

NICHIRYO

JUSTOR 1100DG

DIGITAL PIPEPTE



FEATURES

- Excellent accuracy and reproducibility.
- Light plunger action and slender design makes the pipette easy to handle and reduces fatigue when operated continuously.
- Built-in tip ejector mechanism avoids handling the tip after use. (1100DG-5000 does not have a built-in tip ejector.)
- Four different volume range models facilitate sampling the liquid of any volume from 2 μ l to 5000 μ l.
- Volume change is simply achieved by turning the plunger knob, and the selected volume is fixed by a click-stop mechanism.

SPECIFICATIONS

Cat. No.	Volume Range	Increments	Accuracy Better than	Reproducibility Better than
1100DG-10	2 ~ 10 μ l	0.01 μ l	$\pm 5.0\% \sim \pm 1.0\%$	$\pm 3.0\% \sim \pm 0.6\%$
1100DG-100	10 ~ 100 μ l	0.1 μ l	$\pm 1.5\% \sim \pm 0.8\%$	$\pm 1.0\% \sim \pm 0.3\%$
1100DG-1000	100 ~ 1000 μ l	1.0 μ l	$\pm 1.0\% \sim \pm 0.5\%$	$\pm 0.5\% \sim \pm 0.2\%$
1100DG-5000	1000 ~ 5000 μ l	10.0 μ l	$\pm 1.0\% \sim \pm 0.8\%$	$\pm 0.4\% \sim \pm 0.3\%$

OPERATION

1. Select the desired volume. To reduce the volume, turn the plunger knob counter-clockwise. Turning the plunger knob clockwise increases the volume. (Fig.1) Set the desired volume on the volume counter to correspond to the line moulded on the base of the window frame. The selected volume is fixed by a "click-stop" mechanism and can be read on the digital counter as in the following examples.

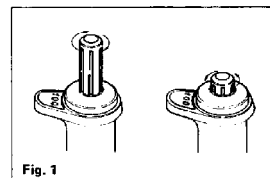
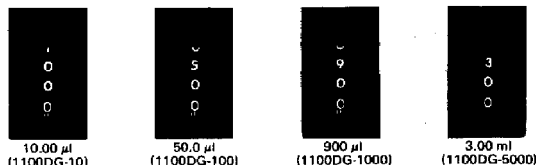


Fig. 1



- 1 -

2. Before operation, the plunger knob should be depressed several times to ensure smooth movement of the plunger.
3. Place a disposable tip firmly onto the end of the pipette. Depress the plunger knob to the first stop. Dip the tip into the liquid to a depth of 3 to 4 mm. (Step 1, Fig. 2)
4. Smoothly return the plunger knob to its original position. The liquid will be then drawn into the tip. (Step 2)
5. Touch the tip against the inside wall of the receiving vessel. (Step 3)
6. Depress the plunger knob again to the first stop to expel most of the liquid. Wait one second with the plunger knob held in this position. (Step 4)
7. Depress the plunger knob until it will go no further. This forces out the last remaining liquid from the tip. Keep the plunger knob fully depressed until the tip is removed from the receiving vessel. (Step 5)
8. Remove the used tip from the pipette by depressing the tip ejector knob. (Step 6)

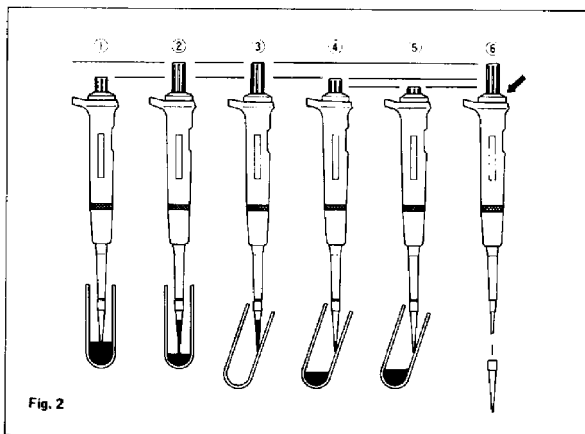


Fig. 2

SERVICE AND MAINTENANCE

The pipette should be dismantled at regular intervals and the plunger (1100DG-10, 100 and 1000) or the piston (1100DG-5000) lubricated with a small amount of the silicone grease provided. The pipette should also be lubricated after dispensing corrosive liquid or if the plunger or the piston does not operate smoothly. Clean the O-ring and the plunger (1100DG-10, 100 and 1000) or the piston and inside wall of the glass cylinder (1100DG-5000) before lubricating. After lubrication wipe off the excess lubricant with a tissue.

If the liquid is accidentally drawn into the instrument, all of the contaminated surface should be cleaned with detergent, and, after rinsing with distilled water, it should be lubricated before the pipette is reassembled.

Any deposits inside the nozzle cone (it is the cylinder as well for 1100DG-10 and 100), the nozzle insert, or the cylinder, should be removed with the cleaning wire provided by completely disassembling the nozzle cone, nozzle, nozzle insert and cylinder.

DISMANTLING AND REASSEMBLING

1100DG-10, 100 and 1000

A. Barrel Portion (Fig. 3)

1. Holding the upper housing in one hand and the tip ejector with the other hand, unscrew the pipette housing from the cylinder, taking care not to bend the ejector pins. The pipette should be held horizontally so that the mechanical parts do not fall out of the upper housing.
2. Remove the second spring holder, second spring and second spring retainer from the plunger. The O-ring (1100DG-1000) can be removed from the cylinder by using the cleaning wire provided.
3. If the mechanical parts come out of the upper housing, replace them in accordance with Fig. 3. Make sure that the ejector pins do not touch the second spring.

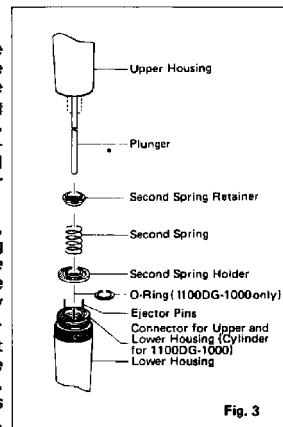


Fig. 3

B. Nozzle Portion (Fig. 4)

1. Hold the pipette housing in one hand and the lower housing with the other hand. Unscrew the lower housing from the connector for upper and lower housing (it is the cylinder as well for 1100DG-1000).

2. Slip the tip ejector, the tip ejector spring and the ejector pins with holder off the pipette.

3. Unscrew the nozzle cone from the nozzle and the nozzle from the connector for upper and lower housing. To remove the nozzle insert from the connector for upper and lower housing, the nozzle insert is gently pulled and turned counter-clockwise, taking care not to damage the O-ring of the nozzle insert with the threads of the connector for upper and lower housing.

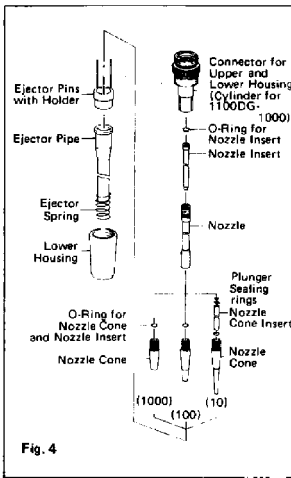


Fig. 4

4. The nozzle cone of 1100DG-100 and 1000 has one O-ring for sealing the nozzle cone and the nozzle insert. The nozzle cone of 1100DG-10 has one O-ring for sealing the nozzle cone and the nozzle insert and two smaller sealing rings for the plunger and the cylinder.

5. When reassembling, reverse procedures are followed. Pay attention not to bend the plunger when assembling 1100DG-10 and 100.

1100DG-5000

A. Cylinder (Fig. 5)

1. Hold the lower housing in one hand and the connector for upper and lower housing by the other hand, unscrew the lower housing from the connector.

2. Holding the plunger knob in one hand gently pull the glass cylinder off the piston.

3. Remove the tip holder from the glass cylinder by turning it counter-clockwise and pulling it.

4. Remove two O-rings on the tip holder.

5. Take the reverse procedures to reassemble.

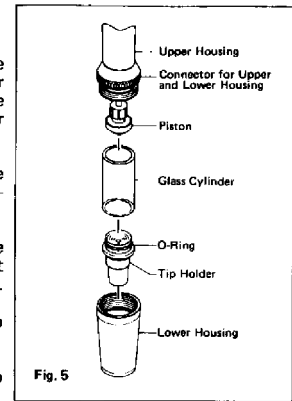


Fig. 5

B. Piston (Fig. 6)

1. Adjust the volume of the pipette to 1.0 ml or less, and remove the lower housing and the glass cylinder from the connector.

2. Unscrew the connector from the upper housing. The connector stays between the piston and the upper housing.

3. Keeping the second spring and the second spring holder in the upper housing, turn the joint nut clockwise until the joint arm of the piston can be removed from the shaft. The piston, connector, second spring retainer, second spring and second spring holder can be taken apart from the upper housing.

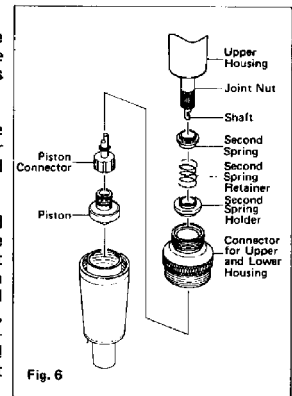


Fig. 6

- 4 -

4. Turn the piston counter-clockwise and unscrew from the piston connector.

5. When reassembling, make sure that the piston is firmly tightened with the piston holder. Looseness of these parts affects the accuracy of the pipette.

6. Slip the second spring and its retainer and holder over the joint nut as shown in Fig. 6. Insert the piston joint arm into the connector for lower and upper housing, and connect the arm with the shaft.

7. Turn the joint nut counter-clockwise until it will go no further, and tighten it.

8. Screw the connector into the upper housing.

- 5 -

GUIDE TO JUSTOR 1100 SERIES PIPETTES

Fixed Volume Pipettes and Triple Volume Pipettes are available from NICHIRYO in addition to these Adjustable Pipettes.

JUSTOR 1100F Fixed Volume Pipette

Cat. No.	Volume
1100F-5 to 1000	5, 10, 15, 20, 25, 30, 40, 50, 60, 70, 75, 80, 90, 100, 120, 150, 200, 250, 300, 400, 500, 600, 700, 750, 800, 900 and 1000 μ l

JUSTOR 1100V Triple Volume Pipette

Cat. No.	Volume
1100VS	5/10/20 μ l
1100VM	25/50/100 μ l
1100VL	200/500/1000 μ l

ORDERING INFORMATION

Pipette

Cat. No.	Volume Range	Increments	Color Code
1100DG-10	2 ~ 10 μ l	0.01 μ l	Red
1100DG-100	10 ~ 100 μ l	0.1 μ l	Orange
1100DG-1000	100 ~ 1000 μ l	1.0 μ l	Brown
1100DG-5000	1000 ~ 5000 μ l	10.0 μ l	Green

Accessories Provided

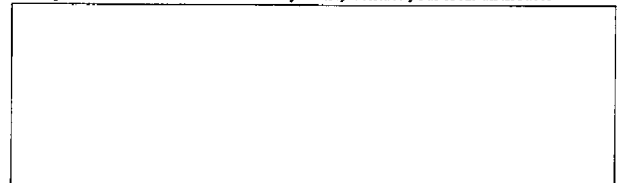
1100DG-10: 4 spare plunger sealing rings and a maintenance kit

1100DG-100: 2 spare plunger sealing rings and a maintenance kit

1100DG-1000: 2 spare O-rings and a maintenance kit

1100DG-5000: Maintenance kit

For repair service or further information you may contact your local distributor:



MANUFACTURER: © NICHIRYO CO., LTD.

- 6 -

10C02-95(E)