



O P E R A T I N G
M A N U A L

slee *solutions*
for
pathology

STAINING SYSTEM
MAS

MULTI PROTOCOL
STAINER

DESIGN &
MANUFACTURING
MADE IN GERMANY



Dear Customer,

thank you very much for your confidence in SLEE products!

Before you start operating the device, please read the operating instructions carefully to familiarize yourself with the proper operation and functions. The device must only be operated by specially trained and instructed staff. The specified safety measures as well as the regulations and hygiene standards of the respective laboratories must be respected.

Enjoy working with your new device!

Your team from SLEE medical GmbH

Please note:

Some of the images in this manual may show special equipment and / or accessories that are subject to a charge. The image may differ slightly from the product. Errors excepted.

We always try to keep our documents up-to-date and free of errors. However, should you notice any mistakes, we would be grateful if you could provide us with feedback. Comments on the actual content are also welcome at any time. Simply e-mail us at marketing@slee.de.

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1 INTRODUCTION

The purpose of this manual is to explain in detail to the user how to work with the MAS tissue stainer in the intended manner. Please read the manual carefully and completely and follow the instructions. Use the provided images to acquaint yourself with the control elements and their functioning, to ensure appropriate handling. In case of ambiguity, please refer to your SLEE contact person.

The device at hand is offered in two mains voltage versions. Please refer to the device type plate to ensure that the local power supply and the device power supply are compatible. Operation and functionality of the device at different mains voltage do not differ.

1.1 General warnings

Before using the device, please read this manual carefully.

Please pay particular attention to the precautions that must be taken for user and product safety.

The warranty applies only if the device is used in the correct manner and in accordance with the information and advice provided herein.

The manufacturer declines all responsibility for possible damages to persons and/or objects due to improper or inexperienced use of the device.

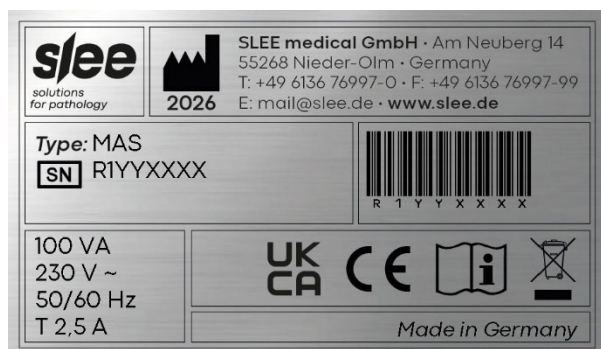
2 SYMBOLS

2.1 Type plate symbols

Not all symbols might appear on the label of the respective device.

 20XX	Year of manufacturing
Rating	It indicates the various voltages at which the device can work another label, in the proximity of the main power cable socket, indicates the voltage at which the device operates.
	Manufacturer address
	Serial number
	CE mark
	UKCA - UK Conformity Assessed
	In Vitro Diagnostic Device
	Caution! Please read accompanying documentation.
	Please read the instructions before use.
	Do not throw on domestic garbage, please follow the local rules for special waste recycling and treatment.

Illustration of type plate (example):



2.2 Used symbols and their meanings

	Warnings for dangers to life or health of people are marked by a red-bordered triangle with an exclamation mark
	Warnings for dangers to machinery, materials or the environment are marked with a yellow triangle with an exclamation mark.
	Flammability warnings are marked with a yellow warning triangle showing a flame.
	Warnings for heat on parts of the device and the situations in which it arises are marked with a yellow warning triangle showing a hot surface.
	Warnings about the risk of crushing are marked with a yellow warning triangle showing a crushed hand. Working with the MAS poses risks to people due to rotating or moving machine parts.
	Special instructions regarding the operation of the device are marked by this symbol.
	Indicates the correct upright position of the package.
	Indicates the temperature range permitted for storing and handling the package. Minimum +5 °C and maximum +50 °C.
	The package must be kept in a dry environment.

2.3 Intended use

The programmable MAS tissue stainer is used in laboratories for the purpose of histological and cytological staining of thin-layer preparations based on defined protocols with the aid of additional staining solutions. It can hold up to twelve slide baskets at the same time (eight baskets in the staining process and four in the start positions), which are automatically moved to the respective positions within the device according to the selected parameters. Processing takes place in the slide basket. Individual slides cannot be processed loosely.

The MAS has a total of 44 stations, including four loading and unloading stations and water baths as well as 30 staining stations. Alternative models with an integrated drying station are also available. The staining stations work with agitation technology for gentle treatment of specimen.

During the ongoing staining process, a drip tray reliably prevents the carryover of liquid residues by automatically extending underneath the slide holder during transport between the staining cuvettes. The MAS can be operated with an activated carbon filter or be connected to an existing exhaust air system. The integrated water-saving function enables resource-saving work. After the staining protocol has been successfully completed, the slide basket can be removed from the unloading station. Depending on the fit of the slide basket, it is possible to continue processing directly in other devices.

When working with the MAS, the specifications for using the required reagents, particularly with regard to their flammability and other possible hazards, must be strictly observed.

	Unauthorized modifications and refurbishments of any kind of the MAS are forbidden for safety reasons. Only use original parts to replace defective parts. Only use the device with the permitted power supply according to the type plate. Do not use the device in an explosive-prone environment.
	Safety installations on the MAS and safety accessories must not be removed or altered.

2.4 Authorized operators

The MAS is only permitted to be operated by professionally qualified employees who have been successfully and thoroughly instructed by the operator, and who have been tasked to do so. The user is responsible to third parties within the scope of operation. The operator is obligated to provide this instruction manual to all users tasked to working with the MAS and needs to ensure the users have read and understood this instruction manual.

2.5 Types of samples

The MAS can be used for histological and cytological staining of human tissue in the form of thin-layer preparations on slides. Other types of tissue must not be stained or otherwise processed with the device. During use, the slides are continuously located in a slide basket provided for this purpose, the size of which must not exceed that of the staining cuvettes and other stations of the MAS.

2.6 Safety and precautionary measures



The safety and precautionary instructions in the following chapters must be observed at all times. Be sure to read these instructions even if you are already familiar with the operation and use of other devices.

This instruction manual contains important instructions and information on the operational safety and maintenance of the device. The instruction manual is an important part of the product and must be read carefully before commissioning and use and must always be kept near the unit. This appliance has been built and tested in accordance with the safety requirements for electrical measuring, control and laboratory equipment.

Remaining risks

The unit has been designed and built in accordance with the state of the art and the recognized safety rules relating to safety technology. Operation or improper handling of the unit may pose a risk of injury to the user or other persons in damage to the unit.



The safety protections on the device and components must neither be removed nor altered. Only service personnel qualified by SLEE may repair the device and access the internal components.

The device may only be used as intended and only in technically perfect condition. Faults that impair safety must be rectified immediately. To maintain this condition and to ensure safe operation, the user must observe all instructions and warnings contained in this instruction manual. Only original spare parts and approved original accessories may be used.

2.7 Safety precautions

The electrical safety of devices conforms with the requirements of the DIN EN 61010-1:2020-03 "Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements" (IEC 61010-1:2010 + COR:2011 + A1:2016, modified + A1:2016/COR1:2019) and LVD (Low Voltage Directive) 2014/35/EU.

This device meets the requirements for radiation interferences as specified in the DIN EN IEC 61326-1:2022-11 "Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements" (IEC 61326-1:2020) and EMC Guideline 2014/30/EU. This device meets the requirements and the requirements in respect to the limitation and information to hazardous substances in compliance with the EN IEC 63000:2018.

2.8 Warnings and precautions

To maintain the performance of the device and to prevent harm to the user, the instructions in this user manual must be followed.

	Many reagents and reagent vapors are flammable! Get information on the reagents used before use.
	Eating, drinking or otherwise consuming reagents or reagent vapors is prohibited! Do not eat, drink or smoke in the vicinity of the device. In case of accidental swallowing or inhalation of a reagent, seek medical attention immediately. The use of reagents always poses a health risk! Observe the relevant safety regulations.
	The moving parts of the MAS pose a risk of crushing during every application.
	Surfaces of models of the MAS that include drying stations can heat up significantly!

2.9 Environmental conditions requirements

The permissible environmental conditions for operation of the device are listed below. Operating the device, in different conditions than listed below, is not permitted!

- Operation is only allowed in enclosed rooms.
- Ambient temperature from +15 °C to +35 °C (without strong fluctuations).
- Vibration free, flat ground
- Relative air humidity max 80 % non-condensing.
- The device must not be exposed to direct sunlight.
- Maximum height of 2,000 m (according to EN 61010-1: 2020-03).
- Mains voltage fluctuation is within +/-10 % of rated voltage.

2.10 Transport and storage

When transporting the MAS, observe the following instructions:

	"Up": The device must always be packaged, transported and stored with the arrows on the outer packaging pointing upwards.
	"Protect from moisture": The packed device must be protected from excessive moisture and must be covered during storage and transport.
	The device is delivered in a safety transport box. Always transport it up-right and avoid shocks and extreme temperature changes! For storage of the device, an ambient temperature of +5 °C to +50 °C is permissible.
	Always use the carrying handles for lifting and carrying the MAS. When lifting, ensure correct posture to avoid material and especially physical damages!

2.11 Protective features at the device

Emergency stop button	Press the emergency stop button to stop all currently active protocols
Safety fume hood	Protective acrylic hood to reduce fume emission, halts all active protocols when opened during operation
Connection to exhaust system	Connect the device to an existing exhaust system to extract fume emissions
Carbon filter	Absorption of fume emissions

2.12 Personal protective equipment

In addition to the existing regulations, it is necessary to wear protective gloves to prevent accidental contact with reagents when working with the MAS.

	Always wear protective clothing (e.g. lab coat and gloves, safety glasses) to prevent accidental contact with reagents!
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2.13 Safety-related incidents

In any case of emergency due to unforeseeable circumstances, turn the MAS off via emergency stop button, and contact SLEE service.

	Unauthorized conversions and modifications to the unit are prohibited for safety reasons. When replacing defective parts, use only original spare parts.
	Report any serious incident involving the MAS to SLEE medical GmbH and follow your local safety regulations. The emergency stop button is a safety device. Do not use it as a common on/off switch!

2.14 Emissions

Emissions caused by using reagents in the unit are absorbed by the powerful fans and the activated carbon filter (maintain regularly) and released through a targeted central exhaust system. The connection for an exhaust system is pre-installed.

	Check the exhaust system on-site for proper functionality before starting to work with the MAS and reagents.
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3 COMPONENTS

3.1 Standard components

The Slee MAS tissue stainer is provided with the following standard components:

	Quantity
MAS with transport lock	1 pcs.
User manual	1 pcs.
Carrying handles for transport	4 pcs.
Cover for staining cuvettes	2 pcs.
Staining cuvette, capacity of 360 ml each	38 pcs.
Trough for running water	6 pcs. *
Activated carbon filter	1 pcs.
Power cable (voltage according to equipment identification pass)	1 pcs.
Basket for 30 microscope slides	4 pcs.
Hanger for basket	4 pcs.
Filter pads	1 pack of 100 pcs.
Hose for water inlet	5 m
Hose for sewage	5 m
Hose clamps	4 pcs.
Water valve 1/2" with sealing	1 pcs.
Hose connection 1/2" with sealing	1 pcs.

*When purchasing a MAS with drying stations, the number of water cuvettes differs:

MAS with drying stations	Quantity
Troughs for running water	4 pcs.
Insert for drying chamber	1 pcs.

MAS with conveyer system to coverslipper MCS I	Quantity
Transfer station	1 pcs.

4 SPECIFICATIONS

Model	MAS	MAS with conveyer to coverslipper MCS I	MAS with drying stations	MAS with conveyer to coverslipper MCS I and drying stations
Description	Linear multi-stainer for automatic staining of microscope slides in histology, pathology and cytology			
Stations	44 stations, of which: - 4 loading stations - 4 unloading stations - 6 water baths - 30 staining stations with agitation		44 stations, of which: - 4 loading stations - 4 unloading stations - 4 water baths - 2 drying stations - 30 staining stations with agitation	
Bath volume	360 ml, with the option to reduce the volume to 260 ml			
Slide capacity	Up to 12 baskets for 30 slides			
Type of Use	Operation via touch screen			
Protocol variables	Bath, time			
Protocol memory	Max. 50 staining protocols			
Power supply	230 V / 50 - 60 Hz / 100 VA	230 V / 50 - 60 Hz / 100 VA	230 V / 50 - 60 Hz / 1200 VA	230 V / 50 - 60 Hz / 1200 VA
Fuse	T2,5 A	T2,5 A	T6,3 A	T6,3 A
Dimensions (w x d x h)	1,210 mm / 670 mm / 640 mm			
Weight	ca. 115 kg (without contents)			
Water intake				
Connecting hose (Ø)	12 mm (inner diameter)			
Water pressure	0 - 6 bar			
Water flow rate	0 - 60 l/h			
Water drainage				
Drain hose (Ø)	18 mm (inner diameter)			
Water pressure	Free drainage due to gradient (drain hose routed downwards)			
Discharge rate	0 - 60 l/h			
Exhaust system connection	Rectangular, 110 x 53 mm (system 100)			
Quantity of air	max. 86 m³/h			
Stat. pressure increase	max. 180 Pa			
Optional	Transfer unit for MCS I			

MAS 115 V, 60 Hz - on demand

4.1 Safety measures regarding installation location

The MAS must be installed on a stable, flat and horizontal surface to ensure safe and reliable operation. The risk of accidents increases when the device is in an unstable position.

The rear and side panels of the device must be at least 10 cm away from the wall or other objects to ensure adequate ventilation. In addition, make sure that there are no combustible objects in the heating area around the device.

	Ensure that the MAS is placed safely on a solid surface before use. Do not place the MAS directly against a wall or another object. Always ensure a safety distance of at least 10 cm.
	Installation must be carried out by skilled staff, trained and/or authorized by Slee.

5 OVERVIEW DEVICE

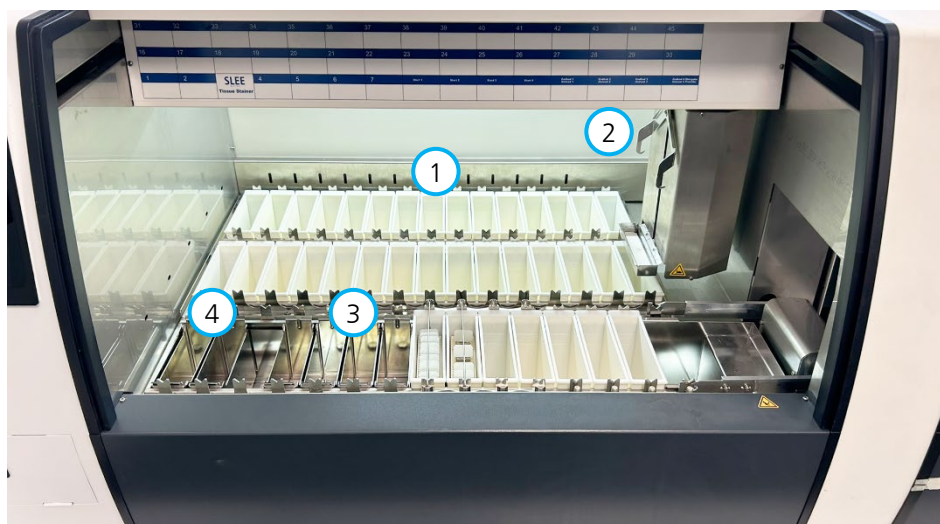
5.1 Device

5.1.1 Front view



1. Safety fume hood
2. Touch display
3. Activated carbon filter
4. Bath contents overview board

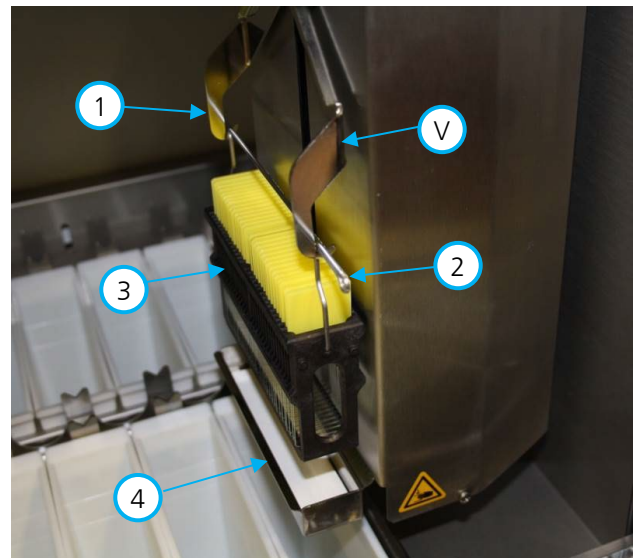
5.1.2 Inside view



1. Staining cuvettes
2. Transport unit
3. Water baths
4. Optional: Two drying stations

5.1.3 Transport unit

1. Transport unit hooks (2)
2. Hanger for microscope slide basket
3. Microscope slide basket
4. Drip tray with filter pad



5.1.4 Left side view

1. Carrying handles for transport (2)
2. Connection board
3. Connection for external exhaust system
4. Air outlet
5. Connection for water inlet
6. Connection for water discharge



5.1.5 Connection board



1. Fan
2. Power-on light
3. Emergency stop button
4. USB port
5. LAN connection
6. Speaker
7. Connection socket with fuse
8. On / off switch
9. Power button
10. USB port
11. Alarm output
12. Audio output

6 Installation

6.1 Assembly

The assembly of the MAS must be carried out by a Slee service technician or another person authorized by Slee to ensure the technically correct setup.

	The emergency stop button is a safety device. Do not use it as a common on/off switch!
	Before assembly, it must be ensured that the environmental conditions at the place of use according to the safety measures on installation location are met. Store the packaging material in a safe place protected from environmental influences for further transportation.

6.2 Transport

The MAS comes with four handles for carrying. The handles can be bolted on and off on the side panels of the device using the provided thread holes

	Before moving the device, turn it off properly, and remove all contents (liquids, microscope slides, memory cards, etc.) as well as all cords, to avoid damage. The emergency stop button is a safety device. Do not use it as a common on/off switch! Before moving the device by using the carrying handles, make sure that they are completely secured.
	Store the carrying handles in a safe place protected from environmental influences for further transportation.

6.3 Disassembly

The disassembly of the MAS must be carried out by a certified Slee service technician to ensure the technically correct dismantling.

To prepare the device for disassembly, remove all contents, such as liquids, microscope slides, slide baskets, memory cards, and other accessories and consumables. Clean the MAS according to the cleaning instructions in chapter "Cleaning and maintenance". Remove all pluggable cords.

	To ensure the safety of everyone involved in transport and packing / unpacking the MAS, the removal of all contents and thorough cleaning is required.
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6.4 Preface

	Before putting the MAS into operation, read and always follow the safety instructions when working with the MAS. Only use accessories and consumables recommended by SLEE medical GmbH. If you are unsure if a product is qualified for use with the MAS, please contact Slee or your distributor directly.
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6.5 Connection to water supply

The MAS needs to be connected to the local water supply with a water tap that can be turned on and off manually.

	The connection of MAS to the water supply must be carried out by a Slee-trained Service Technician!
	Refer to technical data to ensure the local conditions match the requirements of the MAS.

Open the water tap when the display shows the message “Please open the water supply!” during the initialization.

	Do not open the water tap before the message is shown as it could interrupt the initialization process!
	Always close the water tap when not using the MAS!

The water hoses should be positioned as close to the water supply as possible. If possible, avoid placing the hose around corners and edges.

	To ensure the quality of the staining process, regularly control your local water quality, and follow the cleaning instructions for the MAS, especially for the water hose system.
---	---

6.6 Power-on

6.6.1 Power-on with new power supply connection

	Before connecting the MAS to the power supply via mains plug, always ensure that the on/Off button is in O position (power off). Before connecting the MAS to the power supply via mains plug, always ensure that the power supply of the device (refer to the Equipment Identification Pass and/or type plate on the device) and mains plug match the local conditions.
	When the on/off button is in I (on) position, the integrated emergency battery is charged.

Plug the power cable into the connection socket of the MAS and connect it to the local power supply by inserting the plug into the power socket. Switch the on/off button in I (on) position. The computer unit will now boot.

6.6.2 Power-on in regular operation

When using the MAS in regular operation, the device does not need to be switched off entirely. Therefore, it can be restarted by pressing the power button.

6.7 Power-off

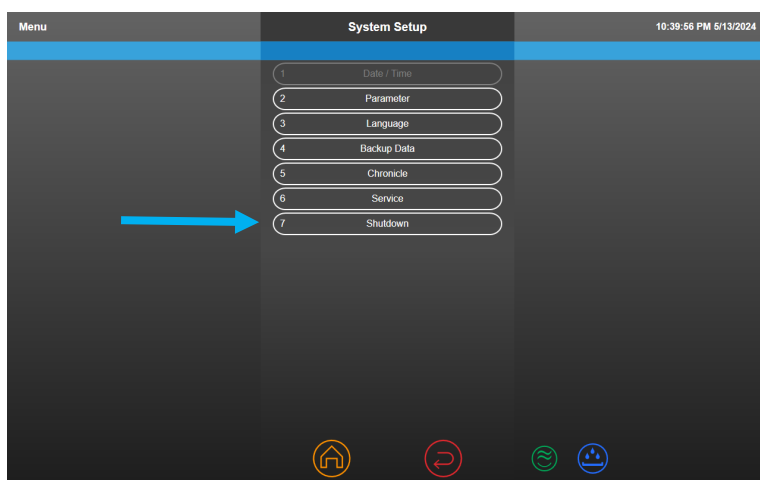
6.7.1 Power-off in regular operation

	Never turn the MAS off while a protocol is active! If you need to turn the MAS off sooner than expected, the protocol can be stopped.
---	--

Ensure that every scheduled protocol is finished or cancelled if necessary. The transport unit must be in the end position. All baskets should be removed.



The display will show the **Home Screen**. Press the button **Setting**  in the **Home Screen**. The display will show the System Setup overview. Press button **Shutdown**.



The device will ask to confirm the shutdown. Confirm or cancel your choice by pressing  or .

If you press **No**, the screen will return to the System Setup overview. If you press **Yes**, the device will proceed to shut down. The screen turns black, and the light inside the basket staining area turns off.

	Always close the water tap when not using the MAS!
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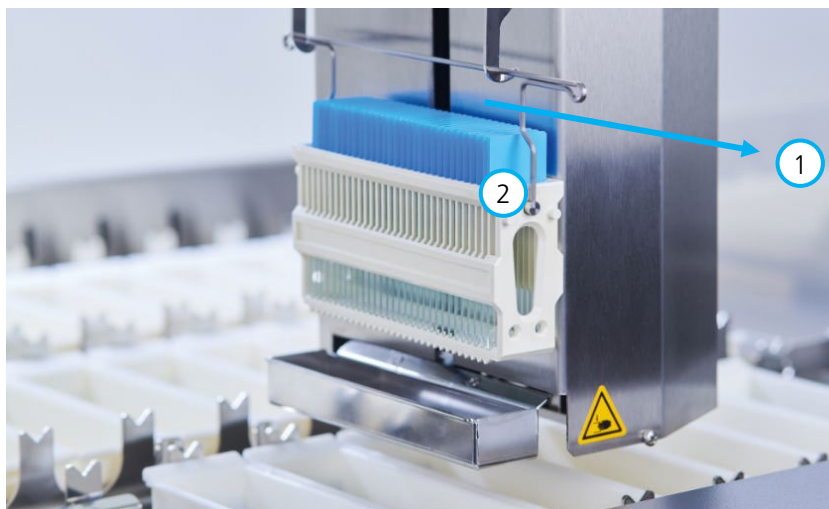
6.7.2 Power-off to remove device from power supply

If you wish to remove the MAS from the power supply entirely, ensure that the shutdown is completed. When the shutdown is completed, switch the on/off button in O (off) position. You can now remove the power cord from the device and power supply.

	Never remove the power cord during a running protocol, or before shutdown is completed! It can cause serious damage to any remaining tissue samples and/or the MAS! Always close the water tap when not using the MAS!
	If you are not going to use the MAS for a longer period (> 48 hrs.), remove the device from power supply to avoid damage from unforeseeable events (e.g. lightning strike).

6.8 Microscope slides and basket orientation

The MAS can be used with slide baskets for 30 slides. All slides in every basket must align in the same direction, with the side containing the tissue sample facing the front / user.



1. Direction device front
2. Front side of the microscope slide with tissue sample

7 Working with the MAS

7.1 Home screen

	Read the instructions carefully before starting to work with the MAS! If you have any questions, please contact your Slee sales contact.
---	--

Staining

4:57:47 PM 1/27/2025

Basket

1

2

Protocol

3

Start

4

Bath

5

End

6

Message

7

Status

1

HE-Färbung

4:51:45 PM

19

5:22:48 PM

Alcohol 100%

2

PAS-Reaktion

4:54:03 PM

17

5:37:48 PM

Xylene

3

PAS-Reaktion

4:57:46 PM

10

5:46:18 PM

Loading 3

8

1

2

3

4

9

10

11

12

Turn the MAS on. After booting, the screen will show the current protocol status in what is referred to as **Home Screen**.

You can return to this screen at any point by pressing the **Home Screen** Button .

In its main section, the Home Screen shows all currently active staining protocols, including basket number, staining protocol, start and expected end time, current location (bath), status and message if applicable. Located in the bottom section of the Home Screen are functional buttons for the different settings.

1. Column Basket: Basket number in order of start time
2. Column Protocol: Currently running protocol for the respective basket number
3. Column Start: Exact time the protocol was started
4. Column Bath: Number of the bath the respective basket is currently in
5. Column End: Calculated time the protocol will be finished
6. Column Message: Bath content as well as error messages appear in this column
7. Column Status: The current protocol status
8. Buttons Baskets: Choose protocol for respective basket
9. Button Bath Contents: Overview and editing of bath contents
10. Button Staining Protocols: Overview and editing of staining protocols

Staining

11:06:26 AM 9/25/2024

Basket	Protocol	Start	Bath	End	Message	Status
2	Alcianblau PAS	9:46:56 AM	14	10:48:09 AM		Exit 3
3	Testprogramm 5	9:49:50 AM	13	10:41:47 AM		Exit 2
4	Eisenfärbung	10:06:43 AM	15	11:04:34 AM		Exit 4
1	Eisenfärbung	11:06:18 AM	8	---		Loading 1

1

2

3

Status

stop

↩

1. Button Status: Detailed view of the active protocol
2. Button Stop: Immediately ends the selected protocol
3. Button Return: Discard selection

7.2 Active protocols

7.2.1 Starting a Staining Protocol

Staining Protocols can be started by selecting a loading bath on the **Home Screen**. A total of four loading baths is available. The numbers match their physical positions within the MAS. If you are unsure of the loading bath number, check the **bath contents overview** (see respective chapter).



Choose a free loading bath by pressing the **green** icon with the respective number on the **Home Screen**, which leads to the list of available staining protocols. If the loading bath is already running a protocol, the icon is **red**.



Before starting a staining protocol, ensure that the slide basket is inserted correctly.

Staining Selection		Staining	9:57:35 PM 5/13/2024
No.:		Protocol	Time
1	①	HE-Färbung	00:27:30
2	②	PAS-Reaktion	00:43:00
3	③	Alcianblau PAS	00:56:00
4	④	Testprogramm 5	00:47:30
5	⑤	Eisenfärbung	00:54:00
6	⑥	PAS-Reaktion 3	00:33:30
7	⑦	Astrabl.-K.-F.	00:30:30
8	⑧	HE-Färbung	00:27:30
9	⑨	Free	00:00:00
10	⑩	Free	00:00:00
11	⑪	Free	00:00:00
12	⑫	Free	00:00:00

1. List of staining protocols with their respective number and duration in ascending order
2. Bath Number: Number of the loading bath to which the protocol will apply
3. Button Arrow Up: Move upwards in the protocol overview (full page)
4. Button Home: Go back to home screen
5. Button Start: Start running the chosen protocol
6. Button Return: Return to previous screen
7. Button Arrow Down: Move downwards in the protocol overview (full page)
8. Button Details: Show the details of the respective protocol

Choose from the list of available Staining Protocols the one for the basket in the selected loading bath by pressing the line on the screen. Use the **Arrows**   to scroll through the list.

To view the details of the selected protocol, press **Detail** . To edit the protocol, please refer to the respective chapter.

	See the number of the currently selected loading bath in the bottom left corner.
---	--

Select the protocol and then press Start . The process will begin immediately.

7.2.2 Stop protocol

To stop a currently active protocol, go to the **Home Screen**. Select the desired protocol by pressing the protocol line. Press **Stop**  to immediately end the protocol.

	Once you press STOP, the process cannot be undone, and the protocol will be stopped immediately!
--	--

The selection of a protocol line can be undone by pressing the **Return** button .

The affected slide basket will be transported to the front door. An audible alarm is heard to signal that the basket is ready to be removed.

7.2.3 Protocol details

To view the details of a currently active protocol in detail, go to the **Home Screen**. Select the desired protocol by pressing the protocol line, then press Status  to open the detailed protocol. The selection of a protocol line can be undone by pressing the **Return** button .

State		Staining			11:06:48 AM 9/25/2024
Basket	No	1 Reagent	2 Bath	3 Duration	
1	1	Xylene	16	01:24	
	2	Xylene	17	01:30	
	3	Xylene	18	01:30	
	4	Alcohol 100%	19	01:30	
	5	Alcohol 96%	20	01:30	
	6	Alcohol 70%	21	01:30	
	7	Aqua dest.	22	01:30	
	8	FE-Solution	37	30:00	
	9	Aqua dest.	38	00:30	
	10	Nuclear Fast Red	40	05:00	
	11	Water bath	7	00:30	
	12	Alcohol 70%	41	01:30	

1. Reagent
2. Bath Number
3. Duration

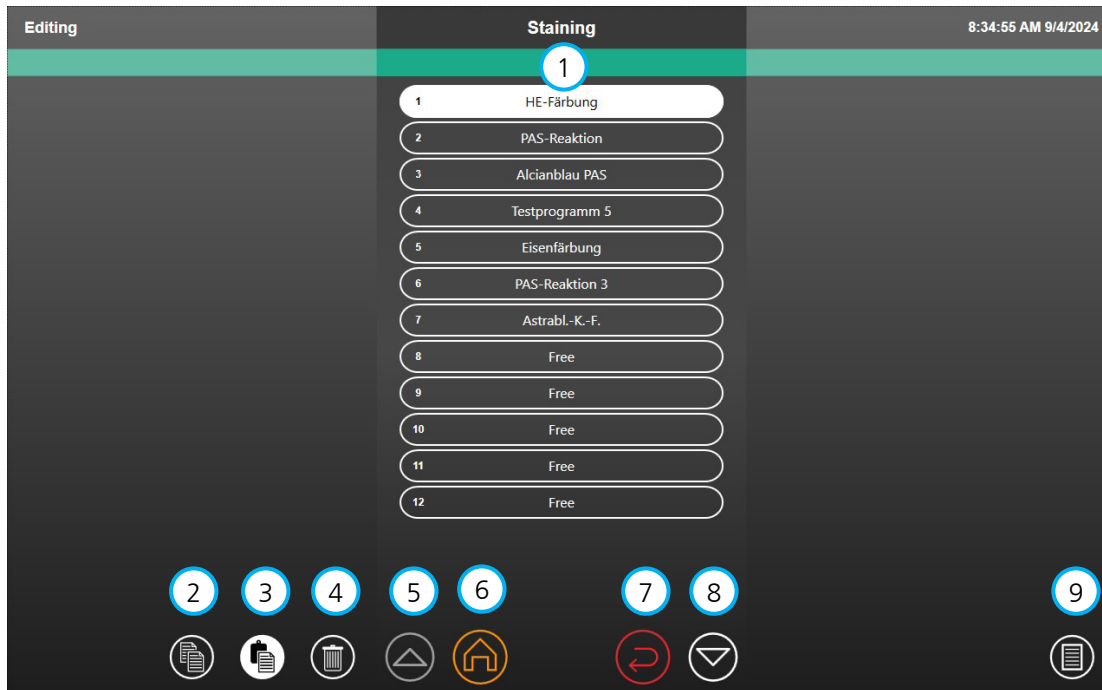
The protocol step that is currently active, is highlighted white. You can return to the previous screen by pressing the **Return** button .

7.3 Staining protocols

7.3.1 Staining Protocols Overview

Press the Button **Staining Protocols**  in the **Home Screen**.

The display shows the list of the saved staining protocols with their respective number and name. Use the arrow keys to switch to the next or previous page. A total of **50** memory locations is available to save staining protocols.



1. List of staining protocols with their respective numbers in ascending order
2. Button Copy: Copy the protocol of the selected memory location
3. Button Insert or Paste: Insert the copied protocol to the selected protocol number or memory location
4. Button Delete: Protocol of the selected memory location is deleted
5. Button Arrow Up: Move upwards in the protocol overview (full page)
6. Button Home: Go back to home screen
7. Button Return: Go back to the previous window
8. Button Arrow Down: Move downwards in the protocol overview (full page)
9. Button Edit: Create or edit the protocol for the selected memory position

7.3.2 Create or edit a staining protocol

In the **Staining Protocol Overview**, select a free memory location to create a new staining protocol, or select an existing protocol to edit it. Then press **Edit** .



The screenshot shows the 'Programming' screen for creating or editing a staining protocol. It features a table with columns for Step, Reagent, Duration, Tolerance, and Bath. A list of reagents is shown on the right, and a bottom navigation bar contains icons for various functions. Numbered callouts identify specific elements:

- 1: Title field at the top left.
- 2: Step column header.
- 3: Reagent column header.
- 4: Duration column header.
- 5: Tolerance column header.
- 6: Bath column header.
- 7: Bath column header (repeated).
- 8: Reagent column header (repeated).
- 9: Up arrow button.
- 10: Down arrow button.
- 11: Plus button to add a new step.
- 12: Delete button (trash icon).
- 13: Save button (document icon).
- 14: Return button (undo icon).

1. Title: Name of the protocol as it appears in the list overview with its respective number
2. Column Step: Number of the step in chronological order as executed during protocol
3. Column Reagent: Name of the reagent used in these steps
4. Column Duration: Time for this step
5. Column Tolerance: Buffer time in % that is allowed for this step, can be turned on or off
6. Column Bath: Number of the bath
7. Column Bath: Number of the bath
8. Column Reagent: Name of the reagent used in this step
9. Button Up: Move upwards in the bath overview (full page)
10. Button Down: Move downwards in the bath overview (full page)
11. Button Plus: Add a new step
12. Button Delete: Delete the selected step
13. Button Save: Save the protocol
14. Button Return: Undo selection



The content within the purple columns appears when adding a new protocol step. It is pre-defined and cannot be edited. If it needs to be changed, please contact a Slee service technician.

Information in the green columns as well as the title will appear in the Home Screen when a protocol is running.

The Editor Menu shows seven different columns and a button menu. To add a new step, press **Plus** .

Choose from the now visible list of available baths/reagents the one you want to add and press the respective option. Use the purple arrow buttons to scroll through the list. The information of the selected bath/reagent is transferred to the green columns.

Press **Duration** to enter the time value for the protocol step. The time value can be set up to 59:59 h (59 minutes and 59 seconds) max. You can also enter a tolerance value in %, which is the buffer time.

	Any duration longer than 59:59 h will be disregarded and reset to 00:00 h!
---	--

If a protocol step is selected when adding a new step, the new step is added above the selected step. If no protocol step is selected, new steps are added at the end of the list.

	Remember to press Save  to ensure your input is saved. If you leave the protocol editor without saving, all changes will be lost.
	Device comes with some standard pre-installed protocols that can be edited or deleted.

7.3.3 Copy an existing staining protocol

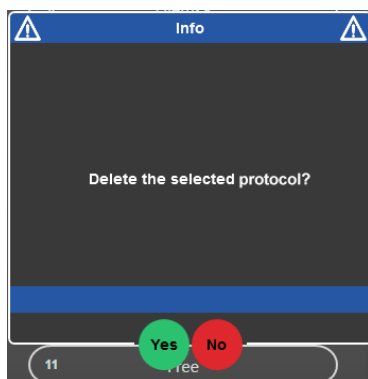
Staining Protocols that already exist, can be copied. Choose the protocol you want to copy by pressing the respective line on the screen. When selected, it is highlighted white. Press **Copy** . The selected protocol is now in your cache. Select any free memory location by pressing the respective line on the touch screen. Use the Arrow Buttons to flip through the pages. Press **Insert**  to copy the protocol to the selected location. All parameters, including name but except memory location number, are copied to the chosen position.



Before pressing Insert, ensure the correct memory location is selected. If a protocol is copied to the location of an existing protocol instead of a free location, the existing protocol will be over-written! This action cannot be reversed!

To undo a selection, press . To return to the **Home Screen**, press .

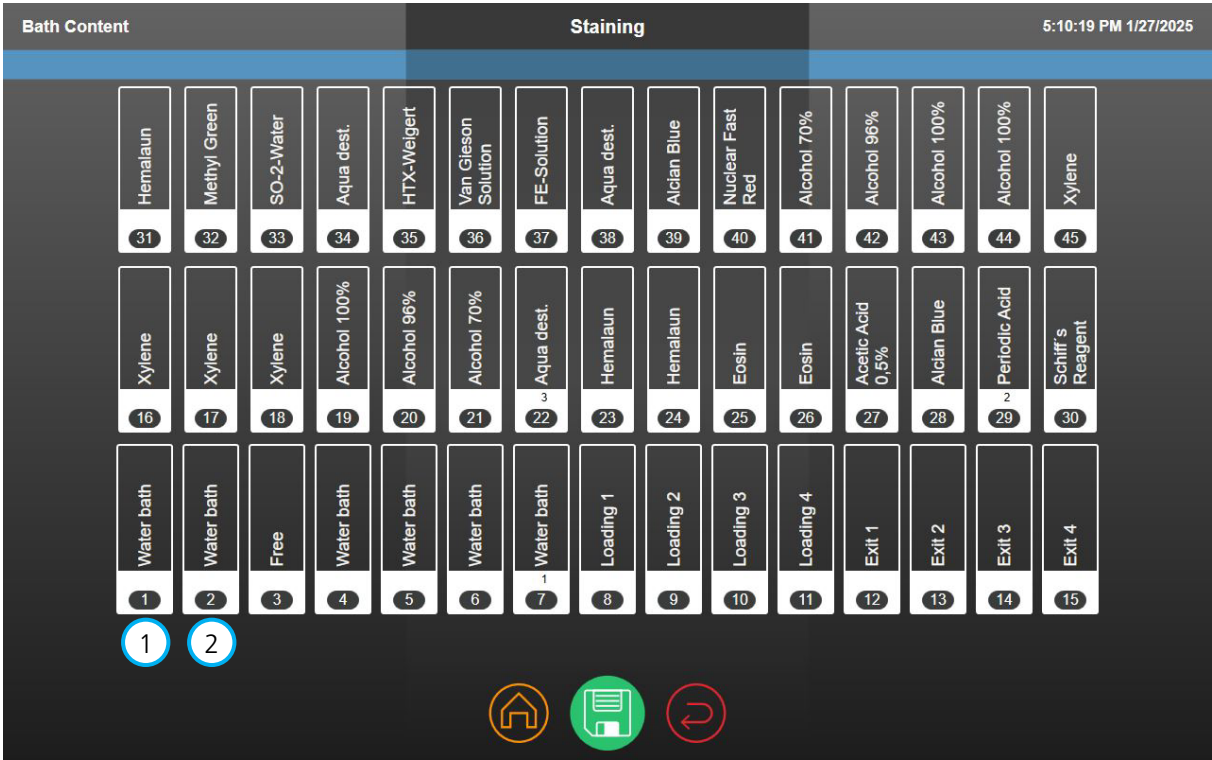
7.3.4 Delete



Choose the protocol you want to delete by pressing the respective line on the screen. When selected, it is highlighted white. Press . Confirm or cancel your choice by pressing  or .

7.4 Bath contents

To view the contents of the staining baths, press the button **Bath Contents**  in the **Home Screen**. You will see an overview of all staining baths in order of their physical position within the MAS, numbered in chronological order from left to right, bottom to top.



- 1. Drying Chamber 1 or Water Bath
- 2. Drying Chamber 2 or Water Bath



If the used MAS model includes Drying Chambers, their positions are fixed at position **1** and **2**. Otherwise, these positions are regular water baths.

Common bath contents (e.g. staining solutions, alcohols) are saved by default. All names can be edited, except for baths no. 1, 2 and 15. These baths are automatically named depending on the selected **MAS** model.

Press on the bath **name** you wish to change. An on-screen keyboard will appear, to delete and rename the bath.

To save the changes, press **Save** .

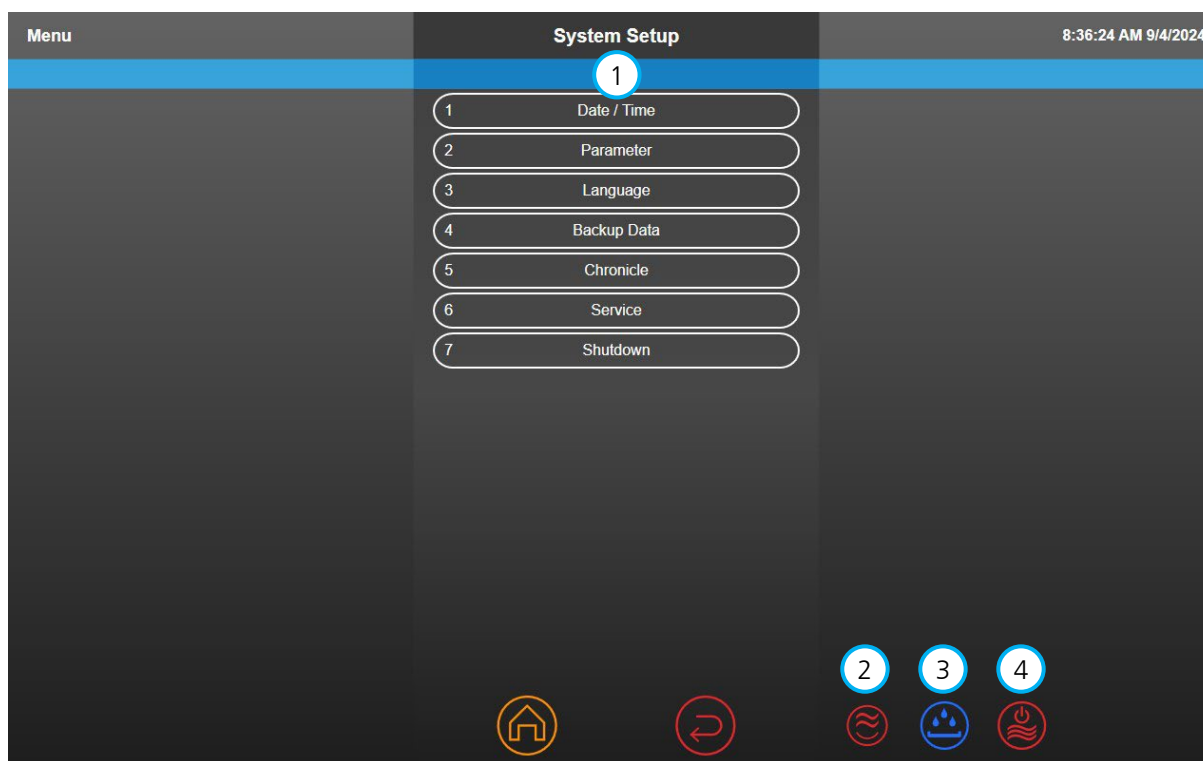
To exit the editing window and return to the **Bath Contents Overview**, press .

To return to the **Home Screen**, press .

7.5 System setup or settings

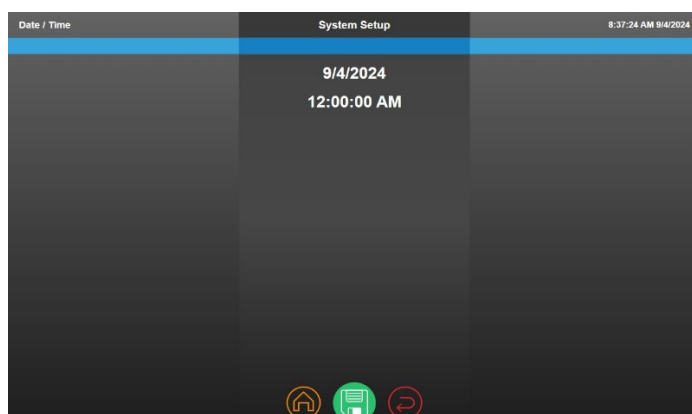
7.5.1 System Setup Overview

To view the system setup options, press the button **Setting**  in the **Home Screen**. You will see an overview of all available settings for the **MAS**.



1. List of available settings
2. Agitation: Switch agitation on or off
3. Transport Unit Cleaning: Moves the transport unit to the front
4. Water Valve: Switch the water valve on or off

7.5.2 Change of Date / Time

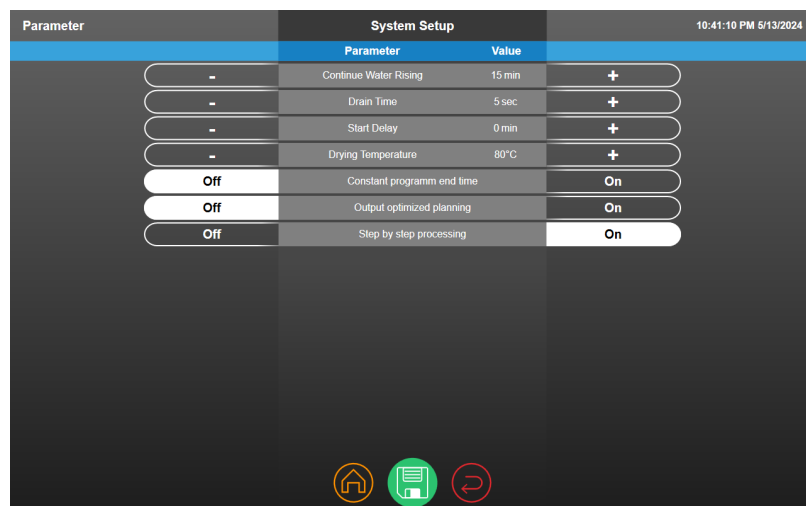


Select **Date / Time** in the **System Setup Overview** to open the editor.

Press anywhere on the date or time to activate the screen keyboard. Now you can edit the respective value.

Press **Save**  to save the changes. To exit the editing window and return to the **System Setup Overview**, press . To return to the **Home Screen**, press .

7.5.3 Parameter Settings



Select **Parameter** in the **System Setup Overview** to open the parameter settings.

The settings for Water Rising, Drain Time, Start Delay, Drying Temperature and Sound Alarm can be adjusted by pressing Plus or Minus. The current value is displayed.

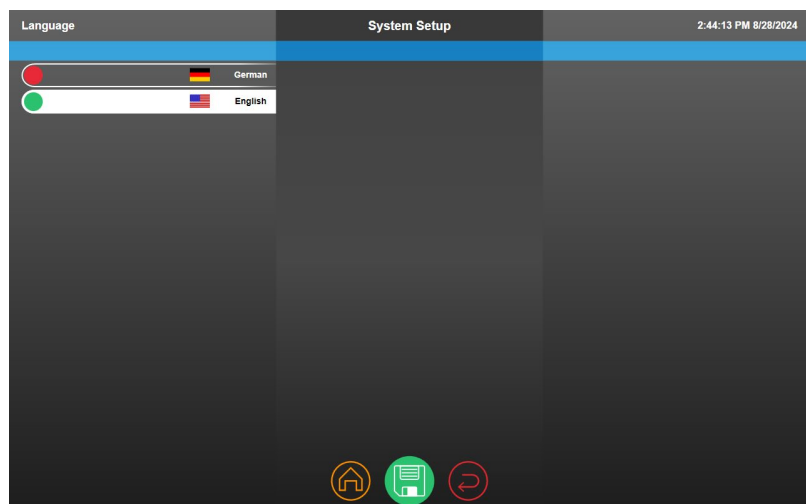
Parameters Constant Program End Time, Output Optimized Planning and Step by Step Processing can be turned on or off. The activated setting is highlighted.

1. Continue water rising: Set time for water rising in water baths
2. Drain time: Set time for draining
3. Start delay: Set time for delay
4. Drying temperature: Set the drying temperature (only for MAS with Drying Station)
5. Sound volume: Set the volume for the alarm
6. Constant program end time: Protocols are processed according to pre-defined end times
7. Output optimized planning: Protocol times are adjusted to each other (high throughput)
8. Step by step processing: Bath times are met according to protocol (best staining results)

Press **Save**  to save the changes. To exit the editing window and return to the **System Setup Overview**, press .

To return to the **Home Screen**, press .

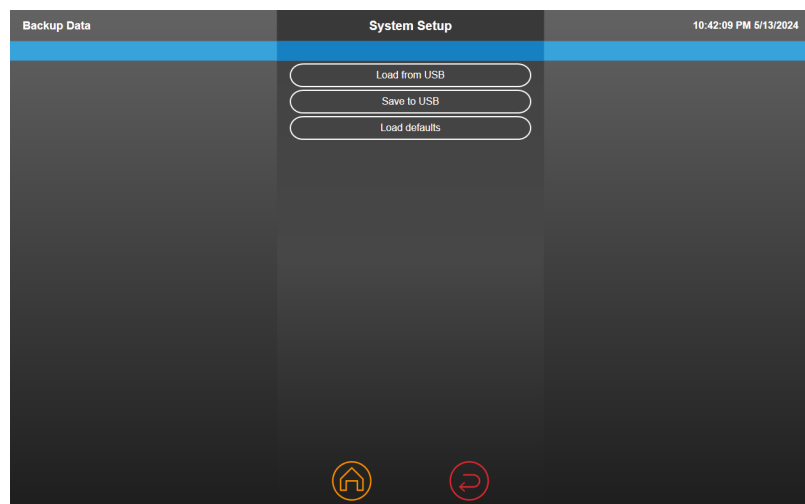
7.5.4 Change Language



Select **Language** in the **System Setup Overview** to open the editor. Press on the language you wish to choose.

Press **Save**  to save the changes. To exit the editing window and return to the **System Setup Overview**, press . To return to the **Home Screen**, press .

7.5.5 Backup (protocol load and setup)



Select **Backup Data** in the **System Setup Overview** to open the backup menu.

The backup data option allows loading and saving protocols and bath names to USB and loading default protocols.

To load from or save to a USB drive, connect it to the device via the USB slot provided. Please refer to the respective chapter "**Connection board**".

To return to the **System Setup Overview**, press .

To return to the **Home Screen**, press .



USB flash drive must be connected to use **Load from / Save to USB!**

7.5.6 Load from USB

When pressing **Load from USB**, all protocol memory locations and bath names will be overwritten with the data saved on the USB flash drive



USB flash drive must be connected to use **Load from / Save to USB!**



This process cannot be undone!

7.5.7 Save to USB

When pressing **Save to USB**, all protocols and bath names that are currently saved on the **MAS** are saved onto the connected USB drive.



USB flash drive must be connected to use **Load from / Save to USB!**

7.5.8 Load defaults

When pressing **Load defaults**, all protocol memory locations and bath names will be overwritten with the default protocols and bath names that are preset on the MAS.

	This process cannot be undone!
---	--------------------------------

7.5.9 Chronicle

7.5.9.1 Chronicle Overview

All protocol runs are logged and saved in the MAS Chronicle. Select **Chronicle** in the **System Setup Overview** to access the log files.

Included in the overview are name, date, start and end time, status and errors of every finished protocol. Go to the next / previous page by using the arrow keys. The protocols are sorted by date and start time.

To exit the window and return to the **System Setup Overview**, press . To return to the **Home Screen**, press .

Chronicle		System Setup				10:43:02 PM 5/13/2024	
1	No.:	Staining protocol	Date	Start	End	Status	Errors
	1	HE-Färbung	5/13/2024	9:57:21 PM	10:00:23 PM	AbortedIntoHook	2
	4	Demo	5/13/2024	10:21:52 PM	10:22:37 PM	Finished	1
	3	HE-Färbung	5/13/2024	10:02:20 PM	10:37:04 PM	Finished	18

2

3

4



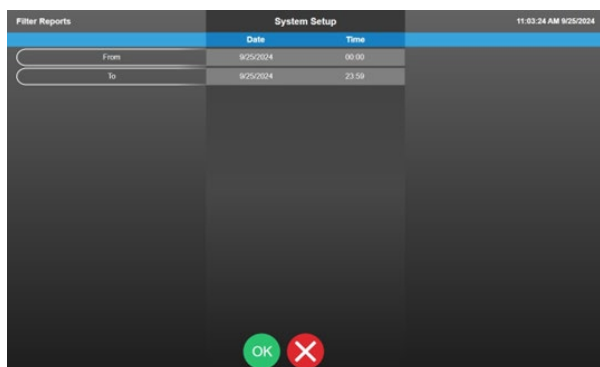
1. Chronicle Overview: List of logged protocols including start and end time, status, and errors
2. Button Print report: Press to print the selected report
3. Button View with filter: View protocols of a selected period of time
4. Button Copy to USB: Press to copy the selected protocol to a USB flash drive

7.5.9.2 Print Report (PDF export)

	USB flash drive must be connected to print report!
---	--

Press  to save the protocols of the selected time period to the USB flash drive. Choose a file name and enter it via Screen Keyboard. Press **Save**.

7.5.9.3 View with Filter



The protocol log files can be filtered. Press  to adjust the filter settings. Values for start (from) and end (to) date and time can be set.

Press on the value you want to change. Change the setting via screen keyboard. Press  to save the filter settings, or  to discard the changes. The log files for the selected time period will then be displayed.

To exit the log files view and return to the **System Setup Overview**, press .

To return to the **Home Screen**, press .

7.5.9.4 Copy to USB

Press  to save the protocols of the selected time period to the USB flash drive.

7.5.9.5 Service

The Service Menu is only available for Slee service technicians.

7.5.9.6 Agitation

In the **System Setup Overview**, press Agitation  to turn it on or off.



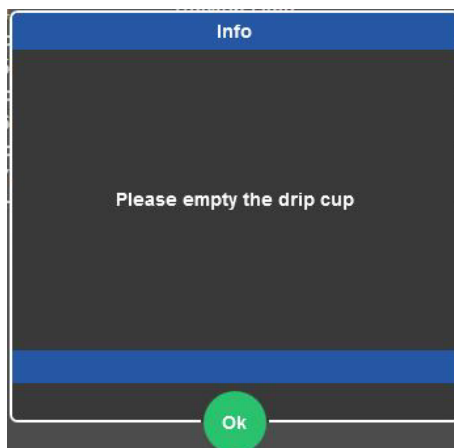
Red: Agitation off



Green: Agitation on

	Agitation is turned on or off for all currently active protocols!
---	---

7.5.9.7 Transport Unit Cleaning



In the **System Setup Overview**, press Transport Unit . The Slide Basket Transporter is transported to the device front. It is now easily accessible for cleaning.

While the Transport Unit is in front position, the display shows a pop-up message **Empty Drip Cup** that informs about the current cleaning status. Press  when the cleaning process is finished. Upon confirmation, the Transport Unit is transported back to its previous position.



Keep your distance and do not reach into the device while the transport unit is moving!

7.5.9.8 Water Valve

In the **System Setup Overview**, press Water Valve  to turn it on or off.



Red: Water Valve off

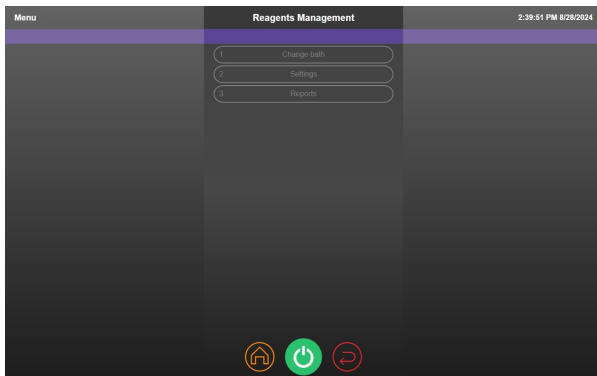


Green: Water Valve on

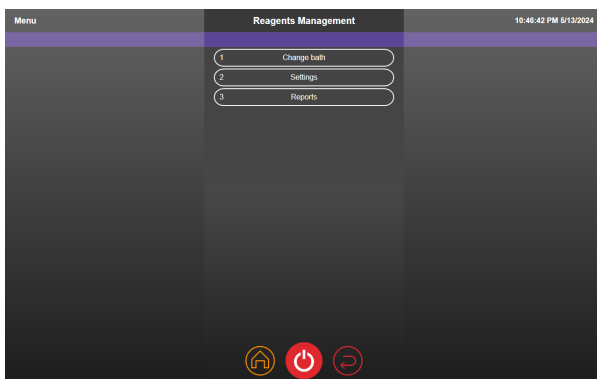
The water valve is automatically switched off as soon as the maximum filling level in the water baths has been reached.

7.6 Reagents management

7.6.1 Activate Reagents Management Overview

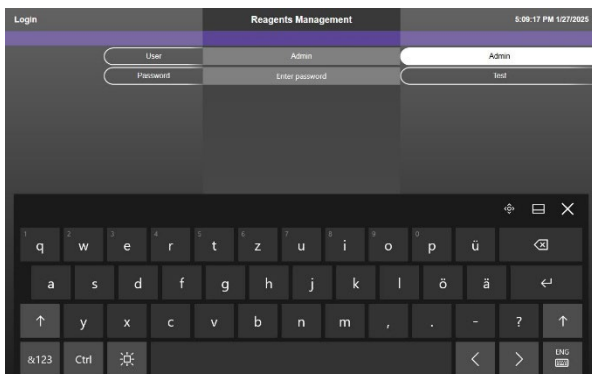


Press Reagents Management  in the Home Screen.



Press Activate  to activate the Reagents Management Menu.

7.6.2 Reagent Management Login



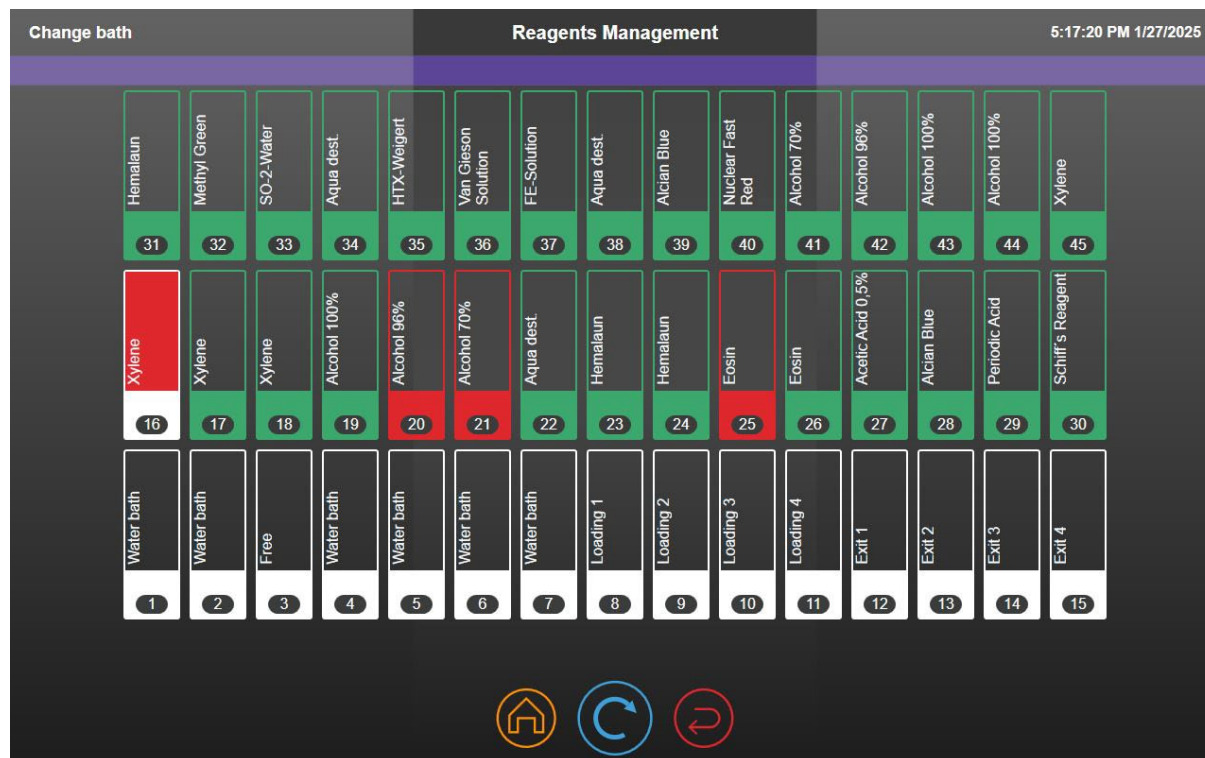
When choosing any of the menu topics, login information is requested. Enter the Admin ID and Password via screen keyboard.



If you can't remember your Admin ID and/or Password, please contact your Slee service technician.

7.6.3 Change bath

Press **Change bath** in the Reagents Management Overview when the contents of a staining bath need to be changed, e.g. because the interval limit is reached. Seen in the display then is an overview of all staining baths with their contents and filling levels.



The individual staining baths are marked in different colors according to the set interval.

- **White:** Different stations other than staining baths
- **Green:** Fresh reagent, below 80 % of set interval limit
- **Orange:** Used reagent, 80 % of more of set interval limit
- **Red:** Reagent needs to be changed, 100 % of interval limit reached

Select the bath you wish to change by pressing it on the display. Exchange the physical reagent from its respective cuvette.

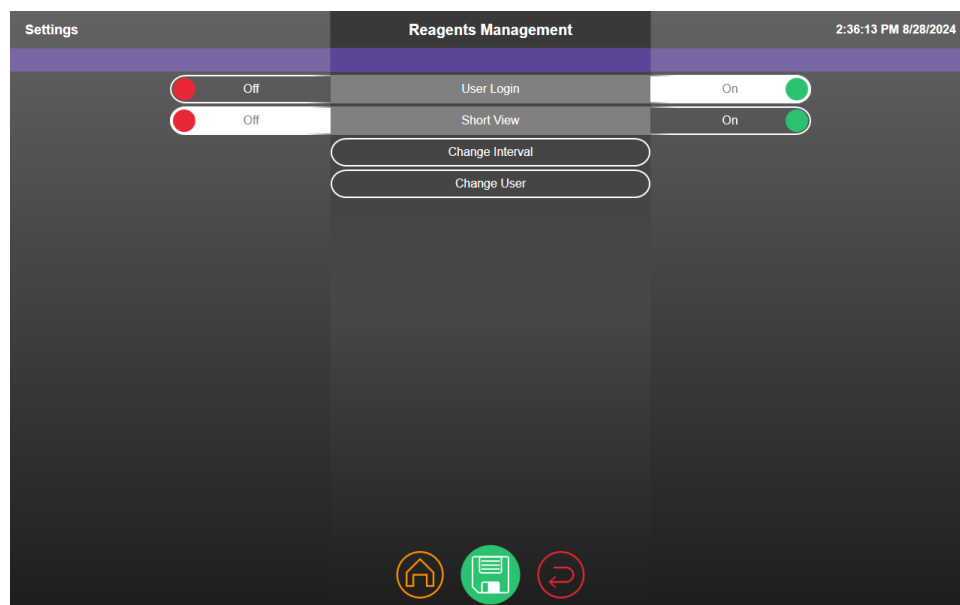
Clean the cuvette and refill it with the matching reagent. After physically replacing the reagent, press **Refresh** .

	The reagents used within the baths of the MAS need to be regularly changed to ensure the best possible quality for the staining results. For each staining bath, an interval can be set to prevent use beyond the point of effectiveness.
---	--

7.6.4 Reagents Management Settings

7.6.4.1 Reagents Management Settings Overview

Press **Settings** in the Reagents Management Overview to access the reagents management settings.

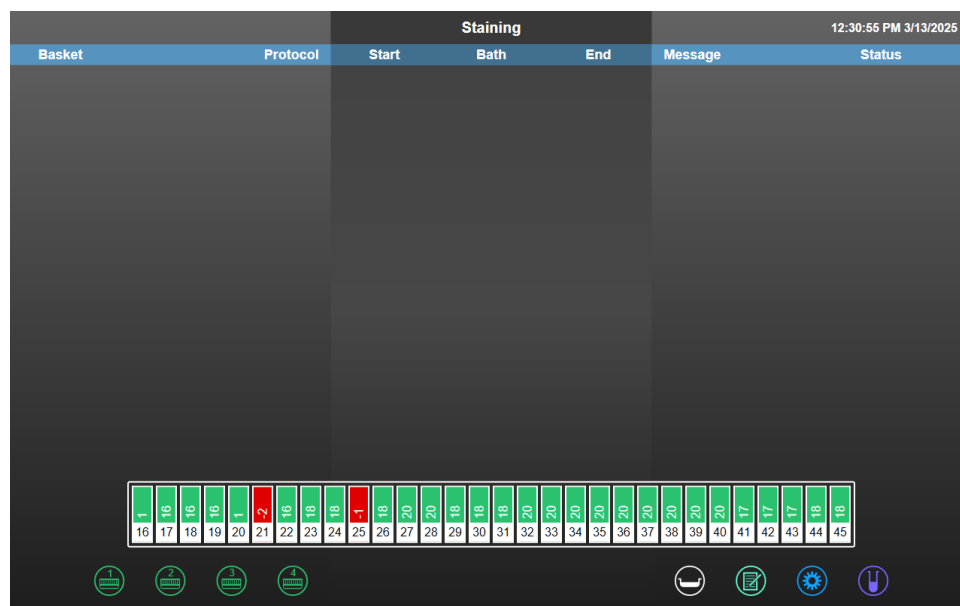


7.6.4.2 User Login

Turn **on** (on) or **off** (off), if user login is mandatory for reagent management. The active option is highlighted.

7.6.4.3 Short View

If the short view is activated, all baths are displayed with the color markings (see chapter about **bath change**) in one row. The corresponding bath number is shown below. Instead of the labels, the remaining runs until the bath change are displayed here.



7.6.4.4 Change Interval



The reagents used within the baths of the MAS need to be regularly changed to ensure the best possible quality for the staining results.

Press **Change Interval** to access the bath contents list.

Change Interval		2	3	4	
		Bath No.:	Reagent	Interval	5
1	-	16	Xylene	1	+
	-	17	Xylene	20	+
	-	18	Xylene	20	+
	-	19	Alcohol 100%	20	+
	-	20	Alcohol 96%	2	+
	-	21	Alcohol 70%	2	+
	-	22	Aqua dest.	20	+
	-	23	Hemalaun	20	+
	-	24	Hemalaun	20	+
	-	25	Eosin	1	+
	-	26	Eosin	20	+
	-	27	Acetic Acid 0,5%	20	+

6 7 8 9 10

1. Button Minus: Decrease interval value
2. Column Bath No.: Number of the staining bath cuvette according to their physical position
3. Column Reagent: Reagent within the staining bath of the respective number
4. Column Interval: Number of times the cuvette is used before it should be replaced
5. Button Plus: Increase interval value
6. Button Arrow Up: Move upwards in the protocol overview (full page)
7. Button Home: Go back to home screen
8. Button Save: Save the protocol
9. Button Return: Go back to the previous window
10. Button Arrow Down: Move downwards in the protocol overview (full page)

Press button **Plus** or **Minus** to change the interval limit on the line of the reagent.

Use the **Arrows** to scroll through the list.

Press **Save** to save the changes. To exit the editing window and return to the **System Setup Overview**, press .

To return to the **Home Screen**, press .

7.6.4.5 Change User

Authorized admins can create new user profiles or delete existing user profiles.



If you can't remember your Admin ID and / or Password, please contact your Slee service technician.

7.6.5 Reagents Report

7.6.5.1 Reagents Report Overview

Press **Report** in the Reagents Management Overview to access the Reagents Management Reports Overview.

Reagents Management Overview					
1 Bath Change	2 Bath No.:	3 User	4 Interval	5 Reagent	6 Status
9/3/2024 12:50:09 PM	34	Admin	0 / 20	Aqua dest.	Green
9/3/2024 12:50:11 PM	34	Admin	0 / 20	Aqua dest.	Green
9/4/2024 8:40:24 AM	16	Admin	0 / 20	Xylene	Green
9/11/2024 11:08:05 AM	28	Admin	0 / 2	Alcian Blue	Green
9/11/2024 11:08:10 AM	26	Admin	0 / 20	Eosin	Green
9/11/2024 11:08:13 AM	29	Admin	0 / 3	Periodic Acid	Green
1/9/2025 11:39:48 AM	16	Admin	289 / 2	Acetone	Red
1/9/2025 11:39:51 AM	17	Admin	285 / 20	Alcohol	Red
1/9/2025 11:40:30 AM	16	Admin	0 / 2	Acetone	Green
1/9/2025 11:46:12 AM	16	Admin	1 / 2	Acetone	Green
2/18/2025 2:10:07 PM	20	Admin	3 / 2	Alcohol 96%	Red
2/27/2025 1:53:32 PM	16	Admin	4 / 1	Xylene	Red

7

8

9









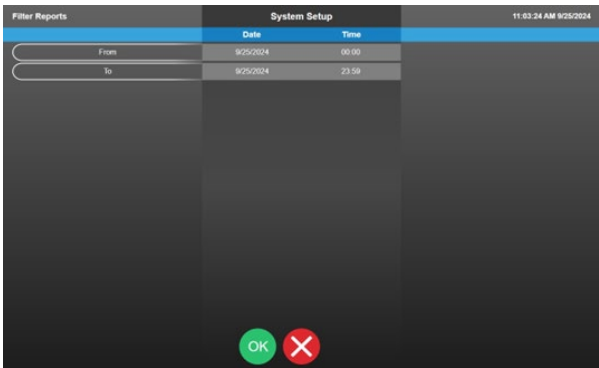
1. Bath Change: Date and Time of latest bath contents change
2. Bath No.: Number of the respective bath
3. User: Username of the user who administered the latest change
4. Interval: Set interval for use of the reagent in the respective bath
5. Reagent: Name of the contained reagent in the respective bath
6. Status: Current status of the reagent contained in the respective bath according to the set interval
7. **RED**: Number of uses exceeded in this interval, **Green**: interval within the intended number of uses
8. Button Print report: Press to print the selected report
9. Button View with filter: View reports of a selected period of time
10. Button Copy to USB: Press to copy the report to a USB drive

7.6.5.2 *Print Report (PDF export)*

	USB flash drive must be connected!
---	------------------------------------

Press  to save the reports of the selected time period to the USB flash drive. Choose a file name and enter it via Screen Keyboard. Press **Save** .

7.6.5.3 *View with filter*



The report log files can be filtered. Press  to adjust the filter settings. Values for start (from) and end (to) date and time can be set. Press on the value you want to change. Adjust the setting via screen keyboard. Press  to save the filter settings, or  to discard the changes. The log files for the selected time period will then be displayed. To exit the log files view and return to the **System Setup Overview**, press .

7.6.5.4 *Copy to USB*

	USB flash drive must be connected!
---	------------------------------------

Press  to save the protocols of the selected time period to the USB flash drive.

8 Troubleshooting

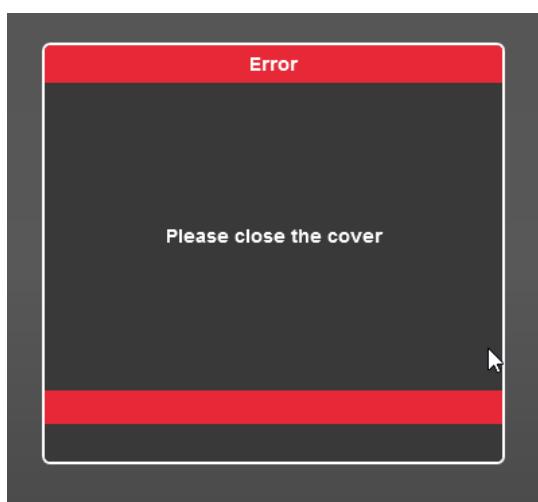
8.1 Change of fuses



To change the fuse, first turn off the power on the device. Remove the power cord. Then press the two pins (X) together and carefully pull out the drawer with the fuses.

The type of fuse is listed in chapter “**Technical data**”. Replace the defective fuse with a matching new fuse and slide the drawer back into the slot provided until you hear a clear click.

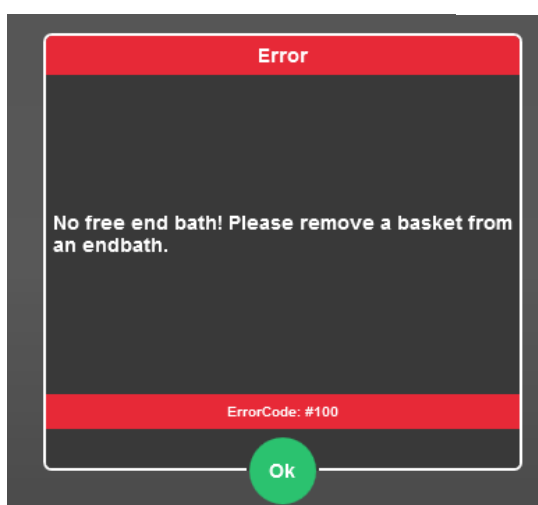
8.2 Safety fume hood warning



If the safety fume hood is not closed properly, an audible alert sounds, and the display will show a warning message. Open the safety fume hood again and close it completely.

If the warning does not disappear, please contact a Slee-certified service technician.

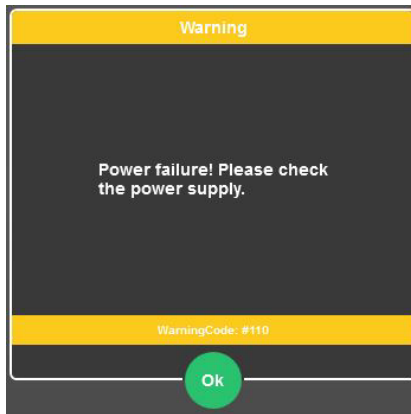
8.3 No free end bath



If no free end bath is available due to occupancy by finished slide baskets, an audible alert sounds, and the display will show a warning message. Remove at least one finished slide basket, then press .

If the warning does not disappear, please contact a Slee-certified service technician.

8.4 Power failure



In case of loss of power, e.g. blackout, an audible alert sounds and the display will show a warning message.

Protocols that were already started will continue until they are finished, or until the emergency battery life ends. If the power supply does not return, upcoming protocols are put on hold. If the emergency battery is too low to finish the currently running protocols, the slide baskets are also put on hold in water baths and the MAS goes into standby.

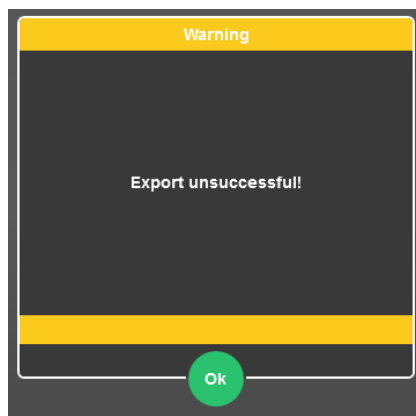
To return from standby, ensure that the power supply is connected, then press .



If the power supply cannot be connected although there is no blackout, turn the device off via emergency stop button and contact your Slee service technician.

Check for every protocol that was activated prior to the power failure if it should be continued after restarting the MAS.

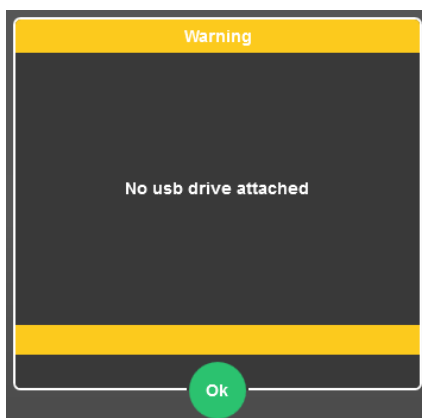
8.5 Export unsuccessful



If the error message “Export unsuccessful” is displayed, remove the USB flash drive and try another USB flash drive and / or the second USB port.

If the error persists, please contact your Slee service technician.

8.6 No usb drive attached



If the error message “No usb drive attached” is displayed, ensure that a USB flash drive is connected correctly to the **MAS**.

If a USB flash drive is already connected, remove it and try another and / or use the second USB port.

If the error persists, please contact your Slee service technician.

9 Cleaning and maintenance

9.1 Periodic cleaning and maintenance

To ensure long-term, trouble-free operation of the device, it is necessary to thoroughly clean the device regularly. It is recommended to include a daily maintenance procedure in the cleaning and maintenance plan. It is advised to keep written proof of regular cleaning.

	Always wear protective clothing (e.g. lab coat, safety glasses, laboratory gloves) when working and cleaning the MAS! Always stop the water flow and remove all acid reagent as well as the power cord before cleaning the MAS!
	Regular maintenance by a certified Slee service technician is highly recommended to ensure longtime operation of the MAS.
	Only use a damp cloth to clean the display and safety fume hood. Do not use Xylene as it can damage these surfaces!

9.2 Cleaning the water hose system

Cleaning interval for the Water Hose System: every 4 weeks (adjust to water bath cleaning)

It is important to clean the water drain hose regularly, as it can become clogged after long periods of use due to solids in the wastewater from the water baths. It is then important to ensure that the hose is laid correctly again with a slope.

Remove the cuvettes from the water bath. Stop the water supply by closing the shut-off valve of your central water system and remove the water inlet and drain hoses from the central water connection. Close the openings at the end of the hose to prevent the cleaning solution from draining away.

Mix a cleaning solution of 10 ml of 25 - 35 % hydrochloric acid and 100 ml of 70 % alcohol. You will need about

1 - 2 liters to clean the hose system. Pour the cleaning solution into the water bath and allow the solution to react for about 15 - 20 minutes. Then remove the cleaning solution, reconnect the hoses to the central water system, and rinse the hose system with plenty of water.

9.3 Cleaning the staining cuvettes

Cleaning interval for the staining cuvettes: with every change or refill of reagent

The staining cuvettes can be cleaned with commercial cleaning supplies either by hand or with a commercial dishwasher at 60 °C.

	Environmentally harmful effects can be caused by chemical residues in the staining cuvettes. Please refer to the safety data sheet for the relevant chemical.
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9.4 Cleaning the drip tray

Cleaning interval for the drip tray: twice daily at least

The drip tray and the filter pad in the drip tray have limited capacity. To prevent overflow, clean it at least twice a day.

To access the drip tray, follow the instructions in chapter “**Transport unit cleaning**”.

Remove the used filter pad. Clean the drip tray with commercial cleaning supplies. Replace the filter pad and finish the cleaning process as described in chapter “**Transport unit cleaning**”.

9.5 Cleaning the water bath

Cleaning interval for the water bath: regular cleaning every two weeks, intensive cleaning every four weeks (adjust to water hose system cleaning)

Regular cleaning: Remove all cuvettes from the water bath. Clean by hand with a brush and commercial cleaning supplies. Rinse off any residue with clean water and reinsert the cuvettes.

Intensive cleaning: Remove all cuvettes from the water bath. After the regular cleaning procedure, leave the cuvettes overnight in a suitable container in a cleaning solution. Rinse off any residue with clean water and reinsert the cuvettes.

9.6 Cleaning the inside of the MAS

Cleaning interval for the inside of the MAS: every 4 weeks

Remove all cuvettes and clean the stainless-steel surfaces with damp cloth.

9.7 Exchanging the carbon filter

Cleaning interval for the carbon filter: as per device notification

		
Open the carbon filter chamber on the left front side of the MAS.	Remove the used filter carefully and dispose of it according to local regulations.	Insert the new filter carefully and close the filter chamber.



Always wear protective clothing (e.g. lab coat, safety glasses, laboratory gloves) when changing the carbon filter!

10 OPTIONAL ACCESSORIES

	Item-No.
Cuvette (plastic), 360 ml for reagent	38500050
Stainless steel cover for plastic cuvette (38500050)	38500053
Cuvette (stainless steel), 450 ml for reagent	14000611
Basket (plastic) for 30 standard slides incl. clip (MAS)	12000262

11 CONSUMABLES

	Item-No.
Exchange carbon filter, 1 pcs.	38700004

12 SERVICE

Internal components should only be serviced by technicians authorized by SLEE medical GmbH.

If technical service or spare parts are necessary, please contact your local SLEE medical GmbH distributor. Please have the following information available:

- Complete contact details
- Type of device and serial number
- Place of device and name of user
- Purpose of service call
- Delivery date of the unit

If it is necessary to return the device, it must be cleaned and disinfected before delivery. It must be returned in its original package, to avoid transport damage.

If the device or parts thereof are sent back in a dirty or non-disinfected condition, SLEE medical GmbH reserves the right to return the parts to the debit of the customer without carrying out repairs or maintenance.

13 WARRANTY

SLEE medical GmbH guarantees that the product delivered has been subjected to a comprehensive quality control procedure, and that the product is faultless and complies with all technical specifications and/or agreed characteristics warranted.

SLEE medical GmbH guarantees that the device is manufactured under an ISO 9001:2015 and ISO 13485:2016 quality management system.

Unauthorized modification or repair by third party persons will void the warranty.

Only original SLEE spare parts must be used.

Guarantee claims can be put forward only if the device is used according to this manual and for the purpose described.

Mistakes and errors which occur because of improper use cannot be accepted.

14 DISPOSAL

The device or parts of the device must be disposed of according to existing local applicable regulations.



The device must not be disposed of with normal household or commercial waste, as the electronic components it contains can be harmful to the environment.

Notes



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