iSED® Automated Erythrocyte Sedimentation Rate Analyzer

Pump Tube Replacement Procedure, 112-28-017 Rev. 0

Purpose

The purpose of this procedure is to guide the customer in performing the required preventative maintenance on the *iSED*® ESR Analyzer.

Scope

This applies to all *iSED*® instruments that have reached 200 hours of pump operation. This procedure must be performed after every 200 hours of pump operation on *iSED*® with Software Version 3.03A or later. The *iSED*® will alert the user when this number has been reached. The items to be replaced are primary pump tube and wash pump tube.

Required

1. All necessary Personal Protective Equipment.
2. Biohazard Disposal
3. Primary Pump Tube (112-13-002)
4. Wash Pump Tube (112-13-011)

Preparation

1. Power on *iSED*®
2. Run a Wash Cycle by pressing the Wash Cycle Icon:

Procedure - Remove Rear Enclosure

Note:
If you are changing only the Primary Pump Tube follow steps 13 through 19. This can be accessed by the Needle door in the rear of the analyzer.

Note:
If you are changing only the Wash Pump Tube skip steps 13 through 19.

1. Power off instrument.
2. Disconnect the rapid connect tubing attached to the Waste and Wash containers and remove these containers from the *iSED*®. Figure 1

Figure 1

3. Remove the back enclosure by unscrewing the screws indicated in Figure 2 & 3.

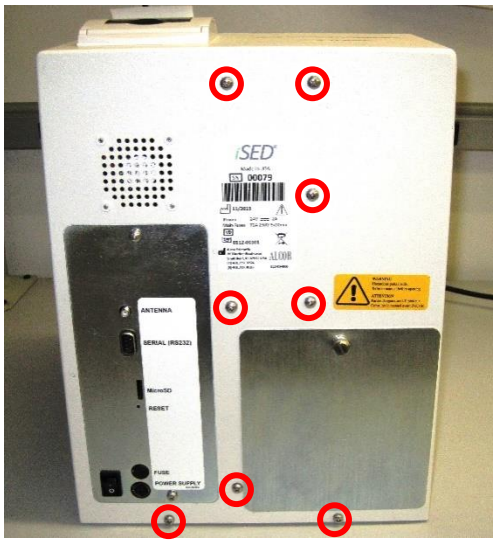

Figure 2

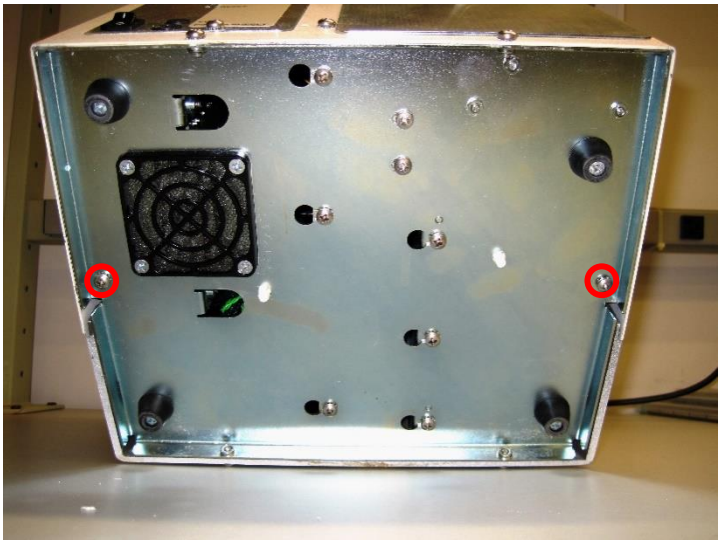

Figure 3

4. Once these screws are removed, slowly split the back portion from the front as depicted below in Figure 4 but do NOT fully remove the enclosure yet.

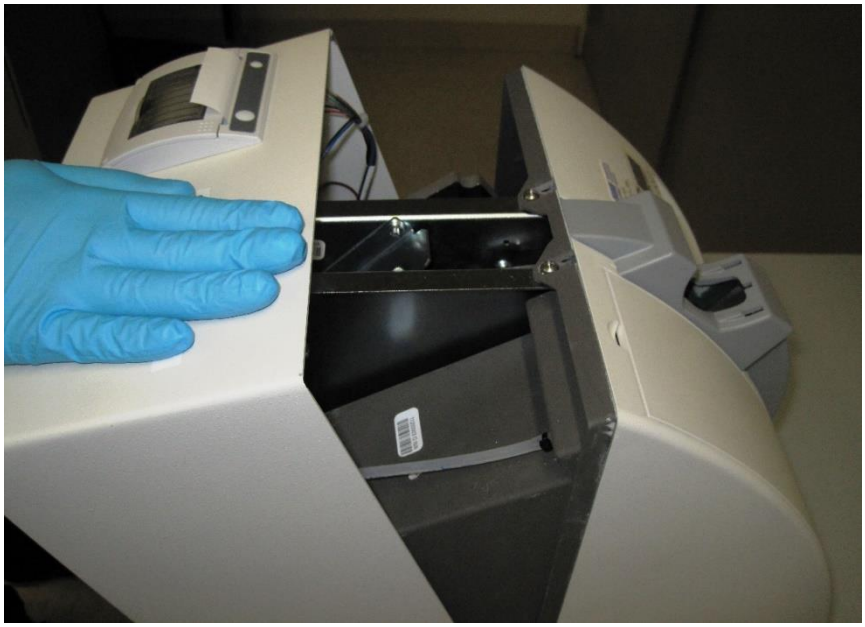

Figure 4

5. Once you have the back and front enclosures split as shown above, you will see two sets of wires leading from the printer to the main electronics board. Disconnect these two wire sets from the top of the main board. Figure 5

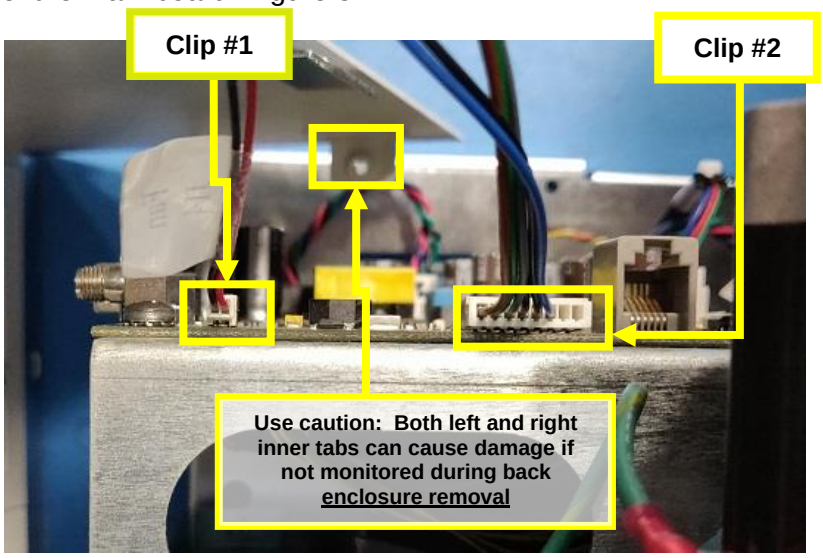

Figure 5

6. Two additional wires must be disconnected before the analyzer can be separated. These wires lead from the power switch to the main electronics board. Disconnect these wires from the main electronics board. Figure 6

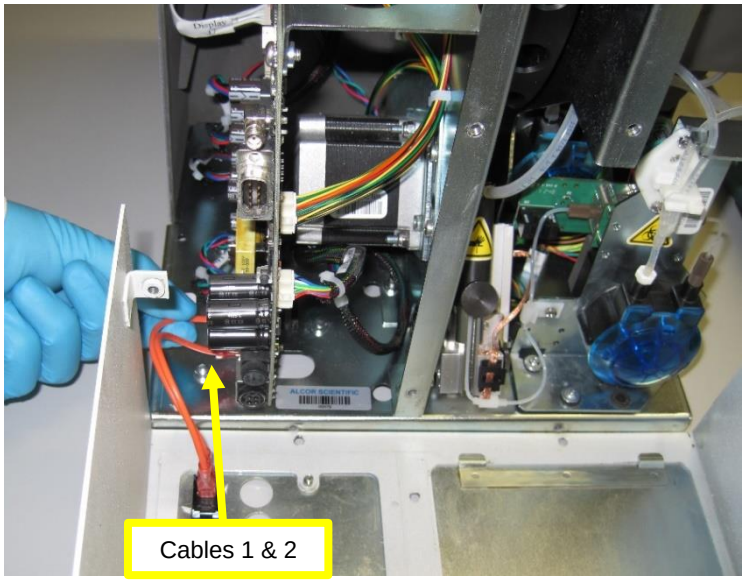

Figure 6

7. After disconnecting these wires, the back enclosure will be able to be completely removed. Carefully separate the back enclosure from the front while watching to ensure both the right and left interior parts of the back enclosure clear the other mechanics without damage.

Procedure - Replace Wash Pump Tubing

1. Remove tubing from the left side of the reading cell and tail sensor by turning the brown thumbscrew counterclockwise. Figure 7

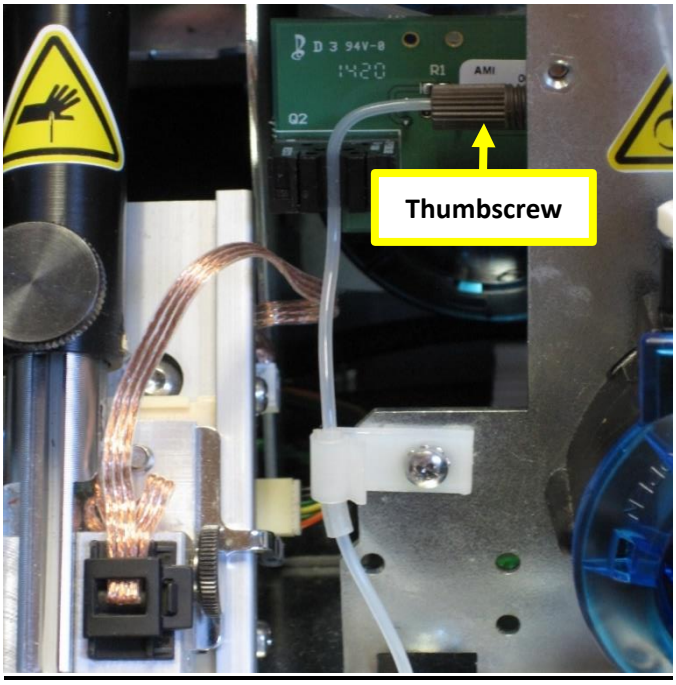

Figure 7

2. Remove the tube from the Washing Ring Barb connector**.** Figure 8

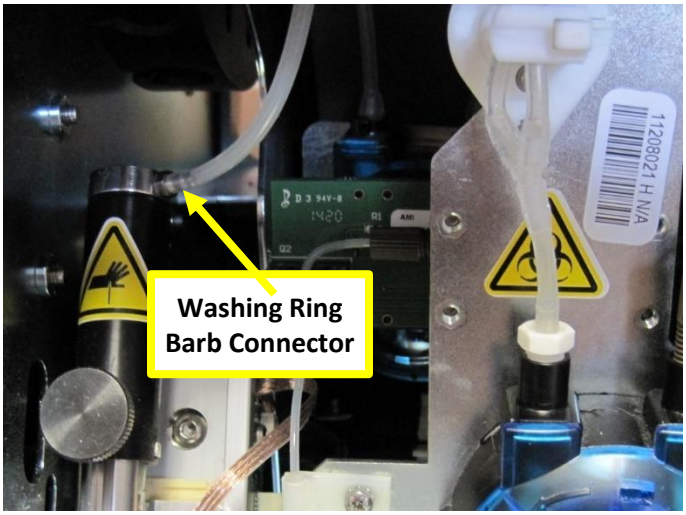

Figure 8

3. Remove the front screw on the peristaltic pump Figure 9 and set the entire sub-assembly aside.

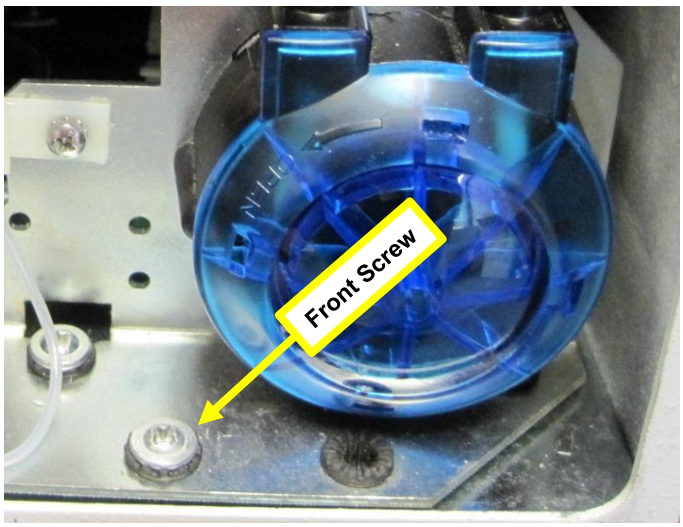

Figure 9

4. Disconnect the right side of wash pump tubing by removing it from the “Y” connector. Disconnect the tubing from the barb connector on the Probe Tube Figure 10

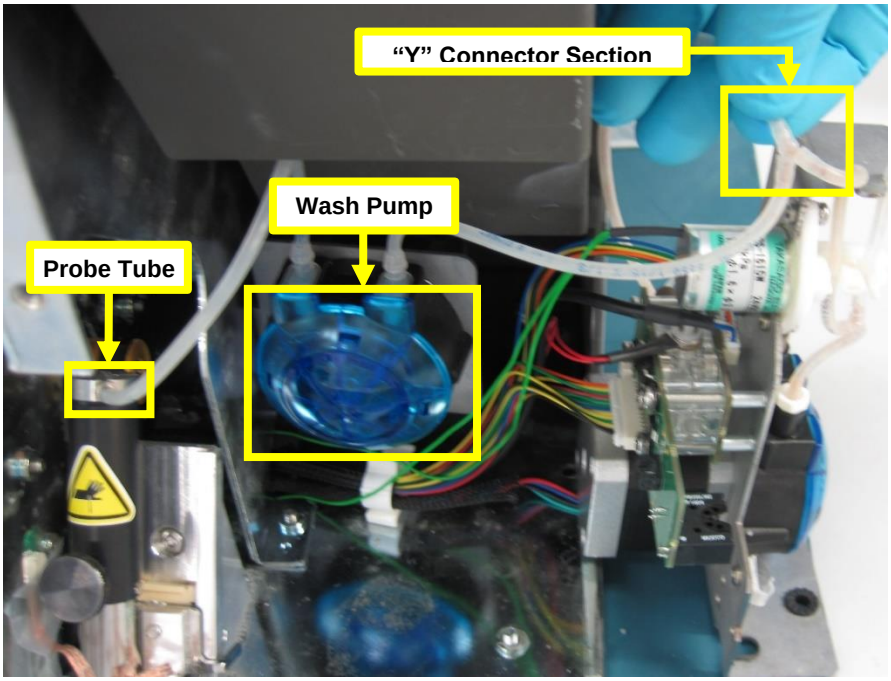

Figure 10

5. Remove the blue cover from the wash pump by turning slightly counterclockwise and gently pulling it towards you. Figure 11
6. Remove the old wash pump tubing sub-assembly. Be careful not to damage the roller as the old tubing is removed. Clean inside of black compartment (if necessary). Dispose of old tubing in Biohazard Waste containers.

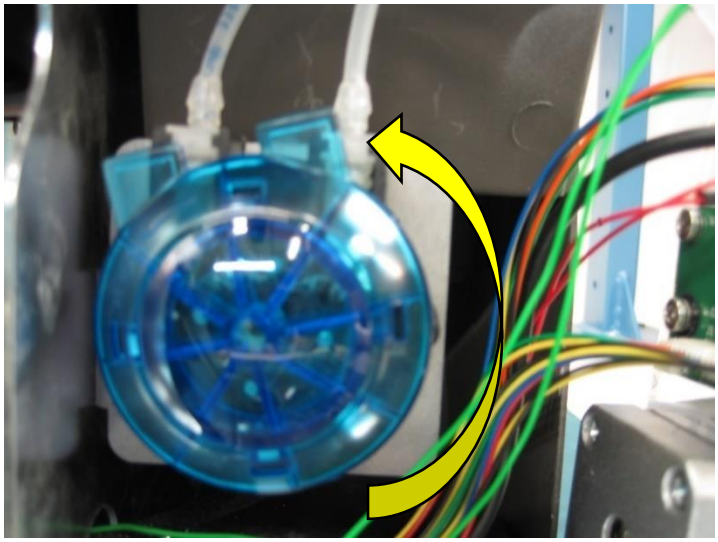

Figure 11

7. Starting on the left side of the wash pump, insert the grooves of the collar on the new tubing into the slot on the wash pump. Slowly work the tubing into the wash pump in a counter-clockwise direction. Once the tubing is in place, insert the grooves of the collar on the new tubing into the slot on the right side of the wash pump. Figure 12 shows correct placement for tubing.

Note: The longer portion of tubing should be on the left side of the wash pump. A blunt object can be used to help insert the new wash pump tubing into the wash pump. Be careful not to puncture the tubing.

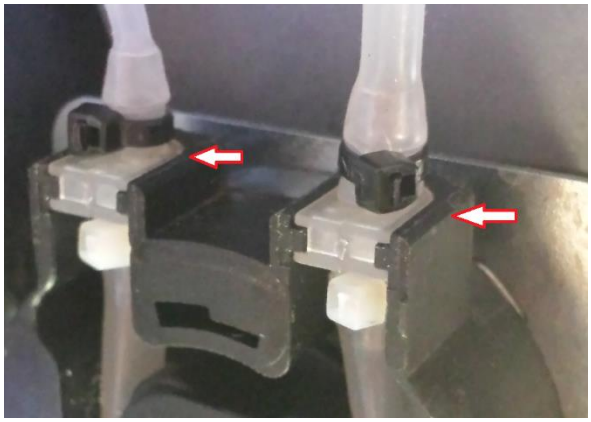

Figure 12

8. Once completed, return the blue cap as removed turning clockwise to lock in place. Attach the right side of the new wash pump tubing to the "Y" connector and secure with zip tie. Attached the left side of wash pump tubing to the barb on the right side of the syringe probe tube.

8. Slide the Peristaltic pump back into its original position between the two rubber grommets, Figure 13 and secure it with the screw removed in the earlier step.

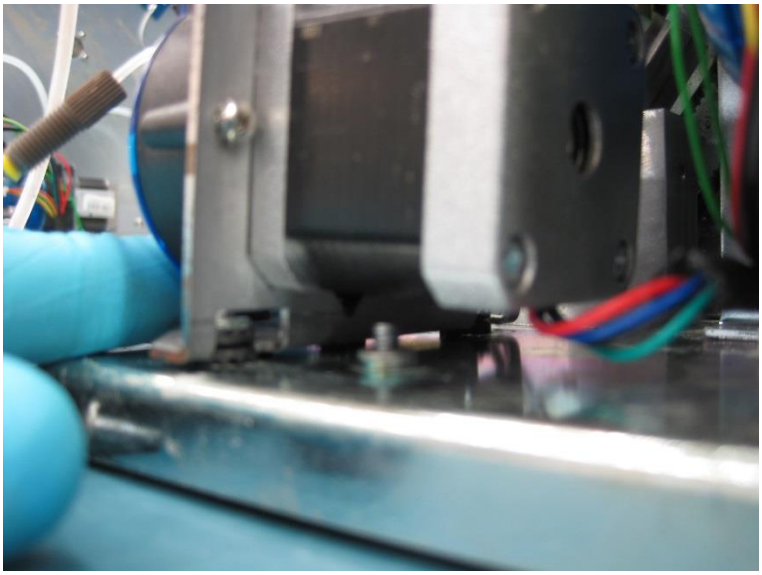

Figure 13

Procedure - Replace Primary Pump Tubing

9. Remove the tubing from the white connector on the left side of the peristaltic pump and unscrew the brown thumbscrew on the right. **Figure 14**

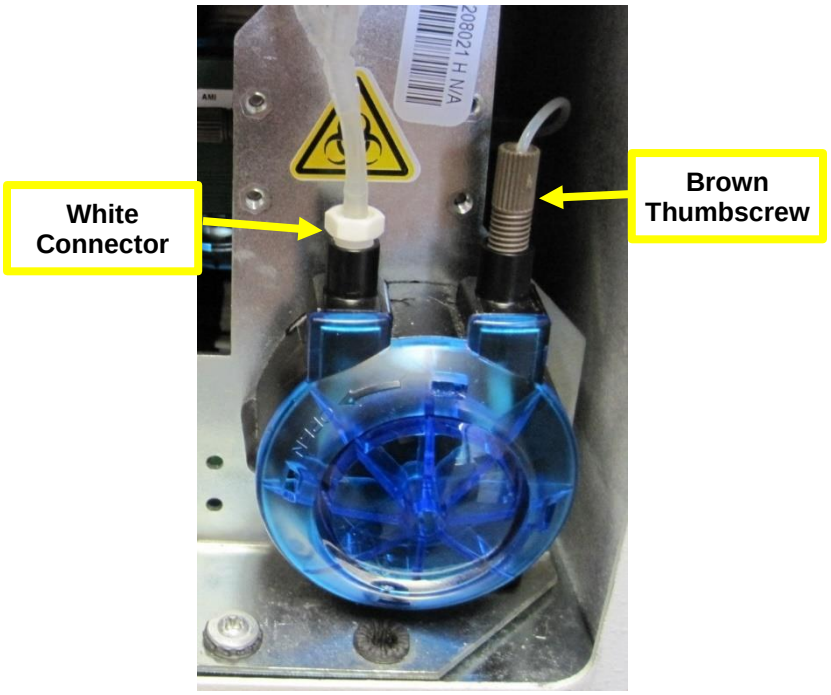

Figure 14

10. Loosen and remove the blue cap on the peristaltic pump in the same manner as the wash pump cover.
11. Remove the old primary pump tubing. Being careful not to damage the roller as the old tubing is removed. Clean inside of black compartment (if necessary). Dispose of old tubing in Biohazard Waste containers.
12. Starting on the left side of the primary pump, insert the groves of the new tubing into the slot on the pump. Slowly work the tubing in the pump. Once the tubing is in place, insert the groves of the new tubing into the slot on the right side of the pump. See Figure 15 for correct placement.

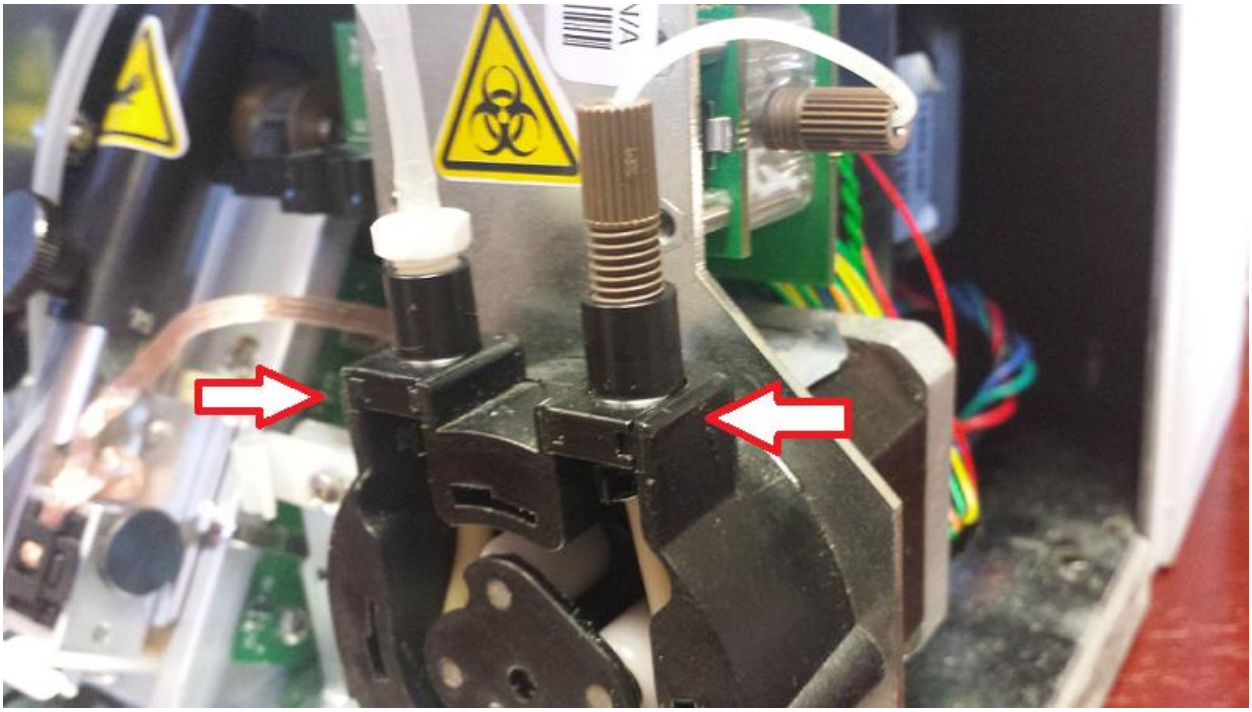

Figure 15

13. Once completed, return the blue cap as removed turning clockwise to lock in place. Reconnect the tubing to the white connector on the left and re-attach the brown thumbscrew to the right of the peristaltic pump.

Procedure - Reassemble Rear Enclosure

14. Attach the two wires leading from the power switch to the main electronics board. Figure 16

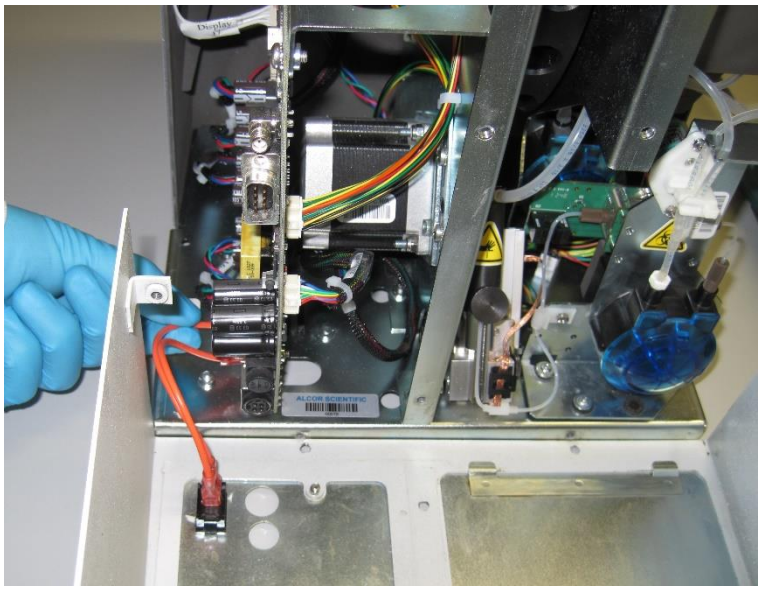

Figure 16

15. Attached the two cable wires leading from the printer to the main electronics board. Place the panel in a leaning manner to account for the inner tabs, avoid damaging any components inside the analyzer. Figure 17

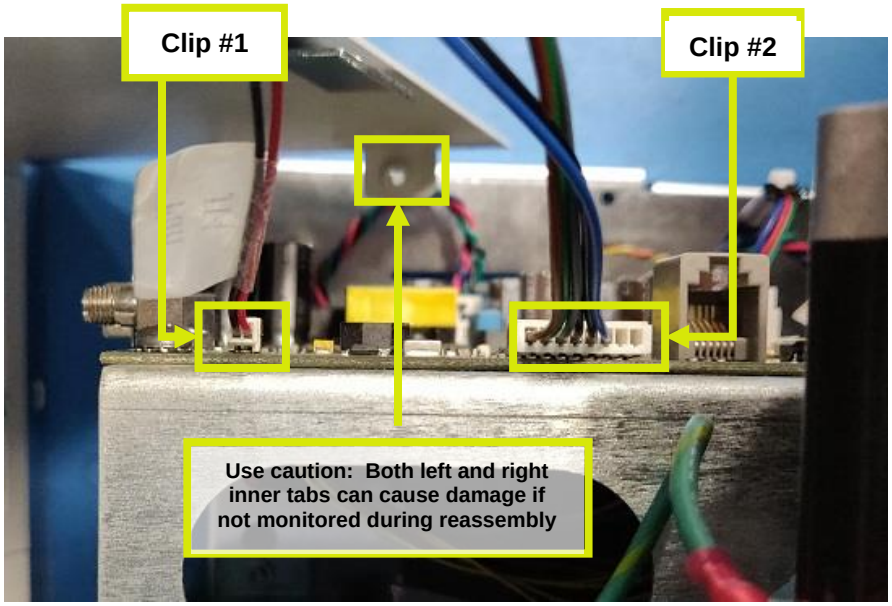

Figure 17

16. Verifying everything is plugged back in and that the enclosure is tightly flush with the front molding, screw all ten screws on the back and underside of the analyzer. Reconnect wash and waste bottles. Perform 3 wash cycles and check for leaks. Refer to Figure 2 and Figure 3 for locations of screws.

Procedure – Reset the Maintenance Counter

17. Power on the iSED®. On the Main measurement screen, press the “Tools” icon. (Figure 18)

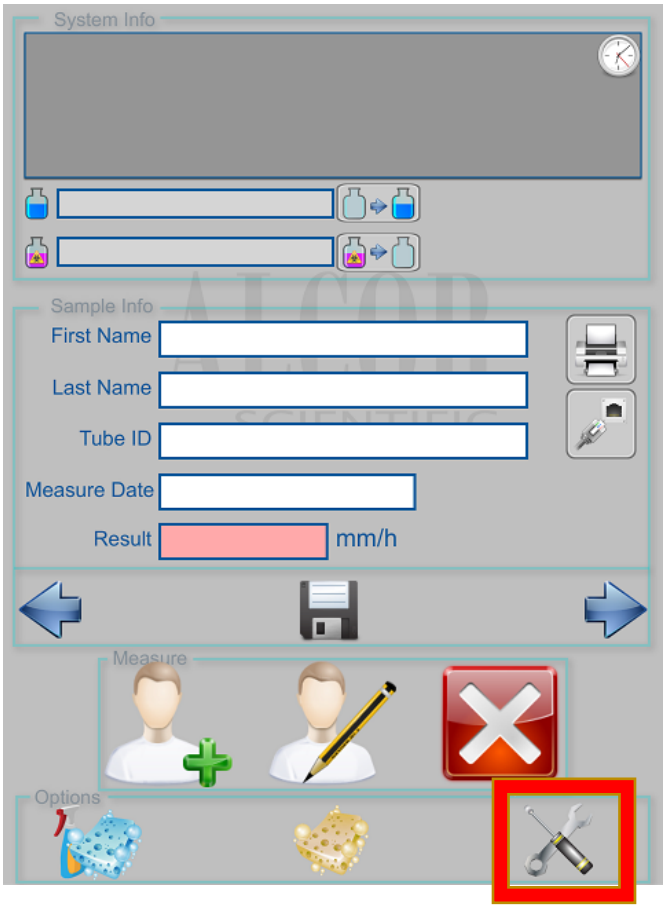

Figure 18

18. Enter the code “19912” and press the enter key to submit the code.

19. Press the right-hand pointing Blue arrow at the lower right corner of the screen 2 times, or until Tech Screen #3 is displayed (screen number is shown in the upper right corner of the screen). Figure 19

20. Press the Grey box next to the pump icon outlined in red in Figure 19. This will reset the Maintenance Counter number inside that grey box to 0.

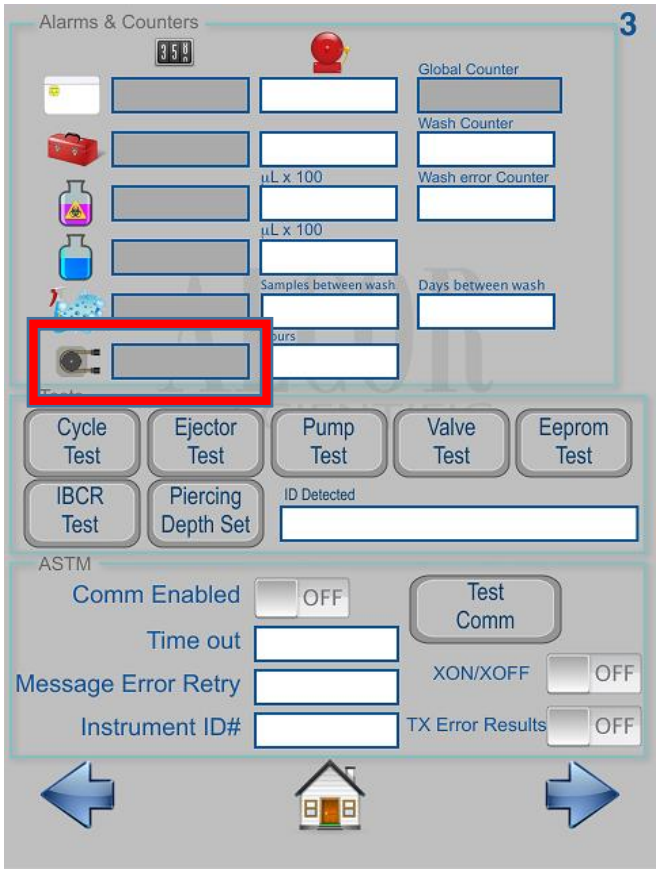

Figure 19

21. Press the Home button at the bottom of the screen to return to the Main screen.

Contact Technical Support @ (800)-495-5270 or +1 (401) 737-3774 for any assistance.