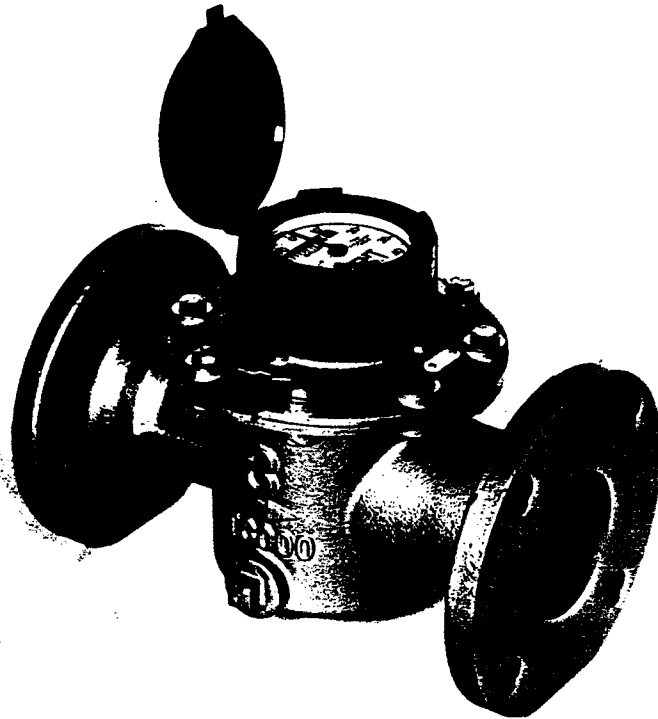




# FTB7100 Series

INDUSTRIAL HELICAL VANE  
COLD WATER METERS



**Operator's Manual**

## WARRANTY

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service 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 our customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. Our 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. However, 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 or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

THESE UNITS ARE INHERENTLY DANGEROUS AND ARE INTENDED TO BE INSTALLED AND USED ONLY BY QUALIFIED PERSONNEL. NO WARRANTY EXTENDED HEREIN WILL APPLY IF SUCH UNIT IS INSTALLED OR USED BY UNQUALIFIED PERSONNEL. THERE ARE NO WARRANTIES EXCEPT AS STATED HEREIN. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE. OMEGA ENGINEERING, INC. IS NOT RESPONSIBLE FOR ANY DAMAGES OR LOSSES CAUSED TO OTHER EQUIPMENT, WHETHER DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL, WHICH THE PURCHASER MAY EXPERIENCE AS A RESULT OF THE INSTALLATION OR USE OF THE PRODUCT. THE BUYER'S SOLE REMEDY FOR ANY BREACH OF THIS AGREEMENT BY OMEGA ENGINEERING, INC. OR ANY BREACH OF ANY WARRANTY BY OMEGA ENGINEERING, INC. SHALL NOT EXCEED THE PURCHASE PRICE PAID BY THE PURCHASER TO OMEGA ENGINEERING, INC. FOR THE UNIT OR UNITS OR EQUIPMENT DIRECTLY AFFECTED BY SUCH BREACH.

EVERY PRECAUTION FOR ACCURACY HAS BEEN TAKEN IN THE PREPARATION OF THIS MANUAL, HOWEVER, OMEGA ENGINEERING, INC. NEITHER ASSUMES RESPONSIBILITY FOR ANY OMISSIONS OR ERRORS THAT MAY APPEAR NOR ASSUMES LIABILITY FOR ANY DAMAGES THAT RESULT FROM THE USE OF THE PRODUCTS IN ACCORDANCE WITH THE INFORMATION CONTAINED IN THE MANUAL.



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Customer Service: 1-800-622-2378 / 1-800-622-BEST

Engineering Assistance: 1-800-872-9436 / 1-800-USA-WHEN

International: (203) 359-1660 CABLE: OMEGA

EASYLINK: 62968934 TELEX: 996404 FAX: (203) 359-7700

## Return Requests/Inquiries

Direct all warranty and repair requests/inquiries to OMEGA Customer Service Department, telephone number 1-800-622-2378; International (203) 359-1660. BEFORE RETURNING ANY INSTRUMENT, PLEASE CONTACT THE OMEGA CUSTOMER SERVICE DEPARTMENT TO OBTAIN AN AUTHORIZED RETURN (AR) NUMBER. The designated AR number should then be marked on the outside of the return package.

To avoid processing delays, also please be sure to include:

1. Returnee's name, address, and phone number.
2. Model and Serial numbers.
3. Repair instructions.

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

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Printed in U.S.A.

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**TURBINE WATER METER**

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## SECTION 1 INTRODUCTION

The OMEGA® FTB7000 Series Turbine Water Meter (made of bronze, or optionally made of iron) is designed for high volume, water flow measurement. Water passes through the meter without a change in flow direction, driving a helical vane motor in direct proportion to the quantity of water passing through the meter. The FTB7000 flowmeter is highly accurate and features giant fully rotatable 3", magnetically driven, permanently hermetically sealed nitrogen-filled register for extra long life and assured accuracy. Its 1/4" thick glass face is tempered to resist breakage, scratching and abrasion.

Rotor revolutions are converted to engineering units by a gear reduction system, and magnetically coupled to a sealed register which reads in U.S. Gallons, ft<sup>3</sup> (cubic feet) or M<sup>3</sup> (cubic meters).

The FTB7000 features PTFE sleeve bearing, tough tungsten carbide rotor shafts, sapphire thrust bearings, and a light weight polypropylene rotor to maximize wear resistance for long term accurate service. Integral flow straightening vanes provide flow conditioning.

The FTB7000 bolted top plate is easily removed while the flowmeter is in line for easy servicing. A special Kynar coated, iron body is available in line sizes up to 4" for de-ionized water applications. Consult OMEGA Engineering for more details.

## SECTION 2 AVAILABLE MODELS

The following models are available from OMEGA Engineering:

	PORT SIZE	PART NUMBER
Water Meter	1.5"	FTB7115
Water Meter	2	FTB7120
Water Meter	3	FTB7130
Water Meter	4	FTB7140
Water Meter	6	FTB7160

## SECTION 3 INSTALLATION

### 3.1 UNPACKING

Remove the packing list and verify that all equipment has been received. If there are any questions about the shipment, please call OMEGA Customer Service Department at 1-800-622-2378.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of 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 shipment is necessary.

### 3.2 INSTALLATION

The meter must be installed in a clean pipeline, free from any foreign materials.

Install the meter with the direction of flow as indicated by the arrow cast in the meter case. The meter can be installed in horizontal, vertical or inclined lines, however, the meter CANNOT be installed upside down. The meter location should allow a minimum of 10 straight pipe diameters upstream and 5 straight pipe diameters downstream. Gaskets and adjacent pipe must match the meter size.

### SECTION 4 START-UP PROCEDURE

When purging the line on start-up, turn on the flow gradually. The air in the line will be expelled slowly and will not damage the mechanism due to excessive revolution of the rotor.

### SECTION 5 SPECIFICATIONS

MAXIMUM TOTAL (MILLIONS OF GALLONS): 10 up to 1", 100 for 1.5" and 2", and 1,000 ABOVE 2"

MODEL	PORT SIZE	FLOW RANGE (GPM)	CONT. DUTY (GPM)	"A" LENGTH OVERALL (-----INCHES-----)	"C" DIM	"D" WIDTH	SHIP WEIGHT	"-PR" (GAL/PULSE) (LB)
FTB7115	1.5	3-200	160	10	2.44	7.41	24	25
FTB7120	2	3-200	160	10	2.44	7.41	29	25
FTB7130	3	4-750	600	12	.81	7.94	36	25
FTB7140	4	7-1250	1000	14	4.36	9	60	25
FTB7160	6	15-2500	2000	18	5.25	11	111	25

ACCURACY:  $\pm$  1.5% of reading at normal operating range.

TEMPERATURE: To +120 F.  
WETTED PARTS (FTB7000): Bronze body (Kynar coating optional); polyacetal polypropylene, polyphenylene, oxide, PTFE, sapphire, tungsten carbide, 302SS, and barium ferrite magnet for internals; neoprene O-rings.

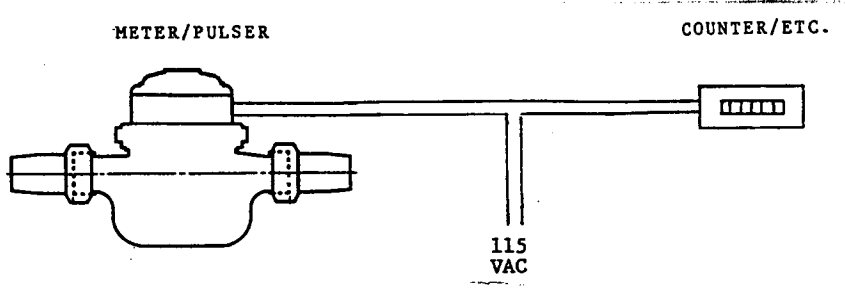
MAXIMUM PRESSURE DROP: 9 PSID at 1 CSTK

MAXIMUM PRESSURE: 150 PSI for bronze.

230 PSI for Cast Iron with Poly Top.

**SECTION 6 PR OPTION**

To be wired in series. Refer to Figure 3. This unit requires power from an external source.



The transmitting element is a 3 watt Reed Switch, giving a closure rate as follows:

	US Gallon	Optional
1.5" - 2"	50 Gallon/Pulser	25 Gallon/Pulse

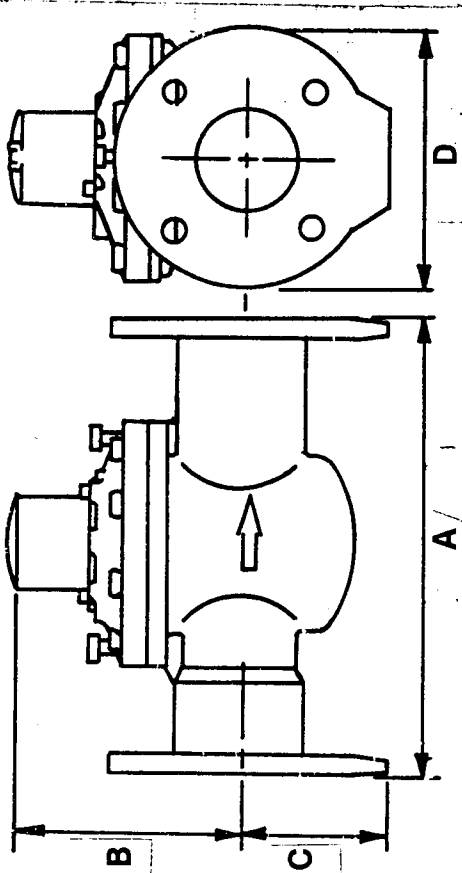
The 3 watt Reed Switch, rated for minimum 1.5 million pulses. Relay switch is field replaceable, spare part number FTB76-RR.

Perform the following steps to install the -PT option onto the meter.

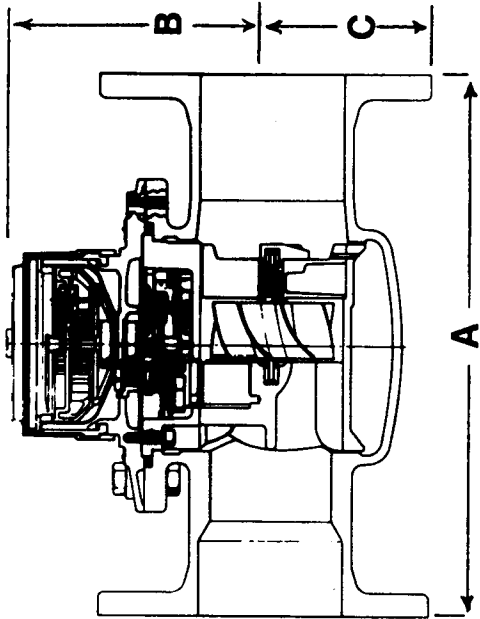
1. Remove bolts securing register.
2. Remove register from meter.
3. Place "-PT option" on the meter and secure the bolts.
4. Place register on "-PT option" and secure with bolts.

The transmitting element is a 10 watt Reed Switch giving a closure rate as follows:

SIZE	U.S. GALLON	CUBIC FEET
1.5" - 2"	1 Contact/Gal	10 Contacts/Cu.Ft.
3" - 6"	1 Contact/10 Gal	1 Contact/Cu.Ft.
SIZE	CUBIC METER/LITER	
1.5" - 3"	1 Contact/10 Liter	
4" - 6"	1 Contact/100 Liters	



**IRON (Style for Pulsers)**



**BRONZE (Totalizing)**

NOTE: ADD 2" TO B WHEN  
ADDING PT PULSER

NOTE: ADD 2 1/8" TO B WHEN  
ADDING PR PULSER

**Dimensions — Iron Body**

Meter size	1 1/2"	2"	3"	4"	6"	8"	10"	12"
A Overall length	12 1/4	12 1/4	16 1/4	19	19 3/4	20 1/2	17 23/32	19 11/16
B Center line to top	5	6 5/16	6 7/8	7 5/8	9 3/16	9 7/16	10 29/32	10 29/32
C Center line to bottom	2 7/8	3 1/8	4 3/16	4 7/8	5 7/8	6 7/8	9 23/32	9 23/32
D Width	6 1/16	7 3/8	7 7/8	9 1/16	11 1/2	13 3/8	16 15/64	19 1/16
Weight (lbs.)	33 1/2	26 1/2	37 1/2	55 1/2	98 1/2	174	296	335
Shipping Weight (approx.)	37	31	40	64	105	183	308	347

**Dimensions — Bronze Body**

Meter size	1 1/2"	2"	3"	4"	6"	8"	10"	12"
A Overall length	10"	10"	12"	14"	14"	14"	14"	18"
B Center line to top	5 1/8"	5 1/8"	5 1/8"	5 1/8"	5 1/8"	5 1/8"	6 13/32"	8"
C Center line to bottom	3 9/32"	3 9/32"	4 1/8"	4 1/8"	4 1/8"	4 1/8"	5"	5 7/32"
D Width	7 1/32"	7 1/32"	7 1/16"	7 1/16"	7 1/16"	7 1/16"	9"	11 1/2"
Weight (lbs.)	20	24	33	51	104	104	104	104
Shipping Weight (lbs.)	24	29	36	60	111	111	111	111

**OMEGA**

FTB 7115      FTB 7160  
 FTB 7120  
 FTB 7130  
 FTB 7140

NOTE: The width will be the same for both configurations!

# **OMEGA® ...Your Source for Process Measurement and Control**

## **TEMPERATURE**

- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
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