

Leica RM2125 RTS

Rotary Microtome



PURPOSE

To describe the use and maintenance of the Leica RM2125 RTS rotary microtome. The Leica RM2125 RTS is a manually operated rotary microtome specifically designed for creating thin sections of formalin-fixed, paraffin-embedded human tissue specimens of varying hardness used for histological diagnosis by a pathologist. It is intended for sectioning soft and hard human specimens, as long as they are suitable for being cut manually. The Leica RM2125 RTS is designed for in vitro diagnostic applications.

1. PROCEDURE

1.1. Description of the system

The Leica RM2125 RTS is a manually operated rotary microtome for creating thin sections of specimens of varying hardness for use in routine and research laboratories in the fields of biology, medicine, and industry. It is designed for sectioning soft paraffin specimens as well as harder specimens, as long as they are suitable for being cut manually.

Overview of components

Leica RM2125 RTS (from the right)

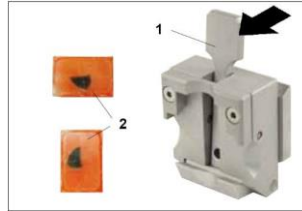


Leica RM2125 RTS (from left)



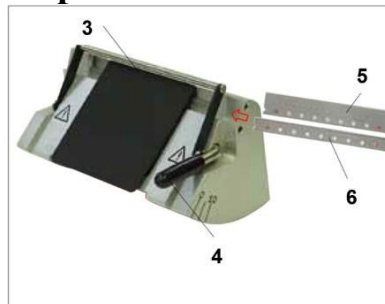
1.2. Operation

1.2.1. Clamping specimen on universal cassette clamp



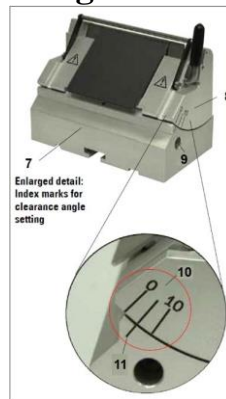
1. Always clamp the specimen block **BEFORE** clamping the knife or the blade.
2. Lock the handwheel and cover the knife edge with the knife guard prior to any manipulation of knife or specimen, prior to changing the specimen block and during all work breaks.
3. Activate the handwheel lock by allowing the handwheel handle to lock in place.
4. To insert a specimen into the specimen clamp, push lever (1) forward.
5. Mount the cassette (2) horizontally or vertically as required.
6. To clamp the cassette, release the lever.

1.2.2. Clamping the knife / disposable blade in knife holder E



1. Carefully insert knife or disposable blade into the knife holder and clamp.
2. Fold knife guard (3) downward.
3. To insert the blade, rotate clamping lever (4) forward.
4. Carefully push in the blade (5 or 6) from the side.
5. To clamp the blade, rotate clamping lever (4) back upwards.

1.2.3. Adjusting the clearance angle



1. The index marks (0° , 5° and 10°) for adjustment of the clearance angle (10) are located on the rightside of the knife holder (8).
2. There is also an index mark (11) on the right side of the knife holder base (7) which serves as a reference point when adjusting the clearance angle.
3. When using the knife holder base (non-orientable), loosen the Allen screw to release the clamp by turning Allen key No. 4 (9) counterclockwise.
4. When using the knife holder base (with lateral movement), rotate the lever on the right side of the knife holder base counterclockwise.
5. Move the knife holder until the index mark of the desired clearance angle coincides with the reference line on the knife holder base.

Example: Enlarged detail showing a clearance angle setting of 5° .

Note: The recommended clearance angle setting for knife holder E is approx. $1^\circ - 3^\circ$.

6. Firmly hold the knife holder in this position and rotate the lever (9) or Allen screw (depending on the knife holder base used) clockwise to clamp it.

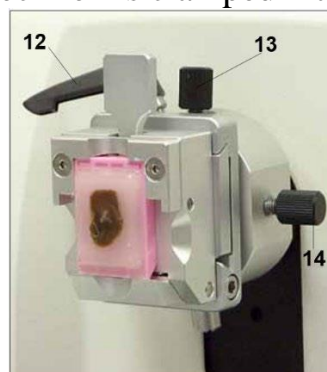
1.2.4. Specimen retraction (specimen orientation)



- (i) To prevent the knife or blade from touching the overlapped specimen while returning to the upper end position, the specimen is retracted 40 μm when retraction is activated.
- (ii) To do so, use an Allen key with handle, No. 4 (included in the delivery package) and turn the screw depicted in the detail picture (Fig. 13a) so that the red dot indicates "OFF" = retraction is disabled. Reddot on "ON" means = retraction is switched on.

1.2.5. Orienting the specimen

The specimen orientation allows for simple position correction of the specimen surface when the specimen is clamped into place.



1. Run the specimen to the rear end position by turning the coarse feed wheel.
2. Loosen the clamping lever in front on the microtome base plate and slide the knife holder base with knife holder until it is almost in front of the specimen.

Note: Specimen blocks must NOT be oriented during the retraction phase!

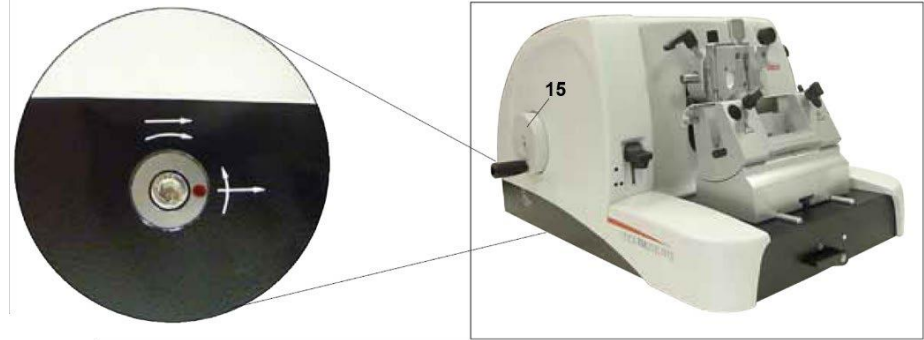
If a block is oriented during retraction, the block will advance by the retraction value PLUS the selected section thickness before the next section.

This may cause damage to both specimen and knife!

3. Move the specimen holder fixture to the upper end position by turning the handwheel and engage the handwheel lock.

4. To release the clamp, turn the eccentric lever (12) counterclockwise.
5. Turn setscrew (14) to orient the specimen in north-south direction.
Turn setscrew (13) to orient the specimen in east-west direction.
6. To lock the current orientation, turn the eccentric lever (12) clockwise.

1.2.6. Cutting (trimming) the specimen



1.2.6.1. Coarse feed wheel (15)

The coarse feed serves for a fast horizontal forwards movement of the specimen – towards the knife – and backwards – away from the knife.

The instrument can be used optionally with either clockwise rotation or counterclockwise rotation for the coarse feed wheel (15).

To do so, use an Allen key with handle, No. 4 (included in the delivery package) to turn the screw as shown in the detail picture.

1. Red dot at 3 o'clock: turning the coarse feed wheel counterclockwise (see curved arrow) means the specimen advances.

Turning the coarse feed wheel clockwise means the specimen retracts (away from the knife).

2. Red dot at 12 o'clock: turning the coarse feed wheel clockwise (see curved arrow) means the specimen advances.

Turning the coarse feed wheel counterclockwise means the specimen retracts (away from the knife).

Note: When the rear- or front-end position is reached, the coarse feed wheel will be difficult to rotate (if you continue turning it at this point anyway, the torque limitation will be exceeded – this is not a malfunction!).

In the front-end position, no more feed motion takes place.

1.2.6.2. **Trimming the specimen with the coarse feed**

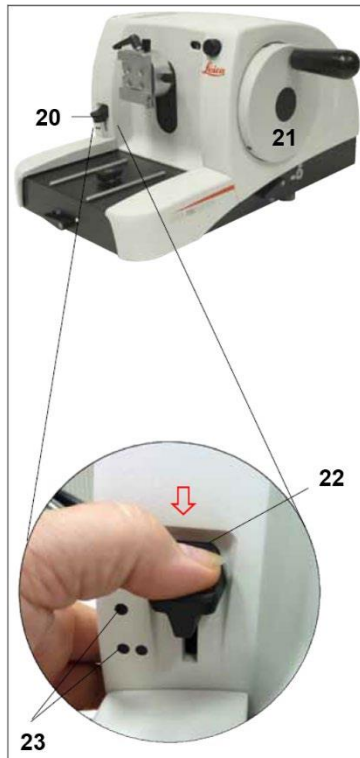


1. Release the handwheel lock. To do so, pull the handle of the handwheel out to the right and use the lever (19) to release the brake.
 - Brake engaged
 - Brake released
2. Bring the specimen closer to the knife by rotating the coarse feed wheel and trim it by simultaneously rotating the handwheel (18) until the desired specimen plane is reached.

1.2.6.3. **Trimming the specimen by setting a large section thickness**

1. Set a correspondingly large section thickness (e.g. 50 μm) using the section thickness setting knob (17) at the front of the microtome on the right. The current setting is displayed in the section thickness window (16).
2. Trim the specimen by rotating the handwheel (15) until the desired specimen plane is reached.

1.2.6.4. Trimming with the mechanical trimming function



The Leica RM2125 RTS is equipped with a mechanical trimming function that is activated via the trimming lever (20).

The trimming lever has 3 click stops: 0 μm , 10 μm , and 50 μm .

The points (23) mark the two trimming stages:

□ = 10 μm

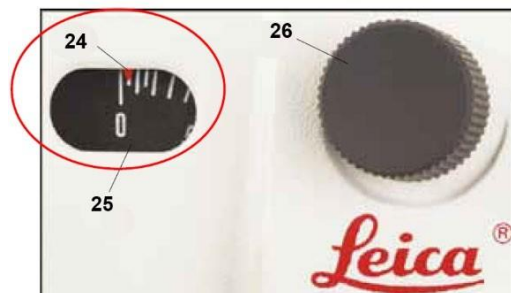
□□ = 50 μm

1. To activate the trimming function, press the lever downwards into the desired position and keep it pressed down.
2. With each rotation of the handwheel, a feed motion of 10 μm or 50 μm takes place.
3. After you let go of the lever, it springs back to its original position (zero position). The trimming function is thereby deactivated.

Note: The section thickness that has been set is not added to the selected trimming value. If the section thickness that has been set is greater than the selected trimming value, the section thickness is fed.

4. Bring the specimen closer to the knife by rotating the coarse feedwheel.
5. Select the desired trimming stage.
6. Trim the specimen by rotating the handwheel (21) until the desired specimen plane is reached.
7. Release the trimming lever (22).

1.2.7. Sectioning



Note: Always rotate the handwheel at a uniform speed. The rotation speed of the handwheel must be adapted to suit the

hardness of the specimen. For harder specimens, use a slower speed.

8. Set the desired section thickness using the section thickness setting knob (26) at the front of the microtome on the right, or check the set value in the viewing window (25). The red indicator (24) indicates the selected section thickness (on the scale).
9. Use a different area of the cutting edge for trimming than for sectioning.
10. To do so, move the knife holder laterally on the knife holder base accordingly (see Chap. 5.9.7) or, when using the knife holder base without lateral movement, move the knife or disposable blade in the knife holder.
11. For sectioning, turn the handwheel (15) evenly in a clockwise direction.
12. Pick up the sections and mount them on microscope slides.

1.2.8. Changing specimens

Note: Lock the handwheel and cover the knife edge with the knife guard prior to any manipulation of knife or specimen, as well as prior to changing specimens and during all work breaks!

1. Move the specimen to the upper end position by turning the handwheel and engage the handwheel lock.
2. Cover the sectioning edge with the knife guard.
3. Remove the specimen from the specimen clamp and mount a new specimen.

Run the object clamp with the coarse feed back far enough until the new specimen can start being cut.

Maintenance

Note: Always remove the knife / blade before detaching the knife holder from the instrument. Always put the knives back into the knife case when not in use! Never place a knife anywhere with the cutting edge facing upwards and never try to catch a falling knife! When using cleaning agents, observe the manufacturer's safety instructions and the laboratory regulations valid in the country of use. Do not use any of the following for cleaning the outside surfaces of the instrument: alcohol, detergents containing alcohol (window cleaner!), abrasive cleaning powders, and solvents containing acetone or xylene. Xylene or acetone will damage the finished surfaces! Ensure that liquids do not enter the interior of the instrument during cleaning! Move the specimen to the upper end position by turning the handwheel and engage the handwheel lock.