

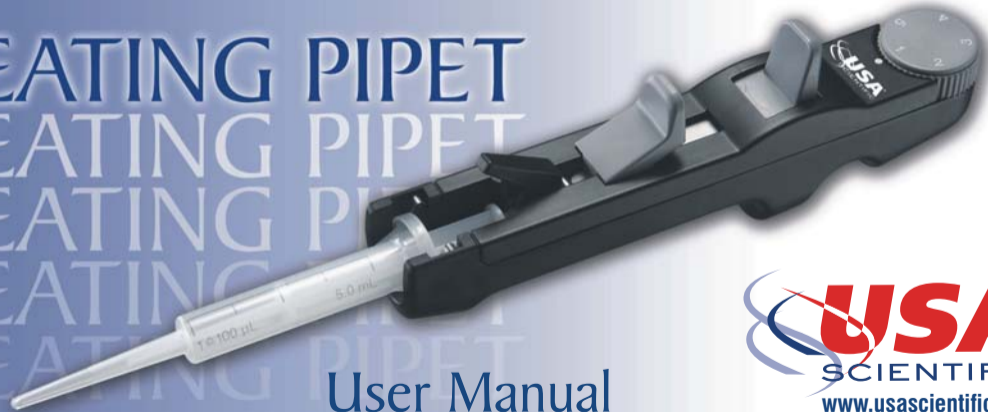
REPEATING PIPET

REPEATING PIPET

REPEATING PIPET

REPEATING PIPET

REPEATING PIPET



User Manual



User Manual

1.	General	4
1.1.	Design Principle of the Repeating Pipet	4
2.	Volume Selection and Choice of Tips	5
2.1.	Repeating Pipet Tips	6
2.2.	25 ml and 50 ml Tips	6
3.	Operation	7
3.1.	Inserting the Repeating Tip	7
3.2.	Filling the Repeating Tip	7
3.3.	Dispensing	8
3.4.	Removing the Tip	9
4.	Safety Precautions and Operational Limitations	9
5.	Troubleshooting Guide	10
6.	Maintenance, Service and Warranty	11
7.	Ordering Information	12
8.	Technical Data	13
9.	Quick Reference Guide	14
10.	Manufacturing and Inspection Standards	15

1. General

The repeating pipet is a hand-held device for repetitive dispensing. Up to 48 aliquots of the same sample can be made from a single filling, resulting in a considerable reduction in time and expense.

The repeating pipet allows the selection of five separate volumes from each repeating pipet tip. Seven different tip sizes provide the most important volumes from 10 to 5000 μl . Use only original USA Scientific repeating tips to guarantee performance.

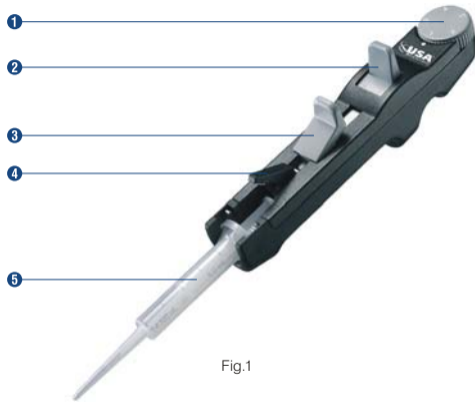


Fig.1

1.1. Design Principle of the Repeating Pipet (Fig.1)

- 1 Volume selection dial**
To determine the dispensing volume, the dial setting (1– 5) is multiplied by the minimum aliquot volume of the repeating pipet tip.
- 2 Dispensing lever**
To dispense, press the dispensing lever down until it stops.
- 3 Filling lever**
To fill the repeating pipet tip, slide the filling lever upward.
- 4 Locking clamp**
To secure the repeating pipet tip, tighten the locking clamp down over the top of the tip.
- 5 Repeating pipet tip**

2. Volume Selection and Choice of Tips

For repetitive dispensing of a specific volume:

- Find the desired volume in the upper horizontal line of the table.
- The number of dispensing steps and corresponding setting of the volume selection dial (shaded in blue) are listed below the volume.
- Select the corresponding repeating tip from the column on the right.

Dispensing Volume																							Tip Choice		
10 μ l	20 μ l	25 μ l	30 μ l	40 μ l	50 μ l	75 μ l	100 μ l	125 μ l	150 μ l	200 μ l	250 μ l	300 μ l	400 μ l	500 μ l	750 μ l	1.0 ml	1.25 ml	1.5 ml	2.0 ml	2.5 ml	3.0 ml	4.0 ml	5.0 ml		
48	23		15	11	8																			0.5 ml	
1	2		3	4	5																				
		48			23	15	11	8																	1.25 ml
		1			2	3	4	5																	
					48		23		15	11	8														2.5 ml
					1		2		3	4	5														
							48		23		15	11	8												5.0 ml
							1		2		3	4	5												
										48		23	15	11	8										12.5 ml
										1		2	3	4	5										
												48		23		15	11	8							25 ml*
												1		2		3	4	5							
															48			23		15	11	8			50 ml*
															1			2		3	4	5			

Number of dispensing steps

23
2

Volume selection dial

*Adapter necessary for 25 ml and 50 ml tips

2.1. Repeating Pipet Tips

The minimum dispensing volume ① and the maximum filling capacity ② is printed on each tip (Fig. 2). The scale facilitates drawing off partial quantities and helps you to estimate the amount of liquid still available for operation.

The volume to be dispensed is obtained by multiplying the number selected on the volume selection dial by the minimum dispensing volume of the tip.

For example, the 1.25 ml tip has a minimum volume where 1=25 μ l. At setting 4, the dispensed volume will be 4 x 25 μ l or 100 μ l.

For increased precision, choose a small capacity tip and use a high dial setting. The correlation between the position of the volume selection dial and the number of dispensing steps is as shown in the table.

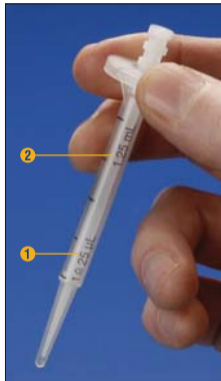


Fig.2

Number of Pipetting Steps	Position of Volume Selection Dial
48	1
23	2
15	3
11	4
8	5

2.2. 25 ml and 50 ml Repeating Pipet Tips (Fig.3)

Note: An adapter, included with each repeating pipet, is required for use with 25 ml and 50 ml tips.

Attach the adapter to the 25 ml or 50 ml tips by turning it clockwise; remove by turning it counter clockwise.



Fig.3

3. Operation

3.1. Inserting the Repeating Tip

- Slide the filling lever ① down until it stops.
- Raise the locking clamp ② upward.
- Insert the tip until it clicks into position. The tip plunger must be completely inside the tip barrel before attaching it to the repeating pipet (Fig. 4).



Fig. 4



Fig. 5

- With the filling lever in the down position, lower the locking clamp to secure the tip in place (see Fig. 5).

3.2. Filling the Repeating Tip

Use the following steps for all sizes of tips. 0.5 ml, 1.25 ml and 2.5 ml tips may also be used with a standard 200 μ l pipet tip. Attaching a tip facilitates filling from narrow-necked

vessels or piercing of sealing foil and also makes dispensing of small volumes more precise.

- Immerse the tip into the liquid.
- Slowly slide the filling lever upward (Fig. 6).
- Discard the liquid from the first dispensing step. The repeating pipet is now ready for operation.



Fig. 6

Additional Information

Raising the filling lever too quickly can cause an excessive vacuum. This may cause tiny air bubbles to accumulate in the liquid, resulting in inaccurate volumes.

Important: The first dispensing step must be discarded so that any residual filling pressure may be released and the system is prepared for precise delivery. Small bubbles in the tip beneath the piston will not affect the accuracy since the residual stroke lock prevents the delivery of any remaining sample after the last dispensing step.

It is not necessary to completely fill the tip. Partial filling will not cause dispensing inaccuracies.

3.3. Dispensing (Fig.7)

- Check the volume selection dial.
- Wipe the end of the tip with lint-free tissue.
- Hold the tip so it touches the inner wall of the vessel.
- Dispense the liquid by completely depressing the dispensing lever.



Fig.7

Additional Information

It is not necessary to attach a standard 200 μ l pipet tip to the 5.0 ml or 12.5 ml repeating tips. Never attach a standard pipet tip when working with the 25 ml or 50 ml repeating tips.

A new tip must be used each time to avoid carry-over and contamination.

3.4. Removing the Tip (Fig.8)

- Hold the repeating pipet over a beaker.
- Slowly depress the filling lever down to the stop. This will completely empty the tip.
- Raise the locking clamp upward.
- Remove the tip.

Note: 25 ml or 50 ml tips are removed from the reusable adapter by turning counter clockwise.



Fig.8

4. Safety Precautions and Operational Limitations

When removing the repeating pipet tips, please note the following:

- Do not touch the tip, especially when using hazardous reagents!
- Empty the tips into a proper disposal bin to avoid splashing and aerosols.
- Treat any retained fluid as a bio-hazard. Do not allow the fluid to come into contact with laboratory personnel.
- If a liquid with a surface tension significantly different from water is being dispensed, inaccuracies or leaking can occur.
- The repeating pipet with an attached, partially filled tip should be stored in a stand to prevent air from entering the pipet.

5. Troubleshooting Guide

Error	Cause	Solution
Tip cannot be inserted.	The locking clamp cannot be fully raised unless the filling lever is completely down.	Depress the filling lever downward and raise the locking clamp as far as it will go.
	The tip piston is not completely inserted in the barrel.	Slide the piston into the proper position.
Unable to fully raise the filling lever.	Locking clamp incompletely depressed.	Completely depress the locking clamp.
Excessive air bubbles develop during filling.	Filling lever slightly lifted before immersing into the liquid.	Draw a small amount of solution into the tip and discard it completely. Refill the tip.
	The tip is leaking.	Replace the tip with a new one.
Inconsistent dispensing.	Volume selection dial is not set into position.	Turn the volume selection dial into position until it clicks.
Tip drips.	The tip is leaking.	Replace the tip with a new tip.
	The tip is not tightly attached.	Use more force to attach the tip.
The repeating pipet jams or does not function.		Call 800-522-8477 or 352-237-6288 for assistance.

6. Maintenance, Service and Warranty

Maintenance

External surfaces of the pipet can be cleaned with warm water or isopropyl alcohol.

There are no other maintenance requirements.

Important: Under no circumstances should the pipet be dismantled!

Do not autoclave the pipet or the tips!

Service

If a problem cannot be solved with the aid of the Troubleshooting Guide, call USA Scientific at 800-522-8477 or 352-237-6288 for repair or replacement.

Important: Decontamination of the pipet will be required before a return. We will send you a decontamination form to complete.

Please contact USA Scientific for more detailed information.

Warranty

Please check that the unit has been received complete and undamaged. Save all packaging and documents until you have thoroughly inspected your shipment; if you find that your order is incorrect or damaged please call USA Scientific.

This warranty is valid for 24 months with the condition that product has been used and cared for according to this User Manual. No liability is accepted for loss or damage arising from incorrect use.

The liability is limited to the repair or replacement of the unit. USA Scientific is not liable for any consequential damages. We refer to our general terms of sale. USA Scientific reserves the right to alter these specifications without prior notice.

7. Ordering Information

Repeating Pipet and Adapters		
Catalog No.	Description	Quantity
4736-8025	Repeating pipet, includes one adapter for 25 ml and 50 ml tips	1
4798-2550	Adapter for 25 ml and 50 ml tips*	1

* Please call or visit our website for information on sterile adapters.

Important Note:

Please use only the accessories recommended by USA Scientific. Using non-recommended consumables can reduce the precision, accuracy, and life of the pipet. We do not honor any warranty or accept any responsibility for damage resulting from such action.

Repeating Pipet Tips		
Catalog No.	Volume	Quantity
4770-0050	0.5 ml	100
4772-0125	1.25 ml	100
4774-0250	2.5 ml	100
4776-0500	5.0 ml	100
4778-1250	12.5 ml	100
4780-2500	25.0 ml	100
4782-5000	50.0 ml	100

Repeating Pipet Tips, Sterile		
Catalog No.	Volume	Quantity
4784-0050	0.5 ml	100
4786-0125	1.25 ml	100
4788-0250	2.5 ml	100
4790-0500	5.0 ml	100
4792-1250	12.5 ml	100
4794-2500	25.0 ml	100
4796-5000	50.0 ml	100

8. Technical Data

Tip Size	Dispensing Volume			Systematic Error (Inaccuracy)			Random Error (Imprecision; CV)		
	Minimum		Maximum	Minimum		Maximum	Minimum		Maximum
0.5 ml	10 μ l	30 μ l	50 μ l	\pm 2.0 %	\pm 1.0 %	\pm 1.0 %	\pm 2.0 %	\pm 1.0 %	\pm 0.8 %
1.25 ml	25 μ l	75 μ l	125 μ l	\pm 0.9 %	\pm 0.9 %	\pm 0.9 %	\pm 0.9 %	\pm 0.7 %	\pm 0.6 %
2.5 ml	50 μ l	150 μ l	250 μ l	\pm 0.7 %	\pm 0.7 %	\pm 0.7 %	\pm 0.9 %	\pm 0.7 %	\pm 0.6 %
5.0 ml	100 μ l	300 μ l	500 μ l	\pm 0.6 %	\pm 0.6 %	\pm 0.6 %	\pm 0.6 %	\pm 0.5 %	\pm 0.3 %
12.5 ml	250 μ l	750 μ l	1250 μ l	\pm 0.5 %	\pm 0.5 %	\pm 0.5 %	\pm 0.6 %	\pm 0.5 %	\pm 0.3 %
25 ml	500 μ l	1500 μ l	2500 μ l	\pm 0.4 %	\pm 0.4 %	\pm 0.4 %	\pm 0.6 %	\pm 0.4 %	\pm 0.25 %
50 ml	1000 μ l	3000 μ l	5000 μ l	\pm 0.3 %	\pm 0.3 %	\pm 0.3 %	\pm 0.5 %	\pm 0.4 %	\pm 0.25 %

Test conditions in accordance with EN ISO 8655

Liquid: Water bi-distilled, degassed

Test Temperature: 20–25°C, \pm 0.5 % constant

(Data for 0.5 ml, 1.25 ml and 2.5 ml tips are determined with a standard 200 μ l pipet tip attached)

Operating Temperature: +4 °C +40 °C

Measurement: Performed with USA Scientific repeating pipet tips in accordance with EN ISO 8655

Technical specifications are subject to change without notice.

9. Quick Reference Guide

Important: The Quick Reference Guide should only be used after the operator is thoroughly acquainted with the detailed instructions, otherwise errors may occur.

- **Look for desired volume in the volume selection chart. (See page 5.)**
- **Select appropriate repeating tip by number of dispensing steps.**
- **Set volume selection dial to corresponding position.**
- **Slide filling lever down.**
- **Raise locking clamp upward.**
- **Insert tip into position.**
- **Lower locking clamp and close it completely.**
- **Immerse the tip into the liquid.**
- **Slide filling lever upward.**
- **Discard first dispensing step.**
- **Dispense.**
- **Empty tip completely.**
- **Raise locking clamp upward.**
- **Remove tip.**

10. Manufacturing and Inspection Standards

Product Description

Manual Repeating Pipet

Catalog Number

4736-8025

This product has been manufactured and inspected in accordance with the following International and European standards:

EN ISO 8655

Piston-Operated Volumetric Apparatus

ASTM E1154-89 (2003)

Standard Specification for Piston or Plunger Operated Volumetric Apparatus

98/79/EEC

In Vitro Diagnostic Medical Devices

February 2008

USA Scientific, Inc.

PO Box 3565
Ocala, FL 34478
Phone: 800-522-8477
352-237-6288
Fax: 352-351-2057
infoline@usascientific.com
www.usascientific.com



Tolerance Check