

Performing a Calibration on the PH202

When performing a calibration, always start with fresh buffer solutions. You will need two buffers (preferably 7.00 and 4.00) and deionized water to rinse the electrodes.

- 1) Fill separate beakers with buffer solutions (7.00 and 4.00).
- 2) Clean the electrodes in 5-10% HCl solution as described above.
- 3) Immerse the electrodes in the first buffer solution (7.00).
- 4) To perform Automatic Calibration, push the **mode** button on the front panel of the PH202.
- 5) The lower (2nd line) display will ask you **Auto Cal YES/NO?** Answer **YES**.
- 6) The main display will start flashing and continue until the reading has stabilized. Once stabilized, the main display will lock onto the reading and store it in memory. The lower display will now ask you **Cal End YES/NO?** Answer **NO**.
- 7) Remove electrodes from the 7.00 buffer and rinse it thoroughly in deionized water, then blot the electrodes to remove any excess water.
- 8) Immerse the electrode assembly in a sample cup of 4 buffer solution and allow it to stabilize.
- 9) The lower display is asking you **Cal 4 YES/NO?** When the reading is stable, press **Yes**. The main display will start flashing and continue until the reading has stabilized. Once stabilized, the main display will lock onto the reading and store it in memory.
- 10) The lower display will now ask you **Cal End YES/NO?** Answer **YES**.
- 11) The display will now flash **WAIT**. During this waiting period, the instrument recalculates the (E_o) reference electrode offset (asymmetry) and the slope (efficiency) of the pH electrode and updates the stored calibration values.
- 12) At the end of the waiting period the instrument will return to normal operation, or continue to **HOLD** the output if the Hold function is activated.
- 13) Remove electrodes from the 4 buffer, rinse them in deionized water and put back online.

You can now read the diagnostics to ensure that the electrodes are functioning properly.

- 1) Press the **mode** button. The lower display will ask **AUTO CAL YES/NO?** Answer **NO**.
Then, **MAN CAL YES/NO?** Answer **NO**.
Then, **DISPLAY YES/NO?** Answer **YES**.

You will now be able to scroll through the choices for your second line display by continually pressing the **NO**. [Your choices are: temperature, AS (asymmetry), SL (slope), Z1 (impedance of measuring electrode), and Z2 (impedance of reference electrode)].

The two values you are interested in, are AS and SL. The (AS) asymmetry potential is ideally 0 mV and has a correction limit of ± 120 mV. When the asymmetry potential is greater than ± 60 mV, it will be slower to respond and needs to be replaced for this application.

The (SL) slope value should be 100% and its correction limits are 70% to 110%. When the slope drops to less than 85%, it indicates that the pH electrode has lost some of its efficiency (mV output) and will typically have a slow response. At this point it is recommended that the pH electrode be replaced.