



## Vulcan Seals Type U22

### Technical Data Sheet



#### Product Description

The Vulcan Seals Type U22 is a resilient, rubber diaphragm-mounted parallel spring seal design with a self-adjusting head to accommodate minor shaft misalignment and run-out.

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 11 boot-mounted stationary to suit common USA ANSI imperial extended-length seal chambers.

#### Why Choose the Vulcan Seals Type U22?

- Proficient diaphragm bellows design with dimensions to suit common USA ANSI extended-length imperial seal chambers.
- Boot-mounted stationary provides maximum elastomer sealing contact to the housing surface.
- The base plate fitted at the spring drive end provides firm contact against a shaft step or circlip that sets the seal's operating height. This component can be removed if not required.
- A widely utilised mechanical seal type highly suited to general light to medium duties and capable of long service life.

#### Standard Face Material Combinations

Rotary Face   Material	Stationary Face   Material	Complete Material Code
VCP1 Carbon	VAW1 Ceramic	C
VCP1 Carbon	VSR1 Silicon Carbide	D
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 14 bar (203 psi)

#### Compliance & Certificates



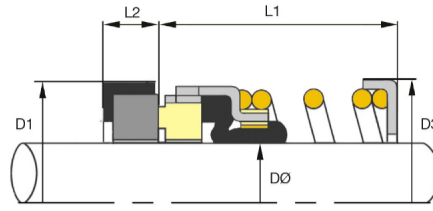
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

#### Mechanical Seal Replacement Range

Vulcan Seals Type U22 is a dimensional replacement mechanical seal for the following seal ranges:

- U.S. Seal® | Type C long with reduced outer diameter\*

\*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	0.898	22.80	1.250	31.75	0.312	7.93
0.625	0158	1.250	31.75	1.063	27.00	1.375	34.93	0.405	10.28
0.750	0191	1.375	34.93	1.197	30.40	1.375	34.93	0.405	10.28
0.875	0222	1.500	38.10	1.315	33.40	1.437	36.50	0.405	10.28
1.000	0254	1.625	41.28	1.547	39.30	1.625	41.28	0.437	11.10
1.125	0286	1.750	44.44	1.650	41.90	1.687	42.85	0.437	11.10
1.250	0317	1.875	47.63	1.787	45.40	1.687	42.85	0.437	11.10
1.375	0349	2.000	50.80	1.941	49.30	1.687	42.85	0.437	11.10
1.500	0381	2.125	53.98	2.067	52.50	1.687	42.85	0.437	11.10
1.625	0412	2.375	60.33	2.185	55.50	2.000	50.80	0.500	12.70
1.750	0444	2.500	63.50	2.402	61.00	2.000	50.80	0.500	12.70
1.875	0476	2.625	66.68	2.520	64.00	2.125	53.98	0.500	12.70
2.000	0508	2.750	69.85	2.720	65.70	2.125	53.98	0.500	12.70
2.125	0539	3.000	76.20	2.776	70.50	2.375	60.32	0.562	14.28
2.250	0571	3.125	79.38	3.150	80.00	2.375	60.32	0.562	14.28
2.375	0603	3.250	82.55	3.134	79.60	2.500	63.50	0.562	14.28
2.500	0635	3.375	85.73	3.209	81.50	2.500	63.50	0.562	14.28
2.625	0666	3.375	85.73	3.437	87.30	2.750	69.85	0.625	15.88
2.750	0698	3.500	88.90	3.543	90.00	2.750	69.85	0.625	15.88
3.000	0762	3.875	98.43	3.811	96.80	2.875	73.03	0.625	15.88
3.125	0794	4.000	101.60	4.094	104.00	3.125	79.37	0.783	19.88
3.250	0825	4.125	104.78	4.094	104.00	3.125	79.37	0.783	19.88
3.375	0857	4.250	107.95	4.252	108.00	3.125	79.37	0.783	19.88
3.500	0889	4.375	111.13	4.409	112.00	3.125	79.37	0.783	19.88
3.625*	0921	4.500	114.30	4.488	114.00	3.250	82.55	0.783	19.88
3.750	0953	4.625	117.48	4.685	119.00	3.250	82.55	0.783	19.88
3.875*	0984	4.750	120.65	4.764	121.00	3.375	85.72	0.783	19.88
4.000	1016	4.875	123.83	4.882	124.00	3.375	85.72	0.783	19.88

Dimensions in mm and inches

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

\\*Non-stock guarantee



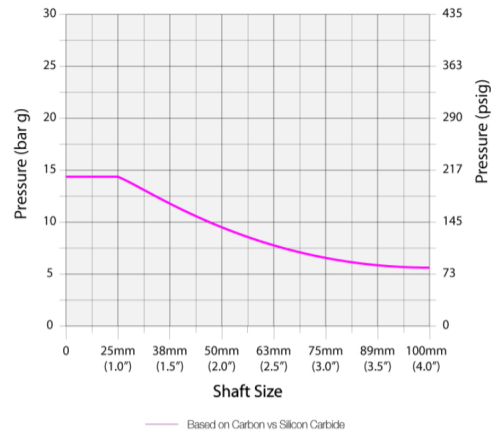
**Maximum Operating Pressure**

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 Silicon Carbide	x 1.00
Silicon Carbide vs Silicon Carbide	x 0.50
Tungsten Carbide vs Tungsten Carbide	x 0.50

**Example Calculation for Vulcan Seals Type U22**

- A. Shaft size: 38mm therefore pressure is 12 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 U22 seal size, the calculation for the approximate guidance maximum operating pressure would be:

A x B x C x D x E  
 12 bar x 0.85 x 1.00 x 1.00 x 1.00 = 10.20 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.