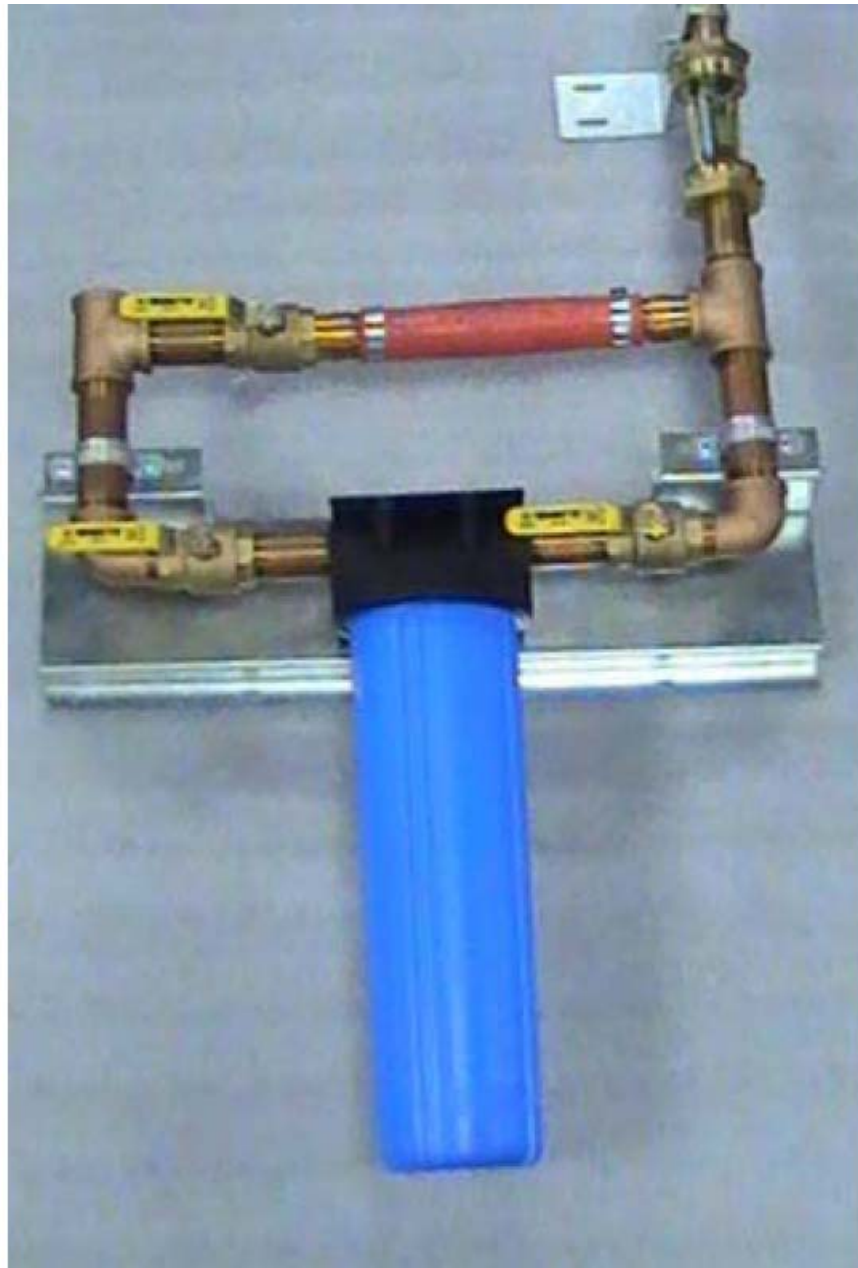


FILTER KIT OPERATING MANUAL REV. 3



REVISION HISTORY


LEVEL	DATE	REVISION DESCRIPTION	SIGNATURES
1	1 April 2010	Draft	
2	13 July 2010	Add mounting bracket Update flow meter to Insite Add assembly drawings	
3	9 November 2011	Update Drawings	

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FOR YOUR SAFETY

1. Signs and Symbols:

Throughout the operating manual, the information and notices below are identified by graphical symbols.



DANGER!

Safety note indicating imminent danger. Failure to heed the warning may result in serious bodily injury and even death.



CAUTION!

Safety note indicating the presence of potential hazard. Failure to heed the safety notice may result in minor bodily injury or damage to the equipment.



INFORMATION!

This symbol identifies important information or a useful tip concerning the application or service of the unit.

2. Safety Notes:

For the installation and operation of the Filter Kit, the following regulations and safety notes have to be observed.



Any work on the Filter may only be performed by qualified personnel. All relevant accident prevention regulations have to be observed.



Any national regulations applicable in the country of installation must be observed.

INSTALLATION

1. The Filter Kit consists of a cartridge filter, block and bypass valves, and flow meter. This protects the HEC from contamination and allows routine verification of proper flow for service and maintenance.
2. The Filter Kit should be wall mounted and piped between the external Heat Exchanger and the HEC in the equipment room. The Filter Kit must be installed indoors only. The filter mount and pipe clamp must be used to support the piping. Align the flow meter outlet clamp carefully to avoid stress on the flow meter.

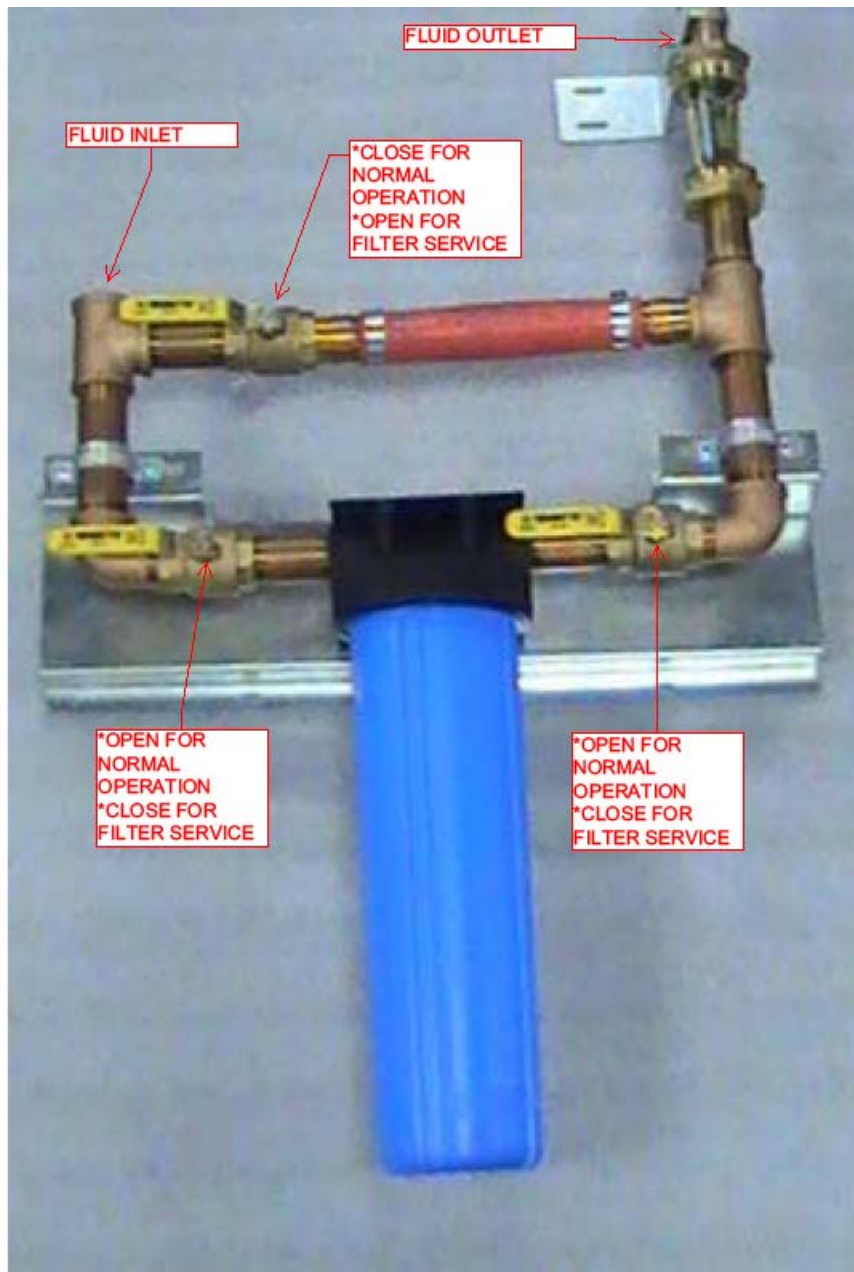


Figure 1



3. Teflon tape only should be used for sealing threaded joints. Vapors from pipe dope or PVC cement will damage the flow meter. If cement must be used, allow the cement to dry completely and purge fumes before installing the flow meter.



Caution: Make sure all piping is clean before installation.

OPERATION

1. Open filter valves and close bypass valve for normal operation.
2. Open bypass valve then close filter valves for cartridge replacement only.
3. Observe the fluid flow on the meter provided.

MAINTENANCE

1. Replace filter cartridges after first day of operation. Replace filter cartridges monthly thereafter. If no loose sediment is in the housing, replace cartridges without draining fluid from housing. If any loose sediment is in the housing, dispose of the fluid and replace the cartridge. Carefully reposition the O-ring to maintain seal. Replace the O-ring if damaged.



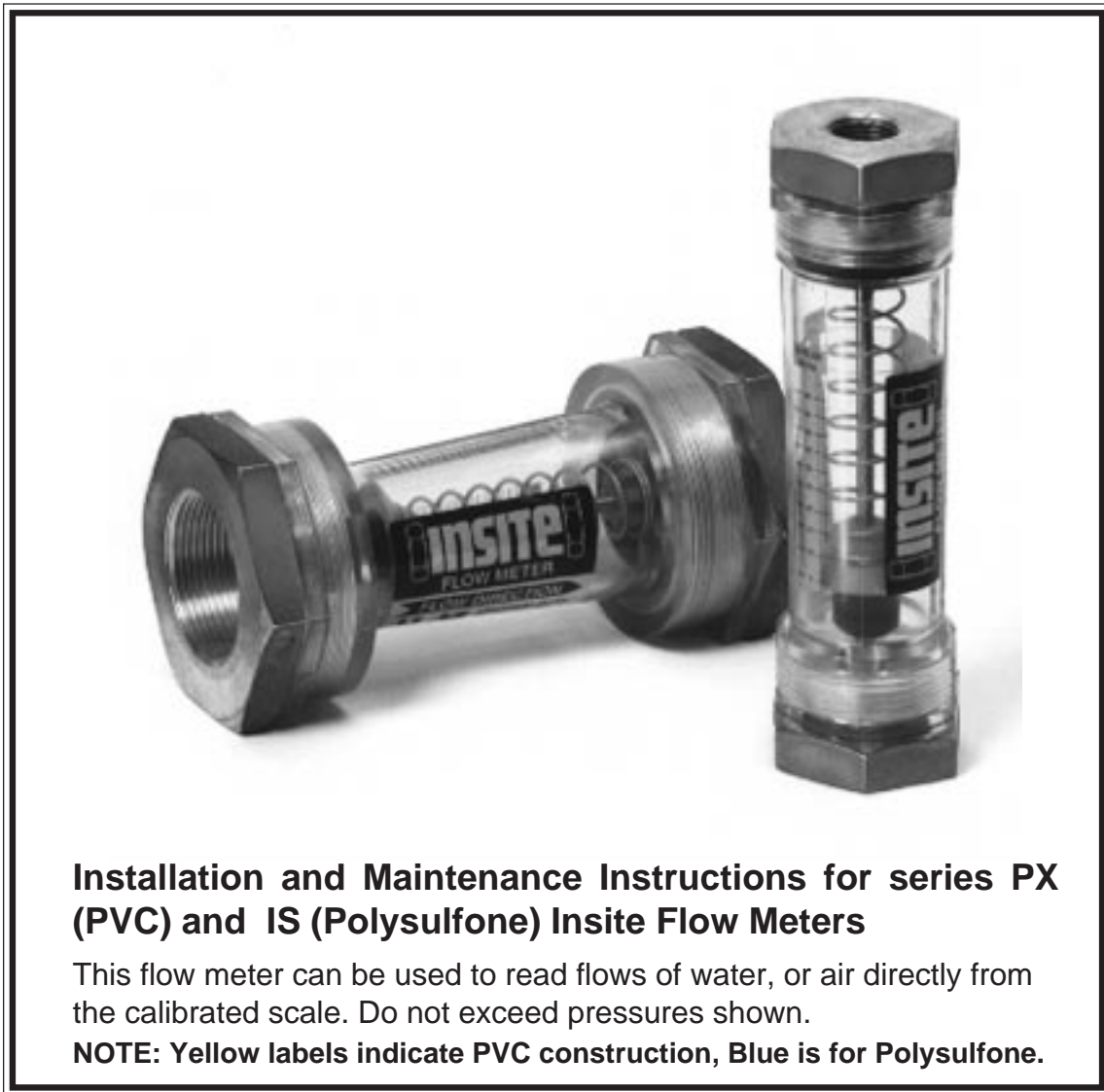
Caution: Remove cartridge housing slowly as filter housing may still be under pressure.

2. If housing is drained, check fluid level in external Heat Exchanger reservoir. If level is low refill according to the filling instructions in the Heat Exchanger Owner's Manual to maintain proper glycol concentration.

COMPONENT INFORMATION

insite[®]

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.

UNIVERSAL FLOW MONITORS, INC.
1755 East Nine Mile Road
P.O. Box 249, Hazel Park, MI 48030-0249
(248) 542-9635 / FAX (248) 398-4274

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.

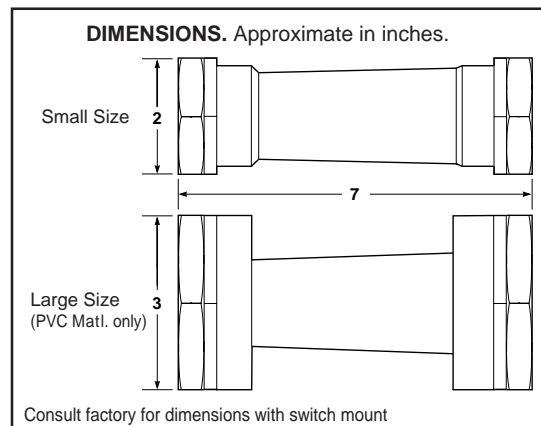
Fluid Temp.		Max. Pressure			
(°F)	(°C)	Liquid		Air	
		PSIG	kPa	PSIG	kPa
PVC					
70	21	200	13380	100	690
100	38	100	690	50	345
125	52	75	518	35	241
150	65	50	345	25	172
POLYSULFONE					
230	110	250	1724	125	862

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

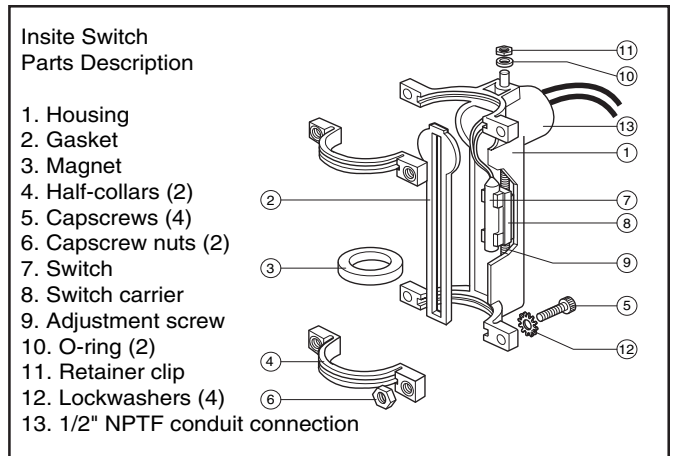
Flow meter installed:

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.



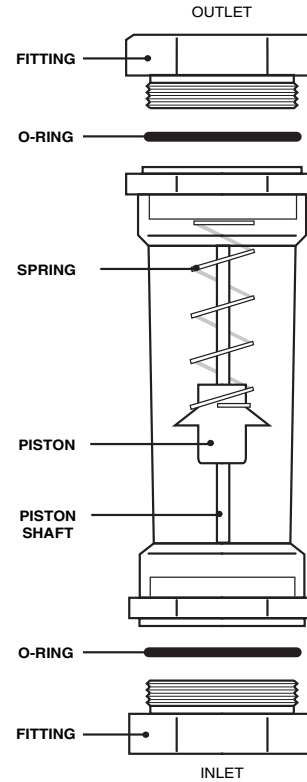
INSITE Switch Replacement Parts	
MAGNET (ONLY) Part # 1122	SWITCH (ONLY) Part # 1127

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
DISCS	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
PISTONS	* 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)

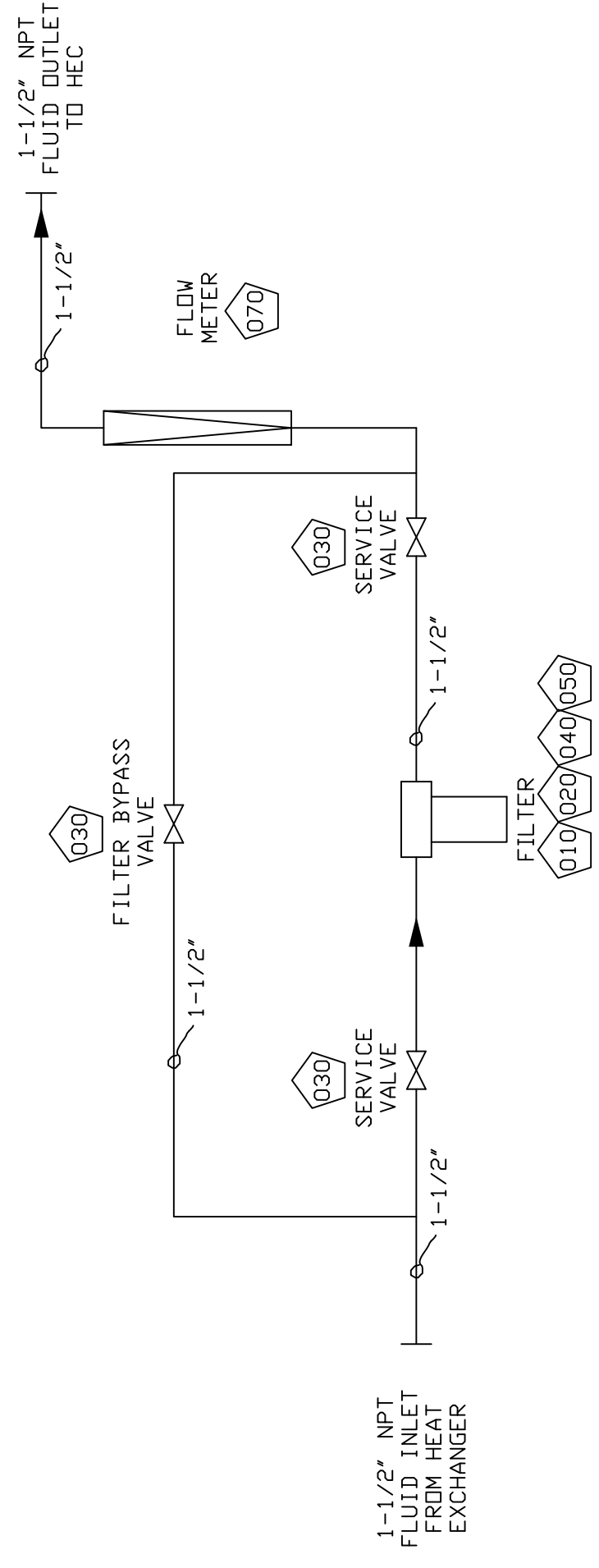
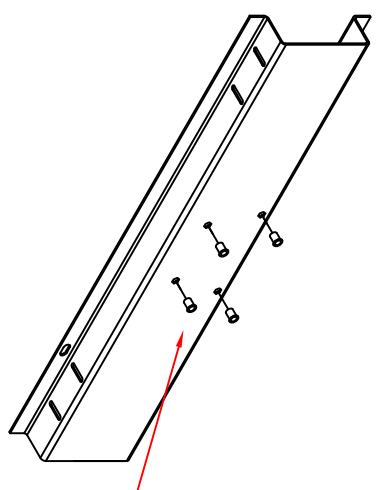
UNIVERSAL FLOW MONITORS, INC.

1755 East Nine Mile Road
 P.O. Box 249, Hazel Park, MI 48030-0249
 (248) 542-9635 / FAX (248) 398-4274



PIPING PARTS

****SHIP ALL COMPONENTS LOOSE****
INSTALL (4) 1/4-20 RIVNUTS ON 445115-1 PRIOR TO SHIPPING TO CUSTOMER.
PACKAGE REQUIRED FASTENERS PRIOR TO SHIPPING FOR CUSTOMER INSTALLATION.



NO.	ID/DESCRIPTION	K. K. PART #	QTY	TYPE
001	FLUID FILTER PACKAGE	0444051	1.0	ASSEM
001	150296 FILTER 1-1/2" BIG BLUE # 20 W/ PRESSURE RELIEF, 90 PSI MAX NE	4330006		PC
020	EJS WRENCH #431005 NEEDS SPACER #4 331013 HOLDS 2 CARTRIDGES, AMETEK (4 PER CASE)	4331001	4.0	PC
030	R50-BBS FILTER CARTRIDGE 50 MICRON VALVE BALL BRONZE 1-1/2" WATTS	4113150	3.0	PC
040	SW-3 WRENCH 150296 PENTAIR CARTRIDGE COUPLER FOR #20 FILTER (NO BX	4331005	1.0	PC
050	BIG BLUE FILTERS, PENTAIR (NO BX QTY)	4331013	1.0	PC
060	TEE 1-1/2" X 1-1/2" X 1-1/2" FPT BR	7512100	2.0	PC
070	LS-50GPM-12-F-F FLOW METER 5-50 1-1/2" BRASS FITTINGS VITON SEALS POLYSULPHONE TUBE INSTIE	4292008	1.0	PC
080	NIPPLE 1-1/2" MPT X 3 BR	7512003	4.0	PC
090	ELBOW 90 1-1/2" MPT X FPT BR	7512300	2.0	PC
100	HOSEBARB 1-1/2" MPT X 1-1/2" HOSE BR	7512901	1.0	PC
110	HOSE 1-1/2" RED WINGFOOT 250 PSI 569-025-381	4410004	1.0	PC
120	60200 HOSE CLAMP 1-1/4" - 2-1/8" IDEAL SS	7797411	2.0	PC
130	FILTER BRACKET BIG BLUE # 10 SHEET 12 GA GALV. 48 X ****	0307136	1.0	ASSEM
010	CHEMTREAT G-90 DRY	9531200	3.0	PC
140	GE FILTER HAT BRACKET GALV	0445115-1	1.0	ASSEM
010	SHEET 12 GA GALV. 48 X ****	9531200	11.0	PC
150	CHEMTREAT G-90 DRY	0445115-2	2.0	ASSEM
010	GE FILTER LOWER PIPE BRACE GALV	9531200	2.0	PC
160	CHEMTREAT G-90 DRY	0445115-3	1.0	ASSEM
010	GE FILTER UPPER PIPE BRACE GALV	9531200	2.0	PC
170	SHEET 12 GA GALV. 48 X ****	7729125	4.0	PC
180	CHEMTREAT G-90 DRY	7719125	14.0	PC
190	SCREW 1/4"-20 X 1/2" FLANGE BOLT GRADE 8.2	7714008	10.0	PC
200	NUT 1/4"-20 FLANGE LOCK NUT (FING) P/N 37337	7714015	4.0	PC
210	NUTSERT 1/4"-20 RIV NUT STEEL .165 LOW PROFILE	4599104	3.0	PC
220	PIPE STRAP 1-1/2" GALVANIZED 2 HOLE NIPPLE 1-1/2" MPT X 6 BR	7512006	3.0	PC

* PARTS NOT SHOWN ON DRAWING DETAIL

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KALAMAZOO, MI.
 PH (800) 968-5665
 WWW.DIMPLEXTHERMAL.COM

Dimplex Thermal Solutions

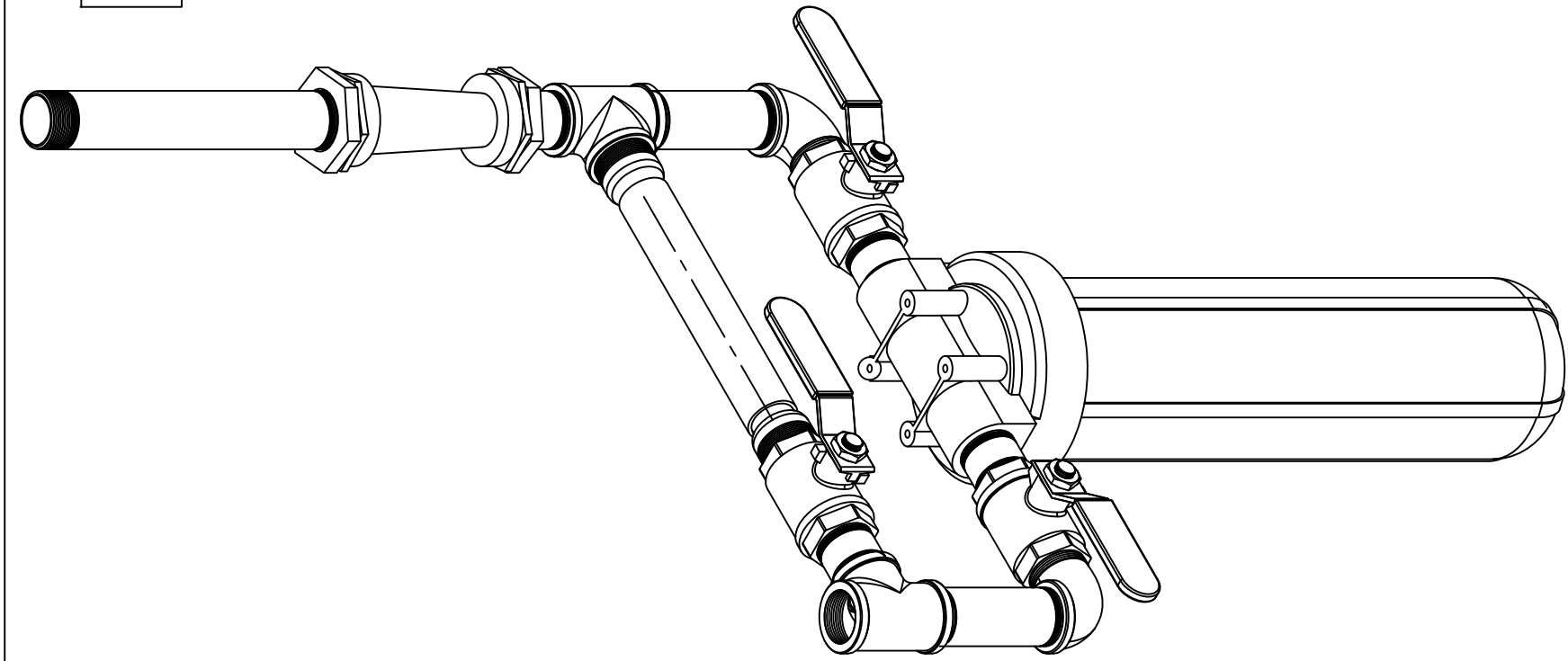
DESIGN BY: BKS
 DRAWN BY: BKS
 DATE: 02-26-10
 PAGE 1 OF 1

FLUID FILTER

MECHANICAL

DRAWING NO. 444051

DATE	DESCRIPTION OF REVISION	APPROVED BY
10/24/11	ADDED 6" NIPPLES	DHM
07-29-11	RED FOLDER	BKS
07-29-11	RED FOLDER	BKS
07/13/10	FLOW METER WAS 4290006	MAR <C>
7/12/10	ADDED FASTENERS FOR SHIPPING TO 04#	CHV <C>
07/08/10	ADDED SHEET METAL PARTS TO 04#	CJH <C>



1-1/2" FLUID INLET FROM
HEAT EXCHANGER

FLUID OUTLET TO HEC
CUSTOMER SUPPLIED
1-1/2" PIPE TO MACHINE

FOR ORDERING
PURPOSES, ORDER
ASSEMBLY 0444051

Item Number	Document Number	Title	Quantity	Unit
1	4330006	150236 1-1/2 BIG BLUE # 20	1	Pc.
2	7512003	NIPPLE 1-1/2 MPT X 3 BRS	4	Pc.
3	4113150	VALVE BALL BRONZE 1-1/2	3	Pc.
4	7512300	ELBOW 90 1-1/2 MPT X 1-1/2	2	Pc.
5	7512006	NIPPLE 1-1/2 MPT X 6 BRS	2	Pc.
6	7512100	TEE 1-1/2 X 1-1/2 X 1-1/2	2	Pc.
7	7512901	1-1/2 MPT X 1-1/2	2	Pc.
8	4410004	HOSE 1-1/2 250 PSI	1	Pc.
9	4292008	IS-50GPM-12-F-F 5-50GPM	1	Pc.

* PARTS NOT SHOWN ON
DRAWING DETAIL

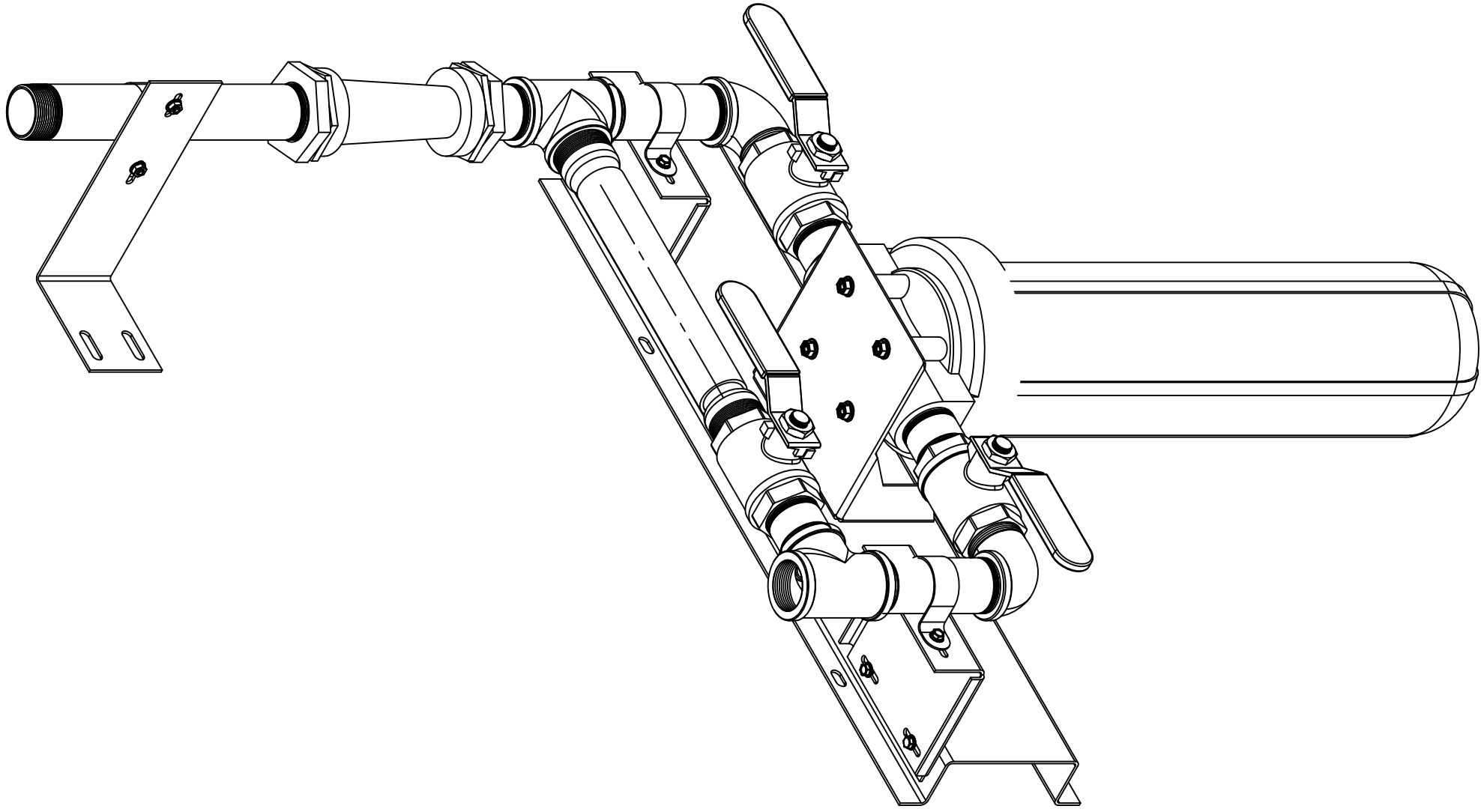
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DATE: 7/9/10	PAGE 1 OF 1	PH: (800) 968-5665	
		WWW.DIMPLEXTHERMAL.COM	
		W02-2-5000/7500-2P-L-M	
		FILTER ASSEMBLY	
		DRAWING NO. 445650	

DATE	DESCRIPTION OF REVISION	APPROVED BY
11/09/11	UPDATE FILTER AND FLOW METER RED FOLDER	BKS



MOUNT TO STUDS 16" ON CENTER WITH (6) 1/4" LAG BOLTS

Item Number	Document Number	Title	Quantity	Unit
1	307136	FILTER BRACKET BIG BLUE # 10	1	Pc.
2	445115-1	GE FILTER HAT BRACKET GALV	1	Pc.
3	445115-2	GE FILTER LOWER PIPE BRACE GALV	2	Pc.
4	445115-3	GE FILTER UPPER PIPE BRACE GALV	1	Pc.
5	7729125	SCREW 5/16-18 18.2X 1/2 FLANGE BOLT	4	Pc.
6	7719125	SCREW 1/4-20 X 1/2 FLANGE BOLT	14	Pc.
7	7714008	NUT 1/4-20 FLANGE LOCK NUT (FING)	10	Pc.
8	7714015	NUTSERT 1/4-20 RIV NUT STEEL	4	Pc.
9	4599104	PIPE STRAP 1.5 GALVANIZED 2 HOLE	3	Pc.

* PARTS NOT SHOWN ON DRAWING DETAIL

DESIGN BY: CHW DATE: 7/9/10		DRAWN BY: CHW PAGE OF	
TO:		KALAMAZOO, MI. PH (800) 968-5665 WWW.DIMPLEXTHERMAL.COM	
HELLO DATE		W02-2-5000/7500-2P-L-M	
DESCRIPTION OF REVISION		DRAWING NO. 445651	
APPROVED BY		FILTER BRACKET ASSEMBLY	

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