



Leica VT1000 S

Vibrating-blade microtome for most
sophisticated sectioning requirements

Living up to Life

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MICROSYSTEMS

Leica VT1000 S for precision sectioning in neuroscience

The Leica VT1000 S vibrating-blade microtome is the instrument of choice for high-quality sectioning requirements in neurophysiology, neuropathology and experimental pathology. Whether sectioning fixed tissue for specific neuropathology tests or sectioning unfixed native tissue e.g. for patch clamping or ratio imaging tests – the Leica VT1000 S always provides convincing sectioning results.

Linear selection of both sectioning speed and sectioning frequency and 5 different amplitude settings allow the user to adjust the VT1000 S to meet virtually any sectioning needs. Since time is of tremendous importance when dealing with unfixed fresh tissue every effort has been made to accelerate the sectioning process: the Leica VT1000 S features a high-speed knife return stroke of 5 mm/sec as well as a freely programmable

sectioning window which ensures extremely quick sectioning of even the smallest specimens. An adjustable specimen retraction feature protects the specimen during the return stroke of the knife. Knife holder and buffer tray are easily exchangeable thus eliminating any risk of fixation solution carry-over when changing from fixed to unfixed specimens. Enzyme activity within the tissue is preserved optimally during the sectioning process as the instrument allows sectioning under physiological conditions. This is achieved by either a combination of removable buffer tray / integrated ice bath or a double-walled buffer tray with thermostat temperature control for constant buffer temperature.

**AS SLOW AS NECESSARY –
BUT AS FAST AS POSSIBLE**

NOW:

Reproducible setting of superslow
sectioning speed for native tissue in
combination with fast return speed.

Design and ergonomics

The classic lines of the Leica VT1000 S make working with the instrument safe and easy – ergonomic hand rests and direct access to all functional elements provide highest comfort and safety.



Careful sectioning under physiological conditions

Working with the Leica VT1000 S under physiological conditions provides optimum protection for tissue, enzymes and antigens during sectioning. For that purpose, the specimen is placed into a buffer tray filled with cooled physiological buffer solution. The Leica VT1000 S provides a choice of two methods to maintain the buffer temperature stable:

- Filling the integrated ice bath with crushed ice.
- Using the double-walled buffer tray with thermostat control.



The double-walled buffer tray can be equipped with clamps to maintain an oxygen-gassing hose in the correct position. The tray is available in two different sizes which allows to section specimens of 33 x 40 mm or as large as 70 x 40 mm. The magnetic specimen disc (left in photograph) makes it easy to orient the specimen prior to sectioning.

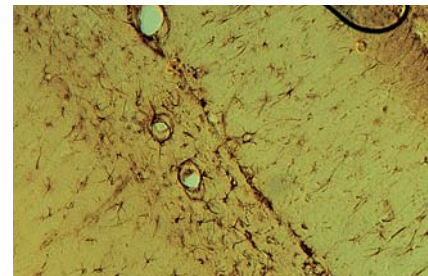
Practical details:

- Easy specimen change, i.e. specimen disc can be removed without having to remove the buffer tray.
- The efficiency of the large-field magnifier which is supplied as part of standard delivery can be enhanced with a fiber-optical lighting system (optional accessory). This system ensures exact and individually adjustable illumination of the entire sectioning range for stress-free sectioning.

Calbindin D positive neurons in rat brain cortex.
30 μ m section. 200x.



GFAP positive astrocytes in rat hippocampus. Note the astrocyte processes surrounding the blood vessel.
30 μ m section. 200x.



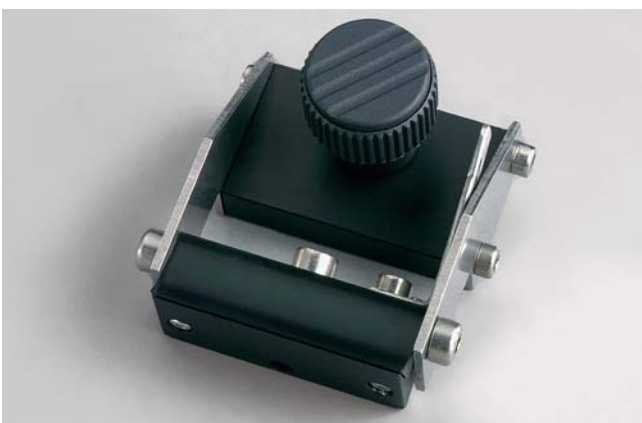
Enlargement of CA1 region showing pyramidal neurons with apical dendritic processes.



Individual accessory configurations

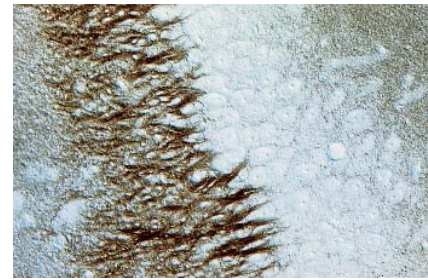


Buffer tray L and knife holder L for sectioning specimens up to 70 x 40 mm.



Special knife holder for sectioning specimens up to 20 mm high.

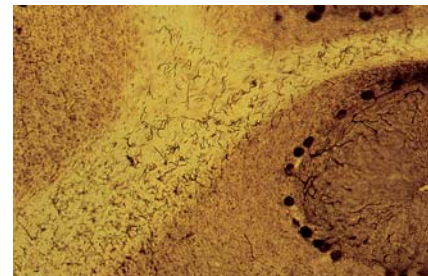
CA3 field of rat hippocampus. Syntaxin positive axon terminals over pyramidal cells. 40 μ m section. 400x.



Calbindin D positive neurons in rat brain cortex. 30 μ m section. 200x.



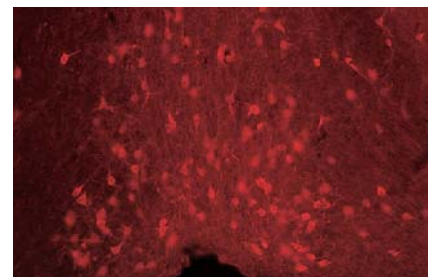
Calbindin D positive Purkinje cells in rat cerebellum. 30 μ m section. 200x.



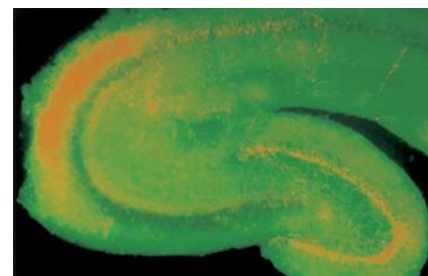
GFAP positive astrocytes in the granular layer of rat cerebellum. 40 μ m section. 1000x.



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



Live/dead cell assay reveals viable neurons (fluorescingreen) in 50 μ m sections of hippocampus.



Leica VT1000 S – Instrument features

- Ergonomic design
- Linear sectioning speed adjustment
- Linear sectioning frequency adjustment
- Sectioning thickness totalizer
- 5 Different amplitude settings
- Freely programmable sectioning window
- Programmable specimen retraction
- Single and continuous stroke
- Emergency stop switch
- Easy mounting and removing of knife holder and buffer tray.
- Double-walled buffer tray providing excellent contrast
- Adjustable 2x large-field magnifier
- Optional accessory configuration: cold light source and fiber-optical lighting system for complete illumination of the entire sectioning range; prevents surface reflection of buffer solution.

Leica VT1000 S – Technical specification

Sectioning frequency:	Linear adjustment from 0 - 100 Hz	Total vertical specimen stroke:	15 mm (motorized) standard
Voltage range ($\pm 10\%$):	100 V - 240 V (Long-range mains power supply)		or 20 mm (optional)
Nominal frequency ($\pm 10\%$):	50 - 60 Hz	Specimen retraction:	0 - 999 μm (motorized)
Power consumption:	35 VA	Sectioning range:	1 - 40 mm
Amplitude:	5 different settings selectable: 0.2; 0.4; 0.6; 0.8; 1.0 mm	Maximum specimen size:	
		- with standard knife holder	33 x 40 mm
		- with knife holder L	70 x 40 mm
Sectioning speed:	0,025 - 2,5 mm/sec	Sectioning thickness setting:	1 - 999 μm (in 1- μm steps)
Return speed:	5 mm/sec	Magnifier:	2 x

State-of-the-art research and development, manufacturing and quality control procedures – documented under DIN EN ISO 9001 – guarantee highest quality and reliability.

Wide range of accessories on request. Technical specification subject to change.

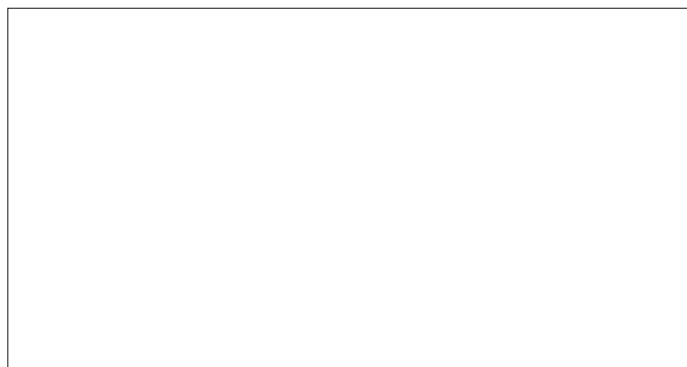
As confirmed by the successful c-CSA-us certification, the Leica VT1000 has been designed and manufactured in compliance with UL, CSA and ICE requirements.

We wish to express our thanks to Francisco Javier García Ladona, Ph.D.; Shawn Hochman, Ph.D.; and Dr. Andreas Schober for granting us their permission to use the photographs contained in this brochure.

A detailed applications brief on working with the Leica VT1000 S is available in English: Leica Vibrating Blade Microtome Near-monolayer Sectioning of Live CNS Tissue'

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