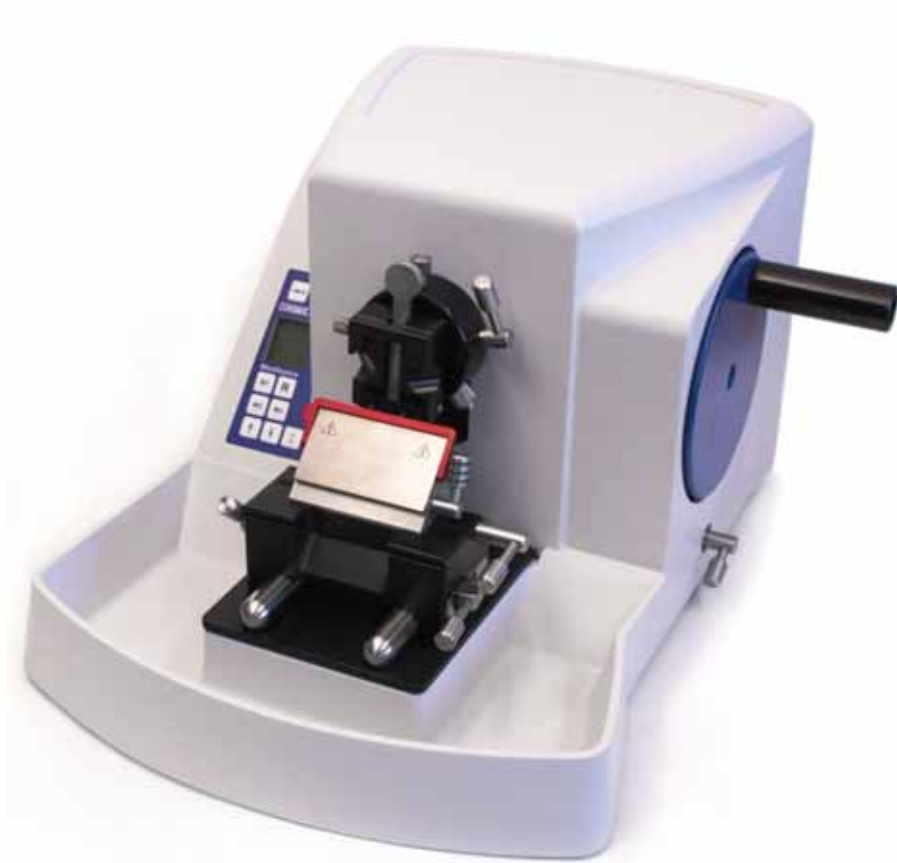


Rotary Microtome Meditome M 530



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Rev. 02 (2010-05-06) Manual_M530_Rev02.doc

Konformitätserklärung

Certificate of Conformity

Attestation de Conformité



Type of instrument: Rotary Microtome

Model: Meditome M 530

Serial No.:

We do hereby certify that the above mentioned product meets the requirements set forth in the CE Guidelines indicated below including all changes and addendums to date thereto. The above mentioned product has been controlled by an authorized test center and meets the following standards and guidelines:

- Richtlinie 2006/42/EWG Maschinen
- Richtlinie 89/336/EWG EMV
- Richtlinie 2006/95/EWG Niederspannung
- DIN EN ISO 9001
- VDE 701

Burgdorf, 20.05.2007

M. Ott – Managing Director



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1. Safety

1.1 Introduction

By purchasing this Meditome, you decided for a quality product of MEDITE GmbH, Germany. Intention of this manual is to help you working with your unit. Please read it carefully and completely and follow its advices.

1.2 Used Symbols



This symbol warns you of risks for the life or health of persons. Pay attention!



This symbol warns you of risks for machine, material or environment. Pay attention!



This symbol stands for areas of information. Pay attention!

1.3 Intended Use

The Meditome is a highly efficient multi-purpose microtome which can be used for any tasks in paraffin, hard- and thin-sectioning techniques in biology, medicine, industry and research.

A use in food industries and similar facilities is strictly prohibited.
Arbitrary rebuilding or changing of this laboratory instrument is strictly prohibited due to safety reasons. Use only original MEDITE spare parts in case of replacement issues.

Operation, maintenance or service conditions mentioned in this manual have to be strictly observed.

1.4 Sources Of Danger



RISK OF INJURY

When adjusting the specimen and the knife, the finger protection should be used to decrease the risk of injury at the blade.

If possible, the specimen should be inserted before the knife is clamped into the knife carrier. Always remove the knife or the blade when changing the knife carrier.

A knife not being used should always be kept in the knife case!

Never try to catch a dropping knife!

Never check the sharpness of the Meditome knife with your fingers!

The blade is extremely sharp! Be careful with cutting and removing sections!

1.5 Authorized User / Operator



Users working with the Meditome 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 make this instruction manual available to the users and to make sure, the users have read and understood it.

1.6 Safety Instructions On Installation Site



The Meditome M530 has to be installed only on a stable, even and solid basis to be sure, it stands and works safely. A falling instrument means a big accident risk!
Violation of the technical regulations of use of the Meditome or improper substitution means exclusion from any warranty for defects!

1.7 Safety Equipment

The Meditome M530 offers a protective bar, which can be flapped up to secure the area of the knife. The handwheel brake – if activated – keeps the handwheel in its position. You should always activate these two safety precautions, when the Meditome is not in use.

1.8 Case Of Emergency

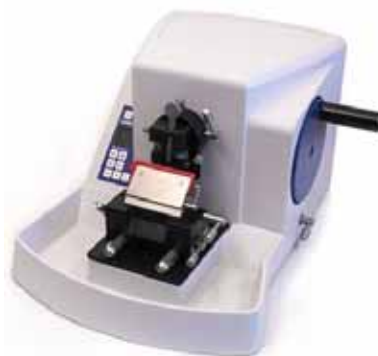
In case of injuries due to a cut by the knife, directly start first aid actions and inform your local medical emergency service! Follow your local first aid regulations for such situations!

2. Transport / Installation

2.1 Technical Data

Meditome M530:

| | |
|------------------------------|----------------------------|
| Power supply: | 110...240 VAC / 50...60 Hz |
| Section thickness: | 1 - 99 μ m |
| Section resolution: | 1 μ m |
| Trimming thickness: | 5 - 500 μ m |
| Trimming resolution: | 5 μ m |
| Width: | 377 mm |
| Depth: | 530 mm |
| Height: | 281 mm |
| Weight: | 26 Kg |
| Storage temperature: | -20°C up to +50°C |
| Operating conditions: | +5°C up to +40°C |



2.2 Transport / Storage

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



**Remove the section waste tray when transporting or lifting the Meditome because it will get loose during carriage!
It can be removed from the unit by pulling it to the front.
Read 2.4 carefully!**

2.3 Unpacking

Put the machine on a flat and stable surface 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 standard equipment of the Meditome contains:

- 1 power cable**
- 1 instruction manual**
- 1 section waste tray**
- 1 dust cover**
- 1 tool kit (allen key)**

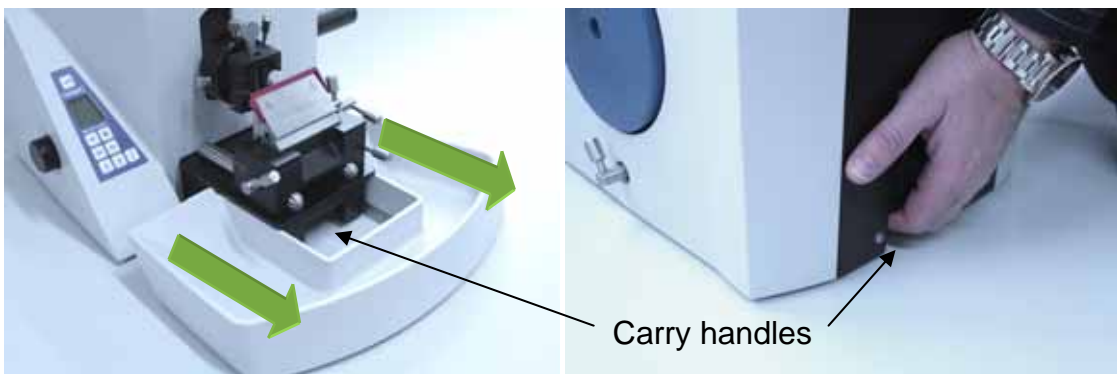
2.4 Setup And Connection



When unpacking, carrying or moving the Meditome use the recessed handles, which are positioned at the front and at the back underneath the unit.

- Do never use the object holder or the handwheel as handle for carrying!
- Do never use the knife holder or the section waste tray as handle for carrying!
- Remove the knife holder and the section waste tray!

Remove the section waste tray by pulling it to the front and the knife holder by unlocking it and also pulling it away to the front. (3.5.2)





Before initially switching on the Meditome M530, leave the unit on the designated workspace for at least 2 hours or more, to adjust to room temperature.
To ensure a faultless function, the microtome has to be placed on a stable and vibration-free table.



For detailed information ask your local MEDITE sales representative.

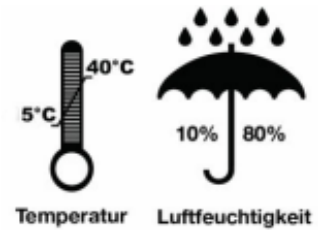


Before connecting the instrument to the power supply, make sure the unit is adequate to your local electrical power line. The unit is delivered "ready to start". For the connection to your laboratory power supply use the supplied power cord and a socket with an intact ground wire.
Do not put or store inflammable things nearby the Meditome.

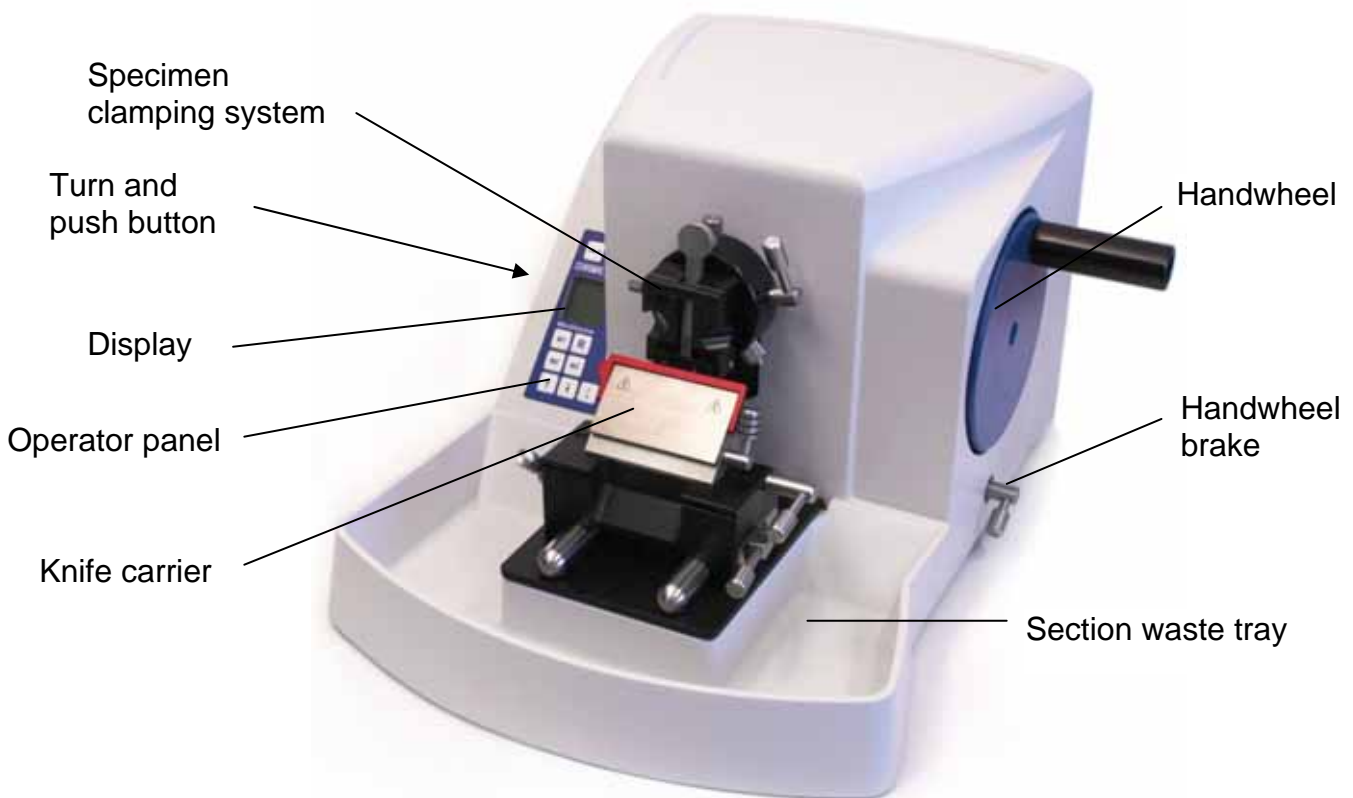


2.5 Operating Conditions

- Operating of the Meditome M530 is only intended within closed premises
- Field temperatures may differ from + 5°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 assumed
- Relative air humidity max. 80%, not condensing for temperatures up to 31°C, Linearly decreasing to 50% relative humidity at 40°C
- No variations of electrical power supply more than to 10%



2.6 Functional Components



3. Operation / Before Operation

3.1 Switching On The Unit

Press the power switch on the back panel of the unit.

When switching the unit on the specimen clamp moves to the reference position. This is repeated every time the unit is switched on so that a high accuracy of positioning is guaranteed. As soon as the reference position is found, the display shows the data and setting parameter required for operation.



3.2 Cutting Process And Handwheel

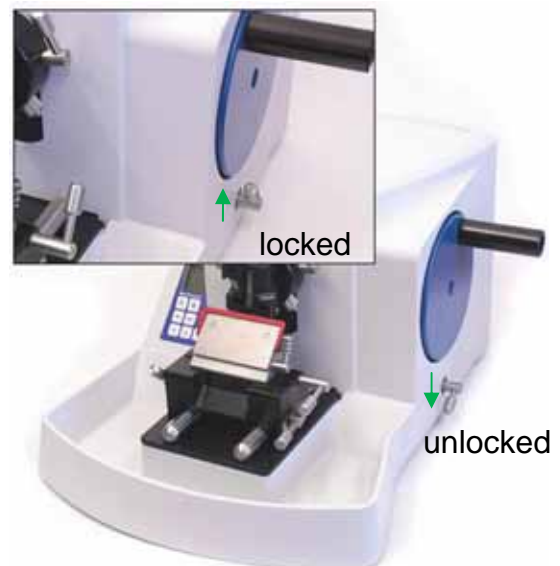
The handwheel is integrated in the casing. The position of the handwheel handle corresponds to the respective vertical position of the specimen.

The cutting stroke of the microtome is produced by turning the handwheel. The section is done by the downward movement of the specimen which is positioned in the object clamp. Continuing to turn the wheel results in the upward and return movement of the object. During this return movement the specimen is retracted to protect the knife and the specimen.

During retraction the display shows the symbol “!” .
If required, the retraction (3.3.3) can be switched off.

It is possible to block the handwheel by using the brake, so that it cannot be turned any longer.

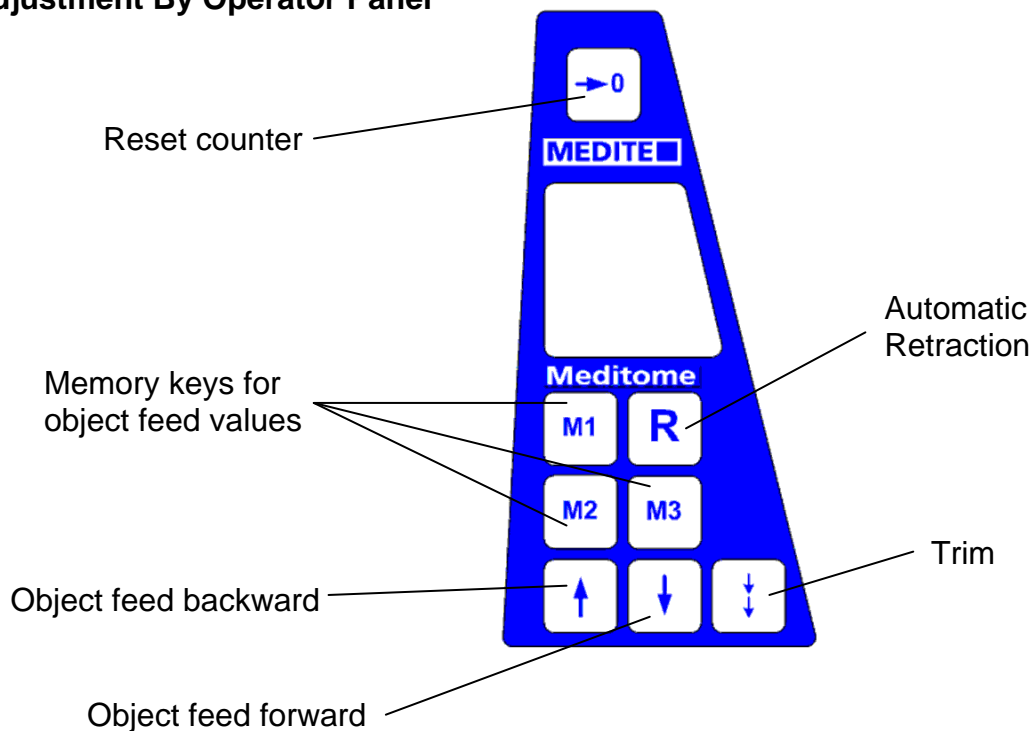
To lock the wheel the brake lever has to be turned up, and turned down to loosen it.



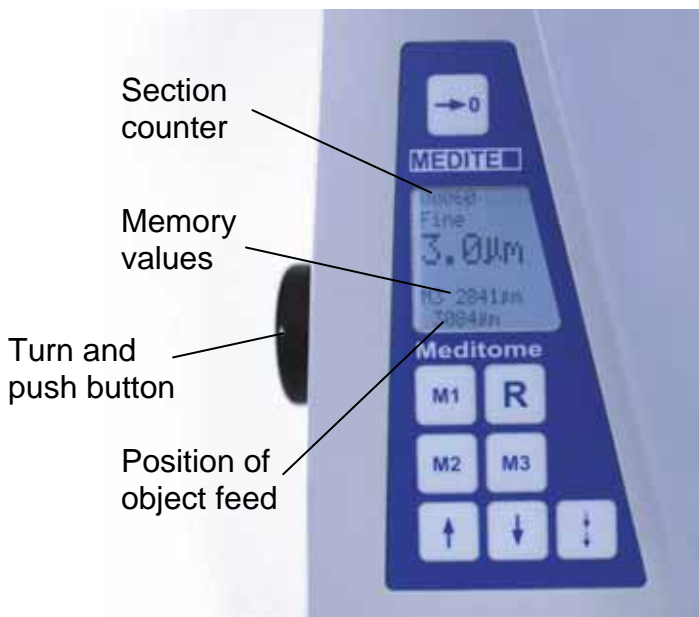
RISK OF INJURY

For safety reasons the handwheel always has to be locked during transport or change of objects.

3.3 Adjustment By Operator Panel



3.3.1 Section Counter And Object Feed Position



The following information is shown on the Meditome display:

With every cut movement of the object clamp one step is added on the section counter.

By pushing the "Reset counter" key above the display, the counter is set to "0" again.

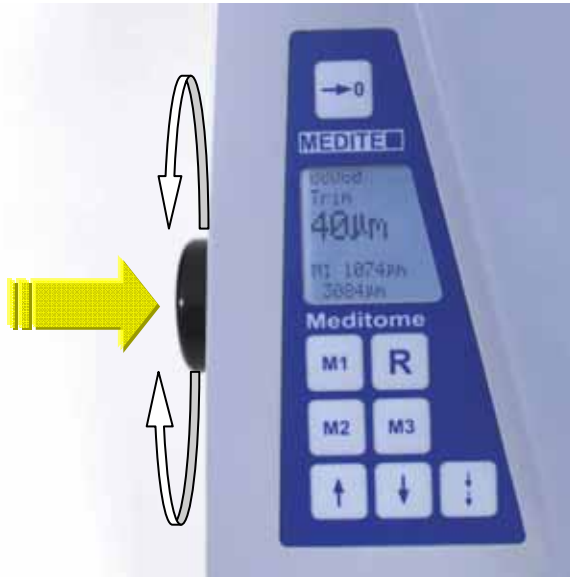
The value of the section counter is shown in the first line of the display.

Another indication shows the current position of the object clamp. ("0" is completely back, the value counts up when the feed starts moving towards the knife)

The actual value can be found at the bottom of the display.

3.3.2 Object Feed - Trim And Fine Mode

To achieve a fast change of the distance between specimen and knife edge, the Meditome offers a motorized object feed with a “Trim” (coarse) and a “Fine” movement, offering also 3 memory keys for storing regular used values.



To set your desired “Trim” or “Fine” values just use the “turn and push” button on the left side of the Meditome. Push the button to switch between trim and fine (shown in the display) and turn it left or right to change the values.

The left picture shows the “Trim” mode (set to 40µm).

Also the memory value for “M1” is shown (1074µm).
(Read 3.3.4 for further information)

The actual value here is “3084”.

In the next picture “Fine” mode for object feed is activated and set to 3µm (shown in the display).



As soon as the key “object feed forward” is pressed, the specimen is moving towards the knife. When the key is released the feed stops.

By tapping on the key „Trim“, one feed with the value saved in “Trim”, is accomplished. If the key is held for longer while the handwheel is turned, one feed with the value saved in “Trim” is carried out each cut.

When the key “Trim” is released, the value seen in the display is active again.

In the picture on the left “Retraction” function is activated, which is signed by an “R” at the lower border of the display.
(Read 3.3.3 for further information)

To move the specimen in the object clamp away from the knife the key „object feed backward“ can be used. If the key is held for longer, an acoustic beep confirms an automatic movement of the object clamp to its reference position. By pressing the key “object feed forward” the movement is interrupted and stopped.

**ATTENTION!**

The very fast approach of object feed and blade has to be observed thoroughly to prevent damages at the microtome knife and the specimen.

3.3.3 Automatic Retraction

To prevent the knife and the specimen from damage when the object clamp is moving up again, the specimen can be pulled back during upward movement by activating the automatic "Retraction".

The "Retraction" can be switched on and off by pressing the "R" key.

If the function is activated there is an "R" appearing in the display.

3.3.4 Position Memory

The Meditome offers the possibility to store 3 values for trimming positions. These values can be used to recover certain positions within a short time.

A position can be stored by pushing one of the memory keys (M1, M2 or M3) for more than one second until a signal appears. The value of the actual positioning then is stored in your chosen memory and can be approached any time later on by just pushing the memory key again.

Occupied memory numbers are shown "M1 ... M3" including their values in the display to avoid an overwriting of your positions.

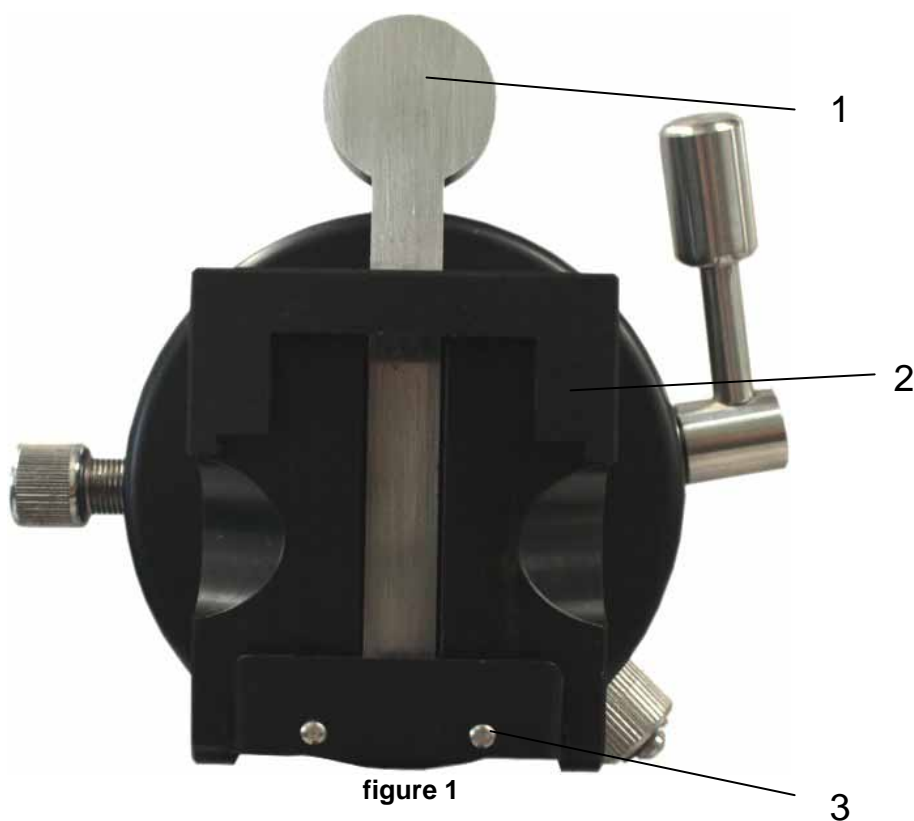
Of course you can overwrite your values just by proceeding the same way again.

After each restart of the Meditome these values are deleted for safety.

3.4 Object Clamp

3.4.1 Universal Cassette Clamp

The universal cassette clamp is a quick change system. By pulling the lever (fig. 1, no. 1) to the front, the cassette can be inserted or removed between the fixed (fig. 1, no. 2) and the movable (fig. 1, no. 3) jaw.



Make sure the contact surfaces of the cassette are free from paraffin to achieve an optimal clamping.

3.4.2 Object Orientation

By the adjustable adaptor (fig. 2, no. 1) at the cassette clamp, which is fixing the object clamps at the cylinder head, the specimen can be oriented.

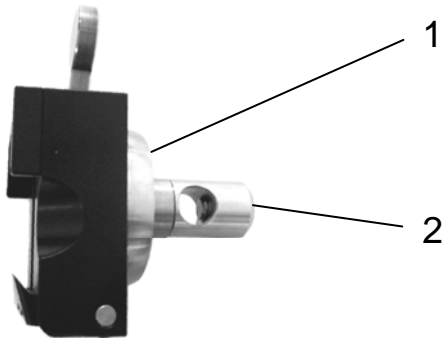


figure 2

To adjust the specimen in the desired position, the clamping lever (fig. 3, no. 2) has to be turned to the front. Thereby the object clamp is released and can be turned 360° to find your desired position.

In addition the object clamp can be adjusted by 8° in each direction (left/right and up/down) by using the two adjusting screws (fig. 3, no. 1).

When the adjustments are done the clamping lever (fig. 3, no. 2) has to be pushed back up, so that the adjusted orientation of the specimen is fixed.

Note: To facilitate the orientation of the specimen, the clamping lever (fig. 3, no. 2) may be pushed up slightly. The slight fixing prevents undesired movements of the clamp during adjustments.

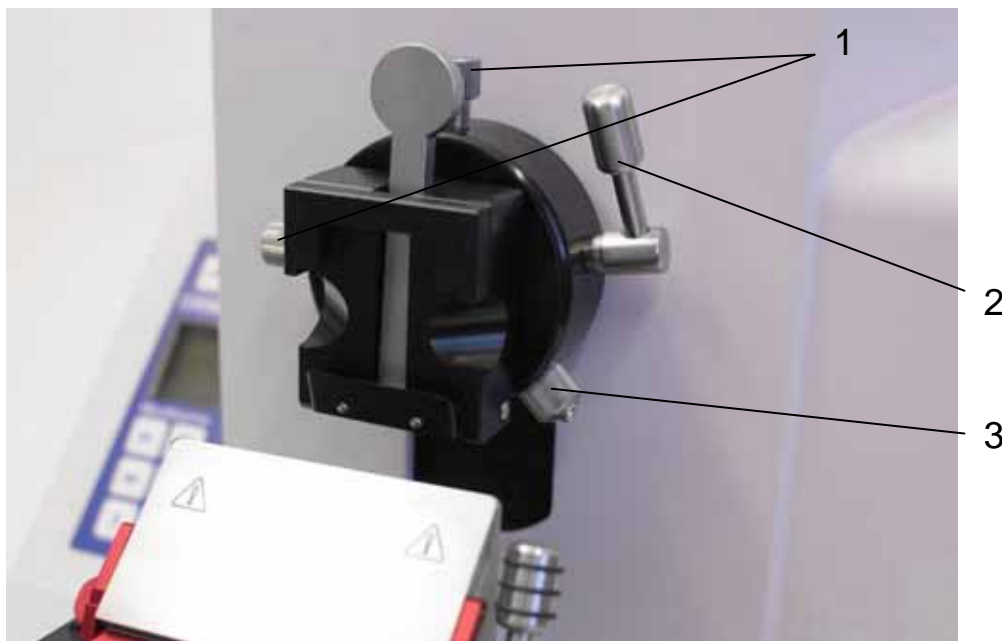


figure 3



To keep the adjusting screws under constant tension, the spring bolt (fig. 3, no. 3) always has to be tightened.

3.4.3 Fixing Object Clamps

A specimen clamp is exchanged by turning the eccentric lever (fig. 3, no. 2) down and pulling it out to the side. In addition the two adjusting screws (fig. 3, no. 1) and the spring bolt (fig. 3, no. 3) have to be unscrewed a little, so that the specimen clamp can be pulled out to the front and be exchanged with another one.

When inserting a specimen clamp into the cylinder head the clamping lever has to fit all the way through the hole of the adapter from the right side. After pushing it in, the spring bolt (fig. 3, no. 3) has to be tightened and by using the adjusting screws (fig. 3, no. 1), the specimen clamp can be oriented. At the end the clamping lever (fig. 3, no. 2) has to be pushed back up to fix the adjustment.

3.4.4 Re-Adjusting The Specimen Clamp

After frequent use the clamping lever might lose its adjustment, so that an optimal clamping of the specimen clamp is not possible any longer. If there are no re-adjustments done, the clamping might not work at all anymore after a while.

To achieve an optimal clamping, the locked clamping lever (fig. 3, no. 2) should be in an almost upright position. The clamping position of the lever can be readjusted by turning the inner screw on the back side of the orienting adapter (fig. 2, no. 2) with the help of an Allen key (size 3 mm). If there is no clamping at all or the clamping position of the lever is too high, the Allen key has to be turned in a clockwise direction. Consequently, it has to be turned counter-clockwise if the clamping position of the lever is too low.

After the adjustment the specimen clamp can be inserted and the clamping position has to be checked. If necessary, the correction can be repeated once more in the same way.



To decrease the risk of injury, the clamping plate is equipped with a bracket (fig.8, no.2 or fig.7, no.3). It has to be turned up over the cutting edge during any adjustments at the knife or the specimen. Even better is, to take out the blade before doing any adjustment work.

3.5 Knife Carrier

3.5.1 Inserting The Knife

The disposable blade carrier can be used for commercially available low profile blades. For inserting a blade, the clamping lever (fig. 4, no. 4) and the finger protection (fig. 4, no. 1) have to be turned to the front. This opens a gap (fig. 4, no. 2) between the rail and the clamping plate in which the disposable blade (fig. 4, no. 6) can be pushed from the side to the middle. After the insertion the clamping lever can be turned back, so that the blade is fixed.

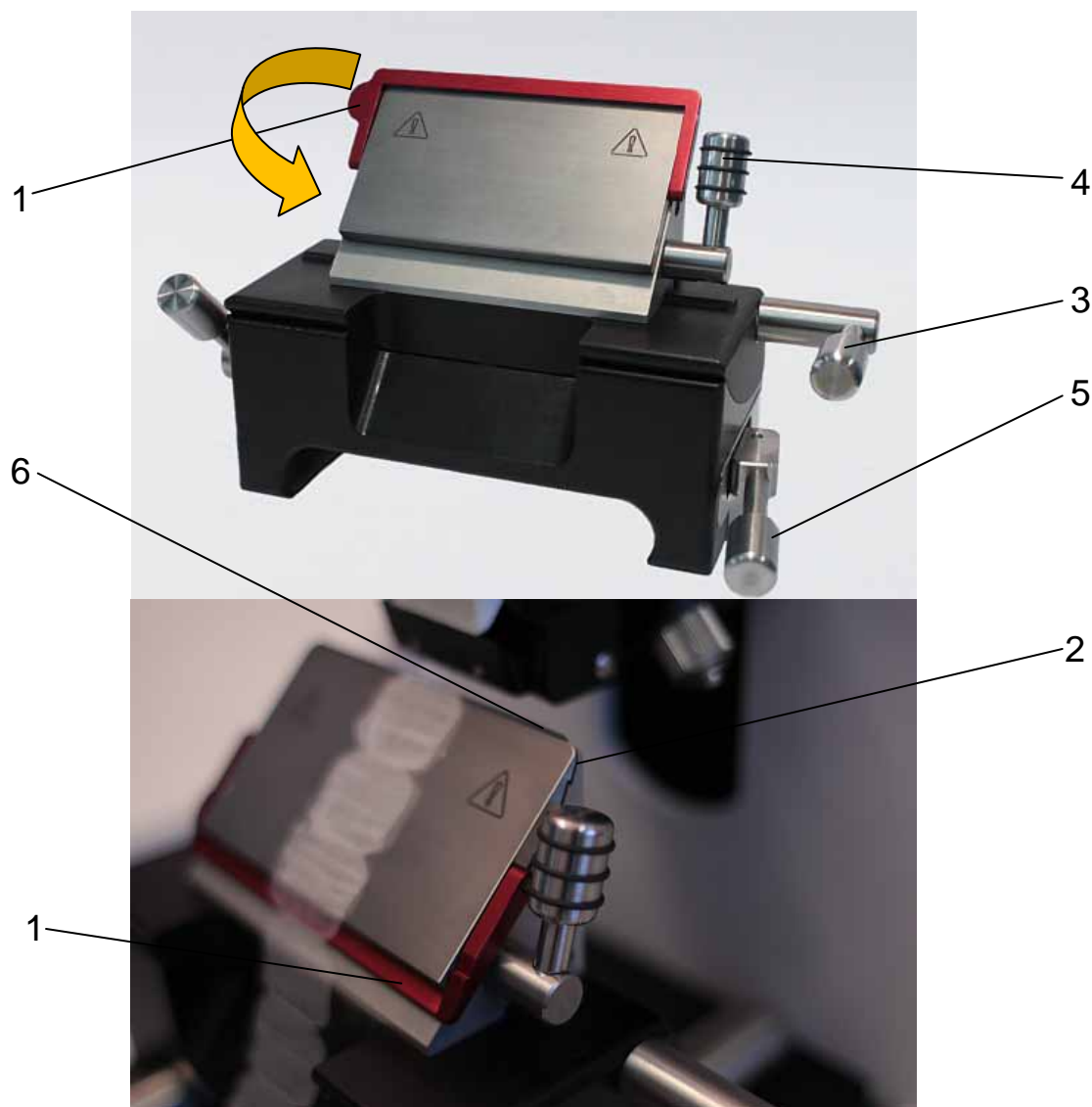


figure 4

If the clamping lever (fig. 4, no. 3) is released and the bracket (fig. 4, no. 1) is turned up, the blade and the clamping plate can be moved together to the left or to the right. Thereby the whole cutting length of the blade can be used. At the end of any adjustments the clamping levers have to be fastened again!

3.5.2 Forward / Backward Adjustment Of The Knife Carrier

The complete knife carrier can be moved forward and backward on the rails or taken off the rails by unlocking the clamping lever (fig 5, no. 1) by turning it to 90° as seen in fig. 5. Fixing the Carrier in position works by turning the lever towards you. (fig.6, no. 1)



figure 5



figure 6

3.5.3 Adjusting The Knife Carrier Angles

In order to meet the different requirements for different specimens, the clearance angle between cutting edge and specimen can be adjusted. For this purpose the clamping lever (fig. 7, no. 2) on the left side of the knife carrier is released, so that the upper part of the knife carrier can be moved on the base. The scale (fig. 7, no. 1) is showing the adjusted clearance angle. To lock a certain clearance angle, the clamping lever has to be turned back up.

Note: Only with a clearance angle of 10° or more usable sections are provided.

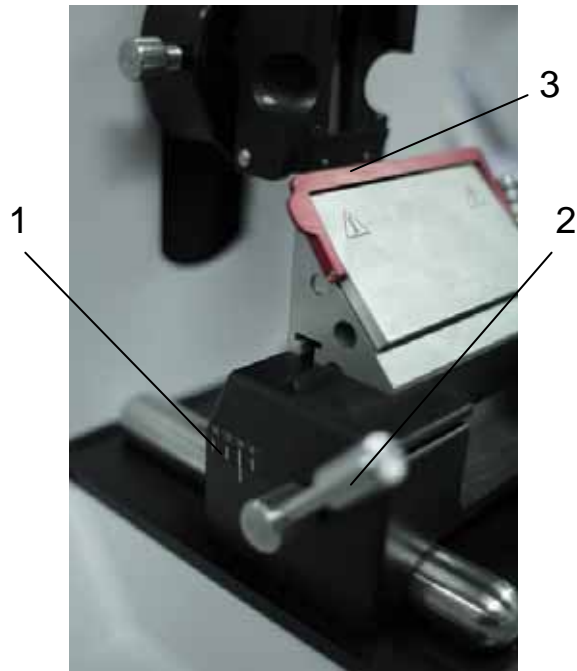


figure 7

In addition a coarse adjustment of the knife carrier can be done by loosening the clamping lever on the right side of the carrier (fig. 8, no. 1), so that the whole knife carrier can be moved forward or backward on the guide bars or taken out for cleaning or readjusting as described in 3.5.2.

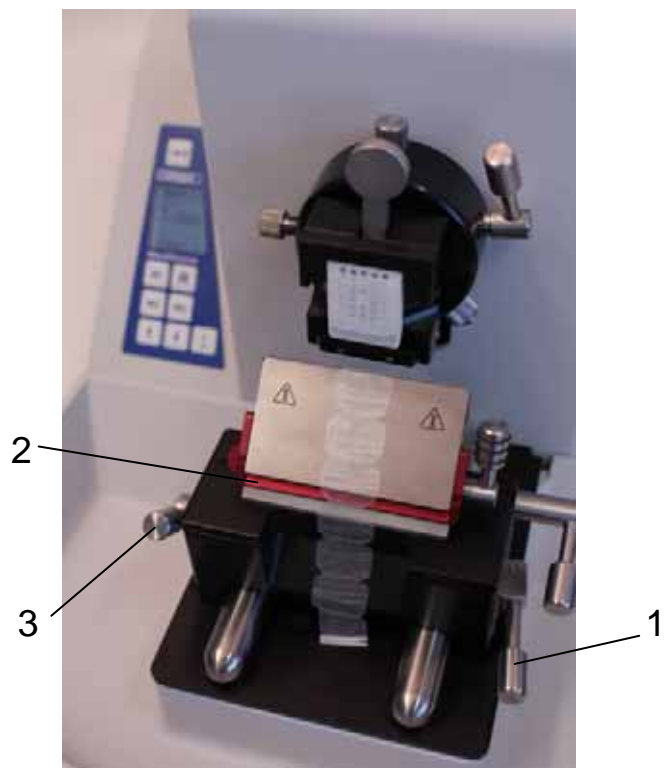


figure 8

4. Regular Cleaning And Maintenance



4.1 Cleaning Instructions

The Meditome M530 is a precision instrument. Of course it is necessary to keep it clean to guarantee a long timespan between maintenance checks.

So, after each use, you have to clean the specimen clamp, the knife carrier, the section waste tray and all visible guiding.

The surface of the Meditome may be cleaned with standardized, not scratching cleaning agents, if needed. To remove sticking deposits of sections, use a brush, don't use sharp-edged blades or tools!! These will destroy the surface of the Meditome. The whole Meditome has to be checked regularly by MEDITE service.



MEDITE recommends you to include a daily cleaning procedure – after finish of routine work - into your cleaning and maintenance plan.



Attention: Before doing any cleaning work, the power cable has to be disconnected first!



A regularly maintenance of the Meditome M530 (cleaning and greasing of the relevant mechanical parts, cleaning of parts inside and exchange of expandable parts) by MEDITE Service is the main requirement for a well working microtome! Ask your local MEDITE representative for a maintenance check.

Recommended:

Meditome Paraffin Remover

Cleaning solution for quick and easy removal of paraffin residues.



4.2 Timing Of Cleaning And Maintenance

| Activity | daily | Every week | Every 12 months |
|--|-------|------------|-----------------|
| Clean the Meditome from remains of sections and wax as explained in point 4.1 | X | | |
| Check for all guiding, locking- and clamping-levers to work perfect | | x | |
| Recommendation: Contact you responsible MEDITE representative or Service for maintenance of the hidden parts. | | | X |
| | | | |
| | | | |

5. Troubleshooting

5.1 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 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 !

Fuse box



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

5.2 Troubleshooting

| Problem | Possible Reason |
|---|--|
| Knife Carrier can not be fixed | Clamping lever has to be readjusted (read point 3.6.3) |
| Object feed not working correctly | Restart your Meditome and check again, call service for help |
| Cutting movement (rotation) too hard | Guiding rolls dirty or defective, call service for help |
| | |
| | |

6. Abandonment / Recycling

After expiration of instrument's life span please transfer unit into professional disposal or send it back to **MEDITE**. As a manufacturer / distributor we take back the used equipment, requiring a payment for disposal.

7. Greasing

Microtome oil

8. Equipment

Universal Objectclamp
 Knifecarrier for low profile one-way blades
 Knifecarrier for high profile one-way blades

Art.-Nr. 24-3030-00
Art.-Nr. 24-3131-00
Art.-Nr. 24-3128-00