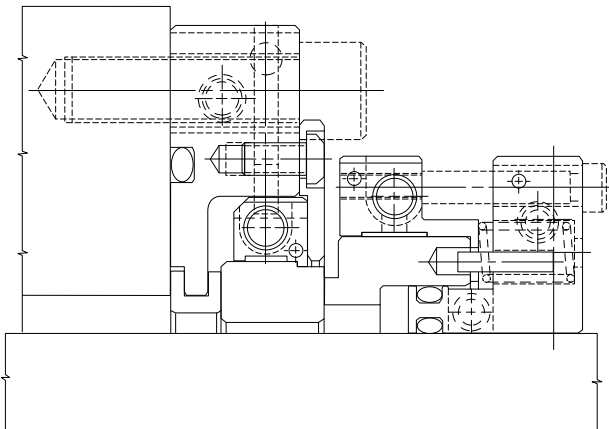


**DRY-RUNNING, FULLY SPLIT MIXER SEAL**

Installation, Operation &amp; Maintenance Instructions

**Foreword**

These instructions are provided to familiarize the user with the seal and its designated use. These instructions must be read and applied whenever work is done on the seal, and must be kept available for future reference.

**ATTENTION**

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 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 the Company 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.

**ATTENTION**

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.

**Safety Instructions**

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

**NOTE:** Refers to special information on how to install or operate the seal most efficiently.

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



Refers to mandatory instructions designed to prevent personal injury or extensive damage to the seal or its surroundings.

2. Installation, removal, and maintenance of the seal must be carried out only by qualified personnel who have read and understood these installation instructions.
3. The seal is designed exclusively for sealing rotating shafts. The manufacturer cannot be held liable for use of the seal for purposes other than this.
4. The seal must only be used in technically perfect condition, and must be operated within the recommended performance limits in accordance with its designated use set out in these installation instructions.

5. If the pumped fluid is hazardous or toxic, appropriate precautions must be taken to ensure that any seal leakage is adequately contained. Further information on sealing hazardous or toxic fluids should be obtained from John Crane prior to seal installation.
6. Fluorocarbon components should never be burned or incinerated as the fumes and residue can decompose. Therefore, protective gloves should be worn as hydrofluoric acid may be present.
7. PTFE components should never be burned or incinerated as the fumes are highly toxic.

**Before Starting The Equipment**

1. Check the pump at the coupling for proper alignment of the driver or motor.
2. Ensure that the gland plate nuts/bolts are securely tightened according to the pump manual instructions, and that all screws are securely fastened.
3. Complete the assembly of the pump, and turn the shaft (by hand if possible) to ensure free rotation.
4. Consult all available equipment operating instructions to check for correctness of all piping and connections, particularly regarding seal recirculation/flush, heating or cooling requirements, and services external to the seal.

**ATTENTION** This mechanical seal is designed to operate in a liquid so the heat energy it creates is adequately removed. Therefore, the following check should be carried out not only after seal installation, but also after any period of equipment inactivity.

5. Check that the seal chamber fluid lines are open and free of any obstruction, and ensure that the seal chamber is properly vented and filled with liquid - refer to the pump instruction manual.

**ATTENTION**

Dry-running - often indicated by a squealing noise from the seal area - will cause overheating and scoring or other damage to the sealing surfaces, resulting in excessive leakage or a much shortened seal life.



**Before start-up, ensure that all personnel and assembly equipment have been moved to a safe distance, so there is no contact with rotating parts on the pump, seal, coupling, or motor.**

**WARNING:** Seal installation should be handled only by qualified personnel. If questions arise, contact the local John Crane Sales/Service Engineer. 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.

## DRY-RUNNING, FULLY SPLIT MIXER SEAL

Installation, Operation & Maintenance Instructions

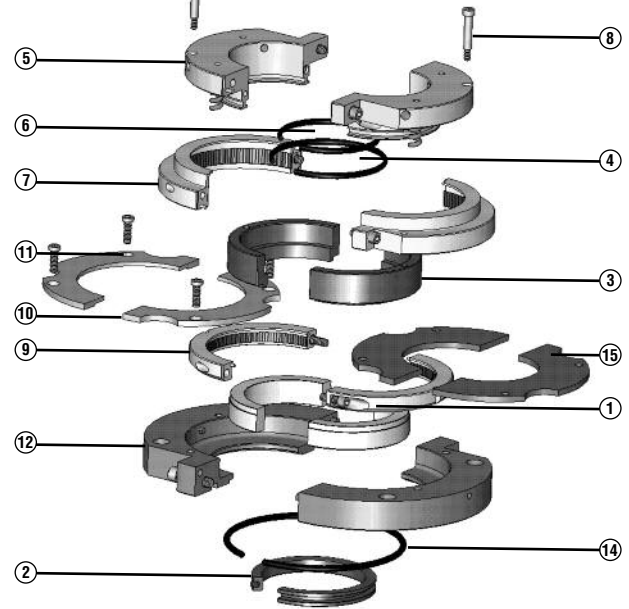
### General Instructions

1. Be sure to read all instructions carefully before installing seal.
2. The John Crane Type75FS Seal is a precision product designed specifically for dry running operation. Special care must be taken during installation not to damage or contaminate the sealing face of the mating ring or primary ring. **Do not lubricate faces. Assemble dry.**
3. The seal may be supplied as a complete assembled cartridge (as shown right) or seal head assembly with mating ring, depending on specific unit or seal design requirements.

### Part Name

1 Mating Ring	9 Clamp Ring
2 Sealing Ring	10 Retaining Plate
3 Primary Ring	11 Low Head Cap Screws
4 O-ring	12 Gland Plate
5 Retainer	13 Cap Screws
6 O-ring	14 Spacer
7 Clamp Ring	15 Installation Disc
8 Shoulder Screws	

### Typical Type 75FS Exploded View Assembly Drawing



### Equipment Check

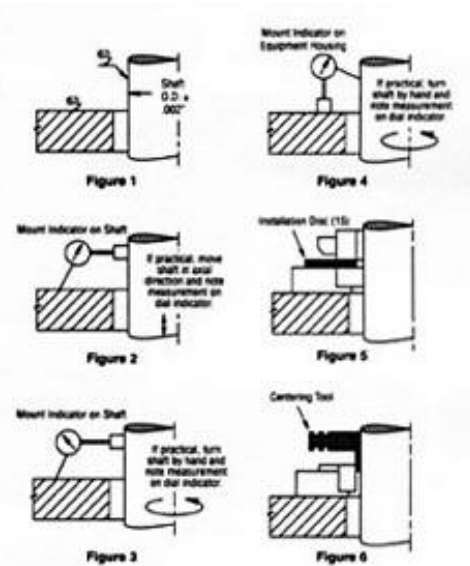
Measure seal mounting dimensions as shown in Figures 1 through 4.

- Shaft diameter max, Fig. 1 .....± .002"
- Finishes roughness, Fig. 1 .....63 Ra max.
- Shaft axial play max, Fig. 2 ..... .030" TIR
- Squareness of equipment housing face to shaft max, Fig. 3 .020" TIR
- Shaft runout max, Fig. 4 ..... .150" TIR

### Equipment Preparation

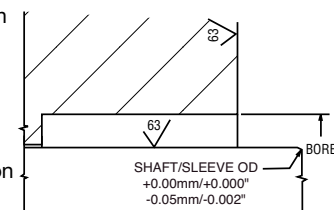
Numbers in parentheses refer to numbers on the seal installation drawing above.

- Remove all sharp edges on shaft before installation.
- Lightly lubricate shaft to assist installation of the seal.
- Shaft must be of corrosion resistant material with a hardness of 125 Brinell minimum and be machined to dimensions and tolerances stated.

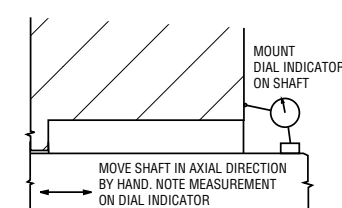


### Preparing the Equipment

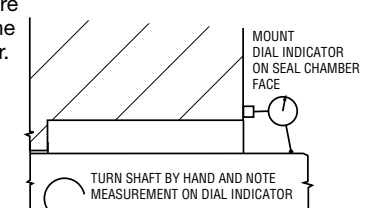
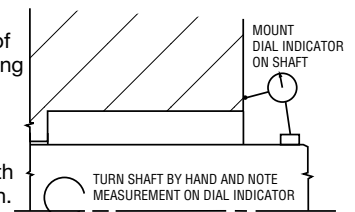
1. Clean the entire area into which the seal fits. Check shaft or sleeve for burrs and scratches.
2. Check that the seal envelope is in accordance with the appropriate John Crane drawing for the unit in question



3. Measure the runout of the shaft. This should not exceed 0.002" F.I.M.



4. Measure the perpendicularity of the abutment face of the housing with respect to the shaft. This should not exceed 0.005".
5. Follow the notes on the seal drawing which is packaged with the seal for the unit in question.
6. On double seals, ensure that the gas supply is not contaminated. If shop air is being used, be sure to use a moisture trap within the line as well as a 10 micron filter.



**NOTE:** If measured dimensions exceed those values given, correct the equipment to meet specifications prior to seal installation.

## DRY-RUNNING, FULLY SPLIT MIXER SEAL

Installation, Operation & Maintenance Instructions

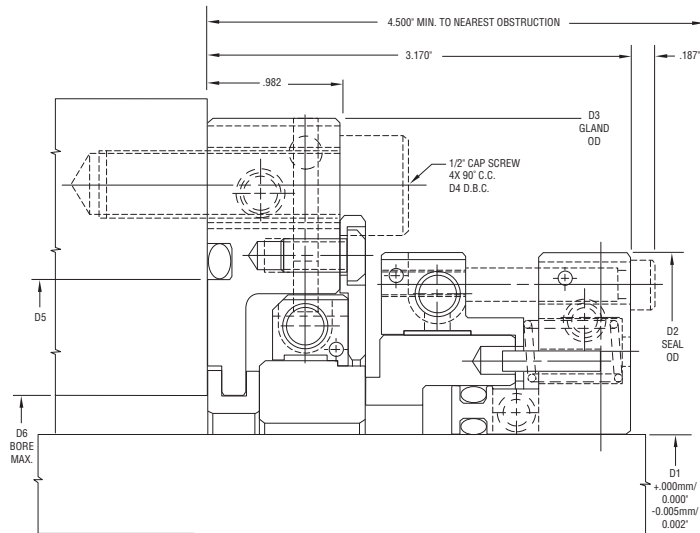
### Installing Gland Plate Assembly (12)

1. Apply a thin coat of adhesive (Part No. D-0002-150) to one split end of the sealing ring (2). Place sealing ring around shaft and hold the ends together until adhesive bonds the ends. The ends must match up identically to ensure a proper seal. Lubricate the sealing ring with silicone grease (Part No. D-0001-637) provided.
2. Place the gland plate halves around shaft and insert into sealing ring. Tighten the 5/16" cap screws (13).
3. Bolt the installation disc (15) halves to the gland plate using the low head cap screws (11) (see Figure 5).

### Installing Mating Ring (1)

1. Assemble mating ring halves around shaft and rest on installation disc. Place clamp ring (9) halves around mating ring halves and locate the splits 90° apart. Make sure the clamp ring is pressed down fully on the mating ring. Apply thread adhesive (Part No. D-0002-661) to the cap screws and loosely tighten.
2. Make sure the mating ring halves fit together without leaving a step at split joint. The split on the seal face should not be felt when run across with a finger nail.
3. Tighten cap screws to 45 in.-lbs. If a sharp edge can still be felt on the face where the mating ring halves meet, loosen the clamping screws slightly and realign the faces.
4. Remove the installation disc halves and save the low head cap screws for Step 6.
5. Place the assembled mating ring into the gland plate bore, and rest it upon the sealing ring.
6. Install the retaining plate (10) over the mating ring assembly, and evenly tighten the low head cap screws to 6.5 ft.-lbs. Using centering gauge (Part No. A75-0000-002) as a spacer (Figure 6), center the mating ring/gland plate assembly concentrically around the shaft. Tighten the 1/2" gland bolts to 63 ft.-lbs.

### Typical Type 75FS Installation Dimensions



### Type 75FS Dimensional Data (inches)

Seal Size (inches)	D1	D2	D3	D4	D5	D6
0635	2.500	5.250	7.250	6.250	4.815	3.062
0698	2.750	5.500	7.500	6.500	5.065	3.312
0762	3.000	5.750	7.750	6.750	5.315	3.562
0825	3.250	6.000	8.000	7.000	5.565	3.812
0889	3.500	6.250	8.250	7.250	5.815	4.062
0952	3.750	6.500	8.500	7.500	6.065	4.312
1016	4.000	6.750	8.750	7.750	6.315	4.562
1079	4.250	7.000	9.000	8.000	6.565	4.812
1143	4.500	7.250	9.250	8.250	6.815	5.062
1206	4.750	7.500	9.500	8.500	7.065	5.312
1270	5.000	7.750	9.750	8.750	7.315	5.562
1333	5.250	8.000	10.000	9.000	7.565	5.812
1397	5.500	8.250	10.250	9.250	7.815	6.062
1460	5.750	8.500	10.500	9.500	8.065	6.312
1524	6.000	8.750	10.750	9.750	8.315	6.562
1587	6.250	9.000	11.000	10.000	8.565	6.812
1651	6.500	9.250	11.250	10.250	8.815	7.062
1714	6.750	9.500	11.500	10.500	9.065	7.312
1778	7.000	9.750	11.750	10.750	9.315	7.562

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**Decommissioning The Equipment**

1. Ensure that the equipment is electrically isolated.



If the equipment has been used on toxic or hazardous fluids, ensure that the equipment is correctly decontaminated and made safe prior to commencing work. Remember, fluid is often trapped during draining and may exist outside the seal. The pump instruction manual should be consulted to check for any special precautions.

2. Ensure that the equipment is isolated by the appropriate valves. Check that the fluid is drained and pressure is fully released.

**Maintenance**

No maintenance of a seal is possible while installed. Therefore, it is recommended that a spare seal unit and mating ring be held in stock to allow immediate replacement of a removed seal.

It is recommended that used seals be returned to a John Crane Seal Rebuilding Center. Rebuilding to as-new specifications must be carried out by qualified personnel.



It is the responsibility of the equipment user to ensure that any, parts being sent to a third party have appropriate safe handling instructions externally attached to the package.

**Quality Assurance**

This seal has been assembled in accordance with John Crane Quality Assurance Standards and with proper maintenance and use will give safe and reliable operation to the maximum recommended performance as shown in any relevant approved John Crane publication.

**Ordering Information**

1. Select seal size required.
2. Determine shaft rotation.
3. Select seal assembly number and corresponding mating ring number.
4. Determine material of construction.

**Materials of Construction - Standard**

Primary Ring:

Mating Ring:

Hardware:

Spring:

Secondary Seal:

**Operating (non-concurrent) Limits**

Pressure:

Temperature:

Speed:



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Fax: 971-488-62830

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Singapore  
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If the products featured will be used in a potentially dangerous and/or hazardous process, your John Crane representative should be consulted prior to their selection and use. In the interest of continuous development, John Crane Companies reserve the right to alter designs and specifications without prior notice. It is dangerous to smoke while handling products made from PTFE. Old and new PTFE products must not be incinerated. ISO 9001 and ISO14001 Certified, details available on request.