



A GUIDE TO

How Water Meters Work

Water meters measure the volume of water that flows through a pipe or water supply system. They are essential for accurately billing water usage. There are three main water meter types: mechanical, electromagnetic, and ultrasonic. All work by measuring the amount of water that passes through the meter.

TYPES OF WATER METERS

Mechanical

The most common is the mechanical (or displacement) meter, which does not require a power supply.



Water enters the meter through an inlet pipe and flows through the measurement chamber, which consists of a rotating impeller or set of pistons that move in response to the water's flow.

Water flowing through the calibrated meter causes the impeller or pistons to move. The amount of rotation or displacement is directly proportional to the volume of water passing through the meter. A mechanical register uses a set of gears and dials to translate the movement into a numerical reading on the register.

The dials display the usage in cubic feet or gallons. Users, utilities, and billing companies can read this display to determine the amount of water used.

Mechanical water meters are considered to be very accurate and reliable.

Electromagnetic

Electromagnetic water meters (mag meters or magnetic flow meters) require a power supply.

Electromagnetic flow meters use electromagnetic induction to measure the speed of the water passing through the meter.

They use electrodes to create a magnetic field that the water flows through. As the water



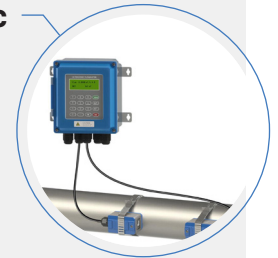
flows through that magnetic field, conductive particles in the water create changes in voltage that can be measured

to calculate the water's velocity through the pipe. This can be translated to total water usage.

Electromagnetic flow meters are highly accurate and require little to no maintenance because they have no moving parts. These meters are commonly used in agriculture, irrigation, and industrial applications.

Ultrasonic

Ultrasonic water meters may require a power supply.



These water meters use sound waves at a frequency beyond human hearing, which are sent into the water stream. Typically, two ultrasonic transducers alternatively transmit and receive a burst of ultrasound in both directions. Differences in the transit time between the transducers are directly proportional to the velocity of the liquid in the pipe, allowing accurate measurement of the amount of water flowing and the total amount used.

Ultrasonic meters are extremely accurate, easily installed, and have very low maintenance requirements.

IS MY WATER METER WORKING CORRECTLY?

All three types of water meters are very reliable and accurate. The American Water Works Association (AWWA) allows water meters to have an error rate of 1.5 percent, meaning meters must read between 98.5% and 101.5% of the accurate water usage in a residence. All water bills are charged per 1,000 gallons, the industry standard. This means if your exact usage was 1,000 gallons, the registered consumption could be 15 gallons higher or lower and be within AWWA guidelines. For perspective, those 15 gallons would cost a few dollars higher or lower over the course of a year for most customers.

Additionally, the mechanical design of the water meter means it almost never reads inaccurately high. The meter's mechanical parts cannot "speed up" to artificially register a significantly higher reading than actual usage. As mechanical meters age, it is far more likely for them to read low and undercharge you.

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When water usage is more than expected, our first inclination may be to wonder if the water meter is defective. As noted above, this is very rarely the case. In most instances, high readings can almost always be attributed to something happening in the residence. This might be a potential leak (a continuously running toilet can waste up to 200 gallons of water daily, and a dripping faucet may waste as much as 1,350 gallons every three months) or, most commonly, simply an unrealized change in the household's water use (consider seasonal changes, number of guests visiting, etc.).



Have questions about your electric meter or your bill? Contact Resident Support:
877-818-2637 M-F 8a - 6p EST | ResidentSupport@NationwideEnergyPartners.com

