

Air Tube/Extension Tube Replacement

Disassembly:

1. Adjust the unit to minimum volume.
2. Remove the gray Pipette Button by pulling it straight off the Plunger Retainer Post and set aside.

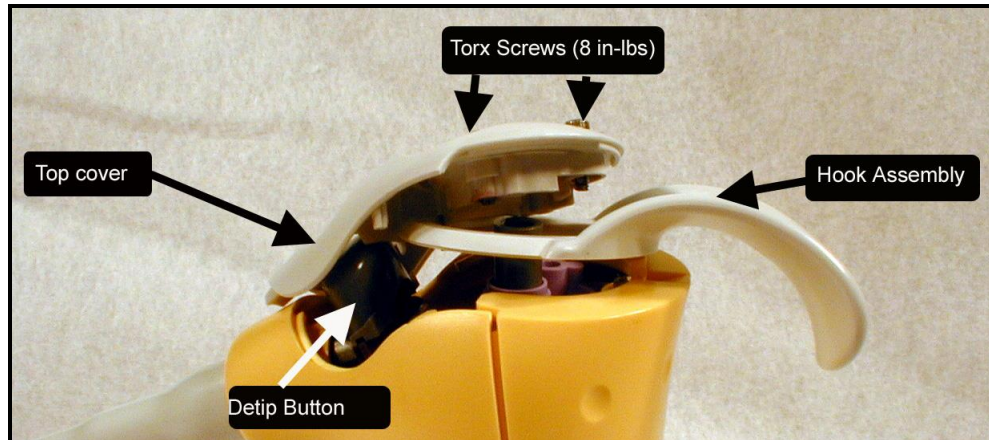


Figure 1 Top Cover and Hook

3. Remove the two T9 Torx screws from the Top Cover and set aside.
4. Lift the Top Cover, Hook and gray Detip Button and set aside.



Figure 2 Remove Nozzle Assembly with silicone tube

5. Remove the Nozzle assembly.

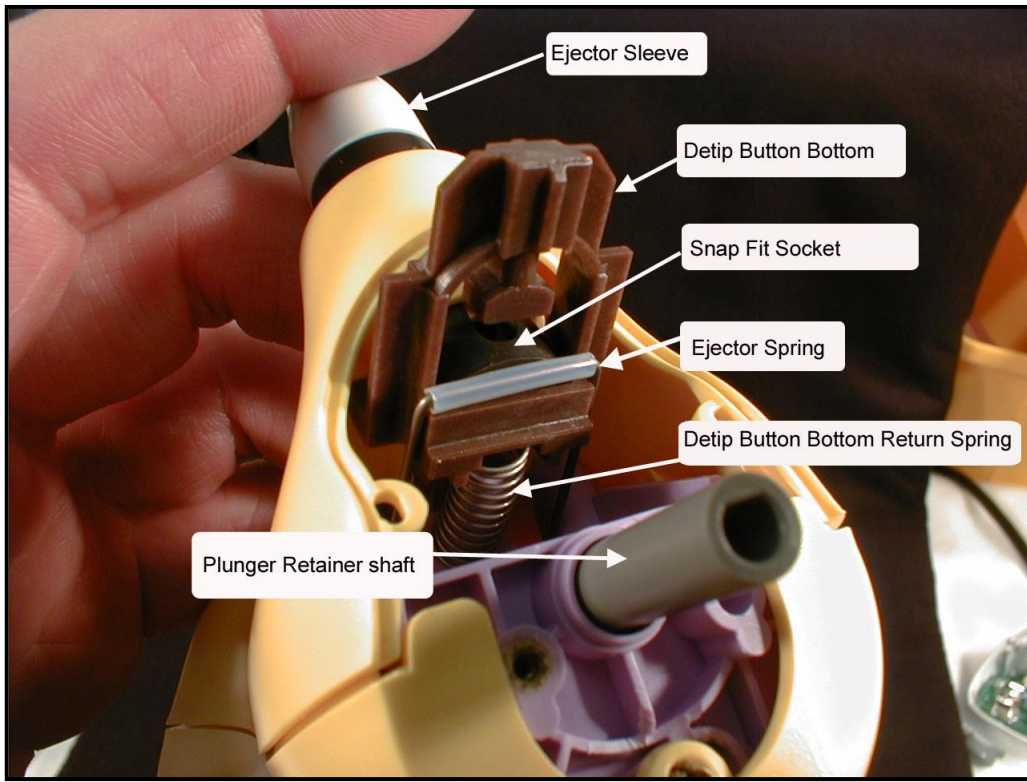


Figure 3 Remove Snap fit Socket Assembly

6. Depress the Detip Button Bottom, slide the Ejector Sleeve towards the Ejector Spring, and disengage the Detip Button Bottom from the Snap Fit Socket.
7. Adjust the unit to maximum volume.
8. Remove the base of the unit.

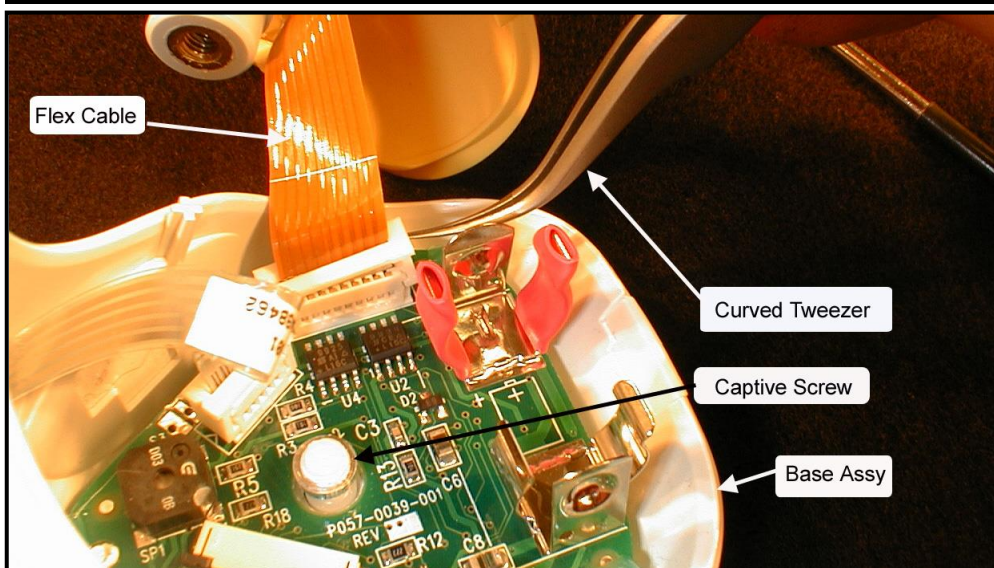


Figure 4 Flex Cable connection and Captive Screw

9. Remove the Battery.
10. Disconnect the Flex Cable from the PC board and set the base assembly aside.

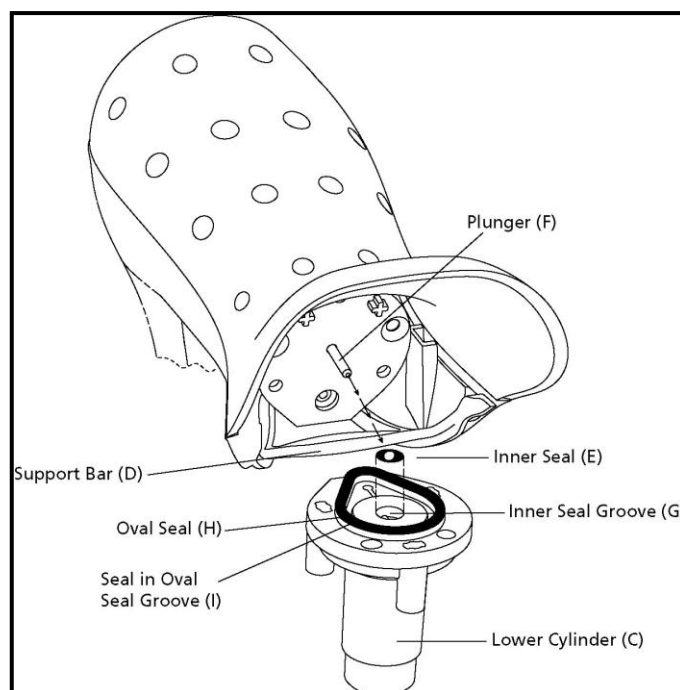


Figure 5 Lower Cylinder Assembly

11. Loosen the three 5/64" Allen screws located on the bottom side of the Lower Cylinder (C). Continue to loosen screws until the Lower Cylinder is free.
12. Using your fingers remove the Inner Seal (E) from the plunger (F) or Inner Seal groove (G) and set aside.

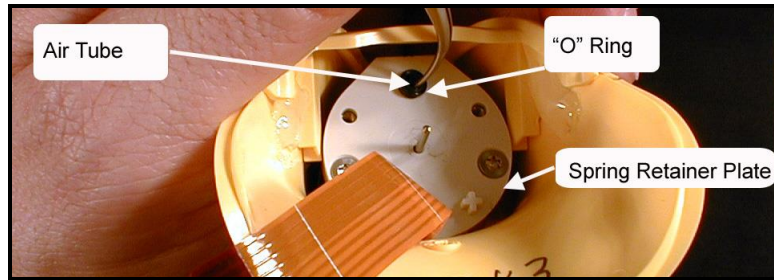


Figure 6 Removing "O" Ring for the Air Tube

13. Remove the Air Tube "O" Ring from where the Air Tube enters the Spring Retainer Plate Assembly.



Figure 7 Remove Hot Glue from Air Tube

14. Remove the hot glue for the Air Tube from the front of the Outer Cylinder Assembly. See Figure 7.

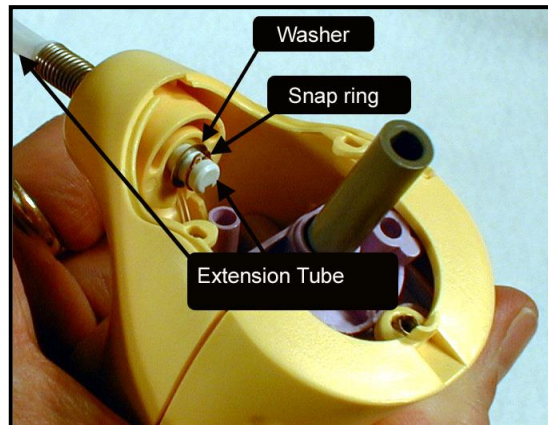


Figure 8 Extension Tube Snap Ring and Washer

NOTE: Safety glasses must be worn for the following steps.

15. Remove the Snap Ring from the end of the Extension Tube in the Upper Housing and discard.
16. Allow the Extension Tube assembly with air tube to slide free from the Upper Body Assembly and discard.

Reassembly

1. Install the Extension Tube Spring over the Extension Tube Assembly.
2. To protect your hand, place the silicone tube used to tighten the Nozzle Assembly over the end of the Extension Tube Assembly and fold over.
3. Wearing safety glasses install the Extension Tube in to the Upper Body Assembly and compress the spring.

Note: See Figures 8 and 10, for the orientation of the washer and Snap Ring for the Extension Tube.

4. Place the washer over the end of the Extension Tube Assembly in the upper body
5. Using snap ring pliers, install a Snap Ring in the groove of the Extension Tube Assembly. Be sure that it is properly seated.
6. Release the Extension Tube Assembly.
7. Compress and release the Extension Tube Assembly against its spring several times to insure that the Snap Ring is properly seated.
8. Put a bend on the end of a new Air Tube and insert into the end of the Extension Tube. Twist it while inserting to cause it to pass beneath the washer. See Figures 9 and 10.

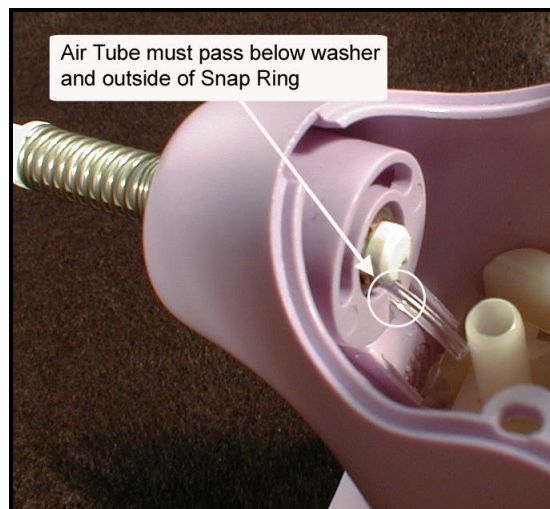


Figure 9 Air Tube Routing in housing

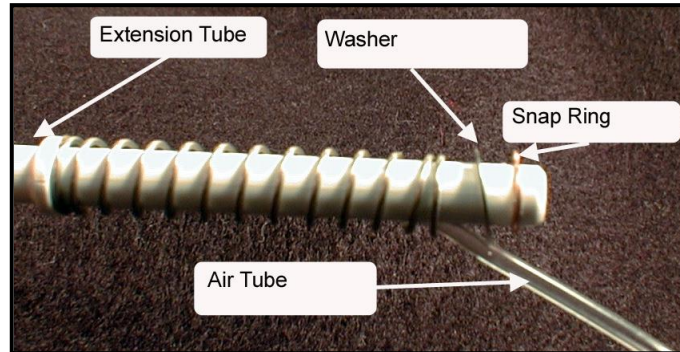


Figure 10 Proper Air Tube Routing with out Upper Housing

9. Position the Air Tube down through its hole in the Spring Retainer Plate using the curved tweezers if necessary. Using NO LUBRICANT install a new “O” Ring over the Air Tube and into the groove in the Spring Retainer Plate.

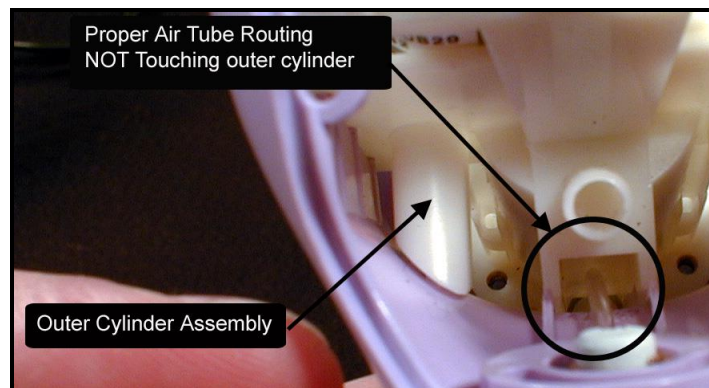


Figure 11 Air Tube Route through Outer Cylinder (not touching)

10. Position the Air Tube in the Spring Retainer Plate so that it is routed as shown in Figure 11.
11. Use hot glue on the Air Tube to glue it to the front of the Outer Cylinder. See Figure 7 above.

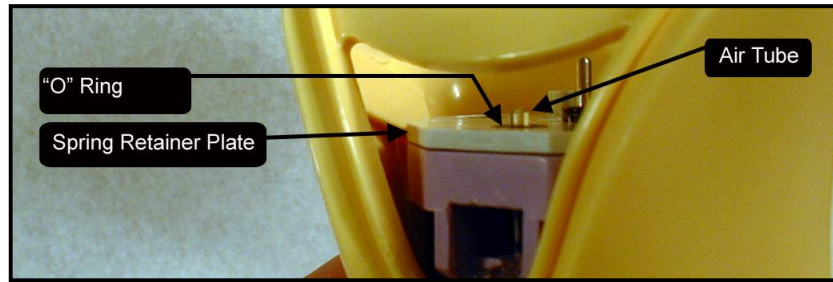


Figure 12 Snipped Air Tube height

12. Using diagonal cutters, snip off the Air Tube just above the “O” Ring at about a 45-degree angle.
13. Coat the new Inner Seal “O” Ring (E in Figure 5) with a small amount of silicone oil from the Spares Kit and position the seal in the Inner Seal Groove (G).
14. Place the new Oval Seal “O” Ring (H) in the Oval Seal Groove (I). Ensure the oval seal is fully seated in the groove.
15. Replace the Lower Cylinder by sliding its edge under the support bar, and then seat into place.
16. Using a torque limiting allen driver, tighten the three captive screws to 32 in/oz’s. (There should be no gap around the edge where the lower and upper cylinders meet.)
17. Operate the plunger several times and be sure that it is smooth and quiet.
18. Using the silicone tube, install the Nozzle.
19. Perform a leak test as indicated in chapter 8
20. Disconnect the vacuum tester and remove the Nozzle.
21. Reconnect the Flex Cable to the PC board and close the Flex Circuit Cable Zif Socket.
22. Reassemble the Base to the Upper Body of the unit and tighten the Captive Screw with a coin or screwdriver.
23. Home the pipette by simultaneously pressing the up and down arrows until “CAL” shows on the display. Then press down the plunger twice and hold until the unit beeps three times.

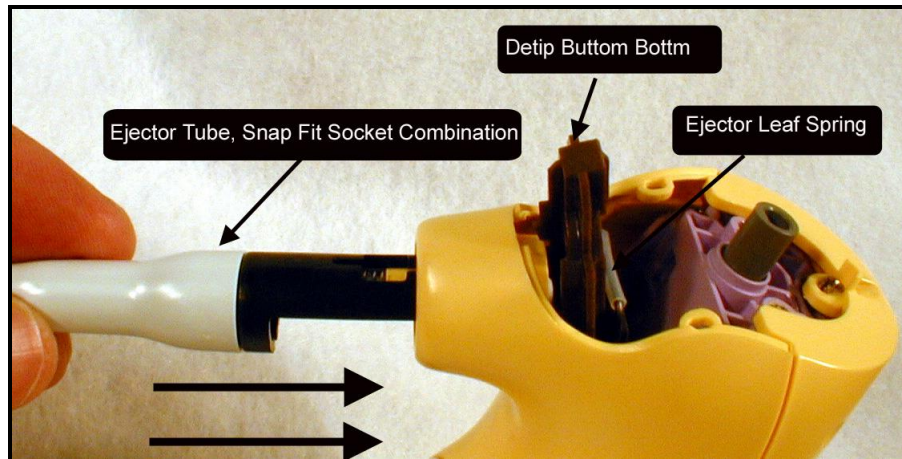


Figure 13 Install Ejector Tube / Snap Fit Socket

24. Install the Ejector Tube, Snap Fit Socket combination into the Upper body assembly as shown in Figure 13.

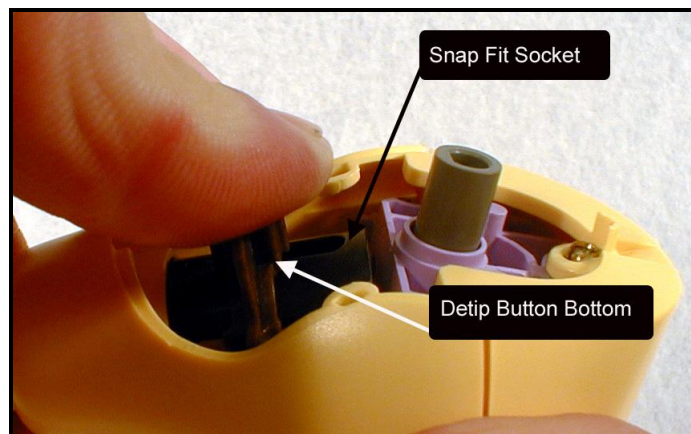


Figure 14 Engage Snap Fit Socket with Detip Button Bottom

- 25. Engage the Snap Fit Socket with the Detip Button Bottom.
- 26. Release the Ejector Tube/Snap Fit Socket assembly so that the Detip Button Bottom engages the Snap Fit Socket.
- 27. Release the Detip Button Bottom.
- 28. Install the Nozzle Assembly tightly using the silicone rubber tube. See Figure 2 above.
- 29. Apply Loctite 495 to the two (2) T9 Torx screws for the top cover.

30. Remove Ejector Sleeve and apply a drop of Loctite 495 to the new air tube in the location shown in Figure 15



Figure 15 Applying Loctite 495 to new air tube

31. Install the Hook and Top Cover assemblies with the two T9 Torx screws and torque to 8.0 in oz's. The Hook should hold its position when rotated.
32. Firmly install the Pipette Button on to the Plunger Retainer Post. Hold the pipette in the air by the Pipette Button to be sure that it is firmly in place.
33. Install and eject 10 tips to be sure that the ejector system works properly.
34. Calibrate the pipette using Ovation Calibration Software as described in Chapter 7.

