

eLINE®

Instruction Manual



BIOHIT





*e*LINE®

Instruction Manual 1

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1. Biohit *e*LINE Dispenser

The Biohit *e*LINE electronic pipettors offer you the latest technology and innovations in the field of the hand held liquid handling devices. The attractive and ergonomic design of the *e*LINE pipettors together with electronic tip ejection operation take the effort out of pipetting and reduce the risk of repetitive strain injuries (RSI) that are common in mechanical pipetting.

The microprocessor controlled system and the superior construction of the Biohit *e*LINE pipettors enables maximum liquid handling performance with high levels of accuracy and precision.

Biohit *e*LINE Dispenser

Cat. No.	73070X
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X: 0=Without adaptor; 1=With AC-adaptor, Euro; 2= With AC-adaptor, U.S.; 3=With AC-adaptor, U.K; 4=With AC-adaptor, Jpn; 5= With AC-adaptor, Aus.

Biohit *e*LINE Dispenser Tips

Standard

Tip size (ml)	Qty/Unit	Order code
0,1	100	792017
0,2	100	792018
0,5	100	792019
1,0	100	792020
2,5	100	792021
5,0	100	792022
10,0	100	792023
25,0	25	792024
50,0	25	792025

Dispenser Test Package		
0,5	20	792038
1,0	20	
2,5	20	
5,0	20	
10,0	20	

Sterile

Tip size (ml)	Qty/Unit	Order code
0,1	100	792026
0,2	100	792027
0,5	100	792028
1,0	100	792029
2,5	100	792030
5,0	100	792031
10,0	100	792032
25,0	25	792033
50,0	25	792034

Adapter

Adapter for 25 and 50 ml tips		
Adapter	3	792036



Note: The tips are disposable, do not reuse them!

2. Quick start

2.1. Unpacking

The Biohit eLINE Dispenser may be delivered with or without an AC-adaptor, depending from the type of order. However, all Biohit eLINE Dispenser packages contain:

- eLINE Dispenser
- Tilting piece
- Instruction manual
- Performance certificate in accordance with ISO 8655-5
- Demo package of the Biohit eLINE Dispenser Tips
 - 0.1 ml, 1 pc
 - 0.2 ml, 1 pc
 - 0.5 ml, 5 pcs
 - 1.0 ml, 5 pcs
 - 2.5 ml, 5 pcs
 - 10.0 ml, 5 pcs
 - 25.0 ml, 1 pc

Please check that all items are included and no damage has occurred during shipment.

2.2. Charging the Biohit eLINE Dispenser before first use

The battery is protected against discharging during storage with a plastic protector.

Before use remove the plastic protector (Fig. 1.)

1. Push the charging buttons simultaneously in order to open the battery cover
2. Remove the plastic protector

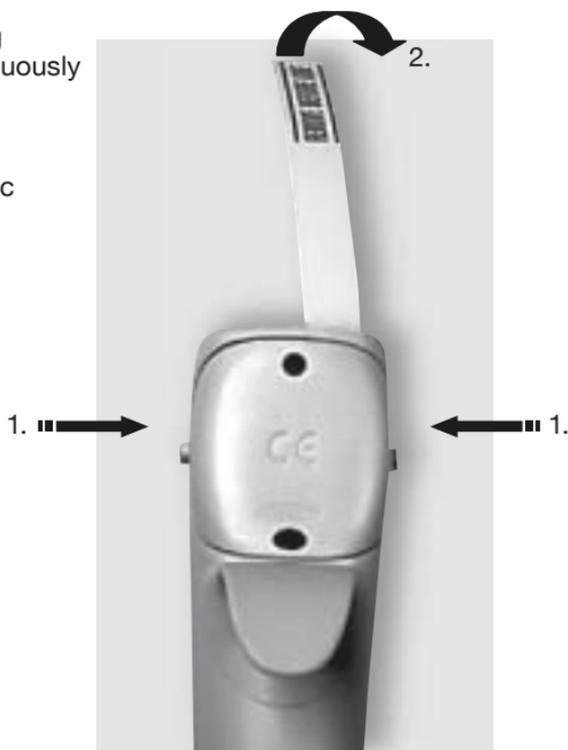


Fig. 1.



Note: It is recommended to charge the pipettor for 12 hours before initial use. The pipettor may only be charged with original Biohit eLINE Charging Stand, Charging Carousel or Biohit eLINE AC-adaptor (See Section 3.)

2.3. Biohit eLINE Dispenser operating Instructions

The control and programming of the Biohit eLINE Dispenser is performed using the display, keyboard, operating buttons and tip. (Fig. 2 and 3.)

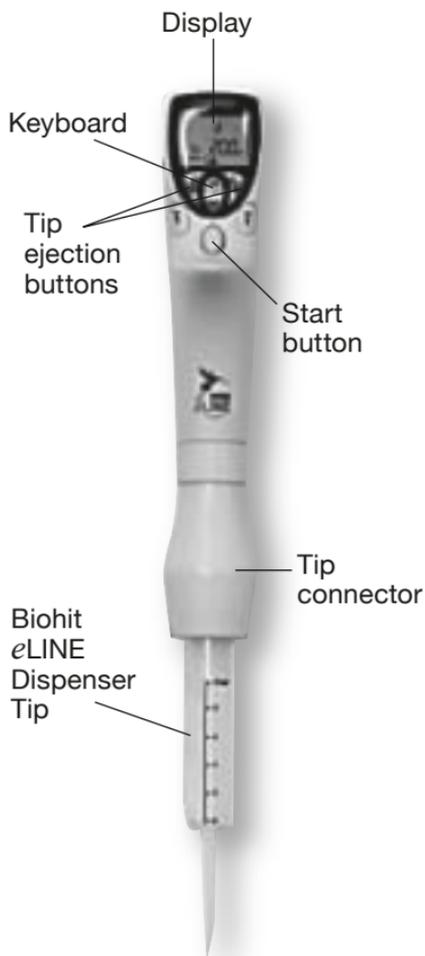


Fig. 2.

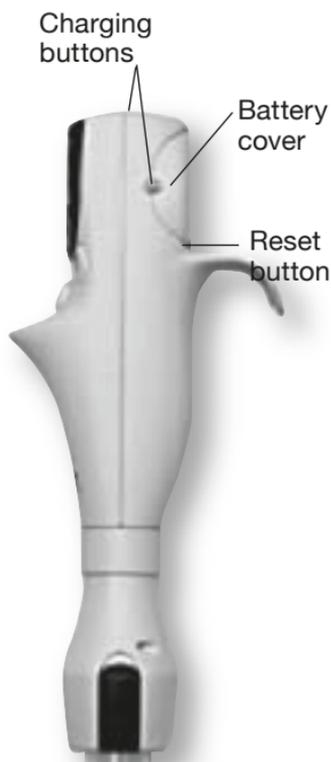
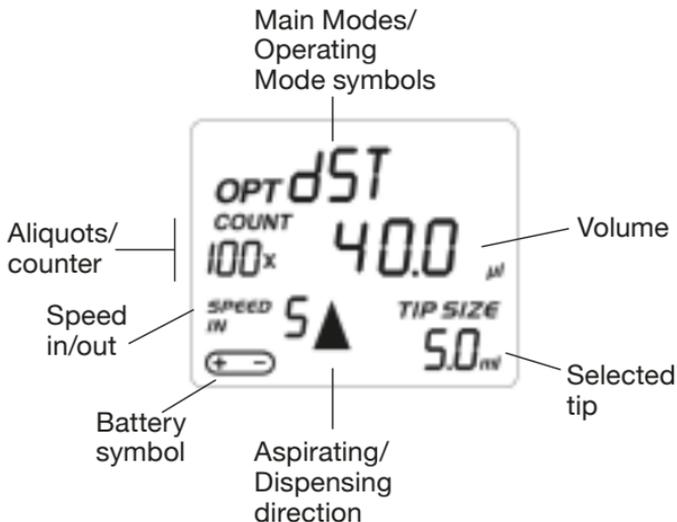


Fig. 3.

2.3.1. Display



Note: When the dispenser is not connected to the charging unit the dispenser/display will automatically hibernate after 10 minutes. Dispenser can be switched back on by pressing any key.

Main Modes and Mode Symbols:



**d=dispensing
(with TipGuide)**



**dST=dispensing
(user selects
the tip size)**



OPT includes:
P = pipetting
dd = diluting
Sd = sequential dispensing
Ad = automatic multidispensing
SA = multi-aspirating

Custom mode (CST):



GL



Sr



SET

2.3.2. Keyboard

Keyboard:

Select



- Press to go back to the Main Modes or to the previous step.
- Activates the speed-function during the programming procedure.

Arrow up/down



- Press to select the operating mode or to make setting changes (volume, aliquots, speed, etc.)

Enter



- Press to confirm the selections or setting changes

Operating buttons:

Start button



- Triggers all piston movements

Tip ejection buttons



- Press to remove tip

Reset button



- Press to reset the pipettor

2.3.3. Reset Button

To reset the dispenser, press the reset button on the battery cover. The display shows **E** and **TIP** in blinking form and pressing the tip ejector button will reset the pipettor to the **d**-mode.



Note: The dispenser should never be reset during pipetting! Resetting will cause the plunger to move to the home position and it will empty the contents of the tip. The tip is also ejected in the end.

2.3.4. Start Button

The start button triggers the aspiration and dispensing operations according to the selected operating mode. Only a soft touch is required to operate the button.

2.3.5. Tip Attachment and Ejection

Tip attachment

1. Push the tip into the tip connector. **Make sure that the tip is properly attached.** (Fig. 4.)
2. Confirm the tip size by double clicking the Start-button according the instruction on the page 15.



Fig. 4.

Releasing the tip:

1. Press the Tip Ejection button. The tip is released immediately (Fig. 5.)

Note: After the dispensing cycle has been completed a small residual amount of fluid may have been left in the tip. During the tip ejection it is possible that a part of the remaining fluid comes out of the tip. Therefore it is recommended that the tip ejection is performed above a waste container.

Note: When aspirating the liquid using the 25 or 50 ml tip, let the tip stay in the liquid a few seconds after the plunger has stopped to move. In this way you ensure that all liquid has been aspirated into the tip.

Note: It is possible to work with aqueous liquids and liquids with higher viscosity. However, it is recommended always to choose the tip with smallest applicable volume in conjunction with high viscosity liquids. Please note, specifications are given in accordance with ISO8655-5.



Fig. 5.

3. Charging of the Biohit *e*LINE Dispenser

The Biohit *e*LINE Dispenser should be charged using the original Biohit *e*LINE Charging Stand, Charging Carousel or AC-adapter.

When the dispenser is properly connected to the charger, the led indicator (Fig. 6.) lights up and stays on as long as the dispenser is connected to the charger.

When the dispenser requires charging, the battery symbol and “lo bat”-text will appear to the display (Fig. 6.). You need to confirm that by pressing “enter”, only after that you can complete your work, and/or start charging the dispenser. Please note that if “enter” is

not pressed the dispenser will not start charging, even placed in charging stand/connected to AC-adaptor.

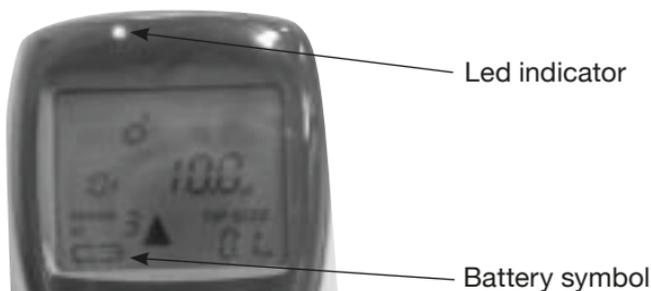


Fig. 6.



Note: In case you continue to work with the dispenser after the low bat-alarm, the battery will eventually be completely discharged. Then the battery-symbol and led indicator start to blink, and there is no response from operating buttons. Charge the dispenser.

Initial charging of 5 minutes is required before use, if the battery is totally discharged. During that time the “Load”-text is displayed and you can't use the dispenser.

When the text disappears from the display, you can continue to work with the dispenser keeping it still connected to the charger.

3.1. Charging with the Biohit eLINE Charging Stand and Charging Carousel

The Biohit eLINE Charging Stand and Carousel are desktop charging units.

The Charging Stand accommodates one Biohit eLINE Dispenser and Charging Carousel four Biohit eLine Dispensers.

The eLINE Charging Stands and Carousels operate through the metal contacts placed in the sides of the Dispenser and the head of the Charging unit (Fig. 7.)



Fig. 7.

Before operating the AC-adaptor must be connected to the socket at the rear of the Charging Stand (Fig. 7.) as well as to the electrical outlet. Before connecting the AC-adapter to the electrical outlet, check that its voltage setting corresponds to the voltage setting of your electrical outlet.



Note: The Charging Carousel is used to charge the dispenser without the tip. If you need to charge the dispenser with the tip attached, you can use the Charging Stand with the Tilting Piece mounted (Fig. 8.).



Fig. 8.

Cat. No.	Product
73098X	Biohit <i>e</i> LINE Charging Stand
73099X	Biohit <i>e</i> LINE Charging Carousel

X: 1=Euro, 2= U.S., 3= UK., 4=Jpn, 5= Aus

1. Check that the plastic protector is removed and the battery cover is properly closed
2. Place the dispenser into the Charging unit. Make sure that the metal contacts at the sides of the dispenser are properly fitted to the tracks of the metal contacts in the Charging head.
3. When charging, the battery-symbol and the led indicator will be displayed. The charging time for completely discharged batteries is 6 hours (initial charge 12 hours).
4. When the battery is fully charged the battery-symbol disappears from the display. Otherwise the display will stay on and other information on the display will be visible.

3.2. Charging through direct charging system

The AC-adaptor supplied with the Biohit *e*LINE Dispenser or Charging Stand can be used for direct charging of the Biohit *e*LINE Dispenser. The socket for the AC-adaptor is placed at the back of the dispenser (Fig. 9.)



Fig. 9.

Cat. No.	Product
731146	Biohit <i>e</i> LINE AC-adaptor, Euro
731147	Biohit <i>e</i> LINE AC-adaptor, U.S
731148	Biohit <i>e</i> LINE AC-adaptor, UK
731149	Biohit <i>e</i> LINE AC-adaptor, Jpn
731150	Biohit <i>e</i> LINE AC-adaptor, Aus

X: 1=Euro, 2= U.S, 3= UK., 4=Jpn 5= Aus

1. Before connecting the AC-adaptor to the electrical outlet, check that its voltage settings corresponds to the voltage settings of the electrical outlet.
2. Check that the battery protector is removed and the battery cover is properly closed.
3. Connect the AC-adaptor to the electrical outlet as well as to the socket at the back of the dispenser
4. The charging time is 6 hours for the completely discharged battery.
5. When the battery is fully charged the battery-symbol disappears from the display. Otherwise the display will stay on and other information on the display will be visible.



Note: It is possible to continue pipetting while the *e*LINE Dispenser is charged through the AC-adaptor. With fully discharged battery 30 minute initial charging is recommended before continuing the pipetting.

3.3. Charging Recommendations

When the eLINE Dispenser is not in use it is recommended to keep it always in the charging unit. This ensures that the battery is kept fully charged and the pipettor is always ready for use.

However, during long storage periods (holidays etc.) it is recommended to disconnect the Charging Stand and Carousel from the mains outlet.

It is also advisable to remove the battery pack from the dispenser. This protects the batteries against discharging during the long storage period.



Note: The battery won't get damaged when the dispenser is kept on the charging unit: the charging process is intelligently controlled by a microprocessor.



Note: If battery is kept as full as possible, it will lengthen its lifetime.

3.4. Electrical specifications

Battery

- Rechargeable NiMH battery back with protection circuit
- 4.8 V, 500 mAH
- Charging time 6 hours for empty batteries
- Initial Charging 12 hours

AC-adaptor for Charging Stand or direct charging

- Input voltages and main plug according to local requirements
- Output voltage 9 VDC, 360 mA

AC-adaptor for Charging Carousel

- Input voltages and main plug according to local requirements
- Output voltage 9 VDC, 1200 mA

4. Programming principles

The Biohit *e*LINE Dispenser features ten different operating modes which are divided in to the three Main Modes (d, dST/OPT) and Custom Mode (CST).

Main Modes:	Operating Modes:
d	d (user selects the aliquot size and the number of dispensings)
dST	d (user selects the tip size)
OPT	P, dd, Sd, Ad, SA
Custom Mode:	
CST	GL (Good Laboratory Practice: select the service and the reminder intervals)
	Sr (select the desired tip range)
	SET (returns default settings)

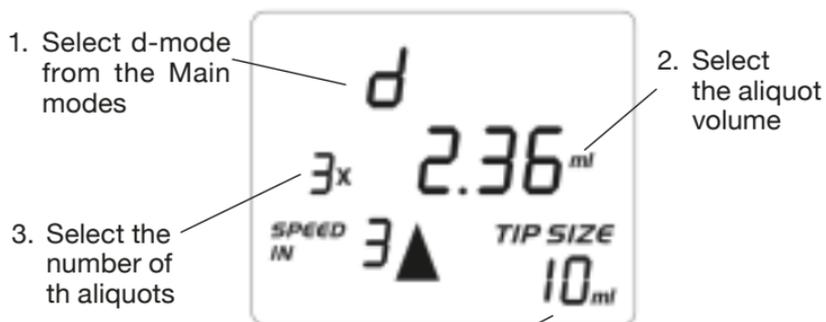
Programming is performed by using the Select-, Enter, Arrow- and Start-keys. The main mode range is selected with the Select-key, after that the desired operating mode is selected by pressing the Arrow-key and the selection is confirmed with Enter-key.

4.2. Main Modes

4.2.1. d-mode, Programming using TipGuide

TipGuide is unique built-in tool making the programming as easy, safe and convenient as possible. The Tip Guide selects the optimal tip based on desired aliquot volume and number of aliquots.

Multiple dispensing by selecting the aliquot, Tip guide



4. The Tip Guide display will show the best option for the tip size. If there are other options the “TIP SIZE”-text is blinking. Other options can be observed by pressing the Arrow-key. **Attach the tip to the dispenser before confirming the programming by double clicking the Start-button.**

Note: If you want to change the speed, press the Select-key and make the desired changes to the speed before you confirm the tip size.

4.2.2. dST-mode

Multiple dispensing by selecting the tip

1. Select dST-mode from the Main modes
 2. Select the tip size
 3. Select the aliquot volume
 4. Select the aliquots. **Attach the tip to the dispenser before confirming the programming by double clicking the Start-button.** Note: If you want to change the speed, press the Select-key and make the desired changes to the speed before you confirm the number of dispensing
- 

The programming of this dispensing-mode is based on the increment of the chosen tip size.

4.3. OPT-mode

Options-modes P, dd, Sd, Ad and SA

2. Choose the desired Operating mode:

P = pipetting

dd = diluting

Sd = sequential dispensing

Ad = automatic multi-dispensing

SA = multi-aspirating



1. Choose OPT-mode from the Main modes range

P = pipetting

dd = two different solutions separated with air gap are aspirated and then dispensed together

Sd = a series of different volumes of same solution can be delivered in any desired order

Ad = the pipettor performs repetitive dispensing of a selected volume automatically at the specifies interval.

The sum of the dispensing aliquots

and an automatically selected excess volume is aspirated into the tip. The excess volume is needed to ensure equal operating conditions for each dispensing step

SA = the pipettor performs consecutive aspiration operations of the programmed volume. This mode allows e.g. emptying a microwell plate, sample pooling and other special applications

P



dd

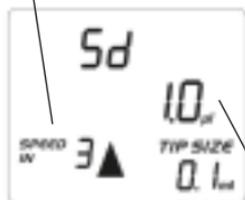


3. Choose the volume. **Attach the tip to the dispenser before confirming the programming by double clicking the Start-button.**
 Note: If you want to change the speed, press the Select-key and make the desired changes to the speed before you confirm the volume.

3. Choose the desired volumes. **Attach the tip to the dispenser before confirming the programming by double clicking the Start-button.**
 Note: If you want to change the speed, press the Select-key and make the desired changes to the speed before you confirm the volumes.

3. Choose the aliquots

Sd



4. Choose the volumes. **Attach the tip to the dispenser before confirming the programming by double clicking the Start-button.**
 Note: If you want to change the speed, press the Select-key and make the desired changes to the speed before you confirm the number of the portions.

4. Choose the aliquots 5. Choose the volume

Ad



3. Choose the dispensing pace. **Attach the tip to the dispenser before confirming the programming by double clicking the Start-button.**
 Note: If you want to change the speed, press the Select-key and make the desired changes to the speed before you confirm the pace.

SA



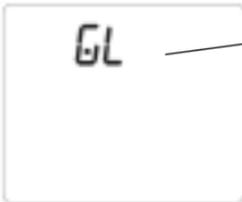
3. Choose the volume

4. Choose the aliquots. **Attach the tip to the dispenser before confirming the programming by double clicking the Start-button.**

Note: If you want to change the speed, press the Select-key and make the desired changes to the speed before you confirm the number of the portions

4.3. Custom Mode

Operation modes GL, Sr and SET

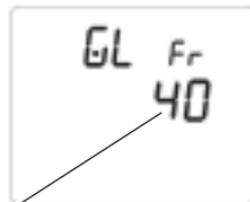


1. Push Enter and Start-keys
2. Choose the desired operation mode:
GL
Sr
SET

GL (Good Laboratory practice)



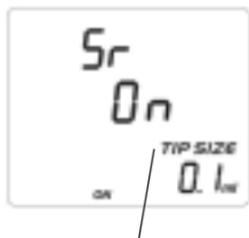
3. Select the service interval (number of pipetting cycles whereupon the pipettor alarms service)



4. Select the alarm interval (number of pipetting cycles whereupon the pipettor reminds about the service)

- When pipettor alarms the service (GL-text and the number of cycles are shown in the display), clear the alarm-signal by pressing the Enter-key a few seconds.
- After the service is done, press the Select-key (RES-text is displayed) and Enter-key to start the counting again with the same service and alarm intervals
- If you want to change the intervals, program the GL again according the instructions above

Sr (Select tip range)



3. Scroll the tip range and accept or reject the tip with Select-key

SET



3. Press the Enter-key. The default settings will be valid after the "donE"-text appears in the display.

5. Maintenance

5.1. Cleaning the pipettor

To ensure trouble-free operation it is recommended to apply regular maintenance and cleaning to Biohit eLINE Dispenser.

To clean and decontaminate the outer surface use Proline Biocontrol (Cat. No. 724004) and a soft lint-free cloth. Gently clean the surface of the pipettor with the moistened cloth and wipe dry. It is possible to use ethanol (70%) isopropanol (60%) or mild detergent as a cleaning agent.



Note: Remove the battery pack from the pipettor prior the cleaning! It is recommended always to use gloves when cleaning the pipettor. Do not let the liquid enter the pipettor handle!

5.2. Battery replacement

The design of the Biohit eLINE pipettors enables fast and easy battery replacement. The battery replacement pack includes 4 NiMH batteries fixed to the battery cover. If the batteries do not hold a sufficient charge for proper operation follow these steps for replacement of the battery pack.

1. Hold the pipettor in a horizontal position with the display facing up.
2. Press the two charging contacts simultaneously to release the battery pack.
3. Place the new battery pack into the compartment and close the battery cover by pressing it lightly.



Note: The battery cover pack fits in to the compartment one way only. If the pack is inserted incorrectly the battery cover will not close properly.



Note: Only use battery packs supplied by the manufacturer. The use of any other type of battery will immediately void the warranty!



Fig. 10.

6. Troubleshooting

The Biohit eLINE Dispenser have a onboard monitoring program to control the performance of each pipetting action. If any error message appears to the display it means that the Dispenser has been unable to perform the attempted action properly. In case of an error the display will show ER and PRSS ENT. message. To clear the message please follow these steps:

1. Clear the error message by pressing . The display will show E and ▼.
2. Press the  and the blunger moves to the home-position. The display will show E and TIP.
3. Remove the tip by pressing the tip ejection button .



Note: Repeated occurrence of error messages indicates an internal error causing failure of the eLINE Dispenser to complete the execution of the pipetting. The eLINE Dispenser therefore needs to be returned to the nearest Biohit Service Centre or your local Biohit service representative for repair.

Symptom	Possible cause	Solution
Display is blank and there is no response when pressing the buttons	Battery is fully discharged	Recharge the battery
Leakage or pipetted volume too small	Tip incorrectly attached Unsuitable tip Foreign particles between the tip and tip connector	Attached new tip Attach firmly Use original tips Clean the tip connector and attach new tip
Dispenser out of the established specifications	Unsuitable tip Instrument damaged	Use original tips Return to your Biohit service representative for servicing
Tip ejector jammed or moves erratically	Tip connector has been contaminated Tip connector mechanism damaged	Clean the Tip connector Return to your Biohit service representative for servicing
Continuous error message	Instrument damaged	Return to your Biohit service representative for servicing

7. Warranty information

Biohit *e*LINE Dipenser is covered by a warranty for one year against defects in material and workmanship (excluding the battery pack). Should your *e*LINE dispenser fail to function according to specifications at any time, please contact your local Biohit representative immediately.

ANY WARRANTY WILL, HOWEVER, BE DEEMED AS VOID IF FAULT IS FOUND TO HAVE BEEN CAUSED BY MALTREATMENT, MISUSE, UNAUTHORIZED MAINTENANCE A OF SERVICE OR NEGLIGENCE OF REGULAR MAINTENANCE AND SERVICE, ACCIDENTAL DAMAGE, INCORRECT STORAGE OS USE OF THE PRODUCTS FOR OPERATIONS OUTSIDE THEIR SPECIFICATIONS, CONTRARY TO THE INSTRUCTIONS GIVEN IN THIS MANUAL OR WITH OTHER THAN THE MANUFACTURER'S ORIGINAL TIPS.

Each Biohit *e*LINE Dispenser is tested before shipping by the manufacturer. The Biohit Quality Assurance Procedure guarantees that the Biohit *e*LINE Dispenser you have purchased is ready for use.

Each Biohit *e*LINE Dispenser is CE-marked, fulfilling the requirements of the EN 55014, 1993 / EN 55104, 1995 / ISO 13485:2003 and IVD Directive (98/79/EC).

8. Performance specifications



Note: The manufacturer's specifications below should be used as guidelines when establishing your own performance specifications accordance with ISO 8655-5

Cat. No.	Tip volume (ml)	Volume min/ max (µl)	Increment (µl)	Test volume (µl)	Inacc. (%)	Impr. (%)	Number of dispensing Min/max
792017	0,1	d: 1/100	d: 0,2	10 100	1,00 1,00	0,50 2,00	1/100
792018	0,2	d: 2/200	d: 0,4	20 100	1,50 1,70	0,20 1,00	1/100
792019	0,5	d: 5/500	d: 1	50 500	0,80 0,80	0,40 0,80	1/100
792020	1,0	d: 10/1000	d: 2	100 1000	0,80 0,80	0,20 0,55	1/100
792021	2,5	d: 25/2500	d: 5	250 2500	0,50 0,50	0,20 0,50	1/100
792022	5,0	d: 50/5000	d: 10	500 5000	0,80 0,80	0,15 0,50	1/100
792023	10,0	d: 100/10 000	d: 20	1000 10 000	0,30 0,25	0,20 0,50	1/100
792024	25,0	d: 500/25 000	d: 50	2500 25 000	0,50 0,50	0,15 1,00	1/50
792025	50,0	d: 1000/50 000	d: 100	5000 50 000	0,40 0,40	0,15 0,80	1/50



Note: The specifications are valid only to the eLINE Dispenser and Biohit eLINE Dispenser Tip combination.

9. Recycling instruction (WEEE)



In compliance with European Directive, WEEE (2002/96EC) on waste and reducing of hazardous substances in electrical and electronic equipments, this device must not be recycled as unsorted municipal waste. Instead this device must be collected separately in accordance the local recycling regulations. The solid bar used in conjunction with the crossed-out wheeled bin indicates that the product was put on the European market after 13 August 2005.

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eLINE®

Instruction Manual

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Due to Biohit's continuing R&D effort, specifications may change without prior notice. Biohit Proline innovations are covered by multiple patents including U.S. Pat. 5,343,769, U.S. Pat. 5,505,097 and patents pending. Biohit eLINE® is a registered trademark of Biohit Plc.

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