



Vulcan Seals Type

1659BS

Technical Data Sheet



Product Description

The Vulcan Seals Type 1659BS is a robust, 'O'-ring mounted "pusher" seal design with multiple springs and a monolithic sealing face intended for step-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 and step-shaft layout provide even closing forces and hydraulic balancing giving improved pV capability and higher sealing 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 1659BS rotary is compatible with a wide range of Vulcan Seals stationary types.

Why Choose the Vulcan Seals Type 1659BS?

- 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 1659BS 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	-	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
FEPM/AFLAS®	-10°C	+250°C
FFKM	-50°C	+315°C

Pressure: Up to 40 bar (580 psi)

Compliance & Certificates



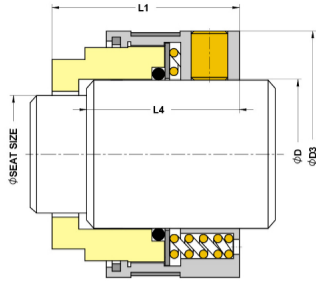
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

Mechanical Seal Replacement Range

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

- AES® | Type N-M04S*
- Lidering® | Type 120*
- John Crane® | Type 58B*

*Rotary Face | **Stationary Face



Dimensional Data

DØ (Metric)	Seat Size Code	Seal Size Code	D3 (mm)	L1 (mm)	L4 (mm)
18	0140	0180	32.00	30.50	24.50
20	0160	0200	34.50	30.50	24.50
22	0180	0220	36.50	31.50	25.00
24	0200	0240	38.60	31.50	25.00
28	0240	0280	43.00	34.50	27.50
30	0250	0300	45.00	34.50	27.50
33	0280	0330	48.20	37.50	30.00
35	0300	0350	50.00	38.00	30.00
38	0330	0380	54.00	38.00	30.00
40	0350	0400	56.00	38.00	30.00
43	0380	0430	59.00	39.50	29.50
45	0400	0450	61.00	39.50	29.50
48	0430	0480	64.20	39.50	29.50
50	0450	0500	66.30	39.50	29.50
53	0480	0530	69.70	39.50	29.50
55	0500	0550	70.80	44.00	32.50
58	0530	0580	78.00	44.00	32.50
60	0550	0600	80.10	44.00	32.50
63	0580	0630	85.20	49.00	37.50
65	0600	0650	85.20	49.00	37.50
68	0630	0680	87.80	49.00	37.50
70	0650	0700	90.00	49.00	37.50
75*	0700	0750	95.00	55.50	41.50
80*	0750	0800	104.10	55.50	42.50
85*	0800	0850	109.30	55.00	42.50
90*	0850	0900	114.00	60.00	47.00
95*	0900	0950	119.20	60.00	47.00
100*	0950	1000	124.10	60.00	47.00

DØ = Metric size shaft

Dimensions in mm

*Non-stock guarantee



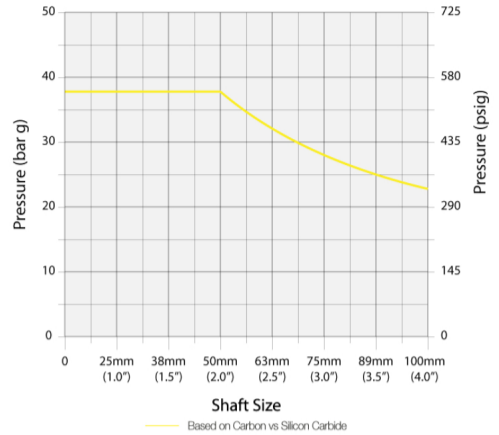
Maximum Operating Pressure

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

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

Example Calculation for Vulcan Seals Type 1659BS

- 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 1659BS 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.