Diaphragm seal for flange connection
With flush diaphragm, cell-type
Model 990.28

EAC

for further approvals
see page 5

Applications

- Aggressive, highly viscous, crystallising or hot media
- Process industry
- High-pressure applications

Special features

- Compact cell-type
- Intermediate flange with flush diaphragm
- Common standards and nominal widths available
- Wide variety of different materials and material combinations
- Instrument connection via radial gauge adapter

Diaphragm seal for flange connection, model 990.28

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 990.28 diaphragm seal is available in a wide variety of dimensions following the usual standards for this market.

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.

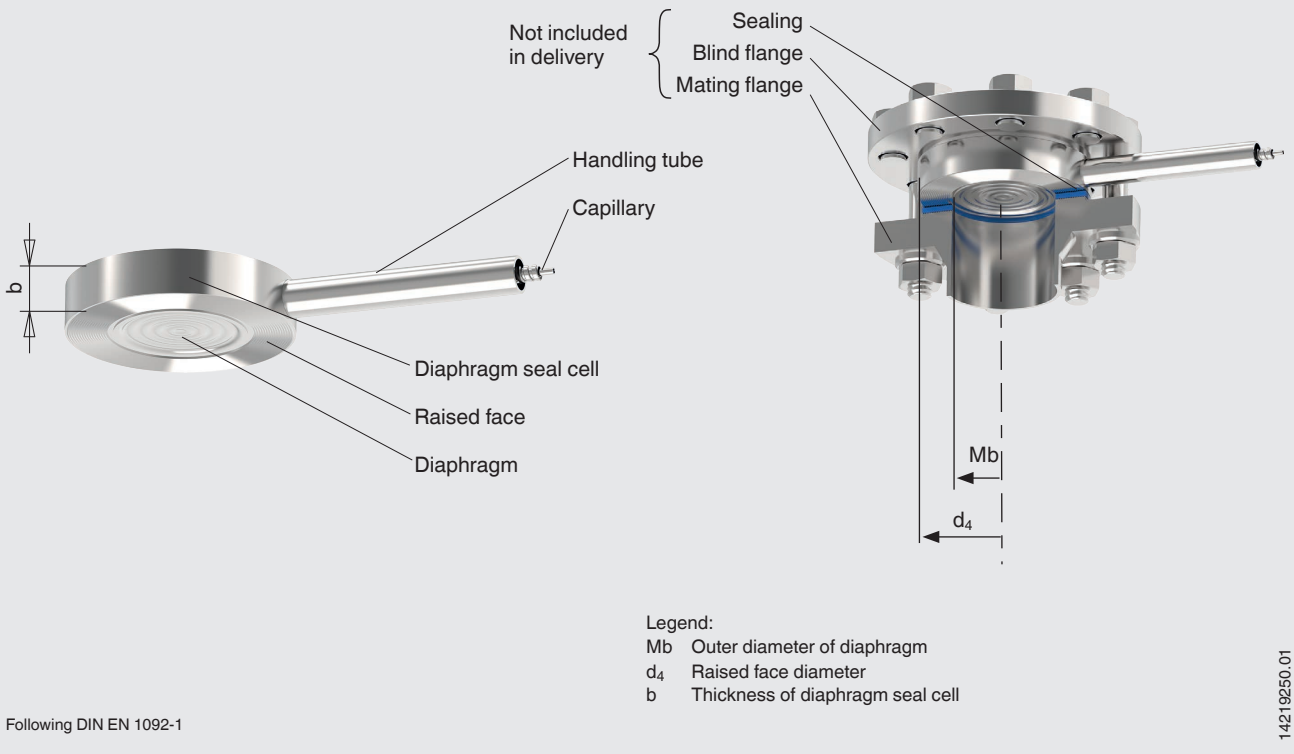
For the material selection WIKA offers a variety of solutions, in which the diaphragm seal and the wetted parts can be made of identical or different materials. The diaphragm can, as an alternative, be coated.

Data sheets showing similar products:
Flange connection, with flush diaphragm; model 990.27; see data sheet DS 99.27
Flange connection, with internal diaphragm; model 990.26; see data sheet DS 99.26

Specifications

Model 990.28	Standard	Option
Material combinations	See table on page 4	
Pressure range	See tables from page 6	
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	Radial gauge adapter	-
Type of mounting	Capillary with handling tube	-
Flushing ring, model 910.27	-	Stainless steel 316L, for connection DN 40 ... 125 per EN or DN 1 ½" ... 5" per ASME (see data sheet AC 91.05)
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 Ø 20 ... 80 mm, steel (see data sheet AC 09.07)

Example: Diaphragm seal model 990.28 with capillary and handling tube



Legend:
Mb Outer diameter of diaphragm
d_4 Raised face diameter
b Thickness of diaphragm seal cell

Following DIN EN 1092-1

14219250.01

For fixing to the mating flange, a blind flange and a suitable sealing is required.

Process connection, flange

Standard	Flange size	Sealing face	
		Standard	Option
Following DIN EN 1092-1	DN 40	Form B1	■ Form B2 ■ Form C (tongue) ■ Form D (groove) ■ Form E ■ Form F ■ Form G ■ Form H
	DN 50		
	DN 80		
	DN 100		
	DN 125		
Following ASME B16.5	1 ½"	RF 125 ... 250 AA	■ RFSF ■ Flat face ■ Small tongue ■ Small male face ■ Small groove ■ Small female face ■ Large tongue ■ Large male face ■ Large groove ■ Large female face ■ RJF groove
	2"		
	3"		
	4"		
	5"		
Following GOST 33259	DN 40	Type B	■ Type C (tongue) ■ Type D (groove) ■ Type E (spigot, male face) ■ Type F (recess, female face)
	DN 50		
	DN 80		
	DN 100		
	DN 125		
Following JIS B2220	DN 40A	RF	-
	DN 50A		
	DN 80A		
	DN 100A		

Further flanges and options on request

Material combinations

Diaphragm seal	Wetted parts	Maximum permissible process temperature [1] in °C [°F]
Stainless steel 1.4404 (316L)	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 (diaphragm)	150 [302]
	PFA (perfluoroalkoxy) coating, FDA (diaphragm)	260 [500]
	PFA (perfluoroalkoxy) coating, antistatic (diaphragm)	
	Gold plating (diaphragm)	400 [752]
	Wikaramic® coating (diaphragm)	
	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]
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)	
Inconel 600 (2.4816)	Inconel 600 (2.4816)	
Inconel 625 (2.4856)	Inconel 625 (2.4856)	
Incoloy 825 (2.4558)	Incoloy 825 (2.4858)	
Monel 400 (2.4360)	Monel 400 (2.4360)	
Nickel 200 (2.4060, 2.4066)	Nickel 200 (2.4060, 2.4066)	
Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	
Titanium grade 7 (3.7235)	Titanium grade 11 (3.7225)	

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.

Further material combinations for special process temperatures on request

Approvals

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

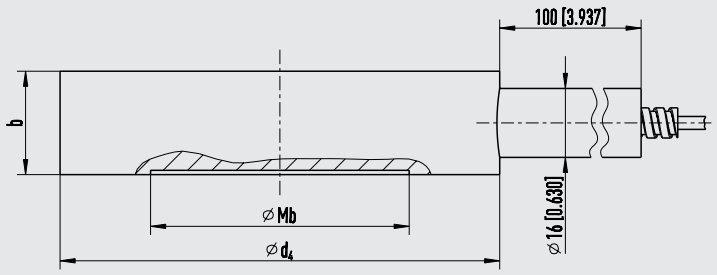
Certificates (option)

- 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 metal parts, indication accuracy for diaphragm seal systems)

Approvals and certificates, see website

Dimensions in mm [in]

Flange connection following DIN EN 1092-1, form B1



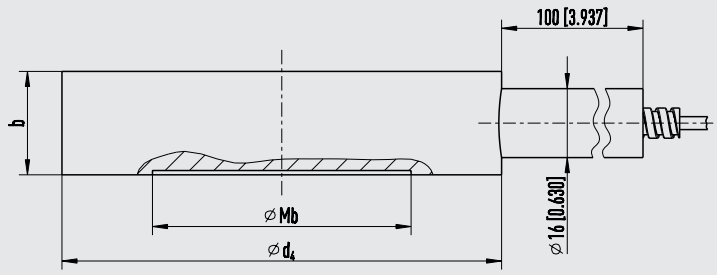
1036955. 02

Legend:
Mb Outer diameter of diaphragm
d_4 Raised face diameter
b Cell thickness

DN	PN in bar	Dimensions in mm [in]			Weight in kg [lbs]
		Mb	d_4	b	
40	10 ... 400	45 [1.772]	88 [3.465]	20 [0.787]	1.0 [2.205]
50	10 ... 400	60 [2.362]	102 [4.016]	20 [0.787]	1.3 [2.866]
80	10 ... 400	90 [3.543]	138 [5.433]	20 [0.787]	2.3 [5.071]
100	10 ... 16	90 [3.543]	158 [6.220]	20 [0.787]	3.1 [6.834]
100	25 ... 400	90 [3.543]	162 [6.378]	20 [0.787]	3.2 [7.055]
125	10 ... 400	124 [1.772]	188 [7.402]	22 [0.866]	4.8 [10.582]

Further dimensions and higher nominal pressures on request

Flange connection per ASME B16.5, RF 125 ... 250 AA



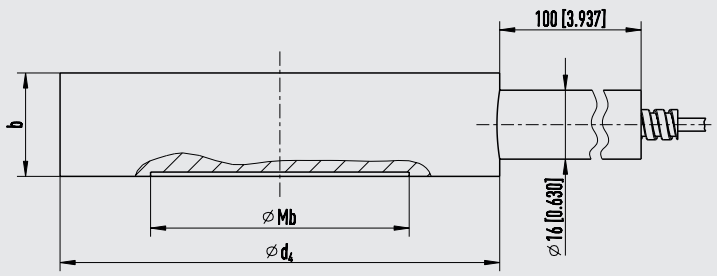
1036955. 02

Legend:
Mb Outer diameter of diaphragm
d_4 Raised face diameter
b Cell thickness

DN	Class	Dimensions in mm [in]			Weight in kg [lbs]
		Mb	d_4	b	
1 ½"	150 ... 2500	45 [1.772]	73 [2.874]	20 [0.787]	0.7 [1.543]
2"	150 ... 2500	60 [2.362]	92.1 [3.626]	20 [0.787]	1.0 [2.205]
3"	150 ... 2500	90 [3.543]	127 [5.0]	20 [0.787]	2.0 [4.409]
4"	150 ... 2500	90 [3.543]	157.2 [6.189]	20 [0.787]	3.0 [6.614]
5"	150 ... 2500	124 [1.772]	185.7 [7.311]	22 [0.866]	4.7 [10.362]

Further dimensions and higher nominal pressures on request

Flange connection following GOST 33259, type B



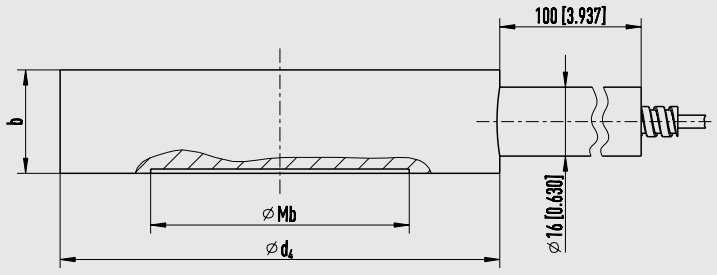
1036955.02

Legend:
Mb Outer diameter of diaphragm
d_4 Raised face diameter
b Cell thickness

DN	PN in bar	Dimensions in mm [in]			Weight in kg [lbs]
		Mb	d_4	b	
40	16 ... 200	45 [1.772]	88 [3.465]	20 [0.787]	1.0 [2.205]
50	16 ... 200	60 [2.362]	102 [4.016]	20 [0.787]	1.3 [2.866]
80	16 ... 200	90 [3.543]	133 [5.236]	20 [0.787]	2.3 [5.071]
100	16 ... 200	90 [3.543]	158 [7.244]	20 [0.787]	3.1 [6.834]
125	16 ... 200	90 [3.543]	184 [7.402]	22 [0.866]	4.8 [10.582]

Further dimensions and higher nominal pressures on request

Flange connection per JIS B 2220



1036955.02

Legend:
Mb Outer diameter of diaphragm
d_4 Raised face diameter
b Cell thickness

DN	PN in bar	Dimensions in mm [in]			Weight in kg [lbs]
		Mb	d_4	b	
40A	10K ... 20K	45 [1.772]	81 [3.189]	20 [0.787]	0.8 [1.764]
	30K ... 63K	45 [1.772]	90 [4.016]	20 [0.787]	1.0 [2.205]
50A	10K ... 20K	60 [2.362]	96 [3.78]	20 [0.787]	1.1 [2.425]
	30K ... 63K	60 [2.362]	105 [4.134]	20 [0.787]	1.4 [3.086]
80A	10K	90 [3.543]	126 [4.961]	20 [0.787]	2.0 [4.409]
	10K ... 20K	90 [3.543]	132 [5.197]	22 [0.866]	2.4 [5.291]
	30K ... 63K	90 [3.543]	140 [5.512]	22 [0.866]	2.7 [5.952]
100A	10K	90 [3.543]	151 [5.945]	22 [0.866]	3.1 [6.834]
	10K ... 20K	90 [3.543]	160 [6.299]	22 [0.866]	3.5 [7.716]
	30K ... 63K	90 [3.543]	162 [6.378]	22 [0.866]	3.7 [8.157]

Further dimensions and higher nominal pressures on request

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, flange size, nominal pressure, sealing face) / Materials (diaphragm seal, sealing face, diaphragm) / Level of cleanliness of wetted parts / Origin of wetted parts / Design per NACE / Connection to the measuring instrument / Certificates / Flushing ring

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 / Instrument mounting bracket / Process connection (standard, flange size, nominal pressure, sealing face) / Flushing ring

WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.de
www.wika.de