

Beaumont

Origination 5/18/2023
Last 5/18/2023
Approved
Effective 5/18/2023
Last Revised 5/18/2023
Next Review 5/17/2025

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Automated Chemistry Pipetting - Royal Oak

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

- A. The purpose of this procedure is to provide technical staff with a description for the operation of pipettes in the Automated Chemistry laboratory. This procedure describes how to properly dispense liquids using calibrated single channel micro-pipettors.
- B. Micro-pipettors are products in a general laboratory used for transferring liquids of specified volumes in combination with matching tips. In-vivo applications are not allowed. Only trained users according to the manual are allowed to use the pipettes. All users must read the procedure carefully and familiarize themselves with the device's mode of operation.

II. SUPPLIES:

- A. Proper Personal Protective Equipment (PPE)
- B. Appropriately sized disposable pipette tips

III. EQUIPMENT / MAINTENANCE:

- A. Pipettes must be calibrated per manufacturer's recommendations, or at least once per year.

IV. SPECIAL SAFETY PRECAUTIONS:

- A. Never use your mouth to operate a pipette.
- B. Always use caution when attaching a tip to a pipettor.
- C. Never hold your pipettor upside down when a used or full tip is in place.
- D. Never forcefully aspirate or dispense liquids out or let go of micro-pipette plunger, bulb, or other

devices during dispensing as this can aerosolize liquids or cause splashing.

V. PROCEDURE:

- A. Wear the correct PPE for the material you are handling (gloves, lab coat, face shield, etc.)
- B. Choose the appropriate pipettor for the volume and type of work.
- C. Choose the correct size tip for the volume you will be working with.
 - 1. The pipette tips can be attached by hand or mounted directly from a tip holder with the pipette.
 - 2. The pipette tips are single use.
- D. **Aspirating the liquid**
 - 1. Attach the tip to the pipettor.
 - a. To ensure maximum precision and accuracy, it is recommended to wet each new tip by aspirating and dispensing the liquid one to three times.
 - 2. Immerse the pipette tip vertically into the liquid.
 - 3. Maintain the immersion depth and let the dispensing button slide back slowly.
 - a. Liquid is aspirated into the pipette tip.
 - 4. Wait until the liquid has been aspirated.
 - 5. Remove the pipette tip from the liquid.
 - a. If necessary, wipe the pipette tip against the tube inner wall.
- E. **Dispensing the liquid**
 - 1. Place the pipette tip on the tube inner wall at a steep angle.
 - 2. Slowly press down the dispensing button to the first stop.
 - a. The liquid is dispensed.
 - 3. Wait until the flow of liquid stops.
 - 4. Press down on the dispensing button to the second stop.
 - a. The pipette tip is completely emptied.
 - 5. Hold down the dispensing button and wipe the pipette tip on the tube inner wall.
- F. **Ejecting the pipette tip**
 - 1. Press the ejector.
 - a. The pipette tip is ejected.
 - 2. Dispose of waste according to the Laboratory Waste Disposal Policy.
 - 3. The pipette can be stored in a pipette carousel, a wall mount, or in a horizontal position.

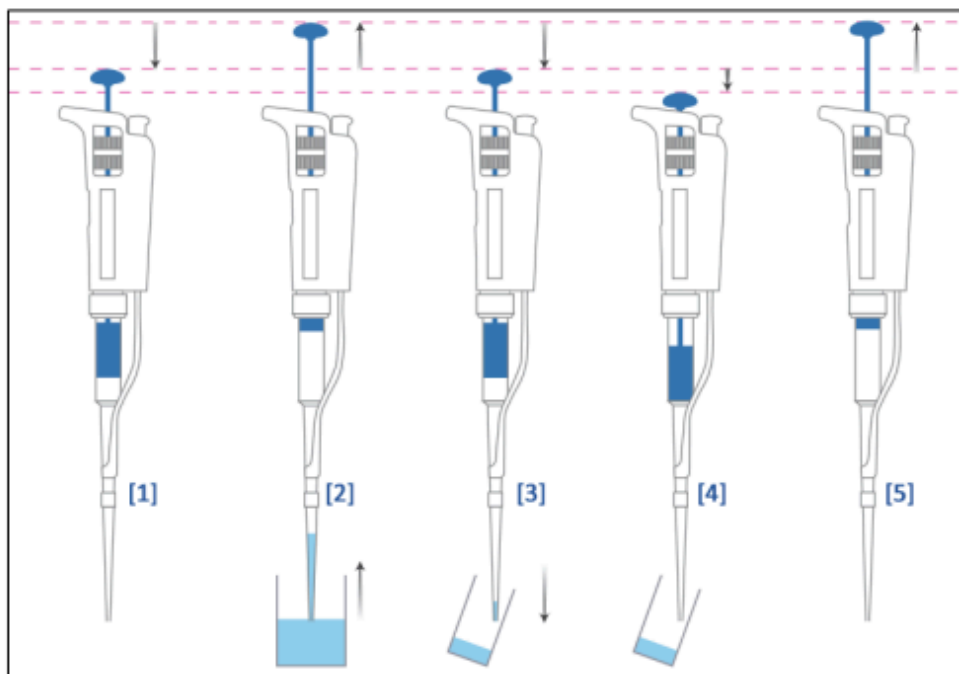


Figure 2: Aspirating and dispensing, taken from Gilson Principles of Pipetting video

- Always depress the plunger to the 1st stop prior to immersing the tip into liquid sample.
- Always aspirate sample in the vertical position (see 2 above).
- Dispense sample while tube is held on a slight angle to prevent splashing of sample into tube. The tip should touch the side of the vessel while dispensing. (see 3 above).
- Do not immerse tip into liquid while dispensing (can create aerosols) (see 3 & 4 above).
- When dispensing, carefully depress the plunger to the 1st stop; pause, and then depress plunger to the 2nd stop to eject (blow-out) remaining liquid (see 3 and 4 above).
- Eject tip carefully into the proper waste container.

VI. REDUCING AEROSOLS & GOOD PIPETTING TECHNIQUE:

- A. Keep the pipette vertical when pipetting in order to prevent liquid from running into the pipette body.
- B. Release the push-button slowly.
- C. Store pipettes vertically.

- D. Change the pipette tip after each sample.
- E. Do not depress the plunger while the tip is immersed in the liquid.

VII. REFERENCES:

1. Eppendorf Research Plus Operating Manual, 2021.

Approval Signatures

| Step Description | Approver | Date |
|--|---|-----------|
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