

SCOT

SINGLE AND PRESSURSEAL® PEDESTAL BASE PUMPS

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AGRICULTURAL – Operation and Maintenance Instructions

FPD – BELT DRIVE



HYD – HYDRAULIC DRIVE



RKLD – CLUTCH DRIVE



PSP – PRESSURSEAL®



Models FPD, HYD, RKLD, PSP, PSH, PSD Pedestal Base Centrifugal Pumps

GENERAL INFORMATION

All models are single stage, end suction, volute type, general purpose centrifugal pumps with semi-open or enclosed impellers, applicable to clear liquids and fertilizers.

Models may be driven by mechanical coupling, pulley, electric clutch or hydraulic motor. Pumps have double sealed ball bearings and stainless steel shaft sleeves

in a cast iron bearing frame.

All models are equipped with mechanical seals. The back-pull-out* design facilitates inspection and repair without disturbing the piping.

*The impeller, shaft and pedestal can be pulled from the pump case.

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OPERATION

Fill the suction pipe and casing with the liquid to be pumped to insure that the single mechanical seal will not run dry. Pressur Seal® system can run dry without damaging mechanical seal. Two plugs are provided in the casing so that one will be on top for venting and another at the bottom for draining. With the pump primed, the unit may be started. Be sure that the pump is not started against a closed throttling valve in the discharge line.

For possible leaks, check flange bolting, piping connections and pipe plugs. Tighten if necessary. Optional, severe duty seals for abrasive liquids are available upon request.

Rotation – Rotation must agree with the rotation arrow on the pump. For all pumps the standard rotation is counterclockwise when viewed from the suction end.

MAINTENANCE

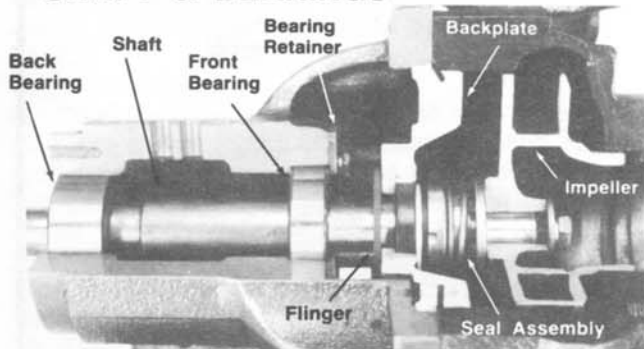
LUBRICATION

Ball bearing construction

Double shielded, prelubricated bearings are used. For the life of the bearings no additional lubrication is required. Inspect bearings periodically to determine the condition of the grease and replace the bearings if necessary.

SINGLE SEAL PUMPS

REPLACING MECHANICAL SEAL SHAFT & BEARINGS



A) Disassembly

1. Remove (4) 3/8" cap screws holding case. Remove case from backplate.
2. Insert a screwdriver in one of the impeller waterway passages and back off the impeller retaining assembly with a 9/16" socket wrench as shown in Fig. 1.

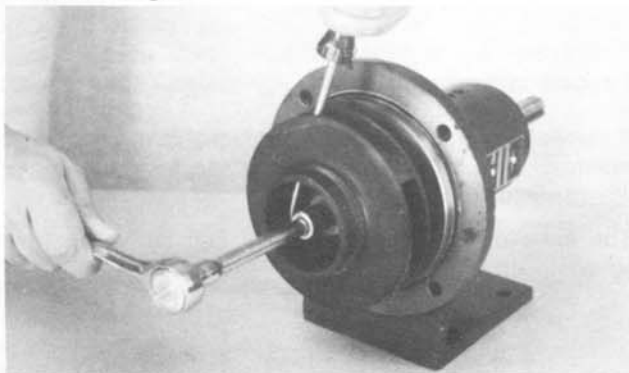


Figure 1

3. Use a gear puller to remove impeller from shaft.
4. Remove seal spring retainer, spring and rotary seal head.
5. Remove (2) 1/4" cap screws holding backplate. Remove backplate from bearing frame. Remove stationary seat of seal from backplate.
6. Inspect flinger, shaft sleeve and shaft o-ring for wear. Replace worn parts as necessary.
7. Remove (3) 1/4" cap screws holding bearing retainer
8. Remove shaft and bearings from pedestal by driving shaft out from rear of pedestal with rubber mallet as shown in Fig. 2.



Figure 2

9. Inspect bearings and shaft. Replace worn parts as necessary.

B) Reassembly

1. Press new bearings onto shaft with arbor press as shown in Fig. 3. Ensure force is only exerted on inner race of bearings.

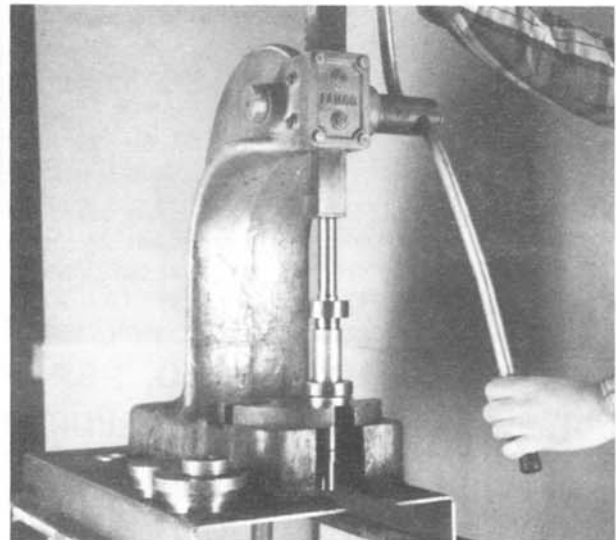


Figure 3

2. Install shaft from front side of bearing frame. Small diameter bearing is installed toward rear of pedestal as shown in Fig. 4.
3. Install bearing retainer with (3) 1/4" cap screws into bearing frame.

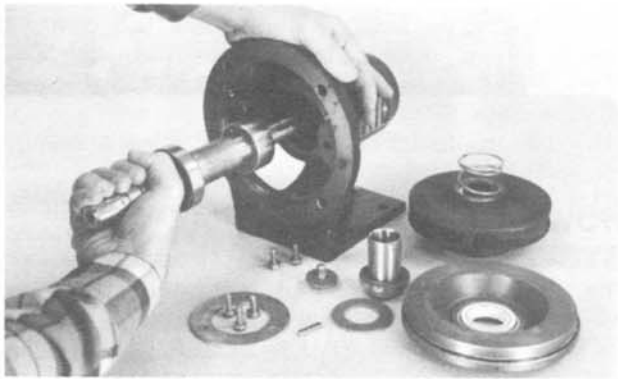


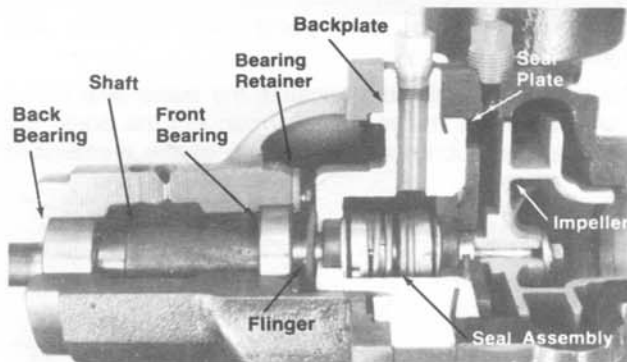
Figure 4

4. Lubricate shaft with white lithium grease. Install shaft o-ring, shaft sleeve (with chamfered end toward o-ring) and flinger.
5. Clean seal cavity of back plate. Lubricate seal cavity and cup of stationary seat with a soapy water solution or light oil. Press stationary seat into seal cavity squarely and evenly, with lapped face up. Use caution not to chip or scratch lapped face of seal. Clean lapped face of seat with a soft clean cloth.
6. Install backplate into pedestal. Replace (2) 1/4" cap screws to secure backplate to pedestal.

7. Clean lapped face of rotary seal head with a soft clean cloth. Lubricate shaft sleeve and bellows of rotary seal head with a soapy water solution or light oil. Slide rotary seal head over shaft sleeve pressing evenly on drive band of rotary seal head.
8. Install seal spring and seal spring retainer.
9. Insert impeller key into keyway of shaft. Lubricate shaft with white lithium grease.
10. Install impeller fully which will compress the seal spring. Replace the impeller retaining assembly. Use Loctite on threads of cap screw of impeller retaining assembly. Use a screwdriver in impeller waterway passage to keep shaft from turning when tightening the retaining assembly with a 9/16" socket wrench.
11. Remove any burrs caused by screwdriver on vane of impeller in waterway passage.
12. Install case o-ring on backplate. Lubricate with white lithium grease. Install case onto backplate. Evenly and alternately tighten (4) 3/8" cap screws to secure case.
13. Check for free rotation after assembly is completed.
14. Pump is ready for installation. Do not start until pump is completely filled with liquid.

PRESSURSEAL® PUMPS

REPLACING MECHANICAL SEAL SHAFT & BEARINGS



A) Disassembly

1. Remove (4) 3/8" cap screws holding case. Remove case from backplate.
2. Insert a screwdriver in one of the impeller waterway passages and back off the impeller retaining assembly with a 9/16" socket wrench as shown in Fig. 5.

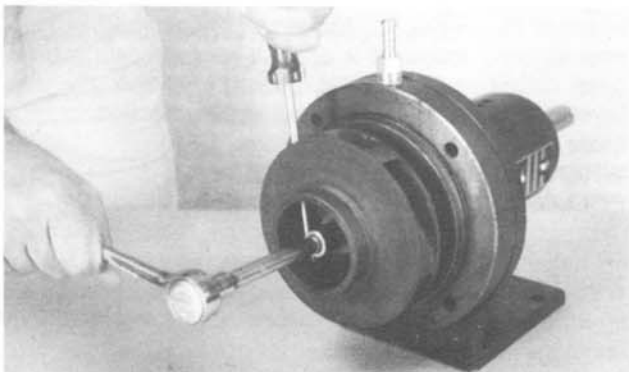


Figure 5

3. Use a gear puller to remove impeller from shaft.
4. Remove (3) 1/4" cap screws holding seal plate to backplate. Remove seal plate, outboard rotary seal head, seal spring and inboard rotary seal head.
5. Remove (2) 1/4" cap screws holding backplate to bearing frame. Remove backplate.
6. Inspect flinger, shaft sleeve and shaft o-ring for wear. Replace worn parts as necessary.
7. Remove stationary seat from backplate and seal plate.
8. Remove (3) 1/4" cap screws holding bearing retainer
9. Remove shaft and bearings from pedestal by driving shaft out from rear of pedestal with rubber mallet as shown in Fig. 6.



Figure 6

10. Inspect bearings and shaft. Replace worn parts as necessary.

B) Reassembly

1. Press new bearings onto shaft with arbor press as shown in Fig. 3. Ensure force is only exerted on inner race of bearings.

2. Install shaft from front side of bearing frame. Small diameter bearing is installed toward rear of pedestal as shown in Fig. 7.



Figure 7

3. Install bearing retainer with (3) 1/4" cap screws into bearing frame.

4. Lubricate shaft with white lithium grease. Install shaft o-ring, shaft sleeve (with chamfered end toward o-ring) and flinger.

5. Clean seal cavity of backplate. Lubricate seal cavity and cup of stationary seat with a soapy water solution or light oil. Press stationary seat into seal cavity squarely and evenly, with lapped face up. Use caution not to chip or scratch lapped face of seal. Clean lapped face of seat with a soft clean cloth.

6. Install backplate into pedestal. Replace (2) 1/4" cap screws to secure backplate to pedestal.

7. Clean lapped face of inboard rotary head of seal with a soft clean cloth. Lubricate shaft sleeve and bellows of rotary seal head with a soapy water solution or light oil. Slide rotary seal head over shaft sleeve pressing evenly on drive band of rotary seal head.

8. Install seal spring.

9. Clean lapped face of outboard rotary head of seal with a soft clean cloth. Lubricate shaft sleeve and bellows of rotary seal head with a soapy water solution or light oil. Slide rotary seal head over shaft sleeve (carbon rotating washer should be toward you). Do not compress seal spring with rotary seal head at this time as this may cause the rotary seal head to come apart.

10. Clean seal cavity of seal plate. Lubricate seal cavity and cup of stationary seat with a soapy water solution or light oil. Press stationary seat into seal cavity squarely and evenly with lapped face up. Use caution not to chip or scratch lapped face of seal.

11. Install o-ring on seal plate. Install seal plate into backplate. Apply even pressure to ensure seal plate is installed squarely. To avoid damage to the outboard rotary seal head, do not allow the seal plate to slide back once the seal spring has been compressed. Replace (3) 1/4" cap screws to secure seal plate.

12. Insert impeller key into keyway of shaft. Lubricate shaft with white lithium grease.

13. Install impeller. Replace the impeller retaining assembly. Use Loctite on threads of cap screw of impeller retaining assembly. Use a screwdriver in impeller waterway passage to keep shaft from turning when tightening the retaining assembly with a 9/16" socket wrench.

14. Remove any burrs caused by screwdriver on vane of impeller in waterway passage.

15. Install case o-ring on backplate. Lubricate with white lithium grease. Install case onto backplate. Evenly and alternately tighten (4) 3/8" cap screws to secure case.

16. Check for free rotation after assembly is completed.

HOW THE PRESSURSEAL® SYSTEM WORKS

The Pressurseal pump kit will give trouble-free performance day in and day out, NO MATTER WHAT FLUID FERTILIZER YOU ARE PUMPING. This work-horse is designed for the toughest jobs, and all you have to do is follow the simple operating instructions and watch it work.

Mount Pressurseal tank so that it is HIGHER THAN THE HIGHEST PART OF THE PUMP ITSELF. If the chamber is below the pump, liquid may siphon back into the pressure chamber.

There are two things to watch while your pump is working: (1) the pressure gauge, and (2) the liquid level. So that you can understand why, here is a short explanation of how this superior pump works:

The liquid (ethylene glycol or standard good grade antifreeze) in the seal chamber and Pressurseal tank (which you see rising to a height of about five inches above the bottom of the lucite tube) is under pressure. This liquid must always be at higher pressure than the liquid being pumped. It is this special liquid (under pressure) in the seal chamber that is lubricating the face of the pump seal. This has been a serious problem particularly with suspension fertilizers, and the pressurized double seal pump now prevents the problem.

The presence of liquid lubricating the pump seal in the seal chamber is the reason you can run the pump dry – it is always lubricated from within by the pressurized liquid.

FOR MOST EFFICIENT OUTPUT, PUMP SHOULD OPERATE AT APPROXIMATELY 3600 RPM. Of course increased service life may be expected if pump is used at lower RPM.

Your pump will be delivered filled and pressurized with the gauge reading between 100 and 125 PSI. It is important that you CHECK THE PRESSURE GAUGE AT REGULAR INTERVALS to be sure the pressure does not fall below 100 PSI. Optimum working pressure is 125 PSI.

It is also important to CHECK THE LEVEL OF FLUID. The liquid will not extrude through the seals very quickly. Only a molecule thickness of liquid is required to lubricate the seal. Rapid loss of fluid should never occur. If it does, it may indicate a broken seal or loose-fitting seal chamber. When the liquid level decreases to two inches above the bottom of the lucite tube, it is time to refill.

WHEN REFILL IS NECESSARY FOLLOW THESE STEPS:

Depressurize pressure chamber by releasing air from air valve on the top of the Pressurseal tank. Remove 1/2 inch fill plug at top of the seal tank and fill with 50-50% glycol-water solution. Liquid level should be about five inches above the bottom of the lucite tube (to fill line). Replace the fill plug and repressurize slowly.