Micropipette EASY 40+ User Manual

EASY

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User manual

Please read the User Manual carefully before use and follow all operating and safety instructions!

Contents

Introduction

Users must read this manual carefully before using the equipment, and follow the instructions and procedures in order to be aware of all the precautions, as well as in order to obtain the maximum benefits and duration of the equipment.

Service
If help is needed, contact with your supplier/manufacturer or Labbox via: **www.labbox.com**
Please, provide the customer service representative with the following information:

- Serial number (on the back side)
- Description of the problem
- Your contact information

Warranty

This instrument is guaranteed to be free from defects in materials and workmanship under normal use and service, for a period of 36 months from the date of invoice. The warranty is extended only to the original purchaser. It shall not apply to any product or parts which have been damaged on account of an improper installation, improper connections, misuse, accident or abnormal conditions of operation. For claim under the warranty, please contact your supplier.

CALIBRATION

Each pipette has been checked & calibrated at factory with procedure conforming to EN- ISO 8655-6 standards. Depending upon use, we recommend checking of calibration every six months. However this can be adjusted to individual requirements.

1.1 Procedure to check calibration

The pipette is checked at maximum volume, at 50 % of maximum volume and at minimum or 10% of maximum volume, whichever is higher.

- A new tip is first pre-wetted 3-5 times and a series of ten pipetting is done at each volume.
- Use of forward pipetting technique is recommended.
- Calculate the inaccuracy and imprecision for all three volumes as per EN ISO 8655-6/DIN 12650 standards based on the following calculation

1.2 Conversion of weight readings to volume

- Mean Value $\bar{?}$ = $\bar{?}$ · Z
- Mean Value $\bar{?}$= $\frac{\sum Xi}{n}$
- Xi: Balance Reading
- n: Number of Reading
- Z : Conversion factor [example Z=1.0040 µl/mg at 25°c and 1013 hPa]

1.3 Calculation for in-accuracy (Systematic Error)

- A% = $\frac{\bar{V}-Vo}{Vo}$ · 100
- V: Mean Value
- Volume at which readings are taken

1.4 Calculation for Imprecision (Random Error)

- S = $\sqrt{\frac{\sum_{i=1}^{n}(Vi-\bar{V})^2}{n-1}}$
- CV% = $\frac{100 \cdot S}{\bar{V}}$
- S: Standard Deviation
- $\bar{?}$: Mean Value
- n: Number of readings

1.5 Devise requirements and test conditions

An analytical balance must be used. The balance selection depends upon selected model of the pipette and sensitivity of balance reading.
Test liquid: Water, distilled or deionized, grade 3 water conforming ISO3696.
Calibration should be carried out in a draft- free room at a constant (+/- 0. 5 °C) temperature of water, pipette and air between 15°C to 30°C. The relative humidity must be above 50% especially with volumes under 50 µl, the air humidly should be as high as possible to reduce the effect of evaporation loss.
Special accessories for analytical balance, such as the evaporation trap are recommended for the calibration of volumes under 50 µl.

1.6 Recalibration

1. Place the service tool intro 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.

Fig 1: Recalibration procedure

Storage

When not in use, it is recommended that your pipettor is stored in a vertical position.
Leaving the pipette on it's side can cause liquids to leak into the body of the pipette and cause corrosion.

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.

3.1 Pipettes Table Comparison

Reference	Volume Range (µl)	Increment (µl)	Accuracy (±) %	Precision (±) %
EASD-P02-001	0,1-2,5	0,01	±12,0% – 2,5%	±6,0% – 1,6%
EASD-P10-001	0,5-10	0,1	±2,5% – 1,0%	±1,5% – 0,8%
EASD-P20-001	2-20	0,1	±2,0% – 1,8%	±2,0% – 0,4%
EASD-P50-001	5-50	0,5	±3,0% – 0,9%	±2,0% – 0,3%
EASD-10P-001	10-100	0,5	±3,0% – 0,8%	±1,5% – 0,15%
EASD-20P-001	20-200	1,0	±2,0% – 0,6%	±0,8% – 0,15%
EASD-1KP-001	100-1000	5,0	±2,0% – 0,6%	±0,7% – 0,2%
EASD-5KP-001	500-5000	50,0	±2,0% – 0,5%	±0,6% – 0,2%
EASD-10K-001	1000-10000	100,0	±3,0% – 0,6%	±0,6% – 0,2%

3.2 Intended Use

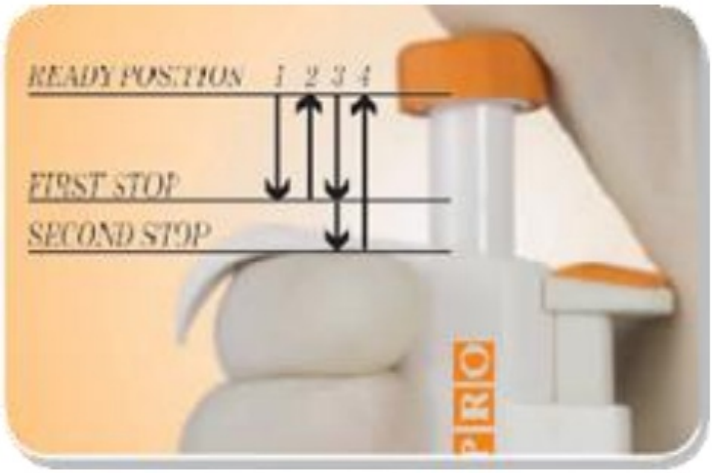
These Pipette are designed and constructed for accurate and precise liquid handling. These devices are intended

to dispense liquid in the volume range from 0.1uL to 10mL in combination with matching pipette tips.
These pipettes may only be operated by trained specialist staff for general laboratory purposes. All users must have read the operating manual carefully and familiarized themselves with the device mode of operation.

Pipetting Technique

A. Forward Pipetting

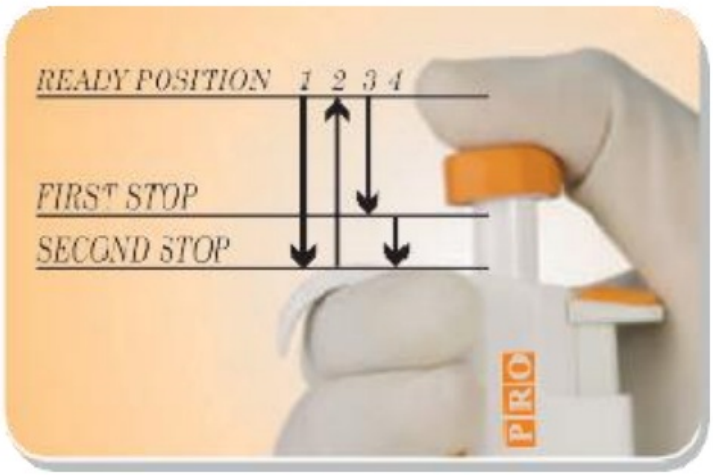
1. Press the operating button to the First stop.
2. Dip the tip attached to the pipette into the solution to a depth of about 1cm, and slowly release the operating button. Wait for a while, then withdraw it from the liquid touching it against the edge of the reservoir to remove excess liquid adhering 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 fromthe vessel by 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. Disperse 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 the pipette in your hand while not working, to avoid transferring to body heat.
  Use the correct pipette tip designed for use with the 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.

6.1 Cleaning the pipette

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

6.2 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 anticlockwise.
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 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.

Troubleshooting

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
	Foreign particles between tip and tip cone	Clean the tip cone
	Insufficient amount of grease on piston & O-ring	Clean & grease O-ring and piston
	O-ring not correctly positioned or damaged	Change the O-ring
Inaccuracies	Incorrect operation	Follow instructions carefully
	Calibration altered	Recalibrate according to instructions
	Unsuitable for the particular liquid pipetting technique	Use correct pipetting technique
	Instrument damaged	Send to repair
Push button jammed or moves erratically	Piston contaminated	Clean & Grease O-ring and piston
	Penetration of solvent vapors	
Tip ejector jammed or moves erratically	Tip cone contaminated from outside	Remove ejector collar and clean tip cone’s outer surface with ethanol
Volume setting is not properly click stopped	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

Documents / Resources

	EASY Micropipette EASY 40+ [pdf] User Manual EASY 40, Micropipette EASY 40, Micropipette, EASY 40

References

- Material de laboratorio - Grupo Labbox - Grupo Labbox
- User Manual