# Finesse®

*E + AND ME +*

## E+ AND ME+

ENGLISH

**Issue 3**

# OPERATOR GUIDE

# A77510300

Thermo SCIENTIFIC

## SYMBOLS

The following symbols and conventions are used throughout this manual and on the instrument.

**THIS SYMBOL IS USED ON THE EQUIPMENT, OR IN A DOCUMENT, TO WARN THAT INSTRUCTIONS MUST BE FOLLOWED FOR SAFE AND CORRECT OPERATION. IF THIS SYMBOL APPEARS ON THE INSTRUMENT, ALWAYS REFER TO THIS OPERATOR GUIDE.**

**WARNING** **A warning is given in the document if there is a danger of personal injury or damage to samples or equipment**

**Note**

*1 Notes give more information about a job or instruction but do not form part of the instruction*

Thermo Shandon Limited is an ISO 9001 and TickIT Accredited Company

*Finesse® is a trade mark of Thermo Shandon Limited*

Thermo Fisher Scientific is the trading name of Thermo Shandon Limited

CE **Finesse E + and ME + meet the following CE Mark requirements:**
In Vitro Diagnostic Directive 98/79/EC
Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC.

C SP® US

# OPERATOR GUIDE
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# WELCOME

## 1 INTRODUCTION

Welcome to the Finesse® microtome series, a family of precision microtomes intended for use by appropriately trained Laboratory Technicians for the routine sectioning of wax or resin embedded tissue specimens that are subsequently prepared and diagnosed by a pathologist.

Designed and made with care, the instrument is safe to use, simple to operate, and easy to maintain.

This Operator Guide gives instructions for its correct operation and use of both models of the Finesse (E + and ME +). Instructions and information that applies to the ME + only are marked as follows: *[ME + only]*

## 2 SAFETY

**THIS PARAGRAPH DETAILS IMPORTANT SAFETY INFORMATION. PLEASE READ THIS SECTION CAREFULLY.**

Thermo products are designed for convenient and reliable operation and to accepted standards of safety. Its use does not entail any hazard if operated in accordance with the instructions given in this manual. However, incorrect actions by a user may damage the equipment, or cause a hazard to health. It is important for you to obey the following safety precautions:

**i All users must read and understand the Operator Guide and only operate the unit in accordance with the instructions. If the instructions are not followed, then the protection provided by the instrument may be impaired.**

**ii Do not modify the instrument - if unauthorised modifications are carried out, the instrument may be made unsafe and the warranty may be invalidated.**

**iii Potentially lethal voltages above 110V a.c. or 50V d.c. are present inside the instrument.**

**iv This instrument must be properly connected to a good earth (Ground) via the mains input supply.**

**v There are no user serviceable parts. Do not remove any covers or panels.**

vi **Finesse uses sharp knives. Make sure that you understand the safe and correct methods of using and handling them BEFORE you use the instrument.**

vii **Always use the knife guards provided to cover the knife when the instrument is not cutting.**

viii **It is important that normal standards of safety and good laboratory practices are employed. Always use common sense and the best known practice when operating the instrument.**

ix **The instrument weighs approximately 40 kilograms (88 lbs); get help to move or lift it.**

x **If the instrument has been used with materials that are toxic or contaminated with pathogenic micro-organisms, follow the cleaning instructions given in Chapter 5. The Product Return Certificate (found in Appendix B) must be completed if the instrument is to be returned to Thermo.**

xi **The instrument should be regularly cleaned as described in Chapter 5 of this Operator Guide.**

xii **Use only factory approved accessories or replacement parts with Finesse.**

xiii **Correct maintenance procedures are essential for consistent performance. It is recommended that a Maintenance Contract is taken out with your supplier.**

xiv **The instrument must be serviced annually by a Thermo trained engineer in accordance with the instructions contained in the Finesse Service Manual (77510162).**

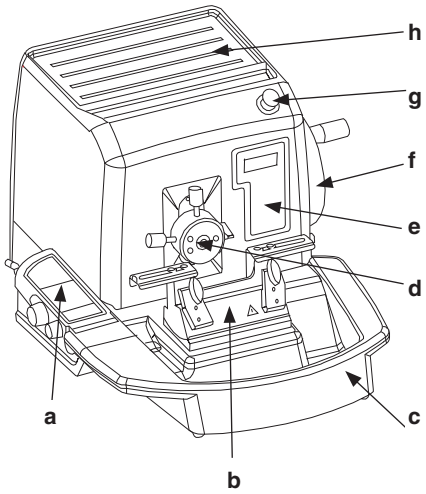
xv **Any problems and queries should be referred to your supplier.**

# DESCRIPTION

## 1.1 FINESSE OVERVIEW

The Finesse is a precision engineered bench-top rotary microtome with electronic advance, manual or motorised cutting and a separate control unit that can be sited either on the microtome or on the bench beside it. The Finesse has been designed for general laboratory use. It can be used to section wax, plastic and resin embedded specimens

The different components of the Finesse are shown in the diagram.




- a Control Unit
- b Knife Holder
- c Debris Tray
- d Orientation Head
- e Front Panel
- f Handwheel
- g Emergency Stop
- h Specimen Storage Tray

Special design features of the Finesse include:

- i section cutting down to 0.5µm thickness
- ii fixed knife position with sectioning performance maintained over full specimen travel
- iii handwheel braking in any position
- iv optional specimen retraction
- v high speed advance and rewind control
- vi fine advance and rewind control
- vii automatic start positioning for specimen trimming
- viii section counting
- ix distance travelled display
- x backlight to aid accurate specimen positioning at the knife
- xi control unit that can be used on the microtome or on the bench
- xii removable debris tray
- xiii tray for tool and specimen storage
- xiv programmable ‘rocking’ feature

*[ME + Only:]*

xv motorised cutting with speed indication

xvi footswitch supplied for optional use

The Finesse microtome can be used with the following knife holders, in addition to a comprehensive range of accessories from our catalogue:

i solid knife holder
ii disposable blade holder *(low and high profile variants)*
iii triangular glass knife holder
iv Ralph glass knife holders for 25 and 38mm knives

**Note:**

*Orientation Heads, Knife Holders and Specimen Clamps should be ordered separately to individual preference.*

Routine maintenance of the Finesse microtome requires only that the instrument is kept clean.

**Note:**

*It is recommended that a glass knife and fixed head are used to section resin embedded specimens.*

# CONTROLS

## 2.1 DESCRIPTION

This chapter describes the layout of the screen displays and the functions of all the controls on the instrument.

The Finesse has been designed for sectioning wax, plastic and resin embedded specimens and general laboratory use.

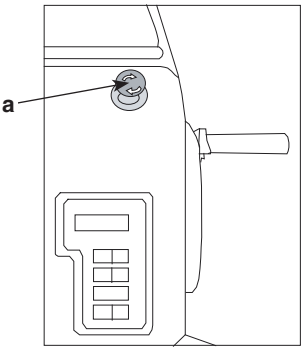
**Note** *ME + Only*

*1 Motorised cutting is recommended when resin embedded sections are being cut*

## 2.2 EMERGENCY STOP BUTTON

**ONLY USE THE EMERGENCY STOP BUTTON IN AN EMERGENCY**

The red Emergency Stop button *(a)* is situated on the front of the instrument in the top right hand corner.



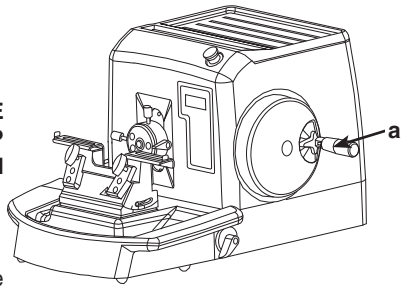

In an emergency, push the Emergency Stop button until it locks into position. This immediately stops all motors.

To release the Emergency Stop button, when the emergency is cleared, turn the button in the direction of the arrows marked on it.

When the Emergency Stop button is released, the display prompts the operator to press the **[NEXT]** button before the Finesse can be used again. When **[NEXT]** is pressed, the Specimen Head rewinds to the backstop position before reverting to normal operation

## 2.3 MANUAL CONTROLS

### 2.3.1 BRAKE




**ALWAYS APPLY THE BRAKE BEFORE ADJUSTING THE SPECIMEN CLAMP OR KNIFE HOLDER AND WHEN LEAVING THE UNIT UNATTENDED**

The Brake Lever *(b)* is located on the face of the Handwheel at the base of the handle *(a)*. The brake prevents movement of the Specimen Head by locking the handwheel, and can be engaged with the Handwheel in any position.

To apply the brake, turn the Brake Lever *(b)* until it points to 'BRAKE' on the label *(d)*. There is a positive feel as the brake locates into position.

**WARNING** **[ME + Only] To select the brake on the Finesse ME +, the Brake Lever must be turned in an anti-clockwise direction only**

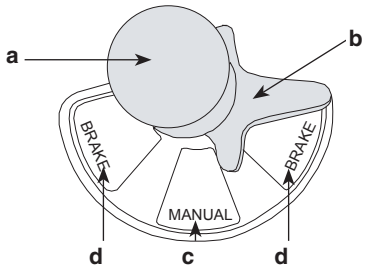
**WARNING** **[ME + Only] Do not turn the Handwheel manually if the Brake Lever is set to MOTOR - the Motor Drive system may be damaged**

The Brake Lever has three positions that are shown on the colour coded label as shown:

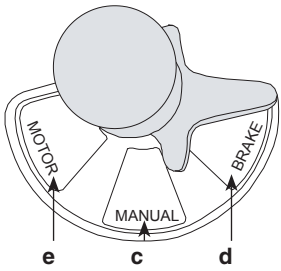
| *[E + version]* | | | *[ME + version]* | | |
|---|---|---|---|---|---|
| BRAKE | MANUAL | BRAKE | MOTOR | MANUAL | BRAKE |
| Brake On | Brake Off | Brake On | Motor On | Brake Off | Brake On |
| *Red* | *Green* | *Red* | *Blue* | *Green* | *Red* |
| *(d)* | *(c)* | *(d)* | *(e)* | *(c)* | *(d)* |

**WARNING** **Care should be taken to make sure that the brake is correctly selected**

**[E +]**




**[ME +]**

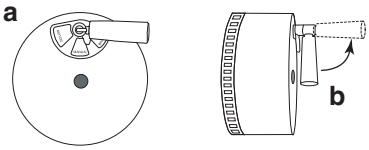



**2.3.2**

## HANDWHEEL

The Handwheel is used to set the position of the Specimen Head and to manually cut sections.

The Handwheel is fitted with a fold-down handle. To fold the handle down, pull it outward and fold it down in line with the brake lever *(a)*. Lift the handle until it clicks into place to use it to section manually *(b)*.

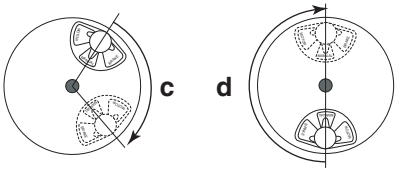



Rotate the Handwheel clockwise to cut sections. It is balanced for smooth and easy operation and performs one cutting stroke each time the handle moves through the 1 o'clock to 5 o'clock sector *(c)*.

The Specimen Head returns to the top of the cycle as the handle moves through 6 o'clock to 12 o'clock *(d)*.

**Note**

*1 The Handwheel is biased to stop at the top of the cycle.*




The Retract facility allows the specimen to be moved away from the knife edge during the return stroke to prevent specimen compression.

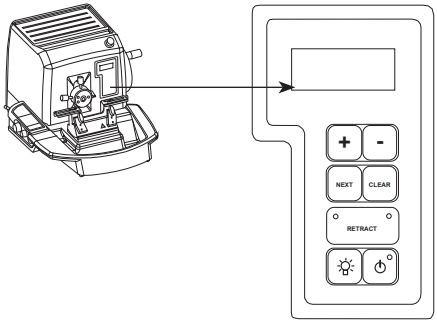
The pre-set retraction distances are 5µm for wax, and 40µm for resin. However, these values can be changed by the operator to a value between 5 and 125µm (in the 'Retract Amount Menu' section of the User Setup Options, described in Appendix A, Section A.3.3). The facility can be turned off if not required.

The green LED on the **[RETRACT]** button on the front panel will be lit if the retraction option is selected.


The operator can cancel the retraction selection by pressing **[RETRACT]**. The green LED will switch off.

## 2.4 FRONT PANEL CONTROLS

The Main Control Panel is situated on the front of the instrument.




### 2.4.1 DISPLAY

The Finesse microtome has a backlit display to assist the operator. More detail is given about each display in Section 5.3.

### 2.4.2 [+] AND [-]

**[+]** and **[-]** are used to step through the available options appropriate to the display. The language display shows at initial power up. When the desired language appears on the display, press **[NEXT]** to select it.



### 2.4.3 [NEXT]

**[NEXT]** is used to choose the next display in the sequence of displays and to select the desired option.

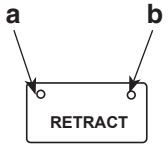

### 2.4.4 [CLEAR]

**[CLEAR]** clears the Count and Distance displays as applicable. Hold down for 3 seconds.


If both Count and Distance are displayed, press **[CLEAR]** for 3 seconds to clear the Count, and then a further 3 seconds to clear the Distance.

### 2.4.5 [RETRACT]

**[RETRACT]** selects and deselects the Retraction option for the Specimen Head. LEDs on the button show the current status.




| | |
|---|---|
| Green LED on *(b)* | automatic retraction selected. |
| Amber LED on *(a)* | specimen is fully retracted |

If the Retraction option has been selected, an 'R' on the distance travelled display shows that the Finesse has retracted the Specimen.

### 2.4.6 BACKLIGHT [☼]

**[☼]**switches the knife holder backlight on and off.

### 2.4.7 STANDBY KEY [⏻]

**[⏻]** switches the instrument into standby mode. The red LED is lit when Standby is selected. All motorised cuts in progress will be stopped, and all motors, LEDs, the display and the knife holder backlight will be turned off if **[⏻]** is pressed.

The display shows the Finesse logo as the instrument saves all the current settings before entering Standby mode.

If **[⏻]** is pressed again, the instrument will restart, using the previous settings.

**ALWAYS APPLY THE BRAKE BEFORE SWITCHING THE INSTRUMENT INTO STANDBY MODE**

**Note**

*1 Switch the instrument into Standby mode when not in use.*

## 2.5 CONTROL UNIT

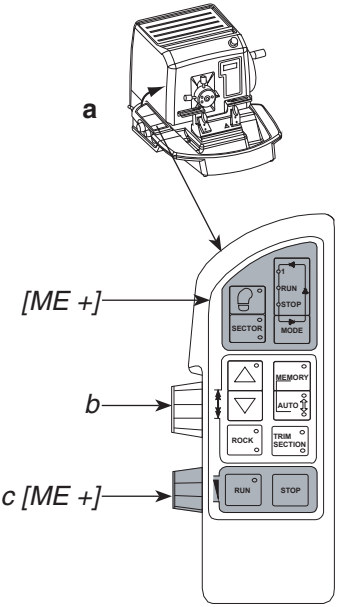
### 2.5.1 To set up the Control Unit

The Control Unit is connected to the instrument by electrical cable. The Control Unit unclips from the body of the instrument for ease of use.

**WARNING** **It is not necessary to remove the Control Unit cable from the rear of the Finesse. However, if the Control Unit has been disconnected from the main instrument for any reason, make sure the Finesse is switched off before the Control Unit is reconnected, otherwise damage will occur.**

To remove the Control Unit from its holder, pull the back of the Control Unit upwards towards you *(a)*. To replace the Control Unit, insert the bottom of the Control Unit into its holder and lower the back of the Control Unit.

The Control Unit has flip down feet that can be lowered or left up to suit individual preferences. The operation of the individual buttons, Trim Wheel *(b)* and Speed Control Wheel *(c)* are described in the following section.




## 2.5.2 SPECIMEN TRAVEL CONTROLS

**[△]** moves the Specimen Head away from the knife. When held for more than 3 seconds, the Specimen Head moves more quickly (see Note 1 below). If it is held until the LED lights, the Specimen Head rewinds to the back stop position.

Cancel this movement by pressing either **[△]** or **[▽]**.

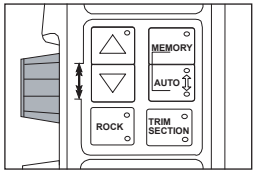
**[▽]** moves the Specimen Head towards the knife.

**Note**

*To change the response speed of the buttons and the speed of advance of **[▽]**, refer to the Buttons Display in the Speed Options Menu of the User Setup (Appendix A section A.3.5)*

## 2.5.3 TRIM WHEEL

The Trim Wheel provides fine adjustment of the Specimen Head position. The distance of the Trim Wheel adjustment depends on whether wax (pre-set value of 8µm) or resin (trim distance set) is selected (see the 'Material Select Menu' option in the User Setup Options (Appendix A, section A.3.2).

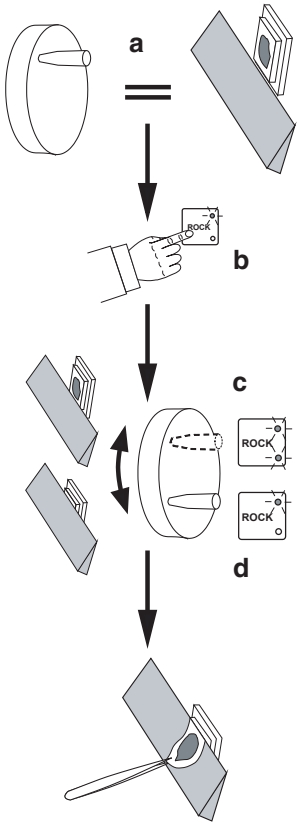


When the Trim Wheel is turned away from you, the Specimen Head moves away from the knife. When it is turned towards you, the Specimen Head moves towards the knife.

Section 5.5 explains the use of the Trim Wheel when trimming a specimen.

### 2.5.4 ROCK

The rock facility is a method of quickly and efficiently advancing and trimming a specimen without turning the handwheel fully. **[ROCK]** is used to enable and disable the rock feature of the Finesse microtome.




Turn the Handwheel until the specimen block is above the knife *(a)*. The rock position is saved when **[ROCK]** is pressed *(b)*.

*[ME + Only]* If a Cutting Sector is already defined, the top of the Cutting Sector will be used as the rock position.

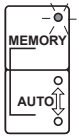
When the rock feature has been selected, the green LED lights *(d)* The amber LED *(c)* lights when the Specimen Head is above the height at which the Specimen Head advances.

Press and hold **[ROCK]** again to turn off the rock feature. The green LED will turn off.

Section 4.6 describes how the rock facility is used to trim a specimen.

### 2.5.5 [MEMORY]

When the **[MEMORY]** button is pressed, the current advance position of the Specimen Head is saved to allow you to automatically position the next specimen at the same place. The green LED is lit to indicate that a position is saved.



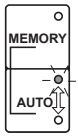

**Note**

*Any previous memory position will be overwritten when a new position is saved*

If the Specimen Head is at the memory position, press **[MEMORY]** once to clear the memory position. If the Specimen Head is not at the memory position, press **[MEMORY]** twice. The first press will overwrite any existing memory position with a new position, and the second press will clear the new memory position.

### 2.5.6 [AUTO]

If the Specimen Head is at, or in front of, the position set in memory, the Specimen Head will retract a set amount behind the memory position when **[AUTO]** is pressed. The top amber LED will light *(a).*

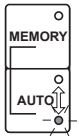


**a**

**Note**

*To alter the factory set offset distance of 5mm, change the memory offset position of the 'Auto Load Option Menu' in User Setup (see Appendix A, section A.3.6)*

If the Specimen Head is behind the memory position, the Specimen Head will advance to the memory position when **[AUTO]** is pressed. The bottom amber LED will light *(b).*



**b**

**Note**

*If no position has been saved, the Specimen Head will return to the back stop position, but no LED will light when **[AUTO]** is pressed.*

### 2.5.7 [TRIM / SECTION] and Operating Mode

This button switches the display between *'TRIM'* and *'SECTION'* to show the appropriate information. When *'TRIM'* is selected, the upper green LED will be lit *(c)*; and the display will show the relevant *'TRIM'* display.

**c**

When *'SECTION'* is selected, the lower green LED will be lit *(d)*, and the display will show the relevant *'SECTION'* display.

**d**

### 2.5.8 FOOTSWITCH ENABLE [⍁] *[ME + only]*

**[⍁]** enables and disables the Footswitch. The green LED lights when the Footswitch is enabled.

**Note**

1 *The Footswitch must be fully depressed at least once after switching on the mains supply before it can be enabled.*

2 *The Footswitch remains active for a preset time. If the Footswitch is not used within this time, it will automatically be disabled. The delay time can be altered as described in the 'Speed Options Menu' section of the User Setup (see Appendix A section A.3.5).*

### 2.5.9 [SECTOR] *[ME + only]*

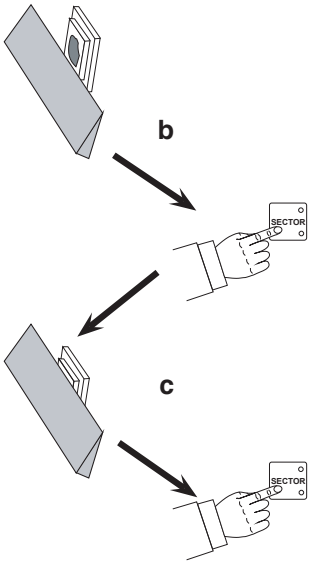
**[SECTOR]** defines the Cutting Sector. Turn the Handwheel until the specimen is above the knife *(b)*. Press **[SECTOR]** once to capture the top of the sector. Turn the Handwheel until the specimen is just below the knife *(c)*. Press **[SECTOR]** again to define the end position.

**Note**

1 *The highest specimen position is always saved as the start position.*

2 *If an end position for the Cutting Sector is not defined, the bottom of the cutting stroke is automatically used instead.*

3 *If no sector is set, the complete cutting stroke is taken as the Cutting Sector for the purposes of speed control.*

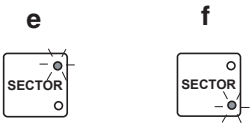



The top LED lights *(e)* when the Specimen Head is above the Cutting Sector. The lower LED lights *(f)* when the Specimen Head is below the Cutting Sector.

**Note**

1 *Both LEDs are lit when the Specimen Head is within the Cutting Sector.*

2 *Flashing LEDs indicate that a position has not been set.*

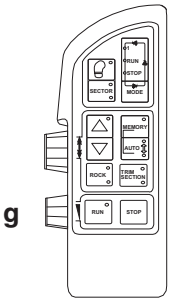



The Speed Knob *(g)* sets the speed within the Cutting Sector. At low cutting speeds, the return speed is automatically faster than the cutting speed to save time.

To clear the Cutting Sector, press and hold **[SECTOR]** until both LEDs on the button clear.

### 2.5.10 [MODE] *[ME + only]*

The **[MODE]** button is used to step through the available cutting modes - Single Cycle Mode ('1'), Run Mode continuous cutting ('RUN') and Stop Mode continuous cutting ('STOP').



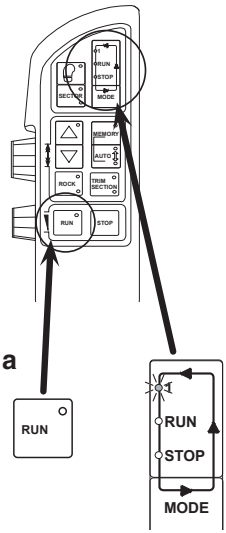

### 2.5.11 Single cycle cutting *[ME + only]*

The green LED marked '*1*' lights when this option is selected.

The **[RUN]** button *(a)* on the Control Unit starts a cut cycle when it is pressed once. The Specimen Head completes one cycle, and automatically stops at the top of its travel.

If **[RUN]** is held down, cutting is continuous until **[RUN]** is released. The specimen head will then stop at the top of its travel.

**THE SPECIMEN WILL CONTINUE TO MOVE UNTIL IT REACHES THE TOP OF ITS TRAVEL**



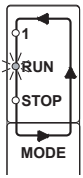

### 2.5.12 Run mode cutting *[ME + only]*

The green LED marked *'RUN'* lights when this option is selected.

Cutting is continuous as long as **[RUN]** is pressed. When **[RUN]** is released, the motor stops immediately, with the specimen head in any position.

### 2.5.13 Continuous cutting - Stop mode *[ME + only]*

The green LED marked *'STOP'* lights when this option is selected.
Continuous cutting is started when **[RUN]** is pressed once.




If **[STOP]** is pressed, the specimen will stop immediately with the specimen head in any position.

If **[RUN]** is pressed again while the instrument is cutting, the specimen moves to the top of its travel and then stops.

**THE SPECIMEN CONTINUES TO MOVE UNTIL IT REACHES THE TOP OF ITS TRAVEL**

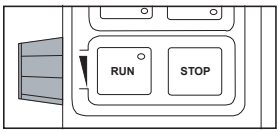

### 2.5.14 SPEED CONTROL WHEEL *[ME + only]*

This is used to set the speed of motorised cutting. The display shows the speed selected when an adjustment is made. The display will then return to the previous screen.

**Note**

*Speeds will automatically differ between 'TRIM' and 'SECTION' modes, and will be displayed as 1 - 99.*

To display the speed at all times, see the 'Display Options Menu' of the User Setup Options described in Appendix A, Section A.3.4.




### 2.5.15 [RUN] *[ME + only]*

**[RUN]** starts a cutting cycle according to the mode set and lights the green LED. (Refer to **[MODE]** section - paragraphs 3.5.10 to 3.5.13).


**Note**

1 *The **[RUN]** button on the Control Panel will not allow cutting if the footswitch has been enabled. A warning message will be shown on the display.*

2 *The Brake Lever should be set to the MOTOR position (blue) for motorised cutting.*

### 2.5.16 [STOP] *[ME + only]*

**[STOP]** stops any active cutting cycle immediately.

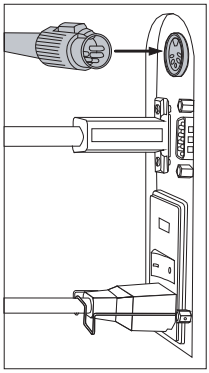

## 2.6 FOOTSWITCH [ME + only]

**Note**

1 *The Footswitch must be fully depressed at least once after switching on the mains supply before it can be enabled.*

2 *The Footswitch remains active for a preset time. If the Footswitch is not used within this time, it will automatically be disabled. The delay time can be altered as described in the 'Speed Options Menu' section of the User Setup (see Appendix A, section A.3.5).*

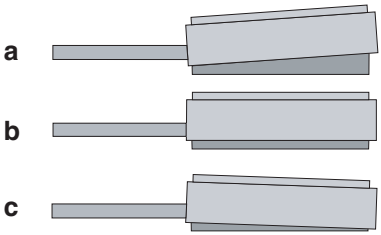
3 *The Footswitch works in the same way as the **[RUN]** button, and depends on the cutting mode selected.*



The normal position of the Footswitch is shown *(a).* To enable or disable the footswitch, press the Footswitch Enable button on the Control Unit. This is described in section 3.5.8.

To cut, press the Footswitch to Position 1 *(b)*.

The motor can be stopped at all times by fully depressing the Footswitch *(c)* or by pressing **[STOP]** on the Control Unit.



# INSTALLATION AND SETTING UP

## 3.1 INTRODUCTION

The Finesse Microtome is a bench mounted instrument that must be unpacked and installed with care.

The maximum overall dimensions of the Finesse microtome are:

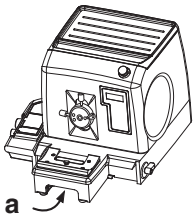
| | | | |
|---|---|---|---|
| Width | *(handle down)* | 420 mm | (16½ ins) |
| Width | *(handle up)* | 480 mm | (19 ins) |
| Depth | | 530 mm | (21 ins) |
| | *(with connectors at rear)* | 590 mm | (23 ins) |
| Height | | 330 mm | (13 ins) |

**FINESSE WEIGHS APPROXIMATELY 40kg (88lbs). ALWAYS GET HELP TO SAFELY MOVE OR LIFT THE INSTRUMENT WITHOUT RISK OF INJURY**

## 3.2 TO INSTALL THE INSTRUMENT

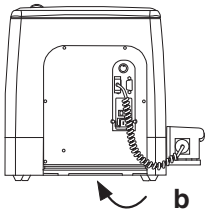
### 3.2.1 TO UNPACK

If the packaging has been damaged, check the condition of the instrument. Contact your dealer if there is any damage.



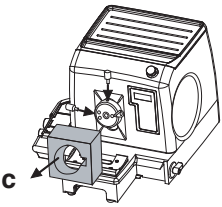

The bench where Finesse will be located should be rigid and level, and made of a non-flammable material. It must be able to hold 40kg (88lbs) and be large enough to provide good access to the Handwheel.

Remove the top layer of packaging from the Finesse. Get help to lift the instrument from the box and to place it on the bench.




To lift or move the Finesse, hold the Finesse securely at the lifting positions located under the front *(a)* and rear *(b)* of the instrument.

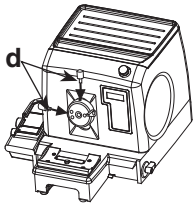
To remove the packing *(c)* from the Orientation Head, support the weight of the Orientation Head and raise it slightly. Remove the packing and carefully lower the Orientation Head to its lowest position.



**WARNING** **The Orientation Head is heavy.**

Remove the Debris Tray, Handwheel and accessories from the packaging and carefully place them on the bench.

**WARNING** **The Handwheel is heavy.**




Remove the two Orientation Head Adjustment Screws from the small bag provided and screw them into the orientation head *(d)*.

Make sure that you have received all the parts listed on the packing list supplied with the instrument. Contact your Thermo dealer if necessary.

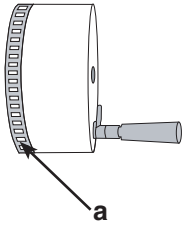
**Note**

1 *Inform your Thermo dealer immediately if there are any breakages or shortages. Quote the instrument Serial Number, your Order Number, Invoice Number, Delivery Note Number and the date.*

2 *If you ever need to transport the instrument, refer to Appendix B for for repacking instructions.*

### 3.2.2 TO FIT THE HANDWHEEL

The Handwheel must be fitted onto the Finesse when the instrument is first unpacked. Carefully remove the Handwheel from its packaging.



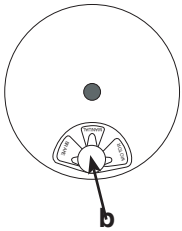

**WARNING** **Do not damage the encoder strip *(a)* on the Handwheel.**

**THE HANDWHEEL IS HEAVY. TAKE CARE WHEN LIFTING IT.**

Remove the screw, washer, plastic plug, Alignment Shaft and 6mm A/F Allen key from the small bag supplied.

Screw the Alignment Shaft into the centre of the hub, and use a screwdriver or small coin to tighten it.

Make sure that the Brake Lever on the Handwheel is in the central position (green position) *(b)*.

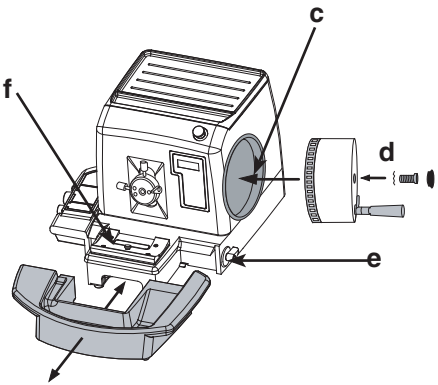



**Note**

1 *Make sure that the Handwheel handle and the Specimen Head are at the bottom whenever the Handwheel is fitted or removed.*

Carefully insert the Handwheel onto the Alignment Shaft on the right hand side of the instrument *(c)* until it touches the drive hub.

Move the Handwheel slightly backwards and forwards until the drive pin slots into position inside the Handwheel. To check that the Handwheel is in position, gently rotate it backwards and forwards. If it is in the correct position, the Specimen Head will move up and down.




Remove the Alignment Shaft from the centre of the Handwheel.

Put the washer onto the screw and fit into the centre of the Handwheel. Tighten firmly using the Allen key provided. Fit the plastic plug into the hole *(d)*.

Turn the Handwheel until the handle is at the top, and apply the brake by moving the Brake Lever to the red position on the label.

### 3.2.3 TO FIT THE KNIFE LOCK LEVER SHAFT

The Knife Lock Lever Shaft *(e)* must also be fitted to the Finesse when the instrument is first unpacked.

Press down the Knife Lock Stud *(f)* on the Knife Holder Base.

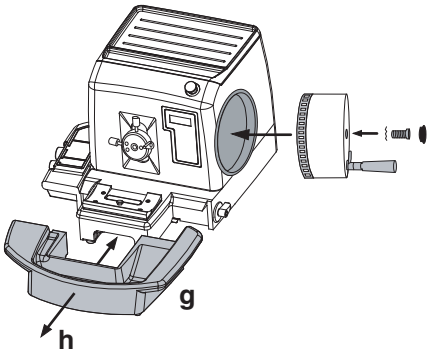
Fit the Knife Lock Lever Shaft into the hole in the right hand side of the cover so that the cam at the end of the shaft is at the bottom. Push the shaft into the hole until approximately 20mm of the shaft is visible.

Release the Knife Lock Stud. Rotate the Knife Lock Lever and make sure that the Knife Lock Stud moves up and down.

### 3.2.4 TO FIT THE DEBRIS TRAY

To fit the Debris Tray, hold the tray anywhere around its edge and line it up with the front of the instrument under the Knife Holder. Push it firmly into position until it clicks into place *(g)*.

To remove the Debris Tray firmly pull it towards you *(h)*.



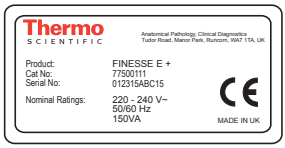

**Note**

*1 Always remove the Debris Tray to lift or move the Finesse.*

**WARNING** **Do not lift the instrument by the debris tray.**

## 3.3 ELECTRICAL REQUIREMENTS

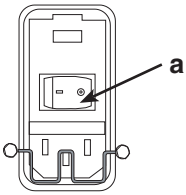
Make sure that the voltage of the mains supply corresponds with the voltage rating on the rating plate on the back of the instrument.




**Note**

*1 The ~ symbol on the rating plate indicates that the instrument operates on an alternating current supply (a.c.)*

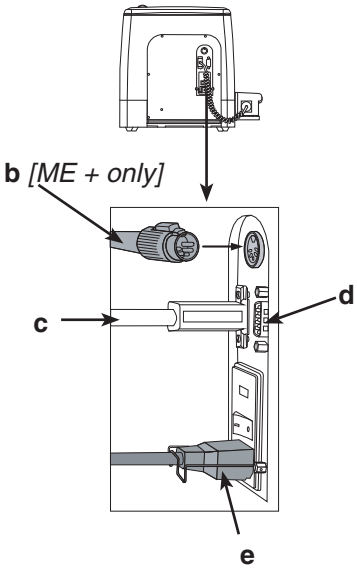
Make sure that the **I / O** power switch at the rear of the instrument is switched off (**O** side of the switch pushed inward) *(a)*.



Instruments are supplied with power cords with moulded plugs suitable for the UK, France and Germany or North America. If another plug is required, it is necessary for a technically competent person to remove the moulded plug and fit a suitably rated, fused plug using the wiring convention shown below.

| | |
|---|---|
| *Brown wire:* | *Live (L or L2) terminal* |
| *Blue wire:* | *Neutral (N or L1) terminal* |
| *Green / yellow wire:* | *Earth terminal - E, ground or* ⏚ |

Insert the appropriate mains cable into the mains connector on the rear panel of the instrument and clip the cable restraint over the mains connector *(e)*. Connect the mains supply cable to the local power supply outlet.




**Note**

*Connectors (c) and (d) are for use by the Service Engineer only.*

**THE FINESSE MICROTOME MUST BE PROTECTIVELY EARTHED. MAKE SURE THAT THE INSTRUMENT IS PLUGGED INTO A PROPERLY EARTHED MAINS SUPPLY.**

**IT MUST BE POSSIBLE TO INTERRUPT THE MAINS SUPPLY AT SOURCE BY REMOVING THE PLUG FROM THE MAINS SUPPLY SOCKET.**

**IF THE CONTROL UNIT HAS BEEN DISCONNECTED FROM THE MAIN INSTRUMENT FOR ANY REASON, SWITCH OFF THE FINESSE BEFORE THE CONTROL UNIT IS CONNECTED, OTHERWISE DAMAGE WILL OCCUR.**

*[ME + only]*
To connect the Footswitch, hold the round footswitch connector with the clip at the top as shown *(b)*. Insert it into the top connector on the back panel until the clip clicks into place.

## 3.4 TO SET UP THE INSTRUMENT

It is important that the instrument is kept clean and free from wax and resin debris.

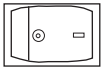
Make sure that the instrument is correctly set up as instability of the specimen, cassette, Specimen Clamp, blade or Knife Holder could affect the quality of the sections.

**ALWAYS APPLY THE HANDWHEEL BRAKE BEFORE ADJUSTING THE SPECIMEN CLAMP OR VICE**

### 3.4.1 TO SWITCH ON AND OFF

***TO SWITCH ON***

Press the **I** (ON) side of the **I / O** power switch to switch the instrument on:



**Note**

*The Specimen Head automatically moves back to its back stop position when power is applied to the Finesse.*

Make sure that the screen shows a similar display to those shown in *(a)* and *(b)* before it finally displays the language selection screen shown in *(c)*.

Press **[+]** to step through the language selections available on the Finesse microtome. (The abbreviations are listed opposite *(d)*).

When the required language is displayed, press **[NEXT]** to select it.

When the Finesse has been switched on, turn the Handwheel for one complete rotation prior to use. Apply the brake (red position).

**a**

FINESSE

**b**

**MICROTOME**
**ME Ver. x.x**
**775-xxxx.x**

**c**

**LANGUAGE**
**+ for USA** **ENG**

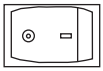
**d**

*ENG ENGLISH*
*USA ENGLISH (USA)*
*FRE FRENCH*
*GER GERMAN*
*ITA ITALIAN*
*SWE SWEDISH*
*SPA SPANISH*
*FIN FINNISH*
*POR PORTUGUESE*
*DK DANISH*

***TO SWITCH OFF***

When the instrument is regularly used, the Standby button **[⏻]** should be used (see 3.4.7).

If the instrument is to be left unattended for long periods of time, or is to be moved, the power to the instrument should be turned off. Press the **O** (OFF) side of the power switch to switch off the Finesse.



## 3.4.2 SPECIMEN ORIENTATION

***ORIENTATION HEADS***

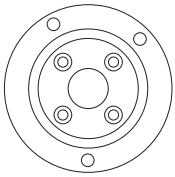
The Orientation Head enables a specimen to be aligned correctly to the knife.

A Fine Adjust Orientation Head is already fitted to the Finesse when it is supplied. A Fixed Head must be ordered separately if required.

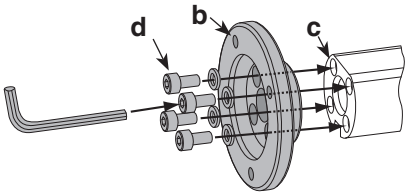
***FINE ADJUST ORIENTATION HEAD***

**REMOVE THE KNIFE AND KNIFE HOLDER FROM THE FINESSE BEFORE AN ORIENTATION HEAD IS FITTED**

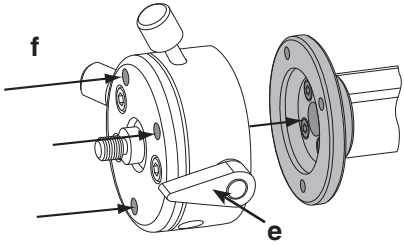
The Fine Adjust Orientation Head allows the position of the specimen to be easily and accurately adjusted by the controls.




***To fit the Fine Adjust Orientation Head***, apply the brake and orientate the mounting plate as shown *(a)*.




Align the inner holes in the Mounting Plate *(b)* with those in the Specimen Advance Tube *(c)*. Use the Allen key and the four short screws and washers provided *(d)* to secure the Mounting Plate to the Specimen Advance Tube.

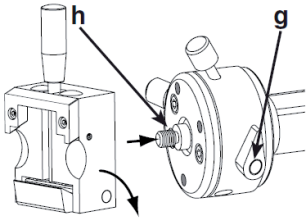



Orientate the Fine Adjust Specimen Head with the Adjustment Lock on the right as shown *(e)*. Use the Allen key and the three remaining long screws and washers to secure the Orientation Head to the Mounting Plate *(f)*.

**WARNING** **Tighten firmly using only the tools provided**

Fit the 3 plastic plugs into the front three holes to cover the screwheads.

***To attach the vices and specimen clamps*** to the Fine Adjust Orientation Head, clamp the Orientation Head by moving the Adjustment Lock until it is vertical (in either direction) *(g).*

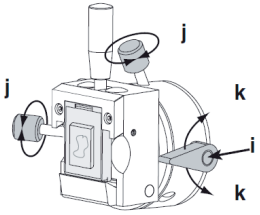



Screw the vice or clamp onto the threaded stud protruding from the centre of the Orientation Head *(h)* until it is secure.

**ALWAYS APPLY THE HANDWHEEL BRAKE BEFORE ADJUSTING THE SPECIMEN CLAMP OR VICE**

**To adjust the orientation of the Specimen Clamp,** turn the Adjustment Lock on the right hand side of the Orientation Head to point towards the front of the instrument *(i)* so that the specimen holder has free movement.

The ends of the two Orientation Head Adjustment Levers can be rotated to position the Specimen Head accurately *(j).* The specimen clamp or vice can also be rotated for 360°.




To secure the Orientation Head when it is in the required orientation, tighten the Adjustment Lock until it is vertical (in either direction) *(k)*. Make sure that the Specimen Clamp is secure and does not move as this will affect the success of sectioning.

***FIXED HEAD***

**REMOVE THE KNIFE AND KNIFE HOLDER FROM THE FINESSE BEFORE A FIXED HEAD IS FITTED**

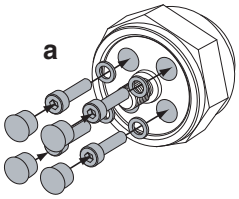
The Fixed Head is securely bolted to the Specimen Advance Tube to ensure that the specimen is held extremely rigidly.

**Note**

*It is recommended that, because of the extra stability that it provides, the Fixed Head is used in the following situations:*

1 *When resin embedded specimens are to be sectioned.*

2 *When very thin sections of large, hard tissue are to be taken, the Fixed Head should be used in combination with a solid knife.*

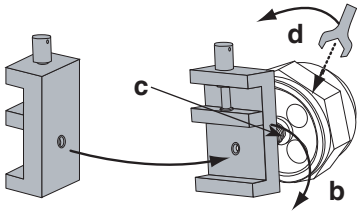



**To fit the Fixed Head**, apply the brake and secure the Fixed Head to the specimen advance tube using the four washers, screws and Allen key provided. Use the four domed plugs to blank off the screw holes *(a)*.

**WARNING** **Tighten firmly using only the tools provided**

**To attach the vices and specimen clamps** to the Fixed Head, first make sure that the Locking Collar is as far back as it will go on the Fixed Head (turn it clockwise to check) *(b).*

Screw the vice or clamp as far as it will go onto the threaded stud protruding from the centre of the Fixed Head *(c).*




Adjust the vice until it is in the desired orientation. Use the spanner provided to turn the Locking Collar anticlockwise to tighten it against the vice *(d)*.

To rotate the head, use the spanner to loosen the Locking Collar before rotating the vice or clamp to the desired orientation. Secure the Locking Collar.

### 3.4.3 SPECIMEN CLAMPING

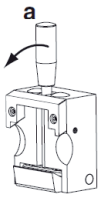
Specimens are normally embedded in wax or resin and then held in a cassette clamp or vice attached to the Orientation Head to section them.

Instructions about attaching the specimen clamps and vices to the different Orientation Heads are given in Section 3.4.2.

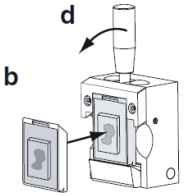
**ALWAYS REMOVE THE KNIFE OR FIT THE KNIFE GUARDS OVER THE KNIFE BEFORE LOADING OR UNLOADING A SPECIMEN**

***QUICK RELEASE CASSETTE CLAMP***

The Finesse Microtome uses a quick release cassette clamp that takes standard sized plastic specimen cassettes.

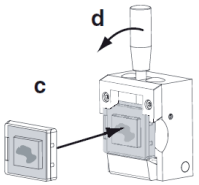



To fit a cassette into the cassette clamp, apply the brake and push the quick release lever backward to slacken the lower jaw (a).



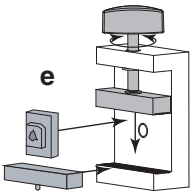

Fit the cassette either vertically (b) or horizontally (c) under the top jaw. Let the quick release lever come forward (d), so that as the lever is released, the jaws close under spring pressure to clamp the cassette in position.

The cassette clamp is interchangeable with the range of vices and holders detailed in the Thermo catalogue.

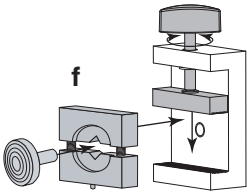



***VICES***

The vice is operated by a thumbscrew that moves the upper jaw vertically to clamp the specimen against the lower jaw.




A resin clamp *(f)* and a number of spacer blocks *(one example is shown (e))* are available that allow resin embedded specimens and small specimens to be sectioned. These are positioned on the lower jaw of the vice.




**Note**

*The resin clamp must be used with the 50 x 45mm vice.*

The two resin clamps are designed for a JB4 or EBH type resin specimen holder. The mount fits into the vice so that the vice can clamp onto either the shaft or the outer diameter of the holder.

**WARNING** **Do not overtighten the clamp onto plastic stubs**

**Note**

1 *Clamping on the larger outer diameter of the holder will give better stability and rigidity.*

2 *Make sure that the resin mount and specimens are securely clamped.*

### 3.4.4 KNIFE HOLDERS

**MICROTOME BLADES ARE EXTREMELY SHARP AND CAN CAUSE SERIOUS INJURY. ALWAYS HANDLE MICROTOME BLADES WITH GREAT CARE. MESH GLOVES PROVIDE SOME PROTECTION WHEN SHARP OBJECTS ARE HANDLED.**

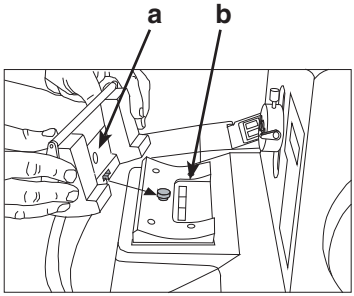
**STORE ALL BLADES IN THEIR TRANSPORT BOXES WHEN NOT REQUIRED FOR IMMEDIATE USE.**

***INTRODUCTION***

The Knife Holders for the Finesse microtome are designed to hold a range of blades - solid knives, disposable blades (both low and high profile), and glass knives (both triangular and Ralph).

**Note**

1 *Always use a compatible knife. Check with your Thermo agent if in doubt.*




Common features of all types of knife and Knife Holder are described in this section.

The Knife Holder assembly is made of two parts - a top and a base. The base *(b)* is an integral part of the microtome body and supports the top section *(a)*.

The top sections of the assembly can be interchanged with others in the range. (For clarity, the removable top section of the Knife Holder assembly will subsequently be referred to as the Knife Holder)

**ALWAYS REMOVE THE KNIFE AND APPLY THE HANDWHEEL BRAKE BEFORE THE KNIFE HOLDER IS REMOVED**

***TO FIT THE KNIFE HOLDER TO THE BASE***

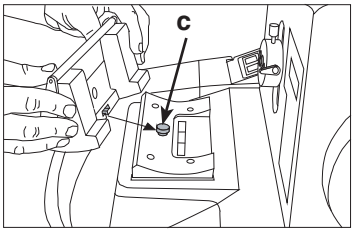
To fit the Knife Holder, move the Knife Lock Lever on the right hand side of the instrument *(d)* until the 'T' stud locking pin on the Knife Holder Base *(c)* is at its highest point.

Locate the 'T' shaped cutout section on the bottom of the Knife Holder onto the 'T' stud *(c).*

Slide the Knife Holder onto the base, making sure that the 'T' stud slides along the cutout.

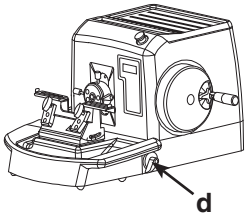
**Note**

1 *The Knife Holder should not be too loose when fitted onto the base. If it feels loose, remove the Knife Holder and adjust the 'T' stud (c) by turning it clockwise to lower the stud.*




2 *If the Knife Holder will not slide on at all, or is very tight, adjust the 'T' stud (c) by turning it anti-clockwise to raise the stud.*

**To secure the Knife Holder to the Knife Holder Base**, turn the Knife Lock Lever in either direction until it locks.




**Note**

1 *The lock and release positions of the Knife Lock Lever Handle can be altered to suit the user's individual preferences.*

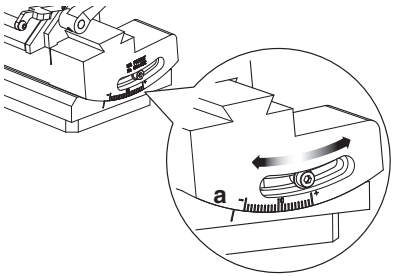
*Press the orange button and gently pull the Handle to release it. Turn the handle to the desired position and release. The Knife Lock Lever will work in the same way as before, but the Handle position will be in the new position.*

2 *If the Knife Lock Lever does not securely clamp the Knife Holder, adjust the 'T' stud (c) by turning it clockwise to lower the stud.*

### *TO SET THE REQUIRED ANGLE*

To help set the required cutting angle, the Knife Holder Base is marked with a black engraved line. The engraved line should be aligned with the scale engraved on the side of the Knife Holder.

Release the Knife Lock Lever and move the Knife Holder to the desired angle using the angle marking scale on the side of the Knife Holder for guidance *(a)*.




For the Thermo MB35 blade (with a 35° facet angle), set the angle to the zero mark on the scale on the side of the Knife Holder.

It may be necessary to adjust the angle slightly for optimum results. Each line marked on the scale corresponds to 1°.

To secure the Knife Holder in position, turn the Knife Lock Lever downward.

**Note**

*The angle marking scales are provided on solid and disposable Knife Holders only.*

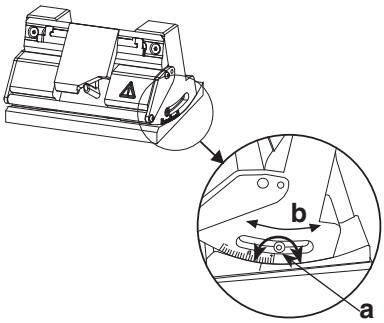
### *TO SAVE THE KNIFE HOLDER POSITION*

The angle setting of the Knife Holder can be saved. If the Knife Holder is moved or refitted, the previous angle can be easily achieved.

**Note**

*1 The position can be saved on each individual Knife Holder only.*

To save the angle, set the Knife Holder to the required position and turn the Knife Lock Lever downwards to secure it in the desired position.




Use the Allen key provided to turn the screw in the side of the Knife Holder *(a)* anti-clockwise to release it. Slide the screw until you can feel the locking plunger locate *(b)*. Tighten the screw.

To change the angle, release the screw and repeat the above procedure.

### 3.4.5 SOLID KNIVES

**MICROTOME KNIVES ARE EXTREMELY SHARP AND CAN CAUSE SERIOUS INJURY. ALWAYS HANDLE MICROTOME KNIVES WITH GREAT CARE. MESH GLOVES PROVIDE SOME PROTECTION WHEN SHARP OBJECTS ARE HANDLED.**

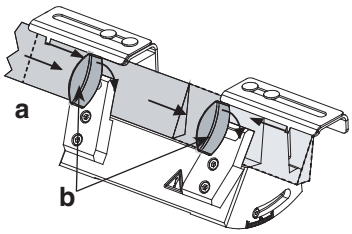
**STORE ALL KNIVES IN THEIR TRANSPORT BOXES WHEN NOT REQUIRED FOR IMMEDIATE USE.**

**WHEN SOLID KNIVES LONGER THAN 180mm ARE USED AT THE EXTREMES, THE KNIFE GUARDS WILL NOT PROTECT THE UNUSED CUTTING EDGE**

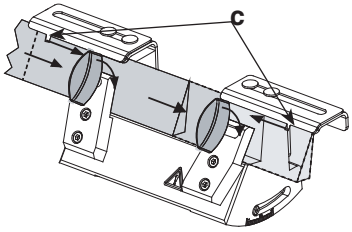
***SOLID KNIFE HOLDER***

Turn the two elliptical Locking Knobs at the front of the Solid Knife Holder anti-clockwise to release them.

Slide the knife into position under the Knife Clamp *(a)* and then tighten both Locking Knobs by turning them clockwise *(b).*




Knife Guards are fitted as standard to cover the portions of the knife not in use, and can be pushed together to cover the entire knife *(c).*




**Notes**

1 *It is advisable to use a knife handle if available.*

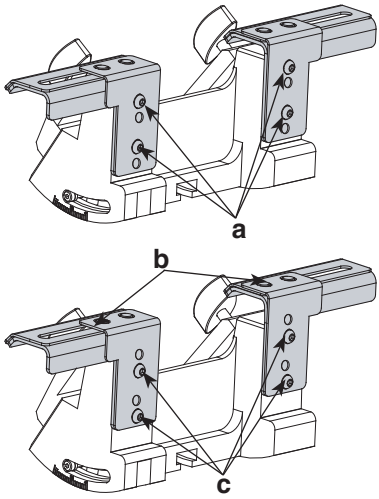
2 *Knife lengths and profiles are shown in Appendix C. Suitable knives are listed in the Thermo catalogue.*

3 *If the knife angle is changed, the blade may move in relation to the section*

4 *The Solid Knife holder is designed for use with Thermo knives. However, if a higher knife is to be used, the Solid Knife holder can be adapted by moving the Knife Guard as follows:*

*Remove the screws (a) holding the Knife Guard to the rear of the Knife holder using the Allen key provided.*

*Position the Knife Guard in the higher position (b) and use the screws in the lower holes (c) to secure it.*




### 3.4.6 DISPOSABLE BLADES

**MICROTOME BLADES ARE EXTREMELY SHARP AND CAN CAUSE SERIOUS INJURY. ALWAYS HANDLE MICROTOME BLADES WITH GREAT CARE. MESH GLOVES PROVIDE SOME PROTECTION WHEN SHARP OBJECTS ARE HANDLED.**

**EXCESSIVE CLAMPING OF THE BLADE MAY DISTORT THE CLAMPING PARTS AND THE BLADE**

## DISPOSABLE BLADE HOLDER

**Part numbers**

A77510272 - low profile disposable blade holder complete
A77510275 - high profile disposable blade holder complete

## FITTING THE BLADE HOLDER

The bottom stage enables the blade angle to be adjusted, and the top stage allows lateral movement of the clamped blade. The blade guard is attached to the top stage

**ALWAYS LOCK THE HANDWHEEL TO PREVENT IT MOVING WHEN WORKING NEAR THE BLADE HOLDER.**

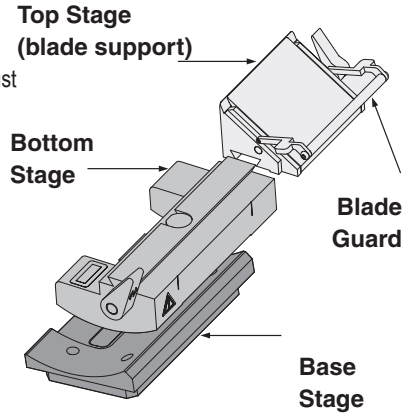
To fit the Blade Holder, move the Knife Lock Lever on the right hand side of the instrument (b) until the 'T' stud locking pin on the Blade Holder Base (a) is at its highest point.
Locate the 'T' shaped cutout section on the bottom of the Blade Holder onto the 'T' stud (a).

Slide the Blade Holder onto the base, making sure that the 'T' stud slides along the cutout.

**Note**

**1.** The Blade Holder should not be too loose when fitted onto the base. If it feels loose, remove the Blade Holder and adjust the 'T' stud (a) by turning it clockwise to lower the stud.

**2.** If the Blade Holder will not slide on at all, or is very tight, adjust the 'T' stud (a) by turning it anti-clockwise to raise the stud.



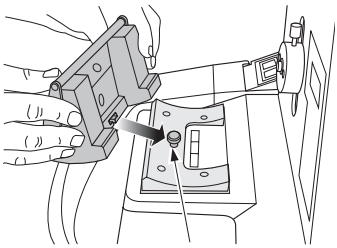

To secure the Blade Holder to the Blade Holder Base, turn the Knife Lock Lever in either direction until it locks.

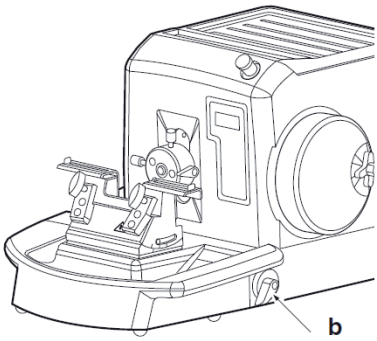
**Note**

**1.** The lock and release positions of the Knife Lock Lever Handle can be altered to suit the user's individual preferences.

Press the orange button and gently pull the Handle to release it. Turn the handle to the desired position and release. The Knife Lock Lever will work in the same way as before, but the Handle position will be in the new position.

**2.** If the Knife Lock Lever does not securely clamp the Knife Holder, adjust the 'T' stud (a) by turning it clockwise to lower the stud.



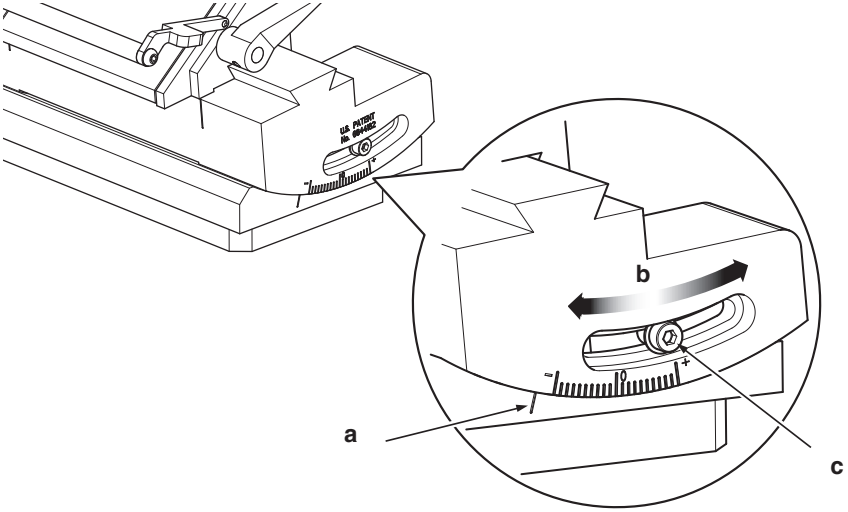

## TO SET THE REQUIRED ANGLE

Release the Knife Lock Lever and move the Blade Holder to the desired angle using the angle marking scale on the side of the Blade Holder for guidance (a).

Set the angle to the zero mark on the scale on the side of the Knife Holder.

It may be necessary to adjust the angle slightly for optimum results. Each line marked on the scale corresponds to 1°.

To secure the Blade Holder in position, turn the Knife Lock Lever until it locks.




## TO SAVE THE BLADE HOLDER POSITION

The angle setting of the Blade Holder can be saved. If the Blade Holder is moved or refitted, the previous angle can be easily achieved.

**Note**

**1.** The position can be saved on each individual Blade Holder only.

To save the angle, set the Blade Holder to the required position and turn the Knife Lock Lever to secure it in the desired position.

Use the Allen key provided to turn the screw in the side of the Blade Holder (c) anti-clockwise to release it. Slide the screw until you can feel the locking plunger locate (b). Tighten the screw.

To change the angle, release the screw and repeat the above procedure.

## FITTING A DISPOSABLE BLADE

**MICROTOME BLADES ARE EXTREMELY SHARP AND CAN CAUSE SERIOUS INJURY. ALWAYS HANDLE MICROTOME BLADES WITH GREAT CARE. USE THE DISPENSER WHEN FITTING A NEW BLADE.**

**ALWAYS PLACE THE BLADE GUARD OVER THE BLADE WHENEVER THE INSTRUMENT IS NOT BEING USED FOR CUTTING.**

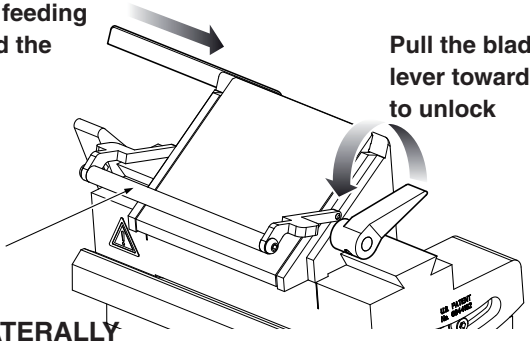
Use the handle to swing the knife guard away from the blade clamp. Pull the black blade clamp lever towards you to release it.

Push the end of the blade to be installed part way out of the dispenser and put its end under the plate of the blade clamp.

Slide the blade until it is located symmetrically in the top stage.

Push the blade clamp lever to lock the blade in position.

**Take care when feeding the blade behind the blade clamp**



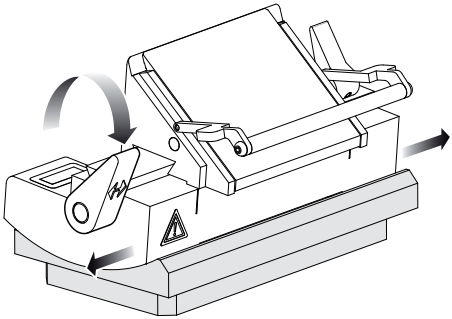
**Pull the blade clamp lever towards you to unlock**

**Blade Guard**

## TO MOVE THE BLADE LATERALLY

To move the top stage, release the blue blade position clamp lever. Move the top stage to the required position and re-tighten the blue lever.

**Move blue blade position clamp towards you to unlock**



**Move top stage to required positiion**

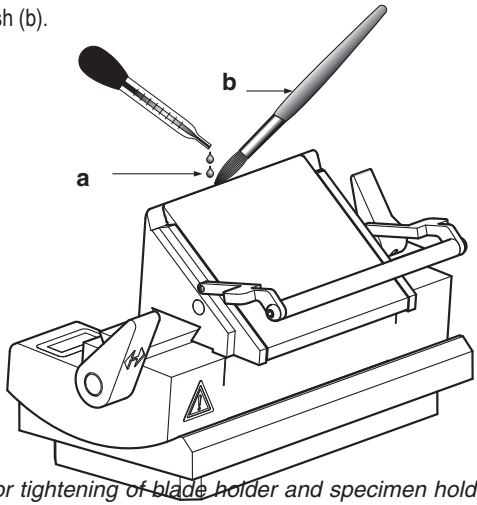
## TO CLEAN THE DISPOSABLE BLADE HOLDER

**REMOVE THE BLADE BEFORE CLEANING THE BLADE HOLDER.**

Pull the Clamp Lever towards you to loosen the clamp plate.

Drip xylene behind the clamp plate to loosen any wax build up (a).

Remove any wax build up with a fine brush (b).




**Note**

1 *Carry out all usual checks for tightening of blade holder and specimen holder before sectioning.*

2 *If 'thick / thinning' occurs, reduce the clamping.*

3 *If chattering of the blade occurs, increase the clamping.*

### 3.4.7 GLASS KNIVES AND KNIFEHOLDERS

**MICROTOME KNIVES ARE EXTREMELY SHARP AND CAN CAUSE SERIOUS INJURY. ALWAYS HANDLE MICROTOME KNIVES WITH GREAT CARE. MESH GLOVES PROVIDE SOME PROTECTION WHEN SHARP OBJECTS ARE HANDLED.**

**STORE ALL KNIVES IN THEIR TRANSPORT BOXES WHEN NOT REQUIRED FOR IMMEDIATE USE.**

**ALWAYS WEAR SAFETY SPECTACLES WHEN USING GLASS KNIVES**
**NEVER TOUCH THE CUTTING EDGE OF A GLASS KNIFE AS IT IS EASILY DAMAGED OR BLUNTED. TO REMOVE DEBRIS, USE A BLOWER**

The Knife Holders for Ralph and triangular glass knives consist of two parts.

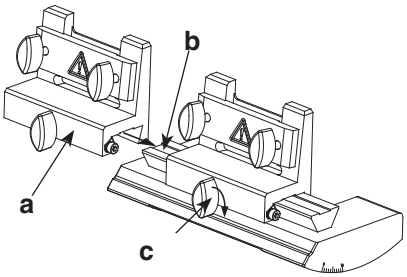
The base section is common to all of the glass Knife Holders, and slots onto the fixed base in the same way as before - see paragraph 3.4.4.

### *TO FIT THE GLASS KNIFE HOLDER TOP SECTIONS*

The Knife Holder top sections are specific to the type of glass knife to be used. Make sure that the Knife Holder is the correct type.

To fit the top section to the base section, hold the top section upright so that the locking knob is at the bottom of the holder and is facing you *(a)*.

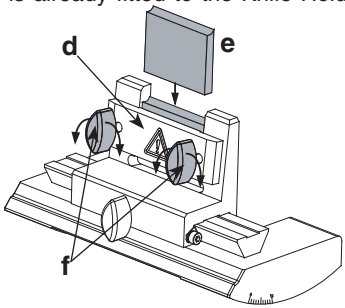
Locate the cutout underneath the top section onto the metal slide on top of the base section *(b)*, so that the locking knob is towards the front of the instrument. Gently push the top section onto the slide, and position it centrally on the slide.




To lock the top section in position, tighten the locking knob of the top section *(c)* by turning it clockwise.

### *TO FIT A RALPH GLASS KNIFE*

The Ralph Knife Holder is suitable for use with 38mm or 25mm high glass knives. There are two different Clamp Plates *(d)* - the 38mm clamp plate is already fitted to the Knife Holder when it is supplied, and the 25mm Clamp Plate is supplied as a spare item.




To fit the alternative Clamp Plate, remove the two Clamp Screws located on the front of the clamp *(f)*. Remove the Clamp Plate from the Knife Holder and replace it with the other Clamp Plate. Make sure the Clamp Plate is oriented as shown.

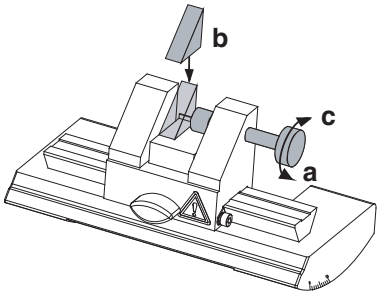
To fit a Ralph knife, make sure the correct Clamp Plate is fitted onto the Knife Holder. Turn the two Clamp Screws *(f)* anti-clockwise to loosen them. Do not remove the Clamp Screws.

Carefully insert the Ralph knife behind the clamp, with the cutting edge away from the clamp, towards the rear of the instrument *(e)*. Turn the Clamp Screws clockwise to tighten them, until the glass knife is firmly gripped by the clamp.

***TO FIT A TRIANGULAR GLASS KNIFE***

Turn the the Clamp Screw located at the side of the Knife Holder to loosen it *(a)*.

Very carefully insert the triangular knife so that it locates against the endstop *(b)*.




Turn the Clamp Screws clockwise to tighten them *(c)*, until the glass knife is firmly gripped by the clamp.

**Note**

*The knife, Knife Holder and Knife Holder Base must all be extremely secure and rigid before starting to section. Poor clamping may result in chatter or uneven sectioning.*

## 3.5 SECTIONING PROCEDURE - WAX

**ALWAYS APPLY THE BRAKE BEFORE ADJUSTING THE SPECIMEN CLAMP OR KNIFE HOLDER**

**MICROTOME BLADES ARE EXTREMELY SHARP AND CAN CAUSE SERIOUS INJURY. ALWAYS HANDLE MICROTOME BLADES WITH GREAT CARE. MESH GLOVES PROVIDE SOME PROTECTION WHEN SHARP OBJECTS ARE HANDLED.**

**STORE ALL BLADES IN THEIR TRANSPORT BOXES WHEN NOT REQUIRED FOR IMMEDIATE USE.**

Use a scraper to remove excess wax from the sides, ends and back of the cassette. The cassette must be able to mount squarely on the Specimen Clamp.

Turn the handwheel until the handle is at the top (at the 12 o'clock position), engage the brake (red position) and test to make sure the brake is on.

Check that the Specimen Clamp is clean and free of wax deposits. Check that the cassette sits squarely and securely in the clamp before you begin to trim the specimen.

## 3.6 SECTIONING PROCEDURE - RESIN

**ALWAYS APPLY THE BRAKE BEFORE ADJUSTING THE SPECIMEN CLAMP OR KNIFE HOLDER**

**MICROTOME BLADES ARE EXTREMELY SHARP AND CAN CAUSE SERIOUS INJURY. ALWAYS HANDLE MICROTOME BLADES WITH GREAT CARE. MESH GLOVES PROVIDE SOME PROTECTION WHEN SHARP OBJECTS ARE HANDLED.**

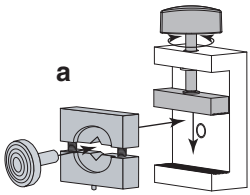
**STORE ALL BLADES IN THEIR TRANSPORT BOXES WHEN NOT REQUIRED FOR IMMEDIATE USE.**

**ALWAYS WEAR SAFETY SPECTACLES WHEN USING GLASS KNIVES**

For best results use a glass knife and a Fixed Head.

Make sure that the Knife, Knife Holder, Fixed Head and vice are rigid and secure on the microtome.

A JB4 or EBH style resin specimen holder can be clamped on the outer diameter of the holder in the resin clamp to give better stability and rigidity for sectioning. However, the shaft of the holder can also be clamped. Use spacers if necessary.




Insert the resin clamp into the vice held on the Fixed Head *(a)* and tighten the thumbscrew to secure the mount.

Make sure that the specimen is rigid and secure before sectioning.

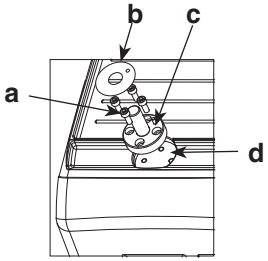
**Note**

1 *For best results, the specimen and microtome must be properly set up before you begin to section a specimen. Failure to do so may result in poor sections.*

## 3.7 ACCESSORIES

***MAGNIFIER (230V - Europe only)***

The Magnifier is a combined light and magnifying glass that attaches to the Finesse. A separate Mounting Boss to attach the Magnifier to the Finesse and a new top tray are supplied.




To attach the Mounting Boss, remove the top tray from the Finesse. Remove the four screws *(d).* Align the holes in the Mounting Plate with the holes in the top of the Finesse, so that the small alignment pin *(c)* is located towards the rear of the Finesse.

Secure the Mounting Boss with the screws supplied *(a).* Fit the washer *(b)* over the Mounting Boss and alignment pin. Place the new top tray on top of the Finesse.

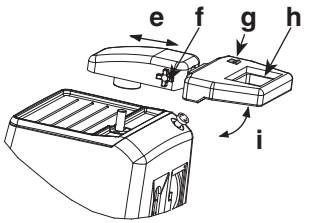
**Note**

1 *The Magnifier requires a separate mains supply socket near to the Finesse.*

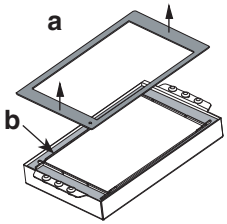
2 *Make sure that the voltage of the mains supply corresponds with the voltage rating of the Magnifier.*

**WARNING** **Route the mains cable to the rear of the instrument. Make sure it does not come into contact with any moving parts**

With the magnifying glass facing the front of the Finesse *(h)*, place the Magnifier onto the Mounting Boss. The small pin at the back of the Mounting Boss locates the Magnifier, and allows it to be moved to the desired position or moved out of the way.



The Magnifier can be positioned to suit the individual operator. The Magnifier can be moved towards or away from the instrument *(e)*. To alter the angle of the magnifier, loosen the clamping knob *(f)* and tilt the Magnifier to the desired angle *(i)*.

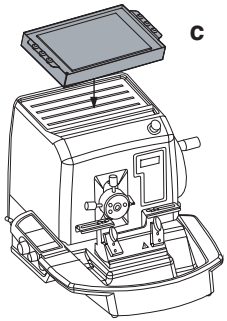



**WARNING** **Hold the magnifier in the required position until the clamping knob is tightened**

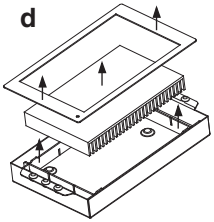
To switch on the light, press the switch on top of the Magnifier *(g)*.

***COLD PLATE***

The Cold Plate provides a convenient cold area to cool specimen blocks.

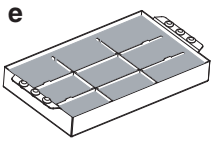



Remove the top cover of the Cold Plate *(a)* and fill the container with water to the top of the baffles *(b)*. Replace the top cover and freeze until completely frozen.



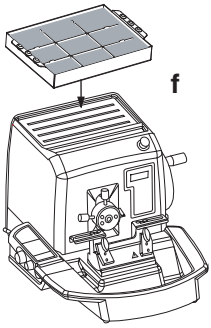

To fit the Cold Plate onto the Finesse, place it on the rear section of the top tray *(c)*.

To clean the Cold Plate, remove the top plate, heatsink and baffles *(d)*. Wash in warm soapy water.




***ICE TRAY***

The Ice Tray is an alternative to the Cold Plate.

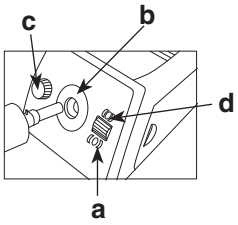



Fill the container with water to the top of the baffles *(e)*. Freeze until completely frozen. Place the frozen Ice Tray onto the top tray of the Finesse *(f)*.

To clean the Ice Tray, remove the top plate, heatsink and baffles. Wash in warm soapy water.

### *COLD POINT LIGHT SOURCE*

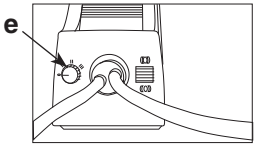
The Cold Point Light Source is a separate free standing accessory that can be adjusted by the operator to give optimum illumination of the specimen using a light that will not affect the temperature of the specimens.



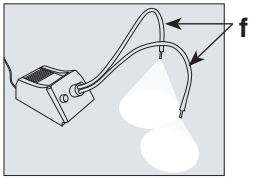

**Note**

1 *The Light Source requires a separate mains supply socket near to the Finesse.*

2 *Make sure that the voltage of the mains supply corresponds with the voltage rating of the Light Source.*




Turn the Locking Knob towards the **( 0 )** symbol *(a)*. Firmly insert the flexible light arms into the connector on the front of the base unit *(b)* with the small metal pin on the light arm connector at the top *(c)*. Secure the flexible arms by turning the Locking Knob towards the **(0)** symbol *(d)*.




Switch on the mains supply to the base unit and switch on by turning the Brightness Knob to the **I**, **II**,or **III** settings *(e)*. The brightness of the light increases from setting **I** through to setting **III**.

Adjust the arms to the desired position *(f)*.

To switch the light unit off, turn the Brightness Knob to the **O** setting *(e)*.

# OPERATION

## 4.1 INTRODUCTION

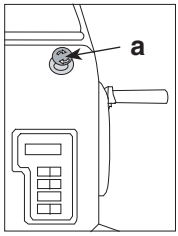
**THIS INSTRUMENT USES SHARP KNIVES. MAKE SURE YOU UNDERSTAND THE SAFE AND CORRECT METHODS OF USING AND HANDLING THEM.**

**MESH GLOVES PROVIDE SOME PROTECTION WHEN SHARP OBJECTS ARE HANDLED**

**STORE BLADES IN THEIR TRANSPORT BOXES WHEN NOT REQUIRED FOR IMMEDIATE USE.**

**ALWAYS APPLY THE BRAKE BEFORE ADJUSTING THE SPECIMEN CLAMP OR VICE OR HANDLING THE KNIFE**

**AWAYS WEAR SAFETY SPECTACLES WHEN USING GLASS KNIVES**




All motors are automatically disabled if the red Emergency Stop button *(a)* has been pressed. To disengage the Emergency Stop, turn the red button clockwise until it unlocks and pops out. Then follow the instructions shown on the display.

It is recommended that the brake is applied and the instrument is kept in Standby mode when it is not in use. To enter the Standby mode, press the **[⏻]** button.

**Note**

*1 The red LED lights when the instrument is in STANDBY mode*

To restart the instrument, press the **[⏻]** button again.

## 4.2 NORMAL OPERATION

This section deals with the normal operation of the Finesse microtome.

**Note**

1 *Many features and displays of the Finesse can be customised using the User Setup facility described in Appendix A.*

2 *The backlight is a very useful aid to align the knife to the specimen.*

The Finesse will automatically enter the normal operation mode when the **[⏻]** button is pressed if it was left in the Standby mode.

**Note**

*If the Finesse has been switched off by using the I / O power switch, follow the instructions in Section 3.4.1.*

The Finesse microtome is set at the factory for use with wax embedded specimens. To change the desired medium to resin, refer to the 'Material Select Menu' options in User Setup described in Appendix A.


The display will automatically show the *'TRIM'* screen when it is first switched on. This is described fully in Section 4.3.

The Finesse can be fully configured to the user's individual preferences. The procedure is explained in the User Setup section in Appendix A.

## 4.3 OPERATING DISPLAYS

This section explains the different displays that will be encountered during normal use.

### *4.3.1 TRIM Display*

Press **[TRIM/SECTION]** on the Control Unit until *'TRIM'* is selected. The top LED will light .


The Finesse automatically shows the *'TRIM'* display when it is has been set up. This shows the thickness of material that will be removed during trimming.

**Note**

1 *If the 'TRIM' screen is not shown on the display, press* ***[NEXT]*** *until it is.*

The **[+]** and **[-]** buttons are used to increase and decrease the trim amount to the following values:

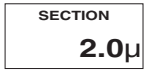
2, 4, 6, 8, 10, 15, 20, 25, 50, 75, 100 µm

**Note**

1 *The thickness of the trim can be changed at any time during normal operation as long as 'TRIM' is selected.*

### *4.3.2 SECTION Display*


Press **[TRIM/SECTION]** until *'SECTION'* is selected. The bottom LED will light.




The screen will show the *'SECTION'* display which shows the thickness of material that will be removed during sectioning.

The **[+]** and **[-]** buttons are used to increase and decrease the section amount to the following values:

| | |
|---|---|
| 0.5 - 3µm | in 0.5µm steps |
| 3 - 20µm | in 1µm steps |
| 20 - 40µm | in 5µm steps |
| 40 - 100µm | in 10µm steps |

**Note**

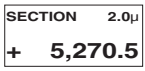
1 *The thickness of the section can be changed at any time during normal operation as long as 'SECTION' is selected.*

### *4.3.3 COUNT Display*


The count increments with every cutting stroke, To view this information, press **[NEXT]** until this screen is displayed.

To zero the count, press and hold down **[CLEAR]** until it goes to zero.

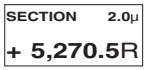
### *4.3.4 DISTANCE Display*




The Finesse keeps track of the total distance travelled. To view this information, press **[NEXT]** again until the screen is displayed.

The value increments with every cutting stroke to show the overall distance travelled.

The 'R' after the value signifies that the specimen head is retracted during the return stroke to the top of its travel.

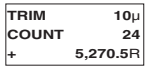



**Note**

*1 The retraction distance is not included in the 'DISTANCE' display.*

To zero the distance, press and hold down **[CLEAR]** until it goes to zero.

### *4.3.5 COMBINED Display*




This display combines all of the above information in the one screen. Press **[NEXT]** to display it.

To clear both Count and Distance, press **[CLEAR]** until both go to zero (Count will clear before Distance).

## *WAX EMBEDDED SPECIMENS*

**The desired medium (either wax or resin) is selected from the Material Select Menu in the User Setup Options. This is described in detail in Appendix A (paragraph A.3.5). Note that wax is the factory set medium.**

## 4.4 TO SET THE KNIFE HOLDER FOR CUTTING SPECIMENS

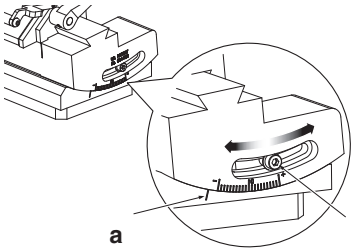
**THIS INSTRUMENT USES SHARP KNIVES. MAKE SURE YOU UNDERSTAND THE SAFE AND CORRECT METHODS OF USING AND HANDLING THEM.**

It is important to adjust the Knife Holder to the correct angle before sectioning.

### *4.4.1 TO SET THE KNIFE HOLDER TO THE REQUIRED ANGLE*

Release the Knife Lock Lever and move the Blade Holder to the desired angle using the angle marking scale on the side of the Blade Holder for guidance (a).

Set the angle to the zero mark on the scale on the side of the Knife Holder.



**a**

### *4.4.2 RECOMMENDED KNIFE ANGLES FOR SOLID KNIVES AND PREMIER PLUS BLADES, Mx35*

Set the Knife Holder initially to an angle of 0°.

You can then adjust the Knife Angle more accurately to suit the Knife and specimen being sectioned.

## 4.5 TO TRIM A SPECIMEN

The thickness required while trimming a specimen is set using the Front Panel and Control Unit (see paragraphs 4.3.1 and 4.3.2). The **[**▽**]** button can be used to advance a specimen to the knife.

The Specimen Travel controls **[**△**]** and **[**▽**]** on the Control Unit can be used to move the Specimen Head towards and away from the knife.

**[**△**]** moves the Specimen Head away from the knife. When held for more than 3 seconds, the Specimen Head moves more quickly. If it is held until the LED lights, the Specimen Head rewinds to the back stop position.

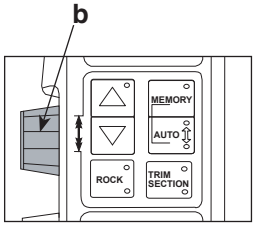
The green LED will be lit when the Specimen Head is moving to the back stop position. Cancel this movement by pressing either **[**△**]** or **[**▽**]**.

**[**▽**]** moves the Specimen Head towards the knife. When the button is first pressed, the Specimen Head slowly moves towards the knife. Continue to press **[**▽**]** for 3 seconds, to move the Specimen Head more quickly.

Release the brake and set to either *MANUAL* (green position) or *MOTOR* (blue position) *[ME + only]*. Slowly turn the Handwheel clockwise or press **[RUN]** if the motor is engaged *[ME + only]*.

Each time the handle on the Handwheel moves from the 11 o'clock position to the 12 o'clock position, the Specimen Head will move towards the knife by the amount set.

The Trim Wheel *(b)* can also be used to carefully approach the specimen and is able to provide the operator with fine adjustments. Each click on the Trim Wheel corresponds to 8µm.




**WARNING** **If the Trim wheel is used, only advance the Specimen Head when the specimen is above the knife.**

**Note**

1 *In 'TRIM' mode, the retraction facility is not automatically selected. To turn it on, press **[RETRACT]**.*

2 *Do not advance with the Trim Wheel if the specimen is retracted (amber LED is lit).*

Alternatively, the 'rock' technique can be used. This is described fully in Section 4.6.

Continue trimming until the desired face of the specimen is presented to the knife. Apply the handwheel brake when trimming is completed.

## 4.6 TO ROCK

The 'rock' facility is an alternative method that can be used to trim the specimen without turning the Handwheel completely. When the Handwheel is turned for a small amount, the Specimen Head is advanced by a set distance.

**WARNING** **Only use the 'rock' facility to advance the Specimen Head when the specimen is above the knife.**

**Note**

1 *The 'ROCK' and 'RETRACT' facilities cannot be used at the same time.*

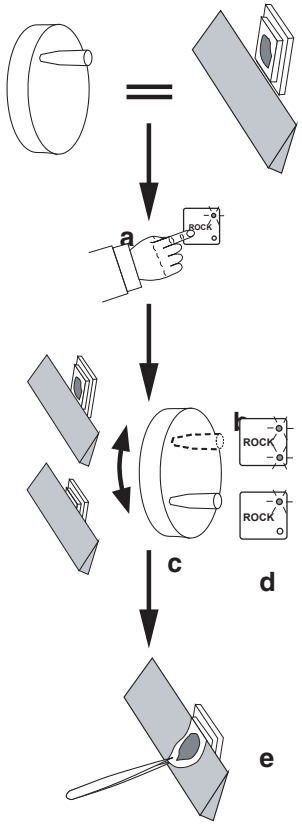
2 *When 'WAX' is selected as the chosen medium, the status of 'ROCK' and 'RETRACT' can be different for 'TRIM' and 'SECTION'.*

To enable the rock facility, the rock position must be saved. Turn the Handwheel to move the specimen to the start, or top, of the cutting sector *(a)*.

Press **[ROCK]** on the Control Unit to save the start of the rocking sector *(b)*. The green LED lights when the facility is selected *(e)*.

Move the Handwheel so that the specimen passes across the knife and then back up again *(c)*.

When the specimen is above the set rock position, the amber LED on the button *(d)* lights. The Specimen Head advances by the set distance.



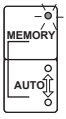

**Note**

1 *If a Cutting Sector has previously been set, the Finesse will use the existing top position when **[ROCK]** is pressed.*

To cancel the rock facility, press **[ROCK]** again.

## 4.7 TO USE THE MEMORY

To help reposition similar sized specimens, press **[MEMORY]** on the Control Unit when the Specimen Head has advanced to the required position to start to trim. The green LED is lit to indicate that a position is saved.




If **[AUTO]** is then pressed, the Specimen Head rewinds a set distance back from the knife so that the specimen cassette can be removed. (The distance can be set in the Auto Load Options Menu section of User Setup, described in Appendix A, section A.3.6).

When the next specimen has been loaded, press **[AUTO]** again to return the Specimen Head to the memory position.

**Note**

1 *If **[AUTO]** is pressed when a memory position has not been saved, the Specimen Head rewinds back to the back stop position.*

If the Specimen Head is at the memory position, press **[MEMORY]** once to clear the memory position. If the Specimen Head is not at the memory position, press **[MEMORY]** twice. The first press will overwrite any existing memory position with a new position, and the second press will clear the new memory position.

## 4.8 TO CUT SECTIONS


When trimming is complete, select *'SECTION'* mode by pressing **[TRIM/SECTION]**. The lower LED will light.

Make sure that the specimen is positioned ready for cutting using the Trim Wheel and the Specimen Travel controls **[△]** and **[▽]**.

Sections can be cut manually using both models of the Finesse. The ME + can also cut sections using the motor.

### *4.8.1 Manual cutting*

Press the **[+]** or **[-]** buttons to select the thickness required for the sections. The values that can be selected are:

| | |
|---|---|
| 0.5 - 3µm | in 0.5µm steps |
| 3 - 20µm | in 1µm steps |
| 20 - 40µm | in 5µm steps |
| 40 - 100µm | in 10µm steps |

**Note**

1 *In 'SECTION' mode, the retraction facility is selected automatically. To turn it off, press **[RETRACT]**.*

Release the Brake, and set it to *MANUAL* (green position). Turn the Handwheel. Apply the Brake (red position) when sectioning is complete.

### *4.8.2 Motorised cutting* *[ME + only]*

To automatically cut sections, select the mode required (see paragraphs 3.5.10 to 3.5.13) by pressing **[MODE]**. Release the Brake and set it to *MOTOR* (blue position).

When **[RUN]** is pressed, or the Footswitch operated, the Finesse will section according to the mode it is in - a single section in single cycle cutting, or continuous sectioning in run mode or stop mode.

## 4.9 TO SET THE CUTTING SECTOR FOR MOTORISED CUTTING [ME + only]

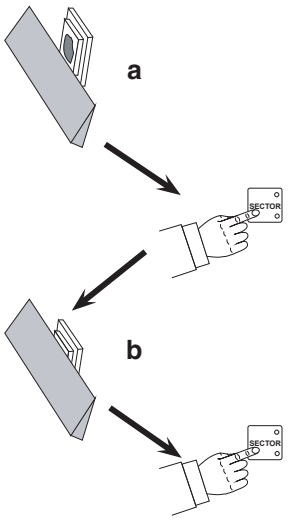
**WARNING** **[ME + Only] Do not turn the Handwheel manually if the Brake Lever is set to MOTOR - the Motor Drive system may be damaged**

Motorised cutting allows the operator to cut specimens evenly and smoothly at low speeds. It is particularly useful when cutting large numbers of samples.

The Cutting Sector allows the operator to select a suitably slow speed for cutting a sample whilst automatically allowing a fast return stroke, to produce good quality sections in the optimum time.

To set the Cutting Sector, release the Handwheel brake, and turn the Handwheel until the specimen is positioned above the knife *(a)*. Press **[SECTOR]** once to capture the top of the sector.

Turn the Handwheel until the specimen is just below the knife *(b)*. Press **[SECTOR]** again to define the end position.




**Note**

1 *The highest position is always saved as the start position.*

2 *If an end position for the Cutting Sector is not defined, the bottom of the cutting stroke is automatically used instead.*

3 *If no sector is set, the complete cutting stroke is taken as the Cutting Sector (for the purposes of speed control).*

The top LED lights *(c)* when the Specimen Head is above the Cutting Sector. The lower LED lights *(d)* when the Specimen Head is below the Cutting Sector.

**Note**

1 *Both LEDs are lit when the Specimen Head is within the Cutting Sector.*

2 *Flashing LEDs indicate that a position has not been set.*

**c**


**d**


To cut a specimen, select *MOTOR* on the Brake Lever (blue position). When **[RUN]** is pressed, the Specimen Head will cut through the Cutting Sector at the speed set on the Speed Control Wheel. At low cutting speeds, the return speed is automatically faster than the cutting speed to save time.

**Note**

1 *When the speed is being adjusted using the Speed Control Wheel, the display will show the speed. It will then revert back to the previous display. The Display Option Menu section of the User Setup in Appendix A gives details of how to set the speed to be displayed permanently.*

To clear the Cutting Sector, press and hold **[SECTOR]** until both LEDs on the button clear.

## 4.10 HOUSEKEEPING

Always make sure that any debris is regularly cleared away from the Knife, to ensure quality sections.

### *RESIN EMBEDDED SPECIMENS*

**Resin embedded specimens require the use of specialised techniques. Make sure that you are familiar with the necessary techniques and standard practices. The following section gives instructions about how to use the Thermo Finesse to trim and section resin embedded specimens.**

**THIS INSTRUMENT USES SHARP KNIVES. MAKE SURE YOU UNDERSTAND THE SAFE AND CORRECT METHODS OF USING AND HANDLING THEM.**

Select *'RESIN'* as the desired medium from the Material Select Menu in the User Setup Options. This is described in detail in Appendix A (paragraph A.3.5).

**Note**

*1 Note that wax is the factory set medium.*

Accessories such as a magnifier and cold light source are available to assist when resin embedded sections are to be cut.

**Note**

*It is recommended that the following points are followed when cutting resin embedded specimens:*

*1 Use a Fixed Head.*

*2 Select Retraction.*

*3 Use motorised cutting, as this provides the necessary control at low speeds to give smooth and even sections. This option is only available on the Finesse ME +.*

*4 The motor will automatically select lower speeds.*

## 4.11 TO MOUNT A SPECIMEN

The mounted specimen is held in a vice attached to the Fixed Head on the Finesse. Section 3.4 contains full instructions of how to mount the specimen in the vice.

**Note**

*1 Specimens must be securely clamped. Clamp on the larger outer diameter of a JB4 or EBH holder to obtain better stability and rigidity.*

## 4.12 TO TRIM A SPECIMEN

The thickness required while trimming a specimen is set using the Front Panel and Control Unit (see paragraphs 4.3.1 and 4.3.2). The **[▽]** button can be used to advance a specimen to the knife.

**Note**

*When 'Resin' is selected, each click of the Trim Wheel is equal to the Trim distance set using the 'TRIM' display (paragraph 4.3.1).*

***To trim using motorised cutting*** *[ME + Only]*

Set the Speed Control Wheel to a low speed. Select the required cutting mode. Release the brake, engage the motor and press **[RUN]**.

Continue trimming until the desired face of the specimen is presented to the knife. Apply the handwheel brake when trimming is completed.

**Note**

*1 The backlight is particularly useful when cutting resin sections.*

## 4.13 TO CUT SECTIONS

Make sure that the Fixed Head, Specimen, Knife Holder and knife are all completely rigid before you start to section.

Select *'SECTION'* mode by pressing **[TRIM/SECTION]**. The lower LED will light. 


To achieve accurate sections, resin embedded specimens are best sectioned using motorised cutting as this allows the operator to cut specimens evenly and smoothly at low speeds.

**Note**

*When 'Resin' is selected, each click of the Trim Wheel is equal to the Section distance set using the 'SECTION' display (paragraph 4.3.2).*

To cut sections, select the mode required (see paragraphs 3.5.10 to 3.5.13) by pressing **[MODE]**. Release the Brake and set it to *MOTOR* (blue position).

When **[RUN]** is pressed, the Finesse will section according to the mode it is in - a single section in single cycle cutting, or continuous sectioning in run mode or stop mode.

## 4.14 TO SET THE CUTTING SECTOR FOR MOTORISED CUTTING [ME + only]

The Cutting Sector allows the operator to select a suitably slow speed for cutting the sample whilst allowing a fast return stroke.

Instructions about how to set a Cutting Sector are given in Section 4.9.

## 4.15 HOUSEKEEPING

Use a blower to make sure that any debris is regularly cleared away from the Knife and Knife Holder, otherwise the success of sections may be impaired.

# CLEANING AND MAINTENANCE

## 5.1 CLEANING

**REMOVE THE KNIFE OR BLADE BEFORE ATTEMPTING ANY CLEANING OR MAINTENANCE OF THE MICROTOME**

**TURN OFF THE POWER AND REMOVE THE MAINS PLUG FROM THE MAINS SUPPLY BEFORE CLEANING THE FINESSE**

Clean the instrument regularly as part of your normal housekeeping routine, paying particular attention to the removal of wax and debris from the area around the Knife Holder. Always remove the knife or blade, apply the Brake and lock or remove the Knife Holder before cleaning or maintenance.

### *5.1.1 To clean the Instrument*

To clean the outside of the Finesse, wipe with a cloth damped in soapy water, then polish with a dry cloth. **DO NOT USE EXCESSIVE LIQUID.**

### *5.1.2 To clean the Knife Holder*

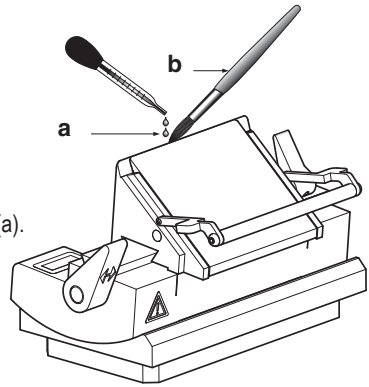
To clean the Knife Holder of residual wax, remove it from its base by loosening the Knife Holder Lock then slide the Knife Holder towards you. Use an appropriate wax removing solvent to clean away all traces of wax.

### *5.1.3 To clean the Disposable Blade Holder*

Pull the Clamp Lever towards you to loosen the clamp plate.

Drip xylene behind the clamp plate to loosen any wax build up (a).

Remove any wax build up with a fine brush (b).




## 6.2 MAINTENANCE

The Finesse Microtome requires annual lubrication by a qualified service engineer.

# TROUBLE SHOOTING

## 6.1 GENERAL

Correct service and maintenance is essential for the long term serviceability of precision engineered products such as the Finesse microtomes. We recommend that a Service Contract is used to ensure future reliability and consistency of performance.

This instrument is designed for maximum safety, ease of use and reliability. It should only be serviced by a Thermo qualified Service Engineer.

### TABLE 1 INSTRUMENT FUNCTION

| SYMPTOM | CAUSE | REMEDY |
|---|---|---|
| 1 Display not lit on the Front Panel | a No Power Supply<br>b Mains fuse blown<br>c Instrument fuse blown | a Check the mains supply<br>b Replace mains fuse<br>c Replace the instrument fuse<br><br>**Note:**<br>**Only a technically competent person should replace fuses** |
| 2 Handwheel will not turn when turned manually or *[ME + only]* when **[RUN]** is pressed | a The brake is engaged<br><br>b *[ME + only]* The Speed Control Wheel is set to its lowest setting. | a Make sure the Brake Lever is set to *MANUAL* or *[ME + only] MOTOR*<br>b *[ME + only]* Slowly adjust the Speed Control Wheel to increase the speed |
| 3 *[ME + only]* Footswitch does not operate correctly | a The Footswitch cable has not been properly connected<br>b The Footswitch is disabled | a Check the Footswitch connection at the rear panel of the instrument<br>b Press **[ ]** to enable the Footswitch<br>c Make sure that the Footswitch has not been pressed fully down to the second position |

**TABLE 2 PROBLEMS WHEN SECTIONING WAX EMBEDDED SPECIMENS**

| SYMPTOM | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| 1 Ribbon of section is curved. | a The leading and trailing edges of the block are not parallel.<br>b One area of the knife or blade is blunt.<br>c Surplus wax on one side of block.<br>d Variation in consistency of specimen | a Use a scalpel to trim the edges of the block until parallel.<br>b Sharpen the knife or use different part of blade.<br>c Reduce excess wax.<br>d Turn block through 90° and cool with ice. Mount sections individually. |
| 2 Sections alternate between thick and thin. | a Wax not hard enough for the conditions.<br>b Block or knife is loose.<br>c Insufficient clearance angle.<br>d Sections of large / hard tissue are too thin. | a Use higher melting point wax, or cool block with ice.<br>b Tighten Knife holder, blade clamp and orientation lock. Clean Specimen Holder.<br>c Slightly increase the angle.<br>d Increase section thickness. Use Fixed Head and solid knife to increase rigidity. |
| 3 Chatters - thick and thin areas parallel to the knife edge. | a Block or knife loose in holder.<br>b Knife angle too steep or sharp.<br>c Specimen too hard for current conditions.<br>d Calcified areas in tissue.<br>e Knife blunt. | a Tighten block or knife.<br>b Reduce angle to minimum, with clearance.<br>c Use heavy duty knife. Reduce knife slant angle. Soften tissue with softening fluids. Re-process / re-embed the specimen.<br>d Decalcify the surface or dehydrate then decalcify.<br>e Sharpen knife or change blade. |
| 4 Sections split or scored perpendicular to the knife edge | a Nick in edge of knife.<br>b Specimen contains hard particles.<br>c Wax contains hard particles. | a Sharpen knife or use different area of blade.<br>b If calcium deposits, decalcify.<br>c Re-embed using fresh filtered wax |
| 5 No joining of sections to form a ribbon. | a Wax too hard.<br>b Debris on knife edge.<br>c Knife angle too sharp or shallow.<br>d Uneven edges of block.<br>e Mould release or detergent | a Re-embed in lower melting point wax, or breathe on block to soften.<br>b **WEAR MESH GLOVES** and clean with rag moistened in wax solvent.<br>c Adjust to optimum angle.<br>d Use scalpel to straighten leading or trailing edges until parallel.<br>e Wipe around edge of block with absorbent paper. |

**TABLE 2 (continuation)**
**PROBLEMS WHEN SECTIONING WAX EMBEDDED SPECIMENS**

| | | |
|---|---|---|
| 6 Sections attached to block on return stroke | a Insufficient clearance angle.<br>b Debris on edge of knife.<br>c Debris on edge of block. | a Increase clearance angle.<br>b **WEAR MESH GLOVES** and use cloth moistened in wax solvent and clean carefully.<br>c Trim the edge of the block. |
| 7 Areas of specimen in block not in wax | a Incomplete impregnation of the specimen.<br>b Wax becoming detached from the Specimen Holder. | a Return specimen to vacuum impregnating bath for a few hours, or re-process if the fault is excessive.<br>b Re-attach with hot spatula. |
| 8 Sections excessively compressed | a Knife blunt.<br>b Knife bevel too wide.<br>c Wax not hard enough, hot specimen, or ambient conditions.<br>d Cutting too fast.<br>e Retraction not selected.<br>f Wax debris has accumulated behind the clamp plate of the disposable Knife Holder. | a Sharpen knife or change blade.<br>b Regrind or sharpen to produce secondary narrow bevels.<br>c Use higher melting point wax, or cool block with ice.<br>d Cut more slowly.<br>e Select by pressing **[RETRACT]**<br>f Carefully drip xylene between the clamp plate and backplate to remove the wax debris. |
| 9 Expansion and disintegration of sections on water surface | a Poor specimen impregnation.<br>b Water temperature too high. | a Return specimen to a vacuum impregnation bath for a few hours.<br>b Cool water. |
| 10 Sections coil up instead of keeping flat on knife | a Knife blunt.<br>b Rake angle too small.<br>c Section thickness too large for type of wax. | a Sharpen knife or change blade.<br>b Reduce cutting angle by re-sharpening, or if clearance angle too small, reduce the tilt of the knife.<br>c Reduce the thickness of the section, or use wax with a slightly higher melting point. Raise temperature of the block by breathing on sections as they are cut. |

**TABLE 3 PROBLEMS WHEN SECTIONING RESIN EMBEDDED SPECIMENS**

| SYMPTOM | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| 1 Knife 'howls' as it passes through the specimen | a Glass knife edge is damaged<br>b Glass knife is loose in the holder | a Change the knife<br>b Tighten the Knife Holder |
| 2 Section has horizontal lines across it | a Glass knife is loose in the holder<br>b Glass knife is blunt<br>c Resin block is too soft | a Tighten the Knife Holder<br>b Change the knife<br>c Harden the block if possible |
| 3 Section has vertical scores across it | a Glass knife edge is damaged | a Change the knife |
| 4 Thin sections not successful | a Glass knife is blunt or damaged<br>b Resin block is soft<br>c Sectioning speed was too fast | a Change the knife<br>b Warm gently in an oven (40 - 50°C) for a few hours to aid polymerisation, or place in chamber over silica to harden the block<br>c Use a very slow speed for sectioning |

## TABLE 4 WARNING SCREENS

| SCREEN | MEANING | ACTION |
|---|---|---|
| **The following screens appear when instrument is first switched on for information.<br>CAUTION: Settings may be lost if a Low Battery warning screen appears** | | |
| **LOW BATTERY<br>PRESS NEXT<br>TO CONTINUE** | Internal battery is losing its charge. Any information set by the operator when the instrument was last used will be lost if the instrument had not been set to 'STANDBY' before switching off the mains supply. | 1 Have battery replaced by a Thermo qualified Service Engineer<br>2 Press **[** ⏱ **]** to set the Finesse to 'STANDBY' before switching off the mains supply.<br>3 Check that Trim and Section sizes are still correct before restarting |
| **LOW BATTERY<br>PRESS NEXT<br>FOR DEFAULT** | Internal battery is losing its charge. All information set by the operator will be lost, and the instrument will revert to factory set default values. | 1 Have battery replaced by a Thermo qualified Service Engineer |
| **PLEASE WAIT<br>RECALCULATE<br>0 PROGRESS** | Instrument is calculating specimen advance control data, based on values already set. | 1 Wait until finished - the figure on the bottom row of the warning screen will count from 0 to 100 |
| **EMERGENCY<br>STOP<br>PRESSED** | Emergency Stop button has been pressed. | 1 When the emergency has been cleared, turn the Emergency Stop button in the direction of the arrows to release it. The next screen will be displayed. |
| **The following screen appears after the Emergency Stop has been pressed** | | |
| **PRESS NEXT<br>TO CONTINUE** | The Emergency Stop button has been released. | 1 Press **[NEXT]** to continue. The microtome will fully retract the advance assembly. |
| **If the following screens appear, press and release the Emergency Stop and press [NEXT] to continue. If the same message appears again, call your Thermo agent.** | | |
| **ADVANCE<br>SYSTEM<br>ERROR 1A** | Specimen travel motor or opto failure | 1 Press and release the Emergency Stop button, then press **[NEXT]** to continue<br>2 Call your Thermo agent if problem recurs |

## TABLE 4 (continuation) WARNING SCREENS

| SCREEN | MEANING | ACTION |
|---|---|---|
| **ADVANCE OPTO ERROR 1B** | Specimen travel opto failure | 1 Press and release the Emergency Stop button, then press **[NEXT]** to continue<br>2 Call your Thermo agent if problem recurs |
| **HANDWHEEL ENCODER ERROR 1C** | Handwheel position sensor failure | 1 Check Handwheel has been correctly installed<br>2 Press and release the Emergency Stop button, then press **[NEXT]** to continue<br>3 Call your Thermo agent if problem recurs |
| **CONTROL UNIT ERROR** | Control unit or control unit cable failure | 1 Press and release the Emergency Stop button, then press **[NEXT]** to continue<br>2 Switch off and wait 20 seconds. Ensure that the control unit is connected correctly, and that there is no damage to the cable. Switch the unit on again<br>3 Call your Thermo agent if problem recurs |
| **FOOTSWITCH ERROR** | Fault detected at the Footswitch | 1 Press and release the Emergency Stop button, then press **[NEXT]** to continue<br>2 Turn the power off and check the connections before switching back on again<br>3 Call your Thermo agent if problem recurs |
| **The following screens briefly appear for information. When the message switches off, the instrument can be used as normal. Refer to Appendix A to alter the screen speed.** | | |

## TABLE 4 (continuation) WARNING SCREENS

| SCREEN | MEANING | ACTION |
|---|---|---|
| **END OF TRAVEL !** | The Specimen Head is at its limit of travel and cannot move any further | 1 Move the Specimen Head in the opposite direction |
| **TURN HANDWHEEL ONE TURN !** | The Handwheel position is unknown | 1 Rotate the Handwheel for one complete turn without stopping |
| **SECTOR TOP TOO LOW !** | An attempt has been made to set the sector top position too close to the bottom of the cutting stroke | 1 Turn the Handwheel to a new position and try setting the sector top position again. |
| **The following screens appear for information on the Finesse ME + only.** | | |
| **CUT ERROR ! Is motor engaged ?** | No Handwheel motion has been detected after motorised cut has been requested | 1 Check motor selection<br>2 Check Brake is not engaged |
| **FOOTSWITCH ACTIVE !!** | Footswitch has been enabled | 1 No action required if Footswitch is required<br>2 Press **[** ⎚ **]** if Footswitch not required |
| **FOOTSWITCH NOT ACTIVE** | Footswitch has not been enabled | 1 Press **[** ⎚ **]** if Footswitch required |
| **PLEASE TEST FOOTSWITCH** | Footswitch or footswitch enable has been pressed before its operating cycle has been checked | 1 Fully depress the Footswitch once and then carry on with normal operation |

# SPECIFICATION AND ACCESSORIES

## 7.1 SPECIFICATION

### 7.1.1 Physical

| | | |
|---|---|---|
| Width *(handle down)* | 420 mm | (16½ ins) |
| Width *(handle down)* | 480 mm | (19 ins) |
| Depth | 530 mm | (21 ins) |
| Depth *(with connectors at rear)* | 590 mm | (23 ins) |
| Height | 330 mm | (13 ins) |
| Weight | 40 kg | (88 lbs) |

### 7.1.2 Electrical

| | |
|---|---|
| Power Supply Voltages: | 100 - 120 V a.c. (~) |
| *(factory set)* | 220 - 240 V a.c. (~) |
| Frequency | 50 / 60 Hz |
| Power | 150 VA |

*Contact your Thermo dealer for details of alternative mains supplies*

*Maximum supply voltage fluctuations not to exceed ± 10% of nominal voltage*

### 7.1.3 Fuses

| | |
|---|---|
| Mains plug fuse *(where applicable)* | 5A, 250V |
| Mains input fuses (x 2) | T1.6A, 250V |
| Transformer fuses (x 2) | T3.15A, 250V *(each secondary)* |

*Note: Fuses should only be replaced by technically competent personnel*

### 7.1.4 Switch convention

| | |
|---|---|
| I | Power On |
| O | Power Off |

### 7.1.5 Environment

| | |
|---|---|
| General | Indoor use only |
| Temperature *(operation)* | +5°C to +40°C |
| Temperature *(transit / storage)* | -25°C to +55°C *(+70°C for short exposure)* |
| Humidity | 80% max. for temperatures < 31°C<br>50% max. for temperatures 31°C to 40°C<br>(Non-condensing environment) |
| Altitude | up to 2000m (6,500 feet) |
| Pollution degree | 2 |
| Over voltage category | II |

### 7.1.6 Thermo part numbers

| | |
|---|---|
| Finesse ME + | 220 - 240V ac (~) A77500015 |
| Finesse ME + | 110 - 120V ac (~) A77500016 |
| Finesse E + | 220 - 240V ac (~) A77500021 |
| Finesse E + | 110 - 120V ac (~) A77500022 |

## 7.2 ACCESSORIES

| | PART NUMBER |
|---|---|
| **Orientation Heads:** | |
| Fine Adjust | 77510166 |
| Fixed Head | 77510164 |
| **Knife Holders:** | |
| Solid | 77510171 |
| Disposable - low profile | A77510272 |
| Disposable - high profile | A77510275 |
| Ralph 38mm / 25mm | 77510168 |
| Triangular | 77510170 |
| **Specimen Holders:** | |
| Vices: 60 x 55mm | 77510167 |
| 50 x 45mm | 0201 |
| 50 x 30mm | 0214 |
| 25 x 30mm | 0313 |
| Spacers: 50 x 10mm | 0215 |
| 'V' | 0216 |
| 'V' (5 - 10mm diameter) | 0220 |
| Resin Clamp - EBH | A77510181 |
| Resin Clamp - JB4 | 77510178 |
| Quick Release Clamp | A78110200 |
| **General Accessories:** | |
| Cold Plate | 77510175 |
| Ice Tray | 77510174 |
| Cold Point Light Source (230V) (UK) | 77510261 |
| Cold Point Light Source (230V) (Europe) | 77510252 |
| Cold Point Light Source (110V) | 77510262 |
| *(Note that the Cold Point Light Source includes a twin arm 'gooseneck' light guide)* | |
| *Cold Point Light Source spare parts:* | |
| *Bulb 8V, 20W halogen* | *P13962* |
| *Fuse (230V version) T125mA* | *P13975* |
| *Fuse (110V version) T250mA* | *P13741* |
| *Mains plug fuse (where applicable) 3A, 250V* | |
| Illuminated Magnifier (230V) (UK) 1.75 x | 77510155 |
| Illuminated Magnifier (230V) (Europe) 1.75 x | 77510253 |
| *Illuminated Magnifier spare parts:* | |
| *Fluorescent tube 9W* | *P13934* |
| *Mains plug fuse (where applicable) 3A, 250V* | |
| Tool Kit | 77510234 |
| *2.5 mm A/F allen key* | *1* |
| *3 mm A/F allen key* | *1* |
| *6 mm* A/F allen key | 1 |

| | |
|---|---|
| *Blades* | *See Thermo Catalogue for details* |
| *Cassettes* | *See Thermo Catalogue for details* |
| *Knives* | *See Thermo Catalogue for details* |

# WARRANTY STATEMENT

We are proud of our quality and reliability, and of our after-sales service. We continuously strive to improve our service to our customers.

Please ask your distributor or representative about Service Contracts which can keep your purchase in peak condition for many years to come.

Warranty provisions necessarily vary to comply with differences in national and regional legislation, and you can find details in your delivery documents or from your dealer or representative.

Please note that your warranty may be invalidated if:

- the instrument is modified in any way,
- accessories and reagents are used that are not approved by Thermo, or
- the instrument is not operated or maintained in accordance with the instructions in this Operator Guide.

# Declaration of Conformity

*This Declaration of Conformity is only valid when the instrument is used in accordance with this Operator Manual*

**Manufacturer's Name:** Thermo Shandon Limited (Trading as Thermo Fisher Scientific)

**Manufacturer's Address:** Tudor Road, Manor Park, Runcorn, Cheshire, WA7 1TA
ENGLAND

**Product Description:** Electronic Microtome

**Product Designation:** **Finesse® E +**
**Finesse® ME +**

*Part numbers:* *A77500015, A77500016, A77500021, A77500022 including accessories supplied as standard and the following accessories:*

*Vices:* *77510167, 0201, 0214, 0215, 0216, 0220, 0313, 77510178, A77510181, A78110200*

*Knife Holders:* *77510168, 77510170, 77510171, 77510173, A77510263, A77510265, A77510272, A77510275*

**Year of Marking (CE):** 1998

This product conforms with the essential requirements of the following directives:

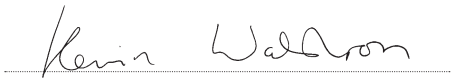
In Vitro Diagnostics Directive 98/79/EC
Low Voltage Directive 73/23/EEC *(as amended by 93/68/EEC)*

This product complies with the following International Standards:

**EMC:** EN61326-2-6
EN61000-3-2
EN61000-3-3

**Safety:** IEC 1010-1
CAN / CSA - C22.2 No 1010.1-92
UL Std No. 3101

**Issued by:** K.Waldron
Quality Manager
Thermo Fisher Scientific
Anatomical Pathology, Clinical Diagnostics



Date: 8 January 2010

*Optional accessories considered subject to the In Vitro Diagnostic Directive (IVDD) are specifically indentified on this Declaration of Conformity. Further supplies of standard accessories are treated as spares. Convenience aids offered as accessories are not subject to the IVDD*

# APPENDIX A
# USER SETUP OPTIONS

## A.1 INTRODUCTION

The Finesse can be configured to suit the medium being sectioned (e.g. resin or wax) and also to suit the user's individual preferences.

The flow chart in Section A.2 show the sequence of selections in the User Setup mode. A reference is made to a paragraph number in Section A.3 in which more information is given about each option.

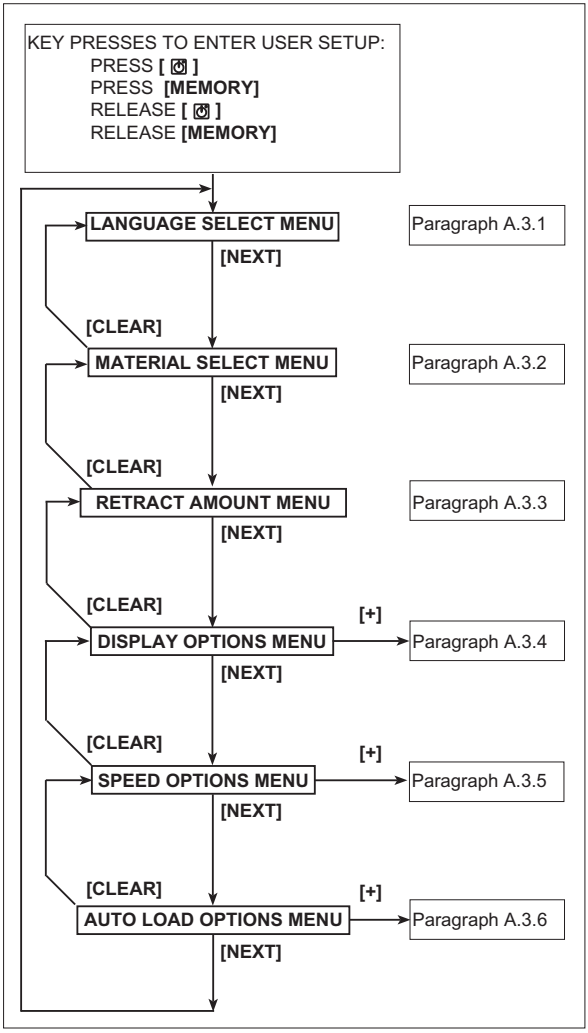
***A.1.1*** ***To enter User Setup***, the Finesse microtome must be in normal running mode, with any of the *'TRIM'* or *'SECTION'* screens displayed. Press **[⏱]**, and keeping this button pressed, press **[MEMORY]**.

Next, release **[⏱]** , then release **[MEMORY]**. The Finesse is now in User Setup mode.

***A.1.2*** ***To exit User Setup*** at any time, press and release **[⏱]**. After a short pause, the Finesse will exit to the *'TRIM'* or *'SECTION'* screens.

# A.2 OVERALL FLOW CHART OF USER SETUP SELECTIONS

The following top level flowchart gives a reference to the relevant paragraph in Section A.3 where a full description is given about each individual menu.



# A.3 FLOW CHARTS OF USER SETUP SELECTIONS

The following flow charts show the detail of the User Setup selections:

***Note***

*1 Underlined selections signify the pre-set option or value.*

### *A.3.1 LANGUAGE SELECT MENU*

The initial language screen is English (UK). If this is the language required by the operator, press **[NEXT]**, otherwise press **[+]** until the desired language is shown on the display. Press **[NEXT]** to select it.

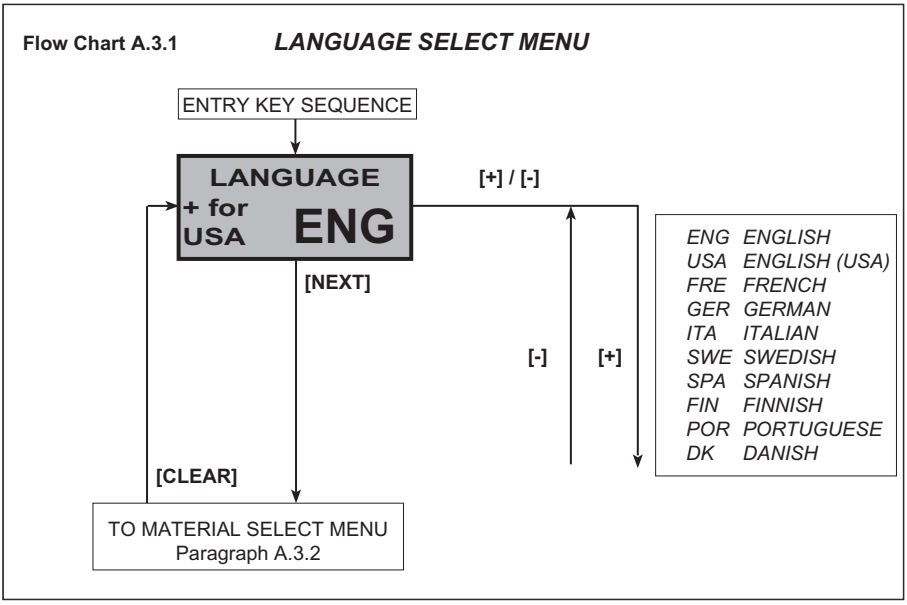
When **[NEXT]** is pressed, the display will advance to show the Material Select Option screen that is described fully in paragraph A.3.2.

Flow chart A.3.1 shows the sequence of the Language Select menu.

***Note***

*1 To exit User Setup at any time, press and release [⏱]. After a short pause, the Finesse will exit to the 'TRIM' or 'SECTION' screens.*

**Flow Chart A.3.1** ***LANGUAGE SELECT MENU***



### *A.3.2 MATERIAL SELECT MENU*

This option allows the operator to specify whether the specimens being sectioned are embedded in wax or resin.

*'WAX'* is initially displayed. If this is the required medium, press **[NEXT]**, otherwise press **[+]** to display *'RESIN'*.

Press **[NEXT]** to select resin, otherwise press either **[+]** or **[-]** to return to the wax option, or press **[CLEAR]** to return to the Language Select Menu (paragraph A.3.1).

***Note***

*1 The pre-set selection is wax.*

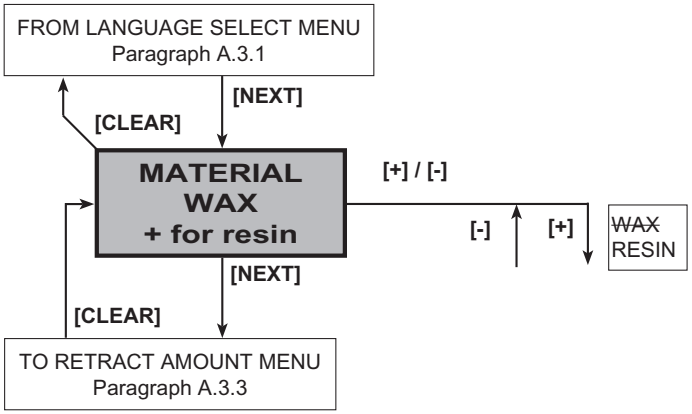
When **[NEXT]** is pressed, the display will advance to show the Retract Amount Menu that is described fully in paragraph A.3.3.

Flow chart A.3.2 shows the sequence of the Material Select Menu.

**Note**

*1 To exit User Setup at any time, press and release [⏱]. After a short pause, the Finesse will exit to the 'TRIM' or 'SECTION' screens.*

**Flow Chart A.3.2** ***MATERIAL SELECT MENU***



### *A.3.3 RETRACT AMOUNT MENU*

This option allows the operator to specify the amount that the specimen head should retract from the knife on the return stroke. The amounts displayed depend on whether wax or resin was selected in the Material Select Menu.

The values available for retraction are the same for both materials, but their pre-set values differ. The values available are:

| | | |
|---|---|---|
| | 5, 10, 15, 20, 25, 30, 35, 40, 60, 80, 100, 125µm | |
| Pre-set value | (Wax) | (Resin) |

***Note***

1 *Each material can be given a different value for the retract amount.*

*The pre-set selection for wax is 5µm.*
*The pre-set selection for resin is 40µm.*

2 *If **[CLEAR]** is pressed and held down until the display is clear, the option will always revert to the factory set pre-set value.*

***If 'WAX' was selected***, the pre-set value of 5µm will be displayed. If this is the required amount, press **[NEXT]**, otherwise press **[+]** or **[-]** to advance through the other options.

***If 'RESIN' was selected***, the pre-set value of 40µm will be displayed. If this is the required amount, press **[NEXT]**, otherwise press **[+]** or **[-]** to advance through the other options.

When the desired value is displayed, press **[NEXT]** to select it, otherwise press either **[+]** or **[-]** to advance through the other options again, or press **[CLEAR]** to return to the Material Select Menu (paragraph A.3.2).

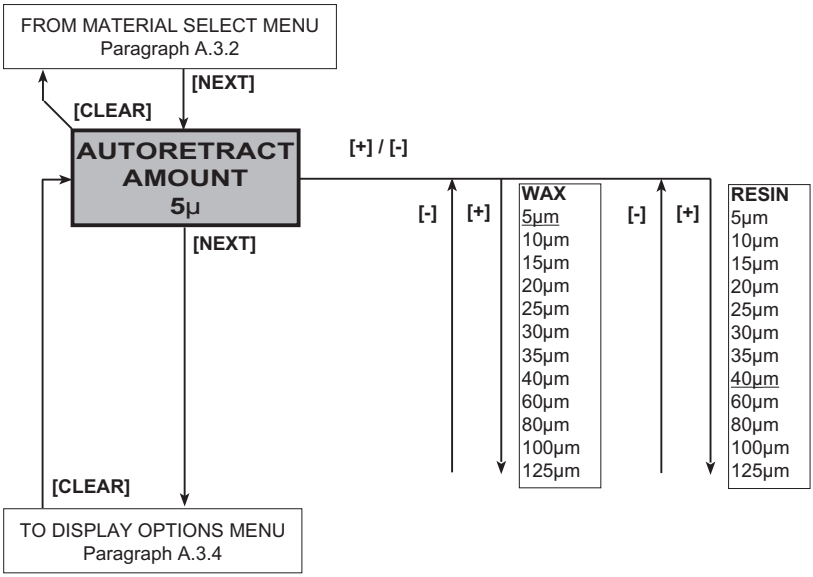
When **[NEXT]** is pressed, the display will advance to show the Display Options Menu that is described fully in paragraph A.3.4.

Flow chart A.3.3 shows the sequence of the Retract Amount Menu.

***Note***

1 *To exit User Setup at any time, press and release **[⏱]**. After a short pause, the Finesse will exit to the 'TRIM' or 'SECTION' screens.*

**Flow Chart A.3.3** ***RETRACT AMOUNT MENU***




### *A.3.4 DISPLAY OPTIONS MENU*

This option allows the operator to specify the information to be displayed during normal operation.

The initial screen displayed is the Display Options Menu. Press **[+]** to enter the different sub-menus. To advance to the Speed Options Menu (paragraph A.3.5), without changing any display options, press **[NEXT]**, or to return to the Retract Amount Menu (paragraph A.3.3), press **[CLEAR]**.

If **[+]** was pressed, the first option specifies whether the header should be shown. It will be displayed during normal running unless changed. Press **[+]** or **[-]** to switch between the options of *'SHOW'* or *'OMIT'*.

When the desired option is displayed, press **[NEXT]** to select it, otherwise press either **[+]** or **[-]** to choose again, or press **[CLEAR]** to return to the Display Options main screen.

When **[NEXT]** is pressed, the display will advance to the next option. The different options are:

| | | | |
|---|---|---|---|
| i | *HEADER* | *'TRIM'* or *'SECTION'* displayed at the top of the screen eg. | TRIM 10µ |
| ii | *COUNT* | Total number of sections taken - the number of times the specimen head has advanced. | |
| iii | *DISTANCE* | Total distance the specimen head has travelled. 'R' is displayed if the specimen head has retracted for the return stroke. | |
| iv | *DUAL DISPLAY* | Both *'COUNT'* and *'DISTANCE'* displayed at the same time. | |
| v | *SPEED* | The speed of the cutting motor *[ME + Only]*. | |

Use the **[+]**, **[-]** and **[NEXT]** buttons to select the desired options in each of the sub-menus in turn. When the desired selections have been made, press **[CLEAR]** to return to the Display Options main screen and then press **[NEXT]** to go on to the Speed Options Menu display (paragraph A.3.5).

Flow chart A.3.4 shows the sequence of the Display Options Menu.

***Note***

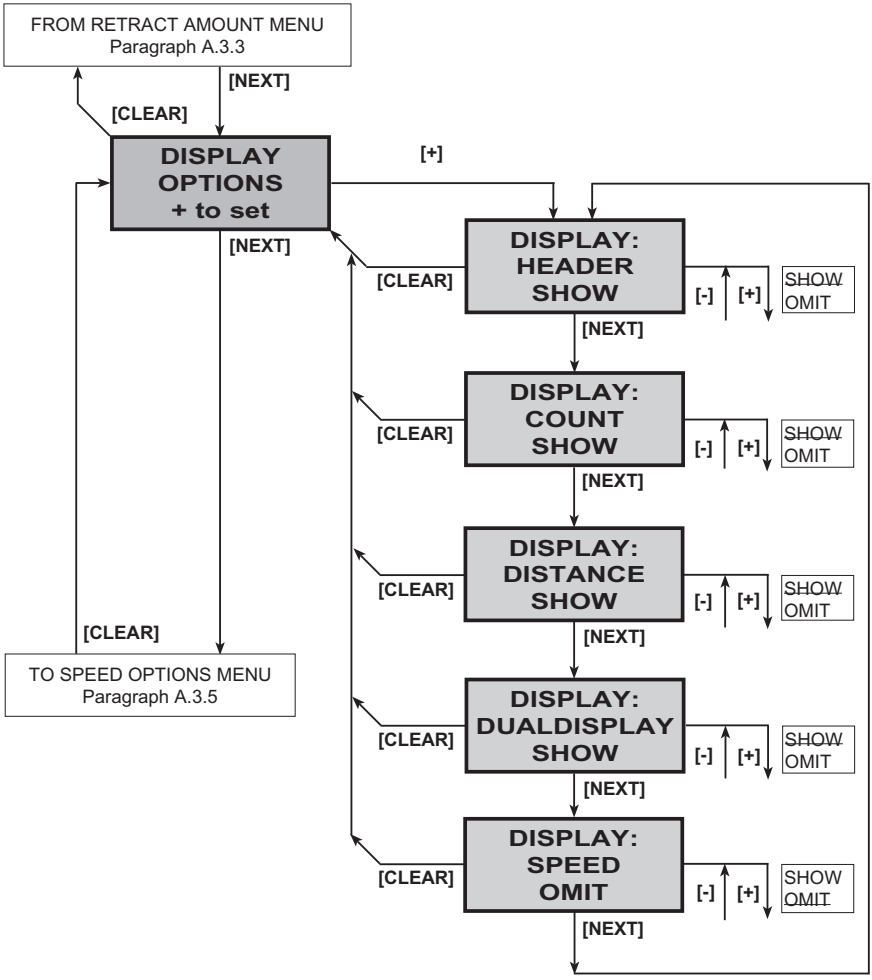
1 *The Finesse will display all information except 'speed' unless the options are changed.*

2 *If **[CLEAR]** is pressed and held down when the initial Display Options screen is displayed, all five sub-menus will revert to their factory set values.*

3 *If **[CLEAR]** is pressed and held down in any of the sub-menus, the individual option will always revert to the factory set option.*

4 *To exit User Setup at any time, press and release **[⏱]**. After a short pause, the Finesse will exit to the 'TRIM' or 'SECTION' screens.*

**Flow Chart A.3.4** ***DISPLAY OPTIONS MENU***



### *A.3.5 SPEED OPTIONS MENU*

This menu allows the operator to specify the time the Footswitch is active, the response speed of the screen and buttons.

The initial screen displayed is the Speed Options Menu. Press **[+]** to enter the different sub-menus. To advance to the Auto Load Options Menu (paragraph A.3.6), without changing any speed options, press **[NEXT]**, or to return to the Display Options Menu (paragraph A.3.4), press **[CLEAR]**.

If **[+]** was pressed, the first screen is the Footswitch Active display. It is used to set the time allowed for the Footswitch to remain enabled if it is not used after it is first selected. The pre-set time is 30 seconds, which means that the footswitch will stay enabled for 30 seconds if it is not used. After 30 seconds, it will automatically be disabled. Press **[+]** or **[-]** to cycle through the different values shown below:

2, 4, 6, 8, 10, 15, 20, 30, 40, 50, 60, 90, 120, 180 seconds

When the desired value is displayed, press **[NEXT]** to select it and move on to the next sub-menu, otherwise press either **[+]** or **[-]** to choose again, or press **[CLEAR]** to return to the Speed Options main menu.

When **[NEXT]** is pressed, the display will advance to the *'SCREEN'* display used to set the response speed of the screen. The pre-set value is 'MEDIUM' and the alternatives of 'HIGH' and 'LOW' can be displayed by pressing either **[+]** or **[-]**.

As before, when the desired option is displayed, press **[NEXT]** to select it, otherwise press either **[+]** or **[-]** to choose again, or press **[CLEAR]** to return to the Speed Options main screen.

When **[NEXT]** is pressed, the display will advance to the *'BUTTONS'* display used to set the response speed of the buttons. It also sets the speed of advance of the Specimen Head when **[▽]** is pressed (see Note 1 below). Again, the pre-set value is 'MEDIUM' and the alternatives of 'HIGH' and 'LOW' can be displayed by pressing either **[+]** or **[-]**. Select the desired value in the same way as before.

***Note***

1 *When LOW speed is selected for the buttons, there is a single slow advance speed.*

*When MEDIUM or HIGH speed is selected, there is a two speed advance - when* **[▽]** *is pressed, the Specimen Head advances to the knife slowly, and after a set time, advances quickly.*

*(The second, faster, advance speed is reached sooner when HIGH speed is selected than when MEDIUM is selected).*

When the desired selections have been made, press **[CLEAR]** to return to the Speed Options main screen and then press **[NEXT]** to go on to the Auto Load Options Menu (paragraph A.3.6).

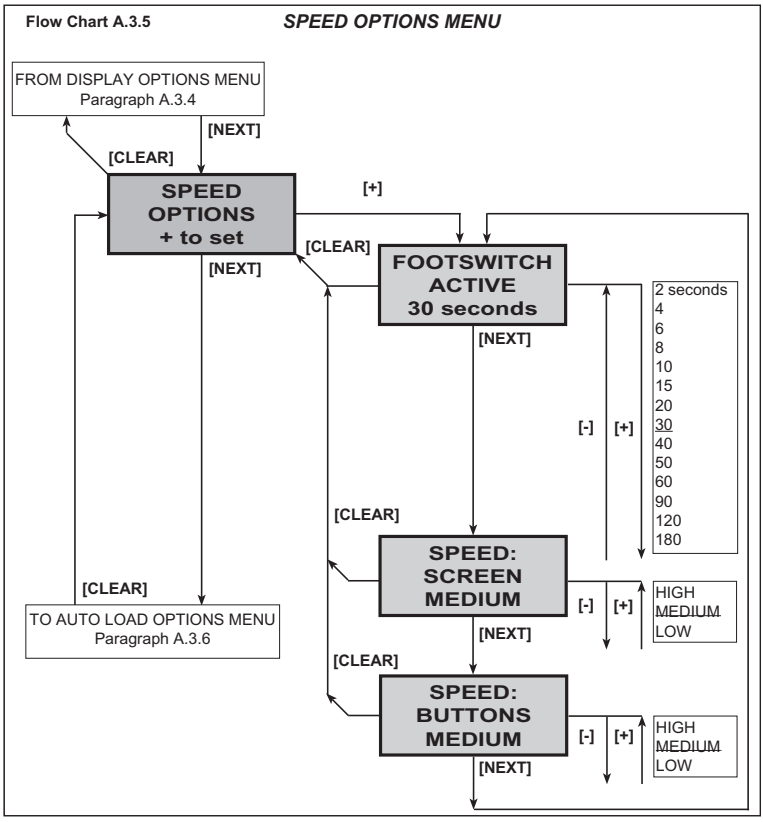
Flow chart A.3.5 shows the sequence of the Speed Options Menu.

***Note***

1 *If **[CLEAR]** is pressed and held down when the 'SPEED OPTIONS' screen is displayed, all three sub-menus will revert to their factory set pre-set values.*

2 *If **[CLEAR]** is pressed and held down in any of the sub-menus, the individual option will always revert to the factory set pre-set.*

3 *To exit User Setup at any time, press and release [⏱]. After a short pause, the Finesse will exit to the 'TRIM' or 'SECTION' screens.*



### *A.3.6 AUTO LOAD OPTIONS MENU*

This menu allows the operator to specify the memory offset position to help with unloading the specimen and also whether to save or discard any rock positions that may have been set during operation.

The initial screen displayed is the Auto Load Options Menu. Press **[+]** to enter the different sub-menus. To advance to the Language Select Menu (paragraph A.3.1), without changing any options, press **[NEXT]**, or to return to the Speed Options Menu (paragraph A.3.5), press **[CLEAR]**.

If **[+]** was pressed, the first screen displayed is the *'MEMORY OFFSET'* sub-menu used to set the offset from the memory position to allow for unloading the specimens. The pre-set setting is 5mm which means that the specimen head will withdraw 5mm from the set memory position to allow the specimen to be quickly and safely unloaded. Press **[+]** or **[-]** to switch between the different values shown below:

0, 1, 2, 3, 4, 5, 10, 15, 20, 25, 30mm

When the desired value is displayed, press **[NEXT]** to select it and move on to the *'ROCK POSITION'* sub-menu, otherwise press either **[+]** or **[-]** to choose again, or press **[CLEAR]** to return to the Auto Load Options main screen.

When **[NEXT]** is pressed, the display will advance to the *'ROCK POSITION'* display. The pre-set options of this menu depend on whether *'WAX'* OR *'RESIN'* were previously selected.

***If 'WAX' was selected***, the pre-set option is to KEEP the rock position. If this is suitable, press **[NEXT]**, otherwise press either **[+]** or **[-]** to display the alternative option - 'LOSE'.

***If 'RESIN' was selected***, the pre-set option is to LOSE the rock position. Again if this is suitable, press **[NEXT]**, otherwise press either **[+]** or **[-]** to display the other option - 'KEEP'.

***Note***

1 *The factory settings of the 'ROCK POSITION' option are most useful when blocks of the same size are normally used. If blocks of different sizes are regularly used, it is helpful to change the pre-set selections to avoid the possibility of the specimen inadvertently advancing into, and damaging, the knife.*

2 *The pre-set option for wax is to **save** the rock position*
*The pre-set selection for resin is to **discard** the rock position*

3 *If **[CLEAR]** is pressed and held down when the 'SPEED OPTIONS' screen is displayed, all three sub-menus will revert to their factory set pre-set values.*

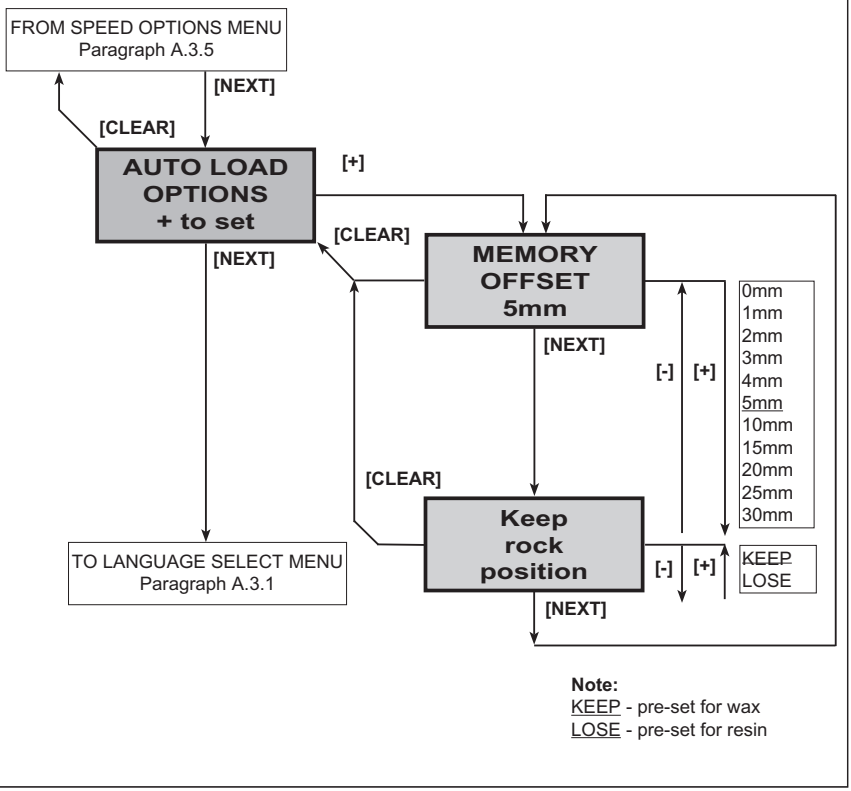
4 *To exit User Setup at any time, press and release [⏱]. After a short pause, the Finesse will exit to the 'TRIM' or 'SECTION' screens.*

Press **[NEXT]** to select the desired option, otherwise press either **[+]** or **[-]** to choose again, or press **[CLEAR]** to return to the Auto Load Options Menu (paragraph A.3.6).

When the desired selections have been made, press **[CLEAR]** to return to the Auto Load Options main menu and then press **[NEXT]** to go on to the Language Select Menu (paragraph A.3.1), or **[⏱]** to exit User Setup.

Flow chart A.3.6 shows the sequence of the Auto Load Options Menu.

**Flow Chart A.3.6** ***AUTO LOAD OPTIONS MENU***



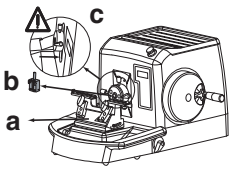
# APPENDIX B
# TRANSPORTATION INSTRUCTIONS

## B.1 INTRODUCTION

If you ever need to transport the Finesse, follow these packaging instructions.

## B.2 TO REPACKAGE THE FINESSE

Remove the Knife Holder *(a)* and Specimen Holder *(b)* from the Finesse. Move the Orientation Head as far back as it will go *(c)*.

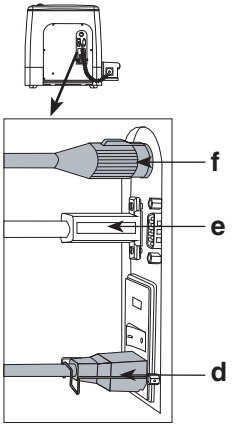



**Note**

*If the Finesse is to be serviced or returned to Thermo, it must be decontaminated and the Product Return Safety Declaration Certificate (see page B.5) signed.*

Switch off the Finesse and disconnect the mains cable from the mains supply. Remove the mains cable from the rear panel of the Finesse *(d)*, and keep safely.

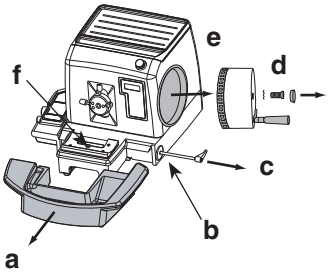
Disconnect the Footswitch, if fitted *(f)*.




**DO NOT REMOVE THE CONTROL UNIT CONNECTOR *(e)* FROM THE REAR PANEL OF THE FINESSE**

To remove the Debris Tray, pull it firmly towards the front of the instrument *(a)*. Place it in its packing box.

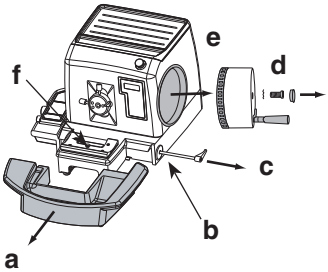
To remove the Knife Lock Lever shaft *(b)*, push the Knife Lock Stud *(f)* down and pull the Knife Lock Lever Shaft out.




**To remove the Handwheel, turn the Handwheel until the Handle is at the bottom** *(c)* and apply the Brake.

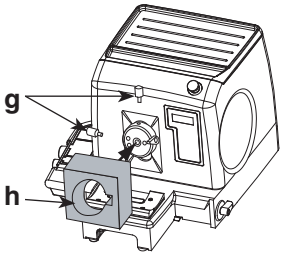
Remove the plastic plug from the centre of the Handwheel. Remove the screw and washer *(d)* using the Allen key provided, and place these in a small bag. Carefully withdraw

the Handwheel from the Finesse *(e)* and place it in its packaging.




**THE HANDWHEEL IS HEAVY, TAKE CARE WHEN LIFTING IT**

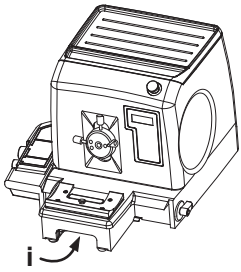
Remove the two thumb screws from the Orientation Head *(g)*. Place these in the small bag that contains the Handwheel plug, screws and washer.




Support the weight of the Orientation Head and raise it to the mid-point of its travel. Place the packing piece *(h)* over the Orientation Head and position it as shown in the diagram. Lower the Orientation Head so that it rests on the packing piece.

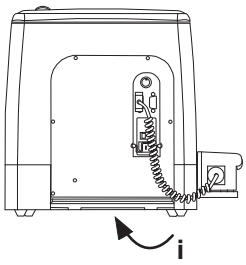
**Note**

*1 The Orientation Head must be supported at the mid-point of its travel.*

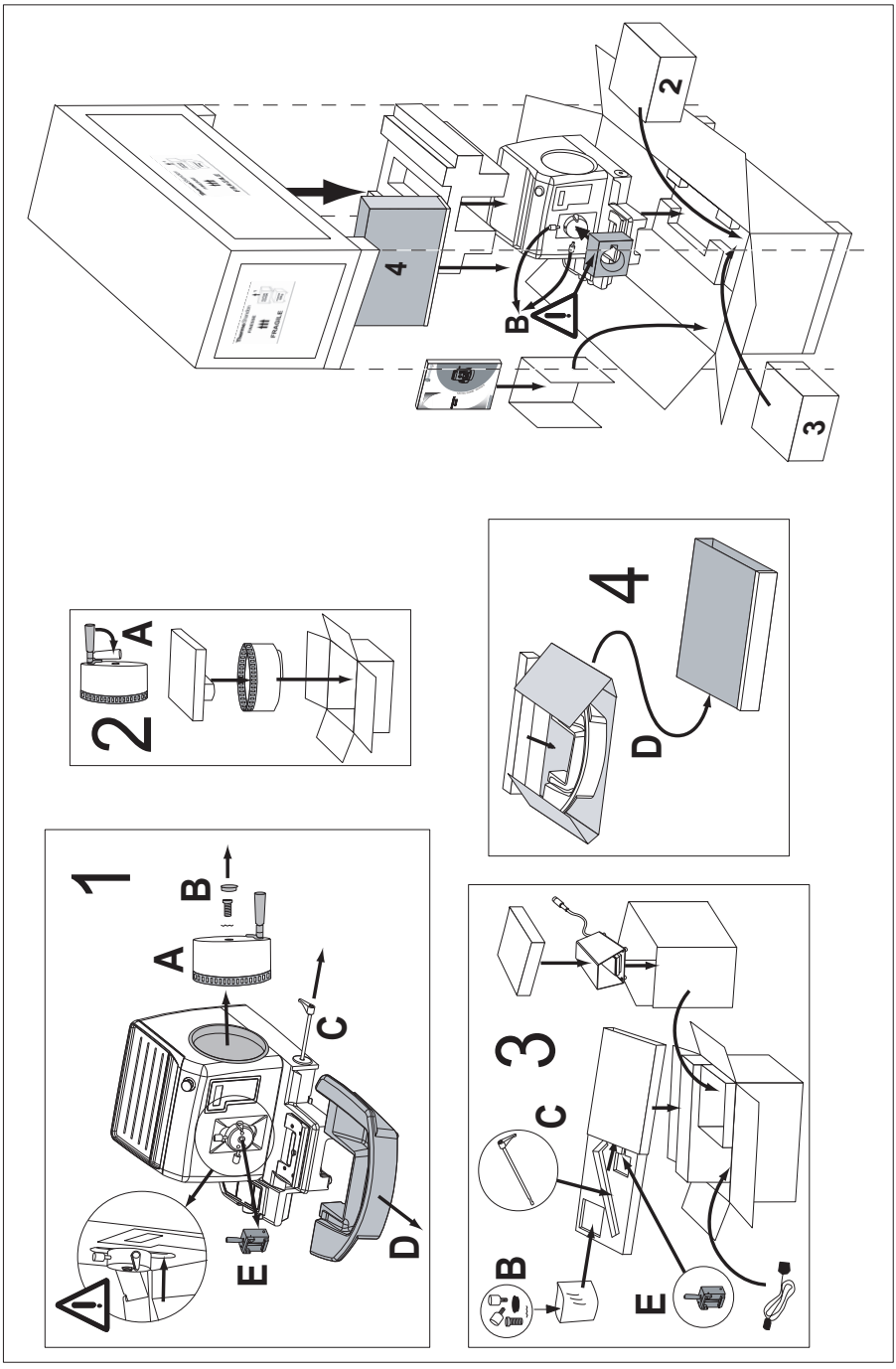



Place the Knife Lock Lever Shaft, small bag (containing the Orientation Head thumbscrews and Handwheel plug, screw and washer) and Footswitch (if applicable) into the accessory box.

The Finesse is heavy so get help to lift it. Hold the Finesse securely at the lifting positions located under the front and rear of the instrument *(i)*. Lift the Finesse and place it on the bottom layer of packaging in the box. Place the top layer of packaging on top of the instrument.




Place the Accessory, Handwheel and Debris Tray boxes beside the Finesse in the packing case. Fit the wooden crate over the top of the box (see next page).


4
2
B
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Thermo
SCIENTIFIC

# PRODUCT RETURN SAFETY DECLARATION

**Part 1 DECONTAMINATION CERTIFICATE**

Any instrument or part of any instrument must be clean before being returned, and where necessary accompanied by a completed Decontamination Certificate. Should the instrument or any part of it be received in an unclean condition, or Thermo Fisher Scientific consider it to be a hazard, the instrument or part will be returned unrepaired at the expense of the customer.

It is important that the certificate is forwarded by post or fax, and a copy attached to the exterior of the container. Containers will not be opened until the company is in possession of the required certificate.

This form MUST be completed by the customer and NOT a Thermo or distributor employee.

If an instrument or part is to be returned to THERMO, please note the following:-

1 If the instrument or any part of it has been exposed to, or been in contact with potential pathogenic or radioactive material, it is essential that it is decontaminated.

2 Set procedures are laid down in the European Health and Safety Directives for decontamination. To avoid any misunderstanding, we request that all instruments or parts returned to us must be accompanied by a certificate stating the following:

We certify that this (Model) . . . . . Serial No

· has not been exposed to pathogenic, radioactive or other hazardous material and has been cleaned

OR

· has been decontaminated and cleaned (if exposed to the above) according to approved procedures, following exposure to:

. . . . . .

· Has the instrument been used for work with human, or animal, Transmissible Spongiform Encephalopathies, e.g. Creutzfeld-Jacob disease, Scrapie or BSE? **YES / NO**

If yes, please contact Thermo Service before taking any further action.

Signed . . . . . Position . . . . . .

Name (Block Capitals) . . . . . .

Company or Organisation . . . . . .

Full address . . . . . .

. . . . . .

**Part 2 Guidelines for Returning Instruments**

Please use the checklist below to ensure that the instrument being returned is ready for collection.

· All reagents / wax removed from instrument, including vapour traps (if applicable) . . . . . ☐

· Accessories are secured / itemised . . . . . ☐

· Instrument has had transit clamps fitted as per operator guide. . . . . ☐

· Instrument is packed in original packaging . . . . . YES / NO

RMA NUMBER . . . . . .

CARRIER . . . . . .

FOR ATTENTION OF . . . . . .

Thermo Fisher Scientific, Tudor Road, Manor Park, Runcorn, WA7 1TA, United Kingdom
Tel: +44 (0) 1928 534050; Fax: +44 (0) 1928 534049; www.thermo.com/pathology

# APPENDIX C
# KNIFE AND BLADE PROFILES

## C.1 INTRODUCTION

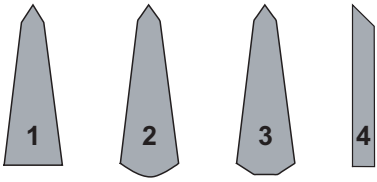
This Section will provides useful information about knives and blades.

## C.2 SOLID KNIVES

The lengths of some common knives are shown at the side of this page:

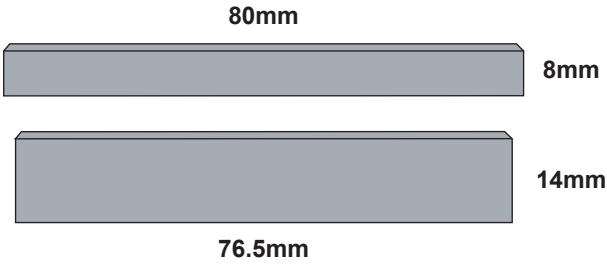
Different profiles are shown below:

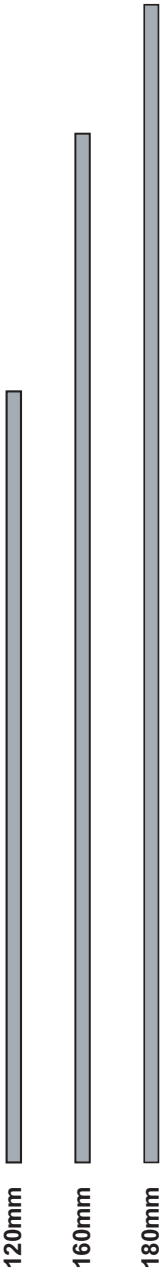
1 C - profile - Flat backed
2 C - profile - Round backed
3 C - profile - Diamond backed
4 D - profile - 40°, parallel sides




## C.2 DISPOSABLE BLADES

The profiles of low and high profile disposable blades are shown below:



# INDEX

## Symbols



## A



## B



## C



## D



## E



## F



## H



## I

## K



## O



## P



## S

## T



## U



## W