the oiler pump body (2) to the oil tank. Carefully pull the oiler pump body down and away from the oil tank so that the oiler pump push rod is undamaged as it comes free. Remove the oiler pump diaphragm (3), spring (4) and valve (5).

2. Carefully lift off the oiler pump cap (6). The plunger (7) is under pressure from the spring (9). Remove the plunger and remove the "O" ring (8) from the plunger. Remove the spring from the body.

SERVICING THE MANUAL OILER PUMP

a. Pump Won't Pump Oil

The pump cannot pump oil if the flapper valves of the diaphragm are damaged or stiff, if the "O" ring is flattened, cracked or broken, or if springs are damaged. The free length of the plunger spring should be approximately 1-1/4 inches long. The free length of the valve spring should be approximately 5/8 inch long.

The pump cannot pump oil if the oil passages between the pump and the bar mounting pad or the right side of the saw are clogged or if the oil pickup assembly in the oil tank is plugged. Use low pressure (three to five pounds) air to blow out the oil passages, blowing from the bar mounting pad toward the oil pump. Do not try to blow out the passages with the oil pump in place. Use low pressure (three to five pounds) air to clear the oil pickup assembly screen after removing the oil tank cap. Blow from the oil pump position into the oil tank. If this does not clear the screen so that oil can be drawn from the oil tank, it will be necessary to remove the tank to clean the screen.

b. Leaking Oil Pump

Oil leakage around the pump cap is caused by a damaged "O" ring and/or a damaged oiler pump cap. This kind of leakage can be caused by a clogged oil discharge line between the pump and the bar mounting pad. Use low pressure (three to five pounds) air to blow the passage out, blowing from the pad toward the pump after removing the pump. Replace the damaged parts.

c. Oil Leakage Around Bar Mounting Pad

This kind of leakage can be caused by a damaged oil pump diaphragm or a clogged vent in the oiler pump cap. Some saws were manufactured with an unvented cap. Check to make sure which cap is on the saw being serviced.

REASSEMBLY

1. Place the plunger spring (9, Figure 4-4) in the pump body (2). Place the "O" ring (8) on the plunger (7). Insert the plunger into the body on top of the spring and install the cap (6).

2. Place the valve spring (4) in its socket in the side of the fuel tank.

3. Place the diaphragm (3) on the body (2) with the sides and screw holes of the diaphragm aligned with the sides and screw holes of the body. Coat the two screws (1) with a drop of Loctite and insert them through the body and gasket.

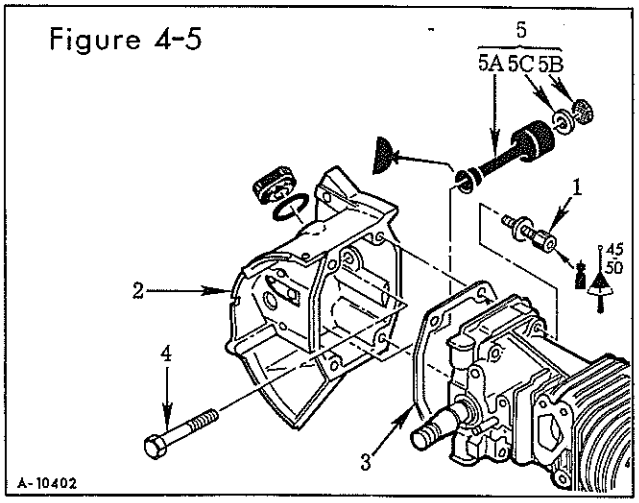
4. Install the valve (5) in the fuel tank body. Feed the oiler push rod into the pump body through the cap and install the body and diaphragm with the two screws on the fuel tank. Tighten the screws to a torque value of 25 to 30 inch pounds.

OIL TANK

The oil tank is mounted on the forward side of the crankcase assembly. It can be removed after removing the fan housing, the handle and upper and lower shrouds. Unless the engine is to be completely torn down, removal of any additional parts is a matter of convenience during removal and installation of the oil tank.

REMOVAL

Figure 4-5



1. Remove the oil tank cap and drain the oil from the oil tank.

2. Remove the four Allen head screws (1, Figure 4-5) attaching the oil tank (2) to the crankcase bottom. (The lower left screw attaches the condenser to the crankcase.) Pull the oil tank away from the crankcase bottom. Remove and discard the oil tank gasket (3).

3. The bar bolt (4) can now be removed from the right hand side of the oil tank.

4. The oil pickup assembly (5) can be removed and disassembled after the oil pump assembly has been removed from the left side of the oil tank.

   a. Push the oil pickup assembly hose (5A) into the oil tank.

   b. The screen (5B) can be cleaned while still in the bell of the hose by soaking the bell and screen in solvent and blowing low pressure (three to five

pounds) air through the hose in the opposite direction from the oil flow.

c. The screen can be removed from the bell by pulling the lip of the bell out and back until one side of the screen is free. Work the lip off the rest of the screen. The weight (5C) can be removed in the same manner. A screwdriver will help to pry the weight out. Do not use a screwdriver on the screen.

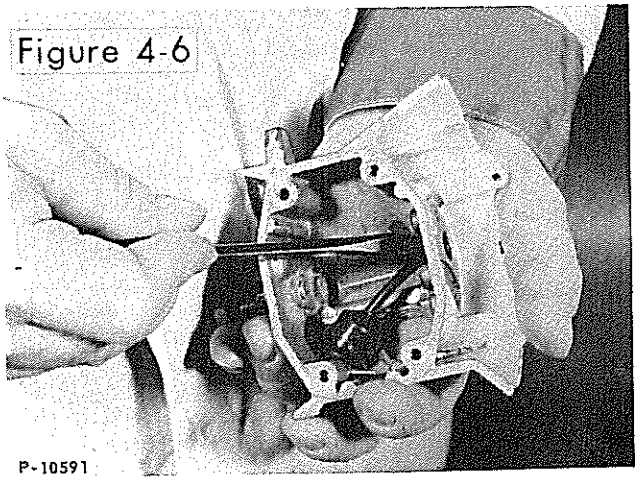
SERVICING THE OIL TANK

a. Pump Won't Pump Oil

Failure of the oil pump to pump oil properly can be caused by a clogged oil screen, damage to the pickup assembly at the point where the hose goes through the oil tank wall at the oiler pump, or a clogged vent in the oil tank cap. Clean and replace parts where necessary. Make sure the oil tank cap vents properly by blowing through the cap with very low pressure (one to three pounds) air.

INSTALLATION

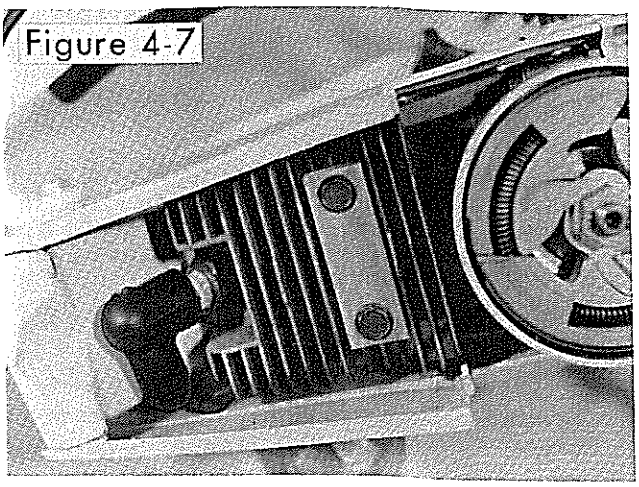
1. Reinstall the weight and screen in the oil pickup assembly.



a. Grasp the lip of the bell on the end of the hose (5A, Figure 4-5) with a needle nose pliers and insert the weight (5C) into the bell. Pull the rest of the lip over the weight and push the weight to the bottom of the bell with a screwdriver.

b. Place the screen (5B) on the end of the bell and work the lip of the bell over the screen. After a portion of the lip has been worked over the screen, run a blunt tool between the screen and the lip to seat the rest of the screen inside the lip.

2. Push the pickup hose through the hole in the side of the oil tank from inside the oil tank (Figure 4-6) and seat the end of the hose in the recess at the oiler pump. Reinstall the oiler pump. Put a drop of Loc-



tite on each of the pump attaching screws and tighten them to a torque value of 25 to 30 inch pounds.

3. Place a new oil tank gasket (3) on the crankcase bottom. Coat each of the four attaching screws (1) with a drop of Loctite. Place the oil tank (2) on the gasket and install the condenser and screws to a torque value of 45 to 50 inch pounds.

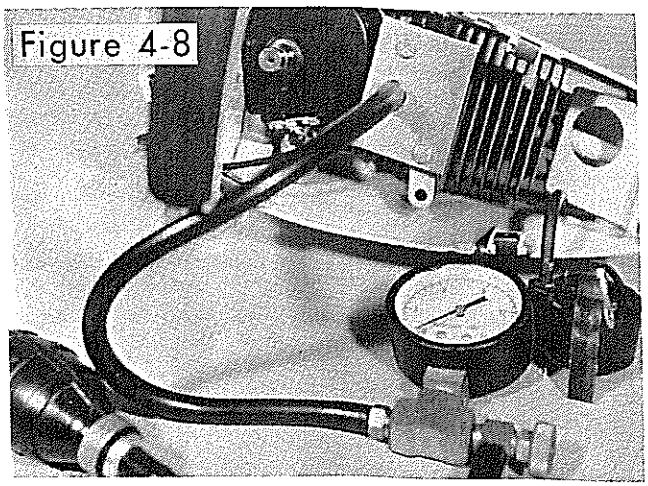
Reinstall the handle, the top and lower shrouds, flywheel and the fan housing. Make sure the throttle rod and manual oiler button work freely. Refill the oil tank with clean SAE 30 motor oil and make sure the manual oiler pump operates correctly.

POWERHEAD

CRANKCASE PRESSURE TEST

The following test should be performed, when required prior to disassembly of the saw. It is only necessary to remove the spark arrester muffler, fan housing, flywheel and carburetor. Do not remove the muffler and carburetor gaskets or the carburetor insulator.

1. Install the exhaust adapter plate on the muffler gasket (Figure 4-7).



2. Install the intake adapter plate on top of the carburetor gasket and connect the pressure tool as shown in Figure 4-8.

3. Pump pressure up to 5 PSI and stop.

4. A pressure loss of 1 PSI per minute is acceptable, but if the loss is greater than 1 PSI per minute, locate the leak and correct it.

NOTE: Make sure the right front handle screw is tight as this screw opens into the crankcase. Apply fuel mix around the head of the screw and check for bubbles.

DISASSEMBLY

To disassemble the powerhead in order to remove the piston, connecting rod and/or crankshaft, remove the fan housing (1, Figure 4-9), flywheel (2), flywheel key, breaker assembly (3), breaker box (4), handle (5), top and bottom shrouds (6 and 7), oil tank (8) and spark plug (9).

To remove the bearings, oil seals, retaining rings and thrust plates from the crankshaft, remove in addition to the above, the clutch rotor (1, Figure 4-10), sprocket and drum assembly (2) and sprocket bearing and washer (3 and 4).

For a complete teardown of the powerhead, the air filter housing (1, Figure 4-11), muffler (2), coil and lamination assembly (3), carburetor (4) and carburetor insulator (5) should also be removed.

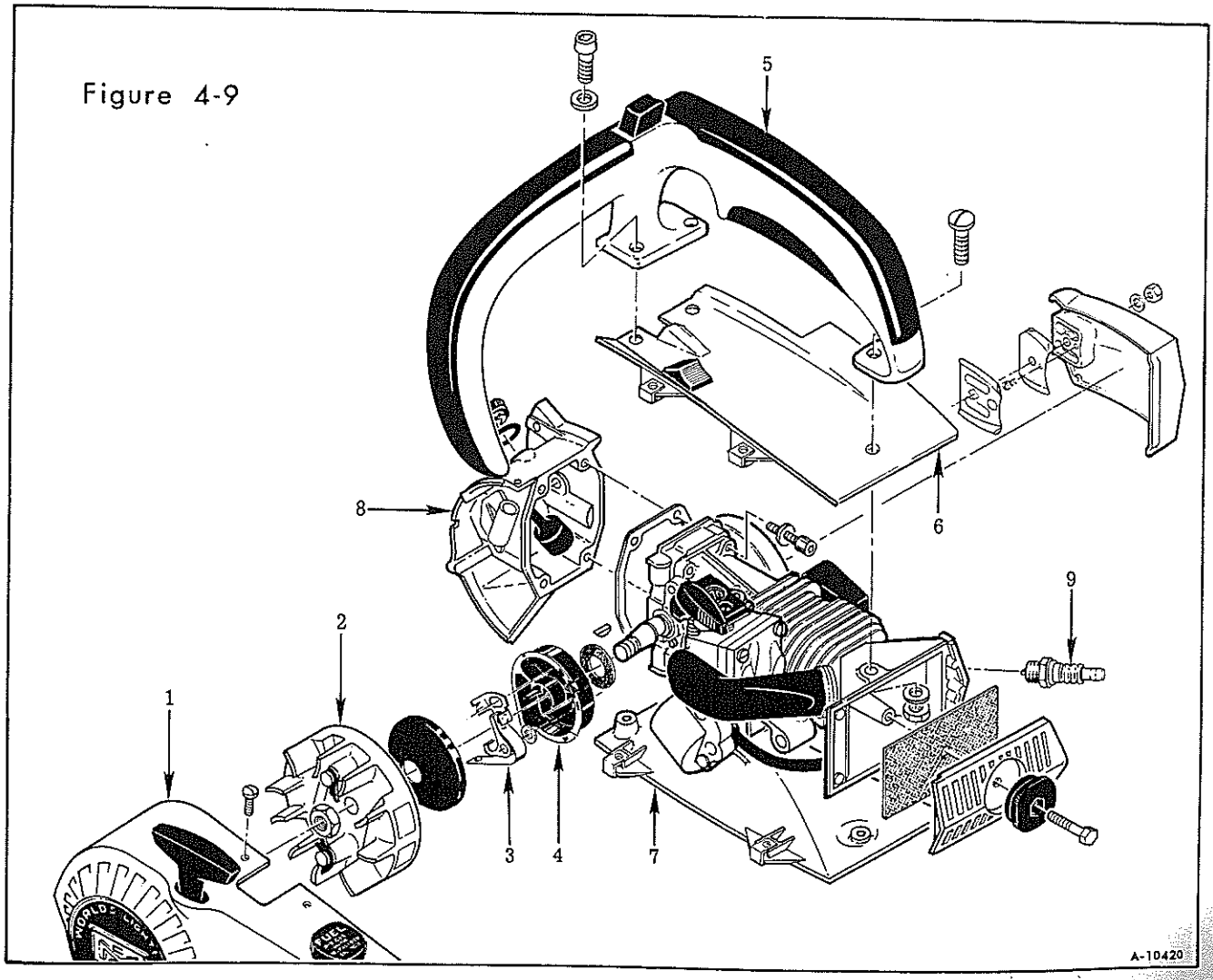
1. Remove the four screws (1, Figure 4-12) attaching the crankcase bottom to the crankcase cylinder (3) and remove the crankcase bottom.

2. Lift out the crankshaft (4), connecting rod (5) and piston (6) as an assembled unit.

   a. If the clutch rotor, etc. was removed, the oil seals (7), retaining rings (8), crankshaft bearings (9) and thrust plates (10) can now be removed.

3. Remove the two connecting rod screws (5A) and re-

Figure 4-9



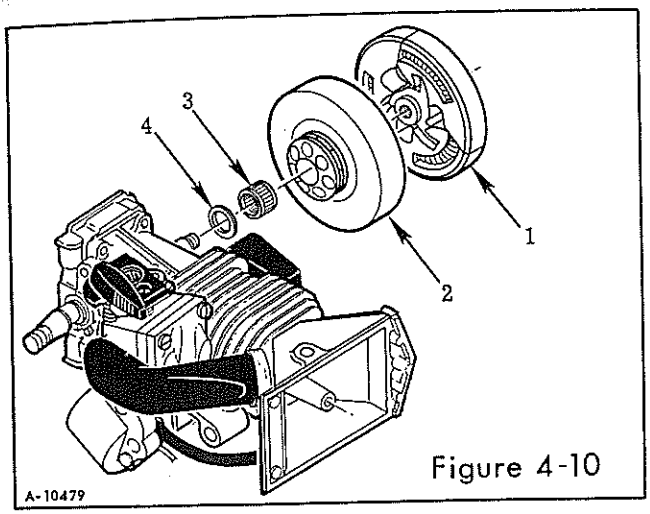


Figure 4-10

move the rod cap (5B) and needle rollers (5C) from the crankshaft. Temporarily reinstall the rod cap on the rod so that it doesn't get lost or mixed with another rod.

4. Remove the rings from the pistons.

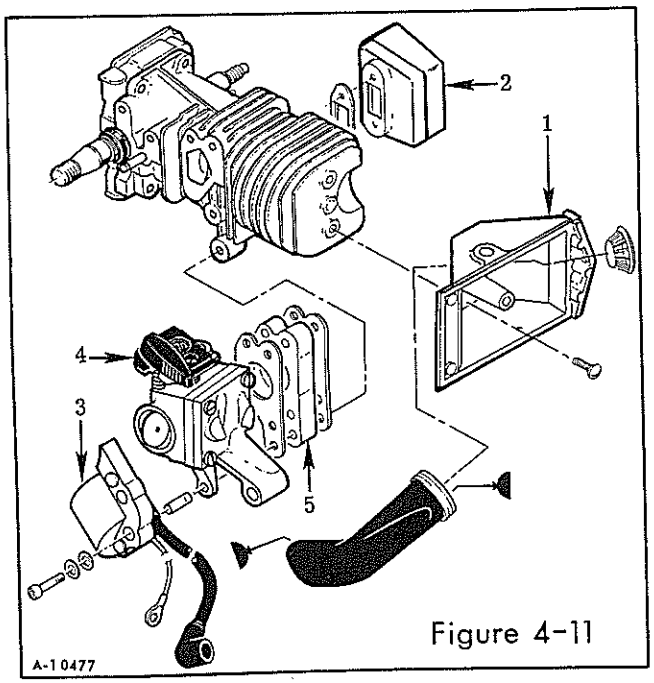


Figure 4-11

5. Disassembly of the connecting rod and piston.

   a. Use Piston Assembly Tool Kit, P/N 68915 and a 1/4-inch drift pin (Figure 4-13) with an arbor press or vise. Do not use a hammer as the parts in the tool kit will be damaged.

   b. Place the piston in the holding block with the ring end of the piston toward the closed end of the block. Press out the pin and opposite bearing with the drift pin (Figure 4-14). Do not reuse this bearing even though it looks in good condition.

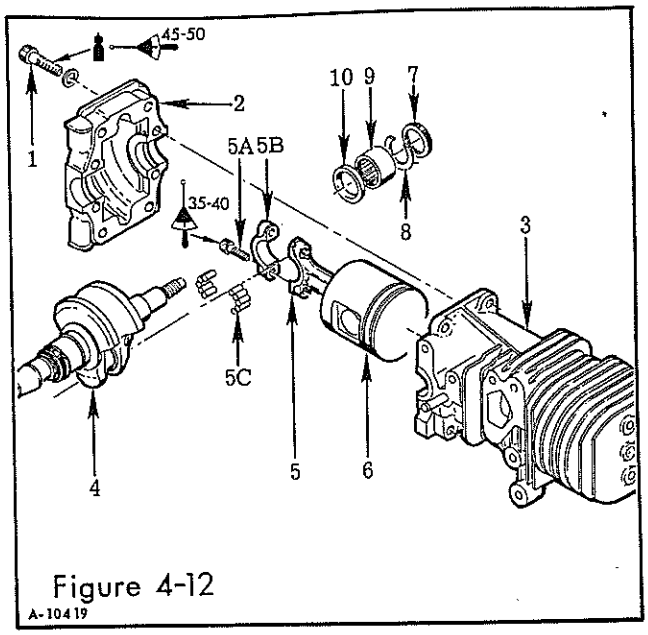


Figure 4-12

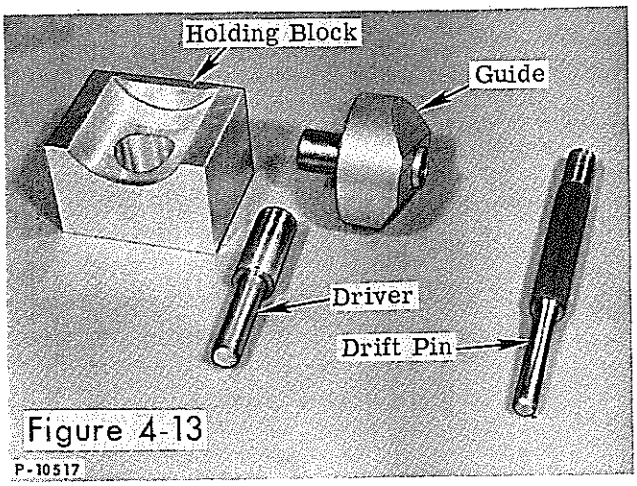


Figure 4-13

   c. Remove the connecting rod from the piston.

   d. Turn the piston over so the remaining bearing is next to the holding block. Place the thick end of the driver over the bearing in the piston and press out the bearing (Figure 4-15).

CLEANING

Clean all parts in solvent and blow dry with low pressure (three to five pounds) air. When handling small parts (i.e., needle rollers, etc.) place them in a small sieve and dunk the sieve up and down in the solvent. Make sure all interior passages of parts are clean. Heavily carboned areas can be cleaned by using commercial carburetor cleaning solutions to loosen the carbon. Finish the job by scrapping the carbon away with a blunt scraper. Use a ring groove scraper to clean out the piston ring grooves. If you don't have a ring groove scraper, make one be breaking a Power Mac 6 ring in two and filing a square edge at one end for the scraper.