



## Vulcan Seals Type

### 1659BSL

#### Technical Data Sheet



#### Product Description

The Vulcan Seals Type 1659BSL is a robust, 'O'-ring mounted "pusher" seal design with multiple springs and a monolithic sealing face, intended for stepped-shaft installations. 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 1659BSL complete seal is supplied with the Vulcan Seals Type 24.DINL 'O'-ring-mounted stationary featuring anti-rotation provision.

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

- Step shaft design allows hydraulic balancing to be incorporated, allowing high shaft speeds, higher pressures, and longer run time to be achieved compared to non-balanced seal designs.
- 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 1659BSL has a narrow radial profile to suit European DIN24960/EN12756 metric seal chamber dimensions and has a shorter than L1K-B 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 stepped-shaft sizes.

#### 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 40 bar (580 psi)

#### Compliance & Certificates



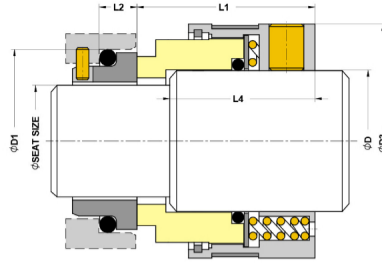
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

#### Mechanical Seal Replacement Range

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

- John Crane® | Type 58B/BP seat\*

\*Rotary Face | \*\*Stationary Face



**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	0140	0180	25.00	32.00	30.50	8.60	24.50	4.00	5.00
20	0160	0200	27.00	34.50	30.50	8.60	24.50	4.00	5.00
22	0180	0220	33.00	36.50	31.50	10.00	25.00	4.00	5.50
24	0200	0240	35.00	38.60	31.50	10.00	25.00	4.00	5.50
28	0240	0280	39.00	43.00	34.50	10.00	27.50	4.00	5.50
30	0250	0300	40.00	45.00	34.50	10.00	27.50	4.00	5.50
33	0280	0330	43.00	48.20	37.50	10.00	30.00	4.00	5.50
35	0300	0350	45.00	50.00	38.00	10.00	30.00	4.00	5.50
38	0330	0380	48.00	54.00	38.00	10.00	30.00	4.00	5.50
40	0350	0400	50.00	56.00	38.00	10.00	30.00	4.00	5.50
43	0380	0430	56.00	59.00	39.50	11.00	29.50	5.00	5.50
45	0400	0450	58.00	61.00	39.50	11.00	29.50	5.00	5.50
48	0430	0480	61.00	64.20	39.50	11.00	29.50	5.00	5.50
50	0450	0500	63.00	66.30	39.50	11.00	29.50	5.00	5.50
53	0480	0530	66.00	69.70	39.50	11.00	29.50	5.00	5.50
55	0500	0550	70.00	70.80	44.00	13.00	32.50	5.00	5.50
58	0530	0580	73.00	78.00	44.00	13.00	32.50	5.00	5.50
60	0550	0600	75.00	80.10	44.00	13.00	32.50	5.00	5.50
63	0580	0630	78.00	85.20	49.00	13.00	37.50	5.00	5.50
65	0600	0650	80.00	85.20	49.00	13.00	37.50	5.00	5.50
68	0630	0680	83.00	87.80	49.00	15.30	37.50	5.00	5.50
70	0650	0700	85.00	90.00	49.00	15.30	37.50	5.00	5.50
75*	0700	0750	92.00	95.00	55.50	15.30	41.50	5.00	5.50
80*	0750	0800	97.00	104.10	55.50	15.70	42.50	5.00	5.50
85*	0800	0850	105.00	109.30	55.00	15.70	42.50	5.00	5.50
90*	0850	0900	110.00	114.00	60.00	15.70	47.00	5.00	5.50
95*	0900	0950	115.00	119.20	60.00	15.70	47.00	5.00	5.50
100*	0950	1000	120.00	124.10	60.00	15.70	47.00	5.00	5.50

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



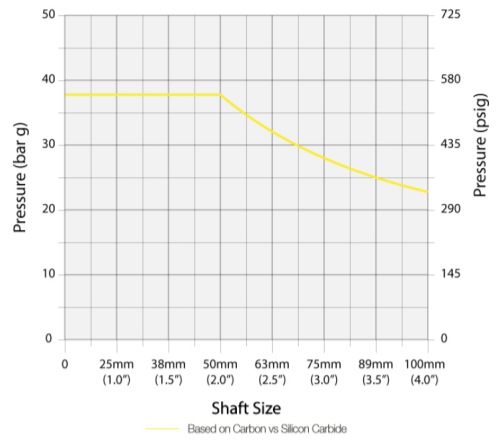
**Maximum Operating Pressure**

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 1659BSL**

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

A x B x C x D x E  
 40 bar x 0.85 x 1.00 x 1.00 x 1.00 = 34.00 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.