

WIKA Introduces Revolutionary Liquid-Filled Gauge with Flexible Window: The FlexWindow™

To realize the protective benefits of case filling without the need to vent, WIKA came up with a revolutionary solution to compensate for internal pressure buildup in liquid-filled pressure gauges.



WIKA's liquid-filled gauge with FlexWindow

In pressure gauges with a FlexWindow, an optically clear disk made of liquid silicone rubber (LSR) is both the instrument's window and the pressure compensator. In effect, it acts like a membrane, compensating for temperature-related overpressure or negative pressure by expanding or contracting.

This solution comes with many other advantages:

1. Improved gauge readings

Because LSR flexes with pressure changes, the gauge can be filled to 100%. This means no reading impairments from large bubbles or optical effects. In addition, the FlexWindow is hydrophobic (repels water), is scratch and crack resistant, and – with its slight curve – has a magnifying effect. All these factors make the dial even easier to read.

2. Long-term durability

LSR is extremely tough. It is shatterproof, virtually impervious to punctures, and mechanically stable down to -67°F (-55°C) and up to 300°F (150°C), making it autoclavable. As this material is UV stable and resistant to yellowing, bacteria, and ozone, pressure gauges with the FlexWindow are ideal for outdoor applications. What's more, LSR is much more resistant to chemicals than polycarbonate or PMMA plastic.

3. Ease of panel mounting

With its protruding design, a vent plug makes it very difficult to panel mount traditional liquid-filled gauges. The flat-fill plug that comes with the FlexWindow eliminates that issue.

4. Greater safety

The FlexWindow has all the necessary features for it to be considered a safety window. The material is far more flexible than glass, thereby greatly reducing the chance of breakage. While flexible enough not to break, it is particularly valuable in applications where the gauge might be exposed to vibrations, shocks, and blows. In case of a window rupture, the FlexWindow stays in place, and no window parts will be projected. Also, unlike any other pressure gauge on the market, the FlexWindow will detect and alert of a leak in the Bourdon tube by expanding like a balloon, giving a visual indication of pressure buildup inside the case.

WIKA, the Pioneer in Pressure Solutions

The [patent-pending FlexWindow option](#) is ideal for use in the [oil and gas](#), [mobile hydraulics](#), [basic materials](#), and [chemical/petrochemical](#) industries. Note: Gauges with FlexWindow are not suitable for use with silicone case filling, are not available with a drag pointer, and cannot be used for [oxygen service](#).

Currently, the FlexWindow option is available for models [213.53](#), [233.53](#), [233.54](#), and [233.55](#) stainless steel gauges (2½" only). Future plans include offering this innovative window material on some other models and sizes. Contact WIKA USA for more information about this exciting new liquid-filled pressure gauge, as well as other innovative pressure solutions for your application.

Bourdon Tube Pressure Gauge Stainless Steel Case Type 212.53 - Dry Case Type 213.53 - Liquid-filled Case

WIKA Datasheet 21X.53

Applications

- Intended for adverse service conditions where pulsating or vibration exists (with liquid filling)
- Hydraulics & compressors
- Suitable for gaseous or liquid media that will not obstruct the pressure system

Product Features

- Vibration and shock resistant (with liquid filling)
- Stainless steel case
- Pressure ranges up to 15,000 psi (1000 bar)



Bourdon Tube Pressure Gauge Model 21X.53

Specifications

Design

ASME B40.100 & EN 837-1

Sizes

2", 2½" & 4" (50, 63 & 100 mm)

Accuracy class

2" & 2½": ± 2/1/2% of span (ASME B40.100 Grade A)

4": ± 1% of span (ASME B40.100 Grade 1A)

Ranges

Vacuum / Compound to 200 psi (16 bar)

Pressure from 15 psi (1 bar) to 15,000 psi (1000 bar)

Pressure from 15 psi (1 bar) to 10,000 psi (690 bar) - 2" size or other equivalent units of pressure or vacuum

Working pressure

2 & 2½": Steady: ¾ full-scale value

Fluctuating: ⅔ full-scale value

Short time: full-scale value

4": Steady: full-scale value

Fluctuating: 0.9 x full-scale value

Short time: 1.3 x full-scale value

Operating temperature

Ambient: -40°F to +140°F (-40°C to +60°C) - dry

-4°F to +140°F (-20°C to +60°C) - glycerine filled

-40°F to +140°F (-40°C to +60°C) - silicone filled

Medium: +140°F (+60°C) maximum

Temperature error

Additional error when temperature changes from reference temperature of 68°F (20°C) ±0.4% of span for every 18°F (10°K) rising or falling.

Weather protection

Weather tight (NEMA 4X / IP 66)

Pressure connection

Material: copper alloy

Lower mount (LM) or center back mount (CBM) - 2" & 2½"

Lower mount (LM) or lower back mount (LBM) - 4"

⅛" NPT, ¼" NPT or ½" NPT limited to wrench flat area ABS (2" & 2½") and white aluminum (4")

Bourdon tube

2" (50 mm) ≤ 870 psi (60 bar): C-shape copper alloy
2" (50 mm) > 870 psi (60 bar): Helical copper alloy
2½" (63 mm) ≤ 870 psi (60 bar): C-shape copper alloy
2½" (63 mm) > 870 psi (60 bar): Helical copper alloy
2½" (63 mm) > 6000 psi (400 bar): Helical stainless steel
4" (100 mm) ≤ 1000 psi (70 bar): C-shape copper alloy
4" (100 mm) > 1000 psi (70 bar): Helical stainless steel

Movement

Copper alloy

Dial

White ABS (2" & 2½") and white aluminum (4")

Pointer

Black aluminum

Case

304 stainless steel with vent plug and stainless steel crimp ring. Suitable for liquid filling.

Case connection sealed with O-ring, (O-ring material

dependent on the case fill):

- 2½": EPDM O-ring for Glycerine case fill; Viton O-ring for Silicone fill
- 4": EPDM O-ring for Glycerine or Silicone case fill; Viton O-ring for Halocarbon or Fluorolube fill

Window

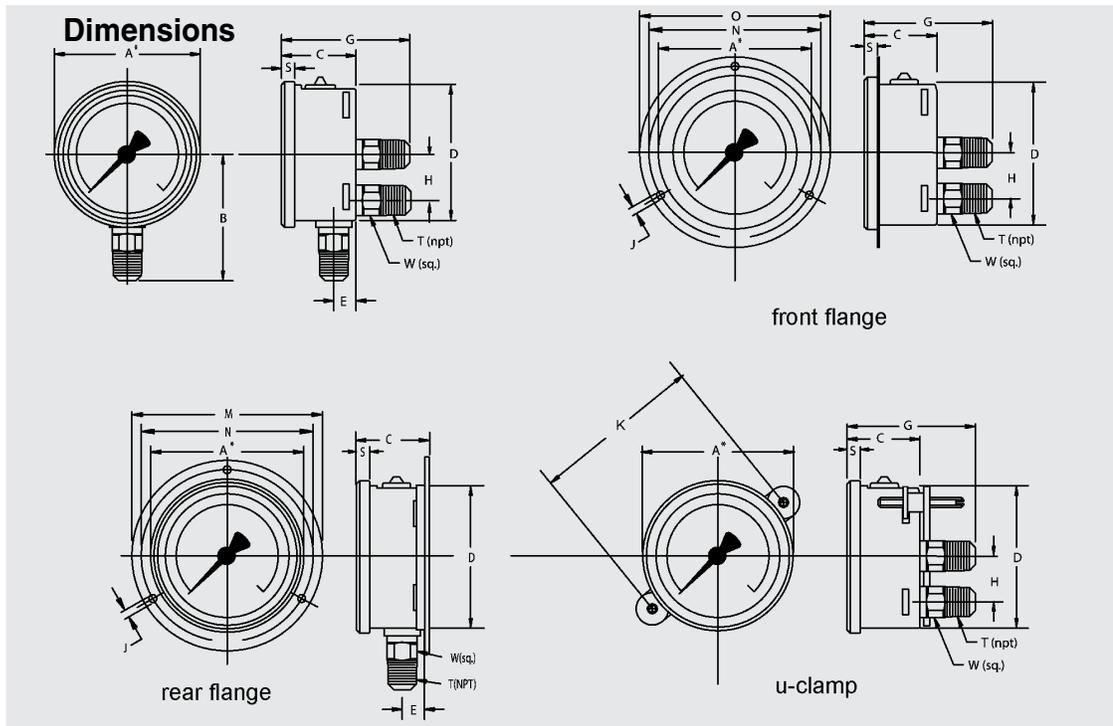
Polycarbonate with Buna-N gasket

Case fill

Glycerine 99.7% - Type 213.53

Optional extras

- Brass restrictor
- Stainless steel front or rear flange - 2½" & 4"
- Zinc-plated steel or SS U-clamp bracket (field installable)
- External zero adjustment (2½" only)
- Red drag pointer or mark pointer
- Silicone or Halocarbon oil case filling
- Special connections limited to wrench flat area
- Custom dial layout
- Other pressure scales available
bar, kPa, MPa, kg/cm² and dual scales



Size		A	B	C	D	E	G	H	J	K	M	N	O	S	T	W	Weight	
2"	mm	55	48	30	50	12	53	-	3.6	72	71	60	17	5.5	14	0.27 lb.	dry	
	in	2.17	1.89	1.18	1.97	0.47	2.09	-	0.14	2.83	2.80	2.36	2.80	0.22	1/4"	0.55	0.33 lb.	filled
2½"	mm	69	54	32	62	13	54	-	3.6	72	88.1	75	85	6.5	14	0.36 lb.	dry	
	in	2.69	2.13	1.26	2.45	0.51	2.13	-	0.14	2.83	3.47	2.95	3.35	0.26	1/4"	0.55	0.44 lb.	filled
4"	mm	107	87	48	100	15.5	79.5	30	4.8	109	132	116	132	8	22	1.10 lb.	dry	
	in	4.21	3.43	1.89	3.91	0.61	3.13	1.18	0.19	4.29	5.20	4.57	5.20	0.31	1/2"	0.87	1.76 lb.	filled

Note: For 1/4" NPT connections on 4" gauges, reduce B dimension by 5mm/0.2"

Recommended panel cut-out:

2"- U-clamp: 51mm
front flange: n/a

2½"- U-clamp: 63mm
front flange: 65mm

4"- U-clamp: 101mm
front flange: 104mm

4½"- panel mount adapter 104mm minimum
(not shown)



WIKA Instrument Corporation
 1000 Wiegand Boulevard
 Lawrenceville, GA 30043-5868
 Tel: 888-WIKA-USA • 770-513-8200
 Fax: 770-338-5118
 E-Mail: info@wika.com
 www.wika.com