Bourdon tube pressure gauge, copper alloy
Stainless steel case, case filling
Model 213.53, NS 50 [2"], 63 [2 ½"] and 100 [4"]

For further approvals,
see page 7

Applications

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

Special features

- Very good vibration and shock resistance
- Especially robust design
- Type approval for the shipbuilding industry
- Scale ranges to 0 ... 1,000 bar or 0 ... 15,000 psi

Bourdon tube pressure gauge, model 213.53.100, lower mount

Configurator

Standard articles

Description

The liquid-filled model 213.53 mechanical Bourdon tube pressure gauge is constructed with a case from stainless steel and wetted parts from copper alloy.

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. In the event of a failure, overpressure can escape there.

Due to the case filling, the pressure 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.

The cases of the model 213.53 are available in nominal sizes of 50 [2"], 63 [2 ½"] and 100 [4"] and fulfil IP65 ingress protection. With an accuracy of up to class 1.0, this pressure gauge is suitable for a wide range of applications in industry.

For mounting in control panels, the pressure gauges with a back mount process connection can be fitted with a mounting flange or with a triangular profile ring and mounting bracket.

Data sheets showing similar products:
Stainless steel case, liquid filling, NS 40, 80 and 100; model 113.53; see data sheet PM 01.08

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.	
Further version	Special design, model 213.57	
Nominal size (NS)	■ Ø 50 mm [2"] ■ Ø 63 mm [2 ½"] ■ Ø 100 mm [4"]	
Connection location	■ Lower mount (radial) ■ Centre back mount (only for NS 50 [2"] and NS 63 [2 ½"]) ■ Lower back mount (only for NS 100 [4"])	
Window	■ Plastic, crystal-clear ■ Laminated safety glass	
Case		
Design	NS 50 [2"], 63 [2 ½"]	Safety level “S2” per EN 837-1: With blow-out device
	NS 100 [4"]	Safety level “S1” per EN 837-1: With blow-out device
	Position of blow-out device: NS 50 [2"]: Case back, at 12 o'clock NS 63 [2 ½"], 100 [4"]: Case circumference, at 12 o'clock Filling plug can be vented and resealed for internal pressure compensation Sealing towards process connection with O-ring	
Material	Stainless steel, natural finish	
Ring	Crimp ring, stainless steel	
Mounting	■ Without ■ Panel mounting flange, stainless steel [1] ■ Panel mounting flange, polished stainless steel [2] ■ Triangular profile ring with mounting bracket, polished stainless steel [3] ■ Surface mounting flange, stainless steel [4]	
Case filling	■ Glycerine ■ Glycerine-water mixture for scale range ≤ 0 ... 2.5 bar [≤ 0 ... 40 psi] ■ Silicone oil	
Movement	Copper alloy	

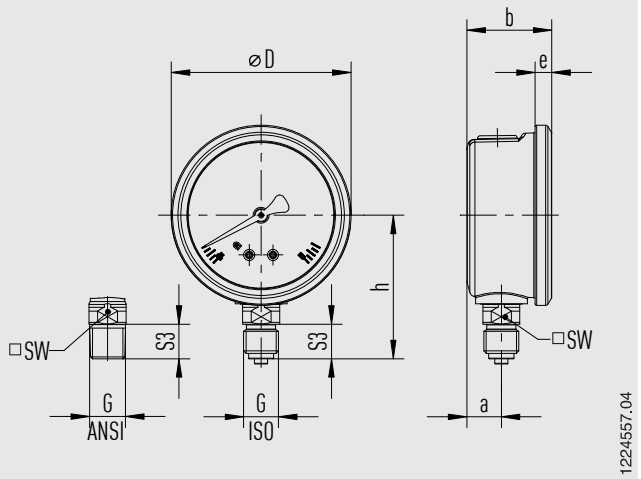
1) Only for back mount
2) Only for NS 63 [2 ½"] and NS 100 [4"], back mount
3) Only for NS 63 [2 ½"]
4) Only for NS 63 [2 ½"] and NS 100 [4"]

Measuring element		
Type of measuring element	Bourdon tube, C-type or helical type	
Material		
NS 50 [2"]	≤ 600 bar	Copper alloy
	> 600 bar	Stainless steel 316L
NS 63 [2 ½"], NS 100 [4"]	≤ 400 bar	Copper alloy
	> 400 bar	Stainless steel 316L
Leak tightness	Leakage rate: $< 5 \cdot 10^{-3}$ mbar l/s	

Accuracy specifications		
Accuracy class		
NS 50 [2"], 63 [2 ½"]	■ 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)
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]	

Dimensions in mm [in]

NS 50 [2"] and NS 63 [2 ½"], lower mount (radial)



NS	Weight
NS 50 [2"]	0.15 kg [0.33 lb]
NS 63 [2 ½"]	0.21 kg [0.46 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	e	D	SW
50 [2"]	G ⅛ B	45 [1.77]	10 [0.39]	12 [0.47]	30 [1.18]	6 [0.24]	55 [2.17]	14 [0.55]
	G ¼ B	48 [1.89]	13 [0.51]	12 [0.47]	30 [1.18]	6 [0.24]	55 [2.17]	14 [0.55]
	M12 x 1.5	48 [1.89]	13 [0.51]	12 [0.47]	30 [1.18]	6 [0.24]	55 [2.17]	14 [0.55]
63 [2 ½"]	G ⅛ B	51 [2.01]	10 [0.39]	13 [0.51]	32 [1.26]	6.5 [0.26]	68 [2.68]	14 [0.55]
	G ¼ B	54 [2.13]	13 [0.51]	13 [0.51]	32 [1.26]	6.5 [0.26]	68 [2.68]	14 [0.55]
	M12 x 1.5	54 [2.13]	13 [0.51]	13 [0.51]	32 [1.26]	6.5 [0.26]	68 [2.68]	14 [0.55]

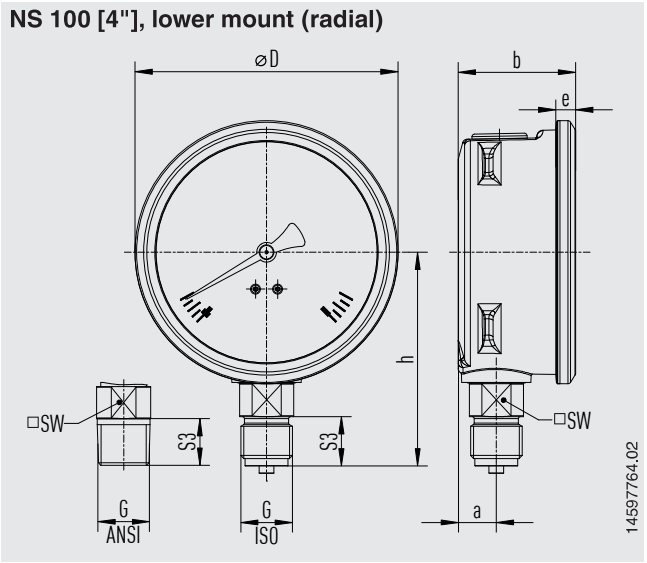
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	e	D	SW
50 [2"]	R ⅛	45 [1.77]	10 [0.39]	12 [0.47]	30 [1.18]	6 [0.24]	55 [2.17]	14 [0.55]
	R ¼	48 [1.89]	13 [0.51]	12 [0.47]	30 [1.18]	6 [0.24]	55 [2.17]	14 [0.55]
63 [2 ½"]	R ⅛	51 [2.01]	10 [0.39]	13 [0.51]	32 [1.26]	6.5 [0.26]	68 [2.68]	14 [0.55]
	R ¼	54 [2.13]	13 [0.51]	13 [0.51]	32 [1.26]	6.5 [0.26]	68 [2.68]	14 [0.55]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	e	D	SW
50 [2"]	⅛ NPT	45 [1.77]	10 [0.39]	12 [0.47]	30 [1.18]	6 [0.24]	55 [2.17]	14 [0.55]
	¼ NPT	48 [1.89]	13 [0.51]	12 [0.47]	30 [1.18]	6 [0.24]	55 [2.17]	14 [0.55]
63 [2 ½"]	⅛ NPT	51 [2.01]	10 [0.39]	13 [0.51]	32 [1.26]	6.5 [0.26]	68 [2.68]	14 [0.55]
	¼ NPT	54 [2.13]	13 [0.51]	13 [0.51]	32 [1.26]	6.5 [0.26]	68 [2.68]	14 [0.55]

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



NS	Weight
NS 100 [4"]	0.8 kg [1.76 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]					
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	D	SW
NS 100 [4"]	G ¼ B	80 [3.15]	13 [0.51]	15.5 [0.61]	48 [1.89]	107 [4.21]	22 [0.87]
	G ½ B	87 [3.43]	20 [0.79]	15.5 [0.61]	48 [1.89]	107 [4.21]	22 [0.87]

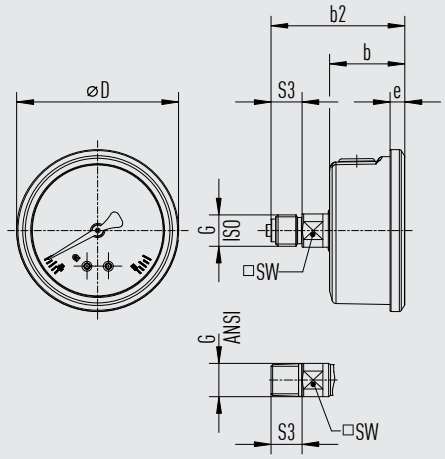
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]					
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	D	SW
NS 100 [4"]	R ¼	80 [3.15]	13 [0.51]	15.5 [0.61]	48 [1.89]	107 [4.21]	22 [0.87]
	R ½	86 [3.39]	19 [0.75]	15.5 [0.61]	48 [1.89]	107 [4.21]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]					
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	D	SW
NS 100 [4"]	¼ NPT	80 [3.15]	13 [0.51]	15.5 [0.61]	48 [1.89]	107 [4.21]	22 [0.87]
	½ NPT	86 [3.39]	19 [0.75]	15.5 [0.61]	48 [1.89]	107 [4.21]	22 [0.87]

NS 50 [2½"] and NS 63 [2½"], centre back mount



NS	Weight
NS 50 [2½"]	0.15 kg [0.33 lb]
NS 63 [2½"]	0.21 kg [0.46 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]					
		b2 ±1 [0.04]	b ±0.5 [0.02]	S3	e	D	SW
50 [2"]	G ⅛ B	53 [2.09]	30 [1.18]	10 [0.39]	6 [0.24]	55 [2.17]	14 [0.55]
	G ¼ B	56 [2.20]	30 [1.18]	13 [0.51]	6 [0.24]	55 [2.17]	14 [0.55]
	M12 x 1.5	56 [2.20]	30 [1.18]	13 [0.51]	6 [0.24]	55 [2.17]	14 [0.55]
63 [2 ½"]	G ⅛ B	53.5 [2.11]	32 [1.26]	10 [0.39]	6.5 [0.26]	68 [2.68]	14 [0.55]
	G ¼ B	56.5 [2.22]	32 [1.26]	13 [0.51]	6.5 [0.26]	68 [2.68]	14 [0.55]
	M12 x 1.5	56.5 [2.22]	32 [1.26]	13 [0.51]	6.5 [0.26]	68 [2.68]	14 [0.55]

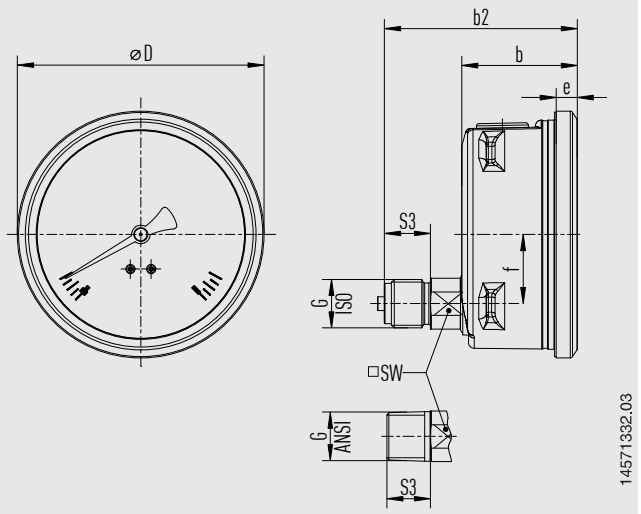
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]					
		b2 ±1 [0.04]	b ±0.5 [0.02]	S3	e	D	SW
50 [2"]	R ⅛	53 [2.09]	30 [1.18]	10 [0.39]	6 [0.24]	55 [2.17]	14 [0.55]
	R ¼	56 [2.20]	30 [1.18]	13 [0.51]	6 [0.24]	55 [2.17]	14 [0.55]
63 [2 ½"]	R ⅛	53.5 [2.11]	32 [1.26]	10 [0.39]	6.5 [0.26]	68 [2.68]	14 [0.55]
	R ¼	56.5 [2.22]	32 [1.26]	13 [0.51]	6.5 [0.26]	68 [2.68]	14 [0.55]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]					
		b2 ±1 [0.04]	b ±0.5 [0.02]	S3	e	D	SW
50 [2"]	⅛ NPT	53 [2.09]	30 [1.18]	10 [0.39]	6 [0.24]	55 [2.17]	14 [0.55]
	¼ NPT	56 [2.20]	30 [1.18]	13 [0.51]	6 [0.24]	55 [2.17]	14 [0.55]
63 [2 ½"]	⅛ NPT	53.5 [2.11]	32 [1.26]	10 [0.39]	6.5 [0.26]	68 [2.68]	14 [0.55]
	¼ NPT	56.5 [2.22]	32 [1.26]	13 [0.51]	6.5 [0.26]	68 [2.68]	14 [0.55]

NS 100 [4"], lower back mount



NS	Weight
NS 100 [4"]	0.8 kg [1.76 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		b2 ±1 [0.04]	b ±0.5 [0.02]	S3	e	f	D	SW
NS 100 [4"]	G ¼ B	74 [2.92]	48 [1.89]	13 [0.51]	8 [0.33]	30 [1.18]	107 [4.21]	22 [0.87]
	G ½ B	81 [3.19]	48 [1.89]	20 [0.97]	8 [0.33]	30 [1.18]	107 [4.21]	22 [0.87]

Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		b2 ±1 [0.04]	b ±0.5 [0.02]	S3	e	f	D	SW
NS 100 [4"]	R ¼	74 [2.92]	48 [1.89]	13 [0.51]	8 [0.33]	30 [1.18]	107 [4.21]	22 [0.87]
	R ½	80 [3.14]	48 [1.89]	19 [0.75]	8 [0.33]	30 [1.18]	107 [4.21]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		b2 ±1 [0.04]	b ±0.5 [0.02]	S3	e	f	D	SW
NS 100 [4"]	¼ NPT	74 [2.92]	48 [1.89]	13 [0.51]	8 [0.33]	30 [1.18]	107 [4.21]	22 [0.87]
	½ NPT	80 [3.14]	48 [1.89]	19 [0.75]	8 [0.33]	30 [1.18]	107 [4.21]	22 [0.87]

Bourdon Tube Pressure Gauges
Industrial Stainless Steel Gauge
Type 232.54 - Dry Case
Type 233.54 - Liquid-filled Case

Applications

- Intended for adverse service conditions where pulsating or vibration exists
- Process industry: chemical/petrochemical, power stations, mining, on and offshore, environmental technology, mechanical engineering and plant construction
- Suitable for gaseous or liquid media that will not obstruct the pressure system

Product features

- Vibration and shock resistant (with liquid filling)
- All stainless steel construction
- Pressure ranges up to 15,000 psi
- FlexWindow™ option with integrated pressure compensation and 100% case fill (*)

Bourdon Tube Pressure Gauge Model 232.54

Specifications

Design
ASME B40.100 & EN 837-1

Sizes
2½” & 4” (63 & 100 mm)

Accuracy class
2½”: ± 2/1/2% of span (ASME B40.100 Grade A)
4”: ± 1% of span (ASME B40.100 Grade 1A)

Ranges
Vacuum / Compound to 200 psi (16 bar)
Pressure from 15 psi (1 bar) to 15,000 psi (1000 bar)
or other equivalent units of pressure or vacuum

Working pressure

2½”:	Steady:	3/4 scale value
	Fluctuating:	2/3 full scale value
	Short time:	full scale value
4”:	Steady:	full scale value
	Fluctuating:	0.9 x full scale value
	Short time:	1.3 x full scale value

Operating temperature
Ambient: -40°F to +140°F (-40°C to +60°C) - dry
-4°F to +140°F (-20°C to +60°C) - glycerine filled
-40°F to +140°F (-40°C to +60°C) - silicone filled
Medium: +212°F (+100°C) maximum

Temperature error
Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% of span for every 18°F (10°K) rising or falling.

Ingress protection
IP 65 per EN 60529 / IEC 60259
IP 66 (NEMA 4) with FlexWindow option (2½” only)

Pressure connection
Material: 316 stainless steel
Lower mount (LM) or center back mount (CBM) - 2½”
Lower mount (LM) or lower back mount (LBM) - 4”
1/4” NPT or 1/2” NPT limited to wrench flat area

Bourdon tube
Material: 316L stainless steel
< 1,500 psi (100 bar): C-shape,
≥ 1,500 psi (100 bar): Helical type

Movement
300-series stainless steel

Dial
White aluminum with black lettering; 2½” size with stop pin

(*) ASME B40.100 and EN837-1 do not apply to gauges with FlexWindow option

Pointer
Black aluminum, friction adjustable

Case
304 stainless steel with vent plug for ranges ≤ 300 psi (FlexWindow option without vent plug) and polished stainless steel bayonet ring. Suitable for liquid filling. Welded case/socket connection.

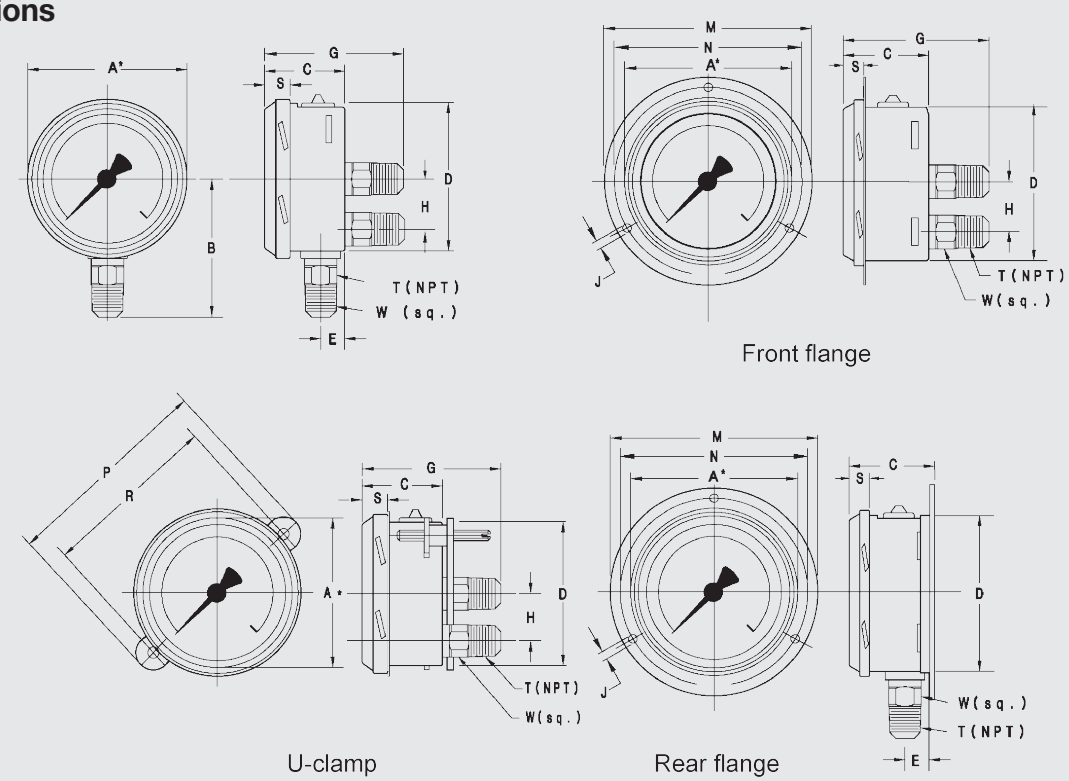
Window
Laminated safety glass with Buna-N gasket
FlexWindow (clear liquid silicone rubber)

Case fill
Glycerine 99.7% - Type 233.54
100% Case fill with integrated pressure compensation with FlexWindow option (only available in 2½")

Optional extras
- 316SS restrictor
- Accuracy ±1.0% of full scale (2½" size)
- Stainless steel front or rear flange
- Zinc-plated steel or SS u-clamp bracket (field installable)
- Red drag pointer or mark pointer (*)
- Silicone or Halocarbon oil case filling (*)
- Special connections limited to wrench flat area
- Cleaned for O2 service (*)
- Custom dial layout
- Other pressure scales available
  bar, kPa, MPa, kg/cm² and dual scales

(*) Not available with FlexWindow

Dimensions



Size		A	B	C	D	E	G	H	J	M	N	P	R	S	T	W	Weight	
2.5"	mm	70	54	33.5	62	13	55.5	-	3.6	85	75	87	72	12		14	0.36 lb.	dry
	in	2.75	2.13	1.32	2.44	0.51	2.19	-	0.14	3.35	2.95	3.43	2.83	0.47	1/4"	0.55	0.44 lb.	filled
4"	mm	110	87	49.5	100	15.5	81	30	4.8	132	116	125	110	15		22	1.10 lb.	dry
	in	4.30	3.43	1.95	3.94	0.61	3.19	1.18	0.19	5.20	4.57	4.92	4.33	0.59	1/2"	0.87	1.76 lb.	filled

Recommended panel cutout is dimension D + 3 mm