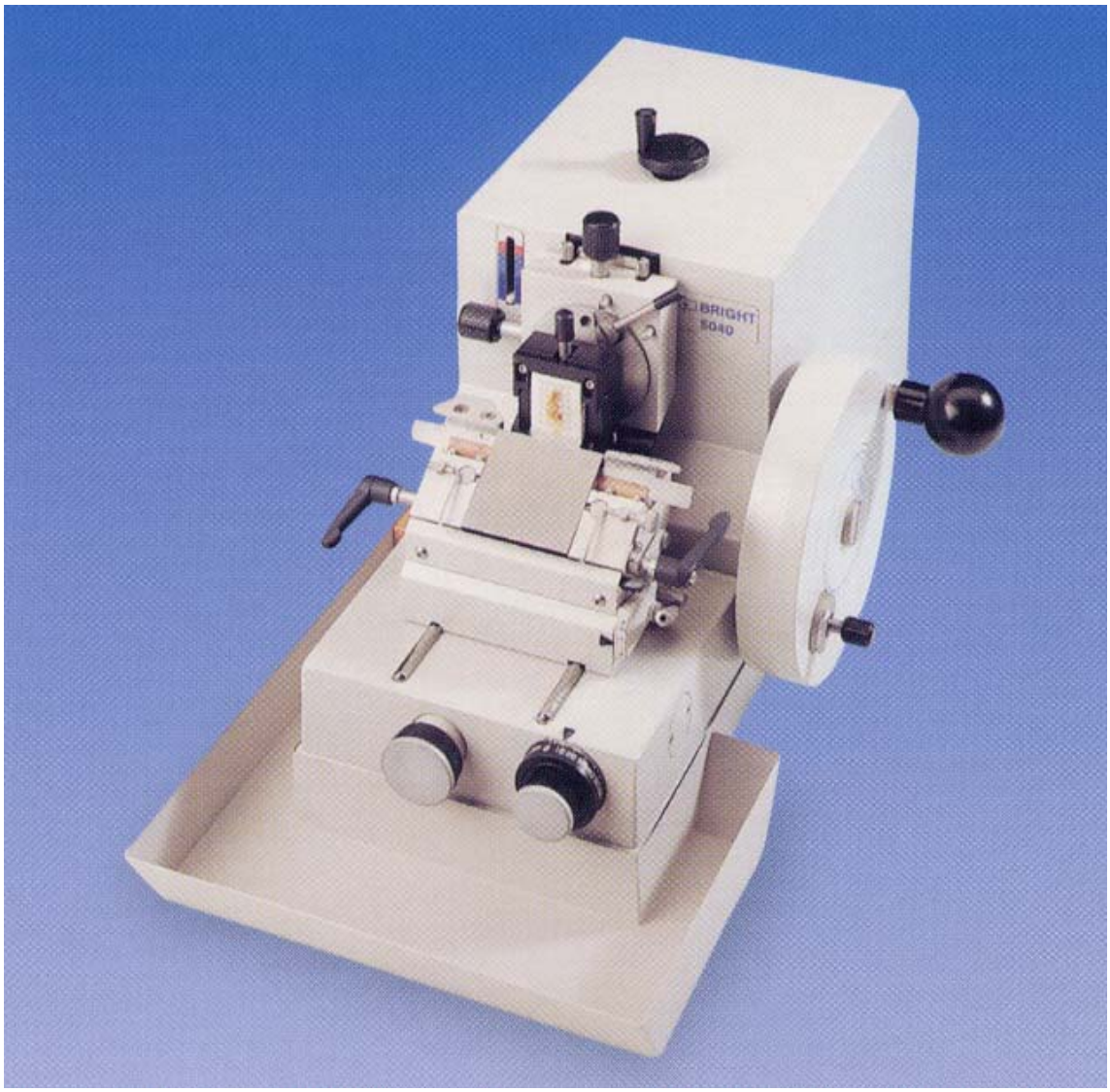
INSTRUCTION MANUAL

5040 Wax Microtome/Quick Release Feather Blade Holder

Serial No: 5560



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 1 March 1988.

The 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 the 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.

Please Take Note Of The Following Warnings:

ELECTRICAL

a) **Warning -** A warning notice is fixed to the instrument (where applicable) stating that it should be disconnected from the mains supply before removing the panels. This warning should be strictly observed.

b) **Fuses** – Fuse ratings are clearly indicated on all fuse panels adjacent to the fuse holder. If and when replacement is necessary, the correct fuse rating and type must be adhered to.

c) **Earthing** (Grounding) – A protective earth terminal is fitted and must be used in all two-wire installations.

MICROTOME KNIVES/BLADES

The microtome knife/blade can be a hazard 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/blade in position. Remove the knife/blade, or cover with the guards or visor provided.

b) **DO NOT** leave unboxed knives/blades lying around. Place knives/blades that are not in use in their boxes or packets.

c) **DO NOT** carry knives/blades unless secure in the box or packet provided.

d) **DO NOT** clean the knife/blade along its length. Wipe the knife from the back edge to the cutting edge.

e) **REMEMBER** that even used knives and blades are dangerous. The are still sharp and may have been used to cut potentially infectious specimens.

f) **DISPOSE** of used knives and blades with the same care as other sharp objects. On no account should used knives or blades be placed in waste bins.

OPERATION

When placing specimens in the microtome vice clamp jaws or holder, or carrying out manipulation, ensure the cutting hand wheel is locked with the head in the uppermost position, to minimise risks.

LOW TEMPERATURES

Low temperatures are present in cryostats and in freezing head stages attached to microtomes. On no account should you touch these cold surfaces without the use of gloves or sufficient clothing covering your exposed wrists/arms etc. touching cold surfaces can result in cold “burns” and permanent tissue and nerve damage.

ACCESSORIES

Fluids supplied as accessories with Bright instruments, such as Cryospray 134 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.

PRODUCT SAFETY SUGGESTIONS

All Bright Instrument Company Limited personnel are encouraged to make suggests 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. All communications should be direct to our Quality Assurance Department and will be acknowledged.

DECONTAMINATION CERTIFICATES

IMPORTANT

If the instrument or any part of it is to be returned to Bright Instrument Company Limited, a decontamination certificate must accompany it, and please note the following:

a) 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.

Set procedures are laid down by the Health and Safety Executive for decontamination. For the avoidance of doubt, we ask that instruments or parts returned to us should be accompanied by a completed decontamination certificate. A copy of this can be found at the back of this instruction manual and we suggest you use a photocopy of this when returning parts.

Alternatively we would be pleased to:

b) either post or fax you another copy should you require.

c) Should 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 un-repaired at the expense of the customer.

d) Overseas customers 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.

WARRANTY

The Warranty relating to the instrument is outlined in our Terms and Conditions of Sale paragraph 6.

The Seller ‘s products are carefully inspected and submitted to its standard tests.

The Seller warrants all its products 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 material and is returned carriage paid, and protected against damage in transit to the Seller’s works at Huntingdon within 12 months from the date of despatch and if after examination by the Seller that 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 re-delivered to the Buyer.

c) this warranty does not apply to any defects caused by wear and tear, incorrect installation abnormal conditions of working, accident, misuse 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 any 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.

Please see our separate Product Warranty sheet for deliveries to the mainland UK.

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.

OPERATING INSTRUCTIONS

1) INTRODUCTION

The Bright 5040 is a rotary rocking microtome with specimen retraction on the return stroke. In standard form it can cut sections up to 60µm thick and will accept specimens up to 50 x 70mm.

Suitable for paraffin wax and plastic embedded specimens, the microtome is fitted with a standard specimen vice clamp or a quick release holder for cassettes, A wide range of options and accessories are available, including motor drive and feed screws for cutting sections up to 300µm

Knife/Blade guards are fitted to protect the operator from the knife/blade during normal operation. All controls are also placed clear of the knife/blade to permit all settings to be made in comfortable safety.

1.1 RECEIPT AND UNPACKING

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

1.1.2 UNPACKING PROCEDURE

The following should be followed when the instrument is received:

a) At least two people are required during the unpacking. The microtome weighs 15Kg.
b) Check that the outer packing is in good order and does not show signs of serious damage.
c) Remove the microtome from the case and unpack it.
d) Remove and unpack the accessories.

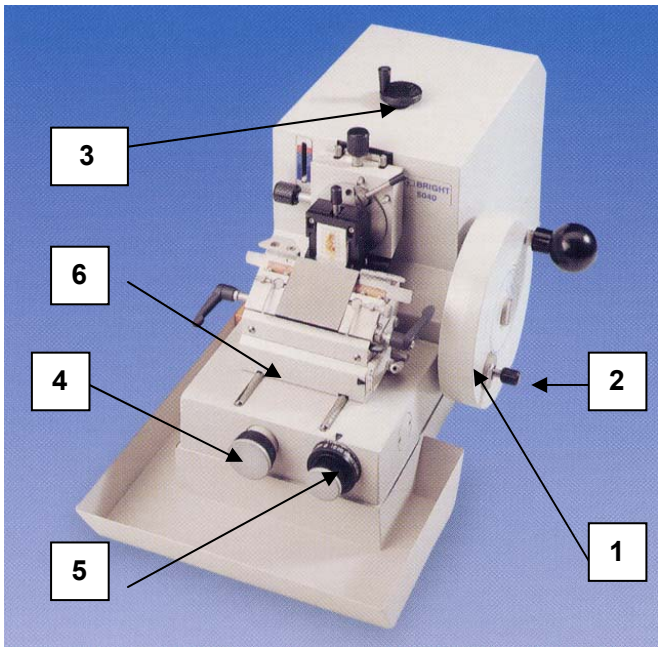


FIG 1

FITTING THE CUTTING HAND WHEEL

Push the hand wheel FIG 1(1) over the shaft on the side of the microtome. Ensure pin on shaft engages slot in centre of hand wheel, press home firmly then fit centre screw.

1.1.3 FITTING THE COARSE ADVANCE/REWIND CONTROL

The rewind knob is fitted FIG 1(3) into the top of the microtome, ensuring it engages properly.

1.2 FEATURES

Refer to FIGs 1 and 2.

1.2.1 CUTTING HAND WHEEL

The hand wheel can be locked with the cutting arm in the upper position. Move the handle on the wheel to the top, pull the small lock knob FIG 1(2) and rotate it quarter of a turn, release and ensure it locates correctly.

To operate the microtome, release the lock and turn the hand wheel in a clockwise direction.

1.2.2 THICKNESS CONTROL

The knob FIG 1(5), on the front of the microtome, is used to set section thickness in µm. Simply turn the knob to the desired setting

FEEDSCREWS

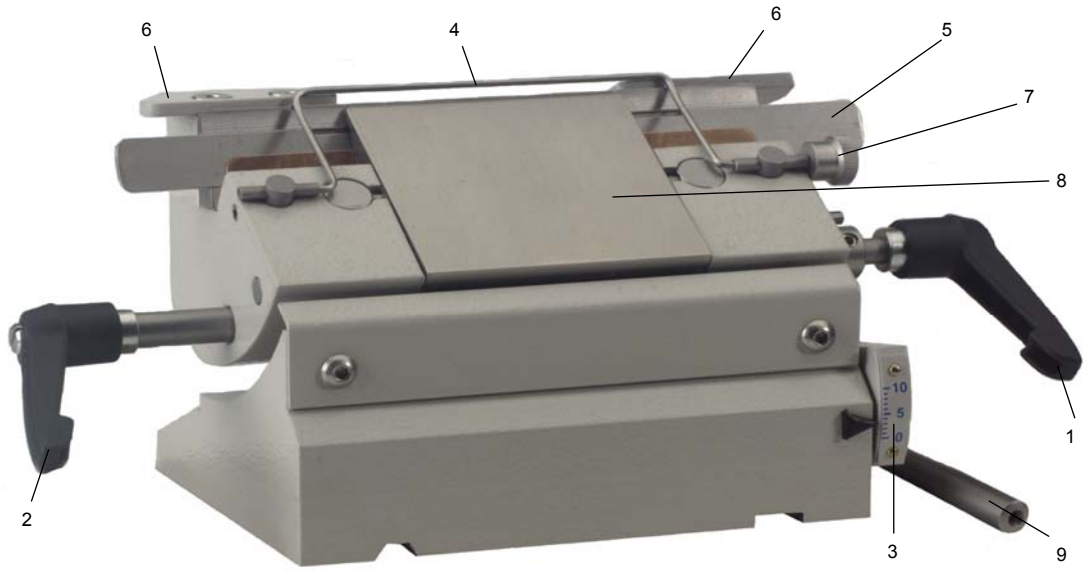
A range of alternative feedscrews is available to cover section thickness' from 0.2µm to 300µm. If one of these has been fitted in the factory, an appropriate scale of microns will also be fitted where available. However, if the user substitutes an alternative himself, the following table should be used to obtain the current section thickness.

Optional Feedscrews 5040

Optional Feedscrews 5040					
50256 manual 50256-1 MAR	**50255 manual 50255-1 MAR**	**50257 manual 50257-1 MAR**	**50258 manual 50258-1 MAR**	**50259 manual 50259-1 MAR**	**50260 manual 50260-1 MAR**
"Thin Section"	Standard in cryostat	Standard in wax microtome			
0.2 to 12µm	0.5 to 30µm	1 to 60 µm	2 to 120µm	3 to 180µm	5 to 300µm
0.2µm incrs.	0.5µm incrs.	1 µm incrs.	2µm incrs.	3µm incrs	5µm incrs.
With scale	With scale	With scale	Without scale	Without scale	Without scale
Scale Markings:					
2	5	10	20	30	50
4	10	20	40	60	100
6	15	30	60	90	150
8	20	40	80	120	200
10	25	50	100	150	250
12	30	60	120	180	300

Note: MAR = Motorised Advance/Rewind

FIG 2 5040 QUICK RELEASE FEATHER BLADE HOLDER



1. Blade clamp lever
2. Blade angle locking lever
3. Blade angle indicator
4. Blade guard
5. Blade loading plate
6. Fixed blade guard
7. Blade guard knob
8. Blade clamping plate
9. Knife block clamp locking lever

1.2.3 QUICK RELEASE FEATHER BLADE HOLDER BLOCK

The complete knife holder block FIG 1(6) can be moved towards or away from the specimen. Raise the knife block clamp locking lever FIG 2(9) on the right side of the knife holder and slide the holder to the desired position, or use knife carriage feed control. Note that the knife carriage feed control can be replaced by the FTA (Fine Trim Adjuster 1.2.4a) Press the lever down to lock.

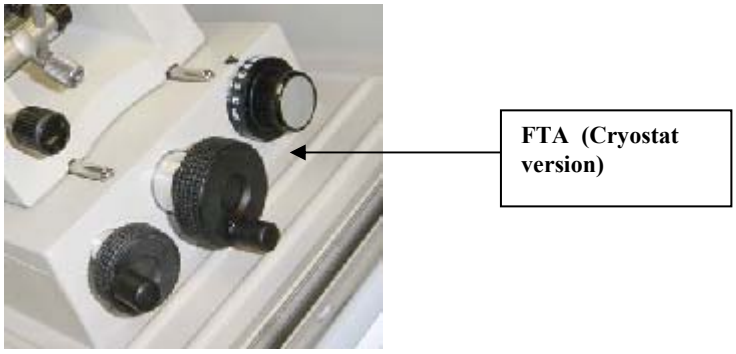
In normal paraffin was section cutting, the knife holder would seldom be moved once it has been put in the most convenient position for the size of the block.

NB: The knife block clamp lever must be firmly locked during sectioning to prevent instability.

1.2.4 KNIFE CARRIAGE FEED CONTROL

The knife carriage feed control FIG 1(4) on the centre front of the microtome moves the knife holder backwards or forwards once the knife lock clamp lever FIG 2(9) has been raised. This device permits incremented movements of the knife holder, for example, for trimming a specimen.

1.2.4a FINE TRIM ADJUSTER / FTA (if fitted)



Works exactly the same as the knife carriage feed control

1.2.5 BLADE ANGLE

Release the blade angle locking lever FIG 2(2) and taking the body of the blade holder in both hands, move it against the lower part of the assembly until the correct angle is shown on the blade angle indicator (3). Then re-lock the blade holder body with the blade angle locking lever. Nominally this angle should be set to 3º.

1.2.6 BLADE LOADING

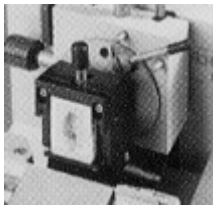
a. Move the blade guard to the lower position using the blade guard knob FIG 2(7).

b. Unlock the blade clamping plate FIG 2(8) using the blade clamp lever FIG 2(1).

c. Push the blade loading plate FIG 2 (5) to one side and very carefully place a new blade into position making sure that the blade is the correct way up.

d. Slide the blade loading plate back to the centre of the assembly and use the blade clamp lever to lock the blade into position. Please note that as the blade wears it is possible to slide it to a new position by repeating this process and by doing this it is possible to utilise the whole length of the blade.

1.2.7 SPECIMEN HOLDERS



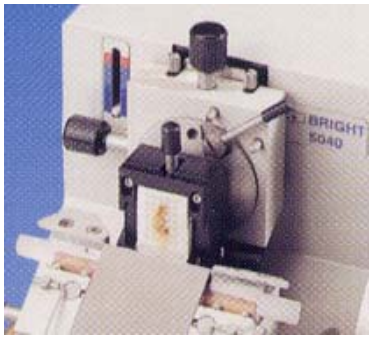
318 Quick Release Holder for wax cassettes
The microtome is normally supplied with an orientating specimen holder with a specimen vice

Alternatively, a cassette quick release holder may be fitted. To exchange specimen holders, simply unscrew the holder supplied from the orientating head.

Some versions of the microtome are supplied with a fixed (non-orientating) specimen vice. In this case a cassette quick release holder can be clamped into this vice.

Other types of specimen holders are available.

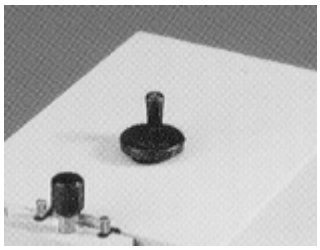
1.2.8 SPECIMEN ORIENTATION (where fitted)



To change the orientation of the specimen, first unlock the clamping lever, then either turn the adjusting knobs, or move the specimen holder by hand.

NOTE: Before attempting to change the orientation ensure cutting hand wheel is locked.

1.2.9 ADVANCE / REWIND CONTROL

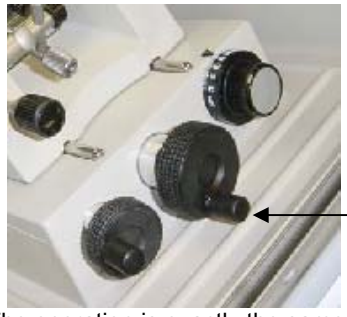


The Advance / Rewind control (on top of the microtome) is used to advance the specimen to the knife and for trimming. It is also used to reset the mechanism usually after cutting each specimen.

NOTE: the control cannot be rewound if the specimen is at the top of the cutting stroke; either lower the specimen or set the thickness control to 0µm to disengage the ratchet mechanism.

A used feed indicator on the front of the microtome shows how much of the specimen-advance remains. Rewind the mechanism when the white pointer reaches the red zone, by turning the knob on top of the microtome clockwise, or if Motorised Advance / Rewind is fitted then see paragraph 1.2.13

1.2.10a LEFT HAND SIDE ADVANCE/REWIND CONTROL - /LHS (where fitted)

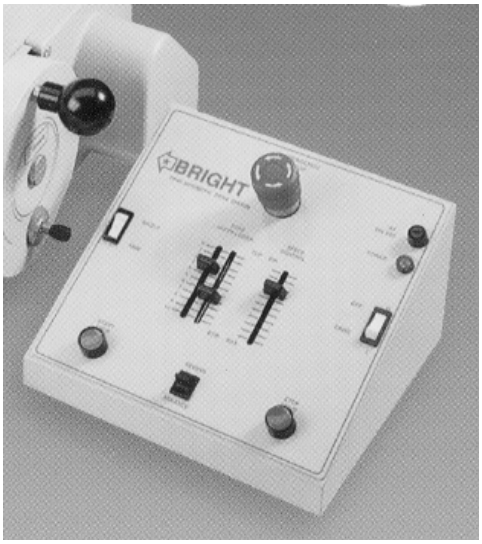


LHS (Cryostat version)

The operation is exactly the same as for the Advance/Rewind control on the top of the microtome. Please note that this option is not available with Motorised Advance/Rewind

1.2.10 MOTOR DRIVE (where fitted)

The motorised cutting system on the 5040 microtome is used for cutting large or hard specimens, and is also useful for serial sectioning. The system can be disengaged for manual cutting.



1. Ensure the specimen will not collide with the knife.
2. To engage motor drive, pull and turn hand wheel plunger knob. Then slowly rotate hand wheel until plunger engages. The hand wheel is locked in motor drive. See section 1.2.1 for manual use.
3. Switch on drive. The green power light will illuminate.
4. Select trim mode (for continuous running of motor drive) press start button (green)
5. Use the speed control to adjust cutting speed, when the head is in the cutting zone.
6. Adjust the zone control. The space between the upper and lower positions indicates that part of the specimen travel which is determined by the speed control.
7. By switching to single, the arm will be made to stop at the bottom of each stroke, allowing section collection.
8. To stop the drive, press stop. Start and stop functions can be used at any time.
9. The emergency-stop button stays in when pressed. Twist button in direction of arrows to release. Then press start to continue drive.

FOOT SWITCH (where fitted)

Plug the foot switch into the socket on the lower front surface of the motor drive control box. When the motor drive is in use, the left and right foot switches will duplicate the action of the stop and start buttons respectively.

1.2.11 SECTION COUNTER (where fitted)

The section counter is used to pre-set the number of cutting stokes from 1 to 9,999 strokes. Press the buttons on the counter until the required number of sections is displayed, then press the reset button.

For each cutting stroke the counter display will increase by one, giving the number of sections cut until it reaches the pre-set value when the red up light will illuminate and the drive will stop. To repeat the cycle, press the reset and start buttons.

1.2.12 MOTORISED ADVANCE / REWIND (where fitted)

Do not operate the rewind motor when the cutting arm is in motion. Only operate the rewind motor with the cutting arm at the rest position. The advance motor may be operated when the cutting arm is in motion. Operating outside these parameters can cause damage to the mechanical components of the machine.

MOTORISED SPECIMEN ADVANCE

1. Set the Specimen thickness control to 0µm
2. Fully rewind specimen, by pressing the rocker switch in the appropriate direction.
3. Adjust position of knife carriage with knife to specimen clearance set to a minimum.
4. Lock knife carriage.
5. Begin advance, with cutting arm fully up, by pressing and releasing ‘advance’ switch whilst rotating the hand wheel. The longer the switch is pressed the thicker the section. If ‘advance’ switch is pressed for more than 2 seconds, a faster advance of the specimen is achieved.

MOTORISED SPECIMEN REWIND

1. Fully rewind specimen press ‘rewind’ switch for a minimum of 2 seconds and release. The feedscew will automatically stop when fully rewound.
2. To stop the specimen rewinding during the period, press ‘advance’ switch and release immediately.
3. For small rewind increments, press and quickly release ‘rewind’ switch.

1.2.13 OTHER ACCESSORIES

Debris Tray: Use this tray to collect section trimmings etc:

Alternative Feed Screws: See section 1.2.2 Instructions for fitting the alternative feed screws are supplied with the feed screws.

2. OPERATION

2.1 FITTING THE SPECIMEN

Ensuring the cutting hand wheel is locked and the blade guard is covering the blade. Fit the specimen into the specimen holder. If the standard vice clamp is used, ensure the specimen is tightly clamped without damaging it. Alternatively, if the cassette quick release is used, care should be taken to ensure a close fit to the cassette. Remove all excess wax. Cassettes may be fitted vertically or horizontally.

2.2 TRIMMING THE SPECIMEN

Release the knife block clamp locking lever FIG 2(9) and move the knife holder close to the specimen (see section 1.2.3) Re-lock the lever.

Either set the section thickness control to thick sections, eg: 15-20µm (see section 1.2.2) and turn the hand wheel to trim the specimen.

OR rotate/rock the hand wheel while using the coarse advance (see section 1.2.4) to trim the specimen.

NOTE: If rocking the hand wheel, ensure trimming is done on the down stroke (hand wheel knob is 1 o'clock round to 5 o'clock position). Trimming on the upward (retraction) stroke will result in a subsequent very thick section and may damage the specimen.

2.3 SECTION CUTTING AND COLLECTION

Select the desired section thickness. Turn the cutting hand wheel a few times to remove any surface roughness on the specimen block caused by trimming.

Cut sections using slow, steady rotation of the hand wheel. Wax-embedded specimens should form a ribbon of sections on the blade.

If the sections keep rolling then make sure that the wax blocks are still cool (+5ºC is the best temperature for most wax). If they continue to roll then try gently blowing down onto the knife to turn down the leading edge of the section.

Sections can be removed either singularly or as a ribbon using forceps. Wax sections are usually floated onto warm water to soften and flatten them.

They can be collected on microscope slides as follows:

a. Dip a microscope slide vertically into the warm water some distance from the sections.

b. Carefully bring the slide close to the section so that the sections edge contacts the slide in the appropriate position.

c. Now raise the slide vertically from the water.

2.4 HINTS ON SECTIONING

1. Ensure the knife is sharp and clean. During use, the knife should be cleaned occasionally to remove a build-up of wax. Buff with a paper towel away from the edge of the knife.

2. Wax embedding specimens usually cut more easily if they have been chilled. It is common practice to trim a batch of wax blocks, then place them face down on a cold plate or crushed ice to cool them. This way they can be returned to the microtome and sections cut while they are still cold.

3. A slow, steady cutting action is needed to obtain the best results. However, different specimens may benefit from different cutting speeds, so experimentation will sometimes bring improved results.

4. If the section ribbon is excessively folded, creased or compressed on the knife, first float it onto cold water and flatten it with the aid of a small artist's brush. Now collect sections with a microscope slide and carefully re-float onto warm water.

5. After collection, dry the wax sections onto the slides using either an oven or a hot plate. Using temperatures 10º-20º above the melting point of the wax. Sections will flatten and stick to the slide without being damaged.

For more detailed instructions on the preparation, cutting and subsequent staining of paraffin wax sections, see any conventional text book of histological technique.

3. MAINTENANCE

No routine maintenance is required.

3.1 DAILY CARE

Empty section debris from the plastic debris tray. Brush away debris from around microtome. Ensure knife is kept sharp and free of nicks.

No other daily attention is required.

3.2 MAINTENANCE & SERVICING

The microtome requires no routine maintenance. In the event of problems, first refer to section 2.5. If no sections are being cut, ensure microtome feed has been rewound (see section 1.2.10).

For advice on repairs, contact either Bright Instrument Co Ltd or your local representative, giving details of the fault and quoting the serial number of your instrument.

3.3 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 5040 Sledge Microtome is constructed of corrosion resistant materials, but hypochlorite (bleach) solutions are corrosive to many metals and should be avoided.

4. SPECIFICATION

Construction	• Rotary rocking design of cast alloys, with detergent and solvent resistant epoxy-polyester finish
Section thickness Range	• Standard range 1-60µm in 1µm steps for wax microtomes and 0.5-30µm in 0.5µm steps for the cryostat version. – See table below
Specimen advance	• Total specimen advance is 5600µm.
Knife block movement	• Total knife block movement is 44mm.
Retraction	• Approximately 50µm
Cutting stroke	• 56mm
Specimen orientation	• ± 8º horizontal and vertical (standard on 5040-01)
Remaining feed Indicator	• Visual display
Knife holders	• Standard knife holder accepts conventional steel knives; tungsten carbide tipped knives, glass knives and disposable blade holders. Alternatively, the quick release Feather blade holder is available as an optional feature either in addition to or in place of the standard knife holder block.
Motorised section cutting	• (Optional) With variable speed, variable cutting zone, single or continuous modes, hands off footswitch and emergency stop.
Safety features	• Counter-balance handwheel with safety lock. Integral knife guards, sliding both ways to cover knife edges •
Dimensions	• H300 x D500 x W300 • Net weight (manual): 20kg • Net weight (motorised): 30kg • Gross weight (manual): 25kg • Gross weight (motorised): 35kg • Shipping volume: 0.158m^3 • Packing dimensions: H580 x D680 x W400mm •

Note: Weights vary according to specification of instrument

OPTIONAL FEEDSCREWS 5040

Optional Feedscrews 5040					
50256 manual 50256-1 MAR	**50255 manual 50255-1 MAR**	**50257 manual 50257-1 MAR**	**50258 manual 50258-1 MAR**	**50259 manual 50259-1 MAR**	**50260 manual 50260-1 MAR**
"Thin Section"	Standard in cryostat	Standard in wax microtome			
0.2 to 12µm	0.5 to 30µm	1 to 60 µm	2 to 120µm	3 to 180µm	5 to 300µm
0.2µm incrs.	0.5µm incrs.	1 µm incrs.	2µm incrs.	3µm incrs	5µm incrs.
With scale	With scale	With scale	Without scale	Without scale	Without scale
Scale Markings:					
2	5	10	20	30	50
4	10	20	40	60	100
6	15	30	60	90	150
8	20	40	80	120	200
10	25	50	100	150	250
12	30	60	120	180	300

Note: MAR = Motorised Advance/Rewind

ORDERING INFORMATION

Order Code	Description
5040-01	5040 Rotary Microtome with fine adjustment specimen orientation
5040-02	5040 Rotary Microtome without specimen orientation
5040-CV	5040 Rotary Microtome for cryostats

OPTIONAL FEATURES

Order Code	Description
215	Knife carriage feed screw mechanism
217	Micro-adjustable knife angle mechanism
318	Quick release holder
53613	Supercassette quick release holder
225MR	Robomatic motor drive for 220/240V AC, 50/60Hz
226MR	Robomatic motor drive for 110/115V AC, 50/60Hz
225MR(S)	Robomatic motor drive as
225MR	but for very hard specimens
226MR(S)	Robomatic motor drive as
226MR	but for very hard specimens
/C	Electronic section counter
/C(M)	Mechanical section counter
/V	Foot switch for motor drive
/Ma/r	Motorised advance rewind
/LHS	Advance/rewind handle on left-hand side front
/FTA	Fine trim adjuster control
/LC	Cryostat type handwheel lock (not available with motor drive)
53430	Quick Release Feather Blade Holder
57903	Lever Release Feather Blade Holder

5. SPARE PARTS AND ACCESSORIES

Parts can be obtained through your local Bright representative, or from Bright Instrument Co Ltd. 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

5.1 5040 Parts List

Item Number	Quantity	Part Number	Description
1	1	50384	Anti-roll assembly
2	1	50442	Knife clamp tie-bar
3	1	50431	Extension
4	4	50984	Knob
5	1	50983	Knob
6	1	50432	Adjusting screw
7	1	50399	Locating pin
8	2	50351	Knife clamp screw
9	3	50986	Knob
10	1	50406	Knife clamp, left hand
11	2	51344	Grub screw
12	1	52442	Knife guard assembly, left hand
13	2	52395	Lock screw
14	1	52355	Knife block
15	1	52443	Knife guard assembly, right hand
16	2	52203	Bush
17	1	52378	Push rod
18	1	52379	Push rod end
19	1	55000	Grub screw
20	1	50526	Knife angle pointer
21	4	55000	Grub screw
22	1	50410	Connecting crank
23	2	55600	PTFE washer
24	1	50357-2	Con rod assembly
25	1	50411	Crank pin
26	1	50407	Crank plate
27	1	50405	Knife clamp, right hand
28	1	50430	Clamp lever
29	1	50471	Stop pin
30	1	55001	Grub screw
31	1	50412	Pawl drive rod
32	1	50413	Pawl pivot
33	1	50414	Pawl spring
34	1	52439	Pawl
35	1	52380	Push rod holder
36	2	55241	Cap head screw
37	2	55616	Washer
38	1	55104	Cap head screw
39	1	55003	Grub screw
40	1	52390	Top arm pivot pin
41	1	52372	Pivot arm rod
42	1	50255	Feed screw assembly
43	1	50404	Bearing post
44	1	50416	Thickness plate
45	1	50459	Knock off arm
46	2	55601	Ball
47	5	55101	Cap head screw
48	1	50458	Retaining plate
49	1	50457	Spring plate
50	1	52371	Pivot arm adaptor
51	1	55610	Washer
52	1	50476	Clamp plate
53	1	50450	Locating pin
54	1	50449	Vee block
55	1	50353	Vice clamp screw
56	2	52427	Blind clamp spring
57	2	52427	Top blind clamp
58	2	53428	Top blind clamp screw
59	1	50987	Rewind knob
60	1	55222	CSK SLTD screw
61	1	50363	Rewind handle
62	1	52348	Top arm (std)
63	1	55108	Cap head screw
64	2	50370	Spring anchor pin
65	1	55621	Washer
66	1	55627	Double coil washer
67	6	50510	Anti rattle body
68	1	50453-1	Pivot arm
69	1	50372	Stop spacer
70	2	55105	Cap head screw
71	8	50423	Anti rattle joint
72	1	50375	Retraction link rod
73	28	55100	Cap head screw
74	3	50438	Retaining plate
75	1	50447	Main hinge

76	1	50373	Stop pin
77	1	50454-1	Hinge segment
78	4	50445	Small hinge
79	8	50446	Retaining plate
80	3	56725	Full nut
81	1	55626	Crinkle washer
82	1	50475	Washer
83	1	50507	Anti-rattle body
84	1	55234	Pan head screw
85	1	50451	Pawl arm
86	2	50980	Click block spring
87	2	51443	Click ball
88	1	50417	Thickness block
89	2	55111	Btn head screw
90	2	50991	Pawl arm bearing
91	2	50475	Pawl washer
92	2	51058	Main shaft brush
93	1	56402	Circlip
94	2	55001	Grub screw
95	1	52430	Main drive shaft
96	1	52345	Base
97	2	55241	Cap head screw
98	1	52357	Bearing holder
99	4	52202	Bush
100	1	52361	Thickness collar
101	2	52360	Thickness gear
102	1	52359	Thickness shaft
103	2	52387	Knife block runners
104	1	56700	Thickness pointer
105	1	52358	Thickness knob shaft
106	1	52356	Bearing holder
107	2	55120	Cap head screw
108	3	51443	Ball plunger
109	2	55003	Grub screw
110	1	52362	Thickness ring holder
111	1	52370	Thickness knob
112	1	52363	Thickness ring (std)
113	1	50387	Knob
114	1	52441	Locating pin
115	1	50388	Bearing holder
116	1	50389	Bush
117	1	56403	Circlip
118	1	50392	Leadscrew
119	1	52389	Clamp bolt
120	2	51344	Grub screw
121	1	50378	Lock screw
122	2	50386	Bearing post
123	1	50419	Centre spindle
124	2	55002	Grub screw
125	1	50443	Thickness crank arm
126	1	52388	Knife carriage block
127	2	55508	Nut
128	1	52386	Thickness drive rod
129	1	55105	Cap head screw
130	1	50402	Clamp plate
131	1	52411	Retraction roller
132	1	50401	Retraction roller pin
133	2	50371	Spring
134	2	56725	Nut
135	1	55628	Double coil washer
136	2	50403	Retraction plate
137	2	50376	Spring anchor pin
138	1	50374	Pivot stud
139	4	50391	Plastic feet
140	1	52373	Pivot rod adaptor
141	1	52374	Pivot rod
142	1	52375	Pivot
143	1	55001	Grub screw
144	2	52437	Bush
145	1	52376	Pivot block
146	1	55001	Grub screw
147	1	52377	Pivot rod end
148	1	55106	Cap head screw
149	1	55620	Washer
150	2	55104	Cap head screw
151	1	55630	Washer
152	1	50493	Bottom washer
153	1	50493-1	Spring

5.2 5040 Electronics Spares List

Part Number	Description
52471	5040 control box for wax version
52472	5040 control box top
52474	Facia panel (blank with rewind)
52473-1	acia panel (rewind 230V 0.5AT printed)
52473-2	acia panel (rewind 115V 1.0AT printed)
52474	Facia panel (blank no rewind)
52474-1	acia panel (no rewind 230V 0.5AT printed)
52474-2	acia panel (no rewind 115V 1.0AT printed)
	Earth stud 4mm
	Earth bolt c/s
137043-02	Ring crimp 4mm
134024	Bridge rectifier P1620F
133078	Flex bushing
132106-17	Capacitor RAD 4700MF/40V
133016	Capacitor clip
133064	Feet, rubber grey
138404-19	Fuse 22mm 2.0AT
138404-16	Fuse 22mm 1.0AT
133034	Fuseholder 22mm panel
134028	Lamp, neon green
136002	Motor drive board
136017	Slider board
52339	Slider knob
130200-61	Resistor 0.25W, 100K
137031	Socket IEE for 1 amp
137031	Socket IEE for 1 amp
137023	Socket DIN 5 way 60 deg
137025-02	Socket Dee 15 way
137013-09	Housing Molex 10 way 0.1
137013-14	Housing Molex 15 way 0.1
137013-18	Crimp kk0.1
137013-19	Polarising key
138016	Switch SP rocker
138114-01	Switch emergency stop
138114-03	Sw Em stop contact block
138118-01	Push switch green mom
138118-02	Push switch red mom
137042-15	Receptacle red 1/4 inch
133022-03	Terminal block
138014	Transformer 75 Va
131105	Coiled coil 6 amp
139025	Motor-DC, 36 V/3000 RPM
137026-02	Plug dee 15 way
137027-02	Shell for dee 15
130403	Servopot 6657S-1-103

Additional Items for /C and /C(M)

139096-01	Counter
139096-02	Connector
139096-03	Fixing plate
137013-04	Plug 5 pin molex
137013-18	Crimp
130200-41	Resistor 0.25W 2k2
130200-49	Resistor 0.25W 10k0

Additional Items for /Ma/r

138103	Motor(s), PF55-44C
138075-00	Micro sw CHERRY DC2
138075-01	Micro sw lever short
139089	Advance/rewind board
138004-05	Relay 24V DPCO
138004-02	Relay socket
137013-04	Housing 5MX 0.1
137013-18	Crimp
137017-09	Housing 10MX 0.156
137017-18	Crimp
138117-01	Switch centre off mom
138117-02	Switch lever black
138117-03	Switch bezel black

Additional Items for /V

137024	Plug free DIN
138026	Twin footswitch

Additional Items for Microtome Light

138034-02	Ballast 8W/115V
138034-01	Ballast 8W/230V
137032	Plug IEE straight
138017	Lamp assembly 2 x 4W
138018	Magnifier

5.3 Accessories and Consumables

Part Number	Description
/R	Conveyor for section ribbon.
50539	Orientating object holder, with fine adjustment screws, factory fitted.
50657	Orientating object holder, without fine adjustment screws, factory fitted.
51637	Quick release hardboard holder, without orientation, for 5040-02.
51637-1	Quick release hardboard holder, with orientation, for 5040-01.
50533	Quick release wax cassette holder, without orientation, for 5040-02.
50209	Triangular glass knife holder, fixed.
50681	Triangular glass knife holder, orientating. These accept 25mm high Latta-Hartmann knives with edges up to 15mm.
52985	CO_2 (gas) object holder and knife freezer.
50208	Sloped (20º) knife holder.
50213	Ralph knife holder.
50214	Ralph knife holder with section float-out trough. For long edged glass knives with edges up to 38mm.
52987	Illuminated magnifier.
50230	Standard knife with box, C-profile, 189 x 27 x 10mm. 22º angle, tapped to accept holder for Shandon knife sharpener, safety cut-outs at each end.
50724	Knife sharpening back for 50230.
50232-1	hardened steel knife with box, C-profile, 160 x 35 x 9mm. 15º angle, suitable for large area sections.
50210	Knife sharpening back for 50232-1.
50207	Steel knife with box, C-profile, 160 x 32 x 13mm. 23º.
50211	Knife sharpening back for 50207.
51675	Handle for 50230, 50232-1 and 50207.
50234	Tungsten carbide tipped knife with box, 228 x 38 x 6mm. Suitable for cutting bone and hard plastics. NB: needs to be resharpened at our factory.
52647	Stem for 50232-1 and 50234 knives.
52671	Knife sharpening kit. Includes hone, strop, oil, three grades of abrasive and instructions.
57612	Coarse abrasive, 6g net.
57611	Fine abrasive, 6g net.
57610	Honing compound, 6g net.
50239	Clock oil, 6g net.
50140	'Magnacut' disposable blade system. Consists of magnetic blade holder, 50mm anti-roll plate, 10 blades, blade removal tool, micro-adjusting T-piece and stem, box and instructions.
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.

A KNIFE SHARPENING SERVICE IS AVAILABLE - DETAILS ON REQUEST

50260	5 - 300µm feed screw.
50259	3 - 180µm feed screw.
50258	2 - 120µm feed screw.
50257	1 - 60µm feed screw.
50255	0.5 - 30µm feed screw.
50256	0.2 - 12µm feed screw.
50259-1	3 - 180µm feed screw for /Ma/r option.
50258-1	2 - 120µm feed screw for /Ma/r option.
50257-1	1 - 60µm feed screw for /Ma/r option.
50255-1	0.5 - 30µm feed screw for Ma/r option.
50256-1	0.2 - 12µm feed screw for /Ma/r option.
50734-1	Object holder, 22mm diameter, solid.
50734-2	Object holder, 22mm diameter, solid - as 50734-1 but long type.
50735-1	Object holder, 37mm diameter, solid
50735-2	Object holder, 37mm diameter, solid - as 50735-1 but long type.
50744	Object holder, 5mm diameter, solid.
50721	Object holder, 50mm diameter.
50741	Object holder, 50 x 50mm.
50743	Object holder, 50 x 70mm.
50221	Quick release object holder clamp, complete with 50 metal object discs.
50690	Metal object holder discs, 22mm, pack of 50.
50204	Cork object holder discs, 22mm, pack of 50.
50204-1	Cork object holder discs, 50 x 50mm, pack of 50.
50162	Adaptor, to accept Ames cryostat, saddle type object holders.
52658	Vertical vice clamp.
57713-1	Bright Cryospray 134, 300ml aerosol can.
57713	Bright Cryospray 134, 300ml aerosol can, carton of 12 cans.
54791	Low temperature oil, 200ml bottle.
54791-1	Low temperature oil, 4.54 litre drum.
57344	Knife cleaning brush.
57808	Anti static brush, 12mm.
52531	Wax brush and debris tray.
53573	Spare fuse set for 5040-001 or 5040-002 with 225MR.
53574	Spare fuse set for 5040-001 or 5040-002 with 226MR.

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

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

Toxicoloigical 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
Trade/Type:	Bright Cryospray 134 Aerosol Freezing Agent		
Container:	Aerosol		
Uses:	Rapid Freezing of tissue specimens to –52ºC		
Data Sheet:	48		
Description:	Colourless viscous liquid		

Information on Ingredients	**Physical and Chemical Properties**
1, 1, 1, 2 – Tetrafluoroethane – contents 80-100%	Appearance: Aerosol Odour: Characteristic
Hazards Identification:	**Stability and Reactivity**
May cause frost bite if intentionally misused	Avoid powdered metal, alkali metals alkali earth metals Avoid heat, flames and other sources of ignition

First Aid procedures		**Toxicoloigical Information**
Skin:	Wash thoroughly, with soap and water	May cause frost bite if intentionally misused No harmful effect if handled correctly. May give off toxic fumes in the case of fire
Respiratory:	Provide rest, warmth and fresh air If discomfort continues, seek medical attention	
Ingest:	Rinse mouth out with water, in sever cases seek medical attention	
Eyes:	Flush copiously for at least 15 minutes SEEK MEDICAL ADVICE	

Fire Fighting Measures	Ecological Information
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 s 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	Water Hazard Classification: Discharge of product will enter the atmosphere and will not result I long term aqueous contamination Global Warming Potential: 0.28 (R11=1) (1,1,1,2 – Tetrafluorethane) Ozone Depletion Potential 0 (R11=1) (1,1,1,2 – Tetrafluorethane)

Accidental Release Measures		**Disposal Considerations**	
Spill:	Let evaporate and ventilate area well	Waste:	DO NOT pierce or burn empty cans. Dispose of in accordance with local authority requirements.

Handling and Storage	**Transport Information**
Usage Precautions: **CAUTION** pressurised container **DO NOT** expose to temperatures exceeding 50ºC **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	Road: UN No.1950 CEFUC TEC (R) No.20G26-1 ADR Class 2 ADR ITEM No.5A Air: UN Air No.1950 Air Transport Class 2 Sea: UN Sea No.1950 Sea Transport Class No.2 IMDG Page No.2102
Exposure Controls	**Regulatory Information**
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.	CHIP: S23 DO NOT breathe gas/fumes/vapour/spray CHIP: S24/S25 Avoid contact with skin and eyes CHIP: S51 use only in well ventilated areas COSHH Regulations 1999

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

MATERIAL SAFETY DATA SHEET

Name: LOW TEMPERATURE OIL

Part Number: 57491

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
Trade/Type:	CLAVUS OIL 15		
Container:	Plastic Bottle		
Uses:	For lubrication of microtomes and remote control spindles		
Data Sheet:	44		
Description:	Low temperature oil		

Information on Ingredients	**Physical and Chemical Properties**
Mineral oil	Physical form: Liquid Density: @15ºC, Kg/1 0.878 Odour: Mineral oil odour Colour: Pale amber Flashpoint: 153ºC (IP 34PM closed cup)
Hazards Identification:	**Stability and Reactivity**
This product is NOT classified as dangerous for supply or conveyance	Stable: Yes
	Conditions to Avoid: Extreme temperatures store between 0 – 50ºC
	Materials to Avoid: Strong oxidising agents
	Hazardous Decomposition/Combustion Products: Dependant of conditions bringing abut decomposition the following substance may be expected from normal combustion: carbon dioxide – polyeyelic Aromatic Hydrocarbons, carbon monoxide – Unburnt hydrocarbons, water – unidentified organic and inorganic compounds, particulate matter – nitrogen oxides

First Aid procedures		**Toxicoloigical Information**
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: Possible aspiration into the lungs with possible resultant chemically induced neumonia OTHER: NONE known
Respiratory:	Remove from exposure	
Ingest:	DO NOT induce vomiting. Wash out mouth with water, SEEK MEDICAL ATTENTION URGENTLY	
Eyes:	Flush copiously for at least 15 minutes. If irritation persists SEEK MEDICAL ADVISE	

Fire Fighting Measures		**Ecological Information**
FIRE:	Extinguish fires with foam, dry powder, CO2 or water fog - do not use water jets	Soil: Will biodegrade Water: Will not evaporate or dissolve Air: Nil DO NOT allow to enter drainage systems, rivers or waterways

Accidental Release Measures		**Disposal Considerations**	
Spill:	Avoid entry into drains and waterways, spilt product will present a slip hazard	Waste:	Dispose of in accordance with local authority requirements

Handling and Storage		**Transport Information**
Handling: Storage:	No special requirements Store away from direct heat and avoid extremes of temperature, DO not leave container unsealed	Not classified as dangerous to transport

Exposure Controls	**Regulatory Information**
5mg/m3 (8hour TWA) and 10mg/m£ (15 minute reference period) (Ref:EH40/1999)	This product is a preparation and is NOT classified according to EEC Guideline

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 2 /March 2000 - Last reviewed: March 2004 /Next review: March 2006

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 have 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:	
Product Code:	Serial Number:
Order Number:	Quantity:

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	Provide further details here:
YES/NO	Other biohazards	
YES/NO	Chemicals/substances hazardous to health	
YES/NO	Other hazards	

2. This equipment has been cleaned and decontaminated:

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

* 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:
Name:	Postcode:
Position:	Telephone: Extn:
Date:	Facsimile:

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

Bright

Our watchword is QUALITY. In 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 asses 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.

Model:	**Serial Number:**
Institute:	**Department:**
Address:	
	Postcode:
Telephone:	**Extension:**

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

Signed:…………………….……………….… Name:……………………….….….…….
Position:……….……………….………..……

Thank you for helping us to help you in the future