



FULLY AUTOMATIC MICROTOME

HTP21-600A



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1. Information

1.1 Symbol and Meaning



Danger:

Indicating an urgent dangerous situation that, if not avoided, will result in death or serious injury.



Warning:

If you do not avoid this danger, it may result in death or serious injury.



Caution:

Indicating a potentially hazardous situation that, if not avoided, may result in death or serious injury.

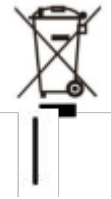


Note:

Indicating information that is not related to risk but is very important. Follow this User Manual.
Note that see the User Manual for relevant warning information.



IVD medical device



Waste electrical and electronic equipment should be collected separately.



Power on

Power off



Biohazard warning (black line on yellow background)



Sign indicator of using flammable solvents and reagents (black line on yellow background)



This warning symbol indicates the instrument surface that will be hot during operation.
Avoid direct contact to prevent burns.



Environmental protection sign of RoHS Directive. The figure in the symbol refers to the product's

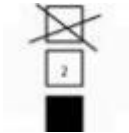
number of years of “environment-friendly use” . Use this symbol if the use of a restricted substance exceeds the maximum allowable limit.



Serial number ,Manufacturing date, Manufacturer



No stacking



Limited height of 2 floors (accessory cases only)



Indicating the correct vertical position of the packing container.



Goods are fragile and must be handled with care. The package must be stored in a dry environment.



Recycle in accordance with local laws and regulations.



It meets the requirements of EU Directive 98/79/EC for IVD medical devices. Item indication number in the illustration.

1.2 Instrument Use

- The user should read this user manual carefully before installation and operating the machine.
- Check your power socket is well grounded.
- Blade is sharp, beware when you change it.
- Do not place blade anywhere with the cutting edge facing upwards.
- Before changing specimens always lock the hand wheel and cover the knife edge with the knife guard.
- Do not put instrument under extreme temperature and high air humidity environment. Failure to follow this will cause instrument severe damage.
- Please keep instrument far away from fire.
- In case of malfunction, contact our company. Don't try to solve it by your own risk.

2. Instrument Components and Specifications

2.1 Basic Information

The microtome is the national regulated first class medical equipment. It is a device used for human and propagation tissues pathological section analysis. It is used to cut paraffin embedding specimens, thin section mounted specimens. It can be widely used for pathological diagnosis analysis and research in hospitals, medical colleges, legal medical experts and propagation institutes. The product has the characteristics of reasonable design, strong structure, good stability and easy to use.

The nameplate behind the instrument indicates the model, serial number and manufacturing date.

The instrument mainly consists of the following:

- Box type specimen clamp
- Direction movable support for the specimen clamp
- Fore-and-aft movable knife holder and locking device
- Removable waste tray
- Microtome hand wheel and locking device
- Seat and driven mechanism on it
- Cover
- Electronic control system
- Chromatic LCD touch screen
- Cassette Clamp

2.2 General overview



Figure 1

3. Technical Parameters

3.1 Section thickness: 0 μ m -100 μ m, adjustable. (Set 3-5 μ m may get the best shape)

Setting values: From 0.5 μ m -5 μ m; in 0.5 μ m increment

From 5 μ m -20 μ m; in 1 μ m increment

From 20 μ m -60 μ m; in 5 μ m increments

From 60 μ m -100 μ m; in 10 μ m increments

3.2 Trimming thickness: 0 μ m - 600 μ m adjustable

Setting values: From 0 μ m -10 μ m; in 1 μ m increments

From 10 μ m -20 μ m; in 2 μ m increments

From 20 μ m -50 μ m; in 5 μ m increments

From 50 μ m -100 μ m; in 10 μ m increments

From 100 μ m -600 μ m; in 50 μ m increments

3.3 Retraction value: 0-150 μ m

3.4 Specimen horizontal travel distance: 25mm

3.5 Specimen vertical travel distance: 60 mm

3.6 Number of languages: 2 (Chinese & English)

3.7 Power supply: 220V \pm 10%; 50Hz(AC110 60Hz)

3.8 Input power: 80W

3.9 Dimension: (L \times W \times H) 620 \times 410 \times 310 (mm)

3.10 Total weight: about 40kg

3.11 Working noise: less than 65dB (A)

3.12 Remind:



Protective grounding (earth)



Check the random file



Prevent electric shock

Figure 2

4. Installation

4.1 This instrument is a movable desk top type which can be placed on the experiment stable working table to prevent it receiving quakes from the ground, and don't install other vibrating equipments round it.

4.2 Place the instrument with appropriate space around it to ventilate and smoothly rotate the handle.

4.3 After confirming power with grounding wire (three holes socket), connect the instrument and power socket by attaching wires. Turn on the switch on the back of instrument and it is under state of working.

4.4 This instrument uses single-phase voltage 220V \pm 10% and 50Hz AC power supply. If does not meet requirement, it needs to externally connect AC voltage stabilizer.

4.5 The instrument should be used at ambient temperature +10 $^{\circ}$ C~+40 $^{\circ}$ C.

4.6 Environmental relative humidity shall not be more than 80%.

4.7 Unpacking

4.7.1 Please check if there are any damages, water immersion, or other phenomena that may cause equipment damage in the packaging box;

Check if the arrow on the box is facing upwards;

Please prepare a flat screwdriver for unboxing;



Figure 3

4.7.2 Please use a "straight" screwdriver to open the buckle of the outer box

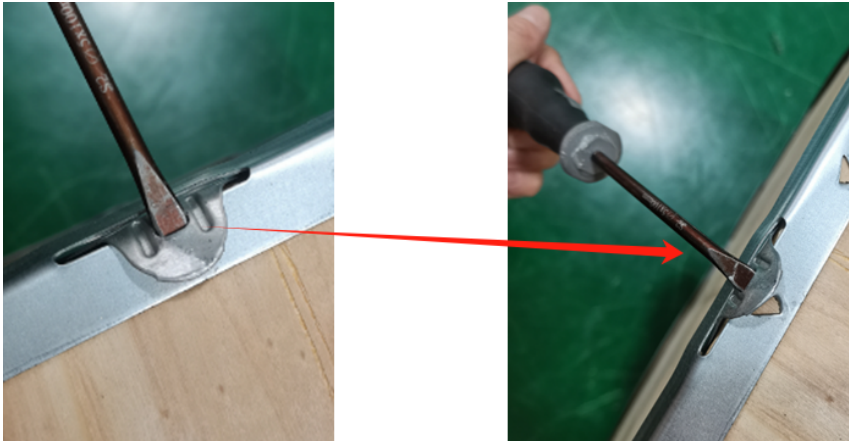


Figure 4

4.7.3 Remove the cover plate

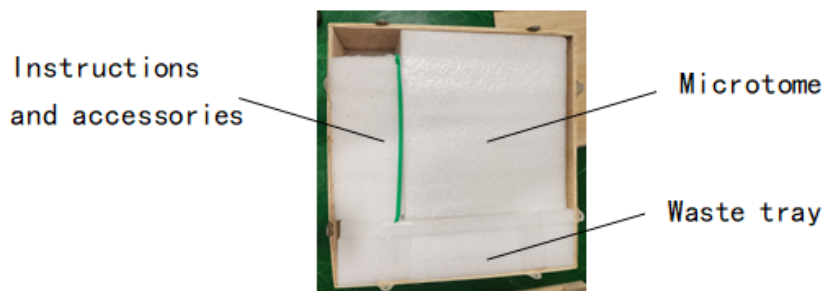


Figure 5

4.7.4 Remove the internal filling material

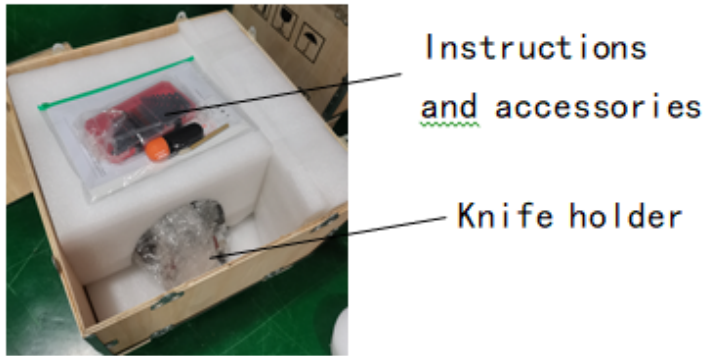


Figure 6

4.7.5 Remove the machine according to the diagram below

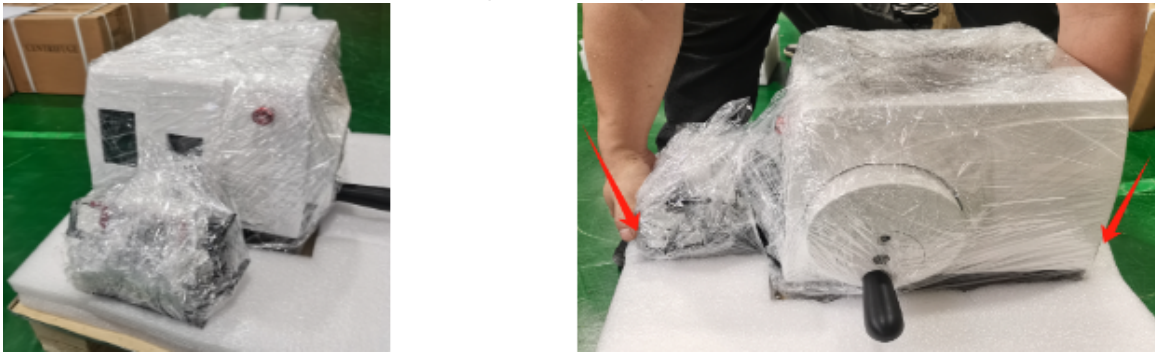


Figure 7

When moving the instrument, do not exert force on the cover, knife holder, and wax block pliers. It is better to support the base area

5. Operation

5.1 Turning on



The instrument should be connected to a grounded main power outlet socket. To connect the instrument only by using one of the main cables supplied together with the instrument. Turn on switch at the rear of instrument, after instrument start, LCD screen is showing as Fig 8.

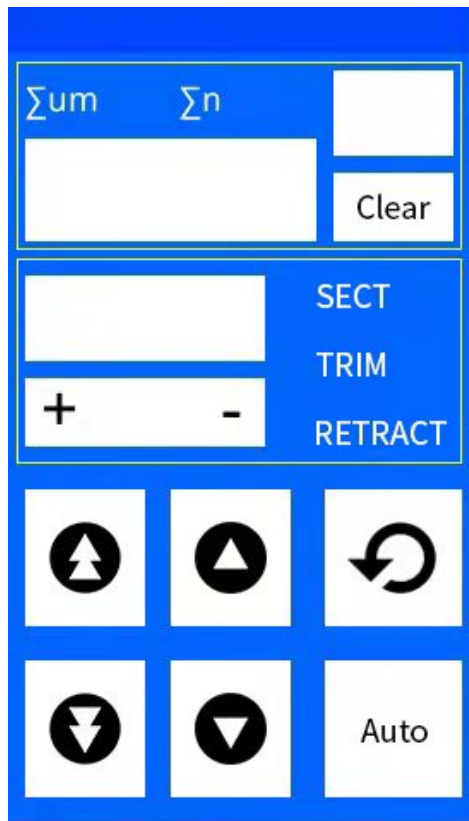


Figure 8

5.2 Description and operation for LCD touch screen

5.2.1 Total amount of cutting times and thickness

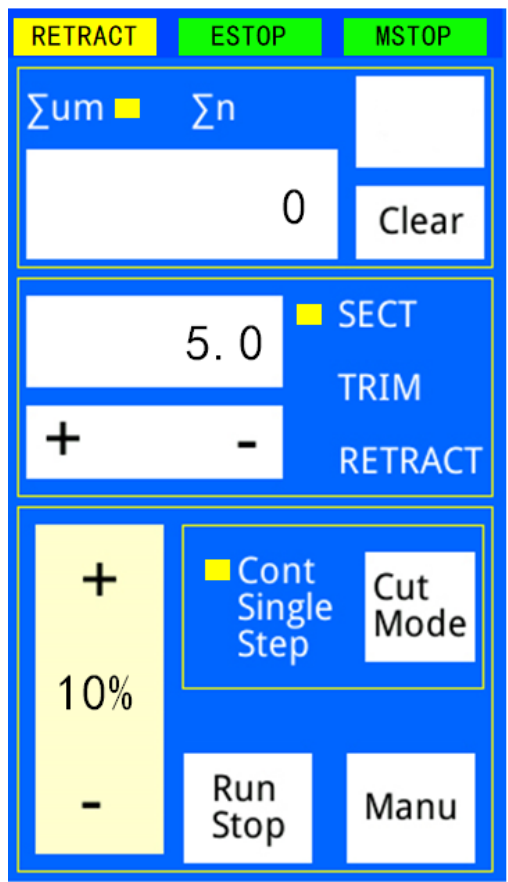


Figure 9

Press “Σn” to displayed the number of cutting times ; Press “Σum” to displayed the number of thickness . When you choose any step, the corresponding yellow light will light up
Press “clear” to reset.

5.2.2 How to set the section/trimming thickness/ retraction

“SECT” ——Section thickness;

“TRIM” ——Trimming thickness

“RETRACT” ——Retracting value

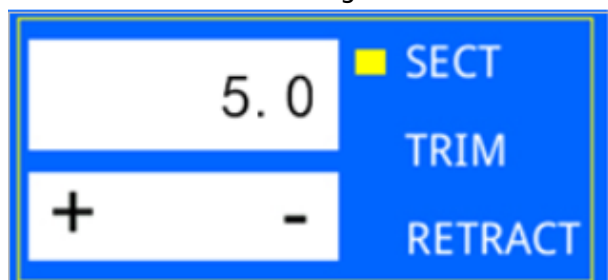


Figure 10

Press “+” and “-” to increase or decrease the setting thickness ; Alternatively, you can click on the blank box and directly enter the number. Retracting value is from 10 to 150um adjustable.

5.2.3 Movement of the specimen clamp

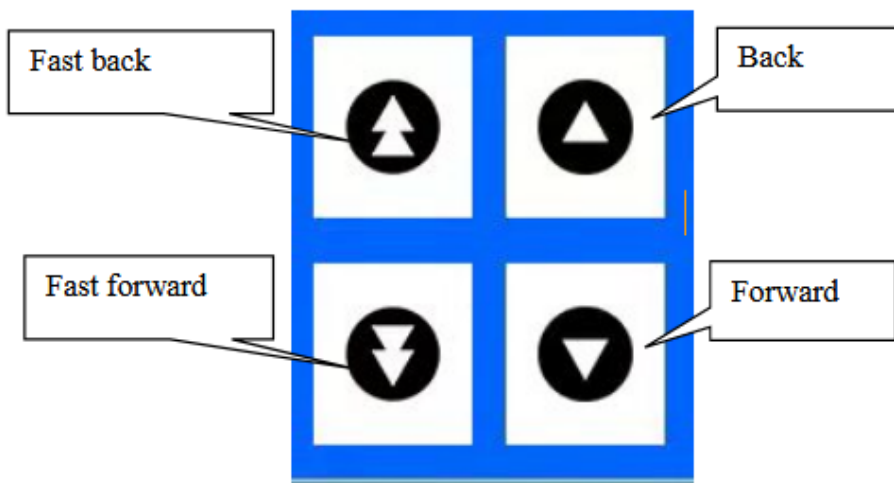


Figure 11

Lower half for the LCD screen is the touching area:

"↑↑" — Fast back: Press it once and the cassette clamp moves back at a speed of 60mm/min and will stop at the limit while the blue light stay lit. Press the button again to stop moving.

"↑" — Back: Press on it and the cassette clamp moves back at a speed of 30mm/min and stops when the pressure is gone. The blue light on the left top of the button flickers during movement and stays lit when move to the limit.

"↓↓" — Fast forward: Press it once and the cassette clamp moves forward at a speed of 60mm/min and will stop at the limit while the blue light stay lit. Press the button again to stop moving.

"↓" — Forward: Press on it and the cassette clamp moves forward at a speed of 30mm/min and stops when the pressure is gone. The blue light on the left top of the button flickers during movement and stays lit when move to the limit.

5.2.5 How to choose a language



Figure 12

Unit enables to display by English

Press "Eng" the language can changes.

5.3 Operating instructions for sectioning and trimming.

- (1) Put the paraffin-embedded specimen into the specimen holder of the microtome. Then rotate to fix it to the lock lever. The specimen fix the clamping properly.
- (2) Put the disposable blade into the knife holder (Please lock the hand wheel first), face the cutting point to the specimen.
- (3) Adjust the section thickness and trimming thickness according to the needing.
- (4) Rotate the hand wheel. Rotate a circle for cutting one piece; continuous rotation for getting continuous pieces. On LCD screen Σn 、 Σum (press "Menu Mode" to switch) can show you the total section thickness and total numbers.
- (5) Stop shaking the hand wheel and lock the lever. Put the sections into the tray carefully with the forceps.
- (6) After section, clean up the microtome promptly. Keep the knife and holder tidily.

5.4 Switch of manual and automatic

The button "Auto" is for switch of manual and automatic.

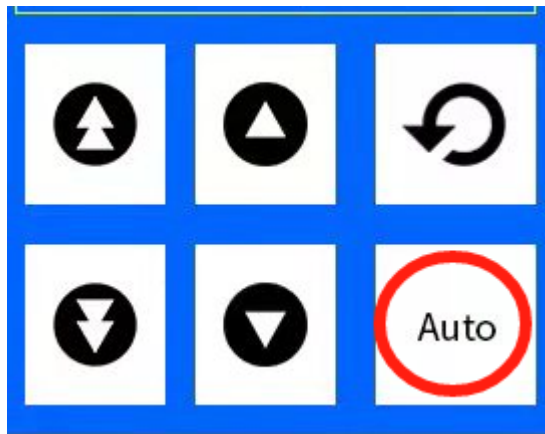


Figure 13

5.5 Automatic operation

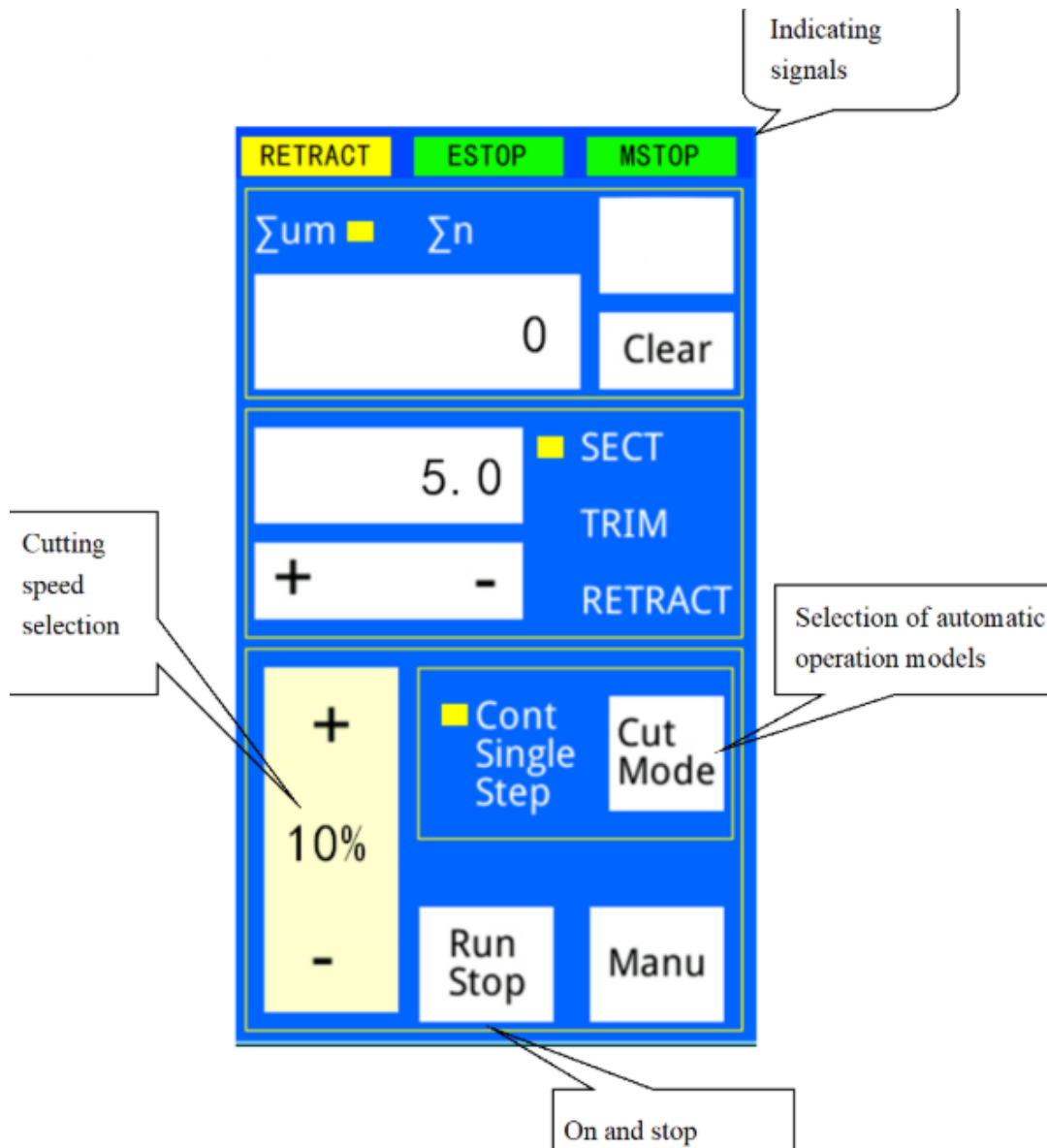


Figure 14

5.5.1 Selection of automatic operation models.

Press "CUT MODE" button to select operation models before automatic operation, there is yellow light showing model state.

CONT: continuous operation after microtome switched on, press "RUN STOP" to stop it;

SINGLE: single operation, one press of "RUN STOP" one time of operation. Then stoped.

STEP: "RUN STOP" for operation for one time, then stoped.the light flicking in "STEP".press "RUN STOP" the microtome cutting once more."CUT MODE" for quit.

5.5.2 RUN AND STOP

Press "RUN STOP" button for 3 seconds(all the three yellow indicator was on), the machine operate automatically. Repress "RUN STOP" to stop it.

5.5.3 selection of cutting speed

Press "+" and "-" to select cutting speed. Selection range is 100%-10%.When speed was 100%, it is about 60 pcs/s. There is speed percent index above the button

5.5.4 Indicating signals

On top of the working menu, there are 3 indicating signals:

- (1) RETRACT: retracting signal and indicates retracting when becomes orange;
- (2) ESTOP: emergency signal and indicates functions disabled when becomes red. Clockwise rotate the “emergency stop button” to shut ESTOP down, then the unit can be turn on normally.
- (3) M_STOP: Hand wheel lock indication. When the status is red, it indicates that the hand wheel lock is in the locked state and the machine function is locked. Open the hand wheel lock, the red color disappears, and the machine can start normally.

6. Parts adjustment

6.1 Specimen holder and orientation system

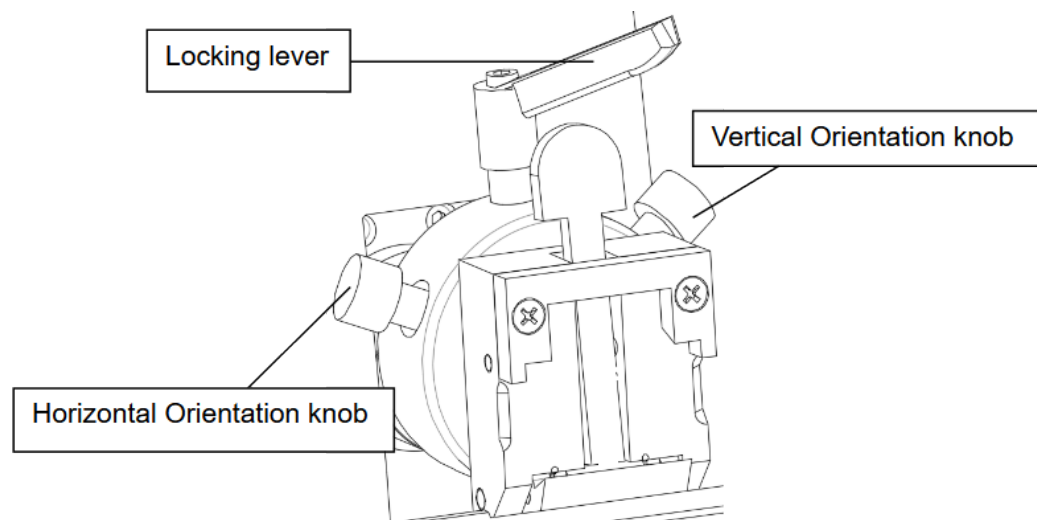


Figure 15

- Turning the locking lever (Fig 3) to set the specimen holder to the adjustable release condition and section lock status.
- Turning the two orientation knobs under release condition make specimen holder clamp plane deflexion by pass horizontal axis and vertical axis for ensuring required tangent plane location to decide the required plane cutting location.
- Turning the adjustable lever to lock and loose specimen holder clamp

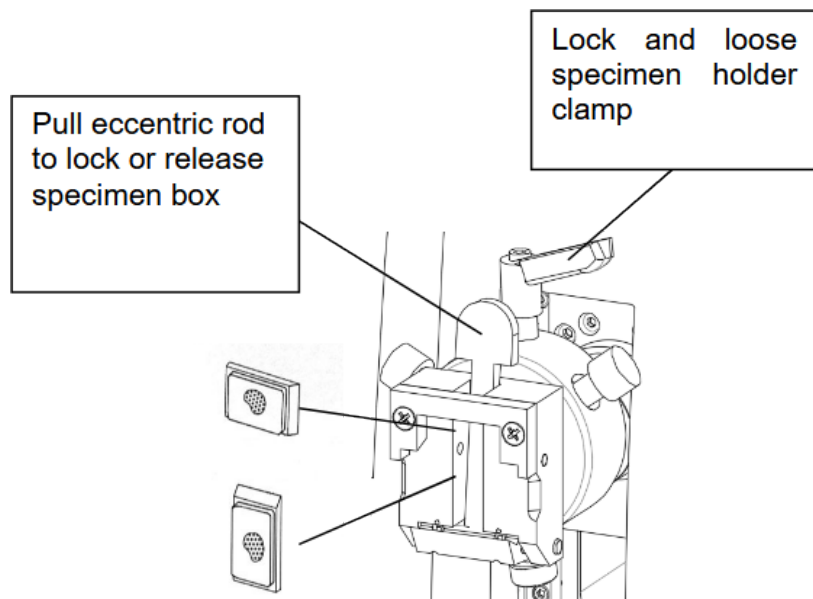


Figure 16

6.2 Box shaped specimen clamp.

- Turning the spanner (Fig 4) on the specimen clamp can make the jaw in the state of braced and locked.
- The specimen can be put in or take off in the state of braced.
- Specimen box may be placed horizontally or vertically.

6.3 Knife holder

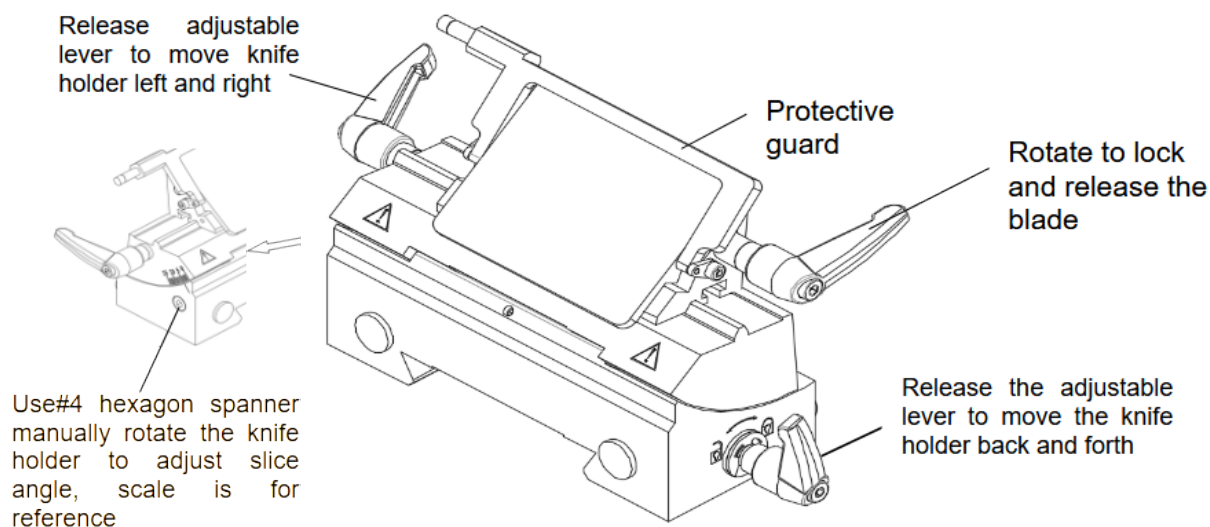
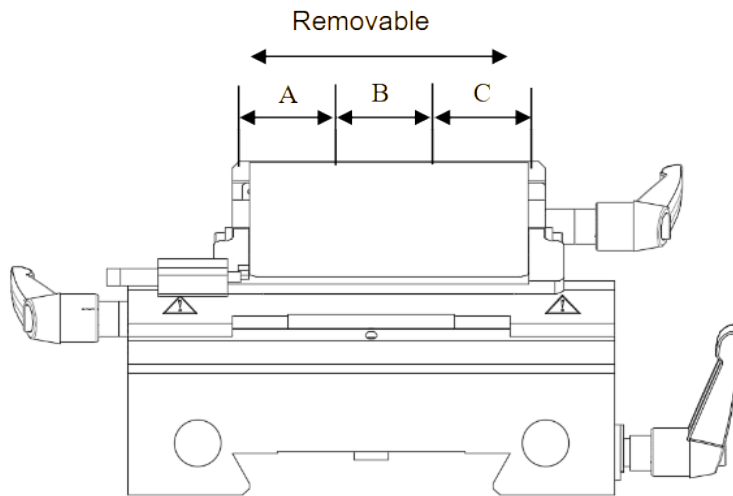


Figure 17

- To turn the adjustable lever under knife holder to release and lock knife holder base.
- In release conditions you can make the knife holder base do the back and forth movement by hand to choose latched position needed. There is a scale under knife holder for reference by location.
- Use hexagon spanner to turn the eccentric rod in the hole on the left side of the knife holder to release and lock the rotator of the knife holder.
- In release condition you can move the rotator by hand to choose locked cutting angle needed. There is

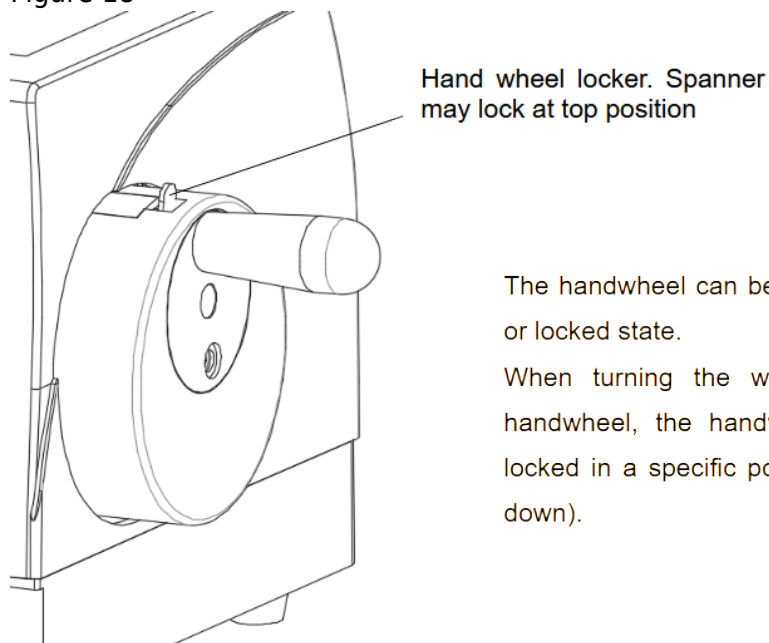
a scale on the right side for reference by location.

- Turn adjustable lever on the rotator to release and lock knife clamp.
- In release condition you can make the knife clamp do the left-and-right movement by hand to choose latched position needed.
- Turn adjustable lever on the knife clamp to release and lock knife flat.
- You can put in or take off the knife in release conditions. Take off the knife after finish the work.
- The protecting plate shall be on the installed position when the knife is on the knife clamp.



The knife holder can move freely. It can improve the efficiency for the disposable blade. The user can divide the blade into three parts, A,B,C. It's more effective to use of the blade and save consumables cost.

Figure 18



The handwheel can be in a released or locked state.

When turning the wrench on the handwheel, the handwheel can be locked in a specific position (up and down).

Figure 19

7. Normal Troubles Solving Methods

There are normal problems in the following table which are likely to happen when the instrument is used. Besides, there are some possible causes that lead to these problems happened and solving methods.

Trouble	Reason	Solving Methods
7.1 Possible phenomena		
(1) The section is uneven. The thin and thick section is alternate, even if sometimes it doesn't cutaway.	The knife centre gripping is improper. Knife is dull Pressure plate is broken or adjustment isn't right. The cutting angle of the knife is too less.	fasten knife again Move the knife holder lateral or stick in new knife. Change new holder plate, or use new knife holder Readjust holder plate Increase the cutting angle gradually until find the optimum
(2) The section is congestion and compressive. The sections congestion. There is the phenomenon of crease and nip.	Knife dull Specimen temperature is high Cutting speed so fast.	Use the other part of the knife or a new one. Make the specimen cool before cutting. Reduce the cutting speed.
(3) There is fringe in the section.	On the pressure plate is filling up paraffin on the back of the knife holder.	Clear up this regional paraffin.
(4) There is noise when cutting. The knife will shake and sound when cutting some hard specimen. There is pull or slightly frictional make on the knife.	Cutting speed too fast. The cutting angle is too big. Clip of specimen or knife not fixed.	Turn hand wheel at a rather low speed. Decrease the cutting angle gradually until find the optimum one. Check all the screwed and jaw connection in the specimen rest and knife holder system. If necessary, fixture the control rod and screw.
Trouble	Reason	Solving Methods
7.2 Instrument failure		
(1) No section is cut when turn the hand wheel.	● The specimen has reached to the extreme position.	Press "back" key to make the specimen backward and so the knife holder.
(2) Knife service time is short	The power for section is too strong.	Adjustment the cutting speed or the section thickness in the process of cutting. Choose smaller section thickness or slow down speed of turning hand wheel.

Table 1

8. Cleaning and Maintenance.

8.1 Cleaning up the instruments

8.1.1 Conduct the following steps before cleaning each time:

- Turn up the specimen grip to the top and lock the hand wheel.
- Release the specimen grip and pull it out.
- Pick off the knife from the knife holder and put it back to the knife box.
- Dismount the knife holder and its seat to clean up.
- Take down the specimen from the specimen nip. Clear away the section waste with dry brush.
- Take down the specimen grip to clear up separately.

8.1.2 Instruments and external surface:

If necessary, the external painted surface can be cleaned with light-duty commercial housework cleaner or suds. And then use wet cloth rub it until dry.

You may use the substitute of xylene, paraffin oil, paraffin scavenger to erase residual.

The instruments must be dry when use again.

8.1.3 Knife holder

Please according to following steps to clean up the knife holder if it had been dismantled.

- Downwardly turn over the cutting edge cover sheet.
- Turn the eccentric rod handle in the lateral of the body of revolution and draw it out from sideward.
- Push the knife clamp back which have knife clip and shift it out from the rotary unit.
- Turn the eccentric rod handle in the lateral of the knife clap and draw it out from sideward.
- Dismount the knife clamp.
- Clean up all parts of the knife holder.



Don't use xylene or alcoholic liquid (e.g.: glass cleaner) when clean up paraffin.

- Make the knife holder dry and assemble it together.
- Apply to thin layer of lubrication after clean up the parts which had been taken off.
- When fix the knife clip, make sure that its upper part is parallel with the back edge of the knife clamp seat.

8.1.4 Box shaped specimen grip

- Dismount the box shaped specimen grip to clear away the residual paraffin.
- Don't use xylene or alcoholic liquid to clean up. Use the substitute of xylene or paraffin scavenger.
- You can put the box shaped specimen grip into oven to heat it to 65°C until lipid paraffin bleeding off.
- Wipe off paraffin with dry cloth.
- Apply oil to the axis grasping joystick after using oven heating method.

8.2 Lubricate instruments.

Do oil lubrication for the following parts monthly. (1~2 drop is well enough)

Instruments and specimen holder

- Grip draw in the clamp.
- Lock in iron at the "T" knife clamp back of the microtome bedplate.
- The knife holder slide way on the microtome bedplate.

Knife holder

- Lock in iron at the "T" body of the rotary units on the knife clamp seat.
- The knife control grip is shift to the eccentric rod handle.
- The iron locking head on the knife clamp of the "T" body of rotary unit and the knife holder with slide way.
- The grasping joystick of the knife.

Box shaped specimen grip

- The bearing of the grasping joystick.

9.Storage and transportation

9.1 Storage: After packaging, the product can be stored for half a year under the temperature of 0-40°C, no acid, no alkali and no corrosion gas.

9.2 Transportation: The packaged products can be applied to various modes of transportation under the condition of avoiding direct rain and snow.

10. Notices

- Must grasp the specimen before positioning the knife. During the operation locking hand wheel and cover the knife edge with its cover sheet.
- Be most careful when you take the section knife. It is possible to lead to bad hurt because of the sharp cutting edge.
- You should turn the hand wheel with the same speed during the cutting process. The hand wheel turning speed must suit with the hardness of the specimen. Harder specimen use slow speed.
- Locking hand wheel and covering the knife edge with its cover sheet when changing specimen piece.
- The instrument should be positioned on the experiment work table level and stable. Preventing it from quake from the ground, and don't put other equipments which may produce vibration near the instrument.
- Holding the fore and end trough of the back when moving it and don't hold the other parts like hand wheel handle.
- Periodically cleaning the instrument.
- Locking the hand wheel before cleaning.
- Don't use acetone or xylene liquid to clean up the instrument.
- Make sure that no paraffin comes into the inside of machine during the cleaning.
- Please follow the safety warnings of the manufacture when using cleaning solvent.
- Put the hand wheel on the locking position when turn down the instrument.
- Electronic parts be repaired by professionals and other people do not touch them.

11.Packing list

order number	name	quantity
1	main engine	1
2	user's manual	1
3	An inch of brush	1
4	inner hexagon spanner	1
5	power line	1
6	3A insurance pipe	1

Always keep this manual with the instrument
Read carefully before working with the instrument

LABSTAC

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