

MJ-SERIES

PULSE METER INSTRUCTIONS

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ISO 9001:2000
CERTIFIED

SeaMetrics

The Leader in Flow Meter Value

GENERAL INFORMATION, INSTALLATION and MAINTENANCE

GENERAL INFORMATION

MJ-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.

MJE (cold water) and **MJHE** (hot water) meters use a solid-state, long-lasting Hall-effect sensor, which requires power. They are suited for use with SeaMetrics controls and metering pumps (LMI for instance) that have sensor power.

MJR (cold water) and **MJHR** (hot water) meters use a reed switch. They provide a dry contact closure and do not require power.

MJT (cold water) and **MJHT** (hot water) meters do not have a sensor, and they totalize only.

SPECIFICATIONS

Power	6 mA at 12 Vdc (MJE/MJHE only)				
Temperature	Cold Water	105° F (40° C) max			
	Hot Water	194° F (90° C) max			
Pressure	150 psi operating				
Materials	Body	Cast bronze			
	Internals	Engineered thermoplastic			
	Magnet	Alnico			
Accuracy	+/- 1.5% of reading				
Pulse Output		MJE/MJHE	MJR/MJHR	MJT/MJHT	
	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

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

INSTALLATION

Position. MJ-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. MJE/MJHE and MJR/MJHR sensors are supplied with a color coded output cable (see diagram, page 3). Optional connectors can be ordered to plug directly into a SeaMetrics control or metering pump.

Pulse Output. Both MJE/MJHE and MJR/MJHR 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

SeaMetrics 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 SeaMetrics before sending meter in for calibration or servicing.**

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).

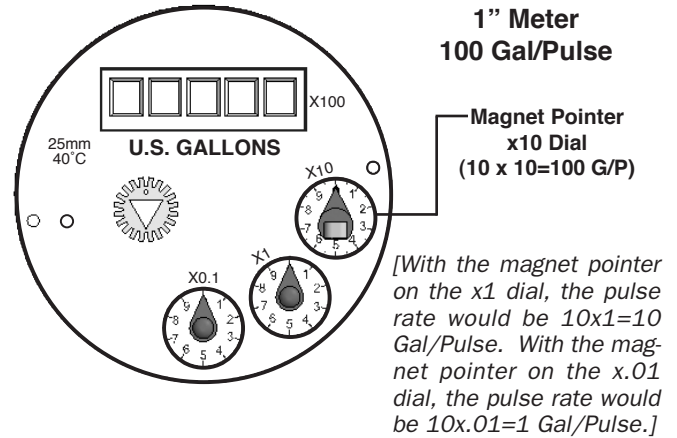
Col. 1	Col. 2	Col. 3	Col. 4
Meter Size	Pulse Rate	Magnet Pointer Dial Position	Connection Diagram #
3/4"	*20 P/G	x0.01	2
	10 P/G	x0.01	1
	†4 P/G	x0.1	1
	*2 P/G	x0.1	2
	1 P/G	x0.1	1
	*5 G/P	x1	2
	10 G/P	x1	1
	*50 G/P	x10	2
1"	†4 P/G	x0.1	1
	*2 P/G	x0.1	2
	1 P/G	x0.1	1
	*5 G/P	x1	2
	10 G/P	x1	1
	*50 G/P	x10	2
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
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 MJR and MJHR dual reed switch meters only.
 †This pulse rate available in MJR and MJHR single reed switch meters only.

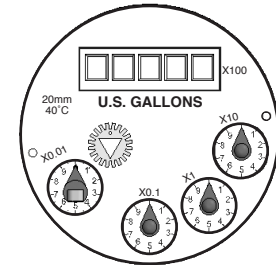
Moving the Magnetic Pointer. Remove meter top and lens, taking care not to lose the sealing ring. With fingers, lift the magnet pointer off its shaft and remove the plain pointer from the target dial. Reverse their positions and press them firmly into place. Securely seat the sealing ring and replace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

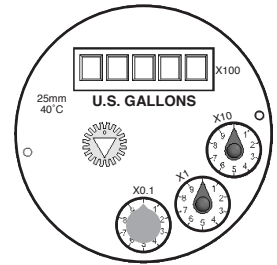
Sample Set-Up. A 1" meter is shown with the magnet pointer set at the x10 dial, with a pulse rate of 100 Gallons per Pulse (that is, 10 increments on the x10 dial, or 10x10=100 Gal/Pulse).



Special Configurations.

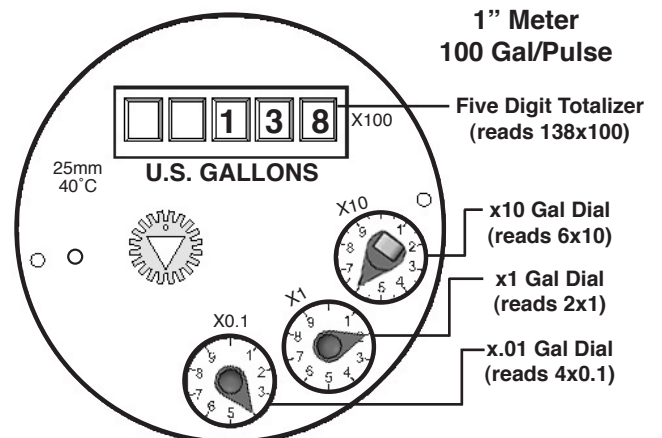


The 3/4" meter has a fourth dial, as shown above. The x0.01 dial is used for 20 P/G and 10 P/G rates.



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

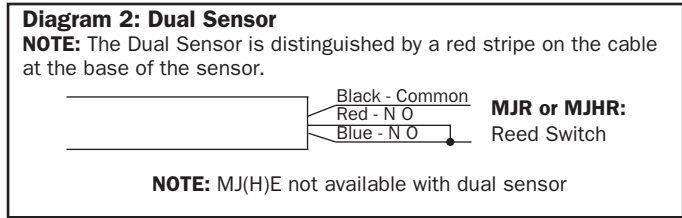
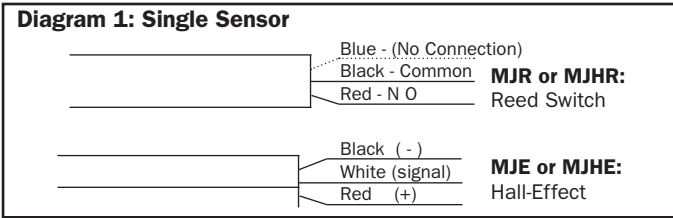
Reading Your Meter. The Total Flow that has passed through your meter is read by starting at the top of the register with the Five-Digit Totalizer, and then reading clockwise around the small dials. In the example below, the Five-Digit Totalizer reads 13,800 (138 x 100), and the dials read 60 (6 x 10), 2 (2 x 1), and .4 (4 x .01) respectively. The Total Flow is 13,862.4 gallons.



(NOTE: Disregard the color of the numbers on the 5-digit totalizer when reading your total. The red "ones" digit has no significance.)

CONNECTIONS, MAINTENANCE and REPAIR

CONNECTION DIAGRAMS



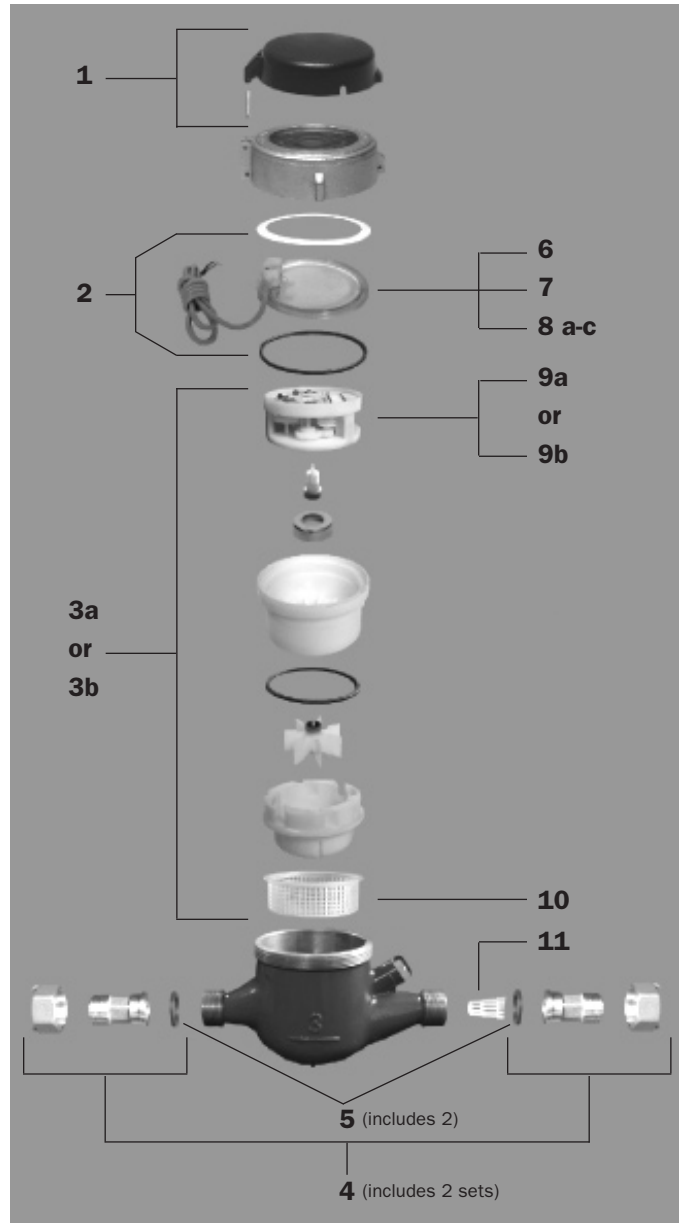
INTERNAL PARTS REPLACEMENT. All of the internal parts of an MJ-Series meter lift out as a unit, after the top has been unscrewed. The lens can then be removed and the internal

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.

MJ-SERIES PARTS

COLD WATER MODELS ONLY		3/4"	1"
<i>Contact factory for hot water parts.</i>			
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 (MJR)	31444	31444
	b Double Reed Switch Sensor (MJR)	31457	31457
	c Single Hall-Effect Sensor (MJE)	31612	31612
9	a Register (gallons)	31463	31464
	b Register (cubic feet)	31473	31474
10	Internal Strainer	31483	31517
11	Tubular Strainer	31496	31497

COLD WATER MODELS ONLY		1 1/2"	2"
<i>Contact factory for hot water parts.</i>			
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 (MJR)	31444	31444
	b Double Reed Switch Sensor (MJR)	31457	31457
	c Single Hall-Effect Sensor (MJE)	31612	31612
9	a Register (gallons)	31465	31466
	b Register (cubic feet)	31475	31476
10	Internal Strainer	31518	31518
11	Tubular Strainer	31498	31499



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