

**Setting the pump operation unit of measure:**

1. Make sure the pump is in the WAIT condition. Display will read 100% (100% speed) out of the box and not be running. If running, press the START/STOP key to stop the operation.
2. Pressing the DISP key will cycle through the display units available: % speed, GPH, LPH, and mL/min (SPM is not an option).

Once the desired units are on the screen, these are set and used throughout the pump!

NOTES:

1. For the display of flowrate units in GPH, LPH, or mL/min, a calibration *will be necessary* for accurate readings. Out of the box, all pumps have 0.6gph/2.28LPH/38mL/min as default max flow numbers. The pump will physically output the correct ratings of the pump, however the display may show the incorrect range until calibrated. See Pump Calibration below.
2. At any time, the pump speed in SPM can be displayed if the EXT key and the DOWN arrow keys are pressed together for 3 seconds. This is only a momentary display while both keys are held.
3. **CAUTION:** Display in flowrates, even after calibration, will ONLY be accurate at the Stroke Length (SL) set during calibration. Stroke Length is a mechanical adjustment and change in SL is not reflected in the flowrate display.

Pump Calibration (for accurate display of flowrate units – mL/min, LPH, GPH):

Before programming the calibration numbers into the pump, a manual calibration will have to be done for 1 minute (60 seconds). Ensure an accurate measurement of volume can be measured over a 1 minute time period. A common setup to achieve this is to connect the suction tubing of the pump to the bottom of an appropriately sized calibration column. This way accurate discharge pressure is used for a more accurate calibration. Run the pump manually to ensure there is no air in the suction line or in the pump head and that the pump operates in a steady state (ie. into application pressure) prior to calibration.

1. Set the pump to operate at 100% SL (or final desired SL setting) and at full speed or output.
2. Make sure the pump is in the WAIT condition. You can do this by pressing the START/STOP key until the pump starts pumping in MAN mode, then pressing it one more time.
3. Fill the calibration column to a start line. Using a timer, press the START/STOP key to start the pump operation in MAN mode and run for exactly one minute (60 seconds). Use the START/STOP key again to stop the pump.
4. After the one minute test, press and hold the DISP key for 3-4 seconds until “TEST” and a small “!” and “mL” are displayed.
5. Press the DISP key again and the screen will change to “000.00 mL” with the far left “0” flashing.
NOTE: Pressing the EXT key at any time will cancel calibration and go back to the WAIT mode.



6. Use the UP/DOWN keys to change the digit of the flashing character.
7. Use the DISP key to shift the flashing character to the right and cycle through all the characters.
8. Enter the volume that was measured with the calibration column during the one minute test.
9. Once finished and the volume is displayed on the screen, pressing the START/STOP key will enter the value. "SAVE" will momentarily display on the screen, then it will return to the WAIT mode, showing the max flowrate setting (100% speed by default).
10. The pump is now calibrated and using the DISP key will now cycle through the different flowrate settings with an accurate output display. Using the UP/DOWN keys will change the output flowrate of the pump.