

FL-X SERIES

Water Meter Monitors

M0374/1098

INTRODUCTION

The OMEGA FL-X Series Flowrate Indicators utilize fluid movement to actuate a swinging vane, which drives the scale pointer attached to the vane shaft, and triggers the signal switch. These flowmeters are ideal for use on fresh or sea water, deionized water, steam condensate, and a variety of organic and inorganic liquids. The corrosion-resistant construction includes no breakable tubes and a display that is unaffected by the opacity of the fluid.

SPECIFICATIONS

ACCURACY: + 5% full scale.

REPEATABILITY: + 1% of reading.

PRESSURE DROP: 2.2 psi, average

SIGNAL SWITCH: 3-wire SPDT. Rated 15 A @ 125 VAC, CSA/CE Rated

MAX. PRESSURE: 200 psig at 200 °F

HOUSING MATERIAL: Polysulfone

INTERNAL WETTED PARTS: 316SS

SEALS: Viton

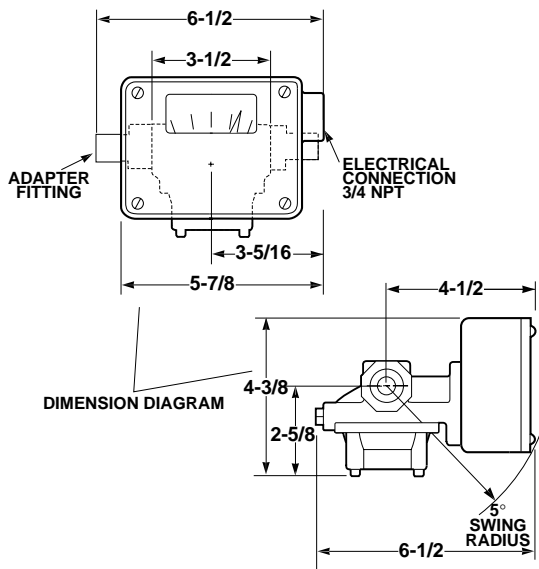
CONNECTIONS: 3/4" NPT, female, plastic

WEIGHT: 1 lb. 12 oz.

Model No.	Flow Range (GPM Water)	Readout Increments
FL-X2	0-2	.5
FL-X3	0-3	1
FL-X4	0-4	1
FL-X5	0-5	1
FL-X6	0-6	1
FL-X7	0-7	1

INSTALLATION

This is an in-line device. To install, place wrench on fitting only, not meter housing, to prevent cracking housing and/or fitting. Thread your piping into the NPT ports, with flow going into the port marked "IN". Mounting can be in any position. See dimension diagram.

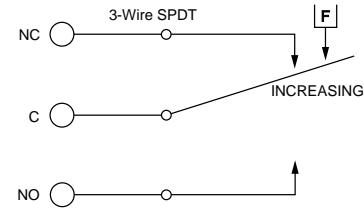


RECOMMENDED INSTALLATION PRACTICES

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 avoid both water hammer and surges, a surge chamber should be installed.

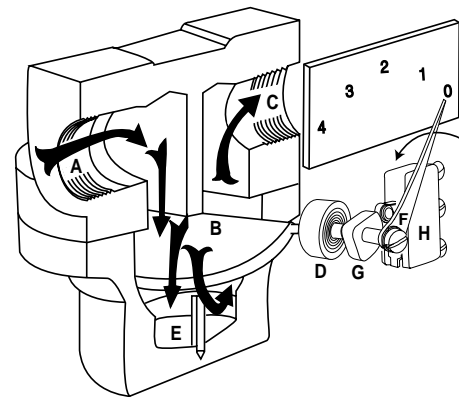
CONNECTING THE SWITCH

To connect the switch, refer to the switch diagram.



SWITCH DIAGRAM

THEORY OF OPERATION



Fluid enters at A, passes around the semi-circular swinging vane B, and exits at outlet C. The vane resists the fluid passage because of the constant-torque spring D. As the vane is pushed farther down, the passage E gets larger to accommodate the larger flow at no increase in pressure drop. The pointer F is mounted on the vane shaft, as is an adjustable cam G, to trigger an electric switch H.

SETTING THE SWITCH POINT

The cam that actuates the switch is located on the dial assembly. The position of the cam dictates the switch point, i.e., the flow rate at which the cam throws the switch. (Usually, the switch point is initially set at OMEGA.) To set or reset the switch point, proceed as follows:

Warning: Shut off the electric power to the control box before opening it.

1. Remove the nameplate, window, and gasket from the control box.
2. The cam that actuates the switch is located just under the pointer. The position of the cam dictates the flow rate at which the cam will trip the switch.
3. Turn the pointer so that it points at the desired flow rate on the scale. Against the low spring forces of the small Vane style models you can do this by grasping the pointer itself (and holding it in position while you adjust the cam).
4. While holding the pointer in the desired position, depress the cam ring fully (approx. 1/16 inch) and rotate it until the switch actuates (clicks). Release your downward pressure and the cam ring will lock at that position.
5. If you can't hear the switch click, you can determine contact closure with an ohmmeter connected across the switch terminals. Connect to the common and normally open or normally close on the switch.
6. To check the setting, direct the pointer again to the desired flow rate, noting where the switch actuates. Make adjustments as necessary. If the bowl was removed please place on guide roll pins and firmly tighten, in a X motion.
7. It's much easier to set the switch point if you can do it with actual flow present. Adjust the flow to the desired point where you want a signal to occur and turn the cam to actuate the switch as outlined above.
8. Replace window, nameplate, and gasket before turning on electric power.

CHANGING THE SPRING (SMALL VANE STYLE)

Remove all parts attached to the shaft, from the spring to the pointer screw. These parts will come off as an assembly by loosening the dial screw. The cam screw may also have to be loosened so that the assembly will slide freely off the shaft.

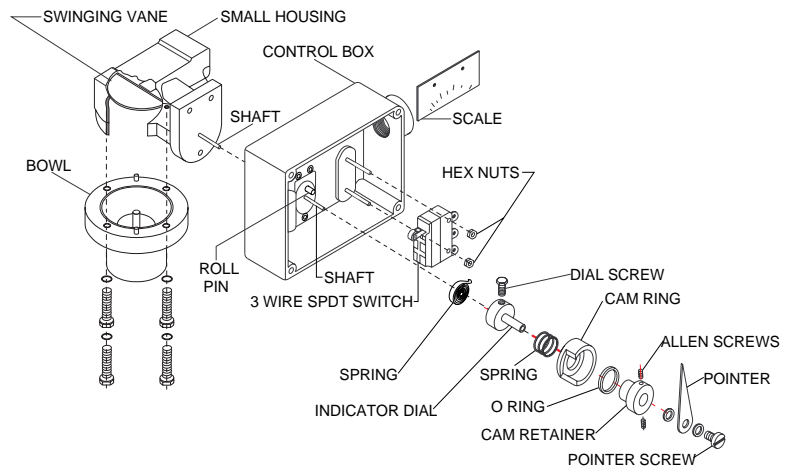
Remove the old spring from the assembly and replace. The new spring is attached to the indicator dial by pressing the bent inside tip of the spring into the slotted hub. If slot is too tight, run a knife through it.

Slide the assembly back onto the shaft and rotate it counterclockwise until the outside spring loop engages the roll pin in the control box. (Flow direction can be determined by noting "IN" and "OUT" marks on ports, looking from front of unit). Pull the assembly back out slightly so that the spring is not sandwiched and can move freely. Now rotate the assembly in the same direction until the dial screw is at 12 o'clock (perpendicular to the top of the control box). This will automatically bring the unit to its original calibration. Then tighten the dial screw.

PERIODIC MAINTENANCE

Using a valve to vary the flow, observe the pointer tracking the flow rate. If the flow monitor does not respond properly, it is probably due to foreign material building up around the swinging vane and hanging it up. The vane can sometimes be jogged loose by manipulating the pointer. If it doesn't free up, remove the bowl and clean out the flow chamber around the swinging vane with a knife or brush.

For replacement parts, contact OMEGA Engineering Customer Service Department at (203) 359 - 1660.



Parts Drawing



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Engineering Service: 1-800-872-9436 / 1-800-USA-WHENSM
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WARNING: These products are not designed for use in, and should not be used for, patient connected applications.



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 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 should malfunction, 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 being 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.

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

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