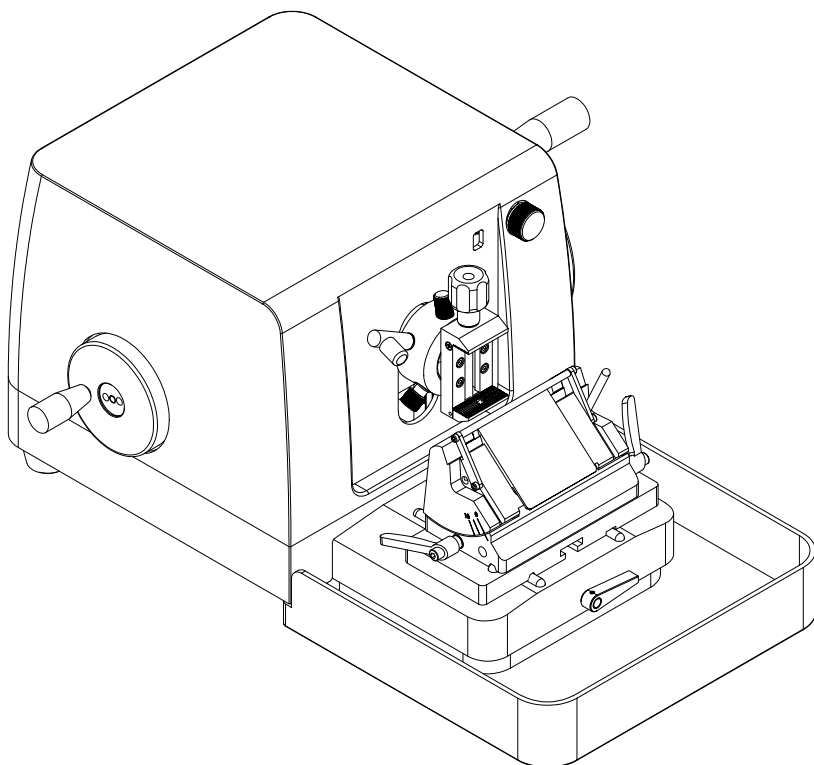




User Manual

Paraffin Microtome

PM-24

Please read the instructions carefully and keep them properly before using the product for future reference.

Wuhan Servicebio Technology Co.,Ltd.

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01 Important Information

1.1 Instrument Model

All information provided in this user manual applies exclusively to the instrument model shown on the cover. The nameplate displaying the instrument's serial number is located on the rear side of the instrument.

1.2 Intended Use

The PM-24 is a manually operated rotary microtome designed for sectioning tissue samples of varying hardness to enable histological diagnosis. It is suitable for both soft and hard tissues that are appropriate for manual sectioning.

1.3 Personnel Qualifications

1. Only trained laboratory personnel may operate the PM-24. This instrument is intended for professional use only;
2. All assigned laboratory personnel must read this user manual thoroughly and fully familiarize themselves with all technical features of the instrument before operation.

02 Safety

2.1 Safety Precautions

1. This user manual contains critical information related to operational safety and equipment maintenance;
2. This manual is an integral part of the product and must be read carefully before use. It must remain stored near the instrument at all times;
3. The instrument is manufactured and tested in compliance with laboratory equipment safety standards;
4. To ensure safe operation, users must strictly adhere to all safety precautions and warnings in this manual;
5. The safety guidelines and precautions outlined in this chapter must always be followed;
6. Even if you are familiar with other Leica products, read these instructions thoroughly.

2.2 Warnings

Removal or modification of manufacturer-installed safety guards or accessories may result in severe personal injury, property damage, or sample loss.

1. Never remove or modify any safety guards on the instrument or accessories. Only certified technicians authorized by the manufacturer may repair the instrument or handle internal components;
2. Before using the instrument, ensure all safety guards and accessories are properly installed and fully functional;
3. The safety guards installed by the manufacturer provide basic accident prevention. Ultimate responsibility for safe operation lies with the instrument owner and designated personnel responsible for operation, maintenance, or cleaning;
4. To ensure proper operation, strictly comply with the following instructions and warnings.

2.3 Handling and Installation

1. Dropping the instrument during unpacking may cause severe personal injury or property damage.
 - Handle packaging with care
 - After unpacking, always keep the instrument upright during transport
 - Strictly follow the unpacking instructions attached to the packaging or described in this manual
2. Improper lifting may cause severe personal injury or property damage.
 - Lift the instrument only at designated points (front base plate and rear underside) as specified in the manual and unpacking instructions

- Never lift by the handwheel, coarse trimming wheel, sample head, or slice thickness adjustment knob
 - Always remove the waste tray before moving the instrument
3. Careless handling may crush hands or fingers between the instrument and workbench.
- Move the instrument only at designated lifting points (front base plate and rear underside)
4. Unstable placement may cause severe injury or damage.
- Place the instrument only on a stable, vibration-free, flat, and level workbench
 - Ensure all four feet rest fully on the surface
 - Recheck placement if the instrument has been moved (e.g., for maintenance)
5. Blade holder falling off may cause injury or damage.
- Handle the blade holder carefully during installation or cleaning to prevent drops
 - Secure the blade holder whenever possible
6. Dropping the waste tray may cause injury.
- Remove the waste tray carefully and place it in a safe location
7. Oil spills may lead to slips and contact with sharp components.
- Never allow lubricating oil to spill
 - Clean spills immediately and thoroughly
8. Uncleared wax debris may cause slips or cuts.
- Clean spilled paraffin waste promptly to prevent slipping or tripping hazards

2.4 Operating the Instrument

1. Explosion hazard, risk of serious personal injury or property damage.
- Do not use the instrument in rooms with explosion hazards
2. Operation by unqualified personnel.
- Contact between the sample and the blade holder due to incorrect operation can cause serious personal injury and sample damage
 - Ensure that only trained and qualified professional laboratory personnel operate the instrument
 - Ensure that all laboratory personnel required to operate the instrument according to work needs carefully read this operating manual and familiarize themselves with all characteristics of the instrument before commencing work

3. Removal or modification of manufacturer-provided protective devices or safety accessories, risk of serious personal injury, property damage, or sample damage.

- Never remove or modify any protective guards on the instrument or accessories. Only repair personnel certified by our company may service the instrument or handle internal components

- Before using the instrument, you must verify that all protective guards and safety accessories are properly installed and fully functional

4. Failure to use personal protective equipment (PPE) resulting in personal injury.

- When operating the microtome, personal safety precautions must be taken. Safety work shoes, protective gloves, masks, and safety goggles must be worn

5. Improper handling or disposal of blades/knives. Risk of severe personal injury due to contact with sharp blade holders or blades.

- Exercise extreme caution when handling blade holders or blades

- Cut-resistant gloves and specialized protective clothing must be worn during handling

- Blade holders and blades must be stored in secure locations (e.g., designated blade containers) and properly disposed of to prevent injury

- When placing blades, avoid blade-up orientation. never attempt to catch a falling blade

- Critical sequence: Samples must be installed and clamped before securing the blade holder or blade

6. Failure to remove blades when detaching blade holder from microtome. Risk of severe injury from sharp Blades.

- Before removing the blade holder from the microtome: Cut-resistant gloves must be worn. Blades must be removed. Blades must be stored in a secure location

7. Operator contact with blade due to incorrect procedure. Severe injury may occur if blades are installed before loading samples.

- Before loading samples into the microtome. Ensure the cutting edge is covered with the blade guard. Engage the handwheel lock. Sample blocks must be loaded before installing and clamping blades

8. Operator clamps two blades in blade holder. Risk of severe personal injury from sharp blades.

- Never clamp two blades in the blade holder. Always insert blades at the center of the blade holder. Blades must not extend beyond the edges of the blade holder

9. Non-parallel blade installation due to excessive paraffin buildup, unclean specimen clamp, etc. When using the traverse feed function, blades not installed in complete parallel alignment with the pressure plate's upper edge may result in: Compromised section quality (e.g., inconsistent thickness, section chatter). Potential sample damage in worst-case scenarios.

- If sectioning results are unsatisfactory, stop cutting immediately

- Reinstall blade ensuring full parallelism with the upper edge of the pressure plate

- After each traverse feed adjustment, verify blade-to-pressure plate parallelism

- Ensure no wax buildup and clean specimen clamp before use

10. Inserting blades before mounting blade holder/base to instrument. Risk of severe injury from sharp blades.

11.Exposure of uncovered blades during non-cutting operations, severe injury risk from unprotected blades.

- Always cover cutting edges with proper blade guards: Before handling blades/specimen clamps. When changing sample blocks. During all work breaks

12.Improper blade storage causing Injury (e.g., accidental drops).

- Store blades in designated containers when not in use
- Never position blades edge-up.Never attempt to catch falling blades

13.Hand cuts during sample handling without cut-resistant gloves. Severe laceration risk from improper procedures.

- must wear cut-resistant gloves when handling microtome samples
- before sample clamp operations or block changes: Lock handwheel and engage blade guard

14.Sample repositioning during the retraction stage. Repositioning the sample during retraction causes sample damage.

- During the retraction stage, sample blocks must not be repositioned. Otherwise, during the next sectioning cycle, the sample block will advance by the retraction value plus the set section thickness. This action may damage both the sample and the blade

15.Failure to wear proper protective clothing when processing fragile specimens. Flying fragments generated during sectioning pose severe personal injury risks.

- Appropriate protective clothing (including safety goggles) must be worn, and extreme caution exercised when sectioning fragile specimens

16.Incorrect fine force balance adjustment. Contact with the blade causes severe personal injury and sample damage.

- Before operating the instrument, you must repeatedly verify correct fine force balance settings
- If fine adjustment is incorrect, do not operate the instrument; instead, readjust it
- Especially after changing specimen head attachments, immediately readjust the force balance

17.Inadequate sectioning conditions. Sample damage or poor section quality, e.g., uneven thickness, compression, folds, or ribbon-like artifacts.

- If unsatisfactory sectioning results are observed, do not continue cutting
- Ensure all prerequisites for proper sectioning are met. For details, refer to the troubleshooting section of this manual

- If you lack sufficient knowledge to troubleshoot suboptimal sectioning results, consult qualified personnel

18.During manual sectioning mode, users cut specimen blocks by rotating the handwheel at high speed. This may cause poor section quality or even sample damage.

- In manual sectioning mode, handwheel rotation must not exceed 60 RPM

19.Handwheel speed unsuitable for sample hardness. Instrument damage and potential sample destruction.

- Adjust handwheel speed according to sample hardness. For harder specimens, use slower speeds

20.During rapid manual facing, fingers remain between sample and blade after handwheel release. After unlocking the handwheel, operators may suffer lacerations due to handwheel rotation.

- During facing and sectioning, never place fingers between sample and blade

21. Sample damage due to failure to retract and re-face after blade holder lateral movement.

- After each lateral displacement of the blade holder, retract the specimen head and re-face the sample block

22. Simultaneous rotation of handwheel and coarse feed wheel causes sample damage.

- Do not rotate handwheel and coarse feed wheel simultaneously
- Prevent corrosive/strongly acidic/strongly alkaline reagents from contacting instrument surfaces or accessories
- Immediately wipe spills and dry thoroughly if such solutions contact equipment
- When frequently using such reagents: Perform daily thorough cleaning of blade holder, specimen clamp, and affected components. Implement corrosion protection measures as needed

2.5 Cleaning and Maintenance

1. Liquid ingress into instrument interior, causing equipment damage or personal injury.

- Ensure liquids do not enter the instrument during operation or maintenance.

2. Severe injury risk from incorrect blade wiping direction during cleaning.

- Always wipe blades from the back to the cutting edge

3. Burn hazard when removing parts from drying oven (65°C) during blade holder cleaning.

- Wear thermal protective gloves when removing parts from the drying oven (65°C)

4. Instrument malfunction or damage from incorrect solvents, cleaners, or sharp/hard tools.

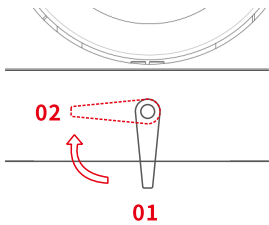
- Never use acetone- or xylene-containing solvents on the instrument
 - Follow manufacturer's safety instructions and lab protocols when using cleaners
 - Never scrape surfaces with sharp/hard tools
 - Never soak accessories in solvents or water
 - Clean steel knives with alcohol-based solutions or acetone
 - Do not use alcohol-xylene mixtures or glass cleaners for paraffin removal (e.g., Isopropanol for steel blades; pH-neutral detergents for polymer parts)
5. Poor sectioning quality due to mixed blade holder components during cleaning.
- Never intermix blade holder parts during cleaning

2.6 Built-in Safety Guards

Removal or modification of manufacturer-provided protective guards or safety accessories causes severe personal injury, property damage, or sample destruction.

- Never remove or modify any protective guards on the instrument or accessories. Only our company certified technicians may service the instrument or handle internal components
- Before operating the equipment, ensure all protective devices and safety accessories are properly installed and fully functional to provide intended safeguards

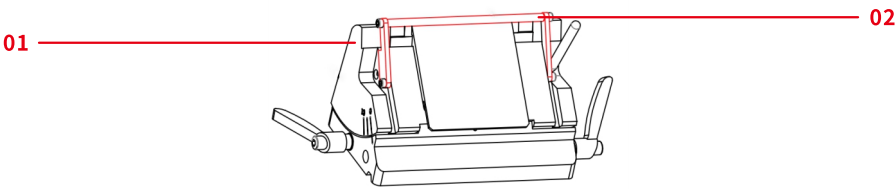
2.7 Locking Handwheel



Rotate the brake lever counterclockwise from Position 2 to Position 1 to lock the handwheel. Improper use of the handwheel brake lever prevents handwheel immobilization, risking severe personal injury or instrument/sample damage.

· The brake lever must be in the correct locked position. If moved beyond these two positions, the handwheel may fail to lock securely

2.8 Blade Holder and Blade Guard

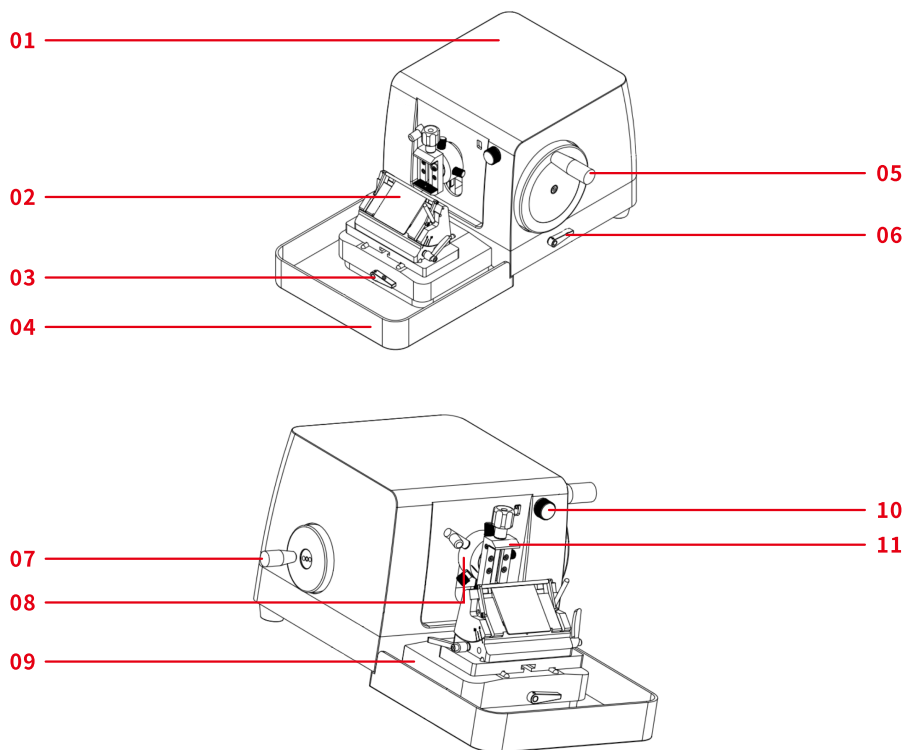


- 01 Blade holder assembly
- 02 Blade guard

Each tool holder has a secure blade guard that covers the full length of the blade in every position.

03 Instrument Components and Specifications

3.1 Instrument Components



- | | | |
|--------------------------------------|--------------------------------------|--------------------------------|
| 01 Main housing | 02 Blade holder | 03 Blade holder locking handle |
| 04 Antistatic waste tray | 05 Handwheel | 06 Handwheel brake lever |
| 07 Coarse feed wheel | 08 Positioning device | 09 Base plate |
| 10 Section thickness adjustment knob | 11 Standard embedding cassette clamp | |

3.2 Instrument Specifications

- Manual mechanical facing function with ergonomically positioned coarse feed wheel.
- 1.Manual rotary microtome featuring a low-maintenance, zero-backlash precision section feed system;
 - 2.Horizontal feeding and vertical stroke mechanism with cross roller bearings;
 - 3.Traditional manual sectioning mode via full handwheel rotation;
 - 4.User-adjustable force balance system with spring force compensation providing dual advantages:
 - Flexible spring force adaptation to specimen/specimen clamp weight → Minimizes risk of specimen head drop into blade
 - Eliminates need for counterweights in handwheel
 - 5.Ergonomically positioned coarse feed wheel;
 - 6.Large top surface area accommodates specimens requiring flat-surface support.

3.3 Technical Parameters

General Parameters

Section thickness range	1~60μm
Section thickness settings	1~10 μm (1 μm increment) / 10~20 μm (2 μm increment) / 20~60 μm (5 μm increment)
Blade holder lateral displacement	50±2mm
Vertical stroke displacement (cross roller guide)	70±2mm
Maximum section height (from base plate)	145mm
Minimum section height (from base plate)	85mm
Maximum specimen block size	68×45×15mm
Coarse feed wheel rotation direction	Clockwise (feed) / Counterclockwise (retract)

Dimensions/Weight

Width (including handwheel & coarse feed wheel)	442mm
Length (including waste tray)	556mm
Height (including feet)	295mm
Weight	15Kg
Waste tray capacity	≈1500mL

Optional Accessories

Specimen orientation with zero-position	Horizontal rotation: $\pm 8^{\circ}$ / Vertical rotation: $\pm 8^{\circ}$
Blade holder base movement	Lateral movement function/Left-right travel distance
Front-rear movement	Lateral shift range: ± 25 mm

Operating Environment

Temperature	18°C to 30°C
Relative humidity	20% to 80% (non-condensing)
Altitude	≤ 2000 m

Transport/Storage Environment

Transport temperature	-29°C to 50°C
Storage temperature	5°C to 50°C
Humidity	10% to 85% (non-condensing)

04 Instrument Installation

Note: Ordered accessories are packed separately. Verify received items against the packing list and order to confirm completeness. Report any discrepancies immediately to your local sales contact.

4.1 Installation Requirements

- 1.Stable, vibration-free workbench with flat, smooth surface and minimal floor vibrations;
- 2.No vibration-generating equipment nearby;
- 3.Constant room temperature maintained at 18°C~30°C;
- 4.Unobstructed access for handwheel operation.

 **Warning**

- Explosion hazard posing severe personal injury or property damage. Never operate the instrument in atmospheres with explosion risks

4.2 Standard Configuration and Packing List

No.	Name	Quantity
1	PM-24 Host Machine	1
2	Sample Clamp Holder	1
3	Universal Clamp Head	1
4	Tool Holder	1
5	User Manual	1

4.3 Unpacking and Installation

1. Accessories/instruments falling outside packaging during unpacking, risking severe injury or property damage

- Carefully remove instrument packaging
- Always keep instrument upright when handling after unboxing
- Strictly follow unpacking instructions on exterior packaging or in manual

2. Improper lifting causing severe injury or damage.

- Lift only at designated points specified in manual/unpacking guide
- Never lift using: Handwheel, coarse feed wheel, thickness adjustment knob
- Always remove waste tray before transport

3. Hand/finger crushing between instrument and workbench during movement.

- Only handle at designated lift points
- Ensure hands never positioned between instrument and work surface

4. Unsecured placement causing injury or damage.

- Install only on stable, vibration-free, level workbenches
- All four feet must fully contact work surface
- Recheck positioning after any relocation (e.g., for maintenance)

5. Loose/damaged components during transit causing property loss/diagnostic delays.

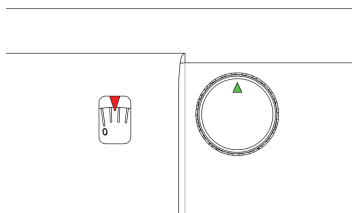
- First inspect shock indicators upon delivery for transport mishandling

Note: The shipping case and its padding materials should be retained for use in case of return shipment. If returning the instrument, follow the instructions below in reverse order:

1. Remove the packing straps and sealing tape;
2. Take out the securing module by gripping its top edge and pulling it upward;
3. Lift the instrument from the molded cushion by holding the front baseplate and the underside of the rear section;
4. Place the instrument on a stable laboratory bench.

05 Operation Guide

5.1 Slice Thickness Setting



Adjust thickness via the knob on the front-right side of the microtome.

Range: 1~60 μm

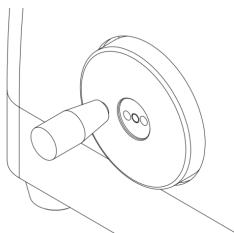
1~10 μm , 1 μm steps

10~20 μm , 2 μm steps

20~60 μm , 5 μm steps

Display: Set thickness appears in the window; align the selected value (on scale) with the red pointer.

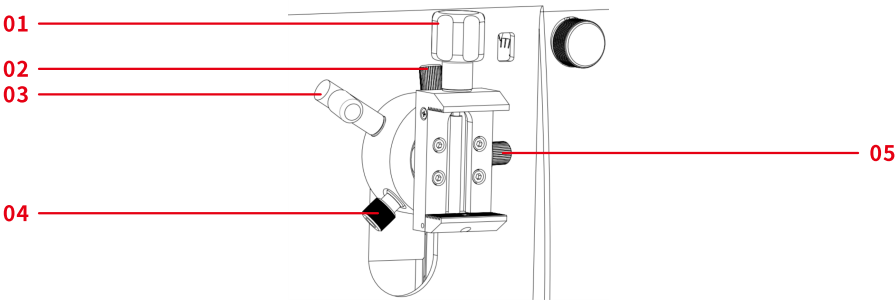
5.2 Coarse Trimming Wheel



Rotate clockwise to advance the specimen toward the blade. Functions: Rapid approach/retraction of the specimen.

Caution: Wheel resistance increases near endpoint positions. Never rotate handwheel and coarse wheel simultaneously – risks sample damage.

5.3 Sample Clamp Holder with Fine Adjustment



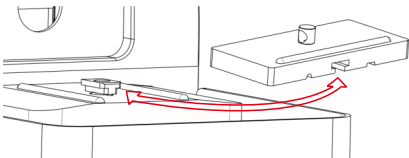
- | | | |
|--------------------------------------|-----------------------------------|-------------------------|
| 01 Sample Locking Nut | 02 Y-axis Adjustment Screw | 03 Eccentric Rod |
| 04 Zero-position Spring Screw | 05 X-axis Adjustment Screw | |

After clamping the specimen, the positioning system allows minor surface adjustments. However, specimen orientation during the retraction phase may cause damage.

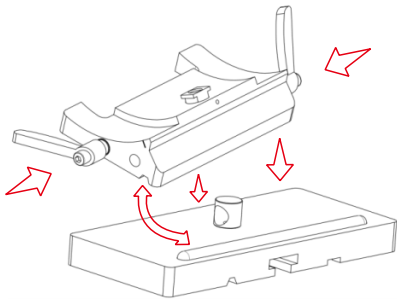
During the retraction phase, do not reposition the specimen block. Otherwise, during the next sectioning cycle, the specimen block will advance by the retraction value plus the selected section thickness, which may damage both the specimen and the blade.

1. Move the specimen head to the top position and engage the main handwheel locking mechanism;
2. To release the specimen clamp, rotate the eccentric rod counterclockwise;
3. Adjust the Y-axis positioning screw to align the specimen along the Y-axis. Adjust the X-axis positioning screw to align the specimen along the X-axis. Each full rotation of the screw tilts the specimen by 2°, allowing up to 4 full rotations (8°) per direction, with an accuracy of approximately $\pm 0.5^\circ$;
4. To lock the current position, rotate the eccentric rod clockwise to secure.

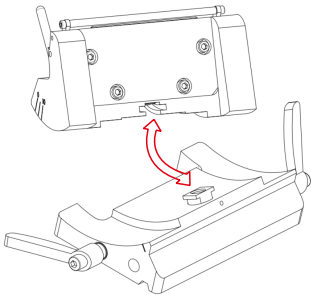
5.4 Installing the blade Holder Base



- 1. Slide the blade holder base into the T-slot at the bottom of the microtome base plate;
- 2. The blade holder base can be moved forward and backward on the microtome base plate. This allows positioning blade holder at the optimal sectioning position relative to the specimen. To secure the blade holder base, turn the eccentric locking lever on the base plate clockwise.

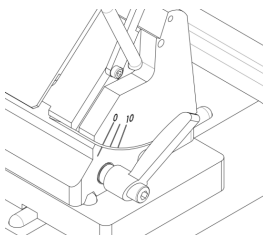


- 1. Turn the left/right eccentric handle counterclockwise and pull it outward to remove it;
- 2. Align the V-groove with the guide bar. The assembly can slide left and right to adjust the optimal transverse sectioning position of the specimen;
- 3. Insert the left eccentric handle and turn it clockwise to lock it into place.



- 1. Rotate the right eccentric handle to loosen it;
- 2. Position the blade holder with its undergroove onto the T-plate of the blade holder base;
- 3. To clamp it securely, re-rotate the eccentric handle to tighten it.

5.5 Angle Adjustment



Indicator marks (0°/5°/10°) for adjusting the clearance angle are located on the right side of the blade holder. A reference line on the right side of the blade holder base serves as the datum point during clearance angle adjustment.

1. Rotate the eccentric handle clockwise until the blade holder can be moved;
2. Slide the blade holder until the indicator mark of the desired clearance angle aligns with the reference line on the blade holder base. A 5° clearance angle is generally recommended;
3. Rotate the eccentric handle counterclockwise to reclamp the blade holder.

5.6 Clamping the Sample

Warning: Operators may grasp the blade during incorrect procedures. Severe injury can occur if the blade is installed before loading the specimen.

Before loading specimens, always cover the blade edge with the blade guard engage the handwheel lock load specimen blocks before installing/clamping blades.

1. Rotate the handwheel until the specimen clamp reaches its top position;
2. Lock the handwheel by engaging the handwheel lock;
3. With the blade guard in place, load the specimen into the specimen clamp.

5.7 Securing the Blade

1. Severe personal injury may occur from contact with sharp blades. Improper handling or disposal of blades can cause life-threatening lacerations.

- Handle blades with extreme caution at all times
- Wear cut-resistant gloves and protective clothing during blade handling
- Store blades only in designated safety containers (e.g. blade disposal boxes). Dispose through certified sharps disposal systems to prevent personnel exposure

- Always position blades edge-down during handling. Never attempt to catch falling blades under any circumstances

- The specimen must be installed and clamped prior to blade clamping

2.Installing two blades in the blade holder exposes operators to severe personal injury from sharp edges.

- Never clamp dual blades, insert only a single blade centrally within the holder while ensuring it does not protrude beyond the holder's edges

3.In the blade holder will damage specimens due to non-compliance with thickness specifications.

- Using blades thicker than 0.322 mm or thinner than 0.246 mm

4.Excess paraffin or unclean inserts cause misalignment between the installed blade and the pressure plate's upper edge.

When such non-parallel blades engage the lateral movement function, sectioning defects like irregularly thick/thin slices or chatter vibration may occur, potentially destroying specimens in worst-case scenarios.

- If sectioning results are unsatisfactory, immediately cease operation

- reinstall the blade to ensure parallelism with the pressure plate's upper edge

- Verify blade-to-plate parallelism after every lateral movement adjustment

- Confirm removal of all residual paraffin with inserts cleaned before use

Blade Clamping Procedure

1.Swing down the blade guard;

2.Rotate the right locking lever counterclockwise to release the blade insertion mechanism;

3.Carefully slide the blade into position from above or sideways, ensuring central alignment and - most critically - parallel orientation with the pressure plate's upper edge;

4.Rotate the locking lever clockwise to clamp the blade securely.

Blade Removal Steps

1.Rotate the L-shaped locking lever clockwise;

2.Slide the blade to the edge position and carefully remove it.

Improper handling causes severe injury from sharp edges.

- Exercise extreme caution during blade operations

- Wear cut-resistant gloves and protective clothing

- Place blades only in designated safety containers (e.g. blade disposal boxes).Dispose through certified sharps management systems

- Always position blades edge-down during handling. Under no circumstances attempt to catch falling blades

- Clamp the specimen prior to blade installation

5.8 Sample Trimming

Simultaneous rotation of the handwheel and coarse feed wheel causes specimen damage.

- Never operate both wheels concurrently

Never place fingers between specimen and blade during trimming/sectioning.

- Releasing the handwheel lock may cause sudden rotation and severe lacerations

1. Rotate the coarse feed wheel to retract the specimen;
2. Slide the blade holder across the base until the blade nearly contacts the specimen;
3. Adjust specimen position relative to the blade (only when directional sample positioning is available);
4. Disengage the main handwheel lock lever;
5. Rotate the handwheel to initiate the trimming process;
6. Conclude trimming when the desired specimen surface is achieved;
7. Release the coarse feed lever.

5.9 Sectioning

1. Operator competency requirement. Severe injury and specimen damage may occur from incorrect blade-specimen contact.

- Only certified laboratory personnel with formal microtomy training may operate this instrument
- All operators must thoroughly study this manual and demonstrate proficiency in instrument features before use

2. Personal protective equipment (PPE) mandate failure to wear PPE risks severe injury.

- Mandatory PPE: Safety shoes, cut-resistant gloves, respiratory mask, and ANSI Z87.1-compliant goggles

3. Fragile specimen handling protocol. Flying debris from brittle specimens causes traumatic injury.

- Wear full protective clothing (including face shield) and exercise extreme caution during sectioning

4. Inadequate sectioning conditions may result in specimen damage or poor section quality, such as uneven thickness, compression, folding, or ribboning effects.

- If unsatisfactory sectioning results are observed, do not continue sectioning
 - ensure all prerequisites for proper sectioning are fulfilled (refer to the Troubleshooting section of this manual for details)
 - Consult qualified personnel if you lack sufficient knowledge to address suboptimal sectioning results
5. Handwheel speed optimization mismatched speed-to-hardness ratio damages instrument/specimen.
- Adjust handwheel RPM proportionally to specimen hardness (slower speeds for rigid samples)

6. Manual sectioning limitation.

- Handwheel rotation shall not exceed 60 rpm to prevent

7. Post-lmf specimen management.

- Always retract specimen head and re-trim after each lateral movement function adjustment to avoid damage

Note:

1. Set/verify target section thickness via thickness display window;

2. Utilize different blade segments for trimming/sectioning (LMF enables full blade utilization);

3. Rotate handwheel clockwise at uniform speed during sectioning;

4. Retrieve sections and mount on slides.

5.10 Replacing Samples or Interrupting Sectioning

1. Specimen retraction phase restriction. Never reposition specimens during retraction.

- Subsequent sectioning advances the specimen by retraction distance plus selected thickness, risking blade/specimen damage

2. Blade guard mandate. Always engage blade guard.

- Before handling blade/specimen clamp. During specimen replacement. When pausing work. Non-compliance risks severe laceration injuries

3. Safe specimen handling protocol. Mandatory actions.

- Wear cut-resistant gloves during all specimen handling

- Lock handwheel + engage blade guard before clamp operations:

a. Move specimen to top position; engage handwheel lock;

b. Cover cutting edge with blade guard;

c. Remove specimen; install new specimen;

d. Retract specimen clamp sufficiently via coarse feed wheel until new specimen contacts blade.

5.11 Routine Operation Completion

1. Waste tray handling precautions.

- Carefully remove and securely position the section waste tray to prevent fall-related injuries

2. Blade holder removal protocol before detaching the blade holder: Wear cut-resistant gloves.

- Remove blade → Store in designated safety container. Failure risks severe laceration injuries from exposed blades

3. Blade storage mandate.

- Store blades in certified blade disposal boxes when unused

- Never store blades edge-up under no circumstances attempt to catch falling blades

4. Paraffin spill & cleanup procedure.

- Immediately clean spilled paraffin to prevent slip/trip hazards near blades:

- a. Rotate handwheel → Move specimen to top position → Engage handwheel lock;

- b. Remove blade → Insert into disposal slot of blade box / Return to storage;

- c. Detach specimen from clamp;

- d. Retract specimen head or slide blade holder outward;

- e. Sweep all trimmings into waste tray → Empty tray;

- f. Perform instrument cleaning.

06 Troubleshooting

Note: Ordered accessories are packed separately. Verify received items against packing lists/orders to confirm completeness. Contact local sales immediately for any discrepancies.

6.1 Potential Issues

Problem	Possible Causes	Corrective Measures
Specimen not clamped.Irregular section thickness(Alternating thick/thin slices, chatter vibration, specimen detachment).Complete sectioning failure	Loose cassette clamp	Contact local sales if embedding cassettes cannot be secured properly
	Dull blade	Replace blade or adjust via Lateral Movement Function
	Damaged/misaligned pressure plate	Install new pressure plate/blade holder
	Insufficient clearance angle	1.Readjust the pressure plate 2. Gradually increase clearance angle until optimal sectioning is achieved
	Paraffin too soft	Use higher-melting-point paraffin or pre-cool paraffin blocks
	Embedding Cassette Not Fully Filled	Ensure the embedding cassette is properly filled.Verify the front retaining block is securely fastened to the cassette
	Incorrect Blade Thickness in blade Holder	Use only recommended compatible blades

Problem	Possible Causes	Corrective Measures
Section Compression and Excessive Pressure Causes wrinkling and prevents ribbon formation	Dull blade	Use an unused blade segment or replace the blade
	Specimen temperature too high	Pre-cool specimens before sectioning
	Sectioning Speed Too High	Reduce sectioning speed
Cracked sections	Paraffin buildup on the blade surface and blade holder back pressure plate	Regularly remove paraffin from these areas
	Clearance angle too deep, approaching zero degrees	Adjust clearance angle
	Cracks/notches present on the blade edge	Replace blade
Sectioning noise when cutting hard specimens, the microtome blade produces a buzzing sound, resulting in scratches or chatter marks on sections	Sectioning speed/thickness too high	Reduce sectioning speed
	Insufficient clearance angle	Gradually decrease clearance angle to optimal setting
	Specimen/Blade holder not secured tightly enough	Tighten all screws/clamps on specimen holder and blade holder

Problem	Possible Causes	Corrective Measures
Excessive sectioning force required	Excessive Sectioning Force	During trimming:Adjust the sectioning speed and/or section thickness.Select a smaller section thickness.Rotate the handwheel more slowly
	Clearance Angle Too Small	Adjust clearance angle

07 Product Configuration List

7.1 Cleaning the Instrument

1. Liquid entering the instrument's interior causes severe personal injury, equipment damage, or specimen loss.

- Ensure liquids do not enter the instrument's interior during operation and maintenance

2. Failure to remove blades when detaching the blade holder from the microtome causes severe laceration injuries from contact with sharp blades.

- Before detaching the blade holder, you must ensure to wear cut-resistant gloves, remove blades, and store them in secure locations

3. Incorrect blade storage causes severe personal injury, for example due to accidental dropping.

- When not in use, blades must be properly stored, such as in designated blade boxes

- Wherever blades are placed, the blade edge must never face upward, and never attempt to catch falling blades

4. Blade holder falls from the instrument cause severe personal injury or property damage.

- If the blade holder is unsecured, such as during installation or cleaning, take care to prevent it from falling

- Secure the blade holder whenever possible to avoid dropping

5. Using incorrect solvents, cleaners, or sharp/hard tools to clean the instrument or accessories may cause instrument failure or diagnostic delays.

- Do not use any solvents containing acetone or xylene for cleaning

- When using cleaners, follow the manufacturer's safety instructions and laboratory safety rules

- Never use sharp or hard tools to scratch instrument surfaces

- Never immerse accessories in solvents or water

- Use alcohol-containing solutions or acetone to clean steel blades

- Do not use xylene-containing alcohols or cleaning solutions (e.g., glass cleaner) to clean and remove paraffin

Pre-cleaning steps:

1. Move the specimen clamp to the top position and lock the main handwheel;

2. Remove blades from the blade holder and insert them into the disposal slot at the bottom of the blade box, or remove the microtome blade and return it to the blade box;

3. Remove the blade holder base and blade holder for cleaning;

4. Remove the specimen from the specimen clamp;

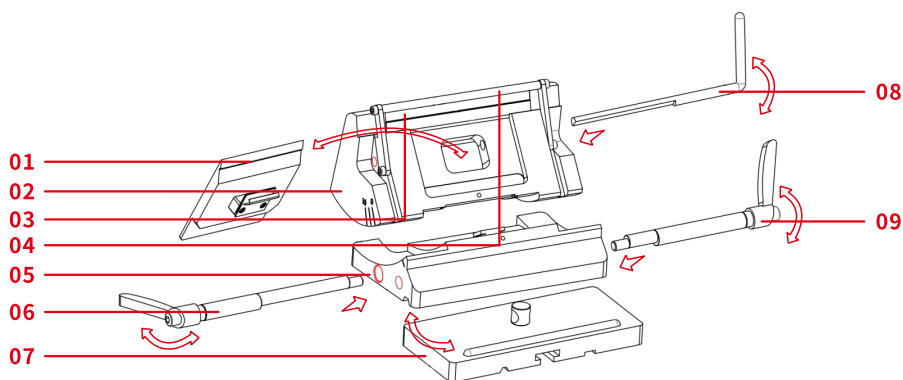
5. Use a dry brush to clear section debris;

6. Remove the specimen clamp and clean it separately.

⚠ Warning

- Incorrect wiping direction during blade cleaning causes severe personal injury. ALWAYS wipe from the spine to the cutting edge

Knife Holder Cleaning



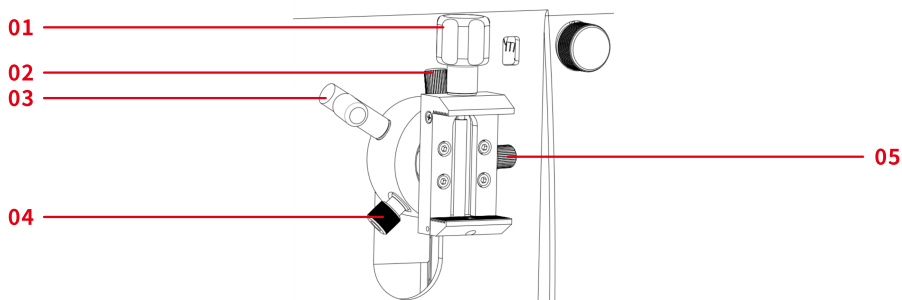
- | | | |
|------------------------|------------------------------|----------------------|
| 01 Pressure Plate B | 02 Arc Bearing Seat | 03 Pressure Plate A |
| 04 Blade Guard Bracket | 05 Blade Holder Support Base | 06 Eccentric Shaft A |
| 07 Blade Holder Base | 08 L-Shaped Wrench | 09 Eccentric Shaft B |

1. Rotate the L-shaped wrench counterclockwise to remove Pressure Plate B;
2. Rotate Eccentric Shaft B counterclockwise, laterally move the locking lever, and detach the Arc Bearing Seat from the main body;
3. Rotate Eccentric Shaft A counterclockwise, laterally move the locking lever, and detach the blade Holder Support Base from the main body;
4. Clean all disassembled components thoroughly;
5. Place the removed parts on absorbent cloth and place in drying oven (maximum temperature 65°C) to remove paraffin contaminants;
6. Wipe the blade holder dry, allow it to cool to room temperature, then reinstall;
7. After cleaning the movable parts of the blade holder, apply a thin layer of machine oil;
8. When reinstalling the pressure plates, ensure the edges of Pressure Plate A and Pressure Plate B are parallel and flush.

❗ Notice

- Mixing blade holder components during cleaning compromises sectioning quality. Never intermix blade holder parts during cleaning procedures

Specimen Clamp Cleaning Components



01 Sample Locking Nut

02 Y-axis Adjustment Screw

03 Eccentric Rod

04 Zero-position Spring Screw

05 X-axis Adjustment Screw

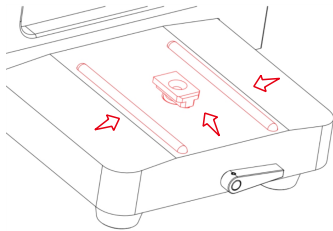
1. Disassemble the specimen clamp and remove all residual paraffin;
2. Do not use xylene for cleaning; use xylene substitutes or paraffin removers instead;
3. Alternatively, place the specimen clamp in an oven (max. 65°C) until molten paraffin is eliminated;
4. Wipe residual paraffin with a dry lint-free cloth;
5. After oven cleaning, cool to room temperature before reassembly.

7.2 Instrument Lubrication

Spilled machine oil that is not immediately cleaned may cause severe personal injury, including slipping hazards or contact with dangerous components such as instrument blades.

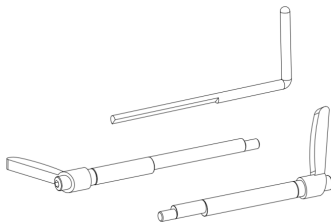
- Never allow machine oil to spill
- If spills occur, clean thoroughly and immediately

Main Unit



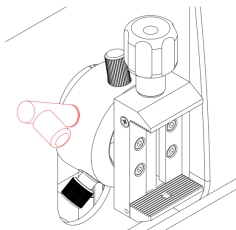
- Guide Rails for Blade Holder Base on Microtome Base Plate
- T-Slot Adapter on Microtome Base Plate

Blade Holder



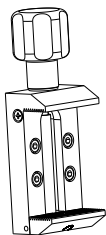
- Lateral movement locking lever
- Blade locking lever

Specimen Clamp Head

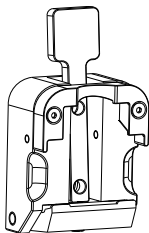


- Lubricating eccentric rod

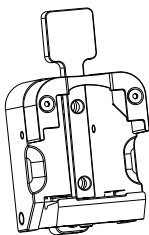
7.3 Accessories



Universal clamp (optional)



Standard embedding cassette clamp (standard configuration)



Thickened embedding cassette clamp (optional)

08 After-Sales Service

8.1 Warranty and Service

We provide pre-sales consultation, installation, debugging, training, and repair services. The instrument is under a 2-year warranty.

Date of Repair	Fault and Repair Details	Date of Repair	Repair Technician



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