



## Vulcan Seals Type A4J

### Technical Data Sheet



#### Product Description

The Vulcan Seals Type A4J 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 31 'O'-ring-mounted stationary to suit common USA market imperial regular length seal chambers with anti-rotation provision.

#### Why Choose the Vulcan Seals Type A4J?

- Robust, regular 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.
- 'O'-ring stationary with anti-rotation provision provides security in high-torque applications such as viscous or high solids medias.
- A widely utilised mechanical seal type suited to medium to heavy duties and capable of long service.

#### Standard Face Material Combinations

Rotary Face   Material	Stationary Face   Material	Complete Material Code
VCP1 Carbon	VAW1 Ceramic	C
VCP1 Carbon	304 Stainless Steel	Q
VCP1 Carbon	VIN1 Ni-Resist	F
VCP1 Carbon	VSR1 Silicon Carbide	D
VCP1 Carbon	VTN1* Tungsten Carbide	E
VSR1 Silicon Carbide	VSR1 Silicon Carbide	S
VTN2* Tungsten Carbide	VTN1* Tungsten Carbide	H

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



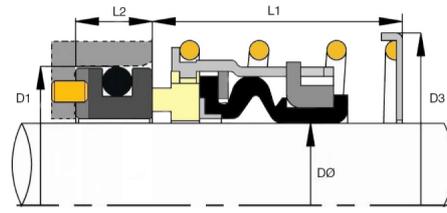
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

#### Mechanical Seal Replacement Range

Vulcan Seals Type A4J is a dimensional replacement mechanical seal for the following seal ranges:

- John Crane® | Type 2 (USA)/Type 3 seat\*

\*Rotary Face | \*\*Stationary Face



**Dimensional Data**

DØ (Imperial)	Seal Size Code	D1 (in)	D1 (mm)	D3 (in)	D3 (mm)	L1 (in)	L1 (mm)	L2 (in)	L2 (mm)
0.500	0127	1.000	25.40	1.187	30.14	0.813	20.64	0.312	7.93
0.625	0158	1.250	31.75	1.312	33.32	0.875	22.23	0.405	10.28
0.750	0191	1.375	34.93	1.438	36.52	0.875	22.23	0.405	10.28
0.875	0222	1.500	38.10	1.564	39.72	0.937	23.80	0.405	10.28
1.000	0254	1.625	41.28	1.783	45.30	1.000	25.40	0.437	11.10
1.125	0286	1.750	44.44	1.908	48.47	1.062	26.97	0.437	11.10
1.250	0317	1.875	47.63	2.079	52.80	1.062	26.97	0.437	11.10
1.375	0349	2.000	50.80	2.204	55.98	1.125	28.58	0.437	11.10
1.500	0381	2.125	53.98	2.329	59.15	1.125	28.58	0.437	11.10
1.625	0412	2.375	60.33	2.636	66.96	1.375	34.93	0.500	12.70
1.750	0444	2.500	63.50	2.761	70.12	1.375	34.93	0.500	12.70
1.875	0476	2.625	66.68	2.880	73.16	1.500	38.10	0.500	12.70
2.000	0508	2.750	69.85	3.011	76.48	1.500	38.10	0.500	12.70
2.125	0539	3.000	76.20	3.256	82.71	1.687	42.85	0.562	14.28
2.250	0571	3.125	79.38	3.381	85.89	1.687	42.85	0.562	14.28
2.375	0603	3.250	82.55	3.506	89.06	1.812	46.02	0.562	14.28
2.500	0635	3.375	85.73	3.631	92.24	1.812	46.02	0.562	14.28
2.625	0666	3.375	85.73	3.875	98.43	1.937	49.20	0.625	15.88
2.750	0698	3.500	88.90	4.000	101.60	1.937	49.20	0.625	15.88
2.875	0730	3.750	95.25	4.125	104.78	2.062	52.37	0.625	15.88
3.000	0762	3.875	98.43	4.250	107.95	2.062	52.37	0.625	15.88
3.125*	0793	4.000	101.60	4.502	115.87	2.187	55.55	0.783	19.88
3.250*	0825	4.125	104.78	4.687	119.05	2.187	55.55	0.783	19.88
3.375*	0857	4.250	107.95	4.812	122.22	2.187	55.55	0.783	19.88
3.500*	0889	4.375	111.13	4.937	125.40	2.187	55.55	0.783	19.88
3.625*	0921	4.500	114.30	5.127	130.18	2.312	58.72	0.783	19.88
3.750*	0953	4.625	117.48	5.250	133.35	2.312	58.72	0.783	19.88
3.875*	0984	4.750	120.65	5.437	138.10	2.312	58.72	0.783	19.88
4.000*	1016	4.875	123.83	5.562	141.27	2.312	58.72	0.783	19.88

Dimensions in mm and inches

Metric shaft size also available, use size code as a reference

\\*Non-stock guarantee



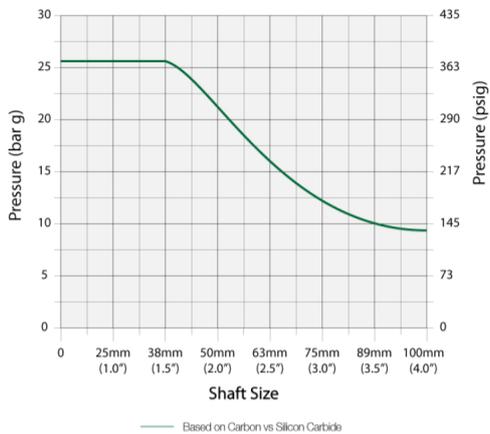
**Maximum Operating Pressure**

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 A4J**

- 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 A4J 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.