

MICRO PIPETTE VARIABLE VOLUME

PRODUCT DESCRIPTION

Micropipettes are commonly used in molecular biology as well as medical tests. Micropipettes come in several designs for various purposes with differing levels of accuracy and precision, from single piece glass pipettes to more complex adjustable or electronic pipettes. Many micropipette types work by creating a partial vacuum above the liquid-holding chamber and selectively releasing this vacuum to draw up and dispense.

Micropipettes that dispense between 1 and 10000UL are termed Micropipette, while micropipettes dispense a greater volume of liquid. Two types of micropipettes are generally used: air-displacement pipettes and positive-displacement pipettes. In particular, piston-driven air-displacement pipettes are micropipettes which dispense an adjustable volume of liquid from a disposable tip. The pipette body contains a plunger, which provides the suction to pull liquid into the tip when the piston is compressed and released.

The maximum displacement of the plunger is set by a dial on the micropipette body, allowing the delivery volume to be changed. Larger capacity tubular pipettes, such as volumetric or graduated pipettes are used by temporarily attaching a pipetting aid. Micropipette typically handle volumes in the 0.5ul to 10,000ul range, for aliquot transfer and incremental dispensing in titrations, with a positive displacement method of operation.



PERFORMANCE DATA

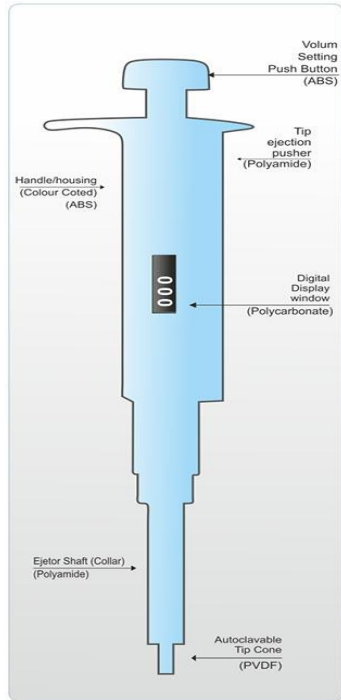
Variable Volume

Cat. No.	Volume μ l	Increment	Inaccuracy %	Imprecision %	Tips to be used
MLP-V10	0.5 - 10	0.1	\pm 5.0 - 1.0	< 5.0 - 1.0	White
MLP-V100	10 - 100	1.0	\pm 2.0 - 1.5	< 1.0 - 0.6	Yellow
MLP-V50	5 - 50	1.0	\pm 2.5 - 1.4	< 1.5 - 0.6	Yellow
MLP-V20	2 - 20	0.1	\pm 4.0 - 2.0	< 2.0 - 0.8	Yellow
MLP-V200	20 - 200	1.0	\pm 2.0 - 1.5	< 0.8 - 0.4	Yellow
MLP-V1000	100 - 1000	10.0	\pm 1.5 - 1.2	< 0.6 - 0.4	Blue
MLP-V5	0.5 - 5 ml	100.0	\pm 5.0 - 0.5	< 0.6 - 0.4	White
MLP-V10	1 - 10 ml	100.0	\pm 1.5 - 0.5	< 0.6 - 0.4	White

INSTRUCTION MANUAL

High Performance Micro Volume Pipettor

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.

All models are equipped with a built-in Tip Ejector. They cover the volume range of 0.5 µl to 1000 µl.

Variable volume pipettes

Volume Range	Increment
0.5-10 µl	0.1 µl
5-50 µl	1.0 µl
50-200 µl	1.0 µl
200-1000 µl	10.0 µl
10-100 µl	0.5 µl
100-1000 µl	10.0 µl
2-20 µl	0.1 µl
20-200 µl	1.0 µl

Fix volume pipettes

Volume
5 µl
10 µl
20 µl
25 µl
50 µl
100 µl
200 µl
250 µl
500 µl
1000 µl

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

Micro Pipette stand

Material	Capacity
Acrylic	4Pipettes
Acrylic	6Pipettes

- 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.

- Before reassembling, use the pipettor recommended to grease the piston slightly using the silicone grease provided.

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

- 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 DIN 12650 standards. It is recommended to check the calibration at least once a year, for regularly used pipette.

Checking calibration

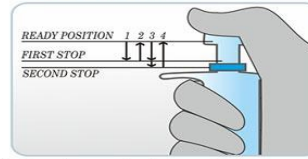
1. Fit new tip onto the tip cone.
2. Pipette distilled water into pre-weighed beaker at least five times & record the weight each time.
3. Compare the results with the permitted variation chart given below. The calibration of the pipette must be set even if only one of the results falls outside the permitted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

Volume	Variation permitted	Volume	Variation permitted
1 µl	+0.80ul	50 µl	± 0.80 µl
2 µl	+1.50ul	100 µl	± 1.50 µl
5 µl	+2.00ul	200 µl	± 2.00 µl
10 µl	+5.00ul	500 µl	± 5.00 µl
20 µl	+10.00ul	1000 µl	± 10.00 µl

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

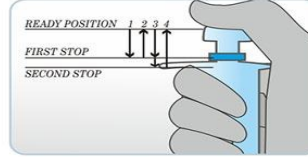
PIPETTE DESCRIPTION

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 1 cm, and slowly release the operation 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



- Press the operating button to the second stop. Dip the tip attached to the pipette into the solution to a depth of about 1cm, and slowly release the operation 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. Dispense the liquid into the tip can be pipetted back into the original solution or disposed together with the tip. Release the operating button to the ready position.
- Note: Reverse pipetting technique is recommended for viscous solutions, solutions having tendency to foam or dispensing very small volumes.

PIPETTING RECOMMENDATIONS

Aspirate liquid into the pipette only when a tip is attached to its tip cone.

While pipetting, the pipettor should be vertically straight and tip should be dipped only a few millimeters into the liquid.

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.

Always control the push button movements with the thumb for consistency.

Allow liquids, tips, and pipettes to equilibrate to the ambient temperature.

Prerinse the tip several times before use when pipetting liquids at temperature different from ambient.

Wipe the tip only if there is liquid on the outside of the tip, being careful to touching tip's orifice.

Don't keep pipette in your hand while not working, to avoid transferring 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).

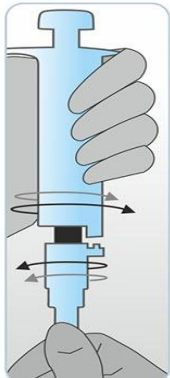
This pipettor has been designed for easy in-house service. However, we also provides complete repair and calibration service. Please return your pipettor to your local distributors for repair or calibration. Before returning, please make sure that it is free from any contamination.

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



Hold down the tip ejector. Place the tooth of the opening tool between the tip ejector and the tip ejector collar to release the locking mechanism.

Carefully release the tip ejector and remove the ejector collar.

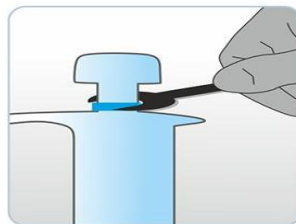
Please the Pull and of the opening tool over the tip cone and turn it anti-clockwise.

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 holes 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
	Tip holder (cone) scratched or damaged	Change the tip cone
Leakage or Pipetted volume too small	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.
	Instrument damaged.	Send for repair.
Tip ejector jammed or moves erratically.	Piston contaminated.	Clean & grease O-ring and piston
	Penetration of solvent vapours.	Remove ejector collar and clean tip cone's outer surface with ethanol.
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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