BULLETIN # B017

AUTOLAB TEMPERATURE SENSOR CALIBRATION
FOR ATL-2, ATL-2+, AND ATL-3

You will need:

- Small Standard screwdriver
- Standard screwdriver
- #1 Phillips® Screwdriver
- An accurate ºC thermometer (graduated in 1/10th's of ºC) to be used as your standard *(JOBO Part #3352 or equivalent)*
- For the ATL-2 Plus, you will also need the 3mm Allen key supplied with your processor.

Procedure:

PART ONE: Preparation

1.1 Switch the Power Switch knob to the ON position.

1.2 Switch the SET/RUN mode knob to the SET mode position.

1.3 Set the program temperature to 32.0ºC.

1.4 Switch the SET/RUN mode knob to the RUN mode position.

1.5 Press the RESET button.

1.) Allow the water bath temperature to stabilize at 32.0ºC.

NOTE: *It is not necessary to have the chemical bottles filled with water or chemicals.*

PART TWO: Accessing the Calibration Potentiometers

2.1 **For ATL-3 ONLY:** Remove the large gray cover (shroud) by removing the six (6) screws located around the perimeter of the cover. Three (3) are located along the front, two (2) in the rear near the plumbing, and one (1) located on the right side near the lift arm. Lift the cover off, being careful not to drag any hoses or wiring.

2.2 **For ATL-2+ ONLY:** Remove the front bottle cover as well as the 3mm cap head screw and washer located near the left cover hinge.

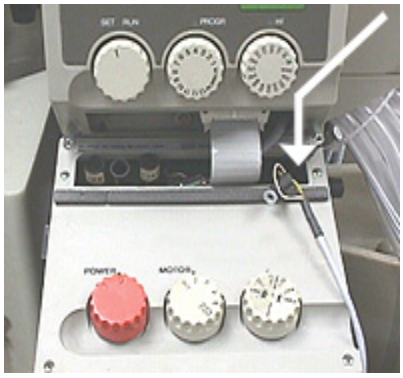
2.3 **For ALL Models:** Remove the two (2) Phillips® screws located just below the display and keypad panel.

2.4 Pull the access panel forward being careful not to lose the rubber grommet(s) located on the right side of the panel.

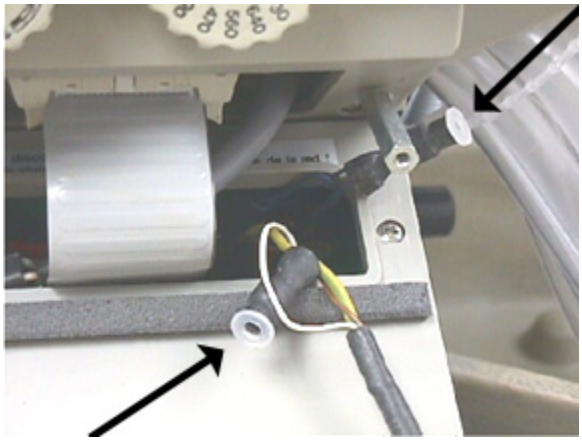
2.5 Located behind the fuse access panel, look down into the opening toward the far right hand side. You will see two (2) connectors labeled CHE and WA (the labeling is printed on the printed circuit board [PCB]).

CHE = CHEmical Temperature Sensor.

WA = WAter Bath Temperature Sensor.



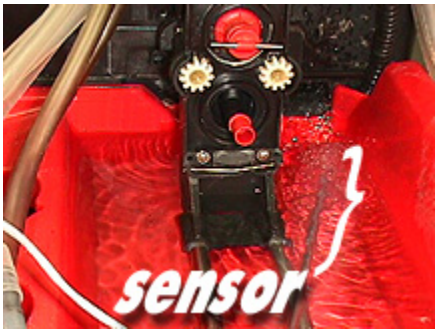
2.6 Follow the wires up from both the CHE and WA black connectors until you locate the small black tube-like piece with a nylon cap fitted into the end of the tube. The two wires connected to each tube attach directly to the black connectors CHE and WA.



2.7 Remove the nylon caps from the top of both tubes. Then look into each to find a calibration potentiometer. You will adjust these potentiometers in Part Three.

PART THREE: Calibration

3.1 Remove the chemical temperature sensor from the chemical bottle and place the lower 8cm (3.15 inches) of the sensor into the flow of water from the output of the pump motor. This "waterfall" is located in the rear left-hand corner of the water bath.



Operational Point: The water bath temperature sensor is located inside of the pump housing (the channel that draws water up into the upper water bath). Therefore the reason you are placing the chemical temperature sensor into the "waterfall", is because the "waterfall" is as close to the water bath temperature sensor as you can be.

3.2 Place your reference thermometer adjacent to the chemical temperature sensor.

NOTE: Your reference thermometer must be an accurate measuring device. It is best to use a thermometer that measures ºC graduated in 1/10 ºC. This is necessary because the temperature control accuracy of the AutoLab is ± 0.1ºC. *Please note that the temperature calibration will only be as accurate to your reference thermometer. If you are happy with the processing results using your reference thermometer, then you can be comfortable using this as your reference standard.*

3.3 Allow both the chemical temperature sensor and your reference thermometer to stabilize.

3.4 Once the AutoLab displays a water bath temperature of 32.0ºC, compare the temperature read by the chemical temperature sensor to the temperature read by your reference thermometer.

3.5 Adjust the potentiometer in-line with the "CHE" connection using a small standard screwdriver, so the chemical temperature sensor display matches the temperature read by the reference thermometer. It should be approximately 32.4ºC.

NOTE: When looking at the water bath temperature or the chemical temperature as read by the AutoLab, it is normal for the temperature to fluctuate ±0.1ºC.

3.6 Read the water bath temperature as displayed by the AutoLab. The temperature should be exactly 0.4ºC lower than the chemical temperature as displayed by the AutoLab (32.0ºC).

3.7 If the temperature as displayed by the chemical temperature sensor is not exactly 32.4ºC, then you must adjust the calibration of the water bath temperature sensor by turning the potentiometer in-line with the "WA" connection up or down until the water bath displays a temperature of 0.4ºC less than the chemical temperature (32.0ºC water bath vs. 32.4ºC chemical).

3.8 Every time you make an calibration adjustment, you must allow the AutoLab's temperature to stabilize and verify the calibration.

Operational Note: The temperature of the entire processor is controlled by the water bath temperature. If you lower the calibration for the water bath temperature sensor, the AutoLab will then heat the water bath up to the set-point temperature of 32.0ºC. Conversely, if you raise the calibration for the water bath temperature sensor, the AutoLab will then cool the water bath down to the set-point temperature of 32.0ºC.

REMEMBER:

[1]Both the chemical temperature sensor and the reference thermometer must be inserted into the "waterfall" of the upper water bath.

[2]Both the chemical temperature sensor and the reference thermometer must read exactly32.4ºC when the water bath temperature sensor reads exactly 32.0ºC.

Operational Note: There is a purposeful offset designed into the calibration of the water bath temperature sensor. The offset (the higher temperature at the "waterfall") is critical for proper temperature control. Please note that the 0.4ºC offset only applies to a calibration temperature of 32.0ºC. The offset is different at other temperatures.

3.9 Keep repeating steps 3.7 and 3.8 until both the chemical temperature sensor and the reference thermometer must read<u>exactly</u> 32.4ºC when the water bath temperature sensor reads <u>exactly</u> 32.0ºC.