The EMS Family of Tissue Slicers

EMS7000smz and EMS5000mz Vibrating Microtomes

Our top-of-the-range high precision, vibrating microtomes, are the finest slicers in the world for all specimen preparation.

- **With Sub-micron Z-axis Deflection at all amplitudes and speeds**
- **With calibration unit**
- **Easy to use**
- **Service-free operation**
- **Considerable longevity**

The EMS5000mz is a very competitively priced high precision unit with a z-axis deflection of only 1-2 microns and a blade advance controllable to 10 microns/sec. The EMS7000smz unit with a z-axis deflection of Sub-Micron and a blade advance controllable to 10 microns/second. On both units the section thickness step size is 0.001mm and each vibrating microtome is supplied with its own z-axis calibration verifier.

All types of sectioning is possible including sectioning for visual patching of neurological tissue, heart, and lung, and much more....

FEATURES

- Includes a Z-axis devification device
- Z-axis blade adjust minimizer
- Custom blade holder with angle set to user requirement
- Set START and STOP position for blade travel.
- Vibration speeds from 50 to 120 Hz
- Amplitudes from 0.5mm to 2.25mm
- Controlled blade advance at 10microns per sec.
- Ice water bath easily removed for cleaning
- Optional LED light source
- Optional magnifier for clear observation
- Optional stereoscope, choice of x5-x10 fixed or x10-40 zoom for optimal observation

On the EMS7000smz additional features:

- Choice of manual or automatic operation
- Auto programming by storage of the first slicing speed and distance profile

OPTIONS

Temperature Controlled Standard Tissue Bath

Integrally Mounted Cold Light Source

Integrally Mounted Magnifying Glass

Integrally Mounted Inspection Microscope (10x-40x)

Integrally Mounted Inspection Microscope (x5 and x10)

Electron Microscopy Sciences

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CONSUMABLES

1. Ceramic Blades (5pk)

Model 7550-1-C

Product Description

The new blade holder design is now included with all Integraslice and Vibroslice instruments. 7550-1-C and 7550-1-SS are designed for new Integraslice instruments.

Product Specifications

	7550-1-C	7550-1-SS
Material	Ceramic	Stainless Steel
Dimensions	38mm x 7mm x 0.5mm	38mm x 9mm x 0.5mm
Geometry	Single sided	Double sided
Bevel	Single bevel	Double bevel
Honing	Lapped edge	Ground edge

Product Features

- Made from ultra hard zirconium
- Honed by a process of “lapping” both sides of the single bevel to micron flatness
- Great rigidity, hence a straight cutting edge
- Prolonged slice life, especially in the most difficult of tissues such as young brain or very old brain
- Inert and impervious to corrosion
- Initial higher cost is offset by its longevity
- Fits into a special blade holder now standard on both Integraslice and Vibroslice instruments
- Dimensions: 38mm x 7mm x 0.5mm

2. Stainless Steel Blades (50pk)

Model 7550-1-SS

Product Description

- Double beveled on both faces, honed to an acute cutting edge and hardened to 56 Rockwell.
- Nevertheless, stainless steel is relatively soft and these blades are usually used once or at a maximum changed every day.
- These blades are for use in specially designed blade holders for Vibroslice instruments manufactured prior to 2003.

Product Specifications

	7550-1-SS	7550-1-C
Material	Stainless Steel	Ceramic
Dimensions	38mm x 9mm x 0.5mm	38mm x 7mm x 0.5mm
Geometry	Double sided	Single sided
Bevel	Double bevel	Single bevel
Honing	Ground edge	Lapped edge

ORDERING INFORMATION

EMS7000smz and EMS5000mz Vibrating Microtomes, Options, and Accessories

The finest vibration microtomes with sub-micron z-axis deflection at all speeds and amplitudes of vibration

Model No.	Description
5000mz	Vibratome, includes demountable tissue bath and sample blades in stainless steel and ceramic
7000smz	Programable Vibratome, includes demountable tissue bath and sample blades in stainless steel and ceramic plus z-axis calibration device

7000-4-1

7000-4-2

7000-3-1
Inner and Outer Bath

Optional Accessories

7610	Standard Temp. Controlled Tissue Bath
7000-1-3	Magnifying Glass, mounted to machine
7000-1-2	Inspection Microscope fixed x5 & x10
7000-1-1	Inspection Microscope zoom x10-40
7000-2-1	Cold Light Source

Spares and Accessories

7000-3-1	Tissue Bath, Ice bath and specimen mount complete
7000-3-2	Tissue Bath, Ice bath and tilting specimen mount complete
7000-3-5	Tissue Bath, Ice bath, in perspex to fit previous Campden model 752 tissue mount
7000-4-1	Specimen mount only
7000-4-2	Tilting specimen only
7000-5-1	Blade holder- standard
7000-5-3	Blade holder- special angle
7000-6-1	“Opti-Cal” Z-axis measurement, traceable to national standards
7000-7-1	Blade Handling Tool
7000-50-1	Tool Kit
7000-60-1	Transit Crate

7550/1/SS	Stainless Steel Blades, pack of 50
7550/1/C	Ceramic Blades, pack of 5

Electron Microscopy Sciences is committed to offering you the most up to date equipment on the market. If you have any ideas or would like to see us make any changes in our line please let us know All ideas and suggestions are encouraged. We look forward to hearing from you.

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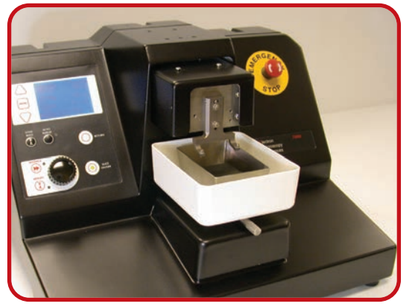
The EMS Family of Tissue Slicers

EMS7000smx shown with optional cold light



EMS7000smz and EMS5000mz Vibrating Microtomes

• With Sub-micron Z-axis Deflection at all amplitudes and speeds • With calibration unit •
• Easy to use • Service-free operation • Considerable longevity

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FEATURES AT A GLANCE

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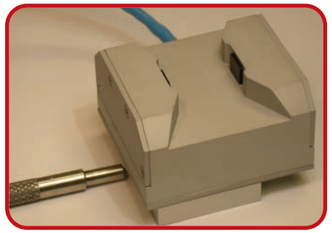
On the EMS7000smz additional features:

- Choice of manual or automatic operation
- Auto programming by storage of the first slicing speed and distance profile



Opti-Cal (standard with the 7000)

Bath and Mount

Tilt Mount and Inner Bath

EMS7000smz and EMS5000mz Vibrating Microtomes

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All types of sectioning is possible including sectioning for visual patching of neurological tissue, heart, and lung, and much more....

The effect of excessive Z-axis deflection on the health and viability of the tissue preparation has been much discussed since the publication of Jonas et al (2003) and the EMS7000smz will now deliver perfect sections every time with sub-micron Z axis deflection across a wide range of vibration speeds and amplitudes.The affordable 5000mz offers almost the same features with Z-axis deflection of 1-2 microns at all vibration speeds and amplitudes, which is less than most other microtomes on the market.

The all-new user interface is both easy to use and versatile. The 7000smz and the 5000mz offer similar operation at the press of a button. The versatility includes simple operation at the push of a button or a range of changeable and programmable parameters and a menu enables the settings of your own preferences.

The EMS7000smz also gives you longevity of performance, in other words it not only gives submicron performance out-of-the-box but the advance vibrating mechanism does not contain bearings and other components subject to wear. Consequently it will retain the sub-micron Z-axis deflection performance for years to come, giving you consistency in your biological preparation.

Tissue cooling is accomplished by the use of either an ice-water bath or an electronically controlled thermo-electric cooler. Other options include a LED cold light source and a magnifier or a stereoscope for clear observation whilst slicing.

TECHNICAL SPECIFICATIONS:

Model	EMS7000smz	EMS5000mz
Section thickness step size	0.001 mm	0.001 mm
Z-Axis Deflection	Sub-micron	1-2 microns
Measured at all speeds and amplitudes with capacitance devices traceable to National Standards		
Blade oscillation frequency at calibration	25 Hz	25 Hz
Blade oscillation amplitude at calibration	2.25mm	2.0mm
Total travel of Bath table	19 mm	19 mm
Bath table rise & fall speed	0.85 mm/sec maximum	0.85 mm/sec maximum
Cutting head advance speed when slicing	From a minimum of -1.00 mm/sec, through the zero point to a maximum of +1.00 mm/sec	From a minimum of -1.00 mm/sec, through the zero point to a maximum of +1.00 mm/sec
Cutting head advance speed resolution	0.01 mm/sec	0.01 mm/sec
Cutting head advance speed max (fast mode)	+/- 4.0 mm/sec	+/- 4.0 mm/sec
Cutting head retraction speed	4.0 mm/sec	4.0 mm/sec
Blade oscillation frequency (amplitude dependent)	50Hz to120Hz	50Hz to 100Hz
Frequency step size	5 Hz	5 Hz
Blade oscillation amplitude (nominal)	0.5 mm to 2.5 mm	0.5 mm to 2.0 mm
Blade oscillation amplitude step size:	0.25 mm (nominal)	0.25 mm (nominal)
Machine Dimensions *LxWxH (With magnifier and cold light options but without scope)*	390 x 390 x 260mm	390 x 390 x 260mm
Tissue bath and tissue mount	Tissue bath is demountable for easy Cleaning.	Tissue bath is demountable for easy cleaning.
Power requirements: (selectable)	115VAC 60Hz or 230VAC 50Hz	115VAC 60Hz or 230VAC 50Hz
Power rating	tba	tba
Fuse rating	(115V) (230V)	(115V)(230V)
Weight, lift handles supplied	43 Kg (excluding microscope)	43 Kg (excluding microscope)
Shipping weight	58 Kg (excluding microscope)	58 Kg (excluding microscope)
Shipping dimensions in wooden crate	475mm x 540mm x 840mm	475mm x 540mm x 840mm

OPTIONS

1. Temperature Controlled Standard Tissue Bath

Model 7610

Product Description

The 7610 Tissue Bath Cooler Unit is intended for use with our 7000 and 5000 range of vibrating microtomes. Unfixed brain slices sectioned at 4˚C give better tissue preservation and are viable for longer in-vitro recordings. Additionally, some enzyme histochemical techniques give better staining results when sectioned at low temperatures.

The 7610 Series coolers use “Peltier” thermoelectric elements. The stainless steel tissue bath and mount are detachable to allow sterilisation by autoclave if required.

7610 Bath with Standard Mount

7610 Bath with Tilting Mount

The equipment comprises of a mains operated control unit, cooling element, tissue bath and specimen holder.

The control unit houses a power supply and temperature control circuitry.

The cooling element assembly consists of thermoelectric “Peltier” elements, temperature feedback sensors and a cold water fed heat exchanger.

Current from the power supply flows through the thermoelectric elements, which act as heat transfer units. Heat is drawn off, cooling the solution in the tissue bath. The heat generated by this process is removed by the water supply fed through the heat exchanger. The unit uses a proportional temperature control algorithm to maintain temperature stability. This will hold the bath temperature to within 0.5ºC of the temperature set point. There will, however, be a small variation in temperature vertically through the bath. Experience will show the best temperature to be set for any given requirement and ambient temperature.

Product Specifications

Display Resolution: 0.1˚C

Temperature Accuracy: +/- .5˚C

Temperature Range: +8˚C to 0˚C

(Note that the actual temperatures achievable will be dependent upon the solutions used and local temperature conditions)

Voltage Requirements: 230V 50Hz or 115V 60Hz

Power Rating: 60W

Inlet Fuse Rating: 2A

2. Integrally Mounted Cold Light Source

Model 7000-2-1

Product Description

To facilitate the careful slicing operation, it is most important that the progress of the blade through the tissue be clearly observed. This observation is used to ensure control of the speed of advance and of the oscillation of the blade. Two elements are required for clear observation, light and magnification.

Product Features

- Ability to direct the light where needed with two flexible fiber optic light guides.
- Maintains temperature stability of the tissue or surrounding a.c.s.f.
- Light Intensity is adjustable by a rotary dial knob.
- 20W/12V Halogen lamp
- 2000 hour life approx.
- Fan and electronic power supply
- Adjustable with potentiometer
- Twin 500mm fibre optic light guides

3. Integrally Mounted Magnifying Glass

Model 7000-1-3

Product Description

For general global slices a magnifying glass offering approx 2x magnification is sufficient. However, if specific loci are under study then an inspection microscope is desirable. The binocular inspection microscope with 10x-40x magnification, a zoom of 1x-4x and a working distance of 80mm is ideal for the task.

Product Features

- 115mm Diameter
- 305mm Focal Length
- 2x Magnification

4. Integrally Mounted Inspection Microscope (10x-40x)

Model 7000-1-1

5. Integrally Mounted Inspection Microscope (x5 and x10)

Model 7000-1-2