

## Title: Gilson Pipetman<sup>®</sup> P-20 to P-1000 Operation and Maintenance

### Approvals:

Preparer: Bob O'Brien \_\_\_\_\_ Date 02Jun08  
Reviewer: Deb Audino \_\_\_\_\_ Date 02Jun08

### 1. Purpose:

Operation of Gilson Pipetman<sup>®</sup> P-20 through to the P-1000.

### 2. Scope:

Applies to the operation, cleaning, and trouble shooting of the Gilson Pipetman<sup>®</sup> designed to dispense precise volumes of liquid safely.

### 3. Responsibilities:

3.1. It is the responsibility of the course instructor/lab assistant to ensure that this SOP is performed as directed and to update the procedure when necessary.

3.2. It is the responsibility of the students/technicians to follow the SOP as described and to inform the instructor about any deviations or problems that may occur while performing the procedure.

### 4. References:

4.1. Gilson Pipetman<sup>®</sup> P users guide.

4.2. Autoclave SOP

### 5. Definitions: N/A

### 6. Precautions:

6.1. Volatile solutions: you should saturate the air-cushion of your pipette by aspirating and dispensing the solvent repeatedly before aspirating the sample.

6.2. Acids or other corrosive liquids that emit vapors; can damage pipette to avoid this remove the tip holder and rinse the piston and O-ring and seal with distilled water.

6.3. Temperature extremes can damage the pipetteman: do not pipette liquids having temperatures of above 70°C or below 4°C.

### 7. Materials:

7.1. Pipetman

7.2. Pipette tips

7.3. Beaker

7.4. Weigh boats

7.5. Distilled water

7.6. Lab towels

7.7. 70% IPA

7.8. Autoclave

7.9. Deionized water (DI water)

### 8. Procedure:

#### 8.1. Operation

8.1.1. The volume of liquid to be aspirated is set using the volumeter which is read top (most significant digit) to bottom (least significant digit).

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- 8.1.2. Adjust the thumbwheel or push button to the desired volume. To obtain the maximum accuracy when setting the volume, set the volume 1/3 of a turn above the desired volume and then turn down to the desired volume.
- 8.1.3. Double check that the set volume is correct while holding the volumemeter at eye level.
- 8.1.4. Fit a tip into the tip holder, by using a slight twisting motion when pressing the Pipetman<sup>®</sup> tip holder into a pipette tip to ensure a firm and airtight seal.
- 8.1.5. Follow direction below to pre-rinse the tip by aspirating the first volume of liquid and then dispensing it back into the sample container or a waste container.
- 8.1.6. Aspirate by pressing the push button to the first stop (Figure 1). Make sure that you operate the pushbutton slowly and smoothly.
- 8.1.7. Hold the pipette vertically and immerse the tip into the liquid hold at a constant depth just below the surface of the liquid (Table 1).
- 8.1.8. Dispense by placing the tip against the inside wall of the recipient vessel at an angle of 10° to 40° and then pressing the pushbutton slowly and smoothly to the first stop. Wait for at least one second; then press the pushbutton slowly and smoothly to second stop to expel any residual liquid from the tip.
- 8.1.9. Keep pushbutton completely depressed while removing the pipette tip from the vessel. Draw up the tip along inside surface of the vessel.
- 8.1.10. Release the pushbutton slowly and smoothly.

### **8.2. Tip removal**

- 8.2.1. Tip may now be ejected by pressing firmly on the tip ejector button into a waste container.
- 8.2.2. Tip changes are required only if aspirating a different liquid, sample or reagent or volume. Tips should also be changed if aseptic technique is compromised (e.g. if the tip touches the outside of a container).
- 8.2.3. When you are finished pipetting, re-set the volume of the Pipetman<sup>®</sup> to the maximum volume for proper storage.

### **8.3. Leak testing P20 – P200**

- 8.3.1. Fit a tip onto the Pipetman<sup>®</sup>.
- 8.3.2. Set the Pipetman<sup>®</sup> to the maximum volume given in the specification.
- 8.3.3. Using DI water, pre-rinse the tip and then aspirate the set volume.
- 8.3.4. Hold the Pipetman<sup>®</sup> in a vertical position for approximately twenty seconds, while observing the end of the Pipetman<sup>®</sup> tip.
- 8.3.5. The water in pipette tip should remain constant.
- 8.3.6. If a droplet appears at the end of the tip there is a leak.
- 8.3.7. Verify that the tip is on tightly, and repeat the test.
- 8.3.8. If a droplet appears at the end of the tip there is a leak and the Pipetman<sup>®</sup> needs repair.

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### **8.4. Cleaning externally**

- 8.4.1. The Pipetman<sup>®</sup> is designed so that the parts that normally come in contact with liquid contaminants can easily be cleaned and decontaminated.
- 8.4.2. Wipe the outside of the entire Pipetman<sup>®</sup> with a lab towel dampened with a mild detergent solution.
- 8.4.3. Wipe the entire Pipetman<sup>®</sup> with a lab towel dampened with distilled water.
- 8.4.4. Remove the tip ejector.
- 8.4.5. Wipe the tip ejector with a lab towel dampened with a mild soap solution.
- 8.4.6. Wipe the tip ejector with a lab towel dampened with distilled water.
- 8.4.7. Refit the tip ejector and allow the pipette to dry.
- 8.4.8. Dispose all used lab towels in a biohazard waste container.

### **8.5. Immersion decontamination**

- 8.5.1. The following components: tip –ejector, tip holder, connecting nut and the metal and plastic components of the piston assembly can be removed and immersed in IPA for complete decontamination. See Figure 2 and disassemble instructions below.
- 8.5.2. Allow the components to dry prior to reassembly. See directions below for reassembly.

### **8.6. Chemical decontamination**

- 8.6.1. Spray a lab towel with 70% IPA to dampen.
- 8.6.2. Wipe upper part of body with dampened lab towel.
- 8.6.3. Wipe tip holder and tip ejector with dampened lab towel.
- 8.6.4. Wipe entire Pipetman<sup>®</sup> with a lab towel dampened with DI water.
- 8.6.5. Leave Pipetman<sup>®</sup> to dry or wipe dry with lab towel.
- 8.6.6. Dispose all used lab towels in a biohazard waste container.

### **8.7. Trouble shooting**

- 8.7.1. See the trouble shooting table (Table 2).

### **8.8. Disassemble the Pipetman<sup>®</sup>** (See Figure 2)

- 8.8.1. Remove tip ejector, Press the tip ejector button down and pull on the flanged upper part of the tip-ejector with the other hand (moderate force may be required).
- 8.8.2. Remove the connecting nut by turning it counterclockwise direction by hand.
- 8.8.3. At this time carefully separate the lower components from the upper body assembly.
- 8.8.4. Remove the piston assembly and the o-ring and seal.
- 8.8.5. Clean the Pipetman<sup>®</sup> by following the decontamination instruction above.
- 8.8.6. Replace the necessary components as needed.

### **8.9. Reassemble the Pipetman<sup>®</sup>**

- 8.9.1. Place fully assembled piston assembly into the tip holder.
- 8.9.2. Place connecting nut so that it can be pulled up over tip holder.
- 8.9.3. Holding the tip holder with connecting nut, line up and place the top of the piston assembly into the pipette upper body.

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- 8.9.4. Tighten the connecting nut onto threads of upper pipette body.
- 8.9.5. Place tip ejector so it comes up over tip holder. Line up with tip ejector button rod in upper body.
- 8.9.6. Pull on the tip-ejector flange with one hand with the other hand holding the upper body (moderate force may be required).

### 9. Attachments:

- 9.1. Figure 1: Pipetman<sup>®</sup>,
- 9.2. Figure 2: Pipetman<sup>®</sup> break out
- 9.3. Table 1: Immersion chart
- 9.4. Table 2: Troubleshooting guide.

### 10. History:

Name	Date	Amendment
Bob O'Brien	16Aug06	Initial release
Bob O'Brien	02Jun08	College name change , rework photo , add reassembly

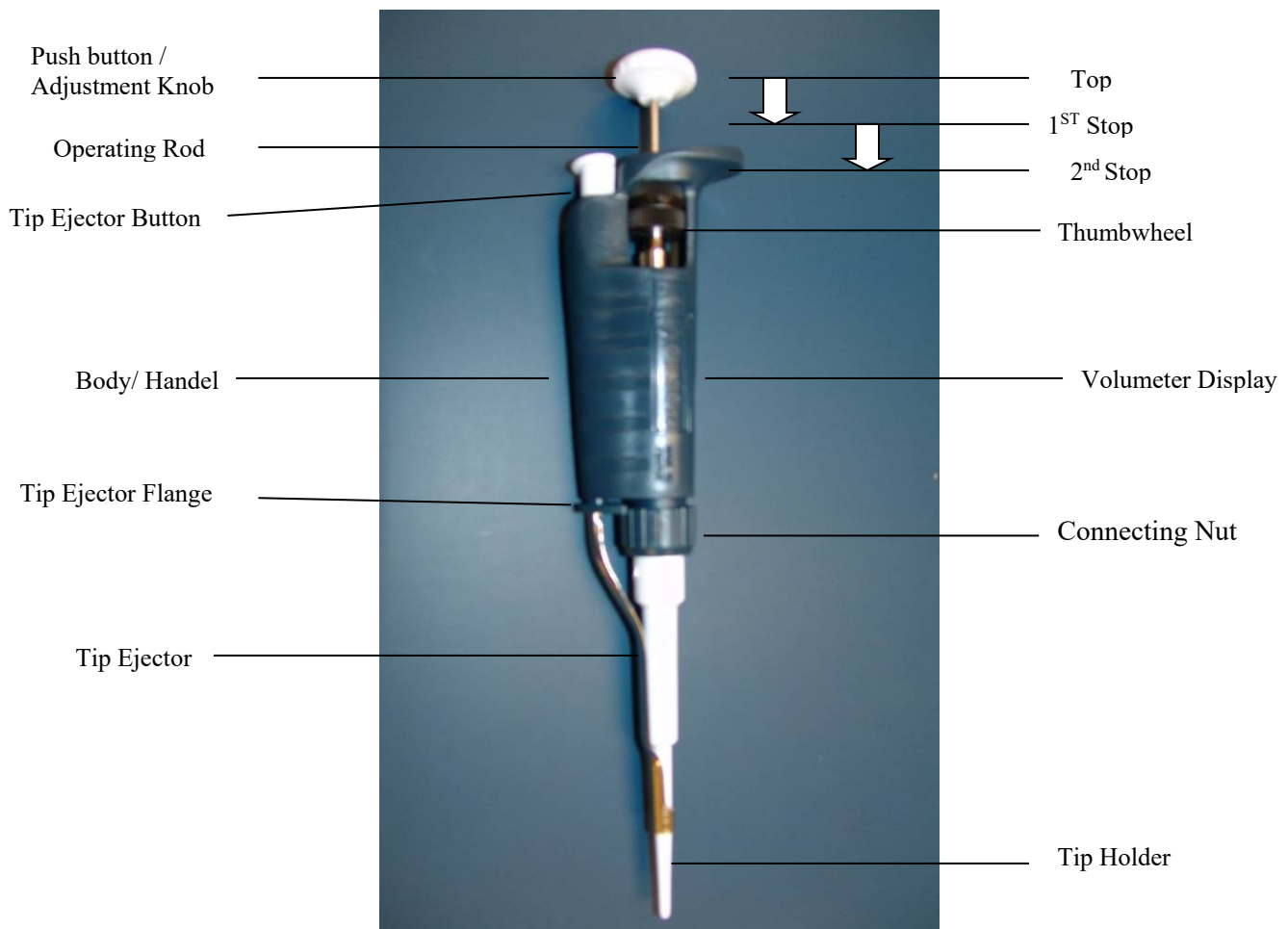


Figure 1: Pipetman<sup>®</sup>

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Immersion Depth and Wait Time		
Model	Immersion depth(mm)	Wait time (sec)
P2	1mm	1
P10	1mm	1
P20	2mm to 3mm	1
P100	2mm to 4mm	1
P200	2mm to 4mm	1
P1000	2mm to 4mm	2 to 3

Table 1: Immersion chart

Pipeteman Trouble Shooting		
Symptom	Possible Cause	Action
Pipette is leaking sample	Worn O-ring or seal.	Replace both parts
Pipette will not aspirate	Worn O-ring or seal. Tip holder is loose. Piston is damaged (chemically or mechanically). Damaged tip holder. Connecting nut is loose.	Replace both parts. Tighten connecting nut. Return pipette to supplier. Replace the tip holder. Tighten connecting nut.
Pipette is inaccurate	Improper assembly. Unscrew tip holder. Connecting nut is loose.	See "Maintenance" Tighten connecting nut. Tighten connecting nut.
Pipette is not precise	Tip holder is loose. Incorrect operator technique. Worn O-ring or seal. Piston is damaged (chemically or mechanically). Damaged tip holder.	Tighten connecting nut. Operator training. Replace both parts. Tighten connecting nut. Return pipette to supplier. Replace tip holder.
Tips fall off or do not fit	Low quality tips. Damaged tip holder. Damaged tip ejector.	Use better quality tips. Replace the tip holder. Replace the tip ejector.
Bent operating rod	Pipette damaged mechanical shock	Return pipette to supplier.
Operating rod has chemical damage	Chemical damaged rod	Return pipette to supplier.
Volumeter digits unclear	Pipette damaged	Return pipette to supplier.
Can not set the maximum range	Pipette damaged mechanical shock	Return pipette to supplier.
The volumeter thumbwheel hitching	Pipette damaged mechanical shock	Return pipette to supplier.
Tip ejector bent	damaged mechanical shock	Replace ejector
Tip ejector chemical damage	chemical damaged ejector	Replace ejector

Table 2: Troubleshooting guide

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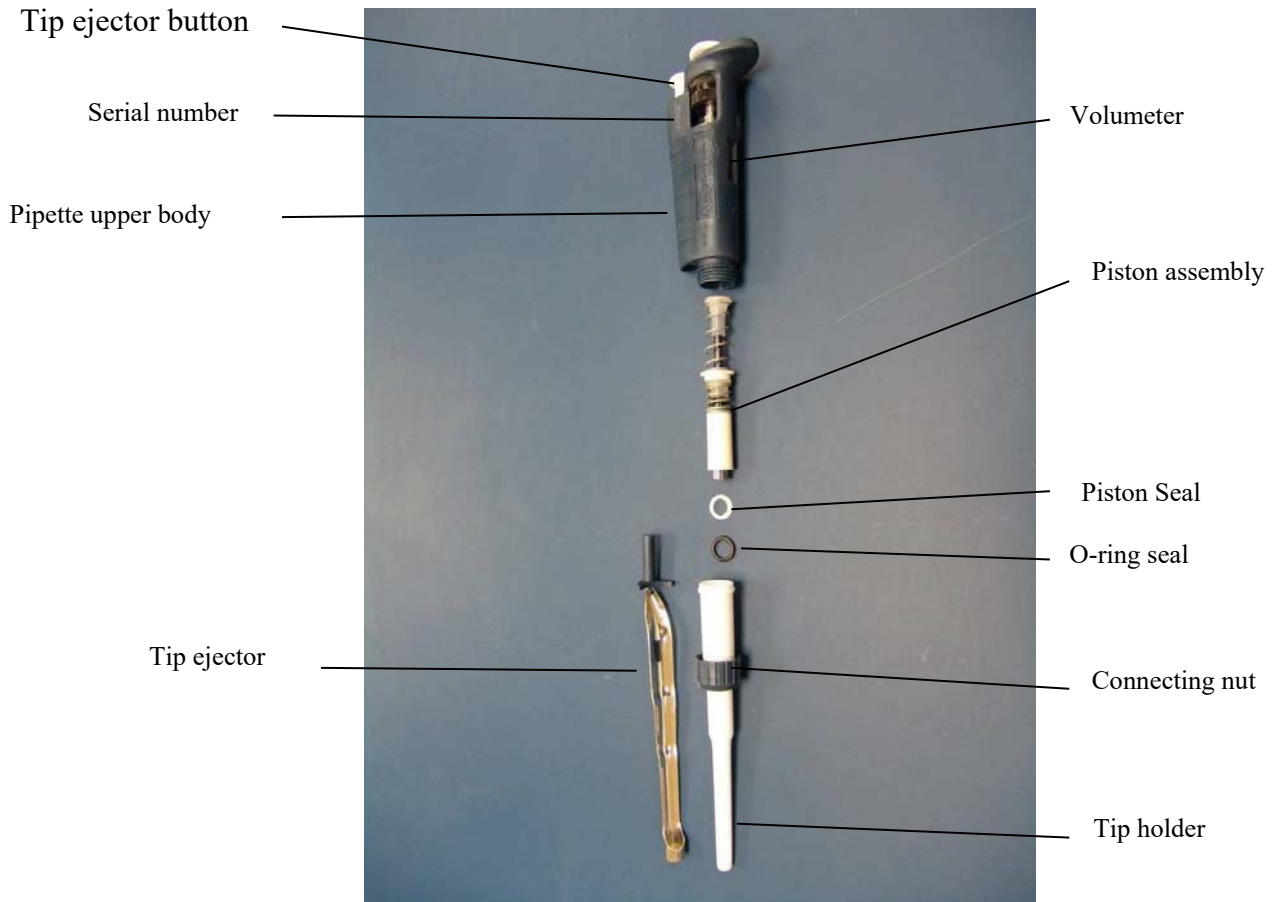


Figure 2: Pipetman<sup>®</sup> breakout