# LUBRICATION

# GRAISSAGE

# SCHMIERUNG

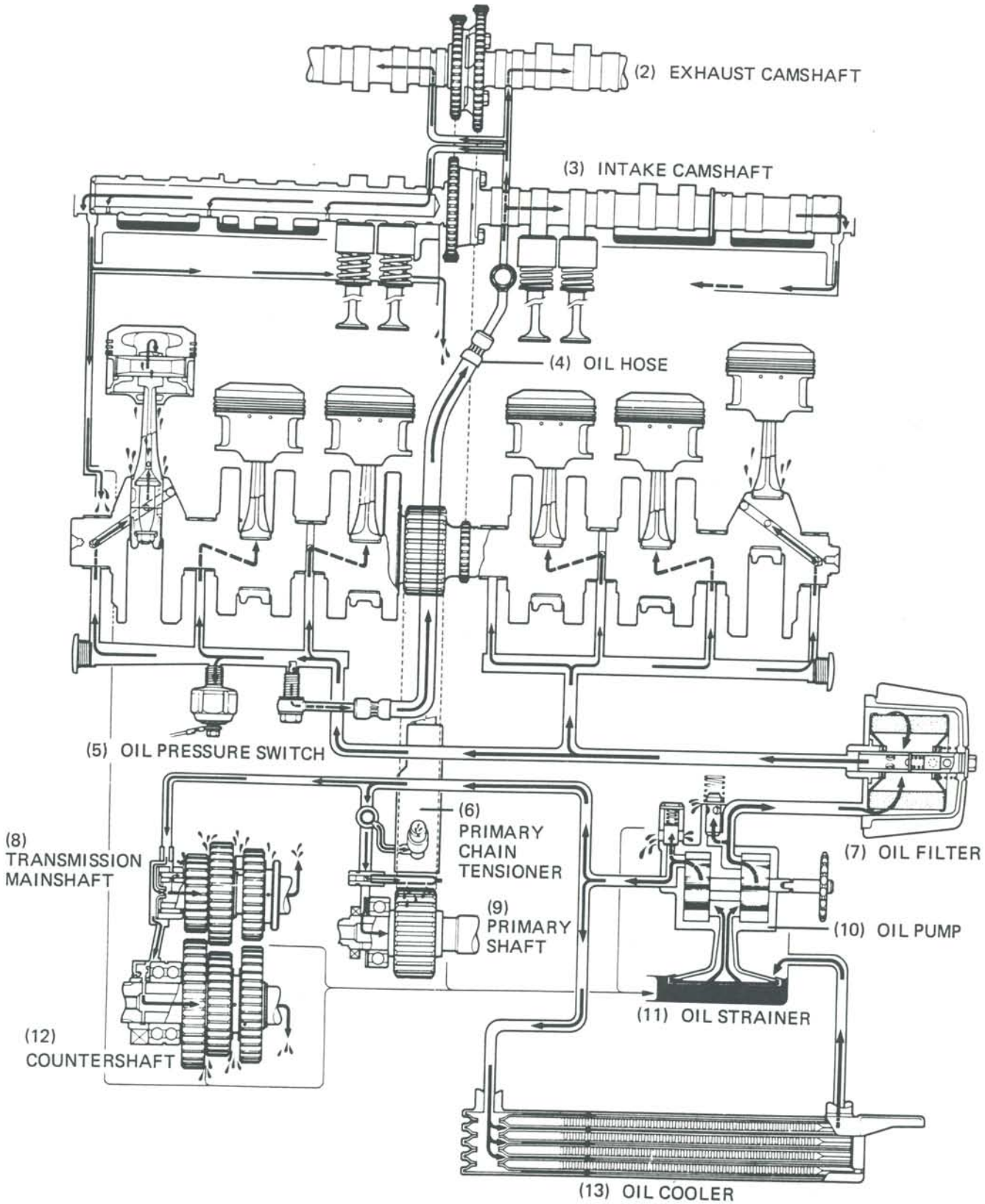
# LUBRICACION

(1) SCHEMA DE GRAISSAGE DU MOTEUR
(2) ARBRE A CAMES D'ECHAPPEMENT
(3) ARBRE A CAMES D'ADMISSION
(4) TUYAU SOUPLE D'HUILE
(5) MANOMETRE D'HUILE
(6) TENDEUR DE CHAINE PRIMAIRE
(7) FILTRE A HUILE
(8) ARBRE SECONDAIRE
(9) ARBRE PRIMAIRE
(10) POMPE A HUILE
(11) CREPINE A HUILE
(12) ARBRE DE RENVOI
(13) RADIATEUR D'HUILE

(1) MOTORSCHMIERUNGSDIAGRAMM
(2) AUSLASSNOCKENWELLE
(3) EINLASSNOCKENWELLE
(4) ÖLSCHLAUCH
(5) ÖLDRUCKSCHALTER
(6) PRIMÄRANTRIEBSKETTENSPANNER
(7) ÖLFILTER
(8) GETRIEBEHAUPTWELLE
(9) PRIMÄRANTRIEBSWELLE
(10) ÖLPUMPE
(11) ÖLSIEB
(12) GEGENWELLE
(13) ÖLKÜHLER

(1) DIAGRAMA DE LUBRICATION DEL MOTOR
(2) ARBOL DE LEVAS DE ESCAPE
(3) ARBOL DE LEVAS DE ADMISION
(4) CONDUCTO DEL ACEITE
(5) INTERRUPTOR DE LA PRESION DEL ACEITE
(6) TENSIONADOR PRIMARIO DE LA CADENA
(7) FILTRO DE ACEITE
(8) EJE PRINCIPAL DE LA TRANSMISION
(9) ARBOL PRIMARIO
(10) BOMBA DE ACEITE
(11) COLADOR DEL ACEITE
(12) EJE SECUNDARIO
(13) REFRIGERADOR DEL ACEITE

(1) ENGINE LUBRICATION DIAGRAM



| | | | |
|---|---|---|---|
| SERVICE INFORMATION | 2–1 | OIL PRESSURE | 2–3 |
| TROUBLESHOOTING | 2–1 | OIL COOLER INSPECTION | 2–3 |
| ENGINE LUBRICATION | | OIL HOSE AND BOLT INSPECTION | 2–4 |
| ENGINE OIL LEVEL | 2–2 | CHASSIS LUBRICATION | |
| ENGINE OIL & FILTER CHANGE | 2–2 | LUBRICATION POINTS | 2–5 |
| OIL STRAINER SCREEN CLEANING | 2–3 | DRIVE CHAIN | 2–5 |


# SERVICE INFORMATION

## WORKING PRACTICE

Oil pump: See Section 11 Oil pressure relief valve: See Section 11

## SPECIFICATIONS

| | | |
|---|---|---|
| Oil Capacity | | Approximately 4.0 liter (4.2 U.S.qt., 3.5 Imp.qt.) at change<br>5.5 liter (5.8 U.S.qt., 4.8 Imp.qt.) at engine assembly |
| Recommended oil | | API service classification-SE<br>General, all temperature SAE 10W-40<br>Alternate Above 15°C (60°F) SAE 30<br>0 – 15°C (32° – 60°F) SAE 20 or 20W<br>Below 0°C (32°F) SAE 10W |
| Oil pump delivery | Right | 36.5 liters/min at 4,000 $min^{-1}$ (36.5 liters/min at 4,000 rpm, 32.1 Imp.qt./min at 4,000 rpm) |
| | Left | 27.0 liters/min at 4,000 $min^{-1}$ (27.0 liters/min at 4,000 rpm, 23.8 Imp.qt./min at 4,000 rpm) |
| Oil pressure (at oil pressure switch) | | 441.3–490.3 kPa/4,000 $min^{-1}$<br>(4.5–5.0 kg/$cm^2$ /4,000 rpm, 64–71 psi/4,000 rpm) 80° C |

## SPECIAL TOOLS

Special Tools

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

## TORQUE VALUES

| | | | |
|---|---|---|---|
| Oil drain plug | 28–32 N·m (2.8–3.2 kg-m, 20–23 ft-lb) | Pressure switch | 15–20 N·m (1.5–2.0 kg-m, 11–15 ft-lb) |
| Oil filter bolt | 27–33 N·m (2.7–3.3 kg-m, 20–24 ft-lb) | Oil bolt (Cylinder head) | 18–22 N·m (1.8–2.2 kg-m, 13–16 ft-lb) |
| Oil pan bolt | 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb) | Oil bolt (Crankcase) | 20–24 N·m (2.0–2.4 kg-m, 14–17 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

**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

**High Oil Pressure**
1. Pressure relief valve stuck closed
2. Plugged oil filter, gallery, or metering orifice
3. Incorrect oil being used

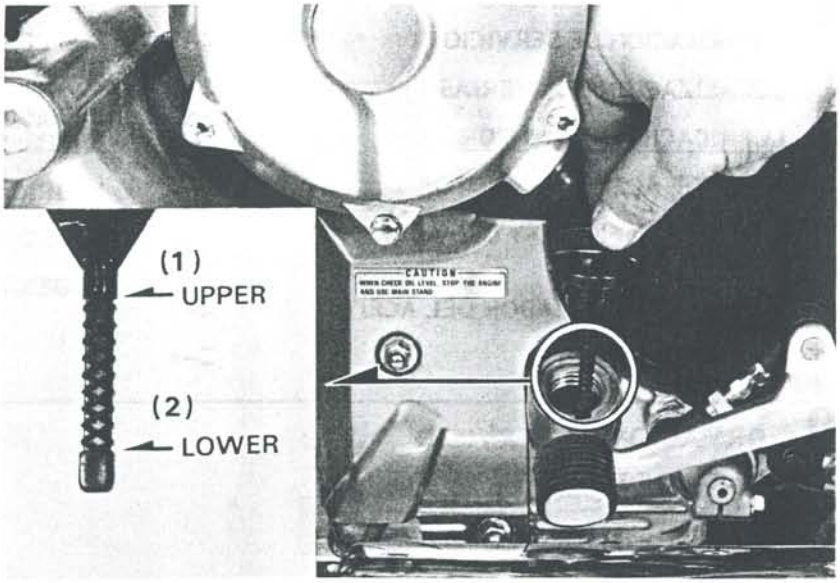
**No Oil Pressure**
1. Oil level low
2. Oil pump drive chain broken
3. Oil pump faulty
4. Internal oil leakage

# ENGINE LUBRICATION

## ENGINE OIL LEVEL

Run the engine and allow to idle for a few minutes.
Stop the engine and place the motorcycle on its 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 operation and/or oil circuit.




## ENGINE OIL & FILTER CHANGE

NOTE

> Before draining the oil, warm the engine to normal operating temperature.

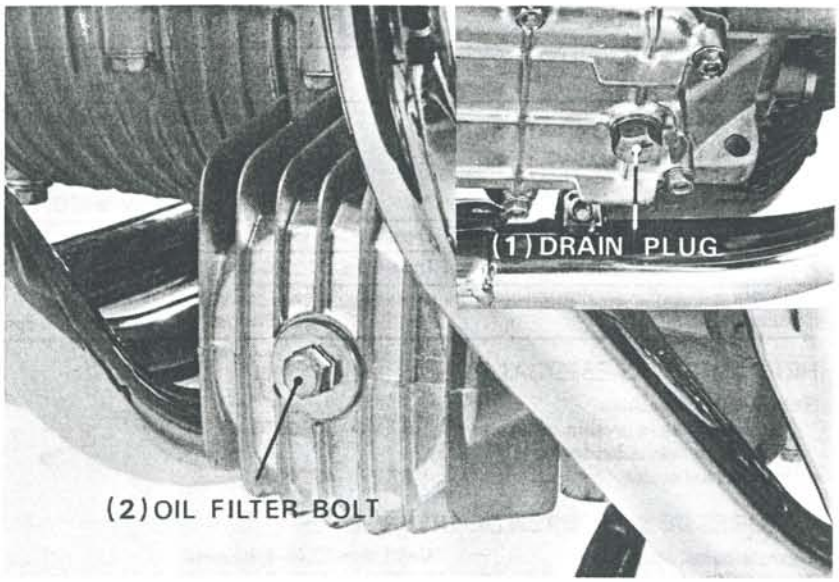
Stop the engine.
Place the motorcycle on its center stand.
Remove the oil filler cap, drain plug and oil filter bolt and drain the oil.
After completely draining, replace the oil filter and install the oil filter bolt and drain plug.

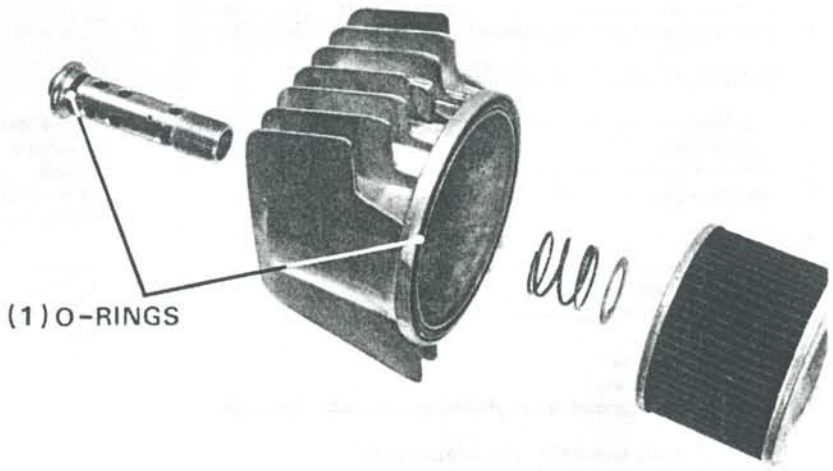
Make sure that the sealing washer on the drain plug and the O-rings on the oil filter bolt and oil filter case are in good condition.

Fill the crankcase with 4.0 lit. (4.2 U.S.qt., 3.7 Imp.qt.) of the recommended oil.

Reinstall the oil filler cap.
Start the engine and idle it for a few minutes.
Stop the engine.

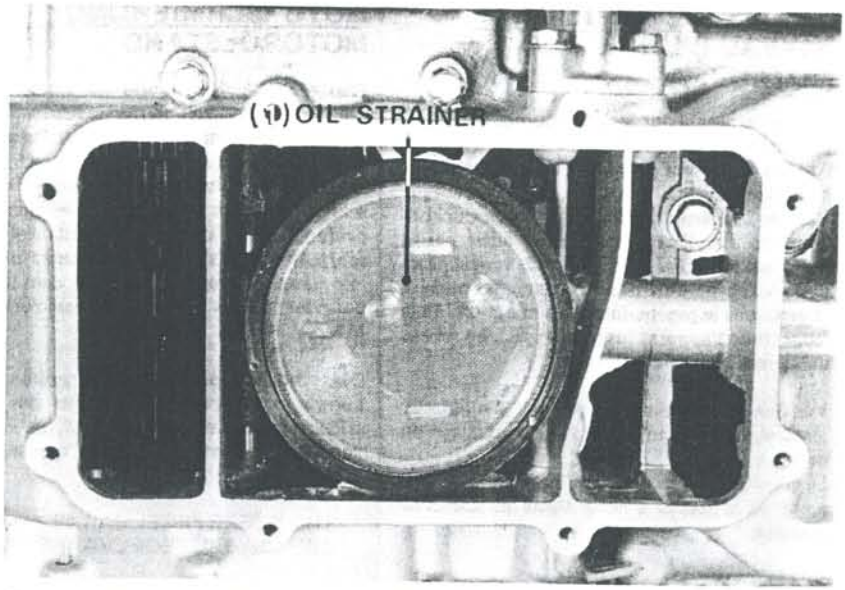
Add the recommended oil to the upper level.
Make sure that there are no oil leaks.



## OIL STRAINER CLEANING

Remove the oil filler cap, drain plug and oil filter bolt.
Remove the oil pan bolts and oil pan.
Remove and clean the oil strainer.
Install the oil strainer and oil pan.
Fill the crankcase with the recommended oil (Page 2–2).



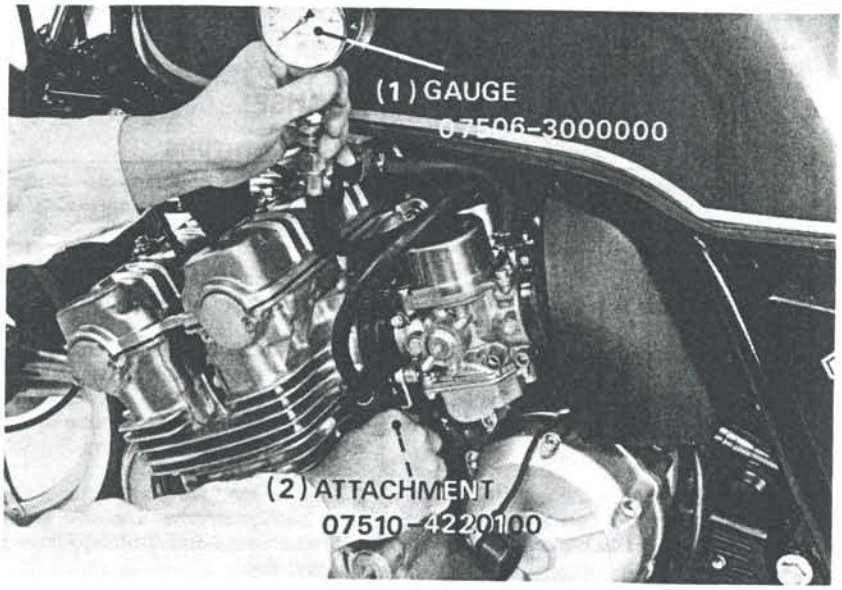

## OIL PRESSURE

Connect the oil pressure gauge.
Check the oil level.
Warm the engine up to normal operating temperature (approximately 80° C = 176° F).
Check the pressure at 4,000 rpm.

**STANDARD:** **441.3–490.3 kPa at 4,000 min$^{-1}$ (4.5–5.0 kg/cm$^2$ at 4,000 rpm 64–71 psi at 4,000 rpm) 80°C (176°F)**

NOTE

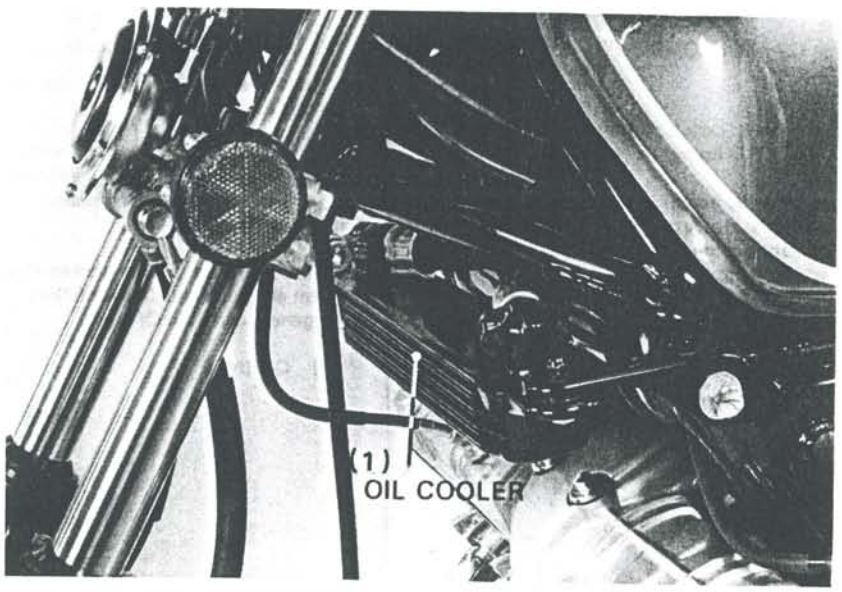
Before installing the pressure switch, apply a liquid sealant to the thread.




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.
Also, check to be sure by touching the oil cooler that the cooler is warmed up by the oil coming from the auxiliary oil pump.

## OIL COOLER INSPECTION

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

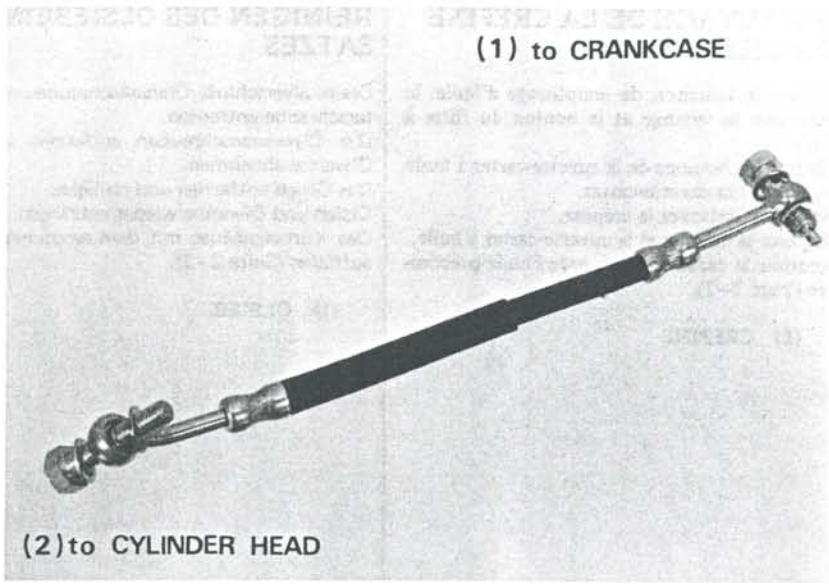


# OIL HOSE AND BOLT INSPECTION

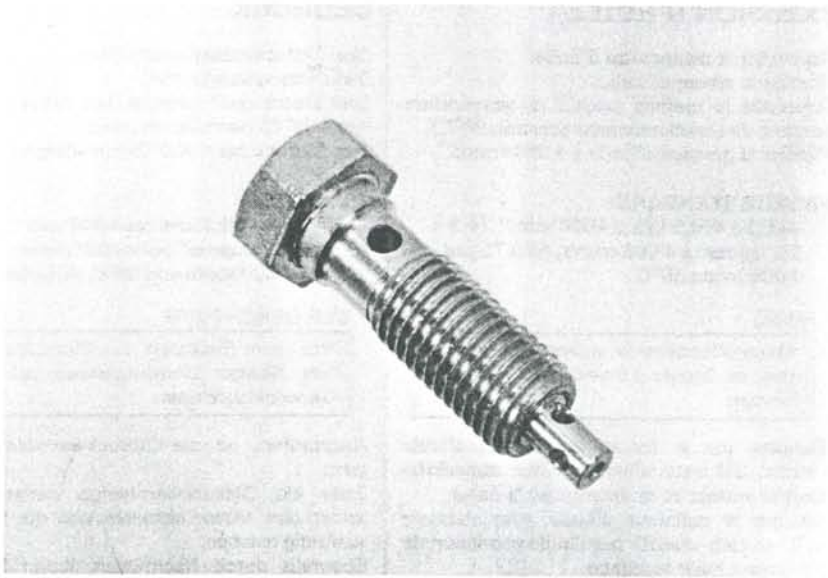
Check for oil leaks at hose connections.
Check the oil hoses for deterioration.

NOTE

- Install new sealing washers, if the hose is removed.
- Install the oil bolt with the oil orifice on the crankcase side.

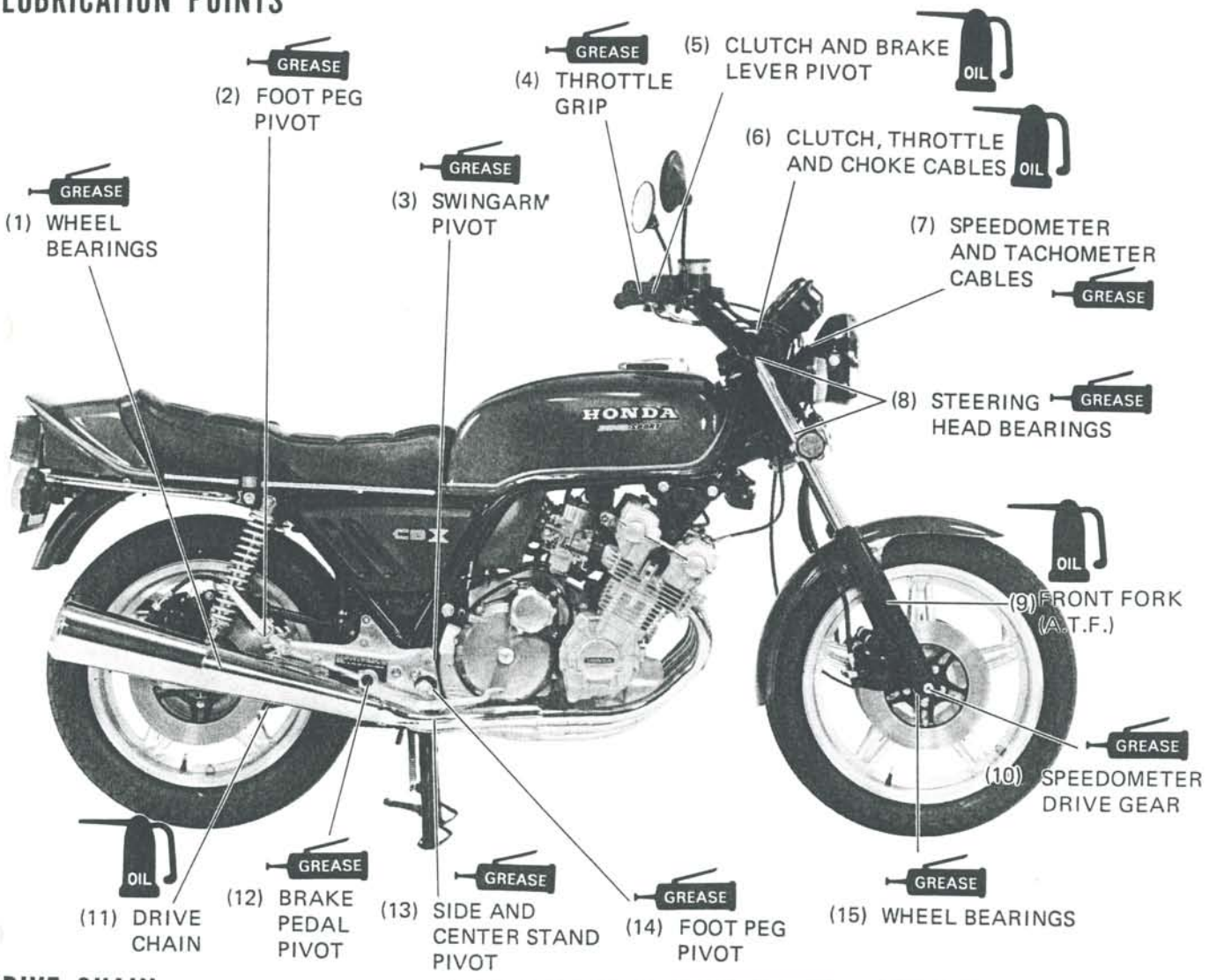



Check that the oil orifice is not clogged.



# CHASSIS LUBRICATION

## LUBRICATION POINTS




## DRIVE CHAIN

Clean the drive chain with kerosene and wipe dry.

*CAUTION*

*Do not use a steam cleaner, high pressure washers or solvents as these will damage the O-rings.*

Lubricate the drive chain with SAE 80 or 90 gear oil.

*CAUTION*

*Do not use commercial aerosol chain lubricants. They contain solvents which could damage the O-rings.*

