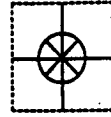
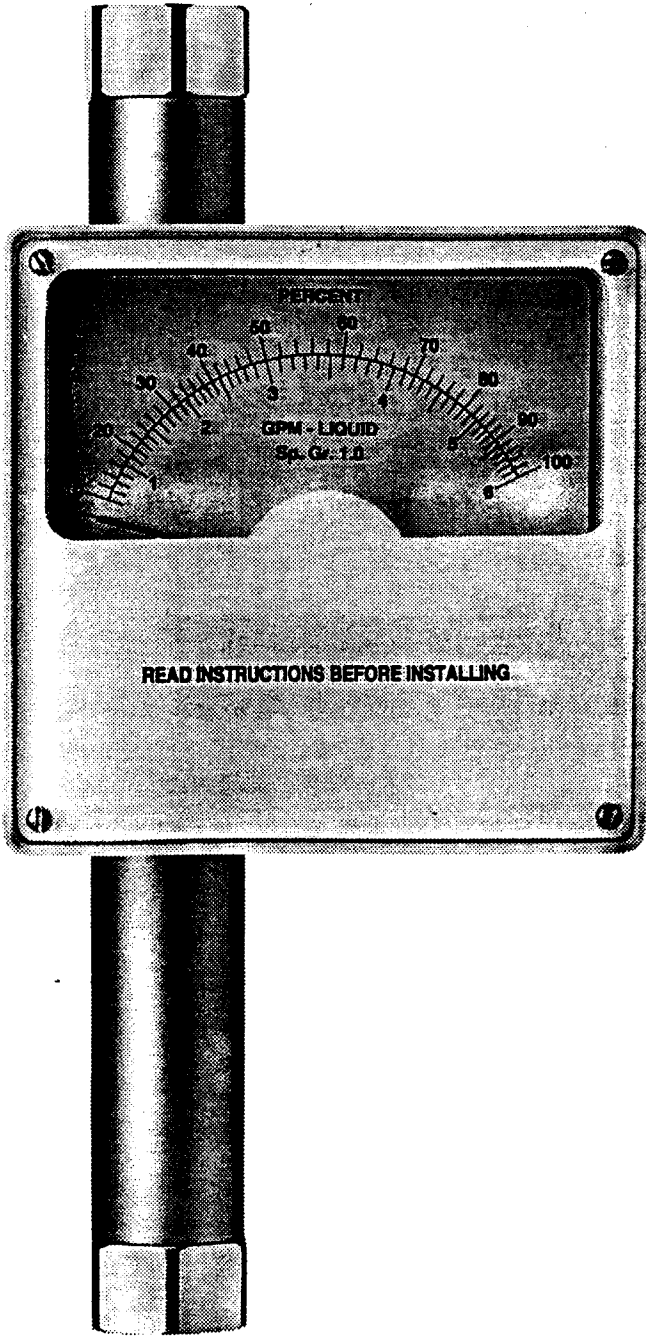


CE



# User's Guide



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## FL-W7000 Flowmeter

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It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, patient-connected applications.

# FL-W7000's INSTALLATION INSTRUCTIONS

This is important information. Read it carefully before beginning work.

- 1) Inspect the meter for damage that may have occurred during shipping. If container is damaged report this to the freight carrier immediately.
- 2) Make sure your pressure, temperature, fluid and other requirements are compatible with the meter and components (including O-rings).
- 3) Select a suitable location for installation to prevent excess stress on the meter which may result from:
  - a) Misaligned pipe.
  - b) The weight of related plumbing.
  - c) "Water Hammer" which is most likely to occur when flow is suddenly stopped as with quick closing solenoid operated valves. (If necessary a surge chamber should be installed. This will also be useful in pressure start-up situations.)
- 4) Handle the meter carefully during installation.
- 5) Install the meter vertically with the inlet port at the bottom. No piping runs are required. Because the guide rod extends from the top of the meter during operation, 4" of straight pipe must be provided at the outlet of the meter.
- 6) Meters will support several feet of pipe as long as significant vibration or stress resulting from misaligned pipe are not factors.

## INSTALLATION

- FL-W7000 meters are designed for vertical installation only (inlet at bottom, outlet at top).
- The indicator housing is not removeable from the meter tube.
- Do not remove or adjust the screws on the back of the indicator housing. These screws were positioned during factory calibration and represent the zero adjustment. If the pointer is set on zero proceed with the piping. If the pointer is not set at zero follow these steps.
  - 1) remove front cover of indicator and gasket
  - 2) loosen set screw at base of pointer shaft
  - 3) reposition pointer to zero line
  - 4) tighten set screw with a 1/16" allen wrench by holding the pointer shaft and gently tightening the set screw
  - 5) replace gasket and cover of indicator housing

**Caution: Zero is factory set when meter is calibrated. Do not loosen nuts that fasten indicator housing to meter body. If indicator housing is moved, the meter will need recalibration.**

### Maximum Non-Shock Pressure for Flanged Meters

### Temperature\*\*

Temp. °F	Stainless Steel Flange Class			O-Ring Material	Maximum Temperature
	150# psig	300# psig	600# psig		
200	225	600	1,200	EPR	225 °F
300	200	540	1,100	Buna-N	275 °F
400	180	515	1,000	Viton®	350 °F
				Zalak®	400 °F
				Kalrez®	400 °F

**The maximum ambient temperature for the Indicator Housing is 158 °F.**

**\*\* Caution: Meters with NPT (threaded) connections can be used in service up to 1500 psi & 400 °F, but always make certain that materials of construction (including O-ring material) are compatible with the fluid to be metered at the desired temperature and pressure.**

Viton®, Zalak® and Kalrez® are registered trademarks of E.I. DuPont.

## **CAUTION:**

- O-rings should be replaced if meter is disassembled after it has been in service.
- Do not loosen nuts that fasten indicator housing to metering tube. If the relationship of meter and housing are changed, meter must be recalibrated.
- Serious property damage and great personal injury could occur as the result of a meter used in an unsuitable application.

## **CLEANING:**

Carefully remove the flowmeter from piping system. Remove the threaded inlet and withdraw the float and guide assembly out from the top. (Normally it is not necessary to remove the tapered sleeve or spacers.) All necessary instrument components are now fully accessible for cleaning with a bottle brush and appropriate mild soap solution\*. Before the meter is reassembled, inspect all parts for damage. O-rings should be replaced during meter maintenance and cleaning.

To reassemble, carefully guide the magnetic float back into the tube. When installing float/guide assembly make certain that the end of the guide fully engages the inlet and/or outlet float stop. Reinstall and tighten fittings in appropriate ports. Reinstall the instrument into the plumbing system after removing the old teflon tape (with a wire brush) and replacing with fresh tape.

\*Do not use cleaning agents that will damage float, tube or O-rings.

**CAUTION:** Do Not loosen nuts that fasten indicator housing to meter tube. If the relationship of meter and housing are changed, meter must be recalibrated.

## **WARNING:**

Pressure and temperature ratings are based on a study of the engineering data for particular materials used in construction and on the design of individual models. This information is supplemented by destructive test results. Meters with stainless enclosures must never be operated without shields securely in place. Meters exposed to difficult environments such as those created by certain chemicals, excessive vibration or other stress inducing factors could fail at or below the suggested maximums. Never operate meters above pressure and temperature maximums. It is strongly recommended that all meter installations utilize an appropriate pressure relief valve and/or rupture disc. The pressure settings and locations of these devices should be such that meters cannot be overpressurized. Meter failure could result in damage to equipment and serious personal injury. Always use suitable safety gear, including OSHA approved eye protection when working around meters in service. We are happy to pass along chemical compatibility information that has been published by the manufacturers of raw materials used in our products; however, this information should not be construed as a recommendation made by **Omega Engineering Inc.** for a specific application.

**Meters are not specifically recommended for service other than water or air.  
The user must determine meter suitability for use with other fluids.**

## METERS FOR GAS SERVICE

Meters used in gas service may be susceptible to float bounce. (This is especially true in low density gas applications.) To reduce the possibility of float bounce, valves should be installed at both ends of the meter. Make sure there is minimum piping between the valve and the meter body.

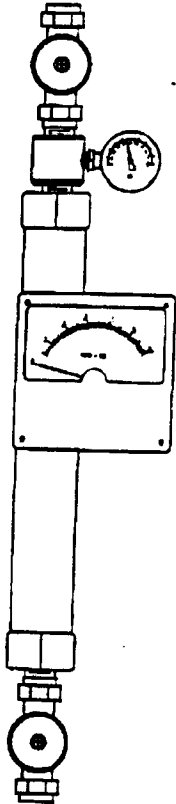
During start up (with both valves closed) open the inlet 1/2 turn, then slowly open the outlet two turns. Return to the inlet and open another two turns. Now adjust a combination of the valves to achieve desired flow. Make sure to open the valves slowly. If the float begins to bounce, close the valves immediately and begin procedure again.

Both the inlet and outlet valves should be opened to the minimum required to achieve the desired flow. Follow this procedure during each start up.

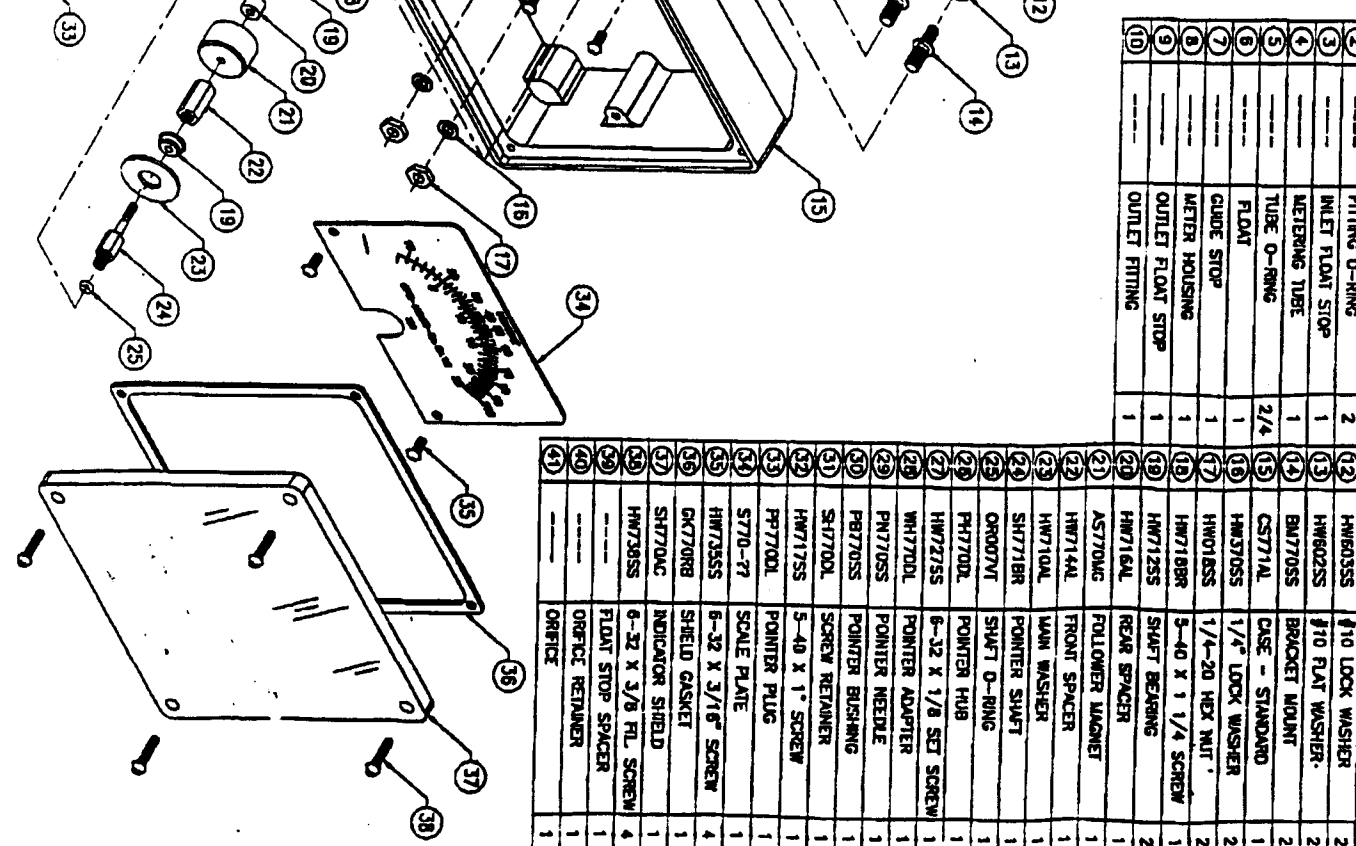
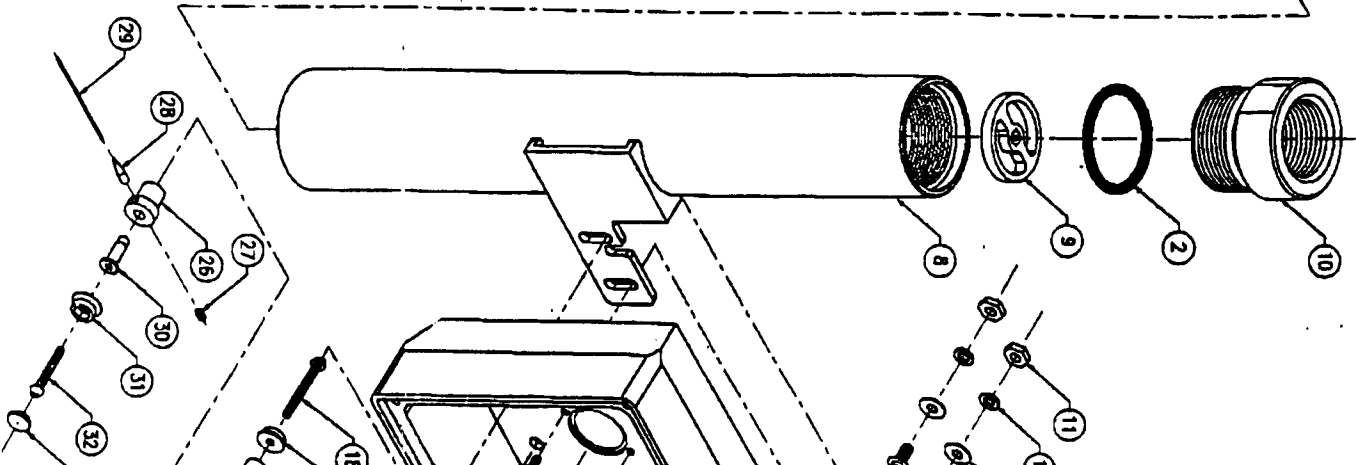
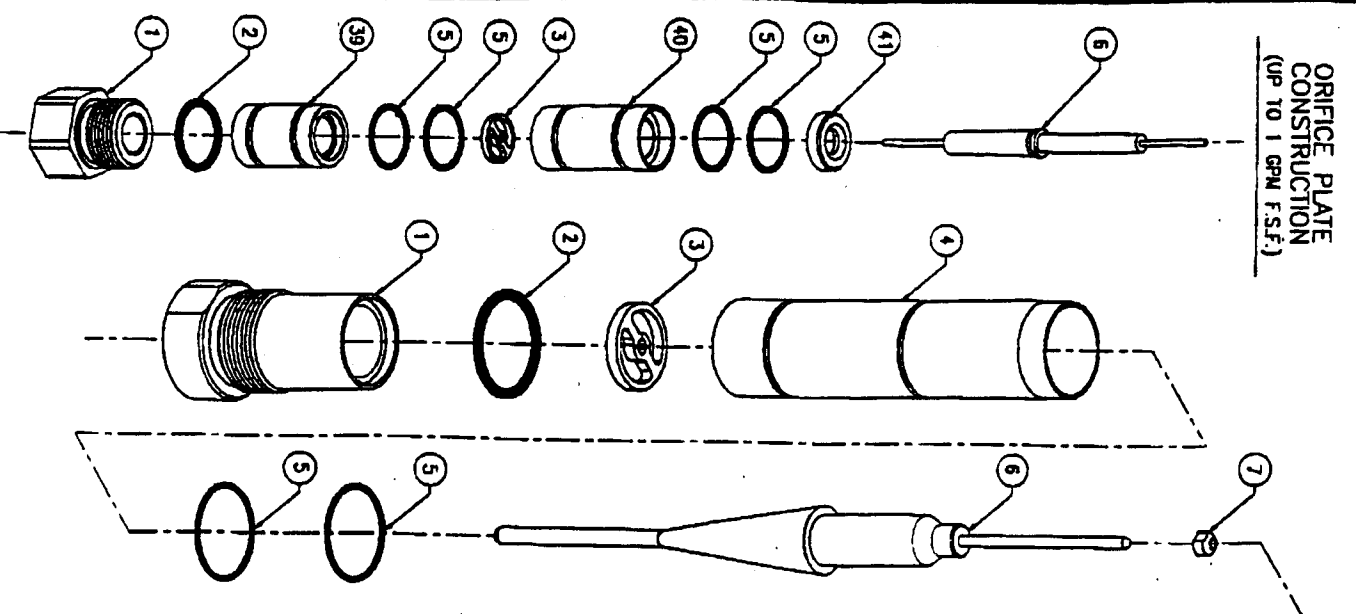
A pressure gage installed between the outlet of the meter and the downstream piping will show the pressure in the meter and will allow the exact flow to be calculated by deriving a multiplier ( $\alpha$ ) using the formula shown below.

$$\alpha = \sqrt{\frac{14.7 + \text{operating pressure}}{14.7}}$$

(To use the formula above, multiply the indicated flow by  $\alpha$  to obtain the actual flow at the corrected pressure.)



ORIFICE PLATE  
CONSTRUCTION  
(UP TO 1 GPM F.S.F.)



ITEM	PART NO	DESCRIPTION / NAME	QTY
1	---	INLET FITTING	1
2	---	FITTING O-RING	2
3	---	INLET FLOAT STOP	1
4	---	METERING TUBE	1
5	---	TUBE O-RING	2/4
6	---	FLOAT	1
7	---	GLIDE STOP	1
8	---	METER HOUSING	1
9	---	OUTLET FLOAT STOP	1
10	---	OUTLET FITTING	1

ITEM	PART NO	DESCRIPTION / NAME	QTY
11	HW604SS	10-32 SS HEX NUT	2
12	HW603SS	#10 LOCK WASHER	2
13	HW602SS	#10 FLAT WASHER	2
14	HW70SS	BRACKET MOUNT	2
15	CS771AL	CASE - STANDARD	1
16	HW570SS	1/2" LOCK WASHER	2
17	HW101SS	1/4-20 HEX NUT	2
18	HW170BR	5-40 X 1 1/4 SCREW	1
19	HW172SS	SHAFT BEARING	2
20	HW161AL	REAR SPACER	1
21	AS770MG	FOLLOWER MANGET	1
22	HW174AL	FRONT SPACER	1
23	HW1710AL	MAIN WASHER	1
24	SH771BR	POINTER SHAFT	1
25	OR007VT	SHAFT O-RING	1
26	PH770DL	POINTER HUB	1
27	HW272SS	6-32 X 1/8 SET SCREW	1
28	WH1770DL	POINTER ADAPTER	1
29	PN170SS	POINTER NEEDLE	1
30	PA770SS	POINTER BUSHING	1
31	SH770DL	SCREW RETAINER	1
32	HW171SS	5-40 X 1" SCREW	1
33	PH770DL	POINTER PLUG	1
34	S770-77	SCALE PLATE	1
35	HW135SS	6-32 X 3/16" SCREW	4
36	DK770BR	SHIELD GASKET	1
37	SH770AC	INDICATOR SHIELD	1
38	HW730SS	6-32 X 3/8 FL SCREW	4
39	---	FLOAT STOP SPACER	1
40	---	ORIFICE RETAINER	1
41	---	ORIFICE	1



## 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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