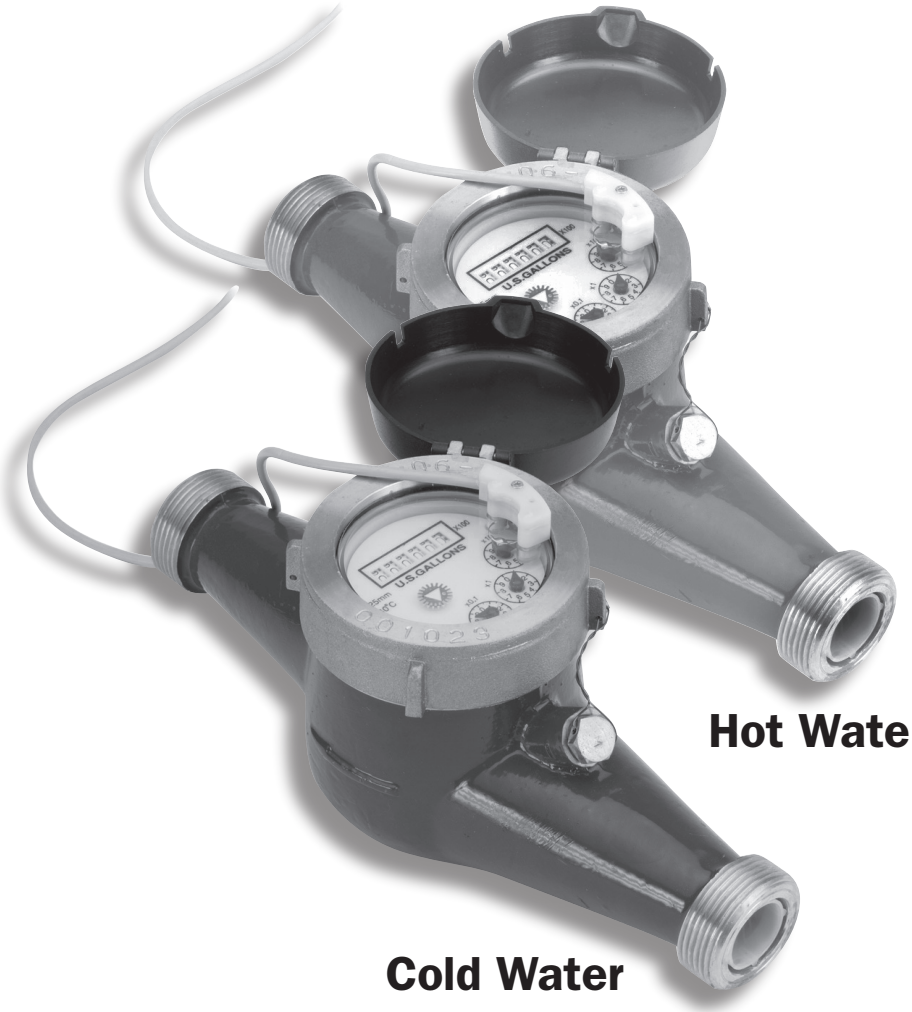
User's Guide



Hot Water

Cold Water

FTB8000B / FTB8000HW
Pulse Meter

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GENERAL INFORMATION

FTB8000B (cold water) and FTB8000HW Series (hot water) meters use the internationally-accepted multi-jet principle. A gear train drives the register totalizer dials. For pulse output, one of the pointers is replaced by a magnet arm, which is detected by an encapsulated sensor attached to the outside of the lens.

PR meters use a solid-state, long-lasting Hall-effect sensor, which requires power. They are suited for use with Omega controls and metering pumps (LMI for instance) that have sensor power.

PT meters use a reed switch. They provide a dry contact closure and do not require power.

Standard meters do not have a sensor, and they totalize only.

SPECIFICATIONS*

Power		6 mA at 12 Vdc (PR only)			
Temperature	**Cold Water**	105˚ F (40˚ C) max (8000B version)			
	Hot Water	194˚ F (90˚ C) max (8000HW version)			
Pressure		150 psi operating			
Materials	**Body**	Cast bronze, epoxy powder coated inside and out			
	Internals	Engineered thermoplastic			
	Magnet	Alnico			
Accuracy		+/- 1.5% of reading			
Pulse Output		**PR**	**PT**	**Standard**	
	Sensor	Hall-effect	Reed switch	Totalizer only	
	Max Current	20 mA	20 mA	n/a	
	Max Voltage	24 Vdc	24 Vdc or Vac	n/a	
Cable Length		12' (4 m) standard (2000' maximum run)			
Flow Rates (GPM)		**3/4"**	**1"**	**1-1/2"**	**2"**
	Minimum	0.22	0.44	0.88	1.98
	****Maximum**	22	52	88	132

**Specifications subject to change.*

****CAUTION:** Excessive flow can cause breakage. Do not exceed recommended maximums.

INSTALLATION

Position. FTB8000B and FTB8000HW 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. No upstream straight pipe is required.

Caution: These water meters are not recommended for installation in uninsulated suspended ceilings where freezing is possible, or in any overhead indoor piping configuration where leakage may cause damage.

Couplings. Male NPT threaded couplings are included with each meter. The threads on the end of the meter are IPS straight threads one size bigger than the meter size. Though it is possible to thread a standard pipe coupling directly onto the meter for close coupling, the included 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.

Connections. PR and PT sensors are supplied with a color coded output cable (see diagram, page 4). Optional connectors can be ordered to plug directly into an Omega control or LMI metering pump.

Pulse Output. Both PR and PT sensors respond to a magnet that 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

Omega recommends all service to be performed by an authorized distributor or the 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 the factory or local meter shops authorized for this purpose. ***Please contact Omega before sending meter in for calibration or servicing.***

Setting Your Pulse Rate. The pulse rate is determined by which sensor was ordered from the factory (single reed switch, dual reed switch, or single Hall-effect) and by the dial on which the magnet pointer is located. The pointer is set at the factory, but can be changed in the field as follows.
In the table below: 1) Locate your meter size (Column 1); 2) Find your desired pulse rate (Column 2); 3) Note the magnet pointer position (Column 3); 4) Move the magnet pointer to the appropriate dial position (using the detailed instructions below the table); 5) Use the appropriate Connection Diagram (from Column 4) to wire the sensor to your remote device (using diagrams on page 4).

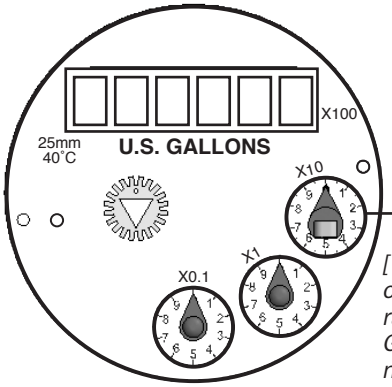
Col. 1 Meter Size	Col. 2 Pulse Rate	Col. 3 Magnet Pointer Dial Position	Col. 4 Connection Diagram #
3/4"	*20 P/G	x0.01	2
	10 P/G	x0.01	1
	†4 P/G	x0.1	1
	*2 P/G	x0.1	2
	1 P/G	x0.1	1
	*5 G/P	x1	2
	10 G/P	x1	1
	*50 G/P	x10	2
	100 G/P	x10	1
1"	†4 P/G	x0.1	1
	*2 P/G	x0.1	2
	1 P/G	x0.1	1
	*5 G/P	x1	2
	10 G/P	x1	1
	*50 G/P	x10	2
	100 G/P	x10	1
1-1/2"	†4 P/G	x0.1	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
2"	†4 P/G	x0.1	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

*These pulse rates available in PT dual reed switch meters only.
†This pulse rate available in PT single reed switch meters only.

Moving the Magnetic Pointer. Remove meter top and lens, taking care not to lose the sealing ring. With fingers, lift the magnet pointer off its shaft and remove the plain pointer from the target dial. Reverse their positions and press them firmly into place. Securely seat the sealing ring and replace the lens, matching the tab on the lens to the notch on the meter to align the sensor with the magnetic pointer dial. Thread the meter top on and tighten.

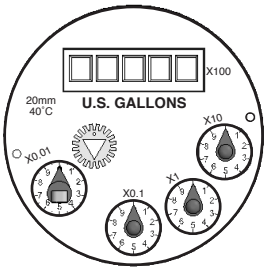
†NOTE: A special magnet (available from the factory) is required to achieve a rate of 4 pulses per gallon. It should be placed on the x0.1 dial, with non-magnetic pointers on the remaining dials. Otherwise, the procedure is the same.

Sample Set-Up. A 1" meter is shown with the magnet pointer set at the x10 dial, with a pulse rate of 100 Gallons per Pulse (that is, 10 increments on the x10 dial, or 10x10=100 Gal/Pulse).

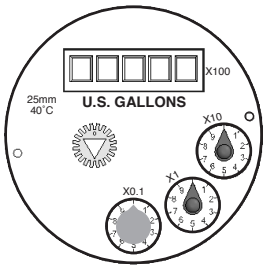


[With the magnet pointer on the x1 dial, the pulse rate would be 10x1=10 Gal/Pulse. With the magnet pointer on the x0.1 dial, the pulse rate would be 10x.1=1 Gal/Pulse.]

Special Configurations.

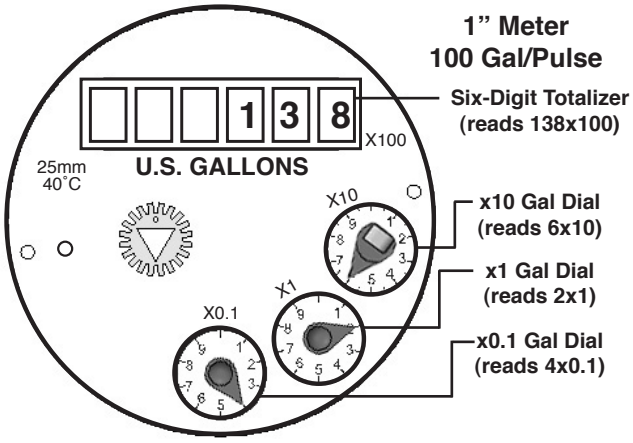


*The **3/4" meter** has a fourth dial, as shown above. The x0.01 dial is used for 20 P/G and 10 P/G rates. Note: The 3/4" meter has a 5 digit totalizer.*



*The **4 P/G rate** requires a special magnet, placed on the x0.1 dial, as shown above.*

Reading Your Meter. The Total Flow that has passed through your meter is read by starting at the top of the register with the Six-Digit Totalizer, and then reading clockwise around the small dials. In the example below, the Six-Digit Totalizer reads 13,800 (138 x 100), and the dials read 60 (6 x 10), 2 (2 x 1), and .4 (4 x .1) respectively. The Total Flow is 13,862.4 gallons.



*(NOTE: Disregard the **color** of the numbers on the totalizer when reading your total.)*
The "ones" digit is significant but the fact that it is red is not significant.

CONNECTION DIAGRAMS

Diagram 1: Single Sensor

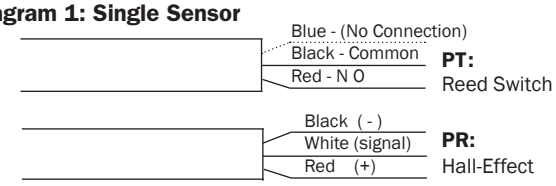
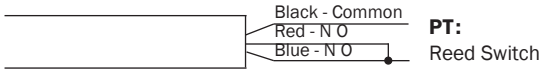


Diagram 2: Dual Sensor

NOTE: The Dual Sensor is distinguished by a red stripe on the cable at the base of the sensor.



NOTE: PR not available with dual sensor

To Distinguish Single Sensor From Dual:
Single: (if new from factory) blue wire is cut back on cable end.
Dual: A red stripe will be on cable near sensor.

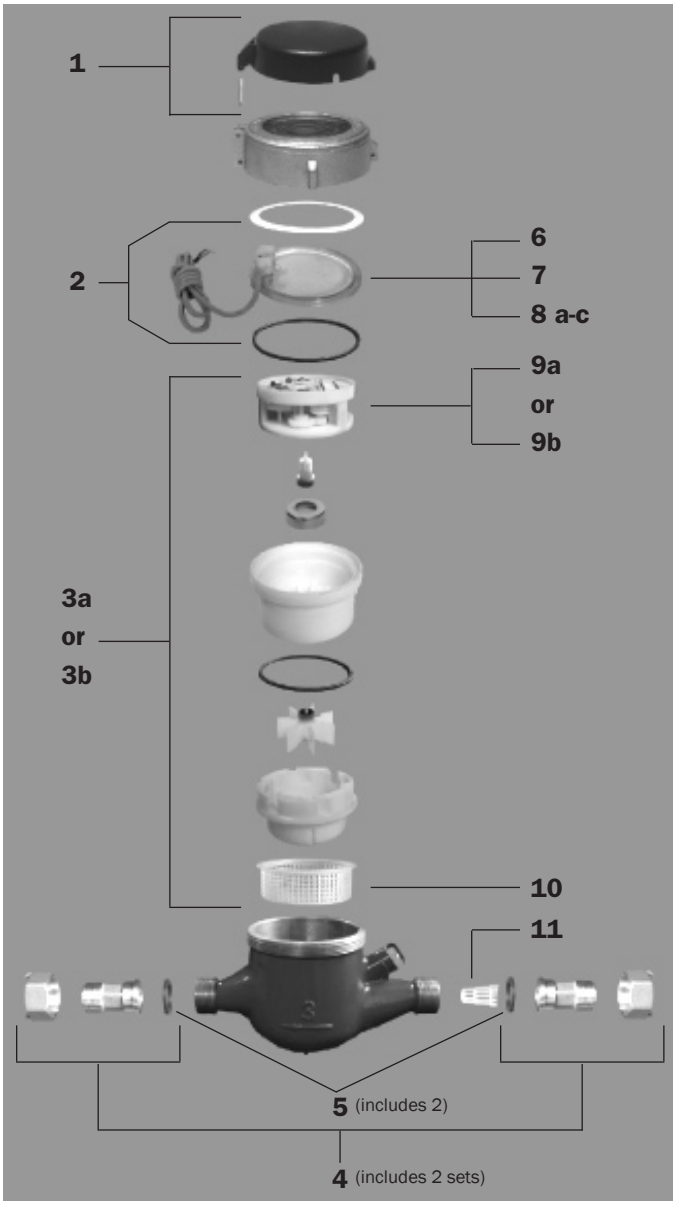
Note: Dual sensor can be used as a single sensor also - use either the red OR the blue wire w/black. If using it as a dual sensor then connecting red and blue together will produce two pulses with every revolution of magnet.

INTERNAL PARTS REPLACEMENT. All of the internal parts of an FTB8000B or FTB8000HW 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 assembly can be separated by hand.

FTB8000B Series			3/4"	1"
1		Lid and Hinge Pin Assembly	31616	31617
2		Lens Gasket Assembly	31619	31620
3	a	Internal Assembly (gallons)	31621	31622
	b	Internal Assembly (cubic feet)	31625	31626
4		Coupling Assembly (incl 2 sets)	32156	32157
5		Coupling Gasket Assembly (incl 2)	31629	31630
6		Lens	31471	31471
7		Sensor Screw	31519	31519
8	a	Single Reed Switch Sensor (PT)	31444	31444
	b	Double Reed Switch Sensor (PT)	31457	31457
	c	Single Hall-Effect Sensor (PR)	31612	31612
9	a	Register (gallons)	31463	31464
	b	Register (cubic feet)	31473	31474
10		Internal Strainer	31483	31517
11		Tubular Strainer	31496	31497

FTB8000B Series			1 1/2"	2"
1		Lid and Hinge Pin Assembly	31618	31618
2		Lens Gasket Assembly	31633	31633
3	a	Internal Assembly (gallons)	31623	31624
	b	Internal Assembly (cubic feet)	31627	31628
4		Coupling Assembly (incl 2 sets)	32158	32159
5		Coupling Gasket Assembly (incl 2)	31631	31632
6		Lens	31471	31471
7		Sensor Screw	31519	31519
8	a	Single Reed Switch Sensor (PT)	31444	31444
	b	Double Reed Switch Sensor (PT)	31457	31457
	c	Single Hall-Effect Sensor (PR)	31612	31612
9	a	Register (gallons)	31465	31466
	b	Register (cubic feet)	31475	31476
10		Internal Strainer	31518	31518
11		Tubular Strainer	31498	31499

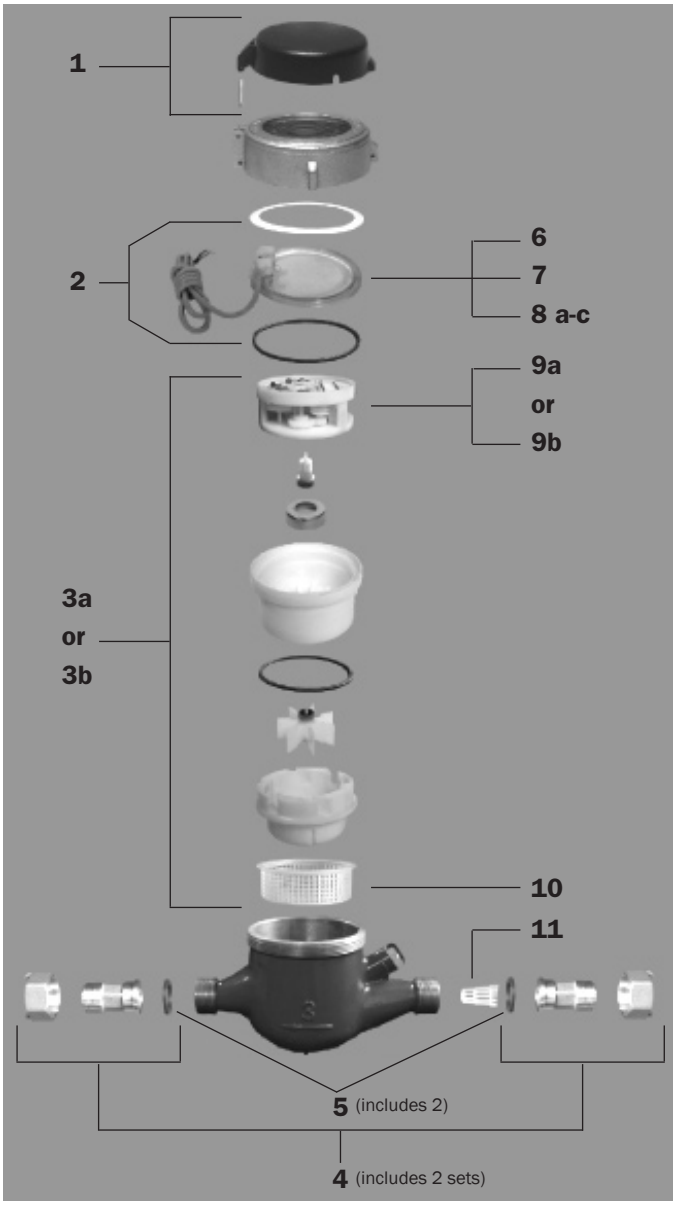
Except as noted, individual parts are not available.



FTB8000HW Series			3/4”	1”
1		Lid and Hinge Pin Assembly	32241	32242
2		Lens Gasket Assembly	32219	32220
3	a	Internal Assembly (gallons)	32237	32238
	b	Internal Assembly (cubic feet)	32233	32234
4		Coupling Assembly (incl 2 sets)	32215	32216
5		Coupling Gasket Assembly (incl 2)	32211	32212
6		Lens	31471	31471
7		Sensor Screw	31519	31519
8	a	Single Reed Switch Sensor (PT)	31444	31444
	b	Double Reed Switch Sensor (PT)	31457	31457
	c	Single Hall-Effect Sensor (PR)	31612	31612
9	a	Register (gallons)	32259	32260
	b	Register (cubic feet)	32255	32256
10		Internal Strainer	32266	32267
11		Tubular Strainer	32269	32270

FTB8000HW Series			1 1/2”	2”
1		Lid and Hinge Pin Assembly	32243	32243
2		Lens Gasket Assembly	32221	32221
3	a	Internal Assembly (gallons)	32239	32240
	b	Internal Assembly (cubic feet)	32235	32236
4		Coupling Assembly (incl 2 sets)	32217	32218
5		Coupling Gasket Assembly (incl 2)	32213	32214
6		Lens	31471	31471
7		Sensor Screw	31519	31519
8	a	Single Reed Switch Sensor (PT)	31444	31444
	b	Double Reed Switch Sensor (PT)	31457	31457
	c	Single Hall-Effect Sensor (PR)	31612	31612
9	a	Register (gallons)	32261	32262
	b	Register (cubic feet)	32257	32258
10		Internal Strainer	32268	32268
11		Tubular Strainer	32271	32272

Except as noted, individual parts are not available.



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.

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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. 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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