Bourdon tube pressure gauge, copper alloy
Heavy-duty version, case filling
Model 213.40, NS 63 [2 ½"], 80 [3"] and 100 [4"]

For further approvals, see page 6

Applications

- For measuring locations 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
- Mining industry
- Hydraulics
- Shipbuilding

Special features

- Vibration- and shock-resistant
- Especially robust design
- NS 63 [2 ½"] and 100 [4"] with DNV approval
- Scale ranges from 0 … 0.6 to 0 … 1,000 bar [0 ... 10 to 0 ... 15,000 psi]

Bourdon tube pressure gauge, model 213.40

Configurator

Standard articles

Description

The liquid-filled model 213.40 Bourdon tube pressure gauge is constructed with a forged brass case and wetted parts from copper alloy.

Scale ranges from 0 … 0.6 to 0 … 1,000 bar [0 ... 10 to 0 ... 15,000 psi] ensure the measuring ranges required for a wide variety of applications.

Due to the case fill fluid, the measuring element and movement are efficiently damped. Therefore, these instruments are particularly suited to measuring locations with high dynamic loads, such as fast load cycles or vibrations.

WIKA manufactures and qualifies the pressure gauge in accordance with the standards EN 837-1 and ASME B40.100. As a safety function, this instrument has a blow-out device with blow-out plug on the top of the case. In the event of a failure, overpressure can escape there.

Data sheets showing similar products:
Liquid filling, stainless steel case; model 213.53; see data sheet PM 02.12

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 63 mm [2 ½"] ■ Ø 80 mm [3"] ■ Ø 100 mm [4"]
Connection location	■ Lower mount (radial) ■ Centre back mount (only for NS 63 [2 ½"]) ■ Lower back mount (only for NS 80 [3"] and NS 100 [4"])
Window	■ Acrylic glass (PMMA) ■ Laminated safety glass
Case	
Design	■ With compensating valve to vent and reseal case ■ With internal pressure compensation (pressure compensation foil)
	With blow-out device at case circumference, 12 o'clock
Material	■ Forged brass, black painted ■ Forged brass, natural finish
Ring	
NS 63 [2 ½"], NS 80 [3"]	Crimp ring, stainless steel, natural finish
NS 100 [4"]	Crimp ring, stainless steel, polished
Mounting	■ Without ■ Surface mounting flange, steel, black ■ Panel mounting flange, steel, chrome-plated ■ Panel mounting flange, steel, black ■ Panel mounting flange, brass, chrome-plated ■ Triangular profile ring with mounting bracket, steel, chrome-plated, with clamp ■ Triangular profile ring with mounting bracket, polished stainless steel, with clamp
Case filling [1]	■ Glycerine or glycerine-water mixture ■ Silicone oil
Movement	Copper alloy

1) For operating conditions, see table on page 5

Measuring element	
Type of measuring element	Bourdon tube, C-type or helical type
Material	
NS 63 [2 ½"]	Copper alloy
NS 80 [3"], NS 100 [4"]	■ Copper alloy ■ Stainless steel 1.4571 (316Ti or 1.4404 (316L)
Leak tightness	■ Tested leakage rate: < $5 \cdot 10^{-3}$ mbar l/s ■ Helium tested, leakage rate: < $1 \cdot 10^{-5}$ mbar l/s

Accuracy specifications		
Accuracy class		
NS 63 [2 ½"], NS 80 [3"]	■ EN 837-1	Class 1.6
	■ ASME B40.100	±2 % | ±1 % | ±2 % of measuring span (grade A)
NS 100 [4"]	■ EN 837-1	Class 1.0
	■ ASME B40.100	±1 % of measuring span (grade 1A)

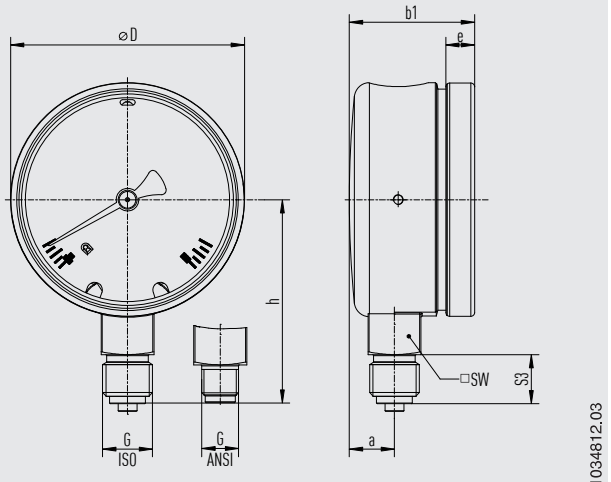
Process connection		
Standard	■ EN 837-1 ■ ISO 7 ■ ANSI/B1.20.1	
Size		
EN 837-1	■ G ⅛ B, male thread ■ G ¼ B, male thread ■ G ½ B, male thread ■ M10 x 1, male thread	
ISO 7	■ R ¼, male thread ■ R ½, male thread	
ANSI/B1.20.1	■ ¼ NPT, male thread ■ ½ NPT, male thread	
Restrictor	■ Without ■ Ø 0.3 mm [0.012"], brass ■ Ø 0.5 mm [0.02"], brass	
Material (wetted)		
Process connection	Copper alloy	
Bourdon tube	NS 63 [2 ½"]	Copper alloy
	NS 80 [3"], NS 100 [4"]	■ Copper alloy ■ Stainless steel 1.4571 (316Ti) or 1.4404 (316L)

→ Other process connections on request

Operating conditions		
Medium temperature	max. +60 °C [+140 °F]	
Ambient temperature		
Instruments with glycerine filling	-20 ... +60 °C [-4 ... +140 °F]	
Instruments with silicone oil filling	-40 ... +60 °C [-40 ... +140 °F]	
Pressure limitation		
NS 63 [2 ½"], NS 80 [3"]	Steady	3/4 x full scale value
	Fluctuating	2/3 x full scale value
	Short time	Full scale value
NS 100 [4"]	Steady	Full scale value
	Fluctuating	0.9 x full scale value
	Short time	1.3 x full scale value
Ingress protection per IEC/EN 60529	IP65	

Dimensions in mm [in]

NS 63 [2 ½"], lower mount (radial)



NS	Weight
63 [2 ½"]	0.36 kg [0.79 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	e	a	b1 ±0.5 [0.02]	D	SW
63 [2 ½"]	G ⅛ B	51 [2.01]	10 [0.39]	7.6 [0.3]	12 [0.47]	34.5 [1.36]	62 [2.44]	14 [0.55]
	G ¼ B	53.8 [2.12]	13 [0.51]	7.6 [0.3]	12 [0.47]	34.5 [1.36]	62 [2.44]	14 [0.55]
	M10 x 1	51 [2.01]	10 [0.39]	7.6 [0.3]	12 [0.47]	34.5 [1.36]	62 [2.44]	14 [0.55]

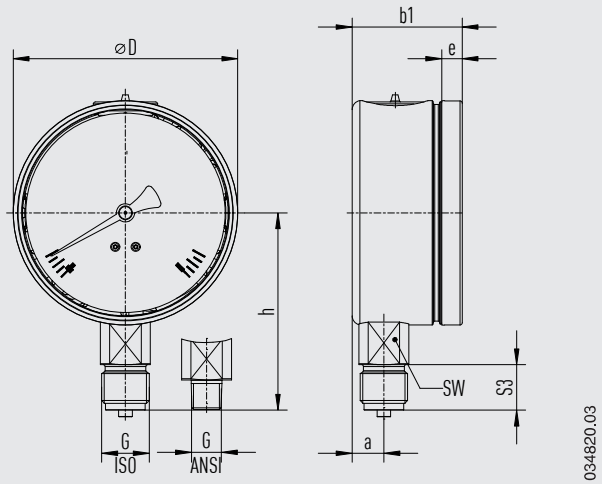
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	e	a	b1 ±0.5 [0.02]	D	SW
63 [2 ½"]	R ⅛	51 [2.01]	10 [0.39]	7.6 [0.3]	12 [0.47]	34.5 [1.36]	62 [2.44]	14 [0.55]
	R ¼	53.8 [2.12]	13 [0.51]	7.6 [0.3]	12 [0.47]	34.5 [1.36]	62 [2.44]	14 [0.55]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	e	a	b1 ±0.5 [0.02]	D	SW
63 [2 ½"]	⅛ NPT	51 [2.01]	10 [0,39]	7.6 [0.3]	12 [0.47]	34.5 [1.36]	62 [2.44]	14 [0.55]
	¼ NPT	53.8 [2.12]	13 [0.51]	7.6 [0.3]	12 [0.47]	34.5 [1.36]	62 [2.44]	14 [0.55]

NS 80 [3"] and NS 100 [4"], lower mount (radial)



NS	Weight
80 [3”]	0.8 kg [1.75 lb]
100 [4”]	1.13 kg [2.5 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	e	a	b1 ±0.5 [0.02]	D	SW
80 [3"]	G ¼ B	69 [2.72]	13 [0.51]	14 [0.55]	8.5 [0.33]	38.5 [1.52]	79 [3.11]	22 [0.87]
	G ½ B	76 [2.99]	20 [0.79]	14 [0.55]	8.5 [0.33]	38.5 [1.52]	79 [3.11]	22 [0.87]
100 [4"]	G ¼ B	80 [3.15]	13 [0.51]	14 [0.55]	8.1 [0.32]	46.2 [1.82]	99 [3.9]	22 [0.87]
	G ½ B	87 [3.43]	20 [0.79]	14 [0.55]	8.1 [0.32]	46.2 [1.82]	99 [3.9]	22 [0.87]

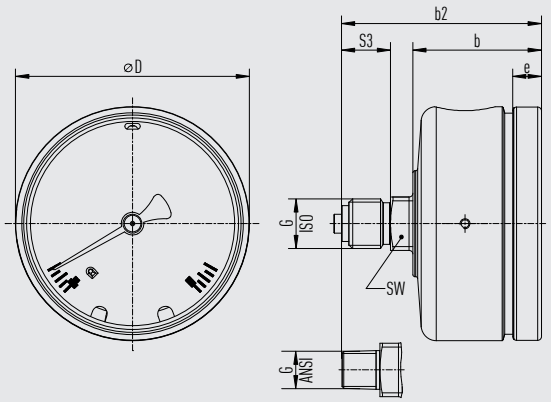
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	e	a	b1 ±0.5 [0.02]	D	SW
80 [3"]	R ¼	76 [2.99]	13 [0.51]	14 [0.55]	8.5 [0.33]	38.5 [1.52]	79 [3.11]	22 [0.87]
	R ½	86 [3.39]	19 [0.75]	14 [0.55]	8.5 [0.33]	38.5 [1.52]	79 [3.11]	22 [0.87]
100 [4"]	R ¼	76 [2.99]	13 [0.51]	14 [0.55]	8.1 [0.32]	46.2 [1.82]	99 [3.9]	22 [0.87]
	R ½	86 [3.39]	19 [0.75]	14 [0.55]	8.1 [0.32]	46.2 [1.82]	99 [3.9]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	e	a	b1 ±0.5 [0.02]	D	SW
80 [3"]	¼ NPT	76 [2.99]	13 [0.51]	14 [0.55]	8.5 [0.33]	38.5 [1.52]	79 [3.11]	22 [0.87]
	½ NPT	86 [3.39]	19 [0.75]	14 [0.55]	8.5 [0.33]	38.5 [1.52]	79 [3.11]	22 [0.87]
100 [4"]	¼ NPT	76 [2.99]	13 [0.51]	14 [0.55]	8.1 [0.32]	46.2 [1.82]	99 [3.9]	22 [0.87]
	½ NPT	86 [3.39]	19 [0.75]	14 [0.55]	8.1 [0.32]	46.2 [1.82]	99 [3.9]	22 [0.87]

NS 63 [2 ½"], centre back mount



NS	Weight
63 [2 ½"]	0.36 kg [0.79 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]					
		b2 ±0.5 [0.02]	b ±0.5 [0.02]	S3	e	D	SW
63 [2 ½"]	G ⅛ B	49.9 [1.97]	34 [1.34]	10 [0.39]	7.6 [0.3]	62 [2.44]	14 [0.55]
	G ¼ B	52.9 [2.08]	34 [1.34]	13 [0.51]	7.6 [0.3]	62 [2.44]	14 [0.55]
	M10 x 1	49.9 [1.97]	34 [1.34]	10 [0.39]	7.6 [0.3]	62 [2.44]	14 [0.55]

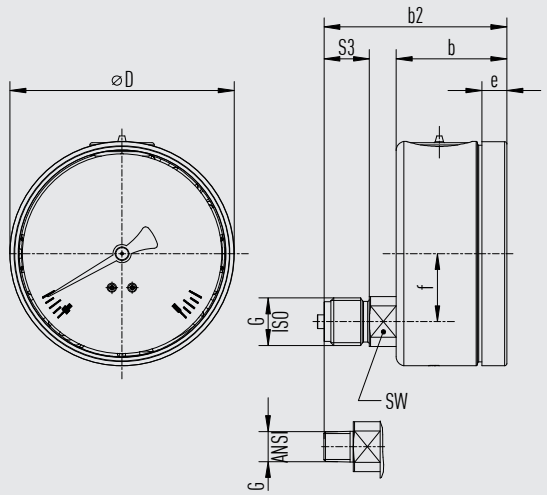
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]					
		b2 ±0.5 [0.02]	b ±0.5 [0.02]	S3	e	D	SW
63 [2 ½"]	R ⅛	49.9 [1.97]	34 [1.34]	10 [0.39]	7.6 [0.3]	62 [2.44]	14 [0.55]
	R ¼	52.9 [2.08]	34 [1.34]	13 [0.51]	7.6 [0.3]	62 [2.44]	14 [0.55]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]					
		b2 ±0.5 [0.02]	b ±0.5 [0.02]	S3	e	D	SW
63 [2 ½"]	⅛ NPT	49.9 [1.97]	34 [1.34]	10 [0.39]	7.6 [0.3]	62 [2.44]	14 [0.55]
	¼ NPT	52.9 [2.08]	34 [1.34]	13 [0.51]	7.6 [0.3]	62 [2.44]	14 [0.55]

NS 80 [3"] and NS 100 [4"], lower back mount



NS	Weight
80 [3”]	0.8 kg [1.75 lb]
100 [4”]	1.13 kg [2.5 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]					
		b2 ±0.5 [0.02]	b ±0.5 [0.02]	S3	e	D	SW
80 [3"]	G ¼ B	61.7 [2.43]	37.7 [1.48]	13 [0.51]	8.8 [0.35]	79 [3.11]	22 [0.87]
	G ½ B	73.6 [2.9]	48.8 [1.92]	20 [0.79]	11 [0.43]	79 [3.11]	22 [0.87]
100 [4"]	G ¼ B	68.7 [2.7]	37.7 [1.48]	13 [0.51]	8.8 [0.35]	99 [3.9]	22 [0.87]
	G ½ B	80.6 [3.17]	48.8 [1.92]	20 [0.79]	11 [0.43]	99 [3.9]	22 [0.87]

Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]					
		b2 ±0.5 [0.02]	b ±0.5 [0.02]	S3	e	D	SW
80 [3"]	R ¼	61.7 [2.43]	37.7 [1.48]	13 [0.51]	8.8 [0.35]	79 [3.11]	22 [0.87]
	R ½	67.7 [2.67]	48.8 [1.92]	19 [0.75]	11 [0.43]	79 [3.11]	22 [0.87]
100 [4"]	R ¼	73.6 [2.9]	37.7 [1.48]	13 [0.51]	8.8 [0.35]	99 [3.9]	22 [0.87]
	R ½	79.6 [2.13]	48.8 [1.92]	19 [0.75]	11 [0.43]	99 [3.9]	22 [0.87]

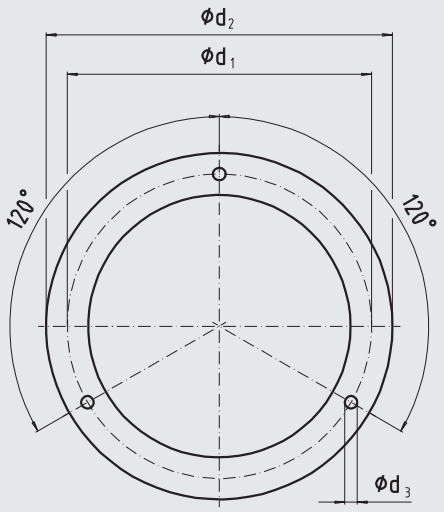
Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]					
		b2 ±0.5 [0.02]	b ±0.5 [0.02]	S3	e	D	SW
80 [3"]	¼ NPT	61.7 [2.43]	37.7 [1.48]	13 [0.51]	8.8 [0.35]	79 [3.11]	22 [0.87]
	½ NPT	67.7 [2.67]	48.8 [1.92]	19 [0.75]	11 [0.43]	79 [3.11]	22 [0.87]
100 [4"]	¼ NPT	73.6 [2.9]	37.7 [1.48]	13 [0.51]	8.8 [0.35]	99 [3.9]	22 [0.87]
	½ NPT	79.6 [2.13]	48.8 [1.92]	19 [0.75]	11 [0.43]	99 [3.9]	22 [0.87]

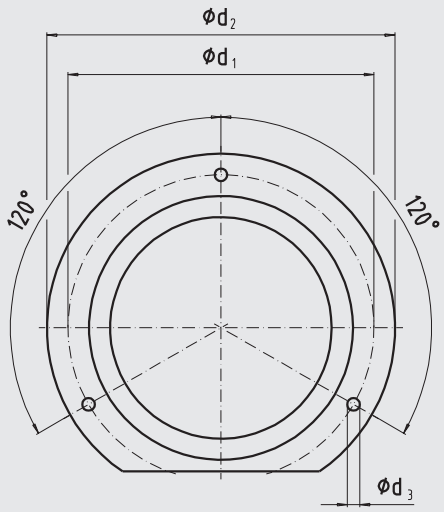
Accessories

Dimensions in mm [in]

Panel mounting flange

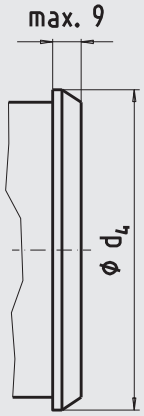


Surface mounting flange



NS	Dimensions in mm [in]			
	Recommended panel cutout	d1	d2	d3
63 [2 ½"]	67 ±0.3 [2.64 ±0.01]	75 [2.95]	85 [3.35]	3.6 [0.14]
80 [3"]	84 ±0.3 [3.31 ±0.01]	95 [3.74]	110 [4.33]	4.8 [0.19]
100 [4"]	104 ±0.5 [4.09 ±0.02]	116 [4.57]	132 [5.2]	4.8 [0.19]

Triangular profile ring



NS	Dimensions in mm [in]	
	Recommended panel cutout	d4
63 [2 ½"]	64,5 ±0,5 [2,54 ±0,02]	68 [2,68]
80 [3"]	82 ±1 [3,23 ±0,04]	87 [3,43]
100 [4"]	102 ±1 [4,02 ±0,04]	107 [4,21]