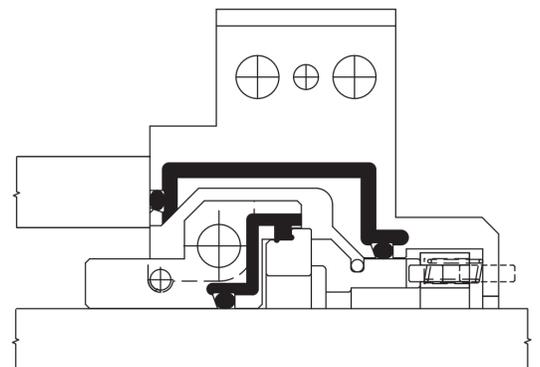


CARTRIDGE SPLIT SEAL REPAIR KIT

Installation, Operation & Maintenance Instructions

Foreword

These instructions are provided to familiarize the user with the seal and its designated use. The 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 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 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

- 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 towards 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.

- Installation, removal and maintenance of the seal must be carried out only by qualified personnel who have read and understood these installation instructions.
- 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.

- The seal must only be used in technically perfect condition, and must be operated within the recommended performance limits stated in the published technical datasheet and instructions in this booklet. Copies of the technical documents are available from John Crane. Any modifications will void any and all warranties.
- The Type 3740 seal is not intended to be used in hazardous or toxic fluids. If the process fluid is either hazardous or toxic, please contact your local John Crane representative for a more appropriate seal recommendation.
- Fluorocarbon components should never be burned or incinerated as the fumes and residues are highly toxic. If fluorocarbons are accidentally heated above 400°C/750°F, they can decompose. Protective gloves should be worn as hydrofluoric acid may be present.
- PTFE components should never be burned or incinerated as the fumes are highly toxic.

Before Starting the Equipment

- Check the pump at the coupling for proper alignment of the driver or motor.
- Ensure that the seal mounting bolts are securely tightened. **DO NOT OVER TORQUE THE BOLTS. DOING SO MAY CAUSE GLAND DISTORTION WHICH COULD RESULT IN EXCESSIVE LEAKAGE.**
- Complete the assembly of the pump, and turn the shaft (by hand if possible) to ensure free rotation.
- 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 The 3740 Wet Running seal is designed to operate in a liquid so the heat energy it creates is adequately removed. The following check should be carried out not only after seal installation, but also after any period of equipment inactivity.

- For the Type 3740 Wet Running split seal, 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 the Type 3740 Wet Running split seal — 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 (This does not apply to the T-3740D, which was designed for dry-running).



Before startup, 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 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.

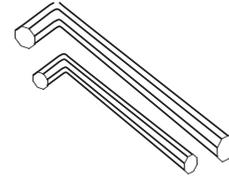
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Supplies Required

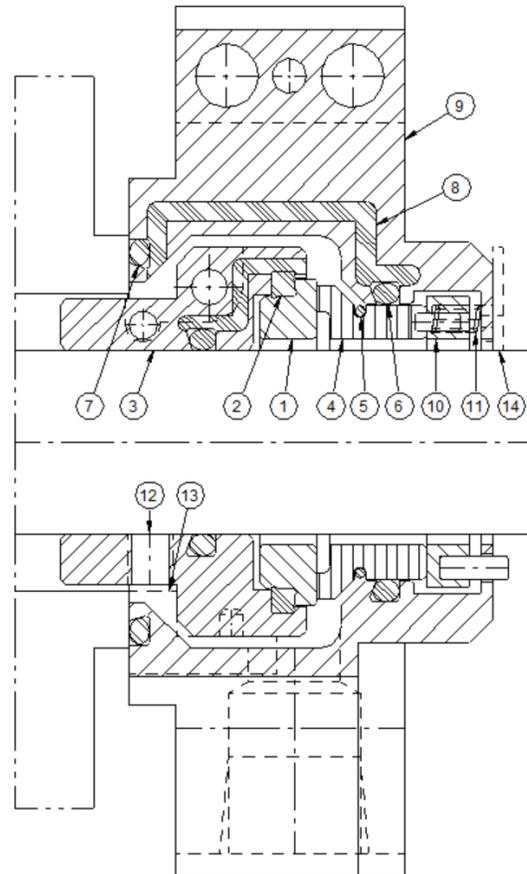
Allen wrenches are provided for all screws necessary for seal assembly. You will need a wrench to remove the seal mounting bolts.

Additional prep materials (lubricant, alcohol prep pads) are not supplied and need to be acquired for proper installation. Please refer to the assembly kit flyer, DSK-15778.

**Typical Arrangement of Type 3740 Seal**

ITEM	DESCRIPTION	SPARES**
1	MATING RING	X
2	SEALING ELEMENT	X
3	MATING RING ADAPTER ASS'Y.	
4	PRIMARY RING	X
5	RETAINING RING	X
6	O-RING (SPLIT)	X
7	O-RING (SPLIT)	X
8	GASKET	X
9	GLAND PLATE ASS'Y.	
10	SPRING ADAPTER ASS'Y. SET	
11	SPRING	X
12	SET SCREW	X
13	SETTING SPACER	X
14	CENTERING SPACER	X

****Parts Included in the Repair Kit**

**Seal Disassembly**

1. Disconnect any flush and/or vent connections. Loosen and remove the four gland plate assembly cap screws. Unscrew the top seal mounting bolts. Remove the top half of the gland assembly. Unscrew the lower seal mounting bolts. The bottom half of the gland assembly can then be removed.
2. Remove the retaining ring holding the primary ring together. Hold the halves together, while removing the retaining ring, to prevent the split halves from falling. Remove the primary ring halves.
3. Remove the four set screws and slide the mating ring adapter assembly away from the seal chamber for easier access. Loosen the two cap screws completely and take the mating ring adapter halves off the shaft.

THE DISASSEMBLY IS NOW COMPLETE

Clean and Inspect Parts – Step 1

- 1.1 Remove the spring adapter by pushing and slightly tilting the part as you lift it over the lip and out of the gland. Then remove the springs from the adapter.
- 1.2 Clean and inspect the mating ring adapter assembly, gland plate assembly, and the spring adapter assembly for any damage and contact your local John Crane representative for replacement parts. These parts are not usually replaced and are not included in the repair kit.
- 1.3 Once apart, safely dispose of all elastomeric sealing parts, springs, primary ring and mating ring. These parts can NOT be reused. Replacement parts are provided in the repair kit.

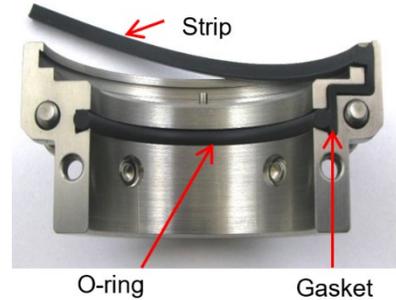
ATTENTION

Do not fit the mating ring and primary ring faces together before actual installation. Damage to the mating ring split joints may occur.

Repair Mating Ring Adapter - Step 2

2.1 Lightly lubricate the new flat Gasket and Strip before installation (DO NOT lubricate the length of the O-ring before installation). Press the Gasket (the flat molded element) into the groove on the mating ring adapter half. Starting from the Gasket end of the Mating ring adapter half, press the O-ring into the ID groove from one end to the other, ensuring the O-ring is not twisted during installation. The free O-ring end must extend 1.02 to 1.78 mm (0.040" to 0.070")** from the split surface.

The Gasket O-ring end must extend 0.38 to 1.02 mm (0.015" to 0.040")** from the split surface. Ensure O-ring is seated in the bottom of the groove throughout its entire length.



2.2 Install the Strip starting from the Gasket end. The rib of the Strip needs to be engaged in the groove. Hold the Gasket at the end of the Strip. Start by pushing end of Strip with right thumb while holding Strip 12.7 to 25.4 mm (½" to 1") away from the start with left hand.

Slightly twist (or tilt) the Strip inward while seating Strip throughout to help guide the Strip rib into the groove. Ensure the first 12.7 to 19.05 mm (½" to ¾") of rib is engaged in groove.

Sliding a thumb over the Strip prevents the Strip rib from disengaging as next section of Strip is being engaged with the other hand.

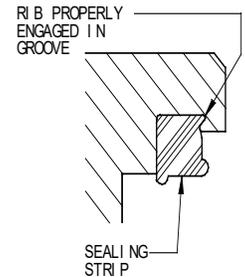
Continue in this fashion until the entire Strip is engaged in the groove.



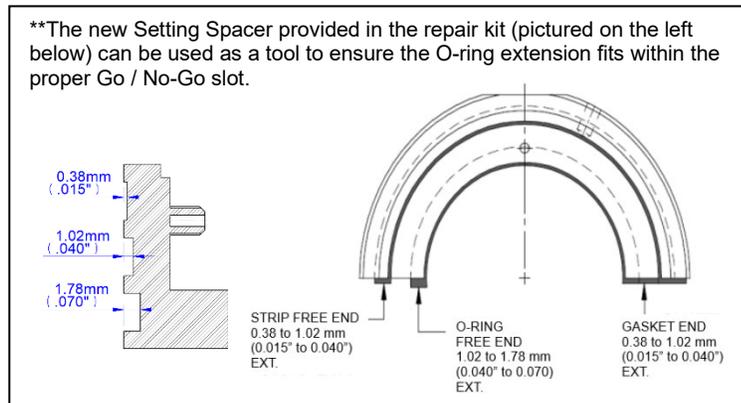
2.3 Visually inspect the strip to ensure Strip rib is fully engaged in groove. It is essential that the Strip rib is fully engaged in groove for proper functioning of seal.

Looking from the top ensure that no portion of the Strip rib is showing, which would mean that the strip is disengaged. If it is, try pushing that area with thumb to re-engage.

Lightly lubricate strip ID with recommended lubricant.

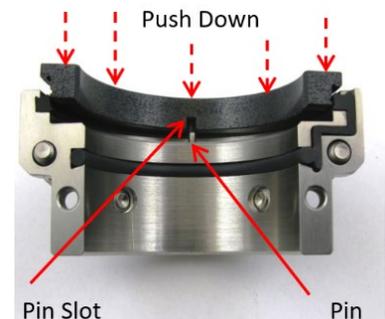


2.4 Verify the extension of the Strip, O-ring, and Gasket**. If they're too long, they may not be fully engaged.



Install Mating Ring - Step 3

3.1 Hold the Mating Ring over the top of the Mating Ring Adapter so that the Mating Ring split lines up with the Mating Ring Adapter split lines. Ensure the Mating Ring pin slot is aligned with the pin in the Mating Ring Adapter. When properly aligned, press the Mating Ring down from the top into the bore and engage the pin.



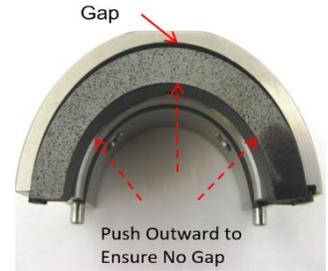
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- 3.2 From the front, lightly push the Mating Ring into the bore of the Mating Ring Adapter if a gap exists (Correct assembly without a gap).

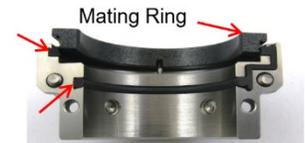
Looking at the split end, you will be able to confirm that both sealing ribs are engaged with the two Mating Ring rib grooves.

With the Mating Ring half installed, check to ensure the free Gasket ends of Strip are properly extended as specified in step 2.4.



- 3.3 Lightly lubricate Gasket end (at split) and O-ring end, but do not lubricate the length of the O-ring or Strip.

Be careful not to apply lubricant to split ends of Mating Ring.



- 3.4 Install Setting Spacer by pressing the peg of spacer into the hole in Adapter.



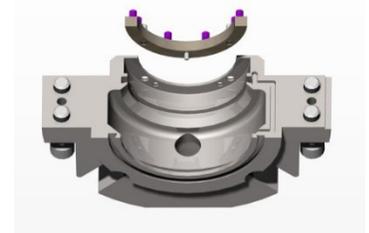
- 3.5 Repeat steps 2 thru 3 to complete other half of rotating assembly.



ATTENTION Do not fit the mating ring and primary ring faces together before actual installation. Damage to the mating ring split joints may occur.

Repair Spring and Gland Assemblies - Step 4

- 4.1 Install Springs into the Spring Adapter Assembly. If necessary, a small amount of Silicone grease can help hold them in the Spring Adapter counterbore holes.

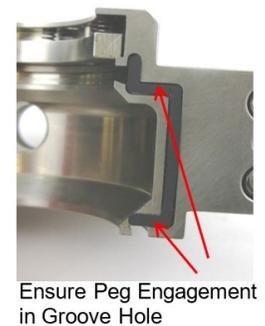
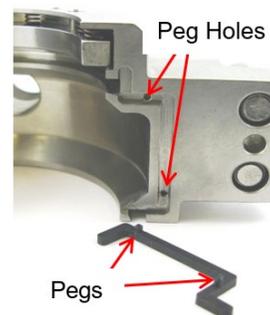


- 4.2 Hold the Spring Adapter Assembly with Springs in place over the Gland. The Spring adapter and Gland counterbore are slightly smaller than the Spring adapter OD. Therefore, the Spring adapter must be tilted slightly as it is placed in the counterbore. As the Spring adapter is placed into the Gland counterbore, compress the Springs nearest the split lines. With the Spring adapter tilted and the end compressed, push the Spring adapter pins into the holes of the Gland plate.



- 4.3 Once in place, push on the Spring adapter to verify it moves freely in the axial direction. With the pin engaged in the Gland plate holes, the OD of the back face of the Spring adapter should be in full contact (from spring compression) on the ID shoulder of the Gland plate.

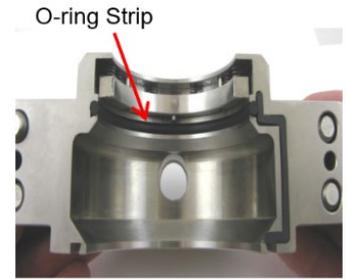
- 4.4 Lubricate the Gasket. Pegs on Gasket engage the holes in the Gland plate groove to center the Gasket in the groove. Push Gasket pegs into Gasket groove holes in Gland plate. Push above pegs to ensure engagement.



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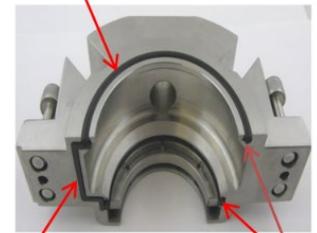
- 4.5** Do not lubricate the O-ring strip. Press the dynamic O-ring Strip into the groove on Gland plate, ensuring the O-ring is not twisted during installation. The O-ring must extend 1.02 to 1.78 mm (0.040" to 0.070")** from the split surface. Ensure even lengths on both ends, adjust if necessary.



- 4.6** Do not lubricate Gland plate face O-ring strip. Press in groove on Gland plate, ensuring the O-ring is not twisted during installation. The O-ring must extend 1.02 to 1.78 mm (0.040" to 0.070")** from the split surface. Ensure even length on both ends, adjust if necessary.

Lightly lubricate the ENDS of the O-rings and Gasket.

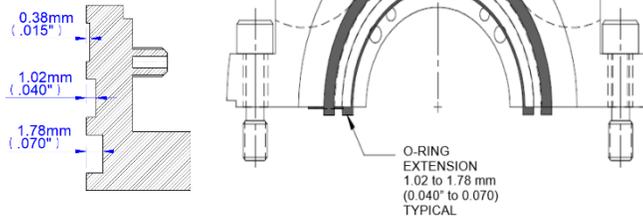
Gland Plate O-ring Strip



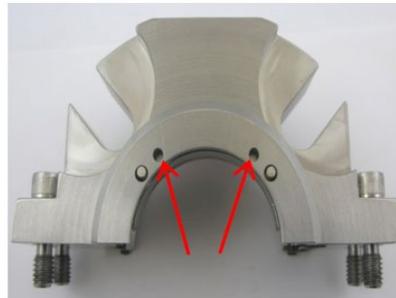
End of Gasket

End of O-rings

**The new Setting Spacer provided in the repair kit (pictured on the left below) can be used as a tool to ensure the O-ring extension fits within the proper Go / No-Go slot.



- 4.7** Install two Centering spacers into the back of the Gland plate half by lining-up the peg on the spacer with the hole in the Gland. Press in place to engage.



- 4.8** Repeat Step 4 to complete other half of Gland assembly.



PARTS ARE NOW READY FOR SEAL INSTALLATION

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Reinstall the Seal - Step 5

Refer to seal installation instructions I-3740 / 3740D.

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 equipment 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. It is recommended that a spare seal or repair kit be held in stock to allow immediate replacement of a removed seal.

Type 3740 can be returned to a John Crane service location, as rebuilding to as-new specifications must be carried out by qualified personnel. Otherwise, repair kits are available for field repair.



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.



North America
United States of America
Tel: 1-847-967-2400
Fax: 1-847-967-3915

Europe
United Kingdom
Tel: 44-1753-224000
Fax: 44-1753-224224

Latin America
Brazil
Tel: 55-11-3371-2500
Fax: 55-11-3371-2599

Middle East & Africa
United Arab Emirates
Tel: 971-481-27800
Fax: 971-488-62830

Asia Pacific
Singapore
Tel: 65-6518-1800
Fax: 65-6518-1803

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