

Diaphragm seal with sterile connection For homogeniser machines Model 990.30

WIKA data sheet DS 99.33



for further approvals
see page 6

Applications

- Homogeniser machines for milk, beverages, cosmetics and pharmaceutical preparations
- Machines for the production of emulsions

Special features

- Process connection with flush, all welded diaphragm, with or without retainer flange
- For highest dynamic pressures $\leq 2,500$ bar
- System fill fluids FDA and USP conform
- Robust, all welded design



Diaphragm seal model 990.30 with directly mounted Bourdon tube pressure gauge with electrical output signal model PGT23.100

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 990.30 diaphragm seal is a special development for homogeniser machines in sanitary applications. This diaphragm seal is available with process connections in various designs and is thus suitable for all common measuring points. The diaphragm seal systems ensure reliable measurements, even with high loading through vibrations and pressure spikes.

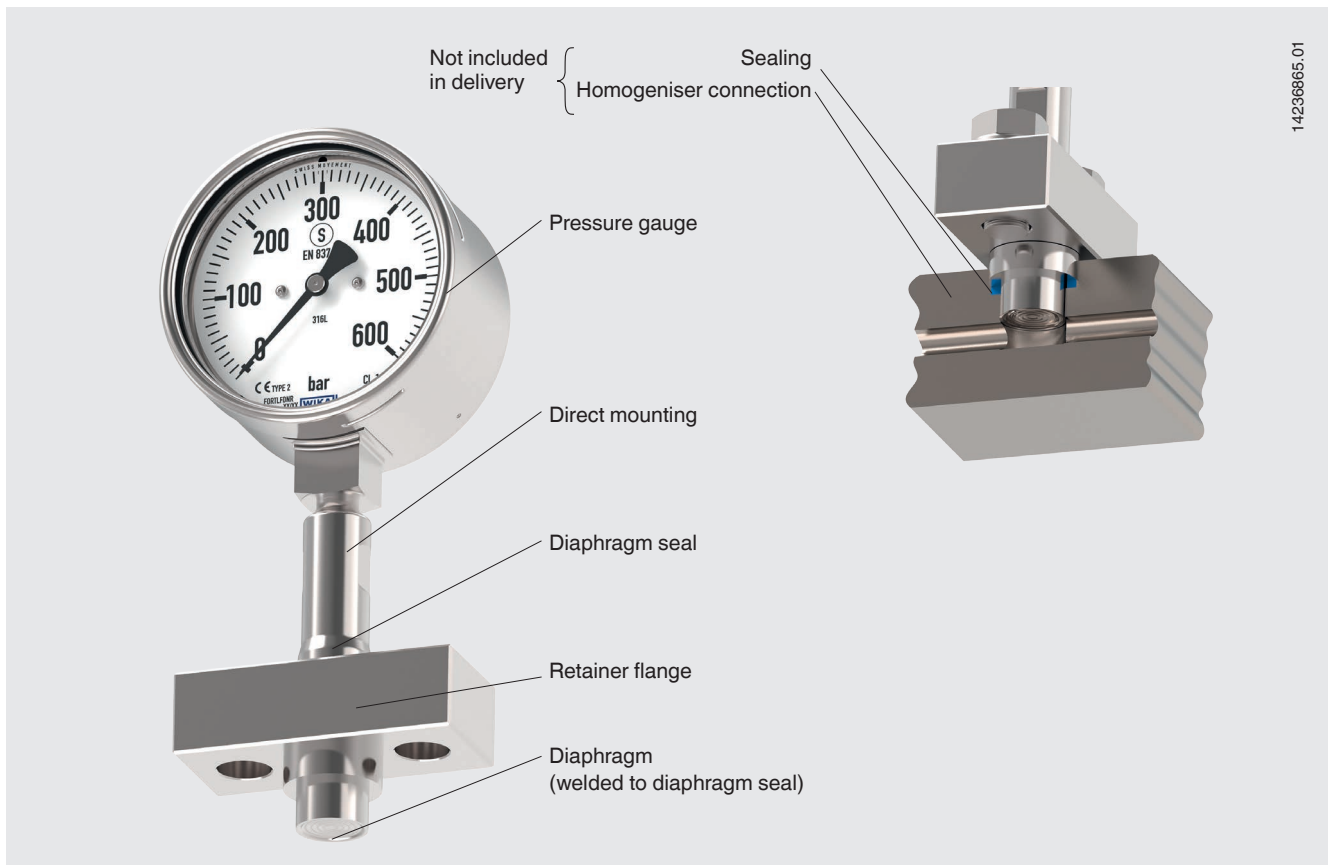
Mounting of the diaphragm seal to the measuring instrument may be made via a direct connection or a flexible capillary.

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.

Specifications

| Model 990.30 | Standard | Option | |
|---|--|---|-----------------------------------|
| Measuring ranges in bar (psi) | 0 ... 160 bar (2,320 psi) 0 ... 250 bar (3,626 psi) 0 ... 400 bar (5,800 psi) 0 ... 600 bar (8,700 psi) | 0 ... 1,000 bar (14,500 psi) 0 ... 1,600 bar (23,200 psi) 0 ... 2,500 bar (36,260 psi) | Other measuring ranges on request |
| Measuring ranges in psi | 0 ... 2,000 psi 0 ... 4,000 psi 0 ... 6,000 psi | 0 ... 10,000 psi 0 ... 15,000 psi 0 ... 20,000 psi | |
| Level of cleanliness of wetted parts | Oil and grease free per ASTM G93-03 level F, WIKA standard (< 1,000 mg/m ²) | <ul style="list-style-type: none"> ■ 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) | |
| Origin of wetted parts | International | EU, CH, USA | |
| Type of mounting | Direct mounting | Capillary | |
| System fill fluid | KN 92 | KN 7 | |
| Surface roughness | Ra ≤ 0.76 µm | Ra ≤ 0.38 µm (only with 1.4435) | |
| Permissible temperature range | | - | |
| Medium | 10 ... 100 °C (50 ... 212 °F) | | |
| Ambient | 10 ... 40 °C (50 ... 104 °F) | | |
| CIP, SIP | ≤ 130 °C (≤ 266 °F) | | |
| Storage | 10 ... 60 °C (50 ... 140 °F) | | |

Example: Diaphragm seal model 990.30 with mounted pressure gauge and retainer flange



Possible measuring instruments for a diaphragm seal system

| Model | | | Ex version | Data sheet |
|------------|---|---|---|------------|
| 232.50.100 | Bourdon tube pressure gauge |  | Option: Ignition protection type "c", constructive safety | PM 02.02 |
| 232.30.100 | Bourdon tube pressure gauge, safety version |  | Option: Ignition protection type "c", constructive safety | PM 02.04 |
| PGT23.100 | Bourdon tube pressure gauge with electrical output signal |  | Option: Intrinsically safe Ex i | PV 12.04 |
| S-20 | Pressure sensor for superior industrial applications |  | - | PE 81.61 |
| IS-3 | Pressure transmitter intrinsically safe Ex i |  | Standard: Intrinsically safe Ex i | PE 81.58 |
| PSD-4 | Electronic pressure switch with display |  | - | PE 81.86 |
| UPT-20 | Process transmitter |  | Option: Intrinsically safe Ex i | PE 86.05 |
| CPG1500 | Precision digital pressure gauge |  | Standard: Intrinsically safe Ex i | CT 10.51 |

Material combinations

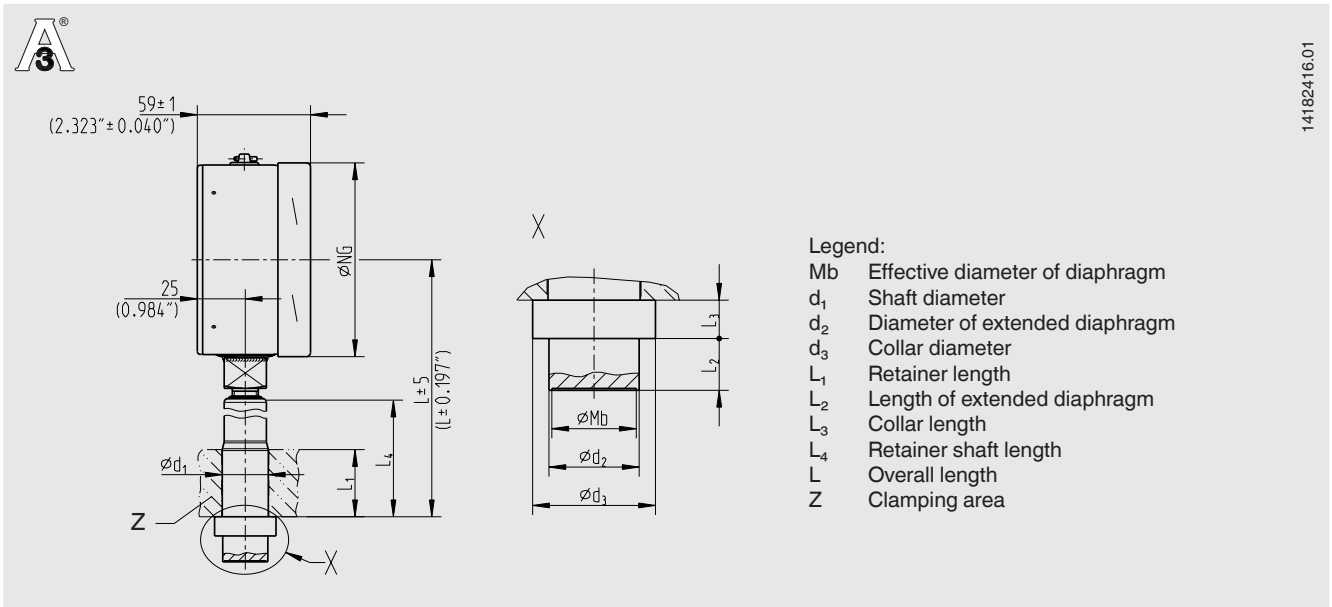
| Maximum permissible process pressure | Upper body of diaphragm seal | Wetted parts (diaphragm) | Maximum permissible process temperature ¹⁾ in °C (°F) |
|--------------------------------------|-------------------------------|---|--|
| ≤ PN 600 | Stainless steel 1.4435 (316L) | Stainless steel 1.4435 (316L), standard version | 400 (752) |
| > PN 600 | Stainless steel 1.4542 (316L) | Stainless steel 1.4571 (316Ti) | |

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

Process connection ≤ PN 600

(Example with mounted Bourdon tube pressure gauge model 233.30.100)



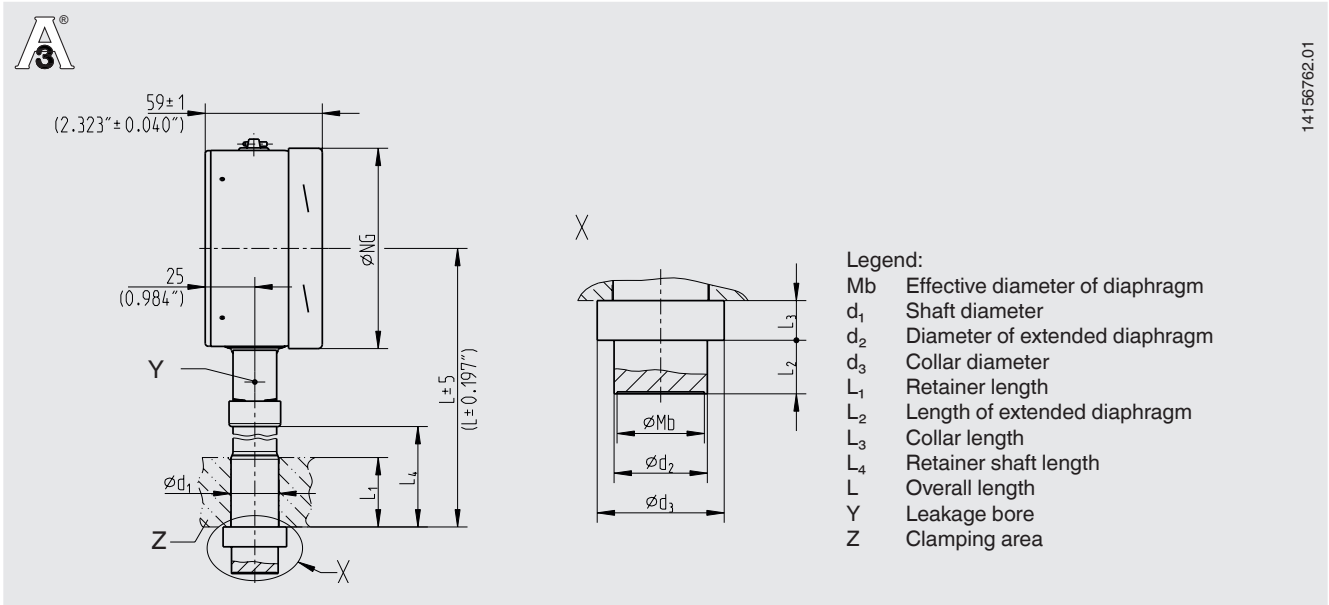
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| Dimensions in mm (inch) | | | | | | | | |
|-----------------------------|---------------------------|------------------------------|--------------------------------|----------------|------------------------------|----------------------------|----------------|-------------|
| Mb | d ₁ | d ₂ | d ₃ | L ₁ | L ₂ | L ₃ | L ₄ | L |
| 22 (0.866) | 24 / 31 (0.945 / 1.22) | 23.8 / 26 (0.937 / 1.024) | 34.9 / 37.5 (1.374 / 1.476) | 30 (1.18) | 13.5 / 10 (0.531 / 0.394) | 10 / 10 (0.394 / 0.394) | 77 (3.031) | 150 (5.905) |
| | | | | 50 (1.968) | | | 97 (3.819) | 170 (6.693) |
| | | | | 80 (3.15) | | | 127 (5) | 200 (7.874) |
| | | | | 100 (3.937) | | | 147 (5.787) | 220 (8.661) |

| Dimensions in mm (inch) | | | | | | | | |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Mb | d ₁ | d ₂ | d ₃ | L ₁ | L ₂ | L ₃ | L ₄ | L |
| 22 (0.866) | 22 (0.866) | 23.8 (0.937) | 34.9 (1.374) | 30 (1.18) | 13.5 (0.531) | 10 (0.394) | 77 (3.031) | 150 (5.905) |
| | | | | 50 (1.968) | | | 97 (3.819) | 170 (6.693) |
| | | | | 80 (3.15) | | | 127 (5) | 200 (7.874) |
| | | | | 100 (3.937) | | | 147 (5.787) | 220 (8.661) |

Other dimensions on request

Process connection ≤ PN 1600 and ≤ PN 2500
 (Example with mounted Bourdon tube pressure gauge model 233.30.100)



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Process connection ≤ PN 1600


| Dimensions in mm (inch) | | | | | | | | |
|-----------------------------|---------------------------|------------------------------|--------------------------------|----------------|------------------------------|----------------------------|----------------|-------------|
| Mb | d ₁ | d ₂ | d ₃ | L ₁ | L ₂ | L ₃ | L ₄ | L |
| 22 (0.866) | 24 / 31 (0.945 / 1.22) | 23.8 / 26 (0.937 / 1.024) | 34.9 / 37.5 (1.374 / 1.476) | 30 (1.18) | 13.5 / 10 (0.531 / 0.394) | 10 / 10 (0.394 / 0.394) | 60.5 (2.382) | 150 (5.905) |
| | | | | 50 (1.968) | | | 80.5 (3.169) | 170 (6.693) |
| | | | | 80 (3.15) | | | 110.5 (4.35) | 200 (7.874) |
| | | | | 100 (3.937) | | | 130.5 (5.138) | 220 (8.661) |

Process connection ≤ PN 2500

| Dimensions in mm (inch) | | | | | | | | |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Mb | d ₁ | d ₂ | d ₃ | L ₁ | L ₂ | L ₃ | L ₄ | L |
| 22 (0.866) | 22 (0.866) | 23.5 (0.925) | 32 (1.26) | 30 (1.18) | 13 (0.512) | 1 (0.394) | 60.5 (2.382) | 150 (5.905) |
| | | | | 50 (1.968) | | | 80.5 (3.169) | 170 (6.693) |
| | | | | 80 (3.15) | | | 110.5 (4.35) | 200 (7.874) |
| | | | | 100 (3.937) | | | 130.5 (5.138) | 220 (8.661) |

Other dimensions on request

Approvals

| Logo | Description | Country |
|---|--|------------|
|  | 3-A Sanitary Standard This instrument is 3-A marked, based on a third party verification for conformance to the 3-A standard. Only in combination with COP (cleaning out of place). | USA |
| - | CRN Safety (e.g. electr. safety, overpressure, ...) | Canada |
| - | MChS (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)

Further approvals and certificates on request.

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (nominal width, nominal pressure rating, shaft diameter, shaft length, diameter of sealing collar, length of sealing collar, diameter of extended diaphragm, length of extended diaphragm) / Materials (extended diaphragm, diaphragm) / Level of cleanliness of wetted parts / Origin of wetted parts / Connection to the measuring instrument / Certificates / Retainer parts (flange)

Diaphragm seal system:

Diaphragm seal model / Pressure measuring instrument model (per data sheet) / Mounting (direct mounting, cooling element, capillary) / Materials (upper body, diaphragm) / Min. and max. process temperature / Min. and max. ambient temperature / System fill fluid / Certificates / Height difference / Level of cleanliness of wetted parts / Origin of wetted parts / Instrument mounting bracket / Process connection (nominal width, nominal pressure) / Retainer parts (flange)

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