User's Guide

FTB8000A SERIES
Pulse Meter

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FTB8000A - SERIES
Pulse Meter Instructions

General Information

FTB8000A-Series meters use the multi-jet principle, which has been an internationally-accepted standard for many years. This type of meter is known for its wide range, simplicity, and accuracy in low-quality water. The impeller is centered in a ring of jets, with inlet jets on one level and outlet jets on another. A gear train drives the register totalizer dials. For pulse output, one of the dials is replaced by a gear, which turns a magnet that is detected by an encapsulated sensor threaded into the outside of the lens. Pulse rate is determined by the gear and the dial on which the gear is placed.

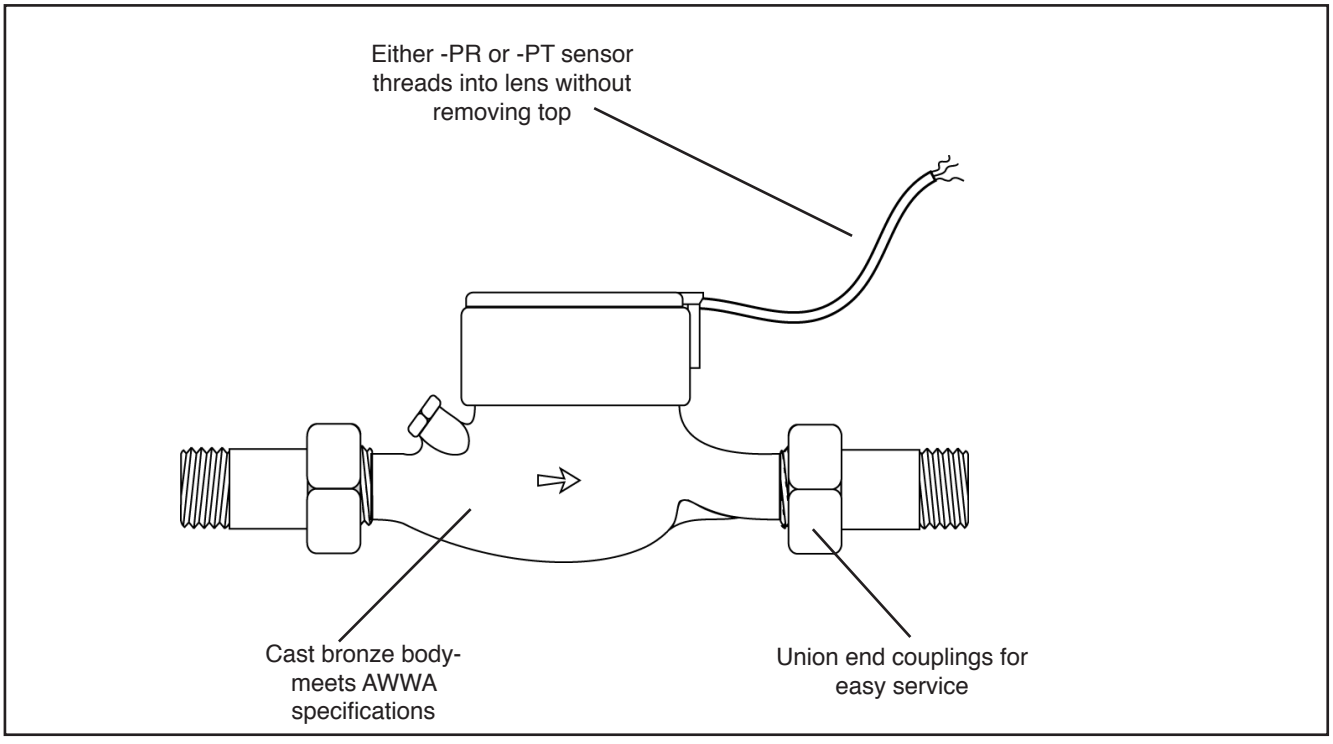
Mechanically, all FTB8000A-Series meters are the same. The difference between -PR, -PT and Standard meters is in the sensor. -PR meters use a solid-state, long-lasting Hall-effect sensor, which requires power. -PT meters use a two-wire reed switch. They provide a dry contact closure and do not require power. Standard meters totalize only and do not have a sensor.

Specifications

Materials	
Case	Cast bronze
Internals	Engineered thermoplastic
Magnet	Ceramic permanent
Temperature	105° F, 40° C
Max. Pressure	150 PSI operating
Accuracy	1-1/2% of reading
Sensor	
-PR	Solid state
-PT	Reed switch
Max. Current	
-PR	20 mA
-PT	50 mA
Max. Voltage	
-PR	24 VDC
-PT	24 VDC or 24 VAC
Sensor Power -PR	Minimum 6 mA at 12 VDC
Cable Length	18 ft. standard, 2,000 ft. max.
Flow Rates (GPM):	

	3/4"	1"	1-1/2"	2"
Minimum	**0.22**	**0.44**	**0.88**	**1.98**
Maximum	**22**	**52**	**88**	**132**

Features



Installation

These water meters are not recommended for installation indoors or anywhere leakage may cause damage.

Position. FTB8000A-Series meters should be installed horizontally with the register up. Vertical mounting will result in some degree of under-measurement and shortened life of the bearings.

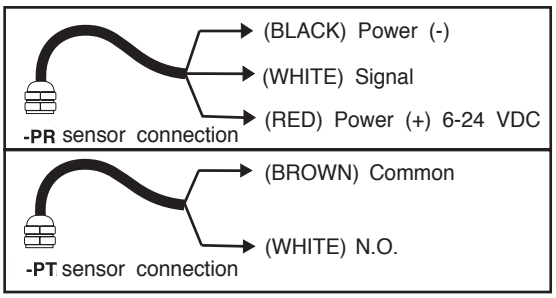
Couplings. Couplings are included with each meter. These provide male NPT threads the same nominal size as the meter. The threads on the end of the meter are IPS straight threads one size bigger than the meter size. It is possible to thread a standard pipe coupling directly onto the meter for close coupling, but the meter couplings are much preferable because they provide a union connection for meter service. Be sure to use the included gasket between the end of the meter and the coupling.

Inlet Conditions. No upstream straight pipe is required. A strainer is built in to protect from solids, and should be periodically cleaned.

Air Bleed. When the meter is first installed, trapped air should be removed. To do this, loosen the meter couplings slightly and rotate the meter to an inverted position. Allow water to flow, then rotate the meter back to an upright position and tighten.

Connections. -PR and -PT sensors are supplied with a color coded output cable. See the diagram for color codes and polarity.

Pulse Output. Both -PR and -PT sensors respond to a magnet which rotates on the face of the meter under the lens. The sensor turns on and off once each time the magnet passes under it. Sensors are designed for electronic control loads, and should not be used to switch power loads or line voltages. See maximum current and voltage ratings, under Specifications.



Maintenance

All service should be performed by authorized distributor or factory to maintain the integrity of the protective tamper-proof wire-and-seal.

Inlet Strainer. Clean the strainer yearly, or as required, depending on water condition. Pull out the strainer or backflush the meter to loosen trapped particulates.

Calibration. Meters used for billing or billing exemption may be regulated by state or local authorities. New meters are factory-tested to meet the AWWA C-708 Multi-Jet Meter accuracy specification. Some states require retesting at various intervals, typically eight years for 3/4" meters, six for 1", and four for 1-1/2" and 2". Meters used for control should be tested every 5-10 years. Testing can be done by local meter shops authorized for this purpose, or can be done by the factory. For tracking purposes, please obtain an Authorized Return (AR) number before shipping to Omega.

Internal Parts Replacement. All of the internal parts of an FTB8000A-Series meter lift out as a unit, after the top has been unscrewed. The lens can then be removed and the internal assembly lifted out. If necessary, turn the meter upside down and tap one end lightly on a countertop to loosen the internals. The three pieces of the assembly can be separated by hand.

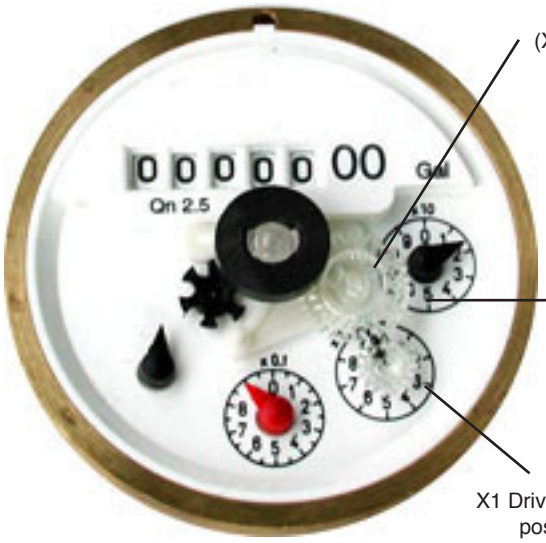
Breakage in a relatively-new meter is almost always due to excessive flow. Compare maximum flow with the flow rating table.

Changing Pulse Rates. After removing the meter top, lift off the center magnet to expose the gears. If the only change required is moving the drive gear (for example from one gallon/pulse to ten gallons/pulse), gently pull the drive gear off its shaft. Remove the pointer on the target shaft and push the drive gear onto the target shaft as far as it will go. Put the pointer on the vacant shaft and push on.

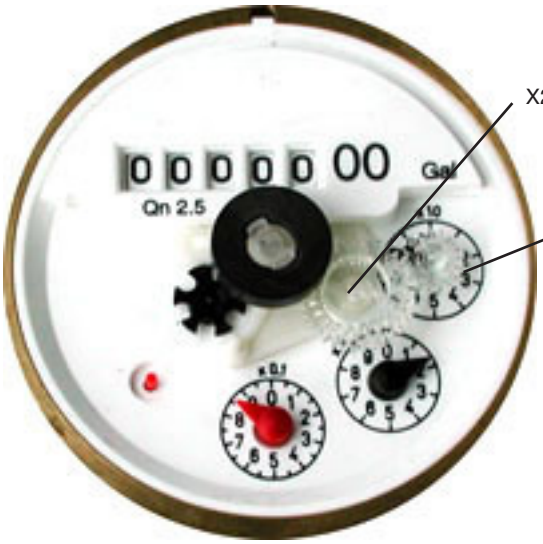
If a different gear set is required, follow the same procedure, replacing rather than moving the drive gear. To install a drive gear on another shaft, remove the pointer and then press the gear down until it bottoms. Use the pulse rate chart to determine the position.

	Pulse Rate	Drive Gear Position	Gear Set (X...)
3/4"	20 P/G	*	2
	10 P/G	*	1
	2 P/G	X0.1	2
	1 P/G	X0.1	1
	5 G/P	X1	2
	10 G/P	X1	1
	50 G/P	X10	2
	100 G/P	X10	1
1"	20 P/G	*	2
	10 P/G	*	1
	2 P/G	X0.1	2
	1 P/G	X0.1	1
	5 G/P	X1	2
	10 G/P	X1	1
	50 G/P	X10	2
	100 G/P	X10	1
1-1/2"	2 P/G	*	2
	1 P/G	*	1
	5 G/P	X1	2
	10 G/P	X1	1
	50 G/P	X10	2
	100 G/P	X10	1
	500 G/P	X100	2
	1000 G/P	X100	1
2"	2 P/G	*	2
	1 P/G	*	1
	5 G/P	X1	2
	10 G/P	X1	1
	50 G/P	X10	2
	100 G/P	X10	1
	500 G/P	X100	2
	1000 G/P	X100	1
* Unlabeled position			

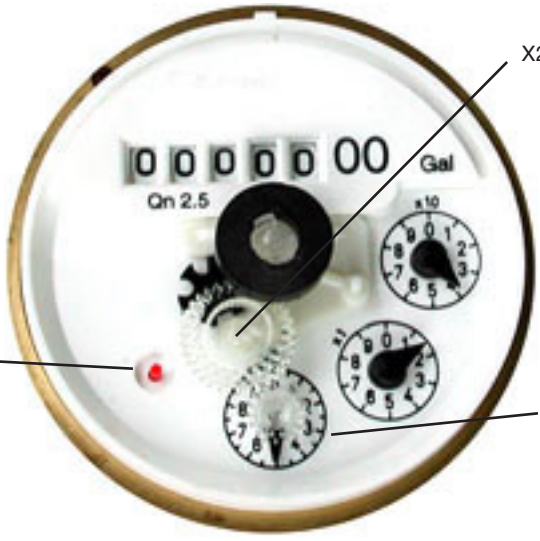
3/4" - 10 gallons/pulse



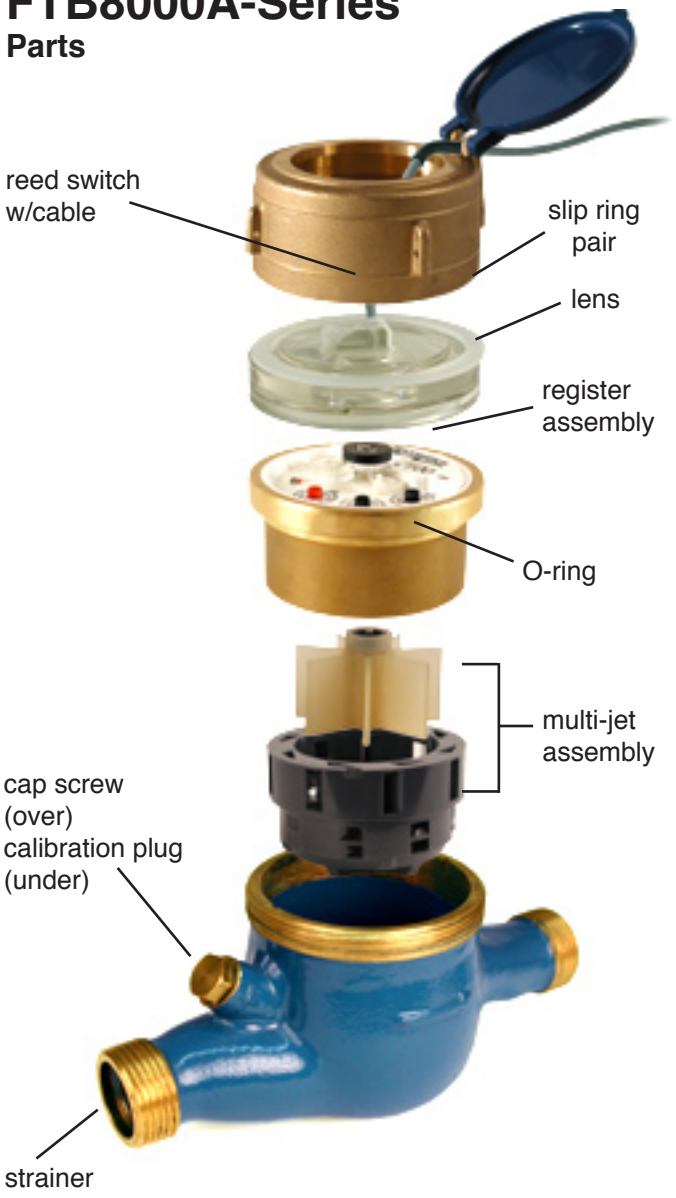
3/4" - 50 gallons/pulse



3/4" - 1 gallon/pulse



FTB8000A-Series
Parts



FTB8000A-SERIES PARTS

Part #	FOR ALL SIZES
30387	Gear Assembly, x1
30342	Gear Assembly, x2
30290	Hinge Pin
30293	Lens, Glass
30289	Lid
30296	O-ring
30300	Pickup, Reed Switch, 12' Cable
30346	Pickup, Solid State, 12' Cable, MDE
30292	Slip Ring (pair)

Part #	FOR 3/4" METERS
16125	Calibration Plug
16105	Cap Screw for Calibration Plug
30381	Coupling Assembly (2 required)
30416	Coupling Gasket (2 required)
30311	Multi-jet Assembly
30308	Register Assembly
30479	Strainer

Part #	FOR 1" METERS
16125	Calibration Plug
16105	Calibration Plug Cap Screw
30382	Coupling Assembly (2 required)
30417	Coupling Gasket (2 required)
30297	Drive Magnet
30323	Multi-jet Assembly
30321	Register Assembly
30480	Strainer

Part #	FOR 1-1/2" METERS
30303	Calibration Plug
30305	Calibration Plug Cap Screw
30383	Coupling Assembly (2 required)
30418	Coupling Gasket (2 required)
30297	Drive Magnet
30304	Gasket
30332	Multi-jet Assembly
30330	Register Assembly
30481	Strainer

Part #	FOR 2" METERS
30303	Calibration Plug
30305	Calibration Plug Cap Screw
30384	Coupling Assembly (2 required)
30419	Coupling Gasket (2 required)
30297	Drive Magnet
30304	Gasket
30326	Multi-jet Assembly
30328	Register Assembly
16240	Strainer

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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