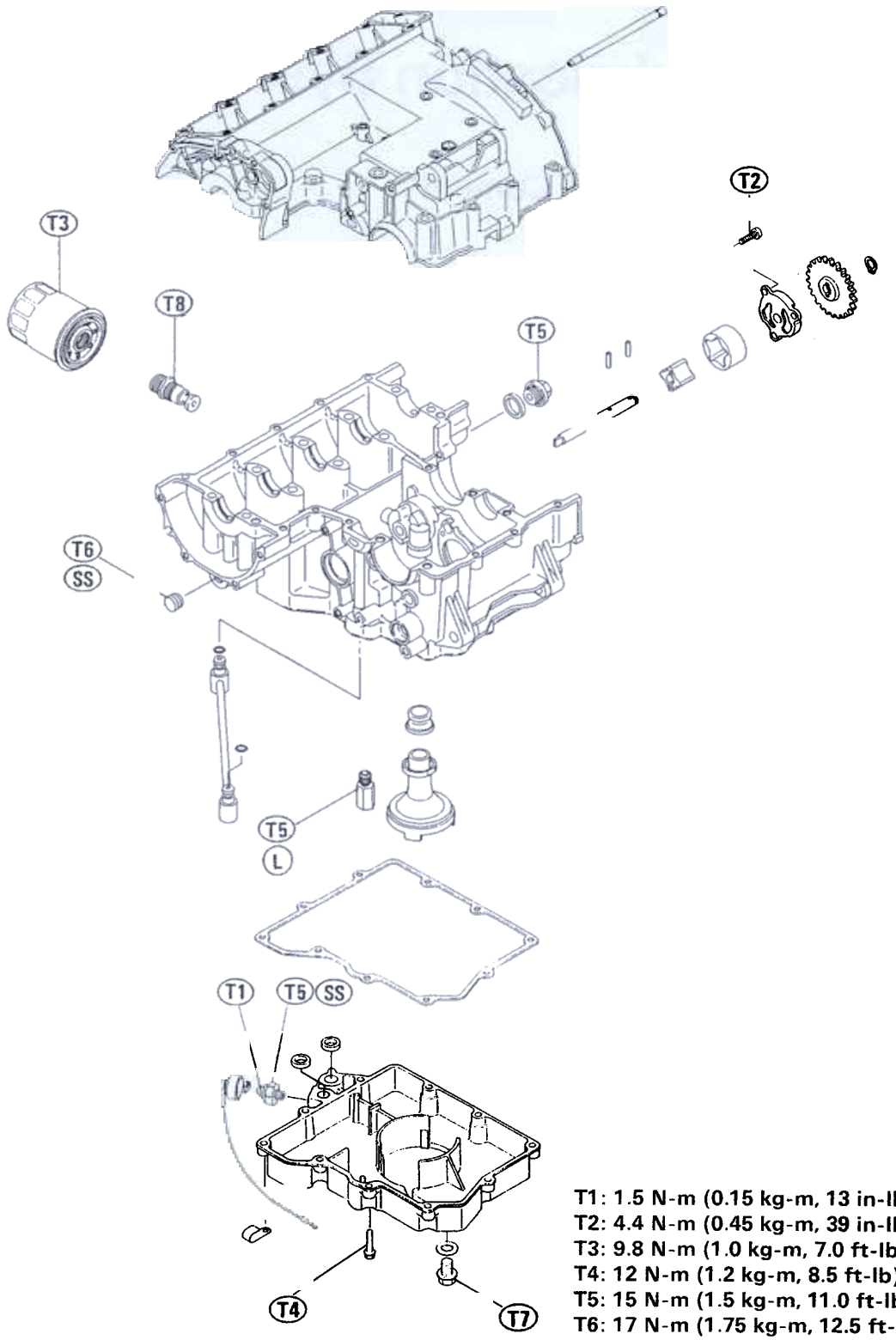
Engine Lubrication System

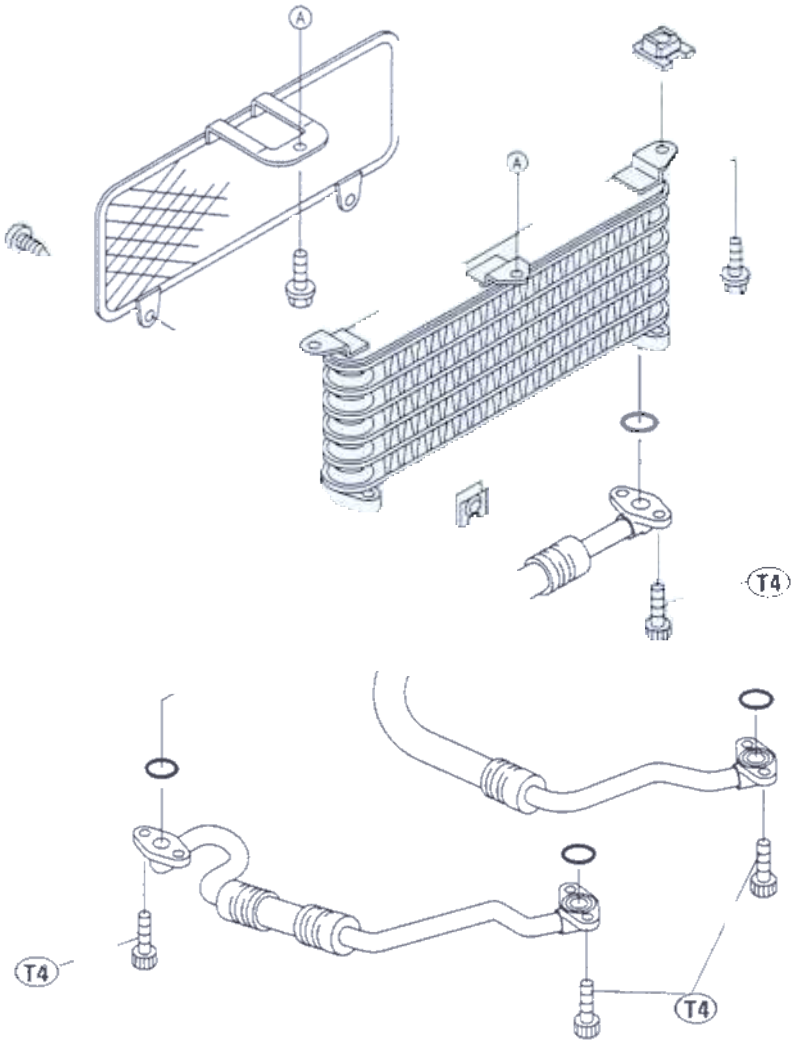
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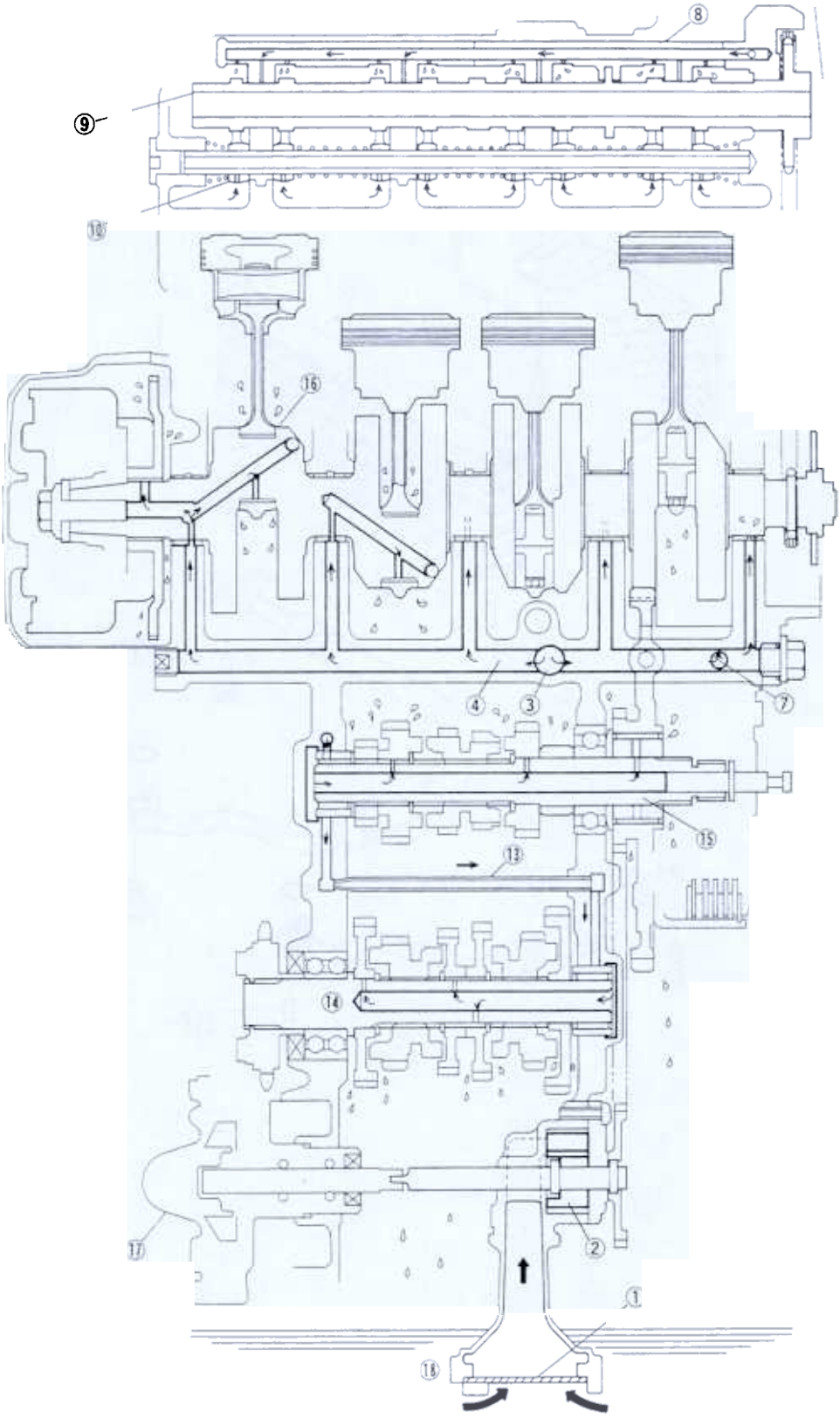
Exploded View



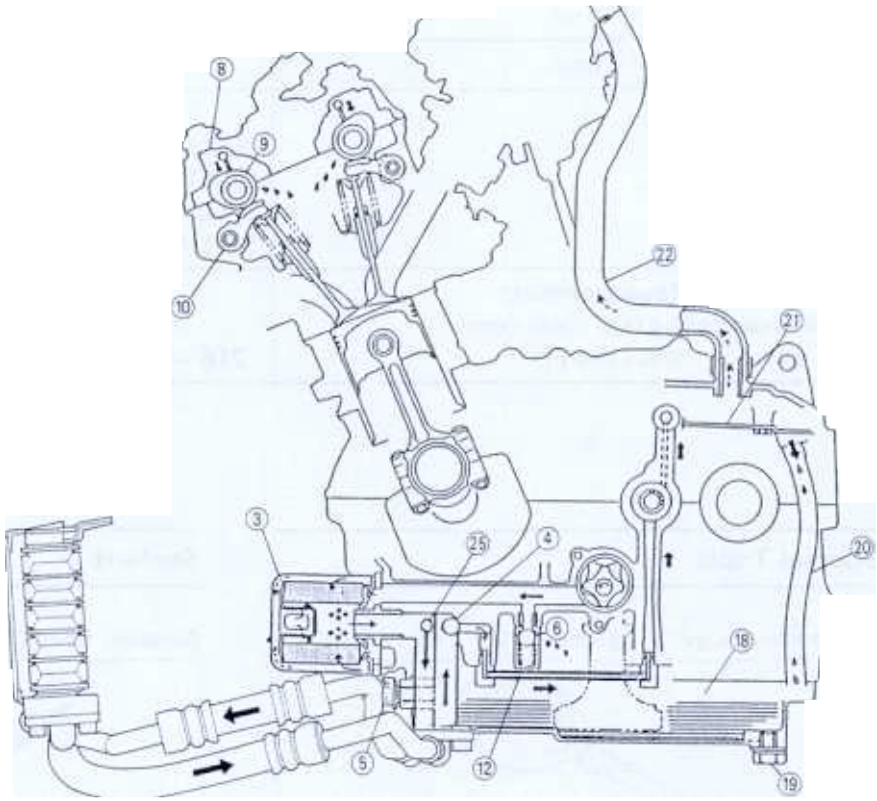
T1: 1.5 N-m (0.15 kg-m, 13 in-lb)
T2: 4.4 N-m (0.45 kg-m, 39 in-lb)
T3: 9.8 N-m (1.0 kg-m, 7.0 ft-lb)
T4: 12 N-m (1.2 kg-m, 8.5 ft-lb)
T5: 15 N-m (1.5 kg-m, 11.0 ft-lb)
T6: 17 N-m (1.75 kg-m, 12.5 ft-lb)
T7: 20 N-m (2.0 kg-m, 14.5 ft-lb)
T8: 29 N-m (3.0 kg-m, 22 ft-lb)
L : Apply a non-permanent locking agent to the threads.
SS: Apply silicone sealant to the threads.

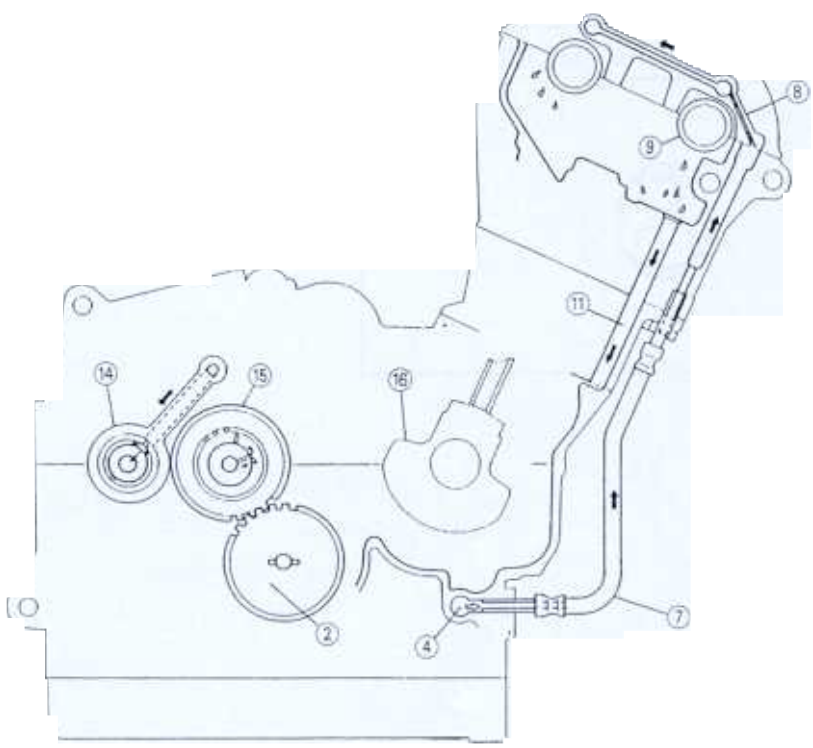

A
A
T4
T4
T4

Engine Oil Flow Chart



1. Oil Pump Filter
2. Oil Pump
3. Oil Filter
4. Oil Passage
5. Oil Pressure Switch
6. Releif Valve
7. Oil Hose
8. Camshaft Bracket
9. Camshaft
10. Rocker Arm
11. Oil Return Passage
12. Oil Pipe (to Mission)
13. Oil Pipe (to Output Shaft)
14. Output Shaft
15. Drive Shaft
16. Crankshaft
17. Water Pump
18. Oil Pan
19. Oil Drain Plug
20. Oil Return Hose
21. Breather Plate
22. Breather Hose
23. Oil Cooler
24. Oil Cooler Hose
25. Bypass Hole



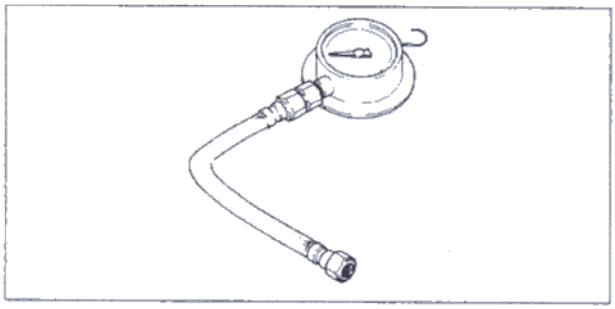


Specifications

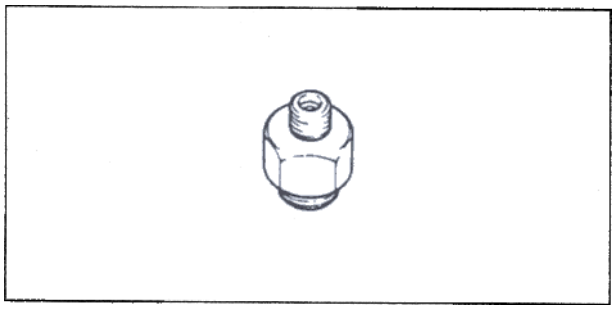
Item	Standard
Engine Oil:	
Grade	SE or SF class
Viscosity	SAE 10W-40
Capacity	2.8 L (when filter is not removed) 3.0 L (when filter is removed)
Oil Pressure Measurement:	
Oil Pressure @4,000 r/min (rpm), oil temp. 90°C (194°F)	216 ~ 275 kPa (2.2 ~ 2.8 kg/cm², 31 ~ 40 psi)

Special Tools

Oil Pressure Gauge, 10 kg/cm²: 57001-164

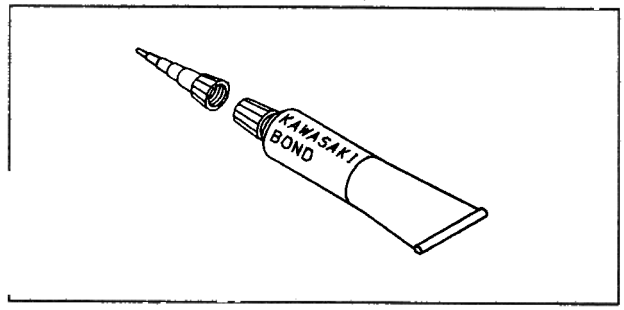


Oil Pressure Gauge Adapter, M18 x 1.5: 57001-1278



Sealant

Kawasaki Bond (Silicone Sealant): 56019-120



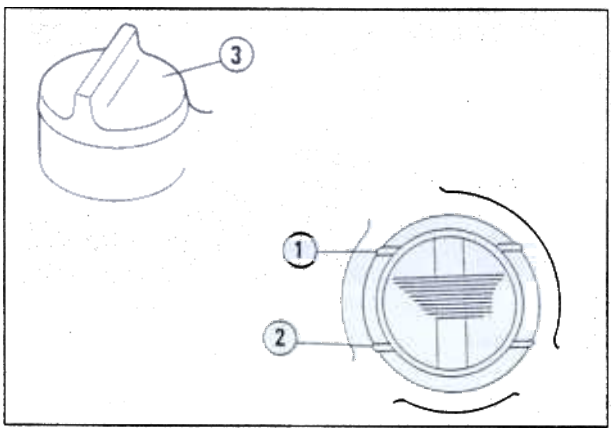
Engine Oil and Oil Filter

⚠WARNING

Motorcycle operation with insufficient, deteriorated, or contaminated engine oil will cause accelerated wear and may result in engine or transmission seizure, accident, and injury.

Oil Level Inspection

- Support the motorcycle perpendicular to the ground.
- Check that the engine oil level is between the upper and lower levels in the gauge.



1. Upper Level
2. Lower Level
3. Oil Filler Opening Plug

NOTE

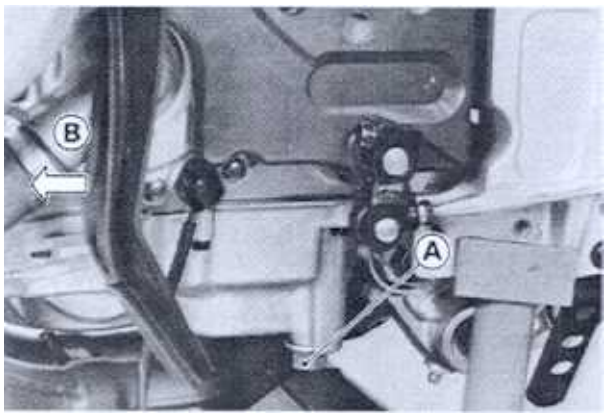
- *Situate the motorcycle so that it is perpendicular to the ground.*
- *If the motorcycle has just been used, wait several minutes for all the oil to drain down.*
- *If the oil has just been changed, start the engine and run it for several minutes at idle speed. This fills the oil filter with oil. Stop the engine, then wait several minutes until the oil settles.*

CAUTION

Racing the engine before the oil reaches every part can cause engine seizure.
If the engine oil gets extremely low or if the oil pump or oil passages clog up or otherwise do not function properly, the oil pressure warning light will light. If this light stays on when the engine is running above idle speed, stop the engine immediately and find the cause.

Engine Oil Change

- Support the motorcycle perpendicular to the ground after warming up the engine.
- Remove the engine drain plug to drain the oil.



A. Drain Plug B. Front

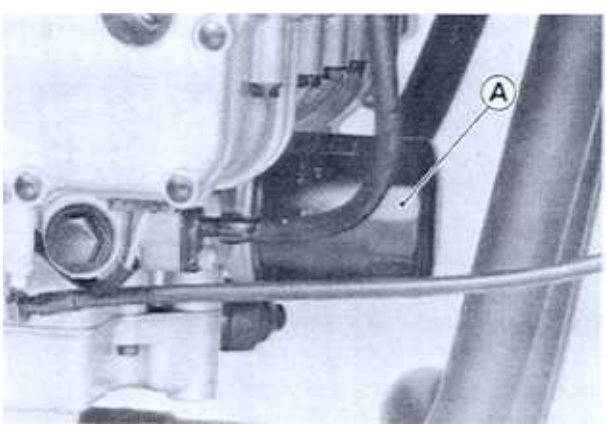
- The oil in the filter can be drained by removing the filter (see Oil Filter Change).
- ★Replace the drain plug gasket with a new one if it is damaged.
- Tighten the drain plug to the specified torque (see Exploded View).
- Pour in the specified type and amount of oil.

Engine Oil

Grade:	SE or SF class
Viscosity:	SAE 10W-40
Amount:	3.0 L (filter is removed)
	2.8 L (filter is not removed)

Oil Filter Change

- Remove the lower fairing.
- Drain the engine oil (see this chapter).
- Remove the oil filter with the oil filter wrench.



A. Oil Filter

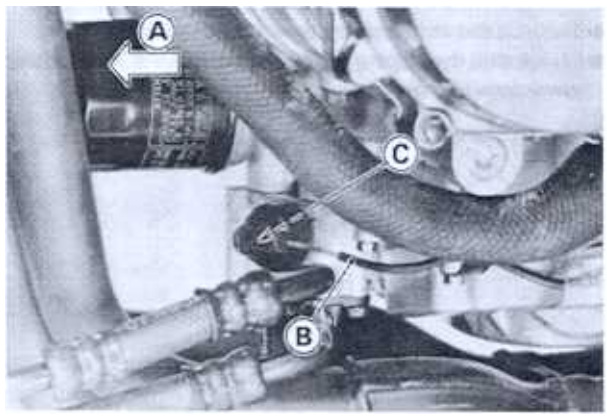
- Replace the filter with a new one.
- When installing the oil filter, be careful of the following.
- Apply oil to the gasket before installation.

○ Tighten the filter with the oil filter wrench to the specified torque (see Exploded View) or tighten it with hands about ¾ turns after gasket contacts the mounting surface of engine.
○ Pour in the specified type and amount of oil.

Oil Pan

Removal

● Set the motorcycle on its side stand.
● Remove the following.
Lower Fairings (see Frame chapter)
Muffler (see Engine Top End)
Engine Oil (Drain, see this chapter)
Oil Pressure Switch Lead
Oil Pressure Switch (as necessary)
Oil Pipes



A. Front
B. Switch Lead
C. Oil Pressure Switch

● Remove the oil pan bolts and take off the oil pan.

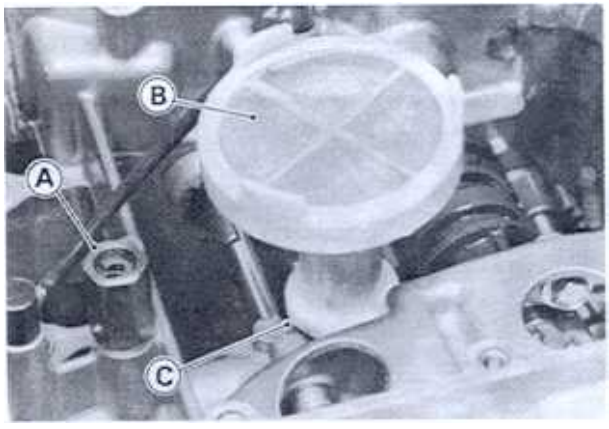
Installation

● Installation is the reverse of removal. Note the following.
● Apply silicone sealant to the threads of the oil pressure switch and tighten it to the specified torque (see Exploded View).
● Replace the gasket with a new one.
● Replace the O-rings with new ones if they are damaged.
● Tighten the oil pan bolts to the specified torque (see Exploded View).

Relief Valve, Oil Pump Filter

Removal

- Remove the oil pan.
- Unscrew the oil pressure relief valve from the engine.
- Pull out the oil pump filter and the oil pipe.



A. Relief Valve
B. Oil Pump Filter
C. Unround Portion

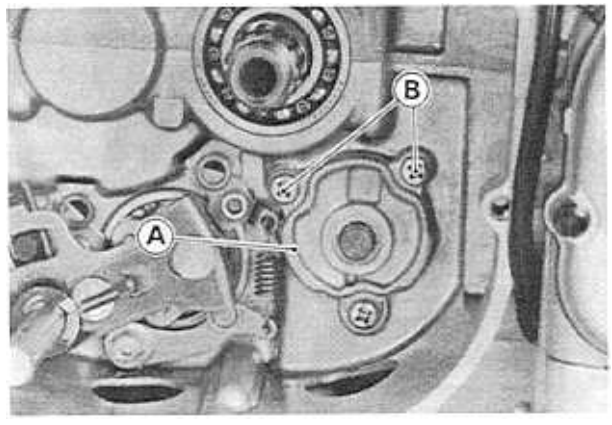
Installation

- Installation is the reverse of removal. Note the following.
  - Apply a non-permanent locking agent to the thread of the releif valve and tighten it to the specified torque (see Exploded View).
  - Replace the oil pipe O-ring if it is damaged.
  - When installing the oil pump filter, note the position of its unround portion.

Oil Pump

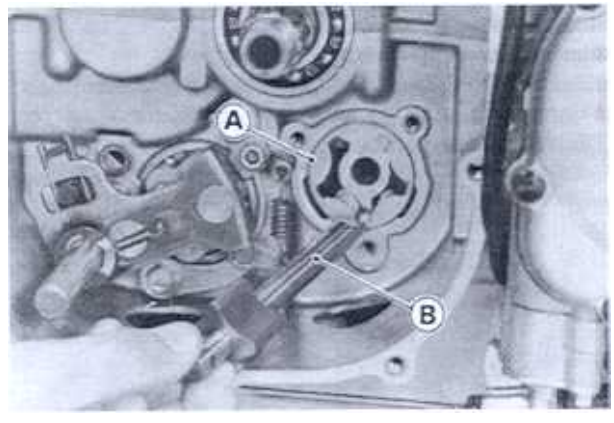
Removal

- Remove the following.
  - Clutch (see Clutch chapter)
  - Circlip
  - Oil Pump Gear
  - Oil Pump Cover



A. Pump Cover
B. Pump Cover Screw

- Remove the oil pump shaft and pump rotor.



A. Pump Rotor
B. Pump Shaft

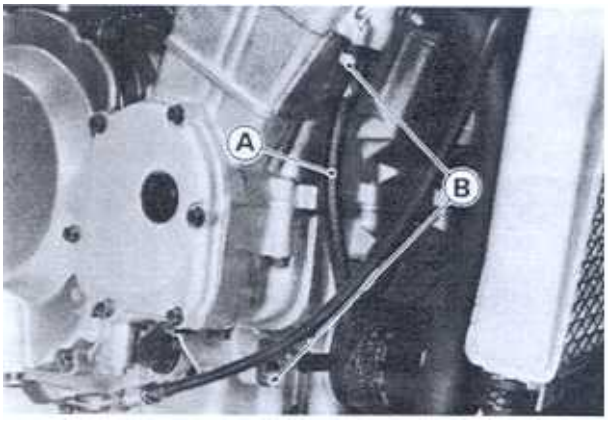
Installation

- Installation is the reverse of removal. Note the following.
- When installing the oil pump, note the position of the water pump shaft slot and turn the oil pump shaft so that the projection fits into the slot.
- Tighten the oil pump cover screw to the specified torque (see the Exploded view).
- Replace the pump gear circlip with a new one.

Oil Hose

Removal

- Drain the engine oil.
- Remove the lower fairing (see Frame chapter).
- Remove the Allen bolts from the cylinder head and the crankcase.
- Take out the oil hose.



A. Oil Hose B. Allen Bolt

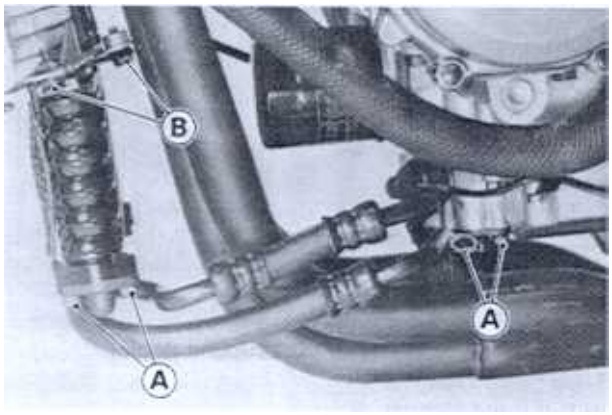
Installation

- Installation is the reverse of removal.
- Replace the O-rings with new ones if they are damaged.
- Tighten the Allen bolts to the specified torque (see Exploded View).

Oil Cooler

Removal

- Remove the following.
  Engine Oil (Drain, see this chapter)
  Lower Fairings (see Frame chapter)
  Muffler (see Engine Top chapter)
  Oil Cooler Pipe Fitting Bolts
  Oil Cooler Mounting Bolts



A. Fitting Bolts B. Mounting Bolts

- Remove the oil cooler.

Installation

- Installation is the reverse of removal. Note the following.
- Replace the O-rings with new ones.
- Tighten the oil cooler pipe fitting bolts to the specified torque (see Exploded View).

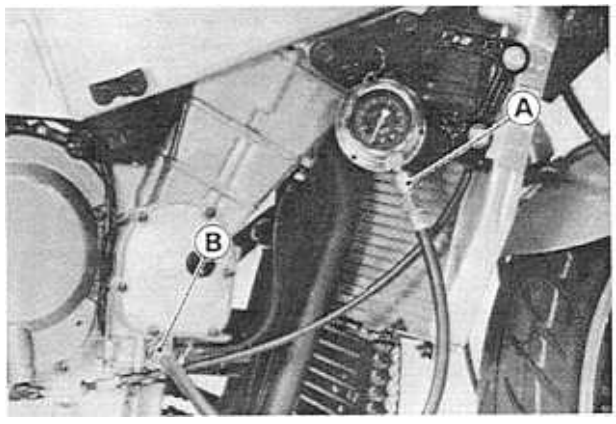
Oil Pressure Measurement

Oil Pressure Measurement

NOTE

○ *Measure the oil pressure after the engine is warmed up.*

● Remove the following.
  Right Lower Fairing (see Frame chapter)
  Oil Passage Plug
● Attach the oil pressure gauge and adapter (special tools) to the plug hole.



A. Oil Pressure Gauge: 57001-164
B. Adapter: 57001-1278

Oil Pressure

Standard	**216 ~ 275 kPa** **(2.2 ~ 2.8 kg/cm², 31 ~ 40 psi)** **@4000 r/min (rpm), 90°C (194°F) of oil temp.**

★ If the oil pressure is much lower than the standard, check the oil pump, relief valve, and/or crankshaft bearing insert wear immediately.