Operation Manual

ELECTRONIC MICROPIPETTE

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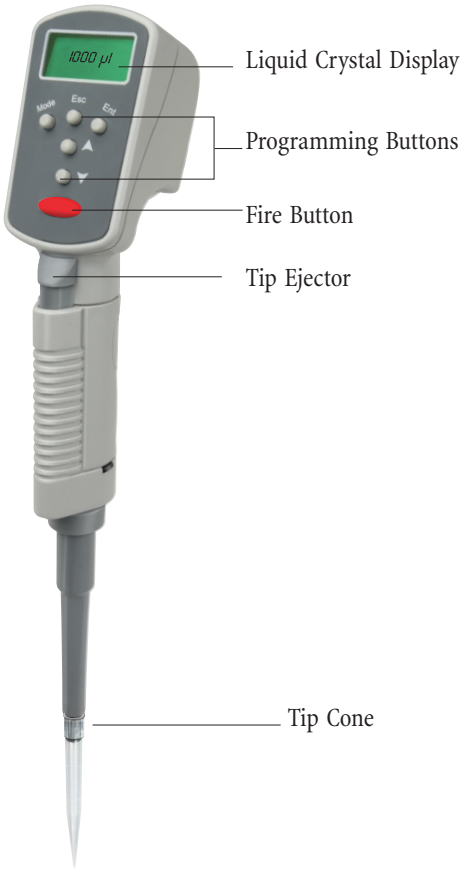


GENERAL DESCRIPTION OF THE PRODUCT

Electronic Micropipettes are Medical and scientific laboratory equipment used for dispensing small quantities of fluids or liquids. It has movable parts made up of steel and plastic and uses detachable tips to hold the samples. Micropipette works on air displacement principle and uses the following formula :

$V = \pi r^2 h$

Where V is the desired volume being used for Pipetting.

These micropipettes are designed for use in Medical, Educational Research, Diagnostics, Clinical Pathology, Blood Banks handling human blood samples.

Ergonomic Aspect : Pipette is designed ergonomically with following features :

- Angled Upper body ensures comfortable grip for stress free long duration continuous working.
- Light weight design to ensure less fatigue during operation.
- Smooth edges to ensure that the gloves do not snag while working.
- Body design ensures proper thumb position on the fire button and tip ejector.
- Large Liquid Crystal Display is provided for ease of visibility during volume setting and operation.

KEY FEATURES

These micropipettes are designed for easy operation and maximum accuracy conforming to ISO 8655 standards.

Available in various volume ranges and sizes to cover the pipetting range from 0.2ml to 10000ml.

Separate, streamlined 'tip ejector' ensures no accidental de-tipping during use.

Calibration Menu is provided for easy user re-calibration.

User friendly software with three modes :

- Standard mode
- Step mode
- Dilution mode

Serviceable and easy to disassemble.

Each pipette is individually calibrated conforming to ISO 8655 standards. A calibration report is provided with each pipette.

The constructional design and the materials used for their manufacture is chosen in such a way that any heat transmitted from the user's hand to the apparatus during period of use or test is in accordance with ISO 8655-6 and can be ignored.

Specifications :

Sl. No.	Model No.	Volume Range
1.	ME-10	0.2 - 10ul
2.	ME-120	5 - 120ul
3.	ME-300	20 - 300ul
4.	ME-1000	50 - 1000ul
5.	ME-5000	100 - 5000ul

Pre-Use Instructions :

Ensure that the box is shrink packed.

Ensure that the volume of the pipette is as per the label outside.

Ensure that the date of manufacturing is not older than five years.

Ensure that the pipette is not damaged physically.

Ensure that the accessories in the box are as per the label outside.

Ensure that the calibration report and instruction manual is present in the box.

GENERAL INSTRUCTIONS FOR OPERATION :

Introduction :

SWITCHING ON THE PIPETTE : There is no ON/OFF switch on the pipette. If the pipette is left idle for more than 2minutes it goes in sleep mode (this saves battery charge). To re-boot the pipette press any key on the keyboard. The pipette displays company name and serial number of the instrument, this disappears in a short while and the pipette comes back to the operation which was being performed before it went in sleep mode. User can now restart work on the originally set parameters.

Incase the parameters need to be changed, the user has three pipetting options as follows :

Standard mode : To set a volume and perform standard fill/dispense operation.

Dilution mode : To fill two liquids in different volumes with air gap in between and dispense all at once.

Stepper mode : To fill large volume initially and dispense in desired number of steps of equal volumes.

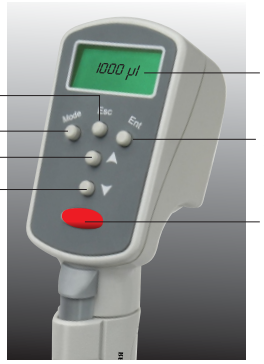
Charging the battery :

1. Simply connect the AC/DC Adapters to a compatible AC outlet and to the pipette. Charging is indicated on display as shown in the picture.

2. If the pipette is new or the battery charge is low, keep the pipette connected to the charging adaptor for 12 hours to fully charge the pipette before use.

3. The pipette can be charged in both working and sleeping modes. The pipette can be used during charging also.

Operation :



Press [Esc] once or twice until the display shows

Press [Ent]

The display will show last operated Mode and volume.

If same settings are to be retained press [Ent] and start working.

If settings are to be changed then

Press [Mode] : display shows

Press [up/down] key to get the desired mode on the display.

Press [Ent]

Case I : Std Mode is selected

Display shows a volume.

Press [up/down] to arrive at desired volume

Press [Ent]

Display shows

Press [Up/Down] to select desired speed from 1-5

(Note : Default recommended speed is 3.)

Press [Ent] to select the speed.

Display will now show the selected mode and volume, if everything is as per settings : Press [Ent] (Otherwise press [Esc] and start again.)

Display will show an upward arrow ▲ indicating that the pipette is ready to fill.

Press [Red fire button] while the tip is dipped in the liquid to fill the liquid.

Liquid will be filled in the tip. As soon as the filling is over display shows a ▼ downward arrow. Pipette is now ready to dispense.

Press [Red Fire button] to dispense the liquid. After dispensing the pipette will again be ready to fill and the operation can be repeated.

Case II : Dilution Mode is selected

Display will show

Press[Up/Down] to select volume of the first liquid

Press [Ent]

Display will show

Press [Up/Down] to select the volume of air gap between the two liquids.

Press [Ent]

Display will show

(Note : Sum of all three volume cannot be more than the volume range of the pipette.)

Press [down] to select volume of the second liquid

Press [Ent] at desired volume

Display will show

Press [Up/Down] to select speed

Press [Ent] at desired speed

Display will confirm the mode and two volumes. If everything is as per your setting

Press [Ent]

Upward arrow ▲ will appear on the display.

Put the tip in the first liquid and

Press [Red Fire button]

First liquid is filled in the tip

Display will show air with an upward arrow ▲

Press [Red Fire button] keeping the tip in air

Air is sucked in the tip

Display shows the second volume with upward arrow. ▲

Put the tip in the second liquid

Press [Red Fire button]

Second liquid is filled in the tip.

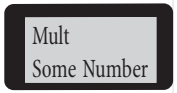
Display shows a downward arrow ▼

Press [Red Fire button] to dispense both liquids together.

The pipette is again ready to repeat the procedure.

Case III : Stepper mode is selected

Display shows



Press [Up/Down] to select the desired number of multiples.

Press [Ent]

Display shows maximum volume each multiple can have according to the range of the pipette

Press [Down] to select the desired volume of each multiples

Press [Ent]

Display will show

Press [Up/Down] to select speed

Press [Ent]

Display will confirm the mode and volume. If everything is as per setting.

Press [Ent]

Upward arrow ▲ will appear on the display. The pipette is now ready to fill the total amount.

Dip the tip in the liquid and

Press [Red fire button].

Liquid will be filled in the tip. As soon as the filling is over we will see **number of multiples X volume** and a downward arrow ▼ on display. The pipette is now ready to dispense in steps.

Press [Red fire button].

First dispensing is done and number of multiples on the display is reduced by 1 Press [Red fire button] again

Until the display shows LDO (last drop out) Discard this liquid by keeping the tip in the original container

Press [Red fire button] to dispence LDO (Last drop out).

Pipette is again ready to repeat the procedure.

Re-Calibration of Pipette

The pipette comes calibrated from the company accompanied with complete calibration report, which includes actual calibration data, % inaccuracy and % CV as per ISO 8655 standards.

However, in the following cases re-calibration by the user is recommended.

1. Since the pipette is calibrated using degassed, double distilled water as per ISO 8655 standards, it is recommended to recalibrate the pipette when working on detergent or foaming liquids, high viscosity liquids like oil etc..
2. In the event of disassembling the pipette for servicing, greasing, o-ring replacement etc.
3. Pipette is calibrated under laboratory conditions at 20-25 C, 50% relative Humidity and Atmospheric pressure 760mmHg. It is recommended to recalibrate the pipette if the working conditions are different from those mentioned above.

Note : Volume variation up to 0.3 % may result due to change in temperature (25^{0}C to 45^{0} C), relative humidity and atmospheric pressure.

Re-Calibration Procedure

Equipments required :

Electronic Balance (Readability : 0.01mg)

Double distilled water

Small container

Procedure

Put the small container on the weighing pan of the electronic balance and tare the balance to 0.00

Press [Esc] until display shows 

Press [Up/Down] to select Menu Cal

Press [Ent] when display shows 

Display will show a pre-set volume with an upward arrow. ▲

The pipette is ready for calibration.

Immerse the tip into the distilled water and

Press [Red fire button].

Water is aspirated in the tip. (The display shows a downward arrow.) Carefully dispense the liquid in the container placed on the tared Electronic Balance . Note the reading on the balance readout.

Feed this reading into the pipette by Pressing [Up/Down] key and Press [Ent]. The pipette is calibrated. 

Display shows

Check the calibration.

If further re-calibration is required

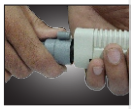
Press [Ent] and repeat the above procedure till you get the same reading on the balance as the preset value on the Pipette display.

To Exit Menu Cal

Press [Up/Down] key to reach Menu Prog and continue working.

In - house Maintenance :

Piston Cleaning and Tip-cone replacement



1) Remove the tip ejector : Gently pull the tip ejector and slide it off.

2) Remove tip cone : Unscrew the tip cone from the main body and gently pull it out to expose the piston.

This metal piston should be cleaned with a soft tissue. Gently mount the tip cone back on the piston and screw to its original position. Slide the tip ejector back and press gently, it will fit on the main housing with a click sound.

Note : Pipette must be re-calibrated after maintenance. Follow the re-calibration procedure.

3) In case the problem still persists the tip cone assembly should be replaced. This is available as a spare part.

ACCURATE PIPETTING

1. Always clean the tip-cone with dry tissue paper before fixing the tip.
2. Ensure that the tip is firmly fitted.
3. The solution and the tip should be at the same temperature.
4. Always reject initial 3/4 dispersing before starting your work.
5. Always keep the pipette upright.
6. Reject the tip if any liquid is sticking on the inner wall of the tip.

Trouble Shooting

Trouble	Possible Cause	battery Solution
Screen blank. (LCD Display)	Pipette is in sleep mode.	Press any button to start.
	Battery charge low.	Charge the battery and start by pressing any button. Note: If the problem still remain contact distributor.
	Tip is not compatible.	Use standard tips.
Low volume filling.	O-ring damage.	Change Tip-cone (follow In-House maintenance.)
	Calibration not proper.	Re-calibarte (follow instruction in calibration procedure.)
Battery not charging while charging sign displayed on the screen.	Battery life is finished.	Change battery. (Contact distributor.)
Battery charging sign not displayed when adaptor is connected to the mains.	Adaptor is loosely connected.	Check connections.
	Adaptor not working properly.	Contact distributor or use any 9V DC adaptor.

SAFETY AND STORAGE INSTRUCTIONS

1. Pipette should not be left on the working platform with tip attached to it. There is a likelihood of the liquid flowing inside the tip-cone.
2. Care must be taken while ejecting the tips. The tips are ejected with a jerk and should be directed towards the waste bin only.
3. The pipette must not come in contact with any organic solvent, flame or direct heat. This may effect the plastic body of the pipette.
4. It is not recommended to use organic solvents or liquids with high vapour pressure with this micropipette. These liquids do not hold in the tips and dripping from the tips may result.
5. Precaution must be taken while working with strong chemicals like acids or alkalies. Use of gloves and eye glass is recommended to avoid accidents while working.
6. This micropipettes has built-in tip ejector and simple adjustments which does not trap the gloves of the user during operation. However, care must be taken to ensure that the gloves are not breached resulting in any accident hazard.
7. This pipette is meant for re-use. Tip cones must be properly cleaned with a filter paper each time the tips are ejected from the tip-cones.
8. Upon request, information regarding the reaction of the materials of the pipette with organic and inorganic solutions and solvents shall be provided by the manufacturer.
9. The pipette must be kept in the box after use.

Warning:

1. Bio contamination is possible. While working on very sensitive applications like tissue culture, clinical chemistry and human blood samples etc.
2. Follow storage instructions carefully.
3. Follow caution messages carefully.
4. The pipette is supplied in non-sterile condition.
5. Tips used with this pipette are meant for single use only. They must not be cleaned for re-use as their metrological characteristics will no longer be reliable.