PIPETMAN® *Concept*

User's Guide

ENGLISH

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GILSON

SOLUTIONS AT WORK FOR YOU

PIPETMAN® *Concept*

1 INTRODUCTION 3

2 PARTS CHECK LIST AND ACCESSORIES 3

Accessories 3

3 GETTING STARTED 4

Battery charging 4
Setting-up 4
Initializing 5
Standby Screen 5

4 DESCRIPTION 5

Pipette 5
Keypad 6
Screen (LCD) 6
Tip-ejector Extension 7

5 OPERATION 7

Switching On 7
Thumbwheel 7
Start Button 8
Speed Buttons 8
Direction Button 8
Mode Buttons 8
Reset Button and Connectors 8
Tip-Ejector Button 9

6 PIPETTING MODES 9

Overview 9
Selecting 9
Aborting the Active Mode 9
Mode Description 10
AUTO 10
AUTO + MIX 10
MANUAL 11
REPETITIVE 12
REVERSE 13
Programming Modes 13
DILUTE 14
DILUTE AND MIX 14
MULTIPLE ASPIRATES 14
DISTRIBUTION WITH TIMER 14

7 GILSON DIAMOND® TIPS 14

Tipack - Rocky Rack

8 PIPETTING TECHNIQUES 15

Guidelines for Good Pipetting 15
Aspirate and Dispense 16

9 GLP FEATURES 17

General 17
Cycle counters 17
Alarms 17

10 SYSTEM MENU 18

Configuration 18
Calibration 18
Standard Readjustment 19
Quick Readjustment 19
Factory Setting 20
Maintenance 20
Disassembly 20
Service Info 20
Service Settings 21
Maintenance Alarm 21
Pipette Info 21
Personalization 21

11 USER MAINTENANCE 22

Maintenance Warnings 22
Maintenance Operations 22
Maintenance Operations for Monochannel 23
Tip-holder and Tip-ejector 23
Changing the Tip-ejector 23
Changing the Tip-holder 23
Changing the O-ring 5or seal for C10) 23
Servicing the Piston 24
Removing the Piston 24
Maintenance Operations for Multichannel 25
Removing and reassembling the Head 25
Removing the Plastic Cover... 25
Servicing the Cover-ejector... 26
Reassembling the Piston Assemblies... 27
How to Lubricate the Piston (except for C10) 27

12 CLEANING AND DECONTAMINATION 28

Cleaning 28
External 28
Internal 28
Decontamination 29
Autoclaving 29
Chemical Decontamination 29

13 LEAK TEST 30

14 TROUBLESHOOTING 30

15 SPECIFICATIONS 31

16 ACCESSORIES & REPLACEMENT PARTS 31

Accessories 31
Replacement Parts for Concept Monochannel 32
Replacement Parts for Concept Multichannel 32

EC DECLARATION OF CONFORMITY 35

1 INTRODUCTION

Thank you for choosing Gilson Pipetman® Concept - the latest and most user-friendly of motorized pipettes. It is another quality product from Gilson, which is fully ISO8655 compliant, CE labeled (conforms to the EC directives on *in vitro* diagnostic medical devices, electromagnetic compatibility and safety).

To ensure the best performance from your Gilson pipette you should always use Gilson Diamond® Tips (in accordance with ISO8655) to complete your pipetting system, because Diamond Tips were used to establish the specifications cited in Chapter 15.

2 PARTS CHECK LIST AND ACCESSORIES

The following items are supplied in the box:
- Pipetman Concept pipette
- Battery block
- Sample Diamond Tips (Tipack rack or for C5000 and C10ml a bag of tips)
- Guarantee and quality certificate
- User's Guide & Quick Guide
- Safety bag
- Tip-holder reassembly tool (Multichannel models only)
- Tube of lubricant
- Identification tags
- Tip-ejector extension (C10 model only)

Accessories

The following item may be supplied either in the box or separately by your Gilson distributor:
- AC adaptor (four region types are available: Europe, UK, USA/Japan, Australia).

The following items are **not** supplied in the box:
- Rapid charging and storage stand (AC adaptor not included)
- PC Connection kit (includes PC cable plus programming and maintenance software)
- Additional battery block

☞ *Please contact your Gilson Distributor for these accessories. Order with the reference numbers given in Chapter 16.*

3 GETTING STARTED

1) Slide the battery block into the pipette (see fig. 1).

2) Your Gilson distributor supplies an AC adaptor that is suitable for your country – either in the pipette box or separately. **You must only use an original Gilson** AC adaptor **specific to this product**.

3) Connect the AC adaptor to a suitable AC power supply and plug the adaptor into the pipette (see figure 2). If you have a charging stand, then you must first place the pipette on the stand and plug the adaptor into the stand. It takes two hours to fully charge the battery or one hour for 80% charge. We strongly recommend you fully charge the battery before using the pipette.

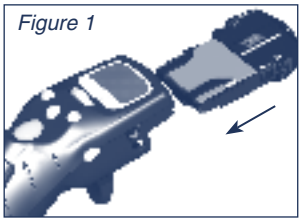


Figure 1

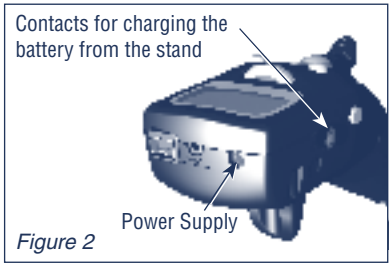
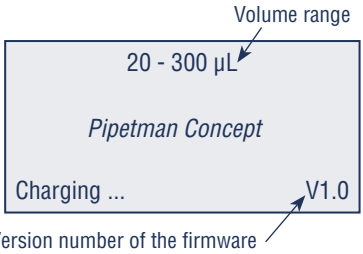


Figure 2

Battery Charging

When charging the pipette you see the following screen:



Get a second battery block – that way one can be charged while the pipette is in use (you can plug the battery block into the charging stand).

Setting-up

1) Set the position of the adjustable hook to the position of maximum comfort for you size of hand (see figure 3). Loosen the retaining screw (do not undo completely), slide the hook into the most comfortable position, and then retighten the screw.

2) Fit Gilson Diamond Tips appropriate for the model of Pipetman Concept that you are using (see Chapter 7).

You must always fit a tip before using any pipette.

3) Rotate the tip-adjustment force regulator until you reach the optimum force for you and the type of tip being used (see figure 3).

4) Optionally, you may personalize the name of your pipette (see Chapter 10).

Initializing

Press any button to activate the pipette. You then see the start-up screen:

Select your mode (see Chapter 6) and enjoy using your Pipetman Concept.

☞ *To get used to the pipette, we recommend you select the AUTO mode.*

20 - 300 µL

Pipetman Concept

Initializing ... V1.0

Standby Screen

Pipetman® Concept goes to stand-by after 3 minutes of inactivity. Press any button to reactivate the pipette. If you do not press one of the buttons within 3 minutes of the end of the current cycle, you will see the standby screen:

When you next press a button, the software reinitializes the piston.

20 - 300 µL

Pipetman Concept

On standby ... V1.0

4 DESCRIPTION

Pipette (figure 3)

1. Tip-ejector button, can be positioned for left or right-handed operation.
2. Ergonomic, adjustable hook, to make the pipette more comfortable to use, and to reduce fatigue.
3. Identity-tag window (see GLP features).
4. Connecting nut – links body handle to the lower part.
5. Tip-ejector stroke adjustment-wheel – Force Regulator.
6. Tip-ejector: removable to access piston assembly and tip-holder.
7. Optimized tip-holders to reduce tip fitting and ejection forces– removable for cleaning and servicing.

Figure 3

Keypad (figure 4)

The following buttons are used to control the pipette.

1. Thumbwheel to set the volume and other system parameters: setting by rolling, and validating by clicking,
2. Reset button, to initialize the pipette (see chapter 5),
3. Contacts for charging the battery from the stand (see chapter 16),
4. Two buttons (+) and (-) to adjust the speed,
5. Two mode buttons, one for right handed and one for left handed, to select the requested mode,
6. A button to inverse direction of piston motion (Manual mode),
7. Start button, to aspirate and dispense,
8. A button for tip ejection.

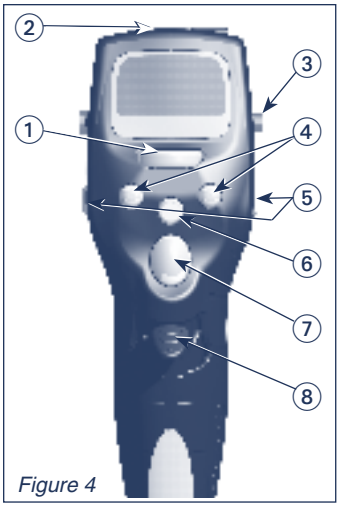
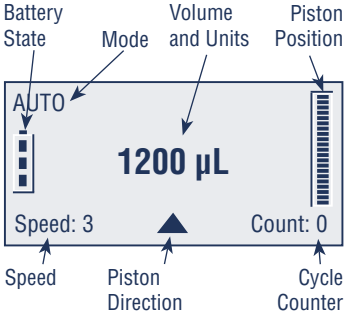


Figure 4

Screen (LCD)

Typically, the LCD screen is used to display:

- The available modes and the parameters required for a specific mode.
- Information relating to the current manipulation in real time.
- Battery state (4 levels)
- Piston direction and motion in real time (see Chapter 6).
- Configuration and maintenance information (see Chapter 10).
- Cycle counter (see Chapter 9).
- Warning messages, which appear in the place of volume (refer to Chapter 16 for the full list).



Tip-ejector Extension (only with C10 model)

In order to eject D10 tips, tip-ejector extensions are supplied with C10 pipettes (figure 5).

The tip ejector extension, which is made of PVDF (polyvinylidene difluoride), is autoclavable.

Do the following to fit a tip extension.

1) Hold the pipette with the LCD uppermost and hold the extension with the slot uppermost,
2) Slide the extension over the tip- holder,
3) Push the extension firmly onto the end of the tip-ejector until it clicks into place (see opposite).
4) To remove a tip-ejector extension (see opposite):
   a) Hold the pipette in one hand and grip the extension with the other.
   b) Gently twist the extension (either direction) and pull it away from the pipette.

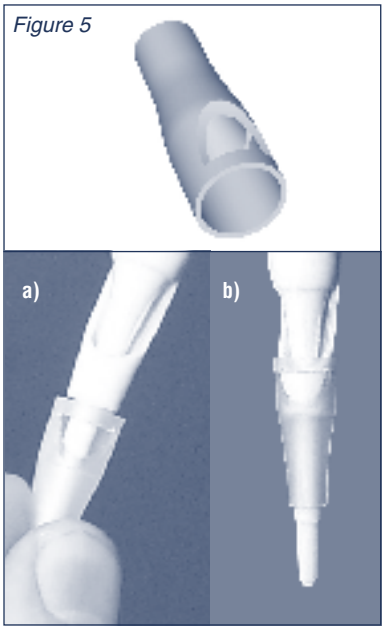


Figure 5

5 OPERATION

Switching On (figure 6)

Press any button to activate the pipette. After pressing a button, if nothing shows on the screen, check that the battery is charged (see Chapter 3).

Thumbwheel

There are two ways of using the thumbwheel: by rotating in either direction or by pressing inward sharply (clicking). For example, to set the volume:

1) Click the thumbwheel to unlock the volume.
2) Rotate the thumbwheel to set the volume.
3) Click the thumbwheel to lock the volume.

Figure 6

The thumbwheel is also used to select parameters and to choose from the System menu. However, it always operates in the same manner; click then turn to select and click again to confirm your choice. These options are explained in the following text at the appropriate point.

☞ *When setting the volume, use a sharp motion on the thumbwheel to move rapidly through the volume range or use a slow and deliberate motion to fine tune the volume.*

Start Button

This button is the equivalent of the plunger on a manual pipette. However, very little force is needed to operate it. A simple click is all that is needed to aspirate and dispense or to purge the pipette.

Speed Buttons

These buttons are used to change the speed (which may be set from 1 to 5) of a pipetting cycle: + to increase the speed – to decrease the speed.

☞ *The speed can be changed before or during a pipetting cycle.*

Direction Button

Press this button to change the direction in which the piston is moving. The arrow on the screen will change accordingly.

☞ *This button is only active in the MANUAL mode (see Chapter 6).*

Mode Buttons

There are two buttons located at either side of the pipette: one each for left- or right-handed operators.

Press either of these buttons to display the mode menu on the screen (see Chapter 6). Pressing both at the same time will switch the pipette to System menu (see Chapter 10).

Reset Button and Connectors (figure 7)

The reset button is recessed at the back of the pipette between the power supply and the PC connector. Insert a small plastic probe or a tip and press to reinitialize the pipette.

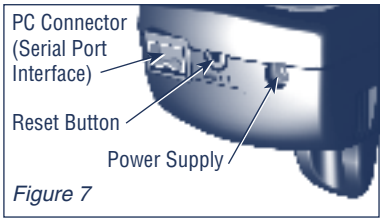


Figure 7

Tip-Ejector Button (figure 8)

This is a mechanical button that can be set for left- or right-handed users.

Figure 8

6 PIPETTING MODES

Overview

Pipetman Concept has five pre-programmed modes. The “AUTO” mode is the recommended for the new user to become familiar with the operation of Pipetman Concept.

Selecting

Press either of the “Mode” buttons. The “Mode” menu shows on the LCD screen. The active mode will blink.

☞ *After a few seconds the display returns to the last mode used, if no mode is selected.*

To select another mode, scroll the different modes by turning the thumbwheel, then press the thumbwheel to confirm.

AUTO
AUTO + MIX
MANUAL
REPETITIVE
REVERSE

In each of the modes listed below the parameters last used are kept in memory until you change them.

☞ *The REVERSE mode can be replaced by another programmed mode that can be uploaded by the user with a PC Connection Kit (optional). The kit, which includes a PC cable, programming and configuration software, can be obtained from your usual Gilson representative (the reference number is F123456).*

Reminder: Pressing both mode buttons at the same time switches the pipette to System menu (see Chapter 10).

Aborting the Active Mode

If you press one of the mode buttons **during the current cycle** the following is displayed:

If you do not press the **START** button within a few seconds you are sent back to the previous screen.

WARNING!
Process aborted.

Press START to Blow Out

Mode Description

AUTO

a) Description:
This is the simplest mode. Aspirate and dispense are initiated using the **START** button.

b) Protocol:

i) Click on the thumbwheel to unlock the volume setting – the current volume will flash.

ii) Set the sample volume: turn the thumbwheel until you see the selected volume displayed on the screen, then press the thumbwheel to lock the volume – you cannot dispense until this is done.

iii) Set the speed (optional): press the +/- keys to increase or reduce the speed (default is 5). The speed can be changed before or during a pipetting cycle.

c) Functionality:

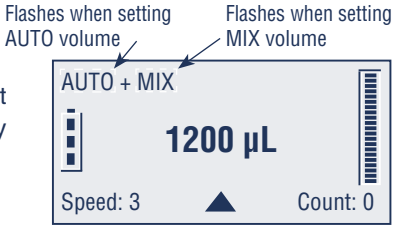
i) Immerse the tip in the liquid to be aspirated.

ii) To aspirate: click (press and release) the **START** button and wait until the motor stops (check piston position indicator).

iii) To dispense: click (press and release) the **START** button. Three things happen: sample dispense, automatic purge and piston reset to zero. However, if you keep the button pressed until the end of the dispense cycle (when the motor stops) the piston reset takes place **after** you release the **START** button again. This feature enables you to remove the tip from the liquid – otherwise liquid would be re-aspirated when the piston resets.

☞ *In this mode the user has access to a cycle counter, which is incremented after each pipetting cycle. It counts up to 999 before starting again at zero. The counter is reset to zero each time the volume is changed.*

AUTO + MIX



a) Description:
This mode operates in the same way as AUTO, but is followed by a mixing phase, which is achieved by repeatedly aspirating and dispensing.

b) Protocol:

i) Set the sample volume: with “AUTO” flashing on the screen, click the thumbwheel then turn it until you see the selected volume displayed, then press the thumbwheel to lock the volume.

ii) Set the mix volume: with “MIX” flashing on the screen, turn the thumbwheel until you see the selected volume displayed, then press the thumbwheel to lock the volume.

Then "AUTO" is displayed again. The default is the sample volume previously selected, to accept this value for mixing simply press the thumbwheel for the second time.

iii) Set the speed (optional): press the +/- keys to increase or reduce the speed (default is 5). The speed can be changed before or during a pipetting cycle.

c) Functionality:

i) Immerse the tip in the liquid to be aspirated.

ii) To aspirate: click (press and release) the **START** button and wait until the motor stops (check piston position indicator).

iii) To dispense: click (press and release) the **START** button. Three things happen: sample dispense, automatic purge and piston reset to zero. However, if you keep the button pressed until the end of the dispense cycle (when the motor stops) the piston reset takes place **after** you release the **START** button again.

iv) To mix: press the **START** button again; mixing continues for as long as you keep the START button pressed. Release the **START** button to complete the current mixing cycle.

v) Purge: click on **START** to purge and reset the piston. "BLOW OUT" appears on the screen until the piston has reset to zero.

☞ *During the normal aspirate and dispense phase the word "AUTO" appears; the volume displayed is the sample volume. During the mixing phase the word "MIX" appears ; the volume displayed is the mix volume.*

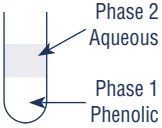
In this mode the user has access to a cycle counter, which is incremented after each pipetting cycle. It counts up to 999 before starting again at zero. The counter is reset to zero each time the volume is changed.

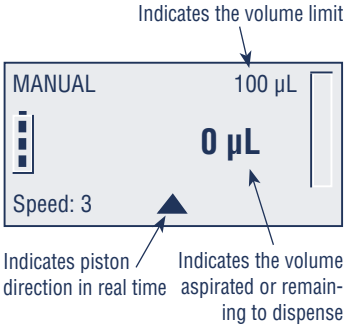
MANUAL

a) Description:

This mode simulates the way in which a manual pipette is operated. The user can stop and start the aspirate and dispense phases at will.

This enables you to load a gel or measure a sample volume. You can also set a volume limit before aspirating a phase.





b) Protocol:

i) Set the sample volume (optional): click on the thumbwheel than turn it until you see the selected volume limit (Vmax) displayed on the screen, then press the thumbwheel to lock the volume – you cannot dispense until this is done. If you do not set a volume, the default volume is the nominal volume of the pipette.

ii) Set the speed (optional): press the +/- keys to increase or reduce the speed (default is 5). The speed can be changed before or during a pipetting cycle.

c) *Functionality:*

i) To aspirate: keep the **START** button pressed. You can stop by releasing the **START** button and restart by pressing it again. You can aspirate until Vmax or the nominal volume is reached.

ii) Press the **DIRECTION** button to change the direction in which the piston moves from up to down (see direction arrow on the display). You can change direction at any time during an aspirate or a dispense cycle.

iii) Dispense: keep the **START** button pressed. At any time, you can stop by releasing the **START** button and restart by pressing it again. When the volume reaches 0.0 µL, dispensing stops.

iv) Purge: click on **START** to purge and reset the piston. "BLOW OUT" appears on the screen until the piston has reset to zero.

☞ *The volume of liquid present in the tip is permanently displayed in real time. As a consequence, you can use the MANUAL mode to measure unknown volumes. However, take care to reset the selected volume (Vmax) to the nominal volume (e.g. 1200 µL for a C1200).*

REPETITIVE

a) *Description:*

This mode distributes a number (N) of equal aliquots. You supply the aliquot volume (AV) and the pipette automatically calculates the number from the nominal volume (NV) of the pipette as follows: N = NV/AV (e.g. 120 µL x 10 for C1200).

b) *Protocol:*

i) Set the aliquot volume: click the thumbwheel, the default volume flashes. To change the volume turn the thumbwheel until you see the required volume displayed on the screen.

ii) Then press the thumbwheel to lock the volume and calculate the number of aliquots. The number of aliquots flashes. You can change the number of aliquots using the thumbwheel or simply press the thumbwheel to accept the number displayed.

iii) Set the speed (optional): press the +/- keys to increase or reduce the speed (default is 5). The speed can be changed before or during a pipetting cycle.

c) *Functionality:*

i) Immerse the tip in the liquid to be aspirated.

ii) To aspirate: click (press and release) the **START** button and wait until the motor stops (check piston position indicator).

iii) To dispense: click (press and release) the **START** button "N" times to sequentially dispense the aliquots. The number of aliquots left to dispense is displayed on the screen.

iv) “BLOW OUT” appears on the screen when no aliquots are left to dispense. Click on **START** to purge and reset the piston. However, if you keep the button pressed until the end of the dispense cycle (when the motor stops) the reset takes place after you release the **START** button again.

☞ *You can abort the current dispense cycle by pressing one of the mode buttons; then press the start button to blow out.*

REVERSE

a) Description:

This mode is like reverse mode pipetting using a manual pipette and recommended for viscous liquid. Please refer to the Gilson Guide to Pipetting for further information.

b) Protocol:

i) Set the sample volume: turn the thumbwheel until you see the selected volume displayed on the screen, then press the thumbwheel to lock the volume – you cannot dispense until this is done.

ii) Set the speed (optional): press the +/- keys to increase or reduce the speed (default is 5). The speed can be changed before or during a pipetting cycle.

c) Functionality:

i) Immerse the tip in the liquid to be aspirated.

ii) To aspirate: press the **START** button, wait until the motor resets and stops at the end of the aspiration phase.

iii) To dispense: press and release the **START** button.

iv) “BLOW OUT” appears on the screen: click on **START** to purge and reset the piston. However, if you keep the button pressed until the end of the dispense cycle (when the motor stops) the reset takes place after you release the **START** button again.

☞ *The REVERSE mode may replaced by a pre-programmed mode uploaded from your computer (see below).*

Programming Modes

You may replace REVERSE with your own custom built mode, which you have programmed on a Personal Computer (PC) with the Pipetman Concept Utility Software. You have total flexibility and an almost unlimited number of combinations are possible (see program guide).

To operate in the program mode, you need a PC and a kit (reference F30755) containing the necessary software and connectors. The kit is available from your usual Gilson distributor (see Chapter 16).

Typically you can do the following:

DILUTE

Aspirate volumes V1 and V2 with an air gap between the two volumes then distribute the ensemble.

DILUTE AND MIX

Aspirate volumes V1 and V2 with an air gap between the two volumes, mix (as above), then distribute the mixture.

MULTIPLE ASPIRATES

Aspirate N times a volume and then distribute the ensemble.

DISTRIBUTION WITH TIMER

Distribute multiple aliquots with a user defined time interval between each.

7 GILSON DIAMOND TIPS

Gilson Diamond Tips are made to the highest specifications, strict quality control is maintained throughout the manufacturing process.

Diamond Tips are used to calibrate Pipetman Concept, therefore for optimum performance, you are strongly advised to use Gilson's Diamond Tips with your Pipetman Concept. Diamond Tips have the Gilson logo engraved on their collar, ensuring that you have a genuine Gilson product. To ensure accuracy and precision, Gilson's Quality Assurance System focuses on the following critical parameters.

- Diamond Tips are made from pure polypropylene (virgin, metal-free, to avoid the possibility of contamination). They are available sterilized and with filters.
- Gilson's sterilized Diamond Tips are certified free of detectable RNases, DNases, DNA, RNA, and proteases.
- Optimized shape (revised collar for optimum sealing, thin walls, and fine point), making them easier to mount, more flexible, with no vortexing, and improved precision.
- Diamond Tips are free from 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.
- They may be autoclaved at 121°C for 20 minutes at 0.1 MPa.

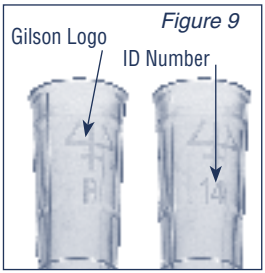


Figure 9

8 PIPETTING TECHNIQUES

Guidelines for Good Pipetting

1) Make sure that you fit new tips.
2) Each new tip(s) should be pre-rinsed with the liquid to be pipetted.
3) When aspirating, keep the tip(s) at a constant depth below the surface of the liquid (refer to Table 1).
4) Change the tip(s) before aspirating a different liquid, sample, or reagent.
5) Change the tip(s) if a droplet remains at the end of the tip(s) from the previous pipetting operation.
6) Liquid should never enter the tip holder. To prevent this:
   - Never turn the pipette upside down,
   - Never lay the pipette on its side when there is liquid in the tip(s),
   - Refer to the specific mode for details of the functionality.
7) The use of the Gilson Charging Stand (see Chapter 16) is recommended to store your Pipetman Concept pipette in the vertical position.
8) When pipetting liquids with temperatures different to the ambient temperature, pre-rinse the tip(s) several times before use in order to reach an equilibrium between the temperatures of the liquid and the pipette's air-cushion.
9) For volatile liquids you should saturate the aircushion of your pipette by aspirating and dispensing the liquid repeatedly before aspirating the sample.
10) After pipetting acids or other corrosive liquids that emit vapors, clean the pipette, as described in Chapter 12.

11) The pipette can be used between + 4 °C and + 40 °C, but the specifications may vary.

12) Do not pipette liquids having temperatures above 70°C or below 4°C.

Extreme temperatures can affect accuracy and precision.

Aspirate and Dispense

1) Fit new Gilson Diamond Tip(s) (for the best results - see “Specifications”, Chapter 15). Push the tip-holder into the tip using a slight twisting motion to ensure a firm and airtight seal.

2) Pre-rinse the tip(s).
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.
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-rinsing the tip minimizes any errors that may be related to this phenomenon.

3) Hold the pipette vertically and immerse the tip(s) in the liquid (see Table 1).
Press START to aspirate the set volume of liquid. Wait a few seconds (time depends on model, see Table 1); then withdraw the pipette-tip from the liquid.
You may wipe any droplets away from the outside of the tip(s) using a medical wipe, however if you do so **take care to avoid touching the tip’s orifice**.

Table 1 - Immersion Depth and Wait Time

Model	Immersion Depth (mm)	Wait Time (Seconds)
C10, 8x10, 12x10	1	1
C100, 8x100, 12x100	2-4	1
C300, 8x300, 12x300	2-4	1
C1200, 8x1200, 12x1200	2-4	2-3
C5000	3-6	4-5
C10ml	5-7	4-5

4) Place the end of the tip(s) against the inside wall of the recipient vessel (at an angle of 10° to 40°). Press the START button. Wait for at least a few seconds before releasing the START button to expel any residual liquid from the tip(s). While removing the pipette draw the tip along the inside surface of the vessel.

5) Eject the tip(s) by pressing firmly on the tip ejector button.

9 GLP FEATURES

Your Pipetman Concept is fully compliant to ISO8655 standard and is CE marked (for IVD and EMC directives).

Pipetman Concept enables error-free manipulations, and includes the following GLP features.

General

- Lockable volume.
- Name of model is marked on the color-coded START button.
- Volume range is displayed on the screen and on the cover-ejector (Multichannel models).
- Serial number is engraved on the body of the pipette and encoded in the firmware.
- Bar code: on the box and with the certificate (can be transferred).
- Personalization by nametag (for marking application or user name) and by encoding in the firmware. The name appears on the screen when the pipette goes to standby (after 3 minutes of inactivity).
- System menu can be lacked from a PC thanks to the Utility Software (see Chapter 10).

Cycle counters

- From last volume setting, counts the number of cycles in the current 'run' (0 to 999). Appears on the main screen.
- From manufacture and since the last service (see Chapter 10).
- Indicators (R1, R2, R3 … Rx) each time pipette is readjusted (see Chapters 10 & 15).
- Maintenance intervals can be specified by weeks or number of cycles elapsed. These and other parameters may be locked by the using the Pipetman Concept Utility Software.

Alarms

- Low battery warning (flashes in the place of the volume indicator).
  Push any button and the message disappears – this gives a few minutes of use enabling you to finish the current manipulation and then to recharge the battery (or replace with another charged battery).
- Volume out of specifications warning (for Program mode).
- Service is overdue warnings (see Chapter 10).
- Beeper can be set On or Off.

10 SYSTEM MENU

Press both Mode buttons at the same time to accede to the System Menu. This menu lets you choose between 4 sub-menus: Configuration, Calibration, Maintenance and Personalization.

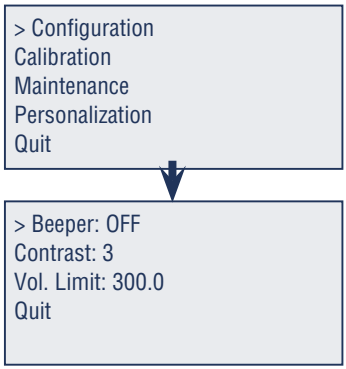
Select a menu by rotating the thumbwheel, then click on the required item to enter the sub-menu; select an item from the sub-menu in the same way.

☞ ** asterisk means that the system menu is locked.*

You can modify the parameters associated with each one, provided that the sub-menu was not locked by computer-based software (using the PC Connection Kit, see Chapter 16).

Configuration

This menu allows you to configure the following items.



Beeper:

Click on the thumbwheel to set the beeper ON or OFF (the beeper will not operate, except in the case of an error or if set in Program mode).

Screen contrast:

Click on the thumbwheel, rotate the thumbwheel to select a value from 1 to 5, then click again to confirm the value.

Volume limit:

Click on the thumbwheel, rotate the thumbwheel to select a volume (default = nominal), then click again to confirm the value.

To return to the currently active screen: select Quit and click to confirm.

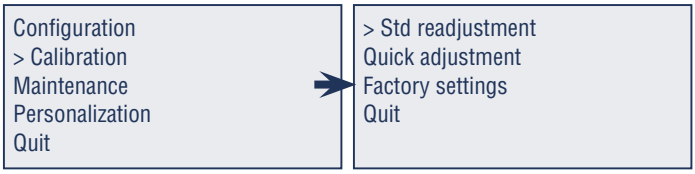
Calibration

As part of your quality system you may have standard operating procedures for pipette calibration. In accordance with ISO 8655 Gilson recommends a gravimetric procedure for pipette calibration. Please refer to “Verification Procedure for Accuracy and Precision, reference LT802292”, which you can download from the Gilson website.

This gravimetric method is used to establish the mean mass of a given volume of water (taking into account evaporation losses, where necessary). After converting the mean mass to a volume (using the Z factor), you enter the measured volumes(s) into the pipettes memory and the software readjusts the pipette accordingly.

Pipetman Concept allows the user to adjust the pipette quickly with maximum accuracy and with the flexibility to use one, three or four calibration points (see below).

The calibration menu allows you to access the following items: Standard Readjustment, Quick Re-adjustment or Factory setting.



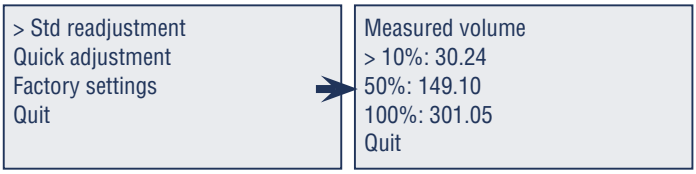
☞ *Following readjustment by the user, Rn (R1, R2, etc) is displayed on the active screen to indicate the number of times the pipette has been readjusted since manufacture. The value of n is increased by 1 when you use Quit to leave the screen after a modification or confirmation of the values.*

You select the operation that you wish to perform using the thumbwheel, and then click the thumbwheel to access the corresponding parameters. After this, select the volume that you wish to enter, click the thumbwheel, turn the thumbwheel until you see the measured volume, and click to confirm the value.

Continue this process for the other volumes (if any), then select Quit and click to confirm.

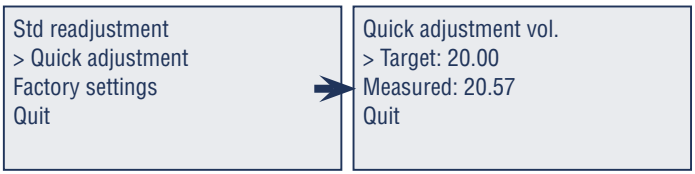
Standard Readjustment

This menu allows you to readjust the pipette using 3 calibration points: minimum volume, 50% and 100% of nominal volume nominal (according the recommandation of ISO8655). These three values are stored in the firmware.



Quick Adjustment

This menu allows you to adjust the pipette using 1 calibration point. Effectively, by adding a fourth point to the standard calibration values. By default the value stored in the firmware is zero in which case it is not taking into account as a fourth calibration point.



☞ *If the value entered for Calibration volume is the same as one of the values used for the Standard re-adjustment then the Measured volume of Quick readjustment will replace the Measured volume of Standard readjustment when calculating the correction to be used.*

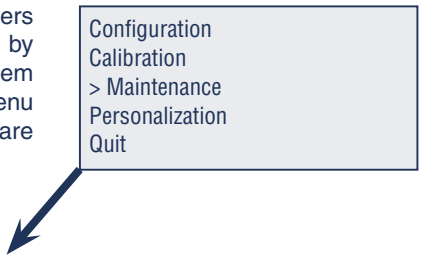
Factory Settings

This option allows you to reset the volumes to the three factory calibration values (Std. Adjustment), which are permanently stored in the pipette's firmware.

☞ *If you choose this option you will erase the fourth calibration point from the Quick Readjustment procedure.*

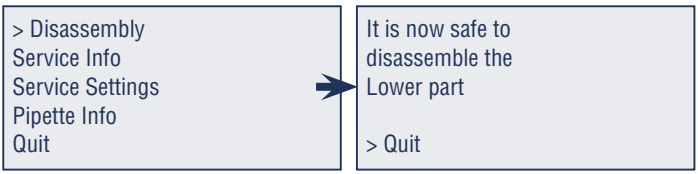
Maintenance

This menu allows you to check and set parameters relating to pipette maintenance. Select a sub-menu by rotating the thumbwheel, then click on the required item to enter the sub-menu; select an item from the sub-menu in the same way. Routine maintenance procedures are described in the next Chapter.



Disassembly

This option allows you to disassemble the lower part safely (protection of the piston). If you select "Disassembly", the following screen appears:



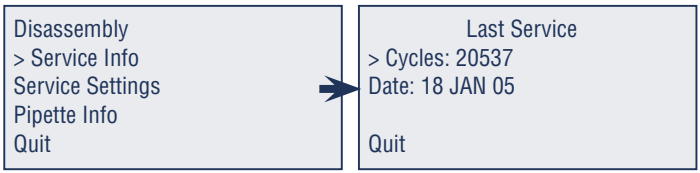
To close the "Disassembly" menu, the only possibility is to choose "Quit". Removing the battery or using the RESET button will not allow you to close the "Disassembly" menu.

If you select "Quit", a confirmation message appears. If you select "No", the display will return to the "Disassembly" menu. If you select "Yes", **you must first ensure that the pipette has been correctly reassembled** (see Chapter 11). The software then resets the piston and the display returns to the last mode used.

Service Info

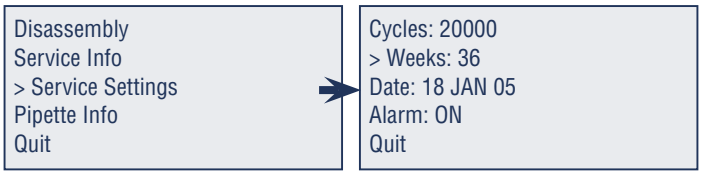
This screen is **read only** – you cannot modify any of the items, which are:

the number of cycles and the date since the pipette was serviced.



Service Settings

Select an item by rotating the thumbwheel, then click on the required item to select it; rotate the thumbwheel to select a value (e.g. “Weeks”) and then click on the thumbwheel to confirm.



You can change four variables: “Cycles” to next service, “Weeks” to next service, “Date” of the service, and “Alarm” (see below).

When it comes to setting the date, you have three fields to modify, one after the other, day - month - year (dd mm yy) in the same way as the other parameters mentioned above.

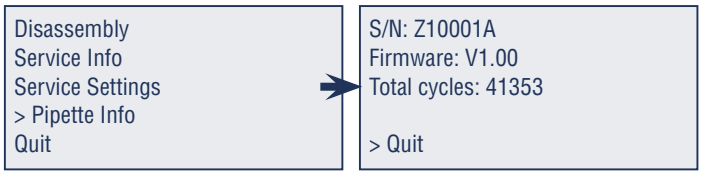
☞ *The 3 letters for the months are as follows; JAN, FEB, MAR, APR, MAY, JUN, JUL, SEP, OCT, NOV, DEC.*

Maintenance Alarm

By default the maintenance alarm is set to On – clicking the thumbwheel alternates between On and Off. Warning messages will be displayed depending on the maintenance settings that you make (see Chapter 11).

Pipette info

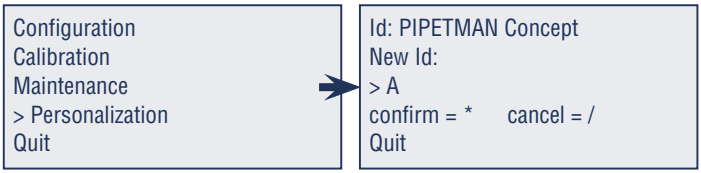
This screen is **read only** – you cannot modify any of the items, which are:



- The serial number of the pipette.
- The version of the firmware.
- The number of cycles since the pipette was manufactured.

Personalization

This menu allows you to personalize the standby screen.



With the cursor aligned as shown (>A), turn the thumbwheel to select a character and click it to confirm. You may enter a string of up to 15 alphanumeric characters. Use the asterisk (*) to signal that you have entered the last character; use / to cancel.

11 USER MAINTENANCE

It is best to inspect your pipette regularly and to routinely clean and change parts if required. To help you to keep up a regular schedule and in the interests of GLP, you can configure your pipette to display an alarm before a service is due (refer to Chapter 10). Setting maintenance alarm to “On” results in the following messages.

Maintenance Warnings

- Date of next service: warning 1 week before and if overdue.
- If you exceed a service interval that was set relative to the number of pipetting cycles, the system flashes the following message place of the volume indicator.

SERVICE PIPETTE NOW!
[N° cycles limit passed]

> Maintenance ?
Remind me later

Push any button and the following is displayed.

Select “Maintenance ?” to go to the system menu or “Remind me later” to delay by one week.

- If you exceed a service interval that was set relative to a time limit, the system flashes the following message place of the volume indicator.

SERVICE PIPETTE NOW!
[Time limit passed]

> Maintenance ?
Remind me later

Select “Maintenance ?” to go to the system menu or “Remind me later” to delay by one week.

Maintenance Operations

You may perform the following operations yourself.

- Clean or autoclave the parts specified under “Cleaning and Decontamination”, Chapter 12
- Change the parts specified under “Replacement Parts”, Chapter 16
- Lubricate the piston,
- Change the battery.

☞ *Please contact your Gilson distributor if you require their assistance in the form of training or if you would like to enter into a service contract with them.*

Maintenance Operations for Monochannel models

Tip-holder and Tip-ejector

These parts must be changed, if they are accidentally damaged or attacked chemically. You should also remove these parts for cleaning or decontamination purposes.

Changing the Tip-ejector

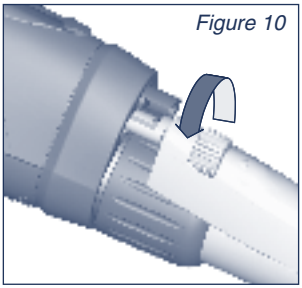


Figure 10

1) Keep the tip-ejector button depressed, and grip the top of the tip-ejector with the other hand (figure 10).
2) Gently rotate the tip-ejector counterclockwise and separate its connector from the activating rod.
3) Pull the tip-ejector away from the body of the pipette.
4) Clean or autoclave the tip-ejector and refit it (or a new one) by reversing the procedure.

Changing the Tip-holder (lower part)

After removing the tip-ejector, you may remove the lower part of the tip-holder, which is more likely to become contaminated or damaged than the upper part. Removal of the lower part is shown below; for the upper part refer to “Removing the Piston” (special precautions are necessary).

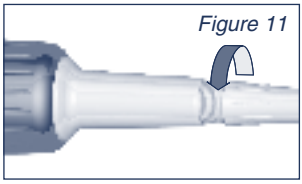


Figure 11

1) Gently rotate the lower part of the tip-holder counterclockwise to unscrew it from the upper part (figure 11).
2) Separate the parts and remove the O-ring (see “Changing the O-ring”, figures 12 and 13).
3) Clean and if required autoclave the lower part of the tip-holder.

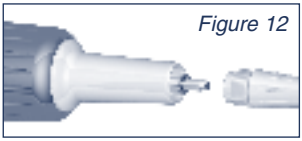


Figure 12

4) If required lubricate the piston (see “How to Lubricate the Piston”) and fit a new O-ring.
5) Screw the two parts together; making sure that the two parts are fully tightened by hand, using latex gloves.
6) Refit the tip-ejector.

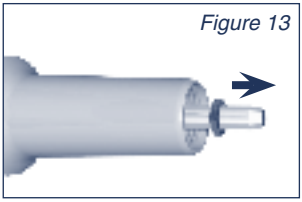


Figure 13

Changing the O-ring (or seal for C10)

The O-ring is contained by the two halves of the tip-holder; it must not be autoclaved, if worn or damaged in any way, it must be replaced.

To access the O-ring, remove the tip-ejector and unscrew the lower part of the tip-holder - if the O-ring is not immediately visible on the piston, select the AUTO mode then set the volume to the nominal and press the ACTION button. You should now be able to remove the O-ring from the piston. Sometimes, the O-ring may be found in the recess at the top-end of the lower part of the tip-holder.

If required lubricate the piston (see “How to Lubricate the Piston”) then fit a new O-ring by sliding it onto the piston. Reassemble the pipette.

Servicing the Piston

You may remove the piston-assembly to clean, lubricate, or change the piston.

The specifications of the pipette must be checked after changing the piston.

Removing the Piston

Use the stand-by procedure (Disassembly, see Chapter 10: “Maintenance”).

1) Select the “Disassembly” option in the System menu (System menu>Maintenance>Disassembly).
2) Remove the tip-ejector and (optionally) the lower part of the tip-holder. If you remove the lower part, take care to remove the piston seal as described in “Changing the O-ring”.
3) Unscrew the connecting-nut (turn by hand, counterclockwise, figure 14).
4) Pull on the spring guide to remove the piston assembly from the body of the pipette - separate the parts (figure 15). For C5000 and C10 ml, the connecting nut is combined with the upper part of the tip-holder (see “Spare Parts”).
5) Clean and autoclave (if required) the piston and holder, together with any other parts that may need to be treated in the same way (see “Cleaning and Decontamination”).
6) Lubricate the piston (except C10), see below.
7) Reassemble the piston, spring and spring guide; then carefully insert the assembly into the body of the pipette (figure 16). The spring guide should hold the piston assembly inside the body of the pipette.

Figure 14

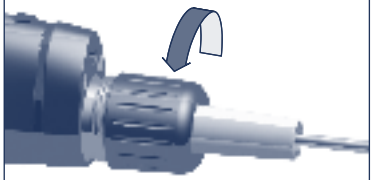


Figure 15

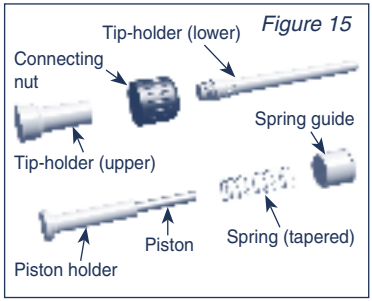
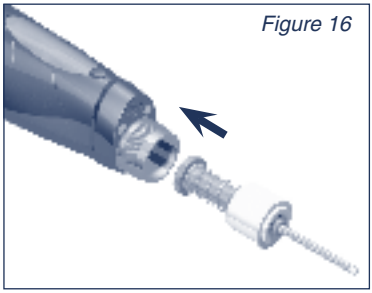


Figure 16



Take care to position the small-diameter end of the spring as shown (innermost), and that the flanged end of the spring guide is outermost.

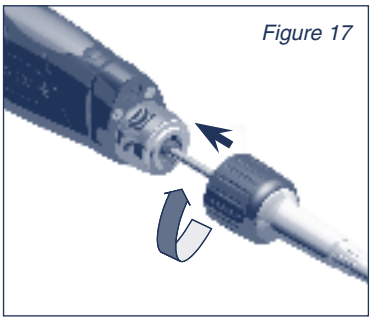


Figure 17

8) Reassemble the upper part of the tip-holder and the connecting nut, and then refit to the body of the pipette by rotating the connecting nut clockwise until it is finger tight (figure 17). Fit the seal and reassemble the lower part of the tip-holder. Refit the tip ejector.

   The seal for C10 is fragile and can only be used once. So, after unscrewing the lower part of the tip-holder you must fit a new seal.

9) Quit the "Disassembly" screen (Quit>Yes).

Maintenance Operations for Multichannel models

Removing and reassembling the Head

Use the stand-by procedure (Disassembly, see Chapter 10: "Maintenance").

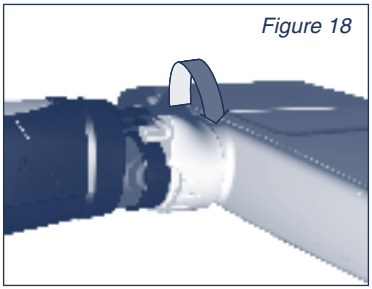


Figure 18

1) Select the "Disassembly" option in the System menu (System menu>Maintenance>Disassembly).
2) Keep the tip-ejector button depressed and grip the ejector-clip (figure 18).
3) Unlock the ejector-clip and separate it from the activating rod.
4) Unscrew the connecting nut.
5) After reassembling the head, quit the "Disassembly" screen (Quit>Yes). Extract the head.

Removing the Plastic Cover, Piston Assemblies and Tip-holders

1) Remove the two screws, which are located at either side of the head, using a miniature screwdriver (figure 19).
2) Gently pull the cover-ejector away from the head (figure 20).
3) Remove the wire clips from the piston tray-cover (figure 21).

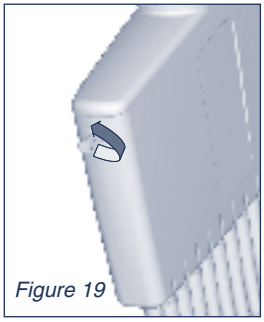


Figure 19

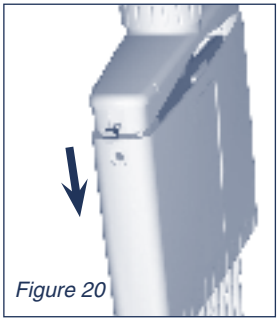


Figure 20

4) Lay the pipette flat and push awards (with your thumbs) on the catches at either side of the piston-tray cover (figure 22). The cover will flip upwards to reveal piston and tip-holder assemblies.

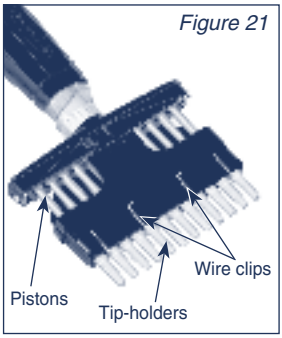


Figure 21

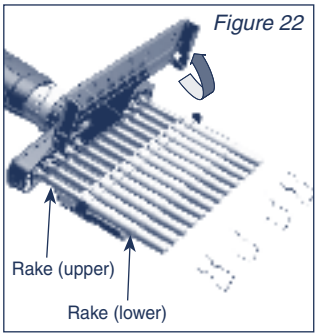


Figure 22

5) Lift the tip-holder upwards, away from the lower rake, then push the tip-holder back along the axis of the piston. Now, pull the piston away from the upper rake and lift it and the tip holder out of the tray, taking care not to lose or damage the piston spring.

6) Gently pull the piston assembly out of the tip-holder.

Servicing the Cover-ejector, Piston Assemblies and Tip-holders

The tip-holders and piston assemblies must be changed, if they are accidentally damaged or attacked chemically (figures 23 and 24).

You should also remove them for cleaning or decontamination purposes, and to lubricate the pistons.

1) Examine the cover-ejector, if it is cracked or badly corroded it should be replaced with a new part. Otherwise, it should be cleaned and if necessary autoclaved.

2) Check the piston for damage or corrosion. Lubricate and replace as necessary.

3) After removing the locking clip, gently pry out each tip-holder's internal components: locking-clip, spring, O-ring and seal-holder (figure 25) - this can be done using the reassembly tool. Replace or clean and decontaminate these components. Replace or clean and decontaminate the tip-holder.

☞ *The O-ring can get trapped in tip-holder. Use a fine plastic probe to extract the O-ring.*

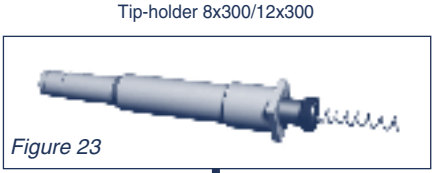


Figure 23

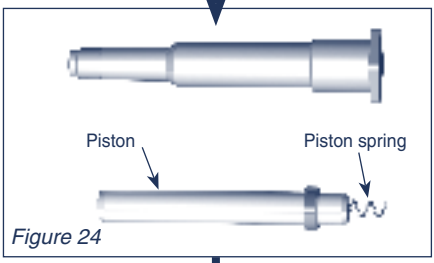


Figure 24

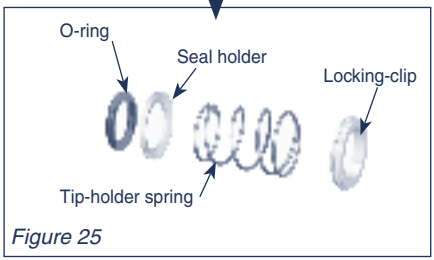


Figure 25

Reassembling the Piston Assemblies, Tip-holders, and Plastic Cover-ejector

A) Tip-holders

1) Use a lubricated piston to transfer a small quantity of lubricant to the O-ring.
2) With reference to the figures 26 and 27, place the components on the reassembly tool in the following order: locking-clip, tip-holder spring, seal-holder, O-ring - take care that the spring is the correct way up.
3) Insert the components into the tip-holder with the aid of the reassembly tool.
4) Push on the locking-clip until it snaps into place.

Figure 26

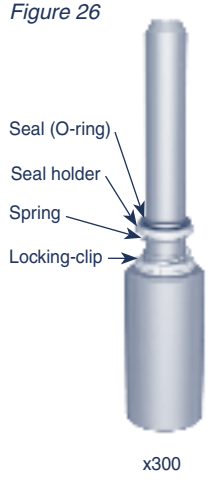
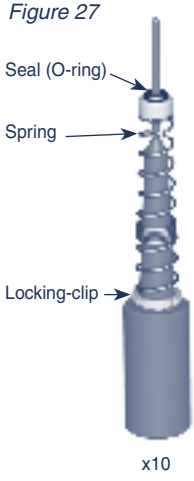


Figure 27



B) Piston Assemblies

1) Lubricate the piston, as described in the section below.
2) Gently, slip a lubricated piston into the tip-holder, with a slight twisting motion. Avoid using too much force as this could dislodge the O-ring.

C) Closing-up

1) Refit each tip-holder/piston assembly so that the top of the piston and the tip-holder snap into the upper and lower rakes, respectively. To facilitate fitting a piston assembly to the upper rake, you should incline the piston assembly and compress the piston-spring against the upper rake, before pushing the assembly into place.
2) Close the piston tray-cover, after checking that all assemblies are correctly installed.
3) Refit the wire-clips.
4) Slide the cover-ejector back over the piston-tray and reattach using the two screws.

How to Lubricate the Piston (all models, except C10)

Use only Gilson lubricant (ref: F2070902, as supplied). Squeeze a small quantity from the tube onto a clean, nonabrasive cloth. Use the cloth to transfer the lubricant to the piston. Ensure that the piston is evenly lubricated, and that you wipe away any excess - remember only a fine film of lubricant is required (over the entire piston).

12 CLEANING AND DECONTAMINATION

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

As part of your quality system, you may have procedures for pipette decontamination. We recommend that you refer to “Decontamination Procedures for Gilson Pipettes” (reference LT802288), which you can download from Gilson’s website.

Liquid must not enter the body (handle) of the pipette.

If you use chemical solutions for decontamination or detergents for cleaning, other than specified below, you should check with your supplier that the solution or detergent used does not attack any of the following materials: stainless steel, POM (Polyoxymethylene), PVDF (Polyvinylidene fluoride), PC (Polycarbonate) and PBT (Polybutylene Terephthalate).

Cleaning

The pipette must be cleaned, as described below, before it is decontaminated. You may use a simple soap solution for cleaning Pipetman Concept or any of the solutions mentioned in “Decontamination Procedures for Gilson Pipettes” (reference LT802288).

External

1) Remove the tip-ejector (see Chapter 11).
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 impregnated with distilled water.

Internal

The following components only can be immersed in a cleaning solution: tip-ejector, tip-holder (both parts), connecting nut, piston (including holder), return spring, and spring guide.

1) Disassemble the pipette as described in Chapter 11.
2) Set aside the upper part in a dry and secure location.
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. 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) Lubricate the piston and reassemble the pipette according to the instructions given earlier in the previous chapter.

Decontamination

Autoclaving

The body (handle) of the pipette is not autoclavable. Only the following parts may be autoclaved individually: tip-ejector, tip-holder (both parts), connecting nut, piston (including holder), return spring, spring guide, O-ring, and airtightness kit (Multichannel models). The seal of C10, 8x10 and 12x10 is not autoclavable; it should be replaced with the one specified in “Spare Parts”.

☞ *After separation from the body, the entire head of a Multichannel model may be autoclaved as a unit.*

1) Clean the parts to be autoclaved, especially the tip-holder.
2) Put the parts in an autoclaving sack.
3) Autoclave at 0.1 MPa at 121°C for 20 minutes.
4) Check that the parts are dry before reassembling the pipette.
5) Set the pipette aside to stabilize at room temperature.

The specifications of the pipette must be checked after autoclaving.

Chemical Decontamination

You may choose to decontaminate your pipette chemically, in accordance with your own procedures. Whatever decontaminant you use, check that it is compatible with the plastics used in the construction of the pipette (see above).

- Parts that may not be immersed
  1) Wipe the body (handle) of the pipette with a soft-cloth or lint-free tissue impregnated with the chosen decontaminant.
  2) Wipe the body of the pipette with a soft-cloth or lint-free tissue impregnated with distilled water.
- Parts that may be immersed
  The following components only can be immersed in a decontaminant solution: tip-ejector, tip-holder (both parts), connecting nut, piston (including holder), return spring, and spring guide.
  1) Disassemble the pipette as described in “Maintenance”.
  2) Immerse the components in the decontaminant solution or wipe them according the instructions given by the manufacturer or supplier of the decontaminant.
  3) Rinse the individual components with distilled or sterile water.
  4) Leave the parts to dry by evaporation or wipe them with a clean lint-free tissue or soft-cloth.
  5) Lubricate the piston and reassemble the pipette according to the instructions given in this chapter.

13 LEAK TEST

After servicing or repair and before calibration, you are advised to perform a leak test, as follows.

- Fit Gilson Diamond Tips,
- Set the pipette to the nominal volume given in the specifications,
- Pre-rinse the tip(s), and then aspirate the set volume from a beaker of distilled water,
- Maintain the pipette in the vertical position and wait for 20 seconds,
- If a water droplet appears at the end of the tip there is a leak (see “Troubleshooting”),
- If you see no droplet, re-immerse the tip below the surface of water,
- The water level inside the tip should remain constant; if the level goes down there is a leak (see “Troubleshooting”).

14 TROUBLESHOOTING

In case of malfunction, first press the reset button located in the back of the pipette between the power supply and the PC connector. Insert a small plastic probe (like a tip) in the hole and press. If the problem persists, you may consult the following table wich identifies potential problems and their solutions.

Before returning any pipette to your local Gilson Service Center, ensure that it is completely free of chemical, biological, or radioactive contamination. Please use the included safety bag.

Symptom	Possible Cause	Refer to page
Pipette is leaking sample	Worn O-ring	23-24, 26
Pipette won’t aspirate	Worn O-ring	23-24, 26
	Unscrewed lower part of tip holder	23
	Damaged or corroded piston	24-26
	Damaged tip holder	23, 25-27
	Improper repair or assembly	22-27
	Connecting nut is loose	25
Noisy operation	Piston needs lubricating	27
Pipette is inaccurate	Improper repair or assembly	22-27
	Unscrewed lower part of tip-holder	23
	Pipette is out of adjustment	18-20
	Connecting nut is loose	25
Pipette is not precise	Unscrewed lower part of tip-holder	23
	Incorrect operator technique	15-16
	Worn O-ring	23-24, 26
	Connecting nut is loose	25
	Damaged or corroded piston	24-26
	Damaged tip-holder	23, 25-27
Tips fall off or don’t fit	Low quality tips	14-15
	Damaged tip-holder	23, 25-27
	Damaged tip-ejector	24-26
No LCD display	Pipette is not switched on	7
	Battery needs recharging	4

15 SPECIFICATIONS

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

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, which are Nominal Volume, 50 % of Nominal Volume, and 10% of Nominal Volume.

See Table of Maximum Permissible Errors in the enclosed data sheet “Appendix”.

16 ACCESSORIES & REPLACEMENT PARTS

Accessories

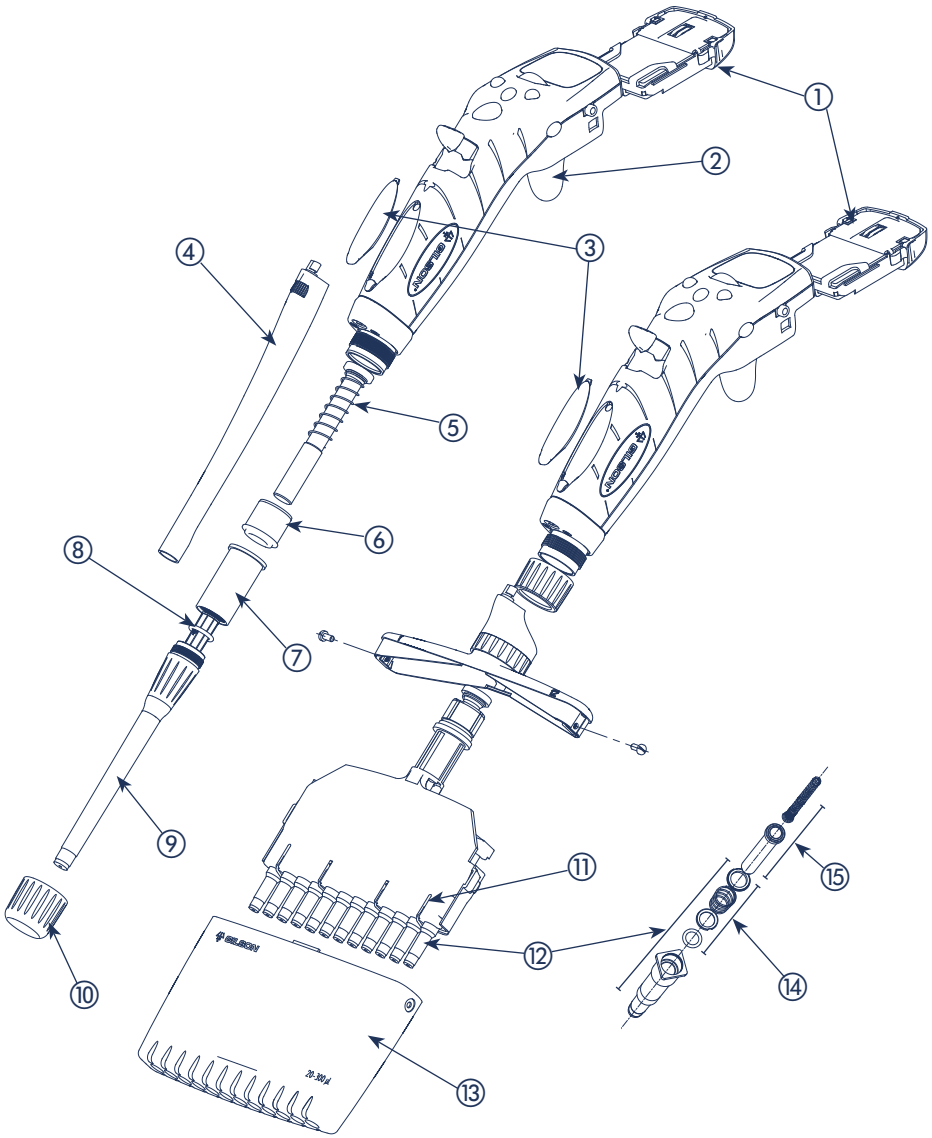
Item	Reference
Rapid Charging Stand	F30750
PC Connection Kit (including Pipetman Concept Utility Software)	F30755
Pipetman Concept Utility Software	F3075502
Name Tag	F3071107
AC-adapter Europe	F30701
AC-adapter USA/Japan	F30702
AC-adapter UK	F30703
AC-adapter Australia	F30704

Replacement Parts for Pipetman Concept Monochannel

Item		C10	C100	C300	C1200	C5000	C10ml
O-ring (or seal for C10)	⑧	F161902	F2070401	F307145351	F2070601	F2070701	F2070801
Spring guide	⑥	F307115451	F307115451	F307115451	F307115451	-	-
Return spring		F2070113	F2070113	F2070113	F2070113	-	-
Piston	⑤	F3071252	F3071352	F3071452	F3071552	F3071652	F3071752
Tip holder, upper part	⑦	F2070117	F2070417	F307145302	F2070617	-	-
Tip holder, lower part	⑨	F2070218	F2070418	F307145301	F2070618	F2070718	F2070818
Tip ejector assembly	④	F2070159	F2070459	F2070559	F2070659	F2070759	F2070859
Tip ejector extension for C10		F2070903	-	-	-	-	-
Connecting nut	⑩	F2072111	F2072111	F2072111	F2072111	-	-
Battery block	①	F3071165	F3071165	F3071165	F3071165	F3071165	F3071165
Personalization window	③	F3071103	F3071103	F3071103	F3071103	F3071103	F3071103
Adjustable hook	②	F3071110	F3071110	F3071110	F3071110	F3071110	F3071110
Lubricant tube 2.5 g		-	F2070902	F2070902	F2070902	F2070902	F2070902

Replacement Parts for Pipetman Concept Multichannel

Item		8x10	8x100	8x300	8x1200	12x10	12x100	12x300	12x1200
Piston	⑮	F3073254	F3073354	F2073260	F3073554	F3073254	F3073354	F2073260	F3073554
Air tightness kit	⑭	F3073260	F3073360	F2073265	F3073560	F3073260	F3073360	F2073265	F3073560
Tip holder	⑫	F3073255	F3073355	F2073263	F3073555	F3073255	F3073355	F2073263	F3073555
Cover ejector	⑬	F307325051	F307335051	F2073259	F307355051	F307425051	F307435051	F2073359	F307355051
Wire clip	⑪	F207306407	F207306407	F207306407	F207306407	F207306407	F207306407	F207306407	F207306407
Reassembly tool		F3073201	F3073301	F2073201	F3073401	F3073201	F3073301	F2073201	F3073401
Battery block	①	F3071165	F3071165	F3071165	F3071165	F3071165	F3071165	F3071165	F3071165
Personal. window	③	F3071103	F3071103	F3071103	F3071103	F3071103	F3071103	F3071103	F3071103
Adjustable hook	②	F3071110	F3071110	F3071110	F3071110	F3071110	F3071110	F3071110	F3071110
Lubricant tube 2.5 g		-	F2070902	F2070902	F2070902	F2070902	F2070902	F2070902	F2070902



1) The airtightness kit ⑭ include the following items: Locking-clip, Spring, Seal holder, Seal (O-ring).

2) The tip-holder assembly ⑫ includes the above items fitted into the tip-holder.

Figure 28

EC DECLARATION OF CONFORMITY

The company,

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Hereby certifies on its sole responsibility that the products listed below:

Pipetman Concept®
C10, C100, C300, C1200, C5000, C10ml,
8x10, 8x100, 8x300, 8x1200,
12x10, 12x100x 12x300,12x1200

comply with the requirements of the following European Directives:

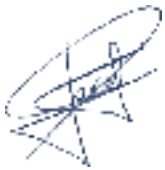
98/79/EC*
on In Vitro Diagnostic Medical Devices

89/336/EEC
Electromagnetic Compatibility, EMC

** Annex III, self-declared*

Villiers-le-Bel, October 5th, 2004

S. Solotareff
General Manager



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CE

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