

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

WIKA data sheet DS 99.03



for further approvals  
see page 4

## 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



**Model 990.36 with flush diaphragm**

## 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.

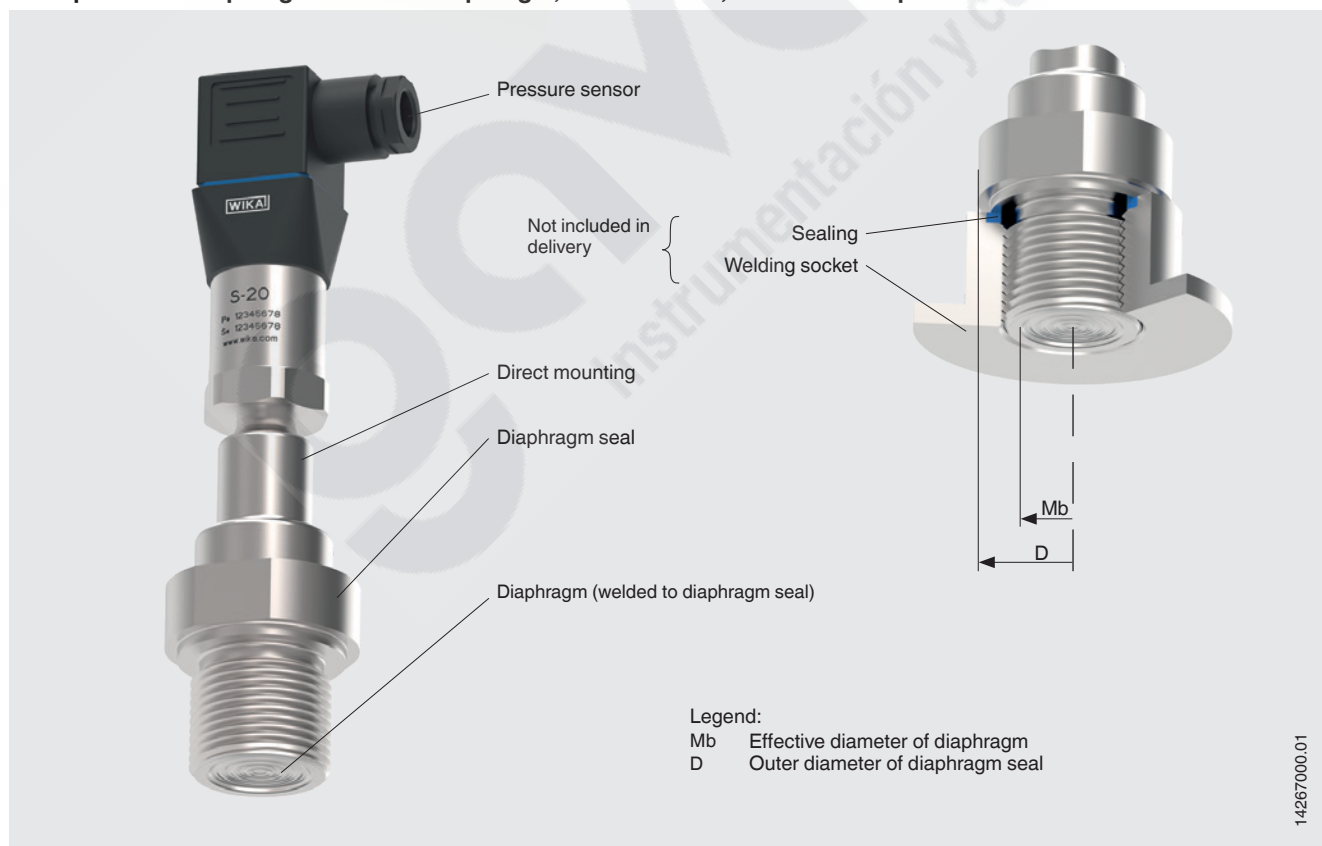
Mounting of the diaphragm seal to the measuring instrument may be made via a direct connection, for high temperatures via a cooling element or via a flexible capillary.

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

Model 990.36	Standard	Option
<b>Permissible pressure</b>	Depending on the process connection thread, see tables from page 5	Vacuum measuring ranges
<b>Version</b>	Flush diaphragm seal with diaphragm	<ul style="list-style-type: none"> <li>■ Flush diaphragm seal with protective plate</li> <li>■ Flush diaphragm seal with hygienic connection</li> </ul>
<b>Level of cleanliness of wetted parts</b>	Oil and grease free per ASTM G93-03 level F WIKA standard ( $< 1,000 \text{ mg/m}^2$ )	<ul style="list-style-type: none"> <li>■ Oil and grease free per ASTM G93-03 level D and ISO 15001 (<math>&lt; 220 \text{ mg/m}^2</math>)</li> <li>■ Oil and grease free per ASTM G93-03 level C and ISO 15001 (<math>&lt; 66 \text{ mg/m}^2</math>)</li> </ul>
<b>Origin of wetted parts</b>	International	EU, CH, USA
<b>Connection to the measuring instrument</b>	Axial adapter	Axial adapter with G $\frac{1}{2}$ , G $\frac{1}{4}$ , $\frac{1}{2}$ NPT or $\frac{1}{4}$ NPT (female)
<b>Type of mounting</b>	Direct mounting	<ul style="list-style-type: none"> <li>■ Capillary</li> <li>■ Cooling element</li> </ul>
<b>Design per NACE</b>	-	<ul style="list-style-type: none"> <li>■ MR 0175</li> <li>■ MR 0103</li> </ul>
<b>Vacuum service (see IN 00.25)</b>	Basic service	<ul style="list-style-type: none"> <li>■ Premium service</li> <li>■ Advanced service</li> </ul>
<b>Instrument mounting bracket (only for capillary option)</b>	-	<ul style="list-style-type: none"> <li>■ Form H per DIN 16281, 100 mm, aluminium, black</li> <li>■ Form H per DIN 16281, 100 mm, stainless steel</li> <li>■ Bracket for pipe mounting, for pipe outer <math>\varnothing 20 \dots 80 \text{ mm}</math>, steel (see data sheet AC 09.07)</li> </ul>

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



## Material combinations

Diaphragm seal with diaphragm	Wetted parts	Maximum permissible process temperature <sup>1)</sup> in °C [°F]
Stainless steel 1.4404 / 1.4435 (316L), standard version	Stainless steel 1.4404 / 1.4435 (316L), standard version	400 [752]
Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	400 [752]
Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	
Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	
Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	
Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	300 [572]
Superduplex 2507 (1.4410)	Superduplex 2507 (1.4410)	
Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	400 [752]
Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	
Monel 400 (2.4360)	Monel 400 (2.4360)	
Titanium class 2 (3.7035)	Titanium class 2 (3.7035)	
Titanium class 7 (3.7235)	Titanium class 11 (3.7225)	
Stainless steel 1.4435 (316L)	Wikaramic® coating (diaphragm)	
	PFA (perfluoroalkoxy) coating, FDA (diaphragm)	260 [500]
	PFA (perfluoroalkoxy) coating, antistatic (diaphragm)	400 [752]
	Gold plating (diaphragm)	

Diaphragm seal with protective plate	Wetted parts	Permissible temperature range <sup>1)</sup> of the sealing in °C [°F]
Stainless steel 1.4404 / 1.4435 (316L), standard version	Stainless steel 1.4404 / 1.4435 (316L), standard version	<ul style="list-style-type: none"> <li>■ FPM/FKM, Viton (standard) -10 ... +200 °C [14 ... 392 °F]</li> <li>■ NBR -20 ... +100 °C [-4 ... +212 °F]</li> <li>■ EPDM -50 ... +100 °C [-58 ... +212 °F]</li> </ul>
Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	
Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	
Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	
Monel 400 (2.4360)	Monel 400 (2.4360)	
Titanium class 2 (3.7035)	Titanium class 2 (3.7035)	
Titanium class 7 (3.7235)	Titanium class 11 (3.7225)	
Stainless steel 1.4435 (316L)	Wikaramic® coating (protective plate)	



<sup>1)</sup> 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

Standard	Male thread	
	Standard	Option
Following DIN 3852-2	G ½	<ul style="list-style-type: none"> <li>■ G ¾</li> <li>■ G 1</li> <li>■ G 1 ½</li> <li>■ G 2</li> </ul>
Following ASME B16.11	½ NPT	<ul style="list-style-type: none"> <li>■ ¾ NPT</li> <li>■ 1 NPT</li> <li>■ 1 ½ NPT</li> <li>■ 2 NPT</li> </ul>

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

## Approvals

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

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)

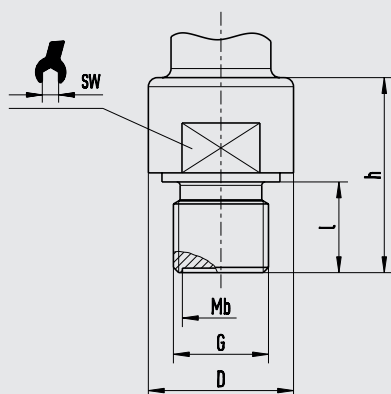
- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy for diaphragm seal systems)
- 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy for diaphragm seal systems)

Approvals and certificates, see website

## Dimensions in mm [in]

### Flush diaphragm seal with diaphragm

Thread following DIN 3852-2



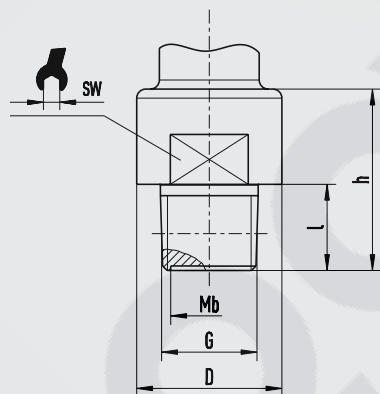
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Legend:

G Thread  
Mb Effective diameter of diaphragm  
SW Spanner width  
D Outer diameter of diaphragm seal

G	PN	Dimensions in mm [in]				
		h	l	Mb	SW	D
G ½	400	43 [1.693]	20 [0.787]	17 [0.669]	27 [1.063]	32 [1.26]
G ¾		50 [1.969]		22 [0.866]		
G 1		59 [2.323]	28 [1.102]	25 [0.984]	41 [1.614]	45 [1.772]
G 1 ½	250	63 [2.48]	30 [1.181]	40 [1.575]	55 [2.165]	60 [2.362]
G 2				52 [2.047]	60 [2.362]	68 [2.677]

Thread following ASME B16.11



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Legend:

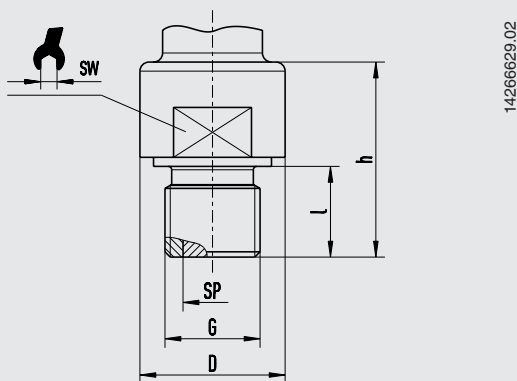
G Thread  
Mb Effective diameter of diaphragm  
SW Spanner width  
D Outer diameter of diaphragm seal

G	PN	Dimensions in mm [in]				
		h	l	Mb	SW	D
½ NPT	600	40 [1.575]	19 [0.748]	14 [0.551]	27 [1.063]	32 [1.26]
¾ NPT	400	50 [1.969]	20 [0.787]	17 [0.669]		
1 NPT	250	53 [2.087]	25 [0.984]	25 [0.984]	36 [1.417]	40 [1.575]
1 ½ NPT	100	59 [2.323]	26 [1.024]	40 [1.575]	55 [2.165]	60 [2.362]
2 NPT		60 [2.362]	27 [1.063]	52 [2.047]	60 [2.362]	68 [2.677]

## Dimensions in mm [in]

### Version: Diaphragm seal with protective plate

Thread following DIN 3852-2



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 thick that it can withstand abrasion by the medium for a long time.

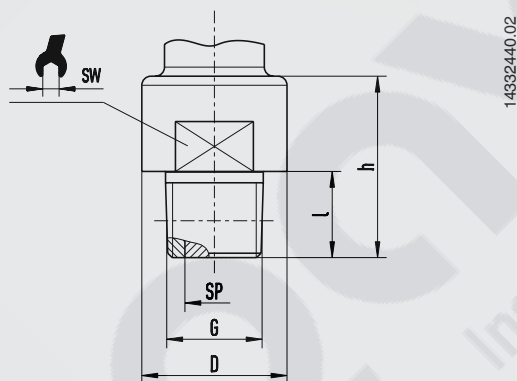
Legend:

G Thread  
SP Effective protective plate diameter  
SW Spanner width  
D <sup>1)</sup> Outer diameter of diaphragm seal

G	PN	Dimensions in mm [in]				
		h	l	SP	SW	D <sup>1)</sup>
G ½	400	43 [1.693]	20 [0.787]	15 [0.591]	27 [1.063]	32 [1.26]
G ¾		50 [1.989]				
G 1		59 [2.323]	28 [1.102]	24 [0.945]	41 [1.614]	41 [1.614]
G 1 ½	250	61 [2.402]	27 [1.063]	36 [1.417]	55 [2.165]	55 [2.165]
G 2		63 [2.48]	30 [1.181]	40 [1.575]	60 [2.362]	68 [2.677]

1) With G 1 and G 1 ½ threads, the diaphragm seal geometry is designed as a hexagon

Thread following ASME B16.11



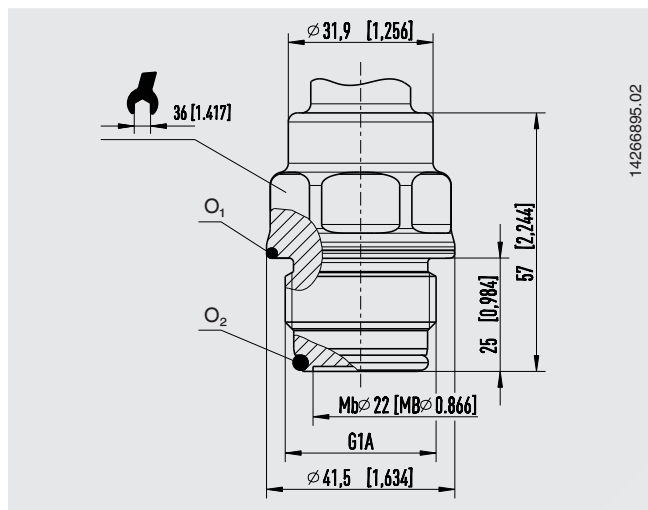
Legend:

G Thread  
SP Effective protective plate diameter  
SW Spanner width  
D Outer diameter of diaphragm seal

G	PN	Dimensions in mm [in]				
		h	l	SP	SW	D
½ NPT	600	40 [1.575]	19 [0.748]	15 [0.591]	27 [1.063]	32 [1.26]
¾ NPT	400	50 [1.969]	20 [0.787]			
1 NPT	250	53 [2.087]	25 [0.984]	24 [0.945]	36 [1.417]	40 [1.575]
1 ½ NPT	100	59 [2.323]	26 [1.024]	36 [1.417]	55 [2.165]	60 [2.362]
2 NPT		60 [2.362]	27 [1.063]	40 [1.575]	60 [2.362]	68 [2.677]

## Dimensions in mm [in]

Version: G 1 hygienic connection



Material O-ring	PN	Temperature range	Conformity	Colour	Order number	
					O <sub>1</sub>	O <sub>2</sub>
EPDM 70	40 bar	-40 ... +145 °C	FDA 21 CFR 177.2600, USP XXV class VI and 3-A (18-03) Sanitary Standards class 2 (max. 8 % milk fat)	Black	14023833	14004173
FKM 75		-15 ... +200 °C	FDA 21 CFR 177.2600, USP XXIII class VI and 3-A (18-03) Sanitary Standards class 1		14337279	14004174

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

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