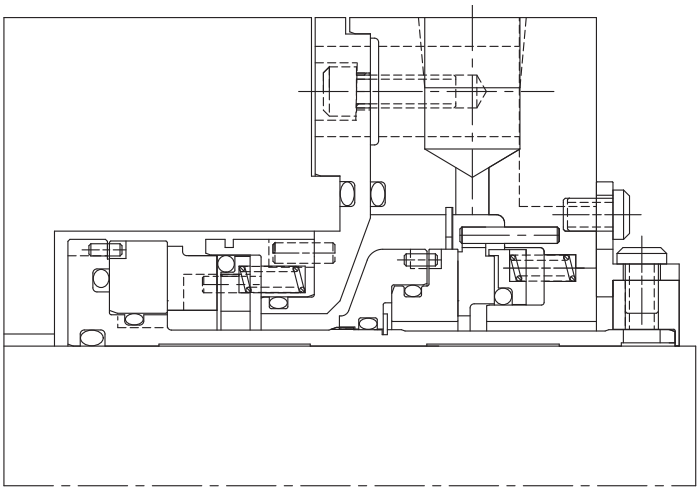
Foreword

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

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 stated in the published Technical Data Sheet and the instructions in this manual. Copies of the Technical Data Sheet are available from John Crane.
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 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.
7. PTFE components should never be burned or incinerated as the fumes are highly toxic.

Before Starting the Equipment

1. Check the pump and coupling for proper alignment to the motor or driver.
2. Ensure that the motor is wired properly and will drive the pump in the correct direction of rotation.
3. Make certain that all gland nuts have been securely fastened in a sequence recommended by the pump manufacturer.
4. Type 2874 seals are lubricated with barrier gas. Ensure that the barrier gas pressure is at least 30-50 psi higher than anticipated seal chamber pressure.
5. Check that all barrier gas connections are tight and leak free.
6. Check that all alarm set points and instrumentation is functioning.

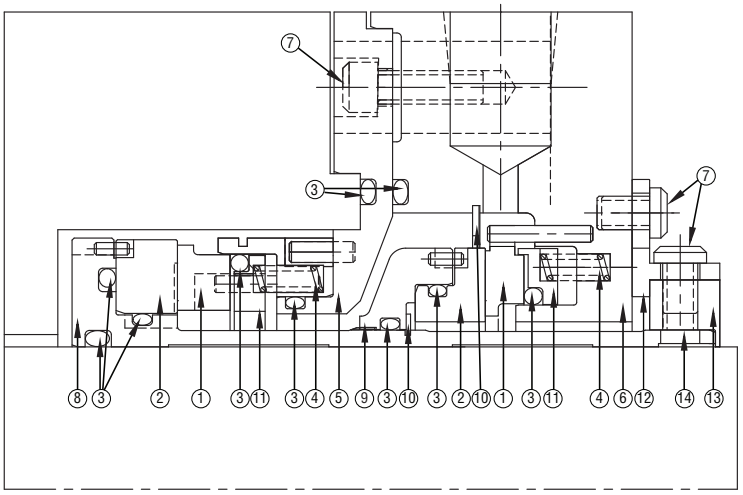
⚠ **Before start-up, ensure that all personnel and assembly equipment have been moved to a safe distance so there is no contact with rotating parts on the pump, seal, coupling or motor.**

General Instructions

1. Review the engineering layout drawing to confirm the proper seal arrangement for the pump being used. The following instructions describe the standard configurations.
2. The John Crane Type 2874 seal is a precision product designed specifically for dry-running operation. Do not lubricate the seal faces. Special care must be taken during installation not to damage or contaminate the sealing faces.

Part Name			
1	Primary Ring	9	Mating Ring Adapter
2	Mating Ring	10	Snap Ring
3	O-ring	11	Disc
4	Spring	12	Spacer
5	Gland Adapter	13	Collar
6	Gland Plate	14	Set Screw
7	Cap Screw		
8	Sleeve		

Typical Type 2874 Seal Arrangement

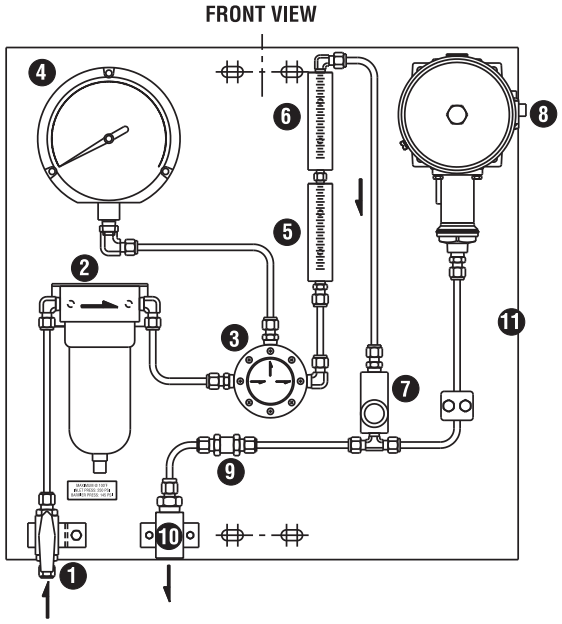


Standard Seal Support System

1. The John Crane Type 2874 seal requires a clean barrier gas supply at 30-50 psi above seal chamber pressure. This barrier gas pressure must never drop below the seal chamber pressure.
2. The Type 2874 Control Panel is recommended for optimal system performance and control.

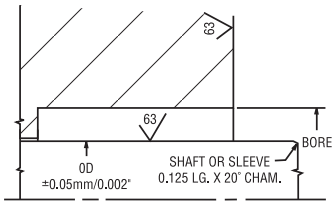
   This system serves these functions:
   - Barrier source regulation
   - Barrier consumption measurement
   - Detection of barrier pressure drop
   - Maintains gas integrity
   - Provides process containment in the event of primary seal failure

System Components			
1	Isolating Ball Valve	7	Flow Switch
2	Coalescing Filter	8	Pressure Switch
3	Pressure Regulator	9	Check Valve
4	Pressure Gauge	10	Coupling to Seal
5	Flow Meter - Low Range	11	Back Panel
6	Flow Meter - High Range		

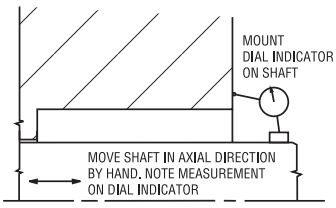


Preparing the Equipment

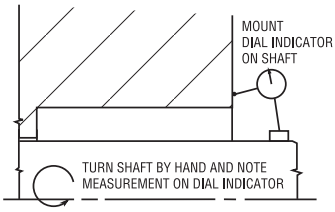
1. Check seal chamber dimensions and finishes.



2. Measure shaft end play/axial float (<0.08mm/0.003" FIM max.).

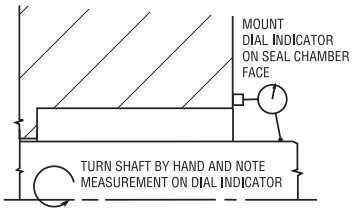


3. Determine squareness of seal chamber face to shaft:
   Rotating Mating Ring
   - 0.13mm/0.005" FIM max.

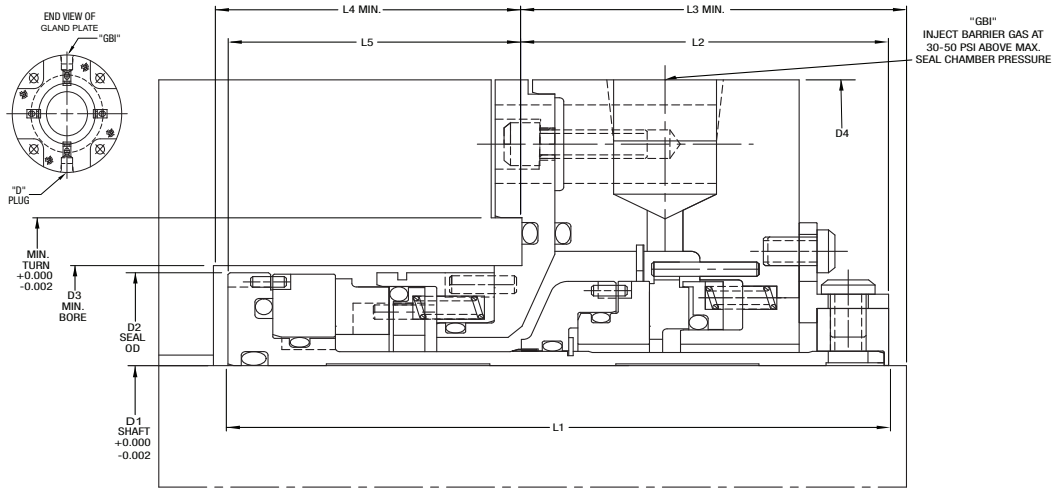


4. Measure shaft runout (0.05mm/0.002" FIM max.).

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



Typical Type 2874 Seal Installation Dimensions



Type 2874 Dimensional Data (inches)

SEAL SIZE	D1	D2	D3 MIN.	D4	L1	L2	L3 MIN	L4 MIN.	L5	MIN. TURN DIA	MIN. STUD DIA.	STUD DBC	CW REF DRAWING	CCW REF. DRAWING
1.375*	1.375	2.821	2.875	5.375	4.125	2.125	2.187	2.062	2.000	3.597	0.375	4.500	HSP-1033467	HSP-1034130
1.375**	1.375	2.821	2.875	5.000	4.125	2.125	2.187	2.062	2.000	3.375	0.375	4.000	HSP-1033468	HSP-1034131
1.500	1.500	3.125	3.375	6.000	5.000	3.125	3.250	2.000	1.875	3.625	0.500	5.000	HSP-1033469	HSP-1034132
1.750	1.750	3.375	3.500	6.500	4.769	2.726	2.812	2.125	2.042	4.340	0.500	5.500	HSP-1033470	HSP-1034133
1.875	1.875	3.500	3.625	5.875	4.769	3.018	3.218	1.875	1.750	4.125	0.500	5.000	HSP-1033471	HSP-1034134
2.000	2.000	3.932	3.937	6.625	5.000	3.600	3.725	1.937	1.875	4.500	0.625	5.500	HSP-1033472	HSP-1034135
2.125	2.125	3.750	3.875	7.125	4.617	2.562	2.687	2.156	2.054	4.711	0.625	6.000	HSP-1033473	HSP-1034136
2.250	2.250	3.875	4.120	8.250	5.000	3.375	3.500	1.750	1.625	4.750	0.750	6.500	HSP-1033474	HSP-1034137
2.500	2.500	4.125	4.500	7.875	4.617	2.116	2.187	2.562	2.500	5.455	0.625	6.750	HSP-1033475	HSP-1034138
2.625	2.625	4.250	4.625	7.000	4.617	2.116	2.187	2.608	2.500	5.125	0.500	6.000	HSP-1033476	HSP-1034139
2.750	2.750	4.375	4.750	7.875	4.769	2.484	2.609	2.500	2.284	5.455	0.625	6.750	HSP-1033477	HSP-1034140
3.000	3.000	4.625	5.000	8.500	5.000	2.905	3.030	2.937	2.095	5.625	0.750	7.250	HSP-1033478	HSP-1034141
3.250	3.250	4.875	5.000	8.000	5.000	2.875	3.000	3.156	2.125	5.500	0.625	6.625	HSP-1033479	HSP-1034142
3.375	3.375	5.000	5.875	9.500	5.000	3.000	3.609	2.546	2.000	6.375	0.875	8.000	HSP-1033480	HSP-1034143
3.500	3.500	5.125	6.000	9.000	5.000	3.968	4.093	1.937	1.032	6.500	0.625	7.750	HSP-1033481	HSP-1034144
4.000	4.000	5.625	6.500	10.000	5.000	3.000	3.345	2.757	2.000	7.000	0.500	8.250	HSP-1033482	HSP-1034145

*Goulds 3196 ST Big Bore

** Duriron Mark III Group IK

Installing the Seal

1. Remove the seal drawing from packaging. Make sure the seal matches the unit where installation will take place.
2. Verify that the direction of shaft rotation shown on the seal layout drawing matches the actual rotation of the pump shaft.
3. Sparingly lubricate the pump shaft with John Crane Silicone O-ring Lubricant (Part No. D-0001-637).
4. Lubricate sleeve o-ring sparingly with the o-ring lubricant supplied and slide complete assembly on the shaft. When ethylene propylene elastomers are being used, do not lubricate with petroleum products.
5. Install backplate. Bolt the gland plate to the face of the backplate and tighten bolts finger tight.
6. Tighten gland plate by tightening bolts alternately until secure. Increase torque by no more than 5 ft-lbs. per bolt at one time. Check impeller for proper clearance.
7. Tighten the set screws (on the collar) uniformly to the pump shaft.
8. Remove the spacers. The spacers must be removed only after the seal gland is attached to the pump, and the set screws are locked on the shaft. Spacers must be removed before starting the pump.
9. Connect the barrier support system to the barrier inlet connection on the seal.
10. The seal barrier pressure should be set to a value that results in 30 to 50 psi pressure differential when process pressure is fully established. Prior to establishing full process pressure, the inboard seal will flow a higher volume of barrier gas. This high flow will be reduced dramatically to normal levels as process pressure is increased.

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 are returned to a John Crane Seal Rebuilding Center, as 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.**

Materials of Construction - Standard

Primary Ring	Carbon
Mating Ring	Tungsten Carbide
Hardware	316 Stainless Steel
Spring	Alloy C-276
Secondary Seal	Fluoroelastomer

Operating Limits

Pressure:	Vacuum to 41 bar g/600 psig barrier pressure
Temperature:	-30°C to 260°C/-20°F to 500°F
Speed:	1450 rpm minimum
Axial Movement:	±0.040"
Runout:	0.002" TIR

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.

Storage and Transport

Instructions for the handling, packaging, storage and transport of seal units and seats/mating rings are given in the John Crane Instruction Sheet ref. I-**Storage**, available on request.

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