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With debritom®, you have acquired a high quality and innovative micro water jet device that sets new standards for wound debridement. debritom® has an electronic control system with optical status indications. Most components that will be getting in contact with rinsing fluids are single use, which have to be disposed of after use according to facility guidelines. The size enables high flexibility and mobile use, and the extreme quietness of operation allows the user to concentrate on wound and patient for an efficient and safe debridement. The comprehensive range of accessories offers the medical professional a toolbox for their individual needs.

1 Warnings and safety instructions

⚠️ WARNINGS
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ CAUTION
Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

👉 SAFETY INSTRUCTION
Indicating useful information about the safe use of the device.

debritom® is approved exclusively for the use as described in these instructions for use. Medaxis can only guarantee the safe functioning of the system when debritom® is used in combination with the original debritom® accessories (pump, handpiece, connection tube, power cord; see chapter 17 – Accessories).

debritom® is EMC-tested in conformity with the requirements of IEC 60601-1-2:2007 and can be used in the vicinity of other EMC-tested devices that fulfill the requirements as outlined in the IEC 60601-1-2 standard. Untested HF sources, radio networks or the like can impair the function of the device and should not be operated in the vicinity of debritom®.
Please read and observe these warning and safety instructions before operation. These instructions for use must be kept with the device for later reference.

Please note that these Instructions for use are a general guide for the use of the product. Medical matters must be addressed by a physician.

Medaxis considers itself only responsible for the effect on BASIC SAFETY, reliability and performance of debritom if it is used in accordance with the Instructions for use.

Subject to change.

⚠️ WARNING

- This manual must be read prior to the use of debritom+
- The use of the device should only be carried out by medical, qualified personnel.
- Before cleaning the device, disconnect the power supply.
- debritom+ was validated in combination with the accessories listed in chapter 17. For a correct and safe operation use debritom+ with these accessories only.
- Do not use debritom+ in MRT (Magnetic Resonance Tomography).
- The device is not suitable for use in a hazardous explosive environment.
- The use of debritom+ for any other indication than intended is neither desired nor allowed.
- Wear gloves, protective googles and mouth protectors for all operations.
- To avoid the risk of electric shock, this equipment must be connected to a supply mains with protective earth only.
- The device shall not be serviced or maintained while in use with a patient.
- Immediately disconnect the device from the supply mains and stop using it, if it is damaged.
- Modification of the device or combination with other devices is not allowed.
- Treating infants, make sure a second medical professional is holding the part to be treated securely in place in order to prevent sudden movement.
- Adults must be asked to keep the part to be treated securely in place.
- Not for use at home or in vehicles.

⚠️ CAUTION

- The intensity level to be set must be determined by a physician according to the patient’s wound.
- Before connecting debritom+ to the power supply, please verify that the supply voltage corresponds to that given on the device specification plate.
- Incorrect use of debritom+ can cause pain and injury to the patient.
- Do not use sterile accessories when the sterile packaging is damaged
- Non-sterile and reusable accessories must be cleaned and disinfected according to chapter 10, General cleaning guidelines.
- Federal US law restricts this device to sale by or on the order of a health professional.
SAFETY INSTRUCTION

- debritom⁺ is a medical device that requires specific safety measures in regard to EMC. It must be installed and put into operation in accordance with the attached EMC information in chapter 16 ,Technical documentation'.
- Portable and mobile RF communications equipment can affect medical devices.
- In each of the following cases, debritom⁺ must not be used and it must be repaired by Customer Service:
  - If the power cord or the plug are damaged
  - If the device is not functioning according to routine check
  - If the device is damaged
  - If the device shows clear safety defects.
  - If a specific error reoccurs several times.
- debritom⁺ has no user serviceable parts inside (open device with cover removed). For safety reasons, it is required that debritom⁺ is repaired throughout its service life strictly and exclusively by Medaxis authorised service centres.
- Keep the power supply cord away from hot surfaces.
- The mains plug and the on/standby button must not come into contact with moisture. Never pull the mains plug out of the fixed mains socket by pulling on the power supply cord.
- Separation from the mains is only assured through the disconnection of the mains adapter and fixed socket connection.
- Never use the device at high room temperatures.
- Never place or immerse debritom⁺ in water or other liquids.
- When using single use, sterile products, please note that they are not intended to be reprocessed. Reuse could result in loss of mechanical and chemical properties and may lead to restriction in terms of biocompatibility.
- Contact your local Medaxis customer service representative for assistance with product operations.
- The device can be switched off at any time by pulling out the mains plug.
- Do not operate the device when tired.

These instructions for use must be kept for later reference.
2 Power supply

debritom® is a mains-powered device. Before you plug in the device, please check that your local power supply is the same as the voltage given on the specification plate.

⚠️ WARNING
To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.
Do not position the debritom® so that it is difficult to disconnect the power supply.

Plugging in the device
Take the power supply cord and plug into the appliance inlet port at the back of the device. The cord in the inlet port is automatically secured. Cable length is 2.5 meters.
3 Description

Introduction
debritom⁺ is a high-quality micro water jet debridement device. The compact system controls the fluid pressure to provide a regulated water jet to clean acute and chronic wounds in a precise and tissue-preserving manner. This highly concentrated micro water jet removes wound surfaces such as fibrin, necrosis or biofilm, clears away foreign bodies from acute wounds, and is ideally suited for the effective irrigation of contaminated wounds.

This method involves mechanical cleaning and stimulation. During the procedure, a sterile solution – Ringer’s solution, NaCl or a solution containing polyhexanide – is sprayed onto the wound surface using precisely controllable pressure. The pressure setting of the device, the distance between the wound and the nozzle, and the gentleness of the wiping motions determine how much of the wound is removed. The practitioner, patient and surrounding area are protected from contamination by a protective tent.

The wound cleansing is continued until all surfaces are removed. Minimal surface bleeding from the wound bed is a desired effect. With these intentionally generated micro bleedings, the practitioner achieves hyperemia, which accelerates the regenerative healing process of the wound during all four phases (exudation, proliferation, reparation, epithelialization). Medicating the patient with anticoagulants is generally unproblematic. Micro bleedings occur not only during the cleansing phase (exudation), but also during the granulation phase (proliferation). However, they are only one of the factors which greatly stimulate and activate the body’s own wound healing ability.

debritom⁺ is intended for use on patients in appropriate care settings by a medical professional.

Intended purpose
The debritom⁺ is intended for cleaning, irrigating and debriding wounds and other diseases of the skin by using micro water jet technology.

Indications
Chronic and badly healing wounds which, in the clinical judgement of the physician, require a cleaning or debridement procedure.
Acute wounds which, in the clinical judgement of the physician, require a cleaning or debridement procedure.
Other disorders of the skin which, in the clinical judgement of the physician, require a cleaning or debridement procedure.

Typical applications for use of debritom⁺
Infected, necrotic, ischemic, contaminated or otherwise poorly healing chronic wounds e.g. originating from following diseases:
- Ulcers of various causes (venous, arterial, mixed)
- Ischemia
- Bedsore
- Diabetic foot syndrome
- Abscess and fistulas
Acute wounds, e.g. originating from
- Accidents
- Skin burns
- Operations (wound healing disturbance)

Removal of biofilm

Removal of foreign bodies from wounds, e.g. sand, textile fiber, metallic splinter etc.

Other suitable applications according to the clinical judgement of the physician

**Contraindications**
- Malignant tumor types
- Open injury to vessels, unprotected exposed vessels
- Eyes, ears, nose
- Delicate vessels and structures, such as neurovascular bundles
- For complex or highly contaminated wounds
- Patients with HIV, hepatitis C or another contagious disease

Warnings with regard to the use of the device for the following conditions, since they are associated with higher risk:
- Patients with increase tendency to hemorrhage and arterial ulcers

- Contaminated wounds
If treatment is indicated for the above listed conditions (listed under warnings), this treatment should be done under medical guidance and supervision.

**Side-effects**
There could be undesirable side-effects such as excessive bleeding or pain. In such cases it’s the physician’s responsibility to decide whether the debridement procedure shall be continued and under what circumstances (analgesic, intensity level decrease), or if the treatment shall be stopped.

**Intended user**
The debritom+ system is designed for use by qualified health professionals.

**Important note**
Compliance with proper debridement procedures and techniques is the responsibility of the physician/user. Each physician must evaluate the appropriateness of the treatment based on his own knowledge and experience.
4 Overview debritom$^+$ system

debritom$^+$, REF 1000.00xx
debritom$^+$ for recurrent use, for multiple patients

Pole for rinsing fluid

Hand grip

Display / User interface

Pump insert

Knurled head screw for pole

Power connector / fuse

Specification plate and connection to trolley

debritom$^+$ CH, REF 1000.0001
debritom$^+$ EU, REF 1000.0002
debritom$^+$ UK, REF 1000.0003
debritom$^+$ IT, REF 1000.0004
debritom$^+$ US, REF 1000.0005

Country specific debritom$^+$ contain items according to chapter 6
debritom+ pump, REF 2000.020x

Pump versions depending on duration of use, either replace after application or after one day.

Connector for connecting tube – rinsing fluid

Luer-connector to handpiece

Pump / drive unit interface to debritom+

debritom+ Pump
REF 2000.0200
single use, sterile

debritom+ Pump, one day
REF 2000.0201
one day use, multiple patients, sterile

With protective cap
debritom\textsuperscript{+} handpiece, REF 2000.000x
Single use, sterile, various jet shapes, details see chapter 7 ’Optimal working parameters’

Luer-connector to pump

Handpiece tubing – Length 180 cm

Handpiece with nozzle (various jets)

| debritom\textsuperscript{+} handpiece standard jet | REF 2000.0003 |
| debritom\textsuperscript{+} handpiece flat jet narrow | REF 2000.0004 |
| debritom\textsuperscript{+} handpiece flat jet wide | REF 2000.0005 |

debritom\textsuperscript{+} connecting tube, REF 2000.0300
Sterile, details see chapter 8 ’Replace rinsing fluid’
debritom\textsuperscript{+} foot on/off switch, REF 2000.5020
For recurrent use, for multiple patients

debritom\textsuperscript{+} power cord, REF 2000.50xx
For country-specific power cord see chapter 17

5 Additional information

Intensity levels/running time
The handpiece and the pump are equipped with an RFID tag. These tags set according to the connected handpiece, with its corresponding water jet, a preset intensity level at the console. By connecting the handpiece, the intensity will be set at a standard level per handpiece. To increase the water jet’s intensity press ‘+’, to decrease the water jet intensity press ‘-’. See corresponding handpiece Instructions for intensity level and working distance.

Additionally, the RFID tags ensure a maximal running time of the pump and handpiece, in order to prevent wear and blockage of the system.
6 Installation

Check initial delivery
Check the delivery package of debritom+ for completeness and general condition.

---

debritom+ basic unit
REF 1000.0000
with type label and transportation safety bolt

---

Pole for rinsing fluid
REF 8000.0001

Knurled head screw for pole
REF 8000.0000

---

debritom+ power cord
REF 2000.50xx

debritom+ foot on/off switch
REF 2000.5020

---

debritom+ instruction for use
REF 9000.5503
Initial start up

Remove transportation safety bolt

Cover transportation safety hole with sticker

Install pole for rinsing fluid, using the knurled head screw

Activate the foot on/off switch and check whether the green indicator light flashes.

Please note - Your foot on/off switch that comes with your device is already paired.
7 Preparation for use/operating instructions

⚠️ WARNUNG
- The use of the device should only be carried out by medical qualified personnel.
- Wear gloves, protective goggles and mouth protectors for all operations.
- Adapt intensity levels in the case of pain-sensitive patients.

⚠️ CAUTIONS
- Do not use sterile accessories when the sterile packaging is damaged.
- Sterile products should be opened just before use.
- Non sterile and reusable accessories must be cleaned and disinfected according to chapter 10, 'General Cleaning Guidelines'.

Frequently used functions
- Insert pump
- Insert spike of connection tube into rinsing fluid bottle or bag
- Connect rinsing fluid with pump
- Connect handpiece to pump
- Open clamp and filter port (connection tube)
- Debridement of wound with micro water jet (jet on/off with foot pedal / intensity level / distance and angle of micro water jet to wound)
- Remove handpiece
- Remove pump

Checks before use

Check the debritom+ system before use for damage of the power cord or plug, obvious device damage or safety defects and proper functioning of the device.

- Check that the blue seal for the drive unit is correctly placed.
- Check all accessories prior to use:
  - handpiece, pump and connecting tube for cracks, brittle spots or other damages - replace if necessary.
  - Check whether the green LED lights up as the foot on/off switch will be activated. If needed replace batteries as shown in chapter 6 – Installation Start Up (Battery type 2 x LR03 / AAA)
Connect debritom® to mains

Turn on debritom®

General Button Operation

- Press any button for a short period of time to turn on the device or to adjust/change intensity settings.
- To switch off the device, press the on/standby button for 3 seconds.
- The on/standby button will also be used to acknowledge any type of error, to recognize as the button lights up red in the event of error messages. (see chapter 9)

Note: the intensity level of the micro water jet will be chosen automatically depending on type of handpiece (pre-programmed)

debritom® Display

Display for intensity levels and information
Intensity level +
Intensity level -
on/standby button
Connecting foot on/off switch with debritom

1. Press 🔄 to turn on debritom+. The device immediately goes into the 'Connecting mode' for the foot on/off switch.

2. Connect the foot on/off switch with debritom+ by pressing the foot on/off switch once. The symbol 'foot on/off switch connected' is displayed and debritom+ is in standby mode.

If a connection to the foot on/off switch cannot be established or a new foot on/off switch is used, this must be paired with the device. (Chapter 11 'Pairing foot on/off switch with debritom+')
Insert debritom® pump

1.a debritom® pump: Open sterile blister pack an remove the pump.

1.b debritom® pump, one day:
Open sterile blister pack and remove the pump. Keep the protective cap still in the blister pack. This will be used later as described under , Further steps using debritom® pump, one day REF 2000.0201’

2. Align triangle on pump with triangle on blue ring and insert pump horizontal as shown until it stops.

3. Turn pump clockwise until second triangle is aligned with the triangle on blue seal for drive unit. You will feel a ‘click’ as the pump reaches it’s final run position.

⚠️ CAUTION
When the pump is not installed correctly, a leakage of the treatment fluid could happen. In this case do not use the device any more and disconnect it from mains.
Rinsing fluid

The user does decide what type of rinsing fluid should be used to debride. These are generally saline solutions, or fluids containing polyhexanide. The fluid pole’s versatile hanger part is designed to attach the most common fluid bottles that are equipped with a shackle, fluid volumes up to 2000 ml. In chapter 17, you will find a list with rinsing fluids that are tested for compatibility with debritom+.

**NOTE:** Within 12 minutes of fulltime use, set on high intensity levels and no micro water jet interruption, you will approximately need 1000 ml of rinsing fluid.

---

Attach the connecting tube

1. Open sterile pouch.
2. Make sure the clamp is in closed position.
3. Push the spike into the rinsing fluid.
4. Open the venting cover.

---

Attach rinsing fluid
Connect the connecting tube with pump

Attach the debritom+ handpiece

WARNING
Use the handpiece solely in combination with debritom+ pump and do not re-use (single use).

1. Open sterile pouch. Recommendation: due to hygienic reason, keep the handpiece within the pouch until start of treatment.

2. Attach the luer connection to the pump. Make sure the connection is tighten securely.

3. Open the clamp before start of treatment.
Placement of connected handpiece

The opening in the fluid pole serves as short time parking position for the handpiece during treatment interruptions. Insert the handpiece as shown.

⚠️ WARNING
After each patient, the fluid pole, especially the opening for the handpiece needs to be desinfected thoroughly.
Wound treatment with debritom+

How it works
As you activate the foot on/off switch, the device starts running, resp. starts pumping rinsing fluid through the handpiece onto the patient’s wound.

The pressure to generate the micro water jet is being created inside the pump. The rinsing fluid will be pressed through the integrated nozzle within the handpiece, which creates the micro water jet. The regulation of the micro water jet’s intensity level is managed by the motor’s revolution.

Should the user realize, that the intensity level inadvertently increases, without any handling changes at the device, the foot on/off switch should not be pressed anymore, and the handpiece needs to be brought into a safe position, away from patient and user. The jet can also be interrupted by pressing any button on the debritom⁺ device. Then debritom⁺ needs to be switched off by pressing the on/standby button for 3 seconds. Should the user be unable to turn the device off, either the water supply or the electrical power needs to be disconnected.

All fluid conveying parts (handpiece, pump, connecting tube) are sterile and need to be disposed according to facility guidelines. This prevents cross contamination.

Wound treatment steps

**NOTE:** Always wear protective gear according to internal guidelines during the treatment. Recommended are gloves, eye wear and mouth protection

1. For chronic and algesic wounds it is recommendable to apply a local anesthetic. (Please follow the instruction of the manufacturer)

2. The patient needs to be in a comfortable position.

3. Put an absorbent cover underneath the wound location and make sure, that the rinsing fluid can easily drain off from the wound area.

4. Visually assess the micro water jet (correct shape: standard or flat, wide or narrow) as well as the jet’s intensity on your palm – distance approx. 20cm. 
   If ok, move on to 5. 
   If not ok, replace the handpiece and repeat 4.

5. For a patient that undergoes his first debritom⁺ treatment, demonstrate the micro water jet also on his palm with a minimum distance of 20cm. This will increase his confidence into the new debridement treatment.
6. For further protection regarding aerosols Medaxis recommends to use AeroGuard Jellyfish as following described:
Unfold the AeroGuard and use according to the product’s instructions.

7. Start the treatment with either the pre-set intensity level for the chosen handpiece, or set your desired intensity level manually.

8. Press the foot on/off switch and start the procedure with the micro water jet tangentially to the wound, nozzle distance at working distance to the wound as prescribed below. Guide the jet starting at the wound edge, and move the jet slightly back and forth.

9. The optimal working angle lies between 3 and 45 degrees to the wound surface.

**Optimal working parameters**

Intensity levels at START of each handpiece: Level 4 (Level 1-5 / weak-strong)

<table>
<thead>
<tr>
<th>Handpiece Type</th>
<th>Reference Number</th>
<th>Working Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>debritom+ standard jet</td>
<td>REF 2000.0003</td>
<td>15-20cm</td>
</tr>
<tr>
<td>debritom+ flat jet narrow</td>
<td>REF 2000.0004</td>
<td>4-10cm</td>
</tr>
<tr>
<td>debritom+ flat jet wide</td>
<td>REF 2000.0005</td>
<td>3-8cm</td>
</tr>
</tbody>
</table>

**NOTE flat jet:** The flat jet should be applied like a spatula to the wound. (FIG)
Adjustment of water jet intensity

Adjust the Intensity level during the treatment
- Increase the distance between handpiece and wound => intensity level will decrease
- Decrease the distance between handpiece and wound => intensity level will increase

Adjust the intensity level at the device itself

⚠️ CAUTION
Before adjusting the intensity level, the treatment MUST be temporarily stopped. Continue with the treatment according to chapter 7 after adjusting the intensity level with +/-.

🔥 SAFETY INSTRUCTION
Use a sterile gauze in order to absorb rinsing fluid.

To increase the water jet’s intensity
=> press ‘+’

To decrease the water jet intensity
=> press ‘-’

⚠️ CAUTION
- Switching off the device is possible at any time by pulling out the power plug.
After completion of the debridement procedure
As soon as the debridement procedure is completed, proceed with the following steps:

1. Press the button for 3 seconds to set the debritom® into standby mode and clamp the connecting tube.

2. Take care of your patient according to your facility's protocol.

Steps after using debritom® pump REF 2000.0200

3a. Remove all single patient use components in following order:
   - Remove the spike of the venting tube.
   - Rotate the single patient use pump by 30 degrees counter clockwise and remove from the device. (There is no need to disconnect handpiece and connecting tube from the pump for disposal)
4a. Dispose of the complete unit (pump, handpiece and connecting tube) according to your facility guidelines. Follow the hospital’s internal guidelines regarding period of use of the rinsing fluid.

5a. If you are not planning on using debritom+ soon again, disconnect the device from mains. (Pull power cord)

**Steps after using debritom+ pump, one day REF 2000.0201**

debritom+ pump, one day, can be used for multiple patients within one day. Therefore we recommend to keep all connections to the pump in place (rinsing fluid and connecting tube) until you either replace the pump or the rinsing fluid. If you replace the rinsing fluid, we recommend to also replace the connecting tube.

3b. Clamp connecting tube, then remove handpiece and dispose it.

4b. Use the protective cap to close the luer connection at the pump. (The cap can be found in the pump’s blister package.)

5b. Before removing the next handpiece, remove the protective cap and store it in a clean place. (Opening downwards)

6. Unclamp connecting tube and start the treatment as described under ‚Wound treatment with debritom+‘

Repeat steps 3b – 5b until your last treatment of the day. Then proceed with steps 3a – 5a.

⚠️ **CAUTION**

- Cover the pump’s luer connection with the cap immediately after removing the handpiece.
8 Replace rinsing fluid

If you should have to replace the rinsing fluid during a treatment, perform the following steps. Always make sure that the handpiece is being stored within a sterile setting and in a non critical position for patient and user.

1. Press for 3 seconds to set the debritom+ into standby mode.

2. Prepare the new rinsing fluid bottle in order to keep the time to switching over as short as possible.
3. Remove the spike of the connecting tube from the empty bottle and insert into the new bottle immediately. Make sure that the spike is not soild or contaminated. Unhook the empty bottle and attach the new one.

⚠️ CAUTION

– Immediately connect the spike of the connecting tube to the new rinsing fluid bottle.

4. Press  to turn on debritom⁺, and continue the treatment.

If the foot on/off switch should not be connected anymore, follow the instructions ,connecting foot on/off switch’ in chapter 7.
9 Error messages

**NOTE:** The on/standby button lights up red as an error message occurs. This button can be used to acknowledge the fault after rectification.

---

**Battery foot on/off switch almost empty**  
Troubleshooting: Replace batteries (Battery type 2 x LR03 / AAA, chapter 11)

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**Pump in use for too long time period**  
Troubleshooting: Replace pump

---

**Handpiece in use for too long or trying to use with different single use pump**  
Troubleshooting: Replace handpiece

---

**Handpiece missing or handpiece not recognized**  
Troubleshooting: Replace handpiece. If the error can not be resolved, contact the Medaxis service department immediately.

---

**Nozzle blocked or motor overheated**  
Troubleshooting: Change handpiece and pump if necessary. If the error can not be resolved, contact the Medaxis service department immediately.

---

**Pump not inserted correctly**  
Troubleshooting: Replace pump and reinsert it correctly, or replace it.

---

**General system error**  
Troubleshooting: Please contact the Medaxis service department immediately.

---

**No foot on/off switch detected**  
Troubleshooting: Press the foot on/off switch. If foot on/off switch cannot be detected, re-pair. (See chapter 11)
10 General cleaning guidelines

⚠️ WARNING ⚠
After each use, the parts that have been in contact with aspirated secretions are to be cleaned and disinfected or disposed.

Before cleaning the device, pull the mains plug out of the fixed mains socket.

Allgemeine Hinweise
- Never place electrical devices in water or other liquids
- Do not spray or pour liquid directly onto debritom+.
- debritom+ product range cannot be sterilized.
- Rinsing the debritom+ product range in a washing machine is not permitted.
- Immersion disinfection, thermal disinfection and ultrasound cleaning for the debritom+ product range are not permitted.
- Higher temperature than 45°C, 113°F can cause protein coagulation which can lead to problems further in the process.
- Clean all surfaces immediately after use to avoid residues from drying and to prevent growth of microorganisms.
- Do not use cleaning agent/detergent based on phenol.
- Do not use steel brushes or steel wool for cleaning.
- Store medical products dry and dust free.
Disposables

This Symbol indicates a single used product. This product is not intended to be reprocessed. Reuse could result in loss of mechanical and chemical properties and may lead to restriction in terms of biocompatibility.

Exception – debritom® pump, one day
The debritom® pump, one day, is intended to be used for multiple patients within one day. The sterile package for the pump contains a luer cap, which is intended to cover the luer connection for the handpiece between switching patients.

After one day, the debritom® pump, one day, has to be disposed of and is not intended to be reprocessed.

Reusable parts – debritom®, foot on/off switch

1. Thorough cleaning
Thorough cleaning can either be done at the point of use with sterile cold water only or in dedicated health care facilities with the additional use of enzymatic detergents according to the manufacturer’s instructions for use.

⚠️ CAUTION
Make sure that the wiping towel is not too wet, so that it does not drop onto the device.

1.1 Disconnect the power plug from the power socket.
1.2 Disinfect your hands and put on disposable gloves and proper protective gear.
1.3 Separate all individual parts. Dispose single use products in accordance with internal hospital guidelines.
1.4 Remove visible dirt with lint free nonwoven wipes wetted with sterile cold water (<40 °C, 104 °F)
1.5 Ensure that all surfaces are thoroughly wetted and keep moist for a minimum of 5 minutes then repeat this step with another wipe.
1.6 Dispose protective gloves and disinfect your hands.

2. Intermediate level disinfection
2.1 Disinfect your hands and put on disposable gloves and proper protective gear.
2.2 Use disinfecting wipes* according to the manufacturer’s instructions for use.
2.3 Let product work in for 5 minutes and wipe afterwards with another disinfecting wipe*.
2.4 Allow the surface to dry for a minimum of 5 minutes.
2.5 Dispose protective gloves and disinfect your hands.

*Recommended agent for intermediate level disinfection:
CaviWipes®
Metrex® Research
Address: 1717 West Collins Avenue
Orange, CA 92867, USA
Homepage: http://www.metrex.com
Phone: +1 800 841 1428
E-Mail: metrexcustcare@sybrondental.com

Mikrozid® AF Wipes,
Schülke & Mayr GmbH
Address: Robert-Koch-Str. 2,
22851 Norderstedt, DEUTSCHLAND
Homepage: http://www.schuelke.com
Telefon: +49 40 521 00 0
E-Mail: info@schuelke.com

3. Storage
3.1 After appropriate cleaning and disinfecting check the device before re-use.
3.2 Store products dry and dust free under storing conditions
11 Warranty, maintenance and checks

Warranty
Medaxis AG warrants the device will be free from defects in materials and workmanship for a period of 2 years from the date of delivery ex works. Faulty material will be replaced free of charge during this period if not resulting from abuse or misapplication. This will not apply to parts subject to wear and tear in use. To ensure compliance with this warranty as well as optimum service from Medaxis products, we recommend the exclusive use of Medaxis accessories with our appliances. In no event shall Medaxis AG be liable for claims which exceed the scope of warranty described including liability for consequential damages, etc. The right to the replacement of faulty parts will not be recognized by Medaxis if any work has been carried out on debritom+ by unauthorized persons. This warranty is subject to the appliance being returned to a Medaxis service centre.

Maintenance
Medaxis recommends to performing an inspection of the debritom+ once a year. The inspection needs to be carried out according to EN/IEC 62353 and should include the following procedures:

- Visual examination of the device, in particular silicone sealing ring
- Measurement of grounding conductor according EN/IEC 62353; measure at the metal piece will be seen after the pump has been removed (Note – do not measure at the two plungers!)
- Measurement of the insulation resistance according to EN/IEC 62353; the pole for rinsing fluids is an example for an exposed conductive part (measurement should be performed at the threaded part of the knurled head screw).
- Measurement of leakage current according to EN/IEC 62353 is inapplicable. Alternatively, the earth leakage current could be measured according to IEC 60601-1:2005
- Function control: the power consumption should not exceed the value given on the type label – measured with running motor at highest intensity level setting. As you remove the pump during operation (Note: pump could be damaged), there has to be an error message displayed and the device will be shut down immediately.

For any test described above, there is no need to open the device.

Examine the complete device on the outside for any cracks in the housing, and replace the silicone sealing ring as you should discover wear and tear or brittleness

Replacement with new silicone sealing ring

Only in case of broken sealing ring
Replacement of battery

If the foot on/off switch needs a battery replacement, turn on debritom+ by pressing the ON button, and follow the instructions below:

1. Remove protective cover from foot on/off switch as shown (phillips screw driver needed)

2. Open battery cover (screwdriver). Replace batteries and lock the battery cover. Make sure the blue LED lights up as you activate the foot on/off switch. Battery type - Alkali AAA (LR03) 1.5V. Do not use lithium batteries or rechargeable batteries.

Reassemble protective cover in reverse order.
Pairing foot on/off switch with debritom+

The foot on/off switch needs to be paired only in case of replacement. Turn on debritom+ by pressing the on/standby button, and follow the instructions below:

1. Remove protective cover from foot on/off switch as shown (phillips screw driver needed)
2. Simultaneously press the on/standby and „+“ buttons for > 1 s until the symbol press appears.
3. Press yellow button on foot on/off switch
4. As soon as the foot on/off switch has been recognized by the device press yellow button again to confirm pairing.
5. If successful confirm is shown. If not, please repeat step 2 through 4.
6. Mount protective cover
Safety check
There are no prescribed or recommended safety checks to be carried out. Each time the device is switched on, a self-test is carried out which checks the internal functions of debritom®.
Because of the method of construction used, Medaxis does not expect electrical safety to be affected at any time during the life of the product - provided that debritom® is repaired throughout its service life strictly and exclusively by Medaxis authorized service centers and that it is used properly in accordance with the intended use.

The safety instructions must be observed.

12 Disposal
debritom® comprises metals and plastics and should be disposed of in accordance with the European directives 2002/95/EC and 2002/96/EC. Additional, local guidelines must also be observed. The electronic components and the rechargeable battery must be disposed of separately, in accordance with the local regulations.
Please take care that you dispose of debritom® and its accessories in accordance with the hospital disposal guidelines.

User information for the disposal of electrical and electronic equipment
This symbol means that the electrical and electronic equipment must not be disposed of as normal household refuse. A correct disposal of this device protects and prevents possible damage to the environment or human health. For more information about the disposal contact the manufacturer, your local caregiver or healthcare provider.
This symbol is only valid in the European Union. Please respect the relevant state laws and rules in your country for the disposal of electrical and electronic equipment.

13 Accessories

WARNINGS
debritom® was validated in combination with the accessories listed in Chapter 17. For a correct and safe operation use debritom® with these accessories only. Further information is supplied with the individual accessory.
14 Technical Specifications

5.3kg/11.7lbs

[VAC] 100 – 240
[Hz] 50/60
[VA] 200

HxWxD
44x25x24cm

Transport / Storage
Humidity 15 – 93%
Temperature 5 – 40°C

Operation
Humidity 15 – 93%
Temperature 5 – 37°C

Fuse: Schurter AG 0034.3125 FST 5x20 6.3A T 250VAC Breaking Capacity 63A@250V

Operation below 2000 m (to sea level)

Classification according to 60601-1
– Medical equipment class I, external power supply
– Continuous operation
– Protection class IP20
– The Handpiece is a applied part type B as a possible conductive water jet will touch the patient
15 Signs and symbols


This symbol indicates the legal specifications of the system.

This symbol indicates to follow instructions for use.

This symbol indicates to consult instructions for use.

This symbol indicates a CAUTION associated with the device.

This symbol indicates a Tip.

This symbol indicates a Warning.

This symbol indicates the protection against ingress of solid foreign objects and against harmful effects due to the ingress of water.

This symbol indicates a prescription device. Federal law restricts this device to sale by or on the order of a licensed healthcare practitioner. (for US only).

This symbol indicates MR UNSAFE

This symbol indicates that interferences may occur in the vicinity of equipment marked with this symbol.

This symbol indicates the manufacturer.

This symbol indicates the date of manufacture (four digits for the year and two digits for the month).

This symbol indicates that the device should not be used after the end of the year and month shown.

This symbol indicates a single use device. Do not reuse the device.

This symbol indicates the temperature limitation for operation, transport and storage.

This symbol indicates the humidity limitation for operation, transport and storage.

This symbol indicates the device is sterilized using ethylene oxide.

This symbol indicates a manufacturer’s catalogue number.

This symbol indicates a manufacturer’s serial number.

This symbol indicates a manufacturer’s batch code.

This symbol indicates that interferences may occur in the vicinity of equipment marked with this symbol.

This symbol indicates a prescription device. Federal law restricts this device to sale by or on the order of a licensed healthcare practitioner. (for US only).

This symbol indicates a manufacturer’s catalogue number.

This symbol indicates a manufacturer’s serial number.

This symbol indicates a manufacturer’s batch code.

This symbol indicates the device is sterilized using ethylene oxide.

This symbol indicates the temperature limitation for operation, transport and storage.

This symbol indicates the humidity limitation for operation, transport and storage.

This symbol indicates do not use the device if package is damaged.

This symbol indicates the number of items n that the content is sufficient for.
Symbols on debritom+ display

Symbols for the error messages are described in chapter 9 , Error messages'.

Search for Bluetooth device for pairing
Pressing the on/standby and ,+' buttons for > 1 s at debritom+ will show the ,Search for Bluetooth device' symbol for pairing a new or replacement of the foot on/off switch.

Bluetooth signal of foot on/off switch detected - confirm
As soon as debritom+ has detected the Bluetooth signal of the foot on/off switch, this symbol appears on the display.

debritom+ connected with foot on/off switch
This symbol appears on the display as the foot on/off switch is connected to debritom+.

Intensity levels
The intensity levels can be adjusted between 1 - 5. (1 weakest/5 strongest)
16 Technical Documentation

EMC
debritom® is EMC-tested in conformity with the requirements of IEC 60601-1-2:2007 and can be used in the vicinity of other EMC-tested devices that fulfill the requirements of the relevant IEC 60601-1-2 standard. Untested HF (high-frequency) sources, radio networks or the like can influence the operation of the device and may not be operated in combination with the system. debritom® is a medical device that requires special safety precautions and must be installed and placed in operation in accordance with the attached EMC information. Portable and mobile RF communication devices (mobile telephones) can affect debritom®.

The debritom® has been tested in the operating mode “Foot switch On”. The acceptance criteria for the EMC tests were:
no Error Message allowed and no stop of pump allowed.
Electromagnetic compatibility (EMC, IEC 60601-1-2:2007, Table 1)

<table>
<thead>
<tr>
<th>Emissions Test</th>
<th>Compliance</th>
<th>Electromagnetic environment - guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF emissions</td>
<td>Group 1</td>
<td>The debritom® use RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.</td>
</tr>
<tr>
<td>CISPR 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF emissions</td>
<td>Class B</td>
<td>The debritom® is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.</td>
</tr>
<tr>
<td>CISPR 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmonic emissions</td>
<td>Class A</td>
<td></td>
</tr>
<tr>
<td>IEC 61000-3-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage fluctuations / flicker emissions</td>
<td>Complies</td>
<td></td>
</tr>
<tr>
<td>IEC 61000-3-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WARNING
debritom® should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, debritom® should be observed to verify normal operation in the configuration in which it will be used.
**Guidance and manufacturer’s declaration – electromagnetic immunity**

The debritom™ is intended for use in the electromagnetic environment specified below. The customer or the user of the debritom™ should assure that it is used in such an environment.

<table>
<thead>
<tr>
<th>Immunity test</th>
<th>IEC 60601 Test level</th>
<th>Compliance Level</th>
<th>Electromagnetic Environment – guidance</th>
</tr>
</thead>
</table>
| Electrostatic discharge (ESD)              | ±6 kV contact         | ±6 kV contact    | Floor should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at Least 30 %.
| IEC 61000-4-2                             | ±8 kV Air             | ±8 kV Air        |                                        |
| Electrical fast transient/burst            | ±2 kV for power supply lines | ±2 kV for power supply lines | Mains power quality should be that of a typical commercial and/or hospital environment. |
| IEC 61000-4-4                             | ±1 kV for input/output lines | Not applicable |                                        |
| Surge                                      | ±1 kV line to line    | ±1 kV line to line | Mains power quality should be that of a typical commercial and/or hospital environment. |
| IEC 61000-4-5                             | ±2 kV line to earth   | ±2 kV line to earth |                                        |
| Voltage dips, short interruptions and voltage variations on power supply input lines | <5 % UT(>95 % dip in UT) for 0.5 cycle | <5 % UT(>95 % dip in UT) for 0.5 cycle | Mains power quality should be that of a typical commercial and/or hospital environment. If the user of the debritom™ requires continued operation during power mains interruption, it is recommended that the debritom™ is powered from an uninterruptible power supply or battery. |
| IEC 61000-4-11                            | 40 % UT (60 % dip in UT) for 5 cycles | 40 % UT (60 % dip in UT) for 5 cycles |                                        |
|                                            | 70 % UT (30 % dip in UT) for 25 cycles | 70 % UT (30 % dip in UT) for 25 cycles |                                        |
|                                            | <5 % UT (95 % dip in UT) for 5 sec. | <5 % UT (95 % dip in UT) for 5 sec. |                                        |
| Power frequency (50/60 Hz) magnetic field  | 3 A/m                 | 3 A/m            | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. |
| IEC 61000-4-8                             |                       |                  |                                        |

**NOTE:** UT is the a.c. mains voltage prior to application of the test level.
Guidance and manufacturer’s declaration – electromagnetic immunity

The debritom+ is intended for use in the electromagnetic environment specified below. The customer or the user of the debritom+ should assure that each are used in such an environment.

<table>
<thead>
<tr>
<th>Immunity test</th>
<th>IEC 60601 Test level</th>
<th>Compliance Level</th>
<th>Electromagnetic Environment – guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducted RF</td>
<td>3 Vrms</td>
<td>3 V</td>
<td>Portable and mobile RF communications equipment should be used no closer to any part of the debritom+, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</td>
</tr>
<tr>
<td>IEC 61000-4-6</td>
<td>150 kHz to 80 MHz</td>
<td>3 V/m</td>
<td>Recommended separation distance</td>
</tr>
<tr>
<td>Radiated RF</td>
<td>3 V/m</td>
<td>80 MHz to 2.5 GHz</td>
<td>D = ((1.17)\sqrt{P}) 80 to 800 MHz</td>
</tr>
<tr>
<td>IEC 61000-4-3</td>
<td>80 MHz to 2.5 GHz</td>
<td></td>
<td>D = ((2.33)\sqrt{P}) 800 MHz to 2.5 GHz</td>
</tr>
</tbody>
</table>

Recommended separation distance

Where \(P\) is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and \(D\) is the recommended separation distance in meters (m).

Field strengths from fixed transmitters, as determined by an electromagnetic site survey, a should be less than the compliance level in each frequency range. b Interference may occur in the vicinity of equipment. Marked with the following symbol:

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the debritom+ is used exceeds the applicable RF compliance level above, the debritom+ should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the debritom+. b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.
Electromagnetic compatibility (EMC, IEC 60601-1-2:2007, Table 6)

**Recommended separation distance between portable and mobile RF communications equipment and the debitom**.

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

<table>
<thead>
<tr>
<th>Rated maximum output Power of transmitter W</th>
<th>Separation distance according to frequency of transmitter m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150 kHz to 80 MHz</td>
</tr>
<tr>
<td></td>
<td>$D = (1.17)\sqrt{P}$</td>
</tr>
<tr>
<td>0,01</td>
<td>0,117</td>
</tr>
<tr>
<td>0,1</td>
<td>0,369</td>
</tr>
<tr>
<td>1</td>
<td>1,17</td>
</tr>
<tr>
<td>10</td>
<td>3,69</td>
</tr>
<tr>
<td>100</td>
<td>11,7</td>
</tr>
</tbody>
</table>

For transmitters rated at a maximum output power not listed above, the recommended separation distance $D$ in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where $P$ is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

**NOTE 1:** At 80 MHz and 800MHz, the higher frequency range applies.

**NOTE 2:** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

**RF Transmitter/Reciver used in the equipment**

Bluetooth 4.0 (single mode/Bluetooth smart): max RF output power 3.2mW 2.402-2.480 GHz, ISM band.

RFID 13.56MHz

**Service:**

Requirements for service personnel: The service personnel must be trained by Medaxis AG in order to service the debitom and its accessories.

Medaxis AG will make available on request circuit diagrams, component part lists, descriptions, calibration instructions, or other information for Medaxis authorised service centres.
## 17 Required and optional accessories

### Required accessories

**Pumps**

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>debritom⁺ pump</td>
<td>REF 2000.0200</td>
</tr>
<tr>
<td>debritom⁺ pump, one day (contains pump and luer cap)</td>
<td>REF 2000.0201</td>
</tr>
</tbody>
</table>

**Handpiece**

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>debritom⁺ handpiece standard jet</td>
<td>REF 2000.0003</td>
</tr>
<tr>
<td>debritom⁺ handpiece flat jet narrow</td>
<td>REF 2000.0004</td>
</tr>
<tr>
<td>debritom⁺ handpiece flat jet wide</td>
<td>REF 2000.0005</td>
</tr>
</tbody>
</table>

**Connecting tube**

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>debritom⁺ connecting tube</td>
<td>REF 2000.0300</td>
</tr>
</tbody>
</table>

### Optional accessories

**AeroGuard „Jellyfish“ 2000.2000**

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
</table>
To install debritom®, follow the steps below

**Tool for attaching: hex wrench 6mm**
Spare parts

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Length (m)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>debritom+ power cord (CH)</td>
<td>L= 2.5m</td>
<td>REF 2000.5000</td>
</tr>
<tr>
<td>debritom+ power cord (DE)</td>
<td>L= 2.5m</td>
<td>REF 2000.5001</td>
</tr>
<tr>
<td>debritom+ power cord (UK)</td>
<td>L= 2.5m</td>
<td>REF 2000.5002</td>
</tr>
<tr>
<td>debritom+ power cord (USA)</td>
<td>L= 2.5m</td>
<td>REF 2000.5003</td>
</tr>
<tr>
<td>debritom+ power cord (IT)</td>
<td>L= 2.5m</td>
<td>REF 2000.5004</td>
</tr>
</tbody>
</table>

Knurled head screw for pole rinsing fluid  REF 8000.0000
Pole for rinsing fluid  REF 8000.0001
Seal drive unit  REF 8000.0002
Transportation safety bolt  REF 8000.0005
Foot on/off switch  REF 2000.5020

Rinsing fluid

The debritom+ system was verified with the rinsing fluids listed below:

<table>
<thead>
<tr>
<th>Rinsing Fluid</th>
<th>Manufacturer</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterile water for rinsing purposes</td>
<td>Dr. G Bichsel</td>
<td>REF 1000248</td>
</tr>
<tr>
<td>NaCl 0.9%</td>
<td>Dr. G Bichsel</td>
<td>REF 1000220, 1000256</td>
</tr>
</tbody>
</table>

There have been other rinsing fluids tested – please do not hesitate to contact us for further information.

SAFETY INSTRUCTION

Medaxis’ purpose of testing a variety of rinsing fluids is to make sure that these fluids work properly with debritom+, not causing any harm to the system.

In order to make sure the fluids you intend to use do not cause any harm to the patient, you must contact the manufacturer of the rinsing fluid.

The manufacturer of the rinsing fluid must be contacted for questions regarding medical application.

The debritom+ System was tested with bottles and bags up to 1000 ml.