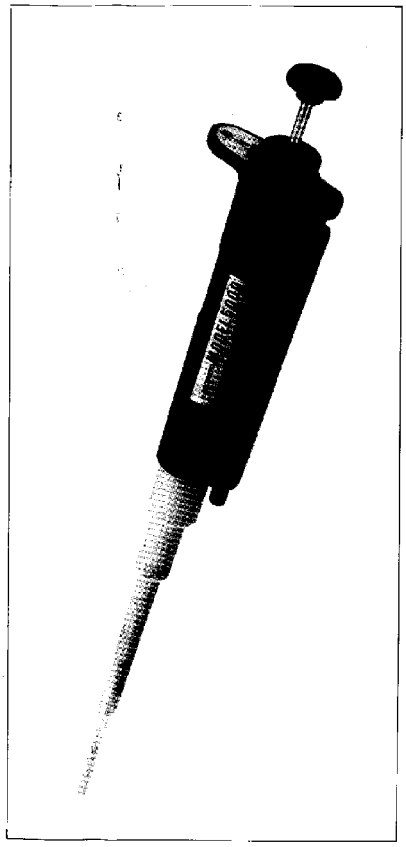
NICHIRYO

MODEL 5000DG

DIGITAL MICRO PIPETTE



FEATURES

Thumb Plunger – Smooth, effortless movement of the plunger reduces operator fatigue.

Locking Mechanism – Convenient, easy to use locking mechanism ensures that the selected volume remains securely fixed and will not change during operation.

Tip Ejector Knob – Built in tip ejector for the safe disposal of used tips. Knob location eliminates the possiblity of accidental tip ejection.

Digital Display – Pre-set volume is confirmed by the convenient digital volume indicator.

Body Design – Lightweight, slender design reduces operator fatigue. Thermal insulation prevents body heat from contributing to measurement error during prolonged handling.

Seal Ring – Teflon® Seal and Rubber-O-Ring eliminate the need for routine maintenance and lubrication.

Tip Ejector Pipe – Non-Metallic Tip Ejector Body permits easy access to the bottom of commonly used test tubes.

Cylinder – Designed to minimize dead air space for increased pipette accuracy.

SPECIFICATIONS/ORDERING INFORMATION

Cat. No.	Volume Range	Adjustable Increments	Accuracy	Reproducibility
50DG-10	0.5µℓ ~ 10µℓ	0.01µℓ	±5.0 ~ ±1.0%	<3.0 ~ <0.5%
50DG-50	10µℓ ~ 50µℓ	0.1 µℓ	±1.5 ~ ±0.7%	<0.6 ~ <0.3%
50DG-200	40µℓ ~ 200µℓ	1.0 µℓ	±1.0 ~ ±0.7%	<0.5 ~ <0.3%
50DG-1000	200µℓ ~ 1000µℓ	1.0 µℓ	±0.8 ~ ±0.3%	<0.3 ~ <0.2%
50DG-5000	1000µℓ ~ 5000µℓ	10.0 µℓ	±0.8 ~ ±0.6%	<0.3 ~ <0.2%

VOLUME ADJUSTMENT

To select the desired volume, loosen the lock nut mechanism by turning it counter-clockwise. To reduce the volume turn the thumb knob clockwise. Turning the thumb knob counter-clockwise will increase the volume. (Fig. 1) Set the desired volume on the digital display to correspond to the arrow mark molded on the base of the window frame. The selected volume is fixed by turning the lock nut clockwise and can be confirmed on the digital display as in the following examples:

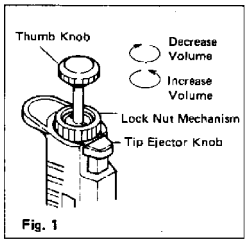
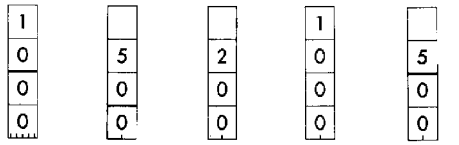


Fig. 1



OPERATING INSTRUCTIONS

1. Attach a clean tip firmly to the instrument.
2. Before entry into the sample solution, depress the thumb knob to the "First Stop".
3. Now immerse the tip approximately 3mm into the sample solution. (Step 1, Fig. 2)
4. Smoothly return the plunger knob to the release position allowing sample to enter tip. (Step 2) Do not allow the knob to "snap" back to release position.
5. Withdraw the tip from the sample solution. Do not wipe the tip.
6. Place tip against the side wall of receiving vessel. (Step 3)
7. Smoothly depress the plunger knob to the first stop (Step 4), pause; then depress the knob to the second stop. (Step 5)
   NOTE: When dispensing serum and other viscous fluids, it is necessary to pause about two seconds before moving to the secondary stop.
8. With the knob still held in its lowest position, slowly withdraw the tip while sliding it against the wall of the receiving vessel.

9. Return the knob to the release position. Do not allow the knob to "snap" back.
10. Remove the disposable tip by firmly depressing the tip ejector knob. (Step 6)

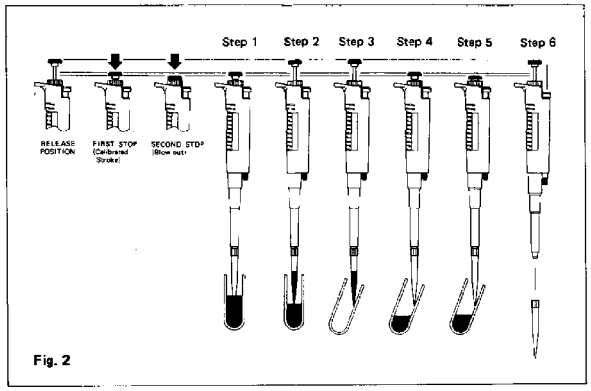


Fig. 2

AIDS TO REPRODUCIBILITY AND ACCURACY

Listed below are some techniques found to improve sampling precision. READ THIS SECTION CAREFULLY.

1. Try to effect the same speed for both the intake and delivery of all samples. Smooth depression and release of the plunger knob will give the most consistant result. Never allow the plunger to "snap" back. Consistency of technique is a key to precision.
2. Always depress the plunger knob to the proper stop before insertion of the tip into the solution. Depression of the plunger knob after insertion may cause the formation of an air bubble in the tip and result in a filling error.
3. Try to insert the tip to approximately the same depth in the sample each time, never going deeper than 3mm. Hold the instrument as vertically as possible (10° maximum from vertical).
4. When sampling hot or cold material, the tip's temperature should be equalized to that of the solution to prevent contraction or expansion of sample.

SERVICE AND MAINTENANCE INFORMATION

It is recommended that the following servicing procedures be performed at regular intervals. Heavy usage or usage with corrosive fluids will require more frequent servicing.

Disassembly (Reference Figure 3 & 4)

1. Turn the screw securing the tip ejector pipe counter clockwise to remove. Gently pull the tip ejector pipe off the end of the instrument. Do not twist the tip ejector pipe during this procedure.

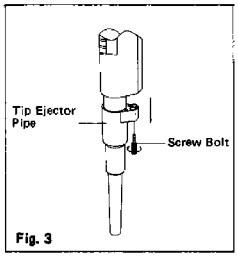


Fig. 3

2. Unscrew the barrel assembly from the handle and carefully pull directly away from the handle. The plunger assembly and spring can be removed from the pipette. Refer to Figure 5 for the internal configuration of the specific size MODEL 5000 being serviced. Take special care not to bend the piston rod, especially in the smaller volume units.

3. Replace the O-ring.

4. Reassemble the unit by reversing the above procedures. Refer to Figure 5 when reassembling to ensure that all parts are placed in the correct position.

5. To reassemble the tip ejector pipe gently push on the tip ejector pipe so that the pipe mates with the handle connection. Turn the screw clockwise to secure.

6. After the above maintenance procedure, should the feeling of a smooth piston stroke seem different than prior to the servicing, immediately disassemble the pipette as in the above procedure and reassemble per the schematics in Figures 4 and 5.

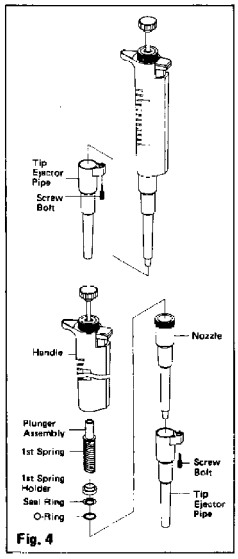


Fig. 4

7. After the above maintenance procedure, should the tip ejector knob stroke seem different and lack the smoothness of its normal stroke, immediately disassemble the tip ejector portion of the pipette and reassemble ensuring the spring and spring holder are installed properly.

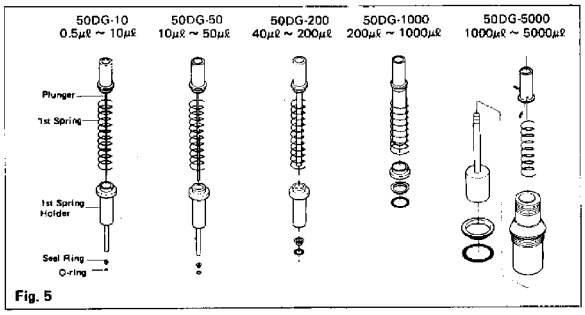


Fig. 5

SPECIAL INSTRUCTIONS FOR THE MODEL 5000 1-5ML PIPETTE (50DG-5000)

1. To disconnect the tip ejector pipe remove three (3) stainless steel screws by turning counter clockwise. Gently pull the tip ejector pipe off the end of the instrument. Do not twist the tip ejector pipe during this procedure.

2. Remove the plunger and nozzle assembly from the pipette handle by turning it counter-clockwise.

3. Unscrew the nozzle from the plunger and nozzle assembly, the seal ring and O-ring may remain inside of the nozzle. Remove the seal ring and O-ring from the nozzle. (Fig. 7)

4. Remove the plunger holder from the plunger by loosening two screws on the plunger holder. The 1st spring and the plunger assembly will come out from the plunger and barrel assembly. (Fig. 5)

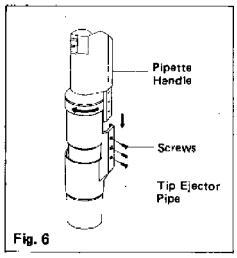


Fig. 6

5. Reassemble in accordance with the following procedure. Insert the Handle and Nozzle Connector Assembly into the handle of the pipette and turn clockwise to secure. Gently push on the tip ejector pipe so that the connecting arm engages with the bottom protruding portion of the tip ejector knob. Secure with the three stainless steel screws.

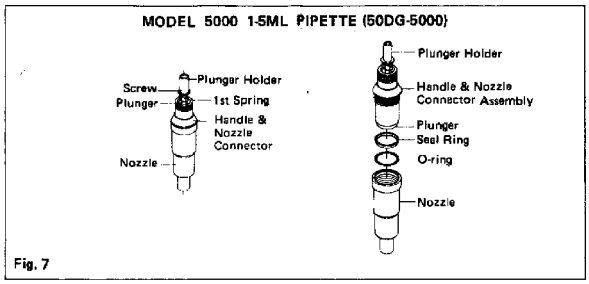


Fig. 7

RECALIBRATION PROCEDURE

1. Set MODEL 5000 Pipette to the maximum specified volume.

2. Depress the tip ejector knob fully.

3. Loosen the lock nut mechanism by turning it counter clockwise and stop when the oval opening on the lock nut faces the tip ejector knob. (Fig. 8)

4. There are two hex head screws, one on each side of the mechanism. Turn the thumb knob so that the hex head screws can be seen through the oval opening.

5. Loosen the two hex screws with a hex head wrench (1.5 mm) by turning them counter-clockwise two turns. (Fig. 9)

6. Keeping the hex head wrench inserted in one hex head screw, turn the thumb knob to calibrate the pipette. (Fig. 9)

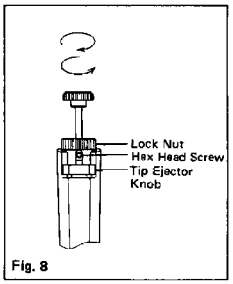


Fig. 8

7. A 360 degree clockwise turn of the thumb knob increases the volume by approximately 4% of the specified maximum volume, +0.4ul for the MODEL 5000 5 - 10ul, +2.0ul for the MODEL 5000 10 - 50ul, +8.0ul for the MODEL 5000 40 - 200ul, 40.0ul for the MODEL 5000 200 - 1000ul and 200ul for the MODEL 5000 1000 - 5000ul.

   A 360 degree counter-clockwise turn of the thumb knob reduces the volume by approximately 4% of the specified maximum volume.

8. Tighten the hex head screws after adjusting the thumb knob and measure the accuracy of the pipette.

9. Repeat the above procedures until the pipette is calibrated within the specified accuracy. An accuracy test should be made at the specified minimum and maximum volume of each MODEL 5000.

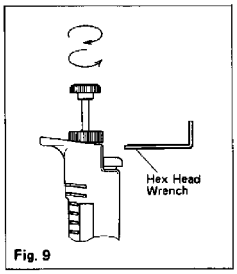


Fig. 9

ORDERING INFORMATION

Pipette

Cat. No.	Volume Range	Accessories
50DG-10	0.5 ~ 10μℓ	Three appropriate tips
50DG-50	10 ~ 50μℓ	Three appropriate tips
50DG-200	40 ~ 200μℓ	Three appropriate tips
50DG-1000	200 ~ 1000μℓ	Three appropriate tips
50DG-5000	1000 ~ 5000μℓ	One appropriate tip

Tip

Cat. No.	Capacity	Color	Q'ty/bag (or box)
50T-SS	0.5 ~ 10μℓ	clear	1000
50T-S	10 ~ 200μℓ	yellow	1000
50T-L	200 ~ 1000μℓ	blue	1000
MPT-5	1000 ~ 5000μℓ	green	200

(Only 50T-SS is supplied with a carton box. All others are supplied with a poly-bag.)

Racked Tip

Cat. No.	Capacity	Color	Q'ty/rack
50T-SSR	0.5 ~ 10μℓ	clear	100
50T-SR	10 ~ 200μℓ	yellow	96
50T-LR	200 ~ 1000μℓ	blue	100

Stand

Cat. No.	Description
5000S	Five Model 5000 series pipettes can be stored, excluding the 50DG-5000.
5000S2	Two Model 5000DG-5000 pipettes can be stored.

Fixed Volume Models and Triple Volume Models are also available.

Model 5000F
Fixed Volume Pipette

Cat. No.	Standard Volume
50F-5 to 50F-1000	5, 10, 20, 25, 50, 100, 200, 250, 300, 500 & 1000μℓ

Special volumes are available to order.

Model 5000V
Triple Volume Pipette

Cat. No.	Volume Settings
50V-S	10/20/50μℓ
50V-M	50/100/200μℓ
50V-L	200/500/1000μℓ

For repair, service or information you may contact your local distributor.

MANUFACTURER: ⓝ NICHIRYO CO., LTD.

10C.4-96(O)