



Vulcan Seals Type  
1677M  
Technical Data Sheet



Product Description

The Vulcan Seals Type 1677M is a robust, 'O'-ring mounted sinusoidal wave-spring "pusher" seal design, fully DIN24960/EN12756 L1K-U dimension compatible.

The drive from the shaft and set of working lengths is by set screws to the shaft, providing bi-directional rotation capability. The sinusoidal wave-spring provides even closing force to the sealing faces ensuring higher sealing performance compared to a single spring seal design.

The Vulcan Seals Type 1677M features a monolithic steelhead, optimised for chemical resistance and high-temperature applications.

Vulcan Seals Type 1677M complete seal is supplied with the Vulcan Seals Type 8.DINL stationary to suit DIN24960/EN12756 housings with anti-rotation provision, for greater reliability in viscous or abrasive medias.

Why Choose the Vulcan Seals Type 1677M?

- The design of the Type 1677M head ensures the 'O'-ring is positively energised against the shaft at all times, providing superior performance and preventing shaft fretting.
- The positive energising of the secondary seal allows high shore-A 'O'-ring materials with high chemical resistance to be used.
- The crest-to-crest wave spring technology utilised in the Vulcan Seals Type 1677M offers excellent axial movement capabilities.
- The one-piece sinusoidal wave spring provides superior strength and reliability compared to welded multi-part wave springs, which are prone to breakage at the weld points.
- The high performance and interchangeability of the 'O'-ring secondary seals provides a wide range of material capabilities for chemical process industries.

Standard Face Material Combinations

| Rotary Face            | Stationary Face        | Complete Seal Code |
|------------------------|------------------------|--------------------|
| VCD1 Carbon            | VAW1 Ceramic           | DB                 |
| VCD1 Carbon            | VSS1 Silicon Carbide   | DR                 |
| VSS1 Silicon Carbide   | VCD1 Carbon            | RD                 |
| VSS1 Silicon Carbide   | VSS1 Silicon Carbide   | R                  |
| 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 22 bar (320 psi)

Compliance & Certificates



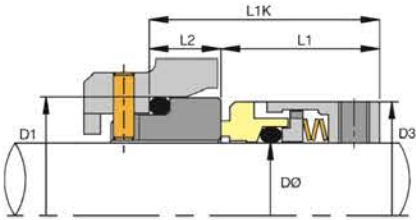
Also available with built materials that adhere to the above compliance standards and certificates. Please enquire about your requirements.

Mechanical Seal Replacement Range

Vulcan Seals Type 1677M is a dimensional replacement mechanical seal for the following seal ranges:

- AES® | Type N-W07DM\*
- Lidering® | Type 110\*
- Flexaseal® | Type BE G9\*

\*Rotary Face | \*\*Stationary Face



Dimensional Data

| DØ (Metric) | Seal Size Code | D1 (mm) | D3 (mm) | L1 (mm) | L2 (mm) | Slot Width | Slot Depth | L1K   |
|-------------|----------------|---------|---------|---------|---------|------------|------------|-------|
| 14*         | 0140           | 25.00   | 24.00   | 25.00   | 10.00   | 4.00       | 5.00       | 35.00 |
| 16          | 0160           | 27.00   | 26.00   | 25.00   | 10.00   | 4.00       | 5.00       | 35.00 |
| 18          | 0180           | 33.00   | 32.00   | 26.00   | 11.50   | 4.00       | 5.50       | 37.50 |
| 20          | 0200           | 35.00   | 34.00   | 26.00   | 11.50   | 4.00       | 5.50       | 37.50 |
| 22          | 0220           | 37.00   | 36.00   | 26.00   | 11.50   | 4.00       | 5.50       | 37.50 |
| 24          | 0240           | 39.00   | 38.00   | 28.50   | 11.50   | 4.00       | 5.50       | 40.00 |
| 25          | 0250           | 40.00   | 39.00   | 28.50   | 11.50   | 4.00       | 5.50       | 40.00 |
| 28          | 0280           | 43.00   | 42.00   | 31.00   | 11.50   | 4.00       | 5.50       | 42.50 |
| 30          | 0300           | 45.00   | 44.00   | 31.00   | 11.50   | 4.00       | 5.50       | 42.50 |
| 32          | 0320           | 48.00   | 46.00   | 31.00   | 11.50   | 4.00       | 5.50       | 42.50 |
| 33          | 0330           | 48.00   | 47.00   | 31.00   | 11.50   | 4.00       | 5.50       | 42.50 |
| 35          | 0350           | 50.00   | 49.00   | 31.00   | 11.50   | 4.00       | 5.50       | 42.50 |
| 38          | 0380           | 56.00   | 54.00   | 31.00   | 14.00   | 5.00       | 5.50       | 45.00 |
| 40          | 0400           | 58.00   | 56.00   | 31.00   | 14.00   | 5.00       | 5.50       | 45.00 |
| 43          | 0430           | 61.00   | 59.00   | 31.00   | 14.00   | 5.00       | 5.50       | 45.00 |
| 45          | 0450           | 63.00   | 61.00   | 31.00   | 14.00   | 5.00       | 5.50       | 45.00 |
| 48          | 0480           | 66.00   | 64.00   | 31.00   | 14.00   | 5.00       | 5.50       | 45.00 |
| 50          | 0500           | 70.00   | 66.00   | 32.50   | 15.00   | 5.00       | 5.50       | 47.50 |
| 53          | 0530           | 73.00   | 69.00   | 32.50   | 15.00   | 5.00       | 5.50       | 47.50 |
| 55          | 0550           | 75.00   | 71.00   | 32.50   | 15.00   | 5.00       | 5.50       | 47.50 |
| 58          | 0580           | 78.00   | 78.00   | 37.50   | 15.00   | 5.00       | 5.50       | 52.50 |
| 60          | 0600           | 80.00   | 80.00   | 37.50   | 15.00   | 5.00       | 5.50       | 52.50 |
| 63          | 0630           | 83.00   | 83.00   | 37.50   | 15.00   | 5.00       | 5.50       | 52.50 |
| 65          | 0650           | 85.00   | 85.00   | 37.50   | 15.00   | 5.00       | 5.50       | 52.50 |
| 68          | 0680           | 90.00   | 88.00   | 34.50   | 18.00   | 5.00       | 5.50       | 52.50 |
| 70          | 0700           | 92.00   | 89.00   | 42.00   | 18.00   | 5.00       | 5.50       | 60.00 |
| 75          | 0750           | 97.00   | 96.00   | 42.00   | 18.00   | 5.00       | 5.50       | 60.00 |
| 80          | 0800           | 105.00  | 104.00  | 41.80   | 18.20   | 5.00       | 5.50       | 60.00 |
| 85          | 0850           | 110.00  | 108.00  | 41.80   | 18.20   | 5.00       | 5.50       | 60.00 |
| 90          | 0900           | 115.00  | 114.00  | 46.80   | 18.20   | 5.00       | 5.50       | 65.00 |
| 95          | 0950           | 120.00  | 118.00  | 47.80   | 17.20   | 5.00       | 5.50       | 65.00 |
| 100         | 1000           | 125.00  | 124.00  | 47.80   | 17.20   | 5.00       | 5.50       | 65.00 |

Dimensions in mm  
\\\*Non-stock guarantee





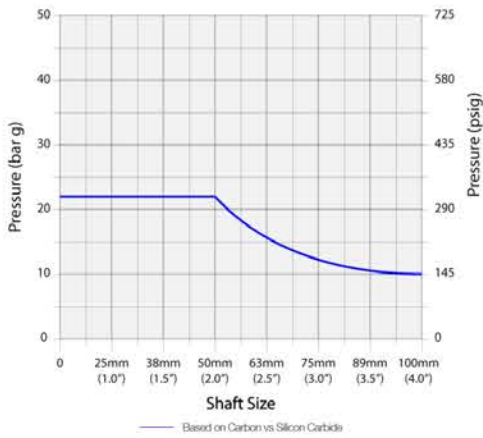
Maximum Operating Pressure

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 SiSiC                      | x 0.85     |
| SiSiC vs Carbon                      | x 0.85     |
| SiSiC vs SiSiC                       | x 0.41     |
| Tungsten Carbide vs Tungsten Carbide | x 0.50     |

Example Calculation for Vulcan Seals Type 1677M

- A. Shaft size: 38mm therefore pressure is 22 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 1677M seal size, the calculation for the approximate guidance maximum operating pressure would be:

A x B x C x D x E  
22 bar x 0.85 x 1.00 x 1.00 x 1.00 = 18.70 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.