

# Absolute pressure gauge, stainless steel

## High overload safety

### Models 532.52, 532.53 and 532.54

WIKA data sheet PM 05.02



For further approvals,  
see page 6

#### Applications

- Pressure measurement independent of fluctuations in atmospheric pressure
- For gaseous, liquid and aggressive media, also in aggressive environments
- Monitoring of vacuum pumps
- Control of vacuum packaging machines
- Monitoring of condensation pressures and determination of vapour pressure in liquids

#### Special features

- High overload safety
- Long service life due to metal media chamber sealing and the extremely gas-tight material of the reference chamber
- Instruments compatible with switch contacts
- Scale ranges from 0 ... 25 mbar absolute pressure
- QR code on dial links to instrument-specific information

#### Description

These absolute pressure gauges are used when the pressure measurement needs to be carried out independent of fluctuations in atmospheric pressure.

Based on the diaphragm element measurement principle, extremely low scale ranges from 0 ... 25 mbar absolute pressure are available. These measuring instruments, made entirely of stainless steel, are suitable for gaseous, liquid and aggressive media.

The instruments owe their high long-term stability and subsequent long service life to the special, extremely gas-tight material of the reference chamber. Thus, the required vacuum can be maintained in the reference chamber for a long time. A metal media chamber sealing also contributes to this.



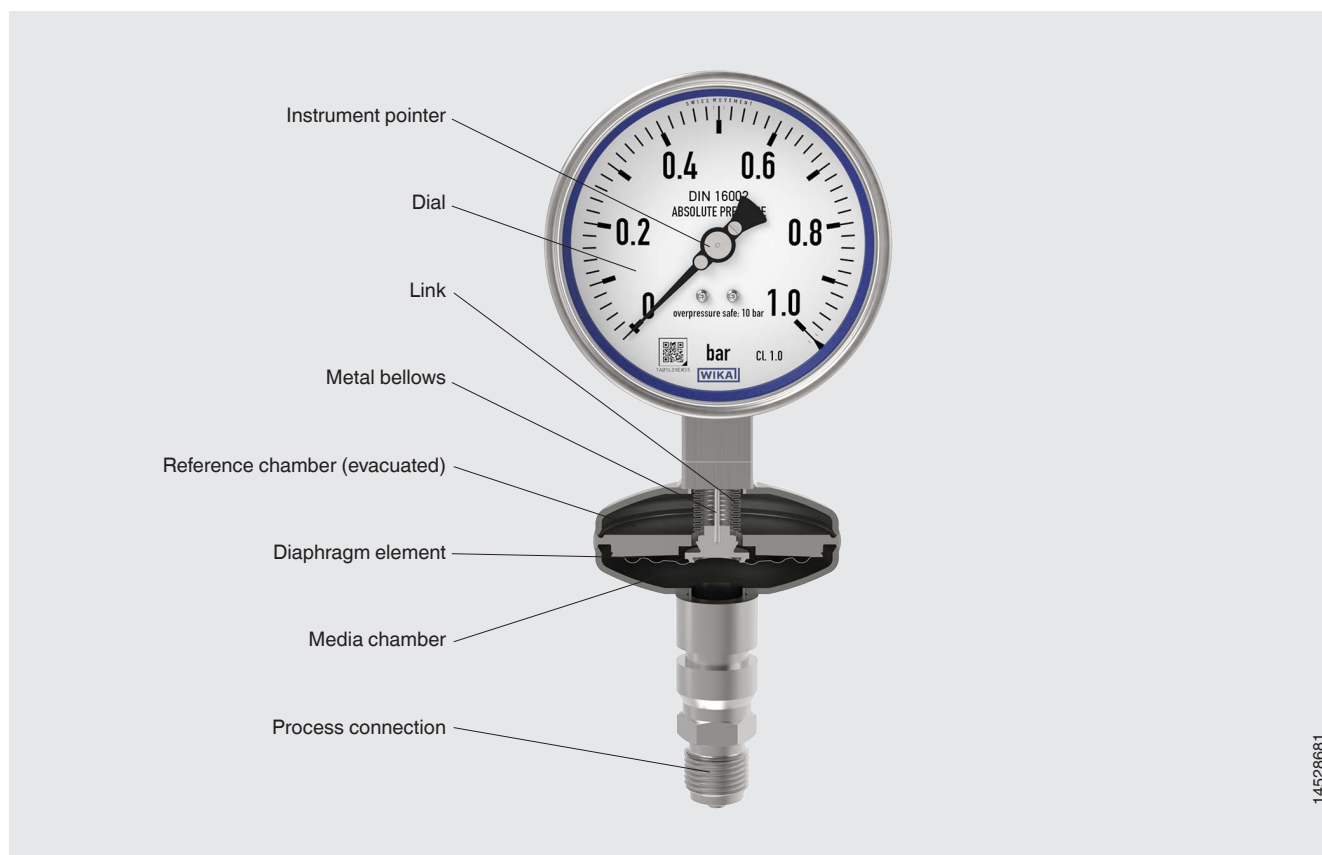
Absolute pressure gauge, model 532.52

In addition, depending on the scale range, this instrument features an overload safety of at least 1 bar absolute pressure. Depending on the version, the overload safety can be up to 20 times the full scale value, but a maximum of 25 bar absolute pressure.

The qualification and production of the instruments is carried out in accordance with DIN 16002, which was developed with the cooperation of WIKA.

The QR code on the dial allows instrument-specific information such as the serial number, the order number, certificates and other product data to be retrieved from the internet easily and in the long term.

## Functionality



The pressure measurement in absolute pressure gauges always refers to the absolute vacuum in the reference chamber. This enables pressure measurement independently of fluctuations in atmospheric pressure. The pressure element separates the media chamber from the fully evacuated reference chamber. The pressure element, the diaphragm element, is a circular, corrugated diaphragm. The diaphragm element is welded at the edge and is subjected to pressure on one side by the pressure in the media chamber.

The pressure difference between media chamber and reference chamber causes the deflection, and thus the measuring travel, of the diaphragm element. The measuring travel of the diaphragm element is transmitted to the movement by a metal bellows via the link and displayed on the dial with the instrument pointer.

### Overload safety

Independent of the scale range, the overload safety is at least 1 bar absolute pressure. This ensures that the ambient pressure (approx. 1 bar absolute pressure) cannot represent an overload.

The diaphragm element can be subject to an overload of up to 20 times the full scale value, but max. to 25 bar absolute pressure, through load take-up points (by bringing the diaphragm element up against the upper measuring flange). With this version, for example, in the scale range 0 ... 400 mbar abs., a short-term overpressure of up to 8 bar abs. would not be problematic and the accuracy would remain unaffected.

### Monel version

For extremely corrosive media, the wetted parts can be supplied from Monel.

# Specifications

Basic information	
<b>Standard</b>	
EN 837-3	Diaphragm and capsule pressure gauges
DIN 16002	Absolute pressure gauges
→ For information on the “Selection, installation, handling and operation of pressure gauges”, see technical information IN 00.05.	
<b>Nominal size (NS)</b>	<ul style="list-style-type: none"> <li>■ Ø 100 mm [4"]</li> <li>■ Ø 160 mm [6"]</li> </ul>
<b>Window</b>	<ul style="list-style-type: none"> <li>■ Laminated safety glass</li> <li>■ Polycarbonate</li> </ul>
<b>Case</b>	
Design, model 532.52, 532.53, 532.54, 533.52, 533.53, 533.54, 562.54, 563.54	Safety level “S1” per EN 837-1: with blow-out device
Design, model 532.32, 532.33, 532.34, 533.32, 533.33, 533.34, 562.34, 563.34	Safety level “S3” per EN 837-1: with solid baffle wall and blow-out back
Material	<ul style="list-style-type: none"> <li>■ Stainless steel 1.4301 (304)</li> <li>■ Stainless steel 1.4571 (316Ti)</li> </ul>
<b>Ring</b>	Bayonet bezel, stainless steel
<b>Mounting</b>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Panel mounting flange, stainless steel</li> </ul>
<b>Case filling</b>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Glycerine-water mixture <sup>1)</sup></li> <li>■ Silicone oil M50 <sup>1)</sup></li> </ul> <p>Instruments with case filling can be vented and resealed for internal pressure equalisation.</p>
<b>Movement</b>	Stainless steel

1) Ingress protection IP65 for instruments with case filling

Measuring element	
<b>Type of measuring element</b>	Diaphragm element
<b>Material <sup>1)</sup></b>	
Span ≤ 0.25 bar [100 inH <sub>2</sub> O]	<ul style="list-style-type: none"> <li>■ Stainless steel 1.4571 (316Ti)</li> <li>■ Monel <sup>2)</sup></li> </ul>
Span ≥ 0.4 bar [160 inH <sub>2</sub> O]	<ul style="list-style-type: none"> <li>■ NiCr alloy (Inconel)</li> <li>■ Monel <sup>2)</sup></li> </ul>

1) The version for customised spans between 0.25 bar [100 inH<sub>2</sub>O] and 0.4 bar [160 inH<sub>2</sub>O] is determined after application-specific testing.

2) The Monel version (models 562.54, 563.54, 562.34, 563.34) is only available in accuracy class 2.5.

Accuracy specifications	
<b>Accuracy class</b>	
Model 532.52, 533.52, 532.32, 533.32	1.0
Model 532.53, 533.53, 532.33, 533.33	1.6
Model 532.54, 533.54, 532.34, 533.34, 562.54, 563.54, 562.34, 563.34	2.5
	The accuracy is ensured for ambient pressure fluctuations between 955 and 1,065 mbar (min. and max. of atmospheric pressure).
<b>Temperature error</b>	On deviation from the reference conditions at the measuring system: ≤ ±0.8 % per 10 °C [≤ ±0.8 % per 18 °F] of full scale value
<b>Reference conditions</b>	
Ambient temperature	+20 °C [68 °F]

## Scale ranges

Scale range
<b>mbar abs.</b>
0 ... 25
0 ... 40
0 ... 60
0 ... 100
0 ... 160
0 ... 250
0 ... 400
0 ... 600
0 ... 1,000
0 ... 30 ... 1,200 <sup>1)</sup>
<b>bar abs.</b>
0 ... 0.25
0 ... 1
0 ... 1.6
0 ... 2.5
0 ... 4
0 ... 6
0 ... 10
0 ... 16
0 ... 25

1) Expanded lower scale range

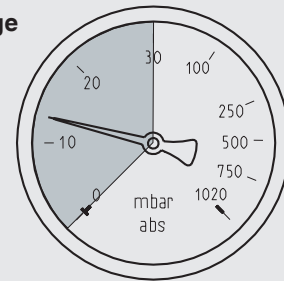
→ Other scale ranges on request

Scale range
<b>psi abs.</b>
0 ... 4
0 ... 6
0 ... 10
0 ... 15
0 ... 30
0 ... 60
0 ... 100
0 ... 150
0 ... 160
0 ... 200
0 ... 250
0 ... 300

### Expanded lower scale range

Scale range 0 ... 1,020 mbar absolute pressure, lower scale range 0 ... 30 mbar, class 1.6 expanded to approx. 130 °.

### Operating range Class 1.6



## Further details on: scale ranges

<b>Unit</b>	<ul style="list-style-type: none"> <li>■ mbar abs.</li> <li>■ bar abs.</li> <li>■ psi abs.</li> <li>■ kPa abs.</li> </ul>				
	Other units on request				
<b>Overload safety</b>	<ul style="list-style-type: none"> <li>■ 10 x full scale value<sup>1)</sup>, however max. 25 bar abs.</li> <li>■ 20 x full scale value<sup>1)</sup>, however max. 25 bar abs.</li> </ul>				
<b>Dial</b>					
Scale layout	<ul style="list-style-type: none"> <li>■ Single scale</li> <li>■ Dual scale</li> </ul>				
Scale colour	<table border="1"> <tbody> <tr> <td>Single scale</td> <td>Black</td> </tr> <tr> <td>Dual scale</td> <td>Black/red</td> </tr> </tbody> </table>	Single scale	Black	Dual scale	Black/red
Single scale	Black				
Dual scale	Black/red				
Material	Aluminium				
Customer-specific version	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				
<b>Instrument pointer</b>					
With case filling	Standard pointer, aluminium, black				
Without case filling	Adjustable pointer, aluminium, black				

1) Regardless of the full scale value, this version can work with pressures of min. 1 bar abs.

Process connection	
<b>Standard</b>	<ul style="list-style-type: none"> <li>■ EN 837</li> <li>■ ANSI / ASME B1.20.1</li> <li>■ ASME B16.5</li> <li>■ EN 1092-1, form B</li> </ul>
<b>Size <sup>1)</sup></b>	
EN 837	<ul style="list-style-type: none"> <li>■ G ½ B, male thread</li> <li>■ M20 x 1.5, male thread</li> </ul>
ANSI / ASME B1.20.1	<ul style="list-style-type: none"> <li>■ ½ NPT, male thread</li> </ul>
ASME B16.5	<ul style="list-style-type: none"> <li>■ Open connecting flange 1" class 150, RF</li> <li>■ Open connecting flange 2" class 150, RF</li> </ul>
EN 1092-1, form B1	<ul style="list-style-type: none"> <li>■ Open connecting flange DN 25 PN 25</li> <li>■ Open connecting flange DN 50 PN 25</li> </ul>
DIN 28403	<ul style="list-style-type: none"> <li>■ Small flange for vacuum applications DN 10</li> <li>■ Small flange for vacuum applications DN 16</li> </ul>
<b>Materials (wetted)</b>	
Process connection with lower measuring flange	<ul style="list-style-type: none"> <li>■ Stainless steel 1.4571 (316Ti)</li> <li>■ Monel</li> </ul>

1) Further threaded connections (→ See technical information IN 00.03) and open connecting flanges per ASME B16.5 / EN 1092-1, form B from DN 15 to DN 80 (→ See technical information IN 00.10)

→ Other process connections on request

Operating conditions	
<b>Medium temperature range</b>	<ul style="list-style-type: none"> <li>■ +100 °C [+212 °F] maximum</li> <li>■ +200 °C [+392 °F] maximum</li> </ul>
<b>Ambient temperature range</b>	<ul style="list-style-type: none"> <li>■ -20 ... +60 °C [-4 ... +140 °F]</li> <li>■ -40 ... +60 °C [-40 ... +140 °F] <sup>1)</sup></li> </ul>
<b>Storage temperature range</b>	-40 ... +70 °C [-4 ... 140 °F]
<b>Pressure limitation</b>	
Steady	Full scale value
Fluctuating	0.9 x full scale value
<b>Ingress protection per IEC/EN 60529</b>	<ul style="list-style-type: none"> <li>■ IP54</li> <li>■ IP65 <sup>2)</sup></li> </ul>

1) Only selectable in combination with silicone oil case filling







2) Ingress protection IP65 for instruments with case filling

## Other versions

- Version for hazardous areas (Ex h)
- Absolute pressure gauge with switch contacts; see data sheet PV 25.02
- Absolute pressure gauge with output signal; model APGT43; see data sheet PV 15.02
- Oil- and grease-free
- Oil- and grease-free for oxygen
- Silicone-free
- With pre-volume deflagration flame arrester <sup>1)</sup> for mounting to zone 0 (EPL Ga); model 910.21; see data sheet AC 91.02

1) Only for instruments with Ex approval

## Optional approvals

Logo	Description	Region
 	<b>EU declaration of conformity</b> ATEX directive Hazardous areas Gas II 2G h IIC T6 ... T1 Gb X Dust II 2D h IIIC T85°C ... T450°C Db X	European Union
	<b>EAC</b> Hazardous areas	Eurasian Economic Community
	<b>Ex Ukraine</b> Hazardous areas	Ukraine
	<b>PAC Kazakhstan</b> Metrology, measurement technology	Kazakhstan
-	<b>MChS</b> Permission for commissioning	Kazakhstan
-	<b>PAC Ukraine</b> Metrology, measurement technology	Ukraine
	<b>PAC Uzbekistan</b> Metrology, measurement technology	Uzbekistan
-	<b>CPA</b> Metrology, measurement technology	China
-	<b>CRN</b> Safety (e.g. electr. safety, overpressure, ...)	Canada

## Certificates

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> </ul>
<b>Recommended calibration interval</b>	1 year (dependent on conditions of use)

## Patents, property rights

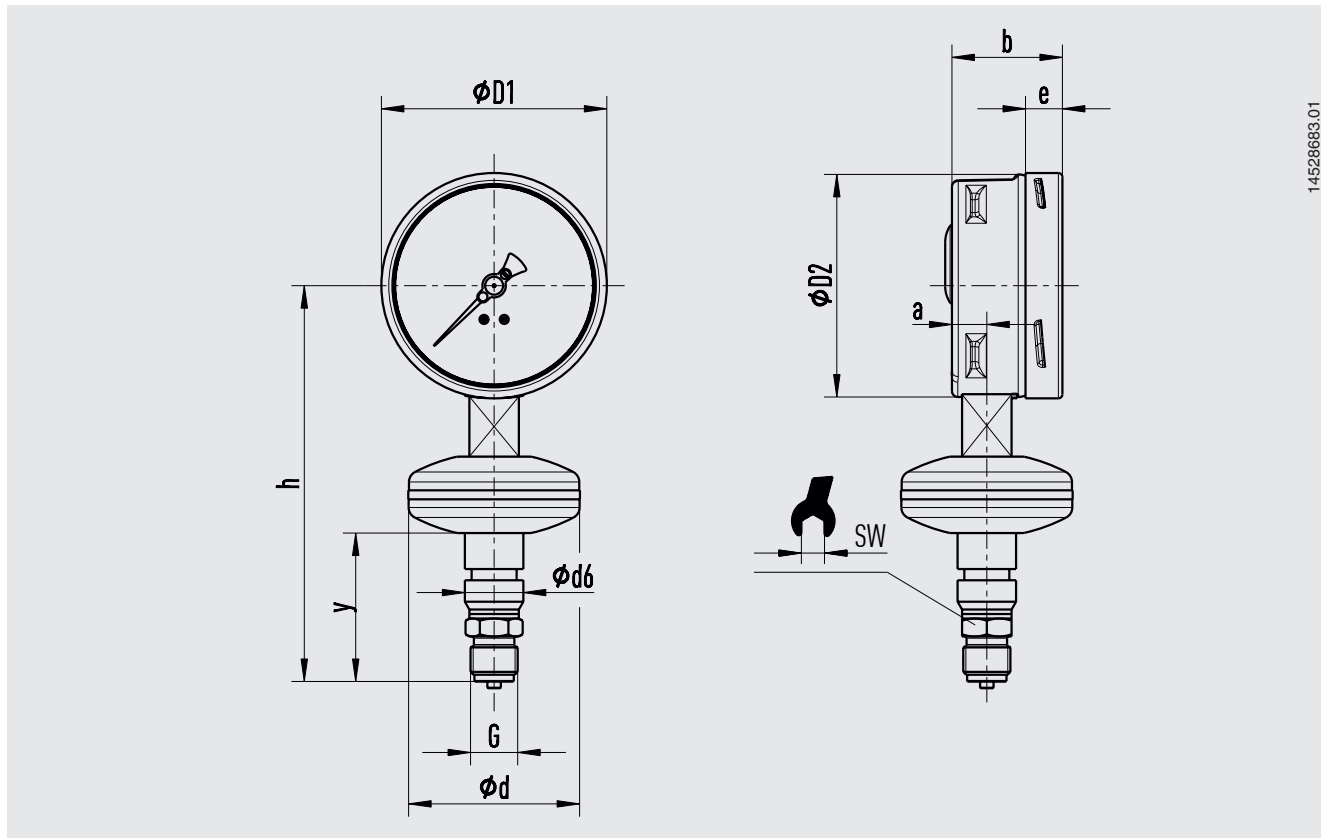
Patent number	Description
<b>US Design D1051747S, CPC CN 01677074, DE Design 402022100171, EU Design 402022100171, IR Design DM/222416, EU 3D trademark 018659564</b>	WIKA blue identity design patent

The WIKA blue identity design is protected in various countries under various rights.

→ For approvals and certificates, see website

## Dimensions in mm [in]

Model 532.52, 532.53, 532.54, 533.52, 533.53 and 533.54



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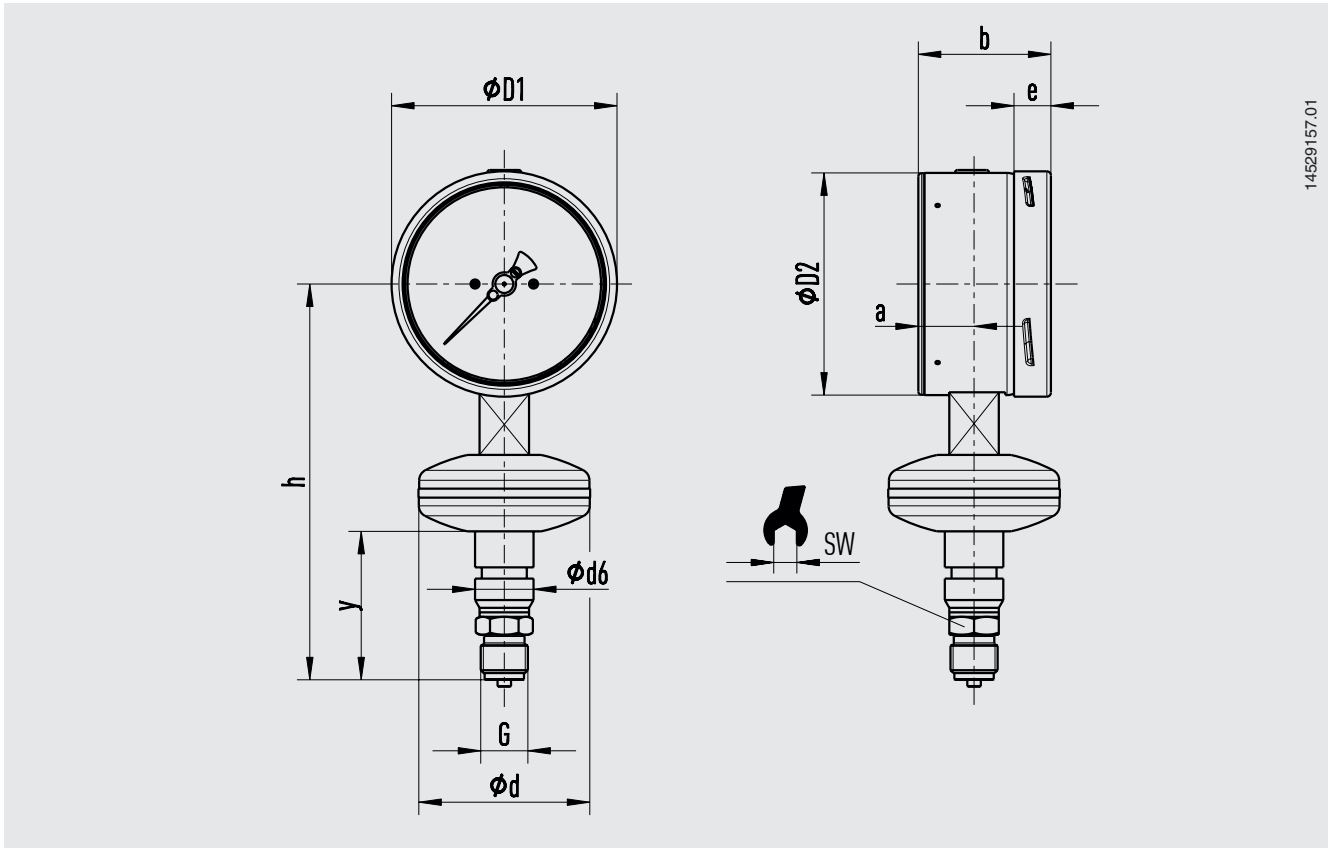
### Nominal size 100 [4"]

Process connection G	Scale range <sup>1)</sup>	Dimensions in mm [in]										Weight in kg [lb]
		d	d6	a	b	D1	D2	e	$h \pm 1$ [0.04]	y	SW	
G ½ B	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	17.5 [0.69]	185 [7.28]	58 [2.28]	22 [0.87]	1.8 [3.97]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	17.5 [0.69]	177 [6.97]	66 [2.60]	22 [0.87]	1.2 [2.65]
½ NPT	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	17.5 [0.69]	184 [7.24]	57 [2.24]	22 [0.87]	1.8 [3.97]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	101 [3.98]	99 [3.90]	17.5 [0.69]	176 [6.93]	65 [2.56]	22 [0.87]	1.2 [2.65]

### Nominal size 160 [6"]

Process connection G	Scale range <sup>1)</sup>	Dimensions in mm [in]										Weight in kg [lb]
		d	d6	a	b	D1	D2	e	$h \pm 1$ [0.04]	y	SW	
G ½ B	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	161 [6.34]	159 [6.26]	17.5 [0.69]	215 [8.46]	58 [2.28]	22 [0.87]	2.3 [5.07]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	161 [6.34]	159 [6.26]	17.5 [0.69]	207 [8.15]	66 [2.60]	22 [0.87]	1.6 [3.53]
½ NPT	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	161 [6.34]	159 [6.26]	17.5 [0.69]	214 [8.43]	57 [2.24]	22 [0.87]	2.3 [5.07]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	15.5 [0.61]	49.5 [1.95]	161 [6.34]	159 [6.26]	17.5 [0.69]	206 [8.11]	65 [2.56]	22 [0.87]	1.6 [3.53]

<sup>1)</sup> The dimensions for customised spans between 0.25 bar [3.6 psi] and 0.4 bar [5.8 psi] are determined after application-specific testing.



14529157.01

Nominal size 100 [4"]

Process connection G	Scale range <sup>1)</sup>	Dimensions in mm [in]										Weight in kg [lb]
		d	d6	a	b	D1	D2	e	h ± 1 [0.04]	y	SW	
G ½ B	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	24.5 [0.96]	59 [2.32]	101 [3.98]	99 [3.90]	17.5 [0.69]	185 [7.28]	58 [2.28]	22 [0.87]	1.8 [3.97]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	24.5 [0.96]	59 [2.32]	101 [3.98]	99 [3.90]	17.5 [0.69]	177 [6.97]	66 [2.60]	22 [0.87]	1.2 [2.65]
½ NPT	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	24.5 [0.96]	59 [2.32]	101 [3.98]	99 [3.90]	17.5 [0.69]	184 [7.24]	57 [2.24]	22 [0.87]	1.8 [3.97]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	24.5 [0.96]	59 [2.32]	101 [3.98]	99 [3.90]	17.5 [0.69]	176 [6.93]	65 [2.56]	22 [0.87]	1.2 [2.65]

Nominal size 160 [6"]

Process connection G	Scale range <sup>1)</sup>	Dimensions in mm [in]										Weight in kg [lb]
		d	d6	a	b	D1	D2	e	h ± 1 [0.04]	y	SW	
G ½ B	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	27 [1.06]	65 [2.56]	161 [6.34]	159 [6.26]	17.5 [0.69]	215 [8.46]	58 [2.28]	22 [0.87]	2.3 [5.07]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	27 [1.06]	65 [2.56]	161 [6.34]	159 [6.26]	17.5 [0.69]	207 [8.15]	66 [2.60]	22 [0.87]	1.6 [3.53]
½ NPT	≤ 0.25 bar [3.6 psi]	133 [5.24]	26 [1.02]	27 [1.06]	65 [2.56]	161 [6.34]	159 [6.26]	17.5 [0.69]	214 [8.43]	57 [2.24]	22 [0.87]	2.3 [5.07]
	≥ 0.4 bar [5.8 psi]	76 [2.99]	26 [1.02]	27 [1.06]	65 [2.56]	161 [6.34]	159 [6.26]	17.5 [0.69]	206 [8.11]	65 [2.56]	22 [0.87]	1.6 [3.53]

<sup>1)</sup> The dimensions for customised spans between 0.25 bar [3.6 psi] and 0.4 bar [5.8 psi] are determined after application-specific testing.

## Accessories and spare parts

Model	Description
	<b>910.17</b> Seals → 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>IV1</b> Needle valve and multiport needle valve → See data sheet AC 09.22
	<b>IV2</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 / Options

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