Repeating Pipette

User Manual

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User Manual

1. General

The repeating pipette 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 pipette allows the selection of five separate volumes from each TipOne repeating tip. Eight different tip sizes provide the most important volumes from 2 to 5000 µl. Use only original USA Scientific TipOne repeating tips to guarantee performance.

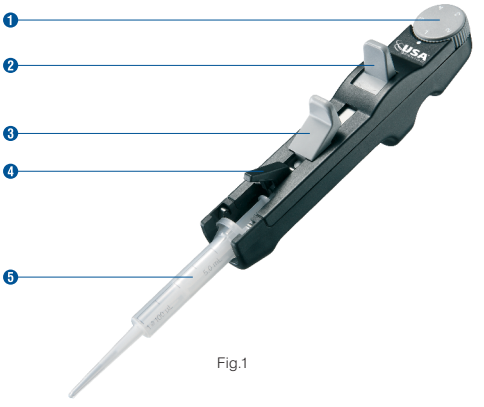

Fig.1

1.1. Design Principle of the Repeating Pipette (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 TipOne repeating tips.
2. **Dispensing lever**
   To dispense, press the dispensing lever down until it stops.
3. **Filling lever**
   To fill the tip, slide the filling lever upward.
4. **Locking clamp**
   To secure the tip, tighten the locking clamp down over the top of the tip.
5. **TipOne repeating pipette tip**

2. Volume Selection and Choice of Tips

For repetitive dispensing of a specific volume:

- Find the desired volume in the columns on the right.
- The required dial setting and maximum number of pipetting steps for the volume are shown at the top of the columns.
- Select the corresponding TipOne repeating tip from the column on the left.

TIP SELECTION GUIDE

Dispensing Volumes of TipOne Repeating Pipette Tips with the 4736-8025 Repeating Pipette					
Selection Dial Setting	1	2	3	4	5
Maximum Pipetting Steps	48	23	15	11	8
0.1 ml tip	2 µl	4 µl	6 µl	8 µl	10 µl
0.5 ml tip	10 µl	20 µl	30 µl	40 µl	50 µl
1.0 ml tip	20 µl	40 µl	60 µl	80 µl	100 µl
2.5 ml tip	50 µl	100 µl	150 µl	200 µl	250 µl
5.0 ml tip	100 µl	200 µl	300 µl	400 µl	500 µl
10.0 ml tip	200 µl	400 µl	600 µl	800 µl	1000 µl
25.0 ml tip	500 µl	1.0 ml	1.5 ml	2.0 ml	2.5 ml
50.0 ml tip	1.0 ml	2.0 ml	3.0 ml	4.0 ml	5.0 ml

***Adapter necessary for 25 ml and 50 ml tips**

2.1. TipOne® Repeating Pipette 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 1.0 ml tip has a minimum volume where 1=20 µl. At setting 4, the dispensed volume will be 4 x 20 µl or 80 µl.

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. Using the 25 and 50 ml Tip Adapters (Fig.3)

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 Tip

- Slide the filling lever ❶ down until it stops.
- Raise the locking clamp ❷ 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 pipette (Fig. 4).

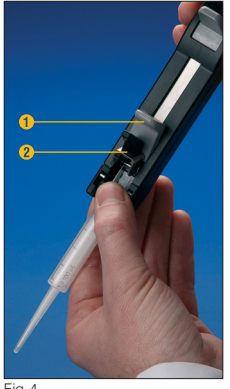

Fig. 4


Fig. 5

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

3.2. Filling the Tip

Use the following steps for all sizes of tips. 0.1 ml, 0.5 ml, 1.0 ml, and 2.5 ml tips may also be used with a standard 200 µl pipette 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 pipette is now ready for operation.

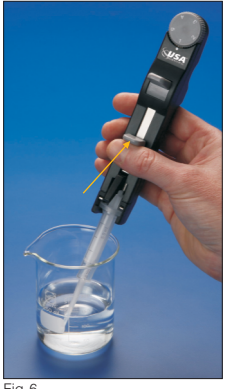
Fig. 6

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 µl pipette tip to the 5.0 ml or 10.0 ml repeating tips. Never attach a standard pipette 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 pipette 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 pipette 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 pipette with an attached, partially filled tip should be stored in a stand to prevent air from entering the pipette.

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 pipette 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 pipette can be cleaned with warm water or isopropyl alcohol.

There are no other maintenance requirements.

Important: Under no circumstances should the pipette be dismantled!

Do not autoclave the pipette 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 pipette 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 the 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

TipOne Repeating Pipette and Adapters		
Catalog No.	Description	Quantity
4736-8025	Repeating pipette	1
4756-2500	Adapter for 25 ml TipOne tips	1
4756-5000	Adapter for 50 ml TipOne 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 pipette. We do not honor any warranty or accept any responsibility for damage resulting from such action.

TipOne® Repeating Pipette Tips		
Catalog No.	Volume	Quantity
4751-0010	0.1 ml	100
4751-0050	0.5 ml	100
4751-0100	1.0 ml	100
4751-0250	2.5 ml	100
4751-0500	5.0 ml	100
4751-1000	10.0 ml	100
4751-2500	25.0 ml	100
4751-5000	50.0 ml	100

TipOne® Repeating Pipette Tips, Sterile		
Catalog No.	Volume	Quantity
4761-0010	0.1 ml	100
4761-0050	0.5 ml	100
4761-0100	1.0 ml	100
4761-0250	2.5 ml	100
4761-0500	5.0 ml	100
4761-1000	10.0 ml	100
4761-2500	25.0 ml	100
4761-5000	50.0 ml	100

8. Technical Data

	Dispensing Volume		Systematic Error (Inaccuracy)		Random Error (Imprecision; CV)	
Tip Size	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
0.1 ml	2 µl	10 µl	± 1.6 %	± 1.6 %	≤ 5.0 %	≤ 2.5 %
0.5 ml	10 µl	50 µl	± 1.0 %	± 1.0 %	≤ 1.5 %	≤ 0.8 %
1.0 ml	20 µl	100 µl	± 0.9 %	± 0.9 %	≤ 0.9 %	≤ 0.6 %
2.5 ml	50 µl	250 µl	± 0.8 %	± 0.8 %	≤ 0.8 %	≤ 0.5 %
5.0 ml	100 µl	500 µl	± 0.6 %	± 0.6 %	≤ 0.6 %	≤ 0.3 %
10.0 ml	200 µl	1000 µl	± 0.5 %	± 0.5 %	≤ 0.6 %	≤ 0.3 %
25 ml	500 µl	2500 µl	± 0.4 %	± 0.4 %	≤ 0.6 %	≤ 0.25 %
50 ml	1000 µl	5000 µl	± 0.3 %	± 0.3 %	≤ 0.5 %	≤ 0.25 %

Test conditions in accordance with EN ISO 8655

Liquid: Water bi-distilled, degassed
Test Temperature: 20–25°C, ±0.5 % constant

Operating Temperature: +4 °C +40 °C
Measurement: Performed with USA Scientific repeating pipette 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 Pipette

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

August 2017