Eppendorf Series 2000 Reference® fixed-volume and adjustable Pipettes

Instruction Manual · Mode d'emploi · Manual de Instrucciones

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Brinkmann Instruments, Inc. · One Cantiague Road, P.O. Box 1019
Westbury, New York 11590-0207 (USA) · Phone: 800-645-3050 · Fax: 516-334-7506
E-Mail: info@brinkmann.com · Internet: www.brinkmann.com

Brinkmann Instruments, Ltd. · 6670 Campobello Road
Mississauga, Ont. L5N 2L8 · Canada · Phone: 800-263-8715 · Fax: 905-826-5424
E-Mail: canada@brinkmann.com

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Part A / Section A / Parte A

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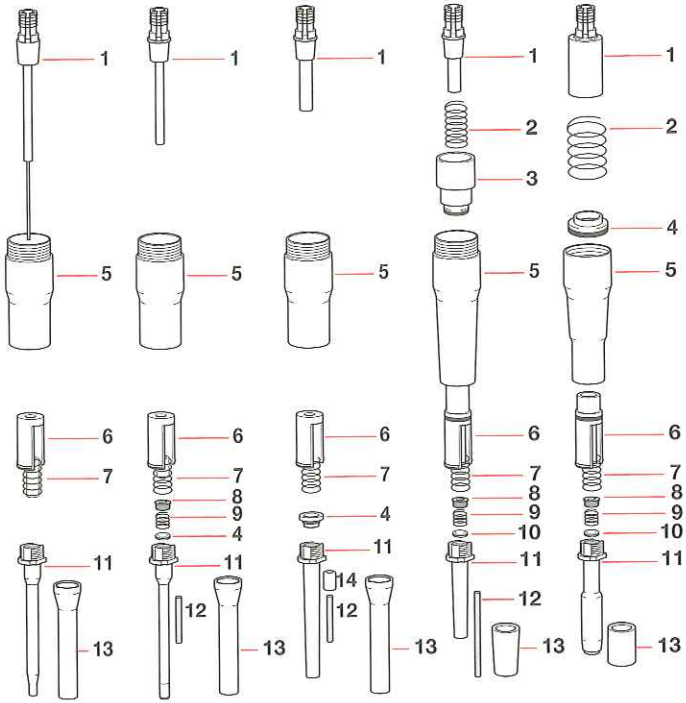
Fig. 1

Reference adjustable-volume / Reference variable

0.1 – 2.5 µL 10 – 100 µL 20 – 200 µL 100 – 1000 µL 500 – 5000 µL
0.5 – 10 µL
2 – 20 µL

Reference fixed-volume / Reference volumen fijo

1 – 50 µL 100 µL 200 – 250 µL 500 – 2500 µL



Series 2000 Reference®

1 Safety precautions and applicational limitations

Before using the Reference pipette, please read the operating manual.
To ensure safe, problem-free service from the Reference pipette, it is essential to observe the following points:

1.1 Handling

- Only use the pipette when a pipette tip has been attached.
- Do not lay down the pipette when a filled pipette tip is attached.
- When using infectious, radioactive, toxic and/or other solutions that pose a health risk, please observe the statutory safety regulations in the country in which the pipette is being used.
- When using organic solvents and aggressive chemicals, check the chemical compatability of the pipette tips (made of PP = polypropylene) and the pipettes.
- When using solutions with physical characteristics which differ to a large extent to those of water (e.g. glycerol), check the dispensing volume as described in Section 5.2.
- Avoid differences in temperature between pipettes and pipette tips as well as the liquid used as this may lead to incorrect volumes being dispensed.
- The above may also occur when liquids with a high vapor pressure are used.

1.2 Care and maintenance

- Do not allow any liquid to enter into the pipette.
- Do **not** clean the pipette with acetone or aggressive solutions.
- Use original spare parts and accessories (pipette tips) only.

2 Technical data

2.1 Reference fixed-volume

Model / Volume	Systematic measurement deviation (Inaccuracy)	Systematic measurement deviation (Imprecision; CV)
1 µL	± 2.5 %	≤ 1.8 %
2 µL	± 2.0 %	≤ 1.2 %
5 µL	± 1.5 %	≤ 0.8 %
10 µL	± 1.0 %	≤ 0.5 %
20 µL	± 0.8 %	≤ 0.3 %
25 µL	± 0.8 %	≤ 0.3 %
50 µL	± 0.7 %	≤ 0.3 %
100 µL – 2500 µL	± 0.6 %	≤ 0.2 %

2.2 Reference variable

Model	Aspirate button color	Volume increment µL	Volume µL	Systematic measurement deviation (Inaccuracy)	Random measurement deviation (Imprecision; CV)
0.1 – 2.5	dark gray	0.002	0.25	± 12.0 %	≤ 6.0 %
			1.25	± 2.5 %	≤ 1.5 %
			2.5	± 1.4 %	≤ 0.7 %
0.5 – 10	light gray	0.01	0.5	± 5.0 %	≤ 2.8 %
			1	± 2.5 %	≤ 1.8 %
			5	± 1.5 %	≤ 0.8 %
			10	± 1.0 %	≤ 0.4 %
2 – 20	light gray	0.02	2	± 3.0 %	≤ 2.0 %
			10	± 1.0 %	≤ 0.5 %
			20	± 0.8 %	≤ 0.3 %
2 – 20	yellow	0.02	2	± 5.0 %	≤ 1.5 %
			10	± 1.2 %	≤ 0.6 %
			20	± 1.0 %	≤ 0.3 %
10 – 100	yellow	0.1	10	± 3.0 %	≤ 0.7 %
			50	± 1.0 %	≤ 0.3 %
			100	± 0.8 %	≤ 0.15 %
50 – 200	yellow	0.2	50	± 1.0 %	≤ 0.3 %
			100	± 0.9 %	≤ 0.3 %
			200	± 0.6 %	≤ 0.2 %
50 – 250	blue	0.2	50	± 1.4 %	≤ 0.3 %
			100	± 1.1 %	≤ 0.3 %
			250	± 0.6 %	≤ 0.2 %
100 – 1000	blue	1.0	100	± 3.0 %	≤ 0.3 %
			500	± 1.0 %	≤ 0.2 %
			1000	± 0.6 %	≤ 0.2 %
500 – 2500	red	2.0	500	± 1.5 %	≤ 0.3 %
			1000	± 0.8 %	≤ 0.2 %
			2500	± 0.6 %	≤ 0.2 %

The technical data given is valid only when eppendorf pipette tips are used.
Tests carried out in accordance with ISO 8655 for piston-stroke pipettes with an air cushion using a precision balance with evaporation trap approved by the standardization authorities.
Number of determinations: 10; degassed, bidistilled water, 20 °C – 25 °C, constant to ± 0.5 °C; with pre-wetted pipette tip; dispensing carried out on inner wall of vessel; for volumes
< 10 µL, test carried out upon removal from the weighing vessel, due to the risk of evaporation.

3 Function principle

The pipettes in the Reference-Series are piston-stroke pipettes that operate according to the air-cushion principle.
The Reference-Series consists of fixed-volume pipettes and pipettes with an adjustable volume setting.
The control button is multi-functional. The function executed by the pipette depends on how far its control button is pressed down.

Ex
20 °C

Three steps are necessary to operate the pipette:

1. Measuring stroke
   Press the control button down until the first stop. The desired volume of liquid is dispensed or, when the button is released, aspirated.
2. Blow-out
   Press the button down a little more until the next stop.
   Any liquid remaining in the pipette tip is emptied.
3. Ejection
   Press the button all the way down.
   The pipette tip is ejected.

4 Operation

The pipette can be individually labelled. The autoclavable blank adhesive label provided can be marked with a permanent marker and fits onto the identification area on the top of the housing.

4.1 Volume setting

The volume is adjusted by pressing down the lateral catch and turning the control button at the same time.

It is advisable to carry out volume setting from the higher down to the lower value. i.e. first go above the desired volume and then return to the lower value.

4.2 Pipette tips

The pipette can function only when a pipette tip is attached into which the liquid is aspirated.

To facilitate the search for a suitable tip, the color of the control buttons corresponds to the color of the eppendorf pipette tip racks.

When pipetting liquids with wetting properties different to those of water, please observe the recommendations contained in Section 4.5.

4.3 Aspirating liquid

- Attach suitable pipette tip to the pipette firmly (observe the color coding).
- Press down the control button to the first stop (measuring stroke).
- Immerse the pipette tip vertically approx. 3 mm into the liquid.
- Allow the control button to slide back **slowly**.
- Pull the tip out of the liquid **slowly**.
- To remove any remaining droplets, dab with non-fibrous cellulose material. When doing so, ensure that no liquid comes out of the tip.

4.4 Dispensing liquid

- Hold the tip at an angle against the inside wall of the tube.
- Press down the control button slowly to the first stop (measuring stroke) and wait until the liquid stops flowing.
- Press down the control button to the second stop (blow-out) until the tip is completely empty.
- Hold down the control button and pull the tip up the inner wall of the tube.
- Allow the control button to slide back slowly.
- Tip is ejected by pressing the control button to the final stop.

⚠ **Please do not lay down the pipette when a filled pipette tip is attached as this may result in liquid entering the pipette!**

4.5 Special notes

To guarantee the highest degree of precision and accuracy, we recommend pre-wetting all new tips by aspirating and dispensing liquid two or three times before pipetting.
Finally, with the tip not in contact with the liquid, empty it completely on the inner wall of the tube (via blow-out).

Explanation: Why does the pipette tip have to be **pre-wetted**?
To compensate for the properties of the liquid.
Wetting liquids (serum, detergent) form a thin film on the inner wall of the pipette tip. When the first pipetting is carried out, the volume dispensed would thus be too low.
When pipetting serum or high-viscosity solutions, wait a few seconds when aspirating and dispensing liquid.

5 Testing / Alignment

The serial number of the pipette is located on its control button.

5.1 Testing

Volumes < 1 µL:
We recommend a photometric test. Our brochure "Photometric test for checking the precision and accuracy of small volumes" is available upon request.

Volumes > 1 µL:
For volumes ≥ 1 µL, the test can be performed by weighing the volume using an analytical balance with a sufficient level of sensitivity.

⚠ **The bidistilled water, weighing vessel, pipette and pipette tip must all be the same temperature!**

To calculate the volume, divide the weight by the density of the water (at 20 °C: 0.9982).

Volumes 1 – 10 µL:
The test is performed by taking the volume from a weighed, water-filled tube.

Volumes > 10 µL:
Distilled water is dispensed from a pre-wetted tip into a tube and is then weighed.

5.2 Alignment

5.2.1 When should alignment be carried out?

The pipettes in the Reference-Series were tested during production in accordance with the measurement conditions for water listed in Section 2.

In the case of doubts arising about the accuracy of the pipetted volume, the following points should first be checked:

- Is the pipette leaking? (This is one possible reason for dispensed volumes being too low; troubleshooting and solutions are contained in Section 7)
- What is the temperature of the sample? (In open tubes, water at room temperature cools down due to evaporation.)
- What is the temperature of the pipette?
- What is the temperature of the air?

- Has mg been converted into µL?
- Does the sample have a different density to that of water?
- Is the pipetting speed too high?

Assistance with these questions is contained in eppendorf's SOP (**S**tandard **O**peration **P**rocedure).

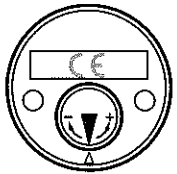
If these checks prove to be unsuccessful, it is safe to assume that the alignment of the pipette has altered (e.g. due to several components having been replaced).

5.2.2 Follow-up alignment in the case of error

From a technical point of view, this is a zero-point shift. The value by which the setting of the pipette is shifted remains constant across the entire measuring range. If, for example, in the case of a 10 – 100 µL pipette, follow-up alignment of 1 µL is carried out at 100 µL (=1 %), the pipette is also adjusted by 1 µL at 10 µL (= 10 %!)

Alignment Reference fixed-volume:

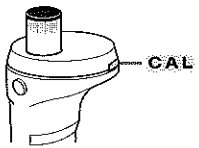
To assist you in finding the basic setting again, round adhesive labels with an arrow are provided as an alignment aid.



– Stick the alignment aid onto the control button.

Determine the volume by weighing and calculation
(see point a – c "Alignment Reference variable").

d



Pierce the calibration seal attached to the opening for adjustments with Side B of the key provided. This destroys the seal which should be removed. Undo the screw inside a little until the control button can be turned.

e Adjust control button by the volume determined.
One revolution of the control button corresponds to the following values for water:

Reference fixed-volume	Vol./revol.
1, 2, 5, 10 µL	approx. 0.5 µL
10, 20 µL	approx. 1 µL
25, 50 µL	approx. 2.4 µL
100 µL	approx. 5 µL
200, 250 µL	approx. 12 µL
500, 1000 µL	approx. 46 µL
1500, 2000, 2500 µL	approx. 118 µL

Clockwise rotation: decrease in volume.
Counterclockwise rotation: increase in volume.

f Tighten the screw until the control button can no longer be turned.

Then continue as described in steps f and g of the Alignment Reference variable.

If the nominal volume does not correspond with the measuring result, repeat steps d – g.
Then reseal the adjustment opening using one of the calibration seals supplied.

Alignment Reference variable:

a The pipette, tip and water must all be the same temperature (20 – 25 °C, constant to ± 0.5 °C).

b Set the Reference variable to the desired nominal volume.

c With a pipette tip attached to the pipette, the desired volume is pipetted and weighed 10 times. The average of this weighing is converted into µL using the following formula:

$$\text{Volume} = \frac{\text{Weight}}{\text{Density of liquid (at the temperature specified)}}$$

The value obtained is the actual setting (density of water at 20 °C: 0.9982).

d 

Pierce the calibration seal attached to the opening for adjustments with Side B of the key provided. This destroys the seal which should be removed. Carefully attach the key to the adjusting sleeve inside.

e Turn the wrench to adjust the volume display of the pipette (with piston stroke unchanged) to the actual volume (measurement under step c).

f Remove the wrench.

g Repeat step c). The readings must be within the tolerances specified in the technical data.

If the nominal value still does not agree with the measuring result, repeat steps d – g.

Since this adjustment affects the entire measuring range, it is imperative to check the other volumes of this pipette specified in the technical data.
Then reseal the adjustment opening using one of the calibration seals supplied.

5.2.3 Adjustment for liquids with a density different to that of water

It is possible to adjust the pipette for **one specific volume of liquid** with a density different to that of water in such a way that the volume displayed corresponds to the volume pipetted.

All other values for the adjustable pipettes are now out of alignment, i.e. an adjustable-volume pipette has been converted into a fixed-volume pipette!

Proceed as described in Section 5.2.2.

⚠ A pipette set in this way delivers a pipetting value that correlates with that in the display **only for the liquid used and for the volume tested**! For this reason, we very strongly recommend labeling the converted pipette **as a fixed-volume pipette** for "Solution y"!
The error for liquids with a higher vapor pressure (e.g. organic solvents) cannot be aligned in this way. In this case, we recommend using an eppendorf positive-displacement pipette.

6 Care / Sterilization

6.1 Care

Depending on the frequency of use, all parts of the pipette should be cleaned from time to time in a soap solution or should be sterilized using 60 % isopropanol. They should then be rinsed in distilled water and dried.
The seals are maintenance-free and the pistons should be lubricated lightly (using the silicone grease provided) when cleaned or replaced.

Severe contamination caused by the liquid entering the pipette can be removed after the pipette has been disassembled (see Part B, Maintenance).

For information about replacing defective parts, please see Part B, Maintenance.

6.2 Sterilization

The Reference-Series, including the blank label provided (marked with a permanent marker), is fully autoclavable at 121 °C for 20 minutes.
Before autoclaving, unscrew the pipette at the central junction by rotating about one revolution. This enables steam to penetrate more easily into the pipette during autoclaving.
After autoclaving, the pipette may have to be dried at room temperature.
Retighten the central junction only after the pipette has completely cooled.
The nose cone may have to be tightened again with the wrench (see part B, Maintenance).

The Reference can be stored aseptically under ultra violet light ≥ 254 nm.

7 Troubleshooting

Error	Cause	Solution
Droplets on the inner wall of the pipette tip.	– Uneven wetting of the plastic wall.	– Attach a new pipette tip.
	– A pipette tip with poor wetting properties has been used.	– Use an original eppendorf tip.
Pipette is dripping and/or the volume pipetted is incorrect.	– The tip is loose.	– Press the tip firmly in place.
	– A poorly fitting pipette tip has been used.	– Use an original eppendorf tip.
	– Liquid with a high vapor pressure has been pipetted.	– In this case, we recommend pipetting using a positive-displacement pipette.
	– Tip has been taken out of the liquid too quickly.	– Remove the tip slowly from the liquid.
	The pipette is dripping because:	
	– Piston is contaminated.	– Clean and lightly lubricate the piston.
	– Piston is damaged.	– Replace the piston and seal (see Part B, Maintenance).
	– Seals are damaged.	– Replace all seals (see Part B, Maintenance).
	– Nose cone loose.	– Lightly tighten nose cone with wrench (see Part B, Maintenance). Exchange, where necessary.

Series 2000 Reference® – Part A – Section 7

Error	Cause	Solution
Control button jams, moves erratically.	– Piston contaminated.	– Clean piston and lubricate lightly.
	– Seals contaminated.	– Disassemble pipette. Clean all seals and exchange where necessary (see Part B, Maintenance).
	– Penetration of solvent vapors.	– Unscrew pipette at the central junction and ventilate. Clean piston and lubricate lightly.
Pipette blocked, too little liquid is aspirated.	– Liquid has penetrated the nose cone and dried.	– Unscrew pipette at the central junction, rinse lower part first with warm water, then with distilled water and allow to dry. Or: – Disassemble pipette. Replace ejector seal in the nose cone (see Part B, Maintenance).
	For 25 to 500 µL pipettes: – The filling tube in the nose cone is blocked.	For 25 to 50 µL: – Replace nose cone. For 10 to 500 µL: – Replace the filling tube in the nose cone (see Part B, Maintenance).

Series 2000 Reference® – Part B – Contents

Maintenance

Ordering information

Please only use the accessories recommended by eppendorf. Using spare parts and disposables which we have not recommended can reduce the precision, accuracy and life of the pipette. We do not honor any warranty or accept any responsibility for damage resulting from such action.

Series 2000 Reference® – Part B – Maintenance

For information on replacing pistons and seals as well as on disassembling and assembling the different models in the Reference-Series please open the fold-out cover at the front of this manual.
The fixed and variable pipettes are of identical construction. You should therefore refer to the figure corresponding to the volume of your pipette or the volume range it falls in.

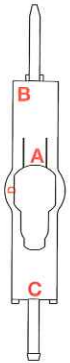
I. Exchanging the piston

- Unscrew pipette at the central junction.
- Press control button and hold down. Hold piston at the top of the piston mounting and pull off. If the piston is difficult to remove, the spring at the piston mounting can be pressed down slightly with side B of the wrench and the piston then pulled off.
- Attach new piston down to the stop and lubricate lightly.

II. Exchanging the seals

The lower parts of the Reference-Series can be completely disassembled for cleaning and maintenance using the wrench provided.

The wrench has the following functions:



A = Narrow opening: for loosening and tightening the nose cone.
Wide opening (D): For tightening the nose cone (with the lettering facing the pipette tip).
The wrench is designed in such a way that the nose cone cannot be tightened too much.

B = For loosening the screw in the nose cone.
During assembly, for mounting the screw, spring and seal and tightening the screw.
During alignment, for adjusting the volume display.

C = For removing the seal in the nose cone.

Removing the seals

Fig. 2 – 6 on the following pages show you how to remove the seals. The numbers shown are identical with the numbers in the Ordering information (see page 53) and the numbers of the parts on the fold-back cover at the front of this manual.

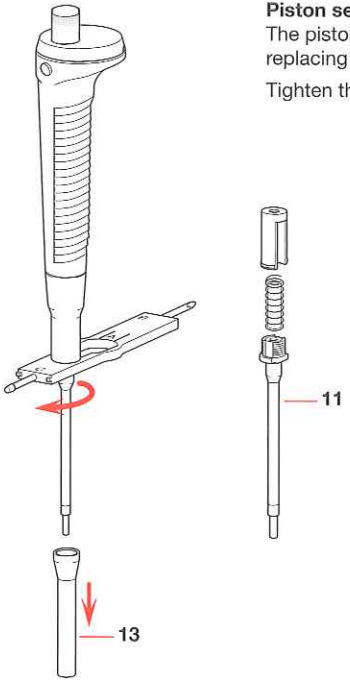
0.1 – 2.5 µL, 0.5 – 10 µL and 2 – 20 µL (Fig. 2)

Push the control button all the way down and pull off the ejector sleeve (13).

Piston seal

The piston seal in the nose cone is exchanged by replacing the entire nose cone (11).

Tighten the nose cone (see IV of this part).



10 – 100 µL (Fig. 3)

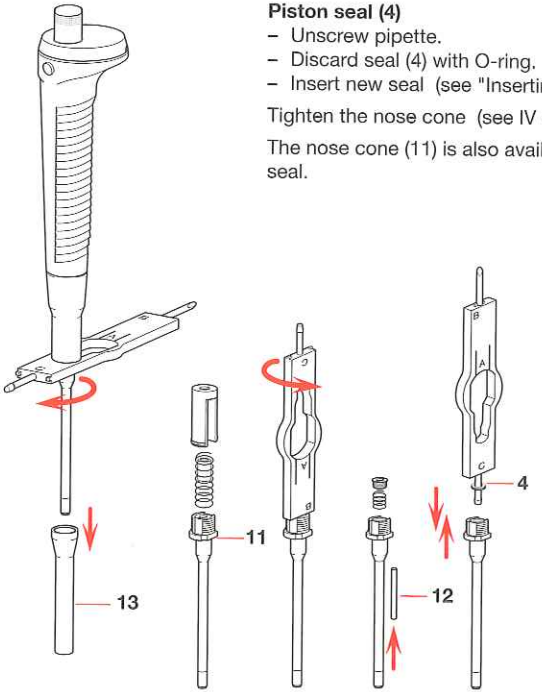
Push the control button all the way down and pull off the ejector sleeve (13).

Piston seal (4)

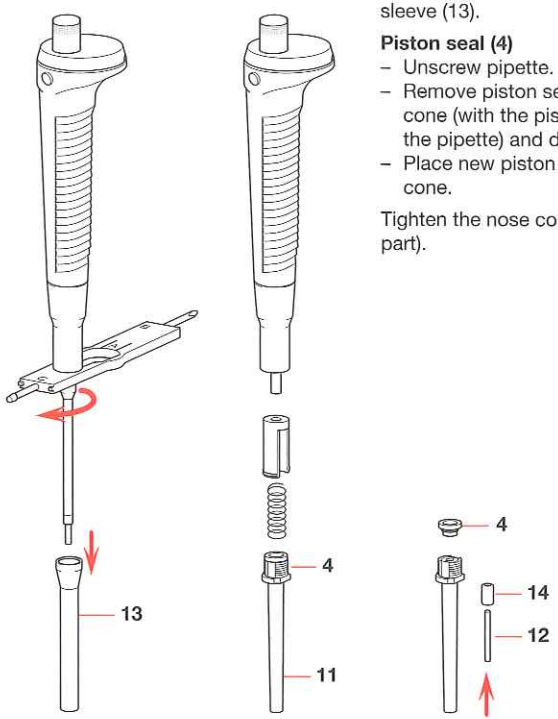
- Unscrew pipette.
- Discard seal (4) with O-ring.
- Insert new seal (see "Inserting the seals").

Tighten the nose cone (see IV of this part).

The nose cone (11) is also available complete with seal.



50 – 200 µL (Fig. 4)

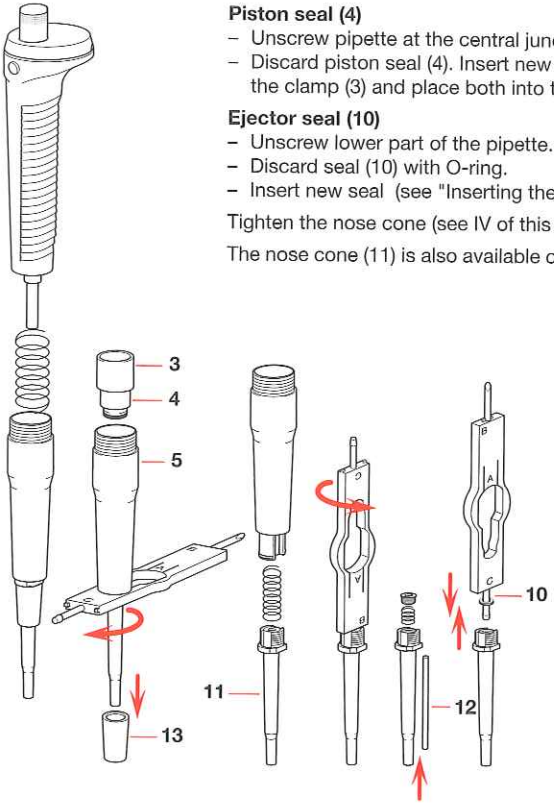


Push the control button all the way down and pull off the ejector sleeve (13).

Piston seal (4)
- Unscrew pipette.
- Remove piston seal (4) from nose cone (with the piston in the grip of the pipette) and discard.
- Place new piston seal onto nose cone.

Tighten the nose cone (see IV of this part).

50 – 250 µL (Fig. 5)



Push the control button all the way down and pull off the ejector sleeve (13).

Piston seal (4)
- Unscrew pipette at the central junction.
- Discard piston seal (4). Insert new piston seal into the clamp (3) and place both into the lower part (5).

Ejector seal (10)
- Unscrew lower part of the pipette.
- Discard seal (10) with O-ring.
- Insert new seal (see "Inserting the seals").

Tighten the nose cone (see IV of this part).

The nose cone (11) is also available complete with seal.

100 – 1000 and 500 – 2500 µL (Fig. 6)

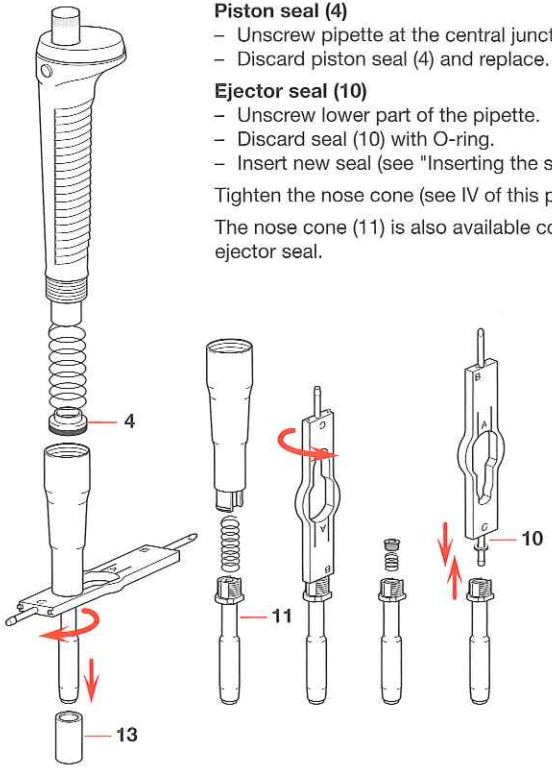
Push the control button all the way down and pull off the ejector sleeve (13).

Piston seal (4)
- Unscrew pipette at the central junction.
- Discard piston seal (4) and replace.

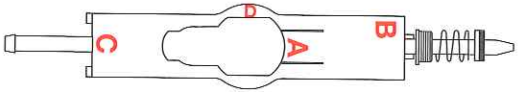
Ejector seal (10)
- Unscrew lower part of the pipette.
- Discard seal (10) with O-ring.
- Insert new seal (see "Inserting the seals").

Tighten the nose cone (see IV of this part).

The nose cone (11) is also available complete with ejector seal.



Inserting the seals



Pull new seal off the pin and push screw, spring, seal (with plastic part first) in that order onto side B of the wrench as shown in the figure and screw lightly into nose cone. Do not tighten too much. Assemble pipette again.

III. Exchanging the filling tube

10 – 100 µL, 50 – 200 µL and 50 – 250 µL (Fig. 3, 4, 5)

Filling tube (12)
- Unscrew lower part of the pipette.
- Push filling tube (12) (and damping tube (14) for 50 – 250 µL) out of the nose cone from below with the wire punch. Push in new tube from above.

IV. Exchanging the nose cone

After the ejector sleeve has been pulled off, the nose cone together with the seal (11) can be loosened with the wrench (A, narrow opening) and exchanged (together with the seal. See Fig. 2 – 6).

Tighten the nose cone:
Place wrench with the wide opening (A, lettering facing the pipette tip) onto the nose cone and tighten until it locks into position by turning half a revolution. The wrench is designed in such a way that the nose cone cannot be tightened too much.

Caution
After exchanging parts or completing other maintenance, always check that the pipette functions correctly (see Part A, Section 7 of this Manual).

If a problem cannot be solved with the aid of the recommendations above, please return the Series 2000 Reference Pipette to Brinkmann Instruments.

I. Reference fixed-volume

Pipettes / spare parts

Models

Gray control button (use 10 µL pipette tips)	
1 µL	022470400
2 µL	022470451
5 µL	022470507
10 µL, UM	022470558
Yellow control button (use 100 µL pipette tips)	
10 µL	022470604
20 µL	022470752
25 µL	022470809
30 µL	022470850
50 µL	022470957
75 µL	022471007
80 µL	022471058
90 µL	022471104
100 µL	022471155
150 µL	022471201
200 µL	022471252
Blue control button (uses 1000 µL pipette tips)	
250 µL	022471309
300 µL	022471350
500 µL	022471457
800 µL	022471554
900 µL	022471601
1000 µL	022471651
Red control button (uses 2500 µL pipette tips)	
1500 µL	022471708
2000 µL	022471759
2500 µL	022471805

(Please open up the fold-back cover at the front of this manual).
Only parts with order numbers are available separately.

1	**Piston**		
1 – 10 µL	(gray button)		022475088
10 – 20 µL	(yellow button)		022475100
25 – 50 µL			022475118
75 – 100 µL	incl. piston seal (4)		022475126
150 – 200 µL			022475142
250 µL			022475169
300 – 1000 µL	incl. piston seal (4)		022475185
1500 – 2500 µL	incl. piston seal (4)		022475207
2	**Piston spring**		
250 µL			022475223
300 – 1000 µL			022475240
1500 – 2500 µL			022475266
3	**Clamp** (250 µL)		not sold separately
4	**Piston seal**		
75 – 100 µL	incl. screw (8), spring (9)		022475282
150 – 200 µL	incl. screw (8), spring (9)		022475304
250 µL	incl. screw (8), spring (9), ejector seal (10)		022475321
300 – 1000 µL	incl. screw (8), spring (9), ejector seal (10)		022475347
1500 – 2500 µL	incl. screw (8), spring (9), ejector seal (10)		022475363
5	**Lower housing**		not sold separately
6	**Ejector**, includes ejector spring (7)		
1 – 20 µL	incl. ejector tube		022475380
25 – 100 µL	incl. ejector tube		022475401
150 – 200 µL			022475428
250 µL			022475461
300 – 1000 µL			022475487
1500 – 2500 µL			022475509
7	**Ejector spring** (1 – 100 µL includes ejector tube)		not sold separately
8	**Screw for nose cone**		not sold separately
9	**Nose cone spring**		not sold separately
10	**Ejector seal**		not sold separately

11 Nose cone, complete

1	–	10 µL	gray, incl. seal	022475541
10	–	20 µL	yellow, incl. seal	022475584
25	–	50 µL	incl. (8), (9), (4), (12)	022475606
75	–	100 µL	incl. (8), (9), (4), (12)	022475622
150	–	200 µL	incl. (12), (14)	022475649
		250 µL	incl. (8), (9), (10), (12)	022475665
300	–	500 µL	incl. (8), (9), (10), (12)	022475681
800	–	1000 µL	incl. (8), (9), (10)	022475703
1500	–	2500 µL	incl. (8), (9), (10)	022475720

12 Reducing tube (5 pieces, 1 wire punch)

75	–	100 µL	022475746
150	–	200 µL	022475762
		250 µL	022475789
300	–	500 µL	022475801

13 Ejector sleeve

1	–	100 µL	022475827
150	–	200 µL	022475843
250	–	1000 µL	022475860
1500	–	2500 µL	022475886

14 Damping tube

Lower part complete, includes piston and (3) – (14)

		10 µL	UM (gray button)	022475924
10	–	20 µL	(yellow button)	022475967
25	–	50 µL		022475983
75	–	100 µL		022476009
150	–	200 µL		022476025
		250 µL		022476041
300	–	500 µL		022476068
800	–	1000 µL		022476084
1500	–	2500 µL		022476106

Series 2000 Reference repair kit 022475045
(1 tube of silicone lubricant, 1 wrench, 6 blank labels, 1 wire punch, 1 reducing tube each for 75 – 100 µL, 150 – 200 µL, 250 µL and 300 – 500 µL)

Calibration aid labels (5 pieces) 022475002

Silicone lubricant for piston 022478507

Wrench 022475029

Series 2000 Reference® – Part B – Ordering information

II. Reference adjustable-volume

Pipettes / spare parts

Models

Dark gray control button (uses 2.5 µL pipette tips)

0.1	–	2.5 µL	022470001

Gray control button (uses 10 µL pipette tips)

0.5	–	10 µL, UM	022470051
2	–	20 µL, UM	022470108

Yellow control button (uses 100 µL pipette tips)

2	–	20 µL	022470159
10	–	100 µL	022470205
50	–	200 µL	022470256

Blue control button (uses 1000 µL pipette tips)

100	–	1000 µL	022470302

Red control button (uses 2500 µL pipette tips)

500	–	2500 µL	022470353

(Please open up the fold-back cover at the front of this manual).
Only parts with order numbers are available separately.

1 Piston

0.1	–	2.5 µL		022475061
0.5	–	10 µL		022475088
2	–	20 µL		022475100
10	–	100 µL	incl. piston seal (4)	022475126
50	–	200 µL	incl. piston seal (4)	022475142
100	–	1000 µL	incl. piston seal (4)	022475185
500	–	2500 µL	incl. piston seal (4)	022475207

2 Piston spring

100	–	1000 µL	022475240
500	–	2500 µL	022475266

3 Clamp not sold separately

4 Piston seal

10	–	100 µL	incl. screw (8), spring (9)	022475282
50	–	200 µL	with two O-rings	022475304
100	–	1000 µL	incl. screw (8), spring (9), ejector seal (10)	022475347
500	–	2500 µL	incl. screw (8), spring (9), ejector seal (10)	022475363

5	**Lower housing**	not sold separately
6	**Ejector**, includes ejector spring (7)	
	0.1 – 2.5 µL incl. ejector tube	022475380
	0.5 – 10 µL incl. ejector tube	022475380
	2 – 20 µL incl. ejector tube	022475380
	10 – 100 µL incl. ejector tube	022475401
	50 – 200 µL	022475444
	100 – 1000 µL	022475487
	500 – 2500 µL	022475509
7	**Ejector spring** (0.1–2.5, 0.5–10, 2–20, 10–100 µL incl. ejector tube)	not sold separately
8	**Screw for nose cone**	not sold separately
9	**Nose cone spring**	not sold separately
10	**Ejector seal**	not sold separately
11	**Nose cone, complete**	
	0.1 – 2.5 µL incl. seal	022475525
	0.5 – 10 µL incl. seal	022475541
	2 – 20 µL gray, incl. seal	022475568
	2 – 20 µL yellow, incl. seal	022475584
	10 – 100 µL incl. (8), (9), (4), (12)	022475622
	50 – 200 µL incl. (12), (14)	022475649
	100 – 1000 µL incl. (8), (9), (10)	022475703
	500 – 2500 µL incl. (8), (9), (10)	022475720
12	**Reducing tube** (5 pieces, 1 wire punch)	
	10 – 100 µL	022475746
	50 – 200 µL incl. 2 pieces of (14)	022475762
13	**Ejector sleeve**	
	0.1 – 2.5 µL	022475827
	0.5 – 10 µL	022475827
	2 – 20 µL	022475827
	10 – 100 µL	022475827
	50 – 200 µL	022475843
	100 – 1000 µL	022475860
	500 – 2500 µL	022475886

14	**Damping tube**	not sold separately
	Lower part, complete, includes piston and (3) – (14)	
	0.1 – 2.5 µL	022475908
	0.5 – 10 µL	022475924
	2 – 20 µL gray	022475941
	2 – 20 µL yellow	022475967
	10 – 100 µL	022476009
	50 – 200 µL	022476025
	100 – 1000 µL	022476084
	500 – 2500 µL	022476108
	Series 2000 Reference repair kit (1 tube of silicone lubricant, 1 wrench, 6 blank labels, 1 wire punch, 1 reducing tube each for 10 – 100 µL and 50 – 200 µL, for 50 – 200 µL, 1 damping tube)	022475045
	Silicone lubricant for piston	022348507
	Wrench	022475029

III. Pipette holder

Carousel stand, incl. 6 pipette supports	022444905
Pipette holder (replacement for stand)	022260588
Pipette wall mount	022444913

IV. Pipette tips

epT.I.P.S.

(The packaging units stated represent the minimum ordering quantity).

	Color code	Order no.
Bulk, in bags, 2x 500=1000 tips		
0.1 – 10 µL	anthracite	022492004
0.1 – 20 µL	dark gray	022492012
0.5 – 20 µL L	light gray	022492021
2 – 200 µL	yellow	022492039
50 – 1000 µL	blue	022492055
500 – 2500 µL (500 tips)	red	022492071

	Color code	Order no.
Set, 1 box, incl. 5x96 tips		
0.1 – 10 µL	anthracite	022491407
0.1 – 20 µL	dark gray	022491415
0.5 – 20 µL L	light gray	022491423
2 – 200 µL	yellow	022491431
50 – 1000 µL	blue	022491458
500 – 2500 µL (5x48 tips)	red	022491474
Reloads, 10x96=960 tips		
0.1 – 10 µL (in stacks)	anthracite	022491504
0.1 – 20 µL	dark gray	022491512
0.5 – 20 µL L	light gray	022491521
2 – 200 µL (in stacks)	yellow	022491539
50 – 1000 µL	blue	022491555
500 – 2500 µL (10x48=480 tips)	red	022491571
Reloads PCR-clean, 10x96=960 tips		
0.1 – 10 µL (in stacks)	anthracite	022491709
0.1 – 20 µL	dark gray	022491717
0.5 – 20 µL L	light gray	022491725
2 – 200 µL (in stacks)	yellow	022491733
50 – 1000 µL	blue	022491750
500 – 2500 µL (10x48=480 tips)	red	022491776
Box, 1 box plus 96 tips		
0.1 – 10 µL	anthracite	022491300
0.1 – 20 µL	dark gray	022491318
0.5 – 20 µL L	light gray	022491326
2 – 200 µL	yellow	022491334
50 – 1000 µL	blue	022491351
500 – 2500 µL (48 tips)	red	022491377
Racks, plus 10x96=960 tips		
0.1 – 10 µL	anthracite	022491903
0.1 – 20 µL	dark gray	022491911
0.5 – 20 µL L	light gray	022491920
2 – 200 µL	yellow	022491938
50 – 1000 µL	blue	022491954
500 – 2500 µL (480 tips)	red	022491971

Series 2000 Reference® – Part B – Ordering information

	Color code	Order no.
Racks PCR-clean, plus 10x96=960 tips		
0.1 – 10 µL	anthracite	022491806
0.1 – 20 µL	dark gray	022491814
0.5 – 20 µL L	light gray	022491822
2 – 200 µL	yellow	022491831
50 – 1000 µL	blue	022491857
Racks, sterile, plus 10x96=960 tips		
0.1 – 20 µL	dark gray	022492250
2 – 200 µL	yellow	022492276
50 – 1000 µL	blue	022492292
Racks Eppendorf Biopur, colorless, pyrogen-free, DNA-free, RNase-free, ATP-free, 5x96=480 tips		
0.1 – 20 µL	dark gray	022491067
2 – 200 µL	yellow	022491083
50 – 1000 µL	blue	022491105
500 – 2500 µL (240 tips)	red	022491121
Singles (Eppendorf Biopur), colorless, pyrogen-free, DNA-free, RNase-free, ATP-free, individually wrapped, 100 tips		
0.1 – 20 µL	dark gray	022491130
2 – 200 µL	yellow	022491148
50 – 1000 µL	blue	022491156
Filter, PCR-clean, in racks, 10x96=960 tips		
0.1 – 10 µL S	anthracite	022491202
0.1 – 10 µL M	dark gray	022491211
0.5 – 10 µL L	light gray	022491229
2 – 20 µL	yellow	022491270
2 – 100 µL	yellow	022491237
20 – 300 µL	orange	022491245
50 – 1000 µL	blue	022491253
GELoader® tips (f. 0.5–10 µl) 1 set = 200 tips	light gray	022351656