

## Pressure gauge, DirectDrive version Models PG81 and PG91

WIKA data sheet PM 01.50



### Applications

- Measurement of static pressures in dry, gaseous media that will not attack copper alloy parts
- Indication of cylinder charging pressure for medical and industrial gases

### Special features

- Good vibration and shock resistance
- Compact and robust design
- Scale ranges to 0 ... 450 bar [0 ... 6,500 psi]
- Stainless steel case, NS 36 [1.4"] and NS 41 [1.6"]
- Ingress protection IP65 and IP67 available



Fig. left: Model PG81 with spiral tube

Fig. right: Model PG91 with helical tube

## Description

### Measurement principle

The pressure gauges in DirectDrive version do not require a movement. The pressure element is directly connected to the pointer or acts as a pointer itself. The shape of the pressure element provides for a pointer rotation proportional to the pressure. The measuring elements of the model PG81 are designed in a spiral form and those of the model PG91 in a helical form.

The advantage of the DirectDrive version is the optimised shock and vibration resistance.

### Fields of application

This pressure gauge is particularly suited for the operating conditions of pressure regulators and pressure valves on fixed and portable gas cylinders.

### Individual customer versions

Based on many years of experience in manufacturing and development, WIKA is happy to offer support in the construction and production of customer-specific solutions.

# Specifications

Basic information	
<b>Standard</b>	<ul style="list-style-type: none"> <li>■ In line with EN 837-1 <sup>1)</sup></li> <li>■ In line with ISO 10297 <sup>1)</sup></li> <li>■ UL 252A (only for model PG81)</li> <li>■ UL 404 (only for scale ranges from 0 ... 100 bar [0 ... 1,500 psi])</li> </ul> <p>For information on the "Selection, installation, handling and operation of pressure gauges" see technical information IN 00.05.</p>
<b>Further version</b>	<ul style="list-style-type: none"> <li>■ Oil- and grease-free</li> <li>■ For oxygen, oil- and grease-free</li> </ul>
<b>Nominal size (NS)</b>	<ul style="list-style-type: none"> <li>■ Ø 36 mm [1.4"]</li> <li>■ Ø 41 mm [1.6"]</li> </ul>
<b>Connection location</b>	Centre back mount
<b>Window</b>	Polycarbonate
<b>Case</b>	
Design	<ul style="list-style-type: none"> <li>■ With blow-out device in case back</li> <li>■ With ventable diaphragm and blow-out device in case back</li> </ul>
Material	Stainless steel
Case protector	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Rubber, black</li> <li>■ Rubber, blue</li> <li>■ Rubber, red</li> <li>■ Rubber, orange</li> </ul>

1) Load cycle stability and other standards' requirements are fulfilled.

Measuring element	
<b>Type of measuring element</b>	
Model PG81	Spiral tube
Model PG91	Helical tube
<b>Material</b>	Copper alloy
<b>Leak tightness</b>	Leakage rate: $< 5 \cdot 10^{-3}$ mbar l/s

Accuracy specifications	
<b>Accuracy <sup>1)</sup></b>	<ul style="list-style-type: none"> <li>■ <math>\pm 4</math> % of span <sup>2)</sup></li> <li>■ <math>\pm 2.5</math> % at a defined pressure value</li> </ul>
<b>Temperature error</b>	On deviation from the reference conditions at the measuring system: $\leq \pm 0.4$ % per 10 °C [ $\leq \pm 0.4$ % per 18 °F] of full scale value
<b>Reference conditions</b>	
Ambient temperature	+20 °C [+68 °F]

1) Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2). Adjusted at nominal position per EN 837-1

2)  $\pm 5$  % of span for span  $\leq 12$  bar [175 psi]

## Scale ranges

bar
0 ... 40
0 ... 60
0 ... 100
0 ... 160
0 ... 200
0 ... 250
0 ... 315
0 ... 400
0 ... 450

kg/cm <sup>2</sup>
0 ... 40
0 ... 60
0 ... 100
0 ... 160
0 ... 200
0 ... 250
0 ... 315
0 ... 400
0 ... 450

kPa
0 ... 4,000
0 ... 6,000
0 ... 10,000
0 ... 16,000
0 ... 20,000
0 ... 25,000
0 ... 31,500
0 ... 40,000
0 ... 45,000

MPa
0 ... 4
0 ... 6
0 ... 10
0 ... 16
0 ... 20
0 ... 25
0 ... 31.5
0 ... 40
0 ... 45

psi
0 ... 600
0 ... 870
0 ... 1,500
0 ... 2,200
0 ... 3,000
0 ... 3,600
0 ... 4,500
0 ... 5,000
0 ... 6,000
0 ... 6,500

	<b>Model PG81 with spiral tube</b>
	<b>Model PG91 with helical tube</b>

The scale ranges shown with model (type of the measuring element) are recommendations from WIKA. Different, customer-specific versions on request.

Further details on: scale ranges		
<b>Unit</b>	<ul style="list-style-type: none"> <li>■ bar</li> <li>■ psi</li> <li>■ kg/cm<sup>2</sup></li> <li>■ kPa</li> <li>■ MPa</li> </ul>	
<b>Dial</b>		
Scale angle	≤ 160° ±15°	
Scale layout	<ul style="list-style-type: none"> <li>■ Single scale</li> <li>■ Dual scale</li> </ul>	
Scale colour	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	
<b>Pointer</b>	Copper alloy, black	

Process connection		
<b>Standard</b>	<ul style="list-style-type: none"> <li>■ EN 837-1</li> <li>■ ISO 7</li> <li>■ ANSI/B1.20.1</li> </ul>	
<b>Size</b>		
EN 837-1	<ul style="list-style-type: none"> <li>■ G 1/8 B, male thread</li> <li>■ G 1/4 B, male thread</li> </ul>	
ANSI/B1.20.1	<ul style="list-style-type: none"> <li>■ 1/8 NPT, male thread</li> <li>■ 1/4 NPT, male thread</li> </ul>	
ISO 7	<ul style="list-style-type: none"> <li>■ R 1/8, male thread</li> <li>■ R 1/4, male thread</li> </ul>	
<b>Restrictor</b>	<ul style="list-style-type: none"> <li>■ Without</li> <li>■ Ø 0.3 mm [0.012"], copper alloy</li> <li>■ Ø 0.1 mm [0.004"], copper alloy</li> <li>■ Reduced measuring element diameter (only model PG91 with helical tube)</li> </ul>	
<b>Material (wetted)</b>		
Process connection	Copper alloy	
Bourdon tube	Copper alloy	

Other process connections on request

Operating conditions		
<b>Medium temperature range</b>	-20 ... +65 °C [-4 ... +149 °F]	
<b>Ambient temperature range</b>	-20 ... +65 °C [-4 ... +149 °F]	
<b>Storage temperature range</b>	-40 ... +70 °C [-40 ... +158 °F]	
<b>Pressure limitation</b>		
Steady <sup>1)</sup>	3/4 x full scale value	
Fluctuating	2/3 x full scale value	
Short time	Full scale value	
<b>Ingress protection per IEC/EN 60529</b>	<ul style="list-style-type: none"> <li>■ IP65</li> <li>■ IP67</li> </ul>	

1) Maximum allowable pressure PS per European pressure equipment directive

## Approvals

Logo	Description	Region
	<b>EU declaration of conformity</b> Pressure equipment directive PS > 200 bar, module A, pressure accessory	European Union
	<b>UL</b> UL approval per UL 252A (only for model PG81) UL approval per UL 404 (only for scale ranges from 0 ... 100 bar [0 ... 1,500 psi])	North America

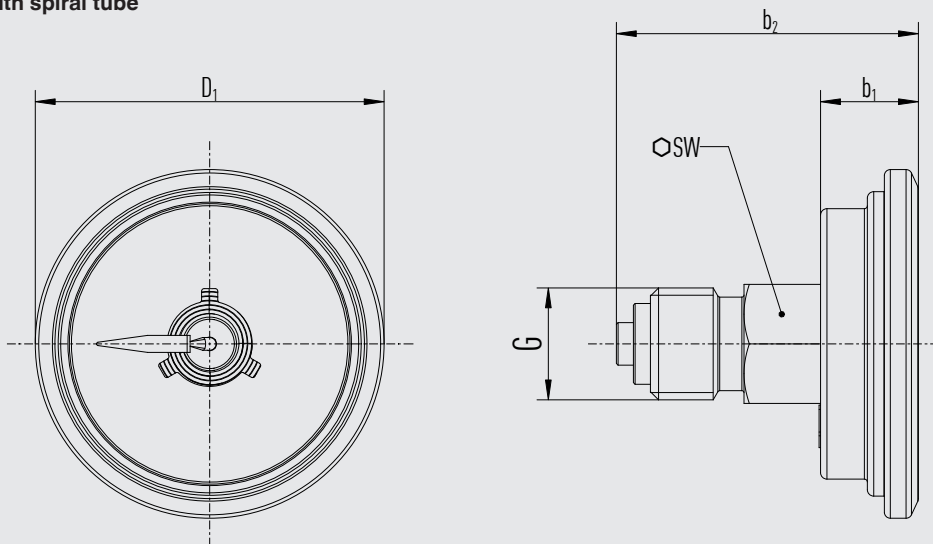
## Certificates (option)

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></ul>

→ For approvals and certificates, see website

## Dimensions in mm [in]

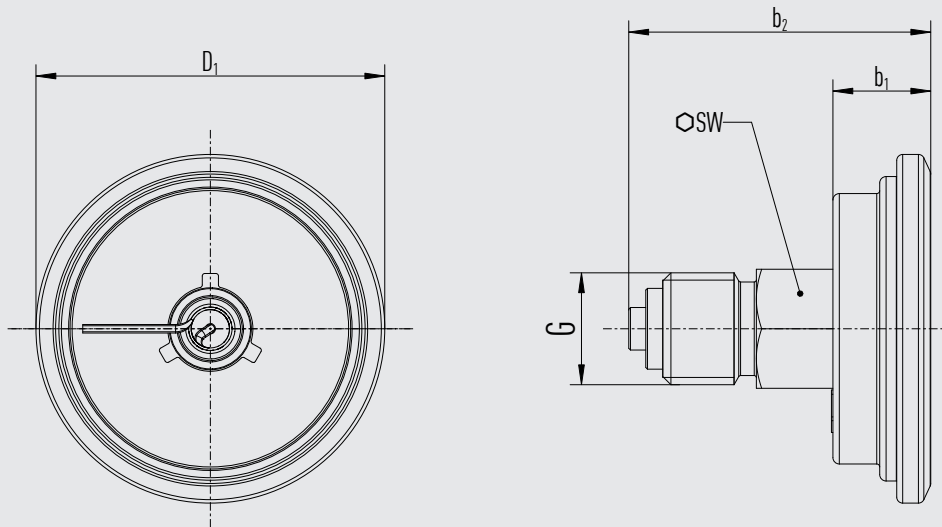
Model PG81 with spiral tube



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NS	G	Dimensions in mm [in]				Weight in kg [lb]
		D	b1 ±0.5 [±0.02]	b2 ±1.5 [±0.06]	SW	
36 [1.4"]	G 1/8 B	36 [1.42]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.021 [0.046]
	G 1/4 B	36 [1.42]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.021 [0.046]
	1/8 NPT	36 [1.42]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.021 [0.046]
	1/4 NPT	36 [1.42]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.021 [0.046]
	R 1/8	36 [1.42]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.021 [0.046]
	R 1/4	36 [1.42]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.021 [0.046]
41 [1.6"]	G 1/8 B	41 [1.61]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.024 [0.053]
	G 1/4 B	41 [1.61]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.024 [0.053]
	1/8 NPT	41 [1.61]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.024 [0.053]
	1/4 NPT	41 [1.61]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.024 [0.053]
	R 1/8	41 [1.61]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.024 [0.053]
	R 1/4	41 [1.61]	11.5 [0.45]	32 [1.26]	14 [0.55]	0.024 [0.053]

### Model PG91 with helical tube



14298216.01

NS	G	Dimensions in mm [in]				Weight in kg [lb]
		D	b1 ±0.5 [±0.02]	b2 ±1.5 [±0.06]	SW	
<b>36 [1.4"]</b>	G 1/8 B	36 [1.42]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.021 [0.046]
	G 1/4 B	36 [1.42]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.021 [0.046]
	1/8 NPT	36 [1.42]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.021 [0.046]
	1/4 NPT	36 [1.42]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.021 [0.046]
	R 1/8	36 [1.42]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.021 [0.046]
	R 1/4	36 [1.42]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.021 [0.046]
<b>41 [1.6"]</b>	G 1/8 B	41 [1.61]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.024 [0.053]
	G 1/4 B	41 [1.61]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.024 [0.053]
	1/8 NPT	41 [1.61]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.024 [0.053]
	1/4 NPT	41 [1.61]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.024 [0.053]
	R 1/8	41 [1.61]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.024 [0.053]
	R 1/4	41 [1.61]	11.5 [0.45]	36.5 [1.44]	14 [0.55]	0.024 [0.053]

### Ordering information

Model / Nominal size / Scale range / Options

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