

Diaphragm seal with threaded connection

Threaded design

Model 990.10

WIKA data sheet DS 99.01



for further approvals
see page 3

Applications

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

Special features

- Process connection with thread to provide for direct threaded connection
- Version with internal diaphragm, diaphragm seal parts screwed together
- Large selection of process connections and materials

Description

Diaphragm seals are used to protect the pressure measuring instrument from aggressive, adhesive, crystallising, corrosive, environmentally hazardous or toxic media. A diaphragm made of the appropriate material provides for the separation from the medium to be measured. Thus even the most difficult measuring requirements can be met by combining measuring instruments with diaphragm seals.

A fluid inside the system, which can be chosen to suit the particular application, hydraulically transmits the pressure to the measuring instrument.

Almost limitless application possibilities exist due to the large number of available variants, such as diaphragm seal designs or materials. The type of process connection (flange, threaded and sterile connection) and the basic method of manufacture are important design differentiation criteria.

For further technical information on diaphragm seals and diaphragm seal systems see IN 00.06 "Application, operating principle, designs".

Diaphragm seal with threaded connection, model 990.10



Due to its design, the model 990.10 diaphragm seal with threaded connection can be used universally. A replacement of the lower body is possible (e.g. when changing the process connection) without having to carry out modifications on the diaphragm seal system. Compared to the model 990.40 diaphragm seal, higher pressure ranges can be covered (smaller diameter of the diaphragm).

Assembly of the diaphragm seal and measuring instrument is made via a direct assembly as standard or optionally via a cooling element or a flexible capillary.

For the material selection WIKA offers a variety of solutions, in which the upper body, the diaphragm and the lower body can be made of identical or different materials. The diaphragm and the lower body can also be offered coated or covered with foils.

The model 990.10 WIKA diaphragm seal is particularly well suited for aggressive or hot media. This instrument is mainly geared to applications in the process industry.

Standard version

Nominal pressure

PN 100 or 250

Pressure ranges

max. 0 ... 250 bar (max. 0 ... 100 bar for lower body with tantalum lining or PTFE foil)

Material of upper body

Stainless steel 1.4404 (316L)

Material of wetted parts

Diaphragm: Stainless steel 1.4435 (316L)

Lower body: Stainless steel 1.4404 (316L)

Lower body (process connection)

Threaded connection G 1/2, male (following BSPP)

Sealing

PTFE up to 260 °C

Retainer parts

Retainer flange (stainless steel), hexagon bolts and nuts:
Stainless steel, up to 260 °C

Level of cleanliness of wetted parts

Oil and grease free per ASTM G93-03 level E (WIKA standard) and ISO 15001 (< 550 mg/m²)

Connection to the measuring instrument

Axial weld-in connection

Options

Process connection

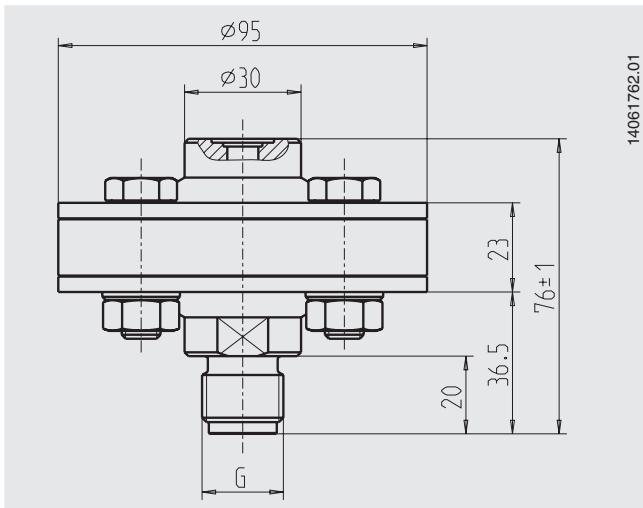
Standard	Threaded connection ¹⁾
following BSPP	G 1/4, G 3/8, G 1/2, G 3/4, G 1, G 1 1/2
following ANSI B 1.20.1	1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT, 1 NPT, 1 1/2 NPT
following DIN 13	M20 x 1.5
following ISO 7-1	R 1/4, R 3/8, R 1/2, R 3/4

1) Male and female threads available

Other connections on request

- Lower body (process connection)
 - Special materials, solid, lined or coated
 - Lower body with 1 or 2 flushing connection(s) 1/4 NPT, 1/8 NPT, G 1/8
 - Locking screw on the flushing connection
- Sealing
 - Metal C spring, silver-plated stainless steel, max. 400 °C
 - Metal C spring, Inconel, max. 400 °C
- Retainer parts
 - 8 hexagon bolts and nuts:
 - Steel, highly heat-resistant, up to 400 °C
- Connection to the measuring instrument
 - G 1/2, G 1/4, 1/2 NPT or 1/4 NPT (female)
- Design per NACE (MR 0175 or MR 0103)
- Origin of wetted parts (EU, CH, USA)

Dimensions in mm



PN in bar	Number of screws	Effective diameter of diaphragm	Weight in kg
100	4	52	1.30
250	8	52	1.50

Additional information for diaphragm seal systems

See Technical information IN 00.06 "Diaphragm seals - Diaphragm seal systems, application, operating principle, designs"

- Pressure measuring instrument model
- Connection to the measuring instrument: Direct assembly (calibrated in vertical mounting position, process connection facing downwards)
- Process temperature
- Ambient temperature
- System fill fluid

Options for diaphragm seal systems

- Connection to the measuring instrument via cooling element or capillary
- Vacuum service (suitable for vacuum operation)
- Higher level of cleanliness of wetted parts
 - 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)
- Height difference between measuring point and pressure measuring instrument with capillary in metre increments (max. 7 m with silicone oils)
- Diaphragm seals for mounting to zone 0
 - with flame arrester
 - with flame arrester and PTB certificate
- Mounting bracket (required for connection to the measuring instrument via capillary)
 - 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

Approvals

- GOST-R, import certificate, Russia
- CRN, safety (e.g. electr. safety, overpressure, ...), Canada

Certificates ¹⁾

- 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)

1) Option

Approvals and certificates, see website

Materials

Upper body	Wetted part Diaphragm	Lower body	Process temperature limit in °C
Standard			
Stainless steel 1.4404 (316L)	Stainless steel 1.4435 (316L)	Stainless steel 1.4404 (316L)	400
Option			
Stainless steel 1.4404 (316L)	Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	400
	Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	400
	Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	400
	ECTFE coating	ECTFE coating	150
	PFA coating	PFA coating	260
	Gold plating	Stainless steel 1.4404 (316L)	400
	Wikaramic®	Stainless steel 1.4404 (316L)	400
	Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	300
	Superduplex (1.4410)	Superduplex (1.4410)	300
	Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	260
	Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	400
	Inconel 600 (2.4816)	Inconel 600 (2.4816)	400
	Inconel 625 (2.4856)	Inconel 625 (2.4856)	400
	Incoloy 825 (2.4558)	Incoloy 825 (2.4558)	400
Monel 400 (2.4360)	Monel 400 (2.4360)	400	
Nickel	Nickel	260	

Other materials

Upper body	Wetted part Diaphragm	Lower body	Process temperature limit in °C
Option			
Stainless steel 1.4404 (316L)	Titanium (3.7035)	Titanium (3.7035)	150
	Titanium (3.7235)	Titanium (3.7235)	150
	Tantalum	Stainless steel 1.4404 (316L) with tantalum lining	300
Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	400
Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	400
Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	400
Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	400
Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	300
Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	400
Incoloy 825 (2.4558)	Incoloy 825 (2.4558)	Incoloy 825 (2.4558)	400
Titanium (3.7035)	Titanium (3.7035)	Titanium (3.7035)	400

Further material combinations and process temperatures on request

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, threaded connection, nominal pressure) / Material (upper body, diaphragm, lower body) / Sealing / Retainer parts / Flushing connection / Locking screw on the flushing connection / Connection to the measuring instrument / Level of cleanliness of wetted parts / Design per NACE / Origin of wetted parts / Certificates

Diaphragm seal system:

Diaphragm seal model / Process connection (standard, threaded connection, nominal pressure) / Material (upper body, diaphragm, lower body) / Sealing / Retainer parts / Flushing connection / Locking screw on the flushing connection / Pressure measuring instrument model (per data sheet) / Assembly (direct assembly, via cooling element or 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 / Design per NACE / Diaphragm seal for mounting to zone 0 / Mounting bracket

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