

## 1. INTRODUCTION

Thanks for your trust in our SUREPETTE® Series Pipettes. Let's share the following benefits from SUREPETTE®:

- 1). SUREPETTE® Series Pipettes include Adjustable Volume Pipettes and Fixed Volume Pipettes, covering a volume range from 0.5  $\mu$  L to 5 mL;
- 2). SUREPETTE® Series Pipettes aspirate and dispense volumes of liquid precisely and safely;
- 3). A volumeter makes it easy to set volume and to eliminate calculation errors;
- 4). A tip ejector button simplifies the discarding of the tip and makes the operation safe.
- 5). Each SUREPETTE® is factory calibrated and carefully checked gravimetrically using distilled water and an analytical balance.

## 2. PARTS CHECK LIST

Our SUREPETTE® package contains the following items:

- Pipette
- Service Tool
- Grease
- User's Guide
- Pipette Holder
- Tip

Please take a moment to verify that the above items are present.

## 3. DESCRIPTION



## 4. OPERATING RANGES

Adjustable Volume Pipettes:

Model	Range
SPA-10	0.5 - 10 $\mu$ L
SPA-20	2 - 20 $\mu$ L
SPA-50	5 - 50 $\mu$ L
SPA-100	10 - 100 $\mu$ L
SPA-200	20 - 200 $\mu$ L

SPA-1000 100 - 1000  $\mu$  L  
 SPA-5000 1 - 5 ML

#### Fixed Volume Pipette

Model	Volume
SPF-5	5 $\mu$ L
SPF-10	10 $\mu$ L
SPF-20	20 $\mu$ L
SPF-25	25 $\mu$ L
SPF-50	50 $\mu$ L
SPF-100	100 $\mu$ L
SPF-200	200 $\mu$ L
SPF-250	250 $\mu$ L
SPF-500	500 $\mu$ L
SPF-1000	1000 $\mu$ L
SPF-2000	2000 $\mu$ L
SPF-5000	5000 $\mu$ L

### 5. SETTING THE VOLUME

The volume of SUREPETTE® is clearly shown through the volumeter.

For the Adjustable Volume Pipettes, the delivery volume is set by turning the push button clockwise or anticlockwise until the desired delivery volume clicks into place and the digits are completely visible in the volumeter;

#### WARNING:

ALWAYS adjust the volume within the designated volume range. Do not turn the push button with excessive force. This prevents the pipettes from inaccuracy and damage.

Example for each pipette:

SPA-10 (Adjustable Unit Volume=0.1  $\mu$  L)

<div>0.5</div>	<div>1.0</div>	<div>10.0</div>
0.5 $\mu$ L	1 $\mu$ L	10 $\mu$ L

SPA-20 (Adjustable Unit Volume=0.5  $\mu$  L)

<div>2.5</div>	<div>10.0</div>	<div>10.5</div>
2.5 $\mu$ L	10 $\mu$ L	10.5 $\mu$ L

SPA-50 (Adjustable Unit Volume=0.5  $\mu$  L)

<div>5.5</div>	<div>20.5</div>	<div>50.0</div>
5.5 $\mu$ L	20.5 $\mu$ L	50 $\mu$ L

SPA-100 (Adjustable Unit Volume=1  $\mu$  L)

<div>10</div>	<div>11</div>	<div>100</div>
10 $\mu$ L	11 $\mu$ L	100 $\mu$ L

SPA-200 (Adjustable Unit Volume=1  $\mu$  L)

<div>20</div>	<div>21</div>	<div>105</div>
20 $\mu$ L	21 $\mu$ L	105 $\mu$ L

SPA-1000 (Adjustable Unit Volume=5  $\mu$  L)

<div>100</div>	<div>105</div>	<div>1000</div>
100 $\mu$ L	105 $\mu$ L	1000 $\mu$ L

SPA-5000 (Adjustable Unit Volume=50  $\mu$  L)

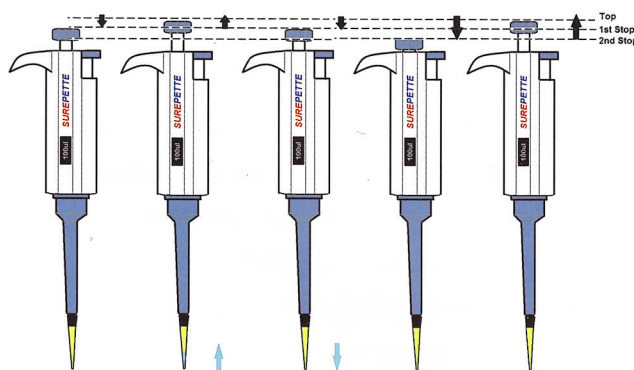
<div>1000</div>	<div>1050</div>	<div>5000</div>
1000 $\mu$ L	1050 $\mu$ L	5000 $\mu$ L

### 6. PIPETTING

1). Attach a new disposable tip to the tip holder.

Press only enough to make a positive airtight seal. This avoids leaks or poor accuracy;

- 2). Pre-rinse the tip by aspirating the first volume of liquid and then dispensing it back or to waste;
- 3). Press the push button to the first stop. This part of the stroke is the volume displayed on the volumeter;
- 4). Holding SUREPETTE® vertically, immerse the tip into the liquid to a depth of 2 - 4 mm;
- 5). Wait 2 - 3 seconds. Allow the push button to return slowly and smoothly to the top position. DO NOT let it snap up;
- 6). Withdraw the tip from the liquid after the full volume of sample is drawn into the tip, touching against the edge of the container to remove excess;
- 7). To dispense sample, place the tip end against the inside wall of the recipient vessel at an angle of 10° to 40°. Depress the push button slowly and smoothly to the first stop. Wait 1 - 3 seconds. Then press the push button to the second stop (bottom of stroke), expelling the residual liquid from the tip.
- 8). Withdraw SUREPETTE® from the vessel carefully. Allow the push button to return to the top position.
- 9). Discard the tip by depressing the tip ejector button.



## 7. GUIDELINES FOR GOOD PIPETTING

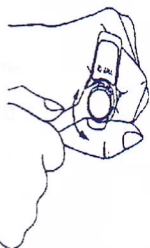
- 1). Always control the push button movements with the thumb slowly and smoothly.
- 2). Hold the pipette vertically when aspirating the liquid and place the tip only a few millimeters into the liquid.
- 3). Change the tip before aspirating a different liquid, sample, or reagent.
- 4). Change the tip if there is residual liquid at the end of tip.
- 5). When using new tips, pre-rinse the tips with the liquid to be pipetted several times to eliminate the chances of measuring error.

- 6). Liquid should never enter the tip holder; to prevent this:
- press and release the push button slowly and smoothly;
  - never turn the pipette upside down;
  - never lay the pipette on its side when there is liquid in the tip.
- 7). When pipetting liquids with temperatures different from the ambient temperature, pre-rinse the tip several times before use.
- 8). Do not pipette liquids which have extreme temperatures ( $> 70^{\circ}\text{C}$ , or  $< 4^{\circ}\text{C}$ ).

## 8. RECALIBRATION

SurePettes are factory calibrated and carefully checked gravimetrically before shipment using distilled water, an analytical balance (accuracy is 1/10,000 to 1/100,000) and a beaker. Normally, the recalibration is not required; but, if necessary, the calibration can be taken easily in your labs, following the below steps:

- 1). Place the service tool into the holes of the calibration adjustment lock (under the push button).
- 2). Turn the adjustment lock anticlockwise to decrease and clockwise to increase the volume.



- 3). Pipette the distilled water into the beaker following the pipetting procedures and measure with an analytical balance. Repeat the measurement six times. The results should be consistent with the specifications. Otherwise, calibrate and test again until the results are consistent with the specifications.

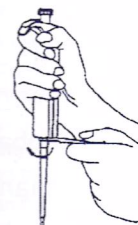
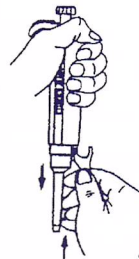
## 9. MAINTENANCE

### Cleaning

Use ethanol and a soft cloth or lint-free tissue to clean your SurePette. It is recommended to clean the tip holder regularly.

### Maintenance

- 1). Depress the tip ejector button.
- 2). Place the tooth of the service tool between the tip ejector and the tip ejector collar to release the locking mechanism.
- 3). Carefully release the tip ejector and remove the tip ejector collar.
- 4). Place the wrench end of the service tool over the tip holder, turning it anticlockwise. Do not use any other tools. The 5ml tip holder is removed by turning it anticlockwise. Do not use any tools.



5). Wipe the piston, the O-ring and the tip holder with ethanol and a lint-free cloth.

Note: Some models have a fixed O-ring located inside the tip holder. In this case, the O-ring can not be accessed for maintenance.

6). Before replacing the tip holder, it is recommended to grease the piston slightly using the grease provided.

Note: Excessive use of grease may jam the piston.

7). After reassembling, use the pipette without liquid several times to make sure that the grease is spread evenly.

8). Check the performance and recalibrate the pipette.

## 10. TROUBLE SHOOTING

A quick inspection of the pipette referring to the below questions may help you isolate the problem.

- Is the push button rod straight?
- Is the push button free of chemical damage?
- Are the volumeter digits clear and easy to read?
- Can you set any volume in the useful range?
- Can you set the maximum volume?
- Does the volumeter operate smoothly without hitching?

If the answer to any of these questions is NO, the pipette probably has been damaged as the result of a mechanical shock or chemical damage, in which case it should be returned to your supplier

for repair.

If the answer to these questions is YES, continue as follows:

- Is the tip ejector straight?
- Is the tip ejector free of chemical damage?
- Remove tip ejector; is the tip holder undamaged and free of chemical damage?
- Are the O-ring and seal undamaged and free of chemical damage?

If the answer is NO, clean or replace the damaged part.

If the answer is YES, you may be able to identify and to correct the problem by reference to the below table. If you can not solve the problem, contact your SurePette representative.

Trouble	Possible Cause	Solution
Droplets left inside the tip	Unsuitable tip	Use original Tips
Leakage or pipetted volume too small	Tip incorrectly attached	Attach firmly
	Unsuitable tip	Use original Tips
	Particles between tip and tip holder	Clean the tip holder, attach new tip
	Insufficient amount of grease on piston	Clean and grease the piston
	O- ring not correctly positioned or damaged	Change the O- ring
	Incorrect operation	Follow the instruction carefully
Push button jammed or moves erratically	Calibration altered	Recalibrate
	Piston contaminated	Clean and grease
	Penetration of solvent vapours	O- ring and piston. Clean the tip holder
Pipette blocked, aspirated volume too small	Liquid has penetrated tip holder and dried	Clean and grease O- ring and piston. Clean the tip holder
Tip ejector jammed or moves erratically	Tip holder and/or tip ejector collar contaminated	Clean the tip holder and the tip ejector collar

## 11. STORAGE

For convenience and safety, always keep your SurePette vertically on its own holder provided when not in use. When installing the holder, please follow the below instructions:

- 1). Clean the shelf surface with ethanol;
- 2). Remove the protective paper from the adhesive tape of the holder;
- 3). Press the adhesive side of the holder against the edge of the shelf;

We also provide SurePette Stand to hold 5 SurePettes.

## 12. SPECIFICATIONS

### Fixed Volume Pipettes

Model	Normal Volume $\mu\text{l}$	Accuracy (mean error) %	Precision (repeatability) %
SPF- 5	5	$\pm 4.8$	$\leq 3.0$
SPF- 10	10	$\pm 3.0$	$\leq 2.0$
SPF- 20	20	$\pm 2.4$	$\leq 1.0$
SPF- 25	25	$\pm 2.4$	$\leq 1.0$
SPF- 50	50	$\pm 2.4$	$\leq 1.0$
SPF- 100	100	$\pm 1.5$	$\leq 0.8$
SPF- 200	200	$\pm 1.2$	$\leq 0.7$
SPF- 250	250	$\pm 1.2$	$\leq 0.7$
SPF- 500	500	$\pm 1.2$	$\leq 0.7$
SPF- 1000	1000	$\pm 1.0$	$\leq 0.5$
SPF- 2000	2000	$\pm 1.0$	$\leq 0.5$
SPF- 5000	5000	$\pm 1.0$	$\leq 0.5$

### Adjustable Volume Pipettes

Model & Volume Rang	Normal Volume l	Accuracy (mean error) %	Precision (repeatability) %
SPA - 10 0.5~10 $\mu\text{l}$	1 *	$\pm 12$	$\leq 4.0$
	5	$\pm 6.4$	$\leq 3.0$
	10	$\pm 3.2$	$\leq 2.0$
SPA - 20 2~20 $\mu\text{l}$	2	$\pm 10$	$\leq 3.0$
	10	$\pm 3.2$	$\leq 2.0$
	20	$\pm 3.0$	$\leq 1.5$
SPA - 50 5~50 $\mu\text{l}$	5	$\pm 6.4$	$\leq 3.0$
	25	$\pm 3.0$	$\leq 2.0$
	50	$\pm 2.4$	$\leq 1.5$
SPA - 100 10~100 $\mu\text{l}$	10	$\pm 3.2$	$\leq 3.0$
	50	$\pm 2.4$	$\leq 1.5$
	100	$\pm 1.5$	$\leq 1.0$
SPA - 200 20~200 $\mu\text{l}$	20	$\pm 3.0$	$\leq 1.5$
	100	$\pm 1.5$	$\leq 1.0$
	200	$\pm 1.5$	$\leq 1.0$
SPA - 1000 100~1000 $\mu\text{l}$	100	$\pm 1.5$	$\leq 1.0$
	500	$\pm 1.5$	$\leq 0.5$
	1000	$\pm 1.2$	$\leq 0.5$
SPA - 5000 1000~5000 $\mu\text{l}$	1000	$\pm 1.5$	$\leq 0.5$
	2500	$\pm 1.0$	$\leq 0.5$
	5000	$\pm 1.0$	$\leq 0.5$

\* Only for the practiced.