




Eppendorf Easypet®

Operating manual

eppendorf



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1 User instructions

1.1 Using this manual

- ▶ Please read this operating manual completely before using the device for the first time.
- ▶ Please view this operating manual as part of the product and keep it somewhere easily accessible.
- ▶ When passing the device on to third parties, be sure to include this operating manual.
- ▶ If this manual is lost, please request another one. The current version can be found on our website www.eppendorf.com.

1.2 Warning signs and hazard icons

1.2.1 Hazard icons


	Biohazard		Explosion
	Cuts		Toxic substances
	Hazard point		Material damage

1.2.2 Degrees of danger

The degree of danger is a part of a safety note and distinguishes the possible results of non-observance from each other.

DANGER	<i>Will</i> lead to severe injuries or death.
WARNING	<i>May</i> lead to severe injuries or death.
CAUTION	May lead to light to moderate injuries.
NOTICE	May lead to material damage.

1.3 Symbols used

Depiction	Meaning
▶	You are requested to perform an action.
1. 2.	Perform these actions in the sequence described.
•	List.
	References useful information.

2 Product description

2.1 Main illustration

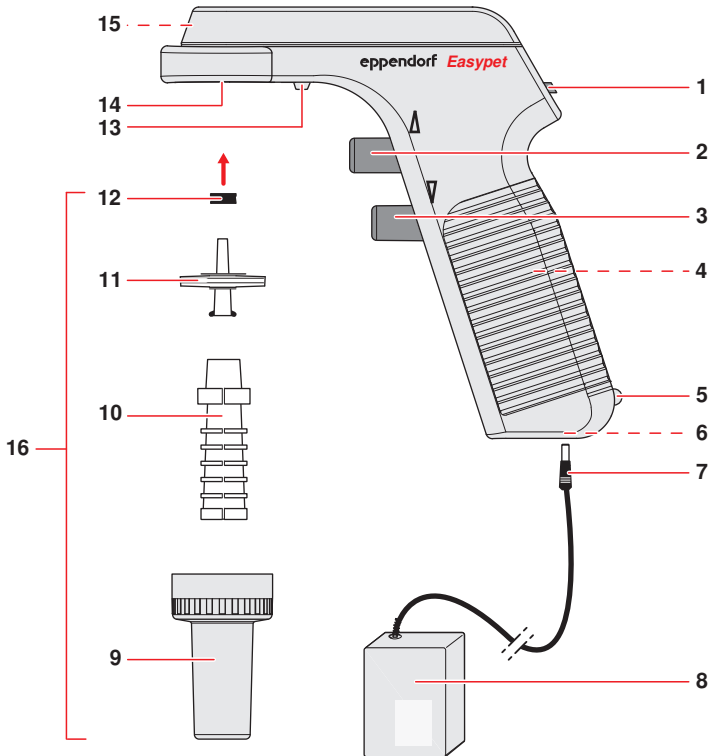


Fig. 1: Easypet with accessories

1 Adjustment dial	2 Aspirating button
3 Dispensing button	4 Rechargeable battery compartment
5 Charge control lamp	6 Connector socket
7 Charging plug	8 Power supply
9 Aspirating cone	10 Pipette adapter
11 Membrane filter	12 Seal for filter adapter
13 Release button	14 Filter adapter
15 Pressure compensation opening	16 Pipette clamp

2.2 Delivery package

Number	Description
1	Eppendorf Easypet
3	Nickel-metal hydride rechargeable batteries
2	Unsterile membrane filter, 0.45 µm
1	Wall holder
1	Power supply

2.3 Warranty

In case of warranty claims, contact your local Eppendorf contractual partner. No warranty is provided if the Easypet is misused or opened by unauthorized persons. The rechargeable battery and all other wear parts are excluded from the warranty.

2.4 Materials



NOTICE! Aggressive substances may damage the Easypet and the accessories.

- ▶ When using aggressive chemicals, check their compatibility with the materials used.
- ▶ Observe the cleaning instructions (see *Cleaning* on p. 15).

The parts of the Easypet that can be accessed by the user are made of the following materials:

Component	Material
Selection dial, housing	Acrylonitrile styrene acrylate (ASA) and polycarbonate (PC)
Aspirating button, dispensing button	Acrylonitrile butadiene styrene (ASA) and polycarbonate (PC)
Aspirating cone, membrane filter housing	Polypropylene (PP)
Pipette adapter	Silicone
Filter membrane	Polytetrafluoroethylene (PTFE)
Seal for filter adapter	Hydrated acrylonitrile butadiene rubber (HNBR)
Release button	Polyoxymethylene (POM)
Tubes and valves	Fluorocarbon rubber (FKM) and Polyoxymethylene (POM)

2.5 Features

The Easypet is a rechargeable battery operated pipetting aid. You can use pipettes made of glass or plastic in a volume range of 0.1 mL to 100 mL.

A pump generates an overpressure or a vacuum for liquid aspiration or dispensing. Alternatively, the liquid can be dispensed by atmospheric pressure alone.

The aspiration and dispensing speed can be adjusted by an adjustment dial.

3 Safety

3.1 Intended use

The Easypet is intended for dispensing liquids. In vivo applications (applications in or on the human body) are not permitted.

The Easypet may only be operated by trained specialists. All users must have read the operating manual carefully and familiarized themselves with the device's mode of operation.

3.2 Warnings for intended use



WARNING! Damage to health due to handling infectious liquids and pathogenic germs.

- ▶ Observe the national regulations for handling these substances, the biological security level of your laboratory, the material safety data sheets and the manufacturer's application notes.
- ▶ Wear personal protective equipment (PPE).
- ▶ Follow the instructions regarding hygiene, cleaning and decontamination.
- ▶ For complete instructions regarding the handling of germs or biological material of risk group II or higher, please refer to the "Laboratory Biosafety Manual" (source: World Health Organization, current edition of the Laboratory Biosafety Manual).



WARNING! Risk of explosion from potentially explosive atmospheres and potentially explosive substances.

- ▶ Do not use the Easypet in potentially explosive atmospheres.
- ▶ Do not operate the Easypet in rooms where work is being carried out with explosive substances.
- ▶ No explosive, flammable (flash point < 21 °C), highly flammable (flash point < 0 °C) or highly reactive materials may be dispensed using the Easypet.
- ▶ Do not use the Easypet to process any substances which could create an explosive atmosphere.



WARNING! Damage to health due to toxic, radioactive or aggressive chemicals.

- ▶ Observe the national regulations for handling these substances as well as the material safety data sheets and manufacturer's application notes.
- ▶ Wear personal protective equipment (PPE).



CAUTION! Poor safety due to incorrect accessories and spare parts.

The use of accessories and spare parts other than those recommended by Eppendorf may impair the safety, functioning and precision of the device. Eppendorf cannot be held liable or accept any liability for damage resulting from the use of incorrect or non-recommended accessories and spare parts or from the improper use of such equipment.

- ▶ Only use accessories and original spare parts recommended by Eppendorf.



CAUTION! Danger to persons from careless use.

- ▶ Never point the opening of a EasyPET equipped with a pipette at yourself or other persons.
- ▶ Only initiate dispensing if it is safe to do so.
- ▶ For all dispensing tasks, make sure that you are not endangering yourself or anyone else.



NOTICE! Damage to device from penetration of liquids.

- ▶ Do not allow any liquids to penetrate the inside of the housing.
- ▶ If liquid has penetrated the inside of the housing, have the inner parts of the EasyPET repaired only by service partners of Eppendorf AG. Contact your responsible sales office before returning a product.



NOTICE! Damage to device from missing pipette.

- ▶ Only use the EasyPET with a pipette inserted.
-

3.3 Information on product liability

In the following cases, the protection provided by the device may be impaired. The liability for the function of the device passes to the operator if:

- The device is not used in accordance with the operating manual.
- The device is used outside of the range of application described in the preceding chapters.
- The owner has made unauthorized modifications to the device.

4 Installation

4.1 Preparing installation

- ▶ Use the delivery package details to check that the delivery is complete.
- ▶ Check all parts for any transport damage.
- ▶ Keep the transport carton and the packing material for subsequent safe transport or storage.

4.2 Loading the rechargeable battery



WARNING! Use of incorrect power supplies may result in fatal injuries and damage to the device.

Use of incorrect power supplies may result in overheating, burning, melting, short-circuiting of the Easypet or similar damage.

- ▶ Only use the supplied power supply for charging the device.
- ▶ Only connect the power supply to voltage sources that correspond to the information on the identification plate regarding the power supply.
- ▶ Do not use the power supply when signs of damage are evident, and particularly if the power cable is damaged.



WARNING! Incorrect charging of the rechargeable battery can cause serious personal injuries and damage to the device.

- ▶ Only use the rechargeable batteries supplied.
- ▶ Do not use any primary cells!
- ▶ Do not charge the NiMH rechargeable batteries outside of the Easypet.
- ▶ Do not connect the Easypet to the power supply without the rechargeable batteries inserted.



WARNING! Personal injury caused by the incorrect handling of the rechargeable battery.

- ▶ Do not disassemble or modify the rechargeable battery.
- ▶ Never pierce, crush or throw the rechargeable battery.
- ▶ Only use the rechargeable battery in the Easypet.
- ▶ Do not touch leaky rechargeable batteries.
- ▶ Do not use any damaged rechargeable batteries.
- ▶ Dispose of damaged rechargeable batteries in accordance with legal regulations.

On delivery the nickel-metal hydride rechargeable batteries (NiMH rechargeable batteries) are already inserted. Fully charge the rechargeable batteries before using the device for the first time. If using the device daily, do not charge the rechargeable batteries until the charge control lamp has lit up (see Fig. 1 on p. 6). A residual charge of approximately 15% is still available when the lamp is lit.

To charge the rechargeable batteries, proceed as follows:

1. Insert the power supply into the socket.
2. Insert the charging plug of the power supply into the connector socket on the grip (see Fig. 1 on p. 6).

The red charge control lamp on the grip goes out. The charging time depends on the charging state of the rechargeable batteries. Fully discharged rechargeable batteries require a charging time of about 12 hours.

i You can also use the Easypet during the charging process.

4.3 Storage

The Easypet can be stored in a wall holder.

Fastening the wall holder

1. Clean the fastening point on the wall.
2. Remove the protective foil.
3. Press the wall holder firmly against the wall.

Removing the wall holder

1. Pull the wall holder to one side to remove it from the wall.
2. Remove the fastening strip with the aid of commonly-used solvents.

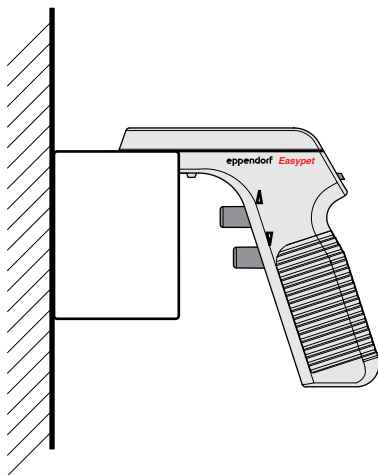


Fig. 2: Easypet with wall holder

5 Operation

5.1 Inserting the pipette



WARNING! Risk of cuts from shattered glass pipettes.

Glass pipettes are fragile and may cause severe cuts when breaking.

- ▶ Do not use force to insert glass pipettes.
- ▶ Wear personal protective equipment (PPE).
- ▶ Protect the hand you are using for insertion with a towel.

- ▶ Holding the pipette at the top, push it carefully into the aspirating cone until it is securely fastened and air tight.

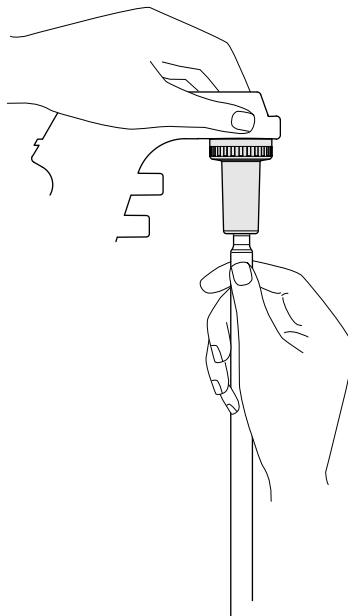


Fig. 3: Inserting the pipette

5.2 Aspirating liquid



NOTICE! Damage to device due to missing or damaged membrane filter.

- ▶ Easypet must not be used without the membrane filter inserted.
- ▶ Replace the membrane filter if it is damaged.

1. The aspiration speed can be continuously adjusted using the adjustment dial.
I = slow, IIIII = fast
2. Immerse the pipette into the liquid.
3. Press the aspirating button until the pipette is filled just above the desired mark.
4. Press the dispensing button slowly until the meniscus is exactly level with the desired mark.

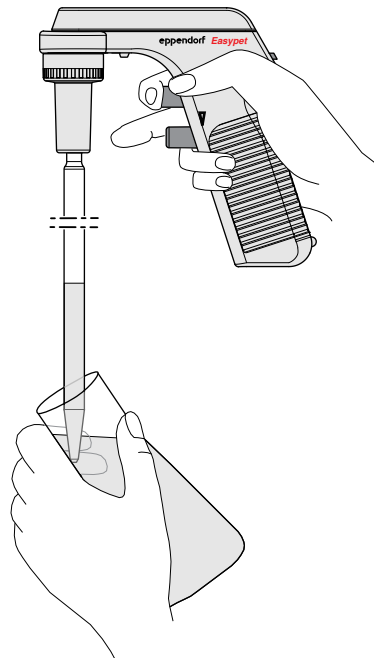


Fig. 4: Aspirate liquid

5.3 Dispensing liquid

Flow-out

During flow-out, a valve is opened. In this mode, liquid dispensing takes place without activating the pump, only using atmospheric pressure.

1. Place the pipette against the wall of the vessel.
2. Press the dispensing button down to 5 mm. Vary the pressure in order to change the dispensing speed.

Blow-out

During blow-out, liquid is dispensed with the aid of the pump.

1. In this mode, the dispensing speed can be continuously adjusted using the adjustment dial.
2. Place the pipette against the wall of the vessel.
3. Press in the dispensing button completely.

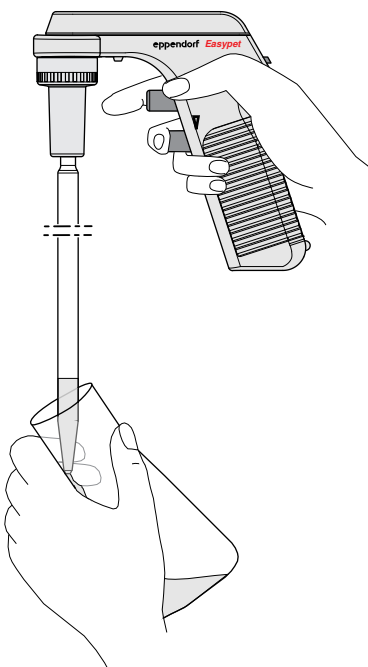



Fig. 5: Dispense liquid

6 Maintenance

6.1 Cleaning

-  No special maintenance is required.
-



NOTICE! Damage to the device due to autoclaving.


- ▶ Do not autoclave the Easypet.
-

To clean contaminated surfaces, proceed as follows.

- ▶ The housing can be wiped with a moist cloth.
- ▶ The surfaces can be disinfected using alcohol (ethanol, propanol) or with a disinfectant containing alcohol.

6.2 Replacing the rechargeable batteries

1. Slide open the rechargeable battery compartment cover in the grip
 2. Take out the old or damaged rechargeable batteries.
 3. Insert the new rechargeable batteries into the rechargeable battery compartment according to the markings.
 4. Close the rechargeable battery compartment.
 5. Charge the rechargeable batteries.
-

-  If your Easypet still contains NiCd rechargeable batteries, you can replace them with NiMH rechargeable batteries.
-

6.3 Dismantling the pipette clamp

If liquid has entered the pipette clamp, aspiration capacity may be reduced or pipette clamp parts may be damaged. To clean or replace the parts, it will be necessary to dismantle the pipette clamp.

1. While keeping the release button pressed, unscrew and remove the aspirating cone counterclockwise.
2. Remove the pipette adapter with the membrane filter from the filter adapter.
3. Remove the membrane filter from the pipette adapter.
4. Pry the seal with a sharp object out of the filter adapter.

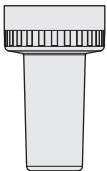



6.4 Cleaning the pipette clamp

The parts of the pipette clamp can be replaced or cleaned as follows.

Requirement

EasyPet is disassembled (see p. 15).

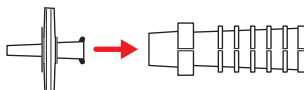
1. Replace the part if necessary.
2. Clean the part if necessary. Autoclave the aspirating cone and the pipette adapter at 121°C, 1 bar overpressure for 20 min if necessary. Then allow to dry at room temperature.

<p>Aspirating cone</p>  <ul style="list-style-type: none"> • Can be wiped with a moist cloth • Can be disinfected with alcohol (ethanol, propanol) or with a disinfectant containing alcohol • Can be steam autoclaved multiple times 	<p>Pipette adapter</p>  <ul style="list-style-type: none"> • Can be rinsed with demineralized water • Can be steam autoclaved multiple times • Can be replaced
<p>Membrane filter</p>  <ul style="list-style-type: none"> • Can be steam autoclaved once • Dispose of if contaminated • Cannot be cleaned • Can be replaced 	<p>Sealing</p>  <ul style="list-style-type: none"> • Can be replaced

-
- i** Alternatively, you can also use a membrane filter with a pore size of 0.2 µm, for example, type Minisart SRP from Sartorius stedim.
-

6.5 Mounting the pipette clamp

1. Press the seal into the filter adapter.
2. Press the wide opening of the membrane filter into the narrower opening of the filter adapter.



3. Insert the assembled pipette adapter with the membrane filter into the seal of the filter adapter.
4. Put the aspirating cone over the assembled pipette adapter with the membrane filter and screw in until it engages.
5. Check that the Easypet is leak-tight.

Hold the Easypet vertically with the filled pipette for approx. 30 s. Do not touch the pipette tip. Observe the meniscus of the liquid on the tip opening. If there is a leak in the pipette, a drip will form on the tip opening.

When the pipette is filled, no liquid should drip out of the pipette for 30 s as long as the aspirating or dispensing buttons are not pressed. If liquid does drip out, dismantle the pipette adapter with the membrane filter and carefully reassemble the Easypet.

7 Troubleshooting

7.1 General errors

Symptom / message	Cause	Remedy
Liquid drips out of the pipette.	• Pipette adapter and/or membrane filter inserted incorrectly.	▶ Remove pipette adapter and membrane filter and insert again.
	• Pipette not inserted far enough.	▶ Carefully insert pipette further.
	• Pipette adapter damaged.	▶ Replace pipette adapter.
	• Pipette damaged.	▶ Replace pipette.
	• Seal damaged.	▶ Replace seal.
Aspiration capacity reduced.	• Membrane filter wetted.	▶ Replace membrane filter.
	• Rechargeable batteries discharged.	▶ Charge rechargeable batteries.
Short operation time despite fully charged rechargeable batteries.	• Rechargeable batteries are too old.	▶ Replace rechargeable batteries.
Pipette loose.	• Pipette adapter damaged.	▶ Replace pipette adapter.

8 Technical data

Battery	Type: nickel-metal hydride rechargeable battery Capacity: 600 mAh/1.2 V Charging time: ~12 h Operation period: ~7 h Number of charge cycles: ~500 Weight: ~15.5 g per rechargeable battery
Power supply	Input voltage: <ul style="list-style-type: none"> • 230 V, 50 Hz (EU) • 120 V, 60 Hz (USA) • 230 V, 50 Hz (UK) • 100 V, 50/60 Hz (JA) • 240 V, 50 Hz (AUS) Output voltage: 9 V, 200 mA
Operating and charging temperature	+10 °C to +35 °C
Storage temperature	
In transport packaging	Air temperature: -25 to 55 °C Rel. air humidity: 10 to 95% Atmospheric pressure: 70 to 106 kPa
Without transport packaging	Air temperature: -5 to 45 °C Rel. air humidity: 10 to 95% Atmospheric pressure: 70 to 106 kPa
Weight	~148 g
without rechargeable battery, without pipette	

Technical specifications subject to change.

9 Ordering Information

Order No. (International)	Order No. (North America)	Description
4421 000.013 4421 000.030 4421 000.064 4421 000.048	022230204	Eppendorf Easyjet Incl. power supply, wall holder, 2 membrane filters (unsterile) 0.45 µm 230 V / 50 Hz (EU) 120 V / 60 Hz (USA) 230 V / 50 Hz (UK) 240 V / 50 Hz (AU) 100 V / 50/60 Hz (JP)
4420 801.004	022236105	Pipette adapter
4420 802.000	022236113	Aspirating cone
4421 601.009	022231006	Membrane filter 0.45 µm, sterile, 1 set (pack of five)
4421 602.005	4421602005	Seal for filter adapter (5 pieces)
4420 810.003	022236016	NiMH accumulator 3 pieces, for Easyjet
4850 868.005 4850 869.001 4850 871.006 0013 611.955	022236300	Power supply 9 V, for Easyjet 230 V / 50 Hz (EU) 120 V / 60 Hz (USA) 230 V / 50 Hz (UK) 100 V / 50/60 Hz (JP) 240 V / 50 Hz (AU)
4420 815.005	022230905	Wall mounting device For Easyjet

10 Transport, storage and disposal

10.1 Decontamination before shipment

Decontaminate the pipette before shipping it to the authorized Technical Service for repairs or to your authorized dealer for disposal. Please note the following:

If liquid has penetrated into the Easypet through the membrane filter, decontamination of the internal parts of the Easypet can only be carried out by the authorized service partner of Eppendorf AG. In this case the enclosed decontamination certificate must include the following additional information:

- An exact description of the substances which have entered the device (including a copy of the respective safety data sheets if possible)
- The serial number (can be found in the rechargeable battery compartment)
- A description that is easy to understand and carry out by non-specialists for decontamination and, if necessary, for proper disposal of the decontaminated internal parts.

Prior to shipment contact your service partner to check whether decontamination is possible.



WARNING! Risk to health from contaminated device

1. Follow the instructions in the decontamination certificate. It is available in PDF format on our homepage (www.eppendorf.com/decontamination).
 2. Decontaminate all the parts you want to dispatch.
 3. Enclose the fully-completed decontamination certificate for returned goods (including the serial number of the device) with the dispatch.
-

10.2 Disposal

Always observe the statutory requirements when disposing of the product.

Information on the disposal of electrical and electronic devices in the European Community:

Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2002/96/EC pertaining to waste electrical and electronic equipment (WEEE).

According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste. They are marked with the following symbol to indicate this:

As disposal regulations may differ from country to country within the EU, please contact your supplier if necessary.

In Germany, this is mandatory from March 23, 2006. From this date, the manufacturer has to offer a suitable method of return for all devices supplied after August 13, 2005. For all devices supplied before August 13, 2005, the last user is responsible for the correct disposal.



WARNING! Risk of explosion and fire from overheated batteries.

- ▶ Do not heat the batteries above 80 °C and do not throw them into the fire.

Disposing of rechargeable batteries

Do not dispose of rechargeable batteries as household waste. Dispose of rechargeable batteries in compliance with local legal disposal regulations.



EG-Konformitätserklärung EC Conformity Declaration

Das bezeichnete Produkt entspricht den einschlägigen grundlegenden Anforderungen der aufgeführten EG-Richtlinien und Normen. Bei einer nicht mit uns abgestimmten Änderung des Produktes oder einer nicht bestimmungsgemäßen Anwendung verliert diese Erklärung ihre Gültigkeit.

The product named below fulfills the relevant fundamental requirements of the EC directives and standards listed. In the case of unauthorized modifications to the product or an unintended use this declaration becomes invalid.

Produktbezeichnung, Product name:

Easypet 4421

inkl. Netzteil / including charging adapter

Produkttyp, Product type:

elektrische Pipettierhilfe / electric pipette helper

Einschlägige EG-Richtlinien/Normen, Relevant EC directives/standards:

2006/95/EG, EN 61010-1

2004/108/EG, EN 55011/B, EN 61000-6-1, EN 61326-1

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14.12.2010

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