



## Vulcan Seals Type 193

### Technical Data Sheet



#### Product Description

Vulcan Seals Type 193 is a robust elastomer bellows "non-pusher" design, with wide radial profile and high flexibility to readily accommodate service misalignment and provide extended resilience and durability in service. The Vulcan Seals Type 193 has an extended working length similar to L1N standard.

The seal drive is provided by the elastomer bellows tightly gripping the shaft from a contact point under the coil end, providing bi-directional "non-pusher" performance that minimises shaft fretting.

Supplied with a Vulcan Seals Type 8.STD 'O'-ring-mounted stationary to suit pre-DIN24960 European short seal chamber housings.

#### Why Choose the Vulcan Seals Type 193?

- Robust, highly resilient elastomer bellows design provides high performance in an easy to handle and install unit.
- Ideal for applications with variable pressures and axial movement due to the fast adjusting non-pusher design.
- Robust, non-clogging, self adjusting and durable giving highly effective performance in medias with particulates.
- Larger than DIN24960/EN12756 radial profile gives greater strength and resilience compared to fully compliant seal designs, such as the Vulcan Seals Type 142DINS.
- Suitable for medium to heavy duty applications.

#### Standard Face Material Combinations

Rotary Face	Stationary Face	Complete Seal Code
VCP1 Carbon	VAW1 Ceramic	C
VCP1 Carbon	VSR1 Silicon Carbide	D
VSS1 Silicon Carbide	VSR1 Silicon Carbide	SS
VTN2* Tungsten Carbide	VTN1* Tungsten Carbide	H

Guaranteed Stock/Material Elastomers: Viton™/FKM, EP, Nitrile and Metallurgy 304SS

\*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 16 bar (232 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

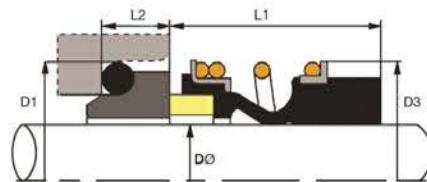
Vulcan Seals Type 193 is a dimensional replacement mechanical seal for the following seal ranges:

- AES® | Type N-B013S\*
- Lidering® | Type 107 NU\*
- M.T.U.® | FG 3\*
- Burgmann® | Type MG13\*
- Lidering® | Type LRB17NU\*
- U.S. Seal® | Type VGMC-13\*

\*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](http://www.vulcanseals.com) | [contact@vulcanseals.com](mailto:contact@vulcanseals.com)

**Dimensional Data**

D $\varnothing$ (Metric)	Seal Size Code	D1 (mm)	D3 (mm)	L1 (mm)	L2 (mm)
10	0100	19.20	20.00	33.40	6.60
12	0120	21.60	24.30	33.40	5.60
14	0140	24.60	28.50	33.40	5.60
15	0150	24.60	28.50	33.40	6.60
16	0160	28.00	28.50	33.40	7.50
18	0180	30.00	31.00	37.50	8.00
19*	0190	35.00	36.50	-	7.50
20	0200	35.00	36.50	37.50	7.50
22	0220	35.00	36.50	37.50	7.50
24	0240	38.00	41.10	42.50	7.50
25	0250	38.00	41.10	42.50	7.50
26*	0260	40.00	41.10	-	9.00
28	0280	42.00	47.60	42.50	9.00
30	0300	45.00	47.60	42.50	10.50
32	0320	48.00	51.00	47.50	10.50
33	0330	50.00	51.00	47.50	11.00
35	0350	52.00	54.50	47.50	11.00
38	0380	55.00	57.90	46.00	10.30
40	0400	58.00	60.00	46.00	10.80
42*	0420	62.00	62.00	-	12.00
43	0430	62.00	63.80	51.00	12.00
45	0450	64.00	65.70	51.00	11.60
48	0480	68.40	69.30	51.00	11.60
50	0500	69.30	71.80	50.50	11.60
53	0530	72.30	76.00	59.00	12.30
55	0550	75.40	78.30	59.00	13.30
58*	0580	78.40	82.50	59.00	13.30
60	0600	80.40	85.50	59.00	13.30
65*	0650	85.40	90.30	69.00	13.00
68*	0680	91.50	94.00	68.70	13.70
70*	0700	92.00	97.00	68.70	13.00
75*	0750	99.00	102.00	68.70	14.00
80*	0800	104.00	109.50	78.00	15.00
85*	0850	109.00	116.70	76.00	14.80
90*	0900	114.00	122.30	76.00	14.80
95*	0950	120.30	127.60	76.00	15.80
100*	1000	123.30	132.00	76.00	15.80

Dimensions in mm

\*Non-stock guarantee



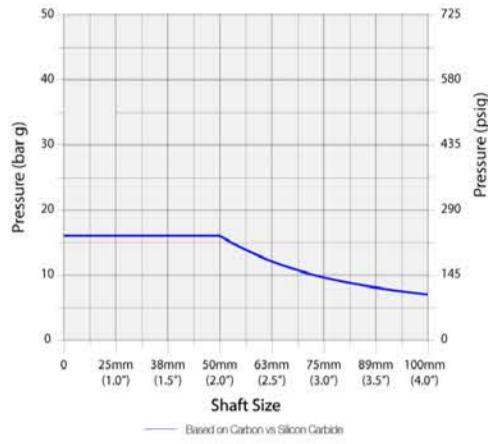
## Maximum Operating Pressure

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 193

- A. Shaft size: 38mm therefore pressure is 16 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 193 seal size, the calculation for the approximate guidance maximum operating pressure would be:

$$A \times B \times C \times D \times E \\ 16 \text{ bar} \times 0.85 \times 1.00 \times 1.00 \times 1.00 = 13.60 \text{ bar}$$

## 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.