Chapter 5: Activating and Reading MACH 10® Ultrasonic Meters

This chapter explains the operations of the MACH 10® ultrasonic meter.

Activating the LCD Meter Display

The light sensor is located in the center of the faceplate of the MACH 10, and it supplies the power for the Liquid Crystal Display (LCD) panel.

Figure 13 – MACH 10® Faceplate

Timeout Period

Typically, the display is OFF. The meter includes a light sensor used to activate the LCD when you open the meter. A timed out LCD can not be reactivated just by shining a light on the light sensor. In order to reset the meter, close and re-open the lid.

Meter Display

The Neptune MACH 10 ultrasonic meters use a nine-digit LCD to show consumption, flow rate, and alarm information.

LCD Panel

Following is an example of the MACH 10 LCD panel. The table on the following page provides a description of each icon.

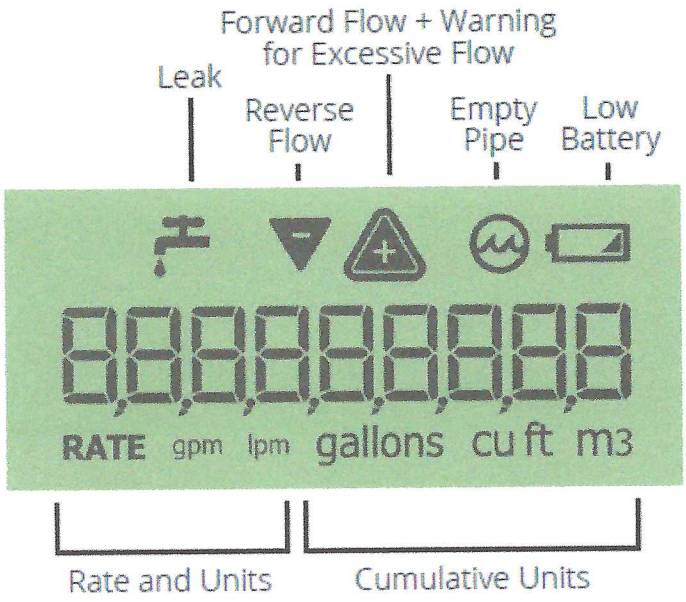

Figure 14 – MACH 10® LCD Panel

The LCD can display commas or decimals, depending on the configuration of each register, to show digits in the tens position, ones position, tenths position, and so forth. For example, some registers display 1,234,567.89. Others display 123,456.789, 12,345,678.9, or 1,234,567,89 depending on the need of the meter/register combination.

How to Read the Meter

It is important to become familiar with the information available from the meter. The icons and displays provide helpful information.

Alarms

Indicators and alarms appear in the displays as symbols that illuminate when the condition is active, and disappear when the alarm condition is eliminated.

LCD Icons

The following table defines the MACH 10 LCD icons and the status they indicate.

Table 10 – MACH 10® Icons and Displays

Icon	Description	Status	Explanation
Leak 	Icon used to indicate a leak. Leak status is determined by keeping track of the number of 15-minute intervals where the volume consumption exceeds Vmin in the previous 24-hour period. Vmin is factory programmed depending on meter size. It is defined as a change of the ninth digit on the LCD.	OFF	Number of 15-minute intervals < 50.
		Flashing	50 ≤ Number of 15-minute intervals < 95.
		Continuous ON	Number of 15-minute intervals ≥ 95.
Forward and reverse flow 	Icons used to indicate the forward and reverse direction of flow.	OFF	No flow is detected.
		Continuous ON	The meter has detected flow.
High flow warning 	Icon used to indicate excessive flow which can be a burst pipe.	OFF	Rate of flow < Maximum defined by normal flow range specifications.
		ON	Rate of flow exceeds normal operating flow limits.
Empty pipe 	Icon used to indicate if the pipe is empty or there is excessive air in the line. If this occurs, there is no receive signal in the expected time window.	OFF	Typically OFF. Meter is operating normally.
		ON	Turned ON if no receive signal is seen for 1 minute.
Battery status 	Icon used to indicate time and voltage of remaining battery life.	OFF	> One year of battery life remaining. Time since first power ON < 19 years.
		Continuous ON	< One year of battery life remaining or time since first power ON > 19.5 years.
		Continuous FLASHING	Low battery or time since first power ON > 20 years.