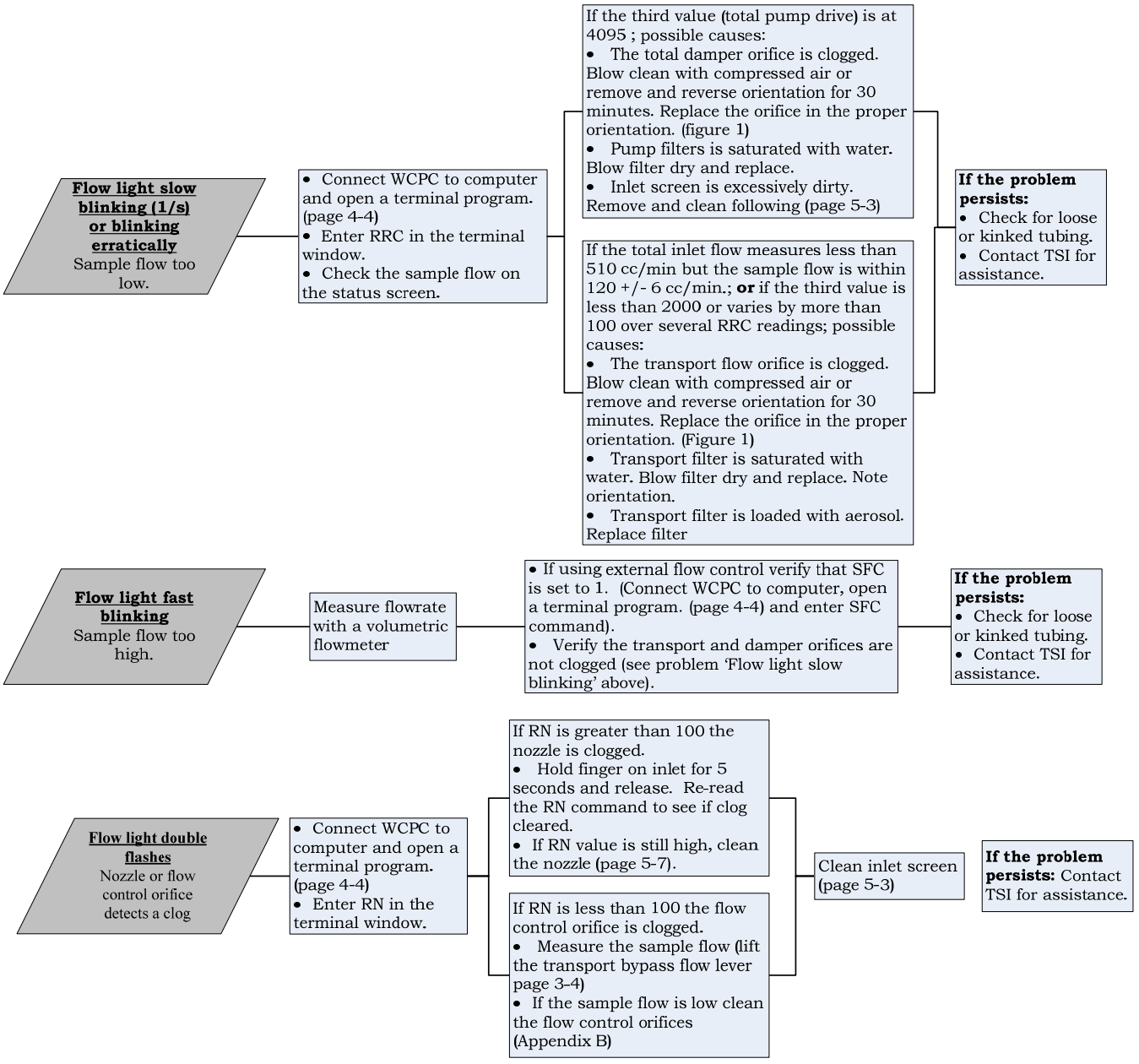
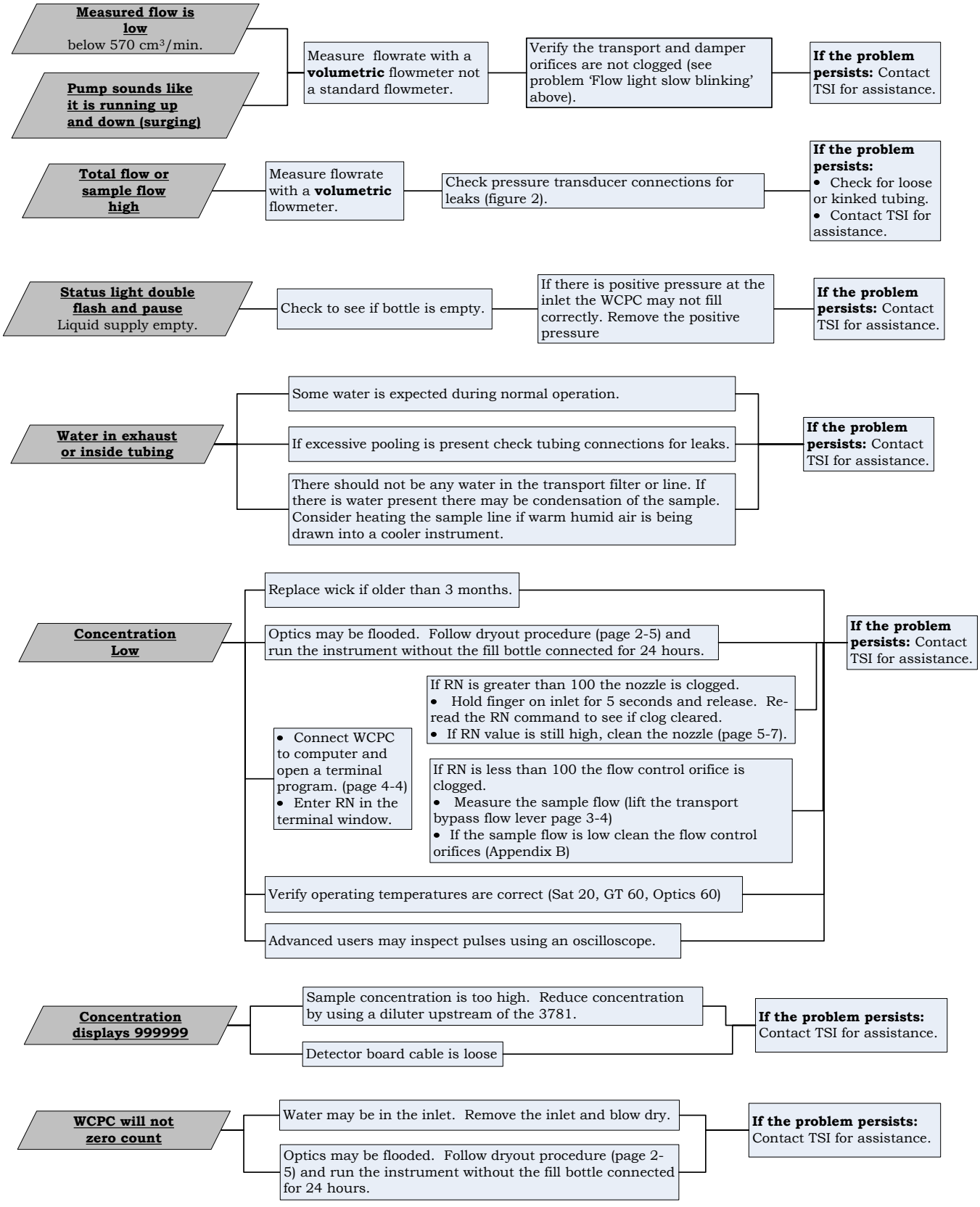
3781 Trouble Shooting Guide

General Notes:

1) Please provide serial number and model number of the instrument when contacting TSI
2) Use necessary ESD protection when handling the 3781 unit. ESD sensitive components inside
3) Drain and dry before shipping.




Measured flow is low
below 570 cm³/min.
Pump sounds like it is running up and down (surging)
Measure flowrate with a volumetric flowmeter not a standard flowmeter.
Verify the transport and damper orifices are not clogged (see problem 'Flow light slow blinking' above).
If the problem persists: Contact TSI for assistance.
Total flow or sample flow high
Measure flowrate with a volumetric flowmeter.
Check pressure transducer connections for leaks (figure 2).
If the problem persists:
• Check for loose or kinked tubing.
• Contact TSI for assistance.
Status light double flash and pause
Liquid supply empty.
Check to see if bottle is empty.
If there is positive pressure at the inlet the WCPC may not fill correctly. Remove the positive pressure
If the problem persists: Contact TSI for assistance.
Water in exhaust or inside tubing
Some water is expected during normal operation.
If excessive pooling is present check tubing connections for leaks.
There should not be any water in the transport filter or line. If there is water present there may be condensation of the sample. Consider heating the sample line if warm humid air is being drawn into a cooler instrument.
If the problem persists: Contact TSI for assistance.
Concentration Low
Replace wick if older than 3 months.
Optics may be flooded. Follow dryout procedure (page 2-5) and run the instrument without the fill bottle connected for 24 hours.
If RN is greater than 100 the nozzle is clogged.
• Hold finger on inlet for 5 seconds and release. Re-read the RN command to see if clog cleared.
• If RN value is still high, clean the nozzle (page 5-7).
• Connect WCPC to computer and open a terminal program. (page 4-4)
• Enter RN in the terminal window.
If RN is less than 100 the flow control orifice is clogged.
• Measure the sample flow (lift the transport bypass flow lever page 3-4)
• If the sample flow is low clean the flow control orifices (Appendix B)
Verify operating temperatures are correct (Sat 20, GT 60, Optics 60)
Advanced users may inspect pulses using an oscilloscope.
If the problem persists: Contact TSI for assistance.
Concentration displays 999999
Sample concentration is too high. Reduce concentration by using a diluter upstream of the 3781.
Detector board cable is loose
If the problem persists: Contact TSI for assistance.
WCPC will not zero count
Water may be in the inlet. Remove the inlet and blow dry.
Optics may be flooded. Follow dryout procedure (page 2-5) and run the instrument without the fill bottle connected for 24 hours.
If the problem persists: Contact TSI for assistance.

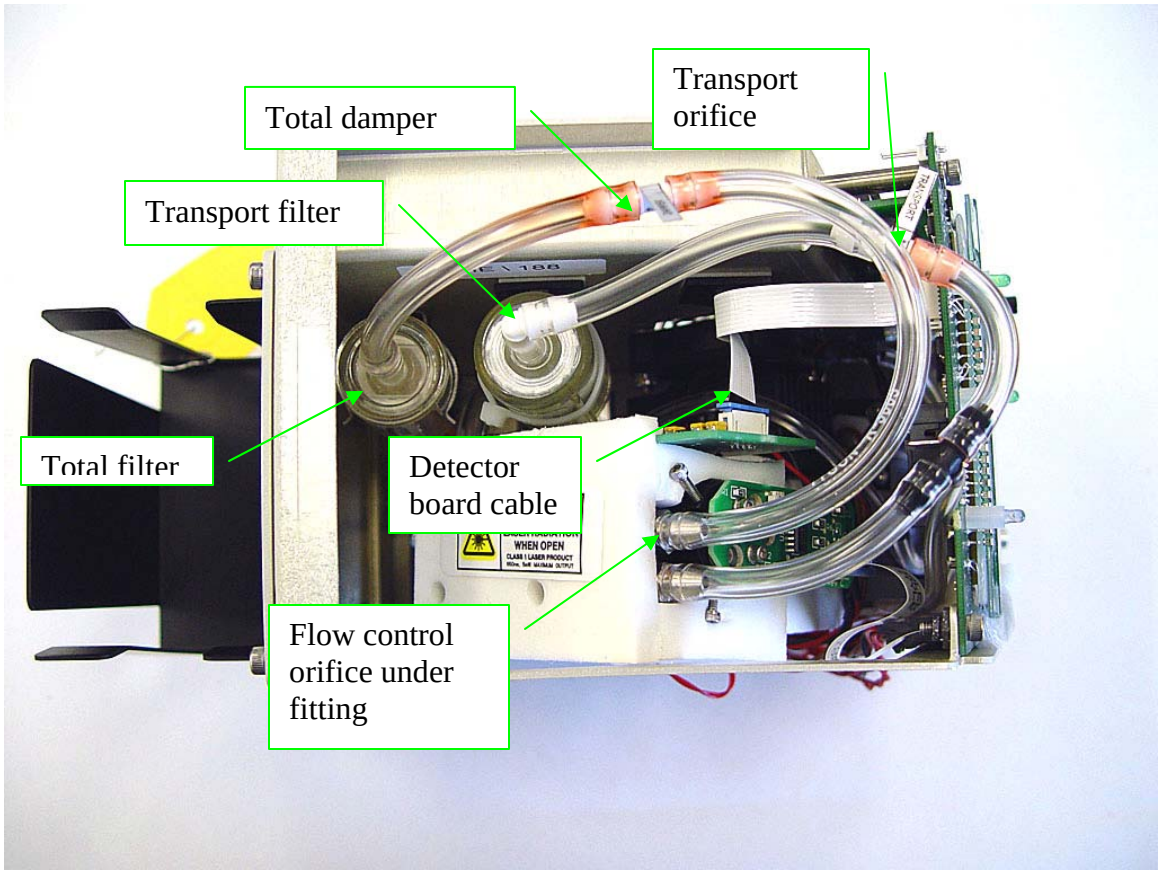


Figure 1: Orifice and filter location.

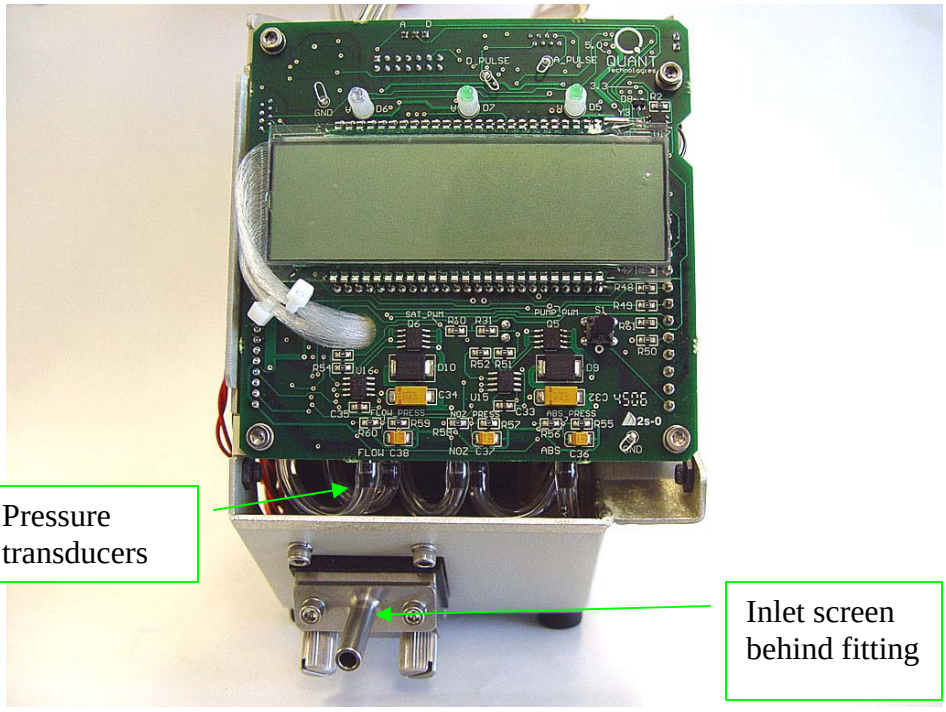


Figure 2: pressure transducer location.

Appendix A: 3781 flow control orifice cleaning

3781 Flow Control Orifice Cleaning

1. **NOTE: Use necessary ESD protection when handling the 3781 unit, ESD sensitive components inside.**
2. Remove the cover from the WCPC 3781 and locate the tubing and barb shown in Figure #1.

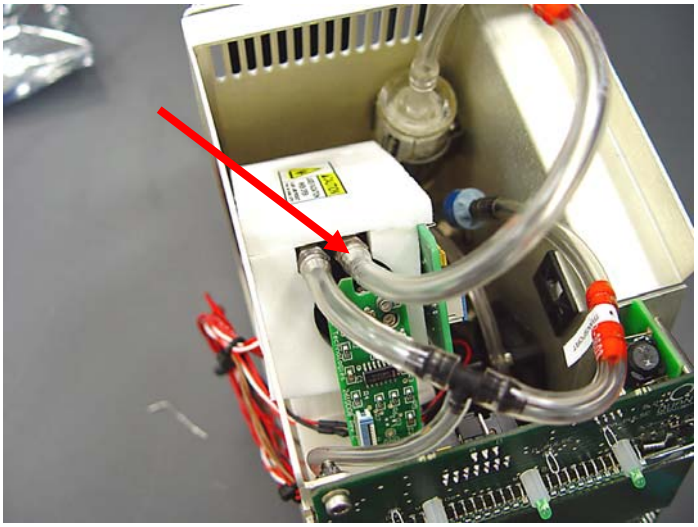


Figure #1

3. Carefully remove the tubing from the 1/8” tubing barb making sure not to collapse or damage the tubing. The use of needle nose pliers may be necessary.

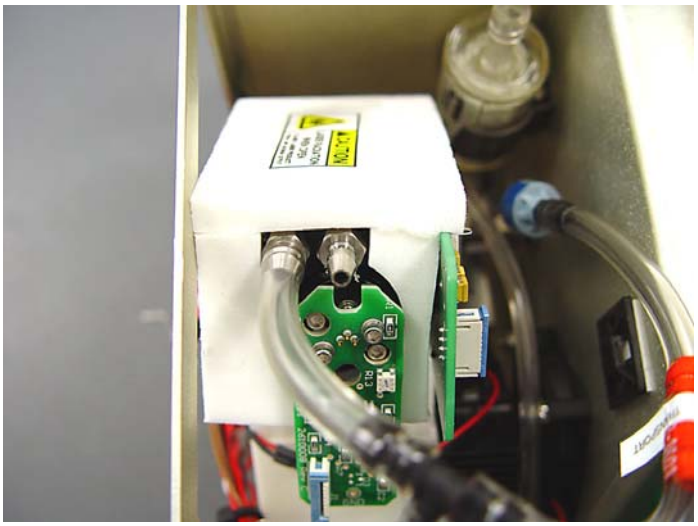


Figure #2

4. Carefully remove the 1/8” barb from the optics head assembly being careful not to cause any damage to any surrounding components, refer to Figure #3.

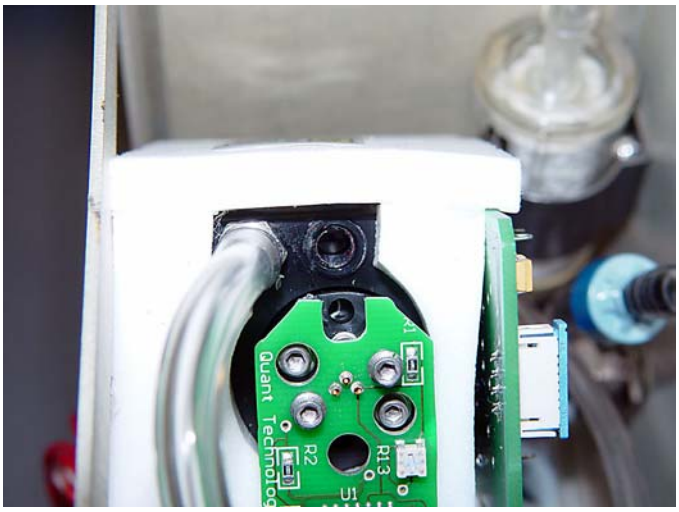


Figure #3

5. Using a flat head screwdriver back out the Flow Control Orifice as shown in Figure #4.

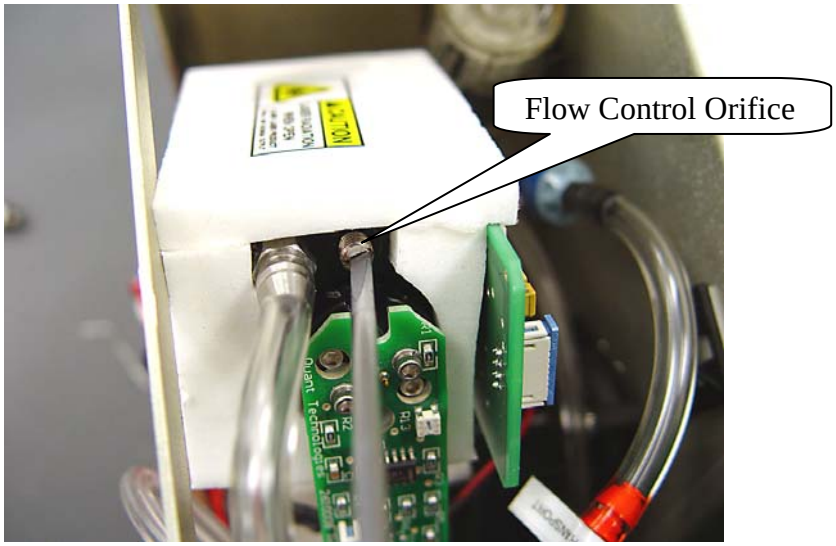


Figure #4

6. Soak the Flow Control Orifice in Isopropyl Alcohol for approximately 3-5 minutes to allow any contaminants that may be clogging the orifice to dissolve, refer to Figure #5.

Figure #5

7. Using a filtered air source blow air through the slotted end to clean out any debris which could be clogging the orifice as shown in Figure #6.

Figure #6

8. Inspect Flow Control Orifice under a microscope to verify there is no debris blocking the orifice.

9. By shining a light from the opposite side of the optics fasten the Flow Control Orifice into the threaded hole until no light can be seen through the Orifice, stop and back it out 1/4 turn. Refer to Figure #7 as an example of how the orifice should look properly installed.

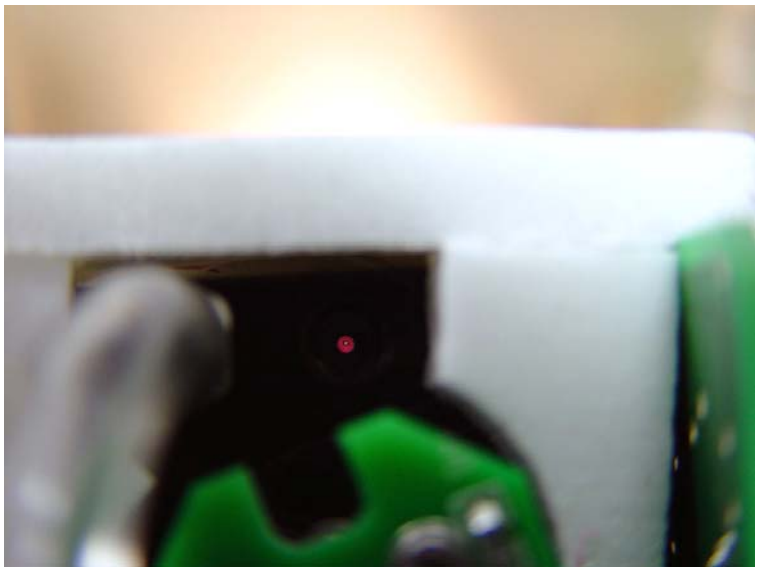


Figure #7

10. Making sure the O-Ring is still on the 1/8” Fitting fasten it back onto the optics head and re-attach the tubing as shown in Figure #8.

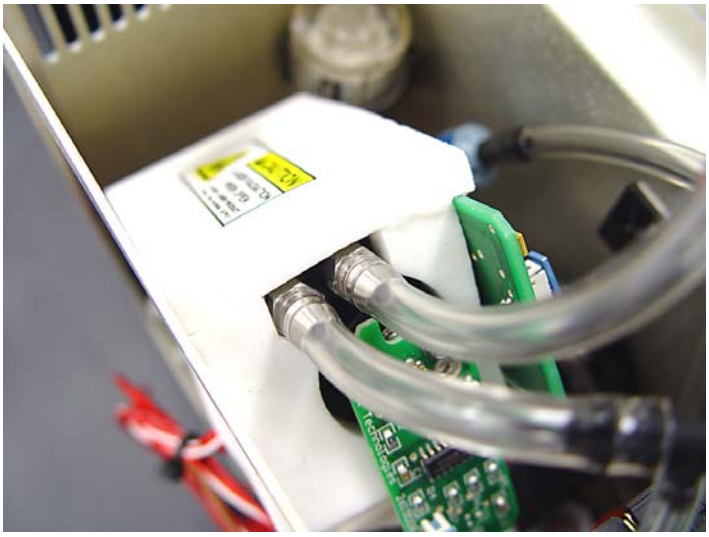


Figure #8