



Instructions for Replacing The Packing on 1510, 1531 & Series 80®-PF Type Pumps

INSTALLER: PLEASE LEAVE THIS MANUAL FOR THE OWNER'S USE.



SAFETY INSTRUCTIONS

This safety alert symbol will be used in this manual and on the pump safety instruction decals to draw attention to safety related instructions. When used, the safety alert symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.

SERVICE INSTRUCTIONS



WARNING: Electrical Shock Hazard

Disconnect and lockout the power before making electrical connections. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

1. Close valves on suction and discharge sides of pump. (If no valves have been installed, it will be necessary to drain the system).



CAUTION: Extreme Temperature Hazard

Allow the pump temperature to reach an acceptable level before proceeding. Open the drain valve and do not proceed until the liquid has completely drained. If the liquid does not stop flowing from the drain valve, then the isolation valves are not sealing and should be repaired before continuing. After the liquid has stopped flowing, leave the drain valve open and continue. Remove the drain plug located on the bottom of the pump volute. Do not reinstall this plug or close the drain valve until the reassembly is complete. Failure to follow these instructions could result in moderate personal injury and/or property damage.

2. For 1531 and Series 80 pumps:

Remove motor foot capscrews (1531 only). Loosen volute capscrews, but do not remove them. Use capscrews in the jackscrew holes provided. Begin to remove the pump assembly from the volute.

For 1510 pumps:

Remove coupler guard and loosen set screws in both coupler halves. Slide each half back as far as possible on its shaft. Remove coupler sleeve. Where a full diameter impeller is being used, it may be necessary to remove the

pump side coupler half and slide the motor back on its base in order to gain sufficient clearance to remove the pump assembly from the volute. Remove the pump assembly from the volute. Remove support foot capscrews. Loosen volute capscrews, but do not remove them. Use capscrews in the jackscrew holes provided. Begin to remove the pump assembly from the volute.



WARNING: Excessive Pressure Hazard

Make certain internal pressure of the pump is relieved before continuing. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

3. Remove seal flushing tube.
Remove the volute capscrews and remove the pump assembly from the volute.
4. Remove the impeller capscrew, lock washer and washer. Remove the impeller.
5. Remove hex nuts from packing gland and remove coverplate capscrews. Remove coverplate from bracket.
6. Remove packing rings from the stuffing box.
7. Check condition of shaft sleeve and replace if scored or otherwise damaged.
8. Insert two packing rings in the stuffing box followed by the lantern ring and then the remaining two pieces of packing. Make certain that the packing joints are staggered 90°.
9. Install, but do not tighten the packing gland.
10. Install coverplate over the pump shaft, tighten capscrews (per torque chart on page 4).
11. Tighten packing gland to compress packing.
12. Install impeller, impeller washer, lock washer and cap-screw, then tighten (per torque chart on page 4).
13. Install new volute gasket, then install pump assembly into volute. Tighten volute capscrews (per torque chart). Install seal flushing tube.

For 1531 and Series 80 pumps:

Install motor foot capscrews (1531 only) and tighten. Install drain plug and close drain valve.

For 1510 pumps:

Install support foot capscrews and tighten. Install coupler and align per instructions on page 3. Install coupler guard and drain plug. Close drain valve.

WARNING: Rotating Component Hazard
Do not operate pump without all guards in place. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

14. Open isolation valves and inspect pump for leaks. If not leaking return pump to service.

NOTE: Before starting pump, back off packing gland nuts or screws until glands are loose. Re-tighten with fingers until glands are just snug against the first packing ring. After pump is running at first start, water may run freely from packing. This is normal and should be allowed to continue for a period of

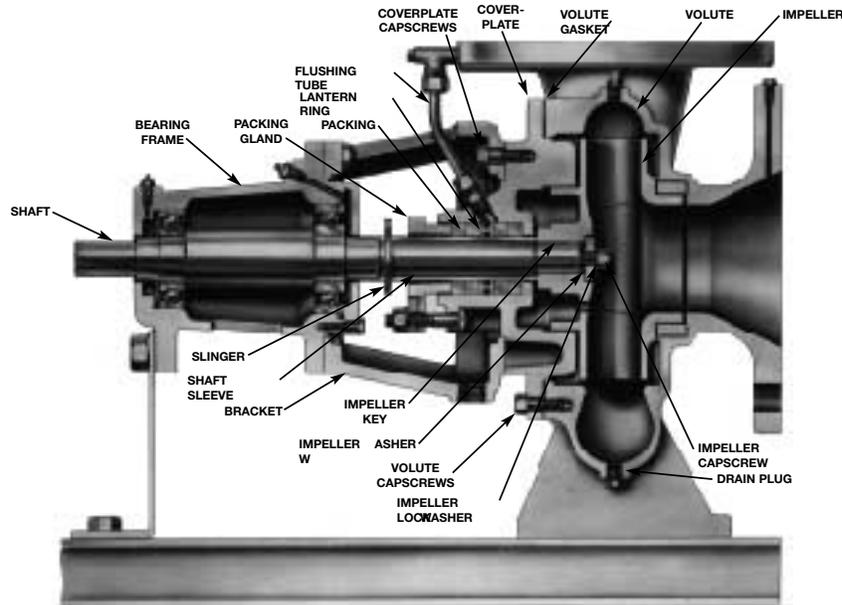
time before further tightening of the glands. Take up gland bolts uniformly, one flat at a time.

An adequate leakage rate is not one single value for all pumps and installations, but is the amount required to provide adequate cooling and lubrication. The required leakage will be largely influenced by operating pressure, fluid temperature, shaft speed, etc.

For fluid temperatures in the range of 32° to 190°F, average leakage rates of 60 to 80 drops per minute are recommended. However, each individual pump and installation will have unique operating conditions that will result in broadly variable leakage rate requirements.

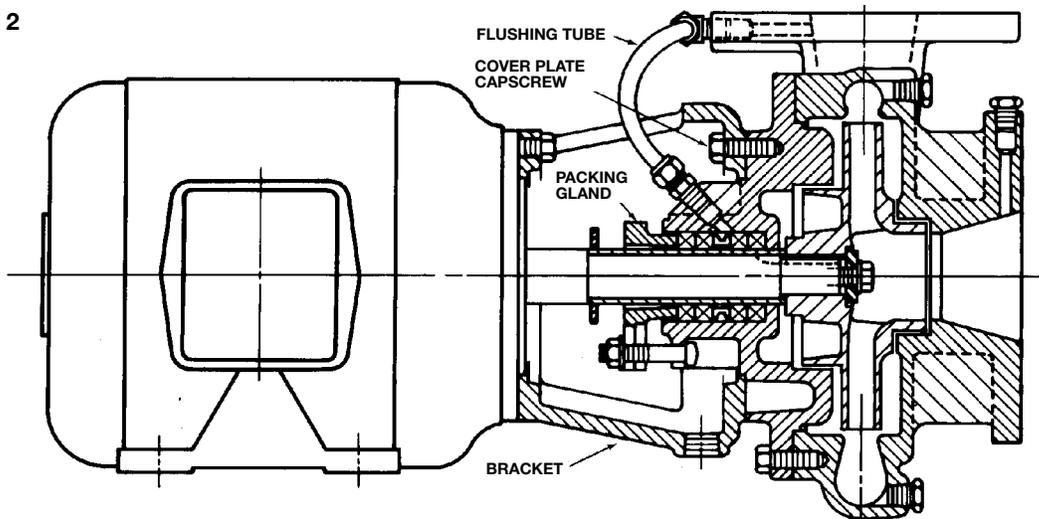
At fluid operating temperatures near the upper limit of 190°F, the maximum temperature rise of the leakage is particularly important. A packed pump should never operate with steam forming on the gland. This necessarily limits the temperature rise to a maximum of about 20°F. If the formation of steam persists at higher leakage rates, cooling water must be provided by means of an external supply, or a heat exchanger used to cool the by-pass flush.

FIGURE 1



1510-PF PUMP

FIGURE 2



1531-PF PUMP

NOTE: Series 80-PF pump constructed similarly, but mounted vertically.

COUPLER ALIGNMENT

All alignment should be done by moving or shimming the motor only. Adjustments in one direction may alter alignment in another. Therefore, check alignment in all directions after a correction is made. **Black rubber sleeves have different horsepower load ratings than orange Hytrel sleeves, they should not be interchanged.**



WARNING: UNEXPECTED STARTUP HAZARD

Disconnect and lockout power before servicing. Failure to follow these instructions could result in serious personal injury or death, or property damage.

Standard Sleeve Type Coupler with Black Rubber Sleeve

Before aligning the coupler, make sure there is at least $\frac{1}{8}$ " end clearance between the sleeve and the two coupler halves.

1. Check angular misalignment using a micrometer or caliper. Measure from the outside face of one flange to the outside face of the opposite flange at four points 90° apart. Refer to figure 4. **DO NOT ROTATE COUPLER.** Misalignment up to $\frac{1}{64}$ " per inch of coupler radius is permissible.
2. At four points 90° apart (**DO NOT ROTATE COUPLER**), measure the parallel coupler misalignment by laying a straight edge across one coupler half and measuring the gap between the straight edge and opposite coupler half. Up to a $\frac{1}{64}$ " gap is permissible. Refer to figure 3.

For Fine Alignment, Orange Hytrel Sleeves, 3500 RPM Operation, or All Other Coupler Types

Use a dial indicator when greater alignment accuracy is required. Use the following alignment tolerances unless specified otherwise by the coupler manufacturer. On sleeve type couplers make sure there is at least $\frac{1}{8}$ " end clearance between the sleeve and the two coupler halves.

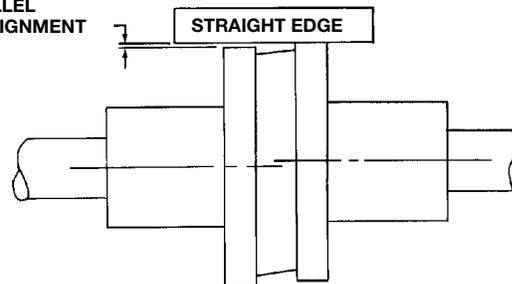
1. To check angular misalignment, mount the dial indicator base to one coupler half or shaft, and position the dial indicator button on the front or rear face of the opposite coupler half. Set the dial to zero. Rotate both coupler halves **together**, making sure the indicator button always indicates off the same spot. Misalignment values within 0.004" TIR per inch of coupler radius are permissible.
2. To check parallel misalignment, mount the dial indicator base to one coupler half, or shaft, and position the dial indicator button on the outside diameter of the opposite coupler half. Set the dial to zero. Rotate both coupler halves **together**, making sure the indicator button always indicates off the same spot. Misalignment within 0.004" TIR is permissible.



WARNING: ROTATING COMPONENT HAZARD

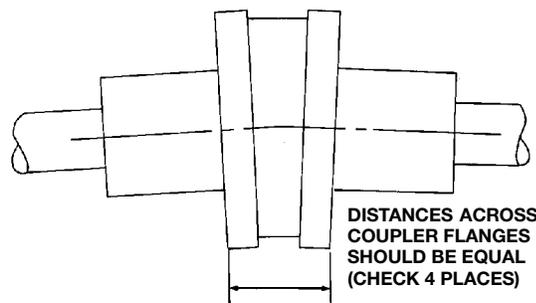
Do not operate pump without all guards in place. Failure to follow these instructions could result in serious personal injury or death, and property damage.

AMOUNT OF
PARALLEL
MISALIGNMENT



PARALLEL ALIGNMENT CHECK

FIGURE 3



ANGULAR ALIGNMENT CHECK

FIGURE 4

FIGURE 5

Capscrew Type	Head Marking	CAPSCREW TORQUE (FOOT-POUND)					
		Capscrew Diameter					
		1/4	5/16	3/8	7/16	1/2	5/8
SAE Grade 1 & 2		3	6	10	16	24	46
Stainless Steel							
SAE Grade 5		8	17	30	50	76	148



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