



Vulcan Seals Type 1659

Technical Data Sheet



Product Description

The Vulcan Seals Type 1659 is a robust, PTFE wedge-mounted "pusher" seal design with multiple springs and a monolithic sealing face. The drive from the shaft and the seal working length is by set screws tightened using the supplied Allen key.

The set screws provide bi-directional rotation capability. The multi-springs provide even closing forces around the sealing face circumference giving improved pV capability and higher performance. The robust design and multi-spring arrangement provide optimised performance in challenging industrial applications when compared to single-spring seal designs.

The Vulcan Seals Type 1659 rotary is compatible with a wide range of Vulcan Seals stationary types, please see Vulcan Seals Type 1659L for the most commonly requested.

Why Choose the Vulcan Seals Type 1659?

- Highly effective robust design that is commonly used in chemical and petrochemical duties.
- PTFE wedge secondary seal, VCT1 carbon primary seal face, and Hastelloy-C276® springs ensure compatibility with a wide range of industrial medias.
- The Vulcan Seals Type 1659 has a narrow radial profile to suit European DIN24960/EN12756 metric seal chamber dimensions.
- The design features a setting line to aid installation at the correct compressed length.
- Suitable for medium and heavy-purpose applications with metric or imperial shaft sizes.
- Seal face dimensions ensure compatibility with a wide range of Vulcan Seals stationary ranges.

Standard Face Material Combinations

Rotary Face	Stationary Face	Complete Seal Code
VCT1 Carbon	-	IB
VSS1 Silicon Carbide	-	R
VTN2* 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 23 bar (333 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

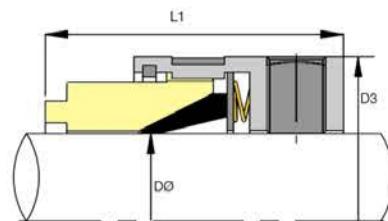
Vulcan Seals Type 1659 is a dimensional replacement mechanical seal for the following seal ranges:

- AES® | Type N-M03*
- John Crane® | Type 59U*

*Rotary Face | **Stationary Face

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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)	Seal Size Code	D3 (mm)	L1 (mm)
16	0160	26.00	23.00
18	0180	32.00	24.00
20	0200	34.50	24.00
22	0220	36.50	24.00
24	0240	38.60	26.70
25	0250	40.00	27.00
28	0280	43.00	30.00
30	0300	45.00	30.50
32	0320	47.10	30.50
33	0330	48.20	30.50
35	0350	50.00	30.50
38	0380	54.00	32.00
40	0400	56.00	32.00
43	0430	59.00	32.00
45	0450	61.00	32.00
48	0480	64.20	32.00
50	0500	66.30	34.00
53	0530	69.70	34.00
55	0550	70.80	34.00
58	0580	78.00	39.00
60	0600	80.10	39.00
63	0630	85.20	39.00
65	0650	85.20	39.00
68	0680	87.80	39.00
70	0700	90.00	45.50
75*	0750	95.00	45.50
80*	0800	104.10	45.00
85*	0850	109.30	45.00
90*	0900	114.00	50.00
95*	0950	119.20	50.00
100*	1000	124.10	50.00

DØ = Metric size shaft

Dimensions in mm

*Non-stock guarantee



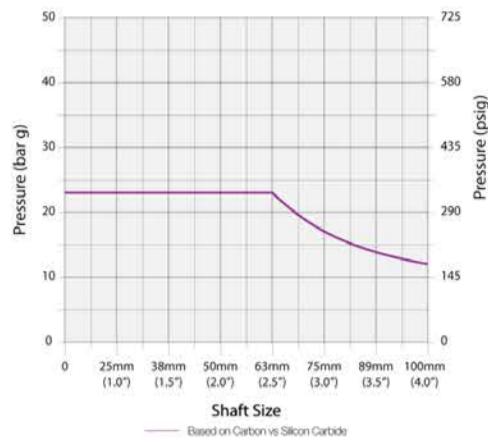
Maximum Operating Pressure

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 1659

- A. Shaft size: 38mm therefore pressure is 23 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 1659 seal size, the calculation for the approximate guidance maximum operating pressure would be:

$$A \times B \times C \times D \times E \\ 23 \text{ bar} \times 0.85 \times 1.00 \times 1.00 \times 1.00 = 19.55 \text{ bar}$$

Face and Seat Materials

Combination	Multiplier
Carbon vs Ceramic	x 0.50
Carbon vs RB Silicon Carbide	x 1.00
SiSiC vs RB Silicon Carbide	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.