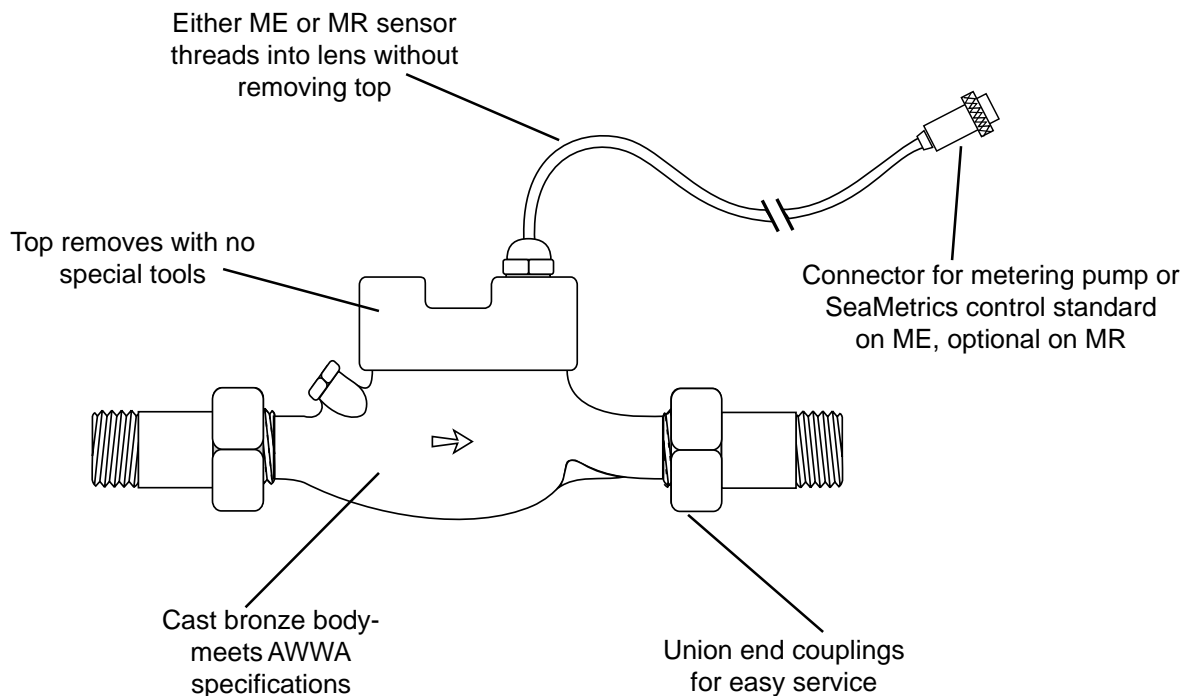


General Information

M-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 magnet, which is detected by an encapsulated sensor threaded into the outside of the lens. Pulse rate is determined by the number of poles on the magnet and the dial placement. Changing the pulse rate requires no special tools and can be done in the field.

Mechanically, all M-Series meters are the same. The difference between ME, MR, and MT meters is in the sensor. ME meters use a solid-state, long-lasting Hall-effect sensor, which requires power. It is suited for use with SeaMetrics controls and metering pumps (LMI for instance) which have sensor power. MR meters use a two-wire reed switch. They provide a dry contact closure and do not require power. MT meters totalize only and do not have a sensor.

Features



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

ME Hall-effect device
MR Reed switch

Max. Current

ME 20 mA
MR 50 mA

Max. Voltage

ME 24 VDC
MR 24 VDC or 24 VAC

Sensor Power (ME)

Minimum 6 mA at 12 VDC

Cable Length

12 ft. standard, 2,000 ft. max.

Flow Rates (GPM):

	3/4"	1"	1-1/2"	2"
Minimum	0.25	0.30	0.50	1.00
Maximum	20	50	100	130

Installation

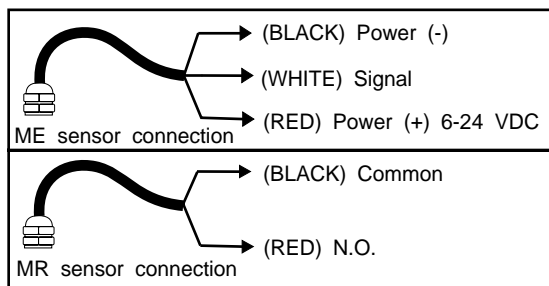
Position. M-Series meters should be installed horizontally with register up. Vertical mounting will result in some degree of under-measurement and shortened life of the bearings.

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 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 meter couplings slightly and rotate the meter to an inverted position. Allow water to flow, then rotate back to an upright position and tighten.

Connections. ME and MR sensors are supplied with a color coded output cable. See the diagram for color codes and polarity. ME meters come standard with a specified connector on the end of the cable, to plug directly into a SeaMetrics control or a specific brand of metering pump. MR meters can also be ordered with connectors, if desired.



Pulse Output. Both ME and MR sensors respond to a magnet which is turning on the face of the meter under the lens. The sensor turns on and off once each time a white spot on the magnet passes under it. There are one and two-pole magnets. 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.

Maintenance

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 a Returned Material Authorization (RMA) number before shipping to SeaMetrics.

Internal Parts Replacement. All of the internal parts of an M-Series meter lift out as a unit, after the top has been unscrewed. To remove the meter top, loosen by putting a bar through the slots on the meter top. Then remove the lens and lift out the internal assembly. 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, remove the magnet by pulling gently with fingers. To install a magnet on another shaft, remove the pointer and then press the magnet down until it bottoms. It is sometimes necessary to lift the gear below the dial slightly in order to get the magnet all the way down. Use the pulse rate chart to determine the position and number of poles required.

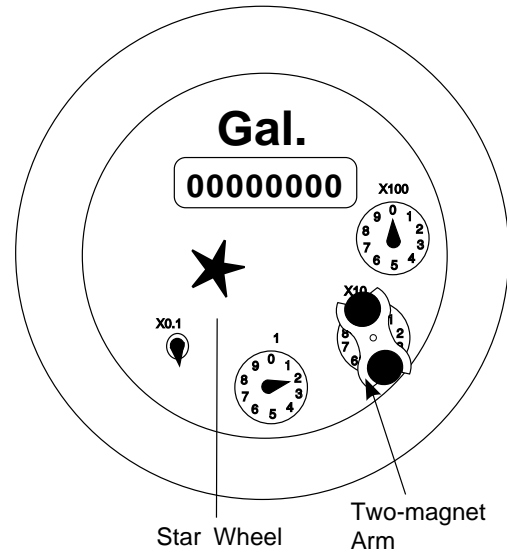
Changing Sensors. Sensors are threaded into the lens hand tight. Unthread one sensor and thread in the other.

	Pulse Rate	Magnet Position	No. of Magnets
3/4"	20 P/G	X.01	2
	10 P/G	X.01	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"	26 P/G	*	2
	13 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"	10 P/G	*	2
	5 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
	500 G/P	X100	2
	1000 G/P	X100	1
2"	9.5 P/G	*	2
	4.75 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
	500 G/P	X100	2
	1000 G/P	X100	1

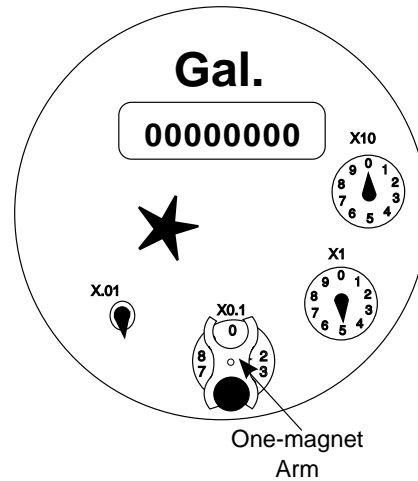
* Star wheel position

Pulse Rate Examples

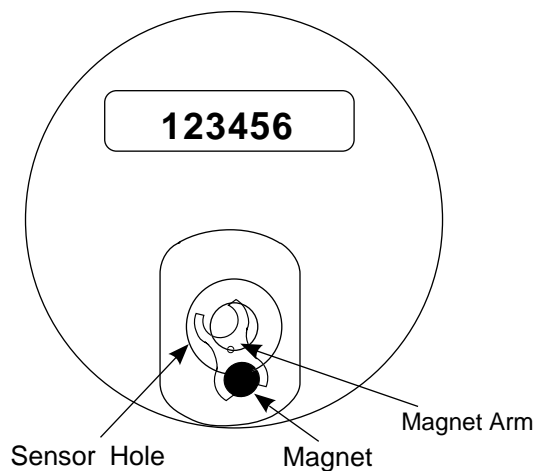
50 G/P (1-1/2" or 2" meter)

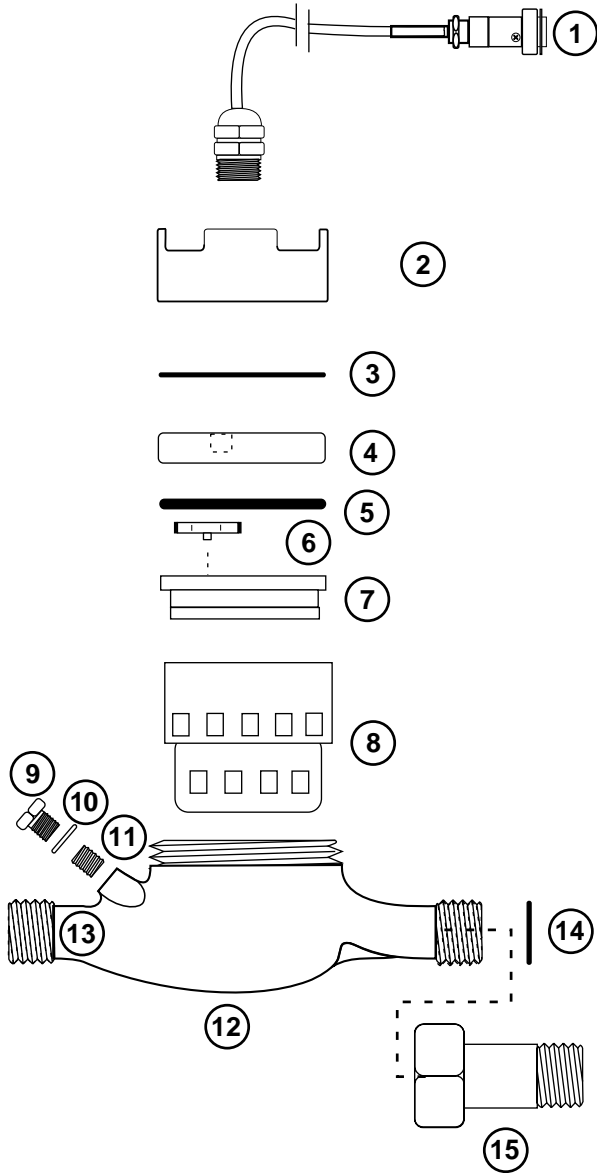


1 P/G (3/4" or 1" meter)



Locating sensor over magnet





M-Series Parts				
Item	Part	Description	Stock #	
1	Sensor	ME sensor	11001	
		ME sensor w/LMI conn.	11005	
		ME sensor w/SeaMetrics conn.	11010	
		MR sensor (MS2)	12060	
2	Ring Base	3/4"	14060	
		1"	14070	
		1-1/2" \varnothing 2"	14080	
3, 5	Gasket Set	3/4"	16081	
		1"	16082	
		1-1/2"	16083	
		2"	16084	
4	Lens	ME/MR	MT	
		3/4"	16019	16000
		1"	16020	16001
		1-1/2" \varnothing 2"	16021	16002
Assembly Parts:				
6	ME/MR Magnet Arm		16355	
7	Register 3/4"		16155	
7	Register 1"		16160	
7	Register 1-1/2"		16165	
7	Register 2"		16170	
8	Bottom Chamber 3/4"		16135	
8	Bottom Chamber 1"		16140	
8	Bottom Chamber 1-1/2" - 2"		16145	
9	Locking Screw	3/4" \varnothing 1"	16105	
		1-1/2" \varnothing 2"	16110	
10	Sealing Gasket	3/4" \varnothing 1"	16115	
		1-1/2" \varnothing 2"	16120	
11	Orifice Screw	3/4" \varnothing 1"	16125	
		1-1/2" \varnothing 2"	16130	
12	Meter Body	3/4"	14010	
		1"	14020	
		1-1/2"	14030	
		2"	14040	
13	Tubular Strainer	3/4"	16025	
		1"	16030	
		1-1/2"	16035	
		2"	16040	
14	Coupling Gasket	3/4"	16077	
		1"	16078	
		1-1/2"	16079	
		2"	16080	
15	Coupling	3/4"	14090	
		1"	14100	
		1-1/2"	14110	
		2"	14120	