

Model 106 – Differential Pressure Gauge *Bellows Type*

*High Accuracy
±0.5% or ±1% Full Scale Accuracy*



Model 106 – Differential Pressure Gauge with Electrical Switch Options

The Mid-West® Instrument Model 106 is a precision bellows differential pressure gauge built for high-accuracy, low-DP applications. With ±0.5% or ±1.0% full-scale accuracy and optional electrical switches, Model 106 provides both local indication and remote signaling in a compact, rugged design.

Why Choose Model 106?

- **High Accuracy at Low DP Ranges** — Ideal for monitoring small pressure differentials in sensitive systems.
- **Optional Factory-Installed Micro-Switches** — Available with one or two fast-acting SPDT micro-switches for alarms, process control, or remote indication. Switches are factory-installed and adjustable for either increasing or decreasing pressure.
- **Bi-Directional Protection** — Relief valve equalizes pressure from either direction to prevent damage from over-ranging events.
- **Durable Design** — Internal components are protected by a robust housing and over-pressure relief system.

Applications

- Oil & Gas
- Water/Wastewater
- Power Generation
- Chemical Processing
- Tank Level Measurement
- HVAC

Installation Tip:

A **3-valve manifold** is recommended for installation of the Model 106. Proper use helps prevent over-range conditions and pressure shock during system pressurization, and allows for convenient zeroing, range adjustment, and calibration verification.

Key Features & Benefits

High Accuracy

- ±0.5% or ±1.0% full scale accuracy
- Bellows and linkage assembly translates pressure into highly accurate readings.

Two-Piece Body

- Provides **containment** and **isolation** of high/low side pressures.
- Supports sensing element, over-pressure assembly, and gauge front.

Bi-Directional Over-Pressure Protection

- Built-in relief valve protects against over-pressure from both directions
- **High-side:** mechanical stop opens valve at max deflection.
- **Low-side:** spring-loaded valve opens when differential limit is exceeded.

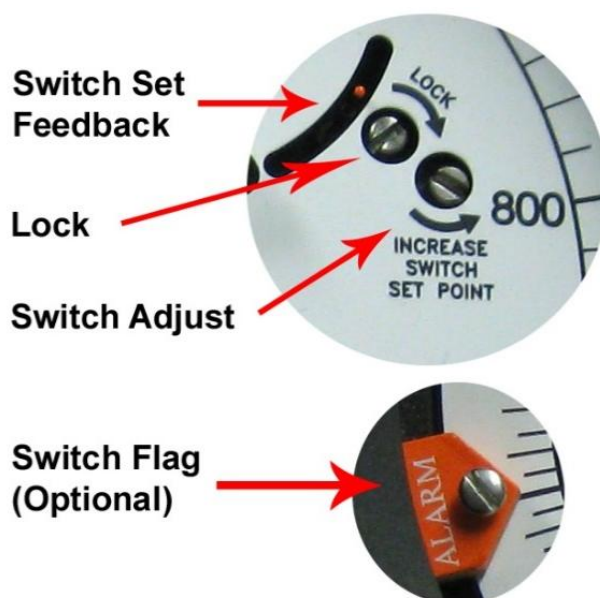
Technical Specifications

Specification

Details

Accuracy	±0.5% FS (ASME B40.1 Grade 2A) or ±1.0% FS (ASME B40.1 Grade 1A)
Differential Pressure Ranges	0-80" H2O (0-200 mbar) to 0-800" H2O (0-30 PSID) (0-2 bar)
Working Pressure Ratings	500, 1500, or 3000 PSIG
Housing Materials	Aluminum, Brass, Carbon Steel, or 316L Stainless Steel
Wetted Internals	Stainless Steel
Dial Sizes	4½" and 6"
Dial Arc	270°
Dial Scale Types	PSI, inches of H2O, bar, kPa, kg/cm ² , dual scale, square root scale for flow
O-Ring Materials	Buna-N, Viton®, EPDM
Port Configuration	Dual top & bottom (high port on left when facing the dial)
Mounting	Panel mounting standard and (4) ¼-20 mount holes in body.
Operating Temperature	–40°F to +200°F (–40°C to +93°C) - Gauge only
Dial Enclosure Rating	Designed and tested to meet NEMA Type 4X requirements.
Proof Pressure	2x working pressure or 10,000 PSI max at ambient temperature

Model 106 – Differential Pressure Gauge *With Optional Snap-Acting Micro Switches*



This versatile unit is available with **one or two independently adjustable SPDT snap-acting micro-switches**, capable of activating on either increasing or decreasing pressure. These switches provide **dry contact outputs** and require **no input power** to function, making the device ideal for fail-safe control circuits.

Feature

Description

Snap-Acting SPDT Micro-Switches	Optional 1 or 2 switches Independently adjustable Set on rising or falling pressure No external power required Repeatability: $\pm 2\%$ ($\geq 200'' \text{ H}_2\text{O}$)
Overpressure Protection	Integrated Bi-directional Over Pressure Relief Valve (OPV) activates at 130% of range to equalize pressure between high and low sides.
Field-Adjustable Zero	Micro-adjust pointer allows re-zeroing without disassembly.
Weatherproof Construction	NEMA 4-rated enclosure for protection in harsh environments.

Configuration

Accuracy

Switch Repeatability

Single Switch ($\geq 200'' \text{ H}_2\text{O}$)	$\pm 2\%$ FS	$\pm 2\%$ FS
Dual Switch ($\geq 200'' \text{ H}_2\text{O}$)	$\pm 2\%$ FS	$\pm 2\%$ FS
Dual Switch (80–199'' H_2O)	$\pm 4\%$ FS	$\pm 4\%$ FS

- Accuracy and repeatability values for units with two switches are based on one switch set low ($\sim 25\%$ FS) and one switch set high ($\sim 75\%$ FS).

Electrical Specifications

Switch Type — SPDT, Snap-Acting

Contacts — 1 or 2 (independent adjustment)

Setpoint Range:

- **Single Switch:**
 - 3%–90% F.S. (decreasing)
 - 15%–95% F.S. (increasing)
- **Dual Switches:**
 - 20%–95% F.S. (increasing or decreasing)

Contact Ratings:

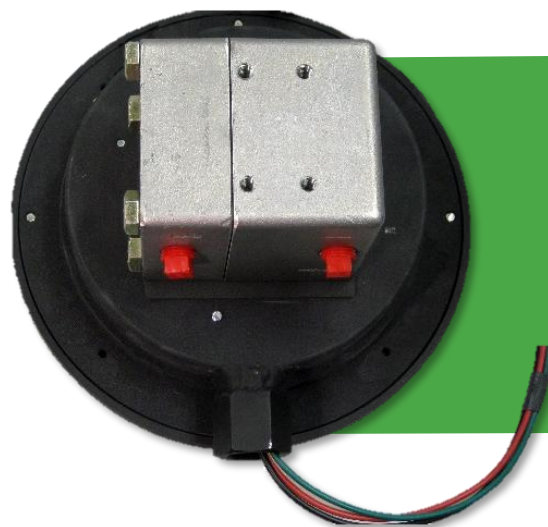
- 4 A @ 30 VDC
- 3 A @ 240 VAC
- 5 A @ 120 VAC

Wiring Interface:

- 18 AWG, color-coded leads
- 18" long, 600V, 105°C
- ½" FNPT conduit connection

NOTE: Snap-acting switches are **not available** on bi-directional range models.

½" NPT fitting with 18" leads.



Switch Mechanical Specifications

Materials:

- **Body:** Aluminum, Brass, Carbon Steel, or Stainless Steel
- **Wetted Parts:** 316/316L Stainless Steel
- **Dial Housing:** Anodized Aluminum
- **Dial Bezel:** Engineered Plastic

Dial Size — 6 inches

Dial Face — White aluminum with black lettering

Pointer — Aluminum, micro-adjustable

Process Connections:

- ¼" FNPT (top and bottom)
- High port on the right when facing the dial. (switch units)

Working Pressure — Up to **6000 PSI**

Proof Pressure — 2× working pressure or **10,000 PSI** (whichever is lower)

Operating Temperature — -20°F to +185°F (-29°C to +85°C)

½" NPT conduit connection



Dial Range Options

- Available in PSID, kPa, bar, kg/cm², Inches H₂O, mm H₂O, and cm H₂O.
- Custom dual-scale, multi-color, and flow-rate dials are available.
- Flow rate dials (GPM, SCFM, L/S, LB/HR, M³/HR) are **available with proper engineering data**.
- Not all scales are available for every range.
- Contact customer service for all non-standard dials.



Standard Dial Ranges – Model 106

 Uni-Directional		
Single Scale		Dual Scales
0 – 100	inches H ₂ O	0-15 PSID & 0-100 kPa
0 – 150	inches H ₂ O	0-15 PSID & 0-1 kg/cm ²
0 – 200	inches H ₂ O	0-15 PSID & 0-1 bar
0 – 3	PSID	
0 – 5	PSID	
0 – 10	PSID	
0 – 15	PSID	
0 – 30	PSID	

 Bi-Directional	
Dial Scales	
100 – 0 – 100	inches H ₂ O
150 – 0 – 150	inches H ₂ O
5 – 0 – 5	PSID

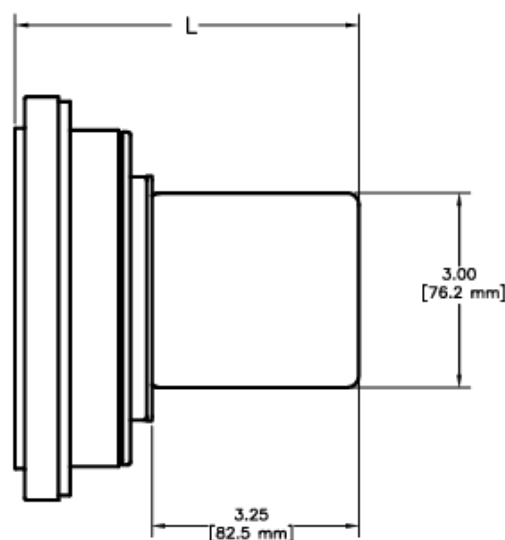
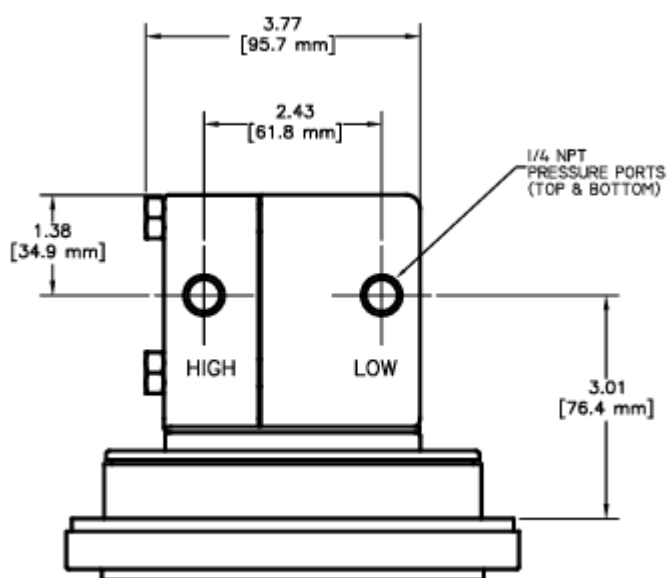
Model	Accuracy	Min. ΔP Range	Max. ΔP Range
106	±1/2% or 1%	0-80" H ₂ O (0-200 mbar)	0-800" H ₂ O (0-30 PSID) (0-2 Bar)

Standards

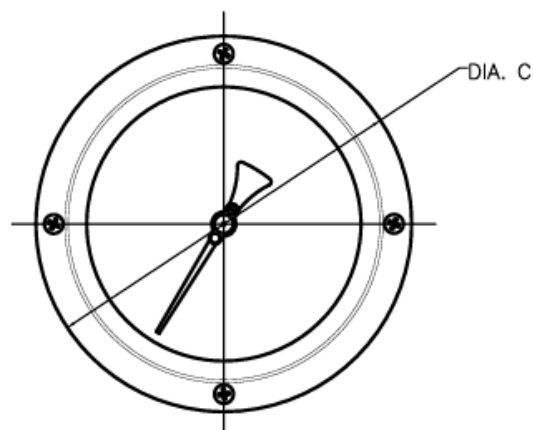
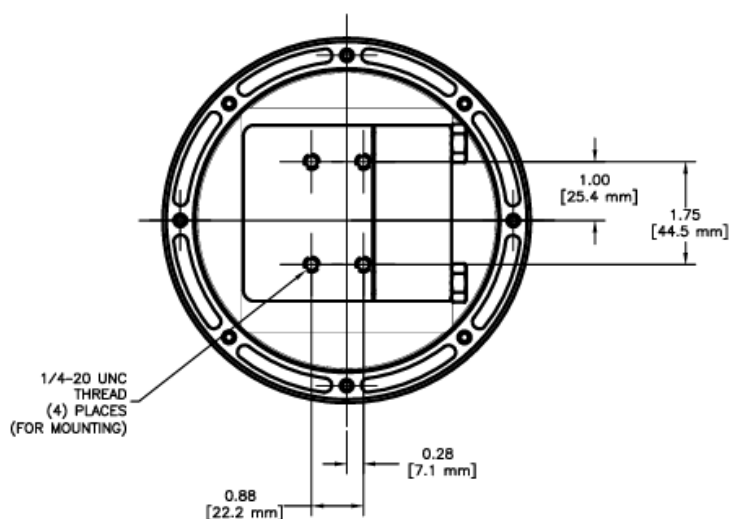
Model 106 gauge either conforms to and/or is designed to the following required standards:

- ASME B40.100
- ASME B1.20.1
- NACE MR0175
- SAE J514
- UL Std. No. 50
- CSA-C22.2 No. 14.25 and 30

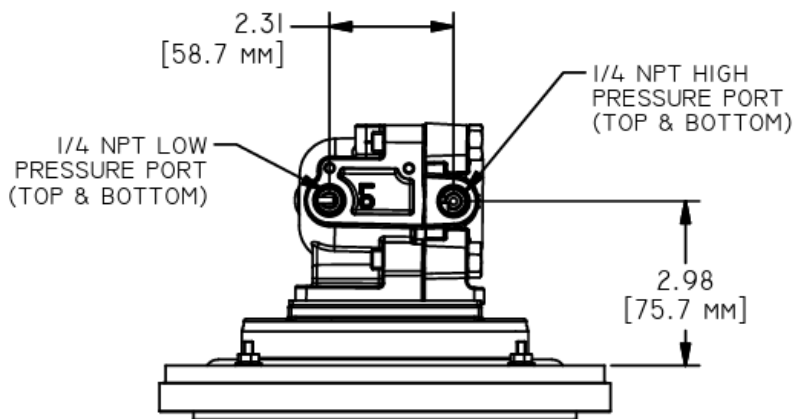
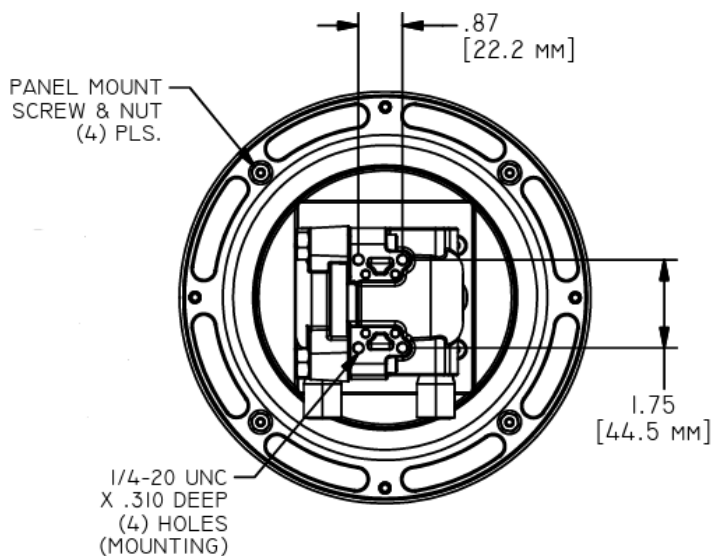
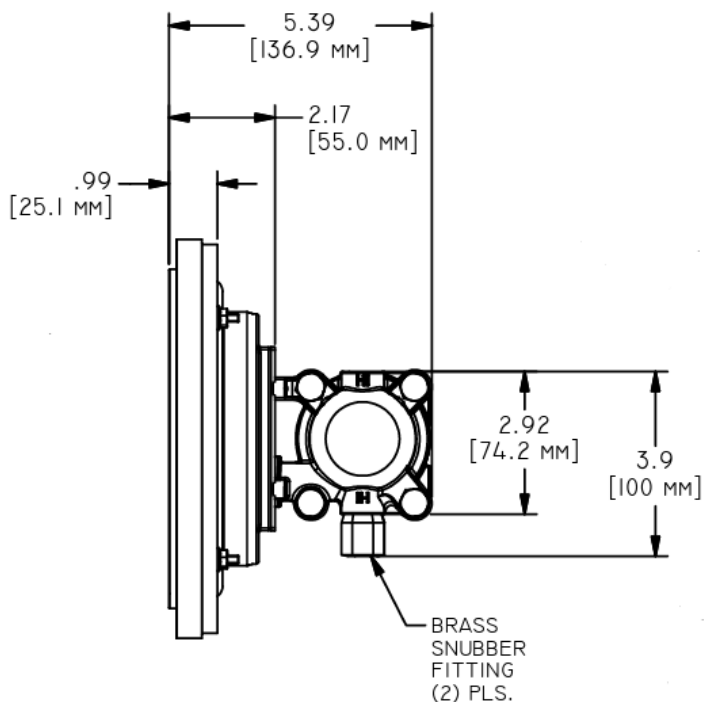
Dimensions – Aluminum, Carbon Steel, or Stainless-Steel bodies



DIAL SIZE	DIAMETER C	LENGTH L
	Inch (mm)	Inch (mm)
4-1/2 in.	6.21 (157.7)	5.25 (133.4)
6 in.	8.18 (208.0)	5.31 (134.9)



Dimensions – Brass Body



Optional: Brass snubber fittings.

Standard Model Number Sequence: 106-FE-00-O-O

1500 PSIG Working Pressure, Aluminum Body, Stainless Steel Internals Buna-N Seals, ¼" FNPT Dual Top & Bottom Connections, 6" Uni-Directional Round Dial with white background and black letters, Weather Resistant Engineered Plastic Case with Shatter Resistant Acrylic Lens, Accuracy ±1% Full Scale (Ascending)

0-80" H2O (0-200 mbar) to 0-800" H2O (0-30 PSID) (0-2 bar)

Gauge body and internal components are considered wetted parts.

Model Number Configuration

1	0	6			-			-					-						
[Model]						2	3	-	4	5	-	6	6	6	6	-	7	8	9

* Each character position relates to the numbered section in table below.

Range: _____

Scale: _____

2

Material

F	1500 PSIG, Aluminum Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections
G	3000 PSIG, Aluminum Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections
M	1500 PSIG, Mild Carbon Steel Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections
N	3000 PSIG, Mild Carbon Steel Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections
Q	1500 PSIG, 316 Stainless Steel Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections
R	3000 PSIG, 316 Stainless Steel Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections
X	1500 PSIG, Brass Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections
Y	500 PSIG, Brass Body, S.S. Internals – 316 Stainless Steel ¼" FNPT Connections

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Dial Size Type

E	Accuracy ±1% Full Scale Uni-Directional Dial w/Engineered Plastic Dial Case (Standard)
F	Accuracy ±1% Total Span Bi-Directional Dial w/Engineered Plastic Dial Case
G	Accuracy ±1/2% Full Scale Uni-Directional Dial w/Engineered Plastic Dial Case <i>Not available with Square Root (Flow) Dials</i>
Z	Special (Un-coded Options)

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Seal Materials

0	Buna-N (aka NBR or Nitrile) (Standard)
1	Viton [®] (aka FKM)- Viton [®] is a Registered Trademark of Dupont
5	Ethylene Propylene (aka EPDM)
9	Special (Un-coded Options)

Not all options are available in combination with other options.

NOTE: The use of Diaphragm seals is not recommended for the Model 105 gauge.

5 Process Connections

0	1/4" FNPT Dual top & bottom Connections
9	Special (Un-coded Options)

6 Additional Options

O	NONE
A	Snubber fittings in bottom process ports
B	Snubber fittings in top process ports
D	3/4" NPT Stainless Steel stub mount bracket
F	Carbon Steel 2" Pipe Mounting Kit
G	Stainless Steel 2" Pipe Mount Kit
H	1/4" Carbon Steel Compression Tube Fittings
J	1/4" Stainless Steel Compression Tube Fittings
K	1/2" FNPT Stainless Steel Adapters (pair)
N	NACE (Only available on Aluminum or Stainless-Steel gauge bodies.)
Q	CRN - Canadian Registration Number (Only available with "Q" material option)
S	Shatter Proof Glass Lens
T	Cleaned for Oxygen Service
U	Stainless Steel Tag with S.S. Wire
V	Stainless Steel Tag and S.S. Screw
W	Wall Mount Kit
Y	4-1/2" Dial Case
Z	Special (Un-coded Options)

7 Electrical Configurations

O	NONE
G	One (1) Micro-switch in Type 4 weather resistant enclosure. Accuracy $\pm 2\%$
H	Two (2) Micro-switches in Type 4 weather resistant enclosure. Accuracy $\pm 4\%$ for ranges 80" thru 199" Accuracy $\pm 2\%$ for ranges 200" H2O and above
J	One (1) Micro-switch in Type 4 weather resistant housing with conduit enclosure. Accuracy $\pm 2\%$
K	Two (2) Micro-switches in Type 4 weather resistant enclosure with conduit enclosure. Accuracy $\pm 4\%$ for ranges 80" thru 199" Accuracy $\pm 2\%$ for ranges 200" H2O and above
Z	Special (Un-coded Options)

8 Electrical Input Specification

N	For microswitch options G, H, J & K.
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8 Electrical Output Specification

M	SPDT micro switch high current (G, H, J and K electrical configurations)
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NOTE: Factory can preset switches at no charge (specify increasing or decreasing)