

Diaphragm seal with flange connection With internal diaphragm, threaded design Model 990.16, high-pressure version

WIKA data sheet DS 99.08



for further approvals
see page 6

Applications

- Aggressive, contaminated or hot media
- Chemical and petrochemical industries
- Oil and gas industry
- High-pressure applications

Special features

- High pressures up to PN 400 / class 2.500
- Flange with internal welded diaphragm
- Small process connections
- Flushing connections optionally available



Diaphragm seal with flange connection, model 990.16

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".

With the model 990.16 diaphragm seal, high nominal pressures of PN 400 / class 2.500 can be realised. Due to its design, with an internal diaphragm, accurate measurements are possible even with small flange connections. By means of optionally available flushing connections, the process side of the flange can be cleaned and flushed as required.

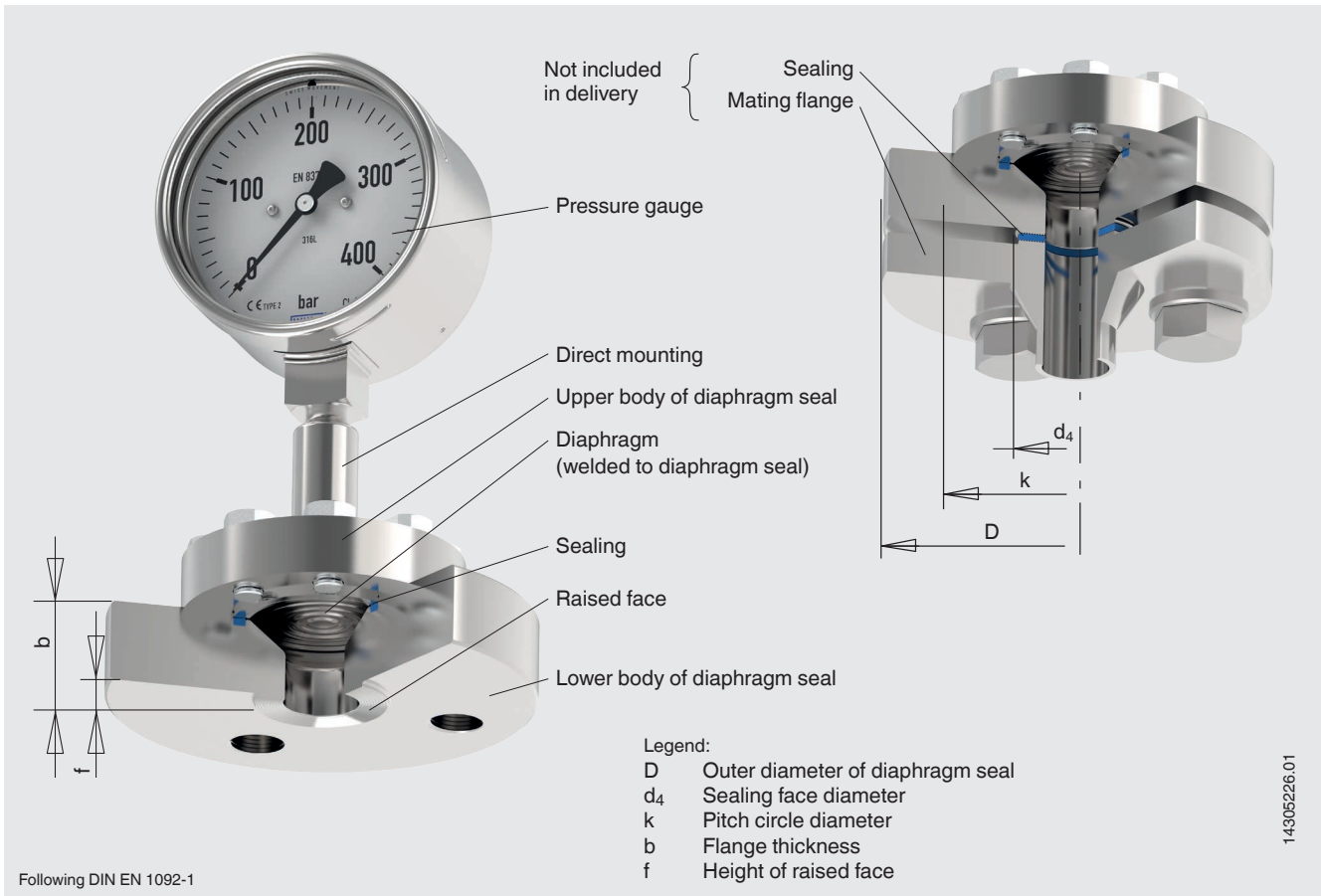
Mounting of the diaphragm seal to the measuring instrument may be made via a direct connection, for high temperatures via a cooling element or via a flexible capillary.

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 990.16	Standard	Option
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	<ul style="list-style-type: none"> ■ EU ■ CH ■ USA
Sealing	<ul style="list-style-type: none"> ■ FPM, max. 200 °C [392 °F] ■ PTFE, max. 260 °C [500 °F] 	Metal C snap ring, max. 400 °C [752 °F]
Flushing connection	-	<ul style="list-style-type: none"> ■ Single flushing connection (G ¼, G ⅛, ¼ NPT, ⅜ NPT) ■ Dual flushing connection (G ¼, G ⅛, ¼ NPT, ⅜ NPT) ■ Plug screws
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	<ul style="list-style-type: none"> ■ Capillary ■ Cooling element
Retainer parts	Stainless steel	-
Design per NACE	-	<ul style="list-style-type: none"> ■ MR 0175 ■ MR 0103
Vacuum service (see IN 00.25)	Basic service	<ul style="list-style-type: none"> ■ Premium service ■ Advanced service
Diaphragm seal for mounting to zone 0	-	With flame arrester and PTB certificate
Instrument mounting bracket (only for capillary option)	-	<ul style="list-style-type: none"> ■ 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 990.16 with mounted pressure gauge



Process connection, flange

Standard	Nominal width	Sealing face	
		Standard	Option
Following DIN EN 1092-1	DN 15	Form B1	Form B2
	DN 20		
	DN 25		
	DN 40		
Following ASME B16.5	1/2"	RF 125 ... 250 AA	RFSF Flat face Ring groove form RJF
	3/4"		
	1"		
	1 1/2"		

Further flanges and options on request
 After feasibility test, pressure rating to PN 600 possible

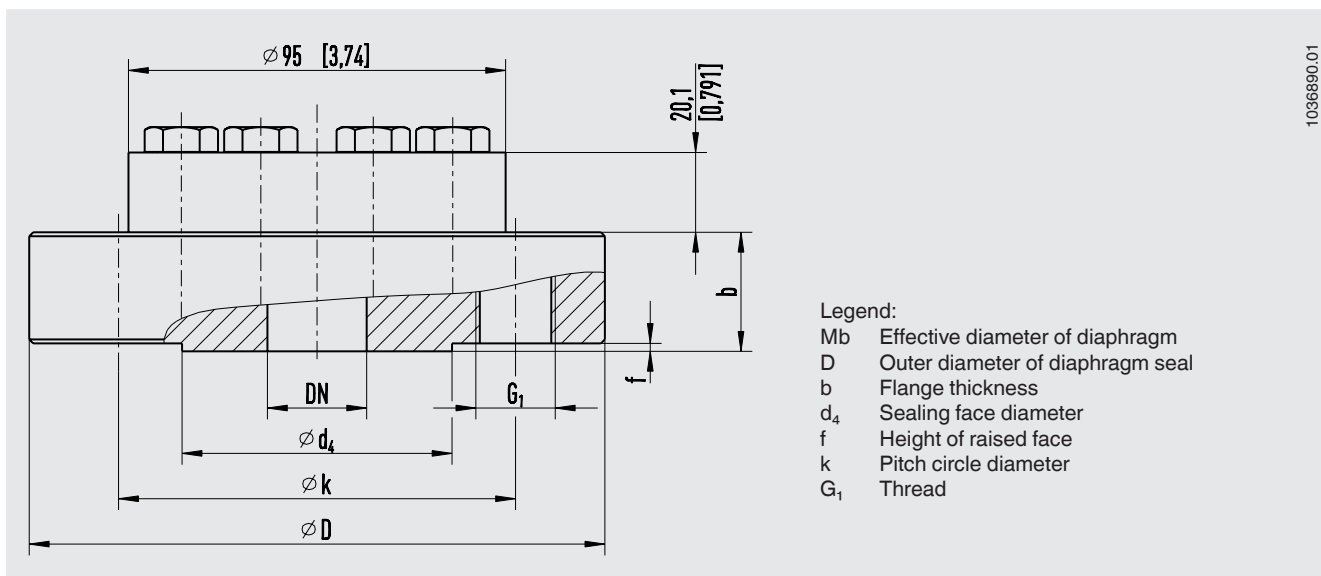
Material combinations

Upper body of diaphragm seal	Lower body of diaphragm seal and diaphragm (wetted)	Maximum permissible process temperature ¹⁾ in °C [°F]
Stainless steel 1.4404 [316L]	Stainless steel 1.4404 [316L]	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 class 2 [3.7035]	150 [302]
Titanium class 7 [3.7235]		
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 3.7035	Titanium class 2 [3.7035]	
Titanium 3.7235	Titanium class 7 [3.7235]	

1) The maximum permissible process temperature is limited by the joining method and by the system fill fluid.

Further material combinations for special process temperatures on request

Dimensions in mm [in]



Flange connection following DIN EN 1092-1


DN	PN	Dimensions in mm [in]						G ₁
		Mb	D	b	d ₄	f	k	
15	400	52 [2.047]	145 [5.709]	30 [1.181]	45 [1.772]	2 [0.079]	100 [3.937]	M20
25	400	52 [2.047]	180 [7.087]	38 [1.497]	68 [2.677]	2 [0.079]	130 [5.118]	M24

Flange connection following ASME B16.5

DN	Class	Dimensions in mm [in]						G ₁
		Mb	D	b	d ₄	f	k	
½"	2,500	52 [2.047]	135 [5.315]	37.2 [1.465]	34.9 [1.374]	7 [0.276]	88.9 [3.5]	¾"-10 UNC
¾"	2,500	52 [2.047]	140 [5.512]	38.8 [1.528]	42.9 [1.689]	7 [0.276]	95.5 [3.76]	¾"-10 UNC
1"	2,500	52 [2.047]	160 [6.299]	42 [1.654]	50.8 [2]	7 [0.276]	108 [4.252]	7/8"-9 UNC

Further dimensions and higher nominal pressures 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)

Approvals and certificates, see website

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, nominal width, nominal pressure, sealing face) / Materials (upper body, lower body, sealing face, diaphragm, sealing) / Retainer parts (screws, retainer flange) / Flushing connection / 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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