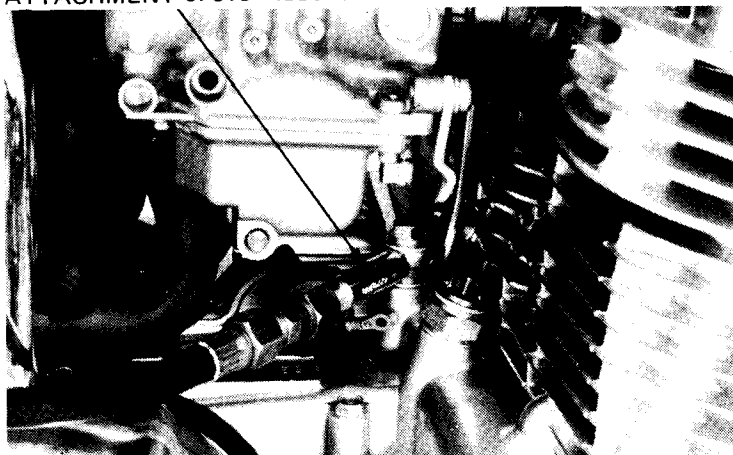
- Remove and clean the oil strainer.
- Check the operation of the pressure relief valves.
- Install the oil strainer and oil pan.
- Connect the oil hoses and install the exhaust pipes.
- Fill the crankcase with recommended oil (Page 2-3).



## OIL PRESSURE CHECK

- Warm the engine up to normal operating temperature (approximately 80°C/176°F).
- Stop the engine.
- Remove the oil pressure switch.
- Connect an oil pressure gauge to the pressure switch hole.
- Check the oil level.

OIL PRESSURE GAUGE  
ATTACHMENT 07510-4220100





Start the engine.  
Check the oil pressure at 7,000 rpm.

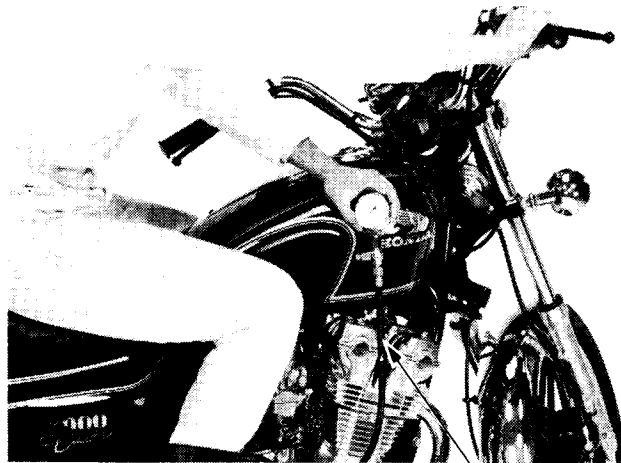
**OIL PRESSURE:**

5.5 kg/cm<sup>2</sup> (78 psi) at 7,000 rpm  
(80°C/176°F)

Stop the engine.  
Apply Loctite ® to the pressure switch threads and install.

**TORQUE: 1.5–2.0 kg-m (11–14 ft-lb)**

Connect the oil pressure switch.  
Start the engine.  
Check that the oil pressure warning light goes out. If the oil pressure warning light stays on, stop the engine immediately and determine the cause.  
Refer to page 21-2 for warning switch.



OIL PRESSURE GAUGE  
07506-3000000  
(Not available in U.S.A.)

### OIL COOLER INSPECTION

Check for damage to the oil cooler core.  
Clean the core if necessary.



OIL COOLER

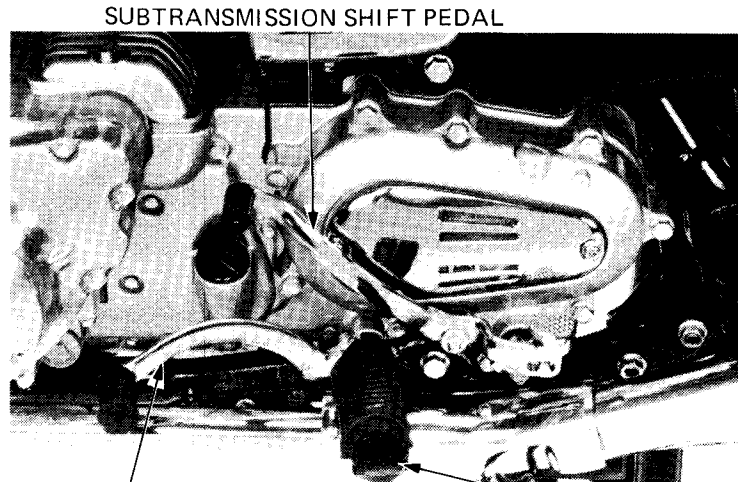
### OIL PUMP

#### REMOVAL

**NOTE**

The oil pump can be removed with the engine mounted in the frame.

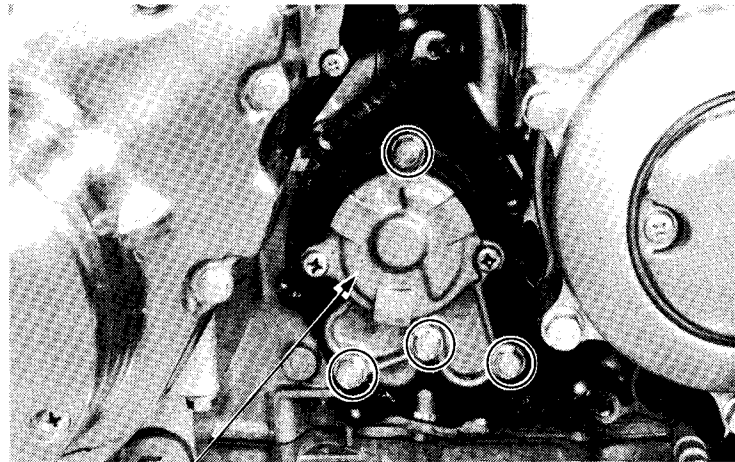
- Drain the engine oil
- Remove the left foot peg.
- Remove the subtransmission shift pedal.
- Remove the gearshift pedals.
- Remove the oil pump cover.



GEARSHIFT PEDAL

LEFT FOOT PEG

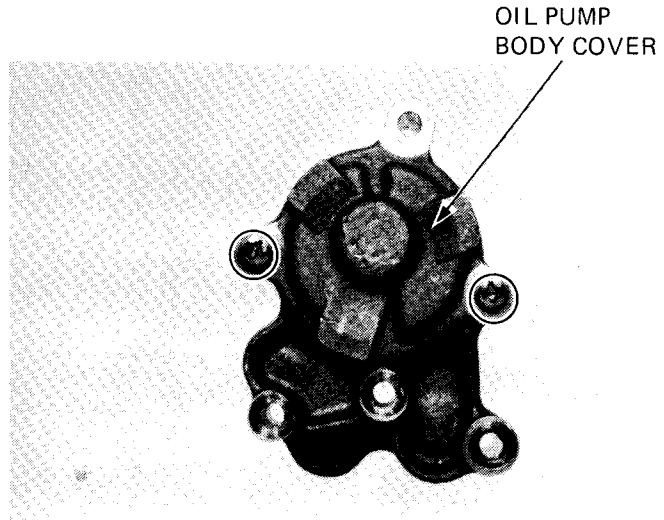
Remove the oil pump.



OIL PUMP

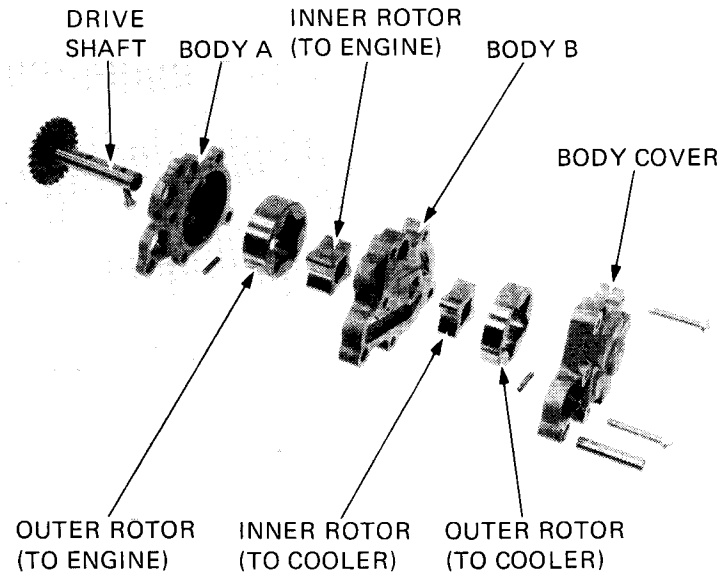
**DISASSEMBLY**

Remove the oil pump body cover.



OIL PUMP  
BODY COVER

Remove the inner and outer rotors.  
Remove the drive pin and drive shaft.



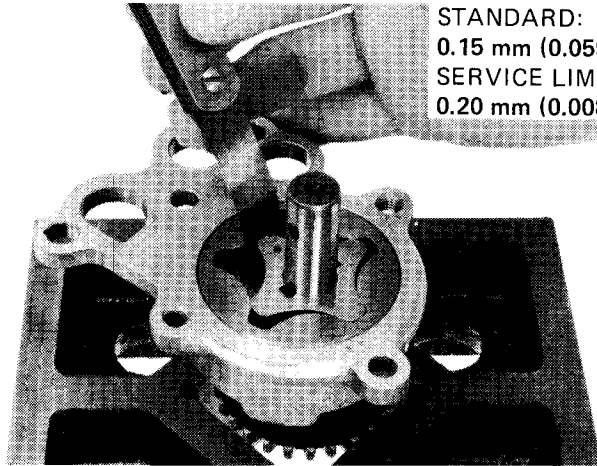


**INSPECTION**

Measure the rotor tip clearance.

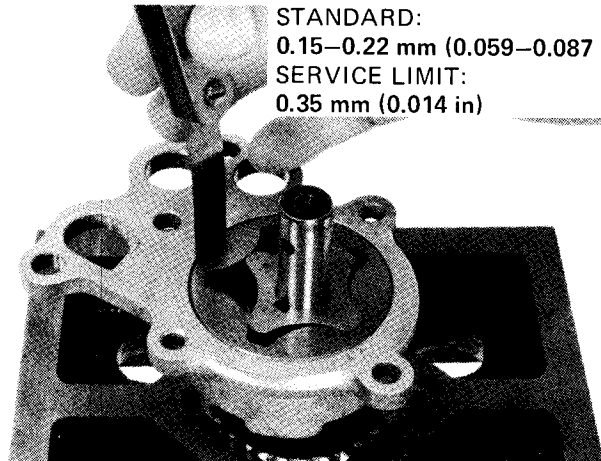
**NOTE**

Specifications are the same for the engine and cooler pumps.



**STANDARD:**  
0.15 mm (0.059 in)  
**SERVICE LIMIT:**  
0.20 mm (0.008 in)

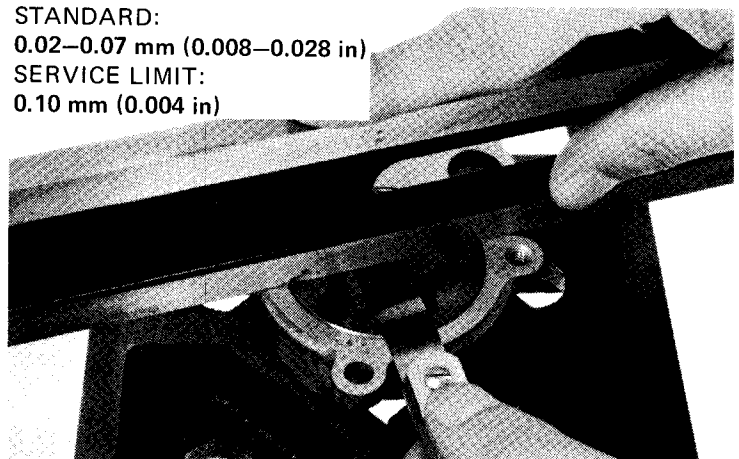
Measure the pump body clearance.



**STANDARD:**  
0.15–0.22 mm (0.059–0.087 in)  
**SERVICE LIMIT:**  
0.35 mm (0.014 in)

Measure the pump end clearance.

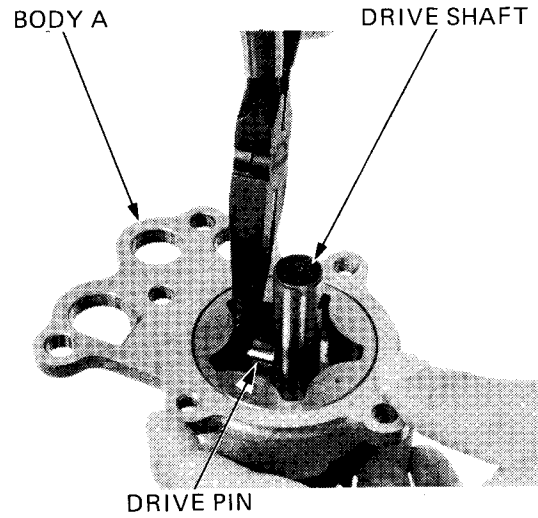
**STANDARD:**  
0.02–0.07 mm (0.008–0.028 in)  
**SERVICE LIMIT:**  
0.10 mm (0.004 in)



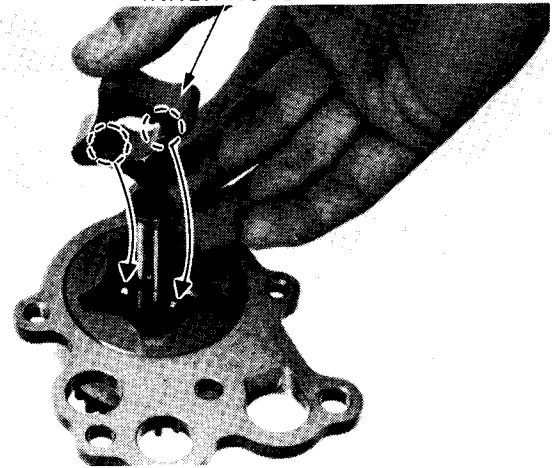



**ASSEMBLY**

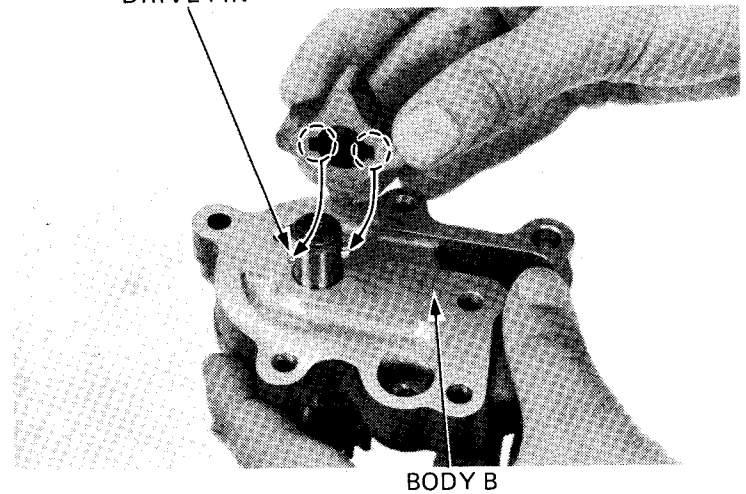
Install the engine outer rotor into body A.  
 Insert the drive shaft.  
 Insert the drive pin into the drive shaft.



Align the slots in the inner rotor with the drive pin.

**INNER ROTOR**


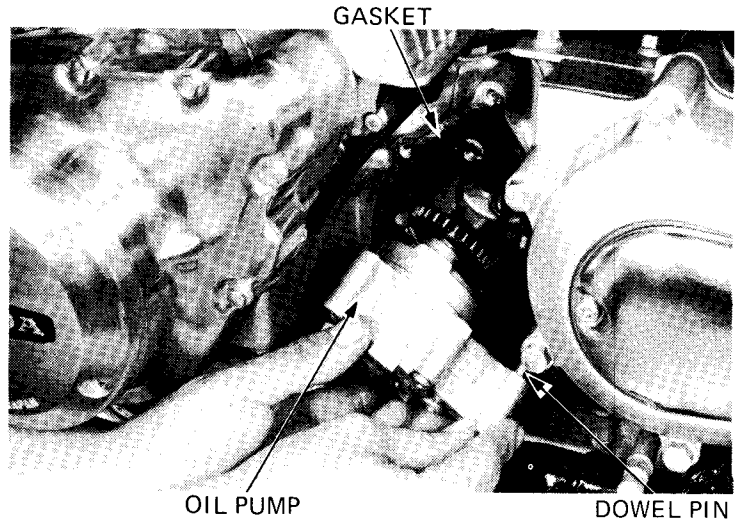
Install body B.  
 Insert the drive pin into the shaft.  
 Align the slot in the inner rotor with the drive pin.  
 Install the side covers.  
 Tighten the screws.

**DRIVE PIN**




**INSTALLATION**

Install a new gasket.  
Engage the oil pump drive and driven gears.  
Install the dowel pin.  
Tighten the oil pump mounting bolts.



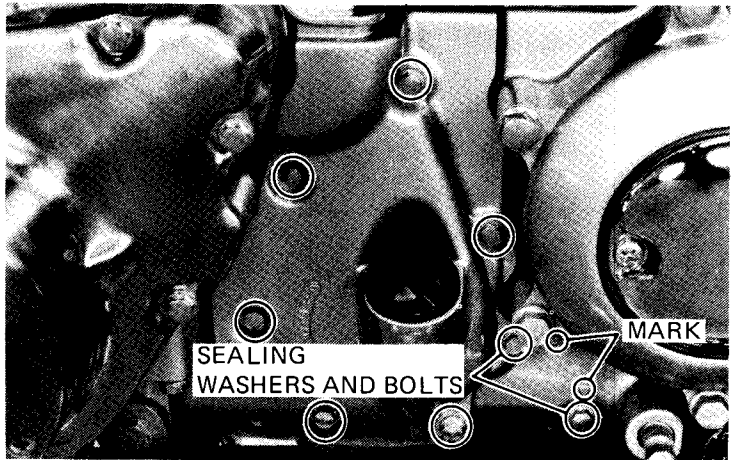
Install the oil pump cover.

**NOTE**

Install the sealing washers and bolts to the "▽" mark points.

Tighten the oil pump cover bolts.

Install the gearshift pedal and left foot peg.  
Fill the engine with the recommended oil (page 2-3).



**SUBTRANSMISSION OIL**

**CHECK**

Place the motorcycle on its center stand.  
Shift the subtransmission into low position.  
Remove the protector cover.  
Remove the oil check bolt.  
Check that the subtransmission is filled to the lower edge of the inspection hole with oil.

If the oil level is low, check for oil leaks.  
Add the recommended oil until it reaches the lower edge of the inspection hole.

**CHANGE**

Remove the oil filler cap.  
Remove the drain bolt and drain the oil.

Install the drain bolt.

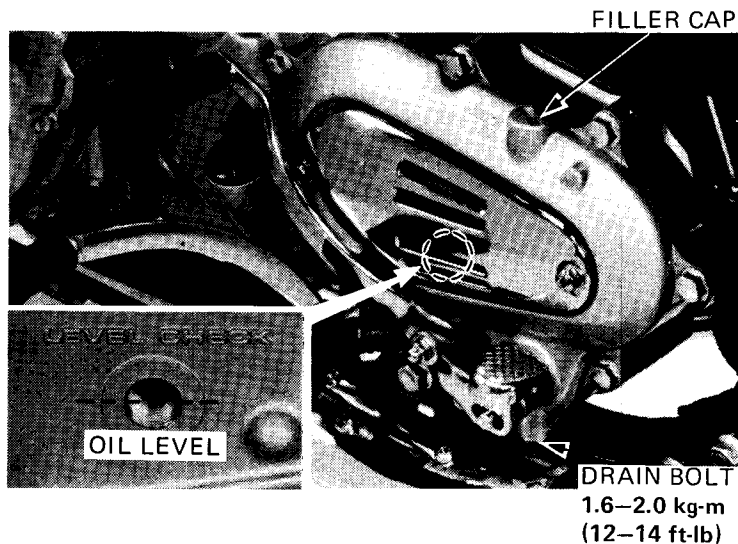
**TORQUE: 1.6–2.0 kg-m (12–14 ft-lb)**

Fill the subtransmission with the recommended oil up to the lower edge of the inspection hole.

**OIL CAPACITY: 600 cc (20.4 oz)**

**RECOMMENDED OIL:**

**HYPOID GEAR OIL SAE #80**

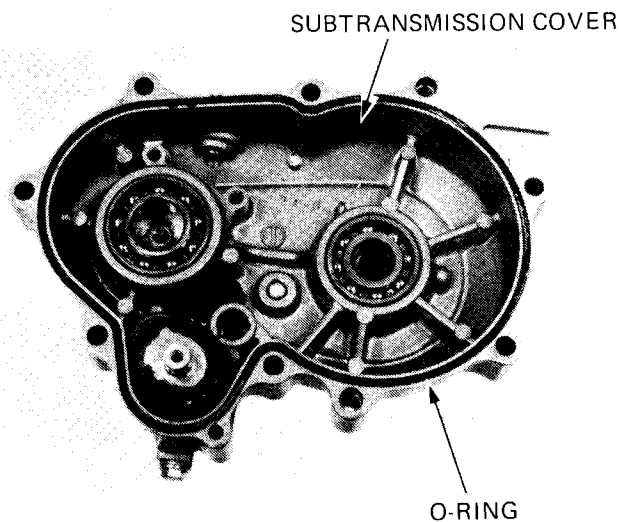




## SUBTRANSMISSION OIL PUMP

### REMOVAL

Drain the subtransmission oil (Page 2-9).  
 Remove the subtransmission cover (Page 10-3).  
 Remove the shift drum.  
 Remove the O-ring.

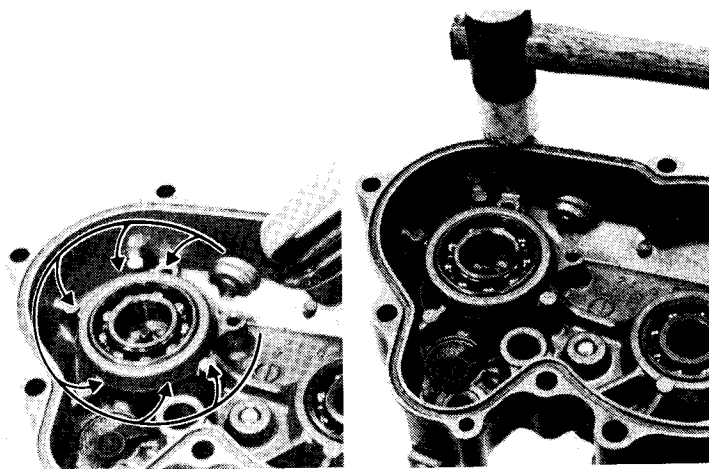


Heat the case around the bearing evenly with a 1 kw dryer for 3 minutes.

Remove the bearing, tapping the case lightly with a plastic hammer.

**WARNING**

*Be sure to wear gloves when removing the heated bearing.*

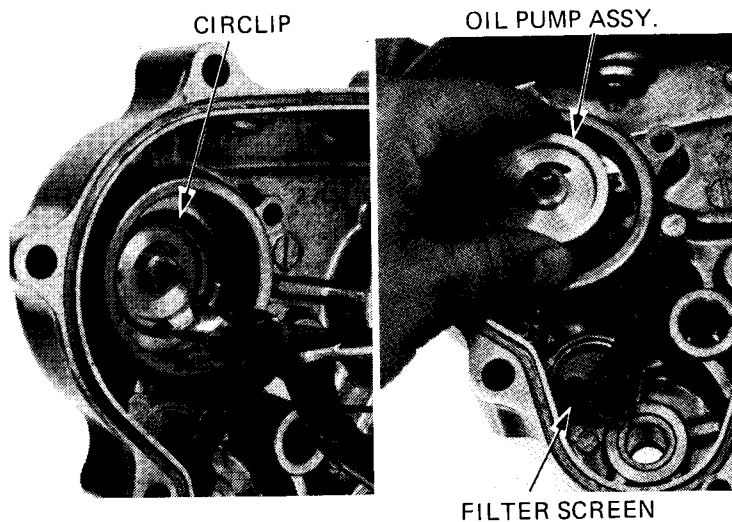


Remove the circlip.  
 Remove the oil pump Assy.

Clean the filter screen with compressed air.

**CAUTION:**

*Do not remove the filter screen.*



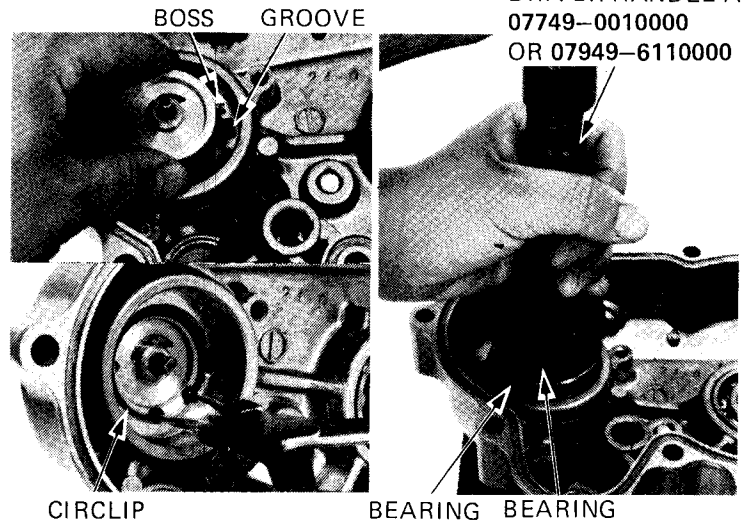


### INSTALLATION

Clean the oil pump assy., bearing and cover thoroughly.

Install the oil pump assy, aligning the oil pump boss with the cover groove.

Install the circlip and drive the bearing into the cover.



DRIVER HANDLE A  
07749-0010000  
OR 07949-6110000

BEARING DRIVER 52 x 55 mm  
07946-9370100

Lubricate the oil pump and bearing with hypoid gear oil, SAE #80.

Install the shift drum.

Turn the rear wheel or drive gear by hand so that the slot in the drive gear shaft collar is vertical.

Install the case cover with the oil pump drive shaft boss aligned with the collar slot and new O-ring.

### CAUTION:

*Check the location of the shift drum and shift fork if difficulty is encountered in installing the cover (See page 10-7, 10-8). Do not strike the cover with excessive force.*

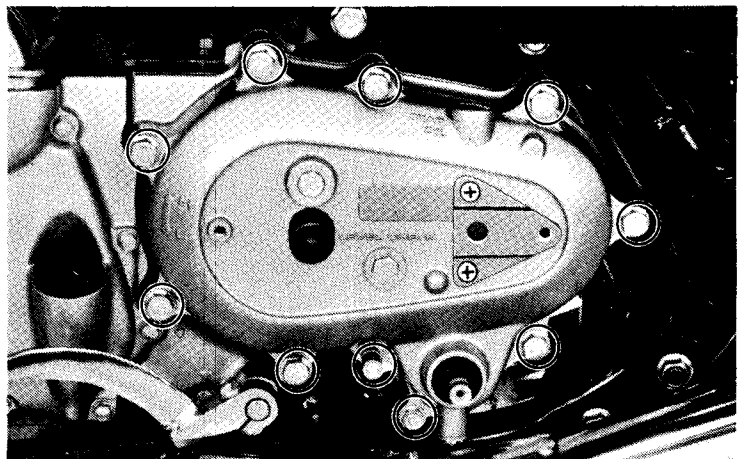
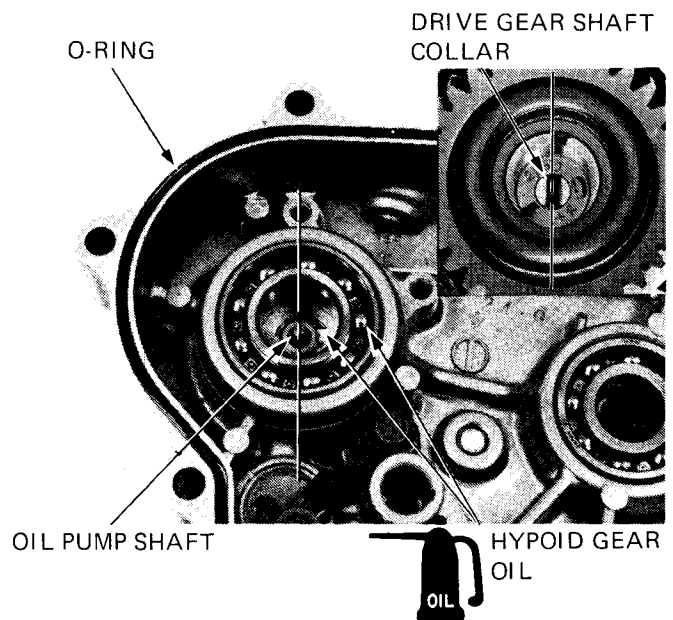
Tighten the cover bolts.

**TORQUE: 3.0-3.4 kg-m (22-25 ft-lb)**

Install the exhaust pipe heat shield.

Fill the case with the recommended oil (page 2-9).

Install the removed parts (page 10-8).





## < CHASSIS LUBRICATION >

### FINAL DRIVE GEAR OIL

#### CHECK

Place the motorcycle on its center stand.  
 Remove the oil filler cap.  
 Check that the final gear case is filled up to the lower edge of the oil filler cap hole.

Check for leaks, if the level is low. Pour fresh oil through the oil filler hole until it reaches the lower edge.

#### CHANGE

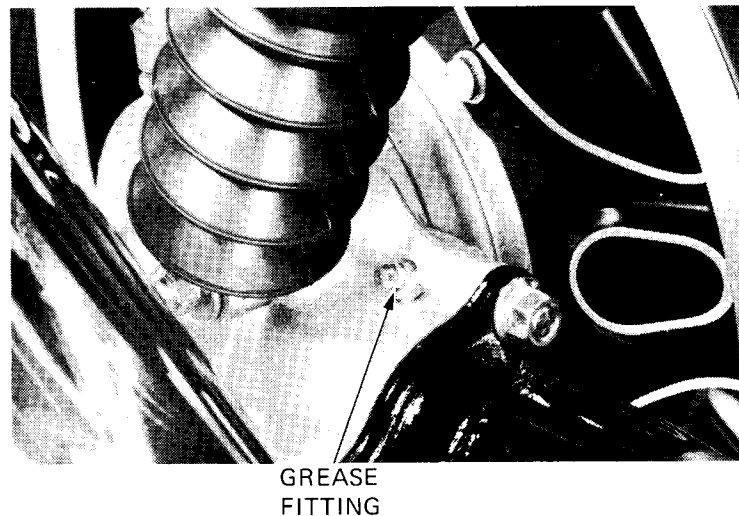
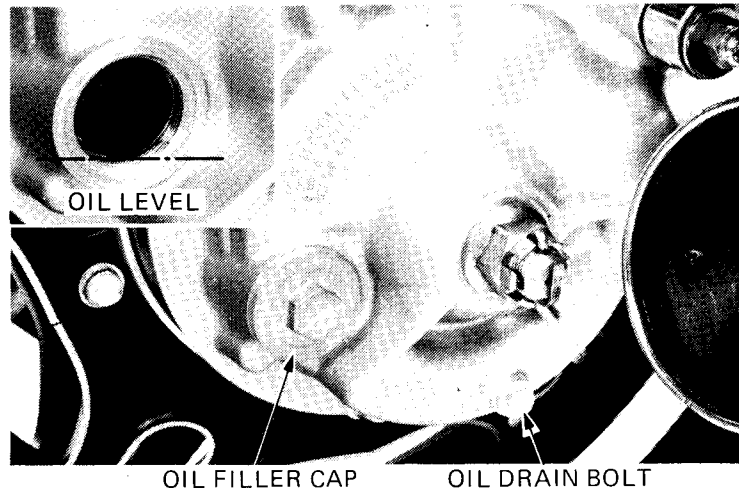
Remove the oil filler cap.  
 Remove the drain bolt to drain all oil from the final gear case.  
 Install the drain bolt securely.  
 Fill the gear case with the recommended oil up to the correct level.

**OIL CAPACITY:** 150 cc (5.1 oz)

**RECOMMENDED OIL: HYPOID GEAR OIL**  
 API, GL-5      SAE #90 (Above 5°C/41°F)  
                     SAE #80 (Below 5°C/41°F)

### DRIVE SHAFT COUPLING

Pump LITHIUM-BASED multipurpose grease through the drive shaft joint grease fitting.

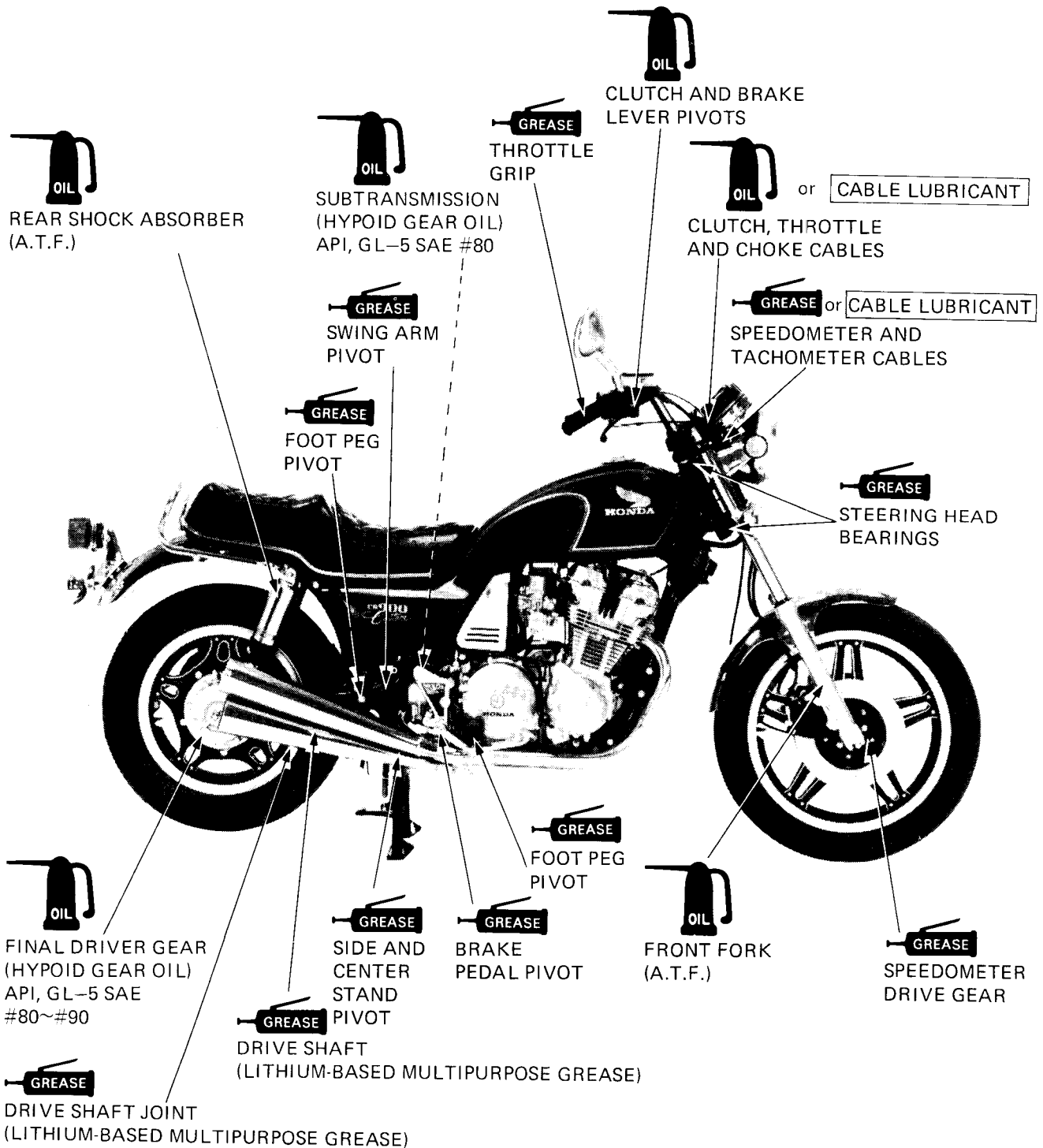


### CONTROL CABLE LUBRICATION

Periodically, disconnect the throttle and clutch cables at their upper ends.  
 Thoroughly lubricate the cables and their pivot points with a commercially available cable lubricant.



## LUBRICATION POINTS





MEMO

