

Operating, Maintenance and
Spare Parts Manual for the

Bright 8000 Base Sledge Microtome

Serial Number:



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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 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.

Your attention is therefore drawn to the following precautions:

MECHANICAL

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

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. Please refer to the material safety data information, towards the back of this instruction manual for further details.

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:

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. 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 either post or fax you another copy should you require.
3. 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.
4. 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.

- i. The Seller 's products are carefully inspected and submitted to its standard tests.
- ii. 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.

1. INTRODUCTION

1.1 Receipt and Unpacking

This instrument received a final test and inspection prior to despatch from the factory. The following instructions are given for the re-assembly of the instrument, adjustments and its correct use. If the instrument is received before preparations for installation are completed, it should be stored in a clean, dry place and not exposed to dirty or damp conditions.

1.1.1 Receipt

Immediately upon receipt of the instrument, make a careful examination for evidence of damage encountered in transit. If any damage is found or suspected, notify both the carrier and Bright Instrument Company Limited.

1.1.2 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 direct, immediately. At least two people are required during the unpacking. When removing the main instrument from the packaging, grip the instrument on the underside (one person to each side) and lift out the microtome. Do not lift by the sledge or attempt to separate the sledge from the casting within the case as damage can result.

1.2 ASSEMBLY AND INSTALLATION

1.2.1 Positioning

The instrument should be positioned on a level, sturdy surface at a height convenient for the operator. It may be used with its long axis parallel to the bench, at right angles or obliquely. Ensure it has been positioned away from direct, hot sunlight and is in a location completely free from draughts.

2. OPERATING INSTRUCTIONS

On receipt of your new Bright instrument, please refer to section 1.1 (Receipt and Unpacking) and section 1.2 (Assembly and Installation).

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

Refer to Figure One.

2.1 Operating handle (3)

Semi automatic advance – when pushed towards the knife the sledge will move along the runners and will also advance the specimen the selected amount (thickness). When pulled back the specimen retraction mechanism is activated.

2.2 Thickness control (5)

A knob, calibrated in microns, is used to select the thickness of sections to be cut from 1µm – 40µm, in 1µm steps. Always set the thickness by turning the knob anticlockwise. If the thickness has to be reduced then turn clockwise past the required thickness, then anticlockwise.

2.3 Coarse advance/trim control (4)

Quickly raises or lowers the specimen 450µm per turn. As this control is always engaged, it can be used at any time.

2.4 Specimen holder

Specimens are clamped in the vice (7) or alternative holder if fitted. The specimen holder can be raised and lowered after releasing the clamp lever (14).

2.5 Knife clamps

Two screws, turned by a lever (10), are used to fix the knife in the knife clamp and the knife clamp in the knife block (9). The cutting angle of the knife is adjustable from 0–40°. A scale is provided on the knife block. Slew angles of the knife can be obtained by loosening the knife block clamp levers (12) and the knife clamp levers (10) and moving knife to slew angle required.

2.6 Knife guards

Each knife guard (1) can be moved to the central position to cover the working area of the knife, or to the outer position while section cutting. The black knobs secure the guards in the chosen position.

2.7 Side pillars [Fig.1 20 & 23]

In normal use, these pillars slope inwards slightly. For large area sections they can be unbolted from the base, swapped left to right and refitted, so that they slop outwards, so providing more space.

3. OPERATION

The microtome should be installed on a sturdy bench at a height convenient for the operator. It may be used with its long axis parallel to the bench, at right angles or obliquely.

There are many variations of the preparation procedure according to the type of specimen to be sectioned, the size of the specimen and how the specimen is prepared.

The following general procedures can be applied to all uses:

3.1 Fitting the Object Holder

Pull the sledge away from the knife holders. Secure the required object holder by placing it in the holder in the sledge slide (17). Set to correct height and lock by tightening clamp lever (14).

Note that the clamp lever has a ratchet with its movement limited to prevent the lever being left in positions where it could impact on other parts during sectioning.

3.2 Fitting and Adjusting the Knife

NB: The term 'knife' used here also includes disposable blade holder.

- a. Slacken the knife clamp levers (10) just enough to let the knife slide into the knife clamps from the side.
- b. Insert the knife, taking care to avoid touching the edge against the metalwork.
- c. Check that the knife lies flat on the pad pieces in the knife clamps and that the heel of the knife is not caught up on the slot in the knife clamps.
- d. Screw the knife clamp levers down just sufficiently to steady the knife in position.
- e. Slacken the knife block clamp levers (12). Set the knife holders to the desired slew angle, ensure the knife clamps still cover the ends of the knife. Set the knife to the desired cutting angle and tighten the knife clamping levers.
- f. Check that the knife is still at the desired slew angles and tighten the knife block clamp levers.

NB: To ensure that the knife clamps are correctly aligned in the holders, the knife block clamp levers must always be slackened before the knife clamping levers are tightened.

3.3 Trimming the Specimen

Fit the specimen securely into the appropriate specimen holder on the microtome.

To trim excess material from the surface of the specimen block:

- a. First move the sledge towards the knife and adjust the specimen height using the coarse advance so that the specimen is just below the knife.
- b. Either set the thickness control to cut thick sections, eg: 20µm, and move the sledge back and forth repeatedly to trim the specimen.
- c. Or set the thickness control to zero and alternately raise the specimen slightly using the coarse advance and move the sledge forward then backwards. This method is quicker but should only be used if the operator is experienced in the use of base sledge microtomes.

3.4 Section Cutting and Collection

Select the desired section thickness. Operate the sledge back and forth a few times to remove any surface roughness on the specimen block caused by trimming.

Cut sections using slow, steady forward movements of the sledge. Wax-embedded specimens should form a ribbon of sections on the knife.

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.

3.5 Hints on Sectioning

1. Ensure the knife is sharp and clean. During use, the knife should be cleaned occasionally to remove built-up wax.
2. Wax embedded 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 artists 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 hotplate. Using temperatures 10° - 20° 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.

4. MAINTENANCE

The only routine maintenance required is regular cleaning and lubrication.

4.1 Cleaning

Wipe off sectioning debris etc with a paper towel. Alcohols (industrial methylated spirits, ethanol or methanol) may be used. Xylene may be used sparingly to remove built-up wax, but ensure surplus Xylene is wiped off.

Avoid harsh solvents such as acetone.

4.2 Lubrication

After cleaning, oil both the sliding surfaces of the sledge base [Fig.1 19] with Part No. 57425 Microtome Sledge Oil. Now move the sledge several times over the full length of travel to distribute oil.

The Slide Blocks Dovetails [Fig.1 6] should also be lubricated on a regular basis with Part No.57425 Microtome Sledge Oil.

4.3 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 8000 Sledge Microtome is constructed of materials which are sensitive to hypochlorite (bleach) solutions. These are corrosive to many metals and should be avoided.

4.4 Removing the Sledge

If the sledge has to be removed for any reason, great care must be taken to prevent damage to the sliding surfaces of either the sledge or the base.

- Remove the end stops [21]
- Slide the sledge off carefully [18]

Refitting is the reversal of removal.

Take care. The two components are heavy and fit closely together.

MATERIAL SAFETY DATA SHEET

Name: Microtome Lubricating Oil

Part Number: 57425

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:	OIL TYPE 'C'	
Container:	Plastic Bottle (200ml)	
Uses:	For lubrication of 8000 microtomes	
Data Sheet:	97	
Description:	Lubricating Oil	
Information on Ingredients		Physical and Chemical Properties
Highly refined white oil containing anti-wear, anti-corrosion and anti-oxidation additives		Physical form: Liquid Odour: Negligible Colour: Water White Water Solubility: Insoluble
Hazards Identification:		Stability and Reactivity
This product is NOT classified as hazardous for supply or conveyance/		Stable: Yes Conditions to Avoid: Extreme temperatures, store between 0 – 40°C Materials to Avoid: Strong oxidising agents Hazardous Polymerisation: Will not occur Hazardous Decomposition/Combustion Products: Hydrocarbons, oxides of carbon, traces of oxides of nitrogen and sulphur
First Aid procedures		Toxicological Information
Skin:	Wash thoroughly, with soap and water	Health effects: EYES: May cause transient irritation. SKIN: Prolonged contact may cause defatting of the skin resulting in cracking and soreness INHALATION: Low volatility make inhalation unlikely at ambient temperatures. INGESTION: May cause nausea, vomiting and diarrhoea Toxic effects can be delayed by up to 48hours OTHER: NONE known
Respiratory:	Fumes may irritate respiratory tract	
Ingest:	Harmless if swallowed in small amounts. DO NOT induce vomiting	
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, sand, earth or water fog	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, contain and absorb with sand, earth or mineral absorbent	Waste: Dispose of in accordance with local authority requirements
Handling and Storage		Transport Information
Handling: Storage:	No special precautions Store out of direct heat and avoid extremes of temperature. DO NOT leave container unsealed	Not classified as dangerous to transport
Exposure Controls		Regulatory Information
OES: 5mg/m3 (8hour TWA) and 10mg/m3 (10 minute reference period) (Ref:EH40/1999)		This product is a preparation and is NOT classified according to EEC Guideline 88/3709

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.

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5. SPECIFICATIONS

Specimen Orientation	<ul style="list-style-type: none">• $\pm 8^\circ$ horizontal and vertical [optional]
Cutting Stroke	<ul style="list-style-type: none">• 270mm
Maximum specimen size:	<ul style="list-style-type: none">• Maximum specimen size 250x110mm
Section thickness range	<ul style="list-style-type: none">• 0-040μm in 1μm increments
Total feed range	<ul style="list-style-type: none">• $\pm 8^\circ$ horizontal and vertical (optional)
Specimen holder	<ul style="list-style-type: none">• Specimen vice or quick release holder for cassettes, supercassettes and hardboard squares.
Dimensions	<ul style="list-style-type: none">• H325 x D610 x W260mm Net weight: 40Kg

6. ACCESSORIES AND CONSUMABLES

Parts and accessories can be obtained from 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 to

Part Number:	Description
51407	Single side, double clamp knife holder
51473	Tilt adapter $\pm 8^\circ$
53613	Supercassette quick release holder, for holding wax supercassettes, 75x52x19mm
51637	Quick release holder for hardboard squares
50533	Quick release holder for cassettes
529875	CO ₂ (gas) object holder and knife freezer
53023	Solid state freezer, a Peltier effect freezing stage, 30x30mm
53024	Solid state freezer, a Peltier effect freezing stage, 40x40mm
8000-208	Cryostage freezing stage, 130x90mm
51719	Object holder, 73x54mm
51720	Object holder, 100 x 66mm
51836	Object holder, 130x90mm
51717	Object holder, 250x110mm
50235	Steel knife with box. 'C' profile, 240x33x13mm 22° angle, tapped to accept holder for Shandon knife sharpener
53605	Knife sharpening back for 50235
50233	Steel knife with box. 'D' profile, 240x33x13mm 22° angle, tapped to accept holder for Shandon knife sharpener
50234	Tungsten carbide tipped knife with box, 228x38x6mm. Suitable for bone sections NB: Needs to be re-sharpened at our factory
57675	Holder for Feather™ blades with box, 240mm, complete
50241	Feather™ disposable blades, pack of 50
52647	Stem for 50232-1 and 50234 knives
51460-1	Knife raising block, one pair
57713-1	Bright Cryospray 134, 300ml aerosol can
57713	Bright Cryospray 134, 300ml aerosol can, carton of 12 cans
57344	Knife cleaning brush
57808	Anti-static brush, 12mm
57425	Microtome oil, 200ml