OTF5000 Cryostat

At the cutting edge of sectioning technology

Bright Instruments

Bright

Introduction

Based on the long-established and reliable OTF/AS cryostat, the new OTF5000 brings Bright cryostats completely up to date. New styling with improved user ergonomics, the latest blade systems in the ever-reliable and powerful 5040 microtome, a huge choice of options plus money-saving package deals make these cryostats absolutely unique.

They are suitable for an endless range of applications and in the correct configuration are capable of cutting a wide diversity of specimens from undecalcified bone to brain, resins, plastics and plant tissue as well as more usual soft tissue. Allowing full anti-roll plate adjustment for perfect results coupled with long lasting temperature stability, the OTF5000 can truly be described as complete.

Special Features

- New contoured top for added operator comfort and usability
- Suitable for research and clinical operation
- 2 money-saving special packages available
- Uses solid knives or disposable blades including new lever release FeatherTM blade holder
- Available in 2 different working heights
- Automatic evaporator defrost supplied as standard
- Non-urgent functions on side panel
- Long list of options and accessories
- Contains tried and tested 5040 rotary microtome

Styling for today – reliability for tomorrow

Configurations

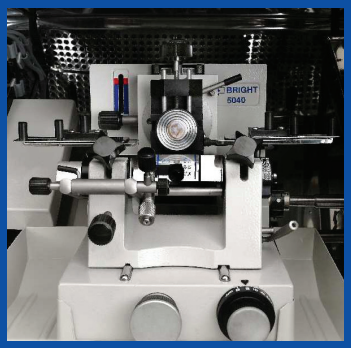
The OTF5000 cryostats are available in 3 configurations:

Basic Instrument which includes; Quick Freezer, Internal shelves, Evaporator defrost, Manual cutting system, 5040 microtome with fixed head, Heated window surround, Window demist system, Analogue defrost clock, Side mounted non urgent controls and a full set of accessories.

LS specification, which includes all of the features of the basic instrument and additionally; 2 speed motorised advance/rewind, Fine object orientation and Cryomatic specimen temperature control.

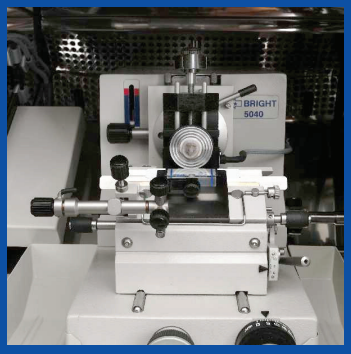
HS specification, which includes all the features of the LS specification and additionally; 6 digit section counter, Dual refrigeration and Motor drive.

5040 Microtome with Solid Knife Holder Block



The Bright 5040 microtome is based on original and proven designs that can cope with high cutting loads and yet perform very favourably under conditions of low temperature. Based on the principle of a parallelogram of forces, the 5040 is of unique construction. By incorporating thin flexible beryllium hinges the movement of the top arm of the microtome is strictly controlled by the position of a trunnion nut on a feed screw that is backlash-free. The design eliminates any expansion or contraction problems that might arise due to the large range of temperature changes which take place in a cryostat. The mechanical pawl and ratchet wheel system guarantees accurate head advance thus the user can have peace of mind that continuity of section thickness is being achieved.

Quick Release FeatherTM Blade Holder



Designed to make full use of the attributes of a FeatherTM blade, the Quick Release FeatherTM Blade Holder enables the Cryotomist to use the full length of the blade without waste. Other important features are the fact that the blade angle can be changed without changing the position of the blade edge since it is at the centre of the radius of angular movement. The Quick Release FeatherTM Blade Holder can quickly be changed for the standard knife block holder and vice versa. It is also extremely safe to change a blade because it is inserted from the side into a blade carriage.

Lever Release FeatherTM Blade Holder

The lever release FeatherTM blade holder fits into a standard knife holder block. Although less sophisticated than the quick release version, it is quite safe and easy to use and provides accessibility to the whole length of the blade. It is available for all versions of the OTF5000.

Defrost Timer

The defrost timer is set in the factory to switch the refrigeration off for 30 minutes at midnight each day. This works in conjunction with the defrost switch. There is an override switch so that the refrigeration can be switched off and the evaporator heater switched on. The purpose of the evaporator heater is to remove frost from the evaporator fins every 24 hours so that the refrigeration system will run more efficiently than if frost was allowed to accumulate.

Dual Refrigeration

The dual refrigeration controls are on HS, EC and LT model options only. The dual refrigeration switch allows selection of a single compressor or both together. For the EC model, when a single compressor is selected then the lowest achievable temperature is –35°C and –40°C when both compressors are selected. For the LT model this is –40°C and –45°C respectively.

An automatic timer cycles the compressors every hour.

There are three main benefits to dual compressor refrigeration:

1/. A dual compressor system can achieve lower chamber temperatures than a single compressor system and will cool down quicker.

2/. Compressor usage is shared, this will extend the life of the compressors.

3/. In the unlikely event of a compressor failure, the remaining compressor will automatically maintain the selected temperature, thus refrigeration will be uninterrupted. A warning light will indicate a compressor failure. This allows 24 hour guaranteed performance.

Quick Freeze Temperature Display

This LCD display shows the temperature of the Quick Freeze Bar. Typically the Quick Freeze Bar runs at about 7ºC to10ºC below the temperature of the cryostat chamber. The minimum temperature on a single refrigeration instrument is about –45ºC.

Cryomatic Specimen Temperature Display

This LCD display indicates the temperature of the specimen heater block. The associated controls allow the required temperature to be set by first pressing the Set button and then using the up and down arrow buttons to change the display to the desired value. After a few seconds the display will return to read the actual temperature of the specimen heater block. The display unit then acts as a controller to bring the specimen heater block to the desired temperature.

IMPORTANT NOTE:
The Cryomatic specimen temperature control is designed to raise the specimen temperature (when set) above that of the chamber temperature. It is the chamber temperature that sets the knife or blade temperature, once equilibrium has been reached (allowing for thermal lag). It is imperative with some tissues that the blade is colder than the specimen so that the tissue section is cooled by the blade and not warmed up.

If the section is warmed up, it may become "sticky" and compressed. Conversely when the blade or knife cools the section upon delivery it is in a better condition. Also, even with the sharpest blades or knives, friction is generated at the leading edge and this can produce tiny but appreciable amounts of heat. It is therefore better if a much cooler blade or knife dissipates the heat generated. Also, by having the Cryomatic specimen block electrically heated, the response time to changes of temperature is much faster than if a refrigerant system is used.

Chamber Temperature display

This LED display indicates the temperature of the cryostat chamber. The associated controls allow the required temperature to be set by first pressing the Set button and then using the up and down arrow buttons to change the display to the desired value. After a few seconds the display will return to read the actual temperature of the chamber. The display unit then acts as a controller to bring the chamber to the desired temperature.

Quick Freeze Bar

The Quick Freeze Bar can accommodate 5 x 22mm dia. Specimen Holders and 4 x 37mm Specimen Holders in the positions provided. The temperature of the Freeze Bar is approximately 10 degrees C lower than the chamber temperature. Typically when the chamber temperature is set to –20ºC then the Quick Freeze Bar will vary in temperature around –30ºC +/- 2ºC.

Front Panel Controls

(Where fitted)

Quickfreeze Temperature LCD
Specimen Temperature LCD
Chamber Temperature LCD
Single/Dual Refrigeration button
Refrigeration Alarm light
Chamber Light, button all on splash proof membrane panel.

Drive Controls

(Where fitted)

Emergency Stop Button
Section Counter
Trim/Single Button
Motor Drive Button
Upper/Lower Cutting Zones
Cutting Zone Speed Control
Motor Drive Stop/Start
Motorised Rewind/Advance

Basic Specifications

Cryochamber	Polished stainless steel construction
Quick freezer	9 position, running at 10º C below chamber temperature, ultra low temperature –80ºC version can be factory fitted at extra cost
Minimum chamber temperature	Single compressor –35ºC
Compressor type	1 x 15cc displacement 2 x 15cc displacement (for /EC or /LT options)
Refrigerant	Ozone friendly HFC refrigerants
Cooling power	150watt at -35ºC 300watt at –40ºC (for /EC or /LT options)
Lowest set temperature	Ambient to –35ºC with automatic defrost. Lower Temperature options are available: ambient to –40ºC (/EC) and ambient to –45ºC (/LT)
Shelves	3 internal, 1 external
Chamber temperature control	Microprocessor with LED display
Evaporator defrost	Automatic with analogue clock
Cutting system	Manual with balanced handwheel
Microtome	5040 rotary microtome with beryllium hinges
Section range	0.5 to 30µm in 0.5µm increments
Maximum head advance	5.6mm
Maximum knife block adjustment	44mm (Coarse control)
Knife angle adjustment	25º
Window surrounds	Heated
Window demist system	Fan driven, automatic
Surface finishes	Easy clean, scratch and solvent resistant, flame retardant
Defrost clock	Analogue with battery back-up
Non urgent controls	Side mounted
Normal working height	990mm
Low working height	890mm

LS Specification

As the basic specification but with the addition of the following items:

Object orientation	Fine, with +/-8º in horizontal and vertical axes, 360º rotation
Motorised Advance/Rewind	2 speed, 116µm/s and 164µm/s with auto-reset
Specimen temperature control	fast reacting from -5ºC to minimum chamber temperature microprocessor controlled with LED display

HS Specification

As the LS specification but with the addition of the following items:

Sections counter	6 digit LCD displays
Dual refrigeration	Twin compressors automatically switched with fail-safe feature, -40°C chamber temperature. LT system available to go to –45°C Note: ultra low temperature –80°C quick freezer cannot be fitted to the HS model
Motor drive	Features cutting window to accommodate differences in specimen size, infinitely variable speed control in cutting window, slow speed version available for cutting hard materials, footswitch operation available

Other Accessories include:

Low height option for cabinet, Glove port, thin section conversion kit, Large area sectioning kit, UV Decontamination unit, Magnacut disposable blade system, Holders for glass knives, Full range of knives and object holders. See price list for full details.

OTF 5000 DIMENSIONS:

UNPACKED

High Spec & OTF5000 with MR

	With Hand wheel	Without hand wheel
Width	89cms	80cms
Depth	90cms	90cms
Height	130cms	130cms

Low Spec & Basic

	With Hand wheel	Without hand wheel
Width	81cms	73cms
Depth	90cms	90cms
Height	130cms	130cms

PACKED DIMENSIONS

ALL OTF 5000

Width	106cms	
Depth	90cms	
Height	154cms	

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Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct.
If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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