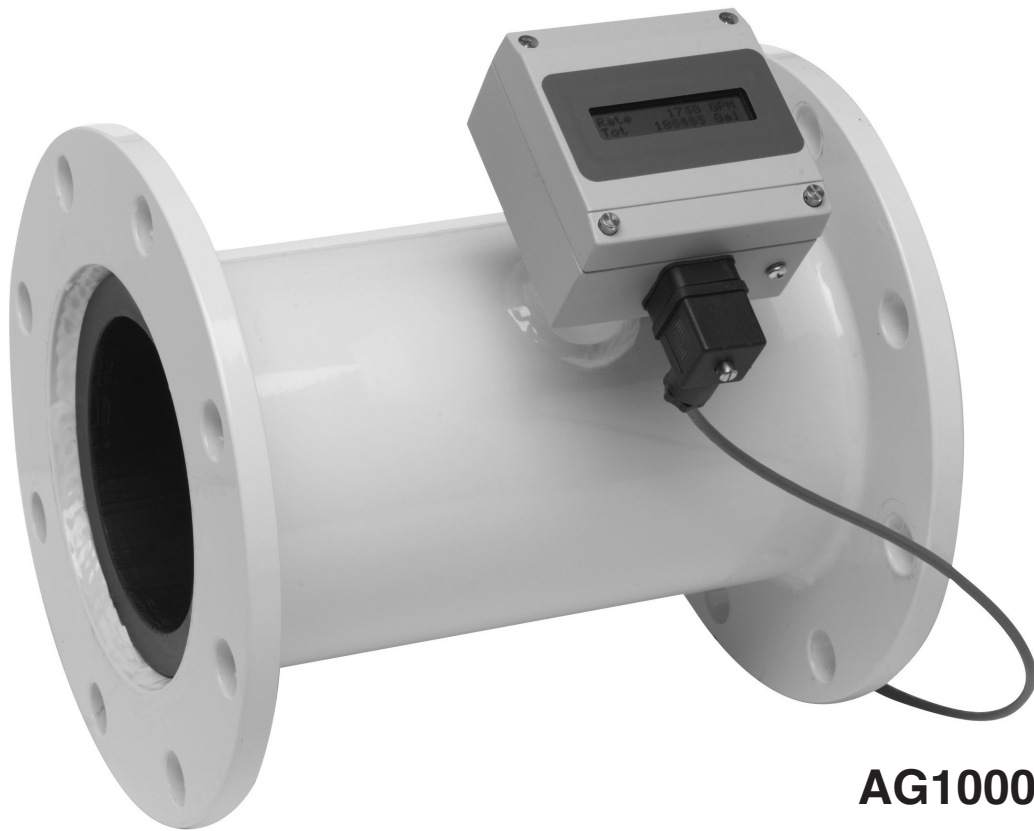


AG1000

IRRIGATION MAGMETER INSTRUCTIONS

AG1000 IRRIGATION MAGMETER INSTRUCTIONS



AG1000

SeaMetrics

The Leader in Flow Meter Value.

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GENERAL INFORMATION

The AG1000 is a spool-type electromagnetic flowmeter for use in irrigation applications in 4" to 10" pipe. With no moving parts, these meters have unobstructed flow and are resistant to wear from debris found in ground or surface water. There are no bearings or propeller to wear out. Minimal straight pipe requirements allow AG1000 meters to be used in piping configurations where there is little space between the meter and an elbow. These meters are available with either flanged or grooved ends.

The AG1000 is externally powered with 12-24 VDC. Low

power requirements also make it ideal for solar or other small power sources. It comes standard with a built-in pulse output for data logging or telemetry. The built-in display shows rate and total, and the housing is fitted with tamper-evident features. A pulse-to-analog converter (AO55) can be added if a 4-20 mA signal is required. The AG1000 is compatible with the SeaMetrics Data Logger (DL75).

Optional features include immersible electronics for burial or occasional vault flooding and bi-directional flow indication.

PARTS DIAGRAM

Alphanumeric rate and total indicator

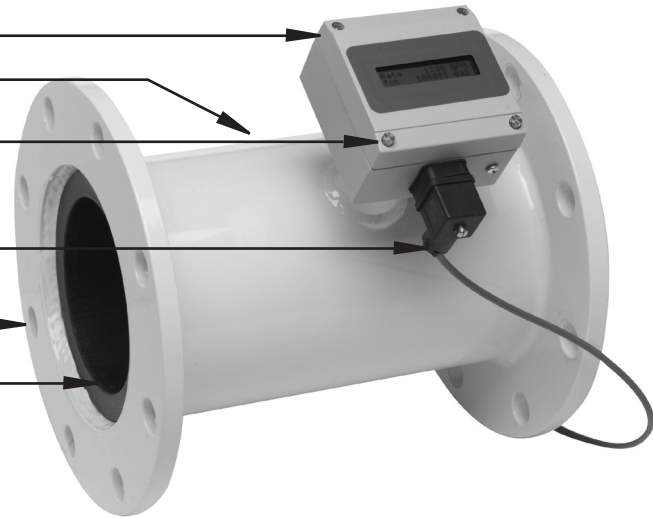
Powder coated steel body

Crossdrilled screws in connector & housing for security wire, tamper evident

Sealed DIN connector

ANSI 150 lb. drilling flanges

HDPE liner
316 SS electrodes



SPECIFICATIONS

Pipe Sizes	4", 6", 8", 10"
Flanges	AWWA 150 lb. drilling
Pressure	150 psi working pressure
Temperature Range	10° F to 130° F
Accuracy	+/-1% at 100% to 10% of reading +/-2% at 10% of reading to cut off
Materials	
Body	Welded steel, epoxy powder coated
Liner	HDPE
Electronics Housing	Diecast aluminum, powder coated
Electrodes	316 stainless steel
Rate Display	
Digits	6
Units	Gallons/Minute, Liters/Second, Cubic Feet/Minute
Total Display	
Digits	8
Units	Acre-Feet, Acre-Inches, Gallons x 1000, Cubic Feet, Cubic Meters, Megaliters
Power	12-24 VDC, 30 mA
Output Signal	Current sinking pulse, opto-isolated, 24 VDC, 10 mA max
Empty Pipe Detection	Hardware/software, conductivity-based
Environmental	NEMA 4X standard, short-term immersible option

INSTALLATION AND ELECTRICAL CONNECTIONS

INSTALLATION

Positioning the Meter. These are all-position meters, meaning that they can be installed horizontally, vertically, and in any radial position. If there is potentially a problem with sludge accumulation, vertical or horizontal with the register up may be preferred. See recommendations on pages 3 and 4.

Piping Conditions. As with most flow meters, the AG1000 requires some straight pipe before and/or after the meter for best accuracy. However, the tendency of electromagnetic meters to average the flow across the entire pipe allows for shorter straight pipe recommendations than most mechanical meters. Follow the guidelines on page 3 for the type of installation that best matches yours.

Although the meter is designed with an empty pipe detection feature, it requires that one or more electrodes be exposed. An installation in which the pipe is nearly but not quite full will cause reading errors. Be sure that the piping is configured to ensure that the pipe is full when there is flow. See diagrams on page 4 for examples of recommended installations.

The AG1000 is available with either grooved or flanged ends. Flanges have standard ANSI 150 lb drilling, and should match up with any other ANSI 150 lb flange.



Caution: These flow sensors are not recommended for installation where temperature exceeds 120°F.

ELECTRICAL CONNECTION

Electrical Connections. A current source of some kind at 12 to 24 VDC must be connected to the meter. If needed for remote reading, logging or telemetry, the pulse output can also be connected. See the Connections diagram on page 5 for guidance. It shows the color coding of the pre-installed power/pulse output cable. If it is necessary to replace this cable, for instance to install a longer one, see the drawings for proper installation of the cable into the connector.

Electrical Noise Immunity. For best results, connect grounds and cable shielding as shown in the diagram on page 5, and install the included ferrite beads by snapping them onto the outside of the cable.



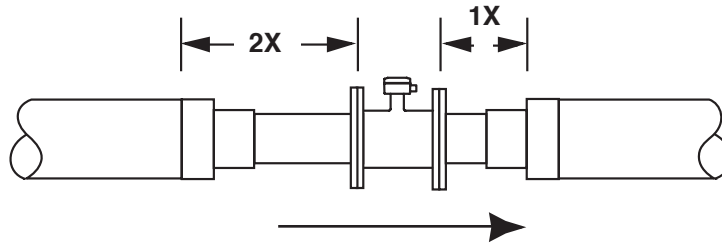
Caution: There are no connections inside the display. Breaking the seal wire will **VOID WARRANTY**.

INSTALLATION

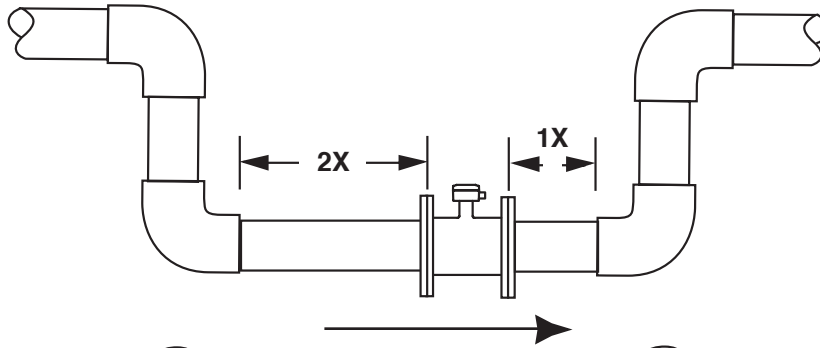
STRAIGHT PIPE RECOMMENDATIONS

(X = diameter)

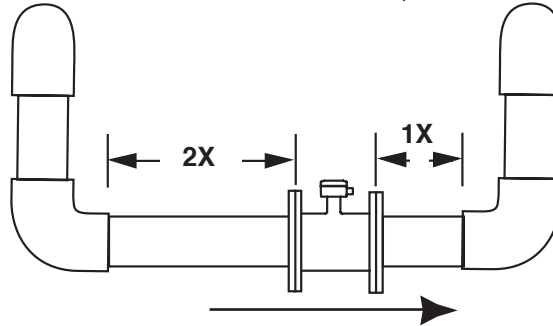
Reduced Pipe



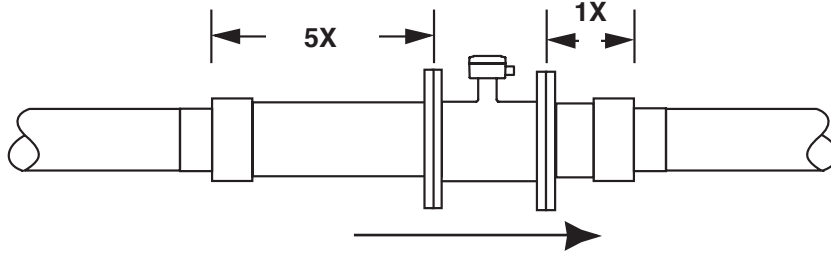
Two Elbows In Plane



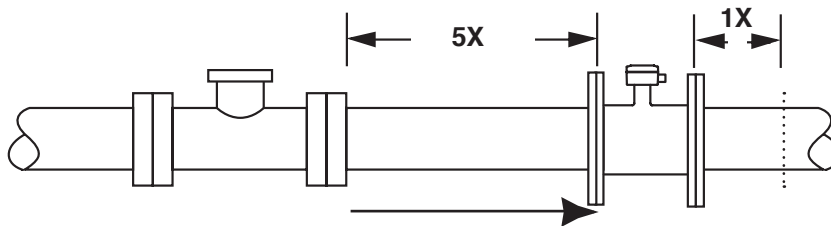
Two Elbows, Out Of Plane



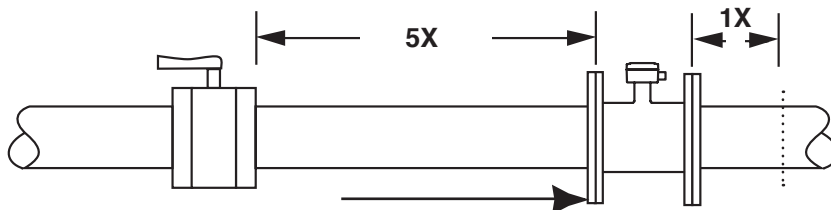
Expanded Pipe



Propeller Meter



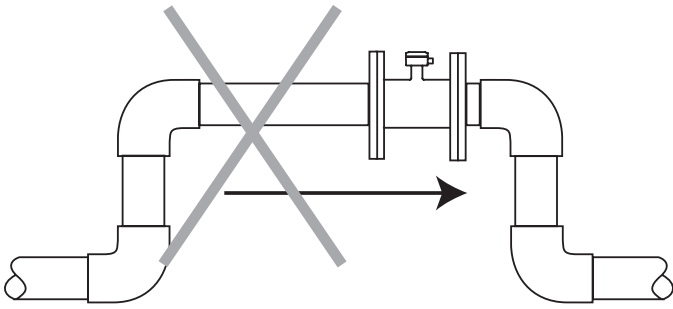
Partially Open Butterfly Valve



INSTALLATION

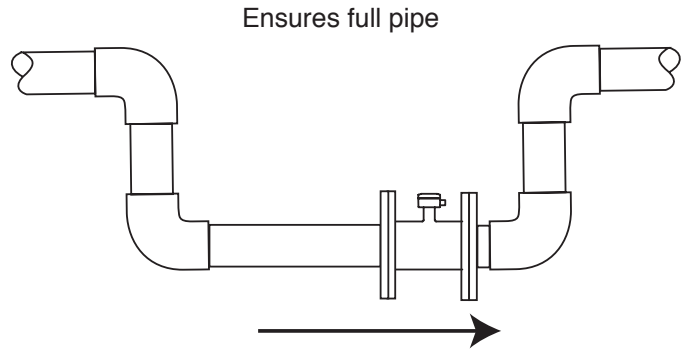
FULL PIPE RECOMMENDATIONS

NOT RECOMMENDED

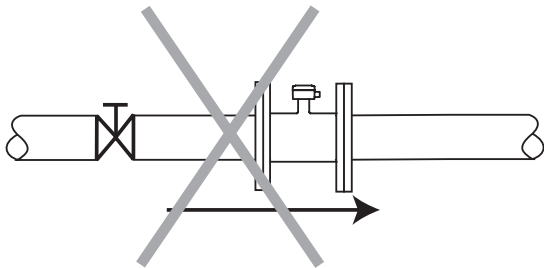


Allows air pockets to form at sensor

RECOMMENDED

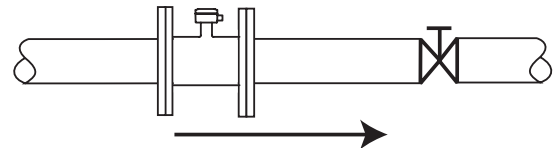


NOT RECOMMENDED



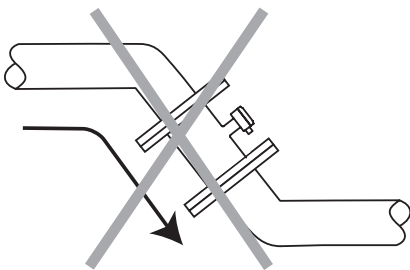
Post-valve cavitation can create air pocket

RECOMMENDED



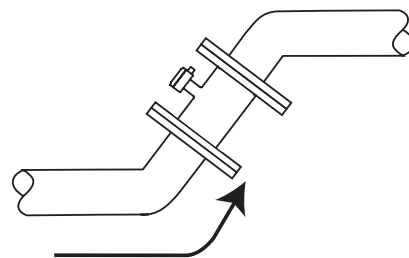
Keeps pipe full at sensor

NOT RECOMMENDED



Air can be trapped

RECOMMENDED



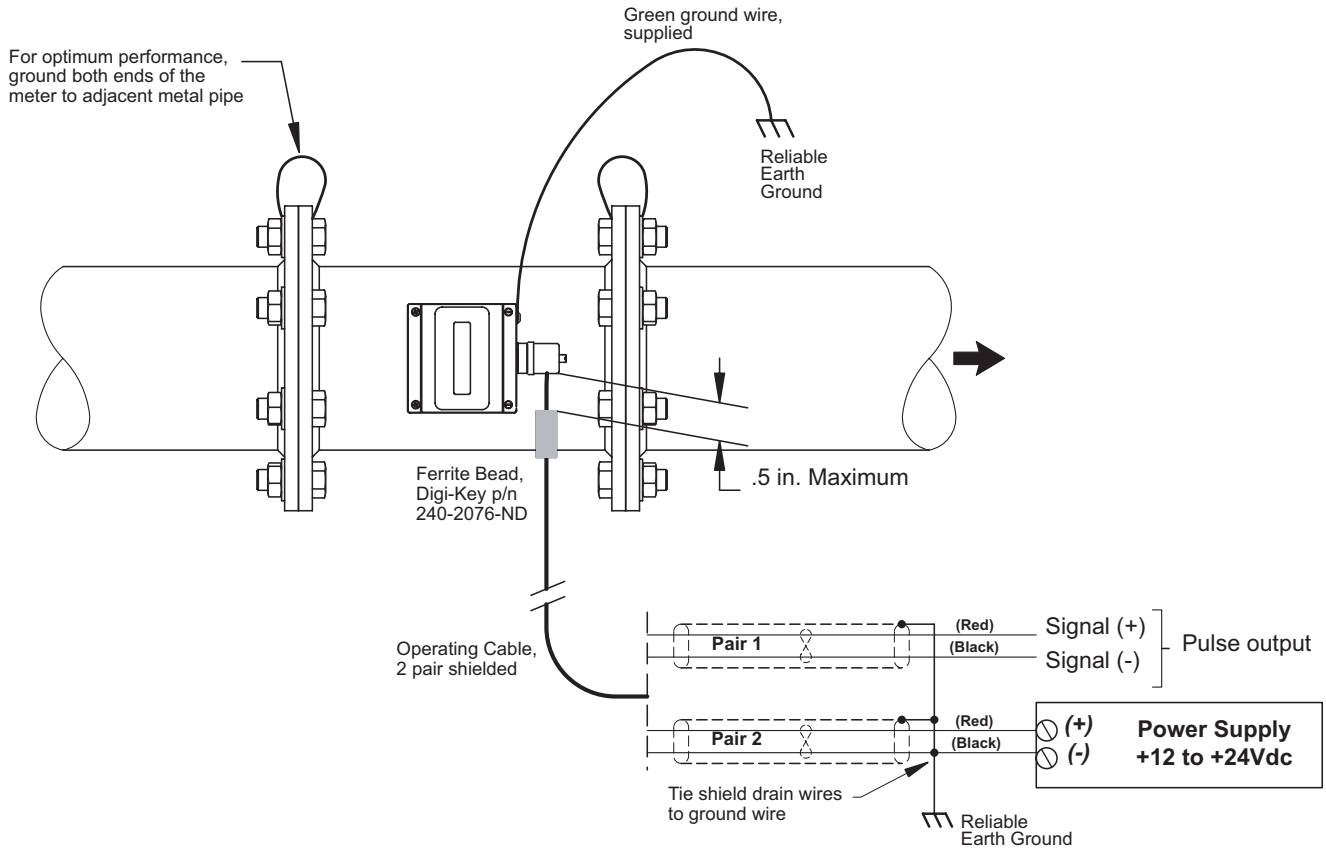
Allows air to bleed off



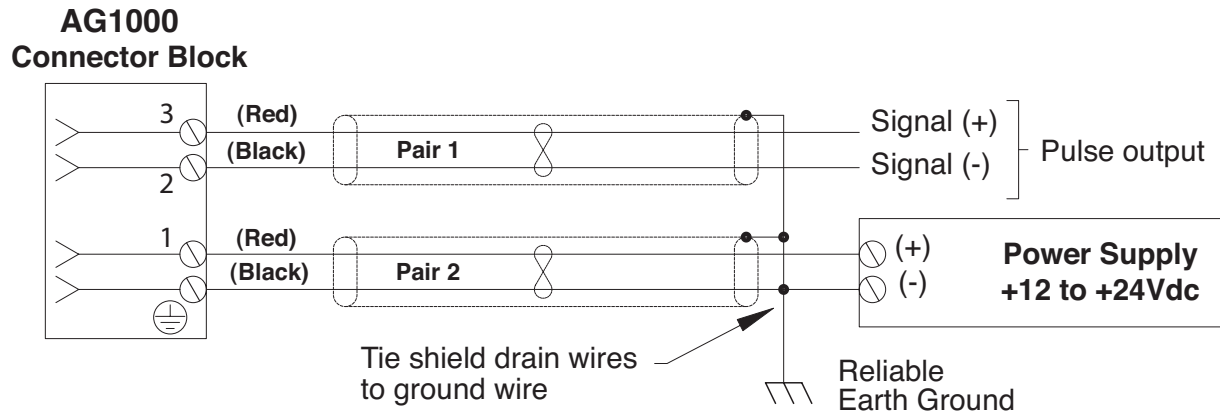
Caution: These flow sensors are not recommended for installation where temperature exceeds 120°F.

ELECTRICAL CONNECTIONS

STANDARD CONNECTION



CONNECTION WHEN REPLACING CABLE



CAUTION: Be sure to note Pair 1 & Pair 2 numbers printed on the wires, since there are 2 wires of each color

OPERATION

Display. There are two lines to the display, one for flow rate and one for accumulated total. The units used are indicated on the display. These are pre-ordered and factory set, and can not be changed in the field.

If the display indicates letters and digits, the meter has power and should be functioning normally. If there is no display (the display is blank) the meter is not powered.

Solar Operation. In most areas of the US, a 15-volt, 5 watt solar power unit (panel, charge controller and battery) should suffice to operate the meter, which draws approximately 30 mA.

Calibration. The AG1000 is factory calibrated and should not require any form of field calibration.

Empty Pipe Detection. All magmeters require a method for determining that the pipe is empty, since in many cases an empty pipe may otherwise cause a false reading. This meter uses a software-based empty pipe detection method. It should immediately go to a zero reading if one or more electrodes is exposed.

FLOW RANGE IN GPM

	4"	6"	8"	10"
Min	12	32	60	95
Max	500	1200	1500	3500

PULSE OUTPUT

Meter Size	Pulses per gallon
4"	16.362
6"	6.307
8"	3.344
10"	2.500

TROUBLESHOOTING

Problem	Probable Cause	Try...
No pulse output	Unit not grounded Flow reversed Output connections reversed Pipe not full Excessive electrical noise No power Power reversed Fluid conductivity <20 microSiemens/cm	Connect to earth ground Note flow direction arrow, reverse direction to meter Change output connections Check plumbing Check for proper electrical wiring Check for power across power input terminals Reverse connections Select another flow meter
Output pulses incorrect	Missing or incorrect ground wire Fluid conductivity <20 microSiemens/cm Empty pipe Excessive electrical noise	Check for proper ground Select another flow meter Check for full pipe or install meter in the vertical position Check for proper electrical wiring



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