OPERATING INSTRUCTIONS

MAQUET

MEDAP SEPTIC FLUID SUCTION PUMP
VENTA MULTI CARE 16

SURGICAL WORKPLACES

GA 5752 2434 EN 13

MAQUET

Subject to technical modification!
Illustrations and technical specifications may vary slightly from those in these Operating Instructions as a result of ongoing product development.

V13.01.03.23-05-2006

CE
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1 Introduction

1.1 Foreword

Your facility has selected the leading-edge medical technology made by MAQUET.
We sincerely appreciate the trust you have placed in us.
MAQUET a member of the GETINGE Group, which consistently aims for pace-setting solutions in medical technology.
MAQUET is regarded, around the world, as one of the leading suppliers of equipment for emergency rooms, operating theaters and intensive care units. Ever since the company was founded in 1838, MAQUET has been synonymous with innovations and technical progress in medical technology.
The MEDAP septic fluid suction pumps made for OR and all-purpose use are high in performance and thus convincing in function.
MEDAP septic fluid suction and drainage pumps are the basis for superior patient care at home, too.
– Competence growing out of a sense of responsibility for patients, physicians and care givers.

1.2 Environment protection

1.2.1 Packaging

The packaging is made of materials compatible with the environment. MAQUET will dispose of the packaging materials upon request.

1.2.2 MAQUET products

MAQUET will take back used products or those which are no longer in service.
Please contact your MAQUET factory representative for more detailed information.

1.2.3 Disposal

WARNING!
Infection hazard
This product is used in the treatment of patients. The product or some of its components may be contaminated after use. Clean and disinfect the product before disposal.

1.2.3.1 Within the European Trade Area

This product is governed by the 2002/96/EEC Directive (Directive on Waste Electrical and Electronic Equipment).
As a result of its registration pursuant to that Directive, disposal using the municipal collection points for electrical equipment is not permitted. Please contact your MAQUET factory representative for more detailed information on correct and legal disposal.

1.2.3.2 Outside the European Trade Area

When disposing of this product, be sure to comply with the applicable national regulations on the handling and disposal of used equipment.

1.3 How to use these Operating Instructions

1.3.1 General

These operating instructions are provided to familiarize you with the features of this MAQUET product. They are subdivided into several chapters.

Please note:
- Please read these operating instructions carefully and completely before using the product for the first time.
- Always proceed in accordance with the information provided in these operating instructions.
- Store these operating instructions in a location near the product.

1.3.2 Abbreviations

EN	European standard
EEC	European Economic Community
VDE	Verband der Elektrotechnik Elektronik Informationstechnik (Association for Electrical, Electronic & Information Technologies)

1.3.3 Symbols

1.3.3.1 Cross-references

References to other pages in these Operating Instructions are identified with a double arrow symbol "⏩".

1.3.3.2 Actions and responses

The "☒" symbol identifies an action taken by the user while the "✓" symbol identifies the reaction which this will induce in the system.

Example:
☒ Turn on the light switch.
✓ Lamp lights up.

1.3.4 Definitions

1.3.4.1 Design of safety notes

Pictogram	Descriptor		Text
	**DANGER!**	Indicates a direct and immediate risk to persons, which may be fatal or result in most serious injury.	The text for the safety note describes the type of risk and how to avert it.
	**WARNING!**	Indicates a potential risk to persons or property which may result in health hazard or grave property damage.	
	**CAUTION!**	Indicates a potential risk to property which may result in property damage.	

Fig. 1: Design of safety notes

1.3.4.2 Definition for other notes

Notes not referring to personal injury or property damage are used as follows:

Pictogram	Descriptor	Reference to
	**NOTE**	Supplementary assistance or further useful information.
	**ENVIRONMENT**	Proper disposal.

Fig. 2: Definition for other notes

1.3.5 Symbols used

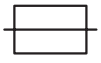
Symbol	Designation
CE 0123	Marking for products which were developed and are marketed in compliance with the 93/42/EEC Medial Products Directive. Class IIa, IIb and III products are also marked with the identifying number for the notified body.
	Identification of devices incorporating a Type B applied part as defined in the IEC 60601-1 standard. Degree of protection against electrical shock.
SN	Labelling in compliance with the EN 980 standard. Symbol for "Serial number".
	Marking in compliance with the IEC 60601-1 standard. Symbol for "Follow Operating Instructions".
	Labelling as per the 2002/96/EC Directive (Directive on Waste Electrical and Electronic Equipment). Symbol for "Do not dispose of at the municipal collection points for used electrical equipment".
IP X1	Marking in compliance with the IEC 60601-1 standard. Symbol for ""Protection against dripping water"".
	Labelling as per IEC 60601-1 standard. Symbol for "Alternating current".
	Marking in compliance with the IEC 601-1. standard. Symbol for "ON".
	Marking in compliance with the IEC 601-1. standard. Symbol for "OFF".
	Labelling as per the IEC 60417-1 standard. Symbol for "Fuse".
>ABS<	Material designation for ABS plastic (Acrylonitrile-butadiene-styrene copolymer).

Fig. 3: Symbols (Part 1 of 2)

Symbol	Designation
	Packaging label. Symbol for "Keep dry".
	Packaging label. Symbol for "Fragile! Handle with care".
	Packaging label. Symbol for "Top".
	Transportation label. Symbol for "Temperature limitations".
	Transportation label. Symbol for "Relative humidity".
	Transportation label. Symbol for "Atmospheric pressure".

Fig. 3: Symbols (Part 2 of 2)

1.4 VENTA MC 16 septic fluid suction pump

1.4.1 VENTA MC 16 septic fluid suction pump / complete unit (REF 5752 2764)

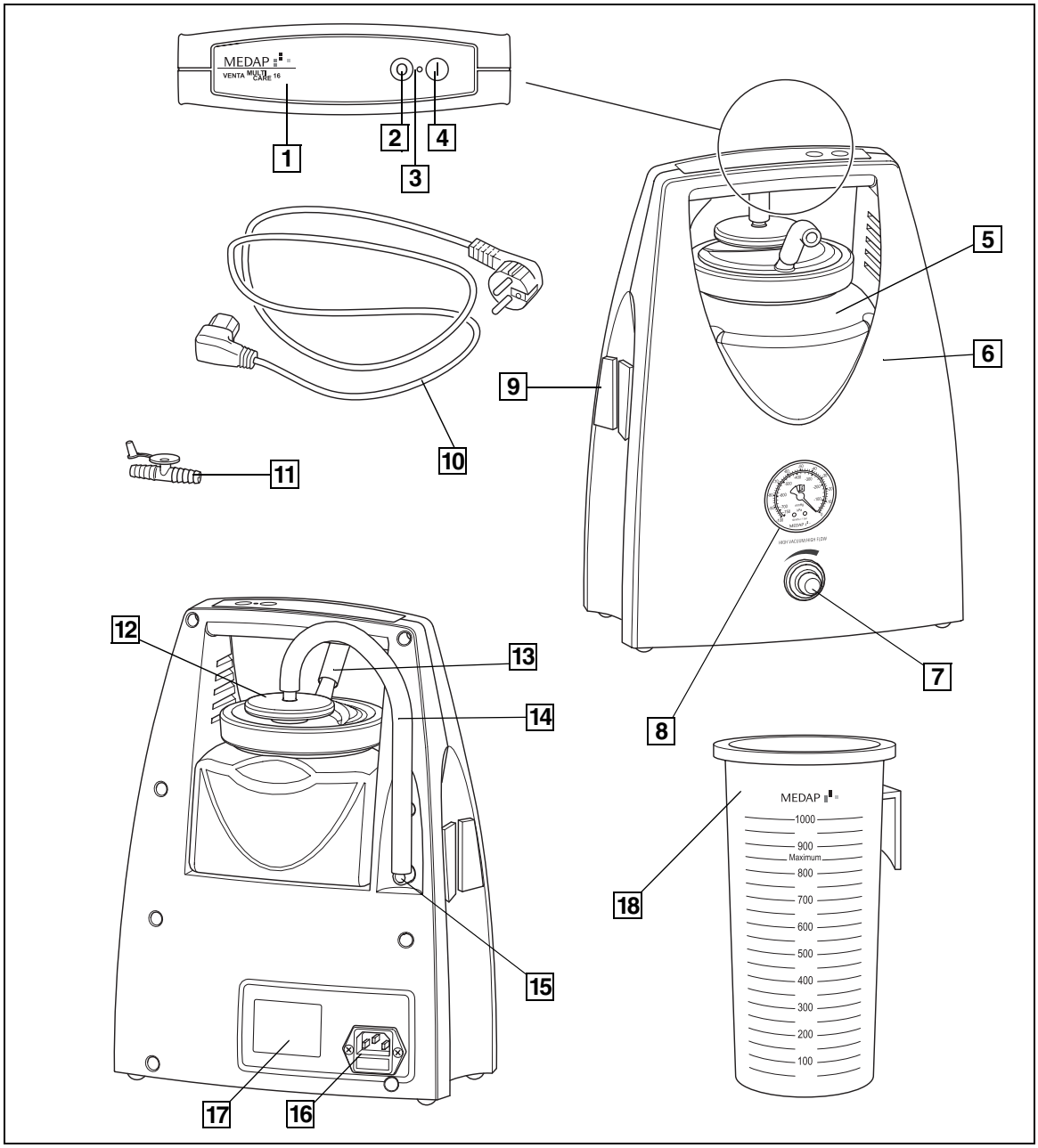


Fig. 4: VENTA MC 16 septic fluid suction pump / complete unit (REF 5752 2764)

1 Operating panel
2 OFF switch
3 Operating status display
4 ON switch
5 Septic fluid jar with cap
6 VENTA MC 16 septic fluid suction pump
7 Regulating knob
8 Vacuum gauge
9 Connection of equipment mount
10 Mains cable
11 Fingertip
12 Hydrophobic bacterial filter
13 Suction tube
14 Connection tube
15 Connector nipple on the pump side
16 Equipment socket
17 Type plate
18 Rinsing fluid container

1.4.2 VENTA MC 16 septic fluid suction pump / basic equipment (REF 5752 2345)

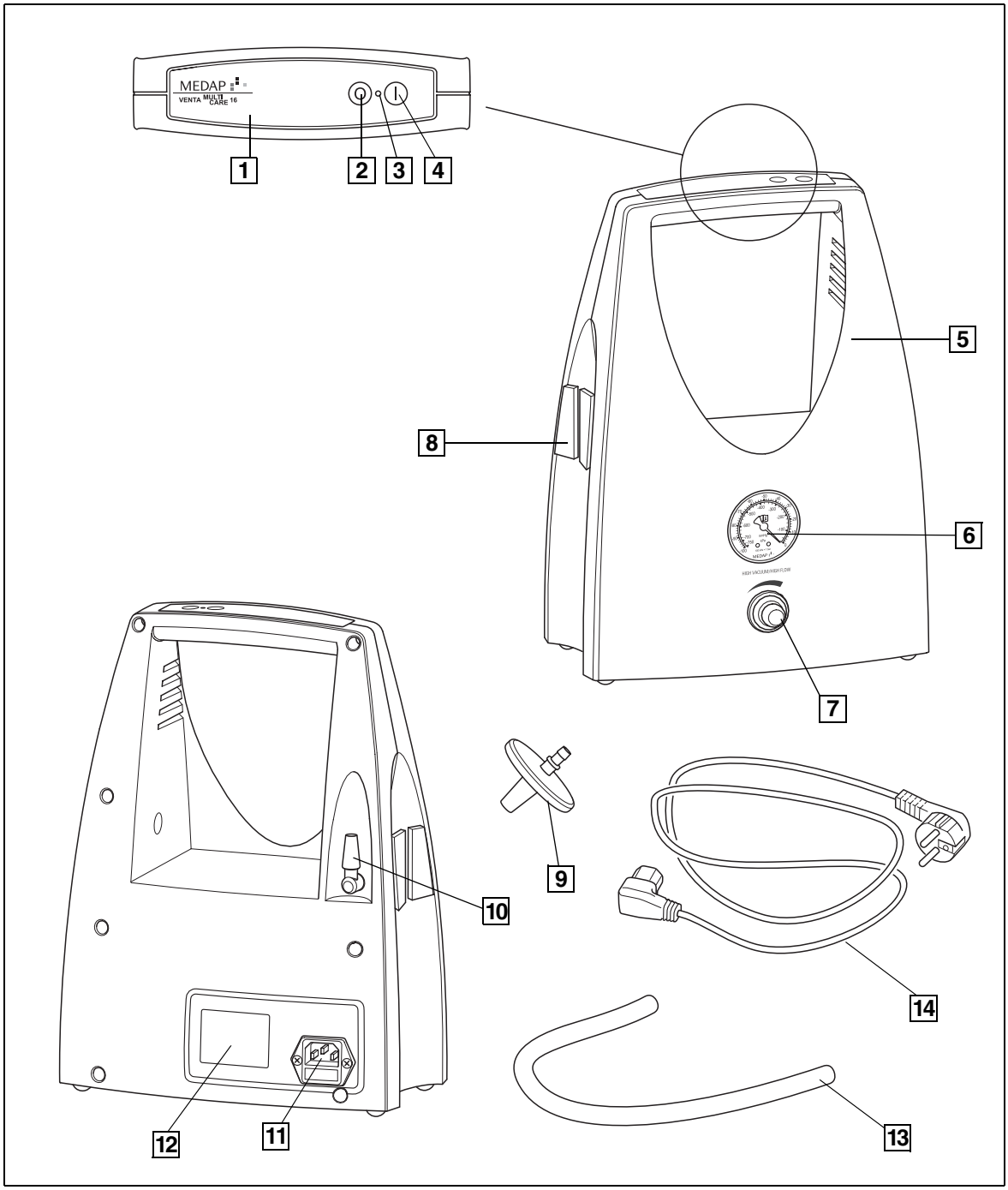


Fig. 5: VENTA MC 16 septic fluid suction pump / basic unit (REF 5752 2764)

1 Operating panel
2 OFF switch
3 Operating status display
4 ON switch
5 VENTA MC 16 septic fluid suction pump
6 Vacuum gauge
7 Regulating knob
8 Connection of equipment mount
9 Hydrophobic bacterial filter
10 Connector nipple on the pump side
11 Equipment socket
12 Type plate
13 Connection tube
14 Mains cable

1.4.3 Pictorial view, septic fluid jar with hydrophobic bacteria filter

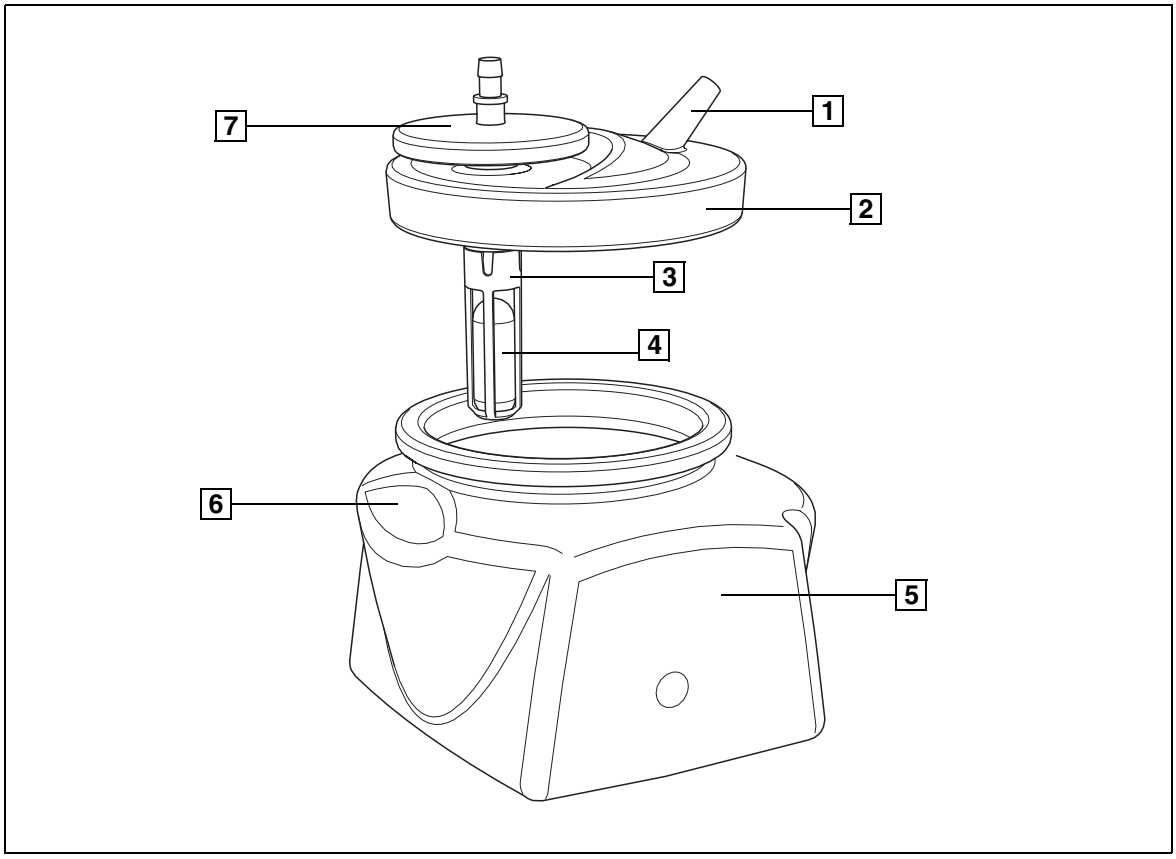


Fig. 6: Pictorial view, septic fluid jar

1 Connector nipple on the patient side
2 Septic fluid jar cap
3 Float cage
(mechanical overflow protection)
4 Float
(mechanical overflow protection)
5 Septic fluid jar
6 Fingertip recess
(for removing the septic fluid jar cap)
7 Hydrophobic bacteria filter

1.4.4 Pictorial view, trolley

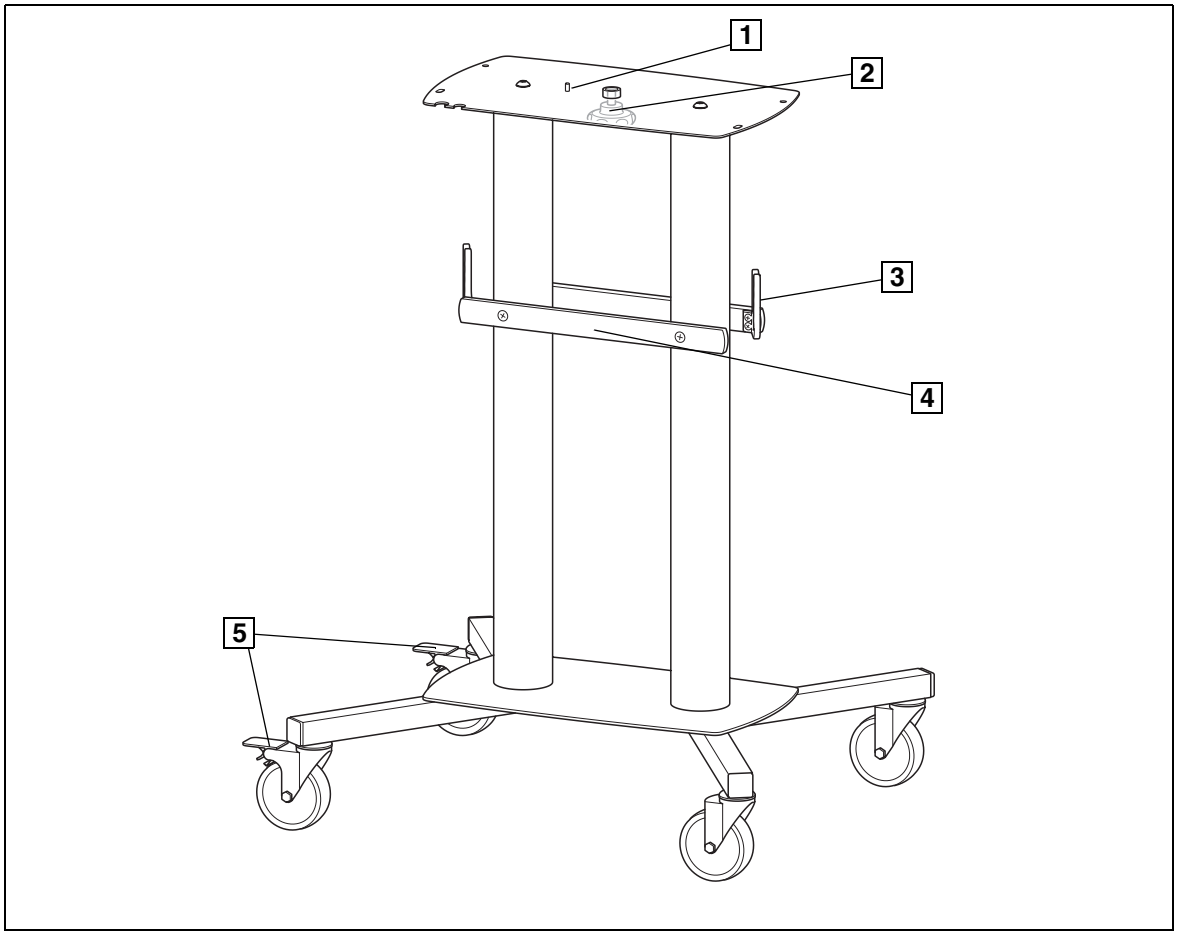


Fig. 7: Pictorial view, trolley

1 Locating pin
2 Screw with star knob
3 Tube holder
4 Equipment rail
5 Castor brake

1.4.5 Pictorial view, VENTA pump shelf for wall rail

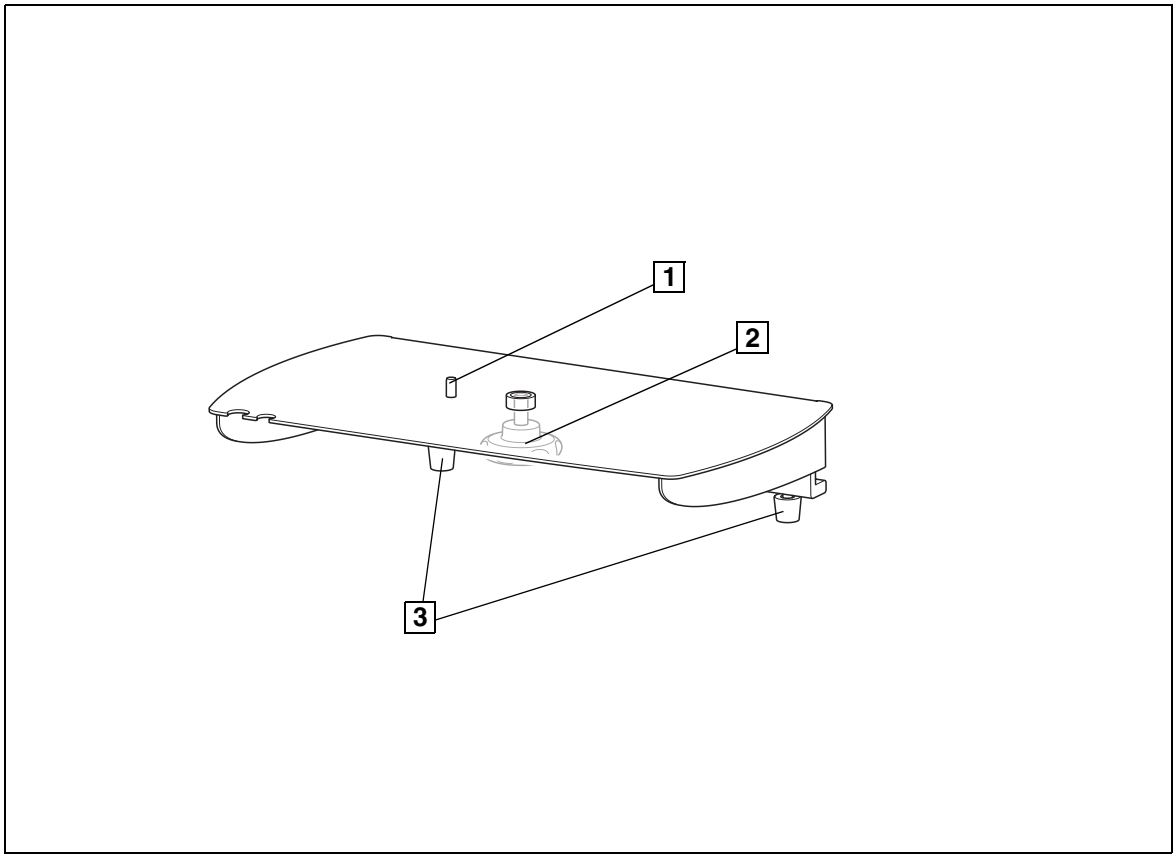


Fig. 8: Pictorial view, pump shelf for wall rail

1 Locating pin
2 Screw with star knob
3 Mounting screw

The VENTA pump shelf for the wall rail will be referred to below simply as "pump shelf".

1.4.6 Pictorial view, VENTA carry bag

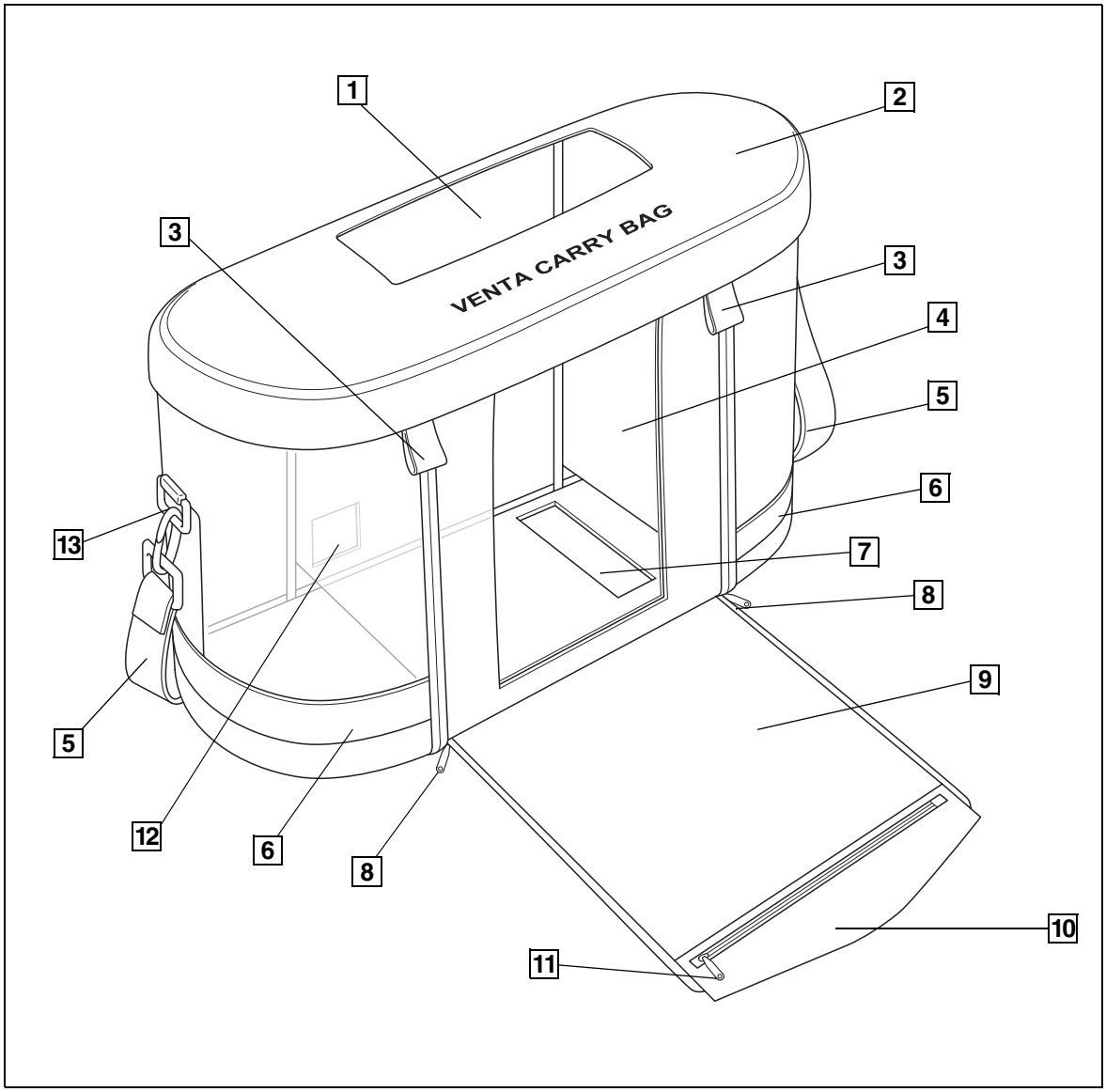


Fig. 9: Pictorial view, carry bag

1 Opening for septic fluid suction pump handle
2 Upper section
3 Tab
4 Side panel
5 Shoulder strap
6 Reflector strip
7 Opening for septic fluid suction pump ventilation grille
8 Front zipper
9 Inside front pocket
10 Front side
11 Inside front pocket zipper
12 Opening for septic fluid suction pump power supply
13 Shoulder strap attachment ring

The VENTA carry bag will be referred to only as carry bag below.

1.4.7 Use in accordance with the intended purpose

Product
As per Annex IX of the 93/42/EEC Medical Products Directive, this unit is a Class IIa item.
As prescribed by that directive, only persons skilled in the use of the product and medical personnel may use this product, provided that they have been instructed by an authorised individual on the use of the product.
This product is to be used exclusively for human medicine.
When employed in a commercial or business use this product shall be entered in the inventory.

Accessories
Accessories or combinations of accessories may be utilised only when and as indicated in these Operating Instructions.
Other accessories, combinations of accessories and consumable items may be used only if they have a valid certification, are intended expressly for the particular use and will not adversely affect performance, the prescribed ambient conditions or safety requirements.

1.4.8 Applicable standards

The product satisfies the basic requirements set forth in Annex I to the 93/42/EEC Directive drafted by the Medical Products Council (Medical Products Directive) as well as the applicable national (German) codes and the Medical Products Act in Germany.

The applicable standards include the following:

- EN 837-1: 1997-02
  Pressure measurement devices
  Part 1: Bourdon tube pressure gauges – dimensions, metrology, requirements and testing
- EN ISO 10079-1: 2000-03
  Medical suction equipment
  Part 1: Electrically powered suction equipment
- EN 60601-1: 1996-03
  Medical electrical equipment
  Part 1: General requirements for safety
- EN 60601-1-2: 2002-10
  Medical electrical equipment
  2. Collateral standard: Electromagnetic compatibility – Requirements and tests
- EN 12218: 2002- 07
  Rail systems for supporting medical equipment
- EN ISO 14971: 2001-03
  Medical devices – Application of risk management to medical devices

1.4.9 Intended purpose

The VENTA MC 16 septic fluid suction pump is a portable, electrically powered suction pump. The product is designed for temporary duty of maximum 30 minutes and suitable for low flow and high vacuum.
The VENTA MC 16 septic fluid suction pump is powered by 230 V / 50 Hz. The product is an active medical product for therapeutic treatment. The VENTA MC 16 septic fluid suction pump is intended for the aspiration of patient secretion, blood, vomit or serous fluids from natural and artificial orifices and is particularly suited for bronchoaspiration (nasal and oral aspiration).
The VENTA MC 16 septic fluid suction pump is not invasive and cannot be implanted. Is has no direct application at human organs.
The VENTA MC 16 septic fluid suction pump may only be used in combination with a septic fluid jar, an overflow protection device and a hydrophobic bacterial filter. A sterile extraction catheter and fingertip are always to be used for extractions.
The VENTA MC 16 septic fluid suction pump has applications in the hospital environment, in general medical practices, in old people's and nursing homes as well as in military ambulance service. The unit is used by medical personnel who, on the basis of their professional experience and instruction in safety matters, are able to evaluate their activities and recognize potential hazards associated with the work.
The VENTA MC 16 septic fluid suction pump may be used in home care by patients and their relatives only after appropriate instructions by medical experts.

The VENTA MC 16 septic fluid suction pump may only be used with accessories which has MAQUET approval for the combination according to accessory list or comply with the requirements of the connection description.
The VENTA MC 16 septic fluid suction pump may **not** be used for the following purposes or under the following conditions:

- during surgery,
- for drainage,
- in pediatrics,
- in neonatology,
- by rescue services
- for operation without overflow protection device,
- for operation without a hydrophobic bacterial filter,
- for extraction without a fingertip,
- for operation without a septic fluid jar,
- for extraction of flammable, caustic or explosive liquids or gases,
- outside the intended ambient conditions (⏩Page 53),
- in areas subject to explosion hazard (anesthesia gases),
- in a areas subject to splashed water,
- with accessories which have not been approved by MAQUET,
- by unsupervised children,
- while the unit is being carried,
- after rinsing the VENTA MC 16 septic fluid suction pump with water or dipping it in water,
- if the septic fluid jar or its cap has come into contact with strong acids or bases.

In the following the VENTA MC 16 septic fluid suction pump is referred to as septic fluid suction pump.

1.4.10 Connection description

1.4.10.1 Vacuum connection tube

The vacuum connection tube is used to make the connection between the septic fluid suction pump and the septic fluid jar cap.

Technical specifications
- Shore hardness 60
- Inside diameter 6 - 8 mm
- Max. length 1.1 m
- Vacuum resistant down to -95 kPa (may not collapse).

Requirements
- The vacuum connection tube shall comply with the hospital's standards for hygiene.
- The inside diameter of the vacuum connection tube shall match the outside diameter of the connector nipple on the unit.
- The inside diameter of the vacuum connection tube shall match the outside diameter of the connector nipple on the bacteria filter.

The vacuum connection tube will be referred to only as "connection tube" below.

1.4.10.2 Hydrophobic bacteria filter

The hydrophobic bacteria filter protects against contaminants which could be present in the form of particles or aerosols in the gas drawn in. Moreover, the hydrophobic bacteria filter serves as protection against oversuction; the filter closes off the flow of gas to the product in case of oversuction.

Requirements
- The hose connector shall match the hose being used.
- The conical connector shall match the septic fluid jar cap being used.
- The bacteria filter shall close tightly against water passage at absolute pressure of up to 10 kPa.
- Use a bacteria filter suitable for the particular application.
- Observe the direction of flow, if appropriate.

1.4.10.3 Septic fluid jar

The septic fluid jar is used to collect the secretions extracted.

Requirements
- Low leak rate.
- Only septic fluid jars with volumes of from 0.7 to 1.0 l may be attached to the septic fluid suction pump.
- Septic fluid jars with volumes exceeding 1.0 l may be attached only at the equipment rail.
- Always fasten the septic fluid jar securely.
- The outside diameter of the connector nipple on the patient side shall match the inside diameter of the vacuum tube.

1.4.10.4 Suction tube

The suction tube makes the connection between the connector nipple on the patient side and the fingertip or the utensil.

Technical specifications
- Shore hardness 60
- Inside diameter 6 - 8 mm
- Length 1.3 m - 3.0 m
- Vacuum resistant down to -95 kPa

Requirements
- The suction tube shall comply with the hospital's standards for hygiene.
- The vacuum hose may not collapse.
- The outside diameter of the connector nipple on the patient side at the septic fluid jar cap shall match the inside diameter of the suction tube.

1.4.10.5 Fingertip

The fingertip serves to vent the suction tube in order to quickly be able to interrupt the extraction procedure.

Requirements
- It must be possible to sterilise the fingertip or it must be a disposable item.
- The outside diameter of the connector nipple on the patient side shall match the inside diameter of the suction tube.

1.4.10.6 Utensil

The extraction catheter, lance etc. is designated as the utensil. It is used to extract the secretion.

Requirements
- The inside diameter of the utensil's connector must match the outside diameter of the fingertip.
- It must be possible to sterilise the utensil or it must be a disposable item.
- Biocompatibility

1.4.10.7 Equipment carrier interface

The equipment carrier interfaces are used to accept a rinsing jars or septic fluid jar and a holder for rinsing jars or septic fluid jars.

Requirements
- Maximum load on the equipment carrier interface is 1 kg.
- The interface for the rinsing jar or septic fluid jar or for the holder for the rinsing jar or septic fluid jar shall correspond to the equipment carrier mount as per DIN EN 12218.

1.4.10.8 Rinsing jar

Any container meeting the following requirements may be used as a rinsing jar.

Requirements
- The rinsing jar shall have a volume of at least 250 ml.
- The rinsing jar shall be easy to clean and disinfect.

1.4.10.9 Application sets

Application sets (⏩Page 60) augment the basic unit. Application sets can be configured as required, using individual accessories.

Requirements
- Suitable connection tubes will have to be selected.
- The interface descriptions for the septic fluid suction pump will have to be complied with.

1.4.10.10 Trolley

Only the specially designed trolley (REF 5752 2356) may be used with the septic fluid suction pump.

Requirements
- A maximum of two 5-litre septic fluid jars, made by MAQUET, may be attached to the equipment rails integrated into the trolley.

1.4.10.11 Pump shelf

Only the specially designed wall rail shelf (REF 5752 2618) may be used with the septic fluid suction pump.

Requirements
- Suitable only for attachment to equipment rails (25 x 10 mm).

1.4.10.12 Carry Bag

The septic fluid suction pump may only be used in combination with the "Carry Bag" (REF 5752 2633).

Requirements
- Do not operate the pump while it is being carried.
- Ventilation slots on the bottom of the VENTA MC 16 may not be covered.

1.4.11 Septic fluid suction pump variants

These operating instructions are applicable to the variants listed below.

- **VENTA MC 16 Septic fluid suction pump / basic equipment (REF 5752 2345):**
  - VENTA MC 16 basic unit
  - Mains cable (2 m)
  - Connection tube 8 x 14 mm (0.5 m)
  - Hydrophobic bacterial filter
- **VENTA MC 16 Septic fluid suction pump / complete unit (REF 5752 2764):**
  - VENTA MC 16 basic unit
  - Mains cable (2 m)
  - Connection tube 8 x 14 mm (0.5 m)
  - Suction tube 6 x 12 mm (1.3 m)
  - Septic fluid jar (0.8 l)
  - Septic fluid jar cap with mechanical overflow protection
  - Hydrophobic bacterial filter
  - Fingertip
  - Rinsing fluid container

2 Basic safety notes

2.1 Personal safety notes

WARNING!
Injury hazard!
Danger due to improper handling.
This unit may be put into service and operated only under the supervision of an adult who has been trained in its use. Keep equipment not being in operation out of chirldren's reach.

DANGER!
Potentially fatal!
Hazard resulting from improper handling.
Be absolutely sure to observe the operating instructions for all the products used in the configuration.

DANGER!
Incorrect use can result in fatalities!
Instructions for using components made by other manufacturers are not a part of these operating instructions.
Be absolutely sure to follow the manufacturer's instructions!

DANGER!
Potentially fata!l
Electrical potential!
Check to ensure that the available mains voltage corresponds with the specifications on the data plate before connecting the mains power plug.
Only when the mains power plug is disconnected is the unit separated from the power source.

DANGER!
Electrical shock resulting from an object being inserted from the outside, into the case, and its making contact with live components.
Never insert any objects into the case.

WARNING!
Injury hazard!
MAQUET products may be used only if they are in perfect working order.
Check to ensure that the MAQUET product is fully functional and in good working order prior to use.

WARNING!
Injury hazard!
Worn or damaged accessories can cause injuries.
Use only accessories which are in perfect condition.

WARNING!
Injury hazard!
Patient may be endangered as a result of incorrect use.
Follow the operating instructions for all accessories.

WARNING!
Injury hazard!
Electrical devices (e. g. cellphones, radios, magnetic resonance tomographs) can interfere with the functioning of the product when used near the product.
Electrical devices which can interfere with the functioning of the product may not be used near the product.
Please observe the information concerning electromagnetic compatibility (EMC) (emissions and resistance to interference) contained in the Technical specifications.
Adhere to those specifications when using electrical devices and respond properly in the event of effects on the device or the product.

WARNING!
Infection hazard resulting from improper handling!
Applicable rules for hygiene shall be observed in order to avoid infection or bacterial contamination when extracting and disposing of secretions. Observe the purpose for which the bacteria filter is intended. Use sterile catheters only during extraction and ensure that the patient is not injured during the procedure. Always wear gloves during the procedure.

WARNING!
Infection hazard resulting from using the wrong hydrophobic bacteria filter!
The septic fluid suction pump may be used only with a hydrophobic bacteria filter suitable for the specific application. This is to protect it against contaminants which might be present in the form of particles or aerosols in the gas being drawn in and to prevent contamination of the air nearby.
Always use a hydrophobic bacteria filter appropriate to the particular extraction situation.

WARNING!
Infection hazard due to using no hydrophobic bacteria filter or the wrong type!
Secretions will enter the septic fluid suction pump during extraction.
Do not continue using the septic fluid suction pump. Clean and disinfect the septic fluid suction pump and have it repaired by a shop authorised by MAQUET to do so.

2.2 Safety notes for the product

CAUTION!
Observe ambient conditions!
Functioning can be adversely affected if the required ambient conditions are not maintained during shipping and operation.
Conduct a functional check and rectify any deficiencies.

CAUTION!
Property damage due to oversuction!
The septic fluid suction pump may be used only with overflow protection in place and connected as otherwise the pump is not protected against oversuction. The hydrophobic filter provides additional protection against oversuction; it closes the flow of gas to the product in the event of oversuction. Particles in the gaseous phase can clog the hydrophobic bacteria filter.

CAUTION!
Property damage due to foaming!
Foam may be created when extracting secretions. Foam is detrimental to the functioning of the mechanical overflow protection. This gives rise to the hazard of secretions entering and damaging the septic fluid suction pump.
Always use a hydrophobic bacteria filter and, if possible, a commercially available foam inhibitor.

CAUTION!
Property damage due to overheating!
If placed on a soft surface (such as pillows or a mattress) the ventilation slots may be covered and the septic fluid suction pump will overheat.
The septic fluid suction pump shall be upright and on a solid surface during operation.

CAUTION!
Property damage!
Proper functioning of the mechanical overflow protection is not assured if the septic fluid suction pump is not upright.
The septic fluid suction pump shall be level and on a solid surface during operation. When using a trolley the castors shall be locked during operation.

CAUTION!
Property damage!
Excessive exposure of plastic case components to ultraviolet rays will cause premature material fatigue, resulting in breakage.
Protect the product against the sun's direct rays.

3 Product description

3.1 Mains operation

DANGER!
Potentially fata!l
Electrical potential!
Check to ensure that the available mains voltage corresponds with the specifications on the data plate before connecting the mains power plug.
Only when the mains power plug is disconnected is the unit separated from the power source.

4 First-time use

4.1 General

WARNING!
Infection hazard!
Contaminated components can endanger patient health.
Be sure to prepare the product as per the hygiene standards before using it for the first time.

Standard equipment includes these operating instructions, abbreviated instructions and the individual components (⏩1.4.11) corresponding to the model ordered.
Remove the product from its packaging and check the shipment for completeness and for damage.

4.2 Mounting the overflow protection device

WARNING!
Oversuction hazard!
The septic fluid suction pump may be used only with overflow protection in place and connected as otherwise it is not protected against oversuction.

The product version of VENTA MC 16 complete unit (REF 5752 2764) is fitted with a mounted overflow protection device. You should nevertheless check the overflow protection device, prior to its first use, to ensure that it is seated properly and functions correctly. Removing the septic fluid jar and its cap is described on (▶▶Page 38).

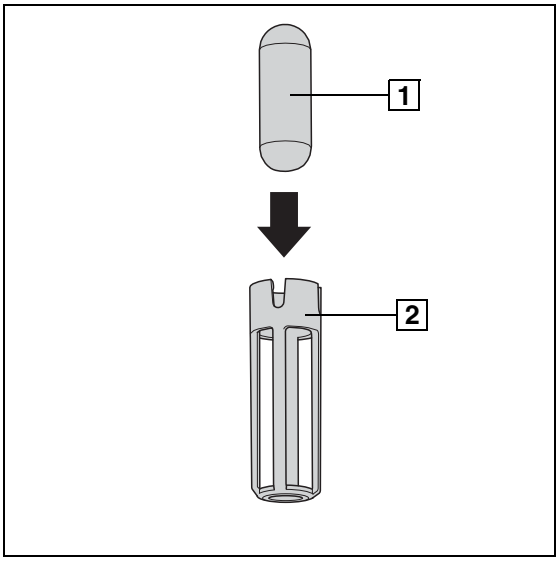


Fig. 10: Pre-assembling the overflow protection device

☒ Insert the float (1) in its cage (2).
✓ The overflow protection device is now pre-assembled.

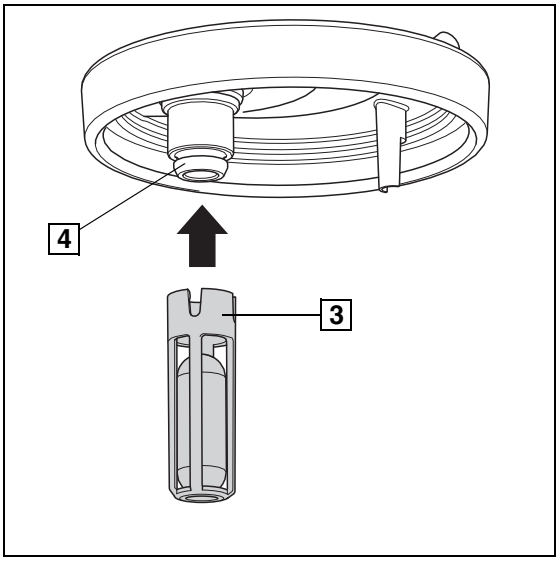


Fig. 11: Mounting the overflow protection device

☒ Plug the overflow protection device (3) onto the silicone cone (4).

4.3 Mount the septic fluid jar cap

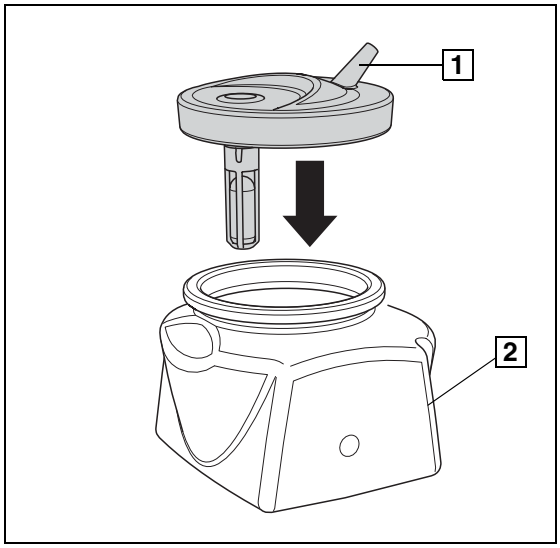


Fig. 12: Mounting the septic fluid jar cap

☒ Place the septic fluid jar cap on the septic fluid jar.
- ✓ The connector nipple (1) on the patient side points toward the fill level indicator (2).

4.4 Lock the septic fluid jar in the septic fluid suction pump

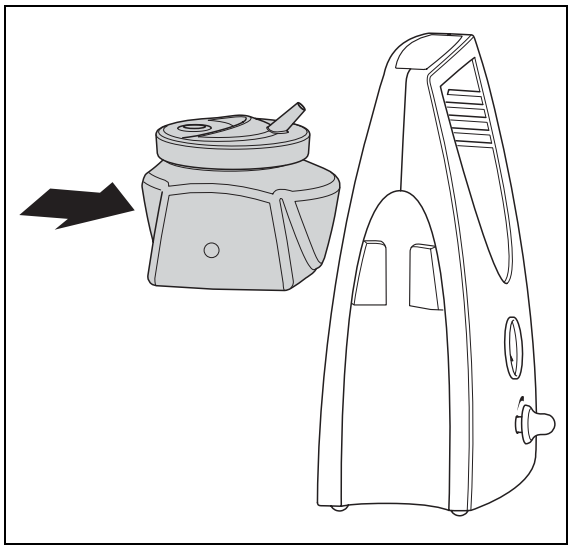


Fig. 13: Locking the septic fluid jar

☒ Slide the septic fluid jar into the septic fluid suction pump
- ✓ The patient-side connector nipple points toward the front of the septic fluid suction pump.
- ✓ The septic fluid jar will engage with an audible click.

4.5 Mount the tubes and hydrophobic bacteria filter

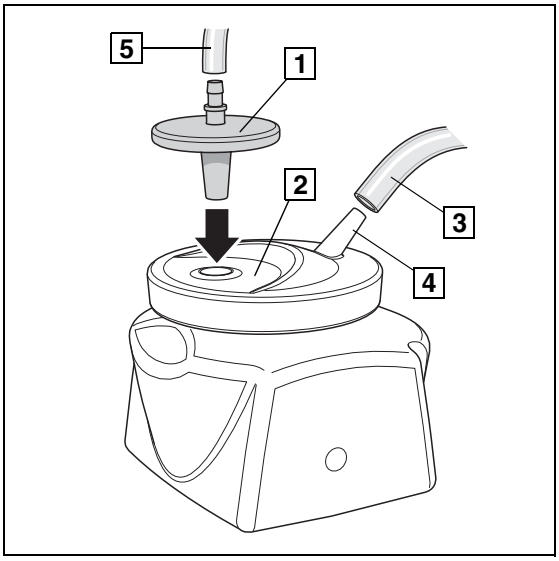


Fig. 14: Mounting the tubes and the hydrophobic bacteria filter

☒ Mount the hydrophobic bacteria filter (1) on the septic fluid jar cap (2).
☒ Attach the suction tube (3) to the patient-side connector nipple (4) on the septic fluid jar cap.
☒ Attach the connection tube (5) to the hydrophobic bacteria filter.

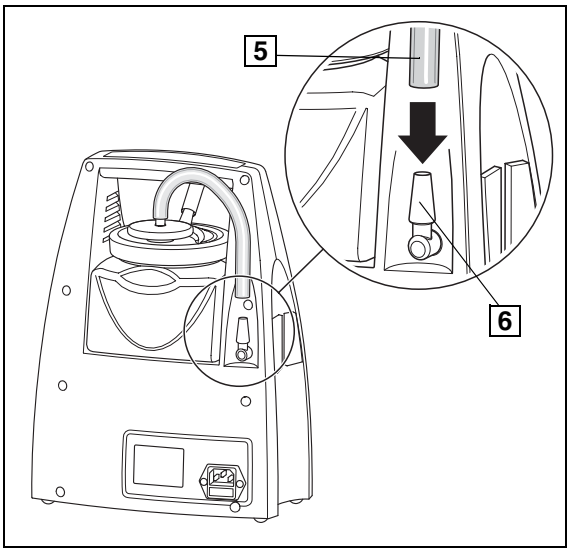


Fig. 15: Connecting the bacteria filter to the septic fluid suction pump

Connecting the bacteria filter to the septic fluid suction pump

☒ Attach the connection tube (5) to the connector nipple (6) on the pump.

4.6 Equipment carrier interface

Any of a variety of containers may be attached at the equipment carrier interface. Described below is the procedure for mounting the septic fluid jar / rinsing fluid container (REF 5752 2312 and REF 5752 2313), the holder (REF 5752 0187) for the Medi-Vac 1 / 1.5 l outer container and the Serres outer container (REF 5752 2537).

CAUTION!

Property damage due to material failure!

Do not exceed the permissible overall loading of 1 kg at the equipment carrier mounting point.

4.6.1 Mount the septic fluid jar / rinsing jar (REF 5752 2312, REF 5752 2313)

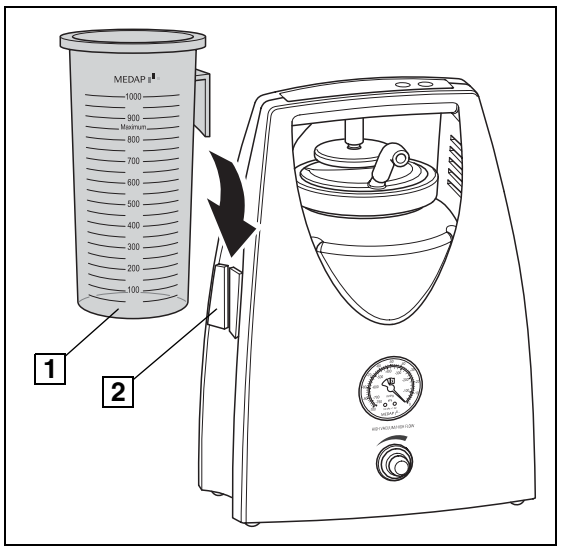


Fig. 16: Attaching the septic fluid jar / rinsing jar

☒ Insert the tab on the septic fluid jar / rinsing jar (1) from above and into the mounting point (2).

☒ Check to ensure that the rinsing jar is firmly seated.

4.6.2 Attach holder (REF 5752 0187) for the Medi-Vac 1 / 1.5 l outer container

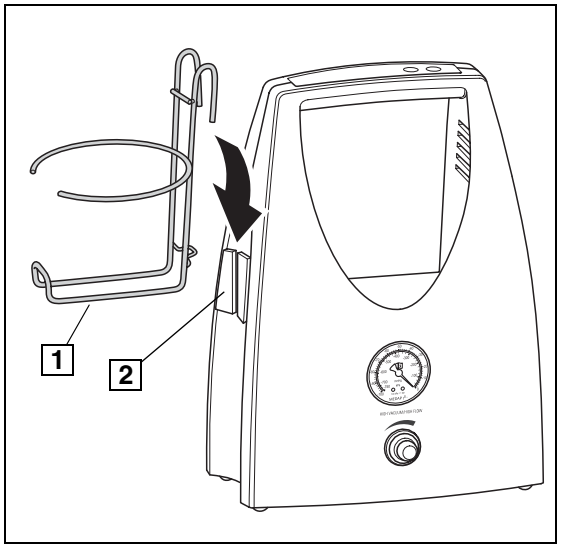


Fig. 17: Inserting the holder

☒ Insert the tab on the holder (1) from above and into the mounting point (2).

☒ Check to ensure that the holder is firmly seated.

4.6.3 Attach Serres outer container (REF 5752 2537)

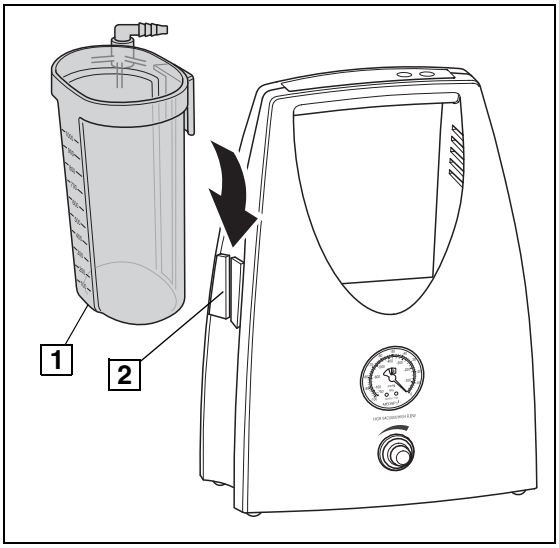


Fig. 18: Attaching the Serres outer container

☒ Insert the tab on the Serres outer container (1) from above and into the mounting point (2).

☒ Check to ensure that the Serres outer container is firmly seated.

4.7 Connecting mains cable

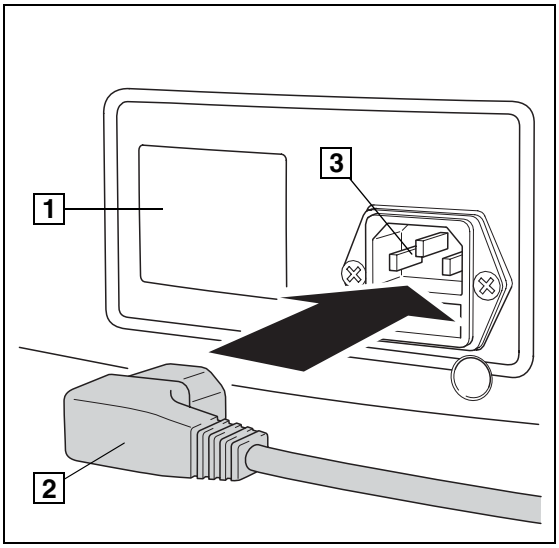


Fig. 19: Connecting the mains cable

☒ Ensure that the available voltage corresponds to the specifications on the type plate (1).

☒ Plug mains cable (2) into equipment socket (3) and connect with mains socket (230 V / 50 Hz).

4.8 Mounting accessories

4.8.1 Mount septic fluid suction pump on trolley

WARNING!
Injury hazard!
The septic fluid suction pump and its accessories may be mounted only on the trolley (REF 5752 2356) designed for this purpose.

A trolley is available to facilitate moving the septic fluid suction pump and installing additional accessories.

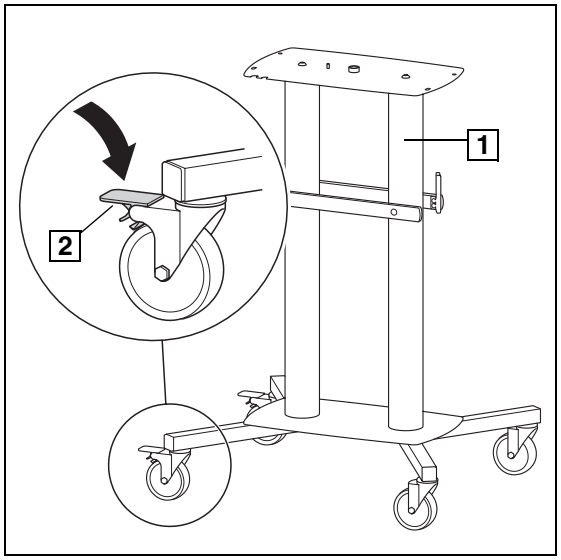


Fig. 20: Engaging castor brakes

Engaging castor brakes

☒ Engage the brakes (2) at the castors on the trolley (1).

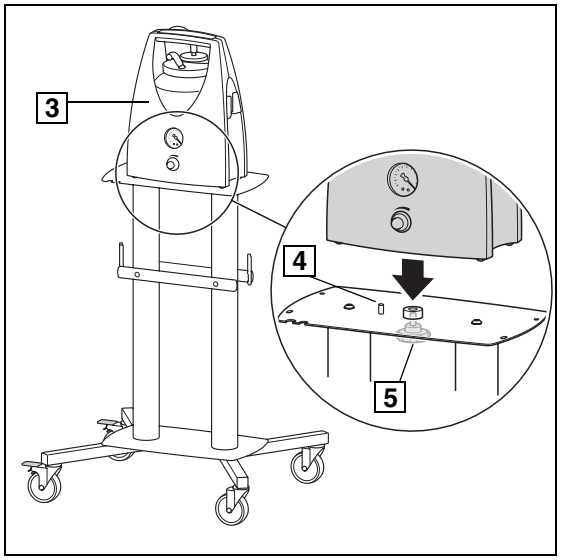


Fig. 21: Attaching the septic fluid suction pump

Attach the septic fluid suction pump

☒ Place the septic fluid suction pump (3) on the trolley.
  ✓ The septic fluid suction pump is positioned on the locating pin (4).

☒ Use the star knob to turn down the screw (5) on the trolley and secure the septic fluid suction pump.

☒ Check to ensure that the septic fluid suction pump is firmly seated.

4.8.2 Mount septic fluid suction pump on pump shelf

WARNING!
Injury hazard!
The septic fluid suction pump and its accessories may be mounted only on the shelf (REF 5752 2618) designed for this purpose.

A shelf is provided for mounting the suction pump on an equipment rail.

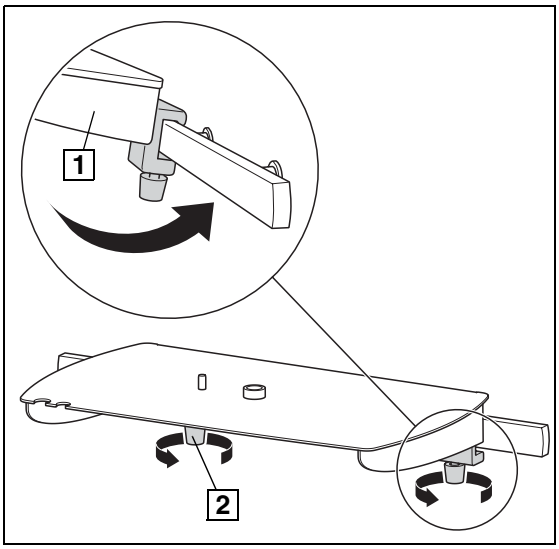


Fig. 22: Securing the pump shelf

Secure the pump shelf
☒ Seat the pump shelf (1) on the equipment rail, at an angle from above, and affix it to the equipment rail with the two fixing screws (2).
☒ Check to ensure that the pump shelf is firmly seated.

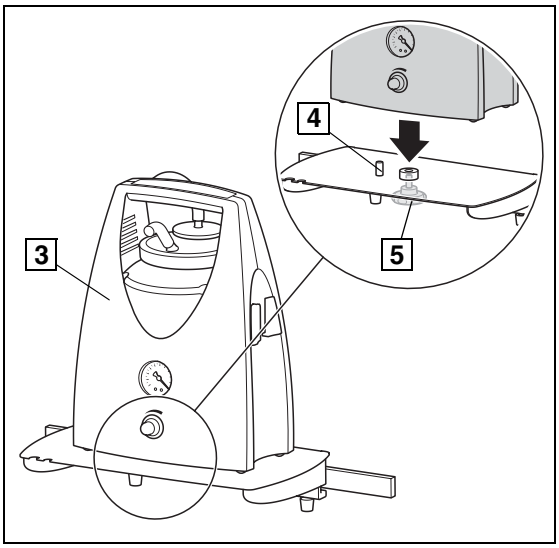


Fig. 23: Securing the septic fluid suction pump

Secure the septic fluid suction pump
☒ Place the septic fluid suction pump (3) on the pump shelf.
✓ The septic fluid suction pump is positioned on the locating pin (4).
☒ Use the star knob to turn down the screw (5) on the pump shelf and secure the septic fluid suction pump.
☒ Check to ensure that the septic fluid suction pump is firmly seated.

4.8.3 Pack the septic fluid suction pump in the carry bag

Requirements

- Mechanical overflow protection has been installed.
- Septic fluid jar cap has been installed.
- Hydrophobic bacteria filter has been installed.
- Tubes have been attached.

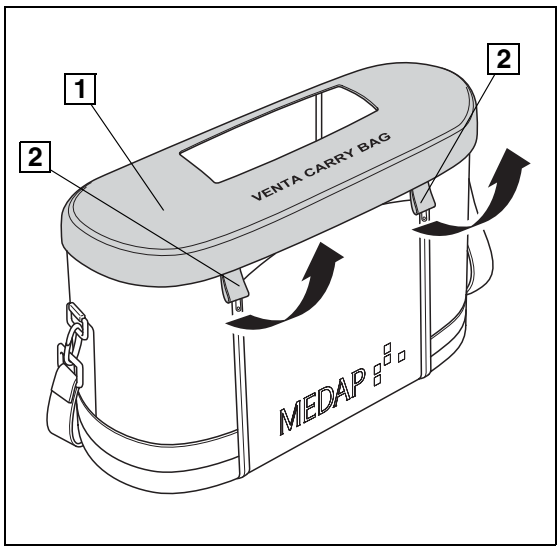


Fig. 24: Opening the carry bag

Open the carry bag

☒ Grasp the lid (1) by the tabs (2).

☒ Lift and swing the lid toward the rear.

✓ The carry bag is now open.

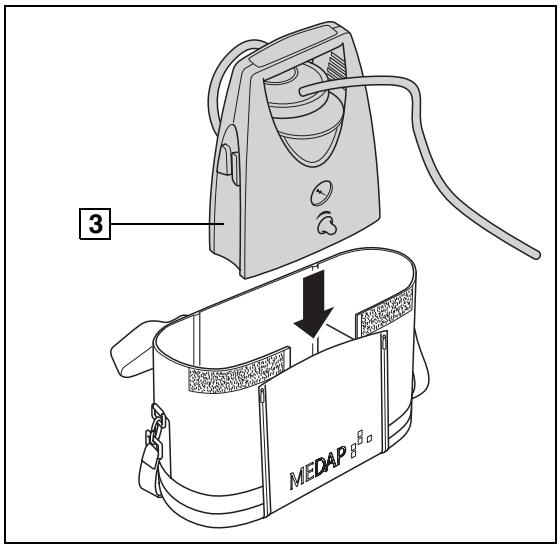


Fig. 25: Placing the septic fluid suction pump in the bag

Place the septic fluid suction pump in the bag

☒ Insert the septic fluid suction pump (3) from above and into the centre compartment in the carry bag.

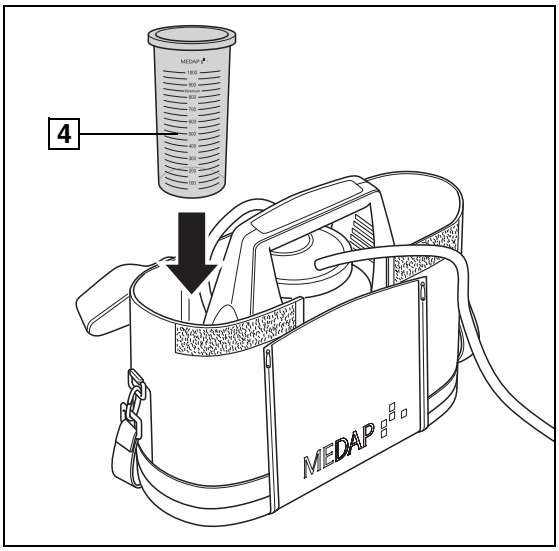


Fig. 26: Inserting the rinsing jar

Insert the rinsing jar

☒ Insert the rinsing jar (4) from above in the side compartment.

☒ Attach the rinsing jar at the equipment carrier mount.

Pack the suction tube / mains cable

☒ Pack the suction hose and mains cable in the vacant side compartment.

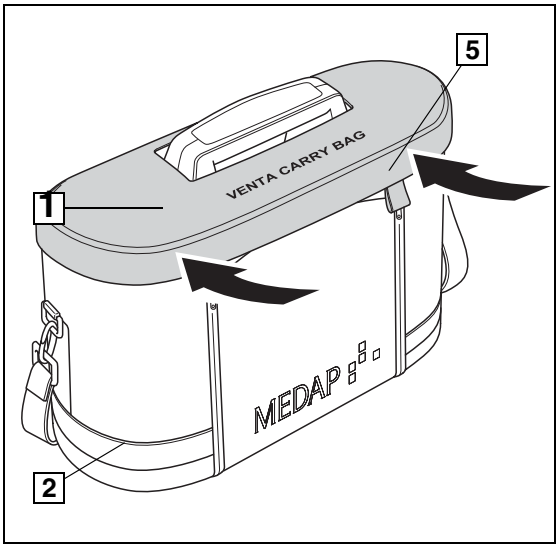


Fig. 27: Closing the carry bag

Close the carry bag

☒ Swing the carry bag lid forward.

☒ Press, near the tabs, the lip on the lid against the carry bag.

✓ The carry bag is now closed.

5 Operation

5.1 Functional check

Prior to using the system, the operator shall confirm that the product is fully functional and in good condition.

WARNING!
Health hazard!
The septic fluid suction pump is used in patient treatment. Any restriction of performance can result in complications during treatment.
Check the unit on proper functioning every time before using and preparing it.

NOTE
Connecting several septic fluid jars in series can cause delayed suction effect and reduced suction power.

Check before each use to ensure that:

- The mains cable is undamaged.
- Components made of plastic or rubber (e.g. control panel film, tube, septic fluid jar cap, septic fluid jar) are in good condition and show no damage due to aging.
- The overflow protection device and hydrophobic bacterial filter are mounted and functional.
- The overflow protection device and hydrophobic bacterial filter have been properly cleaned and neither residues nor grime is present.
- Tube connectors and septic fluid jar cap are tightly seated and do not leak.
- That no mechanical forces are applied to the tubes.
- Tubes may not be kinked.
- Maximum vacuum of approx. -80 kPa is reached within about 20 seconds when the connection tube is held shut.
- The vacuum can be regulated steplessly throughout the entire range.
- The septic fluid jar is attached to the septic fluid suction pump.
- Septic fluid suction pump has been properly cleaned and neither residues nor grime is present.
- Damaged parts have been replaced by new parts.

5.2 Extraction

WARNING!
Infection hazard resulting from using the wrong hydrophobic bacteria filter!
The septic fluid suction pump may be used only with a hydrophobic bacteria filter suitable for the specific application. This is to protect it against contaminants which might be present in the form of particles or aerosols in the gas being drawn in and to prevent contamination of the air nearby.
Always use a hydrophobic bacteria filter appropriate to the particular extraction situation.

WARNING!

Infection hazard due to using no hydrophobic bacteria filter or the wrong type!
Secretions will enter the septic fluid suction pump during extraction.
Do not continue using the septic fluid suction pump. Clean and disinfect the septic fluid suction pump and have it repaired by a shop authorised by MAQUET to do so.

WARNING!

Injury hazard if the catheter attaches itself to tissue!
Always use a fingertip so that the extraction process can be interrupted quickly by releasing the fingertip.

WARNING!

Hazard to patient!
Use an extraction catheter with openings at the side during endobronchial extraction.

CAUTION!

Property damage due to oversuction!
The septic fluid suction pump may be used only with overflow protection in place and connected as otherwise the pump is not protected against oversuction. The hydrophobic filter provides additional protection against oversuction; it closes the flow of gas to the product in the event of oversuction. Particles in the gaseous phase can clog the hydrophobic bacteria filter.

CAUTION!

Property damage due to foaming!
Foam may be created when extracting secretions. Foam is detrimental to the functioning of the mechanical overflow protection. This gives rise to the hazard of secretions entering and damaging the septic fluid suction pump.
Always use a hydrophobic bacteria filter and, if possible, a commercially available foam inhibitor.

CAUTION!

Property damage
Ensure that no vacuum is present when the septic fluid suction pump is switched on. Non-observance may cause unit failure.
Consult the troubleshooting table for instructions on removing defects.

NOTE

If the overflow protection is tripped, then the septic fluid suction pump will have to be switched off, and the septic fluid jar emptied and cleaned.

NOTE
Monitor the fill level in the septic fluid jar before and after extraction and, where larger volumes are being extracted, during the extraction process.
If the "maximum" fill level is reached, then the septic fluid suction pump will have to be switched off and the septic fluid jar emptied.

NOTE
The hydrophobic bacteria filter has to be changed out if it comes in contact with liquid or if suction performance declines.

NOTE
Rinse the extraction catheter and suction tube briefly with clean water after each extraction cycle.

5.2.1 Operation

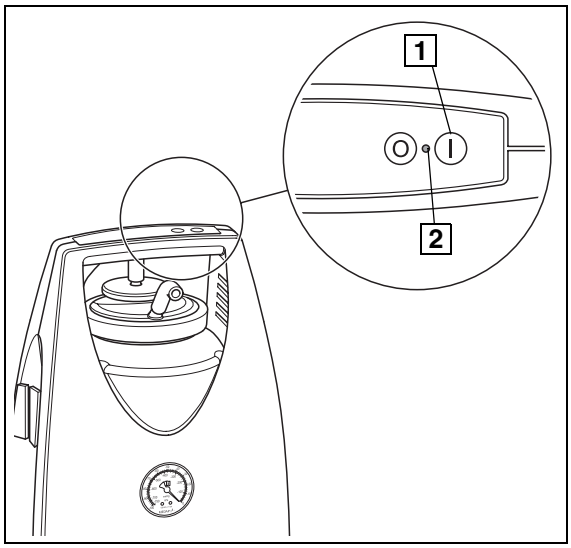


Fig. 28: Switching on the septic fluid suction pump

Mains operation
☒ Switch on the septic fluid suction pump (1).
- ✓ The green LED (2) is on.
- ✓ The septic fluid suction pump is switched on.

5.2.2 Set the vacuum level

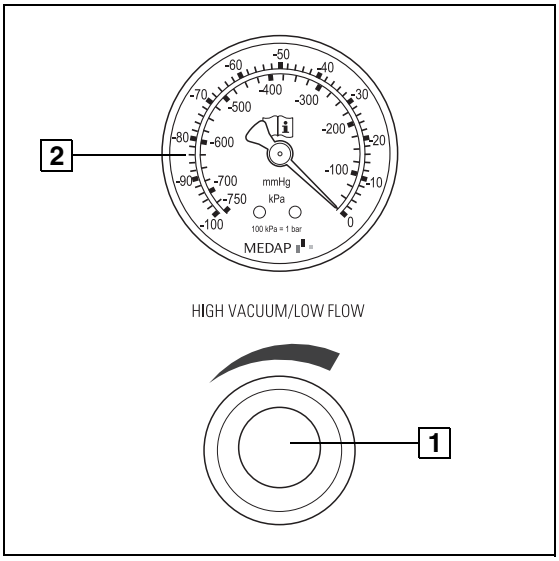


Fig. 29: Setting the vacuum level

Set the vacuum level

☒ Hold the end of the suction hose on the patient side closed.

Increase vacuum:

☒ Turn the regulator knob (1) to the right.

☒ Read the value at the vacuum meter (2).

Reduce vacuum:

☒ Turn the regulator knob (1) to the left.

☒ Read the value at the vacuum meter (2).

5.2.3 Utensil

Connect utensil, using an extraction catheter as the example here.

WARNING!
Inury hazard!
Tissue can be injured during extraction.
Never extract directly with the suction hose but always with an extraction catheter of the right size or with an extraction set.

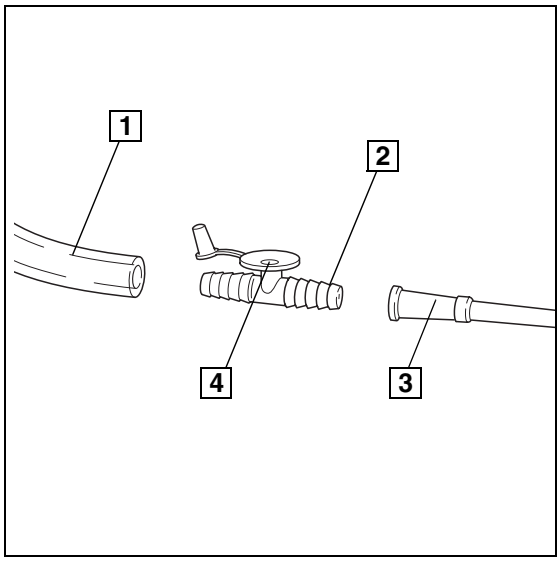


Fig. 30: Connecting the utensil

Connect the utensil
☒ Connect the suction tube (1) to the fingertip (2).
☒ Connect the extraction catheter (3) to the fingertip.

Extraction
☒ Use a finger to shut off the shunt air opening (4).

Interrupt the extraction process
☒ Open the shut air opening (4).

5.3 Terminating the extraction process

☒ Switch off the septic fluid suction pump once the extraction process has been completed.

☒ Empty the septic fluid jar.

☒ Clean the components(▶▶Page 44, Cleaning and disinfection).

5.4 Empty the septic fluid jar

WARNING!

Infection hazard!

Any and all of the components in the septic fluid jar might be contaminated.

Always wear gloves when emptying the septic fluid jar and be absolutely sure to follow the hygiene rules.

CAUTION!

Property damage!

Never hold the septic fluid jar by its cap as the septic fluid jar could become detached and spill.

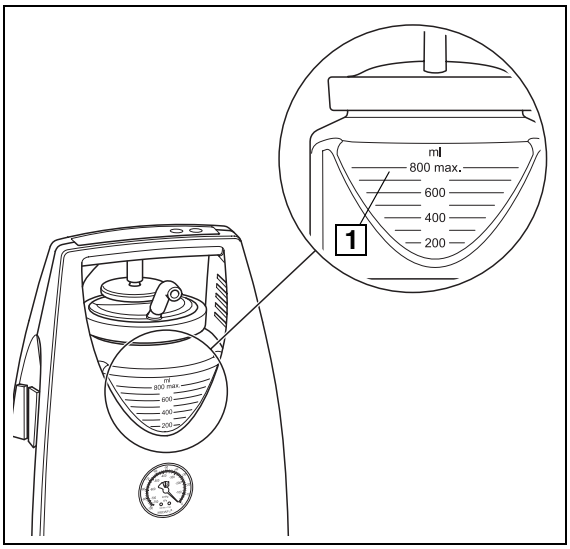


Fig. 31: Fill level indicator

The septic fluid jar will have to be emptied when the "Maximum" mark (1) on the septic fluid jar is reached.

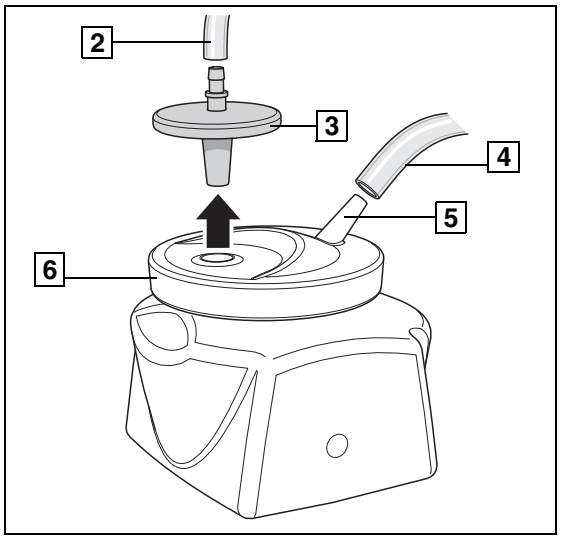


Fig. 32: Detaching the hydrophobic bacteria filter

Disconnect the bacteria filter and tubes

☒ Switch off the septic fluid suction pump.

☒ Detach the connection tube(2) from the hydrophobic bacteria filter (3).

☒ Detach the suction tube (4) from the patient-side connector nipple (5).

☒ Remove the hydrophobic bacteria filter (3) from the septic fluid jar cap (6).

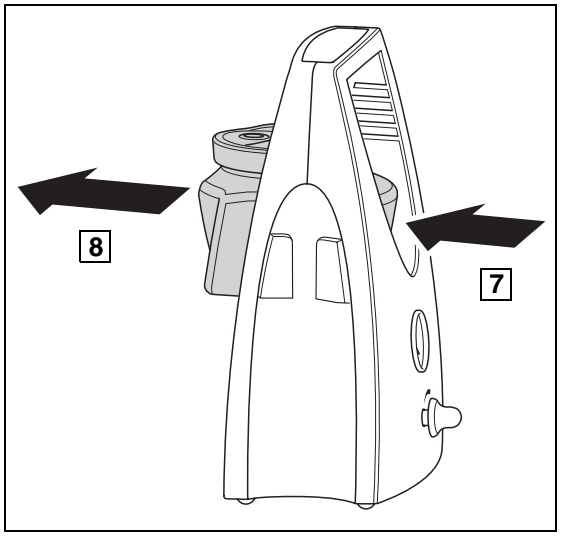


Fig. 33: Removing the septic fluid jar.

Remove the septic fluid jar.

☒ Press against the septic fluid jar (7) from the front.

☒ Carefully slide the septic fluid jar (8) out toward the rear.

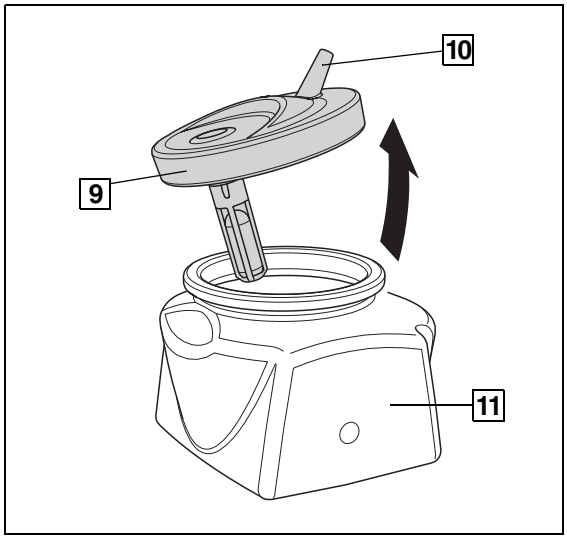


Fig. 34: Removing the septic fluid jar cap

Remove the septic fluid jar cap

☒ Carefully grip the septic fluid jar cap (9) near the patient-side connector nipple (10) and lift the cap off the septic fluid jar (11).

☒ Dispose of the extracted fluid.

5.5 Operation in the carry bag

CAUTION!
Property damage due to overheating!
If the opening at the bottom of the carry bag were to be covered by film, paper or the like, then the septic fluid suction pump would overheat during extraction.
The opening at the bottom of the carry bag must never be covered.

CAUTION!
Property damage due to overheating!
If placed on a soft surface (such as pillows or a mattress) the ventilation slots may be covered and the septic fluid suction pump will overheat.
The septic fluid suction pump shall be upright and on a solid surface during operation.

WARNING!
Infection hazard due to secretions spilling!
Transport the septic fluid suction pump only with the septic fluid jar empty.

The carry bag must be open while operating the septic fluid suction pump.

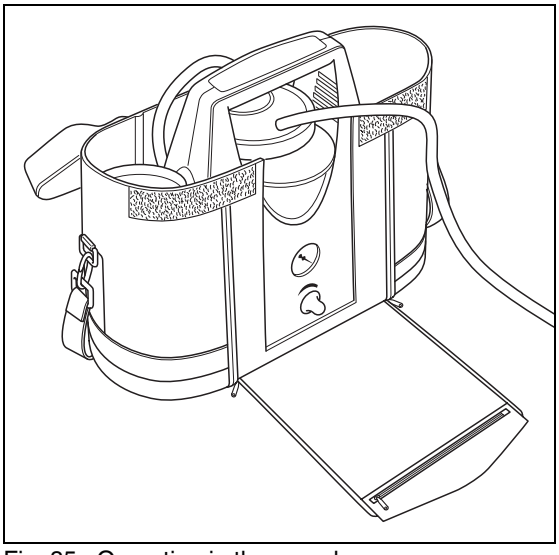


Fig. 35: Operating in the carry bag

☒ Hold the lid at the tabs.
☒ Lift and swing the lid toward the rear.
✓ The carry bag is now open.
☒ Pull the two zippers near the tabs all the way downward.
☒ Swing the front panel down.
☒ Remove the suction tube, fingertip and extraction catheter from the side compartment

6 Malfunctions and troubleshooting

6.1 General

Potential malfunctions and their rectification are described in the following table.

No.	Malfunction	Cause	Remedy
1	Septic fluid suction pump does not start operation, operating status display is illuminated.	Vacuum is still present	Switch off the septic fluid suction pump, turn regulating knob to the left, switch on the septic fluid suction pump
		Motor defective	Have the equipment repaired by a service technician authorised by MAQUET.
2	Septic fluid suction pump does not start operation, operating status display is illuminated.	Equipment or mains plug not seated properly in the socket	Check the equipment and mains plugs for proper contact
		No or improper voltage	Check building's circuit breakers, check specifications on type plate
		Mains fuse blown	Replace mains fuse (⏩Page 43)
3	Equipment cannot be switched on and off.	Electronic circuits defective	Have the equipment repaired by a service technician authorised by MAQUET.
4	Septic fluid suction pump runs but operating status display is not illuminated	LED at the operating status display defective	Have the equipment repaired by a service technician authorised by MAQUET.
5	Septic fluid suction pump does not achieve maximum vacuum of - 80 kPa within 20 seconds	Leaks in vacuum section inside the septic fluid suction pump	Check all septic fluid jar components for visible damage. Check tubes and septic fluid jar cap for proper seating
		Hydrophobic bacterial filter is clogged (vacuum gauge indicates vacuum)	Replace the bacterial filter
		Motor defective	Have the equipment repaired by a service technician authorised by MAQUET.

Fig. 36: Malfunctions and repairs (Part 1 of 2)

No.	Malfunction	Cause	Remedy
6	Septic fluid suction pump runs but does not extract	Overflow protection device is closed (vacuum gauge indicates vacuum)	Check liquid level in the septic fluid jar; empty the septic fluid jar and clean overflow protection device as required.
		Hydrophobic bacterial filter is clogged (vacuum gauge indicates vacuum)	Replace the bacterial filter
		Suction tube clogged or incorrectly connected	Inspect tubes
		Motor defective	Have the equipment repaired by a service technician authorised by MAQUET.
7	Septic fluid suction pump has been exposed to oversuction	No mechanical overflow protection device and no hydrophobic bacterial filter installed	Do not continue to use the septic fluid suction pump. Have the equipment repaired by a service technician authorised by MAQUET.
		Mechanical overflow protection device is sticking; no hydrophobic bacterial filter used	
8	Vacuum cannot be regulated	Regulating valve defective	Have the equipment repaired by a service technician authorised by MAQUET.
9	Septic fluid suction pump working but vacuum gauge indicates no vacuum	Vacuum gauge defective	Have the equipment repaired by a service technician authorised by MAQUET.
10	Septic fluid jar does not fit in the septic fluid suction pump	Septic fluid jar inserted in wrong position	Insert the septic fluid jar in the septic fluid suction pump with the scale to the front.

Fig. 36: Malfunctions and repairs (Part 2 of 2)

6.2 Replace mains fuses

WARNING!
Electrical shock!
Disconnect the electrical plug before changing the line fuses.

CAUTION!
Property damage!
Use only fuses of the following type:
2 x T 1.25 A/H; 250 V; 5 x 20 mm

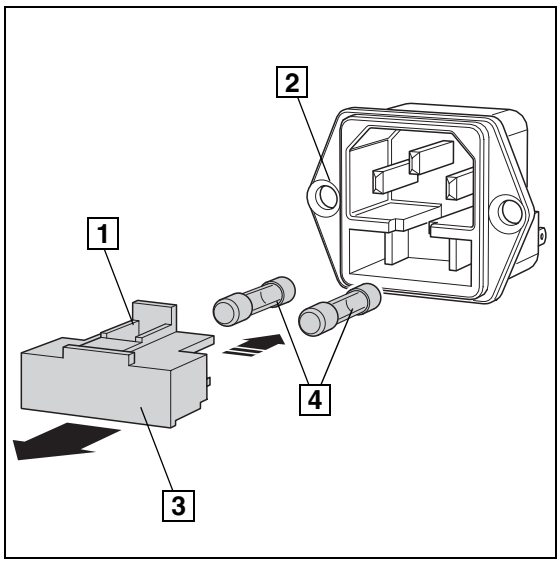


Fig. 37: Replacing fuses

☒ Disconnect the equipment plug.
☒ Use a small screwdriver to carefully release the catch (1) at the centre of the equipment socket (2) and remove the fuse carrier (3).
☒ Remove the fuses (4) from the fuse carrier.
☒ Insert new fuses.
☒ Insert the fuse carrier.
  ✓ The catch will engage with an audible click.
☒ Ensure that the fuse carrier is properly seated.

7 Cleaning and disinfection

7.1 General

All the components in the septic fluid suction pump which come into contact with secretions will have to be cleaned and disinfected after each use.

WARNING!
Infection hazard!
Any and all the parts of the product could be contaminated.
Wear gloves and be absolutely sure to follow the hygiene rules during all cleaning and reconditioning work.

CAUTION!
Property damage due to changes in materials!
Almost all the components in the product are made of plastic. Solvents, some disinfectants and some cleaning agents can soften plastic or cause tension fissures.
Do not use alcohol-containing agents to clean the surfaces. Follow the instructions for using disinfectants.

NOTE
If the product is used in the home setting then the hoses and the hydrophobic bacteria filter will have to be replaced and the septic fluid jar and its cap will have to be sterilised or replaced with each change of patients.

7.2 Removing the septic fluid jar

☒ Switch off the septic fluid suction pump.
☒ Detach the extraction catheter and fingertip from the suction tube(⏩Fig. 33) and dispose of properly.
☒ Detach the connection tube from the bacteria filter.
☒ Detach the suction tube from the patient-side connector nipple.
☒ Remove the septic fluid jar.
☒ Remove the septic fluid jar cap.
☒ Empty the septic fluid jar.

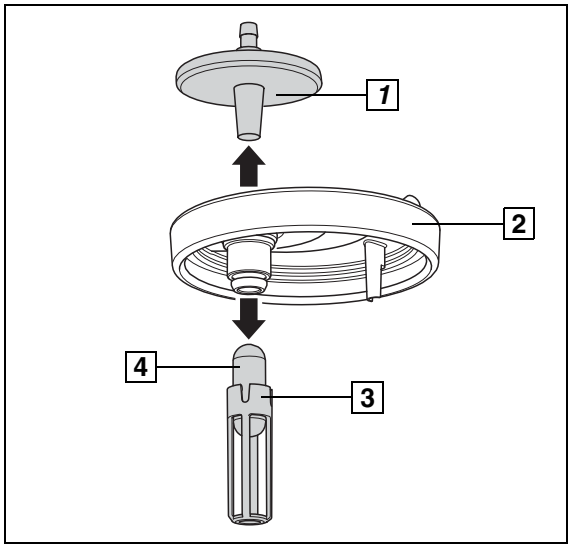


Fig. 38: Disassembling the overflow protection

☒ Detach the bacteria filter (1) from the septic fluid jar cap (2).
☒ Detach the float cage (3) from the silicone cone (5) and remove the float (4).

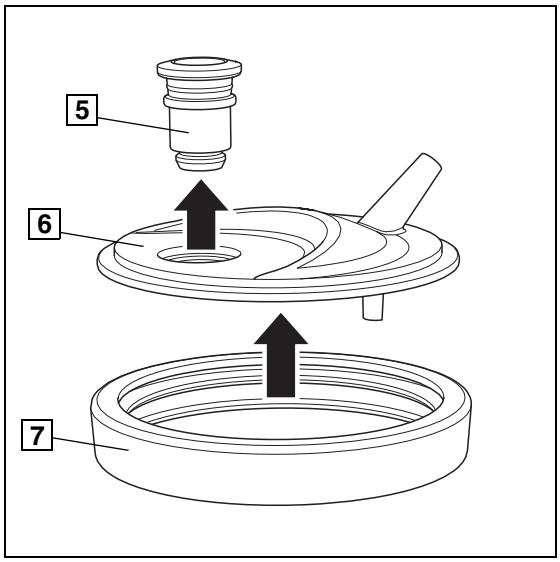


Fig. 39: Disassembling the septic fluid jar cap

☒ Detach the silicone cone (5) from septic fluid cap insert (6).
☒ Detach the septic fluid jar cap insert from the silicone gasket (7).

7.3 Cleaning

7.3.1 General

DANGER!
Potentially fatal!
Dangerous voltage!
Remove the mains plug from the socket before cleaning / disinfection.

CAUTION!
Property damage due to improper cleaning!
Avoid using excessive quantities of cleaning agent or cleaning liquid and remove excess agent and liquid by wiping with a moist cloth.

CAUTION!
Improper cleaning can cause damage to the equipment!
Do not spray cleaning agent directly into the joints or gaps and never use a high-pressure cleaning unit!

WARNING!
Infection hazard!
Particles of grime can become encapsulated and result in components not being sterile after disinfection.
That is why all components have to be thoroughly cleaned prior to disinfection and stubborn dirt removed with a cloth and suitable cleaning agent.

CAUTION!
Property damage due to improper cleaning!
Abrasive cleaners will damage the surfaces.
Use only all-purpose cleaners which are slightly alkaline (soap solution) and contain tensides and phosphates as the active cleaning agents.

NOTE
The parts will have to be cleaned and dried prior to disinfection.

7.3.1.1 Cleaning

NOTE
Where the product is very dirty it is advisable to carry out an additional disinfection procedure before cleaning the product.

☒ Thoroughly wipe down the product and its components using a cloth slightly moistened with an all-purpose cleaning agent in solution.
☒ Remove encapsulated residues by rubbing vigorously.
☒ Thoroughly wipe down the product and its components using a cloth slightly moistened with water.
☒ Dry the product and its components immediately.
  ✓ This will help to inhibit pathogen growth on the product's surface.
☒ Wipe the product down with disinfectant after each cleaning.

7.4 Disinfection

WARNING!
Injury hazard!
Disinfectants may contain substances which are detrimental to health and could cause injuries if they came into contact with the skin or eyes.
Protect the skin and eyes and observe the hygiene rules when working with disinfectants.

WARNING!
Functional failure!
Check the unit's components for proper functioning after each cleaning or disinfection procedure.

CAUTION!
Property damage resulting from improper handling!
Be absolutely sure to follow the instructions for use provided by the manufacturer of the disinfectant.

CAUTION!
Property damage at temperatures above 50°C!
The septic fluid jar may be used again only after it has cooled down.

CAUTION!
Property damage due to changes in materials!
The natural aging of plastics will be accelerated by autoclaving using live steam. The functioning of the unit's components can be adversely affected by changes in the materials.
Check the components for proper functioning after autoclaving.

NOTE
The septic fluid jar, all the components in its cap, and the tubes are consumable items. Depending on the cleaning process used, they will be subjected to a greater or lesser amount of wear and tear, this being due to the materials employed. Inspect all components for serviceability before use. Replace them if there are any signs of damage.

NOTE
Using drapes which are not colourfast can cause discolouration in plastic components.

CAUTION!

Property damage!

If used over an extended period of time, alcohol-based disinfectants can damage surfaces and accessories.

Disinfectant agents which have been approved for use:
Use only instrument and surface disinfectants with the following combinations of active ingredients:

- Aldehydes
- Quaternary compounds or
- Guanidine derivatives.

Disinfectants which are not approved for use:

- Pure hand disinfectants,
  since these usually contain alcohol or compounds of alcohol
- Disinfectants containing alcohol,
  since alcohol applied in excess (i.e. accumulations of liquids containing alcohol remaining on the surface for more than about 5 minutes) can damage the surface.

Aldehydes, quaternary compounds and guanidine derivatives will not attack surfaces and will pass recurring hygiene inspections.
Thanks to the markedly longer evaporation period and extended residence of the disinfectant agent on the surface, germicidal effect beyond 95 % is achieved within a few minutes, provided that coarse soiling is removed beforehand.
Please refer to the following list for information on active ingredients.

Ingredient group	Active ingredients
Aldehydes	2-ethyl-1-hexanal, formaldehyde, glutardialdehyde, glyoxal, o-phthaldialdehyde, succinaldehyde
Quaternary compounds	Alkyl didecyl polyoxethyl ammonium propionate, alkyl dimethyl alkylbenzyl ammonium chloride, alkyl dimethyl ethyl ammonium chloride, alkyl dimethyl ethylbenzyl ammonium chloride, benzalkonium propionate, benzalkonium chloride (alkyl dimethyl benzyl ammonium chloride, coco dimethyl benzyl ammonium chloride, lauryl dimethyl benzyl ammonium chloride, myristyl dimethyl benzyl ammonium chloride), benzethonium chloride, benzyl dihydroxyethyl coco alkyl ammonium chloride, dialkyl dimethyl ammonium chloride (didecyl dimethyl ammonium chloride), didecyl methyloxyethyl ammonium propionate, mecetroniumethyl sulfate, methyl benzethonium chloride, n-Octyl dimethyl benzyl ammonium chloride
Guanidine derivatives	Alkyl-biguanide, chlorhexidine-digluconate, cocospropylene-diamine guanidinium diacetate, oliogomeric biguanide, polyhexamethylene biguanide hydrochloride (oligo-diimino imiodo-carbonyl imino-hexamethylene, polyhexanide)

Fig. 40: Active ingredients in disinfectants

The DGHM list contains additional information. It can be obtained from:

Deutsche Gesellschaft für Hygiene und Mikrobiologie
c/o Institut für Hygiene und Mikrobiologie
Universität Würzburg
Josef-Schneider-Str. 2
97080 Würzburg
www.dghm.org

Examples of surface disinfectants:

- Incidin® Plus *
- Incidin® Perfect *
- Antiseptica, a combination surface disinfectant
- Antifect® FF *
- B 10 *

Examples of instrument disinfectants:

- Lysetol® AF *
- Gigasept® FF *
- Sekusept® forte S *

* Incidin® (Registered trademark of Ecolab GmbH & Co OHG)
* Antifect® (Registered trademark of Schülke und Mayr GmbH)
* Lysetol® (Registered trademark of Schülke und Mayr GmbH)
* Gigasept® (Registered trademark of Schülke und Mayr GmbH)
* Sekusept® (Registered trademark of Ecolab GmbH & Co OHG)

7.5 Disinfection procedures

Different disinfection procedures may be used for the various components, depending on the properties of the materials.

Components	In solution[1]	Wiping[2]	Boiling (10 min)	Autoclaving with live steam[3]
Septic fluid jar	X		X	Up to 121°C PSU up to 134°C
Septic fluid jar cap				Up to 134°C
Silicone cone				
Septic fluid jar cap insert				
Silicone seal ring				
Overflow protection device (float cage and float)				
Suction tube				
Connection tube				
Pump housing		X		
Mains cable				
Hydrophobic bacterial filter	Disposable item; must be replaced after oversuction.			
Fingertip	Disposable item; must be replaced after every extraction procedure.			

1. After exposure (as prescribed in the manufacturer's instructions), rinse components thoroughly with water and dried them.
2. After exposure (as prescribed in the manufacturer's instructions) remove disinfectant residues from the components using a moist cloth and dry them.
3. Caution: Live steam will accelerate the natural aging of plastics.

Fig. 41: Malfunctions and repairs

8 Maintenance and repairs

8.1 General

WARNING!
Health hazard!
The septic fluid suction pump is used in the treatment of patients. The septic fluid suction pump or parts of the unit may be contaminated. It is for this reason that, prior to returning the septic fluid suction pump for service, the bacteria filter and all the tubes shall be removed and the unit shall be cleaned and disinfected.

8.2 Maintenance

The septic fluid suction pump is fitted with a maintenance-free vacuum pump. Users need not carry out any maintenance work beyond the usual daily cleaning and care. Perform visual and functional checks before use to ensure proper functionality of the septic fluid suction pump.
We recommend servicing the product once a year to ensure operational safety, availability of all functions and an extended service life of the product.

The scope of maintenance is given in the maintenance schedule; including safety inspection as per the IEC directive 601-1.
Maintenance may be carried out by a service technician.
These service technicians can obtain testing schedules from MAQUET.
Where maintenance is required outside Germany, the responsible foreign representative can provide assistance.

8.3 Repairs

NOTE
Limitation of liability!
Any and all liability by the manufacturer lapses in case of tampering by unauthorized persons.

Repairs may be carried out only by service technicians authorised by MAQUET to do so. These authorised service technicians can obtain descriptions, circuit diagrams, spare parts lists and testing schedules for system components that MAQUET has deemed to be repairable in the field.

The product may no longer be used if defects are found.
Make note of the deficiencies and the REF number on the data plate and notify the responsible MAQUET factory representative.
Notify the appropriate foreign representative outside Germany.

8.4 Service hotline (inside Germany only):

German service hotline:
0 180 32 12 144
Service hotline in all other countries:
+49 / 72 22 / 932 – 745

9 Technical specifications

9.1 General

Classification as per Annex IX of the 93/42/EEC Directive	Class IIa
Type of protection against electrical shock	Safety class I (IEC 60601-1)
Degree of protection against electrical shock	Type B (IEC 60601-1)
Protection against ingress of liquids	IP X1 (IEC 60601-1)
Year manufactured	First two digits of the serial number

9.2 Ambient conditions

Temperature	-15°C to +50°C (shipping)
	+5°C to +40°C (operation)
Relative humidity	10% to 95% (during shipping)
	30% to 75% (in operation)
Atmospheric pressure	700 hPa to 1060 hPa (shipping)
	700 hPa to 1060 hPa (in operation)

9.3 Dimensions and weight

Width	250 mm
Altitude	350 mm
Depth	150 mm
Mains cable length	2000 mm
Weight	3.7 kg

9.4 Technical specifications

Nominal voltage	230 V, AC power
Rated frequency	50 Hz
Power consumption	92 W
Max. power consumption	700 mA
Fuse	2 x T 1.25 A/H; 250 V; 5 x 20 mm
Operating mode	Intermittent operation: 30 min. on / 45 min. off
Displacement, product at sea level	16 ± 3 l/min.
Max. vacuum at sea level	approx. -80 kPa
Vacuum regulation	Shunt air screw, mechanical

9.5 Vacuum in dependency on altitude

Altitude		**Pump ultimate vacuum**	**Pump ultimate vacuum**
	2000 m	-58 kPa	-435 mm Hg
	1500 m	-63 kPa	-473 mm Hg
	1000 m	-69 kPa	-518 mm Hg
	500 m	-74 kPa	-555 mm Hg
	0 m	-80 kPa	-600 mm Hg

9.6 Electromagnetic compatibility (EMC)

The produkt ist designed for operation in the environment specified below. The customer has to ensure that the product is operated in an environment meeting these specifications.

9.6.1 Electromagnetic emission

Measurement / Standard	Compliance	Electromagnetic environment / Guidelines
RF radiation CISPR 11	Group 1	The product uses RF energy exclusively for its own internal functions. Consequently its RF emission levels are very low and it is improbable that it will cause interference in nearby electronic equipment
	Class B	The product is intended for use in all facilities, to include residential areas, and in those facilities which are connected directly to a public power supply network which also serves residential buildings.
Harmonics IEC 61000-3-2	Class A	
Voltage fluctuations / Flicker IEC 61000-3-3	Complies	

Fig. 42: Electromagnetic emission

9.6.2 Electromagnetic interference resistance

Measurement / Standard	Test level	Compliance level	Electromagnetic environment / Guidlines
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV Contact discharge ± 8 kV Air gap discharge	± 6 kV Contact discharge ± 8 kV Air gap discharge	Floors should be made of wood or concrete or be finished with ceramic tiles. If the floor is covered with a synthetic material, then the relative humidity shall be at least 30 %.
Rapid electrical transients / Bursts IEC 61000-4-4	± 2 kV for mains cords ± 1 kV for input and output cables	± 2 kV for mains cords ± 1 kV for input and output cables	The quality of the mains power voltage should correspond to that of a typical commercial or hospital environment.
Surges (surges) IEC 61000-4-5	± 1 kV Differential mode voltage ± 2 kV Common mode voltage	± 1 kV Differential mode voltage ± 2 kV Common mode voltage	The quality of the mains power voltage should correspond to that of a typical commercial or hospital environment.

Fig. 43: Electromagnetic interference resistance (Part 1 of 2)

Measurement / Standard	Test level	Compliance level	Electromagnetic environment / Guidlines
Voltage dips, brief interruptions and fluctuations in the supply voltage IEC 61000-4-11	< 5 % U_T (> 95 % dip in U_T) for½ cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30 % dip in U_T) for 25 cycles < 5 % U_T (> 95 % dip in U_T) for 5 s	< 5 % U_T (> 95 % dip in U_T) for½ cycle 40 % U_T (60 % dip in U_T) for 5 cycles 70 % U_T (30% dip in U_T) for 25 cycles < 5 % U_T (> 95 % dip in U_T) for 5 s	The quality of the mains power voltage should correspond to that of a typical commercial or hospital environment. If the user requires continued operation despite interruptions in the power supply, then it is recommended that the unit be operated with an uninterruptible power supply or battery.
Power frequency (50 / 60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	The magnetic fields generated at line frequency should correspond to values typically found in commercial or hospital environments.
Note: U_T is the AC mains voltage prior to application of the test level.			

Fig. 43: Electromagnetic interference resistance (Part 2 of 2)

9.6.3 Electromagnetic interference resistance, non-vital equipment

Interference resistance test	IEC 60601 Test level	Compliance level	Electromagnetic environment / Guidelines
			Portable and mobile radio communication equipment should be used no closer to the product (including its cables) than the recommended separation distance, calculated using the equation for the particular transmission frequency. Recommended separation distance:
Cable-carried RF interference magnitude as per IEC 61000-4-6	3 V_{eff} 150 kHz to 80 MHz	3 V_{eff} 150 kHz to 80 MHz	**$d = 1{,}17\sqrt{P}$**
Radiated RF interference magnitude as per IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	3 V/m 80 MHz to 2,5 GHz	**$d = 1{,}17\sqrt{P}$** for 80 MHz to 800 MHz **$d = 2{,}33\sqrt{P}$** for 800 MHz to 2,5 GHz where P is the rated power of the transmitting device in watts (W), as specified by the manufacturer, and d is the recommended separation distance in metres (m). The field strengths of stationary radio transmitting devices should be determined at all frequencies in an on-site test[a] and should be less than the compliance level[b] Interference is possible near devices which are marked with the following symbol. 

Notes:
At 80 MHz and 800 MHz the higher frequency range is applicable. These guidelines may not be applicable in all situations. The propagation of electromagnetic emissions will be affected by the absorptive and reflective properties of structures, objects and persons.

[a] The field strength of stationary transmitters such as the base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, and AM and FM broadcast and TV broadcast can, theoretically, not be determined exactly in advance. A study of the operating location should be considered in order to assess the electromagnetic environment in regard to stationary radio transmitting units. If the field strength measured at the location where the product is used exceeds the RF compliance specified above, then it will be necessary to observe the product to determine that it is functioning properly. If unexpected actions are found, then additional measures may be required such as, for example, re-orienting or relocating the product.

[b] The field strength should be less than 3 V/m all across the frequency from 150 kHz to 80 MHz.

Fig. 44: Electromagnetic interference resistance, non-vital equipment

9.6.4 Recommended protective distances

The following is a table showing the recommended separation distances between portable and mobile radio telecommunication equipment and the product.
The product is engineered for use in an electromagnetic environment in which radio frequency interference is monitored. The customer or user of the product can prevent electromagnetic interference by maintaining the minimum distances between portable and mobile radio telecommunication devices (transmitters) and the product as specified below, in accordance with the maximum output power of the communication equipment.

Rated transmission power [W]	Separation distance as a factor of transmission frequency [m]		
	150 kHz to80 MHz $d = 1,2 \sqrt{P}$	80 MHz 800 MHz $d = 1,2 \sqrt{P}$	800 MHz to 2,5 GHz $d = 2,3 \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

When dealing with transmitters for which no rated output is indicated in the table above the distance can be ascertained, using the equation associated with the appropriate column, where P is the transmitter's maximum rated power in watts (W) as specified by the manufacturer of the transmitter.

Notes:
At 80 MHz and 800 MHz the higher frequency range is applicable. The ISM frequency bands (for industrial, scientific and medical applications) between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz and 40.66 MHz to 40.70 MHz. The compliance levels in the ISM frequency bands between 150 kHz and 80 MHz and in the 80 MHz to 2.5 GHz band are intended to reduce the probability that mobile and portable communication devices can cause interference if they are inadvertently brought into the patient area. For this reason the additional factor of 10/3 was introduced in calculating the recommended separation distance in these frequency ranges. These guidelines may not be applicable in all situations. The propagation of electromagnetic emissions will be affected by the absorptive and reflective properties of the structure, objects in the area, fittings and persons.

Fig. 45: Recommended protective distances

10 Approved accessories

10.1 General accessories

The following accessories are not part of the scope of delivery
and must be ordered separately:

Septic fluid jar, 1 l (polycarbonate - PC)	5752 2312
Septic fluid jar, 1 l (polysulfone - PSU)	5752 2313
Septic fluid jar, 0.8 l (polypropylene - PP)	5752 2311
Septic fluid jar cap, silicone, with overflow protection device	5752 2573
Serres outer container, 2 l	5752 2044
Serres inner liner, 2 l	5752 2046
Serres outer container, 1 l	5752 2537
Serres inner liner, 1 l	5752 2538
MediVac outer container (Flex), 1.5 l	5750 2458
MediVac inner liner, 1.5 l	5750 2461
MediVac outer container (Flex), 1 l	5750 2457
MediVac inner liner, 1 l	5750 2460
Holder for outer container, 1000/1500 ml, MediVac	5752 0187
FINA rail clamp for equipment mount (metal)	5752 2048
FINA rail clamp for equipment mount (plastic)	5752 2540
Catheter holder, large	5750 8002
Catheter holder, small	5750 5157
Basket	5750 8012
Pump shelf for wall rail	5752 2618
Trolley	5752 2356
VENTA carry bag	5752 2633
Adapter	5752 2295
Tube, silicone 8 x 14 mm, by the meter	5750 5483
Tube, silicone 6 x 12 mm, by the meter	5750 5467
Hydrophobic bacterial filter (pore size 1 µm)	5752 2557
Fingertip (20 pcs.)	5752 2148

Fig. 46: General accessories

10.2 Application sets

NOTE
A detailed description of the individual application set will be found in the current price list.

AS (application set) septic fluid aspiration / portable / PSU / 1 l	5752 2816
AS (application set) septic fluid aspiration / portable / PC / 1 l	5752 2817
AS (application set) septic fluid aspiration / on trolley / PSU / 1 l	5752 2822
AS (application set) septic fluid aspiration / on trolley / PC / 1 l	5752 2821
AS (application set) septic fluid aspiration / portable / Serres / 1 l	5752 2820
AS (application set) septic fluid aspiration / on trolley / Serres / 1 l	5752 2819
AS (application set) septic fluid aspiration / on trolley / Serres / 2 l	5752 2818
AS (application set) septic fluid aspiration / portable / PP / 0.8 l	5752 3415
AS (application set) septic fluid aspiration / on trolley / 1.5 l / Medi-Vac	5752 3416
AS (application set) septic fluid aspiration / on trolley / 1 l / Medi-Vac	5752 3417
AS (application set) rinsing jar, 0.7 l, for trolley	5752 3344

Fig. 47: Application sets

11 Spare parts

11.1 General

Operating instructions	5752 2434
Brief operating instructions	5752 3421

Fig. 48: General

11.2 Spare parts

11.2.1 Spare parts, septic fluid suction pump

Hose connector elbows (5 pcs.)	5752 2812
Septic fluid jar cap insert (5 pcs.)	5752 2613
Adapter (5 pcs.)	5752 2614
Float and float cage (10 pcs. each)	5752 2096
Mains cable 2 m	5750 3615
Silicone cone (5 pcs.)	5752 2611
Silicone gasket (5 pcs.)	5752 2612
Fuses T 1.25 A/h 250 V (10 pcs)	5752 2615

Fig. 49: Spare parts, septic fluid suction pump

11.2.2 Spare parts, accessories

Repair kit, fixing screw for pump shelf and trolley	5752 4408

Fig. 50: Spare parts, accessories

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