

Flow Meters

Series FL-2000, FL-2069

INSTRUCTION
SHEET

M3231/0918

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INSTALLATION & OPERATION INSTRUCTIONS FL-2000 – FL-2069

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.

meter is received damaged, *report it to the carrier immediately*. Before installing, verify that you have the model and flow range required.

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:	FL-2001 to FL-2025 • ± 5% Full Scale FL-2031 to FL-2069 • ± 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
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

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.

CLEANING AND DISASSEMBLY

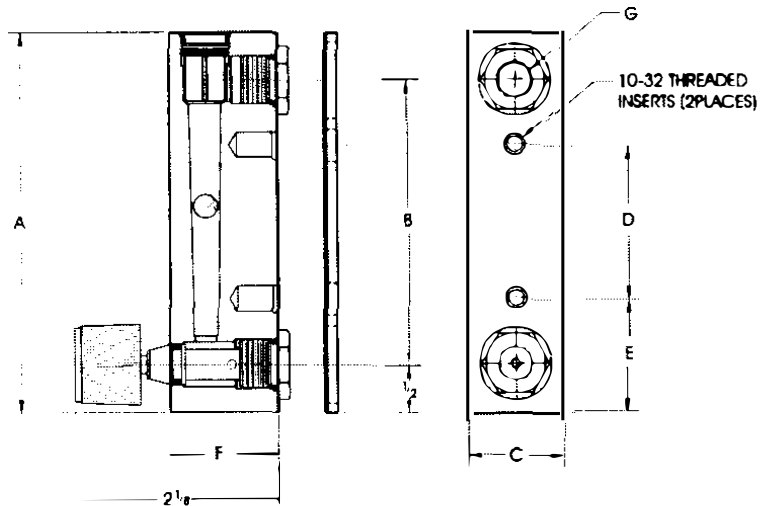
Occasional cleaning may be required if dirt appears in the flow tube or if float movement becomes restricted. To clean, remove the top plug and remove the float. Wash the tapered hole and top plug with a mild liquid detergent and soft brush. Rinse all parts with clean water and dry thoroughly with clean air or nitrogen. **Do not use solvents to clean this meter** as they will attack the acrylic and destroy the meter.

RE-ASSEMBLY

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 re-assembly. 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. Tighten top plug until it's flush with top of acrylic body. Exceeding this may damage the meter body. If you have any questions regarding the installation, maintenance or use of this flowmeter, please call the Customer Service Department.

DIMENSIONS		FL-2001 to FL-2025	FL-2031 to FL-2057	FL-2060 to FL-2069
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

*Does not include 1/8" backplate.



FL-2001 to FL-2025 FLOW RATES			
RANGE	MODEL	RANGE	MODEL
SCFH OF AIR	CODE	LPM OF AIR	CODE
.1-1	FL-2001	.04-5	FL-2010
2-2	FL-2002	.1-1	FL-2011
4-5	FL-2003	2-2.5	FL-2012
5-10	FL-2004	4-5	FL-2013
2-20	FL-2005	1-10	FL-2014
3-30	FL-2006	2-25	FL-2015
4-50	FL-2007	4-50	FL-2016
10-100	FL-2008	10-100	FL-2017
20-200	FL-2009		
CCM OF WATER	CODE	GPH OF WATER	CODE
		2-2	FL-2021
5-50	FL-2018	4-5	FL-2022
10-100	FL-2019	1-10	FL-2023
20-240	FL-2020	2-20	FL-2024
		4-40	FL-2025

FL-2060 to FL-2069 FLOW RATES*			
RANGE	MODEL	RANGE	MODEL
SCFM OF AIR	CODE	LPM OF AIR	CODE
5-5	FL-2060	14-140	FL-2063
1-10	FL-2061	30-280	FL-2064
2-20	FL-2062	60-560	FL-2065
GPM OF WATER	CODE	LPM OF WATER	CODE
2-2.5	FL-2066	8-9	FL-2068
4-5	FL-2067	1.5-20	FL-2069
FL-2031 to FL-2057 FLOW RATES			
RANGE	MODEL	RANGE	MODEL
SCFH OF AIR	CODE	CCM OF WATER	CODE
4-5	FL-2031	4-50	FL-2045
1-10	FL-2032	10-120	FL-2046
2-20	FL-2033	25-225	FL-2047
4-40	FL-2034	40-400	FL-2048
10-100	FL-2035	40-660	FL-2049
14-150	FL-2036	100-1500	FL-2050
20-200	FL-2037	200-3000	FL-2051
CCM OF AIR	CODE	300-3700	FL-2052
100-1000	FL-2038	GPH WATER	CODE
LPM OF AIR	CODE	1-10	FL-2053
4-5	FL-2039	2-25	FL-2054
1-10	FL-2040	4-50	FL-2055
2-20	FL-2041	6-60	FL-2056
3-30	FL-2042	SCFM OF AIR	CODE
4-50	FL-2043	3-3	FL-2057
10-100	FL-2044		

CONTINUED PRODUCT IMPROVEMENT MAY RESULT IN SPECIFICATION REVISIONS

WHEN ORDERING PARTS PLEASE INCLUDE PART DESCRIPTION, ITEM NUMBER AND TYPE OF MATERIAL REQUIRED.



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WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product. If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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