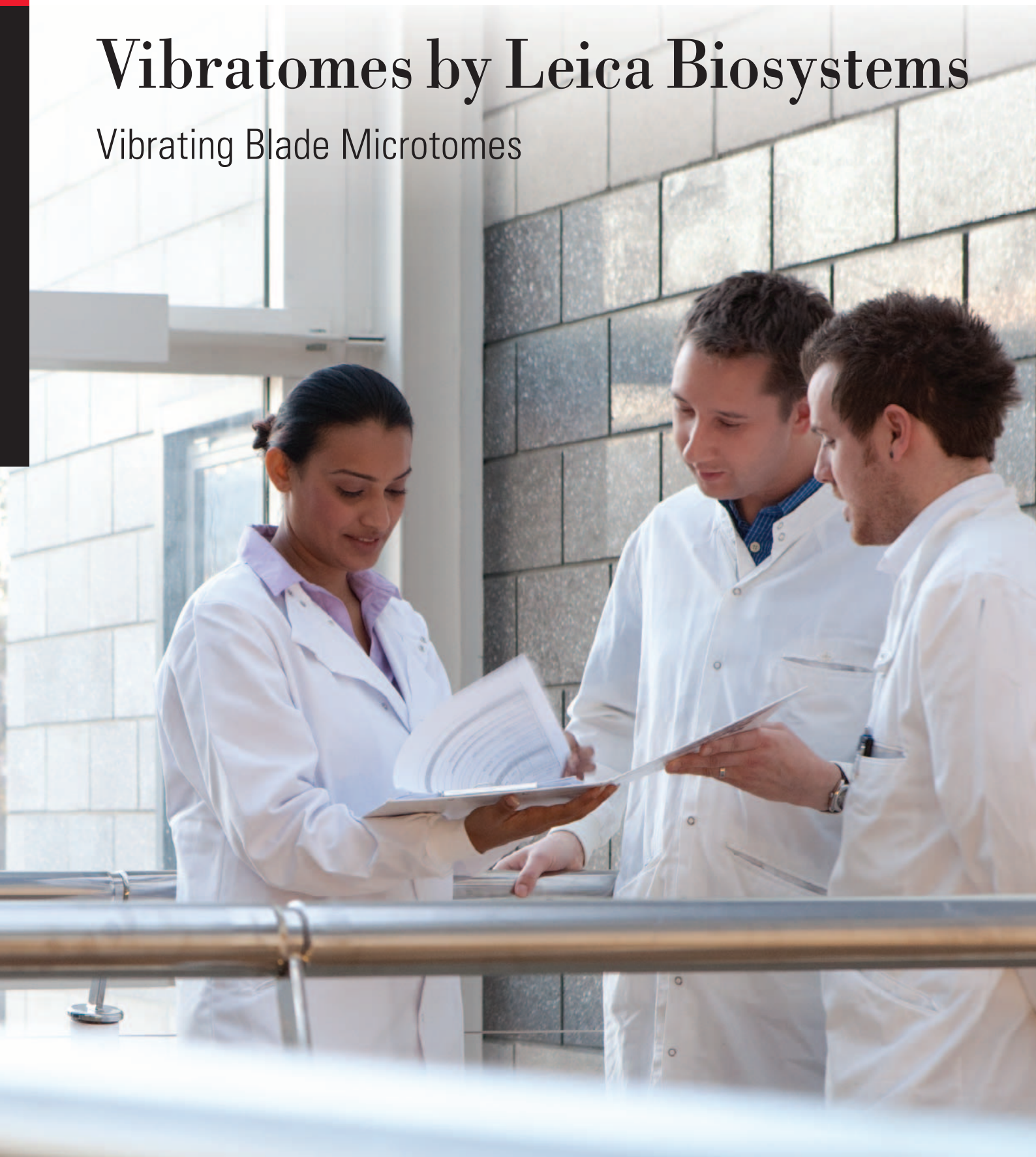


The Pathology Company

Leica
BIOSYSTEMS

Vibratomes by Leica Biosystems

Vibrating Blade Microtomes

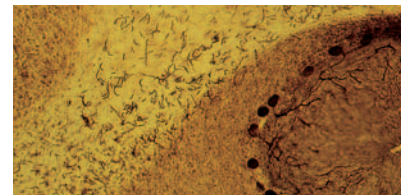
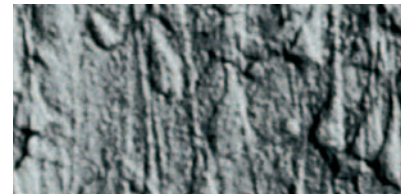
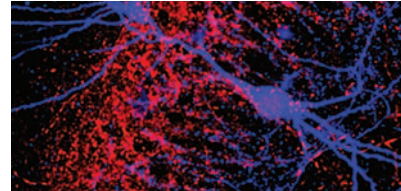


Cutting Edge Precision

Vibrating blade microtomes are used to produce monolayer or thick sections of fixed or fresh tissue under physiological conditions without freezing or embedding. Sectioning fresh tissue specimens with Leica Biosystems' VT Series maintains the morphology, enzyme activity and cell viability of the tissue. Their use also minimizes artifacts, compression distortion, cell destruction and other inherent deleterious effects of sectioning.

Applications for these instruments include immunohistochemistry, cell culturing of different organs, sections for patchclamping, electrophysiology, free floating sections and many other applications in neuroscience.

In order to maintain physiological conditions while sectioning, it is common to use chilled buffer and minimize the vertical deflection of the blade holder as well as the blade. During operation, the blade vibrates laterally and advances forward through the specimen. Section thickness is determined by motorized or manual vertical feeding of the specimen stage. Other parameters that influence section quality are amplitude, frequency, knife travel speed and blade angle. The Leica VT Series of instruments offers a complete product range that control some or all of these parameters.



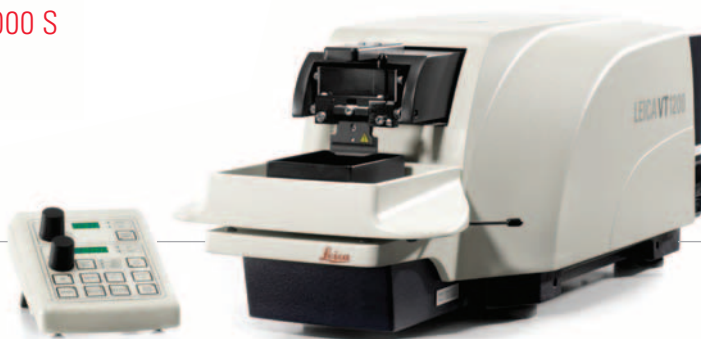
Leica Biosystems offers a wide variety of vibrating blade microtomes that have been developed in collaboration with renowned scientists throughout the world. There is an instrument for every researcher's application and budget. The features of each instrument vary in the degree of automation, ranging from the Leica VT2000 to the fully automated Leica VT1000 S and VT1200 S with optional Vibrocheck, for measuring and minimizing vertical blade deflection

Lean principles are revolutionizing the way laboratories operate. Leica Biosystems prides itself on providing high quality, reliable and durable instruments. The vibrating blade microtomes can greatly improve productivity and reduce costs in the laboratory by producing high quality sections with viable cells without the need of replicating experiments.

Leica Biosystems expresses its thanks to Prof. Dr. Peter Jonas, Francisco Javier García Ladona, Ph.D., Shawn Hochman, Ph.D., and Dr. Andreas Schober for granting their permission to use the application photographs contained in this brochure.



LEICA VT1000 S



LEICA VT1200



LEICA VT1200 S

Specifications	Leica VT1000 S	Leica VT1200	Leica VT1200 S
Vibrocheck (measurement device for vertical deflection of the blade)		•	•
Fully automated cut mode	•		•
Specimen retraction	•		•
Adjustable amplitude	•	•	•
Adjustable frequency	•		
Blade travel speed	0.025 - 2.5mm/s	0.01 - 1.5 mm/s	0.01 - 1.5 mm/s
Adjustable cutting window	electronic		individually programable front and rear position
Maximum specimen size	70 x 40 x 15 mm	33 x 50 x 20 mm	33 x 50 x 20 mm
Total vertical specimen stroke	15 mm	20 mm	20 mm
Selection of buffer trays	•	•	•
Cooling options	Chiller	Chiller	Chiller
Memory capability for storing section thickness		•	
Multiple user settings			8 different user settings
Adjustable return stroke			1- 5 mm/s
Adjustable forward speed in manual mode			1- 5 mm/s
Magnification options	2x magnifier	2x magnifier, microscope	2x magnifier, microscope

Leica VT1000 S

Vibrating Blade Microtome

The classic design of the Leica VT1000 S makes working with the instrument a pleasure. Ergonomic hand rests and direct access to all functional elements provide exceptional comfort and added safety. The VT1000 S features very fine adjustable knife advance speed, a freely programmable cutting window, and accelerated return knife speed to minimize overall sectioning time of even the smallest specimens. The VT1000 S vibrating blade microtome is designed to consistently produce thin sections of fixed tissue specimens, even non-homogeneous specimens that are difficult to section. It is also used for some industrial applications related to structural analysis of foam and other very soft materials and botanical specimens such as plants and roots.

KEY FEATURES

- Ergonomic design for comfortable working conditions
- 5 different amplitude settings from 0.2 - 1 mm
- Linear sectioning speed adjustment from 0.025 mm - 2.5 mm
- Linear sectioning frequency adjustment from 0 - 100 Hz
- Programmable specimen retraction
- Freely programmable sectioning window
- Single and continuous stroke options for ultimate versatility
- Easy mounting and removing of knife holder and buffer tray for efficient workflow
- Dark buffer tray provides excellent contrast to the specimen



The optional double-walled buffer tray is available in two different sizes which allows sectioning of specimens 33 x 40 mm or as large as 70 x 40 mm.



Standard knife holder S and buffer tray S with optional magnetic specimen holder.

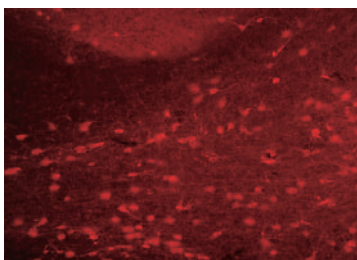
The Leica VT1000 S sections specimens under physiological conditions, which protects tissue, enzymes and antigens. For that purpose, the specimen is mounted directly onto a specimen plate, using cyanoacrylate adhesive, and placed into a buffer tray filled with cooled physiological buffer solution. The buffer provides a flotation medium for the sections. To maintain stable, cold buffer temperature, the integrated ice bath can be filled with crushed ice or the optional double-walled buffer tray can be connected with a circulation cooling device. Both the knife holder and buffer tray are easily removed to reduce the risk of reagent carryover or contamination when sectioning.



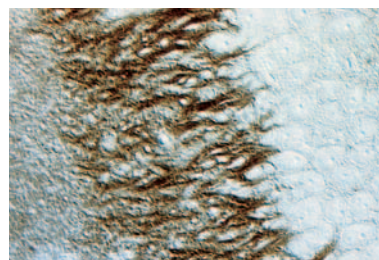
The variable frequency allows the VT1000 S to adapt to a variety of applications. Accurate control of the knife or blade movement is integral in the design of this instrument. The visual clarity provided by the wide large-field magnifier, supplied as standard delivery, can be enhanced with a fiber optic lighting system (optional). Together, these features provide exact, individually adjustable illumination of the entire sectioning range, and prevents surface reflection of the buffer solution for accurate sectioning.



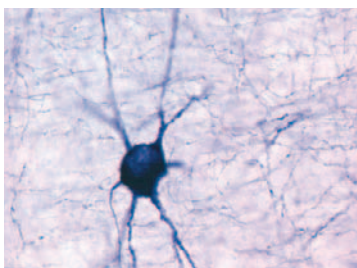
Leica Design by Werner Hölbl



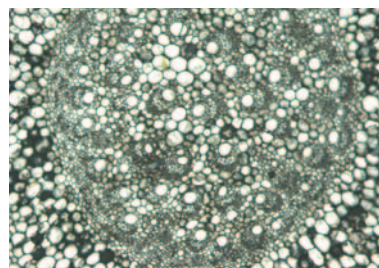
Labeling of cholinergic septal neurons in rat basal forebrain by using a polyclonal antiserum against choline acetyltransferase (ChAT).



CA3 field of rat hippocampus. Syntaxin positive axon terminals over pyramidal cells. 40 μ m section. 400x.



Transversal section through rat brain cortex at the forebrain level. A large single neuron was labeled by NADPH-diaphorase histochemistry. The small axon and some branching dendrites are visible.



Epipremnum pinnatum (ivy). 50 μ m section.

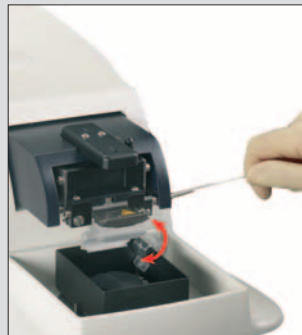
Leica VT1200 and VT1200 S

Vibrating Blade Microtomes

Fresh nervous tissues, brain and spinal cord are soft, fragile and extremely susceptible to mechanical damage. The Leica VT1200 and VT1200 S vibrating blade microtomes are designed to meet the highest demands for cutting fresh and fixed tissue in Neuropathology, Neurophysiology (patch-clamping) and Electrophysiology. These robust instruments feature a new blade holder design with the possibility to measure vertical deflection using the optional Vibrocheck device. Negative mechanical effects on the tissue are reduced to a minimum. This produces the highest quality sections that retain viable cells on the section surface/s.

KEY FEATURES

- Vertical deflection of the blade can be measured with the optional Vibrocheck device and minimized below 1 μ m
- Blade holder can be rotated through 90° to permit accurate insertion of a whole double edged razor blade, sapphire knife or injector blade.
- Optimized blade holder designed for minimum buffer spillage.
- Motorized blade holder sectioning speed adjustable between 0.01 to 1.5 mm/sec.
- Palm rests on the ice bath or double-walled buffer tray allow a relaxed, ergonomic working position.
- Built-in LED illumination provides natural, comfortable lighting during sectioning without adding heat, which could deteriorate the tissue. The Leica VT1200 S features 5-step adjustable light intensity.





MODULAR FUNCTIONALITY

Both instrument versions can be enhanced with an optional magnifier (2x) or microscope to improve visual clarity.

The **SEMI-AUTOMATED LEICA VT1200** has been designed for users who prefer to manually control sectioning parameters such as section thickness and cutting stroke for each individual section. The VT1200 offers straightforward, intuitive operation, fast sectioning and a full range of accessories at an attractive price.

The **FULLY-AUTOMATED LEICA VT1200 S** is recommended for multi user laboratories where users of both semi-automated vibrating blade microtomes and fully automated instruments work together. VT1200 S can be used in both semi- or fully-automated sectioning modes depending on the users' requirements. The fully automated mode of the VT1200 S offers automatic feeding, specimen retraction, and a cutting window. The mode of operation can be individually selected, and settings can be stored for up to 8 users. Automatic feeding, specimen retraction and use of a cutting window are designed to minimize sectioning time.



Leica Design by Werner Hölbl

CUSTOMIZED COMFORT

The separate, foil-protected control panel can be placed on either side of the instrument depending on the personal preference of the user

FLEXIBLE PERFORMANCE

The removable ice bath and buffer tray allow working under physiological conditions and away from the instrument, e.g., under a microscope.



OPTIONAL MEASUREMENT DEVICE: VIBROCHECK™

The vertical deflection of the blade can be measured by the Vibrocheck measurement device. Both vertical deflection (in μm) and rotation direction of the adjustment screw are displayed on the separate, foil-protected control panel. The adjustment screw on the blade holder allows minimization of the vertical deflection to below $1 \mu\text{m}$, which significantly increases the number of viable cells.

TECHNICAL SPECIFICATIONS

Leica VT1000 S	
Cutting frequency	Linear adjustment from 0 to 100 Hz
Rated voltage range	100 V to 240 V ($\pm 10\%$)
Rated frequency	50/60 Hz ($\pm 10\%$)
Power consumption	35 VA
Amplitude	5 different settings selectable: 0.2; 0.4; 0.6; 0.8; 1.0 mm
Sectioning speed	0.025 to 2.5 mm/s
Maximum specimen size: With standard blade holder (LxW) With knife holder L (LxW)	33 mm x 40 mm 70 mm x 40 mm
Section thickness adjustment	1 to 999 μm (in 1 μm increments)
Total vertical specimen stroke	15 mm (motorized) standard or 20 mm (optional)
Return speed	5 mm/s
Specimen retraction	0 to 999 μm (motorized)
Sectioning range	1 to 40 mm

Leica VT1200	
Cutting frequency	85 Hz ($\pm 10\%$)
Rated voltage range	100 V to 240 V ($\pm 10\%$)
Rated frequency	50/60 Hz ($\pm 10\%$)
Power consumption	35 VA
Amplitude	from 0 to 3 mm, in 0.05 mm increments
Sectioning speed	0.01 to 1.5 mm/s ($\pm 10\%$)
Maximum specimen size: With standard blade holder (LxW) Specimen orientation, rotating Specimen plate, swiveling	33 mm x 50 mm 360° 0 to 10°
Section thickness adjustment .	manual in 1 μm increments or automatic max. 1000 μm
Total vertical specimen stroke	20 mm (motorized)
Return speed	2.5 mm/s ($\pm 10\%$)
Sectioning range	45 mm (adjustable)
Size L x W x H (basic instrument without control unit)	600 mm x 250 mm x 230 mm
Weight (basic instrument without control unit)	56 kg
Leica VT1200 S – same as Leica VT1200 above, plus:	
Return speed	1 to 5 mm/s, in 0.5 mm increments ($\pm 10\%$)
Cutting window	0.5 mm to 45 mm
Specimen retraction	0 to 100 μm (adjustable, can be deactivated)
Section thickness adjustment	manual in 1 μm increments or automatic max. 1000 μm

LEICA BIOSYSTEMS

Leica Biosystems is a global leader in workflow solutions and automation, striving to advance cancer diagnostics to improve patients' lives. Leica Biosystems provides anatomic pathology laboratories and researchers a comprehensive product range for each step in the pathology process, from sample preparation and staining to imaging and reporting. Our easy-to-use and consistently reliable offerings help improve workflow efficiency and diagnostic confidence. The company is represented in over 100 countries and is headquartered in Nussloch, Germany.

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