



Vulcan Seals Type 1678M

Technical Data Sheet



Product Description

The Vulcan Seals Type 1678M is a robust, 'O'-ring mounted sinusoidal wave-spring "pusher" seal design intended for step-shaft installations, fully DIN24960/EN12756 L1K-B 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 1678M features a monolithic steelhead, optimised for chemical resistance and high-temperature applications.

Vulcan Seals Type 1678M 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 1678M?

- The design of the Vulcan Seals Type 1678M 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 1678M 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	Stationary Face	Complete Seal 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	+230°C
FEP/AFLAS®	-10°C	+250°C
FFKM	-50°C	+315°C

Pressure: Up to 40 bar (580 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

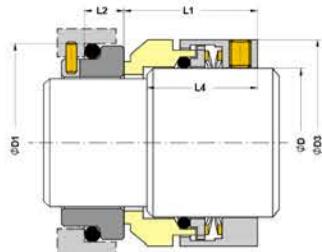
Vulcan Seals Type 1678M is a dimensional replacement mechanical seal for the following seal ranges:

- Lidering® | Type 110 B*

*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**

DØ (Metric)	Seat Size Code	Seal Size Code	D1 (mm)	D3 (mm)	L1 (mm)	L2 (mm)	L4 (mm)	Slot Width	Slot Depth
18*	0180	0140	25.00	32.00	32.50	10.00	25.00	4.00	5.00
20*	0200	0160	27.00	34.00	32.50	10.00	25.00	4.00	5.00
22*	0220	0180	33.00	36.00	33.50	11.50	26.00	4.00	5.50
24*	0240	0200	35.00	38.00	33.50	11.50	26.00	4.00	5.50
28	0280	0240	39.00	42.00	36.00	11.50	28.00	4.00	5.50
30	0300	0250	40.00	44.00	36.00	11.50	28.00	4.00	5.50
33	0330	0280	43.00	47.00	38.50	11.50	30.50	4.00	5.50
35	0350	0300	45.00	49.00	38.50	11.50	30.50	4.00	5.50
38	0380	0330	48.00	54.00	38.50	11.50	30.50	4.00	5.50
40	0400	0350	50.00	56.00	38.50	11.50	30.50	4.00	5.50
43	0430	0380	56.00	59.00	38.50	14.00	30.50	5.00	5.50
45	0450	0400	58.00	61.00	38.50	14.00	30.50	5.00	5.50
50*	0500	0450	63.00	66.00	38.50	14.00	30.50	5.00	5.50
53*	0530	0480	66.00	69.00	38.50	14.00	30.50	5.00	5.50
55*	0550	0500	70.00	71.00	42.50	15.00	34.50	5.00	5.50
60*	0600	0550	75.00	80.00	42.50	15.00	34.50	5.00	5.50
80*	0800	0750	97.00	104.00	52.00	18.00	43.00	5.00	5.50

Dimensions in mm

*Non-stock guarantee



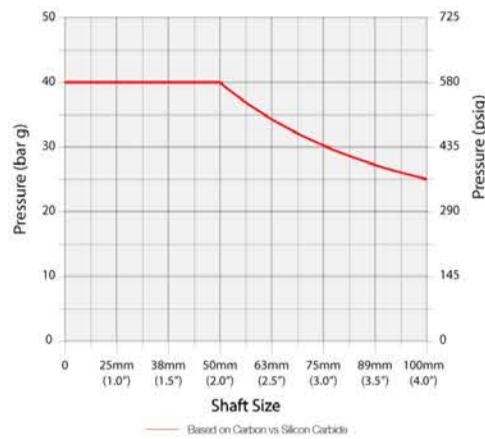
Maximum Operating Pressure

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 1678M

- A. Shaft size: 38mm therefore pressure is 40 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 1678M seal size, the calculation for the approximate guidance maximum operating pressure would be:

$$A \times B \times C \times D \times E \\ 40 \text{ bar} \times 0.85 \times 1.00 \times 1.00 \times 1.00 = 34.00 \text{ bar}$$

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

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.