

Diaphragm seal with hygienic process connection With clamp connection and extension (tank spud) Model 990.42

WIKA data sheet DS 99.42



Applications

- Sanitary applications
- Gases, compressed air, vapour; liquid, pasty, powdery and crystallising media
- Ultra-pure steam systems
- Mounting to pipelines and vessels
- Pressure/vacuum monitoring, e.g. vacuum conveyors, pump monitoring

Special features

- Quick cleaning, without residue
- Clamp connection easy to open for cleaning and seal replacement
- Suitable for SIP and CIP
- 3-A compliant



Diaphragm seal with sterile connection, model 990.42

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.

Due to their hygienic process connection, this model is particularly well suited for food production, pharmaceutical and biotechnology applications. The diaphragm seal can withstand the cleaning vapour temperatures occurring in the SIP processes and thus ensure a sterile connection between the medium to be measured and the diaphragm seal.

The model 990.42 with extended diaphragm is ideally suited for installation on pipelines and vessels.

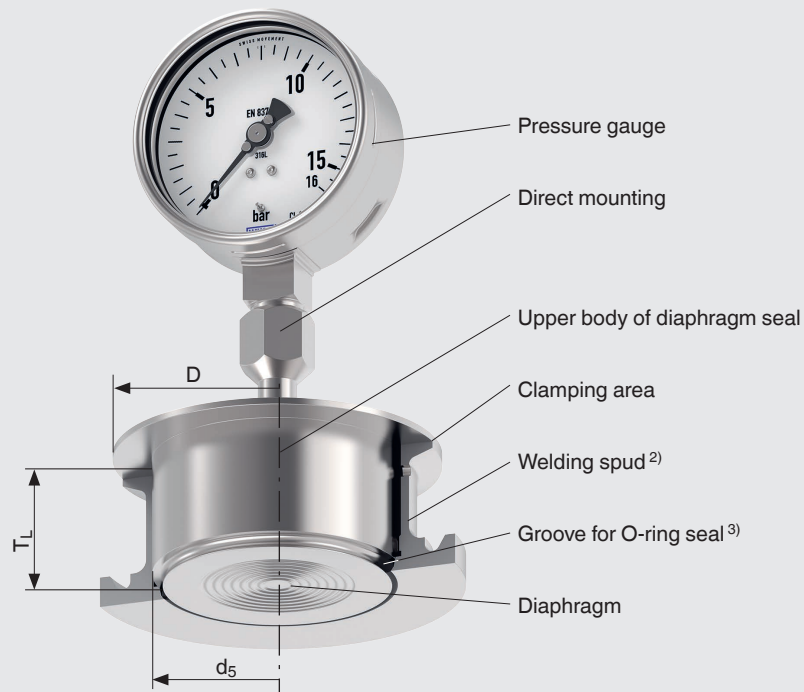
Mounting of the diaphragm seal to the measuring instrument may be made via a direct connection, for high temperatures via a cooling element or a flexible capillary.

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

Installation example

Model 990.42 with directly mounted pressure gauge

Diaphragm seal system in mounting situation ¹⁾



Legend:

- D Outer diameter of diaphragm seal
- d₅ Diameter of extension
- T_L Length of extension

- 1) Illustration example of the mounting situation. The operator is responsible for ensuring that the installation complies with the standards.
- 2) Welding spud is not included in delivery
- 3) O-ring from EPDM is included in delivery

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 heat sink or via a flexible capillary.

Direct mounting via axial connection adapter (example)



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 00.41	Specifications of oil- and grease-free instruments

→ See download on the WIKA website

Specifications

Basic information for diaphragm seal systems	
Version	Diaphragm seal with hygienic process connection, with extended diaphragm
Pressure range	0 ... 0.6 bar to 0 ... 40 bar [0 ... 8.7 psi to 0 ... 580 psi] or all other equivalent vacuum or combined pressure and vacuum ranges
Connection to the instrument	<ul style="list-style-type: none"> ■ 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 ¹⁾	<ul style="list-style-type: none"> ■ Direct mounting ■ Capillary ■ Heat sink

1) For possible mounting type, see page 2

Process connection	
Standard	Clamp connection
Size	<ul style="list-style-type: none"> ■ 2 ½" ■ 4"
Wetted parts	Diaphragm and upper body of diaphragm seal → See tables below for material selection
Origin of wetted parts	<ul style="list-style-type: none"> ■ International ■ Exclusively from EU, CH, GB, US, CA
Level of cleanliness of wetted parts ¹⁾	<ul style="list-style-type: none"> ■ 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)
Surface texture of wetted parts	<ul style="list-style-type: none"> ■ Ra ≤ 0.76 µm [30 µin] per ASME BPE SF3 ■ Ra ≤ 0.38 µm [15 µin] per ASME BPE SF4, electropolished Wetted weld seams meet the requirements of ASME BPE 2022 chapter 6 part MJ

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

→ Other process connections on request


Material of wetted parts	Maximum permissible temperature ¹⁾ in °C [°F]
Diaphragm and upper body	
Stainless steel 316L (1.4404)	400 [752]
Hastelloy C276 (2.4819)	400 [752]

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.

Approvals

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

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)

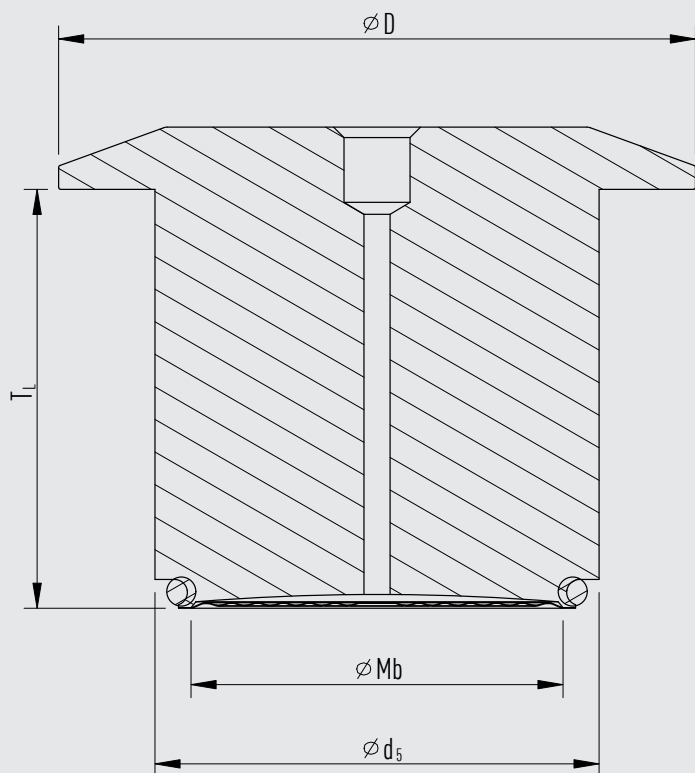
Certificates	
Certificates	<ul style="list-style-type: none">■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy for diaphragm seal systems)■ 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy for diaphragm seal systems)

→ For approvals and certificates, see website

Dimensions in mm [in]

Process connection: clamp connection

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Legend:

- Mb Effective diameter of diaphragm
- D Outer diameter of diaphragm seal
- d_5 Diameter of extension
- T_L Length of extension

DN	PN	Dimensions in mm [in]				Weight in kg [lb]
		Mb	D	d_5	T_L	
2 ½"	40	45 [1.8]	77.4 [3]	54 [2.1]	50.8 [2]	1.1 [2.5]
2 ½"	40	45 [1.8]	77.4 [3]	54 [2.1]	152.4 [6]	2 [4.5]
4"	40	62.9 [2.5]	132.6 [5.2]	100.8 [4]	50.8 [2]	4.3 [9.6]
4"	40	62.9 [2.5]	132.6 [5.2]	100.8 [4]	152.4 [6]	7.2 [15.8]

Accessories and spare parts

Model	Description	Order number
O-ring	DN 2 ½", EPDM	81201243
	DN 4", EPDM	81200929
Welding spud with clamp connection	DN 2 ½", length of extension 2", 316L	52973227
	DN 2 ½", length of extension 6", 316L	52961241
	DN 4", length of extension 2", 316L	81202007
	DN 4", length of extension 6", 316L	81202009
	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 (size, nominal pressure, length of extension) / Material of wetted parts / Level of cleanliness of wetted parts / Origin of wetted parts / Surface texture 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) / Material of 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 / Surface texture of wetted parts / Diaphragm seal for mounting to zone 0 / Instrument mounting bracket / Process connection (size, nominal pressure, length of extension)

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