

# Bourdon tube pressure gauge, stainless steel XSEL<sup>®</sup> process pressure gauge Models 232.34 and 233.34, NS 4 ½" and 6"

WIKA data sheet PM 02.10



for further approvals  
see page 5

## Applications

- For applications with highly dynamic pressure loads and vibrations
- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Process industry: Plant construction, chemical industry, petrochemical industry, power plants, mining, on-/offshore and environmental technology
- Machine building and general plant construction

## Special features

- Excellent load-cycle stability and shock resistance
- Safety version with solid baffle wall designed in compliance with the requirements and test conditions of ASME B 40.100
- With case filling (model 233.34) for applications with high dynamic pressure loads and vibrations
- Scale ranges from 0 ... 10 to 0 ... 30,000 psi  
[0 ... 0.6 to 0 ... 2,000 bar]



Bourdon tube pressure gauge, model 232.34, NS 4 ½"

## Description

This high-quality Bourdon tube pressure gauge has been designed especially for the process industry.

The use of high-quality materials and the robust design are geared to applications in the chemical and process engineering industries.

Scale ranges of 0 ... 10 to 0 ... 30,000 psi  
[0 ... 0.6 to 0 ... 2,000 bar] ensure the measuring ranges required for a wide variety of applications.

WIKA manufactures and qualifies the pressure gauge in accordance with the standard ASME B40.100. As a safety function, this instrument has a solid baffle wall with blow-out back.

In the event of a failure, the operator is protected at the front side, as media or components can only be ejected via the back of the case.

The glass-fibre reinforced POCAN<sup>®</sup> case offers the necessary stability for reproducible measurements, even under aggressive ambient conditions.

With the model 233.34, the case filling in combination with a screwed-in restrictor enables use in applications with highly dynamic pressure loads and vibrations.

## Specifications

Basic information	
Standard	ASME B40.100
Special design feature	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ For oxygen, cleanliness per ASME B40.1 level IV</li> <li>■ Silicone-oil-free version</li> <li>■ NACE version</li> </ul>
Nominal size (NS)	<ul style="list-style-type: none"> <li>■ 4 ½" [115 mm]</li> <li>■ 6" [160 mm]</li> </ul>
Connection location	<ul style="list-style-type: none"> <li>■ Lower mount (radial)</li> <li>■ Lower back mount</li> </ul>
Window	<ul style="list-style-type: none"> <li>■ Clear non-splintering plastic</li> <li>■ Instrument glass</li> <li>■ Laminated safety glass</li> </ul>
Sealing from NBR	
Case	
Design	With solid baffle wall (Solidfront) and blow-out back
Internal pressure compensation <sup>1)</sup>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ With diaphragm</li> </ul>
Material	POCAN® (thermoplastic), black <sup>2)</sup>
Ring	Threaded bezel, POCAN®, black <sup>2)</sup>
Mounting	<ul style="list-style-type: none"> <li>■ Surface mounting flange (integrated into case)</li> <li>■ Adapter kit for panel mounting incl. front bezel from polished stainless steel <sup>3)</sup></li> </ul>
Case filling (model 233.34)	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Glycerine</li> <li>■ Glycerine-water mixture for scale ranges ≤ 0 ... 40 psi [≤ 0 ... 2.5 bar]</li> <li>■ Silicone oil</li> <li>■ Halocarbon oil</li> </ul>
Movement	<ul style="list-style-type: none"> <li>■ Stainless steel</li> <li>■ Stainless steel, dampened with silicone oil</li> </ul>
Internal movement stop with vacuum and 1.1-fold full scale value	

1) Filled instruments or instruments with radial lower mount connection are always equipped with a diaphragm for internal pressure compensation

2) Case and ring also available in red or yellow (only for NS 4 ½" [115], lower mount (radial))

3) Only available for NS 4 ½" [115]

Measuring element	
Type of measuring element	Bourdon tube, C-type or helical type
Material	Stainless steel 316L

Accuracy specifications	
Accuracy class	±0.5 % of measuring span (grade 2A) <sup>1)</sup>
Temperature error	On deviation from the reference conditions at the measuring system: ≤ ±0.4 % per 18 °F [≤ ±0.4 % per 10 °C] of full scale value
Reference conditions	
Ambient temperature	+68 °F [+20 °C]

1) ±1 % of measuring span (grade 1A) for scale range ≥ 0 ... 20,000 psi [0 ... 1,600 bar]

## Scale ranges, gauge pressure

psi	
0 ... 10	0 ... 1,000
0 ... 15	0 ... 1,500
0 ... 30	0 ... 2,000
0 ... 60	0 ... 3,000
0 ... 100	0 ... 5,000
0 ... 160	0 ... 10,000
0 ... 200	0 ... 15,000
0 ... 300	0 ... 20,000
0 ... 400	0 ... 30,000 <sup>1)</sup>
0 ... 600	

bar	
0 ... 0,6	0 ... 60
0 ... 1	0 ... 100
0 ... 1.6	0 ... 160
0 ... 2.5	0 ... 250
0 ... 4	0 ... 400
0 ... 6	0 ... 600
0 ... 10	0 ... 1,000
0 ... 16	0 ... 1,600
0 ... 25	0 ... 2,000 <sup>1)</sup>
0 ... 40	

kPa	
0 ... 60	0 ... 6,000
0 ... 100	0 ... 10,000
0 ... 160	0 ... 16,000
0 ... 250	0 ... 25,000
0 ... 400	0 ... 40,000
0 ... 600	0 ... 60,000
0 ... 1,000	0 ... 100,000
0 ... 1,600	0 ... 160,000
0 ... 2,500	0 ... 200,000 <sup>1)</sup>
0 ... 4,000	

MPa	
0 ... 0.06	0 ... 6
0 ... 0.1	0 ... 10
0 ... 0.16	0 ... 16
0 ... 0.25	0 ... 25
0 ... 0.4	0 ... 40
0 ... 0.6	0 ... 60
0 ... 1.0	0 ... 100
0 ... 1.6	0 ... 160
0 ... 2.5	0 ... 200 <sup>1)</sup>
0 ... 4	

1) Only available with a G ½ B or a high-pressure process connection (e.g. Autoclave Engineering)

## Vacuum and +/- scale ranges

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

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

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

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

### Further details on: Scale ranges

#### Unit

- psi
- bar
- kg/cm<sup>2</sup>
- kPa
- MPa

Further details on: Scale ranges	
<b>Increased overload safety</b>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ 2-fold</li> <li>■ 3-fold</li> <li>■ 4-fold</li> <li>■ 5-fold</li> </ul> <p>The possibility of selection depends on the scale range</p>
<b>Vacuum resistance</b>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Vacuum-resistant to -1 bar</li> </ul>
<b>Dial</b>	
Scale colour	Black
Material	Aluminium
Customer-specific version	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Reflecting scales with InSight™ printing (e.g. white reflecting scale, fluorescent or glow-in-the-dark dial)</li> </ul> <p>Other scales, e.g. with red mark, circular arcs or circular sectors, on request</p>
<b>Pointer</b>	
Instrument pointer	Adjustable pointer, aluminium, black
Mark pointer/drag pointer	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Red drag pointer on window, resetting with fixed adjustment key</li> <li>■ Red drag pointer on window, resetting with removable adjustment key</li> </ul>
<b>Pointer stop pin</b>	At 6 o'clock

Other scale ranges and units on request

Process connection	
<b>Standard</b>	<ul style="list-style-type: none"> <li>■ ANSI/ASME B1.20.1</li> <li>■ EN 837-1</li> </ul>
<b>Size</b>	
ANSI/ASME B1.20.1	<ul style="list-style-type: none"> <li>■ ¼ NPT, male thread</li> <li>■ ½ NPT, male thread</li> </ul>
EN 837-1	<ul style="list-style-type: none"> <li>■ G ¼ B, male thread</li> <li>■ G ½ B, male thread</li> </ul>
<b>Restrictor</b>	<ul style="list-style-type: none"> <li>■ Ø 0.6 mm [0.024"], stainless steel</li> <li>■ Ø 0.3 mm [0.012"], stainless steel</li> </ul>
<b>Material (wetted)</b>	
Process connection	Stainless steel 316L
Bourdon tube	Stainless steel 316L

Other process connections on request

Operating conditions		
<b>Medium temperature</b>	-4 ... +212 °F [-20 ... +100 °C]	
<b>Ambient temperature</b>		
With glycerine filling	-4 ... +140 °F [-20 ... +60 °C]	
Unfilled instruments or with silicone oil filling	-40 ... +140 °F [-40 ... +60 °C]	
<b>Pressure limitation</b>	Steady	Full scale value
	Fluctuating	0.9 x full scale value
	Short time	1.5 x full scale value <sup>1)</sup>
<b>Ingress protection <sup>2)</sup></b>	<ul style="list-style-type: none"> <li>■ IP54 per EN/IEC 60529</li> <li>■ IP65 per EN/IEC 60529</li> </ul>	



1) 1,0 x full scale value for scale ranges > 10,000 psi [690 bar]

2) Filled instruments or instruments with radial lower mount connection always fulfil IP65 ingress protection

## Approvals

Logo	Description	Region
	<b>EU declaration of conformity</b> Pressure equipment directive PS > 200 bar, module A, pressure accessory	European Union
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...) For scale ranges ≤ 1,000 bar	Canada

## Optional approvals

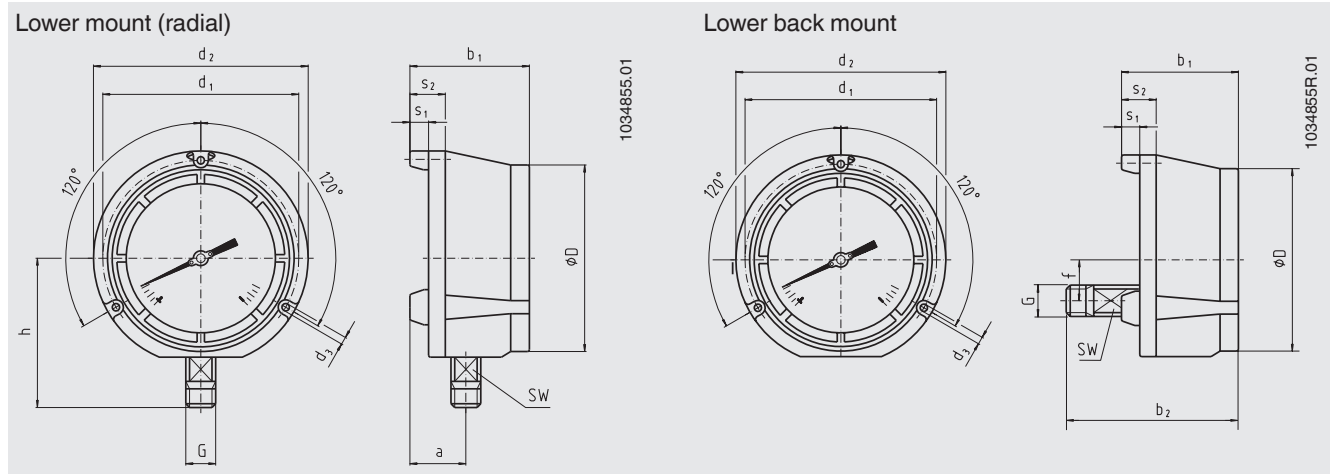
Logo	Description	Region
	<b>PAC Russia</b> Metrology, measurement technology	Russia
	<b>PAC Kazakhstan</b> Metrology, measurement technology	Kazakhstan
-	<b>MChS</b> Permission for commissioning	Kazakhstan

## Certificates (option)

Certificates	
<b>Certificates</b>	<ul style="list-style-type: none"> <li>■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy)</li> <li>■ 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy)</li> <li>■ A2LA calibration certificate, traceable and accredited in accordance with ISO/IEC 17025</li> <li>■ Calibration certificate by a national accreditation body, traceable and accredited in accordance with ISO/IEC 17025 on request</li> </ul>
<b>Recommended recalibration interval</b>	1 year (dependent on conditions of use)

→ Approvals and certificates, see website

## Dimensions in inch [mm]



### Process connection with thread per ANSI/ASME B1.20.1

NS	G	Dimensions in inch [mm]											
		a	b <sub>1</sub>	b <sub>2</sub>	D	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	f	h	s <sub>1</sub>	s <sub>2</sub>	SW
4 ½" [115]	¼ NPT	1.57 [40]	3.31 [84]	4.49 [114]	5 [128]	5.37 [136.5]	5.83 [148]	0.248 [6.3]	1.12 [28.5]	3.91 [99]	0.49 [12.5]	0.99 [25]	0.87 [22]
	½ NPT	1.57 [40]	3.31 [84]	4.74 [120]	5 [128]	5.37 [136.5]	5.83 [148]	0.248 [6.3]	1.12 [28.5]	4.06 [103]	0.49 [12.5]	0.99 [25]	0.87 [22]
6" [160]	¼ NPT	1.58 [40.2]	3.46 [88]	4.62 [117.4]	6.46 [164]	7 [177.8]	7.5 [190]	0.28 [7.1]	1.12 [28.5]	4.58 [116.5]	0.5 [12.7]	1 [25.4]	0.87 [22]
	½ NPT	1.58 [40.2]	3.46 [88]	4.86 [123.4]	6.46 [164]	7 [177.8]	7.5 [190]	0.28 [7.1]	1.12 [28.5]	4.82 [122.5]	0.5 [12.7]	1 [25.4]	0.87 [22]

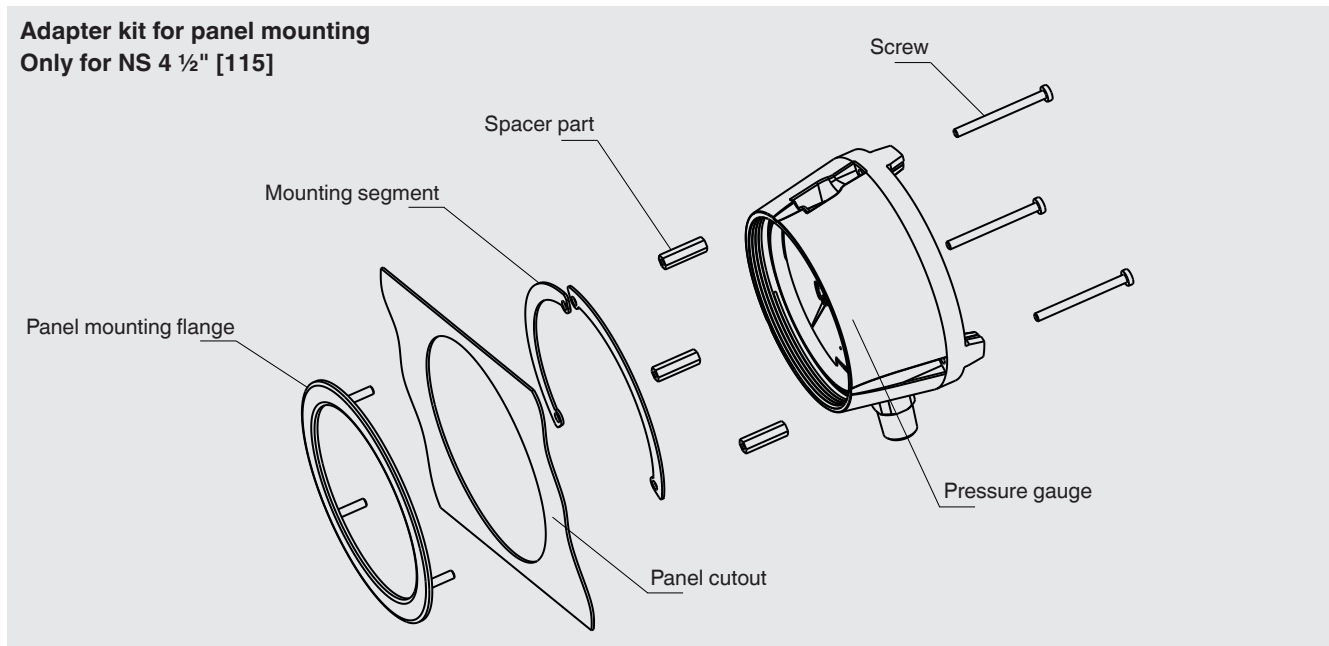
### Process connection with thread per EN 837-1

NS	G	Dimensions in inch [mm]											
		a	b <sub>1</sub>	b <sub>2</sub>	D	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	f	h	s <sub>1</sub>	s <sub>2</sub>	SW
4 ½" [115]	G ¼ B	1.57 [40]	3.31 [84]	4.49 [114]	5 [128]	5.37 [136.5]	5.83 [148]	0.248 [6.3]	1.12 [28.5]	3.82 [97]	0.49 [12.5]	0.99 [25]	0.87 [22]
	G ½ B	1.57 [40]	3.31 [84]	4.76 [121]	5 [128]	5.37 [136.5]	5.83 [148]	0.248 [6.3]	1.12 [28.5]	4.09 [104]	0.49 [12.5]	0.99 [25]	0.87 [22]
6" [160]	G ¼ B	1.58 [40.2]	3.46 [88]	4.62 [117.4]	6.46 [164]	7 [177.8]	7.5 [190]	0.28 [7.1]	1.12 [28.5]	4.58 [116.5]	0.5 [12.7]	1 [25.4]	0.87 [22]
	G ½ B	1.58 [40.2]	3.46 [88]	4.89 [124.4]	6.46 [164]	7 [177.8]	7.5 [190]	0.28 [7.1]	1.12 [28.5]	4.86 [123.5]	0.5 [12.7]	1 [25.4]	0.87 [22]

NS	Weight	
	Model 232.34	Model 233.34
4 ½" [115]	approx. 2 lbs [0.9 kg]	approx. 3 lbs [1.4 kg]
6" [160]	approx. 3 lbs [1.4 kg]	approx. 4 lbs [1.8 kg]









## Accessories

### Adapter kit for panel mounting Only for NS 4 1/2" [115]



Dimensions in inch [mm]		Order number
Recommended panel cutout	Wall thickness of control panel	
Ø 5.69 [144.5]	0.063 ... 0.31 [1.5 ... 7.9]	0738581

## Accessories and spare parts

Model	Description
	<b>910.17</b> Sealings → see data sheet AC 09.08
	<b>910.15</b> Syphons → see data sheet AC 09.06
	<b>910.13</b> Overpressure protector → see data sheet AC 09.04
	<b>IV10, IV11</b> Needle valve and multiport valve → see data sheet AC 09.22
	<b>IV20, IV21</b> Block-and-bleed valve → see data sheet AC 09.19
	<b>IVM</b> Monoflange, process and instrument version → see data sheet AC 09.17
	<b>BV</b> Ball valve, process and instrument version → see data sheet AC 09.28
	<b>IBF2, IBF3</b> Monoblock with flange connection → see data sheet AC 09.25

### Ordering information

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

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