



Bourdon Tube Pressure Gauges

Solid-Front Turret Style Thermoplastic Case

Process Industry Series • 316SS Wetted Parts • Type 23X.34

Pressure Gauges

Application

Industrial type suitable for corrosive environments where the fluid medium does not clog connection or corrode wetted part material. Field convertible to a liquid filled gauge for severe vibration conditions. Solid front, blow-out back case design meets safety requirements of ASME B40.1.

Size

4½" (115 mm) dial size

Accuracy

± 0.5% of span (ASME B40.1 Grade 2A)

Ranges (All ranges not stocked)

Vacuum / Compound to 30" HG / 0 / 200 PSI
Pressure from 10 PSI to 30,000 PSI
or other equivalent units of pressure or vacuum

Working Range

Steady: Full scale value
Fluctuating: 0.9 x full scale value
Short time: 1.5 x full scale value

Operating Temperature

Ambient: -40°F to 150°F (-40°C to 65.6°C) ^{Note 1}
Media: 500°F - dry gauge
250°F - Liquid filled

Temperature Error

Additional error when temperature changes from reference temperature of 68°F (20°C) ±1.5% per 100°F (37.8°C) rising or falling. Percentage of span.

Standard Features

Connection

Material: 316 stainless steel
Lower mount (LM)
1/4" NPT or 1/2" NPT with M4 internal tap

Bourdon Tube

Material: 316 stainless steel
30" Hg (Vac) to 1000 PSI C-type
1500 PSI to 10,000 PSI helical type

Movement

Stainless steel
Internal stop pin at 1.3 times full scale value
Overload and underload stops- standard
Optional: dampened movement

Shock & Vibration

Shock resistance up to 100G
Optional: up to 400G
Optional: vibration resistance up to 10G

Cycle Testing

400,000-2,000,000 *cycles, depending upon pressure range
*Liquid filled

Dial

White aluminum with black lettering. Stop pin at 6 o'clock

Pointer

Adjustable black aluminum



Case

Black glass reinforced thermoplastic (PBTP)
Solid front, blow-out back
Turret style case with built in rear flange lugs

Weather Protection

Weather resistant (NEMA 3 / IP 54) - dry case
Weather tight (NEMA 4X / IP 65) - liquid-filled case

Standard Scale

PSI

Window Gasket

Buna-N

Window

Acrylic

Case Filling

None - 232.34
Glycerine - 233.34

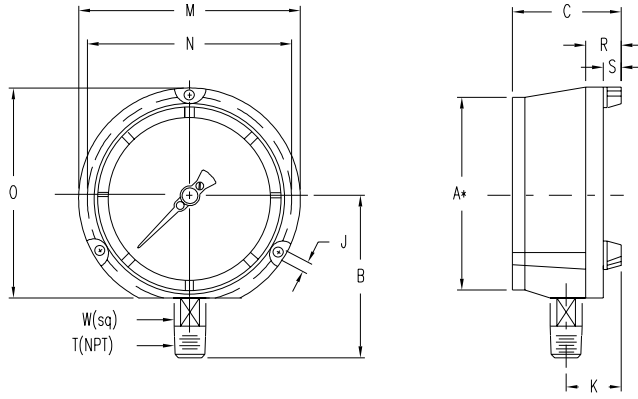
Order Options (min. order may apply)

Overpressure protection up to 5x scale (limited ranges only)
Threaded restrictor
Silicone dampened movement
Movement with PTFE coated gears
Panel mounting adaptor kit (field assembled)
Glycerine, silicone, or fluorolube case filling (213.34) ^{Note 1}
Field conversion kit for glycerine, silicone, or fluorolube fill
Cleaned for oxygen service
Glass window
Safety glass window
Externally adjustable red drag pointer (max. hand)
Externally adjustable red mark pointer
Special connections limited to socket square size
DIN standards
Custom dial layout
Other pressure scales available:
Bar, kPa, MPa, Kg/cm², and dual scales
Alarm contact switches (magnetic or inductive)
Shock resistant up to 400G
Vibration resistant up to 10G
Chemical seals available

Note 1 Temperature Ranges (Liquid filled gauges)
Glycerine: -4°F to 150°F (-20°C to 65.6°C)
Silicone: -40°F to 150°F (-40°C to 65.6°C)

APM 23X.34
(APM 02.10)

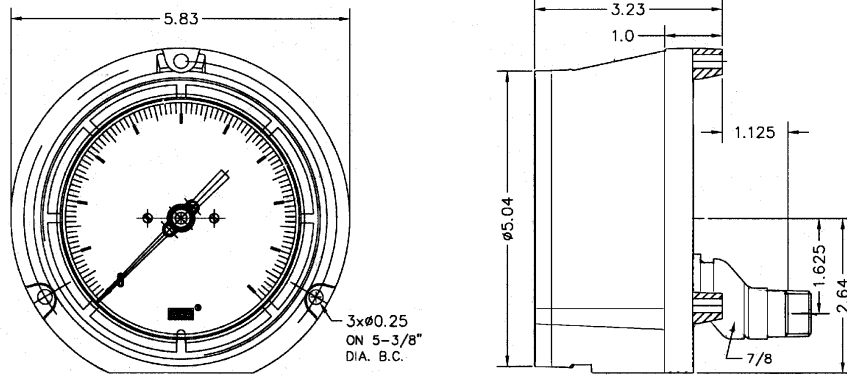
Dimensions:



A* Nominal Size

| TYPE | WEIGHT | KEY | A* | B (1) | C | J | K | M | N | O | R | S | T | W |
|--------------|--------|-----|-----|-------|------|------|------|------|-------|------|------|------|------|------|
| 23X.34 LM | 3 lbs. | mm | 114 | 103 | 82 | 6.0 | 38 | 148 | 136.5 | 141 | 25 | 12.5 | -- | 22 |
| | | in | 4.5 | 4.06 | 3.23 | 0.24 | 1.50 | 5.83 | 5.37 | 5.55 | 0.98 | 0.49 | 1/2" | 0.87 |

(1) Gauges with 1/4" NPT connection - dimension changes to 97mm / 3.81 in.



A* Nominal Size

| TYPE | WEIGHT | KEY | A* | C | H (1) | J | L | M | N | O | R | S | T | W |
|---------------|--------|-----|-----|------|-------|------|------|------|-------|------|------|------|------|------|
| 23X.34 LBM | 3 lbs. | mm | 114 | 82 | 48.5 | 6.0 | 28.5 | 148 | 136.5 | 141 | 25 | 12.5 | -- | 22 |
| | | in | 4.5 | 3.23 | 1.91 | 0.24 | 1.12 | 5.83 | 5.37 | 5.55 | 0.98 | 0.49 | 1/2" | 0.87 |

(1) Gauges with 1/4" NPT connection - dimension changes to 43.5 mm (1.71 in.)



Chemical Seals

Cooling Element

Intended to protect the pressure instrument from high or low process temperature. Air flow across heat exchanging fins reduces or increases the temperature of the system fill fluid to protect the pressure measuring instrument.

The cooling element is recommended for process temperatures above 212°F. It is direct mounted between the pressure instrument and the chemical seal. Silicone fill is recommended. Effective temperature reductions of 200°F depending upon ambient conditions. All stainless steel construction back welded to stainless steel upper housing or flange.

Capillary line

Stainless steel capillary with or without stainless steel armor provides a connection between the pressure instrument and the chemical seal. It protects the pressure instrument from high or low process temperatures and provides distant or remote reading.

The capillary should be selected as short as possible, since changes in ambient temperature conditions may considerably affect the accuracy and response time of the pressure instrument. Standard length is five feet; other lengths are available upon request.

Installation on mechanical gauges normally requires a gauge support and gauge adaptor or other surface mounting provisions.

Any level difference between pressure instrument and chemical seal will cause a pressure indication error. The level difference can be compensated for during calibration of the chemical seal assembly if level difference is known.

Minor corrections can be made on site by means of an adjustable pointer or zero adjustment of the pressure instrument.

Gauge Support and Adaptor

Provides wall mounting of pressure instrument by clamping to gauge adaptor. Material: gauge support - aluminum or stainless steel, gauge adaptor - stainless steel.



Chemical Seal Assembly with Cooling Element

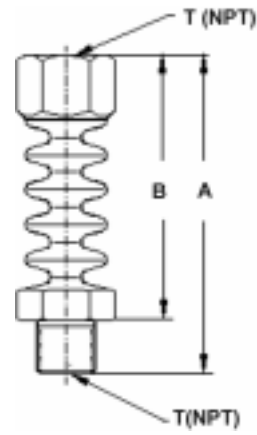


Chemical Seal Assembly with Capillary Line, Gauge Support and Adaptor

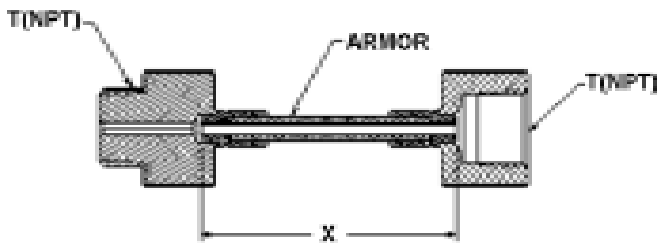
To determine the effects of temperature and response time in a specific application, contact the factory for an **Application Questionnaire**. The information provided will allow WIKA Technical Support to accurately model your application parameters using state-of-the-art computer simulation techniques.

Cooling Element

| T | KEY | A | B |
|-------------|-----|------|------|
| 1/4" X 1/4" | in. | 4.68 | 4.05 |
| | mm | 119 | 103 |
| 1/2" X 1/2" | in. | 4.68 | 3.86 |
| | mm | 119 | 98 |

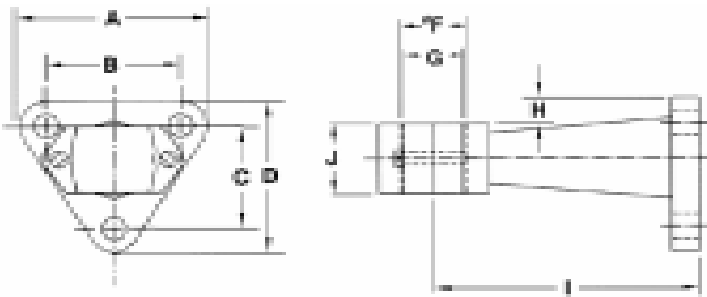


Capillary Line



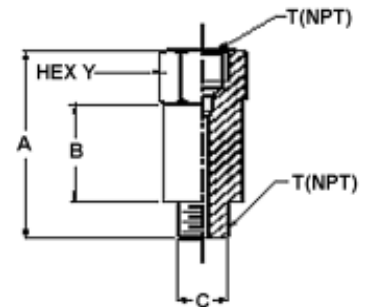
X = 5 feet standard, maximum 48 ft.; T = 1/4" or 1/2"

Gauge Support



| KEY | A | B | C | D | E | F | G | H | I |
|-----|------|------|------|------|------|------|-----|-----|------|
| in. | 3.35 | 2.56 | 2.20 | 2.99 | .276 | 1.02 | .87 | .55 | 3.94 |
| mm | 85 | 65 | 56 | 76 | 7 | 26 | 22 | 14 | 100 |

| KEY | A | B | C | T | Y |
|-----|------|------|------|------|------|
| in. | 2.95 | 1.18 | 1.02 | 1/2" | 1.06 |
| mm | 75 | 30 | 26 | -- | 27 |



Chemical Seal Mounting Options

Chemical Seal

System Fill Fluids

The system fill fluid should be carefully selected for compatibility with the pressure medium. This is particularly true in food applications and in processes involving oxidizing media such as oxygen or chlorine. The table below lists the most common fill fluids. Alternate fill fluids are available for special applications.

Mounting Options available (connections, capillary, etc.)
See Selection Guide (over)

NOTE: For applications with oxidizing media such as oxygen or chlorine, either Halocarbon (KN 21) or Fluorolube (KN8) should be used for the system fill.

| | Standard | Low Temp. | Food Application | | | | High Temp. | Inert | |
|--------------------------------|--------------|----------------|------------------------|------------------------------|---------------|-------------------------|----------------|----------------|-----------------|
| Fill Fluid ¹ | Silicone Oil | Silicone Oil | Glycerine ³ | Glycerine/Water ³ | Vegetable Oil | Food Grade Silicone Oil | High Temp. Oil | Halocarbon 6.3 | Fluorolube FS-5 |
| Code No. (KN) | KN 2 | KN 17 | KN 7 | KN 12 | KN 13 | KN 34 | KN 3.2 | KN 21 | KN 8 |
| Temperature (min/max) | -4 to +392°F | -130 to +176°F | +60 to +462°F | +14 to +248°F | +14 to +400°F | 0-372°F | -4 to +752°F | -40 to +347°F | -40 to +392°F |
| Assembly design: | Part Number | Part Number | Part Number | Part Number | Part Number | Part Number | Part Number | Part Number | Part Number |
| - Mini Seal direct | 281 | | 280 | | 287 | | | 283 | |
| - Direct mounting ² | 219 | 238 | 215 | 216 | 250 | 263 | 266 | 212 | 240 |
| - with cooling element | 220 | 296 | | | 254 | 264 | 267 | 213 | |
| - with capillary Upto 9' | 220 | 296 | | | 254 | 264 | 267 | 213 | |
| - with capillary 10' to 19' | 221 | 269 | | | 255 | | 268 | 247 | |
| - with capillary 20' to 29' | 222 | 273 | | | 256 | | | 248 | |
| - with capillary Over 29' | 223 | | -- | | 257 | | | 249 | |

¹ Contact factory for other filling liquids.

² Not available for Type 990.28.

³ KN 7 and KN 12 not suitable for vacuum or compound ranges

All threads welded during assembly.

+14° F when used with transmitters

Temperature ranges atmospheric pressure and up

Filling Liquids Specifications

| Fill Fluid | WIKA Code No. | Suitable Temperature Range | | Specific Gravity at Temperature | | Viscosity at Temperature | | Notes |
|-------------------------|---------------|----------------------------|---------------|---------------------------------|------|--------------------------|------|----------------------------------|
| | | P <15psi [°F] | P >15psi [°F] | | [°F] | [cSt] | [°F] | |
| Silicone Oil DC 200/50 | KN 2 | N/A | -4 to +392 | 0.96 | +77 | 50 | +77 | Standard |
| Silicone Oil DC200/10 | KN 68 | -40 to +250 | -40 to +400 | 0.934 | +77 | 10 | +77 | Standard |
| Silicone Oil (4 cSt) | KN 17 | -130 to +176 | -130 to +356 | 0.91 | +68 | 4 | +77 | Low Temperature |
| High Temperature Oil | KN 3.2 | +14 to +392 | -4 to +750 | 1.07 | +68 | 39 | +77 | High Temperature and High Vacuum |
| Halocarbon® 6.3 | KN 21 | -40 to +176 | -40 to +347 | 1.97 | +68 | 14 | +68 | Oxygen and Chlorine Service |
| Fluorolube® FS-5 | KN 8 | N/A | -40 to +392 | 1.86 | +77 | 5 | +68 | Oxygen and Chlorine Service |
| Glycerine | KN 7 | N/A | +60 to +462 | 1.26 | +68 | 1110 | +68 | Food & Beverage |
| Glycerine / Water | KN 12 | N/A | +14 to +248 | 1.22 | +68 | 88 | +68 | Food & Beverage |
| Vegetable Oil | KN 13 | +14 to +200 | +14 to +400 | 0.94 | +68 | 66 | +68 | Food & Beverage |
| Food Grade Silicone Oil | KN 34 | N/A | 0 to +572 | 0.97 | +77 | 350 | +77 | Food & Beverage |
| Neobee M20 | KN 59 | -10 to +200 | -10 to +400 | 0.917 | +77 | 9.8 | +77 | Food & Beverage |

¹ +14 °F when used with transmitters

Mounting Options

This chart to be used for ease of ordering only. WIKA will convert to appropriate 3-7 digit part numbers.

DG,N/A,N,N,N,N,2,N

Options

- 1 = Mounting bracket, aluminum
- 2 = Mounting bracket, stainless steel
- 3 = Back weld 360° (SS only)
- 4 = Tack weld (SS only)
- 5 = Volume minimized (To improve temperature effects, see note 4)
- N = Not applicable

Fill Fluids

- 02 = KN 2, standard silicone oil (DC200-50)
- 03 = KN 3.2, high temperature silicone oil
- 07 = KN 7, glycerine (99.6% pure) (See note 2)
- 08 = KN 8, Fluorlube® FS-5 (See note 3)
- 12 = KN 12, glycerine / water (86.5% / 13.5%) (See note 2)
- 13 = KN 13, vegetable oil (See note 2)
- 17 = KN 17, low temperature silicone oil (4 cSt)
- 21 = KN 21, Halocarbon® (grade 6.3) (See note 3)
- 32 = KN 32, DC704 silicone oil (39 cSt)
- 34 = KN 34, food grade silicone oil (350 cSt) (See note 2)
- 59 = KN 59, Neobee® M-20 (77 cSt) (See note 2)
- ?? = KN ??, DC200-10 silicone oil (10 cSt)
- XX = Customer to specify
- NA = Not applicable

Support tubes / Adaptors

- 4 = Support tube, 4" (See note 1)
- A = Stainless steel adaptor
- N = Not applicable

Connection B (connection to seal/process)

- 1 = 1/4" NPT-F
- 2 = 1/4" NPT-F with fill port
- 3 = 1/2" NPT-F
- 4 = 1/2" NPT-F with fill port
- 5 = 1/4" NPT-M
- 6 = 1/4" NPT-M with fill port
- 7 = 1/2" NPT-M
- 8 = 1/2" NPT-M with fill port
- 9 = Welded to seal (See note 1)
- X = To be specified by customer
- N = Not applicable

Connection A (connection to instrument)

- 1 = 1/4" NPT-F
- 2 = 1/4" NPT-F with fill port
- 3 = 1/2" NPT-F
- 4 = 1/2" NPT-F with fill port
- 5 = 1/4" NPT-M
- 6 = 1/4" NPT-M with fill port
- 7 = 1/2" NPT-M
- 8 = 1/2" NPT-M with fill port
- 9 = Welded to instrument (See note 1)
- X = To be specified by customer
- N = Not applicable

Capillary Armor

- B = Capillary w/o protective armored tube
- A = Capillary with stainless steel armored tube
- P = Capillary with stainless steel armored tube, white PVC coating
- N = Not applicable

Capillary ID (OD x wall thickness) identification color

- 2.0 = 2.0 mm (3 x 0.5 mm) yellow
- 1.0 = 1.0 mm (3 x 1.0 mm) green
- 0.6 = 0.6 mm (3 x 1.2 mm) black
- N/A = Not applicable

Mounting and capillary length

- DG = Direct mount / gauge
- DT = Direct mount / transmitter
- DS = Direct mount / switch
- CC = Cooling element
- 0X = Capillary length 1 to 9 feet, specify length (x) use 5ft. increments
- XX = Capillary length 10 to 50 feet, specify length (XX) use 5ft. increments

Notes

1. For use with capillary only.
2. Food grade fill fluids.
3. Inert fill fluids.
4. Recommended for use with smart electronic transmitters.

Items in bold are available from stock (subject to prior sales). For optional items, consult factory for current lead-time.

Ordering Information:

State computer part number (if available) / type number / size / range / connection size and location / options required.

Specifications given in this price list represent the state of engineering at the time of printing. Modifications may take place and the specified materials may change without prior notice



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