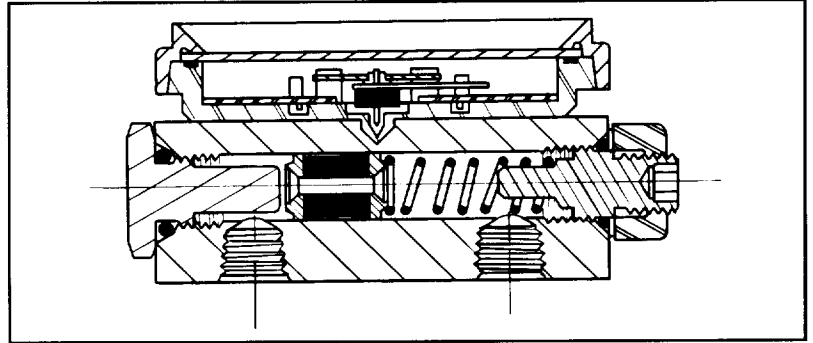
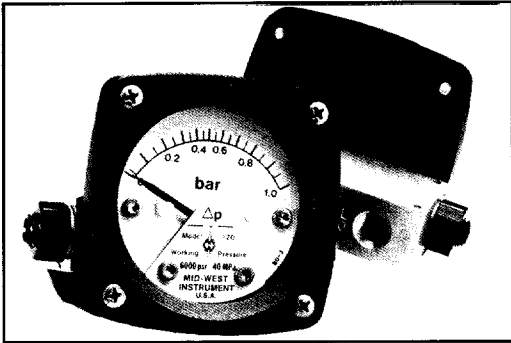


Model 120 Series "Filter Minder"[®] Installation and Operating Instructions



INSPECTION

Before installation check the nameplate on each instrument against the receiving paperwork and the intended application for correct part number, materials of construction, working pressure, dial range, etc. If equipped with switches, check electrical rating, type of enclosure, etc. Inspect for shipping damage and, if damaged, report it immediately.

NOTE - Before attempting repairs contact your local Mid-West Representative or our factory. Failure to do so will void any warranty.

PRODUCT DESCRIPTION

The Model 120 Series "Filter Minder"[®] is a rugged, medium-range differential pressure instrument available as a switch, a gauge, or both. See "Part Numbering System". (Fig. 4) for available options.

Differential pressure is sensed by the movement of a floating piston magnet against a calibrated spring. The magnetically coupled gauge pointer outside the pressure housing follows the movement of the piston magnet and indicates differential pressure on the dial scale.

When equipped with switches, a contact is made or broken by the magnetic field of the piston magnet. See Bulletin ELECIM120/latest for gauges with switches.

The unit provides full over-range protection to the rated working pressure of the housing in either direction.

The precise piston/bore fit allows minimal leakage from high to low sides. This leakage is only 5 to 15 SCFH air at ambient conditions and a pressure differential of 100 PSID.

INSTALLATION

Model 120 Series "Filter Minder"[®] is calibrated and tested prior to shipment and is ready for immediate installation. Use of the following installation procedures should eliminate potential damage and provide optimum trouble-free operation.

1. CONNECTIONS

1/4" FNPT are provided as standard but check paperwork for connections ordered. There are two connections on the housing identified as "hi" and "lo" for high pressure and low pressure (Fig. 2). Be sure these get plumbed to the proper connections on your system. Improper connection will not damage the instrument, but it will not function properly. Flexible tubing is recommended to minimize the effect of any vibration that may exist.

2. INSTRUMENT LOCATION

On liquid service the instrument should be mounted **below** the process connections to facilitate self-bleeding. On gas service it should be located **above** the process connections to promote self-draining. If the process contains particulates, a "pigtail" loop or drop leg (manometer "U-tube" configuration) in the tubing will minimize the possibility of it migrating into the instrument.

3. PANEL MOUNTING

Gauges with 2-1/2" dials can **only** be mounted through the **rear** of the panel. Make the proper panel cutout as indicated in (Fig.1). Remove the (4) bezel screws. Insert the gauge front through the rear of the panel and reinstall the bezel screws through the **front** of the panel and into the gauge bezel. Tighten the screws securely, alternating in a **diagonal** pattern.

Gauges with 3-1/2" dial should be mounted from the front of the panel. Contact factory for mounting information and dimensional data.

Gauges with 4-1/2" dial should be mounted from the **front** of the panel. Make the cutout as indicated in (Fig. 1). Insert the (4) panel mounting studs, finger tight, into the metal inserts located in the rear of the bezel. Insert the gauge through the panel, aligning the panel mounting studs with the holes in the panel. Install the (4) #8-32 nuts onto the studs and tighten securely.

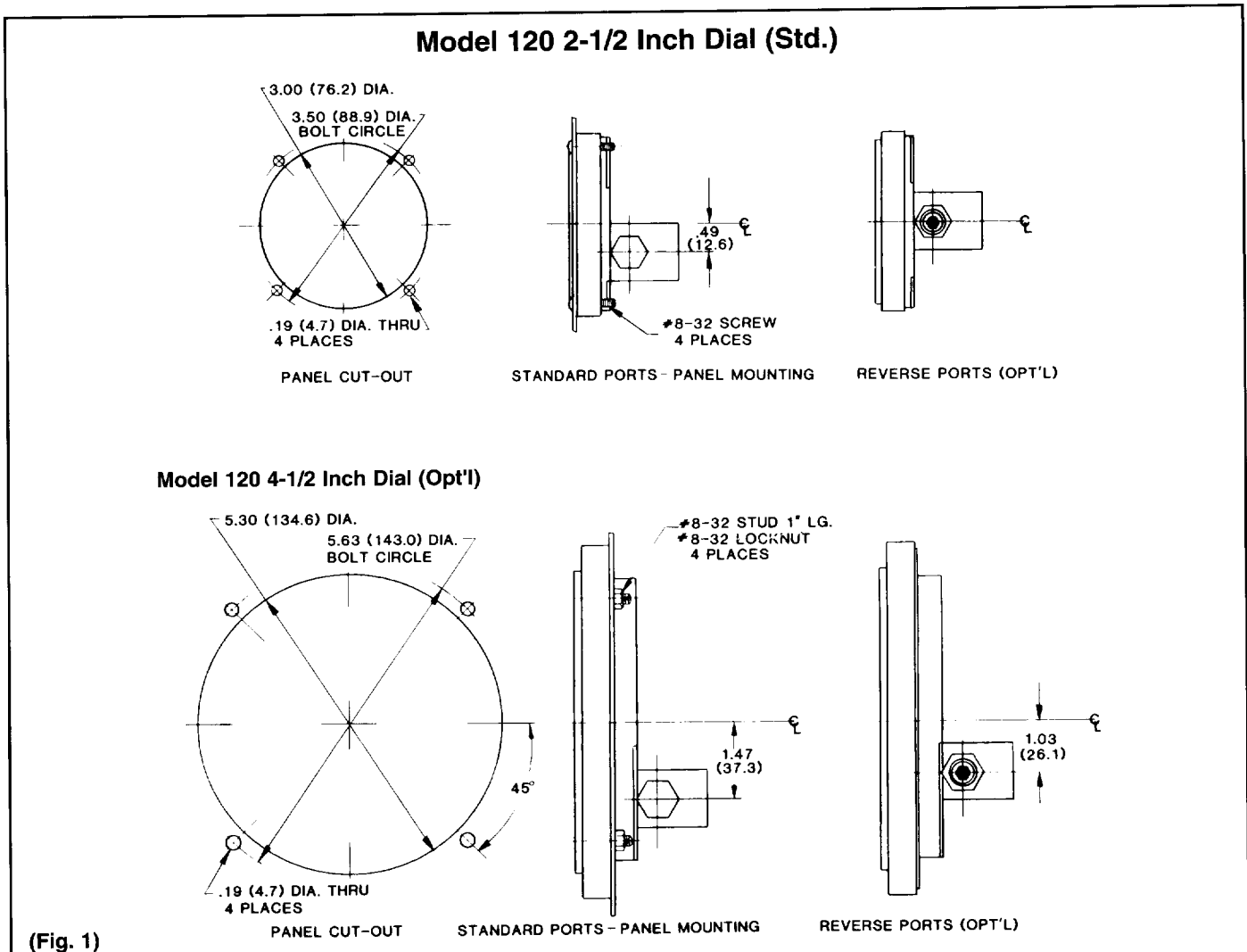
4. PIPE MOUNTING

An optional pipe mounting kit is available for mounting the gauge to a 2" vertical or horizontal pipe (Fig. 3).

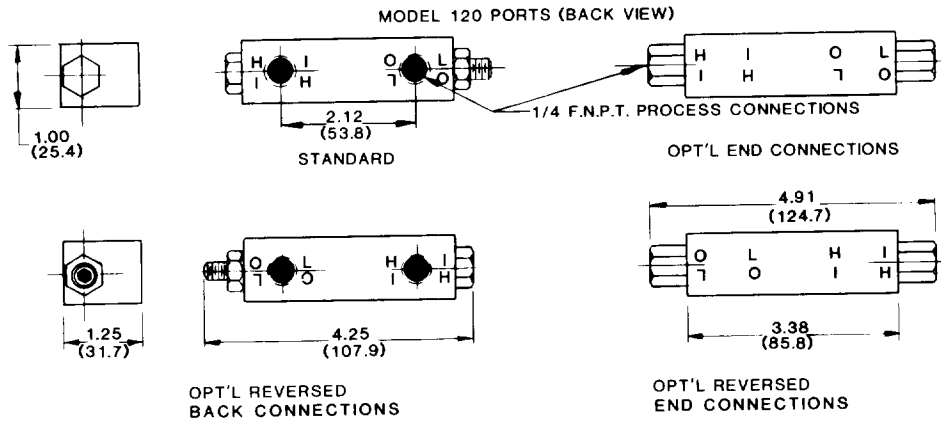
TROUBLE SHOOTING

1. Gauge does not indicate differential.

- Check for proper hook up, high to "hi" and low to "lo".
- Make certain block valves are open and, if using a 3-valve manifold, that the equalizer (balance) valve is closed.
- If A & B check out correctly, loosen or disconnect the high pressure line to determine if there is pressure to the instrument.
- If there is pressure to the instrument, check to determine that there is differential across the unit being monitored. If so, contact the factory for assistance and/or an "RGA" (return goods authorization) number to return the instrument for repair or replacement.



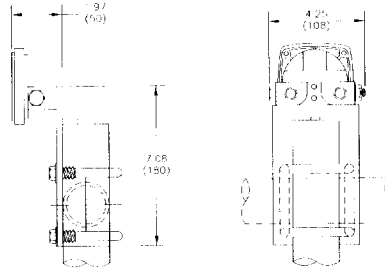
Supplementary 120 Dimensional/Mounting Data



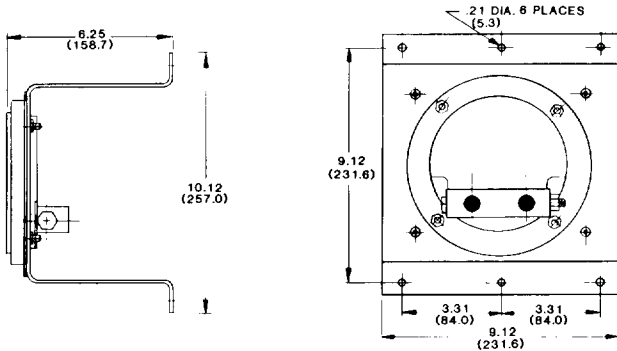
(Fig. 2)

TYPICAL 2" PIPE MOUNTING (BACK CONNECTIONS ONLY)

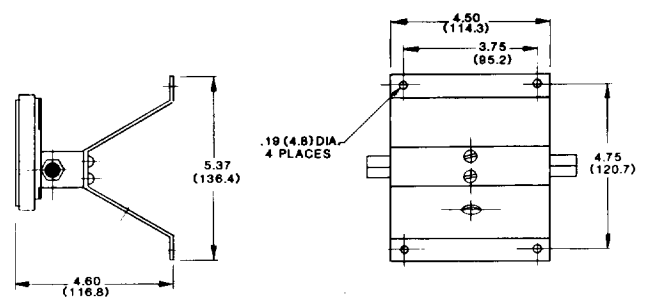
3.75 (95) FOR 2-1/2 INCH DIAL
4.18 (106.1) FOR 4-1/2 INCH DIAL



TYPICAL WALL MOUNTING 4-1/2 INCH DIAL (BACK OR END CONNECTIONS)



TYPICAL WALL MOUNTING 2-1/2 INCH DIAL (END CONNECTION OPTION ONLY)



(Fig. 3)

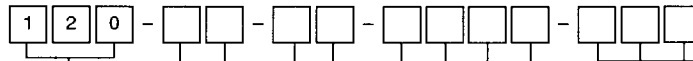
- NOTES: 1. Drawings show standard gauge nominal dimensions. (not to scale)
2. Dimensions shown in parentheses are in millimeters.
3. Manufacturer reserves the right to change specifications without prior notice.

STANDARD MODEL SPECIFICATIONS

120-AA-00-00

6000 P.S.I.G. Working Pressure Aluminum Body, Stainless Steel Piston, Ceramic Magnets, Buna N Seals, 2-1/2" Engineering Plastic Case with Shatter-Resistant Lens. 1/4" FNPT Back Connections. Accuracy $\pm 3-2-3\%$ Full Scale (Ascending).

PART NUMBERING SYSTEM



① BASIC MODEL NUMBER

② MATERIAL

- A. Aluminum Body, S.S. Piston (Standard)
- M. Monel Body (See 120 ABM) (5000 P.S.I.G. working pressure)
- N. Aluminum Bronze Body (See 120 ABM) (5000 P.S.I.G. working pressure)
- S. 316 S.S. Body & S.S. Piston (Standard)
- Z. SPECIAL (Uncoded Options)

③ DIAL TYPE

- A. 2-1/2" Round Uni-Directional Engrd. Plastic Housing Assy. (Standard)
- B. 2-1/2" Round Bi-Directional Engrd. Plastic Housing Assy.
- C. 4-1/2" Round Uni-Directional Engrd. Plastic Housing Assy.
- D. 4-1/2" Round Bi-Directional Engrd. Plastic Housing Assy.
- E. 3-1/2" Round Uni-Directional Anod. Aluminum Housing Assy.
- F. 3-1/2" Round Bi-Directional Anod. Aluminum Housing Assy.
- G. 4-1/2" Round Uni-Directional Anod. Aluminum Housing Assy.
- H. 4-1/2" Round Bi-Directional Anod. Aluminum Housing Assy.
- T. Non-Indicating Differential Pressure Switch Only (Select Appropriate Electrical Option)
- Z. Special (Uncoded Options)

④ SEALS

- 0. Buna N (Standard)
 - 1. Viton®
 - 2. Neoprene
 - 4. Teflon®
 - 5. Ethylene Propylene
 - 6. Perfluoroelastomer
 - 9. Special (Uncoded Options)
- *Viton® is a Registered Trademark of DuPont Dow Elastomers.
**Teflon® is a Registered Trademark of DuPont.

⑤ CONNECTIONS

- (NOTE: Models 120M and 120N available only with end connections)
- 0. 1/4" FNPT Back Connections (Standard)
 - 2. 1/4" FNPT End Connections
 - 6. 7/16" - 20 Str. Thd. O-Ring Port (Back Connections)
 - 7. 1/2" FNPT Stainless Steel Adaptors
 - B. 1/2" FNPT Monel Adaptors
 - 9. Special (Uncoded Options)

⑥ OPTIONS (Up to four options)

- O. None (Standard)
- A. Reversed High/Low Process Connections
- B. DIN2353 12-S (12mm) Steel Tube Fittings (2)
- C. Mounting Holes in Gauge Body for Field Mounting of Electrical Configurations Options A & B
- D. Mounting Holes in Gauge Body for Field Mounting of Electrical Configurations Options L & M
- F. Pipe Mounting Kit (Carbon Steel) (Not available w/C, D, E or F Electrical Switch Options)
- L. Liquid Fill (Not available w/whenever pointer) (Not available with 3-1/2" dial)
- M. Maximum Indicator Follower Pointer
- T. Oxygen Cleaning
- U. S.S. Tag Mounted w/S.S. Wire
- V. S.S. Tag Mounted w/S.S. Screws
- W. Wall Mounting Kit
- X. Individual Gauge Packaging
- Z. Special (Uncoded Options)

⑦ ELECTRICAL CONFIGURATIONS

- (NOTE: All options ** marked, except E, F, J & K)
- O. None
 - A. One (1) Switch in STD. Enclosure with Grommet Wire Seal
 - B. Two (2) Switches in STD. Enclosures with Grommet Wire Seal
 - C. One (1) Switch in STD. Enclosure with 1/4" FNPT Electrical Connection NEMA 4X
 - D. Two (2) Switches in STD. Enclosures with 1/4" FNPT Electrical Connection NEMA 4X
 - E. One (1) Switch in General Purpose Enclosure, C.S.A. & U.L. Listed, Division II Locations ^{(1) (2)}
 - F. Two (2) Switches in General Purpose Enclosure, C.S.A. & U.L. Listed, Division II Locations ^{(1) (2)}
 - G. One (1) Switch & Gauge in NEMA 4X Plastic Enclosure (Not Available With End Connections)
 - H. Two (2) Switches & Gauge in NEMA 4X Plastic Enclosure (Not Available With End Connections)
 - J. One (1) Switch in Explosion Proof Enclosure with Glass Window Cover and C.S.A. & U.L. Listing ⁽²⁾
 - K. Two (2) Switches in Explosion Proof Enclosure with Glass Window Cover and C.S.A. & U.L. Listing ⁽²⁾
 - L. One (1) Switch in STD. Enclosure with Plug-In Connector (DIN 43650/IP65-PG11)
 - M. Two (2) Switches in STD. Enclosure with Plug-In Connector (DIN 43650/IP65-PG11)
 - Z. Special (Uncoded Options)

⑧ ELECTRICAL SPECIFICATIONS (For Resistive Loads)

- A. S.P.D.T., 3W, 0.25 Amp., 125 VAC/VDC (Standard) (Switch adjustable range of 10-90%)
- E. S.P.S.T., 60W, 3.0 Amp., 240 VAC/VDC (Normally Open) (Switch adjustable range of 25-95%)
- F. S.P.S.T., 60W, 3.0 Amp., 240 VAC/VDC (Normally Closed) (Switch adjustable range of 25-95%)
- G. S.P.S.T., 60W, 3.0 Amp., 240 VAC/VDC One (1) Normally Open, One (1) Normally Closed ⁽¹⁾
- H. S.P.D.T., 60W, 1.0 Amp., 240 VAC/VDC (Switch adjustable range of 25-100%)
- Z. Special (Uncoded Options)

NOTE: NOT ALL OPTIONS AVAILABLE IN COMBINATION WITH OTHER OPTIONS.
NOTE: FACTORY PRESET SWITCHES AT NO CHARGE (SPECIFY SETTING)
NOTE: THE USE OF DIAPHRAGM SEALS IS NOT RECOMMENDED FOR MODEL 120 SERIES GAUGE. ATTEMPTS TO INSTALL SUCH SEALS ON THIS GAUGE WILL VOID THE WARRANTY.

⁽¹⁾ Complete Assembly Rated Class I, Div. II, Groups A, B, C, & D, Class II, Div. II, Groups F and G.
⁽²⁾ Complete Assembly Rated Class I, Div. I, Groups C & D, Class II, Div. I, Groups E, F, & G.
⁽³⁾ 5000 PSIG Working Pressure.

(Fig. 4)

Manufacturer reserves the right to change specifications without prior notice.

PROOF PRESSURE: 12,000 PSI for models 120-A and 120-S.
10,000 PSI for models 120-M and 120-N.

TEMPERATURE LIMITS: -40°F (-40°C) to +200°F (+93°C) - These limits are based on the entire instrument being saturated to these temperatures. System (process) temperatures may exceed these limitations with proper installation. Contact our customer service representative for details.

STANDARDS: All Model 120 Series differential pressure gauges either conform to and/or are designed to the requirements of the following standards:

ASME B1.20.1	NACE MR0175
ASME B40.100	NEMA Std. No. 250
CSA-C22.2 No. 14.25 and 30	SAE J514
EN-61010-1	UL Std. No. 50,508 and 1203



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