

Human Immunology Center Core Laboratory

David H. Smith Center for Vaccine Biology and Immunology

Aab Institute of Biomedical Sciences

STANDARD OPERATING PROCEDURE: Operation and Maintenance of the VWR Model SB20 Bench top pH meter

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1. Purpose/Scope:

The purpose of this procedure is to outline the operation and maintenance of the VWR Model SB20 bench top pH meter located in the Human Immunology Core Laboratory (HIC).

2. General Policy:

The HIC will adhere to the specific guidelines recommended by the manufacture for the use and maintenance of the VWR Model SB20 bench top pH meter. The specific policy will be outline below for use and care of the VWR Model SB20 bench top pH meter. This will also include the proper documentation indicating that the maintenance recommended has been completed and also tracking of any issues or problems with the VWR Model SB20 bench top pH meter on the maintenance log worksheet.

3. Specific Policy**3.1. Installation of the VWR Model SB20 bench top pH meter****3.1.1. Reference the instruction manual for the specific installation procedure of the VWR Model SB20 bench top pH meter.****3.1.1.1.Plug the unit into the appropriate power supply.****3.1.1.2.Attach the electrode to the pH meter.****3.1.1.2.1. Rinse the electrode with distilled water to remove any salt deposits.****3.1.1.2.2. Add filling solution.****3.1.1.2.3. Allow the electrode to soak in pH electrode storage solution for 1 hour before use.****3.1.1.3.Perform the instrument check out procedure (Self Test).****3.1.1.3.1. Disconnect the probe from the meter and attach the shorting cap.****3.1.1.3.2. Run a self test by turning on the pH meter while holding down the OK key. The unit will automatically perform the self test.**

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- 3.1.1.3.3. When "P-" is displayed, press each key once on the meter in any order including the on/off button. A numerical digit will be displayed after each button has been pressed.
- 3.1.1.3.4. After the self test is completed, the unit will shut off. An error code will be displayed if a problem arises during the test.

3.2. Operation of the VWR Model SB20 bench top pH meter

- 3.2.1. Reference the VWR Model SB20 bench top pH meter instruction manual and the SympHony Ag/AgCl pH, Gel & 3-in-1 Electrodes Instruction Manual for operation.

- 3.2.1.1. Record all relevant information on the current maintenance log worksheet located above the pH meter.
- 3.2.1.2. Verify calibration has been performed before use.
- 3.2.1.3. Verify proper maintenance has been performed as documented on the maintenance log worksheet located above the pH meter.
- 3.2.1.4. Verify the proper electrode is connected for the desire solution (Ag/AgCl electrodes are incompatible with samples containing silver complexing or binding agents such as Tris, proteins, and sulfides. This electrode should not be used with samples containing organic solvents or in temperatures above 80°C. An Orion ROSS Ultra pH Electrode is available for use with Tris buffers. Reference the Orion ROSS Ultra pH Electrode Instruction Manual for use.)
- 3.2.1.5. Press lower left key to turn pH meter on.
- 3.2.1.6. Press the mode key until the annunciator is at the pH mode.
- 3.2.1.7. Rinse electrode with distilled water, uncover the fill hole and place in sample (Make sure the liquid that is being measured never goes above the level of the fill hole and the filling solution should be at least 1 inch above the sample level upon immersion).
- 3.2.1.8. Record sample pH when "ready" is displayed on the pH meter.
- 3.2.1.9. Rinse the electrode with distilled water and cover fill hole. Place electrode in storage solution.
- 3.2.1.10. Unit will turn off automatically.

3.3. Maintenance of the VWR Model SB20 bench top pH meter

- 3.3.1. Daily (When in use)

- 3.3.1.1. Perform two buffer pH calibration using fresh buffers.

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- 3.3.1.1.1. Uncover the fill hole. (Make sure the liquid that is being measured never goes above the level of the fill hole and the filling solution is above the reference junction)
- 3.3.1.1.2. Place the pH electrode into the first calibration buffer (usually the lower pH buffer).
- 3.3.1.1.3. Press lower left key on the pH meter to turn the unit on.
- 3.3.1.1.4. Press the mode key until the annunciator is at the pH mode.
- 3.3.1.1.5. Press the cal key and “calibrate” will be displayed in the lower field. “P1” will be displayed indicating it is ready for the first buffer point.
- 3.3.1.1.6. When “ready” flashes, press “ok” to accept the pH value and record that value on maintenance log worksheet. “P2” will then be displayed.
- 3.3.1.1.7. Rinse the electrode with distilled water and place the electrode into the second buffer.
- 3.3.1.1.8. When “ready” flashes again, press the “ok” key and record that value on maintenance log worksheet.
- 3.3.1.1.9. “P3” will then be displayed. Press the mode key and the slope will be displayed. The slope should be between 92-102%. Record the slope on maintenance log worksheet.

3.3.2. Weekly

- 3.3.2.1. Inspect the electrode for scratches, cracks, salt/crystal build up, or membrane/junction deposits.
- 3.3.2.2. Rinse off salt build up with distilled water and remove any other deposits as indicated in manual.
- 3.3.2.3. Replace storage solution.

3.3.3. Monthly

- 3.3.3.1. Soak electrode in 0.1 M HCl for 30 minutes.
- 3.3.3.2. Soak electrode in pH storage solution for at least 1 hour before using after soaking in HCl.

3.3.4. Every 6 Months

- 3.3.4.1. Perform self test as indicated in 3.1.1.3.1.

3.3.5. Electrode testing (As need)

- 3.3.5.1. Set pH meter to absolute mV mode
- 3.3.5.2. Immerse electrode in fresh pH 7 buffer.

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- 3.3.5.3. Display value should be ~ 0+/-30mV
- 3.3.5.4. Rinse with distilled water.
- 3.3.5.5. Repeat using pH10 buffer.
- 3.3.5.6. Display should be 160-180mV greater than in step 3.3.5.3.
- 3.3.5.7. Perform maintenance on the electrode if it fails this test.

Reference:

Reference the VWR Basic Bench top pH meter instruction manual
Reference the SympHony Ag/AgCl pH, Gel & 3-in-1 Electrodes Instruction Manual
Reference the Orion ROSS Ultra pH Electrode Instruction Manual

Attachments:

Maintenance Log Worksheet

Revision History

Version	Change	Impact	Justification	Change Date:
Legacy	No sign off	New/HIC startup		No date assigned
HIC-4-0012	New		Control document management system	02/16/07