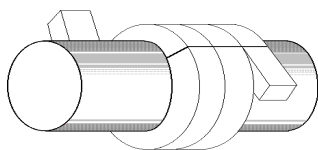


Installation Instructions for Garlock Style #1303-FEP Five-Ring Set

1. REMOVE ALL OF THE OLD PACKING FROM THE STUFFING BOX. Clean box and stem thoroughly and examine stem for wear and scoring. Replace stem if wear is excessive. (Recommended surface finishes are 32 RMS on the stem, and 125 RMS maximum on the box bore.)
2. MEASURE AND RECORD STEM DIAMETER, STUFFING BOX BORE, AND BOX DEPTH. To determine the correct packing size, measure the diameter of the stem (inside the stuffing box area if possible), and then measure the diameter of the stuffing box bore. Subtract the ID measurement from the OD measurement, and divide the difference by two. This is the required cross-sectional size. Subtract four (4) times the cross-section from the stuffing box depth. The result is the length of bushing required for a five-ring packing set.
3. ALWAYS CUT THE PACKING INTO INDIVIDUAL RINGS. Never wind the packing into a coil in the stuffing box. Rings should be cut with a butt joint. The following illustration shows this method of preparing a spool stock packing. One way to cut rings is to use a mandrel with the same diameter as the stem. If there is no stem wear, rings can be cut on the stem outside the stuffing box.



BUTT CUT

Hold the packing tightly on the mandrel, but do not stretch excessively. Cut the ring and insert it into the stuffing box, making certain that it fits the packing space properly. Each additional ring can be cut in the same manner.

4. INSTALL ONE RING AT A TIME. Make sure it is clean, and has not picked up any dirt in handling. Seat rings firmly. Joints of successive rings should be staggered and kept at least 90° apart. When enough rings have been individually seated so that the nose of the gland follower will reach them, individual tamping of the rings should be supplemented by the gland follower.

After the fourth ring is installed, compress so that there is enough room for the fifth ring to be inserted.

5. AFTER THE FIFTH RING IS INSTALLED, mark the gland follower with a line at a depth equal to 1/2 of a cross-section. Bring down the gland follower and apply load with gland bolts. Compress set until the mark on the gland follower is even with the top of the stuffing box. This will result in a final set compression of 30%. If possible, record the gland nut torque values. Actuate the valve through five (5) complete cycles (ending with the stem in the down position), retightening the gland bolt nuts to the previously recorded torque value after each full actuation.

NOTE: An alternative, more accurate method of achieving an appropriate gland load is to use bolt torque measurements. This is especially effective when the cross-sectional dimension of the packing chamber does not fall near a normal packing cross-section. (Packings are usually made to the nearest 1/16" or 1/8" increment.) In order to use this method, Steps 1 through 4 should be followed as in the above procedure. The fifth ring should be installed, then the gland studs and nuts should be lubricated with a suitable grease. **For a valve with two gland studs the following equations can be used to determine the appropriate bolt torque to arrive at a gland load of 5500 psi, or 1.5 times the system pressure, whichever is greater.**

For System pressures < 3666 psi

$$\text{Bolt Torque (Ft Lbs)} = (36.00) \times (\text{OD}2 - \text{ID}2) \times (\text{d})$$

For System Pressures > 3666 psi

$$\text{Bolt Torque (Ft Lbs)} = \frac{\text{S.P.}}{101.8} \times (\text{OD}2 - \text{ID}2) \times (\text{d})$$

Where:

| | |
|--------|--------------------------|
| OD = | Stuffing Box Bore (in) |
| ID = | Stem Diameter (in) |
| d = | Gland Stud Diameter (in) |
| S.P. = | System Pressure (psi) |



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