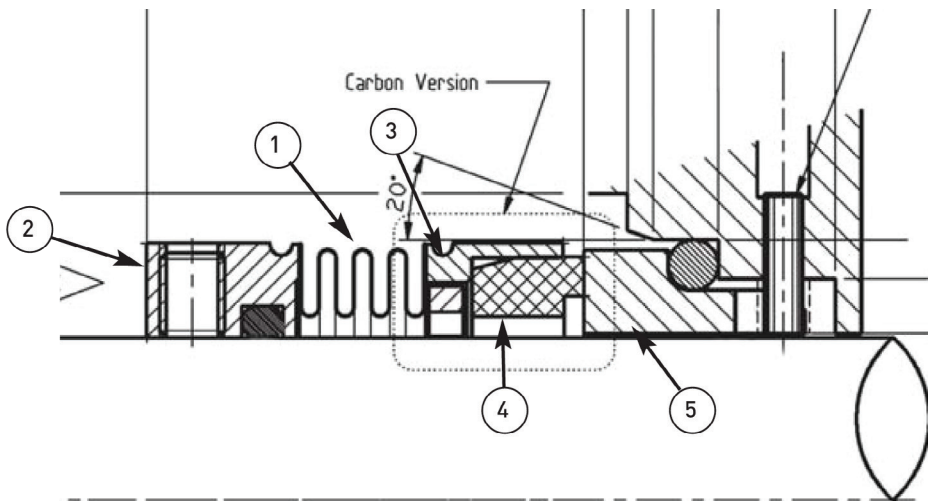


- 1 - Bellows core
- 2 - Drive ring
- 3 - End ring
- 4 - Insert
- 5 - Seat



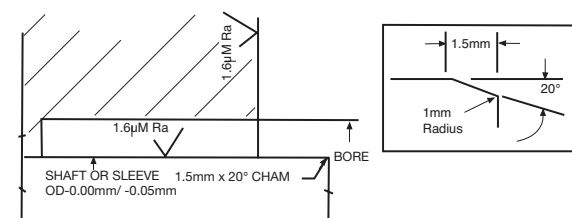
Foreword

These instructions are for the installation and operation of a seal as used in rotating equipment and will help to avoid danger and increase reliability. The information required may change with other types of equipment or installation arrangements. These instructions must be read in conjunction with the Generic Instruction Manual and the instruction manuals for both the pump and any ancillary equipment. If the seal 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 seal. Contact John Crane for information as to exclusive product warranty and limitations of liability. If questions or problems arise, contact your local John Crane Sales/Service Engineer or the original equipment manufacturer, as appropriate. John Crane mechanical seals are precision products and must be handled appropriately. Take particular care to avoid damage to lapped sealing faces and to flexible sealing rings. Do not excessively compress the seal before or during installation.

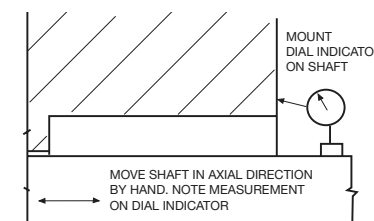
Seal Performance and Installation Dimensions

Refer to seal data sheet (ref S-GL1B) available on johncrane.com.

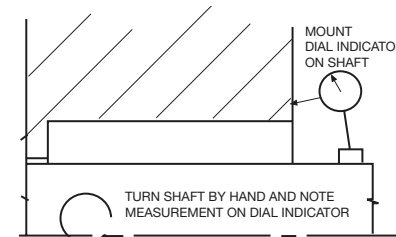
1. Check seal chamber dimensions and finishes.



2. Measure axial end play.



3. Determine squareness of seal chamber face to shaft.



4. Measure shaft runout.

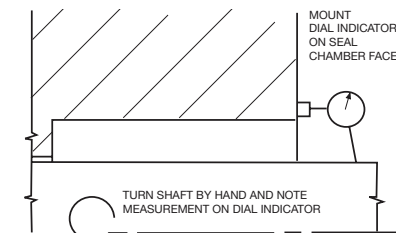


Table 1. Shape and Positional Tolerances

Component	Type	Tolerance
Shaft to housing	Squareness	0.08 mm*
Shaft to housing	Concentricity	0.13 mm
	static	± 0.25 mm**
Shaft end float	Axial	
	dynamic	± 0.04 mm
Shaft or sleeve	Ovality	0.05 mm
Housing to shaft	Runout	0.05 mm

* API requires <0.5 µm/mm of chamber bore, FIM.

** If an alternative figure is stated on a general arrangement drawing then the drawing should take precedence

Table 2. Surface Finish

Seal Type	Value
Dynamic O-ring	0.3/0.8 µm Ra (ground or polished)
Static O-ring	<1.6 µm Ra (turned)
Elastomer bellows	0.8/1.2 µm Ra (turned)
PTFE bellows	0.8/1.2 µm Ra (turned)
Dynamic and static wedge	0.1/0.25 µm Ra (polished)
Static packing ring	0.8/1.6 µm Ra (turned)

NOTE Remove all set screw burrs and sharp edges that could damage the sleeve O-ring during fitting.

If the measured dimensions exceed the values given, correct the equipment to meet the specifications before installing the seal.

If the seal is installed on a shaft sleeve, the sleeve must be liquid and pressure-tight through its bore.

Preparing the Equipment

Installing the seal (component seals)

- Before starting the installation, read the following instructions carefully.
- Remove the seal from its packaging, inspect for any damage, and wipe clean.
- The equipment should be clean and meet the specifications noted in the "Preparing the Equipment" section. Lubricate sleeve O-ring with lubricant recommended in Table 3. Lubricate shaft sparingly. Lubricate gland plate bolts/nuts as required.
- Check the seat (5) O-ring location in the gland plate is clean and free from burrs, locate the seat packing.
- Align the slot in the seat (5) with the anti-rotation pin in the gland plate and press in squarely as far as possible by hand. Protect the seal faces and drive the seat fully home with steady pressure using a hand press.

- Check the gland plate gasket groove is clean and free from burrs and fit the gasket. The gland plate assembly is now complete and can be mounted on the shaft.
- Check the bellows assembly for damage and cleanliness. If the O-ring is not installed, lightly lubricate the ring in accordance with approved lubricants (Table 3) and install. Ensure the drive screws do not protrude into the bore of the assembly.
- Slide the bellows assembly along the shaft and secure in position in accordance with dimensional data given in the seal technical data sheet. Tighten drive screws in accordance with torque values given in Table 4.
- Complete assembly of the pump.
- Check the pump rotates freely and pipe up as required.

ATTENTION Accurate torque settings will avoid set screw damage and eliminate seal movement on the shaft.

- Complete the required piping to the seal:

NOTE Take care not to use excess sealant or PTFE tape when making circulation pipework connections.

ATTENTION Unused tapped connections must be correctly plugged before seal operation.

Installing the Seal (Cartridge Design)

NOTE To assure satisfactory operation, the seal must be handled with care.

- Before starting the installation, please ensure the following instructions are read carefully.
- Remove the seal from its packaging, inspect for any damage, and wipe clean.
- The pump equipment should be clean and meet the criteria outlined in the pre-installation checks above.
- Lubricate the shaft/sleeve using soft hand soap/water solution, glycerine or silicone grease.
- Slide the seal on to the shaft and rotate until the flush port is in a suitable position for equipment piping.
- Slide the cartridge over the seal chamber studs until the gasket abuts against the seal chamber face.
- Fit nuts, with suitable washers, and equally tighten to the torque levels recommended by the pump manufacturer.
- Ensure the shaft is in its working position and evenly tighten the collar set screws using the Allen key provided, which secures the cartridge sleeve to the shaft. Recommended torque values for seals are given in Table 4. Remove setting clips and store for use in seal removal.
- Turn the shaft by hand to ensure free rotation with no shaft binding
- Complete the required piping to the seal. Take care not to use excess sealant or PTFE tape when making circulation pipework connections. Unused tapped connections must be correctly plugged before seal operation.

Table 3. Recommended Lubricants

Elastomer	Lubricant
Fluoroelastomer (i.e. Viton™)	Mineral-hydrocarbon oils, silicone grease (chloride-free), glycerine
Ethylene propylene	Silicone grease (chloride-free), glycerine
Perfluoroelastomer	Mineral-hydrocarbon oils, silicone grease (chloride-free), glycerine

NOTE Always use a lubricant that is compatible with your machinery and product. Use lubricant sparingly, only enough to install seal with ease. Viton is a registered trademark of DuPont.

Table 4. Set Screw Torques

Seal Size	Screw Size	Tightening Torques [Nm] (u 0.125 lubricated)
0180 – 0550	M5	4
0571 – 0889	M6	6.5
0900 - 1016	M8	16

The values given above are the recommended maximum torques for standard hardened stainless steel set screws.



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