



## Vulcan Seals Type

### 1659SL

#### Technical Data Sheet



#### Product Description

The Vulcan Seals Type 1659SL is a robust, 'O'-ring mounted "pusher" seal design with multiple springs and a monolithic sealing face. The drive from the shaft and the seal working length are 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 1659SL complete seal is supplied with the Vulcan Seals Type 24.DINL 'O'-ring-mounted stationary featuring anti-rotation provision. The Vulcan Seals Type 1659S rotary is compatible with a wide range of Vulcan Seals stationary types.

#### Why Choose the Vulcan Seals Type 1659SL?

- Highly effective robust design that is commonly used in chemical and petrochemical duties.
- Interchangeable 'O'-ring secondary seal, VCT1 carbon primary seal face, and Hastelloy-C276® springs ensure compatibility with a wide range of industrial medias.
- The Vulcan Seals Type 1659SL has a narrow radial profile to suit European DIN24960/EN12756 metric seal chamber dimensions and has a shorter than L1K operating height.
- The design features a setting line to aid installation at the correct compressed length.
- Suitable for medium and heavy-purpose applications with metric shaft sizes.
- The 'O'-ring mounted stationary features anti-rotation provision for secure location in high torque applications such as viscous and high solids medias.

#### Standard Face Material Combinations

Rotary Face   Material	Stationary Face   Material	Complete Material Code
VCT1 Carbon	VAW1 Ceramic	IB
VCT1 Carbon	VSR1 Silicon Carbide	IS
VSS1 Silicon Carbide	VAW1 Ceramic	SG
VSS1 Silicon Carbide	VSR1 Silicon Carbide	SS
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	+315°C

Pressure: Up to 23 bar (333 psi)

#### Compliance & Certificates



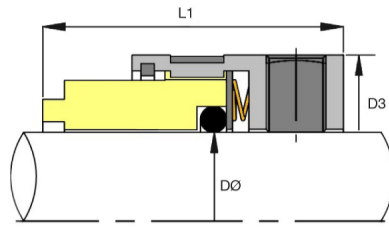
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

#### Mechanical Seal Replacement Range

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

- John Crane® | Type 58U/BP seat\*

\*Rotary Face | \*\*Stationary Face



**Dimensional Data**

DØ (Metric)	Seal Size Code	D1 (mm)	D3 (mm)	L1 (mm)	L2 (mm)	Slot Width	Slot Depth
16	0160	27.00	26.00	23.00	8.60	4.00	5.00
18	0180	33.00	32.00	24.00	10.00	4.00	5.50
20	0200	35.00	34.50	24.00	10.00	4.00	5.50
22	0220	37.00	36.50	24.00	10.00	4.00	5.50
24	0240	39.00	38.60	26.70	10.00	4.00	5.50
25	0250	40.00	40.00	27.00	10.00	4.00	5.50
28	0280	43.00	43.00	30.00	10.00	4.00	5.50
30	0300	45.00	45.00	30.50	10.00	4.00	5.50
32	0320	48.00	47.10	30.50	10.00	4.00	5.50
33	0330	48.00	48.20	30.50	10.00	4.00	5.50
35	0350	50.00	50.00	30.50	10.00	4.00	5.50
38	0380	56.00	54.00	32.00	11.00	5.00	5.50
40	0400	58.00	56.00	32.00	11.00	5.00	5.50
43	0430	61.00	59.00	32.00	11.00	5.00	5.50
45	0450	63.00	61.00	32.00	11.00	5.00	5.50
48	0480	66.00	64.20	32.00	11.00	5.00	5.50
50	0500	70.00	66.30	34.00	13.00	5.00	5.50
53	0530	73.00	69.70	34.00	13.00	5.00	5.50
55	0550	75.00	70.80	34.00	13.00	5.00	5.50
58	0580	78.00	78.00	39.00	13.00	5.00	5.50
60	0600	80.00	80.10	39.00	13.00	5.00	5.50
63	0630	83.00	85.20	39.00	13.00	5.00	5.50
65	0650	85.00	85.20	39.00	13.00	5.00	5.50
68	0680	90.00	87.80	39.00	15.30	5.00	5.50
70	0700	92.00	90.00	45.50	15.30	5.00	5.50
75*	0750	97.00	95.00	45.50	15.30	5.00	5.50
80*	0800	105.00	104.10	45.00	15.70	5.00	5.50
85*	0850	110.00	109.30	45.00	15.70	5.00	5.50
90*	0900	115.00	114.00	50.00	15.70	5.00	5.50
95*	0950	120.00	119.20	50.00	15.70	5.00	5.50
100*	1000	125.00	124.10	50.00	15.70	5.00	5.50

DØ = Metric size shaft  
 Dimensions in mm  
 \\*Non-stock guarantee



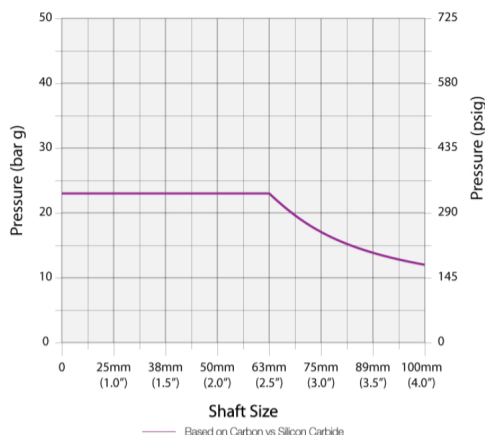
**Maximum Operating Pressure**

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

**Face and Seat Materials**

Combination	Multiplier
Carbon vs Ceramic	x 0.50
Carbon vs RB Silicon Carbide	x 1.00
SiSiC vs Ceramic	x 0.35
SiSiC vs RB Silicon Carbide	x 0.41
Tungsten Carbide vs Tungsten Carbide	x 0.50

**Example Calculation for Vulcan Seals Type 1659SL**

- 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 1659SL seal size, the calculation for the approximate guidance maximum operating pressure would be:

A x B x C x D x E  
 23 bar x 0.85 x 1.00 x 1.00 x 1.00 = 19.55 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.