

5. After removing the tip cone, wipe the piston, the O-ring and the tip cone with ethanol and a lint-free cloth.

**Note:** Models up to 10µl have a fixed O-ring location inside the tip cone, so do not remove or maintain it.

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

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

8. Check the pipettor calibration.

**Note:** Never disassemble the upper part of the pipette. To avoid losing or damaging fragile parts, reassemble the pipette immediately.

## CALIBRATION

Each pipette has been checked & calibrated at factory with procedure conforming to EN-ISO 8655 standards. It is recommended to check the calibration at least once a year, for regularly used pipette.

### Checking calibration

- 1 Fit new tip onto the tip cone.
- 2 Pipette distilled water into pre-weighed beaker at least five times & record the weight each time.
- 3 Compare the results with the permitted variation chart given below. The calibration of the pipette must be set even if only one of the results falls outside the permitted range.

Volume	Variation permitted	Volume	Variation permitted
1 µl	± 0.15 µl	50 µl	± 0.80 µl
2 µl	± 0.20 µl	100 µl	± 1.50 µl
5 µl	± 0.30 µl	200 µl	± 2.00 µl
10 µl	± 0.30 µl	500 µl	± 5.00 µl
20 µl	± 0.40 µl	1000 µl	± 10.00 µl

For user in a normal lab environment, the limits may be doubled.

## Important Notes

1. Procedure should take place at 20° (± 0.5°) C. constant temperature.
2. The weighing beaker, distilled water, pipettor & tips must be at the same temperature.
3. Use an analytical balance with 0.01 mgs readability.
4. Pre-rinse the tip 3 to 5 times before pipetting.
5. Divide the weight of the water by its density (at 20°C, 0.9982) to get the volume.

## Recalibration

- 1 Place the service tool into grooves at the base of the push button as shown below. Turn it clockwise to increase & anticlockwise to decrease the volume.
- 2 Repeat the 'Checking calibration' procedure.



## STORAGE

When not in use, it is recommended that your pipettor is stored in a vertical position.

Leaving the pipette on its side can cause liquids to leak into the body of the pipette and cause corrosion.

## TROUBLE SHOOTING

Trouble	Possible Reason	Correction
Droplets left inside the tip	Unsuitable tip, non-uniform wetting of the plastic	Use new tip
Leakage or Pipetted volume too small	Tip holder (cone) scratched or damaged	Change the tip cone
	Organic Solvent as liquid.	Aspirate & discard the organic solvent several times before actual pipetting by the same tip.
	Tip incorrectly attached	Attach firmly.
	Unsuitable tip.	Use new tip.
Inaccuracies	Foreign particles between tip and tip cone.	Clean the tip cone.
	Insufficient amount of grease on piston and O-ring.	Clean & grease O-ring and piston.
	O-ring not correctly positioned or damaged.	Change the O-ring.
	Incorrect operation.	Follow instructions carefully.
Push button jammed or moves erratically	Calibration altered.	Recalibrate according to instructions.
	Unsuitable for the particular liquid pipetting technique.	Use correct pipetting technique.
	Instrument damaged.	Send for repair.
Tip ejector jammed or moves erratically.	Piston contaminated.	Clean & grease O-ring and piston
	Penetration of solvent vapours.	
Volume setting is not properly click stopped.	Tip cone contaminated from outside.	Remove ejector collar and clean tip cone's outer surface with ethanol.
	Click stop mechanism damaged.	Send for repair.
Push button does not turn for volume setting.	Use of excessive force beyond the range of pipette.	Send for repair.



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ISO 9001 : 2000



Research micro pipette with smart grip

## INSTRUCTION MANUAL



## PIPETTE DESCRIPTION

These pipettes are available as fixed or variable, general purpose micropipettes for sampling and dispensing accurate amounts of liquid in micro volumes.

These pipettes operate on the air displacement principle and use disposable tips of any standard make.

All pipettes are equipped with a built-in tip ejector.

They cover the volume range of 0.1  $\mu\text{l}$  to 5000  $\mu\text{l}$ .

### Variable volume pipettes

Volume Range	Increment
0.1-2.5 $\mu\text{l}$	0.01 $\mu\text{l}$
0.5-10 $\mu\text{l}$	0.1 $\mu\text{l}$
5-50 $\mu\text{l}$	0.5 $\mu\text{l}$
50-200 $\mu\text{l}$	1.0 $\mu\text{l}$
200-1000 $\mu\text{l}$	5.0 $\mu\text{l}$
10-100 $\mu\text{l}$	0.5 $\mu\text{l}$
100-1000 $\mu\text{l}$	5.0 $\mu\text{l}$
2-20 $\mu\text{l}$	0.1 $\mu\text{l}$
20-200 $\mu\text{l}$	1.0 $\mu\text{l}$
500-5000 $\mu\text{l}$	50.0 $\mu\text{l}$

### Fix volume pipettes

Volume	
2.5 $\mu\text{l}$	200 $\mu\text{l}$
5 $\mu\text{l}$	250 $\mu\text{l}$
10 $\mu\text{l}$	500 $\mu\text{l}$
20 $\mu\text{l}$	1000 $\mu\text{l}$
25 $\mu\text{l}$	2000 $\mu\text{l}$
50 $\mu\text{l}$	2500 $\mu\text{l}$
100 $\mu\text{l}$	5000 $\mu\text{l}$

**Note:** Special volume pipettes other than specified above may be supplied on demand.

### Multi(8) Channel pipettes

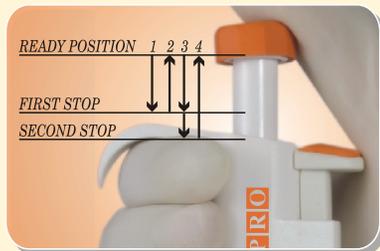
Volume Range	Increment
0.5-10 $\mu\text{l}$	0.1 $\mu\text{l}$
5-50 $\mu\text{l}$	0.5 $\mu\text{l}$
10-100 $\mu\text{l}$	0.5 $\mu\text{l}$
30-300 $\mu\text{l}$	1.0 $\mu\text{l}$

### Multi(12) Channel pipettes

Volume Range	Increment
0.5-10 $\mu\text{l}$	0.1 $\mu\text{l}$
5-50 $\mu\text{l}$	0.5 $\mu\text{l}$
10-100 $\mu\text{l}$	0.5 $\mu\text{l}$
30-300 $\mu\text{l}$	1.0 $\mu\text{l}$

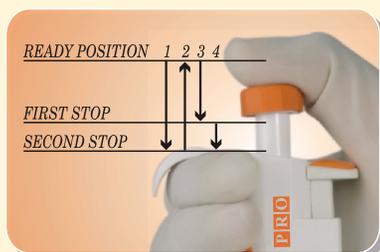
## PIPETTING TECHNIQUE

### A. Forward Pipetting



1. Press the operating button to the first stop.
2. Dip the tip attached to the pipette into the solution to a depth of about 1cm, and slowly release the operating button. Wait for a while, then withdraw it from the liquid touching it against the edge of the reservoir to remove excess liquid adhering to the outer surface of the tip.
3. Dispense the liquid into the receiving vessel by gently pressing the operating button to the first stop. After a second, press the operating button to the second stop. This will empty the tip completely. Remove the pipette from the vessel sliding it up the wall of the vessel.
4. Release the operating button to the ready position.

### B. Reverse Pipetting



1. Press the operating button to the second stop.
2. Dip the tip attached to the pipette into the solution to a depth of about 1cm, and slowly release the operating button. This action will fill the tip with a volume that is larger than the set volume. Wait 1-2 seconds and withdraw the tip from the liquid, touching it against the edge of the reservoir to remove excess liquid.
3. Dispense the liquid into the receiving vessel by pressing the operating button gently and steadily to the first stop. This volume is equal to the set volume. Hold button in this position. Some liquid will remain in the tip, which should not be dispensed.
4. The liquid remaining in the tip can be dispensed back into the original solution by pressing the button to the second stop or disposed together with the tip.
5. Release the operating button to the ready position.

**Note :** Reverse pipetting technique is recommended for viscous solutions, solutions having tendency to foam or for dispensing very small volumes.

## PIPETTING RECOMMENDATIONS

- ◆ Aspirate liquid into the pipette only when a tip is attached to its tipcone.
- ◆ Allow liquids, tips, and pipettes to equilibrate to the ambient temperature.
- ◆ Pre-rinsing of tip 5 times with the liquid to be dispensed is recommended. This is important especially when dispensing liquids which have a viscosity and density different from water.
- ◆ Pre-rinse the tip several times before use when pipetting liquids at temperature different from ambient.
- ◆ While pipetting, the pipettor should be vertically straight and tip should be dipped only a few millimeters into the liquid.
- ◆ Always control the push button movements with the thumb for consistency.
- ◆ Wipe the tip only if there is liquid on the outside of the tip, being careful to avoid touching the tip's orifice.
- ◆ Don't keep pipette in your hand while not working, to avoid transferring of body heat.
- ◆ Use the correct pipette tip designed for use with the particular pipette.
- ◆ Select the correct pipetting technique (e.g. Reverse, forward etc.) depending on the nature of the liquid.
- ◆ Using excessive force to turn the push button outside the range specified for it may jam the mechanism and damage the pipettor.

## MAINTENANCE

To maintain the best results from your pipettor, each unit should be checked every day for cleanliness. Particular attention should be paid to the tip cone(s).

This pipettor has been designed for easy in-house service. However, we also provide complete repair and calibration service. Please return your pipettor to your local distributor for repair or calibration. Before returning, please make sure that it is free from any contamination.

Check the performance of your pipettor regularly e.g every 3 months and after every in-house service or maintenance.

### Cleaning Your Pipettor

To clean your pipettor, use ethanol and a soft cloth or lint-free tissue. It is recommended to clean the tip cone regularly.

### In-House Maintenance



1. Hold down the tip ejector.
2. Place the tooth of the opening tool between the tip ejector and the tip ejector collar to release the locking mechanism.
3. Carefully release the tip ejector and remove the ejector collar.
4. Place the wrench end of the opening tool over the tip cone and turn it anti-clockwise.