

pipetman[®]

G

User's Guide

EN



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NOTICE

Decreased pipetting forces are due to the redesigned piston assembly including the use of a very high quality lubricants. The use of other lubricant cancels the warranty of this pipette. The approved lubricant is available under the part number 5440011070. Please contact your Gilson distributor.

Chapter 1

INTRODUCTION



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, two improvements have been added to our mechanical series:

- Pipetting and purge forces are dramatically decreased*
- Improved comfort in the design of our 5 and 10 mL pipettes

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

- **P2G and P10G:** measurement and transfer of microliter volumes, DNA sequencing, and enzyme assays
- **P20G, P100G, P200G, and P1000G:** measurement and transfer of general aqueous solutions, acids, and bases
- **P5000G and P10mLG:** measurement and transfer of large volumes

Eight multichannel models cover a volume range from 1 μL to 300 μL .

NOTICE

PIPETMAN G is identified by a visual blue ring.

PIPETMAN G pistons need to be lubricated.

Parts Checklist

After unpacking the pipette, verify that the following items were included and are undamaged:

Single Models

- PIPETMAN G
- PIPETMAN G Quick Guide
- Safety bag
- Dual-position adapter (for P2G and P10G models only)
- Certificate of Conformity (including barcode sticker)

Multichannel Models

- PIPETMAN G
- PIPETMAN G Quick Guide
- Safety bag
- Ejector spacers for D10 tips (for PX10G model only)
- Certificate of Conformity (including barcode sticker)

* These new features that dramatically improve pipetting comfort have no impact on the legendary durability, accuracy, and precision of PIPETMAN.



GLP Compliant

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.

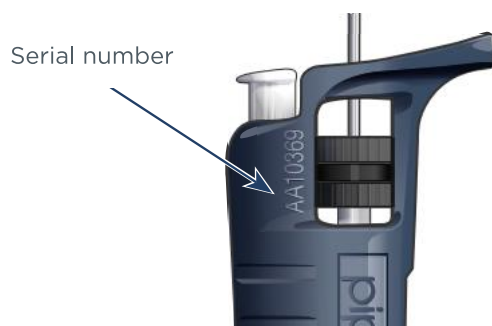
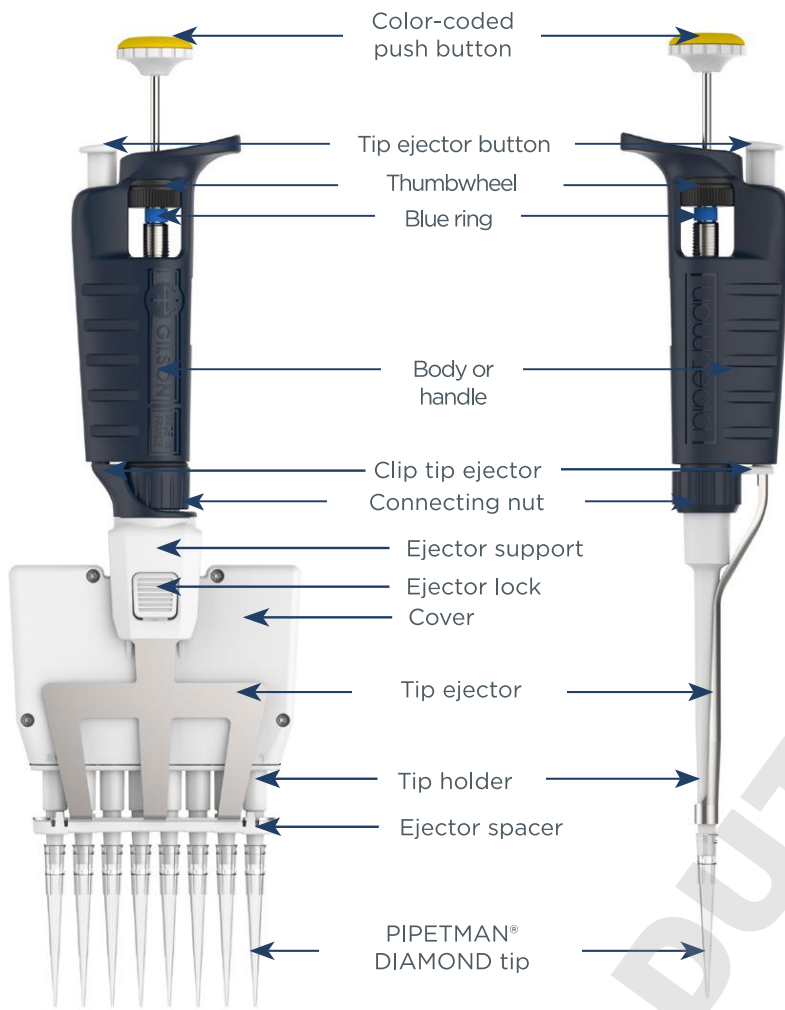


Figure 1

Serial number location

Description



INTRODUCTION

Figure 2

PIPETMAN® G multichannel and single channel models

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 data provided in the [Gilson Maximum Permissible Errors](#) table were obtained using PIPETMAN® DIAMOND Tips. These values 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, 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.

PIPETMAN G is equipped with a stainless steel tip ejector and can also be used with a plastic tip ejector, which is available as an accessory (refer to [ACCESSORIES](#) on page 14).

Maximum Permissible Errors

MAXIMUM PERMISSIBLE ERRORS				
VOLUME (μL)	GILSON		ISO 8655	
	SYSTEMATIC ERROR (μL)	RANDOM ERROR (μL)	SYSTEMATIC ERROR (μL)	RANDOM ERROR (μL)
PIPETMAN G SINGLE CHANNEL				
P2G (P/N F144054M) WITH D10 OR DL10 TIPS				
0,2	$\pm 0,024$	$\leq 0,012$	$\pm 0,08$	$\leq 0,04$
0,5	$\pm 0,025$	$\leq 0,012$	$\pm 0,08$	$\leq 0,04$
1	$\pm 0,025$	$\leq 0,012$	$\pm 0,08$	$\leq 0,04$
2	$\pm 0,030$	$\leq 0,014$	$\pm 0,08$	$\leq 0,04$
P10G (P/N F144055M) WITH D10 OR DL10 TIPS				
1	$\pm 0,025$	$\leq 0,012$	$\pm 0,12$	$\leq 0,08$
5	$\pm 0,075$	$\leq 0,030$	$\pm 0,12$	$\leq 0,08$
10	$\pm 0,100$	$\leq 0,040$	$\pm 0,12$	$\leq 0,08$
P20G (P/N F144056M) WITH D200 TIPS				
2	$\pm 0,10$	$\leq 0,030$	$\pm 0,2$	$\leq 0,1$
10	$\pm 0,10$	$\leq 0,050$	$\pm 0,2$	$\leq 0,1$
20	$\pm 0,20$	$\leq 0,060$	$\pm 0,2$	$\leq 0,1$
P100G (P/N F144057M) WITH D200 TIPS				
10	$\pm 0,35$	$\leq 0,10$	$\pm 0,8$	$\leq 0,3$
50	$\pm 0,40$	$\leq 0,12$	$\pm 0,8$	$\leq 0,3$
100	$\pm 0,80$	$\leq 0,15$	$\pm 0,8$	$\leq 0,3$
P200G (P/N F144058M) WITH D200 TIPS				
20	$\pm 0,50$	$\leq 0,20$	$\pm 1,6$	$\leq 0,6$
100	$\pm 0,80$	$\leq 0,25$	$\pm 1,6$	$\leq 0,6$
200	$\pm 1,60$	$\leq 0,30$	$\pm 1,6$	$\leq 0,6$
P1000G (P/N F144059M) WITH D1000 TIPS				
100	$\pm 3,0$	$\leq 0,6$	$\pm 8,0$	$\leq 3,0$
500	$\pm 4,0$	$\leq 1,0$	$\pm 8,0$	$\leq 3,0$
1000	$\pm 8,0$	$\leq 1,5$	$\pm 8,0$	$\leq 3,0$
P5000G* (P/N F144066) WITH D5000 TIPS				
500	± 12	≤ 3	± 40	$\leq 15,0$
2500	± 15	≤ 5	± 40	$\leq 15,0$
5000	± 30	≤ 8	± 40	$\leq 15,0$
P10MLG* (P/N F144067) WITH D10ML TIPS				
1000	± 30	≤ 6	± 60	$\leq 30,0$
5000	± 40	≤ 10	± 60	$\leq 30,0$
10000	± 60	≤ 16	± 60	$\leq 30,0$
PIPETMAN G MULTICHANNEL				
P8X10G (P/N F144068) P12X10G (P/N F144069) WITH D10 AND DL10 TIPS				
1	$\pm 0,08$	$\leq 0,05$	$\pm 0,24$	$\leq 0,16$
5	$\pm 0,20$	$\leq 0,10$	$\pm 0,24$	$\leq 0,16$
10	$\pm 0,20$	$\leq 0,10$	$\pm 0,24$	$\leq 0,16$
P8X20G (P/N F144070) P12X20G (P/N F144071) WITH DL10 TIPS				
2	$\pm 0,10$	$\leq 0,08$	$\pm 0,4$	$\leq 0,20$
10	$\pm 0,20$	$\leq 0,10$	$\pm 0,4$	$\leq 0,20$
20	$\pm 0,40$	$\leq 0,20$	$\pm 0,4$	$\leq 0,20$
P8X200G (P/N F144072) P12X200G (P/N F144073) WITH D200 TIPS				
20	$\pm 0,50$	$\leq 0,25$	$\pm 3,2$	$\leq 1,2$
100	$\pm 1,00$	$\leq 0,40$	$\pm 3,2$	$\leq 1,2$
200	$\pm 2,00$	$\leq 0,50$	$\pm 3,2$	$\leq 1,2$
P8X300G (P/N F144074) P12X300G (P/N F144075) WITH D300 TIPS				
30	$\pm 1,00$	$\leq 0,35$	$\pm 8,0$	$\leq 3,0$
150	$\pm 1,50$	$\leq 0,60$	$\pm 8,0$	$\leq 3,0$
300	$\pm 3,00$	$\leq 1,00$	$\pm 8,0$	$\leq 3,0$

* P5000G and P10MLG do not have tip ejectors



SPECIFICATIONS

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 (refer to Figure 3).

The volume is set by turning the thumbwheel or the push button (refer to Figure 4). 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.

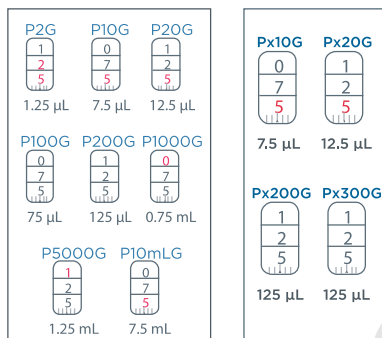


Figure 3
Dial colors by model

MODEL	COLOR OF VOLUMETER NUMBERS		
	BLACK	RED	INCREMENT
P2G	µL	0.01 µL	0.002 µL
P10G - P20G - PX10G - PX20G	µL	0.1 µL	0.02 µL
P100G - P200G - PX200G - PX300G	µL	-	0.2 µL
P1000G	0.01 mL	mL	0.002 mL
P5000G	0.01 mL	mL	0.002 mL
P10mLG	mL	0.1 mL	0.02 mL

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

- When **decreasing** the volume setting, slowly reach the required setting, making sure to not 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 to not overshoot the mark.

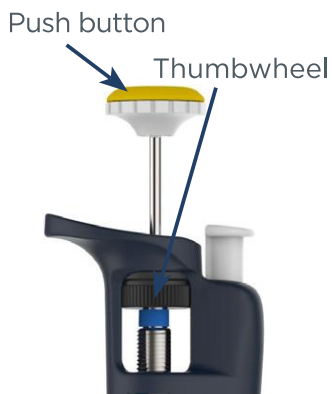


Figure 4
Location of push button and thumbwheel

Chapter 3

PIPETTING



PIPETTING

While many brands of tips can be used with the PIPETMAN G, 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 should not be cleaned for reuse.

Fitting 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.

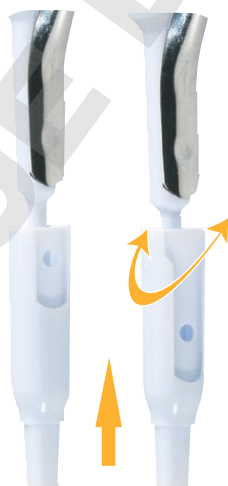
Fitting the Tips on P2G and P10G Models

NOTE

For the P2G and P10G models, a dual-position adapter (plastic) is required to fit DL10 tips (long tips) or D10 tips (short tips). The metallic rod of the tip ejector is shaped so the adapter may be clipped to it in either position.

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:

1. Pull the adapter down from the metallic rod.
2. Turn the adapter 180°.
3. Refit the adapter so the end of the metallic rod engages the shorter slot of the adapter.



Short tips Long tips

NOTE

The dual-position adapter is autoclavable.

Figure 5

Dual-position adapter for P2G and P10G with stainless steel tip ejector

An autoclavable tip ejector extension can be ordered as an accessory for P2 and P10 equipped with a plastic tip ejector (part number F107027; refer to [ACCESSORIES](#) on page 14).



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.

Ejector Spacer for PIPETMAN G 10 µL Multichannel Models

According to the tip used, D10 or DL10, you may have to exchange the ejector spacer. The broad one is dedicated to D10, and the small one is dedicated to DL10.

- Remove the tip ejector, keeping both ejector locks depressed. Pull the tip ejector down.
- Gently press the tabs from the ejector spacer and remove it from the tip ejector.
- Insert the alternative ejector spacer and click it to the tip ejector.
- To refit the tip ejector, gently re-insert the tip ejector vertically into the rails of the ejector support.

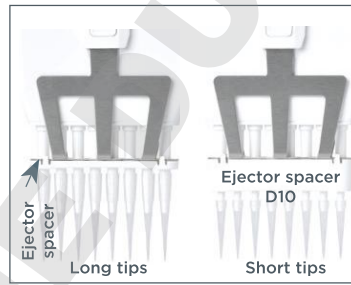


Figure 6 Ejector spacer location

PIPETMAN DIAMOND Tips are best fitted from the patented ROCKY RACK™ available only in our TIPACKS and TOWERPACKS.



Figure 7 ROCKY RACK™ system

PIPETMAN DIAMOND Tip Compatibility for Multichannel Models	
P8x10G, P12x10G	D10*, DL10, DF10, DFL10
P8x20G, P12x20G	DL10, DFL10, DF30, D200
P8x200G, P12x200G	D200, D300, DF200, DF300
P8x300G, P12x300G	D200, D300, DF200, DF300

* Using the broad ejector spacer D10, you can adapt a D10 tip (see above).

Figure 8 PIPETMAN DIAMOND Tips compatibility charts for multichannel models



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 (refer to [Guideline for Good Pipetting](#) on page 12).
3. Release the push button slowly and smoothly (to the **top** position) to aspirate the set volume of liquid. Wait one second (refer to [Guidelines for Good Pipetting](#) on page 12) and then withdraw the pipette-tip from the liquid.
4. 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.

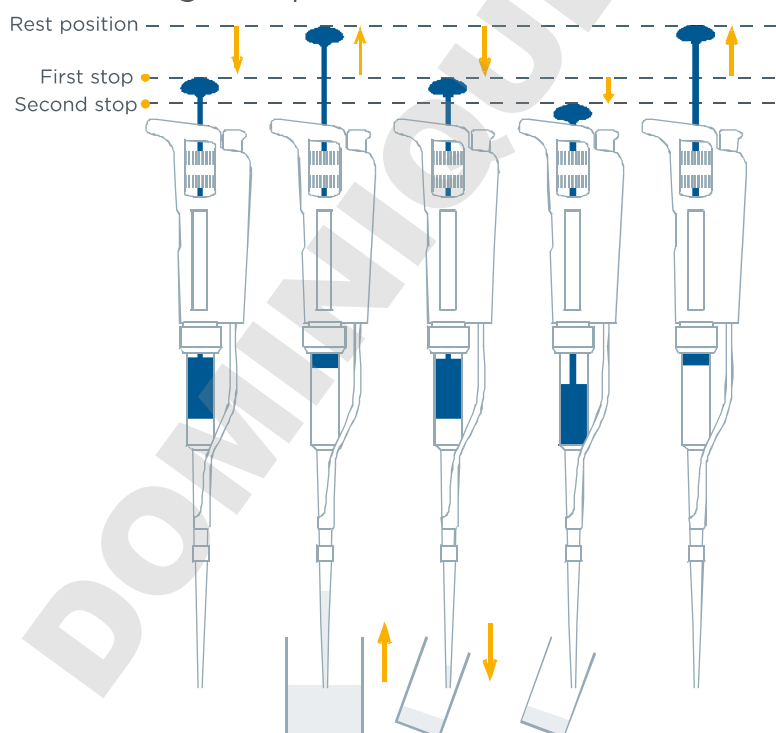


Figure 9

Pipetting motion - aspirate and dispense



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 one 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

Make sure that you operate the push button slowly and smoothly.

When aspirating, keep the tip at a constant depth below the surface of the liquid (refer to the table below).

IMMERSION DEPTH AND WAIT TIME		
MODEL	IMMERSION DEPTH (MM)	WAIT TIME (SECONDS)
P2G	1	1
P10G - Px10G	1	1
P20G - Px20G	2-3	1
P100G - Px200G - Px300G	2-4	1
P200G	2-4	1
P1000G	2-4	2-3
P5000G	3-6	4-5
P10mLG	5-7	4-5



PIPETTING

- Change the tip before aspirating a different liquid, sample, or reagent.
- Change the tip if a droplet remains at 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 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.
- If you use the same tip with a larger volume, pre-rinse the tip.
- For volatile solvents, you should saturate the air cushion of your pipette by aspirating and dispensing the solvent repeatedly before aspirating the sample.
- When pipetting liquids with temperatures different to the ambient temperature, pre-rinse the tip several times before use.
- You may remove the tip ejector (refer to [MAINTENANCE](#) on page 17) to aspirate from very narrow tubes.
- After pipetting acids or other corrosive liquids that emit vapors, remove the tip ejector and the tip holder; and then rinse, dry, and lubricate the piston (refer to [MAINTENANCE](#) on page 17). For the model P1000G, you can increase the lifetime of the piston by using a specific tip holder equipped with a filter (refer to [ACCESSORIES](#) on page 14).
- Do not pipette liquids with temperatures above 70°C or below 4°C. The pipette can be used between 4° and 40°C, but the specifications may vary according to the temperature (refer to [Maximum Permissible Errors](#) on page 7).

NOTICE

It is recommended to regularly verify the volume displayed on the dial while pipetting.

ACCESSORIES

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

DESCRIPTION	PART NUMBER
Plastic ejector P2/P10 with adapter	F107027
Plastic ejector P20	F107028
Plastic ejector P100	F107029
Plastic ejector P200	F107030
Plastic ejector P1000	F107031

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

DESCRIPTION	PART NUMBER
CARROUSEL™ Pipette Stand (7 pipettes)	F161401
TRIO™ Stand (3 pipettes)	F161405
SINGLE™ Pipette Holder	F161406

COLORIS™ Identification Clips identify or personalize your pipette. Write your name or application to avoid mix-ups and then snap into place.

DESCRIPTION	PART NUMBER
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™, hands-free microtube opener, you can open both snap-cap and screw-cap microtubes to increase pipetting efficiency and reduce the fatigue associated with manual tube opening.

DESCRIPTION	PART NUMBER
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 P1000G.

DESCRIPTION	PART NUMBER
Corrosion Protection Kit (tip holder + a bag of 10 filters)	F144570

TROUBLESHOOTING



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

NOTE

You can download the Two Minute Inspection Poster from the Gilson website (www.gilson.com). The poster describes how to perform a quick diagnosis of your pipette.

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

SYMPTOM	POSSIBLE CAUSE	ACTION
SINGLE CHANNEL		
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 and seal 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 (refer to MAINTENANCE on page 17)
Pipette is inaccurate	Improper repair or assembly Unscrewed tip holder Connecting nut is loose	Refer to page 17 - 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
MULTICHANNEL MODELS		
Tips fall off or do not fit correctly	Low quality tips Damaged tip ejector Damaged ejector spacer Dirty tip holder(s) Damaged tip holder	Use PIPETMAN DIAMOND Tips Replace the tip ejector Replace the ejector spacer Clean the tip holder(s) with isopropanol or ethanol Contact your local authorized Gilson Service Center
Pipette won't aspirate	Connecting nut is loose	Tighten the connecting nut
Pipette is inaccurate	Connecting nut is loose	Tighten the connecting nut
Pipette is not precise	Connecting nut is loose Incorrect operator technique	Tighten the connecting nut Operator training

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

**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 [CLEANING AND DECONTAMINATION](#) on page 22). 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.

For the Multichannel Models (PX8G PX12G)

1. Fit the 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 reagent reservoir of distilled water.
4. Maintain the pipette in the vertical position and wait for 20 seconds. Fluid level in the tips should remain constant.
5. If a water droplet appears at the end of the tip, there is a leak.
6. For volumes below 200 μL , if you see no droplets, 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.

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 (refer to [CLEANING AND DECONTAMINATION](#) on page 22).
- Replacing spare parts
- Greasing the piston assembly

Maintenance for Single Channel Models

PIPETMAN P2G and P10G should not be disassembled, so you can only replace the push button, tip ejector, and its dual position 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.



MAINTENANCE



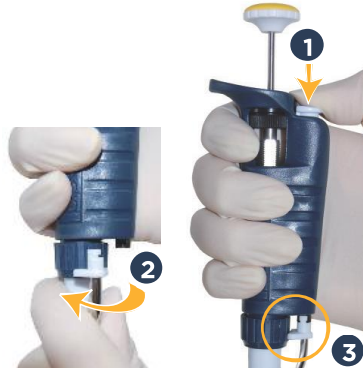
Changing the Tip Ejector for Single Channel Models

To remove:

- 1 Push the ejection button.
- 2 Laterally push 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.



Changing the Tip Holder - No Tools Required

1. Remove the tip ejector (refer to [Changing the Tip Ejector for Single Channel Models](#) on page 18).
2. Unscrew the connecting nut by turning it counterclockwise.
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, lightly lubricate the piston and its seals (refer to [Servicing the Piston Assembly](#) on page 19).
7. Reassemble the pipette (refer to the Figure 10 on page 19).
8. Tighten the connecting nut (turn clockwise)
9. Refit the tip ejector (refer to [Changing the Tip Ejector for Single Channel Models](#) on page 18).



MAINTENANCE

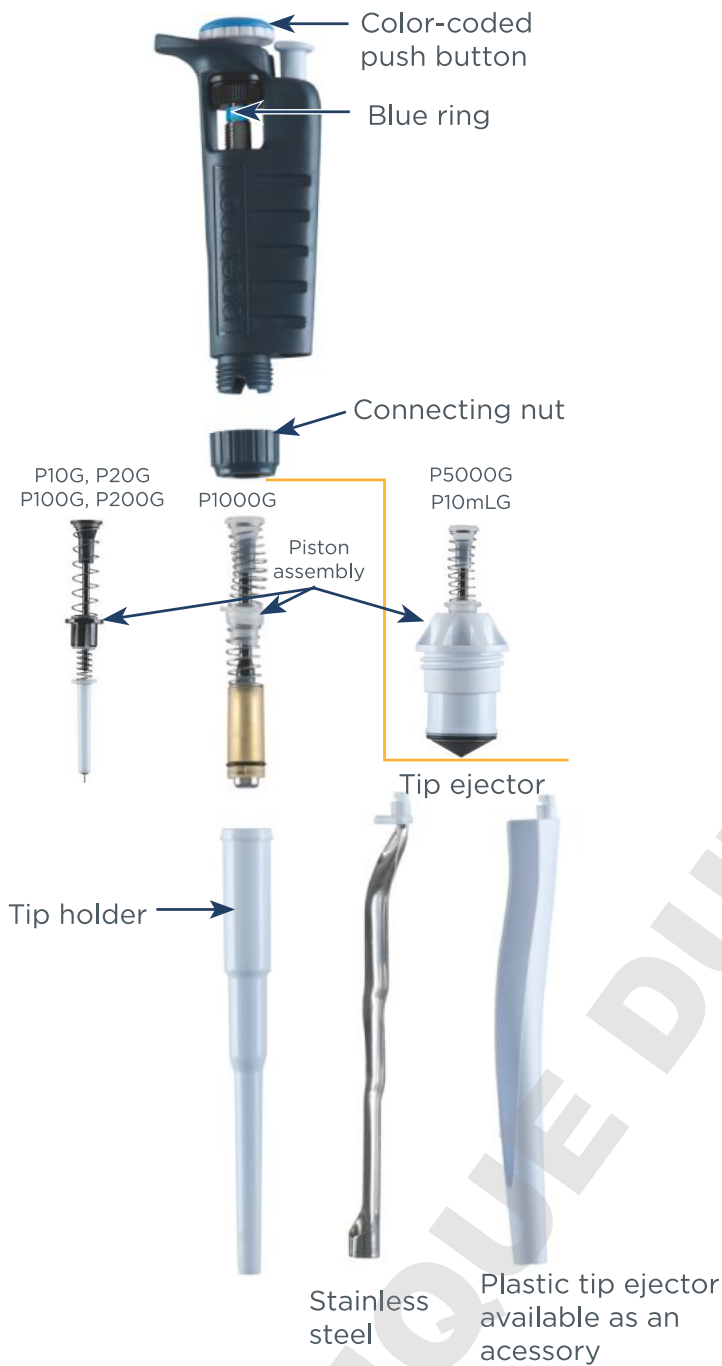


Figure 10

Piston assembly (disassembled)

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 at a local Gilson Service Center. Because P2G and P10G models contain miniaturized parts, it is best not to disassemble these pipettes yourself.

NOTICE

The piston assembly must not be autoclaved.



1. Remove the tip ejector (refer to [Changing the Tip Ejector for Single Channel Models](#) on page 18).
2. Unscrew the connecting nut by turning it counterclockwise.
3. Carefully separate the lower and upper parts.
4. Remove the piston assembly and the seals.
5. Leave the piston exposed, clean it with isopropanol or ethanol, and lubricate lightly. **For P100G, P200G, and P1000G** models, lubricate only the internal part of the piston and the seals. **For P5000G and P10mLG**, lubricate the tip of the piston, disassemble the seals, and lubricate their internal part.

**NOTICE**

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

6. Reassemble the pipette (refer to Figure 10 on page 19).
7. Tighten the connecting nut (turn clockwise).
8. Refit the tip ejector (refer to [Changing the Tip Ejector for Single Channel Models](#) on page 18).

Changing the Seal Guide (or Seal)

The O-ring and seal on the piston must not be autoclaved. If worn or damaged in any way (chemical or mechanical), they must be replaced. 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.

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

1. Remove the tip ejector (refer to [Changing the Tip Ejector for Single Channel Models](#) on page 18).
2. Unscrew the connecting nut by turning it counterclockwise.
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. Lightly lubricate both seal and piston. Remember to replace the seal and O-ring in the correct order.
6. Reassemble the pipette (refer to the Figure 10 on page 18).
7. Tighten the connecting nut (turn clockwise).
8. Refit the tip ejector (refer to [Changing the Tip Ejector for Single Channel Models](#) on page 18).

Maintenance for Multichannel Models

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

Maintenance is limited to:

- Cleaning or decontamination (refer to [CLEANING AND DECONTAMINATION](#) on page 22)
- Replacing spare parts
- Greasing the piston assembly

Changing the Tip Ejector for Multichannel Model

To remove the tip ejector, keep both ejector locks depressed. Pull the tip ejector down.

To refit the tip ejector, gently re-insert the tip ejector vertically into the rails of the ejector support. Pull lightly on the tip ejector to check the position.

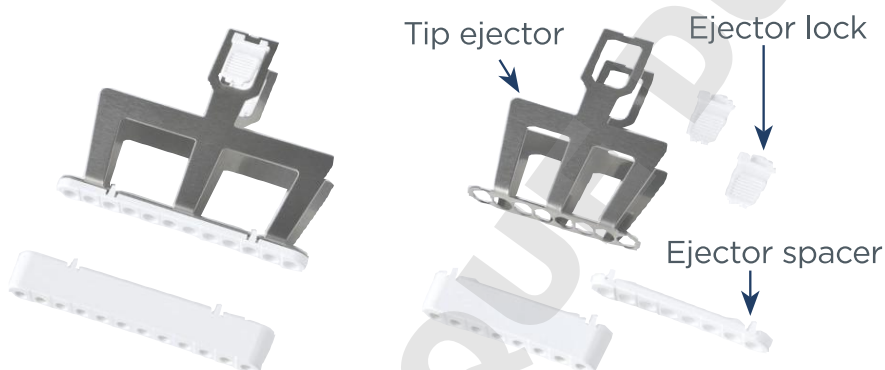


Figure 11

PIPETMAN® G multichannel tip ejector and ejector spacers



MAINTENANCE

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 can 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 for Single Channel Models

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 (refer to [Changing the Tip Ejector for Single Channel Models](#) on page 18).
2. Wipe the tip ejector with a soft cloth or lint-free tissue soaked with soap solution.
3. Wipe the entire pipette with a soft cloth or lint-free tissue soaked 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.

Internal

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

1. Disassemble the pipette (refer to Figure 10 on page 19).
2. Set aside the upper part in a clean, dry place. 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

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.

3. Rinse the individual components with distilled water.
4. Let the parts dry by evaporation or wipe them with a clean soft cloth or lint-free tissue.
5. Reassemble the pipette as described (refer to Figure 10 on page 19).

Cleaning for Multichannel Models

Only the following components can be immersed in a cleaning solution: tip ejector, ejector locks, and ejector spacer.

1. Remove the tip ejector and the ejector spacer.
2. Immerse the tip ejector, ejector locks, and ejector spacer in the cleaning solution or wipe them with a soft cloth or lint-free tissue soaked with the cleaning solution.
3. Rinse the components with distilled water.
4. Wipe the entire pipette with a soft cloth or lint-free tissue soaked with the cleaning solution.
5. Wipe it with distilled water.
6. Let the parts dry by evaporation or wipe them with a clean soft cloth or lint-free tissue.
7. Refit the tip ejector (refer to [Changing the Tip Ejector for Multichannel Models](#) on page 21).

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 ones found in [SPARE PARTS](#) on page 25.

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 reassembling the pipette.
5. Set the pipette aside to equilibrate to room temperature.
6. Reassemble the pipette (refer to Figure 10 on page 19).



CLEANING AND DECONTAMINATION



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 to verify 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).

Chemical Decontamination for Single Channel Models

Upper Part (handle)

1. Wipe the upper part (handle) of the pipette with a soft cloth or lint-free tissue soaked 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)

Only the following components can be immersed in a decontaminant solution: connecting nut, tip ejector, and tip holder.

NOTE

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

1. Remove the tip ejector, the tip holder, and the connecting nut.
2. Immerse them in the decontamination solution.
3. Degrease the piston assembly and the seals. Then immerse them in another vessel of decontamination solution.
4. Rinse each component with distilled water.
5. Let the parts dry by evaporation. The tip ejector, tip holder, and connecting nut can be wiped dry with a soft cloth.
6. Lubricate the piston assembly and the seals.
7. Reassemble the piston assembly, the tip holder, and the tip ejector.

Chemical Decontamination for Multichannel Models

Only the following components be immersed in a decontamination solution: tip ejector, ejector locks, and ejector spacer.

1. Remove the tip ejector and the ejector spacer.
2. Immerse the tip ejector, ejector locks and ejector spacer in the decontamination solution or wipe them with a soft cloth or lint-free tissue soaked with the decontamination solution.
3. Rinse the components with distilled water.
4. Wipe the entire pipette with a soft cloth or lint-free tissue soaked with the decontamination solution.
5. Wipe the entire pipette with distilled water.
6. Let the parts dry by evaporation or wipe them with a clean soft cloth or lint-free tissue.
7. Refit the tip ejector (refer to [Changing the Tip Ejector for Multichannel Models](#), page 21).



SPARE PARTS

Chapter 8

SPARE PARTS

Service Kit 1st level includes:

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

Service Kit 2nd level includes:

- 1 push button **A**
- 1 connecting nut **B**
- Stainless steel tip ejector **F2**
- Plastic tip ejector **F1** available separately as an accessory

For the P2G and P10G models only:

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

* For P5000G, two piston seals and O-rings are provided on the Service Kit 1st level.

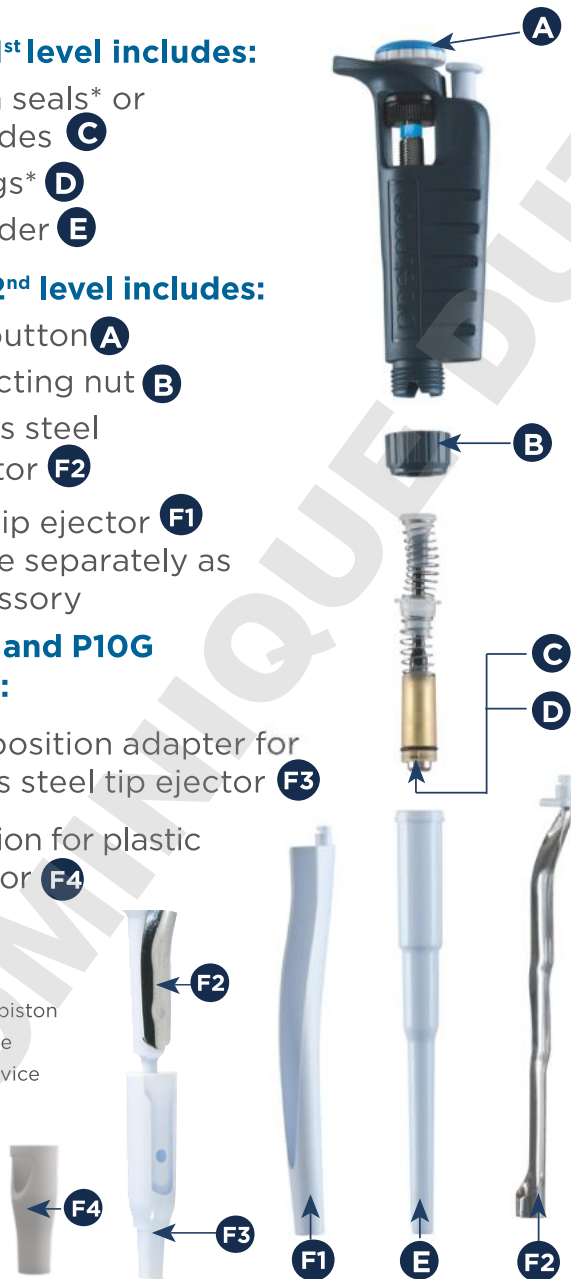


Figure 12

Spare parts identified

Single Channel Models

P2G (F144054M) AND P10G (F144055M)			
LABEL	DESCRIPTION	P/N FOR P2G	P/N FOR P10G
C+D+E	Service Kit 1st level	F144501	FA07001
A+B+F1 to F4	Service Kit 2nd level	F1619702	F1619712
C+D	Seal Guide + O-ring (5 sets)	F144861	FA07012
F3	Dual-Position Adapter (x5)	F144879	F144879
F4	Tip ejector extension	F2070903	F2070903

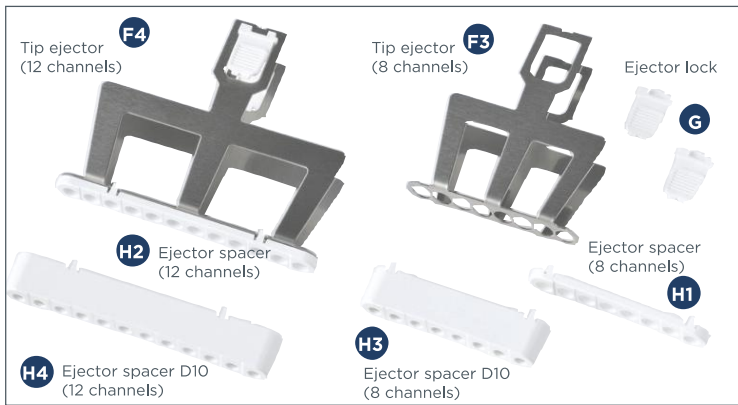
P20G (F144056M) AND P100G (F144057M)			
LABEL	DESCRIPTION	P/N FOR P20G	P/N FOR P100G
C+D+E	Service Kit 1st level	FA07002	FA07003
A+B+F	Service Kit 2nd level	F1619722	F1619732
C+D	Seal Guide + O-ring (5 sets)	FA07013	FA07014

P200G (F144058M) AND P1000G (F144059M)			
LABEL	DESCRIPTION	P/N FOR P200G	P/N FOR P1000G
C+D+E	Service Kit 1st level	FA07004	FA07005
A+B+F	Service Kit 2nd level	F1619742	F1619782
C+D	Seal Guide + O-ring (5 sets)	FA07015	FA07016

P5000G (F144066) AND P10MLG (F144067)			
LABEL	DESCRIPTION	P/N FOR P5000G	P/N FOR P10MLG
C+D+E	Service Kit 1st level	FA07021	FA07022
C+D	Seal Guide + O-ring (2 sets)	FA07017	FA07018
E	Tip holder	F123608	F161263

DESCRIPTION	PART NUMBER
Lubricant	5440011070

Multichannel Models



P8X10G (F144068) AND P12X10G (F144069)

LABEL	DESCRIPTION	P/N FOR P8X10G	P/N FOR P12X10G
F3-F4	Tip ejector	F507005	F507006
G	Ejector lock	F507008	F507008
H1 - H2	Ejector spacer	F507001	F507003
H3 - H4	Ejector spacer D10	F807114	F807115

P8X20G (F144070) AND P12X20G (F144071)

LABEL	DESCRIPTION	P/N FOR P8X20G	P/N FOR P12X20G
F3-F4	Tip ejector	F507005	F507006
G	Ejector lock	F507008	F507008
H1 - H2	Ejector spacer	F507001	F507003

P8X200G (F144072) AND P12X200G (F144073)

LABEL	DESCRIPTION	P/N FOR P8X200G	P/N FOR P12X200G
F3-F4	Tip ejector	F507005	F507006
G	Ejector lock	F507008	F507008
H1 - H2	Ejector spacer	F507001	F507003

P8X300G (F144074) AND P12X300G (F144075)

LABEL	DESCRIPTION	P/N FOR P8X300G	P/N FOR P12X300G
F3-F4	Tip ejector	F507005	F507006
G	Ejector lock	F507008	F507008
H1-H2	Ejector spacer	F507001	F507003



SPARE PARTS

WARRANTY

Gilson warrants this pipette against defects in material under normal use and service for a period of **three years for both single channel and for multichannel models** 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. **Routine cleaning, control, and recalibration are not covered under the warranty. The replacement of wearing parts such as seals, O-rings, broken pistons assembly, and broken tip holders are not covered under the warranty.**

NOTICE

Yearly routine maintenance is highly recommended to keep your pipette in good condition, ensuring a continued high level of performance.

THE FOREGOING WARRANTY IS EXCLUSIVE AND GILSON HEREBY DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY AND ANY WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE, UNDER NO CIRCUMSTANCES SHALL GILSON BE LIABLE FOR ANY CONSEQUENTIAL, PUNITIVE, INDIRECT OR INCIDENTAL DAMAGES ARISING OUT OF ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.



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