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who, well, didn't do much this time, since Paul Lee provided the thing already scanned and compiled into a PDF! (Thanks!). Go visit his website: http://www.iluvmyrx7.com/index.htm Lots of RX-7 goodness there.

There are several ways to get around in the document. I have provided Bookmarks to all the sections, and thumbnails are also provided in the Thumbnails side bar.
I have also included a label for the spine of a binder, for those who wish to print out all the pages and keep a dead-tree edition handy.☺

This version is provided as a service for owners of first generation Mazda RX-7s who are having a devil of a time locating the factory service manual for a reasonable price.
If you really want to send me money, email me and I'll tell you where to send it, but it's not necessary. Consider this payback for all the good advice and information gleaned from the various RX-7 email lists!

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09/16/03

LUBRICATING SYSTEM

2

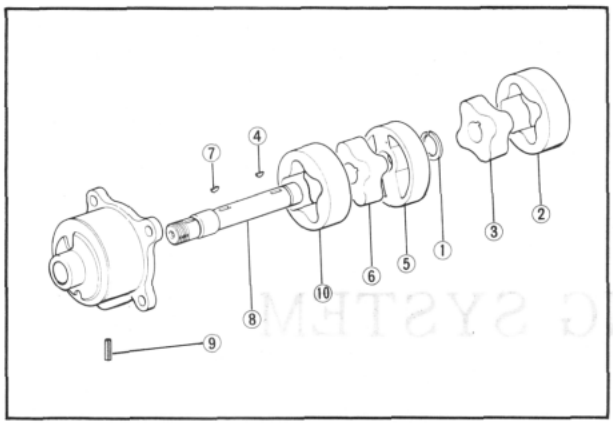

Fig. 2–1

2–A. OIL PUMP

2–A–1. Disassembling Oil Pump

1. Remove the oil pump from the front housing as described in Par. 1–B–11.
2. Disassemble the oil pump in the order numbered below.

1) Snap ring
2) Rear outer rotor
3) Rear inner rotor
4) Key
5) Middle plate
6) Front inner rotor
7) Key
8) Shaft
9) Spring pin (Drive out)
10) Front outer rotor

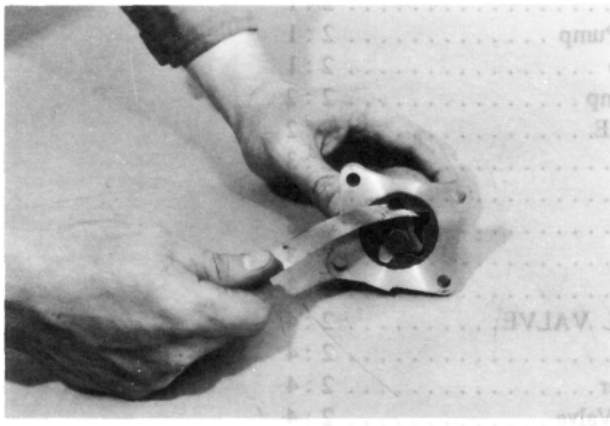

Fig. 2–2

2–A–2. Checking Oil Pump

1. Check the clearance between the lobes of the rotors with a feeler gauge. If the clearance exceeds the limit, replace both rotors.

Standard clearance:
0.01 ~ 0.09 mm (0.0004 ~ 0.0035 in)
Clearance limit:
0.15 mm (0.0059 in)

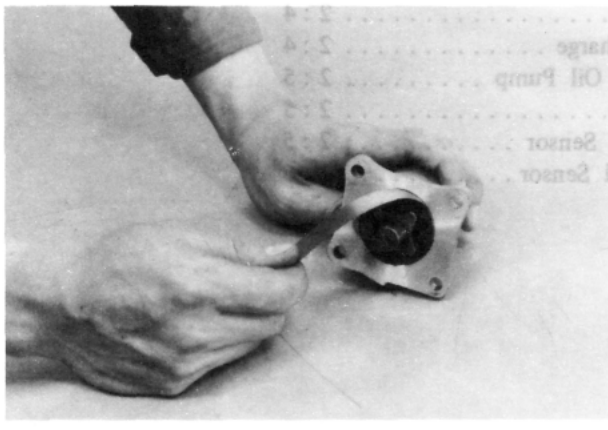

Fig. 2–3

2. Check the clearance between the outer rotor and the pump body with a feeler gauge. If the clearance exceeds the limit, replace the rotor or body.

Standard clearance:
0.20 ~ 0.25 mm (0.0079 ~ 0.098 in)
Clearance limit:
0.30 mm (0.0118 in)

Fig. 2–4

3. Check the end float of the rotors. Place a straight edge across the pump body and measure the clearance between the rotor and the straight edge.
Then place a straight edge across the matching surface of the front housing and measure the clearance between the straight edge and the front housing.
If the end float exceeds the limit, correct the pump body by grinding.

Standard end float:
0.03 ~ 0.13 mm (0.0012 ~ 0.0051 in)
End float limit:
0.15 mm (0.0059 in)

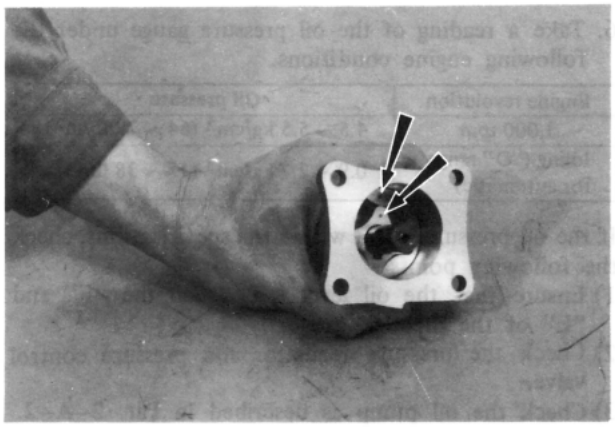

Fig. 2–5

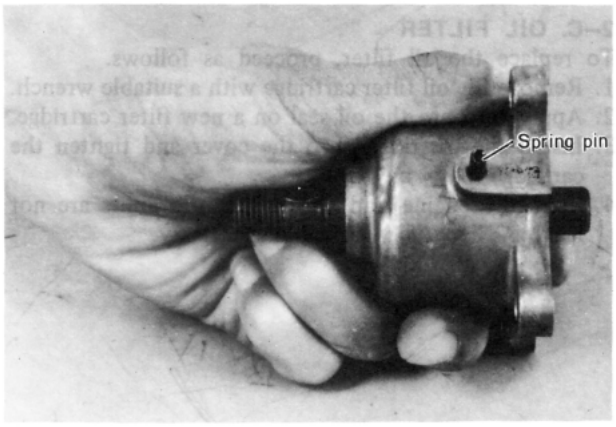

Fig. 2–6

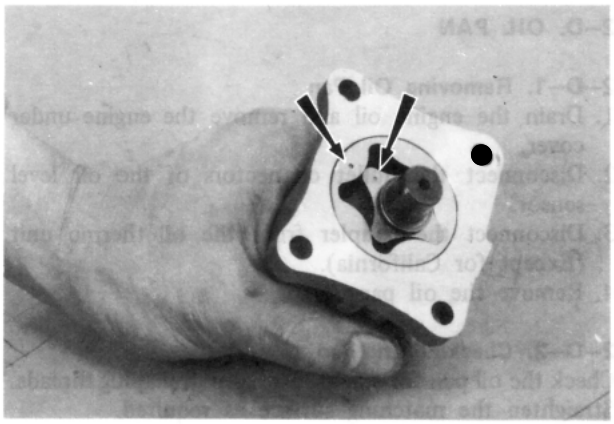

Fig. 2–7

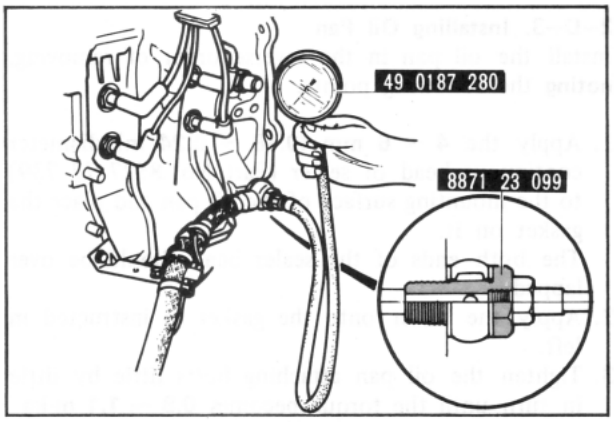

Fig. 2–8

2–A–3. Assembling Oil Pump

Assemble the oil pump in the reverse order of disassembling, **noting** the following points.

1. Install the inner rotor and shaft assembly, and the outer rotor into the pump body so that the tally marks on the rotors go toward the front housing.
2. Install the middle plate into the pump body. Drive in the spring pin to the body so that the spring pin aligns the recess portion of the middle plate. The spring pin slit should face toward the front or rear of engine.
3. Install the rear side inner and outer rotors into the pump body so that the tally marks on the rotors go toward the front housing. Fit the snap ring on the shaft.
4. Prime the oil pump with engine oil.
5. Mount the oil pump assembly on the front housing and fix it with bolts. Rotate the shaft by hand to see whether it rotates smoothly.
6. After installing, check the oil pressure as described in Par. 2–B.

2–B. CHECKING OIL PRESSURE

1. Drain the engine oil.
2. Remove the connecting bolt attaching the oil hose to the rear housing and install the oil pressure connector (8871 23 099) instead.
3. Connect the **oil pressure gauge** (49 0187 280) to the oil pressure connector.
4. Fill the engine with engine oil.
5. Start the engine and warm up the engine to the normal operating temperature.

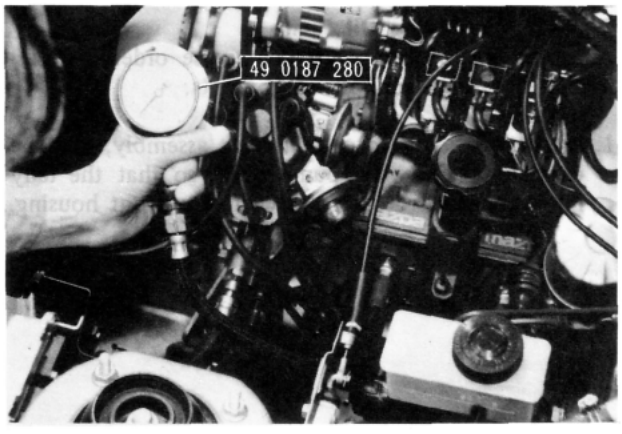

Fig. 2–9

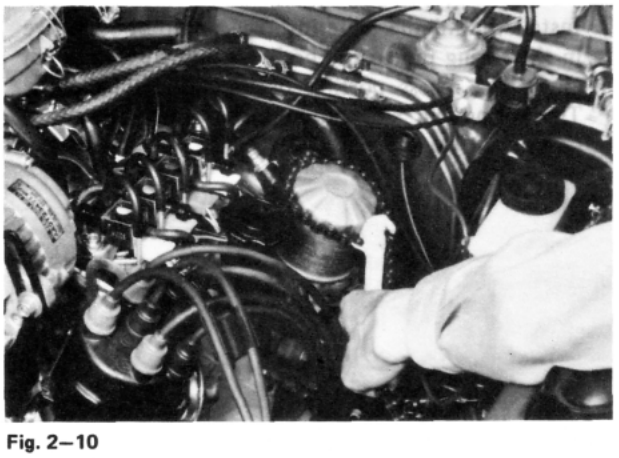

Fig. 2–10

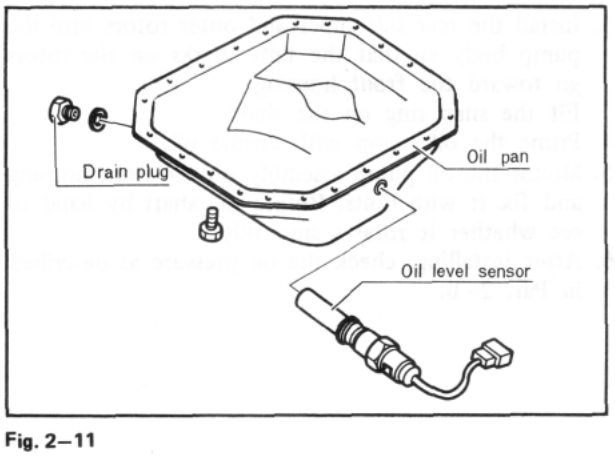

Fig. 2–11

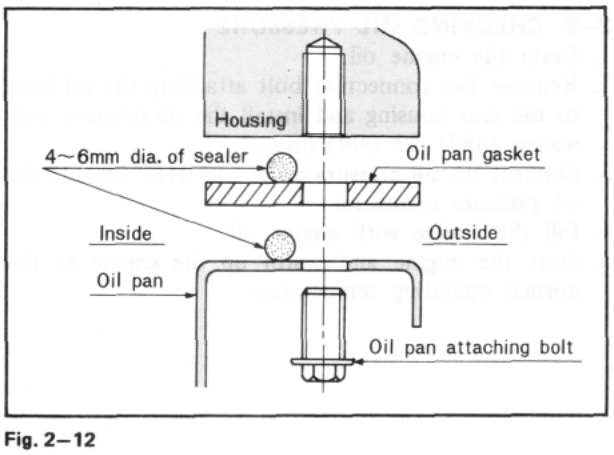

Fig. 2–12

6. Take a reading of the oil pressure gauge under the following engine conditions.

Engine revolution	Oil pressure
3,000 rpm	4.5 ~ 5.5 kg/cm² (64 ~ 79 lb/in²)
Idling ("D" range for automatic)	0.9 ~ 2.7 kg/cm² (13 ~ 38 lb/in²)

If the oil pressure is not within the specifications, check the following points.

1) Ensure that the oil level is between the "F" and "L" of the dipstick gauge.
2) Check the pressure regulator and pressure control valve.
3) Check the oil pump as described in Par. 2–A–2.

2–C. OIL FILTER

To replace the oil filter, proceed as follows.

1. Remove the oil filter cartridge with a suitable wrench.
2. Apply oil onto the oil seal on a new filter cartridge.
3. Install the cartridge onto the cover and tighten the cartridge **fully by hand.**
4. Start the engine and check that the joints are not leaking. Top up with oil if necessary.

2–D. OIL PAN

2–D–1. Removing Oil Pan

1. Drain the engine oil and remove the engine under cover.
2. Disconnect the bullet connectors of the oil level sensor.
3. Disconnect the coupler from the oil thermo unit (Except for California).
4. Remove the oil pan.

2–D–2. Checking Oil Pan

Check the oil pan for cracks, damaged drain plug threads. Straighten the matching surface as required.

2–D–3. Installing Oil Pan

Install the oil pan in the reverse order of removing, **noting** the following points.

1. Apply the **4 ~ 6 mm (0.16 ~ 0.24 in)** diameter continuous bead of sealer (Part No. 8527 77 739) to the mounting surface of the oil pan and place the gasket on it.
   The both ends of the sealer bead should be over lapped.
2. Apply the sealer onto the gasket as instructed in left.
3. Tighten the oil pan attaching bolts little by little in turn until the torque becomes **0.8 ~ 1.1 m-kg (6 ~ 8 ft-lb)** evenly.

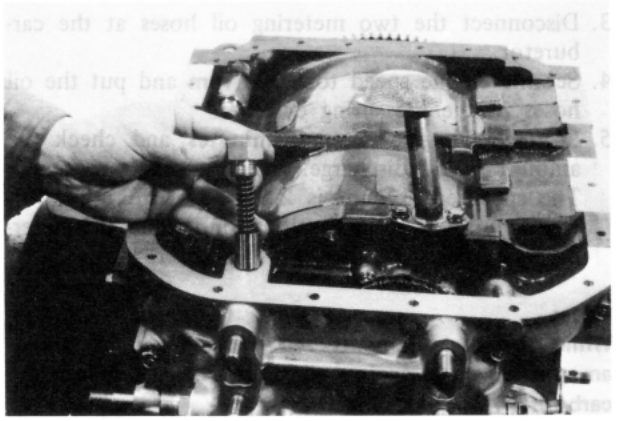

Fig. 2–13

2–E. OIL PRESSURE CONTROL VALVE

Remove the pressure control valve from the front cover. Examine the spring and the plunger for corrosion or any damage. If it is severe, replace with new ones. Measure the free length and replace with new spring if it is not in the specification.
The free length of the spring is **73 mm (2.874 in).**

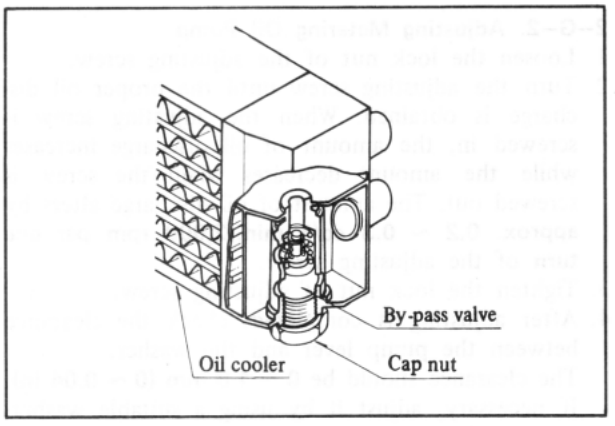

Fig. 2–14

2–F. OIL COOLER

2–F–1. Checking Oil Cooler

Visually inspect the oil cooler for damage, crack and leakage.
If any defects are found, repair it by aluminum welding or replace with new one.

2–F–2. Replacing By-pass Valve

1. Drain the engine oil.
2. Remove the engine under cover.
3. Remove the cap nut and pull out the by-pass valve.
4. Install the by-pass valve in the reverse order of removing.
5. Fill the engine with oil.
6. Start the engine and check that the oil is not leaking from the cap nut.

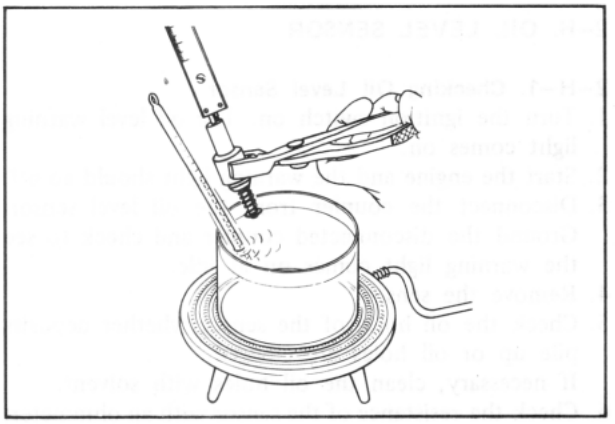

Fig. 2–15

2–F–3. Checking By-pass Valve

1. Remove the by-pass valve from bottom of the oil cooler.
2. Soak the by-pass valve in oil and heat up the oil gradually.
3. Check the protrusion of the valve when the oil temperature is **70°C (158°F).**

Protrusion: **More than 5 mm (0.2 in)**

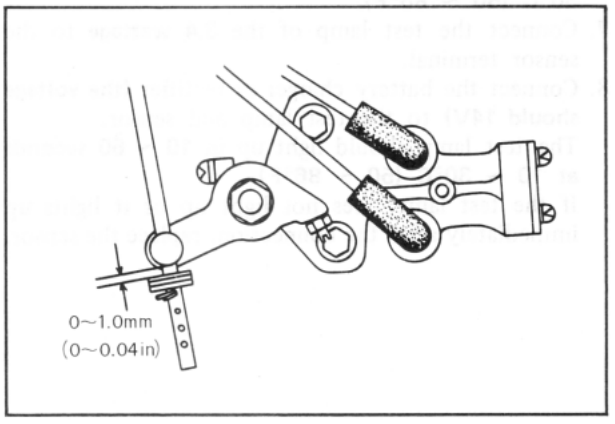

Fig. 2–16

2–G. METERING OIL PUMP

2–G–1. Measuring Oil Discharge

Before measuring the oil discharge, check the metering oil pump and oil hoses for leaks.
Make sure that the clearance between the metering oil pump lever and washer is **0 ~ 1.0 mm (0 ~ 0.04 in).**

1. Connect a tachometer to the engine.
2. Warm up the engine to the normal operating temperature.

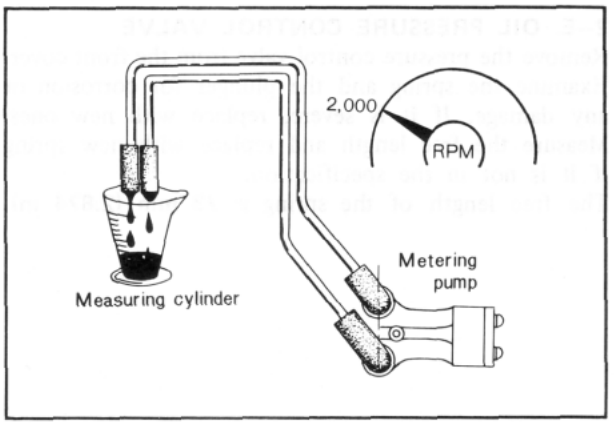

Fig. 2–17

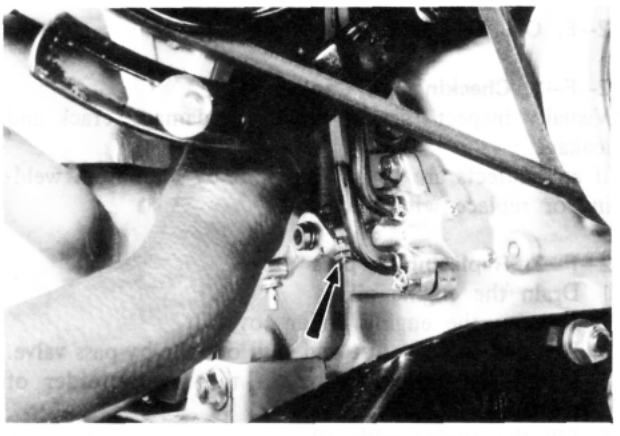

Fig. 2–18

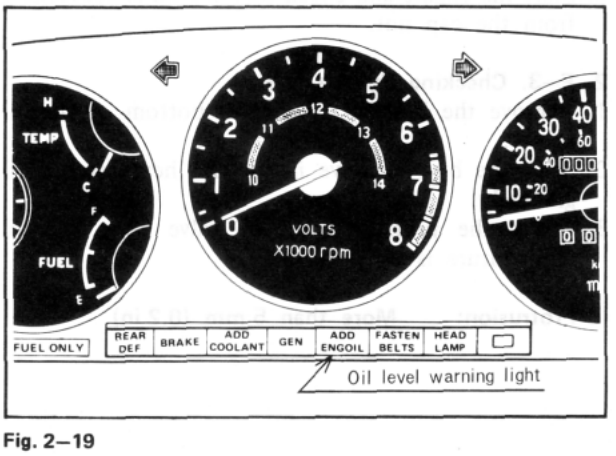

Fig. 2–19

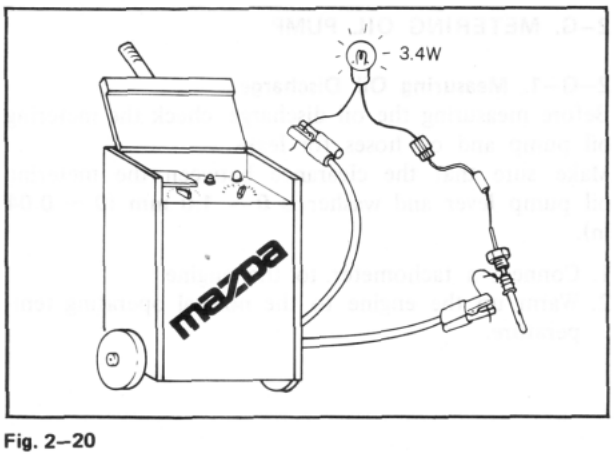

Fig. 2–20

3. Disconnect the two metering oil hoses at the carburetor.
4. Set the engine speed to **2,000 rpm** and put the oil hoses in the measuring cylinder.
5. Stop the engine **after 6 minutes** and check the amount of oil discharge.
   The specified amount is **2.0 ~ 2.5 cc/6 min.**
   If it is not within the specifications, adjust the metering oil pump.

Note:
While the measurements are being taken, a proper amount of clean engine oil should be added into the carburetor.

2–G–2. Adjusting Metering Oil Pump

1. Loosen the lock nut of the adjusting screw.
2. Turn the adjusting screw until the proper oil discharge is obtained. When the adjusting screw is screwed in, the amount of oil discharge increases while the amount decreases when the screw is screwed out. The amount of oil discharge alters by **approx. 0.2 ~ 0.3 cc/6 min./2,000 rpm per one turn** of the adjusting screw.
3. Tighten the lock nut of adjusting screw.
4. After adjusting is completed, check the clearance between the pump lever and the washer.
   The clearance should be **0 ~ 1.0 mm (0 ~ 0.04 in).**
   If necessary, adjust it by using a suitable washer.

2–H. OIL LEVEL SENSOR

2–H–1. Checking Oil Level Sensor

1. Turn the ignition switch on. The oil level warning light comes on.
2. Start the engine and the warning light should go off.
3. Disconnect the coupler from the oil level sensor. Ground the disconnected coupler and check to see the warning light comes on at idle.
4. Remove the sensor.
5. Check the oil holes of the sensor whether deposits pile up or oil holes are clogged.
   If necessary, clean the oil holes with solvent.
6. Check the resistance of the sensor with an ohmmeter.
   The specified resistance is **2 ~ 4 kiloohm at 10 ~ 30°C (50 ~ 86°F).**
7. Connect the test lamp of the **3.4 wattage** to the sensor terminal.
8. Connect the battery charger or rectifier **(the voltage should 14V)** to the test lamp and sensor.
   The test lamp should light up in **10 ~ 60 seconds at 10 ~ 30°C (50 ~ 86°F).**
   If the test lamp does not light up or it lights up immediately after the connection, replace the sensor.

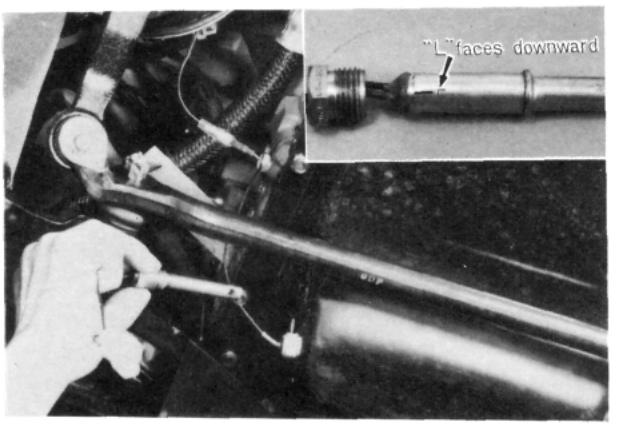

Fig. 2–21

2–H–2. Replacing Oil Level Sensor

1. Drain the engine oil.
2. Disconnect the coupler of the sensor.
3. Remove the sensor attaching nut and remove the sensor.
4. Place the gasket onto the sensor.
5. Install the sensor to the oil pan with "L" mark on the sensor downward.
6. Install the nut onto the sensor and tighten the nut to **2.5 ~ 3.0 m-kg (18 ~ 22 ft-lb).**
7. Connect the coupler of the sensor.
8. Fill the engine with engine oil.
9. Start the engine and check to see the oil is not leaking from the joining faces of the sensor.