

Operating Instructions

ATMOS LC 27

ATMOS LC 27 Battery

English



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1.0 Introduction

1.1 Notes on operating instructions



These operating instructions contain important notes on how to operate the ATMOS LC 27 and ATMOS LC 27 Battery safely, correctly and effectively.

These operating instructions are designed for training and instructing new operating personnel in the use of the system, and also for use as a reference manual. This document may only be reprinted, either in part or in whole, 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 essential. They guarantee the operational safety and usability of the ATMOS LC 27 and ATMOS LC 27 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. The person in question must possess the necessary test devices and original spare parts required to carry out these measures.



Read chapter "2.0 Notices for your safety" on page 14 before using the device for the first time. This will help you to avoid potentially dangerous situations.

The ATMOS LC 27 and ATMOS LC 27 Battery bear the CE marking CE in accordance with the European Medical Device Regulation (MDR) 2017/745.

The products ATMOS LC 27 and ATMOS LC 27 Battery comply 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 viewed on our website at www.atmosmed.com.

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

These operating instructions are valid for the following devices:

Mains-powered suction devices:

| | |
|-----------------------------|------------|
| ATMOS LC 27 / DDS | 321.1000.0 |
| ATMOS LC 27 / DDS Universal | 321.1300.0 |
| ATMOS LC 27 / Serres® | 321.1100.0 |
| ATMOS LC 27 / Medi-Vac | 321.1200.0 |









Battery-powered suction devices:

| | |
|---------------------------|------------|
| ATMOS LC 27 Battery / DDS | 321.2000.0 |
|---------------------------|------------|






| | |
|-------------------------------------|------------|
| ATMOS LC 27 Battery / DDS Universal | 321.2300.0 |
| ATMOS LC 27 Battery / Serres® | 321.2100.0 |
| ATMOS LC 27 Battery / Medi-Vac® | 321.2200.0 |



















1.2 Explanation of pictures and symbols










In the operating instructions

| | |
|--|--|
|  DANGER | Warning of a danger that will result in immediate fatal or serious injury. Observe the necessary measures. |
|  WARNING | Warning of a danger that can cause fatal or serious injury. Observe the necessary measures. |
|  CAUTION | Warning of a danger that can cause minor injury. Observe the necessary measures. |
| NOTICE | Notice of a danger that can damage the product or other objects. Observe the necessary measures. |
|  | Warning of a danger that can cause fatal or serious injury. |
|  | Notice of potential material damage. |
|  | Useful information on the handling of the device. |
| 1. | Action. Proceed step by step. |
| • | Numeration. |
| » | Result of an action. |
|  | Move, plug in this direction. |
|  | Engage, check correct fit. |

On device, type plate, and packaging

| | |
|---|--|
|  | Follow operating instructions (blue) |
|  | Consult operating instructions |
|  | Warning; pay special attention |
|  | This device complies with the relevant requirements of EU regulations. |
|  | This device complies with the relevant requirements of EU regulations. |



| | |
|---|--|
|  | <p>UL listing test label MEDICAL — GENERAL MEDICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH ANSI/AAMI ES60601-1 (2005) + AMD 1 (2012) CAN/CSA-C22.2 No. 60601-1 (2014) IEC 60601-1-6 (2013) ANSI/AAMI HA60601-1-11 (2015)</p> |
|  | <p>Manufacturer</p> |
|  | <p>Date of manufacture Country of manufacture</p> |
|  | <p>Distributor</p> |
|  | <p>Reference number</p> |
|  | <p>Unique Device Identifier of a medical device</p> |
|  | <p>Medical device</p> |
|  | <p>Serial number</p> |
|  | <p>Batch code</p> |
|  | <p>Expiry date</p> |
| <p>IP21</p> | <p>Protected against ingress of:</p> <ul style="list-style-type: none"> • Solid foreign particles $\varnothing \geq 12.5$ mm • Dripping water from above |
|  | <p>Application part type BF</p> |
|  | <p>Professional disposal</p> |
|  | <p>Not for reuse (designed for repeated use for a single patient)</p> |
|  | <p>Not sterile</p> |
|  | <p>Connection for suction hose/patient</p> |
|  | <p>Device does not contain latex</p> |
|  | <p>Short-term operation (max. 30 minutes ON, min. 30 minutes OFF)</p> |
|  | <p>Protection class II device</p> |



| | |
|---|--|
|  | On/Off button |
|  | Direction of vacuum setting |
| - | min. vacuum setting |
| + | max. vacuum setting |
|  | Fragile, handle with care |
|  | Keep dry |
|  | Keep away from sunlight |
|  | Temperature limit |
|  | Humidity limitation |
|  | Atmospheric pressure limitation |
|  | Do not use if the packaging is damaged |

UDI application identifier






| | |
|------|---|
| (01) | UDI-DI: Identification of the manufacturer and the device |
| (10) | Batch code |
| (11) | Date of manufacture |
| (17) | Expiry date |
| (21) | Serial number |
| (30) | Quantity in pieces |

On the battery

| | |
|---|--|
|  | This product complies with the relevant requirements of the EU Directives. |
|  | Contains lead, recyclable |

| | |
|---|---|
|  | Contains lead, dispose of professionally |
|  | Certification marking (Recognized Component Mark) |

On the mains power unit

| | |
|---|---|
|  | Protection class II |
|  | Professional disposal |
|  | This product complies with the relevant requirements of the EU Directives. |
|  | Devices with this symbol may only be used indoors (dry surroundings) |
| IP52 | Protected against: <ul style="list-style-type: none"> • Dust in harmful quantities • Dripping water from above when the housing is tilted up to 15° |
|  | Safety test seal |

1.3 Intended use

| | |
|---------------------------------------|---|
| Name: | <p>ATMOS LC 27</p> <ul style="list-style-type: none"> • ATMOS LC 27 / DDS • ATMOS LC 27 / Serres® • ATMOS LC 27 / Medi-Vac® • ATMOS LC 27 / DDS Universal <p>ATMOS LC 27 Battery</p> <ul style="list-style-type: none"> • ATMOS LC 27 Battery / DDS • ATMOS LC 27 Battery / Serres® • ATMOS LC 27 Battery / Medi-Vac® • ATMOS LC 27 Battery / DDS Universal |
| Main functions: | <p>Temporary and spontaneous suction of suction material (including secretions, blood, serum fluids, food particles) from the oral cavity, pharynx and bronchial system</p> <p>Suction during ENT treatments.</p> |
| Intended use: | Suction of the upper and lower respiratory tract as well as in the ear. |
| Intended users / User profile: | <ul style="list-style-type: none"> • Trained medical personnel • Non-medical users, e.g. patients and/or relatives (after medical instruction) |

| | |
|---|--|
| Intended Patient population: | Patients of all ages with and without restrictions |
| Disease state to be diagnosed, treated or monitored: | Not applicable |
| Application organ: | <ul style="list-style-type: none"> • Upper respiratory tract (nose, nasal cavity, pharynx) • Lower respiratory tract (larynx, trachea, bronchial system) • Ear |
| Application time: | Temporary use on the patient (<60 min) |
| Area of application: | <ul style="list-style-type: none"> • Home (homecare sector) • Outpatient and hospital care |
| Criteria for patient selection: | <ul style="list-style-type: none"> • Patients who will benefit from upper/lower respiratory tract suction • Patients who will benefit from suction during ENT treatments. |
| Indications: | <p>In case of damage to respiratory and cough function with disturbance of tracheal, bronchial or oral secretion elimination:</p> <ul style="list-style-type: none"> • Suction during tracheotomy • Suction during laryngectomy • Suction if breathing is impeded <p>Suction for muscular and/or neurological disorders:</p> <ul style="list-style-type: none"> • Suction if swallowing is impeded • Suction of blood, secretions and food particles from the oral cavity, pharynx and bronchial system • Suction during ENT treatments. |
| Medical contra-indications: | <p>Not suitable for:</p> <ul style="list-style-type: none"> • Continuous operation for drainage procedures in the low vacuum range (e.g. cardiothoracic or wound drainage) • Permanent endoscopic use • Vacuum extraction • Smoke evacuation • Liposuction • Emergency and rescue use |
| Other contraindications: | <p>Not suitable for:</p> <ul style="list-style-type: none"> • Suction outdoors/during transport • Suction of flammable, corrosive or explosive substances • Suction in potentially explosive areas |

- Warning notes:** The following complications may occur 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 in patients who tend to develop cramps

The product is: active

Sterility / specific microbial condition: Product not sterile

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

1.4 Function

General description

The devices are mobile, portable medical suction devices designed for temporary, preferably spontaneous suction of the upper and lower respiratory tract. The suction material (including secretion, blood, serum fluids, and food particles) will be temporarily collected in a collecting container and then disposed of.

Principles of operation and its mode of action

The devices are electrical operated and takes their medical effect by generating vacuum and suction performance. The devices are operated by an electromotive maintenance-free piston pump.

The products have a suction capacity of max. 27 l/min \pm 3 l/min and can build up a max. vacuum of -80 kPa \pm -5kPa (-800 mbar \pm -50 mbar; -600 mmHg \pm -37.5 mmHg).

The ATMOS LC 27 is a mains-powered bronchial suction unit, operation of which requires the mains power unit (100 - 240 V) to be connected to the power supply grid.

The ATMOS LC 27 Battery is a bronchial suction device powered by a rechargeable battery, which can be operated either using the permanently installed rechargeable battery or an external DC power supply (13.8 V) as desired. To charge the battery, the mains power unit (100 - 240 V) needs to be plugged into the power supply grid.

The devices are designed for short-term operation. The devices must be switched off after no more than 30 minutes to prevent them from overheating. They must remain switched off for a period of at least 30 minutes to ensure adequate cooling.

During operation the pump generates a vacuum inside the single-patient secretion canister and hose system, thus sucking off secretion, blood and body fluids as well as liquid and solid pieces of food. The fluid is collected in the single-patient secretion canister.

The vacuum setting allows you to infinitely adjust the final vacuum and thus the suction capacity. The vacuum gauge shows the set vacuum.

The ATMOS LC 27 and the ATMOS LC 27 Battery cannot be operated when in motion and therefore need to be kept stationary when operated.

Single-patient secretion canister (DDS):

The single-patient secretion canister is fastened to the side of the device and connects directly to the suction unit by means of the Direct-Docking-System (DDS). The user then merely needs to connect the suction hose to the lid of the single-patient secretion canister. A DDS bacterial and viral filter cartridge with a hydrophobic bacterial and viral filter installed in the device prevents bacteria, viruses and liquids from entering the device.

Key features:

- Vacuum generation (high vacuum)
- Suction capacity (high flow)

1.5 Intended users

The ATMOS LC 27 or ATMOS LC 27 Battery may be operated by the patient themselves, a patient’s relative, the mobile care service, a nurse or trained medical personnel.

Suction is performed after the patient or the assistant / caregiver has been instructed by a doctor, taking into account the specific vacuum required depending on the age.

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

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

321.1000.0 ATMOS LC 27 / DDS

| | |
|---|----------------|
| 1 x basic device | |
| 1 x single-patient secretion canister system | 321.0300.0 |
| 1 x DDS bacterial and viral filter cartridge (1 pc.) | 321.0027.0 |
| 1 x suction hose with DDS adapter and fingertip (1 pc.) | 321.0100.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

321.1300.0 ATMOS LC 27 / DDS Universal

| | |
|---|----------------|
| 1 x basic device | |
| 1 x single-patient secretion canister system | 321.0300.0 |
| 1 x DDS hose adapter (1 pc.) | 321.0040.0 |
| 1 x DDS bacterial and viral filter cartridge (1 pc.) | 321.0027.0 |
| 1 x suction hose, silicone, Ø 6 mm, L = 1.30 m, (1 pc.) | 000.0013.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

321.1100.0 ATMOS LC 27 / Serres®

| | |
|--|----------------|
| 1 x basic device | |
| 1 x support for canister system Serres® | 321.0032.0 |
| 1 x canister extension for the use of disposable systems | 321.0033.0 |
| 1 x Serres® outer canister 1 l | 312.0465.0 |
| 1 x vacuum hose Serres® (14.5 cm) | 006.0009.0 |
| 1 x DDS bacterial and viral filter cartridge for disposable system | 321.0034.0 |
| 10 x suction hose with funnel and fingertip | 006.0057.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

321.1200.0 ATMOS LC 27 / Medi-Vac®

| | |
|--|----------------|
| 1 x basic device | |
| 1 x support for canister system Medi-Vac® | 321.0036.0 |
| 1 x canister extension for the use of disposable systems | 321.0033.0 |
| 1 x Medi-Vac® outer canister 1 l | 312.0473.0 |
| 1 x vacuum hose Medi-Vac® (22 cm) | 006.0009.0 |
| 1 x DDS bacterial and viral filter cartridge for disposable system | 321.0034.0 |
| 10 x suction hose with funnel and fingertip | 006.0057.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

321.2000.0 ATMOS LC 27 Battery / DDS

| | |
|---|----------------|
| 1 x basic device | |
| 1 x single-patient secretion canister system | 321.0300.0 |
| 1 x DDS bacterial and viral filter cartridge (1 pc.) | 321.0027.0 |
| 1 x suction hose with DDS adapter and fingertip (1 pc.) | 321.0100.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

321.2300.0 ATMOS LC 27 Battery / DDS Universal

| | |
|---|----------------|
| 1 x basic device | |
| 1 x single-patient secretion canister system | 321.0300.0 |
| 1 x DDS hose adapter (1 pc.) | 321.0040.0 |
| 1 x DDS bacterial and viral filter cartridge (1 pc.) | 321.0027.0 |
| 1 x suction hose, silicone, Ø 6 mm, L = 1.30 m, (1 pc.) | 000.0013.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

321.2100.0 ATMOS LC 27 Battery / Serres®

| | |
|---|------------|
| 1 x basic device | |
| 1 x support for canister system Serres® | 321.0032.0 |

| | |
|--|----------------|
| 1 x canister extension for the use of disposable systems | 321.0033.0 |
| 1 x Serres® outer canister 1 l | 312.0465.0 |
| 1 x vacuum hose Serres® (14,5 cm) | 006.0009.0 |
| 1 x DDS bacterial and viral filter cartridge for disposable system | 321.0034.0 |
| 10 x suction hose with funnel and fingertip | 006.0057.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

321.2200.0 ATMOS LC 27 Battery / Medi-Vac®

| | |
|--|----------------|
| 1 x basic device | |
| 1 x support for canister system Medi-Vac® | 321.0036.0 |
| 1 x canister extension for the use of disposable systems | 321.0033.0 |
| 1 x Medi-Vac® outer canister 1 l | 312.0473.0 |
| 1 x vacuum hose Medi-Vac® (22 cm) | 006.0009.0 |
| 1 x DDS bacterial and viral filter cartridge for disposable system | 321.0034.0 |
| 10 x suction hose with funnel and fingertip | 006.0057.0 |
| 1 x ATMOS mains power unit | 011.1363.0 |
| 1 x operating instructions | GA1DE.310301.0 |

Not included in the scope of delivery:

- ATMOS LC 27 bag (321.0350.0)
- ATMOS LC 27 / DDS consumables set, 10 pcs. (321.0340.0)
- Serres® disposable suction liner 1 l, without gelling agent (321.0466.0)
- Serres® disposable suction liner 1 l with gelling agent (312.0467.0)
- Medi-Vac® disposable suction liner 1 l (312.0474.0)

1.7 Transport and storage

Only transport the device in a shipping carton that is padded and offers sufficient protection.

If damage occurs during transport:

1. Document and report the transport damage.
2. Fill in the form QD 434 "delivery complaint/return shipment".
3. Send the device to ATMOS (chapter "6.2 Sending in the device" on page 41).

Ambient conditions for transport and storage:

- Temperature: -30...+70° C
- Relative humidity: 5...90%
- Air pressure: 700...1060 hPa

2.0 Notices for your safety

The safety of the ATMOS LC 27 and the ATMOS LC 27 Battery complies with all the recognized rules of technology and the guidelines of the Medical Products Law.

2.1 General safety instructions

Report all serious incidents that have occurred in connection with this product to the manufacturer and your national competent authority.

Make yourself familiar with the device in good time, so that you are capable of operating it when it is needed.

The product will only meet the safety requirements of users, patients and third parties when it is fully functional. Therefore read the following instructions carefully:

Never operate the device if it shows any obvious safety defects.

2.2 Danger for users, patients and third parties

WARNING

Ensure that the device is always operational and ready for use!

The patient could suffocate.

- Ensure that the device is always ready for use.
- Place the device where it will be easily accessible.
- Make sure that the mains power unit is working.
- Always carry out a function check before using the device.
- ATMOS recommends always having another suction device ready to hand in case of any device failure.
- Observe the notes on electromagnetic compatibility (EMC).
- Only use the recommended original accessories and original spare parts.

WARNING

Avoid misuse!


Risk of severe injury to your patient.

- Use the device only as intended.
- Never use the device for low-vacuum suction.
- Too many suction operations may cause minor bleeding.
- Always observe the applicable guidelines.
- Using the device on children requires a lower vacuum setting. Observe the instructions issued by the attending physician.
- Observe the notes on hygiene and cleaning.

WARNING

Reduce the risk of infection for you and your patients!

Risk of deadly diseases being transmitted.

- Always wear disposable gloves.
- Never use components which are marked with  more than once.
- Always use a suitable sterile catheter for suction. The suction hose must never come into direct contact with the application site.
- Sterile packaged parts may only be used when the packaging is undamaged.

- Never operate the device without DDS bacterial and viral filter. Always check that the bacterial and viral filter in the DDS bacterial and viral filter cartridge is dry and clean before using the device to ensure that it will operate correctly.

⚠ WARNING

Protect yourself against an electric shock!

Damage from incorrect power supply.

- Risk of burns, cardiac arrhythmias and even fatal injury.
- Before switching on the device, make sure that the power supply grid is designed for connecting a device that operates in the range from 100 - 240 VDC at a grid frequency of 50/60 Hz. Use only the included mains power unit for the device (type: GTM46402-3713.4).
- Do not operate the device in damp rooms, bathrooms or shower cubicles. Keep the mains power unit, control panel and mains power connection point dry.
- Do not use the device in areas where there could be a torrent of water.
- Never submerge the device in water or other fluids.
- Do not operate the device if it has been dropped. In this case clean the device and send it in to ATMOS for repair.
- Disconnect the device from the mains power supply prior to cleaning or disinfection.
- Always check the device and power cable for damage before use. Do not operate the device if you notice any damage. In this case clean the device and send it in to ATMOS for repair.
- Ensure that no liquid penetrates the device. If liquid enters the device, operation of the device must cease immediately. In this case clean the device and send it in to ATMOS for repair.
- The ATMOS LC 27 and ATMOS LC 27 Battery are not suitable for sterilisation.
- Only use the mains power unit in dry surroundings.
- Only use the mains power unit according to the operating instructions.
- Only use original accessories and original spare parts from ATMOS.
- Observe the specifications regarding period tests in chapter "6.0 Maintenance and service" on page 41.
- Assembly, new settings, alterations, extensions and repairs may only be carried out by authorised persons.
- Do not modify the device without the manufacturer's permission.

⚠ WARNING

Explosion and fire hazard!

There is a risk of burns and injuries.

- Never suction any explosive, flammable or corrosive gases or liquids. Refer to the explanations under intended use.
- Never operate the device in potentially explosive areas or areas which are oxygenated.
- Only use original accessories and original spare parts from ATMOS.

⚠ WARNING

Risk of suffocation or strangling for children and animals through accessory parts!

Small parts may cause children or animals to suffocate or be injured.

- Hoses or power cables may strangle people or animals, especially if the hoses or cables are particularly long.
- Keep unauthorised persons away from the device during suction.
- Keep children away from swallowable small parts.
- Keep the device and all its accessories out of reach of children when not using it.

⚠ WARNING

Contact may cause allergic reactions!

The materials used have been tested for their tolerability. In very rare cases, contact with accessible materials on the device and its accessories may cause allergic reactions. This applies in particular to contact injuries in conjunction with prolonged contact. If this occurs, seek medical attention immediately.

⚠ WARNING

Tripping hazard from cables!

Injuries and fractures are possible.

- Lay connecting cables properly.

2.3 Avoiding damage to the device

⚠ NOTICE

Damage to device from heat build-up!

Risk of damage to the device.

- Do not cover the device during suction.
- Keep the device and the mains power unit away from other heat sources.
- Do not place the device directly next to other devices as this may cause excessive heating of the device.

⚠ NOTICE

Storage and operation in an unsuitable environment!

Risk of damage to the device.

- Please observe the ambient conditions regarding transport, storage, operation and recharging of the battery.
- After transporting the device at low temperatures, keep the device at room temperature for at least six hours before initial start-up. If the device has not acclimatised, it may suffer internal damage.

⚠ NOTICE

Damage to the device through improper use!

The device may become damaged.

- Ensure that no liquid penetrates the device. In case that liquid has penetrated the device it may no longer be operated. In this case 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.
- Only use mains power units and extension cables that are in perfect condition.

3.0 Setting up and starting up

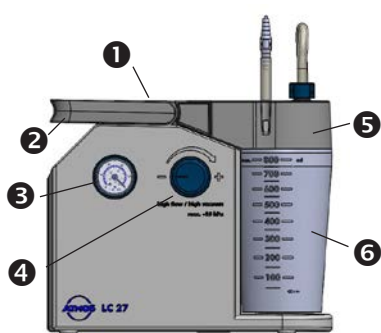
i Please observe that insufficient battery charge can result in damage to the battery.

1. Fully charge the battery for the ATMOS LC 27 Battery before using the device.

3.1 Device overview

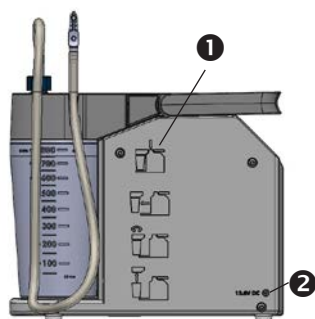
3.1.1 Front/rear view (with single-patient secretion canister system)

Front view



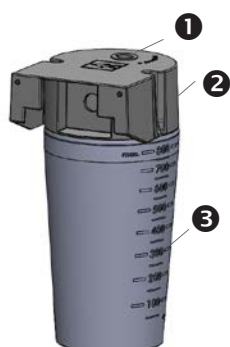
- 1 Control panel
- 2 Carrying handle
- 3 Vacuum gauge
- 4 Vacuum adjustment (from - to +)
- 5 Single-patient secretion canister lid
- 6 Single-patient secretion canister

Rear view



- 1 Brief instructions
- 2 Connection for the mains power unit/ car connecting cable

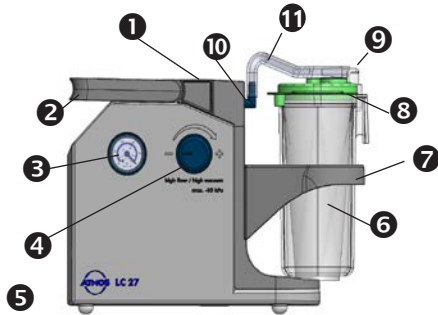
Single-patient secretion canister system



- 1 Connection for suction hose
- 2 Single-patient secretion canister lid
- 3 Single-patient secretion canister

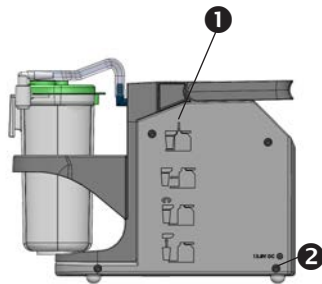
3.1.2 Front/rear view (with Serres® secretion canister system)

Front view



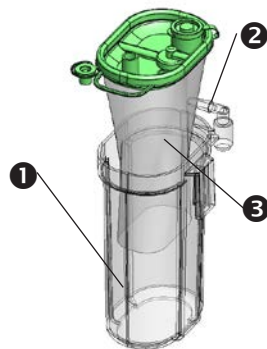
- ❶ Control panel
- ❷ Carrying handle
- ❸ Vacuum gauge
- ❹ Vacuum adjustment (from - to +)
- ❺ Connection for the mains power unit
- ❻ Serres® outer canister
- ❼ Support for Serres® outer canister
- ❽ Serres® suction liner
- ❾ Angle (connection for the disposable suction hose)
- ❿ DDS bacterial and viral filter cartridge for disposable system
- ⓫ Vacuum hose

Rear view



- ❶ Brief instructions
- ❷ Connection for the mains power unit/car connecting cable

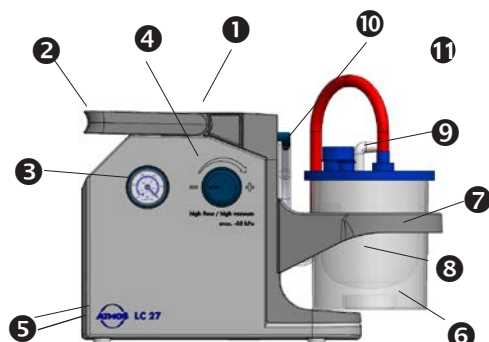
Serres® secretion canister system



- ❶ Serres® outer canister
- ❷ Angle (connection for the disposable suction hose)
- ❸ Serres® suction liner

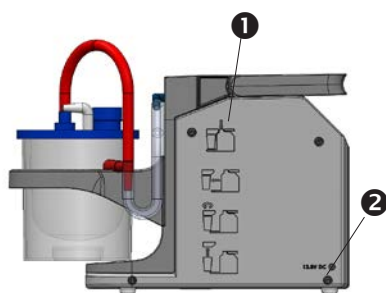
3.1.3 Front/rear view (with Medi-Vac® secretion canister system)

Front view



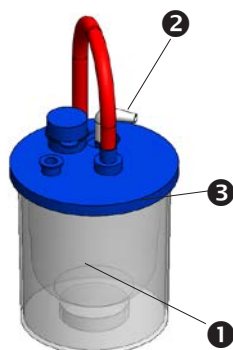
- ❶ Control panel
- ❷ Carrying handle
- ❸ Vacuum gauge
- ❹ Vacuum adjustment (from - to +)
- ❺ Connection for the mains power unit
- ❻ Medi-Vac® outer canister
- ❼ Support for the Medi-Vac® outer system
- ❽ Medi-Vac® suction liner
- ❾ Angle (connection for the disposable suction hose)
- ❿ DDS bacterial and viral filter cartridge for disposable system
- ⓫ Vacuum hose

Rear view



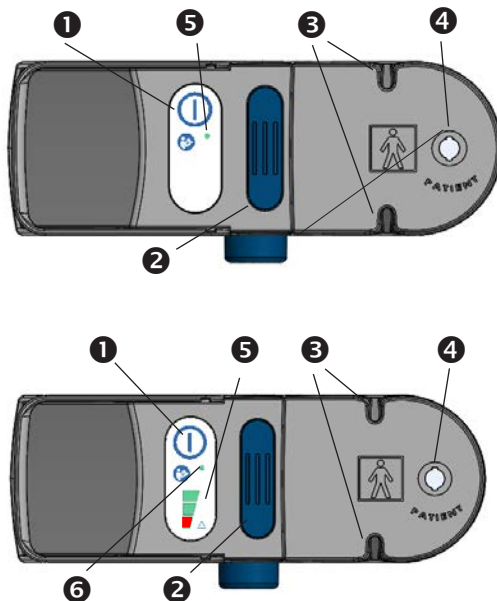
- ❶ Brief instructions
- ❷ Connection for the mains power unit/ car connecting cable

Medi-Vac® secretion canister system



- ❶ Medi-Vac® outer canister
- ❷ Angle (connection for the disposable suction hose)
- ❸ Medi-Vac® suction liner

3.1.4 Control panel



ATMOS LC 27

- ❶ On/Off button
- ❷ Release button
- ❸ Holder for suction hose
- ❹ Connection for suction hose
- ❺ Operation status display

ATMOS LC 27 Battery

- ❶ On/Off button
- ❷ Release button
- ❸ Fastener for suction hose
- ❹ Connection for suction hose
- ❺ Battery charge indicator
- ❻ Operation status display

- ☞ The battery charge level of the ATMOS LC 27 Battery must be visually monitored by checking the indicator.
- ☞ If only the red LED lights up, although the battery has been loaded for a longer period, the battery is defective.

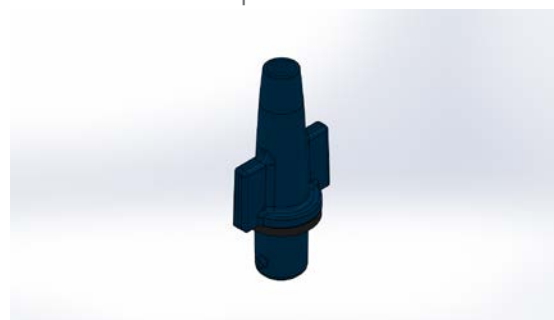
3.1.5 Hose connection DDS

Suction hose with DDS adapter and fingertip (REF 321.0100.0)



DDS hose adapter (REF 321.0040.0)

- ☞ Connect the suction hose with the DDS hose adapter.



3.2 Prepare the device with the single-patient secretion canister

1. After transportation of the device at low temperatures and prior to first start-up, it should be kept at room temperature for at least six hours.
2. Take the device and the accessories out of the packaging.
3. Read the safety notes before initial start-up.
4. Check the device for any transport damage.
5. If the device is damaged: Document and report the damages in transit, see "6.2 Sending in the device" on page 41 and spare parts can be requested (see back).

6. Place the device on a safe and even surface.
7. Check the mains power unit for damage.
8. Replace a defective mains power unit immediately.
9. With the ATMOS LC 27 Battery: The battery must be fully charged prior to first use, see chapter "3.4 Charging the battery" on page 22.
10. Operate the device only with the DDS bacterial and viral filter cartridge inserted and with the single-patient secretion canister system connected. The device is delivered with the DDS bacterial and viral filter cartridge and the single-patient secretion canister system already inserted and connected. Always keep an extra DDS bacterial and viral filter cartridge on hand.
11. Remove the single-patient secretion canister as instructed in chapter "4.5.1 Removing the single-patient secretion canister system" on page 34.
12. Before using it for the first time, clean the single-patient secretion canister, see chapter "5.0 Cleaning and disinfection" on page 35.
- ☞ Recommendation: Before suction, fill some water (approx. 10–20 ml) into the single-patient secretion canister system. This will prevent secretions from drying into crusts.
13. Place the single-patient secretion canister into the canister guides on the base as per chapter "3.6.1 Connecting the single-patient secretion canister system" on page 22.
14. Connect the suction hose.
15. Attach the suction hose to the single-patient secretion canister lid.

3.3 Prepare the device with the disposable system Serres® or Medi-Vac®

1. After transporting the device at low temperatures, keep the device at room temperature for at least six hours before initial start-up.
2. Take the device and the accessories out of the packaging.
3. Read the safety notes before initial start-up.
4. Check the device for any transport damage.
5. If the device is damaged: Document and report the damages in transit, see chapter "6.2 Sending in the device" on page 41.
6. Place the device on a safe and even surface.
7. Check the mains power unit for damage.
8. Replace a defective mains power unit immediately.
9. With the ATMOS LC 27 Battery: The battery must be fully charged prior to first use, see chapter "3.4 Charging the battery" on page 22.
10. Only operate the device when the DDS bacterial and viral filter cartridge is inserted and the disposable canister system (Serres® or Medi-Vac®) is connected. The device is delivered with the DDS bacterial and viral filter cartridge already inserted. Always keep an extra DDS bacterial and viral filter cartridge on hand.
11. Attach the support for the Serres® outer canister or the Medi-Vac® outer canister directly to the device.
12. Insert the disposable suction liner into the outer canister. Observe the operating instructions of the disposable canister system. The outer canister must be placed on a solid surface.
13. Check whether the foil of the suction liner is completely inserted into the outer canister and the lid is firmly closed.

14. Insert the disposable canister system (outer canister with suction liner) into the support for canister system.
15. Attach the vacuum hose to the DDS bacterial and viral filter cartridge and to the angle on the outer canister of the disposable system.
16. Attach the disposable suction hose to the suction liner.

3.4 Charging the battery

- ☞ The battery's charge level is shown by the LED battery charge indicator on the control panel.
 - ☞ As the integrated battery is not automatically kept at fully operational level, you will need to check the battery charge level regularly and, when necessary, have service personnel replace it. The battery may be replaced by authorised and trained service personnel only. You can check the battery status by switching on the device.
 - ☞ The battery must be fully charged prior to first use.
1. Charge the battery at the latest when the battery charge indicator's red LED lights up.



Understanding the battery charge level:

- Two green LEDs: > 60%
- One green LED: 20-60%
- One red LED: <20%

During charging:

While the battery is charging, both green LEDs are lit.

2. Only use the enclosed mains power unit (REF 011.1363.0).
3. Please observe the notes in chapter "6.3 Handling batteries" on page 41. Try to avoid charging the battery only briefly, as this can damage the battery.

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

If the battery is fully discharged, you can operate the device using the mains power unit.

3.5 Charging using the mains power unit



4. Plug the mains power unit into the rear side of the device.
 5. Plug the mains power unit into the power outlet.
- » The device will be fully charged.

3.6 Connecting and removing single-patient secretion canister system and hoses

3.6.1 Connecting the single-patient secretion canister system

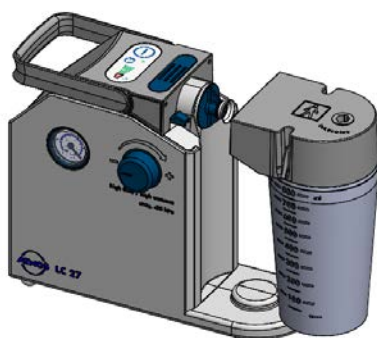
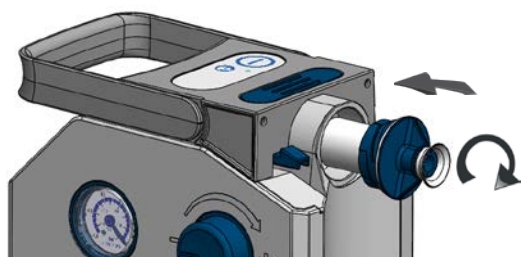
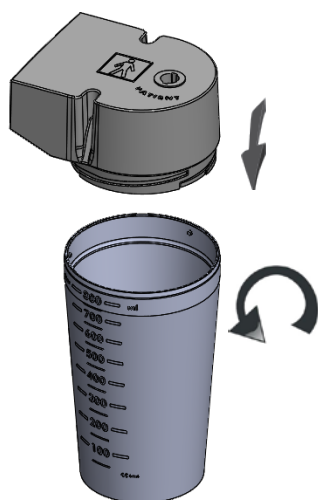
⚠ WARNING

Risk of infection from contaminated DDS bacterial and viral filter and canister lid

Risk of deadly diseases being transmitted.

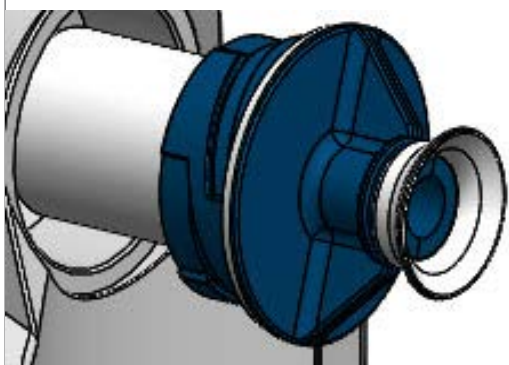
- Never operate the device without DDS bacterial and viral filter cartridge. Always keep at least one DDS bacterial and viral filter cartridge on hand.

- Wear disposable gloves when changing the DDS bacterial and viral filter and the canister lid.
- Prior to each use, check whether the DDS bacterial and viral filter is dry and clean. Replace the DDS bacterial and viral filter if it is discoloured, soiled or after oversuction. The DDS bacterial and viral filter must not be dried and not reused.
- Replace the DDS bacterial and viral filter after a patient change. Replace the bacterial and viral filter after two months even if there is no patient change (Requirement: Device is in use).



- ☞ Recommendation:
Before suction, fill some water (approx. 10–20 ml) into the single-patient secretion canister system. This will prevent secretions from drying into crusts.
1. Place the canister lid onto the single-patient secretion canister.
 2. Hold the single-patient secretion canister in place with one hand and screw on the single-patient secretion canister lid by turning it clockwise with a quarter turn.
 3. Check that the single-patient secretion canister lid is tightly closed.
 4. Check the white seal on the DDS bacterial and viral filter cartridge to see whether it is positioned correctly. If the white seal is missing, replace the DDS bacterial and viral filter cartridge.
 5. Insert the DDS bacterial and viral filter cartridge into the corresponding opening on the device and turn the cartridge clockwise with a quarter turn.
 6. Place the single-patient secretion canister into the canister guides on the base. To lock the single-patient secretion canister in place, push the lid until it engages or keep the blue release button pressed while inserting the single-patient secretion canister until it engages.
 7. Make sure that the single-patient secretion canister is firmly in place.
- ☞ The device is ready for use. You can connect the suction hose.

3.6.2 Notes on the DDS bacterial and viral filter cartridge

| | |
|---|---|
|  | <ul style="list-style-type: none"> ☞ The DDS bacterial and viral filter cartridge is located between the device and the single-patient secretion canister system. This consists of a hydrophobic bacterial and viral filter with a blue support and white seal. The DDS bacterial and viral filter cartridge effectively protects the device from oversuction and contamination. ☞ The DDS bacterial and viral filter cartridge is designed for use on a single patient. The DDS bacterial and viral filter cartridge has to be replaced after a patient change. If it is used exclusively on the same patient, the DDS bacterial and viral filter cartridge must be replaced after two months (Requirement: Device is in use). ☞ Never operate the device without DDS bacterial and viral filter cartridge. |
|---|---|

3.6.3 Removing the DDS bacterial and viral filter cartridge

Remove a used DDS bacterial and viral filter cartridge after a patient change or replace the DDS bacterial and viral filter cartridge every two months when using the device for the same patient (Requirement: Device is in use).


Wear disposable gloves when changing the DDS bacterial and viral filter cartridge.

1. Remove the single-patient secretion canister system as instructed in chapter "4.5.1 Removing the single-patient secretion canister system" on page 34.
 2. Turn the bacterial and viral filter cartridge anti-clockwise and pull the bacterial and viral filter cartridge out of the opening.
- ☞ DDS bacterial and viral filter cartridge has been removed.

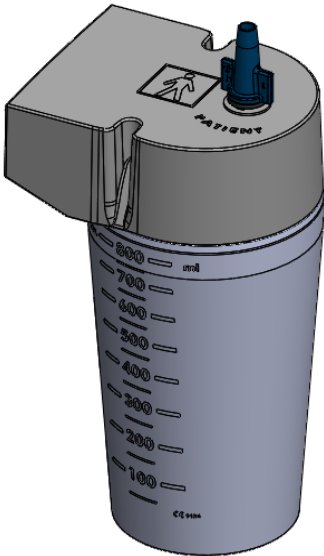
3.6.4 Inserting the DDS bacterial and viral filter cartridge

1. Check the white seal on the DDS bacterial and viral filter cartridge to see whether it is positioned correctly. If the white seal is missing, replace the DDS bacterial and viral filter cartridge.
 2. Insert the new DDS bacterial and viral filter cartridge into the corresponding opening on the device and turn the cartridge clockwise with a quarter turn.
- ☞ The device is ready for use once more.

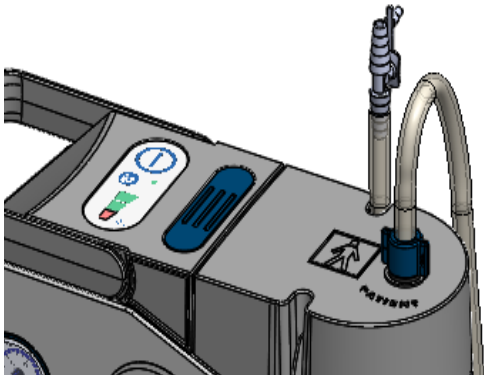
3.6.5 Connecting the suction hose with DDS adapter and fingertip

| | |
|---|--|
|  | <ol style="list-style-type: none"> 1. Insert the blue adapter on the suction hose into the opening on the single-patient secretion canister lid. 2. Turn the blue adapter clockwise with a quarter turn. 3. Now, check that the suction hose is connected firmly to the single-patient secretion canister system. <p>☞ The device is ready for use.</p> |
|---|--|

3.6.6 Connecting the DDS hose adaptor

| | |
|--|---|
|  | <ol style="list-style-type: none"> 1. Insert the single blue DDS hose adaptor into the opening on the single-patient secretion canister lid. 2. Turn the blue DDS hose adaptor clockwise with a quarter turn. 3. Now, check that the DDS hose adaptor is connected firmly to the single-patient secretion canister system. 4. Next, connect the suction hose to the blue DDS hose adaptor. 5. Connect the open end of the suction hose to a fingertip. <p>☞ The device is ready for use.</p> |
|--|---|

3.6.7 Holder for suction hose

| | |
|---|---|
|  | <ol style="list-style-type: none"> 1. Clip the suction hose into the corresponding hose holders on the single-patient secretion canister lid. <p>☞ The suction hose has been attached in place and is ready for use.</p> |
|---|---|

3.7 Connecting the Serres® secretion canister system

⚠ WARNING

Risk of infection from contaminated secretion canister system and hoses.

Deadly diseases can be transmitted.

- Only use Serres® suction liners with integrated bacterial filter.
- Never operate the device without DDS bacterial and viral filter cartridge. Always keep at least one DDS bacterial and viral filter cartridge on hand.
- Wear disposable gloves.
- Prior to each use, check whether the DDS bacterial and viral filter cartridge is dry and clean. Replace the DDS bacterial and viral filter cartridge if it is discoloured, soiled or after oversuction. The DDS bacterial and viral filter cartridge must not be dried and not reused.
- Replace the DDS bacterial and viral filter cartridge for disposable system after four months (Requirement: Device is in use).
- Only use sterile packaged parts, when the packaging is undamaged.

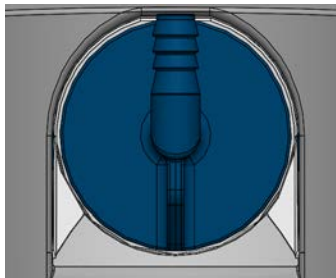
Insufficient or no vacuum due to incorrect connection.

The patient can suffocate.

- Observe the manufacturer's operating instructions for the Serres® secretion canister system.

3.7.1 Connection

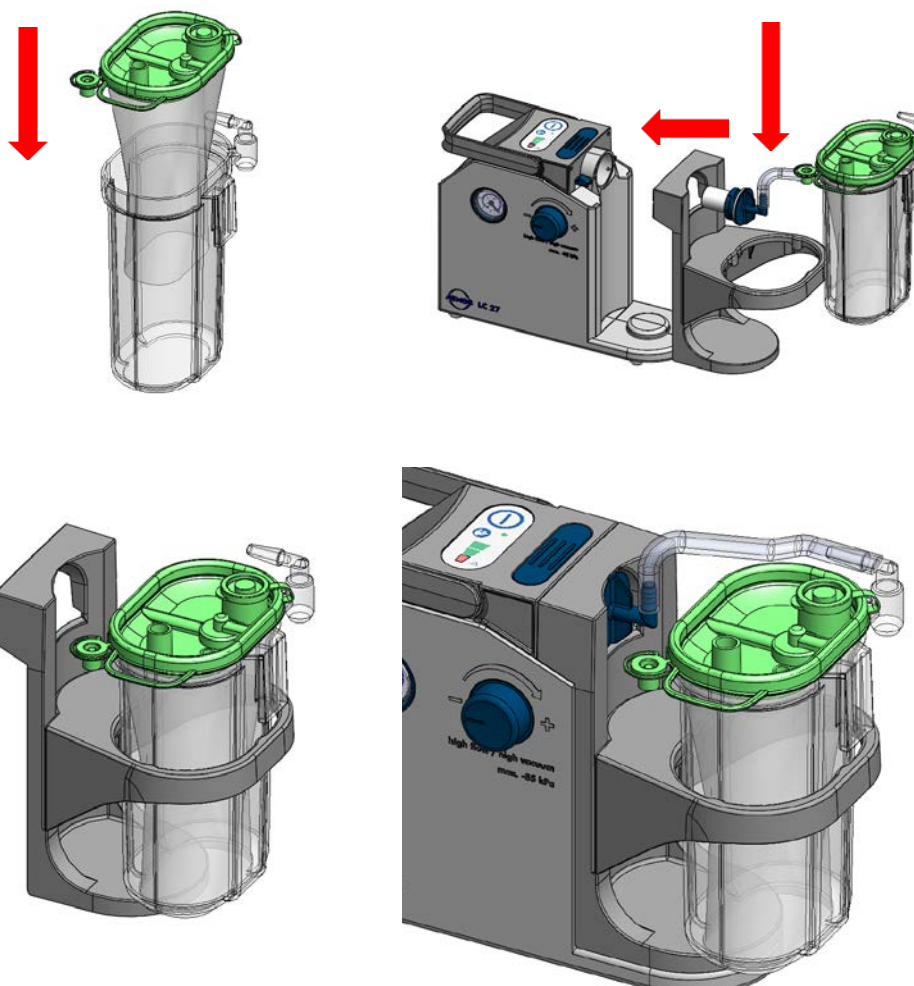
1. Attach the support for the Serres® outer canister directly to the device.
2. Check the DDS bacterial and viral filter cartridge for disposable system. The blue connection for the vacuum hose must point towards 12 o'clock.



3. Insert the Serres® suction liner into the Serres® outer canister. Observe the manufacturer's operating instructions for the disposable canister system. The outer canister must be placed on a firm, level surface and must not be connected to the device.
4. Check whether the foil of the suction liner is completely inserted into the outer canister and the lid is firmly closed.
5. Insert the Serres® secretion canister system (outer canister with suction liner) into the Serres® support for canister system. The scale on the canister must point towards the device.
6. Attach the vacuum hose to the DDS bacterial and viral filter cartridge for disposable system and to the angle on the Serres® outer canister.
7. Attach the disposable suction hose to the Serres® suction liner.
8. Close the secondary air opening of the fingertip and close the front opening with your thumb.

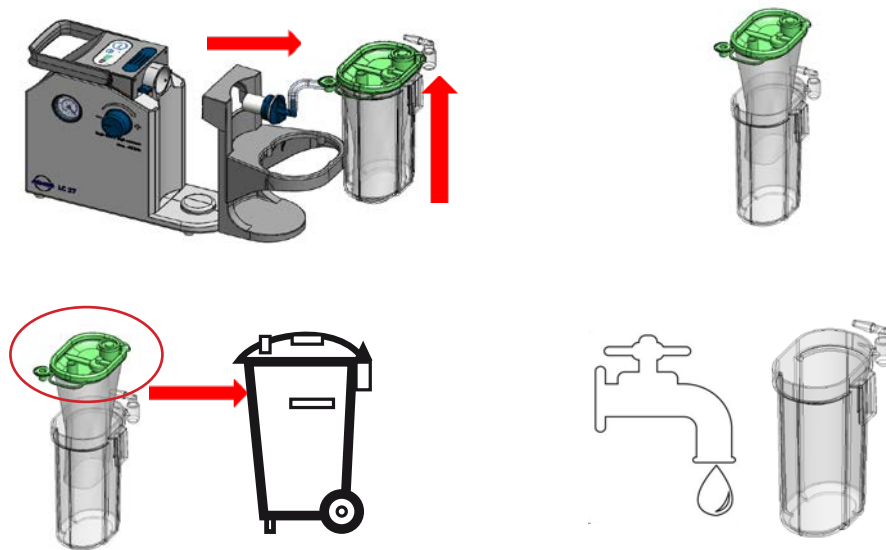
9. Switch on the device so that the pump builds up a vacuum.

☞ The Serres® suction liner unfolds.

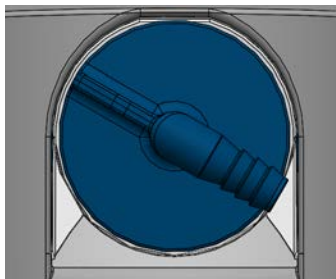


3.7.2 Removal

1. Remove the disposable suction hose from the Serres® suction liner.
2. Close the „patient“ connection on the Serres® suction liner with the green cap .
3. Remove the vacuum hose from the Serres® outer canister.
4. Remove the Serres® secretion canister system from the support.
5. Remove the sealed Serres® suction liner from the Serres® outer canister and dispose of it.
6. Clean the Serres® outer canister according to the manufacturer's operating instructions.
7. Replace the DDS bacterial and viral filter cartridge for disposable system after four months (Requirement: Device is in use).



3.7.3 Notes on the DDS bacterial and viral filter cartridge for disposable system



- The DDS bacterial and viral filter cartridge for disposable system is located between the device and the Serres® secretion canister system.
- This consists of a hydrophobic bacterial and viral filter with a blue support and white seal.
- The DDS bacterial and viral filter cartridge effectively protects the device from oversuction and contamination.
- ☞ The DDS bacterial and viral filter cartridge for disposable system must be replaced after four months (Requirement: Device is in use)
- ☞ Never operate the device without DDS bacterial and viral filter cartridge.

Wear disposable gloves when changing the DDS bacterial and viral filter cartridge.

1. Remove the Serres® secretion canister system.
2. Turn the bacterial and viral filter cartridge anti-clockwise and pull the bacterial and viral filter cartridge out of the opening.
- ☞ DDS bacterial and viral filter cartridge has been removed.
3. Insert the new DDS bacterial and viral filter cartridge into the opening provided on the device and turn the cartridge clockwise with a quarter turn. The blue connection for the vacuum hose must point towards 12 o'clock.
- ☞ The device is immediately ready for use.

3.8 Connecting the Medi-Vac® secretion canister system

⚠ WARNING

Risk of infection from contaminated secretion canister system and hoses.

Deadly diseases can be transmitted.

- Only use Medi-Vac® suction liners with integrated bacterial filter.
- Never operate the device without DDS bacterial and viral filter cartridge. Always keep at least one DDS bacterial and viral filter cartridge on hand.
- Wear disposable gloves.
- Prior to each use, check whether the DDS bacterial and viral filter cartridge is dry and clean. Replace the DDS bacterial and viral filter cartridge if it is discoloured, soiled or after oversuction. The DDS bacterial and viral filter cartridge must not be dried and not reused.
- Replace the DDS bacterial and viral filter cartridge for disposable system after four months (Requirement: Device is in use).
- Only use sterile packaged parts, when the packaging is undamaged.

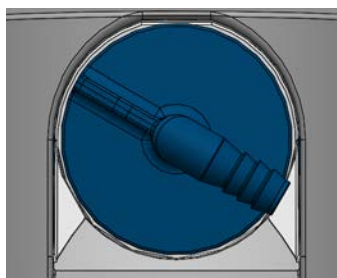
Insufficient or no vacuum due to incorrect connection.

The patient can suffocate.

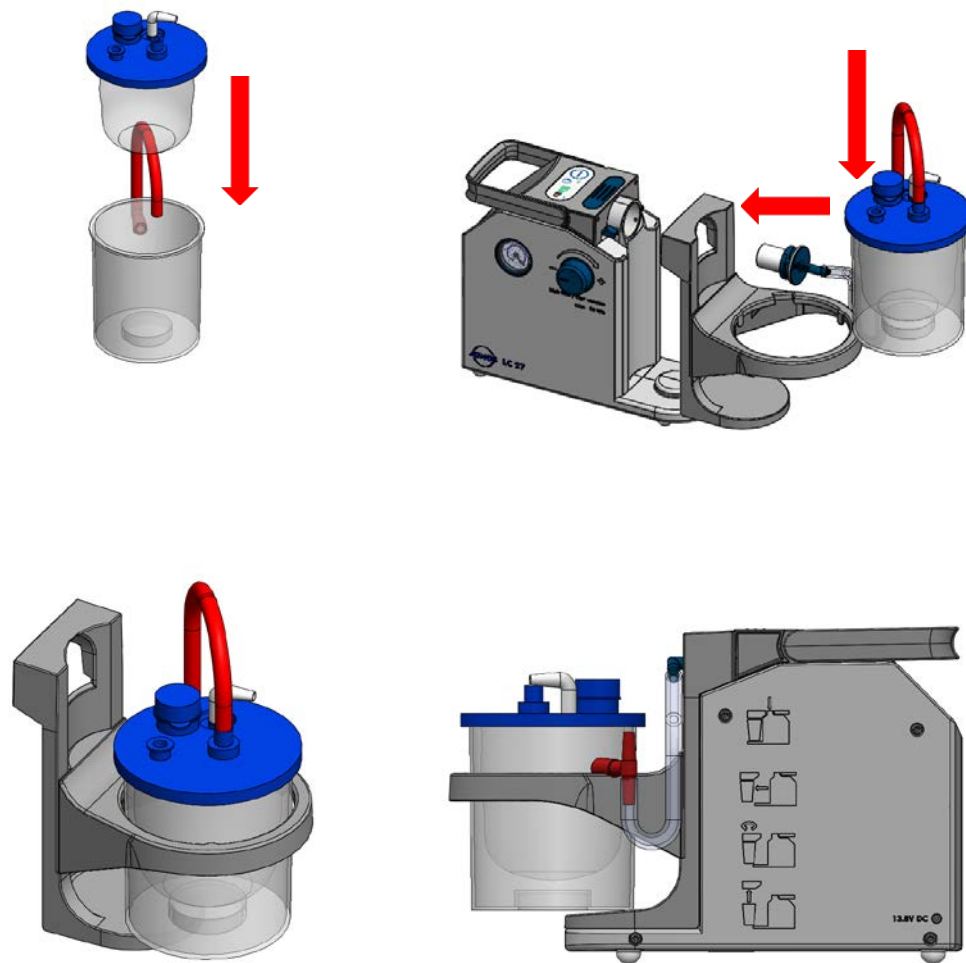
- Please observe the manufacturer's operating instructions for the Medi-Vac® secretion canister system.

3.8.1 Connection

1. Attach the support for the Medi-Vac® outer canister directly to the device.
2. Check the DDS bacterial and viral filter cartridge for disposable system. The blue connection for the vacuum hose must point towards 4 o'clock.

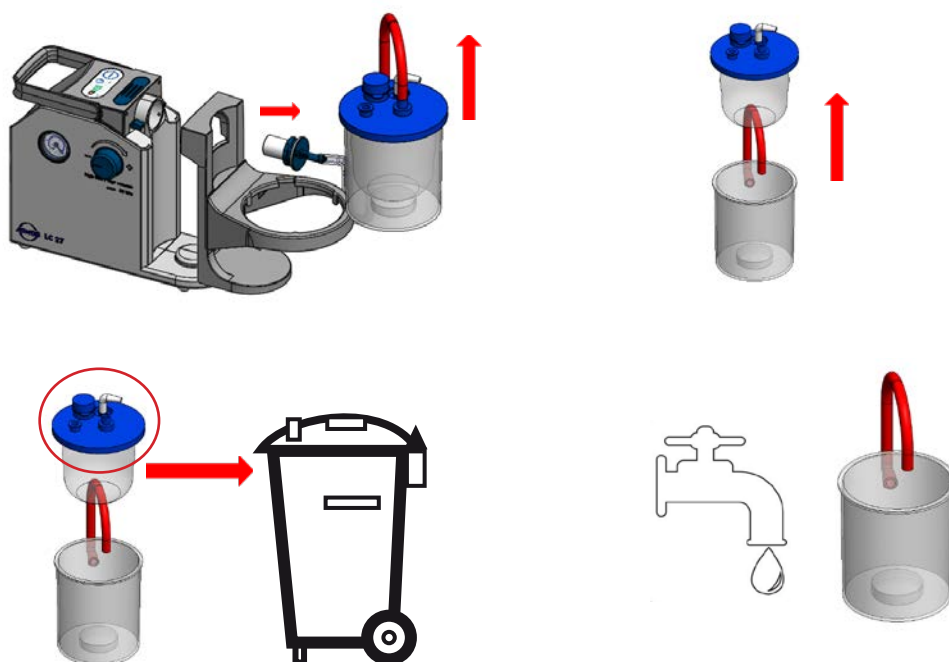


3. Insert the Medi-Vac® suction liner into the Medi-Vac® outer canister. Observe the manufacturer's operating instructions for the disposable canister system. The outer canister must stand on a solid surface and must not be connected to the device.
 4. Connect the red hose to the Medi-Vac® suction liner.
 5. Check whether the foil of the suction liner is completely inserted into the outer canister and the lid fits tightly.
 6. Insert the Medi-Vac® secretion canister system (outer canister with suction liner) into the Medi-Vac® support for canister system.
 7. Attach the vacuum hose to the DDS bacterial and viral filter cartridge for disposable system and to the red connection on the Medi-Vac® outer canister.
 8. Attach the disposable suction hose to the Medi-Vac® suction liner.
 9. Close the secondary air opening of the fingertip and close the front opening with your thumb.
 10. Switch on the device so that the pump builds up a vacuum.
- ☞ The Medi-Vac® suction liner unfolds.

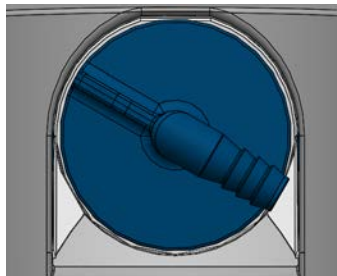


3.8.2 Removal

1. Remove the disposable suction hose from the Medi-Vac® suction liner.
2. Close the „patient“ connection on at the Medi-Vac® suction liner with the blue cap .
3. Remove the red hose from the Medi-Vac® suction liner.
4. Close the „vacuum“ connection on the Medi-Vac® suction liner with the blue cap.
5. Remove the vacuum hose from the red connection on the Medi-Vac® suction liner.
6. Remove the Medi-Vac® secretion canister system from the support.
7. Remove the sealed Medi-Vac® suction liner from the Medi-Vac® outer canister and dispose of it.
8. Clean the Serres® outer canister according to the manufacturer's operating instructions.
9. Replace the DDS bacterial and viral filter cartridge for disposable system after four months (Requirement: Device is in use).



3.8.3 Notes on the DDS bacterial and viral filter cartridge for disposable system



- The DDS bacterial and viral filter cartridge for disposable system is located between the device and the Medi-Vac® secretion canister system.
 - This consists of a DDS bacterial and viral filter and the blue support.
 - The DDS bacterial and viral filter cartridge effectively protects the device from oversuction and contamination.
- ☞ The DDS bacterial and viral filter cartridge for disposable system must be replaced after four months (Requirement: Device is in use)
 - ☞ Never operate the device without DDS bacterial and viral filter cartridge.

Wear disposable gloves when changing the DDS bacterial and viral filter cartridge.

1. Remove the Medi-Vac® secretion canister system.
 2. Turn the DDS bacterial and viral filter cartridge anti-clockwise and pull the DDS bacterial and viral filter cartridge out of the opening.
- ☞ DDS bacterial and viral filter cartridge has been removed.
3. Insert the new DDS bacterial and viral filter cartridge into the corresponding opening on the device and turn the cartridge clockwise with a quarter turn. The blue connection for the vacuum hose must point towards 4 o'clock.
- ☞ The device is immediately ready for use.

4.0 Operation

⚠ WARNING

Risk of infection by lack of hygiene or damaged components!

Risk of deadly diseases being transmitted.

- Always use new consumables for every patient (single-patient secretion canister system, DDS bacterial and viral filter cartridge and suction hose).
- Always check whether hoses or the single-patient secretion canister system are damaged before using the device. Replace any damaged parts.

⚠ WARNING

Electric shock from damaged equipment!

Cardiac arrhythmias may be caused.

- Always check the device and mains power unit for damage before use.
- Replace any damaged parts immediately.
- Do not use the device if it is damaged.

Ambient conditions during operation

- Temperature: 0...+40°C
- Relative humidity: 20...80%
- Air pressure 700...1060 hPa

4.1 Switching on the device

☞ The device should only be left on for as long as you need it. This will prolong the battery life (for ATMOS LC 27 Battery).

1. Press the on/off button to switch on the device.
 - » The pump starts.
 - » The operation status display (LED) below the on/off button lights up so long as the device is switched on.

4.2 Switch off the device

1. Switch off the device by pressing the on/off button.

4.3 Vacuum adjustment

⚠ WARNING

Excessive vacuum!

Patient may be seriously injured.

- Observe the valid guidelines.
 - Select the vacuum according to the patient and the application.
 - Using the device on children requires a lower vacuum setting. Observe the instructions issued by the attending physician.
1. Switch on the device.
 2. Set the desired vacuum by obstructing the suction hose opening and allowing the vacuum to build.

3. Turn the vacuum adjustment to the right until the vacuum gauge shows the desired vacuum.
 4. To reduce the vacuum, turn the vacuum adjustment to the left.
- ☞ The vacuum adjustment shows the setting range directly (from - to +).
 - ☞ You can further fine-tune the vacuum using the vacuum regulator on the fingertip.

4.4 Suction

⚠ WARNING

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

Patient can suffocate.

- Make sure that the device does not remain switched on for longer than necessary.
- Check the status of the battery regularly while you operate the device.

⚠ WARNING

Risk of infection!

Risk of deadly diseases being transmitted.

- Always wear disposable gloves during suction.

⚠ CAUTION

Risk of injury due to inappropriate material or untrained users!

Risk of injuries in the oral cavity and pharynx of the patient.

- Apply particular care when sucking out the tracheal area.
 - The patient may suffer serious injury if too much vacuum is applied. Turn the vacuum adjustment to set the desired vacuum. The vacuum gauge shows the currently set vacuum.
 - Risk of suffocation when the single-patient secretion canister system is full.
 - Pay attention to the filling level of the single-patient secretion canister system.
 - Empty the single-patient secretion canister system as soon as it is half full. When the secretion canister system is full, you can no longer use the device for suction.
 - Make sure that the hose is not kinked during suction. Otherwise the suction capacity at the patient is too low.
1. Perform suction as instructed by the trained medical staff.
 2. Control the suction process and the desired vacuum using the secondary air opening on the fingertip.
 3. Do not switch off the device until you have finished performing suction.
 4. If there is a mains power unit connected: unplug it from the mains before unplugging it from the device.
 5. Remove the single-patient secretion canister system. Observe chapter "4.5.1 Removing the single-patient secretion canister system" on page 34.

4.5 After use

1. Switch off the device by pressing the on/off button.
2. Clean the device after each use: See chapter "5.0 Cleaning and disinfection" on page 35.
3. Perform a function check after each cleaning: See chapter "6.1 Function check" on page 41.

4.5.1 Removing the single-patient secretion canister system

1. Remove the single-patient secretion canister system by pressing and holding the release button on the control panel and taking the single-patient secretion canister system out to the side.
2. Open the single-patient secretion canister lid by turning the lid anti-clockwise with a quarter turn.
3. Remove the single-patient secretion canister lid from the single-patient secretion canister.
4. Clean the device after each use: See chapter "5.0 Cleaning and disinfection" on page 35.
5. Perform a function check after each cleaning: See chapter "6.1 Function check" on page 41.
 - » The device has been made ready for its next use.

4.5.2 Removing the suction hose with DDS adapter and fingertip

1. Turn the blue adapter on the suction hose anti-clockwise with a quarter turn.
2. Remove the blue adapter from the single-patient secretion canister lid.
 - ☞ You can now remove the suction hose.

4.5.3 Removing the DDS hose adaptor

1. Remove the suction hose from the blue DDS adapter.
2. Turn the blue DDS adapter anti-clockwise with a quarter turn.
3. Remove the blue DDS adapter from the single-patient secretion canister lid.
 - » You can now remove the DDS adapter.

5.0 Cleaning and disinfection

5.1 Safety instructions for reprocessing

5.1.1 General safety instructions

We recommend you to always document all maintenance work and part replacements in writing.

It is the responsibility of the user to ensure that the demands for cleaning and disinfection are adhered to. Validation and routine monitoring of the procedure will generally be necessary.

The reprocessing treatment may only be carried out by persons who have the necessary expertise. To carry out these measures the person must have the necessary devices.

5.1.2 Danger for users, patients and third parties

Risk of infection due to unsuitable accessories!

Risk of deadly diseases being transmitted.

- Always wear your own personal protective equipment. The protective equipment consists of protective gloves, protective clothing, goggles and mouth and nose protection for all steps where the product components are still contaminated.
- Only use accessories which can be easily reprocessed or are disposable products.

Risk of infection due to unsuitable reprocessing!

Risk of deadly diseases being transmitted.

- Make sure that all areas of the accessories can be easily reached.
- Only use suitable load carriers for mechanical reprocessing. This especially applies to accessories with difficult to access cavities and lumens.
- Make sure that air bubbles do not form in the cavities and lumens when placed in the treatment solution.

5.1.3 Avoiding damage to the device

Damage to the device due to improper cleaning!

The device may become damaged.

- Use a damp, never wet cloth to clean and disinfect the surface.
- Do not use spray disinfectant directly on the device. Spray the disinfectant onto a cloth before disinfecting the surface.
- Ensure that no disinfectant enters the device.
- Make sure that the product is switched off during cleaning.
- The product should never be autoclaved, rinsed under running water or immersed into any liquids.

Damage to the device due to cleaning with fixatives!

Soiling will become permanently unremovable.

- Do not use aldehydes before and for cleaning.
- Do not expose the product to temperatures above 40°C/104°F before and during cleaning it.

Unsuitable accessories!

Risk of damage to the product.

- Only use lint-free, soft cloths.
- For final rinsing, always use fully demineralised water.
- Observe the respective operating instructions of all the accessories and devices used.

Unsuitable cleaning agents and disinfectants.

Risk of damage to the product.

- Do not use any process chemicals which contain the following ingredients **on plastic parts:**
 - Chloramide or phenol derivatives
- Do not use any process chemicals which contain the following ingredients **on stainless steel:**
 - Organic or inorganic bases
 - Alkaline solutions
- Do not use any process chemicals which contain the following ingredients **on padding:**
 - Polish or wax polish
 - Chemical cleaning agents
 - Oils, greases or alcohol

Incorrect mechanical cleaning and disinfection.

Corrosion due to moisture.

- When the program is finished remove the products immediately.

5.2 Preparing/completing reprocessing

Prior to reprocessing

1. Switch off the device.
2. Disassemble the product for reprocessing in the following order:
 - Remove the mains power unit from the device.
 - Remove the single-patient secretion canister system from the device.
 - Carefully remove the single-patient secretion canister lid.
 - Dispose of the secretion.

After reprocessing

1. Perform a function check.

5.3 Prepare surfaces

5.3.1 Overview

| Surface | After each application | After a patient change | Daily | Weekly | Every two months | Monthly | Pre-cleaning | Wipe cleaning | Wipe disinfection | Spray disinfection | Remarks |
|----------------------------|------------------------|------------------------|-------|--------|------------------|---------|--------------|---------------|-------------------|--------------------|--|
| Housing incl. carry handle | | x | | x | | | | x | x | | As per agent manufacturer's instructions |
| Vacuum gauge | | x | | x | | | | x | x | | As per agent manufacturer's instructions |
| Vacuum adjustment | | x | | x | | | | x | x | | As per agent manufacturer's instructions |
| Release button | | x | | x | | | | x | x | | As per agent manufacturer's instructions |
| Control panel | | x | | x | | | | x | x | | As per agent manufacturer's instructions |

5.3.2 Select process chemicals

Observe the process chemical manufacturer's specifications.

If heavily soiled, clean the device surface directly with a cloth moistened with clean water.

| Agent (manufacturer) | Active ingredients in 100 g | Art | Housing incl. carry handle | Vacuum gauge | Vacuum adjuster | Release button | Control panel |
|--|---|-----------------------|----------------------------|--------------|-----------------|----------------|---------------|
| Cleaning | | | | | | | |
| Mikrozid® Sensitive Wipes (Schülke & Mayr) | Benzyl-C12-16-alkyldimethyl-chloride 0.26 g / 100 g C12-14-alkyl[(ethyl phenyl) methyl]dimethyl, chloride 0.26 g / 100 g Didecyldimethylammoniumchloride 0.26 g / 100 g | Wipes | x | x | x | x | x |
| Disinfection | | | | | | | |
| Green & Clean SK (Metasys) | Propane-2-ol [67-63-0], didecyl-dimethyl-ammonium-chloride [7173-51-5], C12-14-alkyl [(ethyl-phenyl) methyl] dimethyl-ammonium-chloride [85409-23-0], Benzyl-C12-16-alkyl-dimethyl-ammonium-chloride [68424-85-1] | Foam Ready for use | x | x | x | x | x |
| Bacillol® 30 Foam (Bode Chemie) | Ethanol 14 g / 100 g, propane-2-ol 10 g / 100 g, propane-1-ol 6 g / 100 g, N-alkyl-amino-propylglycin 0.5 g / 100 g | Foam | x | x | x | x | x |
| Mikrozid® Sensitive Wipes (Schülke & Mayr) | 0.26 g of alkyl (C12-16) dimethyl nezl ammonium chloride, 0.26 g of didecyl dimethyl ammonium chloride, 0.26 g of alkyl (C12-14) ethyl benzyl ammonium chloride | Wipes | x | x | x | x | x |
| Mikrozid® Universal Wipes (Schülke & Mayr) | 2-propanol 17.4 % / 100 g Ethanol 12.6 % / 100 g | Wipes | x | x | x | x | x |

| Agent (manufacturer) | Active ingredients in 100 g | Art | Housing incl. carry handle | Vacuum gauge | Vacuum adjuster | Release button | Control panel |
|---------------------------|-----------------------------|---------------------------|----------------------------|--------------|-----------------|----------------|---------------|
| Bacillo® AF (Bode Chemie) | Alcohols | Solution Ready for use | X | X | X | X | X |

5.3.3 Pre-cleaning

1. Disconnect the device from the mains power supply.
2. Clean the surface evenly with a suitable cloth and clear water. Pay particular attention to areas which are difficult to access.
3. Remove the suction hose and rinse it out with water over a sink.
 - » There is no more soiling visible.

5.3.4 Wipe cleaning

1. Disconnect the device from the mains power supply.
2. Clean the surface evenly with a suitable cloth and suitable cleaning agent, see chapter "5.3.1 Overview" on page 37. Pay particular attention to areas which are difficult to access.
 - » There is no more soiling visible.

5.3.5 Wipe disinfection

1. Disinfect the surface evenly with a suitable cloth and suitable disinfectant. Pay particular attention to areas which are difficult to access. Do not use spray disinfectant directly on the device.
2. Wait for the specified exposure time.
3. Allow the surface to dry.

5.4 Reprocessing the accessories

5.4.1 Replacing accessories

| Accessories | After each application | After a patient change | Daily | Weekly | Every two months | Monthly | Every four months |
|--|------------------------|------------------------|-------|--------|------------------|---------|-------------------|
| Single-patient secretion canister system | | X | | | | | |
| Suction hose | | X | | | | X | |
| DDS hose adapter | | X | | | | | X |
| DDS bacterial and viral filter cartridge | | X | | | X | | |

After a patient change, always replace the DDS bacterial and viral filter cartridge, suction hose respectively the DDS adapter and the single-patient secretion canister system.

Single-patient secretion canister system

- Empty the single-patient secretion canister system at least once a day and rinse it thoroughly with clean water. If possible, clean it using a mild household washing-up liquid and then rinse it off with clean water.
- ☞ Recommendation: Before suction, fill some water (approx. 10 - 20 ml) into the single-patient secretion canister system. This will prevent secretions from drying into crusts.
- The single-patient secretion canister system can be boiled (max. 30 x cycles)
- The single-patient secretion canister system is suitable for cleaning in dishwashers.
- After a patient change, always replace the single-patient canister system.
- In the case of frequent use and disinfection ATMOS recommends replacing the single-patient secretion canister system at least every 3 months.

Serres[®]-, Medi-Vac[®] secretion canister system

- Observe the instructions in the operating instructions for the secretion canister system.
- Do not operate the device without a bacterial filter.

Suction hose with DDS adapter and fingertip/suction hose

- Rinse out the suction hose with clean water after every use.
- When using the device for only a single patient, replace the suction hose every 4 weeks.
- If heavily soiled with clogged or crusted secretion, replace the suction hose immediately.
- After a patient change, always replace the suction hose.

DDS hose adapter

- Rinse the DDS Hose adapter with clean water after every use.
- When using the device on the same patient, replace the DDS Hose adapter every 4 weeks.
- If heavily soiled with clogged or crusted secretion, replace the DDS hose adapter immediately.
- When there is a change of patient, the DDS hose adapter must be replaced.

DDS bacterial and viral filter cartridge

- Never wash or autoclave the DDS bacterial and viral filter cartridge.
- The DDS bacterial and viral filter cannot be detached from the filter cartridge.
- Disposable article, for use with a single patient only.
- The DDS bacterial and viral filter cartridge must be replaced after a patient change.
- When using the device on the same patient, replace the DDS bacterial and viral filter cartridge every two months (Requirements: Device is in use).
- Replace the DDS bacterial and viral filter cartridge if it is discoloured, soiled or after oversuction.

DDS bacterial and viral filter cartridge for disposable system

- Never wash or autoclave the DDS bacterial and viral filter.
- The DDS bacterial and viral filter cannot be detached from the filter cartridge.
- The DDS bacterial and viral filter cartridge for disposable system must be replaced after four months (Requirement: Device is in use).
- Replace the DDS bacterial and viral filter cartridge if it is discoloured, soiled or after oversuction.

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. The person in question must possess the necessary test devices and genuine spare parts required to carry out these measures.

ATMOS recommends: Work should be carried out by an authorised ATMOS service partner.

Period tests

Comply with the country-specific guidelines regarding regular testing, especially with regard to electrical safety. ATMOS recommends performing a test every 24 months.

6.1 Function check

Perform a function check:

- Prior to each use.
- After each use and after cleaning.
- Every 4 weeks if the device is not being used.
- After any maintenance work, servicing or repair.

6.2 Sending in the device

- Remove all consumables and dispose of them properly.
- Clean and disinfect the product and accessories in accordance with the operating instructions.
- Place any used accessories with the product.
- Fill in the QD 434 "Delivery complaint/return shipment" form and the corresponding **decontamination certificate**.
- This form is enclosed with each delivery and can be found at www.atmosmed.com.
- The device must be well padded and packed in suitable packaging.
- Place the QD 434 "Delivery complaint/return shipment" form and the corresponding decontamination certificate in an envelope.
- Affix the envelope to the outside of the package.
- Send the product in to ATMOS or your dealer.

6.3 Handling batteries

The battery in the ATMOS LC 27 Battery is a wear part and is therefore not covered by 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 battery.
- Prior to first use, the battery must be fully charged.
- Battery-run devices should only be stored when they are charged.
- Fully charge the battery every 3 months, even if the device is not used.
- Do not expose the batteries to 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. 400 charging cycles.

7.0 Troubleshooting

The ATMOS LC 27 or ATMOS LC 27 Battery has been subjected to thorough quality inspection at the factory. Nevertheless, if a problem may occur you can possibly solve it yourself.

Recharging and battery status

| Error symptom | Possible cause | Remedy |
|--|--|--|
| Device cannot be recharged. | The mains power unit's plug is not plugged in properly. | Check the connection to the mains supply. |
| | The mains power unit is defective. | Replace the mains power unit. |
| | Battery is not connected properly. | Send the device in for repair. |
| | Battery temperature too high or too low. | After prolonged use: Let the device cool down. Extreme ambient temperature: If necessary, move the device to a cooler or warmer location. |
| | Defective battery. | Exchange the battery. Send the device in for repair. |
| | Defective fuse or electronics. | Send the device in for repair. |
| When recharging the battery 100 % cannot be achieved. The charging time can take up to 12 hours. | Battery service life is exhausted or the battery is defective. | Send the device in for repair. |
| | Wrong mains power unit. | Only use the mains power unit originally included or an original spare part. |
| Red LED of the battery status indicator is lit up although the battery is fully charged. | Defective battery. | Send the device in for repair. |

Switching on and off

| Error symptom | Possible cause | Remedy |
|--------------------------------------|--|--|
| Device cannot be switched on or off. | Battery is discharged. | Recharge the battery. |
| | Battery is not connected properly. | Send the device in for repair. |
| | The plug from the charging accessories is poorly fitted. | Send the device in for repair. |
| | Defective fuse or electronics. | Send the device in for repair. |
| Pump does not start up. | Vacuum is already built up. | Do not switch on the device if the vacuum is already built up. |

Vacuum and suction capacity

| Error symptom | Possible cause | Remedy |
|--|---|---|
| Vacuum is not built up or cannot be reached. | Battery is discharged or defective. | Charge the battery or send the device in for repair. |
| | Hoses or single-patient secretion canister lid are leaking. | Check the single-patient secretion canister lid and hoses for tight fit. Screw in the DDS bacterial and viral filter cartridge tightly. Check the white seal on the DDS bacterial and viral filter cartridge to see whether it is positioned correctly. |
| | Liquid has penetrated the device. | Send the device in for repair. |
| | Pump is defective or the device has a leak. | Send the device in for repair. |
| | The disposable suction liner is not inserted correctly or not properly connected. | Check that the disposable liner is firmly seated in the outer canister. Check all the connection points on the secretion canister system. |
| Low suction capacity although the vacuum is reached. | Hydrophobic DDS bacterial and viral filter is blocked. | Replace the hydrophobic DDS bacterial and viral filter cartridge. |
| | Hose is kinked. | Check the hoses. |
| | The bacterial filter in the disposable suction liner is blocked. | Exchange the secretion suction liner. |

8.0 Accessories and consumables

8.1 Accessories

| Name | REF |
|--|------------|
| ATMOS LC 27 bag | 321.0350.0 |
| ATMOS mains power unit | 011.1363.0 |
| Retrofit kit Serres® secretion canister system | 321.0360.0 |
| Retrofit kit Medi-Vac® secretion canister system | 321.0370.0 |
| Serres® outer canister 1 l | 312.0465.0 |
| Serres® angle connector grey, 2 pcs. | 310.0415.0 |
| Medi-Vac® outer canister 1 l | 312.0473.0 |

8.2 Consumables

| Name | REF |
|---|------------|
| ATMOS LC 27 / DDS consumables set, 10 pcs. | 321.0340.0 |
| Single-patient secretion canister system | 321.0300.0 |
| DDS bacterial and viral filter cartridge, 10 pcs. | 321.0027.0 |
| DDS bacterial and viral filter cartridge for disposable system, 10 pcs. | 321.0034.0 |
| Suction hose with DDS adapter and fingertip, 10 pcs. | 321.0100.0 |
| Suction hose, silicone, Ø 6mm, L = 1.3 m, 1 pcs. | 000.0013.0 |
| Suction hose, silicone, Ø 6 mm, L = 1 m (minimum order 5 m) | 006.0009.0 |
| Suction hose, PVC, disposable, Ø 6 mm, L = 1,30 m, 10 pcs. | 006.0057.0 |
| DDS hose adapter, 5 pcs. | 321.0040.0 |
| Fingertip, sterile, not autoclavable, minimum 1 packet = 10 pcs. | 000.0347.0 |
| Fingertip, sterile, not autoclavable, 100 pcs. | 000.0347.1 |
| Serres® disposable suction liner 1 l, without gelling agent, 36 pcs. | 312.0466.0 |
| Serres® disposable suction liner 1 l with gelling agent, 32 pcs. | 312.0467.0 |
| Medi-Vac® disposable suction liner 1 l, 50 pcs. | 312.0474.0 |
| Suction catheter Unomedical®, size: CH 12, length: 53 cm, 100 pcs. | 000.0294.0 |
| Suction catheter Unomedical®, size: CH 14, length: 53 cm, 100 pcs. | 000.0295.0 |
| Suction catheter Unomedical®, size: CH 16, length: 53 cm, 100 pcs. | 000.0296.0 |

9.0 Disposal/recycling

Packaging

1. Recycle any device packaging you no longer need.

Canister system

Disposable products may not be reprocessed and may not be reused! Please dispose of disposable products professionally.

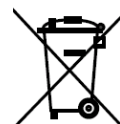
The following notes are only applicable for reusable products.

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

ATMOS LC 27 and ATMOS LC 27 Battery

Do not dispose of devices or batteries in domestic waste.

1. Clean and disinfect the device.
2. In Germany: send the device back to ATMOS or your specialist dealer. They will dispose of the device professionally.
3. For other countries: Dispose of the product properly and in accordance with country-specific laws and regulations.




9.1 Expected service life

When the ATMOS LC 27 or ATMOS LC 27 Battery is operated according to the operating instructions it has an expected service life of 3 years. A regular thorough cleaning and disinfection of the device as well as operation in line with the operating instructions are assumed.

10.0 Technical data

10.1 ATMOS LC 27



| | |
|---|---|
| Voltage | 100 - 240 V~ ± 10%; 50/60 Hz (13.4 VDC mains power unit) |
| Current consumption | Max. 1 A |
| Power consumption | Max. 37 W |
| Mains power unit | Manufacturer: GlobTek, Inc. Model: GTM46402-3713.4 |
| Suction capacity (on pump, during mains operation at 21°C/1013 hPa) | 27 l/min ± 3 l/min |
| Maximum achievable vacuum at sea level* | -80 kPa ± 5 kPa (-800 mbar ± -50 mbar; -600 mmHg ± 37.5 mmHg) or 80% of daily air pressure |
| Vacuum display | -1 to 0 bar (± 2.5% of final value) (mmHg, bar, kPa) |
| Vacuum adjustment | Infinitely variable vacuum adjustment |
| Operating time | Interval operation (max. 30 minutes ON; min. 30 minutes OFF) |
| Environmental conditions: Transport/ storage | |
| - Temperature range | -30...+70 °C |
| - Humidity without condensation | 5...90 % |
| Air pressure | 700...1060 hPa |
| Ambient conditions for operation | |
| - Temperature | 0...+40 °C |
| - Humidity without condensation | 20...80% |
| Air pressure | 700...1060 hPa |
| Maximum operational altitude | 3000 m (NN) |
| Contamination level | 2 |
| Overvoltage category | II |
| Dimensions (W x H x D) | 286 x 243 x 118 mm (with DDS secretion canister system) 340 x 253 x 140 mm (with Serres® secretion canister system) 368 x 243 x 161 mm (with Medi-Vac® secretion canister system) |
| Weight | 1.9 kg (with empty DDS secretion canister system) 2.1 kg (with empty Serres® secretion canister system) 2.1 kg (with empty Medi-Vac® secretion canister system) |
| Periodic tests: | Recommended: Testing every 24 months. |
| Protection class against electric shock (according to EN 60601-1) | II |

| | |
|---------------------------------|--|
| Classification of applied parts | Application parts type BF  |
| Degree of protection | IP21 |
| CE mark | CE 0124 |
| ID No. (REF) | 321.1000.0 ATMOS LC 27 / DDS 321.1100.0 ATMOS LC 27 / Serres® 321.1200.0 ATMOS LC 27 / Medi-Vac® 321.1300.0 ATMOS LC 27 / DDS Universal |

* Data may differ depending on elevation above sea level, prevalent air pressure and air temperature.

10.2 ATMOS LC 27 Battery

| | |
|---|---|
| Voltage | 100 - 240 V~ ± 10%; 50/60 Hz (13.4 VDC mains power unit) |
| Current consumption | Max. 1 A |
| Power consumption | Max. 37 W |
| Mains power unit | Manufacturer: GlobTek, Inc. Model: GTM46402-3713.4 |
| Other power sources | 12 V; 4 Ah, lead acid battery Minimum 400 recharging cycles within approx. 3 years |
| Battery capacity | Ca. 60 minutes |
| Charging time | 50% in 3 h Fully charged in 12 h |
| Suction capacity (on pump, during mains operation at 21°C/1013 hPa) | 27 l/min ± 3 l/min |
| Maximum achievable vacuum at sea level* | -80 kPa ± 5 kPa (-800 mbar ± -50 mbar; -600 mmHg ± 37.5 mmHg) or 80% daytime barometric pressure |
| Vacuum display | -1 to 0 bar (± 2.5% of final value) (mmHg, bar, kPa) |
| Vacuum adjustment | Infinitely variable vacuum adjustment |
| Backup mode | If battery is exhaustively discharged, device can be operated on mains power |
| Operating time | Interval operation (max. 30 minutes ON; min. 30 minutes OFF) |
| Noise level | < 65 dB (A) @ 1m |
| Environmental conditions: Transport/ storage | |
| - Temperature range | -30...+70 °C |
| - Humidity without condensation | 5...90% |
| Air pressure | 700...1060 hPa |

| | |
|--|---|
| Ambient conditions for operation - Temperature - Humidity without condensation Air pressure | 0...+40 °C 20...80% 700...1060 hPa |
| Maximum operational altitude | 3000 m (NN) |
| Contamination level | Class 2 |
| Overvoltage category | II |
| Dimensions WxHxD | 286 x 243 x 118 mm (with DDS secretion canister system) 340 x 253 x 140 mm (with Serres® secretion canister system) 368 x 243 x 161 mm (with Medi-Vac® secretion canister system) |
| Weight | 3.3 kg (with empty DDS secretion canister system) 3.5 kg (with empty Serres® secretion canister system) 3.5 kg (with empty Medi-Vac® secretion canister system) |
| Periodic tests: | Recommended: Testing every 24 months. |
| Protection class against electric shock (according to EN 60601-1) | II |
| Classification of applied parts | Application parts type BF  |
| Degree of protection | IP 21 |
| CE mark |  0124 |
| ID No. (REF) | 321.2000.0 ATMOS LC 27 Battery / DDS 321.2100.0 ATMOS LC 27 Battery / Serres® 321.2200.0 ATMOS LC 27 Battery / Medi-Vac® 321.2300.0 ATMOS LC 27 Battery / DDS Universal |

* Data may differ depending on elevation above sea level, prevalent air pressure and air temperature.

10.3 DDS bacterial and viral filter cartridge

| | |
|---------------------------------------|---|
| Degree of separation against bacteria | 99.999778%* |
| Degree of separation against viruses | 99.73%* |
| Total degree of separation | >99.95%* |
| Filter class | H13 (High-Efficiency Particulate Air/Arrestance)* |

*External test report (test laboratory)

11.0 Notes on EMC

- ☞ Medical electrical equipment is subject to special precautions with regard to EMC and must be installed acc. to following EMC notes.

Guidance and manufacturer's declaration - ambient conditions

The ATMOS LC 27 and ATMOS LC 27 Battery are suitable for operation in the following surroundings:

- Homecare in any building.

The customer or user of the device is obliged to ensure that it is used in an environment compliant with the specifications.

Guidance and manufacturer's declaration - key features

- ☞ Please note the technical data in this manual. The essential features are fully usable even in the presence of electromagnetic disturbances.

Guidance and manufacturer's declaration - electrical components

The ATMOS LC 27 and the ATMOS LC 27 Battery feature the following electrical components:

| Type | REF | Max. cable length |
|------------------|------------|-------------------|
| Mains power unit | 011.1363.0 | 1.2 m |

Guidance and manufacturer's declaration - Warnings

Warning

The use of electrical components and accessories other than those specified or provided by the manufacturer may result in increased electromagnetic interference or reduced immunity to electromagnetic interference and result in the device not operating as intended.

Warning

Portable RF communications equipment (e.g. radios, antenna cables) should not be used within 30 cm* of any parts or cables of the product as specified by the manufacturer. Failure to do so may result in a reduction in the performance of the device.

- ☞ * At higher immunity test levels the distance may be reduced.

Warning

Placement on or next to another device should be avoided. This could result in incorrect operation. If this is unavoidable, the proper functioning of the device must be monitored regularly. If possible, please switch off any nearby devices that are not in use.

12.0 Notice



MedizinTechnik

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