

pipetman[®]

G

User's Guide

EN





INTRODUCTION

PIPETMAN G* is a fully adjustable air displacement pipette and is used with disposable tips. To answer the current needs of the loyal users of our pipette, and still conform to Gilson brand qualities, three improvements have been added to our mechanical series:

- pipetting and purge forces dramatically decreased*,
- large volumes, 5 mL and 10 mL very comfortable,
- choose a plastic ejector or a stainless steel ejector.

**Implementation of new features to improve dramatically pipetting comfort has no impact on the legendary robustness, accuracy and precision of PIPETMAN.*

Eight single channel models cover a volume range from 0.2 μ L to 10 mL.

Parts Check List

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

- PIPETMAN G,
- User's Guide,
- Safety bag,
- Certificate of conformity (including barcode sticker).

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NOTICE

Decreased pipetting forces are due to the new designed piston assembly including the use of a very high quality of lubricant. The use of other lubricant cancels the warranty of this pipette. This lubricant is available under the reference: 5440011070. Please contact your Gilson distributor.



GLP Features

The **Serial Number** is engraved on the body of the pipette. It provides unique identification of your pipette and the date of manufacture.

Ex : AA10369

The **Barcode** on the box and the certificate of conformity provide traceability of your pipette.

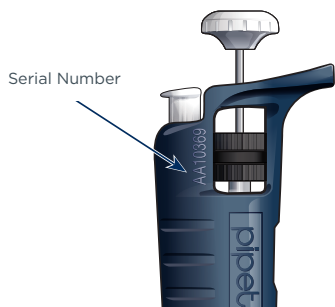


Figure 1
Serial Number Location

Description

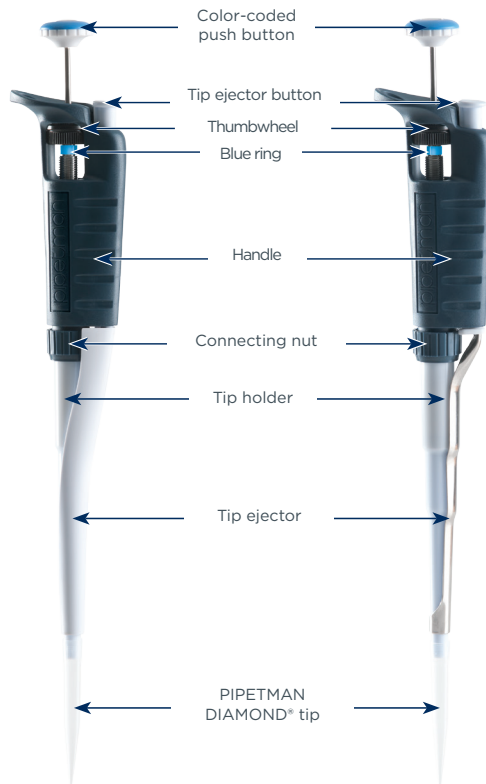


Figure 2
PIPETMAN G

Please refer to the following chapters for a full description of the different parts and functions of the pipette.



Specifications

PIPETMAN G is a high quality pipette that offers excellent accuracy and precision. The figures given in the [Gilson Maximum Permissible Errors](#) table (page 7) were obtained using PIPETMAN DIAMOND Tips. These figures are guaranteed only when genuine PIPETMAN DIAMOND Tips are used.

Each pipette is inspected and validated by qualified technicians in accordance with 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).

NOTICE

The data given in the tables conform to the ISO 8655-2 Standard. With a precise pipetting technique, see [Guidelines for Good Pipetting](#) on page 12, the P2G model may be used to aspirate volumes as low as 0.1 μL and the P10G model as low as 0.5 μL .

Gilson Maximum Permissible Errors

		MAXIMUM PERMISSIBLE ERRORS				
MODEL	VOLUME (μL)	GILSON		ISO 8655		
		SYSTEMATIC ERROR (μL)	RANDOM ERROR (μL)	SYSTEMATIC ERROR (μL)	RANDOM ERROR (μL)	
P2G (F144054P) (F144054M)	Min.	0.2	± 0.024	≤ 0.012	± 0.08	≤ 0.04
		0.5	± 0.025	≤ 0.012	± 0.08	≤ 0.04
P10G (F144055P) (F144055M)	Max.	2	± 0.030	≤ 0.014	± 0.08	≤ 0.04
	Min.	1	± 0.025	≤ 0.012	± 0.12	≤ 0.08
P10G (F144055P) (F144055M)		5	± 0.075	≤ 0.030	± 0.12	≤ 0.08
	Max.	10	± 0.100	≤ 0.040	± 0.12	≤ 0.08
P20G (F144056P) (F144056M)	Min.	2	± 0.10	≤ 0.03	± 0.20	≤ 0.10
		10	± 0.10	≤ 0.05	± 0.20	≤ 0.10
P20G (F144056P) (F144056M)	Max.	20	± 0.20	≤ 0.06	± 0.20	≤ 0.10
	Min.	10	± 0.35	≤ 0.10	± 0.80	≤ 0.30
P100G (F144057P) (F144057M)		50	± 0.40	≤ 0.12	± 0.80	≤ 0.30
	Max.	100	± 0.80	≤ 0.15	± 0.80	≤ 0.30
P200G (F144058P) (F144058M)	Min.	20	± 0.50	≤ 0.20	± 1.60	≤ 0.60
		100	± 0.80	≤ 0.25	± 1.60	≤ 0.60
P200G (F144058P) (F144058M)	Max.	200	± 1.60	≤ 0.30	± 1.60	≤ 0.60
	Min.	100	± 3	≤ 0.6	± 8	≤ 3.0
P1000G (F144059P) (F144059M)		500	± 4	≤ 1.0	± 8	≤ 3.0
	Max.	1000	± 8	≤ 1.5	± 8	≤ 3.0
P5000G (F144066)	Min.	500	± 12	≤ 3	± 40	≤ 15
		2500	± 15	≤ 5	± 40	≤ 15
P5000G (F144066)	Max.	5000	± 30	≤ 8	± 40	≤ 15
	Min.	1000	± 30	≤ 6	± 60	≤ 30
P10mLG (F144067)		5000	± 40	≤ 10	± 60	≤ 30
	Max.	10000	± 60	≤ 16	± 60	≤ 30

Each pipette model (except P5000G and P10 mLG) has two different ordering references to identify the kind of tip ejector required. For a pipette with a plastic tip ejector, the ordering reference is ended by the letter P, for a pipette with a stainless steel tip ejector, the ordering reference is ended by the letter M. Ex: For a P10G model with the plastic tip ejector the ordering reference is F144055P. For the same pipette with a stainless steel tip ejector, the ordering reference is F144055M.





SETTING THE VOLUME

The volume of liquid to be aspirated is set using the volumeter. The dials are colored either black or red to indicate the position of the decimal point, depending on the model (see examples).

MODEL	COLOR OF VOLUMETER NUMBERS		
	BLACK	RED	INCREMENT
P2G	μL	0.01 μL	0.002 μL
P10G to P20G	μL	0.1 μL	0.02 μL
P100G-P200G	μL	-	0.2 μL
P1000G	0.01 mL	mL	0.002 mL
P5000G	0.01 mL	mL	0.002 mL
P10mLG	mL	0.01 mL	0.02 mL

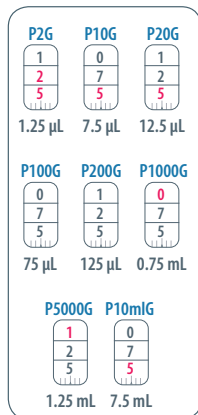


Figure 3
Dial Colors by Model

The volume is set by turning the thumbwheel or the push button. The push button makes it easier and quicker to set volumes, especially when wearing gloves. The thumbwheel may be turned using only one hand to slowly 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 1/3 of a turn and then slowly decrease to reach the volume, making sure not to overshoot the mark.



Figure 4
Location of Push Button and Thumbwheel

PIPETTING



It is recommended to use PIPETMAN® DIAMOND Tips with the PIPETMAN G for optimum performance. These tips are made from pure polypropylene. Plastic tips are for a single application—they must not be cleaned for reuse.

Fit the Tips

To fit a new PIPETMAN DIAMOND Tip, push the tip holder into the tip using a slight twisting motion to ensure a firm, airtight seal.

For the P2G and P10G Models Equipped with Stainless Steel Tip Ejector,

A dual-position adapter (plastic) is required to fit DL10 tips (long tips) or D10 tips (short tips).

P2G and P10G models are delivered with the adapter in place, ready to use DL10 tips. If D10 tips are used, the adapter must be repositioned in the shorter slot as follows:

- Pull the adapter down from the metallic rod.
- Turn the adapter through 180°C.
- Refit the adapter so that the end of the metallic rod engages the shorter slot of the adapter.



Short tips Long tips

Figure 5
Dual-Position Adapter for P2G and P10G with stainless steel tip ejector

For the P2G and P10G Models Equipped with Plastic Tip Ejector,

A tip ejector extension is supplied to fit with D10 tips (short tips).

To fit a tip ejector extension:

1. Slide the extension over the tip holder.
2. Push the extension firmly onto the end of the tip ejector until it clicks into place.

To remove a tip ejector extension:

1. Gently twist the extension.
2. Pull it away from the pipette.

Both dual-position adapter and tip ejector extension are autoclavable .

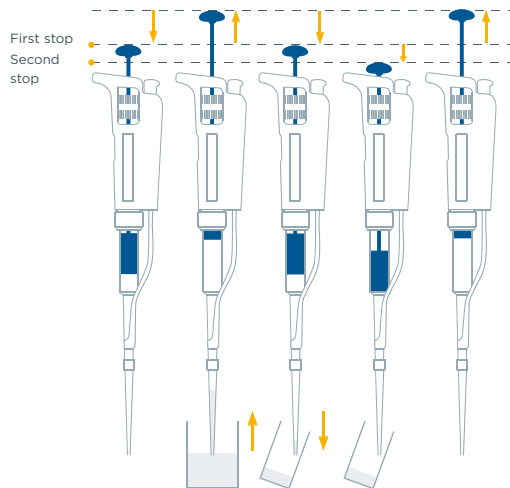


Figure 6

Pipetting Motion - Aspirate and Dispense

Pre-rinse the Tips

Some liquids (e.g., protein-containing solutions and organic solvents) can leave a film of liquid on the inside 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.

Aspirate

1. Press the push button to the **first stop** (this corresponds to the set volume of liquid).
2. Hold the pipette vertically and immerse the tip in the liquid (see immersion depth table, page 12). Release the push button slowly and smoothly (to **top** position) to aspirate the set volume of liquid. Wait one second (time depends on model, see table); then withdraw the pipette-tip from the liquid. You may wipe any droplets away from the outside of the tip using a medical wipe, however if you do so take care to avoid touching the tip's orifice.

Dispense

1. Place the end of the tip against the inside wall of the recipient vessel (at an angle of 10° to 40°).
2. Press the push button slowly and smoothly to the **first stop**.
3. Wait for at least a second, then press the push button to the **second stop** to expel any residual liquid from the tip. Keep the push button pressed fully down and (while removing the pipette) draw the tip along the inside surface of the vessel.
4. Release the push button, smoothly. Eject the tip by pressing firmly on the tip ejector button.



Guidelines for Good Pipetting

1. Make sure that you operate the push button slowly and smoothly.
2. When aspirating, keep the tip at a constant depth below the surface of the liquid (refer to the table).

TABLE - IMMERSION DEPTH AND WAIT TIME

MODEL	IMMERSION DEPTH (MM)	WAIT TIME (SECONDS)
P2G	1	1
P10G	1	1
P20G	2-3	1
P100G	2-4	1
P200G	2-4	1
P1000G	2-4	2-3
P5000G	3-6	4-5
P10mLG	5-7	4-5

3. Change the tip before aspirating a different liquid, sample, or reagent.
4. Change the tip if a droplet remains at the end of the tip from the previous pipetting operation.
5. Each new tip should be pre-rinsed with the liquid to be pipetted.
6. Liquid should never enter the 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.
7. If you use the same tip with a higher volume, pre-rinse the tip.
8. For volatile solvents you should saturate the air-cushion of your pipette by aspirating and dispensing the solvent repeatedly before aspirating the sample.
9. When pipetting liquids with temperatures different to the ambient temperature, pre-rinse the tip several times before use.

10. You may remove the tip ejector, see [CHAPTER 6 - MAINTENANCE](#) to aspirate from very narrow tubes.
11. After pipetting acids or other corrosive liquids that emit vapors, remove the tip ejector, the tip holder, rinse, dry and lubricate the piston, see [CHAPTER 6 - MAINTENANCE](#). For the model P1000G, by using a specific tip holder equipped with a filter, you can increase the lifetime of the piston, see [CHAPTER 4 - ACCESSORIES](#).
12. Do not pipette liquids having temperatures above 70°C or below 4°C. The pipette can be used between + 4°C and + 40°C but the specifications may vary according to the temperature (refer to the ISO 8655-2 standard for conditions of use).

Chapter 4

ACCESSORIES

To make pipetting more comfortable and more secure, Gilson has developed several accessories:

Pipette stands allow users to store pipettes vertically to avoid the possibility of liquid running back into the pipette.

DESCRIPTION	P/N
CARROUSEL™ pipette stand (7 pipettes)	F161401
TRIO™ stand (3 pipettes)	F161405
SINGLE™ PIPETTE HOLDER	F161406

To identify or personalize your pipette, COLORIS™ clips are available:

DESCRIPTION	P/N
COLORIS™ clips (mixed colors set of 10)	F161301
COLORIS clips (red, set of 10)	F161302
COLORIS clips (yellow, set of 10)	F161303
COLORIS clips (green, set of 10)	F161304
COLORIS clips (blue, set of 10)	F161305
COLORIS CLIPS (WHITE, SET OF 10)	F161306

With The JIMMY™, a hands-free microtube opener, you can open both snap-cap and screw-cap microtubes.

DESCRIPTION	P/N
The Jimmy™ (set of 3)	F144983

To protect the piston when pipetting corrosive liquids, you can use a specific tip holder and filter for the model P1000N:

DESCRIPTION	P/N
CORROSION PROTECTION KIT (TIP HOLDER + A BAG OF 10 FILTERS)	F144570

Chapter 5

TROUBLESHOOTING

A quick inspection of the pipette may help you to detect a problem.

NOTE

You may download from the Gilson website (www.gilson.com) the “2 minute inspection poster”, which shows how to perform a quick diagnosis of your pipette.

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

SYMPTOM	POSSIBLE CAUSE	ACTION
Pipette is leaking sample	Damaged tip holder Worn O-ring or seal	Replace the tip holder Replace both parts and lubricate
Pipette won't aspirate	Worn O-ring Damaged tip holder Connecting nut is loose Damaged or corroded piston Improper repair or assembly	Replace both parts and lubricate Replace the tip holder Tighten connecting nut Return pipette to supplier See CHAPTER 6 - MAINTENANCE
Pipette is inaccurate	Improper repair or assembly Unscrewed tip holder Connecting nut is loose	See CHAPTER 6 - MAINTENANCE Tighten connecting nut Tighten connecting nut
Pipette is not precise	Tip holder is loose Connecting nut is loose Incorrect operator technique Damaged or corroded piston(s) Damaged tip holder(s) Worn O-ring or seal	Tighten connecting nut Tighten connecting nut Operator training Return pipette to supplier Replace the tip holder Replace both parts and lubricate
Tips fall off or do not fit correctly	Low quality tips Dirty tip holder Damaged tip holder(s) Damaged tip ejector Ejector spacer is missing The ejector spacer is damaged The tip ejector is loose The ejector lock is misaligned	Use PIPETMAN DIAMOND tips Clean the tip holder with alcohol Replace the tip holder Replace tip ejector Mount the spacer on the tip ejector Replace the ejector spacer Assemble the tip ejector properly Align the ejector lock
Pipetting seize up	Piston need lubricant	Lubricate piston assembly

If you cannot solve the problem, contact your local Gilson representative.

Chapter 6

MAINTENANCE

Routine maintenance will help keep your pipette in good condition, ensuring a continued high level of performance.

Maintenance is limited to:

- Cleaning or decontamination, see [CHAPTER 7 - CLEANING AND DECONTAMINATION](#).
- Replacing spare parts
- Greasing the piston assembly.

PIPETMAN P2G and P10G should not be disassembled, so you may only replace the push button, tip ejector, dual position tip ejector and its adapter. With these pipettes if the tip holder is damaged, the piston may also be damaged.

NOTICE

After replacing any parts you should verify the performance of your pipette following the verification procedure available on the Gilson website (www.gilson.com). If the pipette needs to be readjusted, please contact your local Gilson Service Center.

Changing the Tip Ejector

To remove

- 1 Push the ejection button.
- 2 Push laterally the tip ejector.
- 3 Slide and remove the tip ejector.



To refit

- 1 Push the ejection button.
- 2 Slide the tip ejector along the tip holder.
- 3 Clip the tip ejector on the body of the pipette.

CAUTION

Before returning any pipette to your local Gilson Service Center, ensure that it is completely free of chemical, biological, or radioactive contamination. Refer to [CHAPTER 7 - CLEANING AND DECONTAMINATION](#). Please use the included safety bag to return the pipette to your local Gilson Service Center.

Leak Test

This test may be performed at any time to check that the pipette does not leak, especially after performing a maintenance or decontamination procedure. If a pipette fails this test, replace the O-ring and seal. After making sure that the pipette is correctly reassembled, repeat this test.

For the P2G to P200G Models:

- 1 Fit a PIPETMAN DIAMOND Tip.
- 2 Set the pipette to the maximum volume given in the specifications, and pre-rinse.
- 3 Aspirate the set volume from a beaker of distilled water.
- 4 Maintain the pipette in the vertical position and wait for 20 seconds.
- 5 If a water droplet appears at the end of the tip there is a leak.
- 6 If you see no droplet, re-immers the tip below the surface of water.
- 7 The water level inside the tip should remain constant; if the level goes down there is a leak.

For the P1000G, P5000G, and P10mLG Models:

- 1 Fit a PIPETMAN DIAMOND Tip.
- 2 Set the pipette to the maximum volume given in the specifications.
- 3 Aspirate the set volume from a beaker of distilled water.
- 4 Maintain the pipette in the vertical position and wait for 20 seconds.
- 5 If a water droplet appears at the end of the tip, there is a leak.

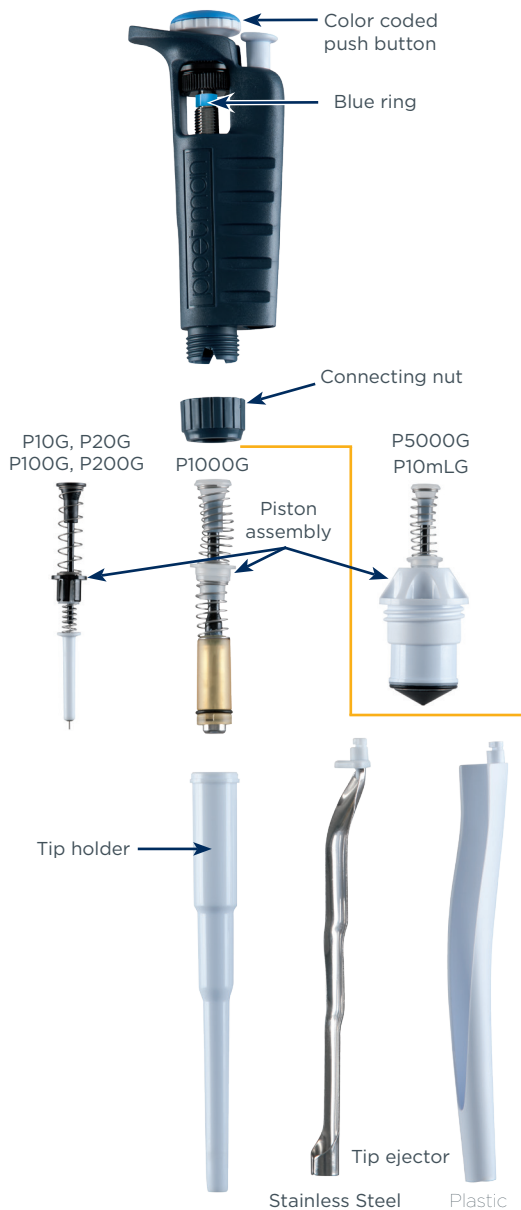


Figure 7
Piston Assembly (Disassembled)

Changing the Tip Holder – No Tools Required

1. Remove the tip ejector (see page 17).
2. Unscrew the connecting nut by turning it counter-clockwise.
3. Carefully separate the lower and upper parts.
4. Remove the piston assembly and the seals.
5. Clean, autoclave, or replace the tip holder.
6. If necessary, lubricate lightly the piston and its seals (see below).
7. Reassemble the pipette (refer to the figure, p 18).
8. Tighten the connecting nut (turn clockwise)
9. Refit the tip ejector (see page 17).

Servicing the Piston Assembly

You may remove the piston assembly for cleaning purposes only. If the piston assembly is changed, the pipette must be adjusted and calibrated in a local Gilson Service Center. As the models P2G and P10G contain miniaturized parts, it is best not to disassemble these pipettes yourself.

NOTICE	The piston assembly must not be autoclaved.
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1. Remove the tip ejector (see page 17).
2. Unscrew the connecting nut by turning it counter-clockwise.
3. Carefully separate the lower and upper parts.
4. Remove the piston assembly and the seals.
5. Leave exposed the piston, clean it with isopropanol or ethanol and lubricate lightly.

For P100G, P200G, and P1000G models, lubricate only the useful part of the piston and the seals.

For P5000G and P10 mLG, lubricate the tip of the piston, disassemble the seals and lubricate their internal part.





CLEANING AND DECONTAMINATION

PIPETMAN G is designed so that the parts normally in contact with liquid contaminants, can easily be cleaned and decontaminated. However, because the models P2G and P10G contain miniaturized parts, it is best not to disassemble these pipettes yourself; please contact your local Gilson Service Center.

NOTICE

You may refer to the decontamination procedure available on the Gilson website (www.gilson.com). **Liquid must never enter the upper part (handle) of any pipette.**

Cleaning

The pipette must be cleaned, as described below, before it is decontaminated. Soap solution is recommended for cleaning PIPETMAN G.

External

1. Remove the tip ejector (see page 17).
2. Wipe the tip ejector with a soft-cloth or lint-free tissue impregnated with soap solution.
3. 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.
4. Wipe the entire pipette and the tip ejector with a soft cloth or lint-free tissue soaked with distilled water.
5. Refit the tip ejector and allow the pipette to dry.

NOTICE

The use of other lubricant cancels the warranty of this pipette.

6. Reassemble the pipette (refer to figure 7, page 18).
7. Tighten the connecting nut (turn clockwise).
8. Refit the tip ejector (see page 17).

Changing the Seals

The O-ring and seal are on the piston; **they must not be autoclaved**, if worn or damaged in any way (chemical or mechanical), they must be replaced. As the models P2G and P10G contain miniaturized parts, it is best not to disassemble these pipettes yourself, please contact your local Gilson Service Center.

The dimensions of the O-ring vary depending on the model of pipette.

1. Remove the tip ejector (see page 17).
2. Unscrew the connecting nut by turning it counter-clockwise.
3. Carefully separate the lower and upper parts.
4. Remove the piston assembly, O-ring and seal.
5. If necessary clean the piston and replace the seal; lubricate them lightly. Please place them in the correct order.
6. Reassemble the pipette (refer to the figure 7, page 18).
7. Tighten the connecting nut (turn clockwise).
8. Refit the tip ejector (see page 17).





Internal

The following components **only** can be immersed in a cleaning solution: connecting nut, tip ejector, tip holder, piston assembly, seal and O-ring.

1. Disassemble the pipette as described in the [CHAPTER 6 - MAINTENANCE](#).
2. Set aside the upper part in a clean, dry place.
3. Clean the individual components of the lower part of the pipette using an ultrasonic bath (20 minutes at 50°C) or with a soft-cloth and brushes. Note that the piston assembly and seals must be degreased with isopropanol or ethanol before being immersed in the ultrasonic bath. Small round brushes with soft plastic bristles may be used to clean the interior of the tip holder.
4. Rinse the individual components with distilled water.
5. Leave the parts to dry by evaporation or wipe them with a clean soft-cloth or lint-free tissue.
6. Reassemble the pipette as described in the [CHAPTER 6 - MAINTENANCE](#).

Autoclaving

The upper part (body) and the piston assembly of the pipette are **not** autoclavable. **Only** the following parts may be autoclaved: tip ejector, tip holder and connecting nut. The O-ring and seal are **not** autoclavable; they may be cleaned or replaced with the one specified in [CHAPTER 8 - SPARE PARTS](#).

1. Clean the parts to be autoclaved, especially the tip holder.
2. Put the parts in an autoclaving sack.
3. Autoclave for 20 minutes at 121°C, 0.1 MPa.
4. Check that the parts are dry before re-assembling the pipette.
5. Set the pipette aside to stabilize at room temperature.
6. Reassemble the pipette as described in the [CHAPTER 6 - MAINTENANCE](#).

Chemical Decontamination

You may choose to decontaminate your pipette chemically, in accordance with your own procedures. Whatever decontaminant you use, check with the supplier of the decontaminant that it is compatible with stainless steel and the plastics used in the construction of the pipette: PA (Polyamide), PBT (Polybutylene Terephthalate), PC (Polycarbonate), PC/PBT (Polycarbonate/ Polybutylene Terephthalate), POM (Polyoxymethylene), or PVDF (Polyvinylidene Fluoride).

Upper Part (handle)

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

Lower Part (volumetric module)

The following components **only** can be immersed in a decontaminant solution: connecting nut, tip ejector, tip holder.

Piston assembly and seals must be degreased with isopropanol or ethanol before being immersed in decontamination solution in separate vessel.

1. Remove the tip ejector, the tip holder and the connecting nut.
2. Immerse them in the cleaning solution.
3. Degrease the piston assembly, the seals and immerse them in another vessel.
4. Rinse each component with distilled water.
5. Leave the parts to dry by evaporation (or wipe with a soft cloth the tip ejector, the tip holder and connecting nut).
6. Lubricate the piston assembly and the seals.
7. Reassemble the piston assembly, the tip holder and the tip ejector.



Chapter 8

SPARE PARTS

Service Kit 1st level includes:

- 3 piston seals or **C**
- 3 O-rings **D**
- 1 tip holder **E**

Service Kit 2nd level includes:

- 1 push button **A**
- 1 connecting nut **B**
- 2 tip ejectors **F1** **F2**

for the P2G and P10G models only:

- 1 adapter for stainless steel tip ejector **F3**
- 1 extension for plastic tip ejector **F4**



Figure 8
Spare Parts Identified

P2G (F144054P OR M) AND P10G (F144055P OR M)*			
	DESCRIPTION	P/N FOR P2G	P/N FOR P10G
C+D+E	Service Kit 1 st level	F144501	FA07001
A+B+F1 to F4	Service Kit 2 nd level	F1619702	F1619712
C+D	Seal + O-ring (5 sets)	F144861	FA07012
F3	Tip ejector adapter	F144879	F144879
F4	Tip ejector extension	F2070903	F2070903

P20G (F144056P OR M) AND P100G (F144057P OR M)*			
	DESCRIPTION	P/N FOR P20G	P/N FOR P100G
C+D+E	Service Kit 1 st level	FA07002	FA07003
A+B+F	Service Kit 2 nd level	F1619722	F1619732
C+D	Seal + O-ring (5 sets)	FA07013	FA07014

P200G (F144058P OR M) AND P1000G (F144059P OR M)*			
	DESCRIPTION	P/N FOR P200G	P/N FOR P1000G
C+D+E	Service Kit 1 st level	FA07004	FA07005
A+B+F	Service Kit 2 nd level	F1619742	F1619752
C+D	Seal + O-ring (5 sets)	FA07015	FA07016

P5000G (F144066) AND P10mLG (F144067)*			
	DESCRIPTION	P/N FOR P5000G	P/N FOR P10mLG
C+D+E	Service Kit 1 st level	FA07021	FA07022
A	Service Kit 2 nd level	FA07019	FA07020
C+D	Seal + O-ring (5 sets)	FA07017	FA07018
E	Tip holder	F123608	F161263

Each pipette model (except P5000G and P10mLG) has two different ordering references to identify the kind of tip ejector required. For a pipette with a plastic tip ejector, the ordering reference is ended by the letter P, for a pipette with a stainless steel tip ejector, the ordering reference is ended by the letter M. Ex: For a P10G model with the plastic tip ejector the ordering reference is F144055P. For the same pipette with a stainless steel tip ejector, the ordering reference is F144055M.

DESCRIPTION	PART NUMBER
Lubricant*	5440011070



www.gilson.com/contactus

Gilson, Inc.

3000 Parmenter Street • PO Box 620027

Middleton, WI 53562 USA

T: 608-836-1551 or 800-445-7661 • F 608-831-4451

Gilson S.A.S.

19, avenue des Entrepreneurs BP 145 • F-95400

Villiers-le-Bel, France

T +33 (0) 1 34 29 50 00 • F +33 (0) 1 34 29 50 20

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