

Diaphragm seal with threaded connection

Threaded design

Model 990.10

WIKA data sheet DS 99.01



for further approvals
see page 5

Applications

- For aggressive, hot, corrosive, environmentally hazardous or toxic media
- Process industry

Special features

- Process connection with thread
- Version with internal diaphragm, diaphragm seal parts screwed together
- Large selection of process connections and materials
- Flushing connections optionally available



**Diaphragm seal with threaded connection,
model 990.10**

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 990.10 diaphragm seal with threaded connection in threaded design is suitable for versatile application areas. A replacement of the lower body is possible without modifications on the diaphragm seal system. With this diaphragm seal, high pressure ranges up to 250 bar can be covered.

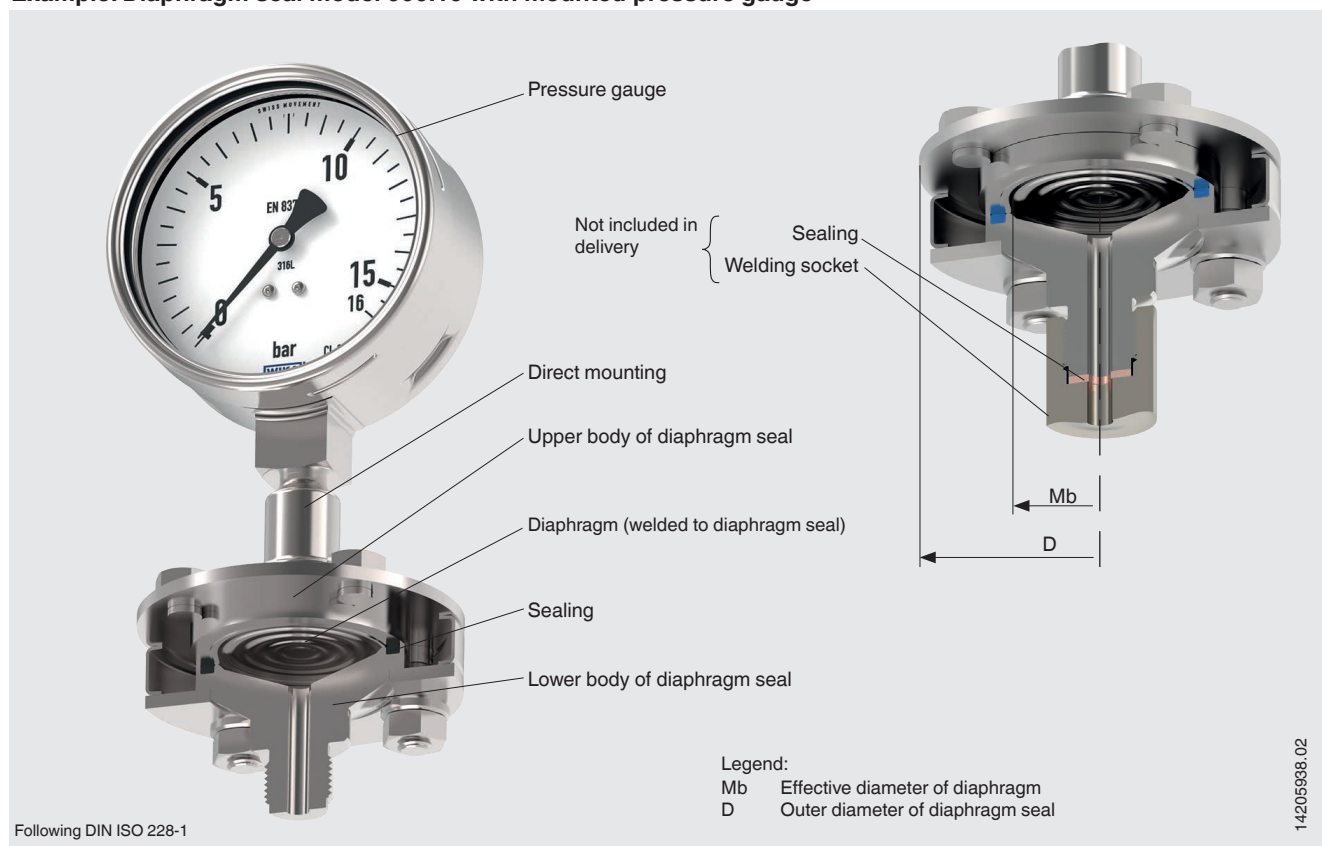
Mounting of the diaphragm seal to the measuring instrument may be made via a direct connection, for high temperatures via a cooling element or via a flexible capillary.

For the material selection WIKA offers a variety of solutions, in which the upper body of 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 990.10	Standard	Option
Pressure range	0 ... 250 bar [0 ... 3,600 psi] or all other equivalent vacuum or combined pressure and vacuum ranges	
Level of cleanliness of wetted parts	Oil and grease free per ASTM G93-03 level F WIKA standard (< 1,000 mg/m ²)	Oil and grease free per ASTM G93-03 level D and ISO 15001 (< 220 mg/m ²)
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 ■ Cooling element
Sealing	PTFE max. 260 °C [500 °F]	■ Metal C spring, silver-plated stainless steel, max. 400 °C [752 °F] ■ Metal C spring, Inconel, max. 400 °C [752 °F]
Flushing connection	-	■ Single flushing connection (G ¼, G ⅛, ¼ NPT, ⅛ NPT) ■ Dual flushing connection (G ¼, G ⅛, ¼ NPT, ⅛ NPT) ■ Plug screws
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: Diaphragm seal model 990.10 with mounted pressure gauge



Process connection

Standard	Male thread		Female thread	
	Standard	Option	Standard	Option
Following DIN ISO 228-1	G ½ A	G ¼ A G ⅜ A G ¾ A G 1 A G 1 ½ A	G ½	G ¼ G ⅜ G ¾ G 1
Following ASME B 1.20.1	½ NPT	¼ NPT ⅜ NPT ¾ NPT 1 NPT 1 ½ NPT	½ NPT	¼ NPT ⅜ NPT ¾ NPT 1 NPT
Following DIN 13-1	M20 x 1.5	-	M20 x 1.5	-
Following ISO 7-1	R ½	R ¼, R ⅜, R ¾	-	-

Other process connections on request

Material combinations

Upper body of diaphragm seal	Wetted parts		Maximum permissible process temperature ¹⁾ in °C [°F]
	Lower body of diaphragm seal	Diaphragm	
Stainless steel 1.4404 (316L)	Stainless steel 1.4404 (316L)	Stainless steel 1.4404 / 1.4435 (316L), standard version	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)	
	PTFE lining ²⁾	ECTFE coating	150 [302]
	PTFE lining ²⁾	PFA (perfluoroalkoxy) coating, FDA	260 [500]
	PTFE lining ²⁾	PFA (perfluoroalkoxy) coating, antistatic	
	-	Gold plating	400 [752]
	-	Wikaramic® coating	
	Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	260 [500]
	Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	400 [752]
	Inconel 600 (2.4816)	Inconel 600 (2.4816)	
	Inconel 625 (2.4856)	Inconel 625 (2.4856)	
	Incoloy 825 (2.4858)	Incoloy 825 (2.4858)	
	Monel 400 (2.4360)	Monel 400 (2.4360)	
	Nickel 200 (2.4060, 2.4066)	Nickel 200 (2.4060, 2.4066)	260 [500]
	Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	150 [302]
	Titanium grade 7 (3.7235)	Titanium grade 11 (3.7225)	300 [572]
	Tantalum lining ²⁾	Tantalum	
Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	400 [752]
Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	
Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	
Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	
Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	300 [572]
Superduplex 2507 (1.4410)	Superduplex 2507 (1.4410)	Superduplex 2507 (1.4410)	
Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	400 [752]
Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	
Inconel 600 (2.4816)	Inconel 600 (2.4816)	Inconel 600 (2.4816)	
Inconel 625 (2.4856)	Inconel 625 (2.4856)	Inconel 625 (2.4856)	
Incoloy 825 (2.4558)	Incoloy 825 (2.4858)	Incoloy 825 (2.4858)	
Monel 400 (2.4360)	Monel 400 (2.4360)	Monel 400 (2.4360)	
Nickel 200 (2.4060, 2.4066)	Nickel 200 (2.4060, 2.4066)	Nickel 200 (2.4060, 2.4066)	
Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	
Titanium grade 7 (3.7235)	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.

2) For G ½ and M 20 x 1.5 (male), max. 0 ... 100 bar

Further material combinations for special process temperatures on request

Approvals

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

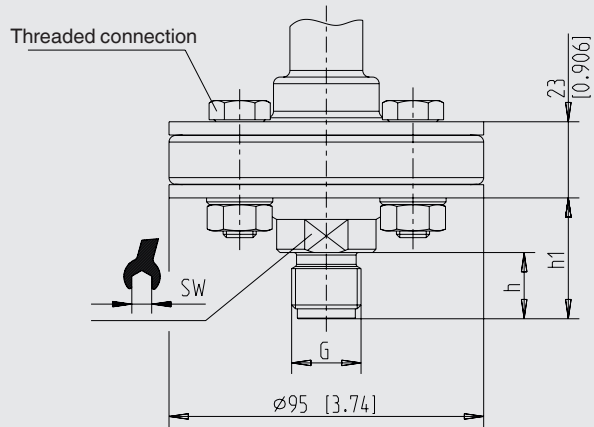
Certificates (option)

- 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

Dimensions in mm [in]

Male thread



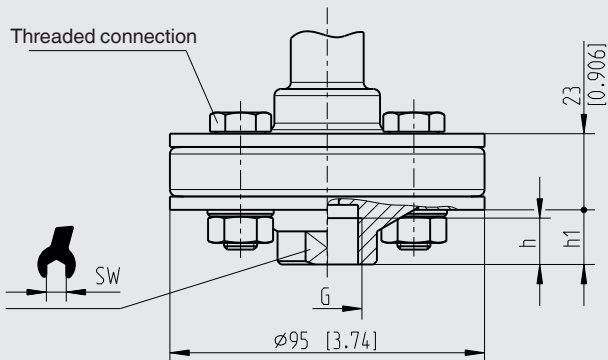
Threaded connections:
 4x to 100 bar
 8x 101 ... 250 bar
 8x with metal sealing to 250 bar

Legend:
 Mb Diameter of diaphragm
 G Thread
 SW Spanner width

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G	Dimensions in mm [in]			
	h	h ₁	Mb	SW
G ¼ A	13 [5.512]	29.5 [1.161]	52 [2.047]	27 [1.063]
G ⅜ A	16 [0.63]	32.5 [1.28]		
G ½ A	20 [0.787]	36.5 [1.437]		
G ¾ A		43 [1.693]		41 [1.614]
G 1 A	28 [1.102]	51 [2.008]		
G 1 ½ A		58.5 [2.303]		
¼ NPT	13 [5.512]	29.5 [1.161]		27 [1.063]
⅜ NPT	15 [0.591]	31.5 [1.24]		
½ NPT	19 [0.748]	35.5 [1.398]		
¾ NPT	20 [0.787]	36.5 [1.437]		
1 NPT	25 [0.984]	48 [1.98]		41 [1.614]
1 ½ NPT	26 [1.024]	56.5 [2.224]		
M20 x 1.5	20 [0.787]	36.5 [1.437]		27 [1.063]
R ¼	15 [0.591]	31.5 [1.28]		
R ⅜	18 [0.709]	34.5 [1.358]		
R ½	19 [0.748]	35.5 [1.398]		
R ¾	20 [0.787]	36.5 [1.437]		

Female thread



Threaded connections:
 4x to 100 bar
 8x 101 ... 250 bar
 8x with metal sealing to 250 bar

Legend:
 Mb Diameter of diaphragm
 G Thread
 SW Spanner width

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G	Dimensions in mm [in]			
	h	h ₁	Mb	SW
G ¼	10 [0.394]	16.5 [0.65]	52 [2.047]	27 [1.063]
G ⅜	12 [0.472]			
G ½	14 [0.551]			
G ¾	16 [0.63]	22.5 [0.886]		32 [1.26]
G 1	18 [0.709]	24.5 [0.965]		41 [1.614]
¼ NPT	-	16.5 [0.65]		27 [1.063]
⅜ NPT				
½ NPT				
¾ NPT		20.5 [0.807]		32 [1.26]
1 NPT		28.5 [1.122]		41 [1.614]
M20 x 1.5	15.5 [0.61]	18.5 [0.728]		27 [1.063]

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (process connection standard, thread, nominal pressure rating) / Material (upper body, diaphragm, lower body) / Sealing / Retainer parts (retainer flange, screws) / 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 / Retainer parts (retainer flange, screws) / 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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We reserve the right to make modifications to the specifications and materials.



Diaphragm seal with flange connection

With internal diaphragm

Model 990.26

WIKA data sheet DS 99.26



For further approvals,
see page 5

Applications

- Aggressive, highly viscous, crystallising or hot media
- Process industry
- Small flange process connections

Special features

- Flange with internal, fully welded diaphragm
- Compact design



Diaphragm seal with flange connection, model 990.26

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 990.26 diaphragm seal is particularly well suited for use with small process connections. Due to the internal diaphragm low measuring ranges can be realised. The large diameter of the diaphragm effects a lower deviation at the measuring instrument when the temperature changes.

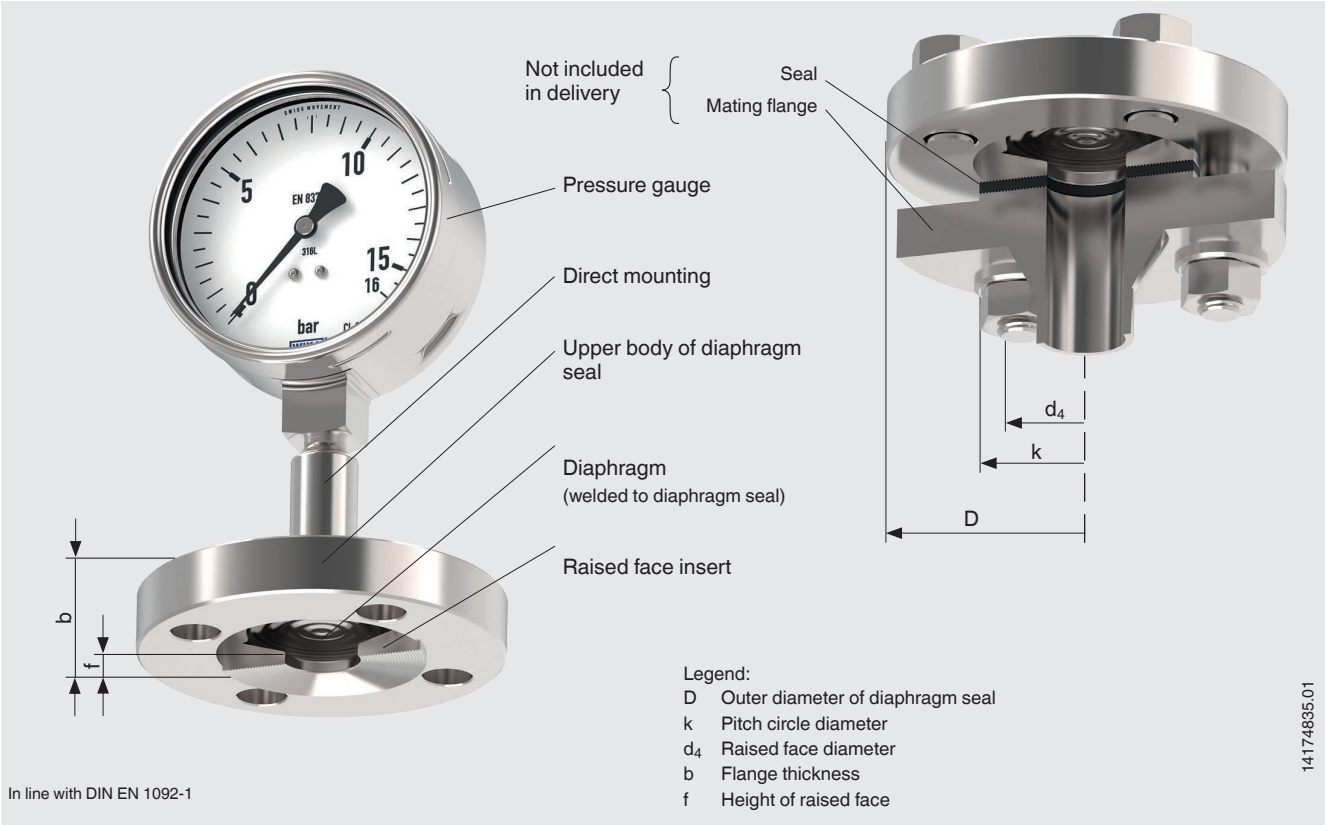
Mounting of the diaphragm seal to the measuring instruments may be made via direct mounting, for high temperatures via a cooling element or via a flexible capillary.

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

Specifications

Model 990.26	Standard	Option
Pressure range	From 400 mbar [5.8 psi] depending on diaphragm diameter For diaphragm seal systems with pressure gauges from 6 bar [87 psi]	
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)
Origin of wetted parts	International	EU, CH, USA
Connection to the measuring instrument	Axial connection adapter	Axial connection adapter with female thread G ½, G ¼, ½ NPT or ¼ NPT
Mounting type	Direct mounting	■ Capillary ■ Cooling element
Version 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)

Installation example, model 990.26 with mounted pressure gauge



Process connection, flange

Standard	Flange size	Sealing face	
		Standard	Option
In line with DIN EN 1092-1	DN 15	Form B1	Form B2
	DN 20		
	DN 25		
In line with ASME B16.5	½"	RF 125 ... 250 AA	RFSF
	¾"		
	1"		
In line with GOST 33259	DN 15	Type B	-
	DN 20		
	DN 25		
In line with JIS B 2220	DN 15A	RF	-
	DN 20A		
	DN 25A		

Further flanges and options on request

Material combinations

Upper body of diaphragm seal	Wetted parts		Maximum permissible process temperature ¹⁾ in °C [°F]
	Raised face insert	Diaphragm	
Stainless steel 1.4404 (316L)	Stainless steel 1.4404 (316L)	Stainless steel 1.4435 (316L)	400 [752]
	Stainless steel 1.4404 (316L)	Stainless steel 1.4404 (316L)	
	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)	
	Stainless steel 1.4404 (316L) with PTFE lining	PFA (perfluoroalkoxy) coating, FDA	260 [500]
	Stainless steel 1.4404 (316L) with PTFE lining	PFA (perfluoroalkoxy) coating, antistatic	
	Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	260 [500]
	Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	400 [752]
	Inconel 600 (2.4816)	Inconel 600 (2.4816)	
	Inconel 625 (2.4856)	Inconel 625 (2.4856)	
	Incoloy 825 (2.4858)	Incoloy 825 (2.4858)	
	Monel 400 (2.4360)	Monel 400 (2.4360)	
	Tantalum	Tantalum	300 [572]
Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	400 [752]
Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	
Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	
Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	
Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	300 [572]
Superduplex (1.4410)	Superduplex (1.4410)	Superduplex (1.4410)	
Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	400 [752]
Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	
Inconel 600 (2.4816)	Inconel 600 (2.4816)	Inconel 600 (2.4816)	
Inconel 625 (2.4856)	Inconel 625 (2.4856)	Inconel 625 (2.4856)	
Incoloy 825 (2.4558)	Incoloy 825 (2.4858)	Incoloy 825 (2.4858)	
Monel 400 (2.4360)	Monel 400 (2.4360)	Monel 400 (2.4360)	
Nickel 201 (2.4068)	Nickel 201 (2.4068)	Nickel 201 (2.4068)	
Nickel 200 (2.4060, 2.4066)	Nickel 200 (2.4060, 2.4066)	Nickel 200 (2.4060, 2.4066)	
Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	
Titanium grade 7 (3.7235)	Titanium grade 7 (3.7235)	Titanium grade 11 (3.7225)	
Titanium grade 11 (3.7225)	Titanium grade 11 (3.7225)	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 (option) Pressure Equipment Directive	Eurasian Economic Community
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada
-	MTSCHS (option) Permission for commissioning	Kazakhstan

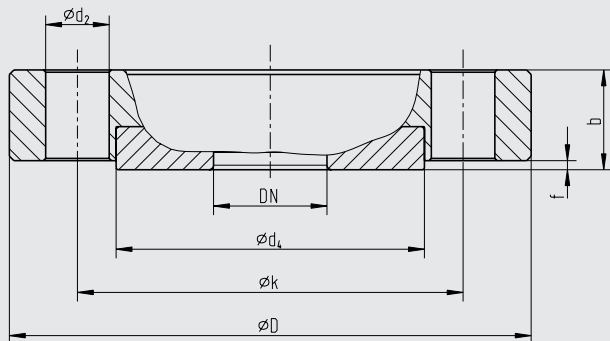
Certificates (option)

- 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)

For approvals and certificates, see website

Dimensions in mm [in]

Flange connection in line with DIN EN 1092-1, form B1



Legend:

Mb	Effective diameter of diaphragm
D	Outer diameter of diaphragm seal
b	Flange thickness
d_2	Bore diameter
f	Height of raised face
k	Pitch circle diameter
d_4	Raised face diameter
x	Number of screws

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DN	PN	Dimensions in mm [in]							x	Weight in kg [lbs]
		Mb	D	b	d_2	f	k	d_4		
15	10-40	40 [1.575]	95 [3.74]	22 [0.866]	14 [0.551]	2 [0.079]	65 [2.559]	45 [1.772]	4	1 [2.2]
20	10-40	40 [1.575]	105 [4.134]	22 [0.866]	14 [0.551]	2 [0.079]	75 [2.953]	58 [2.283]	4	1.3 [2.9]
25	10-40	52 [2.047]	115 [4.528]	22 [0.866]	14 [0.551]	2 [0.079]	85 [3.346]	68 [2.677]	4	1.5 [3.3]

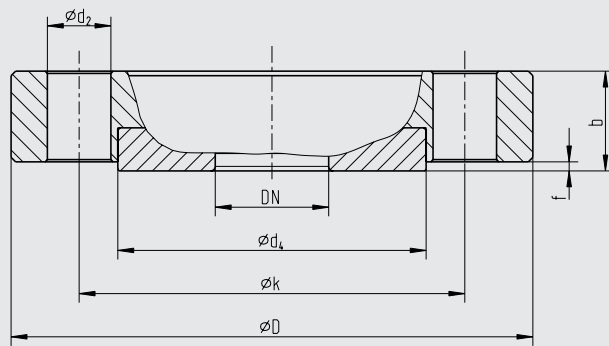
Further dimensions and higher nominal pressures on request

Special case: flange made of nickel

Nickel materials are not described in the DIN EN 1092-1 standard. For identical dimensions, lower values apply for the maximum allowable pressure. The values can be found in the table below.

Flange material	DN	PN	Maximum allowable pressure in bar [psi] at ambient temperature 21 °C [60.8 °F]
Nickel 200 (2.4066)	15, 20, 25	10	7.4 [107]
		16	11.9 [172]
		25	18.6 [269]
		40	29.7 [430]
Nickel 201 (2.4068)	15, 20, 25	10	6.2 [89]
		16	10 [145]
		25	15.6 [226]
		40	25 [362]

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



Legend:

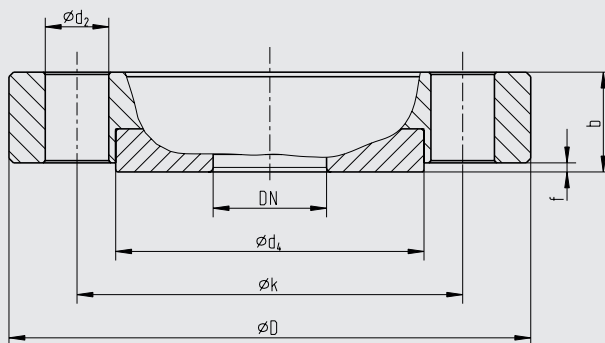
Mb	Effective diameter of diaphragm
D	Outer diameter of diaphragm seal
b	Flange thickness
d_2	Bore diameter
f	Height of raised face
k	Pitch circle diameter
d_4	Raised face diameter
x	Number of screws

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DN	Class	Dimensions in mm [in]							x	Weight in kg [lbs]
		Mb	D	b	d_2	f	k	d_4		
½"	150	32 [1.26]	90 [3.543]	22 [0.866]	16 [0.63]	2 [0.079]	60.3 [2.374]	34.9 [1.374]	4	1 [2.2]
	300	40 [1.575]	95 [3.740]	22 [0.866]	16 [0.63]	2 [0.079]	66.7 [2.626]	34.9 [1.374]	4	1 [2.2]
¾"	150	40 [1.575]	100 [3.937]	22 [0.866]	16 [0.63]	2 [0.079]	69.9 [2.752]	42.9 [1.689]	4	1.1 [2.4]
	300	40 [1.575]	115 [4.528]	22 [0.866]	19 [0.748]	2 [0.079]	82.6 [3.252]	42.9 [1.689]	4	1.6 [3.5]
1"	150	52 [2.047]	110 [4.331]	22 [0.866]	16 [0.63]	2 [0.079]	79.4 [3.126]	50.8 [2]	4	1.4 [3]
	300	52 [2.047]	125 [4.921]	22 [0.866]	19 [0.748]	2 [0.079]	88.9 [3.5]	50.8 [2]	4	1.7 [3.7]

Further dimensions and higher nominal pressures on request

Flange connection in line with GOST 33259, type B



Legend:

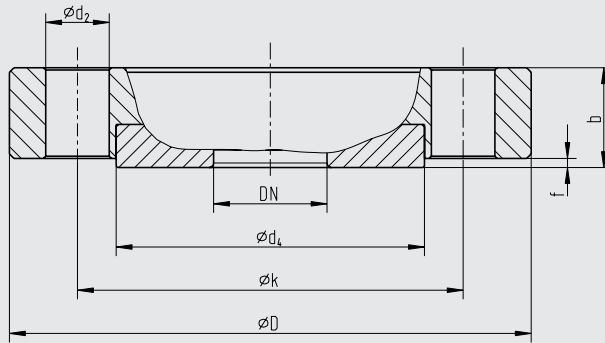
Mb	Effective diameter of diaphragm
D	Outer diameter of diaphragm seal
b	Flange thickness
d_2	Bore diameter
f	Height of raised face
k	Pitch circle diameter
d_4	Raised face diameter
x	Number of screws

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DN	PN	Dimensions in mm [in]							x	Weight in kg [lbs]
		Mb	D	b	d_2	f	k	d_4		
15	10-40	40 [1.575]	95 [3.74]	22 [0.866]	14 [0.551]	2 [0.079]	65 [2.559]	47 [1.85]	4	1 [2.2]
20	10-40	40 [1.575]	105 [4.134]	22 [0.866]	14 [0.551]	2 [0.079]	75 [2.953]	58 [2.283]	4	1.3 [2.9]
25	10-40	52 [2.047]	115 [4.528]	22 [0.866]	14 [0.551]	2 [0.079]	85 [3.346]	68 [2.677]	4	1.5 [3.3]

Further dimensions and higher nominal pressures on request

Flange connection per JIS B 2220



Legend:

Mb	Effective diameter of diaphragm
D	Outer diameter of diaphragm seal
b	Flange thickness
d ₂	Bore diameter
f	Height of raised face
k	Pitch circle diameter
d ₄	Raised face diameter
x	Number of screws

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DN	PN	Dimensions in mm [in]							x	Weight in kg [lbs]
		Mb	D	b	d ₂	f	k	d ₄		
15	10K - 20K	40 [1.575]	95 [3.74]	21 [0.827]	15 [0.591]	1 [0.04]	70 [2.756]	51 [2.008]	4	1 [2.2]
20	10K - 20K	40 [1.575]	100 [3.937]	21 [0.827]	15 [0.591]	1 [0.04]	75 [2.953]	56 [2.205]	4	1.3 [2.9]
25	10K - 20K	52 [2.047]	125 [4.921]	21 [0.827]	19 [0.748]	1 [0.04]	90 [3.543]	67 [2.638]	4	1.7 [3.7]

Further dimensions and higher nominal pressures on request

Special case: flange made of nickel, Monel, Inconel, Incoloy or titanium

Nickel, Monel, Inconel, Incoloy and titanium materials are not described in the JIS B 2220 standard. For identical dimensions, lower values apply for the maximum allowable pressure. The values can be found in the table below.

Flange material	DN	PN	Maximum allowable pressure in MPa [psi] at ambient temperature 21 °C [60.8 °F]
Nickel 200 (2.4066)	15, 20, 25	10K	0.7 [101]
		16K	1.4 [202]
		20K	1.8 [261]
Nickel 201 (2.4068)	15, 20, 25	10K	0.9 [130]
		16K	1.7 [246]
		20K	2.1 [304]
Monel 400 (2.4360)	15, 20, 25	10K	1 [145]
		16K	1.8 [261]
		20K	2.3 [333]
Inconel 600 (2.4816)	15, 20, 25	10K	1 [145]
		16K	1.9 [275]
		20K	2.4 [348]
Incoloy 825 (2.4558)	15, 20, 25	10K	1.2 [174]
		16K	2.4 [348]
		20K	3 [435]
Titanium grade 2 (3.7035)	15, 20, 25	10K	1.2 [174]
		16K	2.3 [333]
		20K	2.9 [420]
Titanium grade 7 (3.7235)	15, 20, 25	10K	1.2 [174]
		16K	2.3 [333]
		20K	2.9 [420]

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, flange size, nominal pressure, sealing face) / Materials (upper body of diaphragm seal, raised face insert, diaphragm) / Level of cleanliness of wetted parts / Origin of wetted parts / Version 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 of diaphragm seal, raised face insert, 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 / Version per NACE / Diaphragm seal for mounting to zone 0 / Instrument mounting bracket / Process connection (standard, flange size, nominal pressure, sealing face)

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We reserve the right to make modifications to the specifications and materials.
In case of a different interpretation of the translated and the English data sheet, the English wording shall prevail.



Diaphragm seal with flange connection

With flush diaphragm

Model 990.27

WIKA data sheet DS 99.27

Applications

- Aggressive, highly viscous, crystallising or hot media
- Process industry
- Machine building and automation

Special features

- Flange with flush welded diaphragm
- Common standards and nominal widths available
- Wide variety of different materials and material combinations



Diaphragm seal with flange connection, model 990.27

Description

Diaphragm seals are used to protect pressure measuring instruments in demanding applications under difficult conditions. These diaphragm seal systems, consisting of a process transmitter, pressure sensor, pressure gauge or pressure switch with diaphragm seal, can be combined individually for each customer application. For this, a wide range of different designs, process connections, mounting types and wetted materials are available.

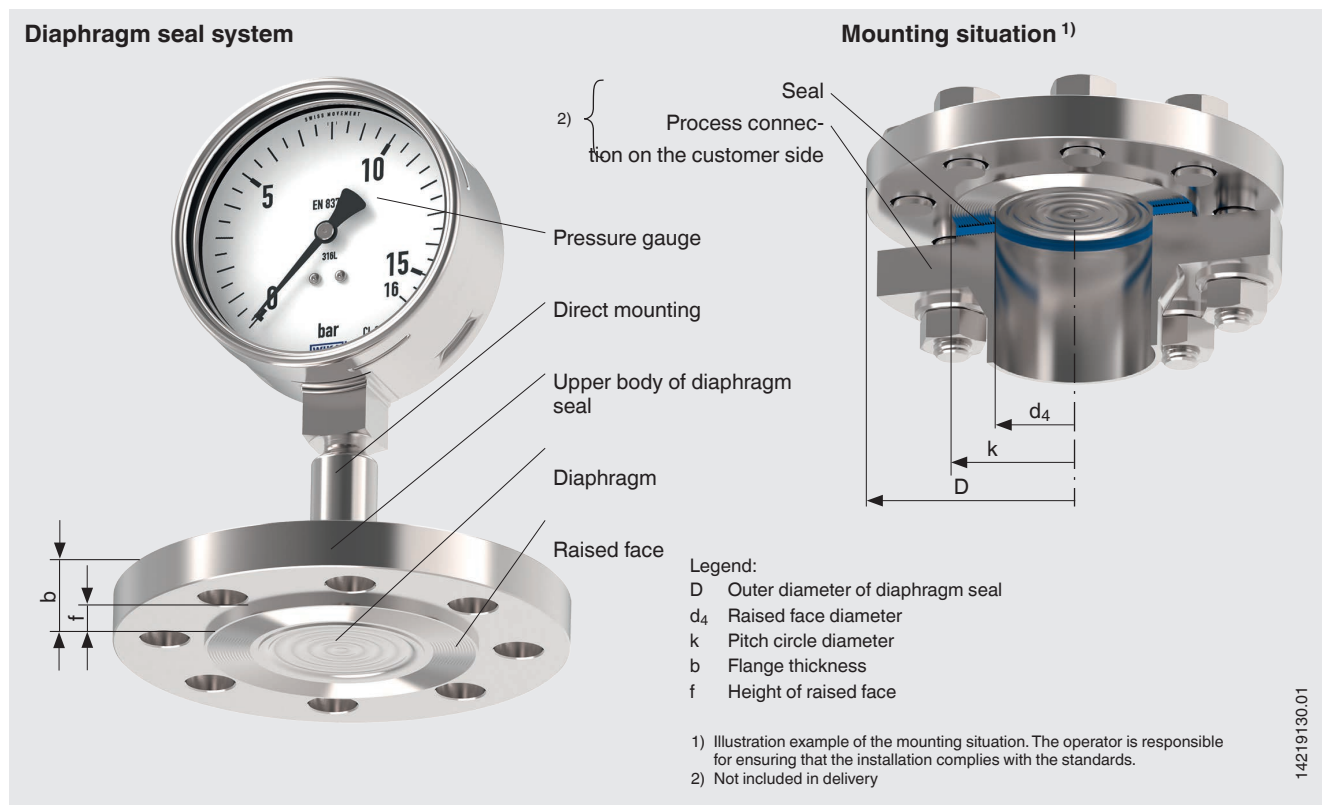
Diaphragm seal models with flange connections are available with flush or internal diaphragms, in tubular design or as in-line diaphragm seals. The variants mentioned are also available in a cell-type design.

The model 990.27 diaphragm seal with flush flange connection is assembled from the upper body of a diaphragm seal and the wetted parts (sealing face and diaphragm). This diaphragm seal model is optimised for applications in the chemical, petrochemical and the oil and gas industries and is therefore available in a wide range of dimensions in accordance with the standards common in these markets.

Through the high number of possible combinations and aided by the individual checking of the operating conditions, it is ensured that the ideal customer solution for a diaphragm seal system can be found with the model 990.27.

Installation example

Model 990.27 with directly mounted pressure gauge



Diaphragm seal system

Diaphragm seal systems are mounted to existing connections, which are welded to a pipeline, a process reactor or a tank. A diaphragm made of the appropriate material separates the medium from the measuring instrument. The internal space between the diaphragm and the measuring instrument is completely filled with a system fill fluid.

Measuring element

The pressure of the medium is transferred via the elastic diaphragm to the system fill fluid and then on to the measuring instrument. A diaphragm seal and its components are perfectly matched to each other to ensure a reliable measurement.

Mounting type

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

Direct mounting via axial connection adapter



Capillary (example)



Heat sink (examples)



Technical information

Data sheet number	Title
IN 00.06	Diaphragm seals and diaphragm seal systems, application – functionality – design
IN 00.25	Diaphragm seal systems for vacuum processes
IN 00.21	General information about NACE standards for sour gas applications
IN 00.41	Specifications of oil- and grease-free instruments

→ See download on the WIKA website

Specifications

Basic information for diaphragm seal systems	
Version	Diaphragm seal with flange connection
Other versions	■ Per NACE ¹⁾ MR0175 / ISO 15156, use in H₂S-containing environments in oil and gas production ■ Per NACE ¹⁾ MR0103 / ISO 17945, metals resistant to hydrogen sulphide stress cracking ■ With pre-volume deflagration flame arrester ²⁾ for mounting to zone 0 (EPL Ga); model 910.21; see data sheet AC 91.02
Pressure range	The maximum permissible operating pressure must be determined individually for each diaphragm seal system. It is dependent on the operating temperature, the process connection, the joining method, the system fill fluid and the mounted measuring instrument.
Connection to the instrument	■ Axial connection adapter for weld seam ■ Suitable connection adapter to the instrument (e.g. G ½, G ¼, ½ NPT or ¼ NPT)
Mounting type ³⁾	■ Direct mounting ■ Capillary ■ Heat sink
Vacuum service ⁴⁾	■ Basic service ■ Advanced service ■ Premium service

1) General information about NACE standards; see technical information IN 00.21

2) Only for instruments with Ex approval

3) For possible mounting type, see page 2

4) Diaphragm seal systems for vacuum processes; see technical information IN 00.25

Process connection				
Standard ¹⁾	■ DIN EN 1092-1 ■ ASME B16.5-2017 ■ GOST 33259 ■ API 6A ■ JIS B2220			
Size				
DIN EN 1092-1	■ DN 25 ■ DN 80	■ DN 40 ■ DN 100	■ DN 50 ■ DN 125	■ DN 65
ASME B16.5-2017	■ 1" ■ 3"	■ 1 ½" ■ 4"	■ 2" ■ 5"	■ 2 ½"
GOST 33259	■ DN 25 ■ DN 80	■ DN 40 ■ DN 100	■ DN 50 ■ DN 125	■ DN 65
API 6A	■ 1 1/8"	■ 1 1/16"	■ 1 13/16"	■ 2 1/16"
JIS B2220	■ DN 25A ■ DN 100A	■ DN 40A	■ DN 50A	■ DN 80A

Process connection		
Sealing face		
DIN EN 1092-1	■ Form B1 ■ Form A ■ Form B2 ■ Form C (tongue)	■ Form D (groove) ■ Form E (spigot) ■ Form F (recess)
ASME B16.5-2017	■ 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
GOST 33259	■ Type B ■ Type A (flat face) ■ Type C (tongue)	■ Type D (groove) ■ Type E (spigot, male face) ■ Type F (recess, female face)
API 6A	Ring-joint groove	
JIS B2220	RF	
Wetted parts	Diaphragm and raised face → See tables below for material selection	
Origin of wetted parts	■ International ■ Exclusively from EU, CH, GB, US, CA	
Level of cleanliness of wetted parts ²⁾	■ Oil- and grease-free per WIKA specification (< 1,000 mg/m²) ■ Oil- and grease-free per ASTM G93-03 level D (< 220 mg/m²) ■ Oil- and grease-free per ASTM G93-03 level C (< 66 mg/m²)	

1) The respective standard is met for the connection dimensions of the sealing geometry; other dimensions, e.g. bores or flange thicknesses, may vary slightly.

2) Specifications of oil- and grease-free instruments; see technical information IN 00.41

→ Other process connections on request

Material combination		Maximum permissible temperature ¹⁾ in °C [°F]
Upper body of diaphragm seal	Wetted parts	
Stainless steel 1.4404 (316L)	Stainless steel 1.4404 / 1.4435 (316L)	400 [752]
	Hastelloy C22 (2.4602) ²⁾	260 [500]
	Hastelloy C276 (2.4819) ^{2) 3)}	400 [752]
	Inconel 600 (2.4816) ²⁾	400 [752]
	Inconel 625 (2.4856) ²⁾	400 [752]
	Incoloy 825 (2.4858) ²⁾	400 [752]
	Monel 400 (2.4360) ²⁾	400 [752]
	Nickel 200 (2.4066) ²⁾	260 [500]
	Nickel 201 (2.4068) ²⁾	260 [500]
	Titanium grade 2 (3.7035) ²⁾	150 [302]
	Titanium grade 11 (3.7225) ²⁾	150 [302]
	Tantalum ^{2) 3)}	300 [572]
Titanium grade 7 (3.7235)	Titanium grade 7 (3.7235) / Titanium grade 11 (3.7225)	250 [482]

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

2) This material combination is only possible with form B2 and RFSF sealing faces. Since the parts don't allow any machining, the surface roughness Ra is ≤ 0.5 µm.

3) This material combination is additionally possible with form B1 and RF 125 ... 250 AA sealing faces for DN 50, DN 80 and also 2" and 3".

Material	Maximum permissible temperature ¹⁾ in °C [°F]
Upper body of diaphragm seal and wetted parts	
Stainless steel 1.4435 (316L)	400 [752]
Stainless steel 1.4539 (904L)	400 [752]
Stainless steel 1.4541 (321)	400 [752]
Stainless steel 1.4571 (316Ti)	400 [752]
Duplex 2205 (1.4462)	250 [482]
Superduplex 2507 (1.4410)	250 [482]
Hastelloy C22 (2.4602)	400 [752]
Hastelloy C276 (2.4819)	400 [752]
Inconel 600 (2.4816)	400 [752]
Inconel 625 (2.4856)	400 [752]
Incoloy 825 (2.4858)	400 [752]
Monel 400 (2.4360)	400 [752]
Nickel 200 (2.4066)	300 [572]
Nickel 201 (2.4068)	400 [752]
Titanium grade 2 (3.7035)	300 [572]

1) The maximum permissible operating temperature must be determined individually for each diaphragm seal system. It is dependent on the operating pressure, the process connection, the joining method, the system fill fluid and the mounted measuring instrument.

Material of coating ¹⁾	Maximum permissible temperature ²⁾ in °C [°F]
Wetted parts	
ECTFE	150 [302]
PFA (perfluoroalkoxy), FDA	260 [500]
PFA (perfluoroalkoxy), anti-static	260 [500]
Gold	400 [752]
Wikaramic®	400 [752]

1) The coated basic material is from stainless steel 1.4435 (316L)

2) The maximum permissible operating temperature of the diaphragm seal system is limited by the joining method, the system fill fluid and the measuring instrument.

→ Further materials for special process temperatures on request

Approvals

Logo	Description	Country
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Optional approvals

Logo	Description	Country
-	MTSCHS Permission for commissioning	Kazakhstan

Manufacturer's information and certificates (option)

Logo	Description
	SIL EXIDA report with SFF values from FMEDA analysis for functional safety assessment in accordance with IEC 61508

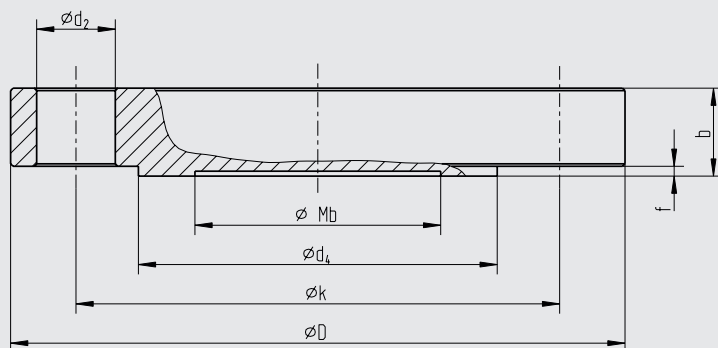
Certificates (option)

Certificates	
Certificates	■ 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)

→ For approvals and certificates, see website

Dimensions in mm [in]

Sealing geometry per DIN EN 1092-1, form B



Legend:

- Mb Effective diameter of diaphragm
- D Outer diameter of diaphragm seal
- b Flange thickness
- d₂ Bore diameter
- d₄ Raised face diameter
- f Height of raised face
- k Pitch circle diameter
- x Number of bores

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DN	PN	Dimensions in mm [in]							x	Weight in kg [lb]
		Mb	D	b	d ₂	k	f	d ₄		
25	10/40	32 [1.26]	115 [4.528]	18 [0.709]	14 [0.551]	85 [3.346]	2 [0.079]	68 [2.677]	4	1.5 [3.3]
	63/100	25 [0.984]	140 [0.984]	24 [0.945]	18 [0.709]	100 [3.937]	2 [0.079]	68 [2.677]	4	2.5 [5.5]
40	10/40	45 [1.772]	150 [5.905]	18 [0.709]	18 [0.709]	110 [4.331]	2 [0.079]	88 [3.465]	4	2.6 [5.7]
	63/100	45 [1.772]	170 [6.693]	26 [1.024]	22 [0.866]	125 [4.921]	2 [0.079]	88 [3.465]	4	4.0 [8.8]
	160	45 [1.772]	170 [6.693]	28 [1.102]	22 [0.866]	125 [4.921]	2 [0.079]	88 [3.465]	4	4.3 [9.5]
	250	45 [1.772]	185 [2.283]	34 [1.339]	26 [1.024]	135 [5.315]	2 [0.079]	88 [3.465]	4	6.3 [13.9]
50	10/40	59 [2.323]	165 [6.496]	20 [0.787]	18 [0.709]	125 [4.921]	2 [0.079]	102 [4.016]	4	3.3 [7.3]
	63	59 [2.323]	180 [7.087]	26 [1.024]	22 [0.866]	135 [5.315]	2 [0.079]	102 [4.016]	4	5.1 [11.2]
	100	59 [2.323]	195 [7.677]	28 [1.102]	26 [1.024]	145 [5.709]	2 [0.079]	102 [4.016]	4	6.5 [14.3]
	160	59 [2.323]	195 [7.677]	30 [1.181]	26 [1.024]	145 [5.709]	2 [0.079]	102 [4.016]	4	7.0 [15.4]
	250	59 [2.323]	200 [7.874]	38 [1.496]	26 [1.024]	150 [5.906]	2 [0.079]	102 [4.016]	8	9.3 [20.5]
80	10/16	89 [3.504]	200 [7.874]	20 [0.787]	18 [0.709]	160 [6.299]	2 [0.079]	138 [5.433]	8	4.9 [10.8]
	25/40	89 [3.504]	200 [7.874]	24 [0.945]	18 [0.709]	160 [6.299]	2 [0.079]	138 [5.433]	8	5.8 [12.8]
	63	89 [3.504]	215 [8.465]	28 [1.102]	22 [0.866]	170 [6.693]	2 [0.079]	138 [5.433]	8	7.9 [17.4]
	100	89 [3.504]	230 [9.055]	32 [1.26]	26 [1.024]	180 [7.087]	2 [0.079]	138 [5.433]	8	10.4 [22.9]
	160	89 [3.504]	230 [9.055]	36 [1.487]	26 [1.024]	180 [7.087]	2 [0.079]	138 [5.433]	8	11.7 [25.8]
	250	89 [3.504]	255 [10.039]	46 [1.811]	30 [1.181]	200 [7.874]	2 [0.079]	138 [5.433]	8	18.4 [40.6]
100	10/16	89 [3.504]	220 [8.661]	20 [0.787]	18 [0.709]	180 [7.087]	2 [0.079]	158 [6.22]	8	5.9 [13]
	25/40	89 [3.504]	235 [9.252]	24 [0.945]	22 [0.866]	190 [7.480]	2 [0.079]	162 [6.378]	8	8.1 [17.9]
	63	89 [3.504]	250 [9.842]	30 [1.181]	26 [1.024]	200 [7.874]	2 [0.079]	162 [6.378]	8	11.5 [25.3]
	100	89 [3.504]	265 [10.433]	36 [1.487]	30 [1.181]	210 [8.268]	2 [0.079]	162 [6.378]	8	15.5 [34.2]
	160	89 [3.504]	265 [10.433]	40 [1.575]	30 [1.181]	210 [8.268]	2 [0.079]	162 [6.378]	8	17.3 [38.1]
	250	89 [3.504]	300 [11.811]	54 [2.126]	33 [1.299]	235 [9.252]	2 [0.079]	162 [6.378]	8	29.9 [65.9]
125	10/16	124 [4.882]	250 [9.842]	22 [0.866]	18 [0.709]	210 [8.268]	2 [0.079]	188 [7.402]	8	8.4 [18.5]
	25/40	124 [4.882]	270 [10.63]	26 [1.024]	26 [1.024]	220 [8.661]	2 [0.079]	188 [7.402]	8	11.6 [25.6]
	63	124 [4.882]	295 [11.614]	34 [1.339]	30 [1.181]	240 [9.449]	2 [0.079]	188 [7.402]	8	16.5 [36.4]
	100	124 [4.882]	315 [12.412]	40 [1.575]	33 [1.299]	250 [9.842]	2 [0.079]	188 [7.402]	8	24.4 [53.8]
	160	124 [4.882]	315 [12.412]	44 [1.732]	33 [1.299]	250 [9.842]	2 [0.079]	188 [7.402]	8	26.9 [59.3]
	250	124 [4.882]	340 [13.386]	60 [2.342]	33 [1.299]	275 [10.827]	2 [0.079]	188 [7.402]	12	42.7 [94.1]

→ Further dimensions and higher nominal pressures on request

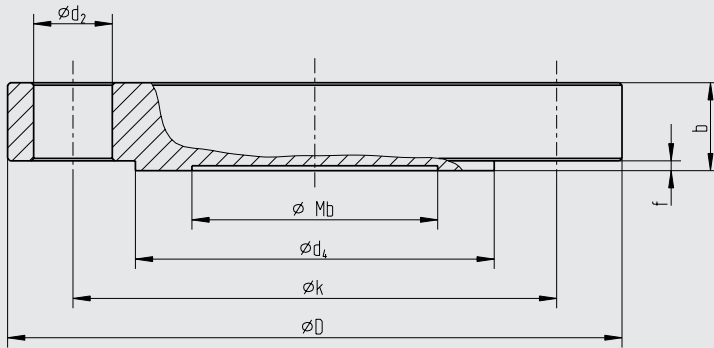
Special case: flange made of nickel per DIN EN 1092-1, form B

Nickel materials are not described in the DIN EN 1092-1 standard. For identical dimensions, lower values apply for the maximum allowable pressure. The values can be found in the table below.

Flange material	DN	PN	Maximum allowable pressure in bar [psi] at ambient temperature 21 °C [60.8 °F]
Nickel 200 (2.4066)	25, 40, 50, 80, 100, 125	10	7.4 [107]
		16	11.9 [172]
		25	18.6 [269]
		40	29.7 [430]
		63	46.8 [678]
		100	74.4 [1,078]
		160	119 [1,725]
		250	186 [2,697]
Nickel 201 (2.4068)	25, 40, 50, 80, 100, 125	10	6.2 [89]
		16	10 [145]
		25	15.6 [226]
		40	25 [362]
		63	39.3 [569]
		100	62.5 [906]
		160	100 [1,450]
		250	156.2 [2,264]

Sealing geometry per ASME B16.5-2017, RF

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Legend:

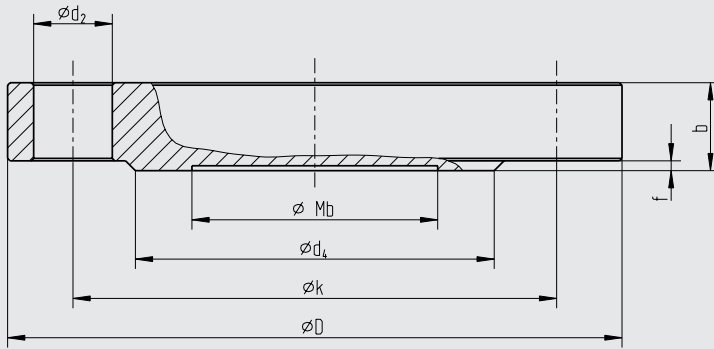
- Mb Effective diameter of diaphragm
- D Outer diameter of diaphragm seal
- b Flange thickness
- d₂ Bore diameter
- d₄ Raised face diameter
- f Height of raised face
- k Pitch circle diameter
- x Number of bores

DN	Class	Dimensions in mm [in]							x	Weight in kg [lb]
		Mb	D	b	d ₂	k	f	d ₄		
1"	150	32 [1.26]	110 [4.331]	14.7 [0.579]	16 [0.63]	79.4 [3.126]	2 [0.079]	51 [2.008]	4	1.4 [3.1]
	300	32 [1.26]	125 [4.921]	17.9 [0.705]	19 [0.748]	88.9 [3.5]	2 [0.079]	51 [2.008]	4	1.7 [3.7]
1 ½"	150	45 [1.772]	125 [4.921]	17.9 [0.705]	16 [0.63]	98.4 [3.874]	2 [0.079]	73 [2.874]	4	1.6 [3.5]
	300	45 [1.772]	155 [6.102]	21.1 [0.831]	22 [0.866]	114.3 [4.5]	2 [0.079]	73 [2.874]	4	2.5 [5.5]
	600	45 [1.772]	155 [6.102]	29.3 [1.154]	22 [0.866]	114.3 [4.5]	7 [0.276]	73 [2.874]	4	3.3 [7.2]
	1,500	45 [1.772]	180 [7.087]	38.8 [1.528]	29 [1.142]	123.8 [4.874]	7 [0.276]	73 [2.874]	4	5.9 [13]
	2,500	45 [1.772]	205 [8.071]	51.5 [2.078]	32 [1.26]	146 [5.748]	7 [0.276]	73 [2.874]	4	10.4 [22.9]
2"	150	59 [2.323]	150 [5.905]	19.5 [0.768]	19 [0.748]	120.7 [4.752]	2 [0.079]	92 [3.622]	4	2.7 [6]
	300	59 [2.323]	165 [6.496]	22.7 [0.894]	19 [0.748]	127 [5]	2 [0.079]	92 [3.622]	8	3.7 [8.1]
	600	59 [2.323]	165 [6.496]	32.4 [1.276]	19 [0.748]	127 [5]	7 [0.276]	92 [3.622]	8	5.7 [12.6]
	1,500	59 [2.323]	215 [8.465]	45.1 [1.776]	26 [1.024]	165.1 [6.5]	7 [0.276]	92 [3.622]	8	13.2 [29]
	2,500	59 [2.323]	235 [9.252]	57.9 [2.28]	29 [1.142]	171.4 [6.748]	7 [0.276]	92 [3.622]	8	19.8 [43.7]
3"	150	89 [3.504]	190 [7.482]	24.3 [0.957]	19 [0.748]	152.4 [6]	2 [0.079]	127 [5]	4	5.3 [11.7]
	300	89 [3.504]	210 [8.268]	29 [1.142]	22 [0.866]	168.3 [6.626]	2 [0.079]	127 [5]	8	7.8 [17.2]
	600	89 [3.504]	210 [8.268]	38.8 [1.528]	22 [0.866]	168.3 [6.626]	7 [0.276]	127 [5]	8	11 [24.3]
	900	89 [3.504]	240 [9.449]	45.1 [1.776]	26 [1.024]	190.5 [7.7]	7 [0.276]	127 [5]	8	16.7 [36.8]
	1,500	89 [3.504]	265 [10.433]	54.7 [1.799]	32 [1.26]	203.2 [8]	7 [0.276]	127 [5]	8	24.5 [54]
	2,500	89 [3.504]	305 [12.007]	73.7 [2.902]	35 [1.378]	228.6 [5.063]	7 [0.276]	127 [5]	8	42.7 [94.1]
4"	150	89 [3.504]	230 [9.055]	24.3 [0.957]	19 [0.748]	190.5 [7.5]	2 [0.079]	157.2 [6.189]	8	7.7 [17]
	300	89 [3.504]	255 [10.039]	32.2 [1.268]	22 [0.866]	200 [7.874]	2 [0.079]	157.2 [6.189]	8	12.7 [28]
	400	89 [3.504]	255 [10.039]	42 [1.654]	26 [1.024]	200 [7.874]	7 [0.276]	157.2 [6.189]	8	17.4 [38.4]
	600	89 [3.504]	275 [10.826]	45.1 [1.776]	26 [1.024]	215.9 [8.5]	7 [0.276]	157.2 [6.189]	8	21.5 [47.4]
	900	89 [3.504]	290 [11.417]	51.5 [2.028]	32 [1.26]	235 [9.252]	7 [0.276]	157.2 [6.189]	8	27.7 [61.1]
	1,500	89 [3.504]	310 [12.205]	61 [2.402]	35 [1.378]	241.3 [9.5]	7 [0.276]	157.2 [6.189]	8	37 [81.6]
	2,500	89 [3.504]	355 [13.976]	83.2 [3.276]	42 [1.654]	273 [10.748]	7 [0.276]	157.2 [6.189]	8	65.7 [144.8]
5"	150	124 [4.882]	255 [10.039]	24.3 [0.957]	22 [0.866]	215.9 [8.5]	2 [0.079]	185.7 [7.311]	8	9.2 [20.3]
	300	124 [4.882]	280 [11.024]	35.4 [1.394]	22 [0.866]	235 [9.25]	2 [0.079]	185.7 [7.311]	8	16.3 [35.9]
	400	124 [4.882]	280 [11.024]	45.1 [2.13]	26 [1.024]	235 [9.25]	7 [0.276]	185.7 [7.311]	8	19.3 [42.5]
	600	124 [4.882]	330 [13]	51.5 [2.028]	29 [1.142]	266.7 [10.5]	7 [0.276]	185.7 [7.311]	8	30.5 [67.2]
	900	124 [4.882]	350 [13.78]	57.8 [2.278]	35 [1.378]	279.4 [11]	7 [0.276]	185.7 [7.311]	8	38 [83.8]
	1,500	124 [4.882]	375 [14.764]	80.1 [3.154]	42 [1.654]	292.1 [11.5]	7 [0.276]	185.7 [7.311]	8	60.1 [132.5]
	2,500	124 [4.882]	420 [16.535]	99.1 [3.902]	48 [1.889]	323.8 [12.75]	7 [0.276]	185.7 [7.311]	8	93.6 [206.4]

→ Further dimensions and higher nominal pressures on request

Sealing geometry per GOST 33259, Type B

14237014.01



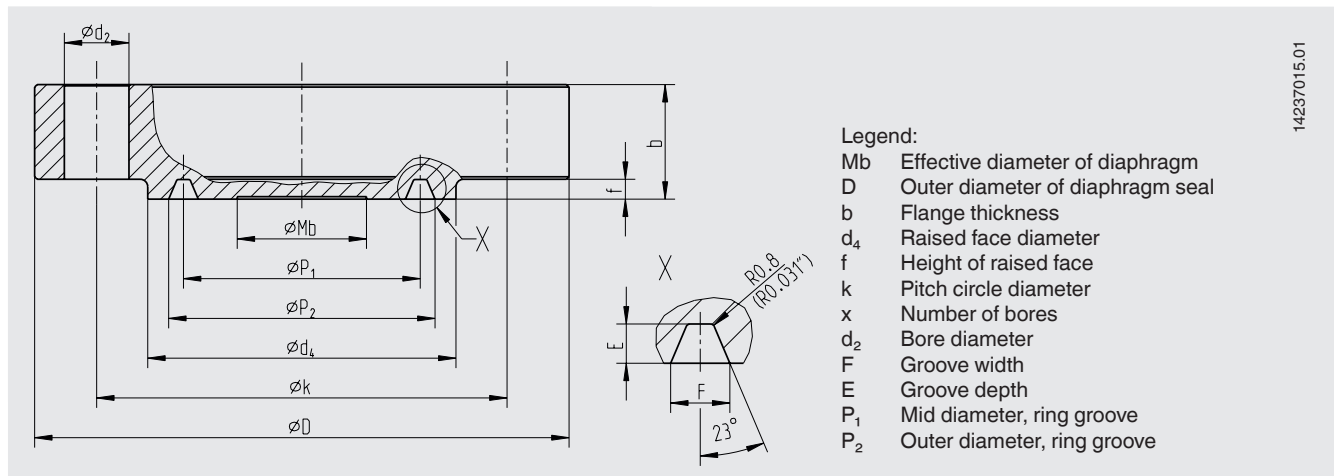
Legend:

- Mb Effective diameter of diaphragm
- D Outer diameter of diaphragm seal
- b Flange thickness
- d₂ Bore diameter
- d₄ Raised face diameter
- f Height of raised face
- k Pitch circle diameter
- x Number of bores

DN	PN	Dimensions in mm [in]							x	Weight in kg [lb]
		Mb	D	b	d ₂	k	f	d ₄		
50	10/16	59 [2.323]	160 [6.3]	16 [0.63]	18 [0.709]	125 [4.921]	3 [0.118]	102 [4.016]	4	2.4 [5.3]
	25/40	59 [2.323]	160 [6.3]	20 [0.787]	18 [0.709]	125 [4.921]	3 [0.118]	102 [4.016]	4	3 [6.6]
	63	59 [2.323]	175 [6.89]	26 [1.024]	22 [0.866]	135 [5.315]	3 [0.118]	102 [4.016]	4	4.5 [9.9]
	100	59 [2.323]	195 [7.677]	28 [1.102]	26 [1.024]	145 [5.709]	3 [0.118]	102 [4.016]	4	5.6 [12.3]
	160	59 [2.323]	195 [7.677]	30 [1.181]	26 [1.024]	145 [5.709]	3 [0.118]	102 [4.016]	4	6.4 [14.1]
	200	59 [2.323]	210 [8.268]	40 [1.575]	26 [1.024]	160 [6.299]	3 [0.118]	102 [4.016]	8	9.4 [20.7]
80	10	89 [3.504]	195 [7.677]	18 [0.709]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	4	4 [8.8]
	16	89 [3.504]	195 [7.677]	20 [0.787]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	4	4.5 [9.9]
	25	89 [3.504]	195 [7.677]	22 [0.866]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	8	4.8 [10.6]
	40	89 [3.504]	195 [7.677]	24 [0.945]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	8	5.2 [11.5]
	63	89 [3.504]	210 [7.677]	30 [1.181]	22 [0.866]	170 [6.693]	3 [0.118]	133 [5.236]	8	7.4 [16.3]
	100	89 [3.504]	230 [9.055]	34 [1.339]	26 [1.024]	180 [7.087]	3 [0.118]	133 [5.236]	8	9.8 [21.6]
	160	89 [3.504]	230 [9.055]	36 [1.417]	26 [1.024]	180 [7.087]	3 [0.118]	133 [5.236]	8	10.4 [22.9]
	200	89 [3.504]	290 [11.417]	54 [2.126]	33 [1.299]	230 [9.055]	3 [0.118]	133 [5.236]	8	24.7 [54.5]
100	10/16	89 [3.504]	215 [8.465]	20 [0.787]	18 [0.709]	180 [7.087]	3 [0.118]	158 [6.22]	8	5.3 [11.7]
	25	89 [3.504]	230 [9.055]	24 [0.945]	22 [0.866]	190 [7.48]	3 [0.118]	158 [6.22]	8	7.1 [15.7]
	40	89 [3.504]	230 [9.055]	26 [1.024]	22 [0.866]	190 [7.48]	3 [0.118]	158 [6.22]	8	7.8 [17.2]
	63	89 [3.504]	250 [9.842]	32 [1.26]	26 [1.024]	200 [7.874]	3 [0.118]	158 [6.22]	8	11.1 [24.5]
	100	89 [3.504]	265 [10.433]	38 [1.496]	30 [1.181]	210 [8.268]	3 [0.118]	158 [6.22]	8	14.5 [32]
	160	89 [3.504]	265 [10.433]	40 [1.575]	30 [1.181]	210 [8.268]	3 [0.118]	158 [6.22]	8	15.3 [33.7]
	200	89 [3.504]	360 [14.173]	66 [2.598]	39 [1.535]	292 [11.496]	3 [0.118]	158 [6.22]	8	47.2 [104.1]
	200	89 [3.504]	360 [14.173]	66 [2.598]	39 [1.535]	292 [11.496]	3 [0.118]	158 [6.22]	8	47.2 [104.1]
125	10/16	89 [3.504]	245 [9.646]	22 [0.866]	18 [0.709]	210 [8.268]	3 [0.118]	184 [7.244]	8	7.7 [17]
	25	89 [3.504]	270 [10.63]	26 [1.024]	26 [1.024]	220 [8.661]	3 [0.118]	184 [7.244]	8	10.6 [23.4]
	40	89 [3.504]	270 [10.63]	28 [1.102]	26 [1.024]	220 [8.661]	3 [0.118]	184 [7.244]	8	11.4 [25.1]
	63	89 [3.504]	295 [11.614]	36 [1.417]	30 [1.181]	240 [9.449]	3 [0.118]	184 [7.244]	8	17.4 [38.4]
	100	89 [3.504]	310 [12.205]	42 [1.654]	33 [1.299]	250 [9.842]	3 [0.118]	184 [7.244]	8	22.3 [49.2]
	160	89 [3.504]	310 [12.205]	44 [1.732]	33 [1.299]	250 [9.842]	3 [0.118]	184 [7.244]	8	23.4 [51.6]
	200	89 [3.504]	385 [15.157]	76 [2.992]	39 [1.535]	318 [12.52]	3 [0.118]	184 [7.244]	8	63.2 [139.3]

→ Further dimensions and higher nominal pressures on request

Sealing geometry per API 6A, ring-joint groove

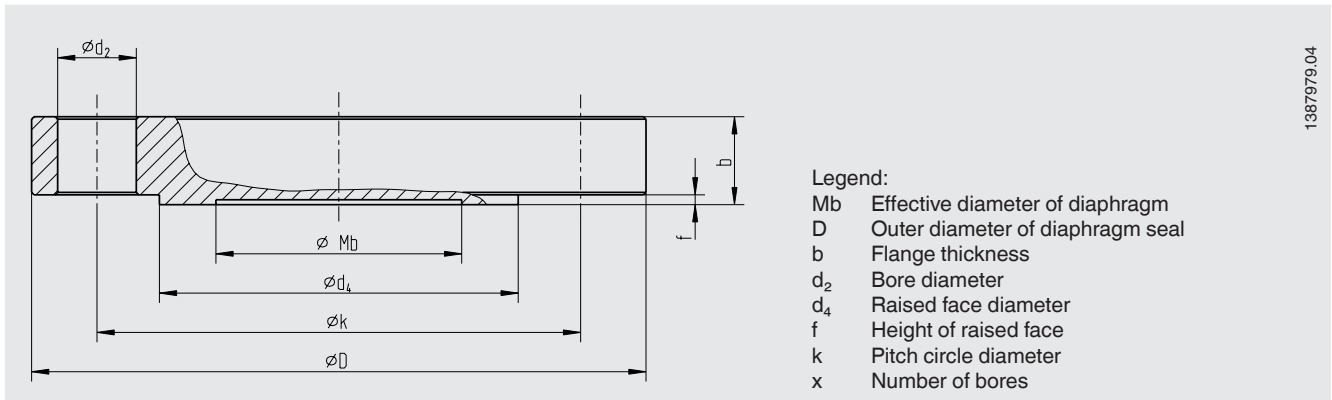


14237015.01

DN	PN in psi	Dimensions in mm [in]							x	Groove dimensions in mm [in]				Weight in kg [lb]
		Mb	D	d_2	d_4	f	b	k		P_1	P_2	E	F	
1 13/16"	10,000	40 [1.575]	185 [7.283]	23 [0.906]	105 [4.134]	4 [0.157]	42.1 [1.657]	146.1 [5.752]	8	-	77.77 [3.062]	5.56 [0.219]	11.84 [0.466]	7.7 [17]
	15,000	40 [1.575]	210 [8.268]	26 [1.024]	106 [4.173]	4 [0.157]	45.3 [1.783]	160.3 [6.311]	8	-	77.77 [3.062]	5.56 [0.219]	11.84 [0.466]	10.5 [23.1]
	20,000	40 [1.575]	255 [10.039]	29 [1.142]	117 [4.606]	4 [0.157]	63.5 [2.5]	203.2 [8]	8	-	77.77 [3.062]	5.56 [0.219]	11.84 [0.466]	22.3 [49.2]
2 1/16"	2,000	52 [2.047]	165 [6.496]	20 [0.787]	108 [4.252]	8 [0.315]	33.4 [1.315]	127 [5]	8	82.55 [3.25]	-	7.9 [0.311]	11.91 [0.469]	4.6 [10.1]
	3,000/5,000	52 [2.047]	215 [8.465]	26 [1.024]	124 [4.882]	8 [0.315]	46.1 [1.815]	165.1 [6.5]	8	95.25 [3.75]	-	7.9 [0.311]	11.91 [0.469]	10.7 [23.6]
	10,000	52 [2.047]	200 [7.874]	23 [0.906]	111 [4.370]	4 [0.157]	44.1 [1.736]	158.8 [6.252]	8	-	86.23 [3.395]	5.95 [0.234]	12.65 [0.498]	9.5 [20.9]
	15,000	52 [2.047]	220 [8.661]	26 [1.024]	114 [4.488]	4 [0.157]	50.8 [2] [1.996]	174.6 [6.874]	8	-	86.23 [3.395]	5.95 [0.234]	12.65 [0.498]	13.2 [29.1]
	20,000	52 [2.047]	285 [11.22]	32 [1.26]	132 [5.197]	4 [0.157]	71.5 [2.815]	230.2 [9.063]	8	-	86.23 [3.395]	5.95 [0.234]	12.65 [0.498]	31.6 [69.7]
2 9/16"	2,000	59 [2.323]	190 [7.48]	23 [0.906]	127 [5]	8 [0.315]	36.6 [1.441]	149.2 [5.874]	8	101.6 [4]	-	7.9 [0.311]	11.91 [0.469]	6.7 [14.8]
	3,000/5,000	59 [2.323]	245 [9.656]	29 [1.142]	137 [5.394]	8 [0.315]	49.3 [1.941]	190.5 [7.5]	8	107.95 [4.25]	-	7.9 [0.311]	11.91 [0.469]	15 [33.1]
	10,000	59 [2.323]	230 [9.055]	26 [1.024]	132 [5.197]	4 [0.157]	51.2 [2.016]	184.2 [7.252]	8	-	102.77 [4.046]	6.75 [0.266]	14.07 [0.579]	14.7 [32.4]
	15,000	59 [2.323]	255 [10.039]	29 [1.142]	133 [5.236]	4 [0.157]	57.2 [2.252]	200 [7.874]	8	-	102.77 [4.046]	6.75 [0.266]	14.07 [0.579]	20.1 [44.3]
	20,000	59 [2.323]	325 [12.795]	35 [1.378]	151 [5.945]	4 [0.157]	79.4 [3.126]	261.9 [10.311]	8	-	102.77 [4.046]	6.75 [0.266]	14.07 [0.579]	46.3 [102]
3 1/8"	2,000	89 [3.504]	210 [8.268]	23 [0.906]	146 [5.748]	7.9 [0.311]	39.7 [1.563]	168.3 [6.626]	8	123.83 [4.875]	-	7.9 [0.311]	11.91 [0.469]	9.2 [20.3]
	3,000	89 [3.504]	240 [9.449]	26 [1.024]	156 [6.142]	8 [0.315]	46.1 [1.815]	190.5 [7.5]	8	123.83 [4.875]	-	7.9 [0.311]	11.91 [0.469]	13.9 [30.6]
	5,000	89 [3.504]	265 [10.433]	32 [1.26]	168 [6.614]	7.9 [0.311]	55.6 [2.189]	203.2 [8]	8	136.53 [5.375]	-	7.9 [0.311]	11.91 [0.469]	20.2 [44.5]

→ Further dimensions and higher nominal pressures on request

Sealing geometry per JIS B 2220, RF



DN	PN	Dimensions in mm [in]							x	Weight in kg [lb]
		Mb	D	b	d ₂	k	f	d ₄		
25A	5K	32 [1.26]	95 [3.74]	10 [0.394]	12 [0.472]	75 [2.953]	1 [0.039]	59 [2.323]	4	0.7 [1.5]
	10K	32 [1.26]	125 [4.921]	14 [0.551]	19 [0.748]	90 [3.543]	1 [0.039]	67 [2.638]	4	1.4 [3.1]
	16K	32 [1.26]	125 [4.921]	14 [0.551]	19 [0.748]	90 [3.543]	1 [0.039]	67 [2.638]	4	1.4 [3.1]
	20K	32 [1.26]	125 [4.921]	16 [0.63]	19 [0.748]	90 [3.543]	1 [0.039]	67 [2.638]	4	1.6 [3.5]
	30K	32 [1.26]	130 [5.118]	20 [0.787]	19 [0.748]	95 [3.740]	1 [0.039]	70 [2.756]	4	2.1 [4.6]
	40K	25 [0.984]	130 [5.118]	22 [0.866]	19 [0.748]	95 [3.740]	1 [0.039]	70 [2.756]	4	2.3 [5.1]
	63K	25 [0.984]	140 [5.512]	27 [1.063]	23 [0.906]	100 [3.967]	1 [0.039]	70 [2.756]	4	3.1 [6.9]
50A	5K	59 [2.323]	130 [5.118]	14 [0.551]	15 [0.591]	105 [4.134]	2 [0.079]	85 [3.346]	4	1.5 [3.3]
	10K	59 [2.323]	155 [6.102]	16 [0.63]	19 [0.748]	120 [4.724]	2 [0.079]	96 [3.78]	4	2.3 [5.1]
	16K	59 [2.323]	155 [6.102]	16 [0.63]	19 [0.748]	120 [4.724]	2 [0.079]	96 [3.78]	8	2.2 [4.9]
	20K	59 [2.323]	155 [6.102]	18 [0.709]	19 [0.748]	120 [4.724]	2 [0.079]	96 [3.78]	8	2.4 [5.3]
	30K	59 [2.323]	165 [6.496]	22 [0.866]	19 [0.748]	130 [5.118]	2 [0.079]	105 [4.134]	8	3.4 [7.5]
	40K	59 [2.323]	165 [6.496]	26 [1.024]	19 [0.748]	130 [5.118]	2 [0.079]	105 [4.134]	8	4.0 [8.8]
	63K	59 [2.323]	185 [7.83]	34 [1.339]	23 [0.906]	145 [5.709]	2 [0.079]	105 [4.134]	8	6.4 [14.1]
80A	5K	89 [3.504]	180 [7.087]	14 [0.551]	19 [0.748]	145 [5.709]	2 [0.079]	121 [4.764]	4	2.7 [6]
	10K	89 [3.504]	185 [7.83]	18 [0.709]	19 [0.748]	150 [5.905]	2 [0.079]	126 [4.961]	8	3.5 [7.7]
	16K	89 [3.504]	200 [7.874]	20 [0.787]	23 [0.906]	160 [6.299]	2 [0.079]	132 [5.197]	8	4.5 [9.9]
	20K	89 [3.504]	200 [7.874]	22 [0.866]	23 [0.906]	160 [6.299]	2 [0.079]	132 [5.197]	8	4.9 [10.8]
	30K	89 [3.504]	210 [8.268]	28 [1.102]	23 [0.906]	170 [6.693]	2 [0.079]	140 [5.512]	8	7 [15.4]
	40K	89 [3.504]	210 [8.268]	32 [1.26]	23 [0.906]	170 [6.693]	2 [0.079]	140 [5.512]	8	8 [17.6]
	63K	89 [3.504]	230 [9.055]	40 [1.575]	25 [0.984]	185 [7.83]	2 [0.079]	140 [5.512]	8	11.9 [26.2]
100A	5K	89 [3.504]	200 [7.874]	16 [0.63]	19 [0.748]	165 [6.496]	2 [0.079]	141 [5.551]	8	3.7 [8.2]
	10K	89 [3.504]	210 [8.268]	18 [0.709]	19 [0.748]	175 [6.89]	2 [0.079]	151 [5.945]	8	4.6 [10.1]
	16K	89 [3.504]	225 [8.858]	22 [0.866]	23 [0.906]	185 [7.83]	2 [0.079]	160 [6.299]	8	6.4 [14.1]
	20K	89 [3.504]	225 [8.858]	24 [0.945]	23 [0.906]	185 [7.83]	2 [0.079]	160 [6.299]	8	6.9 [15.2]
	30K	89 [3.504]	240 [9.449]	32 [1.26]	25 [0.984]	195 [7.677]	2 [0.079]	160 [6.299]	8	10.4 [22.9]
	40K	89 [3.504]	250 [9.852]	36 [1.417]	25 [0.984]	205 [8.071]	2 [0.079]	165 [6.496]	8	12.8 [28.2]
	63K	89 [3.504]	270 [10.63]	44 [1.732]	27 [1.063]	220 [8.661]	2 [0.079]	165 [6.496]	8	18.2 [40.1]

→ Further dimensions and higher nominal pressures on request

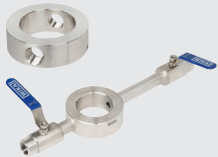
Special case: flange made of nickel, Monel, Inconel, Incoloy or titanium per JIS B 2220, RF

Nickel, Monel, Inconel, Incoloy and titanium materials are not described in the JIS B 2220 standard. For identical dimensions, lower values apply for the maximum allowable pressure. The values can be found in the table below.

Flange material	DN	PN	Maximum allowable pressure in MPa [psi] at ambient temperature 21 °C [60.8 °F]
Nickel 200 (2.4066)	25A, 50A, 80A, 100A	5K	0.4 [63]
		10K	0.8 [126]
		16K	1.6 [244]
		20K	2.1 [308]
		30K	3.1 [462]
		40K	4.2 [616]
		63K	6.6 [969]
Nickel 201 (2.4068)	25A, 50A, 80A, 100A	5K	0.3 [53]
		10K	0.7 [106]
		16K	1.4 [205]
		20K	1.7 [258]
		30K	2.6 [388]
		40K	3.5 [517]
		63K	5.6 [814]
Monel 400 (2.4360)	25A, 50A, 80A, 100A	5K	0.4 [69]
		10K	0.9 [138]
		16K	1.8 [266]
		20K	2.3 [335]
		30K	3.4 [502]
		40K	4.6 [670]
		63K	7.2 [1,055]
Inconel 600 (2.4816)	25A, 50A, 80A, 100A	5K	0.5 [73]
		10K	1 [146]
		16K	1.9 [281]
		20K	2.4 [355]
		30K	3.6 [532]
		40K	4.8 [710]
		63K	7.7 [1,117]
Incoloy 825 (2.4558)	25A, 50A, 80A, 100A	5K	0.6 [89]
		10K	1.2 [178]
		16K	2.3 [344]
		20K	2.9 [433]
		30K	4.4 [650]
		40K	5.9 [867]
		63K	9.4 [1,365]
Titanium grade 2 (3.7035)	25A, 50A, 80A, 100A	5K	0.6 [87]
		10K	1.2 [175]
		16K	2.3 [337]
		20K	2.9 [425]
		30K	4.3 [637]
		40K	5.8 [850]
		63K	9.2 [1,338]

Flange material	DN	PN	Maximum allowable pressure in MPa [psi] at ambient temperature 21 °C [60.8 °F]
Titanium grade 7 (3.7235)	25A, 50A, 80A, 100A	5K	0.6 [87]
		10K	1.2 [175]
		16K	2.3 [337]
		20K	2.9 [425]
		30K	4.3 [637]
		40K	5.8 [850]
		63K	9.2 [1,338]

Accessories and spare parts

Model	Description		Order number
	910.27	Flushing ring for flange-connection diaphragm seals → See data sheet AC 09.05	On request
	IBF2, IBF3	Monoblock with flange connection → See data sheet AC 09.25	On request
	910.16	Instrument mounting bracket form H per DIN 16281, 100 mm, aluminium, black	9091858
		Instrument mounting bracket form H per DIN 16281, 100 mm, stainless steel	9091882
		→ See data sheet AC 09.05	On request

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, flange size, nominal pressure, sealing face) / Material combination (upper body of diaphragm seal, wetted parts) / 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) / Material combination (upper body of diaphragm seal, wetted parts) / 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, flange size, nominal pressure, sealing face) / Flushing ring

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We reserve the right to make modifications to the specifications and materials.
In case of a different interpretation of the translated and the English data sheet, the English wording shall prevail.



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

WIKA data sheet DS 99.28

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 connection adapter



Diaphragm seal for flange connection, model 990.28

Description

Diaphragm seals are used to protect pressure measuring instruments in demanding applications under difficult conditions. These diaphragm seal systems, consisting of a process transmitter, pressure sensor, pressure gauge or pressure switch with diaphragm seal, can be combined individually for each customer application. For this, a wide range of different designs, process connections, mounting types and wetted materials are available.

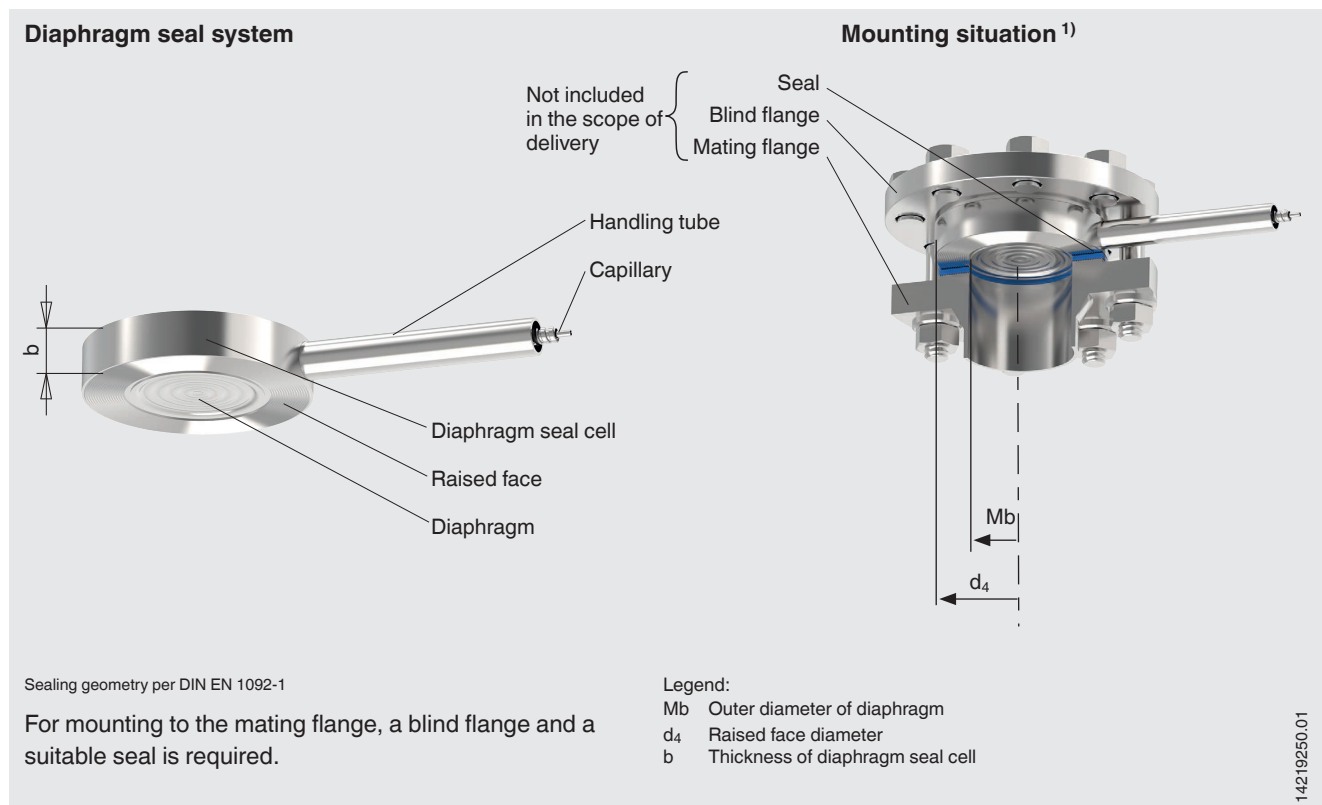
Diaphragm seal models with flange connections are available with flush or internal diaphragms, in tubular design or as in-line diaphragm seals.

The diaphragm seal model 990.28 with flush diaphragm, cell-type, is optimised for applications in the chemical, petrochemical and the oil and gas industries and is therefore available in a wide range of dimensions in accordance with the standards common in these markets.

Through the high number of possible combinations and aided by the individual checking of the operating conditions, it is ensured that the ideal customer solution for a diaphragm seal system can be found with this model.

Installation example

Model 990.28 with capillary and handling tube



Diaphragm seal system

Diaphragm seal systems are mounted to existing connections, which are welded to a pipeline, a process reactor or a tank. A diaphragm made of the appropriate material separates the medium from the measuring instrument. The internal space between the diaphragm and the measuring instrument is completely filled with a system fill fluid.

Measuring element

The pressure of the medium is transmitted to the system fill fluid via the elastic diaphragm and then on to the measuring instrument. A diaphragm seal and its components are perfectly matched to each other to ensure a reliable measurement.

Mounting type

The mounting of the diaphragm seals to the measuring instruments can be made via a capillary with handling tube.

Technical information

Data sheet number	Title
IN 00.06	Diaphragm seals and diaphragm seal systems, application – functionality – design
IN 00.25	Diaphragm seal systems for vacuum processes
IN 00.21	General information about NACE standards for sour gas applications
IN 00.41	Specifications of oil- and grease-free instruments

→ See download on the WIKA website

Specifications

Basic information for diaphragm seal systems	
Version	Diaphragm seal with flange connection, cell-type
Other versions	■ Per NACE ¹⁾ MR0175 / ISO 15156, use in H₂S-containing environments in oil and gas production ■ Per NACE ¹⁾ MR0103 / ISO 17945, metals resistant to hydrogen sulphide stress cracking ■ With pre-volume deflagration flame arrester ²⁾ for mounting to zone 0 (EPL Ga); model 910.21; see data sheet AC 91.02
Pressure range	The maximum permissible operating pressure must be determined individually for each diaphragm seal system. It is dependent on the operating temperature, the process connection, the joining method, the system fill fluid and the mounted measuring instrument.
Connection to the instrument	Suitable connection adapter to the instrument (e.g. G ½, G ¼, ½ NPT or ¼ NPT)
Mounting type	Capillary with handling tube
Vacuum service ³⁾	■ Basic service ■ Advanced service ■ Premium service

1) General information about NACE standards; see technical information IN 00.21

2) Only for instruments with Ex approval

3) Diaphragm seal systems for vacuum processes; see technical information IN 00.25

Process connection				
Standard ¹⁾	■ DIN EN 1092-1 ■ ASME B16.5-2017 ■ GOST 33259 ■ JIS B2220			
Size				
DIN EN 1092-1	■ DN 40 ■ DN 100	■ DN 50 ■ DN 125	■ DN 80	
ASME B16.5-2017	■ 1 ½" ■ 4"	■ 2" ■ 5"	■ 3"	
GOST 33259	■ DN 40 ■ DN 100	■ DN 50 ■ DN 125	■ DN 80	
JIS B2220	■ DN 40A ■ DN 100A	■ DN 50A	■ DN 80A	

Process connection		
Sealing geometry		
DIN EN 1092-1	■ Form B1 ■ Form A ■ Form B2 ■ Form C (tongue)	■ Form D (groove) ■ Form E (spigot) ■ Form F (recess)
ASME B16.5-2017	■ 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
GOST 33259	■ Type B ■ Type A (flat face) ■ Type C (tongue)	■ Type D (groove) ■ Type E (spigot, male face) ■ Type F (recess, female face)
JIS B2220	RF	
Wetted parts	Diaphragm and raised face → See tables below for material selection	
Origin of wetted parts	■ International ■ Exclusively from EU, CH, GB, US, CA	
Level of cleanliness of wetted parts ²⁾	■ Oil- and grease-free per WIKA specification (< 1,000 mg/m²) ■ Oil- and grease-free per ASTM G93-03 level D (< 220 mg/m²) ■ Oil- and grease-free per ASTM G93-03 level C (< 66 mg/m²)	

1) The respective standard is met for the connection dimensions of the sealing geometry; other dimensions, e.g. bores or flange thicknesses, may vary slightly.

2) Specifications of oil- and grease-free instruments; see technical information IN 00.41

→ Other process connections on request

Material combination		Maximum permissible temperature ¹⁾ in °C [°F]
Diaphragm seal	Wetted parts	
Stainless steel 1.4404 (316L)	Stainless steel 1.4404 / 1.4435 (316L)	400 [752]
	Hastelloy C22 (2.4602) ²⁾	260 [500]
	Hastelloy C276 (2.4819) ^{2) 3)}	400 [752]
	Inconel 600 (2.4816) ²⁾	400 [752]
	Inconel 625 (2.4856) ²⁾	400 [752]
	Incoloy 825 (2.4858) ²⁾	400 [752]
	Monel 400 (2.4360) ²⁾	400 [752]
	Nickel 200 (2.4066) ²⁾	260 [500]
	Nickel 201 (2.4068) ²⁾	260 [500]
	Titanium grade 2 (3.7035) ²⁾	150 [302]
	Titanium grade 11 (3.7225) ²⁾	150 [302]
	Tantalum ^{2) 3)}	300 [572]
Titanium grade 7 (3.7235)	Titanium grade 7 (3.7235) / Titanium grade 11 (3.7225)	250 [482]

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

2) This material combination is only possible with form B2 and RFSF sealing geometries. Since the parts do not allow any machining, the surface roughness Ra is ≤ 0.5 µm.

3) This material combination is additionally possible with form B1 and RF 125 ... 250 AA sealing geometries for DN 50, DN 80 and also 2" and 3".

Material	Maximum permissible temperature ¹⁾ in °C [°F]
Diaphragm seal and wetted parts	
Stainless steel 1.4435 (316L)	400 [752]
Stainless steel 1.4539 (904L)	400 [752]
Stainless steel 1.4541 (321)	400 [752]
Stainless steel 1.4571 (316Ti)	400 [752]
Duplex 2205 (1.4462)	250 [482]
Superduplex 2507 (1.4410)	250 [482]
Hastelloy C22 (2.4602)	400 [752]
Hastelloy C276 (2.4819)	400 [752]
Inconel 600 (2.4816)	400 [752]
Inconel 625 (2.4856)	400 [752]
Incoloy 825 (2.4858)	400 [752]
Monel 400 (2.4360)	400 [752]
Nickel 200 (2.4066)	300 [572]
Nickel 201 (2.4068)	400 [752]
Titanium grade 2 (3.7035)	300 [572]

1) The maximum permissible operating temperature must be determined individually for each diaphragm seal system. It is dependent on the operating pressure, the process connection, the joining method, the system fill fluid and the mounted measuring instrument.

Material of coating ¹⁾	Maximum permissible temperature ²⁾ in °C [°F]
Wetted parts	
ECTFE	150 [302]
PFA (perfluoroalkoxy), FDA	260 [500]
PFA (perfluoroalkoxy), anti-static	260 [500]
Gold	400 [752]
Wikaramic®	400 [752]

1) The coated basic material is from stainless steel 1.4435 (316L)

2) The maximum permissible operating temperature of the diaphragm seal system is limited by the joining method, the system fill fluid and the measuring instrument.

→ Further materials for special process temperatures on request.

Optional approvals

Logo	Description	Country
-	MChS Permission for commissioning	Kazakhstan
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Manufacturer's declaration

Logo	Description
	SIL EXIDA report with SFF values from FMEDA analysis for functional safety assessment in accordance with IEC 61508

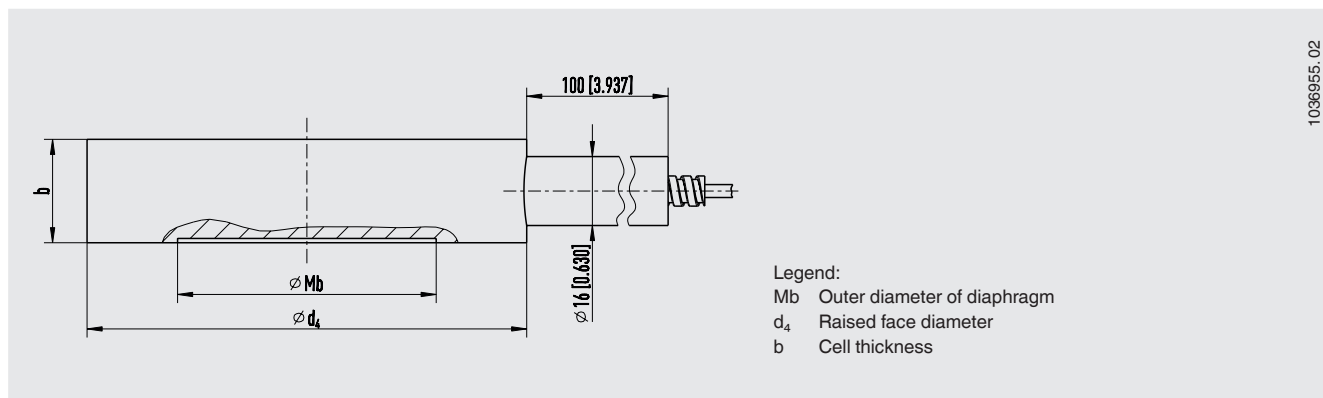
Certificates

Certificates	
Certificates	■ 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)

→ For approvals and certificates, see website

Dimensions in mm [in]

Sealing geometry per DIN EN 1092-1, form B1



DN	PN in bar	Dimensions in mm [in]			Weight in kg [lb]
		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

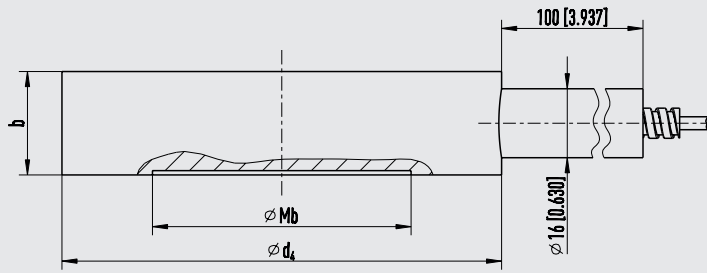
Special case: flange made of nickel per DIN EN 1092-1, form B

Nickel materials are not described in the DIN EN 1092-1 standard. For identical dimensions, lower values apply for the maximum allowable pressure. The values can be found in the table below.

Flange material	DN	PN	Maximum allowable pressure in bar [psi] at ambient temperature 21 °C [60.8 °F]
Nickel 200 (2.4066)	25, 40, 50, 80, 100, 125	10	7.4 [107]
		16	11.9 [172]
		25	18.6 [269]
		40	29.7 [430]
		63	46.8 [678]
		100	74.4 [1,078]
		160	119 [1,725]
		250	186 [2,697]
Nickel 201 (2.4068)	25, 40, 50, 80, 100, 125	10	6.2 [89]
		16	10 [145]
		25	15.6 [226]
		40	25 [362]
		63	39.3 [569]
		100	62.5 [906]
		160	100 [1,450]
		250	156.2 [2,264]

Sealing geometry per ASME B16.5, RF 125 ... 250 AA

1036955.02



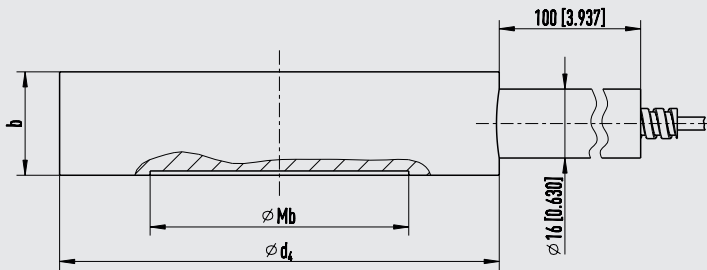
Legend:
 Mb Outer diameter of diaphragm
 d₄ Raised face diameter
 b Cell thickness

DN	Class	Dimensions in mm [in]			Weight in kg [lb]
		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

Sealing geometry per GOST 33259, Type B

1036955.02



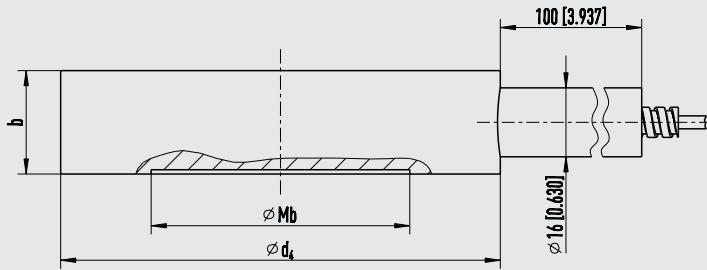
Legend:
 Mb Outer diameter of diaphragm
 d₄ Raised face diameter
 b Cell thickness

DN	PN in bar	Dimensions in mm [in]			Weight in kg [lb]
		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

Sealing geometry per JIS B 2220, RF

1036955_02



Legend:

Mb Outer diameter of diaphragm

d₄ Raised face diameter

b Cell thickness

DN	PN	Dimensions in mm [in]			Weight in kg [lb]
		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]
	16K ... 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]
	16K ... 30K	90 [3.543]	160 [6.299]	22 [0.866]	3.5 [7.716]
	40K ... 63K	90 [3.543]	162 [6.378]	22 [0.866]	3.7 [8.157]

→ Further dimensions and higher nominal pressures on request

Special case: flange made of nickel, Monel, Inconel, Incoloy or titanium per JIS B 2220, RF

Nickel, Monel, Inconel, Incoloy and titanium materials are not described in the JIS B 2220 standard. For identical dimensions, lower values apply for the maximum allowable pressure. The values can be found in the table below.

Flange material	DN	PN	Maximum allowable pressure in MPa [psi] at ambient temperature 21 °C [60.8 °F]
Nickel 200 (2.4066)	25A, 50A, 80A, 100A	5K	0.4 [63]
		10K	0.8 [126]
		16K	1.6 [244]
		20K	2.1 [308]
		30K	3.1 [462]
		40K	4.2 [616]
		63K	6.6 [969]
Nickel 201 (2.4068)	25A, 50A, 80A, 100A	5K	0.3 [53]
		10K	0.7 [106]
		16K	1.4 [205]
		20K	1.7 [258]
		30K	2.6 [388]
		40K	3.5 [517]
		63K	5.6 [814]

Flange material	DN	PN	Maximum allowable pressure in MPa [psi] at ambient temperature 21 °C [60.8 °F]
Monel 400 (2.4360)	25A, 50A, 80A, 100A	5K	0.4 [69]
		10K	0.9 [138]
		16K	1.8 [266]
		20K	2.3 [335]
		30K	3.4 [502]
		40K	4.6 [670]
		63K	7.2 [1,055]
Inconel 600 (2.4816)	25A, 50A, 80A, 100A	5K	0.5 [73]
		10K	1 [146]
		16K	1.9 [281]
		20K	2.4 [355]
		30K	3.6 [532]
		40K	4.8 [710]
		63K	7.7 [1,117]
Incoloy 825 (2.4858)	25A, 50A, 80A, 100A	5K	0.6 [89]
		10K	1.2 [178]
		16K	2.3 [344]
		20K	2.9 [433]
		30K	4.4 [650]
		40K	5.9 [867]
		63K	9.4 [1,365]
Titanium grade 2 (3.7035)	25A, 50A, 80A, 100A	5K	0.6 [87]
		10K	1.2 [175]
		16K	2.3 [337]
		20K	2.9 [425]
		30K	4.3 [637]
		40K	5.8 [850]
		63K	9.2 [1,338]
Titanium grade 7 (3.7235)	25A, 50A, 80A, 100A	5K	0.6 [87]
		10K	1.2 [175]
		16K	2.3 [337]
		20K	2.9 [425]
		30K	4.3 [637]
		40K	5.8 [850]
		63K	9.2 [1,338]

Accessories and spare parts

Model		Description	Order number
	910.27	Flushing ring for flange-connection diaphragm seals → See data sheet AC 09.05	On request
	IBF2, IBF3	Monoblock with flange connection → See data sheet AC 09.25	On request
	910.16	Form H instrument mounting bracket per DIN 16281, 100 mm, aluminium, black	9091858
		Form H instrument mounting bracket per DIN 16281, 100 mm, stainless steel	9091882
		→ See data sheet AC 09.05	On request

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, flange size, nominal pressure, sealing geometry) / Material combination (upper body of diaphragm seal, wetted parts) / 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) / Material combination (upper body of diaphragm seal, wetted parts) / 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, flange size, nominal pressure, sealing geometry) / Flushing ring

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