

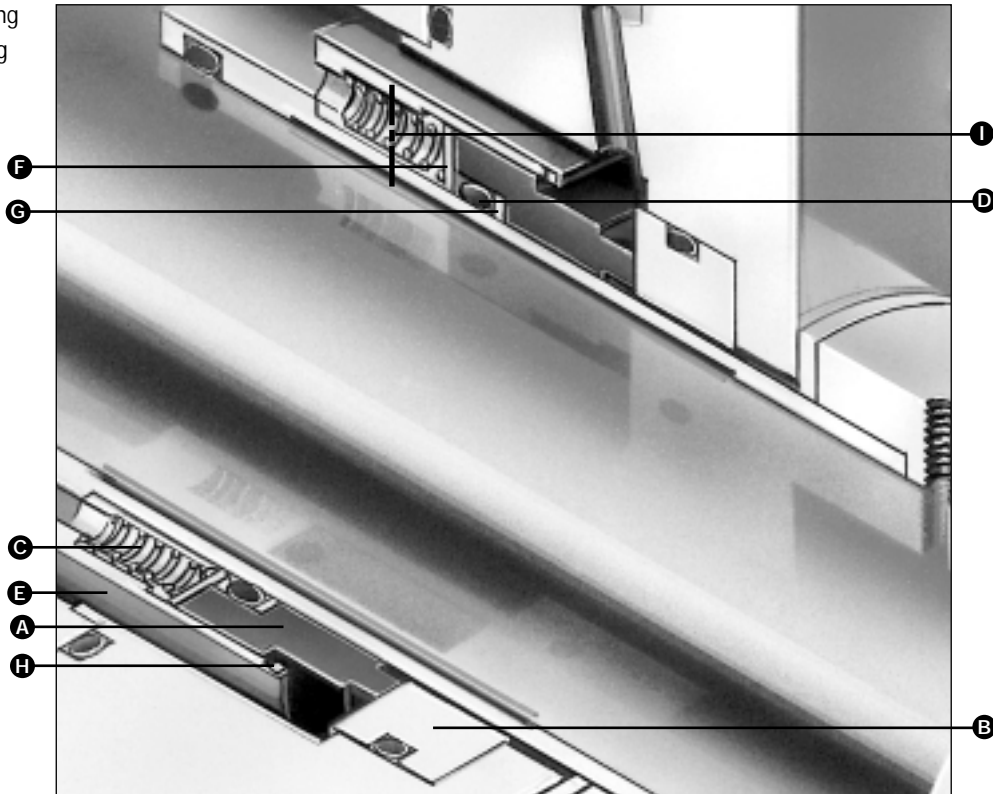


TYPE 8-1/8-1T

Elastomer O-Ring Seals

8-1/8-1T

- A – Face/Primary Ring
- B – Seat/Mating Ring
- C – Spring
- D – O-Ring
- E – Retainer
- F – Disc
- G – Anti-X-Ring
- H – Snap Ring
- I – Set Screws



Product Description

Rugged mechanical seals are available in a wide variety of elastomers for handling practically every industrial fluid. All components are held together by a snap ring in a unitized construction design.

- General industrial applications including chemical processing, food and beverage, petrochemical processing, pharmaceutical, pipeline, power generation and pulp and paper.
- Compact design permits use in all types of rotating equipment centrifugal pumps, mixers and agitators.
- Seals can be repaired easily on-site or at any John Crane Seal Rebuilding Center.
- Seals can be shaft mounted or built into a cartridge as illustrated above.

Design Features

- O-Ring Design
- Positive Mechanical Drive Design Eliminates Slippage
- Multiple Springs Provide Precise Face Loading

Performance Capabilities

- Temperature:
-30°C to 205°C/-20°F to 400°F
(depending on materials used)
- Pressure:
24 bar g/350 psig
For hydrostatic pressure limits, refer to the Hydrostatic Pressure Limits chart.
- Speed:
Up to 25 m/s / 5000 fpm

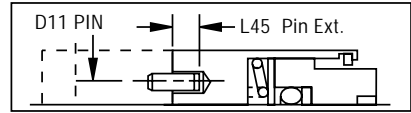
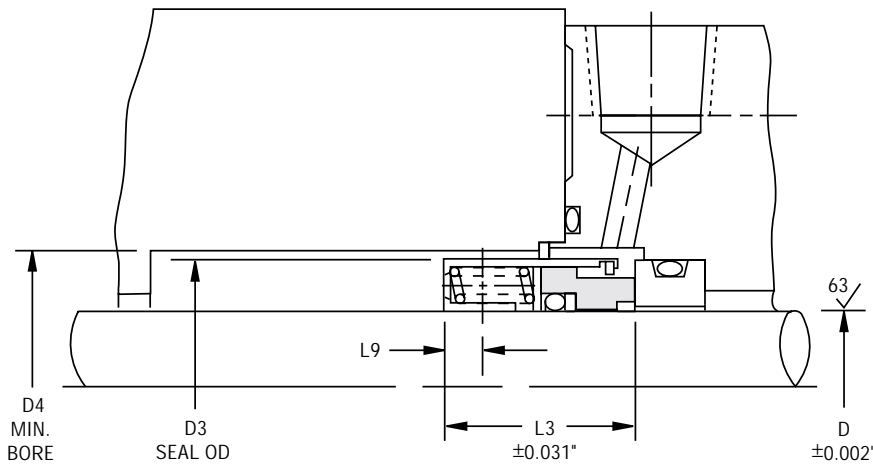
NOTE: For applications with speeds greater than 25 m/s/ 5000 fpm, a rotating seat (RS) arrangement is recommended.



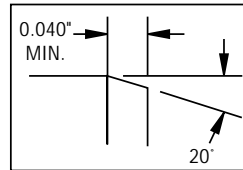
TYPE 8-1/8-1T

Elastomer O-Ring Seals

Type 8-1 Typical Arrangement/Dimensional Data



(N) number of pins (D12) pin diameter Pin press fit into collar or impeller. Engages holes in retainer. Design option standard on Type 8B1 Seals only.



For ease of installation, the lead-in edge of the shaft or sleeve should be chamfered as shown.

Type 8-1 Dimensional Data (inches)

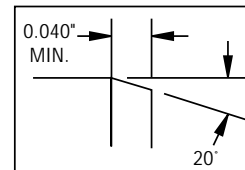
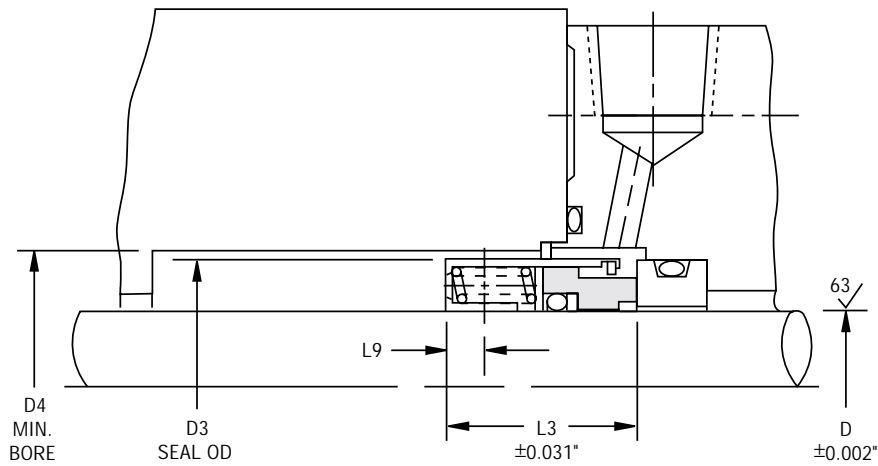
Seal Size/D (inches)	D3	D4	D11	D12	L3	L9	L45	N
0.500	1.031	1.156	0.750	0.125	0.812	0.156	0.125	1
0.625	1.187	1.312	0.890	0.125	0.750	0.156	0.125	1
0.750	1.312	1.437	1.015	0.125	0.875	0.187	0.125	1
0.875	1.437	1.562	1.125	0.125	0.937	0.187	0.125	1
1.000	1.562	1.750	1.265	0.125	1.000	0.187	0.125	1
1.125	1.687	1.875	1.437	0.187	1.062	0.218	0.187	1
1.250	1.875	2.000	1.562	0.187	1.062	0.187	0.187	1
1.375	2.000	2.125	1.687	0.187	1.125	0.187	0.187	1
1.500	2.125	2.250	1.812	0.187	1.125	0.187	0.187	1
1.625	2.375	2.500	2.000	0.187	1.375	0.281	0.187	1
1.750	2.500	2.625	2.125	0.187	1.375	0.281	0.187	1
1.875	2.625	2.750	2.250	0.187	1.375	0.281	0.187	1
2.000	2.750	2.875	2.375	0.187	1.375	0.281	0.187	1
2.125	3.000	3.125	2.562	0.250	1.687	0.343	0.250	1
2.250	3.125	3.250	2.718	0.250	1.687	0.343	0.250	1
2.375	3.250	3.375	2.812	0.250	1.687	0.343	0.250	1
2.500	3.375	3.500	2.968	0.250	1.687	0.343	0.250	1
2.625	3.500	3.625	3.062	0.312	1.687	0.343	0.312	1
2.750	3.625	3.750	3.187	0.312	1.687	0.343	0.312	1
2.875	3.750	3.875	3.312	0.312	1.687	0.343	0.312	1
3.000	3.812	4.000	3.390	0.312	1.687	0.343	0.312	1
3.125	3.937	4.062	3.515	0.312	1.687	0.343	0.312	1
3.250	4.125	4.250	3.687	0.312	1.687	0.343	0.312	1
3.375	4.250	4.375	3.796	0.312	1.687	0.343	0.312	1
3.500	4.375	4.500	3.937	0.312	1.687	0.343	0.312	1
3.625	4.500	4.625	4.046	0.312	1.687	0.343	0.312	1
3.750	4.625	4.750	4.187	0.312	1.687	0.343	0.312	1
3.875	4.750	4.875	4.296	0.312	1.687	0.343	0.312	1
4.000	4.875	5.000	4.421	0.312	1.687	0.343	0.312	1
4.125	5.000	5.125	—	0.312	1.687	0.343	0.312	2
4.250	5.250	5.375	4.781	0.187	1.687	0.343	0.187	2
4.375	5.375	5.500	—	—	1.687	0.343	0.312	2
4.500	5.500	5.625	4.953	0.250	1.687	0.343	0.250	2
4.625	5.625	5.750	5.046	0.250	1.687	0.343	0.250	2
4.750	5.750	5.875	5.109	0.250	1.687	0.343	0.250	2
4.875	5.875	6.000	5.359	0.250	1.687	0.343	0.250	2
5.000	6.000	6.125	5.484	0.250	1.687	0.343	0.250	2
5.125	6.125	6.260	—	0.250	1.687	0.343	0.250	2
5.250	6.500	6.625	5.750	0.250	2.000	0.312	0.250	2
5.375	6.625	6.750	—	0.250	2.000	0.312	0.250	2
5.500	6.750	6.875	5.984	0.250	2.000	0.312	0.250	2
5.625	6.875	7.000	6.109	0.250	2.000	0.312	0.250	2
5.750	7.000	7.125	6.250	0.250	2.000	0.390	0.250	2
5.875	7.125	7.260	—	0.250	2.000	0.390	0.250	2
6.000	7.250	7.375	6.484	0.250	2.000	0.312	0.250	2



TYPE 8-1/8-1T

Elastomer O-Ring Seals

Type 8-1T Typical Arrangement/Dimensional Data



For ease of installation, the lead-in edge of the shaft or sleeve should be chamfered as shown.

Type 8-1T Dimensional Data (inches)

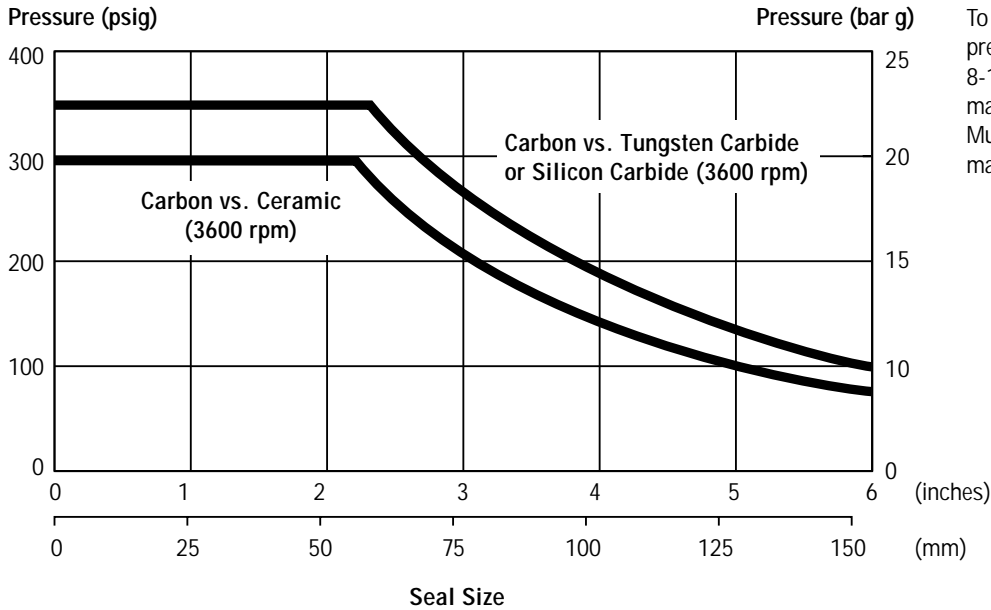
Seal Size/D (inches)	D3	D4	L3	L9
0.500	0.937	1.062	0.937	0.187
0.625	1.062	1.187	0.937	0.156
0.750	1.187	1.312	0.937	0.187
0.875	1.312	1.437	0.937	0.187
1.000	1.437	1.562	1.000	0.187
1.125	1.562	1.687	1.000	0.218
1.250	1.687	1.812	1.000	0.187
1.375	1.937	2.062	1.375	0.187
1.500	1.937	2.062	1.125	0.187
1.625	2.250	2.375	1.156	0.187
1.750	2.312	2.437	1.375	0.281
1.875	2.500	2.625	1.375	0.281
2.000	2.625	2.750	1.375	0.281
2.125	2.812	2.937	1.687	0.343
2.250	2.843	2.968	1.375	0.234
2.375	3.000	3.125	1.687	0.343
2.500	3.125	3.250	1.375	0.234
2.625	3.250	3.375	1.687	0.343
2.750	3.375	3.500	1.687	0.343
2.875	3.500	3.625	1.687	0.343
3.000	3.625	3.750	1.687	0.343
3.125	3.750	3.875	1.687	0.343
3.250	3.875	4.000	1.687	0.343
3.375	4.000	4.125	1.687	0.343
3.500	4.125	4.250	1.687	0.343
3.625	4.250	4.375	1.687	0.343
3.750	4.375	4.500	1.687	0.343
3.875	4.500	4.625	1.687	0.343
4.000	4.625	4.750	1.687	0.343



TYPE 8-1/8-1T

Elastomer O-Ring Seals

Basic Pressure Ratings

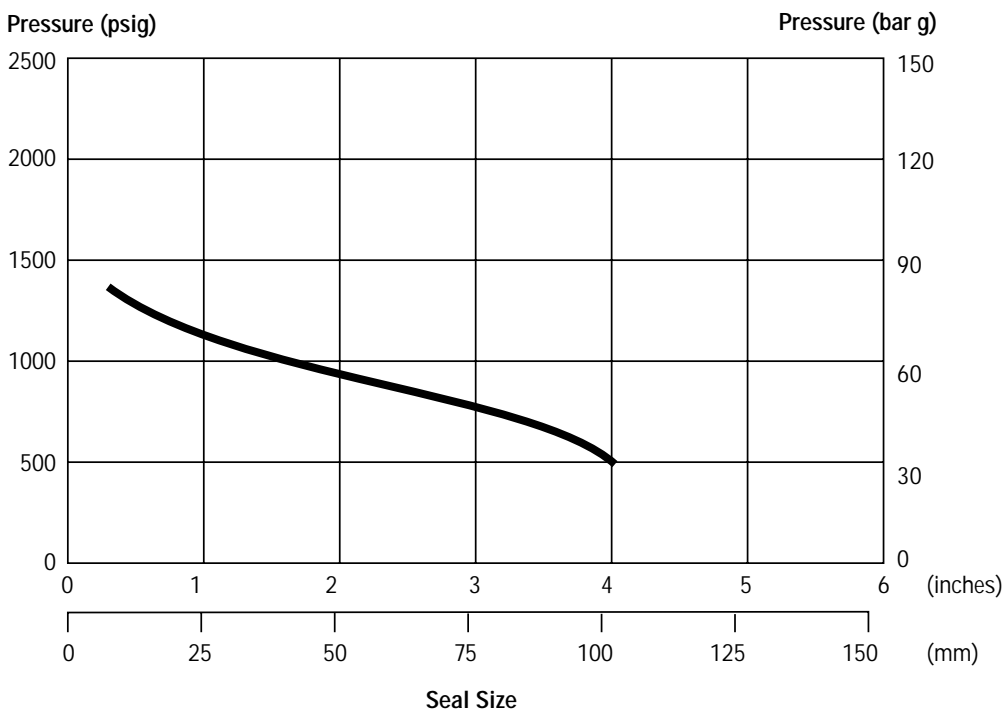


To determine the maximum pressure for the Type 8-1 or 8-1T required, multiply the maximum pressure by the Multiplier Factors to obtain the maximum operating pressure.

The Basic Pressure Rating is for a standard Type 8-1 or 8-1T seal, as shown in the typical arrangement, when installed according to the criteria given in this data sheet and generally accepted industrial practices.

The Basic Pressure Rating assumes stable operation at 3600 rpm in a clean, cool, lubricating, nonvolatile liquid, with an adequate flush rate. When used with the Multiplier Factors, the Basic Pressure Rating can be adjusted to provide a conservative estimate of the dynamic pressure rating. For process services outside this range or a more precise assessment of the dynamic pressure rating, contact John Crane for more information.

Hydrostatic Pressure Limits





TYPE 8-1/8-1T

Elastomer O-Ring Seals

Multiplier Factors

	Selection Considerations	Multiplier Factor
Sealed Fluid Lubricity	Gasoline, Kerosene or Better	x 1.00
	Aqueous Solutions	x 0.75
Sealed Fluid Temperature (for carbon only)	Below 80°C/175°F	x 1.00
	From 80°C to 120°C/175°F to 250°F	x 0.90
	From 120°C to 180°C/250°F to 350°F	x 0.80
	Above 180°C/350°F	x 0.65
Speed	Up to 3600 rpm	x 1.00
	Above 3600 rpm	*

* Multiplier = 3600/new speed

Example: If new speed = 4000 rpm

Multiplier = 3600/4000 = 0.90

Example for Determining PV Limits:

Seal: 51mm/2" diameter Type 8-1

Product: Water

Face Material: Carbon vs. Tungsten Carbide

Temperature: 16°C/60°F

Speed: 3600 rpm

Using the Basic Pressure Rating chart the maximum pressure would be 24 bar g/350 psig.

From the Multiplier Factors chart apply the multipliers for the specific service requirements to determine the maximum operating pressure for the application.

$350 \text{ psig} \times 0.75 \times 1 \times 1 = 263 \text{ psig}/18 \text{ bar g}$

The maximum operating pressure of this 51mm/2" diameter Type 8-1 seal is 263 psig/18 bar g.



TYPE 8-1/8-1T

Elastomer O-Ring Seals

Materials of Construction

SEAL COMPONENTS	MATERIALS	
Description	Standard	Options
Face/Primary Ring	Carbon	Carbon (Nuclear Service) Carbon Severe (Chemical Service) Tungsten Carbide (Nickel Binder) Solid Silicon Carbide
O-Ring	Buna-N	Fluoroelastomer Ethylene Propylene Neoprene® Perfluoroelastomer Silicone
Disc Set Screws Retainer Snap Ring	316 Stainless Steel	Monel® Alloy 20 CB-3 SS Hastelloy B® Alloy C-276 (UNS N10276) Titanium
Springs	316 Stainless Steel	Monel Alloy 20 CB-3 SS Hastelloy B Alloy C-276 (UNS N10276) Titanium

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