



## INSTRUCTIONS FOR THE AMCO RATIO TURBIDITY KIT HACH 43900/XR

EPA regulations require that if you are using Sealed Secondary Standards, they must be checked against a Primary Standard **at least** every three months.

### **EPA 570 Manual for the Certification of Laboratories Analyzing Drinking Water**

#### **BEFORE STARTING CALIBRATION:**

- Always use clean glassware and handle cuvettes so there are no fingerprints in the area where light is passing through the sample. GFS recommends using alcohol to clean the outside of the cuvettes.
- Make sure that the index marks on the cuvettes and turbidimeter are aligned before reading. (See attached Indexing Procedure.)
- When opening bottles of AMCO CLEAR™ standards, make sure seal is removed completely.
- Do not pour used Primary Standard back into the bottle. This contaminates the contents, since the used standard has been in contact with impurities in the cuvette.
- Allow the standard to reach room temperature before use to alleviate fogging of the cuvette.
- If you encounter difficulties with calibrations, allow the sample to sit, loosely capped with clean cap, until all air bubbles have settled out, or gently tap sides of cuvette to release the air bubbles, then take another reading.
- When placing any standards in the well, always use the light shield to cover the well in order to keep out ambient light.



## **CALIBRATION WITH THE AMCO PRIMARY STANDARD:**

### **A) BEFORE STARTING**

- Select a clean scratch-free cuvette. (This same cuvette should be used both for checking your Sealed Secondary Standard with Primary Standard and for your regular turbidity test samples.)
- Index the cuvette following the Indexing Procedure Included.

### **B) 0-2 RANGE OR STRAY LIGHT MEASUREMENT**

- Press the 0-2 range switch
- Put the 0.0 NTU standard in the cuvette. Clean outside of the cuvette with a lint free paper (kimwipe).
- Put the 0.0 NTU standard in the machine.
- Adjust the ZERO control for a reading of 0.02 NTU.

**NOTE: THIS CALIBRATION IS DONE ONLY IF YOU ARE MEASURING LOW TURBIDITY VALUES (LESS THAN 1 NTU).**

### **C) 0-200 RANGE**

- Press the 0-200 range-switch. Covering the sample cell compartment while its empty, adjust the zero control knob until a reading of .000 is obtained.
- Rinse (with approximately 5ml) and fill cuvette with 18 NTU Primary Standard.
- Clean the outside of the cuvette with a lint free paper (kim-wipes) and alcohol to eliminate all fingerprints.
- Press the range switch to select the 0-20 range. Put the 18 NTU Primary Standard into the machine. Adjust the S (span) control on the side of the machine until you obtain a reading of 18.0 NTU.
- Rinse (with approximately 5ml) and fill cuvette with 180 NTU Primary Standard.
- Clean the outside of the cuvette.
- Press the range switch to select the 0-200 range. Put the 180 NTU standard into the machine. Adjust the L (linearity) control on the side of the machine until you obtain a reading of 180.0.

- Press the range switch again on the second range (0-20). Put the 18 NTU standard into the machine and again check the reading. If it does not read 18.8, adjust the S (span) control again until you obtain a reading of 18.0.
- Check the 0-200 range again with the 180 NTU standard. Continue to adjust the machine in both (the 20 & 200) ranges until you obtain the correct readings. When the readings are correct in both ranges, your machine is then calibrated.

#### **D) 0-200 RANGE**

- Press the range switch to select the 2000 ranges. Put the 180 NTU standard into the machine. Adjust the 2K range S (span) control on the side of the machine until you obtain a reading of 180.0.
- Put the 1800 NTU standard into the machine. Adjust the 2K range L (linearity) control on the side of the machine until you obtain a reading of 1800.
- Put the 180 NTU into the machine. If it does not read 180.0, repeat steps in section C.

#### **DETERMINING THE TRUE VALUE OF YOUR SEALED SECONDARY STANDARD AFTER CALIBRATING WITH THE AMCO PRIMARY STANDARD**

- Clean your Sealed Secondary Standard using the same technique as you used to clean the sampling cuvette.
- Place the Sealed Standard, appropriate to the range, into the instrument as well.
- Rotate the Sealed Standard vial until it reads its marked value (or to its closest reading). Index the vial.
- Log the reading, then write the value on one of the enclosed stickers, and place it on the Sealed Standard vial. This is the **true value** of your Sealed Standard.



### **CALIBRATION WITH THE AMCO SEALED SECONDARY STANDARD:**

- Align the Sealed Standard in the indexed position.
- Calibrate your instrument to the **true value** of your Sealed Standard. e.g. If your 18.00 NTU Sealed Standard read 18.10 NTU when calibrated to the primary, you will calibrate your instrument to 18.10 NTU with the Sealed Standard indexed and in position.

### **NOTES:**

- Differences in Primary vs. Sealed Standard readings are due to the inherent differences in the glassware, not in the actual standard value.
- Remember; Sealed Secondary Standards are “Reference Standards” only, and must be used in conjunction with a Primary Standard to meet EPA requirements.