Diaphragm seal with threaded connection
Flush diaphragm or with protective plate
Model 990.36

Applications

- For highly viscous or crystallising media
- For hard and abrasive media
- Screed and concrete pumps
- Mining, tunnelling and overburden haulage
- Hygienic applications

Special features

- Threaded connection for screwing in directly
- Flush diaphragm with compact dimensions
- High pressures for the process industry
- Version with protective plate for increased wear resistance
- Vacuum measuring ranges

Description

Diaphragm seals are used for the protection of pressure measuring instruments in applications with difficult media. In diaphragm seal systems, the diaphragm of the diaphragm seal effects the separation of the instrument and the medium. The pressure is transmitted to the measuring instrument via the system fill fluid which is inside the diaphragm seal system.

For the implementation of demanding customer applications, there is a wide variety of designs, materials and system fill fluids available.

For further technical information on diaphragm seals and diaphragm seal systems see IN 00.06 “Application, operating principle, designs”.

The model 990.36 small diaphragm seal with threaded connection and flush diaphragm is suitable for versatile applications. This diaphragm seal, despite its compact dimensions, can also be used for high pressures.

Optionally, there are versions available in hygienic design or with protective plates.

Mounting of the diaphragm seal to the measuring instrument may be made via a direct connection, for high temperatures via a cooling element or via a flexible capillary.

For the material selection WIKA offers a variety of solutions, in which the diaphragm seal and the wetted parts can be made of identical or different materials. The wetted parts can, as an alternative, be coated.
### Specifications

<table>
<thead>
<tr>
<th>Model 990.36</th>
<th>Standard</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissible pressure</td>
<td>Depending on the process connection thread, see tables from page 5</td>
<td>Vacuum measuring ranges</td>
</tr>
</tbody>
</table>
| Version | Flush diaphragm seal with diaphragm | Flush diaphragm seal with protective plate
| Level of cleanliness of wetted parts | Oil and grease free per ASTM G93-03 level F WIKA standard (< 1,000 mg/m²) | Oil and grease free per ASTM G93-03 level D and ISO 15001 (< 220 mg/m²)
| | Oil and grease free per ASTM G93-03 level C and ISO 15001 (< 66 mg/m²) |
| Origin of wetted parts | International | EU, CH, USA |
| Connection to the measuring instrument | Axial adapter | Axial adapter with G ½, G ¼, ½ NPT or ¼ NPT (female) |
| Type of mounting | Direct mounting | Capillary
| Design per NACE | - | MR 0175
| | | MR 0103 |
| Vacuum service (see IN 00.25) | Basic service | Premium service
| | | Advanced service |
| Instrument mounting bracket (only for capillary option) | - | Form H per DIN 16281, 100 mm, aluminium, black
| | | Form H per DIN 16281, 100 mm, stainless steel
| | | Bracket for pipe mounting, for pipe outer Ø 20 ... 80 mm, steel (see data sheet AC 09.07) |

### Example: Flush diaphragm seal with diaphragm, model 990.36, with mounted pressure sensor

![Diagram of flush diaphragm seal with diaphragm and mounted pressure sensor]

Legend:
- Mb: Effective diameter of diaphragm
- D: Outer diameter of diaphragm seal
### Material combinations

<table>
<thead>
<tr>
<th>Diaphragm seal with diaphragm</th>
<th>Wetted parts</th>
<th>Maximum permissible process temperature (^1) in °C [°F]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel 1.4404 / 1.4435 (316L), standard version</td>
<td>Stainless steel 1.4404 / 1.4435 (316L), standard version</td>
<td>400 [752]</td>
</tr>
<tr>
<td>Stainless steel 1.4435 (316L)</td>
<td>Stainless steel 1.4435 (316L)</td>
<td>400 [752]</td>
</tr>
<tr>
<td>Stainless steel 1.4539 (904L)</td>
<td>Stainless steel 1.4539 (904L)</td>
<td></td>
</tr>
<tr>
<td>Stainless steel 1.4541 (321)</td>
<td>Stainless steel 1.4541 (321)</td>
<td></td>
</tr>
<tr>
<td>Stainless steel 1.4571 (316Ti)</td>
<td>Stainless steel 1.4571 (316Ti)</td>
<td></td>
</tr>
<tr>
<td>Duplex 2205 (1.4462)</td>
<td>Duplex 2205 (1.4462)</td>
<td>300 [572]</td>
</tr>
<tr>
<td>Superduplex 2507 (1.4410)</td>
<td>Superduplex 2507 (1.4410)</td>
<td></td>
</tr>
<tr>
<td>Hastelloy C22 (2.4602)</td>
<td>Hastelloy C22 (2.4602)</td>
<td>400 [752]</td>
</tr>
<tr>
<td>Hastelloy C276 (2.4819)</td>
<td>Hastelloy C276 (2.4819)</td>
<td></td>
</tr>
<tr>
<td>Monel 400 (2.4360)</td>
<td>Monel 400 (2.4360)</td>
<td></td>
</tr>
<tr>
<td>Titanium class 2 (3.7035)</td>
<td>Titanium class 2 (3.7035)</td>
<td></td>
</tr>
<tr>
<td>Titanium class 7 (3.7235)</td>
<td>Titanium class 7 (3.7225)</td>
<td></td>
</tr>
<tr>
<td>Stainless steel 1.4435 (316L)</td>
<td>Wikaramic\textsuperscript{®} coating (diaphragm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PFA (perfluoroalkoxy) coating, FDA (diaphragm)</td>
<td>260 [500]</td>
</tr>
<tr>
<td></td>
<td>PFA (perfluoroalkoxy) coating, antistatic (diaphragm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gold plating (diaphragm)</td>
<td>400 [752]</td>
</tr>
</tbody>
</table>

\(^1\) The maximum permissible process temperature of the diaphragm seal system is limited by the joining method, by the system fill fluid and by the measuring instrument.

### Process connection

<table>
<thead>
<tr>
<th>Standard</th>
<th>Male thread</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard</td>
<td>Option</td>
</tr>
<tr>
<td>Following DIN 3852-2</td>
<td>G ½</td>
<td>G ¼</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G 1 ½</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G 2</td>
</tr>
<tr>
<td>Following ASME B16.11</td>
<td>½ NPT</td>
<td>¼ NPT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 NPT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 ½ NPT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NPT</td>
</tr>
</tbody>
</table>

Further material combinations for special process temperatures and process connections on request.
Approvals

<table>
<thead>
<tr>
<th>Logo</th>
<th>Description</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAC</td>
<td>EAC (option)</td>
<td>Eurasian Economic Community</td>
</tr>
<tr>
<td></td>
<td>Pressure equipment directive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MTSCHS (option)</td>
<td>Kazakhstan</td>
</tr>
<tr>
<td></td>
<td>Permission for commissioning</td>
<td></td>
</tr>
<tr>
<td>3-A</td>
<td>3-A 1) (version with G 1 hygienic connection)</td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td>Sanitary Standard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This instrument is 3-A marked, based on a third</td>
<td></td>
</tr>
<tr>
<td></td>
<td>party verification for conformance to the 3-A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>standard.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CRN</td>
<td>Canada</td>
</tr>
<tr>
<td></td>
<td>Safety (e.g. electr. safety, overpressure, ...)</td>
<td></td>
</tr>
</tbody>
</table>

1) To comply with the 3-A guidelines, the corresponding process adapter, approved in accordance with 3-A, must be used (see data sheet AC 09.20; model 910.61).

Certificates (option)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy for diaphragm seal systems)
- 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy for diaphragm seal systems)

Approvals and certificates, see website
### Dimensions in mm [in]

**Flush diaphragm seal with diaphragm**

Thread following DIN 3852-2

![Diaphragm Seal Diagram](image)

Legend:
- **G** Thread
- **Mb** Effective diameter of diaphragm
- **SW** Spanner width
- **D** Outer diameter of diaphragm seal

<table>
<thead>
<tr>
<th>G</th>
<th>PN</th>
<th>Dimensions in mm [in]</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>h</td>
<td>l</td>
<td>Mb</td>
<td>SW</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td><strong>G 1/2</strong></td>
<td>400</td>
<td>43 [1.693]</td>
<td>20 [0.787]</td>
<td>17 [0.669]</td>
<td>27 [1.063]</td>
<td>32 [1.26]</td>
</tr>
<tr>
<td><strong>G 3/4</strong></td>
<td>50</td>
<td>50 [1.969]</td>
<td>22 [0.866]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>G 1</strong></td>
<td>59</td>
<td>28 [1.102]</td>
<td>25 [0.984]</td>
<td>41 [1.614]</td>
<td>45 [1.772]</td>
<td></td>
</tr>
</tbody>
</table>

Thread following ASME B16.11

![NPT Diaphragm Seal Diagram](image)

Legend:
- **G** Thread
- **Mb** Effective diameter of diaphragm
- **SW** Spanner width
- **D** Outer diameter of diaphragm seal

<table>
<thead>
<tr>
<th>G</th>
<th>PN</th>
<th>Dimensions in mm [in]</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>h</td>
<td>l</td>
<td>Mb</td>
<td>SW</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td><strong>1/2 NPT</strong></td>
<td>600</td>
<td>40 [1.575]</td>
<td>19 [0.748]</td>
<td>14 [0.551]</td>
<td>27 [1.063]</td>
<td>32 [1.26]</td>
</tr>
<tr>
<td><strong>3/4 NPT</strong></td>
<td>400</td>
<td>50 [1.969]</td>
<td>20 [0.787]</td>
<td>17 [0.669]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1 NPT</strong></td>
<td>250</td>
<td>53 [2.087]</td>
<td>25 [0.984]</td>
<td>25 [0.984]</td>
<td>36 [1.417]</td>
<td>40 [1.575]</td>
</tr>
</tbody>
</table>
Due to the high abrasion resistance of the protective plate, this version is particularly suitable for pressure measurements with abrasive media. The shock-resistant and abrasion-resistant protective plate increases the resilience of the diaphragm seal system. The protective plate is dimensioned sufficiently thickly that it can withstand abrasion by the medium for a long time.

Legend:

<table>
<thead>
<tr>
<th>G</th>
<th>Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>Effective protective plate diameter</td>
</tr>
<tr>
<td>SW</td>
<td>Spanner width</td>
</tr>
<tr>
<td>D</td>
<td>Outer diameter of diaphragm seal</td>
</tr>
</tbody>
</table>

### Dimensions in mm [in]

**Version: Diaphragm seal with protective plate**

Thread following DIN 3852-2

<table>
<thead>
<tr>
<th>G</th>
<th>PN</th>
<th>Dimensions in mm [in]</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 1/2</td>
<td>400</td>
<td>h 43 [1.693]</td>
</tr>
</tbody>
</table>

1) With G 1 and G 1 1/2 threads, the diaphragm seal geometry is designed as a hexagon.

### Dimensions in mm [in]

**Thread following ASME B16.11**

<table>
<thead>
<tr>
<th>G</th>
<th>PN</th>
<th>Dimensions in mm [in]</th>
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</tr>
<tr>
<td>3/4 NPT</td>
<td>400</td>
<td>h 50 [1.989]</td>
</tr>
<tr>
<td>1 NPT</td>
<td>250</td>
<td>h 53 [2.087]</td>
</tr>
</tbody>
</table>
The model 990.36 diaphragm seal with G 1 hygienic connection has been specifically developed for the food, beverage and pharmaceutical industries. Pressure measuring instruments with this G 1 hygienic process connection enable the connection of a number of aseptic process connections (e.g. clamp, threaded, VARIVENT® or NEUMO®) from the WIKA process adapter system (see model 910.61; data sheet DS 99.80).

Material: Stainless steel 316L / 1.4435

Surface finish quality of wetted parts:
Ra < 0.76 µm [< 30 µin] (option: Ra < 0.38 [< 15 µin])
Ordering information

**Diaphragm seal:**
- Diaphragm seal model / Process connection (process connection standard, thread, nominal pressure rating) / Material (upper body, diaphragm, lower body) / Sealing / Flushing connection (plug screw) / Connection to the measuring instrument / Level of cleanliness of wetted parts / Origin of wetted parts / Certificates

**Diaphragm seal system:**
- Diaphragm seal model / Process connection (process connection standard, thread, nominal pressure rating) / Material (upper body, diaphragm, lower body) / Sealing / Flushing connection (plug screw) / Pressure measuring instrument model (per data sheet) / Mounting (direct mounting, cooling element, capillary) / min. and max. process temperature / min. and max. ambient temperature / Vacuum service / System fill fluid / Certificates / Height difference / Level of cleanliness of wetted parts / Origin of wetted parts / Instrument mounting bracket