



OPERATING  
MANUAL

**slee** solutions  
for  
pathology

MICROTOME  
**POLYCUT LEGACY**

HEAVY DUTY  
SLIDING MICROTOME

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 should 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.

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## CONTENTS

<b>1</b>	<b>INTENDED USE</b>	<b>7</b>
<b>2</b>	<b>SYMBOLS</b>	<b>7</b>
<b>3</b>	<b>OVERVIEW DEVICE</b>	<b>8</b>
<b>4</b>	<b>SAFETY NOTES</b>	<b>9</b>
4.1	SAFETY FEATURES	9
4.2	SAFETY INSTRUCTIONS	9
<b>5</b>	<b>COMPONENTS</b>	<b>11</b>
<b>6</b>	<b>SPECIFICATIONS</b>	<b>12</b>
<b>7</b>	<b>UNPACKING AND INSTALLATION</b>	<b>13</b>
7.1	UNPACKING THE DEVICE	13
7.2	INSTALLATION SITE REQUIREMENTS	13
<b>8</b>	<b>OPERATION OF POLY-CUT LEGACY</b>	<b>14</b>
8.1	ELECTRICAL POWER CONNECTION	14
8.2	SWITCHING THE DEVICE ON	15
8.3	OVERVIEW CONTROL PANEL	16
8.4	OVERVIEW TOUCH PANEL KNIFE AND SLEDGE MOVEMENTS	17
8.5	OVERVIEW TOUCH PANEL FOR GENERAL OPERATION	18
8.6	START, PAUSE, STOP BUTTON	20
8.7	USING THE PHOTO POSITION	21
8.8	STANDARD SETTINGS FOR THE CONTROL UNIT	22
8.9	DESCRIPTION OF EACH INDIVIDUAL CONTROL ELEMENT	23
8.10	MOUNTING THE ACCESSORIES	25
8.11	WORKING WITH THE DEVICE	40
8.12	SWITCHING THE DEVICE OFF	41
<b>9</b>	<b>TROUBLE SHOOTING</b>	<b>41</b>
9.1	ERROR CODES / DEVICE / ACCESSORIES NOT WORKING	41
9.2	POWER FAILURE	41
<b>10</b>	<b>CLEANING / DESINFECTION</b>	<b>42</b>
10.1	MAINTENANCE	43
10.2	RECOMMENDED MAINTENANCE AND SERVICE SCHEDULE	43

10.3	REPLACING THE FUSES	43
<b>11</b>	<b>OPTIONAL ACCESSORIES</b>	<b>44</b>
11.1	RESHARPENING SERVICES	45
<b>12</b>	<b>SERVICE</b>	<b>46</b>
<b>13</b>	<b>WARRANTY</b>	<b>46</b>
<b>14</b>	<b>DISPOSAL</b>	<b>46</b>







## 1 INTENDED USE

The Polycut Legacy is a microprocessor-controlled, electrically driven heavy duty sliding microtome, designated to produce thin sections of industrial materials and paraffin-, celloidin- and plastic-embedded samples in medicine, biology and industry.

The Polycut Legacy may be used only in conjunction with accessories and supplementary devices supplied by SLEE medical GmbH.

**If the device is used for any other than the designated application, this will be considered an improper use of the product!**

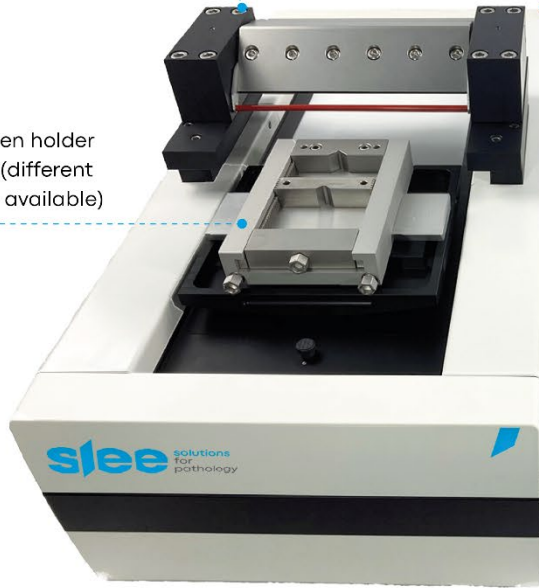
## 2 SYMBOLS

	<p>Dangers, warnings and cautions are marked by this symbol. Failure to comply with these warnings / cautions can lead to accidents, bodily injury and damage to device and / or accessories.</p>
	<p>Special instructions and important information for the user regarding the operation of the device are marked by this symbol.</p>
	<p>Warning: Cut or severe hazards are marked by this symbol.</p>
	<p>Warning: Crushing of hands. Hazard: Closing mechanical parts of equipment.</p>
	<p>Mandatory sign. Wear eye protection.</p>
	<p>This device complies with the CE standard.</p>

### 3 OVERVIEW DEVICE

Knife holder system  
(different options available)

Specimen holder  
system (different  
options available)



Polycut Legacy -  
heavy duty microtome

Polycut Legacy -  
control unit

Touch panels

Emergency  
switch



Foot switch



Electronic handwheels /  
rotary knob



## 4 SAFETY NOTES

### 4.1 SAFETY FEATURES

The Polycut Legacy is provided with the following safety features:

	Standard
Emergency stop button located on the control panel	•
Emergency stop function of the foot switch	•
Finger protection on the knife holders	•

The institution which owns the unit and the persons working with the unit, servicing or repairing it, have the responsibility for a hazard-free use.

### 4.2 SAFETY INSTRUCTIONS




Be sure to follow the unpacking instructions (attached to the outside of the device shipping crate)!

The device may only be transported in an upright position!

Be sure to comply with the site requirements (c.f. UNPACKING AND INSTALLATION)!


For best sectioning results the device must be put on a table suitable for heavy duty microtomes. It must not move while sectioning.

#### 4.2.1 OPERATING THE DEVICE

 	<p>Always store knives in the knife case when not in use!</p> <p>Never place a knife on a bench with the edge facing upwards!</p> <p>Never try to catch a falling knife or disposable blade!</p> <p>Always clamp the specimen first and the knife second!</p> <p>Always wear protective glasses when sectioning brittle specimens (risk of splintering)!</p>
	<p>No liquids must enter the interior of the device during operation!</p> <p>Always cover the knife edge with the knife guard during work breaks!</p> <p>Always remove the knife from the knife holder when finishing work!</p> <p>The device may only be operated by skilled laboratory personnel. It may only be used for the designated application and operated in accordance with the instructions contained in this manual!</p> <p>Before mounting the knife holder make sure the bearing blocks of the microtome supporting the knife holder are clean.</p> <p>Carefully place the preassembled knife holder onto the microtome bearing blocks from above. Do not slide the knife holder onto the bearings to prevent the bearing surface from getting scratched.</p> <p>Handle microtome knives and blades with utmost care. Knife and blade edges are extremely sharp and can cause severe injuries!</p> <p>Wear cut-resistant safety gloves when inserting / removing the knife.</p>

	<p>Prior to inserting the knife, always tighten one of the knife's clamping screws of the knife holder to secure the knife holder in position!</p> <p>Never leave knives / disposable blades or knife holders with a knife / disposable blade inserted lying around!</p>
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#### 4.2.2 CLEANING, DESINFECTION AND MAINTENANCE


	<p>Only authorized service technicians may access the internal components of the device for service and repair!</p> <p>Prior to any cleaning, disinfection or maintenance work, the device must be switched off and disconnected from mains!</p> <p><b>Exception:</b> Cleaning or disinfection procedures which require the sledge to be moved.</p> <p>Remove both knife and specimen prior to any cleaning, disinfection or maintenance work!</p> <p>Wear cut-resistant safety gloves to remove the knife.</p> <p>No liquids must enter the interior of the device during cleaning, disinfection or maintenance!</p> <p>Clean only with a slightly moistened cleaning cloth!</p> <p>Disinfection only with disinfectants that allow application with a slightly moistened cloth!</p> <p>Do not use any solvents (e.g., Xylene, Acetone), any cleaners containing solvents or scouring powders for cleaning!</p> <p>Appropriate cleaners for the control unit / control panel and all painted surfaces: mild laboratory detergent (slightly moistened cloth)!</p> <p>Clean the control panel only when the device is switched off.</p> <p>Appropriate cleaners for non-varnished metal parts (knife holders, base plates, specimen clamps): Xylene substitutes, alcohol – apply with an only slightly moistened cleaning cloth!</p> <p>Use cleaners and disinfectants according to the safety instructions of the manufacturer and in compliance with the regulations applicable in your laboratory!</p> <p>Regularly remove any sectioning waste from the microtome, but at least of any working cycle. A vacuum cleaner might be used for this (check with the lab supervisor first).</p> <p>Prior to exchanging any fuse, always switch the device off and unplug the mains plug.</p> <p>Replace defective fuses only with fuses of identical specification!</p> <p>Users may carry out only the maintenance work (c.f. CLEANING / DESINFECTION).</p>
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## 5 COMPONENTS

The Slee Polycut Legacy is provided with the following standard components:

	Polycut Legacy
Polycut Legacy basic unit	•
Polycut Legacy control unit	•
Touchscreen	•
Emergency switch	•
Electronic handwheels / rotary knob for sectioning speed change	•
Foot switch	•
Knife holder system	o
Specimen holder system	o
1 x mains cable	•
1 x connector cable	•
Operation manual	•
Tools	•

• = standard component, o = optional, different options available

	<p>Specimen and knife holder systems are not included in the device standard delivery. They have to be ordered separately, in accordance to each user's specific application(s). Mounting instructions for all accessories can be found separately.</p>
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## 6 SPECIFICATIONS

### Microtome

Section thickness range	0 - 999 $\mu\text{m}$ , adjustable in 1- $\mu\text{m}$ -steps
Total horizontal specimen stroke	max. 275 mm
Total vertical knife feed	max. 70 mm
Knife retraction (during specimen return stroke)	0 - 999 $\mu\text{m}$
Clearance angle adjustment	0° - 17°
Knife declination (with knife holder)	45°
Maximum specimen size (W x D x H)	250 x 200 x 70 mm
Specimen orientation (along x / y axis)	5°
Specimen orientation (rotability, depending on clamp)	approx. +/- 3 and 360°
Sectioning speed	1 - 125 mm/s, adjustable in 0.1-mm-steps
Return speed	1 - 125 mm/s, adjustable in 0.1-mm-steps
Manual knife movement	37 mm/s and 74 mm/s
Manual specimen movement	37 mm/s and 74 mm/s
Sectioning speed	To be set manually
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

### Electrical connections

Nominal voltage	100 - 240 V
Nominal frequency	50 Hz
Ampacity	4 A at 230 - 240 V / 10 A at 100 - 120 V
Maximum power draw	max. 900 VA

### Dimensions and weights

Microtome (W x D x H)	380 x 815 x 380 mm
Control unit (W x D x H)	340 x 290 x 180 mm
Required space for operating the machine (W x D)	1,000 x 950 mm
Microtome & control unit	approx. 100 kg (incl. power cords, connecting cable)
Microtome	approx. 80 kg
Control unit	approx. 10 kg

## **7 UNPACKING AND INSTALLATION**

### **7.1 UNPACKING THE DEVICE**

Be sure to follow the unpacking instructions (attached to the outside of the device shipping crate)!

When transporting the device avoid any critical vibration and make sure the device was not tilted too much. Make sure to check the outside indicators!

The installation of the device and the training must be done by Slee authorized trained personnel!

### **7.2 INSTALLATION SITE REQUIREMENTS**

The site for installation should meet the following requirements:

- Surface of around 1.000 x 950 mm for microtome and control unit.
- Vibration free lab table that can handle a weight of min. 100 kg.
- Stable ambient temperature between +10 °C to +35 °C.
- Stable humidity max. rel. 80 % non-condensing.
- Do not place near sources of vibration, avoid exposure to direct sunlight and strong temperature fluctuations.

## 8 OPERATION OF POLYCUT LEGACY

### 8.1 ELECTRICAL POWER CONNECTION

Verify the voltage prior to connecting the device!

The voltage comes factory-adjusted to a setting of self-adjusting internal power supply from 100 - 230 V 50/60 Hz.

Prior to connecting the device to mains, verify whether the voltage setting is correct for the mains electricity in your laboratory!



Incorrect voltage selector settings can lead to severe damage of the device!

Prior to adjusting the voltage selector, disconnect the device from mains!

The device may be connected to mains only with one of the power cords supplied and only to grounded sockets!

The device may not be operated in hazardous locations where risk of explosion exists!

Extreme temperature fluctuations and high air humidity (e.g. during transport, storage) may cause condensation inside of the device.

In this case, wait at least two hours before switching the device on. Failure to comply with this waiting period may cause severe damage to the device!

Be sure to read and comply with the safety instructions, warnings and cautions in this chapter, even if you are already familiar with the operation and use of other Slee products.

- The voltage setting should be examined during installation of the unit by a competent person.
- Use a dedicated fuse for the unit.
- Do not connect another unit to the same power circuit.
- Before turning on the device, check if the voltage of the mains supply is identical with the name plate of the unit.
- The mains supply should not be connected in series with other devices, such as multiple sockets - a separate circuit should be provided.

#### 8.1.1 VERIFYING AND ADJUSTING THE VOLTAGE

The device is factory-adjusted for a use with 110 - 230 V, therefore the available power has to be verified. Incorrect voltage can lead to severe damage of the device!

With a different available voltage, changes may be necessary. These change on the device must be done by Slee authorized personnel and not by the customer himself or third-party people.

#### 8.1.2 INSTALLING CONNECTOR CORD AND POWER CORD / REMARK ON THE FOOTSWITCH

The connector cable from the control box must be mounted on the back side of the microtome.

While positioning the microtome on the table, make sure the connector cable holds distance to any walls in the back and is not touching them or is bended!

The power cord must be connected to a grounded and suitable source. The device works with 110 – 230 V.

It is not mandatory to connect the footswitch to operate the microtome, so there is no need for a dongle here.

### 8.1.3 USING THE PHOTO POSITION WITH A TRIGGER SIGNAL

It is possible to attach a photo-set-up. The device will then send a trigger signal via 6.3 mm jack plug to a camera. A photo will be taken in a predefined position set-up via the control panel.

The set-up is explained in the chapter "USING THE PHOTO POSITION".

## 8.2 SWITCHING THE DEVICE ON

### 8.2.1 VERIFYING AND ADJUSTING THE VOLTAGE



Caution: Did you verify whether the voltage is set correctly?

Incorrect voltage settings can lead to severe damage of the device and you cannot operate it correctly!

The device must be connected to mains with the delivered power cord only!

The device must not be operated in hazardous locations where risk of explosion exists! Extreme temperature fluctuations and high air humidity (transport, storage) may cause condensation inside of the device. In this case, wait at least two hours before switching the device on.

Failure to comply with this waiting period may cause severe damage to the device!

Switch on the mains switch on the backside of the control unit.



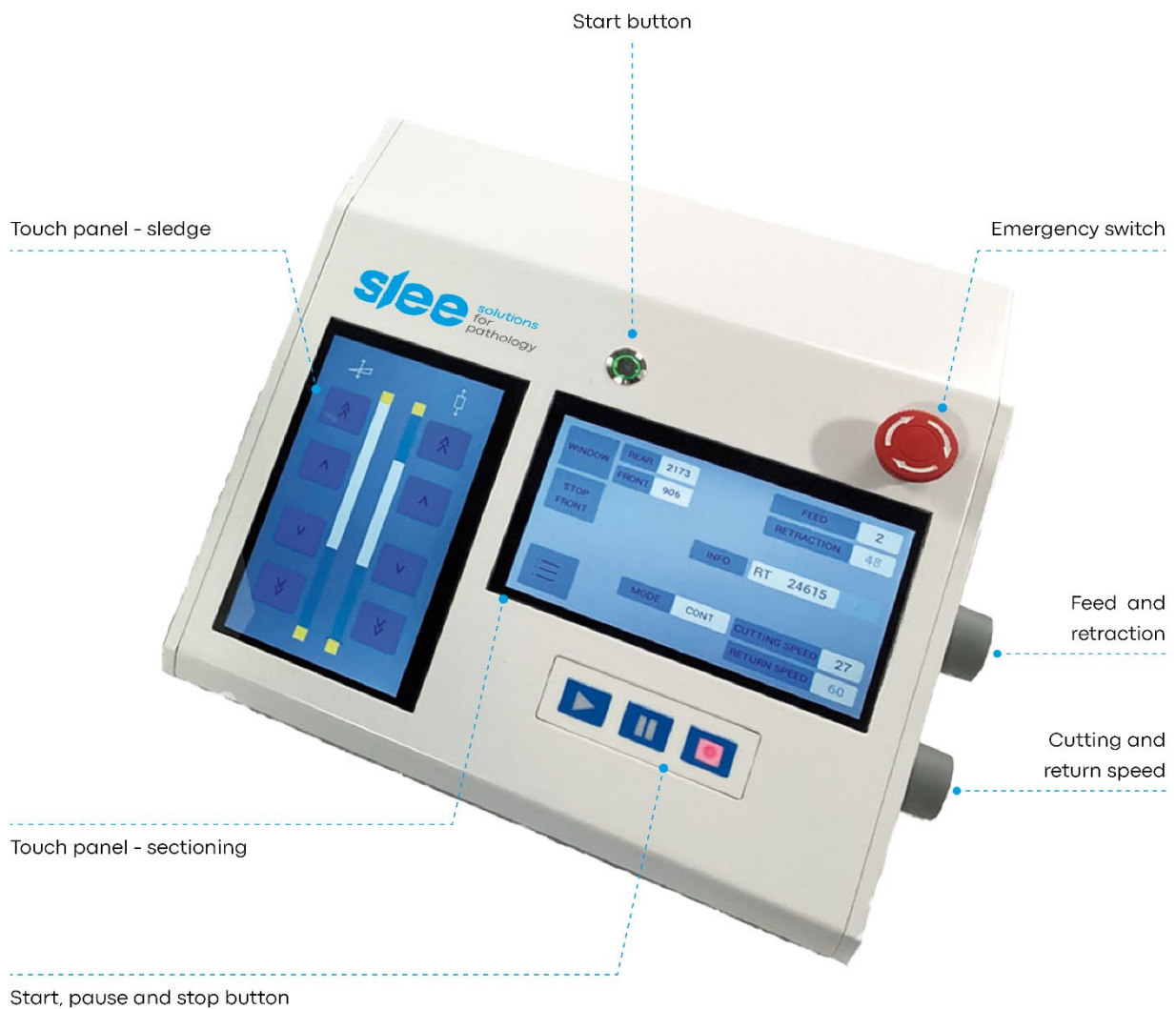
Press the start button the front of the control unit.

The touch panels are booting and the device will be available for operation shortly.

The green light on the control panel indicates that the device is ready for operation.



## 8.3 OVERVIEW CONTROL PANEL



**Start button:** Pressing down initiates the booting and the device will be in operating mode shortly.

**Emergency switch:** Push it for an emergency stop. To unlock it, turn the wheel to the right and confirm the unblocking on the touch panel.

**Touchscreen sledge:** Touch panel for sledge and knife movements.

**Touchscreen sectioning:** Touch panel for all further demands in the sectioning process.

**Start, pause and stop button:** Illuminated buttons, show their status according to the light.

**Feed and retraction:** Turn button for feed and retraction thickness.

**Cutting and return speed:** Turn button for cutting and return speed.



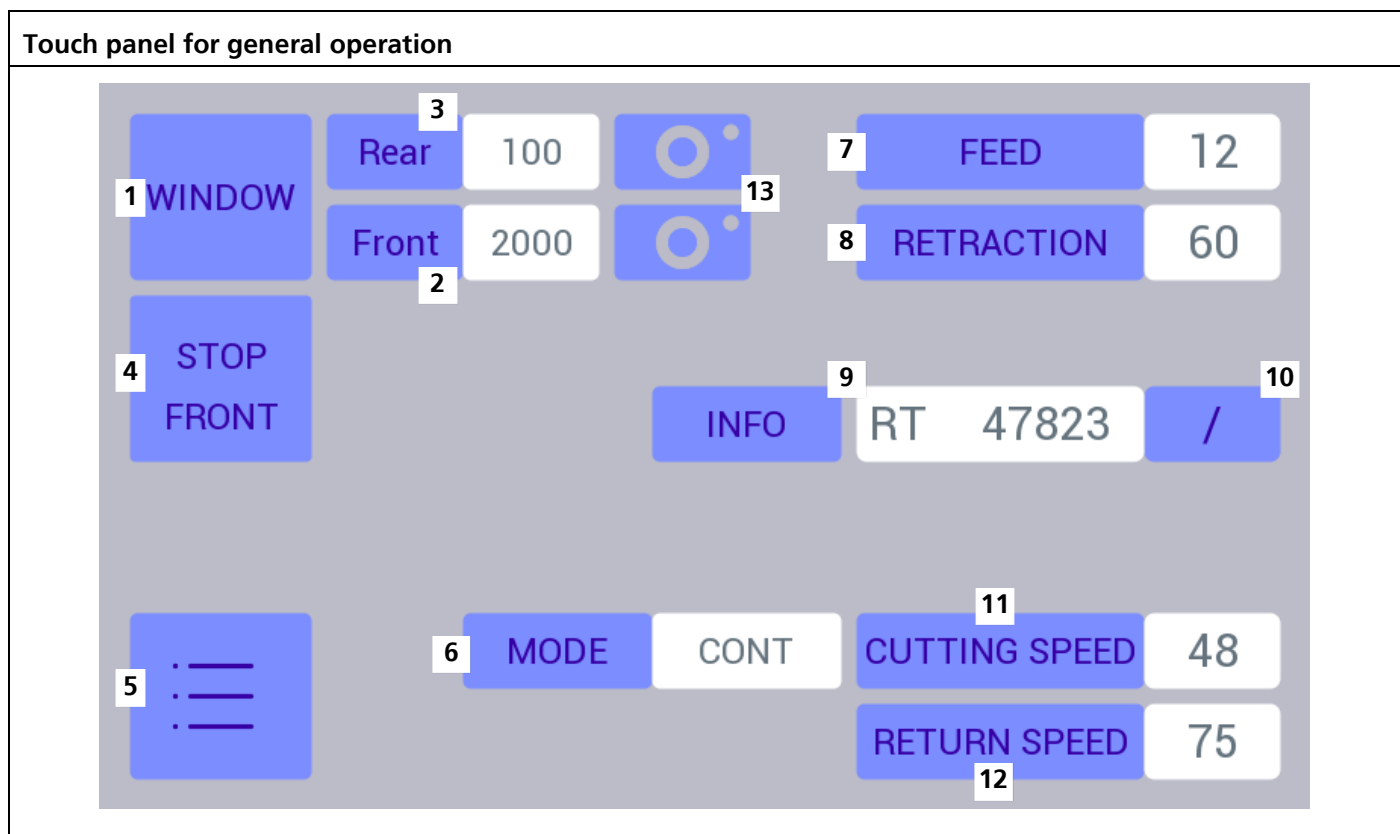
## 8.4 OVERVIEW TOUCH PANEL KNIFE AND SLEDGE MOVEMENTS

Touch panel for knife and sledge movements		Knife	Sledge	Function
	1		KNIFE MOVEMENT: FAST TO THE TOP POSITION	
	2		KNIFE MOVEMENT: SLOW TO THE TOP POSITION	
	3		KNIFE MOVEMENT: SLOW TO THE BOTTOM POSITION	
	4		KNIFE MOVEMENT: FAST TO THE BOTTOM POSITION	
		5	SLEDGE MOVEMENT: FAST TO THE REAR	
		6	SLEDGE MOVEMENT: SLOW TO THE REAR	
		7	SLEDGE MOVEMENT: SLOW TO THE FRONT	
		8	SLEDGE MOVEMENT: FAST TO THE FRONT	



Warning: There is a risk of collision!  
Pay attention to the movement of the axes!




## 8.5 OVERVIEW TOUCH PANEL FOR GENERAL OPERATION



#	Name	Function
1	WINDOW	Press this button to activate the SECTIONING WINDOW. The sledge will be moving in a defined area. Set the start and the end point with the FRONT button (2) which stands for the start point of the window, and the REAR button (3) which stands for the end point of the window. Don't set the points too close to your specimen. Add some speeding-up and speeding-down space to generate best sections.
2, 3	FRONT, REAR	This marks the start point of the sectioning window. Move to the desired point with the panel for the sledge movement. Press the FRONT button for 3 seconds when you want the start point to be set, then go to the desired end point of your window and press the REAR button for 3 seconds. The values are set in the white fields.  The white bar in the sledge panel indicates the size of the window in relation to the whole possible sledge movement.  NOTE: To deactivate the SECTIONING WINDOW mode press WINDOW (1). The window values change their color to grey, indicating that they are inactive.
4	STOP FRONT / REAR	Defines where the sledge stops after the sectioning process. Choose between FRONT and REAR.
5	DOWN MENU	Press to access further submenus.
6	SECTIONING MODES	Choose between different sectioning modes:  <b>SINGLE</b> : If this mode is activated the microtome will execute one single section. It will start over at the defined end position. To start press the START icon.

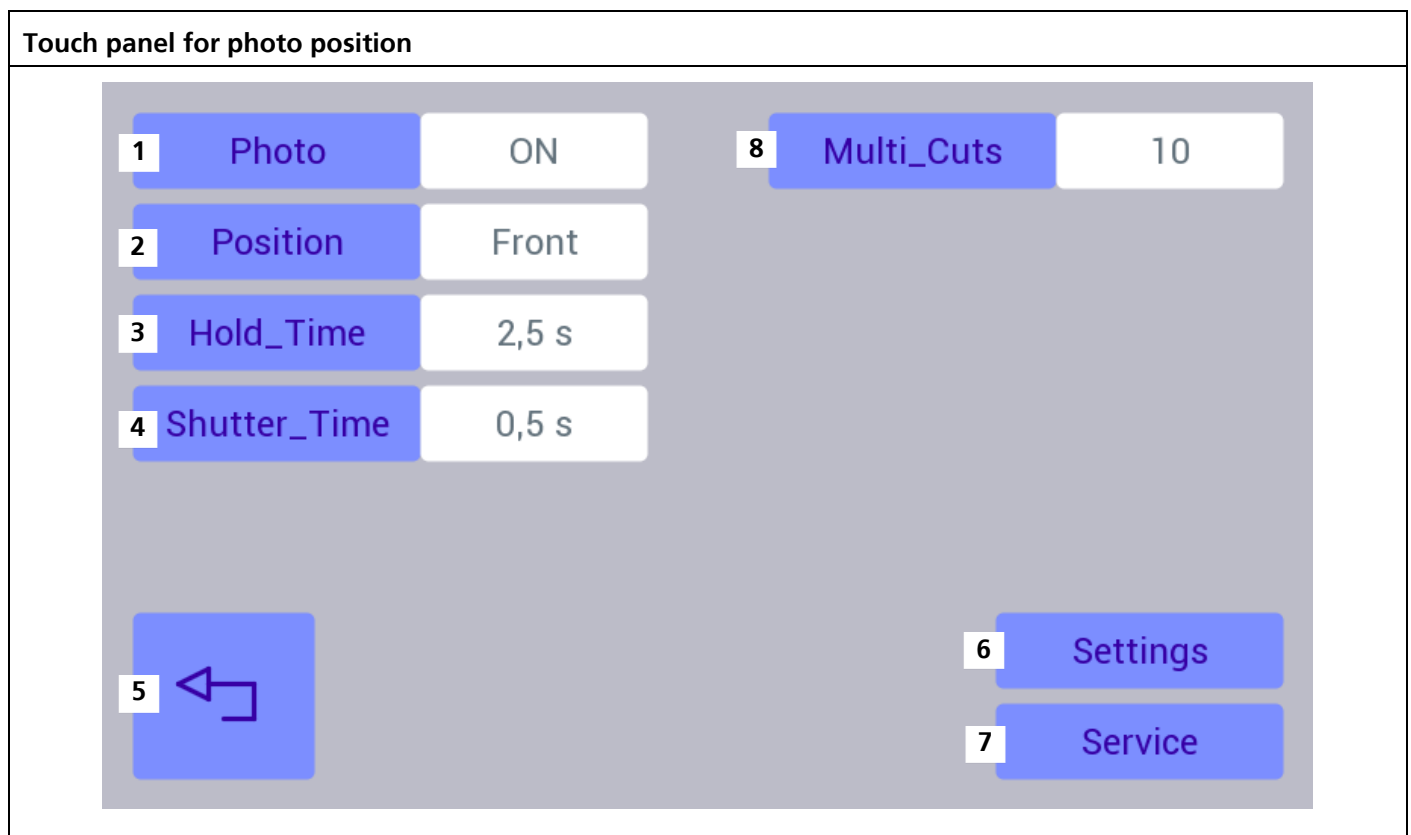
		<p><b>CONT</b> (CONTINUOUS): If this mode is activated, the microtome will do endless sections until you press the STOP icon. Please note: The microtome will fulfill the last movement and then stop. Pressing stop does not lead to an immediate stop.</p> <p><b>INTERV</b> (INTERVAL): The sledge moves as long as the START button is being pressed. When you release the button it instantly stops. The footswitch works in the same way.</p> <p><b>MULTI</b> (MULTIMODE): Set a specified number of sections to be completed before the microtome stops. Find the settings in the first submenu.</p>
7	FEED	Choose the sectioning thickness feed from values of 1µm to 999 µm in 1-µm-steps. Use the upper turnbutton to change the values. The set values are automatically adopted.
8	RETRACTION	<p>Set the distance of retraction. After sectioning the knife holder will perform an upward movement to not touch the sample on the sledge's way back to the front position.</p> <p>This is very important if you operate with hard materials or specimen that easily burst out. They could harm the knives when they strike them on the return movement. Give it a value of 50 and the overall operation is still quick and save. Give it a value of 100 when you operate with tungsten carbide knives and have critical specimen in addition. RETRACTION mode will automatically return to FEED within two seconds. The set values are automatically adopted.</p>
9	INFO	Displays the remaining travel distance of your sectioning stroke.
10	RESET VALUE	Reset the value.
11	CUTTING SPEED	Set the values for speed by the corresponding lower turnbutton. The speed can be changed even while sectioning.
12	RETURN SPEED	Change the return speed of the sledge after each section with the turnbutton. Press the button and change the speed value within two seconds. The set values are automatically adopted.
13	PHOTO POSITION	Indicates if a photo position is set either on the front or the rear position.

## 8.6 START, PAUSE, STOP BUTTON

	Name	Function
	START	When double-clicking on START, all automatic modes can be started. The button is illuminated GREEN when it is active.
	PAUSE	When you press PAUSE within an active sectioning process, the process will stop immediately and the button turns YELLOW. To restart the mode press either 2 x PAUSE or 2 x START.
	STOP	When you press STOP, the RED LIGHT of the button will turn on, indicating that the active mode will be ended as soon as possible. The movement will not be interrupted immediately, but finish the stroke once begun. The light will stay active until you start another program.

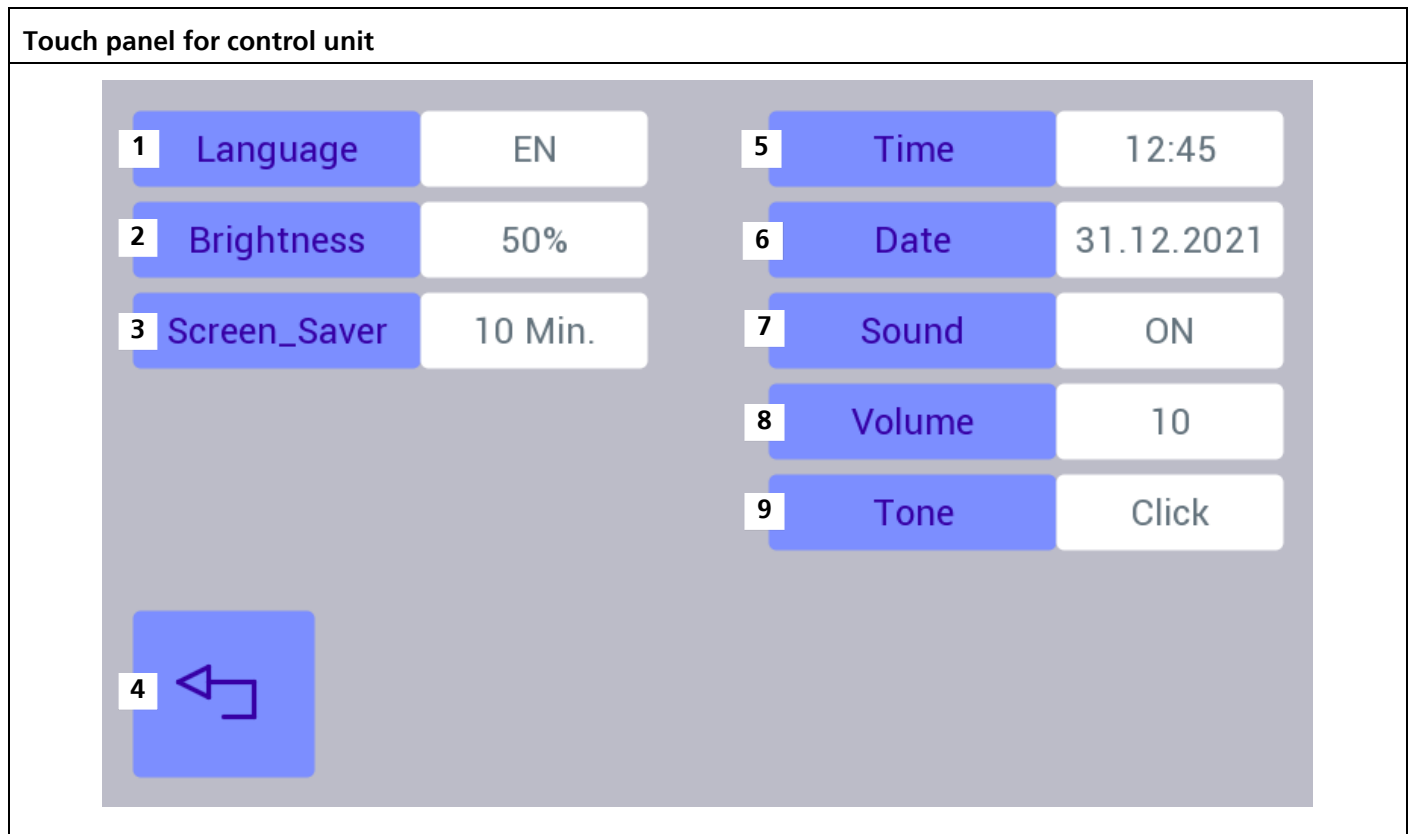
## 8.7 USING THE PHOTO POSITION

It is possible to set-up a photo position on the device. Every time the sledge reaches a defined position you can trigger a camera to take a photo. Enter the submenu.



#	Name	Function
1	ON / OFF	Press button to activate / deactivate the feature.
2	Position	Choose the FRONT or the REAR position.
3	Hold_Time	Choose the hold-time in seconds at the position to take the picture.
4	Shutter_Time	Choose the length of the shutter time for the camera.
5	Return	Return to the main menu.
6	Settings	Go down to the standard settings of the control box.
7	Service	Enter the service menu (only applies to Slee service technicians).
8	Multi_Cuts	Enter the setting for the multi section mode.

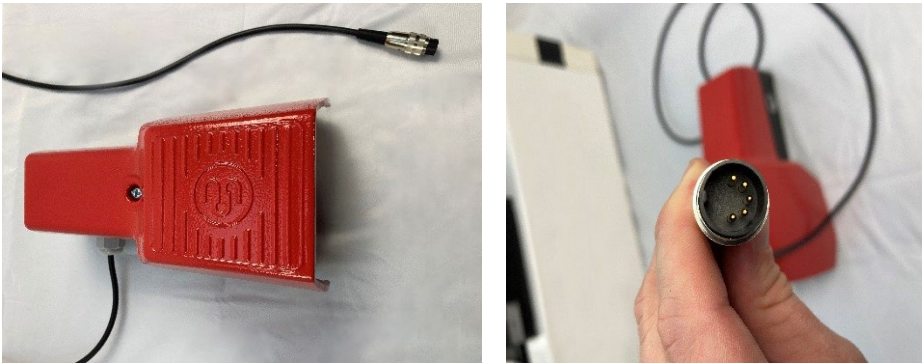
## 8.8 STANDARD SETTINGS FOR THE CONTROL UNIT



#	Name	Function
1	Language	Set the language (ENGLISH / GERMAN).
2	Brightness	Set the brightness of the touchscreens.
3	Screen_Saver	Set the time for the screen saver (darkens the screens).
4	Return	Return to previous level.
5	Time	Set the time.
6	Date	Set the date.
7	Sound	ON / OFF
8	Volume	Set the volume of the device.
9	Tone	Select a sound.

## 8.9 DESCRIPTION OF EACH INDIVIDUAL CONTROL ELEMENT

### 8.9.1 FOOT SWITCH



The foot switch has two different functions:

#### 1. Start / Stop sectioning:

The foot switch can be used as an alternative to the buttons on the touchscreen:

- To start, lightly press the foot switch.
- To stop, lightly press the foot switch again.
- For the interval sectioning mode keep it lightly pressed as long as you want to section.

#### 2. Emergency stop:

You can use the foot switch for an emergency stop like the emergency stop button on the control panel.

- Press the foot switch down once, forcefully.
- Emergency stop is activated.
- To unlock the emergency stop, press “UNLOCK” in the pop-up window on the control unit.

#### Connecting the foot switch with the device:

Make sure the cable is mounted correctly on the back of the control unit.

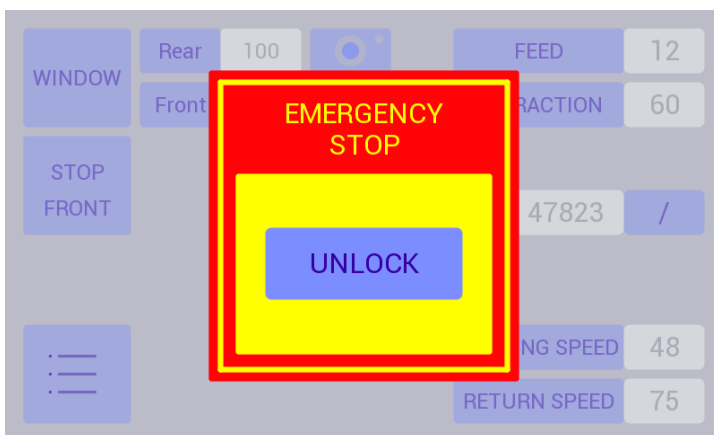
This device needs no dongle. It works with or without a connected foot switch.

## 8.9.2 EMERGENCY STOP



By pressing the emergency stop button you immediately freeze all moving parts of the device. Hit the button to activate the emergency stop to prevent any dangerous situation.

When the dangerous situation is averted turn the knob into the direction of the arrows until it unlocks and pops out again.



A digital warning also pops up at the touchscreen. The device turns back to operating mode when you press "UNLOCK".



## 8.10 MOUNTING THE ACCESSORIES

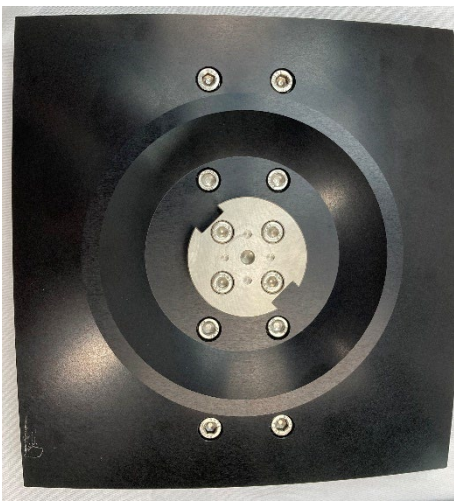
To switch the device on, use the main switch at the backside of the unit.  
The display lights up and the device will ask for a reference drive.



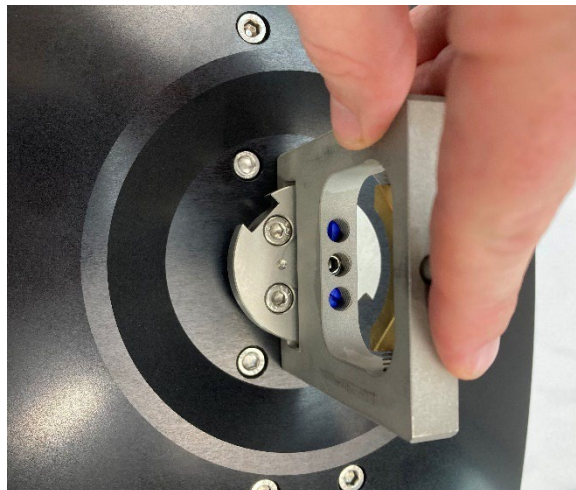
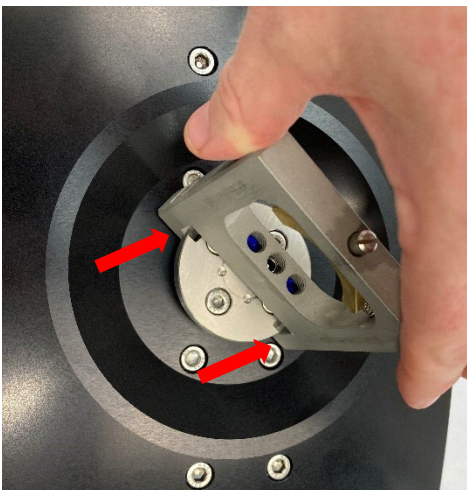
Always clamp your specimen first before you clamp the knife!

### 8.10.1 MOUNTING THE BASE PLATE

Put the base plate upside down so you can see locking system.

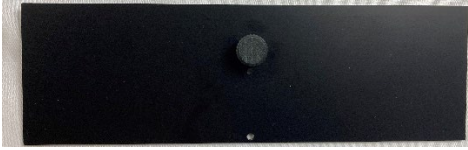


Put the tension bracket in the two cutouts and push it down slightly. Then turn it with slight pressure around 45° until it clicks and locks.

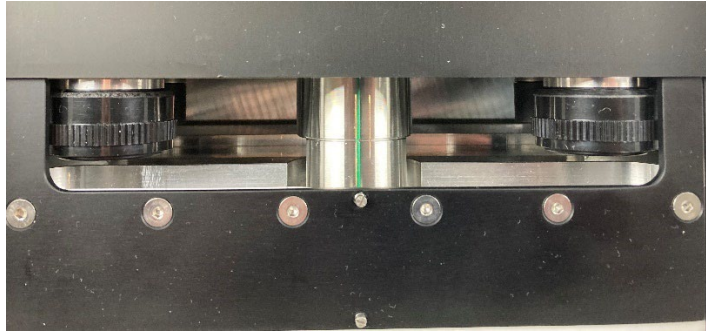


### 8.10.2 MOUNTING THE BASE PLATE ON THE SLEDGE.

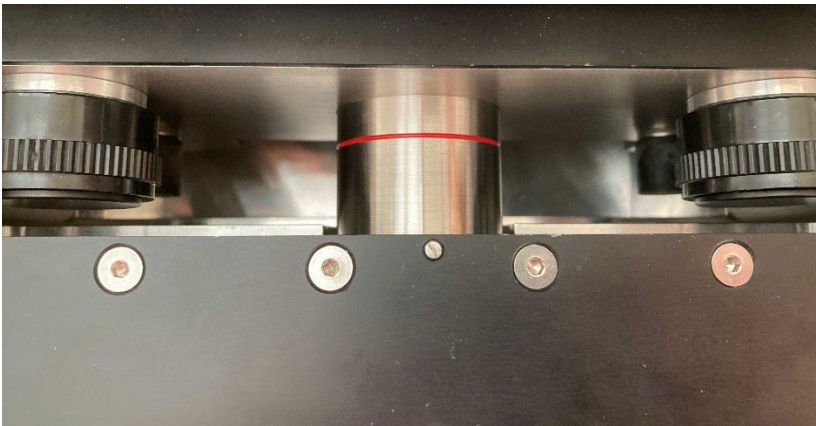
The sledge must be positioned at the front end. First remove the dust protection plate to access the interior of the x / y orienting system. You then have access to the excenter bolt clamping the baseplate firmly to the sledge.

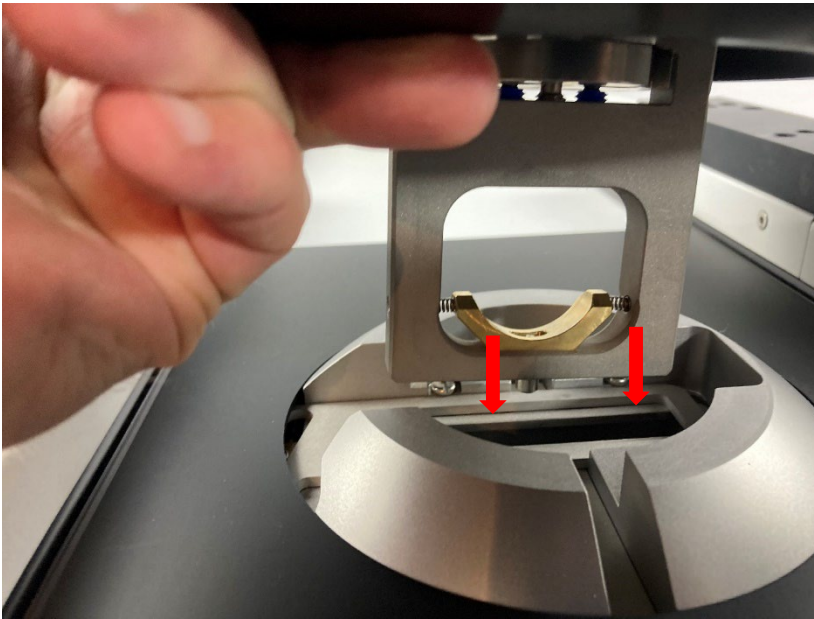


Now you can see the interior through the opening.



Loosen the bolt with the torque wrench counterclockwise so you can easily move it by hand. Turn the bolt further counterclockwise until the red line on the bolt is up. Then put it with your hands towards you until you see the RED ring. The gap should be completely free now. Carefully put the baseplate with the tension bracket into the hole until you feel it is sitting on the sledge. It should fit in precisely.



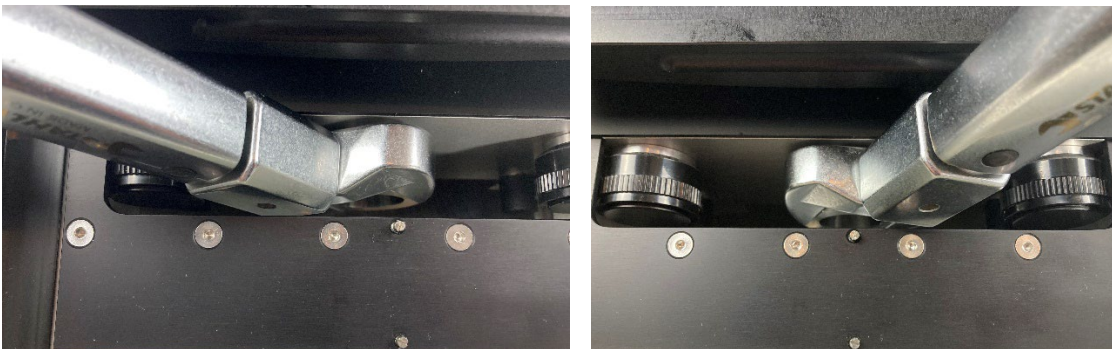


Shift the bolt with the red line up deep into the sledge to meet the tension bracket.

Turn the excenter bolt with your hands clockwise until stop. Now the green line should be visible. Then put on the torque wrench and pull it clockwise until it clicks to tighten the system.

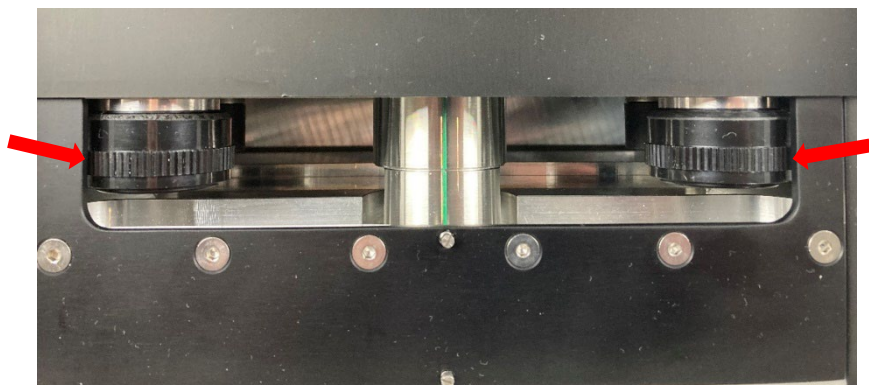
Now the green line should be visible in the upper position.

Do not overturn it in order to not damage the excenter!



### 8.10.3 X / Y ORIENTATION OF THE BASE PLATE

To orientate the base plate, the bolt must be loosened again with the torque wrench. You can then tilt the base plate in all directions with the two black knobs. For work and sectioning the bolt **MUST** be tightened again.





LEFT ----- RIGHT  
for x axis

H ----- V  
for y axis

### 8.10.4 THE EXCENTER RING FOR WORK WITH VERY HARD SPECIMEN

For very hard and demanding specimen it is useful to add an optional excenter ring to the system for additional stability while sectioning.

**With this optional feature the x / y orientation is no more available and blocked and any attempt to use it can harm the system! The blocking makes sure that the sectioning area is not altered!**

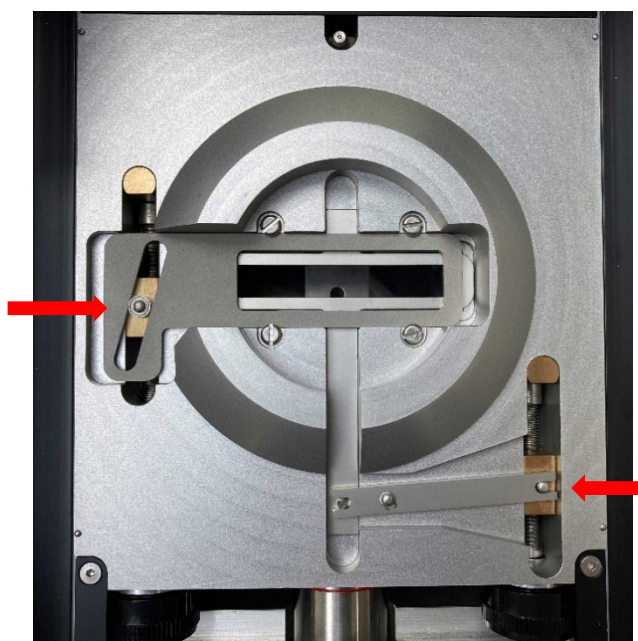
Top view of the ring inserted from above:	
Bottom view of the ring:	

Remove the base plate until you see the black protection lid. Lift it up and put it aside.



Now you can see the x / y orientation system. For inserting the excenter ring, the x position must be in a 0-axis position and the y position must be in a 0 position as well.

This is achieved when the guiding pins are in the middle of their rail at about where the red arrows show.

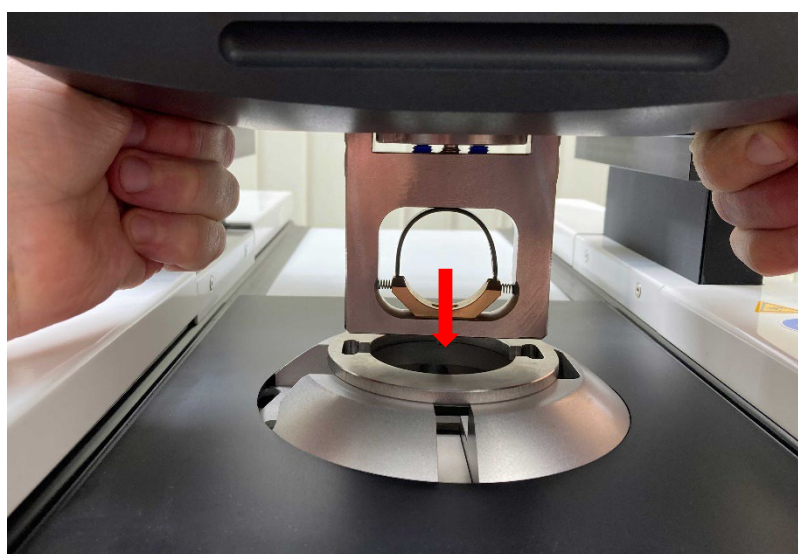


Put the black lid back.

Insert the excenter ring like shown in the picture with its top side in place.

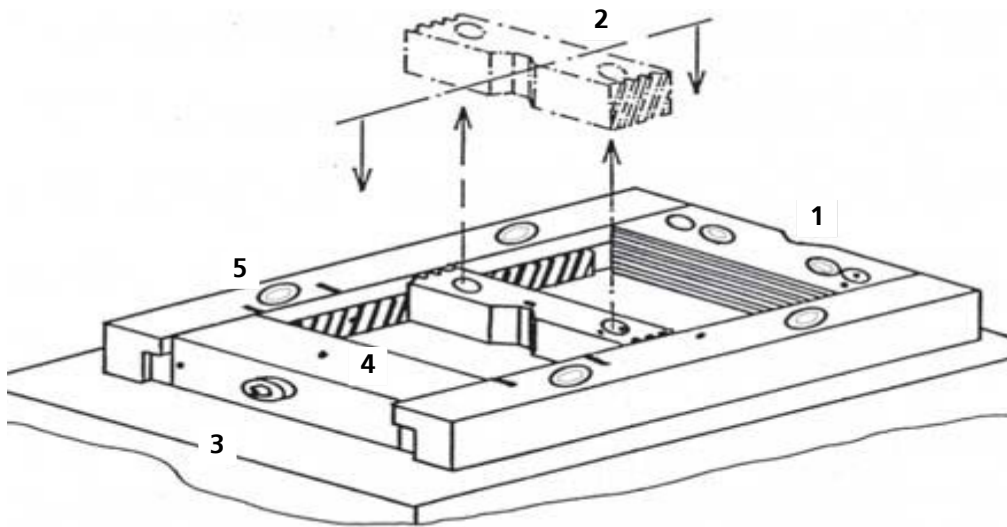
The cut outs must be horizontally aligned. Now you can drop the base plate carefully into the sledge.

Proceed to put the bolt back in place (c.f. MOUNTING THE BASE PLATE) and fix everything.



### 8.10.5 CLAMPING SPECIMENS OR SPECIMEN STAGES IN THE BASE PLATE WITH VISE CLAMP

In the base plate with vise, you can either directly clamp specimen blocks or specimen stages holding specimen embeddings.



### 8.10.6 CLAMPING SQUARE SPECIMEN BLOCKS

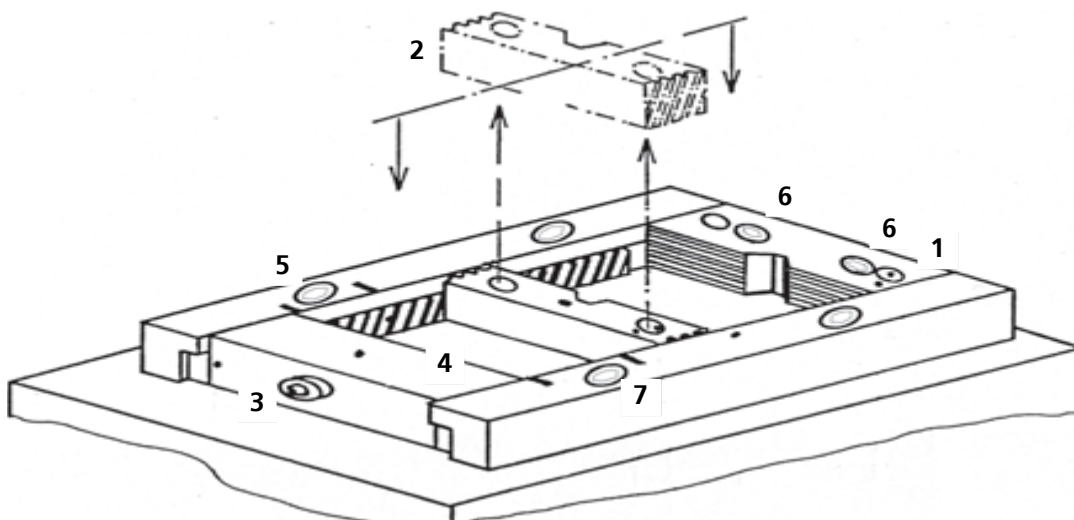
The vise is equipped with two clamping jaws: a fixed jaw (1) and a movable jaw (2). Both have a V-notch on one side.

- The fixed jaw (1) remains in its standard position (V-notch facing outwards, away from the specimen).
- Insert the movable jaw (2) in an appropriate position for the specimen size to be clamped, also with the V-notch facing outwards (away from the specimen).
- Insert the specimen block.
- Tighten the movable clamping jaw with clamping screw (3), using an Allen key.




**Important** - for square as well as for cylindrical specimen blocks:

When the specimen block is tightly clamped, the front edge of block (4) must not have moved beyond the two lateral markings (5).



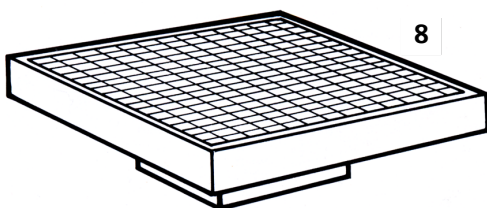
### 8.10.7 CLAMPING CYLINDER-SHAPED SPECIMEN BLOCKS

Remove screws (6) holding the fixed clamping jaw (1). Turn the jaw and re-insert with the V-notch facing inwards, towards the specimen. Re-insert and tighten screws (6) of clamping jaw (1). Insert the movable jaw (2) in an appropriate position for the specimen size to be clamped and with the V-notch facing inwards (towards the specimen). Tighten the movable jaw with clamping screw (3).

	<p><b>Important</b> - for square as well as for cylindrical specimen blocks:</p> <p>When the specimen block is tightly clamped, the front edge of block (4) must not have moved beyond the two lateral markings (5).</p>
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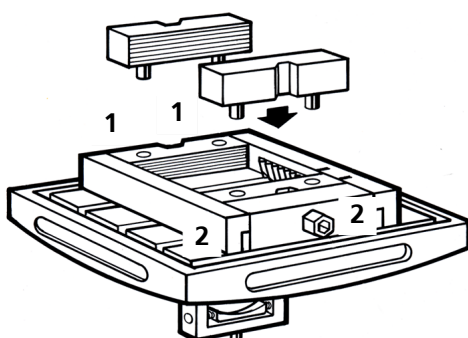
### 8.10.8 CLAMPING SPECIMEN STAGES

The fixed clamping jaw (1) remains in standard position (V-notch facing outwards, away from the specimen stage). All specimen stages have identical clamping block sizes and are clamped as follows: Insert the movable jaw (2) with its front edge (the edge facing the specimen), flush with marking (7). Insert the specimen stage (8). Tighten the clamping screw on the movable jaw (3).

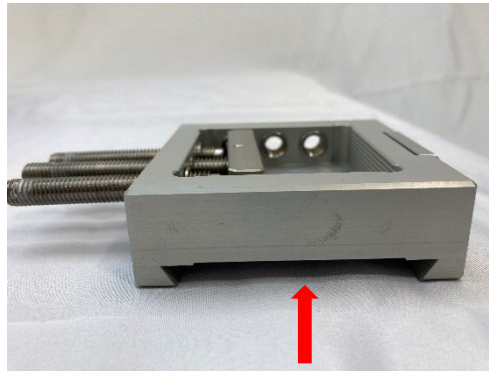
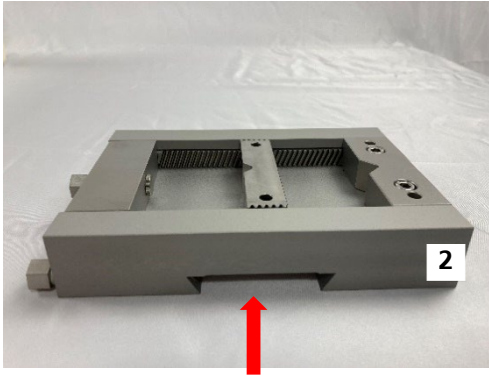


### 8.10.9 MOUNTABLE JAWS FOR VISE

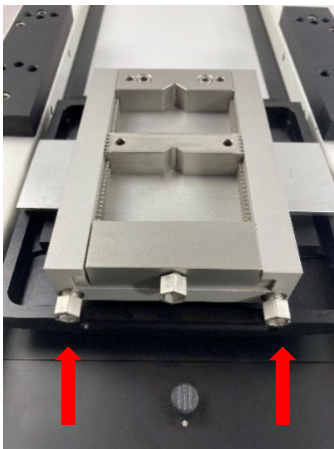
For sectioning very high specimen, there are two mountable jaws available, which can be inserted into boreholes (1) and (2).



### 8.10.10 MOUNTING SPECIMEN HOLDERS ONTO THE BASE PLATE WITH DOVETAIL GUIDE

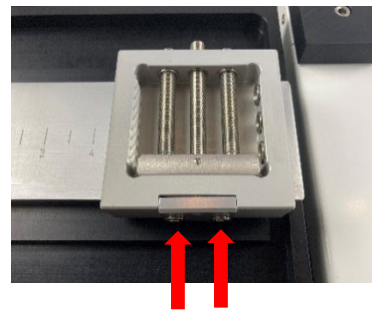
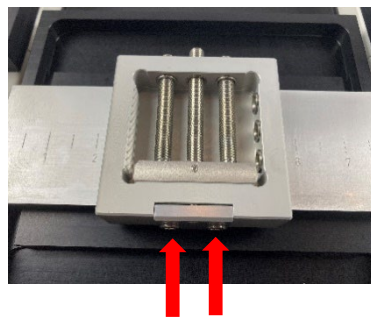
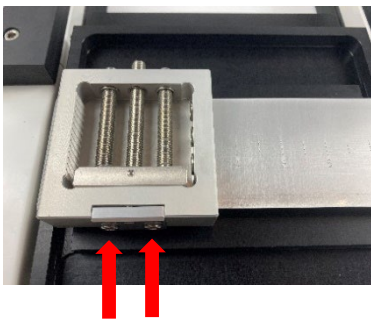


All of the basic object holders have guidelines for dovetails. Like this you can use the full width of your knives with all applications.



To fix the object plate at any place on the lateral movement, tighten both Allen key screws.




To mount the 80 x 100 vise, you need to remove the basic plate from the device. Otherwise, the vise would collide laterally with the bearing plates.



To fix the object plate at any place on the lateral movement tighten both Allen key screws.



### 8.10.11 MOUNTING THE KNIFE HOLDERS

	<p>Handle microtome knives and blades with utmost care. Knife and blade edges are extremely sharp and can cause severe injuries!</p> <p>Wear cut-resistant safety gloves when inserting / removing the knife!</p>
	<p>Never leave knives / disposable blades or knife holders with a knife / disposable blade inserted lying around!</p> <p>Always store knives in the knife case when not in use!</p>
	<p>Never place a knife on a bench with the edge facing upwards!</p> <p>Never try to catch a falling knife or disposable blade!</p> <p>Always clamp the specimen first and the knife second!</p>

### 8.10.12 INSERTING KNIVES INTO THE HOLDERS

#### Knife holder KH-P or KH-A:

Clamp the blades with the marking (if present) facing upwards. If in doubt, the wedge angle must point towards the sample.

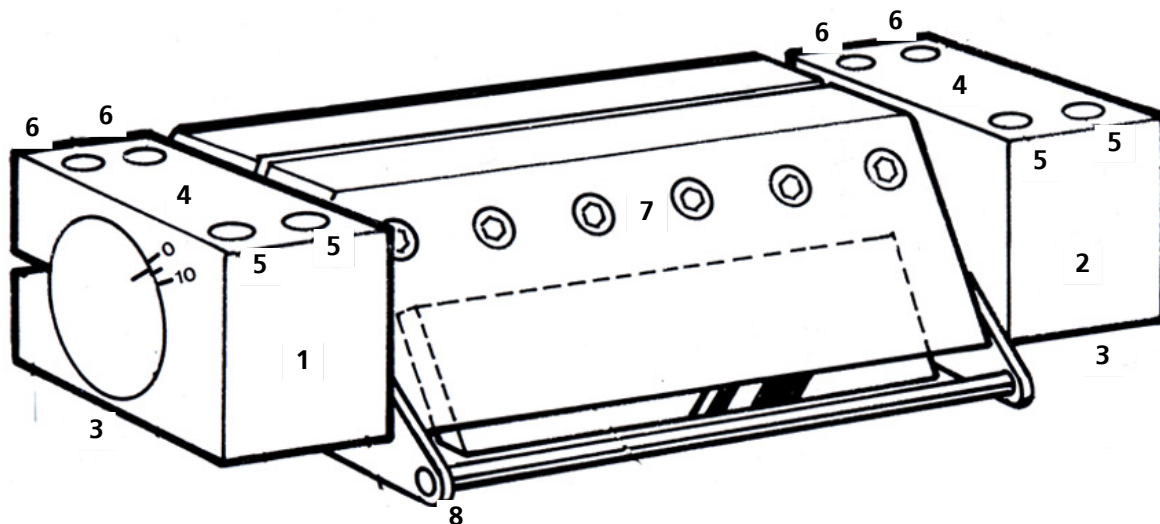
#### Knife holder KH-S or KH-B:

C-profile knives may be clamped with either surface facing upwards.

D-profile knives must be clamped with the facet pointing backwards inserting the knife, pointing away from the specimen once the knife has been turned into sectioning position.

### 8.10.13 MOUNTING KNIFE HOLDER KH-P OR KH-A

Knife holder KH-P / KH-A consists of 3 components: Two clamping blocks that hold the knife holder on the microtome bearing blocks, and the knife holder itself. Preassemble the three components prior to mounting them onto the microtome: Slide the clamping blocks (1, 2) onto the pins (3) of the knife holder. Block (1), bearing the clearance angle scale, must be located on the left, block (2) on the right. The slot in each clamping block must point backwards. Secure the knife holder with slotted screw (4). The slot in each clamping block must point backwards. Secure the knife holder with slotted screw (4).

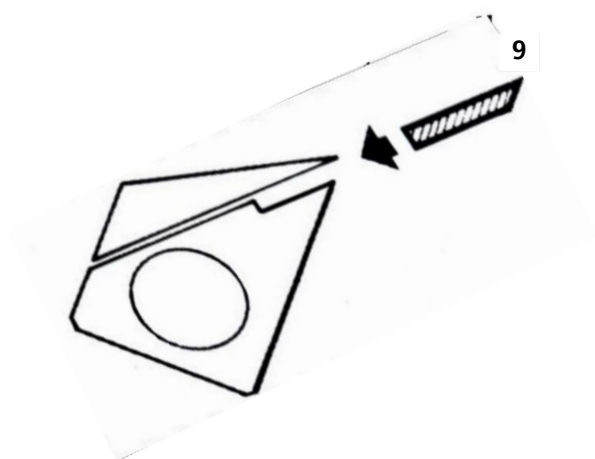


The bearing blocks of the microtome supporting the knife holder must be clean. Clean them if necessary. Place the preassembled knife holder onto the bearing blocks from above. Do not slide the knife holder onto the bearing blocks to prevent the bearing surface from getting scratched.

Place the knife holder onto the bearing blocks. The pin on the bottom side of each clamping block must fit into the bore-hole in each bearing block. The knife holder is secured with a total of 8 clamping screws. Each clamping block is held down by two front (5) and two rear screws (6). Lightly tighten all 8 clamping screws (tighten them alternately to prevent misalignment). Next, the 4 rear screws (6) have to be loosened again.



Tightening all 8 screws first, followed by releasing the 4 rear screws, is important to prevent the knife holder from being misaligned!



To insert the knife, turn the knife holder upwards into the correct position. If the knife holder cannot be turned it has been misaligned. In that case, loosen all 8 clamping screws and retighten as described previously.

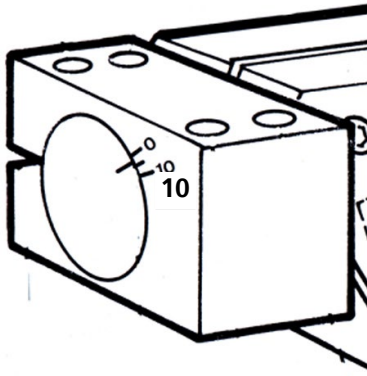
Retighten at least one of the 4 rear clamping screws (6) to secure the knife holder in its position.

	<p>Prior to inserting the knife, always tighten one of the rear clamping screws to secure the knife holder in its position!</p>
	<p>Wear cut-resistant safety gloves!</p>

Insert the knife: The knife back (base of knife) must fit against the bearing surface inside the knife holder. The wedge angle (9) must point downwards. Tighten the 6 knife clamping screws (7) starting with the center screws and working your way outwards and from side to side to prevent any misalignment on the knife. When clamping a short knife, only tighten as many screws as the knife is actually wide.

	<p>Make sure not to misalign the knife when tightening the knife clamping screws (7) as this will negatively affect sectioning results!</p>
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Place the knife guard over the knife edge.

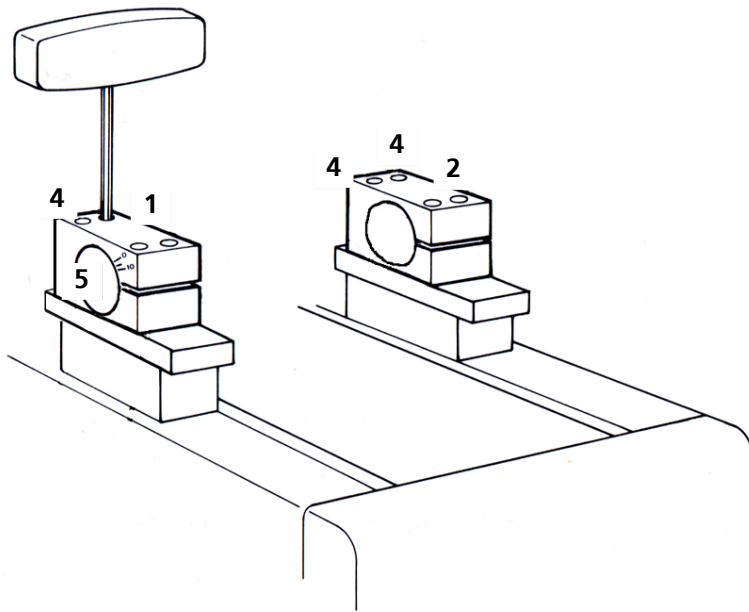


Loosen the rear clamping screws (6). Turn the knife holder into the desired clearance angle position. Hold the knife holder in that position and retighten the 4 rear clamping screws (6) to secure the set clearance angle. Let go of the knife holder and tighten all remaining clamping screws (6) alternately.



Setting „0“ on the clearance angle scale (10) corresponds to an actual clearance angle of 5°. Each scale graduation corresponds to an angle increment of 2°.

### 8.10.14 MOUNTING KNIFE HOLDER KH-S OR KH-B



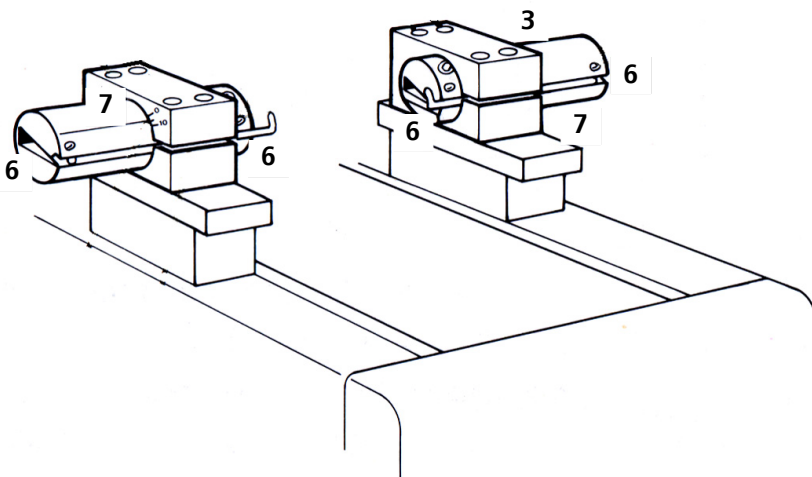
Knife holder KS-S / KS-B consists of four components: 2 cylindrical holders (3) with integrated knife guards and 2 clamping blocks (1, 2) fixing the knife holder to the microtome.



The bearing blocks of the microtome supporting the knife holder must be clean. Clean them if necessary. Place the preassembled knife holder onto the bearing blocks from above. Do not slide the knife holder onto the bearing blocks to prevent the bearing surface from getting scratched.


Mount the two clamping blocks onto the bearing blocks of the microtome. The slot in each of the two clamping blocks must point forward. The left clamping block (1) bears the clearance angle scale (5). Tighten the rear clamping screws (4) of both clamping blocks.

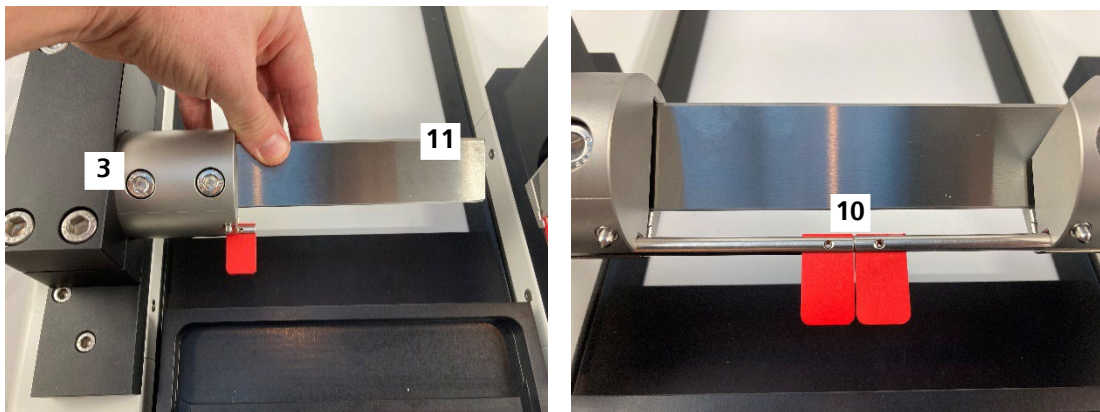
Each cylindrical holder is equipped with two locking pins (6) to prevent the cylindrical holders from sliding out of the clamping blocks. Insert the left cylindrical holder (3) into the left clamping block (1) from inside outwards until the outer locking pin (6) is released.



### 8.10.15 INSERTING KNIVES OF UP TO 22 CM LENGTH

Insert right cylindrical holder (3) into the right clamping block (2) from inside outwards until the locking pin (6) is released. Pull both cylindrical holders (3) far enough outwards so that the knife can be inserted easily from the center. Turn the clamping slots (7) upwards to the top.

	Wear cut-resistant safety gloves!
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Insert the knife (11) from the center outwards into the left cylindrical holder (3).

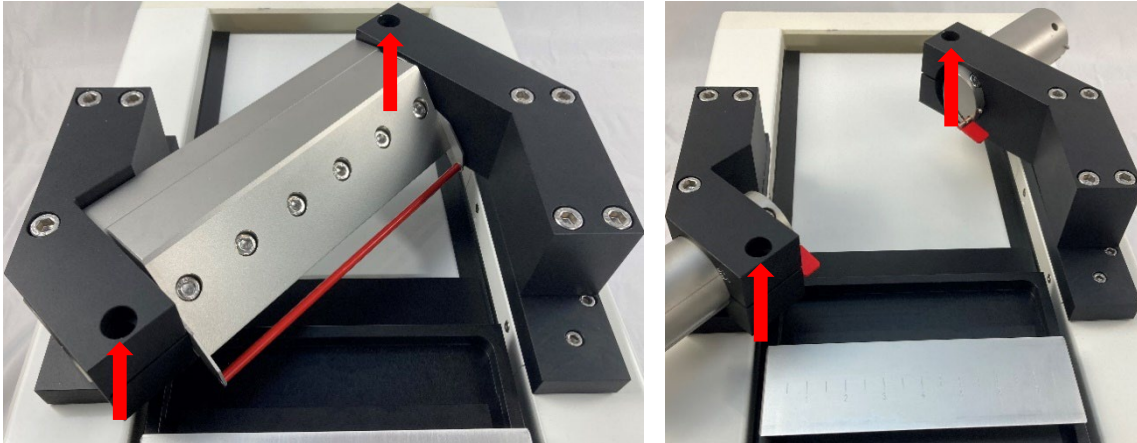
C-profile knives can be inserted either way.

D-profile knives: Facet must point backwards.

Slide the right cylindrical holder (3) over the knife. Support the back of the knife from below with one of your hands. Slide both knife guards (10) over the knife edge. Turn the knife far enough forward to be able to easily access the knife clamping screws.

Tighten knife clamping screws (9) on both sides. Release clamping screw. Select the desired clearance angle (5). Sustain the knife holder in the desired clearance angle position and tighten front clamping screws (8) alternately.

### 8.10.16 45° DECLINATION BLOCKS



The mounting of the declination blocks is the same like the setting of the knife holder KH-P / KH-A or KH-S / KH-B. Make sure they are set-up like shown in the upper pictures.



In the holes marked with the red arrows (see picture above) special screws must be placed. They must correspond with the inner threads, since only with these the knife can be tightened.

## 8.11 WORKING WITH THE DEVICE


Switch the device on with the main switch on the back, and press the start button on the front for about two seconds. After a short booting the device is ready for work.

Mount your specimen in a dedicated clamp or fix it on an object stage.

Insert a suitable knife for your specimen. Use a suitable knife angle for the knife you are using.

Until you start sectioning make sure to always use the finger protection.


With the eight movement buttons in the left touch panel, you can align your specimen close to the edge of the knife. Slow and careful working has proven to be the gold standard here.

	<p>It is recommended to always wear an eye protection. There's always a risk that small debris flings out and harms you!</p>
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Once the specimen is close enough to the knife, you can start trimming the specimen with a higher micrometer feed and do so until you receive a plane surface.

Micrometer feed and speed depend on the hardness of your specimen, its size and the kind of sectioning material!



Now you can start to section your specimen in the desired sectioning thickness.

	<p>Taking off the sections should always be done with a proper tool.</p> <p>Plastic forceps, a pencil or wooden sticks are the product of choice. Forceps made from metal can harm the knife holder and leave visible scratches. Avoid metal forceps.</p> <p>The use of fingers should be totally avoided due to safety issues!</p>
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## 8.12 SWITCHING THE DEVICE OFF

Wait for the sectioning procedure to be finished. Switch the device off with the main switch.

 	<p>Wear cut-resistant safety gloves when inserting / removing the knife.</p> <p>Always remove the knife from the knife holder when finishing work!</p> <p>Handle microtome knives and blades with utmost care.</p> <p>Knife and blade edges are extremely sharp and can cause severe injuries!</p> <p>Never leave knives / disposable blades or knife holder with a knife / disposable blade inserted lying around!</p> <p>Never place a knife on a bench with the edge facing upwards!</p> <p>Never try to catch a falling knife or disposable blade!</p> <p>Always store knives in the knife case when not in use!</p>
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## 9 TROUBLE SHOOTING

### 9.1 ERROR CODES / DEVICE / ACCESSORIES NOT WORKING

Error	Cause	Corrective action
Device not working	Connecting cables / power cord not connected / not correctly connected.	Verify if connecting cable from microtome to control unit and / or mains cable are properly connected.
	Line fuses defective.	Replace line fuses.

### 9.2 POWER FAILURE

If there is a power failure while the microtome is in motion, the microtome will stop in the position where the power failure occurred.

	<p>Once power has been restored, the device will automatically go to its initial start position.</p>
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## 10 CLEANING / DESINFECTION



Prior to any cleaning, disinfection or maintenance work, the device must be switched off and disconnected from mains!

**Exception:** Cleaning or disinfection procedures which require the sledge to be moved.

Remove both knife and specimen prior to any cleaning, disinfection or maintenance work!

Wear cut-resistant safety gloves to remove the knife.

No liquids must enter the interior of the device during cleaning, disinfection or maintenance!

Only use a slightly moistened cleaning cloth!

Disinfection only with disinfectants that allow application with a slightly moistened cloth!

Do not use solvents (e.g. Xylene, Acetone), cleaners containing solvents or scouring powders for cleaning!

Appropriate cleaners for the control unit / control panel and all painted surfaces: mild laboratory detergent (slightly moistened cloth)!

Clean the control panel only when the device is switched off.


Appropriate cleaners for non-varnished metal parts (knife holders, base plates, specimen clamps): Xylene substitutes, alcohol - apply with an only slightly moistened cleaning cloth!

Use cleaners and disinfectants according to the safety instructions of the manufacturer and in compliance with the applicable regulations in your laboratory!

Regularly check and empty the section waste. Wipe the coarse debris off the device with a pencil. The waste trays on the front and on the back of the device can be pulled off to empty them. The cover ribbon can be cleaned at the deflection roller with a pencil or a soft moistened cloth. It can be helpful to move the ribbon with the manual sledge movement via the control panel so all relevant parts are within reach.


Put only light pressure on the ribbon as it could leave the guides otherwise. If that happens put it back in place immediately. Otherwise, debris might enter the inside of the device and damage it.

## 10.1 MAINTENANCE


	<p>Only SLEE medical GmbH authorized service technicians may access the internal components of the device for service and repair!</p> <p>Prior to any cleaning, disinfection or maintenance work, the device must be switched off and disconnected from mains!</p> <p>Users may only carry out the maintenance work described in the chapter CLEANING / DISINFECTATION.</p> <p>No liquids must enter the inside of the device during cleaning, disinfection or maintenance!</p>
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## 10.2 RECOMMENDED MAINTENANCE AND SERVICE SCHEDULE

<b>Daily / after use</b>	Cleaning of the device
<b>Yearly</b>	Complete service (performed by authorized SLEE medical GmbH service technician)

	<p>Conclude a service contract once the warranty period has expired.</p>
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## 10.3 REPLACING THE FUSES

	<p>Prior to exchange any fuse, switch the device off and unplug the mains plug.</p> <p>Use only identical replacement fuses with identical technical specifications.</p>
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## 11 OPTIONAL ACCESSORIES

Product	Item-No.
Basic plate with square clamp for specimen up to 44 x 58 mm, with lateral movement option to take advantage of the complete blade of all knives.	10100005
Basic Plate with round clamp and inserts (Ø 6, 15 and 25 mm) to clamp differently round specimen, with lateral movement option to take advantage of the complete blade of all knives.	10100006
Basic Plate with vise to clamp all metal or plastic tables. The clamping of choice for rectangular specimen blocks up to 80 x 100 mm, with lateral movement option to take advantage of the complete blade of all knives, including V-inserts for big, round samples.	10100007
Excenter ring for very heavy applications (x / y orientation is terminated by this).	10100008
Round clamp and inserts (Ø 6, 15 and 25 mm) to clamp differently round specimen, with lateral movement option to take advantage of the complete blade of all knives.	10100009
Square clamp for specimen up to 44 x 58 mm, with lateral movement option to take advantage of the complete blade of all knives.	10100010
Vise to clamp all metal or plastic tables. The clamping of choice for rectangular specimen blocks up to 80 x 100 mm, with lateral movement option to take advantage of the complete blade of all knives, including V-inserts for big, round samples.	10100011
Knife holder KH-S for all standard knives (profiles B, C and D) from 16 up to 30 cm. This knife holder is required to hold the insert for disposable blades up to 22 cm	10100012
Knife holder KH-S 45 for all standard knives with 45° declination blocks for more tricky paraffin sections.	10100045
Knife holder KH-P for all parallel sided Polycut knives with angles from 40° to 60° for hard tissues. This knife holder is required to hold the insert for disposable TC blades like the TC65.	10100013
Knife holder KH-P 45 with declination blocks for long pulling cuts at 45° to section even the hardest materials.	10100046
Disposable blade insert for blades up to 22 cm (KH-S is additionally required)	10100014
Disposable blade insert for blades up to 8 cm (KH-S is additionally required)	10100015
Disposable TC blade insert for TC blades up to 8 cm (KH-P is required in addition)	10100016
One pair of declination blocks for a fix declination of 45° (suitable for knife holders KH-S, KH-P and KH-CCCD)	10100017
One pair of on top jaws for the basic clamp with vise clamp	10100018
Paraffin table, metal, 80 x 65 mm, for use with the basic clamp with vise clamp	10100019
Paraffin table, metal, 120 x 80 mm, for use with the basic clamp with vise clamp	10100020
Paraffin table, metal, 160 x 120 mm, for use with the basic clamp with vise clamp	10100021
Paraffin table, metal, 250 x 200 mm, for use with the basic clamp with vise clamp	10100022
Exchange foot switch	10100023
Tungsten carbide knife D-edge 16 cm, 40° angle (for knife holder KH-P or Leica / R-Jung knife holder A)	10100024
Tungsten carbide knife D-edge 16 cm, 50° angle (for knife holder KH-P or Leica / R-Jung knife holder A)	10100025

Disposable tungsten carbide knife 65 mm for hard sections, to be used with knife holder KH-P plus the D-TC disposable blade insert (5 blades per box)	10100026
Disposable tungsten carbide knife 80 mm for hard sections, to be used with knife holder KH-P plus the D-TC disposable blade insert (1 blade per box)	10100027
Tungsten carbide knife D-edge 16 cm, 100% TC, rotary microtome	10100028
Tungsten carbide knife C-edge 16 cm, 100% TC, rotary microtomes	10100029
Standard knife C-edge 220 mm, surgical steel	10100030
Standard knife C-edge 300 mm, surgical steel	10100031
Standard knife D-edge 160 mm, surgical steel	10100032
Standard knife D-edge 220 mm, surgical steel	10100033
Standard knife D-edge 300 mm, surgical steel	10100034
Liquid nitrogen sectioning unit including customized table or clamp depending on customers' needs with control unit, dewar, special hoses and safety equipment. The dewar has 35 l capacity depending on customized table or clamp. Operating pressure max. 300 mbar. Temperatures down to -170 °C are possible (ambient temperature of 15 - 20° C is optimal for the working system, excessive humidity should be avoided).	10100035
Customized cryo unit: <ul style="list-style-type: none"> <li>• Cryo stage 38 x 38 mm with connectors and cables</li> <li>• Dual temperature controller, settable cooling temperature from RT down to max. -40 °C</li> <li>• Nominal voltage: 100 through 240 V</li> <li>• Pump &amp; tank unit, floor stand (empty 10 kg) to fill with 28 l of fluid</li> </ul>	10100036
Complete special tool set for service in suitcase	10100044
Ergosit laboratory chair	Upon request

## 11.1 RESHARPENING SERVICES

We also offer knife sharpening services:

Product	Item-No.
Tungsten carbide knife D-edge 16 cm, 40° angle	10100037
Tungsten carbide knife D-edge 16 cm, 50° angle	10100038
Tungsten carbide knife D-edge 16 cm, 60° angle	10100039
Tungsten carbide knife D-edge 16 cm, CC-edge grinding	10100040
Tungsten carbide knife D-edge 16 cm, CD-edge grinding	10100041
Tungsten carbide knife D-edge 16 cm, rotary microtome	10100042
Tungsten carbide knife C-edge 16 cm, rotary microtome	10100043

## 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 packing, 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.



Special attention should be paid to the lithium cell of the electronic circuit board!

**Notes**



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