



## Vulcan Seals Type 1677

### Technical Data Sheet



#### Product Description

The Vulcan Seals Type 1677 is a robust, 'O'-ring mounted sinusoidal wave-spring "pusher" seal design, fully DIN24960/EN12756 L1K-U dimension compatible.

The drive from the shaft and set of working lengths is by set screws to the shaft, providing bi-directional rotation capability. The sinusoidal wave-spring provides even closing force to the sealing faces ensuring higher sealing performance compared to a single spring seal design.

The Vulcan Seals Type 1677 features a primary sealing face inserted in a stainless steel head, optimised for resilience and performance in high-torque viscous applications.

Vulcan Seals Type 1677 complete seal is supplied with the Vulcan Seals Type 8.DINL stationary to suit DIN24960/EN12756 housings with anti-rotation provision, for greater reliability in viscous or abrasive medias.

#### Why Choose the Vulcan Seals Type 1677?

- The design of the Vulcan Seals Type 1677 head ensures the 'O'-ring is positively energised against the shaft at all times, providing superior performance and preventing shaft fretting.
- The positive energising of the secondary seal allows high shore-A 'O'-ring materials with high chemical resistance to be used.
- The crest-to-crest wave spring technology utilised in the Vulcan Seals Type 1677 offers excellent axial movement capabilities.
- The one-piece sinusoidal wave spring provides superior strength and reliability compared to welded multi-part wave springs, which are prone to breakage at the weld points.
- The high performance and interchangeability of the 'O'-ring secondary seals provide a wide range of material capabilities for chemical process industries.

#### Standard Face Material Combinations

Rotary Face   Material	Stationary Face   Material	Complete Material Code
VCD1 Carbon	VAW1 Ceramic	DB
VCD1 Carbon	VSS1 Silicon Carbide	DR
VSS1 Silicon Carbide	VCD1 Carbon	RD
VSS1 Silicon Carbide	VSS1 Silicon Carbide	R
VTN2* Tungsten Carbide	VTN1* Tungsten Carbide	H

Guaranteed Stock/Material Elastomers: Viton™/FKM, EP, Nitrile and Metallurgy 316SS  
\*Non-stock guarantee

#### Elastomer Temperature Capabilities

	Minimum	Maximum
Nitrile	-30°C	+120°C
EPDM	-40°C	+140°C
Viton™/FKM	-30°C	+180°C
FEPM/AFLAS®	-10°C	+180°C
FFKM	-50°C	+180°C

Pressure: Up to 22 bar (320 psi)

#### Compliance & Certificates



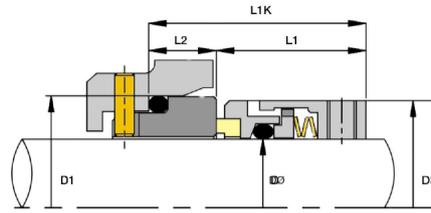
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

#### Mechanical Seal Replacement Range

Vulcan Seals Type 1677 is a dimensional replacement mechanical seal for the following seal ranges:

- AES® | Type N-W07D\*
- Pac-Seal® | Type 167\*
- Burgmann® | Type M7N\*

\*Rotary Face | \*\*Stationary Face



**Dimensional Data**

DØ (Metric)	Seal Size Code	D1 (mm)	D3 (mm)	L1 (mm)	L2 (mm)	Slot Width	Slot Depth	L1K
14*	0140	25.00	24.00	25.00	10.00	4.00	5.00	35.00
16	0160	27.00	26.00	25.00	10.00	4.00	5.00	35.00
18	0180	33.00	32.00	26.00	11.50	4.00	5.50	37.50
20	0200	35.00	34.00	26.00	11.50	4.00	5.50	37.50
22	0220	37.00	36.00	26.00	11.50	4.00	5.50	37.50
24	0240	39.00	38.00	28.50	11.50	4.00	5.50	40.00
25	0250	40.00	39.00	28.50	11.50	4.00	5.50	40.00
28	0280	43.00	42.00	31.00	11.50	4.00	5.50	42.50
30	0300	45.00	44.00	31.00	11.50	4.00	5.50	42.50
32	0320	48.00	46.00	31.00	11.50	4.00	5.50	42.50
33	0330	48.00	47.00	31.00	11.50	4.00	5.50	42.50
35	0350	50.00	49.00	31.00	11.50	4.00	5.50	42.50
38	0380	56.00	54.00	31.00	14.00	5.00	5.50	45.00
40	0400	58.00	56.00	31.00	14.00	5.00	5.50	45.00
43	0430	61.00	59.00	31.00	14.00	5.00	5.50	45.00
45	0450	63.00	61.00	31.00	14.00	5.00	5.50	45.00
48	0480	66.00	64.00	31.00	14.00	5.00	5.50	45.00
50	0500	70.00	66.00	32.50	15.00	5.00	5.50	47.50
53	0530	73.00	69.00	32.50	15.00	5.00	5.50	47.50
55	0550	75.00	71.00	32.50	15.00	5.00	5.50	47.50
58	0580	78.00	78.00	37.50	15.00	5.00	5.50	52.50
60	0600	80.00	80.00	37.50	15.00	5.00	5.50	52.50
63	0630	83.00	83.00	37.50	15.00	5.00	5.50	52.50
65	0650	85.00	85.00	37.50	15.00	5.00	5.50	52.50
68	0680	90.00	88.00	34.50	18.00	5.00	5.50	52.50
70	0700	92.00	89.00	42.00	18.00	5.00	5.50	60.00
75	0750	97.00	96.00	42.00	18.00	5.00	5.50	60.00
80	0800	105.00	104.00	41.80	18.20	5.00	5.50	60.00
85	0850	110.00	108.00	41.80	18.20	5.00	5.50	60.00
90	0900	115.00	114.00	46.80	18.20	5.00	5.50	65.00
95	0950	120.00	118.00	47.80	17.20	5.00	5.50	65.00
100	1000	125.00	124.00	47.80	17.20	5.00	5.50	65.00

Dimensions in mm  
 \\*Non-stock guarantee



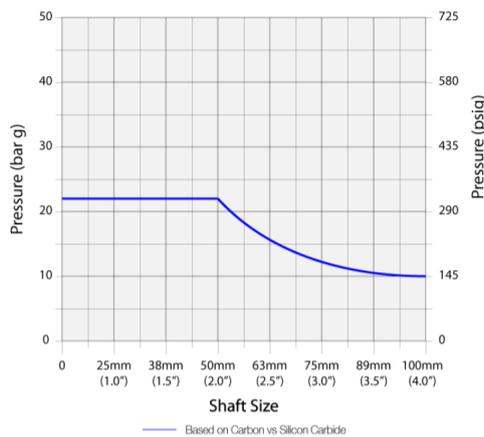
**Maximum Operating Pressure**

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 SiSiC	x 0.85
SiSiC vs Carbon	x 0.85
SiSiC vs SiSiC	x 0.41
Tungsten Carbide vs Tungsten Carbide	x 0.50

**Example Calculation for Vulcan Seals Type 1677**

- A. Shaft size: 38mm therefore pressure is 22 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 1677 seal size, the calculation for the approximate guidance maximum operating pressure would be:

A x B x C x D x E  
 22 bar x 0.85 x 1.00 x 1.00 x 1.00 = 18.70 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.