

distriman®

User's Guide

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INTRODUCTION



INTRODUCTION

DISTRIMAN® is a continuously adjustable repeater pipette designed to dispense precise aliquots of liquid safely. The DISTRIMAN can quickly transfer volumes from 1 µL to 1.25 mL, depending on the capacity of the DISTRITIP® (positive displacement syringe) fitted to it. The number of aliquots that can be dispensed depends on the volume of liquid aspirated (up to the maximum for a given size of syringe) and the aliquot volume selected.

This ergonomically designed product is suitable for transferring most kinds of liquids (aqueous, volatile, viscous, or dense) into many kinds of vials (tubes, microplates, etc.). DISTRIMAN ensures reliable results in any domain and in all kinds of laboratory, for a wide variety of applications.

The positive displacement mechanism permits precise pipetting of viscous materials (e.g. blood, plasma, oils, etc.), including those used in molecular biology (glycerol, enzymes, and amplified DNA), without contaminating the pipette.

DISTRIMAN is fitted with a COLORIS™ tag, which can identify the user or application. You may replace the one fitted with a COLORIS of a different color (as supplied, refer to Chapter 5 [Maintenance](#) on page 14).

DISTRIMAN is equipped with a direct reading volumeter that allows precise and continuous volume setting. The aliquots are dispensed by pressing the push button the required number of times (the volume between aliquots can also be changed). A small red flag (refer to [Figure 1](#) on page 4) indicates that the final aliquot will be dispensed.

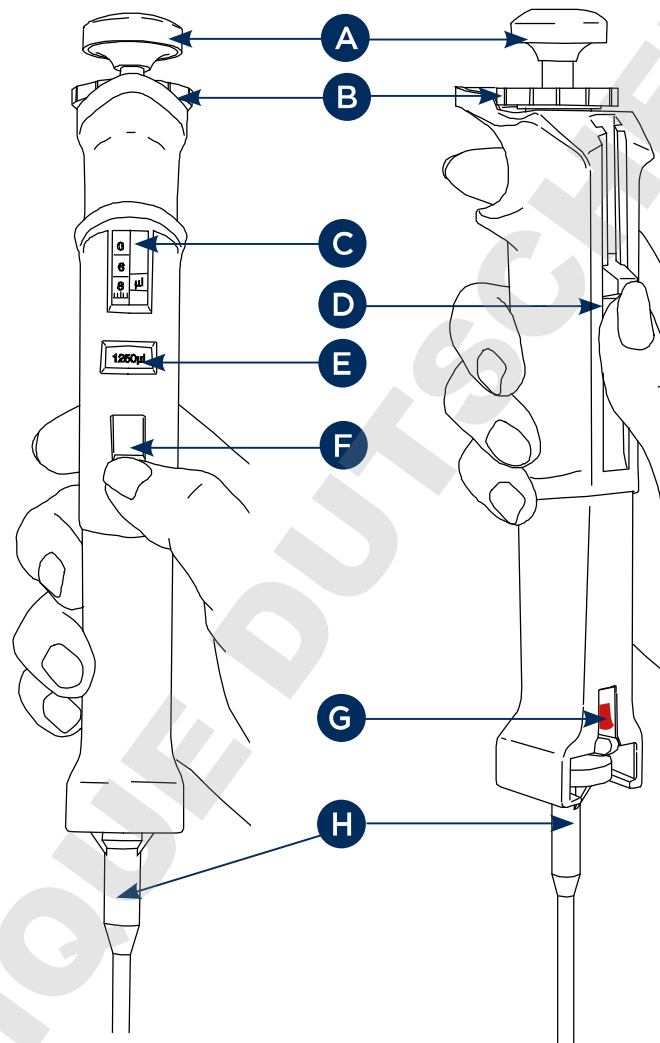
Because DISTRIMAN is permanently calibrated when manufactured, there is no need for readjustment. It is virtually maintenance free. However, a few spare parts have been made available in case they are damaged as the result of extensive use.



Chapter 2

OPERATION

Description



- | | |
|--|--------------------------|
| A Push Button | E Unit Indicator |
| B Adjustment Ring | F Selector Switch |
| C Parallax-limiting Digital Volumeter | G Red Flag |
| D Filling Knob | H DISTRITIPS |

Figure 1
DISTRIMAN Description

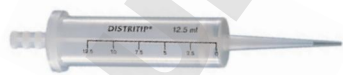
Perform the following sequence of steps in order to operate the DISTRIMAN®.

1. Select a DISTRITIP of suitable capacity.
2. Fit the DISTRITIP to the DISTRIMAN.
3. Select the volume range on the DISTRIMAN.
4. Set the aliquot volume.
5. Lock in the selected volume.
6. Fill the DISTRITIP.
7. Dispense the aliquots.
8. Eject the DISTRITIP.

Select the DISTRITIP

Three standard DISTRITIPS are provided with DISTRIMAN (refer to Table 1 below). Individually wrapped sterilized versions are available.

Table 1
DISTRITIPS Model

MODEL	VOLUME
	DISTRITIP Micro 125 µL 1 µL to 12.5 µL
	DISTRITIP Mini 1250 µL 10 µL to 125 µL
	DISTRITIP Maxi 12.5 mL 100 µL to 1250 µL

Select the capacity* of the DISTRITIP according to the volume and number of aliquots that you want to dispense.

Because DISTRIMAN is continuously adjustable you can also select any aliquot volume within the range for the size of DISTRITIP fitted.

For example, the DISTRITIP Micro is ideal for filling a 96-well microplate. The syringe capacity is 125 µL, so the DISTRIMAN can dispense at least 96 aliquots of 1 µL.

$$\text{Number of aliquots}^{**} = \frac{\text{Volume in Syringe}}{\text{Volume of Aliquot}}$$



*Capacity refers to the maximum usable volume of a DISTRITIP; the range refers to the maximum and minimum aliquot volumes that may be dispensed.

NOTE

**Taking into account the systematic error, the maximum number of aliquots varies from 118 to 121, according to the type of DISTRITIP used.

Fit the DISTRITIP

Take the following steps to ensure the DISTRITIP is correctly fitted.

1. Push the filling knob downwards to its lowest possible position, using your thumb **A**. Hold the filling knob firmly in place with your thumb.
2. Hold the DISTRITIP in your other hand, place the end of the piston into the body of the DISTRIMAN at a right-angles to the main axis **A**.
3. Gently rotate the DISTRITIP downwards with the other hand **B**, and then snap the syringe into place with your thumb, using moderate pressure **C**.
4. Finally, check that the piston of the syringe is correctly fitted by pushing the filling knob upwards.

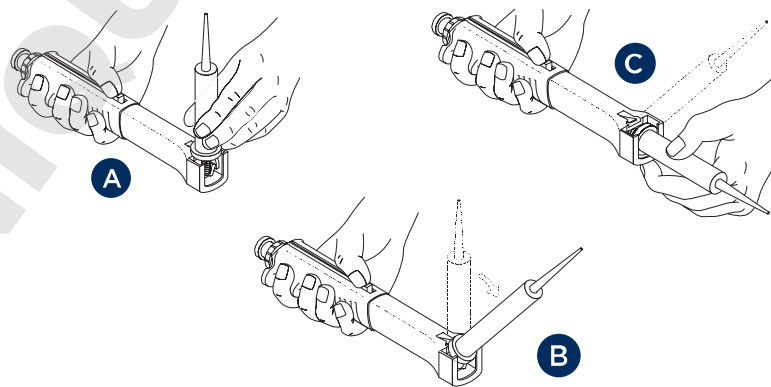


Figure 2

Fit the DISTRITIP

NOTE

Before using DISTRIMAN, check the selected volume range matches the volume of the DISTRITIP.

Select the Volume Range

Each volume range corresponds to the capacity of a specific size of DISTRITIP. The selected volume range is shown clearly on an indicator **H** located between the volumeter **G** and the selector switch **J**. You select the volume range using the selector switch.

1. Check that the selected volume range corresponds to the capacity of DISTRITIP fitted. The capacity of a DISTRITIP is marked on its barrel.
2. Set the volume range, by sliding the selector switch **J** with your thumb, to match the capacity of DISTRITIP fitted. The volume range indicator, volume units (μL are in black and mL are in red), and decimal point indicator of the volumeter, are all switched by this action.

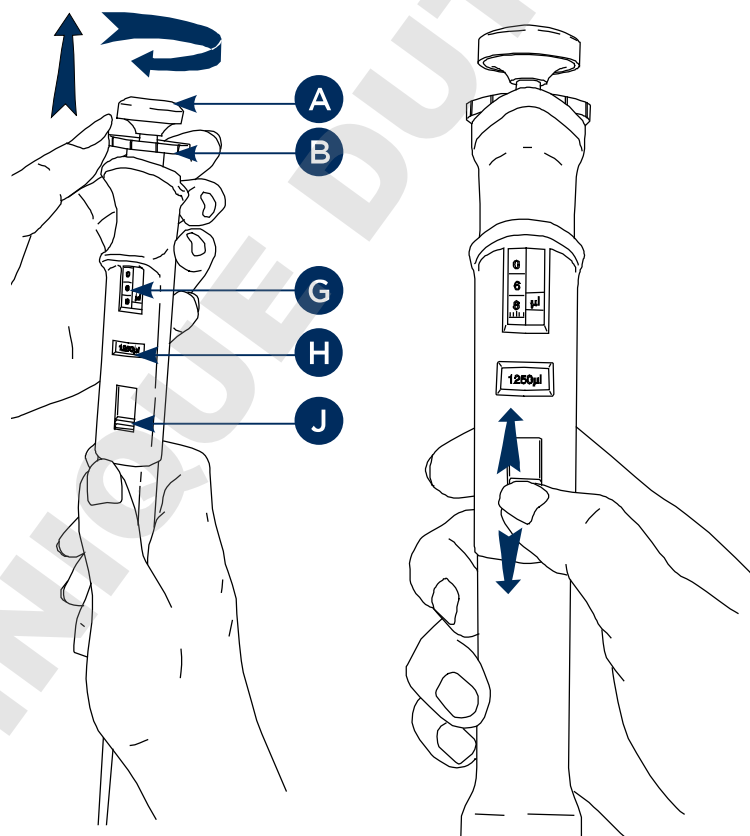


Figure 3

Set the Volume Range



OPERATION



Set the Aliquot Volume

Volumeter

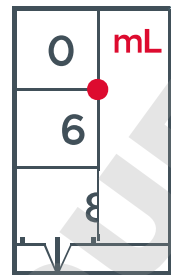
Set the volume of liquid to be dispensed in each aliquot using the black adjustment ring and the parallax-limiting digital volumeter (refer to [Figure 3](#) on page 7). The volume is continuously adjustable in all ranges.

The volumeter consists of three numbered dials, a parallax-limiting marker, and a range and decimal point indicator. The three numbered dials, used to set the aliquot volume, are read from top (most significant digit) to bottom (least significant digit).

The marker is used to set exact or intermediate volumes using the scale on the bottom dial. The volume units (mL or μL) and position of the decimal point change automatically when you change the volume range using the selector switch.

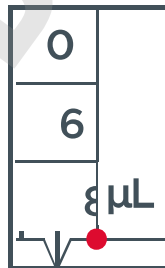
The volumeter makes it easy to set and read any volume from 1 μL to 1.25 mL with accurate incremental settings, as shown below.

DISTRITIP Maxi
Increment: 2 μL
Example 1
0.682 mL



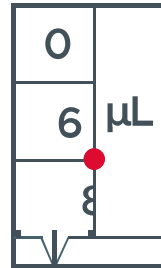
125 mL

DISTRITIP Mini
Increment: 0.2 μL
Example 2
68.2 μL



1250 μL

DISTRITIP Micro
Increment: 0.02 μL
Example 3
6.82 μL



125 μL

Figure 4

Set the Volume Range

Set the Volume

1. Pull up the black adjustment ring **B** refer to [Figure 3](#) on page 7.
2. With your DISTRIMAN in one hand, turn the adjustment ring with the other hand until the volumeter shows the required value, taking care that the marker is correctly aligned with the scale on the bottom dial.



Take the following precautions in order to obtain maximum accuracy when changing the volumeter setting.

- When decreasing the volume setting, turn clockwise the adjustment ring slowly to reach the required setting, taking care not to overshoot the mark.
- When increasing the volume setting, turn the adjustment ring counter clockwise past the mark to 1/3 of a turn above the required setting. Then turn the adjustment ring slowly to decrease the volume setting to the required value, taking care not to overshoot the mark.

Lock the Selected Volume

So that the volume cannot be changed accidentally, push the black adjustment ring down firmly to lock the selected volume. You hear a click when you lock the volume.

To change the volume, unlock the adjustment ring by pulling it upwards.

NOTE

Even if the volume is locked, the action of turning the adjustment ring will not harm the mechanism.

Fill the Syringe

Only one hand is needed to fill the DISTRITIP. Push the filling knob down with your thumb, to completely or partially fill the DISTRITIP, which is clearly marked with graduations according to its size.

1. Push the filling knob down to the lowest possible position, using your thumb.
2. Immerse the end of the DISTRITIP into the liquid to be aspirated. Ensure that the tip remains about 2 mm below the surface of the liquid.



OPERATION

3. Move the filling knob **C** slowly up to its highest position to completely fill the syringe, or with reference to the graduations on the DISTRITIP to an intermediate position.
4. Withdraw the DISTRITIP from the liquid and carefully wipe any excess liquid from the outside, using a medical wipe, taking care not to touch the orifice of the syringe.

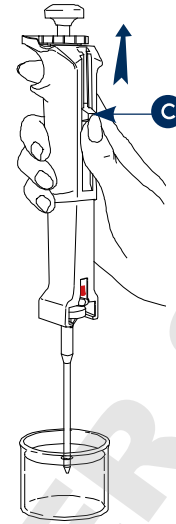


Figure 5
Fill the Syringe

NOTE

After fitting a new DISTRITIP, you are advised to “wet” the interior with the liquid to be aspirated. Then purge and refill the syringe.

Dispense the Aliquots

1. Put the end of the DISTRITIP into a suitable recipient vessel (according to the nature and volume of liquid to be dispensed).
2. Press the push button **A** all the way down to dispense the first aliquot. This action also locks the adjustment ring **B**, if it was left unlocked after setting the volume.
3. Release the push button.
4. Repeat steps 1 to 3 for all but the last aliquot, which normally would not contain a complete aliquot. The red plastic flag **E** refer to Chapter 5 [Maintenance](#) on page 14, when completely visible, warns that it is time to purge and eject the syringe (or refill it).
5. You may purge the syringe at any time by placing the tip into a suitable recipient vessel and then pushing filling knob downwards to its lowest possible position.

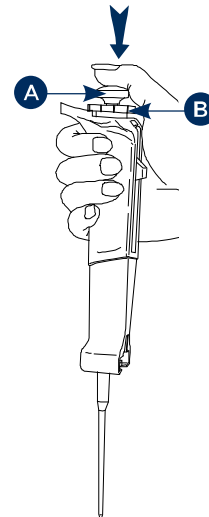


Figure 6
Dispense the Aliquots

NOTE

Operator error is minimized by applying axial pressure on the dampened push button, ensuring that each aliquot is completely dispensed, and that the repeatability is maximized, refer to Chapter 3 [Recommendations](#) on page 11.

**RECOMMENDATIONS**

Chapter 3

RECOMMENDATIONS

NOTICE

The pipette can be used between +4°C and +40°C but the specifications may vary according to the temperature (refer to Chapter 4 [Specifications](#) on page 12, for controlled conditions of use).

When the red flag appears, be prepared to refill the DISTRITIP before you reach the last aliquot.

For the complete distribution of an aliquot, you must press the push button until it reaches the adjustment ring. If after distributing an aliquot, a drop of liquids forms on the end of the DISTRITIP, do not discard this drop, which is part of the next aliquot.

Accuracy could be affected by capillary action; when dispensing, do not “wipe” the DISTRITIP against the side of the recipient vessel. After changing the DISTRITIP or resetting the volume, discard the first aliquot.

Never try to force the volumeter beyond the recommended volume ranges.



SPECIFICATIONS

DISTRITIPS			MAXIMUM PERMISSIBLE ERRORS			
MODEL	VOL		GILSON		ISO 8655	
			SYSTEMATIC ERROR	RANDOM ERROR	SYSTEMATIC ERROR	RANDOM ERROR
125 µL Micro (F164100)	Min.	2	± 0,100	≤ 0,080	± 0,2	≤ 0,1
Micro ST* (F164130)	5		± 0,125	≤ 0,075	± 0,2	≤ 0,1
	Max.	10	± 0,200	≤ 0,100	± 0,2	≤ 0,1
1250 µL Mini (F164110)	Min.	20	± 0,80	≤ 0,20	± 1,5	≤ 0,6
Mini ST* (F164140)	50		± 1,00	≤ 0,40	± 1,5	≤ 0,6
	Max.	100	± 1,00	≤ 0,60	± 1,5	≤ 0,6
12.5 mL Maxi (F164120)	Min.	200	± 6,0	≤ 1,0	± 12,0	≤ 4,0
Maxi ST* (F164150)	500		± 7,5	≤ 1,5	± 12,0	≤ 4,0
	Max.	1000	± 10,0	≤ 2,5	± 12,0	≤ 4,0

*ST means Sterilized.

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

NOTE

The accuracy and precision figures, given in the table, are only guaranteed when you fit your DISTRIMAN with genuine Gilson DISTRITIPS, of which the fine points results from high quality molding.

Each DISTRIMAN is engraved with a unique serial number, allowing you to keep track of individual pipettes, in accordance with GLP. The serial number is also printed on the warranty card.

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

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

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



SPECIFICATIONS



MAINTENANCE

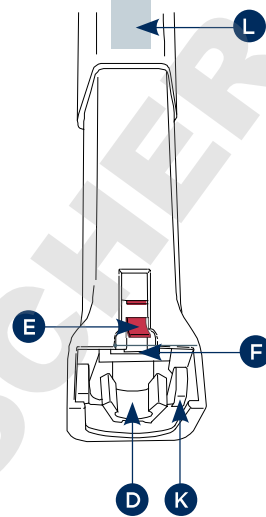
NOTICE

Neither DISTRIMAN nor DISTRITIPS may be autoclaved.

From time to time it may be necessary to replace one of the following parts:

- push button assembly,
- DISTRITIP retaining spring **K**
- piston retaining assembly **D**
- the red flag **E**

Should a persistent problem arise, send the DISTRIMAN to your Gilson representative.

**Figure 7**

DISTRIMAN
Maintenance

WARNING

Before returning a pipette, please ensure that it is completely free of any chemical, biological, or radioactive contamination.

Replace the Push Button Assembly

Perform the following steps to replace the push button assembly.

1. Hold the DISTRIMAN in one hand and pull the push button assembly gently in the axial direction to remove it.
2. Fit the new push button assembly by placing the core of the push button into the hollow shaft and then pressing on the push button with your thumb until it clicks back into place.

Replace the DISTRITIP Retaining Spring

To replace the retaining spring, perform the following steps.

1. Remove the DISTRITIP.
2. Pull the filling knob fully up.
3. Make a note of the position and orientation of the spring **K** (refer to [Figure 7](#) on page 14).
4. Pull on the retaining spring at a 90° to the body of the DISTRIMAN. Insert a small screwdriver under the spring or by pulling on it with a small pair of pliers.
5. Fit the new spring by pushing it back into the slot from which it came. However, make sure that spring goes all the way back into the body of the DISTRIMAN. It may be necessary to apply moderate lateral force to the ends of the spring to make sure that they are located in their retaining slots.



MAINTENANCE



Replace the Piston Retaining Assembly

The DISTRITIP retaining collar is fixed to a steel shaft to form the piston retaining assembly. The piston retaining assembly, which connects to the filling knob, must be replaced as a unit. To replace the retaining collar **D** (refer to [Figure 7](#) on page 14), perform the following steps.

1. Hold your DISTRIMAN in the horizontal position with the red flag visible.
2. Hold the filling knob at its lower position using the thumb of one hand.
3. Press lightly on the white locking tab **F** (refer to [Figure 7](#) on page 14) with a screwdriver.
4. Move the filling knob towards the upper position to separate it from the assembly.
5. Pull the assembly out of the neck of the DISTRIMAN, taking care not to lose the small red flag.
6. Return the filling knob to the upper position.
7. Push the new piston retaining assembly into the body of the DISTRIMAN while pushing the filling knob in the opposite direction until they click together.

Replace the Red Flag

You cannot remove the red flag **E** (refer to [Figure 7](#) on page 14) until you have separated the filling knob from the piston retaining assembly. In fact, The act of separating these two components will free the flag.

To replace the red flag, the piston retaining assembly and filling knob should be reconnected first. Then, with reference to the [Figure 7](#) on page 14, hold the flag with end **A** between the thumb and index finger of one hand. With end **B** pointing downwards, insert it into the access slot. Next, push end **A** as far as it will go into the slot using a small screwdriver.

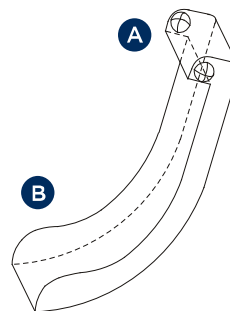


Figure 8
Red Flag

Replace the COLORIS™

NOTICE

Do not try to pry the Coloris away from the DISTRIMAN's body.



DECONTAMINATION

1. Push the filler-knob to the top (closest to the push button).
2. Use your thumb to push the COLORIS to the top. Moderate pressure may be required.
3. Remove the old COLORIS and insert the new one into the filler knob slot.
4. Push the COLORIS all the way down into position.

Chapter 6

DECONTAMINATION

You are advised to take the following steps to decontaminate DISTRIMAN. You can use the following disinfectants:

- A solution of 10% sodium hypochloride
 - CIDEX (Johnson & Johnson).
1. Disassemble the piston retaining assembly.
 2. Put all the parts into an ultrasonic bath for 15 minutes.
 3. Rinse the parts thoroughly with clean tap water.
 4. Immerse all of the parts in a disinfectant bath for 15 minutes.
 5. Rinse the parts thoroughly with clean tap water.
 6. Dry the parts using hot air (40°C to 60°C max.).



SPARE PARTS

NOTE

Contact your Gilson representative to order spare parts.

MODEL		
DESCRIPTION	PART NUMBER	
Push button assembly	A page 7	F164040
Piston retaining assembly	D page 14	F164070
Red flag (pack of 5)	E page 14	F164042
Retaining spring	K page 14	F1864052

Chapter 8

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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