## Protect Against Leakage

Before turning on the service water, use care to protect against potential leakage.

1. Shut off the valves on both the inlet and outlet sides of the meter.
2. Open the curb (shutoff) valve slowly to pressurize the service line to the meter.
3. Slowly open the meter's inlet-side valve to fill the meter.
4. Check for leaks around the meter and its connections.
5. Slowly open the meter's outlet-side valve to pressurize the consumer side of the system.
6. Open a faucet to allow entrapped air to escape.
7. Once water is flowing normally, turn off the faucet.

# E-SERIES ULTRASONIC METER OPERATIONS

Meter Display

The Badger Meter E-Series Ultrasonic meters use a nine-digit Liquid Crystal Display (LCD) to show consumption, flow rate and alarm information. See the Status Indicators chart on *page 10* for detailed descriptions.
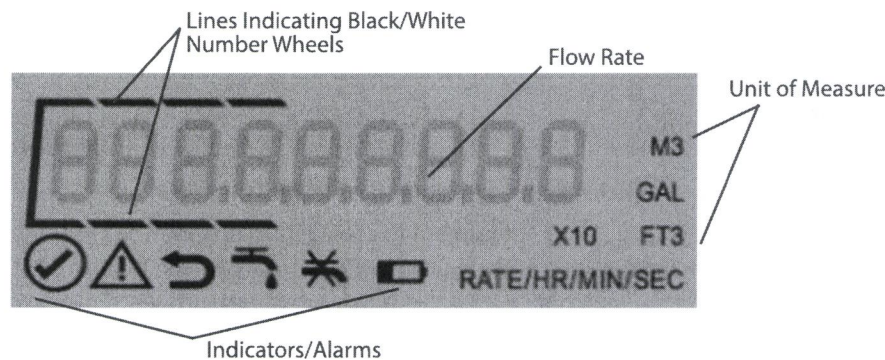
Activating the Display

The Ultrasonic meter's display illuminates when the register cover is opened. After a period of time, the display will revert to sleep mode. You can alternate the display between total flow and rate of flow mode by touching the optical display switch or by closing and opening the meter's lid. The optical switch is located just below the LCD on the left side of the register's face.
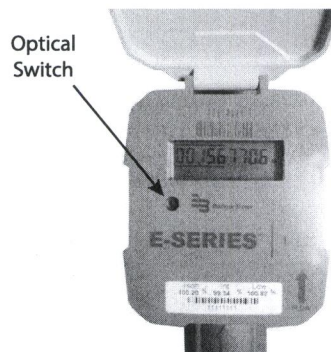
Unit of Measure

The unit of measure and resolution are factory programmed and options include gallons, cubic feet and cubic meters.

For 5/8…1 in. meters, totalized flow displays up to 10 million gallons with a resolution of 0.01 gallons, one million cubic feet with a resolution of 0.001 cubic feet or 100 thousand cubic meters with a resolution of 0.0001 cubic meters.

For the 1-1/2 in. and 2 in. meters, totalized flow displays up to 100 million gallons with a resolution of 0.1 gallons, 10 million cubic feet with a resolution of 0.01 cubic feet or one million cubic meters with a resolution of 0.001.

The following chart lists the possible E-Series Ultrasonic meter conditions when connected to Badger Meter ORION Cellular and Fixed/Migratable (SE/ME) AMR/AMI endpoints.

The chart does *not* apply to ORION Classic (CE) or GALAXY endpoints. The E-Series will display the status indicators, but *Reverse Flow*, *Suspected Leak* and *30 Day No Usage* alarms are determined by the endpoint radio and are not obtained from the Ultrasonic meter.

Status Indicator	Icon	Alarm Description	High Resolution with ORION Cellular, Fixed Network (SE) or Migratable (ME)	Encoder Protocol with ORION Cellular, Fixed Network (SE) or Migratable (ME)	RTR with ORION Fixed Network (SE) or Migratable (ME)
Meter functioning correctly		Meter operating correctly.	Normal operation. Indicator not sent to endpoint.		
Meter alarm		Several potential conditions may exist, including: • Empty pipe: "err" displays on LCD. Last known good read is displayed. Alarm clears when pipe is filled. • Temperature limits exceeded: meter continues to operate but outside specified accuracy range. Alarm clears after 60 days unless alarm condition continues. • Maximum flow rate is exceeded. No consumption is displayed until back within specified flow range. Both the meter functioning correctly and the meter alarm are active. Alarms clear after 60 days unless alarm condition continues. • Other meter or sensor issue: interference of ultrasonic signal. Meter continues to operate unless sensors are damaged. Alarm clears after 60 days unless alarm condition continues.	Consumption is sent to the endpoint. Meter alarm is also sent.	Meter alarm is sent to the endpoint. **NOTE:** No consumption is sent to endpoint when the alarm is active.	Consumption is sent to the endpoint, except when Exceeding Max Flow alarm is set.
Reverse flow		The meter detects reverse flow and triggers the reverse flow alarm icon on the E-Series display. The alarm remains active for 60 days. The alarm automatically clears after 60 days if the condition has not recurred.	Meter detects reverse flow and sends alarm message to the endpoint.	Meter does not send the alarm. The endpoint detects and reports the reverse flow and will report the read exactly how it is received.	No alarm condition reported by the endpoint will only record positive, forward flow.
Suspected leak		Meter detects 24 hours without one 15-minute interval of no flow. The alarm clears automatically when a 15-minute no-flow interval occurs.	Meter detects suspected leak and sends alarm message to the endpoint.	Meter does not send the alarm. The endpoint detects continuous consumption over a 24-hour period and reports suspected leak.	
30 day no usage		No measured flow in past 30 days. The alarm automatically clears once flow occurs.	Meter detects 30 day no usage and sends alarm to the endpoint.	Meter does not send the alarm. The endpoint detects no change in consumption over a 30-day period and reports 30 day no usage.	
End of life battery indicator		Indicated battery life based on pre-calculated consumption. Alarm is activated after 19 years and does not clear.	Meter sends alarm to the endpoint.	Meter does not send the alarm.	

NOTE: For meters manufactured prior to 5/2017, the meter alarms and reverse flow alarm were set to 35 days.