Size: 258 x 250mm/ Matt Art Paper/ 170 GSM/ CMYK Color/ No Lamination/ Front - Back Side Print

AUTOCLAVING

This entire pipette can be autoclaved (Sterilized) by steam 121°C for 20 minutes at 1 atm pressure.

After the autoclaving, let the pipette cool down and dry 6 hours before use.

Verify calibration after autoclaving cycle.

Perform cleaning & lubrication of internal parts at regular interval to keep smooth pipetting operation.

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.

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 on the basis of the following calculation

Conversion of weight readings to volume

Mean Value $\overline{V} = \overline{X} \cdot Z$

Mean Value $\overline{X} = \frac{\sum Xi}{n}$

Xi = Balance Reading

n = Number of Reading

Z = Conversion factor
[example Z=1.0040 µl/mg at 25°c and 1013 hPa]

Calculation for in-accuracy (Systematic Error)

$A\% = \frac{\overline{V} - Vo}{Vo} \cdot 100$

V = Mean Value

Vo = Particular volume at which readings are taken

Calculation for Imprecision (Random Error)

$S = \sqrt{\frac{\sum_{i=1}^{n} (Vi - \overline{V})^2}{n - 1}}$

S = Standard Deviation

$\overline{V}$ = Mean Value

$CV\% = \frac{100 \cdot S}{\overline{V}}$

n = Number of Readings

- Compare the results to the limits with tables mentioned in Pipette description section.

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.

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	User 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 vapours	
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

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ACCUMAX LAB DEVICES PVT. LTD.
Plot No 16, GIDC Electronic Park SEZ,
Kolavada Road, Gandhinagar-382026,
Gujarat, India.

www.accumaximum.com

INSTRUCTION MANUAL

Accumax

TRULY AUTOCLAVABLE
Micro Volume Pipettor



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 µl to 10000 µl.

Variable Volume Pipettes

CAT NO.	Volume Range (µl)	Increment (µl)	Test Volume (µl)	Inaccuracy (±)%	Impre-cision (±)%
AV-100	0.5-10 µl	0.1	1	2.5	1.5
			5	2	1
			10	1	0.8
AV-125	0.1-2.5 µl	0.01	0.25	12	6
			1.25	3	3
			2.5	2.5	1.6
AV-200	5-50 µl	0.5	5	2	2
			25	0.8	0.4
			50	0.6	0.3
AV-300	50-200 µl	1	50	1	0.4
			100	0.8	0.2
			200	0.6	0.15
AV-400	200-1000 µl	5	200	0.9	0.3
			500	0.75	0.25
			1000	0.6	0.2
AV-500	10-100 µl	0.5	10	3	1.5
			50	1	0.5
			100	0.8	0.15
AV-600	100-1000 µl	5	100	2	0.7
			500	1	0.4
			1000	0.6	0.2
AV-700	2-20 µl	0.1	2	3	2
			10	1.5	1
			20	0.9	0.4
AV-800	20-200 µl	1	20	2	0.8
			100	0.7	0.3
			200	0.6	0.15
AV-900	1000-5000 µl	50	1000	0.8	0.3
			2500	0.6	0.2
			5000	0.5	0.15
AV-905	500-5000 µl	50	500	2	0.6
			2500	0.6	0.3
			5000	0.5	0.15
AV-1000	1000-10000 µl	100	1000	3	0.6
			5000	1.2	0.3
			10000	0.6	0.2
AV-1005	500-10000 µl	100	1000	3	0.6
			5000	1.2	0.3
			10000	0.6	0.2

Fix Volume Pipettes

CAT NO.	Volume Range (µl)	Test Volume (µl)	Inaccuracy (±)%	Impre-cision (±)%
AF-2.5	2.5 µl	2.5	2	1.6
AF-0005	5 µl	5	1.3	1.2
AF-0010	10 µl	10	0.8	0.8
AF-0020	20 µl	20	0.6	0.5
AF-0025	25 µl	25	0.5	0.3
AF-0050	50 µl	50	0.5	0.3
AF-0100	100 µl	100	0.5	0.3
AF-0200	200 µl	200	0.4	0.2
AF-0250	250 µl	250	0.4	0.2
AF-0500	500 µl	500	0.3	0.2
AF-1000	1000 µl	1000	0.3	0.2
AF-2000	2000 µl	2000	0.3	0.15
AF-5000	5000 µl	5000	0.3	0.15
AF-10000	10000 µl	10000	0.6	0.2

Multi Channel Pipettes

CAT NO.	Volume Range (µl)	Increment (µl)	Test Volume (µl)	Inaccuracy (±)%	Imprec-ision (±)%
AM8-010 AM12-010	0.5-10 µl	0.1	10	1.5	1.5
			5	2.5	2.5
			1	4	4
AM8-050 AM12-050	5-50 µl	0.5	50	1	0.7
			25	1.5	1
			5	3	2
AM8-100 AM12-100	10-100 µl	1	100	1	0.5
			50	1	0.5
			10	1.5	0.75
AM8-200 AM12-200	20-200 µl	1	200	0.7	0.25
			100	1	0.4
			20	1.5	0.75
AM8-300 AM12-300	30-300 µl	1	300	0.8	0.25
			150	1	0.5
			30	1.5	0.75

*Pipette volume 500-10000 µl, 1000-10000 µl & 10000 µl have manual tip ejection

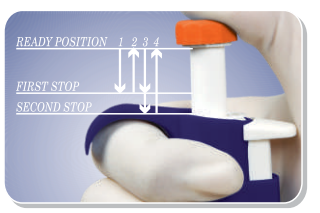
Intended Use

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 pipette may only operated by trained specialist staff for general laboratory purposes. All users must have read the operating manual carefully and familiarized themselves with the devices mode of operation.

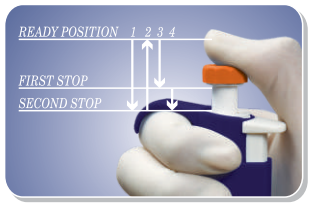
PIPETTING TECHNIQUE

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 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. 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 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.
5. After removing the tip cone, wipe the piston, the O-ring and the tip cone with ethnol 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.