TYPE G58IEP

PACKING RINGS

Installation, Operation & Maintenance Instructions

Foreword

This instruction manual is provided to familiarize the user with the packing set and its designated use. The instructions must be read and applied whenever work is done on the packing and must be kept available for future reference.

ATTENTION These instructions are for the installation and operation of a packing set as used in fugitive emission valve equipment. The instructions will help to avoid injury and increase reliability. The information required may change with other types of equipment or installation arrangements. This manual must be read in conjunction with the instruction manuals for both the valve and any ancillary equipment.

If the packing is to be used for an application other than that originally intended or outside the recommended performance limits, John Crane must be contacted before its installation and use.

Any warranty may be affected by improper handling, installation or use of this packing set. Contact John Crane for information as to exclusive product warranty and limitations of liability

If questions or problems arise, contact your local John Crane representative or the original equipment manufacturer, as appropriate.

ATTENTION John Crane gland packings are precision products and must be handled appropriately. Do not excessively compress the rings before or during installation.

Safety Instructions

1. The following designations are used in the installation instructions to highlight instructions of importance.

NOTE Refers to special information on how to install or operate the packing most efficiently.

ATTENTION Refers to special information or instructions directed toward the prevention of damage to the packing or its surroundings.

⚠ Refers to mandatory instructions designed to prevent personal injury or damage to the packing or its surroundings.

2. Installation, removal, and maintenance of the packing must be carried out only by qualified personnel who have read and understood these installation instructions.
3. The packing is designed exclusively for sealing valves. The manufacturer cannot be held liable for use of the packing for purposes other than this.
4. The packing must only be used in technically perfect condition and must be operated within the recommended performance limits in accordance with its designated use and the instructions in these instructions.
5. If the fluid is hazardous or toxic, appropriate precautions must be taken to ensure that any leakage is adequately contained. Further information on sealing hazardous or toxic fluids should be obtained from John Crane prior to installation.

Before Installing

1. Be sure to shut off all valve lines leading into and out of equipment including pressurized flush if any.
2. Bleed off the equipment pressure. DO NOT use system pressure to blow out (remove) packing rings.
3. Remove all old packing rings by using proper sized packing removal hooks.
4. Check that all connections are tight and leak free.
5. Check that all alarm set points and instrumentation is functioning.

⚠ Before start-up, ensure that all personnel and assembly equipment have been moved to a safe distance so there is no contact with moving parts.

ATTENTION Installation should be handled by qualified personnel. If questions arise, contact the local John Crane representative. Improper use and/or installation of this product could result in injury to the person and or harmful emissions to the environment and may affect any warranty on the product. Please contact the company for information as to exclusive product warranty and limitations of liability.

Preparing the Equipment

1. Make sure stuffing box and stem are smooth and without nicks or score marks. If any are found, must not be more than 0.002" (0.05mm). Both shall be clean and free of burrs and corrosion.
2. Ensure the bottom of the box is perpendicular to the stem.
3. Check surface finish of both the stem and stuffing box.
   - Stem surface finish to be 16-32 Ra µin (0.4-0.8 Ra µm)
   - Stuffing box shall not exceed 125 Ra µin (3.2 Ra µm)
4. Examine fasteners to be new or near new condition for proper to load transfer throughout the gland follower and packing rings. bolt threads and nuts are clean and can run freely. Ensure threa are properly lubricated with an appropriate lubricant, suitable f temperature range. Use hardened flat washers to prevent wear damage.
5. Measure the valve runout at the length of stem. The maximum va should not exceed 0.002"/0.05mm F.I.M. max.

NOTE If the measured dimensions exceed the values given, correct the equipment to meet the specifications prior to installing the packing set.

Installing the Packing

1. Read this instruction guide thoroughly before attempting installation.

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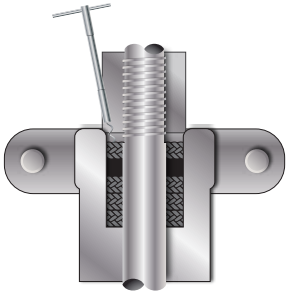
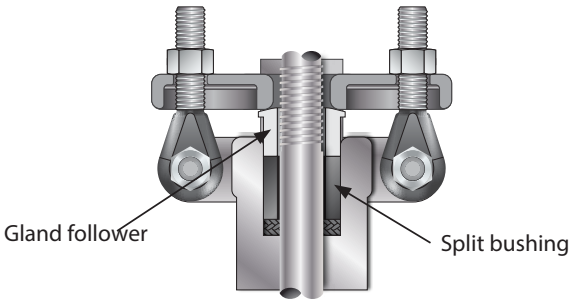
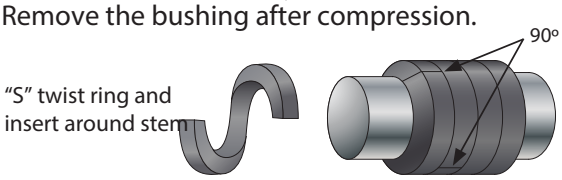
2. Remove old packing from valve using John Crane packing hooks.



3. Inspect stuffing box as described in 'Preparing the Equipment' section.
4. Begin by installing the first ring with ring joint at approximately the "1 o'clock position". Seat ring firmly against bottom of stuffing box using a split bushing and gland follower.



5. Install the second ring of packing staggering joints by 90° from the previous ring. If the gland follower can reach the bottom two rings, then use it to apply compression by tightening down the gland bolts to the recommended torque shown in the 'Bolt Torque Calculation' section. If the follower does not reach, insert a proper sized bushing, and apply the compression with the torque specified. Remove the bushing after compression.



6. Repeat procedure as described in numbers 4 and 5 above and install two more rings. Ring joints should be staggered 90° from each other and compress again with the gland follower to the recommended torque.
7. Install final ring and apply recommended load to the whole packing set. Be sure to use a torque wrench to alternately tighten the gland nuts at least 3 times until the recommended torque value is achieved.
8. Refer to next section for 'Packing Pre-compression Procedure' before startup of equipment.

Packing Pre-compression Procedure

This procedure ensures the optimal gland load is attained throughout the entirety of the packing set.

1. Completely loosen and remove gland follower stud nuts until no compression is exerted onto the packing rings.
2. Retighten the stud nuts to 25% of the total torque recommended.
3. Cycle the valve 10 times.
4. Completely loosen the stud nuts once again.
5. Retighten the stud nuts to 50% of the total torque recommended and repeat steps 3 and 4.
6. Repeat the cycling process one last time (steps 3 and 4) using the full recommended torque value.
7. Check the torque on the stud nuts. If there is a significant difference from original torque value, repeat step 6. Otherwise, retorque to original value and continue for startup.

Bolt Torque Calculation

To achieve the optimal gland load of 8600 psi, use the torque formula:

$$T = \frac{2150\mu D(B^2 - S^2)\pi}{12N}$$

Where:

T = Torque on each bolt (ft-lbs)

μ = K-factor of bolt lubricant (default value=0.2)

D = Gland bolt diameter (inches) B = Stuffing box diameter (inches)

S = Stem diameter (inches) N = Number of bolts

To achieve the optimal gland load of 59.295 MPa, use the torque formula:

$$T_m = \frac{0.0466\mu D(B^2 - S^2)}{N}$$

Where:

T_m = Torque on each bolt (Nm)

μ = K-factor of bolt lubricant (default=0.2)

D = Gland bolt diameter (mm) B = Stuffing box diameter (mm)

S = Stem diameter (mm) N = Number of bolts

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