

- Before replacing tip cone it is recommended to grease the piston slightly using the silicone grease provided.
- After reassembling, use the pipette (without liquid) several times to make sure that the grease is spread evenly.
- Check the pipette calibration.

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

Calibration

Each VERTEX pipette has been checked & calibrated at factory with procedure conforming to DIN 12650 standards. It is recommended to check the calibration atleast once a year, for regularly used pipette.

Checking calibration

- Set the desired testing volume of your pipette.
- Carefully fit tip on to the tip cone.
- Pipette distilled water in to a pre-weighed beaker atleast five times & record the weight each time.
- 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	100 µl	± 1.50 µl
2 µl	± 0.20 µl	200 µl	± 2.00 µl
5 µl	± 0.30 µl	500 µl	± 5.00 µl
10 µl	± 0.30 µl	1000 µl	± 10.00 µl
20 µl	± 0.40 µl	5000 µl	± 50.00 µl
50 µl	± 0.80 µl	10000 µl	± 100.00 µl

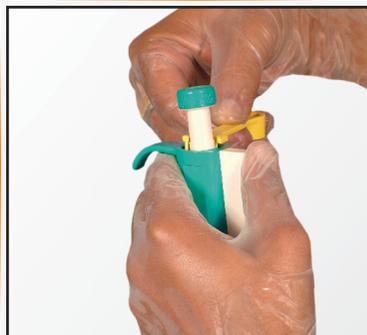
For user in a normal lab environment, the limits may be doubled.

Important Notes

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

Recalibration

- Place the service tool in to the holes at the base of the thumb button as shown below. Turn it clockwise to increase & anticlockwise to decrease the volume.
- Repeat the checking calibration procedure.



Storage

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

leaving a pipette on its side can cause liquids to leak in to the body of the pipette and cause corrosion.

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Trouble Shooting

Trouble	Possible Reason	Correction
Droplets left inside the tip.	Unsuitable tip. Non-Uniform wetting of the plastic.	Use new better Quality 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.	Attached firmly.
	Unsuitable tip.	Use better quality tip.
	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.
Inaccuracies	O-ring not correctly positioned or damaged.	Change the O-ring.
	Incorrect operation.	Follow instruction carefully.
	Calibration altered.	Recalibrate according to instruction.
	Unsuitable for the particular liquid pipetting technique.	Use correct pipetting technique.
Push button jammed or move erratically	Instrument damaged.	Send for repair.
	Piston contaminated. Penetration of solvent vapours.	Clean & grease O-ring and piston.
Tip Ejector jammed or move 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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Instruction Manual



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Pipetting Technique

The VERTEX PIPETTES are fixed or variable, general purpose micropipettes for sampling and dispensing precise amounts of liquid in micro volumes. VERTEX pipettes operate on the air displacement principle and use disposable tips.

All models are equipped with a built-in Tip Ejector.

VERTEX Digital Pipettes cover the volume range of 0.5 µl to 10000 µl.

Cat No.	Volume Range	Increment
600440	0.5 - 10 µl	0.1 µl
600460	2 - 20 µl	0.1 µl
600480	5 - 40 µl	1 µl
600500	5 - 50 µl	1 µl
600520	10 - 100 µl	1 µl
600540	20 - 200 µl	1 µl
600560	40 - 200 µl	1 µl
600580	50 - 200 µl	1 µl
600600	200 - 1000 µl	10 µl
600620	100 - 1000 µl	10 µl
600640	1 - 5ml	100 µl
600660	2 - 10ml	100 µl

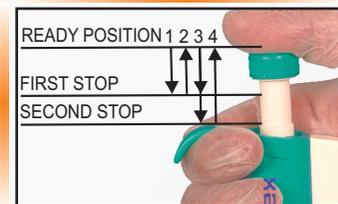
VERTEX Variable volume pipettes

Cat No.	Volume Range
600680	1 µl
600700	2.5 µl
600720	5 µl
600740	10 µl
600760	20 µl
600780	25 µl
600800	50 µl
600820	100 µl
600840	200 µl
600860	250 µl
600880	500 µl
600900	1000 µl
600920	2000 µl
600940	3000 µl
600960	5000 µl
600980	10000 µl

VERTEX Fix volume pipettes

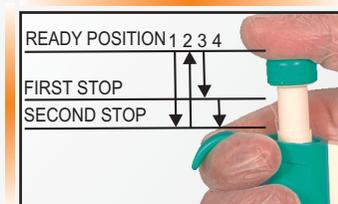
Pipetting Technique

A. Forward Pipetting



- Press the operating button to the first Stop.
- Dip the tip attached to the pipette into the solution to a depth of about 1 cm, 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 Outer surface of the tip.
- 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 tip from the vessel sliding it up the wall of the vessel.
- 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 1 cm, 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.
- 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.
- The liquid remaining in 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, solution having tendency to foam or dispensing very small volumes.

Unpackaging

- ✓ Pipettor
- ✓ Tip
- ✓ Instruction Manual
- ✓ Calibration Report
- ✓ Warranty Card

Pipetting Recommendations

- Aspirate liquid into the pipette only when a tip is attached to its cone.
- While pipetting, the pipette 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 to ensure consistency.
- Allow liquids, Tips and pipettes to equilibrate to the ambient temperature.
- Wipe the tip only if there is liquid on the outside of the tip, being careful to avoid 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.

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Maintenance

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

VERTEX pipette has been designed for easy in-house service. However, VERTEX also provides complete repair and calibration service. Please return your pipette to your local distributor for repair or calibration. Before returning please make sure that it is free from all contamination.

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

Cleaning Your Pipette

To clean your pipette use ethanol and 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.

Place the wrench end of the opening tool over the tip cone and turn it anticlockwise.

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 located

