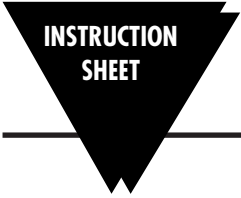




FL-1002, FL-1004, FL-1006 PURGE ROTAMETERS

Operator's Manual:



M0369/0201



General Description

The OMEGA® FL-1000 Series Rotameters are low-flow variable area flow meters molded of high impact polycarbonate. The single piece molded unit forms the tapered ribbed tube, integral float stops, and front bezel.

The o-ring sealed metal connector inserts prevent possible cracking of the meter body by overtightening. The rotatable connectors also act as line unions to simplify piping.

The FL-1000 Series are equipped with a standard control valve, integrally mounted at the inlet or outlet of the meter. They are also available without a valve.

Maximum flow rates range from 0.50 to 100 scfh on air, or 0.1 to 20 gph on water. Refer to Capacities table for exact ranges available.

Specifications

SCALES

Nominal Length:	37mm
Display:	Direct reading for air or water
Connections:	1/8" Female NPT, Horizontal (inlet and outlet) fully rotatable
Accuracy:	Standard accuracy ±10% of full scale

Repeatability: ±1% of full scale

RATINGS

Rangeability:	10:1
Maximum Operating Pressure:	(100psig)
Operating Temperature	(20° to 130° F). Fluid Temperature below 32° F can cause frosting of plastic meter body.

Pressure Drop with Valve:	FL-1002, FL-1012: 96"
	FL-1004, FL-1014: 136"
	FL-1006, FL-1016: 191"

The figures represent the pressure drop in inches of water column across the meter with the float in the maximum flowrate position.

- OPTIONS:** 1) Brass end fittings, with valve (add suffix B)
2) 316SS end fitting without valve (add suffix "NV")

Materials of Construction

Meter Body, Clean-out Plug, Float Stop: FDA approved polycarbonate

Floats: 316 Stainless Steel (Spherical)

O-rings: Viton

Line Connectors: Brass or Stainless Steel

Valve: Brass or Stainless Steel

Unpacking Instruction

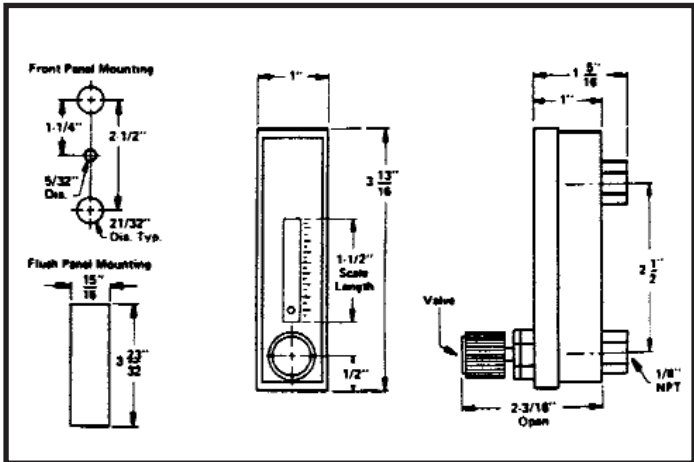
Remove the Packing List and verify that you have received all equipment. If you have any questions about the shipment, please call the OMEGA Customer Service Department.

When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

Dimensions



Installation

The flow meter is shipped completely assembled and tested at the factory. It should not be necessary to tighten or adjust any parts when received.

The meter must be mounted in a vertical position with the inlet (upstream flow line) connected to the bottom connection, and the outlet (downstream line) connected to the top connection. Standard connection adapters are horizontal female 1/8" NPT. Flexible pipe is recommended for use with the meter to avoid stressing the meter body.

The Rotameters are supplied with a "U" -shaped bracket to facilitate panel mounting. From the front of the panel, the meter is inserted into a 15/16 x 33/4" vertical panel cutout. The mounting bracket is installed from the rear of the panel and secured to the connector retainer plate with a single screw.

RECOMMENDED INSTALLATION PRACTICES
Water Hammer and surges can be damaging to any flowmeter and must *always* be avoided.

Water hammer occurs when a liquid flow is suddenly stopped as with quick closing and solenoid operated valves. Surges occur when flow is suddenly begun, as when a pump is turned on at full power or a valve is quickly opened.

Liquid Surges are particularly damaging to flowmeters if the pipe is originally empty. To avoid damaging surges, fluid lines should remain full (if possible) and pumps should be brought up to power slowly and valves opened slowly. In addition, to both water hammer and surges, a surge chamber should be installed.

CAPACITIES (Standard Scales)

Model No. Air	Range (SCFH)	Model No. Water	Range (GPH)
FL-1002	0.5-5.5	FL-1012	0.1-1.1
FL-1004	2.0-20.	FL-1014	0.5-4.5
FL-1006	10-100	FL-1016	2.0-20.

Capacities are at metering conditions of 70 °F, 121.1 °C and psia (101.3 kPa)
 s (standard) designates reference condition of 70° F and 14.7 psia

Table 2 Pressure Drop

Size	Float	ΔP Inches W.C. (With Valve)	ΔP Inches W.C.
2	Glass	33	1/4
	316 Stainless Steel	96	1
4	Glass	42	1
	316 Stainless Steel	136	3-1/2
6	Glass	68	8
	316 Stainless Steel	191	32

The figures above represent the pressure drop in inches of water across the meter with the float in maximum flow rate position.

Operation

Caution: Do not operate this instrument in excess of temperature and pressure ratings or serious injury and /or damage to the instrument could result.

and flush with mild detergent solution or appropriate solvents. **DO NOT** use any solvent or cleaning solution which might attack the meter body.

Maintenance

It is recommended that the user periodically inspect the tube and float and clean if necessary. Dirt or foreign materials adhering to the tube and float may cause inaccuracy and sticking of the float. To clean the meter, remove it from the line

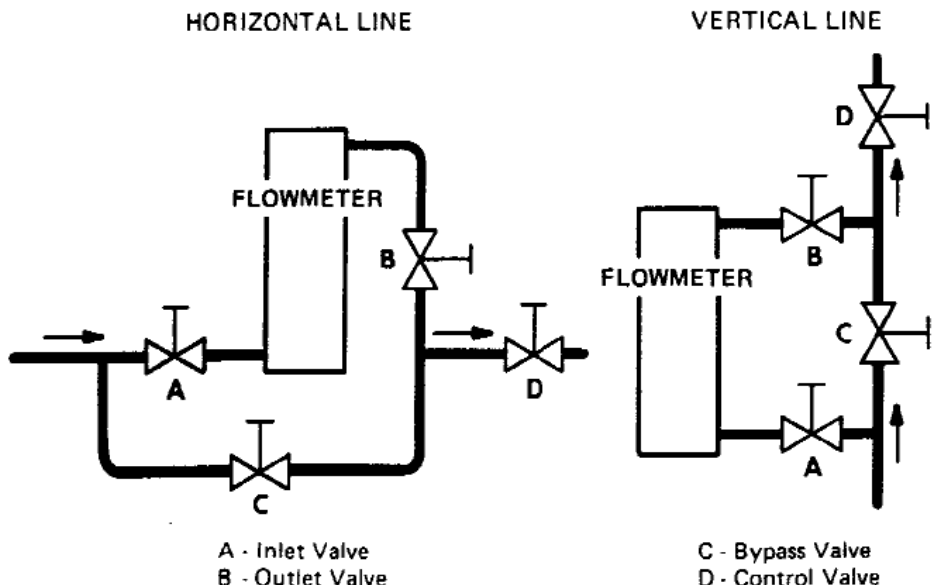
Replacement Parts

There are no replacement parts available. For users desiring to stock spare parts, it is recommended a complete unit be kept on hand as a replacement.

WARNING

FLOWMETER OPERATION

If the inlet and outlet valves adjacent to the flowmeter are to be closed for any reason, the flowmeter must be completely drained. Failure to do so may result in thermal expansion of the liquid which can cause rupture of the meter and possible personal injury.



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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 which wear are not warranted, including but 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 it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS 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.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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