

Date: September 21, 2015
From: Badger Meter
Subject: Water Meter Performance and Accuracy Over Time

In response to your request for information regarding water meter performance, the following information is provided. Trophy Club Municipal Utility District No. 1 utilizes "positive displacement" type water meters. This means the meter measures all the water passing through the measuring element, not just a portion as inferential type meters do.

Further, the meters used by Trophy Club Municipal Utility District No. 1 employ the nutating disc type of measuring element. The meters are designed to and comply with the American Water Works Association Standard (C-700) for potable, cold water meters. Every meter purchased is fully tested by the manufacturer and must pass AWWA accuracy standards. An accuracy test result tag is attached to each new water meter at the factory before delivery.

Operating Characteristics:

The following is an explanation of the operating characteristics of a positive displacement, nutating disc meters. The design of this type of meter helps prevent it from over-registering the water measured.

The meter consists of three main components; the housing, the register, and the measuring chamber. The housing is the case that contains the measuring chamber internally and supports the register externally. This housing provides for the containment of water around and through the measuring chamber.

The measuring chamber is where the meter gets the name "positive displacement water meter". The term "positive displacement" means that water moves an internal part of the measuring chamber to make the meter operate. This displacement (movement) of water is the same amount for each cycle of the internal part. This internal part that is moved by the water is called a nutating disc. It takes the force of the water to make the disc move, and each time the disc makes a cycle, it is counted.

The register counts the cycles of the nutating disc. The register is magnetically coupled to the meter's measuring chamber. The number wheel stack that the utility bills from is linked directly to the gear train in the register. This gear train advances only when magnetically coupled to the meter's measuring chamber. "Positive displacement" of this chamber drives the magnetic coupling to advance the register.

The number wheel stack, gear train, and nutating disc remain static and does not move until advanced by the movement of water through the meter.

This meter will not register water flows unless there is water moving through the measuring chamber. This displacement (movement) is constant with each cycle of the nutating disc; therefore it is not typical for the meter to go faster. As mentioned above, all meters purchased are tested at three different flow rates for accuracy by the manufacturer. A spike in a customer's consumption should be considered a leak or an addition to the normal water usage pattern.