

OMNI™ R²

2" OMNI R² Meter

Over 1" WATER METERS

USE WITH VL9 REMOTE READER

DESCRIPTION

Model: The OMNI R² meter operation is based on advanced Floating Ball Technology (FBT) with an operating range of 1.0 GPM (.23 m³/hr) @ 95% min. to 200 GPM (45 m³/hr) @ 100% +/- 1.5% registration of actual throughput. The meter is also rated for continuous flows up to 200 GPM (45 m³/hr).

Conformance to Standards: The OMNI R² meter meets and far exceeds the most recent revision of ANSI / AWWA Standard C701 class II standards and exceeds ANSI/AWWA C700 Residential Standard using Sensus Turbo technology. Each meter is performance tested to ensure compliance. All OMNI meters are NSF Approved to the latest standards.

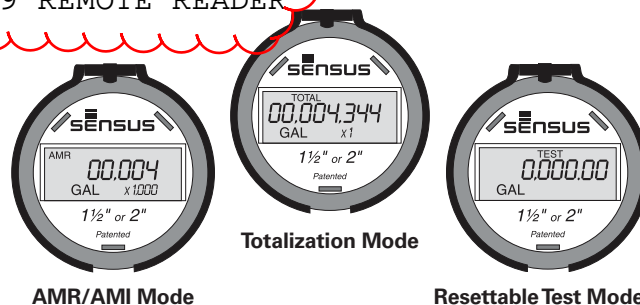
Performance: The patented measurement principles of the OMNI R² meter assure enhanced accuracy ranges, an overall greater accuracy, and a longer service life than any other comparable class meter produced. The R² meter has no restrictions as to sustained flow rates within its continuous operating range. The floating ball measurement technology allows for flows up to its rated maximum capacity without affecting undue wear or accuracy degradation.

Construction: The R² meter consists of two basic assemblies; the maincase and the measuring chamber. The measuring chamber assembly includes the "floating ball" impeller with a coated titanium shaft, hybrid axial bearings, integral flow straightener and an all electronic programmable register with protective bonnet. The maincase is made from industry proven Ductile Iron with an approved NSF epoxy coating. Maincase features are; easily removable measuring chamber, unique chamber seal to the maincase using a high pressure o-ring, testing port and a convenient integral strainer.

OMNI Electronic Register: The R² electronic register consist of a hermetically sealed register with an electronic pickup containing no mechanical gearing. The large character LCD displays AMR, Totalization and a Resettable Test Totalizer. OMNI register features; AMR resolution units that are fully programmable, Large, easy-to-read LCD also displays both forward and reverse flow directions and all with a 10-year battery life guarantee.

Magnetic Drive: Meter registration is achieved by utilizing a fully magnetic pickup system. This is accomplished by the magnetic actions of the embedded rotor magnets and the ultra sensitive register pickup probe. The only moving component in water is the "floating ball" impeller.

Measuring Element: The revolutionary thermoplastic, hydro dynamically balanced impeller floats between the bearings. The Floating Ball Technology (FBT) allows the measuring element to operate virtually without friction or wear, thus creating the extended upper and lower flow ranges capable on only the OMNI R² meter.

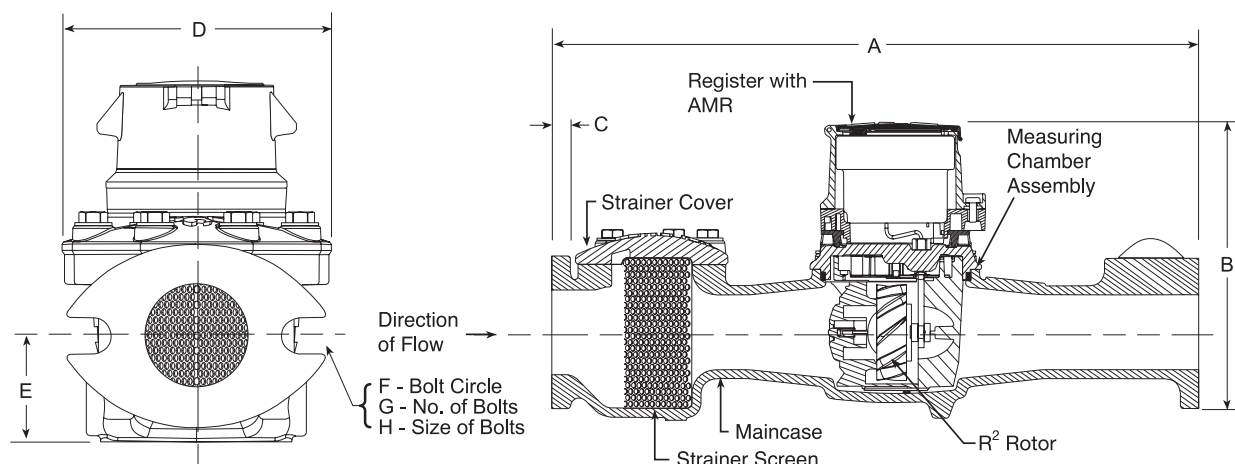
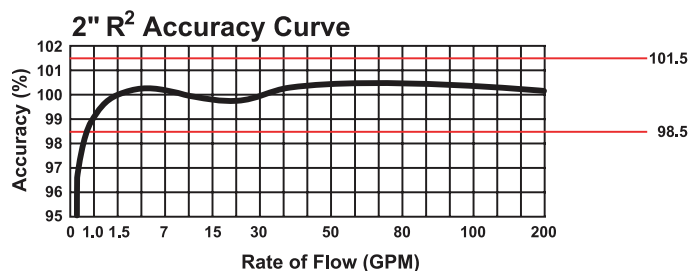
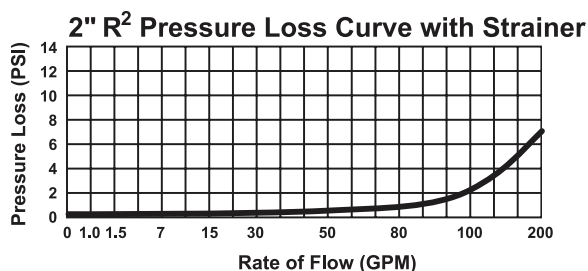


Strainer: The OMNI R² with the "V" shaped integral strainer using a stainless steel screen along with Floating Ball Technology (FBT) create a design that gives far improved accuracy even in those once thought questionable settings. A removable strainer cover permits easy access to the screen for routine maintenance.

Maintenance: The OMNI R² meter is designed for easy maintenance. Should any maintenance be required, the measuring chamber and / or strainer cover can be removed independently. Parts and or a replacement measuring chamber may be utilized in the event repairs are needed. Replacement and Measuring Chamber Exchange are available under the Sensus MMP Program for the R² meters and this program may also be utilized for retrofitting to competitive meters to achieve increased accuracy and extended service life.

AMR / AMI Systems: Meters and encoders are compatible with current Sensus AMR/AMI systems.

Guarantee: Sensus OMNI R² Meters are backed by "The Sensus Guarantee." Ask your Sensus representative for details or see Bulletin G-500.



DIMENSIONS AND NET WEIGHTS

Meter and Pipe Size	Normal Operating Range	Connections	A	B	C	D	E	F	G	H	Net Weight	Shipping Weight
2"	1.0 gpm	200 gpm	17"	7-7/8"	1"	5-3/4"	2-5/16"	4-1/2"	2	3/4"	27.4 lbs.	34.5 lbs.
DN 50mm	.23 m ³ /hr	45 m ³ /hr	432mm	200mm	25mm	146mm	59mm	114mm	2	19mm	12.42 kg	15.65 kg.

SPECIFICATIONS

SERVICE	Measure of potable water. Operating temperature range of 33°F (.56°C) – 150°F (65.6°C).
OPERATING RANGE	100% ± 1.5% from 2.5 – 200 GPM (.56 – 45 m ³ /hr)
LOW FLOW	95% – 101.5% @ 1.0 GPM (.23 m ³ /hr)
PRESSURE LOSS	7.0 psi @ 200 GPM (.48 bar @ 45 m ³ /hr)
MAXIMUM OPERATING PRESSURE	200 PSI (13.8 bar)
FLANGE CONNECTIONS	2" U.S. ANSI B16.1 / AWWA Class 125
REGISTER	Fully electronic sealed register with programmable registration (Gal. /Cu.Ft./ Cu. Mtr. / Imp.Gal / Acre Ft.) Programmable AMR/AMI reading Guaranteed 10 year battery life

NSF APPROVED MATERIALS	Maincase: Coated Ductile Iron
	Measuring Chamber: Thermoplastic
	Rotor "Floating Ball": Thermoplastic
	Radial Bearings: Hybrid Thermoplastic
	Thrust Bearings: Sapphire/Ceramic Jewel
	Magnets: Ceramic Magnet
	Strainer Screen: Stainless Steel
	Strainer Cover: Coated Ductile Iron
	Test Plug: Coated Ductile Iron

TO BE INSTALLED ON BACK WITH COVER TO MATCH
EXISTING PAINT COLOR

VL9

REMOTE READER FOR WATER METERS



FEATURES:

- ◆ Environmentally sealed ◆ Connects to Meter M.I.U. ◆ Large easy to read DISPLAY
- ◆ “TAP” switch to get current meter reading ◆ 8 digit meter readings ◆ 12 digit meter ID
- ◆ Alpha numeric ◆ 5 year limited warranty ◆ Solution for confined space meters
- ◆ Convenient cost effective solution to inaccessible meters, i.e., Shopping Malls, etc.

METER CONNECTIVITY:

- ◆ Sensus ◆ Invensys ◆ Neptune ◆ Amco/Kent ◆ Schlumberger ◆ Badger ADE
- ◆ Any meter with Sensus protocol

Kemp-Meek MFG. INC.
101 Park Central
Mineola, TX 75773
903.569.9700
www.kempmeek.com

Distributor

PHYSICALS:

4.6" X 4.3" X 2" thick (11.7cm X 10.9cm X 5.1cm thick)

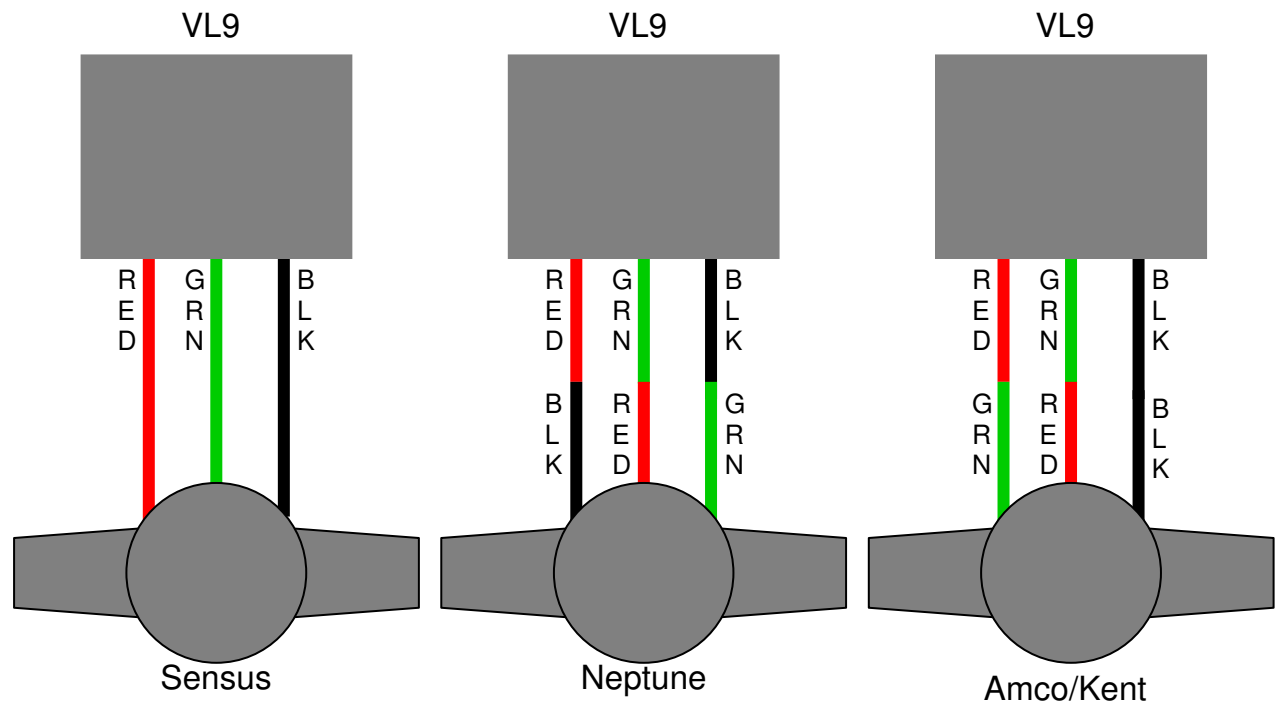
Operating Temperature:

-30 to 80 °C (-22 to 176 °F)

Weight:

9oz (254g)

INSTALLATION:



WARRANTY:

This Visu-Link is warranted to be free from manufacturing defects and is subject to replacement in the event of failure five years or less from the date of manufacture. Mis-use, abuse, vandalism, physical damage or acts of God are not covered by this warranty. Expenses incurred due to device failure or expenses related to replacement are not covered. Transportation cost are not covered. Kemp-Meek reserves the right to repair or replace a defective unit and in no case shall the liabilities exceed the unit price. No other warranty is expressed or implied. No modification of this warranty is permitted without the authorized written consent of Kemp-Meek Mfg., Inc. Warranty applies only to original purchaser of this product.

Kemp-Meek MFG. INC.
101 Park Central
Mineola, TX 75773
903.569.9700
www.kempmeek.com

VL9 Encoded Remote Totalizer



General

The VL9 is a battery powered remote totalizer that works with any meter with Sensus or Neptune Encoded output. This includes most Actaris 250 and 400 class gas meters as well as a variety of water meters. Encoder technology directly reads the position of the odometer wheels on the meter when interrogated. This technology does not rely on pulse output, so Encoded systems are not prone to the mismatched meter/remote totalizer readings that can sometimes arise with pulse based systems. The Remote totalizer is always the same as the Encoder index on the meter. It provides nearly error free reading.

Materials / Construction

All electronics are sealed in a single piece lexan cover with a wall mount back plate.

Operating Specifications / Tech Data

Operating Temp:	-22 to 176°F (-30 to 80°C)
Meter Reading	8 Digit Read
Meter ID	12 Digits
Power:	3V Non-replaceable Li
Battery Life:	5 Years
Reading Distance:	500 feet (using 22G cable)
Update Frequency:	Wakes up when "tapped"

For Sales & Service Contact:

41 Magnolia Avenue
Cambridge MA 02138
Phone: (617) 290-2134
Fax: (240) 250-8907

Follin Flo-Controls

www.FollinFlo-Controls.com
sales@FollinFlo-Controls.com

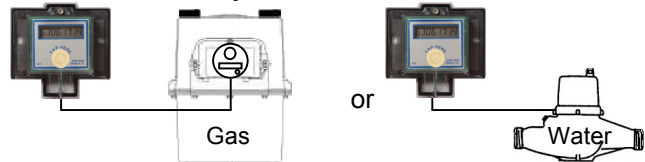
Doc. Ref: MPVL6_Encoded_Tot_v2

5 Heritage Hill Rd.
Norwalk, CT 06851
Phone: (203) 845-0593
Fax: (203) 846-3825

Dimensions

4.6 wide x 4.3 high x 2" thick

Installation & Operation Considerations



The unit is permanently sealed in a waterproof Lexan case. It can be installed inside or outside.

It has a wall mounting bracket with pre-drilled holes. (mounting HW provided)

Terminate cable under the cover using the connectors provided and terminate the red, green and black wires according to schematic below.

Never place the cable in a conduit with AC conductors.

Wire the totalizer to the encoder on the meter:

Totalizer	Sensus/Invensys	Neptune/SLB*
Red	Red	Black
Green	Green	Red
Black	Black	Green

*does not work w/ AutoRead protocol

The unit will wake up when you strike the "TAP" switch with something hard like the handle of a screw driver. The percussion wakes the unit up and it will display the meter read, followed by the serial number.

The battery is designed to last a minimum of 5 years. When the battery dies, simply replace with a new totalizer. Because it reads encoded output, no reads are lost, the new totalizer will display the exact value on the meter. (Note: it does round down to nearest 5 places of the last moving odometer wheel)

Options & Accessories

Data Logging Capability
SW for Downloading Reads

Examples of readings:

Neptune water meters with Pro-Read Register.

It is best to have the water meter's register programmed to ENCODED or MIU output mode not AUTO DETECT mode. Registers in Auto Detect mode will sometimes experience data clashes that give erroneous readings.

The VL-9 does not display the "fixed zeros" or multipliers that are printed to the right of the turning odometer wheels. As such you need to add zeros accordingly. It is helpful to add a sticker as a reminder.

Gallons Readout

Meter Size & Type	Multiplier
5/8" to 1" T-10	x 10
1 1/2" T-10 to 4" Turbine	X100
6" to 12" Turbine	X1000

Cubic Feet Readout

Meter Size & Type	Multiplier
5/8" to 1" T-10	X1
1 1/2" T-10 to 4" Turbine	X10
6" to 12" Turbine	X100

Note: The VL-9 Rounds down to the nearest:

Meter Size & Type	CuFt	Gallons
5/8" to 1" T-10	5	50
1 1/2" T-10 to 4" Turbine	50	500
6" to 12" Turbine	500	5000



This is a Neptune 2" T-10 Register that reads in CuFt x 10 or 10 CuFt. Since the reading on this register is 10 Cuft, it would be rounded down to 0. If for example it read 34790 CuFt the VL-9 would read 3475 and you would need to add a zero to the reading for the multiplier.

For Sales & Service Contact:

41 Magnolia Avenue
Cambridge MA 02138
Phone: (617) 290-2134
Fax: (240) 250-8907

Follin Flo-Controls

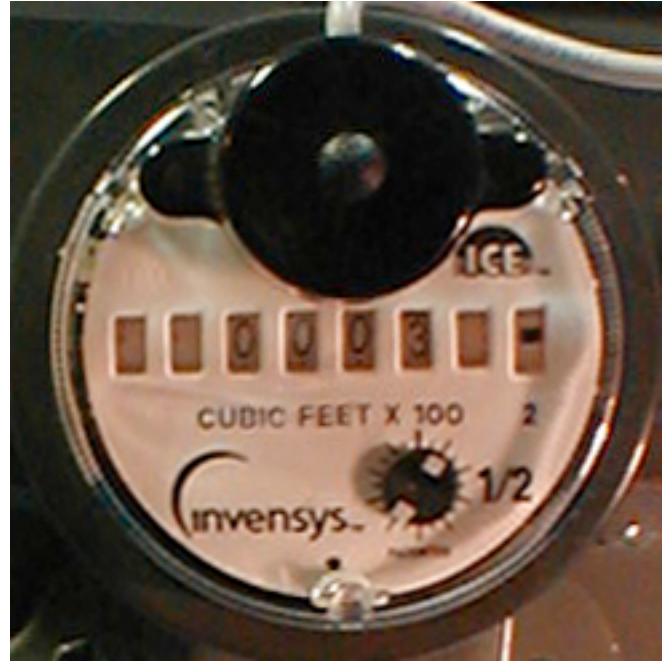
www.FollinFlo-Controls.com
sales@FollinFlo-Controls.com

Doc. Ref: MPVL6_Encoded_Tot_v2

Actaris gas meter with Sensus ECI Encoder

The ECI register on the meter only displays 4 digits. The reading is in Cubic Feet x100.

The VL-9 does not display the "fixed zeros" or multipliers that are printed to the right of the turning odometer wheels. As such you need to add zeros accordingly. It is helpful to add a sticker as a reminder.



This is a Itron (Sprague/Schlumberger/Actaris) Metris 250 gas meter with an encoded index. The index reads 3 x100 or 300 Cubic feet. The VL-9 would simply read 3, so you would need to add two zeros or put a sticker on the unit that says "x100 CuFt".

Error Codes:

VL-9 Reads:	Description of Problem
No Response	Meter is not wired or connected properly to VL9
Unknown Register	Verify the meter connected is in the supported meter types list
Framing Error	Check cable
Parity Error	Check Cable

Supported Meters:

Water: Sensus, Neptune (Pro-read), AMCO/Kent, Schlumberger, Badger ADE, Neptune Trident, Badger 25 Read-omatic

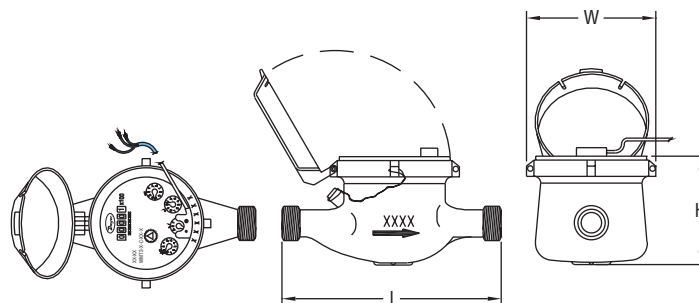
Gas: Any gas meter with Sensus ICE Protocol register

5 Heritage Hill Rd.
Norwalk, CT 06851
Phone: (203) 845-0593
Fax: (203) 846-3825



Series WMT2 Multi-Jet Water Meters with Pulsed Output

Specifications - Installation and Operating Instructions



Size in (mm)	Spud NPSM (BSPP)	Length 'L' in (mm)	Width 'W' in (mm)	Height 'H' in (mm)	Weight lb (kg)
5/8 (15)	3/4" (3/4")	6-1/2 (165)	3-45/64 (94)	4-15/64 (107.5)	3.75 (1.7)
5/8 x 3/4	1" (1")	7-1/2 (190)	3-45/64 (94)	4-15/64 (107.5)	3.97 (1.8)
3/4 (20)	1" (1")	7-1/2 (190)	3-45/64 (94)	4-15/64 (107.5)	4.9 (2.2)
1 (25)	1-1/4" (1-1/4")	10-1/4 (260)	3-55/64 (98)	4-5/8 (117.5)	6.4 (2.9)
1-1/4 (32)	1-1/2" (1-1/2")	10-1/4 (260)	3-55/64 (98)	4-5/8 (117.5)	8.2 (3.7)
1-1/2 (40)	2" (2")	11-13/16 (300)	4-51/64 (122)	5-9/16 (141.5)	13.52 (6.17)
2 (50)	2-1/2" (2-1/2")	11-13/16 (300)	5-45/64 (145)	6-31/32 (177)	18.74 (8.5)

The **Series WMT2 Multi-Jet Water Meter** is ideal for commercial and industrial applications. The multi-jet design allows simplicity and accuracy with wide flow ranges, even in low flow applications. The magnetically driven, hermetically sealed register will not leak or fog and is completely separated from the water. These water meters are designed for long service life and maintenance-free operation.

Installation Instructions

1. Thoroughly flush the service line upstream of the meter to remove dirt and debris.
2. Remove meter spud thread protectors.

Note: To protect meter spud threads, store the meter with thread protectors in place.

3. Set the meter in the line. Install in a horizontal plane, with the register upright, in a location accessible for reading, service and inspection. Arrows on the side of the meter and above the outlet spud indicate the direction of flow.
4. For accurate measurement, the tap height should be higher than the meter.
5. Do not over-tighten connections; tighten only as required to seal. Do not use pipe sealant tape on meter threads.
6. With upstream shut-off valve only: Open shut-off valve slowly to remove air from meter and service line. Open a faucet slowly to allow entrapped air to escape. Close the faucet.

With both upstream and downstream shut-off valves installed:

7. Test the installation for leaks: Close the outlet (downstream) shutoff valve. Open the inlet (upstream) shut-off slowly until meter is full of water. Open the outlet (downstream) valve slowly until air is out of the meter and service line. Open a faucet slowly to allow entrapped air to escape. Close the faucet.

SPECIFICATION

Service: Water.

Wetted Materials: Body: Brass, polyethylene; Couplings: Brass; Measuring Chamber: Polyethylene, ABS plastic, ferrite, acetel.

Flow Range: See model chart.

Accuracy: Transitional Flow: $\pm 5\%$; Nominal Flow: $\pm 2\%$.

Temperature Limit: 104°F (40°C).

Pressure Limit: 232 psi (16 bar).

Pressure Drop: See pressure drop chart.

Totalizing Display Maximum: See model chart.

Output Signal: Pulse output with frequency proportional to flow rate.

Pulse Options: 0.1 gal, 1 gal, 10 gal, 100 gal per pulse (1 L, 10 L, 100 L per pulse).

Electrical Rating: 0.01 A @ 24 VAC/DC.

Electrical Connections: Color-coded lead wires, 4.5' (1.5 m) long.

Mounting Orientation: Horizontal with register face up.

Weight: See dimension chart.

CAUTION

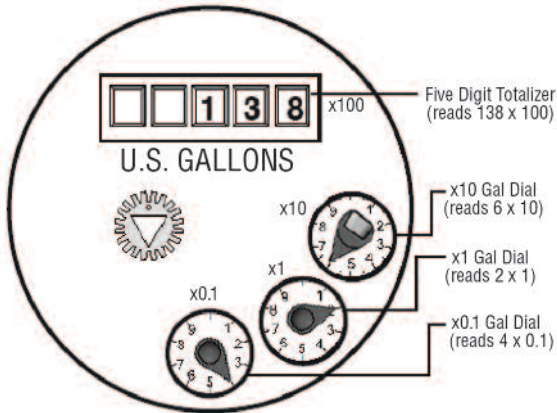
Unit must be installed in a horizontal position with the register face pointing up otherwise leakage and/or meter damage will occur.

Model	Coupling Size	Size	Max Flow	Nominal Flow Range	Transitional Flow	Display Max (Gallons)	Pulse Rate (Gal./Pulse)
WMT2-A-C-01	1/2" NPT	5/8 x 1/2"	20	1 to 10	0.25	9,999,999.99	0.1
WMT2-A-C-02	3/4" NPT	5/8" x 3/4"	20	1 to 20	0.25	9,999,999.99	0.1
WMT2-A-C-03	3/4" NPT	3/4"	30	2 to 30	0.25	9,999,999.99	0.1
WMT2-A-C-04	1" NPT	1"	50	3 to 50	0.75	9,999,999.99	0.1
WMT2-A-C-01-1	1/2" NPT	5/8 x 1/2"	20	1 to 10	0.25	9,999,999.99	1
WMT2-A-C-02-1	3/4" NPT	5/8" x 3/4"	20	1 to 20	0.25	9,999,999.99	1
WMT2-A-C-03-1	3/4" NPT	3/4"	30	2 to 30	0.25	9,999,999.99	1
WMT2-A-C-04-1	1" NPT	1"	50	3 to 50	0.75	9,999,999.99	1
WMT2-A-C-06-10	1-1/2" NPT	1-1/2"	100	5 to 100	1.5	99,999,999.9	10
WMT2-A-C-07-10	2" NPT	2"	160	80 to 160	2	99,999,999.9	10
WMT2-A-C-04-100	1" NPT	1"	50	3 to 50	0.75	9,999,999.99	100
WMT2-A-C-07-100	2" NPT	2"	160	80 to 160	2	99,999,999.9	100

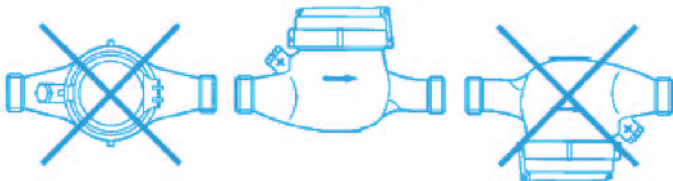
Model	Coupling Size	Size	Max Flow	Nominal Flow Range	Transitional Flow	Display Max (m³)	Pulse Rate (L/Pulse)
WMT2-B-C-08-1	1/2" BSPT	15 mm	3	0.12 to 1.5	0.03	99,999.9999	1
WMT2-B-C-10-1	3/4" BSPT	20 mm	5	0.2 to 2.5	0.05	99,999.9999	1
WMT2-B-C-11-1	1" BSPT	25 mm	7	0.25 to 3.5	0.07	99,999.9999	1
WMT2-B-C-12-1	1-1/4" BSPT	32 mm	12	0.48 to 6	0.12	99,999.9999	1
WMT2-B-C-08-10	1/2" BSPT	15 mm	3	0.12 to 1.5	0.03	99,999.9999	10
WMT2-B-C-12-10	1-1/4" BSPT	32 mm	12	0.48 to 6	0.12	99,999.9999	10
WMT2-B-C-14-10	2" BSPT	50 mm	30	1.2 to 15	0.3	999,999.9999	10
WMT2-B-C-12-100	1-1/4" BSPT	32 mm	12	0.48 to 6	0.12	99,999.9999	100
WMT2-B-C-14-100	2" BSPT	50 mm	30	1.2 to 15	0.3	999,999.9999	100

Meter Reading

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 read clockwise around the small dials. In the example below, the Five-Digit Totalizer reads 13800 (138 x 100), and the dials read 60 (6 x 10), 2 (2 x 1), and 0.4 (4 x 0.1) respectively. The total flow is 13862.4.

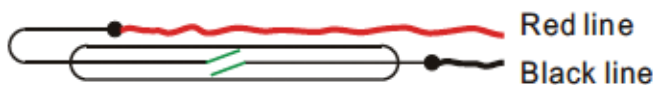


INSTALLATION

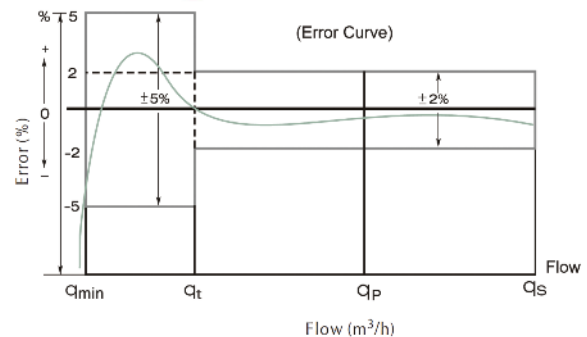
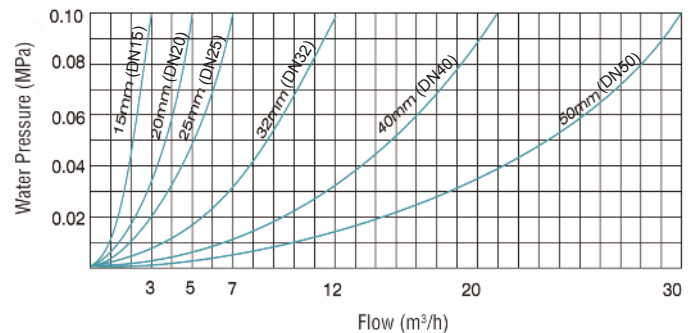
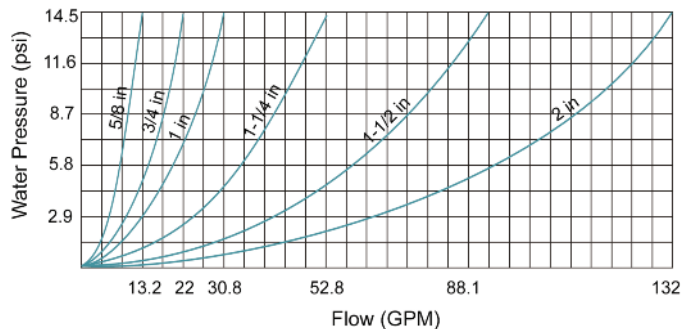


ELECTRICAL INSTALLATION

Dry contact closure, does not require power.



Pressure Drop



Accuracy Chart

MAINTENANCE/REPAIR

Preventative maintenance consists of periodic inspections and cleaning procedures. The procedures should be performed at regular intervals, and any defects discovered should be corrected before further operation of the meter.

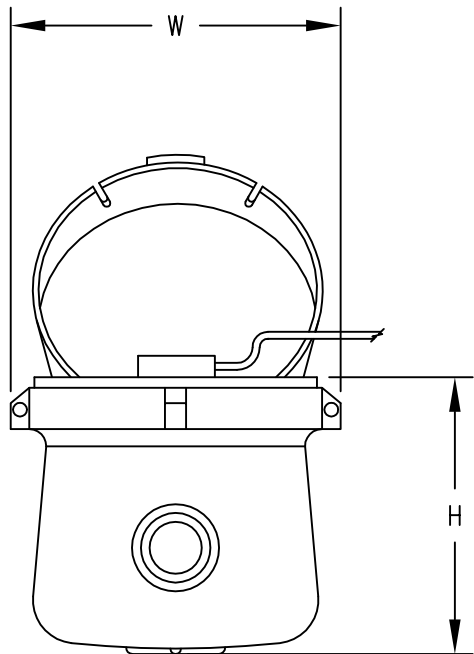
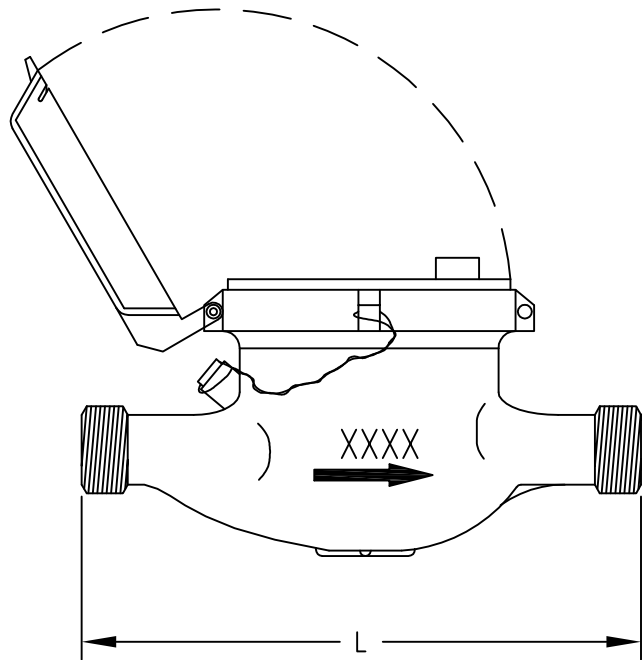
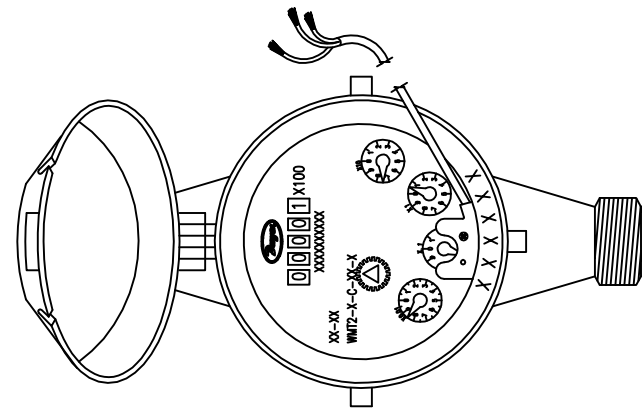
Visually inspect the meter for missing hardware, broken resistor glass, or other signs of wear or deterioration. Verify proper flow rate and pressure for meter. A loss in pressure, with the resulting flow rate decrease, may indicate the meter screen is clogged and requires cleaning.

Clean the strainer yearly, or as required, depending on water condition. Pull out the strainer or back flush the meter to loosen trapped particulates.

The Series WMT2 is not field serviceable and should be returned if repair is needed. Field repair should not be attempted and may void warranty.

WARRANTY/RETURN

Refer to "Terms and Conditions of Sales" in our catalog and on our website. Contact customer service to receive a Return Goods Authorization number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.



R2-700991-00				
U.S. NPSM / NPT THREAD UNITS				
SIZE	FLOW RANGE	L ^{Fraction} _{mm}	W ^{Fraction} _{mm}	H ^{Fraction} _{mm}
5/8 x 1/2"	1-10 GPM	7-1/2" [190mm]	3-45/64" [94mm]	4-15/64" [107.5mm]
5/8 x 3/4"	1-20 GPM	7-1/2" [190mm]	3-45/64" [94mm]	4-15/64" [107.5mm]
3/4"	2-30 GPM	7-35/64" [191.5mm]	3-13/16" [96.84mm]	4-3/4" [120.65mm]
1"	3-50 GPM	10-1/4" [260mm]	3-55/64" [98mm]	4-5/8" [117.50mm]
1-1/4"	3-50 GPM	10-1/4" [260mm]	3-55/64" [98mm]	4-5/8" [117.50mm]
1-1/2"	5-100 GPM	11-13/16" [300mm]	4-51/64" [122mm]	5-9/16" [141.5mm]
2"	80-160 GPM	11-13/16" [300mm]	5-45/64" [145mm]	6-31/32" [177mm]
U.K. BSPP / BSPT THREAD UNITS				
SIZE	FLOW RANGE	L ^{Fraction} _{mm}	W ^{Fraction} _{mm}	H ^{Fraction} _{mm}
15mm	0.12-1.5 m³/h	6-1/2" [165mm]	3-45/64" [94mm]	4-15/64" [107.5mm]
15x20mm	0.12-1.5 m³/h	7-1/2" [190mm]	3-45/64" [94mm]	4-15/64" [107.5mm]
20mm	0.2-2.5 m³/h	7-1/2" [190mm]	3-45/64" [94mm]	4-15/64" [107.5mm]
25mm	0.25-3.5 m³/h	10-1/4" [260mm]	3-55/64" [98mm]	4-5/8" [117.50mm]
32mm	0.48-6 m³/h	10-1/4" [260mm]	3-55/64" [98mm]	4-5/8" [117.50mm]
40mm	0.8-10 m³/h	11-13/16" [300mm]	4-51/64" [122mm]	5-9/16" [141.5mm]
50mm	1.2-15 m³/h	11-13/16" [300mm]	5-45/64" [145mm]	6-31/32" [177mm]

			DATE	NAME	MATERIAL
			DWN BY	ARTWORK WMT2 SERIES MULTI-JET WATER METER WITH PULSED OUTPUT (FOR REFERENCE ONLY) <div>ACAD2002</div>	FINISH
			CHKD		DWYER INSTRUMENTS, INC. MICHIGAN CITY, INDIANA 46360 U.S.A.
			APPD		
NO.	CHANGES	BY/DATE			FR. NO. R2-700991-00
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