



INSTALLATION & OPERATION INSTRUCTIONS  
FOR FR2000, FR4000 FR4500 SERIES FLOWMETERS

Acrylic block flowmeters are available in various sizes and ranges, with direct reading scales in both SAE and SI units for air and water (see charts on other side). For other gases or liquids, special scales can be provided. If you use this meter with fluids other than air or water, please consult chemical compatibility data for possible effects on the meter. These meters are manufactured of durable acrylic and if properly installed and maintained, will provide long-term trouble-free operation.

ACHIEVING ACCURATE FLOWRATES

To obtain an accurate flowrate, the float must be read at the position indicated on the meter. If the meter uses a ball float, the flowrate is determined by reading the center of the ball. Additionally, the flowmeter should be installed in a manner, which minimizes both external vibrations and internal flow variations. Special care should be taken so that the connections to the meter's inlet and outlet fittings do not overly restrict the liquid or gas flow being metered. This could result in a reduced flow volume, preventing the meter from reaching its maximum flowrate. Furthermore, internal pressures could be affected, which can cause inaccurate flow readings. On start-up, slowly purge any fluid trapped in the meter.

SPECIFICATIONS	
ACCURACY:	FR2000 Series • ± 5% Full Scale FR4000, FR4500 Series • ± 3% Full Scale
FLOATS:	Black Glass, Stainless Steel, Aluminum or Black Delrin
METER BODY:	Clear Acrylic
FITTINGS:	Brass or Stainless Steel
ELASTOMERS:	• Buna-N with Brass Fittings • Viton O-rings with Stainless Steel fittings
VALVES:	Brass or Stainless Steel Cartridge Type (Optional)
MOUNTING INSERTS:	10-32 UNF x 3/8"
MAXIMUM TEMPERATURE:	150°F (65 °C)
MAXIMUM PRESSURE:	100 PSIG (690 kPa)

INSTALLATION

These meters are supplied with 5/8" or 7/8" hex's on the inlet and outlet fittings. When installing 1/8-27 MNPT or 1/4-18 MNPT fittings into the meter, **place the appropriate size wrench on the hex to prevent the inlet/outlet fitting from rotating. Torque only to 60 in-lbs.** Failure to do so will cause the fitting to rotate, and may damage the meter body, causing leaks and/or meter failure. Use pipe thread sealant or Teflon® tape to ease installation and provide a better seal. This meter is supplied with #10-32 threaded inserts for mounting. When installing, use slotted screws and torque to a maximum of 35 in-lbs. Mounting dimensions are shown in Figure 1.

UNPACKING

Precautions have been taken to prevent any damage from occurring during shipment. However, if the meter is received damaged, *report it to the carrier immediately.* Before installing, verify that you have the model and flow range required.

CLEANING AND DISASSEMBLY

Occasional cleaning may be required if dirt appears in the flow tube or if float movement becomes restricted. To clean, remove the top plug and remove the float. Wash the tapered hole and top plug with a mild liquid detergent and soft brush. Rinse all parts with clean water and dry thoroughly with clean air or nitrogen.

CAUTION

THIS FLOWMETER IS DESIGNED FOR USE WITH NON-HAZARDOUS FLUIDS AT PRESSURES UP TO 100 PSI (690 kPa) AND TEMPERATURES UP TO 150 °F (65 °C). DO NOT USE HAZARDOUS FLUIDS AND DO NOT EXCEED TEMPERATURE OR PRESSURE LIMITS. USE WITH HAZARDOUS FLUIDS OR EXCEEDING THE PRESSURE AND TEMPERATURE LIMITS MAY CAUSE FAILURE WHICH COULD RESULT IN INJURY.

**Do not use solvents to clean this meter** as they will attack the acrylic and destroy the meter.

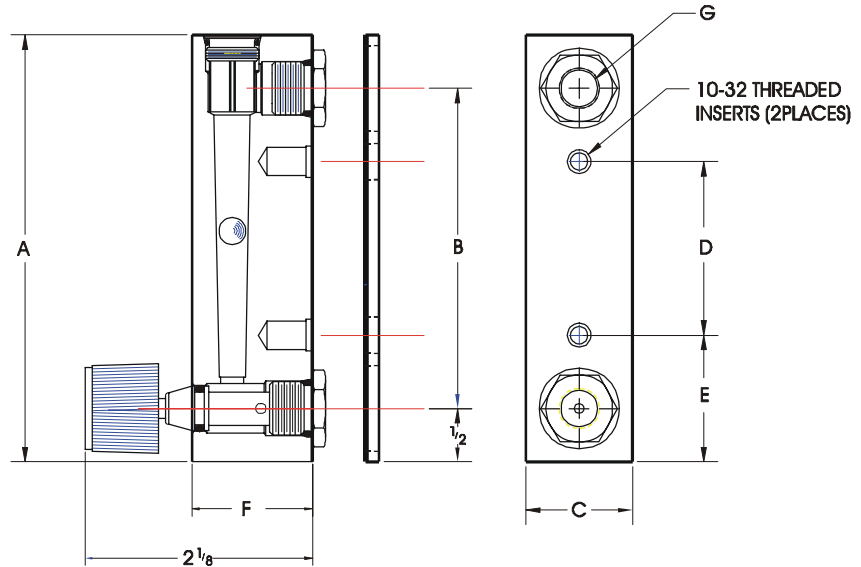
**REASSEMBLY**

Check to make sure that all parts are clean and dry. To lubricate the o-rings, apply a small amount of halocarbon grease prior to reassembly. If applicable, reinstall the rod guide assembly into the flowmeter body. Make sure the rod guide is seated firmly in the

body of the meter. Reinstall the top plug, making sure that the rod guide is properly aligned.

If you have any questions regarding the installation, maintenance or use of this flowmeter, please call the Customer Service Department at 1-800-356-7483.

DIMENSIONS		FR2000	FR4000	FR4500
A	IN.	4	6 1/2	6 5/8
	mm	102	165	164
B	IN.	3	5 1/2	5 1/2
	mm	76.2	140	140
C	IN.	1	1 3/8	1 1/8
	mm	25.1	34.9	28.6
D	IN.	1 5/8	3 1/2	3 1/2
	mm	41.3	88.9	38.1
E	IN.	1 3/16	1 1/2	1 1/2
	mm	30.2	38.1	38.1
F	IN.	1 1/8	1 1/8	1 3/8
	mm	29.6	28.6	34.9
G	IN.	1/8-27	1/8-27	1/4-18
	mm	MNPT	MNPT	MNPT



FR2000 SERIES FLOW RATES			
RANGE	MODEL	RANGE	MODEL
SCFH OF AIR	CODE	LPM OF AIR	CODE
.1-1	2A00	.04-5	2A12
.2-2	2A01	.1-1	2A13
.4-5	2A02	.2-2.5	2A29
.5-10	2A03	.4-5	2A14
2-20	2A04	1-10	2A15
3.-30	2A05	2-25	2A16
4-50	2A06	4-50	2A17
10-100	2A07	10-100	2A18
20-200	2A08		
CCM OF WATER	CODE	GPH OF WATER	CODE
		.2-2	2L28
5-50	2L09	.4-5	2L19
10-100	2L10	1-10	2L20
20-240	2L11	2-20	2L21
		4-40	2L22

FR4500 SERIES FLOW RATES			
RANGE	MODEL	RANGE	MODEL
SCFM OF AIR	CODE	LPM OF AIR	CODE
.5-5	4A67	14-140	4A72
1-10	4A65	30-280	4A70
2-20	4A68	60-560	4A73
GPM OF WATER	CODE	LPM OF WATER	CODE
.2-2.5	4L64	.8-9	4L69
.4-5	4L66	1.5-20	4L71

FR4000 SERIES FLOW RATES			
RANGE	MODEL	RANGE	MODEL
SCFH OF AIR	CODE	CCM OF WATER	CODE
.4-5	4A30	4-50	4L38
1-10	4A31	10-120	4L56
2-20	4A32	25-225	4L51
4-40	4A33	40-400	4L50
10-100	4A34	40-660	4L52
14-150	4A35	100-1500	4L53
20-200	4A36	200-3000	4L54
		300-3700	4L55
CCM OF AIR	CODE	GPH OF WATER	CODE
100-1000	4A39	1-10	4L45
LPM OF AIR	CODE	2-25	4L48
.4-5	4A40	4-50	4L49
1-10	4A41	6-60	4L46
2-20	4A42		
3-30	4A43	SCFM OF AIR	CODE
4-50	4A44	.3-3	4A37
10-100	4A47		

\*Does not include 1/8" backplate.