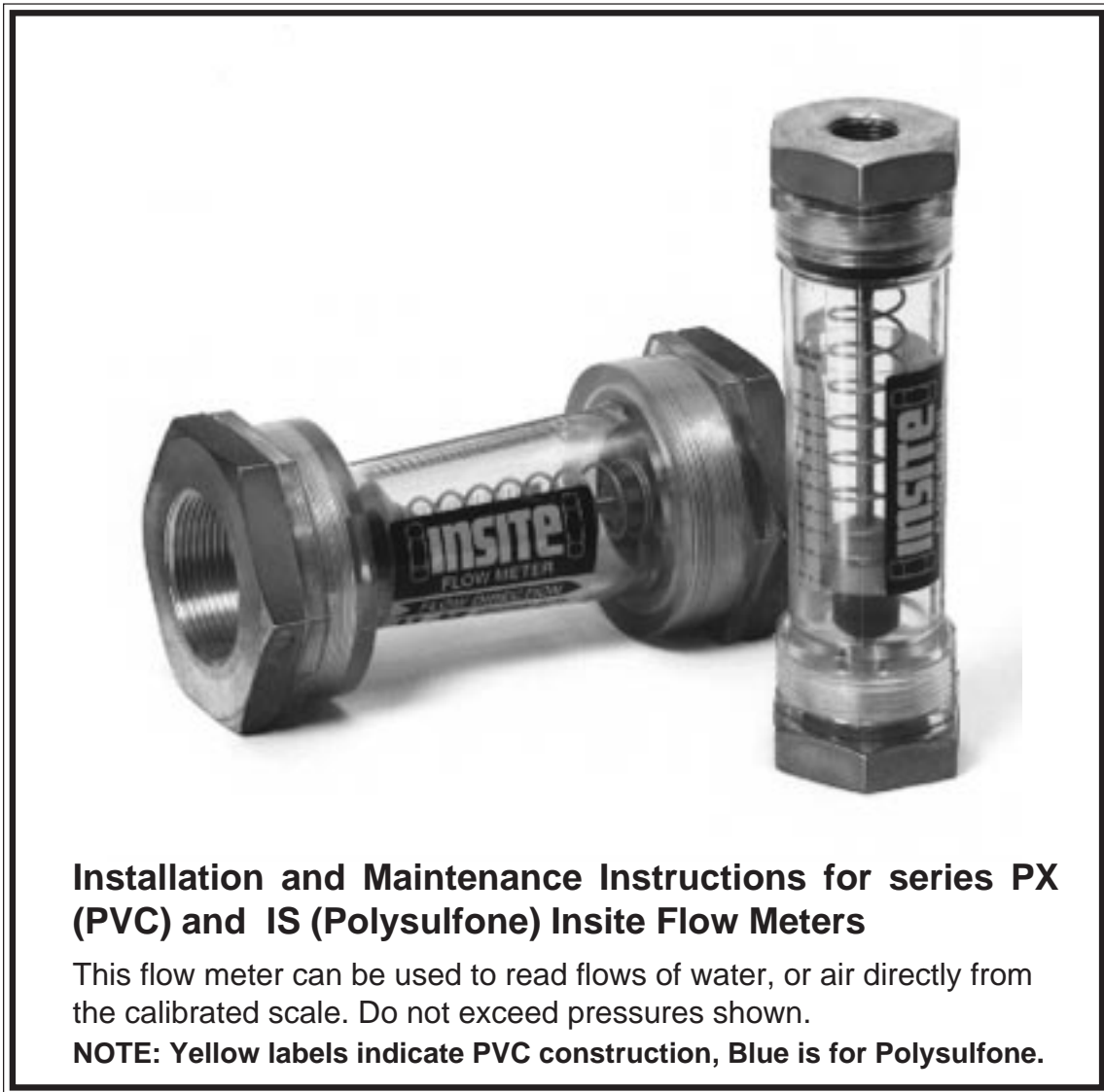


# **insite**<sup>®</sup>

## **INLINE FLOW METERS**



### **Installation and Maintenance Instructions for series PX (PVC) and IS (Polysulfone) Insite Flow Meters**

This flow meter can be used to read flows of water, or air directly from the calibrated scale. Do not exceed pressures shown.

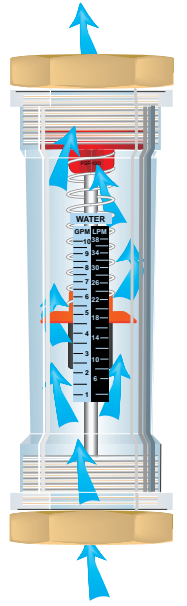
**NOTE:** Yellow labels indicate PVC construction, Blue is for Polysulfone.

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**UNIVERSAL**  
**U-M**  
**FLOW MONITORS**

## 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.



The Air flow meter is calibrated (reading in SCFM/SLPM), at 90 PSI pressure and 70°F temperature.

If the flow meter 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

TABLE 1 PRESSURE

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

TABLE 2 TEMPERATURE

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

When operating 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.

## Installation

Inlet and outlet ends are marked on the flow meter body, and an arrow on the printed scale indicates flow direction. Insite flow meters 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 and don't need to be highly torqued to prevent leakage, or require any other kind of sealant such as Teflon 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 flow meter, makes for easier removal of the flow meter, for cleaning internals. Control valves should be installed downstream of the flow meters.

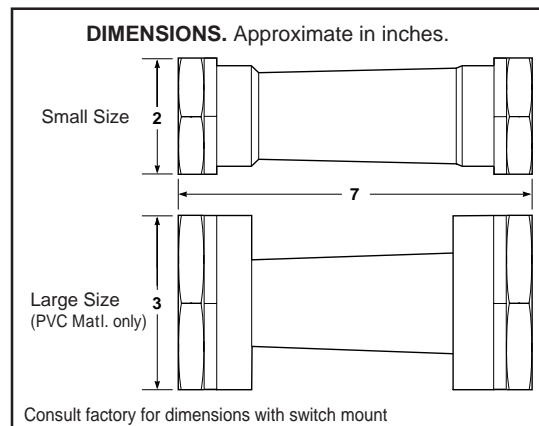
Fluid Temp.		Max. Pressure			
(°F)	(°C)	Liquid		Air	
		PSIG	kPa	PSIG	kPa
<b>PVC</b>					
70	21	200	13380	100	690
100	38	100	690	50	345
125	52	75	518	35	241
150	65	50	345	25	172
<b>POLYSULFONE</b>					
230	110	250	1724	125	862

## Maintenance

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 flow meter from the line. **Do not apply wrenches to the plastic body when breaking pipe connections, only end fittings.**

With the flow meter 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 flow meter, 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.



## For Electric Signalling

**Switch Kits:** Flow meters 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 flow meter piston, and a proximity switch in a housing that clamps to the body of the flow meter. 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 @ 120 VAC/ 100 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 specs contact ratings: 12VDC @.66 A, 28 VDC @ .285 A, 120 VAC @ .066 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. Installing the magnet. You must disassemble the flow meter to do this. Follow instructions found under the heading "Maintenance" on page 3. Remove piston from the shaft and **place the magnet between piston and spring. Be sure that the piston is installed as in the drawing (page 4), and the spring is seated on the magnet and piston.** Insert into tube and replace outlet end fittings.

Step 2. Installing the foam gasket. It 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. Installing the switch housing(s) on the flow meter 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 switches, 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 two switch housings, 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

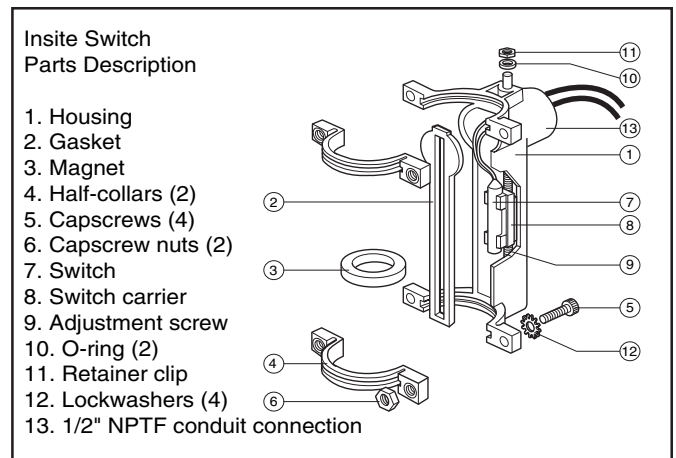
Flow meter installed:

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.

Flow meter 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 till 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.

When connecting the switch wires, leave enough lead length (as a pigtail) to allow full travel of the switch.



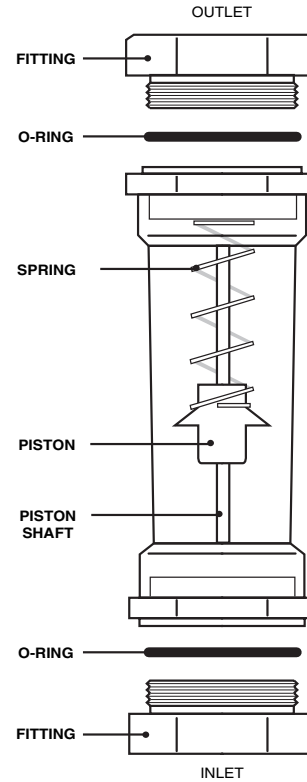
INSITE Switch Replacement Parts	
MAGNET (ONLY) Part # 1122	SWITCH (ONLY) Part # 1127

# Insite Replacement Parts

## REPLACEMENT PART NUMBERS FOR MODEL CODES

		PX-3, 5, 10, and 15	PX-20, 30, 40 and 50	IS-5, 10, and 15	IS-20, 30, 40 and 50	
PARTS	Flow Tube Assembly with Max. Flow Reading	3	1161-AS			
		5	1158-AS		1119-AS	
		10	1159-AS		1116-AS	
		15	1160-AS		1117-AS	
		20		1147-AS		1173-AS
	Aluminum	30		1148-AS		1174-AS
		40		1149-AS		1175-AS
		50		1150-AS		1176-AS
		1/2	1194-4		1194-4	
		3/4	1194-6	1196-6	1194-6	1196-6
DESCENDERS	End Fittings (2 Required) For NPT Line Sizes and Materials	1	1194-8	1196-6	1194-8	1196-6
		1-1/2		1196-12		1196-12
		1/2	1193-4		1193-4	
		3/4	1193-6	1195-6	1193-6	1195-6
		1	1193-8	1195-8	1193-8	1195-8
	316 Stainless Steel	1-1/2		1195-12		1195-12
		1/2	1188-4		1188-4	
		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
* PVC	1/2	1191-4				
	3/4	1191-6	477-6			
	1	1191-8	477-8			
	1-1/2		477-12			
	Viton® Seal (2 Required)	1112	396	1112	396	

\* Not Available on IS Units



### MODEL CODE DESCRIPTION:

Select appropriate symbols, and build an ordering code as shown.

**EXAMPLE: PX - 30 GPM - 8 - F - F - IS2**

#### TUBE MATERIAL

PVC (Flows from 3 to 50 GPM) = **PX**  
 Polysulfone (from 5 to 50 GPM) = **IS**

#### MAX FLOW SIZE & UNITS

(Consult factory for calibrated increments)

Small Series	Large Series
* WATER	
3,5,10,15 GPM	20,30,40,50 GPM
20,38,55 LPM	75,110,150,200 LPM
* AIR	
50,*90, 100,	200,300,400,
150 SCFM	500 SCFM
1400,3000,	5500,8000,11000,
4200 SLPM	14000 SLPM

\* PVC Tube material only (series PX)

#### SPECIAL OPTIONS: (No Symbol = None)

**IS1** = Installed with One Switch Kit  
**IS2** = Installed with Two Switch Kit  
**ST** = Stainless Steel Identification Tag  
**VPB** = Brass ball valve with pressure gauge  
**VPS** = Stainless ball valve with pressure gauge

#### SEAL MATERIAL

**F** = Viton®  
 Other Consult factory

#### FITTING MATERIAL

**D** = Aluminum  
**F** = Brass  
**I** = 316 stainless  
**V** = PVC plastic (N/A on IS series)

#### PORT SIZE (NPT)

**4** = 1/2 (small series only)  
**6** = 3/4  
**8** = 1  
**12** = 1-1/2 (large series only)

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