

# WFM-SERIES

## PULSE METER INSTRUCTIONS



**GENERAL INFORMATION**

WFM-Series 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.

**WFMxx2** meters use a solid-state, long-lasting Hall-effect sensor, which requires power. They are suited for use with Walchem controllers and metering pumps that have sensor power.

**WFMxx1** meters use a reed switch. They provide a dry contact closure and do not require power.

**WFMxx0** meters do not have a sensor, and they totalize only.

**SPECIFICATIONS**

<b>Power</b>	6 mA at 12 Vdc (WFMxx2 only)			
<b>Temperature</b>	105° F (40° C) max			
<b>Pressure</b>	150 psi operating			
<b>Materials Body</b>	Cast bronze, epoxy powder coated inside and out			
<b>Internals</b>	Engineered thermoplastic			
<b>Magnet</b>	Alnico			
<b>Accuracy</b>	+/- 1.5% of reading			
<b>Pulse Output</b>	<b>WFMxx2</b>	<b>WFMxx1</b>	<b>WFMxx0</b>	
<b>Sensor</b>	Hall-effect	Reed switch	Totalizer only	
<b>Maximum Current</b>	20 mA	20 mA	n/a	
<b>Maximum Voltage</b>	24 Vdc	24 Vdc or Vac	n/a	
<b>Cable Length</b>	12' (4 m) standard (2000' maximum run)			
<b>Flow Rates (GPM)</b>	<b>3/4"</b>	<b>1"</b>	<b>1-1/2"</b>	<b>2"</b>
<b>Minimum</b>	0.22	0.44	0.88	1.98
<b>*Maximum</b>	22	52	88	132

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

**INSTALLATION**

**Position.** WFM-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.** WFMxx2 and WFMxx1 sensors are supplied with a color coded output cable (see diagram, page 3). Optional connectors can be ordered to plug directly into a Walchem controller or metering pump.

**Pulse Output.** Both WFMxx2 and WFMxx1 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**

Walchem 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 back-flush 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 Walchem before sending meter in for calibration or servicing.*

**Changing Pulse Rates:** See Page 3.

**Internal Parts Replacement:** See Page 4.

## CHANGING PULSE RATES

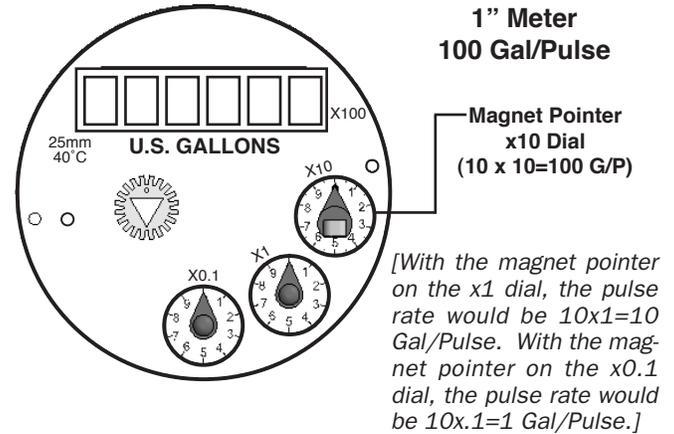
**Setting Your Pulse Rate.** The pulse rate is determined by which sensor was ordered from the factory (single reed switch, dual reed switch, or single Hall-effect) and by the dial on which the magnet pointer is located. The pointer is set at the factory, but can be changed in the field as follows. In 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	Col. 2	Col. 3	Col. 4
Meter Size	Pulse Rate	Meter Pointer Dial Position	Connection Diagram #
3/4"	*20 P/G	factory pre-set only	2
	10 P/G	factory pre-set only	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
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
1-1/2"	*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
2"	*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
*These pulse rates available in WFMxx1 dual reed switch meters only.			

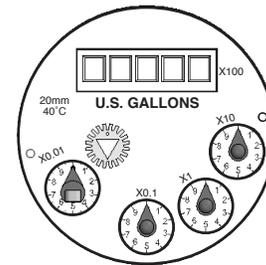
**Moving the Magnetic Pointer.** Remove meter top and lens, taking care not to lose the sealing ring. With fingers, lift the magnet pointer off its shaft and remove the plain pointer from the target dial. Reverse their positions and press them firmly into place. Securely seat the sealing ring and replace 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  $10 \times 10 = 100$  Gal/Pulse).

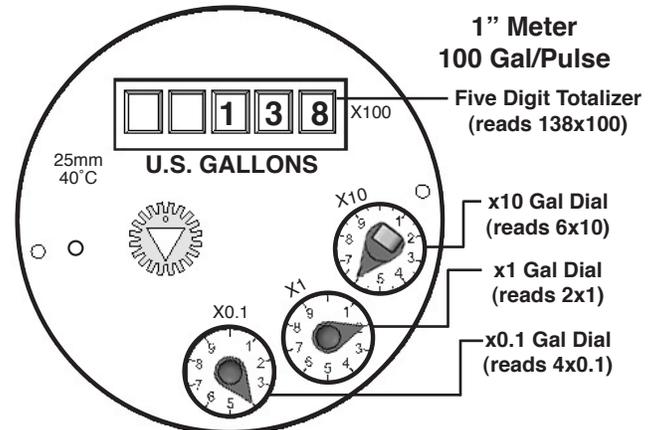


### Special Configurations.



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.

**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 ( $138 \times 100$ ), and the dials read 60 ( $6 \times 10$ ), 2 ( $2 \times 1$ ), and .4 ( $4 \times .1$ ) respectively. The Total Flow is 13,862.4 gallons.

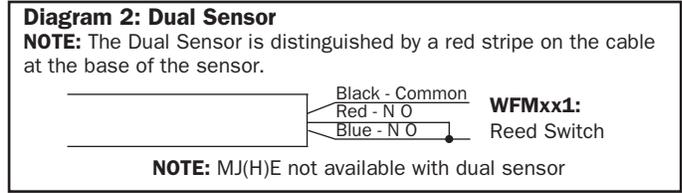
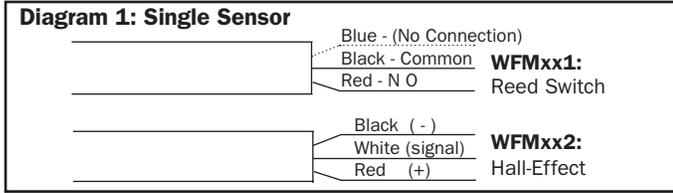


(NOTE: Disregard the **color** of the numbers on the totalizer when reading your total.)

The "ones" digit is significant but the fact that it is red is not significant.

# CONNECTION, MAINTENANCE and REPAIR

## CONNECTION DIAGRAMS



### 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.

**INTERNAL PARTS REPLACEMENT.** All of the internal parts of an WFM-Series meter lift out as a unit, after the top has been unscrewed. The lens can then be removed and the

**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.

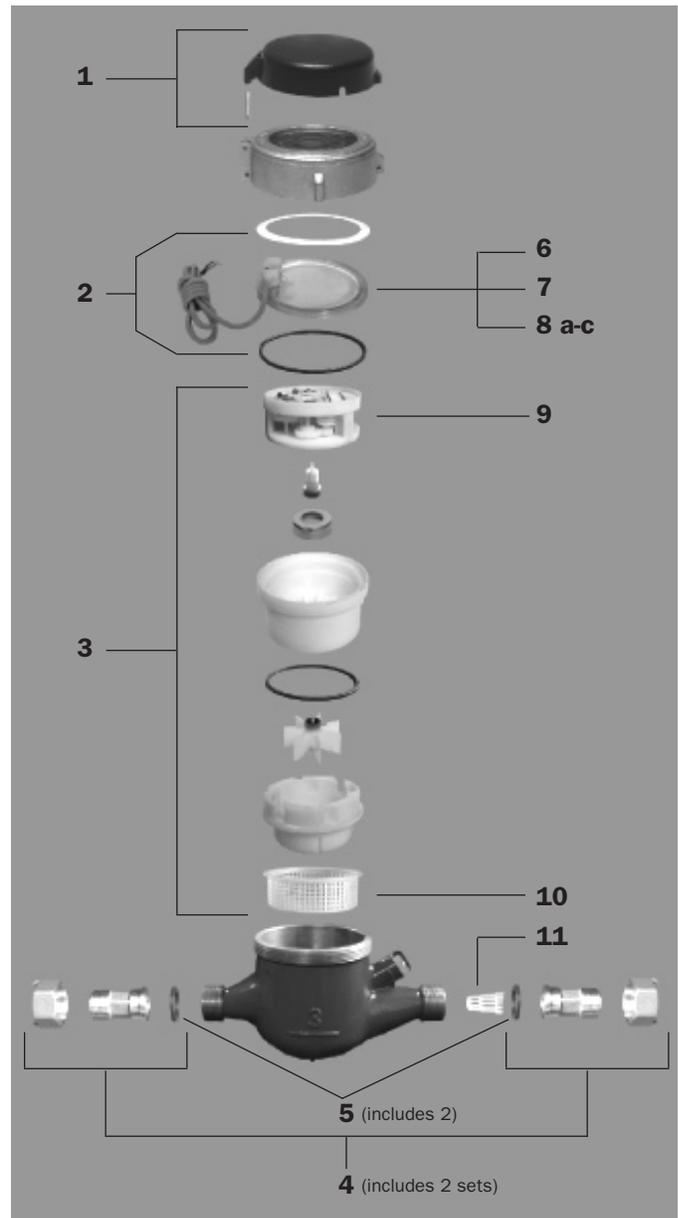
internal assembly lifted out. If necessary, turn the meter upside down and tap one end lightly on a countertop to loosen the internals. The assembly can be separated by hand.

## WFM-SERIES PARTS

WFM-SERIES		3/4"	1"
1	Lid and Hinge Pin Assembly	51662	51663
2	Lens Gasket Assembly	51665	51666
3	Internal Assembly (gallons)	51668	51669
4	Coupling Assembly (incl 2 sets)	51676	51677
5	Coupling Gasket Assembly (incl 2)	51680	51681
6	Lens	51684	51684
7	Sensor Screw	51685	51685
8	a Single Reed Switch Sensor (WFMxx1)	51650	51650
	b Double Reed Switch Sensor (WFMxx1)	51651	51651
	c Single Hall-Effect Sensor (WFMxx2)	51652	51652
9	Register (gallons)	51654	51655
10	Internal Strainer	51686	51687
11	Tubular Strainer	51689	51690

WFM-SERIES		1 1/2"	2"
1	Lid and Hinge Pin Assembly	51664	51664
2	Lens Gasket Assembly	51667	51667
3	Internal Assembly (gallons)	51670	51671
4	Coupling Assembly (incl 2 sets)	51678	51679
5	Coupling Gasket Assembly (incl 2)	51682	51683
6	Lens	51684	51684
7	Sensor Screw	51685	51685
8	a Single Reed Switch Sensor (WFMxx1)	51650	51650
	b Double Reed Switch Sensor (WFMxx1)	51651	51651
	c Single Hall-Effect Sensor (WFMxx2)	51652	51652
9	Register (gallons)	51656	51657
10	Internal Strainer	51688	51688
11	Tubular Strainer	51691	51692

**Except as noted, individual parts are not available.**



# WALCHEM

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