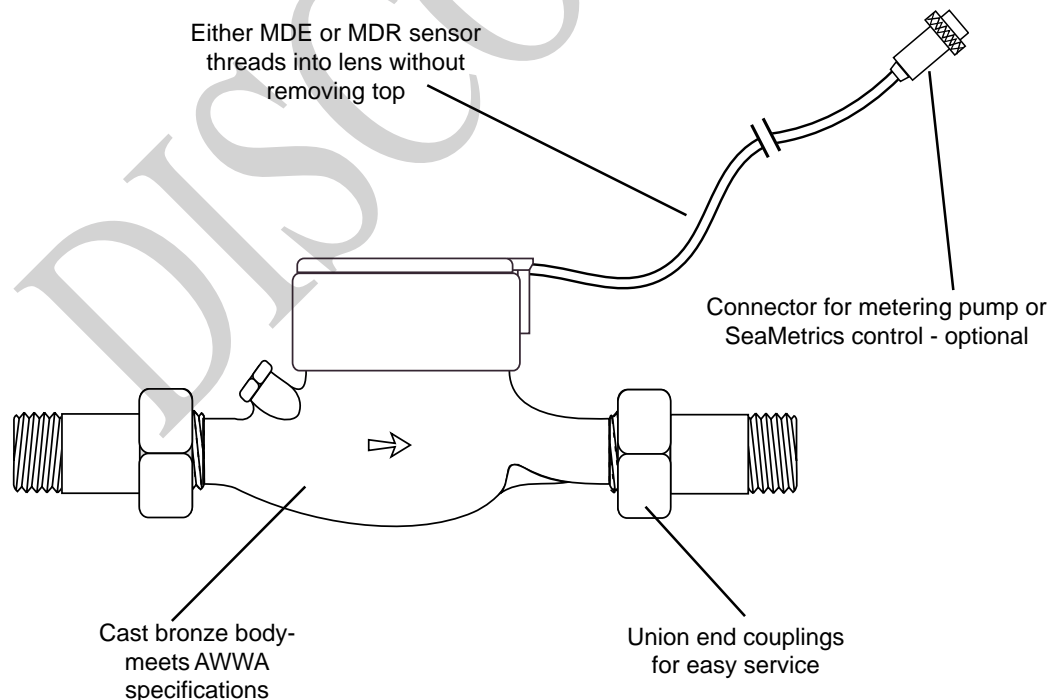


General Information

MD-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 MD-Series meters are the same. The difference between MDE and MDR meters is in the sensor. MDE 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) which have sensor power. MDR meters use a two-wire reed switch. They provide a dry contact closure and do not require power. MDT meters do not have a sensor, totalize only.

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

MDE	Solid state
MDR	Reed switch

Max. Current

MDE	20 mA
MDR	50 mA

Max. Voltage

MDE	24 VDC
MDR	24 VDC or 24 VAC

Sensor Power (MDE)

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

Installation



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

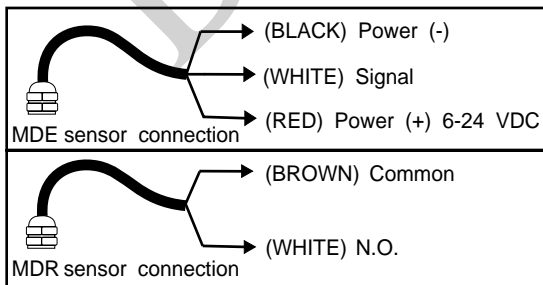
Position. MD-Series meters should be installed horizontally with the register up. Vertical mounting will result in some degree of under-measurement and shortened life of the bearings.

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. MDE and MDR sensors are supplied with a color coded output cable. See the diagram for color codes and polarity. Optional connectors can be ordered to plug directly into a SeaMetrics control or a specific brand of metering pump.



Pulse Output. Both MDE and MDR 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

SeaMetrics recommends all service to 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. Please contact SeaMetrics before sending meter in for calibration or servicing.

Internal Parts Replacement. All of the internal parts of an MD-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. The three pieces of the assembly can be separated by hand.

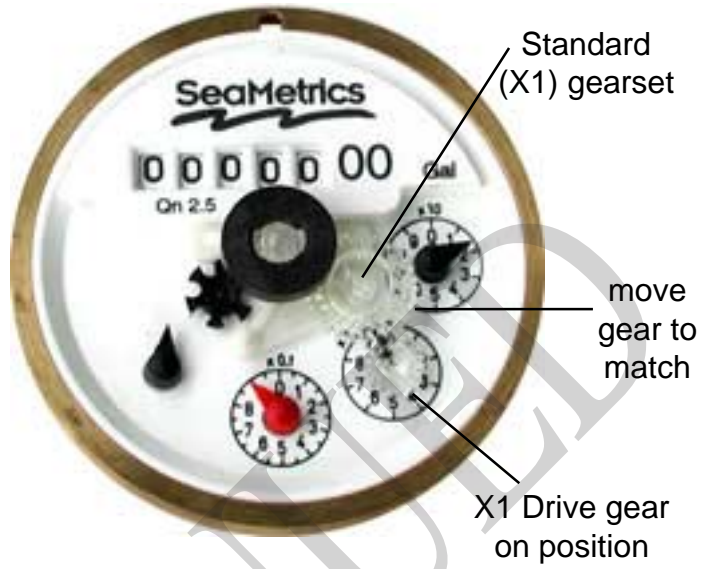
Excessive flow can cause breakage. Compare maximum flow with the flow rating table.

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.

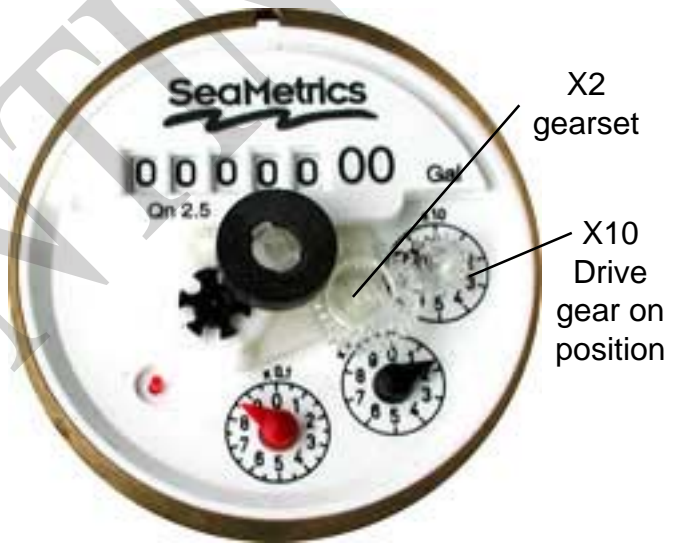
If a different gear set is required, follow the same procedure, replacing rather than moving the drive gear. To install a drive gear on another shaft, remove the pointer and then press the gear down until it bottoms. Use the pulse rate chart to determine the position.

	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			

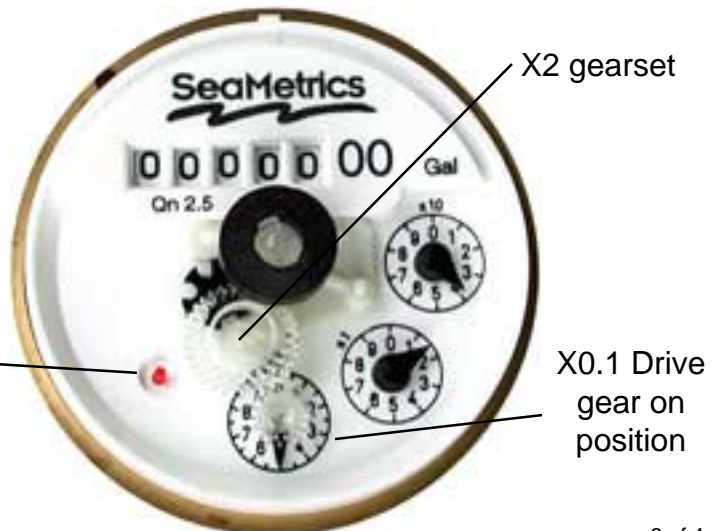
3/4" - 10 gallons/pulse



3/4" - 50 gallons/pulse



3/4" - 1 gallon/pulse



*Unlabelled position

MD-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" MD METERS
16125	Calibration Plug
16105	Calibration Plug Cap Screw
30381	Coupling Assembly (2 required)
30416	Coupling Gasket (2 required)
30311	Multi-jet Assembly
30308	Register Assembly
30479	Strainer
Part #	FOR 1" MD 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" MD 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" MD 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

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