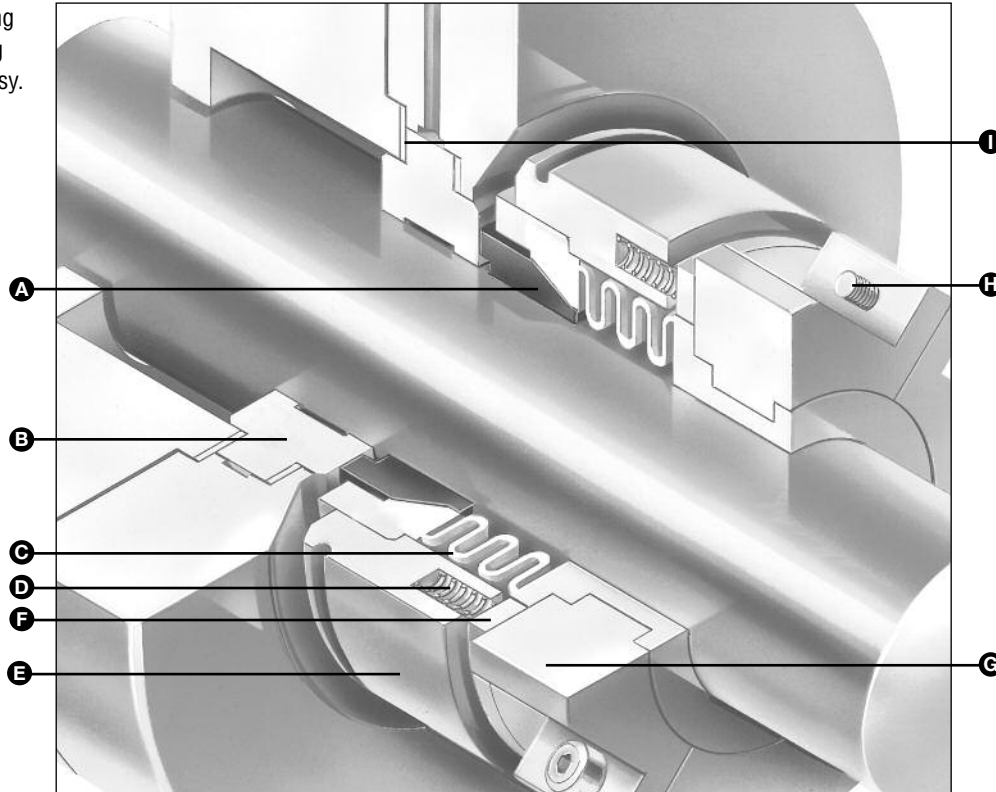


- A – Face/Primary Ring
- B – Seat/Mating Ring
- C – PTFE Bellows Assy.
- D – Spring
- E – Spring Adapter
- F – Disc
- G – Clamp Ring
- H – Cap Screw
- I – Gasket



Type 20R shown

### Product Description

Types 20 and 20R shaft seals feature chemically inert materials in all areas and on all surfaces in contact with the liquid being sealed. Metallic components, springs and clamp ring, are located outside the pump seal chamber, isolated from the process liquid. Multiple springs are standard. A single spring design is available.

- For use with extremely corrosive chemicals, including concentrated acids and salts, strong oxidizing and reducing agents, and chemically active organic compounds commonly used on PTFE filled pumps.

### Design Features

- The entire seal assembly and component parts employ mechanical drive to prevent slippage on the shaft or sleeve. Seal assembly is outside mounted and internally pressurized
- Flexible PTFE bellows design - maximum corrosion resistance. Eliminates possibility of seal face misalignment. Compensates for shaft runout to promote low maintenance, long life operation
- Independent spring assembly, replaceable primary ring (Type 20R) - provides uniform face loading characteristics. Easy removal and replacement of sealing member most subject to wear. It reduces costs in very severe or critical installations

### Performance Capabilities

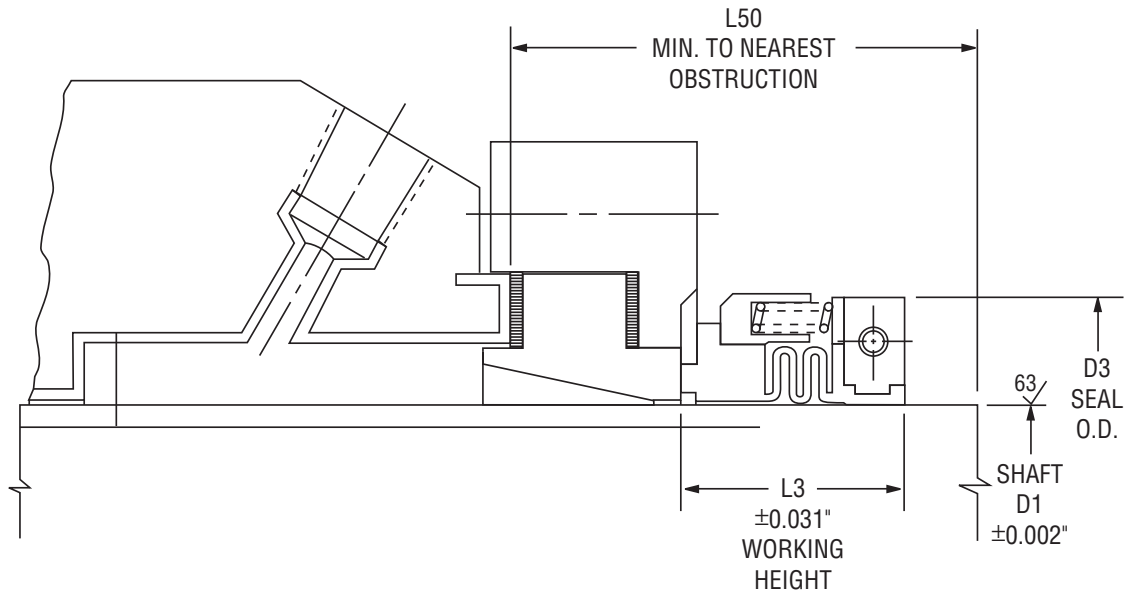
- Temperatures: -45°C to 121°C/-50°F to 250°F
- Pressures: 10 bar g/150 psig
- Speeds: 20: to 5 mps/1000 fpm  
20R: to 13 mps/2600 fpm

NOTE: Some restrictions apply in handling strong alkalis.  
Consult John Crane for evaluation and analysis.

# TYPE 20/20R

## PTFE BELLOWS SEALS

### Type 20 Typical Arrangement



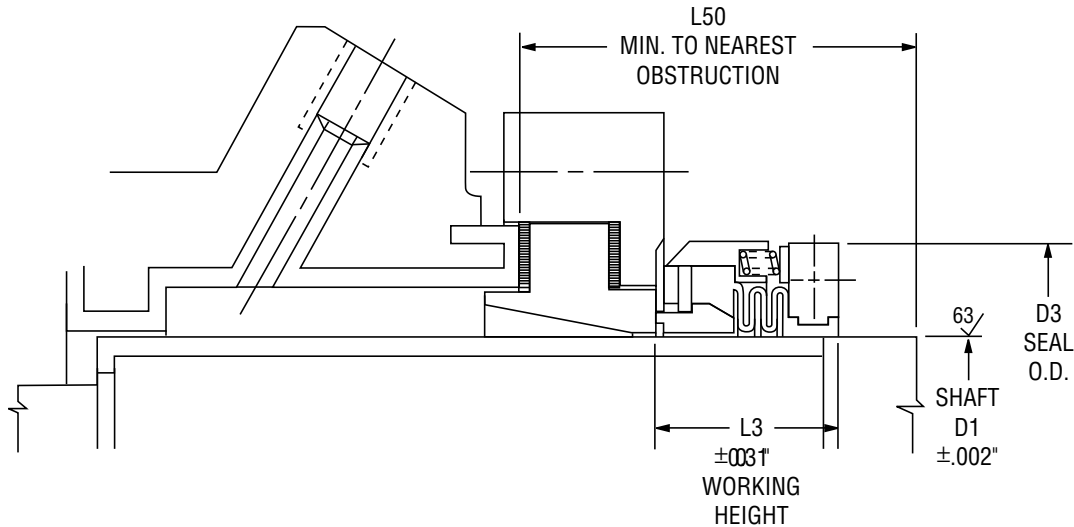
### Type 20 Dimensional Data (inches)

Seal Size (Inches)	D1	D3	L3	L50
0.625	0.625	1.312	2.062	2.875
0.750	0.750	1.437	2.062	2.875
0.875	0.875	1.562	1.000	2.812
1.000	1.000	2.250	1.000	1.718
1.125	1.125	2.375	1.062	1.781
1.250	1.250	2.625	1.062	1.781
1.375	1.375	2.750	1.125	1.875
1.500	1.500	2.875	1.125	1.875
1.625	1.625	3.000	1.375	2.125
1.750	1.750	3.125	1.375	2.125
1.875	1.875	3.375	1.375	2.125
2.000	2.000	3.500	1.375	2.250
2.125	2.125	3.625	1.687	2.562
2.250	2.250	3.750	1.687	2.562
2.375	2.375	3.875	1.687	2.562
2.500	2.500	4.000	1.687	2.562
2.625	2.625	4.125	1.687	2.562
2.750	2.750	4.250	1.687	2.562
2.875	2.875	4.375	1.687	2.562
3.000	3.000	4.500	1.687	2.562
3.125	3.125	4.875	1.687	2.562
3.250	3.250	5.000	1.687	2.562
3.375	3.375	5.125	1.687	2.562
3.500	3.500	5.250	1.687	2.562
3.625	3.625	5.375	1.687	2.562
3.750	3.750	5.500	1.687	2.562
3.875	3.875	5.625	1.687	2.562
4.000	4.000	5.750	1.687	2.562

# TYPE 20/20R

## PTFE BELLOWS SEALS

### Type 20R Typical Arrangement



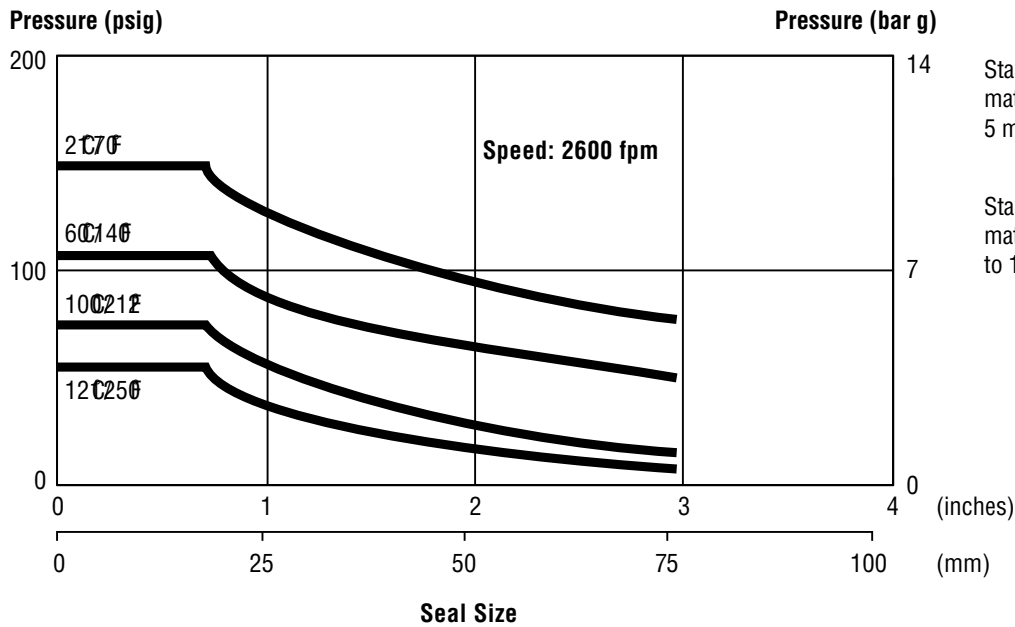
### Type 20R Dimensional Data (inches)

Seal Size (Inches)	D1	D3	L3	L50
0.875	0.875	1.937	1.937	2.812
1.000	1.000	2.250	1.062	1.781
1.125	1.125	2.375	1.125	1.843
1.250	1.250	2.625	1.125	1.843
1.375	1.375	2.750	1.125	1.875
1.500	1.500	2.875	1.125	1.875
1.625	1.625	3.000	1.375	2.125
1.750	1.750	3.125	1.375	2.312
1.875	1.875	3.375	1.375	2.312
2.000	2.000	3.500	1.375	2.250
2.125	2.125	3.625	1.687	2.562
2.250	2.250	3.750	1.687	2.562
2.375	2.375	3.875	1.687	2.562
2.500	2.500	4.000	1.687	2.562
2.625	2.625	4.125	1.687	2.562
2.750	2.750	4.250	1.687	2.562
2.875	2.875	4.375	1.687	2.562
3.000	3.000	4.500	1.687	2.562
3.125	3.125	4.875	1.687	2.562
3.250	3.250	5.000	1.687	2.562
3.375	3.375	5.125	1.687	2.562
3.500	3.500	5.250	1.687	2.562
3.625	3.625	5.375	1.687	2.562
3.750	3.750	5.500	1.687	2.562
3.875	3.875	5.625	1.687	2.562
4.000	4.000	5.750	1.687	2.562

# TYPE 20/20R

## PTFE BELLOWS SEALS

### Basic Pressure Velocity (PV) Rating



Standard Type 20 and standard mating ring (PTFE vs. ceramic) to 5 mps/100 fpm.

Standard Type 20R and standard mating ring (carbon vs. ceramic) to 13 mps/2600 fpm.

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

### Pressure Limits

Seal Type	Pressure Limits	
	Operating	Static Test
Type 20 and 20R	Reference	21°C/70°F 10 bar g/150 psig
	Basic	60°C/140°F 8 bar g/110 psig
	Pressure	100°C/212°F 4 bar g/65 psig
	Velocity (PV) Rating above	121°C/250°F 3 bar g/40 psig

### Criteria for Installation

Shaft/Sleeve	Limits
Surface Finish	63 Ra
Ovality/Out of Roundness (Shaft)	0.051mm/0.002"
End Play/Axial Float Allowance	0.025mm - 0.130mm/ 0.001" - 0.005"

**Materials of Construction**

<b>SEAL COMPONENTS</b>	<b>MATERIALS</b>	
<b>Description</b>	<b>Standard</b>	<b>Options</b>
Face/Primary Ring	Carbon (Type 20R) Resin Filled PTFE (Type 20)	Silicon Carbide —
Clamp Ring Disc Spring Adapter	316 Stainless Steel	Monel® Alloy 20 CB-3 SS Alloy C-276 (UNS N10276) Hastelloy B®
Bellows	PTFE	—
Springs	316 Stainless Steel	Monel Alloy 20 CB-3 SS Alloy C-276 (UNS N10276) Hastelloy B



# TYPE 20/20R

## PTFE BELLOWS SEALS

Technical Specification

john crane

# TYPE 20/20R

PTFE BELLOWS SEALS

Technical Specification

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



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Fax: 1-847-967-3915	Fax: 44-1753-224224	Fax: 55-11-3371-2599	Fax: 971-488-62830	Fax: 65-6518-1803

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