VULCAN SEALS

Phone : +44 (0) 114 249 3333
Email : contact@vulcanseals.com

Vulcan Seals Type 1688U

Technical Data Sheet

Product Description

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

The drive from the shaft and setting of working length 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 1688U features a monolithic steel head, optimised for abrasion resistance and high temperature applications.

The Vulcan Seals Type 1688U complete seal is supplied with the Type 12 'O'-ring stationary to suit Italian standard housings commonly used in rotary lobe pumps.

Why Choose the Vulcan Seals Type 1688U?

- The design of the Vulcan Seals Type 1688U 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 1688U allow installation in very short length seal chambers.
- The Vulcan Seals Type 1688U 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 | Material	Stationary Face | Material	Complete Material 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 316SS
*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	+260°C

Pressure: Up to 10 bar (145 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 1688U is a dimensional replacement mechanical seal for the following seal ranges:

- Roten® | Roten® 7K*

**Rotary Face | **Stationary Face*

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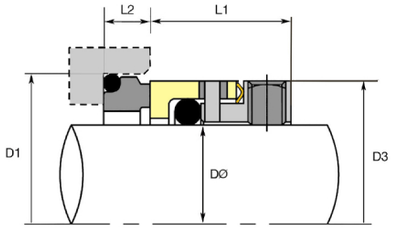

Dimensional Data

DØ (Metric)	Seal Size Code	D1 (mm)	D3 (mm)	L1 (mm)	L2 (mm)
16*	0160	26.90	27.00	19.10	7.00
20*	0200	30.90	30.20	19.10	8.00
22*	0220	35.40	33.00	19.10	8.00
24*	0240	35.40	36.00	19.10	8.00
25*	0250	38.20	39.00	19.10	8.50
28*	0280	43.30	42.00	19.10	9.00
30*	0300	43.30	44.00	19.10	9.00
32*	0320	43.30	46.00	19.10	9.00
35*	0350	53.50	49.00	19.10	11.50
38*	0380	60.50	53.00	21.10	11.50
40*	0400	60.50	55.00	21.10	11.50
45*	0450	65.50	61.00	21.10	11.50
50*	0500	72.50	66.00	21.10	11.50
55*	0550	72.50	71.00	22.10	11.50
60*	0600	79.30	80.00	25.80	11.50
65*	0650	84.50	84.00	25.80	11.50
70*	0700	89.50	89.00	25.80	11.50
75*	0750	94.50	94.00	25.80	11.50
80*	0800	99.50	100.00	25.80	11.50
85*	0850	105.50	105.00	25.80	13.50
90*	0900	111.50	112.00	25.80	13.50
95*	0950	116.50	117.00	25.80	13.50
100*	1000	119.50	122.00	25.80	13.50

Dimensions in mm
*Non-stock guarantee

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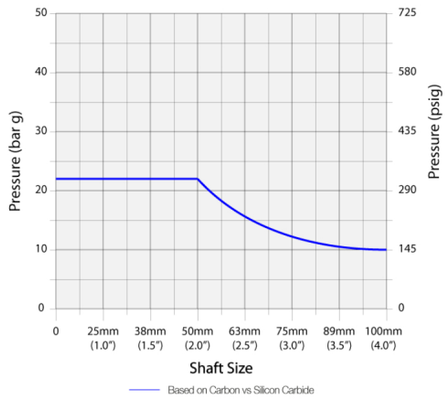
Maximum Operating Pressure

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 to347°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 Stainless Steel	x 0.30
Carbon vs Tungstn Carbide	x 0.90
Tungsten Carbide vs Tungsten Carbide	x 0.50

Example Calculation for Vulcan Seals Type 1688U

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 1688U 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.

** 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.