

### DESCRIPTION

All Mc Propeller flow meters are manufactured to comply with the applicable provisions of AWWA standard No. C704-02 and latest revisions for propeller type flow meters.

### FEATURES

#### **Saddle**

- The fabricated, epoxy-coated steel saddle eliminates the fatigue-related breakage common to cast iron and aluminum saddles and provides unsurpassed corrosion protection.
- Fabricated steel construction offers the additional advantage of being flexible enough to conform to out-of-true pipe.

#### **Impellers**

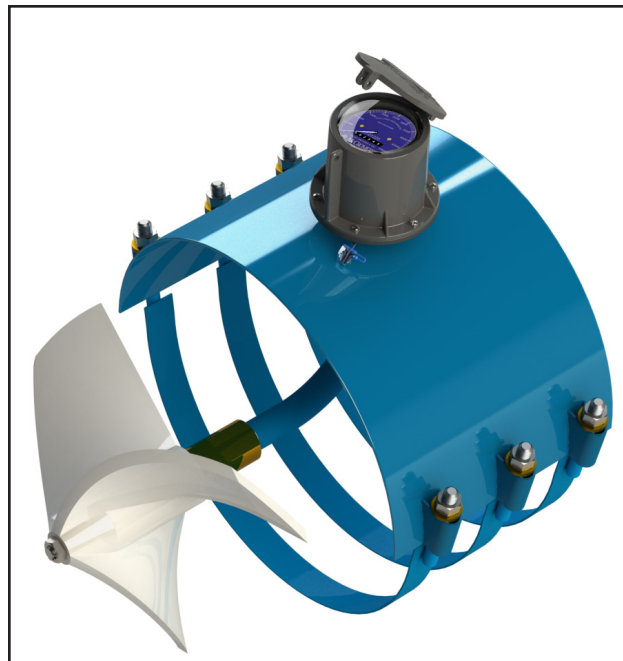
- Impellers are manufactured of high-impact plastic, capable of retaining their shape and accuracy over the life of the meter.
- Each impeller is individually calibrated at the factory to accommodate the use of any standard McCrometer register, and since no change gears are necessary, the M1400 can be field-serviced without the need for factory recalibration.

#### **Bearings**

- Factory lubricated, stainless steel bearings are used to support the impeller shaft.
- The sealed bearing design limits the entry of materials and fluids into the bearing chamber providing maximum bearing protection.

#### **Register**

- An instantaneous flowrate indicator is standard and available in gallons per minute, cubic feet per second, liters per second and other units.



### Typical Applications

The McCrometer propeller meter is the most widely used flowmeter for agricultural and turf irrigation measurement. Typical applications include:

- Golf course and park water management
- Gravity turnouts for underground pipelines
- Pump stations
- Water and wastewater management
- Sprinkler irrigation systems
- Drip irrigation systems

- The register is driven by a flexible steel cable encased within a protective vinyl liner.
- The register housing protects both the register and cable drive system from moisture while allowing clear reading of the flowrate indicator and totalizer.

### INSTALLATION

Standard installation is horizontal mount. If the meter is to be mounted in the vertical position, please advise the factory. A straight run of full pipe the length of ten pipe diameters upstream and two diameters downstream of the meter is recommended for meters without straightening vanes. Meters with optional straightening vanes require at least five pipe diameters upstream and two diameters downstream of the meter.

### SPECIFICATIONS

#### Performance

<b>Accuracy / Repeatability</b>	<ul style="list-style-type: none"> <li>• <math>\pm 2\%</math> of reading guaranteed throughout full range</li> <li>• <math>\pm 1\%</math> over reduced range</li> <li>• Repeatability 0.25% or better</li> </ul>
<b>Maximum Temperature</b>	(Standard Construction) 160°F constant
<b>Pressure Rating</b>	75 psi

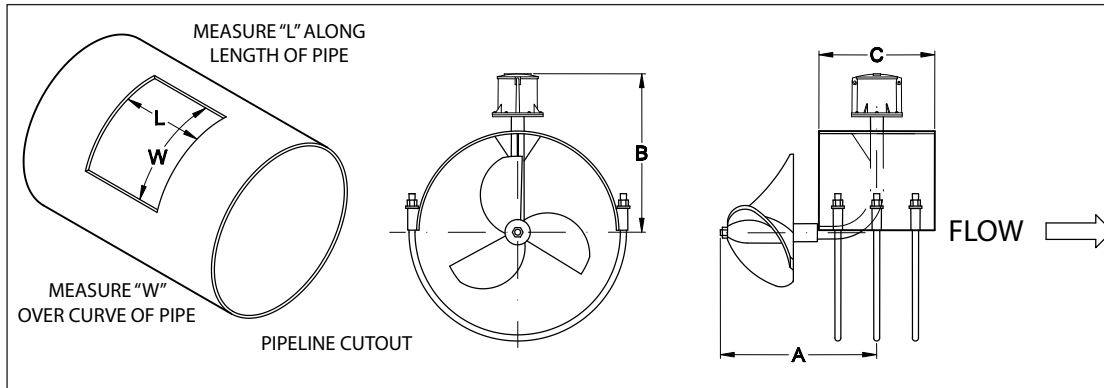
#### Materials

<b>Bearing Assembly</b>	<ul style="list-style-type: none"> <li>• Impeller shaft is 316 stainless steel</li> <li>• Ball bearings are 440C stainless steel</li> </ul>
<b>Magnets</b>	(Permanent type) Alnico
<b>Bearing Housing</b>	Brass standard, 316 stainless steel optional
<b>Register</b>	An instantaneous flowrate indicator and six-digit straight-reading totalizer are standard. The register is hermetically sealed within a die cast aluminum case. This protective housing includes a domed acrylic lens and hinged lens cover with locking hasp.
<b>Impeller</b>	Impellers are manufactured of high-impact plastic, retaining their shape and accuracy over the life of the meter.

#### Options

	<ul style="list-style-type: none"> <li>• Extended warranty</li> <li>• Saddle can be constructed to fit any outside diameter pipe dimensions, including metric sizes</li> <li>• Can be used on a variety of pipe materials such as steel, plastic, cast iron, cement or asbestos cement</li> <li>• Register extensions</li> <li>• Marathon bearing assembly for higher than normal flowrates</li> <li>• Digital register available in all sizes of this model</li> <li>• A complete line of flow recording / control instrumentation</li> <li>• Blank repair saddle</li> <li>• Canopy boot</li> </ul>
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### DIMENSIONS



M1400	DIMENSIONS											
<b>Meter and Nominal Pipe Size (inches)</b>	18	20	22	24	26	28	30	32	34	36	42	48
<b>Maximum Flow U.S. GPM</b>	5000	6000	7000	8500	8500	12500	12500	12500	17000	17000	25000	30000
<b>Minimum Flow U.S. GPM</b>	400	475	650	700	700	1200	1200	1200	1500	1500	2000	2500
<b>Standard Dial Face (GPM/Gal)</b>	10000/1000	10000/10000	10000/10000	15000/10000	15000/10000	15000/10000	15000/10000	15000/10000	30000/10000	30000/10000	35000/10000	Consult Factory
<b>Approx. Head Loss in Inches at Max. Flow</b>	1.5	1.25	1.0	1.0	.75	.60	.52	.50	.45	.40	.40	.40
<b>Approx. Shipping Weight, lbs.</b>	55	65	73	80	100	100	110	110	130	140	200	200
<b>A (inches)</b>	17	17	17	17	17	17	17	17	17	17	17	17
<b>B (inches)</b>	14 3/8	16 3/8	16 3/8	18 3/8	20 3/8	20 3/8	20 3/8	22 3/8	23 3/8	24 3/8	30 3/8	36 3/8
<b>C (inches)</b>	12	12	12	12	12	18	18	18	18	18	18	18
<b>L (inches)</b>	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	12	12	12
<b>W (inches)</b>	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	16	16	16

### PIPE RUN REQUIREMENTS

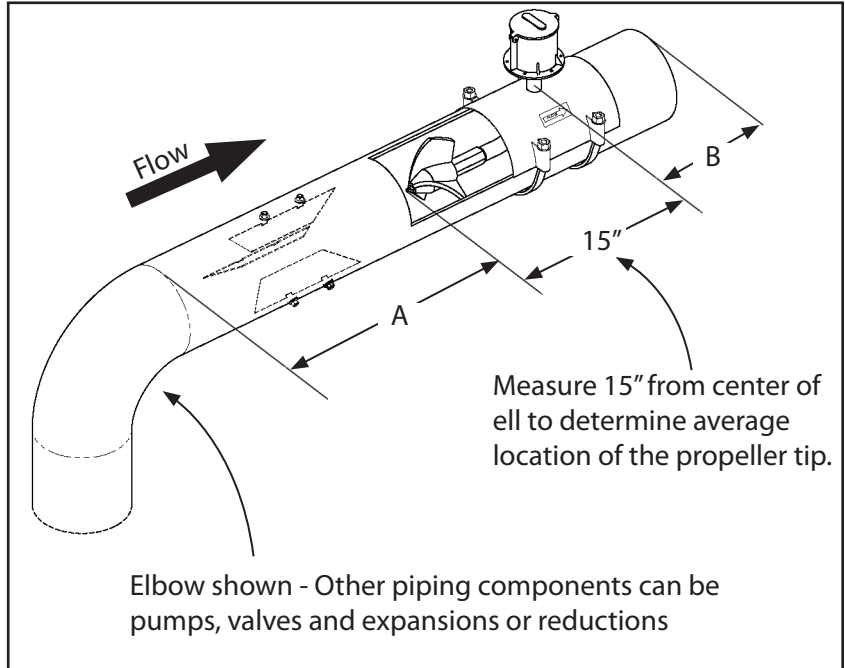
#### Upstream Requirement

Mc Propeller meters should be installed a minimum of five to ten diameters downstream of any obstructions.

#### Downstream Requirement

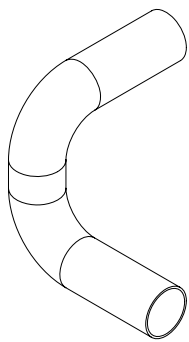
The downstream run should be one diameter of straight pipe length after the meter.

Configuration	A	B
Without straightening vanes	10	1
With straightening vanes	5	1
With FS100 Flow Straightener	1.5	1

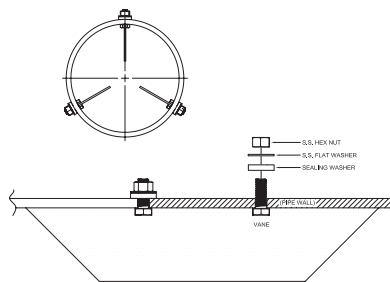


### STRAIGHTENING VANES

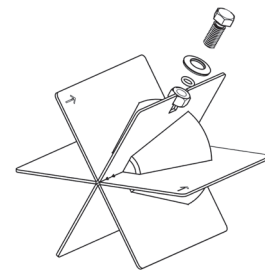
Special attention should be given to systems using two elbows “out of plane” or devices such as a centrifugal sand separator. These cause swirling flow in the line that affect propeller meters. Well developed swirls can travel up to 100 diameters downstream if unobstructed. Since most installations have less than 100 diameters to work with, straightening vanes become necessary to alleviate the problem. Straightening vanes will break up most swirls and ensure more accurate measurement. McCrometer actively encourages installing vanes just ahead of the meter. Straightening vanes are available in weld-in, bolt-in, and the FS100 Flow Straightener.



**Elbows out of plane**

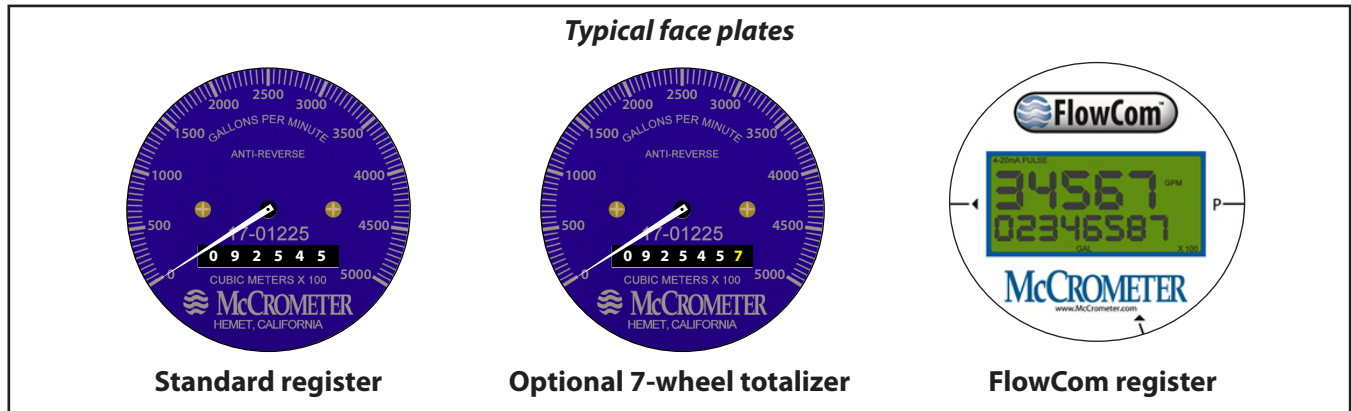


**Bolt-in straightening vanes**



**FS100 Flow Straightener**

### TOTALIZERS



### Mechanical Totalizer

The instantaneous flowrate indicator is standard and available in gallons per minute, cubic feet per second, liters per second and other units. The register is driven by a flexible steel cable encased within a protective vinyl liner. The register housing protects both the register and cable drive system from moisture while allowing clear reading of the flowrate indicator and totalizer.



### Digital Totalizer

The optional FlowCom register displays a flowmeter's flowrate and volumetric total. Available are optional outputs: scaled pulse and/or industry standard 4-20mA signal. The FlowCom can be fitted to any new or existing McCrometer propeller flowmeter.



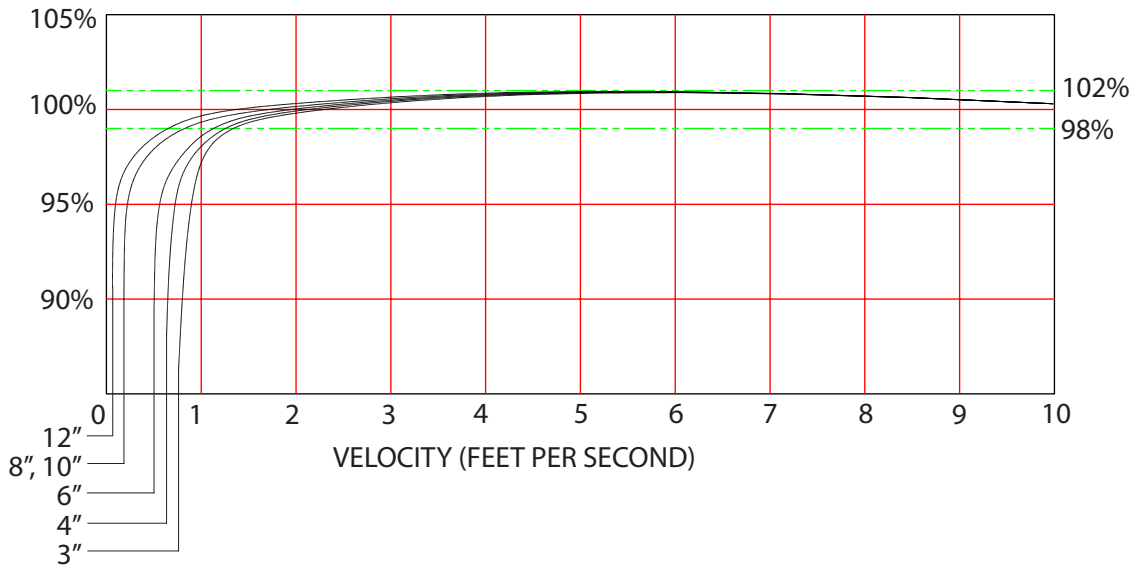
### Wireless Telemetry

The optional FlowConnect is designed specifically for wireless telemetry via either satellite or cellular data service. Manual meter reading is never required. It uses either the mechanical register or the digital register (both shown above).

You can determine how often readings are made and transmitted to the cloud database, which you can view on a PC or on a cell phone. The viewing utility provides data tools that can analyze flow rate, consumption, and possible anomalies in an irrigation system.

### Accuracy

ACCURACY CHART



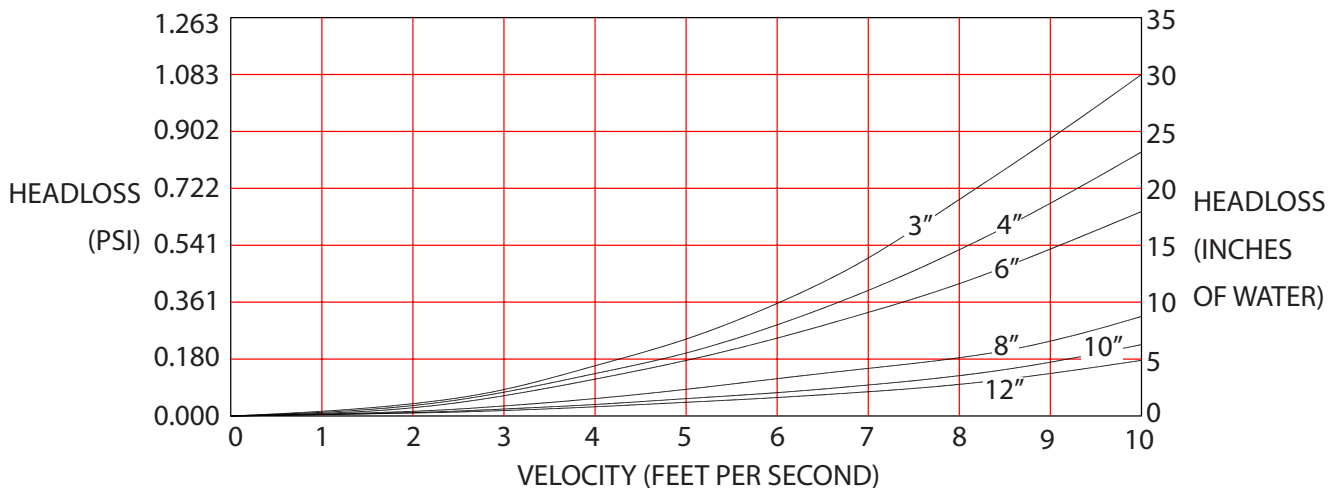
Standard flowrates for McCrometer propeller meters are shown below. Readings are guaranteed accurate within  $\pm 2\%$  in these flowrates. Please note that over 80 percent of the meter's flow range, the accuracy is better than  $\pm 1\%$ .

Nominal Meter Size	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Minimum Flow(U.S.GPM)	40	40	40	50	90	100	125	150	250	275	400	475	700
Maximum Flow(U.S.GPM)	250	250	250	600	1200	1500	1800	2500	3000	4000	5000	6000	8500
Dial Face Range	250	250	250	800	1300	2500	3000	4000	6000	8000	10000	10000	15000

### Headloss

Headloss refers to the fluid pressure lost due to the meter. Propeller meters have very low permanent headloss as seen in the chart below.

HEADLOSS CHART



Nominal Meter Size	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Max. Headloss (in. H <sub>2</sub> O column)	30	23	17	7	4	3	2	2	2	1	1

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