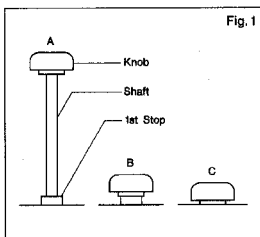


MODEL 5100 ULTRA MACRO PIPETTE OPERATING MANUAL

OPERATION

1. Mount a tip firmly on the tip holder, and attach a tip-nozzle on the tip.
2. Depress a knob to the 1st stop, position B in Fig. 1.
3. Dip a tip-nozzle to the liquid, keeping the pipette held vertically, and release the knob slowly. The liquid is drawn into the tip.
4. Hold the pipette as it is for 2 to 3 seconds after the knob returns to the original position.
5. Touch the tip-nozzle to the inside wall of the receptacle, and depress the knob to the 2nd stop, position C in Fig. 1.
6. Release the knob.



DISMANTLING AND REASSEMBLING

1. Turn the cylinder cover counter-clockwise and remove it from the body. Pay attention to the 1st spring not to come out the body.
2. Take 1st spring retainer, 1st spring and plunger out of the body.

Note: Do not dismantle this part unless it is necessary when the plunger and cylinder become wet by accidental drawing of the liquid into the cylinder.

3. Follow the reverse procedures of the above for re-assembling.

VOLUME CHANGEMENT

1. Hold a shaft by one hand, and turn the knob counter-clockwise by other hand. Remove the knob from the shaft.
2. Slip the desired volume spacer over the shaft and return the knob to the shaft.

IMPORTANT NOTICE

**The pipette has an air-nozzle attached to the tip holder to prevent the liquid enter into the cylinder. However, if the liquid enter to the cylinder accidentally, movement of the plunger may become unsmooth. In this case, dismantle the plunger and cylinder and wipe the surface with a dry cloth.

**Do not remove the tip holder from the cylinder.

**The pipette is to be held vertically during operation. If the pipette is tilted, it may affect to the accuracy. It may also be cause of drop of the liquid from a tip if the pipette is shaken or handled roughly after drawing the liquid into the tip.

**The pipette is calibrated at our factory. However, the accuracy of the pipette may be affected by the liquid to be transferred. The pipette can be recalibrated in this case by the following procedures.

- 1) Three yellow dots on the cap, recalibration nut and body are aligned in which position the pipette is calibrated for use of most liquids.
- 2) If the pipette can draw the smaller volume than preset volume, loosen the cap by turning it counter-clockwise until the pipette delivers correct amount. Then fix the position of the cap by turning the recalibration nut counter-clockwise and tighten it against the cap.
- 3) If the pipette delivers too large amount, loosen the cap slightly and turn the recalibration nut clockwise. Turn the cap clockwise and tighten it against the recalibration nut. Repeat this procedures until the stroke of the plunger is corrected to deliver the preset volume.

SPECIFICATIONS

Cat.No.	Volume Setting (ml)
5100S	15.0 / 20.0 / 25.0
5100L	30.0 / 40.0 / 50.0

Accuracy : $< \pm 0.3\%$

Reproducibility : $< \pm 0.3\%$

