shaft on which it was mounted, the chain (6) can be removed.

(2) Remove keys (7 and 8).

(3) Disconnect hoses to the fluid motor (58). Remove bolts (54), lockwashers (55) and remove the fluid motor.

(4) Remove the bolts (15) lockwashers (16), shaft lock (17), shaft (18), seals (19 and 23), bearings (20 and 22), and sprockets (21).

(5) Remove the bolts (15), lockwashers (16), shaft lock (17), shaft (18), seals (19 and 23), and spacers (32 and 33).

(7) Remove the cotter pin (36), sprocket (37), chain (38), sprocket (12) and keys (14 and 40).

(8) Remove nuts (34), lockwashers (35), bolts (41), retainer plate (45), seal (46), nut (47), and washer (48) from shaft (52).

(9) Remove the pillow block assemblies from the shaft (52) and remove the chains (53).

(10). Remove the retainer plate (51), seal (50), and bearing (49).

(11) Remove the nuts (24), lockwashers (25), bolts (26), retainer plates (27 and 44), seal (43), and bearing (42) from pillow block (31).

(12) Remove the bolt (56), lockwasher (57), and adapter (59).

b. Cleaning, Inspection, and Repair

(1) Clean all parts in an approved solvent and dry with filtered compressed air.

(2) Inspect sprockets for cracked, chipped, or broken teeth.

(3) Check chains for excessively worn or broken links.

(4) Inspect bearings for pitting, wear, and other damage.

(5) Replace all seals.

(6) Replace all parts worn or damaged beyond simple repair.

c. Reassembly. Reassemble the chain feed drive by reversing disassembly procedures.

3-38. FLUID MOTOR, CHAIN FEED DRIVE (Figure 3-44).

1. MOUNTING BOLT
2. BOLT
3. COVER
4. RING
5. O-RING
6. SCREW
7. PRESSURE PLATE
8. BUSHING
9. ROTOR
10. VANE KIT
11. RING
12. PRESSURE PLATE
13. O-RING
14. RING
15. HUB ADAPTER
16. O-RING
17. RING
18. TEFLON RING
19. O-RING
20. LOCK RING
21. RING
22. BEARING
23. SHAFT
24. KEY
25. WASHER
26. SHAFT SEAL
27. WIPER
28. BODY
29. PIN
30. PIN
20. BOLT
21. LOCKWASHER
22. ADAPTER
23. BEARING
24. BOLT
25. LOCKWASHER
26. ADAPTER
27. SEAL
28. BEARING
29. GEAR
30. SHIFTER COLLAR
31. CLUTCH
32. YOKE
33. GEAR
34. SHAFT
35. BEARING
36. SPACER
37. FITTING
38. BUSHING
39. RING
40. CASE

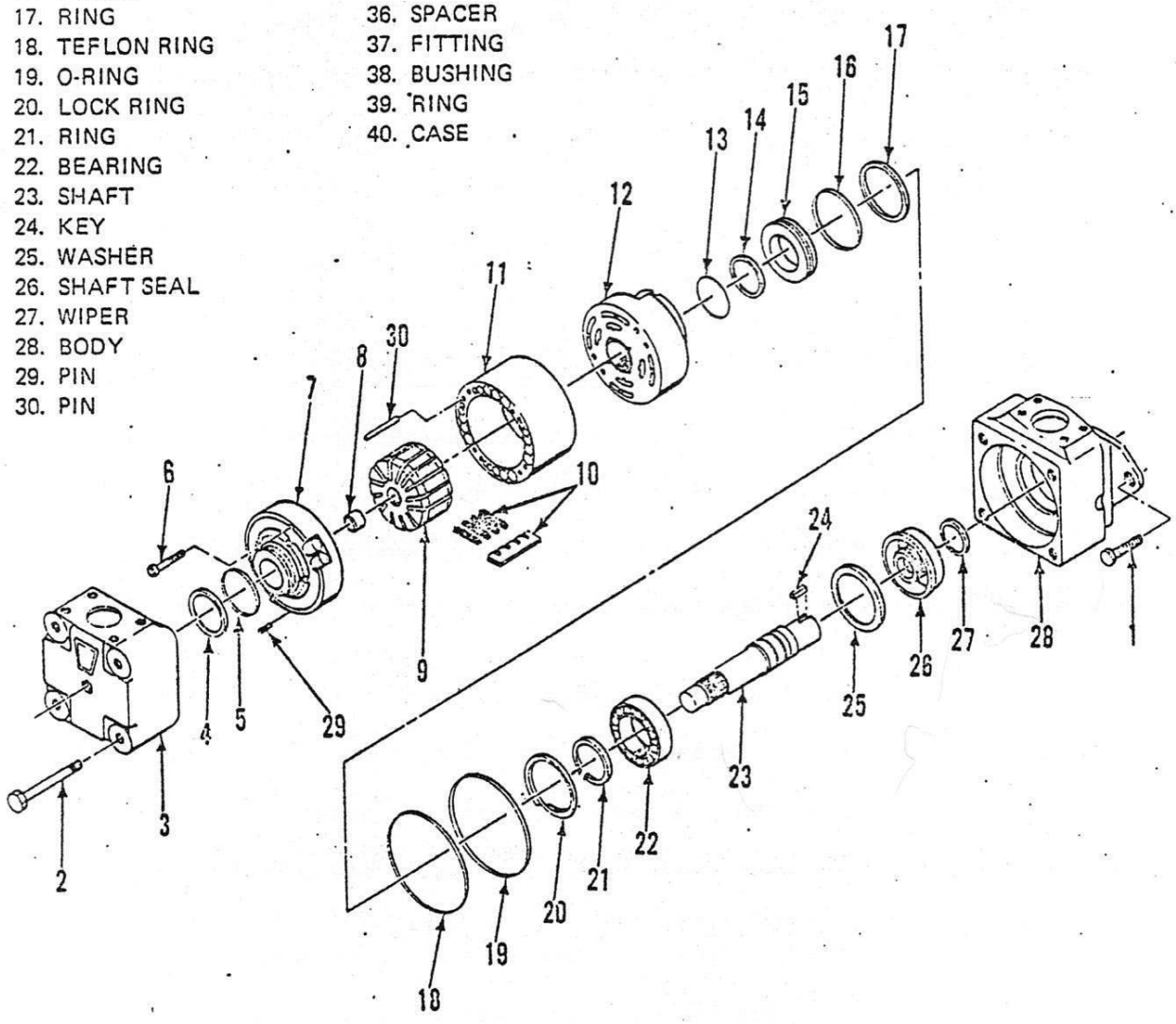

Figure 3-44. Fluid Motor, Chain Feed Drive

Fluid Motor (Contd):

The chain feed mechanism receives its power from a Vickers balanced vane type fluid motor (45 M) as illustrated in parts book.

These motors are very compact and used as a means of applying variable speed rotary hydraulic power. These motors have variable horsepower (constant torque characteristics) and can be stalled under load without damage.

Removal & Disassembly

First, remove roller chain and sprocket. Disconnect hydraulic hose connections and plug holes to prevent the entry of dirt into the system. Clamp the motor in a vise with protective jaws, cover end up. Remove the four cover screws and lift off the cover. Attach the cartridge puller to the cartridge assembly and pull from the body. It is suggested at this point that a pre-assembled replacement cartridge be installed for rapid field overhaul. The cartridge is bolted together and can be serviced as a complete assembly. If the cartridge is not being replaced as an assembly, remove two screws and separate the pressure plates, rotor, ring, vanes and springs.
NOTE: Use a standard four inch piston ring compressor when disassembling and assembling the cartridge components.

Carefully position the rotor and vane assembly halfway out of ring and install the ring compressor. Compress the vanes into the rotor and remove this assembly from ring. Release the ring compressor and disassemble components. Remove the "O" ring and backup rings from the pressure plates and body.

Remove the shaft key. Carefully remove spirolox ring next to the shaft bearing from the body; then tap the shaft and bearing assembly out. If it is necessary to remove the small snap ring and bearing from the shaft, support the bearing inner race in an arbor press, remove snap ring and press bearing off the shaft. Remove the washer and then drive seal and wiper from the flanged end of the body.

Fluid Motor (Cont'd):

Inspection and Repair:

Discard the shaft seal, wiper, "O" rings and backup rings. Use a new seal kit for re-assembly. (See Parts Catalog.) Wash the metal parts in clean mineral oil solvent, blow them dry with filtered compressed air and place on a clean surface for inspection. Check the wearing surfaces of the cartridge pressure plates and ring for scoring and excessive wear. Remove light score marks by lapping. Replace any heavily scored or badly worn parts.

Inspect the vanes for burrs, wear and excessive play in the rotor slots. Carefully dress down burrs with a medium India stone (Norton abrasives MF-724 or equivalent). Replace the rotor if the slots are worn. Replace vanes with a new vane and spring kit if the vane tips are rounded. In any case, all the vanes' springs must be replaced with a new spring kit. Rotate the bearing while applying pressure to check for wear, looseness, roughness and pitted or cracked races.

Inspect the seal and bushing mating surfaces on the shaft for scoring or wear. Replace the shaft if marks cannot be removed by light polishing. Be sure that any paint or burrs raised on the body and cover mating surfaces are removed before re-assembly.

Re-Assembly:

NOTE: Coat all parts with clean hydraulic fluid to facilitate re-assembly and provide initial lubrication. Use small amounts of petroleum jelly to hold the "O" rings in place during assembly. Soak the shaft wiper in oil before re-assembly.

Install the shaft wiper in the body. Grease the shaft seal and press it into the body with the seal driver. The spring on the seal must be toward the bearing. Place the washer in the body against the seal. Support the bearing inner race

Fluid Motor (Cont'd):

and press in the shaft. Install the tru-arc snap ring on the head hammer. Install the spirolox ring in the body to secure the bearing and shaft. Thoroughly inspect to insure that spirolox ring is correctly installed.

With the rotor lying on a clean, flat surface, slide the vanes and springs into the rotor slots. Lift the vanes slightly to insure the springs are positioned in the spring recesses of the rotor. With a four-inch ring compressor, compress the vanes in the slots so the vanes will clear the minor diameter of the ring.

CAUTION: Be certain the springs remain seated in the spring recesses of the rotor as vanes are compressed.

Position the ring on a flat surface and insert the rotor and vane assembly one-fourth way into the ring. Use a 3-1/2 inch diameter hard wood plug as a driver for positioning the rotor and vane assembly. Release the compressor carefully so the vanes do not snap out against the ring surface. With the 3-1/2 inch plug, press the vanes and rotor flush with the ring.

NOTE: Vanes may become cocked if not pushed down uniformly.

Install the locating pins on the cover end pressure plate (plate w/bushing). Place the rotor, ring and vane assembly over the pins on the plate.

CAUTION: Do not insert pins in screw holes when assembling rotor to plate. The pin holes can be identified because they are elongated whereas the screw holes are round.

Install the body end pressure plate against the rotor and ring. The porting in this plate will be 90° from the other plate. Carefully install the two capscrews in the cartridge. Tighten the screws to 12 foot pounds, being certain the peripheral edges of the ring and plates are flush. Tap with a plastic hammer, if

Fluid Motor (Cont'd):

necessary to effect alignment. Install "O" rings first and then backup rings on the pressure plate hubs. Grease with petroleum jelly. Inspect this assembly to insure that the "O' ring is positioned in the concave side of the back-up ring.

Clamp the body in a vise in protective jaws. Install the teflon "O" ring in the body, greasing liberally. In the -II design motors, this teflon "O" ring is in cover. Assembly the cartridge on the shaft, with the pressure plate bushing toward the toward the cover. Tap the cartridge into position.

Install the cover locating pin in the cover end pressure plate. Carefully install the cover, being sure the locating pin engages the pinhole in the cover. To check engagement, turn the cover 30 degrees in both directions and be certain the cartridge moves with it. Install four cover screws and tighten to 200 foot pounds.

3.38 "FLUID MOTOR"

TABLE IV - TROUBLE, CAUSE AND REMEDY CHART

TROUBLE	PROBABLE CAUSE	REMEDY
MOTOR FAILS TO START	System leakage - loose port connections or broken lines.	Inspect and tighten port connections and lines.
	No fluid - inadequate fluid supply at inlet or in system.	Check fluid level in reservoir. Replenish as necessary.
	System return line or drain line restricted.	Check drain filter. Clean and/or replace filter element.
	System inlet line restricted.	Check all strainers and filter for dirt and sludge. Clean if necessary.
	Fluid viscosity to heavy to pick up prime.	Completely drain the system. Add new filtered fluid of proper viscosity.
	Air in system.	Tighten any loose connections. Bleed air from highest point in system and replenish fluid.
	Drive train damaged.	Check and repair drive train.
	Pump driven in wrong direction.	Drive direction must be reversed immediately to prevent seizure.
	Pump coupling or shaft sheared.	Check shaft engagement and damage. Replace the necessary parts.
	System relief valve stuck open.	Disassemble and clean the valve with solvent. Use pressure gauge to adjust the relief valve.
	Pump or motor binding.	Remove and disassemble the unit. Check for correct assembly of parts. Also check for dirt or metal chips. Clean the parts thoroughly and replace any damaged parts.
MOTOR NOT DEVELOPING SUFFICIENT SPEED OR TORQUE	Insufficient pump speed.	Check pump drive speed.
	Insufficient fluid pressure.	Check delivery of pump. Make certain sufficient hydraulic fluid is available to the pump.
	System overload relief valve set too low.	Check pressure and reset relief valve.
	Motor requiring excessive torque.	Remove motor and check torque requirements of driven shaft.
	Parts of motor cartridge scored due to excessive pressure or foreign matter in oil.	Remove motor for overhaul.
MOTOR TURNING IN WRONG DIRECTION	Improper port connections or control	Reverse port connections or shift valve.
	Components in system not functioning as intended.	Check complete system for proper operation.
MOTOR NOISY	Air in system.	Bleed air from highest point in system and replenish fluid.
	Motor internally damaged.	Remove motor for overhaul.
	Noise from other system components telegraphing back through lines and emerging from motor.	Check complete system for proper operation.
EXTERNAL LEAKAGE FROM MOTOR	Worn seals or cut "O" rings.	Install new seals and "O" rings.
MOTOR SHAFT CONTINUING TO ROTATE WHEN CONTROL IS IN "OFF" POSITION	Control valve is not functioning properly.	Check control valve for correct spool and leakage.