



**Advantage Seal™**

The Seal of Quality

**2015**  
**Mechanical Seal**  
**Brochure**



# Advantage Seal Inc.

## About Us



**Advantage Seal, Inc.** is a leading international manufacturer of both standard and customized mechanical shaft seals. Since 2002, we have worked closely with our customers, providing them solutions to help them to operate much more reliably, efficiently and economically. It is our goal is to consistently surpass our customer's expectations of quality, service and delivery of our products and services.

For over a decade, we have maintained or exceeded our high quality product support and service that has allowed our company to be where it is today. We are relentless in our pursuit of perfection from design to manufacturing and consequently to the market. We have a lean operation which enables us to achieve speed and flexibility, thus allowing us to be more responsive to our customer's needs.

**Design** - Advantage Seal, Inc. employs design engineers throughout the globe using the latest design software and equipment. Our more than 25 years of mechanical seal experience allows us innovative ways to analyze and solve the most demanding seal application problems and prolonging seal life.

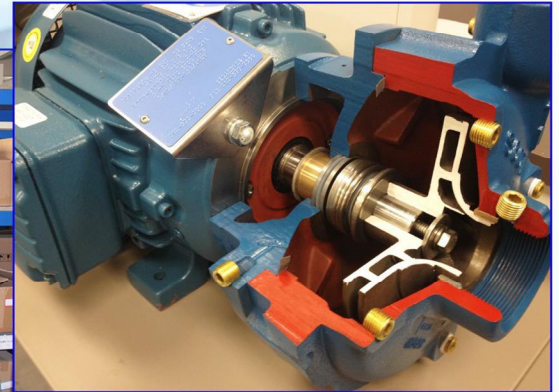
**Manufacturing** - Advantage Seal ISO9001-2008 modern facilities operate a lean and efficient operation with a non-compromising focus on quality. We take opportunity of a low-cost manufacturing environment while producing the highest quality product for the market. We are determined to pursue enhancements in all aspect of our operation to remain competitive in the industry. From prototype design to high production volume, we can meet your sealing requirements.

**Service** - Advantage Seal's streamlined operation allows us to provide efficient and responsive customer service. We view our relationship with our customers as a partnership that mutually benefits the interest of both companies, ours and that of our customer. We offer free seal failure analysis, even on our competitor's seals, and work with our customers to solve their sealing problems. We can incorporate our customers' brand name or trademark as a mold mark one or more elastomeric components of a seal We will even create a private label seal if desired. We will provide a quote based on prints, cad files, PS numbers, and /or supplies. We exist to serve your needs.



# Advantage Seal Inc.

## Company History



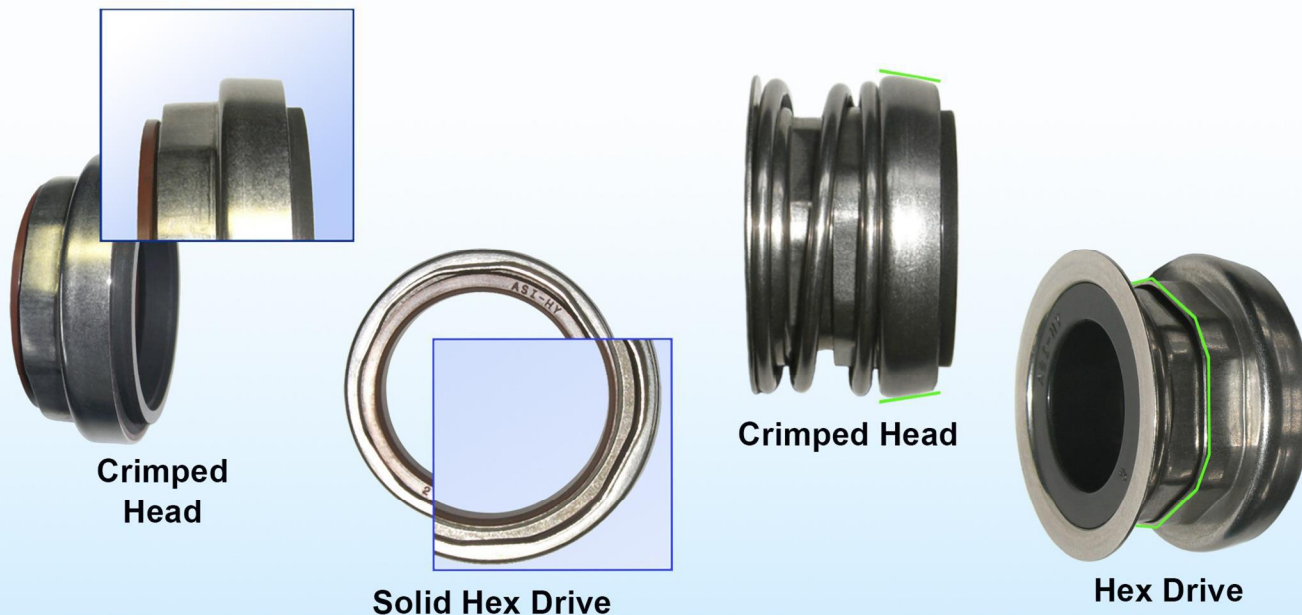
In 2002, a group of skilled veterans in the pump and mechanical seal industry teamed up together with the goal to create a company that can provide affordable and high quality products in the sealing industry, with the premise that "big" corporations are more focused on increasing the value of their stock shares rather than increasing their customer base, thus the industry is in dire need of a company that focuses on the customer need for affordable quality products and attentive service. Thus, Advantage Seal, Inc. was born.

In 2005, Advantage Seal Ningbo operation in China commenced and duplicated it's US Manufacturing process. Since then, Advantage Seal has successfully merged American innovation with the low cost manufacturing efficiency of the Ningbo operation to make Advantage Seal's mission to provide affordable & high quality seals a reality.

In 2010, Advantage Seal started operation in the Philippines, expanding their capability by providing services the emerging Asian Market, and providing global engineering support.

Advantage Seal is committed to the designing and developing of exceptional seals that meet the fluid handling requirements and demands of both current and emerging markets. To maintain the edge in the design and manufacturing of elastomer bellows seals, we will continue to invest in the best equipment, people and technology. Being not the biggest in the industry is an asset that allows us to operate leaner, more efficient and stronger.





Advantage Seal offers only the best in quality elastomer bellows seals. Our crimped rotating head design and hex-drive distribution system provide enhanced operation levels, superior reliability, increased durability, and greater ease-of-use as compared to other seal designs.

**Take a look at how our seals are designed to last.**

### **The Crimped Head Design**

- By eliminating contact between the seal ring and the metal shell, Advantage seals are capable of operating at higher pressure levels and faster shaft speeds.
- With the seal ring crimped securely in place foreign particles and solids cannot intrude and dislodge the seal ring.
- Manufactured without glue, our seals pose no questions of chemical compatibility or hassles with seal rings falling out during installation - even if they are installed nose-down.

### **The Hex-Drive Distribution Advantage**

- The hex-drive system evenly distributes torque around the seal head by incorporating a solid six-faced drive band that protects the diaphragm and eliminates the need for tangs and notches.
- Inferior tang and notch drive systems commonly fail from broken tangs, loose engagements, and torn diaphragms. The Advantage Seal hex-drive system features a locking positive engagement that eliminates drive failure.
- You can rely on Advantage seals to endure, even during frequent start-and-stop operations and high break-away torque situations



# Materials of Construction



## Available Materials\*

- Rotary Face**
  - AS-191™ High Temp Carbon
  - AS-181™ Antimony Carbon
  - Reaction-Bonded Silicon Carbide (RBSiC)
  - Graphite Loaded Silicon Carbide (GLSiC)
  - Tungsten Carbide
  - SAE 660 Bronze
  
- Stationary Face**
  - Ceramic (Alumina Oxide)
  - Reaction-Bonded Silicon Carbide (RBSiC)
  - Tungsten Carbide
  - Graphite Loaded Silicon Carbide (GLSiC)
  
- Elastomer Components**
  - Buna Nitrite -40°F to +225°F (-40°C to +107°C)
  - EPDM -65°F to +300°F (-54°C to +149°C)
  - Fluoroelastomer (Viton™) -15°F to +400°F (-26°C to +204°C)
  - Neoprene -65°F to +300°F (-54°C to +149°C)
  - Aflas™ +14°F to +400°F (-10°C to +204°C)
  - Kalrez™ (O-Ring Design Only) -15°F to +620°F (-26°C to +327°C)
  
- Metal Components** → 316 Stainless Steel

*\*Please contact Advantage Seal for special material requirements*





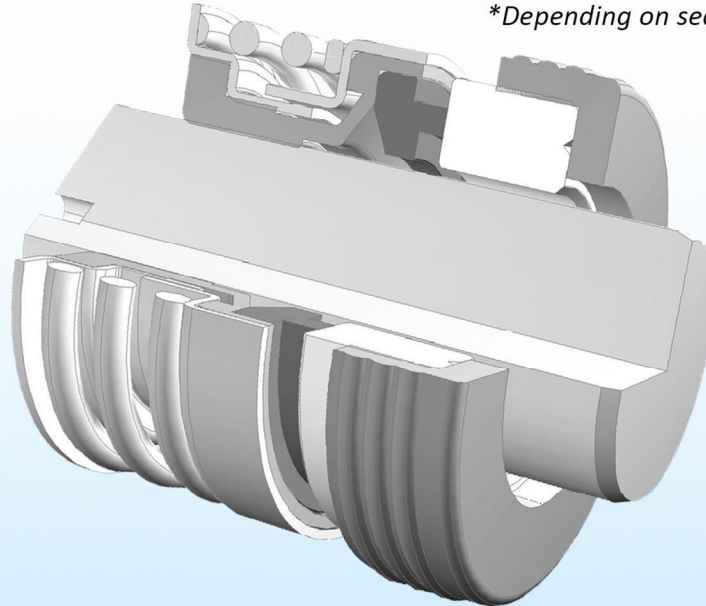
# Advantage Seal Type 16



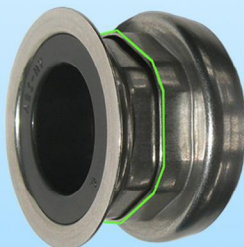
The versatile, self-aligning choice for services:

- Up to 5,000 sf/m \*
- Up to 150 psig (10 bar) \*
- From -40°F (-40°C) to 400°F (204°C) \*

*\*Depending on seal size and material selection*



## Why choose the Advantage Seal Type 16?



**Hex Drive**

### Unitized Design

- No-hassle handling
- Easy to install
  - Rotating face will not detach
  - No removable drive gasket

### Hex Drive

- Will not disengage during operation
- Protects the elastomer bellows from damage

### Economical Choice

- High volume, standardized components

### Ideal for:

- Pool Pumps
- Spa Pumps
- Stamped Pumps
- Smaller Industrial and Commercial applications



**Crimped Head**



**Unitized Rotary Seal**

### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design



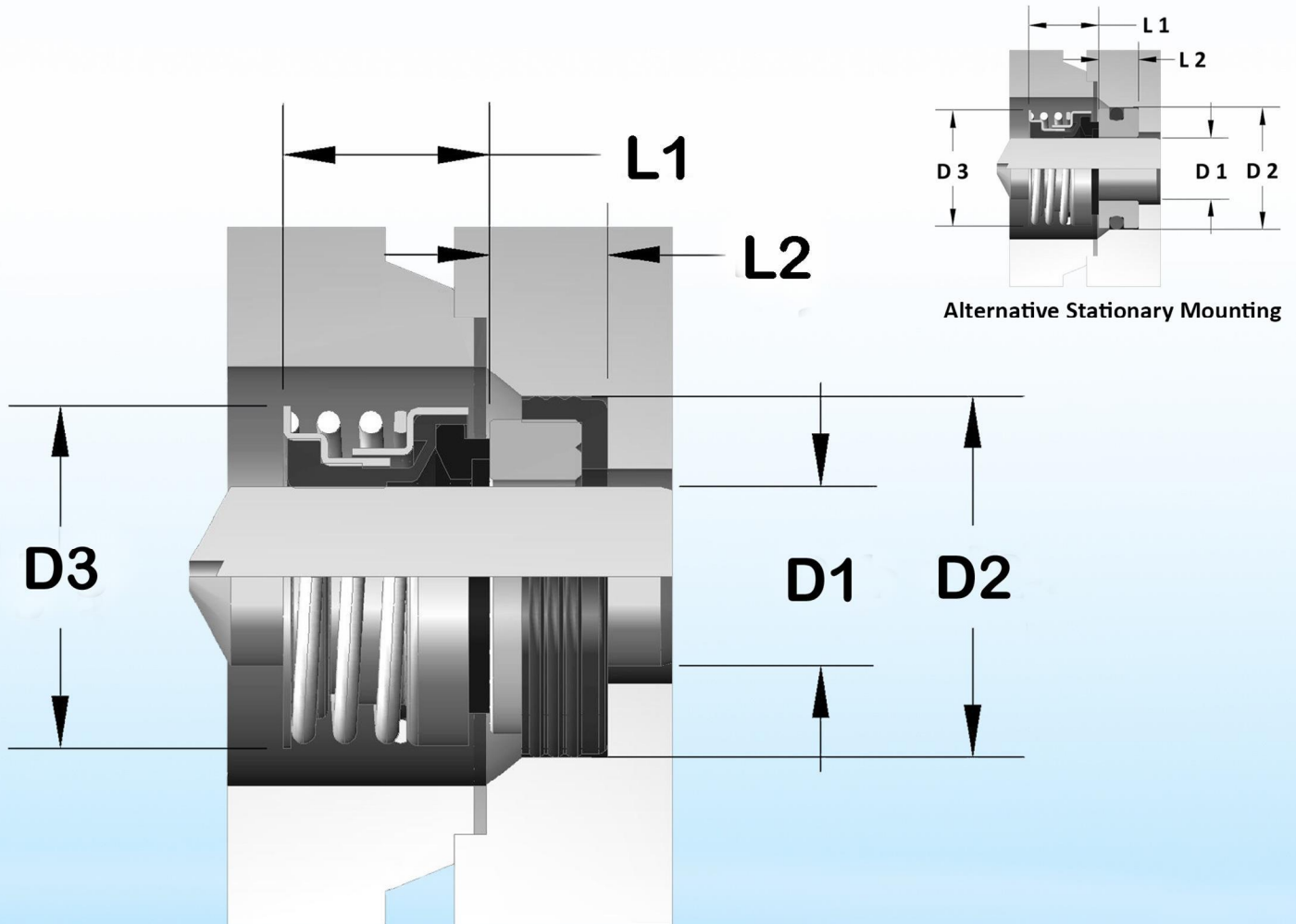
**Stationary Seal**

## Advantage Seal Type 16 replaces:

- John Crane Type 6
- Sealol Type 60L
- Pac-Seal Type 16
- US Seal Type A



# Typical Type 16 Dimensions



D1		D2		D3		L1		L2	
Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter
0.375	9.53	0.875	22.23	0.915	23.24	0.656	16.66	0.281	7.14
0.437	11.10	1.000	25.40	0.915	23.24	0.656	16.66	0.312	7.92
0.500	12.70	1.000	25.40	0.915	23.24	0.656	16.66	0.312	7.92
0.625	15.88	1.250	31.75	1.190	30.23	0.718	18.24	0.406	10.31
0.750	19.05	1.375	34.93	1.300	33.02	0.718	18.24	0.406	10.31
0.875	22.23	1.500	38.10	1.460	37.08	0.812	20.62	0.406	10.31
1.000	25.40	1.625	41.28	1.617	41.07	0.812	20.62	0.437	11.10

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



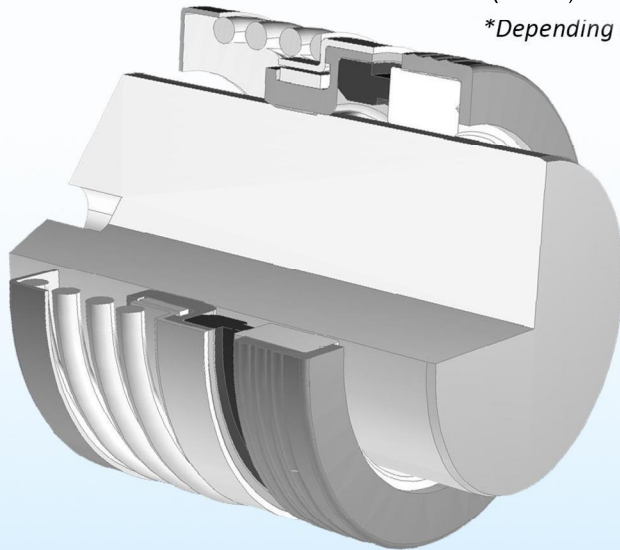
# Advantage Seal Type 21



The versatile, self-aligning choice for services:

- Up to 5,000 sf/m \*
- Up to 250 psig (17 Bar) \*
- From - 40°F (-40°C) to 400°F (204°C) \*

*\*Depending on seal size and material selection*



## Why choose the Advantage Seal Type 21?



Solid Hex Drive



Crimped Head



Rotary Seal



Stationary Seal

### The Solid Hex Drive Advantage

- Standard in every Advantage Seal Type 21
- Locking, Positive Engagement
- Drive Band cannot be installed improperly
- Eliminates damage to bellows
- Eliminates drive failure
- Competitor's stamped designs:
  - Offer less engagement
  - Sharp stampings can damage the seal bellows
  - Can be installed upside down at the seal manufacturer
- Competitor's tang and notch designs:
  - Offer loose engagement
  - Fewer points of contact with the seal outer shell
  - May lead to broken tangs and seal bellows damage

### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

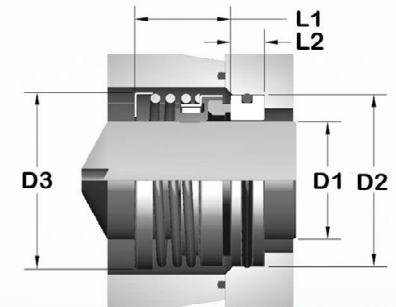
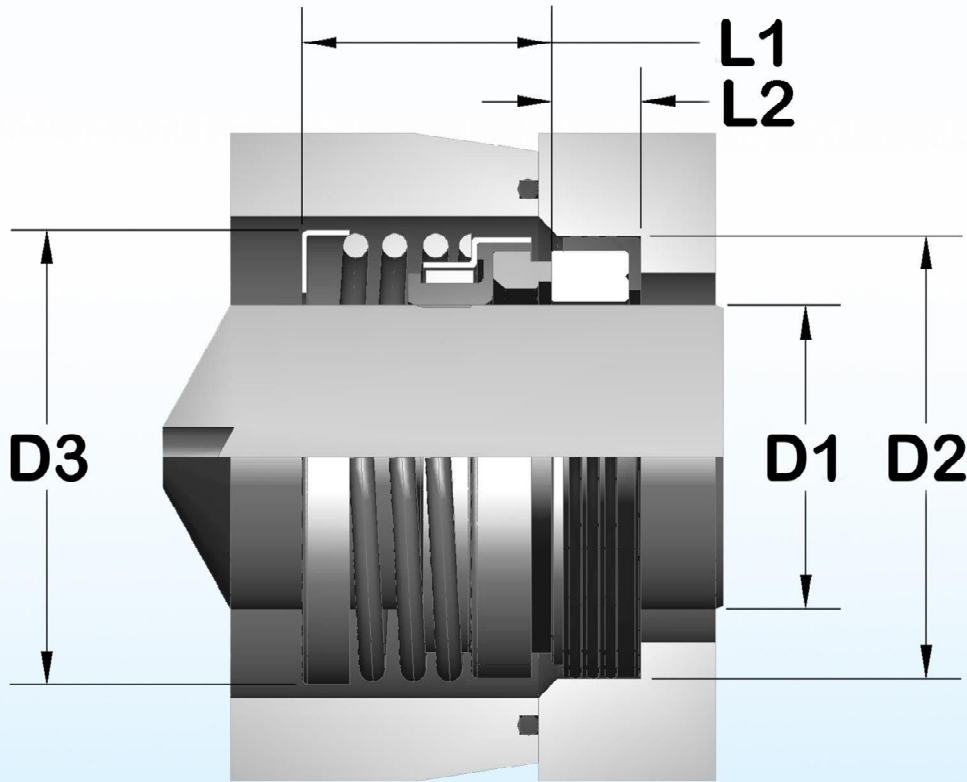
- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design

### Advantage Seal Type 21 replaces:

- John Crane Type 21, Type 2100
- Sealol Type 43 CU Short
- Pac-Seal Type 21
- Pac-Seal Type 21

# Typical Type 21 Dimensions



Alternative Stationary Mounting

US Standard				
D1	D2	D3	L1	L2
Inches				
0.500	1.000	0.915	0.812	0.312
0.625	1.250	1.177	0.875	0.406
0.750	1.375	1.304	0.875	0.406
0.875	1.500	1.463	0.937	0.406
1.000	1.625	1.588	1.000	0.437
1.125	1.750	1.838	1.062	0.437
1.250	1.875	1.838	1.062	0.437
1.375	2.000	1.963	1.125	0.437
1.500	2.125	2.154	1.125	0.437
1.625	2.375	2.435	1.375	0.500
1.750	2.500	2.435	1.375	0.500
1.875	2.625	2.560	1.500	0.500
2.000	2.750	2.810	1.500	0.500
2.125	3.000	2.935	1.687	0.562
2.250	3.125	2.935	1.687	0.562
2.375	3.250	3.034	1.812	0.562
2.500	3.375	3.437	1.812	0.562
2.625	3.375	3.559	1.937	0.625
2.750	3.500	3.559	1.937	0.625
2.875	3.750	3.684	2.062	0.625
3.000	3.875	3.934	2.062	0.625

Metric DIN Standard				
D1	D2	D3	L1	L2
Millimeters				
18.00	32.99	33.12	26.59	10.49
20.00	34.98	33.12	26.59	10.49
22.00	37.01	33.12	26.59	10.49
24.00	38.99	40.34	28.98	10.49
25.00	40.01	40.34	28.98	10.49
28.00	42.98	46.69	31.75	10.49
30.00	45.01	46.69	31.75	10.49
32.00	48.01	46.69	31.75	10.49
33.00	48.01	46.69	31.75	10.49
35.00	50.01	49.86	31.75	10.49
38.00	56.01	54.71	33.32	11.51
40.00	57.99	61.85	33.32	11.51
43.00	61.01	61.85	33.32	11.51
45.00	62.99	61.85	33.32	11.51
48.00	65.99	65.02	33.32	11.51
50.00	70.00	71.37	35.71	13.49
53.00	73.00	74.55	35.71	13.49
55.00	74.98	74.55	35.71	13.49
58.00	78.00	74.55	38.48	13.49
60.00	80.01	77.06	38.48	13.49
63.00	83.01	87.30	38.48	13.49
65.00	84.99	90.40	38.48	13.49
68.00	89.99	90.40	38.48	15.49
70.00	92.00	90.40	45.49	15.49
75.00	96.82	93.57	45.49	15.49
80.00	105.13	99.92	45.49	15.49

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



# Advantage Seal Type 21B

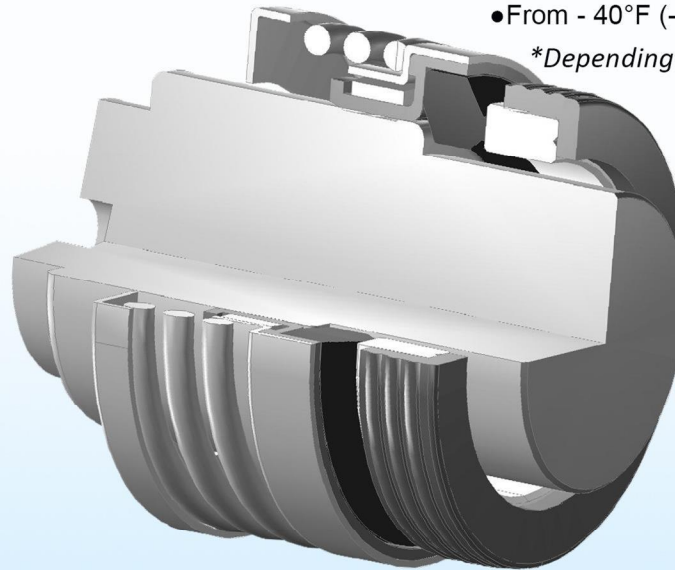


## The versatile, self-aligning choice for services:

- Hydraulically balanced seal
- Ideal for high pressure application

- Up to 5,000 sf/m \*
- Up to 625 psig (43 Bar) \*
- From - 40°F (-40°C) to 400°F (204°C) \*

*\*Depending on seal size and material selection*



## Why choose the Advantage Seal Type 21B?



**Solid Hex Drive**



**Crimped Head**



**Rotary Seal**



**Stationary Seal**

### The Solid Hex Drive Advantage

- Standard in every Advantage Seal Type 21
- Locking, Positive Engagement
- Drive Band cannot be installed improperly
- Eliminates damage to bellows
- Eliminates drive failure
- Competitor's stamped designs:
  - Offer less engagement
  - Sharp stampings can damage the seal bellows
  - Can be installed upside down at the seal manufacturer
- Competitor's tang and notch designs:
  - Offer loose engagement
  - Fewer points of contact with the seal outer shell
  - May lead to broken tangs and seal bellows damage

### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

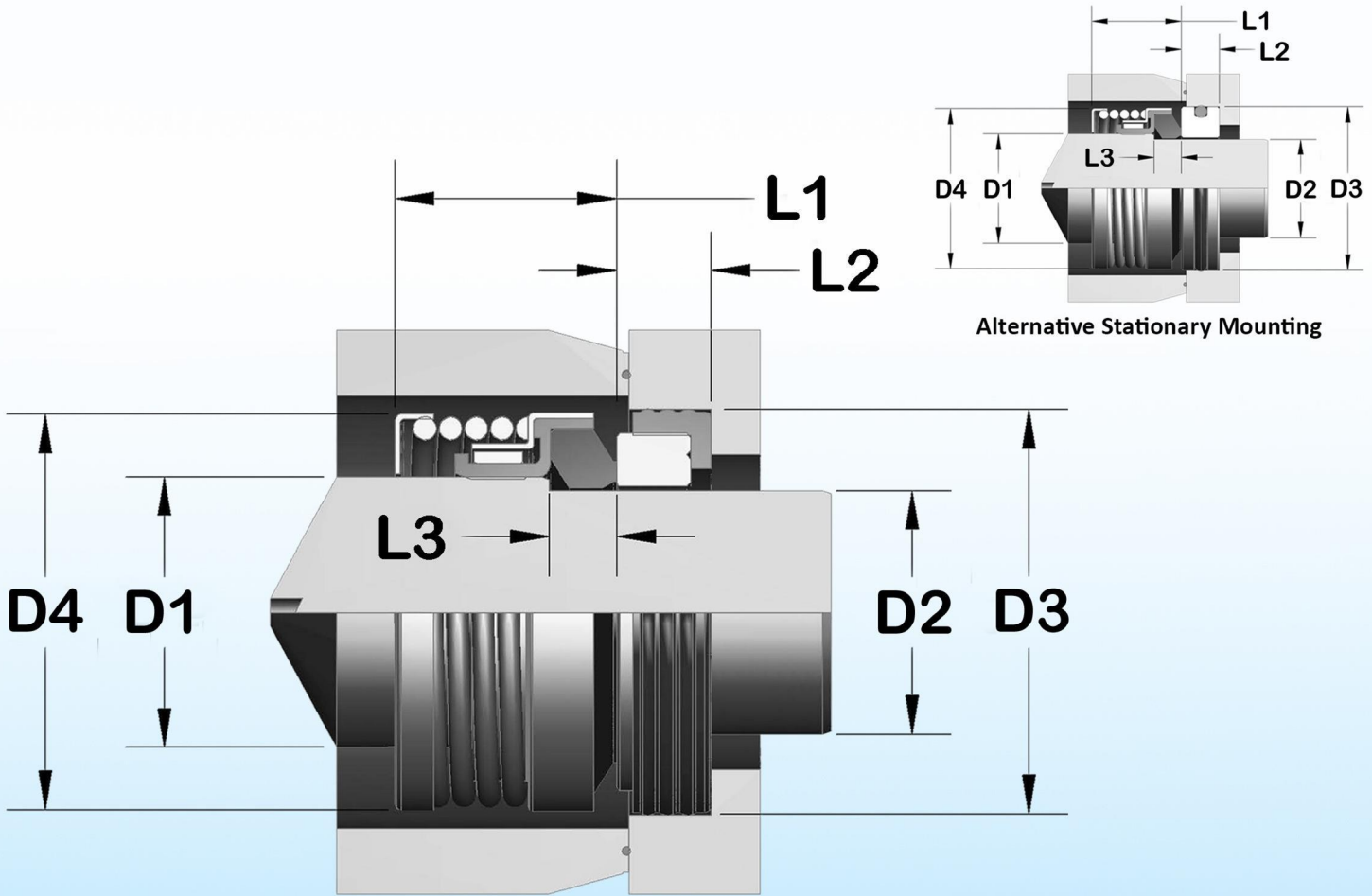
- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design

## Advantage Seal Type 21B replaces:

- John Crane Type 21, Type 2100
- Sealol Type 43 CU Short
- Pac-Seal Type 21
- Pac-Seal Type 21

# Typical Type 21B Dimensions



US Standard						
D1	D2	D3	D4	L1	L2	L3
Inches						
0.500	0.375	1.000	0.915	0.812	0.312	0.245
0.625	0.500	1.250	1.177	0.875	0.406	0.195
0.750	0.625	1.375	1.304	0.875	0.406	0.237
0.875	0.750	1.500	1.463	0.937	0.406	0.312
1.000	0.875	1.625	1.588	1.000	0.437	0.312
1.125	1.000	1.750	1.838	1.062	0.437	0.312
1.250	1.125	1.875	1.838	1.062	0.437	0.312
1.375	1.250	2.000	1.963	1.125	0.437	0.312
1.500	1.375	2.125	2.154	1.125	0.437	0.312
1.625	1.500	2.375	2.435	1.375	0.500	0.315
1.750	1.625	2.500	2.435	1.375	0.500	0.315
1.875	1.750	2.625	2.560	1.500	0.500	0.315
2.000	1.875	2.750	2.810	1.500	0.500	0.315
2.125	2.000	3.000	2.935	1.687	0.562	0.315
2.250	2.125	3.125	2.935	1.687	0.562	0.315
2.375	2.250	3.250	3.034	1.812	0.562	0.315
2.500	2.375	3.375	3.437	1.812	0.562	0.315
2.625	2.500	3.375	3.559	1.937	0.625	0.414
2.750	2.625	3.500	3.559	1.937	0.625	0.414
2.875	2.750	3.750	3.684	2.062	0.625	0.414
3.000	2.875	3.875	3.934	2.062	0.625	0.414

Metric DIN Standard						
D1	D2	D3	D4	L1	L2	L3
Millimeters						
18.00	14.83	32.99	33.12	26.59	10.49	6.22
20.00	16.83	34.98	33.12	26.59	10.49	4.95
22.00	18.83	37.01	33.12	26.59	10.49	6.02
24.00	20.83	38.99	40.34	28.98	10.49	7.92
25.00	21.83	40.01	40.34	28.98	10.49	7.92
28.00	24.83	42.98	46.69	31.75	10.49	7.92
30.00	26.83	45.01	46.69	31.75	10.49	7.92
32.00	28.83	48.01	46.69	31.75	10.49	7.92
33.00	29.83	48.01	46.69	31.75	10.49	7.92
35.00	31.83	50.01	49.86	31.75	10.49	7.92
38.00	34.83	56.01	54.71	33.32	11.51	7.92
40.00	36.83	57.99	61.85	33.32	11.51	7.92
43.00	39.83	61.01	61.85	33.32	11.51	8.00
45.00	41.83	62.99	61.85	33.32	11.51	8.00
48.00	44.83	65.99	65.02	33.32	11.51	8.00
50.00	46.83	70.00	71.37	35.71	13.49	8.00
53.00	49.83	73.00	74.55	35.71	13.49	8.00
55.00	51.83	74.98	74.55	35.71	13.49	8.00
58.00	54.83	78.00	74.55	38.48	13.49	8.00
60.00	56.83	80.01	77.06	38.48	13.49	8.00
63.00	59.83	83.01	87.30	38.48	13.49	8.00
65.00	61.83	84.99	90.40	38.48	13.49	8.00
68.00	64.83	89.99	90.40	38.48	15.49	10.52
70.00	66.83	92.00	90.40	45.49	15.49	10.52
75.00	71.83	96.82	93.57	45.49	15.49	10.52
80.00	76.83	105.13	99.92	45.49	15.49	10.52

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



# Advantage Seal Type 21BSS

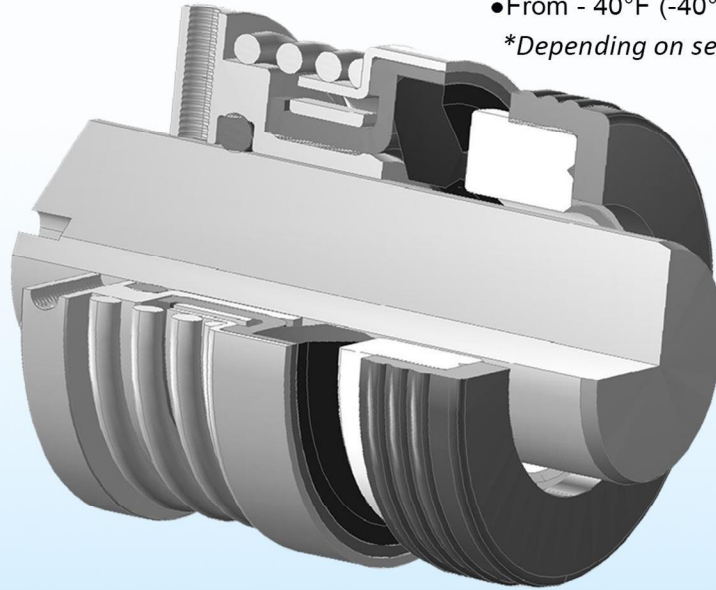


A hybrid hydraulically balanced seal that allows installation without modifying standard shaft. Ideal for high pressure and high temp application:

- Hydraulically balanced seal
- Ideal for high pressure application

- Up to 5,000 sf/m \*
- Up to 625 psig (43 Bar) \*
- From - 40°F (-40°C) to 400°F (204°C) \*

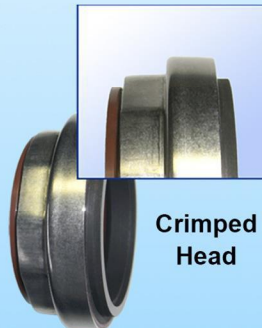
*\*Depending on seal size and material selection*



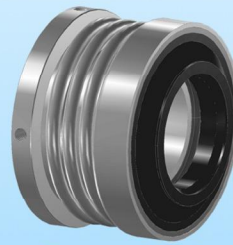
## Why choose the Advantage Seal Type 21BSS?



Solid Hex Drive



Crimped Head



Rotary Seal



Stationary Seal

### The Solid Hex Drive Advantage

- Standard in every Advantage Seal Type 21
- Locking, Positive Engagement
- Drive Band cannot be installed improperly
- Eliminates damage to bellows
- Eliminates drive failure
- Competitor's stamped designs:
  - Offer less engagement
  - Sharp stampings can damage the seal bellows
  - Can be installed upside down at the seal manufacturer
- Competitor's tang and notch designs:
  - Offer loose engagement
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### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

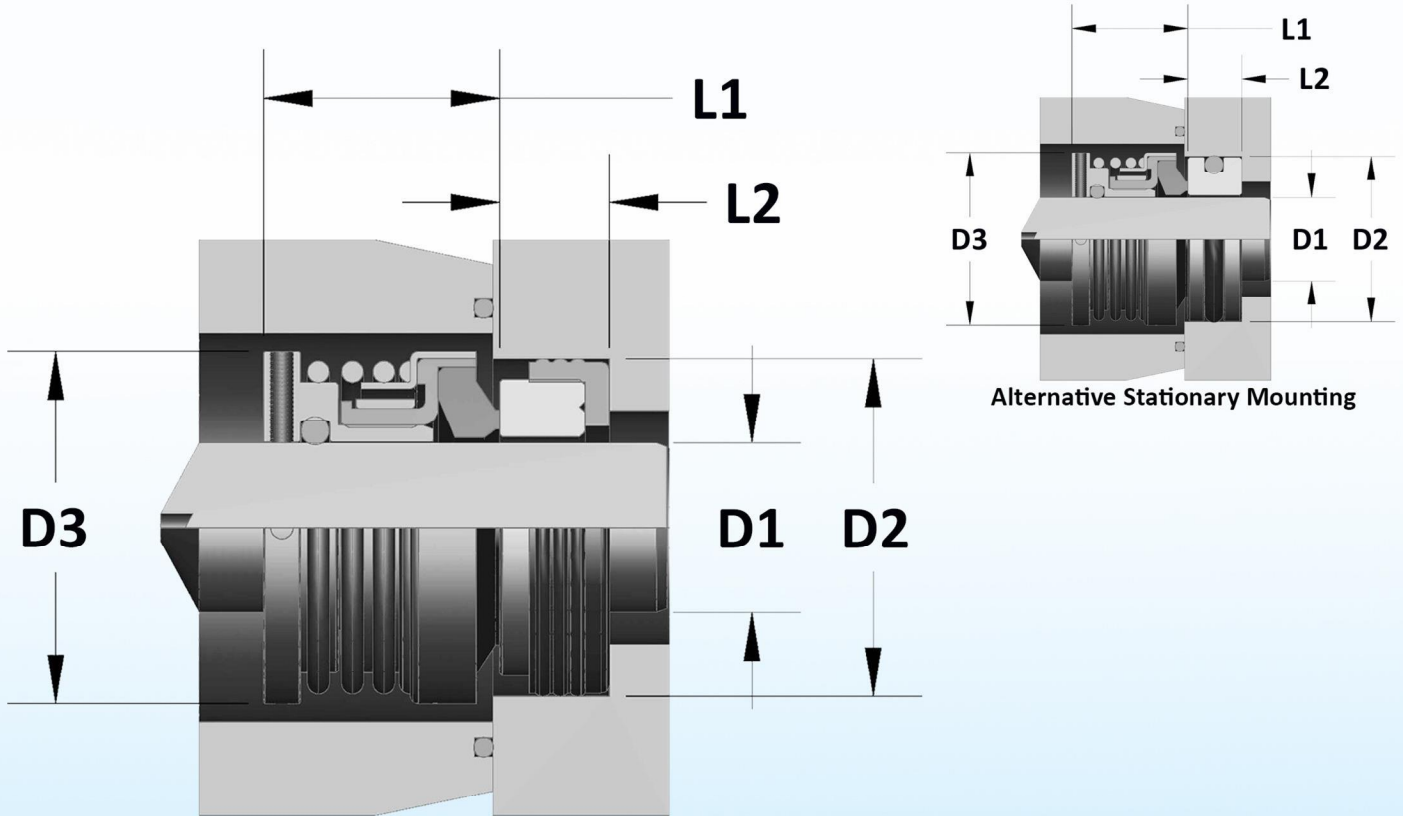
- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design

### Advantage Seal Type 21BSS replaces:

- John Crane Type 21, Type 2100
- Sealol Type 43 CU Short
- Pac-Seal Type 21
- Pac-Seal Type 21

# Typical Type 21BSS Dimensions



US Standard				
D1	D2	D3	L1	L2
Inches				
0.500	1.000	1.177	0.812	0.312
0.625	1.250	1.304	0.875	0.406
0.750	1.375	1.463	0.875	0.406
0.875	1.500	1.588	0.937	0.406
1.000	1.625	1.838	1.000	0.437
1.125	1.750	1.838	1.062	0.437
1.250	1.875	1.963	1.062	0.437
1.375	2.000	2.154	1.125	0.437
1.500	2.125	2.435	1.125	0.437
1.625	2.375	2.435	1.375	0.500
1.750	2.500	2.560	1.375	0.500
1.875	2.625	2.810	1.500	0.500
2.000	2.750	2.935	1.500	0.500
2.125	3.000	2.935	1.687	0.562
2.250	3.125	3.034	1.687	0.562
2.375	3.250	3.437	1.812	0.562
2.500	3.375	3.559	1.812	0.562
2.625	3.375	3.559	1.937	0.625
2.750	3.500	3.684	1.937	0.625
2.875	3.750	3.934	2.062	0.625
3.000	3.875	4.184	2.062	0.625

Metric DIN Standard				
D1	D2	D3	L1	L2
Millimeters				
18.00	32.99	33.12	26.59	10.49
20.00	34.98	33.12	26.59	10.49
22.00	37.01	40.34	26.59	10.49
24.00	38.99	40.34	28.98	10.49
25.00	40.01	46.69	28.98	10.49
28.00	42.98	46.69	31.75	10.49
30.00	45.01	46.69	31.75	10.49
32.00	48.01	46.69	31.75	10.49
33.00	48.01	49.86	31.75	10.49
35.00	50.01	54.71	31.75	10.49
38.00	56.01	61.85	33.32	11.51
40.00	57.99	61.85	33.32	11.51
43.00	61.01	61.85	33.32	11.51
45.00	62.99	65.02	33.32	11.51
48.00	65.99	74.55	33.32	11.51
50.00	70.00	74.55	35.71	13.49
53.00	73.00	74.55	35.71	13.49
55.00	74.98	74.55	35.71	13.49
58.00	78.00	77.06	38.48	13.49
60.00	80.01	87.30	38.48	13.49
63.00	83.01	90.40	38.48	13.49
65.00	84.99	90.40	38.48	13.49
68.00	89.99	90.40	38.48	15.49
70.00	92.00	93.57	45.49	15.49
75.00	96.82	99.92	45.49	15.49
80.00	105.13	106.27	45.49	15.49

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



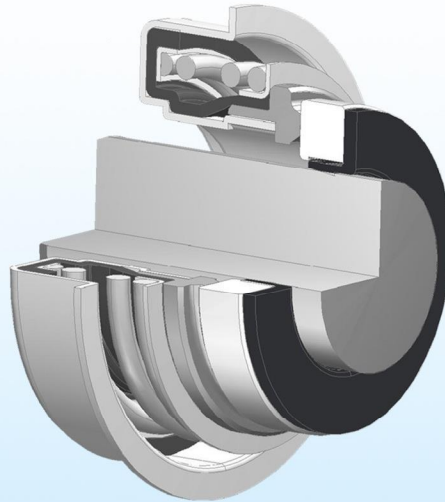
# Advantage Seal Type 61



The compact, single spring, elastomeric bellows mechanical seal for services:

- Up to 10,000 RPM\*
- ID: 7.20 psig (0.5 bar) OD: up to 75 psig (5 bar)
- From - 40°F (-40°C) to 400°F (204°C) \*
- Shaft Runout - .05mm per mm/.002 per inch of shaft Dia. FIM max.

\* Depending on seal size and material selection



## Why choose the Advantage Seal Type 61?



**Compact Design**

### Compact Design

- Allows use in small centrifugal water pumps, deep and shallow well jet pumps, swimming pool pumps, wastewater pumps and submersible pumps



**Full Convoluted Bellows**

### Fully Convoluted Bellows

- Allows maximum flexibility to compensate for shaft movement

### Positive Drive

- Torsional movement controlled by dent and groove system to minimize stress on bellows

### Single Spring

- Single Coil Spring provides even preloading of the seal face through extreme working conditions

### Rotary Mating Ring

- Rotating mating ring provides operation at much higher speeds than rotary head seal design



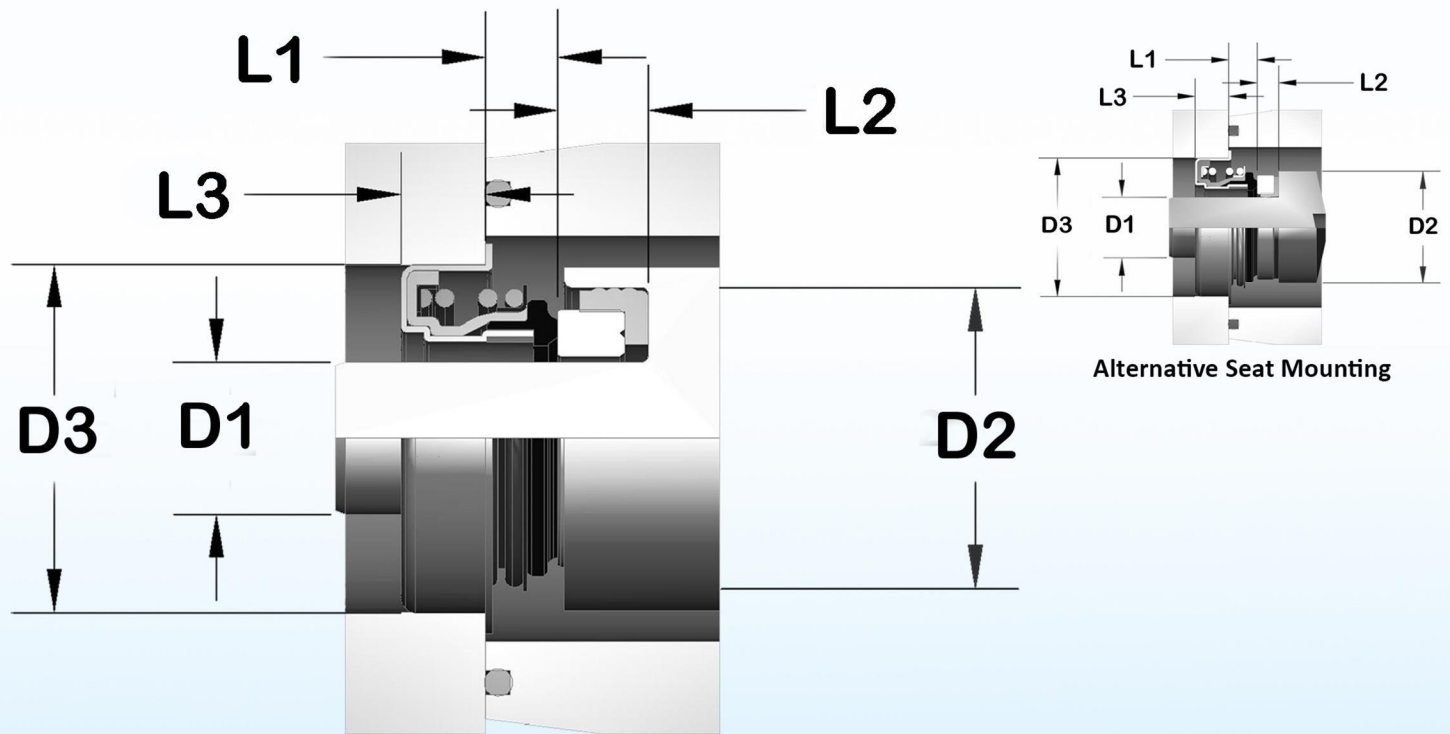
**Rotary Mating ring**

*Ideal for: Designed for use in small centrifugal water pumps, deep and shallow well jet pumps, swimming pool pumps, wastewater pumps and submersible pumps.*

**Advantage Seal Type 61 replaces:**

- John Crane Type 6A
- Pac-Seal Type 68
- US Seal Type B

# Typical Type 61 Dimensions



D1		D2		D3		L1		L2		L3	
Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter
0.312	7.92			1.125	28.58	0.065	1.65			0.315	8.00
0.375	9.53	0.875	22.23	1.125	28.58	0.065	1.65	0.160	4.06	0.315	8.00
0.375	9.53	0.875	22.23	1.125	28.58	0.065	1.65	0.240	6.10	0.315	8.00
0.375	9.53	0.875	22.23	1.125	28.58	0.065	1.65	0.281	7.14	0.315	8.00
0.375	9.53	1.000	25.40	1.125	28.58	0.065	1.65	0.205	5.21	0.315	8.00
0.500	12.70	1.000	25.40	1.125	28.58	0.187	4.75	0.312	7.92	0.375	9.53
0.500	12.70	1.000	25.40	1.125	28.58	0.187	4.75	0.250	6.35	0.375	9.53
0.500	12.70	1.000	25.40	1.125	28.58	0.187	4.75	0.218	5.54	0.375	9.53
0.500	12.70	1.000	25.40	1.125	28.58	0.187	4.75	0.290	7.37	0.375	9.53
0.625	15.88	1.250	31.75	1.437	36.50	0.265	6.73	0.406	10.31	0.350	8.89
0.625	15.88	1.375	34.93	1.437	36.50	0.265	6.73	0.375	9.53	0.350	8.89
0.625	15.88	1.375	34.93	1.437	36.50	0.265	6.73	0.181	4.60	0.350	8.89
0.625	15.88	1.187	30.15	1.437	36.50	0.265	6.73	0.343	8.71	0.350	8.89
0.625	15.88	1.375	34.93	1.437	36.50	0.265	6.73	0.266	6.76	0.350	8.89
0.625	15.88	1.078	27.38	1.437	36.50	0.265	6.73	0.210	5.33	0.350	8.89
0.625	15.88	1.187	30.15	1.437	36.50	0.265	6.73	0.281	7.14	0.350	8.89
0.625	15.88	1.250	31.75	1.437	36.50	0.265	6.73	0.375	9.53	0.350	8.89
0.625	15.88	1.093	27.76	1.437	36.50	0.265	6.73	0.218	5.54	0.350	8.89
0.625	15.88	1.312	33.32	1.437	36.50	0.265	6.73	0.250	6.35	0.350	8.89
0.625	15.88	1.250	31.75	1.437	36.50	0.265	6.73	0.281	7.14	0.350	8.89
0.750	19.05	1.375	34.93	1.575	40.01	0.265	6.73	0.406	10.31	0.350	8.89
0.750	19.05	1.375	34.93	1.575	40.01	0.265	6.73	0.375	9.53	0.350	8.89
1.000	25.40	1.625	41.28	1.812	46.02	0.312	7.92	0.437	11.10	0.400	10.16

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



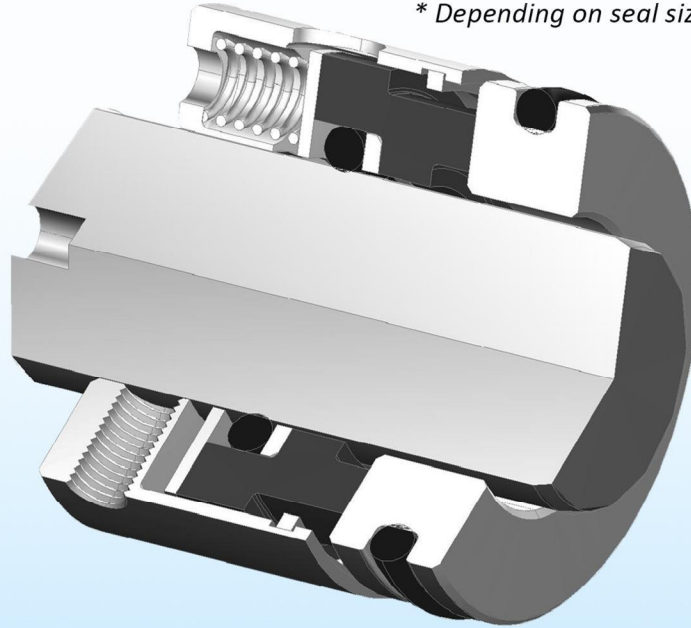
# Advantage Seal Type 81



The compact, durable, multi spring, choice for services:

- Up to 5,000 sf/m \*
- Up to 350 psig (24 Bar) (balanced) \*
- From - 40°F (-40°C) to 500°F (204°C) \*

\* Depending on seal size and material selection



## Why choose the Advantage Seal Type 81?



**Compact Design**

### Compact Design

- Allows use in a wide variety of rotating equipment including Centrifugal Pumps, Mixers and Agitators

### Unitized Design

- Rotating face held in by a snap ring
- No-hassle handling
- Easy to install

**Ideal for: Industrial Fluids, Caustics, light Hydrocarbons, Corrosives and high pressure liquids and gasses**



**Positive Drive**

### Positive Drive

- "X" Set Screws secure seal to shaft preventing slippage



**Multiple springs**

### Multiple Springs

- Provide precise even preloading of the seal face

### For use with a variety of mating rings

- O-Ring Mount
- Cup Mount
- DIN



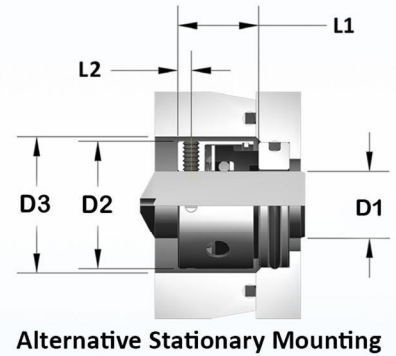
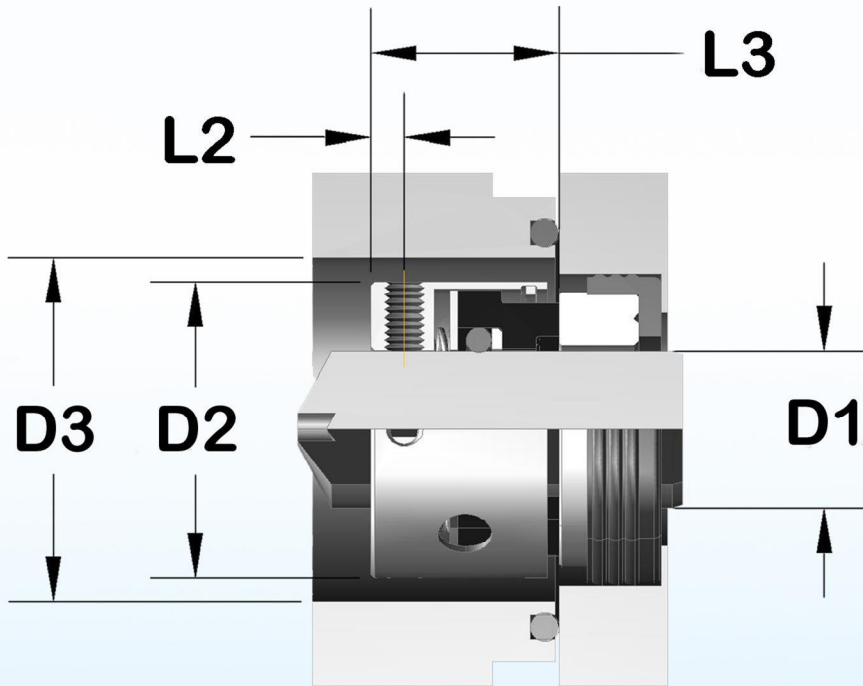
**O-Ring Secondary Seal**

- Available in Buna, Viton™, Neoprene and Kalrez™

Advantage Seal Type 81 replaces:

- John Crane Type 8-1
- Pac-Seal Type 8
- US Seal Type J

# Typical Type 81 Dimensions



STANDARD				
D1	D2	D3	L1	L2
Inches				
0.500	1.031	1.156	0.812	0.156
0.625	1.187	1.312	0.75	0.156
0.750	1.312	1.437	0.875	0.187
0.875	1.437	1.562	0.937	0.187
1.000	1.562	1.750	1.000	0.187
1.125	1.687	1.875	1.062	0.218
1.250	1.875	2.000	1.062	0.187
1.375	2.000	2.125	1.125	0.187
1.500	2.125	2.250	1.125	0.187
1.625	2.375	2.500	1.375	1.000
1.750	2.500	2.625	1.375	0.281
1.875	2.625	2.750	1.375	0.281
2.000	2.750	2.875	1.375	0.281
2.125	3.000	3.125	1.687	0.281
2.250	3.125	3.250	1.687	0.343
2.375	3.250	3.375	1.687	0.343
2.500	3.375	3.500	1.687	0.343
2.625	3.500	3.625	1.687	0.343
2.750	3.625	3.750	1.687	0.343
2.875	3.750	3.875	1.687	0.343
3.000	3.812	4.000	1.687	0.343
3.125	3.937	4.062	1.687	0.343
3.250	4.125	4.250	1.687	0.343
3.375	4.250	4.375	1.687	0.343
3.500	4.375	4.500	1.687	0.343
3.625	4.500	4.625	1.687	0.343
3.750	4.625	4.750	1.687	0.343
3.875	4.750	4.875	1.687	0.343
4.000	4.875	5.000	1.687	0.343

ALTERNATIVE 81T VERSION				
D1	D2	D3	L1	L2
Inches				
0.500	0.937	1.062	0.812	0.156
0.625	1.062	1.187	0.75	0.156
0.750	1.187	1.312	0.875	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	1.062	0.218
1.250	1.687	1.812	1.062	0.187
1.375	1.937	2.062	1.125	0.187
1.500	1.937	2.062	1.125	0.187
1.625	2.250	2.375	1.375	1.000
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	0.281
2.250	2.843	2.968	1.687	0.343
2.375	3.000	3.125	1.687	0.343
2.500	3.125	3.250	1.687	0.343
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

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



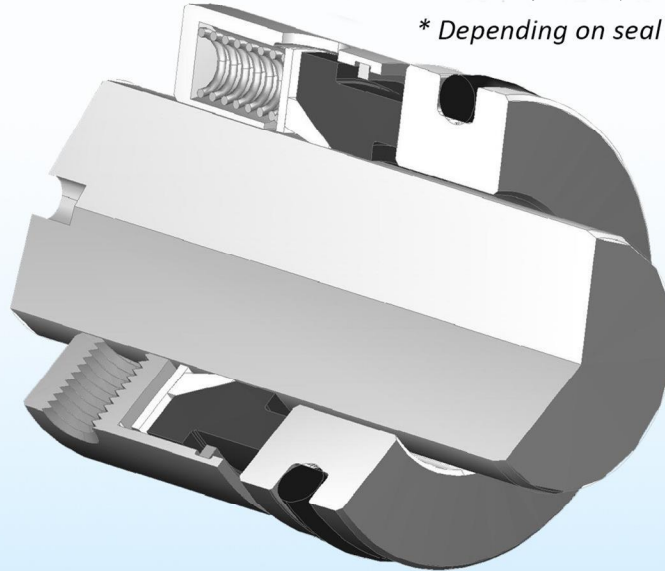
# Advantage Seal Type 91



The compact, durable, multi spring, wedge seal choice for services:

- Up to 5,000 sf/m \*
- Up to 350 psig (24 Bar) \*
- From - 350°F (-212°C) to 750°F (400°C) \*

\* Depending on seal size and material selection



## Why choose the Advantage Seal Type 91?



**Compact Design**

### Compact Design

- Allows use in a wide variety of rotating equipment including Centrifugal Pumps, Mixers and Agitators



**Positive Drive**

### Positive Drive

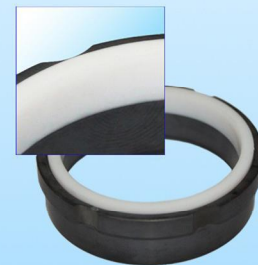
- "X" Set Screws secure seal to shaft preventing slippage



**Multiple springs**

### Multiple Springs

- Provide precise even preloading of the seal face



**Wedge Secondary Seal**

- Available in Teflon™ PTFE and flexible graphite materials
- Creates positive seal for use in extreme temperature/chemical applications

### For use with a variety of mating rings

- O-Ring Mount
- Cup Mount
- DIN

### Unitized Design

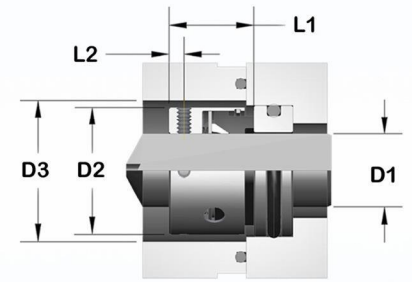
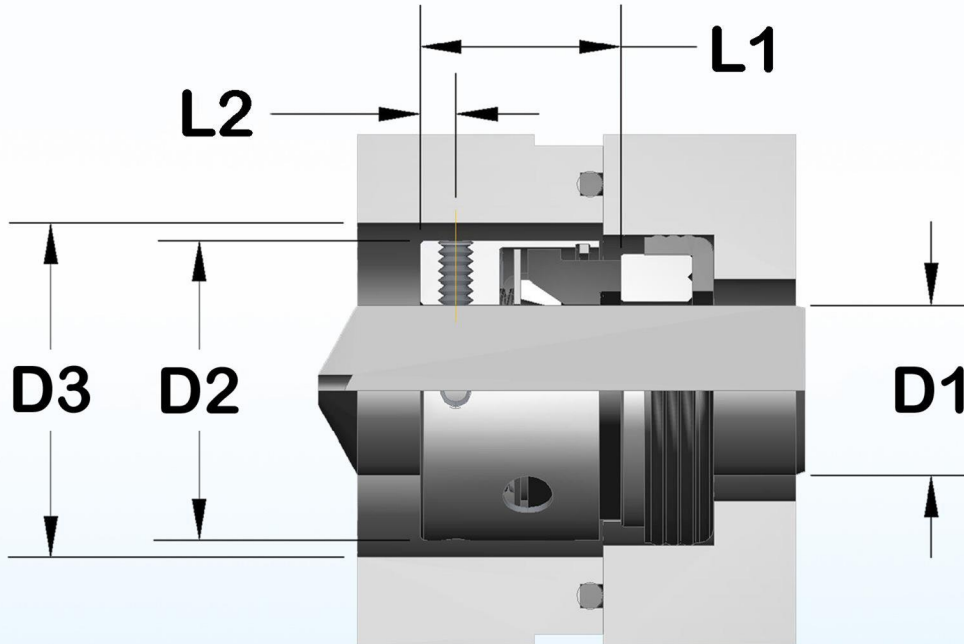
- Rotating face held in by a snap ring
- No-hassle handling
- Easy to install

**Ideal for: Industrial Fluids, Caustics, light Hydrocarbons, Corrosives and high pressure liquids and gasses**

**Advantage Seal Type 91 replaces:**

- John Crane Type 9
- Pac-Seal Type 9
- US Seal Type J

# Typical Type 91 Dimensions



Alternative Stationary Mounting

STANDARD				
D1	D2	D3	L1	L2
Inches				
0.500	1.031	1.156	0.812	0.156
0.625	1.187	1.312	0.75	0.156
0.750	1.312	1.437	0.875	0.187
0.875	1.437	1.562	0.937	0.187
1.000	1.562	1.750	1.000	0.187
1.125	1.687	1.875	1.062	0.218
1.250	1.875	2.000	1.062	0.187
1.375	2.000	2.125	1.125	0.187
1.500	2.125	2.250	1.125	0.187
1.625	2.375	2.500	1.375	1.000
1.750	2.500	2.625	1.375	0.281
1.875	2.625	2.750	1.375	0.281
2.000	2.750	2.875	1.375	0.281
2.125	3.000	3.125	1.687	0.281
2.250	3.125	3.250	1.687	0.343
2.375	3.250	3.375	1.687	0.343
2.500	3.375	3.500	1.687	0.343
2.625	3.500	3.625	1.687	0.343
2.750	3.625	3.750	1.687	0.343
2.875	3.750	3.875	1.687	0.343
3.000	3.812	4.000	1.687	0.343
3.125	3.937	4.062	1.687	0.343
3.250	4.125	4.250	1.687	0.343
3.375	4.250	4.375	1.687	0.343
3.500	4.375	4.500	1.687	0.343
3.625	4.500	4.625	1.687	0.343
3.750	4.625	4.750	1.687	0.343
3.875	4.750	4.875	1.687	0.343
4.000	4.875	5.000	1.687	0.343

ALTERNATIVE 91T VERSION				
D1	D2	D3	L1	L2
Inches				
0.500	0.937	1.062	0.812	0.156
0.625	1.062	1.187	0.75	0.156
0.750	1.187	1.312	0.875	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	1.062	0.218
1.250	1.687	1.812	1.062	0.187
1.375	1.937	2.062	1.125	0.187
1.500	1.937	2.062	1.125	0.187
1.625	2.250	2.375	1.375	1.000
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	0.281
2.250	2.843	2.968	1.687	0.343
2.375	3.000	3.125	1.687	0.343
2.500	3.125	3.250	1.687	0.343
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

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



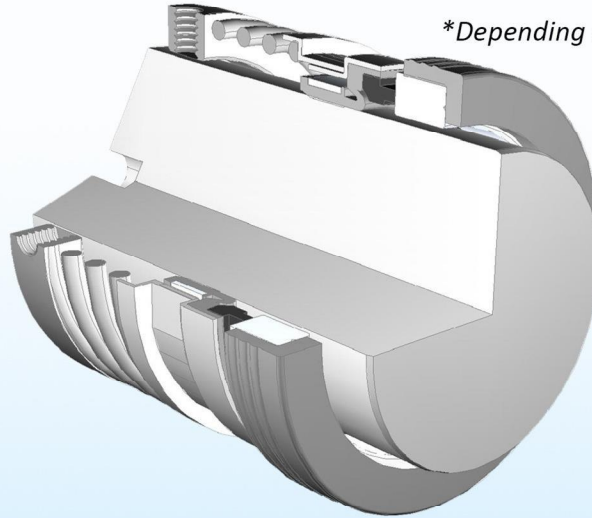
# Advantage Seal Type 201



## The versatile, self-aligning choice for services:

- Requiring a narrow seal cross-section
- Requiring a more convoluted bellows
- Up to 5,000 sf/m \*
- Up to 250 psig (17 Bar) \*
- From - 40°F (-40°C) to 400°F (204°C) \*

\*Depending on seal size and material selection



## Why choose the Advantage Seal Type 201?



Solid Hex Drive

### The Solid Hex Drive Advantage

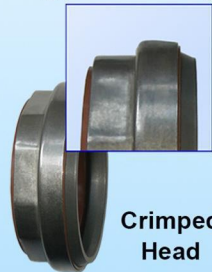
- Standard in every Advantage Seal Type 201
- Locking, Positive Engagement
- Drive Band cannot be installed improperly
- Eliminates damage to below
- Eliminates drive failure
- Competitor's stamped designs:
  - Offer less engagement
  - Sharp stampings can damage the seal bellows
  - Can be installed upside down at the seal manufacturer

### Convoluted Bellows

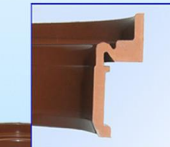
- Greater self-aligning capability
- Adjusts for End-Play, Runout, and Equipment Tolerance issues

### Innovative Design

- Fewer seal components than other designs
- Commonality of components with Type 202 seal
- Delivers Performance and Value



Crimped Head



Convoluted Bellows

### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design

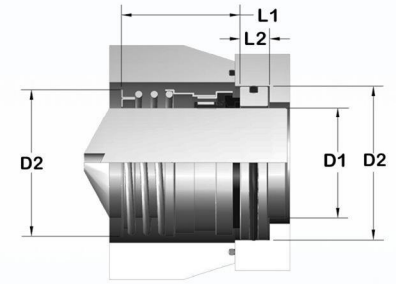
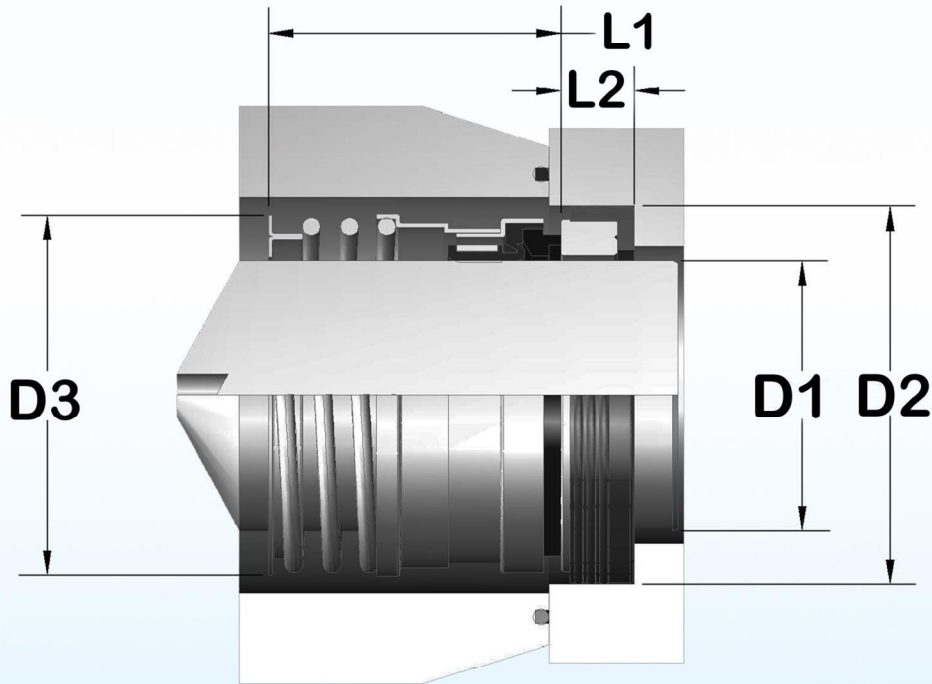


Complete Seal Assembly

## Advantage Seal Type 201 replaces:

- John Crane Type 1, Type 21, Type 2100
- Sealol Type 43 CE Long
- Pac-Seal Type 51, Type 21
- US Seal Type E

# Typical Type 201 Dimensions



Alternative Stationary Mounting

D1		D2		D3		L1		L2	
Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter
0.750	19.05	1.375	34.93	1.242	31.55	1.312	33.32	0.406	10.31
0.875	22.23	1.500	38.10	1.367	34.72	1.375	34.93	0.406	10.31
1.000	25.40	1.625	41.28	1.500	38.10	1.562	39.67	0.437	11.10
1.125	28.58	1.750	44.45	1.625	41.28	1.625	41.28	0.437	11.10
1.250	31.75	1.875	47.63	1.742	44.25	1.625	41.28	0.437	11.10
1.375	34.93	2.000	50.80	1.875	47.63	1.687	42.85	0.437	11.10
1.500	38.10	2.125	53.98	2.150	54.61	1.687	42.85	0.437	11.10
1.625	41.28	2.375	60.33	2.250	57.15	2.000	50.80	0.500	12.70
1.750	44.45	2.500	63.50	2.375	60.33	2.000	50.80	0.500	12.70
1.875	47.63	2.625	66.68	2.500	63.50	2.125	53.98	0.500	12.70
2.000	50.80	2.750	69.85	2.625	66.68	2.125	53.98	0.500	12.70
2.125	53.98	3.000	76.20	2.884	73.25	2.375	60.33	0.562	14.27
2.250	57.15	3.125	79.38	2.884	73.25	2.375	60.33	0.562	14.27
2.375	60.33	3.250	82.55	3.062	77.77	2.500	63.50	0.562	14.27
2.500	63.50	3.375	85.73	3.232	82.09	2.500	63.50	0.562	14.27
2.625	66.68	3.375	85.73	3.375	85.73	2.750	69.85	0.625	15.88
2.750	69.85	3.500	88.90	3.500	88.90	2.750	69.85	0.625	15.88
2.875	73.03	3.750	95.25	3.625	92.08	2.875	73.03	0.625	15.88
3.000	76.20	3.875	98.43	3.750	95.25	2.875	73.03	0.625	15.88
3.125	79.38	4.125	104.78	4.000	101.60	3.125	79.38	0.781	19.84
3.250	82.55	4.125	104.78	4.125	104.78	3.125	79.38	0.781	19.84
3.375	85.73	4.250	107.95	4.250	107.95	3.125	79.38	0.781	19.84
3.500	88.90	4.375	111.13	4.375	111.13	3.125	79.38	0.781	19.84
3.625	92.08	4.750	120.65	4.500	114.30	3.250	82.55	0.781	19.84
3.750	95.25	4.750	120.65	4.625	117.48	3.250	82.55	0.812	20.62
3.875	98.43	4.875	123.83	4.750	120.65	3.375	85.73	0.812	20.62
4.000	101.60	5.000	127.00	4.875	123.83	3.375	85.73	0.875	22.23

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



# Advantage Seal Type 202

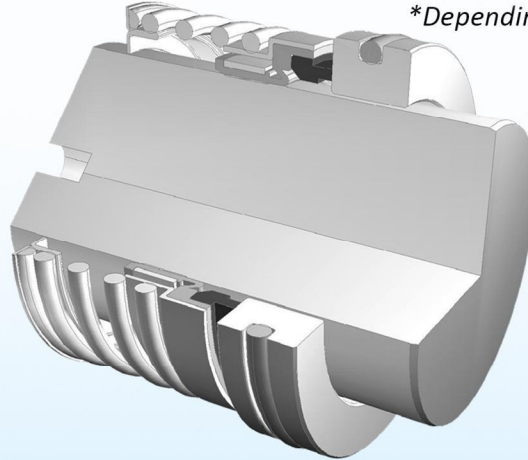


## The versatile, self-aligning choice for services:

- Requiring a narrow seal cross-section
- Requiring a more convoluted bellows

- Up to 5,000 sf/m \*
- Up to 250 psig (17 Bar) \*
- From - 40°F (-40°C) to 400°F (204°C) \*

\* Depending on seal size and material selection



## Why choose the Advantage Seal Type 202?



Solid Hex Drive



Crimped Head



Convoluted Bellows



Complete Seal Assembly

### The Solid Hex Drive Advantage

- Standard in every Advantage Seal Type 202
- Locking, Positive Engagement
- Drive Band cannot be installed improperly
- Eliminates damage to bellows
- Eliminates drive failure
- Competitor's stamped designs:
  - Offer less engagement
  - Sharp stampings can damage the seal bellows
  - Can be installed upside down at the seal manufacturer

### Convoluted Bellows

- Greater self-aligning capability
- Adjusts for End-Play, Runout, and Equipment Tolerance issues

### Innovative Design

- Fewer seal components than other designs
- Commonality of components with Type 201 seal
- Delivers Performance and Value

### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

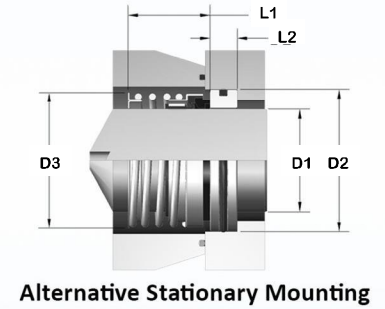
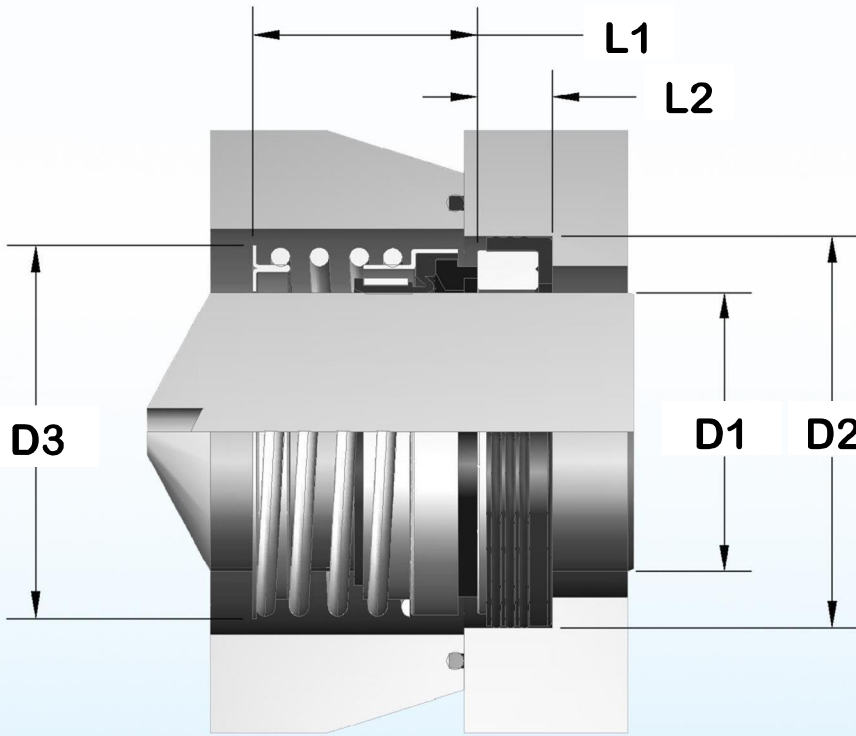
- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design

## Advantage Seal Type 202 replaces:

- John Crane Type 2, Type 21, Type 2100
- Sealol Type 43 CE Short, 43 BE
- Pac-Seal Type 52, Type 21
- US Seal Type D
- Burgmann Type M2, M3, M377

# Typical Type 202 Dimensions



US Standard				
D1	D2	D3	L1	L2
Inches				
0.750	1.375	1.242	0.875	0.406
0.875	1.500	1.367	0.937	0.406
1.000	1.625	1.500	1.000	0.437
1.125	1.750	1.625	1.062	0.437
1.250	1.875	1.742	1.062	0.437
1.375	2.000	1.875	1.125	0.437
1.500	2.125	2.150	1.125	0.437
1.625	2.375	2.250	1.375	0.500
1.750	2.500	2.375	1.375	0.500
1.875	2.625	2.500	1.500	0.500
2.000	2.750	2.625	1.500	0.500
2.125	3.000	2.884	1.687	0.562
2.250	3.125	2.884	1.687	0.562
2.375	3.250	3.062	1.812	0.562
2.500	3.375	3.232	1.812	0.562
2.625	3.375	3.375	1.937	0.625
2.750	3.500	3.500	1.937	0.625
2.875	3.750	3.625	2.062	0.625
3.000	3.875	3.750	2.062	0.625
3.125	4.125	4.000	2.187	0.781
3.250	4.125	4.125	2.187	0.781
3.375	4.250	4.250	2.187	0.781
3.500	4.375	4.375	2.187	0.781
3.625	4.750	4.500	2.312	0.781
3.750	4.750	4.625	2.312	0.812
3.875	4.875	4.750	2.312	0.812
4.000	5.000	4.875	2.312	0.875

Metric DIN Standard				
D1	D2	D3	L1	L2
Millimeters				
18.00	32.99	31.55	26.59	10.49
20.00	34.98	34.72	26.59	10.49
22.00	37.01	34.72	26.59	10.49
24.00	38.99	38.10	28.98	10.49
25.00	40.01	38.10	28.98	10.49
28.00	42.98	41.27	31.75	10.49
30.00	45.01	41.27	31.75	10.49
32.00	48.01	44.25	31.75	10.49
33.00	48.01	44.25	31.75	10.49
35.00	50.01	47.62	31.75	10.49
38.00	56.01	54.61	33.32	11.51
40.00	57.99	57.15	33.32	11.51
43.00	61.01	57.15	33.32	11.51
45.00	62.99	60.32	33.32	11.51
48.00	65.99	63.50	33.32	11.51
50.00	70.00	66.65	35.71	13.49
53.00	73.00	73.25	35.71	13.49
55.00	74.98	73.25	35.71	13.49
58.00	78.00	73.25	38.48	13.49
60.00	80.01	77.78	38.48	13.49
63.00	83.01	82.09	38.48	13.49
65.00	84.99	85.73	38.48	13.49
68.00	89.99	88.90	38.48	15.49
70.00	92.00	88.90	45.49	15.49
75.00	96.82	95.25	45.49	15.49
80.00	105.13	101.60	45.49	15.49

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



# Advantage Seal Type 202B

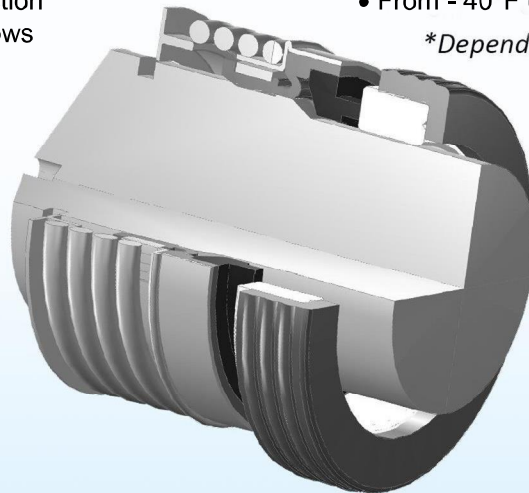


## The versatile, self-aligning choice for services:

- Hydraulically balanced seal
- Ideal for high pressure application
- Requiring a narrow seal cross-section
- Requiring a more convoluted bellows

- Up to 5,000 sf/m \*
- Up to 500 psig (34 Bar) \*
- From - 40°F (-40°C) to 400°F (204°C) \*

*\*Depending on seal size and material selection*



## Why choose the Advantage Seal Type 202B?



Solid Hex Drive

### The Solid Hex Drive Advantage

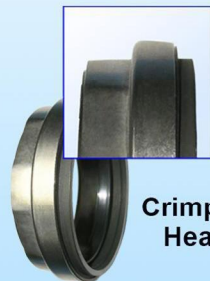
- Standard in every Advantage Seal Type 202B
- Locking, Positive Engagement
- Drive Band cannot be installed improperly
- Eliminates damage to bellows
- Eliminates drive failure
- Competitor's stamped designs:
  - Offer less engagement
  - Sharp stampings can damage the seal bellows
  - Can be installed upside down at the seal manufacturer

### Convoluted Bellows

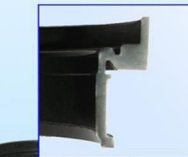
- Greater self-aligning capability
- Adjusts for End-Play, Runout, and Equipment Tolerance issues

### Innovative Design

- Fewer seal components than other designs
- Commonality of components with Type 201 seal
- Delivers Performance and Value



Crimped Head



Convoluted Bellows

### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design

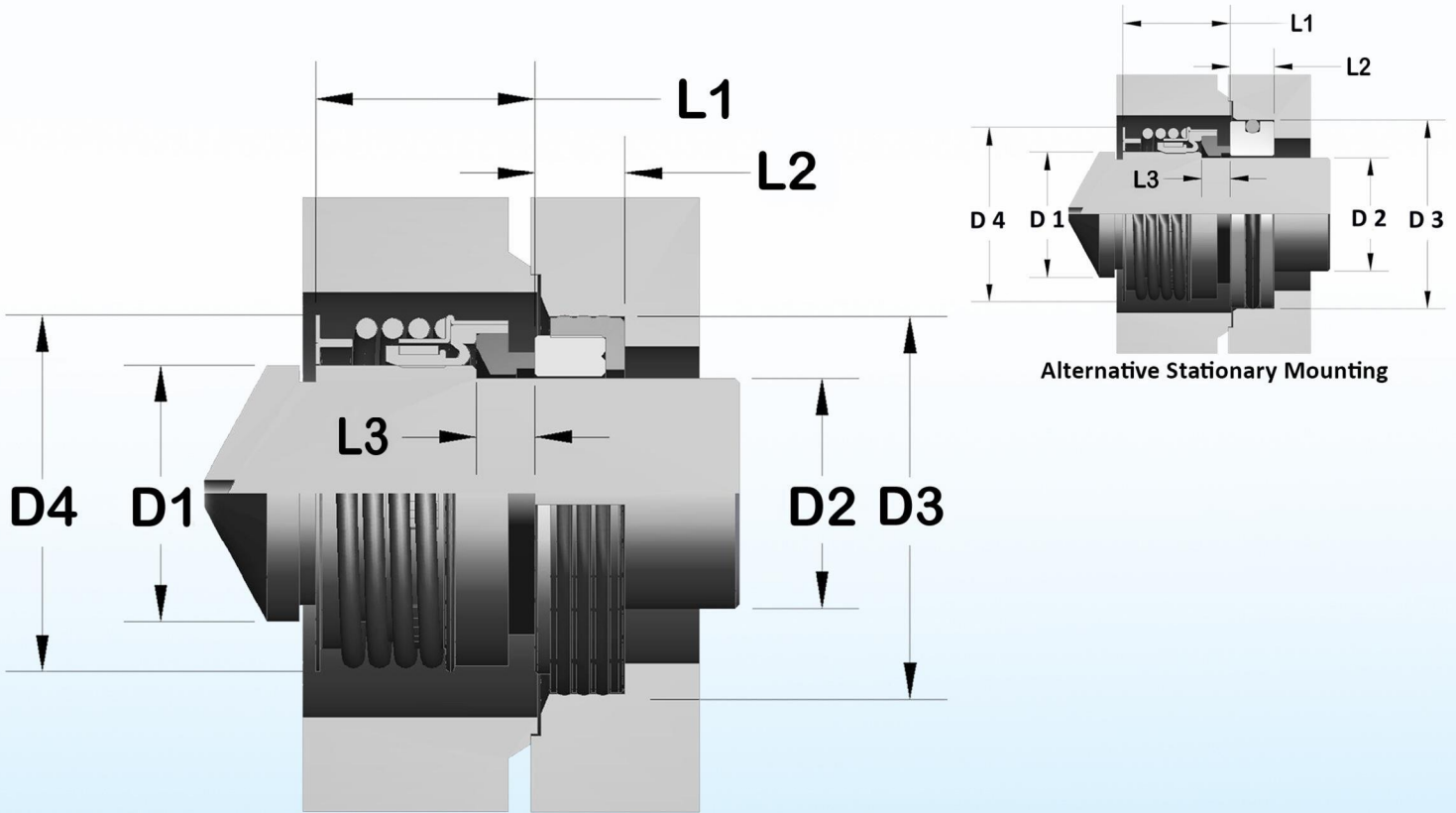


Complete Seal Assembly

## Advantage Seal Type 202B replaces:

- John Crane Type 2, Type 21, Type 2100
- Sealol Type 43 CE Short, 43 BE
- Pac-Seal Type 52, Type 21
- US Seal Type D 24
- Burgmann Type M2, M3, M377

# Typical Type 202B Dimensions



US Standard						
D1	D2	D3	D4	L1	L2	L3
Inches						
0.750	0.625	1.375	1.242	0.875	0.406	0.290
0.875	0.750	1.500	1.367	0.937	0.406	0.290
1.000	0.875	1.625	1.500	1.000	0.437	0.290
1.125	1.000	1.750	1.625	1.062	0.437	0.290
1.250	1.125	1.875	1.742	1.062	0.437	0.290
1.375	1.250	2.000	1.875	1.125	0.437	0.290
1.500	1.375	2.125	2.150	1.125	0.437	0.290
1.625	1.500	2.375	2.250	1.375	0.500	0.290
1.750	1.625	2.500	2.375	1.375	0.500	0.290
1.875	1.750	2.625	2.500	1.500	0.500	0.290
2.000	1.875	2.750	2.625	1.500	0.500	0.290
2.125	2.000	3.000	2.884	1.687	0.562	0.290
2.250	2.125	3.125	2.884	1.687	0.562	0.290
2.375	2.250	3.250	3.062	1.812	0.562	0.320
2.500	2.375	3.375	3.232	1.812	0.562	0.320
2.625	2.500	3.375	3.375	1.937	0.625	0.320
2.750	2.625	3.500	3.500	1.937	0.625	0.320
2.875	2.750	3.750	3.625	2.062	0.625	0.320
3.000	2.875	3.875	3.750	2.062	0.625	0.320
3.125	3.000	4.125	4.000	2.187	0.781	0.320
3.250	3.125	4.125	4.125	2.187	0.781	0.320
3.375	3.250	4.250	4.250	2.187	0.781	0.320
3.500	3.375	4.375	4.375	2.187	0.781	0.320
3.625	3.500	4.750	4.500	2.312	0.781	0.350
3.750	3.625	4.750	4.625	2.312	0.812	0.350
3.875	3.750	4.875	4.750	2.312	0.812	0.350
4.000	3.875	5.000	4.875	2.312	0.875	0.350

Metric DIN Standard						
D1	D2	D3	D4	L1	L2	L3
Millimeters						
18.00	14.83	32.99	31.55	26.59	10.49	7.37
20.00	16.83	34.98	34.72	26.59	10.49	7.37
22.00	18.83	37.01	34.72	26.59	10.49	7.37
24.00	20.83	38.99	38.10	28.98	10.49	7.37
25.00	21.83	40.01	38.10	28.98	10.49	7.37
28.00	24.83	42.98	41.27	31.75	10.49	7.37
30.00	26.83	45.01	41.27	31.75	10.49	7.37
32.00	28.83	48.01	44.25	31.75	10.49	7.37
33.00	29.83	48.01	44.25	31.75	10.49	7.37
35.00	31.83	50.01	47.62	31.75	10.49	7.37
38.00	34.83	56.01	54.61	33.32	11.51	7.37
40.00	36.83	57.99	57.15	33.32	11.51	7.37
43.00	39.83	61.01	57.15	33.32	11.51	7.37
45.00	41.83	62.99	60.32	33.32	11.51	7.37
48.00	44.83	65.99	63.50	33.32	11.51	7.37
50.00	46.83	70.00	66.65	35.71	13.49	7.37
53.00	49.83	73.00	73.25	35.71	13.49	7.37
55.00	51.83	74.98	73.25	35.71	13.49	7.37
58.00	54.83	78.00	73.25	38.48	13.49	7.37
60.00	56.83	80.01	77.78	38.48	13.49	7.37
63.00	59.83	83.01	82.09	38.48	13.49	8.13
65.00	61.83	84.99	85.73	38.48	13.49	8.13
68.00	64.83	89.99	88.90	38.48	15.49	8.13
70.00	66.83	92.00	88.90	45.49	15.49	8.13
75.00	71.83	96.82	95.25	45.49	15.49	8.13
80.00	76.83	105.13	101.60	45.49	15.49	8.13

## Tolerances and Finishes

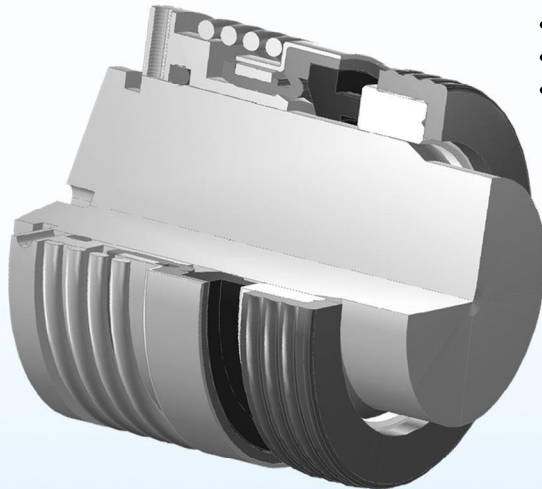
- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



# Advantage Seal Type 202BSS



A hybrid hydraulically balanced seal that allows installation without modifying standard shaft. Ideal for high pressure and high temp application:



- Up to 5,000 sf/m \*
- Up to 625 psig (43 Bar) \*
- From - 40°F (-40°C) to 400°F (204°C) \*

*\*Depending on seal size and material selection*

## Why choose the Advantage Seal Type 202BSS?

Type 202BSS incorporates the advantages of Type 202B balance design and added the convenience of allowing user to install this seal to any standard shaft; without the needed machined step that is required when installing hydraulically balanced seals.

- The built in sleeve eliminates the need for additional components for easy installation.
- Balanced design allows for higher pressure and higher speed applications.
- Hydraulic balance helps reduce heat in the stuffing box; as seal faces generate less heat thus allowing increased lubricity in poor lubricating fluids.
- Greater ability to handle “water hammer” and pressure surges.



**Solid Hex Drive**

### The Solid Hex Drive Advantage

- Standard in every Advantage Seal Type 202
- Locking, Positive Engagement
- Drive Band cannot be installed improperly
- Eliminates damage to bellows
- Eliminates drive failure
- Competitor's stamped designs:
  - Offer less engagement
  - Sharp stampings can damage the seal bellows
  - Can be installed upside down at the seal manufacturer

### Convolute Bellows

- Greater self-aligning capability
- Adjusts for End-Play, Runout, and Equipment Tolerance issues



**Crimped Head**

### Crimped Head

- Greatly simplifies installation
- No adhesive on seal face
- Prevents penetration of solids into the seal head
- Cushions rotary seal face
  - No metal to seal face contact

### Single Coil Spring

- Helps prevent clogging

### For use with a variety of mating rings

- O-Ring Mount
- Cup Mount
- DIN

### Non-Fretting design

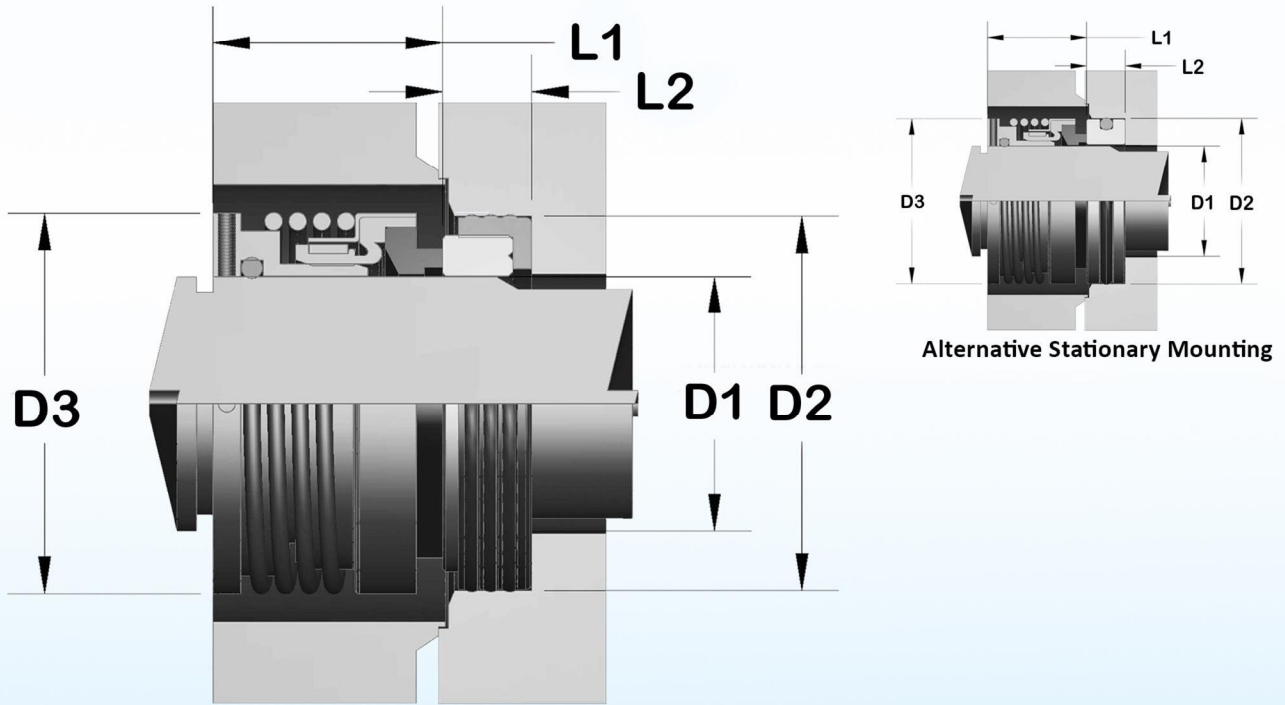


**Convolute Bellows**

Advantage Seal Type 202BSS replaces:

- John Crane Type 2B, Type 21B, Type 2100
- Pac-Seal Balanced Type 52, Type 21

# Typical Type 202BSS Dimensions



US Standard				
D1	D2	D3	L1	L2
Inches				
0.750	1.375	1.367	0.875	0.406
0.875	1.500	1.500	0.937	0.406
1.000	1.625	1.625	1.000	0.437
1.125	1.750	1.742	1.062	0.437
1.250	1.875	1.875	1.062	0.437
1.375	2.000	2.150	1.125	0.437
1.500	2.125	2.250	1.125	0.437
1.625	2.375	2.375	1.375	0.500
1.750	2.500	2.500	1.375	0.500
1.875	2.625	2.625	1.500	0.500
2.000	2.750	2.884	1.500	0.500
2.125	3.000	2.884	1.687	0.562
2.250	3.125	3.062	1.687	0.562
2.375	3.250	3.232	1.812	0.562
2.500	3.375	3.375	1.812	0.562
2.625	3.375	3.500	1.937	0.625
2.750	3.500	3.625	1.937	0.625
2.875	3.750	3.750	2.062	0.625
3.000	3.875	4.000	2.062	0.625
3.125	4.125	4.125	2.187	0.781
3.250	4.125	4.250	2.187	0.781
3.375	4.250	4.375	2.187	0.781
3.500	4.375	4.500	2.187	0.781
3.625	4.750	4.625	2.312	0.781
3.750	4.750	4.750	2.312	0.812
3.875	4.875	4.875	2.312	0.812
4.000	5.000	5.000	2.312	0.875

Metric DIN Standard				
D1	D2	D3	L1	L2
Millimeters				
18.00	32.99	34.72	26.59	10.49
20.00	34.98	34.72	26.59	10.49
22.00	37.01	38.10	26.59	10.49
24.00	38.99	38.10	28.98	10.49
25.00	40.01	41.27	28.98	10.49
28.00	42.98	41.27	31.75	10.49
30.00	45.01	44.25	31.75	10.49
32.00	48.01	44.25	31.75	10.49
33.00	48.01	47.62	31.75	10.49
35.00	50.01	54.61	31.75	10.49
38.00	56.01	57.15	33.32	11.51
40.00	57.99	57.15	33.32	11.51
43.00	61.01	60.32	33.32	11.51
45.00	62.99	63.50	33.32	11.51
48.00	65.99	66.65	33.32	11.51
50.00	70.00	73.25	35.71	13.49
53.00	73.00	73.25	35.71	13.49
55.00	74.98	73.25	35.71	13.49
58.00	78.00	77.78	38.48	13.49
60.00	80.01	82.09	38.48	13.49
63.00	83.01	85.73	38.48	13.49
65.00	84.99	88.90	38.48	13.49
68.00	89.99	88.90	38.48	15.49
70.00	92.00	95.25	45.49	15.49
75.00	96.82	101.60	45.49	15.49
80.00	105.13	104.77	45.49	15.49

## Tolerances and Finishes

- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



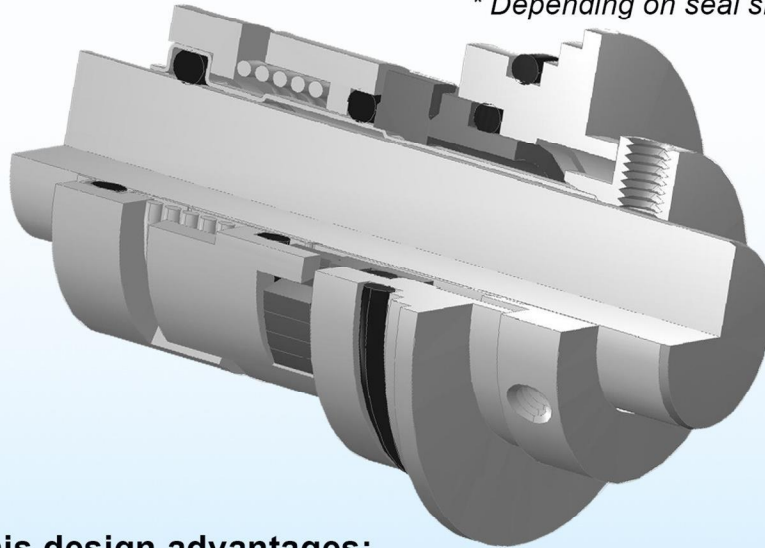
# Advantage Seal Type 511



Balanced Cartridge Seal as direct replacement for Grundfos® CR Series Pump's seals.

- Up to 435 psig (30 Bar) \*
- Up to 450°F (232°C) \*

\* Depending on seal size and material selection



Type 511 offers this design advantages:



- Balanced design allows seal to operate in very high pressure
- Unitized, cartridge design allows for easy installation
- Robust notch and groove drive system handles high torque application
- Suitable for sludge or heavy deposits application
- 316L Stainless Steel metal construction

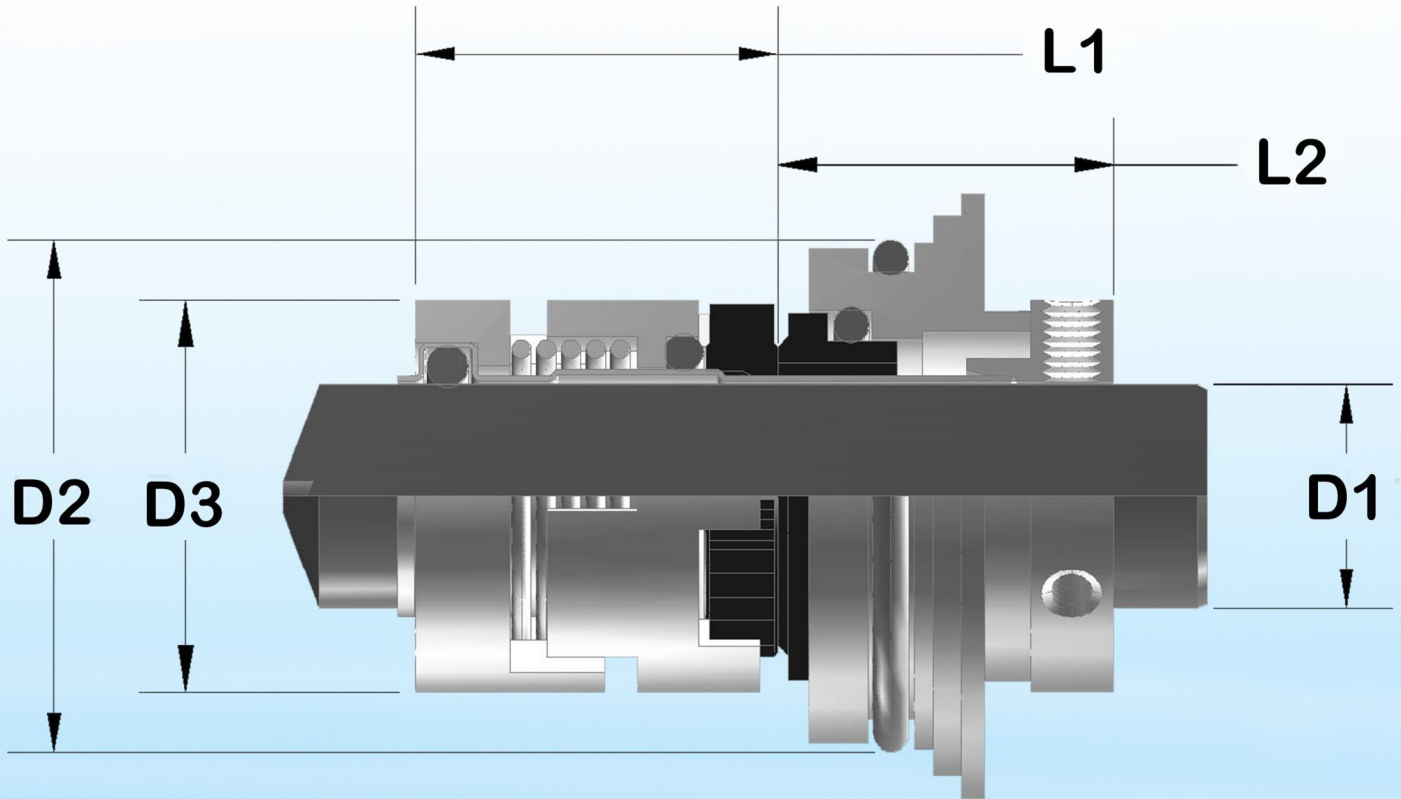
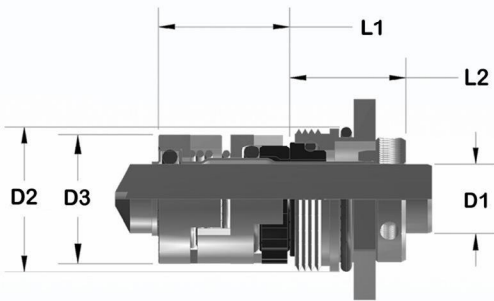
Replaces the following Grundfos® seal part numbers

Grundfos® Part Number	ASI Part Number	Shaft Size (mm)	Material Combinations
96455082	511-04701-13	12	Carbon/Tungsten/EPDM
96455086	511-04701-28	12	Tungsten/Tungsten/EPDM
96455083	511-04701-12	12	Carbon/Tungsten/Viton
96455087	511-04701-47	12	SiC/SiC/Viton
96455085	511-04701-27	12	Tungsten/Tungsten/Viton

96511836	511-06301-13	16	Carbon/Tungsten/EPDM
96511840	511-06301-28	16	Tungsten/Tungsten/EPDM
96511837	511-06301-12	16	Carbon/Tungsten/Viton
96511845	511-06301-47	16	SiC/SiC/Viton
96511841	511-06301-27	16	Tungsten/Tungsten/Viton

96416584	511-08701-13	22	Carbon/Tungsten/EPDM
96433365	511-08701-28	22	Tungsten/Tungsten/EPDM
96525459	511-08701-12	22	Carbon/Tungsten/Viton
96525490	511-08701-47	22	SiC/SiC/Viton
96436728	511-08701-27	22	Tungsten/Tungsten/Viton

# Typical Type 511 Dimensions



D1		D2		D3		L1		L2	
Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter
0.472	12.00	1.142	29.00	0.984	25.00	1.181	30.00	1.004	25.50
0.630	16.00	1.339	34.00	1.200	30.50	1.200	30.50	1.063	27.00
0.866	22.00	1.968	50.00	1.555	39.50	1.398	35.50	1.279	32.50

## Tolerances and Finishes

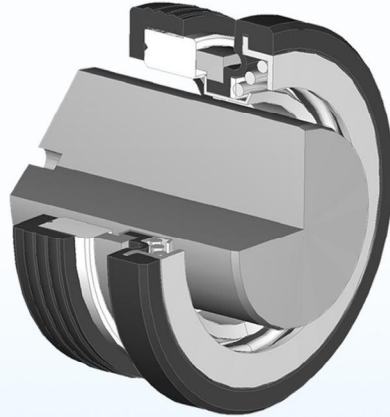
- Equipment Shaft  $\pm 0.002$  (0.05mm)
- Seat Bore  $\pm 0.002$  (0.05mm)
- Maximum End-Play 0.005 (0.13mm)
- Shaft / Sleeve surface finish 35 Ra to 105 Ra



# Advantage Seal Type 41



The non-metallic exposure solution for special application:



- Up to 10,000RPM
  - ID: 7.20 psig (0.5 bar)  
OD: Up to 75 psig (5.0 bar)
  - From -40°F (-40°C) to 400°F (204°C) \*
- \*Depending on seal size and material selection*

## Why choose the Advantage Seal Type 41?



### All elastomer exposure

- Ideal for application that is sensitive to metal material. Only seal face and the rubber material are directly expose to the fluid

### Fully Convoluted Bellows

- Allows maximum flexibility to compensate for axial shaft movement

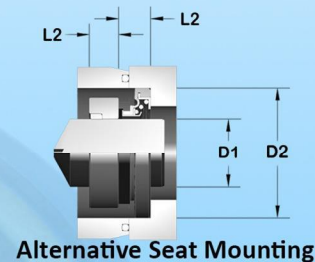
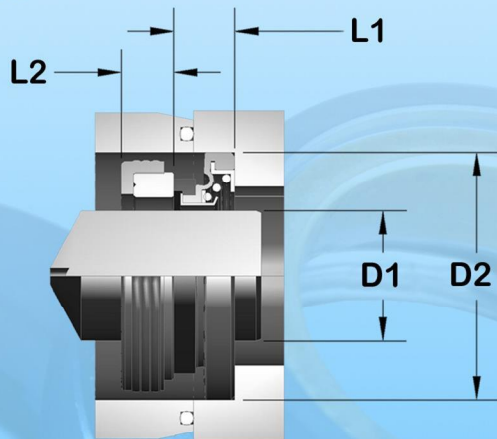
### Anti-Clogging Design

- Spring and other component that can build up debris are protected from the element, and remained dry

### Rotating Mating Ring

- Rotating mating ring provides operation at much higher speeds than rotary head seal design

## Typical Type 41 Dimensions

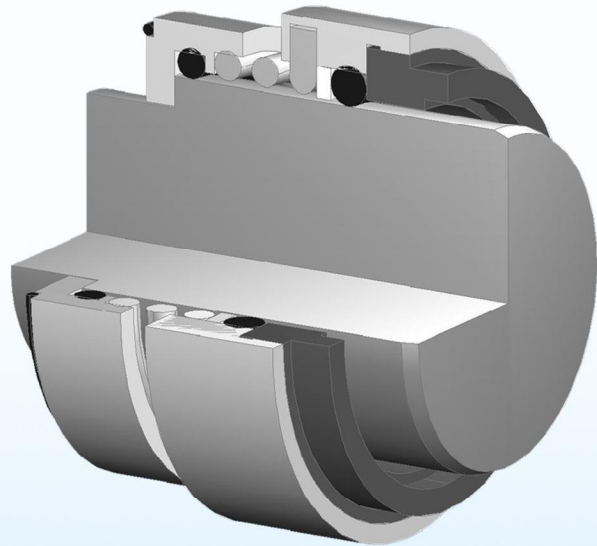


D1		D2		L1		L2*	
Inches	Millimeter	Inches	Millimeter	Inches	Millimeter	Inches	Millimeter
0.375	9.53	1.125	28.58	0.390	9.91	0.164	4.17
0.500	12.70	1.125	28.58	0.390	9.91	0.312	7.92
0.625	15.88	1.500	38.10	0.556	14.12	0.343	8.71
0.750	19.05	1.750	44.45	0.460	11.68	0.406	10.31
1.000	25.40	1.906	48.41	0.470	11.94	0.432	10.97

\*customizable to fit seal chamber

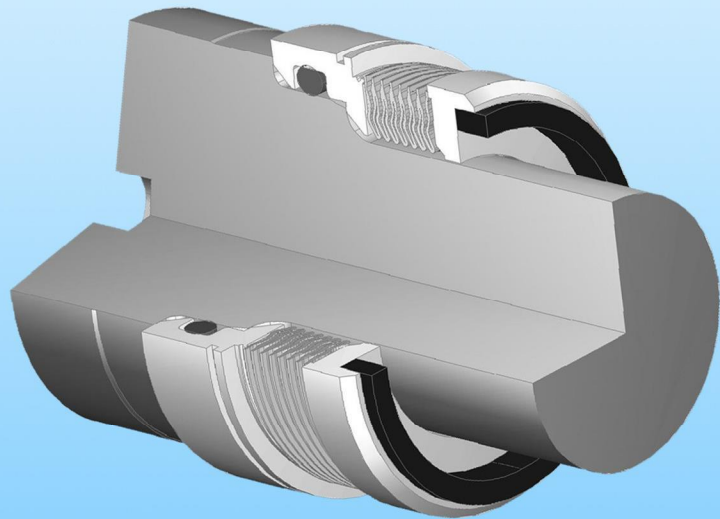
Advantage Seal Type 41 replaces:

- John Crane Type 11-A
- Flowsolve Type 40
- US Seal Type Q



## Type 37

- Solid Shrink Fitted Seal Face
- Ideal for high pressure application
- Also available in positive drive alternative
- Up to 250psig
- From -40°F (-40°C) to 400°F (204°C) with proper material
- Contact us for available sizes



## Type 300

- Metal Bellows Balanced Design
- Ideal for high temperature and high pressure application
- Positive Drive with set screw or key way notch
- Up to 400psig
- From -40°F (-40°C) to 500°F (260°C) with proper material
- Contact us for available sizes





## Type of Seats Alternative



Type 1



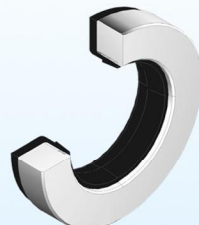
Type 2



Type 3



Type 4



Type 5



Type 8

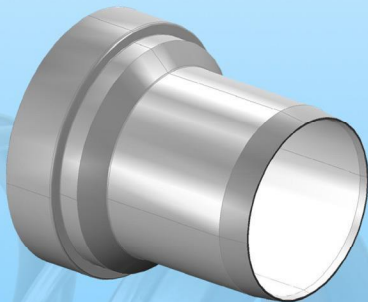


Type 20

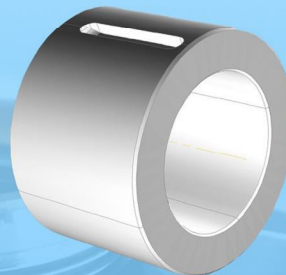


Type 25

## Advantage Seal Accessories



Sleeves - Type 24



Bushing - Type 13



Lubricant - AdvantaLube™

Contact our sales engineer for your specific requirements



**Advantage Seal**  
The Seal of Quality



Advantage Seal Bolingbrook , USA Operation



Advantage Seal Davao , Philippines Operation



Advantage Seal Ningbo , China Operation

## Contact Advantage Seal for your fluid sealing requirements



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