Rineer 15 Series Hydraulic Motor Service Manual

Removal of 15 Series Shaft Seal

Step 1

Remove snap ring. See Figure 1.

WARNING

WARNING: Use caution when removing snap ring. If released accidentally, it can become an airborne hazard.



Figure 1

Step 2

- a. Pry out shaft seal plate with two screwdrivers
- b. Remove seal plate o-ring from groove in bearing bore. See Figure 2.

NOTE: The shaft seal on a standard motor is pressed in and can be removed in the reverse manner.



Figure 2

Removal of Wheel Motor Seal Plate and Bearing Box

Step 3

- a. Loosen and remove 8 each 10-32 bolts.
- b. Pry off the seal plate with a screwdriver. See Figure 3. Protect the shaft seal from being cut by the keyway (keyed shaft) by placing a thin strip of metallic tape over the shaft. Smooth any burrs that may tear or snap the seal.



Figure 3

Step 4

Loosen and remove 8 each 3/8" bolts with 5/16" socket head wrench. See Figure 4.



Figure 4

Removal of Wheel Motor Seal Plate and Bearing Box (cont.)

Step 5

- a. Two of the 3/8" bolt holes are provided with jack screw threads.
- b. Insert a piece of 1/4" round stock by 2-1/2" long into each jack screw hole.
- c. Screw two 7/16-14 bolts into the jack screw threads until the bearing box is free of the motor. See Figure 5.



Disassembly of Wheel Motor Bearing Box

Step 7

- a. Loosen clamp screw in lock nut.
- b. Unscrew lock nut and remove. See Figure 7.



Figure 7

Figure 5

Step 6

Lift up on the bearing box to remove from motor. See Figure 6.



Figure 6

- a. Press shaft out of bearing box. See Figure 8.
- b. Proceed to step 9, disregarding steps 11 & 12.



Figure 8

Disassembly of Front Housing and Shaft

Step 9

- a. Mark one side of the motor for proper assembly, paying careful attention that the cartridge will not be installed upside down.
- b. Secure the motor prior to loosening the 5/8-11 bolts. See Figure 9.



Figure 9

Step 10

- a. Remove front housing.
- Note: Two 5/16" ball checks and one main body o-ring may be dislodged and fall free. See Figure 10.



Figure 10

Step 11

With the seal plate removed, press shaft and ball bearing out of front housing. See Figure 11.



Figure 11

- a. Remove snap ring from shaft.
- b. Press shaft out of bearing. See Figure 12.





Disassembly of Rotor/Stator Cartridge

Step 13

Lift up rotor/stator cartridge and remove from the rear housing. See Figure 13.



Figure 13

Step 14

- a. Place cartridge on any object which will hold it off the table.
- b. Remove two each 10-32 plate screws.
- c. Remove timing plate. See Figure 14.



Step 15

- a. Remove o-ring and springs with a small screwdriver.
- b. Remove dowel pins. See Figure 15.



Figure 15

- a. Replace plate on rotor/stator cartridge.
- b. Turn rotor/stator cartridge over. See Figure 16.
- c. Repeat steps 14 & 15.



Figure 16

Figure 14

Disassembly of Rotor/Stator Cartridge (cont.)

Step 17

- a. Remove the rotor.
- b. Remove both the rotor and stator vanes. See Figure 17.

Note: On motors manufactured prior to 1987, rotor vane slots and rotor vanes should be numbered so that vanes can be reassembled in the same vane slot.



Figure 17

Inspection and Replacement of Parts

Step 18

Inspect all springs and seals. We recommend replacement of all seals and springs whenever the motor has been disassembled.



Figure 18

Step 19

Inspect all parts and replace any parts which obviously show excessive wear or damage. See Figure 19.



Figure 19

Step 20

VANES: Normal wear results in slight flattening of vane tips which does not impair motor performance. Replace vane if radius is reduced by 50%. Clearance between the rotor vane and rotor vane slot varies with the vane selection. The design allows the vane to "lean" slightly in the slot, providing the required mechanical seal. See Figure 20.



Figure 20

Inspection and Replacement of Parts (cont.)

Step 21

PLATES: Normal wear results in marking of timing plates which does not impair motor performance. Replacement of the timing plate is required if any smearing, galling, or heat cracks are present. See Figure 21.



Figure 21

Step 22

ROTOR: Normal wear results in polishing of rotor faces which does not impair motor performance. Examine the rotor vane slots closely. Polishing down in the slots is normal, but if there is any indication of a "pocket" forming in the wall of the slot, the rotor should be replaced. See Figure 22.

Step 23

STATOR: Normal wear results in polishing of cam form which does not impair motor performance. Noticeable wear may be apparent along the corner of one side of the stator vane slot. This does not necessarily require replacement of the stator, but may slightly affect volumetric efficiency. See Figure 23.



Figure 23

Step 24

Note: Measure the rotor and stator length to the fourth decimal point and supply measurement when ordering rotor, stator, or vanes. See Figure 24.



Figure 24



Figure 22

Assembly of Rotor/Stator Cartridge

Step 25

- a. Reverse the procedures in steps 17, 16, 15, and 14.
- b. NOTE: Make sure that the radiused edge of each stator vane points to the rotor and the radiused edge of each rotor vane points to the stator.
- c. NOTE: Make sure springs are seated in the bottom of the spring pocket in both the rotor and stator. See Figure 25.



Figure 25

Assembly of Front Housing

Step 26

- a. Press bearing onto shaft.
- b. Install snap ring. See Figure 26.

Figure 26

Step 27

Press shaft and bearing assembly into front housing by pressing on the outer race of bearing. See Figure 27.



Figure 27

- a. Place seal in seal plate.
- b. Place seal plate o-ring into groove in the front housing.
- c. Press seal plate into front housing.
- d. Install snap ring. See Figure 28.
- e. Proceed to step 30.



Figure 28

Assembly of Wheel Motor Front Housing

Step 29

- a. Reverse the procedures in steps 8 thru 3.
- b. Screw lock nut onto shaft until all threads are engaged.
- c. Tighten clamp screw until lock nut turns with a slight drag.
- d. Tighten lock nut until desired rolling drag of bearing is obtained see procedure further on.
- e. Tighten clamp screw.
- f. Tighten all seal plate bolts. See Figure 29.





Assembly of Motor

Step 30

- a. Install dowel pins into rear housing.
- b. Install ballchecks into rear housings.
- c. Install main body o-ring. See Figure 30.



Step 31

- a. Place rotor/stator cartridge onto rear housing.
- b. NOTE: Make sure assembly marks from step 3 are lined up. See Figure 31.



Figure 31

Step 32

- a. Install main body o-ring into front housing.
- b. Install ball checks into front housing.
- c. Place a small amount of grease over ball checks and o-ring.
- d. Wipe off excess grease. See Figure 32.



Figure 32

Figure 30

Assembly of Motor (cont.)

Step 33

- a. Install dowel pins into rotor/stator cartridge.
- b. Pour a small amount of clean oil into the cartridge.
- c. Install front housing onto rotor/stator cartridge.
- d. Make sure alignment marks are lined up. See Figure 33.



Figure 33

Step 34

- a. Install 5/8-11 bolts. See Figure 34.
- b. Torque bolts to 50 ft./lbs.



Figure 34

Step 35

- a. Rotate shaft in both directions to assure that the shaft turns smoothly.
- b. Torque motor to 190 ft./lbs.
- c. Rotate shaft again in both directions to assure that the shaft turns smoothly. See Figure 35.



Figure 35

Spool Assembly for the Two Speed Motor

Step 36

NOTE: Spool should be oriented as shown for two speed motors with model codes 62, 63, 68, & 69. See Figure 36.

NOTE: Slight design variations may exist in motors manufactured either before of after the printing of this manual.





Wheel Motor Shaft And Bearing Assembly Procedure

- 1. Clean ALL assembly parts with lacquer thinner.
- 2. Dip clampnut and clamping bolt separately in lacquer thinner. (Steps 3 thru 10 must be conducted to completion ONE assembly at a time.)
- 3. Press bearing cups into bearing housing. Make sure they are pressed completely against bearing shoulders.
- 4. Coat inner race of large cone with #609 (green) Loctite and press cone onto the shaft. Make sure the cone is completely against the shoulder of the shaft.
- 5. Insert shaft and large cone into bearing housing.
- 6. Coat inner race of small cone with #609 (green) Loctite and press small cone onto shaft.

- 7. Apply #272 (red) Loctite to the clampnut threads of the shaft. Apply #242 (blue) Loctite to the threads of the clamping bolt and install in the clampnut.
- Spin clampnut onto shaft with the "B" face towards bearings. After the nut threads are fully engaged, but prior to the nut contacting the bearings, tighten the clamping bolt until there is drag on the clamping nut (see note in Figure 37). Tighten the nut until a 20 to 30 inch pound rolling torque is achieved.
- 9. Tighten clamping bolt on clampnut to 70 inch pounds and recheck rolling torque. Apply inspectors lacquer to head of the bolt.
- 10. Allow a minimum of 24 hrs. to dry.



Figure 37

Information

BOLT TORQUE -Main Bolts (5/8-11): 190 ft. lbs. Seal Plate (3/8-16 - Wheel motor only): 45 ft. lbs. Grease used for bolt threads and o-ring retention: Pennzoil 707L RED Shaft seal assembly lube: Mobilgrease special with Moly.