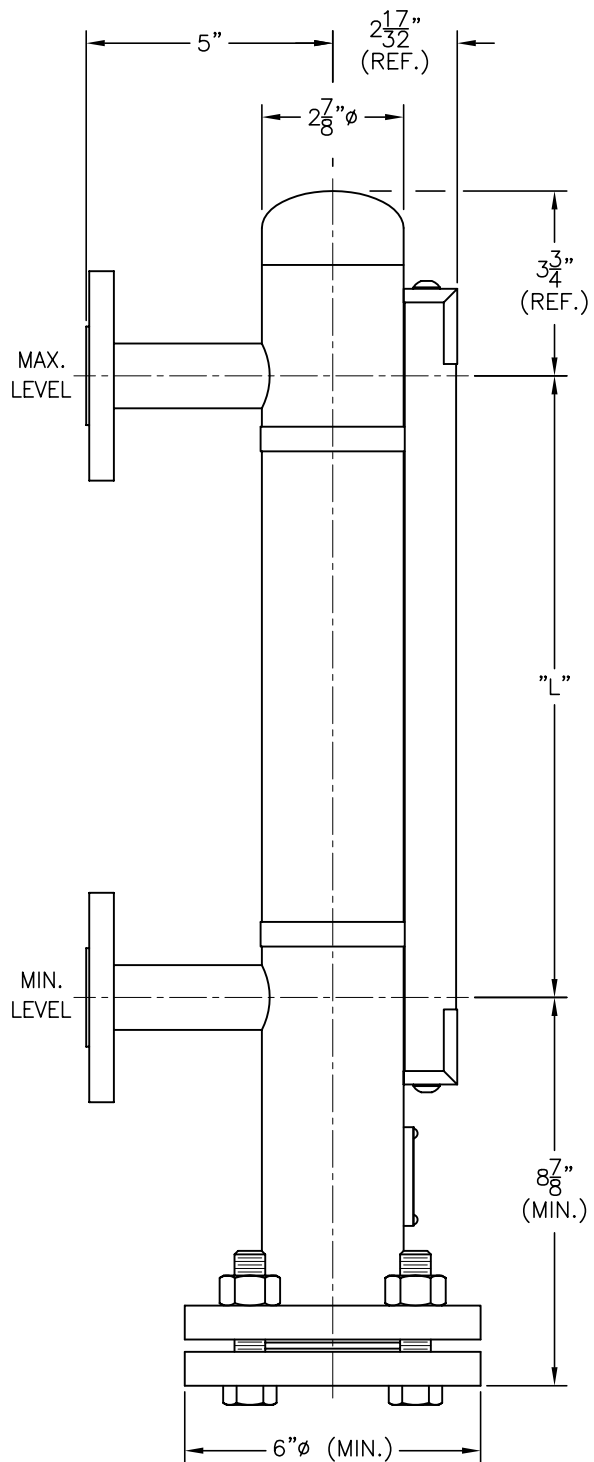


Rev.	By	Rev. Description	Rev. Date							Num.	NOTE		
				Customer: INTI Power Inc. Customer PO: 20090811-002 End User: -- Project: EDC Tacoa Skid Tag: TBD Duplex Gas Fuel Filter Skid IFS Job Number: 24877 IFS Document Number: IL-24877-01						1	Quantity 1 Shown, 2 Required		
										2	The instruments tags for one skid will be 400 and 500 for the other.		
B	CM	Issued For Approval	3-Sep-2009										
A	CM	Issued For Approval (internal review)	13-Aug-2009										
INSTRUMENT LIST													
Seq.	Tag Number	Device Type	Description of Service	Range		Set Point	Engineering Units	P&ID Reference	Hook-Up Detail Reference	Manufacturer	Model Number		Comments
				Minimum (4mA / LRV)	Maximum (20mA / URV)	High High High Low Low Low							
1	LG-400A LG-401A LG-400B LG-401B	Level gauge	Upper/Lower Level Condensate Level	0	14	N/A	"	P-24877-01	LEVEL GAUGE TYPE 2	Kenco	58847		Level Indicator - 3/4" 300# RF Process Connections, 304 SS Construction, 316 SS Magnetic Float, 14" C-C, Scale in Feet and Inches, 1/2" FNPT Drain and Vent Connections
	LSH-400A LSH-401A LSH-400B LSH-401B	High Level Switch	Upper/Lower Level Condensate Level	N/A	N/A	High High= 7	"	P-24877-01	N/A	Kenco	9958		Level Switch - SPDT Latching Reed Switch, C1D1 Groups C&D
2	PSV-400A PSV-400B	Thermal Relief	Fuel Gas Filter Vessel	0	740	High High= 450	psig	P-24877-01	N/A	AGCO	951101MA		Pressure Relief Valve - 3/4" NPT x 1" NPT, Metal Seated, CS Body and Trim
3	DPISH-400 DPISHH-400	Differential Pressure Gauge and Switch	Filter Vessel - Filter Health	0	20	High=7 High High= 10	psid	P-24877-01	DIF.PRESS.GAU GE TYPE 1	Midwest	120-SC-00-0FA (0-20 psid)		Differential Pressure Indicator/Switch - 1/4" NPT Process Connections, Stainless Steel Construction, 2 Independently adjustable SPDT Switches
5	PI-400	Pressure Gauge	Fuel gas Outlet Pressure	0	1000	N/A	psig	P-24877-01	PRESSURE GAUGE- TYPE 1	Wika	9834893		Pressure Gauge - 1/2" NPT Process Connection, Acrylic Window, Black Fiberglass reinforced Thermoplastic Case. 316 SS Internals, 0-1000 psig scale.




MODEL MLG-C

L = Length of indication (supplied by customer)

DIMENSION ARE FOR REFERENCE PURPOSES ONLY
AND ARE SUBJECT TO CHANGE AT ANY TIME WITHOUT
NOTICE.

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REV.	DATE	BY	ECN	EXPLANATION:	KENCO ENGINEERING COMPANY TULSA, OKLAHOMA		
					MAGNETIC LIQUID LEVEL INDICATOR (OUTLINE DRAWING) MODEL MLG-C		
					DATE: 02-03-03	SHEET: 1 OF 1	DRAWING NUMBER
					DRN. BY: DPS	CHKD. BY:	C-43681
					SCALE: NONE	REVISION:	



LG-400A/B
LG-401A/B

THE DIFFERENCE IS CLEARLY VISIBLE

MAGNA-SITE
MAGNETIC LIQUID LEVEL GAUGE



ENGINEERED LIQUID LEVEL SOLUTIONS

MAGNA-SITE – MAGNETIC LEVEL GAUGE

OPERATING PRINCIPLE

The KENCO Magna-Site Magnetic Liquid Level Gauge is used to determine the volume of liquid contained within a vessel. Because the Magna-Site eliminates the need for glass, high pressure applications and hazardous locations are protected from the danger of a chemical spill due to glass failure.

The KENCO Magna-Site utilizes three major components: the gauge housing chamber, the magnetic float and the magnetic flag assembly.

The gauge housing chamber is mounted adjacent to the side of the vessel. It is constructed to withstand the same temperatures and pressures as the tank itself. It is equipped with the appropriate tank mounting connections for easy installation and to allow equalization of liquid level in tank and gauge.

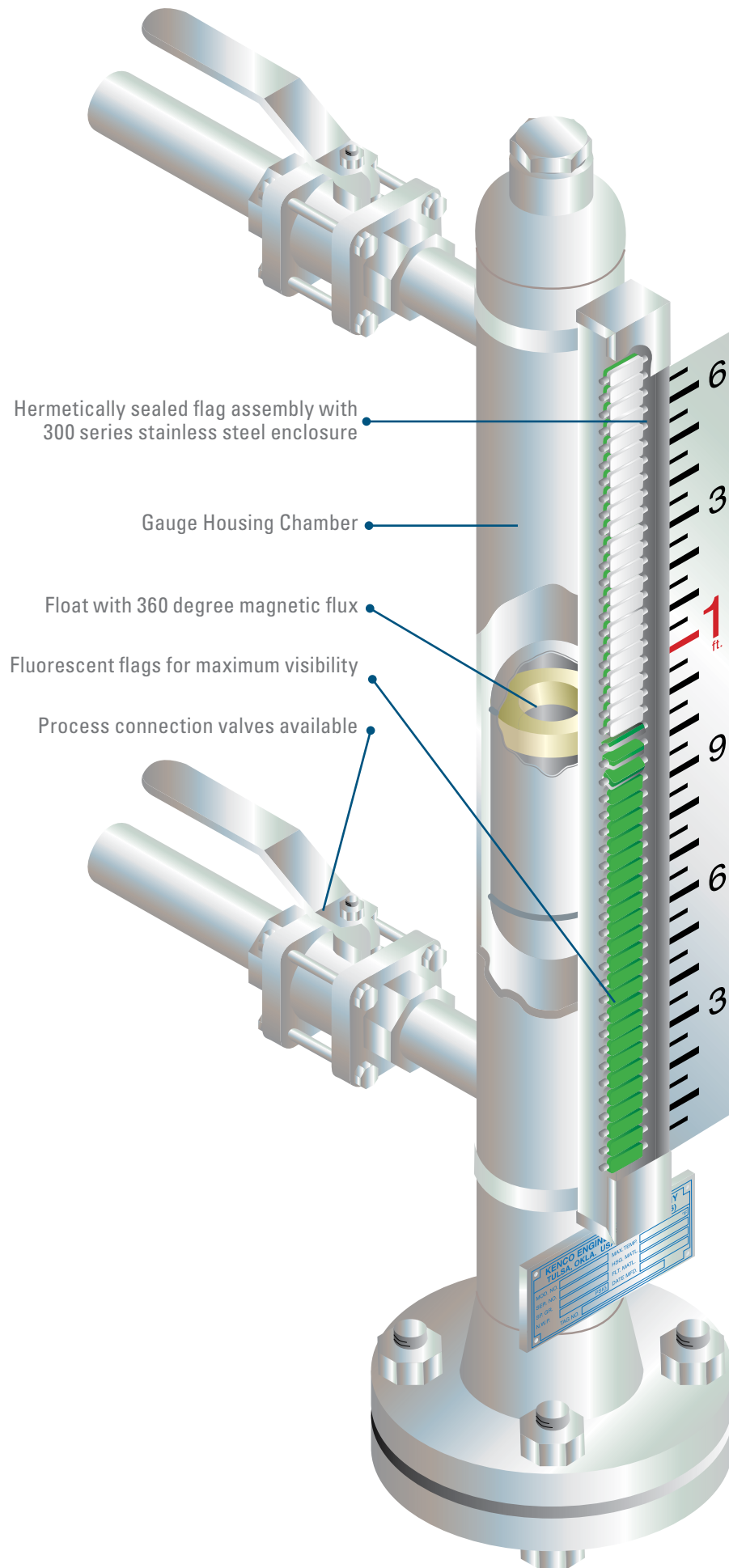
Inside the gauge housing chamber is the magnetic float, which contains radially-positioned magnets to provide a 360 degree magnetic-flux field. Each float is internally weighted based on specific gravity so that the liquid level in the gauge coincides with the location of the magnets inside the float.

Attached to the gauge housing chamber is the magnetic flag assembly. This is the visual means of liquid level indication for the KENCO Magna-Site. The assembly is made up of a series of bicolored, fluorescent flags. As the magnetic float rises and falls with the liquid level in the gauge housing chamber, a magnet embedded in each flag reacts to the 360 degree magnetic flux of the float. This magnetic interaction causes each flag to rotate 180 degrees. The flags below the magnetic flux of the float will flip to fluorescent green, while those flags above the float level remain bright white.

When your application priorities are safety, visibility and accuracy, the KENCO Magna-Site is the low-maintenance, cost-effective solution.

GAUGE FEATURES

- Maximum safety—No glass is used in the construction
- Optimum visibility—Fluorescent flags are visible from great distances
- Float with 360 degree magnetic flux—Maintains a strong magnetic field in all directions; turbulent liquids will not cause flag assembly to give an inaccurate level indication
- Double flag protection—Flags are hermetically sealed inside a Teflon® encapsulated assembly which is shrouded by a 300 series stainless steel enclosure on three sides with a UV stabilized high-impact clear polycarbonate shield
- Adjustable viewing angles—Flag assembly can be rotated to any angle to provide maximum visibility
- Multiple mounting options—Engineered construction allows for a variety of mounting configurations
- Compatibility—A broad range of materials can be used to withstand harsh chemicals
- Remote level indication—Explosion-proof magnetostrictive level sensor/transmitter provides a 4-20mA signal output
- Height scale—304 stainless steel with no. 3 finish and large etched characters/lines for easy reading
- High/Low level switches—Explosion-proof switches can signal an alarm, operate a pump/valve or act as an emergency shut down
- Convenience—Easy installation and very low maintenance
- Warranty—Three year guarantee against defects
- Reliability—KENCO has been building magnetic liquid level gauges since 1985



INDUSTRIES SERVED

- Chemical and Petrochemical Refineries
- Water and Waste Treatment
- Pulp and Paper Processing
- Power Plants
- Pharmaceutical Processing
- Food and Beverage Processing

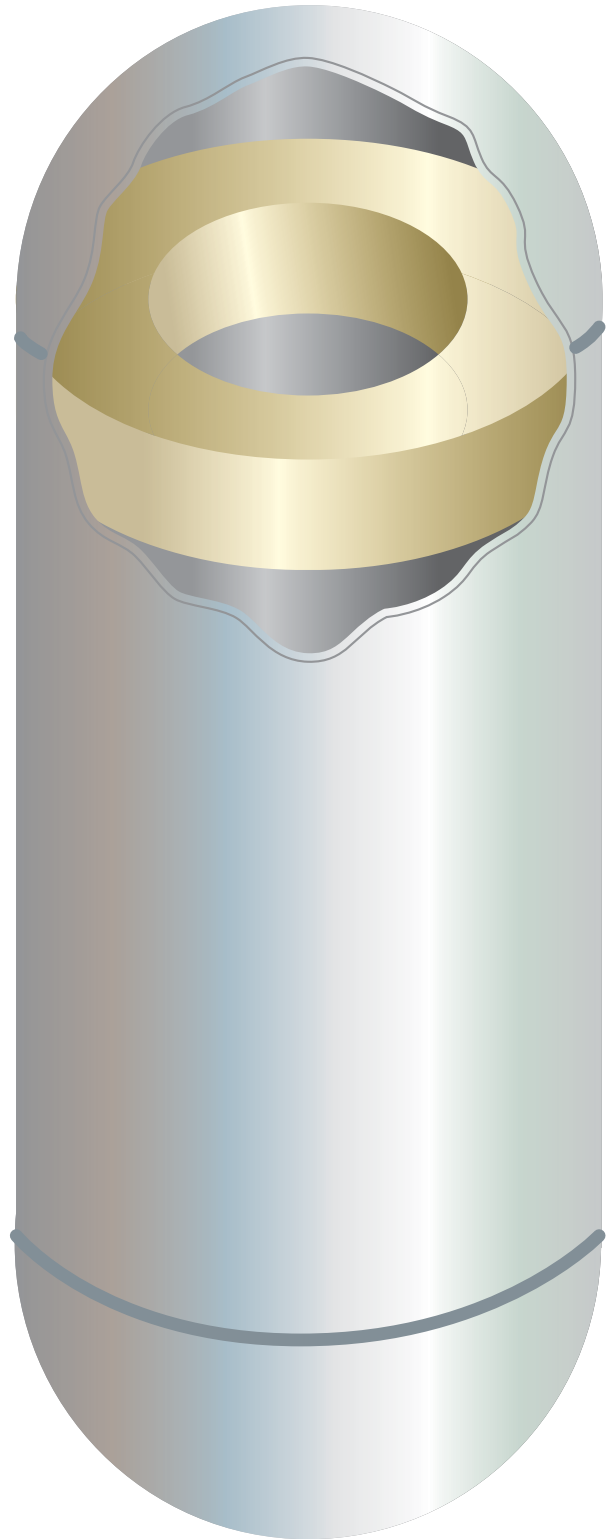
COMMON APPLICATIONS

- Fuels and Solvents
- Oil Production and Refining
- Lubrication Oils
- Detergents and Soaps
- Boiler Feedwater Tanks
- Fertilizers and Pesticides
- Ammonia Tanks
- Scrubber Tanks
- Storage Tanks
- Acid Tanks

WHAT MAKES THE DIFFERENCE CLEARLY VISIBLE?

FLOAT CHARACTERISTICS

- 360 degree magnetic-flux field provides constant interaction with flag assembly in turbulent liquids
- Internally weighted based on specific gravity so that location of magnets inside float coincide with liquid level in gauge
- Cylindrical geometric shape ensures more accuracy in interface specific gravity applications
- Rare earth magnet assembly has an unusually high energy output volume and is highly resistant to demagnetization; they will not demagnetize at high temperatures like ceramic magnets
- Standard float material is 316 stainless steel. Other float materials are available. Call KENCO for applications requiring special float materials.
- Standard float good to a minimum specific gravity of 0.50 (floats for lower specific gravities available)
- 360 degree magnetic-flux field is ideal for interaction with KENCO magnetostrictive transmitter
- Compact length minimizes ground clearance requirements

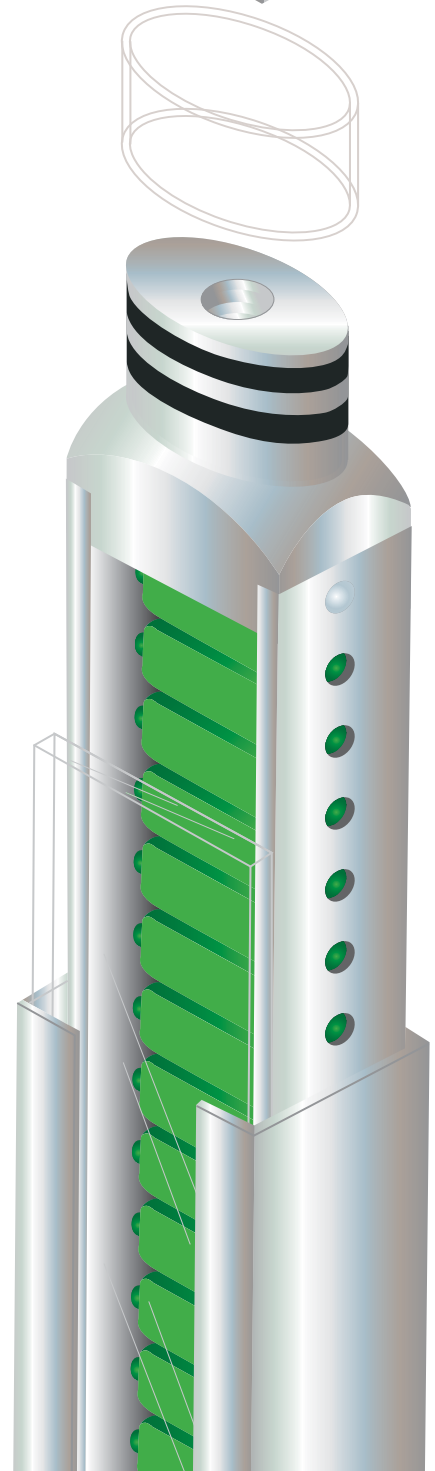


FLAG ASSEMBLY FEATURES

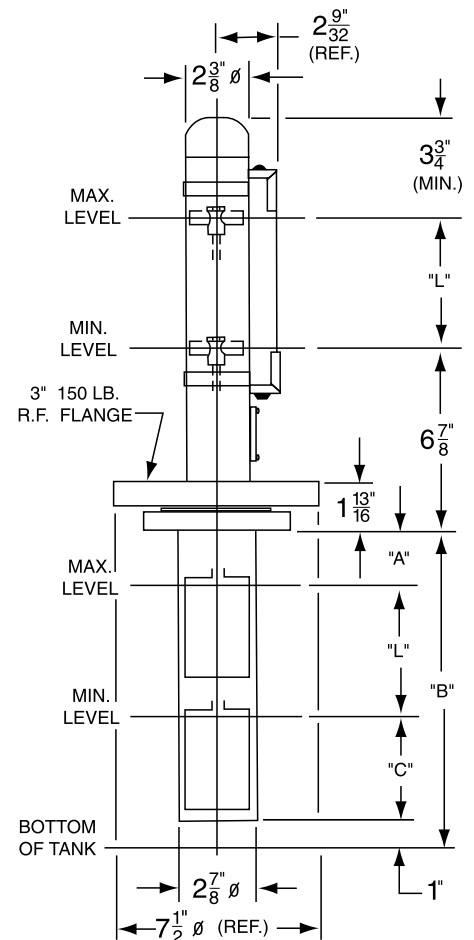
- Fluorescent flags for maximum visibility
- No glass in flag assembly
- Shield is UV stabilized high-impact clear polycarbonate
- Chamber is hermetically sealed and nitrogen filled to prevent internal condensation and ensure 100% flag rotation every time
- Totally enclosed with clear F.E.P. Teflon® tubing for maximum chemical resistance from puncture of F.E.P. Teflon®
- 300 series stainless steel is more compatible to corrosive environments than aluminum
- Double O-ring seal assures that the flag assembly will not lose its nitrogen-filled atmosphere
- Each flag contains an Alnico 8 magnet, making each flag highly demagnetization
- Flags are UV stabilized, high-temperature thermoplastic and molded in color to prevent fading
- No ceramic magnets are used
- About the sealing process:
The end block on one end of the flag rail is equipped with a positive stop charge valve to allow the flag assembly to be hermetically sealed. The flag assembly is attached to a vacuum pump through a manifold which is connected to a cylinder of ultra high-purity nitrogen gas. We evacuate the flag assembly with a vacuum pump to 28" Hg and then internally pressurized it with ultra high-purity nitrogen gas to a maximum of 5 psig.

HIGH-TEMPERATURE FLAG ASSEMBLY FEATURES

- Flags are 316 stainless steel
- Flag color is heat cured at 400°F with heat resistant paint
- All 300 series stainless steel flag assemblies are ideal for severe environment
- Alnico 8 magnets are nickel plated to withstand severe environments.

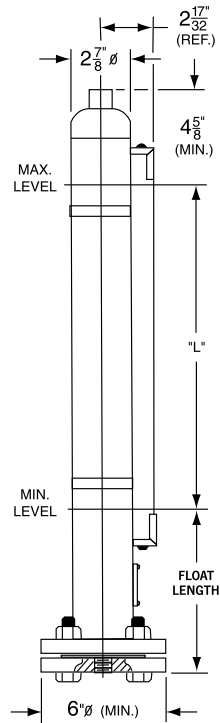


MLG-C: FOR USE WITH SIDE FLANGE CONNECTIONS

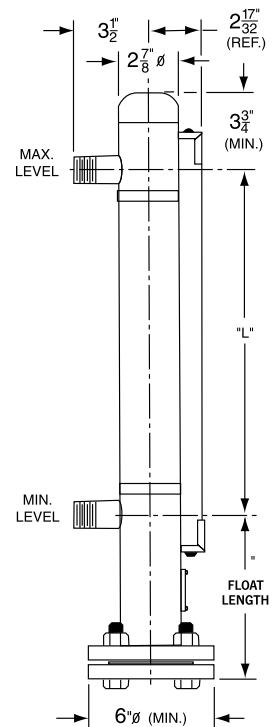
[illegible]**MLG-D DIAGRAM ONLY:**

MLG-A: FOR USE WITH FEMALE NPT END CONNECTIONS

CALL KENCO FOR WELDING SPECIFICATIONS AND OPTIONS. KENCO IS ABLE TO PROVIDE FULL PENETRATION WELDS, X-RAYS, AND WELD MAPS. MATERIAL CERTIFICATIONS AND CERTIFIED DRAWINGS ARE AVAILABLE UPON REQUEST.

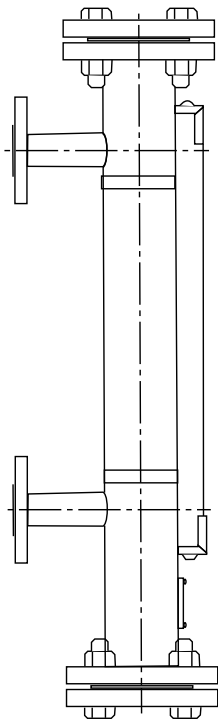


MLG-B: FOR USE WITH MALE NPT SIDE CONNECTIONS

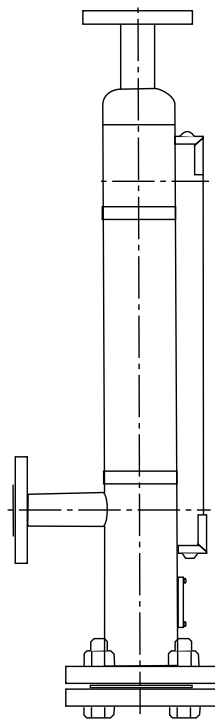


OTHER GAUGE HOUSING CONFIGURATIONS

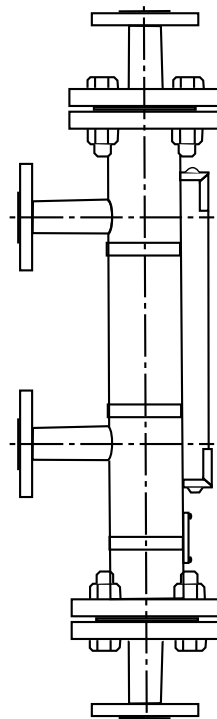
(Housing can be modified as required to meet your specific needs)



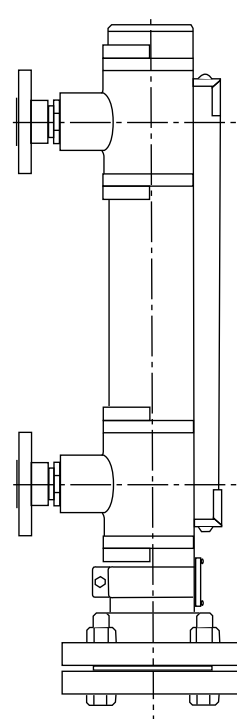
MLG-E Removable Flange
Top Connection



MLG-F Fixed Flange
Vent Connection



MLG-G Removable Flange
Vent Connection



MLG-C-PVC with
PVC Gauge Housing

KENCO MAGNETOSTRICTIVE TRANSMITTER

TRANSMITTER FEATURES

- Digital Display for zero and span settings and readout
- Readout available as a % of span, a 4-20 mA output or any unit of measure
- CSA and ATEX approved explosion-proof housing
- Temperature range: -40 to 300°F
(call Kenco for higher temperature requirements)
- No maintenance required
- Immune from electrical and mechanical noise
- HART® Communications standard

KENCO LEVEL TRANSMITTERS

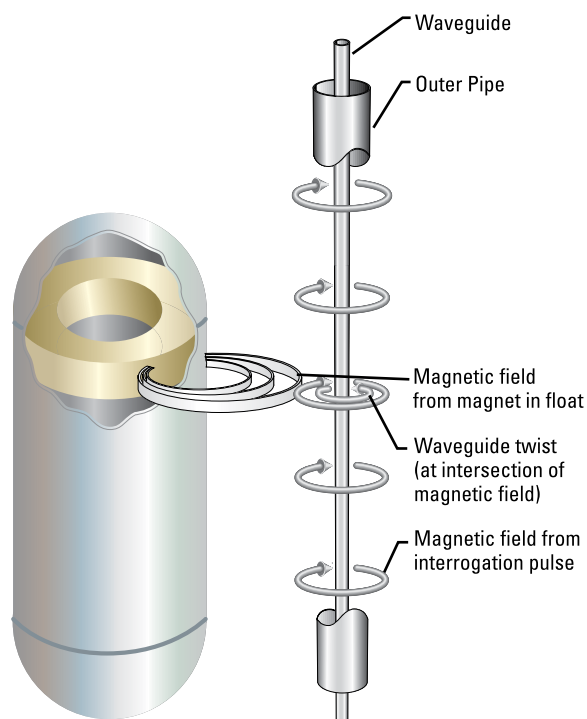
KENCO loop powered transmitters electronically monitor the location of the magnetic float within the Magna-Site gauge housing, providing an output in a unit of measure, as a % of span or a 4-20 mA output. The transmitter is available up to a length of 300 inches. Zero and span may be adjusted by using the HART® communications protocol or it may be manually calibrated using the keypad display inside of the explosion proof housing. These transmitters operate within a process temperature range of -40°F to 300°F. Field replaceable electronics are potted and encapsulated. KENCO transmitters are available as standard with NEMA 4X/7 explosion-proof housings. These housings feature an industrial epoxy coating for corrosion resistance. All KENCO level transmitters use non-contacting, magnetostrictive technology. This simple design ensures no scheduled maintenance or re-calibration – ever. Accurate, non-contact float location sensing is achieved with absolutely no wear to any of the sensing elements.



PRINCIPLE OF MAGNETOSTRICTION

The level transmitter is composed of two concentric members. The outermost member is a protective 304 stainless steel chamber that withstands aggressive or harsh process industry environments. The heart of the transmitter design is the innermost member, the waveguide, a formed element constructed of a proprietary magnetostrictive material.

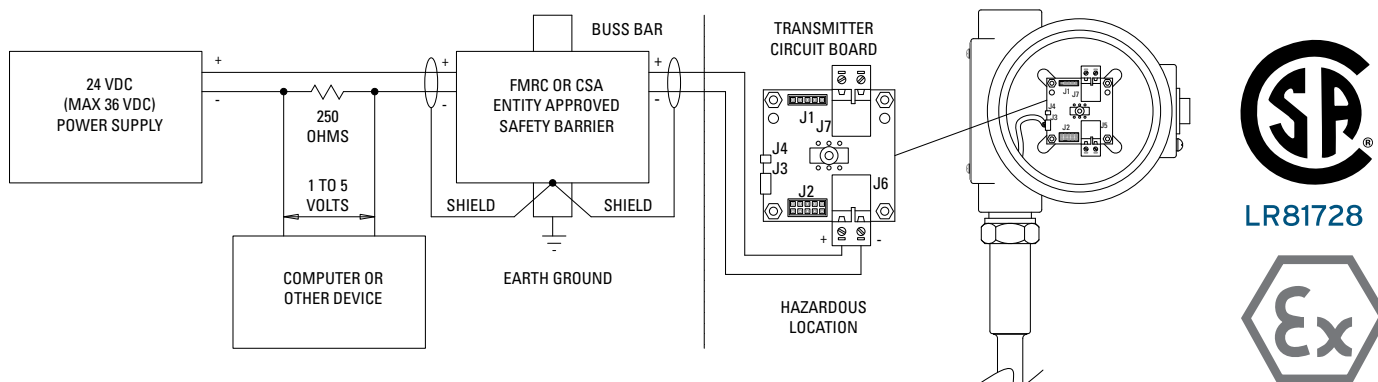
A pulse is induced in the waveguide by the momentary interaction of two magnetic fields, one from an electric current pulse launched along the waveguide and the other from the magnet inside the float. This interaction produces a strain pulse that travels along the waveguide. The location of the magnet inside the float is determined by measuring the elapsed time between the launching of the electronic pulse and the detection of the strain pulse by the sensor head. The time period measurement is used to produce a 4-20mA output.



ELECTRICAL CONNECTIONS AND WIRING PROCEDURES

A typical intrinsically safe connection for the KMD Transmitter includes protective safety barriers, a power supply, and a reading or monitoring device.

NON-HAZARDOUS LOCATIONS (INTRINSICALLY SAFE):



HAZARDOUS LOCATIONS

A typical explosion proof connection for the KMD Transmitter includes a power supply and a reading or monitoring device connected via an explosion proof conduit.

PARAMETER

SPECIFICATIONS

LEVEL OUTPUT

Measured Variable	Product Level
Full-Range	0.5 to 25 ft. (152 mm to 7.6 m)
Non-linearity Fullspan	0.020 % F.S. (Independent BSL) or 1/32 in. (0.794mm), whichever is greater.
Repeatability	0.01 % F.S. or 0.015 in. (0.381 mm), whichever is greater.
Sensor Operating Temperature	Operating temperature is -40 to 300°F. Contact Kenco for higher temperature requirements

TRANSMITTER LOOP

Input Voltage Range	10.5 to 36.1 Vdc
Reverse Polarity Protection	Series diodes
Safety Approval	CSA certified explosion-proof - Class I, Division 1, Groups B, C, and D ATEX certified explosion-proof - II 1/2 G resp. II 2 G EEx ia IIB T4 resp. EEx ia IIA T4

CALIBRATION

Zero Adjust Range	Anywhere within the active length
Span Adjust Range	FS \geq 0.5 ft. (152 mm) from zero

ENVIRONMENTAL

Sealing	Potted sensor cartridge and electronics
Humidity	0 to 100 % R.H.
Operating Temperature	-30 to 160°F (-34 to 71°C)
Materials	304 stainless steel

FIELD INSTALLATION

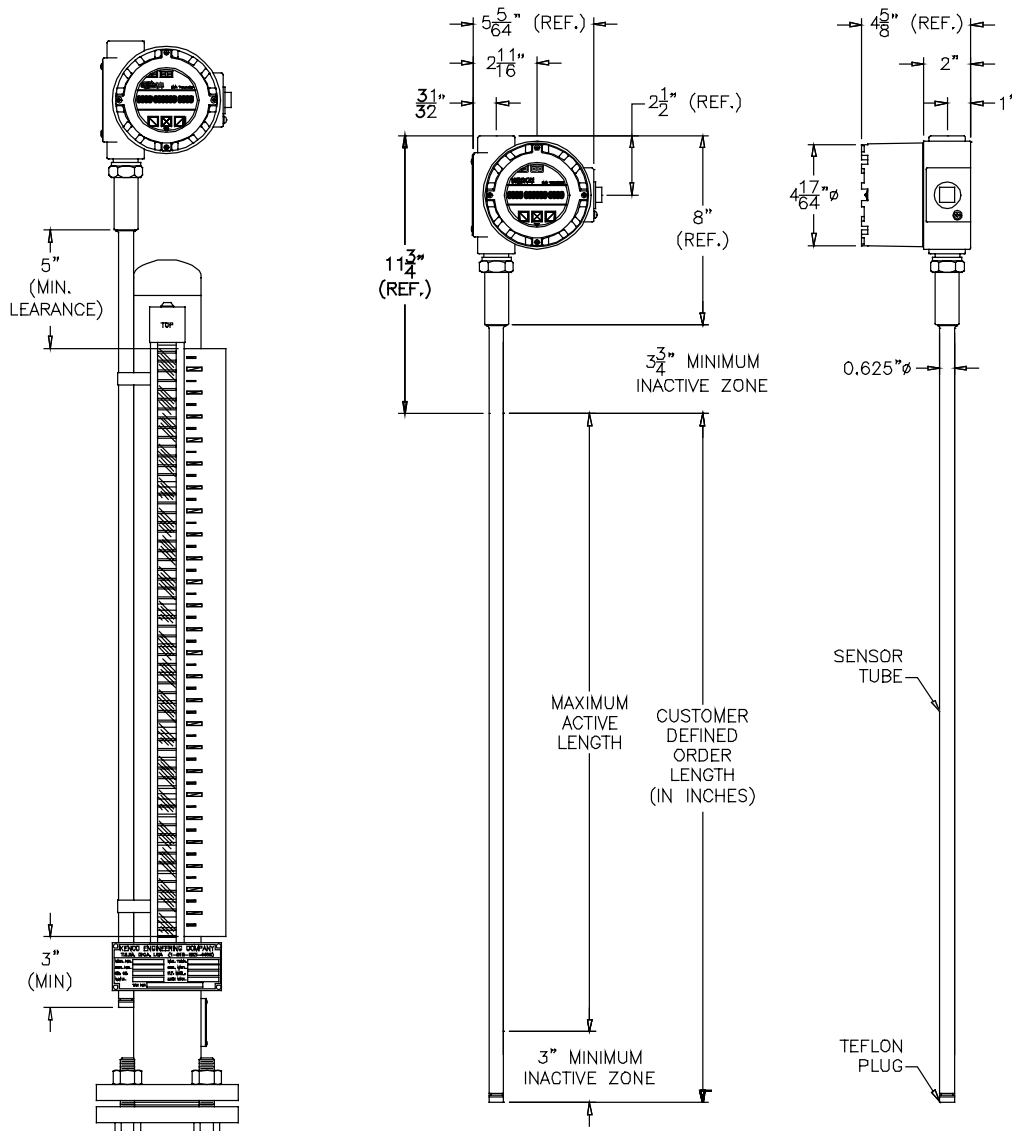
Transmitter Length	Up to 25 ft. (7.6 meters)
Wiring	Two-wire connection, shielded cable or twisted pair to screw terminals through a 3/4 in. (12.7 mm) NPT conduit opening

DISPLAY

Measured Variables	Liquid Level
Update Rate	3 seconds
Size	0.5"
Number of Digits	16
Measurement	% of span, a 4-20 mA output or any unit of measure

HART® COMMUNICATIONS standard

All specifications are subject to change without notice. Consult KENCO for verification of specifications critical to your needs.



MOUNTING INSTRUCTIONS

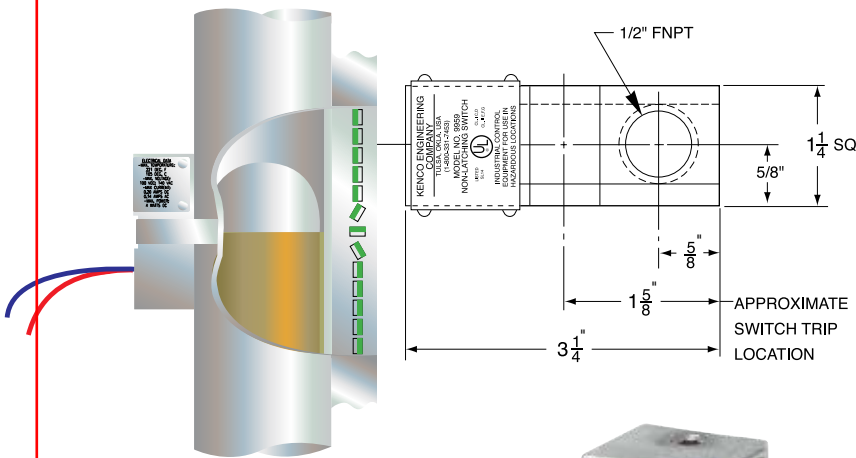
The KMD transmitter is mounted directly to the housing of the KENCO Magnetic Liquid Level Gauge. In a typical configuration, the magnetic flag assembly and transmitter are attached to the gauge housing with mounting clamps provided. Install the transmitter to the right or left of the flag assembly by placing the transmitter sensor tube 90 degrees away from the flag assembly. Tighten the mounting clamps provided around the transmitter sensor tube. Allow for minimum inactive zone of 3 inches at the bottom of the sensor tube by placing bottom of sensor 3 inches below the zero setting (centerline of bottom gauge process connection).

NOTE: The transmitter head can be rotated 360 degrees when mounted as shown to the right.

NOTE: The transmitter may also be mounted with the transmitter head at the foot of the gauge
Consult factory for specifics.

MAGNA-SITE ACCESSORIES

EXPLOSION-PROOF HIGH- OR LOW-LEVEL SWITCHES



- Can activate alarms, pumps or valves when the liquid reaches high or low levels

- Does not come in contact with process liquid



SPECIFICATIONS:

MODEL NUMBER 9958 - LATCHING SWITCH

UL approved for Class I, Div. 1, Div. 2, Groups C & D, Class II, Div. 1, Div. 2, Groups E, F & G

Housing Material: Aluminum (Other Materials Available)

Switch: SPDT, latching reed normally open or normally closed form C contacts

Maximum temperature: 221°F or 105°C. Consult factory for higher temperatures.

Maximum switching volts: 100 VDC, 140 VAC

Maximum switch current: 0.20 Amps DC, 0.14 Amps AC

Maximum power: 4 watts (4 V.A.)

Conduit Connection: 1/2" female NPT

MODEL 9959 - NON-LATCHING SWITCH

UL approved for Class I, Div. 1, Div. 2, Groups C & D, Class II, Div. 1, Div. 2, Groups E, F & G

Housing Material: Aluminum (Other Materials Available)

Switch: SPST, non-latching reed normally open form A contacts

Maximum temperature: 221°F or 105°C. Consult factory for higher temperatures.

Maximum switching volts: 100 VDC, 140 VAC

Maximum switch current: 0.25 Amps DC, 0.18 Amps AC

Maximum power: 7 watts (7 V.A.)

Conduit connection: 1/2" female NPT

HEIGHT SCALES

- Standard scales are 304 stainless steel with no. 3 finish
- Standard scales show height in feet/inches or meters/centimeters
- Large numerical characters offer increased visibility
- Standard scale division marks/characters are etched and paint filled
- Can be calibrated for any unit of measure



INSULATION BLANKET

- Withstands temperatures up to 750°F
- Standard shell material is 18 Teflon® cloth
- Also available in other materials based on application
- Steam tracing also available



APPLICATION WORKSHEET

REQUESTED BY: _____ COMPANY: _____
 ADDRESS: _____ CITY: _____ STATE: _____ ZIP: _____
 PHONE: _____ FAX: _____ EMAIL: _____

MLG					
Mounting Style Options A=FNPT End Connections B=MNPT Side Connections C=Flanged Side Connections D=Top of Tank (Consult Factory) E=Removable Flange Top Connection F=Fixed Flange Vent Connection G=Removable Flange Vent Connection X=Special Configuration (Describe in Comments Box Below)	Indication Length (L) (In Inches)	Process Connection Size 0.5=1/2" 0.75=3/4" 1=1" 1.5=1-1/2" 2=2" 2.5=2-1/2" 3=3" 4=4" 6=6"	*Pipe Flange Class 150=150# 300=300# 600=600# 900=900# 1500=1500# 2500=2500#	Construction Material A=316 SS B=316 SS, Carbon Steel Flanges C=304 SS D=304 SS, Carbon Steel Flanges E=PVC F=CPVC G=PTFE Lined 316 SS H=PTFE Lined 316 SS, Carbon Steel Flanges J=PTFE Lined 304 SS K=PTFE Lined 304 SS, Carbon Steel Flanges L=Alloy 20 N=Hastelloy C-276 R=Titanium	

see pages 6-7

**Note: Flanges are raised face unless otherwise specified*

Liquid Specific Gravity 0.50 and up Consult factory for lower specific gravities	Maximum Working Pressure (PSIG)	Maximum Operating Temperature (°F)	Vent/Drain Options N=None TVD=FNPT Vent/Drain TD=FNPT Drain only TV=FNPT Vent only FVD= Flanged Vent/Drain FD= Flanged Drain only FV=Flanged Vent only X=Other (Please Specify in Comments Box Below)	Vent/Drain Size N=None 0.25=1/4" 0.5=1/2" 0.75=3/4" 1=1" X=Other (Please Specify in Comments Box Below)	Scale N=None HS=304 SS Height Scale in Feet/Inches* MHS=304 SS Height Scale in Meters/Centimeters* XS=% scale, marked every 5%, labeled every 10% SHS=Other special Scale (Describe in Comments Box Below)* * Zero at the beginning of visual on lower end of gauge, unless otherwise specified.	Other Gauge Options

Interface Applications: To read the level of the lower liquid, please list the specific gravity of upper/lower liquids. Example = 0.85/1.0

KMD=Kenco Magnetostrictive Transmitter
 40=Sch. 40 Gauge Housing Pipe (Sch. 10 Standard)
 FPW=Full Penetration Welds
 LS=9958 Latching Switches (Specify Quantity)
 NLS=9959 Non-Latching Switches (Specify Quantity)
 IB=Insulation Blanket
 ST=Steam Tracing
 V=Valves (Describe in Comments Box Below)
 X=Other (Describe in Comments Box Below)

Option 1	Option 2	Option 3	Option 4

Liquid in Tank

Comments

--	--

Example: [MLG – C – 36 – 2 – 150 – A – 0.71 – 175 – 100 – TVD – 0.5 – HS – LS(2)] is a Magna-Site with flanged side connections, 36" indication length (L), 2" 150 lb. R.F. flanged process connections, 316 stainless steel construction, float specific gravity of 0.71, a maximum working pressure of 175 psig at 100°F, 1/2" FNPT vent/drain, a 304 stainless steel height scale in feet/inches, and (2) 9958 latching switches.

Represented by:

KENCO Sales Offices:

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 Tulsa, OK 74147
 phone 918.663.4406
 fax 918.663.4480
 http://www.kenco-eng.com
 email: info@kenco-eng.com

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11616 Industriplex, Suite 7
 Baton Rouge, LA 70809
 phone 225.755.1912
 fax 225.755.1913
 http://www.kenco-eng.com
 email: kenco-la@kenco-eng.com



PSV-400 A/B

CROSBY

Crosby's Series 800 adjustable blowdown and Series 900 fixed blowdown OMNI-TRIM® full nozzle pressure relief valves have a simplified, single trim design with superior application versatility.

Features

- Relieving capacities certified by National Board of Boiler and Pressure Vessel Inspectors. Certification includes air and steam for Series 800, and air, steam and water for Series 900.
- Valves manufactured in accordance with the requirements of ASME Boiler and Pressure Vessel Code Section VIII and Section III.
- Superior seat tightness. Precision lapped flat metal-to-metal seats, or elastomer or TFE O-ring soft seats provide the ultimate in seat tightness.
- Maximum corrosion resistance. Trim components are stainless steel as standard. All 316 stainless steel, Monel®, Hastelloy® and NACE* optional constructions are available.
- Spring standardization. Standard Series 800 and Series 900 OMNI-TRIM® pressure relief valves are suitable for inlet temperatures to 750°F [399°C], using a 17-7PH stainless steel spring.
- Positive built-in lift stop.
- Fewer parts result in increased reliability and ease of maintenance.
- Series 800 pressure relief valves have an external blowdown adjustment allowing for short blowdown, smaller differential between operating and set pressures, and reduced product loss.
- Series 900 OMNI-TRIM® valves use a single trim design for liquid, gas and vapor services.
- Series 900 OMNI-TRIM® valves provide reliable blowdown without the need for adjustment.

* Contact the factory for compliance to NACE MR-0175-2003 or later requirements.

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tyco / Flow Control

Total Flow Control Solutions™

Series 900 OMNI-TRIM® Style Designation

1st Digit	2nd Digit	3rd Digit	4th Digit	5th Digit	6th Digit	7th Digit	8th Digit
Series	Effective Orifice Area	Maximum Set Pressure ^{2,6}	Seat Material ⁶	Materials of Construction ^{1,3}	Connection Size - NPS ⁷	Connection Type ^{4,5,8}	Caps and Levers
9 - Series 900 Fixed Blowdown Relief Valve	5 - 0.074 sq. in. [47.74 sq. mm] 6 - 0.110 sq. in. [70.96 sq. mm] 7 - 0.196 sq. in. [126.4 sq. mm] 8 - 0.307 sq. in. [198.0 sq. mm] 9 - 0.503 sq. in. [324.5 sq. mm]	1 - 1500 psig [103.42 barg] 2 - 2500 psig [172.36 barg] 5 - 5000 psig [344.74 barg]	1 - Metal 2 - BUNA-N 3 - Viton® 4 - Ethylene Propylene Rubber (EPR) 5 - Kalrez® 6 - TFE 7 - Other (Specify)	0 - Standard Materials Carbon Steel Cylinder 316 SS Base, Disc Insert, Disc Holder and Guide 17-7PH SS Spring -50°F to +750°F [-45.6°C to +399°C] 1 - All 316 SS Materials -450°F to +500°F [-268°C to +260°C] 2 - All 316 SS Materials Inconel® X750 Spring -450°F to +750°F [-268°C to +399°C] 3 - Carbon Steel Cylinder Monel® Base, Disc Insert, Disc Holder and Guide Inconel® X750 Spring Note ⁵ -50°F to +750°F [-45.6°C to +399°C] 4 - All Monel® Materials Inconel® X750 Spring Note ⁵ -320°F to +750°F [-196°C to +399°C] 5 - Carbon Steel Cylinder Hastelloy® C Base, Disc Insert, Disc Holder and Guide Inconel® X750 Spring Note ⁵ -50°F to +750°F [-45.6°C to +399°C] 6 - All Hastelloy® C Materials Note ⁵ -320°F to +750°F [-196°C to +399°C] 7 - NACE MR-0175-2002 ¹⁰ Carbon Steel Cylinder 316 SS Base, Disc Insert, Disc Holder & Guide Inconel® X750 Spring With 316 SS Washers -50°F to +750°F [-45.6°C to +399°C] 8 - Other (Specify)	0 - 1/2 x 1 1 - 3/4 x 1 2 - 1 x 1 3 - 1 x 1 1/2 4 - 1 1/2 x 1 1/2 5 - 1 1/2 x 2 6 - 2 x 2 7 - 1 1/2 x 2 1/2 9 - Other	M - MNPT x FNPT F - FNPT x FNPT 1 - 150# RF x 150# RF 2 - 300# RF x 150# RF 3 - 600# RF x 150# RF 4 - 1500# RF x 300# RF 5 - 2500# RF x 300# RF 7 - Other (Specify) 8 - Male SW x Male SW ⁹ 9 - MNPT x FNPT 3/4 x 1 Bolted Cylinder (951 Orifice only)	A - Standard Threaded Cap B - Threaded Cap with Test Rod D - Packed Lifting Lever E - Packed Lifting Lever with Test Rod

Available Options

- Special materials not catalogued such as Alloy 20, Titanium, etc.
- Tri-clamp sanitary connections.
- 0.049 sq. in. effective orifice area for liquid service.
- O-ring seat materials not catalogued.
- Position indicators, proximity switches, etc.

How to Order

Example 1: To specify a 3/4 x 1 MNPT x FNPT Series 900 valve with a 0.074 sq. in. [47.74 sq. mm] effective area, BUNA-N seats, all 316 stainless steel materials, standard threaded cap, process fluid operating temperature at 150°F [66°C], and set at 175 psig [12.07 barg], use the following style designation: **951211MA**

Example 2: To specify a 1 1/2 x 2 MNPT x FNPT Series 900 valve with a 0.307 sq. in. [198.0 sq. mm] effective area, metal seats, standard materials, packed lifting lever with test rod, for saturated steam service set at 200 psig [13.79 barg], use the following style designation: **981105ME-STM**

Caution!

Refer to Pages 14-17 to verify the Series 900 model number specified is available in the orifice, connection size and connection type combination selected.

Notes

1. For steam service a 17-4PH disc holder is used. Add — STM after style designation.
2. Maximum set pressure for steam service is 1000 psig [68.95 barg].
3. See page 7 for complete listing of materials of construction.
4. Optional flange facings (such as ring type joint, 125-200RA), if required, must always be specified.
5. Optional flange materials (such as Monel® and Hastelloy®), if required, must always be specified.
6. See pages 14 - 17 for appropriate maximum set pressures.
7. See pages 14 - 17 for appropriate inlet and outlet sizes for each effective orifice area.
8. Consult Crosby for materials, and center to face and height dimensions for socket weld (SW) connections. Weights are the same as for threaded connections.
9. Not available with soft seats; contact the factory.
10. Contact factory for compliance to NACE MR-0175-2003 or later requirements.

Specifications: Series 900 OMNI-TRIM® Threaded Connections (NPT) - USCS (U.S. Customary System) Units

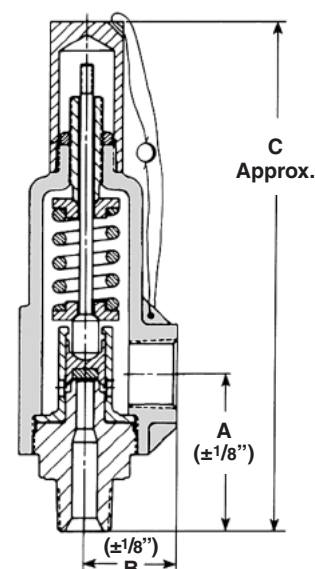
Series 900 Dimensions and Weights, Pressure/Temperature Ratings

Valve Style Number	Connection Size (NPS)		Min. ⁴ Set Press. (psig)	Max. ^{1,3} Set Press. (psig)	Max. Outlet Press. (psig)	Temp. ¹ Range (°F)	Dimensions (in.)			App. Wt. (lbs.)
	Inlet	Outlet					A	B	C ²	
Style 951 — Series 900 with No. 5 orifice (0.074 sq. in.)* and 1500 psig maximum set pressure										
9511()0M	1/2	1	5	1500	400	-450/+750	3	13/4	103/8	7
9511()1M	3/4	1	5	1500	400	-450/+750	3	13/4	103/8	7
9511()2M	1	1	5	1500	400	-450/+750	3 1/4	13/4	105/8	7
Style 951 — Series 900 Bolted Connection with No. 5 orifice (0.074 sq. in.) and 1500 psig max. set pressure ⁵										
9511()19	3/4	1	5	1500	400	-450/+750	6 13/16	13/4	14 1/4	12
Style 955 — Series 900 with No. 5 orifice (0.074 sq. in.)* and 5000 psig maximum set pressure										
9551()0M	1/2	1	1501	5000	400	-450/+750	3 1/8	1 15/16	11 7/8	9
9551()1M	3/4	1	1501	5000	400	-450/+750	3 1/8	1 15/16	11 7/8	9
9551()2M	1	1	1501	5000	400	-450/+750	3 3/8	1 15/16	12 1/8	9
Style 961 — Series 900 with No. 6 orifice (0.110 sq. in.) and 1500 psig maximum set pressure										
9611()0M	1/2	1	5	1500	400	-450/+750	3 1/8	1 15/16	11 7/8	10
9611()1M	3/4	1	5	1500	400	-450/+750	3 1/8	1 15/16	11 7/8	10
9611()2M	1	1	5	1500	400	-450/+750	3 3/8	1 15/16	12 1/8	10
9611()1F	3/4	1	5	1500	400	-450/+750	2 1/2	1 15/16	11 1/4	10
9611()2F	1	1	5	1500	400	-450/+750	2 7/8	1 15/16	11 5/8	10
Style 965 — Series 900 with No. 6 orifice (0.110 sq. in.) and 5000 psig maximum set pressure										
9651()1M	3/4	1	1501	5000	400	-450/+750	3 1/2	2 1/2	13 1/8	16
9651()2M	1	1	1501	5000	400	-450/+750	3 3/4	2 1/2	13 3/8	16
9651()3M	1	1 1/2	1501	5000	400	-450/+750	3 3/4	2 1/2	13 3/8	16
9651()1F	3/4	1	1501	5000	400	-450/+750	2 7/8	2 1/2	12 1/2	16
9651()2F	1	1	1501	5000	400	-450/+750	3 1/8	2 1/2	12 3/4	16
9651()3F	1	1 1/2	1501	5000	400	-450/+750	3 1/8	2 1/2	12 3/4	16
Style 972 — Series 900 with No. 7 orifice (0.196 sq. in.) and 2500 psig maximum set pressure										
9721()3M	1	1 1/2	6	2500	400	-450/+750	3 3/4	2 1/2	13 3/8	17
9721()4M	1 1/2	1 1/2	6	2500	400	-450/+750	3 3/4	2 1/2	13 3/8	17
9721()3F	1	1 1/2	6	2500	400	-450/+750	3 1/8	2 1/2	12 3/4	17
9721()4F	1 1/2	1 1/2	6	2500	400	-450/+750	3 3/8	2 1/2	13	17
Style 981 — Series 900 with No. 8 orifice (0.307 sq. in.) and 1500 psig maximum set pressure										
9811()5M	1 1/2	2	7	1500	400	-450/+750	4 1/2	3 1/4	16 3/8	33
9811()6M	2	2	7	1500	400	-450/+750	4 1/2	3 1/4	16 3/8	33
9811()5F	1 1/2	2	7	1500	400	-450/+750	3 7/8	3 1/4	15 3/4	33
9811()6F	2	2	7	1500	400	-450/+750	4	3 1/4	15 7/8	33
Style 991 — Series 900 with No. 9 orifice (0.503 sq. in.) and 1500 psig maximum set pressure										
9911()7M	1 1/2	2 1/2	7	1500	400	-450/+750	4 1/2	3 1/4	16 3/8	32
9911()7F	1 1/2	2 1/2	7	1500	400	-450/+750	3 7/8	3 1/4	15 3/4	32

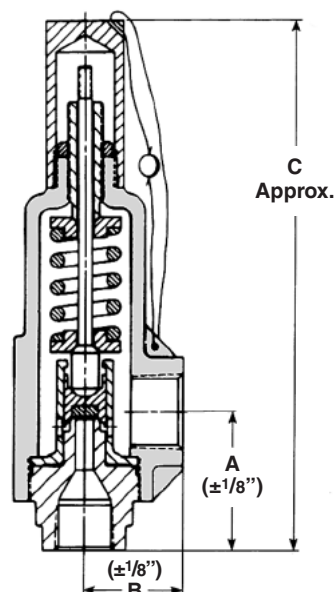
*Consult Crosby for availability of No. 5 (0.074 sq. in.) orifice with FNPT inlet.

Notes

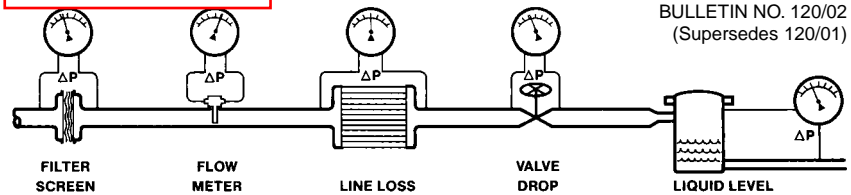
- Minimum/maximum set pressures and temperatures shown apply to metal seated valves only. Refer to page 9 for pressure and temperature limits for soft seat construction.
- Dimension "C" shown is for Type A cap.
For Type B cap, add 1/4 in. to "C" dimension (an additional 2 in. is required for test rod head clearance).
For Type D cap, add 5/8 in. to "C" dimension.
For Type E cap, add 7/8 in. to "C" dimension (an additional 2 in. is required for test rod head clearance).
- Maximum set pressure for steam service is 1000 psig.
- Valves set below 15 psig cannot be stamped with the ASME Code Symbol. Only metal seated valves may be set below 15 psig. For set pressure applications below the published minimum values, consult Crosby.
- See page 3.



MNPT x FNPT



FNPT x FNPT



Model 120 Series "Filter Minder"[®] Piston-Type Differential Pressure Gauge

MEDIUM RANGE: 0-5 P.S.I.D. to 0-110 P.S.I.D. (0.35 to 7.0 bar)

A low cost differential pressure gauge for use in measuring the pressure drop across filters, strainers, separators, valves, pumps, chillers, etc., and for local flow indication and control.

- Simple, rugged, compact design.
- Working pressure 6000 P.S.I.G. (400 bar) models 120-A and 120-S.
- Working pressure 5000 P.S.I.G. (340 bar) models 120-M and 120-N.
- Over-range protection to max. pressure.
- Aluminum or 316 stainless steel housing with 316 stainless steel internals.
- Monel or Aluminum Bronze housing with monel internals.
- Weather-resistant construction standard.
- Accuracy $\pm 3-2-3\%$ full scale (ascending).
- Shatter resistant lens.
- More cost effective and more accurate than using two pressure gauges in monitoring differential pressure.
- 2-1/2" and 4-1/2" plastic dial assemblies.



2-1/2" Plastic Dial Assy.

- 3-1/2" and 4-1/2" anodized aluminum dial assemblies.
- Uni-directional or bi-directional.
- Five Year Limited Warranty



4-1/2" Plastic Dial Assy

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

Available with magnetically actuated hermetically sealed CSA listed reed switches to provide high and low limit alarm or control.

An optional maximum indication follower pointer provides automatic indication of maximum differential occurring during a time period or system cycle.

Reversed pressure ports are optionally available to facilitate installation and readability depending on which side of a filter, etc., the instrument must be installed.



2-1/2" Plastic Dial Assy. w/Max.
Follower Pointer

Why use a dp gauge like this, instead of one or two pressure gauges to monitor a filter? Let's take a typical filter application – 1000 P.S.I.G. system pressure and 25 P.S.I.G. maximum dp. Two 1% accuracy pressure gauges (0-2000 P.S.I.G.) could have a combined error of ± 40 P.S.I.G. (more than the maximum allowable dp!) A 0-50 P.S.I.D. Model 120 would have an error of ± 1 P.S.I. at a reading of 25 P.S.I.D., **40 times the accuracy of more costly pressure gauges!**

NOTE: Due to precision sizing of piston and body bore, leakage across the piston will not exceed 15 SCFH air at 100 P.S.I.D. at ambient conditions.



Cutaway View w/1/4" FNPT Back Connections

Model 120 "Filter Minder"[®] Differential Pressure Gauge with Control Switching

The Model 120 "Filter Minder"[®] gauge is available with one or two hermetically sealed reed switches. The switches are adjustable (see table for adjustment range) within a defined percentage of the full scale range of the gauge and are available in SPDT and SPST, normally open or normally closed configurations for various load power ratings. The switches can be set to activate or deactivate on rising or falling pressure.

All hazardous location switches are CSA & UL Listed. The CSA & UL listings are for the entire design and not just the enclosure. All standard and weatherproof units are CE marked for conformance with the Low Voltage Directive to harmonized standard EN 61010-1.

The standard reed switch is enclosed in a weather-resistant plastic housing. Adjustment of the switch setting is made with an external screw adjustment.

The switch functionality will be different for gauges with bi-directional operation for positive and negative delta pressure. For example a SPDT switch with positive ΔP applied to the gauge, the red wire will be N.O. and the black will be N.C.. For negative ΔP the functionality will be reversed.



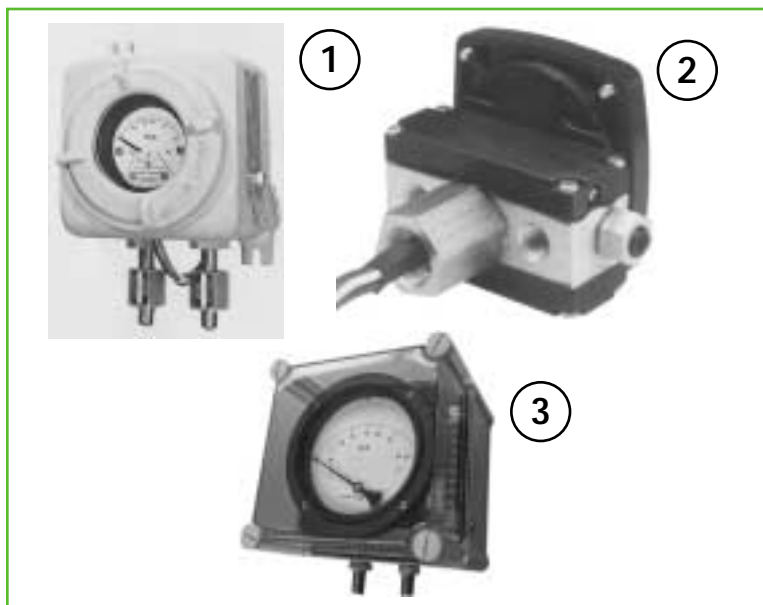
Standard Enclosures for two (2) Switches
w/1/4" FNPT Conduit Connection.
Nema 4X/IP65

Location for a single SPDT (grommet or conduit) switch will be on the bottom of the gauge body for a normal port and on the top for a reverse port. Locations for a single SPST (grommet or conduit) N.O. or SPST N.C. switch will be on the bottom and top respectively for a normal port gauge. The locations will be reversed for a reverse port gauge. For more details request IM 120/latest.

A non-indicating (no dial) differential pressure switch is also available.

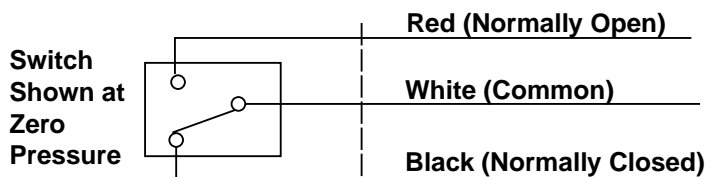
Special Switch Enclosures

- 1 **Hazardous Locations Division 1:**
CSA & UL listed design with SPST or SPDT switches in NEMA 7/9 enclosure approved for use in Class 1 Division 1, Groups C & D; Class 2, Division 1, Groups E, F, & G atmospheres.
- 2 **Hazardous Locations Division 2:**
CSA & UL listed design with SPST or SPDT switches in a general purpose enclosure approved for use in Class 1, Division 2, Groups A, B, C, & D; Class 2, Division 2, Groups F & G atmospheres.
- 3 **Weatherproof:**
Switch(es) and gauge are enclosed in a non-corrosive, molded, plastic enclosure that are oil-tight, dust-tight, and water-tight per NEMA 4X. Design is CE marked for conformance to the Low Voltage Directive.



Reed Switch Ratings (Resistive Load)

Type	SPST	SPST	SPDT	SPDT
Option:	B,C,D***	E,F,G	H	A
*Power	50 W	60 W	60 W	3 W
Max. Current	0.5 Amps	3.0 Amps	1.0 Amps	0.25 Amps
Max. Voltage VAC/VDC	240	240	240	125
**Setting (%F.S.)	10 to 100	25 to 95	25 to 100	10 to 90
Hysteresis (Max/Nom)	10% / 2% (F.S.)	15% / 8% (F.S.)	20% / 13% (F.S.)	10% / 5% (F.S.)
Repeatability	1% F.S.	1% F.S.	1% F.S.	1% F.S.
Leads 22 Awg.	(2), 24"	(2), 24"	(3), 24"	(3), 24"



*Product of the Switching Voltage & Current shall not exceed power rating of the device.

**Except where otherwise noted.

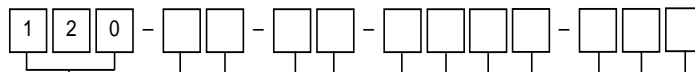
***B, C, & D options are available, however they are not identified in Electrical Specifications. (Recommend using E, F, or G)

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

1. Viton®

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
8. 1/2" FNPT Monel Adaptors
9. Special (Uncoded Options)

⑥ **OPTIONS** (Up to four options)

- Q. 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 or D Electrical Switch Options)
 - L. Liquid Fill (Not available w/follower 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) (3)}
- F. Two (2) Switches in General Purpose Enclosure, **C.S.A. & U.L. Listed, Division II Locations** ^{(1) (3)}**
- 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 ⁽⁴⁾ |
| H | S.P.D.T., 60W, 1.0 Amp., 240 VAC/VDC (Switch adjustable range of 25-100%) |
| Z | Special (Uncoded Options) |

⁽⁴⁾ Available with Electrical Configurations B, D, F, H, K and M only.

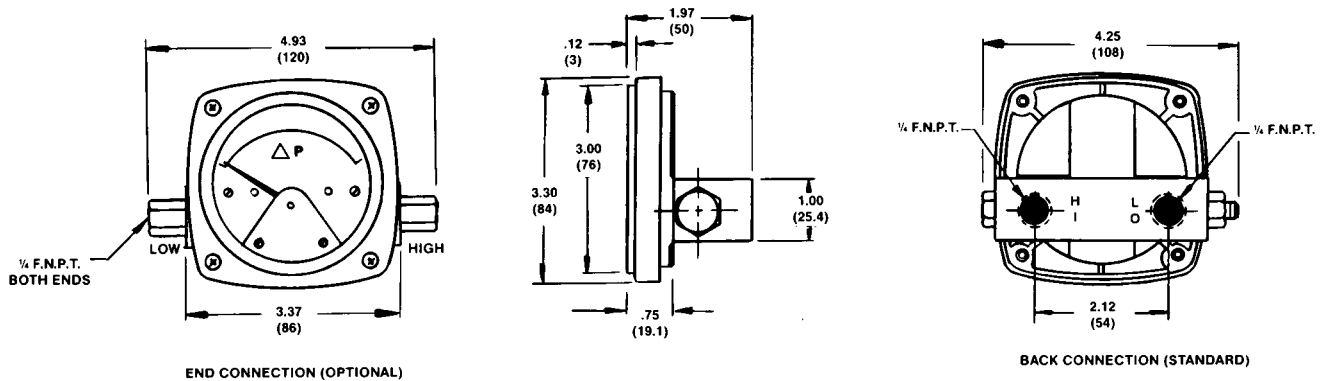
NOTE: NOT ALL OPTIONS AVAILABLE IN COMBINATION WITH OTHER OPTIONS.

NOTE: FACTORY PRESET SWITCHES AT NO CHARGE (SPECIFY SETTING)

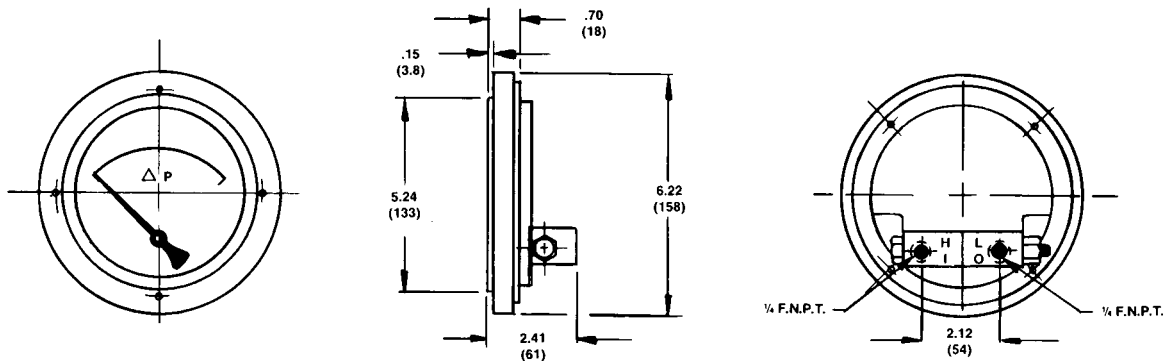
NOTE: THE USE OF DIAPHRAGM SEALS IS NOT RECOMMENDED FOR MODEL 120 SERIES GAUGE. ATTEMPTS TO INSTALL SUCH SEALS ON THIS GAUGE WILL VOID THE WARRANTY.

MOUNTING INFORMATION & DIMENSIONAL DATA

MODEL 120: 2-1/2" INCH PLASTIC DIAL ASSY.



MODEL 120: 4-1/2" INCH PLASTIC DIAL ASSY.



- 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.

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

NACE MR0175
NEMA Std. No. 250
SAE J514
UL Std. No. 50,508 and 1203

Mid-West[®]
Instrument

6500 Dobry Dr. □ Sterling Heights, MI 48314 U.S.A.
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E-mail: sales@midwestinstrument.com
Website: www.midwestinstrument.com

Printed in U.S.A.



REPRESENTED BY:

Bourdon Tube Pressure Gauges

Solid-Front Process Gauge - SS Wetted Parts

Type 232.34 - Dry Case

Type 233.34 - Liquid-filled Case

WIKA Datasheet 23X.34

Applications

- For applications with high dynamic pressure pulsations or vibration a liquid filled case and socket restrictor are available
- Suitable for corrosive environments and gaseous or liquid media that will not obstruct the pressure system
- Process industry: chemical/petrochemical, power stations, mining, on and offshore, environmental technology, mechanical engineering and plant construction

Special features

- Excellent load-cycle stability and shock resistance
- Solid front thermoplastic case
- Positive pressure ranges to 30,000 psi
- All lower mount connection gauges are factory prepared for liquid filling

(LBM: must install membrane prior to field filling)

Standard Features

Design

ASME B40.100

Sizes

4½" & 6" (115 & 160 mm) dial size

Accuracy class

± 0.5% of span (ASME B40.100 Grade 2A)

± 1.0% of span (ASME B40.100 Grade 1A)
(for 20,000 psi range and above)

Ranges

Vacuum / Compound to 200 psi

Pressure from 15 psi to 30,000 psi

or other equivalent units of pressure or vacuum

Working pressure

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 +66°C) - dry

-4°F to +150°F (-20°C to +66°C) - glycerine filled

-40°F to +150°F (-40°C to +66°C) - silicone filled

Medium: max. +212°F (+100°C) (See Note 1 on reverse)

Temperature error

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



Bourdon Tube Pressure Gauge Model 232.34

Weather protection

Weather resistant (NEMA 3 / IP54) - without membrane

Weather tight (NEMA 4X / IP65) - dry case or filled case with membrane installed

Pressure connection

Material: 316L stainless steel

Lower mount (LM) or lower back mount (LBM)
1/4" or 1/2" NPT with M4 internal tap

Restrictor

Material: Stainless steel (0.6 mm)

Bourdon tube

Material: 316L stainless steel

≤ 1,000 PSI: C-type

≥ 1,500 PSI: helical type

Movement

Stainless steel. Internal stop pin at 1.3 x full scale

Overload and underload stops - standard

Dampened movement - optional

Dial

White aluminum with black lettering, stop pin at 6 o'clock

Pointer

Black aluminum, adjustable

Case

Black fiberglass-reinforced thermoplastic (POCAN)

Solid front, blowout back

Turret-style case with built in rear flange lugs

Window

Clear acrylic with Buna-N gasket

Case filling

Glycerine 99.7% - Type 233.34

Cycle testing

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

* Liquid filled

Note 1: The maximum continuous media temperature for this gauge is 212°F. However, higher temperatures can be maintained safely for short term exposure per table to the right. The user should consider temperature error and gauge component degradation when exposing gauge to any media or ambient temperature above 212°F. For continuous use in either ambient or media temperatures above 212°F, a diaphragm seal or other heat dissipating means is recommended. Consult factory for technical inquiries and application assistance.

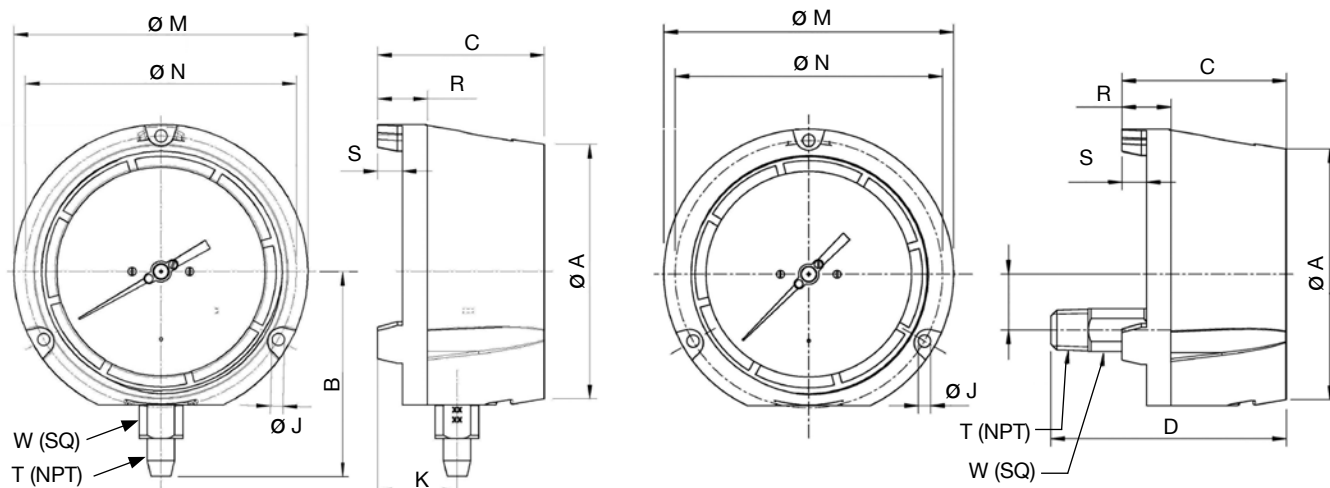
Optional extras

- Silicone dampened movement
- Panel mounting adaptor kit (field assembled)
- Silicone case filling
- Halocarbon case filling
- Cleaned for oxygen service
- Instrument glass or safety glass window
- Drag pointer (maximum reading indicator)
- Alarm contacts switches (magnetic or inductive)
- Special process connections
- Custom dial layout
- External zero adjustment

Short term, intermittent maximum media temperature limits
(Optional glass window required for all these temperatures)

500°F (260 °C) -	Dry Gauge
250°F (130°C) -	Liquid filled gauge
300°F (150°C) -	Dampened movement gauge

Dimensions



Size		A	B	C	D	J	K	L	M	N	R	S	T	W	Weight ¹	
4.5"	mm	128	103	84	120.3	6.3	40	28.5	148	136.5	25	12.5		22	2 lb.	dry
	in	5	4.06	3.31	4.74	0.248	1.57	1.12	5.83	5.37	0.99	0.49	1/2"	0.87	3 lb.	filled
6"	mm	164	122.5	88	123.4	7.1	40.2	28.5	190	177.8	25.4	12.7		22	3 lb.	dry
	in	6.46	4.82	3.46	4.86	0.28	1.58	1.12	7.5	7	1	0.5	1/2"	0.87	4 lb.	filled

¹ Weight without optional accessories

Ordering information

Pressure gauge model / Nominal size / Scale range / Size of connection / Optional extras required
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.
Modifications may take place and materials specified may be replaced by others without prior notice.



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