

Bourdon tube pressure gauge, copper alloy

Standard version

Models 111.10, 111.12

WIKA data sheet PM 01.01



for further approvals,
see page 6

Applications

- For gaseous and liquid media that are not highly viscous or crystallising and will not attack copper alloy parts
- Pneumatics
- Heating and air-conditioning technology
- Medical engineering

Special features

- Reliable and cost-effective
- Design per EN 837-1 or ASME B40.100
- Nominal size 40 [1 ½"], 50 [2"], 63 [2 ½"], 80 [3"], 100 [4"] and 160 [6"]
- Scale ranges to 0 ... 400 bar [0 ... 6,000 psi]



Fig. left: Model 111.12, back mount

Fig. right: Model 111.10, lower mount (radial)

Description

The model 111 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 modular design enables a multitude of combinations of case materials, process connections, nominal sizes and scale ranges. Due to the high variance, the instrument is suitable for use in a wide range of applications within industry.

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

The standard version of the model 111 is manufactured, cost-optimised on modern production lines, in volumes of several million instruments per year.

Specifications

Basic information	
Standard	<ul style="list-style-type: none"> ■ EN 837-1 ■ ASME B40.100 <p>For information on the "Selection, installation, handling and operation of pressure gauges", see Technical information IN 00.05.</p>
Further version	<ul style="list-style-type: none"> ■ For closed heating systems with red mark pointer and adjustable green sector, scale range 0 ... 4 bar, red mark at 2.5 or 3 bar ■ For water level indication (hydrometer) and heating systems Scale ranges 0 ... 0.6 to 0 ... 25 bar, with second scale in mWS and red mark pointer
Nominal size (NS)	<ul style="list-style-type: none"> ■ Ø 40 mm [1 ½"] ■ Ø 50 mm [2"] ■ Ø 63 mm [2 ½"] ■ Ø 80 mm [3"] ■ Ø 100 mm [4"] ■ Ø 160 mm [6"] (only for model 111.10 with steel case)
Connection location	<ul style="list-style-type: none"> ■ Lower mount (radial) ■ Centre back mount ¹⁾
Window ²⁾	Plastic, crystal-clear, snap-fitted in case
Case	
Design	<ul style="list-style-type: none"> ■ Without safety level ■ Safety level "S1" per EN 837-1: With blow-out device
Material ³⁾	<ul style="list-style-type: none"> ■ Plastic, black ■ Steel, black
Mounting	<ul style="list-style-type: none"> ■ Without ■ Panel mounting flange ■ Surface mounting flange ⁴⁾ ■ Triangular profile ring with mounting bracket ⁵⁾
Movement	Copper alloy

1) Not available for NS 160 [6"]

2) Model 111.10, NS 160 [6"]: Instrument glass

3) Model 111.10, NS 160 [6"] and model 111.12, NS 100 [4"]: Steel, black

4) Not available for NS 40 [1 ½"], NS 50 [2"] and NS 160 [6"]

5) Not available for NS 40 [1 ½"], 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	<ul style="list-style-type: none"> ■ Class 1.6 ■ Class 2.5
ASME B40.100	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 ¹⁾
0 ... 2.5	0 ... 100 ¹⁾
0 ... 4	0 ... 160 ¹⁾
0 ... 6	0 ... 250 ¹⁾
0 ... 10	0 ... 315 ¹⁾
0 ... 16	0 ... 400 ¹⁾
0 ... 20	

kg/cm ²	
0 ... 0.6	0 ... 25
0 ... 1	0 ... 40
0 ... 1.6	0 ... 60 ¹⁾
0 ... 2.5	0 ... 100 ¹⁾
0 ... 4	0 ... 160 ¹⁾
0 ... 6	0 ... 250 ¹⁾
0 ... 10	0 ... 315 ¹⁾
0 ... 16	0 ... 400 ¹⁾
0 ... 20	

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

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

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

1) Not available for NS 160 [6"]

Vacuum and +/- scale ranges

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

MPa	
-0.06 ... 0 ¹⁾	-0.1 ... +0.5
-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

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

psi	
-15 inHg ... 0 ¹⁾	-30 inHg ... +100
-30 inHg ... 0	-30 inHg ... +160
-30 inHg ... +15	-30 inHg ... +200
-30 inHg ... +30	-30 inHg ... +300
-30 inHg ... +60	-30 inHg ... +400

1) Not available for NS 160 [6"]

Other scale ranges on request

Further details on: Scale ranges		
Unit	<ul style="list-style-type: none"> ■ bar ■ psi ■ kg/cm² ■ kPa ■ MPa 	
Increased overload safety	<ul style="list-style-type: none"> ■ Without ■ 1.6 times ■ 2 times <p>The possibility of selection depends on scale range and nominal size</p>	
Vacuum resistance	<ul style="list-style-type: none"> ■ Without ■ Vacuum-resistant to -1 bar 	
Dial		
Scale colour	Black	
Material	NS 40 [1 ½"], 50 [2"], 63 [2 ½"]	Plastic, white
	NS 80 [3"], 100 [4"], 160 [6"]	Aluminium, white
Customer-specific version	<ul style="list-style-type: none"> ■ Without ■ With temperature scale for refrigerant, e.g. for NH₃: R 717 <p>Other scales, e.g. with red mark, circular arcs or circular sectors, on request → Alternatively, adhesive label set for red and green circular arcs; see data sheet AC 08.03</p>	
Pointer		
Instrument pointer	NS 40 [1 ½"] ... 100 [4"]	Plastic, black
	NS 160 [6"]	Aluminium, black
Mark pointer/drag pointer	<ul style="list-style-type: none"> ■ Without ■ Red mark pointer on dial, fixed ¹⁾ ■ Red mark pointer on window, adjustable 	
Pointer stop pin	<ul style="list-style-type: none"> ■ Without ■ At zero point 	

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

Process connection	
Standard	<ul style="list-style-type: none"> ■ EN 837-1 ■ ISO 7 ■ ANSI/B1.20.1
Size	
EN 837-1	<ul style="list-style-type: none"> ■ G 1/8 B, male thread ■ G 1/4 B, male thread ■ G 1/2 B, male thread ¹⁾
ANSI/B1.20.1	<ul style="list-style-type: none"> ■ 1/8 NPT, male thread ■ 1/4 NPT, male thread ■ 1/2 NPT, male thread ¹⁾
ISO 7	<ul style="list-style-type: none"> ■ R 1/8, male thread ■ R 1/4, male thread ■ R 1/2, male thread ¹⁾
Restrictor	<ul style="list-style-type: none"> ■ Without ■ Ø 0.5 mm [0.02"], copper alloy ■ Ø 0.3 mm [0.012"], copper alloy
Material (wetted)	
Process connection	Copper alloy
Bourdon tube	Copper alloy


1) Not available for NS 40 [1 1/2"], NS 50 [2"] and NS 63 [2 1/2"]

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		
Model 111.10	NS 40 [1 1/2"], NS 50 [2"], NS 63 [2 1/2"]	IP33
	NS 80 [3"], NS 100 [4"], NS 160 [6"]	IP44
Model 111.12	NS 40 [1 1/2"], NS 50 [2"], NS 63 [2 1/2"]	IP41 ¹⁾
	NS 80 [3"], NS 100 [4"]	IP42

1) Ingress protection IP44 for steel case

Approvals

Logo	Description	Country
	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
-	MChS Permission for commissioning	Kazakhstan
	PAC Belarus Metrology, measurement technology	Belarus
-	PAC Ukraine Metrology, measurement technology	Ukraine
	PAC Uzbekistan Metrology, measurement technology	Uzbekistan
-	PAC China Metrology, measurement technology	China
-	FM ¹⁾ FM 2311, Use in fire protection systems	International
	UL ¹⁾ UL 393, Use in fire protection systems	International
	NSF NSF/ANSI 61-G and NSF/ANSI 372, Suitability for drinking water	USA

1) Only available for NS 100 [4"] with selected scale ranges and process connections

Manufacturer's information and certificates

Logo	Description
-	Pressure equipment directive (PED) for maximum allowable pressure PS ≤ 200 bar
-	Suitability of wetted materials for drinking water in accordance with the European 4MS initiative

Certificates (option)

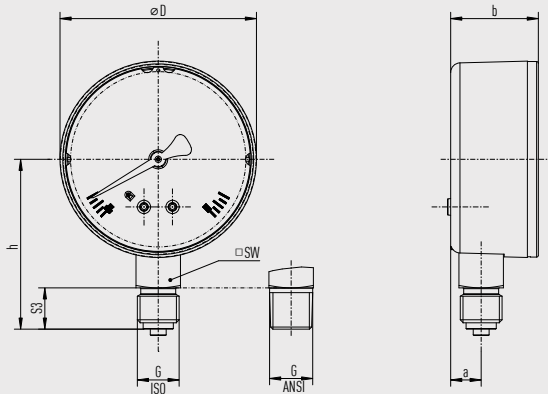
Certificates	
Certificates	<ul style="list-style-type: none"> ■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy) ■ 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy)
Recommended calibration interval	1 year (dependent on conditions of use)

→ For approvals and certificates, see website

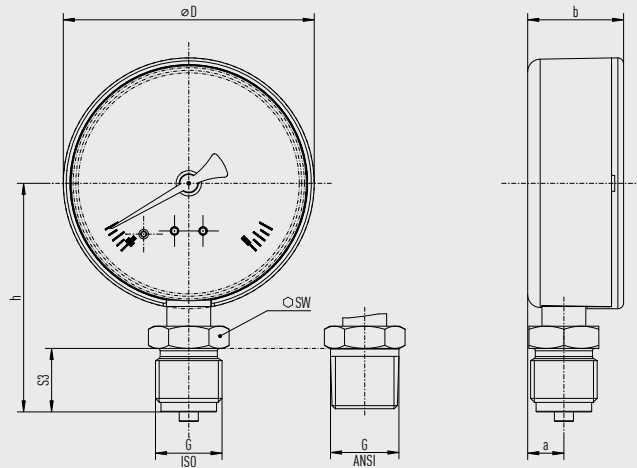
Dimensions in mm [in]

Model 111.10, lower mount (radial), plastic case

Instruments with SW = 14 [0.55]



Instruments with SW = 22 [0.87]



31132006.02

NS	G ¹⁾	Dimensions in mm [in]					
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	D	SW
40 [1 ½"]	G ½ B, ½ NPT, R ½	36.0 [1.42]	12.0 [0.47]	9.6 [0.38]	26.4 [1.04]	38.9 [1.53]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	37.0 [1.46]	13.0 [0.51]	9.6 [0.38]	26.4 [1.04]	38.9 [1.53]	14 [0.55]
50 [2"]	G ½ B, ½ NPT, R ½	44.0 [1.73]	12.0 [0.47]	10.0 [0.39]	27.4 [1.08]	49.0 [1.93]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	45.0 [1.77]	13.0 [0.51]	10.0 [0.39]	27.4 [1.08]	49.0 [1.93]	14 [0.55]
63 [2 ½"]	G ½ B, ½ NPT, R ½	52.5 [2.07]	12.0 [0.47]	9.6 [0.38]	27.6 [1.09]	62.0 [2.44]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	53.5 [2.11]	13.0 [0.51]	9.6 [0.38]	27.6 [1.09]	62.0 [2.44]	14 [0.55]
80 [3"]	G ½ B, ½ NPT, R ½	60.0 [2.36]	12.0 [0.47]	11.4 [0.45]	30.2 [1.19]	79.0 [3.11]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	61.0 [2.40]	13.0 [0.51]	11.4 [0.45]	30.2 [1.19]	79.0 [3.11]	14 [0.55]
	G ½ B, ½ NPT, R ½	72.0 [2.83]	20.0 [0.79]	11.4 [0.45]	30.2 [1.19]	79.0 [3.11]	22 [0.87]
100 [4"]	G ½ B, ½ NPT, R ½	70.0 [2.76]	12.0 [0.47]	11.5 [0.45]	30.3 [1.19]	99.0 [3.90]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	71.0 [2.80]	13.0 [0.51]	11.5 [0.45]	30.3 [1.19]	99.0 [3.90]	14 [0.55]
	G ½ B, ½ NPT, R ½	83.5 [3.29]	20.0 [0.79]	11.5 [0.45]	30.3 [1.19]	99.0 [3.90]	22 [0.87]

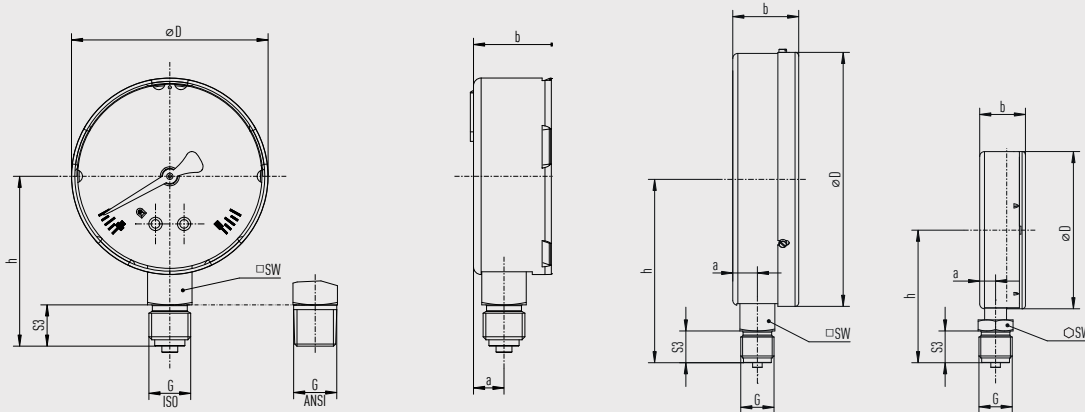
1) The G ½ B process connection of this instrument is manufactured without a centring spigot and with a thread runout instead of a thread undercut.

NS	Weight in kg [lb]
40 [1 ½"]	0.08 [0.18]
50 [2"]	0.10 [0.22]
63 [2 ½"]	0.13 [0.29]
80 [3"]	0.18 [0.40]
100 [4"]	0.21 [0.46]

Model 111.10, lower mount (radial), steel case

Instruments with SW = 14 [0.55]
NS 40 [2 ½"] ... 100 [4"]

Instruments with SW = 22 [0.87]
NS 160 [6"] NS 100 [4"]



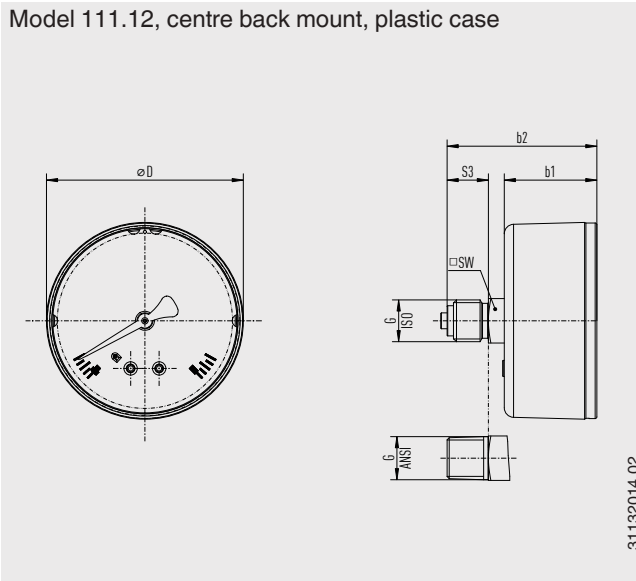
31132006.02

NS	G ¹⁾	Dimensions in mm [in]					
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	D	SW
40 [1 ½"]	G ½ B, ½ NPT, R ½	38.0 [1.50]	12.0 [0.47]	9.6 [0.38]	25.8 [1.02]	39.0 [1.54]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	39.0 [1.54]	13.0 [0.51]	9.6 [0.38]	25.8 [1.02]	39.0 [1.54]	14 [0.55]
50 [2"]	G ½ B, ½ NPT, R ½	44.0 [1.73]	12.0 [0.47]	9.6 [0.38]	27.9 [1.10]	49.0 [1.93]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	45.0 [1.77]	13.0 [0.51]	9.6 [0.38]	27.9 [1.10]	49.0 [1.93]	14 [0.55]
63 [2 ½"]	G ½ B, ½ NPT, R ½	52.5 [2.07]	12.0 [0.47]	9.6 [0.38]	27.9 [1.10]	61.9 [2.44]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	53.5 [2.11]	13.0 [0.51]	9.6 [0.38]	27.9 [1.10]	61.9 [2.44]	14 [0.55]
80 [3"]	G ½ B, ½ NPT, R ½	60.0 [2.36]	12.0 [0.47]	10.0 [0.39]	28.8 [1.13]	79.0 [3.11]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	61.0 [2.40]	13.0 [0.51]	10.0 [0.39]	28.8 [1.13]	79.0 [3.11]	14 [0.55]
100 [4"]	G ½ B, ½ NPT, R ½	70.0 [2.76]	12.0 [0.47]	10.0 [0.39]	28.8 [1.13]	99.0 [3.90]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	76.5 [3.01]	13.0 [0.51]	10.0 [0.39]	28.8 [1.13]	99.0 [3.90]	22 [0.87]
	G ½ B, ½ NPT, R ½	83.5 [3.29]	20.0 [0.79]	10.0 [0.39]	28.8 [1.13]	99.0 [3.90]	22 [0.87]
160 [6"]	G ¼ B, ¼ NPT, R ¼	108.5 [4.27]	13.0 [0.51]	11.5 [0.45]	41.5 [1.63]	160.0 [6.30]	22 [0.87]
	G ½ B, ½ NPT, R ½	115.5 [4.55]	20.0 [0.79]	11.5 [0.45]	41.5 [1.63]	160.0 [6.30]	22 [0.87]

1) The G ½ 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"]	0.09 [0.2]
50 [2"]	0.11 [0.24]
63 [2 ½"]	0.15 [0.33]
80 [3"]	0.26 [0.57]
100 [4"]	0.31 [0.68]
160 [6"]	0.88 [1.94]

Model 111.12, centre back mount, plastic case

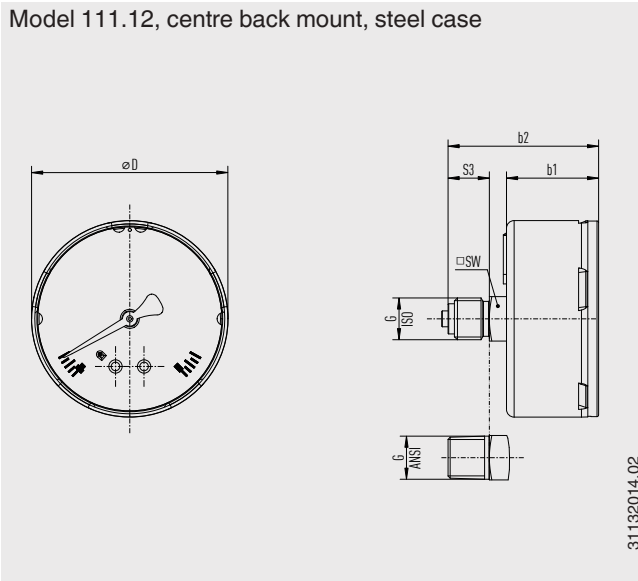


NS	G ¹⁾	Dimensions in mm [in]				
		b1 ±0.5 [0.02]	b2 ±1 [0.04]	S3	D	SW
40 [1 ½"]	G ½ B, ½ NPT, R ½	26.4 [1.53]	44.0 [1.73]	12.0 [0.47]	39.0 [1.53]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	26.4 [1.53]	45.0 [1.77]	13.0 [0.51]	39.0 [1.53]	14 [0.55]
50 [2"]	G ½ B, ½ NPT, R ½	29.5 [1.87]	47.5 [1.87]	12.0 [0.47]	49.0 [1.93]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	29.5 [1.87]	48.5 [1.91]	13.0 [0.51]	49.0 [1.93]	14 [0.55]
63 [2 ½"]	G ½ B, ½ NPT, R ½	29.0 [1.15]	47.0 [1.86]	12.0 [0.47]	62.0 [2.44]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	29.0 [1.15]	48.5 [1.91]	13.0 [0.51]	62.0 [2.44]	14 [0.55]
80 [3"]	G ½ B, ½ NPT, R ½	32.0 [1.25]	48.0 [1.89]	12.0 [0.47]	79.0 [3.11]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	32.0 [1.25]	49.0 [1.92]	13.0 [0.51]	79.0 [3.11]	14 [0.55]
	G ½ B, ½ NPT, R ½	55.4 [2.18]	55.4 [2.18]	20.0 [0.79]	79.0 [3.11]	14 [0.55]

1) The G ½ 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]
80 [3"]	0.11 [0.24]

Model 111.12, centre back mount, steel case











NS	G ¹⁾	Dimensions in mm [in]				
		b1 ±0.5 [0.02]	b2 ±1 [0.04]	S3	D	SW
40 [1 ½"]	G ⅛ B, ⅛ NPT, R ⅛	25.8 [1.02]	44.0 [1.73]	12.0 [0.47]	39.0 [1.53]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	25.8 [1.02]	45.0 [1.77]	13.0 [0.51]	39.0 [1.53]	14 [0.55]
50 [2"]	G ⅛ B, ⅛ NPT, R ⅛	27.9 [1.10]	46.5 [1.83]	12.0 [0.47]	49.0 [1.93]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	27.9 [1.10]	47.5 [1.87]	13.0 [0.51]	49.0 [1.93]	14 [0.55]
63 [2 ½"]	G ⅛ B, ⅛ NPT, R ⅛	29.2 [1.14]	47.2 [1.86]	12.0 [0.47]	62.0 [2.44]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	29.2 [1.14]	48.2 [1.91]	13.0 [0.51]	62.0 [2.44]	14 [0.55]
80 [3"]	G ⅛ B, ⅛ NPT, R ⅛	30.8 [1.21]	47.8 [1.89]	12.0 [0.47]	79.0 [3.11]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	30.8 [1.21]	48.8 [1.92]	13.0 [0.51]	79.0 [3.11]	14 [0.55]
	G ½ B, ½ NPT, R ½	55.4 [2.18]	55.2 [2.17]	20.0 [0.79]	79.0 [3.11]	14 [0.55]
100 [4"]	G ⅛ B, ⅛ NPT, R ⅛	30.8 [1.21]	47.8 [1.89]	12.0 [0.47]	99.0 [3.90]	14 [0.55]
	G ¼ B, ¼ NPT, R ¼	30.8 [1.21]	48.8 [1.92]	13.0 [0.51]	99.0 [3.90]	14 [0.55]
	G ½ B, ½ NPT, R ½	55.4 [2.18]	55.2 [2.17]	20.0 [0.79]	99.0 [3.90]	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"]	0.07 [0.15]
50 [2"]	0.1 [0.22]
63 [2 ½"]	0.15 [0.33]
80 [3"]	0.27 [0.6]
100 [4"]	0.37 [0.82]

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 multipoint valve → See data sheet AC 09.22
	IV20, IV21 Block-and-bleed valve → See data sheet AC 09.19
	IVM Monoflange, process and instrument version → See data sheet AC 09.17
	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

© 02/1995 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.
The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.

