

IOM Sampling with the Gilian Gil Air Plus Pump Procedure

Calibrating GilAir Pump with IOM Sampler

To turn pump on, press the check mark/power button until screen lights up.

Check the flow rate:

1. Press the check mark/power button.
2. Use down arrow to scroll to "Flow Set."
3. Adjust the flow using the +/- buttons to set flow rate to **2000 cc/min (2 L/min)**.

After pump has charged:

1. Pull pump off charger.
2. Press check mark/power button.



Photo 1. Gilian Pump Calibration Setup

3. Use "down" arrow until indicator is on "Calibrate." Press check mark/power button.
 - Allow the pump to run in calibrate mode for about five minutes.

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Calibration

Set up:

1. Place IOM face down (filter opening) onto the calibration adapter. Keep the IOM centered.
2. Screw down onto the IOM until snug, **NOT tight! Screwing the bolt too tight can cause the IOM to crack.**
3. Place tubing on each end of the calibration adapter.

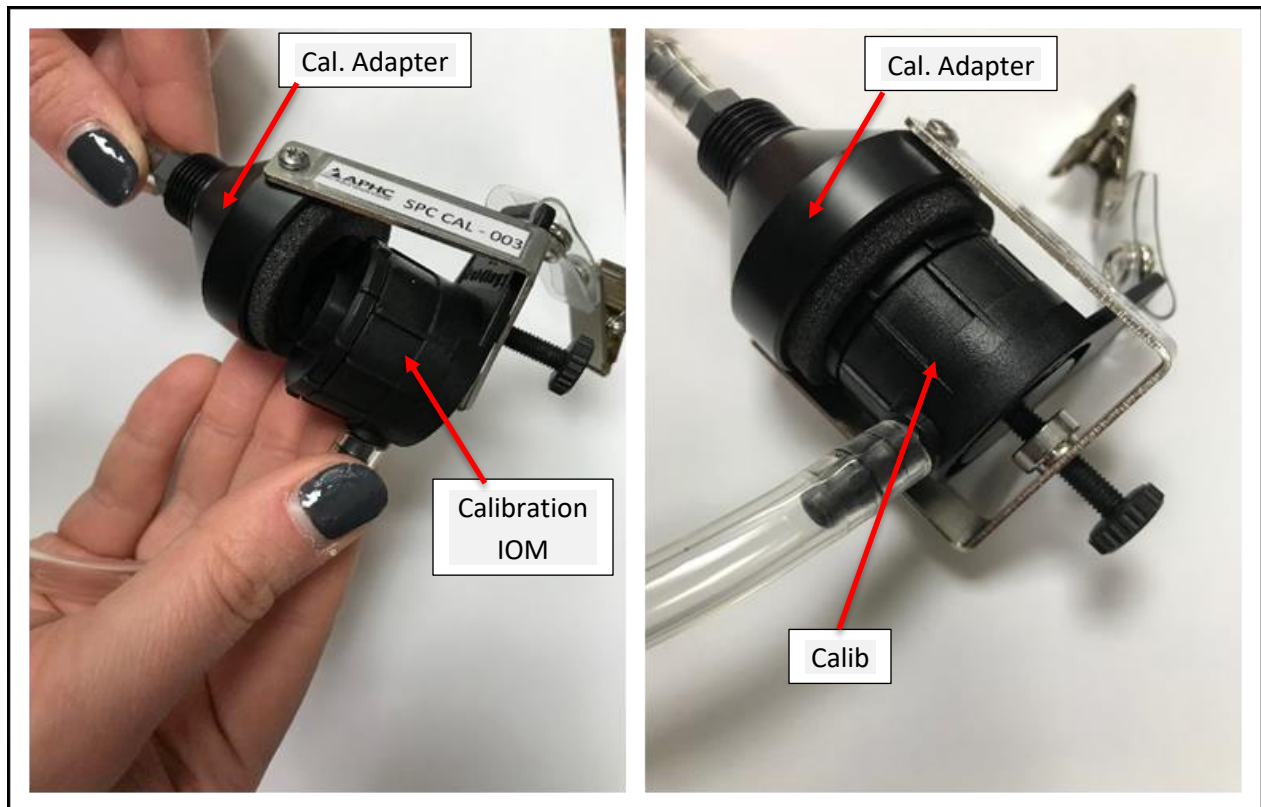


Photo 2. Loading the IOM in the Calibration adapter

4. Connect tubing with attached media onto the “suction” inlet of the calibrator; **funnel side of adapter goes towards the calibrator.**

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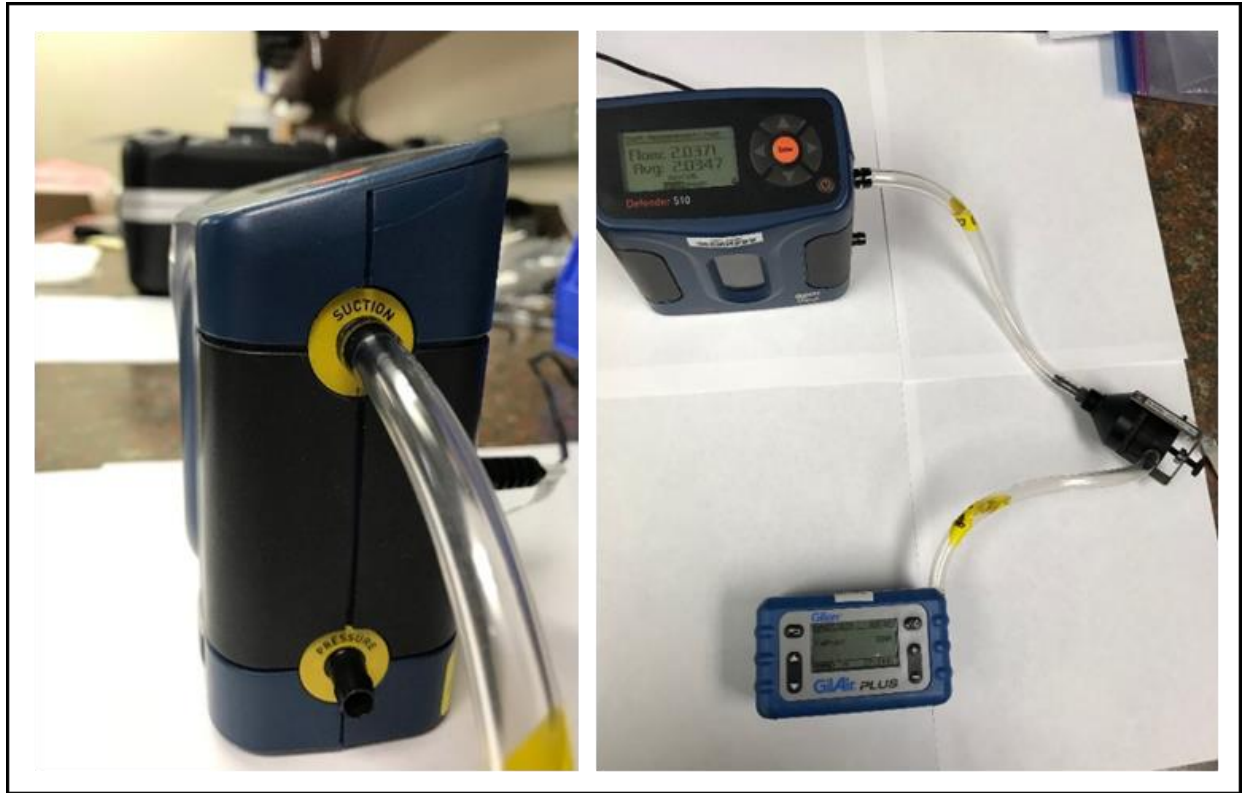


Photo 3. Tubing Configuration of the Calibrator, Calibration adapter, and Pump

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Turning on calibrator:

1. Turn on the calibrator by holding down the power button until the light inside turns on and the piston will drop.

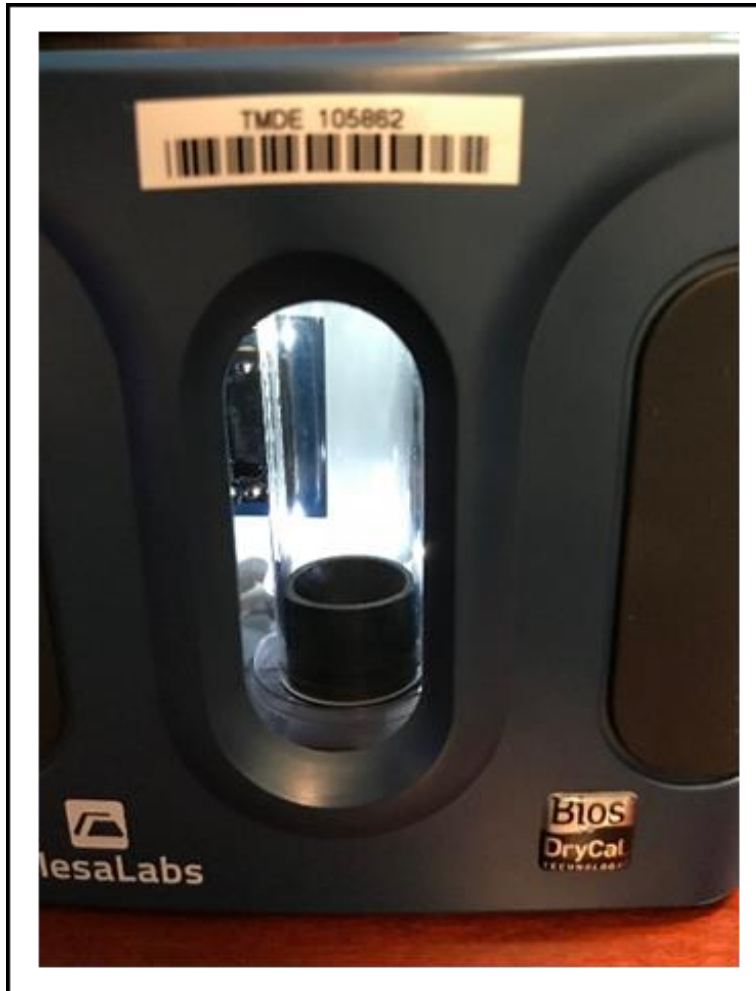


Photo 4. Calibrator Powered On, Piston Dropped

2. The “measure” option will be highlighted. Select “Enter.”
3. Use the “right” arrow to scroll over to “CONT.” (Continuous) to run the calibrator continuously until manually stopped.
4. Connect other end of tubing onto pump inlet.

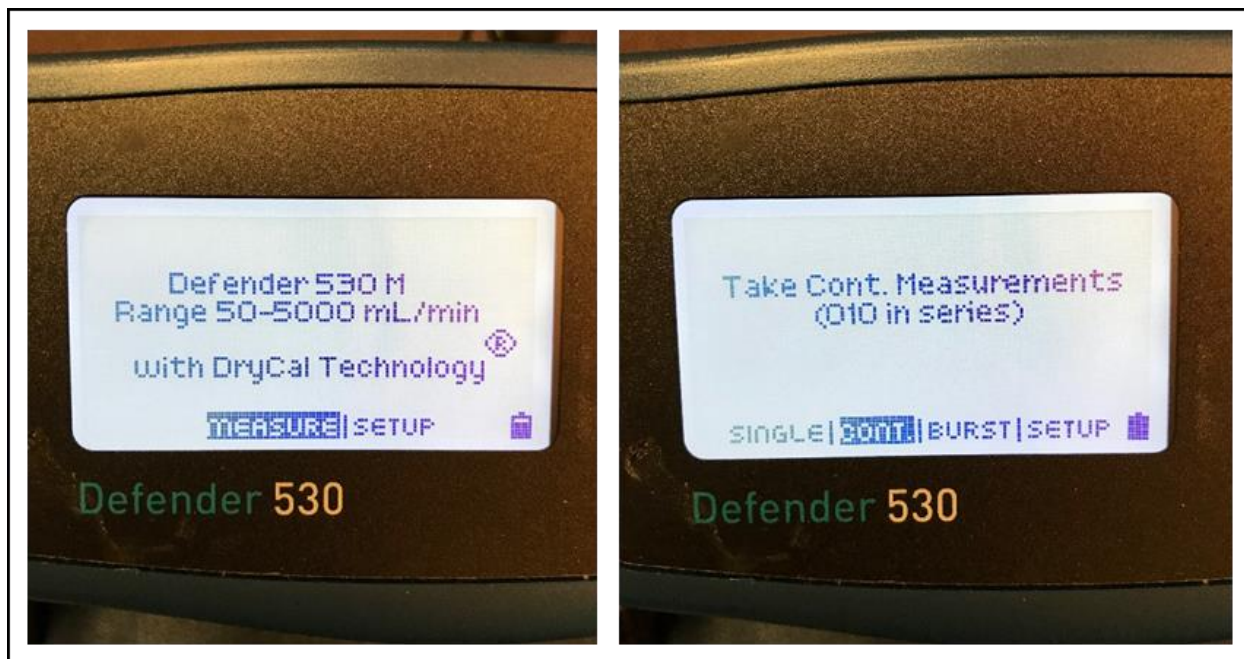


Photo 5. Calibrator Setup

5. If the “average” reading on the calibrator is **not** between 1900-2100 cc/min (1.90-2.10L) then the pump flow needs to be adjusted to the average flow rate on the calibrator. (i.e., If the average flow on calibrator reads 1890 cc/min (1.89L), then adjust the flow on the pump to 1890 which will increase the pump volume closer to 2000 cc/min.)
6. To adjust the flow on the pump, press the “+/-” button to go up or down to the flow rate needed. Press the check mark/power button once adjusted.
 - Allow the piston to cycle at least 10 times prior to taking the reading.
7. Once the “Flow” and “Average” reading stabilize, take the average reading as the calibration number. This number should be within 5% of 2.0 L/min (2000 cc/min).
8. Record the time of calibration for each pump.
9. Clear the reading by pressing the “right” arrow on the calibrator to reset.
10. Once you have recorded the “average” flow rate on calibrator, press the check mark/power button on pump twice. This will return pump to the main screen.

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Photo 6. Exiting Out of Calibration Mode on Gilian Pump

Sampling on personnel:

1. Once pump is calibrated, disconnect it from calibration train.
2. Attach tubing with APHC LAB IOM sampler to the pump inlet (tubing will be approximately 20 inches in length for personnel sampling).
3. Use clip on backside of pump to hook on person's belt behind the hip, as indicated in photo 7.



Photo 7. Gilian Pump Appropriately Attached to Belt

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4. Run tubing under the arm to collar/breathing zone area. Clip IOM on shirt.
 - Make sure IOM filter is open to the front (to allow proper air flow) and is stationary.
5. Use additional clips on tubing to attach to the person's shirt, allowing a little slack on tubing as shown in photo 8.
6. Remove cap from the IOM.



Photo 8. IOM Filter Correctly Oriented on Wearer, with Cap Removed

7. Turn pump on by pressing the check mark/power button with the indicator on the "Run" option.
 - The flow will gradually increase to 2000 cc/min. A flashing green light will appear at the top of screen. This indicates that the pump is in fact in the run mode.

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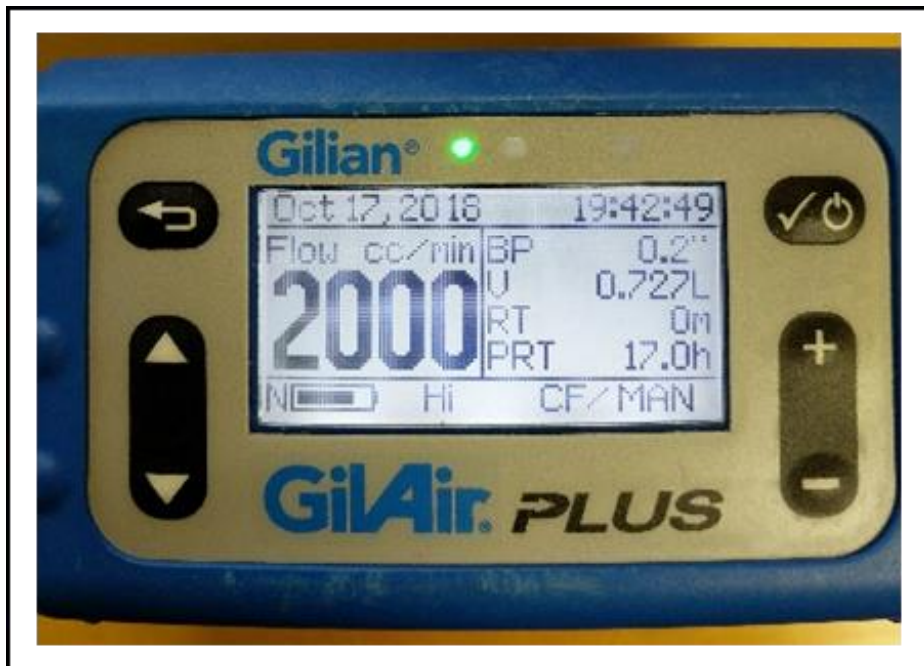


Photo 9. Display Screen of a Running Pump

- When done sampling, press the check mark/power button. Use down arrow to scroll to "Stop." Press check mark/power.
 - "Stopping" the run will end that sampling event. "Pausing" the pump will pause the current sampling event and will resume once started again.

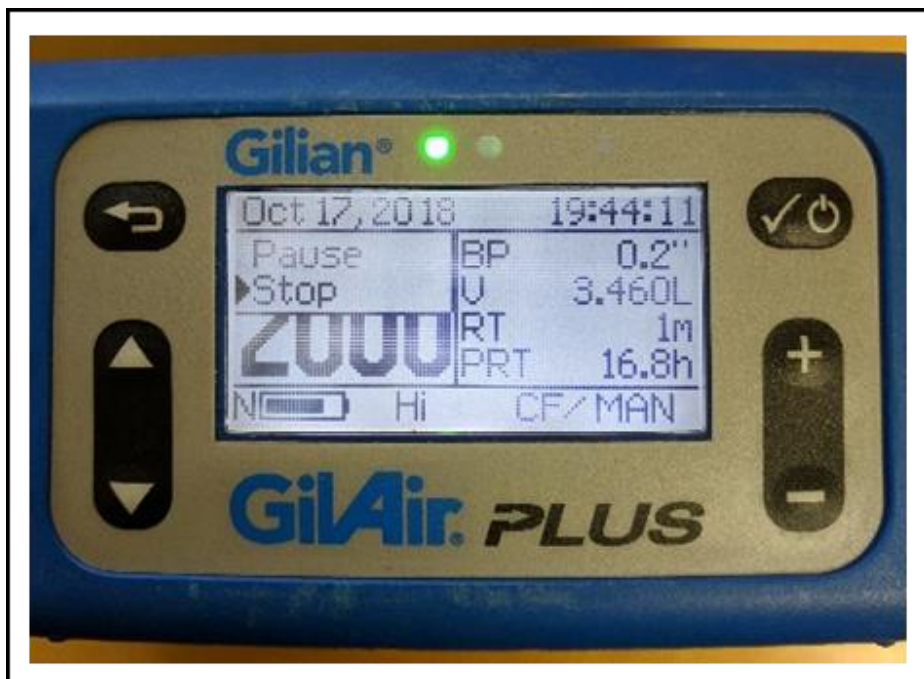


Photo 10. Pausing or Stopping the Gilian Pump

Post calibration

1. Turn pump on and set in run mode. Allow pump(s) to run for a few minutes before continuing to step 2.
2. Connect pump to calibrator tubing.
3. Follow instructions above for calibration.
4. Allow the piston to cycle 5-10 times. Record “average” flow as post calibration reading.
 - To shut off calibrator, hold down power button until the screen turns off.
 - The calibrator should remain on charge at all times.

Troubleshooting

The below screen will display if the pump faults during its run time. This can happen due to a kink in the tubing or if the inlet opening on side of pump becomes blocked. A flashing “red” light will appear when the pump faults. The time of the fault (when the run time ended) will be displayed. This can also be viewed under the “Review” tab on the main screen.



Photo 11. Fault Screen on Gilian Pump