



## iSED® (Serial Numbers >5000) and iSED ELITE Automated Erythrocyte Sedimentation Rate Analyzers

### 30,000 Test Aspiration Maintenance Procedure, 222-28-002, Rev. 3

#### Purpose

The purpose of this procedure is to guide the customer in performing the required preventative maintenance on the iSED (serial numbers 05000 and higher) and iSED ELITE ESR Analyzers.

#### Scope

This applies to all iSED and iSED ELITE instruments that have reached 30,000 aspirations. This procedure must be performed after every 30,000 tests. The iSED/iSED ELITE analyzer will alert the user when this number has been reached. The items to be replaced are Needle-to-Reading Cell tubing, Probe Tube, Needle Spring, Needle Tip, Wash Pump tubing, and Peristaltic Pump tubing.

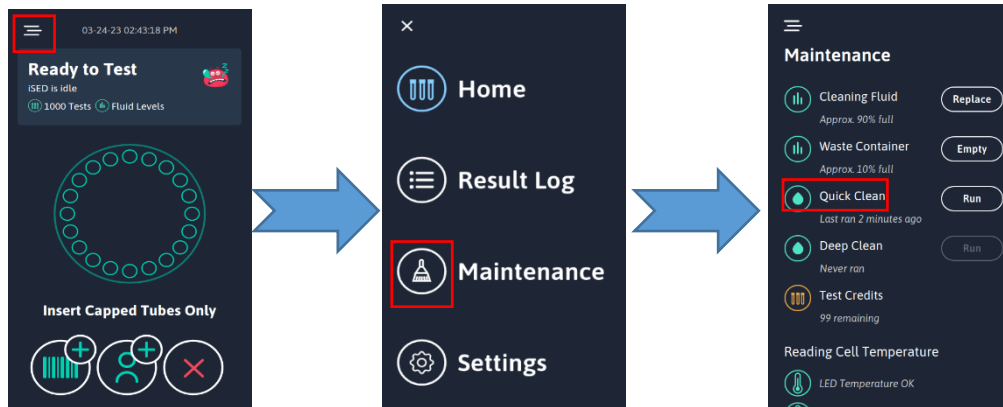
#### Required Materials

1. All necessary Personal Protective Equipment including nitrile gloves and safety glasses (lab coat is recommended)
2. Biohazard disposal
3. Wire cutting pliers/scissors
4. 30,000 iTest Maintenance Kit for iSED/iSED ELITE (Part # 222-13-002)
  - 8mm Open-End Wrench (100-15-054)
  - Needle Spring (000039)
  - Needle Tip (112-01-029)
  - Needle-to-Reading Cell Tubing (112-08-062)
  - iSED/iSED ELITE Probe Tube (112-08-097)
  - Tube, Wash Pump, iSED2 Sub Assembly (112-08-089)
  - Tube, Peristaltic Pump Sub Assembly (112-08-039)

## Preparation

1. Wear protective rubber gloves.
2. Power on the device.
3. Run a Wash Cycle by pressing the Wash Cycle Icon  on the Maintenance page.

**NOTE:** If there is a known clog in tubing or connectors, DO NOT run the wash cycle as it may cause leaks. Skip to Step 4.



4. Power off instrument and disconnect the power supply from power input at the rear of the device. See Fig. 1A.
5. Disconnect the rapid connect tubing attached to the Waste and Wash containers and remove these containers from the Bottle Bay as shown in Figure 1B.

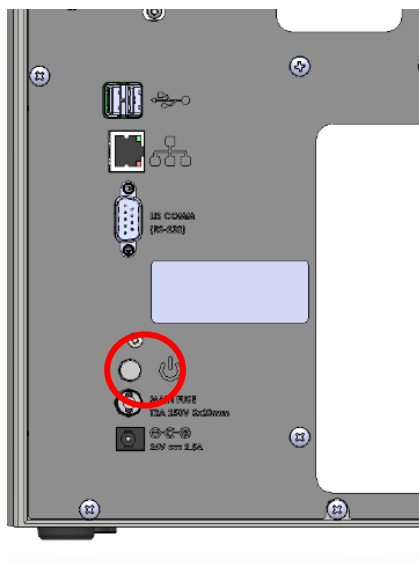


Figure 1A

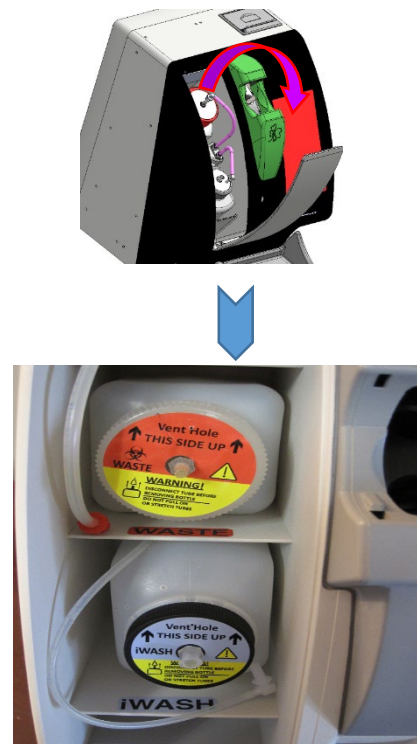


Figure 1B

## Procedure – Replacing Piercing System Parts

1. Remove needle access door by unscrewing metal thumb screw and lift door upward to remove. See Figure 2.

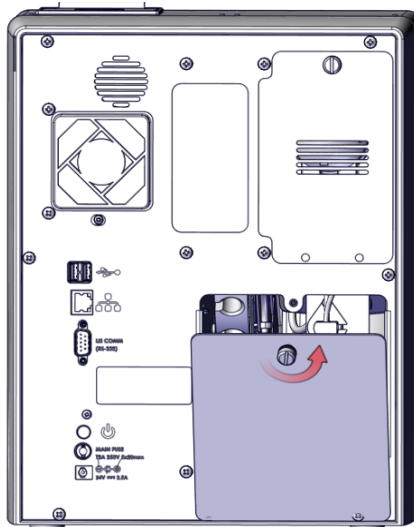


Figure 2

2. Unscrew thumbscrew about ½ inch and see if syringe pivots towards you. If it does not pivot, try unscrewing a little more, repeat until syringe pivots. See Figure 3.

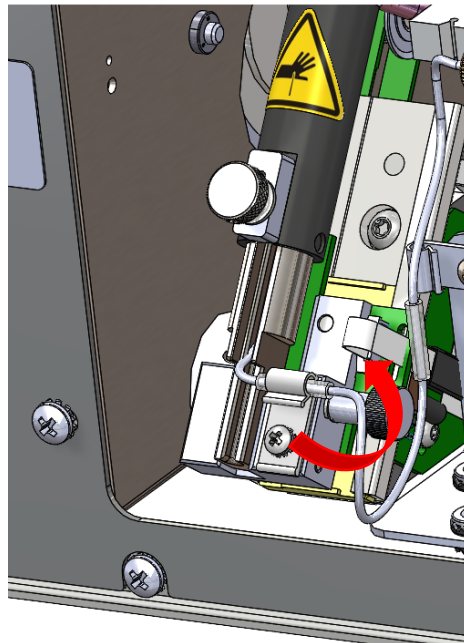


Figure 3

3. Pivot the Needle Piston Assembly outward and remove the tubing as shown. See Figure 4.



Figure 4

4. **WARNING:** Ensure **protective rubber gloves** are worn while performing the steps listed below. Remove Thumb Screw from Probe Tube shown in Figure 5. Now, you can remove the Probe Tube Assembly as seen in Figure 6 and the spring from Needle Piston Assembly. **CAUTION: This will expose the needle and could cause potential injury.**



Warning: Potential needle injury due to exposed needle

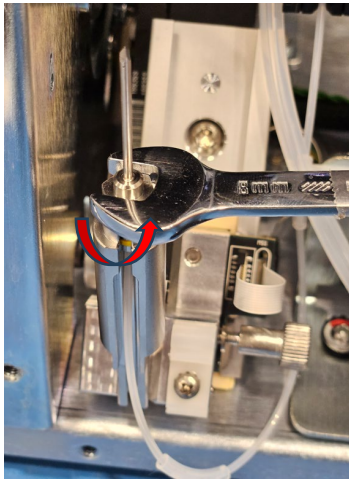


**Figure 5**

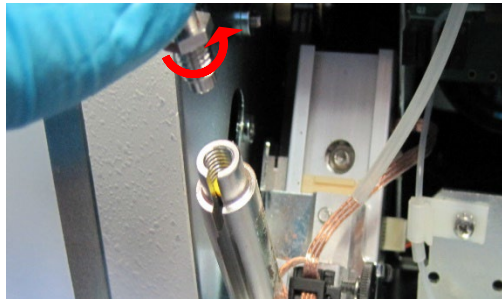


**Figure 6**

5. Use the Open-End Wrench to unscrew the old Needle Tip Assembly (counterclockwise) from Needle Piston Assembly in Figure 7 and Figure 8. Discard the Needle Tip Assembly into a proper Biohazard disposal.



**Figure 7**



**Figure 8**

6. Remove the old Needle-to-Reading Cell Tubing by removing the tubing from the Retention Clips, the Tail Sensor, and the Reading Cell in Figure 9. The tubing at the Reading Cell is removed by turning the brown connector in a counterclockwise direction.

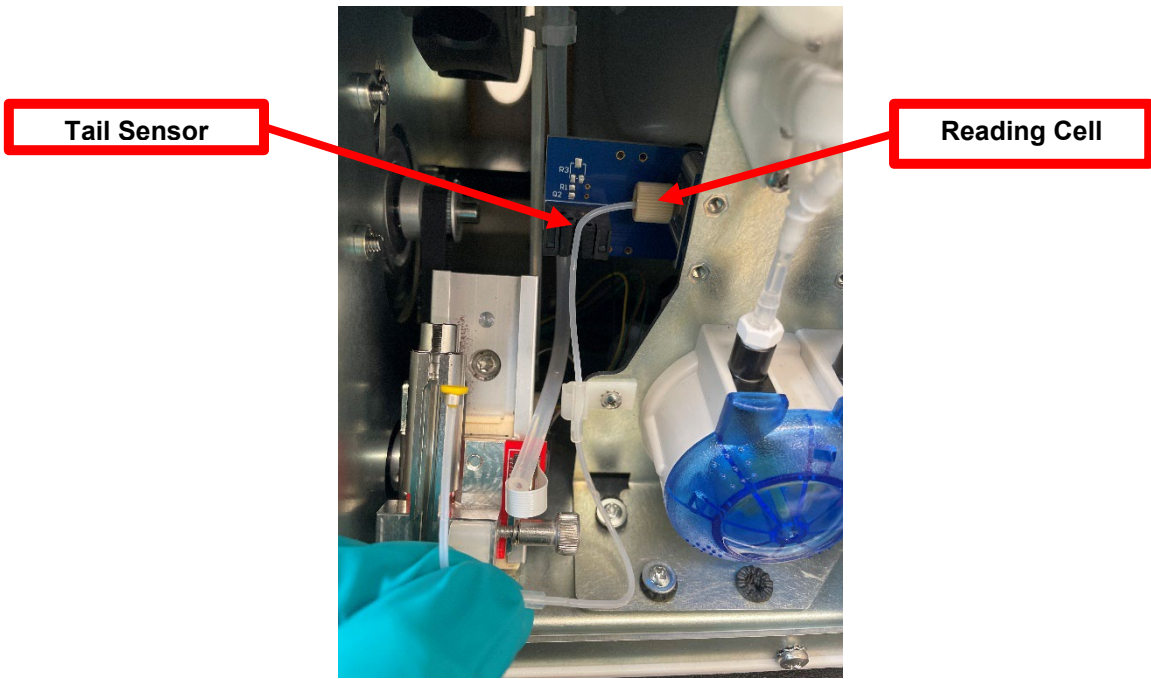
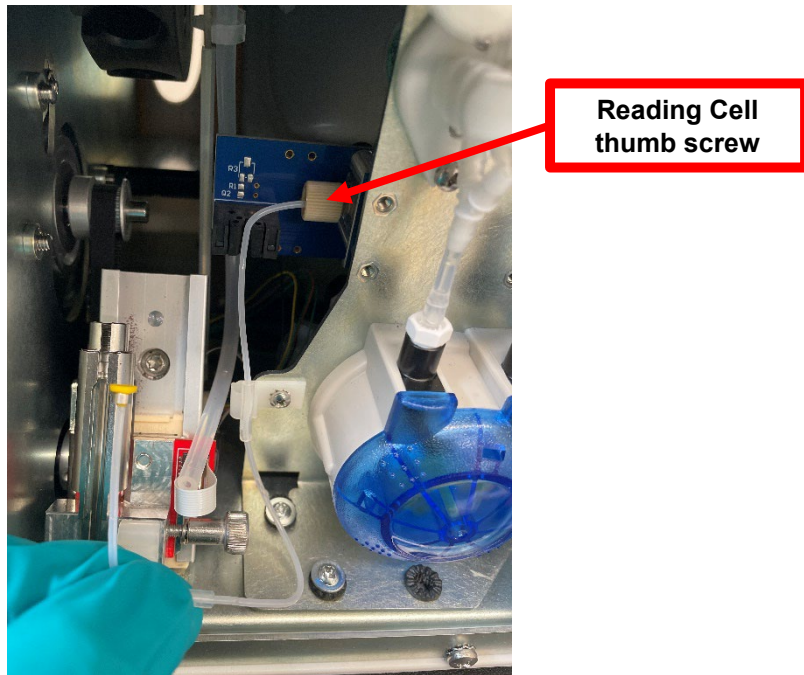


Figure 9

7. Connect the new Needle-to-Reading Cell Tubing to the Reading Cell by tightening the thumbscrew on the end of the Reading Cell Tubing into the Reading Cell ensuring that it remains straight and not cross-threaded. Tighten by hand only but be careful not to overtighten as this could damage the Reading Cell. See Figure 10.



**Figure 10**

8. Insert the new Needle-to-Reading Cell Tubing into the Needle Piston Assembly by ensuring that the tubing is resting on the lowest possible “ledge” of the interior of the Needle Piston. See Figure 11.



**Figure 11**

9. Screw the replacement Needle Tip into the Needle Piston Assembly. Tighten completely with an open-ended wrench.
- **NOTE:** The bottom surface of the hexagonal portion of the needle MUST lay flat on piston. If it does not lay flat, check that the yellow tube fitting is completely recessed in bottom of threaded portion of needle piston. See Figure 12.

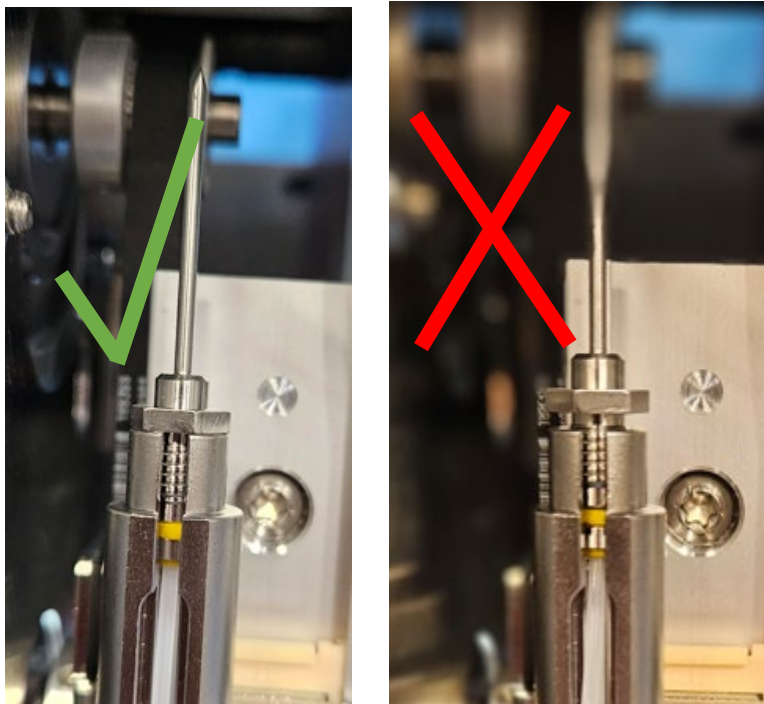
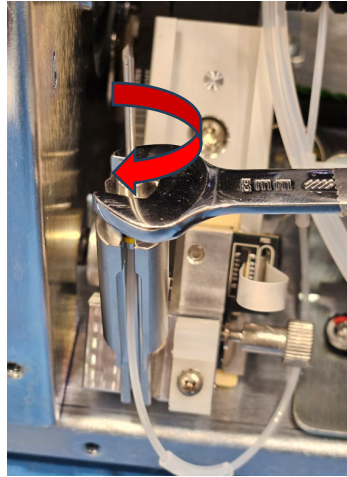
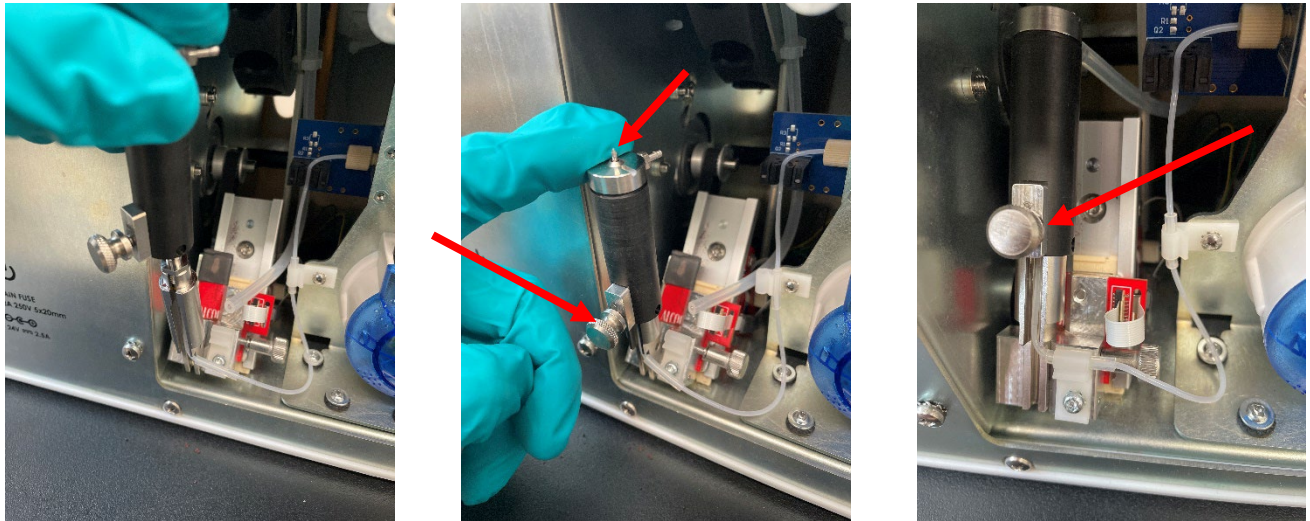


Figure 12

10. Replace the Needle Spring and Probe Tube with new parts provided. The Probe Tube should be placed onto the Needle Spring with the yellow warning label and the Thumbscrew hole directly facing you as it was when it was removed.

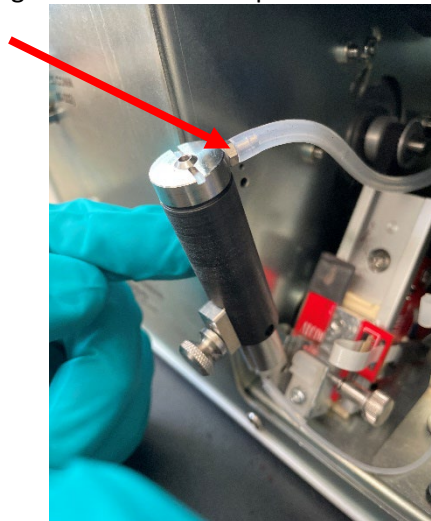
Compress the Needle Spring and Probe Tube housing (pressing down) until the Needle Tip is slightly exposed through the metal cap on the Probe Tube. Turn the large thumbscrew in a clockwise direction until the Thumbscrew is secured by hand. Release the tension on the Probe Tube and allow the Needle Tip to return to a safe position within the Probe Tube. See Figure 13.

**CAUTION! Compressing the assembly will expose the needle and could cause potential injury!**



**Figure 13**

11. Reattach Wash Pump tubing to connector on cap of Probe tube. See Figure 14.



**Figure 14**

12. Pivot Needle assembly forward, then secure with thumb screw. See Figure 15.

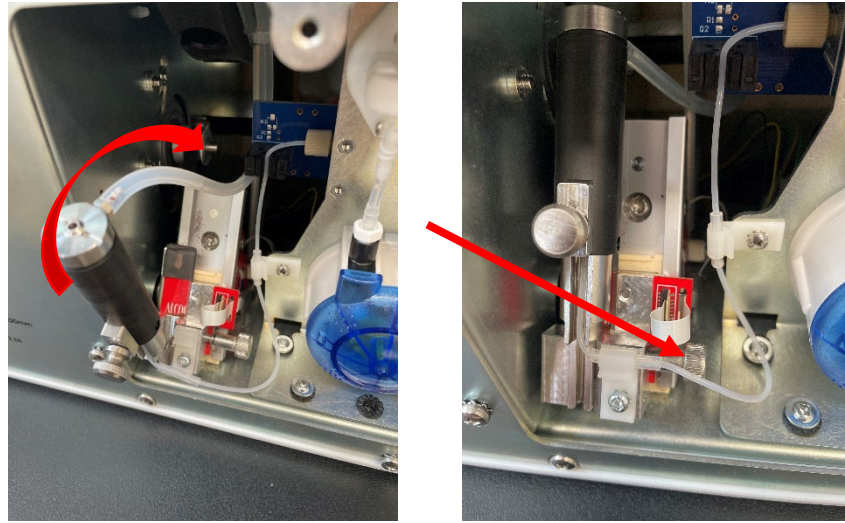


Figure 15

13. Insert Needle-to-Reading Cell Tubing into the Tail Sensor while verifying a nearly 90° angle from the reading cell through the tail sensor. Do not use a sharp tool to push in the tubing as this could damage the tubing. See Figure 16.

**Note: Tubing must be seated in this way to ensure the correct amount of sample is withdrawn.**

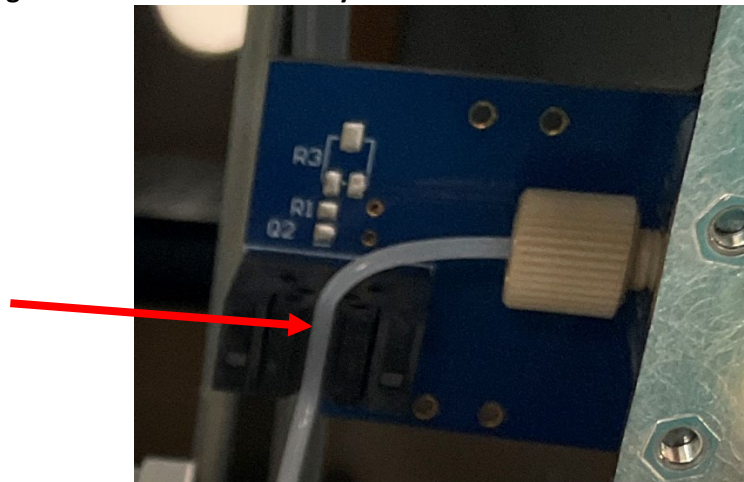


Figure 16

14. Re-Insert Needle-to-Reading Cell Tubing back into retention clips. See Figure 17.

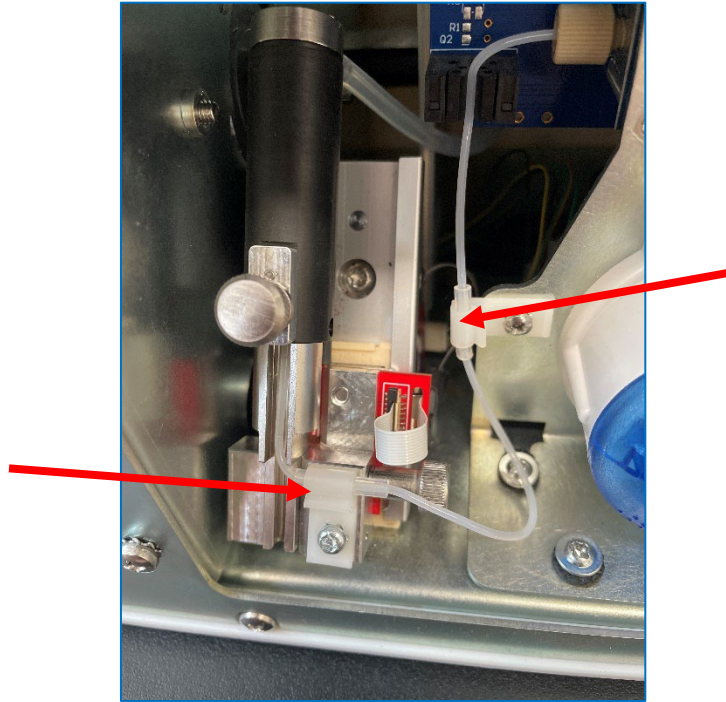


Figure 17

**Procedure – Replace Wash Pump Tubing and Primary Pump Tubing**

15. Remove the Wash Pump Access Door (located on back of instrument) by turning the Thumb Screw counterclockwise and pulling the door outwards and upwards. See Figure 18.

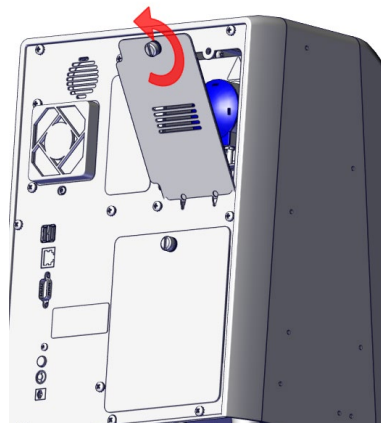


Figure 18

16. Remove the wash pump cap as shown. See Figure 19A and Figure 19B.

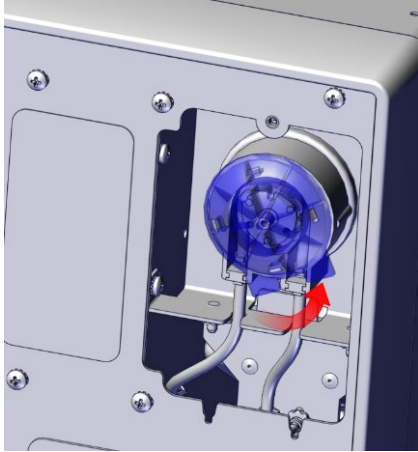


Figure 19A

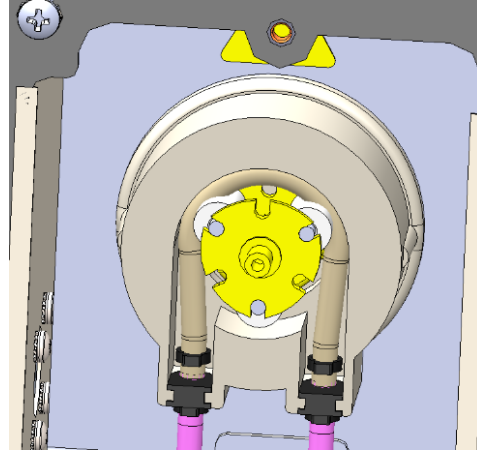


Figure 19B

17. Break the zip-ties at the bottom of the pump housing using wire cutting pliers and disconnect the tubing at the bottom. **NOTE:** Take caution not to cut the silicone tubing. See Figure 20.

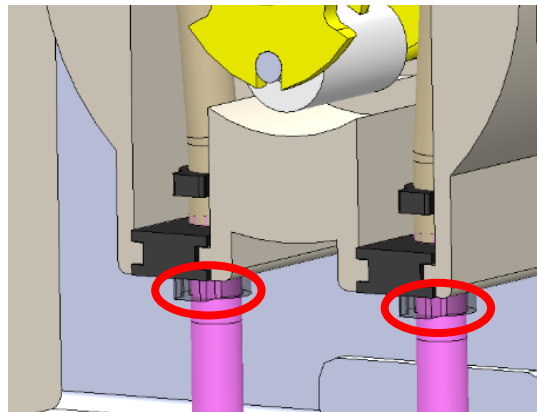


Figure 20

18. Remove the old Wash Pump Tube Assembly as shown in Figure 21.

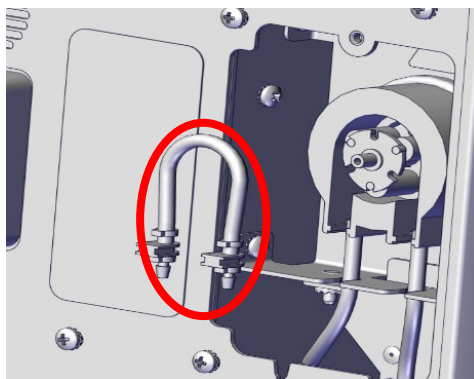
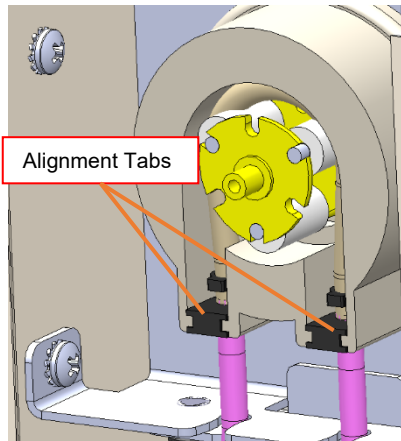


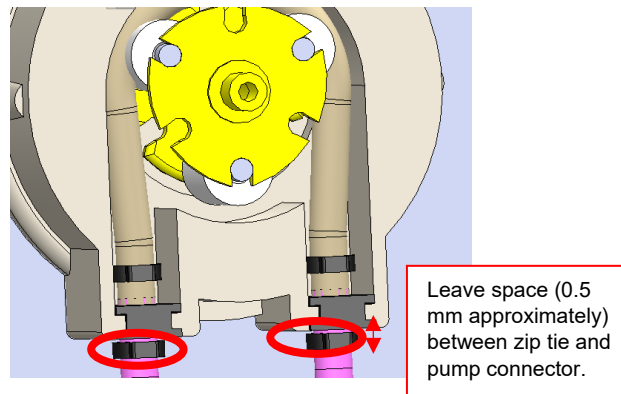
Figure 21

19. Take replacement Wash Pump Tube (222-13-004) out of packaging. Install into pump by pressing a section of tube down past the rollers and rotate the rotor by hand until the entire tube is inserted and engaged by the middle of the rollers. Ensure the tubing does not twist during installation. Alignment tabs within the pump housing must slide through the slot on the barb connectors. See Figure 22.



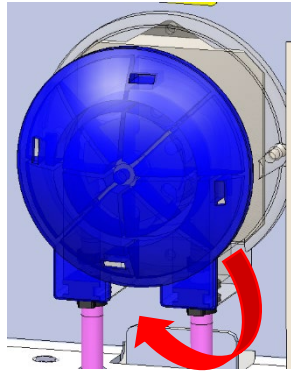
**Figure 22**

20. Reconnect the tubing underneath the Wash Pump. Install new zip-ties and tighten around barb connector (Provided in the Spare part pack, 222-13-004). Cut the extra zip-tie using wire cutting pliers. See Figure 23.



**Figure 23**


21. Re-install the wash-pump cap back to the pump housing. See Figure 24.



**Figure 24**

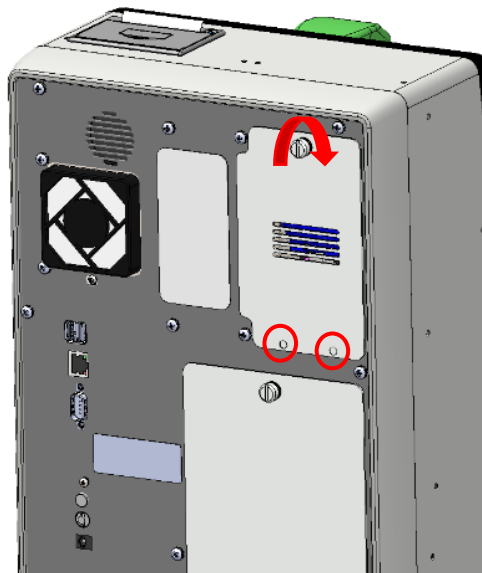
22. Reconnect wash and waste bottles and close the bottle bay door.

23. Connect power cord and switch ON the device.

24. Perform 3 wash cycles  Quick Clean from the Maintenance page and check for leaks. If leaks are observed, ensure tightening of the connector and tubing.

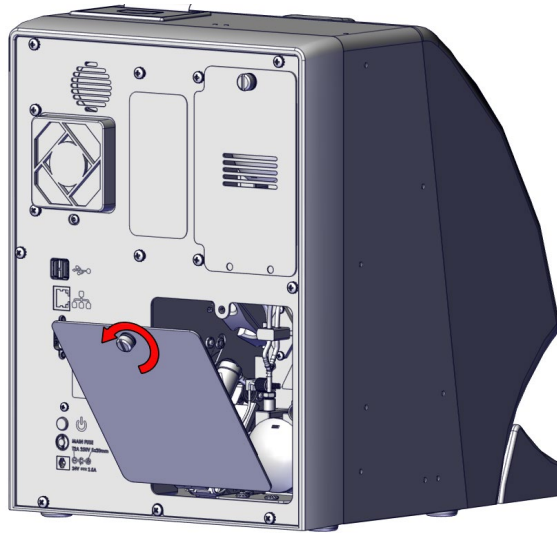
25. Reinstall the Wash Pump Access Door in the cavities highlighted (keyed slots inside for tabs) and turning thumb screw clockwise. See Figure 25.

26. Power off the device, disconnect power cord, disconnect wash and waste bottles, and close bottle bay door.



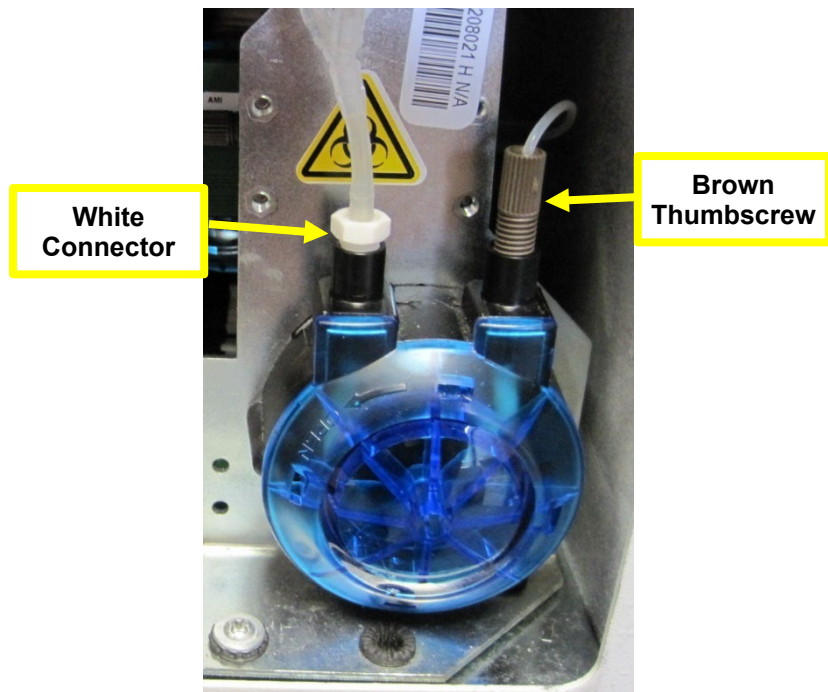
**Figure 25**

27. Open the Pump and needle access door as shown. See Figure 26.



**Figure 26**

28. Remove the tubing from the white connector on the left side of the peristaltic pump and unscrew the

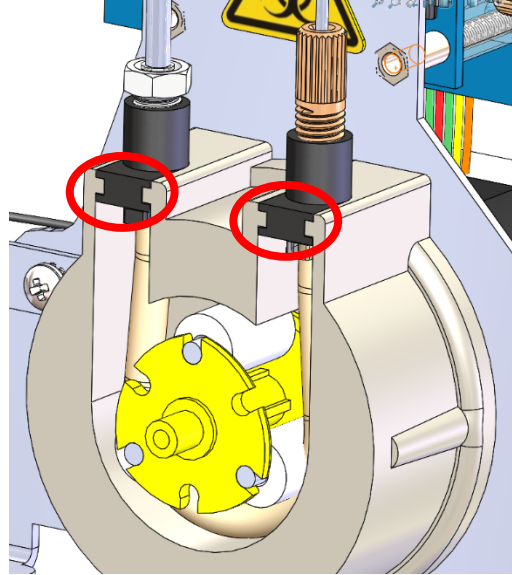


brown thumbscrew on the right. See Figure 27.

**Figure 27**

29. Loosen and remove the blue cap on the peristaltic pump in the same manner as the wash pump cover.

30. Remove the old tubing from the primary pump by gently pulling on the tubing through the alignment tabs within the pump housing. Rotate rotor to assist in removal. Clean inside of black compartment (if necessary). Dispose of old tubing in Biohazard Waste containers. See Figure 28.



**Figure 28**

31. Take replacement Primary Pump Tube (Spare P/N: 112-13-002) out of packaging. Install into pump by pressing a section of tube down past the rollers and rotate the rotor by hand until the entire tube is inserted and engaged by the middle of the rollers. Ensure the tubing does not twist during installation. Alignment tabs within the pump housing must slide through the slot on the barb connectors. See Figure 29 for correct placement.




**Figure 29**

32. 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. See Figure 30.



**Figure 30**

33. Reconnect wash and waste bottles and close the bottle bay door.  
34. Connect power cord and switch ON the device.  
35. Perform 3 wash cycles  Quick Clean from the Maintenance page and check for leaks. If leaks are observed, ensure tightening of the connectors and tubing.  
36. Close the Pump/Needle Access Door by turning the thumbscrew clockwise and placing the Needle door bottom lip inside the device. See Figure 31.



**Figure 31**

## Procedure – Reset the Maintenance Counter

37. On the Maintenance page, press the “Reset” Button under Needle Maintenance and Tubing Maintenance as highlighted. This is going to reset the Needle and Tubing cycle to 0 hours. See Figure 32.

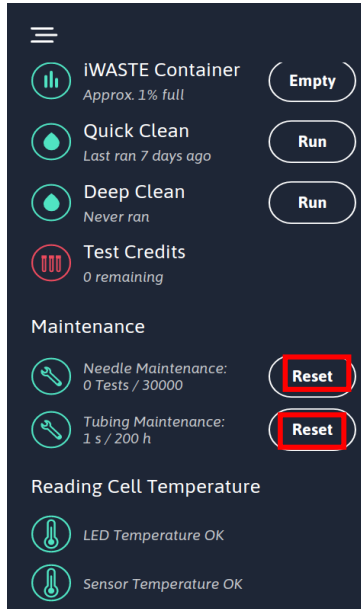


Figure 32

## Procedure – Finalize

- 1) Run a Quick Clean by pressing the “Run” button. Ensure that there are no errors and no leaks.
- 2) Re-install the Needle Door on the back of the analyzer.

**Contact ALCOR® Scientific Technical Support at (800) 495-5270 or +1 401-737-3774 or email techsupport@alcorscientific.com when completed.**