

# AG702

*Seametrics*

## TUBE MAGMETER INSTRUCTIONS



AG702 TUBE MAGMETER INSTRUCTIONS

**ISO 9001:2008**  
CERTIFIED COMPANY

## SPECIFICATIONS, GENERAL INFORMATION and INSTALLATION

### SPECIFICATIONS

<b>Pipe Size</b>	6" and 8" (Additional sizes under development)	
<b>Meter Weight</b>	6" = 23.2 lbs. (10.5 kg) 8" = 33 lbs. (15 kg)	
<b>Pressure</b>	150 psi (10.3 bar) working pressure	
<b>Temperature</b>	<b>Operating</b>	10° to 130° F (-12° to 54° C)
	<b>Non-Operating</b>	-40° to 158° F (-40° to 70° C)
<b>Accuracy</b>	+/-2% at 100% to 10% of reading	
<b>Materials</b>	<b>Body</b>	Powder-coated steel
	<b>Electronics Housing</b>	Aluminum, powder-coated
	<b>Electrodes</b>	316 Stainless
<b>Display</b>	<b>Digits</b>	<b>Rate: 6</b>
	<b>Units</b>	Gallon/Minute, Liter/Minute, Cubic Feet/Minute Feet/Hour, Gallon/Second, Liter/Second Cubic Feet/Second, Miner's In**, Cubic Meter/Minute
		<b>Total: 8</b> Gallon, Gallon x 1000, Liter, Liter x 1000, Mega Liter C u b i c Cubic Meter, Cubic Meter x 1000, Acre Feet, Cubic Feet, Cubic Feet x 1000, Million Gallon, Miner's Inch Day, Acre Inch
<b>Security</b>	Cross-drilled screws and tamper-evident seal	
<b>Power</b>	2 Lithium 3.6V "D" batteries, replaceable, 2-5 year life (depending on usage)	
	With external power option (uses 7-32 Vdc, 30 mA), Lithium batteries serve as backup in power failure (10 year life)	
<b>Pulse Output (with optional cable)</b>	Current sinking pulse, opto-isolated, 32 Vdc max, 10 mA max	
<b>Empty Pipe Detection</b>	Hardware/software, conductivity-based	

\*Specifications subject to change. Please consult our website for the most current data ([www.seametrics.com](http://www.seametrics.com)).

\*\*1 Miner's Inch = 1.2 CFM

### GENERAL INFORMATION

The AG702 is a tube-type electromagnetic flowmeter for use in irrigation applications in 6" and 8" pipe. With **no moving parts**, these meters are resistant to wear and there are no bearings or propellers to wear out.

The standard AG702 is battery powered. Where an external power source is available, the AG702 can be optionally converted to 7-32 Vdc, with the batteries then serving to maintain continuous operation in case of power failure. This configuration will prolong battery life indefinitely.

The meter comes with built-in pulse output (requires optional output cable) for data logging or telemetry. Several pulse rates are available. An internal data logger is also available for secure flow logging (-127). A Seametrics FT420W indicator can be added if remote rate/total reading is desired, or an A055W if a 4-20 mA (analog) signal is required.

The AG702 has a seal wire to protect against unauthorized access. The optional cable can be factory- or field-installed for applications where external power is available and/or pulse output is needed.

In fertigation applications, the meter should be installed upstream of the chemical injection point or enough downstream to allow thorough mixing of fluids ahead of the meter (see *Tech Bulletin on Seametrics website Downloads page*).

### INSTALLATION

**Location.** The meter should be installed in a location which allows enough straight pipe to meet the requirements (See Diagram 1).

All magmeters require a method for determining that the pipe is empty, to prevent false reading. This meter is designed to go to zero reading if one or more electrodes is exposed. For highest accuracy, install the meter so that the pipe will be full when there is flow (See Diagram 2).

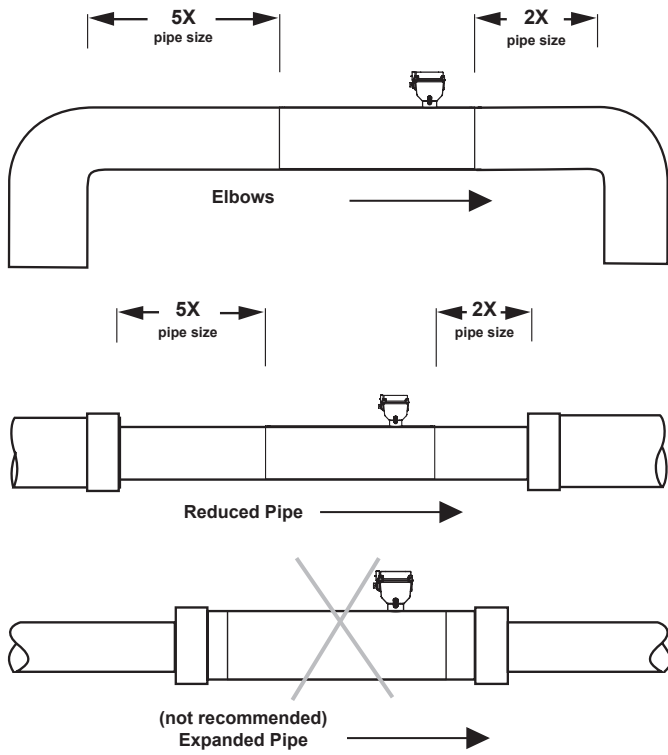
**Pipe Mounting.** The AG702 in its standard plain-end version can be mounted in existing piping by cutting out a section of pipe slightly longer than the tube itself (See Diagram 3 for cutting length). For new piping, simply leave a gap equal to the distance given in the drawing.

Connection to the piping is typically made using bolted flexible couplings. The AG702 is OD-sized piping, that is, a 6" or 8" meter is actually 6" or 8" respectively, in outside diameter. To couple to IPS-size steel piping (which has a 0.63" larger outside diameter) use transition couplings, which come with a different sized gasket on each end to make up the diameter difference.

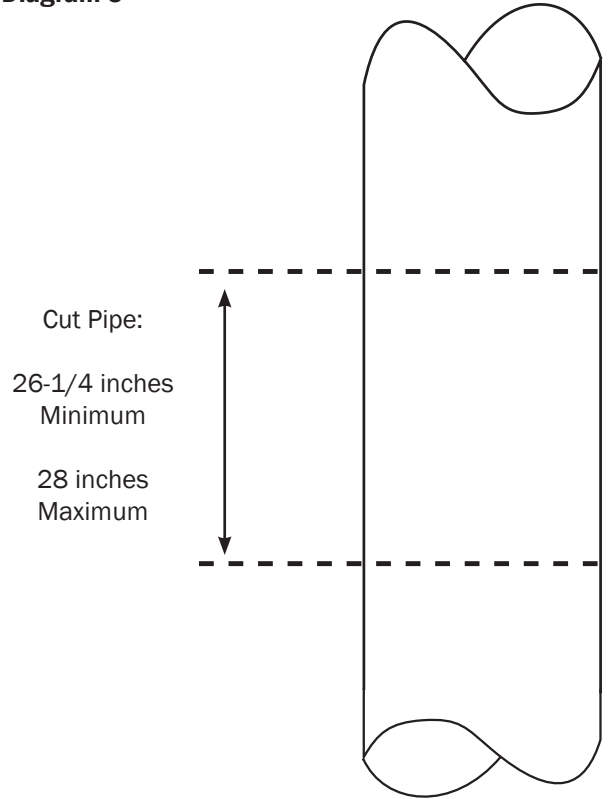
Slip the couplings over the existing pipe ends, then move the AG702 into place between the ends. Slide each coupling over the end of the AG702 until the coupling is roughly centered on the gap between pipe end and the meter. Tighten the coupling nuts evenly to make the seal.

**NOTE:** For ease of installation, compression coupling manufacturers recommend disassembling the coupling so that the gaskets can be slipped onto the pipes. It is not necessary to grease the gasket.

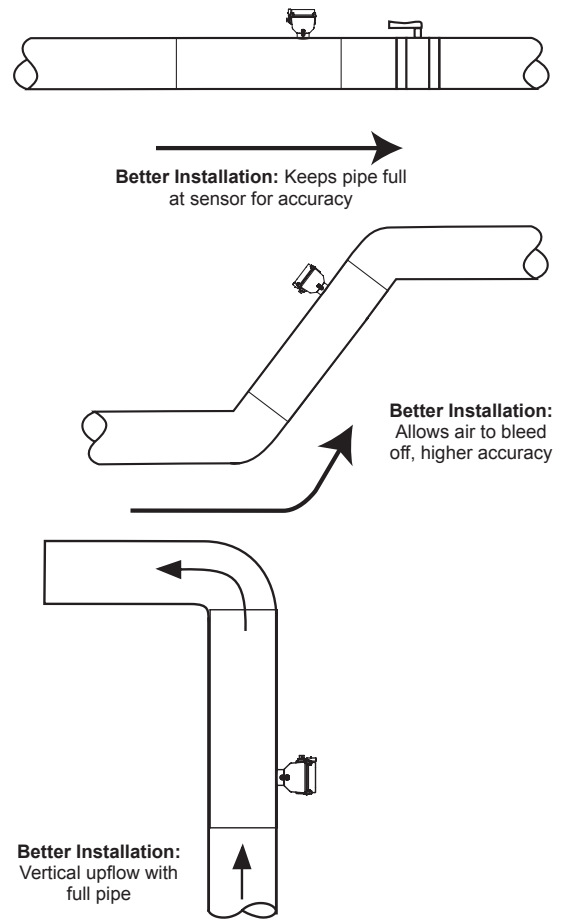
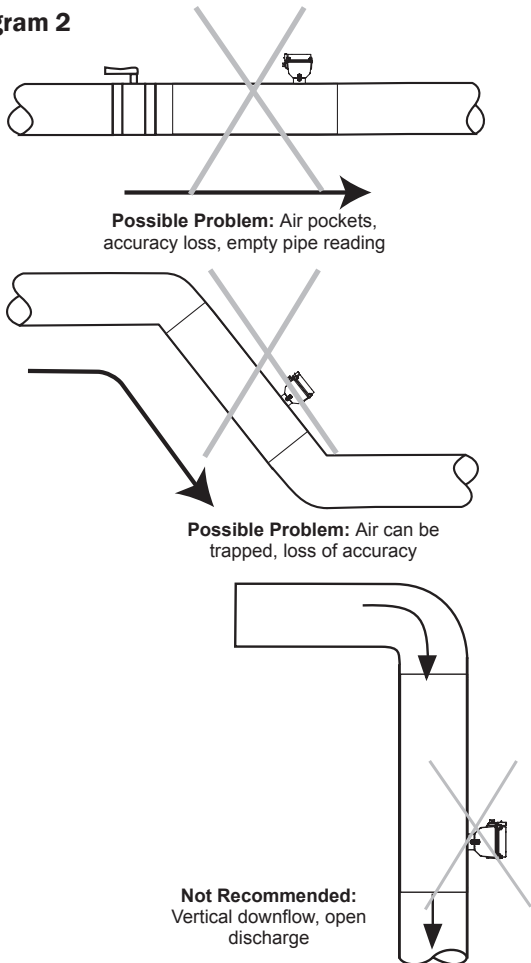
**Diagram 1**



**Diagram 3**



**Diagram 2**



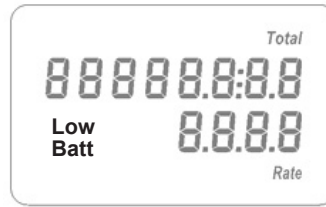
**POWER SUPPLY and GROUNDING**

**Battery Power (standard).** The AG702 is powered by a non-rechargeable battery pack with a lifespan of up to 5 years under typical use. Actual lifespan will vary from application to application, depending on the duty cycle.

“Low Batt” will display when it is time to replace the battery (see illustration below). Replacement instructions come with the custom battery pack available from your dealer or Seametrics.

**NOTE:** Memory will not be lost during a battery change.

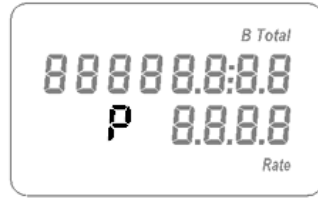
**Display Reading.** There are two lines to the display, the bottom line for flow rate and the top line for accumulated total. Measurement units are pre-ordered and factory-set and can be changed in the field only by an authorized individual.



**Low Battery Indicator**



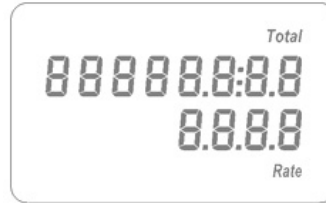
**No Power**



**External Power Indicator**



**Empty Pipe**



**Battery Power**



**Flow Backwards**

**GROUNDING**

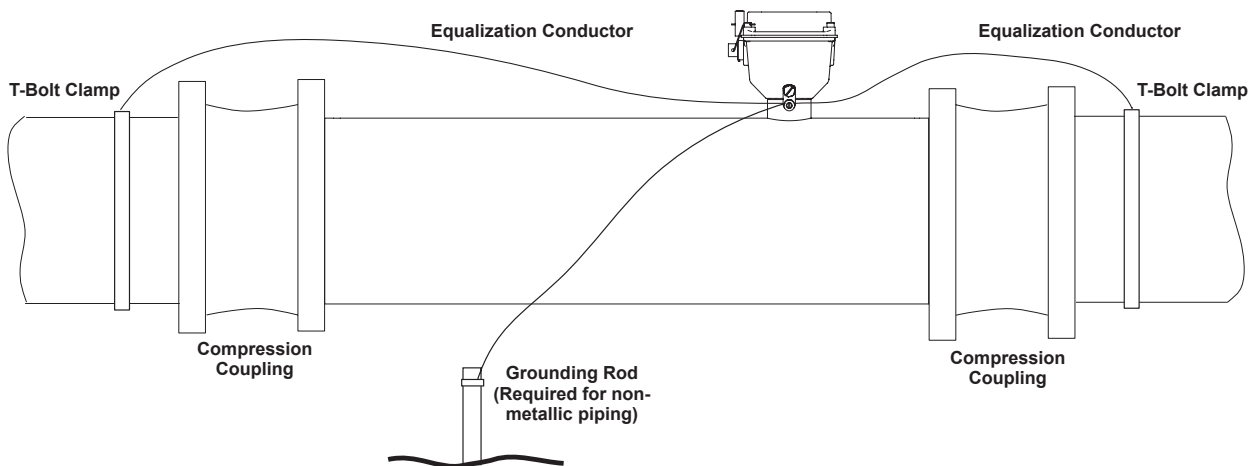
For best results, use a good quality earth ground, such as metallic water piping or a driven ground rod to ensure a good connection to earth ground and good noise suppression.

**Metal Pipe Installations.** If the flow sensor is installed in metallic piping, connect the equalization conductor wires to the piping a short distance beyond both ends of the flow sensor using the T-bolt electrical grounding clamps provided. Paint and rust must be removed from piping to expose bare metal under T-bolt clamp.



**WARNING: ELECTRICAL SHOCK HAZARD**

When the AG702 is installed in a nonconductive piping system, or when externally powered, it is very important to ground the meter to avoid electrical shock hazard. Failure to do so can result in electrocution.

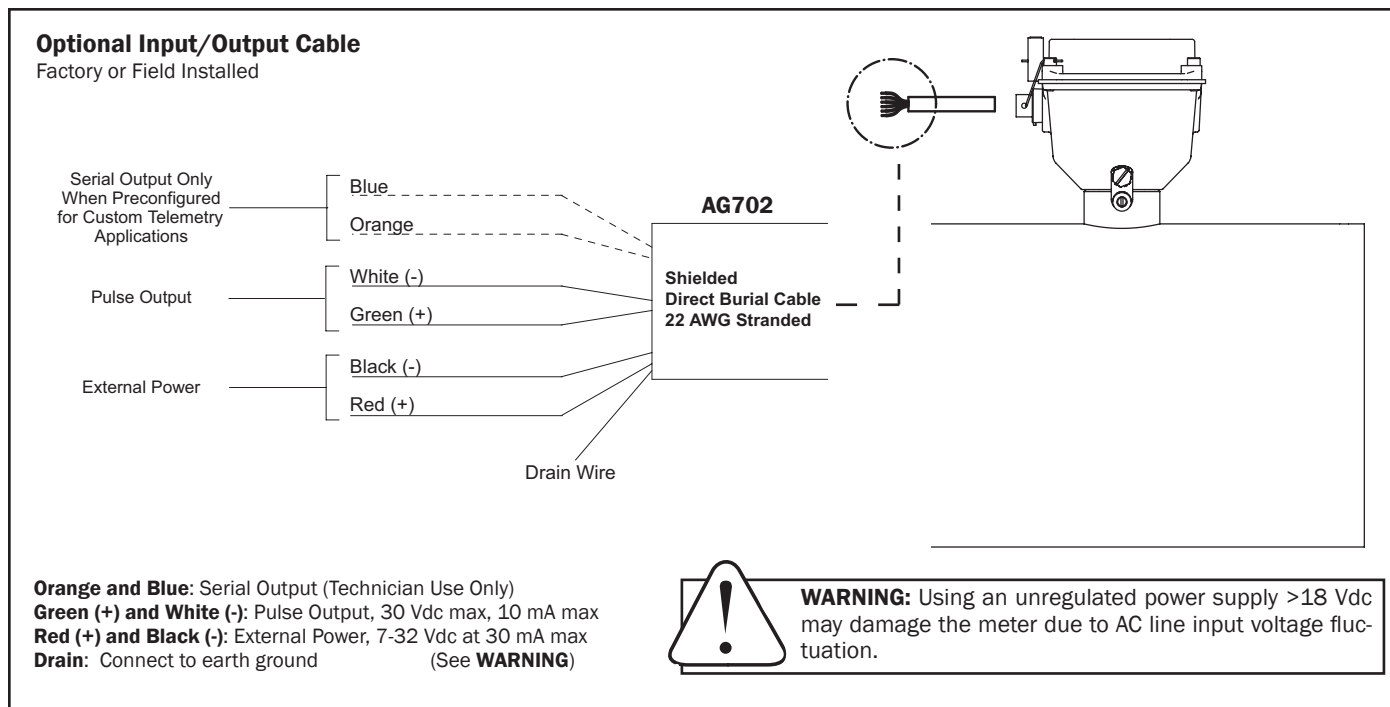


## INPUTS and OUTPUTS

**Optional Input and Outputs.** An optional cable, factory-installed or field-installed by an authorized individual, provides power input, pulse output (for remote reading, 4-20 mA conversion, telemetry and data logging functions), and serial output (when preconfigured for technician use in custom telemetry applications). See diagram below. The factory-default pulse output rate is High Frequency\*. Detailed wiring diagrams provided with cable.

**IMPORTANT:** When field installing the input/output cable, be sure to snugly tighten the cable strain relief to prevent water ingress.

\*See High Frequency Output Below.



The AG702 has one output type, described below. High Frequency is standard, unless otherwise specified at time of order.

This output may be changed by a Seametrics distributor or dealer using the DC20 software and cable.

### Flow Range

	6"		8"	
	Gal/Min	Liter/Sec	Gal/Min	Liter/Sec
<b>Minimum</b>	43	2.7	80	5
<b>Maximum</b>	1200	75.7	2,200	138.8

### High Frequency Output

Meter Size	Pulses Per Gallon	Pulses Per Liter	Full Scale Flow Rate in GPM	Frequency @ Full Scale Flow Rate
6"	6.307	1.666	1200	126.14 Hz
8"	3.344	0.883	2200	122.613 Hz

## TROUBLESHOOTING

<b>Problem</b>	<b>Probable Cause</b>	<b>Try...</b>
Blank display	Dead battery	Replace battery pack
Flow rate steadily reads zero when there is flow	Flow is below cutoff (very low) There is air in the pipe	Reading will resume when flow increases Reposition meter for full pipe
Flow rate intermittently drops when there is flow	There is air in the pipe	Reposition meter for full pipe
Jumpy reading	Improperly grounded Pulsing flow	Check for proper grounding Use external power source (allows more flow averaging)
Meter rate/total appears to be grossly out of tolerance	Meter installed improperly	Adjust rotation of meter per specifications



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