



Vulcan Seals Type 1688L

Technical Data Sheet



Product Description

The Vulcan Seals Type 1688L is a highly robust, 'O'-ring mounted single wave-spring "non-pusher" seal design, with a very narrow cross-section and compact working length.

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

The Vulcan Seals Type 1688L features a monolithic steelhead, optimised for abrasion resistance and high-temperature applications.

Vulcan Seals Type 1688L complete seal is supplied with the Vulcan Seals Type 24.DINL 'O'-ring stationary to suit DIN24960/EN12756 housings with anti-rotation provision.

Why Choose the Vulcan Seals Type 1688L?

- The design of the Vulcan Seals Type 1688L head ensures the 'O'-ring is supported by the set-screw fixed barrel, providing superior performance against service pressure variations and minimising shaft fretting.
- The compact design and set-screw mounting of the Vulcan Seals Type 1688L allow installation in very short-length seal chambers.
- The Vulcan Seals Type 1688L is highly suited to rotary lobe pumps due to the short installation length, reduced radial clearance, and design suited to slow shaft speed operation.
- The one-piece sinusoidal wave spring provides superior strength and reliability compared to cut-section wave springs, which are not as robust.

Standard Face Material Combinations

Rotary Face	Stationary Face	Complete Seal Code
304 Stainless Steel	VCP1 Carbon	P
VTN2* Tungsten Carbide	VCP1 Carbon	U
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
FEP/AFLAS®	-10°C	+250°C
FFKM	-50°C	+315°C

Pressure: Up to 10 bar (145 psi)

Compliance & Certificates



Also available with built materials that adhere to the above compliance standards and certificates. Please enquire about your requirements.

Mechanical Seal Replacement Range

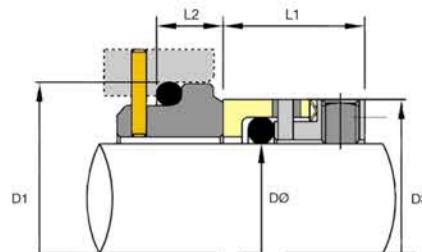
Vulcan Seals Type 1688L is a dimensional replacement mechanical seal for the following seal ranges:

- AES® | Type N-W02*
- Roten® | Uniten® 7K*

*Rotary Face | **Stationary Face

Embrace Excellence - Vulcan Service, Quality and Value

Mechanical Seals | FEP/PFA Encapsulated 'O'-rings | Gland Packing | Expanded PTFE Gasketing
UK/World: +44 (0) 114 249 3333 | USA: +1 952 955 8800 | www.vulcanseals.com | contact@vulcanseals.com

**Dimensional Data**

D \varnothing (Metric)	Seal Size Code	D1 (mm)	D3 (mm)	L1 (mm)	L2 (mm)	Slot Width	Slot Depth
16	0160	27.00	27.00	19.10	8.60	4.00	5.00
20	0200	35.00	31.20	19.10	10.00	4.00	5.50
22	0220	37.00	33.00	19.10	10.00	4.00	5.50
24	0240	39.00	34.10	19.10	10.00	4.00	5.50
25	0250	40.00	36.00	19.10	10.00	4.00	5.50
28	0280	43.00	39.00	19.10	10.00	4.00	5.50
30	0300	45.00	41.00	19.10	10.00	4.00	5.50
32	0320	48.00	42.40	19.10	10.00	4.00	5.50
33	0330	48.00	44.00	19.10	10.00	4.00	5.50
35	0350	50.00	46.00	19.10	10.00	4.00	5.50
38	0380	56.00	51.80	21.10	13.00	5.00	5.50
40	0400	58.00	53.80	21.10	13.00	5.00	5.50
43	0430	61.00	56.80	21.10	13.00	5.00	5.50
45	0450	63.00	58.20	21.10	13.00	5.00	5.50
48	0480	66.00	61.40	21.10	13.00	5.00	5.50
50	0500	70.00	62.00	21.10	13.00	5.00	5.50
55	0550	75.00	72.00	22.10	13.00	5.00	5.50
60	0600	80.00	77.00	25.80	13.00	5.00	5.50
63	0630	83.00	79.30	25.80	13.00	5.00	5.50
65	0650	85.00	82.00	25.80	13.00	5.00	5.50
70	0700	92.00	87.00	25.80	15.30	5.00	5.50
75	0750	97.00	96.00	25.80	15.30	5.00	5.50
80	0800	105.00	101.00	25.80	15.70	5.00	5.50
85	0850	110.00	106.00	25.80	15.70	5.00	5.50
90	0900	115.00	111.00	25.80	15.70	5.00	5.50
95	0950	120.00	116.00	25.80	15.70	5.00	5.50
100	1000	125.00	121.00	25.80	15.70	5.00	5.50

Dimensions in mm

*Non-stock guarantee



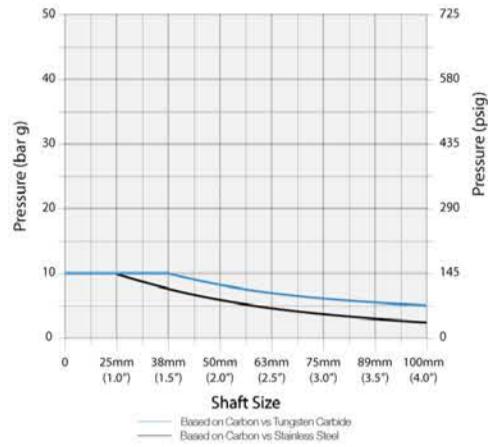
Maximum Operating Pressure

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

Example Calculation for Vulcan Seals Type 1688L

- A. Shaft size: 38mm therefore pressure is 7 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 1688L seal size, the calculation for the approximate guidance maximum operating pressure would be:

$$A \times B \times C \times D \times E \\ 7 \text{ bar} \times 0.85 \times 1.00 \times 1.00 \times 1.00 = 5.95 \text{ bar}$$

Face and Seat Materials

Combination	Multiplier
Carbon vs Stainless Steel	x 0.30
Carbon vs Tungsten Carbide	x 0.90
Tungsten Carbide vs Tungsten Carbide	x 0.50

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.