



Vulcan Seals Type A52J

Technical Data Sheet



Product Description

The Vulcan Seals Type A52J is a robust, hydraulically balanced rubber diaphragm mounted parallel spring double seal design, developed from the proven Vulcan Seals Type A5J platform and intended for applications requiring enhanced leakage control and process containment.

The seal drive is provided by the diaphragm bellows tightly gripping the shaft and providing positive drive to both seal heads and sealing faces. The Vulcan Seals diaphragm seal designs are bi-directional ‘pusher’ seals that minimise shaft fretting, as the springs continuously provide energising force to the sealing faces and secondary seals.

The double seal arrangement allows operation with buffer or barrier fluid systems, providing improved lubrication of the seal faces and enhanced sealing performance in demanding process environments. Where barrier fluid systems are utilised, the barrier pressure is typically maintained above the process pressure to ensure positive barrier fluid flow across the seal faces, commonly around 1 bar (14.5 psi) depending on application and support system design.

Supplied with Vulcan Seals Type 31 ‘O’-ring-mounted stationaries, designed to suit common USA market imperial extended-length seal chambers with anti-rotation provision.

Why Choose the Vulcan Seals Type A52J?

- Robust, regular working length, highly accommodating and reliable rubber diaphragm double 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.
- The Vulcan Seals Type A52J has a narrow profile, allowing clearance into a greater range of pump seal chambers.
- ‘O’-ring mounted stationaries with anti-rotation provision provide security in high torque applications such as viscous or high solids media.
- Double seal configuration enables use with buffer or barrier fluid systems to improve process containment and sealing reliability.
- A widely utilised mechanical seal type suited to medium to heavy duties and capable of long service.

Standard Face Material Combinations

Impeller Side		Bearing Side		Complete Material Code
Rotary Face	Seal Face	Rotary Face	Seal Face	
VCP1 Carbon	VAW1 Ceramic	VCP1 Carbon	VAW1 Ceramic	WB
VCP1 Carbon	304 Stainless Steel	VCP1 Carbon	304 Stainless Steel	WF
VCP1 Carbon	VIN1 Ni-Resist	VCP1 Carbon	VIN1 Ni-Resist	WJ
VCP1 Carbon	VSR1 Silicon Carbide	VCP1 Carbon	VAW1 Ceramic	WI
VCP1 Carbon	VSR1 Silicon Carbide	VCP1 Carbon	VSR1 Silicon Carbide	YC
VCP1 Carbon	VTN1* Tungsten Carbide	VCP1 Carbon	VTN1* Tungsten Carbide	YH
VSR1 Silicon Carbide	VSR1 Silicon Carbide	VCP1 Carbon	VAW1 Ceramic	WA
VSR1 Silicon Carbide	VSR1 Silicon Carbide	VSR1 Silicon Carbide	VSR1 Silicon Carbide	ZS
VTN2* Tungsten Carbide	VTN1* Tungsten Carbide	VTN2* Tungsten Carbide	VTN1* Tungsten Carbide	ZH

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

Elastomer Temperature Capabilities

	Minimum	Maximum
Nitrile	-30°C	+120°C
EPDM	-40°C	+140°C
Viton™/FKM	-30°C	+230°C
FEPM/AFLAS®	-10°C	+250°C
FFKM	-50°C	+315°C

Pressure: Up to 26 bar (377 psi)

Compliance & Certificates



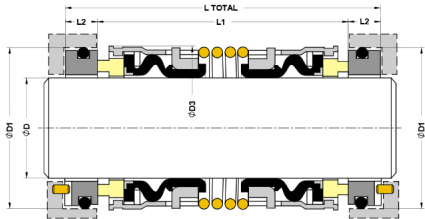
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

Mechanical Seal Replacement Range

Vulcan Seals Type A52J is a dimensional replacement mechanical seal for the following seal ranges:

- John Crane® | Type 1 (USA)/Type 3 seat* - Double Seal

*Rotary Face | **Stationary Face



Dimensional Data

DØ (Imperial)	DØ (Metric)	D1 (in)	D1 (mm)	D3 (in)	D3 (mm)	L1 (in)	L1 (mm)	L2 (in)	L2 (mm)	L Total (in)	L Total (mm)
0.500"	0127	1.000	25.40	0.937	23.80	1.937	49.21	0.312	7.93	2.562	65.07
0.625"	0158	1.250	31.75	1.093	27.76	2.063	52.39	0.405	10.28	2.872	72.95
0.750"	0191	1.375	34.93	1.218	30.94	2.063	52.39	0.405	10.28	2.872	72.95
0.875"	0222	1.500	38.10	1.343	34.11	2.125	53.98	0.405	10.28	2.935	74.54
1.000"	0254	1.625	41.28	1.500	38.10	2.500	63.50	0.437	11.10	3.374	85.70
1.125"	0286	1.750	44.44	1.625	41.28	2.563	65.09	0.437	11.10	3.437	87.29
1.250"	0317	1.875	47.63	1.812	46.02	2.563	65.09	0.437	11.10	3.437	87.29
1.375"	0349	2.000	50.80	1.917	48.68	2.625	66.68	0.437	11.10	3.499	88.88
1.500"	0381	2.125	53.98	2.041	51.85	2.625	66.68	0.437	11.10	3.499	88.88
1.625"	0412	2.375	60.33	2.287	58.10	3.125	79.38	0.500	12.70	4.125	104.78
1.750"	0444	2.500	63.50	2.412	61.27	3.125	79.38	0.500	12.70	4.125	104.78
1.875"	0476	2.625	66.68	2.537	64.44	3.250	82.55	0.500	12.70	4.25	107.95
2.000"	0508	2.750	69.85	2.646	67.21	3.250	82.55	0.500	12.70	4.25	107.95
2.125"	0539	3.000	76.20	2.835	72.02	3.625	92.08	0.562	14.28	4.75	120.64
2.250"	0571	3.125	79.38	2.965	75.30	3.625	92.08	0.562	14.28	4.75	120.64
2.375"	0603	3.250	82.55	3.083	78.30	3.750	95.25	0.562	14.28	4.874	123.81
2.500"	0635	3.375	85.73	3.210	81.54	3.750	95.25	0.562	14.28	4.874	123.81
2.625"	0666	3.375	85.73	3.394	86.22	4.125	104.78	0.625	15.88	5.376	136.54
2.750"	0698	3.500	88.90	3.520	89.40	4.250	107.95	0.625	15.88	5.5	139.71
2.875"	0730	3.750	95.25	3.644	92.57	4.250	107.95	0.625	15.88	5.5	139.71
3.000"	0762	3.875	98.43	3.770	95.75	4.250	107.95	0.625	15.88	5.5	139.71
3.125"	0794*	4.000	101.60	4.012	101.90	4.500	114.30	0.783	19.88	6.065	154.06
3.250"	0825*	4.125	104.78	4.177	106.10	4.500	114.30	0.783	19.88	6.065	154.06
3.375"	0857*	4.250	107.95	4.303	109.30	4.500	114.30	0.783	19.88	6.065	154.06
3.500"	0889*	4.375	111.13	4.429	112.50	4.500	114.30	0.783	19.88	6.065	154.06
3.625"	0920*	4.500	114.30	4.587	116.50	4.687	119.06	0.783	19.88	6.253	158.82
3.750"	0952*	4.625	117.48	4.677	118.80	4.687	119.06	0.783	19.88	6.253	158.82
3.875"	0984*	4.750	120.65	4.886	124.10	4.687	119.06	0.783	19.88	6.253	158.82
4.000"	1016*	4.875	123.83	5.012	127.30	4.687	119.06	0.783	19.88	6.253	158.82

Dimensions in mm
*Non-stock guarantee



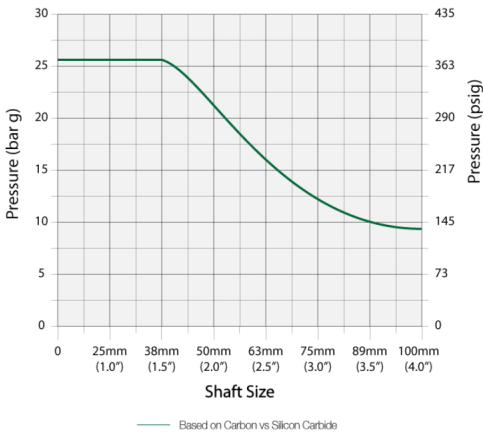
Maximum Operating Pressure

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 to 347°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 Stainless Steel	x 0.30
Carbon vs Ni-Resist	x 0.30
Carbon vs Silicon Carbide	x 1.00
Carbon vs Tungsten Carbide	x 0.90
Silicon Carbide vs Silicon Carbide	x 0.50
Tungsten Carbide vs Tungsten Carbide	x 0.50

Example Calculation for Vulcan Seals Type A52J

- 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 A52J 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.

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** 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.