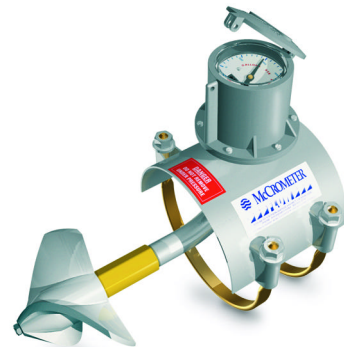


The McCrometer

Propeller flowmeter

The Best
Solution for
Irrigation Flow
Measurement:
Rugged,
Accurate,
Reliable.

 **McCROMETER**

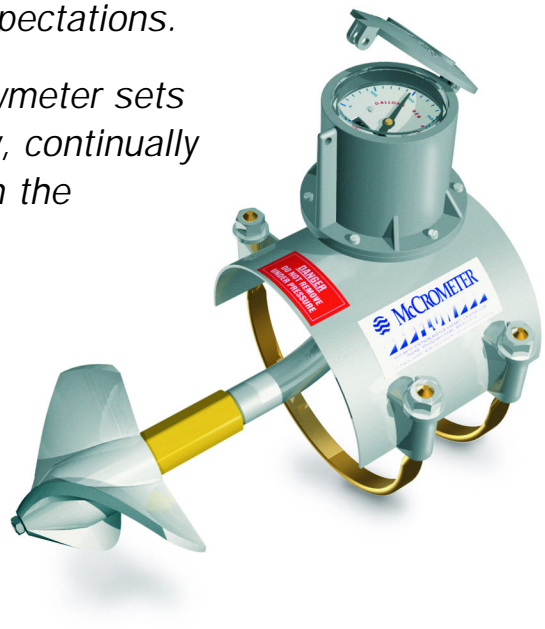


Since 1955, McCrometer has been the leader in propeller flowmeter technology. The McCrometer Propeller flowmeter has developed a solid reputation in flow measurement for its product reliability, high accuracy, low maintenance and price value. Through years of experience, McCrometer has created a product that meets the requirements and exceeds all expectations.

Today, the McCrometer Propeller flowmeter sets the standard for propeller technology, continually outperforming all other flowmeters in the agricultural and turf markets. It's no wonder that it's the #1 choice for irrigation use.

There's no need to take risks with flowmeters that sport unproven or less effective technologies from companies with no track record in serving agricultural irrigation.

Just take a look at what the McCrometer Propeller flowmeter offers you and see why no other flowmeter compares.



Accuracy:

In flow measurement, accuracy can be presented as "a percent of full scale" or as "a percent of reading". Many manufacturers use "a percent of full scale" to express the measurement accuracy of their flowmeters.

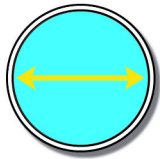
McCrometer uses "a percent of reading" for its Propeller flowmeters.

Which is better? A "percent of full scale" accuracy only applies at the full scale reading of the meter, and the accuracy at readings less than this full scale value is progressively worse. A "percent of reading" measurement of accuracy means the uncertainty or percentage of error is constant across the operating range of the flowmeter. When the meter's accuracy is fixed across the entire operating range of the meter, as in McCrometer's Propeller flowmeters, it does not degrade as the flow rate drops below the full scale reading.

Since the process fluid does not always flow at the flowmeter's full scale value, the meter with "a percent of reading" accuracy specification will always be the more accurate choice.

Cross-Sectional Area:

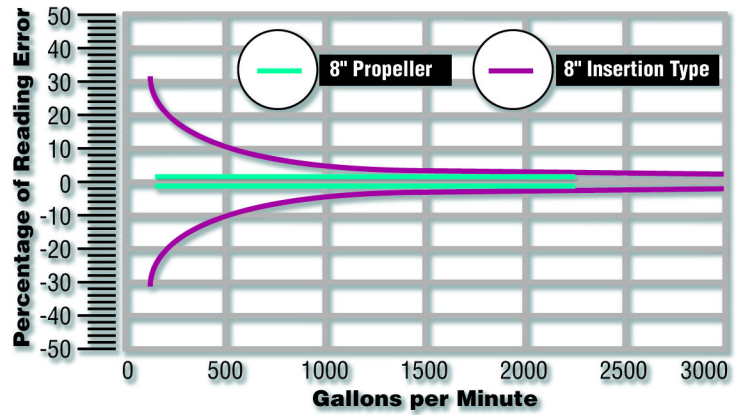
In piping systems, the term "cross-sectional area" refers to the inside area of a section of a pipe perpendicular to the pipe's length (the inside diameter of the pipe, squared, then multiplied by pi, and divided by four).



Velocity Profile:

In piping systems, the term "velocity profile" refers to the speed at which the fluid flows across a given cross-section of the pipe. The friction at the pipe wall combined with the fluid's own frictional (viscous) characteristics causes the velocity of the fluid to be slower, closer to the pipe wall. Obstructions and bends in the piping further distort the velocity profile. Elbows and valves will shift the center of the velocity profile (the highest velocity region in the cross-section) away from the center of the pipe, while upstream reductions and expansions can cause jetting (an exaggeration of the velocity profile). Shifting and jetting can occur easily with changing rates of flow.

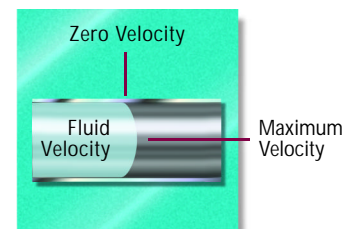
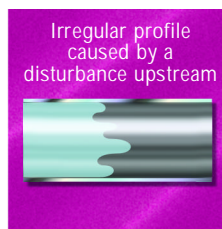
Higher Accuracy at all Operating Ranges



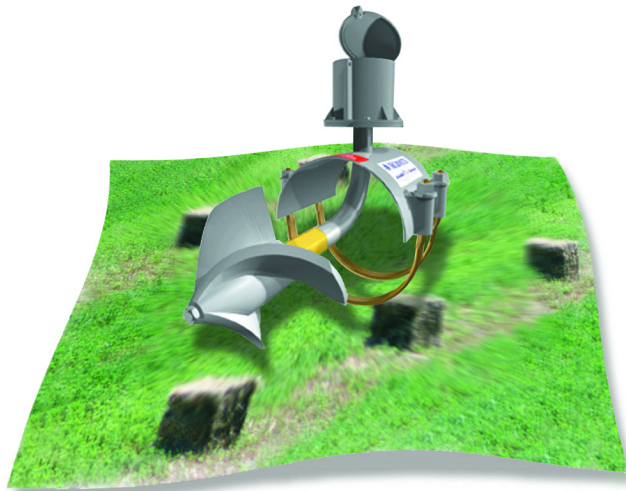
McCrometer's "Percent of Reading Accuracy" vs. other Flowmeters' "Percent of Full Scale Accuracy"

Proven Value

- The McCrometer Propeller flowmeter's rugged design allows it to be used in applications that carry suspended solids and other debris without damage to the meter or without affecting its accuracy. Its high pressure, temperature, and corrosion resistant capabilities also contribute to make it highly cost effective.
- Comes with a standard instantaneous flowrate indicator (an optional feature on all other propeller meters and manually selectable on many insertion-type meters) and straight reading totalizer.
- Unlike insertion flowmeters, it measures almost all of the cross-sectional area of the pipe with an accuracy of $\pm 2\%$ of rate and $\pm .25\%$ repeatability. Because of its high accuracy rate, this flowmeter



Velocity Profile



can be used as a water “management tool” —helping reduce water costs, preventing over irrigation and reducing the leaching of chemical fertilizers into the ground.

- It requires only five diameters upstream and one diameter downstream of pipe length. This allows for installation and effective use in confined or hard-to-access places.
- It requires no electrical power to operate. There are no batteries to fail, electronics to get wet or plastic enclosures to hassle with.
- Available in a wide variety of sizes for line diameters from 2” to over 96”, the McCrometer Propeller flowmeter is built to order and offers quick delivery. It is state approved in Kansas, Nebraska, and Texas.

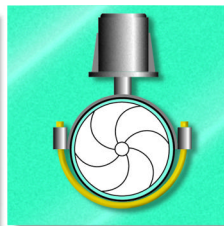


Why the Competition Can't Compete.

There's a variety of insertion flowmeters in the market today: the paddle wheel, the shedding vortex, and the magnetic insertion. A common claim among these manufacturers is that their flowmeters are inexpensive and easy to install; yet they neglect to tell you what's not included in the price or what features you're not getting that should be standard on any unit.

McCrometer's Propeller flowmeters are simple to install and operate, they require minimal maintenance, and they are equipped with all the features you need. Additionally, McCrometer Propeller flowmeters can measure a broad range of flows without damage or loss of accuracy.

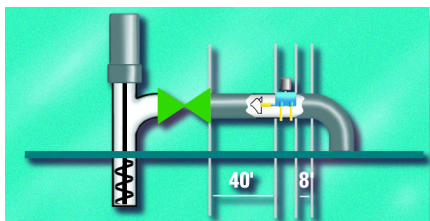
Insertion meters only measure a small portion of the cross-sectional area of the pipe, providing less accurate readings due to change in the velocity profile.



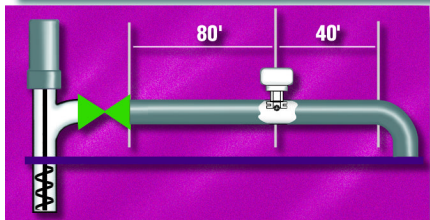
The McCrometer Propeller flowmeter measures almost the entire cross-sectional area of the pipe, providing highly accurate readings.

Questions? Talk to our agricultural irrigation experts at: 909-652-6811

Reduced Installation Requirements



McCrometer's Propeller flowmeter requires minimal straight pipe diameters upstream and downstream.



Insertion-type flowmeters require much longer straight pipe diameters.

Typical installation configuration for an 8" pipe diameter.

Some Common Problems of Insertion Flowmeters.

- Only sample a small portion of the flow, so they are not as accurate or reliable
- Accuracy effected by change in the velocity profile
- Require long upstream straight runs before and after the device
- Not as robust
- Require batteries or AC power to operate
- Susceptible to debris and contaminants in the flow
- Typically straight reading totalizer only. Instantaneous flowrate indicator only available as an option
- Must be field calibrated

Insertion Paddlewheel meter

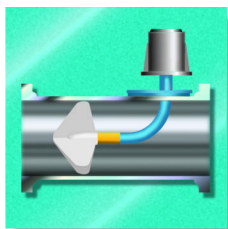
In this type of flowmeter, a small paddle wheel rotates to measure the rate of flow in the pipe. As the fluid flow causes the rotor to spin, a signal is produced, directly proportional to the flow rate.

Insertion Shedding Vortex

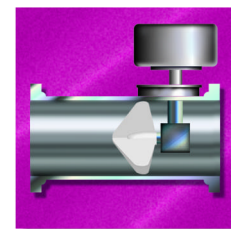
Fluid passes around a bluff body, causing vortices (swirls) to be shed off the body. The vortices shed alternately on the right and left of the bluff body. The rate at which the vortices shed is directly proportional to the flowrate. The meter's electronics then determine the rate at which the pressure differential alternates and then infers velocity of the flow.

Magnetic Insertion

An electromagnetic sensor is placed in flowing water. Water passing through the magnetic field creates a voltage which is picked up by the electrodes embedded in the sensor and then transmitted through the cable to the meter's electronics. The voltage, which is proportional to the rate of water flowing around the sensor, is processed electronically, and the fluid flowrate is shown on a digital display.



The McCrometer Propeller flowmeter's unique, self-cleaning design incorporates a flexible drive shaft running within a curved, stainless steel "ell". Simple and rugged, the "ell" sheds debris easier than the costlier right-angle gear drives found on all competing propeller flowmeters.

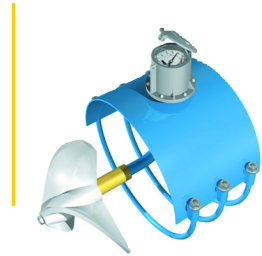


or visit our website at <http://www.mccrometer.com/irrigation>

Flowmeter Type	Requires less than 10 dia. of Upstream Pipe Length	Samples at least 70% of Crosssection of Pipe	All Metal Enclosure	Requires Electrical Power to Operate	Resistance to Debris and Contaminants	Total and Instantaneous Rate of Flow Standard	Experience with Agricultural Irrigation
<i>McCrometer Propeller Meter</i>	Yes ✓	Yes ✓	Yes ✓	No ✓	High ✓	Standard ✓	High ✓
<i>Insertion Meters</i>							
<i>Vortex</i>	No	No	No	Requires AC/DC Power	Low	Optional (when available)	Low
<i>Paddle Wheel</i>	No	No	No	Requires batteries	Low	Optional (when available)	Low
<i>Magmeter</i>	No	No	No	Requires AC/DC Power	Low	Optional (when available)	Low
<i>Other Propeller Meters</i>	Yes	Yes	No	No	High	Optional	High

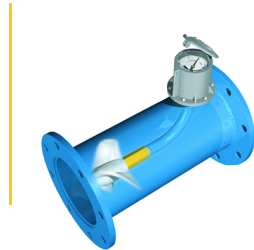
LARGE-LINE, BOLT-ON SADDLE FLOWMETER M1400

- 22" to 48" line sizes



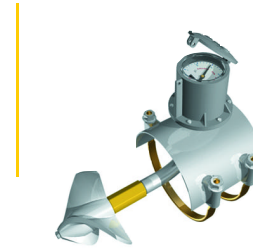
FLANGED END FLOWMETERS MF100 & ML100

- 2" to 12" line sizes



BOLT-ON SADDLE FLOWMETER MO300

- 4" to 16" line sizes



WELD-ON SADDLE FLOWMETER MW600

- 4" to 48" line sizes



The Only Choice.

When all is said and done, McCrometer stands alone as a name you can depend on for product reliability, high accuracy, low maintenance, and price value. We have a knowledgeable team that can efficiently evaluate your flow application and specify the best metering technology to fit your flow condition needs.

For a free evaluation of your flow application or to find out about other flowmeter products, please contact your McCrometer representative today.

Questions? Visit the McCrometer Agricultural Irrigation Specialists at:

<http://www.mccrometer.com>



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