

Product Information EM **PHARMA**

Pressure Gauge EM

Application

- Hygienic pressure measurement in pharmaceutical and biotech applications in the materials 316L, 1.4435 and C22 Hastelloy

Application examples

- Local pressure display without power supply
- For critical applications with CIP/SIP processes or autoclaves

Hygienic design/Process connection

- Direct connection for Tri-Clamp, CPM and Varivent
- Sensor materials and actuating fillings are FDA conform
- IP 66, housing for optimized cleanability

Features

- CIP-/SIP-cleanable up to 149 °C (300 °F) continuous
- Surface quality $R_a \leq 0.2 \mu m$
- Designed and tested in accordance with ASME B40.100, CSA B51-03 and CRN number CSA0F9754.5C

Options

- High temperature version up to 165 °C (330 °F) with steam stabilized diaphragm
- Case filling with glycerine for damping in case of vibration
- Hydromechanical damping for strong pressure surges
- Actuating fill with Neobee M-20
- Adjustment of zero and span
- Autoclavable design available
- Recessed diaphragm
- UV stabilizled lens



Table measurement range

| PSI | BAR | Dual scale range |
|-----|---------------|-------------------------------------|
| 029 | 30"Hg/0...30 | 055 -1...2 |
| 031 | 30"Hg/0...60 | 217 -1...3 |
| 032 | 30"Hg/0...100 | 056 -1...4 |
| 033 | 30"Hg/0...160 | 356 -1...5 |
| 034 | 30"Hg/0...300 | 475 -1...6 |
| 066 | 0...30 | 497 -1...9 |
| 069 | 0...60 | 057 0...2 |
| 071 | 0...100 | 058 0...2.5 |
| 074 | 0...160 | 192 0...4 |
| 077 | 0...300 | 060 0...6 |
| 082 | 0...600 | 061 0...10 |
| | | 064 0...16 |
| | | 067 0...40 |
| | | 241 -0.1...0.2 MPa/bar |
| | | 242 -0.1...0.4 MPa/bar |
| | | 367 -0.1...0.7 MPa/bar |
| | | 243 0...0.25 MPa/bar |
| | | 244 0...0.4 MPa/bar |
| | | 245 0...0.6 MPa/bar |
| | | 246 0...1.0 MPa/bar |
| | | 857 0...2.0 MPa/bar |
| | | 929 30"Hg/0...30 psi / -1...2 bar |
| | | 931 30"Hg/0...60 psi / -1...4 bar |
| | | 932 30"Hg/0...100 psi / -1...7 bar |
| | | 933 30"Hg/0...160 psi / -1...11 bar |
| | | 934 30"Hg/0...300 psi / -1...20 bar |
| | | 966 0...30 psi / 0...2 bar |
| | | 969 0...60 psi / 0...4 bar |
| | | 971 0...100 psi / 0...7 bar |
| | | 974 0...160 psi / 0...11 bar |
| | | 977 0...300 psi / 0...20 bar |
| | | 982 0...600 psi / 0...40 bar |

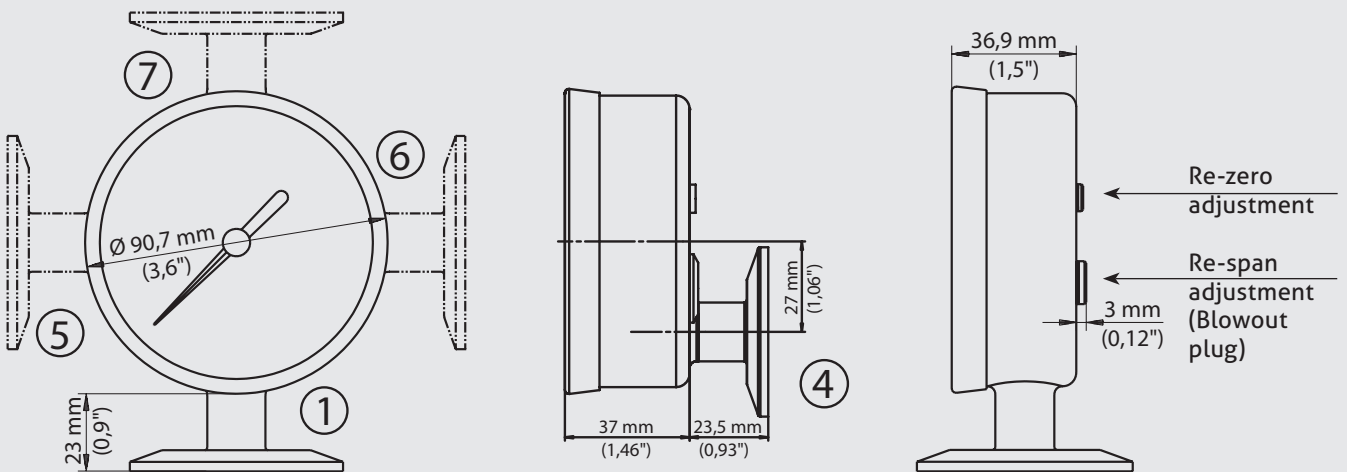
| Specification | | |
|------------------------------|---|---|
| Material | diaphragm, fitting bourdon tube movement mechanism case/stem lens | AISI 316L, 1.4435 or C22 Hastelloy, with 3.1 material certificate bronze brass 1.4301 (AISI 304), polished polysulfone (for temperatures up to 165 °C (330 °F)) |
| Surface roughness | diaphragm, fitting | electro polished, $R_a \leq 0.2 \mu\text{m}$ (8 μin) |
| Actuating fill | | mineral oil optional: Neobee M-20 |
| Case fill | optional | Glycerine (USP Food Grade) |
| FDA approval number | mineral oil Neobee M-20 | 21 CFR 172.878, 21 CFR 178.3620, 21 CFR 573.680, 21 CFR 182.1320 21 CFR 172.856, 21 CFR 174.5 |
| Protection class | | IP 66 / NEMA 4X |
| Damping (option) | glycerine case filling hydromechanical | 25...50 % of pressure variation 50...80 % of pressure variation |
| Over-range capability | | at least 25 % of full scale |
| Accuracy | calibrated accuracy repeatability linearity hysteresis | ± 0.75 % of full scale (from 10...90 % of range) ± 0.25 % of full scale ± 0.25 % of full scale ± 0.25 % of full scale |
| Stability | | Within specified accuracy of 6 months under normal operating conditions |
| Temperature range | process CIP/SIP autoclavability ambient storage | -29...149 °C (-20...300 °F) optional: up to 165 °C (330 °F) 149 °C (300 °F) continuous 149 °C (300 °F) / 60 minutes max. (only for vented case) 4...49 °C (40...120 °F) slower reaction at deep temperatures unvented case: -30...91 °C (-22...95 °F) vented case: -30...121 °C (-22...250 °F) |
| Temperature drift | from 10...90 % of range (process and ambient) | $< \pm 0.01$ %/K of full scale |
| Adjustment | zero span (option) | ± 5 % of measurement range (non active with span) ± 5 % of measurement range (accessible from outside with separate tool) |
| Weight | glycerine case filling Tri-Clamp 1½" Tri-Clamp 2" Varivent V40/50 | 130 g (additional to sensor weight) 450 g 520 g 980 g |

Conditions for a measuring point according to 3-A Sanitary Standard 74-06



- The sensor EM with process connection Tri-Clamp, CPM and Varivent is conform to the 3-A Sanitary Standard.
- The sensor is designed for CIP-/SIP cleaning. Maximum 149 °C (300 °F) continuous.
- The mounting position, self-draining properties and position of the leakage hole must be in accordance with the current 3-A Sanitary Standard.

Mount options



Overview of further process connections

| Type | Figure | Dimensional drawing | Available connections |
|--------------------|--------|---------------------|---------------------------|
| Tri-Clamp | | | Tri-Clamp 1½" d = 50.5 mm |
| | | | Tri-Clamp 2" d = 64.0 mm |
| Tri-Clamp recessed | | | Tri-Clamp 1½" d = 50.5 mm |
| | | | Tri-Clamp 2" d = 64.0 mm |
| Varivent | | | DN 40/50 d = 68.0 mm |
| CPM | | | CPM d = 38.1 mm |

Accessories

4523800000 Tool for Re-span adjustment

TAG Metal plate with inscription according to customer requirements, material 1.4301 (AISI 304)

Pointer stop



Recessed diaphragm



Order Code

EM (diameter housing 90 mm, incl. material certificate and calibration certificate)

Measurement range

XXX see table on page 1

01 Fixed character

Process connection (Ⓐ: 3-A approval)

- 004 (Tri-Clamp 1½") Ⓐ
- 162 (Tri-Clamp 1½", with recessed diaphragm)
- 005 (Tri-Clamp 2") Ⓐ
- 177 (Tri-Clamp 2", with recessed diaphragm)
- 123 (CPM fitting) Ⓐ
- 099 (Varivent type N for DN40/50) Ⓐ

Mount/connection

- 1 (bottom)
- 4 (back)
- 5 (left)
- 6 (right)
- 7 (top)

Damping

- 0 (standard damping)
- 1 (glycerine filled case for damping)
- 2 (hydromechanical damping)
- 3 (vented case, autoclavable, standard damping)
- 4 (vented case, autoclavable, hydromechanical damping)

Calibration adjustment

- 1 (with Re-Zero)
- 2 (with Re-Zero and Re-Span)
- 3 (with Re-Zero, with pointer stop)
- 4 (with Re-Zero and Re-Span, with pointer stop)

Actuating fill

- 1 (mineral oil)
- 5 (Neobee M-20)

Wetted materials

- A (AISI 316L diaphragm and process connection)
- B (C22 Hastelloy diaphragm)
- C (C22 Hastelloy diaphragm and process connection (only for Tri-Clamp))
- D (1.4435 diaphragm (only for Tri-Clamp))
- E (1.4435 diaphragm and process connection (only for Tri-Clamp))

Temperature

- 0 (standard)
- 1 (high temperature up to 165 °C (330 °F) with steam stabilized diaphragm (only for Tri-Clamp))

Lens

- 0 (standard)
- 1 (UV stabilized lens (not suitable for autoclave))

Surface preparation

- 0 (standard)
- 1 (clean for oxygen service)

0 Fixed character

EM 055 01 004 1 1 4 2 A 0 0 0 0