

HOW TO DETECT AND AVOID The Causes Of Packing Failures

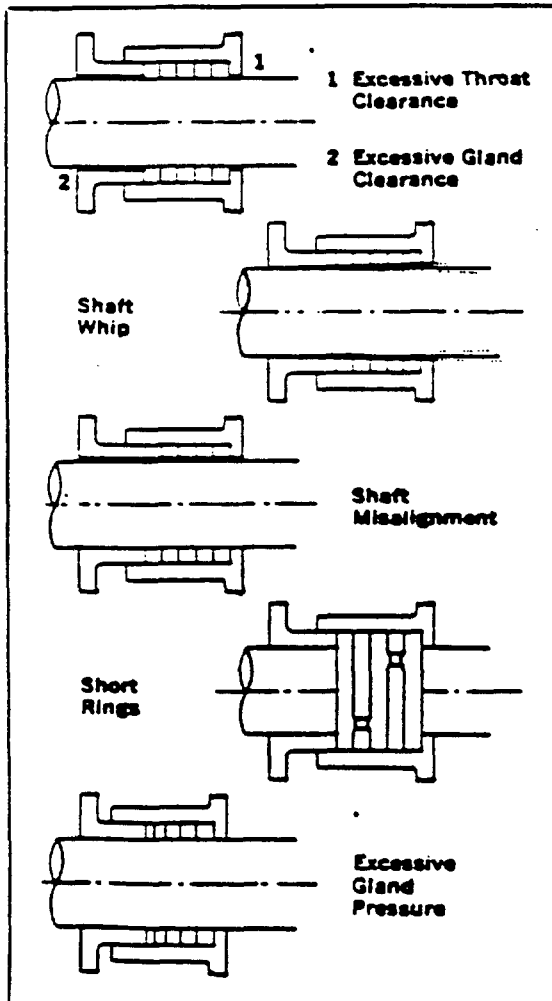
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THE WIDE RANGE of chemical solutions, high temperature liquids and corrosive elements found in modern manufacturing operations present a number of unusual challenges that must be met by the proper application and maintenance of soft packing materials.

As Frank X. Hornung, superintendent of operations, Allied Chemical Company, Industrial Chemicals Division, Buffalo, N.Y., put it, "Proper installation is the best way to avoid packing failures. Follow the manufacturer's installation instructions . . . they have done the research and you only ask for trouble when you don't take advantage of their recommendations."

These tips will help you determine additional causes of packing failure.

- If the packing thickness is unevenly worn, check for badly worn bearings that may cause shaft whip or allow the rod or plunger to wobble.



- If packing at any one spot around the rod is worn excessively, or if early leakage occurs at any one point around the rod, shaft or plunger, the cause is likely to be misalignment between the shaft or rod, and the stuffing box.

- If packings are extruded between rod or shaft and gland follower, the cause may be excessive clearance between the rod or shaft and the follower. Use of an anti-extrusion ring may be required if the clearance cannot be reduced, or the pressures are high.

- If the outside diameter of the packing is worn, loose rings may be rotating with the shaft due to insufficient gland load or undersized packing.

- If one or more of the rings are missing, excessive shaft clearance at the bottom of the box may have allowed extrusion of the rings into the system. As a result, the packing may be trapped in other equipment or contaminate the fluid being handled. Re-bushing or an anti-extrusion ring is indicated.

- If one or more rings have "bulges" in the faces, the adjacent rings are probably cut too short and the packing is being forced into the voids thus created in the joint area.

- If the bottom rings are in good condition but the rings next to the gland followers are deformed, the packing was improperly installed, rings were not individually seated, or excessive gland pressure was applied.

- If a packing problem isn't solved by any of the foregoing, check for OD leakage, as the finish of the stuffing box bore may be too rough. Corrosion, score marks or gouges may prevent a good seal.

While the causes of packing failure often are not readily apparent, a careful examination of the used packing will frequently pinpoint the underlying causes. Should a packing set fail unexpectedly or after an unusually short time, and the cause is difficult to determine, send it to the manufacturer for examination with a complete description of the application. This may help you rectify a faulty operating condition and prevent future failures.

Solution To Problems Is PM

According to Hornung, the best solution to packing problems is preventive maintenance. Here are some steps he suggests that you take to obtain maximum packing life and minimize equipment downtime.

- Avoid over-tightening. This is the greatest single cause of packing failure. It is especially important when TFE materials are used. With TFE, take up one-sixth of a turn — one flat of a hex nut at a time, as opposed to tightening in one or two turn increments as is sometimes done with other materials.

- Always tighten bolts to evenly distribute the pressure applied by the gland follower. The recommended method for all packing materials is to gradually take up opposing bolts, i.e., where multi-bolt glands are used, 12 and 6 o'clock; 3 and 9 o'clock, etc. The extra time required to do this is well worth it.