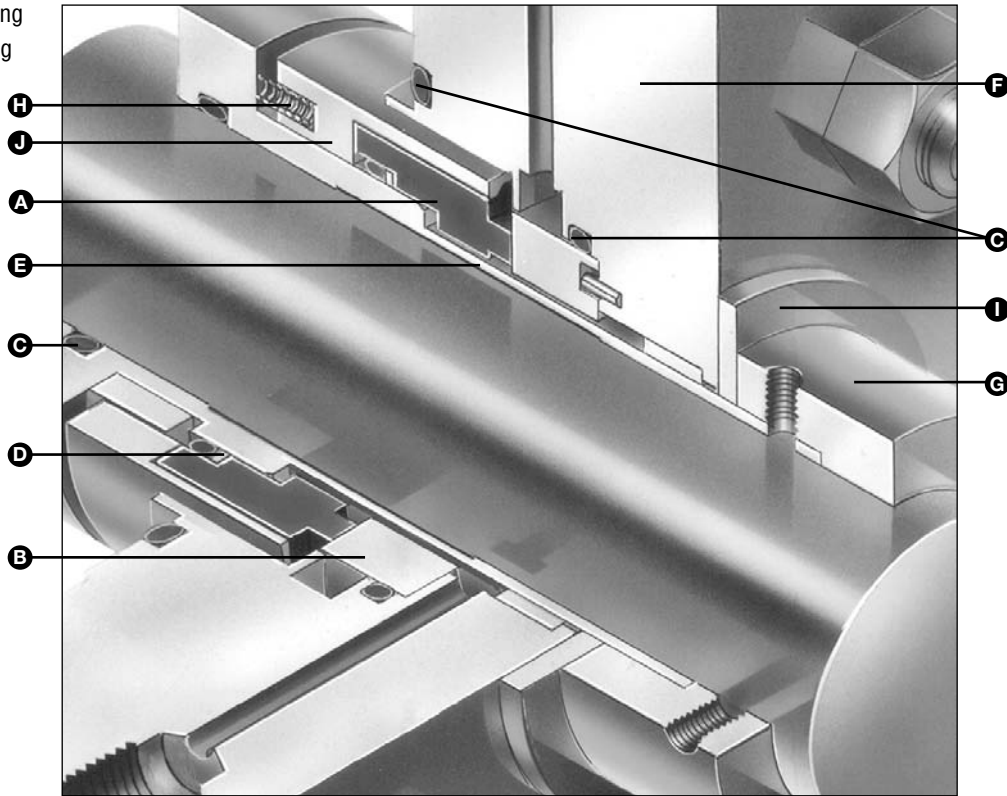


- A – Face/Primary Ring
- B – Seat/Mating Ring
- C – O-Rings
- D – Anti-Extrusion Ring
- E – Sleeve
- F – Gland Plate
- G – Collar
- H – Springs
- I – Spacer
- J – Retainer



Product Description

A rugged mechanical seal available in a variety of elastomers for handling high pressures.

- High pressure service in petrochemical processing, pipeline and refinery applications.
- For use on lubricating liquids, heavy oil liquids, water, LPG, gasoline and crude oil.
- Applications where large pressure and temperature variations are encountered.
- Seal is a cartridge unit assembled on a sleeve for immediate installation. Entire unit can be installed and/or removed without removal of pump casing.
- Compact design permits use in all types of rotating equipment.
- Field Repairable.

Performance Capabilities

- Temperature:
-40°C to 260°C/-40°F to 500°F
- Pressures:
Up to 103.5 bar/1500 psig
- Speed:
Up to 25 m/s/5000 fpm

Design Features

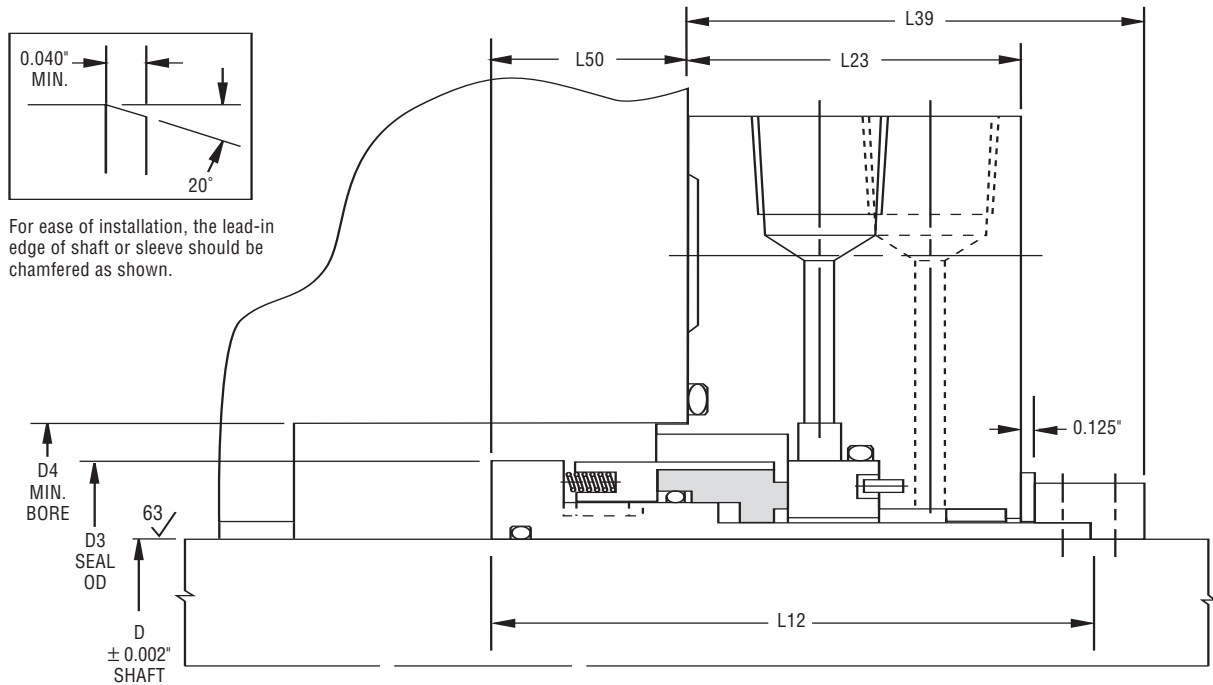
- Mechanical drive design — reduces slippage on shaft and sleeve to eliminate galling and premature wear.
- Minimal Deflection, Lapped Faces — primary ring designed to minimize radial and angular deflections throughout operating range. Lapping process results in high precision finish for optimal sealing performance.
- Balanced Design — balanced construction, including anti-extrusion ring, permits use in higher pressures.
- O-Ring Design — permits accommodation of many different fluids through use of wide variety of materials.



TYPE 8B

Elastomer O-Ring Cartridge Seal

Type 8B Typical Arrangement/Dimensional Data



Type 8B Dimensional Data (inches)

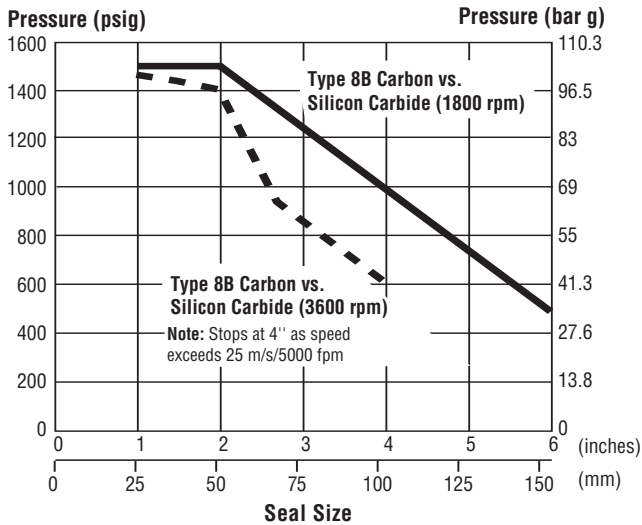
Seal Size	D	D3	D4	L12	L23	L39	L50
1.000	1.000	2.125	2.312	4.250	1.750	2.875	1.843
1.125	1.125	2.250	2.437	4.250	1.750	2.875	1.843
1.250	1.250	2.375	2.562	4.250	1.750	2.875	1.843
1.375	1.375	2.500	2.687	4.312	1.750	2.875	1.906
1.500	1.500	2.625	2.812	4.312	1.750	2.875	1.906
1.625	1.625	2.750	2.937	4.312	1.750	2.875	1.906
1.750	1.750	2.875	3.062	4.312	1.750	2.875	1.906
1.875	1.875	3.000	3.187	4.375	1.750	2.875	1.968
2.000	2.000	3.125	3.312	4.375	1.750	2.875	1.968
2.125	2.125	3.375	3.562	4.562	1.875	3.000	2.031
2.250	2.250	3.500	3.687	4.562	1.875	3.000	2.031
2.375	2.375	3.625	3.812	4.625	1.875	3.000	2.093
2.500	2.500	3.750	3.937	4.625	1.875	3.000	2.093
2.625	2.625	3.875	4.062	4.625	1.875	3.000	2.093
2.750	2.750	4.000	4.187	4.625	1.875	3.000	2.093
2.875	2.875	4.125	4.312	4.781	1.875	3.000	2.250
3.000	3.000	4.250	4.437	4.781	1.875	3.000	2.250
3.125	3.125	4.562	4.750	4.968	2.125	3.250	2.187
3.250	3.250	4.687	4.875	4.968	2.125	3.250	2.187
3.375	3.375	4.812	5.000	4.968	2.125	3.250	2.187
3.500	3.500	4.937	5.125	4.968	2.125	3.250	2.187
3.625	3.625	5.062	5.250	4.968	2.125	3.250	2.187
3.750	3.750	5.187	5.375	4.968	2.125	3.250	2.187
3.875	3.875	5.312	5.500	4.968	2.125	3.250	2.187
4.000	4.000	5.437	5.625	4.968	2.125	3.250	2.187
4.125	4.125	5.750	6.000	5.156	2.125	3.250	2.375
4.250	4.250	5.875	6.125	5.156	2.125	3.250	2.375



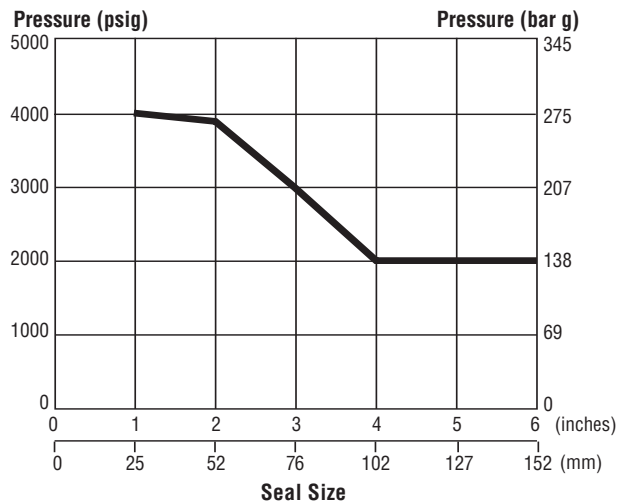
TYPE 8B

Elastomer O-Ring Cartridge Seal

Basic Pressure Ratings



Hydrostatic Pressure Limits



To determine the maximum pressure for the Type 8B Seal, multiply the maximum pressure by the Multiplier Factors to obtain the maximum operating pressure.

The Basic Pressure Rating is based on a standard seal installed according to the criteria given in this data sheet and according to generally accepted industrial practices. The Basic Pressure Rating assumes stable operation in a clean, cool, lubricating, non-volatile liquid, with an adequate flush rate. When used with the Multiplier Factors, the Basic Pressure Rating can provide a conservative estimate of the dynamic pressure rating.

Contact John Crane Engineering for process services outside this range and with more detailed application information in order to obtain the actual dynamic pressure rating.

Multiplier Factors

	Selection Considerations	Multiplier Factor
Speed	3600 rpm Above 3600 rpm*	x 1.00 **
Sealed Fluid Lubricity	Petrol/Gasoline, Kerosene, or better Water and Aqueous Solutions Light Hydrocarbons*** (Specific Gravity ≤ 65)	x 1.00 x 0.75 x 0.60
Sealed Fluid Temperature (for carbon only)	Below 80°C/175°F From 80°C to 125°C/175°F to 250°F From 125°C to 180°C/250°F to 350°F Above 180°C/350°F	x 1.00 x 0.90 x 0.80 x 0.65

* Not to exceed 25m/s/5000 fpm.

** Multiplier = 3600/new speed
Example: If new speed = 4000 rpm
Multiplier = 3600/4000 = 0.90

*** The ratio of sealed pressure to vapor pressure must be greater than 1.5, otherwise consult John Crane. If the specific gravity is less than 0.60, consult John Crane.

Example for Determining Pressure Rating Limits

Seal: 50mm/2" diameter Type 8B

Product: Light Hydrocarbon

Face Material: Carbon vs. Silicon Carbide

Temperature: 40°C/100°F

Speed: 1800 rpm

Using the Basic Pressure Rating chart, the maximum pressure would be 103.5 bar g/1500 psig.

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

$$103.5 \text{ bar g/1500 psig} \times 1.00 \times 0.60 \times 1.00 = 900 \text{ psig/62 bar g.}$$

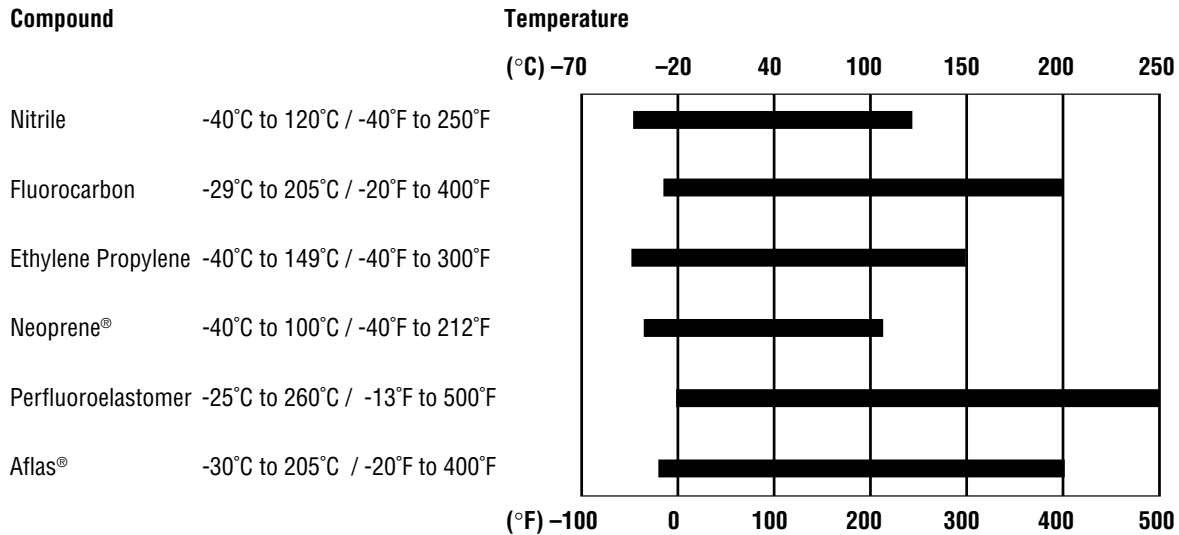
At 1800 rpm with the service conditions noted, a 50mm/2" diameter Type 8B Seal has a maximum operating limit of 900 psig/62 bar g. If operating pressure exceeds the pressure limit, consult John Crane.



TYPE 8B

Elastomer O-Ring Cartridge Seal

Elastomer Temperature Limits



Criteria for Installation

Shaft/Sleeve	Limits
Surface Finish (max.)	0.8µm/32 Ra
Ovality/Out of Roundness (Shaft)	0.051mm/0.002"
End Play/Axial Float Allowance	±0.13mm/0.005"

Materials of Construction

SEAL COMPONENTS	MATERIALS	
	Description	Standard
Face/Primary Ring	Carbon	Nickel Binder Tungsten Carbide Silicon Carbide
Seat/Mating Ring	Silicon Carbide	Nickel Binder Tungsten Carbide
O-Rings	Fluorocarbon	Aflas®, Ethylene Propylene, Nitrile, Neoprene®, Perfluoroelastomer
Retainer Gland Plate Sleeve, Collar, Springs	316 Stainless Steel	Alloy C-276, Hastelloy B® Alloy 400 (Monel®) Alloy 20 Cb-3, Titanium,
Anti-X Ring	PTFE	—
Bushing	Bronze	Carbon

Aflas is a registered trademark of Ashasi Glass Co. Ltd.

Hastelloy is a registered trademark of Haynes International, Inc.

Monel is a registered trademark of Inco Alloys International, Inc.

Neoprene is a registered of DuPont Dow.



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