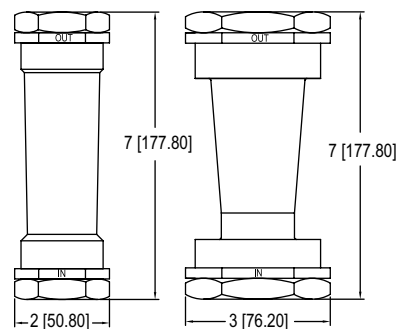




Series IS/PX/TX | U M Insite™ In-Line Flowmeter

Specifications - Installation and Operating Instructions



The **Series IS/PX/TX Insite™ Air/Liquid In-Line Flowmeter** is available in a variety of materials including PVC, aluminum, brass, or 316 stainless steel. The variety of optional materials allows the flowmeters to be used in many different applications. The Series IS/PX/TX Insite™ flowmeters are also available with an optional field adjustable reed switch for high and low alarms.

INSTALLATION

Inlet and outlet ends are marked on the flowmeter body, and an arrow on the printed scale indicates flow direction. Insite™ flowmeters can be mounted in any convenient orientation (vertical, horizontal or anything in-between) without affecting performance.

The end fittings are connected to the plastic body with O-ring sealed straight threads for a strong connection and to prevent leakage. There is no need to over torque or use sealant, plumbing tape or pipe dope.

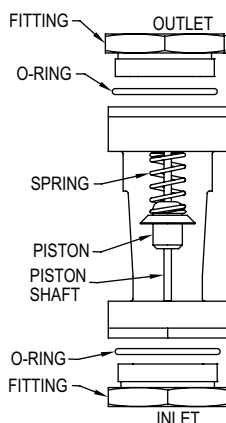
These end fittings accept pipe with tapered threads (NPT). Teflon® tape should be used on the pipe threads and standard torques applied, to make leak-free connections.

Put your wrench only on the end fitting when piping meter inline. Do not apply wrenches on the plastic body when connecting to pipe, only end fittings.

Many users find that a disconnect fitting, installed upstream of the flowmeter, makes for easier removal of the flowmeter, for cleaning internals. Control valves should be installed downstream of the flowmeters.

HOW IT WORKS

Fluid enters at end marked "IN" and forces the piston to move with it, against spring pressure, enough to pass given flow around piston periphery. The knife edge of the piston is visible through the transparent housing; its position under the printed scale gives the flow rate.



SPECIFICATIONS

Service: Compatible gases or liquids.

Wetted Materials: Flowtube: PVC or Polysulfone; Fittings: Aluminum, brass, 316 SS, PVC, or PVDF; Seal: Viton®.

Temperature Limits: See model chart.

Pressure Limits: See model chart.

Switch Type: Optional 3-wire reed switch.

Electrical Rating: 0.3 A @ 48 Vac / 70 Vdc.

Accuracy: ±5% FS; 3 GPM: ±7% FS.

Process Connections: 1/2", 3/4", 1", or 1-1/2" selectable.

Weight: 0.8 to 2.6 lb (0.36 to 1.09 kg).

TEMPERATURE AND PRESSURE

Fluid Temperature		Max. Pressure			
		Liquid		Air	
°F	°C	psig	bar	psig	bar
PVC					
70	21	200	13.79	60	4.1
100	38	100	6.90	50	3.41
125	52	75	5.17	35	2.41
Polysulfone with 316 SS Fittings					
210	99	200	13.8	60	4.1
Polysulfone with PVDF Fittings					
120	49	150	10.35	-	-

ACCESSORIES

Model	Description
ISS-15-B	Small series switch kit
ISS-50-B	Large series switch kit
ISS-15-B-T	Small series switch kit Teflon®
ISS-50-B-T	Large series switch kit Teflon®

MODEL CHART									
Example	PX	-30GPM		-8	-F	-F	PX-30GPM-8-F-F		
Series	PX IS TX						PVC tube flowmeter Polysulfone tube flowmeter PVC tube flowmeter		
Range		Low	High						
		3GPM*	-						
		5GPM	-				3 GPM water		
		10GPM	-				5 GPM water		
		15GPM	-				10 GPM water		
		-	20GPM				15 GPM water		
		-	30GPM				20 GPM water		
		-	40GPM				30 GPM water		
		-	50GPM				40 GPM water		
		20LPM	-				50 GPM water		
		38LPM	-				20 LPM water		
		55LPM	-				38 LPM water		
		-	75LPM				55 LPM water		
		-	110LPM				75 LPM water		
		-	150LPM				110 LPM water		
		-	200LPM				150 LPM water		
		50SCFM	-				200 LPM water		
		100SCFM	-				50 SCFM air		
		135SCFM	-				100 SCFM air		
		-	200SCFM				135 SCFM air		
		-	300SCFM				200 SCFM air		
		-	400SCFM				300 SCFM air		
		-	500SCFM				400 SCFM air		
		1400SLPM	-				500 SCFM air		
		2500SLPM	-				1400 SLPM air		
		3600SLPM	-				2500 SLPM air		
		-	5500SLPM				3600 SLPM air		
		-	8000SLPM				5500 SLPM air		
		-	11000SLPM				8000 SLPM air		
		-	14000SLPM				11000 SLPM air		
Process Connection				4 6 8 12			1/2" (low range only) 3/4" 1" 1-1/2" (high range only)		
Connection Material				D F I M4 V			Aluminum Brass 316 SS PVDF (IS) PVC (PX and TX only)		
Seal Material						F	Viton®		
Options						EP IS1 IS2 IS1T IS2T ST	Electro polished SS shaft and spring (IS only) Installed with one switch kit Installed with two switch kit Installed with one switch kit (IS/TX) Installed with two switch kit (IS/TX) SS identification tag		

*Only available with PX series.

The air flowmeter is calibrated (reading in SCFM/SLPM), at 90 psi pressure and 70°F temperature. If the flowmeter is used with air at pressures and/or temperatures that differ from the above, correction factors can be applied to 90-PSI air scale readings to get correct SCFM values. See Tables 1 and 2 below.

Correction factors when monitoring air flow at other than 90 psi at 70°F.

NOTICE

Refer to pressure and temperature chart to determine appropriate operating limits.

TABLE 1 PRESSURE

psig	Factor
10	.49
20	.58
30	.65
40	.72
50	.79
60	.84
70	.90
80	.95
90	1.00
100	1.05
110	1.09
120	1.13
125	1.16

TABLE 2 TEMPERATURE

Temperature °F	Factor
30	1.04
50	1.02
70	1.00
90	0.98
100	0.97
120	0.96
125	0.95

When operation at a pressure other than 90 psig, or a temperature other than 70°F, multiply the applicable factor to the SCFM reading on the tube for corrected SCFM reading.

REPLACEMENT PARTS NUMBERS FOR MODELS

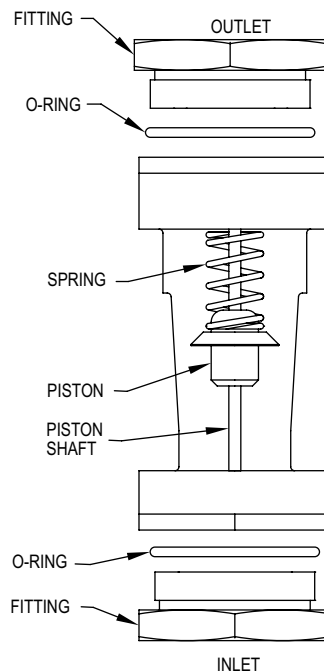
Flow Rates and Connection Sizes		PX-3, 5, 10, and 15	PX-20, 30, 40, and 50	IS-5, 10, and 15	IS-20, 30, 40, and 50	Description
	3	1161-AS	-	-	-	Flow tube assembly with max. flow reading
	5	1158-AS	-	1119-AS	-	
	10	1159-AS	-	1116-AS	-	
	15	1160-AS	-	1117-AS	-	
	20	-	1147-AS	-	1173-AS	
	30	-	1148-AS	-	1174-AS	
	40	-	1149-AS	-	1175-AS	
	50	-	1150-AS	-	1176-AS	
End fittings for NPT line sizes and materials	1/2	1194-4	-	1194-4	-	Aluminum
	3/4	1194-6	1196-6	1194-6	1196-6	
	1	1194-8	1196-6	1194-8	1196-6	
	1-1/2	-	1196-12	-	1196-12	
	1/2	1193-4	-	1193-4	-	Brass
	3/4	1193-6	1195-6	1193-6	1195-6	
	1	1193-8	1195-8	1193-8	1195-8	
	1-1/2	-	1195-12	-	-	
	1/2	1188-4	-	1188-4	-	316 SS
	3/4	1188-6	476-6	1188-6	476-6	
	1	1188-8	476-8	1188-8	476-8	
	1-1/2	-	476-12	-	476-12	
	1/2	1191-4	-	-	-	PVC*
	3/4	1191-6	477-6	-	-	
	1	1191-8	477-8	-	-	
	1-1/2	-	477-12	-	-	
	2 (required)	1112	396	1112	396	Viton® seal

*Not available on IS units.

RECOMMENDED FILTRATION

System filtration of at least a 74 micron filter or a 200 mesh screen is recommended. It has been found that inadequate filtration may cause meter failure, normally in the open position.

Filtration is recommended to avoid meter contamination. Proper filtration allows meter components to function properly and avoid premature wear and tear on meter components.



SWITCH KITS

Flowmeters can be equipped with one or two electric switches so that any flow rate within the range of the meter can be made to trigger a signal (or signals). Switch settings are easily adjusted. Switches are supplied in kit form for installation in the field. Each switch kit consists of a ring shaped ceramic magnet, that fits around the flowmeter piston, and a proximity switch in a housing that clamps to the body of the flowmeter. As the magnet moves with the piston, its field trips the proximity switch. An adjustment screw changes the actuation point by moving the switch.

Switch contact ratings (max.) are 8 watts @ 48 Vac / 70 Vdc. Do not exceed 8 watts with any combination of specified volts or current. Switch has three wires: Black for normally open, Blue for normally closed, and White for common. Switch contact ratings: 12 VDC @ .66 A, 28 VDC @ .285 A, 48 Vac @ .166 A (at 77°F).

For 3 to 15 GPM
Order No. ISS-15-B
For 20 to 50 GPM
Order No. ISS-50-B

Note: Switch has a 25% of full-scale operating band. Within the band, the relay activates. Above and below the band, the relay deactivates. Thus, one switch can be used as a deviation alarm.

SWITCH INSTALLATION

Step 1: Install the magnet. You must disassemble the flowmeter to do this. Follow instructions found under the heading "Maintenance". Remove piston from the shaft and place the magnet between piston and spring. Be sure that the piston is installed as in the drawing on the previous page, and the spring is seated on the magnet and piston. Insert into tube and replace outlet end fittings.

Step 2: Install the foam gasket. The foam gasket has an adhesive on one side, covered with a protective paper. Peel off and press the gasket firmly into place on the switch housing.

Step 3: Install the switch housing(s) on the flowmeter body.

- A) Single switch: push the capscrews through the switch housing tabs, and thread them into the half-collars, as shown. Use the washers provided. The nuts may be discarded.
- B) Dual switch: match up the tabs on the two switch housings and push the capscrews through both collar tabs. Put the nuts on the threaded ends of the capscrews and tighten. Use the washers provided. (The half-collars and extra magnet may be discarded.)

Note: There is no "wrong orientation" of the switch housing. If you are installing a two switch housing, they can both be oriented the same way, as in the photo, or one "up" and the other "down". Install to suit your needs in wiring and switch adjustment.

SETTING THE SWITCH POINTS

Flowmeter installed:

Simply adjust the amount of flow to move the piston to the level on the indicator where a switch signal is desired, then turn the switch adjustment screw until switch actuates. (Switch moves toward the adjustment screw head as you turn it clockwise. Use an ohmmeter to determine actuation.) If you are using two switches, repeat procedure for second switch.

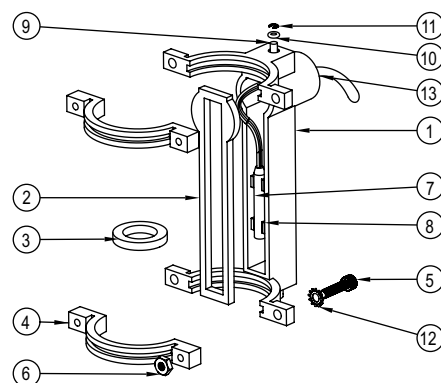
Flowmeter NOT installed:

Simulate flow by pushing the eraser-end of a pencil (or a similar tool) through the inlet end of the tube, contacting the float, and moving it against the spring pressure until the knife edge of the float is at the desired reading on the scale. (If your unit has a 1/2 in pipe fitting, remove it to gain better access.) Then, turn the switch adjustment screw until the switch actuates. (Switch moves toward the adjustment screw head as you turn it clockwise. Use an ohmmeter to determine actuation.) If you are using two switches, repeat procedure for second switch.

Note: When connecting the switch wires, leave enough lead length (as a pigtail) to allow full travel of the switch. Do not overtorque the Adjustment Screw.

INSITE SWITCH PARTS DESCRIPTION

1. HOUSING
2. GASKET
3. MAGNET
4. HALF-COLLARS (2)
5. CAPSCREWS (4)
6. CAPSCREW NUTS (2)
7. SWITCH
8. SWITCH CARRIER
9. ADJUSTMENT SCREW
10. O-RING (2)
11. RETAINER CLIP
12. LOCKWASHERS (4)
13. 1/2" NPTF CONDUIT CONNECTION



MAINTENANCE/REPAIR

Normally, the only servicing required is a periodic cleaning of the tube and three internal parts. Use wrenches on the end fittings to remove the flowmeter from the line. Do not apply wrenches to the plastic body when breaking pipe connections, only end fittings.

With the flowmeter out of the line, completely remove the end fitting from the outlet end of the tube. Use a bent wire or other hook to grab the shaft, piston and spring and remove from tube. Inspect all parts for damage. The interior of the tube can be swabbed out, and the parts wiped off with a soft dry cloth. If dirt or residue cannot be removed with a dry cloth, use water and a mild non-abrasive soap. **DO NOT USE SOLVENT OF ANY KIND.**

Replace any worn or damaged parts.

When reassembling the Insite™ flowmeter, be sure the piston is installed as shown in the drawing. Don't put in upside down. Inspect O-rings for damage and replace if necessary. Wet O-rings with water prior to assembly to improve sealing.

WARRANTY/RETURN

Refer to "Terms and Conditions of Sale" in our catalog and on our website. Contact customer service to receive a Return Materials Authorization (RMA) number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.

