Vulcan Parallel Spring ‘O’-Ring Mounted Seals

Section 7

Introduction

The Vulcan Type 9X mechanical seals are robust, general purpose, parallel spring, pusher type seals, designed to suit standard metric and imperial housing dimensions, that are commonly found mainly in the marine and textile industries.

These are a direct replacement for John Crane® Flexibox® Types R00, R10, R20 and R30 series, together with Pillar® US1, US2 and US3 series (CGU).

Applications

The Type 9X seal ranges are mainly used in marine pump applications, but are designed to satisfy the sealing requirements of rotating shaft equipment for a wide variety of applications, including; marine, textile, pulp and paper, refrigeration compressors, waste treatment etc.

Standard Vulcan Types

Types 95, 96 and 97

These are the standard series 9x range, supplied with either solid or inserted rotary face, in a wide variety of face and elastomer materials.

All types provide a positive drive to the rotary face, by a heavy duty spring, which is supplied either with left or right-hand wound springs, depending on whether clockwise or anti-clockwise shaft direction.

Three versions are available and vary only by the method of providing the drive to the rotary seal face.

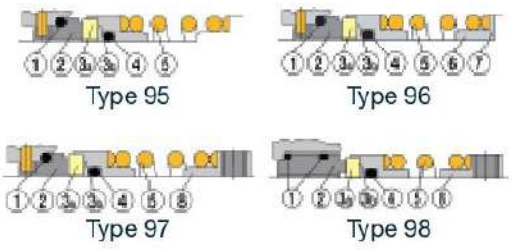
- Type 95 - Drives directly from shaft.
- Type 96 - Type 95 components with the addition of a split ring and washer for simple shaft abutment.
- Type 97 - Type 95 components with addition of a grub screwed drive collar.

Type 98

Heavy duty, single spring, pusher type seal, supplied with either solid or inserted rotary face, in a wide variety of face and elastomer materials. Seal is driven by a grubbed screwed collar, similar to the Type 97.

The Type 98 design is unique compared to Type 95, 96 and 97, as it designed to suit different housing sizes and is supplied with a double 'O'-Ring stationary seat, as standard.

STANDARD COMPONENTS



NO	Description		
1	Stationary 'O'-Ring	4	Rotary 'O'-Ring
2	Stationary Seat	5	Coil
3a	Rotary Face	6	Split Ring
3b	Seal Head Retainer	7	Washer
		8	Drive Collar with Grub screws

Vulcan Design Advantages

Material Quality

All 9x Types are available from stock, with a wide range of face and stationary materials, including Tungsten Carbide, Silicon Carbide or Ceramic inserted rotary faces, Chrome Dioxide coated Stainless Steel rotary faces, and Carbon, Tungsten Carbide or Silicon Carbide stationaries.

Design

The Vulcan 9X seal ranges can either be supplied with solid rotary faces or inserted hard faces, with improved tracking capabilities to many competitors' equivalents.

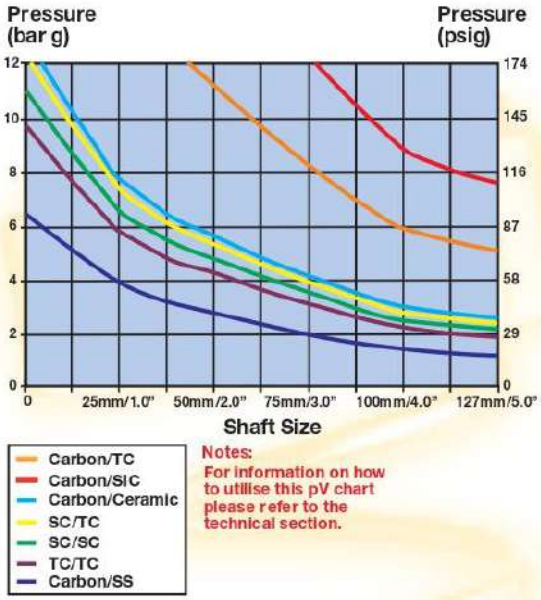
Seal face loading has been designed to ensure optimum seal performance and therefore longer seal life.
Some main competitors seals do not have a linear progression of increasing spring force with shaft size nor optimum closing forces.

Superior Face Combinations

As is evidenced from the pV Chart below and from any Seal Technical literature, the competitor norms of Stainless Steel vs Carbon or Ceramic vs Carbon faces, as standard on their seals, have, substantially lower capability, performance and life in comparison to Vulcans preferred face combination of Carbon vs Silicon Carbide.

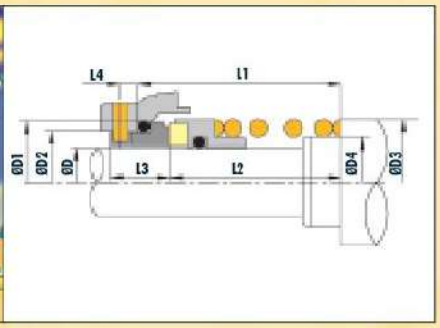
This Carbon vs SIC face combination is offered as the standard by Vulcan, at no extra price, to give the very best quality and performance. Why compromise on quality or accept a higher price for the best seal face combination, for standard, common Marine and Textile duties?

VULCAN PARALLEL SPRING '0'-RING MOUNTED TYPE SEALS PV CHART



Notes:
For information on how to utilise this pV chart please refer to the technical section.

TYPE 95/95N



Robust, general purpose, unbalanced pusher Type seal capable of many shaft-sealing duties. The Type 95 drives directly from the shaft, and is also available with a short, non-pinned seat as Type 95N, see column L31 for revised seat length. Seal illustrated shows a Stainless Steel rotary face.

VULCAN STANDARD SIZES

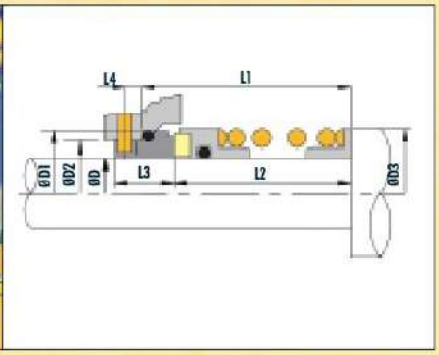
Shaft Size DØ			Shaft Size DØ			D1		D2		D3		D4		L1		L2		L3		L31		L4	
Inch	Metric	Code Size	Metric	Inch	Code Size	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch
0.625	15.88	0158	-	-	-	28.57	1.125	24.31	0.957	29.00	1.142	19.05	0.750	33.50	1.319	24.50	0.965	15.00	0.591	11.50	0.453	4.00	0.157
0.750	19.05	0191	-	-	-	31.75	1.250	27.48	1.082	32.50	1.280	22.22	0.875	33.50	1.319	24.50	0.965	15.00	0.591	11.50	0.453	4.00	0.157
-	-	-	20	0.787	0200	33.32	1.312	29.06	1.144	34.50	1.358	24.00	0.945	36.50	1.437	27.50	1.083	15.00	0.591	11.50	0.453	4.00	0.157
0.875	22.23	0222	-	-	-	34.93	1.375	30.66	1.207	34.93	1.375	25.40	1.000	35.00	1.378	26.00	1.024	15.00	0.591	11.50	0.453	4.00	0.157
-	-	-	25	0.984	0250	39.85	1.569	33.84	1.332	38.10	1.500	28.57	1.125	40.00	1.575	30.00	1.181	16.00	0.630	11.50	0.453	4.00	0.157
1.000	25.40	0254	-	-	-	39.85	1.569	33.84	1.332	38.10	1.500	28.57	1.125	40.00	1.575	30.00	1.181	16.00	0.630	11.50	0.453	4.00	0.157
1.125	28.58	0286	28	1.102	0286	43.05	1.695	37.01	1.457	42.60	1.677	31.75	1.250	41.50	1.634	31.50	1.240	16.00	0.630	11.50	0.453	4.00	0.157
-	-	-	30	1.181	0300	44.63	1.757	38.61	1.520	45.50	1.791	33.32	1.312	41.50	1.634	31.50	1.240	16.00	0.630	11.50	0.453	4.00	0.157
1.250	31.75	0317	32	1.260	0317	46.32	1.824	40.28	1.586	46.20	1.819	34.92	1.375	44.50	1.752	34.50	1.358	16.00	0.630	11.50	0.453	4.00	0.157
1.375	34.93	0349	35	1.378	0349	49.48	1.948	43.46	1.711	49.50	1.949	38.10	1.500	47.50	1.870	37.50	1.476	16.00	0.630	11.50	0.453	4.00	0.157
1.500	38.10	0381	38	1.496	0381	52.56	2.069	46.63	1.836	52.50	2.067	42.88	1.688	47.50	1.870	37.50	1.476	16.00	0.630	11.50	0.453	4.00	0.157
-	-	-	40	1.575	0400	54.25	2.136	48.13	1.895	55.00	2.165	44.45	1.750	47.50	1.870	37.50	1.476	16.00	0.630	11.50	0.453	4.00	0.157
1.625	41.28	0412	42	1.654	0412	55.83	2.198	49.81	1.961	55.50	2.185	46.02	1.812	47.50	1.870	37.50	1.476	16.00	0.630	11.50	0.453	4.00	0.157
1.750	44.45	0444	45	1.772	0444	59.02	2.324	52.98	2.086	59.20	2.331	49.20	1.937	47.50	1.870	37.50	1.476	16.00	0.630	11.50	0.453	4.00	0.157
1.875	47.63	0476	48	1.890	0476	63.68	2.507	57.66	2.270	61.91	2.437	52.37	2.062	52.50	2.067	42.50	1.673	18.00	0.709	11.50	0.453	5.00	0.197
-	-	-	50	1.969	0500	65.37	2.574	59.33	2.336	66.00	2.598	53.97	2.125	55.50	2.185	45.50	1.791	18.00	0.709	11.50	0.453	5.00	0.197
2.000	50.80	0508	-	-	-	66.85	2.632	60.83	2.395	66.68	2.625	55.57	2.188	55.50	2.185	45.50	1.791	18.00	0.709	11.50	0.453	5.00	0.197
2.125	53.98	0539	55	2.165	0539	70.03	2.757	64.01	2.520	70.20	2.764	58.72	2.312	57.00	2.244	47.00	1.850	18.00	0.709	n/a	n/a	5.00	0.197
2.250	57.15	0571	-	-	-	73.20	2.882	67.18	2.645	73.02	2.875	61.90	2.437	57.00	2.244	47.00	1.850	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	58	2.283	0580	79.50	3.129	68.86	2.711	74.00	2.913	63.50	2.500	57.00	2.244	47.00	1.850	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	60	2.362	0600	76.38	3.007	70.36	2.770	77.00	3.031	65.07	2.562	60.50	2.382	50.50	1.988	18.00	0.709	n/a	n/a	5.00	0.197
2.375	60.33	0603	-	-	-	76.38	3.007	70.36	2.770	76.20	3.000	65.07	2.562	60.50	2.382	50.50	1.988	18.00	0.709	n/a	n/a	5.00	0.197
2.500	63.50	0635	-	-	-	79.56	3.132	73.53	2.895	79.38	3.125	68.28	2.688	60.50	2.382	50.50	1.988	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	65	2.559	0650	81.23	3.198	75.21	2.961	82.00	3.228	69.85	2.750	63.50	2.500	53.50	2.106	18.00	0.709	n/a	n/a	5.00	0.197
2.625	66.68	0666	-	-	-	82.73	3.257	76.71	3.020	82.55	3.250	71.42	2.812	63.50	2.500	53.50	2.106	18.00	0.709	n/a	n/a	5.00	0.197
2.750	69.85	0698	70	2.756	0698	85.90	3.382	79.88	3.145	86.20	3.394	74.60	2.937	63.50	2.500	53.50	2.106	18.00	0.709	n/a	n/a	5.00	0.197
2.875	73.03	0730	73	2.874	0730	89.08	3.507	83.06	3.270	90.00	3.543	77.77	3.062	66.50	2.618	56.50	2.224	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	75	2.953	0750	90.77	3.574	84.73	3.336	91.50	3.602	79.37	3.125	66.50	2.618	56.60	2.228	18.00	0.709	n/a	n/a	5.00	0.197
3.000	76.20	0762	-	-	-	95.43	3.757	89.41	3.520	95.25	3.750	80.97	3.188	73.00	2.874	63.00	2.480	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	80	3.150	0800	100.29	3.948	94.26	3.711	99.50	3.917	85.73	3.375	73.00	2.874	63.00	2.480	18.00	0.709	n/a	n/a	5.00	0.197
3.250	82.55	0825	-	-	-	101.78	4.007	95.76	3.770	101.60	4.000	87.30	3.437	73.00	2.874	63.00	2.480	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	85	3.346	0850	104.77	4.125	98.93	3.895	105.50	4.154	90.00	3.543	73.00	2.874	63.00	2.480	18.00	0.709	n/a	n/a	5.00	0.197
3.500	88.90	0889	-	-	-	108.13	4.257	102.11	4.020	107.95	4.250	93.67	3.688	73.00	2.874	63.00	2.480	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	90	3.543	0900	109.82	4.324	103.78	4.086	110.50	4.350	95.25	3.750	78.00	3.071	68.00	2.677	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	95	3.740	0950	114.30	4.500	108.46	4.270	115.50	4.547	100.00	3.937	78.00	3.071	68.00	2.677	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	100	3.937	1000	119.33	4.698	113.31	4.461	120.00	4.724	104.77	4.125	78.00	3.071	68.00	2.677	18.00	0.709	n/a	n/a	5.00	0.197
4.000	101.60	1016	-	-	-	124.00	4.882	117.98	4.645	124.50	4.902	107.95	4.250	82.50	3.248	72.50	2.854	18.00	0.709	n/a	n/a	5.00	0.197
4.125	104.78	1047	105	4.134	1047	127.00	5.000	121.16	4.770	128.00	5.039	111.00	4.370	82.50	3.248	72.50	2.854	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	110	4.331	1100	131.77	5.188	126.01	4.961	133.00	5.236	116.00	4.567	82.50	3.248	72.50	2.854	18.00	0.709	n/a	n/a	5.00	0.197
4.500	114.30	1143	115	4.528	1143	136.52	5.375	130.68	5.145	137.50	5.413	121.00	4.764	82.50	3.248	72.50	2.854	18.00	0.709	n/a	n/a	5.00	0.197
-	-	-	120	4.724	1200	142.87	5.625	137.03	5.395	144.00	5.669	126.00	4.961	89.00	3.504	79.00	3.110	18.00	0.709	n/a	n/a	5.00	0.197

STANDARD STOCK FACE MATERIALS
Rotary Face: Silicon Carbide, Tungsten Carbide, Ceramic, Stainless Steel, Chrome Oxide coated Stainless Steel. Stat Ring: Carbon, Silicon Carbide, Tungsten Carbide.
OTHER FACE MATERIALS TO ORDER

Suggested Operating Limits

PRESSURE 170psi SPEED 20m/s
TEMPERATURE -50 +180°C
Dependent upon shaft diameter and speed + Temperature and media to be sealed

TYPE 96



Robust, general purpose, unbalanced pusher Type seal capable of many shaft-sealing duties. The Type 96 drives from the shaft via the split ring, inserted in the coil tail. Also available with a short, non-pinned seat as Type 96N, see column L31 on the Type 95 page for revised seat length. Seal illustrated shows a Silicon Carbide rotary face.

VULCAN STANDARD SIZES

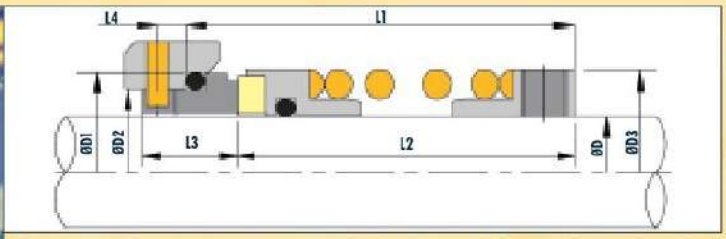
Shaft Size DØ			Shaft Size DØ			D1		D2		D3		L1		L2		L3		L4	
Inch	Metric	Code Size	Metric	Inch	Code Size	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch
0.625	15.88	0158	16	0.630	0160	28.57	1.125	24.31	0.957	29.00	1.142	35.00	1.378	26.00	1.024	15.00	0.591	4.00	0.157
0.750	19.05	0191	18	0.709	0180	31.75	1.250	27.48	1.082	32.50	1.280	35.00	1.378	26.00	1.024	15.00	0.591	4.00	0.157
-	-	-	20	0.787	0200	33.32	1.312	29.06	1.144	34.50	1.358	38.00	1.496	29.00	1.142	15.00	0.591	4.00	0.157
0.875	22.23	0222	22	0.866	0220	34.93	1.375	30.66	1.207	34.93	1.375	36.50	1.437	27.50	1.083	15.00	0.591	4.00	0.157
1.000	25.40	0254	25	0.984	0250	39.85	1.569	33.84	1.332	38.10	1.500	41.50	1.634	31.50	1.240	16.00	0.630	4.00	0.157
1.125	28.58	0286	28	1.102	0280	43.05	1.695	37.01	1.457	42.86	1.687	43.00	1.693	33.00	1.299	16.00	0.630	4.00	0.157
-	-	-	30	1.181	0300	44.63	1.757	38.61	1.520	43.50	1.713	43.00	1.693	33.00	1.299	16.00	0.630	4.00	0.157
1.250	31.75	0317	32	1.260	0320	46.32	1.824	40.28	1.586	47.00	1.850	46.00	1.811	36.00	1.417	16.00	0.630	4.00	0.157
1.375	34.93	0349	35	1.378	0350	49.48	1.948	43.46	1.711	50.00	1.969	49.00	1.929	39.00	1.535	16.00	0.630	4.00	0.157
1.500	38.10	0381	38	1.496	0380	52.56	2.069	46.63	1.836	53.00	2.087	49.00	1.929	39.00	1.535	16.00	0.630	4.00	0.157
-	-	-	40	1.575	0400	54.25	2.136	48.13	1.895	55.00	2.165	49.00	1.929	39.00	1.535	16.00	0.630	4.00	0.157
1.625	41.28	0412	42	1.654	0420	55.83	2.198	49.81	1.961	55.50	2.185	49.00	1.929	39.00	1.535	16.00	0.630	4.00	0.157
1.750	44.45	0444	45	1.772	0450	59.02	2.324	52.98	2.086	60.00	2.362	49.00	1.929	39.00	1.535	16.00	0.630	4.00	0.157
1.875	47.63	0476	48	1.890	0480	63.68	2.507	57.66	2.270	61.91	2.437	54.00	2.126	44.00	1.732	18.00	0.709	5.00	0.197
-	-	-	50	1.969	0500	65.37	2.574	59.33	2.336	66.00	2.598	57.00	2.244	47.00	1.850	18.00	0.709	5.00	0.197
2.000	50.80	0508	-	-	-	66.85	2.632	60.83	2.395	66.68	2.625	57.00	2.244	47.00	1.850	18.00	0.709	5.00	0.197
2.125	53.98	0539	55	2.165	0550	70.03	2.757	64.01	2.520	71.00	2.795	58.50	2.303	48.50	1.909	18.00	0.709	5.00	0.197
2.250	57.15	0571	-	-	-	73.20	2.882	67.18	2.645	73.02	2.875	58.50	2.303	48.50	1.909	18.00	0.709	5.00	0.197
2.375	60.33	0603	60	2.362	0600	76.38	3.007	70.36	2.770	77.00	3.031	62.00	2.441	52.00	2.047	18.00	0.709	5.00	0.197
2.500	63.50	0635	-	-	-	79.56	3.132	73.53	2.895	79.38	3.125	62.00	2.441	52.00	2.047	18.00	0.709	5.00	0.197
-	-	-	65	2.559	0650	81.23	3.198	75.21	2.961	82.00	3.228	65.00	2.559	55.00	2.165	18.00	0.709	5.00	0.197
2.625	66.68	0666	-	-	-	82.73	3.257	76.71	3.020	82.55	3.250	65.00	2.559	55.00	2.165	18.00	0.709	5.00	0.197
2.750	69.85	0698	70	2.756	0700	85.90	3.382	79.88	3.145	87.00	3.425	65.00	2.559	55.00	2.165	18.00	0.709	5.00	0.197
2.875	73.03	0730	73	2.874	0730	89.08	3.507	83.06	3.270	90.00	3.543	70.00	2.756	60.00	2.362	18.00	0.709	5.00	0.197
-	-	-	75	2.953	0750	90.77	3.574	84.73	3.336	91.50	3.602	70.00	2.756	60.00	2.362	18.00	0.709	5.00	0.197
3.000	76.20	0762	-	-	-	95.43	3.757	89.41	3.520	95.25	3.750	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
-	-	-	80	3.150	0800	100.29	3.948	94.26	3.711	99.50	3.917	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
3.250	82.55	0826	-	-	-	101.78	4.007	95.76	3.770	101.60	4.000	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
-	-	-	85	3.346	0850	104.77	4.125	98.93	3.895	105.50	4.154	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
3.500	88.90	0889	-	-	-	108.13	4.257	102.11	4.020	107.95	4.250	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
-	-	-	90	3.543	0900	109.82	4.324	103.78	4.086	110.50	4.350	81.00	3.189	71.00	2.795	18.00	0.709	5.00	0.197
-	-	-	95	3.740	0950	114.30	4.500	108.46	4.270	115.50	4.547	81.00	3.189	71.00	2.795	18.00	0.709	5.00	0.197
-	-	-	100	3.937	1000	119.33	4.698	113.31	4.461	120.00	4.724	81.00	3.189	71.00	2.795	18.00	0.709	5.00	0.197
4.000	101.60	1016	-	-	-	124.00	4.882	117.98	4.645	124.50	4.902	85.50	3.366	75.50	2.972	18.00	0.709	5.00	0.197
4.125	104.78	1047	105	4.134	1050	127.00	5.000	121.16	4.770	128.00	5.039	85.50	3.366	75.50	2.972	18.00	0.709	5.00	0.197
-	-	-	110	4.331	1100	131.77	5.188	126.01	4.961	133.00	5.236	85.50	3.366	75.50	2.972	18.00	0.709	5.00	0.197
4.500	114.30	1143	115	4.528	1150	136.52	5.375	130.68	5.145	137.50	5.413	85.50	3.366	75.50	2.972	18.00	0.709	5.00	0.197
-	-	-	120	4.724	1200	142.87	5.625	137.03	5.395	144.00	5.669	92.00	3.622	82.00	3.228	18.00	0.709	5.00	0.197

STANDARD STOCK FACE MATERIALS
Rotary Face: Silicon Carbide, Tungsten Carbide, Ceramic, Stainless Steel, Chrome Oxide coated Stainless Steel. Stat Ring: Carbon, Silicon Carbide, Tungsten Carbide.
OTHER FACE MATERIALS TO ORDER

Suggested Operating Limits

PRESSURE 170psi SPEED 20m/s
TEMPERATURE -50 +180°C
Dependent upon shaft diameter and speed + Temperature and media to be sealed

TYPE 97



Robust, general purpose, unbalanced pusher Type seal, capable of many shaft-sealing duties. The Type 97 drives from the shaft via the drive collar with grub screws inserted in the coil tail. Type 97 is also available with a short, non-pinned seat as Type 97N, see column L31 on the Type 95 page for revised seat length.

VULCAN STANDARD SIZES

Shaft Size DØ			Shaft Size DØ			D1		D2		D3		L1		L2		L3		L4	
Inch	Metric	Code Size	Metric	Inch	Code Size	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch
0.625	15.80	0158	16	0.630	0160	28.57	1.125	24.31	0.957	29.00	1.142	41.50	1.634	32.50	1.280	15.00	0.591	4.00	0.157
0.750	19.10	0191	18	0.709	0180	31.75	1.250	27.48	1.082	32.50	1.280	41.50	1.634	32.50	1.280	15.00	0.591	4.00	0.157
-	-	-	20	0.787	0200	33.32	1.312	29.06	1.144	34.50	1.358	44.50	1.752	35.50	1.398	15.00	0.591	4.00	0.157
0.875	22.20	0222	22	0.866	0220	34.93	1.375	30.66	1.207	34.93	1.375	44.50	1.752	35.50	1.398	15.00	0.591	4.00	0.157
1.000	25.40	0254	25	0.984	0250	39.85	1.569	33.84	1.332	38.10	1.500	49.00	1.929	39.00	1.535	16.00	0.630	4.00	0.157
1.125	28.60	0286	28	1.102	0280	43.05	1.695	37.01	1.457	42.86	1.687	51.00	2.008	41.00	1.614	16.00	0.630	4.00	0.157
-	-	-	30	1.181	0300	44.63	1.757	38.61	1.520	45.50	1.791	51.00	2.008	41.00	1.614	16.00	0.630	4.00	0.157
1.250	31.70	0317	32	1.260	0320	46.32	1.824	40.28	1.586	47.00	1.850	54.00	2.126	44.00	1.732	16.00	0.630	4.00	0.157
1.375	34.90	0349	35	1.378	0350	49.48	1.948	43.46	1.711	50.00	1.969	57.00	2.244	47.00	1.850	16.00	0.630	4.00	0.157
1.500	38.10	0381	38	1.496	0380	52.56	2.069	46.63	1.836	53.00	2.087	57.00	2.244	47.00	1.850	16.00	0.630	4.00	0.157
-	-	-	40	1.575	0400	54.25	2.136	48.13	1.895	55.00	2.165	57.00	2.244	47.00	1.850	16.00	0.630	4.00	0.157
1.625	41.20	0412	42	1.654	0420	55.83	2.198	49.81	1.961	55.50	2.185	57.00	2.244	47.00	1.850	16.00	0.630	4.00	0.157
1.750	44.40	0444	45	1.772	0450	59.02	2.324	52.98	2.086	60.00	2.362	57.00	2.244	47.00	1.850	16.00	0.630	4.00	0.157
1.875	47.60	0476	48	1.890	0480	63.68	2.507	57.66	2.270	61.91	2.437	65.00	2.559	55.00	2.165	18.00	0.709	5.00	0.197
-	-	-	50	1.969	0500	65.37	2.574	59.33	2.336	66.00	2.598	68.50	2.697	58.50	2.303	18.00	0.709	5.00	0.197
2.000	50.80	0508	-	-	-	66.85	2.632	60.83	2.395	66.68	2.625	68.50	2.697	58.50	2.303	18.00	0.709	5.00	0.197
2.125	53.90	0539	55	2.165	0550	70.03	2.757	64.01	2.520	71.00	2.795	70.00	2.756	60.00	2.362	18.00	0.709	5.00	0.197
2.250	57.10	0571	-	-	-	73.20	2.882	67.18	2.645	73.02	2.875	70.00	2.756	60.00	2.362	18.00	0.709	5.00	0.197
2.375	60.30	0603	60	2.362	0600	76.38	3.007	70.36	2.770	77.00	3.031	73.00	2.874	63.00	2.480	18.00	0.709	5.00	0.197
2.500	63.50	0635	-	-	-	79.56	3.132	73.56	2.896	79.38	3.125	73.00	2.874	63.00	2.480	18.00	0.709	5.00	0.197
-	-	-	65	2.559	0650	81.23	3.198	75.21	2.961	82.00	3.228	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
2.625	66.60	0666	-	-	-	82.73	3.257	76.71	3.020	82.55	3.250	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
2.750	69.80	0698	70	2.756	0700	85.90	3.382	79.88	3.145	87.00	3.425	76.00	2.992	66.00	2.598	18.00	0.709	5.00	0.197
2.875	73.00	0730	73	2.874	0730	89.08	3.507	83.06	3.270	90.00	3.543	81.00	3.189	71.00	2.795	18.00	0.709	5.00	0.197
-	-	-	75	2.953	0750	90.77	3.574	84.73	3.336	91.50	3.602	81.00	3.189	71.00	2.795	18.00	0.709	5.00	0.197
3.000	76.20	0762	-	-	-	95.43	3.757	89.41	3.520	95.25	3.750	87.50	3.445	77.50	3.051	18.00	0.709	5.00	0.197
-	-	-	80	3.150	0800	100.29	3.948	94.26	3.711	99.50	3.917	87.50	3.445	77.50	3.051	18.00	0.709	5.00	0.197
3.250	82.60	0826	-	-	-	101.78	4.007	95.76	3.770	101.60	4.000	87.50	3.445	77.50	3.051	18.00	0.709	5.00	0.197
-	-	-	85	3.346	0850	104.77	4.125	98.93	3.895	105.50	4.154	87.50	3.445	77.50	3.051	18.00	0.709	5.00	0.197
3.500	88.90	0889	-	-	-	108.13	4.257	102.11	4.020	107.95	4.250	87.50	3.445	77.50	3.051	18.00	0.709	5.00	0.197
-	-	-	90	3.543	0900	109.82	4.324	103.78	4.086	110.50	4.350	92.00	3.622	82.00	3.228	18.00	0.709	5.00	0.197
-	-	-	95	3.740	0950	114.30	4.500	108.46	4.270	115.50	4.547	92.00	3.622	82.00	3.228	18.00	0.709	5.00	0.197
-	-	-	100	3.937	1000	119.33	4.698	113.31	4.461	120.00	4.724	92.00	3.622	82.00	3.228	18.00	0.709	5.00	0.197
4.000	101.60	1016	-	-	-	124.00	4.882	117.98	4.645	124.50	4.902	98.50	3.878	88.50	3.484	18.00	0.709	5.00	0.197
4.125	104.70	1047	105	4.134	1050	127.00	5.000	121.16	4.770	128.00	5.039	98.50	3.878	88.50	3.484	18.00	0.709	5.00	0.197
-	-	-	110	4.331	1100	131.77	5.188	126.01	4.961	133.00	5.236	98.50	3.878	88.50	3.484	18.00	0.709	5.00	0.197
4.500	114.30	1143	115	4.528	1150	136.52	5.375	130.68	5.145	137.50	5.413	98.50	3.878	88.50	3.484	18.00	0.709	5.00	0.197
-	-	-	120	4.724	1200	142.87	5.625	137.03	5.395	144.00	5.669	105.00	4.134	95.00	3.740	18.00	0.709	5.00	0.197

Suggested Operating Limits

PRESSURE 170psi SPEED 20m/s

TEMPERATURE -50 +180°C

Dependent upon shaft diameter and speed + Temperature and media to be sealed

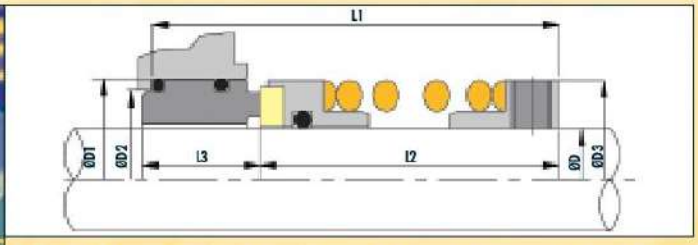
STANDARD STOCK FACE MATERIALS

Rotary Face: Silicon Carbide, Tungsten Carbide, Ceramic, Stainless Steel, Chrome Oxide coated Stainless Steel.

Stat Ring: Carbon, Silicon Carbide, Tungsten Carbide.

OTHER FACE MATERIALS TO ORDER

TYPE 98



Robust ,'O'-Ring mounted, unbalanced, metric shaft, parallel spring seal, as per Type 97, but with the addition of a double 'O'-Ring mounted Stationary Seat.
Most commonly found in marine and textile dyeing applications.

VULCAN STANDARD SIZES

Metric Shaft Size D	Size Code	D1	D2	D3	L1	L2	L3
20	0200	37.00	31.00	34.50	61.00	38.00	24.00
22	0220	39.00	33.00	34.93	61.00	38.00	24.00
25	0250	40.00	34.00	38.10	61.00	38.00	24.00
28	0280	44.00	38.00	42.00	63.00	40.00	24.00
30	0300	47.00	41.00	43.50	64.00	40.00	26.00
32	0320	48.00	42.00	47.00	64.00	40.00	26.00
35	0350	51.00	45.00	50.00	64.00	40.00	26.00
38	0380	54.00	48.00	53.00	69.00	45.00	26.00
40	0400	57.00	51.00	55.00	69.00	45.00	26.00
42	0420	60.50	54.50	55.50	74.00	50.00	26.00
45	0450	61.00	55.00	60.00	74.00	50.00	26.00
48	0480	64.00	58.00	62.00	79.00	55.00	26.00
50	0500	67.00	61.00	66.00	79.00	55.00	26.00
52	0520	70.00	64.00	68.00	82.00	58.00	26.00
55	0550	73.00	67.00	71.00	82.00	58.00	26.00
58	0580	76.00	70.00	74.00	82.00	58.00	26.00
60	0600	80.00	74.00	77.00	86.00	60.00	28.00
62	0620	83.00	77.00	78.00	86.00	60.00	28.00
65	0650	86.00	80.00	82.00	88.00	62.00	28.00
68	0680	89.00	83.00	84.00	88.00	62.00	28.00
70	0700	89.00	83.00	87.00	91.00	65.00	28.00
75	0750	95.00	89.00	91.50	91.00	65.00	28.00
80	0800	99.00	93.00	99.50	96.00	70.00	28.00
85	0850	105.00	99.00	105.50	96.00	70.00	28.00
90	0900	111.00	105.00	110.50	96.00	70.00	28.00
95	0950	114.00	108.00	115.50	101.00	75.00	28.00
100	1000	118.00	112.00	120.00	101.00	75.00	28.00
105	1050	132.00	126.00	128.00	103.00	75.00	30.00
110	1100	137.00	131.00	133.00	108.00	80.00	30.00
115	1150	140.00	134.00	137.50	108.00	80.00	30.00
120	1200	147.00	141.00	144.00	113.00	85.00	30.00
130	1300	156.00	150.00	154.00	113.00	85.00	30.00

Suggested Operating Limits

PRESSURE 170psi SPEED 20m/s
TEMPERATURE -50 +180°C
Dependent upon shaft diameter and speed + Temperature and media to be sealed

STANDARD STOCK FACE MATERIALS
Rotary Face: Silicon Carbide, Tungsten Carbide, Ceramic, Stainless Steel, Chrome Oxide coated Stainless Steel.
Stat Ring: Carbon, Silicon Carbide, Tungsten Carbide.
OTHER FACE MATERIALS TO ORDER