Bourdon tube pressure gauge, copper alloy
Liquid filling, plastic case
Model 113.13

for further approvals, see page 6

Applications

- For measuring points with high dynamic pressure loads or vibrations
- For gaseous and liquid media that are not highly viscous or crystallising and will not attack copper alloy parts
- Hydraulics
- Compressors

Special features

- Vibration and shock resistance
- Design per EN 837-1 or ASME B40.100
- Nominal size 40 [1 ½"], 50 [2"], 63 [2 ½"]
- Scale ranges to 0 ... 400 bar [0 ... 6,000 psi]

Model 113.13, lower mount (radial)

Description

The model 113.13 is a liquid-filled pressure gauge with plastic case. The liquid filling causes damping of the internal components and contributes to an increased vibration and shock resistance. Thus the pressure gauges are suitable for installation in machines and plants where strong vibrations and shocks are expected.

These pressure gauges are based on the proven Bourdon tube measuring system. The deflection of the Bourdon tube is transmitted to a movement and indicated.

The plastic case and the window are welded together and an O-ring seals the process connection at the case. In this way the instrument fulfils the high requirements for IP65 ingress protection.

With accuracy class 2.5 and the available nominal sizes 40 [1 ½"], 50 [2"] and 63 [2 ½"], this model is suited for a wide range of applications in industry.

The mounting bracket, which is available as an option, enables the panel mounting of pressure gauges with back mount process connection. The nominal size 63 [2 ½"] version with back mount process connection is alternatively offered with a mounting flange on the front of the instrument. This mounting flange is used when, for example, panel mounting is only possible from the front.

Data sheets showing similar products:
Panel mounting series; models 111.16, 111.26; see data sheet PM 01.10
With VdS approval; model 111.12.040; see data sheet SP 01.23

Specifications

Basic information	
Standard	■ EN 837-1 ■ ASME B40.100
	For information on the “Selection, installation, handling and operation of pressure gauges”, see Technical information IN 00.05.
Nominal size (NS)	■ Ø 40 mm [1 ½"] ■ Ø 50 mm [2"] ■ Ø 63 mm [2 ½"]
Connection location	■ Lower mount (radial) 2) ■ Centre back mount
Window	Plastic, crystal-clear, snap-fitted in case
Case	
Design	■ Without safety level ■ Safety level “S1” per EN 837-1: With blow-out device
Material	Plastic, black
Mounting	■ Without ■ Panel mounting flange, plastic 1) ■ Mounting bracket, steel 2)
Case filling	■ Glycerine ■ Glycerine-water mixture for NS 63 [2 ½"] with scale range ≤ 0 ... 4 bar [≤ 0 ... 60 psi]
Movement	Copper alloy

1) Only available for NS 63 [2 ½"]
2) Only available for NS 50 [2"] and NS 63 [2 ½"]

Measuring element	
Type of measuring element	Bourdon tube, C-type or helical type
Material	Copper alloy
Leak tightness	Leakage rate: $< 5 \cdot 10^{-3}$ mbar l/s

Accuracy specifications	
Accuracy class	
EN 837-1	Class 2.5
ASME B40.100	±3 % | ±2 % | ±3 % of measuring span (grade B)
Temperature error	On deviation from the reference conditions at the measuring system: ≤ ±0.4 % per 10 °C [≤ ±0.4 % per 18 °F] of full scale value
Reference conditions	
Ambient temperature	+20 °C [68 °F]

Scale ranges

bar	
0 ... 0.6	0 ... 25
0 ... 1	0 ... 40
0 ... 1.6	0 ... 60
0 ... 2.5	0 ... 100
0 ... 4	0 ... 160
0 ... 6	0 ... 250
0 ... 10	0 ... 315
0 ... 16	0 ... 400
0 ... 20	

kg/cm²	
0 ... 0.6	0 ... 25
0 ... 1	0 ... 40
0 ... 1.6	0 ... 60
0 ... 2.5	0 ... 100
0 ... 4	0 ... 160
0 ... 6	0 ... 250
0 ... 10	0 ... 315
0 ... 16	0 ... 400
0 ... 20	

kPa	
0 ... 60	0 ... 2,500
0 ... 100	0 ... 4,000
0 ... 160	0 ... 6,000
0 ... 250	0 ... 10,000
0 ... 400	0 ... 16,000
0 ... 600	0 ... 25,000
0 ... 1,000	0 ... 31,500
0 ... 1,600	0 ... 40,000
0 ... 2,000	

MPa	
0 ... 0.06	0 ... 2.5
0 ... 0.1	0 ... 4
0 ... 0.16	0 ... 6
0 ... 0.25	0 ... 10
0 ... 0.4	0 ... 16
0 ... 0.6	0 ... 25
0 ... 1	0 ... 31.5
0 ... 1.6	0 ... 40
0 ... 2.0	

psi	
0 ... 10	0 ... 500
0 ... 15	0 ... 600
0 ... 30	0 ... 800
0 ... 60	0 ... 1,000
0 ... 100	0 ... 1,500
0 ... 150	0 ... 2,000
0 ... 160	0 ... 3,000
0 ... 200	0 ... 4,000
0 ... 300	0 ... 5,000
0 ... 400	0 ... 6,000

Vacuum and +/- scale ranges

bar	
-1 ... 0	-1 ... +9
-1 ... +0.6	-1 ... +15
-1 ... +1.5	-1 ... +24
-1 ... +3	-1 ... +30
-1 ... +5	

MPa	
-0.1 ... 0	-0.1 ... +0.9
-0.1 ... +0.06	-0.1 ... +1.5
-0.1 ... +0.15	-0.1 ... +2.4
-0.1 ... +0.3	-0.1 ... +3
-0.1 ... +0.5	

kPa	
-100 ... 0	-100 ... +900
-100 ... +60	-100 ... +1,500
-100 ... +150	-100 ... +2,400
-100 ... +300	-100 ... +3,000
-100 ... +500	

psi	
-30 inHg ... 0	-30 inHg ... +160
-30 inHg ... +15	-30 inHg ... +200
-30 inHg ... +30	-30 inHg ... +300
-30 inHg ... +60	-30 inHg ... +400
-30 inHg ... +100	

Other scale ranges on request

Further details on: Scale ranges	
Unit	■ bar ■ psi ■ kg/cm² ■ kPa ■ MPa
Vacuum resistance	■ Without ■ Vacuum-resistant to -1 bar
Dial	
Scale colour	Black
Material	Plastic, white
Customer-specific version	Other scales, e.g. with red mark, circular arcs or circular sectors, on request
Pointer	
Instrument pointer	Plastic, black
Pointer stop pin	At zero point

1) Red mark pointer with measuring ranges 0 ... 0.6 to 0 ... 60 bar

Process connection	
Standard	■ EN 837-1 ■ ISO 7 ■ ANSI/B1.20.1
Size	
EN 837-1	■ G ⅛ B, male thread ■ G ¼ B, male thread
ANSI/B1.20.1	■ ⅛ NPT, male thread ■ ¼ NPT, male thread
ISO 7	■ R ⅛, male thread ■ R ¼, male thread
Restrictor	■ Without ■ Ø 0.5 mm [0.02"], copper alloy ■ Ø 0.3 mm [0.012"], copper alloy

Process connection	
Material (wetted)	
Process connection	Copper alloy
Bourdon tube	Copper alloy

Other process connections on request

Operating conditions	
Medium temperature	-20 ... +60 °C [-4 ... +140 °F]
Ambient temperature	-20 ... +60 °C [-4 ... +140 °F]
Pressure limitation	
Steady	3/4 x full scale value
Fluctuating	2/3 x full scale value
Short time	Full scale value
Ingress protection per IEC/EN 60529	IP65

Approvals

Logo	Description	Country
CE	**EU declaration of conformity** Pressure equipment directive PS > 200 bar, module A, pressure accessory	European Union
-	**CRN** Safety (e.g. electr. safety, overpressure, ...)	Canada

Optional approvals

Logo	Description	Country
	PAC Russia Metrology, measurement technology	Russia
	PAC Kazakhstan Metrology, measurement technology	Kazakhstan
	PAC Belarus Metrology, measurement technology	Belarus
-	**PAC Ukraine** Metrology, measurement technology	Ukraine
	PAC Uzbekistan Metrology, measurement technology	Uzbekistan

Manufacturer's information and certificates

Logo	Description
-	Pressure equipment directive (PED) for maximum allowable pressure PS ≤ 200 bar

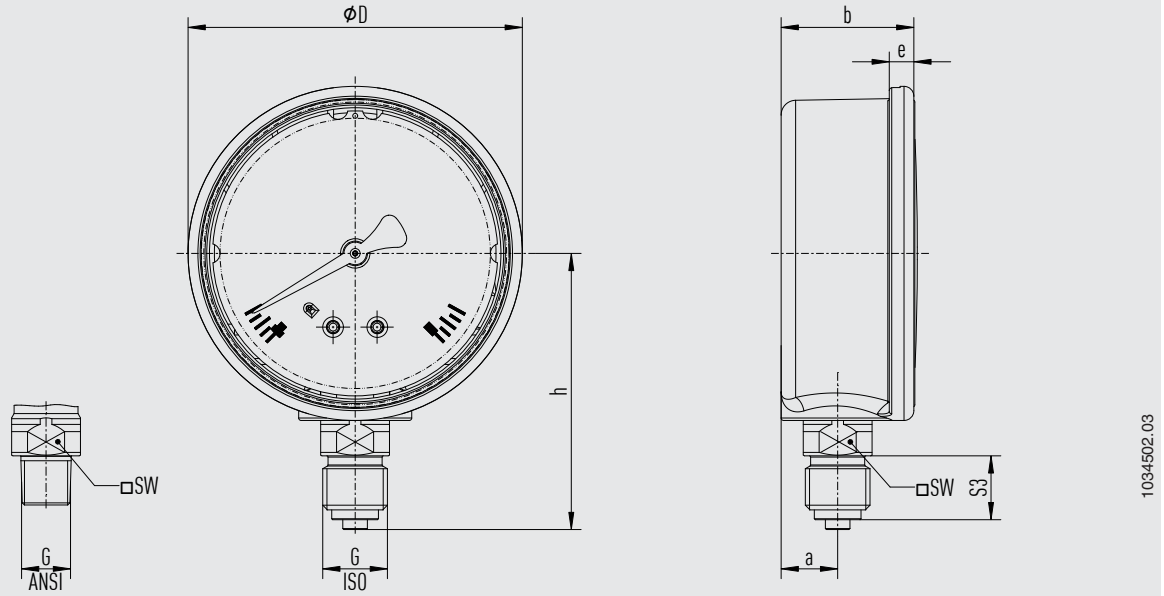
Certificates (option)

Certificates	
Certificates	■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy) ■ 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy)
Recommended calibration interval	1 year (dependent on conditions of use)

→ For approvals and certificates, see website

Dimensions in mm [in]

Model 113.13, lower mount (radial)

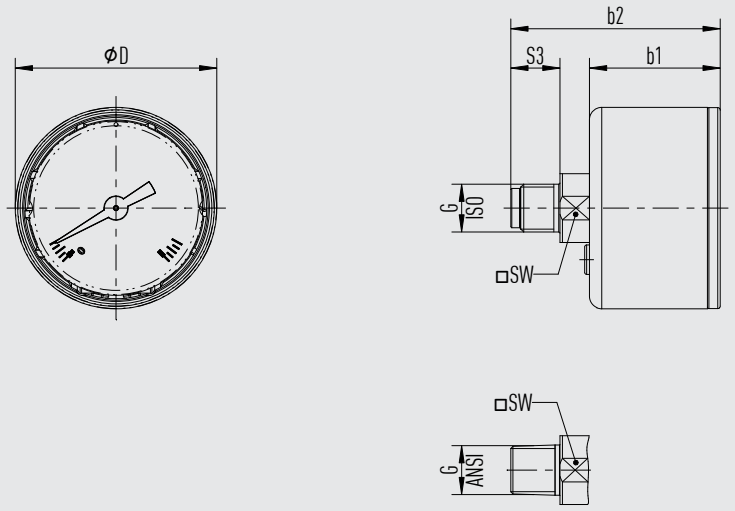


NS	G [1]	Dimensions in mm [in]						
		D	h ±1 [0.04]	a	b1 ±0.5 [0.02]	S3	e	SW
50 [2"]	G ⅛ B, ⅛ NPT, R ⅛	55 [2.17]	51.2 [2.02]	11.5 [0.45]	27 [1.06]	10 [0.39]	5 [0.2]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	55 [2.17]	54.2 [2.13]	11.5 [0.45]	27 [1.06]	13 [0.51]	5 [0.2]	14 [0.55]
63 [2 ½"]	G ⅛ B, ⅛ NPT, R ⅛	68 [2.68]	51.2 [2.02]	11.5 [0.45]	27 [1.06]	10 [0.39]	5 [0.2]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	68 [2.68]	54.2 [2.13]	11.5 [0.45]	27 [1.06]	13 [0.51]	5 [0.2]	14 [0.55]

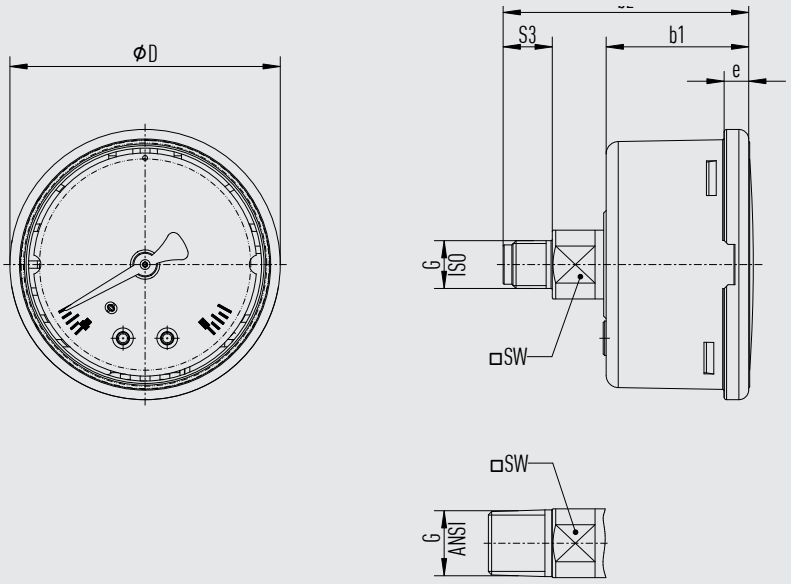
1) The G ⅛ B process connection of this instrument is manufactured without a centring spigot and with a thread runout instead of a thread undercut.

NS	Weight in kg [lb]
50 [2"]	0.11 [0.24]
63 [2 ½"]	0.15 [0.33]

Model 113.13, NS 40 [1 ½"], centre back mount



Model 113.13, NS 50 [2"] and NS 63 [2 ½"], centre back mount



NS	G [1]	Dimensions in mm [in]					
		D	b2 ±1 [0.04]	b	e	S3	SW
40 [1 ½"]	G ⅛ B, ⅛ NPT, R ⅛	41 [1.61]	42.6 [1.68]	26.6 [1.05]	-	10 [0.39]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	41 [1.61]	45.6 1.80]	26.6 [1.05]	-	13 [0.51]	14 [0.55]
50 [2"]	G ⅛ B, ⅛ NPT, R ⅛	55 [2.17]	50 [1.97]	29 [1.14]	5 [0.2]	10 [0.39]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	55 [2.17]	53 [2.09]	29 [1.14]	5 [0.2]	13 [0.51]	14 [0.55]
63 [2 ½"]	G ⅛ B, ⅛ NPT, R ⅛	68 [2.68]	50 [1.97]	29 [1.14]	5 [0.2]	10 [0.39]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	68 [2.68]	53 [2.09]	29 [1.14]	5 [0.2]	13 [0.51]	14 [0.55]

1) The G ⅛ B process connection of this instrument is manufactured without a centring spigot and with a thread runout instead of a thread undercut.

NS	Weight in kg [lb]
40 [1 ½"]	0.06 [0.13]
50 [2"]	0.07 [0.15]
63 [2 ½"]	0.08 [0.18]

Accessories and spare parts

Model		Description
	**910.33**	Adhesive label set for red and green circular arcs → See data sheet AC 08.03
	**910.17**	Sealings → See data sheet AC 09.08
	**910.15**	Syphons → See data sheet AC 09.06
	**910.13**	Overpressure protector → See data sheet AC 09.04
	**IV10, IV11**	Needle valve and multiport valve → See data sheet AC 09.22
	**IV20, IV21**	Block-and-bleed valve → See data sheet AC 09.19
	**BV**	Ball valve, process and instrument version → See data sheet AC 09.28

Ordering information

Model / Nominal size / Scale range / Process connection / Connection location / Options

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