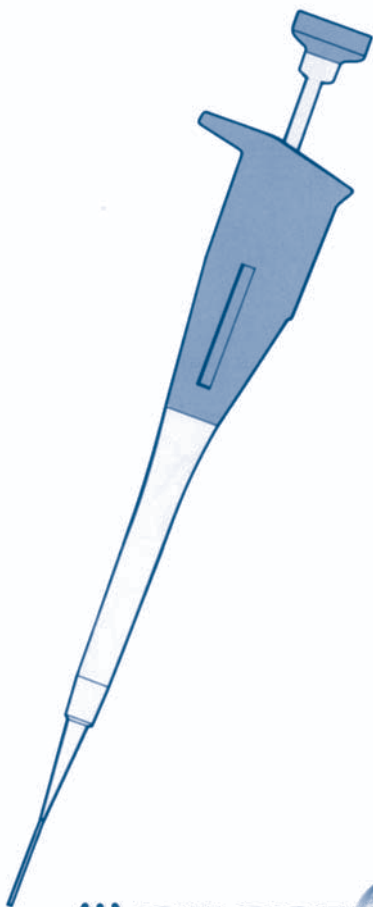


MICROMAN[®]

ENGLISH



 **GILSON[®]**
SOLUTIONS AT WORK FOR YOU



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1 - INTRODUCTION

Congratulations on acquiring your new Microman® pipette. Microman is suitable for many different types of application, including pipetting volatile, viscous, dense, or high surface tension liquids. The two autoclavable models (Microman Bio M10 and M100) permit precise pipetting of viscous materials, such as those encountered in molecular biology techniques (glycerol, enzymes, amplified DNA, blood ...). Of the four other models (Microman M25, M50, M250, and M1000), the first three are especially suited for use with long or narrow vessels, because they are equipped with longer capillaries. Enjoy the following features:

- Microman pipettes are equipped with a positive displacement mechanism that isolates the aspirated liquid from the body of the pipette. The positive displacement mechanism prevents the sample-to-sample contamination that can result from the aerosol effect.
- Microman uses disposable capillaries and pistons. Changing these parts, which must be the only ones to make contact with the aspirated liquids, can provide absolute protection against the contamination caused by carry-over from one sample or reagent to another. You simply have to change the capillary and piston between each assay; they are automatically and simultaneously ejected, thus avoiding any risk to the operator.
- Microman is equipped with a direct reading volumeter that allows precise and continuous adjustment of the required volume. Microman is permanently calibrated at the manufacturing stage, the capillary and piston are positioned automatically, therefore it requires no further calibration.
- Microman requires no lubrication or maintenance, because of the nature and quality of the materials used in its construction.

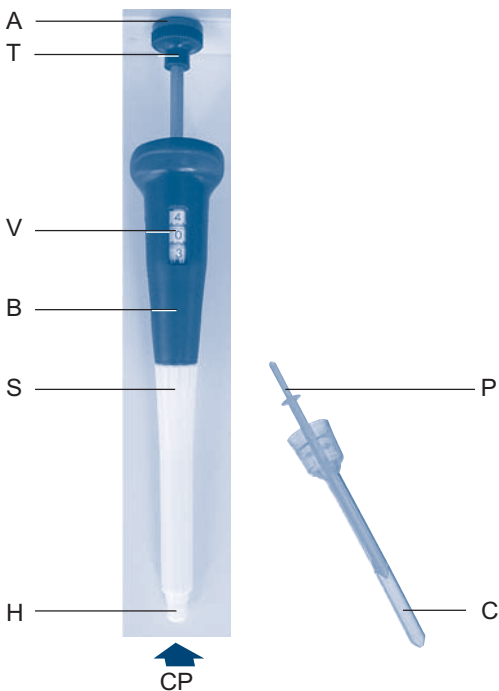
2 - PARTS CHECK LIST

Just take a moment to verify that the following items are present:

- Microman,
- User's Guide,
- Safety bag,
- Adhesive id-tags (strip of 6),
- Capillary-pistons (10),
- Certificate of conformity (including bar-code sticker).

3 - DESCRIPTION

- A) Color coded push-button for aspirating, and dispensing.
- B) Body or handle.
- C) Capillary.
- CP) Capillary-piston.
- H) Capillary-piston holder.
- P) Piston.
- S) Shaft.
- T) Thumbwheel for setting the volume.
- V) Volumeter.




4 - OPERATING RANGES AND MATERIAL

Available Models (Table 1)

Model	Volume Range	Autoclavable
M10, Bio	1 μ L to 10 μ L	Yes
M25	3 μ L to 25 μ L	No
M50	20 μ L to 50 μ L	No
M100, Bio	10 μ L to 100 μ L	Yes
M250	50 μ L to 250 μ L	No
M1000	200 μ L to 1000 μ L	No

Materials (Table 2)


Model	Spring	Clamp	Shaft CP Holder	Body (B)	Capillary (C)	Piston (P)	C-P
M10	SS	Be Alloy	Polyester	PVDF	Polypropylene	Polyester	CP10
M25	SS	Be Alloy	Polyester	PVDF	Polypropylene	Polyester	CP25
M50	SS	Be Alloy	Polyester	PVDF	Polypropylene	Polyester	CP50
M100	SS	Be Alloy	Polyester	PVDF	Polypropylene	Polyethylene	CP100
M250	SS	Be Alloy	Polyester	PVDF	Polypropylene	Polyethylene	CP250
M1000	SS	Be Alloy	Polyester	PVDF	Polypropylene	Polyacetal	CP1000

 SS = Stainless Steel
 Be = Beryllium
 PVDF = Polyvinylidene Fluoride


5 - USING MICROMAN

Three simple steps are necessary:

- 1) Mount the capillary-piston.
- 2) Set the volume.
- 3) Aspirate and Dispense.

 *Microman is automatically calibrated, by correctly fitting a capillary-piston. After setting the volume, the volume measured will be accurate and precise.*

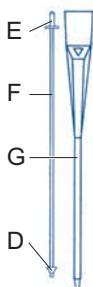
6 - FITTING THE CAPILLARY AND PISTON

 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.

Microman M25, M50, M250, and M1000

Take care not to damage the sealing tip (D) when you handle the piston (F).

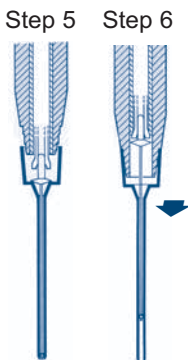
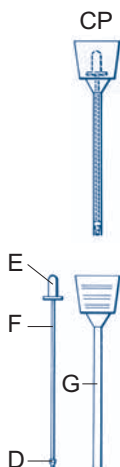
- 1) Press the push-button to the second stop to open the clamp (J).
- 2) Select a piston and slide the stem (E) fully into the clamp (F).
- 3) Slide the mounted piston into the capillary (G).
- 4) Gently push the capillary until it snaps onto the capillary-holder (H).



Microman M10 and M100

The capillary-pistons are delivered already assembled (CP). To fit a capillary-piston, follow this procedure:

- 1) Verify that the model of capillary-piston (identified on the Tipack security sticker on the rack) corresponds to the Microman you are preparing for use: CP10 is for use with the M10 and CP100 is for use with M100.
- 2) Open the rack of CPs, thereby breaking the security sticker.
- 3) Press the push-button on the Microman past the first stop position to the second stop position. The piston clamp should now be open and protruding from the capillary-holder.
- 4) Select a capillary-piston from the Tipack rack.
- 5) Slide the Microman piston clamp inside the top of the capillary tube until the piston clamp is halfway down the piston mounting stem.
- 6) Slowly release the push-button, while pushing the body of the Microman into the capillary-piston until it is firmly seated on the Microman.
- 7) Continue releasing the push-button to ensure



that the piston is secured by the piston clamp.

- 8) Lift the Microman away from the rack. The capillary-piston is now mounted.
- 9) To ensure that the piston is correctly seated, and therefore calibrated, slowly press the push-button until you feel and hear a slight click.

7- 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).

M10	M100	M25	M50	M250	M1000
6.8 μ L	68 μ L	6.8 μ L	36.8 μ L	168 μ L	0.75 mL

Model	Color of volumeter numbers	
	Black	Red
M10, M25, M50	μ L	0.1 μ L and 0.01 μ L
M100, M250	μ L	none
M1000	0.1 and 0.01 mL	mL

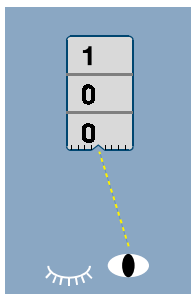
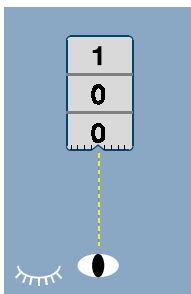
The volume is set by turning the thumbwheel slowly to reach the required setting.

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 $\frac{1}{3}$ of a turn and then slowly decrease the volume to reach the required setting, making sure not to overshoot the mark.



To avoid parallax errors, make sure that the volume indicator and the selected volume marking are in your direct line of vision. At close range you may find it helps to close one eye.



8 - PIPETTING

 When using M25, M50, or M250, firmly press the push-button to the first stop, **before pipetting**, to ensure that the stem of the piston is correctly seated in the clamp.

Aspirating

- press the push-button to the first stop (1),
- immerse the capillary 2 mm into the liquid,
- **slowly**, release the push-button to draw up the liquid (top position),
- wipe any liquid from the outside of the capillary, taking care not to touch the orifice.



Dispensing

- place the end of the capillary against the inside wall of the recipient vessel,
- press the push-button slowly to the first stop,
- keeping the push-button depressed, move the capillary away from the side wall,
- withdraw Microman from the vessel and release the push-button.

Ejecting the Piston-capillary:

Press the push-button to the first stop (1), then press harder to the second stop (2); at this point the piston and capillary are ejected simultaneously.

9 - GLP FEATURES

These are as follows:

- No-need-to-touch disposables (capillary-piston).
- Serial Number: engraved on body of the pipette.
- Bar Code: on the box and with the certificate (can be transferred).
- ID Tag (Application or User).



10 - TROUBLESHOOTING

You may be able to identify and to correct the problem by reference to the following table. If you can't solve the problem, contact your Gilson representative.



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

Leaks: change the capillary and piston.

No stroke: the piston is not properly fitted into the clamp; check that the piston is seated correctly (refer to pages 6-7).

Difficult to fit a capillary: clean the capillary-holder with ethanol.

Inaccuracy: you should check the capillary is correctly mounted on the capillary-holder (refer to pages 6-7).

Imprecision: change the capillary and piston.

Difficult to set the volume: this suggests that the pipette is damaged internally; in which case you should contact your Gilson representative.

If the problem persists ... Contact your Gilson representative.

11-CLEANING AND DECONTAMINATION

Microman is designed so that the parts normally in contact with liquid contaminants, can easily be cleaned and decontaminated.

Cleaning

The pipette must be cleaned with soap solution before it is decontaminated.

External

- 1) Wipe the entire pipette with a soft-cloth or lint-free tissue impregnated with soap solution, to remove all dirty marks. 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 impregnated with distilled water.
- 3) Leave the parts to dry by evaporation or wipe them with a clean soft-cloth or lint-free tissue.

Internal

The following components **only** can 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 brushes. 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 with a clean soft-cloth or lint-free tissue.
- 7) Reassemble the pipette.

Decontamination

Chemical Decontamination

The pipette should be cleaned before it is decontaminated. Full details of recommended decontamination procedures for Gilson pipettes are available from your supplier. Whatever other decontaminant you use, check with the supplier of the decontaminant that it is compatible with the materials used in the construction of the pipette, and does not attack either of the following plastics: Polyester or PVDF (Polyvinylidene Fluoride).

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

The following components **only** can 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 according the instructions given 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.

Autoclaving

Only Microman Bio M10 and M100 are autoclavable. The four other models (Microman M25, M50, M250, and M1000) are not autoclavable.

- 1) Unscrew the capillary-holder (shaft).
- 2) Remove the clamp assembly and return spring from the shaft.
- 3) Clean the parts to be autoclaved, especially the shaft.
- 4) Put the parts in an autoclaving sack.
- 5) Autoclave for 20 minutes at 121 °C, 0.1 MPa.
- 6) Check that the parts are dry before reassembling the pipette.
- 7) Set the pipette aside to stabilize at room temperature.

12 - SPECIFICATIONS

These specifications are obtained in the forward mode, using a gravimetric method with the temperature of the distilled water stabilized at 21.5 ± 1.5 °C.

Specifications Table

Model	Volume (μL)	Accuracy (systematic error)		Precision (random error)		
		Absolute μL	Relative %	Absolute SD μL	Relative SD %	
M10	Min.	1	± 0.06	± 6.0	≤ 0.02	≤ 2.00
		5	± 0.10	± 2.0	≤ 0.03	≤ 0.6
	Max.	10	± 0.15	± 1.5	≤ 0.05	≤ 0.5
M25	Min.	3	± 0.15	± 5.0	≤ 0.06	≤ 2.0
		10	± 0.17	± 1.7	≤ 0.08	≤ 0.8
	Max.	25	± 0.25	± 1.0	≤ 0.10	≤ 0.4
M50	Min.	20	± 0.34	± 1.7	≤ 0.12	≤ 0.6
		50	± 0.50	± 1.0	≤ 0.15	≤ 0.3
M100	Min.	10	± 0.50	± 5.0	≤ 0.2	≤ 2.0
		50	± 0.75	± 1.5	≤ 0.3	≤ 0.6
	Max.	100	± 0.100	± 1.0	≤ 0.4	≤ 0.4
M250	Min.	50	± 1.50	± 3.0	≤ 0.20	≤ 0.4
		100	± 1.70	± 1.7	≤ 0.30	≤ 0.3
	Max.	250	± 2.50	± 1.0	≤ 0.50	≤ 0.2
M1000	Min.	200	± 3	± 1.5	≤ 1.6	≤ 0.8
		500	± 5	± 1.0	≤ 2.5	≤ 0.5
	Max.	1000	± 8	± 0.8	≤ 4.0	≤ 0.4

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 the quality and consistency for the whole pipetting system; they are guaranteed only when the pipette is used with Gilson capillary-pistons.

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English

June 2002
Printed in France



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