

# pipetman<sup>®</sup>

FIXED

## User's Guide

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 GILSON<sup>®</sup>



# TABLE OF CONTENTS

## INTRODUCTION | 3

## SPECIFICATIONS | 4

## PIPETTING | 6

Aspirate | 6

Dispense | 6

Pre-Rinse | 7

User Adjustment | 7

## ASSOCIATED TIPS | 9

## RECOMMENDATIONS | 11

## TROUBLESHOOTING | 12

## SPARE PARTS | 14

## WARRANTY | 15

# INTRODUCTION



PIPETMAN® Fixed volume pipettes are available in 14 different models. Together, they cover a range of volumes from 2 to 5000  $\mu\text{L}$ .

The pipetting mechanism incorporates a highly polished stainless steel piston, a seal, and an O-ring. The mechanism requires no routine lubrication.

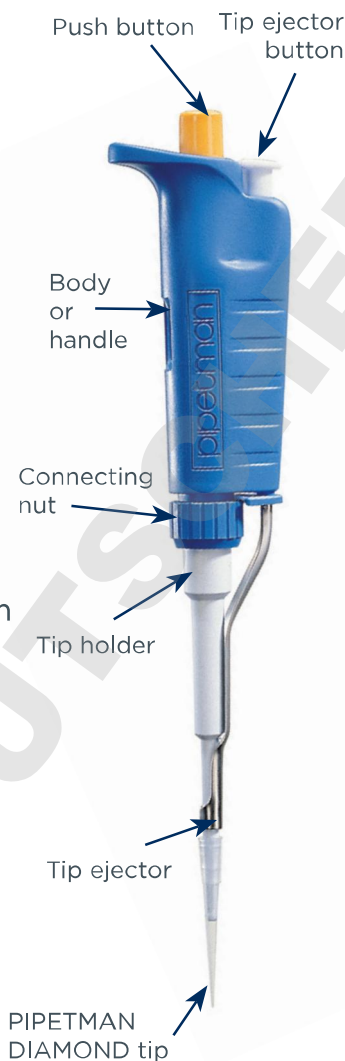
Tip ejector and disposable tips mean no need to handle tips, protecting the user from contamination.

The tip holder, the connecting nut, and the tip ejector are autoclavable for 20 minutes at 121°C and 0.1 MPa pressure.

The PIPETMAN Fixed can be easily re-adjusted in the laboratory, with compensation for variations in fluid viscosity and density. A special calibration key is provided.

The nominal volume of each model is shown on the small label on the push button.

PIPETMAN Fixed is in accordance with ISO 8655 Standard.



**Figure 1**  
PIPETMAN® Fixed



**Figure 2**  
Push Button  
Top View



# SPECIFICATIONS

## Maximum Permissible Errors

PIPETMAN Fixed is a high quality pipette that offers excellent accuracy and precision. The figures given in the “Gilson Maximum Permissible Errors” table were obtained using “PIPETMAN DIAMOND Tips”. These figures are only guaranteed using genuine PIPETMAN DIAMOND Tips.

MODEL	VOL*	GILSON		ISO 8655	
		SYSTEMATIC ERROR*	RANDOM ERROR*	SYSTEMATIC ERROR*	RANDOM ERROR*
F2 (F123770)	2	± 0.08	≤ 0.03	± 0.08	≤ 0.04
F5 (F123771)	5	± 0.10	≤ 0.04	± 0.125	≤ 0.075
F10 (F123772)	10	± 0.10	≤ 0.05	± 0.12	≤ 0.08
F20 (F123604)	20	± 0.20	≤ 0.06	± 0.2	≤ 0.1
F25 (F123775)	25	± 0.25	≤ 0.07	± 0.5	≤ 0.2
F50 (F123778)	50	± 0.40	≤ 0.15	± 0.5	≤ 0.2
F100 (F123784)	100	± 0.80	≤ 0.25	± 0.8	≤ 0.3
F200 (F123605)	200	± 1.60	≤ 0.30	± 1.6	≤ 0.6
F250 (F123787)	250	± 3.00	≤ 0.75	± 4.0	≤ 1.5
F300 (F123788)	300	± 3.50	≤ 0.75	± 4.0	≤ 1.5
F400 (F123789)	400	± 3.60	≤ 0.80	± 4.0	≤ 1.5
F500 (F123790)	500	± 4.00	≤ 1.00	± 4.0	≤ 1.5
F1000 (F123606)	1000	± 8.0	≤ 1.3	± 8.0	≤ 3.0
F5000 (F123607)	5000	± 30	≤ 8	± 40	≤ 15.0

\*All Values in Microliters

**NOTE**

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

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.



## SPECIFICATIONS



# PIPETTING

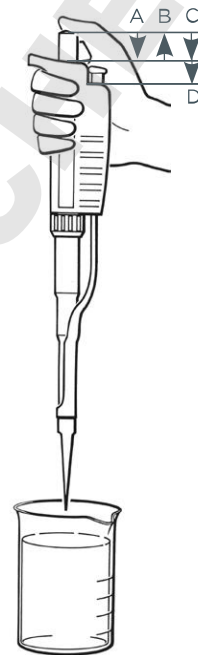
Place a tip on the tip holder. Press the tip on firmly using a slight twisting motion to ensure a positive, airtight seal (refer to [CHAPTER 4 - ASSOCIATED TIPS](#), on page 9).

**NOTE**

Always fit a tip to your PIPETMAN before aspirating any liquid.

## Aspirate

- Press the push button to the first positive stop (A), refer to Figure 3.
- Hold the pipette vertically and immerse the tip into the liquid (depth immersion 2-4 mm).
- Release the push button **slowly** and **smoothly** to aspirate the liquid (B), refer to Figure 3.
- Wait one second and then withdraw the tip from the liquid. Wipe any droplets away from the outside of the tip using medical wipe.



**Figure 3**  
Pipetting Positions

**NOTE**

Avoid touching the orifice of the tip.

## Dispense

- Place the end of the tip against the inside wall of the vessel at an angle of 10 to 40 degrees. Press the push button smoothly to the first stop (C), refer to Figure 3. Wait one second. Press the push button to the second stop to expel any residual liquid from the tip (D), refer to Figure 3.
- Keep the push button pressed fully down and (while removing the pipette) draw the tip along the inside surface of the vessel.
- Release the push button **smoothly**.
- Eject the tip by pressing the tip ejector button.



## Pre-Rinse

Some liquids (e.g., protein-containing solutions and organic solvents) can leave a film of liquid on the inside the wall of the tip; pre-rinse the tip to minimize any errors that may be related to this phenomenon.

Pre-rinsing consists of aspirating the first volume of liquid and then dispensing it back into the same vessel (or to waste). Subsequent volumes that you pipette will have levels of accuracy and precision within specifications.

This pre-rinsing operation should be repeated when a new tip is used.

## User Adjustment

PIPETMAN Fixed is factory calibrated using distilled water and very high precision balances. The nominal value of the PIPETMAN Fixed may be slightly adjusted to compensate for liquids of different density or viscosity.

**NOTICE**

Adjustments of the factory calibration must only be performed using a special calibration key (refer to Figure 4, on page 8)

This adjustment to accommodate for density or viscosity is limited to one full turn of the calibration key in either direction, which equals:

± 1.0 µL (models F2 to F20)

± 4.0 µL (models F25 to F100)

± 10.0 µL (models F120 to F200)

± 40.0 µL (models F250 to F1000)

± 200.0 µL (model F5000)

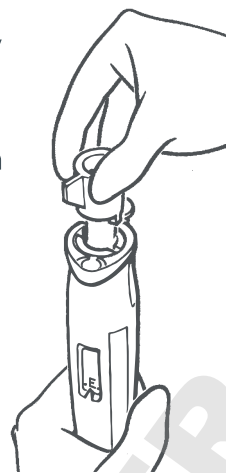
**NOTE**

The display is graduated in tenths of the key revolution (letters A, B,... J) and is read from left to right. Each small graduation mark represents 0.2 of the distance between each letter.



To adjust the volume setting to compensate for a specific density or viscosity, slide the key over the push button until notches fit into the grooves in the calibration sleeve (Figure 4), and then turn the key slowly:

- **Clockwise** to decrease the volume.
- **Counterclockwise** to increase the volume; go above the desired value, then decrease the volume to reach the required setting.



**Figure 4**  
Volume Setting Adjustment

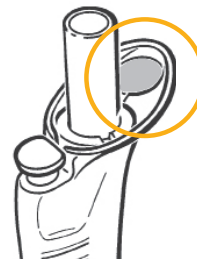
Example: When using a PIPETMAN F100 to aspirate a particularly viscous solution, you may determine gravimetrically that the volume delivered is 98.8  $\mu\text{L}$ , and the display reads “E 0.2”. Therefore, you wish to increase the volume dispensed by 1.2  $\mu\text{L}$ . As the interval between each letter on the calibration display represents 0.4  $\mu\text{L}$  for the F100 (1/10 of 4  $\mu\text{L}$ ), the calibration tool must be turned three units until the display reads “B 0.2”.

It is possible to alter the volume by more than one full turn in the counterclockwise direction. In this case, remember to readjust the same number of turns when it is necessary to return to the original setting.

Check the new volume gravimetrically. If the volumes delivered are still not sufficiently close to the desired value, make another slight adjustment in the relevant direction.

**Be sure to change tips between volume setting adjustments and to pre-rinse each new tip.**

When the PIPETMAN Fixed is readjusted to compensate for a particular solution, the original setting (ex. 0.2) can be noted on the self-adhesive labels supplied (Figure 5).



**Figure 5**  
Self-Adhesive Labels

**NOTE**

Liquids of high density, vapor pressure, or viscosity are best pipetted by the Gilson MICROMAN® positive displacement pipette.



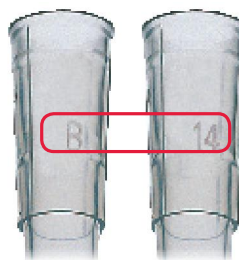
## ASSOCIATED TIPS



PIPETMAN® DIAMOND Tips are made to the highest specifications and strict quality control is maintained throughout the manufacturing process. These tips are used to calibrate PIPETMAN Fixed, therefore for optimum performance we recommend using PIPETMAN DIAMOND Tips with your PIPETMAN Fixed.

To ensure accuracy and precision, Gilson's Quality Assurance System focuses on the following critical parameters:

- PIPETMAN DIAMOND Tips are made from pure polypropylene (virgin, metal-free, to avoid the possibility of contamination). They are available sterilized and with filters.
- Optimized shape (revised collar for optimum sealing, thin walls, and fine point), making them easy to mount, flexible, with no vortexing, and improved precision.
- PIPETMAN DIAMOND Tips are free from even microscopic defects, especially at the orifice. All surfaces are smooth and hydrophobic, thereby avoiding the excessive retention of liquids that causes poor accuracy and a lack of precision.
- Mold and cavity references are marked on the collar, ensuring the traceability. For quality assurance purposes, batch numbers appear on all packages (bags and boxes).
- They form an air-tight seal with the tip holder, preventing the leaks that cause poor accuracy and a lack of precision.
- PIPETMAN DIAMOND Tips (except filter tips) may be autoclaved at 121°C for 20 minutes at 0.1 MPa.



**Figure 6**  
PIPETMAN  
DIAMOND Tips  
Traceability



ASSOCIATED TIPS

### PIPETMAN DIAMOND Filter Tips

Filter tips are used when sample-to-sample, sample-to-pipette, or sample-to-operator contamination must be avoided.

Gilson's sterilized PIPETMAN DIAMOND Filter Tips are certified free of detectable RNase, DNase, DNA, RNA, and protease.

PIPETTE	PIPETMAN DIAMOND TIPS	TYPE
F2 to F100	D200	Regular
F200	D200/D300	Regular
F250 to F1000	D1000	Regular
F5000	D5000	Regular
PIPETTE	PIPETMAN DIAMOND TIPS	TYPE
F2 to F25	DF30ST	Sterilized
F50 to F100	DF100ST	Sterilized
F200	DF200ST/DF300ST	Sterilized
F250 to F1000	DF1000ST	Sterilized

**NOTE**

To ensure the best performance from your Gilson pipette, you should ALWAYS use PIPETMAN DIAMOND Tips (in accordance with ISO 8655) to complete your pipetting system, because PIPETMAN DIAMOND Tips were used to establish the specifications.

# RECOMMENDATIONS



The recommendations below will ensure maximum performance from your PIPETMAN Fixed.

- Make sure to operate PIPETMAN Fixed slowly and smoothly.
- When aspirating, keep the tip at a constant depth below the surface of the liquid.
- PIPETMAN Fixed should be held in the vertical position.
- Change the tip before aspirating a different liquid, sample or reagent.
- Change the tip if a droplet remains on the end of the tip from the previous pipetting operation.
- Each new tip should be pre-rinsed with the liquid to be pipetted.
- Liquid should never enter PIPETMAN Fixed tip holder. To prevent this:
  - Press and release the push button slowly and smoothly.
  - Never turn the pipette upside down.
  - Never lay the pipette on its side when there is liquid in the tip. Use a dedicated stand or hanger: Gilson CARROUSEL™, TRIO™, or SINGLE™.
- Never grease pistons or seals.

### NOTE

The pipette can be used between 4°C and 40°C but the specifications may vary according to the temperature (see [CHAPTER 2 - SPECIFICATIONS](#), on page 4, for controlled conditions of use).



- When pipetting liquids with temperatures different from the ambient temperature, it is recommended to pre-rinse the tip several times before use.
- Do not pipette liquids with temperatures above 70°C or below 4°C.
- After pipetting acids or corrosive liquids which emit vapors, it is recommended to disassemble the tip holder and to rinse the piston, the O-ring, and seal with distilled water.

## Chapter 6

# TROUBLESHOOTING

The following table may help you to identify and correct the problem you might encounter.

SYMPTOM	POSSIBLE CAUSE	ACTION
	Damaged tip holder	Replace the tip holder. For F2 to F20 models, if the tip holder is damaged, the piston may also be damaged. Replace the damaged parts. (See <a href="#">CHAPTER 7 - SPARE PARTS</a> , on page 14).
	Connecting nut is loose	Tighten connecting nut
	Damaged piston and seals	Replace the piston and seals (see <a href="#">CHAPTER 7 - SPARE PARTS</a> , on page 14). Wash the inside of the tip holder using distilled water.
Pipette won't aspirate	Improper repair or assembly	Disassemble the pipette and reassemble the pipette correctly. Refer to page 14.
	Improper repair or assembly	Disassemble the pipette and reassemble the pipette correctly. Refer to page 14.
Pipette is inaccurate	Connecting nut is loose	Tighten connecting-nut
	Low quality tips	Use PIPETMAN DIAMOND tips
	Damaged tip holder	Replace the tip holder. For F2 to F20 models, if the tip holder is damaged, the piston may also be damaged. Replace the damaged parts (See <a href="#">CHAPTER 7 - SPARE PARTS</a> , on page 14).
	Damaged tip ejector	Replace tip ejector
Tips fall off or do not fit correctly	The tip ejector is loose	Assemble the tip ejector properly



If there is liquid in the tip holder, clean the pipette as follows:

- Remove the tip ejector. Unscrew the connecting nut and rinse the tip holder, piston, seal and O-ring with distilled water. Dry these parts and reassemble the pipette.

**NOTICE**

If necessary, the tip holder, connecting nut and the tip ejector can be autoclaved for 20 minutes at 121°C and at 0.1 MPa pressure. The seal and the O-ring should not be autoclaved.

If there is an air bubble when the sample is aspirated:

- Dispense the sample into its original vessel.
- Ensure that the tip is properly immersed in the sample liquid.
- Aspirate the sample more slowly.

If the bubble appears a second time, replace the tip.

The outside of the PIPETMAN Fixed can be cleaned using a cloth dampened with isopropanol.

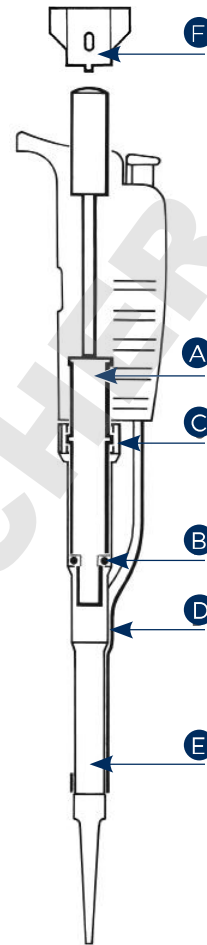
If a problem continues after carrying out the above steps, contact your Gilson representative.

**⚠ WARNING**

Before returning a pipette, please ensure that it is completely free of any chemical, biological, or radioactive contamination. Please contact your Gilson Service Center to obtain the decontamination form.



# SPARE PARTS



**NOTE**

Contact your Gilson representative to order spare parts.

ITEM	PART NUMBER				
	F2 TO F20	F25 TO F100	F200	F250 TO F1000	F5000
<b>A</b> Piston assembly	F123845	F144611	F123846	F123847	F123848
<b>B</b> Seal & O-ring (5 sets)	F144863	F144864	F144865	F144866	F144867
<b>C</b> Connecting Nut	F144723	F144723	F144723	F144723	-
<b>D</b> Tip ejector	F144766	F144767	F144768	F144769	-
<b>E</b> Service kit 1st level (1 tip holder, 3 piston seals and 3 O-rings)	F144495	F144496	F144497	F144498	F144499
<b>F</b> Adjustment key	F123674	F123674	F123674	F123674	F123674
Bags of 10 filters	-	-	-	-	F161280
Bags of 100 filters	-	-	-	-	F161241

# WARRANTY



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, or 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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