

CALIBRATING THE PROBES

Probes require periodic calibration to maintain accuracy. Each probe is calibrated through a simple process of placing it into a standard solution of known water quality. The pH and ORP probe reading are corrected in software for temperature compensation. It is for this reason that **the temperature probe must always be included in the calibration solutions** when either the pH or ORP probes are calibrated. However, the conductivity probe does not require the use of the Temperature probe to complete the calibration process.

CALIBRATING THE CONDUCTIVITY PROBE

The Conductivity probe calibration is a two-part process:

- Step 1—Calibrate to zero.

This is done by calibrating a dry probe out of water.

- Step 2—Calibrate to one of two standard solutions.

This is done by placing the probe in a solution of known conductivity (718 uS or 58,640 uS).

From the Operations Menu, use the arrows to scroll to the Probe Calibrate Menu. After you respond to the “Are You Sure?” prompt, use the arrow keys to scroll to the Conductivity Calibration menu, and press Enter. During the calibration process you will see the following menu prompts shown in Figure 1.

You are directed to dry off the probe then push Enter and begin the dry calibration. When the probe is calibrating the Display Window will read “Cond Probe is Settling.”

At this point you will be prompted to enter the calibration solution. Then place the probe in the solution for calibration. Repeat the calibration procedures for the two standard solutions.

If the probe calibrates properly, the screen will return to the Operation Menu. If the Controller cannot calibrate a probe to within 15% of its design specification, a message will be displayed, “Clean or Replace Probe.”

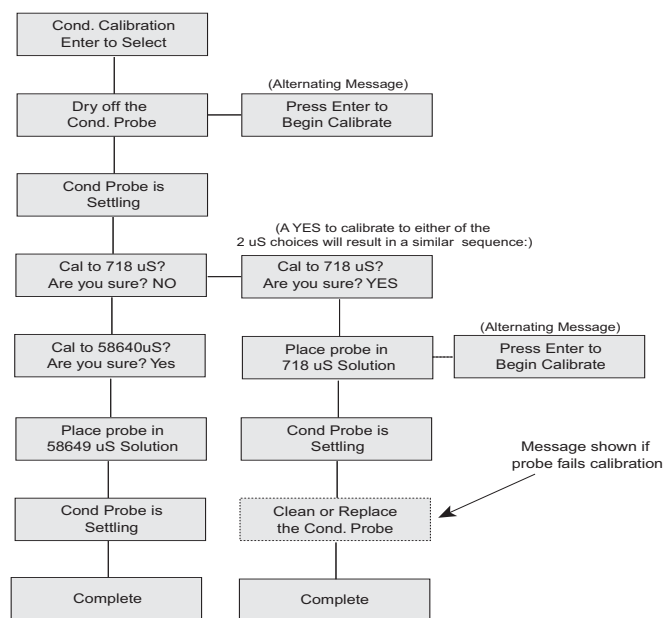




Figure 1. Conductivity Probe Calibration

 **Note** Make sure to use a clean dry towel to dry the tip of the conductivity probe. Oil of any kind on the tip of the electrode will cause errors in calibration and operation.

 **To insure accurate reading it is critical that the unit be calibrated with a conductivity buffer consistent with the range that the conductivity system will be operated in. Aquadyne recommends calibrating the low range with a 718 uS buffer and the high range with a 58,640 uS buffer. Failure to do this will yield inconsistent readings.**

Note

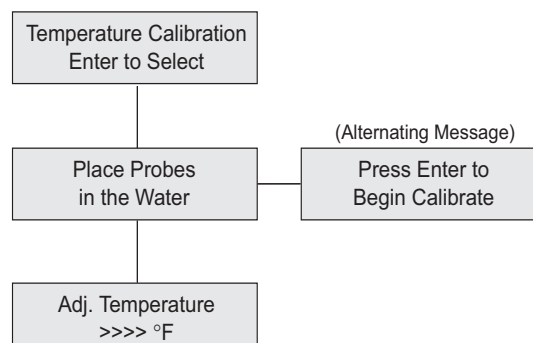


Figure 2. Temperature Probe Calibration

CALIBRATING THE TEMPERATURE PROBE

Aquadyne offers a temperature probe that is calibrated and accurate up to ± 0.4 degrees. It is guaranteed to be accurate to within ± 1 degree at 77° F. Should you wish to recalibrate the temperature probe, do so as follows:

1. From the Top Level Display, press Enter and then press the right arrow and go to the Operation Menu. Press Enter.
2. Next, press the right arrow once to get to the Probe Calibrate menu. Press Enter.
3. Then press the right arrow three times to see the display Temp Calibration. Press Enter to Select.
4. Measure the temperature of a water sample with an accurate thermometer.
5. Read the temperature.
6. Place the probe in the sample and adjust the temperature using left and right arrows until the screen value matches the thermometer reading.
7. Press Enter twice to return to the Top Level Display.

The menus that appear on the Octopus display during calibration are shown in Figure 2.

CALIBRATING THE PH PROBE

The pH probe requires a few more steps to calibrate. The pH calibration is done using two different buffer solutions. Standard buffer solution choices are pH 4, 5, 6, 7, 8, 9, and 10. Calibrate the probe using two buffer solutions. It is best to choose buffers which surround the application range (i.e. saltwater use pH 7 & 10, fresh water use pH 4 and 7) Set up three cups: Buffer Solution #1 in the first cup, Buffer Solution #2 in the second cup, and distilled water in the third cup, as shown in Figure 3.

During calibration the Octopus controller will prompt you, asking you which solution you wish to use for Buffer Solution #1, and Buffer Solution #2. Simply follow the prompts on the display screen. The menu prompts should be as shown in Figure 4.

When preparing a new probe for first use, carefully remove the probe from the soaker bottle. Be sure to save the bottle in case the probe needs to be stored at some later date. Rinse the probe in the distilled water and shake it off.

Next, place the pH probe **and the temperature probe** into the Buffer Solution #1. The Octopus controller will let you know when the readings are stable, so you can remove the probes, rinse them thoroughly in the tank water cup, and proceed to the next step.

Finally, place the pH probe and the temperature probe into Buffer Solution #2. Wait at least

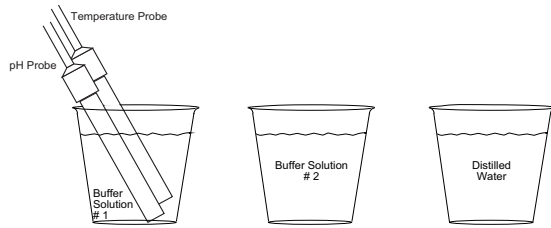


Figure 3. pH Calibration Solution

2 minutes (or up to 5 minutes if the probes are not new), before pressing the Enter key to begin calibration of the probes. The controller should indicate the probe is now calibrated. After cleaning the probes in the tank water cup and drying excess water off the probes, they are ready to be put back into the system. If the probes are not within the tolerance limits, the message will read, “Clean or Replace Probe.” Should this occur, clean the probe, and try to recalibrate it.

If you have cleaned the probe twice and you are still having problems, you will need to purchase an Aquadyne replacement probe from the dealer where you purchased the Octopus .

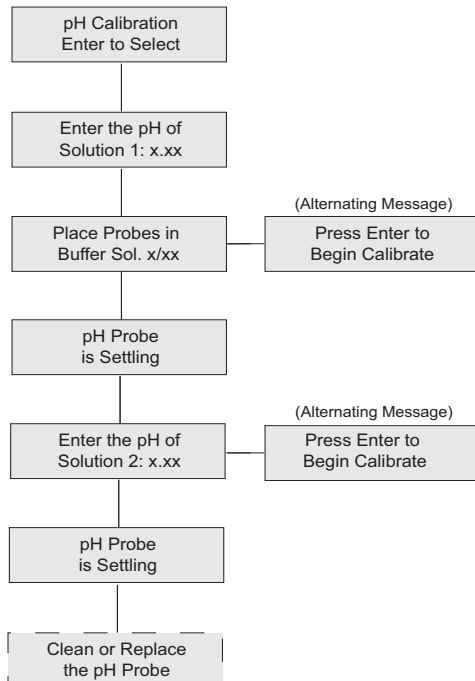



Figure 4. pH Calibration Menu

 It is important that the buffer solution in cup #1 is the HIGHER of the two buffers being used. For example, if you are using buffers 7 & 10, cup #1 should contain pH 10 buffer.


CALIBRATING THE ORP PROBE

Calibration of the ORP probe follows the same general steps as for the pH probe except for two differences:

- When setting up your cups for ORP calibration, you will need to add Quinhydrone to each of the Buffer Solutions.
- You must use **only pH-4 and pH-7 Buffer Solutions** with Quinhydrone.

Proceed with the calibration procedure, as follows:

1. Dip the stir stick provided into the Quinhydrone powder and remove a heaping portion on the bottom 1/4-inch of the stick.
2. Mix this powder into one of the buffer solutions (pH-4 or pH-7). Some of the Quinhydrone should remain undissolved. **If the Quinhydrone dissolves completely, add more.**
3. Use a different stir stick and repeat this procedure for the second buffer solution.
4. At the Octopus controller, press the Enter key from any place on the Top

 **DO NOT CALIBRATE THE ORP OR PH PROBES WITHOUT INCLUDING THE TEMPERATURE PROBE IN THE SOLUTION.**

REPLACING A PROBE

Replace your pH and ORP probes every 18 months for Aquadyne laboratory grade probes, 12 months for standard grade probes, or as needed for accuracy and reliability. Replacement probes can be purchased from the store where you purchased your Octopus controller. For a list of dealers nearest you, check Aquadyne's Web site at <http://www.aquadyne.com> or call Aquadyne Customer Service.

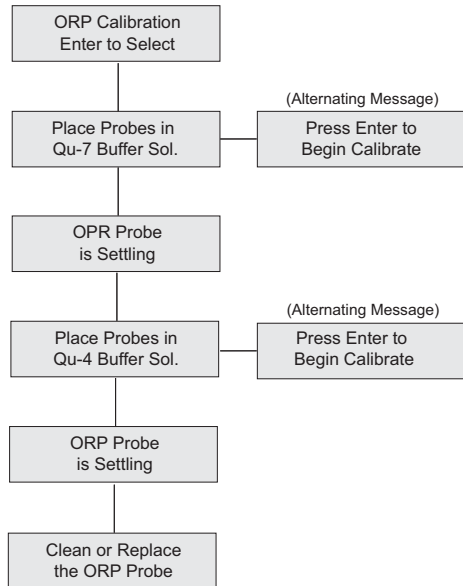


Figure 5. ORP Calibration Menu

Level Display, you will be at the Setpoint Menu. Use the arrow keys to scroll to the Operation Menu and press the Enter key. Use the arrow keys to scroll to the Probe Calibrate sub-menu. When you press the Enter key, you will be prompted whether you wish to continue with probe calibration. After selecting yes, the menus will prompt you through the calibration process, as shown in Figure 5. Be sure to let the probes settle in the calibration solution at least one minute before pressing Enter to begin calibration.