

# microman<sup>®</sup>

E

## User's Guide

EN





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#### **NOTICE**

Before use, please carefully read [WARRANTY](#) on page 17 of this User's Guide!



# INTRODUCTION



Congratulations on purchasing your new MICROMAN E® pipette. MICROMAN E is suitable for many different applications, including pipetting volatile, viscous, dense, or high surface tension liquids. It is a quality product from Gilson, which is fully compliant with ISO 8655 standards.

The six models available allow for precise and accurate pipetting of viscous, dense, and volatile liquids. They also enable contamination-free pipetting, preventing vapor contamination and cross-contamination. M25E, M50E, and M250E, with thin and tall capillary pistons (CPs) are especially suited for use with tall or narrow vessels.

Enjoy the following features:

- MICROMAN E pipettes are equipped with a **positive displacement mechanism** isolating the aspirated liquid from the pipette body. The positive displacement mechanism prevents the sample-to-sample contamination that can result from the aerosol effect.
- MICROMAN E uses **disposable capillary pistons**. These are the only parts that contact with the aspirated liquids, and replacement thereof will provide absolute protection against contamination caused by carryover between samples or reagents. Simply replace the capillary piston between assays; they are ejected automatically and simultaneously, thus avoiding any risk for the operator.
- MICROMAN E is equipped with a **direct reading volumeter** that allows precise adjustment of the required volume. At the manufacturing stage, each MICROMAN E is permanently adjusted to the corresponding capillary piston. The capillary piston is positioned automatically, and therefore no further adjustment is requested when replacing it.
- MICROMAN E requires no lubrication, due to the nature and quality of the materials used in its component parts.

## Parts Checklist

Verify that the following items are present:

- MICROMAN E,
- User's Guide,
- Safety bag,
- Adhesive ID-tags (strip of 6),
- Capillary pistons (10),
- Certificate of conformity (including barcode sticker).

## Good Laboratory Practice (GLP) Features

- No need to touch disposables (capillary piston).
- Serial Number: engraved on pipette body.
- Barcode: on the box and with the certificate (can be transferred).
- ID Tag (Application or User).
- Color-coded push button indicating the volume range.
- Data matrix engraved on pipette body.
- Gilson certificate of conformity according to ISO 8655.

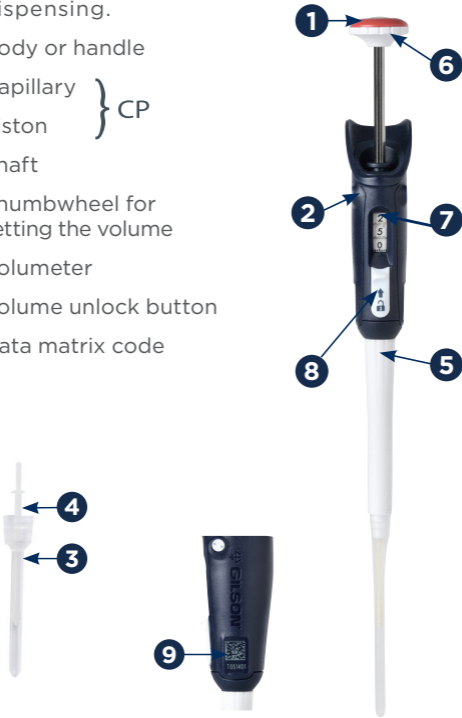


**Figure 1**  
Data Matrix and  
Serial Number  
Location



## Description

- 1 Color-coded push button indicating the volume range for aspirating and dispensing.
- 2 Body or handle
- 3 Capillary
- 4 Piston } CP
- 5 Shaft
- 6 Thumbwheel for setting the volume
- 7 Volumeter
- 8 Volume unlock button
- 9 Data matrix code



**Figure 2**  
MICROMAN® E

# Operating Ranges and Material

## Available Models

MODEL	VOLUME RANGE
M10E	1 $\mu\text{L}$ to 10 $\mu\text{L}$
M25E	3 $\mu\text{L}$ to 25 $\mu\text{L}$
M50E	20 $\mu\text{L}$ to 50 $\mu\text{L}$
M100E	10 $\mu\text{L}$ to 100 $\mu\text{L}$
M250E	50 $\mu\text{L}$ to 250 $\mu\text{L}$
M1000E	100 $\mu\text{L}$ to 1000 $\mu\text{L}$



## Materials

MODEL	SPRING	CLAMP	SHAFT	BODY (B)
M10E	SS	Be Alloy	PBT	PVDF/PP
M25E	SS	Be Alloy	PVDF	PVDF/PP
M50E	SS	Be Alloy	PVDF	PVDF/PP
M100E	SS	Be Alloy	PBT	PVDF/PP
M250E	SS	Be Alloy	PVDF	PVDF/PP
M1000E	SS	Be Alloy	PVDF	PVDF/PP

CP	CAPILLARY (C)	PISTON (P)
CP10	Polypropylene	Polyester
CP25	Polypropylene	Polyester
CP50	Polypropylene	Polyester
CP100	Polypropylene	Polyethylene
CP250	Polypropylene	Polyethylene
CP1000	Polypropylene	Polyacetal

### Abbreviations

SS = Stainless Steel

Be = Beryllium

PBT = Polybutylene Terephthalate

PP = Polypropylene

PVDF = Polyvinylidene Fluoride



## Specifications

MICROMAN E is a high quality pipette that offers excellent accuracy and precision. The figures provided in the “Gilson Maximum Permissible Errors” table were obtained using Gilson CPs. These figures are only guaranteed when using genuine Gilson CPs.

Each pipette is inspected and validated by qualified technicians according to the Gilson Quality System.

Gilson declares that its manufactured pipettes comply with the requirements of the ISO 8655 Standard, by type testing. The adjustment is carried out under strictly defined and monitored conditions (ISO 8655-6):

- Basis of adjustment, Ex.
- Reference temperature, 20°C
- Relative humidity, 50%
- Barometric pressure, 101 kPa
- Use of distilled water grade 3 (ISO 3696)
- Ten measurements for each test volume, which are nominal volume, 50% of nominal volume, and the minimum or 10% of nominal volume.

## Performance Tests

Each pipette is inspected and validated according to the Gilson Quality Assurance System. Based on extensive historical data, manufacturing conditions, and expertise, and in compliance with ISO standards relative to statistical process control, the assurance level of this instrument performing to specifications is 99.8%. Specifications rely on quality and consistency for the whole pipetting system and are guaranteed only when the pipette is used with Gilson capillary pistons.

## Gilson Maximum Permissible Errors

MODEL (PART NUMBER)		VOLUME ( $\mu\text{L}$ )		MAXIMUM PERMISSIBLE ERRORS			
				GILSON		ISO 8655	
				SYSTEMATIC ERROR ( $\mu\text{L}$ )	RANDOM ERROR ( $\mu\text{L}$ )	SYSTEMATIC ERROR ( $\mu\text{L}$ )	RANDOM ERROR ( $\mu\text{L}$ )
M10E (FD10001)	Min.	1	$\pm 0.09$	$\leq 0.03$	$\pm 0.2$	$\leq 0.1$	
		5	$\pm 0.10$	$\leq 0.03$	$\pm 0.2$	$\leq 0.1$	
	Max.	10	$\pm 0.15$	$\leq 0.06$	$\pm 0.2$	$\leq 0.1$	
M25E (FD10002)	Min.	3	$\pm 0.25$	$\leq 0.08$	$\pm 0.7$	$\leq 0.3$	
		10	$\pm 0.27$	$\leq 0.08$	$\pm 0.7$	$\leq 0.3$	
	Max.	25	$\pm 0.30$	$\leq 0.10$	$\pm 0.7$	$\leq 0.3$	
M50E (FD10003)	Min.	20	$\pm 0.34$	$\leq 0.20$	$\pm 0.7$	$\leq 0.3$	
	Max.	50	$\pm 0.70$	$\leq 0.30$	$\pm 0.7$	$\leq 0.3$	
M100E (FD10004)	Min.	10	$\pm 0.50$	$\leq 0.20$	$\pm 1.5$	$\leq 0.6$	
		50	$\pm 0.75$	$\leq 0.30$	$\pm 1.5$	$\leq 0.6$	
	Max.	100	$\pm 1.00$	$\leq 0.40$	$\pm 1.5$	$\leq 0.6$	
M250E (FD10005)	Min.	50	$\pm 1.50$	$\leq 0.30$	$\pm 6$	$\leq 2.0$	
		100	$\pm 1.70$	$\leq 0.30$	$\pm 6$	$\leq 2.0$	
	Max.	250	$\pm 2.50$	$\leq 0.50$	$\pm 6$	$\leq 2.0$	
M1000E (FD10006)	Min.	100	$\pm 3.0$	$\leq 1.6$	$\pm 12$	$\leq 4.0$	
		500	$\pm 5.0$	$\leq 2.5$	$\pm 12$	$\leq 4.0$	
	Max.	1000	$\pm 8.0$	$\leq 4.0$	$\pm 12$	$\leq 4.0$	

The data given in the table conform to the ISO 8655-2 Standard.



# FITTING THE CAPILLARY PISTON

Make sure the capillary piston (CP) is compatible with the MICROMAN E model that will be used.

## CP25, CP50, and CP250 Bulk

The capillaries and pistons are delivered in two separate boxes. To fit a capillary piston:

CP	MODEL
CP10	M10E
CP25	M25E
CP50	M50E
CP100	M100E
CP250	M250E
CP1000	M1000E

1. Take care not to damage the sealing tip **1** when handling the piston **3**.
2. Select a piston **3** and slide it into the capillary **4**.
3. Gently push the capillary until it snaps onto the capillary holder.
4. Attach the stem **2** by slowly pressing the push button until you feel and hear a slight click and then continue to press to the first stop. Finally, pipette the liquid.



**Figure 3**  
MICROMAN  
Capillary Piston

### NOTICE

Never lubricate the capillary holder, capillary, or any other part of the pipette. If the capillary tends to slip off the capillary holder, clean the capillary holder with ethanol, using a medical wipe or similar soft tissue.



## CP10, CP25, CP50, CP100, CP250, and CP1000 Tipack

Capillary pistons (CP) are delivered ready to use. To fit a capillary piston:

1. Press the MICROMAN E onto the capillary piston until it is firmly seated ①.
2. Pick up the CP from the rack ②.
3. Slowly press the push button until **you feel and hear a slight click** and continue to press to the first stop ③. Then pipette the liquid.
4. Press the push button on the second stop to eject the CP.



**Figure 4**  
CP fitting on MICROMAN® E

# Chapter 3

## PIPETTING



### Setting the Volume

The volume of liquid to be aspirated is set using the volumeter. The volumeter consists of three number dials, which are read from top (most significant digit) to bottom (least significant digit). A marker is used to set exact or intermediate volumes using the scale on the bottom dial.

The dials are colored either black or red to indicate the position of the decimal point, according to the model (see examples).

M10E	M25E	M50E	M100E	M250E	M1000E
0 6 8	0 6 8	3 6 8	0 6 8	1 6 8	0 7 5
6.8 $\mu$ L	6.8 $\mu$ L	36.8 $\mu$ L	68 $\mu$ L	168 $\mu$ L	0.75 mL

The volume is set by turning the thumbwheel slowly to reach the required setting.

COLOR OF VOLUMETER NUMBERS			
MODEL	BLACK	RED	INCREMENT
M10E, M25E, M50E	$\mu$ L	0.1 $\mu$ L	0.02 $\mu$ L
M100E, M250E	$\mu$ L	none	0.2 $\mu$ L
M1000E	0.1 and 0.01 mL	mL	2 $\mu$ L

**For small volume changes**, directly and slowly turn the thumbwheel.

To obtain maximum accuracy when setting the volume, proceed as follows:

- when **decreasing** the volume setting, slowly reach the required setting, making sure not to overshoot the mark.
- when **increasing** the volume setting, pass the required value by 1/3 of a turn and then slowly decrease to reach the volume, making sure not to pass the setting.





**For large volume changes**, proceed as follows:

1. Slide and hold the volume unlock button to unlock the volumeter.
2. When **decreasing** the volume setting, approach the required setting, by 1/3 of a turn. When **increasing** the volume setting, pass the required setting by 1/3 of a turn.
3. Release the unlock button.



## Aspirating

1. Press the push button to the first stop,
2. Immerse the capillary 2 mm into the liquid,
3. **Slowly release the push button to draw up the liquid (top position),**
4. Wipe any liquid from the outside of the capillary, taking care not to touch the orifice.



### NOTE

Greater uniformity and precision of dispensing are usually obtained by providing identical contact surfaces for all aliquots. This is achieved by pre-rinsing with the same liquid that is being dispensed.

To pre-rinse, aspirate with the tip and then dispense back into the original reservoir or to waste.



## Dispensing

Place the end of the capillary against the inside wall of the recipient vessel,

1. Press the push button slowly to the first stop,
2. Keeping the push button depressed, move the capillary away from the sidewall,

Withdraw MICROMAN E from the vessel and release the push button.

## Ejecting the Capillary Piston

- Press the push button to the first stop, and then press down harder to the second stop; at this point the piston and capillary are ejected simultaneously.

### NOTE

MICROMAN E is automatically adjusted when the capillary piston is correctly fitted. Once the volume is set, measurements will be accurate and precise.

# TROUBLESHOOTING

You may be able to identify and correct the problem by referring to the following information. If you cannot solve the problem, please contact your local Gilson representative.

**Leaks:**

Replace the capillary piston.

**No stroke:**

The piston is not properly fitted into the clamp; check that the piston is seated correctly (refer to pages 8). Without any capillary piston, press the push button to the first stop, and then press down harder to the second stop.

**Difficult to fit a capillary:**

Clean the capillary holder with ethanol. Without any capillary piston, press the push button to the first stop, and then press down harder to the second stop.

**Inaccuracy:**

Make sure the capillary is correctly mounted on the capillary holder (refer to [CHAPTER 2, FITTING THE CAPILLARY PISTON](#), pages 8).

**Imprecision:**

Replace the capillary piston.

**Difficult to set the volume:**

This suggests internal damage to the pipette. Contact your local Gilson representative.

**If the problem persists...**

Contact your local Gilson representative.



# CLEANING AND DECONTAMINATION



MICROMAN E is designed so that parts normally in contact with liquid contaminants are easy to clean and decontaminate.

## Cleaning

Clean the pipette with soap solution prior to decontamination.

### External

1. Wipe the entire pipette with a soft cloth or lint-free tissue soaked with soap solution to remove any stains. If the pipette is very dirty, a brush with soft plastic bristles may be used.
2. Wipe the entire pipette with a soft cloth or lint-free tissue soaked with distilled water.
3. Leave the parts to dry by evaporation or wipe them down with a clean soft cloth or lint-free tissue.

**WARNING**

Before returning any pipette, ensure that it is completely free of chemical, biological, or radioactive contamination. Use the safety bag provided by Gilson.

### Internal

Only the following components should be immersed in a decontaminant solution: clamp assembly, return spring, and capillary holder (shaft).

1. Unscrew the capillary holder (shaft).
2. Remove the clamp assembly and return spring from the shaft.
3. Set aside the body (handle) in a dry and secure location.



4. Clean the individual components using an ultrasonic bath (for 20 minutes at 50°C) or with a soft cloth and brush. Small round brushes with soft plastic bristles may be used to clean the interior of the shaft.
5. Rinse the individual components with distilled water.
6. Leave the parts to dry by evaporation or wipe them down with a clean soft cloth or lint-free tissue.
7. Reassemble the pipette.

## Decontamination

You may refer to the Decontamination Procedure LT802288 available at [www.gilson.com](http://www.gilson.com).

### Chemical Decontamination

Clean the pipette prior to decontamination. Full details of recommended decontamination procedures for Gilson pipettes are available from your supplier. Whichever decontaminant you use, check with the supplier that the product is compatible with the materials used for the component parts of the pipette, and that does not attack any of the following plastics and metals: polyester, PVDF (polyvinylidene fluoride), PP (polypropylene), PBT (polybutylene terephthalate), PC (polycarbonate), SS (stainless steel), and BE Alloy (beryllium)

### Non-immersible Parts

1. Wipe the body (handle) of the pipette with a soft cloth or lint-free tissue impregnated with the chosen decontaminant.
2. Wipe the body (handle) of the pipette with a soft cloth or lint-free tissue impregnated with distilled water or sterilized water.

### Immersible Parts

Only the following components should be immersed in a decontaminant solution: clamp assembly, return spring and capillary holder (shaft).

1. Unscrew the capillary holder (shaft).
2. Remove the clamp assembly and return spring from the shaft.
3. Set aside the body (handle) in a dry and secure location.



4. Immerse the components in the decontaminant solution or wipe them down according to the instructions provided by the manufacturer or supplier of the decontaminant.
5. Rinse the individual components with distilled or sterilized water.
6. Leave the parts to dry by evaporation or wipe them with a clean lint-free tissue or a soft cloth.
7. Reassemble the pipette.





## Chapter 6

# WARRANTY

Gilson warrants this pipette against defects in material under normal use and service for a period of 12 months from the date of purchase.

This warranty shall not apply to pipettes which are subject to abnormal use and/or improper or inadequate maintenance (contrary to the recommendations given in the User's Guide), including, but not limited to pipettes which have been subjected to physical damage, improper handling, spillage or exposure to any corrosive environment. This warranty shall also be void in the event pipettes are altered or modified by any party other than Gilson or its designates. Gilson's sole liability under this warranty shall be limited to, at Gilson's sole option, repair or replacement of any defective components of pipettes or refund of the purchase price paid for such pipettes.

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