

Operating & Maintenance

INSTALLATION

ALIGNMENT: This pump has been carefully tested and aligned at the factory. Alignment must be re-checked at time of installation due to strains produced in shipping. To check alignment, place a straight edge across the coupling at top, bottom and sides. It should be in full contact with both rims. If grouting is used it should be poured under the bed plate after the coupling is aligned and allowed to set before pulling down on foundation bolts. Any misalignment should be corrected using shims under pump or motor.

PIPING: Pipes should be carefully lined up so that they are not forced into place, since this can force pump out of alignment. Pipes should be supported independently to prevent strains on pump that could destroy bearings and cause motor overload. Care should be exercised with suction piping to assure it is adequately sized for the flow pumping conditions.

SEALS: Turboflex Pumps are fitted with mechanical seals to eliminate the maintenance problems caused by using packing. DO NOT RUN PUMP DRY or pump will be damaged. Put some of liquid to be pumped or other compatible fluid into the pump before operating for the first time. To replace follow instructions of manufacturer.

LUBRICATION: Ball bearings are sealed for life and require no further lubrication. Radial contact seals prevent the entry of foreign material and the loss of lubricant.

ADJUSTMENTS: No adjustments are possible or necessary. Proper clearances have been machined into the pump.

ELECTRICAL WIRING: All wiring to conform with Local and National Electrical Codes. Follow wiring instructions of motor manufacturer.

OPERATING LIMITS

MAX. RECOMMENDED WORKING PRESSURE	400 PSI
MAXIMUM OPERATING TEMPERATURE	225° F

STARTING AND OPERATING

All pumps are carefully tested before shipment, but if difficulties are experienced we suggest the following points:

Observe the following when starting the pump for the first time:

1. Turn the pump over by hand to make sure it is free. If fluid has been allowed to dry inside pump, it may require 2 to 10 foot pounds torque to break loose the first time.
2. Check rotation-which is right hand (clockwise) when viewed from the shaft or coupling end. Jogging the driving motor allows one to observe rotation.
3. Re-check coupling alignment.
4. Prime pump or open valving to flood pump, whichever is the case.
5. Make sure discharge line is open. Do NOT start pump against a closed discharge valve.



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DISASSEMBLY AND REASSEMBLY**DISASSEMBLY:**

1. Prior to disassembly, remove all fluid from pump. Stand pump on the end opposite the shaft extension. Air blown thru will help remove water quickly.
2. Nuts (# SA), from the end opposite the shaft extension, should be removed and bearing arm (# 3) may then be removed. Studs (# S) and jam nuts (# SB) may remain in-cover (# 1).
3. A gear puller should then be used to remove exposed bearing (# 24).
4. Remove Flinger (# 21) from shaft.
5. Using two screwdrivers in the groove on the exposed side of seal cup (# 2), this part may be pried out of the cover (# 1). "O" ring (# 6) and the stationary seal seat (# 13 or # 12 depending on whether pump has 3-4 stages or 1-2 stages) will remain in the seal cup unless removed for examination or replacement.
6. The seal rotating element (# 12 or # 13) may then be removed from the shaft.
7. In the same manner, follow steps 2 thru 6 on the shaft extension end of pump.
8. As further disassembly takes place, it is important to take note of the relative positions of the rings. All 140L rings are on the left side of a 140R ring when the shaft extension is on the left. 140L rings are marked 140L and have the larger hole thru them. 140R rings are marked 140R and have a smaller hole thru them. Each pair of rings, (a 140L and a 140R) should have their parts either both on top or the bottom. If this is not done, pumping action will not be accomplished. The

first stage, (the one nearest the shaft extension) should have both suction and discharge openings up. The second should have these openings down. The third-up. The fourth-down. This staggering of discharge positions will minimize radial loads and substantially extend pump life.

9. The rest of the pump may be disassembled by removing 6 nuts (# 20) from one end.
10. As each cover is removed, two small "O" rings (# 8) will be found on the guide rod (# 18). They should be removed, examined carefully for cuts or breaks and protected carefully for reuse during assembly.
11. A large "O" ring (# 7) is found under each cover as well as between each ring.
12. Between each ring set (# 9 & # 10) is an impeller (# 11). It should be removed from the shaft (# 17) by pushing or tapping the end of the shaft until a grip can be made on the impeller O.O. Care should be taken to prevent damaging the thin vanes as well as protecting one's hands. If the impeller is stuck, two screwdrivers may be used to move it after the shaft has been tapped sufficient to loosen it.
13. On two, three or four stage pumps, it is necessary to remove impeller drive keys (# 23) and interstage bushings (# 16). One bushing is found between each stage.

REASSEMBLY:

All parts should be examined carefully for wear or damage. Replace part that shows noticeable wear. "O" rings and rubber seal parts should be replaced if abrasion or other damage is indicated. Be sure a light press fit still exists between



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the shaft and bearing 1.0. Look for cracked seal carbons on stationary elements.

1. Parts should be reassembled in the reverse order as outlined for disassembly. Be sure ring sets consist of a 140R and a 140L. 140L rings in each set are on the shaft extension side.

2. Lubricate “O” rings with oil as they are reused.

3. Make a subassembly of the covers (# 1) and all parts between them (not seals). Tighten cover nuts (# 20). Be sure the shaft turns.

4. Finish reassembly of shaft-extension-end parts. Far end of the pump shaft must be restrained as bearings are pressed into place. A section of pipe can be slipped over the shaft so that force is applied to the bearing inner race.

5. Nuts (# SA) on bearing arms should be tightened 4 turn past finger tight. Jam nuts under bearing arms should be tightened against the underside of bearing arm flanges (#3) This will maintain proper compression on seal cups (# 2).

6. Discharge side seal & bearing assembly may then be assembled in the same fashion as outlined above. Support the shaft end while bearing is driven into place.

7. A coupling half, slipped on the shaft end, should allow the pump to be turned by hand. A condition other than this indicates improper assembly.

FAILURE TO DELIVER WATER

- A. Pump not up to speed.
- B. Pump not primed.
- C. Discharge head beyond pump’s shut-off head.
- D. Excessive suction lift (over 29 ft. total).
- E. Incorrect direction of rotation.
- F. Clogged suction trap, strainer or foot valve.

OVERLOAD ON MOTOR OR DRIVER

- A. Speed higher than rated.
- B. Total head higher than rated.
- C. Specific gravity or viscosity higher than anticipated.
- D. Mechanical trouble-pump or driver.

REDUCED PRESSURE

- A. Speed too low.
- B. Air in water.
- C. Mechanical damage.

PUMP LOSES PRIME AFTER STARTING

- A. Leaky suction line.
- B. Leak through seal on coupling end.
- C. Excessive suction lift (over 28 ft. total).

PUMP VIBRATES OR IS NOISY

- A. Misalignment.
- B. Insecure foundation.
- C. Mechanical defects (bent shaft, foreign material binding impeller, worn bearings).
- D. Strain due to improperly supported piping.

REDUCED CAPACITY

- A. Speed too low.
- B. Air leaks in suction line.
- C. Total higher than that for which pump was intended.
- D. Excessive suction lift (over 20 ft. total).
- E. Insufficient positive suction head with hot liquids.
- F. Mechanical damage (solid materials will break impeller vanes.)
- G. Clogged suction trap, strainer or foot valve.
- H. Air entering foot valve or suction system.

