

**Instructions for Use**  
Dispensing tools  
English (EN)

**1 About this manual**

**1.1 Notes on this manual**

This document supplements the operating manual for the product. This document does not replace the operating manual.

1. Before using the product, read this document.
2. Also read the operating manual for the device with which you are using the accessory.

The dates in this manual correspond to the international date format as specified in the ISO 8601 standard. All dates are shown in the format YYYY-MM-DD or YYYY-MM.

**1.2 Other applicable documents**

The following documents supplement this manual:

- epMotion operating manual
- epBlue with MultiCon PC software manual

**2 Product description**

**2.1 Features**

Dispensing tools are piston-stroke pipettes that work according to the air cushion principle.

If the piston moves upward in the dispensing tool, liquid will be aspirated into the pipette tip. If the piston moves downward in the dispensing tool, liquid will be dispensed from the pipette tip.

In multi-channel dispensing tools, all pistons move simultaneously.

Table 1: Available dispensing tools and their volume ranges

Volume range	Single-channel dispensing tool	Four-channel dispensing tool	Eight-channel dispensing tool
0.2 µL – 10 µL	TS 10	-	TM 10-8
1 µL – 50 µL	TS 50	TM 50-4	TM 50-8
20 µL – 300 µL	TS 300	TM 300-4	TM 300-8
40 µL – 1000 µL	TS 1000	TM 1000-4	TM 1000-8

## 2.2 Product overview

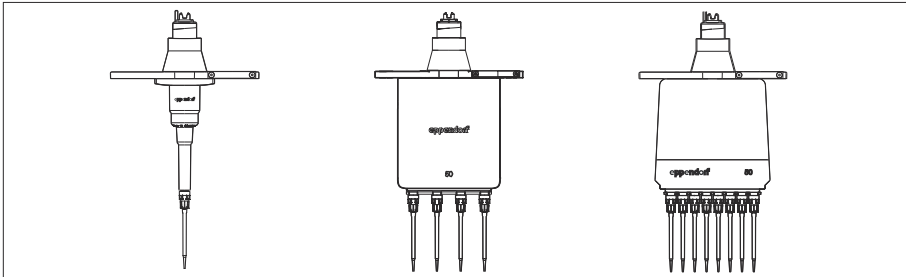


Fig. 2-1: Single-channel, four-channel, eight-channel dispensing tool

## 3 Installation

### 3.1 Checking the delivery package

1. Check that the supplied components match the specifications of the delivery package.
2. If any parts are missing, contact your Eppendorf partner.

#### Scope of delivery

- Dispensing tool as defined in the order
- Instructions for use
- Eppendorf certificate

With multi-channel dispensing tools, the following is included in addition:

- Tool for the removal of worn o-rings
- Mounting aid for o-rings
- With eight-channel dispensing tools: 8 sealing rings
- With four-channel dispensing tools: 4 sealing rings

## 4 Application

Information on using the dispensing tools can be found in the operating manual and the software manual for the device.

5 Maintenance

5.1 Maintenance

Eppendorf SE recommends having your device inspected and maintained at regular intervals by trained and skilled personnel.

Eppendorf SE offers customized service solutions for preventive maintenance, qualification and calibration of your device. For information, offers and contact options, visit our website [www.eppendorf.com/epservices](http://www.eppendorf.com/epservices).

5.1.1 Service schedule

Interval	Servicing work
As required	Cleaning the dispensing tool
Yearly	Replacing the sealing rings on the dispensing tool
100,000 full strokes or 200,000 strokes	Servicing the dispensing tools <ul style="list-style-type: none"><li>Send the dispensing tool to the authorized service partner.</li></ul>

5.1.2 Replacing sealing rings on multi-channel dispensing tools



**NOTICE! Damage to the tool**

If you damage or contaminate the gold contacts of the tool, the tool will become defective.

- Do not touch the gold contacts.

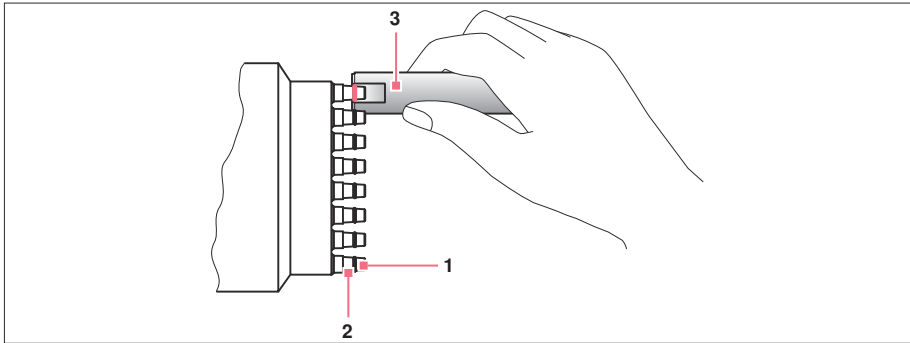
Replace the sealing rings in the following cases:

- The sealing rings are damaged.
- The pipette tips are not inserted in parallel.
- The pipette tips are dripping.

## 4 Instructions for Use

### Dispensing tools

English (EN)



1 Sealing ring

3 Auxiliary tool

2 Tip cone

#### Tool:

- Mounting aid
- Auxiliary tool

#### Material:

- New sealing rings
- Cloth
- Water

1. Position the upper edge of the auxiliary tool level with a sealing ring.
2. Use the auxiliary tool to cut the sealing ring.
3. Use your fingers to remove the sealing ring from the tip cone.
4. Moisten a cloth with water.
5. Clean the tip cone with the cloth.
6. Use the mounting aid to attach a new sealing ring to the tip cone.
7. Position the sealing ring in the groove of the tip cone.
8. Replace all sealing rings as described.

## **5.2 Cleaning**

### **5.2.1 Performing a spray decontamination**

Protective equipment:

- Laboratory protective clothing

Material:

- Decontamination agent
  - Deionized water
  - Cloth
  - Cotton swabs
1. Spray the surfaces with decontamination agent.  
All surfaces are moistened with decontamination agent.
  2. Allow the decontamination agent to take effect.
  3. Moisten a cloth and a cotton swab with deionized water.
  4. Use the cloth and cotton swab to remove the decontamination agent.
  5. Allow the surfaces to dry.

### **5.2.2 Performing a wipe decontamination**

Protective equipment:

- Laboratory protective clothing

Material:

- Decontamination agent
- Deionized water
- Cloth
- Cotton swabs

Prerequisites:

- The ejector sleeve of the single-channel dispensing tool has been removed.
1. Moisten a cloth and a cotton swab with decontamination agent.
  2. Use the damp cloth to clean all accessible surfaces.
  3. Use the cotton swab to clean surfaces that are difficult to access.  
All surfaces are moistened with decontamination agent.
  4. Allow the decontamination agent to take effect.

## **6 Instructions for Use**

### Dispensing tools

#### English (EN)

5. Moisten a cloth and a cotton swab with deionized water.
6. Use the cloth and cotton swab to remove the decontamination agent.
7. Allow the surfaces to dry.

## **6 Disposal**

### **6.1 Preparing for disposal**

#### **Preparing disposal according to legal regulations**



For information on the legal regulations that apply in your country, contact your local authority and your Eppendorf partner.



Dispose of non-decontaminable devices as hazardous waste.

1. Check which legal regulations apply to disposal in your country.
2. Choose a certified waste disposal company or contact your Eppendorf partner.

#### **Creating a decontamination certificate**

Prerequisites:

- The device has been decontaminated.

1. Download a decontamination certificate from our webpage [www.eppendorf.com](http://www.eppendorf.com).
2. Complete the decontamination certificate.

### **6.2 Handing over the device to the disposal company**

1. Inform the disposal company of any hazards posed by the device, e.g., locking devices, flammable substances.
2. Hand over the device and the decontamination certificate to the certified disposal company.

## 7 Technical data

### 7.1 Error of measurements in dispensing mode Pipette

Dispensing tool	Volume range	Volume	Error of measurement			
			Systematic		Random	
			%	µL	%	µL
TS 10	0.2 µL – 10 µL	0.2 µL	±25	±0.05	±19.8	±0.04
		1 µL	±5	±0.05	±3	±0.03
		5 µL	±2.4	±0.12	±0.5	±0.025
		10 µL	±1.2	±0.12	±0.25	±0.025
TS 50	1.0 µL – 50 µL	1 µL	±15	±0.15	±5	±0.05
		5 µL	±5	±0.25	±3	±0.15
		25 µL	±1.5	±0.375	±0.6	±0.15
		50 µL	±1.0	±0.5	±0.4	±0.2
TS 300	20 µL – 300 µL	20 µL	±4	±0.8	±2.5	±0.5
		30 µL	±3	±0.9	±1.5	±0.45
		150 µL	±1	±1.5	±0.4	±0.6
		300 µL	±0.6	±1.8	±0.3	±0.9
TS 1000	40 µL – 1000 µL	40 µL	±5	±2	±1.5	±0.6
		100 µL	±2	±2	±1.0	±1.0
		500 µL	±1	±5	±0.2	±1.0
		1000 µL	±0.7	±7	±0.15	±1.5
TM 10-8	0.2 µL – 10 µL	1 µL	±7.5	±0.075	±5	±0.05
		5 µL	±2.5	±0.125	±2	±0.1
		10 µL	±2	±0.2	±0.6	±0.06
TM 50-4 TM 50-8	1.0 µL – 50 µL	1 µL	±25	±0.25	±10	±0.1
		5 µL	±5	±0.25	±5.0	±0.25
		25 µL	±2	±0.5	±1.2	±0.3
		50 µL	±1.2	±0.6	±0.6	±0.3

Dispensing tool	Volume range	Volume	Error of measurement			
			Systematic		Random	
			%	µL	%	µL
TM 300-4	20 µL – 300 µL	20 µL	±10	±2.0	±4.0	±0.8
TM 300-8		30 µL	±10	±3.0	±3.5	±1.05
		150 µL	±2.5	±3.75	±0.8	±1.2
		300 µL	±1.5	±4.5	±0.5	±1.5
TM 1000-4	40 µL – 1000 µL	40 µL	±6	±2.4	±2.5	±1.0
TM 1000-8		100 µL	±3	±3	±1.5	±1.5
		500 µL	±1.5	±7.5	±0.3	±1.5
		1000 µL	±0.8	±8.0	±0.15	±1.5

## 7.2 Test conditions

Test conditions and test evaluations are based on DIN EN ISO 8655-6.

The errors of measurement for the volumes  $\geq 1 \mu\text{L}$  were determined under the following conditions:

- Water in accordance with DIN EN ISO 8655-6
- Ambient temperature  $20\text{ }^{\circ}\text{C} - 25\text{ }^{\circ}\text{C}$ ,  $\pm 0.5\text{ }^{\circ}\text{C}$
- epT.I.P.S. Motion pipette tips with the purity grade Eppendorf Quality
- Free-jet dispensing
- Six-digit balance

The error of measurement for the volume  $0.2 \mu\text{L}$  was determined by liquid dispensing in *contact dispensing* mode.

## 7.3 Volume aspiration in dispensing mode *Multidispense*

The aspirated volume depends on the dispensing tool. The epBlue software automatically calculates the volume to be aspirated.



Dispensing tool	Volume per channel for reverse stroke	Volume per channel for remaining stroke
Single-channel dispensing tool TS 10	1.8 µL	0.8 µL
Single-channel dispensing tool TS 50	5.8 µL	2.5 µL
Single-channel dispensing tool TS 300	16.7 µL	3.7 µL
Single-channel dispensing tool TS 1000	50.3 µL	35.2 µL
Four-channel dispensing tool TM 50-4	5.8 µL	2.5 µL
Four-channel dispensing tool TM 300-4	45.2 µL	5.0 µL
Four-channel dispensing tool TM 1000-4	50.3 µL	35.2 µL
Eight-channel dispensing tool TM 10-8	1.8 µL	0.8 µL
Eight-channel dispensing tool TM 50-8	5.8 µL	2.5 µL
Eight-channel dispensing tool TM 300-8	45.2 µL	5.0 µL
Eight-channel dispensing tool TM 1000-8	50.3 µL	35.2 µL

The reverse stroke and remaining stroke are identical for all liquid types.

## 8 Ordering information

Ordering information for pipette tips and accessories can be found at [www.eppendorf.com](http://www.eppendorf.com).

### 8.1 Dispensing tools

Description	Order no.
<b>TM 10-8 eight-channel dispensing tool</b> 8-channel 0,2 – 10 µL	5280 000 304
<b>TM 1000-8 eight-channel dispensing tool</b> 8-channel 40 – 1.000 µL	5280 000 258
<b>TM 300-8 eight-channel dispensing tool</b> 8-channel 20 – 300 µL	5280 000 231

**Instructions for Use**

Dispensing tools

English (EN)

Description	Order no.
<b>TM 50-8 eight-channel dispensing tool</b> 8-channel 1,0 – 50 µL	5280 000 215
<b>TS 10 single channel dispensing tool</b> 1-channel 0,2 – 10 µL	5280 000 100
<b>TS 1000 single channel dispensing tool</b> 1-channel 40 – 1.000 µL	5280 000 053
<b>TS 300 single channel dispensing tool</b> 1-channel 20 – 300 µL	5280 000 037
<b>TS 50 single channel dispensing tool</b> 1-channel 1,0 – 50 µL	5280 000 010
<b>TM 1000-4 four-channel dispensing tool</b> 4-channel 40 – 1.000 µL	5280 000 452
<b>TM 300-4 four-channel dispensing tool</b> 4-channel 20 – 300 µL	5280 000 436
<b>TM 50-4 four-channel dispensing tool</b> 4-channel 1 – 50 µL	5280 000 410

**Your local distributor: [www.eppendorf.com/contact](http://www.eppendorf.com/contact)**

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