

Bourdon tube pressure gauge, copper alloy Stainless steel case, case filling Model 113.53, NS 40 [1 ½"], 80 [3"] and 100 [4"]

WIKA data sheet PM 01.08



For further approvals,
see page 6

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
- Pumps and compressors
- Hydraulics

Special features

- Vibration and shock resistant
- Robust design



Model 113.53.100, lower mount

Configurator



Description

The liquid-filled model 113.53 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 113.53 are available in nominal sizes of 40 [1 ½"], 80 [3"] and 100 [4"] and fulfil IP65 ingress protection. With an accuracy of class 2.5, 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.

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 80 mm [3"] Ø 100 mm [4"]	
Connection location	Lower mount (radial) Centre back mount	
Window	Polycarbonate	
Case		
Design	NS 40 [1 ½"]	Safety level “S2” per EN 837-1: with blow-out device
	NS 80 [3"], 100 [4"]	Safety level “S1” per EN 837-1: with blow-out device With scale ranges ≤ 0 ... 16 bar [≤ 0 ... 200 psi], the filling plug can be vented and resealed for internal pressure compensation
Material	Stainless steel, natural finish	
Ring	Crimp ring, stainless steel	
Mounting	Without Panel mounting flange, stainless steel ¹⁾ Triangular profile ring with mounting bracket, stainless steel Surface mounting flange, stainless steel ¹⁾	
Case filling	Glycerine ²⁾ Silicone oil	
Movement	Copper alloy	

1) Not available for NS 40 [1 ½"]

2) For low scale ranges the case filling is a glycerine-water mixture

Measuring element	
Type of measuring element	Bourdon tube, C-type or helical type
Material	Copper alloy
Leak tightness	Leakage rate: < 5 · 10 ⁻³ mbar l/s

Accuracy specifications		
Accuracy class		
NS 40 [1 ½"]	EN 837-1	Class 2.5
	ASME B40.100	±3 % ±2 % ±3 % of measuring span (grade B)
NS 80 [3"], 100 [4"]	EN 837-1	■ Class 2.5 ■ Class 1.6
	ASME B40.100	■ ±3 % ±2 % ±3 % of measuring span (grade B) ■ ±2 % ±1 % ±2 % of measuring span (grade A)
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 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160
0 ... 4	0 ... 200
0 ... 6	0 ... 250
0 ... 10	0 ... 315
0 ... 16	0 ... 400
0 ... 25	0 ... 600
0 ... 40	-

kPa	
0 ... 100	0 ... 6,000
0 ... 200	0 ... 8,000
0 ... 250	0 ... 10,000
0 ... 400	0 ... 16,000
0 ... 600	0 ... 20,000
0 ... 800	0 ... 25,000
0 ... 1,000	0 ... 31,500
0 ... 1,600	0 ... 40,000
0 ... 2,500	0 ... 60,000
0 ... 4,000	-

psi	
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
0 ... 500	0 ... 7,500

kg/cm ²	
0 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160
0 ... 4	0 ... 200
0 ... 6	0 ... 250
0 ... 10	0 ... 315
0 ... 16	0 ... 400
0 ... 25	0 ... 600
0 ... 40	-

MPa	
0 ... 0.1	0 ... 6
0 ... 0.16	0 ... 10
0 ... 0.25	0 ... 16
0 ... 0.4	0 ... 20
0 ... 0.6	0 ... 25
0 ... 1	0 ... 31.5
0 ... 1.6	0 ... 40
0 ... 2.5	0 ... 60
0 ... 4	-

Vacuum and compound scale ranges

bar	
-1 ... 0	-1 ... +9
-1 ... +0.6	-1 ... +15
-1 ... +1.5	-1 ... +24
-1 ... +3	-1 ... +30
-1 ... +5	-1 ... +40

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

psi	
-30 inHg ... 0	-30 inHg ... +15

kg/cm ²	
-1 ... 0	-1 ... +5
-1 ... +0.6	-1 ... +9
-1 ... +1	-1 ... +15
-1 ... +1.5	-1 ... +24
-1 ... +3	-1 ... +30

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	
Special scale ranges	Other scale ranges on request
Unit	■ bar ■ psi ■ kg/cm² ■ kPa ■ MPa
Dial	
Scale colour	Black
Material	Aluminium
Special scale	Other scales or customer-specific dials, e.g. with red mark, circular arcs or circular sectors, on request
Pointer	
Instrument pointer	Plastic, black
Pointer stop pin	■ Without ■ At zero point

Process connection	
Standard	■ EN 837-1 ■ ISO 7 ■ ANSI/B1.20.1
Size	
EN 837-1	■ G 1/8 B, male thread ■ G 1/4 B, male thread ■ G 1/2 B, male thread ■ M10 x 1, male thread ■ M12 x 1.5, male thread ■ M20 x 1.5, male thread
ISO 7	■ R 1/8, male thread ■ R 1/4, male thread ■ R 1/2, male thread
ANSI/B1.20.1	■ 1/8 NPT, male thread ■ 1/4 NPT, male thread ■ 1/2 NPT, male thread
Restrictor	■ 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

→ Other process connections on request

Operating conditions	
Medium temperature	
Instruments with glycerine filling	-20 ... +100 °C [-4 ... +212 °F]
Instruments with silicone oil filling	-40 ... +100 °C [-40 ... +212 °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	
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	Region
	EU declaration of conformity	European Union
	Pressure Equipment Directive PS > 200 bar, module A, pressure accessory	
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Optional approvals

Logo	Description	Region
	PAC Kazakhstan Metrology, measurement technology	Kazakhstan
-	PAC Ukraine Metrology, measurement technology	Ukraine
	PAC Uzbekistan Metrology, measurement technology	Uzbekistan
-	PAC China Metrology, measurement technology	China

Manufacturer's declaration

Logo	Description
-	Pressure Equipment Directive (PED) for maximum allowable pressure $PS \leq 200$ bar
-	Suitability of wetted materials for drinking water in accordance with the European 4MS initiative

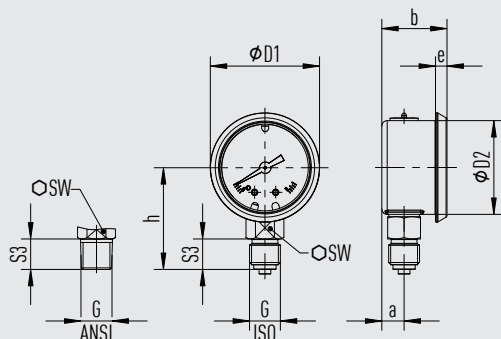
Certificates

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. indication accuracy) ■ PCA calibration certificate, traceable and accredited in accordance with ISO/IEC 17025 ■ Calibration certificate by a national accreditation body, traceable and accredited in accordance with ISO/IEC 17025 on request
Recommended calibration interval	1 year (dependent on conditions of use)

→ For approvals and certificates, see website

Dimensions in mm [in]

NS 40 [1 ½"], lower mount (radial)



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NS	Weight
NS 40 [1 ½"]	0.1 kg [0.22 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	D1	D2	SW
40 [1 ½"]	G ½ B	40.5 [1.59]	10 [0.39]	9.5 [0.37]	28 [1.1]	5 [0.2]	47 [1.85]	40 [1.57]	14 [0.55]
	G ¼ B	43.5 [1.71]	13 [0.51]	9.5 [0.37]	28 [1.1]	5 [0.2]	47 [1.85]	40 [1.57]	14 [0.55]
	M10 x 1	41.5 [1.63]	11 [0.43]	9.5 [0.37]	28 [1.1]	5 [0.2]	47 [1.85]	40 [1.57]	14 [0.55]

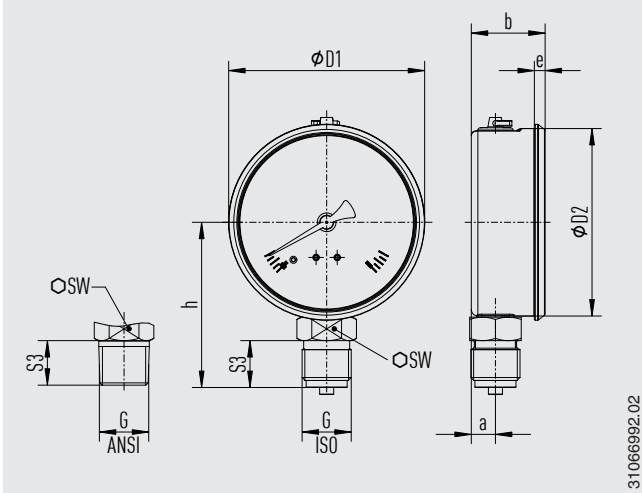
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]							
		h ±1 [0.04]	S3	a	b ±0.5 [0.02]	e	D1	D2	SW
40 [1 ½"]	R ½	40.5 [1.59]	10 [0.39]	9.5 [0.37]	28 [1.1]	5 [0.2]	47 [1.85]	40 [1.57]	14 [0.55]
	R ¼	43.5 [1.71]	13 [0.51]	9.5 [0.37]	28 [1.1]	5 [0.2]	47 [1.85]	40 [1.57]	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	D1	D2	SW
40 [1 ½"]	½ NPT	40.5 [1.59]	10 [0.39]	9.5 [0.37]	28 [1.1]	5 [0.2]	47 [1.85]	40 [1.57]	14 [0.55]
	¼ NPT	43.5 [1.71]	13 [0.51]	9.5 [0.37]	28 [1.1]	5 [0.2]	47 [1.85]	40 [1.57]	14 [0.55]

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



NS	Weight
NS 80 [3"]	0.3 kg [0.66 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]							
		$h \pm 1$ [0.04]	S3	a	$b \pm 0.5$ [0.02]	e	D1	D2	SW
80 [3"]	G ¼ B	67.5 [2.66]	17 [0.67]	10.5 [0.41]	31.5 [1.24]	4.5 [0.18]	83.5 [3.29]	80 [3.15]	22 [0.87]
	G ½ B	70.5 [2.78]	20 [0.79]	10.5 [0.41]	31.5 [1.24]	4.5 [0.18]	83.5 [3.29]	80 [3.15]	22 [0.87]
	M20 x 1.5	70.5 [2.78]	20 [0.79]	10.5 [0.41]	31.5 [1.24]	4.5 [0.18]	83.5 [3.29]	80 [3.15]	22 [0.87]

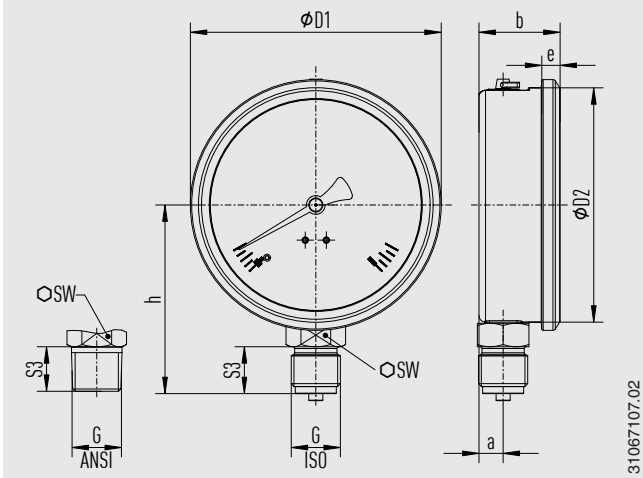
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]							
		$h \pm 1$ [0.04]	S3	a	$b \pm 0.5$ [0.02]	e	D1	D2	SW
80 [3"]	R ¼	67.5 [2.66]	17 [0.67]	10.5 [0.41]	31.5 [1.24]	4.5 [0.18]	83.5 [3.29]	80 [3.15]	22 [0.87]
	R ½	69.5 [2.74]	19 [0.75]	10.5 [0.41]	31.5 [1.24]	4.5 [0.18]	83.5 [3.29]	80 [3.15]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]							
		$h \pm 1$ [0.04]	S3	a	$b \pm 0.5$ [0.02]	e	D1	D2	SW
80 [3"]	¼ NPT	67.5 [2.66]	17 [0.67]	10.5 [0.41]	31.5 [1.24]	4.5 [0.18]	83.5 [3.29]	80 [3.15]	22 [0.87]
	½ NPT	69.5 [2.74]	19 [0.75]	10.5 [0.41]	31.5 [1.24]	4.5 [0.18]	83.5 [3.29]	80 [3.15]	22 [0.87]

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



NS	Weight
NS 100 [4"]	0.5 kg [1.1 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]							
		$h \pm 1$ [0.04]	S3	a	$b \pm 0.5$ [0.02]	e	D1	D2	SW
100 [4"]	G ¼ B	77.5 [3.05]	17 [0.67]	10.5 [0.41]	34.5 [1.36]	8 [0.31]	107 [4.21]	100 [3.94]	22 [0.87]
	G ½ B	80.5 [3.17]	20 [0.79]	10.5 [0.41]	34.5 [1.36]	8 [0.31]	107 [4.21]	100 [3.94]	22 [0.87]
	M20 x 1.5	80.5 [3.17]	20 [0.79]	10.5 [0.41]	34.5 [1.36]	8 [0.31]	107 [4.21]	100 [3.94]	22 [0.87]

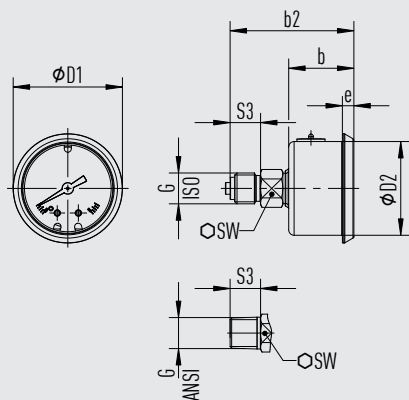
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]							
		$h \pm 1$ [0.04]	S3	a	$b \pm 0.5$ [0.02]	e	D1	D2	SW
100 [4"]	R ¼	77.5 [3.05]	17 [0.67]	10.5 [0.41]	34.5 [1.36]	8 [0.31]	107 [4.21]	100 [3.94]	22 [0.87]
	R ½	79.5 [3.13]	19 [0.75]	10.5 [0.41]	34.5 [1.36]	8 [0.31]	107 [4.21]	100 [3.94]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]							
		$h \pm 1$ [0.04]	S3	a	$b \pm 0.5$ [0.02]	e	D1	D2	SW
100 [4"]	¼ NPT	77.5 [3.05]	17 [0.67]	10.5 [0.41]	34.5 [1.36]	8 [0.31]	107 [4.21]	100 [3.94]	22 [0.87]
	½ NPT	79.5 [3.13]	19 [0.75]	10.5 [0.41]	34.5 [1.36]	8 [0.31]	107 [4.21]	100 [3.94]	22 [0.87]

NS 40 [1 ½"], centre back mount



NS	Weight
NS 40 [1 ½"]	0.1 kg [0.22 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		b2 ±1 [0.04]	b ±0.5 [0.02]	e	S3	D1	D2	SW
40 [1 ½"]	G ½ B	50 [1.97]	28 [1.1]	5 [0.19]	10 [0.39]	47 [1.85]	40 [1.57]	14 [0.55]
	G ¼ B	53 [2.08]	28 [1.1]	5 [0.19]	13 [0.51]	47 [1.85]	40 [1.57]	14 [0.55]
	M10 x 1	51 [2.01]	28 [1.1]	5 [0.19]	11 [0.43]	47 [1.85]	40 [1.57]	14 [0.55]

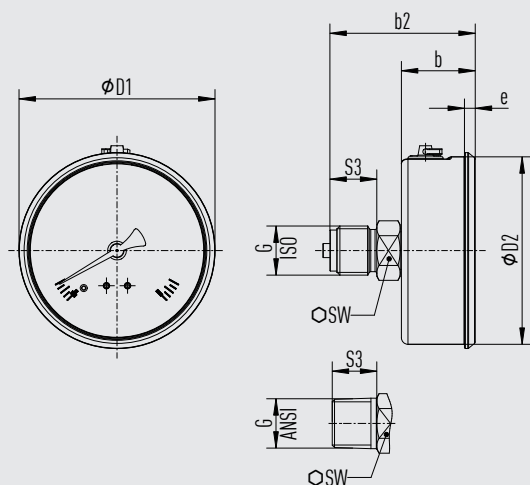
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		b2 ±1 [0.04]	b ±0.5 [0.02]	e	S3	D1	D2	SW
40 [1 ½"]	R ½	50 [1.97]	28 [1.1]	5 [0.19]	10 [0.39]	47 [1.85]	40 [1.57]	14 [0.55]
	R ¼	53 [2.08]	28 [1.1]	5 [0.19]	13 [0.51]	47 [1.85]	40 [1.57]	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]	e	S3	D1	D2	SW
40 [1 ½"]	½ NPT	50 [1.97]	28 [1.1]	5 [0.19]	10 [0.39]	47 [1.85]	40 [1.57]	14 [0.55]
	¼ NPT	53 [2.08]	28 [1.1]	5 [0.19]	13 [0.51]	47 [1.85]	40 [1.57]	14 [0.55]

NS 80 [3"] , centre back mount



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NS	Weight
NS 80 [3"]	0.3 kg [0.66 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		$b2 \pm 1$ [0.04]	$b \pm 0.5$ [0.02]	e	S3	D1	D2	SW
80 [3"]	G ¼ B	59 [2.32]	31.5 [1.24]	4.5 [0.18]	17 [0.67]	83.5 [3.29]	80 [3.15]	22 [0.87]
	G ½ B	62 [2.44]	31.5 [1.24]	4.5 [0.18]	20 [0.79]	83.5 [3.29]	80 [3.15]	22 [0.87]
	M20 x 1.5	62 [2.44]	31.5 [1.24]	4.5 [0.18]	20 [0.79]	83.5 [3.29]	80 [3.15]	22 [0.87]

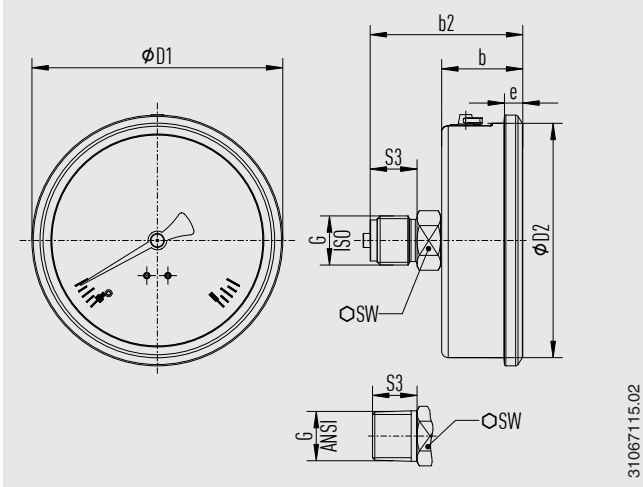
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		$b2 \pm 1$ [0.04]	$b \pm 0.5$ [0.02]	e	S3	D1	D2	SW
80 [3"]	R ¼	59 [2.32]	31.5 [1.24]	4.5 [0.18]	17 [0.67]	83.5 [3.29]	80 [3.15]	22 [0.87]
	R ½	61 [2.4]	31.5 [1.24]	4.5 [0.18]	19 [0.75]	83.5 [3.29]	80 [3.15]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		$b2 \pm 1$ [0.04]	$b \pm 0.5$ [0.02]	e	S3	D1	D2	SW
80 [3"]	¼ NPT	59 [2.32]	31.5 [1.24]	4.5 [0.18]	17 [0.67]	83.5 [3.29]	80 [3.15]	22 [0.87]
	½ NPT	61 [2.4]	31.5 [1.24]	4.5 [0.18]	19 [0.75]	83.5 [3.29]	80 [3.15]	22 [0.87]

NS 100 [4"], centre back mount



NS	Weight
NS 100 [4"]	0.5 kg [1.1 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		b2 ±1 [0.04]	b ±0.5 [0.02]	e	S3	D1	D2	SW
100 [4"]	G ¼ B	62 [2.44]	34.5 [1.36]	8 [0.31]	17 [0.67]	107 [4.21]	100 [3.94]	22 [0.87]
	G ½ B	65 [2.56]	34.5 [1.36]	8 [0.31]	20 [0.79]	107 [4.21]	100 [3.94]	22 [0.87]
	M20 x 1.5	65 [2.56]	34.5 [1.36]	8 [0.31]	20 [0.79]	107 [4.21]	100 [3.94]	22 [0.87]

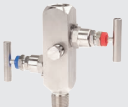
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		b2 ±1 [0.04]	b ±0.5 [0.02]	e	S3	D1	D2	SW
100 [4"]	R ¼	62 [2.44]	34.5 [1.36]	8 [0.31]	17 [0.67]	107 [4.21]	100 [3.94]	22 [0.87]
	R ½	64 [2.52]	34.5 [1.36]	8 [0.31]	19 [0.75]	107 [4.21]	100 [3.94]	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]	e	S3	D1	D2	SW
100 [4"]	¼ NPT	62 [2.44]	34.5 [1.36]	8 [0.31]	17 [0.67]	107 [4.21]	100 [3.94]	22 [0.87]
	½ NPT	64 [2.52]	34.5 [1.36]	8 [0.31]	19 [0.75]	107 [4.21]	100 [3.94]	22 [0.87]

Accessories and spare parts

Model	Description	
	910.33	Adhesive label set for red and green circular arcs → See data sheet AC 08.03
	Order number NG 100 [4"]	14238945
	910.17	Seals → 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
	IV1	Needle valve and multiport needle valve → See data sheet AC 09.22
	IV2	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

Configurator



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