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Midi Plus

Instruction Manual

Bedienungsanleitung

Mode d'emploi

Manual Usaria

Instruzioni d'impiego

Bruksanvisning

Käyttöohje



BIOHIT

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BIOHIT Midi Plus

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1. INTENDED USE

This liquid handling device is designed and manufactured to be used with the IVD-product as an IVD-accessory and as a stand alone laboratory equipment.

2. YOUR NEW BIOHIT MIDI PLUS

The Biohit Midi Plus has been carefully designed and manufactured as a lightweight, cordless pipetting controller. It can be used with all plastic or glass pipets between 1-100 ml and also with Biohit 5 ml (Cat. No. 780300) and 10 ml (Cat. No. 780310) tips. The pipet adapters that allow the use with the Biohit 5 ml and 10 ml tips are available as accessories. The linear speed control allows the aspiration and dispensing speeds to be adjusted easily and precisely to suit either large- or small-volume pipets. The aspiration and dispensing speeds can also be fine-tuned during operation by applying varying finger pressure to the operating buttons.

The Midi Plus has been designed so that it can be suspended for the duration of pipetting. This option can be employed to reduce the strain associated with long operating periods. The Midi Plus also features an attached support which allows the unit to be rested on a table between dispensing routines with a pipet attached.

Cat. No.	Product
71093X	Biohit Midi Plus

X: 0 = Without AC-adaptor; 1 = With universal AC-adaptor (Euro, USA/Jpn, UK and China plugs)

3. UNPACKING AND PREPARING THE MIDI PLUS FOR USE

The Midi Plus package contains the following items:

- Midi Plus pipetting controller
- AC-adaptor
- 0.45 µm hydrophobic filters
- Instructions for use
- Quality control certificate

Please check that all the items are included and nothing has been damaged during shipment.

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3.1. Charging the Midi Plus

The Midi Plus is supplied fully charged. However, it is recommended to recharge the unit overnight before the initial use.

1. Before connecting the AC-adaptor to the electrical outlet, check that its voltage setting corresponds to the voltage of your electrical outlet.
2. Connect the AC-adaptor to the electrical outlet as well as to the electrical fitting at the base of the handle of the Midi Plus (Fig.1).



Fig. 1

Note: The Midi Plus should only be charged with the AC-adaptor provided.

Note: The Midi Plus can be rested on a table with the support for the duration of charging.

3. The length of the recharging time is 14 hours for a completely empty battery.

Note: The Midi Plus should be disconnected from the transformer if it will be out of use for a lengthy period of time.

3.2. Low battery indicator

When the battery is close to empty, the battery capacity indicator starts to blink (Fig. 2). The unit can still be used for some time when the blinking starts. However, as the capacity of the battery decreases, the blinking frequency of the indicator will increase until it is permanently ignited and the unit will need to be recharged. If it is inconvenient to recharge the Midi Plus immediately, the unit can be operated directly through the AC-adaptor. For maximum life time it is recommended to allow the battery to fully discharge before recharging it.



Fig. 2

Note: If the battery has been fully discharged, it may be necessary to charge it for a short period of time before it is possible to operate the Midi Plus directly through the AC-adaptor.

Note: The Midi Plus should not be operated continuously with the AC-adaptor connected.

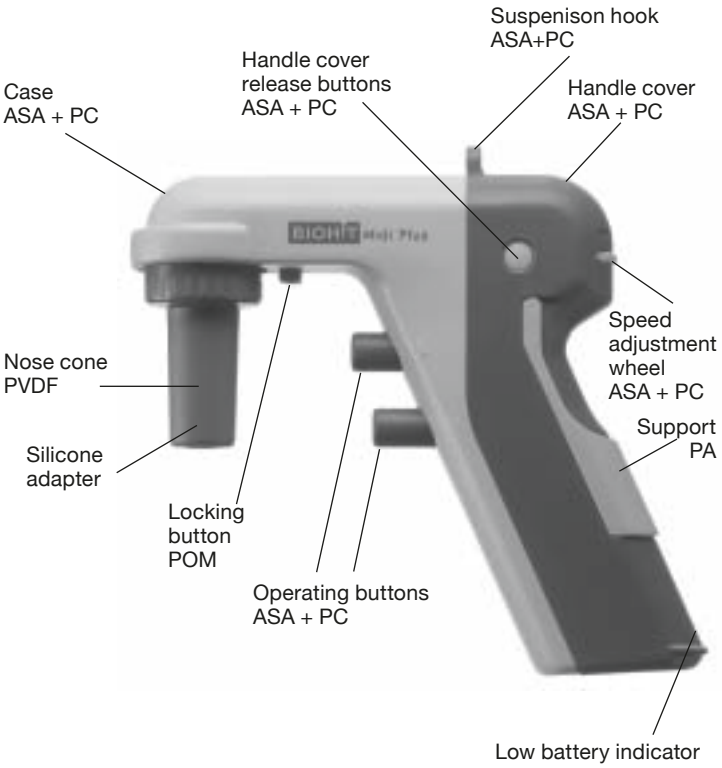
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3.3. Electrical specifications

Batteries
- AA, 3 x 1.2 V, 350 mAh, NiCd
- Approx. 7 hours service life when fully charged
- Charging time 14 hours for completely empty batteries

AC-adaptor
- Input voltage and main plug according to local requirements
- Output voltage 9 VDC

4. MIDI PLUS MATERIALS



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5. MIDI PLUS DESCRIPTION

5.1. Operating buttons

The Midi Plus has two operating buttons located at the front of the handle. The upper button enables aspiration for as long as the button is held down. The lower button allows for dispensing. The aspiration and dispensing speeds can be fine-tuned during operation by applying varying finger pressure to the operating buttons.

5.2. Speed adjustment wheel

The speed adjustment wheel is located at the upper part of the handle. The desired speed is selected by turning the speed adjustment wheel.

5.3. Pipet adapters

The pipet adapter provided with the Midi Plus allows the use of all standard plastic and glass pipets (graduated and non-graduated) including Pasteur pipets. The pipet adapter of the Midi Plus consists of the nose cone and silicon adapter. The silicon adapter enables a pipet to fit securely in place, thus creating a proper vacuum level and preventing leakage.

The Midi Plus can also be used with the Biohit Proline 5 ml (Cat. No. 780300) and 10 ml (Cat. No. 780310) tips. The changeable pipet adapters which allow the use of 5 ml and 10 ml tips are available as accessories (Fig. 3). (See 7.2. Changing the nose cone, silicon adapter or filter.)



Fig. 3

Pipet adapters (silicon adapter + nose cone):

Cat. No.	Product	Qty.
711015	Adapter set for 5 ml tip	1
711016	Adapter set for 10 ml tip	1

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5.4. Filters

Removing the nose cone exposes a hydrophobic filter (0.45 micron), located at the top of the nose piece. The filter protects the Midi Plus from accidental overaspirations. It is strongly recommended to use only the original filters supplied by the manufacturer with the Midi Plus. Both sterile and non-sterile filters are available (see 7.2. Changing the nose cone, silicon adapter or filter).

Note: The Midi Plus cannot be operated without a filter. Wetting of filter due to overfilling will slow or prevent fluid movement. If overfilling occurs, change the filter immediately.

5.5. Support

The Midi Plus also features an attached support for placing the unit on the table between the dispensing routines with a pipet attached (Fig. 4).



Fig. 4

6. OPERATING THE MIDI PLUS

6.1. Adjusting the operating speed

Select the desired speed by turning the linear speed adjustment wheel (Fig. 5). The speed selection can be easily accessed as the height of the indicator column corresponds to the selected speed.

Note: The aspiration and dispensing speeds can be fine-tuned during operation by applying a varying amount of finger pressure to the operating buttons.

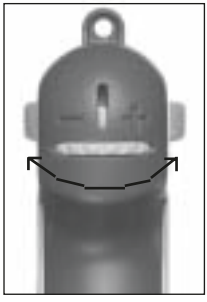


Fig. 5

6.2. Inserting a pipet

Gently push a pipet into the silicone adapter and ensure that it fits securely. To insert the pipet safely, hold the Midi Plus from above the nose cone and the pipet from the top end of the tube.

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6.3. Aspiration

1. Select a speed and fill the pipet by pressing the aspirating button. Fill the pipet just above the desired level.
2. Remove the pipet from the sample container by drawing it up against the inside wall of the container.
3. Adjust the volume of the sample by pressing the dispensing button until the meniscus is at the required level.

6.4. Dispensing

The Midi Plus offers two different dispensig modes:

1. If the dispensing button is pressed only up to a point where a check can be felt, the dispensing function will be based on the force of gravity and the liquid will simply flow out.
2. Pressing the dispensing button further down engages the motor and activates the blow-out function.

Note: Finger pressure can be varied to fine-tune the speed within each mode.

6.5. Other pipetting recommendations

- Use the instrument within the limits of its chemical resistance.
- Never use with solvents the vapours of which are incompatible with the MidiPlus materials.
- Never use with highly flammable liquids.
- Observe the reagent manufacturer's safety information.
- Never use the instrument in an atmosphere with a danger of explosion.
- Never use force with the Midi Plus.
- Should the instrument fail to function properly, stop pipetting and check the Trouble Shooting section.
- Use only the spare parts and accessories recommended by the manufacturer.
- Operational and storage temperatures +10°C to +35°C.

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7. STORAGE

The Midi Plus features an attached support which can be used if there is a need to place the unit on the table with a pipet attached between dispensing routines. However, the Midi Plus should not be stored for a long period of time without removing the pipet. It is also recommended to disconnect the Midi Plus from the AC-adaptor if the unit is not used for a lengthy period of time.

8. MAINTENANCE

The Midi Plus has been designed for easy in-house maintenance. However, Biohit also provides complete servicing and repair including a service report and a performance certificate. Please return your Midi Plus to the local representative for repair. Before returning it, make sure that it is free from all contamination.

Note: Please advise the service representative of any hazardous materials which may have come to contact with your Midi Plus.

8.1. Decontamination

To decontaminate, lightly spray the outside of the Midi Plus with the Biohit Proline Biocontrol decontamination spray (cat.no 724004, 5 l) and wipe dry with a clean cloth. The nose cone and the silicon adapter can also be disassembled (see 7.2.) and placed into a beaker containing Biohit Proline Biocontrol and left there for at least 30 minutes for a complete decontamination. These parts should then be rinsed with distilled water and dried.

8.2. Changing the nose cone, silicone adapter and filter

To change the nose cone, silicon adapter and filter, first press the nose cone lock release button (Fig. 6), rotate the nose cone anticlockwise and pull out the nose cone and the silicon adapter. The filter can be removed by simply pulling it out once the nose cone and the silicon adapter have been disengaged. Position the new filter with the coloured side upwards. To reassemble, insert the adapter and nose cone and twist the nose cone gently clockwise. Both the nose cone and silicon adapters are autoclavable (121 °C, 1 atm).

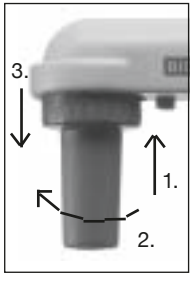


Fig. 6

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Note: It is recommended to change the silicon adapter every six months, or when necessary, to prevent a loss of vacuum. Spare adapters can be ordered from your local Biohit distributor.

Silicon adapter spare parts:

Cat. No	Product	Qty.
712893	Standard silicon adapter for Biohit Midi Plus	1 pc
712910	5 ml silicon adapter for Biohit Midi Plus	1 pc
712911	10 ml silicon adapter for Biohit Midi Plus	1 pc

Nose cone spare parts (PVDF):

Cat. No	Product	Qty.
712713	Standard nose cone for Biohit Midi Plus	1 pc
712711	5 ml nose cone for Biohit Midi Plus	1 pc
712712	10 ml nose cone for Biohit Midi Plus	1 pc

Note: The Midi Plus cannot be operated without a filter. Wetting of filter due to overfilling will slow or prevent fluid movement. If overfilling occurs, change the filter immediately. Both sterile and non-sterile filters are available.

Cat. No	Product	Qty.
712912	Filter for Biohit Midi Plus, non-sterile	5 pcs
712913	Filter for Biohit Midi Plus, sterile	1 pc

Note: If there is any unwanted leakage after the Midi Plus has been disassembled, carefully check that all the components have been securely reattached.

Note: Only use the original filters supplied by the manufacturer.

8.3. Changing the batteries

If the battery does not hold a sufficient charge for the proper operation of the Midi Plus follow these steps to replace the battery:

1. Press the two release buttons towards each other. Pull out the back cover to expose the battery compartment (Fig. 7).
2. Insert the batteries according to the markings inside the battery compartment. The positive (+) end of the battery must be placed against the (+) mark inside the compartment etc. (Fig. 8).



Fig. 7

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3. Replace the back cover.
4. Dispose of the batteries appropriately.

Note: Always replace the complete set of batteries. Only use the original batteries supplied by the manufacturer.



Fig. 8

9. TROUBLE SHOOTING

Problem	Cause	Solution
Reduced aspiration capacity or the Midi Plus blocked	Filter blocked, dirty or damaged Batteries low	Replace the filter Recharge
Pipet drips	Pipet not securely attached Silicon adapter or nose cone loose Silicon adapter or pipet damaged	Reattach Reassemble / change silicon adapter Replace
Reduced operating time	Batteries worn	Replace batteries

10. WARRANTY INFORMATION

The Biohit Midi Plus is warranted for two years against defects in materials and workmanship (except the batteries). Should your Midi Plus fail to function according to specifications at any time, please contact the 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 OF SERVICE OR NEGLIGENCE OF REGULAR MAINTENANCE AND SERVICE, ACCIDENTAL DAMAGE, INCORRECT STORAGE OR USE OF THE PRODUCTS FOR OPERATIONS OUTSIDE THEIR SPECIFIED LIMITATIONS, OUTSIDE THEIR SPECIFICATIONS OR CONTRARY TO THE INSTRUCTIONS GIVEN IN THIS MANUAL.

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Each Biohit Midi Plus is tested before shipping by the manufacturer. The Quality Assurance Procedure guarantees that the Midi Plus you have purchased is ready for use.

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

11. RECYCLING INSTRUCTION (WEEE)

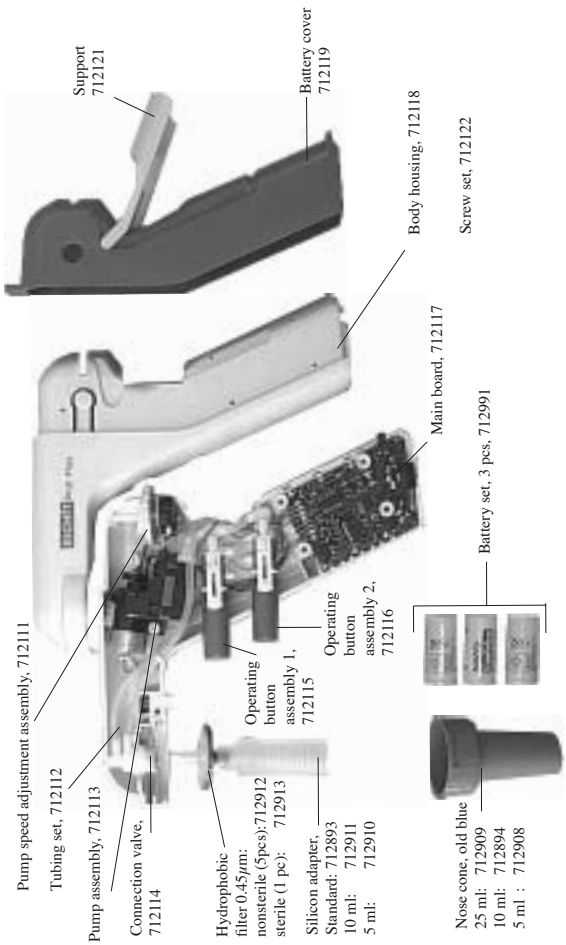


In compliance with European Directive, WEEE (2002/96EC) on waste and reducting of hazardous substances in electical and electronic equipments, this device must not be recycled as unsorted municipal waste. Instead this device must be collected separately in accordance the local recycling regulations.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

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Spare Parts:



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