



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

slee *solutions
for
pathology*

C O V E R S L I P P E R
MCS I

HIGHLY RELIABLE SYSTEM FOR A
SMOOTH WORKFLOW IN THE LABORATORY
HIGHEST QUALITY STANDARDS

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:

We always strive to keep our documents up to date and free of errors. However, should you notice any mistakes, we would be grateful if you could let us know. Comments on the content are also welcome at any time. Simply send us an email at marketing@slee.de.

SLEE medical GmbH is constantly striving to further develop and improve its products. For this reason, we reserve the right to change technical specifications and production processes at any time without prior notice.

Please note that the illustrations shown in this manual may differ slightly from the actual product. They may also include accessories that are not included in the scope of delivery and are available at an additional cost.

This manual may already be a revised version. If you have any technical questions or uncertainties, our service team will be happy to help: service@slee.de.

Thank you for your understanding!

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1. INTRODUCTION

The purpose of this manual is to explain in detail to the user how to work with the device 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 Intended use

The SLEE MCS I is an automatic coverslipper specifically designed for applying mounting media between a slide and a coverslip. A coverslip is then placed on top to preserve the sample and to create a uniform viewing surface for the microscopic examination of histological and cytological tissue samples for medical diagnostics by a pathologist, e.g., for cancer diagnostics.

The SLEE MCS I is intended for use in the field of in vitro diagnostics.

1.2 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.

1.3 Report of serious incidents

The occurrence of serious incidents that have resulted in or could result in the death of a patient or user, or that cause a temporary or permanent deterioration in the health of a patient or user, must be reported to a local SLEE medical GmbH representative and the relevant local regulatory authority.

2. SYMBOLS

2.1 Type plate symbols

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

	Year of manufacturing
Rating	It indicates the various voltages at which the instrument can work (by varying the connection in the internal transformer) another label, in the proximity of the main power cable socket, indicates the voltage at which the instrument is connected and at which it must work.
	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

Not all symbols might appear in this document.

	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 device 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.

3. SAFETY

3.1 Emissions

The emissions of solvent steams due to the use of reagents and chemical glue inside the MCS I are reduced by the powerful fans and the charcoal filter (to be exchanged regularly) of the MCS I exhaust system. A connector to your central exhaust system is integrated, so the device can also be run without filter.

3.2 Sources of danger



The work with reagents and medias, as they are used in laboratories to coverslip slides, is always a danger for health and life. Using the MCS I be sure to follow the common rules and regulations for work with these medias. Further danger can be caused by the moving mechanical parts (step motor axes) inside the MCS I. For this reason the safety covers normally prevent of touching moving parts. If one of the covers are open, the software is not starting the process and an electronic safety board cuts the power of the motors to offer a double safety.

3.3 Authorized user / operator



Users, working with the MCS I, may only be those who have been instructed by the operator. The operator is responsible to third persons on the operating site. The operator has to provide this instruction manual to the users and to make sure that the users have read and understood it.

3.4 Personal protective equipment

Slides and baskets taken out of the MCS I after coverslipping may still be contaminated by reagents or colours from the staining machine. So by taking out or by cleaning the machine you may have direct contact. According to common safety regulations, it is necessary to wear gloves to prevent contact with your skin.

3.5 Safety instructions on installation site



The MCS I has to be installed only on a stable, even and solid basis to be sure that it stands and works safely. A falling device means a big accident risk! Installation has to be done by trained and certified SLEE personal.

3.6 Safety equipment

The MCS I can be stopped safe by just pressing "break" which will lead to put on the last necessary coverglass so nothing will dry out during this break and then releasing the cover. In this case a restart is offered by the MCS I.

For some reason it can be necessary to stop the unit immediately. In this case you have to push the "ON/OFF" button, which will directly stop the running process, release the cover and cut the power of the motors. The MCS I confirms this "Emergency Stop" by an alarm and a message on the screen. Pushing "ON/OFF" again will switch the unit into stand-by mode.

During normal process the safety covers prevent users from being hit by moving parts inside.

3.7 Case of emergency

For an instant emergency stop just push the "ON/OFF" switch, as mentioned at "SAFETY EQUIPMENT". This will directly stop the running process, release the cover and cut the power of the motors. The MCS I confirms this "emergency stop" by an alarm and a message on the screen. Pushing "ON/OFF" again will switch the unit into stand-by mode. For cutting the complete power supply, just switch the main switch on the right side of the unit or pull out the cable.

4. ACCESSORIES

The MCS I is supplied with the following standard accessories:

Mains cable
Slide basket (30 slides)
Coverglass box 50 or 60 mm, 1 pcs.
Carbon filter

5. TRANSPORT / INSTALLATION

5.1 Technical data

Size (W x D x H)	630 x 670 x 640 mm
Weight	65 kg
Power supply	100 – 240 V / 50/60 Hz / 85 VA
Operating temperature range	+10 to +35 °C
Operating humidity	max. rel. 80 % non-condensing
Storage temperature range	+5 to +55 °C
Storage humidity	max. rel. 80 % non-condensing
Coverslipping time	up to 500 slides / h
Mounting media volume	30 - 150 µl
Volume of mounting media container	500 ml

Slide specifications

Size	26 x 76 mm
Thickness	0.9 - 1.2 mm
Capacity	150 pieces, continuously in special SLEE 30 pcs. slide baskets

Coverglass specifications

Sizes	24 x 50, 55, 60 mm
Thickness	0.12 - 0.19 mm
Capacity	250 - 300 pieces (anti-adhesive automat coverglass)

Exhaust connection

Diameter of round connector	100 mm
Max. air throughput	195 m³ / h
Max. static pressure	50 Pa

5.2 Transport / Storage

The coverslipper MCS I is delivered in a protection box. Please move it only upright and avoid shocks.

5.3 Unpacking

Put the device on a flat and stable ground and remove the packing. You should keep the material for safety in cases of later transports, if possible. Check the integrity of the delivery. The MCS I comes with the parts that are notified on a separate packing list.

5.4 Setup and connection

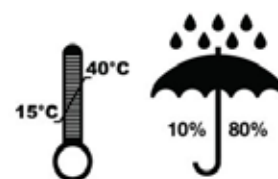
	Before initially switching on the MCS I, leave the unit on the designated workspace for at least 2 hours or more, to adjust to room temperature. Installing and initial adjusting only may be operated by engineers specially trained by SLEE. Before connecting the instrument to the power supply, make sure the unit is adequate to your local electrical power line. The unit is delivered "ready to start". For the connection to your grounded laboratory power supply use the delivered cable.
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The MCS I can be used with a charcoal filter and has two powerful exhaust fans. It can be used even in laboratories without separate central exhaust-system. The filters have to be exchanged at least once a year, depending on frequency of use. Fitting replacement filters can be ordered at SLEE. If you have an existing central exhaust-system, you can connect the device to this unit of course.

	Leave space of at least 10 cm from a wall or other units to all sides of the MCS I, to guarantee an optimized air circulation. Don't put or store inflammable things in the direct neighbourhood of the MCS I.
	For detailed information ask your local SLEE medical GmbH sales representative.

5.5 Operating conditions

- The MCS I is conceived for use in combination with SLEE's tissue stainer MAS.
- Field temperature may differ from +15 °C to +40 °C (no big oscillations).
- Max. allowed height over sea: 2000 m (EN 61010-1:2001).
- Vibration free and weight-adequate work ground required.
- Relative air humidity max. 80 %, not condensing for temperatures up to 31 °C, linearly decreasing to 50 % relative humidity at 40 °C.
- No exposure to direct sunlight.
- No variations of electrical power supply more than 10 %.



5.6 Functional components

1 – Area of transfer unit 2 – Safety hood 3 – Display / operator panel 4 – Storage 5 – Storage cover 6 – Exhaust connector	 This image shows the exterior of the MCS machine. It is a white and blue laboratory instrument. Callout 1 points to the transfer unit area on the left. Callout 2 points to the safety hood. Callout 3 points to the display/operator panel on the right. Callout 4 points to the storage compartment. Callout 5 points to the storage cover. Callout 6 points to the exhaust connector at the top right.
7 – Mounting media bottle 8 – Xylene reservoir for dispenser needle 9 – Dispenser needle 10 – Waste container 11 – Coverglass box 12 – Turntable / disk 13 – Coverglass waste box 14 – Arm / CG-head 15 – Xylene reservoir for media pump	 This image shows the interior of the MCS machine. It is a complex mechanical system with various components. Callout 7 points to the mounting media bottle. Callout 8 points to the xylene reservoir for the dispenser needle. Callout 9 points to the dispenser needle. Callout 10 points to the waste container. Callout 11 points to the coverglass box. Callout 12 points to the turntable/disk. Callout 13 points to the coverglass waste box. Callout 14 points to the arm/CG-head. Callout 15 points to the xylene reservoir for the media pump.

6. BEFORE OPERATION



Attention! Use only baskets, that are also designated for the MAS stainer inside your MCS II!

6.1 Initial fill up

After installation, the machine needs at first a bottle of mounting media. Using non-suitable mounting media can cause damage due to wrong viscosity and different dry-out processes! Before fill-up, SLEE recommends having a system flush with suitable solvent.



Especially reagents based on orange substances are known for sticking mechanical parts within a short time.

SLEE does not assume any liability when non-suitable mounting media and solvents are being used!

Insert a bottle, glass or container with Xylene into the mounting media holder on the left inside wall of the unit and put the end of the tubing into this container. The unit is now prepared for the next steps.

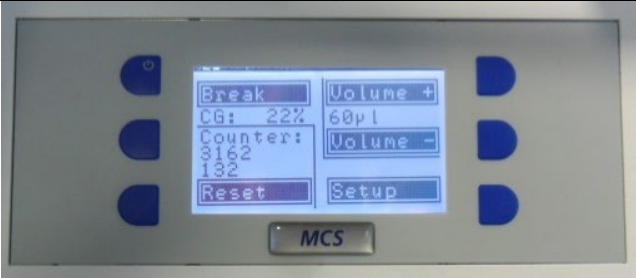
6.2 Lubrication of the pumping system

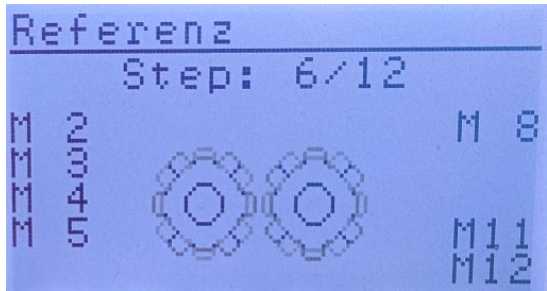
To ensure the lubrication of the complete pumping system, it is necessary to keep all mechanical parts clean and smooth with suitable solvent to protect it from drying out and sticking.

For best control and least possible fume emission of used solvents, SLEE created refillable cartridges (reservoirs), which easily show the fill level all the time. To refill the cartridges, you may open the MCS I, after it took in its refill position and opens the hood after switching on, or anytime during operation, by pressing the "BREAK" button.

Continue with "Switch On / Check / Initialization".

6.3 Switch on / check / initialization

Connection and main switch “ON” Connect the MCS I with your laboratory power supply. Turn on the main switch (at the power connector on the right side) and close both covers if open.	 A close-up photograph of the MCS I power connector. The label on the top left identifies the manufacturer as SLEE medical GmbH, located at 52084 Neander-Camp, Germany. It provides contact information: T: +49 226 7997 20, F: +49 226 7997 99, and an email address: info@medglobe.de. The label also specifies the type as MCS I, the serial number as Q YY XXXX, and the power requirements as 90 VA, 230 V, 50/60 Hz, and 1.6 A. There are CE and RoHS compliance marks, and it states 'Made in Germany'. Below the label is a black power switch and a power cable.
Press “ON/OFF” key at the display With connected power cable the unit now is in standby and can be switched to operation with the power key on the display (left side, upper button). Press this power switch and hold it for 2 seconds.	 A photograph of the MCS I display screen. The screen shows a menu with several options: 'Break', 'Volume +', 'CG: 22%', '60pl', 'Counter: 3162', 'Volume -', '132', 'Reset', and 'Setup'. The 'MCS' logo is visible at the bottom of the screen. The screen is flanked by blue buttons on both sides.
Eventually “power failure” Quit the “power failure” if shown. This means, that the unit was not correctly shut down after last time running, maybe due to a power blackout.	
Check and confirm filling levels Now check the levels of Xylene cartridges and the mounting media bottle. The machine has released the hood locking now, so it's easy for you to open it and have a closer look at cartridges and the bottle, and to refill them, if necessary. Also check for the cover glass waste container and the purge cap (mounting media waste, which has to be replaced and emptied regularly). The purge caps are available as consumables at SLEE.	 A photograph showing the interior of the MCS I machine. The machine is open, revealing the internal components, including the Xylene cartridges and the mounting media bottle. The machine is black and white, with a control panel on the right side.

Refill, clean, take out The needle cartridge on the left (preventing of needle dry out) is always free for taking out, while check function at start-up and when hood is released anytime you use the "BREAK" function. It can be taken out by pulling it up. Now you can refill the cartridge outside the unit (best is to use a wash bottle). If level is below the mark, it is time to refill the cartridge. Please keep the cartridge clean – as mounting media of course will leave remains that can dry out. See on the right, how to check / take out the parts.	
Cartridge for system lubrication The upper cartridge (for lubrication of the media pump system) also has to be kept at correct level. After pressing the "OK" button now, the unit will execute its initialisation run and turn to the "operation screen".	
Initialization Initialization begins as soon as you press a button to confirm that a cover glass container has been inserted into the device. Two rotating gears are then displayed to indicate initialization, and the progress of the initialization is shown by the current stage of the 12-stage test process (e.g., ... 3/12 ... 4/12 ... etc.).	

6.4 Flushing the unit with Xylene

If needed, e.g. before a longer period of non-use of the device, a transport and re-installation on a new site or similar situations, you should start a system flush with Xylene.

At initial setup after receiving a new MCS I, after re-installation on a new site and transports it is also strictly necessary to ensure that no remaining mounting media can get hardened out and stick inside the mounting media system!

From the operation screen you can press "Setup", and then "Arm&Disp" and then "Dispenser" to get into the needed pump menu.



Be sure that you emptied and replaced the purge cap before operating .

Put a container / glass with Xylene into the mounting media bottle position, insert the tube, put an empty purge cap (for mounting media waste) and start the system flush with the key "Cleaning". The unit now starts pumping Xylene from your Xylene container to fill and clean the complete system. You will have to exchange / empty the purge cap after the MCS I asks you to check Xylene and the mounting media 3 times during this cycle. You should restart the "Cleaning" run perhaps for a second and third time after it has finished. In cases of system cleaning after longer non-use of the MCS I, be sure to have 3 - 4 runs before changing to mounting media again and then start 2 runs with mounting media.

To ensure a clean and primed unit, you should have a system flush in intervals of every 2nd or 3rd mounting media exchange.

After a system flush the MCS I is prepared for filling up with mounting media.

6.5 Fill up with mounting media

Open a bottle of mounting media and put it into the designated position at the left inside wall of the MCS I. The end of the tube has to be placed into the bottle. With a special adaptor it can be secured against falling out as shown in the picture. Be sure, the end of the tube is positioned nearly at the ground of the bottle, to ensure an optimized gain per bottle. Before each start of operation, you need to check the fill level of mounting media. You should never run the bottle completely empty, because this will bring up air into the system, which may make the mounting media dry out and stick inside the tubes or at least may cause air bubbles on your slides.

To prevent upcoming cleaning and flushing time or service calls because of this, you should exchange the bottles already a while before the level reached the critical mark. Mounting media, which has been left in a bottle, should be kept to put into the next bottle after there is enough space again after some time of use and to consume it completely by this way. The fill level of the mounting media bottles is easily visible.



6.6 Evacuation of the system

From normal operation screen change to the setup menu by pressing the "Setup" key and then go on into "Arm&Disp" and then "Dispenser". This menu offers a "Cleaning" function and a "Bubble free" function. "Cleaning" gives you the possibility to flush the system with Xylene. For a fill up with mounting media, you should only run "Bubble free", as this runs slower, to prevent the media from gas bubbles due to vacuum in the tubing. "Bubble free" operates a special gentle and slow fill up process and also removes already existing air bubbles from the system by this way. While all these functions, again make sure to have an empty "purge cap" in the correct place!

6.7 Setup data

6.7.1 Mounting media volume, cover glass size, etc.

To set the position of the start and end points of the mounting media line and the volume of the media, SLEE specially focused on simplicity for users. The volume of the mounting media can be changed in 5 µl steps anytime during the process using the two upper keys on the right side of the display between 30 and 150 µl (in operation screen). For more elementary settings, you may go to the "Setup" menu by pushing the "Setup" key, where all possibilities for an individual setting are open.

Choosing "Dispenser", you will go into the setting functions for the "mounting media". Here, you can choose between „Position" and the cleaning or bubble free functions.

By choosing „Position", you will get the possibility to set the start and end positions of the mounting media – according to your used cover glass and type of samples. You can change the distance from the left slide edge to the start point of the line (X1) with the left two upper keys at the display and the length of the mounting media line (X2) with the right upper keys at the display in 1 mm steps.

Because the media spreads after cover glass is applied, it normally is sufficient, to enter a value for X1 from left slide edge to cover glass edge and add about +5 mm and for X2 of about cover glass length minus 10 mm. Otherwise too much media might be pressed out to the sides.

The „delay" time should only be changed if you have problems with the start point of the line (~150 ms).

For first tests SLEE recommends to set the volume to the lowest value (30 µl) and to increase this volume during the test runs till results are optimized. This can be done easily during the process with „volume+" and „volume-" in the operation screen. You don't need to change to the „Setup" menu!

Get out of any screen – back to the last one – easily by pressing exit in any screen.

All changes will be directly stored inside the program.

6.7.2 Setup „arm“ (speed and pressure)

To set the pressure and / or the speed of the coverglass head while bringing up the coverglass onto the slide, go into „Setup“ / „Arm & Disp“ / „Arm“ and adjust the pressure and speed parameters from values between „10“ and „200“ to find the best solution between reducing air-bubbles and being fast.

Best is, to have the MCS I adjusted by your local SLEE sales or service representative. SLEE strictly recommends „automat star“ coverglass from Knittel with a thickness of 0.12 mm to 0.19 mm. With Knittel coverglass you will receive best results without having the problem of glasses sticking to each other, leading to crashes and damage of slides in worst cases. The MCS I is working very fast and has to bring all slides back into the basket, which may be impossible if too many covers or splinters are placed there.



Risk of broken slides and splinters of coverglass if ignored!

Be sure to guarantee a correct stock keeping of your coverglasses! Avoid temperature differences and high humidity! If still having such problems, there are some special functions for SLEE personal to activate a save mode of coverglass pickup. In these cases, please call your local SLEE medical GmbH representative and ask for help in activating and adjusting.

6.7.3 Programs

The MCS I can store up to 4 individual settings in different „programs“. Changes inside the actual chosen program (indicated as „P#“ in the lower left corner of the operation screen – for example „P1“) will automatically be stored and used by the controller. Mounting media length, volume, pressure or speed – all changes will only take effect in the program that you currently activated! This means, if you should need slower speed and pressure for a special kind of samples, maybe due to air bubbles on the slides for example, you may switch to another program no.#, for example „P2“. Now all parameters changed to the values, which were actually stored in „P2“. You can now set all parameters here to the same values, as in your „standard“ program and only change speed and pressure to a lower level.

Finally set values are now automatically stored in „P2“ and it is easy to switch the MCS I to these values, each time you run these samples again, just by choosing „P2“ again. Afterwards, you may switch back to your standard / routine values by turning back to „P1“. The actual chosen program is indicated in the main screen on the lower left side of the display (for example: „P1“). To call up other programs, just turn to „SETUP“ and choose another one by pressing „P1(P2/P3/P4) change“. P1 changes from P1 to P2, then P3 or P4, then starts back at P1, each time you hit this key one time.

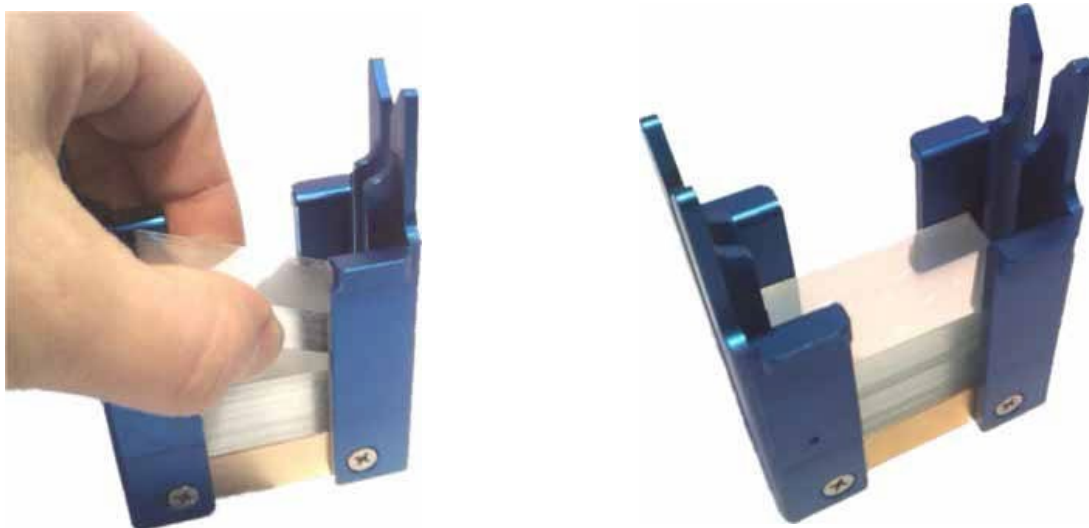
6.8 Coverglass

6.8.1 Filling up coverglass

SLEE offers you different sizes of cover glass boxes, adequate to your used cover glass. These are specially designed for a high capacity (up to 300 pieces) of cover glass. All available boxes can be easily pulled out of the holder and quickly be refilled outside. This again guarantees you easy work with your MCS I, as well as a high capacity of throughput before next refill. The cover glass box has to be refilled, when the MCS I warns you with muted beep tones (at about 15 % remaining pieces).

The machine will continue working until it finally doesn't have any further coverglass pieces. Then it shows an empty-problem, so now it is quite necessary to fill up the CG-box.

To refill the box, go on like shown in the next pictures. If the MCS I still works, just stop a running process with the „BREAK“ key, to release the cover and hold all movements.

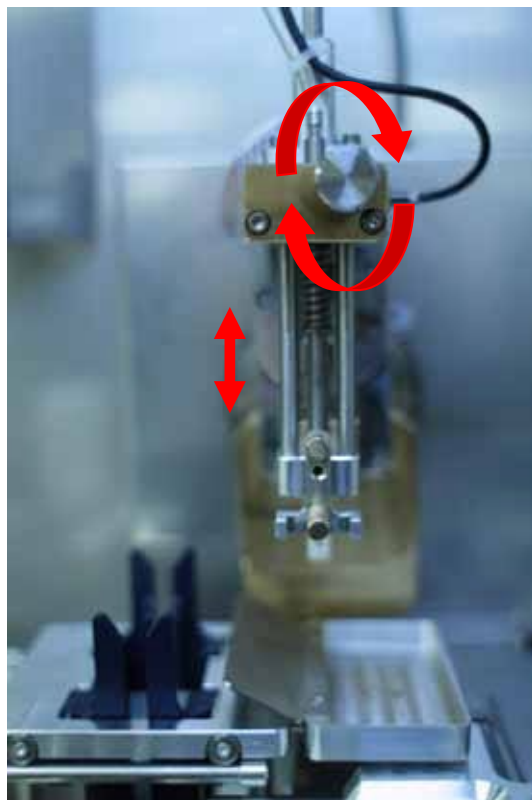


Only operate coverglass of high quality, that doesn't bring up sticking problems, to ensure an optimized progress!

6.8.2 Coverglass positioning

To adjust your coverglass more to the front or more back on the slides, just press „SETUP“ to get into the SETUP menu. Then press „Change CG“. The MCS I will go to a special position and release the hood to have best possibility to adjust the coverglass container to the CG-head.	
As shown in the picture, by turning the adjusting-wheel, the coverglass box will go more to the front or more to the back. Be careful and read attentively! Due to the fact, that the CG-head has to get into the coverglass box without crash, it is strictly necessary to adjust also the CG-head to the new position of the coverglass box! Read and follow the next step before leaving the adjustment function if you changed the position of the coverglass box!	
Check with your fingers if space to get into the coverglass box in front and on the backside is equal so it should be perfect for the CG-head to get inside the box. Read and follow the next step before leaving the adjustment function if you changed the position of the coverglass box!	

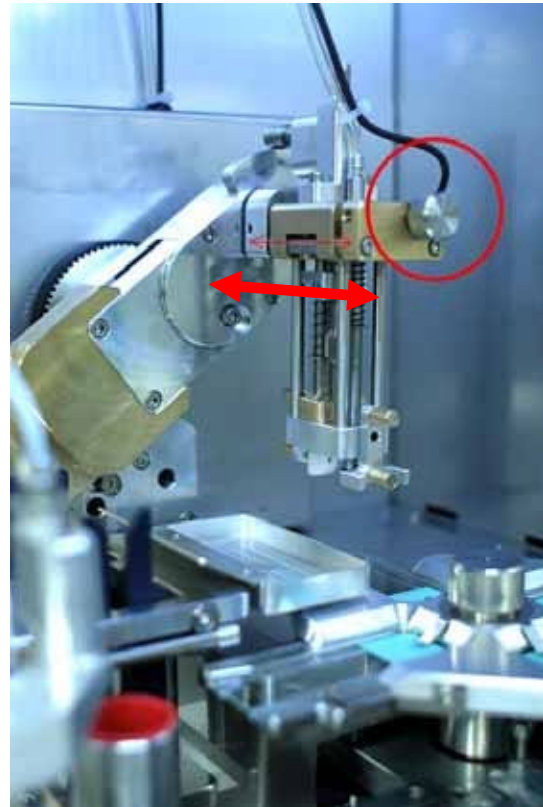
The CG-head can also be adjusted by just turning the adjustment-wheel (in the upper area) as seen in the picture.



So here again is the information, to check with your fingers, if space to get into the coverglass box in front and on the backside is equal so it should be perfect for the CG-head to get inside the box. Cf. this picture.



This picture again shows the adjustment-wheel for the coverglass position. When the position is perfectly adjusted, you will need to check if the separation pressure (bending the coverglass) is optimized to your coverglass, as every glass has different flexibility and separation characteristics! This is explained in the next step.

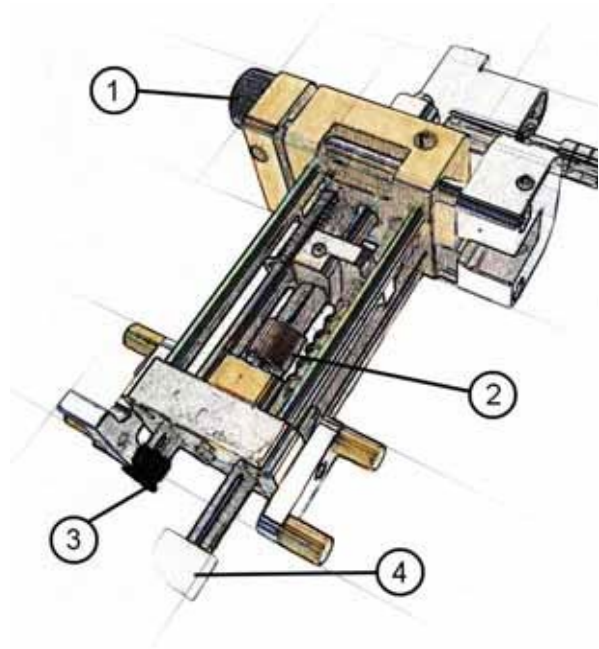


6.8.3 Coverglass quality and separation adjustment

For best variability in processing and to be also able to run low-grade coverglass, SLEE offers the MCS I with one vacuum pad and one separator for best separation in cases of substandard quality coverglass or high humidity, due to higher safety in coverglass separation.

1 vacuum pad system

1. forw. / backw. (positioning coverglass)
2. separation pressure adj. screw up / down)
3. vacuum pad
4. push rod (separating / bending coverglass)



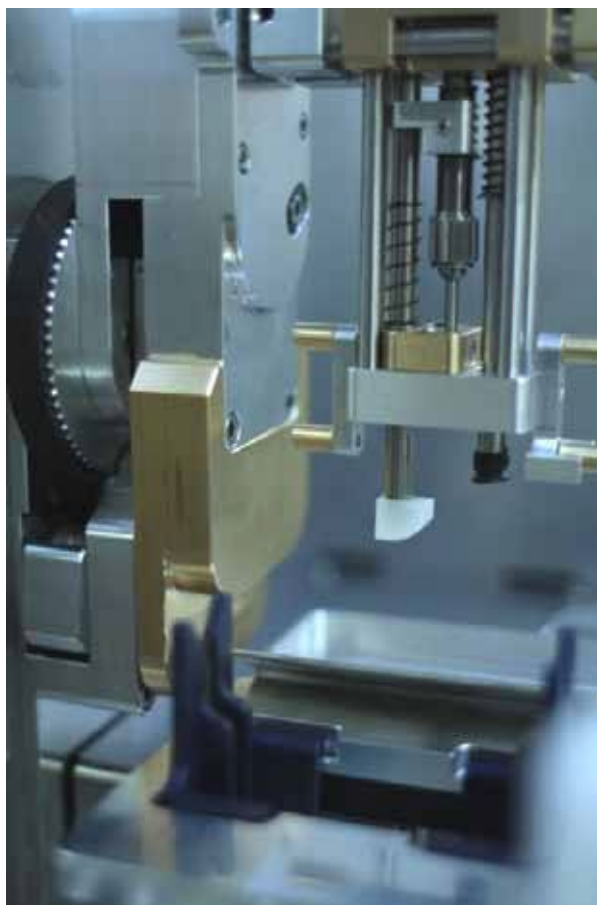
It is absolutely necessary to keep the vacuum pad clean from any dirt or mounting media. For cleaning, you may pull the pad off to clean it with Xylene or suitable solvent or to replace it. Only put it back when it is dry, otherwise the pad will stick to your coverglass when starting the next process. Never clean the pad while still fixed to the CG-head.

Correct placement of the pad to the vacuum tube is guaranteed by checking if the small nose on the pad is placed in the slot at the opposite. The pressure of the separators of the CG-heads are adjusted by a screw which can be easily turned more up or down to find the optimal separation spring pressure (cf. to the pictures on the previous page).

The pressure has to be exactly adjusted, according to the quality of the used coverglass, humidity or thickness, to get the best results between best separation and fewest broken glass problems.

The picture shows the vacuum pad system which here is adjusted not too hard.

The separation pressure adjustment screw is adjusted more to the upper end.



6.9 Storage

The SLEE MCS I offers 4 storage positions for baskets after coverslipping, while still a 5th basket can be run before you have to take out the baskets. To take out the baskets, open the storage cover as shown in the picture and lift up the baskets out of their guidings, taking them directly, not by the basket holders.



The MCS I checks for free storage positions regularly. So if it detects 4 full stations, it will inform the user with a message in the display and a small alarm, to be sure somebody will empty the positions.

The MCS I will still continue working on the actual progress of coverslipping, until it has finished and has to place the basket up in the storage. If still nobody has emptied all or at least one of the storage positions, the alarm will also stop the machine, until the user has taken out the baskets from the storage.

7. REGULAR CLEANING AND MAINTENANCE

7.1 Cleaning instructions

The SLEE MCS I is a precision device. So it is necessary to take care and to keep the device free from broken glass or stuck mounting media. Specially the turntable and its guidings and position rollers should be cleaned carefully and regularly with a brush and Xylene in accordance to their degree of pollution, depending on the solvent, which may still adhere on the slides from the stainer, and on the adjusted amount of mounting medium.

Visible mechanical guidings have to be cleaned with a solvent immediately after the occurrence of contamination. Afterwards you should dry and carefully re-lubricate them. Use the SLEE slide-holders (baskets) and the hangers only in 100 % accurate condition. If detecting any broken basket or deformed hanger, please phase them out of circulation and contact your responsible SLEE medical GmbH representative or service.

The use of broken or deformed baskets or hangers can cause mechanical problems, that may lead to destroy your slides and samples.

The surface of the MCS I may be cleaned with standardized, not scratching cleaning agents. To remove hardened deposits of mounting media, don't use sharp-edged blades or tools. Remove splinter of glass, drops of glue and other things directly after appearance. Remains of mounting media may be removed by soaking them with a brush and Xylene and brushing them away after a while. Please follow your existing safety instructions for use of those solvents!

Both cartridges for Xylene (one for needle position and one for lubrication of the pumping mechanics) have to be consecutively watched for optimized fill level. The cartridge for dispenser needle also has to be cleaned regularly, due to dry out of mounting media inside. All the guidings, especially of transporter, clamp and dispenser, have to be kept absolutely clean and greased and regularly be checked by SLEE service.

	Attention: Before doing any cleaning work, the power cable has to be disconnected first!
	SLEE recommends to include a daily cleaning procedure – after finish of routine work – into your cleaning and maintenance plan. A regularly maintenance of the MCS I (cleaning and greasing of the relevant mechanical parts, cleaning of parts inside and exchange of expandable parts) by SLEE medical GmbH service is the main requirement for a well working machine! Ask your local SLEE medical GmbH representative for a maintenance check.

7.2 Timing of cleaning and maintenance

Activity	Daily	Weekly	Yearly
Empty the waste glass jar.	x		
Check mounting media bottle, fill up or replace if necessary.	x		
Empty or replace the mounting media waste container.	x		
Remove remains of broken glass, if inside the machine.	x		
Remove drops or remains of mounting media, if inside the machine.	x		
Check the fill levels of both Xylene reservoirs (for dispenser needle and pump).	x		
Control the mechanics of the clamp and put some new grease if necessary.		x	
Clean the push rod by using a dry cloth, put a drop of microtome oil on another cloth and dab the push rod with it (only a little).		x	
Empty and clean the Xylene reservoir for dispenser needle completely.		x	
Check the needle.		x	
Depending on the amount of mounting media remains on the 4 disk positions, you have to clean the guidings (perhaps you should remove the disk). Take care of the guiding rolls.		x	x
Recommendation: Contact you responsible SLEE medical GmbH representative or service for maintenance of the hidden parts.			x

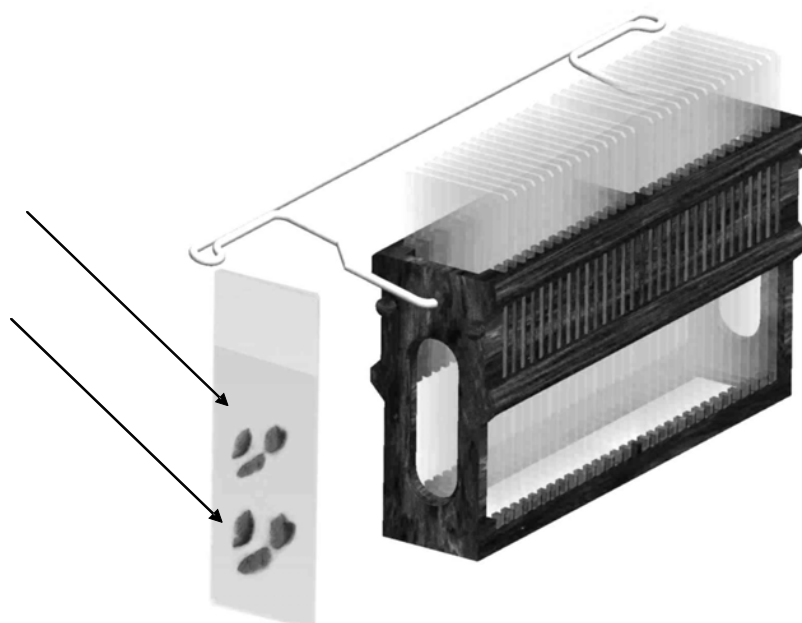
8. ROUTINE BASICS

8.1 Direction of specimen on the slides

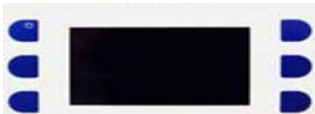


To be sure that the slides are coverslipped from the correct side, put all slides in the same direction into the baskets and have the specimen facing towards you, when hanging them into the stainer (MAS). It is always the front side, which is being coverslipped. So, already by starting the staining programs, you have to insert the baskets with specimen facing into your direction!

Put specimen to
this side.



8.2 Short introduction

1. Connect power supply, switch on main switch (located at the right sidewall).	
2. Turn on power at the ON / OFF key at the display (press the upper key on the left side for at least 2 sec.). After initialization this button is the „Emergency Stop“ for a direct stop of the system. During normal operation for switching off, just press the „BREAK“ key. Like this the MCS I can stop an eventually running process and turn to a „BREAK“ screen where you can press „SWITCH OFF“ to turn the MCS I into stand-by mode. In combination with the MAS the coverslipper MCS I always has to be switched on directly after switching on the stainer and before starting any staining programs, to ensure a communication between both units. Otherwise, the MAS works as stand-alone. Close the hood before switching on!	
3. Check filling levels of Xylene, mounting media and empty the waste containers, when the MCS I informs you to do this after switching on! At the same operation you should have a look at the cover glass level and fill it up if needed, to guarantee a smooth operation.	
4. If point 3 is done, please close the hood and the storage cover again and quit the screen with „OK“.	
5. The MCS I now runs a complete initialization, and tests all its components.	
6. After initialisation is finished, the unit switches to the operation screen.	
7. The unit is now ready to start and waits for baskets, which will be loaded automatically by the transfer station from the MAS. There is no further switch to be pressed to start, the MCS I just has to detect a basket.	

8. Information like „cover glass“ level in % or „volume“ of mounting media in µl is shown on the screen and the „Counter“ (total slides) for your information. You always have the possibility to vary the media volume directly, all the time by the upper and middle keys on the right side of the display.
9. All the time during any process, you have the possibility to stop the MCS I with „BREAK“, to perhaps replace cover glass or check for mounting media. The unit then stops in a safe position after coverslipping the last slide and releases the hood locking. Now it is possible to open the cover and for example refill coverglass or re-empty the waste containers. Never turn the disk (as this may cause sorting problems, if slides are in the wrong position). To continue the operation just close the covers and push the „BACK“ switch if necessary.
10. You may also adjust some settings in the „Setup“ menu, anytime without „BREAK“. Please note, that any time you are holding the unit, you may cause a kind of traffic jam in the stainer as further baskets may be waiting to be transferred, so don't wait too long with any work before restarting! With „exit“ you can get back from one SETUP screen to previous screen you entered, until the process goes on and the operation screen is shown again.
11. After coverslipping, the baskets are being transported immediately to the storage. The storage-cover may be opened anytime to take out finished racks / baskets. The storage cover has to be closed again directly! If you forget to empty all positions from time to time and the unit starts the 5th basket, it will inform you by short alarm tones and a message on the display, to take out the baskets now. You may stop the alarm by pushing „OK“ - after you have taken out the baskets or without taking out the baskets. The MCS I will check the storage positions again just after finishing the actual 5th basket. If you didn't empty at least one station, the alarm will come up again, but more intensively, as the unit now cannot go on operating!
12. To switch off the device, press the „BREAK“ switch (upper key on the left side) and wait until display changes to show „OFF“ and „BACK“. By pressing „OFF“ now, the MCS I will go to its parking positions and switch off.

By pressing „BACK“ the MCS I will get back to its operation screen.

9. TROUBLESHOOTING

9.1 Changing the fuses

In case of malfunction, you should check first that your power supply is OK and be sure the main switch is turned „ON“. Check the fuses inside the fuse box next to the power connector at the back panel. For this, proceed as follows: Disconnect the power cable, open the fuse box carefully with a screw driver, check the fuses and replace them, if necessary. Only use types of fuses as indicated on the type label! (T 1.6A)



Attention: Disconnect power cable first before opening fuse box This symbol warns you of risks for the life or health of person. Pay attention!

Fuse box:



If you are having other difficulties, please call your responsible technical service.

9.2 Troubleshooting

Problem	Possible reason
Values, such as pressure, speed or mounting media volume suddenly have changed.	- Someone changed values (by mistake?). - Someone hit the „P# change“ key by mistake and accidentally changed to another program no.#.
The CG-head cannot get up any cover glass.	- The cover glass is not OK. - The vacuum pump is defective. - The vacuum tube is blocked (by mounting media or glass splinters). - Height adjustment of CG-head should be proceeded (SERVICE).
The dispenser doesn't bring up mounting media onto the slides.	- The mounting media bottle ran empty (no further media inside bottle / tube not correct?). - The dispenser needle is blocked (no Xylene inside needle reservoir?). - The check valve inside the system may be broken / blocked (SERVICE). - The mounting media pump is defective. - The pumping system is not lubricated (Xylene level for lubrication not OK?).

9.3 Error messages

The errors of the step motor axes and internal controller communication don't have a special screen with user information. So errors within these units are shown as number codes on the screen. The numbers have a special meaning. The first number shows the step motor-number, which created the error code. The second number (mostly 1 or 2) shows more detailed information for SLEE service people.

1 stands for „reference error“ (sensor not reached due to blockage, broken motor, broken sensor, cable or bad connection).

2 stands for „runtime error“ (couldn't execute actual step).

Anyway, whether it was a reference or runtime error, the interesting part is the first number, which stands for the unit that created the error. Find the meaning of these numbers in the following table:

ERRORCODE-TABLE

AXIS-No.	DESCRIPTION	2 nd NO. is 1	2 nd NO. is 2
1	ARM/CG-HEAD	REFERENCE ERROR	TIME OUT ERROR
2	PUSH-OUT(FROMDISK)	REFERENCE ERROR	TIME OUT ERROR
3	DISKTURNING	REFERENCE ERROR	TIME OUT ERROR
4	DISPENSERUNIT	REFERENCE ERROR	TIME OUT ERROR
5	MEDIAPUMP	REFERENCE ERROR	TIME OUT ERROR
6	STORAGETURNING	REFERENCE ERROR	TIME OUT ERROR
7	Z-AXIS(SLIDESEARCHING)	REFERENCE ERROR	TIME OUT ERROR
8	PUSH-OUT(FROMBASKET)	REFERENCE ERROR	TIME OUT ERROR
9	BASKETCLAMP	REFERENCE ERROR	TIME OUT ERROR
10	TRANSPORTER(LEFT/RIGHT)	REFERENCE ERROR	TIME OUT ERROR
11	TRANSFER(BASKETINTOMCS)	REFERENCE ERROR	TIME OUT ERROR
12	Z-AXIS(BASKETINTOSTORAGE)	COM. ERROR	TIME OUT ERROR
33	COMMUNICATIONERROR(internali2c)	REFERENCE ERROR	TIME OUT ERROR
44	EEPROMError	Value for CG hight	Value for CG Shaker

Example: Error code is: 10, 1

This means the TRANSPORTER axis (motor 10) couldn't reach its reference position, which might have different reasons like broken sensor, connection problem of step motor, driver problem or crash of axis with some barricade (slideglass). All these errors normally lead to switch of the unit, to check the axes for blockage by the user. If this doesn't lead to success, SLEE medical GmbH trained service engineers should check for reasons. After a switch-off you will have to take out the remaining slides and the basket by hand before you switch on again.

Never remove mechanical parts, while power is connected. The exchange of parts (except fuses) and other interventions may only be done by service engineers instructed by SLEE medical GmbH.

10. GREASING

Microtome oil - Item No. 30001027

Lithium soap grease - Item No. 30001300

11. 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.

12. 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.

13. 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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