

This guide only applies to the fitting of Lionpak® 5500 series graphite moulded rings to valve stems.

### Packing installation:

- 1 Ensure valve is isolated, and all relevant personal protective equipment is worn to ensure a safe working environment.



- 2 Carefully remove all old packing rings using a suitable extraction method.



- 3 Ensure stuffing box stem and bore are clean and free from debris. If required, use a suitable solvent-based cleaner to remove ingrained graphite.



- 4 Examine the stem, housing bore, gland follower and bolting for signs of wear or damage. Repair and / or refurbish as required. Housing recommendations include a maximum radial extrusion clearance of 0.2mm and a stem surface finish of 0.4µm to 0.6µmRa.

For detailed housing recommendations, please refer to the James Walker Compression Packing Guide, which can be downloaded from the website [www.jameswalker.biz](http://www.jameswalker.biz)



- 5 Measure the valve stem and gland diameters, as well as the depth of the gland, so the correct size of packing ring can be chosen.

The packing section (S) is calculated by:

$$S = (\text{Housing bore diameter} - \text{Valve stem diameter}) / 2$$



## Fitting guide for

## James Walker Lionpak® 5500 Series

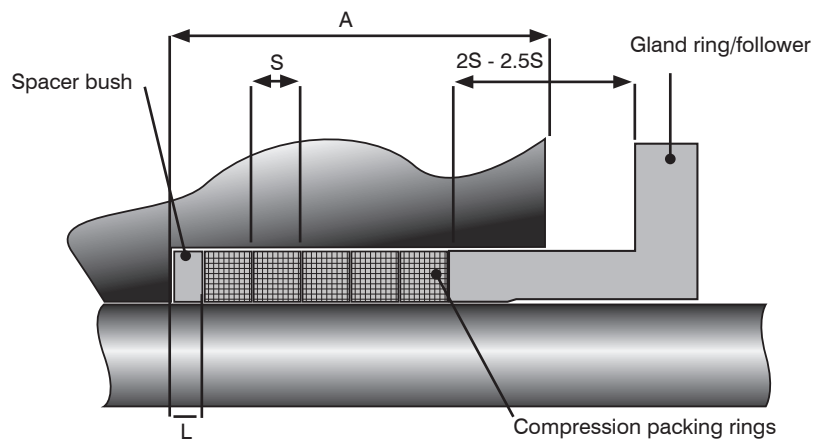
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- 6 Measure the depth of the stuffing box cavity (A) to determine how many rings can be installed. Five or six packing rings should be used for optimum performance; with a gland entry of at least 1 times the packing section in length.

Ensure that the gland follower spigot length is at least 2 – 2.5 times the packing section in length, so that adequate compression can be applied to the packing without the follower ‘bottoming out.’



- 7 If the stuffing box cavity is too deep to accommodate a suitable number of packing rings; excess depth can be taken up by a spacer bush (L). The bush should be made from a suitable material for the process conditions.



- 8 Ensure bolt threads are clean. Then lubricate threads with an appropriate lubricant, suitable for the required temperature range and application, before applying any load.



- 9 Install the rings individually\*. In the case of split rings, partially enter both ends of the first ring together into the gland, then insert the portion of the ring 180° from the join. Subsequently fit both the points at 90° from the join. Tap the ring firmly to the bottom of the housing, using the gland follower and/or a distance piece, as required. Fit the second ring, using the same technique, but ensure that the join is staggered about 90° from that of the first ring.

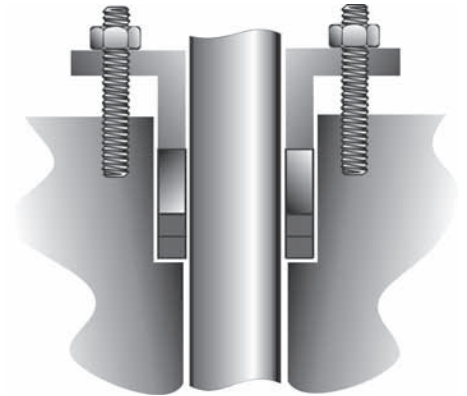
**\*Lionpak 5500 series rings are supplied as either endless or split, special care is required for the installation of split rings, so as to not damage or delaminate graphite layers.**

## Fitting guide for

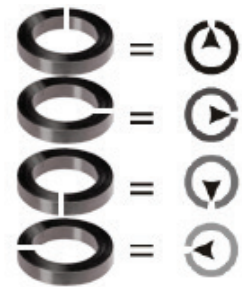
## James Walker Lionpak® 5500 Series

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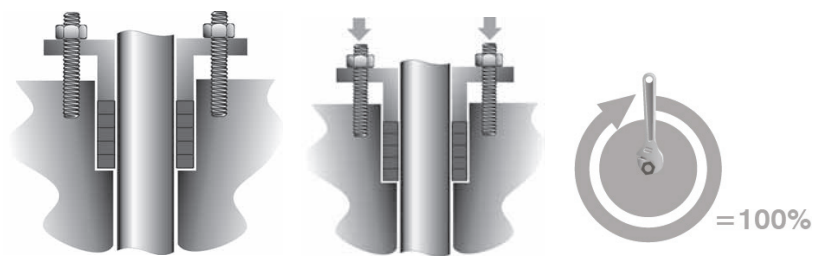
- 10 Insert the gland follower (a split extension to the follower may be required) and compress the first two rings to the full recommended torque (see Section 15) using a calibrated torque wrench set to the pre-determined bolt torque. This will generate the pre-determined stress in the assembly.



- 11 Fit the next two rings, staggering the joins, and compress again with the gland follower to the full recommended torque.



- 12 Fit the remaining one or two rings, staggering the joins, and compress again with the gland follower to the full recommended torque.



- 13 Before the system is pressurised, it is recommended to bed the packing set in. The sequence for this is to cycle the valve from full open to closed and returning to fully open (10 x minimum).

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

If operational thermal cycles below 0°C are anticipated, additional bedding-in cycles under low-temperature conditions should be undertaken (**This will help to consolidate the packing**).

## Fitting guide for James Walker Lionpak® 5500 Series

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### Bolt load calculation:

- 15 To achieve valve sealing leakage performance, it is recommended that a compressive stress of 35MPa is applied to the compression packing. Note that the stress levels up to 50MPa may be required for certain applications.

The following formula calculates the bolt torque required to achieve a stress of 35MPa.

Where: T = required torque in Nm  
N = number of bolts  
D = bolt diameter in mm  
B = housing bore diameter in mm  
C = valve stem diameter in mm

$$T = \frac{0.0055}{N} (B^2 - C^2) \times D$$

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*Safety Data Sheets are available on request*

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