

MJP/MJN-Series

Pulse Meter Instructions



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MJP-Series and MJN-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 Seametrics MJP-Series and MJN-Series are **certified to NSF/ANSI 61**. 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 pointers is replaced by a magnet, which is detected by an encapsulated sensor attached to the outside of the lens. Pulse rate is determined by the dial on which the magnet is placed, and by the number of sensors (single or double).

Changing the pulse rate requires no special tools and can be done in the field.

The **MJP-Series** has a plastic body and is available in 3/4", 1", and 1 1/2" versions.

The **MJN-Series** has a brass body and is available in 3/4", 1", 1 1/2" and 2" versions.

MJPE & MJNE meters use a solid-state, long-lasting Hall-effect sensor, which requires power. It is suited for use with Seametrics controls and metering pumps that have sensor power.

MJPR & MJNR meters use a two-wire reed switch. They provide a dry contact closure and do not require power.

MJPT & MJNT meters totalize only and do not have a sensor.

Features



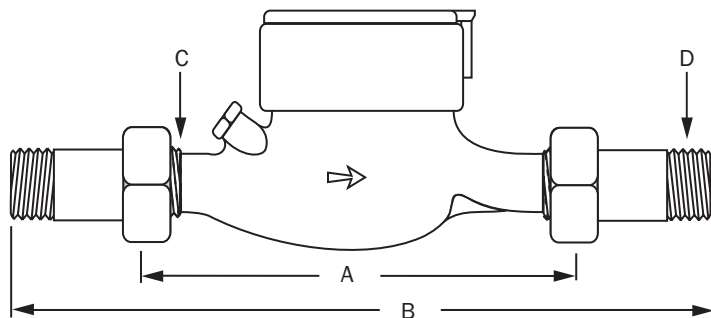
Specifications*

Power		6 mA at 12 Vdc (MJPE & MJNE only)			
Temperature		105° F (40° C) max			
Pressure		150 psi operating (10.3 Bar)			
Materials	Body	Plastic (MJP) or Eco-brass alloy (MJN)			
	Internals	Engineered thermoplastic			
	Magnet	Alnico			
	Fittings	Lead-free tail piece			
Accuracy		±1.5% of reading			
Pulse Output		MJPE/MJNE	MJPR/MJNR	MJPT/MJNT	
	Sensor	Hall-effect device	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" (MJN only)
	Minimum	0.25	0.75	1.5	2.0
	Maximum	20	50	100	160
Regulatory		NSF/ANSI 61, complies with Federal Public Law 111-380			
Standards		ISO4064 Class B, AWWA C708			

*Specifications subject to change • Please consult our website for current data (www.seametrics.com).

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

Dimensions



MJP	3/4"	1"	1 1/2"
A (body)	7 1/2"	10 1/4"	11 3/4"
B (w/couplings)	11 5/8"	15"	17"
C (IPS thread)	1"	1 1/4"	2"
D (NPT thread)	3/4"	1"	1 1/2"

MJN	3/4"	1"	1 1/2"	2"
A (body)	7 1/2"	10 1/4"	11 3/4"	11 3/4"
B (w/couplings)	11 5/8"	15"	17"	17 5/8"
C (IPS thread)	1"	1 1/4"	2"	2 1/2"
D (NPT thread)	3/4"	1"	1 1/2"	2"

Pulse Rates

	3/4"	1"	1 1/2"	2" (MJN only)
Pulses per Gallon	20* 10 4† 2* 1	4† 2* 1	4† 2* 1	4† 2* 1
Gallons per Pulse	1 5* 10 50* 100	1 5* 10 50* 100	1 5* 10 50* 100	1 5* 10 50* 100
Cubic Feet per Pulse	1 5* 10	1 5* 10	1 5* 10	1 5* 10
Pulses per Cubic Meter	1 10 100	1 10 100	1 10 100	1 10 100
Liters per Pulse	1 10 100	1 10 100	1 10 100	1 10 100

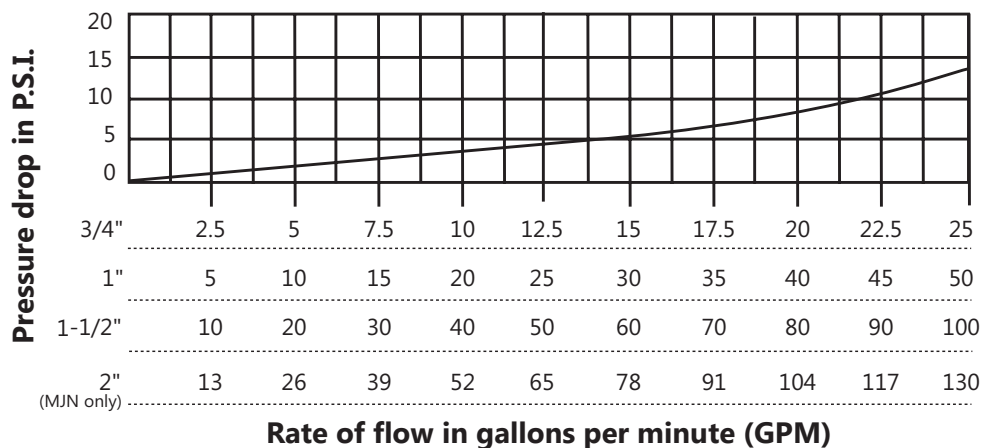
*MJPR/MJNR dual reed switch meters only

†MJPR/MJNR single reed switch meters only

Shipping Weight

	MJP		MJN	
	lb	kg	lb	kg
3/4"	3	1.4	6	2.7
1"	4.5	2	8	3.6
1 1/2"	7.5	3.4	13	5.9
2"	n/a	n/a	16	7.3

Pressure Drop Curve



Position

MJP/MJN-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. If connecting a plastic meter to metal pipe, you can use brass tail pieces, but you **MUST** use the plastic coupling nuts.

Connections

MJPE/MJNE and MJPR/MJNR sensors are supplied with a color coded output cable (see diagrams to right). Optional connectors can be ordered to plug directly into a Seametrics control or metering pump.

Pulse Output

Both MJPE/MJNE and MJPR/MJNR 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.

Setting Pulse Rate

The pulse rate is determined by which sensor was ordered from the factory 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.

1. Find your desired pulse rate (Column 1)
2. Note the magnet pointer position (Column 2)
3. Move the magnet pointer to the appropriate dial position (see detailed instructions on next page)
4. Use the appropriate Connection Diagram (from Column 3) to wire the sensor to your remote device (using diagrams at right).

Column 1

Column 2

Column 3

Pulse Rate	Magnet Pointer Dial Position	Connection Diagram #
*20 P/G (3/4" only)	x0.01	2
10 P/G (3/4" only)	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 CF/P	x0.1	1
*5 CF/P	x1	2
10 CF/P	x1	1
1 P/CM	x0.1	1
10 P/CM	x1	1
100 P/CM	x10	1
1 L/P	x0.1	1
10 L/P	x1	1
100 L/P	x10	1

**MJPR/MJNR dual reed switch meters only*
**MJPR/MJNR single reed switch meters only. 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.*

Diagram 1: Single Sensor

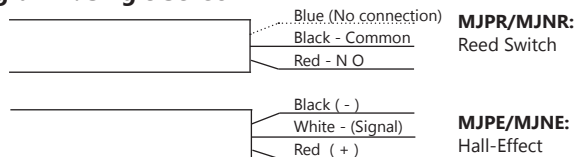


Diagram 2: Dual Sensor

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



To Distinguish Single Sensor From Dual:

Single: (if new from factory) blue wire is cut back on cable end.

Dual: A red mark 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.

Moving the Magnetic Pointer



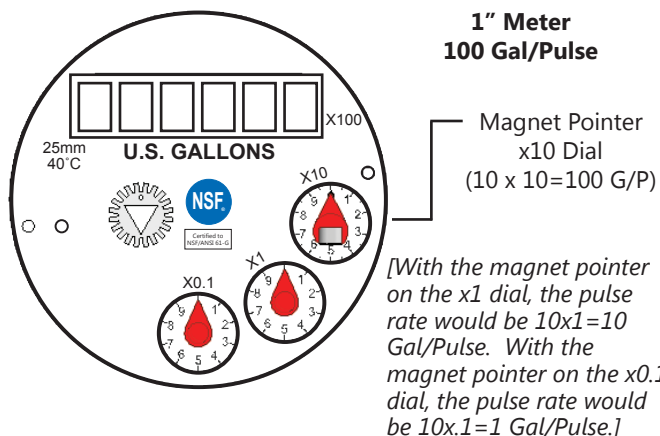
NOTE! When removing the large meter nut, Seametrics recommends using a 24" pipe wrench. Larger or smaller pipe wrenches may damage the nut on plastic units!!

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.

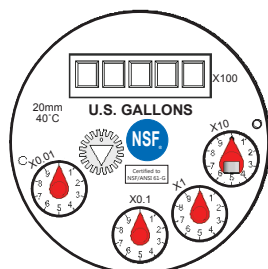
†NOTE: A special magnet (available from the factory) is required to achieve a rate of 4 pulses per gallon. It should be placed on the x0.1 dial, with non-magnetic pointers on the remaining dials. Otherwise, the procedure is the same.

Sample Set-Up

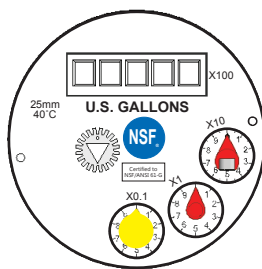
A 1" meter is shown with the magnet pointer set at the x10 dial, with a pulse rate of 100 Gallons per Pulse (that is, 10 increments on the x10 dial, or $10 \times 10 = 100$ Gal/Pulse).



Special Configurations



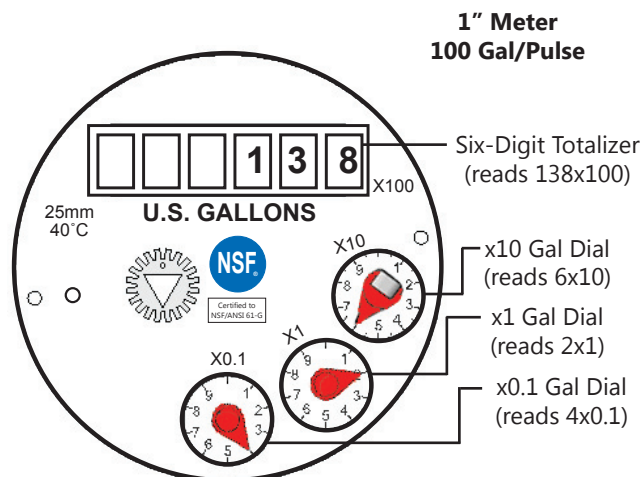
The **3/4" meter** has a fourth dial, as shown above. The x0.01 dial is used for 20 P/G and 10 P/G rates. Note: The 3/4" meter has a 5 digit totalizer.



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

Reading 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 (138×100), and the dials read 60 (6×10), 2 (2×1), and .4 (4×0.1) 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.

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 may be done by a local mobile meter service or in a private or municipal meter shop. Changes in calibration should be made at an authorized meter shop.

MJP/MJN-Series Parts

		¾"	1"
1	Lid and Hinge Pin Assembly	101068	101069
2	Lens Gaskets (O-ring & slip ring)	101071	101072
3	a Internal Assembly (gallons)	103677	103678
	b Internal Assembly (cubic feet)	103681	103682
	c Internal Assembly (cubic meters)	103685	103686
	d Internal Assembly (liters)	103689	103690
4	a Brass Coupling Assembly w/Gasket (incl 2 sets)	103239-075	103239-100
	b Plastic Coupling Assembly w/Gasket (incl 2 sets)	103924-075	103924-100
5	Coupling Gasket (incl 2)	101081	101082
6	Lens	101004	101004
7	Sensor Screw	101045	101045
8	a Single Reed Switch Sensor (MJP/MJR)	100980	100980
	b Double Reed Switch Sensor (MJP/MJR)	100993	100993
9	c Single Hall-Effect Sensor (MPE/MJE)	101065	101065
10	a Register (gallons)	103302-001-075	103302-001-100
	b Register (cubic feet)	103302-002-075	103302-002-100
	c Register (cubic meters)	103302-003-075	103302-003-100
	d Register (liters)	103335-075	103335-100
11	Internal Strainer	101016	101043
12	Tubular Strainer	101029	101030
13	Register Gasket	101013	101027

		1½"	2" (MJN only)
1	Lid and Hinge Pin Assembly	101070	101070
2	Lens Gaskets (O-ring & slip ring)	101085	101085
3	a Internal Assembly (gallons)	103679	103680
	b Internal Assembly (cubic feet)	103683	103684
	c Internal Assembly (cubic meters)	103687	103688
	d Internal Assembly (liters)	103691	103692
4	a Brass Coupling Assembly w/Gasket (incl 2 sets)	103239-150	103239-200
	b Plastic Coupling Assembly w/Gasket (incl 2 sets)	103924-150	n/a
5	Coupling Gasket (incl 2)	101083	101084
6	Lens	101004	101004
7	Sensor Screw	101045	101045
8	a Single Reed Switch Sensor (MJP/MJR)	100980	100980
	b Double Reed Switch Sensor (MJP/MJR)	100993	100993
9	c Single Hall-Effect Sensor (MPE/MJE)	101065	101065
10	a Register (gallons)	103302-001-150	103302-001-200
	b Register (cubic feet)	103302-002-150	103302-002-200
	c Register (cubic meters)	103302-003-150	103302-003-200
	d Register (liters)	103335-150	103335-200
11	Internal Strainer	101044	101044
12	Tubular Strainer	101031	101032
13	Register Gasket	102228	102228

Internal Parts Replacement. All of the internal parts of an MJP/MJN-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 counter top to loosen the internals. The assembly can be separated by hand.

