Diaphragm seal with flange connection
With internal diaphragm, threaded design
Model 990.12

EAC

for further approvals
see page 5

Applications

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

Special features

- Flange with internal welded diaphragm
- Mounting to measuring instruments for low pressures, also for differential pressure
- Flushing connections optionally available

Diaphragm seal with flange connection, model 990.12

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 990.12 diaphragm seal is ideally suited for applications with small process connections. Due to the internal diaphragm low measuring ranges can be realised.

The large diameter of the diaphragm effects a low deviation at the measuring instrument when the temperature changes. By means of optionally available flushing connections, the process side of the flange can be cleaned and flushed as required.

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.

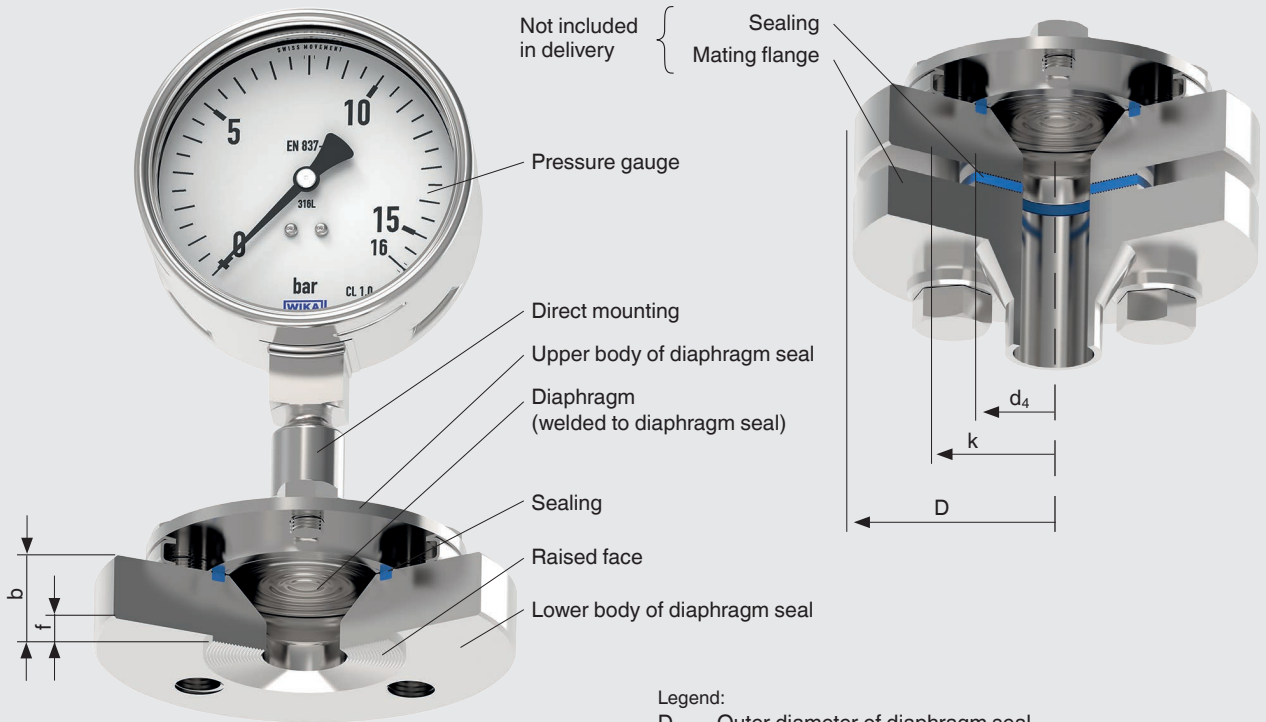
For the material selection WIKA offers a variety of solutions, in which the upper body of the diaphragm seal and the wetted parts can be made of identical or different materials. The wetted parts can, as an alternative, be coated.

Data sheets showing similar products:
Diaphragm seal with threaded connection; model 990.40; see data sheet DS 99.06
Diaphragm seal with flange connection; model 990.16, high-pressure version

Specifications

Model 990.12	Standard	Option
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
Sealing	■ FPM, max. 200 °C [392 °F] ■ PTFE, max. 260 °C [500 °F]	Metal C snap ring, 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
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
Retainer parts	Stainless steel	-
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 990.12 with mounted pressure gauge



Legend:

D	Outer diameter of diaphragm seal
d_4	Sealing face diameter
k	Pitch circle diameter
b	Flange thickness
f	Height of raised face

Following DIN EN 1092-1

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Process connection, flange

Standard	Nominal width	Sealing face	
		Standard	Option
Following DIN EN 1092-1	DN 15	Form B1	Form B2 Groove and tongue Spigot and recess
	DN 20		
	DN 25		
	DN 40		
Following ASME B16.5	½"	RF 125 ... 250 AA	RF 125 ... 500 AA RFSF Flat face Ring groove form RJF
	¾"		
	1"		
	1 ½"		

Further flanges and options on request

Material combinations

Upper body of diaphragm seal	Wetted parts		Maximum permissible process temperature [2] in °C [°F]
	Lower body of diaphragm seal [1]	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)	
	ECTFE coating	ECTFE coating	150 [302]
	PFA (perfluoroalkoxy) coating, FDA	PFA (perfluoroalkoxy) coating, FDA	260 [500]
	PFA (perfluoroalkoxy) coating, antistatic	PFA (perfluoroalkoxy) coating, antistatic	
	Stainless steel 1.4404 (316L)	Gold plating	400 [752]
	Stainless steel 1.4404 (316L)	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 class 2 (3.7035)	Titanium class 2 (3.7035)	150 [302]
	Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	
	Titanium grade 7 (3.7235)	Titanium grade 11 (3.7225)	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 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 lower body of the diaphragm seal is optionally available with up to two flushing connections.
2) 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

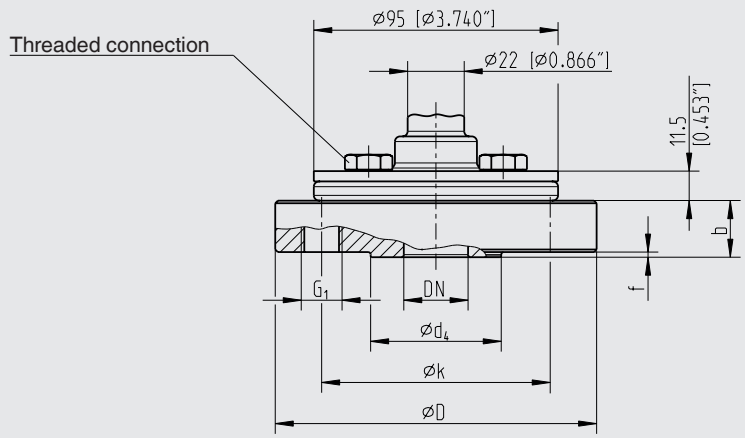
Logo	Description	Country
EAC	**EAC (option)** Pressure equipment directive	Eurasian Economic Community
-	**CRN** Safety (e.g. electr. safety, overpressure, ...)	Canada
-	**MTSCHS (option)** Permission for commissioning	Kazakhstan

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 metallic parts, indication accuracy for diaphragm seal systems)

Approvals and certificates, see website

Dimensions in mm [in]



Threaded connection:
4x to 100 bar
8x to 250 bar
8x with metal sealing

Legend:
Mb Effective diameter of diaphragm
D Outer diameter of diaphragm seal
b Flange thickness
d_4 Sealing face diameter
f Height of raised face
k Pitch circle diameter
G_1 Thread
x Number of screws

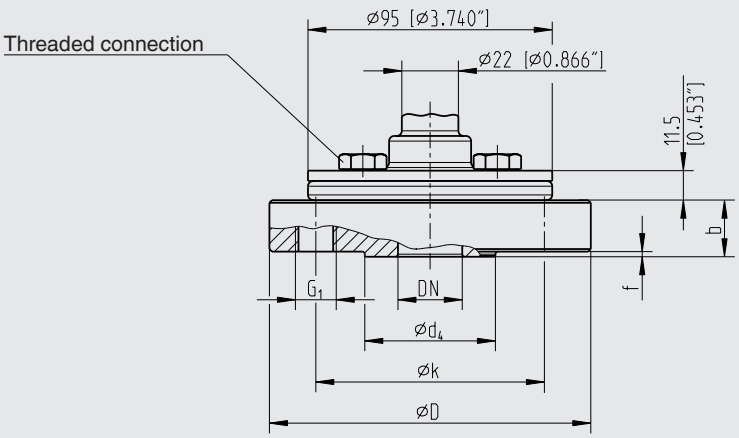
1036874.01

Flange connection following ASME B16.5
Sealing face: RF 125 ... 250 AA

DN	Class	Dimensions in mm [in]						G_1	Weight in kg [lbs]
		Mb	D	b	d_4	f	k		
½"	150	52 [2.047]	95 [3.74]	28 [1.102]	34.9 [1.374]	2 [0.079]	60.3 [2.374]	½" UNC	1.6 [3.5]
	300						66.7 [2.626]		
	600			32 [1.26]		7 [0.276]			1.8 [4]
	1500		120 [4.724]	40 [1.575]			82.6 [3.252]	¾" UNC	3.6 [8]
¾"	150		100 [3.937]	28 [1.102]	42.9 [1.689]	2 [0.079]	69.9 [2.752]	½" UNC	1.7 [3.7]
	300		115 [4.528]	25 [0.984]			82.6 [3.252]	⅝" UNC	1.9 [4.2]
	600			25 [0.894]		7 [0.276]			2.2 [4.8]
	1500		130 [5.118]	32.4 [1.276]			88.9 [3.5]	¾" UNC	3.3 [7.3]
1"	150		110 [4.331]	22 [0.866]	50.8 [2]	2 [0.079]	79.4 [3.13]	½" UNC	1.6 [3.5]
	300		125 [4.921]				88.9 [3.5]	⅝" UNC	2.0 [4.4]
	600			24.5 [0.965]		7 [0.276]			2.3 [5]
	1500		150 [5.905]	36 [1.417]			101.6 [4]	⅞" UNC	4.8 [10.5]

Further dimensions and higher nominal pressures on request

Dimensions in mm [in]



Threaded connection:
4x to 100 bar
8x to 250 bar
8x with metal sealing

1036874.01

Legend:

Mb	Effective diameter of diaphragm
D	Outer diameter of diaphragm seal
b	Flange thickness
d_4	Sealing face diameter
f	Height of raised face
k	Pitch circle diameter
G_1	Thread
x	Number of screws

Flange connection following DIN EN 1092-1
Sealing face: Form B1

DN	PN	Dimensions in mm [in]						G_1	Weight in kg [lbs]
		Mb	D	b	d_4	f	k		
15	10/40	52 [2,047]	95 [3.74]	28 [1.102]	45 [1.772]	2 [0.079]	65 [2.559]	M12	1.6 [3.5]
	63/100		105 [4.134]	25 [0.984]			75 [2.953]	M12	2.0 [4.4]
	160							M12	2.1 [4.6]
	250		130 [5.118]	26 [1.024]			90 [3.543]	M16	3.2 [7]
20	10/40		105 [4.134]	25 [0.984]	58 [2.283]		75 [2.953]	M12	1.9 [4.2]
25	10/40		115 [4.528]	22 [0.866]	68 [2.677]		85 [3.346]	M12	2.1 [4.6]
	63/100		140 [5.512]	24 [0.945]			100 [3.937]	M16	3.2 [7]
	160			28 [1.102]				M16	3.6 [8]
	250		150 [5.905]				105 [4.134]	M20	4.0 [8.8]

Further dimensions and higher nominal pressures on request

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 (plug screw) / Level of cleanliness of wetted parts / Origin of wetted parts / Design per NACE / Origin of wetted parts / 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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