



Pac-Seal

Single Spring and Elastomer Bellows Mechanical Seals



Experience In Motion



Seal Excellence Starts with Superior Design

Pac-Seal designs are a result of years of experience with customers varying shaft sealing applications. Today, utilizing the most sophisticated CAD equipment we continue to analyse the most challenging problems and respond with a product line that meets demands for seal solutions.

Principle Advantages of Single Spring Mechanical Seals

- Single Spring** - gives superior axial and angular flexibility. The seal's design compensates for misalignment and machinery tolerances.
- Non-Clogging** - large single spring, plus free movement of the elastomer shaft seal, combats seal failure caused by build up of solid material.
- Self-adjusting** - the flexible moving elastomer shaft seal accommodates shaft end-float and takes up wear.
- Minimal Wear** - strong static seal to the shaft minimises shaft fretting.
- Versatile** - Compact in design and simple to fit. Standard designs and sizes for all common imperial, metric and DIN EN 12756 housings are standard. Extremely cost effective - low capital cost, proven reliability of design, easy to fit and accommodating in use, excellent seal performance and ex-stock service on a complete range of seal types, materials and sizes, make Pac-Seal single spring seals the choice for the majority of applications.

The power of Flowserve

As a unit of Flowserve, Pac-Seal draws on the experience and knowledge of Flowserve associates around the world. With an extensive network of direct sales engineers and distribution you are connected to a sealing solution that exactly meets your specifications.

Quality Assurance... Not just a process, a promise

Under no circumstance will the quality of Pac-Seal be compromised. From incoming inspection of raw material, through in-process controls to final assembly, our commitment to quality control is reflected in each of the Pac-Seal lines we manufacture. Flowserve works to established quality assurance procedures, which are approved by Lloyds to ISO 9001.

Product environment testing ensures maximum seal performance

When customers are encountering unusual operating conditions, seal material selection becomes critical to the success of the application. In these situations, Flowserve can provide monitored testing of customer equipment in our laboratory. By conducting a seal evaluation under simulated operating conditions, we are able to make the appropriate product recommendations that ensure maximum seal performance.



Our delivery keeps you up and running

We know that downtime is not only a frustration, it costs you money. That's why we maintain a large inventory of both complete products and individual components. This enables us to respond quickly to your needs, often with next day delivery.

Special Designs

Pac-Seal has built a reputation meeting customers' special requirements with rapid prototype development or modifications to existing designs. Please contact us for a more cost effective solution for your current special sealing needs.

O-Ring Mounted



Elastomer Diaphragm



Elastomer Bellows



Typical designs of the three product groups

Product Types

The Pac-Seal single spring seal range is divided into three main product groups, namely; **O-Ring mounted seals, elastomer diaphragm seals and elastomer bellows seals**. These single spring mechanical seals have been designed to service the European pump market and are totally inter-changeable with all other manufacturer's equivalent seals, without any modification to the existing seal housings and gland plates.

O-Ring Mounted Sealing Operation

These conical spring, O-Ring mounted, mechanical seals have been designed to have a small cross-section and a complete recessed O-Ring housing. A narrow seal head width allows the seals to easily fit in confined DIN EN 12756 housings, whilst also providing the benefits of reduced face surface running speed with increased circulation around the seal faces.

The machined, recessed O-Ring groove helps prevent the seal from clogging due to build up of product around the shaft O-Ring. Seal drive is provided by the conical spring tightly gripping the shaft at its base. Stock seals are supplied as **standard with right hand drive springs** for clockwise shafts. Left hand springs for anti-clockwise shaft rotation should be specified on order.



Our resilient O-Ring mounted seal design is technically efficient (readily accommodating misalignment and vibration) and is highly versatile. Flowserve offers a wide range of face material combinations and seal sizes to suit most applications.

Diaphragm Sealing Operation

The drawing on the previous page shows the standard section of a Pac-Seal elastomer diaphragm seal.

The shaft seal is provided by the elastomer diaphragm, which is squeezed onto the shaft by the drive ring. Once fitted, the elastomer diaphragm will grip the shaft giving a strong static seal and positive drive via the drive ring to the seal face.

As there is no relative movement between the shaft and the elastomer diaphragm, shaft fretting, wear and hang-up hysteresis are eliminated and the seal can immediately accommodate some shaft run-out and misalignment.

Shaft axial movement and the movement required during the working life of the seal is handled by the elastomer flexing at its junction point.

The spring force and the seal pumping pressure force maintain the faces in full contact whilst the elastomer diaphragm acts as a bellows providing sustained flexibility. Positive drive of the seal face is transmitted via the drive ring and retaining housing and not via the spring, which merely provides some closing force to the seal faces.

These seals can therefore be used to seal shafts rotating in either direction and in vacuum applications.

Elastomer Bellows Sealing Operation

Pac-Seal elastomeric bellows seals are of compact design with a sealing action that provides many benefits.

The bellows high strength and flexibility is the key to the very reliable performance of this type of seal as it readily accommodates misalignment, end-float and seal face wear.

The convoluted bellows profile makes these seals ideal for media prone to clogging or for hygienic applications.

Designed for confined spaces and limited gland depths, Flowserve elastomer bellows seals are bi-directional in operation and provide secure bellows sealing for longer life in a wide range of applications.

	Type	Page	DIN Compliance	DIN Seat Only	Standard Seat	Optional Seat	Note	Sectional View
O-Ring Mounted	P35	6			8N			
	P38	7			8N			
	P38D	8		●	8L	8S		
	P39	9			8B			
	P42	10			2N			
	P42D	11		●	2D			
	P426	12		●	2D		According to EN 12756 (DIN 24960 L1K)	
	P43	13			3N			
	P43D	14			3D			
	P32	15			8L		For stepped shaft	
	P260	16			9N	9A		
	P270	17			9N			
	P280	18			9N			
P290	19			9U				
Elastomer Bellows	P140	20		●	B9	8S		
	P142	21	●		B9	8S	According to EN 12756 (DIN 24960 L1K)	
	P190	22			8N	B9 / 8S / 8L		
	P192	23			8N	B9 / 8S	DIN L1K working length	
	P193	24			8N	B9 / 8S	DIN L1N working length	
	P150	25			B5	1H		
	P151	26			B3	3H		
P250	27		●	B4	4S / 4L	According to EN 12756 (DIN 24960 L1K)		
Elastomer Diaphragm	P100	28			B2	1H		
	P200	28			B2	1H		
	P110	29			B1	3H		
	P220	29			B1	3H		
	P110U	30			B1	3H		
	P240	31		●	B4	4S / 4L	According to EN 12756 (DIN 24960 L1K)	
	P300	32			B2	1H		
	P320	33			B2	1H		
	P340	34			B1	3H		
P350	35			B1	3H			
Wave & Multi Spring	P167	36		●	8L		According to EN 12756 (DIN 24960 L1K)	
	P167B	37		●	8L		For stepped shaft	
	P168	38			6N	4L		
	P168W	39			6W			
	P168Y	39			6Y			
	P40	40				4S / 4L / 3H	DIN seat for metric sizes	
Special	P118	41			B8			
	P160	42			B6			
	P161	42			B65			
	P170	43			B7			
	P171	43			B75			
	P23	44					Locking collar	

Stationary Seats	Type	Page	Secondary Seal	
	8N,8B,2N,2D,3N,3D,9N	46	O-Ring	
	8S,8L	47	O-Ring	
	4S,4L	48	O-Ring	
	1H,3H	49	O-Ring	
	B1,B2,B3,B4,B5,B9	50	Boot	
	5V	51	PTFE	
	3P	52	O-Ring	
	5A	53	PTFE	

Pac-Seal P35

Single conical spring, O-Ring mounted seal design with monolithic rotary seal face. Pac-Seal P35 is supplied with right hand spring and type 8N seat as standard. Optional left hand spring is available for CCW shaft rotation.

Operating Parameters

Pressure	up to 12 bar
Temperature	-30 to 230°C
Speed	up to 15 m/s

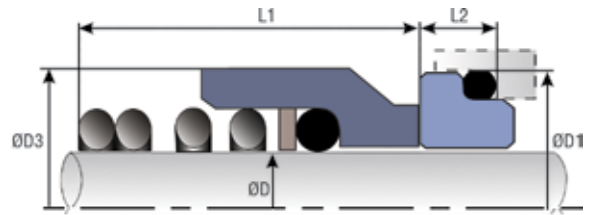
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P35 with 8N Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	19.20	20.00	15.90	6.60
12	21.60	22.00	16.00	5.60
14	24.60	25.00	16.00	5.60
15	24.60	27.00	17.40	6.60
16	28.00	27.00	19.00	7.50
18	30.00	30.00	20.50	8.00
20	35.00	32.00	22.00	7.50
22	35.00	35.00	23.50	7.50
24	38.00	38.00	25.00	7.50
25	38.00	40.00	26.50	7.50
28	42.00	43.00	26.50	9.00
30	45.00	45.00	25.00	10.50
32	48.00	47.00	28.50	10.50
35	52.00	50.00	28.50	11.00
38	55.00	56.00	32.00	10.30

Pac-Seal P38

Single conical spring, O-Ring mounted seal design. Pac-Seal P38 is supplied with right hand spring and type 8N seat as standard. Optional left hand spring is available for CCW shaft rotation.

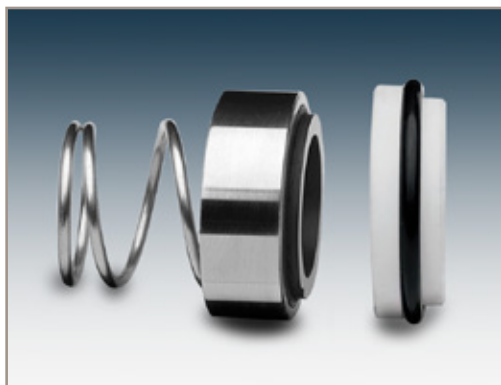
Operating Parameters

Pressure up to 13 bar
Temperature -30 to 180°C
Speed up to 10 m/s

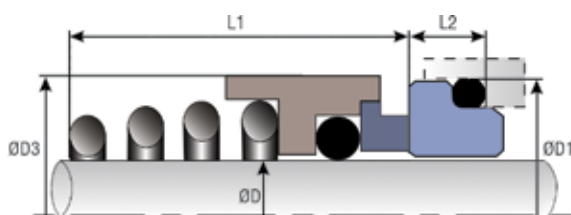
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P38 with 8N Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	19.20	19.00	15.50	6.60
12	21.60	21.00	15.50	5.60
14	24.60	23.00	15.50	5.60
15	24.60	24.00	15.50	6.60
16	28.00	26.00	17.50	7.50
18	30.00	29.00	18.50	8.00
19	31.00	31.00	20.00	7.50
20	35.00	31.00	20.00	7.50
22	35.00	33.00	21.50	7.50
24	38.00	35.00	23.00	7.50
25	38.00	36.00	24.50	7.50
26	40.00	37.00	24.50	8.00
28	42.00	40.00	24.50	9.00
30	45.00	43.00	24.50	10.50
32	48.00	46.00	28.00	10.50
33	48.00	46.00	28.00	11.00
35	52.00	49.00	28.00	11.00
38	55.00	53.00	31.00	10.30
40	58.00	56.00	34.00	10.80
42	62.00	59.00	35.00	12.00
43	62.00	59.00	35.00	12.00
45	64.00	61.00	36.50	11.60
48	68.40	64.00	42.00	11.60
50	69.30	66.00	43.00	11.60
55	75.40	71.00	47.00	13.30
58	78.40	76.00	50.00	13.30
60	80.40	78.00	51.00	13.30
65	85.40	84.00	52.00	13.00
70	92.00	90.00	54.00	13.00
75	99.00	98.00	55.00	14.00
80	104.00	100.00	58.00	15.00

Pac-Seal P38D

Single conical spring, O-Ring mounted seal design suitable for DIN seal housings. Pac-Seal P38D is supplied with right hand spring and type 8L DIN long seat. Optional left hand spring is available for CCW shaft rotation. Type 8S DIN short seat can be supplied.

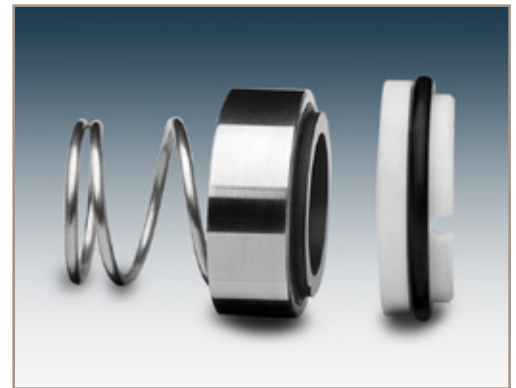
Operating Parameters

Pressure	up to 13 bar
Temperature	-30 to 180°C
Speed	up to 10 m/s

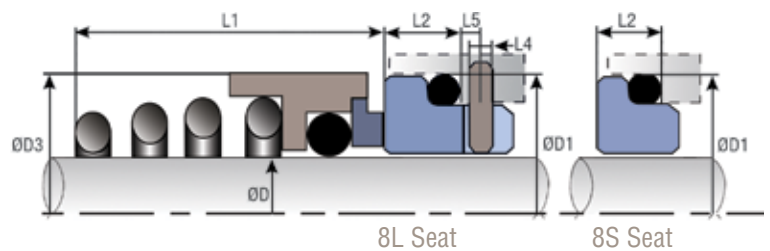
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



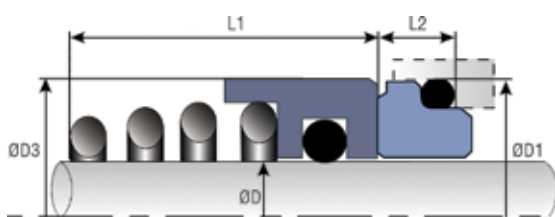
P38D with 8L and 8S Seat Options



Shaft Size ØD (mm)	ØD1 (8S/8L)	ØD3	L1	L2 (8L)	L2 (8S)	L4 (8L)	L5 (8L)
10	21.00	19.00	15.50	10.00	6.60	3.00	5.00
12	23.00	21.00	16.00	10.00	6.60	3.00	5.00
14	25.00	23.00	16.50	10.00	6.60	3.00	5.00
16	27.00	26.00	18.00	10.00	6.60	3.00	5.00
18	33.00	29.00	19.50	11.50	7.50	3.00	5.00
20	35.00	31.00	22.00	11.50	7.50	3.00	5.00
22	37.00	33.00	21.50	11.50	7.50	3.00	5.00
24	39.00	35.00	23.50	11.50	7.50	3.00	5.00
25	40.00	36.00	26.50	11.50	7.50	3.00	5.00
28	43.00	40.00	26.50	11.50	7.50	3.00	5.00
30	45.00	43.00	26.50	11.50	7.50	3.00	5.00
32	48.00	46.00	28.50	11.50	7.50	3.00	5.00
33	48.00	46.00	28.50	11.50	7.50	3.00	5.00
35	50.00	49.00	28.50	11.50	7.50	3.00	5.00
38	56.00	53.00	33.50	14.00	9.00	4.00	5.00
40	58.00	56.00	36.00	14.00	9.00	4.00	5.00
43	61.00	59.00	38.50	14.00	9.00	4.00	5.00
45	63.00	61.00	39.50	14.00	9.00	4.00	5.00
48	66.00	64.00	46.00	14.00	9.00	4.00	5.00
50	70.00	66.00	45.00	15.00	9.50	4.00	5.00
53	73.00	69.00	47.00	15.00	11.00	4.00	5.00
55	75.00	71.00	49.00	15.00	11.00	4.00	5.00
58	78.00	76.00	55.00	15.00	11.00	4.00	5.00
60	80.00	78.00	55.00	15.00	11.00	4.00	5.00
63	83.00	81.00	55.00	15.00	11.00	4.00	5.00
65	85.00	84.00	55.00	15.00	11.00	4.00	5.00
68	90.00	88.00	55.00	18.00	11.30	4.00	5.00
70	92.00	90.00	57.00	18.00	11.30	4.00	5.00
75	97.00	98.00	62.00	18.00	11.30	4.00	5.00
80	105.00	100.00	61.80	18.20	12.00	4.00	5.00



P39 with 8B Seat



Pac-Seal P39

Single conical spring, O-Ring mounted seal design similar to Pac-Seal P38, but with solid stainless steel rotary seal face and carbon stationary seat. Supplied with right hand spring and type 8B seat as standard. Optional left hand spring is available for CCW shaft rotation.

Operating Parameters

- Pressure** up to 13 bar
- Temperature** -30 to 180°C
- Speed** up to 10 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

- Metal Components** Stainless Steel
- Rotary Face** Stainless Steel, Silicon Carbide, Tungsten Carbide
- Stationary Seat** Carbon, Silicon Carbide, Tungsten Carbide
- Elastomers** Nitrile, EPR, Viton

Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	19.20	19.00	15.50	7.10
12	21.60	21.00	15.50	7.60
14	24.60	23.00	15.50	7.60
15	24.60	24.00	15.50	8.60
16	28.00	26.00	17.50	9.00
18	30.00	29.00	18.50	10.00
19	31.00	31.00	20.00	9.00
20	35.00	31.00	20.00	9.50
22	35.00	33.00	21.50	9.50
24	38.00	35.00	23.00	9.50
25	38.00	36.00	24.50	9.50
26	40.00	37.00	24.50	10.00
28	42.00	40.00	24.50	11.00
30	45.00	43.00	24.50	11.00
32	48.00	46.00	28.00	11.00
35	52.00	49.00	28.00	11.50
38	55.00	53.00	31.00	11.50
40	58.00	56.00	34.00	11.50
42	62.00	59.00	35.00	14.30
43	62.00	59.00	35.00	14.30
45	64.00	61.00	36.50	14.30
48	68.40	64.00	42.00	14.30
50	69.30	66.00	43.00	14.30
55	75.40	72.00	47.00	15.30
60	80.40	78.00	51.00	15.30
65	85.40	84.00	52.00	15.30
68	91.50	88.00	53.00	16.00
70	92.00	90.00	54.00	15.30
75	99.00	98.00	55.00	15.30
80	104.00	100.00	58.00	16.30

Pac-Seal P42

Single conical spring, O-Ring mounted seal design with solid stainless steel rotary seal face and carbon seat. Pac-Seal P42 is supplied with right hand spring and type 2N seat as standard. Optional left hand spring is available for CCW shaft rotation.

Operating Parameters

Pressure up to 12 bar
Temperature -30 to 180°C
Speed up to 15 m/s

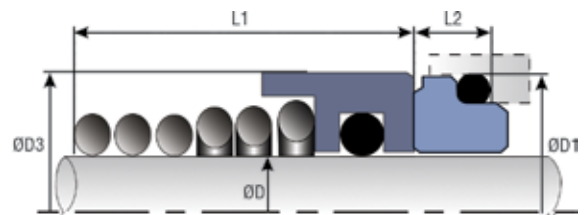
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Stainless Steel, Silicon Carbide, Carbon
Stationary Seat Carbon, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P42 with 2N Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	18.10	19.00	15.00	5.50
12	20.60	21.00	18.00	5.50
13	23.10	23.00	22.00	6.00
14	23.10	23.00	22.00	6.00
15	26.90	24.00	22.00	7.00
16	26.90	26.00	23.00	7.00
17	26.90	26.00	23.00	7.00
18	30.90	29.00	24.00	8.00
19	30.90	31.00	25.00	8.00
20	30.90	31.00	25.00	8.00
22	35.40	33.00	25.00	8.00
24	35.40	35.00	27.00	8.00
25	38.20	36.00	27.00	8.50
26	38.20	36.00	27.00	8.50
28	43.30	40.00	29.00	9.00
30	43.30	43.00	30.00	9.00
32	43.30	46.00	30.00	9.00
33	53.50	46.00	39.00	11.50
34	53.50	49.00	39.00	11.50
35	53.50	49.00	39.00	11.50
38	60.50	53.00	39.00	11.50
39	60.50	56.00	39.00	11.50
40	60.50	56.00	39.00	11.50
42	60.50	59.00	39.00	11.50
43	60.50	59.00	39.00	11.50
44	65.50	61.00	41.00	11.50
45	65.50	61.00	41.00	11.50
48	65.50	64.00	41.00	11.50
50	72.50	66.00	45.00	11.50
55	72.50	71.00	47.00	11.50
60	79.30	78.00	49.00	11.50
65	84.50	84.00	51.00	11.50
70	89.50	89.60	51.00	11.50
75	94.50	98.00	57.00	11.50
80	99.50	100.00	59.00	11.50
85	105.50	107.50	59.00	13.50
90	111.50	111.00	62.00	13.50
95	116.50	119.00	62.00	13.50
100	119.50	123.80	75.00	13.50



Pac-Seal P42D

Single conical spring, O-Ring mounted seal design with solid stainless steel rotary seal face and carbon seat. Pac-Seal P42D is supplied as standard with right hand spring and type 2D seat suitable for DIN housings. Optional left hand spring is available for CCW shaft rotation.

Operating Parameters

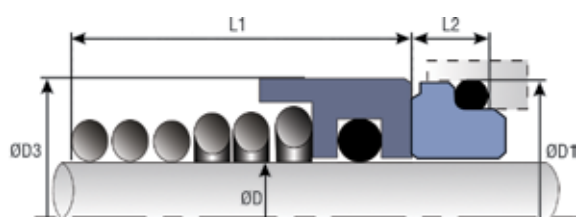
Pressure	up to 12 bar
Temperature	-30 to 180°C
Speed	up to 15 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Stainless Steel, Silicon Carbide, Tungsten Carbide
Stationary Seat	Carbon, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton

P42D with 2D Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	21.00	19.00	15.00	7.00
12	23.00	21.00	18.00	7.00
14	25.00	23.00	22.00	7.00
16	27.00	26.00	23.00	7.00
18	33.00	29.00	24.00	10.00
20	35.00	31.00	25.00	10.00
22	37.00	33.00	25.00	10.00
24	39.00	35.00	27.00	10.00
25	40.00	36.00	27.00	10.00
28	43.00	40.00	29.00	10.00
30	45.00	43.00	30.00	10.00
32	48.00	46.00	30.00	10.00
33	48.00	46.00	39.00	10.00
35	50.00	49.00	39.00	10.00
38	56.00	53.00	42.00	13.00
40	58.00	56.00	42.00	13.00
43	61.00	59.00	47.00	13.00
45	63.00	61.00	47.00	13.00
48	66.00	64.00	47.00	13.00
50	70.00	66.00	46.00	14.00
53	73.00	69.00	56.00	14.00
55	75.00	71.00	56.00	14.00
58	78.00	76.00	56.00	14.00
60	80.00	78.00	56.00	14.00
63	83.00	81.00	56.00	14.00
65	85.00	84.00	66.00	14.00
68	90.00	88.00	64.00	16.00
70	92.00	89.60	64.00	16.00
75	97.00	98.00	64.00	16.00
80	105.00	100.00	72.00	18.00
85	110.00	107.50	72.00	18.00
90	115.00	111.00	72.00	18.00
95	120.00	119.00	72.00	18.00
100	125.00	123.80	72.00	18.00

Pac-Seal P426

Single conical spring, O-Ring mounted seal design conforming to EN 12756 (DIN 24960) L1K dimensions. Pac-Seal P426 is supplied with right hand spring and type 2D seat as standard. Optional left hand spring is available for CCW shaft rotation.

Operating Parameters

Pressure	up to 12 bar
Temperature	-30 to 180°C
Speed	up to 15 m/s

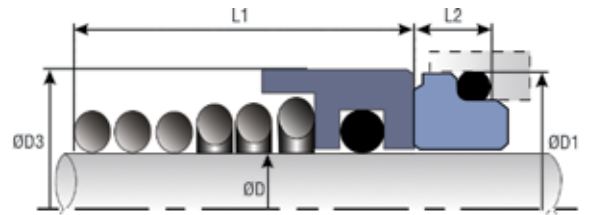
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Stainless Steel, Silicon Carbide, Tungsten Carbide
Stationary Seat	Carbon, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P426 with 2D Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	21.00	19.00	25.50	7.00
12	23.00	21.00	25.50	7.00
14	25.00	23.00	28.00	7.00
16	27.00	26.00	28.00	7.00
18	33.00	29.00	27.50	10.00
20	35.00	31.00	27.50	10.00
22	37.00	33.00	27.50	10.00
24	39.00	35.00	30.00	10.00
25	40.00	36.00	30.00	10.00
28	43.00	40.00	32.50	10.00
30	45.00	43.00	32.50	10.00
32	48.00	46.00	32.50	10.00
33	48.00	46.00	32.50	10.00
35	50.00	49.00	32.50	10.00
38	56.00	53.00	32.00	13.00
40	58.00	56.00	32.00	13.00
43	61.00	59.00	32.00	13.00
45	63.00	61.00	32.00	13.00
48	66.00	64.00	32.00	13.00
50	70.00	66.00	33.50	14.00
53	73.00	69.00	33.50	14.00
55	75.00	71.00	33.50	14.00
58	78.00	76.00	38.50	14.00
60	80.00	78.00	38.50	14.00
63	83.00	81.00	38.50	14.00
65	85.00	84.00	38.50	14.00
68	90.00	88.00	36.50	16.00
70	92.00	89.60	44.00	16.00
75	97.00	98.00	44.00	16.00
80	105.00	100.00	42.00	18.00
85	110.00	107.50	42.00	18.00
90	115.00	111.00	47.00	18.00
95	120.00	119.00	47.00	18.00
100	125.00	123.80	47.00	18.00



Pac-Seal P43

O-Ring mounted, conical spring seal design with pressed stainless steel head retainer. Pac-Seal P43 is supplied with right hand spring and type 3N seat as standard. Optional left hand spring is available for CCW shaft rotation.

Operating Parameters

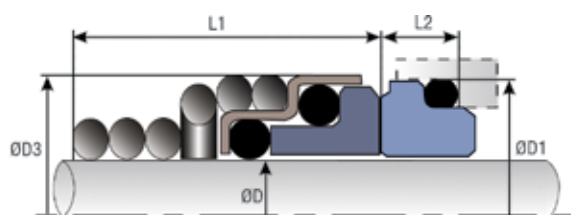
Pressure	up to 12 bar
Temperature	-30 to 230°C
Speed	up to 15 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Ceramic, Silicon Carbide, Tungsten Carbide
Stationary Seat	Carbon, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton

P43 with 3N Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	18.10	19.50	15.00	5.50
11	20.60	22.00	18.00	5.50
12	20.60	22.00	18.00	5.50
13	23.10	24.00	22.00	6.00
14	23.10	24.00	22.00	6.00
15	26.90	26.00	22.00	7.00
16	26.90	26.00	23.00	7.00
17	26.90	26.00	23.00	7.00
18	30.90	32.00	24.00	8.00
19	30.90	32.70	25.00	8.00
20	30.90	32.70	25.00	8.00
21	35.40	36.00	25.00	8.00
22	35.40	36.00	25.00	8.00
23	35.40	36.00	27.00	8.00
24	35.40	37.40	27.00	8.00
25	38.20	38.00	27.00	8.50
28	43.30	42.00	29.00	9.00
30	43.30	44.00	30.00	9.00
32	43.30	45.50	30.00	9.00
33	53.50	46.50	39.00	11.50
35	53.50	49.00	39.00	11.50
38	60.50	56.00	39.00	11.50
40	60.50	58.00	39.00	11.50

Pac-Seal P43D

O-Ring mounted, conical spring seal design with pressed stainless steel head retainer. Pac-Seal P43D is supplied as standard with right hand spring and type 3D seat suitable for DIN housings. Optional left hand spring is available for CCW shaft rotation.

Operating Parameters

Pressure up to 12 bar
Temperature -30 to 230°C
Speed up to 15 m/s

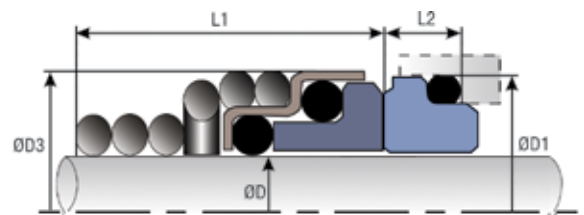
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Ceramic, Silicon Carbide, Tungsten Carbide
Stationary Seat Carbon, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P43D with 3D Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
10	21.00	19.50	15.00	7.00
12	23.00	22.00	18.00	7.00
14	25.00	24.00	22.00	7.00
16	27.00	26.00	23.00	7.00
18	33.00	32.00	24.00	10.00
20	35.00	32.70	25.00	10.00
22	37.00	36.00	25.00	10.00
24	39.00	37.40	27.00	10.00
25	40.00	38.00	27.00	10.00
28	43.00	42.00	29.00	10.00
30	45.00	44.00	30.00	10.00
32	48.00	45.50	30.00	10.00
33	48.00	46.50	39.00	10.00
35	50.00	49.00	39.00	10.00
38	56.00	56.00	42.00	13.00
40	58.00	58.00	42.00	13.00

Pac-Seal P32

Single conical spring, O-Ring mounted balanced seal design to suit stepped shaft configuration. Pac-Seal P32 is supplied as standard with right hand spring and type 8L DIN long seat with anti-rotation pin-slot. Optional left hand spring is available for CCW shaft rotation.

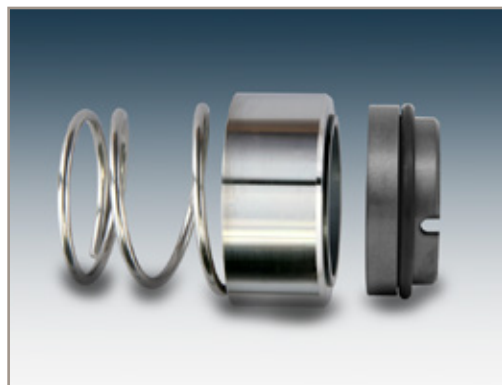
Operating Parameters

Pressure	up to 22 bar
Temperature	-30 to 180°C
Speed	up to 15 m/s

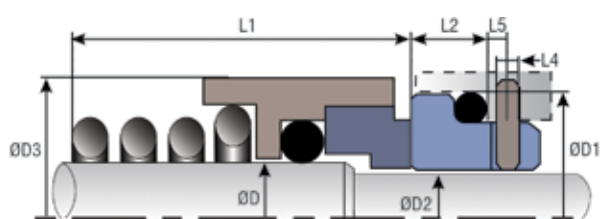
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P32 with 8L Seat



Shaft Size ØD (mm)	ØD1	ØD2	ØD3	L1	L2	L4	L5
16	23.00	12	26.00	26.50	10.00	3.00	5.00
18	25.00	14	29.00	29.50	10.00	3.00	5.00
20	27.00	16	31.00	31.00	10.00	3.00	5.00
22	33.00	18	33.00	32.50	11.50	3.00	5.00
24	35.00	20	35.00	32.50	11.50	3.00	5.00
28	39.00	24	40.00	32.50	11.50	3.00	5.00
30	40.00	25	43.00	33.50	11.50	3.00	5.00
33	43.00	28	46.00	35.50	11.50	3.00	5.00
35	45.00	30	49.00	35.50	11.50	3.00	5.00
38	48.00	33	53.00	39.50	11.50	4.00	5.00
40	50.00	35	56.00	43.50	11.50	4.00	5.00
43	56.00	38	59.00	46.00	14.00	4.00	5.00
45	58.00	40	61.00	48.00	14.00	4.00	5.00
50	63.00	45	66.00	55.00	14.00	4.00	5.00
53	66.00	48	69.00	55.00	14.00	4.00	5.00
55	70.00	50	71.00	58.00	15.00	4.00	5.00
60	75.00	55	78.00	60.00	15.00	4.00	5.00
63	78.00	58	81.00	60.00	15.00	4.00	5.00
65	80.00	60	84.00	60.00	15.00	4.00	5.00
70	85.00	65	90.00	61.00	15.00	4.00	5.00
75	92.00	70	98.00	63.00	18.00	4.00	5.00
80	97.00	75	100.00	68.00	18.00	4.00	5.00
85	105.00	80	107.50	68.00	18.00	4.00	5.00

Pac-Seal P260

Robust O-Ring mounted, direct drive pusher seal. Spring is selected to suit direction of shaft rotation (RH spring for CW rotation looking at gland plate). Standard seat is type 9N with anti-rotation pin-slot. Short, O-Ring mounted type 9A seat can be supplied.

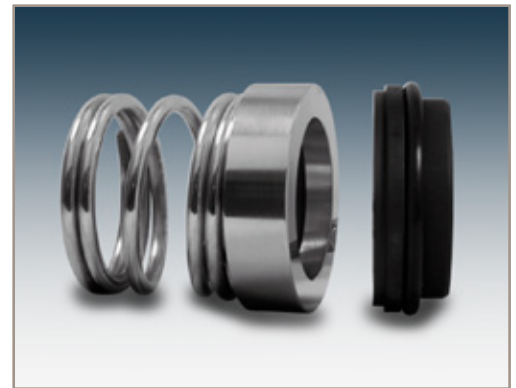
Operating Parameters

Pressure up to 14 bar
Temperature -30 to 180°C
Speed up to 15 m/s

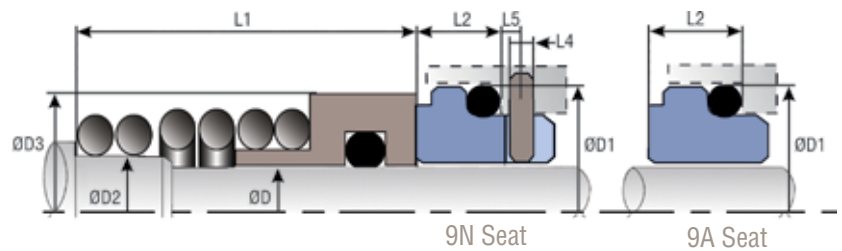
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Stainless Steel, Silicon Carbide, Tungsten Carbide
Stationary Seat Carbon, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P260 with 9N and 9A Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (9N/9A)	ØD2	ØD3	L1	L2 (9N/ 9A)	L4 (9N)	L5 (9N)
20	0.625	28.57	19.05	29.00	24.50	9.00	4.00	4.00
	0.750	31.75	22.23	32.50	24.50	9.00	4.00	4.00
		33.32	24.00	34.50	27.50	9.00	4.00	4.00
25	0.875	34.93	25.40	34.93	26.00	9.00	4.00	4.00
	1.000	39.85	28.57	38.10	30.00	10.00	4.00	4.00
28	1.125	43.05	31.75	42.60	31.50	10.00	4.00	4.00
30		44.63	33.32	45.50	31.50	10.00	4.00	4.00
32	1.250	46.32	34.92	46.20	34.50	10.00	4.00	4.00
35	1.375	49.48	38.10	49.50	37.50	10.00	4.00	4.00
38	1.500	52.56	42.88	52.50	37.50	10.00	4.00	4.00
40		54.25	44.45	55.00	37.50	10.00	4.00	4.00
42	1.625	55.83	46.02	55.50	37.50	10.00	4.00	4.00
44	1.750	59.02	49.20	59.20	37.50	10.00	4.00	4.00
45		59.02	49.20	59.20	37.50	10.00	4.00	4.00
50	1.875	63.68	52.37	59.20	42.50	10.00	4.00	4.00
		65.37	53.97	66.00	45.50	10.00	4.00	4.00
	2.000	66.85	55.57	66.68	45.50	10.00	4.00	4.00
55	2.125	70.03	58.72	70.20	47.00	10.00	4.00	4.00
		70.03	58.72	70.20	47.00	10.00	4.00	4.00
	2.250	73.20	61.90	73.02	47.00	10.00	4.00	4.00
60		76.38	65.07	77.00	50.50	10.00	4.00	4.00
	2.375	76.38	65.07	76.20	50.50	10.00	4.00	4.00
	2.500	79.56	68.28	79.38	50.50	10.00	4.00	4.00
65		81.23	69.85	82.00	53.50	10.00	4.00	4.00
	2.625	82.73	71.42	82.55	53.50	10.00	4.00	4.00
	2.750	85.90	74.60	86.20	53.50	10.00	4.00	4.00
70	2.875	89.08	77.77	90.00	56.50	10.00	4.00	4.00
		90.77	79.37	91.50	56.50	10.00	4.00	4.00
	3.000	95.43	80.97	95.25	63.00	10.00	4.00	4.00
80		100.29	85.73	99.50	63.00	10.00	4.00	4.00
	3.250	101.78	87.30	101.60	63.00	10.00	4.00	4.00
		104.77	89.40	105.50	63.00	10.00	4.00	4.00
85	3.375	105.59	89.40	104.85	63.00	10.00	4.00	4.00
	3.500	108.13	93.67	107.95	63.00	10.00	4.00	4.00
		109.82	95.25	110.50	68.00	10.00	4.00	4.00
90		114.30	100.00	115.50	68.00	10.00	4.00	4.00
95		119.33	104.77	120.00	68.00	10.00	4.00	4.00
100		124.00	107.95	124.50	72.50	10.00	4.00	4.00
120	4.000	142.87	126.00	144.00	78.90	10.00	4.00	4.00

Pac-Seal P270

Robust O-Ring mounted pusher seal design suitable for wide range of applications. Seal is shaft driven via split ring and washer. Spring is selected to suit direction of shaft rotation (RH spring for CW rotation looking at gland plate). Standard seat is type 9N with anti-rotation pin-slot.

Operating Parameters

Pressure	up to 14 bar
Temperature	-30 to 180°C
Speed	up to 15 m/s

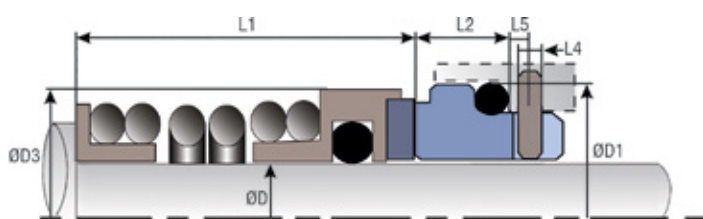
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Stainless Steel, Silicon Carbide, Tungsten Carbide
Stationary Seat	Carbon, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P270 with 9N Seat



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1	ØD3	L1	L2	L4	L5
	0.625	28.57	29.00	26.00	9.00	4.00	4.00
	0.750	31.75	32.50	26.00	9.00	4.00	4.00
20		33.32	34.50	29.00	9.00	4.00	4.00
	0.875	34.93	34.93	27.50	9.00	4.00	4.00
25	1.000	39.85	38.10	31.50	10.00	4.00	4.00
28	1.125	43.05	42.60	33.00	10.00	4.00	4.00
30		44.63	45.50	33.00	10.00	4.00	4.00
32	1.250	46.32	46.20	36.00	10.00	4.00	4.00
35	1.375	49.48	49.50	39.00	10.00	4.00	4.00
38	1.500	52.56	52.50	39.00	10.00	4.00	4.00
40		54.25	55.00	39.00	10.00	4.00	4.00
	1.625	55.83	55.50	39.00	10.00	4.00	4.00
45	1.750	59.02	59.20	39.00	10.00	4.00	4.00
	1.875	63.68	59.20	44.00	10.00	4.00	4.00
50		65.37	66.00	47.00	10.00	4.00	4.00
	2.000	66.85	66.68	47.00	10.00	4.00	4.00
	2.125	70.03	70.20	48.50	10.00	4.00	4.00
55		70.03	70.20	48.50	10.00	4.00	4.00
	2.250	73.20	73.02	48.50	10.00	4.00	4.00
60		76.38	77.00	52.00	10.00	4.00	4.00
	2.375	76.38	76.20	52.00	10.00	4.00	4.00
	2.500	79.56	79.38	52.00	10.00	4.00	4.00
65		81.23	82.00	55.00	10.00	4.00	4.00
	2.625	82.73	82.55	55.00	10.00	4.00	4.00
70	2.750	85.90	86.20	55.00	10.00	4.00	4.00
	2.875	89.08	90.00	60.00	10.00	4.00	4.00
75		90.77	91.50	60.00	10.00	4.00	4.00
	3.000	95.43	95.25	66.00	10.00	4.00	4.00
80		100.29	99.50	66.00	10.00	4.00	4.00
	3.250	101.78	101.60	66.00	10.00	4.00	4.00
85		104.77	105.50	66.00	10.00	4.00	4.00
	3.500	108.13	107.95	66.00	10.00	4.00	4.00
90		109.82	110.50	71.00	10.00	4.00	4.00
95		114.30	115.50	71.00	10.00	4.00	4.00
100		119.33	120.00	71.00	10.00	4.00	4.00
	4.000	124.00	124.50	75.50	10.00	4.00	4.00

Pac-Seal P280

Robust O-Ring mounted pusher seal. This seal design uses set screwed seal collar drive. Spring is selected to suit direction of shaft rotation (RH spring for CW rotation looking at gland plate). Standard seat is type 9N with anti-rotation pin-slot.

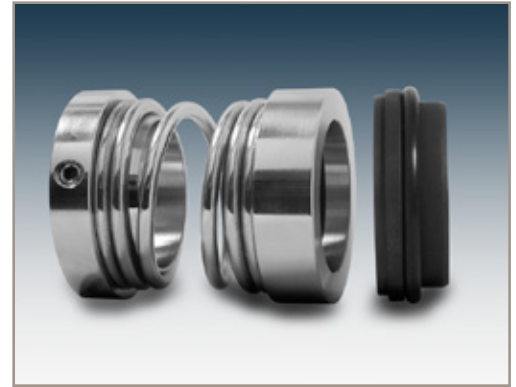
Operating Parameters

Pressure up to 14 bar
Temperature -30 to 180°C
Speed up to 15 m/s

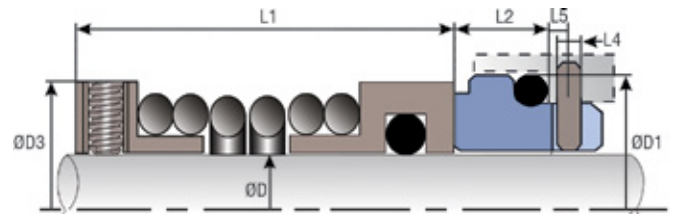
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Stainless Steel, Silicon Carbide, Tungsten Carbide
Stationary Seat Carbon, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P280 with 9N Seat



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1	ØD3	L1	L2	L4	L5
	0.625	28.57	29.00	32.50	9.00	4.00	4.00
	0.750	31.75	32.50	32.50	9.00	4.00	4.00
20		33.32	34.50	35.50	9.00	4.00	4.00
	0.875	34.93	34.93	35.50	9.00	4.00	4.00
25	1.000	39.85	38.10	39.00	10.00	4.00	4.00
	1.125	43.05	42.60	41.00	10.00	4.00	4.00
30		44.63	45.50	41.00	10.00	4.00	4.00
32	1.250	46.32	46.20	44.00	10.00	4.00	4.00
35	1.375	49.48	49.50	47.00	10.00	4.00	4.00
38	1.500	52.56	52.50	47.00	10.00	4.00	4.00
40		54.25	55.00	47.00	10.00	4.00	4.00
42	1.625	55.83	55.50	47.00	10.00	4.00	4.00
45	1.750	59.02	59.20	47.00	10.00	4.00	4.00
	1.875	63.68	59.20	55.00	10.00	4.00	4.00
50		65.37	66.00	58.50	10.00	4.00	4.00
	2.000	66.85	66.68	58.50	10.00	4.00	4.00
	2.125	70.03	70.20	60.00	10.00	4.00	4.00
55		70.03	70.20	60.00	10.00	4.00	4.00
	2.250	73.20	73.02	60.00	10.00	4.00	4.00
60		76.38	77.00	63.00	10.00	4.00	4.00
	2.375	76.38	76.20	63.00	10.00	4.00	4.00
	2.500	79.56	79.38	63.00	10.00	4.00	4.00
65		81.23	82.00	66.00	10.00	4.00	4.00
	2.625	82.73	82.55	66.00	10.00	4.00	4.00
70	2.750	85.90	86.20	66.00	10.00	4.00	4.00
	2.875	89.08	90.00	71.00	10.00	4.00	4.00
75		90.77	91.50	71.00	10.00	4.00	4.00
	3.000	95.43	95.25	77.50	10.00	4.00	4.00
80		100.29	99.50	77.50	10.00	4.00	4.00
	3.250	101.78	101.60	77.50	10.00	4.00	4.00
85		104.77	105.50	77.50	10.00	4.00	4.00
	3.500	108.13	107.95	77.50	10.00	4.00	4.00
90		109.82	110.50	82.00	10.00	4.00	4.00
95		114.30	115.50	82.00	10.00	4.00	4.00
100		119.33	120.00	82.00	10.00	4.00	4.00
	4.000	124.00	124.50	88.50	10.00	4.00	4.00
115		136.52	137.50	88.50	10.00	4.00	4.00
120		142.87	144.00	95.00	10.00	4.00	4.00



Pac-Seal P290

Robust O-Ring mounted pusher seal. This seal design uses set screwed seal collar drive. Spring is selected to suit direction of shaft rotation (RH spring for CW rotation looking at gland plate). Standard seat is double O-Ring mounted type 9U.

Operating Parameters

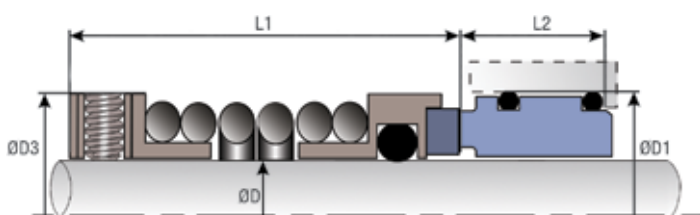
Pressure	up to 14 bar
Temperature	-30 to 180°C
Speed	up to 15 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Stainless Steel, Silicon Carbide, Tungsten Carbide
Stationary Seat	Carbon, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton

P290 with 9U Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
20	37.00	34.50	38.00	23.00
22	39.00	34.93	38.00	23.00
25	40.00	38.10	38.00	23.00
28	44.00	42.00	40.00	23.00
30	47.00	43.50	40.00	24.00
32	48.00	47.00	40.00	24.00
35	51.00	50.00	40.00	24.00
38	54.00	53.00	45.00	24.00
40	57.00	55.00	45.00	24.00
42	60.50	55.50	50.00	24.00
45	61.00	60.00	50.00	24.00
48	64.00	62.00	55.00	24.00
50	67.00	66.00	55.00	24.00
52	70.00	68.00	58.00	24.00
55	73.00	71.00	58.00	24.00
58	76.00	74.00	58.00	24.00
60	80.00	77.00	60.00	26.00
62	83.00	78.00	60.00	26.00
65	86.00	82.00	62.00	26.00
68	89.00	84.00	62.00	26.00
70	89.00	87.00	65.00	26.00
75	95.00	91.50	65.00	26.00
80	99.00	99.50	70.00	26.00
85	105.00	105.50	70.00	26.00
90	111.00	110.50	70.00	26.00
95	114.00	115.50	75.00	26.00
100	118.00	120.00	75.00	26.00
105	132.00	128.00	75.00	28.00
110	137.00	133.00	80.00	28.00
115	140.00	137.50	80.00	28.00
120	147.00	144.00	85.00	28.00
125	150.00	149.00	85.00	28.00
130	156.00	154.00	85.00	28.00

Pac-Seal P140

Short axial length, robust elastomer bellows seal design. Convolute bellows design provides excellent flexibility and durability. P140 seal is supplied with boot mounted B9 type DIN seat as standard. O-Ring mounted DIN short 8S type seat is available.

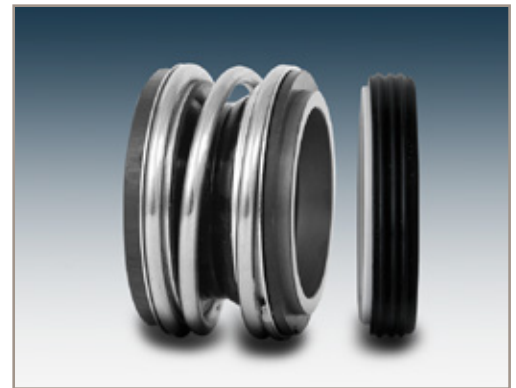
Operating Parameters

Pressure up to 16 bar
Temperature -30 to 230°C
Speed up to 15 m/s

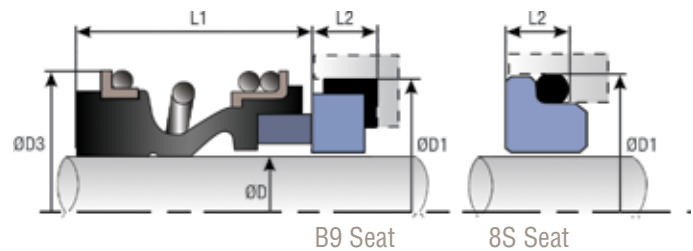
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P140 with B9 and 8S Seat Options



Shaft Size ØD (mm)	ØD1 (B9/8S)	ØD3	L1	L2 (B9/8S)
10	21.00	20.00	13.40	6.60
12	23.00	22.00	14.40	6.60
14	25.00	24.00	14.40	6.60
15	27.00	25.00	14.40	6.60
16	27.00	26.00	14.40	6.60
18	33.00	32.00	18.50	7.50
20	35.00	34.00	18.50	7.50
22	37.00	36.00	18.50	7.50
24	39.00	38.00	18.50	7.50
25	40.00	39.00	18.50	7.50
28	43.00	42.00	24.50	7.50
30	45.00	44.00	25.50	7.50
32	48.00	46.00	25.50	7.50
33	48.00	47.00	25.50	7.50
35	50.00	49.00	26.50	7.50
38	56.00	54.00	29.00	9.00
40	58.00	56.00	29.00	9.00
43	61.00	59.00	29.00	9.00
45	63.00	61.00	29.00	9.00
48	66.00	64.00	31.00	9.00
50	70.00	66.00	30.50	9.50
53	73.00	69.00	29.00	11.00
55	75.00	71.00	29.00	11.00
58	78.00	78.00	32.00	11.00
60	80.00	80.00	34.00	11.00
65	85.00	85.00	34.00	11.00
70	92.00	90.00	33.70	11.30
75	97.00	99.00	40.70	11.30
80	105.00	104.00	40.50	12.00
85	110.00	109.00	38.50	14.00
90	115.00	114.00	38.50	14.00
95	120.00	119.00	38.50	14.00
100	125.00	124.00	38.50	14.00

Pac-Seal P142

Compact and robust convoluted elastomer bellows seal design providing excellent flexibility and durability. Seal is fully compliant to EN 12756 (DIN 24960) L1K dimensions. P142 seal is supplied with boot mounted B9 type DIN seat. O-Ring mounted DIN short 8S type seat is available.

Operating Parameters

Pressure	up to 16 bar
Temperature	-30 to 230°C
Speed	up to 15 m/s

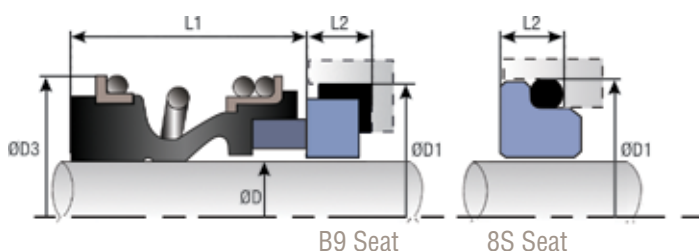
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P142 with B9 and 8S Seat Options



Shaft Size ØD (mm)	ØD1 (B9/8S)	ØD3	L1	L2 (B9/8S)	L1 + L2 (L1K)
10	21.00	20.00	25.90	6.60	32.50
12	23.00	22.00	25.90	6.60	32.50
14	25.00	24.00	28.40	6.60	35.00
15	27.00	25.00	28.40	6.60	35.00
16	27.00	26.00	28.40	6.60	35.00
18	33.00	32.00	30.00	7.50	37.50
20	35.00	34.00	30.00	7.50	37.50
22	37.00	36.00	30.00	7.50	37.50
24	39.00	38.00	32.50	7.50	40.00
25	40.00	39.00	32.50	7.50	40.00
28	43.00	42.00	35.00	7.50	42.50
30	45.00	44.00	35.00	7.50	42.50
32	48.00	46.00	35.00	7.50	42.50
33	48.00	47.00	35.00	7.50	42.50
35	50.00	49.00	35.00	7.50	42.50
38	56.00	54.00	36.00	9.00	45.00
40	58.00	56.00	36.00	9.00	45.00
43	61.00	59.00	36.00	9.00	45.00
45	63.00	61.00	36.00	9.00	45.00
48	66.00	64.00	36.00	9.00	45.00
50	70.00	66.00	38.00	9.50	47.50
53	73.00	69.00	36.50	11.00	47.50
55	75.00	71.00	36.50	11.00	47.50
58	78.00	78.00	41.50	11.00	52.50
60	80.00	80.00	41.50	11.00	52.50
65	85.00	85.00	41.50	11.00	52.50
70	92.00	90.00	48.70	11.30	60.00
75	97.00	99.00	48.70	11.30	60.00
80	105.00	104.00	48.00	12.00	60.00
85	110.00	109.00	46.00	14.00	60.00
90	115.00	114.00	51.00	14.00	65.00
95	120.00	119.00	51.00	14.00	65.00
100	125.00	124.00	51.00	14.00	65.00

Pac-Seal P190

Short axial length, heavy duty convoluted elastomer bellows seal design with wide non-DIN cross-section for optimum flexibility and durability. P190 seal is supplied with O-Ring type 8N seat as standard. Alternative boot mounted B9 type DIN seat and DIN short 8S and DIN long 8L seats are available.

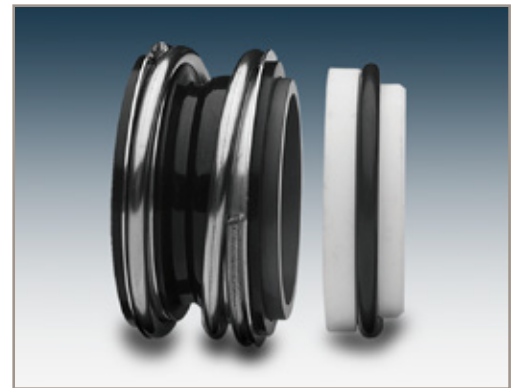
Operating Parameters

Pressure up to 16 bar
Temperature -30 to 230°C
Speed up to 10 m/s

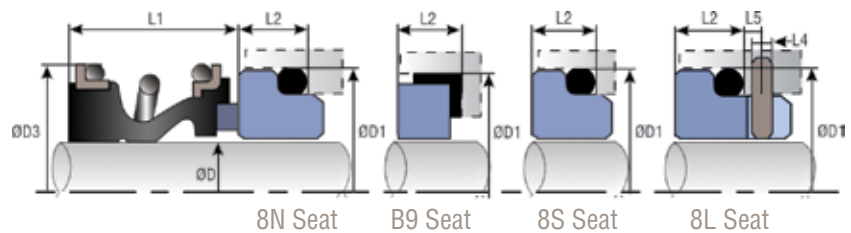
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P190 with Seat Options



Shaft Size ØD (mm)	ØD1 (8N)	ØD1 (B9/8S/8L)	ØD3	L1	L2 (8N)	L2 (B9/8S)	L2 (8L)	L4 (8L)	L5 (8L)
10	19.20	21.00	20.00	14.50	6.60	6.60	10.00	3.00	5.00
12	21.60	23.00	24.30	15.00	5.60	6.60	10.00	3.00	5.00
14	24.60	25.00	28.50	17.00	5.60	6.60	10.00	3.00	5.00
15	24.60	27.00	28.50	17.00	6.60	6.60	10.00	3.00	5.00
16	28.00	27.00	28.50	17.00	7.50	6.60	11.50	3.00	5.00
18	30.00	33.00	31.00	19.50	8.00	7.50	11.50	3.00	5.00
20	35.00	35.00	36.50	21.50	7.50	7.50	11.50	3.00	5.00
22	35.00	37.00	36.50	21.50	7.50	7.50	11.50	3.00	5.00
24	38.00	39.00	41.10	22.50	7.50	7.50	11.50	3.00	5.00
25	38.00	40.00	41.10	23.00	7.50	7.50	11.50	3.00	5.00
28	42.00	43.00	47.60	26.50	9.00	7.50	11.50	3.00	5.00
30	45.00	45.00	47.60	26.50	10.50	7.50	11.50	3.00	5.00
32	48.00	48.00	51.00	27.50	10.50	7.50	11.50	3.00	5.00
33	50.00	48.00	51.00	27.50	11.00	7.50	11.50	3.00	5.00
35	52.00	50.00	54.50	28.50	11.00	7.50	11.50	3.00	5.00
38	55.00	56.00	57.90	30.00	10.30	9.00	14.00	4.00	5.00
40	58.00	58.00	60.00	30.00	10.80	9.00	14.00	4.00	5.00
43	62.00	61.00	63.80	30.00	12.00	9.00	14.00	4.00	5.00
45	64.00	63.00	65.70	30.00	11.60	9.00	14.00	4.00	5.00
48	68.40	66.00	69.30	30.50	11.60	9.00	14.00	4.00	5.00
50	69.30	70.00	71.80	30.50	11.60	9.50	15.00	4.00	5.00
53	72.30	73.00	76.00	33.00	12.30	11.00	15.00	4.00	5.00
55	75.40	75.00	78.30	35.00	13.30	11.00	15.00	4.00	5.00
58	78.40	78.00	82.50	37.00	13.30	11.00	15.00	4.00	5.00
60	80.40	80.00	85.50	38.00	13.30	11.00	15.00	4.00	5.00
65	85.40	85.00	90.30	40.00	13.00	11.00	15.00	4.00	5.00
68	91.50	90.00	94.00	40.00	13.70	11.30	18.00	4.00	5.00
70	92.00	92.00	97.00	40.00	13.00	11.30	18.00	4.00	5.00
75	99.00	97.00	102.00	40.00	14.00	11.30	18.00	4.00	5.00
80	104.00	105.00	109.50	40.00	15.00	12.00	18.20	4.00	5.00
85	109.00	110.00	116.70	41.00	14.80	14.00	18.20	4.00	5.00
90	114.00	115.00	122.30	45.00	14.80	14.00	18.20	4.00	5.00
95	120.30	120.00	127.60	46.00	15.80	14.00	17.20	4.00	5.00
100	123.30	125.00	132.00	47.00	15.80	14.00	17.20	4.00	5.00

Pac-Seal P192

Compact, heavy duty convoluted elastomer bellows seal design with wide non-DIN cross-section. Seal working length is as per EN 12756 (DIN 24960) L1K dimensions. P192 seal is available with a choice of O-Ring type 8N seat, boot mounted B9 type DIN seat and DIN short 8S seat.

Operating Parameters

Pressure	up to 16 bar
Temperature	-30 to 230°C
Speed	up to 10 m/s

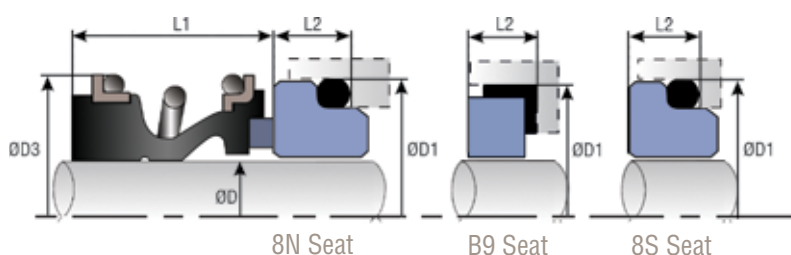
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P192 with Seat Options



Shaft Size ØD (mm)	ØD1 (8N)	ØD1 (B9/8S)	ØD3	L1	L2 (8N)	L2 (B9/8S)
10	19.20	21.00	20.00	25.90	6.60	6.60
12	21.60	23.00	24.30	25.90	5.60	6.60
14	24.60	25.00	28.50	28.40	5.60	6.60
15	24.60	27.00	28.50	28.40	6.60	6.60
16	28.00	27.00	28.50	28.40	7.50	6.60
18	30.00	33.00	31.00	30.00	8.00	7.50
20	35.00	35.00	36.50	30.00	7.50	7.50
22	35.00	37.00	36.50	30.00	7.50	7.50
24	38.00	39.00	41.10	32.50	7.50	7.50
25	38.00	40.00	41.10	32.50	7.50	7.50
28	42.00	43.00	47.60	35.00	9.00	7.50
30	45.00	45.00	47.60	35.00	10.50	7.50
32	48.00	48.00	51.00	35.00	10.50	7.50
33	50.00	48.00	51.00	35.00	11.00	7.50
35	52.00	50.00	54.50	35.00	11.00	7.50
38	55.00	56.00	57.90	36.00	10.30	9.00
40	58.00	58.00	60.00	36.00	10.80	9.00
43	62.00	61.00	63.80	36.00	12.00	9.00
45	64.00	63.00	65.70	36.00	11.60	9.00
48	68.40	66.00	69.30	36.00	11.60	9.00
50	69.30	70.00	71.80	38.00	11.60	9.50
53	72.30	73.00	76.00	36.50	12.30	11.00
55	75.40	75.00	78.30	36.50	13.30	11.00
58	78.40	78.00	82.50	41.50	13.30	11.00
60	80.40	80.00	85.50	41.50	13.30	11.00
65	85.40	85.00	90.30	41.50	13.00	11.00
68	91.50	90.00	94.00	41.20	13.70	11.30
70	92.00	92.00	97.00	48.70	13.00	11.30
75	99.00	97.00	102.00	48.70	14.00	11.30
80	104.00	105.00	109.50	48.00	15.00	12.00
85	109.00	110.00	116.70	46.00	14.80	14.00
90	114.00	115.00	122.30	51.00	14.80	14.00
95	120.30	120.00	127.60	51.00	15.80	14.00
100	123.30	125.00	132.00	51.00	15.80	14.00

Pac-Seal P193

Long length, robust convoluted elastomer bellows seal design with wide non-DIN cross-section. Seal working length is as per EN 12756 (DIN 24960) L1N dimensions. P193 seal is available with a choice of O-Ring type 8N seat, boot mounted type B9 DIN seat and DIN short 8S seat.

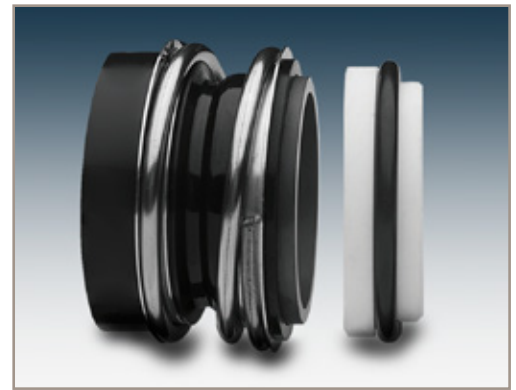
Operating Parameters

Pressure	up to 16 bar
Temperature	-30 to 230°C
Speed	up to 10 m/s

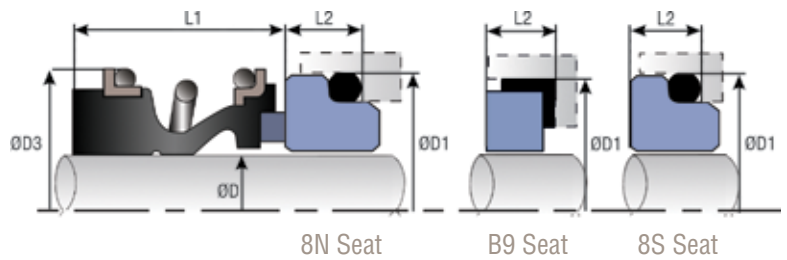
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P193 with Seat Options



Shaft Size ØD (mm)	ØD1 (8N)	ØD1 (B9/8S)	ØD3	L1	L2 (8N)	L2 (B9/8S)
10	19.20	21.00	20.00	33.40	6.60	6.60
12	21.60	23.00	24.30	33.40	5.60	6.60
14	24.60	25.00	28.50	33.40	5.60	6.60
15	24.60	27.00	28.50	33.40	6.60	6.60
16	28.00	27.00	28.50	33.40	7.50	6.60
18	30.00	33.00	31.00	37.50	8.00	7.50
20	35.00	35.00	36.50	37.50	7.50	7.50
22	35.00	37.00	36.50	37.50	7.50	7.50
24	38.00	39.00	41.10	42.50	7.50	7.50
25	38.00	40.00	41.10	42.50	7.50	7.50
28	42.00	43.00	47.60	42.50	9.00	7.50
30	45.00	45.00	47.60	42.50	10.50	7.50
32	48.00	48.00	51.00	47.50	10.50	7.50
33	50.00	48.00	51.00	47.50	11.00	7.50
35	52.00	50.00	54.50	47.50	11.00	7.50
38	55.00	56.00	57.90	46.00	10.30	9.00
40	58.00	58.00	60.00	46.00	10.80	9.00
43	62.00	61.00	63.80	51.00	12.00	9.00
45	64.00	63.00	65.70	51.00	11.60	9.00
48	68.40	66.00	69.30	51.00	11.60	9.00
50	69.30	70.00	71.80	50.50	11.60	9.50
53	72.30	73.00	76.00	59.00	12.30	11.00
55	75.40	75.00	78.30	59.00	13.30	11.00
58	78.40	78.00	82.50	59.00	13.30	11.00
60	80.40	80.00	85.50	59.00	13.30	11.00
65	85.40	85.00	90.30	69.00	13.00	11.00
68	91.50	90.00	94.00	68.70	13.70	11.30
70	92.00	92.00	97.00	68.70	13.00	11.30
75	99.00	97.00	102.00	68.70	14.00	11.30
80	104.00	105.00	109.50	78.00	15.00	12.00
85	109.00	110.00	116.70	76.00	14.80	14.00
90	114.00	115.00	122.30	76.00	14.80	14.00
95	120.30	120.00	127.60	76.00	15.80	14.00
100	123.30	125.00	132.00	76.00	15.80	14.00

Pac-Seal P150

Robust and compact elastomer bellows seal design providing optimum flexibility, durability and performance. Available with boot mounted seat type B5 and centre O-Ring mounted seat type 1H.

Operating Parameters

Pressure	up to 16 bar
Temperature	-30 to 230°C
Speed	up to 10 m/s

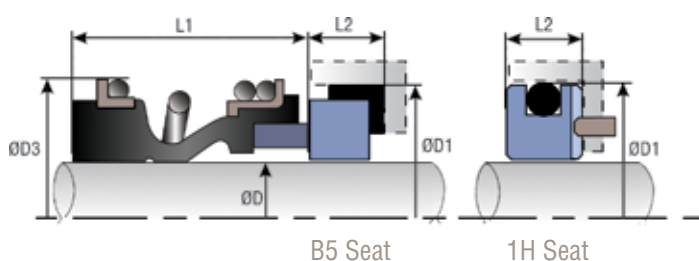
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*1H seat only)
Elastomers	Nitrile, EPR, Viton



P150 with B5 and 1H Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (B5/1H)	ØD3	L1	L2 (B5/1H)
12	0.500	27.79	22.00	25.40	8.74
13		27.79	22.00	25.40	8.74
14		30.95	24.00	25.40	10.32
15		30.95	25.00	25.40	10.32
16	0.625	30.95	26.00	25.40	10.32
18		34.15	32.00	25.40	10.32
19	0.750	34.15	32.00	25.40	10.32
20		35.70	34.00	25.40	10.32
22	0.875	37.30	36.00	25.40	10.32
24		40.50	38.00	25.40	10.32
25	1.000	40.50	39.00	25.40	10.32
28	1.125	47.63	42.00	33.34	11.99
30		50.80	44.00	33.34	11.99
32	1.250	50.80	46.00	33.34	11.99
33		53.98	47.00	33.34	11.99
35	1.375	53.98	49.00	33.34	11.99
38	1.500	57.15	54.00	33.34	11.99
40		60.33	56.00	33.34	11.99
	1.625	60.33	56.00	33.34	11.99
43		63.50	59.00	40.48	11.99
44	1.750	63.50	61.00	40.48	11.99
45		63.50	61.00	40.48	11.99
48	1.875	66.68	64.00	40.48	11.99
50	2.000	69.85	66.70	40.48	13.50
53		73.03	69.00	40.48	13.50
	2.125	73.03	69.00	40.48	13.50
55		76.20	71.50	40.48	13.50
	2.250	76.20	78.00	40.48	13.50
58		79.38	78.00	40.48	13.50
60	2.375	79.38	80.00	40.48	13.50
	2.500	82.55	83.00	40.48	13.50
65		92.08	85.00	49.21	13.50
	2.625	92.08	85.00	49.21	15.88
70	2.750	95.25	90.00	49.21	15.88
	2.875	98.43	96.00	49.21	15.88
75	3.000	101.60	99.00	49.21	15.88

Pac-Seal P151

Robust and compact elastomer bellows seal design providing optimum flexibility, durability and performance. Available with boot mounted seat type B3 and centre O-Ring mounted seat type 3H.

Operating Parameters

Pressure up to 16 bar
Temperature -30 to 230°C
Speed up to 10 m/s

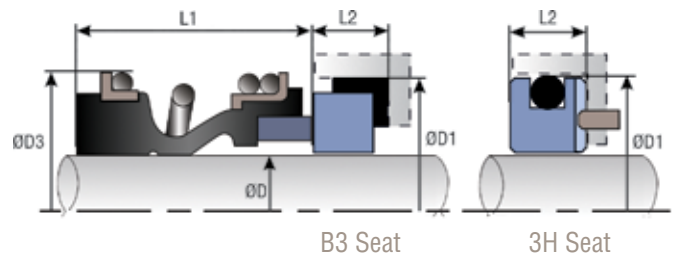
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*3H seat only)
Elastomers Nitrile, EPR, Viton



P151 with B3 and 3H Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (B3 / 3H)	ØD3	L1	L2 (B3 / 3H)
12	0.500	25.40	22.00	20.62	7.93
16	0.625	31.75	26.00	22.23	10.28
18		34.93	32.00	22.23	10.28
19	0.750	34.93	32.00	22.23	10.28
20		38.10	34.00	23.80	10.28
22	0.875	38.10	36.00	23.80	10.28
24		41.28	38.00	25.40	11.10
25	1.000	41.28	39.00	25.40	11.10
28	1.125	44.44	42.00	26.97	11.10
30		47.63	44.00	26.97	11.10
32	1.250	47.63	46.00	26.97	11.10
33		50.80	47.00	28.58	11.10
35	1.375	50.80	49.00	28.58	11.10
38	1.500	53.98	54.00	28.58	11.10
40		60.33	56.00	34.93	12.70
	1.625	60.33	56.00	34.93	12.70
43		63.50	59.00	34.93	12.70
44	1.750	63.50	61.00	34.93	12.70
45		66.68	61.00	38.10	12.70
48	1.875	66.68	64.00	38.10	12.70
50	2.000	69.85	66.70	38.10	12.70
53		76.20	69.00	42.88	14.28
	2.125	76.20	69.00	42.88	14.28
55		79.38	71.50	42.88	14.28
	2.250	79.38	78.00	42.88	14.28
60	2.375	82.55	80.00	46.02	14.28
	2.500	85.73	83.00	46.02	14.28
65		85.73	85.00	49.20	15.88
	2.625	85.73	85.00	49.20	15.88
70	2.750	88.90	90.00	49.20	15.88
	2.875	95.25	96.00	52.37	15.88
75	3.000	98.43	99.00	52.37	15.88

Pac-Seal P250

High performance, stainless steel encased elastomer bellows seal design suitable for a wide variety of applications. Seal design is fully compliant to EN 12756 (DIN 24960) L1K dimensions. Standard seat is DIN boot mounted type B4. O-Ring mounted 4S DIN short and 4L DIN long seats can be supplied.

Operating Parameters

Pressure	up to 35 bar
Temperature	-30 to 230°C
Speed	up to 15 m/s

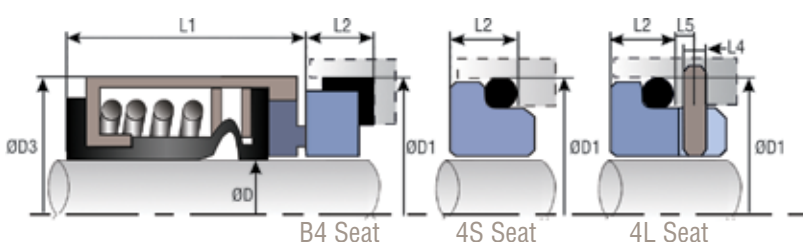
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P250 with Seat Options



Shaft Size ØD (mm)	ØD1 (B4/ 4S/ 4L)	ØD3	L1	L2 (B4/ 4S/ 4L)	L1 + L2 (L1K)	L4 (4L)	L5 (4L)
14	25.00	24.00	26.40	8.60	35.00	3.00	5.00
16	27.00	26.00	26.40	8.60	35.00	3.00	5.00
18	33.00	32.00	27.50	10.00	37.50	3.00	5.00
20	35.00	34.00	27.50	10.00	37.50	3.00	5.00
22	37.00	36.00	27.50	10.00	37.50	3.00	5.00
24	39.00	38.00	30.00	10.00	40.00	3.00	5.00
25	40.00	39.00	30.00	10.00	40.00	3.00	5.00
28	43.00	42.00	32.50	10.00	42.50	3.00	5.00
30	45.00	44.00	32.50	10.00	42.50	3.00	5.00
32	48.00	46.00	32.50	10.00	42.50	3.00	5.00
33	48.00	47.00	32.50	10.00	42.50	3.00	5.00
35	50.00	49.00	32.50	10.00	42.50	3.00	5.00
38	56.00	54.00	34.00	11.00	45.00	4.00	5.00
40	58.00	56.00	34.00	11.00	45.00	4.00	5.00
43	61.00	59.00	34.00	11.00	45.00	4.00	5.00
45	63.00	61.00	34.00	11.00	45.00	4.00	5.00
48	66.00	64.00	34.00	11.00	45.00	4.00	5.00
50	70.00	66.00	34.50	13.00	47.50	4.00	5.00
53	73.00	69.00	34.50	13.00	47.50	4.00	5.00
55	75.00	71.00	34.50	13.00	47.50	4.00	5.00
60	80.00	80.00	39.50	13.00	52.50	4.00	5.00
65	85.00	85.00	39.50	13.00	52.50	4.00	5.00
68	90.00	88.00	37.20	15.30	52.50	4.00	5.00
70	92.00	89.00	44.70	15.30	60.00	4.00	5.00
75	97.00	96.00	44.70	15.30	60.00	4.00	5.00
80	105.00	104.00	44.30	15.70	60.00	4.00	5.00
85	110.00	108.00	44.30	15.70	60.00	4.00	5.00
90	115.00	114.00	49.30	15.70	65.00	4.00	5.00
95	120.00	118.00	49.30	15.70	65.00	4.00	5.00
100	125.00	124.00	49.30	15.70	65.00	4.00	5.00

Pac-Seal P100 / P200

Resilient, elastomer diaphragm seal design. Seals are suitable for bi-directional shaft rotation and available in both metric and imperial sizes. Supplied with standard boot mounted type B2 seat or centre O-Ring mounted type 1H seat.

Operating Parameters

Pressure	up to 14 bar
Temperature	-30 to 230°C
Speed	up to 10 m/s

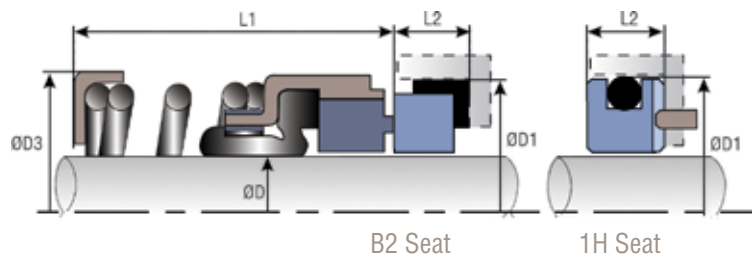
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*1H seat only)
Elastomers	Nitrile, EPR, Viton



P100 / P200 with B2 and 1H Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (B2/1H)	ØD3 (P100/P200)	L1 (P100)	L1 (P200)	L2 (B2/1H)
10	0.375	24.60	21.80	43.66	25.40	8.74
12 / 13	0.500	27.79	23.50	43.66	25.40	8.74
14 / 15 / 16	0.625	30.95	27.00	43.66	25.40	10.32
18 / 19	0.750	34.15	30.70	43.66	25.40	10.32
20		35.70	33.40	43.66	25.40	10.32
22	0.875	37.30	33.40	43.66	25.40	10.32
24 / 25		40.50	39.20	43.66	25.40	10.32
	1.000	40.50	43.20	43.66	25.40	10.32
28 / 29	1.125	47.63	45.60	60.33	33.34	11.99
30 / 32	1.250	50.80	47.40	60.33	33.34	11.99
33 / 34 / 35	1.375	53.98	52.00	60.33	33.34	11.99
38	1.500	57.15	55.60	60.33	33.34	11.99
40 / 41	1.625	60.33	59.20	60.33	33.34	11.99
42 / 43 / 44 / 45	1.750	63.50	65.10	70.64	40.48	11.99
48	1.875	66.68	66.70	70.64	40.48	11.99
50	2.000	69.85	71.00	70.64	40.48	13.50
53	2.125	73.03	73.30	70.64	40.48	13.50
55	2.250	76.20	78.60	70.64	40.48	13.50
58 / 60	2.375	79.38	82.10	70.64	40.48	13.50
63	2.500	82.55	84.60	70.64	40.48	13.50
65	2.625	92.08	88.60	69.85	49.21	15.88
70	2.750	95.25	90.00	69.85	49.21	15.88
	2.875	98.43	95.20	73.03	52.39	15.88
75	3.000	101.60	102.70	73.03	52.39	15.88
	3.125	111.15	104.00	79.38	55.56	19.88
80		114.30	104.00	79.38	55.56	19.88
	3.250	114.30	104.00	79.38	55.56	19.88
85	3.375	117.48	108.00	79.38	55.56	19.88
	3.500	120.65	112.00	79.38	55.56	19.88
90		123.83	112.00	79.38	55.56	19.88
	3.625	123.83	114.00	82.55	58.74	19.88
95	3.750	127.00	119.00	82.55	58.74	19.88
	3.875	130.20	121.00	85.73	61.91	19.88
100	4.000	133.35	124.00	85.73	61.91	19.88

Pac-Seal P110 / P220

Resilient, elastomer diaphragm seal design. Seals are suitable for bi-directional shaft rotation and available in both metric and imperial sizes. Supplied with standard boot mounted type B1 seat or centre O-Ring mounted type 3H seat.

Operating Parameters

Pressure	up to 14 bar
Temperature	-30 to 230°C
Speed	up to 10 m/s

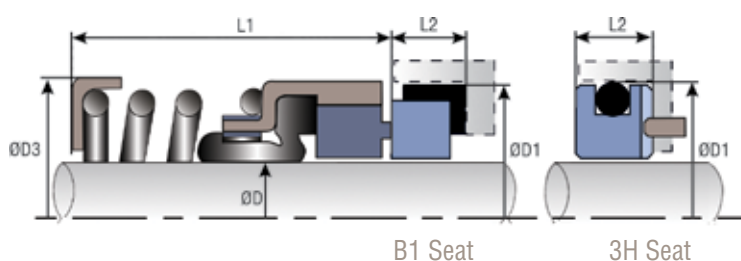
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*3H seat only)
Elastomers	Nitrile, EPR, Viton



P110 / P220 with B1 and 3H Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (B1 / 3H)	ØD3 (P110 / P220)	L1 (P110)	L1 (P220)	L2 (B1 / 3H)
14	0.500	25.40	23.50	20.62	31.75	7.93
16	0.625	31.75	27.00	22.23	34.93	10.28
18	0.750	34.93	30.70	22.23	34.93	10.28
20	0.875	38.10	33.40	23.80	36.50	10.28
22	0.875	38.10	33.40	23.80	36.50	10.28
24	0.875	41.28	39.20	25.40	41.28	11.10
25	0.875	41.28	39.20	25.40	41.28	11.10
28	1.000	41.28	43.20	25.40	41.28	11.10
30	1.125	44.44	45.60	26.97	42.85	11.10
32	1.250	47.63	47.40	26.97	42.85	11.10
33	1.250	47.63	47.40	26.97	42.85	11.10
35	1.375	50.80	52.00	28.58	42.85	11.10
38	1.500	53.98	55.60	28.58	42.85	11.10
40	1.500	60.33	59.20	34.93	50.80	12.70
43	1.625	60.33	59.20	34.93	50.80	12.70
45	1.750	63.50	65.10	34.93	50.80	12.70
48	1.875	66.68	66.70	38.10	53.98	12.70
50	1.875	69.85	66.70	38.10	53.98	12.70
53	2.000	69.85	73.30	38.10	53.98	12.70
55	2.125	76.20	73.30	42.85	60.32	14.28
55	2.125	76.20	73.30	42.85	60.32	14.28
55	2.125	79.38	78.60	42.85	60.32	14.28
60	2.250	79.38	78.60	42.85	60.32	14.28
60	2.375	82.55	82.10	46.02	63.50	14.28
65	2.500	85.73	84.60	46.02	63.50	14.28
65	2.625	85.73	88.60	49.20	69.85	15.88
70	2.750	88.90	90.00	49.20	69.85	15.88
75	2.875	95.25	95.20	52.37	73.03	15.88
75	3.000	98.43	102.70	52.37	73.03	15.88
	3.125	101.60	104.00	55.55	79.37	19.88
	3.250	104.78	104.00	55.55	79.37	19.88
	3.375	107.95	108.00	55.55	79.37	19.88
	3.500	111.13	112.00	55.55	79.37	19.88
	3.625	114.30	114.00	58.72	82.55	19.88
	3.750	117.48	119.00	58.72	82.55	19.88
	3.875	120.65	121.00	58.72	85.72	19.88
	4.000	123.83	124.00	58.72	85.72	19.88

Pac-Seal P110U

Resilient, elastomer diaphragm seal design similar to Pac-Seal type P110, but with reduced seal OD to fit into standard ANSI seal chambers. Seals are suitable for bi-directional shaft rotation. Supplied with standard boot mounted type B1 seat or centre O-Ring mounted type 3H seat.

Operating Parameters

Pressure up to 14 bar
Temperature -30 to 230°C
Speed up to 10 m/s

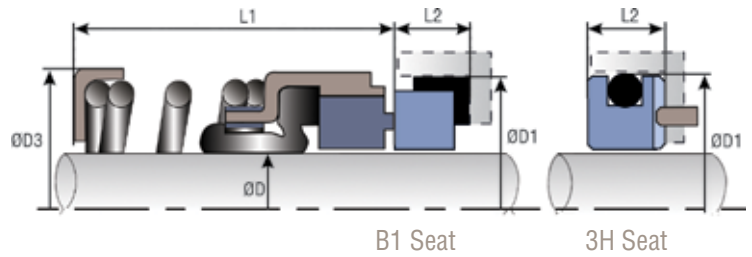
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*3H seat only)
Elastomers Nitrile, EPR, Viton



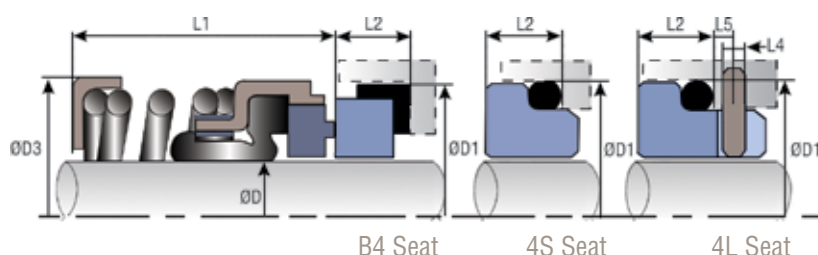
P110U with B1 and 3H Seat Options



Shaft Size ØD (inches)	ØD1 (B1/3H)	ØD3	L1	L2 (B1/3H)
0.500	25.40	22.80	20.62	7.93
0.625	31.75	27.00	22.23	10.28
0.750	34.93	30.40	22.23	10.28
0.875	38.10	33.40	23.80	10.28
1.000	41.28	39.30	25.40	11.10
1.125	44.44	41.90	26.97	11.10
1.250	47.63	45.40	26.97	11.10
1.375	50.80	49.30	28.58	11.10
1.500	53.98	52.50	28.58	11.10
1.625	60.33	55.50	34.93	12.70
1.750	63.50	61.00	34.93	12.70
1.875	66.68	64.00	38.10	12.70
2.000	69.85	65.70	38.10	12.70
2.125	76.20	70.50	42.85	14.28
2.250	79.38	80.00	42.85	14.28
2.375	82.55	79.60	46.02	14.28
2.500	85.73	81.50	46.02	14.28
2.625	85.73	87.30	49.20	15.88
2.750	88.90	90.00	49.20	15.88
3.000	98.43	96.80	52.37	15.88
3.125	101.60	104.00	55.55	19.88
3.250	104.78	104.00	55.55	19.88
3.375	107.95	108.00	55.55	19.88
3.500	111.13	112.00	55.55	19.88
3.625	114.30	114.00	58.72	19.88
3.750	117.48	119.00	58.72	19.88
3.875	120.65	121.00	58.72	19.88
4.000	123.83	124.00	58.72	19.88



P240 with Seat Options



Pac-Seal P240

Compact elastomer diaphragm seal design conforming to EN 12756 (DIN 24960) L1K dimensions. Seals are suitable for bi-directional shaft rotation. P240 seals are supplied with a choice of boot mounted DIN seat type B4, O-Ring mounted DIN short 4S and DIN long 4L seats with anti-rotation pin-slot.

Operating Parameters

Pressure	up to 14 bar
Temperature	-30 to 230°C
Speed	up to 10 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton

Shaft Size ØD (mm)	ØD1 (B4/ 4S/ 4L)	ØD3	L1	L2 (B4/ 4S/ 4L)	L4 (4L)	L5 (4L)
12	23.00	21.70	23.90	8.60	3.00	5.00
14	25.00	24.40	26.40	8.60	3.00	5.00
16	27.00	27.00	26.40	8.60	3.00	5.00
18	33.00	30.60	27.50	10.00	3.00	5.00
20	35.00	33.40	27.50	10.00	3.00	5.00
22	37.00	33.40	27.50	10.00	3.00	5.00
24	39.00	37.80	30.00	10.00	3.00	5.00
25	40.00	39.20	30.00	10.00	3.00	5.00
28	43.00	42.10	32.50	10.00	3.00	5.00
30	45.00	44.00	32.50	10.00	3.00	5.00
32	48.00	45.60	32.50	10.00	3.00	5.00
33	48.00	45.60	32.50	10.00	3.00	5.00
35	50.00	49.30	32.50	10.00	3.00	5.00
38	56.00	52.70	34.00	11.00	4.00	5.00
40	58.00	55.70	34.00	11.00	4.00	5.00
43	61.00	58.60	34.00	11.00	4.00	5.00
45	63.00	61.00	34.00	11.00	4.00	5.00
48	66.00	64.00	34.00	11.00	4.00	5.00
50	70.00	66.10	34.50	13.00	4.00	5.00
53	73.00	70.60	34.50	13.00	4.00	5.00
55	75.00	70.60	34.50	13.00	4.00	5.00
58	78.00	80.00	39.50	13.00	4.00	5.00
60	80.00	80.00	39.50	13.00	4.00	5.00
63	83.00	82.10	39.50	13.00	4.00	5.00
65	85.00	85.00	39.50	13.00	4.00	5.00
68	90.00	90.00	37.20	15.30	4.00	5.00
70	92.00	90.00	44.70	15.30	4.00	5.00
75	97.00	96.80	44.70	15.30	4.00	5.00
80	105.00	104.00	44.30	15.70	4.00	5.00
85	110.00	108.00	44.30	15.70	4.00	5.00
90	115.00	111.00	49.30	15.70	4.00	5.00
95	120.00	119.00	49.30	15.70	4.00	5.00
100	125.00	124.00	49.30	15.70	4.00	5.00

Pac-Seal P300

Robust, hydraulically balanced and narrow profile elastomer diaphragm seal design providing enhanced seal capability and superior seal performance. P300 seals are suitable for common European seal housings. Supplied with boot mounted B2 type seat or optional 1H type centre O-Ring mounted seat.

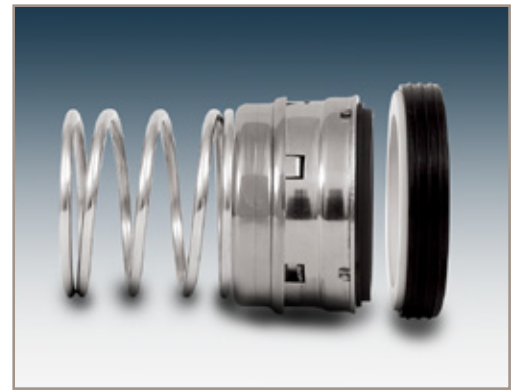
Operating Parameters

Pressure up to 28 bar
Temperature -30 to 230°C
Speed up to 13 m/s

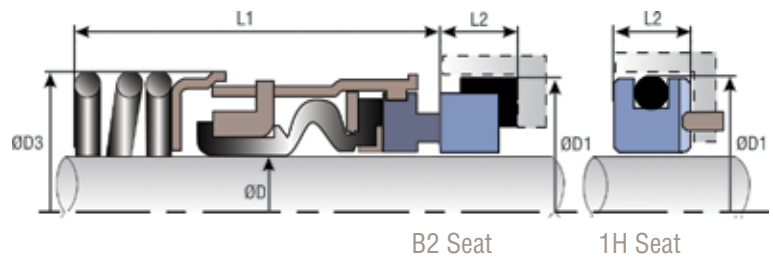
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*1H seat only)
Elastomers Nitrile, EPR, Viton



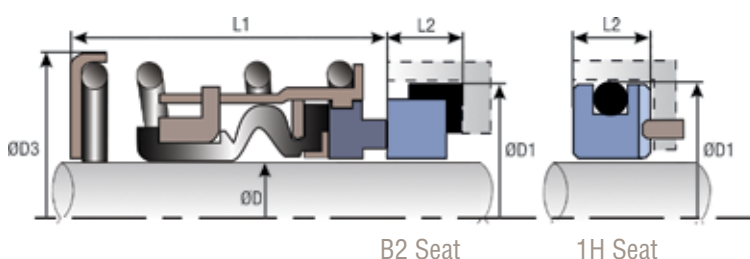
P300 with B2 and 1H Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (B2/ 1H)	ØD3	L1	L2 (B2/ 1H)
12	0.500	27.79	23.90	43.66	8.74
14		30.95	27.07	43.66	10.32
16	0.625	30.95	27.07	43.66	10.32
18		34.15	30.25	43.66	10.32
19	0.750	34.15	30.25	43.66	10.32
20		35.70	33.42	43.66	10.32
22	0.875	37.30	33.42	43.66	10.32
24		40.50	38.10	43.66	10.32
25	1.000	40.50	38.10	43.66	10.32
28	1.125	47.63	41.28	60.33	11.99
30		50.80	46.00	60.33	11.99
32	1.250	50.80	46.00	60.33	11.99
33		53.98	48.68	60.33	11.99
35	1.375	53.98	48.68	60.33	11.99
38	1.500	57.15	51.85	60.33	11.99
40		60.33	58.10	60.33	11.99
	1.625	60.33	58.10	60.33	11.99
43		63.50	61.67	70.64	11.99
45	1.750	63.50	61.67	70.64	11.99
48	1.875	66.68	64.84	70.64	11.99
50	2.000	69.85	68.01	70.64	13.50
53		73.03	72.02	70.64	13.50
	2.125	73.03	72.02	70.64	13.50
55		76.20	75.30	70.64	13.50
	2.250	76.20	75.30	70.64	13.50
60	2.375	79.38	78.37	70.64	13.50
63	2.500	82.55	81.54	70.64	13.50
65	2.625	92.08	86.22	69.85	15.88
70	2.750	95.25	89.40	69.85	15.88
	2.875	98.43	92.57	73.03	15.88
75	3.000	101.60	95.75	73.03	15.88



P320 with B2 and 1H Seat Options



Pac-Seal P320

Robust, hydraulically balanced and short working length elastomer diaphragm seal design providing enhanced seal capability and superior seal performance. P320 seals are suitable for common European seal housings. Supplied with boot mounted B2 type seat or optional 1H type centre O-Ring mounted seat.

Operating Parameters

Pressure up to 28 bar
Temperature -30 to 230°C
Speed up to 13 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*1H seat only)
Elastomers Nitrile, EPR, Viton

Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (B2/ 1H)	ØD3	L1	L2 (B2/ 1H)
12	0.500	27.79	30.20	25.40	8.74
13		27.79	30.20	25.40	8.74
14		30.95	33.37	25.40	10.32
15		30.95	33.37	25.40	10.32
16	0.625	30.95	33.37	25.40	10.32
18		34.15	36.55	25.40	10.32
19	0.750	34.15	36.55	25.40	10.32
20		35.70	39.72	25.40	10.32
22	0.875	37.30	39.72	25.40	10.32
24		40.50	44.30	25.40	10.32
25	1.000	40.50	44.30	25.40	10.32
28	1.125	47.63	49.07	33.34	11.99
30		50.80	53.40	33.34	11.99
32	1.250	50.80	53.40	33.34	11.99
33		53.98	57.58	33.34	11.99
35	1.375	53.98	57.58	33.34	11.99
38	1.500	57.15	60.75	33.34	11.99
40		60.33	67.40	33.34	11.99
	1.625	60.33	67.40	33.34	11.99
43		63.50	71.97	40.48	11.99
45	1.750	63.50	71.97	40.48	11.99
48	1.875	66.68	75.14	40.48	11.99
50	2.000	69.85	78.31	40.48	13.50
53		73.03	82.72	40.48	13.50
	2.125	73.03	82.72	40.48	13.50
55		76.20	86.00	40.48	13.50
	2.250	76.20	86.00	40.48	13.50
60	2.375	79.38	89.00	40.48	13.50
63	2.500	82.55	92.24	40.48	13.50
65	2.625	92.08	97.92	49.21	15.88
70	2.750	95.25	101.10	49.21	15.88
	2.875	98.43	105.27	52.39	15.88
75	3.000	101.60	108.45	52.39	15.88

Pac-Seal P340

Robust, hydraulically balanced and short working length elastomer diaphragm seal design providing enhanced seal capability and superior seal performance. P340 seals are suitable for common American seal housings. Supplied with boot mounted B1 type seat or optional 3H type centre O-Ring mounted seat.

Operating Parameters

Pressure	up to 28 bar
Temperature	-30 to 230°C
Speed	up to 13 m/s

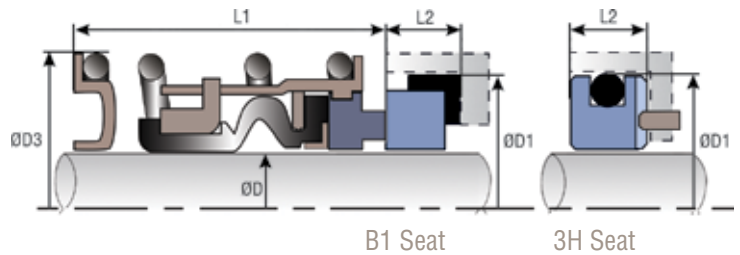
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*3H seat only)
Elastomers	Nitrile, EPR, Viton



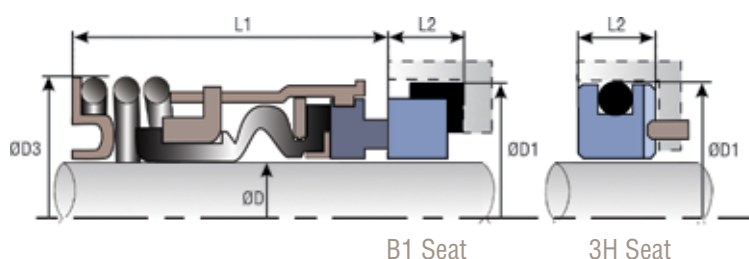
P340 with B1 and 3H Seat Options



Shaft Size DØ (inches)	ØD1 (B1/ 3H)	ØD3	L1	L2 (B1/ 3H)
0.500	25.40	30.14	20.64	7.93
0.625	31.75	33.32	22.23	10.28
0.750	34.93	36.52	22.23	10.28
0.875	38.10	39.72	23.80	10.28
1.000	41.28	45.30	25.40	11.10
1.125	44.44	48.47	26.97	11.10
1.250	47.63	52.80	26.97	11.10
1.375	50.80	55.98	28.58	11.10
1.500	53.98	59.15	28.58	11.10
1.625	60.33	66.96	34.93	12.70
1.750	63.50	70.12	34.93	12.70
1.875	66.68	73.16	38.10	12.70
2.000	69.85	76.48	38.10	12.70
2.125	76.20	82.71	42.85	14.28
2.250	79.38	85.89	42.85	14.28
2.375	82.55	89.06	46.02	14.28
2.500	85.73	92.24	46.02	14.28
2.625	85.73	98.43	49.20	15.88
2.750	88.90	101.60	49.20	15.88
2.875	95.25	104.78	52.37	15.88
3.000	98.43	107.95	52.37	15.88



P350 with B1 and 3H Seat Options



Pac-Seal P350

Robust, hydraulically balanced and narrow profile elastomer diaphragm seal design providing enhanced seal capability and superior seal performance. P350 seals are suitable for common American seal housings. Supplied with boot mounted B1 type seat or optional 3H type centre O-Ring mounted seat.

Operating Parameters

Pressure up to 28 bar
Temperature -30 to 230°C
Speed up to 13 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide.
Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide, Ni-Resist*, Stainless Steel* (*3H seat only)
Elastomers Nitrile, EPR, Viton

Shaft Size ØD (inches)	ØD1 (B1/ 3H)	ØD3	L1	L2 (B1/ 3H)
0.500	25.40	23.80	30.16	7.93
0.625	31.75	27.76	33.32	10.28
0.750	34.93	30.94	33.32	10.28
0.875	38.10	34.11	34.93	10.28
1.000	41.28	38.10	39.67	11.10
1.125	44.44	41.28	41.28	11.10
1.250	47.63	46.02	41.28	11.10
1.375	50.80	48.68	42.85	11.10
1.500	53.98	51.85	42.85	11.10
1.625	60.33	58.10	50.80	12.70
1.750	63.50	61.27	50.80	12.70
1.875	66.68	64.44	53.98	12.70
2.000	69.85	67.21	53.98	12.70
2.125	76.20	72.02	60.33	14.28
2.250	79.38	75.30	60.33	14.28
2.375	82.55	78.30	63.50	14.28
2.500	85.73	81.54	63.50	14.28
2.625	85.73	86.22	69.85	15.88
2.750	88.90	89.40	73.03	15.88
2.875	95.25	92.57	73.03	15.88
3.000	98.43	95.75	73.03	15.88

Pac-Seal P167

Robust, sinusoidal wave spring seal design with set screw drive offering superior performance for a wide range of applications. Seal design conforms to EN 12756 (DIN 24960) L1K dimensions. P167 seal is supplied with type 8L O-Ring mounted DIN long seat having anti-rotation pin-slot as standard.

Operating Parameters

Pressure	up to 25 bar
Temperature	-30 to 180°C
Speed	up to 20 m/s

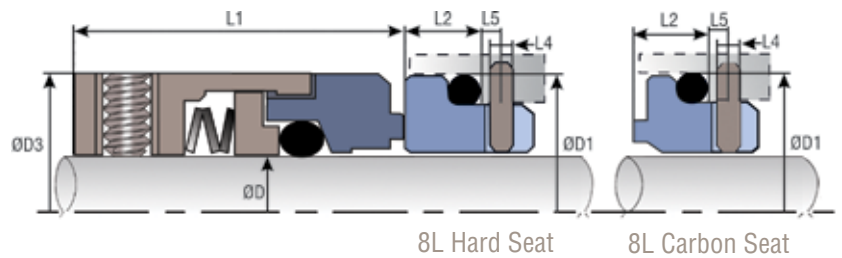
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Carbon, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P167 with 8L Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2	L1 + L2 (L1K)	L4	L5
14	25.00	24.00	25.00	10.00	35.00	3.00	5.00
16	27.00	26.00	25.00	10.00	35.00	3.00	5.00
18	33.00	32.00	26.00	11.50	37.50	3.00	5.00
20	35.00	34.00	26.00	11.50	37.50	3.00	5.00
22	37.00	36.00	26.00	11.50	37.50	3.00	5.00
24	39.00	38.00	28.50	11.50	40.00	3.00	5.00
25	40.00	39.00	28.50	11.50	40.00	3.00	5.00
28	43.00	42.00	31.00	11.50	42.50	3.00	5.00
30	45.00	44.00	31.00	11.50	42.50	3.00	5.00
32	48.00	46.00	31.00	11.50	42.50	3.00	5.00
33	48.00	47.00	31.00	11.50	42.50	3.00	5.00
35	50.00	49.00	31.00	11.50	42.50	3.00	5.00
38	56.00	54.00	31.00	14.00	45.00	4.00	5.00
40	58.00	56.00	31.00	14.00	45.00	4.00	5.00
43	61.00	59.00	31.00	14.00	45.00	4.00	5.00
45	63.00	61.00	31.00	14.00	45.00	4.00	5.00
48	66.00	64.00	31.00	14.00	45.00	4.00	5.00
50	70.00	66.00	32.50	15.00	47.50	4.00	5.00
53	73.00	69.00	32.50	15.00	47.50	4.00	5.00
55	75.00	71.00	32.50	15.00	47.50	4.00	5.00
58	78.00	78.00	37.50	15.00	52.50	4.00	5.00
60	80.00	80.00	37.50	15.00	52.50	4.00	5.00
63	83.00	83.00	37.50	15.00	52.50	4.00	5.00
65	85.00	85.00	37.50	15.00	52.50	4.00	5.00
68	90.00	88.00	34.50	18.00	52.50	4.00	5.00
70	92.00	89.00	42.00	18.00	60.00	4.00	5.00
75	97.00	96.00	42.00	18.00	60.00	4.00	5.00
80	105.00	104.00	41.80	18.20	60.00	4.00	5.00
85	110.00	108.00	41.80	18.20	60.00	4.00	5.00
90	115.00	114.00	46.80	18.20	65.00	4.00	5.00
95	120.00	118.00	47.80	17.20	65.00	4.00	5.00
100	125.00	124.00	47.80	17.20	65.00	4.00	5.00

Pac-Seal P167B

Balanced, sinusoidal wave spring seal design with set screw drive offering superior performance for a wide range of applications. P167B seal is supplied with type 8L O-Ring mounted DIN long seat having anti-rotation pin-slot as standard.

Operating Parameters

Pressure	up to 40 bar
Temperature	-30 to 180°C
Speed	up to 20 m/s

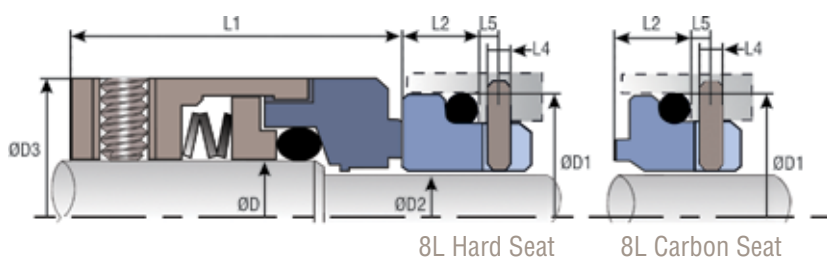
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Carbon, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P167B with 8L Seat



Shaft & Seal Size ØD (mm)	ØD1	ØD2	ØD3	L1	L2	L4	L5
18	25.00	14	32.00	32.50	10.00	3.00	5.00
20	27.00	16	34.00	32.50	10.00	3.00	5.00
22	33.00	18	36.00	33.50	11.50	3.00	5.00
24	35.00	20	38.00	33.50	11.50	3.00	5.00
28	39.00	24	42.00	36.00	11.50	3.00	5.00
30	40.00	25	44.00	36.00	11.50	3.00	5.00
33	43.00	28	47.00	38.50	11.50	3.00	5.00
35	45.00	30	49.00	38.50	11.50	3.00	5.00
38	48.00	33	54.00	38.50	11.50	4.00	5.00
40	50.00	35	56.00	38.50	11.50	4.00	5.00
43	56.00	38	59.00	38.50	14.00	4.00	5.00
45	58.00	40	61.00	38.50	14.00	4.00	5.00
50	63.00	45	66.00	38.50	14.00	4.00	5.00
53	66.00	48	69.00	38.50	14.00	4.00	5.00
55	70.00	50	71.00	42.50	15.00	4.00	5.00
60	75.00	55	80.00	42.50	15.00	4.00	5.00
65	80.00	60	85.00	47.50	15.00	4.00	5.00

Pac-Seal P168

Wave spring seal design with short working length, narrow profile and set screwed seal drive. Used extensively in rotary lobe pumps in food, process and dairy applications. O-Ring mounted short seat type 6N is supplied as standard. DIN long 4L type seat with anti-rotation pin-slot can be supplied.

Operating Parameters

Pressure	up to 12 bar
Temperature	-30 to 180°C
Speed	up to 15 m/s

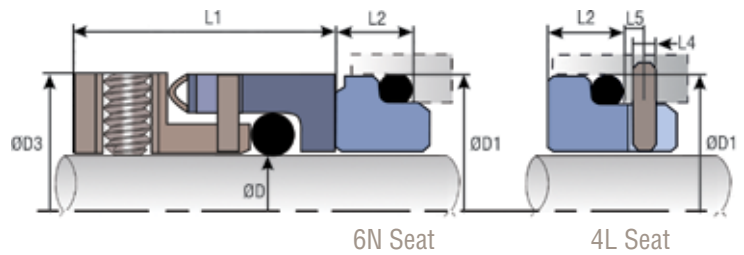
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Stainless Steel, Tungsten Carbide
Stationary Seat	Carbon, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



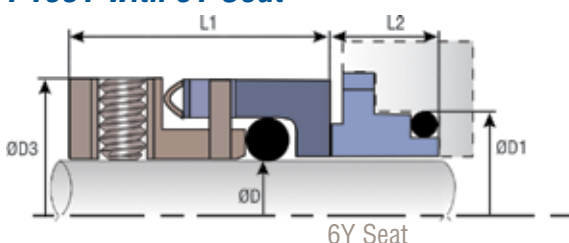
P168 with 6N and 4L Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (6N)	ØD1 (4L)	ØD3	L1	L2 (6N)	L2 (4L)	L4 (4L)	L5 (4L)
	0.625	28.50	-	27.00	19.10	5.32	-	-	-
16		28.50	27.00	27.00	19.10	5.32	8.60	3.00	5.00
	0.750	31.70	-	30.00	19.10	5.32	-	-	-
24		35.40	39.00	34.10	19.10	6.62	10.00	3.00	5.00
28		42.00	43.00	39.00	19.10	6.62	10.00	3.00	5.00
	1.125	41.20	-	39.50	19.10	6.62	-	-	-
30		42.70	45.00	41.00	19.10	6.62	10.00	3.00	5.00
	1.250	44.40	-	42.40	19.10	6.62	-	-	-
32		44.40	48.00	42.40	19.10	6.62	10.00	3.00	5.00
	1.375	47.60	-	45.50	19.10	6.62	-	-	-
35		47.60	50.00	45.50	19.10	6.62	10.00	3.00	5.00
38		53.90	56.00	51.80	21.10	7.12	11.00	4.00	5.00
	1.500	53.90	-	51.80	21.10	7.12	-	-	-
	1.750	60.30	-	58.20	21.10	7.12	-	-	-
	1.875	63.50	-	61.40	21.10	7.12	-	-	-
50		63.90	70.00	61.90	21.10	7.12	13.00	4.00	5.00
	2.000	66.60	-	64.60	21.10	8.62	-	-	-
	2.125	73.02	-	71.00	22.10	8.62	-	-	-
54		73.95	-	71.00	22.10	8.62	-	-	-
55		75.00	75.00	72.00	22.10	8.62	13.00	4.00	5.00
63		83.00	83.00	79.30	25.80	7.83	13.00	4.00	5.00
	2.500	88.90	-	79.30	25.80	7.83	-	-	-
	2.750	95.25	-	90.80	25.80	7.83	-	-	-
	2.875	98.43	-	94.00	25.80	7.83	-	-	-
75		100.40	97.00	96.00	25.80	7.83	15.30	4.00	5.00
	3.000	101.60	-	96.90	25.80	7.83	-	-	-
80		104.00	105.00	101.00	25.80	7.83	15.70	4.00	5.00
95		125.00	120.00	116.00	25.80	7.83	15.70	4.00	5.00
100		130.00	125.00	121.00	25.80	7.83	15.70	4.00	5.00



P168Y with 6Y Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
30.00	40.00	41.00	19.10	9.30
35.00	44.50	45.50	19.10	9.20
50.00	62.00	61.90	21.10	10.40
70.00	85.00	88.90	25.80	14.10
80.00	95.00	101.00	25.80	16.20

Pac-Seal P168Y

Wave spring seal design with short working length, narrow profile and set screwed seal drive. Used extensively in positive displacement pumps in food, process, dairy and brewery applications. O-Ring mounted seat type 6Y with three flats is supplied as standard.

Operating Parameters

Pressure	up to 12 bar
Temperature	-30 to 230°C
Speed	up to 15 m/s

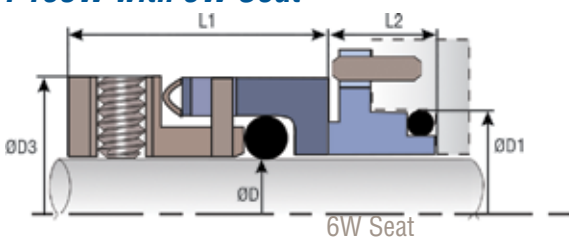
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Stainless Steel , Tungsten Carbide
Stationary Seat	Carbon, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



P168W with 6W Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
20.00	30.00	31.00	19.10	10.70
30.00	41.30	41.00	19.10	10.90
35.00	46.95	45.50	19.10	12.20
45.00	58.26	58.20	21.10	11.60
55.00	69.55	72.00	22.10	13.00
75.00	92.15	96.00	25.80	14.50

Pac-Seal P168W

Wave spring seal design with short working length, narrow profile and set screwed seal drive. Used extensively in rotary lobe pumps in food, process, dairy and brewery applications. O-Ring mounted seat type 6W with three anti-rotation pin-slots is supplied as standard.

Operating Parameters

Pressure	up to 12 bar
Temperature	-30 to 230°C
Speed	up to 15 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Stainless Steel , Tungsten Carbide
Stationary Seat	Carbon, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton

Multi Spring

Pac-Seal P40

Robust and balanced, narrow profile multiple spring O-Ring mounted seal. P40 is a high performance and non-clogging, set screw driven seal design with protected springs away from product. Seal is offered with a choice of O-Ring DIN short 4S and DIN long 4L seats for metric sizes and 3H seats for imperial sizes.

Operating Parameters

Pressure up to 30 bar
Temperature -30 to 180°C
Speed up to 25 m/s

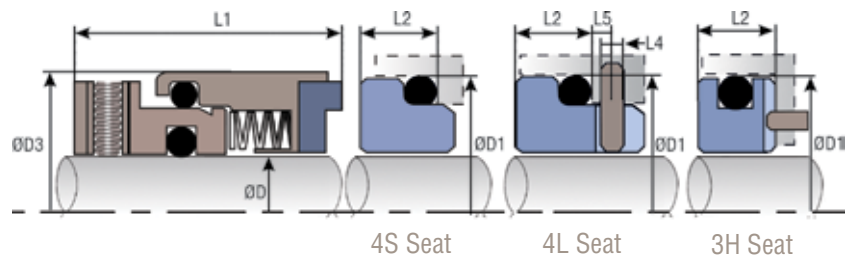
Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat Ceramic, Silicone Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



P40 with Seat Options



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (4S/ 4L)	ØD1 (3H)	ØD3	L1	L2 (4S/ 4L)	L2 (3H)	L4 (4L)	L5 (4L)
18		33.00	-	32.50	30.00	10.00	-	3.00	5.00
	0.750	-	34.93	33.50	30.00	-	10.28	-	-
20		35.00	-	34.50	30.00	10.00	-	3.00	5.00
22		37.00	-	36.50	30.00	10.00	-	3.00	5.00
	0.875	-	37.30	36.50	30.00	-	10.32	-	-
24		39.00	-	38.50	30.00	10.00	-	3.00	5.00
25		40.00	-	39.60	30.00	10.00	-	3.00	5.00
	1.000	-	41.28	39.60	30.00	-	11.10	-	-
28		43.00	-	42.90	32.50	10.00	-	3.00	5.00
	1.125	-	44.44	42.90	32.50	-	11.10	-	-
30		45.00	-	44.50	32.50	10.00	-	3.00	5.00
	1.250	-	47.63	46.00	32.50	-	11.10	-	-
32		48.00	-	46.00	32.50	10.00	-	3.00	5.00
33		48.00	-	47.00	32.50	10.00	-	3.00	5.00
	1.375	-	50.80	49.30	32.50	-	11.10	-	-
35		50.00	-	49.30	32.50	10.00	-	3.00	5.00
38		56.00	-	52.80	34.00	11.00	-	4.00	5.00
	1.500	-	53.98	52.80	34.00	-	11.10	-	-
40		58.00	-	56.00	34.00	11.00	-	4.00	5.00
	1.625	-	60.33	56.00	34.00	-	12.70	-	-
43		61.00	-	59.00	34.00	11.00	-	4.00	5.00
	1.750	-	63.50	59.00	34.00	-	12.70	-	-
45		63.00	-	59.00	34.00	11.00	-	4.00	5.00
	1.875	-	66.68	62.40	34.00	-	12.70	-	-
48		66.00	-	62.40	34.00	11.00	-	4.00	5.00
50		70.00	-	65.60	34.50	13.00	-	4.00	5.00
	2.000	-	69.85	65.60	34.50	-	12.70	-	-
53		73.00	-	68.80	34.50	13.00	-	4.00	5.00
	2.125	-	76.20	70.80	34.50	-	14.28	-	-
55		75.00	-	70.80	34.50	13.00	-	4.00	5.00
	2.250	-	79.38	71.90	34.50	-	14.28	-	-
58		78.00	-	75.20	34.50	13.00	-	4.00	5.00
60		80.00	-	75.20	34.50	13.00	-	4.00	5.00
	2.375	-	82.55	75.20	34.50	-	14.28	-	-
63		83.00	-	78.30	34.50	13.00	-	4.00	5.00
	2.500	-	85.73	78.30	34.50	-	14.28	-	-
65		85.00	-	84.20	36.00	13.00	-	4.00	5.00
	2.625	-	85.73	84.20	36.00	-	14.28	-	-
	2.750	-	88.90	87.40	36.00	-	15.88	-	-
70		92.00	-	87.40	36.00	15.30	-	4.00	5.00
	2.875	-	95.25	90.60	36.00	-	15.88	-	-
75		97.00	-	93.70	36.00	15.30	-	4.00	5.00
	3.000	-	98.43	93.70	36.00	-	15.88	-	-



Pac-Seal P118

Compact, enclosed elastomer bellows seal design with a wide stationary seat configuration. Extremely short working length makes P118 seal ideal for equipment with limited axial space. Seal is supplied with standard boot mounted B8 type stationary seat.

Operating Parameters

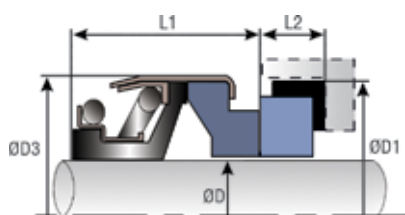
Pressure	up to 5 bar
Temperature	-30 to 230°C
Speed	up to 12 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components	Stainless Steel
Rotary Face	Carbon, Silicon Carbide, Tungsten Carbide
Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton

P118 with B8 Seat



Shaft Size ØD (mm)	ØD1	ØD3	L1	L2
8	26.00	24.00	11.00	8.00
10	26.00	24.00	11.00	8.00
11	26.00	24.00	11.00	8.00
12	26.00	24.00	11.00	8.00
13	26.00	24.00	13.00	8.00
14	35.00	32.00	13.00	8.00
15	38.00	35.00	13.00	8.00
16	38.00	35.00	13.00	8.00
17	42.00	39.00	13.00	8.00
18	42.00	39.00	13.00	8.00
19	42.00	39.00	13.00	8.00
20	42.00	39.00	13.00	8.00
22	45.00	42.00	13.00	10.00
23	50.00	47.00	14.00	10.00
24	50.00	47.00	14.00	10.00
25	50.00	47.00	14.00	10.00
27	50.00	47.00	15.00	10.00
28	57.00	54.00	15.00	10.00
30	57.00	54.00	15.00	10.00
32	57.00	54.00	15.00	10.00
35	63.00	60.00	16.00	10.00
38	68.00	65.00	17.00	12.00
40	68.00	65.00	17.00	12.00
45	73.00	70.00	20.00	12.00
50	88.00	85.00	23.00	15.00
55	88.00	85.00	23.00	15.00
60	110.00	105.00	30.00	15.00
65	110.00	105.00	30.00	15.00
70	110.00	105.00	32.00	15.00

Special

Pac-Seal P160

Compact and unitised, sleeve mounted elastomer bellows seal design with elastomer shaft drive ring. Popular seal for low pressure and general duties on small shafts. Seal is supplied with standard boot mounted B6 type seat.

Operating Parameters

Pressure up to 6 bar
Temperature -30 to 230°C
Speed up to 13 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

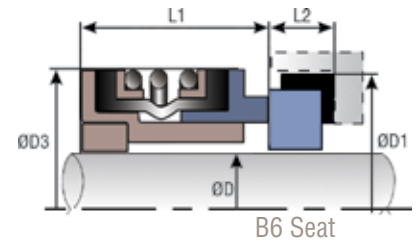
Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide
Stationary Seat Ceramic, Silicon Carbide
Elastomers Nitrile, EPR, Viton

Shaft Size ØD (inches)	ØD1	ØD3	L1	L2
0.375	22.23	23.80	16.02	6.20
0.500	25.40	26.97	16.60	6.20
0.625	31.75	30.94	18.71	10.29
0.750	34.93	34.11	18.71	10.29
1.000	41.28	44.00	20.63	11.10



P160 with B6 Seat



Pac-Seal P161

Compact and unitised, sleeve mounted elastomer bellows seal design with elastomer shaft drive ring. Similar to Pac-Seal P160, but to suit common American housing dimensions. Popular seal for low pressure and general duties on small shafts. Seal is supplied with boot mounted B65 type seat.

Operating Parameters

Pressure up to 6 bar
Temperature -30 to 230°C
Speed up to 13 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

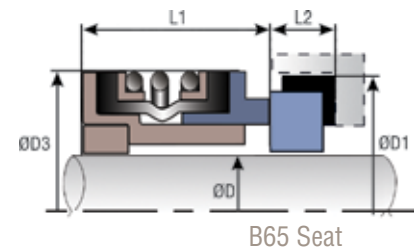
Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide
Stationary Seat Ceramic, Silicon Carbide
Elastomers Nitrile, EPR, Viton

Shaft Size ØD (inches)	ØD1	ØD3	L1	L2
0.375	25.40	26.97	16.66	7.92
0.500	25.40	26.97	16.66	7.92
0.625	31.75	30.94	18.24	10.31
0.750	34.93	34.11	18.24	10.31
1.000	41.28	44.00	20.62	11.10

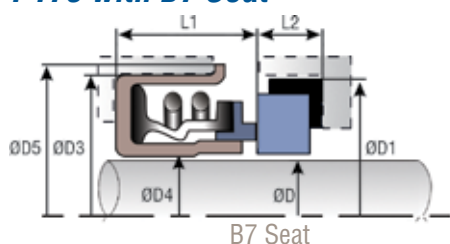


P161 with B65 Seat





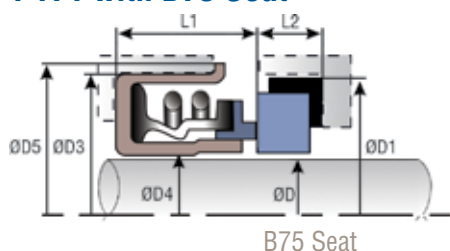
P170 with B7 Seat



Shaft Size ØD (inches)	ØD1	ØD3	ØD4	ØD5	L1	L2
0.500	25.00	28.56	14.00	31.70	13.20	5.00
0.625	31.00	36.45	18.00	41.27	14.80	5.00
0.750	35.00	40.00	21.00	43.70	15.50	5.00
1.125	48.00	52.00	32.00	57.15	19.00	8.00



P171 with B75 Seat



Shaft Size ØD (inches)	ØD1	ØD3	ØD4	ØD5	L1	L2
0.500	25.40	28.56	14.10	31.70	13.79	7.93
0.625	31.75	36.45	17.10	41.27	15.36	10.31
0.750	34.93	40.00	20.15	43.70	15.36	10.31

Pac-Seal P170

Unitised stationary elastomer bellows seal design for small coolant pump applications. Compact design providing flexibility in shaft misalignment. Clearance between shaft and seal parts allows one size of seal to be used on several shaft sizes. Seal is supplied with boot mounted B7 type seat.

Operating Parameters

Pressure up to 6 bar
Temperature -30 to 230°C
Speed up to 13 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide
Stationary Seat Ceramic, Silicon Carbide
Elastomers Nitrile, EPR, Viton

Pac-Seal P171

Unitised stationary elastomer bellows seal design for small coolant pump applications. Compact design providing flexibility in shaft misalignment. Clearance between shaft and seal parts allows one size of seal to be used on several shaft sizes. Seal is supplied with boot mounted B75 type seat.

Operating Parameters

Pressure up to 6 bar
Temperature -30 to 230°C
Speed up to 13 m/s

Actual performance limits depend on specific seal material, size, speed, pressure and media. Consult your Flowserve representative for any specific seal limits.

Materials of Construction

Metal Components Stainless Steel
Rotary Face Carbon, Silicon Carbide
Stationary Seat Ceramic, Silicon Carbide
Elastomers Nitrile, EPR, Viton

Special

Pac-Seal P23

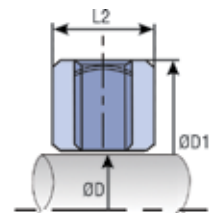
Stainless Steel set screwed locking collar (clamp ring) for setting required seal working length.

Materials of Construction

Metal Components Stainless Steel



P23 Locking Collar



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1	L2	Number of Grub Screws	Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1	L2	Number of Grub Screws
10	0.375	19.00	7.50	3 x 120°	50	2.000	65.00	10.00	3 x 120°
12	0.500	21.00	7.50	3 x 120°	53		68.00	10.00	3 x 120°
14		23.00	7.50	3 x 120°		2.125	68.00	10.00	3 x 120°
15		24.00	7.50	3 x 120°	55		70.00	10.00	3 x 120°
16	0.625	25.00	7.50	3 x 120°		2.250	70.00	10.00	3 x 120°
18		31.00	7.50	3 x 120°	58		77.00	10.00	3 x 120°
	0.750	31.00	7.50	3 x 120°	60	2.375	79.00	10.00	6 X 60°
20		33.00	7.50	3 x 120°		2.500	82.00	10.00	6 X 60°
22	0.875	35.00	7.50	3 x 120°	65	2.625	84.00	12.00	6 X 60°
24		37.00	7.50	3 x 120°	68		87.00	12.00	6 X 60°
25	1.000	38.00	10.00	3 x 120°	70	2.750	89.00	12.00	6 X 60°
28	1.125	41.00	10.00	3 x 120°		2.875	95.00	12.00	6 X 60°
30		43.00	10.00	3 x 120°	75	3.000	98.00	12.00	6 X 60°
32	1.250	45.00	10.00	3 x 120°	80	3.125	103.00	12.00	6 X 60°
33		46.00	10.00	3 x 120°		3.250	103.00	12.00	6 X 60°
35	1.375	48.00	10.00	3 x 120°	85	3.375	108.00	12.00	6 X 60°
38	1.500	53.00	10.00	3 x 120°	90	3.500	113.00	12.00	6 X 60°
40		55.00	10.00	3 x 120°		3.625	113.00	12.00	6 X 60°
	1.625	55.00	10.00	3 x 120°	95	3.750	118.00	12.00	6 X 60°
43		58.00	10.00	3 x 120°		3.875	121.00	12.00	6 X 60°
45	1.750	60.00	10.00	3 x 120°	100		123.00	12.00	6 X 60°
48	1.875	63.00	10.00	3 x 120°		4.000	123.00	15.00	8 X 40°

Pac-Seal ***Stationary Seat Options***



Pac-Seal 8N / 8B / 2N / 2D / 3N / 3D / 9N

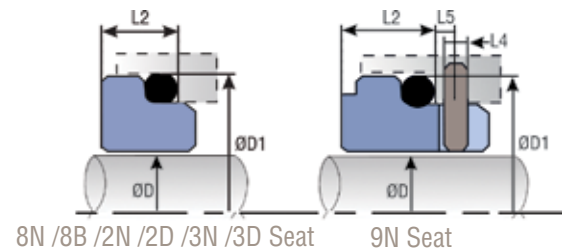
Pac-Seal O-Ring mounted standard stationary seat designs to suit various housings and working length dimensions.

Materials of Construction

Stationary Seat Carbon*, Ceramic, Silicon Carbide, Tungsten Carbide (*Not 8N)
Elastomers Nitrile, EPR, Viton



8N / 8B / 2N / 2D / 3N / 3D / 9N Seat



Shaft Size (mm)	Shaft Size (inches)	ØD1 (8N)	L2 (8N)	ØD1 (8B)	L2 (8B)	ØD1 (2N)	L2 (2N)	ØD1 (2D)	L2 (2D)	ØD1 (3N)	L2 (3N)	ØD1 (3D)	L2 (3D)	ØD1 (9N)	L2 (9N)	L4 (9N)	L5 (9N)
10		19.20	6.60	19.20	7.10	18.10	5.50	21.00	7.00	18.10	5.50	21.00	7.00	-	-	4.00	4.00
11		-	-	-	-	20.60	5.50	-	-	20.60	5.50	-	-	-	-	4.00	4.00
12		21.60	5.60	21.60	7.60	20.60	5.50	23.00	7.00	20.60	5.50	23.00	7.00	-	-	4.00	4.00
13		-	-	-	-	23.10	6.00	-	-	23.10	6.00	-	-	-	-	4.00	4.00
14		24.60	5.60	24.60	7.60	23.10	6.00	25.00	7.00	23.10	6.00	25.00	7.00	-	-	4.00	4.00
15		24.60	6.60	24.60	8.60	26.90	7.00	-	-	26.90	7.00	-	-	-	-	4.00	4.00
16	0.625	28.00	7.50	28.00	9.00	26.90	7.00	27.00	7.00	26.90	7.00	27.00	7.00	28.57	9.00	4.00	4.00
17		-	-	-	-	26.90	7.00	-	-	26.90	7.00	-	-	-	-	4.00	4.00
18		30.00	8.00	30.00	10.00	30.90	8.00	33.00	10.00	30.90	8.00	33.00	10.00	-	-	4.00	4.00
19	0.750	31.00	7.50	31.00	9.00	30.90	8.00	-	-	30.90	8.00	-	-	31.75	9.00	4.00	4.00
20		35.00	7.50	35.00	9.50	30.90	8.00	35.00	10.00	30.90	8.00	35.00	10.00	33.32	9.00	4.00	4.00
21		-	-	-	-	35.40	8.00	-	-	35.40	8.00	-	-	-	-	4.00	4.00
22	0.875	35.00	7.50	35.00	9.50	35.40	8.00	37.00	10.00	35.40	8.00	37.00	10.00	34.93	9.00	4.00	4.00
23		-	-	-	-	35.40	8.00	-	-	35.40	8.00	-	-	-	-	4.00	4.00
24		38.00	7.50	38.00	9.50	35.40	8.00	39.00	10.00	35.40	8.00	39.00	10.00	-	-	4.00	4.00
25	1.000	38.00	7.50	38.00	9.50	38.20	8.50	40.00	10.00	38.20	8.50	40.00	10.00	39.85	10.00	4.00	4.00
26		40.00	8.00	40.00	10.00	38.20	8.50	-	-	-	-	-	-	-	-	4.00	4.00
28		42.00	9.00	42.00	11.00	43.30	9.00	43.00	10.00	43.30	9.00	43.00	10.00	43.05	10.00	4.00	4.00
	1.125	-	-	-	-	-	-	-	-	-	-	-	-	43.05	10.00	4.00	4.00
30		45.00	10.50	45.00	11.00	43.30	9.00	45.00	10.00	43.30	9.00	45.00	10.00	44.63	10.00	4.00	4.00
32	1.250	48.00	10.50	48.00	11.00	43.30	9.00	48.00	10.00	43.30	9.00	48.00	10.00	46.32	10.00	4.00	4.00
33		50.00	11.00	-	-	53.50	11.50	48.00	10.00	53.50	9.00	48.00	10.00	-	-	4.00	4.00
35	1.375	52.00	11.00	52.00	11.50	53.50	11.50	50.00	10.00	53.50	11.50	50.00	10.00	49.48	10.00	4.00	4.00
38	1.500	55.00	10.30	55.00	11.50	60.50	11.50	56.00	13.00	60.50	11.50	56.00	13.00	52.56	10.00	4.00	4.00
40		58.00	10.80	58.00	11.50	60.50	11.50	58.00	13.00	60.50	11.50	58.00	13.00	54.25	10.00	4.00	4.00
	1.625	-	-	-	-	-	-	-	-	-	-	-	-	55.83	10.00	4.00	4.00
42		62.00	12.00	62.00	14.30	60.50	11.50	-	-	-	-	-	-	55.83	10.00	4.00	4.00
43		62.00	12.00	62.00	14.30	60.50	11.50	61.00	13.00	-	-	-	-	-	-	4.00	4.00
44		-	-	-	-	65.50	11.50	-	-	-	-	-	-	59.02	10.00	4.00	4.00
45	1.750	64.00	11.60	64.00	14.30	65.50	11.50	63.00	13.00	-	-	-	-	59.02	10.00	4.00	4.00
48	1.875	68.40	11.60	68.40	14.30	65.50	11.50	66.00	13.00	-	-	-	-	-	-	4.00	4.00
50		69.30	11.60	69.30	14.30	72.50	11.50	70.00	14.00	-	-	-	-	65.37	10.00	4.00	4.00
	2.000	-	-	-	-	-	-	-	-	-	-	-	-	66.85	10.00	4.00	4.00
53		-	-	-	-	-	-	73.00	14.00	-	-	-	-	-	-	4.00	4.00
	2.125	-	-	-	-	-	-	-	-	-	-	-	-	70.03	10.00	4.00	4.00
55		75.40	13.30	75.40	15.30	72.50	11.50	75.00	14.00	-	-	-	-	70.03	10.00	4.00	4.00
58		78.40	13.30	78.40	15.30	-	-	78.00	14.00	-	-	-	-	-	-	4.00	4.00
	2.250	-	-	-	-	-	-	-	-	-	-	-	-	73.20	10.00	4.00	4.00
60	2.375	80.40	13.30	80.40	15.30	79.30	11.50	80.00	14.00	-	-	-	-	76.38	10.00	4.00	4.00
63		-	-	-	-	-	-	83.00	14.00	-	-	-	-	-	-	4.00	4.00
	2.500	-	-	-	-	-	-	-	-	-	-	-	-	79.56	10.00	4.00	4.00
65		85.40	13.00	85.40	15.30	84.50	11.50	85.00	14.00	-	-	-	-	81.23	10.00	4.00	4.00
68		91.50	13.70	91.50	16.00	-	-	90.00	16.00	-	-	-	-	-	-	4.00	4.00
	2.625	-	-	-	-	-	-	-	-	-	-	-	-	82.73	10.00	4.00	4.00
70	2.750	92.00	13.00	92.00	15.30	89.50	11.50	92.00	16.00	-	-	-	-	85.90	10.00	4.00	4.00
	2.875	-	-	-	-	-	-	-	-	-	-	-	-	89.08	10.00	4.00	4.00
75		99.00	14.00	99.00	15.30	94.50	11.50	97.00	16.00	-	-	-	-	90.77	10.00	4.00	4.00
	3.000	-	-	-	-	-	-	-	-	-	-	-	-	95.43	10.00	4.00	4.00
80		104.00	15.00	104.00	16.30	99.50	11.50	105.00	18.00	-	-	-	-	100.29	10.00	4.00	4.00
	3.250	-	-	-	-	-	-	-	-	-	-	-	-	101.78	10.00	4.00	4.00
85	3.375	109.00	14.80	-	-	105.50	13.50	110.00	18.00	-	-	-	-	104.77	10.00	4.00	4.00
90	3.500	114.00	14.80	-	-	111.50	13.50	115.00	18.00	-	-	-	-	109.82	10.00	4.00	4.00
95		120.30	15.80	-	-	116.50	13.50	120.00	18.00	-	-	-	-	114.30	10.00	4.00	4.00
100	4.000	123.30	15.80	-	-	119.50	13.50	125.00	18.00	-	-	-	-	119.33	10.00	4.00	4.00

Pac-Seal 8S / 8L

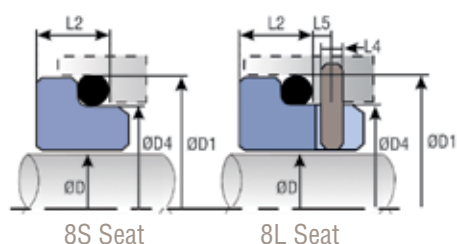
O-Ring mounted stationary seats to suit DIN housing sizes. Seats are designed to provide different axial length dimensions for achieving required seal working lengths. 8S is DIN short seat and 8L is DIN long seat with pin-slot feature. Commonly used with Pac-Seal P140 and P190 series seals.

Materials of Construction

Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton



8S / 8L Seat



Shaft Size ØD (mm)	ØD1 (8S/8L)	ØD4 (8S/8L)	L2 (8S)	L2 (8L)	L4 (8L)	L5 (8L)
10	21.00	16.42	6.60	10.00	3.00	5.00
12	23.00	18.42	6.60	10.00	3.00	5.00
14	25.00	20.42	6.60	10.00	3.00	5.00
16	27.00	22.42	6.60	10.00	3.00	5.00
18	33.00	26.60	7.50	11.50	3.00	5.00
20	35.00	28.60	7.50	11.50	3.00	5.00
22	37.00	30.60	7.50	11.50	3.00	5.00
24	39.00	32.60	7.50	11.50	3.00	5.00
25	40.00	33.60	7.50	11.50	3.00	5.00
28	43.00	36.60	7.50	11.50	3.00	5.00
30	45.00	38.60	7.50	11.50	3.00	5.00
32	48.00	41.60	7.50	11.50	3.00	5.00
33	48.00	41.60	7.50	11.50	3.00	5.00
35	50.00	43.80	7.50	11.50	3.00	5.00
38	56.00	48.80	9.00	14.00	4.00	5.00
40	58.00	50.80	9.00	14.00	4.00	5.00
43	61.00	53.80	9.00	14.00	4.00	5.00
45	63.00	55.80	9.00	14.00	4.00	5.00
48	66.00	58.80	9.00	14.00	4.00	5.00
50	70.00	61.25	9.50	15.00	4.00	5.00
53	73.00	64.25	11.00	15.00	4.00	5.00
55	75.00	66.25	11.00	15.00	4.00	5.00
58	78.00	69.25	11.00	15.00	4.00	5.00
60	80.00	71.25	11.00	15.00	4.00	5.00
63	83.00	74.25	11.00	15.00	4.00	5.00
65	85.00	76.25	11.00	15.00	4.00	5.00
68	90.00	80.50	11.30	18.00	4.00	5.00
70	92.00	82.60	11.30	18.00	4.00	5.00
75	97.00	87.60	11.30	18.00	4.00	5.00
80	105.00	94.70	12.00	18.20	4.00	5.00
85	110.00	99.70	14.00	18.20	4.00	5.00
90	115.00	104.70	14.00	18.20	4.00	5.00
95	120.00	109.70	14.00	17.20	4.00	5.00
100	125.00	114.70	14.00	17.20	4.00	5.00

Pac-Seal 4S / 4L

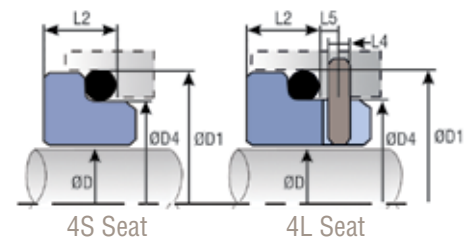
O-Ring mounted stationary seats to suit DIN housing sizes and offering alternative axial length dimensions to Pac-Seal 8S/8L stationary seats. 4S is DIN short seat and 4L is DIN long seat with anti-rotation pin-slot feature. Widely used with Pac-Seal P40, P240 and P250 seal designs.

Materials of Construction

- Stationary Seat** Ceramic, Silicon Carbide, Tungsten Carbide
- Elastomers** Nitrile, EPR, Viton



4S / 4L Seat



Shaft Size ØD (mm)	ØD1 (4S/4L)	ØD4 (4S/4L)	L2 (4S/4L)	L4 (4L)	L5 (4L)
10	21.00	16.42	8.60	3.00	5.00
12	23.00	18.42	8.60	3.00	5.00
14	25.00	20.42	8.60	3.00	5.00
16	27.00	22.42	8.60	3.00	5.00
18	33.00	26.60	10.00	3.00	5.00
20	35.00	28.60	10.00	3.00	5.00
22	37.00	30.60	10.00	3.00	5.00
24	39.00	32.60	10.00	3.00	5.00
25	40.00	33.60	10.00	3.00	5.00
28	43.00	36.60	10.00	3.00	5.00
30	45.00	38.60	10.00	3.00	5.00
32	48.00	41.60	10.00	3.00	5.00
33	48.00	41.60	10.00	3.00	5.00
35	50.00	43.80	10.00	3.00	5.00
38	56.00	48.80	11.00	4.00	5.00
40	58.00	50.80	11.00	4.00	5.00
43	61.00	53.80	11.00	4.00	5.00
45	63.00	55.80	11.00	4.00	5.00
48	66.00	58.80	11.00	4.00	5.00
50	70.00	61.25	13.00	4.00	5.00
53	73.00	64.25	13.00	4.00	5.00
55	75.00	66.25	13.00	4.00	5.00
58	78.00	69.25	13.00	4.00	5.00
60	80.00	71.25	13.00	4.00	5.00
63	83.00	74.25	13.00	4.00	5.00
65	85.00	76.25	13.00	4.00	5.00
68	90.00	80.50	15.30	4.00	5.00
70	92.00	82.60	15.30	4.00	5.00
75	97.00	87.60	15.30	4.00	5.00
80	105.00	94.70	15.70	4.00	5.00
85	110.00	99.70	15.70	4.00	5.00
90	115.00	104.70	15.70	4.00	5.00
95	120.00	109.70	15.70	4.00	5.00
100	125.00	114.70	15.70	4.00	5.00



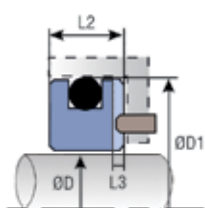
Pac-Seal 1H / 3H

Centre O-Ring mounted, H configuration stationary seat. Short working length seat design providing optional anti-rotation pin-slot feature. 1H seat is to suit popular European housings and 3H to suit common American housings.

Materials of Construction

Stationary Seat	Ceramic, Stainless Steel, Ni-Resist, Silicon Carbide, Tungsten Carbide
Elastomers	Nitrile, EPR, Viton

1H / 3H Seat



Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (1H)	L2 (1H)	L3 (1H)	Slot Width (1H)	ØD1 (3H)	L2 (3H)	L3 (3H)	Slot Width (3H)
10	0.375	24.60	8.74	1.60	4.00	20.62	7.93	1.60	4.00
12		27.79	8.74	1.60	4.00	-	-	-	-
16	0.500	27.79	8.74	1.60	4.00	25.40	7.93	1.60	4.00
18	0.625	30.95	10.32	2.00	4.00	31.75	10.28	2.00	4.00
19		34.15	10.32	2.00	4.00	-	-	-	-
20	0.750	34.15	10.32	2.00	4.00	34.93	10.28	2.00	4.00
22		35.70	10.32	2.00	4.00	-	-	-	-
22	0.875	37.30	10.32	2.00	4.00	37.30	10.32	2.00	4.00
25	1.000	40.50	10.32	2.00	4.00	41.28	11.10	2.00	4.00
28		47.63	11.99	2.35	4.50	-	-	-	-
30	1.125	47.63	11.99	2.35	4.50	44.44	11.10	2.35	4.50
32		50.80	11.99	2.35	4.50	-	-	-	-
32	1.250	50.80	11.99	2.35	4.50	47.63	11.10	2.35	4.50
33		53.98	11.99	2.35	4.50	-	-	-	-
35	1.375	53.98	11.99	2.35	4.50	50.80	11.10	2.35	4.50
38	1.500	57.15	11.99	2.35	4.50	53.98	11.10	2.35	4.50
40		60.33	11.99	2.35	4.50	-	-	-	-
43	1.625	60.33	11.99	2.35	4.50	60.33	12.70	2.35	4.50
45		63.50	11.99	2.35	4.50	-	-	-	-
45	1.750	63.50	11.99	2.35	4.50	63.50	12.70	2.35	4.50
48	1.875	66.68	11.99	2.35	4.50	66.68	12.70	2.35	4.50
50		69.85	13.50	2.35	4.50	-	-	-	-
53	2.000	69.85	13.50	2.35	4.50	69.85	12.70	2.35	4.50
55		73.03	13.50	2.35	4.50	-	-	-	-
55	2.125	73.03	13.50	2.35	4.50	76.20	14.28	2.35	4.50
55		76.20	13.50	2.35	4.50	-	-	-	-
60	2.250	76.20	13.50	2.35	4.50	79.38	14.28	2.35	4.50
60	2.375	79.38	13.50	2.35	4.50	82.55	14.28	2.35	4.50
65	2.500	82.55	13.50	2.35	4.50	85.73	14.28	2.35	4.50
65		92.08	15.88	2.75	5.50	-	-	-	-
70	2.625	92.08	15.88	2.75	5.50	85.73	14.28	2.75	5.50
70	2.750	95.25	15.88	2.75	5.50	88.90	15.88	2.75	5.50
75	2.875	98.43	15.88	2.75	5.50	95.25	15.88	2.75	5.50
75		101.60	15.88	2.75	5.50	-	-	-	-
80	3.000	101.60	15.88	2.75	5.50	98.43	15.88	2.75	5.50
80	3.125	111.13	19.88	3.70	5.50	101.60	19.88	3.70	5.50
85	3.250	114.30	19.88	3.70	7.00	104.78	19.88	3.70	7.00
85	3.375	117.48	19.88	3.70	7.00	107.95	19.88	3.70	7.00
90	3.500	120.65	19.88	3.70	7.00	111.13	19.88	3.70	7.00
95	3.625	123.83	19.88	3.70	7.00	114.30	19.88	3.70	7.00
95	3.750	127.00	19.88	3.70	7.00	117.48	19.88	3.70	7.00
95	3.875	130.17	19.88	3.70	7.00	-	-	-	-
100	4.000	133.35	19.88	3.70	7.00	123.83	19.88	3.70	7.00

Pac-Seal B1 / B2 / B3 / B4 / B5 / B9

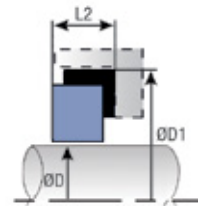
Pac-Seal boot mounted standard stationary seat designs to suit various housings and working length dimensions.

Materials of Construction

Stationary Seat Ceramic, Silicon Carbide, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



B1 / B2 / B3 / B4 / B5 / B9 Seat



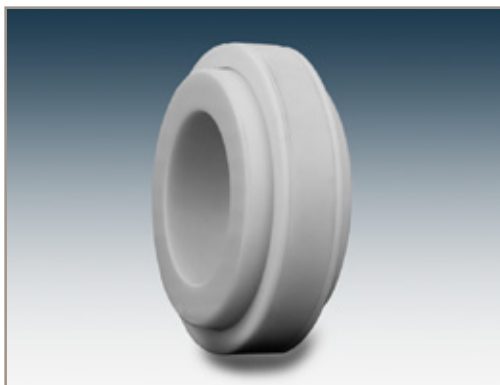
Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1 (B1/B3)	L2 (B1/B3)	ØD1 (B2/B5)	L2 (B2/B5)	ØD1 (B9)	L2 (B9)	ØD1 (B4)	L2 (B4)
10	0.375	22.23	7.93	24.60	8.74	-	-	-	-
12		22.23	7.93	24.60	8.74	21.00	6.60	21.00	8.60
13	0.500	25.40	7.93	27.79	8.74	23.00	6.60	23.00	8.60
14		25.40	7.93	27.79	8.74	-	-	-	-
15		31.75	10.28	30.95	10.32	25.00	6.60	25.00	8.60
16	0.625	31.75	10.28	30.95	10.32	27.00	6.60	27.00	8.60
18		31.75	10.28	30.95	10.32	-	-	-	-
20	0.750	34.93	10.28	34.15	10.32	27.00	6.60	27.00	8.60
22		34.93	10.28	34.15	10.32	33.00	7.50	33.00	10.00
24	0.875	38.10	10.28	35.70	10.32	-	-	-	-
25		38.10	10.28	37.30	10.32	35.00	7.50	35.00	10.00
28	1.000	38.10	10.28	37.30	10.32	37.00	7.50	37.00	10.00
30	1.125	38.10	10.28	37.30	10.32	-	-	-	-
32	1.250	41.28	11.10	40.50	10.32	39.00	7.50	39.00	10.00
33		41.28	11.10	40.50	10.32	40.00	7.50	40.00	10.00
35	1.375	41.28	11.10	40.50	10.32	-	-	-	-
38	1.500	44.44	11.10	47.63	11.99	43.00	7.50	43.00	10.00
40	1.625	44.44	11.10	47.63	11.99	-	-	-	-
43	1.750	47.63	11.10	50.80	11.99	45.00	7.50	45.00	10.00
45	1.875	47.63	11.10	50.80	11.99	-	-	-	-
48		47.63	11.10	50.80	11.99	48.00	7.50	48.00	10.00
50	2.000	47.63	11.10	53.98	11.99	48.00	7.50	48.00	10.00
53	2.125	50.80	11.10	53.98	11.99	50.00	7.50	50.00	10.00
55	2.250	53.98	11.10	57.15	11.99	56.00	9.00	56.00	11.00
58		60.33	12.70	60.33	11.99	58.00	9.00	58.00	11.00
60	2.375	60.33	12.70	60.33	11.99	-	-	-	-
63	2.500	63.50	12.70	63.50	11.99	61.00	9.00	61.00	11.00
65	2.625	63.50	12.70	63.50	11.99	-	-	-	-
70	2.750	66.68	12.70	63.50	11.99	63.00	9.00	63.00	11.00
75	2.875	66.68	12.70	66.68	11.99	-	-	-	-
80	3.000	69.85	12.70	69.85	13.50	66.00	9.00	66.00	11.00
85	3.125	69.85	12.70	69.85	13.50	70.00	9.50	70.00	13.00
90	3.250	69.85	12.70	69.85	13.50	-	-	-	-
95	3.375	76.20	14.28	76.20	13.50	73.00	11.00	73.00	13.00
100	3.500	76.20	14.28	73.03	13.50	-	-	-	-
105	3.625	76.20	14.28	76.20	13.50	75.00	11.00	75.00	13.00
110	3.750	79.38	14.28	76.20	13.50	-	-	-	-
115	3.875	82.55	14.28	79.38	13.50	78.00	11.00	78.00	13.00
120	4.000	82.55	14.28	79.38	13.50	80.00	11.00	80.00	13.00
125		82.55	14.28	79.38	13.50	-	-	-	-
130		85.73	14.28	82.55	13.50	-	-	83.00	13.00
135		85.73	15.88	82.55	13.50	-	-	-	-
140		85.73	15.88	82.55	13.50	-	-	-	-
145		88.90	15.88	92.08	15.88	85.00	11.00	85.00	13.00
150		88.90	15.88	92.08	15.88	-	-	-	-
155		88.90	15.88	95.25	15.88	-	-	-	-
160		88.90	15.88	95.25	15.88	92.00	11.30	92.00	15.30
165		95.25	15.88	98.43	15.88	-	-	-	-
170		98.43	15.88	101.60	15.88	97.00	11.30	97.00	15.30
175		98.43	15.88	101.60	15.88	-	-	-	-
180		101.60	19.88	111.13	19.88	-	-	-	-
185		-	-	114.30	19.88	105.00	12.00	105.00	15.70
190		104.78	19.88	114.30	19.88	-	-	-	-
195		-	-	117.48	19.88	110.00	14.00	110.00	15.70
200		107.95	19.88	117.48	19.88	-	-	-	-
205		111.13	19.88	120.65	19.88	-	-	-	-
210		-	-	123.83	19.88	115.00	14.00	115.00	15.70
215		114.30	19.88	123.83	19.88	-	-	-	-
220		-	-	127.00	19.88	120.00	14.00	120.00	15.70
225		117.48	19.88	127.00	19.88	-	-	-	-
230		120.65	19.88	130.17	19.88	-	-	-	-
235		-	-	133.35	19.88	125.00	14.00	125.00	15.70
240		123.83	19.88	133.35	19.88	-	-	-	-

Pac-Seal 5V

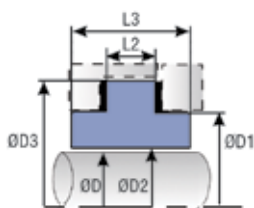
Clamped style stationary seat design. Seats are supplied as standard with two PTFE flat gaskets.

Materials of Construction

Stationary Seat	Ceramic, Silicon Carbide, Tungsten Carbide
Seat Gasket	PTFE



5V Seat



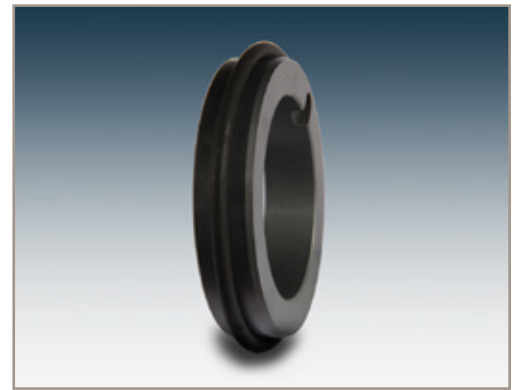
Shaft Size ØD (mm)	Shaft Size ØD (inches)	ØD1	ØD2	ØD3	L2	L3
12	0.500	29.05	13.70	39.70	7.90	17.40
15		31.90	16.00	41.00	7.90	17.40
16	0.625	33.04	16.80	43.69	7.90	17.40
19	0.750	36.21	20.00	46.50	7.90	17.40
20		36.90	21.00	47.00	7.90	17.40
22	0.875	39.39	23.20	49.50	7.90	17.40
25		41.90	26.00	52.00	7.90	17.40
	1.000	42.56	26.40	52.50	7.90	17.40
28	1.125	45.74	29.60	58.50	11.10	26.90
30		48.69	31.00	58.75	11.10	26.90
	1.250	50.50	32.70	63.50	11.10	26.90
33		52.30	34.00	65.00	11.10	26.90
35	1.375	53.68	36.00	65.50	11.10	26.90
38	1.500	56.85	39.10	69.50	11.10	26.90
40		61.90	41.00	75.00	11.10	26.90
	1.625	63.20	42.20	76.50	11.10	26.90
	1.750	66.38	45.40	79.50	11.10	26.90
45		66.90	46.00	80.00	11.10	26.90
48	1.875	69.55	49.00	82.50	11.10	26.90
50		71.90	51.00	85.00	11.10	26.90
	2.000	72.73	51.80	85.50	11.10	26.90
	2.125	79.08	54.90	95.50	14.30	33.33
55		79.90	56.00	96.00	14.30	33.33
	2.250	82.25	58.10	98.50	14.30	33.33
60		84.90	61.00	101.00	14.30	33.33
	2.375	85.43	61.30	101.50	14.30	33.33
	2.500	88.60	64.50	104.50	14.30	33.33
65		89.90	66.00	106.00	14.30	33.33
	2.625	91.78	67.60	108.50	14.30	33.33
70	2.750	94.90	71.00	111.00	14.30	33.33
	2.875	98.13	74.00	114.50	14.30	33.33
75		99.90	76.00	116.00	14.30	33.33
	3.000	99.71	77.20	115.50	14.30	33.33
	3.125	102.89	80.40	119.50	14.30	33.33
80		104.90	81.00	121.00	14.30	33.33
	3.250	107.50	83.70	123.50	14.30	34.30
85		109.90	86.00	126.00	14.30	34.30
	3.375	110.85	86.90	127.50	14.30	34.30
	3.500	114.00	89.90	130.50	14.30	34.30
90		114.50	91.00	130.50	14.30	34.30
	3.625	117.10	93.30	133.50	14.30	34.30
95		119.90	96.00	136.00	14.30	34.30
	3.750	120.35	96.30	136.50	14.30	34.30
100		124.90	101.00	141.00	14.30	34.30
	4.000	126.70	102.60	142.50	14.30	34.30
	4.250	133.05	109.00	149.50	14.30	34.30
	4.500	139.40	115.30	155.50	14.30	34.30
	5.000	164.80	128.00	187.50	16.00	36.00
	5.500	177.50	140.70	200.50	16.00	36.00

Pac-Seal 3P

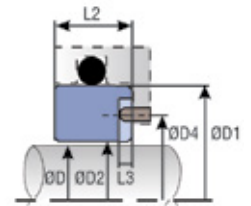
Push-fit type block seat design featuring monolithic stationary ring with O-Ring installed in a radial groove above the stationary ring.

Materials of Construction

Stationary Seat Silicon Carbide, Ni-Resist, Tungsten Carbide
Elastomers Nitrile, EPR, Viton



3P Seat



Shaft Size ØD (inches)	ØD1	ØD2	ØD4 Pin P.C.D	Pin Ø	L2	L3	O-Ring Size
0.500	25.30	13.80	19.80	2.50	7.90	2.50	BS214
0.625	31.65	16.98	24.20	2.50	10.30	2.50	BS218
0.750	34.82	20.15	27.75	2.50	10.30	2.50	BS220
0.875	38.00	23.33	31.00	2.50	10.30	2.50	BS222
1.000	41.18	26.50	34.10	2.50	11.15	2.50	BS223
1.125	44.35	30.08	37.30	2.50	11.15	2.50	BS224
1.250	47.53	33.25	40.50	2.50	11.15	2.50	BS225
1.375	50.70	36.43	43.60	2.50	11.15	2.50	BS226
1.500	53.88	39.60	46.80	2.50	11.15	2.50	BS227
1.625	60.23	42.78	51.60	4.00	12.75	3.00	BS229
1.750	63.40	45.95	54.80	4.00	12.75	3.00	BS230
1.875	66.58	49.13	57.90	4.00	12.75	3.00	BS231
2.000	69.75	52.30	61.10	4.00	12.75	3.00	BS232
2.125	76.10	55.48	65.90	5.00	14.33	3.50	BS234
2.250	79.28	58.65	69.00	5.00	14.33	3.50	BS235
2.375	82.45	61.83	72.20	5.00	14.33	3.50	BS236
2.500	85.63	65.00	75.40	5.00	14.33	3.50	BS237
2.625	85.63	68.18	77.00	5.00	15.93	3.50	BS237
2.750	88.80	71.35	80.20	5.00	15.93	3.50	BS238
2.875	95.15	74.53	84.90	5.00	15.93	3.50	BS240
3.000	98.33	77.70	88.10	5.00	15.93	3.50	BS241
3.125	101.50	81.92	91.30	5.00	19.84	3.50	BS242
3.250	104.68	85.10	94.40	5.00	19.84	3.50	BS243
3.375	107.85	88.27	97.60	5.00	19.84	3.50	BS244
3.500	111.03	91.44	100.80	5.00	19.84	3.50	BS245
3.625	114.20	94.62	104.00	5.00	19.84	3.50	BS246
3.750	117.38	97.79	107.10	5.00	19.84	3.50	BS247
3.875	120.55	100.97	110.30	5.00	19.84	3.50	BS248
4.000	123.73	104.14	113.50	5.00	19.84	3.50	BS249

Pac-Seal 5A

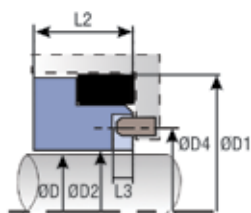
"L" shaped stationary seat design to suit popular American seal housings. Supplied with PTFE gasket and anti-rotation pin-slot feature.

Materials of Construction

Stationary Seat	Ceramic, Ni-Resist, Silicon Carbide, Tungsten Carbide
Seat Gasket	PTFE



5A Seat



Shaft Size ØD (inches)	ØD1	ØD2	ØD4 Pin P.C.D	Pin Ø	L2	L3
0.750	34.93	20.12	23.81	2.00	10.28	4.00
0.875	38.10	23.33	26.99	2.00	10.28	4.00
1.000	41.28	26.50	30.15	2.00	11.10	4.10
1.125	44.44	30.08	33.35	2.00	11.10	4.10
1.250	47.63	33.25	36.50	2.00	11.10	4.10
1.375	50.80	36.43	39.70	2.00	11.10	4.10
1.500	53.98	39.60	42.85	2.00	11.10	4.10
1.625	60.33	42.78	47.63	3.00	12.70	4.20
1.750	63.50	45.95	50.80	3.00	12.70	4.20
1.875	66.68	49.13	53.98	3.00	12.70	4.20
2.000	69.85	52.30	57.15	3.00	12.70	4.20
2.125	76.20	55.48	60.33	3.00	14.28	4.50
2.250	79.38	58.65	63.50	3.00	14.28	4.50
2.375	82.55	61.93	66.68	3.00	14.28	4.50
2.500	85.73	65.00	69.85	3.00	14.28	4.50
2.625	85.73	68.18	73.03	3.00	15.88	4.40
2.750	88.90	71.35	76.20	3.00	15.88	4.40
2.875	95.25	74.53	79.38	3.00	15.88	4.40
3.000	98.43	77.70	82.55	3.00	15.88	4.40

Materials

The limits of pressure, temperature and speed depend on the materials specified for the rotary seals and seats, as well as the nature of the media to be sealed. The maximum capabilities of each seal type are shown on the individual data sheets. Changes in single spring seal operating capabilities are particularly a factor of each seal design but are mainly influenced by selection of elastomer type and seal face materials.

Elastomer selection primarily sets temperature and chemical resistance. Differing face material combinations affect seal capability, performance and life. Their pV (pressure x velocity) value largely determines the suitability of material combinations of seal faces and specifically the amount of heat generated at the faces. The ability of the face material to resist wear increases the life of the seal particularly in abrasive applications.

Pac-Seals are available with various face combinations, from carbon, solid ceramic and stainless steel materials, as standard. We offer choices of reaction bonded & sintered silicon carbide and tungsten carbide faces for hard face applications and also for use against carbon for ultimate pV capability.

Material Code	Rotary (R) & Stationary Seat (S) Face Materials								Elastomers & Gaskets				Spring & Metal Body Components
	B	A	V	Q2	Q1	U2	G	R	P	E	V	T	G
	Resin Carbon	Antimony Carbon	Solid Alumina Ceramic	SiC - Reaction Bonded	SSiC - Self Sintered	Tungsten Carbide (Nickel binder)	Stainless Steel	Ni-Resist	Nitrile	Ethylene Propylene	Fluoroelastomer (Viton)	PTFE	304 SS / 316 SS
O-Ring Mounted	Type												
	P35	R	RS		R	RS	R		R	R	R		●
	P38, P38D, P32	R	RS		R	RS	R		R	R	R		●
	P39, P42, P42D, P426				R	RS	R	R	R	R	R		●
	P43, P43D			R	R	RS	R		R	R	R		●
	P260, P270, P280, P290				R	RS	R	R	R	R	R		●
Elastomer Bellows	P140, P142	R	RS			R	R		R	R	R		●
	P190, P192, P193	R	RS			R	R		R	R	R		●
	P150, P151	R	RS			R	R		R	R	R		●
	P250	R	RS		R	RS	R		R	R	R		●
Elastomer Diaphragm	P100, P110, P200, P220	R	RS		R	RS	R		R	R	R		●
	P240	R	RS		R	RS	R		R	R	R		●
	P300, P320, P340, P350	R	RS		R	RS	R		R	R	R		●
Wave & Multi Spring	P167, P167B	R	RS			R	R		R	R	R		●
	P168, P168W, P168Y						R		R	R	R		●
	P40	R	RS			R	R		R	R	R		●
Special	P118	R	RS		R		R		R	R	R		●
	P160, P161	R	RS		R				R	R	R		●
	P170, P171	R	RS		R				R	R	R		●
Stationary Seats	8N			S	S	SS	S		S	S	S		
	8B	S	SS		S	SS	S		S	S	S		
	2N, 2D	S	SS		S	SS	S		S	S	S		
	3N, 3D	S	SS		S	SS	S		S	S	S		
	9N	S	SS		S	SS	S		S	S	S		
	8S, 8L			S	S	SS	S		S	S	S		
	4S, 4L			S	S	SS	S		S	S	S		
	1H, 3H			S	S	SS	S	S	S	S	S		
	B1, B3			S	S	SS	SS		S	S	S		
	B2, B5			S	S	SS	SS		S	S	S		
	B4			S	S	SS	SS		S	S	S		
	B9			S	S	SS	S		S	S	S		
	5V			S	S	SS	S					S	
	3P				SS	S	S	S	S	S	S		
	5A			S	S	SS	S	S				S	

- R = Rotary Standard
- RS = Rotary Special
- S = Stationary Standard
- SS = Stationary Special
- = Standard

Elastomers		Temperature Limits		Application
		Minimum	Maximum	
Ethylene Propylene (EPDM)	E	-40°C / -40°F	140°C / 284°F	For general duties, especially hot water
Neoprene	N	-50°C / -58°F	100°C / 212°F	For refrigeration applications
Nitrile Butadiene (Buna N)	P	-30°C / -22°F	120°C / 248°F	For general duties
Perfluoroelastomer	K	-7°C / 19°F	246°C / 475°F	For very high chemical and temperature capability
Fluoroelastomer / PTFE coated	M	-18°C / 0°F	204°C / 400°F	Near universal chemical resistance
Fluoroelastomer (e.g. Viton)	V	-30°C / -22°F	230°C / 446°F	For general chemical applications
FEP/PFA	T	-60°C / -76°F	205°C - 260°C / 401°F - 500°F	Near universal chemical resistance

Nomenclature

The seal nomenclature is a 15 to 19 digit code, consisting of seal type, seat type, seal size and material combination.

The first character is a P for Pac-Seal Products, followed immediately by two to four characters defining the rotating seal type and two to three characters defining the stationary seat type.

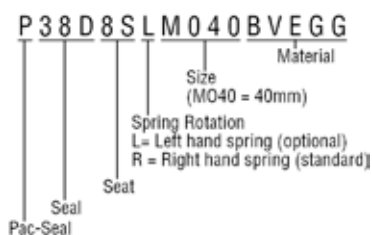
For O-Ring mounted seals, specify R for right hand or L for optional left hand drive spring. Spring rotation is not specified for Elastomer Bellows and Elastomer Diaphragm seals as these are suitable for bi-directional rotation.

The next four characters define the seal size either in metric or imperial format. Metric size seals are identified with the letter M, followed by three numbers. A seal size of 40mm would read M040. Imperial (inch) size seals are identified by four numbers. A seal size of 1.750" would read 1750.

The last five to seven characters define complete seal materials for **rotary face, stationary seat, elastomers, spring and seal metal body parts** as listed on page 54.

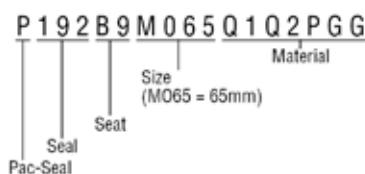
Example 1

Seal type P38D with 8S DIN short stationary seat for 40mm shaft with Carbon/Ceramic/EPDM/SS



Example 2

Seal type P192 with B9 boot mounted stationary seat for 65mm shaft with SSiC/SiC/Nitrile/SS



Pac-Seal Installation Guidelines

Note: protect precision lapped faces of new seal seat and seal ring from damage, dirt and finger marks

A. Disassemble pump housing to expose seal: note how old seal is assembled to be sure replacement seal is installed in an identical manner.

B. Carefully remove old seal head and seat, taking care not to scratch shaft or seal counter-bore.

C. Clean shaft and counter-bore surfaces using fine emery cloth or equivalent. Remove rust, burrs and wipe clean. Avoid making flat spots or otherwise changing original dimensions of the shaft or bore.

- Shaft runout should not exceed 0.05mm (0.002") TIR (Total Indicator Reading) at any point along the shaft, for roller or ball type bearings.
- Shaft end play should not exceed 0.10mm (0.004") TIR on ball type thrust bearings.
- Ensure seal chamber face is sufficiently smooth to make a good gasket joint.

- Ensure that seal chamber face is square to the shaft centreline within 0.025 mm per 25mm shaft diameter (0.001" per 1" shaft diameter) to a maximum of 0.125mm (0.005") TIR.
- Ensure that the shaft is concentric to the seal chamber bore within 0.025 per 25mm shaft diameter (0.001" per 1" shaft diameter) to a maximum of 0.125mm (0.005") TIR

D. For O-Ring and Diaphragm Seals

Lubricate the shaft, rubber inner diameter of the rotating seal head and rubber outer diameter of the stationary seal seat with a light multi-purpose oil. Do not lubricate seal faces. Note: never use grease or heavy oil as installation lubricant, Do not use petroleum based lubricants with EPDM.

For Elastomer Bellows Seals

As above, but use water instead of oil. Press against the last spring convolution and avoid pressing on the face.

E. Press seal firmly into counter-bore to be sure it is bottomed square and at right angles to the shaft. This can be hand pressed into place taking care to protect the sealing face from a direct blow with any metal object. Use a piece of plastic between the face and any driving force.

F. Check both seal surfaces to assure they are free of any foreign matter. Slide rotating seal head by hand pressure along the shaft to a completely parallel contact with the stationary seat. Avoid extreme installation pressure or hammering the seal. Make sure spring correctly engages the shoulder of seal head and impeller shoulder or shaft spring retainer.

G. Re-assemble impeller and/or pump housing.

H. DO NOT RUN PUMP DRY. Always prime the pump before starting. In case of self-priming models the pump casing must be filled.

These instructions are intended for use by trained, experienced technicians who are familiar with the installation and service of mechanical seals.

Seat Selection

Correct seat selection lays the foundation for maximising seal performance. Preferred seat types are shown with each seal. However, any seat design can be used with any seal, thereby giving a maximum range of possible combinations. Seat housings for all Pac-Seal seats are recommended to have a machined lead in of 1.5 to 2.0mm at 20 to 30 degrees angle.

	Seat Type	8N	8B	2N	2D	3N	3D	9N	9A	8S	8L	4S	4L	6N	6W	6Y	9U	1H	3H	B1	B2	B3	B4	B5	B6	B7	B8	B9	B65	B75			
	Seal Type	O-Ring mounted seat	O-Ring mounted seat	O-Ring mounted seat	DIN Short O-Ring mounted seat	O-Ring mounted seat	DIN Short O-Ring mounted seat	O-Ring mounted seat	O-Ring mounted seat	DIN Short O-Ring mounted seat	DIN Long O-Ring mounted seat	DIN Short O-Ring mounted seat	DIN Long O-Ring mounted seat	O-Ring mounted seat	O-Ring mounted seat with 3 slots	O-Ring mounted seat with 3 flats	Double O-Ring mounted seat	Center O-Ring mounted seat	Center O-Ring mounted seat	Boot mounted seat	Boot mounted seat	Boot mounted seat	DIN Boot mounted seat	Boot mounted seat	Boot mounted seat	Boot mounted seat	Boot mounted seat	DIN Boot mounted seat	Boot mounted seat	Boot mounted seat			
O-Ring Mounted	P35, P38	●																															
	P38D									○	●																						
	P39		●																														
	P42			●																													
	P42D				●																												
	P426					●																											
	P43						●																										
	P43D							●																									
	P32											●																					
	P260								●	○																							
P270, P280																																	
P290																																	
Elastomer Bellows	P140, P142																																
	P190	●								○	○																						
	P192, P193	●								○	○																						
	P150																			○													
	P151																			○													
Elastomer Diaphragm	P250																																
	P100, P200																																
	P110, P220																																
	P110U																																
	P240																																
Wave & Multi Spring	P300, P320																																
	P340, P350																																
	P167																																
	P167B																																
	P168																																
Special	P168W																																
	P168Y																																
	P40																																
	P118																																
	P160																																
	P161																																
	P170																																

Pac-Seal

Broad Range of OEM Specific Seal Designs



Consult your Flowserve representative for further details



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