



Vulcan Parallel Spring Diaphragm Type Seals



Section



INTRODUCTION

Vulcan's Parallel Spring Diaphragm Type Seals are highly proficient and widely utilised, covering all standard pump shaft, working length and housing size ranges.

APPLICATIONS

The parallel spring family range of designs are ideal for a wide spectrum of application conditions, ranging from general duties through to more demanding applications, through their accommodating Single Springs and elastomer Diaphragms. The seals are highly effective and widely utilised in pumps, mixers, agitators, compressors and other rotary shaft equipment.

STANDARD VULCAN® PARALLEL TYPES

Types 10, 20 and 20H

Parallel spring, rubber diaphragm seals to common industry standard dimensions. Fitted as standard with Type 20 boot mounted seats, Type 20H has a Type 21 'O'-Ring mounted stationary.

Types 11, 11J and 22

As above, to common American standard dimensions, fitted with a Type 11 boot mounted seats, or Type 11J has a Type 31 'O'-Ring mounted seat.

Types U11/N11

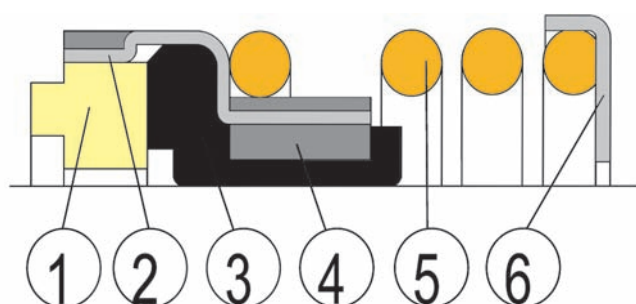
As above Type 11, but to full ANSI compatibility, through incorporating a narrow profile seal design.

Type U11 utilises the same seal head internal design as our Type 24, whilst Type N11 incorporates an elastomer resiliently mounted ring face.

Type 24 Series

As above but to full DIN24960 (EN12756) dimensions, L1K-length. Type 24 is supplied with a Type 24 boot mounted seat as standard. You should specify Type 24S, if a Type 24.DINS stationary is required and Type 24L for the Type 24.DINL stationary.

STANDARD COMPONENTS



NO	DESCRIPTION
1	SEAL FACE
2	RETAINER
3	DIAPHRAGM
4	DRIVE RING
5	SPRING
6	BASE PLATE

VULCAN® DESIGN ADVANTAGES

Accommodating

The seal head automatically adjusts to accommodate misalignment and seal face wear, through the design and flexibility of the rubber diaphragm.

Improved Designs

Vulcan's attention to detail and modern in-house design and manufacturing facilities, have enabled Vulcan to create Parallel Spring Seals, with additional improvements to the original designs, whilst still maintaining the main design features, such as self aligning, non-fretting / clogging and vacuum application suitability. These improvements result in a superior Vulcan Mechanical Seal, to both the original replacement seal and their other direct market copies.

Retained Components

Faces and base plates are retained by adhesive grease and by mating components, respectively, making handling and fitting easier and more secure.

Customisable

The technically efficient and highly versatile, parallel spring, seal design can be readily customised to suit individual requirements; where a standard seal or seat cannot be utilised. Vulcan can assist in the design of special production runs to fully satisfy customer requirements.

Material Quality

A wide selection of high quality face materials and elastomers are readily available as standard.

Reliability

The resulting Vulcan Quality Seal and the high strength and flexibility of the diaphragm, provide a very reliable and accommodating mechanical seal design.

OUR PARALLEL SPRING DIAPHRAGM TYPE SEALS PV CHART

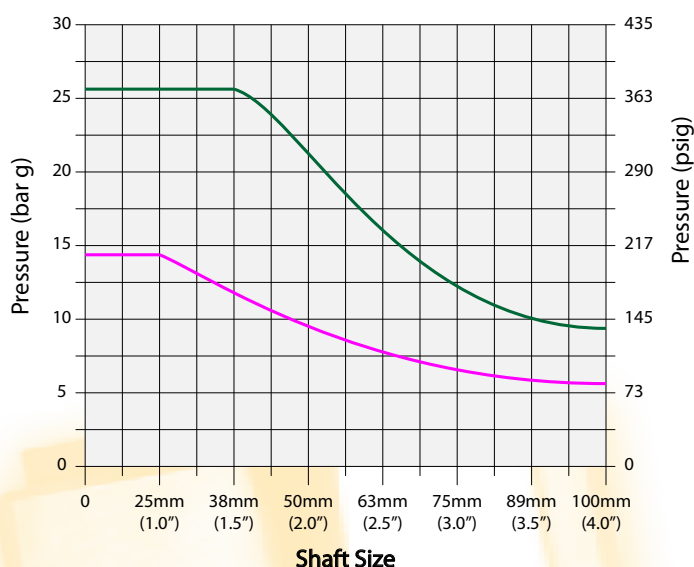


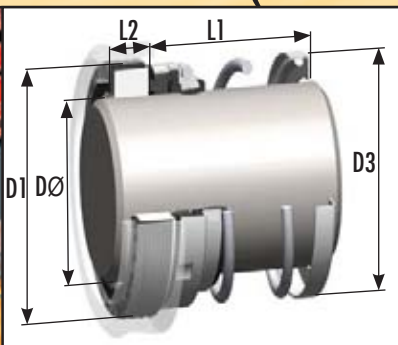
CHART BASED UPON: CARBON VS REACTION BONDED
SILICON CARBIDE SEAL FACES

10/20/11/22/24

A1/A2/A4/A5



TYPES 10 / 20 (METRIC)



Metric shaft size, resilient, single spring, rubber diaphragm seal with a Type 20 boot mounted stationary as standard, to suit originally common UK housing sizes. A widely utilised seal type, highly suited to general duties, capable of long service life.

Also available with 'O'-Ring mounted seats, as Types 10H and 20H, please refer over-leaf. In addition, Types 10/20 are often purchased as a seal only to be installed with any one of a variety of seats.

VULCAN STANDARD SIZES

Metric Shaft Size DØ	Size Code	D1	D3	TYPE 10 L1	TYPE 20 L1	L2
10	0100	24.60	21.80	43.66	25.40	8.74
12	0120	27.79	23.50	43.66	25.40	8.74
13	0130	27.79	23.50	43.66	25.40	8.74
14	0140	30.95	27.00	43.66	25.40	10.32
15	0150	30.95	27.00	43.66	25.40	10.32
16	0160	30.95	27.00	43.66	25.40	10.32
18	0180	34.15	30.70	43.66	25.40	10.32
19	0191	34.15	30.70	43.66	25.40	10.32
20	0200	35.70	33.40	43.66	25.40	10.32
22	0220	37.30	33.40	43.66	25.40	10.32
24	0240	40.50	39.20	43.66	25.40	10.32
25	0250	40.50	39.20	43.66	25.40	10.32
28	0280	47.63	45.60	60.33	33.34	11.99
29	0290	47.63	45.60	60.33	33.34	11.99
30	0300	50.80	47.40	60.33	33.34	11.99
32	0320	50.80	47.40	60.33	33.34	11.99
33	0330	53.98	52.00	60.33	33.34	11.99
34	0340	53.98	52.00	60.33	33.34	11.99
35	0349	53.98	52.00	60.33	33.34	11.99
38	0381	57.15	55.60	60.33	33.34	11.99
40	0400	60.33	59.20	60.33	33.34	11.99
41	0410	60.35	59.20	60.33	33.34	11.99
42	0420	63.50	65.10	70.64	40.48	11.99
43	0430	63.50	65.10	70.64	40.48	11.99
44	0440	63.50	65.10	70.64	40.48	11.99
45	0450	63.50	65.10	70.64	40.48	11.99
48	0480	66.68	66.70	70.64	40.48	11.99
50	0500	69.85	71.00	70.64	40.48	13.50
53	0530	76.20	73.30	70.64	40.48	13.50
55	0550	79.38	78.60	70.64	40.48	13.50
58	0580	79.38	82.10	70.64	40.48	13.50
60	0600	79.38	82.10	70.64	40.48	13.50
63	0630	82.55	84.60	70.64	40.48	13.50
65	0650	92.08	88.60	69.85	49.21	15.88
70	0700	95.25	90.00	69.85	49.21	15.88
75	0750	101.60	102.70	73.03	52.39	15.88
80	0800	114.30	104.00	79.38	55.56	19.88
85	0850	117.48	108.00	79.38	55.56	19.88
90	0900	123.83	112.00	79.38	55.56	19.88
95	0950	127.00	119.00	82.55	58.74	19.88
100	1000	133.35	124.00	85.73	61.91	19.88

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, the asterisked seal and / or seat face materials are stocked in many, but not all, sizes.

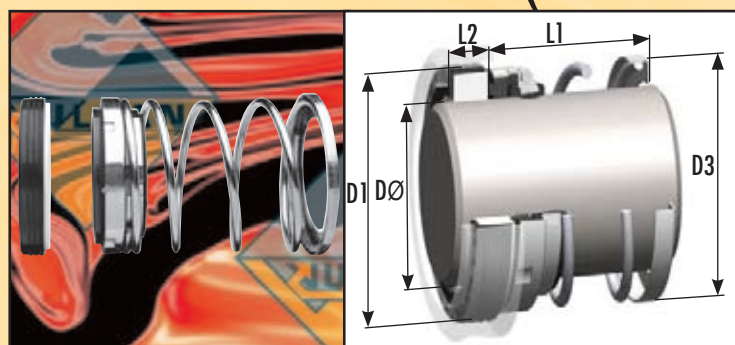
GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic	A
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SiC	S
HARD VS SOFT	G	VES2 RB SiC	S	99% Ceramic	A
HARD	S	VES2 RB SiC	S	VES2 RB SiC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Suggested Operating Limits

Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.



TYPES 10 / 20 (IMPERIAL)



Imperial shaft size, resilient, single spring, rubber diaphragm seal with Type 20 boot mounted stationary as standard, to suit common originally UK housing sizes. A widely utilised seal type, highly suited to general duties, capable of long service life.

Also available with 'O'-Ring mounted seats, as Types 10H and 20H. Please refer overleaf. In addition, Types 10/20 are often purchased as a seal only to be installed with any one of a variety of seats.

VULCAN STANDARD SIZES

Imperial Shaft Size DØ	Size Code	D1	D3	TYPE 10 L1	TYPE 20 L1	L2
0.375	0095	24.60	21.80	43.66	25.40	8.74
0.500	0127	27.79	23.50	43.66	25.40	8.74
0.625	0158	30.95	27.00	43.66	25.40	10.32
0.750	0191	34.15	30.70	43.66	25.40	10.32
0.875	0222	37.30	33.40	43.66	25.40	10.32
1.000	0254	40.50	43.20	43.66	25.40	10.32
1.125	0286	47.63	46.60	60.33	33.34	11.99
1.250	0317	50.80	47.40	60.33	33.34	11.99
1.375	0349	53.98	52.00	60.33	33.34	11.99
1.500	0381	57.15	55.60	60.33	33.34	11.99
1.625	0412	60.33	59.20	60.33	33.34	11.99
1.750	0444	63.50	65.10	70.64	40.48	11.99
1.875	0476	66.68	66.70	70.64	40.48	11.99
2.000	0508	69.85	73.30	70.64	40.48	13.50
2.125	0539	73.03	73.30	70.64	40.48	13.50
2.250	0571	76.20	78.60	70.64	40.48	13.50
2.375	0603	79.38	82.10	70.64	40.48	13.50
2.500	0635	82.55	84.60	70.64	40.48	13.50
2.625	0666	92.08	88.60	69.85	49.21	15.88
2.750	0698	95.25	92.00	69.85	49.21	15.88
2.875	0730	98.43	95.20	73.03	52.39	15.88
3.000	0762	101.60	102.70	73.03	52.39	15.88
3.125	0794	111.15	104.00	79.38	55.56	19.88
3.250	0825	114.30	104.00	79.38	55.56	19.88
3.375	0857	117.48	108.00	79.38	55.56	19.88
3.500	0889	120.65	112.00	79.38	55.56	19.88
3.625*	0921	123.83	114.00	82.55	58.74	19.88
3.750	0953	127.00	119.00	82.55	58.74	19.88
3.875*	0984	130.20	121.00	85.73	61.91	19.88
4.000	1016	133.35	124.00	85.73	61.91	19.88

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, most asterisked sizes are stocked in some, but not all, materials. And the asterisked materials in many sizes.

Suggested Operating Limits

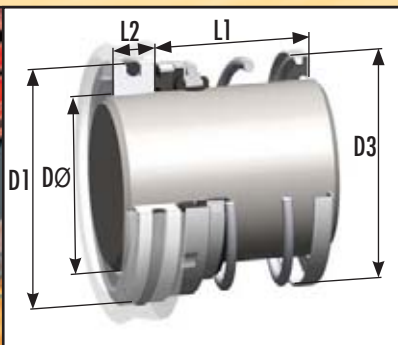
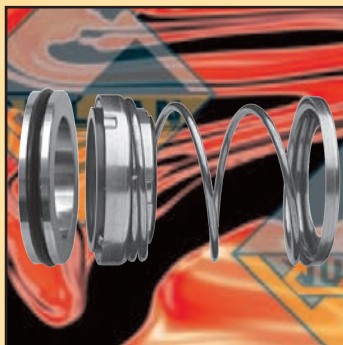
Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.

GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic	A
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SiC	S
HARD VS SOFT	G	VES2 RB SiC	S	99% Ceramic	A
HARD	S	VES2 RB SiC	S	VES2 RB SiC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Please refer to the Technical and Material Standards Section for advice and information on our full range of materials, guaranteed stock policies and more advice on operating limits.



TYPE 20H



Single spring, resilient, rubber diaphragm seal featuring a Type 20 rotary with an 'O'-Ring mounted Type 21 stationary seat option, to suit common UK housing sizes. A very widely specified and utilised seal type, highly suited to diverse duties, and capable of long service life.

Should you require a Type 10H seal assembly, please order a Type 10 seal and a Type 21 stationary as separate components.

VULCAN STANDARD SIZES

Imperial Shaft Size DØ	Size Code	D1	D3	L1	L2
0.375	0095	24.60	21.80	25.40	8.74
0.500	0127	27.79	23.50	25.40	8.74
0.625	0158	30.95	27.00	25.40	10.32
0.750	0191	34.15	30.70	25.40	10.32
0.875	0222	37.30	33.40	25.40	10.32
1.000	0254	40.50	43.20	25.40	10.32
1.125	0286	47.63	45.60	33.34	11.99
1.250	0317	50.80	47.40	33.34	11.99
1.375	0349	53.98	52.00	33.34	11.99
1.500	0381	57.15	55.60	33.34	11.99
1.625	0412	60.33	59.20	33.34	11.99
1.750	0444	63.50	65.10	40.48	11.99
1.875	0476	66.68	66.70	40.48	11.99
2.000	0508	69.85	73.30	40.48	13.50
2.125	0539	73.03	73.30	40.48	13.50
2.250	0571	76.20	78.60	40.48	13.50
2.375	0603	79.38	82.10	40.48	13.50
2.500	0635	82.55	84.60	40.48	13.50
2.625	0666	92.08	88.60	49.21	15.88
2.750	0698	95.25	90.00	49.21	15.88
2.875	0730	98.43	95.20	52.39	15.88
3.000	0762	101.60	102.70	52.39	15.88
3.125*	0794	111.15	104.00	55.56	19.88
3.250*	0825	114.30	104.00	55.56	19.88
3.375*	0857	117.48	108.00	55.56	19.88
3.500*	0889	120.65	112.00	55.56	19.88
3.625*	0921	123.83	114.00	58.74	19.88
3.750*	0953	127.00	119.00	58.74	19.88
3.875*	0984	130.20	121.00	61.91	19.88
4.000*	1016	133.35	124.00	61.91	19.88

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, most asterisked sizes are stocked in some, but not all, materials. And the asterisked materials in many sizes.

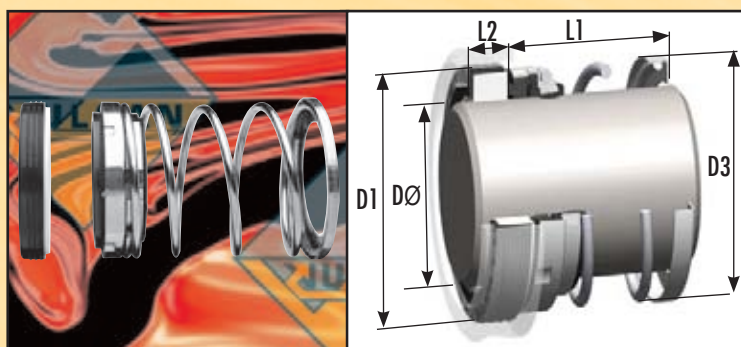
GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic	A
SOFT VS METAL	Q	M106K Carbon	C	304 Stainless Steel	Q
SOFT VS METAL	F	M106K Carbon	C	Ni-Resist*	F
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SiC	S
HARD	E	M106K Carbon	C	Tungsten Carbide*	H
HARD	S	VES2 RB SiC	S	VES2 RB SiC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Suggested Operating Limits

Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.



TYPES 11 / 22



Single spring, resilient, rubber diaphragm seal with two working length options, and a Type 11 boot mounted stationary as standard, to suit common originally American housing sizes. A widely utilised seal type, highly suited to general duties, capable of long service life. Also available with 'O'-Ring mounted seats, as Types 11J and 22J, Please refer over-leaf. In addition, Types 11/22 can be purchased as a seal only to be installed with any one of a variety of seats.

VULCAN STANDARD SIZES

Imperial Shaft Size DØ	Metric Shaft Size DØ	Size Code	D1		D3		TYPE 11 L1		TYPE 22 L1		L2	
			Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric
0.500		0127	1.000	25.40	0.925	23.50	0.812	20.62	1.250	31.75	0.312	7.93
	14	0140	1.250	31.75	1.063	27.00	0.875	22.23	1.375	34.93	0.405	10.28
0.625		0158	1.250	31.75	1.063	27.00	0.875	22.23	1.375	34.93	0.405	10.28
	16	0160	1.250	31.75	1.063	27.00	0.875	22.23	1.375	34.93	0.405	10.28
	18	0180	1.375	34.93	1.209	30.70	0.875	22.23	1.375	34.93	0.405	10.28
0.750		0191	1.375	34.93	1.209	30.70	0.875	22.23	1.375	34.93	0.405	10.28
	20	0200	1.500	38.10	1.315	33.40	0.937	23.80	1.437	36.50	0.405	10.28
	22	0220	1.500	38.10	1.315	33.40	0.937	23.80	1.437	36.50	0.405	10.28
0.875		0222	1.500	38.10	1.315	33.40	0.937	23.80	1.437	36.50	0.405	10.28
	24	0240	1.625	41.28	1.543	39.20	1.000	25.40	1.625	41.28	0.437	11.10
	25	0250	1.625	41.28	1.543	39.20	1.000	25.40	1.625	41.28	0.437	11.10
1.000		0254	1.625	41.28	1.701	43.20	1.000	25.40	1.625	41.28	0.437	11.10
	28	0280	1.750	44.44	1.795	45.60	1.062	26.97	1.687	42.85	0.437	11.10
1.125		0286	1.750	44.44	1.795	45.60	1.062	26.97	1.687	42.85	0.437	11.10
	30	0300	1.875	47.63	1.866	47.40	1.062	26.97	1.687	42.85	0.437	11.10
1.250		0317	1.875	47.63	1.866	47.40	1.062	26.97	1.687	42.85	0.437	11.10
	32	0320	1.875	47.63	1.866	47.40	1.062	26.97	1.687	42.85	0.437	11.10
	33	0330	2.000	50.80	2.047	52.00	1.125	28.58	1.687	42.85	0.437	11.10
1.375		0349	2.000	50.80	2.047	52.00	1.125	28.58	1.687	42.85	0.437	11.10
	35	0350	2.000	50.80	2.071	52.00	1.125	28.58	1.687	42.85	0.437	11.10
	38	0380	2.125	53.98	2.189	55.60	1.125	28.58	1.687	42.85	0.437	11.10
1.500		0381	2.125	53.98	2.197	55.60	1.125	28.58	1.687	42.85	0.437	11.10
	40	0400	2.375	60.33	2.331	59.20	1.375	34.93	2.000	50.80	0.500	12.70
1.625		0412	2.375	60.33	2.331	59.20	1.375	34.93	2.000	50.80	0.500	12.70
	43	0430	2.500	63.50	2.563	65.10	1.375	34.93	2.000	50.80	0.500	12.70
1.750		0444	2.500	63.50	2.563	65.10	1.375	34.93	2.000	50.80	0.500	12.70
	45	0450	2.625	66.68	2.563	65.10	1.500	38.10	2.125	53.98	0.500	12.70
1.875		0476	2.625	66.68	2.626	66.70	1.500	38.10	2.125	53.98	0.500	12.70
	48	0480	2.750	69.85	2.626	66.70	1.500	38.10	2.125	53.98	0.500	12.70
	50	0500	2.750	69.85	2.795	71.00	1.500	38.10	2.125	53.98	0.500	12.70
2.000		0508	2.750	69.85	2.886	73.30	1.500	38.10	2.125	53.98	0.500	12.70
	53	0530	3.000	76.20	2.886	73.30	1.687	42.85	2.375	60.32	0.562	14.28
2.125		0539	3.000	76.20	2.886	73.30	1.687	42.85	2.375	60.32	0.562	14.28
	55	0550	3.125	79.38	3.094	78.60	1.687	42.85	2.375	60.32	0.562	14.28
2.250		0571	3.125	79.38	3.094	78.60	1.687	42.85	2.375	60.32	0.562	14.28
	60	0600	3.250	82.55	3.232	82.10	1.812	46.02	2.500	63.50	0.562	14.28
2.375		0603	3.250	82.55	3.232	82.10	1.812	46.02	2.500	63.50	0.562	14.28
2.500		0635	3.375	85.73	3.331	84.60	1.812	46.02	2.500	63.50	0.562	14.28
	65	0650	3.375	85.73	3.488	88.60	1.937	49.20	2.750	69.85	0.625	15.88
2.625		0666	3.375	85.73	3.488	88.60	1.937	49.20	2.750	69.85	0.625	15.88
2.750		0698	3.500	88.90	3.543	90.00	1.937	49.20	2.750	69.85	0.625	15.88
	70	0700	3.500	88.90	3.543	90.00	1.937	49.20	2.750	69.85	0.625	15.88
2.875		0730	3.750	95.25	3.748	95.20	2.062	52.37	2.875	73.03	0.625	15.88
	75	0750	3.875	98.43	4.043	102.70	2.062	52.37	2.875	73.03	0.625	15.88
3.000		0762	3.875	98.43	4.043	102.70	2.062	52.37	2.875	73.03	0.625	15.88
3.125		0794	4.000	101.60	4.094	104.00	2.187	55.55	3.125	79.37	0.783	19.88
3.250		0825	4.125	104.78	4.094	104.00	2.187	55.55	3.125	79.37	0.783	19.88
3.375		0857	4.250	107.95	4.252	108.00	2.187	55.55	3.125	79.37	0.783	19.88
3.500		0889	4.375	111.13	4.409	112.00	2.187	55.55	3.125	79.37	0.783	19.88
3.625*		0921	4.500	114.30	4.488	114.00	2.312	58.72	3.250	82.55	0.783	19.88
3.750		0953	4.625	117.48	4.685	119.00	2.312	58.72	3.250	82.55	0.783	19.88
3.875*		0984	4.750	120.65	4.764	121.00	2.312	58.72	3.375	85.72	0.783	19.88
4.000		1016	4.875	123.83	4.882	124.00	2.312	58.72	3.375	85.72	0.783	19.88

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, most asterisked sizes are stocked in some, but not all, materials. And the asterisked materials in many sizes.

Suggested Operating Limits

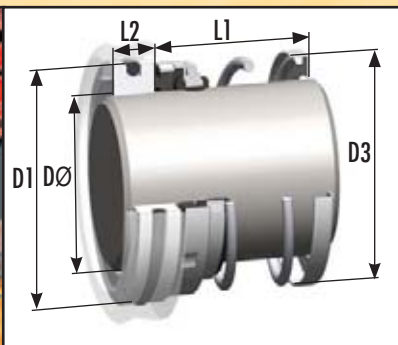
Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.

GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic	A
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SiC	S
HARD VS SOFT	G	VES2 RB SiC	S	99% Ceramic	A
HARD	S	VES2 RB SiC	S	VES2 RB SiC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Please refer to the Technical and Material Standards Section for advice and information on our full range of materials, guaranteed stock policies and more advice on operating limits.



TYPE 11J



Single spring, resilient, rubber diaphragm seal featuring Type 11 rotary with an 'O'-Ring mounted Type 31 stationary option, to suit common originally American housing sizes. A very widely specified and utilised seal type, highly suited to most duties, and capable of long service life.

Should you require a Type 22J Seal assembly, please order a Type 22 Seal and a Type 31 stationary, as separate seal and seat components.

VULCAN STANDARD SIZES

Imperial Shaft Size DØ	Size Code	D1		D3		L1		L2	
		Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric
0.500	0127	1.000	25.40	0.898	22.80	0.812	20.62	0.312	7.93
0.625	0158	1.250	31.75	1.063	27.00	0.875	22.23	0.405	10.28
0.750	0191	1.375	34.93	1.197	30.40	0.875	22.23	0.405	10.28
0.875	0222	1.500	38.10	1.315	33.40	0.937	23.80	0.405	10.28
1.000	0254	1.625	41.28	1.547	39.30	1.000	25.40	0.437	11.10
1.125	0286	1.750	44.44	1.650	41.90	1.062	26.97	0.437	11.10
1.250	0317	1.875	47.63	1.787	45.40	1.062	26.97	0.437	11.10
1.375	0349	2.000	50.80	1.941	49.30	1.125	28.58	0.437	11.10
1.500	0381	2.125	53.98	2.067	52.50	1.125	28.58	0.437	11.10
1.625	0412	2.375	60.33	2.185	55.50	1.375	34.93	0.500	12.70
1.750	0444	2.500	63.50	2.402	61.00	1.375	34.93	0.500	12.70
1.875	0476	2.625	66.68	2.520	64.00	1.500	38.10	0.500	12.70
2.000	0508	2.750	69.85	2.587	65.70	1.500	38.10	0.500	12.70
2.125	0539	3.000	76.20	2.776	70.50	1.687	42.85	0.562	14.28
2.250	0571	3.125	79.38	3.150	80.00	1.687	42.85	0.562	14.28
2.375	0603	3.250	82.55	3.134	79.60	1.812	46.02	0.562	14.28
2.500	0635	3.375	85.73	3.209	81.50	1.812	46.02	0.562	14.28
2.625	0666	3.375	85.73	3.437	87.30	1.937	49.20	0.625	15.88
2.750	0698	3.500	88.90	3.543	90.00	1.937	49.20	0.625	15.88
3.000	0762	3.875	98.43	3.811	96.80	2.062	52.37	0.625	15.88
3.125*	0794	4.000	101.60	4.094	104.00	2.187	55.55	0.783	19.88
3.250*	0825	4.125	104.78	4.094	104.00	2.187	55.55	0.783	19.88
3.375*	0857	4.250	107.95	4.252	108.00	2.187	55.55	0.783	19.88
3.500*	0889	4.375	111.13	4.409	112.00	2.187	55.55	0.783	19.88
3.625*	0921	4.500	114.30	4.488	114.00	2.312	58.72	0.783	19.88
3.750*	0953	4.625	117.48	4.685	119.00	2.312	58.72	0.783	19.88
3.875*	0984	4.750	120.65	4.764	121.00	2.312	58.72	0.783	19.88
4.000*	1016	4.875	123.83	4.882	124.00	2.312	58.72	0.783	19.88

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, most asterisked sizes are stocked in some, but not all, materials. And the asterisked materials in many sizes.

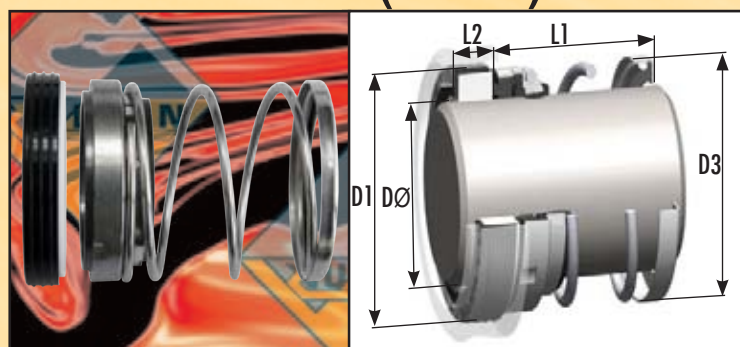
GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic*	A
SOFT VS METAL	Q	M106K Carbon	C	304 Stainless Steel*	Q
SOFT VS METAL	F	M106K Carbon	C	Ni-Resist	F
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SiC	S
HARD	E	M106K Carbon	C	Tungsten Carbide*	H
HARD	S	VES2 RB SiC	S	VES2 RB SiC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Suggested Operating Limits

Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.



TYPE N11 (U11)



Single spring, rubber diaphragm seal, similar to Type 11, but with reduced O.D. (D3) to give full ANSI seal chamber compatibility. Also available as Types N11J or U11J with an 'O'-Ring mounted seat. Type N11; with resilient elastomer mounted face, is the preferred design supplied up to its design limit of 2.000" / 50 mm. Type U11 has a retainer lug driven face, as per our Type 24 design and is the preferred design, that is supplied in all sizes above 2.000" / 50 mm.

VULCAN STANDARD SIZES

Imperial Shaft Size DØ	Size Code	D1		D3		L1		L2	
		Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric
0.500	0127	1.000	25.40	0.898	22.80	0.812	20.62	0.312	7.93
0.625	0158	1.250	31.75	1.063	27.00	0.875	22.23	0.405	10.28
0.750	0191	1.375	34.93	1.197	30.40	0.875	22.23	0.405	10.28
0.875	0222	1.500	38.10	1.315	33.40	0.937	23.80	0.405	10.28
1.000	0254	1.625	41.28	1.547	39.30	1.000	25.40	0.437	11.10
1.125	0286	1.750	44.44	1.650	41.90	1.062	26.97	0.437	11.10
1.250	0317	1.875	47.63	1.787	45.40	1.062	26.97	0.437	11.10
1.375	0349	2.000	50.80	1.941	49.30	1.125	28.58	0.437	11.10
1.500	0381	2.125	53.98	2.067	52.50	1.125	28.58	0.437	11.10
1.625	0412	2.375	60.33	2.185	55.50	1.375	34.93	0.500	12.70
1.750	0444	2.500	63.50	2.402	61.00	1.375	34.93	0.500	12.70
1.875	0476	2.625	66.68	2.520	64.00	1.500	38.10	0.500	12.70
2.000	0508	2.750	69.85	2.587	65.70	1.500	38.10	0.500	12.70
2.125	0539	3.000	76.20	2.776	70.50	1.687	42.85	0.562	14.28
2.250	0571	3.125	79.38	3.150	80.00	1.687	42.85	0.562	14.28
2.375	0603	3.250	82.55	3.134	79.60	1.812	46.02	0.562	14.28
2.500	0635	3.375	85.73	3.209	81.50	1.812	46.02	0.562	14.28
2.625	0666	3.375	85.73	3.437	87.30	1.937	49.20	0.625	15.88
2.750	0698	3.500	88.90	3.543	90.00	1.937	49.20	0.625	15.88
3.000	0762	3.875	98.43	3.811	96.80	2.062	52.37	0.625	15.88
3.125	0794	4.000	101.60	4.094	104.00	2.187	55.55	0.783	19.88
3.250	0825	4.125	104.78	4.094	104.00	2.187	55.55	0.783	19.88
3.375	0857	4.250	107.95	4.252	108.00	2.187	55.55	0.783	19.88
3.500	0889	4.375	111.13	4.409	112.00	2.187	55.55	0.783	19.88
3.625*	0921	4.500	114.30	4.488	114.00	2.312	58.72	0.783	19.88
3.750	0953	4.625	117.48	4.685	119.00	2.312	58.72	0.783	19.88
3.875*	0984	4.750	120.65	4.764	121.00	2.312	58.72	0.783	19.88
4.000	1016	4.875	123.83	4.882	124.00	2.312	58.72	0.783	19.88

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, most asterisked sizes are stocked in some, but not all, materials. And the asterisked materials in many sizes.

Suggested Operating Limits

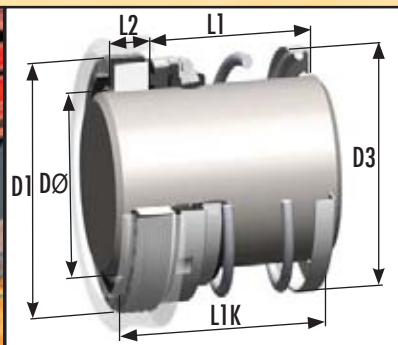
Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.

GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic	A
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SiC	S
HARD	S	VES2 RB SiC	S	VES2 RB SiC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Please refer to the Technical and Material Standards Section for advice and information on our full range of materials, guaranteed stock policies and more advice on operating limits.



TYPE 24



Compact, single spring, rubber diaphragm seal specifically designed to comply with DIN 24960 (EN 12756) L1K-length dimensional requirements, for the complete seal and seat assembly. Available as standard with Type 24 boot-mounted stationary. For 'O'-Ring mounted versions, please see opposite page.

In addition, Type 24 is often purchased as a seal only to be installed with any one of a variety of seats.

VULCAN STANDARD SIZES

Metric Shaft Size DØ	Size Code	D1	D3	L1	L2	L1K
12	0120	23.00	21.70	23.90	8.60	32.50
14	0140	25.00	24.40	26.40	8.60	35.00
16	0160	27.00	27.00	26.40	8.60	35.00
18	0180	33.00	30.60	27.50	10.00	37.50
20	0200	35.00	33.40	27.50	10.00	37.50
22	0220	37.00	33.40	27.50	10.00	37.50
24	0240	39.00	37.80	30.00	10.00	40.00
25	0250	40.00	39.20	30.00	10.00	40.00
28	0280	43.00	42.10	32.50	10.00	42.50
30	0300	45.00	44.00	32.50	10.00	42.50
32	0320	48.00	45.60	32.50	10.00	42.50
33	0330	48.00	45.60	32.50	10.00	42.50
35	0350	50.00	49.30	32.50	10.00	42.50
38	0380	56.00	52.70	34.00	11.00	45.00
40	0400	58.00	55.70	34.00	11.00	45.00
43	0430	61.00	58.60	34.00	11.00	45.00
45	0450	63.00	61.00	34.00	11.00	45.00
48	0480	66.00	64.00	34.00	11.00	45.00
50	0500	70.00	66.10	34.50	13.00	47.50
53	0530	73.00	70.60	34.50	13.00	47.50
55	0550	75.00	70.60	34.50	13.00	47.50
58	0580	78.00	80.00	39.50	13.00	52.50
60	0600	80.00	80.00	39.50	13.00	52.50
63	0630	83.00	82.10	39.50	13.00	52.50
65	0650	85.00	85.00	39.50	13.00	52.50
68	0680	90.00	90.00	37.20	15.30	52.50
70	0700	92.00	90.00	44.70	15.30	60.00
75	0750	97.00	96.80	44.70	15.30	60.00
80	0800	105.00	104.00	44.30	15.70	60.00
85	0850	110.00	108.00	44.30	15.70	60.00
90	0900	115.00	111.00	49.30	15.70	65.00
95	0950	120.00	119.00	49.30	15.70	65.00
100	1000	125.00	124.00	49.30	15.70	65.00

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, the asterisked seal and / or seat face materials are stocked in many, but not all, sizes.

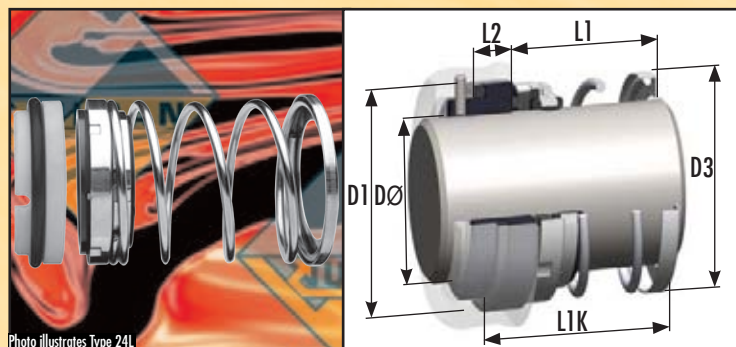
GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic	A
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SIC	S
HARD VS SOFT	G	VES2 RB SIC	S	99% Ceramic	A
HARD	S	VES2 RB SIC	S	VES2 RB SIC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Suggested Operating Limits

Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.



TYPES 24L / 24S



Compact, single spring, rubber diaphragm seal specifically designed to comply with DIN 24960 (EN 12756) L1K-length dimensional requirements, for the complete seal and seat assembly.

The Type 24 seal's highly proficient and accommodating design enables it to be widely utilised.

Available as Type 24L with an 'O'-Ring mounted stationary with anti-rotation provision, or as Type 24S with a short 'O'-Ring mounted stationary.

VULCAN STANDARD SIZES

Metric Shaft Size DØ	Size Code	D1	D3	L1	L2	L1K	SLOT WIDTH 24L	SLOT DEPTH 24L
12	0120	23.00	21.70	23.90	8.60	32.50	4.00	5.00
14	0140	25.00	24.40	26.40	8.60	35.00	4.00	5.00
16	0160	27.00	27.00	26.40	8.60	35.00	4.00	5.00
18	0180	33.00	30.60	27.50	10.00	37.50	4.00	5.50
20	0200	35.00	33.40	27.50	10.00	37.50	4.00	5.50
22	0220	37.00	33.40	27.50	10.00	37.50	4.00	5.50
24	0240	39.00	37.80	30.00	10.00	40.00	4.00	5.50
25	0250	40.00	39.20	30.00	10.00	40.00	4.00	5.50
28	0280	43.00	42.10	32.50	10.00	42.50	4.00	5.50
30	0300	45.00	44.00	32.50	10.00	42.50	4.00	5.50
32	0320	48.00	45.60	32.50	10.00	42.50	4.00	5.50
33	0330	48.00	45.60	32.50	10.00	42.50	4.00	5.50
35	0350	50.00	49.30	32.50	10.00	42.50	4.00	5.50
38	0380	56.00	52.70	34.00	11.00	45.00	5.00	5.50
40	0400	58.00	55.70	34.00	11.00	45.00	5.00	5.50
43	0430	61.00	58.60	34.00	11.00	45.00	5.00	5.50
45	0450	63.00	61.00	34.00	11.00	45.00	5.00	5.50
48	0480	66.00	64.00	34.00	11.00	45.00	5.00	5.50
50	0500	70.00	66.10	34.50	13.00	47.50	5.00	5.50
53	0530	73.00	70.60	34.50	13.00	47.50	5.00	5.50
55	0550	75.00	70.60	34.50	13.00	47.50	5.00	5.50
58	0580	78.00	80.00	39.50	13.00	52.50	5.00	5.50
60	0600	80.00	80.00	39.50	13.00	52.50	5.00	5.50
63	0630	83.00	82.10	39.50	13.00	52.50	5.00	5.50
65	0650	85.00	85.00	39.50	13.00	52.50	5.00	5.50
68	0680	90.00	90.00	37.20	15.30	52.50	5.00	5.50
70	0700	92.00	90.00	44.70	15.30	60.00	5.00	5.50
75	0750	97.00	96.80	44.70	15.30	60.00	5.00	5.50
80	0800	105.00	104.00	44.30	15.70	60.00	5.00	5.50
85	0850	110.00	108.00	44.30	15.70	60.00	5.00	5.50
90	0900	115.00	111.00	49.30	15.70	65.00	5.00	5.50
95	0950	120.00	119.00	49.30	15.70	65.00	5.00	5.50
100	1000	125.00	124.00	49.30	15.70	65.00	5.00	5.50

All types, sizes and materials shown are part of Vulcan's Guaranteed Ex-Stock Range, unless marked with an asterisk*. However, the asterisked seal and / or seat face materials are stocked in many, but not all, sizes.

Suggested Operating Limits

Maximum Operating Pressure Limits primarily depend upon Face Materials, Shaft Size, Speed and Media. Please refer to the Seal Type Specific PV Chart, found at the front of this Brochure Section, in combination with the Vulcan Multiplying Factors found in Technical and Material Standards Section 2.

GUARANTEED STOCK MATERIALS AND FACE MATERIAL CODE					
Seal And Seat Assembly		Rotary Face		Stationary Face	
Face Reference Term	Code	Material	Code	Material	Code
SOFT	C	M106K Carbon	C	99% Ceramic	A
SOFT VS HARD	D	M106K Carbon	C	VES2 RB SiC	S
HARD VS SOFT	G	VES2 RB SiC	S	99% Ceramic	A
HARD	S	VES2 RB SiC	S	VES2 RB SiC	S
HARD 1st ALT	H	Tungsten Carbide*	H	Tungsten Carbide*	H
Guaranteed Stock Elastomers: Viton®, E.P. and Nitrile			Guaranteed Stock Metallurgy: 304SS		

Please refer to the Technical and Material Standards Section for advice and information on our full range of materials, guaranteed stock policies and more advice on operating limits.