

# Diaphragm seal with flange connection

## Flange-type with extended diaphragm

### Model 990.29

WIKA data sheet DS 99.29



for further approvals  
see page 5

#### Applications

- Aggressive, highly viscous, crystallising or hot media
- Process industry
- Thick-walled or insulated pipelines and vessels

#### Special features

- Flange with extended welded diaphragm
- Common standards and nominal widths available
- When special materials are selected, all wetted parts are made of the selected material
- Robust, all welded design



**Diaphragm seal with flange connection,  
model 990.29**

#### 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 are 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 990.29 diaphragm seal is available in a wide variety of dimensions following the usual standards for this market. Due to the extended diaphragm, the diaphragm seal can be used at thick-walled or insulated locations in pipeline and vessel construction.

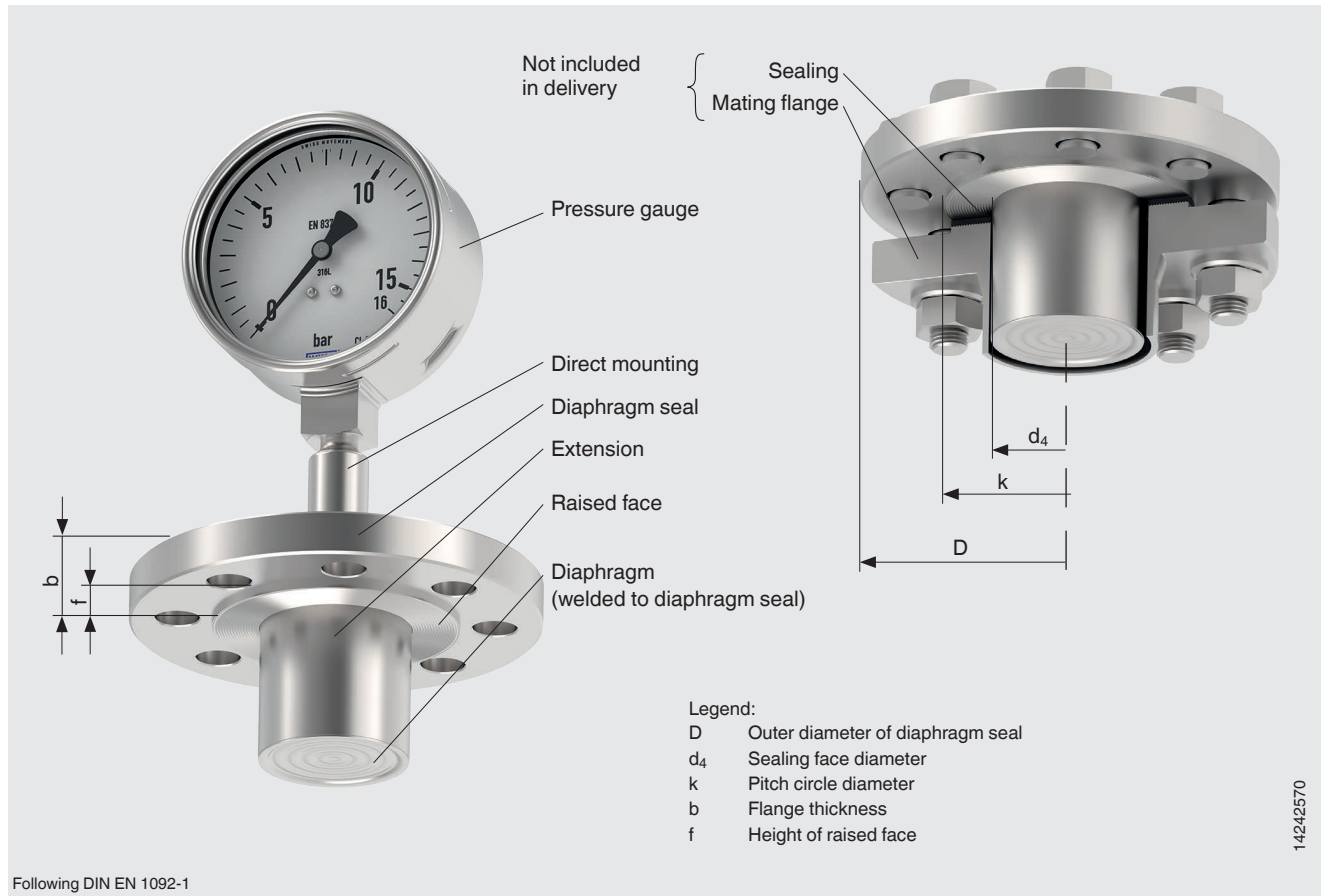
Assembly of the diaphragm seal to the measuring instrument may be made via a direct connection, for high temperatures via a cooling element or via a flexible capillary.

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

## Specifications

Model 990.29	Standard	Option
<b>Level of cleanliness of wetted parts</b>	Oil and grease free per ASTM G93-03 level F WIKA standard (< 1,000 mg/m <sup>2</sup> )	<ul style="list-style-type: none"> <li>■ Oil and grease free per ASTM G93-03 level D and ISO 15001 (&lt; 220 mg/m<sup>2</sup>)</li> <li>■ Oil and grease free per ASTM G93-03 level C and ISO 15001 (&lt; 66 mg/m<sup>2</sup>)</li> </ul>
<b>Origin of wetted parts</b>	International	EU, CH, USA
<b>Extension length</b> (Tolerance: ±2,5 mm [±0,098 in])	50 mm [1.968 in]	<ul style="list-style-type: none"> <li>■ 100 mm [3.937 in]</li> <li>■ 150 mm [5.905 in]</li> <li>■ 200 mm [7.874 in]</li> </ul>
<b>Connection to the measuring instrument</b>	Axial adapter	Axial adapter with G ½, G ¼, ½ NPT or ¼ 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</b> (see IN 00.25)	Basic service	<ul style="list-style-type: none"> <li>■ Premium service</li> <li>■ Advanced service</li> </ul>
<b>Instrument mounting bracket</b> (only for capillary option)	-	<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 Ø 20 ... 80 mm, steel (see data sheet AC 09.07)</li> </ul>

### Example: Diaphragm seal model 990.29 with mounted pressure gauge



## Process connection, flange

Standard	Nominal width	Sealing face	
		Standard	Option
Following DIN EN 1092-1	DN 50	Form B1	<ul style="list-style-type: none"> <li>■ Form A</li> <li>■ Form B2</li> <li>■ Form C (tongue)</li> <li>■ Form D (groove)</li> <li>■ Form E</li> <li>■ Form F</li> </ul>
	DN 80		
	DN 100		
	DN 125		
Following ASME B16.5	2"	RF 125 ... 250 AA	<ul style="list-style-type: none"> <li>■ RFSF</li> <li>■ Flat face</li> <li>■ Small tongue</li> <li>■ Small male face</li> <li>■ Small groove</li> <li>■ Small female face</li> <li>■ Large tongue</li> <li>■ Large male face</li> <li>■ Large groove</li> <li>■ Large female face</li> <li>■ RJF groove</li> </ul>
	3"		
	4"		
	5"		
Following GOST 33259	DN 25	Type B	<ul style="list-style-type: none"> <li>■ Type A (flat face)</li> <li>■ Type C (tongue)</li> <li>■ Type D (groove)</li> <li>■ Type E (spigot, male face)</li> <li>■ Type F (recess, female face)</li> </ul>
	DN 40		
	DN 50		
	DN 65		
	DN 80		
	DN 100		
	DN 125		

Other flanges on request


## Material combinations

Upper body of diaphragm seal	Wetted parts	Maximum permissible process temperature <sup>1)</sup> in °C [°F]
<b>Stainless steel 1.4404 (316L)</b>	Stainless steel 1.4404 / 1.4435 (316L), standard version	400 [752]
	Stainless steel 1.4539 (904L)	
	Stainless steel 1.4541 (321)	
	Stainless steel 1.4571 (316Ti)	
	ECTFE coating	150 [302]
	PFA (Perfluoroalkoxy) coating, FDA	260 [500]
	PFA (perfluoroalkoxy) coating, antistatic	
	Gold plating	400 [752]
	Wikaramic® coating	
	Hastelloy C22 (2.4602)	260 [500]
	Hastelloy C276 (2.4819)	400 [752]
	Inconel 600 (2.4816)	
	Inconel 625 (2.4856)	
	Incoloy 825 (2.4858)	
	Monel 400 (2.4360)	
	Nickel 200 (2.4060, 2.4066)	260 [500]
	Titanium grade 2 (3.7035)	150 [302]
Titanium grade 11 (3.7225)		
Tantalum	300 [572]	
<b>Stainless steel 1.4435 (316L)</b>	Stainless steel 1.4435 (316L)	400 [752]
<b>Stainless steel 1.4539 (904L)</b>	Stainless steel 1.4539 (904L)	
<b>Stainless steel 1.4541 (321)</b>	Stainless steel 1.4541 (321)	
<b>Stainless steel 1.4571 (316Ti)</b>	Stainless steel 1.4571 (316Ti)	
<b>Duplex 2205 (1.4462)</b>	Duplex 2205 (1.4462)	300 [572]
<b>Superduplex (1.4410)</b>	Superduplex (1.4410)	
<b>Hastelloy C22 (2.4602)</b>	Hastelloy C22 (2.4602)	400 [752]
<b>Hastelloy C276 (2.4819)</b>	Hastelloy C276 (2.4819)	
<b>Inconel 600 (2.4816)</b>	Inconel 600 (2.4816)	
<b>Inconel 625 (2.4856)</b>	Inconel 625 (2.4856)	
<b>Incoloy 825 (2.4558)</b>	Incoloy 825 (2.4858)	
<b>Monel 400 (2.4360)</b>	Monel 400 (2.4360)	
<b>Nickel</b>	Nickel 200 (2.4060, 2.4066)	
<b>Titanium grade 2 (3.7035)</b>	Titanium grade 2 (3.7035)	
<b>Titanium grade 7 (3.7235)</b>	Titanium grade 11 (3.7225)	

<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.

Further material combinations for special process temperatures on request

## Approvals

Logo	Description	Country
	<b>EAC (option)</b> Pressure equipment directive	Eurasian Economic Community
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada
-	<b>MTSCHS (option)</b> Permission for commissioning	Kazakhstan

## 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 metallic parts, indication accuracy for diaphragm seal systems)

Approvals and certificates, see website

## Ordering information

Diaphragm seal:

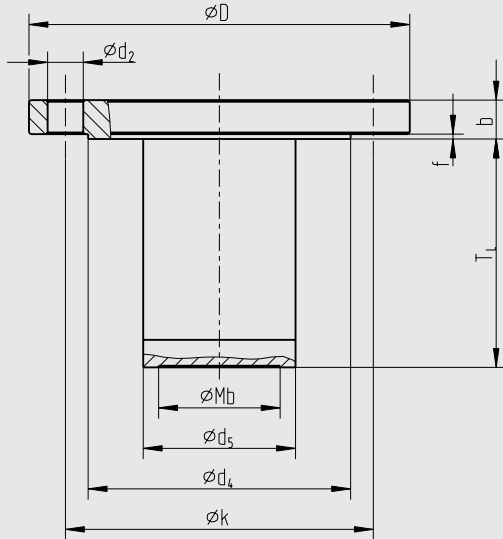
Diaphragm seal model / Process connection (standard, nominal width, nominal pressure, sealing face, extension length) / Materials (upper body, sealing face, diaphragm) / Level of cleanliness of wetted parts / Origin of wetted parts / Design per NACE / Connection to the measuring instrument / Certificates

Diaphragm seal system:

Diaphragm seal model / Pressure measuring instrument model (per data sheet) / Mounting (direct mounting, cooling element, capillary) / Materials (upper body, sealing face, diaphragm) / 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 / Design per NACE / Diaphragm seal for mounting to zone 0 / Instrument mounting bracket / Process connection (standard, nominal width, nominal pressure, sealing face)

## Dimensions in mm [in]

Flange connection following DIN EN 1092-1, form B1



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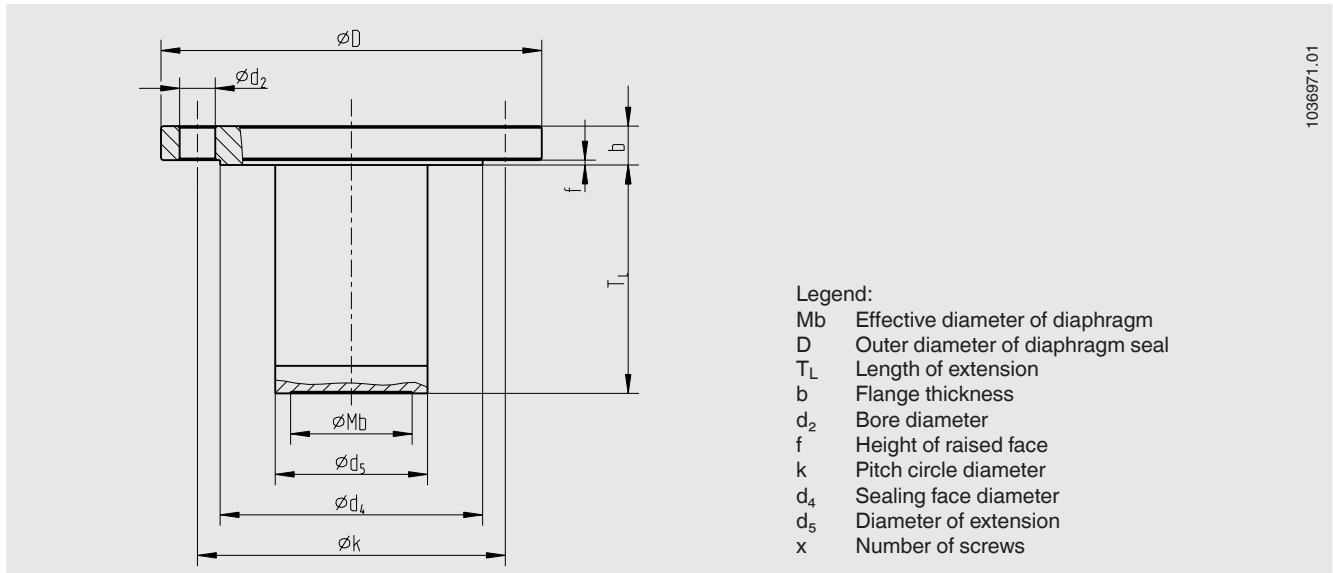
### Legend:

- Mb Effective diameter of diaphragm
- D Outer diameter of diaphragm seal
- T<sub>L</sub> Length of extension
- b Flange thickness
- d<sub>2</sub> Bore diameter
- f Height of raised face
- k Pitch circle diameter
- d<sub>4</sub> Sealing face diameter
- d<sub>5</sub> Diameter of extension
- x Number of screws

DN	PN	Dimensions in mm [in]								x
		Mb	D	b	d <sub>2</sub>	k	f	d <sub>4</sub>	d <sub>5</sub> <sup>+1 [0.039]</sup> <sub>-0.5 [0.020]</sub>	
50	10/40	45 [1.772]	165 [6.496]	20 [0.787]	18 [0.709]	125 [4.921]	2 [0.079]	102 [4.016]	48.3 [1.902]	4
80	10/16	72 [2.835]	200 [7.874]	20 [0.787]	18 [0.709]	160 [6.299]	2 [0.079]	138 [5.433]	76 [2.92]	8
	25/40	72 [2.835]	200 [7.874]	24 [0.945]	18 [0.709]	160 [6.299]	2 [0.079]	138 [5.433]	76 [2.92]	8
100	10/16	89 [3.504]	220 [8.661]	20 [0.787]	18 [0.709]	180 [7.087]	2 [0.079]	158 [6.22]	94 [3.701]	8
	25/40	89 [3.504]	235 [9.252]	24 [0.945]	22 [0.866]	190 [7.48]	2 [0.079]	162 [6.378]	94 [3.701]	8
125	10/16	124 [4.882]	250 [9.842]	22 [0.866]	18 [0.709]	210 [8.268]	2 [0.079]	188 [7.402]	125 [4.921]	8
	25/40	124 [4.882]	270 [10.63]	26 [1.024]	26 [1.024]	220 [8.661]	2 [0.079]	188 [7.402]	125 [4.921]	8

Further dimensions, tolerances and higher nominal pressures on request

Flange connection per ASME B 16.5, RF 125 ... 250 AA

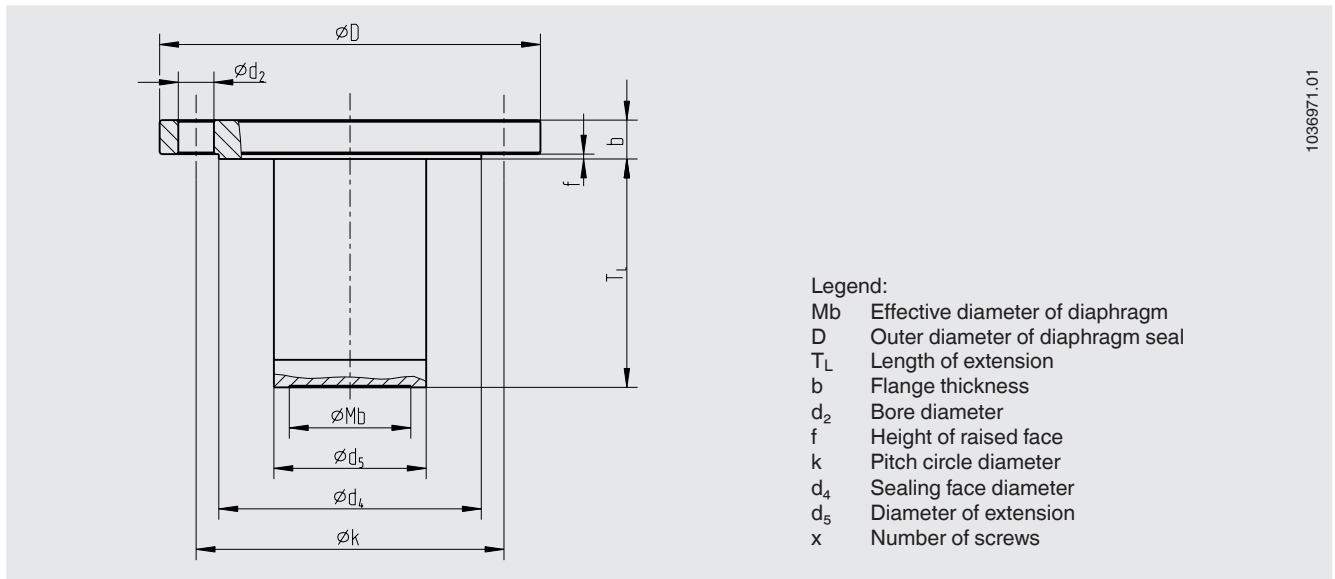


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DN	Class	Dimensions in mm [in]								x
		Mb	D	b	$d_2$	k	f	$d_4$	$d_5 \begin{smallmatrix} +1 [0.039] \\ -0.5 [0.020] \end{smallmatrix}$	
1 1/2"	150	35 [1.378]	125 [4.921]	17.9 [0.705]	16 [0.63]	98.4 [3.874]	2 [0.079]	73 [2.874]	38 [1.496]	4
	300	35 [1.378]	155 [6.102]	21.1 [0.831]	22 [0.866]	114.3 [4.5]	2 [0.079]	73 [2.874]	38 [1.496]	4
2"	150	45 [1.772]	150 [5.906]	19.5 [0.768]	19 [0.748]	120.7 [4.752]	2 [0.079]	92 [3.622]	48.3 [1.902]	4
	300	45 [1.772]	165 [6.496]	22.7 [0.894]	19 [0.748]	127 [5]	2 [0.079]	92 [3.622]	48.3 [1.902]	8
3"	150	72 [2.835]	190 [7.48]	24.3 [0.957]	19 [0.748]	152.4 [6]	2 [0.079]	127 [5]	76 [2.992]	4
	300	72 [2.835]	210 [8.268]	29 [1.142]	22 [0.866]	168.3 [6.626]	2 [0.079]	127 [5]	76 [2.992]	8
4"	150	89 [3.504]	230 [9.055]	24.3 [0.957]	19 [0.748]	190.5 [7.5]	2 [0.079]	158 [6.22]	94 [3.701]	8
	300	89 [3.504]	255 [10.039]	32.2 [1.268]	22 [0.866]	200 [7.874]	2 [0.079]	158 [6.22]	94 [3.701]	8

Further dimensions, tolerances and higher nominal pressures on request

## Flange connection per GOST 33259, type B



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DN	PN	Dimensions in mm [in]								x
		Mb	D	b	$d_2$	k	f	$d_4$	$d_5^{+1 [0.039] -0.5 [0.020]}$	
50	10 / 16	40 [1.575]	160 [6.299]	16 [0.63]	18 [0.709]	125 [4.921]	3 [0.118]	102 [4.016]	44 [1.732]	4
	25 / 40	40 [1.575]	160 [6.299]	20 [0.787]	18 [0.709]	125 [4.921]	3 [0.118]	102 [4.016]	44 [1.732]	4
80	10	60 [2.362]	195 [7.677]	18 [0.709]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	74 [2.913]	4
	16	60 [2.362]	195 [7.677]	20 [0.787]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	74 [2.913]	4
	25	60 [2.362]	195 [7.677]	22 [0.866]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	74 [2.913]	8
	40	60 [2.362]	195 [7.677]	26 [1.024]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	74 [2.913]	8
100	10 / 16	72 [2.835]	215 [8.465]	20 [0.787]	18 [0.709]	180 [7.087]	3 [0.118]	158 [6.22]	91 [3.583]	8
	25	72 [2.835]	215 [8.465]	24 [0.945]	22 [0.866]	190 [7.48]	3 [0.118]	158 [6.22]	91 [3.583]	8
	40	72 [2.835]	215 [8.465]	26 [1.024]	22 [0.866]	190 [7.48]	3 [0.118]	158 [6.22]	91 [3.583]	8
125	10 / 16	90 [3.543]	245 [9.646]	22 [0.866]	18 [0.709]	210 [8.268]	3 [0.118]	184 [7.244]	111 [4.37]	8
	25	90 [3.543]	270 [10.63]	26 [1.024]	26 [1.024]	220 [8.661]	3 [0.118]	184 [7.244]	111 [4.37]	8
	40	90 [3.543]	270 [10.63]	28 [1.102]	26 [1.024]	220 [8.661]	3 [0.118]	184 [7.244]	111 [4.37]	8

Further dimensions, tolerances and higher nominal pressures on request



## Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, nominal width, nominal pressure, sealing face, extension length) / Materials (upper body, sealing face, diaphragm) / Level of cleanliness of wetted parts / Origin of wetted parts / Design per NACE / Connection to the measuring instrument / Certificates

Diaphragm seal system:

Diaphragm seal model / Pressure measuring instrument model (per data sheet) / Mounting (direct mounting, cooling element, capillary) / Materials (upper body, sealing face, diaphragm) / 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 / Design per NACE / Diaphragm seal for mounting to zone 0 / Instrument mounting bracket / Process connection (standard, nominal width, nominal pressure, sealing face)

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