

Product Information EM **PHARMA**

Pressure Gauge EM

Application

- Hygienic pressure measurement in pharmaceutical and biotech applications

Application examples

- Local pressure display without power supply
- SIP and autoclave application

Hygienic design/Process connection

- Direct connection for Tri-Clamp, CPM and Varivent
- CIP-/SIP-cleanable up to 149 °C (300 °F) continuous
- Sensor materials and actuating fill are FDA conform
- IP 66, housing for optimized cleanability

Features

- Works up to 149 °C (300 °F)
- 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

- Case filling with glycerine for damping
- Hydromechanical damping for strong pressure surges
- Actuating fill with Neobee M20
- Adjustment of zero and span
- Autoclaveable design
- Recessed diaphragm
- UV stabilized lens
- High temperature version up to 165 °C (330 °F) with steam stabilized diaphragm
- Hastelloy C22 diaphragm

Compliance



EM

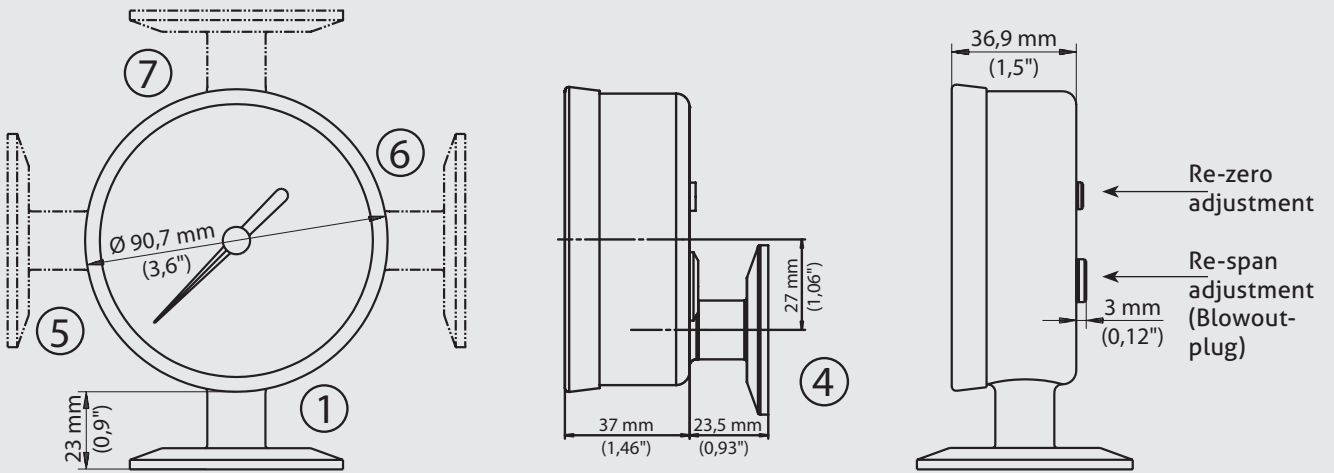


Table measurement range

PSI		BAR		Dual Scale Range	
029	30"Hg/0...30	055	-1...2	241	-0.1...0.2 MPa/BAR
031	30"Hg/0...60	217	-1...3	242	-0.1...0.4 MPa/BAR
032	30"Hg/0...100	056	-1...4	367	-0.1...0.7 MPa/BAR
033	30"Hg/0...160	356	-1...5	243	0...0.25 MPa/BAR
034	30"Hg/0...300	475	-1...6	244	0...0.4 MPa/BAR
066	0...30	497	-1...9	245	0...0.6 MPa/BAR
069	0...60	057	0...2	246	0...1.0 MPa/BAR
071	0...100	058	0...2.5	857	0...2.0 MPa/BAR
074	0...160	192	0...4	929	30"Hg/0...30 PSI / -1...2 BAR
077	0...300	060	0...6	931	30"Hg/0...60 PSI / -1...4 BAR
082	0...600	061	0...10	932	30"Hg/0...100 PSI / -1...7 BAR
		064	0...16	933	30"Hg/0...160 PSI / -1...11 BAR
		067	0...40	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 lense	316L, electro polished, with 3.1 material certificate 316L, polished, with 3.1 material certificate bronze brass 304, polished polysulfone (for temperatures up to 163 °C/325 °F)
Surface roughness	diaphragm	$R_a \leq 0.2 \mu\text{m}$ (= 0.2 microns = 8 microinches)
Actuating fill		paraffin oil/medical white oil Neobee M20
Case fill	optional	Glycerine (USP Food Grade)
FDA approval number	paraffin oil Neobee M20	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
Dampening (option)	glycerine hydro-mechanical	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 ambient storage	-29...149 °C (-20...300 °F) option to 165 °C (330 °F) 120 °C (250 °F) continuous 149 °C (300 °F) continuous 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 effect	from 10...90 % of range (process or ambient)	$< \pm 0.01$ %/K of full scale
Autoclaveable	unfilled case only	149 °C (300 °F) for 60 minutes max.
Adjustment	zero (option) span (option)	± 5 % of span (non active with span, located on back of case) ± 5 % of span (with external tool)
Weight	glycerine case filling Tri-Clamp TC1 Tri-Clamp TC2 Varivent V40/50	130 g (additional to sensor weight) 450 g 520 g 980 g

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 mm
Tri-Clamp recessed			Tri-Clamp 1½"	d = 50.5 mm
			Tri-Clamp 2"	d = 64 mm
Varivent			DN 40/50	d = 68 mm
CPM				

Accessories

Description	Order Number
Tool for Re-span adjustment	4523800000



Recessed diaphragm



Order Code

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

Measurement range

XXX see table on page 1

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Process connection/fitting

- 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 / without)
- 1 (glycerine filled case OF)
- 2 (hydro-mechanical damping MD)
- 3 (vented case/standard dampening)
- 4 (vented case/mechnaical dampeing)

Calibration adjustment

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

Capillary filling

- 1 (paraffin oil/medical white oil)
- 5 (Neobee-M20)

Materials of construction

- A (standard)
- B (C22 (Hastelloy) diaphragm)
- C (C22 all wetted surfaces)
- L (standard with custom marking)
- M (C22 diaphragm with custom marking)
- N (C22 all wetted surfaces with custom marking)

Temperature

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

Lens

- 0 (standard)
- 1 (UV stabilized)

Surface preparation

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

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