

Bourdon tube pressure gauge, copper alloy

For welding, cutting and allied processes

Models 111.11, 111.31

WIKA data sheet PM 01.03


 for further approvals,
 see page 5

Applications

- For equipment and apparatus for gas welding, cutting and allied autogenous processes
- Pressure and level indication for industrial gases such as oxygen or acetylene
- For mounting to pressure reducers or valves

Special features

- Version per ISO 5171 or for acetylene per ISO 7291
- Safety features
 Model 111.11: With blow-out device in case back
 Model 111.31: With solid baffle wall (Solidfront)
- Nominal size (NS) of the case
 Model 111.11: NS 40, 50 and 63
 Model 111.31: NS 50
- Scale ranges to 0 ... 400 bar or 0 ... 6,000 psi



Fig. left: Model 111.11

Fig. right: Model 111.31

Description

The model 111.11 and 111.31 pressure gauges have been specifically designed for gas welding equipment and meet all requirements of the ISO 5171 standard.

The instruments are based on the proven Bourdon tube measuring system. On pressurisation, the deformation of the Bourdon tube, proportional to the incident pressure, is transmitted to the movement via a link and indicated.

The modular design of the pressure gauge enables a multitude of combinations of case materials, process connections, nominal sizes and scale ranges.

Due to this high variance, the instruments are suitable for many applications within the welding engineering sector. An individualisation of the instruments by means of dial printings, such as company logos, is possible.

The safety version of the model 111.31 pressure gauges has a solid baffle wall and also fulfils increased safety requirements regarding personal protection.

Specifications

| Basic information | | |
|----------------------------|---|--|
| Standard | <ul style="list-style-type: none"> ■ ISO 5171, pressure gauges used in welding, cutting and allied processes ■ ISO 7291, acetylene version for pressure regulators for manifold systems, BAM tested ¹⁾ ■ 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> | |
| Nominal size (NS) | | |
| Model 111.11 | <ul style="list-style-type: none"> ■ Ø 40 mm [1 ½"] ■ Ø 50 mm [2"] ■ Ø 63 mm [2 ½"] | |
| Model 111.31 | Ø 50 mm [2"] | |
| Connection location | <ul style="list-style-type: none"> ■ Lower mount (radial) ■ Centre back mount ²⁾ | |
| Window | Polycarbonate | |
| Case | | |
| Model 111.11 | Design | Safety level "S1" per EN 837-1: With blow-out device |
| | Material | <ul style="list-style-type: none"> ■ Steel, brass-coloured ■ Steel, black painted ■ Steel, chrome-plated ■ Stainless steel |
| Model 111.31 | Design | Safety level "S3" per EN 837-1: With solid baffle wall and blow-out back |
| | Material | <ul style="list-style-type: none"> ■ Zinc die-cast ■ Painted to customer requirements |
| Mounting | <ul style="list-style-type: none"> ■ Without ■ Panel mounting flange ■ Surface mounting flange | |
| Movement | Copper alloy | |

1) Only available for acetylene as a medium and model 111.11

2) Only available for model 111.11

| 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 | |
| ISO 5171 | Class 2.5 |
| ASME B40.100 | $\pm 3\%$ $\pm 2\%$ $\pm 3\%$ of measuring span (grade B) |
| Temperature error | 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 |
| Reference conditions | |
| Ambient temperature | +20 °C [68 °F] |

Scale ranges

| bar | |
|-----------|-----------|
| 0 ... 0.6 | 0 ... 25 |
| 0 ... 1 | 0 ... 30 |
| 0 ... 1.6 | 0 ... 40 |
| 0 ... 2 | 0 ... 60 |
| 0 ... 2.5 | 0 ... 70 |
| 0 ... 4 | 0 ... 100 |
| 0 ... 6 | 0 ... 140 |
| 0 ... 7 | 0 ... 160 |
| 0 ... 10 | 0 ... 200 |
| 0 ... 12 | 0 ... 250 |
| 0 ... 14 | 0 ... 315 |
| 0 ... 16 | 0 ... 400 |
| 0 ... 20 | |

| kPa | |
|-------------|--------------|
| 0 ... 60 | 0 ... 2,500 |
| 0 ... 70 | 0 ... 3,000 |
| 0 ... 100 | 0 ... 4,000 |
| 0 ... 160 | 0 ... 6,000 |
| 0 ... 200 | 0 ... 7,000 |
| 0 ... 250 | 0 ... 8,000 |
| 0 ... 400 | 0 ... 10,000 |
| 0 ... 600 | 0 ... 14,000 |
| 0 ... 700 | 0 ... 16,000 |
| 0 ... 800 | 0 ... 20,000 |
| 0 ... 1,000 | 0 ... 25,000 |
| 0 ... 1,400 | 0 ... 31,500 |
| 0 ... 1,600 | 0 ... 40,000 |

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

| kg/cm ² | |
|--------------------|-----------|
| 0 ... 0.6 | 0 ... 25 |
| 0 ... 1 | 0 ... 30 |
| 0 ... 1.6 | 0 ... 40 |
| 0 ... 2 | 0 ... 60 |
| 0 ... 2.5 | 0 ... 70 |
| 0 ... 4 | 0 ... 100 |
| 0 ... 6 | 0 ... 140 |
| 0 ... 7 | 0 ... 160 |
| 0 ... 10 | 0 ... 200 |
| 0 ... 14 | 0 ... 250 |
| 0 ... 16 | 0 ... 315 |
| 0 ... 20 | 0 ... 400 |

| MPa | |
|------------|------------|
| 0 ... 0.06 | 0 ... 2.5 |
| 0 ... 0.1 | 0 ... 3 |
| 0 ... 0.16 | 0 ... 4 |
| 0 ... 0.2 | 0 ... 6 |
| 0 ... 0.25 | 0 ... 7 |
| 0 ... 0.4 | 0 ... 10 |
| 0 ... 0.6 | 0 ... 14 |
| 0 ... 0.7 | 0 ... 16 |
| 0 ... 1 | 0 ... 20 |
| 0 ... 1.4 | 0 ... 25 |
| 0 ... 1.6 | 0 ... 31.5 |
| 0 ... 2 | 0 ... 40 |



| Further details on: Scale ranges | |
|----------------------------------|---|
| Unit | <ul style="list-style-type: none"> ■ bar ■ psi ■ kg/cm² ■ kgf/cm² ■ kPa ■ MPa |
| Dial | |
| Scale colour | Black |
| Material | <ul style="list-style-type: none"> ■ Plastic ■ Aluminium |
| Pointer | |
| Instrument pointer | Plastic, black Aluminium, black |
| Mark pointer/drag pointer | <ul style="list-style-type: none"> ■ Without ■ Red mark pointer on dial, fixed ■ Red mark pointer on window, adjustable |
| Pointer stop pin | At zero point |

| 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 ½ B, male thread ■ G ¼ B, male thread ■ M10 x 1, male thread ■ M12 x 1.5, male thread |
| ANSI/B1.20.1 | <ul style="list-style-type: none"> ■ ½ NPT, male thread ■ ¼ NPT, male thread |
| ISO 7 | <ul style="list-style-type: none"> ■ R ½, male thread ■ R ¼, male thread |
| Restrictor | <ul style="list-style-type: none"> ■ Ø 0.3 mm [0.012"], copper alloy ■ For acetylene version |
| Material (wetted) | |
| Process connection | Copper alloy |
| Bourdon tube | Copper alloy |


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 | |
| Lower mount (radial) | IP33 |
| Centre back mount | IP44 |

Approvals

| Logo | Description | Region |
|---|---|----------------|
|  | EU declaration of conformity Pressure equipment directive PS > 200 bar, module A, pressure accessory | European Union |
|  | UKCA Pressure equipment (safety) regulations | United Kingdom |
| - | CRN Safety (e.g. electr. safety, overpressure, ...) | Canada |

Optional approvals

| Logo | Description | Region |
|---|--|------------|
|  | PAC Kazakhstan Metrology, measurement technology | Kazakhstan |
| - | MChS Permission for commissioning | Kazakhstan |
| - | PAC Ukraine Metrology, measurement technology | Ukraine |
| - | PAC China Metrology, measurement technology | China |

Manufacturer's information and certificates

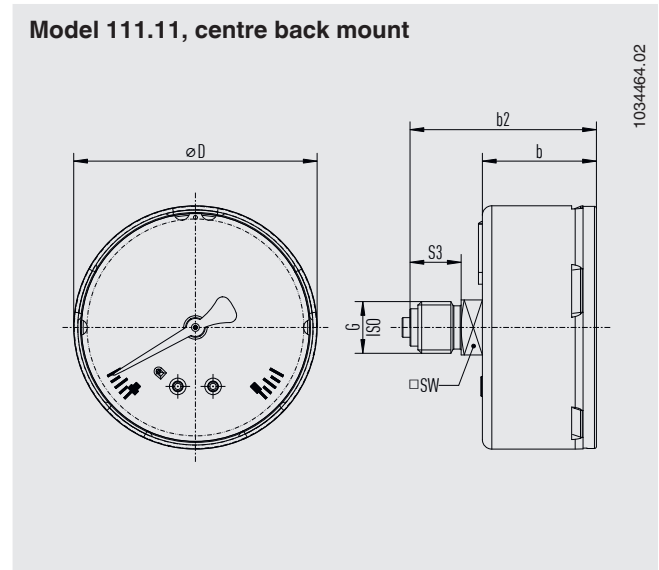
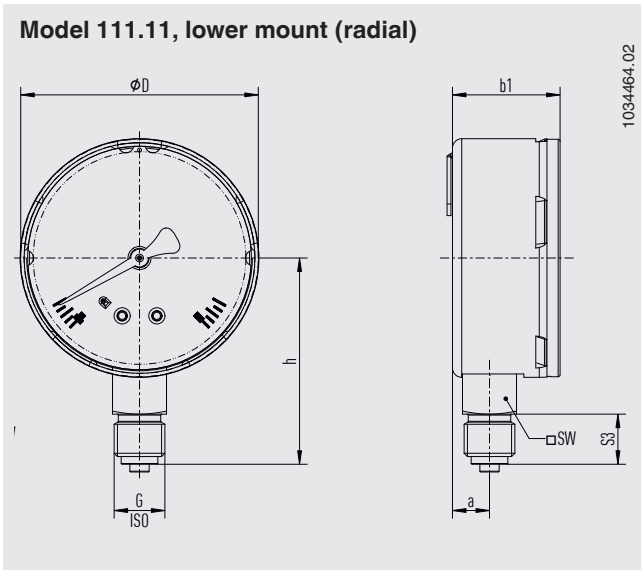
| Logo | Description |
|------|--|
| - | Pressure equipment directive (PED) for maximum allowable pressure PS ≤ 200 bar |

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]



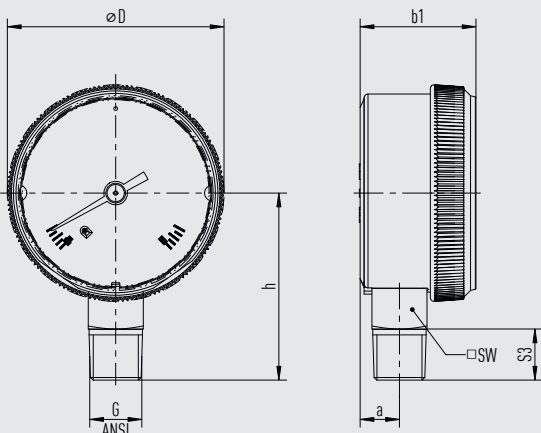
| NS | G ¹⁾ | Dimensions in mm [in] | | | | | | | |
|-----------|-------------------|-----------------------|-----------|------------|---------------|----------------|--------------|-------------|-----------|
| | | h ±1 [0.04] | S3 | a | b ±0.5 [0.02] | b1 ±0.5 [0.02] | b2 ±1 [0.04] | D | SW |
| 40 [1 ½"] | G ⅛ B, ⅛ NPT, R ⅛ | 39 [1.54] | 10 [0.39] | 9.6 [0.38] | 25.8 [1.02] | 25.8 [1.02] | 41.4 [1.63] | 39 [1.54] | 14 [0.55] |
| | G ¼ B, ¼ NPT, R ¼ | 42 [1.65] | 13 [0.51] | 9.6 [0.38] | 25.8 [1.02] | 25.8 [1.02] | 44.4 [1.759] | 39 [1.54] | 14 [0.55] |
| 50 [2"] | G ⅛ B, ⅛ NPT, R ⅛ | 42 [1.65] | 10 [0.39] | 9.6 [0.38] | 27.5 [1.08] | 27.9 [1.1] | 42.9 [1.69] | 49 [1.93] | 14 [0.55] |
| | G ¼ B, ¼ NPT, R ¼ | 45 [1.77] | 13 [0.51] | 9.6 [0.38] | 27.5 [1.08] | 27.9 [1.1] | 45.9 [1.81] | 49 [1.93] | 14 [0.55] |
| 63 [2 ½"] | G ⅛ B, ⅛ NPT, R ⅛ | 50.5 [1.99] | 10 [0.39] | 9.6 [0.38] | 29 [1.14] | 27.9 [1.1] | 44.4 [1.75] | 61.9 [2.44] | 14 [0.55] |
| | G ¼ B, ¼ NPT, R ¼ | 53.5 [2.11] | 13 [0.51] | 9.6 [0.38] | 29 [1.14] | 27.9 [1.1] | 47.4 [1.87] | 61.9 [2.44] | 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 g [oz] |
|-----------|------------------|
| 40 [1 ½"] | 64 [2.3] |
| 50 [2"] | 89 [3.1] |
| 63 [2 ½"] | 148 [5.2] |

Model 111.31, lower mount (radial)

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| NS | G ¹⁾ | Dimensions in mm [in] | | | | | |
|---------|------------------------------|-----------------------|-----------|-----------|----------------|-------------|-----------|
| | | h ±1 [0.04] | S3 | a | b1 ±0.5 [0.02] | D | SW |
| 50 [2"] | G ½ B, ½ NPT, R ½, M10 x 1 | 44.6 [1.75] | 10 [0.39] | 10 [0.39] | 29.5 [1.16] | 55.1 [2.17] | 14 [0.55] |
| | G ¼ B, ¼ NPT, R ¼, M12 x 1.5 | 47.6 [1.87] | 13 [0.51] | 10 [0.39] | 29.5 [1.16] | 55.1 [2.17] | 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 g [oz] |
|---------|------------------|
| 50 [2"] | 131 [4.6] |

Ordering information

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

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