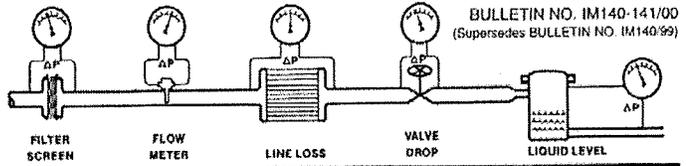




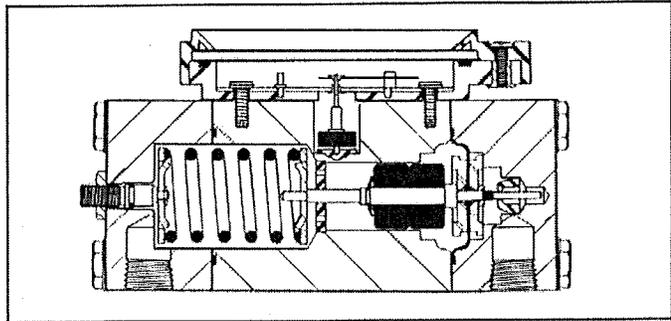
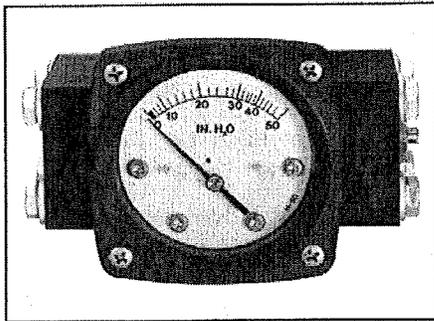
 AVERY



Mid-West[®] Instrument



Model 140/141 Series 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 140/141 "Series" is a medium range differential pressure instrument available as a switch, a gauge, or both. See "Part Numbering System", (Fig. 6) for available options.

A flexible elastomer diaphragm and calibrated range spring are moved by differential pressure. A pair of magnets, coupled with the diaphragm, transmit this motion through the wall of the pressure housing to a follower

magnet attached to an indicating pointer. The rotation of the follower magnet causes the pointer to track movement of internal magnet and indicate the differential on the dial scale.

When equipped with switches, a contact is made, or broken, by the magnetic field of the internal magnets.

The diaphragm is totally supported upon reaching full travel in either direction, providing full over-range protection to the rated working pressure of the housing.

INSTALLATION

Model 140/141 "Series" 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 is 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. 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 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. 5). 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 must be mounted from the **front** of the panel. Contact factory for mounting information and dimensional data.

The Gauges with 4-1/2" dial must be mounted from the **front** of the panel. Make the cutout as shown in (Fig. 5). Insert the four (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 four (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.

5. TROUBLE SHOOTING

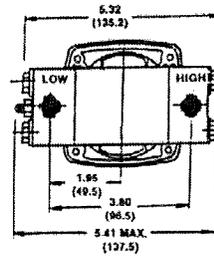
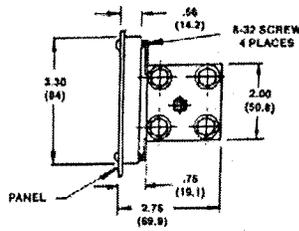
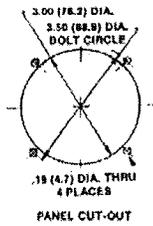
A. Gauge does not indicate differential.

- i. Check for proper hook up, high to "hi" and low to "lo" ports.
- ii. Make certain block valves are open and, if using a 3-valve manifold, that the equalizer (balance) valve is closed.
- iii. If i & ii check out correctly, verify that there is pressure to the instrument.
- iv. 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.

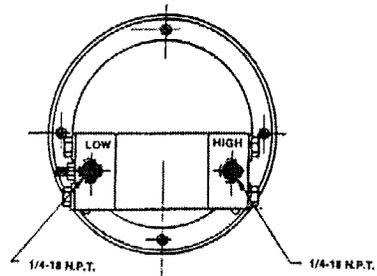
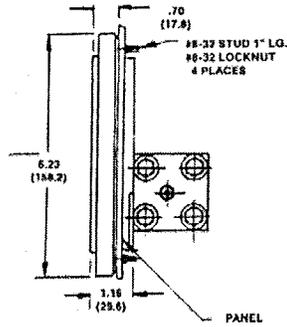
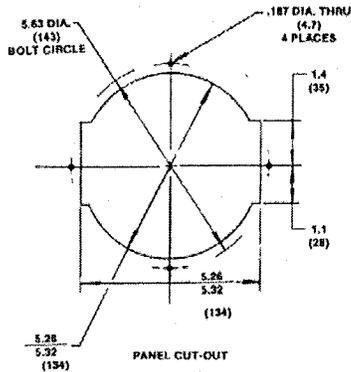
B. Gauge accuracy and set point problems:

- i. Verify gauge is not in an electromagnetic/magnetic environment. i.e.; close proximity to high current power lines.
- iii All others, contact the factory for assistance.

MODEL 140 - 2-1/2 INCH PLASTIC DIAL ASSY. (STANDARD)



MODEL 140 - 4-1/2 INCH PLASTIC DIAL ASSY. (OPTIONAL)



(Fig. 5)

- NOTES:
1. Drawings show standard gauge nominal dimensions. (not to scale)
 2. Dimensions shown in parentheses are in millimeters.
 3. Mounting Dimensions for 3-1/2" & 4-1/2" Alum. Dial Assys. - Contact Factory

Manufacturer reserves the right to change specifications without prior notice. All dimensions in inches and millimeters.

STANDARD MODEL SPECIFICATIONS

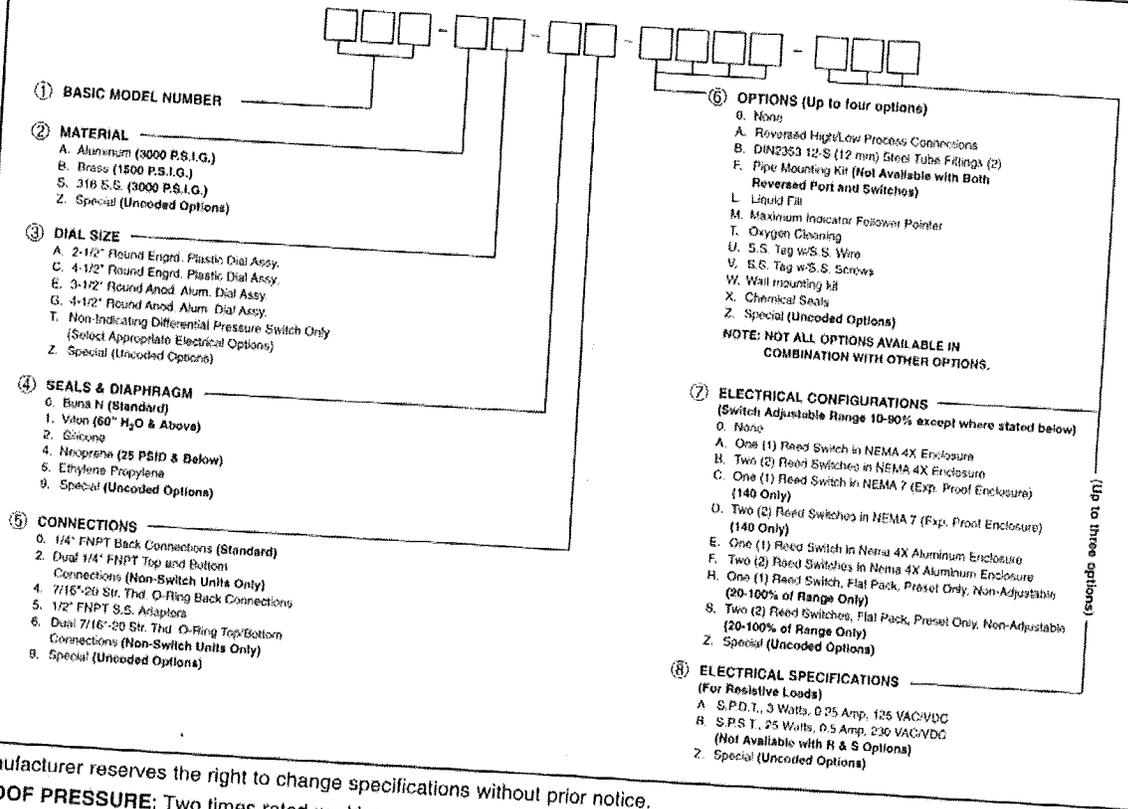
Model 141 0-50" H₂O thru 0-25 PSID
 Model 140 over 0-25 PSID thru 0-100 PSID
140/141-AA-00-00

3000 P.S.I.G. Working Pressure Aluminum Body, Buna N Diaphragm and Seals, 316 Stainless Steel Internal Metal Parts, Ceramic Magnets, Teflon Guide Bushings, 1/4" FNPT Back Connections, 2-1/2" Round Dial in Corrosion Resistant Engineering Plastic Case with Shatter-Resistant Acrylic Lens.

DIFFERENTIAL RANGE & ACCURACY

0-50 to 0-400" H ₂ O (125 mbar to 1 bar) or equivalent	0-15 thru 0-100 PSID. (1 to 7 bar) or equivalent
± 5% Full Scale (Ascending)	+ 3-2-3% Full Scale (Ascending)

PART NUMBERING SYSTEM (Fig. 6)



① BASIC MODEL NUMBER

② MATERIAL

- A. Aluminum (3000 P.S.I.G.)
- B. Brass (1500 P.S.I.G.)
- S. 316 S.S. (3000 P.S.I.G.)
- Z. Special (Uncoded Options)

③ DIAL SIZE

- A. 2-1/2" Round Engrd. Plastic Dial Assy.
- C. 4-1/2" Round Engrd. Plastic Dial Assy.
- E. 3-1/2" Round Anod. Alum. Dial Assy.
- G. 4-1/2" Round Anod. Alum. Dial Assy.
- T. Non-Indicating Differential Pressure Switch Only
(Select Appropriate Electrical Options)
- Z. Special (Uncoded Options)

④ SEALS & DIAPHRAGM

- 0. Buna N (Standard)
- 1. Viton (60" H₂O & Above)
- 2. Silicone
- 4. Niprene (25 PSID & Below)
- 5. Ethylene Propylene
- 9. Special (Uncoded Options)

⑤ CONNECTIONS

- 0. 1/4" FNPT Back Connections (Standard)
- 2. Dual 1/4" FNPT Top and Bottom Connections (Non-Switch Units Only)
- 4. 7/16"-20 Str. Thd. O-Ring Back Connections
- 5. 1/2" FNPT S.S. Adaptors
- 6. Dual 7/16"-20 Str. Thd. O-Ring Top/Bottom Connections (Non-Switch Units Only)
- 8. Special (Uncoded Options)

⑥ OPTIONS (Up to four options)

- 0. None
- A. Reversed High/Low Process Connections
- B. DIN3353 12-S (12 mm) Steel Tube Fittings (2)
- F. Pipe Mounting Kit (Not Available with Both Reversed Port and Switches)
- L. Liquid Fill
- M. Maximum Indicator Followup Pointer
- T. Oxygen Cleaning
- U. S.S. Tag w/S.S. Wire
- V. S.S. Tag w/S.S. Screws
- W. Wall mounting kit
- X. Chemical Seals
- Z. Special (Uncoded Options)

NOTE: NOT ALL OPTIONS AVAILABLE IN COMBINATION WITH OTHER OPTIONS.

⑦ ELECTRICAL CONFIGURATIONS
(Switch Adjustable Range 10-90% except where stated below)

- 0. None
- A. One (1) Reed Switch in NEMA 4X Enclosure
- B. Two (2) Reed Switches in NEMA 4X Enclosure
- C. One (1) Reed Switch in NEMA 7 (Exp. Proof Enclosure) (140 Only)
- D. Two (2) Reed Switches in NEMA 7 (Exp. Proof Enclosure) (140 Only)
- E. One (1) Reed Switch in Nema 4X Aluminum Enclosure
- F. Two (2) Reed Switches in Nema 4X Aluminum Enclosure
- H. One (1) Reed Switch, Flat Pack, Preset Only, Non-Adjustable (20-100% of flange Only)
- S. Two (2) Reed Switches, Flat Pack, Preset Only, Non-Adjustable (20-100% of Range Only)
- Z. Special (Uncoded Options)

⑧ ELECTRICAL SPECIFICATIONS
(For Resistive Loads)

- A. S.P.D.T., 3 Watts, 0.25 Amp, 125 VAC/VDC
- B. S.P.S.T., 25 Watts, 0.5 Amp, 230 VAC/VDC
(Not Available with R & S Options)
- Z. Special (Uncoded Options)

Manufacturer reserves the right to change specifications without prior notice.

PROOF PRESSURE: Two times rated working pressure.

TEMPERATURE LIMITATIONS: -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.

STANDARDS: All Model 140/141 Series differential pressure gauges either conform to and/or are designed to the requirements of the following standards:

- ASME B1.20.1
- ASME B40.1
- CSA-C22.2 No. 14.25 and 30
- EN-61010-1

- NACE MR0175
- NEMA Std. No. 250
- SAE J514i
- UL Std. No. 50,508 and 1203

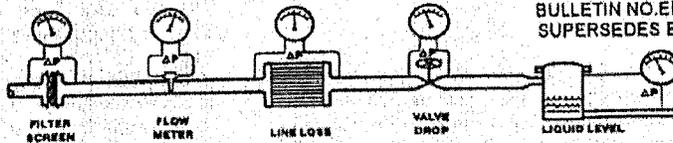
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REPRESENTED BY:

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BULLETIN NO. ELEC IM120/99
SUPERSEDES ELEC IM120/97C

Model 120 Electrical: Installation and Operating Instructions

ELECTRICAL

Gauges with switches have one or two hermetically sealed adjustable set point reed switch assemblies. Load ratings and capabilities for each switch type are defined as follows:

REED SWITCH RATINGS (Resistive Load)

Type	SPST ***	SPDT	SPDT ***
*Power	50 W	50 W	3W
Max. Current	0.5 Amps	1.0 Amps	0.25 Amps
Max. Voltage	240VAC/240 VDC	240 VAC/ VDC	125 VAC/VDC
**Setting (F.S.)	20 % to 90%	25% to 100%	10% to 90%
Hysteresis (Max/Nom)	10% / 2% Full Scale(F.S.)	20% / 13% Full Scale(F.S.)	10% / 5% Full Scale(F.S.)
Repeatability	1% F.S.*	1% F.S.	1% F.S.
Leads	(2), 22 Awg, 24"	(3), 22 Awg, 24"	(3), 22 Awg, 24"

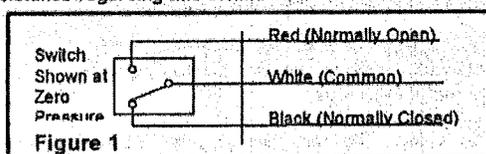
- * Product of the switching voltage and current shall not exceed the power rating of the device.
- ** Except where otherwise noted
- *** CSA Listed and Tested

The SPDT switch ('A' or 'H' Electrical Option) lead colors and associated functionality at '0' PSID is shown in Figure 1. SPST switches ('B', 'C', or 'D' Electrical Options) may be normally closed or normally open at '0' PSID dependent upon the option specified on the purchase order.

All switch types are field adjustable. The defined range of the adjustment is specified in the table above. All switches come with a decal to identify adjustment direction to increase the set point. Do not use excessive force when rotating the adjustment screw as the adjustment mechanism may be damaged. Also note the location of the screw adjust (See Figure 4.) Do not mistake it for the calibration adjust for the gauge.

Note: Switches can be set below the defined minimum set point however, the switch may not remain activated at maximum PSID. If the unit is set below the defined minimum set point, the customer should verify that the switch remains activated from the set point to over range of the gauge.

Provide standard protection techniques for the switch contacts for capacitive and inductive loads. Use current limiting techniques near the switch to protect the contacts due to high inrush (i.e., in line resistor or inductor) for long cable interfaces. Provide clamping devices at or near inductive loads (i.e., relay). Maximum wire length between the 3W switch and its load, should not exceed 70 - 100 Feet. for 120 VAC applications. Contact the factory for assistance regarding this condition.



Use the Mid-West Power Relay 1000TR or equivalent relay for loads above the switch rating.

The following warnings apply to all gauge options with electrical interface:

WARNING: ELECTRICAL CONNECTIONS SHOULD BE PERFORMED BY QUALIFIED PERSONNEL AND MEET THE REPRESENTATIVE COUNTRY'S NATIONAL ELECTRICAL CODE.



WARNING: FAILURE TO CONNECT TO THE PROTECTIVE CONDUCTOR TERMINAL MAY RESULT IN A SHOCK HAZARD.

Grommet Wire / Conduit Interface



The standard switch enclosure is weather resistant with 24" flying lead wire interface. A rubber grommet provides the seal around the wires (See Figure 3).

The conduit version provides a NEMA 4X rated environmental seal with a 1/4" FNPT conduit in the rear center of the gauge body (See Figure 5).

A provision to connect a protective conductor terminal is provided on the High port end of the gauge body. A 6-32 screw, 18 Awg, 24" long, green/yellow wire, and a #6 terminal is provided.

Standard location of a SPDT switch will be on the bottom of the gauge for a standard port gauge. For a reverse port gauge the switch will be on top. (See Figure 2). SPDT Switch leads are color coded and labeled as follows:

White- 1 or 2 Com
Black- 1 or 2 NC
Red - 1 or 2 NO

Location for the SPST switch will vary depending on the switch type required. A standard port gauge has the normally open switch located on the bottom of the gauge body and the normally closed switch located on the top. This applies to both a single switch unit or a double switch unit with one of each type ("G" option Electrical Specifications).

A reverse port gauge has the normally open switch located on the top and the normally closed switch located on the bottom.

Leads are labeled as follows:

Single Switch Unit: 1NC or 1NO
Double Switch Units: 1NC or 1NO and 2NC or 2NC

Deviations from the above configurations may exist. Therefore check the description block of your order to verify your configuration.

DIN Plug-in Connector



The DIN interface conforms to DIN 43 650A / ISO 4400 and when mated provides an IP65 rated protection class. The right angle mating connector is supplied with the gauge upon order. Clocking (orientation) can be changed by prying out the insert and rotating the insert to the desired clocking (90 ° increments). (See Figure 5)

Wiring for the SPDT bottom and top switch for the defined port configuration is as follows:

Standard Port - 1. - Common, 2. - N.C., 3. - N.O.
Reverse Port - 1. - Common, 2. - N.O., 3. - N.C.

Wiring for the SPST switch is between terminals 1 & 2.

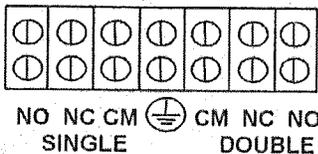
A protective conductor terminal is provided on the DIN connector. 

NEMA 4X (Weatherproof Enclosure)



The gauge and switch(es) are mounted inside the enclosure with the switch(es) wired to a seven (7) position terminal strip. The terminal strip connection uses 6-32 screws and is rated for use with wire up to 14 Awg.. An opening is provided on the bottom of the enclosure for a 1/2" flexible cable or conduit connection.

Access the terminal strip by removing the cover from the enclosure and loosening the (4) screws. Insert wires through an appropriate weatherproof connector (not supplied) into the enclosure and connect to the terminal strip. See the terminal strip diagram shown below or on the outside of the switch enclosure. Reinstall the cover and (4) screws (See Figures 6 & 7).



Wiring to the terminal strip for SPST switches is defined by the functionality required. i.e.; a normally closed switch is wired between the CM and NC connections with the NO connection unused and a normally open switch is wired between the CM and NO connections with the NC connection unused.

Access holes and plugs are provided for external adjustment of the switches if required (Except Model 120 4 1/2" Dial). The cover for the Model 120 with 4 1/2" Dial must be removed to adjust the switch settings.

NEMA 7 (Explosion-proof) Enclosure

WARNING: THE COVER AND/OR SWITCH ADJUST ACCESS PLUGS MUST NEVER BE REMOVED WHEN THERE IS POWER TO THE UNIT. MAKE ALL ADJUSTMENTS IN A NONHAZARDOUS AREA.

The gauge and switches are mounted inside the enclosure (See Fig. 4). A 1/2"-14 FNPT conduit connection is provided in the bottom side of the enclosure. A proper explosion proof, dust tight, sealing fitting with appropriate sealing cement must be used when making connections to the 24",

18 Awg. wire leads. The leads are labeled and/or color coded as described in the grommet / conduit section.

Adjustment of the set point can be accomplished by removing the switch adjustment access plug(s). Insert the screw driver through the hole into the switch adjustment slot and rotate until the desired set point is reached. **Do not use excessive force.** Reinstall the access plugs with at least 5 threads of engagement after completion.

Enclosures with SPDT or SPST switches comply with NEC Class 1, Groups C & D; Class 2 Groups E, F, & G, NEMA 7 and 9. "A, B, C, & D" option switches are CSA listed. Approval on the 'H' Option is pending.

MISCELLANEOUS

Bi-directional Dial:

SPDT Switch units, with the bi-directional dial, require the following setting instructions:

1. If the switch is to operate for positive ΔP , rotate the adjusting screw Counter Clockwise (Red - NO, Black- NC, White- Common).
2. If the switch is to operate for negative ΔP , rotate the adjusting screw Clockwise (Red- NC, Black- NO, White -Common)

The functionality of SPST switches will be reversed for negative ΔP and positive ΔP . i.e.; a normally open switch (B option), will switch from open to closed for set points above 0 PSID, but will switch from closed to open for set points below 0 PSID.

Division II Hazardous Ratings:

The 3W SPDT and 50 W SPST switch assemblies (without the gauge) are CSA certified for Class I, Division II, Groups A, B, C, & D hazardous environments as a component for use in other equipment where the suitability of the final combination is to be determined by CSA. Approvals are pending on the "H" option.

TROUBLE SHOOTING

A. Switch doesn't function

- i. Make sure that the switch load does not exceed the specified wattage rating of the switch. (steady-state and transient). Contact factory for assistance for excessive loads, otherwise proceed to the next step.
- ii. Perform a continuity check of the switch contacts by trying to actuate the switch using an external magnet. An operational switch usually indicates a problem with the gauge. If not operational proceed to the next step.
- iii. Verify the reed switch wires are connected to the terminal strip (NEMA 4X enclosure only). Contact the factory for assistance if the switch is connected and/or request an "RGA" number.

C. Gauge accuracy and set point problems:

- i. Verify gauge is not in an electromagnetic / magnetic environment. i.e.; close proximity to high current power lines.
- ii. All others, contact the factory for assistance.

MOUNTING INFORMATION & DIMENSIONAL DATA

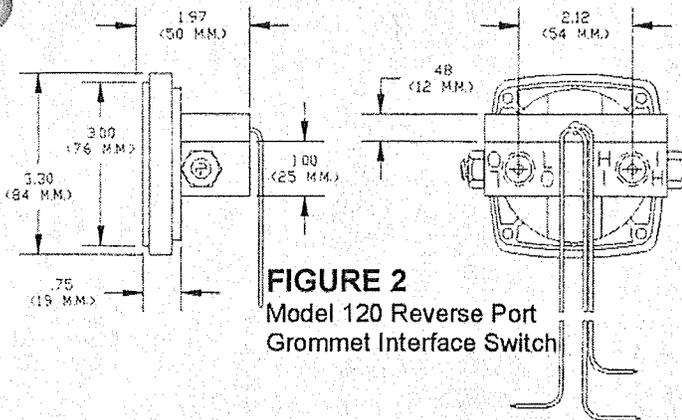


FIGURE 2
Model 120 Reverse Port
Grommet Interface Switch

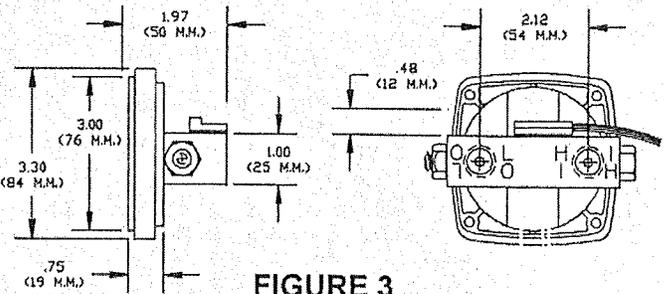


FIGURE 3
Model 120 Reverse Port
SPDT Flat Pack Switch

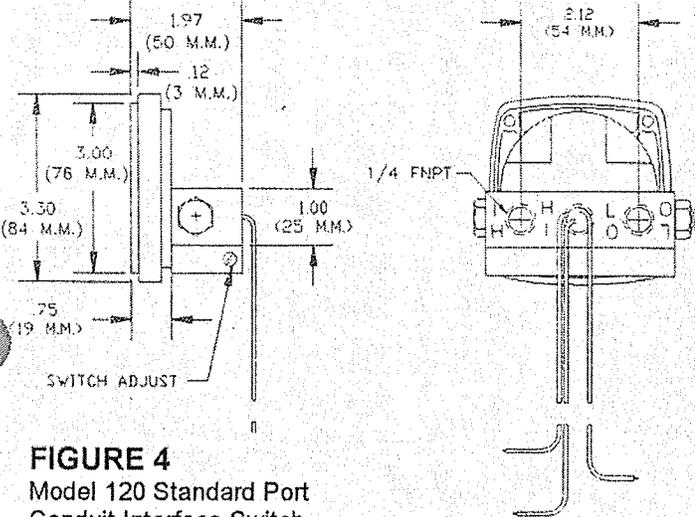


FIGURE 4
Model 120 Standard Port
Conduit Interface Switch

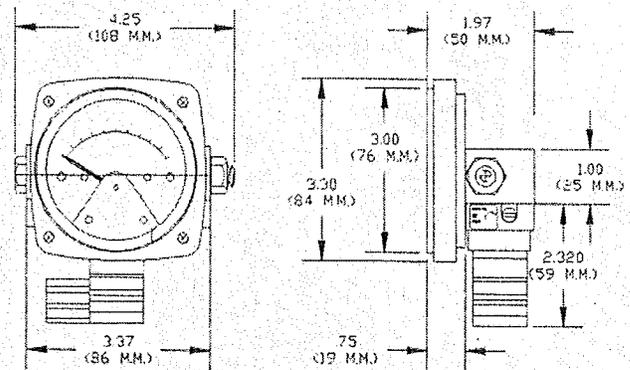


FIGURE 5
Model 120 Reverse Port
Din Connector Interface
Switch

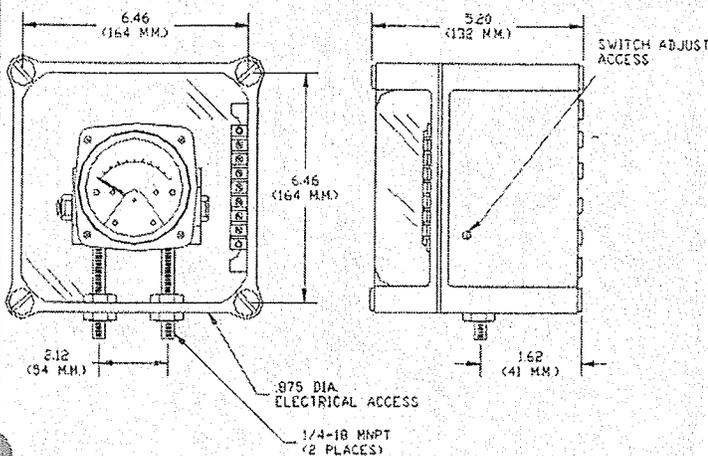


FIGURE 6
Model 120 2 1/2 Dial
NEMA 4 X

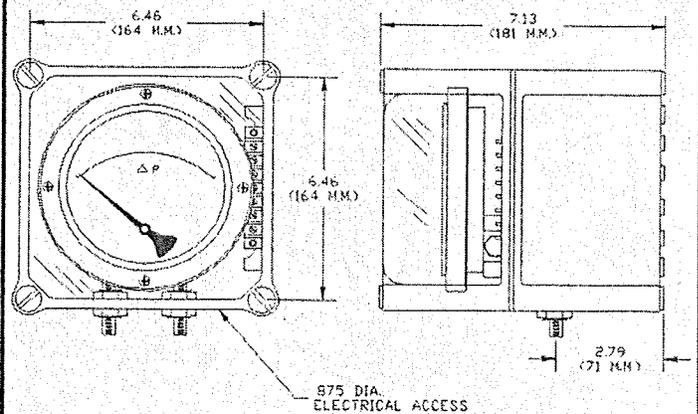
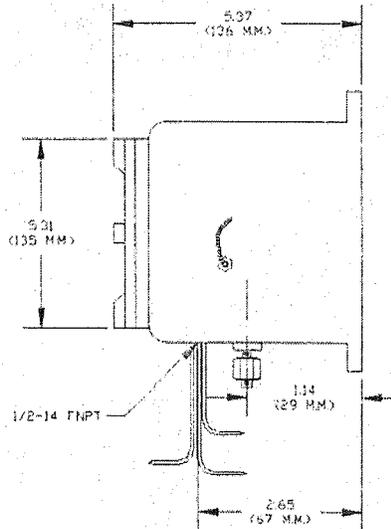
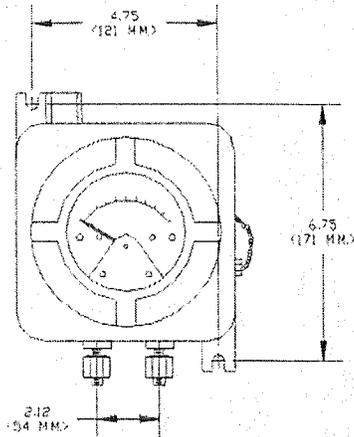


FIGURE 7
Model 120 4 1/2 Dial
NEMA 4 X

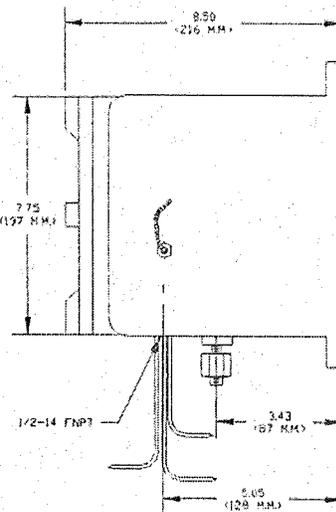
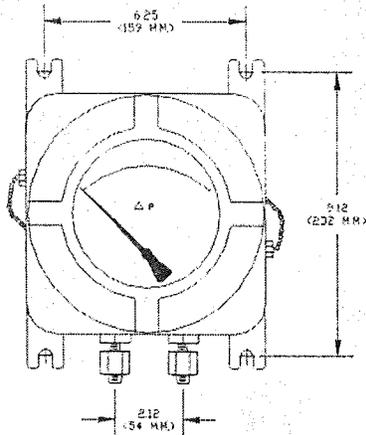
FIGURE 8

Explosion-Proof Enclosures Class I, Groups C & D,
Class II, Groups E, F, & G

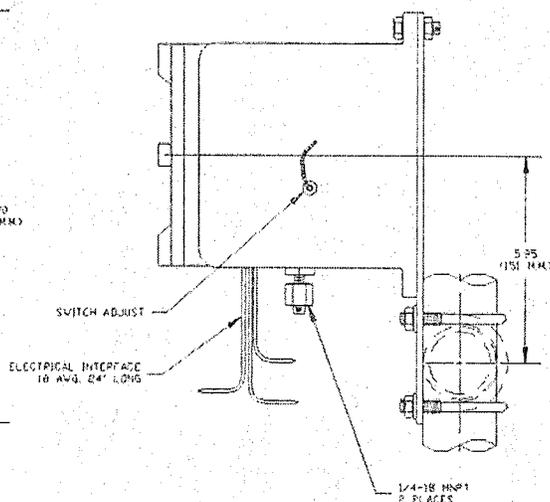
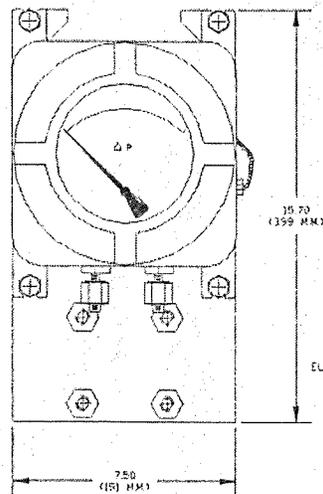
2 1/2 Inch
Dial



4 1/2 Inch
Dial



Typical 2"
Pipe
Mounting



Mid-West[®]
Instrument

6500 Dobry Dr. Sterling Heights, MI 48314

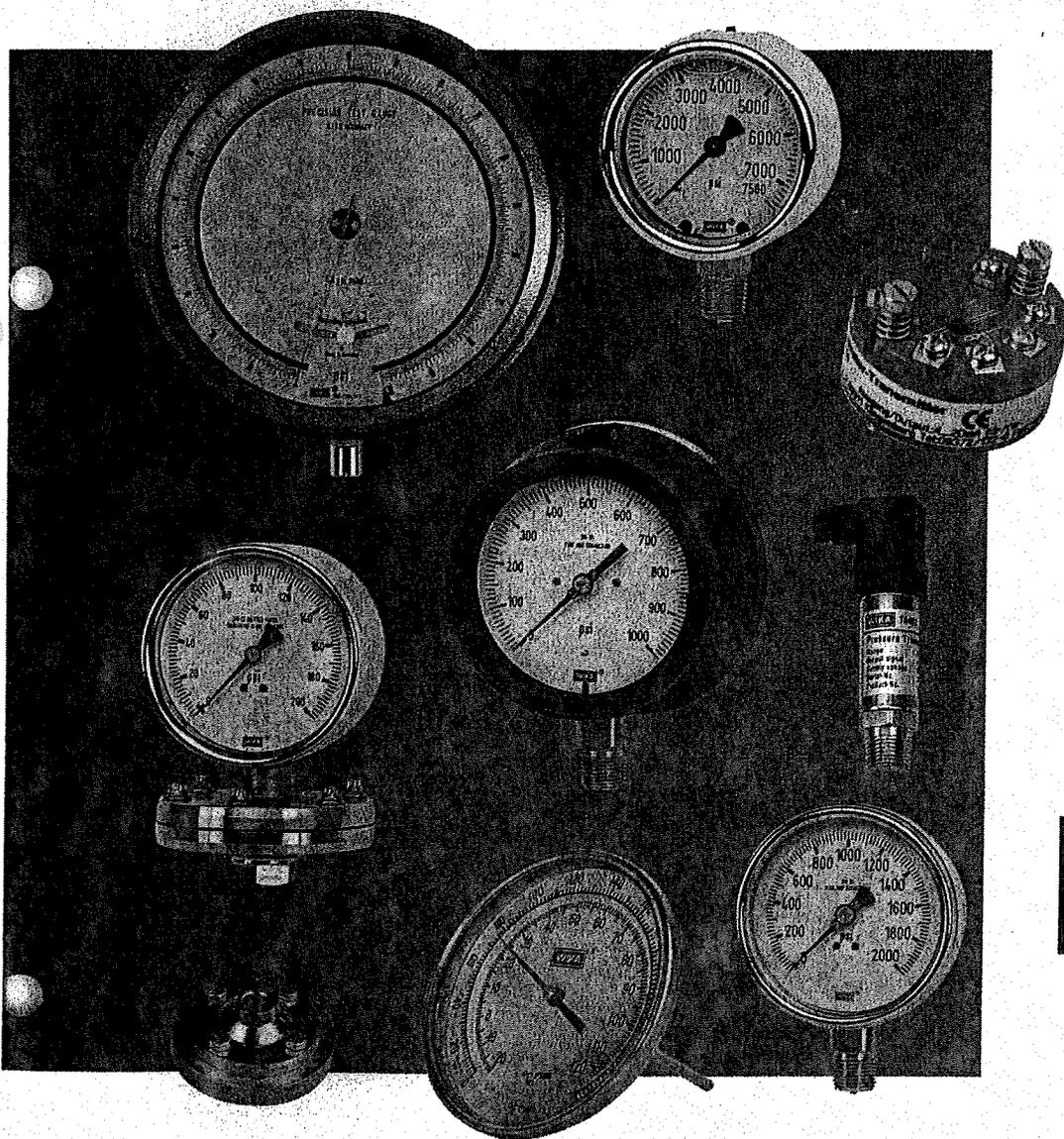
(810)254-6500 FAX (810)254-6509

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Product Digest

Pressure and Temperature Instrumentation

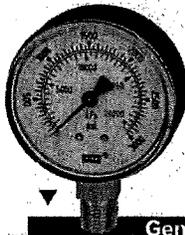


WIKA

**ISO 9001
Certified**

Pressure Gauges

General Service - Dry



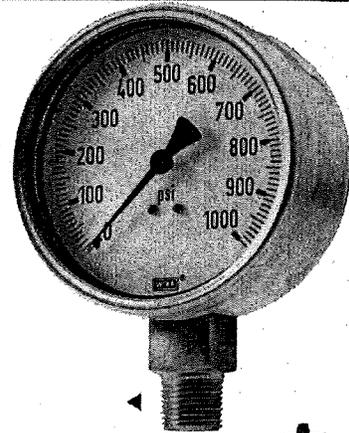
Designed for long and reliable service under rugged conditions. Typical applications are for pumps, hydraulic and pneumatic systems, compressors, as a contractor's gauge, and for many other applications where the measured media does not corrode brass.

Type 111.10

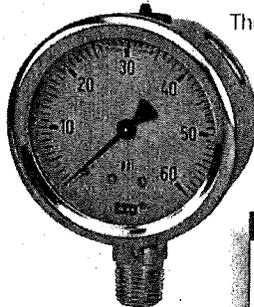
General Purpose Gauge	
Size	1 1/2", 2", 2 1/2", 4" (40, 50, 63, 100 mm)
Case	Black ABS plastic
Wetted Parts	Copper alloy
Window	Snap-in acrylic
Accuracy	± 3 / 2 / 3% of span

Type 212.20

Heavy Duty Service	
Size	4" (100 mm)
Case	Stainless steel
Bayonet Ring	Stainless steel
Wetted Parts	Copper alloy
Window	Instrument glass
Accuracy	± 1.0% of span



General Service - Dry or Liquid Filled



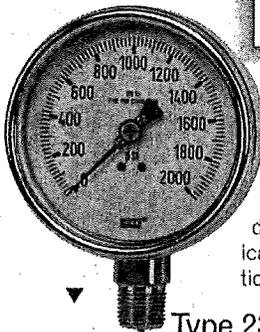
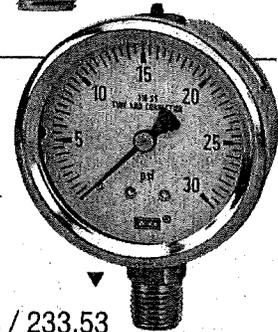
The ideal choice for OEM and general industrial applications requiring an economical, liquid filled pressure gauge. When vibration and/or pulsation are present, the glycerine fill liquid dampens the Bourdon tube and reduces wear on the movement which extends the life of the gauge. Typical applications include air compressors, hydraulic presses, pumps, cylinders, actuators and many other types of hydraulic and pneumatic equipment.

Type 213.53

SS Case, Brass Internals	
Size	2 1/2", 4" (63, 100 mm)
Case	Stainless steel
Ring	Polished stainless steel
Wetted Parts	Copper alloy
Window	Polycarbonate
Liquid Filling	Glycerine
Accuracy	± 1.5% of span

Type 232.53 / 233.53

SS Case, SS Internals / Field Liquid Fillable	
Size	2 1/2", 4" (63, 100 mm)
Case	Stainless steel
Ring	Polished stainless steel
Wetted Parts	316 stainless steel
Window	Polycarbonate
Liquid Filling	None (232.53); Glycerine (233.53)
Accuracy	± 1.5% of span (2 1/2"), ± 1.0% of span (4")



Stainless Steel - Dry or Liquid Filled

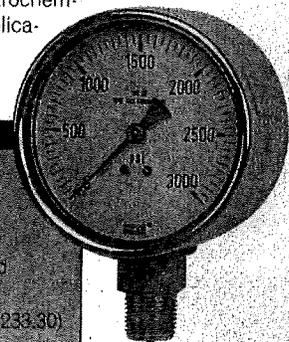
With all stainless steel construction, these gauges insure long service life in the harshest, most demanding applications. Typical applications include process, chemical and petrochemical industries; power generation; pollution control equipment; and any other application requiring fine quality, long lasting pressure measurement instrumentation.

Type 232.54 / 233.54

Field Repairable / Field Liquid Fillable	
Size	2 1/2", 4" (63, 100 mm)
Case	Stainless steel
Bayonet Ring	Stainless steel
Wetted Parts	316 stainless steel
Window	Laminated safety glass
Liquid Filling	None (232.54); Glycerine (233.54)
Accuracy	± 1.5% of span (2 1/2"), ± 1.0% of span (4")

Type 232.30 / 233.30

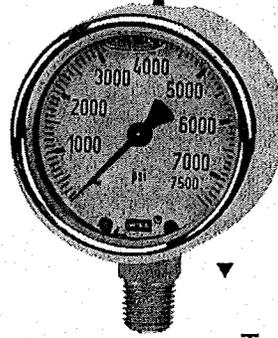
Solid Front Safety Case	
Size	2 1/2", 4" (63, 100 mm)
Bayonet Ring	Stainless steel
Wetted Parts	316 stainless steel
Window	Acrylic (2 1/2"), Laminated safety glass (4")
Liquid Filling	None (232.30); Glycerine (233.30)
Accuracy	± 1.5% of span (2 1/2"), ± 1.0% of span (4")



Pressure Gauges

Industrial Brass – Liquid Filled

WIKA brass gauges are recognized worldwide as the standard of accuracy and durability for gauges in fluid power and hydraulic systems. These liquid filled gauges are ideal for use on compressors, pumps and any other system producing excessive vibration and pulsation.

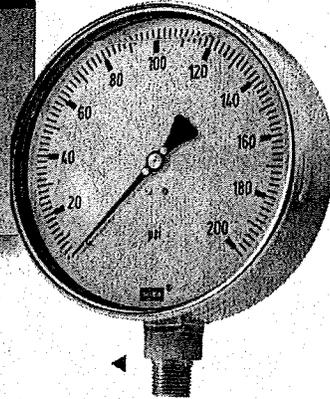


Type 213.40

Hydraulic Gauge	
Size	2 1/2", 4" (63, 100 mm)
Case	Cast brass
Ring	Brass-plated ABS (2 1/2") Chrome-plated steel (4")
Wetted Parts	Copper alloy
Window	Acrylic
Liquid Filling	Glycerine
Accuracy	± 1.5% of span (2 1/2") ± 1.0% of span (4")

Type 213.20

6" Hydraulic Gauge	
Size	6" (160 mm)
Case	Stainless steel
Ring	Stainless steel
Wetted Parts	Copper alloy
Window	Acrylic
Liquid Filling	Glycerine
Accuracy	± 1.0% of span

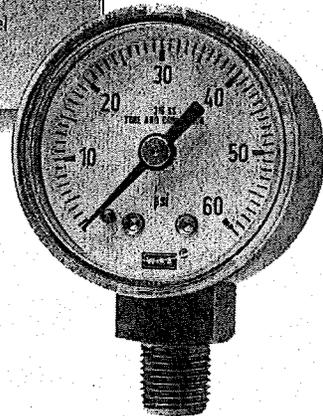


Specialty Stainless Steel Gauges

The large 6" diameter of Type 23X.50 gauges makes them ideal for applications that require reading the dial from a distance. But for applications with compact installation spaces, Type 131.11 1 1/2" or 2" gauges may be ideal. Both models feature all stainless steel construction for protection from harsh environments and corrosive process fluids.

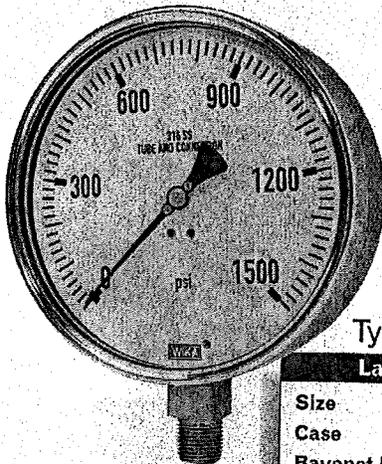
Type 131.11

Small Diameter SS Gauge	
Size	1 1/2", 2" (40 mm, 50 mm)
Case	Stainless steel
Bayonet Ring	None
Wetted Parts	316 stainless steel
Window	Snap-in acrylic
Accuracy	± 2.5% of span



Type 232.50 / 233.50

Large Diameter SS Gauge	
Size	6" (160 mm)
Case	Stainless steel
Bayonet Ring	Stainless steel
Wetted Parts	316 stainless steel
Window	Laminated safety glass
Liquid Filling	None (232.50) glycerine (233.50)
Accuracy	± 1.0% of span



WIKA

Pressure Gauges

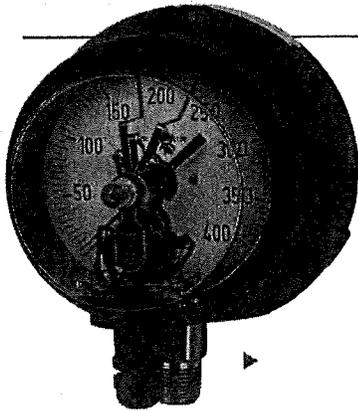
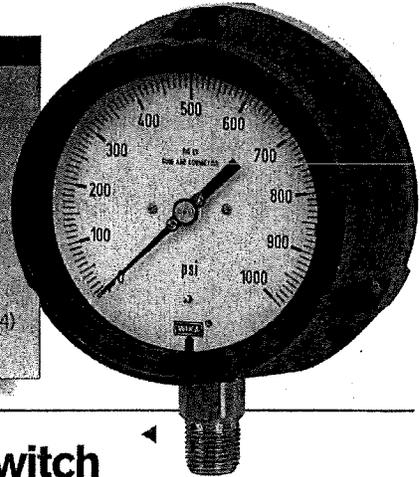
Process Gauge

Specifically designed for the chemical and petroleum processing industries. These gauges feature a corrosion resistant thermoplastic case with solid front/blow-out back safety design, a stainless steel pointer, and an adjustable pointer. They are engineered to deliver years of accurate service while withstanding vibration, corrosive media and atmospheres, and a wide range of temperatures.

Type 2XX.34

Process Gauge

21X.34	Brass wetted parts
23X.34	316SS wetted parts
26X.34	Monel® wetted parts
Size	4 1/2"
Case	Black fiberglass reinforced thermoplastic
Ring	Threaded thermoplastic
Window	Acrylic
Liquid Filling	Dry (2X2.34), Glycerine (2X3.34)
Accuracy	± 0.5% of span



Indicating Pressure Switch

Type CP3000 / CP4000

The WIKA CP3000 and CP4000 switch systems convert WIKA 4 1/2" Pressure Gauges to Indicating Pressure Switches. These units provide local pressure indication with two full range pressure actuated and adjustable electrical contacts for alarm and control. The CP3000 contact is rated for pilot duty. The CP4000 is Factory Mutual Approved <FM> for hazardous locations, Class I and II, Division 1, Groups A, B, C, D, E, F & G.

Pressure Switch

Switching Accuracy	± 0.0% of span (CP3000); ± 1.0% of span (CP4000)
Contact Rating	24-220 VAC, 100 Va (CP3000); 250 VAC, 4A, 500 Va when used with the WIKA 120V 60Hz Power Supply
Window	Acrylic

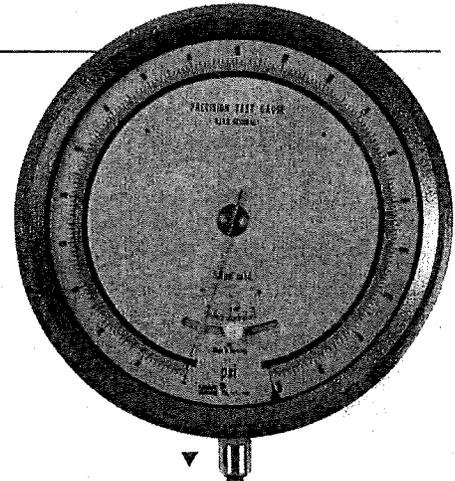
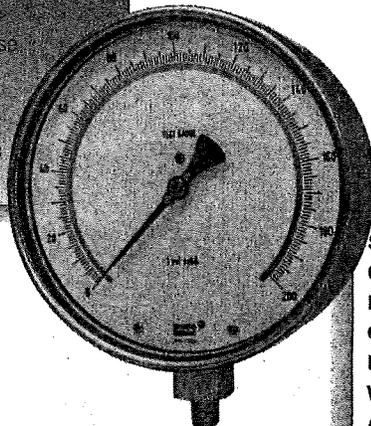
Test & Precision Test

WIKA test gauges are extremely sensitive and highly accurate. They are ideal for instrument shops, gauge repair and calibration shops, testing laboratories and other applications demanding high precision and consistent results. Both gauges feature a mirrored ban on the dial to eliminate parallax reading errors.

Type 312.20 / 332.20

± 0.25% Accuracy / ASME B40.1 Grade 3A

Size	6" (160 mm)
Case	Black painted steel case
Wetted Parts	Copper alloy (312.20) 316 stainless steel (332.20)
Window	Laminated safety glass
Accuracy	± 0.25% of span



Type 342.11

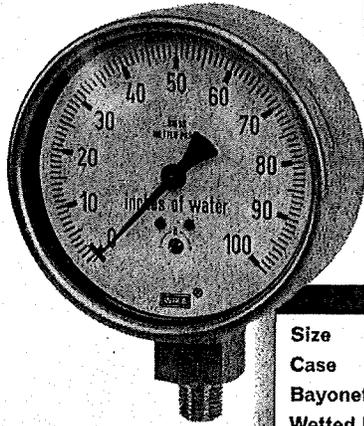
± 0.1% Accuracy / ASME B40.1 Grade 4A

Size	6" (160 mm)
Case	Cast aluminum, dark grey
Ring	Cast aluminum, dark grey
Connection	316 stainless steel
Bourdon Tube	Ni-Span C®
Window	Green tinted acrylic, non-reflecting
Accuracy	± 0.1% of span

Pressure Gauges

Low Pressure Gauges

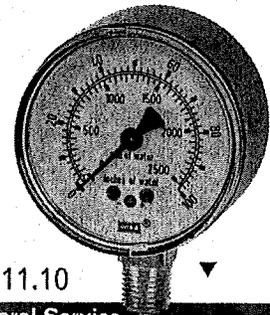
Extremely sensitive and highly accurate, these capsule gauges are designed to measure very low pressure. They are especially well suited to systems where air or other gases are the measured media, and are typically used in ventilation and air conditioning equipment, artificial respiration devices, lead testers, and other applications requiring exceptional sensitivity, precision and reliability.



Type 632.50

All Stainless Steel

Size	4 1/2" (113 mm)
Case	Stainless steel
Bayonet Ring	Stainless steel
Wetted Parts	316 stainless steel
Window	Laminated safety glass / Zero adjustment screw on dial
Accuracy	± 1.5% of span



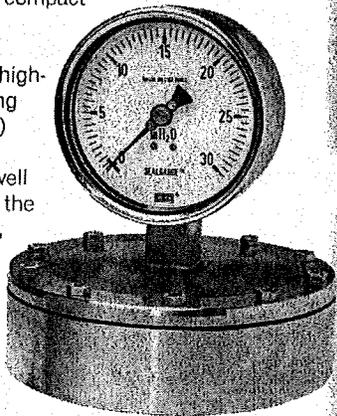
Type 611.10

General Service

Size	2 1/2" (63 mm)
Case	Black painted steel
Wetted Parts	Copper alloy
Window	Snap-in acrylic / Zero adjustment screw on dial
Accuracy	± 1.5% of span

Sealgaug[®] Industrial Gauges

The WIKA Sealgaug[®] is a low cost, reliable alternative to the conventional system of a separate chemical seal and a pressure gauge. It combines both a diaphragm seal and a pressure gauge into one compact economical unit. The Sealgaug[®] is built to withstand the corrosive, highly viscous and crystallizing media (gaseous or liquid) typical of the process industry. It is especially well suited for applications in the chemical, petrochemical, pulp and paper and food processing industries, in water and sewage treatment plants, and in electric power plants.



Type 452.50

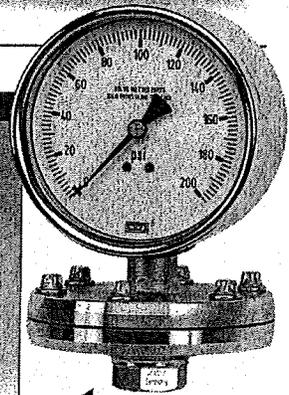
1" ANSI 150# RF Flanged Connection

Size	4 1/2" (113 mm)
Upper Housing	316 stainless steel
Bayonet Ring	316 stainless steel
Diaphragm	316 stainless steel, PTFE lined
Lower Housing	316 stainless steel, PTFE lined
Window	Laminated safety glass
Liquid Filling	None
Accuracy	± 1.0% of span

Type 432.50 / 433.50

All Stainless Steel

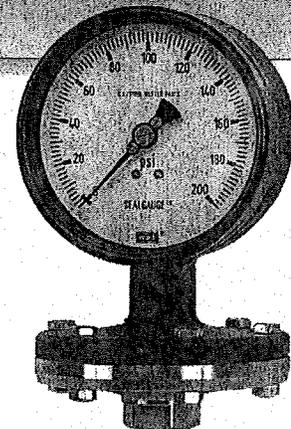
Size	4 1/2" (113 mm)
Case	304 SS
Ring	304-SS, polished
Diaphragm	316 SS, PTFE lined
Lower Housing	316 SS
Window	Laminated safety glass
Liquid Filling	None (432.50); Glycerine (433.50)
Accuracy	± 1.5% of span



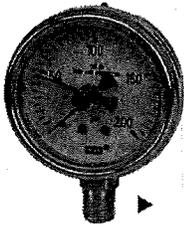
Type 422.12 / 432.12

Cast Iron Case

Size	4 1/2" (113 mm)
Case	Cast iron
Ring	Black painted steel
Diaphragm	Carbon steel (422.12); 316 SS, PTFE lined (432.12)
Lower Housing	Carbon steel (422.12); 316 SS (432.12)
Window	Instrument glass
Accuracy	± 1.5% of span



Gauge Accessories

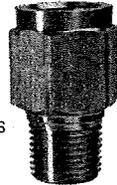


Drag Pointer

(Maximum Reading Pointer)
Separate red pointer follows travel of pointer in rising pressure, marking the point of highest reading. The drag pointer can be reset via a permanent or removable key (specify upon ordering).

Type 910.12 Pressure Snubbers

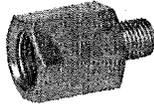
Pressure snubbers dampen pressure oscillations allowing easy reading of the "average" pressure. They also protect the gauge from damaging pulsations and spikes. Available in brass and 316 stainless steel.



Type 910.14 Adapters

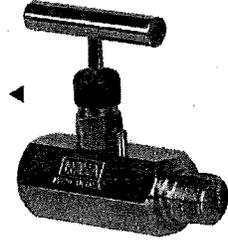
Allows installation of gauges with NPT threads to metric process connections. Available in brass or 316 stainless steel.

1/4" NPT to G1/4A, 1/4R, or 1/4 BSP
1/2" NPT to G1/2A, 1/2R, or 1/2 BSP



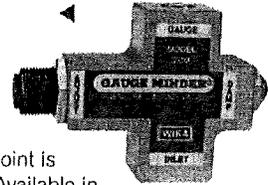
Type 910.11 Needle Valves

Needle valves isolate the pressure gauge from the pressure medium and act as a throttling device. They can also effectively dampen pulsation.



Type 910.13 Adjustable Overpressure Protectors

Over pressure protectors protect the pressure gauge from sudden spikes in pressure. The shut-off pressure point is adjustable from 50 psi to 5,000 psi. Available in aluminum, brass, and 316 stainless steel.

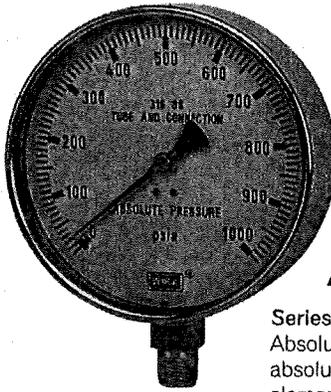


Type 910.15 Gauge Siphons

Gauge siphons protect gauges from high temperature mediums such as saturated steam. The high temperature steam condenses in the siphon preventing it from damaging the gauge internals. Available in brass or 316 stainless steel.



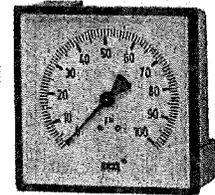
Special Order Gauges



Square or Rectangular Face

Series 214.11 / 614.11

Allows horizontal indication of pressure. All square face gauges are supplied standard with panel mounting hardware. Standard and low pressure ranges available. Available with brass or stainless steel wetted parts in a galvanized steel case.



Absolute Pressure

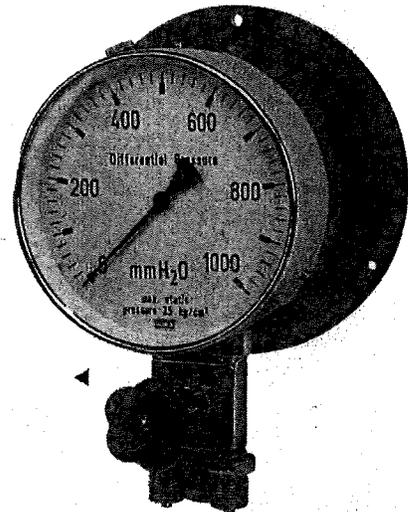
Series 5XX.XX

Absolute pressure gauges indicate the true pressure above absolute zero pressure by means of a Bourdon tube, capsule element, or diaphragm. Available with aluminum or stainless steel case and with brass or stainless steel wetted parts.

Differential Pressure

Series 7XX.XX

Differential pressure gauges indicate the difference between two pressures by means of two independent Bourdon tubes or a single diaphragm. Available with brass or stainless steel wetted parts in a steel or stainless steel case. Duplex gauges which indicate two pressures simultaneously are also available.

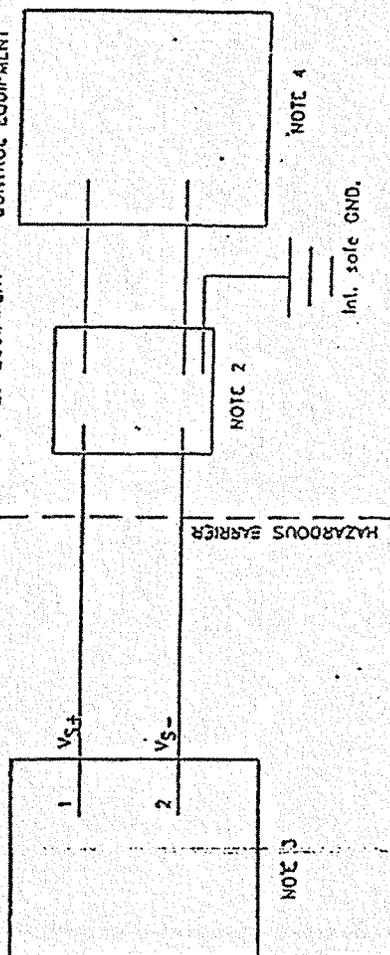




ARC AND CSA HAZARDOUS LOCATION:
CLASS I, DIVISION 1, 2 GROUP A, B, C, D

ARC (ONLY) HAZARDOUS LOCATION:
CLASS II, DIVISION 1, GROUP E, F, G
CLASS III, DIVISION 1

SERIES 892 ENTITY
APPROVED/CERTIFIED
INTRINSICALLY SAFE
TRANSMITTER



ENTITY PARAMETERS
892.XJ.50X 002.XJ.0XX
V_{max} = 20V V_{oc} = 20V
I_{sc} = 220 mA I_{max} = 270 mA
C_i = 55nF C_o = 15nF
U = 00uH U = 12uH

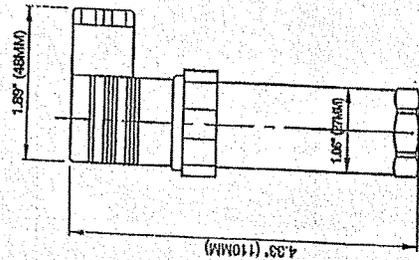
- Notes
- U.S. installations
Install per NATIONAL ELECTRICAL CODE and local codes, as applicable.
Installation should be in accordance with ANSI/ISA RP12.6 and NEC ANSI/NFPA 79
 - Associated apparatus (barrier) must be entity-approved configuration and installed in accordance with barrier manufacturer's instructions. Transmitter V_{max} must be greater or equal to barrier V_l or V_{oc}. Transmitter I_{max} must be greater than or equal barrier I_{sc}.
Total cable capacitance plus C_i of transmitter shall not exceed C_o of barrier. Total cable inductance plus L_i of transmitter shall not exceed L_o of barrier
V_{max} ≥ V_{oc} or V_l
I_{max} ≥ I_{sc} or I_l
C_i + C_{cable} ≤ C_o
L_i + L_{cable} ≤ L_o
 - To maintain type 4X sealing of series-892.XJ.9Xo transmitter, use thread sealant when installing conduit.
 - Control equipment connected to barrier must not use of generate more than 250 V.
Canadian installations
Install per Canadian electrical Code (Part) and local codes, as applicable.
Associated apparatus (barrier) must be entity-certified by CSA used in accordance with barrier manufacturer's instructions. Transmitter V_{max} must be greater or equal to barrier V_{oc}. Transmitter I_{max} must be greater than or equal barrier I_{sc}.
Total cable capacitance plus C_i of transmitter shall not exceed C_o of barrier. Total cable inductance plus L_i of transmitter shall not exceed L_o of barrier
V_{max} ≥ V_{oc}
I_{max} ≥ I_{sc}
C_i + C_{cable} ≤ C_o
L_i + L_{cable} ≤ L_o
 - Control equipment connected to barrier must not use or generate more than 250 V.

No revision to drawing without prior FMRC, CSA approval

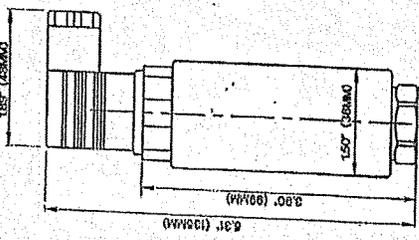
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REVISIONS <table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REV	DATE	BY				REVISIONS <table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REV	DATE	BY				1	1
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INSTALLATION DRAWING TYPE 892.XX.XX0.000																	

4.0 Body Dimensions

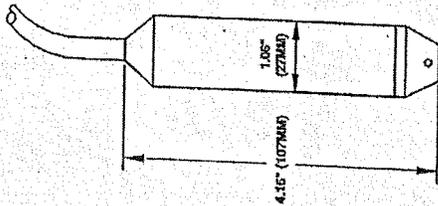
Model 891.13.500 Model 891.13.501 Model 891.23.510
Model 891.13.520 Model 891.23.520 Model 891.23.520



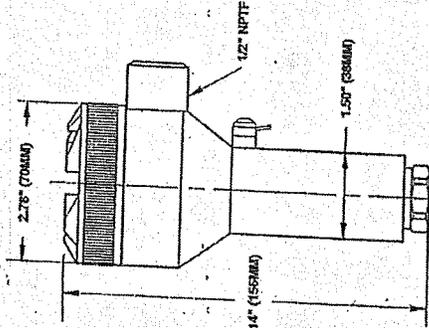
Model 892.13.500 Model 892.23.510
Model 892.13.520 Model 892.23.520



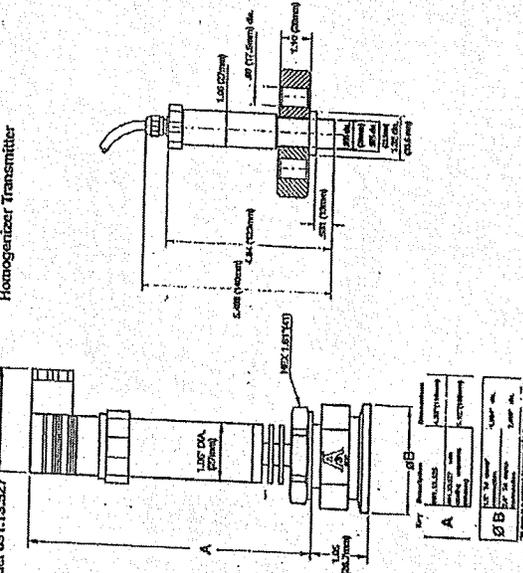
Model 891.13.535



Model 891.13.900 Model 892.13.900
Model 891.13.920 Model 892.13.920
Model 891.23.900 Model 892.23.900
Model 891.23.920 Model 892.23.920



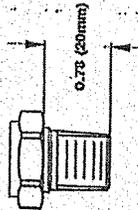
Model 891.23.525
Model 891.13.527



Model 891.23.560
Homogenizer Transmitter

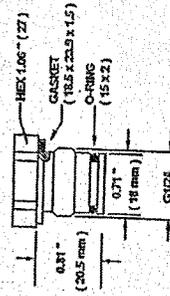
Pressure connections

1/2 NPT male



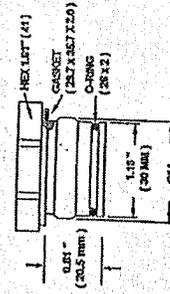
G1/2A Flush Diaphragm with O-ring

Pressure spans 50 PSI to 8000 PSI

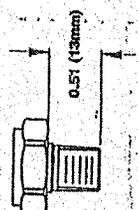


G1A Flush Diaphragm with O-ring

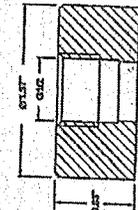
Pressure spans 50NWC(1.8PSI) to 30 PSI



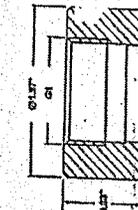
1/4 NPT male



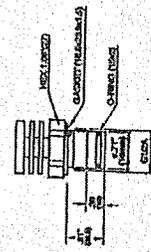
G1/2A Weld Insert Adapter



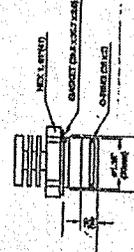
G1A Weld Insert Adapter



G1/2A Flush Diaphragm with Integral Cooling Extension



G1A Flush Diaphragm with Integral Cooling Extension



5.0 Wika Transmitter Troubleshooting Guide		
Problem	Possible cause	Remedy
no output	power supply failure	check power supply
	open wiring	check continuity
	wiring reversed	correct polarity
	no pressure or pressure port blocked	check pressure port
	transmitter failure due to wrong supply voltage or power surge	replace transmitter
output steady as pressure changes	pressure port blocked	check pressure port
	transmitter failure through wiring	replace transmitter
	voltage or power surge	replace transmitter
	over-pressurization	replace transmitter
full span output low	supply voltage too low	correct or replace power supply
	load impedance too high (see load equation)	change load or supply voltage
	incorrect span adjustment	recalibrate transmitter
zero signal too low	incorrect zero adjustment	recalibrate transmitter
zero signal too high	incorrect zero adjustment	recalibrate transmitter
non-linear output	transmitter over-pressurized	recalibrate transmitter
	transmitter over-pressurized	replace transmitter

