EXCELSIOR

ADVANCED TISSUE PROCESSOR

ENGLISH

Issue 1

OPERATOR GUIDE

A78410100

Thermo Shandon

Thermo Shandon is an ISO 9001 and TickIT Accredited Company.

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.

THIS SYMBOL IS USED ON THE EQUIPMENT, OR IN A DOCUMENT, TO WARN THAT SURFACES ARE HOT. 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 makes every endeavour to ensure that the information contained in its support documentation is correct and clearly stated but does not accept responsibility for any errors or omissions. The development of Thermo Shandon products and services is continuous. Make sure that any published information that you use for reference is up to date and relates to the status of the product. If necessary, check with Thermo Shandon or your local Thermo Shandon representative.

OPERATOR GUIDE
LIST OF CONTENTS

WELCOME

1 INTRODUCTION

Welcome to the Excelsior tissue processor, a fully automatic enclosed tissue processor intended for use in Pathology Laboratories by appropriately trained Medical Laboratory Technicians.

Designed and made with care, the instrument is safe to use, simple to operate, and easy to maintain. Excelsior incorporates a safe storage area for all the processing reagents and an innovative, unique in-process reagent rotation management system.

This Operator Guide gives instructions for the correct operation and use of Excelsior.

2 SAFETY

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

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

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

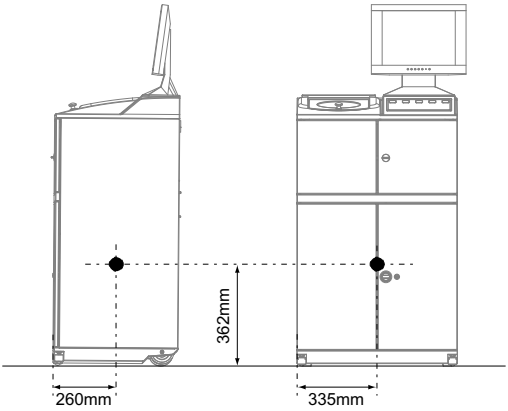
iv **Do not remove any panels or covers. Excelsior does not have any user serviceable parts inside the instrument.**

v **Excelsior, as supplied, conforms with IEC1010-1 and IEC1010-2-010. However, the addition of chemicals introduces potential hazards. Good laboratory practice must be be followed when dealing with these chemicals, and consideration must be given to the potential for hazard when dealing with particular chemicals. Be aware that many of the reagents used with Excelsior are flammable. Do not introduce any source of ignition into, or near, the instrument once it has been loaded with reagents.**

vi **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.**

vii **Refer to your own laboratory procedures and manufacturer's data sheets when using reagents.**

viii **Where seismic regulations require the instrument to be secured, use the handle locations at the rear of the instrument (2 x M8 female threads). The Centre of Gravity position for a fully laden instrument is shown below:**



ix **Excelsior weighs approximately 112 kilograms (246 lbs) when empty; get help to move 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 Shandon.**

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 Excelsior.**

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

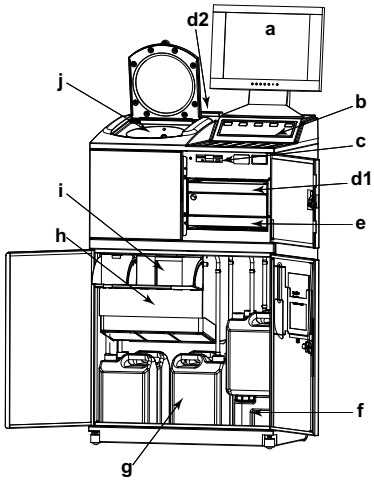
xiv **The instrument must be serviced annually by a Thermo Shandon trained engineer in accordance with the instructions contained in the Excelsior Service Manual (A78410101).**

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

DESCRIPTION

1.1 EXCELSIOR OVERVIEW

The Thermo Shandon Excelsior is an innovative tissue processor with many features to help make processing easier. The different components of Excelsior are shown in the diagram.



a Flat screen colour monitor
b Touch panel
c Disk drive
d Potassium permanganate filters *(one at rear of instrument)*
e Carbon filter
f Water bottle
g Reagent bottle storage
h Wax baths
i Wax waste tray
j Reaction chamber with downdraft system

Special design features of Excelsior include:

i Reagent rotation management - spent reagents are returned to their original bottles during processing for safe and efficient removal

ii Rotation group bottles are concealed and are not handled by the operator

iii Reagent bottles are used as purchased and are located in the accessible storage area. *(Additional bottles are available if required)*

iv Downdraft system to remove fumes away from the operator's face when the Reaction Chamber lid is opened

v Sloping glass lid for visual inspection of the process

vi Clear flat screen colour monitor for the real-time graphical display

vii Simple, flexible programming

viii Battery back-up for enhanced specimen security

ix Automatic underfill recovery

x 3 levels of capacity - 74, 148 and 222 cassettes, or random fill

xi First alcohol concentration is automatically monitored using specific gravity to give the user accurate information for economical reagent management

xii Quality Control automatically alerts the user when to rotate reagents or to perform maintenance or service procedures

xiii 5 levels of selectable contra-stir agitation

xiv Energy efficient - low power use

CONTROLS AND SCREEN LAYOUT

2.1 DESCRIPTION

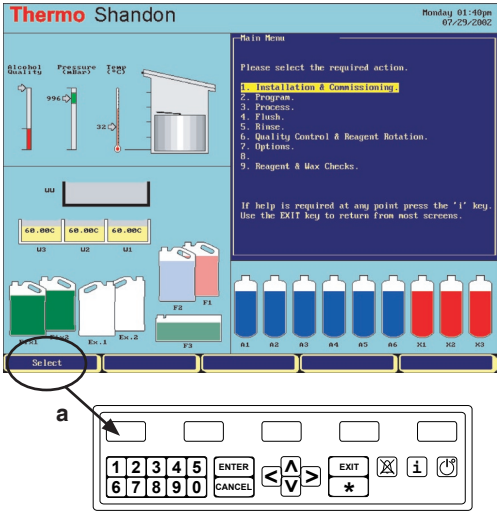
This chapter describes the layout of the screen displays and the functions of all the controls on the instrument.

2.2 MAIN CONTROL PANEL

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

2.2.1 FUNCTION BUTTONS

The five blank buttons at the top of the Main Control Panel correspond to the specific function of the buttons shown at the bottom of each display screen on the colour monitor. The function of each button depends on the screen that is displayed. An example is shown below:



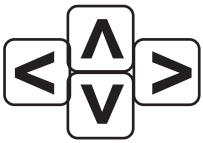
To choose **[SELECT]**, press the left hand function button *(a)* as it corresponds to the one shown on the display. The instruction given to press this function button will be “Press **[SELECT]**”.

Note

1 *This convention for pressing the function keys will be used throughout this Operator Guide.*

2.2.2 NUMBER KEYS AND DIRECTION ARROW KEYS

The number keys are used to enter data and to input numerical information for use in programs. They can also be used as an alternative method to select a particular choice.



Press **[<]**, **[>]**, **[∧]** and **[∨]** to move the cursor around the screen.

2.2.3 ENTER, CANCEL AND EXIT

Press **[ENTER]** if required to confirm any selection.

Press **[CANCEL]** to cancel any selection.

Press **[EXIT]** to go back to the previous screen.

2.2.4 [*]

This key has 3 functions:

1 It can be used to exit from the Concept Demonstration at any time.

2 It can be used to re-enable all access codes

3 Show details of errors and warnings.

2.2.8 SILENCE ALARM [⊠]

Press **[⊠]** to silence the alarm. For some alarms, this will cancel the alarm as well. Other alarms will require separate actions and acknowledgements.

2.2.5 HELP KEY [i]

Press **[i]** to display a help screen at any time.

2.2.6 STANDBY KEY [⏻]

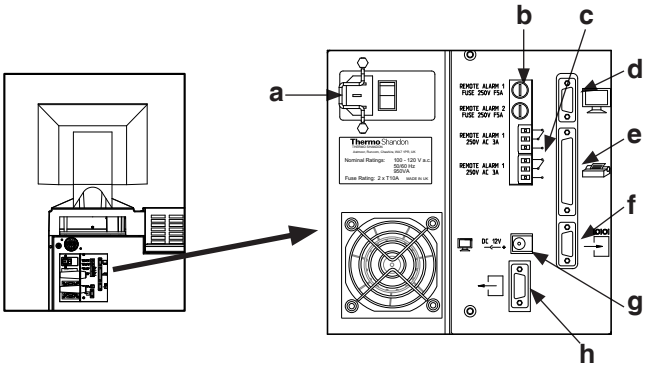
Press [⏻] to switch the instrument into standby mode. The monitor is turned off and the keyboard is locked, but the instrument will continue to process.

The red LED will be lit when Standby is selected.

Press [⏻] again to unlock the keyboard and turn the screen on.

2.3 CONNECTIONS

The connections to the electronics box are shown below:



a	Power Inlet
b	Remote Alarm 1 and 2 Fuses
c	Remote Alarm 1 and 2 Connections
d	Monitor Connection
e	Printer Connection
f	Netmon Interface Connection
g	Monitor Power Connection
h	LIMS Interface Connection

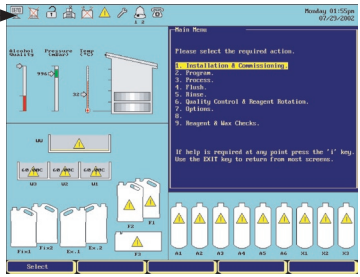
2.4 SCREEN DISPLAYS

The flat screen full colour monitor on Excelsior displays all the program and process information about Excelsior. The active graphics section of the screen is constantly updated and will always show up to date and accurate information. An annotated illustration that describes all of the different areas of the screen display follows.

2.4.1 INFORMATION ICONS

Information icons are displayed to the left of the banner area *(a)*.

a



The icons are described below:

i **Concept Demonstration** program is currently active. The background of the screen is pink, indicating that the program shown is not live.

ii **Reaction Chamber Heater Trip Reset** needs to be pressed *(see Section 3.8.1)*

iii **Access Codes** have been unlocked. The name of the person who has unlocked the codes is displayed underneath the icon. Access codes can be re-enabled by pressing the **[*]** button on the Main Control Panel.

iv **Storage Area Doors Open**. Close the lower doors.

v **Battery Isolation Switch** is not on or the battery is low. Turn the switch on to make sure of battery backup *(see Section 3.8.1).*

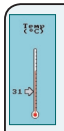
vi **Quality Control Warning**. Access the Quality Control Screen to find out more details *(see Section 4.4)*.

vii **Instrument Warning**. There is a problem with the instrument. Press the **[*]** button on the Main Control Panel to access details.

viii **Remote Alarm**. A remote alarm has sounded. The icon will show whether it is Alarm 1 or Alarm 2.

ix **Netmon Session in progress**. Netmon information is being downloaded and the instrument is being checked.

TEMPERATURE DISPLAY



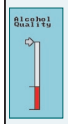
The arrow and temperature reading show the current temperature of the Reaction Chamber in °C.

PRESSURE DISPLAY

The arrow and pressure reading show the current pressure in the Reaction Chamber in mB.

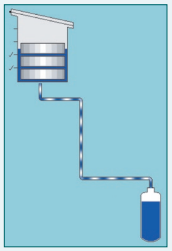
When the pressure is shown to be in the green area at the top of the display, the Reaction Chamber Lid can be opened.

ALCOHOL QUALITY DISPLAY



The quality of the first alcohol (Concealed Bottle A1) is monitored by specific gravity. The black line marks the optimum level at which the first alcohol should be changed.

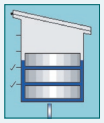
CURRENT REAGENT INFORMATION



The tube shows which reagent is currently being pumped in or out of the Chamber.

The display is dynamic and the tube is only displayed when reagents and wax are being moved in and out of the Reaction Chamber, bottles or wax baths.

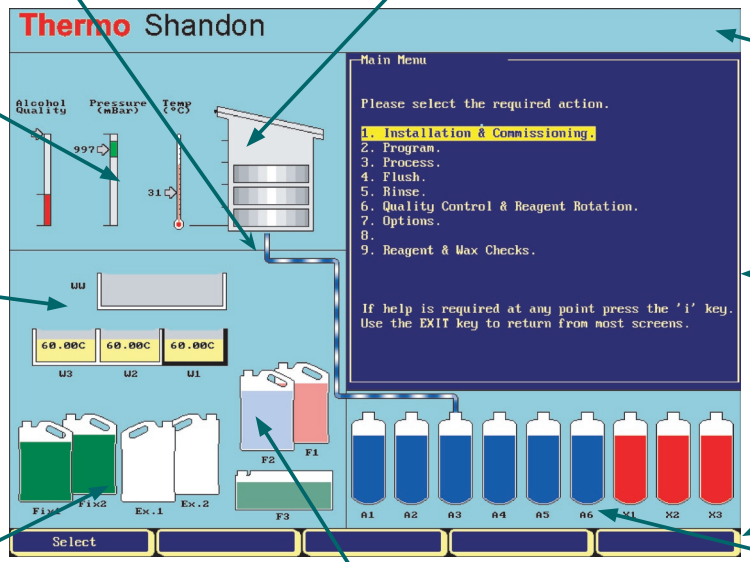
REACTION CHAMBER DISPLAY



This is an active pictorial representation of the Reaction Chamber. It shows the levels of baskets in the Reaction Chamber and the level of the current reagent. It will also show when the lid is open and the downdraft system is on.

The ' ✓ ' symbols are displayed one by one as each fluid level sensor is covered by the reagent - the example shows that 3 levels of baskets are in the Reaction Chamber and that the lower two layer sensors have been covered by the reagent, but the top level sensor is still uncovered. The ' ✓ ' symbols will disappear as the fluid leaves the Reaction Chamber.

The user must acknowledge the number of baskets that have been loaded into the Reaction Chamber before a process can be started *(see Section 4.2)*.



BANNER AREA

The banner area at the top of the screen shows extra information.

The area to the left of the banner displays information icons. *(Icons are described in Section 2.4.1).*

INFORMATION SCREEN

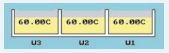
This area displays all program and process information. Help and Warning screens are also displayed in this area.

SCREEN FUNCTION BUTTONS

These screen 'buttons' correspond to the five function buttons on the Main Control Panel *(see Section 2.2.1)*. The function will change with each screen displayed on the Information Screen.

WAX AREA

Wax Waste Tray: shows the status of the Wax Waste Tray - either empty or full.



Wax Baths: representing the three wax baths as viewed from the front of the instrument. W3 is always the cleanest wax and is the wax bath that can be accessed to fill with clean wax pellets. A chute is available for easy filling.

The temperature displayed shows the temperature in each of the wax baths.

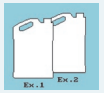
FIXATIVE POSITIONS

This area represents the two available bottles (Fix1 and Fix2) stored in the front storage area of the instrument. Two bottles are provided in case the supplier's bottles do not fit.

The two fixative positions, Fix1 and Fix2, give an option of using 1 or 2 fixative steps in the processing program.

EXCHANGE BOTTLES

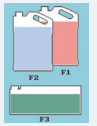
These bottles (Ex.1 and Ex.2) in the front storage area of the instrument are used to fill the concealed bottles in the back of the instrument (A1 - A6 and X1 - 3). The display shows the status of the transfer. (Reagent volume = 3.8 - 5 litres).



Ex.1 is used for dehydant block loading and exchange.
Ex.2 is used for clearant block loading and exchange.

Any expired or dirty reagent is pumped to the Ex.1 and Ex.2 bottles when a Rotate Reagent process is run.

FLUSH BOTTLES

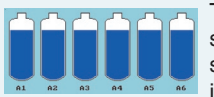


This area represents the three available flush bottles (F1 - F3) stored in the front storage area of the instrument. Supplier's bottles (sized 3.8 - 5 litres) can be used for positions F1 and F2 (Position F3 uses the water bottle supplied with the instrument).

F1 is normally Xylene stored in the supplier's bottle;
F2 is normally Alcohol stored in the supplier's bottle;
F3 is water stored in the water bottle fitted into the instrument.

The position of the bottles on the screen shows how the bottles should be stored in the Excelsior.

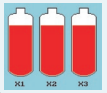
CONCEALED DEHYDRANT BLOCK BOTTLES



This area represents the six dehydrant group bottles situated in the back of the instrument. These are usually graded alcohols starting from 75%.

The concentration of the alcohol in bottle A1 is monitored by specific gravity. An indication of its quality is displayed on screen on the Alcohol Quality Gauges.

CONCEALED CLEARANT BLOCK BOTTLES



This area represents the 3 clearant group bottles situated in the back of the instrument.

2.5 SCREEN MAP

Always follow the instructions on the screens of Excelsior. If you need help, press **[** i **]** at any time.

The following chart shows the screen map of Excelsior. Screens that appear only during operation (for example when the Reaction Chamber lid is opened) are described in the Operation Chapter.

M**AIN MENU:**

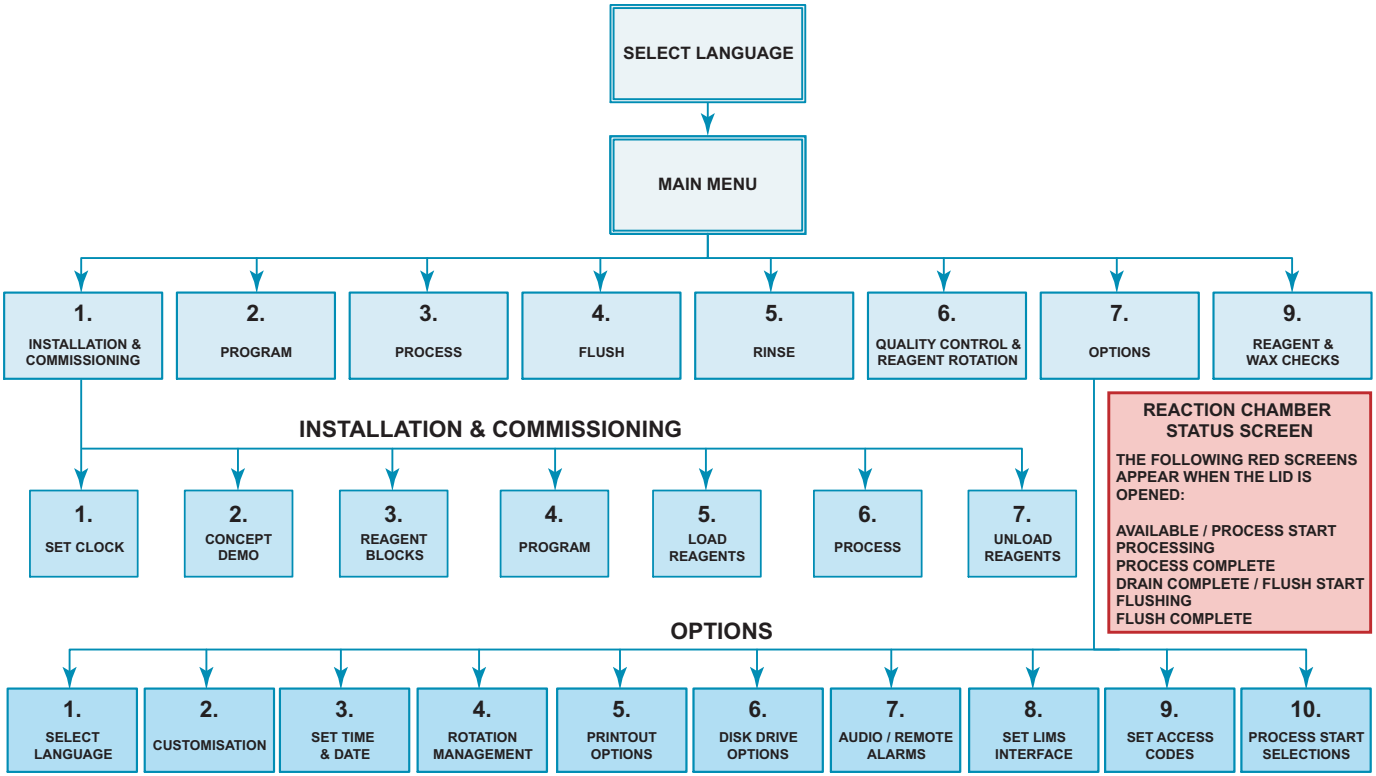
1. Installation and Commissioning
2. Program
3. Process *(includes Start selection)*
4. Flush
5. Rinse
6. Quality Control and Reagent Rotation
7. Options
8.
9. Reagent and wax checks

INSTALLATION AND COMMISSIONING:

1. Set Clock
2. Concept Demonstration
3. Reagent Blocks
4. Program
5. Load Reagents
6. Process
7. Unload Reagents

OPTIONS MENU:

1. Select Language
2. Customization
3. Set Time and Date
4. Rotation Management
5. Printout options
6. Disc Drive options
7. Audio / Remote Alarms
8. Set LIMS interface
9. Set Access Codes
10. Process Start selection


SELECT LANGUAGE
MAIN MENU
1. INSTALLATION & COMMISSIONING
2. PROGRAM
3. PROCESS
4. FLUSH
5. RINSE
6. QUALITY CONTROL & REAGENT ROTATION
7. OPTIONS
9. REAGENT & WAX CHECKS
INSTALLATION & COMMISSIONING
1. SET CLOCK
2. CONCEPT DEMO
3. REAGENT BLOCKS
4. PROGRAM
5. LOAD REAGENTS
6. PROCESS
7. UNLOAD REAGENTS
REACTION CHAMBER STATUS SCREEN
THE FOLLOWING RED SCREENS APPEAR WHEN THE LID IS OPENED:
AVAILABLE / PROCESS START
PROCESSING
PROCESS COMPLETE
DRAIN COMPLETE / FLUSH START
FLUSHING
FLUSH COMPLETE
OPTIONS
1. SELECT LANGUAGE
2. CUSTOMISATION
3. SET TIME & DATE
4. ROTATION MANAGEMENT
5. PRINTOUT OPTIONS
6. DISK DRIVE OPTIONS
7. AUDIO / REMOTE ALARMS
8. SET LIMS INTERFACE
9. SET ACCESS CODES
10. PROCESS START SELECTIONS

INSTALLATION AND SETTING UP

3.1 INTRODUCTION

Excelsior is a precision instrument that must be unpacked and installed with care.

The maximum overall dimensions of Excelsior tissue processor are:

Width	670 mm	(26½ ins)
Depth	520 mm	(20½ ins)
Height *(to monitor platform)*	1130 mm	(44½ ins)
Height *(to top of monitor)*	1600 mm	(63 ins)

EXCELSIOR WEIGHS APPROXIMATELY 112 kg (246 lbs) WHEN EMPTY AND 200kg (440lbs) WHEN FULL. ALWAYS GET HELP TO SAFELY MOVE THE INSTRUMENT WITHOUT RISK OF INJURY

3.2 TO UNPACK

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

Remove the banding from the packaging and remove the lid. To unpack the instrument, follow the instructions that are printed on the packing case. The packaging can be stored flat for future use.

To move Excelsior when it is empty, either move the instrument carefully on all four castors, or fit the transport handles and carefully tip the instrument back towards you and push it on the rear wheels.

ALWAYS KEEP THE INSTRUMENT LEVEL WHEN IT IS LOADED WITH WAX AND REAGENTS. MOVE IT SLOWLY TO PREVENT WAX SPILLAGE

ALWAYS DISCONNECT AND REMOVE THE MONITOR BEFORE THE INSTRUMENT IS MOVED

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

Notes

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

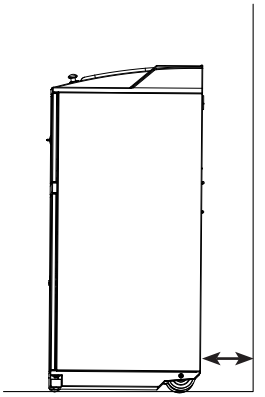
2 *If you ever need to transport the instrument, refer to Appendix B for repacking instructions.*

3.3 TO LEVEL THE INSTRUMENT

It is important that Excelsior is level from front to back and that it is fully adjusted before it is loaded with reagents and wax (paraffin).

EXCELSIOR WEIGHS APPROXIMATELY 112 kg (246 lbs) WHEN EMPTY. WHEN FILLED WITH REAGENTS AND WAX, EXCELSIOR WEIGHS 200 kg (440lbs).

Move Excelsior to its final position. Make sure that the floor is level and is made of a non-flammable material. There should be at least 140 mm behind the instrument if the optional Vent Adaptor is to be used.

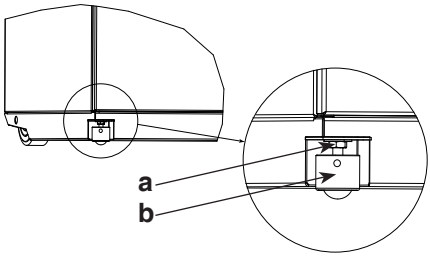


To determine whether the instrument is level, open the Reaction Chamber lid and remove the dessicant pack from the Chamber. Pour 50ml of water into the Reaction Chamber. Check that the water settles evenly around the Agitation Drive at the bottom of the Reaction Chamber.

If the water does not lie evenly, adjust the front castors so that the instrument is level from front to back. Mop up the water and dry the Reaction Chamber with tissue.

To adjust the castors, loosen the locknut *(a)* with the spanner provided.

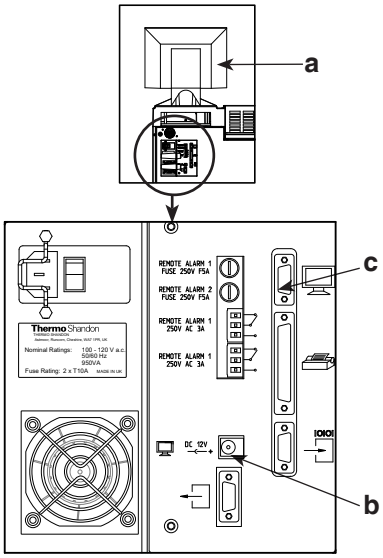
Manually turn the castor *(b)* with the adjustment rod provided until the instrument is level. Then tighten the locknut with the spanner.



3.4 TO CONNECT THE MONITOR

The flat screen monitor is supplied with two cables - the d.c. power lead and the data cable.

Get help if needed to remove the monitor and base from the packing. Refer to the instruction sheet in the accessories box to secure the monitor base to the monitor. Place the complete monitor assembly on top of the instrument *(a).* Refer to the instruction sheet to connect both cables to the monitor.



Connect the free end of the power cable to the power outlet on the rear of the electronics box *(b).*

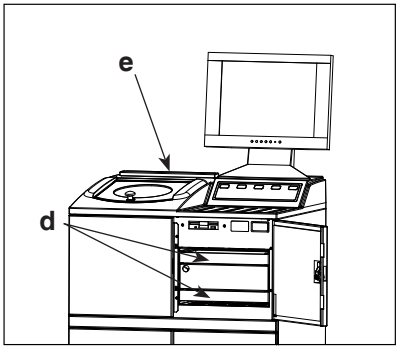
THE MONITOR IS DESIGNED TO USE 12V d.c. ONLY

DO NOT PLUG THE POWER LEAD INTO ANY OTHER POWER SUPPLY

Connect the D-type data cable to the data connector on the rear of the electronics box *(c)* and tighten the screws.

3.5 TO FIT THE FILTERS

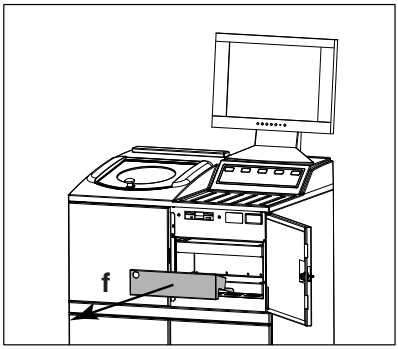
Excelsior is fitted with 2 extraction filters in the front of the instrument *(d)* and 1 downdraft filter in the rear of the instrument *(e)* .



When the instrument is first delivered, new filters will be fitted into the instrument. The filters will be covered with plastic wrappers, which must be removed before the instrument is used. Remove and replace the filters as follows:

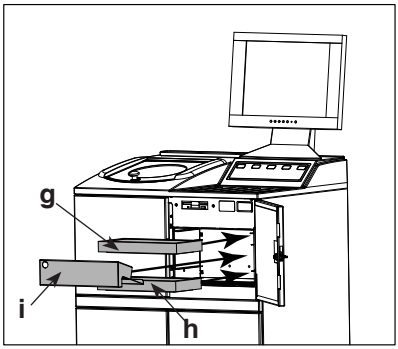
3.5.1 Extraction Filters:

The two main extraction filters, separated by a removable metal baffle, are located behind the top door of Excelsior. The upper filter is a potassium permanganate filter to extract formalin vapours. The lower filter is a carbon filter to extract solvent vapours.



UPPER FILTER: Potassium Permanganate
LOWER FILTER: Carbon

To remove the filters, first slide the metal baffle towards the front of the instrument and remove it *(f)*.



Slide out each filter in turn and remove the plastic wrappers. Replace the filters with the airflow arrow on the filter pointing upwards (upper filter: potassium permanganate *(g)*; lower filter: carbon *(h)*).

Replace the metal baffle *(i)* and close the instrument door.

Note:

1 The filters fit tightly into their slots so that the extraction system works efficiently.

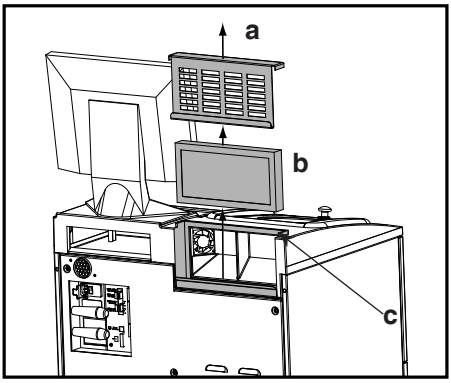
FOR CORRECT OPERATION OF THE EXTRACTION SYSTEM, MAKE SURE THAT THE UPPER AND LOWER DOORS ARE CLOSED

DO NOT OPERATE THE INSTRUMENT IF NEITHER EXTRACTION FILTER IS FITTED

3.5.2 Downdraft Filter:

The downdraft filter *(potassium permanganate)* is located behind the Reaction Chamber.

To remove the filter, first slide the metal cover upwards and remove it *(a)*. Slide the filter upwards *(b)* and remove the plastic wrappers. Replace the filter with the airflow arrow pointing away from the instrument.



To replace the metal filter cover, locate the bottom of the cover behind the filter and then push the filter cover down and towards the front of the instrument. The cover should be securely positioned on the raised wall *(c)*.

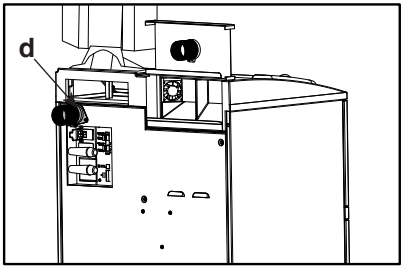
3.6 TO FIT THE OPTIONAL VENT ADAPTORS

The optional vent adaptors allow any fumes to be extracted into a fume cupboard or hood, or vented to the outside atmosphere.

WARNING **The vent adaptors must not be used to extract the fumes through the building HVAC system or a common site extraction system.**

3.6.1 Main Extraction:

Fit the vent adaptor to the rear of the instrument with the fixings supplied *(d)*. Route the ducting to an appropriately vented area.

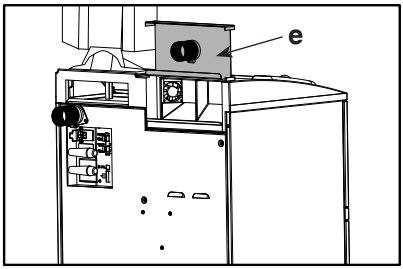


WARNING **The main extraction filters must be left in place.**

3.6.2 Downdraft Extraction:

Remove the Downdraft filter and the metal filter cover. *(The filter may be stored or discarded according to standard laboratory procedures)*.

Fit the Downdraft extraction bracket into the filter pocket *(e)* and press downwards and forward until it is secure.



Route the ducting to an appropriately vented area.

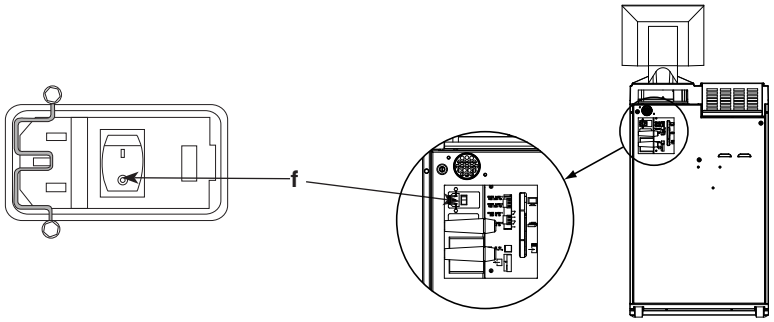
3.7 ELECTRICAL REQUIREMENTS

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.)*

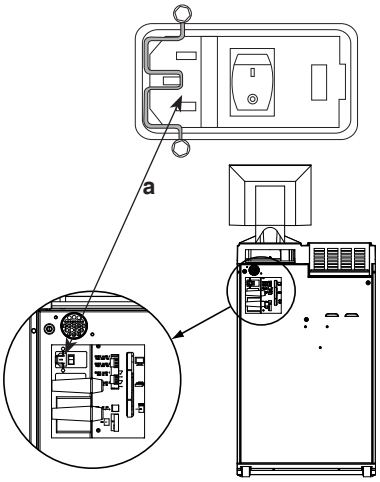
Make sure that the **I** / **O** power switch at the rear of the instrument is switched off (**O** side of the switch pushed inward) *(f)*.



Instruments are supplied with power cords with moulded plugs suitable for many countries. If another plug is required, it is necessary for a technically competent person to remove the moulded plug from the white power cord (UK style 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 *(a)*. Connect the mains supply cable to the local power supply outlet.

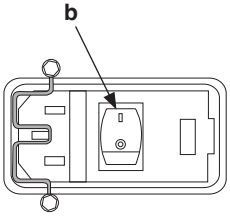


THE EXCELSIOR MUST BE PROTECTIVELY EARTHED. MAKE SURE THAT THE INSTRUMENT IS PLUGGED INTO A PROPERLY EARTHED (GROUNDED) MAINS SUPPLY

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

3.8 TO SWITCH ON AND OFF

3.8.1 TO SWITCH ON



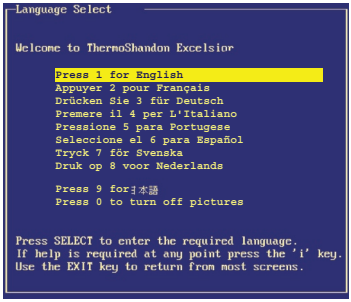
Press the **I** (ON) side of the **I** / **O** power switch to switch the instrument on *(b)*.

When the Excelsior is switched on, you should notice the following:

1 The fans will start and the LEDs on the instrument will light.

2 The rotary valve motor will start up as it determines its position.

3 The screen will come on after approximately 30 seconds and will display the language screen.

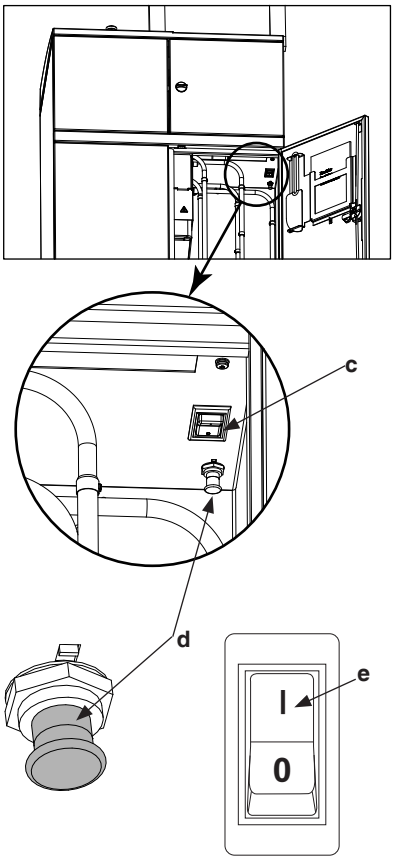


The Battery Isolation Switch and Heater Reset icons will be displayed in the top left hand corner of the screen *(see paragraph 2.4.1)*.These indicate that the Battery Isolation Switch is off *(c)* and should be turned on and the Heater Reset button *(d)* is not set and should be pressed to set it.

The Battery Isolation Switch *(c)* and Heater Reset Button *(d)* are located towards the back of the Reagent Storage Area roof on the right hand side.

To turn on the Battery Isolation Switch, press the **I (**ON) side of the switch *(e)* nearest to the front of the instrument.

To set the black Heater Reset button, press the Heater Reset button *(d)* fully in to activate the Reaction Chamber heaters.



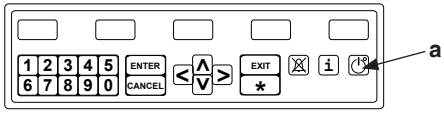
Note

1 When the Heater Reset button is set and the Battery Isolation Switch is turned on, the icons will disappear from the display.

Initial battery charging: after switching on both the main **I/O** power switch and the Battery isolation Switch, the instrument should be left for a period of 14 hours (overnight) to ensure the battery is fully charged.

3.8.2 STANDBY [⏻]

The instrument will usually be left switched on so that processing can continue. However, the Standby button **[⏻]** *(a)* on the Main Control Panel can be used to turn off the screen and lock the keyboard while still allowing processing to continue.



Note

1 The red LED on the Standby button is lit when the instrument is in STANDBY mode

To unlock the keyboard and turn the screen on, press the **[⏻]** button again.

3.8.3 TO SWITCH OFF FOR AN EXTENDED TIME

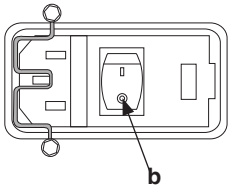
If the instrument is to be left unattended for long periods of time, or is to be moved, carry out the following steps:

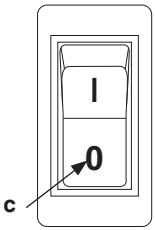
1 Make sure that any processing programs have finished. Carry out a Flush procedure *(see paragraph 4.3.3)*.

2 Press the **O** (OFF) side of the main **I/O** power switch to switch off the Excelsior *(b)*.

3 Wait approximately 45 seconds

4 Press the **O** (OFF) side of the Battery Isolation Switch *(c)* to isolate the battery

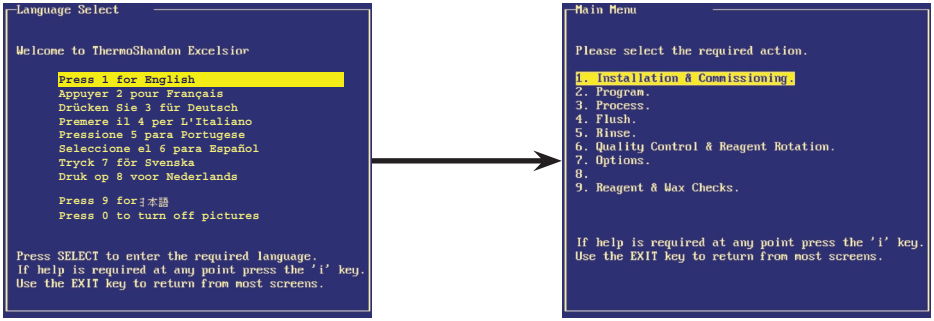




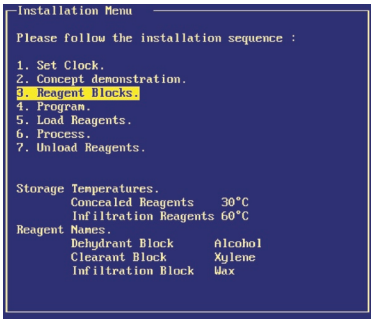
3.9 TO SET UP REAGENT BLOCKS

Switch on Excelsior. Choose the correct language and press the left hand function button on the Main Control Panel to correspond to **[SELECT]** on the screen.

Press **[1]** on the Main Control Panel to select the 'Installation and Commissioning' Menu,



Reagent Blocks are the concealed reagent bottles that store the graded dehydrant and clearant reagents and the infiltration reagents (wax baths). Press **[3]** to select option 3 from the 'Installation Menu' and display the Reagent Block information.



To change the reagent names, press **[DEHYDRANT REAGENT]**, **[CLEARANT REAGENT]** or **[INFILTRATION R.]**.

The storage temperature of the concealed bottles can be changed to above ambient for rapid and more consistent processing.

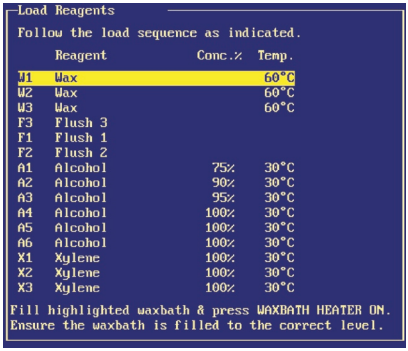
Press **[REAGENT TEMP.]** or **[WAX STORAGE TEMP.]**. The button pressed will change to **[AMBIENT]** to enter ambient storage temperature. Alternatively, use the number keys followed by **[ENTER]** to enter a new storage temperature value.

Note

1 *Do not set the temperature of the concealed reagents to more than 15°C above the minimum ambient temperature*

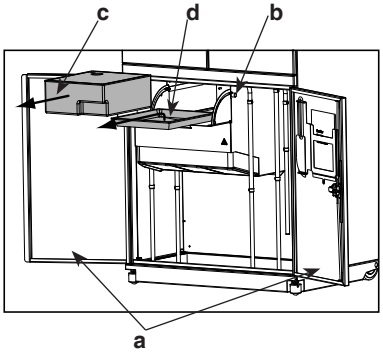
3.10 TO LOAD EXCELSIOR WITH WAX

Press **[5]** to select option 5 from the 'Installation Menu' and display the 'Load Reagents' menu.



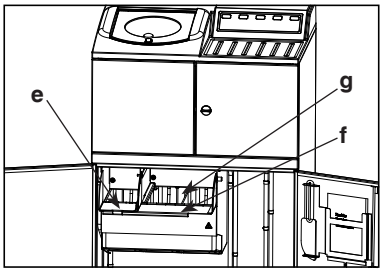
Open the lower doors of Excelsior *(a)*. Lift the small knob *(b)* on the right hand side of the wax bath and pull down the handle of the wax bath door. Pull the door down until it is in the horizontal position.

Remove the Wax Waste Tray *(c)* and the Wax Cover *(d)* that are located over the right hand Wax Baths (Wax Bath 1 and 2).



Pull down the small left hand door of Wax Bath 3 *(e)* until it is horizontal. Then lift the main wax bath door *(f)* until it forms a chute that tilts towards you.

Start from the right hand Wax Bath (Wax Bath 1) *(g)*. Carefully fill the wax bath with between 3.5kg and 3.7kg of wax pellets.



Make sure that the wax pellets are evenly distributed in the wax bath - push the wax pellets towards the back of the wax bath if necessary. The pellets will be higher than the fill line, but they will melt to the correct level within approximately 4 hours.

WARNING **Do not spill any wax pellets, or overfill the wax bath.**

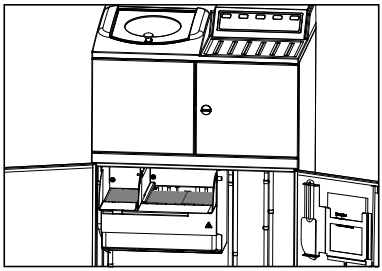
Note

1 *If you buy wax in 1kg bags, use 3½ bags; otherwise, weigh 3.5 - 3.7kg of wax pellets. If you cannot weigh pellets, you can fill the wax bath to the top of the dividing wall, and then top-up to the same level when the first charge has melted. This will extend the melt time slightly.*

2 *An additional wax fill chute is available to help with filling the wax baths.*

DO NOT FILL THE EXCELSIOR WAX BATHS WITH MOLTEN WAX - USE WAX PELLETS

The first Wax Bath will be highlighted in the text screen. Press the left hand function button corresponding to **[WAXBATH HEATER ON]**. This turns on the Wax Bath heaters to melt the wax pellets.



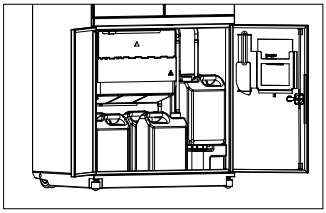
Repeat this procedure with Wax Baths 2 and 3 as prompted by the screen instructions. When the wax has melted, make sure that the level of the wax reaches the top of the interior walls of the wax bath. If it does not, add some more wax pellets.

Close the small left hand wax bath door *(e)* and lower the right hand wax bath door *(f)* to the horizontal position. Replace the Wax Cover. Make sure a wax bag is fitted into the Wax Waste Tray *(see paragraph 5.3.2)*. Replace the Wax Waste Tray and Lid. Close the right hand wax bath door *(f)*.

After the wax has been loaded into the instrument, the reagents should be loaded.

3.11 TO LOAD REAGENTS

Excelsior uses the bottles in which the reagent is supplied (3.8 - 5 litres) *(the exception to this is Flush 3 which is stored in the flat bottle supplied with the Excelsior)*. The bottles are placed into the reagent storage area in the positions shown on the screen and the reagent tubes placed into the necks of the bottles.



MAKE SURE THE COLOUR CODED REAGENT TUBES ARE FULLY INSERTED INTO THE BOTTLES:

Dehydrant	*Ex1*	*Centre front position*	*Blue tube*
Clearant	*Ex2*	*Centre rear position*	*Red tube*
Fixative 1	*Fix 1*	*Left front position*	*Green tube*
Fixative 2	*Fix 2*	*Left rear position*	*Green tube*
Flush 1	*F1*	*Right rear position*	*Red tube*
Flush 2	*F2*	*Right front position*	*Blue tube*
Flush 3	*F3*	*Right bottom position*	*Green tube*

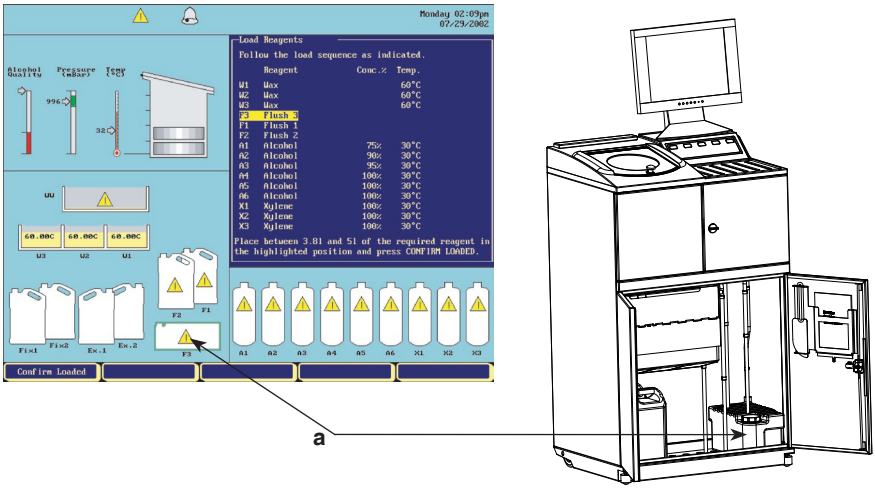
Notes

1 *Standard 5 litre rectangular bottles are suitable for use in all positions except Flush 3.*

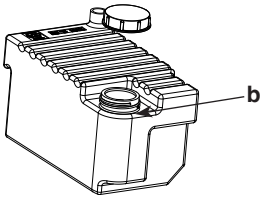
2 *US 1 gallon bottles may not fit into the Fix 1 and Fix 2 positions. Two 5 litre bottles are provided for these positions.*

3 *Additional 5 litre bottles are available from your Thermo Shandon dealer.*

Select option 5 from the 'Installation Menu' and display the 'Load Reagents' menu. Load the reagents in the order shown on the screen - begin with 'Flush 3'. The reagent to be filled is highlighted on the text screen. The pictorial bottle *(highlighted in green)* corresponds to the actual position in the reagent storage area of Excelsior *(a)*.



Fill the Flush 3 bottle to the bottom of its neck with water *(b)*. Make sure the cap is replaced securely, and that the green tube is inserted into the bottle at the back of the reagent storage chamber.



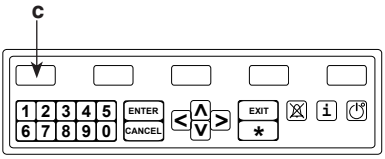
FLUSH 3 IS A WATER RINSE THAT CAN BE USED AS A THIRD FLUSH REAGENT. IT IS USED BY EXCELSIOR DURING COMMISSIONING AND DECOMMISSIONING

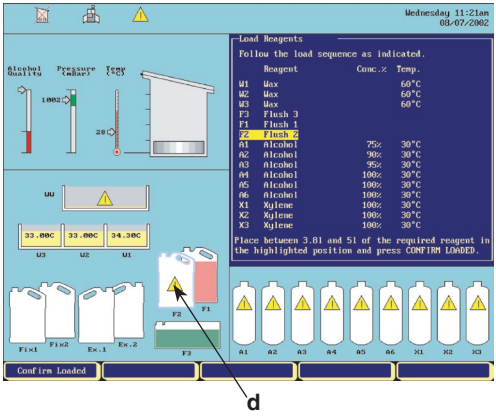
DO NOT USE XYLENE AS THE THIRD FLUSH REAGENT

When the Flush 3 bottle has been filled, press the left hand function button corresponding to **[CONFIRM LOADED]**. The cursor on the text screen will now highlight 'Flush 1' and the Flush 1 bottle (F1) will be highlighted in pink in the pictorial display.

Take a new bottle of the first flush reagent for example xylene. Remove the bottle cap and keep it safely *(you will need it when the reagent is changed)*. Place the bottle on top of the Flush 3 bottle towards the rear of the reagent storage area and insert the red tube.

Press the left hand function button *(c)* corresponding to **[CONFIRM LOADED]**. The cursor on the text screen will now highlight 'Flush 2' and the Flush 2 bottle will be highlighted in pale blue in the pictorial display (F2) *(d)*.





Take a new bottle of the second flush reagent for example alcohol. Remove the bottle cap and keep it safely *(you will need it when the reagent is changed)*. Place the bottle on top of the Flush 3 bottle towards the front of the reagent storage area and insert the blue tube. Place the tube cap over the neck of the bottle.

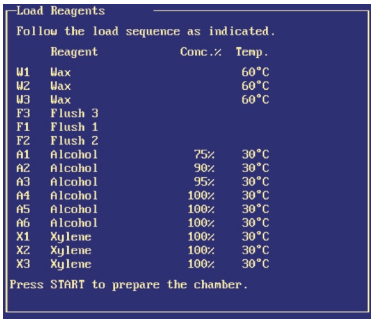
Notes

1 *Thermo Shandon recommend the following flush reagents:*

Flush 1 - Xylene (or xylene substitute)
Flush 2 - Alcohol
Flush 3 - Water (optional)

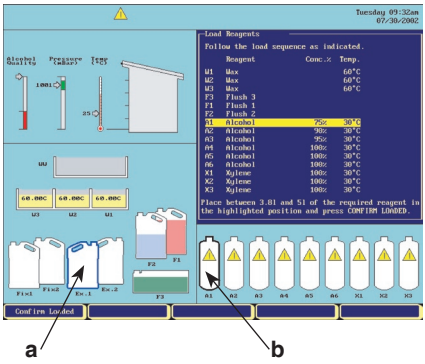
2 *Recommended Reagents are listed in Appendix C*

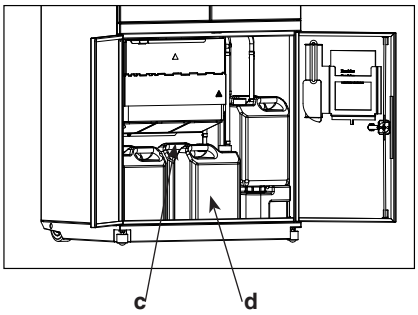
When all the flush reagents have been loaded, the screen will prompt you to start a quick flush to prepare the reaction chamber. To do this, press **[START]**.



The rest of the reagents (dehydrants and clearants) are stored in the concealed bottles at the back of the instrument. As these bottles are not accessible, dehydrants are loaded from the Ex1 position; clearants are loaded from the Ex2 position. To load these reagents, proceed as follows:

The first dehydrant reagent will be highlighted on the text screen. It is important that the first dehydrant is accurately diluted to 75% *(if it is not accurately diluted, the specific gravity calculation will be incorrect)*. Remove the bottle cap and place the bottle in the centre of the front of the reagent storage area *(d)* and insert the blue tube. Place the tube cap over the neck of the bottle.





Press the left hand function button corresponding to **[CONFIRM LOADED]**. The instrument will transfer the reagent from the supplier's bottle *(highlighted in blue (a))*, via the reaction chamber, to the correct concealed bottle in the rear of the instrument *(highlighted in black (b))*.

The cursor on the text screen will now move down to the next reagent to be loaded and the appropriate bottles will be highlighted in the pictorial display.

Repeat this process for all the remaining dehydrant reagents. Note that the second dehyrant must be diluted to 90% and the third dehydrant diluted to 95%. The rest can be undiluted.

To load the clearant reagents, repeat this procedure, but place the new reagent bottles behind the dehydrant bottles in the reagent storage area *(c)* and insert the red tube.

Leave the last clearant reagent bottle in place in the back of the reagent storage area of the instrument with the red tube inserted and the tube cap over the neck of the bottle. Replace the final dehyrant reagent with the blue tube inserted and the tube cap over the neck of the bottle.

THE LAST DEHYDRANT BOTTLE WILL HAVE TO BE REMOVED FROM THE REAGENT STORAGE AREA BEFORE THE CLEARANTS ARE LOADED. MAKE SURE THE BOTTLE IS RETURNED TO ITS POSITION ONCE ALL THE REAGENTS ARE LOADED

Notes

1 *The reagents are loaded in this order so that the instrument has been fully flushed with the correct reagents and is ready for immediate use.*

2 *The 'Load Reagents' Menu cannot be accessed again until another reagent has to be loaded.*

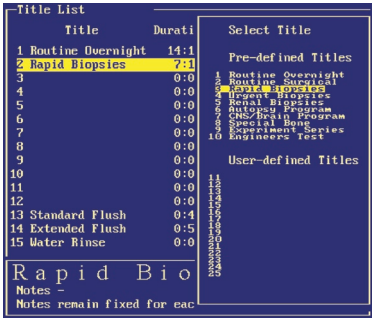
3 *If formalin is to be used, the Quality Control screen will be displayed before the first process run. It will prompt for the reagent to be loaded and* ***[NEW]*** *to be pressed for Fix 1 and Fix 2 (if Fix 2 is to be used)*

When all the reagents have been loaded, the screen will prompt you to start a flush cycle to prepare the reaction chamber for use. To do this, press **[START]**.

When the flush cycle has finished, the screen will display the 'Installation and Commissioning' Menu and the instrument will be ready for use.

3.12 TO PROGRAM EXCELSIOR

From the Main Menu, select option 2 - 'Program' to display the Program Select screen. This screen allows you to choose an existing program or to enter a new program.



Press **[CHANGE TITLE]** to select a different title from the title list.

Press **[CHANGE NOTES]** to add notes - a keyboard screen will be displayed. Use the arrow keys to move around the keyboard.

Note

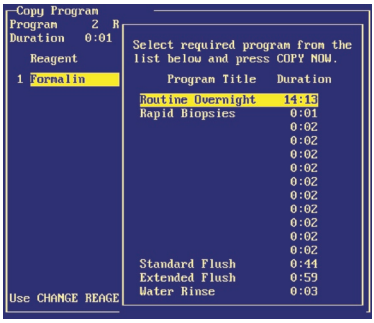
1 *Alternatively, press **[NEW NOTES EACH RUN]** to prompt the user to add notes at the start of every process run.*

When the title and notes have been entered, press **[SELECT]** to enter the program step details.

Notes

1 *To copy another program so that a similar program can be saved, press **[COPY]** and select the required program from the list. When the correct program is highlighted, press **[COPY NOW]**.*

2 *Press **[RESTORE DEFAULTS]** to restore the default program information.*



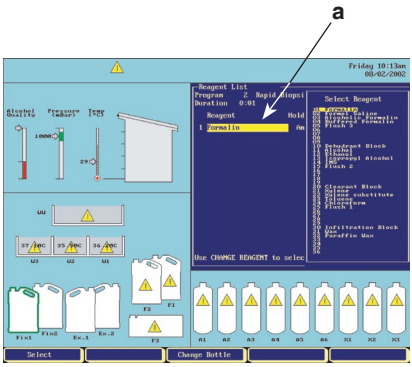
To enter new step information or alter existing information, use [∧] and [∨] to highlight the relevant step. As each step is highlighted, a bottle position on the graphic screen will also be highlighted to show which reagent position will be used.

Note

1 *When the concealed bottles are highlighted on the text screen, the relevant bottle on the pictorial display will also be highlighted and will show which of the six dehydrants or three clearants will be used.*

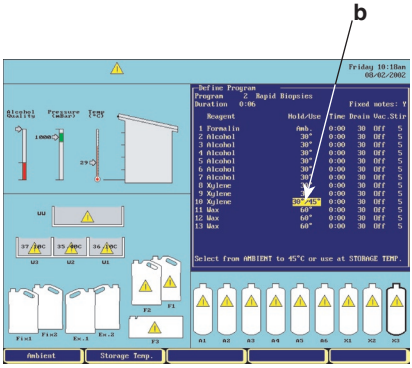
If the A1 bottle is highlighted, then the first dehydrant will be used for that step. When the program is run, Excelsior will search for and use the first dehydrant. This will normally be in position A1, but if a reagent block rotation has taken place (see section 4.4), and the reagent has not been replaced, then the first dehydrant may be in the Ex1 bottle.

Use **[<]** and **[>]** to highlight each option within a step.



When the Reagent column is highlighted *(a)*, press **[CHANGE REAGENT]** to change either the reagent name or the location to be used for that step.

The *'Hold/Use'* column *(b)* shows the temperature for each reagent in its storage location and when in use in the Reaction Chamber.



Note

1 *Fixative, exchange and flush bottles are all held at ambient conditions. The reagent storage temperature for the concealed bottles and wax storage temperature can be changed in the Installation Menu - Reagent Blocks option.*

2 *Select Storage Temperature where possible (as any adjustments to the storage temperature will automatically be updated in each program). Alternatively, choose Ambient for no heating, or use the number keys to enter a specific temperature.*

The *'Time'* column shows hours and minutes for each processing step.

Notes

1 *The time to transfer reagents is included in this time. Steps should be at least 3 minutes long. If a shorter step is entered, and fluid transfers take longer than 3 minutes, then the program will overrun its expected end time.*

2 *The first wax step in any program should be at least 20 minutes long in order to minimise wax carry-over on the Reaction Chamber walls, and to allow the level sensors to warm up to the wax temperature.*

The *'Drain'* column shows a time in seconds to allow the specimens to drain before moving to the next processing step.

The *'Vac.'* column controls the pressure in the Reaction Chamber during each step. Select VACUUM ON to process at approximately 650mB absolute (350mB below atmospheric pressure); VACUUM OFF to process at atmospheric pressure or VACUUM CYCLING for a pressure increase / decrease cycle every 15 minutes.

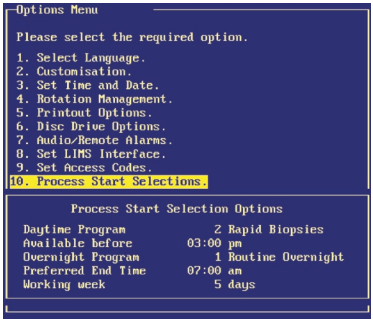
The *'Stir'* column controls the Contra-stir rotation.

Note

1 *Select setting 3 for the equivalent of the Thermo Shandon Pathcentre contra stir.*

3.13 TO SET PROCESS START OPTIONS

The 'Process Start selection' screen can be used to help to simplify the operation of Excelsior. Then use the arrow keys to select 10 - 'Process Start Selections'.



Note

1 *An alternative route is to select 3 from the Main Menu - 'Process', followed by **[START OPTIONS]**.*

The Start Options screen allows you to change the following:

i ***[DAYTIME PROGRAM]*** *- the program to be used during the day*

ii ***[SET BEFORE TIME]*** *- the latest time that the daytime program will be offered by Excelsior. Use the number keys to specify the time when Excelsior will stop displaying daytime programs when the lid is opened*

iii ***[OVERNIGHT PROGRAM]*** *- the program to be used overnight*

iv ***[SET END TIME]*** *- the preferred time for the overnight program to end. Use the number keys to set the required time*

v ***[5/6/7 DAYS]*** *- whether the working week is 5, 6 or 7 days*

Press the appropriate button to select the option and follow the screen instructions.

When all the information is correct, press **[EXIT]** to return to the previous screen.

IT IS IMPORTANT TO SET THE START OPTION INFORMATION FOR NORMAL DAY-TO-DAY OPERATION

OPERATION

4.1 TO OPEN AND CLOSE THE REACTION CHAMBER LID

To open the lid, push the black knob towards the back of the instrument to release the lid catch and then lift the lid.

Note

1 *If vacuum is selected during processing, the lid cannot be opened. Follow the screen instructions to release the vacuum to allow the lid to be opened.*

ALWAYS REFER TO ANY INSTRUCTIONS DISPLAYED ON THE SCREEN BEFORE YOU OPEN THE LID

NEVER LEAVE THE LID RAISED WHEN THE INSTRUMENT IS UNATTENDED

To close the lid, push down on the front of the lid until the black knob slides forward. The lid is correctly closed when the latch is engaged.

Note

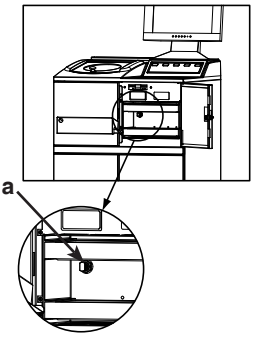
1 *The lid is never locked.*

2 *If Excelsior fails to pump the first reagent into the Reaction Chamber, check that the lid is correctly latched.*

EMERGENCY VACUUM RELEASE

The Emergency Vacuum Release is the red plastic plug *(a)* located behind the filter baffle.

To release the vacuum in the Reaction Chamber, pull out the red plastic plug. Replace the plug to continue with normal operation.



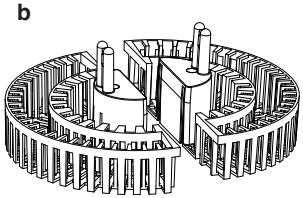
4.2 TO LOAD BASKETS

4.2.1 ORGANISER BASKETS

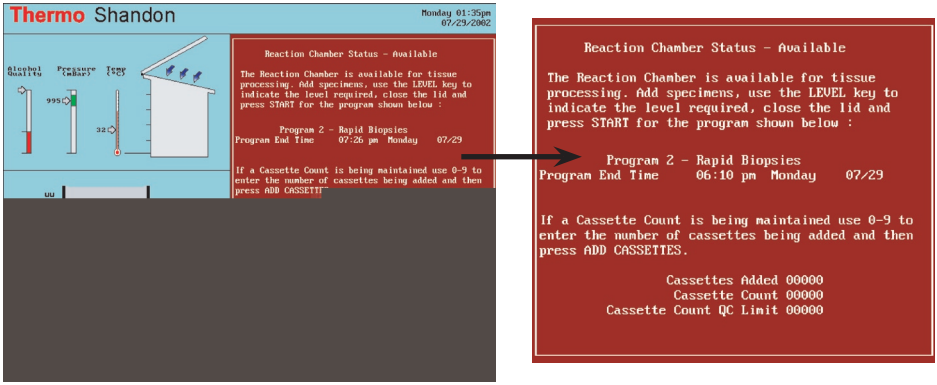
Organiser Baskets allow a high packing density, and easy identification of individual cassettes. Also, uniform spacing encourages superior processing.

Excelsior accepts 3 levels of baskets, with 2 baskets on each level *(b)*. Each basket holds 37 tissue cassettes.

b



Open the Reaction Chamber lid. The screen will display the red Reaction Chamber Status screen.

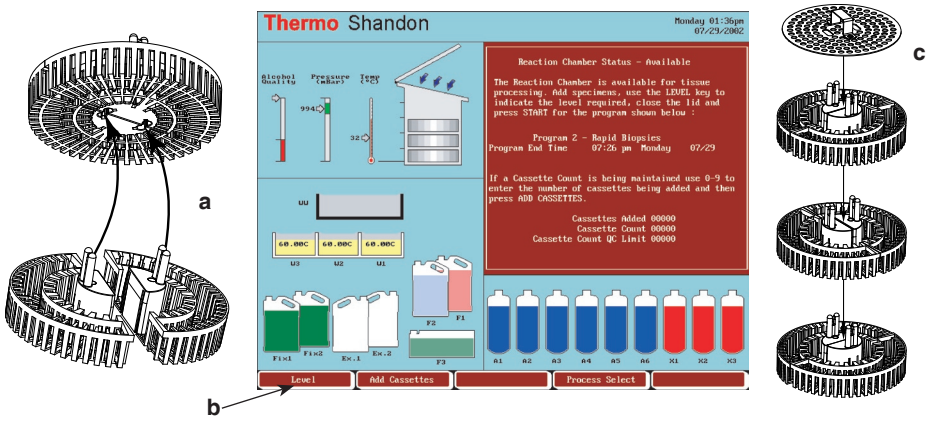


Locate the first two baskets on the Agitation Drive pegs in the base of the Reaction Chamber, and press **[LEVEL]** to acknowledge that one level of baskets has been loaded.

REMEMBER TO ACKNOWLEDGE THE NUMBER OF LEVELS OF ORGANISER BASKETS - TO MAKE SURE THAT THE LEVEL OF REAGENT USED IN THE REACTION CHAMBER IS SUITABLE FOR THE NUMBER OF SAMPLES TO BE PROCESSED

Rotate the next layer of baskets through 90° so that they fit onto the handles of the previous level *(a)*. Press **[LEVEL]** *(b)* to acknowledge the number of levels that are in the Reaction Chamber. Add a third (final) level of baskets in the same way.

Finally, fit the circular basket lid onto the top level of baskets *(c)*.



ALWAYS FIT 2 BASKETS ON EACH LEVEL TO MAKE SURE THE LID FITS CORRECTLY

Note

1 *The Organiser Baskets can be used in a microwave for microwave fixation. However, the baskets should always be fully immersed in fixative when used in a microwave.*

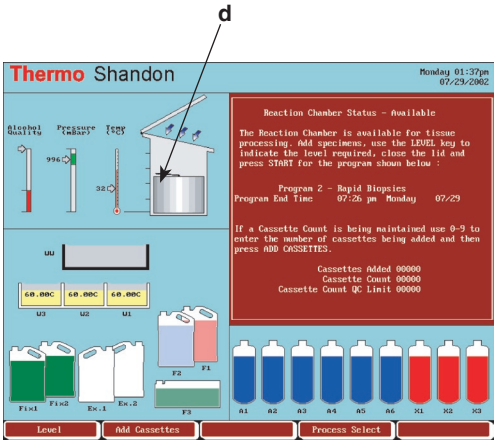
WARNING ***- the lid is metal and should not be used in a microwave.***

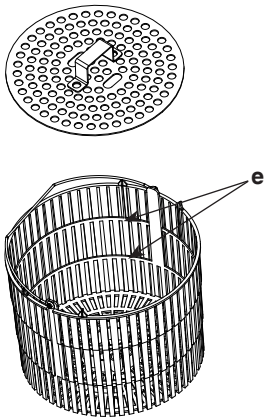
4.2.2 RANDOM BASKETS

Random baskets allow cassettes to be loaded randomly. They are quick and easy to load and unload.

Press the **[LEVEL]** button until the graphic display shows a random basket *(d)*. Each fill level on the screen corresponds to a horizontal ring around the Random Basket *(e)*.

Fit the circular basket lid inside the random basket to secure the tissue cassettes.





Note

1 *When the Random Basket Fill option is selected, Excelsior will attempt to fill the Reaction Chamber to level 3.*

If there is not enough reagent to reach level 3, programs will continue as long as the reagent is over level 2. This may leave some cassettes out of the reagent within the top level.

SELECT AN APPROPRIATE FILL LEVEL FOR THE LOADED SAMPLES - TO MAKE SURE THAT THE LEVEL OF REAGENT USED IN THE REACTION CHAMBER IS SUITABLE FOR THE NUMBER OF SAMPLES TO BE PROCESSED

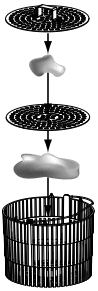
Note

1 *The Random Basket can be used in a microwave for microwave fixation. However, the baskets should always be fully immersed when used in a microwave.*

WARNING - ***the lid and dividers are metal and should not be used in a microwave.***

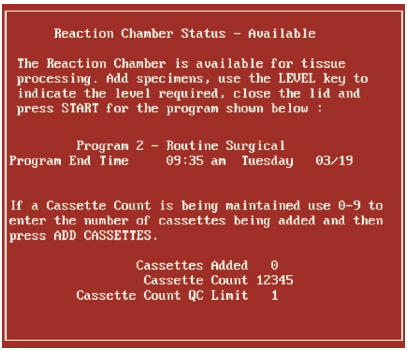
ALWAYS REMOVE THE METAL HANDLE IF THE BASKET IS TO BE USED IN A MICROWAVE

4.2.3 LARGE SAMPLES



Additional horizontal metal dividers can be fitted into the Random Baskets so that larger tissue samples *(e.g. neuro pathology samples)* can be processed appropriately.

4.3 REACTION CHAMBER STATUS SCREEN



When the Reaction Chamber Lid is opened, the red 'Reaction Chamber Status - Available' screen is displayed. The word 'AVAILABLE' signifies that Excelsior is ready for a new process run.

The screen shows the program that will be used and the time that the program will finish.

4.3.1 SETTING THE CASSETTE LEVEL

Press **[LEVEL]** when baskets of cassettes have been added (see section 4.2).

If the cassette count feature is being used, use the number keys to enter the number of cassettes that are being added followed by **[ADD CASSETTES]**.

Press **[IMMEDIATE START]** to start the program displayed immediately, or **[DELAYED START]** to start the program at a later time to end at the stated end time.

Note

1 *The **[IMMEDIATE START]** or **[DELAYED START]** button will only appear after samples have been added to the Reaction Chamber and the level set. The Battery Isolation Switch must be switched on and the Reaction Chamber Heater Trip must be pushed in (see Section 3.8.1).*

To choose another program or change the start parameters (e.g. step start, change end time), press **[PROCESS SELECT]**.

Note

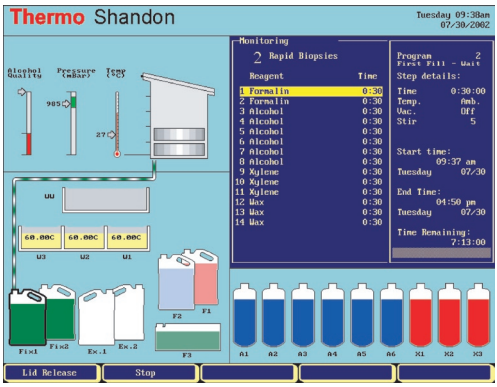
1 *If a delayed start has been specified, **[CANCEL END TIME]** and **[EXIT]** must be pressed before an alternative program can be run.*

2 *If a program has been instructed to start any any position other than Step 1, then the cursor must be positioned on Step 1 and **[EXIT]** pressed before an alternative program can be run.*

4.3.2 STARTING A PROGRAM

If all reagent and quality requirements have been met, then the Monitoring screen *(a)* will be displayed as soon as **[IMMEDIATE START]** or **[DELAYED START]** is pressed.

a



Note

1 *If the program has specified that new notes should be added for each program run, then the keyboard screen will appear so that the notes can be entered first.*

2 *If reagents need to be loaded or replenished, rotation warnings require acknowledgment or if the filter life has been exceeded, the 'Quality Control / Rotation Checklist' screen will appear (see Section 4.4).*

The Monitoring Screen will show the status as *'First Fill - Wait'* until all instrument checks have been completed and the first reagent has been correctly pumped into the Reaction Chamber.

Note

1 *The Monitoring screen can also be accessed from the Main Menu when a process is running.*

The Monitoring screen contains information that could be useful during processing.

The left side of the screen shows the program name and number, along with the program details.

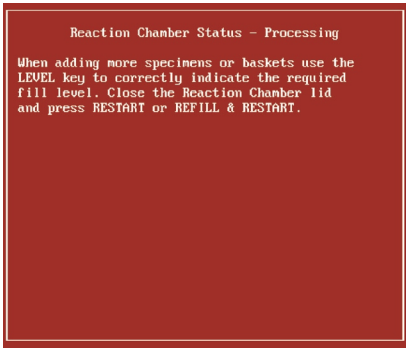
The details of the current step are listed on the right of the screen along with start and end times and the time remaining which counts down to zero when a program is running.

If the user presses **[STOP]** while Excelsior is processing, the program will pause at the current step. **[∧]** and **[∨]** can be used to select a new step at which to restart the program if required. Excelsior will correct all the time details.

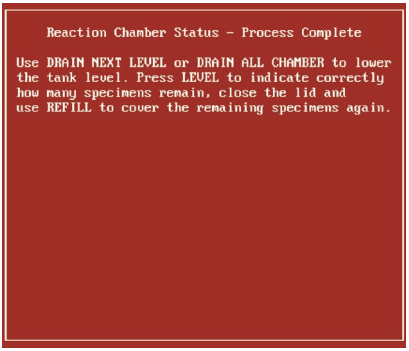
When **[RESTART]** is pressed, the reagent that is in the Reaction Chamber is returned to its bottle and the program jumps to the new step.

If the lid is opened while a process run is in progress, the red 'Reaction Chamber Status - Processing' screen will be displayed *(a)*. More samples can be added and the level changed from this screen. Follow the screen instructions.

a



When the process has finished, the red 'Reaction Chamber Status - Process Complete' screen *(b)* will be displayed when the lid is opened.



b

As baskets of samples are removed from the Reaction Chamber, press **[LEVEL]** to adjust the level to indicate how many levels of baskets remain in the Reaction Chamber.

Alter the fluid level by pressing **[REFILL]**, **[DRAIN NEXT LEVEL]** or **[DRAIN ALL CHAMBER]**.

When all baskets have been removed (and acknowledged on screen), the 'Reaction Chamber Status - Drain Complete' screen will be displayed.

4.3.3 STARTING A FLUSH CYCLE

When all baskets have been removed from the Reaction Chamber, the screen will display the flush program that will be run.

Press **[CANCEL]** if the level key has been pressed by mistake to indicate that baskets are still in the Reaction Chamber. The Reaction Chamber Status - Process Complete' screen will be displayed.

Press **[START]** to start the flush program displayed. Any fluid that remains in the Reaction Chamber will be returned to its original location and the flush program will start.

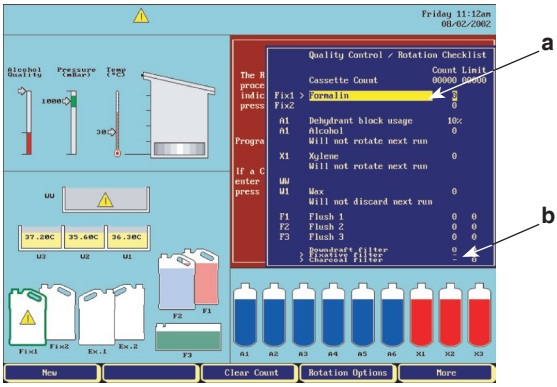
Press **[FLUSH SELECT]** to select another flush program from a list.

When the flush program has finished, the Reaction Chamber Status - Flush Complete' screen is displayed. Follow the screen instructions. Press **[OK]** to acknowledge.

4.4 QUALITY CONTROL AND ROTATION CHECKLIST SCREEN

This screen is displayed when an action is required by the user before processing can begin for example, replenishing a reagent or changing a filter, or when the storage area doors are opened.

In the screen shown, Fixative 1 needs to be loaded with formalin *(a)* and two filters have not been fitted *(b)*.

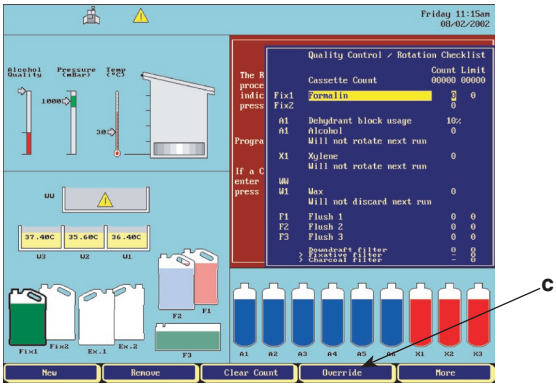


Press **[NEW]** when the new reagent has been placed in the Fix1 position. The screen will be updated.

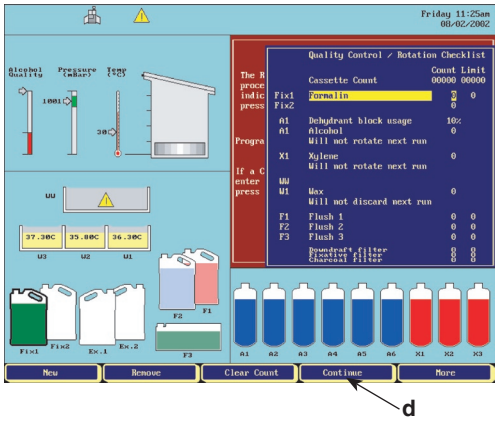
Note

1 *When more than one reagent is to be loaded at the same time, update the screen as each reagent is placed in position.*

When all mandatory requirements have been met, an Override key becomes available *(c)*. Press **[OVERRIDE]** to start the program.



When all the necessary requirements have been met, a Continue key is available *(d)*. Press **[CONTINUE]** to start the program.



To access the Quallity Control / Rotation Checklist screen before processing is started, choose Option 6 from the Main Menu or open the storage area doors.

Use **[** ∧ **]** and **[** ∨ **]** to highlight the relevant bottle positions.

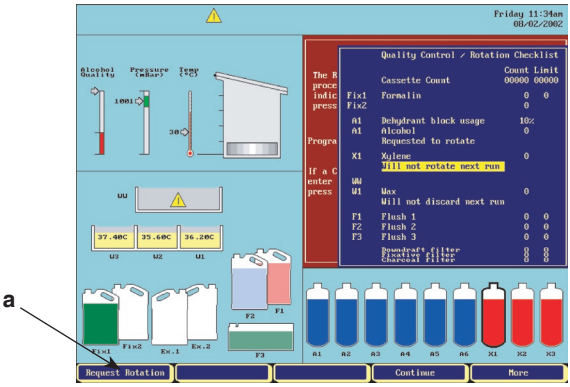
The rotation of reagent blocks is controlled from this screen. Dehydrants and clearants are rotated either automatically or on request.

If a rotation is allowed to happen when a replacement reagent is not available, then the next run will use the reagents again in their new positions *(i.e. the reagent to be changed will be in Ex1 or Ex2 and the other reagents will have moved a position)*.

Infiltration reagents can only be discarded. Once the first wax has been discarded to the Wax Waste Tray, it cannot be used again.

MAKE SURE THAT THERE IS ENOUGH WAX BEFORE A WAX DISCARD IS REQUESTED OR ALLOWED

Press **[REQUEST ROTATION]** *(a)* to request a Reagent Rotation at any time.

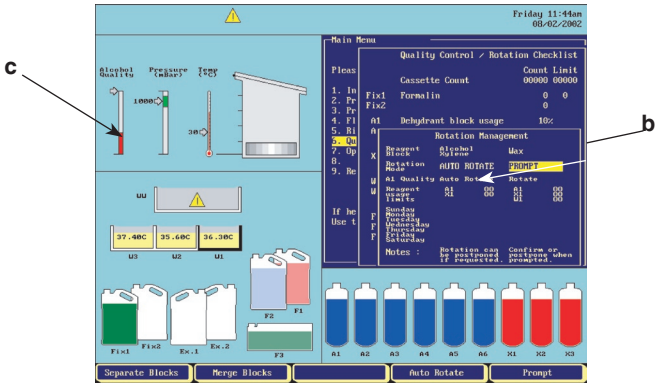


Automatic rotations and discards will occur according to the selections made in the Rotation Management screen.

Note

1 Press [i] at any time to access the context sensitive help.

In the screen shown *(b)*, the Alcohol and Xylene blocks will be automatically rotated when the A1 quality indicator *(c) (based on the specific gravity measurement of the first dehydrant)* reaches its limit.



A prompt will also be displayed on the Quality Control / Rotation Checklist screen before the wax is discarded. The operator must choose to discard on the next run, or to postpone the discard until new wax is available.

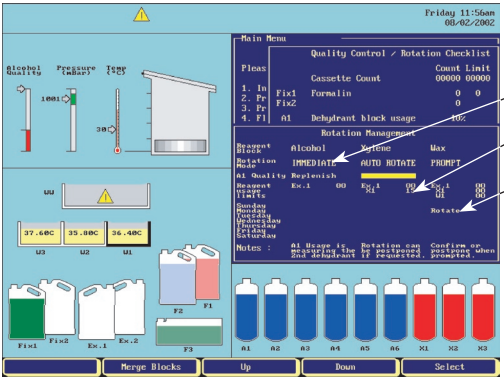
If different triggers for rotation are required for the dehydrant and clearant blocks, press **[SEPARATE BLOCKS]**.

The following screen shows the full options available:

The alcohol wil rotate as soon as possible *(a)*. A warning to replace it will be given when the A1 quality indicator shows that the second dehydrant has reached the limit where rotation is recommended.

The xylene block will automatically rotate every 15 process runs *(b)* and will then prompt for a replacement.

The wax will prompt for a rotation every Monday *(c)* . If this is confirmed, a further reminder to refill the W3 Wax Bath will be displayed at the start of the next run.



As the dehydrant specific gravity measurement detects the reduction in alcohol concentration, the arrow on the Alcohol Quality gauge moves towards the red band.

Note

1 *The transition point is initially set to the recommended threshold value however, the threshold can be changed to suit individual requirements. Use the arrow keys to highlight the A1 Quality line.*

*To raise the threshold, press **[UP]** to force the A1 quality limits to trigger rotations earlier than the recommended concentrations.*

*To lower the threshold, press **[DOWN]** to delay the rotations and extend reagent usage.*

CLEANING AND MAINTENANCE

5.1 GENERAL

Normal standards of laboratory hygiene and routine maintenance procedures are all that is necessary to keep Excelsior in good and serviceable condition.

IF HAZARDOUS MATERIAL IS SPILT ON, OR INSIDE, THE INSTRUMENT, THE USER SHOULD CARRY OUT THE APPROPRIATE DECONTAMINATION

CLEANING OR DECONTAMINATION METHODS, OTHER THAN THOSE RECOMMENDED IN THE OPERATOR GUIDE, SHOULD BE CHECKED WITH A THERMO SHANDON AGENT TO ENSURE THAT THE PROPOSED METHOD WILL NOT DAMAGE THE EQUIPMENT

WARNING **Always wear protective gloves when you clean or decontaminate Excelsior to protect yourself against the effects of chemicals.**

WARNING **Do not use any chemicals that may interact with materials of manufacture. If in doubt, check with Thermo Shandon Service department.**

WARNING **Phenol and Hypochlorites in strong solution will damage the instrument and its accessories.**

WARNING **Do not use abrasive compounds or metal components to clean Excelsior or its components and accessories.**

5.2 RECOMMENDED MATERIALS

ALWAYS WIPE UP ANY SPILLS IMMEDIATELY. IN THE EVENT OF A MAJOR SPILLAGE, DISCONNECT THE INSTRUMENT FROM THE MAINS SUPPLY WITHOUT DELAY AND DO NOT RECONNECT AND SWITCH ON UNTIL THE INSTRUMENT HAS BEEN THOROUGHLY DRIED OUT AND CHECKED BY A SERVICE ENGINEER.

WARNING **Do not use Acetone or Bouin's fixative**

WARNING **Any accidental spillage of reagents on the touch control panel should be removed by immediately wiping with a cloth and a small amount of alcohol.**

POTENTIALLY LETHAL VOLTAGES ABOVE 110V a.c. ARE PRESENT INSIDE THE UNIT. DO NOT REMOVE ANY ACCESS COVERS.

5.3 ROUTINE CLEANING AND MAINTENANCE

THE FOLLOWING INSTRUCTIONS ARE THE RECOMMENDATIONS OF THERMO SHANDON. IF ANOTHER CLEANING METHOD IS REQUIRED, PLEASE CONTACT THERMO SHANDON

INSPECT THE INSTRUMENT FOR OBVIOUS DAMAGE OR WEAR WHENEVER YOU CLEAN OR USE IT *(see Section 5.3.9)*

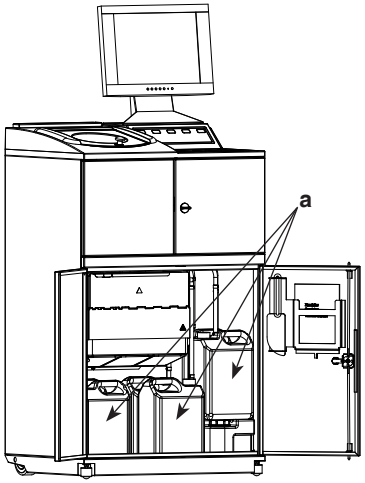
WARNING **Remove the mains plug from the supply socket before you clean the fixed components of the instrument.**

5.3.1 REAGENT BOTTLES

USE GLOVES AND SAFETY GLASSES WHEN DEALING WITH REAGENTS

FIX 1 AND 2; EX1 AND 2; FLUSH 1 AND 2 BOTTLES:

These are the reagent supplier's bottles *(a)* located in the Reagent Storage Area at the front of the instrument. *(Note that 2 empty 5 litre bottles are supplied for the Fix 1 and Fix 2 positions).*

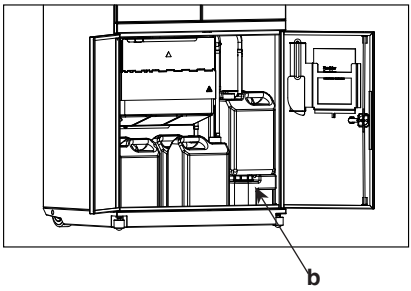


To remove the bottles, carefully remove the dip tubes from the reagent bottles and clean any contamination from the surface of the tubes with a lint free cloth.

Remove the bottles from the instrument and replace their caps. Dispose of the used reagent in accordance with your local regulations and procedures.

FLUSH 3 WATER BOTTLE:

The Flush 3 bottle is situated underneath the Flush 1 and Flush 2 bottles in the Reagent Storage Area *(b)*.



To remove Flush 3 water bottle, first remove the Flush 1 and Flush 2 bottles. Remove the green tube from the rear of the bottle and carefully lift and slide the bottle out of the Reagent Storage Area. Remove the cap and dispose of the water in accordance with any local procedures and regulations.

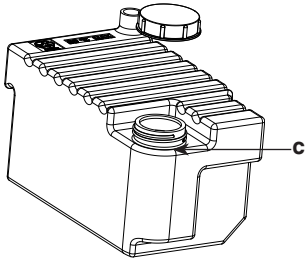
KEEP THE FLUSH 3 BOTTLE LEVEL TO AVOID ANY SPILLAGE

THE FLUSH 3 WATER BOTTLE MUST BE CLEANED BEFORE IT IS REFILLED WITH WATER.

To clean the Flush 3 water bottle, rinse the bottle with clean water and mild detergent. Use a bottle brush if required.

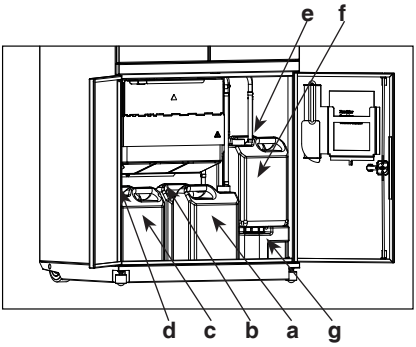
DO NOT USE TEMPERATURES HIGHER THAN 60°C

Refill the Flush 3 water bottle with water to the bottom of its neck *(c)* and replace the cap. Place the water bottle in the Reagent Storage Area with the cap towards the front of the instrument. Fit the green drain tube into the open pipe at the rear of the Flush 3 Water Bottle.



WARNING **Make sure the tube is fully inserted into the Water Bottle so that it sits on the bottom of the bottle and that there are no kinks in the flexible section of tube.**

Place new bottles of reagents into the appropriate positions in the Reagent Storage Area: Remove the caps from the bottles and keep them safe. Fit the corresponding tube into each bottle and place the tube cap over the neck of the bottle. Details are shown below:



a	*Dehydrant*	*Ex1*	*Centre front position*	*Blue tube*
b	*Clearant*	*Ex2*	*Centre rear position*	*Red tube*
c	*Fixative 1*	*Fix 1*	*Left front position*	*Green tube*
d	*Fixative 2*	*Fix 2*	*Left rear position*	*Green tube*
e	*Flush 1*	*F1*	*Right rear position*	*Red tube*
f	*Flush 2*	*F2*	*Right front position*	*Blue tube*
g	*Flush 3*	*F3*	*Right bottom position*	*Green tube*

IF OLD REAGENT BOTTLES ARE TO BE REUSED, MAKE SURE THAT THEY ARE COMPLETELY CLEAN AND RINSED BEFORE THEY ARE REFILLED

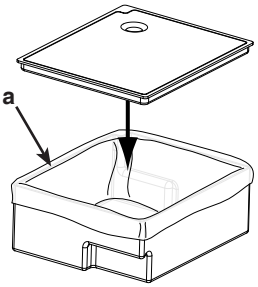
5.3.2 WAX BATHS

TO DISCARD USED WAX

When the wax is changed after the time period set in the Quality Control menu, the oldest wax is discarded into the Wax Waste Tray which is located above the three wax baths in the Reagent Storage Area.

Excelsior will prompt you to confirm that the Wax Waste Tray is in place above the two right hand wax baths (Wax Baths1 and 2) in the Reagent Storage Area before the start of the discard process *(see Section 5.3.3)*.

Fit a waste bag into the Wax Waste Tray and make sure that the top of the bag is folded over the top of the tray *(a)*. Fit the lid.



To remove the waste wax, open the wax access door and carefully slide the Wax Waste Tray from the instrument.

THE TRAY CONTAINS HOT MOLTEN WAX. KEEP IT LEVEL AT ALL TIMES.

Place the tray in a cool, well ventilated area away from Excelsior and allow to set. Carefully remove the lid from the tray to fit onto the spare Wax Waste Tray.

When the waste wax has set, remove the waste bag from the Wax Waste Tray and discard the solid wax in accordance with local procedures and regulations. Keep the Wax Waste Tray safely for reuse.

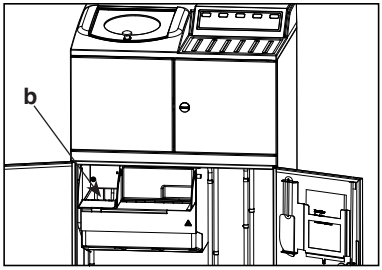
Make sure that there is always a Wax Waste Tray in the instrument with a new waste bag fitted (make sure the bag is folded over the top of the tray *(a))*. A spare Wax Waste Tray is provided for this purpose.

Fit the lid from the original Wax Waste Tray. Slide the Tray back into its position above the wax baths and close the access doors.

TO CLEAN A WAX BATH

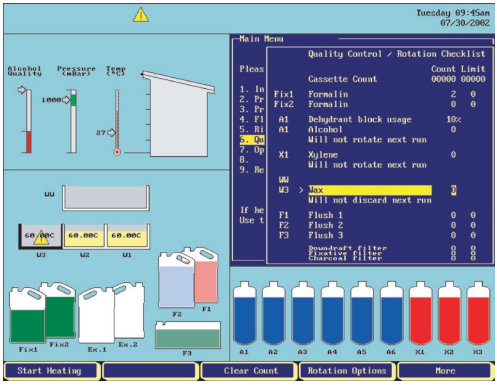
THE METAL PLATES IN THE BASE OF THE WAX BATHS ARE HOT. ALWAYS WEAR GLOVES

After the old wax has been discarded, Wax Bath 3 will be empty *(b)*. Open the left hand wax access door. Use absorbent paper to wipe out any remaining wax from the wax bath. Make sure that no paper is left in the wax bath.

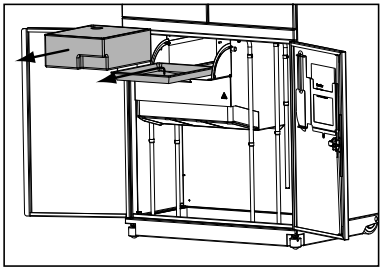


Refill Wax Bath 3 with 3.5 - 3.7kg of wax pellets and press **[CONFIRM LOADED]** to turn on the wax bath heater to melt the wax pellets. Close the wax access door.

If Wax Baths 1 and 2 need to be inspected or cleaned, select option 9 from the Main Menu to access the 'Reagent and Wax Checks' menu *(see section 5.3.3)*. This will allow the wax to be pumped in turn from the Wax Baths 1 and 2 into the reaction chamber.



To access Wax Baths 1 and 2, remove the Wax Waste Tray and lift and slide the cover from above the wax baths forwards to remove it. Wax Baths 1 and 2 are now accessible.



Clean the empty wax bath with absorbent paper. Make sure that no paper is left in the wax bath.

Note

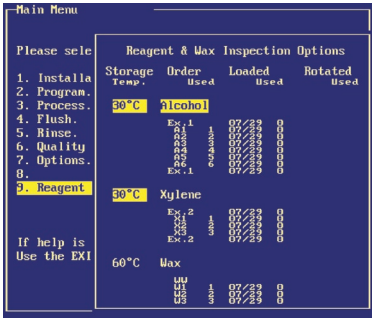
1 *To minimise wax residue in the Reaction Chamber, keep the first wax to be inspected in the Reaction Chamber for 20 minutes to warm it.*

The screen instructions will ask whether the wax is to be used again or discarded. If you choose to use the wax again, the wax in the reaction chamber will be pumped back into the empty wax bath. Alternatively, if you choose to discard the wax, it will be pumped to the Wax Waste Tray. Repeat this process for the remaining wax bath.

Replace the cover on top of Wax Baths 1 and 2 and close the wax access door.

5.3.3 REAGENT AND WAX CHECKS

The 'Reagent and Wax Checks' screen can be accessed by selecting option 9 from the Main Menu. The status of the reagents and waxes can be physically inspected and certain parameters altered.



Use the direction arrows to move the cursor around the screen. The first column is used to set the storage temperature for the dehydrant (alcohol), clearant (xylene) and infiltration (wax) reagents.

To alter the storage temperature for the dehydrant and clearant reagents, highlight the temperature and press **[AMBIENT]** to set the storage temperature to ambient, or enter another temperature using the number keys. This will change the temperature of both sets of reagents.

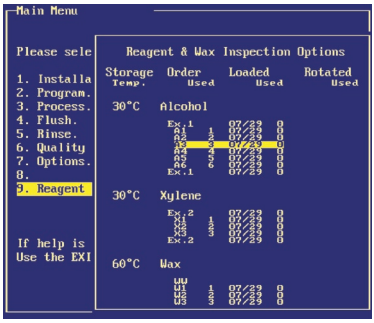
The second column lists the names of the concealed reagent bottles and the wax baths, and their order of use.

The third column shows the date when the hidden reagent bottle or wax bath was last filled, and the number of times each has been used.

The final column shows the date when reagent rotation was last used and the number of times that reagent has been used since the rotation.

TO INSPECT A REAGENT

Highlight the relevant reagent bottle. Press **[INSPECT]**. The reagent will be transferred to the Reaction Chamber.



To return the reagent to the bottle for further use, press **[RETURN REAGENT]**.

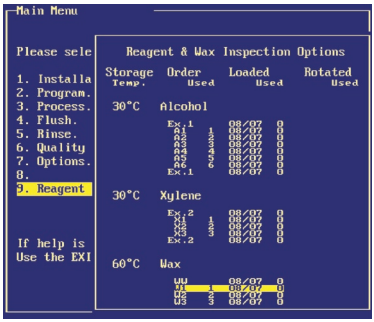
To discard the reagent, press **[DISCARD REAGENT]**. Follow the screen instructions which will prompt you to place an empty bottle in either the Ex1 or Ex2 position.

Press **[CONFIRM LOADED]**, the reagent in the Reaction Chamber will be drained into the empty bottle. Discard the used reagent in accordance with local procedures and regulations. When the Reaction Chamber is empty, the screen will highlight the empty bottle and the second button will show **[LOAD REAGENT]**.

To load a new reagent, press **[LOAD REAGENT]** and follow the screen instructions *(see also section 3.11)*.

TO INSPECT A WAX

Highlight the relevant wax bath. Press **[INSPECT WAX]**. The wax will be transferred to the Reaction Chamber.



To return the wax to the wax bath, press **[RETURN WAX]**.

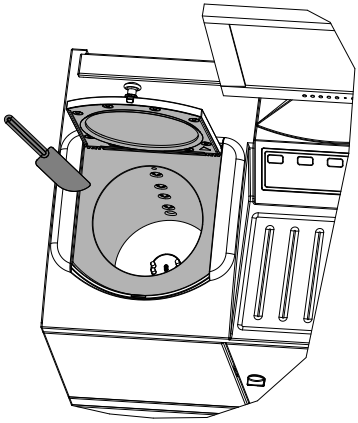
To discard all the existing wax and to start again with fresh wax, press **[DISCARD ALL]** or to discard some of the wax to top up with fresh wax, press **[DISCARD SOME]**.

The screen instructions will ask you to confirm whether the Wax Waste Tray is empty. Press **[CONFIRM LOADED]** to drain the wax from the Reaction Chamber to the Wax Waste Tray. Discard the used wax in accordance with local procedures and regulations.

When the Reaction Chamber is empty, the screen will highlight the empty wax bath and the second button will show **[START HEATING]**. Pour new wax pellets into the wax tray and press **[START HEATING]** *(see also section 3.10)*.

5.3.4 REACTION CHAMBER

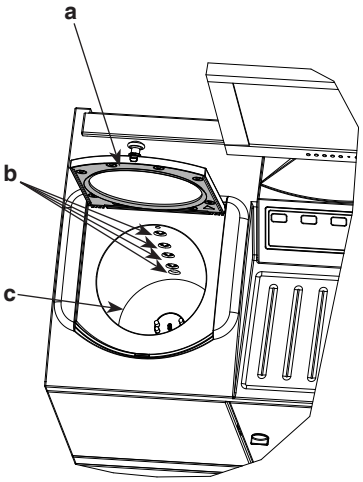
Open the lid and use the plastic spatula provided to remove any solidified wax from the lid, top and sides of the Reaction Chamber. If necessary, wipe the surfaces with absorbent paper and small amount of xylene.



THE LID SEAL AND TOP SURFACE OF THE REACTION CHAMBER MUST BE KEPT CLEAR OF WAX FOR THE INSTRUMENT TO OPERATE CORRECTLY

THE LID SEAL *(a)* CANNOT BE REMOVED FOR CLEANING

Use absorbent paper to wipe out any residual wax from the Reaction Chamber.



Note

1 Flush reagents will last longer if wax is removed from the Chamber and Baskets before a flush is carried out.

Use absorbent paper to gently wipe the 4 level sensors in the Reaction Chamber *(b)* - **DO NOT use abrasive cleaners.**

WARNING **Do not use metal tools to clean or scrape the reaction chamber**

WARNING **Do not use any chemicals other than those recommended in Appendix B**

WARNING **Do not scrape around the edge of the reaction chamber base *(c)*. If any debris falls into this gap, carefully use tweezers to remove it**

Close the Reaction Chamber Lid and perform a flush to rinse the Chamber.

Note

1 *Wipe the Reaction Chamber after every flush and check for any contamination. Evidence of wax may indicate that the flush reagents need to be changed.*

5.3.5 MONITOR

Make sure the monitor is disconnected from the instrument. Wipe over the monitor with a soft damp cloth.

WARNING **Do not use solvents to clean the monitor**

5.3.6 FILTERS

Change the filters every 3 months. To replace the filters, follow the instructions in section 3.5.

5.3.7 SPILLAGES

Any reagent spills within the instrument will be contained.

Small spills, such as drips from the reagent tubes when the reagents are changed, will evaporate and be extracted.

To clean large spills, remove all the reagent bottles in the Reagent Storage Area. To access the spillage containment area, lift and remove the metal shelf in the base of the Reagent Storage Area. Clean any liquid from this area and dispose of in accordance with any local procedures or regulations.

Replace the metal shelf and the reagent bottles.

5.3.8 CLEANING SCHEDULES

DAILY	**CHECK**	General Cleanliness	*Paragraphs 5.3.3 / 5.3.4*
		Reagent Bottle contents	*Paragraph 5.3.3*
		Wax Bath contents	*Paragraph 5.3.3*
WEEKLY	**CHECK**	Spillage Containment Area	*Paragraph 5.3.7*
QUARTERLY	**REPLACE**	Extraction Filters	*Paragraphs 5.3.6 / 3.5*
		Downdraft Filter	*Paragraphs 5.3.6 / 3.5*

5.3.9 REGULAR MAINTENANCE

The following table describes the items to be regularly checked. If there is a problem, contact your Thermo Shandon supplier for advice.

AREA	ITEM	CHECK
LID	**SEAL**	Check seal for visible damage whenever lid is opened.
	LATCH	Check that the lid latch operates correctly whenever lid is opened. The downdraft system should operate and the Reaction Chamber illustration on the screen should show the lid open.
REAGENT STORAGE AREA	**REAGENT PIPES**	When loading or unloading reagents, check that the flexible parts of the reagent pipes in the Reagent Storage Area are not damaged or collapsed.
	REACTION CHAMBER HEATER TRIP	Press the red Heater Trip next to the Reset button in the Reagent Storage Area . The Heater Reset button should operate and the Reaction Chamber Heater Fault icon will be displayed on the screen. Press the Heater Reset button fully in to reactivate the Reaction Chamber heaters *(see Section 3.8.1)*. The Reaction Chamber Heater Fault icon will disappear from the screen. Carry out this check every month.
	BATTERY ISOLATION SWITCH	Check the operation of the switch. When the **O** side is pressed (OFF), the battery fault icon should be displayed. When the **I** side of the switch is pressed (ON), the icon should disappear. Carry out this check every month.

TROUBLE SHOOTING

6.1 GENERAL

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

Table 1 shows remedial action to be taken if Excelsior fails to operate.

Tables 2 to 3 relate to processing problems and suggested solutions with respect to the preparation of tissues.

TABLE 1 INSTRUMENT FUNCTION

SYMPTOM	CAUSE	REMEDY
Excelsior does not respond when the mains power is switched on	1 The instrument is still carrying out inital tests 2 No power supply 3 The mains fuses have blown	1 Wait 30 seconds for the initial tests to finish 2 Connect the power lead Switch on the mains power and instrument main power switch *(see paragraph 3.7)* 3 Replace the mains fuse Replace the instrument fuses **(Note only a technically competent person should replace fuses)**
Excelsior is powered up, but the monitor is blank	1 The monitor is not connected correctly 2 The monitor is faulty	1 Connect the monitor data cable and power lead *(see paragraph 3.4)* 2 Connect another suitable monitor (contact your Thermo Shandon dealer)
Excelsior is powered up, but does not respond correctly	1 Excelsior may have started incorrectly	1 Switch off the Battery Isolation Switch, then switch off the main power switch at the rear of the instrument. Wait for 30 seconds. Switch the main power switch on. Wait for 30 seconds. Switch on the Battery Isolation Switch *(see paragraph 3.8)*

TABLE 2 PROCESSING PROBLEMS - SOFT, SPONGY TISSUE

SYMPTOMS	POSSIBLE CAUSE	REMEDY
- Difficult to section - Section breaks up on the water bath - Poor staining	Inadequate fixation	1 Increase time in fixative 2 Use microwave enhanced technique 3 Bisect if encapsulated specimen or produce a thinner block *(Note that improper fixation cannot be remedied)*
- Clearing impossible - Discoloured cloudy areas within specimen - Section breaks up on the water bath	Inadequate dehydration	1 Increase time in alcohol 2 Make sure concentration of alcohol is correct 3 Adjust solution rotation schedule 4 Rule out contamination from lipids 5 Bisect if encapsulated specimen or produce a thinner block 6 Reinfiltrate in wax. If inadequate, reverse process to absolute alcohol and reprocess
- Wax cannot infiltrate - Discoloured cloudy areas within specimen - Section breaks up on the water bath	Inadequate clearing	1 Make sure specimen is completely dehydrated 2 Adjust rotation schedule 3 Increase time in clearant 4 Use vacuum 5 Bisect if encapsulated specimen or produce a thinner block 6 Reinfiltrate in wax. If inadequate, reverse process to absolute alcohol and reprocess
- Can feel or smell clearing solution - No support when sectioned - Section breaks up on the water bath	Inadequate wax infiltration	1 Extend exposure time 2 Use vacuum 3 Bisect if encapsulated specimen or produce a thinner block 4 Reinfiltrate. Use vacuum to promote infiltration

TABLE 3 PROCESSING PROBLEMS - HARD, BRITTLE TISSUE

SYMPTOMS	POSSIBLE CAUSE	REMEDY
- Obvious drying of all or part of the specimen	Drying during transport	1 Use volume of 20:1 in appropriately sized container 2 Reconstitute specimen
- Brittle sections that fall out of block - Microchatter	Excessive dehydration	1 Decrease time and/or steps 2 Check graduated strengths of alcohol 3 Segregate small, delicate specimens 4 Do not use heat and/or vacuum 5 Soak for short time in chilled water, do not trim away hydrated area and section slowly
	Excessive clearing	1 Decrease time and/or steps 2 Evaluate xylene substitutes 3 Segregate small, delicate specimens 4 Do not use heat and/or vacuum 5 Soak for short time in chilled water, do not trim away hydrated area and section slowly
	Excessive heat	1 Reduce processing temperature during reagent steps 2 Decrease time and/or steps 3 Check temperature reading with thermometer 4 Segregate small, delicate specimens 5 Soak for short time in chilled water, do not trim away hydrated area and section slowly

SPECIFICATION AND ACCESSORIES

7.1 SPECIFICATION

7.1.1 Physical

Width	670 mm	(26½ ins)
Depth	520 mm	(20½ ins)
Height *(to monitor platform)*	1130 mm	(44½ ins)
Height *(to top of monitor)*	1600 mm	(63 ins)
Weight *(no reagents)*	112 kg	(246½ lbs)
Weight *(typical reagents)*	200 kg	(440 lbs)

7.1.2 Electrical

Power Supply Voltages:	100 - 240 V a.c. (~)
Frequency	50 / 60 Hz
Power	950 VA *(maximum)*: 200VA *(typical)*

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

Internal batteries	Yuasa NP12-12 12V, 12Ah *valve regulated sealed lead-acid type rechargeable battery*	AP14011

7.1.3 Fuses

Mains plug fuse *(where applicable)*	5A 250V	Thermo Shandon Part number
Mains input fuses (x 2)	T10A 250V	A78410028 *(Fuse spares kit)*

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

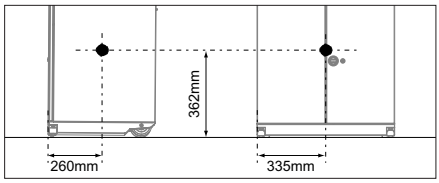
General	Indoor use only
Temperature (operation)	+5°C to +40°C
Temperature (transit / storage)	-25°C to +55°C (+70°C for short exposure)
Humidity	80% max. for temperatures < 31°C 50% max. for temperatures 31°C to 40°C (Non-condensing environment)
Altitude	up to 2000m (6,500 feet)
Pollution degree	2
Over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

7.1.6 Thermo Shandon part number

A78400001

7.1.7 Centre of Gravity Position

for a fully laden instrument *(see also page 5)*



7.2 ACCESSORIES

INSTRUMENT ACCESSORIES	QUANTITY	PART NUMBER
Baskets:		
Organiser Basket	6	A78410025
Random Basket	1	A78410021
Large Block Metal Divider *(for Random Basket)*	1	A78430198
Basket Lid	1	A78420056
Plastic Basket Carrying Container *(microwaveable)*	1	B1002517
Extraction Adaptor Kits:		
Downdraft Extraction Duct Adaptor Kit	1	A78410023
Main Air System Duct Adaptor Kit	1	A78410024
Filters:		
Carbon Filter	1	9990610
Potassium Permanganate Filter	1	9990612
Monitor:		
Monitor Power Lead	1	AP14589
Monitor and Data Lead	1	AP14340
Mains Leads:		
Europe	1	AP14202
UK	1	P12822
USA	1	P12032
Reagent Containers:		
5 litre Reagent Bottle	6	A78410026
Water Flush Bottle	1	A78420039
Wax Waste Drawer Kit, *comprising:*		A78410027
Wax Cover	*1*	
Wax Waste Drawer	*2*	
Wax Waste Drawer Lid	*1*	
Wax Waste Liners	20	AP14747
General:		
Castor Adjustment Rod	1	A78430262
Door Keys	1 set	AP14733
Fuse Kit, *comprising:*		A78410028
Mains Input Fuses - T10A, 250V	*4*	
Remote Alarm Fuses - F5A, 250V	*4*	
Remote Alarm Connectors	*2*	
Instrument Moving Handles	1	AP14590
Operator Guide	1	A78410100
Screwdriver	1	AP14727
Service Manual	1	A78410101
Service Record Book	1	A78410110
Spanner	1	A78420126
Spatula	1	P09046
Wax fill chute	1	A78430265

REAGENTS	QUANTITY	PART NUMBER
Formal-Fixx:		
Concentrate (5x) *(3.8 litre bottle (makes 19 litres)*	1	6764254
Concentrate (5x) *(1 litre bottle (makes 5 litres)*	2	9990244
Ready to use *(19 litres / 5 gal)*	1	6764240
Pre-filled cups	*(see catalogue for full details)*	
Wrench for 19 litre carboy	1	B1000722
Zinc Formal-Fixx:		
Concentrate (5x) *(3.8 litre bottle (makes 19 litres)*	1	6764255
Ready to use *(19 litres / 5 gal)*	1	6764250
Wrench for 19 litre carboy	1	B1000722
Glyo-Fixx:		
Ready to use *(3.8 litres)*	1	6764262
Ready to use *(19 litres / 5 gal)*	1	6764260
Concentrate (5x) *(3.8 litre bottle (makes 19 litres)*	1	6764265
Pre-filled cups	*(see catalogue for full details)*	
Wrench for 19 litre carboy	1	B1000722
Histosolve (xylene substitute):		
Ready to use *(4 litres)*	1	9990505
Ready to use *(4 litres)*	4	6764506
Ready to use *(10 litres)*	2	6764508
Ready to use *(19 litres / 5 gal)*	1	9990507
Ready to use *(209 litres /55 gal)*	1	9990509
Wrench for 19 litre carboy	1	B1000722
Paraffin wax:		
Histoplast *(10 kg bag)*	1	6774060
Histoplast *(2.5 kg box)*	1	6774006
Paraplast® *(1 kg bag)*	8	501006
Paraplast® Plus *(1 kg bag)*	8	502004
Paraplast® X-tra *(1 kg bag)*	8	503002
Precision Cut *(2.5 kg)*	4	B1002490
Peel-A-Way® *(4.5 kg box)*:		
Melting point 53 - 55°C (127 - 131°F)	1	190
Melting point 56 - 58°C (132 - 135°F)	1	19101
Melting point 60 - 62°C (140 - 144°F)	1	19201

A full range of reagents and cassettes is listed in the Thermo Shandon catalogue.

Formal-Fixx™, Glyo-Fixx™ and Histosolve™ are trade marks of Thermo Shandon;
Paraplast® is a registered trademark of Sherwood Medical;
Peel-A-Way® is a registered trademark of Polysciences

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 accessories and reagents are used that are not approved by Thermo Shandon, or if the instrument is not operated in accordance with the instructions in this Operator Guide.

Declaration of Conformity

Manufacturer's Name: Thermo Shandon

Manufacturer's Address: Chadwick Road, Astmoor, Runcorn,
Cheshire, WA7 1PR
ENGLAND

Product Description: Tissue Processor

Product Designation: **Excelsior**

Year of Marking (CE): 2002

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

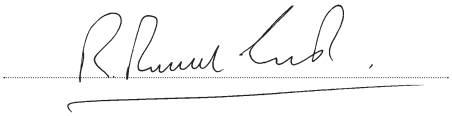
In Vitro Diagnostics Directive	98/79/EC
Low Voltage Directive	73/23/EEC *(as amended by 93/68/EEC)*

This product complies with the following International Standards:

EMC: EN61326
EN61000-3-2
EN61000-3-3

Safety: IEC 1010-2-010

Issued by: R. Russell-Smith
Director of Quality and Service
Thermo Shandon



INDEX

Symbols

A

B

C

D

E

F

G

H

I

L

M

N

O

P

Q

R

S

T

W

APPENDIX A
OPTION MENU

A.1 INTRODUCTION

The Option Menu allows you to set up different parameters to fit Excelsior into your way of working. Press **[** i **]** to access the context sensitive help for each option.

A.2 OPTIONS

To access the Option Menu, select **'7. Options'** from the Main Menu.

The following information gives a brief outline of each option.

1. Select Language — Allows the screen language to be changed.

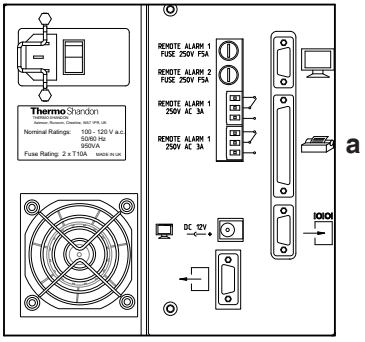
2. Customisation — Allows you to customise the screen display to your hospital and laboratory names.

3. Set Time and Date — This option sets the clock and calendar.

4. Rotation Management — Use this option to set up how you want the rotation of reagents to be managed. See section 4.4 for a full explanation.

5. Printout Options — Excelsior has a parallel printer port to print hard copies of programs and event logs. Select the printout options required.

Printers used should comply with IEC950 or IEC1010-1. Printer connections are Centronics parallel *(a)*



6. Disk Drive Options — Excelsior can save programs and instrument setup information on 3.5" floppy discs. New languages and features can also be loaded.

7. Audio / Remote Alarms — Different tunes can be selected to play for each event. There are two remote alarms that can be selected and operated for any combination of events.

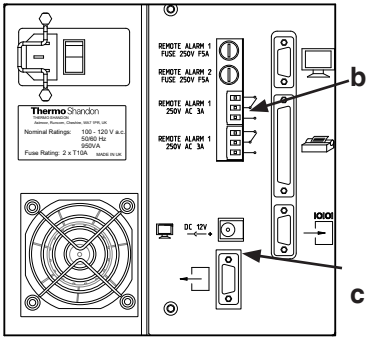
The Remote Alarm connectors *(b)* are rated for operation at 3A 240V a.c. The Remote Alarm facility is not a powered output.

The connection of an external circuit to the Remote Alarm socket should only be performed by a technically competent person. The external circuit should comply with the requirements of IEC1010-1 and or IEC950.

8. Set LIMS Interface

This allows Excelsior to send user defined mesages when any of the listed events occur.

LIMS output is serial RS232 *(c)*.



9. Set Access Codes

Allows Access Codes to be set for different users. The administrator can determine who can perform different funtions on the Excelsior. The access code groups can only be altered by the current administrator who enters the Admin access code.

The Administrator should first enter his or her access code on the number keys.

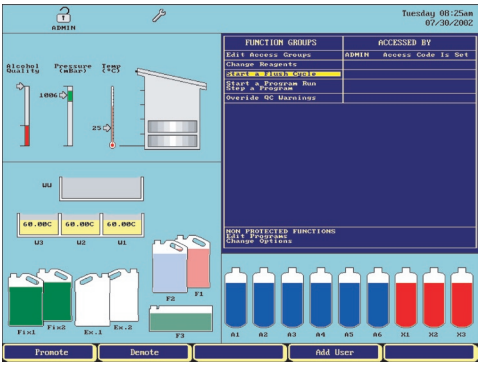
Groups can then be set up. There are a maximum of 6 user defineable groups. This does not include the Admin group or the non protected function group. Within these 6 groups the Administrator may **ADD USER**s, **PROMOTE** functions or users, **DEMOTE** functions or **USERS**, **DELETE USER**.

To add a user to a particular group, simply enter that group with the cursor and press **ADD USER** key.

After pressing the **ADD USER** key the Administrator is presented with the Qwerty screen for the new users name. The name can be upto 5 characters long. Pressing **EXIT** after entering the name will return to the access code screen and the new user will be visible in the requested

group. As stated before this user can be promoted, demoted, changed name, change access code or deleted.

To change the access code highlight the desired user and press **CHANGE ACCESS CODE KEY**. Follow the onscreen instructions (same as admin change access code) and press **ENTER**.



To delete the user, **DEMOTE** the user to the lowest user defined group and press the **DELETE USER** key.

There can be as many users in any group as the screen will display. A user can perform the functions of his / her group and the groups below. All functions listed in the non protected area can be access by any user who wishes to use the machine.

The Administrator cannot be demoted or promoted.

10. Process Start Selections

Use this to select parameters such as number of days in the working week, usual program to be used during the day, usual program to be used overnight and its end time. See Section 3.13.

APPENDIX B
TRANSPORTATION INSTRUCTIONS

B.1 INTRODUCTION

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

B.2 TO UNLOAD REAGENTS

The Unload screen is only available when reagents have already been loaded into Excelsior. From the Main Menu screen, select option 1 - 'Installation and Commissioning' and then select option 7 - 'Unload Reagents'.

Follow the instructions on the Unload screen and fit a wax discard box into the Wax Waste Tray. Press **[UNLOAD]** to pump the wax from the selected wax bath into the Reaction Chamber and then discard it into the Wax Waste Tray. Repeat this process for the other wax baths.

When the last wax has been unloaded, the screen instructions will prompt you to press **[START]** for a flush run. This will remove any remaining wax from the Reaction Chamber.

The unload procedure will continue by highlighting the current clearant bottle and the Ex 2 position bottle. Follow the screen instructions to confirm that the bottle in Ex 2 position is empty and press **[UNLOAD]** to continue to remove the reagents.

Remove the Ex 2 bottle and dispose of in accordance with local procedures and regulations. Place another empty bottle in the Ex 2 position and follow the screen instructions to remove the remaining clearant reagents.

When the last clearant reagent has been unloaded, the screen instructions will prompt you to press **[START]** for another flush run. This will remove any remaining clearant reagent from the Reaction Chamber.

Remove the F1 and F2 bottles from the Reagent Storage Area and confirm that each has been removed by pressing **[UNLOAD]**. Dispose of in accordance with local procedures and regulations.

Follow the screen instructions to start another flush using the water in F3.

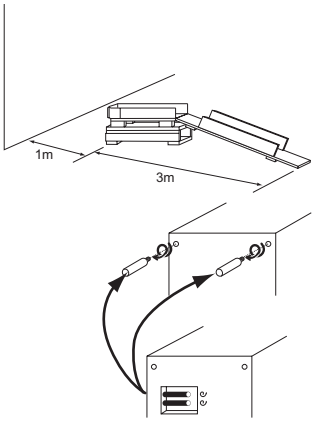
Remove the Fix1 and Fix2 bottles from the Reagent Storage Area and confirm that each has been removed by pressing **[UNLOAD]**. Dispose of in accordance with local procedures and regulations.

The unload procedure will continue by highlighting the current dehydrant bottle and the Ex 1 position bottle. Follow the screen instructions to confirm that the bottle in Ex 1 position is empty and press **[UNLOAD]** to continue to remove the reagents.

Remove the Ex 1 bottle and dispose of in accordance with local procedures and regulations. Place another empty bottle in the Ex 1 position and follow the screen instructions to remove the remaining clearant reagents.

When the last dehydrant reagent has been unloaded, the 'Installation and Commissioning' screen is displayed.

B.3 TO PACKAGE THE INSTRUMENT

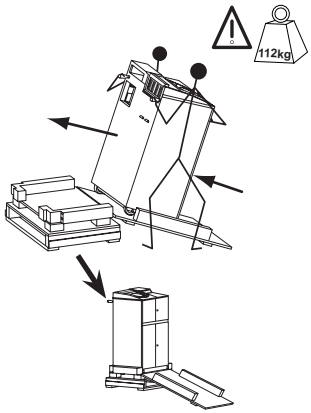


1 Place the base of the packaging in a clear area. 3m is required in front of the packaging for the ramp and approximately 1m is required behind the packaging.

Lower the ramp of the packaging.

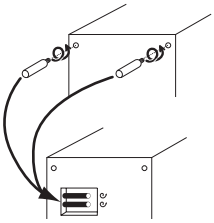
2 Fit the handles to the back of the instrument.

EXCELSIOR WEIGHS APPROXIMATELY 112kg (246lbs) WHEN EMPTY. ALWAYS GET HELP TO SAFELY MOVE THE INSTRUMENT WITHOUT RISK OF INJURY



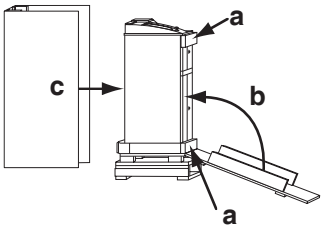
3 Carefully wheel the Excelsior up the ramp until it sits securely in the base.

4 Remove the handles and secure them at the rear of the instrument.



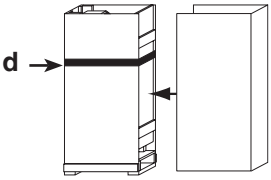
5 Make sure that the foam pieces *(a)* are in place.

Raise the ramp *(b)* and fit the Inner Cover *(c)*.



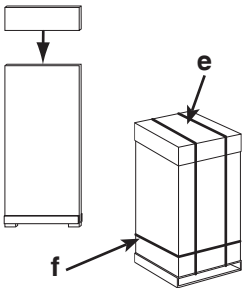
6 Secure the ramp to the Inner Cover with tape *(d)*.

Fit the Outer Cover.



7 Fit the lid over the Outer Cover.

8 Secure the packaging by two bands through the palette and over the lid *(e)*, and one band around the bottom of the packaging *(f)*.



Thermo Shandon

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 Shandon 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 Shandon or distributor employee.

If an instrument or part is to be returned to THERMO SHANDON, 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 Shandon 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 Shandon, 93-96 Chadwick Road, Astmoor, Runcorn, Cheshire, WA7 1PR, United Kingdom
Tel: +44 (0) 1928 566611; Fax: +44 (0) 1928 565845; www.thermoshandon.com

APPENDIX C
APPROVED REAGENT LIST

C.1 INTRODUCTION

This Section lists all the reagents that Thermo Shandon specify can be used with the Excelsior tissue processor.

If you want to use a reagent not included in this list, contact your Thermo Shandon agent for advice.

C.2 REAGENT LIST

C.2.1 Fixatives:

Formalin
Glyo-Fixx™

C.2.2 Dehydrants:

Alcohol
Ethanol
Methanol (up to 10% in ethanol)
IMS (Industrial Methalated Spirits)
Isopropyl alcohol

C.2.3 Clearing Agents:

Xylene
Toluene
Thermo Shandon Xylene substitute (HistoSolve™)
Chloroform

C.2.4 Embedding Agents:

Paraffin Wax

C.2.5 Flush Reagents:

Xylene
Toluene
Thermo Shandon Xylene substitute (HistoSolve™)
Alcohols
Water

C.3 CLEANING AGENTS

Dilute detergent
Water

APPENDIX D
EXAMPLE ROUTINES

D.1 INTRODUCTION

This section provides examples of useful routines that are ready to use on the Thermo Shandon Excelsior.

D.2 ROUTINE OVERNIGHT PROGRAM (for pre-fixed tissues)

	REAGENT	HOLD / USE	TIME	DRAIN	VACUUM	STIR
1	Formalin	Amb	00:30	30	Off	5
2	Formalin	Amb	00:30	60	Off	5
3	Alcohol	30	01:00	30	On	5
4	Alcohol	30	01:00	30	On	5
5	Alcohol	30	01:00	30	On	5
6	Alcohol	30	01:00	30	On	5
7	Alcohol	30	01:00	30	On	5
8	Alcohol	30	01:00	60	On	5
9	Xylene	30	01:00	30	On	5
10	Xylene	30	01:00	30	On	5
11	Xylene	30	01:00	60	On	5
12	Wax	60	01:20	120	On	5
13	Wax	60	01:20	120	On	5
14	Wax	60	01:20	120	On	5

D.3 RAPID BIOPSY PROGRAM

	REAGENT	HOLD / USE	TIME	DRAIN	VACUUM	STIR
1	Formalin	Amb	00:10	30	Off	5
2	Formalin	Amb	00:10	30	Off	5
3	Alcohol	30/45	00:10	30	On	5
4	Alcohol	30/45	00:10	30	On	5
5	Alcohol	30/45	00:10	30	On	5
6	Alcohol	30/45	00:10	30	On	5
7	Alcohol	30/45	00:10	30	On	5
8	Alcohol	30/45	00:10	60	On	5
9	Xylene	30/45	00:10	30	On	5
10	Xylene	30/45	00:10	30	On	5
11	Xylene	30/45	00:10	60	On	5
12	Wax	60	00:20	120	On	5
13	Wax	60	00:10	120	On	5
14	Wax	60	00:10	120	On	5

D.4 STANDARD FLUSH PROGRAM

	REAGENT	HOLD / USE	TIME	DRAIN	VACUUM	STIR
1	Flush 1	Amb/60	00:20	30	Off	5
2	Flush 2	Amb/45	00:03	30	Off	5
3	Flush 3	Amb	00:02	30	Off	5

D.5 EXTENDED FLUSH PROGRAM

	REAGENT	HOLD / USE	TIME	DRAIN	VACUUM	STIR
1	Flush 1	Amb/60	00:30	30	Off	5
2	Flush 2	Amb/45	00:05	30	Off	5
3	Flush 3	Amb	00:02	30	Off	5

D.6 RINSE PROGRAM

	REAGENT	HOLD / USE	TIME	DRAIN	VACUUM	STIR
1	Flush 3	Amb	00:02	30	Off	5