HAMILTON
THE MEASURE OF EXCELLENCE™

SofTouch™

Electronic
Precision Pipette
Instruction Manual

CONTENTS

1. HAMILTON SOFTOUCH™ ELECTRONIC PIPETTE

Your new Hamilton SofTouch electronic pipette offers the best value in high performance electronic pipetting by using a direct charging system which requires no charging stand. The self-calibrating, microprocessor-based system reduces the possibility for human error and instrument contamination by controlling all piston movements. Selected models offer replaceable Pipette Safe™ tip cone filters to help prevent contamination and damage.

Its lightweight, ergonomic controls take the effort out of pipetting to help reduce the risk of repetitive strain injuries (RSI) that are common in manual pipetting. All Hamilton electronic pipettes operate on the air displacement principle and use disposable tips.

1.1. SOFTOUCH Single Channel Electronic Pipettes

Part #	Volume Range	Increment	Hamilton Tip
8707-01XX	0.2 - 10 µl	0.1 µl	10 µl
8707-02XX	5 - 100 µl	1 µl	200 µl, 300 µl
8707-03XX	50 - 1000 µl	5 µl	1000 µl
8707-04XX	100 - 5000 µl	50 µl	5000 µl

Replace "XX" for regional AC/DC adapter:
US = U.S.A., EU = Europe, UK = United Kingdom, JP = Japan

1.2. SOFTOUCH Multi-Channel Electronic Pipettes

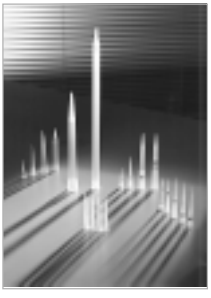
Part #	Channels	Volume Range	Increment	Hamilton Tip
8707-05XX	8-Channel	0.2 - 10 µl	0.1 µl	10 µl
8707-06XX	8-Channel	5 - 100 µl	1 µl	200 µl, 300 µl
8707-07XX	8-Channel	25 - 250 µl	5 µl	300 µl
8707-08XX	8-Channel	50 - 1200 µl	10 µl	1200 µl
8707-09XX	12-Channel	0.2 - 10 µl	0.1 µl	10 µl
8707-10XX	12-Channel	5 - 100 µl	1 µl	200 µl, 300 µl
8707-11XX	12-Channel	25 - 250 µl	5 µl	300 µl
8707-12XX	12-Channel	50 - 1200 µl	10 µl	1200 µl

Replace "XX" for regional AC/DC adapter:
US = U.S.A., EU = Europe, UK = United Kingdom, JP = Japan

1.3. Quality Testing

All SofTouch™ pipettes have been quality tested according to DIN 12650. The quality control according to DIN 12650 involves gravimetric testing of each pipette with distilled water (quality 3, DIN ISO 3696) at 22 °C using original manufacturer tips.

1.4. Hamilton AdvanTip™ Pipette Tips



Hamilton AdvanTip Precision Pipette Tips are recommended for use with Hamilton pipettes. These detachable, disposable tips are made from chemically resistant, virgin polypropylene. Hamilton pipette tips are available with or without filters. Filter tips are presterilized. Tips without filters packaged in bulk or racks are autoclavable (121°C, 1ATM).

***Note**: Never pipette liquid without attaching a tip to the pipette.*

2. UNPACKING & PREPARING THE PIPETTE FOR USE

The pipette package contains the following items:

- Pipette
- Grease
- Filters (selected models, see page 8)
- Instructions for use
- Performance certificate in accordance with DIN E-12650-7
- AC/DC adapter (functions as a recharging unit)

Make sure that all items are included and that no damage has occurred during shipment.

***Note**: The pipette can only be charged with the original AC/DC adapter supplied with the pipette.*

2.1. Hamilton SoftTouch™ Stands

A convenient carousel stand holds up to 5 SofTouch pipettes and a single-place stand holds one SofTouch pipette (Fig. 2 and 3). These stands are for the storage of the pipette only. To recharge the pipette, the AC/DC adapter must be manually plugged directly to the pipette.

Fig. 2.

Fig. 3.

Part #	Product
8706-01	Carousel Stand
8705-01	1-place Stand

2.2. Electrical Specifications

Battery
- Rechargeable NiMH battery
- Charging time max 12 hours for empty battery

AC/DC Adapter
- Input voltage and main plug according to local requirements
- Output voltage 9 VDC

2.3. Charging the Pipette

An ON/OFF switch is located at the top of the pipette (Fig. 4). This switch protects the battery from discharging when the pipette is not in use and the pipette cannot be connected to the recharger unit.

1. Switch the pipetter ON (Fig. 4).

2. Simply connect the AC/DC adapter to a compatible AC outlet and to the pipette (Fig. 4).

Fig. 4.

Fig. 5.

Note: *The charging light will remain illuminated, even after the battery is fully charged, when properly connected to the AC/DC Adapter/Recharger unit (Fig. 5).*

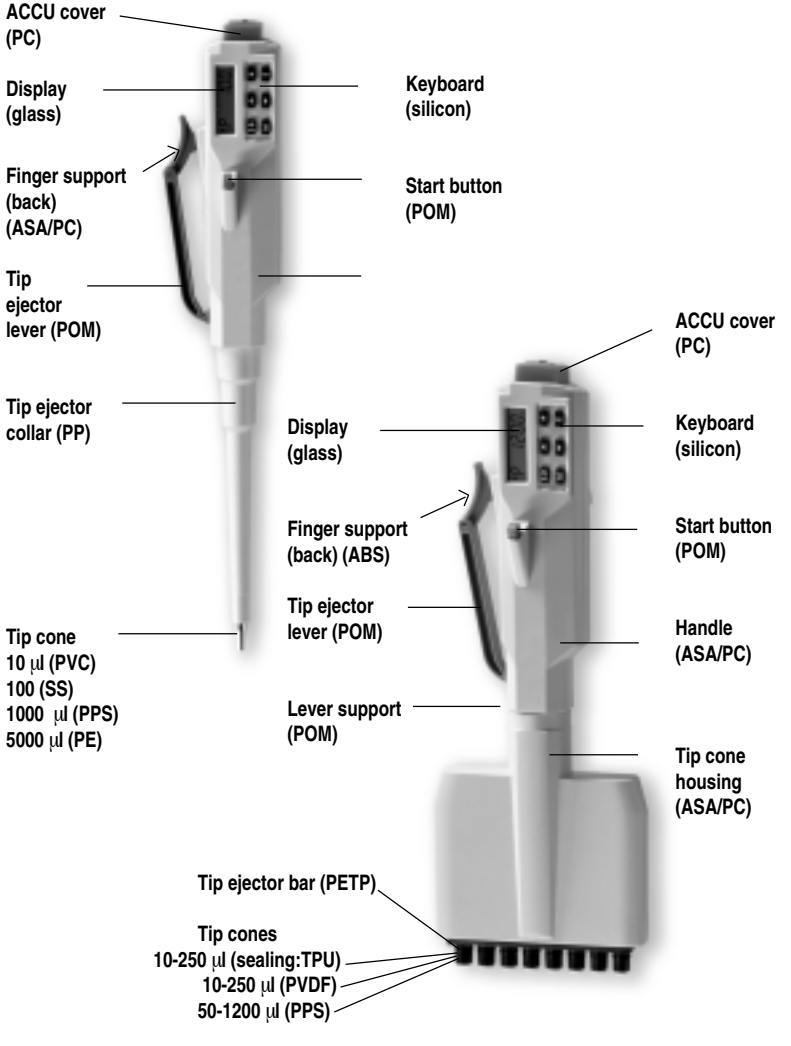
3. If the pipette is new or the battery is low keep the pipette connected to the charging unit for 12 hours to fully charge the pipette before continuing use.

4. Display shows . Press the START button twice and the pipette is ready for the default pipetting at maximum volume or for program changes.

Note: *The pipette will charge in both the ON and OFF positions. Leave the pipette ON connected to the charging unit to retain user-selected settings as switching OFF will reset the unit to default settings.*

Note*: If the pipette is left in the ON position uncharged for several days, the display will be empty and there will be no response from the keyboard or START button, as the battery voltage will be below the operating level.*

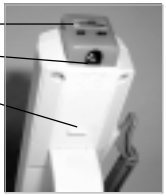
3. PIPETTE MATERIALS



4. PIPETTE DESCRIPTION

The control and programming of the Hamilton electronic pipette are done using the keyboard and display shown in detail below.

4.1. Controls



Power Switch
Recharger Connection
Battery Compartment

Changes speeds
Moves to next Mode
Increases volume or speed
Decreases volume or speed
Confirms setting changes
Switches Mixing on - off

START BUTTON Triggers all mechanical operations

TIP EJECTOR LEVER Squeezed to remove pipette tip(s)

4.2. START Button

The START button triggers the aspiration and dispensing operations according to selected operating mode. Only a quick click is required to operate the button. If the START button is kept down, the piston will stop in the lowest position until the button is released. This feature is applicable to all modes of operation, except for multiple dispensing (d).

4.3. Direction Symbols

These symbols indicate the direction in which the piston moves upon pressing the START button. The small RIGHT ARROW in the display means that the next function is to aspirate the liquid. The small LEFT ARROW in turn indicates the dispensing function in accordance to the selected operating mode.

4.4. Display

The left display is the status indicator. It informs the user about parameters to be programmed, functions to be performed and the number of dispensings available.

The right display is used for programming and displaying the various volumes needed in different operating modes.

4.5. Sealing and Ejecting Tips

Fig. 6

Original Hamilton AdvanTip™ Precision Pipette Tips are recommended for use with Hamilton SofTouch pipettes. Before fitting a tip make sure that the pipette tip cone is clean. Press the tip onto the cone of the pipette firmly to ensure an airtight seal. The seal is tight when a visible sealing ring forms between the tip and the tip cone (Fig. 6).

Hamilton SofTouch pipettes are designed for simple and light attachment and ejection of the tips. To eject the tip, simply place the pipette over the discard container and squeeze the tip ejector lever (Fig. 7).

Fig. 7

4.6. Optional Filters

The tip cones of select Hamilton SofTouch electronic pipettes allow the use of a removable Pipette Safe™ tip cone filter as an option (Fig. 8). The filter prevents liquids and liquid vapors from entering the pipette. Plus filters will seal when wetted. The filter does not affect the calibration of the pipette.

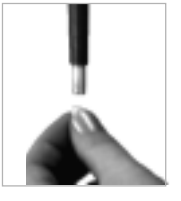


Fig. 8

Cat.No.	Channels	Volume Range	Standard Filter	Plus Filter
8707-01XX	Single Channel	0.2 - 10 µl	N/A	N/A
8707-02XX	Single Channel	5 - 100 µl	N/A	N/A
8707-03XX	Single Channel	50 - 1000 µl	9209-01	9211-01
8707-04XX	Single Channel	100 - 5000µl	9209-01	9211-01
8707-05XX	8-Channel	0.2 - 10 µl	N/A	N/A
8707-06XX	8-Channel	5 - 100 µl	9210-01	N/A
8707-07XX	8-Channel	25 - 250 µl	9210-01	N/A
8707-08XX	8-Channel	50 - 1200 µl	9209-01	9211-01
8707-09XX	12-Channel	0.2 - 10 µl	N/A	N/A
8707-10XX	12-Channel	5 - 100 µl	9210-01	N/A
8707-11XX	12-Channel	25 - 250 µl	9210-01	N/A
8707-12XX	12-Channel	50 - 1200 µl	9209-01	9211-01

Replace “XX” for regional AC/DC Adapter:
US = U.S.A., EU = Europe, UK = United Kingdom, JP = Japan

5. PROGRAMMING THE PIPETTE

Programming is done using the six-button keyboard and the LC-display. There are seven operating modes including mixing offering special functions and varying speeds for your selection.

To begin programming make sure that the pipette is in the ON position.

Display shows .F . Press the START button twice and the pipette is ready for the default pipetting at maximum volume or for program changes.

5.1. Mode Selection and Mode Recall

Available Modes:

- P Pipetting
- rP Reverse Pipetting
- d Repeat Dispensing
- dd Diluting
- Sd Sequenced Dispensing
- P* Pipetting w/mixing
- dd• Diluting w/Mixing

1. Press M repeatedly to view the available modes of the pipette.
2. Press E when the desired mode is displayed. The pipette is ready for use in the mode selected.

***Note**: Mode can only be activated when the piston is in its home position (arrow right sign is lit), not in the middle of an aspiration or dispensing cycle.*

5.2. Setting Speeds

1. Press S▸ to display the current aspiration speed.
2. Press ▲ or ▼ until desired aspiration speed is displayed ("5" Fast and "1" Slow).
3. Press E to confirm speed selection. Display shows the current dispense speed.
4. Press ▲ or ▼ until desired dispense speed is displayed ("5" Fast and "1" Slow).
5. Press E to confirm speed selection.

***Note**: The speed may not be changed in the middle of the aspiration or dispensing cycles.*
***Note**: The default speed is 3 for all speed settings.*

5.3. Pipetting Mode (P)

The pipette performs ordinary pipetting with blow-out.

1. Press M to display P.

2. Press E to confirm the mode change.

3. Select the desired pipetting volume by using ▲ to increase, and ▼ to decrease.

Note: *When holding down ▲ or ▼, the volume display starts to scroll faster.*

4. Press E to confirm selection.

5. Position the tip to aspirate and press the START button.

6. Position the tip to dispense. Press the START button. The tip is emptied with a blow-out and is ready for next pipetting.


Step 5.


Step 6.

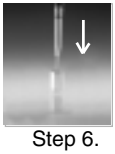
5.4. Reverse Pipetting Mode (rP)

A selected volume plus an excess is aspirated into the tip. After dispensing the selected volume, the excess remains in the tip and will be discarded. This is useful with viscous samples.

1. Use M to display rP
2. Confirm the mode change by pressing E.
3. Select the desired pipetting volume by using ▲ to increase, and ▼ to decrease.
4. Press E to confirm selection.
5. Position the tip to aspirate and press the START button. The selected volume plus an excess is aspirated into the tip.
6. To dispense the selected volume, position the tip, and press the START button.
7. Position the tip to discard any remaining excess and press the START button twice.

Note: *Upon delivering the programmed volume, it is also possible to continue to aspirate and dispense the same volume without the empty function. To continue, keep the START button pressed down and within one second the direction of the arrow will change. Keeping the button down, place the tip into the liquid again and the sample is aspirated into the tip by releasing the START button.*


Step 5.


Step 6.


Step 7.

5.5. Repeat Dispensing Mode (d)

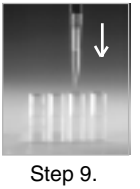
The pipette performs repetitive dispensings of a selected volume. During this operation, the desired volume plus an automatically selected excess volume is aspirated into the tip.

1. Press M to display .
2. Press E to confirm the mode change.
3. Press ▲ or ▼ until the repeat dispense volume is displayed.
4. Press E to confirm selection.
5. Press ▲ or ▼ until the desired number of aliquots is displayed.
6. Press E to confirm selection.
7. Position the tip to aspirate and press the START button. The * sign and ARROW LEFT are lit to indicate the reset function.
8. Position the tip to discard priming excess and press the START button.
9. To dispense, position the tip, press the START button and repeat until the cycle is complete.
10. Finally, position the tip to discard any remaining excess and press the START button twice.

Note: *Upon delivering the programmed volume, it is also possible to continue to aspirate and dispense the same volume without the empty function. To continue, keep the START button pressed down and within one second the direction of the arrow will change. Keeping the button down, place the tip into the liquid again and the sample is aspirated into the tip by releasing the START button.*


Step 7.


Step 8.


Step 9.

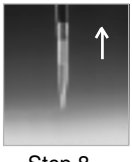

Step 10.

5.6. Diluting Mode (dd)

Two different solutions separated by an air gap are aspirated and then dispensed together with automatic blow-out. The purpose of the air gap is to avoid contamination when aspirating the second volume but it will not prevent the two liquids from mixing in the tip.

1. Press M to display dd.
2. Confirm the mode change by pressing E.
3. Select the desired diluent volume (volume 1) by using ▲ or ▼ .
4. Confirm by pressing E.
5. Press ▲ or ▼ to select the sample volume (volume 2) on the display.
6. Press E to confirm selection.
7. Position the tip to aspirate volume 1 and then press the START button.
8. With the tip in the air press the START button again to aspirate an air gap.
9. Position the tip to aspirate volume 2 and press the START button.
10. Finally, position the tip to dispense and press the START button.


Step 7.


Step 8.


Step 9.


Step 10.

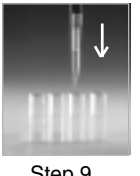
5.7. Sequenced Dispensing Mode (Sd)

Deliver a series of different volumes in any desired order.

1. Press M to display Sd
2. Confirm the mode change by pressing E.
3. Select the first desired dispense volume by using ▲ or ▼ .
4. Press E to confirm the dispense volume.
5. To select the following dispense volumes (up to 12) use ▲ or ▼ and always remembering to confirm each selection by pressing E.
6. To confirm your final selection press *
7. Position the tip to aspirate and press the START button.
8. Position the tip to discard priming excess and press the START button again.
9. Position the tip to dispense and press the START button. Repeat the action until the cycle is complete.
10. Position the tip to discard any remaining excess and press the START button twice.


Step 7.


Step 8.


Step 9.


Step 10.

5.8. Mixing Mode with Pipetting or Diluting (*)

The piston is automatically moved up and down to mix the liquid in the delivery vessel. The mixing time is controlled by the START button.

1. Use M to select either P or dd onto the display.
2. Press ★ to switch on mixing. The display should read either P★ or dd★.

***Note**: Pressing ★ will alternately switch mixing on and off.*

3. Confirm the mode change by pressing E.

For Pipetting:

1. Press ▲ to increase, and ▼ to decrease.
2. Press E to confirm selection.
3. Position the tip to aspirate and press START button.
4. Position to dispense and press the START button .

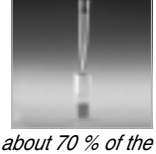
For Diluting:

1. Select the desired diluent volume (volume 1) by using ▲ or ▼.
2. Confirm selection by pressing E.
3. Press ▲ or ▼ to select the sample volume (volume 2) .
4. Confirm selection by pressing E.
5. Position the tip to aspirate volume 1 and then press the START button.
6. With the tip in the air, press the START button to aspirate an air gap.
7. Position the tip to aspirate volume 2 and press the START button.
8. Finally, position the tip to dispense and press the START button.

To Mix:

1. Position the tip in the solution, then press and hold the START button. The mixing is done automatically as long as the START button is held down.
2. Position the tip to dispense. Press the START button twice.


Step 1.


Step 2.

***Note:** The mixing is done with about 70 % of the total volume.*

6. PIPETTING RECOMMENDATIONS

By using the different operating modes and special functions, several different liquid handling procedures are made possible. Modes P and dd feature automatic blow-out and others leave an excess liquid in the tip. Follow recommendations below to ensure optimal performance.

6.1. Dispensing with Blow-out

The P and dd modes have an automatic blow-out function, followed by an immediate return of the piston to the ”home” position. To avoid accidental aspiration of the liquid back into the tip, it is recommended that the dispensing is always done above the liquid surface.

By holding the START button down during dispensing the piston will stop in the lowest position. This allows the tip to be placed against the bottom or the wall of the container. Once the liquid is dispensed, the tip can be removed from the container and the START button released.

6.2. Dispensing without Blow-out

The pipette will not perform the blow-out function when using the d mode. Therefore, it is recommended that dispensing is always performed with the tip set against the wall or the bottom of the container. The use of the d mode is especially useful when pipetting small volumes or solutions that have a tendency to foam or have a high viscosity.

6.3. Other Recommendations

- Hold the pipette vertically and place the tip a few millimeters into the liquid when aspirating.
- Prerinse the tip by filling and emptying the tip five times. This is important when dispensing liquids which have a viscosity and density different from water or a temperature other than ambient.
- Check that the pipette, tip and liquid are at room temperature.
- Avoid contaminating the tip cone.
- Connect the pipette charging unit when the pipette is not in use. Switch the pipettor OFF when not in use if it is not connected to the charging unit.
- Never strike the tip cone against a tip tray when mounting tips as this can damage several internal components.
- Do not drop the pipette or AC/DC-adapter as this may cause excessive shock.
- Avoid exposing the unit to extreme temperature changes, humidity and dust.
- Avoid rough handling. Moderate pressure is all that is required when using the keyboard or START-button.
- Avoid leaving the pipette on its side with liquid in the tip which might seep back into the mechanism.
- Always pipette against the inside wall of the receiving vessel. Remove the tip by drawing it up against the inside wall.
- Change the filter on the tip cone regularly (after 50 - 250 pipettings).

7. STORAGE

When not in use it is recommended that the pipette is stored on the stand in the ON position connected to the charging unit. The green charging light should illuminate.

8. PERFORMANCE TEST

1. Carefully fit the tip onto the tip cone.
2. Prerinse the tip with distilled water by pipetting the selected volume 5 times.
3. Carefully aspirate the liquid, keeping the pipette vertical.
4. Pipette distilled water into a tared container and read the weight in mgs. Repeat at least ten times and record each result. Use an analytical balance with a readability of 0.01 mgs.
5. Calculate the F-value using the following equation:
   F = | inaccuracy | + 2 x imprecision
6. Compare the F-value with the corresponding Fmax value in the table below. The F-value should not exceed Fmax value for the manufacturer (given in the table) by more than 100% (DIN 12650).

Nominal volume	Fmax 1-channel	Nominal volume	Fmax 1-channel
5 µl	±0.3 µl	200 µl	±2 µl
10 µl	±0.3 µl	250 µl	±2.5 µl
20 µl	±0.4 µl	500 µl	±5 µl
25 µl	±0.5 µl	1000 µl	±10 µl
50 µl	±0.8 µl	2000 µl	±20 µl
100 µl	±1.5 µl	5000 µl	±50 µl

	Multichannel		Multichannel
10 µl	±0.6 µl	250 µl	±5.0 µl
50 µl	±1.6 µl	300 µl	±6.0 µl

***Note**: Weighing should take place at 20-25°C, constant to ±0.5°C. Avoid drafts. Distilled water, weighing vessel, pipette and tips must be at the same temperature. To calculate the volume, divide the weight of the water by its density (at 20°C:0.9982). This method is based on DIN 12650.*

9. MAINTENANCE

Hamilton SofTouch™ electronic pipettes require regular cleaning to ensure trouble-free operation. Use a soft cloth lightly moistened with a mild detergent to clean the outer surface of the pipette. DO NOT AUTOCLAVE. Change the tip cone filter regularly.

***Note**: The pipette must be turned off prior to servicing!*

9.1. In-house Maintenance

1. Remove the tip ejector collar: Gently twist the tip ejector collar counter-clockwise and slide off.
2. Using 70% ethanol and soft lint-free cloth, disinfect the tip ejector collar and the tip cone.
3. Unscrew, counter-clockwise, the tip cone and remove it, exposing the piston. The piston may stick to the tip cone, should this occur remove the piston with a pair of tweezers.
4. To avoid scratching the surface of the piston use 70% ethanol and a lint-free tissue when cleaning the piston. Let the parts dry.

Note: *For complete decontamination place the tip cone, tip ejector collar, piston, O-ring and spring into a beaker containing 70% ethanol and leave for at least 30 minutes, rinse the parts with distilled water, then dry preferably with warm air.*

5. Grease the piston thinly with the grease provided. Do not use any other grease. Check that no lint or particles are on the surface of the piston. Avoid excess grease, especially at the bottom of the piston.
6. Reassemble the pipette by screwing the piston and tip cone in their places, replace the tip ejector collar allowing the ejector handle connection to snap into the attachment notch of the ejector collar. Replace the filter if fitted.
7. Test the pipette by pressing the START-button several times. Test the tip ejector operation.

Note: *Check the performance of your Hamilton SofTouch™ pipette regularly, e.g. every 3 months and always after in-house service or maintenance.*

9.2. Battery Replacement

If the battery does not hold a sufficient charge for proper operation of the pipette, follow these steps for replacement of the battery.

1. Switch the unit “OFF”.
2. Remove the top two screws on the back of the pipette and remove the battery cover (Fig. 9).
3. Carefully remove the battery by lifting it straight out of the holder.
4. Install the new NiMH-battery by pressing the positive (+) end against the contact spring at the bottom of the holder.
5. Replace the cover and the screws. Do not overtighten the screws.
6. Dispose of battery appropriately.

Fig. 9

10. TROUBLE-SHOOTING

Hamilton SofTouch™ electronic pipettes have a built-in monitoring program to control the performance of each pipetting action. If the error message Er1 appears on the display, this means the pipette has been unable to perform the attempted action properly. If you receive the error message please do the following:

***Note**: As this procedure will empty the tip, it is recommended that you remove the tip before resetting the pipette.*

1. Charge the pipette for 15 minutes.
2. Clear the error message from the display by pressing E.
3. Press START button, which will set the pipette to its home position.

Occasional Er1 situations can be caused by electrical outlets that have been switched off or if the pipette has been in the OFF position during charging.

Repeated occurrence of the the Er1 message is caused by an internal error failing to complete the execution of the pipetting. The pipette will need to be returned to Hamilton for repair.

Problem	Possible cause	Solution
Droplets left inside the tip	Unsuitable tip	Use Hamilton tips
Leakage or pipetted volume too small	Non-uniform wetting of the plastic Tip incorrectly attached Unsuitable tip Foreign particles between tip and cone Instrument contaminated Insufficient amount of grease on piston and O-ring.	Attach new tip Attach firmly Use Hamilton tips Clean the tip cone, attach new tip Clean and grease piston and tip cone Grease accordingly
Pipette out of given specs	Instrument damaged	Send for service
Pipette blocked, aspirated volume too small	Liquid has penetrated tip cone and dried	Clean and grease piston and tip cone.
Tip ejector jammed or moves erratically	Tip cone contaminated	Remove ejector collar, clean with 70% ethanol
Continuous error message	Instrument damaged	Send for service

11. WARRANTY INFORMATION

Hamilton SofTouch™ electronic pipettes are warranted for one year (batteries/ three months) against defects in materials and workmanship. Should it fail to function in any period of time, please contact Hamilton immediately. The warranty will not cover defects caused by normal wear or by handling or using the pipette in a manner contrary to the instructions given in this manual.

Each Hamilton SofTouch electronic pipette is tested before shipping by the manufacturer. The Quality Assurance Procedure is your guarantee that the Hamilton SofTouch electronic pipette you have purchased is ready for use.

All Hamilton electronic pipettes are CE-marked, fulfilling the requirements of the EMC standards EN 55014, 1993 and EN 55104, 1995.

12. SPECIFICATIONS

Note: *The manufacturer's specifications below should be used as guidelines when establishing your own performance specifications in accordance with DIN 12650.*

Hamilton SofTouch™ Single Channel Pipettes:

Part #	Ch	Volume Range	Test Volume	Inaccuracy	Imprecision	Number of Dispensings
8707-01XX	1-ch	0.2 - 10 µl	10 µl	0.90 %	0.50 %	2 - 50
			5 µl	1.00 %	0.70 %	
			1 µl	2.50 %	1.50 %	
			0.2 µl	6.00 %	6.00 %	
8707-02XX	1-ch	5 - 100 µl	100 µl	0.40 %	0.15%	2 - 20
			50 µl	0.70 %	0.30 %	
			10 µl	2.00 %	1.00 %	
			5 µl	2.50 %	1.80 %	
8707-03XX	1-ch	50-1000 µl	1000 µl	0.40 %	0.15 %	1 - 24
			500 µl	0.70 %	0.20 %	
			100 µl	1.50 %	0.50 %	
			50 µl	2.00 %	1.00 %	
8707-04XX	1-ch	100 - 5000µl	5000 µl	0.50 %	0.15 %	1 - 48
			2500 µl	0.80 %	0.20 %	
			500 µl	0.80 %	0.30 %	

Hamilton SofTouch™ Multi-Channel Pipettes:

Part #	Ch	Volume Range	Test Volume	Inaccuracy	Imprecision	Number of Dispensings
8707-05XX	8-ch	0.2 - 10 µl	10 µl	0.90 %	0.50 %	2 - 50
			5 µl	1.50 %	0.80 %	
			1 µl	4.00 %	4.00 %	
8707-06XX	8-ch	5 - 100 µl	100 µl	0.50 %	0.20 %	2 - 20
			50 µl	0.70 %	0.30 %	
			10 µl	2.50 %	1.50 %	
			5 µl	4.00 %	2.50 %	
8707-07XX	8-ch	25 - 250 µl	250 µl	0.40 %	0.15 %	2 - 10
			125 µl	0.60 %	0.20 %	
			25 µl	1.50 %	1.00 %	
8707-08XX	8-ch	50 - 1200 µl	1200 µl	0.50 %	0.15 %	1 - 24
			600 µl	1.00 %	0.20 %	
			100 µl	4.00 %	0.80 %	
			50 µl	8.00 %	1.50 %	
8707-09XX	12-ch	0.2 - 10 µl	10 µl	0.90 %	0.50 %	2 - 50
			5 µl	1.50 %	0.80 %	
			1 µl	4.00 %	4.00 %	
8707-10XX	12-ch	5 - 100 µl	100 µl	0.50 %	0.20 %	2 - 20
			50 µl	0.80 %	0.40 %	
			10 µl	2.50 %	1.50 %	
			5 µl	4.00 %	2.50 %	
8707-11XX	12-ch	25 - 250 µl	250 µl	0.40 %	0.15 %	2 - 10
			125 µl	0.60 %	0.20 %	
			25 µl	1.50 %	1.00 %	
8707-12XX	12-ch	50 - 1200 µl	1200 µl	0.80 %	0.15 %	1 - 24
			600 µl	1.00 %	0.20 %	
			100 µl	4.00 %	0.80 %	
			50 µl	8.00 %	1.50 %	

Replacement parts for
Hamilton SofTouch single channel models up to 1000 µL

Item #	Description	Part #
1	Tip ejector assembly	9148-01
2	Linear actuator	9149-01
3	Piston Assembly	
	0.2-10 µL	9151-01
	5-100 µL	9152-01
	50-1000 µL	9153-01
4	Tip ejector collar	
	0.2-10 µL	9155-01
	5-100 µL	9156-01
	50-1000 µL	9157-01
5	Stopper assembly	9159-01
6	Motor assembly	9160-01
7	PICO 2 - board	
	0.2-10 µL	9161-01
	5-100 µL	9162-01
	50-1000 µL	9163-01
8	Battery holder	9167-01
9	Battery, NiMH	9168-01
10	ACCU3 On-off assembly	9169-01
11	Bottom plate assembly, incl. Battery cover	9170-01
12	Battery cover	9171-01
13	Cover assembly	
	0.2-10 µL	9172-01
	5-100 µL	9173-01
	50-1000 µL	9174-01
14	Finger grip	9178-01
15	Keyboard	9179-01
16	Holder, linear actuator	9180-01
	Silicon grease, 15 mL	9207-01

Replacement parts for Hamilton SofTouch single channel model 5000 µL

Item #	Description	Part #
1	Tip ejector assembly	9148-01
2	Linear actuator	9150-01
3	Piston assembly, 100-5000 µL	9154-01
4	Tip ejector collar	9158-01
5	Stopper assembly	9159-01
6	Motor assembly	9160-01
7	PICO 2 - board, 100-5000 µL	9164-01
8	Battery holder	9167-01
9	Battery, NiMH	9168-01
10	ACCU3 on-off assembly	9169-01
11	Bottom plate assembly, incl. Battery cover	9170-01
12	Battery cover	9171-01
13	Cover assembly, 100-5000 µL	9175-01
14	Finger grip	9178-01
15	Keyboard	9179-01
16	Holder, linear actuator	9180-01
	Silicon grease, 100-5000 µL, 15 mL	9208-01

Replacement parts for
Hamilton SofTouch multi-channel model 0.2-10 µL

Item #	Description	Part #
1	Tip ejector assembly, mcp	9181-01
2	Linear actuator and piston holder, 8-ch, 10/100/250 µL	9182-01
	Linear actuator and piston holder, 12-ch, 10/100/250 µL	9183-01
3	Stopper assembly	9159-01
4	Motor assembly	9160-01
5	PICO 2 - board, 0.2-10 µL	9161-01
6	Battery holder	9167-01
7	Battery, NiMH	9168-01
8	ACCU3 on-off assembly	9169-01
9	Bottom plate assembly, incl. Battery cover	9170-01
10	Battery cover	9171-01
11	Tip cone housing, 8-ch, 0.2-10 µL, complete	9186-01
	Tip cone housing, 12-ch, 0.2-10 µL, complete	9187-01
12	Tip ejector bar, 8-ch, 0.2-10 µL	9192-01
	Tip ejector bar, 12-ch, 0.2-10 µL	9194-01
13	Piston assembly, 0.2-10 µL, mcp, complete	9198-01
14	Tip cone cylinder, 0.2-10 µL	9202-01
15	Tip cone sealing, 0.2-10 µL, 8 pcs.	9206-01
16	Finger grip	9178-01
17	Keyboard	9179-01
18	Cover assembly, 0.2-10 µL	9172-01
19	Holder, linear actuator	9180-01
	Silcon grease, 15 mL	9207-01

Replacement parts for
Hamilton SofTouch multi-channel models 100 µL and 250 µL

Item #	Description	Part #
1	Tip ejector assembly, mcp	9181-01
2	Linear actuator and piston holder, 8-ch, 10/100/250 µL	9182-01
	Linear actuator and piston holder, 12-ch, 10/100/250 µL	9183-01
3	Stopper assembly	9159-01
4	Motor assembly	9160-01
5	PICO 2 - board, 5-100 µL	9162-01
6	Battery holder	9167-01
7	Battery, NiMH	9168-01
8	ACCU3 on-off assembly	9169-01
9	Bottom plate assembly, incl. Battery cover	9170-01
10	Battery cover	9171-01
11	Tip cone housing, 8-ch, 100/250 µL, complete	9188-01
	Tip cone housing, 12-ch, 100/250 µL, complete	9189-01
12	Tip ejector bar, 8-ch, 100/250 µL	9193-01
	Tip ejector bar, 12-ch, 100/250 µL	9195-01
13	Piston assembly, 5-100 µL, mcp, complete	9199-01
	Piston assembly, 25-250 µL, mcp, complete	9200-01
14	Tip cone cylinder, 5-100 µL	9203-01
	Tip cone cylinder, 25-250 µL	9204-01
15	Finger grip	9178-01
16	Keyboard	9179-01
17	Cover assembly, 5-100 µL	9173-01
	Cover assembly, 25-250 µL	9176-01
18	Holder, linear actuator	9180-01
	Silcon grease, 15 mL	9207-01

Replacement parts for
Hamilton SofTouch multi-channel model 50-1200 µL

Item #	Description	Part #
1	Tip ejector assembly, mcp	9181-01
2	Linear actuator and piston holder, 8-ch, 50-1200 µL	9184-01
	Linear actuator and piston holder, 12-ch, 50-1200 µL	9185-01
3	Stopper assembly	9159-01
4	Motor assembly	9160-01
5	PICO 2 - board, 50-1200 µL	9166-01
6	Battery holder	9167-01
7	Battery, NiMH	9168-01
8	ACCU3 on-off assembly	9169-01
9	Bottom plate assembly, incl. Battery cover	9170-01
10	Battery cover	9171-01
11	Tip cone housing, 8-ch, 50-1200 µL, complete	9190-01
	Tip cone housing, 12-ch, 50-1200 µL, complete	9191-01
12	Tip ejector bar, 8-ch, 50-1200 µL	9196-01
	Tip ejector bar, 12-ch, 50-1200 µL	9197-01
13a	Piston assembly, 50-1200, complete	9201-01
13b	Tip cone cylinder, 50-1200 µL	9205-01
14	Finger grip	9178-01
15	Keyboard	9179-01
16	Cover assembly, 50-1200 µL	9177-01
17	Holder, linear actuator	9180-01
	Silcon grease, 15 mL	9207-01

Notes

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