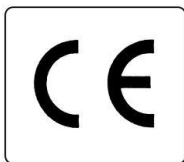


Operation Manual

Semi-Automatic Microtome

ZFP012



Version 1, 2019



Semi-automatic Rotary Microtome ZFP012

Index

Registration Number : _____
Publication Date : _____

All information data, indication and explanation in this manual consist of normal scientific knowledge and craftwork technology .

Please read this manual book carefully before operating the Computer Microtome ZFP012, and especially pay more attention to Safe Indication in Three chapters and Warnings in other chapters.


Only eligible users can operate the machine according to the indication in this manual. This microtome is just for tissue section of histology and pathology.

Only eligible maintenance men and professional workers can maintain the microtome. Maintenance and service of after-service will be supplied by our service department.

Because of the improvement of technical knowledge, we have the right to make improvement of technology upon of this one.

There is specification, publication Date and Registration Number in the nameplate in the back of machine.

Word explanation:

 "Warning" ---- if violated, there will be a severe accident and it will hurt the machine or user badly.

"Attention" --- if violated, the operation will be error and not work continually, even will be hurt the machine.

"Indication" ---- remain to the best proposal of operation, more detailed explanation of the function, or more accessories.

Contents

Index.....	1
Contents	2
1. General description.....	3
2. Main technical parameters.....	4
3. Unpacking and installment.....	4
Installment the microtome	4
Requirement for Site.....	4
Installment of waste tray.....	5
Installment of handwheel.....	5
4. Safe indication of operating the microtome.....	5
5. Illustration the microtome	7
6. The Specimen Orienting System.....	8
7. Knife carrier's Fixing System.....	8
Installment of knife carrier	8
Adjust section angle.....	9
Knife carrier's Safe System.....	9
8. Function induction of LCD and control panel.....	10
9. Operation.....	11
Switch on.....	11
Fixing the specimen.....	11
Fixing the knife carrier.....	11
Fast forward and backward	11
Trimming	11
Section.....	12
Position of specimen clamp.....	12
Auto "sleep" protection function	12
10. Cleaning and daily maintenance.....	13
Shut down the microtome.....	13
Cleaning	13
11. Problems and Solution.....	14
12. Store and Transportation	15
13. Packing list	15
14. Maintenance and After-service.....	15

1. General description:

Thank you for your choice of Semi-Automatic Rotary Microtome (Touch Screen Model).

The ZFP012 Semi-Automatic Microtome is used widely for routine and laboratory section in hospitals, medical colleges, Animal and Plant Quarantine, medical jurisprudence inspection departments and Scientific research units. It is used for slicing different thickness specimen section for pathological diagnosis.

The microtome integrates the distillate of technology of our company, adopts advanced design idea in the world. Its main components are imported from reputed manufacturers in the world. No matter setting program is easy or the rotation of the handwheel is light, which greatly reduces the labor's intensity in the section job.

Our unique design of the specimen clamp that can be adjust the angle arbitrarily. Precision Roller Cross Guide and Step Motor Driver System are available with sustained lubricating and automatic adjustment. There is not need of adding oil and maintenance, etc.

The microtome lives up to that standard in a unique manner: stable performance, easy operation and exemplary comfort and safety standards characterize as much as the comfortable level of the working surface and the ergonomic design.

Its main functions: "fast forward "fast backward", section and trimming thickness adjustable freely between 1~100um, auto sleep protection, etc.

Touch screen: Section and trimming thickness
Section counter
Stroke position/distance

2. Main technical parameters:

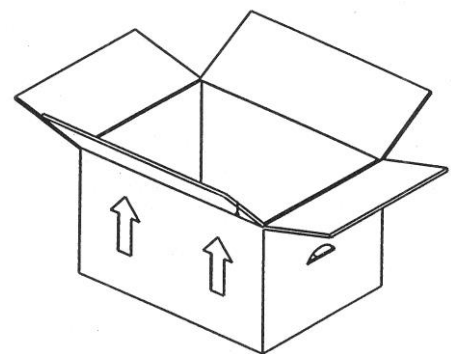
Section thickness range:	1-100 μ m
Trimming thickness range:	1-100 μ m
Specimen retraction	12 μ m
Max. Horizontal dislocation of specimen stroke:	20mm
Max. Vertical displacement of specimen stroke:	60mm
Min. section thickness gradual value:	1 μ m
Min. trimming thickness gradual value:	1 μ m
Section precision:	\pm 10%
Max. size of specimen section	50 \times 45mm
Overall dimension:	(L) 500 \times (W) 420 \times (H) 310mm
Wet weight:	32kg
Gross weight:	38kg
Environmental temperature:	10 $^{\circ}$ C \sim 40 $^{\circ}$ C

3. Unpacking and Installation:

Please check the weather Tip-n-Tell indicators on the outside of the carton box is upon or not. Make sure it is upon.
Cut off the plastic bands on the outside of carton.
Take out the accessory box and the instruction manual.
Remove the around foam packing.

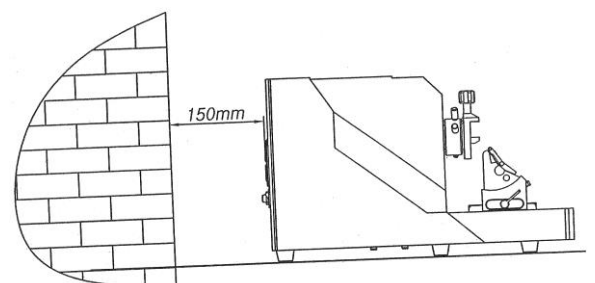


Do not carry the instrument with the handle of the handwheel, or Blade Carrier device.



3.1 Installing the instrument:

Place the instrument on a stable laboratory table, with back away from the wall about 150mm.

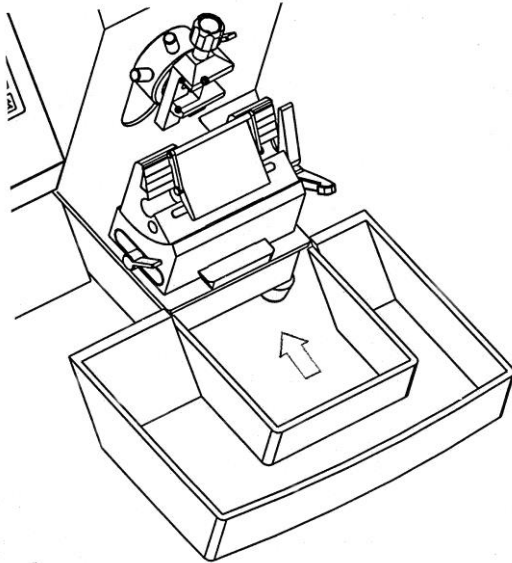


3.2 Requirement for site:

The installation site must meet the following requirements:

- Stable, vibration-free laboratory table
- Vibration-free floor
- room temperature always between+10 $^{\circ}$ C \sim +40 $^{\circ}$ C.

3.3 Section waste tray:

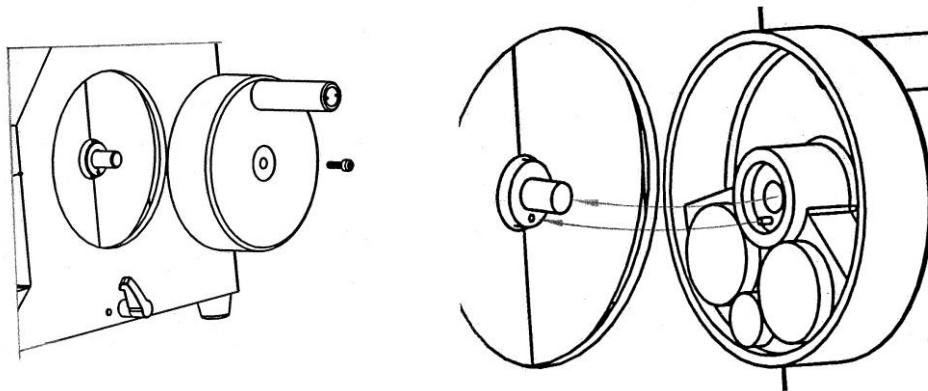


Insert the section waste tray as the figure indicates.

The spindle in the handwheel should be inserted into the hole in the machine. **Especially the small bolt must be inserted into the small hole.** Then tighten the screw with an inner hexagon spanner from the toolbox.

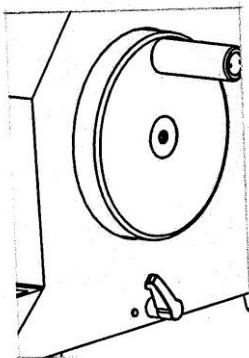
3.4 Installation of the hand wheel

Make sure the axis of the hand wheel is in the axis hole of the hand wheel. Then fix the screw with the inner hexagon spanner.



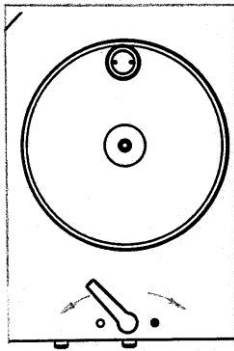
4. Safety instruction for operating the instrument:

Safety devices (Spanner)



The safety devices on the instrument and accessory equipment must not be removed or revised!

Safety device of the hand wheel: the locking system: the spanner controls the hand wheel, lock the hand wheel at any position of rotation.

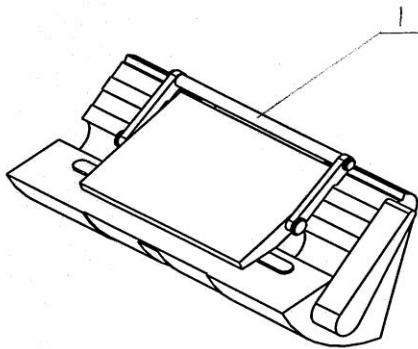


Do lock the handwheel prior to manipulating or changing the specimen or knife.

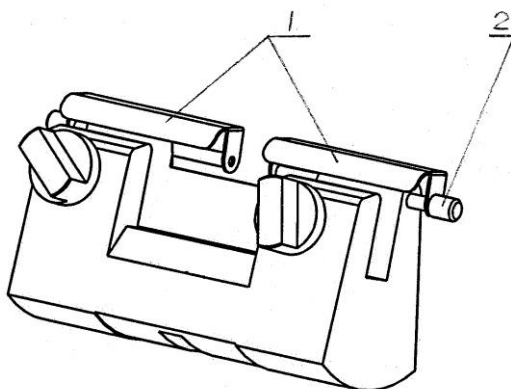
The handwheel can be locked in any direction with the locking spanner. The locking spanner can be set on the locked or released position on the right side of the base.

Inspection: Push the locking spanner backside until the handwheel be locked and can't rotate.

Release action: Push the locking spanner to the front side, and the handwheel can rotate again.

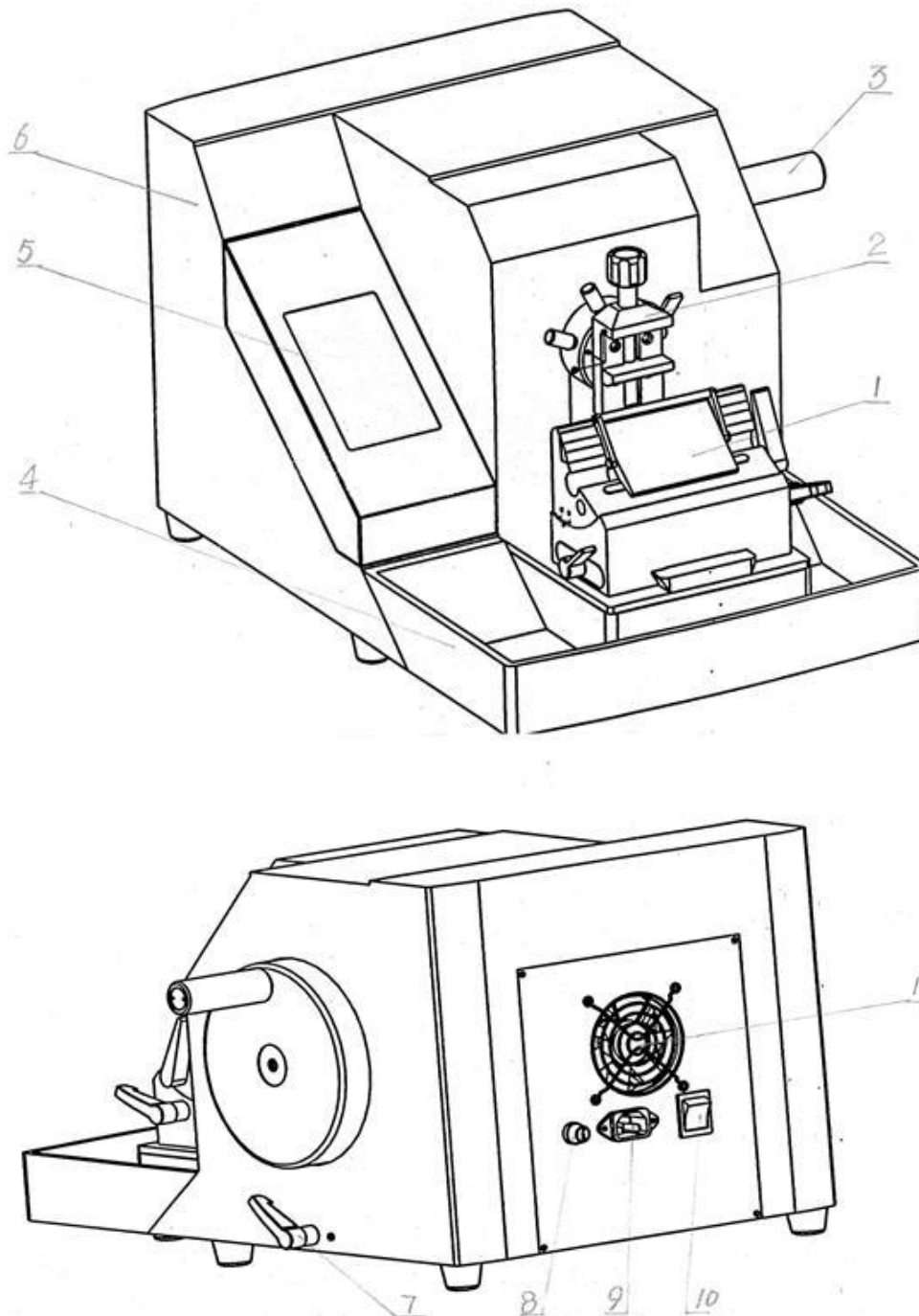


Every Knife (Blade) carrier has different shape Knife (Blade) guard (1) that allows to cover the cutting edge completely. Turn over the knife (Blade) guard handle (2) to cover the knife (Blade) edge.



Prior to manipulating or changing the specimen or knife (Blade), and during breaks, it must always cover the cutting edge with the knife (Blade) guard!

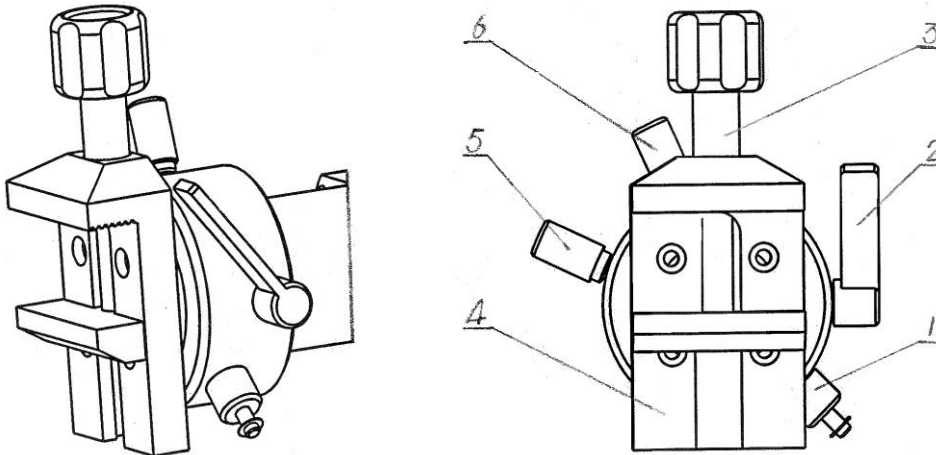
5.Illustration of Microtome



1.Knife (Blade) carrier 2. Specimen clamp 3. Handwheel 4.Waste tray 5.Touch Screen Panel 6.Cover 7.The lock spanner of handwheel 8.Fuse 9.Power connection 10.Power switch 11.Fan

6. The specimen Orienting system:

The specimen orienting system consists of specimen clamp and angle adjusting device. The specimen clamp can be adjusted right and left or up and down to obtain the best slicing angle.



- 1 Springs screw 2 lock spanner for clamp 3 screw for controlling size of clamp
4. specimen clamp 5 screw for left and right 6 screw for up and down

Attention : The specimen clamping system has been installed and adjusted appropriately. Users don't need to dismount and adjust by himself.

7. Knife carrier's Fixing System

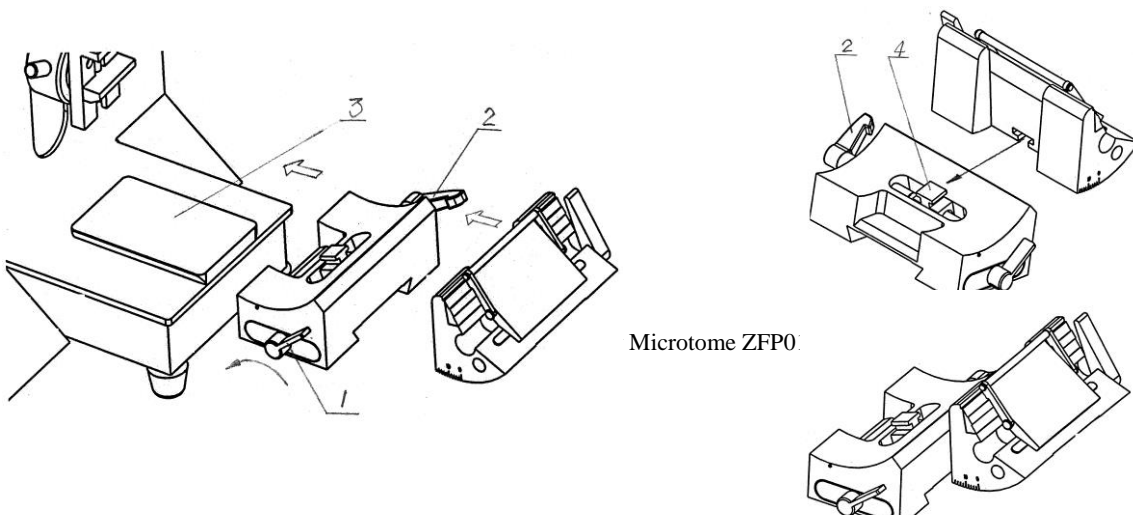
7.1 Installment of the knife carrier:

1) Rotate and release the fixing spanner (**1**) of the knife carrier base, push the carrier base forward along with Rail (**3**) in the machine .Then lock the fixing spanner and fix knife carrier base.

2) Rotate and release the fixing spanner (**2**) of knife carrier .

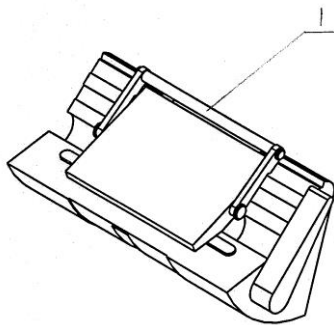
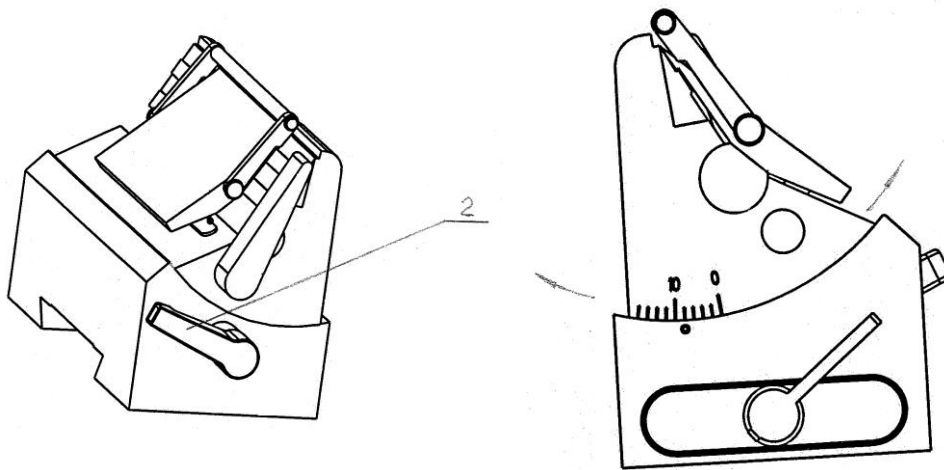
3) The locking block (**4**) of the knife carrier base enter the T shape tray of the knife carrier.

4) Rotary and lock the fixing spanner (**2**) of knife carrier to lock the knife carrier .



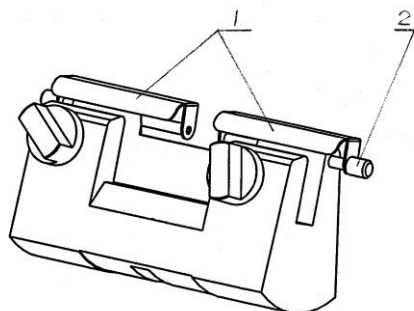
7.2 Adjusting the cutting angle:

1. Release the fixing spanner (**2**) of the knife carrier.
2. Turn the knife carrier, adjust the knife carrier angle according to different specimen hardness and section thickness
3. Lock the fixing spanner (**2**), and fix the knife carrier on the knife carrier base.



7.3 Knife (Blade) guard on the knife carrier

A safety device for moving the knife or revising the instrument.



Prior to manipulating or changing the specimen, knife and blade, even during breaks, it must always cover the cutting edge with the knife(blade) guard!

Knife and disposable knife holder

Be careful during adjusting knife or disposable knife holder, because the cutting edge is extremely sharp, any mal-operation may cause injury to hands.

8. Functions induction of the Touch Screen Control Panel



Touch Screen Panel: Show the Stroke Distance, Counter, Show or Set Trimming Thickness, Section Thickness

“TRIM” button: Press this button to select trimming model, cursor flicker in the thickness value, adjust thickness by pressing the “FF” button or “FB” button

“SECT” button: Press this button to select section model, cursor flicker in the thickness value, adjust thickness by pressing the “FF” button or “FB” button

“FF” button: Press this key to let specimen clamp to move fast forward .if under Section or Trimming model ,Press this button to increase the thickness when cursor flickering in the thickness value .

“FB” button: Press this key to let specimen clamp to move fast draw-back. if under Section or Trimming model, Press this button to decrease the thickness when cursor flickering in the thickness value .

9.Operation

9.1 Switch on

Ensure that the instrument is laid steadily on a firm and solid testing table.

Insert the power cord plug in the input socket on the rear cover board, and then connect through the 220V main power supply.

Turn on the general power switch, the power switch and screen light up, and the specimen clamp resets fast.

9.2 Fixing the specimen

Rotate the handwheel till the specimen clamp is hoisted to the highest position, and lock the handwheel. Loose the specimen clamp and mounting the specimen tissue and fix it.

9.3 Fixing the knife or disposal blade

Insert the blade into the knife(blade) carrier and fix.


Adjust the appropriate knife angle.

Release the fixing spanner of the knife(blade) carrier base.

Approach the knife(blade) holder to the specimen as close as possible.

Lock the fixing spanner, and the knife(blade) carrier.

Rotate the handwheel to make the specimen and knife edge on the same height.

 ! Be careful when changing the knife or disposable blades, the cutting edge is extremely sharp, or will cause injury to hands! Be extremely careful when manipulating the knife, because the cutting edge is extremely sharp, any mal-operation may cause severe injury. In any case, do not touch the falling knife with your naked hand!

Do not lay the knife with the edge upside. If not in use, keep the knife in the knife box!

Always lock the handwheel prior to manipulating or changing the specimen or knife, even during breaks.

Indication: We provide various permanent knife carriers and disposable blade holder for your option.

9.4 Fast forward or backward:

Press the "FF" button or "FB" button; the specimen clamp can fast forward or backward. After it reached the appropriate distance, release the specimen clamp spanner. Rotating the Angle adjusting handle, accordingly, can adjust the parallel between the specimen and knife right and left or up and down. At the same time, rotate the handwheel slowly to reach a better angle. Lock the specimen clamp spanner to fix the specimen clamp.

Indication: It will alarm as bees hum when it forward or backward to the limit.

9.5 Trimming:

Press “Mode” button show trimming thickness “TRIM:00 μ m”. Cursor flickering in the thickness value, Press “FF” or “FB” to adjust the thickness until a satisfactory thickness. wait seconds until cursor stop flickering, rotate the handwheel to do trimming section.

After section trimming, the surface of the specimen should be clean and smooth, Rotate the handwheel clockwise till dispose the specimen clamp in the highest position, and at this time, the specimen is in a status for section.

9.6 Section:

Press “Mode” button to display the section thickness “section thickness 00 μ m”, Cursor flickering in the thickness value, Press “FF” or “FB” to adjust the thickness until a satisfactory thickness. for example, screen displays “SECT 03 μ m, COUNT00”, wait seconds until cursor stop flickering, rotate the handwheel to do trimming section and auto-counting at the same time.

if need to trim the specimen when section, just to press “MODE” to change Rotate the handwheel for a complete circle for each section. The best section way is to rotate the handwheel clockwise from the starting point to the starting point evenly. If the handwheel is rotated too fast, it will compress the specimen, and cause tissue sticking.

After section, rotate the handwheel to the starting position, and lock the handwheel.

Indication: it will auto-store the section thickness and account number , so you do not need to set the program again.

9.7 Position of specimen clamp

” FEED mm” and schematic show the screen remind the operator to notice the distance limit of the specimen clamp movement. If the specimen clamp moves to the distance limit, it can’t feed the knife. Press the “FB” button to reset.

Attention : handwheel rotation should be even, and the rotation speed should be compatible with the specimen hardness. When slicing hard specimen, the speed should be more slowly

Attention : During the section, if manipulated fast forward, fast backward, trimming, or section thickness alteration, etc, should press the “MODE” button, otherwise, the handwheel can’t feed the knife automatically.

9.8 “Auto-sleep” protection function

After booting, if don’t work for a long time, the instrument will enter “auto-sleep” protection status. The display screen darkness touch the screen when needed, and resume to work.

Indication:

After termination, the power supply should be closed, otherwise, the instrument will in protection status for a lone time, which will speed the aging of the instrument, and

shorten its life-span.

10 Cleaning and Maintenance

Warning! Remove the knife(blade), knife(blade) carrier and knife(blade) carrier base before any cleaning and maintenance.

10.1 shut down the microtome

Shut off the general power supply switch, remove the power supply plug

Turn the handwheel to make the specimen clamp to the highest position, turn the spanner, and lock the handwheel.

Loose the knife-protection board and knife, lock the spanner, put the knife in knife box.

Loose the specimen-clamping bolt, and remove the specimen.

10.2 Cleaning

Remove all debris in the machine;

Remove the section waste tray for emptying

Lock the hand wheel before cleaning the instrument!

Clean the instrument like family daily life; pay especial attention to remove the waste wax around the knife(blade)carrier.

Only use mild commercial detergents or soap solution for cleaning! Do not use solvent that contains acetone and benzene!

Use dry cloth and bedew a little detergent to clean the surface of the instrument.

Do ensure that during the cleaning, no detergent liquid enter the instrument. After cleaning, wipe off the surface of the instrument with a soft cloth.

Keep on cleaning all positions of the instrument after use. Use the knife carrier to move on the sliding rail, infuse the detergent lubricant. Good maintenance to the instrument will prolong the life span of the instrument.



Warning: Be extremely careful when using the knife, because its edge is very sharp, any mal-operation will cause serious injury. In any case, do not touch the falling knife with your hand!

Do not leave about the knife in other places.

Do not lay the knife with the edge upside. If not in use, keep the knife(blade) in the knife(blade) box!

Lock the handwheel for each operating of the knife and specimen, or during the working intermission.

11. Problem and solution

Problems, possible causes and corrective action

Problems	Possible causes	Corrective action
Non-even of sections: The section thickness varies from one section to another. In extreme cases, sections are skipped meaning that a section is not obtained.	<ul style="list-style-type: none"> -Insufficient knife/blade inclination; consequently the Clearance angle is too small. -Insufficient clamping of specimen and/or knife. -Blunt knife/blade. 	<ul style="list-style-type: none"> -Systematically try several Clearance angle adjustments until the optimum angle is found. -Check if all clamps are locked and screws are tightened on the specimen and knife carrier systems. Retighten the clamps and screws if necessary.] -Use a different part of the cutting edge or use a new knife/blade.
Compressed sections The sections are extremely compressed, wrinkled or jammed together.	<ul style="list-style-type: none"> -Blunt knife/blade. -Specimen too warm. -Clearance angle too big. -Sectioning speed too high. 	<ul style="list-style-type: none"> -Use a different part of the cutting edge or use a new knife/blade. -Cool the specimen on a cold plate. - Clearance angle adjustment; systematically decrease the Clearance angle until the optimum adjustment is obtained. -Rotate the handwheel at a lower speed.
The knife "rings" on the cutting specimen when slicing hard specimens. Sections exhibit scratches and chatter marks.	<ul style="list-style-type: none"> -Sectioning speed too high. -Clearance angle too big. -Insufficient clamping of paraffin forceps or knife carrier. 	<ul style="list-style-type: none"> -Rotate the handwheel at a lower speed. -Clearance angle adjustment; systematically decrease the clearance angle until the optimum adjustment is obtained. -Check if all levers are locked and screws are tightened on the specimen and knife carrier systems. Retighten the clamps and screws if necessary.
No more specimen advance and consequently no section produced.	<ol style="list-style-type: none"> 1. Specimen reached the front feed limit. 2. The coarse feed wheel cannot rotate freely. 	<ol style="list-style-type: none"> 1. Turn the coarse feed wheel in the appropriate direction to move the specimen towards the clearance limit. 2. Remove and obstruction.
Not lighting-up and no display	Fuse is burned	Replace the fuse

when turn-on the power supply switch.		
---------------------------------------	--	--



Warning: It should use well-earthed plug and turn on the power supply.

This machine should be used only to section specimen it should not be used for other purpose.

The machine should be 15cm away from the wall to keep good heat-scattering effect; otherwise it will shorten the span-life of the machin

12. Storage and transportation

This machine should be stored in a room with temperature 5°~ 40°C, relative humidity <= 80%.

Before transportation of this machine, please check if it's locked and if marks are complete.

The microtome must be erectly transported!

13.Packing list

- | | |
|--------------------------|----------|
| 1, Microtome | 1 |
| 2, Operation Manual | 1 |
| 3, Power line | 1 |
| 4, 3A fuse | 1 |
| 5, Brush | 1 |
| 6, Inner hexagon spanner | 1 |
| 7, Waste tray | 1 |
| 8, Knife shell | 1 pieces |

(base for disposable blade optional)

14. Maintenance and after-sales service

If any damage, please do not carry out any repairs on your own, as this will invalidate the warranty.

Qualified service engineers authorized by our company may only carry out repairs.

If the user operate strictly in accord with this manual, and obey the instruction, we will provide one-year warranty from the date of delivery. Within one year, all damages caused by quality defects, we will be responsible for repairs or replacement free of charge. Besides, we will provide long time maintenance service.

In order to develop and improve our products continuously, we may alter the technical parameters of the products without further notice.