Operating Instructions

ATMOS E 341

CE 0124

GA1GB.320102.0

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Table of contents

1.0 Introduction

1.1 Information on operating instructions

These operating instructions contain important notes on how to operate the ATMOS E 341 Battery safely, correctly and effectively.

The instructions are intended for the training and teaching of operating personnel and are intended as a reference. Reproduction, even partial, is only permitted with written permission from ATMOS.

These operating instructions must always be kept available near the device.

Care, period tests, regular cleaning and proper application are indispensable. They guarantee the operational safety and usability of the ATMOS E 341 Battery.

Maintenance, repairs and period tests may only be carried out by persons who have the appropriate technical knowledge and are familiar with the product. To carry out these measures the person must have the necessary test devices and original spare parts.

Prior to start-up please peruse chapter „2.0 Hints for your safety“ on page 11, in order to be prepared for any possible dangerous situations. This helps you avoid potentially dangerous situations.

The product ATMOS E 341 Battery bears CE marking CE 0124 according to the EC Directive of the council for medical products 93/42/EEC and meets the basic requirements of Appendix I of the directive.

The product ATMOS E 341 Battery complies with all applicable requirements of the Directive 2011/65/EC restricting the use of certain hazardous substances in electrical and electronic equipment (“RoHS”).

The declaration of conformity and our general standard terms and conditions can be obtained on our website at

The quality management system at ATMOS has been certified according to international standards EN ISO 13485.

These operating instructions are valid for the following devices:

ATMOS E 341 Battery	REF 319.0000.0
ATMOS E 341 Battery / DDS	REF 319.1000.0
ATMOS E 341 Battery / Serres®	REF 319.1100.0
ATMOS E 341 Battery / Medi-Vac®	REF 319.1200.0
ATMOS E 341 Battery / Universal bracket	REF 319.1300.0

Some figures show the ATMOS C 341 Battery. However, the devices do not differ in their functionality described.

1.2 Explanation of pictures and symbols

In the operating instructions

⚠ DANGER
Warning of a danger which causes immediate death or serious injury. Observe the necessary measures.

⚠ WARNING
Beware of a danger which can cause death or serious injury. Observe the necessary measures.

⚠ CAUTION
Beware of a danger which can easily hurt you. Observe the necessary measures.

NOTICE
Indication of a danger where the product or other items can be damaged. Observe the necessary measures.

⚠	Warning of a danger which can cause death or serious injury.
ℹ	Information regarding possible material damage which can be caused.
☞	Useful information on the handling of the device.
1.	Action. Go step by step
•	Numeration.
»	Result of an action.
	Move, plug in this direction.
click	Engage, check correct fit.

On device and type plate

	Follow operating instructions (blue)		Observe operating instructions
	Manufacturer		Manufacturing date
SN	Serial number	IP34D	Degree of protection
REF	Order number	KB	Short term operation
	Professional disposal		Application part type BF
	Protection class II	PATIENT	Connection suction hose/patient (Serres® canister system)
CE 0124	This product complies with the relevant requirements of the EU Directives		For single use only (Symbol is on the consumables)

On the recharging accessories

	Observe operating instructions		This product complies with the relevant requirements of the EU Directives
	Manufacturing date		Professional disposal
	Manufacturer	REF	Order number
SN	Serial number	IP 40	Degree of protection
	Output voltage (13.8 V / 3.5 A)		Application part type CF
	Input voltage (100 - 240 V / 50 - 60 Hz / 1.1 A)		For indoor use only
	Alternating current		Direct current
	Protection class II		

On the battery

	Refer to the operating instructions.		This product complies with the relevant requirements of EU directives
	Manufacturing date		Professional disposal
	Manufacturer	REF	Order number
SN	Serial number	EAN	European Article Number
	Mounting position: on the top		Warning, special diligent notice
	Do not throw into fire		European Recycling Platform

1.3 Intended use and side effects

Intended use

Name: ATMOS E 341 Battery

Main functions: Temporary and spontaneous suction of secretion, blood and body fluids and also liquid, viscous and solid pieces of food in the medical sector.

To evacuate vacuum mattresses and inflatable splints.

Medical indications / application: Suction of the upper and lower respiratory tract.

Specification of the main function: Drainage and temporary collection of body fluids. By means of an electrical suction pump a negative pressure will be created. The integrated suction canister allows a temporarily collection of the derived body fluids.

Application organ: Upper respiratory tract (nose, nasal cavity, throat), lower respiratory tract (larynx, trachea, bronchial system)

Application time: Temporary use on the patient (< 60 min.)

Application site: The application site is the clinic, the practice, the accident & emergency department, the nursing and home care sector, as well as for outdoor application and during transport. The application of the device may only be performed by medically trained and introduced staff .

Contraindications: Not suitable for

- The continuous operation by drainages in the low vacuum range (e.g. thorax drainages or wound drainages).
- Permanent endoscopic use.
- Suction in medical rooms where a potential equalization is necessary (e.g. heart surgery).
- Use outside the medical sector.
- Suction of flammable, corrosive or explosive substances.
- Suction in explosion-hazardous areas.

The product is: active

Sterility: No sterile product

Single-use product / reprocessing: The device and parts of the accessories are reusable. For information on reprocessing, cleaning and disinfection please see the operating instructions.

Possible side effects during suction

- Bleeding in the nasal pharyngeal area
- Injury to the vocal cords
- Tracheal injury
- Hypoxemia
- Cardiovascular instability
- Bradycardia, Arrhythmia and Asystole (caused by vagus stimulation)
- Tachycardia (caused by stress)
- Choking, nausea, vomiting and coughing
- Nosocomial infection of the respiratory tract
- Seizures by patients who tend to develop cramps

Attention must be paid to these operating instructions in order to keep the side effects as minimal as possible.

1.4 Function

The ATMOS E 341 Battery is a mobile, portable, mains operated medical device for the temporary application on adults, children and babies. The device is operated with an electronically controlled, maintenance-free diaphragm pump.

The pump can be optionally operated by rechargeable battery or via an external DC voltage source (12 V).

During operation the pump generates a vacuum within the hose system and collection canister, thus sucking off secretion, blood and body fluids as well as liquid, viscous and solid pieces of food. The fluid is gathered in the collection canister.

The predefined vacuum values enables a quick and precise adjustment of the vacuum in different situations. It can be selected between four different vacuum values (-0.1 bar; -0.2 bar; -0.5 bar and -0.8 bar). The control panel is illuminated, so that you can read the operating status even after dark.

An overtemperature stop prevents overheating of the batteries.

DDS secretion canister:

The DDS secretion canister is affixed laterally to the device and is plugged via Direct Docking onto the suction connection at the support for the DDS canister system. Therefore there is no intermediate hose. Now the user can/must only connect the suction hose. A hydrophobic bacterial filter located in the lid of the canister prevents bacteria and liquids from entering the pump.

A mechanical oversuction stop (float ball) is integrated in the canister lid. This prevents an accidental absorption of secretion into the pump head. The float ball rises to the top of the secretion until it blocks the outlet.

Disposable suction canister:

The disposable secretion canister is comprised of an outer canister, disposable suction bag, vacuum hose and the disposable suction hose.

The disposable suction canister is affixed laterally to the device. The vacuum hose of the canister is connected to the suction connection of the device. The secretion is transported to the disposable suction bag via the suction hose. The disposable suction bag is a single use product. As soon as the disposable suction bag is full it is removed from the outer canister and disposed of. The disposable suction bag and the disposable suction hose must not be reused.

A bacterial filter is integrated in the disposable suction bag. This prevents secretion, liquid and bacteria from seeping into the device.

1.5 Intended operators

The ATMOS E 341 Battery may only be used by persons who were medically trained, and were trained in the medical suction. Prior to application the user must be familiar with the device. Please note the country-specific requirements and regulations.

ATMOS recommends: Instruction on the operation of the device must be performed by an authorized person.

1.6 Scope of delivery

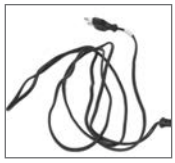
1. Please compare the contents on completeness immediately upon receipt (see delivery note).

Basic device

ATMOS E 341 Battery with device base

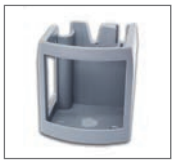
Hose reel (mounted)

Power supply and recharging unit 318.0035.0



2-pin mains connection cable 008.0920.0

DDS canister system (mounted)



Support for DDS canister system

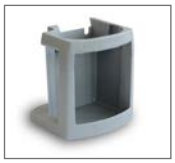
Reusable suction hose, Ø 10 mm, L 1.3 m

Secretion canister 1 l with canister lid, filter holder, sealing ring

10 x Bacterial filter

10 x Fingertip

Serres® canister system (mounted)



Support for Serres® canister system

Vacuum hose with angled connection

Serres® outer canister 1 l

10 x disposable suction hose with fingertip, Ø 6 mm

Medi-Vac® canister system (not mounted)

Support for Medi-Vac® canister system

Vacuum hose with angled connection

Medi-Vac® outer canister 1 l

10 x disposable suction hose with fingertip, Ø 6 mm

Universal bracket (not mounted)

Support for canister system

Vacuum hose with angled connection

☞ Hydrophobic bacterial and viral filter is not included in the scope of delivery and must be ordered separately for use with a canister system without an integrated bacterial filter.

Not included in the scope of delivery:

- Suction catheter
- Adapter for vacuum mattresses
- Serres® suction bag 1 l
- Medi-Vac® suction bag 1 l
- Wall and device support

1.7 Transport and storage

Only transport the device in a shipping container, which is padded and offers sufficient protection.

If damage occurs during transport:

1. Document and report the transport damage.
2. Fill in form “customer complaint/return shipment”. This form is enclosed with each delivery and can be found at
3. Send in the device to ATMOS (chapter „6.3 Sending in the device“ on page 44).

Environmental conditions for transport and storage:

- Temperature: - 40...+ 70 ° C
- Relative humidity: 5...95 % without condensation
- Air pressure: 540...1100 hPa

2.0 Hints for your safety

The safety of the ATMOS E 341 Battery complies with all the recognized rules of technology and the Directives of the Medical Devices Act.

Read and follow the safety instructions carefully before using the product.

2.1 General safety information

Make yourself familiar with the device at an early stage, so you can use it even in hectic situations.

Never operate the unit, if it shows any obvious safety defects. Check the unit at regular intervals for safety and function.

2.2 Danger for users, patients and third parties

Take care that the device is always functional and ready for use.

Your patient may suffocate.

- Ensure that the device is always ready for use in an emergency.
- Position the unit in an easily accessible location and keep access free.
- Make sure that the charging accessories are functional. Replace defective charging accessories immediately.
- Recharge the battery at the latest after 6 months, even if you do not use the device.
- Perform a function check after each use. Perform a function check every 4 weeks in case you do not use the device for a longer period.
- ATMOS recommends always having another suction device ready to hand in case of any device failure. So you can suck even in the event of equipment failure.
- Please observe the notes on electromagnetic compatibility (EMC) of the device.

Avoid misapplication.

Your patient may be seriously injured.

- The ATMOS E 341 Battery may only be used by persons who were medically trained, and were trained in the medical suction.
- Please select the vacuum according to the patient and the application.
- Observe the valid guidelines.

Reduce the risk of infection for you and your patients!

Deadly diseases can be transmitted.

- Always wear disposable gloves, if you could come into contact with secretion.
- Never use components marked with ⊘ more than once. These components are intended for single use only.
- Only use sterile packaged parts, when the packaging is undamaged.
- Do not operate the device without a bacterial filter.

Protect yourself against an electric shock.

Burns, cardiac arrhythmias and even death are possible.

- Do not operate the device if it has been dropped. In this case please clean the device and send it in to ATMOS for repair.
- Disconnect the device from the mains power supply prior to cleaning or disinfection.
- Prior to each use, please check whether the device or the recharging accessories are damaged. Never operate the device if you detect any failure. In this case please clean the device and send it in to ATMOS for repair.
- Take care that no liquid penetrates the device. In case that liquid has penetrated the device it may no longer be operated. In this case please clean the device and send it in to ATMOS for repair.
- The ATMOS E 341 Battery cannot be sterilized.
- Use the recharging accessories in dry surroundings. The surroundings must be non-conductive.
- Only use the recharging accessories according to the operating instructions.
- Only use original accessories and original spare parts from ATMOS. This specifically applies to the recharging accessories and the battery.
- Please pay attention to the period tests in chapter „6.0 Maintenance and service“ on page 42.
- Assembly, repairs, modifications and period tests may only be carried out by authorized persons.
- Do not modify the device without permission of the manufacturer.

Explosion and fire hazard!

Burns and injuries are possible.

- Never suction any explosive, flammable or corrosive gases or liquids. Please observe the intended use in chapter „1.3 Intended use and side effects“ on page 6.
- Never operate the device in explosion-hazardous areas or areas which are oxygenated.
- Only use original accessories and original spare parts from ATMOS. This specifically applies to the recharging accessories and the battery.

Danger of suffocation for children through accessories!

Children can strangle themselves or be suffocated by small parts.

- Keep children away from hoses and connection cables.
- Keep children away from swallowable small parts. Small parts are, e.g. fingertip and sealing ring.

Tripping hazard by cables.

Injuries and fractures are possible.

- Lay connecting cables properly.

Only a fully functional product will meet the safety requirements of users, patients and third parties. Please therefore read the following instructions carefully.

2.3 Damage to the device

Please observe the ambient conditions regarding transport, storage, operation and recharging of the battery.

Take care that no liquid penetrates the device. In case that liquid has penetrated the device it may no longer be operated. In this case please clean the device and send it in to ATMOS for repair.

Always place the device on firm, level surface. The device must always be in a vertical position, when you use it. Otherwise secretions may enter the unit.

Only use proper power connections and extension cords.

If possible, avoid a transport at temperatures below -5 °C. After transport in temperatures below -5°C The device must be acclimatized for up to 6 hours at room temperature before you continue with the next steps.

The device may only be connected to the mains power supply when mains voltage and frequency of device and mains power supply correspond.

3.0 Setting up and starting up

ⓘ Please observe that insufficient battery charge can result in damage to the battery.

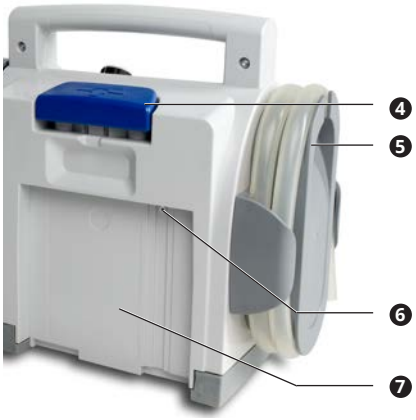
1. The battery must be fully charged prior to first use.

3.1 Device overview

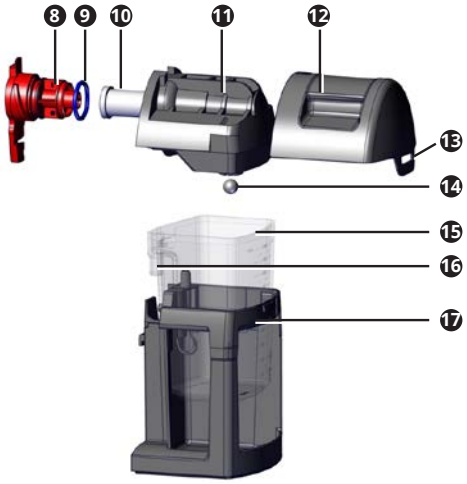
3.1.1 Front and rear view

With DDS canister system

❶ Control panel
❷ Battery compartment cover
❸ Device base



❹ Release button wall and device support
❺ Hose rewind with suction hose
❻ Connection charging accessories
❼ Guide for the wall and device support



❽ Filter holder
❾ Sealing ring
❿ Bacterial filter
⓫ Inner canister lid
⓬ Outer canister lid
⓭ Canister lid lug
⓮ Float ball
⓯ Secretion canister with scale
⓰ Connection suction hose
⓱ Support for DDS canister system

With Serres® canister system

❽ Angle (connection disposable suction hose)

❾ Serres® suction bag

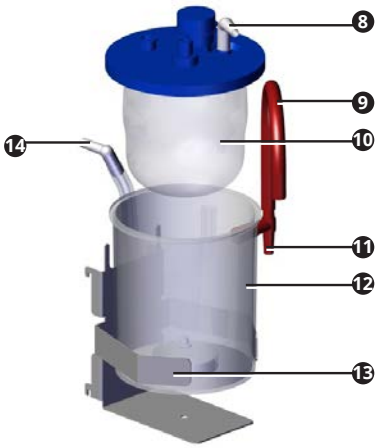
❿ Serres® outer canister

⓫ Support for Serres® canister system

⓬ Grey angle on the Serres® outer canister (connection vacuum hose)

⓭ Vacuum hose with angled connection

With Medi-Vac® canister system



❽ Angle (connection disposable suction hose)

❾ Red hose

❿ Medi-Vac® suction bag

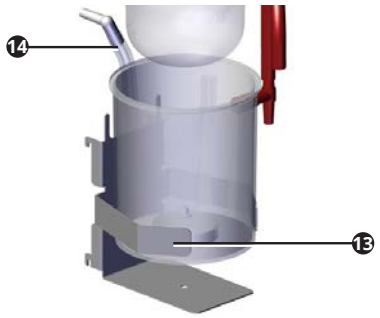
⓫ Connection vacuum hose

⓬ Medi-Vac® outer canister

⓭ Support for Medi-Vac® canister system

⓮ Vacuum hose with angled connection

With universal bracket



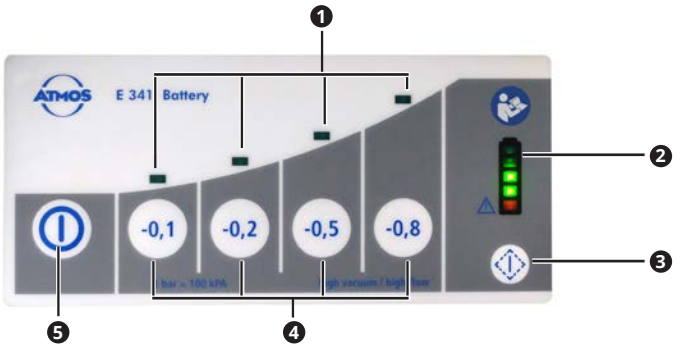
⓭ Support for canister system

⓮ Vacuum hose with angled connection

The universal bracket is suitable for a secretion canister with a diameter of 11.5 - 12.5 cm.

Do not operate the device without a bacterial filter.

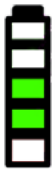
3.1.2 Control panel



1. LEDs for the display of the current vacuum
2. Display of battery status
3. Control button battery status
4. Button to select the desired vacuum
5. On/off button

Display of the battery status

The following display values are not valid during battery charging.

				 Flashes	 Green and red LED flash
> 85 %	60 - 85 %	35 - 60 %	< 15 - 35 %	< 10 - 15 %	< 10 %

Prior to the battery going dead a signal tone sounds every 5 seconds.

An error is present if all the green LEDs flash simultaneously or all LEDs are flashing. Please observe chapter „7.0 Eliminating errors“ on page 47.

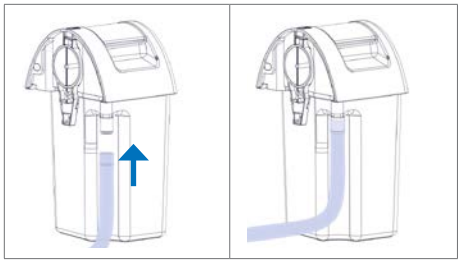
3.2 Preparing the device

Prior to first operation peruse the safety notes in chapter „2.0 Hints for your safety“ on page 11.

ⓘ Damaged pump diaphragms due to cold temperatures during transport.

1. After transport in temperatures below -5°C: The device must be acclimatized for up to 6 hours at room temperature before you continue with the next steps.
2. Check the device for any damage in transport.
3. If the device is damaged: Document and report the transport damage. Send in the device to ATMOS (chapter „6.3 Sending in the device“ on page 44).
4. If the device is not damaged: Place it on a safe and even surface.
5. Check the charging accessories for any damage.
6. Replace defective charging accessories immediately.
7. The battery must be fully charged, chapter „3.3 Charging the battery“ on page 17.
8. Remove the canister system from the support.
9. With DDS canister system: Prior to first use, clean the canister system and insert a bacterial filter (chapter „5.0 Cleaning and disinfection“ on page 35 as well as chapter „3.4 Connection and removal of canister system and hoses“ on page 18).

10. Connect the suction hose.



11. Place the canister system upright from above into the support: Chapter „3.4 Connection and removal of canister system and hoses“ on page 18.
12. Wrap the suction hose onto the hose rewind.
13. If you wish to use the device for vacuum mattresses: Check whether a suitable adapter is available for the vacuum mattresses.

3.3 Charging the battery

☞ The battery status can be checked by briefly pressing the control button for the battery status.

The battery must be fully charged prior to first use.

ⓘ Damage to the battery due to deep discharge.

1. Charge the battery at the latest when the bottom green LED of the battery status display flashes.
2. Only use the enclosed power supply and recharging unit 318.0035.0. Other charging accessories must not be used.
3. Please observe the notes in chapter „6.4 Handling of batteries“ on page 44.

During battery recharging full suction performance of the device is still available.

If the battery is fully discharged or defective, the device may be operated via the charging accessories.

☞ If the ambient conditions are not adhered to, the charging time for the battery is significantly increased. The charging process will be terminated if the temperature is too high. Therefore, please prevent the device from direct solar radiation and keep it away from radiators.

Ambient conditions during charging

- Temperature: +0...+40 °C
- Relative humidity: 5...95 % without condensation
- Air pressure: 540...1100 hPa

Charging with power supply and recharging unit

1. Connect the device plug from the power supply and recharging unit to the back of the device ❶ .

2. Connect the power cable to the power supply and recharging unit.
3. Plug in the power plug of the power supply and recharging unit to the socket.

» The LEDs of the battery status display flash successively.
» One LED is continuously illuminated. This indicates the current battery status.
» The battery is fully recharged when the top red LED is continuously illuminated.

Recharging via the wall and device support

If you have attached the charging accessories to a wall and device support then the device will be charged automatically: Chapter „8.1 Wall and device support“ on page 50.

1. Attach the device to the wall and device support.

» The LEDs of the battery status display flash successively.
» One LED is continuously illuminated. This indicates the current battery status.
» The battery is fully recharged when the top red LED is continuously illuminated.

3.4 Connection and removal of canister system and hoses

3.4.1 DDS canister system

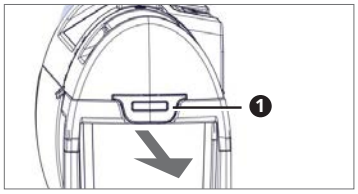
⚠ WARNING

Risk of infection by contaminated bacterial filter and canister lid.

Deadly diseases can be transmitted.

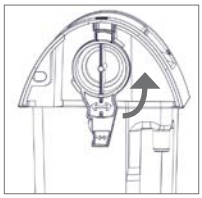
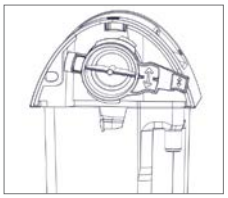
- Do not operate the device without a bacterial filter. We recommend you always to store at least one spare bacterial filter.
- Always wear disposable gloves when changing the bacterial filter.
- Prior to each use please check whether the bacterial filter is dry and clean. Replace the bacterial filter with a new filter if it is discoloured, contaminated or oversucked. A bacterial filter may never be reused.
- Exchange the bacterial filter when changing the patient. ATMOS recommends: Replace the bacterial filter after 14 days, even if there is no patient change.

Removal

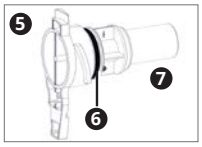
1. Remove the suction hose from the hose rewind and then from the hose guide.
2. Gently unlock the clip ❶ of the canister lid from the support of the DDS canister system and lift it upwards:
3. 

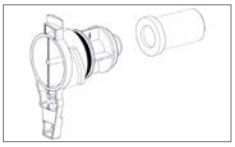
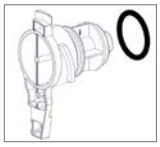
4. Lift the canister system upwards from the support.
5. Place the canister system on a safe and even surface.
6. Remove the suction hose from the secretion canister.
7. Turn the filter holder anti-clockwise by 90°.

☞ The filter holder is difficult to turn because it has to seal the canister lid tightly.

8. Remove the filter holder with bacterial filter from the canister lid.
9. If required: Remove the bacterial filter ❼ and the sealing ring ❻ from the filter holder ❺.



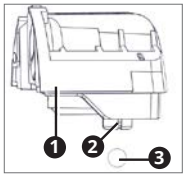
⚠ Risk of infection by overflowing secretion. Deadly diseases can be transmitted.

10. Hold the secretion canister with one hand and pull it upwards with force.

» The canister system is open.

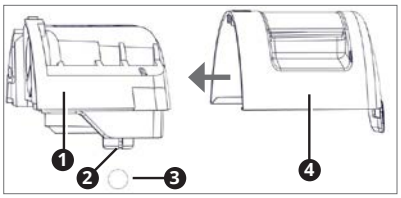
11. If required: Press the inner canister lid forward and remove it from the outer canister lid.

12. If required: Remove the float ball ❸ from the float ball compartment ❷ of the inner canister lid ❶.



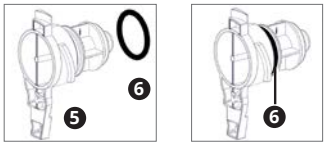
Connection

☞ When you pour 50-100 ml water or disinfectant into the secretion canister, then it is easier to clean.

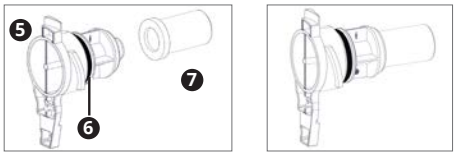


❶ Inner canister lid
❷ Float ball compartment
❸ Float ball
❹ Outer canister lid

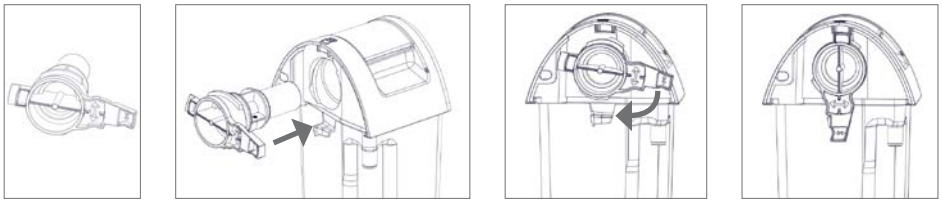
1. Press the outer canister lid ❹ on the inner canister lid ❶, until it clicks into place.
2. Open the float ball compartment ❷ gently and insert the float ball ❸.
3. Gently press the float ball compartment together.
4. Check whether the float ball moves easily and does not fall out of the float ball compartment.
5. Place the secretion canister on a firm surface.
6. Press the canister lid onto the secretion canister. The canister lid cannot be placed in a wrong position.
7. Press the canister lid tightly with both hands as far as it will go onto the secretion canister.
8. Place the sealing ring ❻ onto the filter holder ❺.



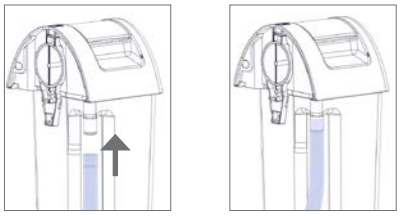
9. Insert a new bacterial filter ❼ onto the filter holder ❺.



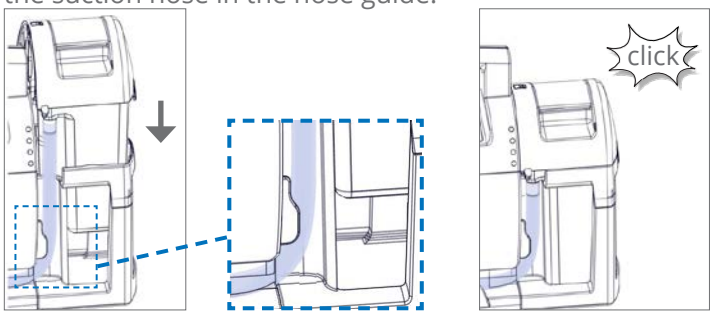
10. Insert the filter holder into the canister lid and turn it clockwise until it clicks into place.



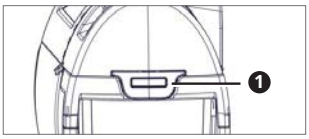
11. Connect the suction hose to the canister system.



12. Place the canister system upright into the support and at the same time position the suction hose in the hose guide.

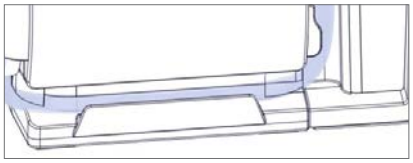


13. Check that the clip ❶ of the canister lid is correctly attached to the support of the canister system.



» The vacuum connection from the pump to the canister system is established.

14. Check whether the hose has a kink. If applicable, remove the kink.
15. Insert the suction hose into the hose guide of the device base.



16. Wrap the suction hose onto the hose rewind.
17. If required: Connect a fingertip to the suction hose.
18. Perform a manual function check: Chapter „6.2.1 Manual function check“ on page 42.

3.4.2 Serres® canister system

⚠ WARNING

Risk of infection by contaminated canister system and hoses.

Deadly diseases can be transmitted.

- Only use Serres® suction bags with integrated bacterial filter.
- Only use sterile packaged parts, when the packaging is undamaged.

No vacuum or vacuum is too low because of incorrect connection.

Patient can suffocate.

- Please observe the operating instructions from the manufacturer of the Serres® canister system.

Removal

1. Remove the disposable suction hose from the hose guide.
2. Remove the disposable suction hose and the angle ❷ from the Serres® suction bag.
3. 

4. Close the connection „patient“ at the Serres® suction bag with the green cap ❸.
5. Remove the vacuum hose from the Serres® outer canister (grey angle ❶).
6. Remove the Serres® canister system from the support.
7. If required: Remove the vacuum hose from the device.

Connection

1. Connect the vacuum hose to the device.

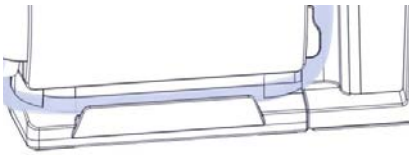
2. Place the Serres® outer canister upright into the support. The scale must be visible.
3. Insert the Serres® suction bag into the Serres® outer canister.

4. Connect the vacuum hose to the Serres® outer canister (grey angle ❶).

5. Check whether the foil of the Serres® suction bag is fully inserted into the Serres® outer canister and the lid tightly fits to the Serres® outer canister.
6. Connect the disposable suction hose with the angle ❷ to the Serres® suction bag.
7. Close the auxiliary air vent of the fingertip and close the front opening with your thumb.
8. Switch on the device so that the pump builds up a vacuum.

» The Serres® suction bag develops.

9. Insert the suction hose into the hose guide.



10. Wrap the suction hose onto the hose rewind.
11. Perform a manual function check: Chapter „6.2.1 Manual function check“ on page 42.

3.4.3 Medi-Vac® canister system

⚠ WARNING

Risk of infection by contaminated canister system and hoses.

Deadly diseases can be transmitted.

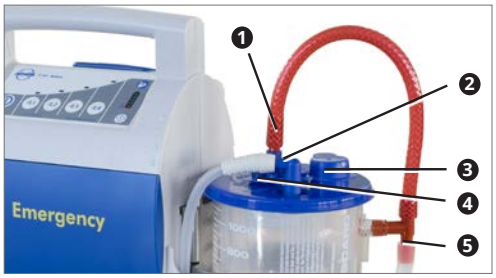
- Only use Medi-Vac® suction bags with integrated bacterial filter.
- Only use sterile packaged parts, when the packaging is undamaged.

No vacuum or vacuum is too low because of incorrect connection.

Patient can suffocate.

- Please observe the operating instructions from the manufacturer of the Medi-Vac® canister system.

Removal

1. Remove the disposable suction hose from the hose guide.
2. Remove the disposable suction hose and the angle ❷ from the Medi-Vac® suction bag.
3. 

4. Close the connection „patient“ at the Medi-Vac® suction bag with the blue cap ❸.
5. Remove the red hose ❶ from the Medi-Vac® suction bag.
6. Close the connection „vacuum“ at the Medi-Vac® suction bag with the blue cap ❹.
7. Remove the vacuum hose from the red connection ❺ of the Medi-Vac® suction bag.
8. Remove the Medi-Vac® canister system from the support.
9. If required: Remove the vacuum hose from the device.

Connection

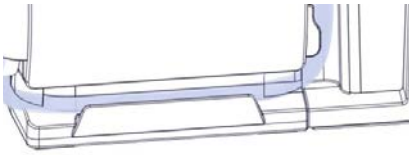
1. Connect the vacuum hose to the device.

2. Insert the Medi-Vac® suction bag into the Medi-Vac® outer canister.
3. Connect the red hose ❶ to the Medi-Vac® suction bag.
4. Place the Medi-Vac® outer canister upright into the support.
5. Connect the vacuum hose to the red connection ❸ of the Medi-Vac® suction bag.

6. Check whether the lid tightly fits to the Medi-Vac® outer canister.
7. Connect the disposable suction hose ❷ to the Medi-Vac® suction bag.
8. Close the auxiliary air vent of the fingertip and close the front opening with your thumb.
9. Switch on the device so that the pump builds up a vacuum.

» The Medi-Vac® suction bag develops.

10. Insert the suction hose into the hose guide.



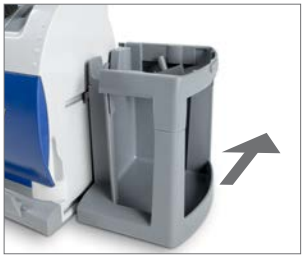
11. Wrap the suction hose onto the hose rewind.
12. Perform a function check: Chapter „6.2 Function check“ on page 42.

3.5 Support for canister system

3.5.1 DDS canister system

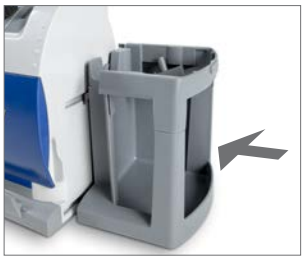
Removal

1. Remove the canister unlocking.
2. 
3. Push the support for the DDS canister system backwards up to the middle and take it out of the guides.




Mounting

1. Attach the support for the DDS canister system in the middle on the right side of the device. The bars at the support must be fitted to the two guides at the device.



2. Slide the support for the DDS canister system forward until it is flush with the device. The inlet to the pump must be visible.

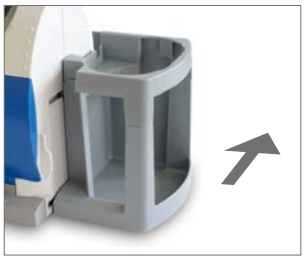

3. Attach the canister unlocking.

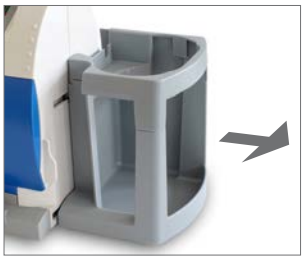
☞ The canister unlocking is at the same time the connection angle through which the canister system is connected to the pump.

3.5.2 Serres® canister system

Removal

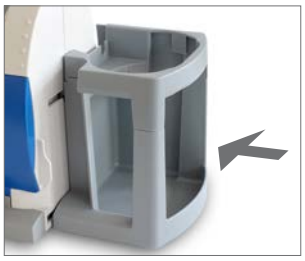
1. Remove the connection angle.
2. Push the support for the Serres® canister system backwards up to the middle and take it out of the guides.



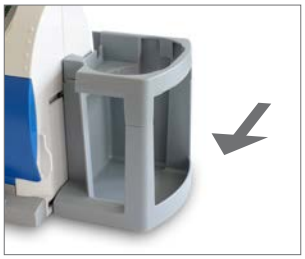


Mounting

1. Attach the support for the Serres® canister system in the middle on the right side of the device. The bars at the support must be fitted to the two guides at the device.



2. Slide the support for the Serres® canister system forward until it is flush with the device. The inlet to the pump must be visible.

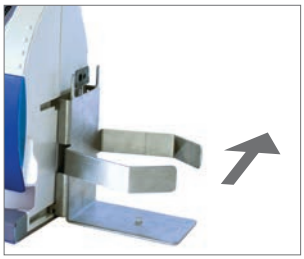


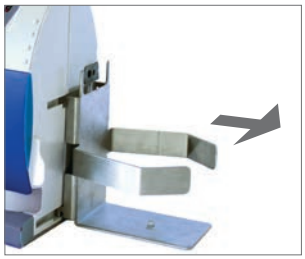
3. Connect the vacuum hose to the connection angle.

3.5.3 Medi-Vac® canister system / Universal bracket

Removal

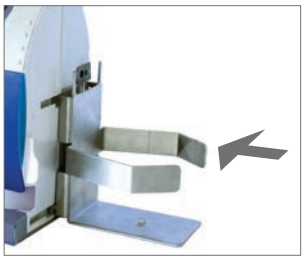
1. Remove the connection angle.
2. Push the support of the canister system backwards up to the middle and take it out of the guides.



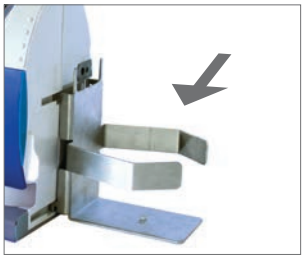


Mounting

1. Attach the support of the canister system in the middle on the right side of the device. The bars at the support must be fitted to the two guides at the device.



2. Slide the support of the canister system forward until it is flush with the device. The inlet to the pump must be visible.



3. Connect the vacuum hose with the connection angle.

☞ The universal bracket is suitable for a secretion canister with a diameter of 11.5 - 12.5 cm .

☞ Do not operate the device without a bacterial filter.

3.6 Hose rewind

Removal

Prerequisite: Hose is taken off.

1. Pull the wings outwards so that the hose rewind can be released.
2. Pull the hose rewind from the device.

Mounting

Prerequisite: Device base and battery compartment cover are attached.

1. Turn the hose rewind so that the opening points upwards.
2. Attach the hose rewind with force to the support on the left side of the device until it clicks into place.

3.7 Device base

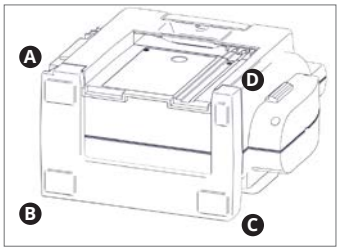
Removal

Prerequisite:

The following parts are removed:

- Canister system
- Support for canister system
- Hose rewind
- Battery compartment cover

1. Put the device carefully on the front.
2. Remove the device base in the following order A - B - C - D:



Mounting

NOTICE

Incorrectly mounted device base.

Device moves during the operation.

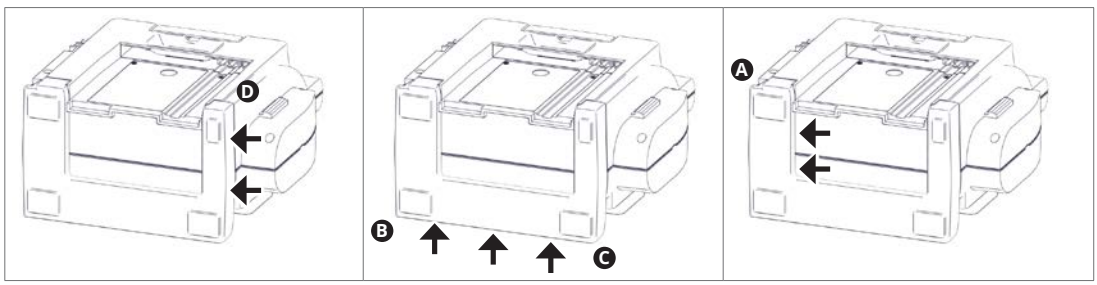
- Attach the device base with particular care, according to the operating instructions.

Prerequisite:

The following parts are removed:

- Canister system
- Support for canister system
- Hose rewind
- Battery compartment cover

1. Put the device carefully on the front.
2. Take care that the indentations at the device base are fitted to the protruding edges at the device.
3. Attach the device base in the following order D - C - B – A. The arrows show the points at which the device and the device base have to engage with each other.



4. Firmly press on all sides again.

5. Afterwards the following parts can be mounted:
   - Battery compartment cover (chapter „6.5 Battery exchange“ on page 45)
   - Hose rewind (chapter „3.6 Hose rewind“ on page 29)
   - Support for canister system (chapter „3.5 Support for canister system“ on page 26)
   - Canister system (chapter „3.4 Connection and removal of canister system and hoses“ on page 18).

4.0 Operation

⚠ WARNING

Risk of infection by lack of hygiene or damaged components.

Deadly diseases can be transmitted.

- Please use new consumables and new disposable canister systems or reprocessed DDS canister systems for each patient.
- Prior to each use, please check whether hoses or canister systems are damaged. Replace any damaged parts.

Electric shock from damaged equipment.

Cardiac arrhythmias may be caused.

- Prior to each use, please check whether the device and the recharging accessories are damaged.
- Replace any damaged parts immediately.
- Do not use the device if it is damaged.

Ambient conditions during operation

- Temperature: -5...+50° C
- Relative air humidity: 5...95 % without condensation
- Air pressure: 540...1100 hPa

4.1 Switch on the device

☞ The device should only be left on as long as you need it. This way you can increase the battery life.

1. Push the on /off button to switch on the device.

» The pump starts. The vacuum is set which was selected prior to switch off.

» All LEDs on the control panel light up for about 1 second.

» The on/off button is illuminated as long as the device is switched on.

4.2 Switch off the device

1. Switch off the device by pressing the on/off button for at least 1 second.

4.3 Vacuum adjustment

⚠ WARNING

Vacuum is too high.

Patient may be seriously injured.

- Observe the valid guidelines.
- Please select the vacuum according to the patient and the application.

1. Push the on /off button to switch on the device.

» The pump starts. The vacuum is set which was selected prior to switch off.

2. Push the button for the required vacuum.

» The green LED above the selected button flashes.

4.4 Suction

⚠ WARNING

Device failure, if the period of continuous operation is too long.

Patient can suffocate.

- Make sure not to use the device in continuous operation for more than 60 minutes. Otherwise the pump shuts off automatically. In this case let the device cool down for about 2 hours.
- Check the status of the battery regularly while you operate the device.

Risk of infection.

Deadly diseases can be transmitted.

- Always wear disposable gloves during suction.

⚠ CAUTION

Risk of injury due to inappropriate material or untrained users.

Injuries in the oral cavity and pharynx of the patient.

- Suction may only be carried out by persons who were medically trained, and were trained in the medical suction.
- Use a suction catheter for tracheal or nasopharyngeal suction.
- If you suck viscous food ingredients in the oral cavity, use the suction hose without suction catheter.

Connect the suction catheter

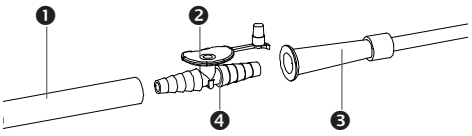
1. Remove the suction hose from the hose rewind.

If you suck viscous food ingredients in the oral cavity:

2. Use the suction hose without suction catheter.

For tracheal or nasopharyngeal suction:

2. Please choose a suction catheter in the appropriate size.
3. Connect the suction hose ❶ and the suction catheter ❸ with a fingertip ❹:



❶ Suction hose
❷ Secondary air opening
❸ Suction catheter
❹ Fingertip

Connect the special suction instruments

1. Please observe the operating instructions for the suction instruments.

Suction

⚠ CAUTION

Adherence by careless suction.

Injuries in the oral cavity and pharynx of the patient.

- Briefly open the auxiliary air vent ❷, if the suction catheter adheres to the tissue.
- Suck particularly careful in the tracheal area.

1. Push the on /off button to switch on the device.

» The pump starts. The vacuum is set which was selected prior to switch off.

⚠ Patient may be seriously injured, if the set vacuum is too high.

» Please select the vacuum according to the patient and the application. Push the button for the required vacuum. The green LED above the selected button flashes.

☞ As long as the auxiliary air vent is opened, the device does not suck.

1. Open the auxiliary air vent before inserting the suction catheter.
2. Apply the suction catheter in such a way as you were taught.
3. Close the auxiliary air vent, so that the device sucks.

⚠ Suffocation is possible by full canister system.

4. Pay attention to the filling level of the canister system.
5. Empty the secretion canister or change the suction bag once it is half full. As soon as the canister system is too full, the float ball seals the intake area. You can then no longer suck with the device.

Make sure that the hose is not kinked during suction. Otherwise the suction at the patient is too low.

☞ If you want to interrupt the suction briefly, you can clamp the suction hose into the opening of the hose rewind.

If secretion has penetrated into the device, please observe chapter „5.6 Oversuction“ on page 41.

After use

1. Switch off the device by pressing the on/off button for at least 1 second.
2. Clean the device after every use: Chapter „5.0 Cleaning and disinfection“ on page 35.
3. Perform a function check after each cleaning: Chapter „6.2 Function check“ on page 42.

5.0 Cleaning and disinfection

We recommend you to document any maintenance work and also any exchange of parts.

⚠ WARNING

Risk of infection by secretion on the device, accessories and consumables.

Deadly diseases can be transmitted.

- Always wear disposable gloves during any cleaning.
- Clean the device after every use:
- Clean and disinfect the device according to the operating instructions.
- The device must be reprocessed professionally, if secretion has penetrated into the device. Please observe chapter „5.6 Oversuction“ on page 41.

5.1 Prepare for cleaning

1. Switch off the device.
2. Remove the recharging accessories from the device.
3. Remove the canister system from the device: Chapter „3.4 Connection and removal of canister system and hoses“ on page 18.

⚠ Risk of infection by overflowing secretion. Deadly diseases can be transmitted.

4. Carefully remove the canister lid / the suction bag.
5. Dispose of the secretion / the suction bag. Please observe the notes in chapter „10.0 Disposal“ on page 53.
6. Dispose of all disposables (e.g. suction catheter, fingertip, single-use suction hose). In case you are using the DDS canister system: Dispose of the bacterial filter.
7. Remove the hose rewind.
8. Remove the support for the canister system.

5.2 Cleaning

Please observe the operating instructions of the disinfectant manufacturers. Pay particular attention to the information regarding the concentration of the disinfectants and the material compatibility.

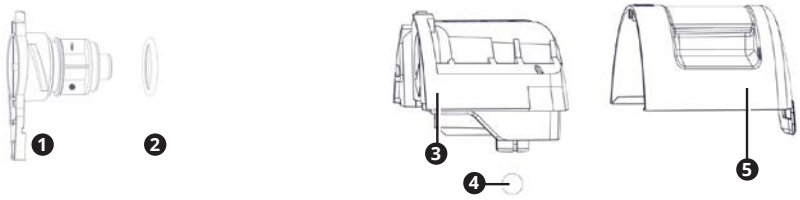
Some disinfectants may stain the parts of the canister lid and silicone hoses. Parts can also stain by autoclaving. However, this has no influence on the properties of the materials.

Please only use disinfectants, which are recommended by ATMOS (chapter „5.4 Recommended disinfectants“ on page 37). The use of other disinfectants may damage the device or the canister system.

DDS canister system

Number of reprocessing cycles: max. 50.

1. Disassemble canister lid and filter holder into their individual parts. Chapter „3.4 Connection and removal of canister system and hoses“ on page 18.



❶ Filter holder
❷ Sealing ring
❸ Inner canister lid
❹ Float ball
❺ Outer canister lid

2. Rinse the following parts of the DDS canister system with clear water:
   - Secretion canister
   - Inner canister lid
   - Outer canister lid
   - Float ball
   - Filter holder
   - Sealing ring
   - Suction hose
   - Support for canister system
3. Clean the mentioned parts with a brush or a cloth.
4. Disinfect the mentioned parts with a disinfectant which is recommended by ATMOS.
5. Let the individual parts of the canister lid and the filter holder dry.

As soon as the individual parts are dry:

6. Insert the new bacterial filter.
7. Reassamble the individual parts of the canister lid and the filter holder.

Serres®, Medi-Vac® secretion canister system, other canister systems

- Please observe the instructions in the operating instructions for the canister system.
- Do not operate the device without a bacterial filter. The hydrophobic bacterial and viral filter (REF 443.0738.0) must be used with a secretion canister system which has no integrated bacterial filter.

Vacuum hose

After every suction process:

1. Rinse the vacuum hose with clear water for at least 10 seconds.

It must be exchanged after each patient or at least once a day:

2. Disinfect the vacuum hose with an instrument disinfectant recommended by ATMOS.

Device surface

⚠ WARNING

Electric shock by liquid in the device.

- Disconnect the device from the mains power supply prior to cleaning.
- Do not rinse the device under running water and do not immerse it into any liquids.
- Make sure that the cleaning cloth is only damp and not wet.
- Do not autoclave the device.
- Do not immerse the device in disinfectant solution.

1. Clean the entire surface of the device and the hose rewind with a damp cloth.
2. Disinfect the entire surface of the device and the hose rewind with a surface disinfectant.

Power supply and recharging unit

⚠ WARNING

Electric shock by liquid in the power supply.

- Disconnect the power supply and recharging unit from the mains power supply prior to cleaning.
- Do not rinse the power supply and recharging unit under running water and do not immerse it into any liquids.
- Make sure that the cleaning cloth is only damp and not wet.
- Do not autoclave the power supply and recharging unit, do not sterilize it and do not thermally disinfect it.
- Do not immerse the power supply and recharging unit in disinfectant solution.

1. Clean the power supply and recharging unit with a damp cloth. You can use a mild detergent.
2. Disinfect the power supply and recharging unit with a surface disinfectant. Recommended: Terralin® Protect

Wall and device support

1. Clean the wall and device support with a damp cloth.
2. Disinfect the wall and device support with a surface disinfectant.

5.3 After cleaning

⚠ Risk of injury to user and patient by a damaged device.

1. Check after each cleaning, whether the device is obviously damaged. In case the device is damaged, please send it in to ATMOS.
2. Perform a function check: Chapter „6.2 Function check“ on page 42.
3. Prepare the device for the next use.

5.4 Recommended disinfectants

If you are using aldehyde and amine-containing disinfectants on the same object, this may cause discoloration.

5.4.1 Instrument disinfection

Disinfectant	Ingredients	in 100 g	Manufacturer
Mucocit®-T	didecyldimethylammonium chloride alkyl propylene diamin-1.5-bis guanidinium acetate bis(aminopropyl)laurylamine laurylpropylen diamine non-ionic surfactants	3.9 g 4.5 g 2 g 2.8 g	Merz Dental, Lütjenburg
Gigasept® FF (new) (Application concentrate)	succindialdehyde dimethoxytetrahydrofuran anionic and non-ionic surfactants, perfumes, methylisothiazolinone	11.9 g 3.2 g	Schülke & Mayr, Norderstedt
Sekusept® PLUS (Application concentrate)	glucoprotamin	25 g	Ecolab, Düsseldorf

5.4.2 Surface disinfection

Coated surfaces

Disinfectant	Ingredients	(in 100 g)	Manufacturer
Green & Clean SK	Di alkyl dimethyl ammonium chloride Alkyl dimethyl ethyl benzyl ammonium chloride Alkyl dimethyl benzyl ammonium chloride	< 1 g < 1 g < 1 g	Metasys, Rum (Austria)
Dismozon® pur (Granulate) End of product 12/2014	magnesium monoperoxyphthalate hexahydrate	80 g	Bode Chemie, Hamburg
Dismozon® plus (Granulate)	magnesium monoperoxyphthalate hexahydrate	95.8 g	Bode Chemie, Hamburg
Kohrsolin® FF (Application concentrate)	glutaral benzyl-C12-C18-alkyldimethyl-ammonium chlorides didecyldimethylammonium chloride	5 g 3 g 3 g	Bode Chemie, Hamburg
Kohrsolin® extra (Application concentrate)	(ethylenedioxy)dimethanol glutaral didecyldimethylammonium chloride	14.1 g 5 g 8 g	Bode Chemie, Hamburg
Perform®	Potassium-bis(peroxymonosulfate)-bis(sulfate)	45 g	Schülke & Mayr, Norderstedt
Terralin® Protect (Application concentrate)	benzyl-C12-16 alkyldimethyl-, chloride 2-phenoxyethanol aminoalkylglycine non-ionic surfactants, perfumes	22 g 17 g 0.9 g	Schülke & Mayr, Norderstedt

Other surfaces

Disinfectant	Ingredients(in 100 g)	(in 100 g)	Manufacturer
Dismozon® pur (Granulate) End of product 12/2014	magnesium monoperoxyphthalate hexahydrate	80 g	Bode Chemie, Hamburg
Dismozon® plus (Granulate)	magnesium monoperoxyphthalate hexahydrate	95.8 g	Bode Chemie, Hamburg
Kohrsolin® FF (Application concentrate)	glutaral benzyl-C12-18-alkyldimethyl-ammonium chlorides didecyldimethylammonium chloride	5 g 3 g 3 g	Bode Chemie, Hamburg
Kohrsolin® extra (Application concentrate)	(ethylenedioxy)dimethanol glutaral didecyldimethylammonium chloride	14.1 g 5 g 8 g	Bode Chemie, Hamburg
Mikrobac® forte (Application concentrate)	benzyl-C12-18-alkyldimethyl-ammonium chlorides N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine	19.9 g 5 g	Bode Chemie, Hamburg
Perform®	Potassium-bis(peroxymonosulfate)-bis(sulfate)	45 g	Schülke & Mayr, Norderstedt

Terralin® Protect (Application concentrate) **Suitable for power supply and recharging unit.**	benzyl-C12-16 alkyldimethyl-, chloride 2-phenoxyethanol aminoalkylglycine non-ionic surfactants, perfumes	22 g 17 g 0.9 g	Schülke & Mayr, Norderstedt
SaniCloth® Active	didecyldimethylammonium chloride	< 1 g	Ecolab, Düsseldorf
Incidin® Active	peracetic acid	< 1 g	Ecolab, Düsseldorf
Mikrozid® Sensitive Wipes	benzyl-C12-16 alkyldimethyl-, chloride; didecyldimethylammonium chloride benzyl-C12-14-alkyl [(ethylphenyl)methyl] dimethyl-, chlorides	0.26 g 0.26 g 0.26 g	Schülke & Mayr, Norderstedt
Gigasept® pearls **Suitable for DDS secretion canisters**	Natriumpercarbonat Tetraacetylethylendiamin	43 g 22 g	Schülke & Mayr, Norderstedt

5.5 Hygienic plan

What	How			Notices	When			Who
Parts to be reprocessed	C Cleaning	D Disinfection	S Sterilization		Daily*	Every 14 days*	After each patient / after each suction	Qualified and trained staff who are familiar with reprocessing
Surfaces								
Housing	X	X		Wipe cleaning and disinfection	X		X	
Device base	X	X[1]		Wipe cleaning and disinfection	X		X	
Hose reel	X	X[1]		Wipe cleaning and disinfection	X		X	
Wall and device support	X	X		Wipe cleaning and disinfection			X	
Power supply and recharging unit	X	X		Wipe cleaning and disinfection with a damp cloth. Do not immerse into any liquid!			X	
Secretion canister system								
DDS secretion canister	X	X[1]	X[2]	Cleaning with a brush; cleaning and disinfection (automatic or manual), sterilization is possible	X		X	
Outer canister lid (DDS)	X	X[1]	X[2]	Cleaning with a brush; cleaning and disinfection (automatic or manual), sterilization is possible	X		X	
Inner canister lid (DDS)	X	X[1]	X[2]	Cleaning with a brush; cleaning and disinfection (automatic or manual), sterilization is possible	X		X	
Float ball (DDS)	X	X[1]	X[2]	Cleaning with a brush; cleaning and disinfection (automatic or manual), sterilization is possible	X		X	
Filter holder	X	X[1]	X[2]	Cleaning with a brush; cleaning and disinfection (automatic or manual), sterilization is possible	X		X	
Sealing ring	X	X[1]		Cleaning and Disinfection	X		X	
Bacterial filter				Exchange. If the filter is blocked it must also be exchanged.		X	X	
Fingertip				Exchange.	X		X	
Support for canister system	X	X[1]		Cleaning and Disinfection	X		X	
Suction hose (DDS)	X	X[1]	X[2]	When using without suction catheter	X		X	
	X	X[1]	X[2]	When using with suction catheter	X		X	
Vacuum hose	X	X		Cleaning and Disinfection	X		X	

Recommended disinfectants

Surface disinfection for coated surfaces:
- Green & Clean SK (ATMOS)
- Dismozon® pur (Bode Chemie)
- Dismozon® plus (Bode Chemie)
- Kohrsolin® FF (Bode Chemie)
- Kohrsolin® extra (Bode Chemie)
- Perform® (Schülke & Mayr)
- Terralin® Protect (Schülke & Mayr)

Other surfaces:
- Dismozon® pur (Bode Chemie)
- Dismozon® plus (Bode Chemie)
- Kohrsolin® FF (Bode Chemie)
- Kohrsolin® extra (Bode Chemie)
- Mikrobac® forte (Bode Chemie)
- Perform® (Schülke & Mayr)
- Terralin® Protect (Schülke & Mayr)
- SaniCloth® Active (Ecolab)
- Incidin® Active (Ecolab)
- Mikrozid® Sensitive Wipes (Schülke & Mayr)
- Gigasept® pearls (Schülke & Mayr)

Manual disinfection of instruments:
- Mucocit®-T (Merz Dental)
- Gigasept® FF neu (Schülke & Mayr)
- Sekusept® PLUS (Ecolab)

For concentrations, contact time, temperature, material compatibility, please see the relevant information from the manufacturer.

Important information

Wipe cleaning and disinfection:
All surfaces have to be wiped with a clean (disposable) wipe which is damped with disinfectant solution. The entire surface has to be wiped thoroughly and may not be dried afterwards.

[1] Preferred: mechanical cleaning and disinfection in the washer disinfector with a device according to the ISO 15883-1 (Program: Rinsing 1 min with cold water, cleaning 5 min at 55°C, neutralisation 1 min with 1/3 cold and 2/3 warm water, rinsing 1 min with purified water, thermal disinfection 5 min at 93°C with purified water)
[2] If required hot-steam sterilization at 134°C, 3 x fractionated pre-vacuum method, sterilization time 5 min with a device according to EN285
* Homecare, unless there is no change in patient.

The above stated hygiene requirements are based on the regulations according to the Medical Devices Act, the Medical Devices Operator Ordinance, §18 IfSG and the recommendations of the Robert Koch Institute.
Defi nition of the required reprocessing steps result from the recommendations of the Robert Koch Institute: „Requirements for the reprocessing of medical products", from Robert Koch Institute. The medical products were categorised in the risk groups uncritical, semi-critical and critical. The reprocessing measures mentioned in this cleaning and disinfection plan are a recommendation of ATMOS MedizinTechnik. Any additional reprocessing measures are at the operator's discretion.
All the recommended disinfectants which are stated herein are listed disinfectants (VAH/RKI) and have been tested on their suitability of use on the ATMOS C / E 341 Battery. ATMOS MedizinTechnik cannot be hold liable for any damage caused by wrong concentration of the disinfectants or by the application of any other disinfectants.
Patients with suspicion of a clinical disease or who developed a transmissible spongiform encephalopathy (CJK, vCJK, etc.) have to be treated at facilities which are able to provide for the necessary preventive measures against infection. The reprocessing of the reusable instruments and material may only be performed at facilities which have an externally certifi ed QM Management acc. to DIN EN ISO 13485.
The Medical Devices Act, IfSG, the RKI directives, BGR 250

GA3GB.320100.0 2020-05 Index: 03

5.6 Oversuction

If you use the ATMOS E 341 Battery according to instructions, with bacterial filter and float ball, the device cannot be oversucked during normal use. Nevertheless, should secretion penetrate into the interior of the device, the device is oversucked.

This can happen, for example, if no bacterial filter is used and the device tips over.

Reduced suction power is an indication for an oversucked device. If you suspect that your device might be oversucked, proceed as follows:

⚠ WARNING

Risk of infection by secretion on and within the device.

Deadly diseases can be transmitted.

- Always wear disposable gloves when touching the oversucked device.
- Clean and disinfect the device.
- Send in the device to ATMOS or an authorized ATMOS service partner, chapter „6.3 Sending in the device“ on page 44.

6.0 Maintenance and service

Maintenance, repairs and period tests may only be carried out by persons who have the appropriate technical knowledge and are familiar with the product. To carry out these measures the person must have the necessary test devices and original spare parts.

ATMOS recommends: Work should be carried out by an authorized ATMOS service partner. This ensures that repairs and testing are carried out professionally, original spare parts are used and warranty claims remain unaffected.

6.1 Period tests

Please comply with the country-specific guidelines regarding regular testing especially for the electrical safety.

ATMOS recommends a test every 24 months.

6.2 Function check

Perform a function check:

- prior to each use
- after each use or cleaning
- every 4 weeks in case the device is not used
- after every maintenance work, service or repair

6.2.1 Manual function check

1. Please check whether the following parts are damaged or torn:
   - all hoses
   - Canister system
2. In case parts are visibly damaged: Please exchange them.
3. Switch on the device.
4. Check whether all LEDs are illuminated.
5. Check the battery status.
6. Connect a fingertip to the suction hose and close the auxiliary air vent.
7. Close the front opening of the fingertip with your thumb.
8. Select the vacuum -0.5 bar.
9. Please check whether the device reaches the vacuum after approx. 20 seconds: The pump switches off and the green LED above the 0.5 bar button is illuminated continuously.
10. In case the device does not reach the vacuum within 20 seconds: Please check the device on potential sources of error and remedy the defect: Chapter „7.0 Eliminating errors“ on page 47.
11. You may now use the device or switch it off.

6.2.2 Automatic function check

Termination

1. Press the control button battery status.

» The device switches off.

Perform a function check

The automatic function control checks successively the following functions:

- Remaining operating hours
- Battery service life
- Tightness (duration: approx. 10 seconds)

The display of battery status shows the results in quick succession. Therefore, first read this section completely.

Between the individual tests only the red LED is illuminated and a signal tone sounds. If two signal tones are sounded in direct succession then the previous test has failed.

1. Connect a fingertip to the suction hose.
2. Close the auxiliary air vent of the fingertip and close the front opening with your thumb.
3. Press the control button for the battery status for approx. 3 seconds.

» The function check starts as soon as all LEDs are illuminated. The first result is shown immediately.

4. Check the results by means of the battery status indication.
5. The fingertip may only be opened when all LEDs are off. The function check is completed.

Result

<table>
<tr><td colspan="5">Remaining operating hours</td></tr>
<tr><td>1.
 
> 750 h</td><td>2.
 
> 500 h</td><td>3.
 
> 250 h</td><td>4.
 
< 250 h</td><td>Short signal tone:
< 50 h
1. Please contact your service.</td></tr>
<tr><td colspan="5">Remaining battery capacity</td></tr>
<tr><td>1.
 
100 %</td><td>2.
 
70 %</td><td>3.
 
40 %</td><td>4.
 
20 %</td><td>Short signal tone:
< 10 %
1. Exchange the battery.</td></tr>
<tr><td colspan="5">Tightness</td></tr>
<tr><td>1.
 
- 0.5 bar</td><td>2.
 
- 0.4 bar</td><td>3.
 
- 0.3 bar</td><td>4.
 
- 0.2 bar</td><td>Short signal tone:
System has a leakage.
1. See chapter „7.0 Eliminating errors“ on page 47.</td></tr>
</table>

6.3 Sending in the device

1. Remove and properly dispose of consumables.
2. Clean and disinfect the products and accessories according to the operating instructions.
3. Place used accessories with the device.
4. Fill in the form QD 434 „Delivery complaint / return shipment“ and the respective **Decontamination certificate**.

☞ This form is enclosed to each delivery and can be found at

5. The device must be well padded and packed in suitable packaging.
6. Place the form QD 434 „Delivery complaint / return shipment“ and the respective decontamination certificate in an envelope.
7. Affix the envelope to the outside of the package.
8. Send the product to ATMOS or to your dealer.

6.4 Handling of batteries

Batteries are wearing parts and therefore excluded from the general warranty. There is a function guarantee of 6 months.

Please observe the following notes in order to reach the maximum service life of your battery:

- Only use the original lithium-ionic battery 4IMR 19/66-2 BM18650Z3.
- Please observe the operating instructions of the battery manufacturer.
- Prior to first use the battery must be fully charged.
- Battery-run devices should only be stored when they are charged.
- Please fully recharge the battery every 6 months, even if the device is not used.
- Prevent the batteries from direct solar radiation and keep them away from radiators. The perfect storage temperature is between 8 and 15° C.
- Exchange the battery when the remaining battery service life noticeably decreases.
- Batteries are run-down after approx. 500 charging cycles.

6.5 Battery exchange

NOTICE

Damage to the electronics due to the use of a third-party battery.

- Only use the original lithium-ionic battery 4IMR 19/66-2 BM18650Z3. This battery is included in the scope of delivery and is available at ATMOS. The warranty claim shall not be applicable if non-original spare parts are used.

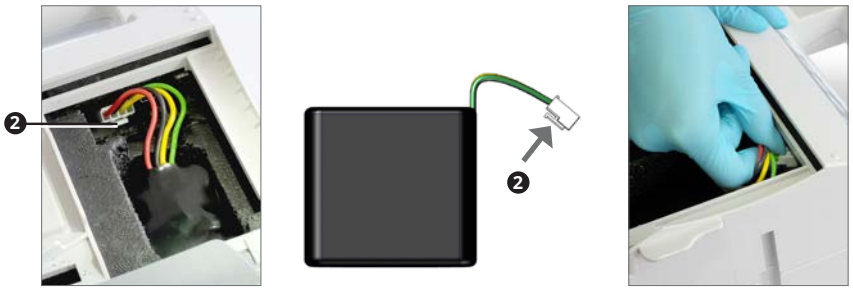
Prerequisite: The support for canister system is removed.

1. Switch off the device.
2. Disconnect the device from the power supply.
3. Remove the hose rewind: Chapter „3.6 Hose rewind“ on page 29.
4. Place the device on its back with the control panel facing upwards.
5. Press the battery compartment cover ❶ from right a little towards the left.

6. Lift the battery compartment cover slightly and remove it from the upper guide.

ⓘ The detent ❷ could break off due to the incorrect removal of the cable.

7. Remove the cable from the device by pressing the detent ❷ of the plug against the plug and simultaneously pull the plug.

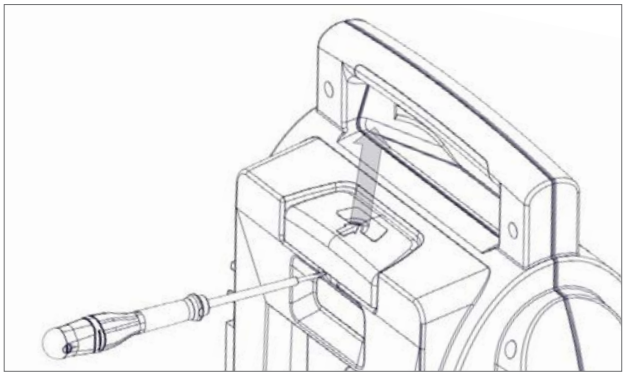


8. Remove the battery in the upwards direction.
9. Insert the new battery. Please observe that the shape of the battery compartment corresponds to the shape of the battery and the symbol TOP indicates towards the socket in the battery compartment.
10. Plug in the connector of the battery cable to the socket in the battery compartment.
11. Stow the cables in the battery compartment so that they cannot be damaged by the battery compartment cover.
12. Insert the battery compartment cover in the upper rail.
13. Slide the battery compartment cover to the right until it stops.
14. Press down the battery compartment cover.
15. Slide the battery compartment cover completely to the right.
16. Attach the hose rewind: Chapter „3.6 Hose rewind“ on page 29.
17. Affix the support for the canister system: Chapter „3.4 Connection and removal of canister system and hoses“ on page 18.
18. Perform a function check.

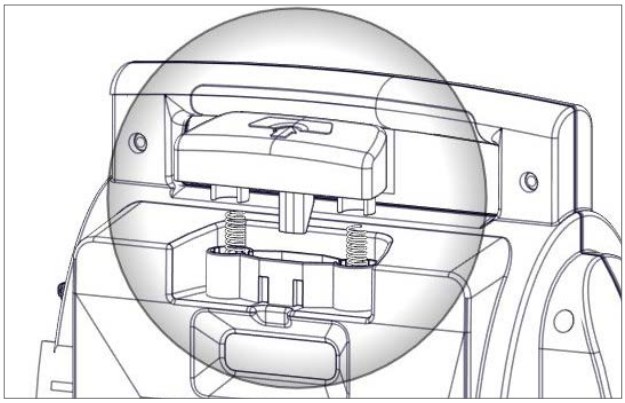
6.6 Exchange release button

☞ There are 2 springs under the release button. Pay attention that they are not misplaced.

1. Place the screwdriver in the middle of the release button and lift the release button up.



2. Replace with a new release button. Pay attention that the two springs are positioned in the guide of the release button.



3. Press the release button downwards until it engages.

7.0 Eliminating errors

The ATMOS E 341 Battery was subjected to a thorough quality control in the factory. Nevertheless, if a problem may occur you can possibly solve it yourself.

Recharging and battery status

Error indication	Possible cause	Remedy
Device cannot be recharged.	The plug from the charging accessories is poorly fitted.	1. Check the connection to the mains supply.
	Charging accessories are defective.	1. Exchange charging accessories.
	Battery is not connected properly.	1. Check the plug connections in the battery compartment.
	Battery temperature too high or too low.	1. After long-term use: Let the device cool down. 2. Extreme ambient temperature: Position the unit where appropriate to a cooler or warmer place.
	Deep discharge of the battery.	1. Exchange the battery.
	Defective electronics.	1. Send in the device for repair.
LED on the power supply and recharging unit is not illuminated.	Defective power supply and recharging unit.	1. Exchange the power supply and recharging unit.
	The mains plug is poorly fitted.	1. Check the connection to the mains supply.
When recharging the battery 100 % cannot be achieved. The charging time can take up to 3 hours.	Battery service life is exhausted or the battery is defective.	1. Exchange the battery.
	Wrong charging accessories.	1. Only use the provided charging accessories or an original spare part.
The bottom green and the red LED on the display of battery status flashes and a signal tone sounds every 5 s.	Battery is almost completely discharged.	1. Recharge the battery.
During switch on: All LEDs of the display of battery status flash for 5 s, a signal tone sounds.	Remaining battery level is low.	1. Perform a function check. 2. Exchange the battery.
All the green LEDs on the display of battery status flash permanently.	A non-ATMOS battery is used.	1. Only use the provided battery or an original spare part.

Error indication	Possible cause	Remedy
All the LEDs on the display of battery status flash permanently.	Battery is not inserted.	1. Insert the battery.
	Battery is not connected properly.	1. Check the plug connections in the battery compartment.
	Defective battery.	1. Exchange the battery.
	Defective electronics.	1. Send in the device for repair.
Battery compartment cover cannot be closed.	Battery is not fitted correctly.	1. Fit the battery correctly.
	Battery compartment cover is installed incorrectly.	1. Mount the battery compartment cover correctly according to operating instructions.

On and Off switching

Error indication	Possible cause	Remedy
Device cannot be switched on or off.	Battery is discharged.	1. Recharge the battery.
	Battery is not connected properly.	1. Check the plug connections in the battery compartment.
	The plug from the charging accessories is poorly fitted.	1. Check the connection to the mains supply.
	Defective electronics.	1. Send in the device for repair.
During switch on: Battery LEDs blink once, but the device does not start.	Device was stored outside the operating temperature (battery is in standby).	1. Switch on the device again.
During switch on: the red LED of the display of battery status flashes for 5 s, a signal tone sounds.	Device is not ready.	1. Perform a function check. 2. Send in the device for repair.
Pump does not start up.	Vacuum is already built up.	1. Do not switch on the device if the vacuum is already built up.
Device switches off after 60 min.	Self-protection of the device.	1. Let the device cool down for approx. 2 hours.
Device switches off after < 60 min.	Battery is discharged.	1. Recharge the battery.
	Battery temperature is too high.	1. Let the device cool down or select a lower vacuum.

Vacuum and suction capacity

Error indication	Possible cause	Remedy
Vacuum is not built up or cannot be reached.	Battery is discharged or defective.	1. Recharge or exchange the battery.
	Leakages at the hoses or the canister system.	1. Check canister lid and hoses on tight fit. 2. DDS canister system: Firmly insert the bacterial filter and check the sealing ring and the filter holder.
	Fingertip is not closed.	1. Close both openings of the fingertip.
	Liquid has penetrated the device.	1. Send in the device for repair.
	Pump is defective or the device has a leak.	1. Send in the device for repair.
	Low ambient pressure (e.g. high altitude).	Not possible.
Low suction capacity although the vacuum is reached.	Bacterial filter is clogged.	1. Exchange the bacterial filter.
	Hose is kinked.	1. Check the hoses.
	DDS canister system: Float ball closes the suction area.	1. Check and if needed clean the float ball and the float ball compartment.

8.0 Accessories

Accessories	REF
Serres® outer canister 1 l	312.0465.0
Medi-Vac® outer canister 1 l	312.0473.0
DDS canister system 1 l, complete	318.1000.0
Wall and device support for ATMOS emergency suction devices	318.1250.0
Retrofit kit DDS canister system	318.1350.0
Retrofit kit Serres® canister system	318.1450.0
Retrofit kit Medi-Vac® canister system	318.1650.0

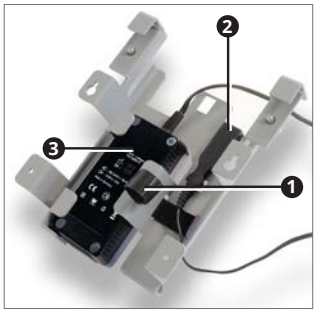
8.1 Wall and device support

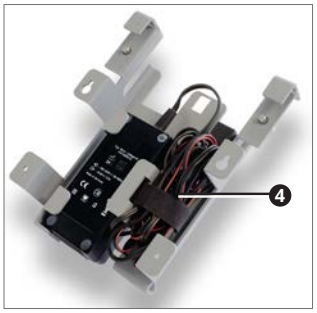
Affix the power supply and recharging unit

Prerequisite: The velcro fastener ❶ is attached to the wall and device support.

ⓘ Damaged cable due to incorrect mounting.

1. Please ensure that the power supply and recharging unit are positioned with the writing towards the wall or the standard rail. Otherwise the cable could be clamped.
2. Affix the parts ❷ and ❸ and fix the cable ❹ with the velcro fastener ❶.





Wall mounting

☞ Only affix the power supply and recharging unit after you have marked the holes to be drilled.

☞ Screws are not included in delivery.

1. Only use screws (max. 4 mm), which are suitable for the material of the wall.
2. Position the wall and device support at an easily accessible place.
3. Check whether the wall is smooth and vertical at the mounting position.
4. Hold the wall and device support to the mounting location and align it with a spirit level.
5. Mark the holes to be drilled on the wall.
6. Drill the holes with a, the wall material and the chosen screws corresponding drill.
7. Mount the power supply and recharging unit to the wall and device support. The power supply and recharging unit must not be connected to the mains supply.
8. Screw the wall and device support to the wall with suitable screws.
9. Connect the power supply and recharging unit to the mains supply.
10. Check whether the charging accessory is correctly attached by installing the device.

» The battery will be charged.

Attach to / remove from a standard rail

Prerequisite: The power supply and recharging unit is mounted.

Mounting

Removal

Attaching the device

1. Slide the device from above onto the wall and device support until it clicks into place.

» If the charging accessory is attached, the battery is charged automatically.

Removing the device

1. Press the release button ❶ and pull the device simultaneously vertically upwards.

8.2 Retrofit kit canister system

You may change the canister system. The retrofit kits comprise the canister system as well as the required support for the canister system. The retrofit kits for the single-use canister systems also comprise the vacuum hose.

Retrofitting

1. Remove the existing canister system, chapter „3.4 Connection and removal of canister system and hoses“ on page 18.
2. Remove the existing support for the canister system.
3. Attach the new support for the canister system.
4. Insert the new canister system.

9.0 Spare parts and consumables

Consumables	REF
Reusable suction hose, Ø 10 mm	318.1012.0
Fingertip for reusable suction hose, Ø 10 mm, 10 St.	318.1100.0
Bacterial filter for ATMOS DDS secretion canister, pack of 10 pcs.	340.0054.0
Suction hose, disposable, Ø 6 mm, L = 1.30 m, 10 pcs.	006.0057.0
Suction hose, disposable, Ø 6 mm, L = 1.30 m, 50 pcs.	006.0059.0
Serres® suction bag 1 l, not autoclavable, 36 pcs.	312.0466.0
Medi-Vac® suction bag 1 l, not autoclavable, 50 pcs.	312.0474.0
Vacuum hose for single-use canister system	318.1211.0
Suction catheter Unomedical®, size: CH 12, L = 50 cm, 100 pcs.	000.0294.0
Suction catheter Unomedical®, size: CH 14, L = 50 cm, 100 pcs.	000.0295.0
Suction catheter Unomedical®, size: CH 16, L = 50 cm, 100 pcs.	000.0296.0
Hydrophobic bacterial and viral filter, Ø 8 mm	443.0738.0

Spare parts	REF
DDS canister system	
DDS secretion canister 1 l	318.1013.0
DDS outer canister lid	318.1002.0
DDS inner canister lid	318.1004.0
Float ball	000.0839.0
Filter holder	318.1003.0
Sealing ring	055.0112.0
Device	
Battery for ATMOS E 341 Battery	319.0015.0
Battery compartment cover	318.0012.0
Hose rewind	319.0004.0
Device base	319.0003.0
Support for DDS canister system	318.1010.0
Support for Serres® canister system	318.1210.0
Support for Medi-Vac® canister system	318.1500.0
Release button	318.0013.0
Spring for release button	000.1029.0
Power supply and recharging unit	318.0035.0
2 pin power cord	008.0920.0

10.0 Disposal

Packaging

1. Please recycle the packing.

Secretion and blood

1. Please dispose of secretion, blood and contaminated parts in line with country-specific regulations.

In the Federal Republic of Germany the „Requirements on the implementation aid for disposal of waste from healthcare institutions" are valid, a statement of the Federal / State Working Group on Waste.

Canister system

Single-use products may not be reprocessed and may not be reused! Please dispose of disposable products professionally.

The following notes are only applicable for reusable products.

1. Clean and disinfect the reusable products of the canister system.
2. Recycle the disinfected reusable products.

ATMOS E 341 Battery

Do not dispose of the device or the battery in domestic waste.

There is a lithium-ionic battery included in the ATMOS E 341 which must be disposed of in accordance with applicable guidelines.

1. Clean and disinfect the device.
2. In Germany: Send in the device to ATMOS or your specialized dealer. They will dispose of the device professionally.
3. In other countries: Dispose of the device professionally and according to country-specific laws and regulations.

In Germany the device is excluded from the Electrical and Electronic Equipment Act (ElektroG) according to the National Register for waste electric equipment because it may be contaminated. Do not dispose of the device with electronic waste.

The housing is fully recyclable. Refer to the country-specific laws and regulations.

11.0 Technical data

Device

Dimensions (W x H x D): with DDS canister system with Serres® canister system with Medi-Vac® canister system with universal bracket	 370 x 277 x 146 mm 370 x 277 x 146 mm 370 x 277 x 136 mm 370 x 277 x 136 mm
Weight: Device with battery / without canister system and support DDS canister system with support for DDS canister system Serres® canister system with support for Serres® canister system Medi-Vac® canister system with support for Medi-Vac® canister system Universal bracket	 3.65 kg 1.00 kg 0.65 kg 0.295 kg 0.2 kg
Operation: Temperature range Relative air humidity Air pressure	 -5° C up to +50° C 5 % to 95 % without condensation 540 hPa to 1100 hPa
Transport / storage: Temperature range Relative air humidity Air pressure	 -40° C up to 70° C 5 % to 95 % without condensation 540 hPa to 1100 hPa
Charging: Temperature range Relative air humidity Air pressure	 0° C up to 40° C 5 % to 95 % without condensation 540 hPa to 1100 hPa
Maximum operating altitude	5000 m (NN)
Contamination level	Class 1 (fully-sealed housing)
Overvoltage category	II
Maximum power consumption	45 W
Maximum current consumption	3.7 A
Mains voltage	12 V DC nominal (at least 10 V, max. 15 V) at the charging interface or via the power supply and recharging unit.
Pump	Vacuum pump (diaphragm pump), 1 head
Suction capacity at the device inlet (without canister system) at -0.8 bar, fully recharged battery and 21° C / 1013 hPa (determined by buffer canister 1 l)	34 l/min ± 4 l/min
Suction capacity at the inlet of the DDS canister system at -0.8 bar, fully recharged battery and 21° C / 1013 hPa	30 l/min ± 3 l/min
Maximum achievable vacuum	0.8 bar* ± 5 % resp. 80 % of the air pressure

Vacuum adjustment	Via predefined steps: -0.1 bar, -0.2 bar, -0.5 bar and -0.8 bar, electronically controlled
Vacuum display	By means of LED on the control panel
Display	By means of LED on the control panel: on / off, selected vacuum, actual vacuum, display of battery status, warning (red LED)
Power cycles (short-term operation)	60 min On, 120 min Off
Noise level: Mean sound pressure level in 1 m distance and at -0.8 bar	< 60 dB (A)
Classification according to EN 60601-1: • Protection class against electric shock • Degree of protection against electric shock	Protection class II (during mains and battery operation) Application part type BF
Degree of protection against: • Ingress of solid foreign objects • Penetration of dust • Ingress of water with harmful effects	IP 34D
Period tests	Recommended: Testing every 24 months.
Suspension	Compatible with ATMOS wall and device support
Classification according to EN ISO 10079-1	High vacuum / high flow
Product class according to Directive 93/42/EEC	IIa
UMDNS code	15-016 Suction device, emergency
GMDN code	36616, Suction unit, transport and emergency

*1 bar = 100 kPa

Battery

Type	Lithium-ionic; 4INR 19/66-2 US 18650VTC6
Dimensions (W x H x D)	43 x 73 x 75 mm
Weight	0.4 kg
Nominal capacity	6 Ah
Nominal voltage	14.4 V
Charging time	Battery status 80 %: 3 h 45 min at 20° C without operation; battery status 100 % approx. 5 h 40 min Automatic switch-over to trickle charging
Recharging interval during long-term storage	Every 6 months.
Battery operating time during continuous operation with fully recharged battery / new battery (>20 l/min, setting -0.8 bar)	85 min at -5° C 85 min at +21 ° C 42 min at +50° C
Life cycle	Approx. 500 recharging cycles
Display	Display of battery status during operation and recharging

Typical battery operating life*	-0.2 bar: 200 min -0.5 bar: 140 min -0.8 bar: 85 min

* Measured at +21° C, continuous operation, without battery recharging and at free air flow.

DDS canister system

Capacity	1000 ml
Connection reusable suction hose	Ø 10 mm I.D.
Reusable suction hose: Diameter Length	 Ø 10 mm I.D. 1300 mm
Connection to the suction device	Direct connection (without intermediate hose)
Bacterial filter	Hydrophobic bacterial filter cartridge for use in the secretion canister lid, disposable
Bacterial filtration efficiency	99,999778%

Single-use canister system

Capacity	1000 ml
Connection disposable suction hose	Ø 7 mm I.D.
Disposable suction hose: Diameter Length	 Ø 6 mm I.D. 1300 mm
Connection to the suction device	By means of a vacuum hose (intermediate hose)
Bacterial filter	Integrated in the suction bag

Power supply and recharging unit

Dimensions (W x H x D)	130 x 36 x 60 mm
Weight	280 g
Operation: Temperature range Relative air humidity Air pressure	 0° C up to +40° C 10% to 90% without condensation 700 hPa to 1100 hPa
Transport / storage: Temperature range Relative air humidity Air pressure	 -40° C up to +70° C 10% to 95% without condensation 700 hPa to 1100 hPa
Electrical connection	100 V AC to 240 V AC, 50 Hz to 60 Hz
Maximum current consumption	1.1 A
Output nominal	13.8 V DC, 3.5 A
Classification according to EN 60601-1: • Protection class against electric shock • Degree of protection against electric shock	 Protection class II Application part type CF
Degree of protection against: • Ingress of solid foreign objects • Penetration of dust • Ingress of water with harmful effects	IP 40
Length of output line	1.8 m
Length of power supply cord	approx. 2 m

12.0 Notes on EMC

- Medical electrical equipment is subject to special precautions with regard to EMC and must be installed acc. to following EMC notes.
- Portable and mobile HF communication facilities can influence medical electrical equipment.
- The use of other accessories, other converters and cables than stated may lead to an increased emission or a reduced interference immunity of the equipment or system.

Guidelines and Manufacturer´s Declaration - Emissions

The ATMOS E 341 Battery is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS E 341 Battery should ensure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF Emissions acc.to CISPR 11	Group 1	The ATMOS E 341 Battery uses RF energy only for its internal function. Therefore, its HF emissions are very low and it is unlikely that nearby electronic devices will be affected.
RF Emissions acc. to CISPR 11	Class B	The ATMOS E 341 Battery is suitable for use in all establishments, including domestic, and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions according to IEC 61000-3-2	Class A	
Voltage fluctuations/flicker according to IEC 61000-3-3	Corresponds	

Guidelines and Manufacturer´s Declaration - Immunity for ATMOS E 341 Battery

The ATMOS E 341 Battery is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS E 341 Battery should ensure that it is used in such an environment.

Immunity Test	IEC 60601- Test Level	Compliance Level	Electromagnetic Environment - Guidance
ESD acc. to IEC 61000-4-2	± 6 kV Contact ± 8 kV Air	± 6 kV Contact ± 8 kV Air	Floors should be wood, concrete, or ceramics tile. If floors are synthetic, the relative humidity should be at least 30 %.
Fast electrical transient/burst IEC 61000-4-4	± 2 kV Mains ± 1 kV I/Os	± 2 kV Mains	Mains power quality should be that of a typical commercial or hospital environment.
Surges IEC 61000-4-5	± 1 kV common-mode ± 2 kV differential mode	± 1 kV common-mode ± 2 kV differential mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations according to IEC 61000-4-11	< 5 % U_T (> 95 % Dip of the UT for 0.5 Cycle) 40 % U_T (60 % Dip of the UT for 5 Cycles) 70 % U_T (30 % Dip of the UT for 25 Cycles) < 5 % U_T (> 95 % Dip of the UT for 5 s)	< 5 % U_T (> 95 % Dip of the UT for 0.5 Cycle) 40 % U_T (60 % Dip of the UT for 5 Cycles) 70 % U_T (30% Dip of the UT for 25 Cycles) < 5 % U_T (> 95 % Dip of the UT for 5 s)	Mains power quality should be that of a typical commercial or hospital environment. If the user of the ATMOS E 341 Battery demands continued function even in case of interruptions of the energy supply, it is recommended to supply the ATMOS E 341 Battery from an uninterruptible current supply or a battery.
Magnetic field at power frequency 50/60 Hz acc. to IEC 61000-4-8	3 A/m	Inapplicable	Power frequency magnetic fields should be that of a typical commercial or hospital environment.
NOTE U_T is the AC mains voltage prior to application of the test level.			

Guidelines and Manufacturer´s Declaration - Immunity

The ATMOS E 341 Battery is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS E 341 Battery should ensure that it is used in such an environment.

Immunity Test	IEC 60601- Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	3 V_{eff} 150 kHz to 80 MHz	10 V	Portable and mobile communications equipment should be separated from the ATMOS E 341 Battery incl. the cables by no less than the distances calculated/listed below. **Recommended distances:** d = 0.35 √ P d = 0.35 √ P 80 MHz to 800 MHz d = 0.70 √ P 800 MHz to 2.5 GHz where „P“ is the max. power in watts (W) and D is the recommended separation distance in meters (m). Field strengths from fixed transmitters, as determined by an electromagnetic site (a) survey, should be less than the compliance level (b). Interference may occur in the vicinity of equipment containing following symbol:
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	10 V/m	

NOTE 1

With 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2

These guidelines may not be applicable in all cases. The emanation of electromagnetic waves is affected by absorption and reflection of buildings, objects and people.

a

The field strength of stationary transmitters, such as base stations of cellular phones and mobile terrain radio equipment, amateur radio transmitters, cbm broadcast and TV stations cannot be predestined exactly.
To determine the electromagnetic environment in regard to stationary transmitters, a study of the location is to be considered. If the measured field strength at the location where the ATMOS E 341 Battery is used exceeds the above compliance level, the ATMOS E 341 Battery is to be observed to verify the intended use. If abnormal performance characteristics are noted, additional measures might be necessary, e. g. a changed arrangement or another location for the device.

b

Within the frequency range of 150 kHz to 80 MHz the field strength should be below 3 V/m.

The device may not be used directly next to other devices or piled up with other devices. If operation next to or piled with other devices is necessary, please watch the device to check its intended operation in this arrangement.

Recommended separations between portable and mobile RF Communications equipment and the ATMOS E 341 Battery

The ATMOS E 341 Battery is intended for use in electromagnetic environment in which radiated disturbances are controlled. The customer or user of the ATMOS E 341 Battery can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications equipment and the ATMOS E 341 Battery as recommended below, according to the maximum output power of the communications equipment.

	Safety distance, depending on transmit-frequency m

Nominal output of the transmitter W	150 kHz to 80 MHz d = [0.35] √ P	80 MHz to 800 MHz d = [0.35] √ P	800 MHz to 2.5 GHz d = [0.35] √ P
0.01	0.035	0.035	0.07
0.1	0.11	0.11	0.22
1	0.35	0.35	0.7
10	1.1	1.1	2.2
100	3.5	3.5	7.0

For transmitters for which the maximum nominal output is not indicated in the above table, the recommended safety distance d in meters (m) can be determined using the equation belonging to the respective column whereas P is the maximum nominal output of the transmitter in watts (W) acc. to manufacturer´s specification.

NOTE 1

With 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2

These guidelines may not be applicable in all cases. The emanation of electromagnetic waves is affected by absorption and reflection of buildings, objects and people.