

Ultraseal 780 Series

(High Temperature Metal Bellows)

Cartridge Seal

INSTALLATION INSTRUCTIONS for PUMPS

(These instructions are not for component type seals or seals that come pre-mounted on the shaft)

SEAL DESIGN

The cartridge seal comes pre-assembled and ready to be installed as a unit.

PREPARE EQUIPMENT

1. Follow all O.E.M. instructions for preparing the equipment for seal replacement.
2. Clean and inspect parts.
3. Check shaft or shaft sleeve, repair or replace if necessary.
4. Check for good starting bevel and remove all burrs that would cut secondary seal rings or cause misalignment.
5. Determine that all equipment components meet any applicable O.E.M. specifications (i.e. shaft runout, seal housing alignment, stuffing box alignment, condition of bearings, etc.) and that all sealing areas are in good condition. *(PPC recommends a 32 RMS finish.)*

INSTALLING SEAL

1. Review all pertinent documentation prior to installation.
2. Determine proper orientation of seal to equipment. NOTE: One (1) grafoil ring is installed in the seal unless otherwise noted on the drawing. Another grafoil is provided as a spare.
3. Hold grafoil centered and lightly finger tighten shaft packing follower with hex head screws to hold packing follower in place. (Do not engage or crush grafoil ring at this time)
4. Insert seal into stuffing box with piping connections facing desired location.
5. Loosely thread gland bolts into stuffing box. IMPORTANT: Do not tighten gland bolts at this time. Also, do not remove any setting clips at this time. NOTE: For larger pumps with heavy stuffing boxes, install the seal on the shaft or sleeve, then slip on the back plate and loosely thread the gland bolts.
6. Install and bolt stuffing box to equipment frame. Take care not to damage grafoil ring while fitting onto the pump shaft.
7. Install and tighten impeller.
8. Make any adjustment or alignments to the shaft and bearings for normal operating positions. Also secure any supports into place as needed.
9. Tighten gland bolts evenly in a diagonal sequence to recommend torque values (see inserted chart). Increase torque by no more than 5 ft.-lbs. per bolt at each interval. When mounting a gland, using a face mounted gasket (spirial wound gasket), metal to metal to stuffing box, the nominal recommended tightening torque for the grade of bolt used is acceptable.
10. Note: Over tightening gland nuts/bolts can warp seal parts and possibly cause leakage.

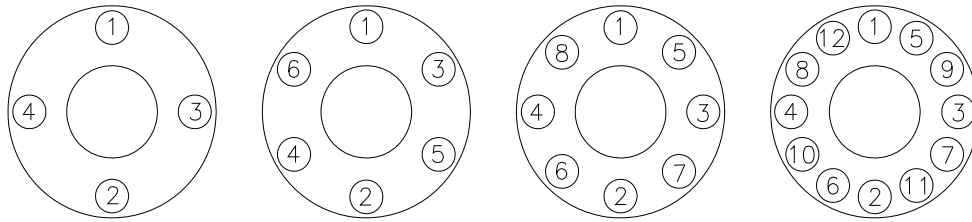
GLAND BOLT TORQUE

<u>Seal Size</u>	<u>Torque Value</u>
1 to 1-3/8"	15 – 20 ft.-lbs.
1-1/2 to 2"	25 – 30 ft.-lbs.
2-1/8 to 3-1/4"	30 – 35 ft.-lbs.
3-3/8" to 5"	40 – 45 ft.-lbs.

11. If required, double seals can be pressure tested at this time. Follow applicable pressure test procedures. 25 psi max.
12. Make all necessary impeller adjustments as required. The impeller can be reset at any time, as long as the setting clips are in place and the seal set screws are loosened while the shaft is being moved.
13. Tighten the packing follower cap head screws / hex bolts to the torque value located below.

Packing Follower Torque Values	
in-lbs	
6-32	15
6-40	17
8-32	28
8-36	29
10-24	40
10-32	45
1/4-20	95
1/4-28	110

14. See diagram below for bolt torque sequence. This will compress the grafoil secondary sealing member evenly, pulling the collar towards the seal sleeve.



BOLT TORQUE SEQUENCE
 FOR
 4, 6, 8, & 12,
 CONFIGURATIONS

15. Tighten the seal with shaft locking mechanism (set screws in collar, bolts in clamp type collar, etc.).
16. Remove setting clips and cap screws or any other device for pre-setting the seal.
17. Turn shaft by hand to make sure there is no rubbing between rotating and stationary parts.
18. If required, single and tandem seals can be tested at this time. Follow applicable pressure test procedures. 25 psi max. NOTE: Do not cause a pressure reversal on tandem seals.
19. Clean out all lines to the seal and any auxiliary equipment for the seal, prior to connecting.
20. Make all necessary connections. See Installation Instructions in I-2792 for seal reservoir connections and setup for double and/or tandem seals, if applicable.
21. Vent the seal of any air and purge the piping prior to start-up, if applicable.
22. Run equipment according to normal start up and operating procedures.