

Test gauge, copper alloy or stainless steel

For low pressure ranges to 600 mbar, class 0.6

Models 610.20 and 630.20, NS 160 [6"]

WIKA data sheet PM 06.09



For further approvals,
see page 6

Applications

- Precision measurement in laboratories
- High-accuracy pressure measurement
- For gaseous, dry and non-aggressive media
- Model 630.20 also for aggressive media

Special features

- Zero point setting in front
- Special connection location on request
- Low scale ranges from 0 ... 10 mbar or 0 ... 4 inH₂O



Test gauge model 610.20

Description

As class 0.6 test gauge series, the model 610.20 and 630.20 capsule pressure gauges are suitable for precision measurements in laboratories. They are based upon the proven capsule measuring system. On pressurisation, the expansion of the capsule element, proportional to the incident pressure, is transmitted to the movement and indicated.

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

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

The scale ranges of 0 ... 10 mbar to 0 ... 600 mbar or 0 ... 4 inH₂O to 0 ... 240 inH₂O and the vacuum and +/- scale ranges ensure the measuring ranges required for a wide variety of applications.

Specifications

Basic information	
Standard	EN 837-3 For information on the "Selection, installation, handling and operation of pressure gauges", see technical information IN 00.05
Further version	<ul style="list-style-type: none"> ■ Oil- and grease-free ■ Oil- and grease-free for oxygen ■ For oxygen, cleanliness per ASME B40.1 level IV
Nominal size (NS)	Ø 160 mm [6"]
Connection location	<ul style="list-style-type: none"> ■ Lower mount (radial) ■ Lower back mount
Window	<ul style="list-style-type: none"> ■ Acrylic glass ■ Laminated safety glass
Case	
Design	<ul style="list-style-type: none"> ■ Without blow-out device ■ With blow-out device in case back
Material	Stainless steel 1.4301 (304)
Ring	Bayonet bezel, stainless steel Bayonet bezel, stainless steel, leaded
Mounting	<ul style="list-style-type: none"> ■ Without ■ Surface mounting flange, stainless steel ■ Panel mounting flange, stainless steel ■ Panel mounting flange, polished stainless steel ■ Triangular profile ring with mounting bracket, stainless steel ¹⁾ ■ Triangular profile ring with mounting bracket, polished stainless steel ¹⁾ <p>For information on "Mounting types, mounting flanges, panel cutouts", see technical information IN 00.04</p>
Movement	<ul style="list-style-type: none"> ■ Copper alloy, with ball bearing ■ Stainless steel, with ball bearing

1) Only for back mount

Measuring element	
Type of measuring element	Dual capsule element
Material (wetted)	
Capsule element	Copper alloy
Seal	NBR
Process connection	Copper alloy
Leak tightness	<ul style="list-style-type: none"> ■ Leakage rate: $< 1 \cdot 10^{-3}$ mbar l/s ■ Helium tested, leakage rate: $< 1 \cdot 10^{-5}$ mbar l/s

Accuracy specifications	
Accuracy class	
EN 837-3	Class 0.6
ASME B40.100	Grade 2A
Zero point setting with adjustment screw	In front, through the opening in the window ¹⁾
Temperature error	On deviation from the reference conditions at the measuring system: ≤ ±0.6 % per 10 °C [≤ ±0.6 % per 18 °F] of full scale value
Reference conditions	
Ambient temperature	+20 °C [+68 °F]

1) The opening of the window for the zero point setting is sealed with a taper plug.

Scale ranges

mbar	
0 ... 10	0 ... 100
0 ... 16	0 ... 160
0 ... 25	0 ... 250
0 ... 40	0 ... 400
0 ... 60	0 ... 600

kg/cm ²	
0 ... 0.01	0 ... 0.1
0 ... 0.016	0 ... 0.16
0 ... 0.025	0 ... 0.25
0 ... 0.04	0 ... 0.4
0 ... 0.06	0 ... 0.6

kPa	
0 ... 1	0 ... 10
0 ... 1.6	0 ... 16
0 ... 2.5	0 ... 25
0 ... 4	0 ... 40
0 ... 6	0 ... 60

Pa	
0 ... 1,000	0 ... 10,000
0 ... 1,600	0 ... 16,000
0 ... 2,500	0 ... 25,000
0 ... 4,000	0 ... 40,000
0 ... 6,000	0 ... 60,000

psi	
0 ... 0.15	0 ... 1.5
0 ... 0.25	0 ... 2.5
0 ... 0.36	0 ... 3.6
0 ... 0.6	0 ... 6.0
0 ... 1.0	0 ... 10

mmH ₂ O	
0 ... 100	0 ... 1,000
0 ... 160	0 ... 1,600
0 ... 250	0 ... 2,500
0 ... 400	0 ... 4,000
0 ... 600	0 ... 6,000

inH ₂ O	
0 ... 4	0 ... 40
0 ... 6	0 ... 60
0 ... 10	0 ... 100
0 ... 16	0 ... 160
0 ... 24	0 ... 240

oz/in ²	
0 ... 2.5	0 ... 25
0 ... 4	0 ... 40
0 ... 6	0 ... 60
0 ... 10	0 ... 100
0 ... 15	0 ... 150

Vacuum and +/- scale ranges

mbar	
-10 ... 0	-5 ... +5
-16 ... 0	-8 ... +8
-25 ... 0	-12.5 ... +12.5
-40 ... 0	-20 ... +20
-60 ... 0	-30 ... +30
-100 ... 0	-50 ... +50
-160 ... 0	-80 ... +80
-250 ... 0	-125 ... +125
-400 ... 0	-200 ... +200
-600 ... 0	-300 ... +300

kg/cm ²	
-0.01 ... 0	-0.005 ... +0.005
-0.016 ... 0	-0.008 ... +0.008
-0.025 ... 0	-0.0125 ... +0.0125
-0.04 ... 0	-0.02 ... +0.02
-0.06 ... 0	-0.03 ... +0.03
-0.1 ... 0	-0.05 ... +0.05
-0.16 ... 0	-0.08 ... +0.08
-0.25 ... 0	-0.125 ... +0.125
-0.4 ... 0	-0.2 ... +0.2
-0.6 ... 0	-0.3 ... +0.3

kPa	
-1 ... 0	-0.5 ... +0.5
-1.6 ... 0	-0.8 ... +0.8
-2.5 ... 0	-1.25 ... +1.25
-4 ... 0	-2 ... +2
-6 ... 0	-3 ... +3
-10 ... 0	-5 ... +5
-16 ... 0	-8 ... +8
-25 ... 0	-12.5 ... +12.5
-40 ... 0	-20 ... +20
-60 ... 0	-30 ... +30

Pa	
-1,000 ... 0	-500 ... +500
-1,600 ... 0	-800 ... +800
-2,500 ... 0	-1,250 ... +1,250
-4,000 ... 0	-2,000 ... +2,000
-6,000 ... 0	-3,000 ... +3,000
-10,000 ... 0	-5,000 ... +5,000
-16,000 ... 0	-8,000 ... +8,000
-25,000 ... 0	-12,500 ... +12,500
-40,000 ... 0	-20,000 ... +20,000
-60,000 ... 0	-30,000 ... +30,000

psi	
-0.15 ... 0	-0.075 ... +0.075
-0.25 ... 0	-0.125 ... +0.125
-0.36 ... 0	-0.18 ... +0.18
-0.6 ... 0	-0.3 ... +0.3
-1 ... 0	-0.5 ... +0.5
-1.5 ... 0	-0.75 ... +0.75
-2.5 ... 0	-1.25 ... +1.25
-3.6 ... 0	-1.8 ... +1.8
-6 ... 0	-3 ... +3
-10 ... 0	-5 ... +5

mmH ₂ O	
-100 ... 0	-50 ... +50
-160 ... 0	-80 ... +80
-250 ... 0	-125 ... +125
-400 ... 0	-200 ... +200
-600 ... 0	-300 ... +300
-1,000 ... 0	-500 ... +500
-1,600 ... 0	-800 ... +800
-2,500 ... 0	-1,250 ... +1,250
-4,000 ... 0	-2,000 ... +2,000
-6,000 ... 0	-3,000 ... +3000

inH ₂ O	
-4 ... 0	-2 ... +2
-6 ... 0	-3 ... +3
-10 ... 0	-5 ... +5
-16 ... 0	-8 ... +8
-24 ... 0	-12 ... +12
-40 ... 0	-20 ... +20
-60 ... 0	-30 ... +30
-100 ... 0	-50 ... +50
-160 ... 0	-80 ... +80
-240 ... 0	-120 ... +120

oz/in ²	
-2.5 ... 0	-1.25 ... +1.25
-4 ... 0	-2 ... +2
-6 ... 0	-3 ... +3
-10 ... 0	-5 ... +5
-15 ... 0	-7.5 ... +7.5
-25 ... 0	-12.5 ... +12.5
-40 ... 0	-20 ... +20
-60 ... 0	-30 ... +30
-100 ... 0	-50 ... +50
-150 ... 0	-75 ... +75

Further details on: scale ranges		
Unit	<ul style="list-style-type: none"> ■ mbar ■ kg/cm² ■ kPa ■ Pa 	<ul style="list-style-type: none"> ■ psi ■ mmH₂O ■ inH₂O ■ oz/in²
	Other units on request	
Overpressure safety		
Scale range < 0 ... 40 mbar [0 ... 16 inH ₂ O]	<ul style="list-style-type: none"> ■ Without ■ 3 x full scale value 	
Scale range ≥ 0 ... 40 mbar [0 ... 16 inH ₂ O]	<ul style="list-style-type: none"> ■ Without ■ 10 x full scale value 	
Vacuum safety		
Scale range < 0 ... 40 mbar [0 ... 16 inH ₂ O]	<ul style="list-style-type: none"> ■ Without ■ 3 x full scale value 	
Scale range ≥ 0 ... 40 mbar [0 ... 16 inH ₂ O]	<ul style="list-style-type: none"> ■ Without ■ 10 x full scale value 	
Dial		
Scale layout	<ul style="list-style-type: none"> ■ Single scale ■ Dual scale 	
Scale colour	Single scale	Black
	Dual scale	Black/red
Material	Aluminium, white	
Special scale	Other scales or customer-specific dials, e.g. with red mark, circular arcs or circular sectors, on request	
Pointer		
Instrument pointer	Aluminium, black	
Mark pointer	<ul style="list-style-type: none"> ■ Without ■ Red mark pointer on window, adjustable 	
Pointer stop pin	<ul style="list-style-type: none"> ■ Without ■ At zero point ■ At 6 o'clock 	

Process connection		
Standard	<ul style="list-style-type: none"> ■ EN 837-3 ■ ANSI/B1.20.1 	
Size		
EN 837-3	<ul style="list-style-type: none"> ■ G ½ B, male thread ■ M12 x 1.5, male thread ■ M20 x 1.5, male thread 	
ANSI/B1.20.1	<ul style="list-style-type: none"> ■ ½ NPT, male thread 	
Restrictor	<ul style="list-style-type: none"> ■ Without ■ Ø 0.5 mm [0.02"], copper alloy ■ Ø 0.3 mm [0.012"], copper alloy ■ Ø 0.6 mm [0.024"], stainless steel ■ Ø 0.3 mm [0.012"], stainless steel 	
Material (wetted)		
Capsule element	Model 610.20	Copper alloy
	Model 630.20	Stainless steel 316L
Seal	Model 610.20	NBR
	Model 630.20	FPM/FKM
Process connection	Model 610.20	Copper alloy
	Model 630.20	Stainless steel 316L

→ 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	Full scale value
Fluctuating	0.9 x full scale value
Short time	1.3 x full scale value
Ingress protection per IEC/EN 60529	IP54

Approvals

Logo	Description	Region
	EU declaration of conformity	European Union
	Pressure Equipment Directive PS > 200 bar, module A, pressure accessory	
	RoHS directive	

Optional approvals

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

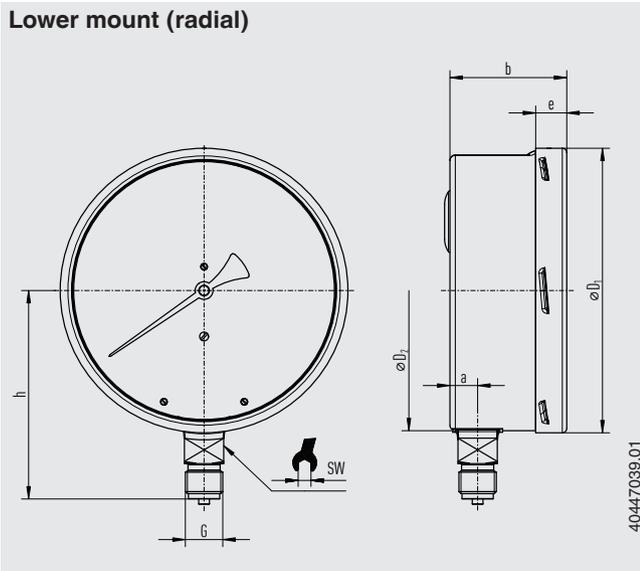
Certificates

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)
Calibration	<ul style="list-style-type: none"> ■ Factory calibration certificate ■ SCS calibration certificate (traceable and accredited in accordance with ISO/IEC 17025) ■ Calibration certificate by a national accreditation body, traceable and accredited per 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]

Lower mount (radial)



NS	Weight
160 [6"]	Approx. 1.2 kg [2.65 lb]

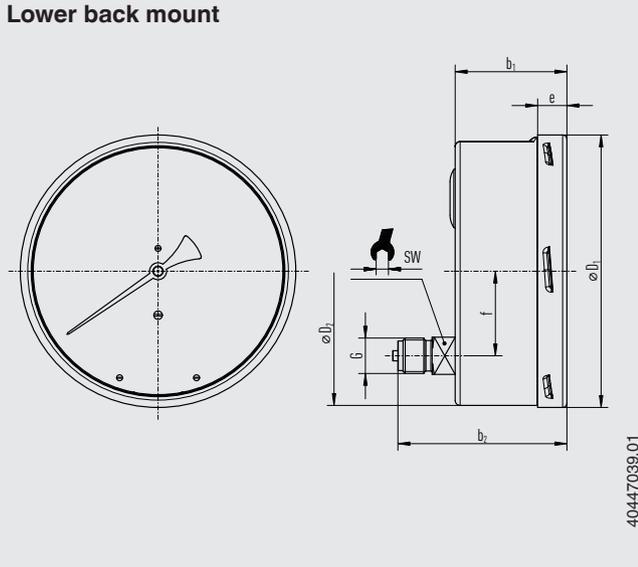
Process connection with thread per EN 837-3

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	a	b	D1	D2	e	SW
160 [6"]	G ½ B	118 [4.65]	15.5 [0.61]	65.5 [2.58]	161 [6.34]	159 [6.26]	17.5 [0.69]	22 [0.87]
	M12 x 1.5	111 [4.37]	15.5 [0.61]	65.5 [2.58]	161 [6.34]	159 [6.26]	17.5 [0.69]	22 [0.87]
	M20 x 1.5	118 [4.65]	15.5 [0.61]	65.5 [2.58]	161 [6.34]	159 [6.26]	17.5 [0.69]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		h ±1 [0.04]	a	b	D1	D2	e	SW
160 [6"]	½ NPT	117 [4.61]	15.5 [0.61]	65.5 [2.58]	161 [6.34]	159 [6.26]	17.5 [0.69]	22 [0.87]

Lower back mount



NS	Weight
160 [6"]	Approx. 1.2 kg [2.65 lb]

Process connection with thread per EN 837-3

NS	G	Dimensions in mm [in]						
		b1	b2	D1	D2	e	f	SW
160 [6"]	G 1/2 B	65.5 [2.58]	99 [3.9]	161 [6.34]	159 [6.26]	17.5 [0.69]	50 [1.97]	22 [0.87]
	M12 x 1.5	65.5 [2.58]	92 [3.62]	161 [6.34]	159 [6.26]	17.5 [0.69]	50 [1.97]	22 [0.87]
	M20 x 1.5	65.5 [2.58]	99 [3.9]	161 [6.34]	159 [6.26]	17.5 [0.69]	50 [1.97]	22 [0.87]

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		b1	b2	D1	D2	e	f	SW
160 [6"]	1/2 NPT	65.5 [2.58]	98 [3.86]	161 [6.34]	159 [6.26]	17.5 [0.69]	50 [1.97]	22 [0.87]

Ordering information

Model / Nominal size / Scale range / Connection size / Connection location / Options

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