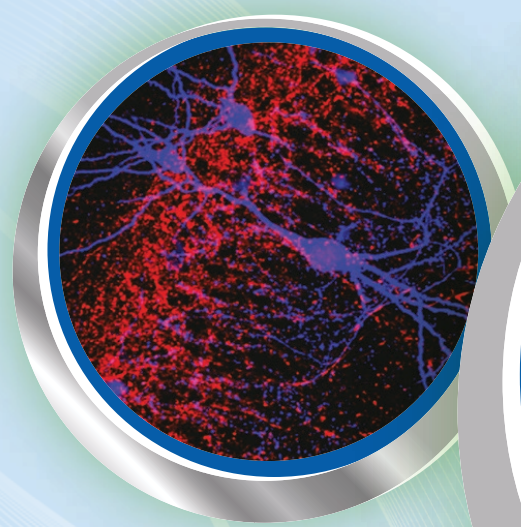
R E S E A R C H S O L U T I O N S

V I B R A T O M E S

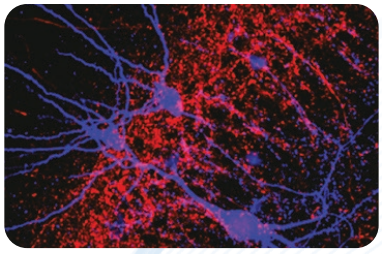
C U T T I N G E D G E P R E C I S I O N

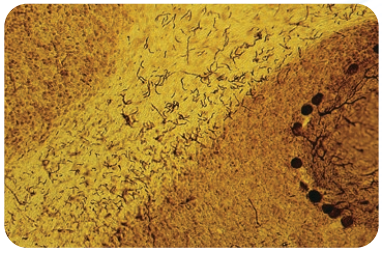


Advancing Cancer Diagnostics
Improving Lives

Leica
BIOSYSTEMS

VIBRATOMES

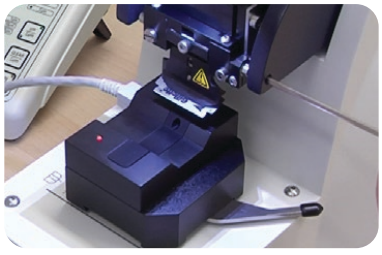




Vibrating blade microtomes are used to produce monolayer or thick sections of fixed or fresh tissue under physiological conditions without freezing or embedding. Sectioning fresh tissue specimens with Leica Biosystems VT Series maintains the morphology, enzyme activity and cell viability of the tissue. 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, resulting in high-quality sections without the need of replicating experiments.

In order to maintain physiological conditions while sectioning fresh tissue, it is common to use chilled buffer and minimize the vertical deflection of the blade. During operation, the blade vibrates laterally and advances forward through the specimen. 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.



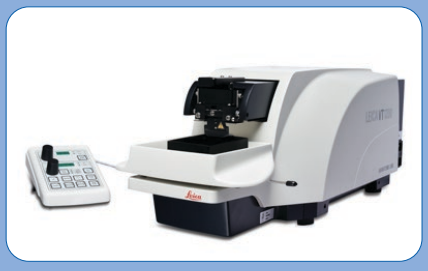
OPTIONAL MEASUREMENT DEVICE FOR VT1200/S: VIBROCHECK

The vertical deflection of the blade can be measured by the Vibrocheck measurement device. The adjustment of the blade allows minimization of the vertical deflection to below 1 µm, which significantly increases the number of viable cells.

Leica Biosystems offers a 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 VT1200 to the fully automated Leica VT1000 S and VT1200 S with optional Vibrocheck, for measuring and minimizing vertical blade deflection.

LEICA VT1000 S

LEICA VT1200



LEICA VT1200 S

LEICA BIOSYSTEMS VIBRATOME SERIES SPECIFICATIONS

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 in 5 steps: 0.2; 0.4; 0.6; 0.8; 1 mm	From 0 - 3 mm, in increments of 0.05 mm	From 0 - 3 mm, in increments of 0.05 mm
Frequency	Adjustable: 0 - 100 Hz	Fixed: 85 Hz (± 10 %)	Fixed: 85 Hz (± 10 %)
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	33 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	Crushed ice or chiller	Crushed ice or chiller	Crushed ice or chiller
Multiple user settings			8 different user settings
Return speed	5 mm/s	2.5 mm/s	1.0 - 5 mm/s, in increments of 0.5 mm/s
Magnification options	2x magnifier	2x magnifier, microscope	2x magnifier, microscope

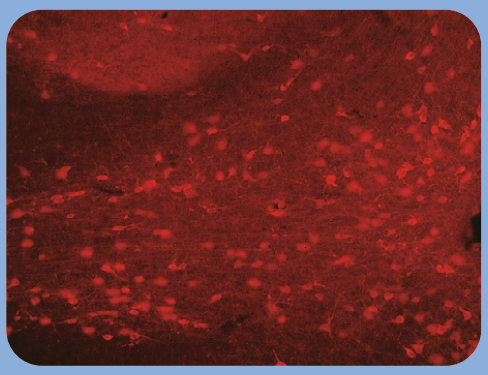
LEICA VT1000 S

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. The VT1000 S features 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.

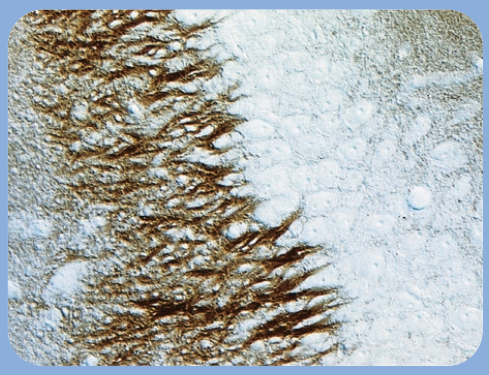
Leica Design by Werner Hölbl

The variable frequency and amplitude allow the VT1000 S to adapt to a variety of applications. The visual clarity provided by the wide large-field magnifier, can be enhanced with an LED lighting system. Together, these features provide exact, individually adjustable illumination of the entire sectioning range, and minimizes surface reflection of the buffer solution for accurate sectioning.

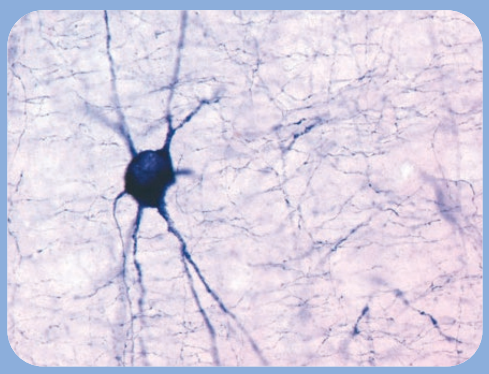
APPLICATION EXAMPLES



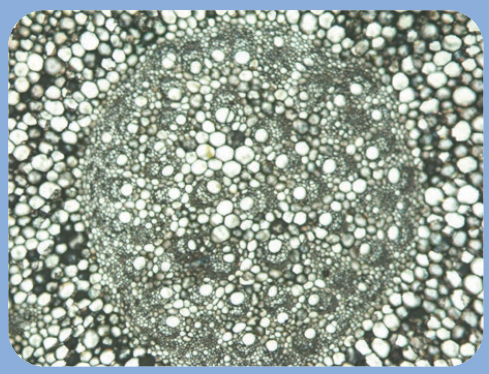
Labeling of cholinergic septal neurons in rat basal forebrain by using a polyclonal antiserum against choline acetyltransferase (ChAT).



CA3 field of rat hippocampus. Syntaxin positive axon terminals over pyramidal cells. 40 µm 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 µm 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 today's sectioning demands for cutting fresh tissue in Neuropathology, Neurophysiology (patch-clamping) and Electrophysiology. These robust instruments feature a 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, which significantly increases the the number of viable cells.

The instrument was designed in collaboration with Prof. Dr. Peter Jonas (previously at the Physiology department of the University of Freiburg, Germany, now at Institute of Science and Technology, Klosterneuburg, Austria) and his former group.

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.

Modular Functionality

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

Leica Design by Werner Hölbl

Flexible Performance

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

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.

LeicaBiosystems.com

Leica Biosystems is an international company with a strong network of worldwide customer services. For detailed contact information on your nearest sales office or distributor please visit our website: **LeicaBiosystems.com**

Leica Biosystems is a global leader in workflow solutions and automation. As the only company to own the workflow from biopsy to diagnosis, we are uniquely positioned to break down the barriers between each of these steps. Our mission of "Advancing Cancer Diagnostics, Improving Lives" is at the heart of our corporate culture. Our easy-to-use and consistently reliable offerings help improve workflow efficiency and diagnostic confidence. The company is represented in over 100 countries. It has manufacturing facilities in 9 countries, sales and service organizations in 19 countries, and an international network of dealers. The company is headquartered in Nussloch, Germany. Visit LeicaBiosystems.com for more information.

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