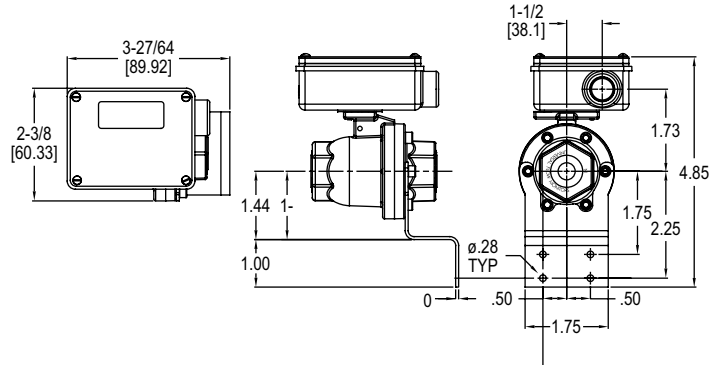


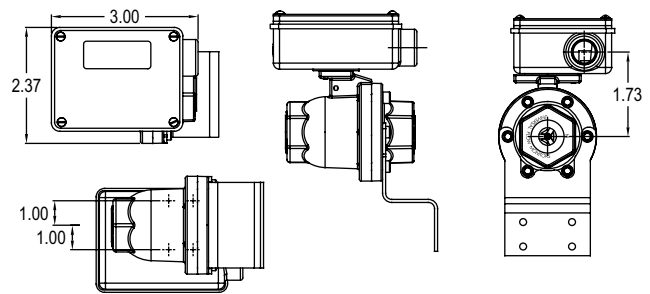
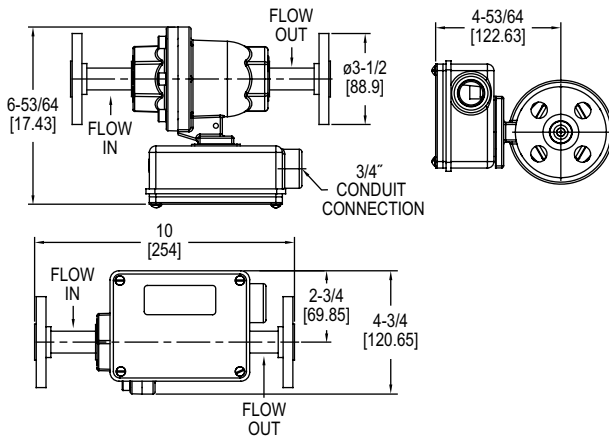
# PISTON IN-LINE VARIABLE AREA FLOWMETER

No Straight Run Requirements, Mechanical Sensing, Switch and Transmitter Options

CALIBRATION SERVICES AVAILABLE



Wall mount bracket



Foot mount bracket

The Series PI Piston In-Line Variable Area Flowmeter is a series of mechanical piston variable area flow meters with visual and electronic output options. The Series PI is offered with inscribed scale displays via pointer or numeric digital LCD options. It offers mechanical switch output options and electronic output options such as 4-20 mA analog output, and HART® protocol. It is available in pipe sizes 1/4" to 1" (8 to 25 mm) and flows of 0.25 to 30 GPM (5 to 100 LPM) for liquids with viscosity up to 650 centistokes.

**BENEFITS/FEATURES**

- Zero straight pipe runs required before or after the meter
- Standard mechanical sensor pointer and switches do not require power
- 10:1 turndown for added measuring flexibility
- Rugged, all metal construction
- Multi-directional mounting

**APPLICATIONS**

- Cooling water monitoring
- Plastic injection molding coolant control
- Oil and gas measurement
- Lubricant flow control
- Hydraulic flow
- Pump protection
- Hazardous areas

FLOW RATE CHART			
Size	Connection Size	Flow Rate	
		GPM	LPM
2	1/4" (8 mm)	5	18.9
3	3/8" (10 mm)	10	37.9
4	1/2" (15 mm)	15	56.8
6	3/4" (20 mm)	20	75.7
8	1" (25 mm)	30	113.6

ACCESSORIES	
Model	Description
8140R-ASSY	Intrinsically safe barrier

**SPECIFICATIONS**

**Service:** Compatible liquids.  
**Range:** See flow rate chart.  
**Display:** Standard analog scale and pointer display with optional numeric digital LCD (model selectable).  
**Wetted Materials:** Flow body: Aluminum, brass or 316 SS; Piston: 316L SS; Seal: Buna-N or Viton®.  
**Accuracy:** ±2% or ±1% FS (model selectable).  
**Repeatability:** 1% of reading.  
**Temperature Limits:** 200°F (93°C) or HT option 400°F (205°C); Transmitters HT 300°F (150°C); Ambient temperature: 150°F (65°C) CSA listed only to 105°F (41°C).  
**Pressure Limits:** Aluminum and brass: 500 psi (34.5 bar); 316 SS: 1500 psi (103.4 bar) (3:1 safety factor).  
**Pressure Drop:** 5 psi (0.35 bar) at FS.  
**Response Time:** 250 ms.  
**Power Requirements:** Standard: None; 4-20 mA analog output or HART® protocol: 10-30 VDC, 0.25 A @ 24 VDC; Intrinsically safe transmitter\*: 10-24 VDC, 0.25 A @ 24 VDC.  
**Output:** 4-20 mA (model selectable).  
**Deadband:** Alarm output: 2.5% FS for up to 1/2"; 5% FS for larger than 1/2".  
**Viscosity:** 650 centistokes max.  
**Enclosure Rating:** NEMA 12 (IP52), NEMA 4 (IP66) or NEMA 4X (IP65) (model selectable).  
**Process Connection:** Female NPT, SAE, BSPT, BSPP or ANSI RF flanges (model selectable).  
**Electrical Connection:** 3/4" NPT for A, L, Z and T-box enclosures; 1/2" NPT for R-box enclosure.  
**Weight:** 10 to 20 lb (4.5 to 9.1 kg) (model dependent).  
**Installation Orientation:** In-line and in any position.  
**Straight Pipe Run:** Zero straight pipe runs before or after, meter required.  
**Switch Output Compliance:** General purpose or rated for hazardous locations (all classes, groups and divisions) (model selectable).  
**Compliance:** CE, ETL.

\*Only when used with intrinsically safe barrier.

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CALIBRATION SERVICES AVAILABLE

MODEL CHART																					
Example	PI	-B	Z	F	10GM	-4					-32	V	1	-A		-1	W	L	-W	PI-BZF10GM-4-32V1-A-1WL-W	
Series	PI																				Piston in-line variable area flowmeter
Housing Material		A B Z																			Aluminum Brass 316 SS
Internal Moving Parts			Z																		316L SS
Seal Material				B F																	Buna-N Viton®
Max Flow Rate Liquids					GH GM LH LM CMH GLM																5 to 300 GPH 0.25 to 30 GPM 20 to 1000 LPH 5 to 100 LPM 1 to 6 CMH GPM and LPM dual scale (reference ranges above)
Threaded Attachment						2 3 4 6 8															1/4" (8 mm) NPT 3/8" (10 mm) NPT 1/2" (15 mm) NPT 3/4" (20 mm) NPT 1" (25 mm) NPT
Flanged Option						- 2 4 6 8															No flange 1/4" 1/2" 3/4" 1"
Attachment Type							- FT														No flange Threaded flange
Material								- CS S													No flange Carbon steel 316 SS
Class									- 150												No flange 150 lb
Style										- RF											No flange ANSI raised face
Viscosity											0.0										Custom viscosity
Viscosity Units												V C CS									SSU Centipoise Centistokes
Specific Gravity													0.0								Custom specific gravity
Enclosure Type and Material														A L Z T  R							A-box, standard polysulfone enclosure** L-box, standard aluminium enclosure** Z-box, standard 316 SS enclosure** T-box, aluminum enclosure with 4-20 mA transmitter standard (intrinsically safe with approved barriers and no switches)** R-box, aluminium enclosure with higher resolution**
Control Box														X  H XL							4-20 mA transmitter (intrinsically safe with approved barriers) HART® communication protocol 4-20 mA transmitter (intrinsically safe with approved barriers) and LCD readout with 2 open collectors (T-box only)
Output																0 1 1B 2 3 7 17					Display only One SPDT (3-wire) One high vibration SPDT (3-wire) Two SPDT (3-wire) One SPDT (4-wire) One SPDT hazardous location (R-box only) One DPDT hazardous location (R-box only)
Service																	N  W X				Oil and dust tight NEMA 12 (IP52) available on A, L, and Z-boxes only Weatherproof NEMA 4 (IP66) Weatherproof, corrosion proof NEMA 4X (IP65)
Flow Direction																		R L U D			Left to right Right to left Up Down
Special Options																			W F		Wall mounting bracket Foot mounting bracket
Switch Setting																					- Lowest possible setting (usually 10% of maximum flow) desired set point is assumed to be in flow units already selected. Give flow rate 5D followed by a "D" for flow going down (flow failure) or a "U" for flow going up. Example: 5D indicates a setting of 5 GPM in declining flow.

\*\*Available with analog display, mechanical switches or transmitters (HART® or 4-20 mA).  
**Note:** For additional configuration options, such as a second switch, hermetically sealed switch, or high-temperature options, refer to the web configurator.

Flow Transmitters  
Variable Area & In-Line