

Pump & Valve Packing Installation Procedures

Assuring Effective Sealing and Maximum Safety

Tools Required

Specific tools are required for removal of the old packing and installation of the new packing, as well as tensioning of the fasteners. In addition, always use standard safety equipment and follow good safety practices. Acquire the following equipment prior to installation:

- Graduated packing ring cutter
- Calibrated torque wrench or spanner
- Flashlight
- Helmet
- Inside & outside calipers
- Lubricant for fasteners
- Mirror
- Packing extractor
- Packing knife
- Safety goggles
- PPE Gloves
- Steel rule
- Tamping tool
- Vernier dial gauge
- Other plant-specified equipment



1. Clean and examine

Isolate all energy from the equipment including drives and pressure, lock out and tag out as per plant safety procedures.

Loosen gland follower nuts slowly and lift follower to release any trapped pressure under packing set.

Remove all old packing and thoroughly clean shaft/stem and stuffing box area following plant-specified procedures.

Examine the shaft/stem for corrosion, nicks, scoring or excessive wear.

Examine other components for burrs, cracks, or wear that could reduce packing life.

Check stuffing box for excessive clearances and shaft/stem for eccentricity.

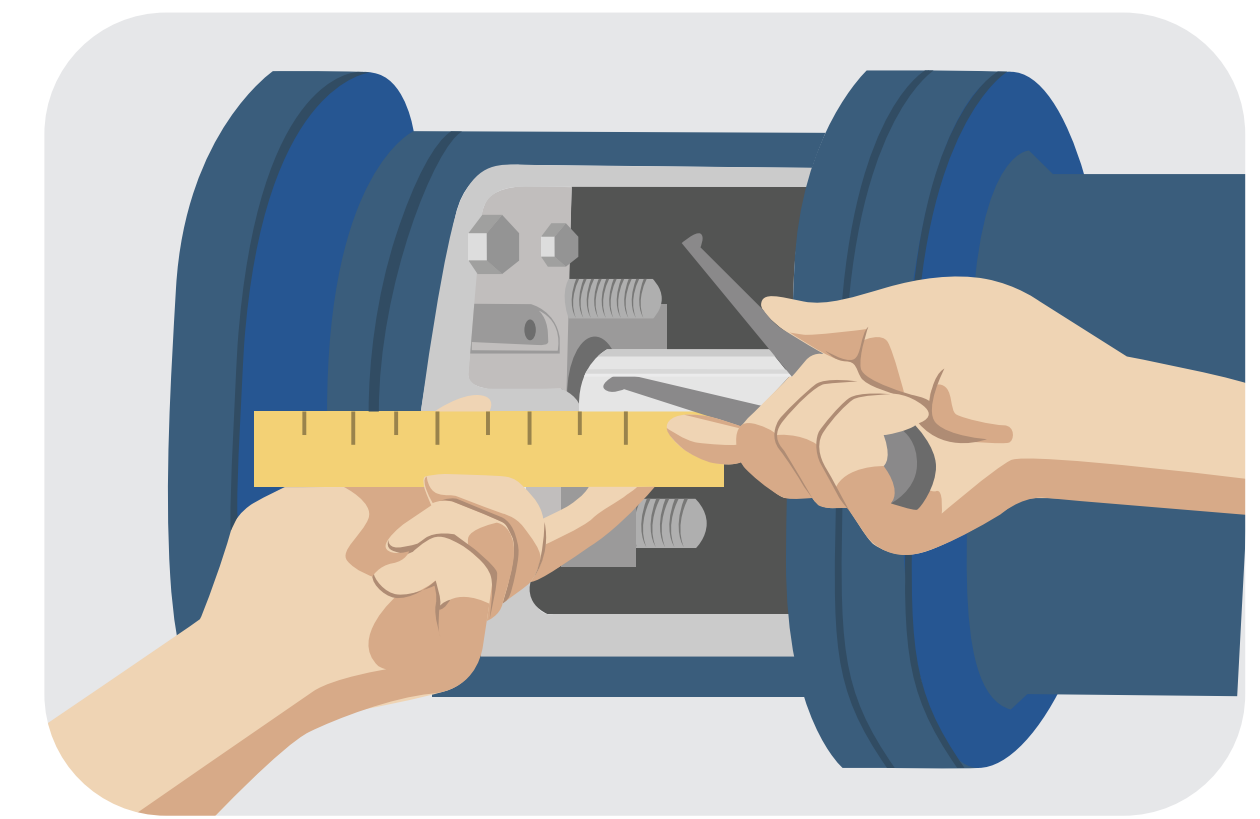
Replace any components found defective. If in doubt, seek advice.

Inspect old packing as part of failure analysis for clues to cause of premature packing failure.



2. Measure and record

Document the shaft or stem diameter, stuffing box bore and depth, and when using lantern rings, distance of port to bottom of stuffing box.



3. Select packing

Assure packing is as specified by packing manufacturer and/or plant engineering department to match service conditions.

Calculate packing cross section and number of rings needed from recorded measurements.

Examine packing to be sure it is free from defects.

Refer to any special installation instructions from packing manufacturer.

Ensure cleanliness of equipment and packing before proceeding.



4. Choosing rings

Braided

Wind packing around properly sized mandrel, or use calibrated packing ring cutter.

Cut packing cleanly, either butt (square) or skive (diagonal), per instructions from packing manufacturer or plant engineering department.

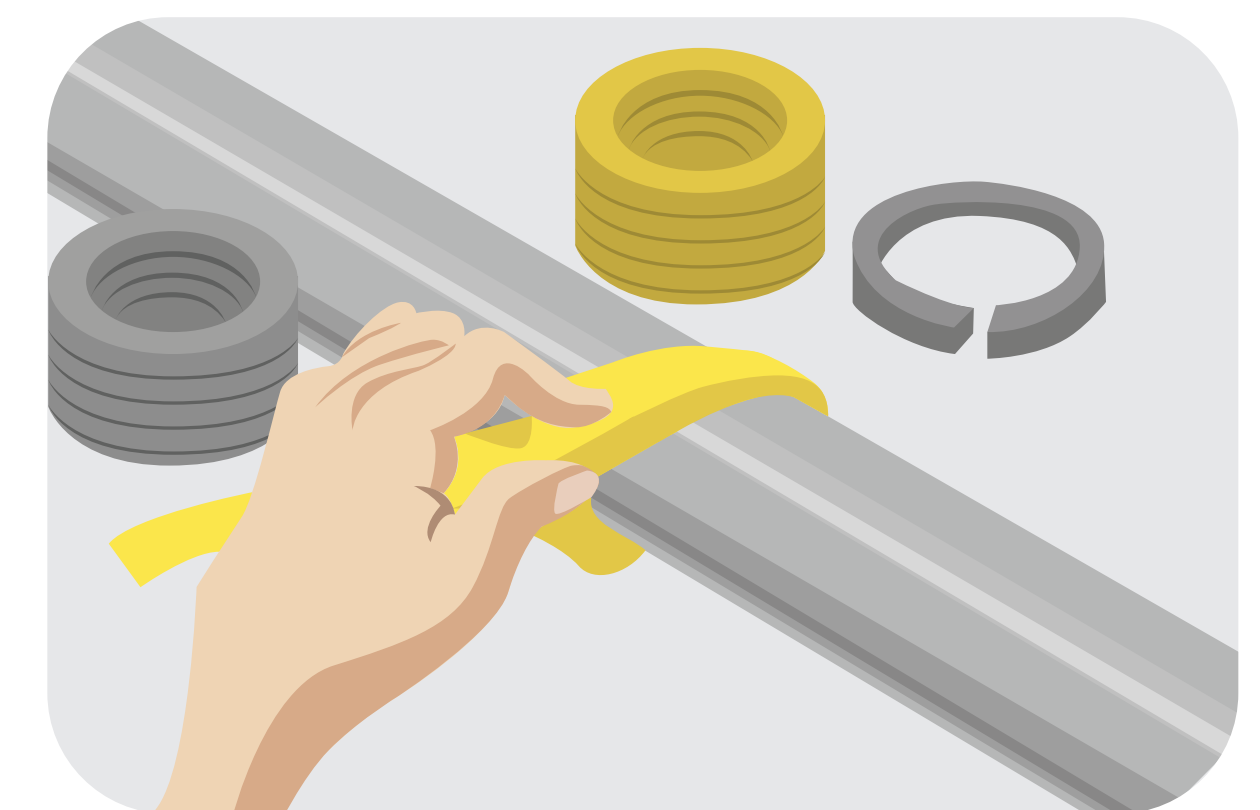
Cut one ring at a time, and, using shaft or stem, check for proper sizing.

Wrap the ends in PTFE tape to prevent fraying of the ends.

Die formed/molded

Assure that rings are sized precisely to shaft or stem.

Follow instructions from packing manufacturer or plant engineering department.



5. Install packing

Carefully install one ring of packing at a time.

Twist each ring over shaft/stem.

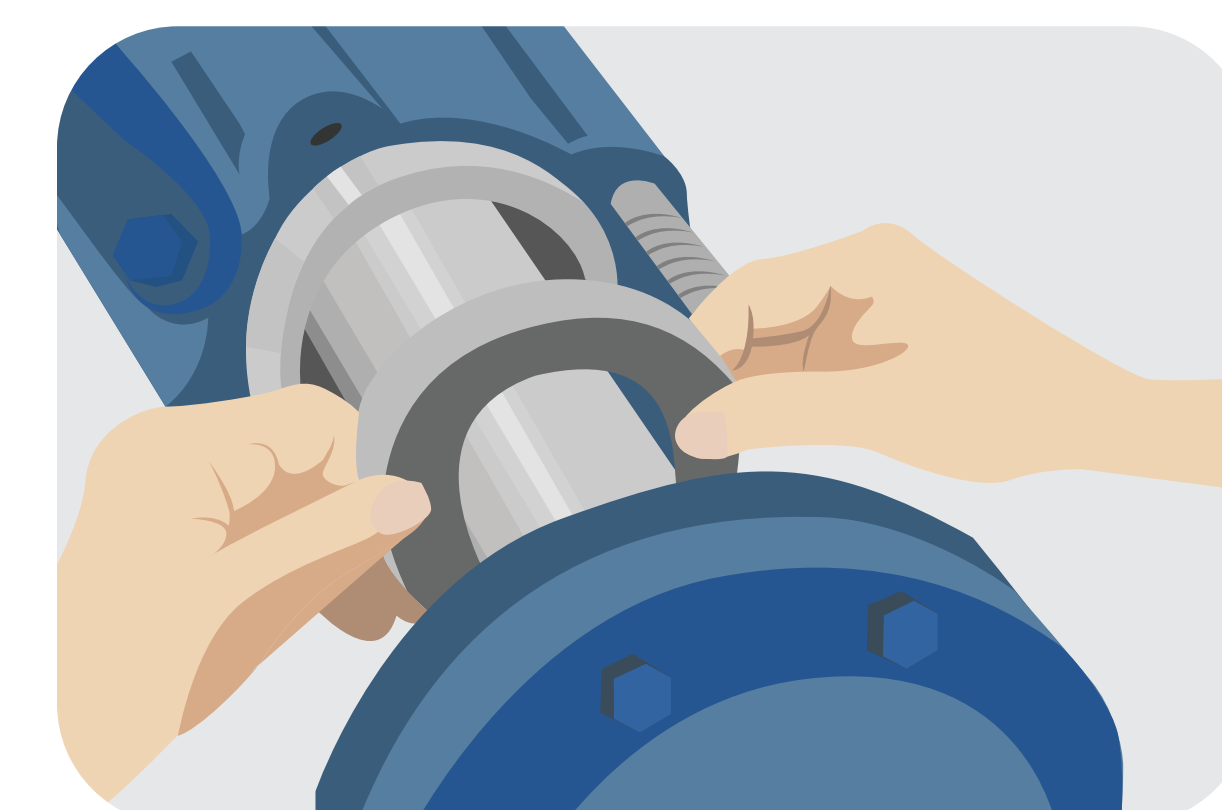
Ensure each ring is seated fully in stuffing box prior to installing next ring.

Stagger joints of subsequent rings a minimum of 90 degrees.

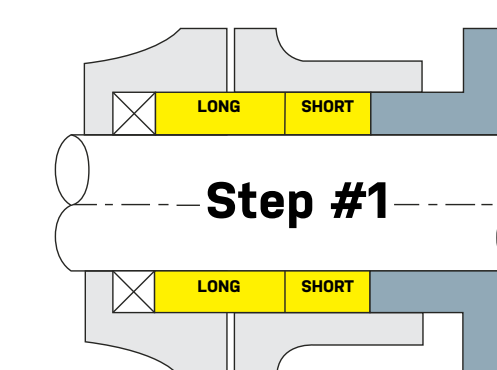
After last ring is installed, draw gland up evenly until nuts are finger-tight.

Check lantern ring, if used, for correct positioning relative to port.

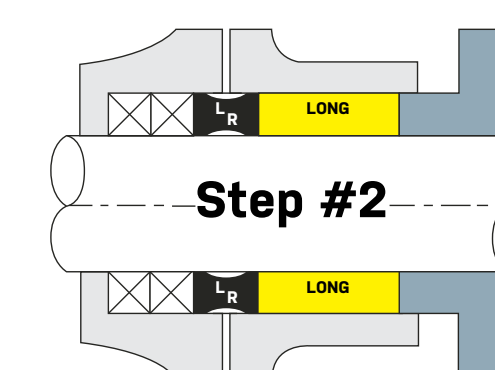
Make sure shaft/stem turns freely.



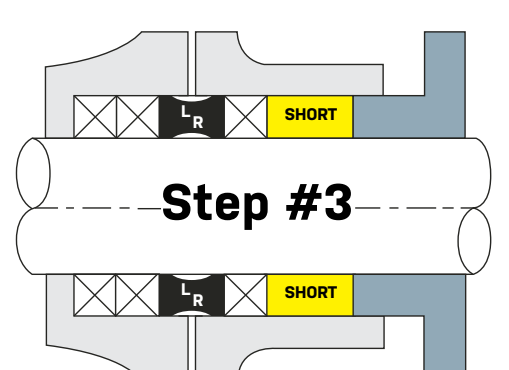
Using Tamping Tool



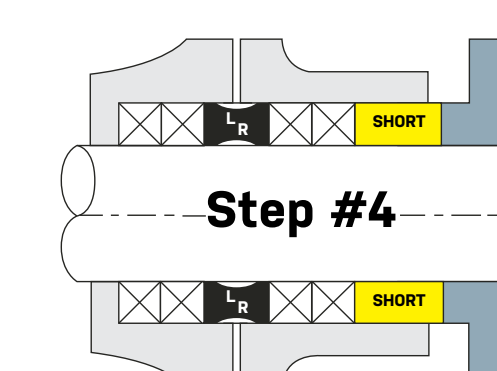
1. Install the first ring using both the short and long pushers. Push the packing ring to the bottom of the stuffing box and install the gland. Remove the pushers with a packing hook and proceed.



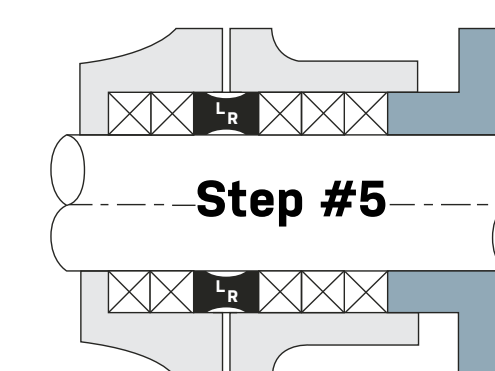
2. Install the second ring using both the long pusher and the lantern ring. Install the gland follower and torque as in step 1.



3. Install the third ring using the short pusher. Install the gland and torque as above.



4. Install the fourth ring using only the short pusher.



5. Install the fifth ring using the gland follower only. Loosen the Gland completely and allow 30-45 seconds for the packing to relax. Tighten the gland nuts finger tight plus one flat. Start up the equipment and adjust if necessary.

6. Adjust packing (Pumps)

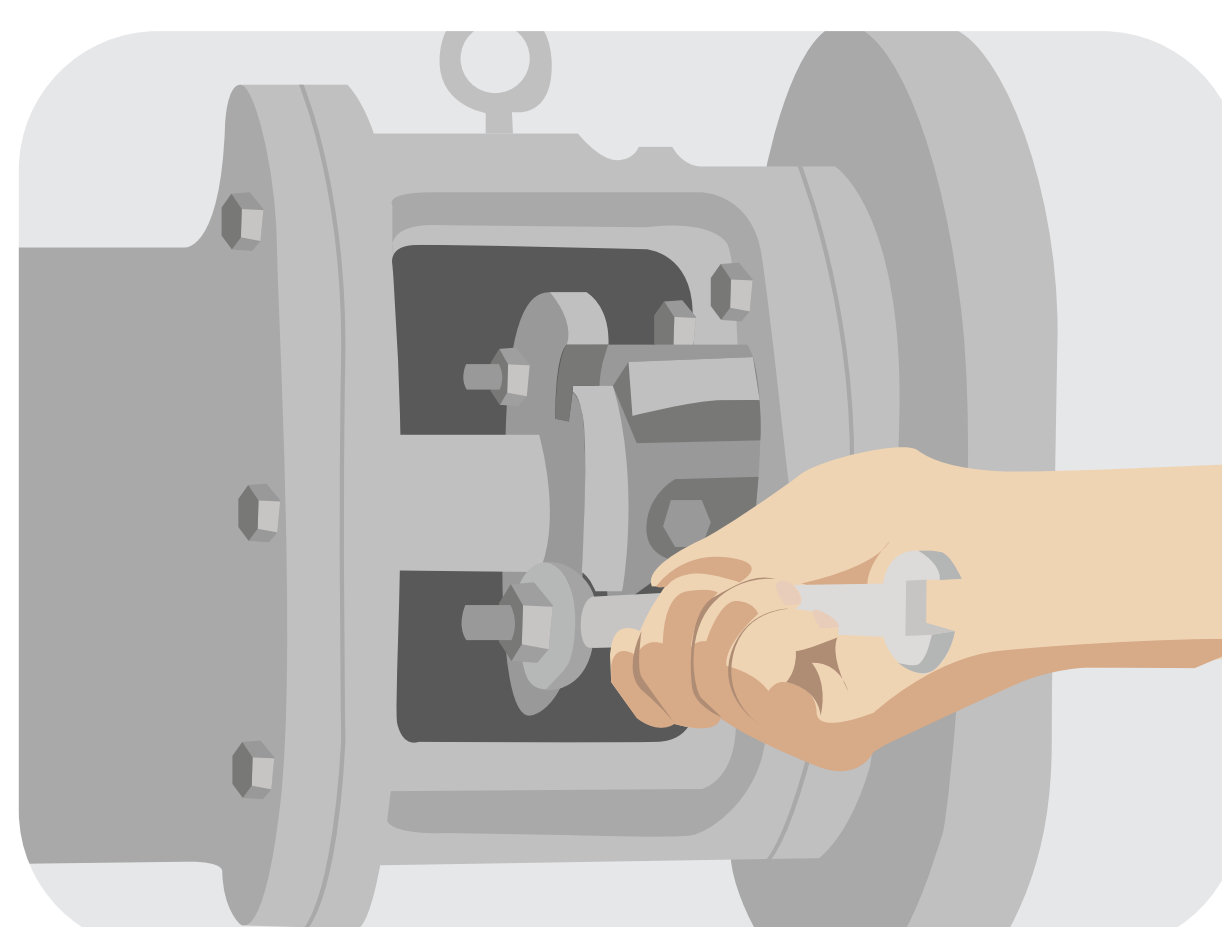
Take up gland nuts until finger-tight.

Turn on flush water ensure correct flow and pressure is maintained.

Start pump and tighten gland nuts allowing liberal leakage. Reduce **leakage gradually** by tightening gland nuts slowly until leakage reaches acceptable level.

If leakage stops abruptly, back off the gland and readjust top revent packing from overheating.

Allow sufficient time between adjustments for leak rate to stabilise.



7. Retightening and replacement

Caution: Consult your packing manufacturer and/or plant engineering department for guidance and recommendations on retightening.

It is advisable to check gland adjustment after a few hours of operation. Tighten as necessary.

Packing must be replaced when gland can not be adjusted further.

