

CCPaSEC

Procedure  
for the Quality Control  
Yearly Equipment Check

July 2018  
CCPaSEC Quality Control Team

## pH and Conductivity Equipment Check.



Battery check: replace the batteries.

Inspect the conductivity probes and clean it if necessary.

When complete, check the appropriate “Physical Check” box on the table.

### Procedure

Calibrate 2 or 3 meters 24 hrs. before we do an equipment check (Note: We allow users to calibrate their meters up to 24 hours before use and they may drift a little so it is best to calibrate the meters a day ahead of performing the equipment check to determine the percent recovery PR).

We will not check all the meters during the yearly equipment check nor need to calibrate them, because we would be using the same standards used to calibrate them as to check them.

The duplicate field tests we do for the relative percent difference (RPD) is a good indicator of the meters' performance since we compare the field teams' with our newly calibrated Quality team meter.

pH & conductivity datasheet

		Check only 2 or 3 meters, 24 hours after calibration for percent recovery			
Kit	Physical check Pass/Fail	4.01 pH	7.0 pH	10.0 pH	conductivity

# Colorimeter Equipment Check.

The colorimeter check can be done using one standard for each test.

\* The Nitrate results should be factored per the HACH “Differences for Cadmium Reduction Method of Nitrate Analysis” procedure.

Colorimeter Physical condition:

Battery check: replace the batteries.

Inspect the sample cell cavity and clean it if necessary.

Verify the colorimeter kit sample cells appear clean.

Verify the kit is complete with unexpired reagent chemicals, wipes, scissors, sample cell holder etc. Replenish as necessary.

When complete, check the appropriate “Physical Check” box on the table.



## Colorimeter Comparison Function and Range Check.

Purpose: We will not attempt to calibrate the colorimeters. Our purpose is to determine the differences between them to establish an average percent recovery (PR) for them.

Record the value of the standard on the datasheet.

1. Turn on the Colorimeter and program each colorimeter for the Nitrate test.
2. Assure the window shows NO<sub>3</sub>-N (if not press the conc button)
3. Wipe the Blank sample cell, insert it in the colorimeter. Orientate the diamond toward the keypad and press Zero for each colorimeter.
4. Wipe the standard sample cell, insert it in the colorimeter. "Read" the Nitrate standard value for each colorimeter and record each value.
5. Reprogram the colorimeter for Sulfate and Phosphate. Repeat steps 5 & 6 for each reagent and each colorimeter. A correction factor is not needed for them.

## **Formula for Correction of Differences for Cadmium Reduction Method of Nitrate Analysis:**

Because we measured the Nitrate results using a sample prepared using distilled water and the NitraVer 5 Nitrate Powder pillow (the cadmium reduction method) the value you record for each team colorimeter will not be the same as the number shown on NO<sub>3</sub>-N on the bottle of the high nitrogen standard (4.43 mg/L).

The correction factor is the ratio of the colorimeter reading of your prepared sample made with distilled water to the value listed on the bottle of the standard (4.43 mg/L).

Correction factor = Colorimeter reading / Standard (4.43)

Example:  $9.5 \div 4.43 = 2.14$

Do not apply the correction factor to the colorimeter readings you log on the datasheet.

Our Percent Recovery spread sheet will automatically apply the correction factor to each of the recorded readings and determine the mean for all colorimeters.

$$\text{Percent Recovery} \quad PR = \frac{\text{Mean}}{\text{Standard}} * 100$$

A correction factor for Sulfate and Phosphate is determined in the same way.

Colorimeter datasheet

<i>Colorimeter</i> Kit number					
Physical Check Pass/Fail					
Test	Program	Standard Value			
NITRATE	51				
SULFATE	91				
PHOS- PHATE	79				

# Dissolved Oxygen Meters Equipment Check

Dissolved Oxygen Meter Physical condition:

Verify that they appear clean and working.

The kit has calibration instructions.

Battery check: replace the batteries.

Inspect the probe cell cavity and clean it or replace if necessary.  
When complete, check the appropriate "Physical Check" box on the table.

Dissolved Oxygen Meter Measurement:

Purpose: Our purpose is to determine the differences between them and establish an average and a tolerance range we can expect from them.

Test:

1. Calibrate the meter for the altitude of the test.
2. Prepare a container with tap water. Insert the meter probe and while moving it back and forth in the water note the measurement.
3. All meters should show a similar result. If not, repeat the calibration and retest.

Alternate with "0" oxygen standard

1. Prepare the "0" zero dissolved oxygen standard.
2. Measure and record the reading of each meter.



# Dissolved Oxygen (YSI Meter) worksheet

Kit	Serial Number	Physical check Pass/Fail	Tap water dissolved oxygen mg/L	dissolved oxygen with zero std.

# FloWatch Equipment Check

Purpose: To determine physical condition. We do not have a means of calibrating for velocity.

FloWatch Meter: Physical condition:

1. Verify that they have not sustained physical damage, appear clean and the kit is complete with instructions.
2. Verify that the cable is attached to the hand unit and connector is properly seated. (we are advising the volunteers to not disassemble that connector).
3. Replace the batteries.
4. Verify the setup for AV (average), Time mode, Units as cm/sec and degrees centigrade - see illustration below. Reset it if needed.



5. Inspect the turbine. It should spin easily with just a breath of air. All four of the blades must appear uniform in shape and pitch (the angle they are set at).



6. The pitch determines the velocity. One revolution is equal to one centimeter per second.

Please remember to turn the unit OFF after use.

When complete, check the appropriate "Physical Check" box on the table.

Replace the unit in the packaging – do not disassemble the cable connector from the unit.

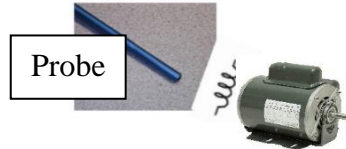
# FloWatch flowmeter worksheet

Kit	Physical Pass/Fail	Measure cm/SEC @ frequency 60 cycles/sec.

# FLOWATCH® Calibrating the meter

You need to provide an alternating magnetic field to calibrate the FloWatch®. This can be done by holding probe close to a small motor running at 60 Hz single phase.

Turn the FloWatch® on. Hold the probe near the motor to pickup a reading. It should read 205 cm/Sec. If not, it will need recalibration.



1. Turn meter on.....
2. Press both bottom buttons simultaneously. A count down will start on the screen.
3. Before the countdown ends release the bottom left button (do not release the bottom right) and press the top right button. ▲
4. Release both buttons and use the arrows to set the value on the screen to 123. ◆
5. The meter will return to normal mod several seconds after no buttons have been pushed.

Step 1. To calibrate the meter, press these two buttons **simultaneously**.



Step 3. While holding the lower right button - press the top right arrow button to enter the setup

4. The screen should show **“123”**  
If not. Adjust the number with the up/down arrows (buttons).

Step 2. A countdown begins to clear the memory. You need to release the **left** button before it stops. Do not release the bottom right button.