



Operating, Maintenance and Spare Parts Manual for the

## Bright Clinicut 60 Cryostat

4000-001

Serial Number:



American MasterTech  
scientific laboratory supplies



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## SAFETY INFORMATION

### CONSUMER PROTECTION

The Consumer Protection Act 1987 Part 1, refers to Product Liability. This legislation was issued as a direct result of an EC Directive to all member states and has been in force with effect from 01 March 1988.

Bright Instrument Company Limited, ever mindful of the need to ensure that their products are not subject to misuse and/or incorrect handling, have made it their aim to communicate any possible dangers to their customers.

Whilst Bright Instrument Company Limited markets products manufactured to the highest safety standards, it is in the interest of the purchaser that he is aware of the resultant dangers of misuse and/or incorrect handling of these products.

Your attention is therefore drawn to the following precautions:

#### 1. ELECTRICAL

- a) **Warnings** – A warning notice is fixed to the instrument stating that it should be disconnected from the power supply before removing the panels. This warning should be strictly observed. This cryostat is fitted with an in line mains filter which may affect portable appliance test results.
- b) **Fuses** – Fuse rating are clearly indicated on all fuse panels adjacent to the fuse holder. If and when replacement is necessary, the correct fuse rating must be adhered to.
- c) **Earthing (Grounding)** - A protective earth terminal is fitted, and must be used in all two wire installations.

#### 2. MECHANICAL

Microtome knives can be hazardous in the laboratory. Personnel should be made aware of the dangers and observe the following warnings:

- a) **DO NOT** leave the microtome unattended with an exposed knife in position. Remove the knife, or cover it with the guards provided.
- b) **DO NOT** leave knives lying around. Place knives that are not in use in their boxes.
- c) **DO NOT** carry knives unless secure in the box provided.
- d) **DO NOT** clean the knife along its length. Wipe from the back edge of the cutting edge.
- e) **REMEMBER** that even used knives are dangerous – they are still sharp and may have been used to cut potentially infectious specimens.
- f) **DISPOSE** of used knives with the same care as other sharp objects. On NO account should used knives be placed in waste bins.

#### 3. OPERATION

When placing object holders in the microtome, when orientating, manipulating or in any way placing fingers in a position above the knife edge – ensure that the hand wheel is locked and knife guards are in position.

Parts of this instrument may attain temperatures as low as minus 55°C. It is important to avoid allowing bare skin to touch such cold surfaces – when in doubt, wear gloves. Avoid touching the knife – it is cold as well as sharp ! **ALWAYS** use knife guards.

#### **4. ACCESSORIES**

Fluids supplied as accessories with Bright instruments, such as Cryospray 134, Cryo-M-Bed and microtome oil, are strictly for laboratory use only. They should not be taken by mouth and precautions afforded to other laboratory chemicals should be adhered to. Please refer to the material safety data information, towards the back of this instruction manual for further details.

Care must be taken when using Cryospray 134. The risk of creating an aerosol of potentially infectious tissue particles must be borne in mind.

#### **5. PRODUCT SAFETY SUGGESTIONS**

All Bright Instrument Company Limited personnel are encouraged to make suggestions regarding product safety. We also welcome such suggestions from our Customers. They may be submitted by completing the appropriate (Safety) section of the Quality Survey Record Form supplied with all Bright instruments, or alternatively by letter, telephone fax or email [sales@brightinstruments.com,] All communications should be direct to our Warranty Assurance Department and will be acknowledged.

#### **6. DECONTAMINATION CERTIFICATES IMPORTANT**

If the instrument or any part of it is to be returned to Bright Instrument Company Limited, 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 be decontaminated.
- 2) A code of practice for decontamination has been prepared by the Health Services Advisory Committee and endorsed by the Health and Safety Commission, see section 4.8 For the avoidance of doubt, we require that all instruments or parts returned to us should be accompanied by a completed decontamination certificate. A copy of this can be found towards the back of this instruction manual and we suggest you use a photocopy of this. Alternatively we would be pleased to either post or fax you another copy should you require.
- 3) Decontamination certification should be faxed to Bright Instrument Company Limited prior to the unit being received, or can be attached externally to the carton. Should no decontamination certificate be received, or the instrument or any part of it be received in a condition that Bright Instrument Company Limited consider to be a potential biological hazard, the instrument or part will be returned, unrepaired, at the expense of the Customer.
- 4) Customs declarations must indicate that the package contains 'British Returned Goods'. Failure to do so will involve customs duty payable by us, which will be invoiced to the sender.

## **6. WARRANTY**

- i) The Seller's manufactures are carefully inspected and submitted to its standard tests.
- ii) The Seller warrants all its manufactures to be free from defects in workmanship and materials under normal conditions of use and service provided always.
- a) that if any of the goods so manufactured is alleged to be defective in workmanship and materials and is returned carriage paid, and protected against damage in transit, to the Seller's works, Huntingdon, within 12 months from the date of despatch and if after examination by the Seller the goods or part of them are found to be so defective then the Seller will repair or replace them free of charge and will return them to the Buyer, carriage paid.
- b) where any part of the goods manufactured by the Seller is repaired or replaced under the terms of the foregoing warranty, such warranty shall thereafter be limited to a period of six months from the date when the goods shall have been redelivered to the Buyer.
- c) this warranty does not apply to any defects caused by wear and tear, incorrect installation, abnormal conditions of working, accident, mis-use or neglect.
- d) that save as in this clause herein before expressed, the Seller shall not be under any liability for negligence or otherwise in respect of defects in goods delivered or for nay injury, damage or loss resulting from such defects and the Seller's liability under this clause shall be in lieu of any warranty or condition implied by law as to the quality or fitness for any particular purpose of such goods.
- e) this warranty is expressly in lieu of all other warranties, guarantees or liabilities expressed or implied by any of the Seller's Representatives or Agents.

## **WARNING**

Before proceeding to Operating Instructions, ensure you are familiar with the contents of the pages marked 'Safety Information' This instrument must only be used by competent persons.



## **1. INTRODUCTION**

### **1.1 Unpacking and Installation**

To prevent damage in transit, the hand wheel and microtome have been removed and packed in separate containers together with the accessories.

#### **1.1.1 Unpacking**

All packing must be carefully removed and parts checked against the enclosed packing list. If any damage or discrepancy is noted, please inform our agent/distributor or Bright Instrument Company Limited immediately.

#### **1.1.2 Fitting Hand Wheel**

Push the hand wheel over the shaft on the right side of the cabinet. Ensure pin on shaft engages slot in centre of hand wheel, press firmly home then fit centre screw.

#### **1.1.3 Installation Of Microtome**

Firstly remove the shipping stay clamped in the knife holder. Check the hand wheel is in the down position (black knob at the bottom) and that the specimen arm of the microtome is in the lowest position.

Grasp the right rear corner of the microtome with your right hand and place your left hand under the left knife holder.

Carefully lift the microtome and place it in position in the cabinet, ensuring that the microtome coupling locates correctly with the cabinet drive coupling. The front stud in the chamber base locates in the hole in the front of the microtome base. Check that the microtome is over the two rear studs.

Push the microtome firmly down into position. Open the knife guards and check the hand wheel revolves freely.

#### **1.1.4 Freezer Assembly**

Fit the plastic cover over the freezer plate.

Fit the heat dissipater plunger into the end of the bracket assembly.

#### **1.1.5 Debris Tray**

Carefully fit the two debris trays in their respective positions in front of and behind the knife holder. To fit the rear tray, open the knife guards and raise the cutting arm to the top. Place the debris chute between them so that section debris will fall into the trays.

#### **1.1.6 Positioning**

Install the cryostat away from direct, hot sunlight. Ensure there is a gap of at least 100mm on each side of the cabinet to allow for ventilation.

## 1.2 ELECTRICAL CONNECTIONS

### 1.2.1 Settling

During transit the oil in the compressor will have been subject to movement, so it is important to let the cryostat settle before switching on. We recommend the cryostat is left standing for at least eight hours, and preferably overnight, before switching on.

Moving the instrument around on its castors, eg: from one laboratory to another, will not affect the compressor oil.

### 1.2.2 Electrical Requirements

The supply cord of the cryostat should be connected to any ordinary electrical outlet (minimum 13 amps for 220/240V, or 20 amps for 110/115V), a 13 amp or 20 amp fuse should be incorporated in the line. Check the voltage stamped on the nameplate located on the back of the cryostat, with your supply.

The connections are:

Brown	- Positive (live)
Blue	- Negative (neutral)
Yellow/Green	- Earth (ground)

### 1.2.3 Switching On

After settling, switch on the mains (see section 2.2.2). Initially the LED displays will flash for a few seconds. Once the displays are constant, the required chamber temperature can be set (see section 2.1.2) Now switch on the refrigeration.

### 1.2.4 Electrical Safety

Where earth cables may have to be removed from panels for servicing or repair purposes, care should be taken to replace them when replacing the panel.

Where earth connections are taken through connectors, then the connect must be rated to take the maximum fault current. The machine should be disconnect before such connectors are separated for servicing purposes.

### 1.2.5 Compressor Operation

This cryostat has a continuously running compressor so that the specimen freezer is under constant refrigeration. Once the selected chamber temperature is reached, a valve operates to control refrigerant to the quick freezer.

## 2. OPERATING INSTRUCTIONS

On receipt of your new Bright cryostat, please refer to section 1.1 (Unpacking and Installation).

As part of its policy of continual improvement, Bright Instrument Company Limited, reserves the right to incorporate changes, or make additions without prior notice. There may, therefore, be minor details differences between the information in this manual and your cryostat. These differences will not affect the safety and use of the cryostat.

### 2.1 FRONT CONTROL PANEL

#### 2.1.1 Quick Freezer Panel

Quick freezer temperature is displayed constantly, and is usually  $-46^{\circ}$  to  $-55^{\circ}\text{C}$

#### 2.1.2 Chamber Temperature

To set chamber temperature, press and release Set button, then press Up or Down buttons until desired temperature is set. After 5 seconds the actual chamber temperature will show. To review Set temperature at any time press and release Set button.

**WARNING: DO NOT** hold the Set button down for more than six seconds as the control will go into a diagnostic/calibration mode. If the diagnostic/calibration mode is selected in error take the following steps:

- a. If Up or Down have not been pressed (ie: no new parameters have been entered), simply leave for 20 seconds. Display will revert to normal.
- b. If new parameters have been selected contact bright Instrument Company Limited or your local representative for advice.

## 2.2 SIDE CONTROL PANEL

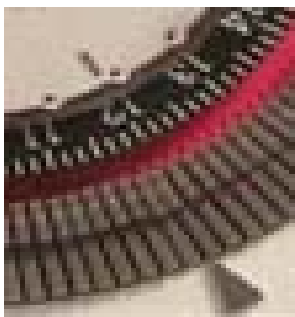
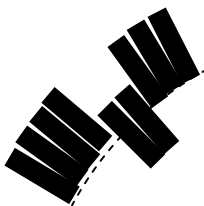


Fig.1

1 Segment Represents 10 Minutes.  
Our Factory setting is 20 minutes – 2 segments pushed forward at midnight (24h00).  
See Detail A



To set the clock, put your finger on the clear plastic marked “X” and turn clockwise or anti-clockwise.  
Note that this is a 24 hour clock, so **ensure that the correct time demarcated on the inner black strip coincides with the arrow “B”**  
The white dotted line in Fig 2 shows that the time is 10 minutes before midday (12h00) – **not midnight** at 24h00.



Enlarged to show 2 fingers pushed forward representing 20 minutes

### 2.2.1 Defrost Clock

This clock sets the time required for routine defrosting. During the defrost cycle the clock switches off the refrigeration unit and activates a low power heater (if switched on) which clears frost from the cooling fins. The defrost clock should be set so that it initiates the defrost at night, and the defrost duration is sufficient to clear the cooling fins with out the rest of the chamber rising above 0°C.

Set the 12 hour analogue clock to the current time by turning the clear plastic disc with your finger. Note: because the defrost needs to run on a 24 hour cycle, make sure that the small black arrow is aligned with the correct number of the outer ring eg: if the time is 4.00pm, then the corresponding number is 16.

The defrost time is set in the factory to start at midnight for 20 minutes, but may be altered by moving the pins which are around the edge of the clock face. If the time already set provides inadequate defrosting, it is recommended that a second cycle is programmed to operate several hours later (eg: 12 midnight and 6am).

In conditions of high humidity some experimentation may be required to obtain optimal defrosting (see section 3.5).

There is an override switch on the defrost clock: turning the small black button switches the defrost cycle on or off.

### 2.2.2 Mains Switch

The mains switch provides power to the entire cryostat and is normally left on.

### 2.2.3 Refrigeration Switch

This can be used to switch off the refrigeration while leaving ancillary items (light, clock, displays) operating. Use this switch when a total defrost is required.

### 2.2.4 Fuses

There are separate fuses for the following functions:

Main	All circuits
Refrig	Refrigeration system
Defrost	Defrost clock, defrost heater
Light	Chamber fluorescent light
LV supply	Low voltage supply to electronics

If a fuse blows, replace it with a new one of exactly the same rating. In the event of repeated fuse blowing, consult a qualified electrical engineer.

On no account must fuses be replaced with anything other than a correctly rated substitute.

## 2.3 MICROTOME CONTROLS

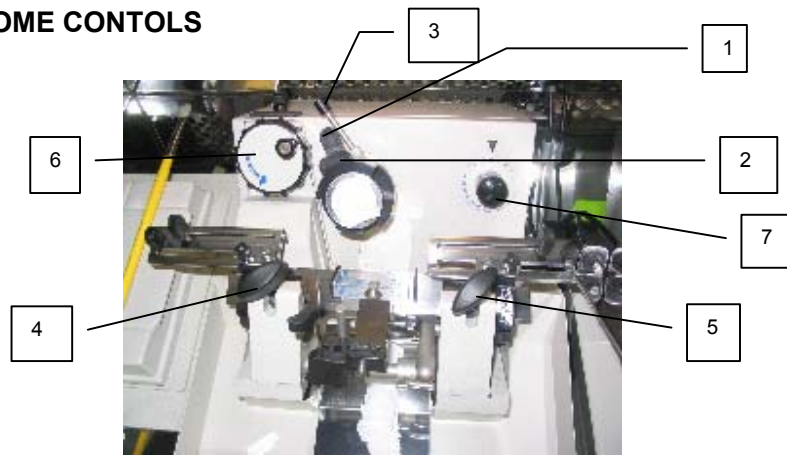


Fig.2

### 2.3.1 Specimen Holder

**IMPORTANT:** Ensure knife guards are in a central position if a knife is installed.

To install a specimen disc, pull the release lever (1) forward with your finger, while applying counter pressure with your thumb on the fixed lever (2). Place the disc in position and release the lever.

To orientate the specimen holder, move lever (3) to the right to release clamp, then move the specimen holder to the desired position. Re-lock the lever.

### 2.3.2 Knife Holder

To install a knife or disposable blade holder, loosen the clamp screws (4 and 5), slide the knife guards to the centre, and slide knife through from the left.

Before re-tightening clamp screws, set knife tilt angle (against the degree scale graduated 0–25°). The correct setting of the knife tilt angle is essential for obtaining good results. With a Bright 50230 knife, set an angle of 15°.

### 2.3.3 Disposable Blades

The *Clinicut* cryostat can be fitted with the bright 'Magnacut' disposable blade system, or with a suitable holder for 'Feather'<sup>™</sup> blades

If the Magnacut system is used, follow the instructions supplied with the system. For 'Feather' blade holders, some experimentation may be required for optimum results. Generally, a smaller knife tilt angle is required, with 5° being a good starting point.

**IMPORTANT:** Knife guards must be used whenever a knife or disposable blades are in position. Take care to guard the central portion of the knife whenever sections are not being cut.

### 2.3.4 Rewind Control

The rewind control (6) is used to reset the microtome advance system and for trimming specimens.

**NB:** Lock the hand wheel in the three o'clock position – this ensures the advance mechanism is disengaged.

### 2.3.5 Section Thickness Control

Select section thickness required by turning the knob (7) to the appropriate position. There are increments of 2µm; it is not possible to set an intermediate thickness.

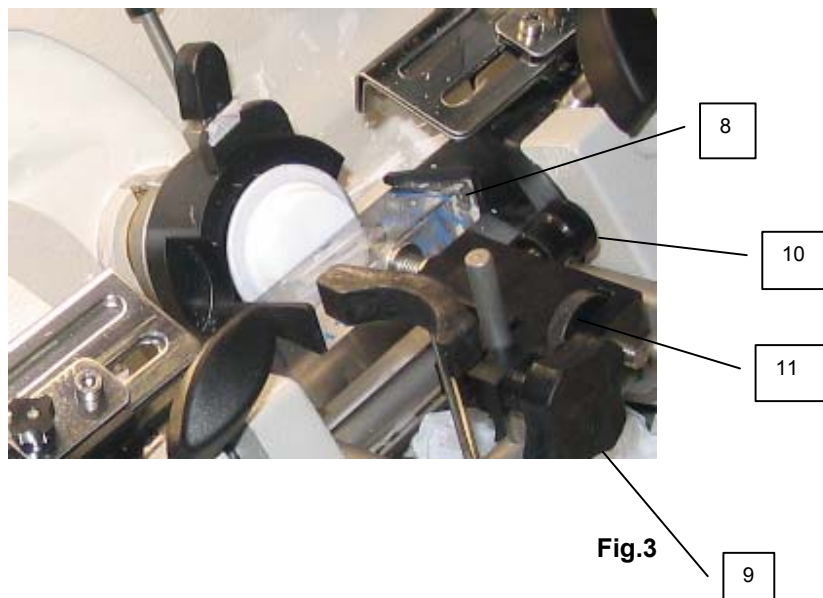
## 2.4 ANTI-ROLL ASSEMBLY

The anti-roll assembly is designed to be fully adjustable so that flat sections can be cut from a variety of specimens using different types of knife. It is vital that a systematic method is used when setting up.

The angle of the anti-roll plate (8) is set by loosening knob (9) and sliding the assembly up and down the pillar. At the same time, the plate can be adjusted so that it is exactly parallel with the knife edge. For fine adjustment of the height of the anti-roll plate, loosen knob (10) and turn the knurled wheel (11).

The following sequence is recommended to set the anti-roll plate assembly quickly and accurately:

1. With the plate away from the knife, cut sections of specimen or embedding medium. When good, regular sections can be seen, proceed to 2.
2. Lift the anti-roll plate clear of the knife. Loosen knob (10) and use wheel (11) to bring the plate (8) to its lowest position. Re-clamp knob (10) finger tight.
3. Loosen knob (9) and slide the assembly up or down the pillar so that the plate rests parallel to and approximately 1-2mm below the knife edge. Re-clamp finger tight.
4. Alternately cut sections and turn wheel (11) so that the plate rises up the knife slowly. At some point the sections will go under the plate.



5. Make fine adjustments as required.

Note that the various clamp screws need only to be finger tight. This allows small movements to be made without the need to loosen them. For further information on the anti-roll plate assembly and its adjustment, refer to section 4.9

## 2.5 SPECIMEN QUICK FREEZER



Fig.4

### 2.5.1 Quick Freezer

This consists of a refrigerated metal block, which acts as a heat sink, a detachable freezer plate, a plastic surround and a plastic cover.

**Note:** Please do not over-tighten the retaining screws.

To freeze a specimen:

1. Have embedding medium, specimen holder, lift-out moulds (if used) and the trimmed specimen to hand.
2. Put a small quantity of embedding medium either directly into the freezer plate well, or into a lift-out mould. Quickly add the tissue, then more embedding medium.
3. Press a specimen disc on top.
4. After allowing to freeze, remove from mould.

Alternatively, the specimen can be placed in embedding medium on the specimen disc. Then position the disc face up on the flat part of the freezer plate. Take care to ensure that the specimen is fully frozen, and firmly bound to the specimen disc.

### 2.5.2 Heat Dissipater

The spring loaded dissipater (12) can be used to speed up freezing by conducting heat away from the uppermost surface of the specimen disc or specimen.

1. Chill the dissipater for a minute on the flat part of the freezer plate.
2. At the appropriate time, swing the dissipater across to the specimen and press on top.

The height of the dissipater above the plate may be adjusted after loosening knob (13).

### 2.5.3 Frost Prevention

The plastic cover should be in position when the freezer is not being used. When required, lift the cover and stand it on edge to the left of the freezer plate.

The top freezer plate can be removed for defrosting and cleaning.



## 2.6 MOTORISED ADVANCE/REWIND (where fitted)

The motor used on this machine is a Pulse DC Stepper Motor. As with all stepped motors, there is an inherent noise which you may find distracting at first. This minimal noise is caused by the 'pulsing' of the motor which is particularly noticeable when the motor is no longer 'driving'. It in no way affects the operation of the microtome, or has any other adverse effects. All tests and set up procedures are carried out at a recommended operating temperature, not ambient. It is not recommended to operate at ambient temperatures.

Only operate the motor when the hand wheel is in the three o'clock position, (see 2.3.4) Operating outside of these parameters can cause damage to the machine.

### 2.6.1 Fitting and Removal of /MA/r

1. When fitting the microtome, the electric's socket and plug must be connect and screwed together and located on brackets at the back of the tank.
2. Before removing the microtome from the cryostat, the electric's socket and plug must be unscrewed and disconnected.

### 2.6.2 Motorised Specimen Rewind

1. To rewind specimen, push switch to 'rewind'
2. For small rewind increments, press and quickly release 'rewind' switch

### 2.6.3 Motorised Specimen Advance

1. Set specimen thickness control to 0µm
2. Rewind specimen as required.
3. With microtome knife set at the correct angle with the specimen in position, push switch to 'advance' until a minimum clearance has been achieved.
4. Begin trimming by pressing and releasing 'advance' switch whilst rotating hand wheel. The longer the switch is pressed, the thicker the sections.

## 2.7 UV Lamp (where fitted)

Below is the recommended use of the UV Lamp. The information given is to the best of the Company's knowledge and belief, accurate and reliable. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. Much will depend upon the specimens and substances being worked on and other decontamination procedures used by the customer.

**CAUTION: UV-C radiation is dangerous and excess exposure can cause skin and eye damage.**

The germicidal lamp has a peak short wave radiation of 254nm, and combined with some reflection from the stainless steel chamber, will irradiate bacteria and viruses within the chamber, however, any bacteria trapped in hidden pockets will not be irradiated and will remain active. To prevent airborne contamination in the chamber due to convection air currents caused by the refrigeration system, it is recommended that the UV system is switched on at all times the cryostat is not being used.

The life of the 6W TUB Lamps is 5000 hours, after which it should be replaced.

## **2.8 OTHER FEATURES**

### **2.8.1 Debris Trays**

Two debris trays are provided – one fits behind the knife holder and the other in front. In addition a debris chute guides debris from the knife into the trays.

The debris trays can easily be lifted out for emptying and cleaning, but first brush most of the debris into the deeper sections of the trays. Do not expose the tray us to temperatures in excess of 65°C.

### **2.8.2 Chamber Light**

A fluorescent lamp is fitted which switches on automatically when the window is slightly open.

### **2.8.3 De-mister**

A fan gently blows air across the outer surface of the window to keep it clear of mist and condensation. Like the chamber light, it is activated by moving the window.

### **2.8.4 Window**

The window slides freely, and should be pushed back fully to engage the magnetic catch. As the window is opened the light comes on and the de-mister switches off; close the window and the opposite happens.

### **2.8.5 Hand Wheel**

The operating hand wheel on the right side of the cabinet can be locked with the thumb lever. There are eleven knocking positions including top and bottom. The hand wheel should always be turned clockwise.

### **2.8.6 Drain Tube and Plug**

An extendable drain tube is located on the right side panel. This is used during defrost and cleaning procedures. A small plug is supplied which fits into the hole in the bottom right-hand corner of the chamber. This plug has a groove to allow water to drain away, and need only be removed during a total defrost.

## 2.9 CUTTING AND COLLECTING SECTIONS

### 2.9.1 Trimming

- Fit a sharp knife in position, ensuring knife guards are in central position.
- Check hand wheel is locked with specimen holder in top position.
- Fit the specimen into the microtome. It may be necessary to rewind the specimen holder to gain access.
- Move knife guards to the side.
- Bring specimen close towards the knife, moving the specimen up and down to check clearance.
- Either set the section thickness control for thick sections and trim by turning hand wheel or rotate/rock hand wheel, while moving the specimen forward with the rewind control no more than a quarter turn each time.

Take care while trimming, particularly with small specimens or hard/tough tissues. If in doubt, trim using automatic advance at, say, 20µm.

### 2.9.2 Section Cutting

- After trimming, set the section thickness control to the desired position.
- It may be necessary to cut a few sections off first to clear trimming marks.
- Once sections are seen to be cut, place anti-roll plate against the knife and proceed to cut sections, if adjustments to anti-roll plate are required, see section 2.4
- To collect sections, have a clean microscope slide ready at ambient temperature. Bring the slide towards the knife, swing the anti-roll plate out of the way, and move the slide very close to the section(s). The section(s) should jump across the gap and stick to the slide.

**NB:** Keep the knife clear of debris and frost by brushing upwards with the knife cleaning brush. **Never** brush along the knife, always brush upwards.

- Beware of debris build-up on the back of knife.
- Cut with a slow, steady movement

For more advice on cutting, see section 4.

### 3. GENERAL MAINTENANCE

#### 3.1 DAILY CARE

Routine daily care consists of removing sectioning debris from the working area, brushing debris and frost from the knife and cleaning the freezer plate as appropriate.

#### 3.2 AUTOMATIC DEFROST CYCLE

Refer to section 2.2.1 The function of the automatic defrost cycle is to clear the cooling fins of frost but without allowing the chamber or microtome to rise above 0°C. This ensures efficient refrigeration.

#### 3.3 TOTAL DEFROSTING

It will be necessary to periodically defrost the entire cryostat to carry out cleaning and/or other procedures. The frequency of this total defrosting will depend on how heavily the cryostat is used; it may be as often as daily but is commonly once a month.

To initiate a total defrost:

1. Pull the drain tube clear from the side of the cryostat and place over a suitable container.
2. Turn off the compressor using the 'REFRIG' switch on the side panel (section 2.2.3)

**IMPORTANT:** Refer to decontamination procedures in section 3.7

**NB: Do not** simply set the chamber temperature at ambient to defrost as the specimen quick freezer will continue to run, resulting in heavy frosting.

3. First remove the microtome knife and clean it (see section 3.4)
4. Remove the debris trays.
5. Remove the microtome from the chamber, the reverse of the installation procedure (section 1.1.3). Remove drain plug from base of chamber.
6. Place the microtome on the laboratory bench. Remove the cover after unscrewing the knobs on the top and side. Allow to warm up, and dry off thoroughly once defrosting is complete.
7. The chamber interior can also be cleaned once it is thawed, as can the freezer plate. Replace the drain plug.

**NB:** Freezer plate must be completely dry before re-installation.

8. Once the chamber and microtome have been cleaned and dried off, replace microtome cover, apply a little low temperature grease to the threads of the knife clamp screws and re-install in the chamber (see section 1.1.3)

Ensure microtome is completely dry inside and out after defrosting. Failure to do so could result in the microtome becoming frozen up and inoperative.

9. Push the drain tube back into position.

Note that the microtome requires no further routine maintenance.

If the microtome freezes up after cooling down to temperature, do not force the hand wheel. Repeat steps 3 – 7, taking care to dry the microtome. An ordinary hairdryer is useful for this task.

### **3.4 MICROTOME KNIVES AND BLADES**

**Great care must be exercised when handling knives and/or disposable blades.**

- knives must be stored in their boxes when not in use
- knives fitted to the microtome must be properly guarded
- particular care must be taken during cleaning and knife sharpening

#### **3.4.1 Conventional Knives**

Conventional microtome knives are usually made from carbon steel and will corrode in moist conditions.

Whenever the cryostat chamber is allowed to warm up above freezing point, (eg: during a full defrost) the knife should be removed, warmed up, cleaned and/or disinfected then stored in its box in a dry place.

The Bright 50230 cryostat knife normally supplied with the cryostat can be sharpened on a conventional knife sharpening machine. Alternatively, Bright Instrument Company Limited offer a knife sharpening service.

#### **3.4.2 Disposable Blades**

Most disposable blades, including Magnacut blades, are not corrosion resistant and should be removed prior to defrosting if they are to be used again. Disposable blade holders are often rustproof, and the bright Feather™ blade holder and Magnacut holders can both be left in place during defrosting.

Take particular care to clean the contact surfaces of disposable blade holders. A build-up of debris can prevent the blade from seating properly and causes instability during section cutting.

### 3.5 OPERATING IN EXTREME CONDITIONS

The refrigeration system used in Bright cryostats is highly efficient and will cope well with high ambient temperatures. However, where conditions of high humidity exist, it may be necessary to adjust the automatic defrost cycle in order to ensure that the cooling coils remain frost free.

It is recommended that additional defrost cycles are initiated at convenient times (eg: 18.00hrs, 06.00hrs). This is done by pressing in the appropriate pins on the clock to give two further twenty minute defrosts.

**Do not** exceed the defrost cycle time beyond thirty minutes as this could cause the entire chamber to warm up above 0°C.

### 3.6 SERVICING AND REPAIRS

#### 3.6.1 Routine Servicing

In addition to the items mentioned in section 3.1, the following should be periodically carried out.

#### 3.6.2 Repairs

In the event of a breakdown a qualified person should be called. Refrigeration problems are likely to be rare, and will normally be dealt with by your local refrigeration specialist. For electrical and mechanical problems contact either your local agent/distributor, or Bright Instrument Company Limited. Please provide the following information:

Model  
Serial Number  
Date of Installation  
Nature of Fault

The following tasks can be carried out by competent personnel:

- Changing fuses (see section 2.2.4)
  
- Changing fluorescent lamp
  
- 1. Switch off power.
  
- 2. Remove plastic trim over light area, it is held by five Pozidrive screws. This will also release the light support bracket.
  
- 3. Lower light unit from right hand side.
  
- 4. Ease the Perspex light cover from the left-hand rubber housing to allow access to light tube.

5. Replace light tube and reverse stages 4-1.

**NB:** Wires must be pushed back with care!

If the cryostat or any part of it is returned to the agent/distributor or manufacturer, it is important to observe the precautions, in section 3.7 to minimise the risk of infection.

**NB:** A completed decontamination certificate must either be sent by post prior to return of cryostat or attached to the exterior of the cryostat. Work on the instrument will not proceed until satisfactory notification of decontamination has been received.

### 3.7 DECONTAMINATION

It is the responsibility of the user to ensure that a decontamination procedure is employed which is appropriate to the nature of the work carried out.

The cryostat chamber, freezer assembly and accessible parts of the microtome are constructed of corrosion-resistant materials, and the following decontamination procedures can be used.

Hypochlorite (bleach) solutions are corrosive to many metals and should be avoided.

**Do not** expose the debris trays to temperatures in excess of 65°C.

#### 3.7.1 Formaldehyde Decontamination

This method is recommended in the Howie code on the prevention of infection in medical laboratories.

1. defrost the cryostat completely with the window closed (after removing knife).
2. Place 50-100ml of formalin BP in a flat dish in the cabinet, Close the window.
3. Leave for a least 24 hours and preferably 48 hours.
4. Open window briefly and place a beaker containing 10ml of ammonia SG.880 in the chamber.
5. Leave for one hour. The cryostat is then ready for cleaning.

### 3.7.2 Virkon Decontamination

'Virkon' is a virucidal disinfectant made by Antec International and is widely used in microbiological and clinical departments.

1. Defrost the cryostat completely, with the window closed.
2. Remove the microtome (reverse of the installation procedure – see section 1.1.4).
3. Make up the Virkon solution according to the manufacturers instructions.
4. Wipe around the cryostat chamber with a cloth or paper towel wetted with Virkon solution. Ensure all debris is collected and all surfaces have ample contact with the solution.
5. Wipe over again with clean water.

**NB: Do not** use excessive quantities of Virkon solution or water during this procedure. The drain tube (section 2.6.5) can be extended and placed in a container to collect liquid, after removal of the drain plug.

6. Carry out a similar procedure on the microtome, taking care to prevent liquid entering the microtome casing.
7. Ensure microtome and chamber are dry.
8. Apply low temperature oil sparingly to the knife clamping screws and re-install microtome in the chamber.
9. The cryostat is now ready to be switched back on.



## **4. FROZEN SECTIONING – A PROBLEM SOLVING GUIDE**

First check all the basic factors:

### **4.1 Listed below**

#### **4.1.1 Specimen**

- Was it frozen badly?
- Has it equilibrated to chamber temperature?
- Has it become loose on the specimen holder?
- Is the specimen holder tightly clamped?
- Is the orientation lever locked?
- Has the specimen dehydrated?

#### **4.1.2 Knife**

- Has it become dull?
- Is it nicked or chipped?
- Is the knife tilt angle incorrect?
- Is the knife loose?
- Is there a build-up of frost or debris on the knife?

#### **4.1.3 Anti-Roll Plate**

- Is it set too high/low?
- Is the angle to the knife too wide/narrow?
- Is it parallel to the knife? (refer to section 2.4 and 4.8)
- Is it frosted/too warm?
- Is it damaged?

#### **4.1.4 General Factors**

- Is the chamber temperature appropriate to the specimen?
- Is the cutting motion too fast/slow/uneven?
- Has the Microtome reached the end of its travel?
- Is the section thickness setting appropriate?

#### **4.2 Thick / Thin Sections – Intermittent Failure To Cut**

- knife not sharp enough
- knife tilt angle too high/low
- clamping screws too loose
- specimen loose on holder
- cutting temperatures too warm/cold
- anti-roll plate adjusted too high
- tissue expansion due to block warming up

#### **4.3 Sections Crumbling or Not Forming**

- freezing technique too slow
- cutting temperature too warm/cold
- specimen not equilibrated to chamber temperature
- specimen dehydrated
- knife not sharp enough
- cutting motion too fast or uneven
- knife tilt angle too high/low

#### **4.4 Excessive Compression of Sections**

- knife not sharp enough
- knife tilt angle too high
- knife surface frosted or debris build up
- anti-roll plate frosted, too warm or incorrectly adjusted
- freezing technique too slow
- cutting temperature too cold/warm

#### **4.5 Uneven Thickness Across Section**

- clamping screws too loose
- specimen loose in holder
- knife not sharp enough
- knife edge too thin
- cutting motion uneven

#### **4.6 Vertical Score Marks on Section**

- knife edge nicked or chipped
- knife faces have built up debris or frost
- anti-roll plate edge damaged
- anti-roll plate surface has debris or frost built up
- tissue contains hard, fine particles (eg: bone fragments)

**NB:** When removing frost and debris always brush up the knife, never down or along.

#### **4.7 SECTIONS CURLING**

##### **4.7.1 Sections Curl Over Anti-Roll Plate**

- anti-roll plate too low

##### **4.7.2 Sections Curl Under Anti-Roll Plate**

- anti-roll plate at too large an angle to knife

##### **4.7.3 Sections Curl Under and Stick to Anti-Roll Plate**

- anti-roll plate too warm, greasy

##### **4.7.4 Sections Curl After Lifting Anti-Roll Plate**

- anti-roll plate at too large an angle to knife, movement too quickly, delay in collecting sections

#### **4.8 SECTIONS FAIL TO FLATTEN AND PASS DOWN KNIFE**

- anti-roll plate too warm, greasy or misalign
- knife surface has built up frost or debris or is too warm

## 4.9 SETTING THE ANTI-ROLL PLATE

**IMPORTANT:** take great care to avoid the knife edge when adjusting the anti-roll plate.

### 4.9.1 General Advise

Because the anti-roll plate setting is crucial to achieving good results, the cryostat is fitted with a fully adjustable anti-roll assembly with the following movements:

- To vary the angle between the surface of the plate and the surface of the knife.
- To vary the height of the plate with respect to the knife edge.
- To adjust the horizontal position of the plate (making it parallel to the knife-edge).

Before making any adjustments it is essential that good, regular sections can be cut without the roll plate in position. Of course, these sections will roll, but it will still be evident that successful sectioning is occurring. If necessary, make a block of frozen embedding medium to eliminate the tissue as a possible cause of problems.

### 4.9.2 Preparation

1. Ensure a sharp knife is installed at the correct tilt angle (15° for a Bright 50230 knife) and firmly clamped.
2. Clamp frozen specimen (or embedding medium alone) into the microtome.
3. Rim the block until a suitable block face is made.
4. Cut a few sections at the chosen section thickness. Once it can be seen that regular, good quality sections are being cut, go onto section 4.9.3

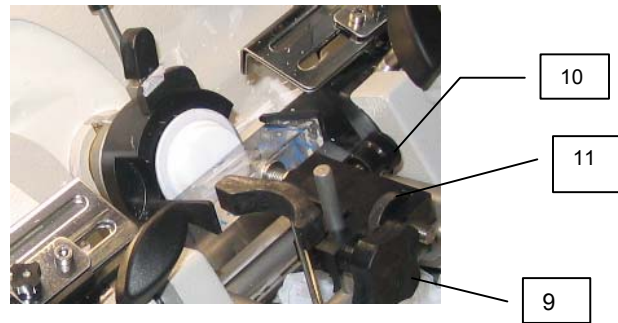
### 4.9.3 Setting the Anti-Roll Plate

This section is an expansion of section 2.4

1. Ensure the anti-roll plate is free of debris and frost, and is in good condition.
2. Establish a starting point by loosening knob (10) and turning the knurled wheel (11) so that there is a gap of about 7mm of the silver stem showing.
3. Now loosen knob (9) and slide the whole assembly up and down (with the plate out of contact with the knife) so that the edge of the plate can rest on the knife about 0.5mm below the knife edge. Re-clamp, but not too tight. This procedure sets the angle which the plate makes with the knife, and subsequent re-adjustments may be required if this angle is not quite correct.
4. Start to cut sections. Initial sections will roll up over the anti-roll plate, but after each cut turn the wheel (11) slightly to the left. The plate will rise and soon a point will be reached when the section slide under the knife. A further small turn should now result in perfect sections.
5. If the plate is raised too far it will be hit by the block. If this is seen or felt to occur, swing the assembly back from the knife and turn the wheel (11) several turns to the right to move it down. Now carry out step 4 again.

- The edge of the anti-roll plate must be exactly parallel with the knife edge. Make any necessary adjustments by placing a forefinger on each end plate (clear of the knife) and pushing the plate one way. If the sections compress on just one side, or a ribbon curves to one side, then it is likely that the plate is not parallel.

Finally, once the anti-roll plate has been correctly set, it should not be necessary to disturb it until the knife is changed. When difficulties are encountered in cutting sections, check other sources of the problem before interfering with an anti-roll system which had previously been giving good results.



**Fig.5**

#### **4.10 CUTTING TEMPERATURES**

Standard textbooks on histological technique give tables of recommended cutting temperatures for different tissues. However, in most cases, the following guidelines will prove adequate:

##### **Fresh, Unfixed Tissue**

Most soft tissues will cut at  $-18^{\circ}\text{C}$  to  $-20^{\circ}\text{C}$

Fatty tissue, such as breast lumps, will need lower temperatures  $-25^{\circ}\text{C}$  or colder.

Brain and spinal cord cut best at warmer temperatures, eg:  $-12^{\circ}\text{C}$

##### **Fixed Tissue**

Differences between tissues are much reduced after fixation. Cutting temperatures around  $-10^{\circ}\text{C}$  to  $15^{\circ}\text{C}$  are recommended, but some experimenting may be required. Ensure fixative is rinsed off tissue before freezing.

## 5. SPECIFICATIONS

### CRYOSTAT

Refrigeration	●	Hermetically sealed continuously running compressor for 220/240V
Chamber Temperature	●	Minimum -35°C at 21°C
Specimen freezer	●	Constantly maintained at -46°C to -53°C at -20°C chamber temperature
	●	Heat extractor fitted
Defrost	●	Automatic programmable defrost with battery back up
Chamber	●	Stainless steel with integral shelves
Illumination	●	Fluorescent light, automatically operated by opening of window
De-misting	●	Automatically operated by closing the window
Cabinet	●	PVC coated sheet steel with moulded cover

### MICROTOME

Movement	●	Radial, flat cutting with manual hand wheel lock
Cutting stroke	●	57mm
Maximum specimen size	●	25mm diameter
Section thickness range	●	2µm to 30µm in 2µm increments 4µm to 60µm in 4µm increments (only available at time of order)
Total Feed range	●	24mm at 0° knife tilt angle
Specimen holders	●	Quick release orientating holder for 25mm diameter discs
Anti-Roll System	●	Built-in adjustable with Perspex easy set anti-roll plate

<b>Retraction</b>	●	Retracting knife block, retraction approx 50µm
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### DIMENSIONS

- Overall height - 1.135mm
- Overall width (including hand wheel) 675mm
- Overall width (excluding hand wheel) 605mm
- Overall depth – 690mm

## 6. SPARE PARTS AND ACCESSORIES

### 6.1 Parts List

Parts can be obtained through your local Bright representative, or from bright Instrument Company Limited. When ordering parts, please provide the following details:

- a. Model type and serial number of your instrument
- b. Full description, part number and quantity of part(s) required
- c. Address to which parts are to be delivered
- d. Address to which invoice is to be sent

### 6.2 Accessories and Consumables

Part Number:	Description
52006	2-30µm feed screw [factory fitted]
52007	4-60µm feed screw [factory fitted]
51986	Orientating holder for Bright specimen discs [factory fitted]
51981	Non-orientating holder for bright specimen discs [factory fitted]
52324	Orientating holder for Ames-type specimen holders [factory fitted]
52323	Non-orientating holder for Ames-type specimen holders [factory fitted]
51976	Bright Specimen discs, pack of six
52970	Orientating vice, factory fitted
50230	Standard knife with box, 'C' profile 189x27x10mm 22° angle tapped to accept holder for Shandon knife sharpener, safety cut-outs each end
50724	Knife sharpening back for 50230
52671	Knife sharpening kit, includes hone, strop, oil, three grades of abrasive and instructions
57612	Coarse abrasive, 6g
57611	Fine abrasive, 6g
57610	Honing compound, 6g
50239	Clock oil, 6g
50133	'Magnacut' disposable blade system. Consists of magnetic blade holder, Magnaplate anti-roll plate, 10 blades, blade removal tool, box and instructions
50540	'Magnacut' disposable blade holder only
52727	Long-life disposable blades for Magnacut, 'C' profile, pack of 50
51564	Magnacut blade removing tool
50240	Feather™ blade holder with box
50241	Feather™ disposable blades, pack of 50
50425	Easi-set anti-roll plate, 50mm
50300/1	Magnaplate anti-roll plate and handle, pack of three
52019	Freezer plate for Bright specimen discs, 141x70x14mm
52246	Freezer plate for Miles type specimen holders, 141x70x14mm
52509	Freezer plate for Hacker moulds, 141x70x14mm
52248	Freezer plate for Shiraimatsu embedding moulds, 141x70x14mm
52175	Debris tray, front
52176	Debris tray, rear
52192	Debris chute
52177	Cryo-mould freezing station
52510	Insulated night plug
52511	UV night plug
57713-1	Bright Cryospray 134, 300ml aerosol can

57713	Bright Cryospray 134, 300ml aerosol can, Carton of 12 cans
53581-1	Bright Cryo-M-Bed, 113ml bottle
53581	Bright Cryo-M-Bed, 113ml bottle, Carton of 6 bottles
57355	Low temperature grease, 5g net
57344	Knife cleaning brush
57808	Anti-static brush, 12mm
138042	Fluorescent tube
53561	Spare fuses for 4000-001 and 4000-003
53562	Spare fuses for 4000-002 and 4000-004



# MATERIAL SAFETY DATA SHEET

**Name: CRYO-M-BED - Part Number: 53581**

## Product Information

By: Bright Instrument Company Limited  
Address: St Margaret's Way, Huntingdon, Cambs, PE29 6EU, England  
Telephone: 01480 454 528 / 451 499 / 451 980      Emergency: 999  
Fax: 01480 456 031      Email: [sales@brightinstruments.com](mailto:sales@brightinstruments.com)  
Trade/Type: EMBEDDING COMPOUND  
Container: Disposable plastic bottles  
Uses: Embedding compound for frozen tissue specimens  
Data Sheet: 3  
Description: Colourless viscous liquid

## Information on Ingredients

Blend of polyviol alcohol 217, thymol and water

## Physical and Chemical Properties

Colourless viscous liquid

## Hazards Identification:

Skin: Can cause skin irritation  
Respiratory: May cause difficulty in breathing if exposed to very high concentration  
Ingest: May be harmful by ingestion  
Eyes: Eye irritation

## Stability and Reactivity

May react with oxidising materials

## First Aid procedures

Skin: Wash thoroughly, with soap and water  
Respiratory: Move to fresh air  
Ingest: Rinse mouth out with water, in sever cases seek medical attention  
Eyes: Flush copiously for at least 15 minutes

## Toxicological Information

No harmful effects if handled correctly. May give off toxic fumes in the case of fire

## Fire Fighting Measures

Hazards: May cause toxic fumes  
Equipment: Water spray, foam, dry powder, Co2

## Ecological Information

Degradable, miscible in all proportions

## Accidental Release Measures

Spill: Absorb on an inert absorbent, bag and arrange disposal. Wash area in water and detergent

## Disposal Considerations

Waste: Bag and dispose of in accordance with local authority requirements

## Handling and Storage

Special Requirements: NONE

## Transport Information

No restrictions

## Exposure Controls

OES: Not assigned (long term, 8 hour TWA)  
Skin: Avoid contact  
Respiratory: Avoid very high concentrations  
Ingest: Do not eat, drink or smoke  
Eyes: Goggles should be worn

## Regulatory Information

NONE

## Additional Information/Comments:

Information given is, to the best of the Company's knowledge and belief, accurate and reliable. However, no warranty, guarantee or representation is made to it's accuracy, reliability of completeness.

Issue 6 /June 2000 - Last reviewed: June 2004 /Next review: June 2006

## MATERIAL SAFETY DATA SHEET

**Name: CRYOSPRAY - Part Number: 57713**

### Product Information

By: Bright Instrument Company Limited  
Address: St Margaret's Way, Huntingdon, Cambs, PE29 6EU, England  
Telephone: 01480 454 528 / 451 499 / 451 980 Emergency: 999  
Fax: 01480 456 031 Email: [sales@brightinstruments.com](mailto:sales@brightinstruments.com)  
Trade/Type: Bright Cryospray 134 Aerosol Freezing Agent  
Container: Aerosol  
Uses: Rapid Freezing of tissue specimens to -52°C  
Data Sheet: 48  
Description: Colourless viscous liquid

### Information on Ingredients

1, 1, 1, 2 – Tetrafluoroethane – contents 80-100%

### Hazards Identification:

May cause frost bite if intentionally misused

### Physical and Chemical Properties

Appearance: Aerosol

Odour: Characteristic

### Stability and Reactivity

Avoid powdered metal, alkali metals alkali earth metals  
Avoid heat, flames and other sources of ignition

### First Aid procedures

Skin: Wash thoroughly, with soap and water  
Respiratory: Provide rest, warmth and fresh air  
If discomfort continues, seek medical attention  
Ingest: Rinse mouth out with water, in severe cases seek medical attention  
Eyes: Flush copiously for at least 15 minutes  
SEEK MEDICAL ADVICE

### Toxicological Information

May cause frostbite if intentionally misused No harmful effect if handled correctly. May give off toxic fumes in the case of fire

### Fire Fighting Measures

This product is not classed as flammable under current regulations. Special

**Fire Fighting Procedures** : use water to keep fire exposed containers cool and disperse vapours. Breathing apparatus should be worn if exposure of fumes is likely.

**Unusual Fire Explosion Hazards:** Possible risk of can rupture when exposed to fire/high temperatures.

**Hazardous Decomposition Products:** Fire or high temperatures create halogenated hydrocarbons, oxides of carbon

### Accidental Release Measures

Spill: Let evaporate and ventilate area well

### Ecological Information

Water Hazard Classification: Discharge of product will enter the atmosphere and will not result in long term aqueous contamination

Global Warming Potential: 0.28 (R11=1) (1,1,1,2 – Tetrafluoroethane) Ozone Depletion Potential 0 (R11=1) (1,1,1,2 – Tetrafluoroethane)

### Disposal Considerations

Waste: DO NOT pierce or burn empty cans. Dispose of in accordance with local authority requirements.

### Handling and Storage

Usage Precautions: **CAUTION** pressurised container  
**DO NOT** expose to temperatures exceeding 50°C

**DO NOT** puncture or incinerate even when empty  
**DO NOT** spray onto naked flame or any incandescent material

Spray in short bursts to prevent cooling of the can

**STORAGE PRECAUTIONS:** Store in a cool dry place, away from all sources of heat, including direct sunlight

### Exposure Controls

1,1,1,2 – Tetrafluoroethane (HFC 134a) OED: Long term exp (8hours TWA ref period) 1000ppm (rec)/4240mg/m3

Skin: Avoid contact, it is advised to wear gloves

Respiratory: Good ventilation required if used in confined space

Ingest: Do not eat, drink or smoke

Eyes: Wear goggles during use if there is any risk of eye contact, but not generally required under normal use.

### Additional Information/Comments:

Information given is, to the best of the Company's knowledge and belief, accurate and reliable. However, no warranty, guarantee or representation is made to its accuracy, reliability of completeness.

Issue 7 /January 2004 - Last reviewed: May 2004 /Next review: May 2006

# MATERIAL SAFETY DATA SHEET

## 1.2.6 Name: Low temperature Grease - Part Number: 57355

### Product Information

By:	Bright Instrument Company Limited	
Address:	St Margaret's Way, Huntingdon, Cambs, PE29 6EU, England	
Telephone:	01480 454 528 / 451 499 / 451 980	Emergency: 999
Fax:	01480 456 031	Email: <a href="mailto:sales@brightinstruments.com">sales@brightinstruments.com</a>
Trade/Type:	OPTITEMP TTI	
Container:	Plastic Tube	
Uses:	For lubrication of microtomes and remote control spindles	
Data Sheet:	87	
Description:	Lubrication at arctic to high temperature ranges	
<b>Information on Ingredients</b>		<b>Physical and Chemical Properties</b>
Lubricant grease based on synthetic oil		Physical form: Paste Density: @20°C, 965Kg/m3 Odour: Mild Colour: Brown Flashpoint: (closed) 215 (Mineral) Water Solubility: Insoluble
<b>Hazards Identification:</b>		<b>Stability and Reactivity</b>
This product is NOT classified as hazardous		Stable: Yes will not polymerise Conditions to Avoid: Temperatures above 215°C Materials to Avoid: Strong oxidising agents Hazardous Decomposition/Combustion Products: NONE with correct use.
<b>First Aid procedures</b>		<b>Toxicological Information</b>
Skin:	Wash thoroughly, with soap and water	Health effects:  EYES: May cause transient irritation. SKIN: Unlikely to irritate on brief or occasional exposure INHALATION: Low volatility make inhalation unlikely at ambient temperatures. INGESTION: May cause nausea, vomiting and diarrhoea CHRONIC: Repeated and prolonged skin contact may lead to skin disorders. OTHER: NONE known
Respiratory:	Remove from exposure	
Ingest:	DO NOT induce vomiting. Seek medical advise immediately	
Eyes:	Flush copiously for at least 15 minutes. If irritation persists SEEK MEDICAL ADVISE	
<b>Fire Fighting Measures</b>		<b>Ecological Information</b>
FIRE:	Extinguish fires with foam, dry powder, CO2 or water fog - do not use water jets	When used and disposed of as intended, no adverse environmental effects are foreseen
<b>Accidental Release Measures</b>		<b>Disposal Considerations</b>
Spill:	Avoid entry into drains and waterways, spilt product will present a slip hazard	Waste: Dispose of in accordance with local authority requirements
<b>Handling and Storage</b>		<b>Transport Information</b>
Handling:	No special precautions	Not classified as dangerous to transport
Storage:	Store out of direct sunlight, do not leave container unsealed	
<b>Exposure Controls</b>		<b>Regulatory Information</b>
None of the ingredients of this product have an occupational exposure limit		This product is a preparation and is NOT classified according to EEC Guideline 88/379

### Additional Information/Comments:

Information given is, to the best of the Company's knowledge and belief, accurate and reliable. However, no warranty, guarantee or representation is made to it's accuracy, reliability of completeness.

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Web site: [www.brightinstruments.com](http://www.brightinstruments.com)

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# SAFETY WARNING

Low temperatures are present in this equipment.  
Extreme care should be taken.

**DO NOT** let bare skin come into contact with  
metal surfaces

# SAFETY WARNING

EXTREMELY SHARP KNIVES / BLADES

USE KNIFE / BLADE GUARDS AT ALL TIMES

USE CORRECT TOOLS FOR REMOVAL AND  
INSERTION OF KNIVES / BLADES

**DO NOT LEAVE KNIVES / BLADES LAYING  
AROUND**

PLACE KNIVES / BLADES NOT IN USE, INTO BOX /  
WALLET PROVIDED

# HEALTH AND SAFETY AT WORK ACT DECONTAMINATION CERTIFICATE



Any product which is to be returned to Bright Instrument Company Limited or serviced on site, must be cleaned and decontaminated in the appropriate manner. This certificate, duly completed, must be either sent in advance (fixed to the outer packing containing the product), or handed to the service engineer.

Packages will not be opened nor servicing commenced until the Company or service engineer has received a satisfactory certificate. Should returned goods be considered a hazard by the Company, they will be returned immediately to the customer at his/her expense. NB: Microtome knives must be in boxes.

Description:
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Product Code:
---------------

Serial Number:
----------------

Order Number:
---------------

Quantity:
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**Tick Box A if applicable. Otherwise complete all parts of B, providing further information as requested or appropriate.**

**A**     This equipment has not been in contact with unfixed biological samples.

**B1.** This equipment has been exposed internally or externally to hazardous materials as indicated below:

YES/NO	Blood, body fluids, pathological samples
YES/NO	Other biohazards
YES/NO	Chemicals/substances hazardous to health
YES/NO	Other hazards

Provide further details here:
-------------------------------

**2.** This equipment has been cleaned and decontaminated:

YES/NO	If YES, give details of the methods:
	If NO*, please indicate why not:

Provide further details here:
-------------------------------

\* Such equipment must not be returned without the written agreement of Bright Instrument Company Limited.

**3.** The equipment has been prepared to ensure safe handling/transportation.

YES/NO

Signed:
---------

Institute:
------------

Department:
-------------

Address:
----------

--

	Postcode:
--	-----------

Name:
-------

Position:
-----------

Telephone:	Extn:
------------	-------

Date:
-------

Facsimile:
------------

# GUIDE TO DECONTAMINATION PROCEDURES

## Cryostats & Ultra Low Temperature Freezing Units

**If decontamination is required carry out the standard procedures as practised in your laboratory.**

It is the responsibility of the customer to use a decontamination procedure appropriate to his/her work. The following decontamination method is as recommended in the 'Code of Practise for the Prevention of Infection in Clinical Laboratories and Post-mortem Rooms', ISBN 0 11 320464 7.

- 1 Bring the cryostat to room temperature.
- 2 Place 50-100ml of formalin BP in a flat dish inside the chamber. Close the window.
- 3 Leave for at least 24 hours, preferably 48 hours.
- 4 Open the window and place a beaker containing 10ml of ammonia SG.880 in the chamber. Close the window.
- 5 Leave for one hour. The cryostat is now decontaminated.

## Microtomes

If decontamination is required carry out the standard procedures as practised in your laboratory. It is the responsibility of the customer to use a decontamination procedure appropriate to his/her work.

## Microtome Knives

If decontamination is required carry out the standard procedures as practised in your laboratory. It is the responsibility of the customer to use a decontamination procedure appropriate to his/her work.

For further information regarding alternative decontamination procedures please refer to 'Safe Working and the Prevention of Infection in Clinical Laboratories', ISBN 0 11 885446 1.

# QUALITY SURVEY REPORT



our continuing endeavour to improve the quality and performance of our processes and products, we would welcome any initial comments on the following aspects of our service and products. As you have only just received the product we do not feel that you could assess the actual workings of the instrument accurately, so we will follow up in approximately six months with a Customer Feedback – Voice of the Customer questionnaire. If, of course, you have any comments to make prior to receiving the questionnaire, please feel free to contact us.

Please return this form either by post or by fax on 01480-456031, for the attention of the QA Manager.

<b>Model:</b>	<b>Serial Number:</b>
<b>Institute:</b>	<b>Department:</b>
<b>Address:</b>	
<b>Postcode:</b>	
<b>Telephone:</b>	<b>Extension:</b>

Aspect	Comments and Suggestions
<b>Purchasing:</b> Did the purchasing process run smoothly with respect to our involvement? e.g. correct advice, lead times, payment arrangements etc.	
<b>Delivery:</b> Was the instrument in a satisfactory condition on arrival?	
<b>Installation:</b> Did we install the instrument? If so was adequate pre-use instruction given?	
<b>User information:</b> Did you receive an operating manual? Do you believe it is comprehensive enough for your use?	
<b>Safety:</b> Any comments?	
<b>Miscellaneous:</b> Any other aspect you would like to comment on, e.g. appearance, first impressions etc.	

Signed:.....  
Position:.....

Name:.....

Thank you for helping us to help you in the future



# APPENDIX

## Clinicut 3020 Microtome Assembly Drawings and Parts Lists

52015	Main Microtome Assembly	Sheet 1 Sheet 2 Sheet 3
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### Standard Sub Assemblies

51937	Cutting Arm Assembly
212-051	Pawl Release Assembly
212-054	Knife Block Assembly
54126	Input Drive Shaft Assembly
54125	Anti Roll Assembly
51986	Orientating Object Holder Assembly

### Optional Sub Assemblies

51981	Non Orientating Object Holder Assembly
212-041	Motor Advance and Rewind Assembly



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