



Vulcan Seals Type 22

Technical Data Sheet



Product Description

The Vulcan Seals Type 22 is a resilient, rubber diaphragm-mounted parallel spring seal design with a self-adjusting head to accommodate minor shaft misalignment and run-out.

The seal drive is provided by the diaphragm bellows tightly gripping the shaft and providing positive drive to the seal head and sealing face. The Vulcan Seals diaphragm seal designs are bi-directional "pusher" seals that minimise shaft fretting as the spring is constantly providing energising force to the shaft contact point and sealing face.

Supplied with a Vulcan Seals Type 11 boot-mounted stationary to suit common metric and imperial USA market extended-length seal chambers.

Why Choose the Vulcan Seals Type 22?

- Proficient diaphragm bellows design with dimensions to suit common USA metric or imperial extended-length seal chambers.
- Boot-mounted stationary provides maximum elastomer sealing contact to the housing surface.
- The base plate fitted at the spring drive end provides firm contact against a shaft step or circlip that sets the seal's operating height. This component can be removed if not required.
- A widely utilised mechanical seal type highly suited to general light to medium duties and capable of long service life.

Standard Face Material Combinations

| Rotary Face Material | Stationary Face Material | Complete Material Code |
|------------------------|----------------------------|------------------------|
| VCP1 Carbon | VAW1 Ceramic | C |
| VCP1 Carbon | VSR1 Silicon Carbide | D |
| VSR1 Silicon Carbide | VAW1 Ceramic | G |
| VSR1 Silicon Carbide | VSR1 Silicon Carbide | S |
| VTN2* Tungsten Carbide | VTN1* Tungsten Carbide | H |

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 14 bar (203 psi)

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

*Non-stock guarantee

Compliance & Certificates



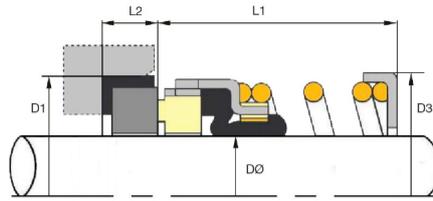
The Vulcan Seals mechanical seal range can be supplied with material combinations designed to meet the compliance standards and certifications listed above. Additional compliance or regulatory requirements can also be considered upon request. Please enquire to discuss your specific application.

Mechanical Seal Replacement Range

Vulcan Seals Type 22 is a dimensional replacement mechanical seal for the following seal ranges:

- AES® | Type N-P05*
- Pac-Seal® | Type 52*
- Burgmann® | Type MG901*

*Rotary Face | **Stationary Face



Dimensional Data

| DØ (Metre) | Size Code | D1 | D3 | L1 | L2 | DØ (Imp.) | Size Code | D1 (in) | D1 (mm) | D3 (in) | D3 (mm) | L1 (in) | L1 (mm) | L2 (in) | L2 (mm) |
|------------|-----------|-------|--------|-------|-------|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| 12 | 0120 | 25.40 | 23.50 | 31.75 | 7.93 | 0.375 | 0095 | 0.875 | 22.23 | 0.858 | 21.80 | - | - | 0.313 | 7.95 |
| 14 | 0140 | 31.75 | 27.00 | 34.93 | 10.28 | 0.500 | 0127 | 1.000 | 25.40 | 0.925 | 23.50 | 1.250 | 31.75 | 0.312 | 7.93 |
| 16 | 0160 | 31.75 | 27.00 | 34.93 | 10.28 | 0.625 | 0158 | 1.250 | 31.75 | 1.063 | 27.00 | 1.375 | 34.93 | 0.405 | 10.28 |
| 18 | 0180 | 34.93 | 30.70 | 34.93 | 10.28 | 0.750 | 0191 | 1.375 | 34.93 | 1.209 | 30.70 | 1.375 | 34.93 | 0.405 | 10.28 |
| 20 | 0200 | 38.10 | 33.40 | 36.50 | 10.28 | 0.875 | 0222 | 1.500 | 38.10 | 1.315 | 33.40 | 1.437 | 36.50 | 0.405 | 10.28 |
| 22 | 0220 | 38.10 | 33.40 | 36.50 | 10.28 | 1.000 | 0254 | 1.625 | 41.28 | 1.701 | 43.20 | 1.625 | 41.28 | 0.437 | 11.10 |
| 24 | 0240 | 41.28 | 39.20 | 41.28 | 11.10 | 1.125 | 0286 | 1.750 | 44.44 | 1.795 | 45.60 | 1.687 | 42.85 | 0.437 | 11.10 |
| 25 | 0250 | 41.28 | 39.20 | 41.28 | 11.10 | 1.250 | 0317 | 1.875 | 47.63 | 1.902 | 48.30 | 1.687 | 42.85 | 0.437 | 11.10 |
| 28 | 0280 | 44.44 | 45.60 | 42.85 | 11.10 | 1.375 | 0349 | 2.000 | 50.80 | 2.047 | 52.00 | 1.687 | 42.85 | 0.437 | 11.10 |
| 30 | 0300 | 47.63 | 47.40 | 42.85 | 11.10 | 1.500 | 0381 | 2.125 | 53.98 | 2.197 | 55.80 | 1.687 | 42.85 | 0.437 | 11.10 |
| 32 | 0320 | 47.63 | 47.40 | 42.85 | 11.10 | 1.625 | 0412 | 2.375 | 60.33 | 2.331 | 59.20 | 2.000 | 50.80 | 0.500 | 12.70 |
| 33 | 0330 | 50.80 | 52.00 | 42.85 | 11.10 | 1.750 | 0444 | 2.500 | 63.50 | 2.563 | 65.10 | 2.000 | 50.80 | 0.500 | 12.70 |
| 35 | 0350 | 50.80 | 52.00 | 42.85 | 11.10 | 1.875 | 0476 | 2.625 | 66.68 | 2.626 | 66.70 | 2.125 | 53.98 | 0.500 | 12.70 |
| 38 | 0380 | 53.98 | 55.60 | 42.85 | 11.10 | 2.000 | 0508 | 2.750 | 69.85 | 2.886 | 73.30 | 2.125 | 53.98 | 0.500 | 12.70 |
| 40 | 0400 | 60.33 | 59.20 | 50.80 | 12.70 | 2.125 | 0539 | 3.000 | 76.20 | 2.886 | 73.30 | 2.375 | 60.32 | 0.562 | 14.28 |
| 43 | 0430 | 63.50 | 65.10 | 50.80 | 12.70 | 2.250 | 0571 | 3.125 | 79.38 | 3.094 | 78.60 | 2.375 | 60.32 | 0.562 | 14.28 |
| 45 | 0450 | 66.68 | 65.10 | 53.98 | 12.70 | 2.375 | 0603 | 3.250 | 82.55 | 3.232 | 82.10 | 2.500 | 63.50 | 0.562 | 14.28 |
| 48 | 0480 | 69.85 | 66.70 | 53.98 | 12.70 | 2.500 | 0635 | 3.375 | 85.73 | 3.331 | 84.60 | 2.500 | 63.50 | 0.562 | 14.28 |
| 50 | 0500 | 69.85 | 71.00 | 53.98 | 12.70 | 2.625 | 0666 | 3.375 | 85.73 | 3.488 | 88.60 | 2.750 | 69.85 | 0.625 | 15.88 |
| 53 | 0530 | 76.20 | 73.30 | 60.32 | 14.28 | 2.750 | 0698 | 3.500 | 88.90 | 3.543 | 90.00 | 2.750 | 69.85 | 0.625 | 15.88 |
| 55 | 0550 | 79.38 | 78.60 | 60.32 | 14.28 | 2.875 | 0730 | 3.750 | 95.25 | 3.748 | 95.20 | 2.875 | 73.03 | 0.625 | 15.88 |
| 60 | 0600 | 82.55 | 82.10 | 63.50 | 14.28 | 3.000 | 0762 | 3.875 | 98.43 | 4.043 | 102.70 | 2.875 | 73.03 | 0.625 | 15.88 |
| 65 | 0650 | 85.73 | 88.60 | 69.85 | 15.88 | 3.125 | 0794 | 4.000 | 101.60 | 4.094 | 104.00 | 3.125 | 79.37 | 0.783 | 19.88 |
| 70 | 0700 | 88.90 | 90.00 | 69.85 | 15.88 | 3.250 | 0825 | 4.125 | 104.78 | 4.094 | 104.00 | 3.125 | 79.37 | 0.783 | 19.88 |
| 75 | 0750 | 98.43 | 102.70 | 73.03 | 15.88 | 3.375 | 0857 | 4.250 | 107.95 | 4.252 | 108.00 | 3.125 | 79.37 | 0.783 | 19.88 |
| | | | | | | 3.500 | 0889 | 4.375 | 111.13 | 4.409 | 112.00 | 3.125 | 79.37 | 0.783 | 19.88 |
| | | | | | | 3.625* | 0921 | 4.500 | 114.30 | 4.488 | 114.00 | 3.250 | 82.55 | 0.783 | 19.88 |
| | | | | | | 3.750 | 0953 | 4.625 | 117.48 | 4.685 | 119.00 | 3.250 | 82.55 | 0.783 | 19.88 |
| | | | | | | 3.875* | 0984 | 4.750 | 120.65 | 4.764 | 121.00 | 3.375 | 85.72 | 0.783 | 19.88 |
| | | | | | | 4.000 | 1016 | 4.875 | 123.83 | 4.882 | 124.00 | 3.375 | 85.72 | 0.783 | 19.88 |

Dimensions in mm and inches
 *Non-stock guarantee



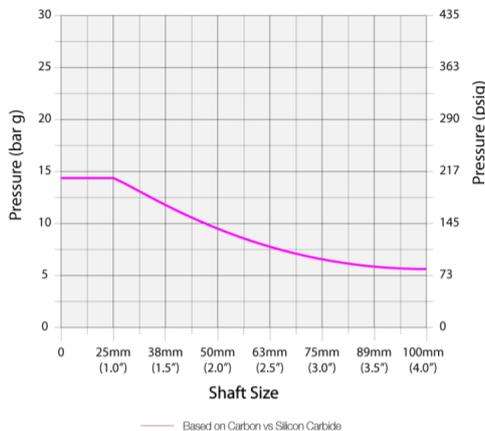
Maximum Operating Pressure

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 Silicon Carbide | x 1.00 |
| Silicon Carbide vs Ceramic | x 0.35 |
| Silicon Carbide vs Silicon Carbide | x 0.50 |
| Tungsten Carbide vs Tungsten Carbide | x 0.50 |

Example Calculation for Vulcan Seals Type 22

- A. Shaft size: 38mm therefore pressure is 12 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 22 seal size, the calculation for the approximate guidance maximum operating pressure would be:

A x B x C x D x E
 12 bar x 0.85 x 1.00 x 1.00 x 1.00 = 10.20 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.