

Well Metering Presentation



What is Water Well Metering

-Water well metering is the process of measuring and recording the amount of water extracted from a well. It's required for many wells, and the requirements vary by location

-Typically approved meters will read in GPM or acre feet per year and will have a running totalizer displayed.

Approved Types of Water Well Meters

Electromagnetic flow meters

These meters are accurate and have a long battery life, making them ideal for remote locations. They can fit into tight spaces and are not affected by debris because they have no moving parts.

Turbine flow meters

These meters are considered a basic and cost-effective digital water flow meter. They contain a magnet in one of the turbine blades, and a pickup coil detects the magnet as it passes with each rotation of the turbine

Mechanical flow meters

These meters are commonly used because they are simple and easy to understand. The main concept of a mechanical flow meter is a paddle wheel

Pulse Output Meter

Pulse output meters are used when it's not practical or cost-effective to read the meter directly. The pulses can be used to communicate with electronic devices, such as a digital display, to remotely read the meter

Electromagnetic flow meters

- An electromagnetic flow meter, also called a "mag meter", is a device that measures the flow rate of a conductive liquid by utilizing the principle of electromagnetic induction, where a voltage is induced across the fluid as it flows through a magnetic field, allowing for accurate measurement of the liquid velocity within a pipe without any moving parts; it essentially works by detecting the electrical potential generated by the flowing liquid within a magnetic field, with the voltage directly proportional to the flow rate.

Mag Meters

(±0.5% of the flow rate)

- Seametric
- McCrometer
- Euro Mag

Turbine Flow Meters

- A turbine flow meter is a device that measures the flow rate of a liquid or gas by utilizing a rotating turbine blade assembly inside a pipe, where the speed of the turbine's rotation is directly proportional to the fluid's velocity, allowing for accurate volumetric flow measurement; essentially, the faster the fluid flows, the faster the turbine spins, generating a measurable signal that corresponds to the flow rate.

Turbine Meters

(average accuracy of 0.5% to 1.5%)

- Seametrics
- McCrometer
- Euro Mag
- Neptune
- Dwyer

Mechanical Flow Meters

- A mechanical flow meter is a device that measures the flow of a liquid or gas by using mechanical parts to respond to the movement of the fluid. They are often used in industrial applications and are the most common type of water flow meter.

Mechanical Flow Meters

(average accuracy of 1%-2%)

- Badger
- Neptune
- Seametric
- McCrometer

Pulse Output Meter

- Pulse output meters are used when it's not practical or cost-effective to read the meter directly, or when the meter needs to be read remotely. The meter generates a pulse for each turn of a sensor wheel, and each pulse represents a specific amount of flow. For example, in an energy meter, a pulse might represent the consumption of 1 kilowatt-hour (kWh)

Pulse Output Meters

(around $\pm 1\%$ of the reading)

- Seametrics
 - Dwyer
- Master Meters

Typical Meter and Install Cost Technoflo

Meter Size	Meter Cost	Install Cost	Total Cost
2" IMAG Meter	\$2,200.00	\$1,500.00	\$3,700.00
3" IMAG Meter	\$2,300.00	\$1,660.00	\$3,960.00
4" IMAG Meter	\$2,600.00	\$1,845.00	\$4,445.00
6" IMAG Meter	\$2,850.00	\$2,545.00	\$5,395.00
8" IMAG Meter	\$3,125.00	\$2,875.00	\$6,000.00

Typical Meter and Install Cost McCrometer

Meter Size	Meter Cost	Install Cost	Total Cost
2" McCrometer	\$1,900.00	\$1,500.00	\$3,400.00
3" McCrometer	\$2,100.00	\$1,660.00	\$3,760.00
4" McCrometer	\$2,200.00	\$1,845.00	\$4,045.00
6" McCrometer	\$2,650.00	\$2,545.00	\$5,395.00
8" McCrometer	\$2,950.00	\$2,875.00	\$5,825.00

Typical Meter and Install Cost DWYER

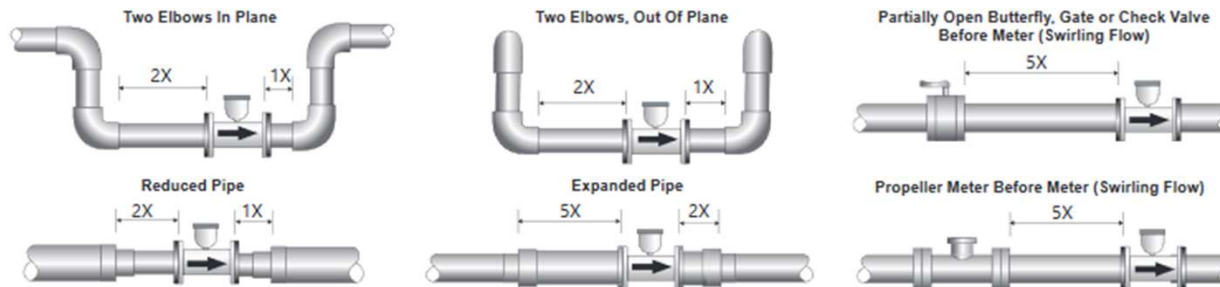
Meter Size	Meter Cost	Install Cost	Total Cost
1" DWYER	\$600.00	\$980.00	\$1,580.00
2" McCrometer	\$1,500.00	\$1,200.00	\$2,700.00

Typical Meter Discharge Requirements



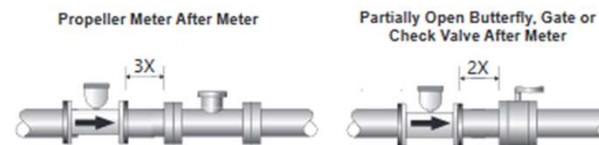
Technical Bulletin PIPING CONFIGURATIONS FOR FLANGED MAGMETERS

NOTE: These configurations are to be used as general guidelines and do not cover every possible installation. A combination of two or more obstructions will require additional straight pipe. If there is any concern about the length of pipe required for a specific application, please contact your local dealer.



Installing a meter after a pump. Most meters will be installed in systems with some sort of pump, and while the pump is unlikely to have a negative effect on meter performance, there are some situations where understanding the effect the pump has on the flow profile, and by extension on the meter will be of utmost importance.

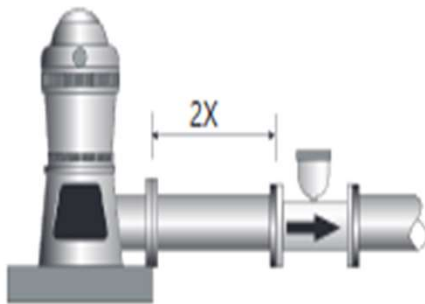
Air vents should be installed in the same unobstructed pipe run as the meter and should be located relatively close to the me-



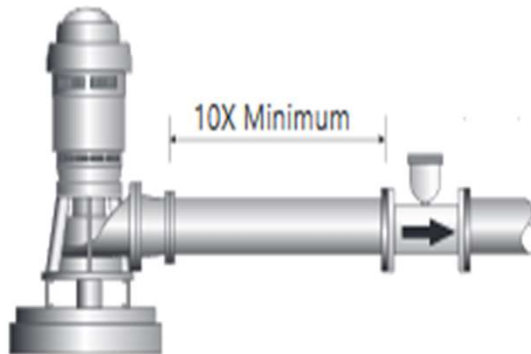
The absolute minimum depth of the inlet of the pump can be

Typical Meter Discharge Requirements

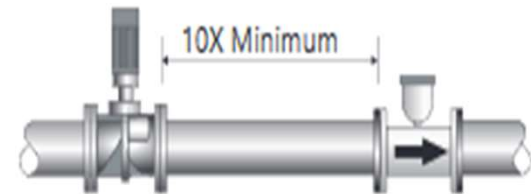
Vertical Turbine Pump Before Meter



Short Coupled Lift Pump Before Meter

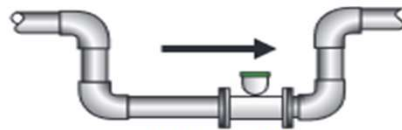


Centrifugal or Booster Pump Before Meter



Typical Meter Discharge Requirements

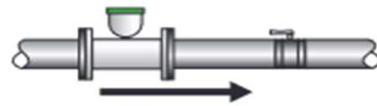
FULL PIPE RECOMMENDATIONS



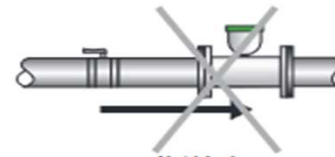
Recommended:
Keep pipe full at meter for accuracy



Not Ideal:
Allows air pockets to form at meter



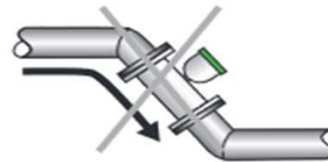
Recommended:
Keeps pipe full at meter for accuracy



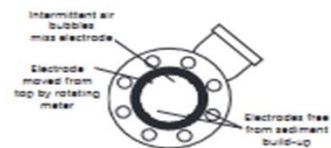
Not Ideal:
Post-valve cavitation can create air pocket



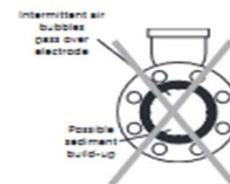
Recommended:
Allows air to bleed off



Not Ideal:
Air can be trapped



Recommended:
Improved accuracy results from unimpeded electrodes



Not Ideal:
Air bubbles and sediment on the electrodes can affect accuracy

Typical Meter Sizing Chart

MF1		DIMENSIONS							
Meter Size	inches	2	2 1/2	3	4	6	8	10	12
	mm	51	64	76	102	152	203	254	305
Minimum Flow	GPM	40	40	40	50	90	100	125	150
	LPS	2.5	2.5	2.5	3.2	5.7	6.3	7.9	9.5
Maximum Flow	GPM	250	250	250	600	1200	1500	1800	2500
	LPS	15.8	15.8	15.8	37.9	75.7	94.6	113.6	157.7