VULCAN SEALS

Phone : +44 (0) 114 249 3333
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Vulcan Seals Type A1

Technical Data Sheet

Product Description

The Vulcan Seals Type A1 is a robust, hydraulically balanced rubber diaphragm mounted parallel spring seal design with increased drive contact area from the shaft to the head to minimise component wear and hang-up.

The seal drive is provided by the diaphragm bellows tightly gripping the shaft and providing positive drive to the seal head and sealing face. The Vulcan Seals diaphragm seal designs are bi-directional "pusher" seals that minimise shaft fretting as the spring is constantly providing energising force to the shaft contact point and sealing face.

Supplied with a Vulcan Seals Type 20 boot-mounted stationary to suit common metric and imperial UK and European extended-length seal chambers.

Why Choose the Vulcan Seals Type A1?

- Robust, extended working length, highly accommodating, and reliable, rubber diaphragm seal, with enhanced seal capability, performance, and durability.
- Featuring a self-adjusting seal head design with face retention and hydraulic face balancing to maximise primary and secondary sealing performance.
- Boot-mounted stationary provides maximum elastomer sealing contact to the housing surface.
- The Vulcan Seals Type A1 has a narrow profile, allowing clearance into a greater range of pump seal chambers.
- A widely utilised mechanical seal type suited to medium to heavy duties and capable of long service.

Standard Face Material Combinations

Rotary Face	Stationary Face	Complete Seal Code

Guaranteed Stock/Material Elastomers: Viton™/FKM, EP, Nitrile and Metallurgy 304SS
*Non-stock guarantee

Elastomer Temperature Capabilities

	Minimum	Maximum
Nitrile	-30°C	+120°C
EP	-40°C	+140°C
Viton™/FKM	-30°C	+180°C

Pressure: Up to 26 bar (377 psi)

Mechanical Seal Replacement Range

Vulcan Seals Type A1 is a dimensional replacement mechanical seal for the following seal ranges:

- AES® | Type N-P01U*
- Lidering® | Type LRB00L*
- U.S. Seal® | Type U*
- John Crane® | Type 1 (Europe)*
- Pac-Seal® | Type 300*

**Rotary Face | **Stationary Face*

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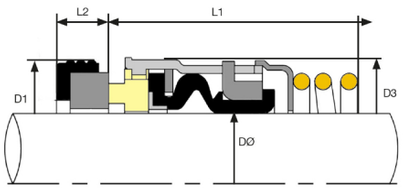

Dimensional Data

DØ (Metr.)	Size Code	D1	D3	L1	L2	DØ (Imp.)	Size Code 2	D1 (mm)	D3 (mm)	L1 (mm)	L2 (mm)
12*	0120	27.79	23.90	43.66	8.74	0.500	0127	27.79	23.90	43.66	8.74
14*	0140	30.95	27.07	43.66	10.32	0.625	0158	30.95	27.07	43.66	10.32
16	0160	30.95	27.07	43.66	10.32	0.750	0191	34.15	30.25	43.66	10.32
18*	0180	34.15	30.25	43.66	10.32	0.875	0222	37.30	33.42	43.66	10.32
20*	0200	35.70	33.42	43.66	10.32	1.000	0254	40.50	38.10	43.66	10.32
22	0220	37.30	33.42	43.66	10.32	1.125	0286	47.63	41.28	60.33	11.99
24*	0240	40.50	38.10	43.66	10.32	1.250	0317	50.80	46.00	60.33	11.99
25*	0250	40.50	38.10	43.66	10.32	1.375	0349	53.98	48.68	60.33	11.99
28*	0280	47.63	41.28	60.33	11.99	1.500	0381	57.15	51.85	60.33	11.99
30*	0300	50.80	46.00	60.33	11.99	1.625	0412	60.33	58.10	60.33	11.99
32	0320	50.80	46.00	60.33	11.99	1.750	0444	63.50	61.67	70.64	11.99
33*	0330	53.98	48.68	60.33	11.99	1.875	0476	66.68	64.84	70.64	11.99
35	0350	53.98	48.68	60.33	11.99	2.000	0508	69.85	68.01	70.64	13.50
38	0380	57.15	51.85	60.33	11.99	2.125	0539	73.03	72.02	70.64	13.50
40*	0400	60.33	58.10	60.33	11.99	2.250	0571	76.20	75.30	70.64	13.50
43*	0430	63.50	61.67	70.64	11.99	2.375	0603	79.38	78.37	70.64	13.50
45*	0450	63.50	61.67	70.64	11.99	2.500	0635	82.55	81.54	70.64	13.50
48*	0480	66.68	64.84	70.64	11.99	2.625	0666	92.08	86.22	69.85	15.88
50*	0500	69.85	68.01	70.64	13.50	2.750	0698	95.25	89.40	69.85	15.88
53*	0530	73.03	72.02	70.64	13.50	2.875	0730	98.43	92.57	73.03	15.88
55*	0550	76.20	75.30	70.64	13.50	3.000	0762	101.60	95.75	73.03	15.88
60	0600	79.38	78.37	70.64	13.50	3.125*	0794	111.15	102.00	79.38	19.88
63*	0630	82.55	81.54	70.64	13.50	3.250*	0825	114.30	105.00	79.38	19.88
65*	0650	92.08	86.22	69.85	15.88	3.375*	0857	117.48	108.00	79.38	19.88
70	0700	95.25	89.40	69.85	15.88	3.500*	0889	120.65	111.00	79.38	19.88
75*	0750	101.60	95.75	73.03	15.88	3.625*	0921	123.83	114.00	85.55	19.88
80	0800	111.15	102.00	79.38	19.88	3.750*	0953	127.00	118.00	82.55	19.88
						3.875*	0984	130.20	121.00	85.73	19.88
						4.000*	1016	133.35	124.00	85.73	19.88

Dimensions in mm
*Non-stock guarantee

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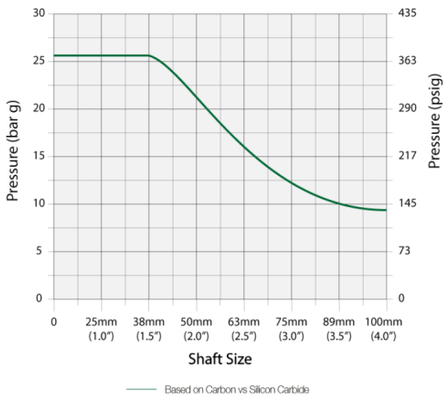
Maximum Operating Pressure

The PV Chart shows the maximum operating pressures of this Vulcan Seals type, based on the seal face materials used. Different lines on the chart indicate different material combinations, as shown underneath.

It also assumes stable operation in a clean, cool, lubricating and nonvolatile fluid with an adequate flush rate.

For more in-depth pressure rating calculations based on specific material combinations and application conditions, please consult us.

PV Chart



Application Conditions

	Criteria	Multiplier
Product Fluid	Lubricating fluids	X 1.00
	Aqueous solutions / Water	X 0.85
Temperature	Below 70°C (158°F)	X 1.00
	71°C to 120°C (160°F to 248°F)	X 0.85
	121°C to 175°C (250°F to347°F)	X 0.75
	Over 176°C (349°F)	X 0.60
Speed	Up to 1750 rpm	X 1.00
	1750 to 3600 rpm	X 0.80

Face and Seat Materials

Combination	Multiplier
Carbon vs Ceramic	x 0.50
Carbon vs Silicon Carbide	x 1.00
Silicon Carbide vs Ceramic	x 0.35
Silicon Carbide vs Silicon Carbide	x 0.50
Tungsten Carbide vs Tungsten Carbide	x 0.50

Example Calculation for Vulcan Seals Type A1

A. Shaft size: 38mm therefore pressure is 25 bar (from PV Chart)
B. Media: Water (multiplier = 0.85)
C. Temperature: 50°C (multiplier = 1.00)
D. Speed: 1450 rpm (multiplier = 1.00)
E. Face combination: Carbon vs Silicon Carbide (multiplier = 1.00)

For this particular Vulcan Seals Type A1 seal size, the calculation for the approximate guidance maximum operating pressure would be:

A x B x C x D x E
25 bar x 0.85 x 1.00 x 1.00 x 1.00 = 21.25 bar

Guidance Only

Please note that due to the many operational and application variables that affect seal performance, the information given on this page is for guidance only.

We therefore strongly recommend careful individual testing and monitoring of all seals and related equipment for any proposed application.

Our policy is one of continuous technical and efficiency improvement. As such, all specifications may be subject to change without prior notice.

** Important: These limits are the theoretical elastomer or design limitations. For maximum theoretical operating pressure for your specific size and application please refer to calculation example within this data sheet. All performance information given is for guidance only and is dependent on material, operating and application factors that affect seal performance.