



Leica VT1200 Leica VT1200 S

Microtome with
Vibrating Blade



Operating Manual

Leica VT1200 and VT1200 S

V1.1 English – 05/2007

Always keep this manual with the instrument.
Read carefully before working with the instrument.

Leica

MICROSYSTEMS

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For the instrument serial number and year of manufacture, please refer to the nameplate on the back of the instrument.

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1.1 Symbols in the Text and their Meanings



Dangers, warnings and cautions appear in a gray box and are marked by a warning triangle .



Useful tips, i.e. important information for the user, appear in gray boxes and are marked by an information symbol .

(5) Numbers in parentheses refer to item numbers in illustrations or to the illustrations themselves.

1.2 Qualification of Personnel

The Leica VT1200 and the VT1200 S may be operated by trained laboratory personnel only.

All laboratory personnel designated to operate the Leica instrument must read this Operating Manual carefully and must be familiar with all technical features of the instrument before beginning to operate it.

1.3 Intended Use/Improper Use

The Leica VT1200 and VT1200 S are used for sectioning in the fields of medicine, biology and industry, and are especially designed for sectioning fixed or unfixed fresh tissue in buffer.

The instrument must be installed according to the directions in this Operating Manual.

Any other use of the instrument is considered improper.

Instrument model:

All information provided in this manual applies only to the VT1200 and VT1200S instruments described here.

A nameplate indicating the instrument serial number is attached to the rear side of the instrument.



Fig. 1

Note:

When making inquiries, please make sure that you have the following product information ready:

- Instrument model and serial number

2. Safety

This Operating Manual contains important instructions and information regarding the operational safety and maintenance of the instrument.

The Operating Manual is an important part of the product, and must be read carefully prior to startup and use and must always be kept near the instrument.

If additional requirements on accident prevention and environmental protection apply in the country of operation, this Operating Manual must be supplemented by appropriate instructions to ensure compliance with such requirements.

Make sure to read all of the Operating Manual before you work on or operate the instrument.

2.1 General Safety Notes

These instruments have been built and tested in accordance with the safety regulations for electrical measuring, control, regulating and laboratory devices.

In order to maintain this condition and to ensure safe operation, the user must follow the instructions and warnings contained in this Operating Manual.

For current information about applicable standards, please refer to the CE Declaration of Conformity on our Internet site:

www.histo-solutions.com

2.2 Warnings

The safety devices installed in this instrument by the manufacturer only constitute the basis for accident prevention. Operating the instrument safely is, above all, the responsibility of the owner, as well as the designated personnel who operate, service or clean the instrument.

To ensure trouble-free operation of the instrument, make sure to comply with the following instructions and warnings.



Caution: Extremely sharp blades pose risk of injury when touched!
Fresh tissue poses risk of infection!
Fire hazard from uncovered magnifier! Cover the magnifier during work breaks!

Proper handling



Always be exceptionally careful when handling the blades!
Do not leave open blades lying around after removal.
Always make sure to handle the blade in a way that will not cause you injury.
All appropriate safety precautions must be met to avoid the risk of infection.
Wearing safety gloves, a mask and safety goggles – in accordance with the "Working with Substances that Pose a Health Risk" guidelines – is absolutely mandatory.
The instrument may be opened by authorized service personnel only.
Always disconnect the power plug before opening the instrument.
Always switch off the instrument using the power switch and disconnect the power plug before replacing the fuse. The use of fuses other than those installed at the factory is not permitted.

2.1 Transport, Unpacking and Setting up

- When unpacking the instrument, compare the parts received with the parts ordered. If the parts received do not match your order, contact the sales company responsible for your order immediately.
- Please refer to "Technical Data" before connecting the instrument to a power supply.
- Never connect the instrument to a power socket that does not have a protective conductor terminal.



The instrument must be set up so that the main power switch on its right side (item 7 in Fig. 14) is easily accessible at any time.



Because the weight of the instrument is approx. 56 kg, carrying the instrument requires 2 persons (1 carrying handle per person).

3. Instrument Characteristics

3.1 Technical Data for the VT1200

General data:

Cutting frequency ($\pm 10\%$)	85 Hz ($\pm 10\%$)
Amplitude	from 0 – 3 mm, in 0.05 mm increments
Cutting speed ($\pm 10\%$)	0.01 – 1.5 mm/s
Return speed ($\pm 10\%$)	2.5 mm/s
Total vertical specimen stroke	20 mm (motorized)
Cutting range	45 mm (adjustable)
Maximum specimen size:	
With standard blade holder	33 x 50 mm
Specimen orientation, rotating	360°
Specimen plate, swiveling	0 – 10°
Section thickness adjustment.....	manual, in 1 μ m increments

Ambient conditions:

Operating temperature range:	min. 10 °C – max. 35 °C
Relative humidity:	max. 60 %
Storage temperature:	5 – 55 °C
Storage humidity:	< 60 %
Height:	up to 2000 m above sea level

Electrical data:

Rated voltage range ($\pm 10\%$):	100V – 240 V
Rated frequency ($\pm 10\%$):	50/60 Hz
Power consumption:	35 VA
Protection class:	I
Power fuses:	T 1 A L 250 V
Pollution degree:	2
Overvoltage category:	II
Electrical overload protection:	yes
Internal current limit for the electronics:	yes

Dimensions:

L x W x H:	600 mm x 250 mm x 230 mm
Height with magnifier support	600 mm x 250 mm x 320 mm
Height with microscope:	600 mm x 250 mm x 490 mm
L x W x H control unit (when the bases are folded in):	165 mm x 120 mm x 72 mm

Weight:

Without magnifier support and control unit	56 kg
VT1200 control unit	1 kg
Magnifier support	2 kg
Microscope support with stereomicroscope	4 kg

3.1.1 Technical Data for the VT1200 S

General data:

Cutting frequency ($\pm 10\%$):	85 Hz ($\pm 10\%$)
Amplitude:	from 0 – 3 mm, in 0.05 mm increments
Cutting speed ($\pm 10\%$):	0.01 – 1.5 mm/s
Return speed ($\pm 10\%$):	1.0 – 5 mm/s, in 0.5 mm/s increments
Total vertical specimen stroke:	20 mm (motorized)
Cutting range:	45 mm
Cutting window:	0.5 mm – 45 mm
Specimen retraction:	0 – 100 μm (adjustable, can be deactivated)
Maximum specimen size:	
With standard blade holder:	33 x 50 mm
Specimen orientation, rotating:	360°
Specimen plate, swiveling:	0 – 10°
Section thickness adjustment:	manual in 1 μm increments or automatic max. 1000 μm

Ambient conditions:

Operating temperature range:	min. 10°C – max. 35°C
Relative humidity:	max. 60%
Storage temperature:	5 – 55°C
Storage humidity:	< 60%
Height:	up to 2000 m NN

Electrical data:

Rated voltage range ($\pm 10\%$):	100V – 240V
Rated frequency ($\pm 10\%$):	50/60 Hz
Power consumption:	35 VA
Protection class:	I
Power fuses:	T 1 A L 250 V
Pollution degree:	2
Overvoltage category:	II
Electrical overload protection:	yes
Internal current limit for the electronics:	yes

Dimensions:

L x W x H:	600 mm x 250 mm x 230 mm
Height with magnifier support:	600 mm x 250 mm x 320 mm
Height with microscope:	600 mm x 250 mm x 490 mm
Control unit (when the bases are folded in):	190 mm x 150 mm x 72 mm

Weight:

Without magnifier support and control unit:	56 kg
VT1200S control unit:	1 kg
Magnifier support:	2 kg
Microscope support with stereomicroscope:	4 kg

3. Instrument Characteristics

3.2 General Overview of the VT1200/VT1200S



Fig. 3, Magnifier



Fig. 4, Microscope



Cold light source

Fig. 5



Cutting head

Blade holder

Fig. 2, Basic instrument



Fig. 6, Foot switch

Fig. 7, Control panel VT1200



Fig. 8, Control panel VT1200S



Attachments on dovetail receptacle

Ice bath



Buffer tray

Buffer tray,
plastic



Buffer tray,
metal



Specimen plate
for specimens of
1 cm in height



for specimens of
2 cm in height



Directional



**Cyanoacrylate
adhesive**



Double-walled buffer tray



Minichiller
(circulating cooler)

Specimen plate
for specimens of
1 cm in height



for specimens of
2 cm in height



Directional



**Cyanoacrylate
adhesive**



VibroCheck



Fig. 9

Blades for the blade holder

Razor blade



Injector blade



Sapphire blade



3. Instrument Characteristics

3.3 VT1200 Control Panel

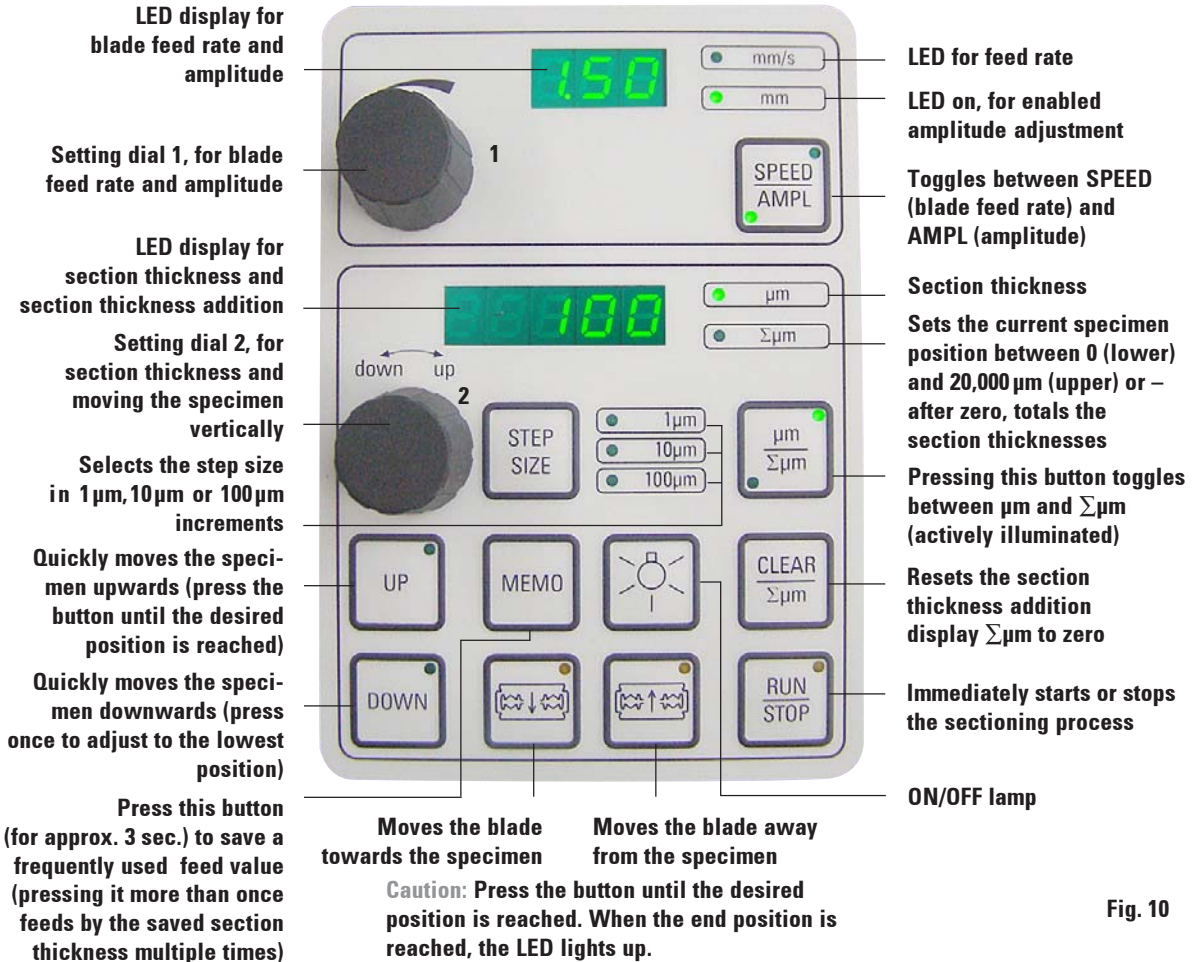


Fig. 10



The Leica VT1200 is a semiautomatic microtome with a vibrating blade. Before each cut, a manual feed to the desired section thickness must be carried out using the setting dial for section thickness. The VT1200 does not include an automatic specimen retraction; however, retraction can be performed manually.

3.3.1 VT1200S Control Panel



Fig. 11



The Leica VT1200S is a fully automatic microtome with a vibrating blade. It can be operated in automatic as well as semiautomatic sectioning mode.

In semiautomatic sectioning mode, a manual feed to the desired section thickness must be carried out before each cut. There is no automatic specimen retraction in this mode; however, retraction can be performed manually.

In automatic mode, an automatic feed (AUTO FEED) to the selected section thickness is carried out before each cut, and the specimen is lowered to the desired retraction value after each cut to prevent the specimen surface and the blade from coming into contact while the blade is being retracted.

4. Installation

4.1 Standard Scope of Delivery for the VT1200

VT1200 basic instrument	14 0481 42065
1 control panel	14 0481 43395
1 toolset:	
- 1 Allen key, size 3.0	14 0194 04764
- 1 Allen key, size 6.0	14 0222 04141
- 1 cryo-manipulator	14 0462 28930
- 1 replacement fuse T 1A	14 6943 01000
1 set of power cables:	
- 1 power cable "D"	14 0411 13558
- 1 power cable "USA-C-J"	14 0411 13559
- 1 power cable "UK" ST/BU F-5A	14 0411 27822
1 dust cover (basic instrument), small	14 0212 43742
1 bottle of cyanoacrylate adhesive, contents 10 gr.....	14 0371 27414
1 Operating Manual for Leica VT1200/VT1200S	14 0481 80001
VT1200 configuration	14 912000001
The above scope of delivery, plus:	
Ice bath, complete	14 0481 42010
Buffer tray, (metal) complete	14 0481 42084
VT blades (10x10 Gillette)	14 0205 42056



When ordering additional accessories, compare the parts received with the parts ordered. If the parts received do not match your order, contact the sales company responsible for your order immediately.

4.1.1 Standard Scope of Delivery for the VT1200S

VT1200 S basic instrument	14 0481 42066
1 control panel	14 0481 43396
1 toolset:	
- 1 Allen key, size 3.0	14 0194 04764
- 1 Allen key, size 6.0	14 0222 04141
- 1 cryo-manipulator	14 0462 28930
- 1 replacement fuse T 1A	14 6943 01000
1 set of power cables:	
- 1 power cable "D"	14 0411 13558
- 1 power cable "USA-C-J"	14 0411 13559
- 1 power cable "UK" ST/BU F-5A	14 0411 27822
1 dust cover (basic instrument), small	14 0212 43742
1 bottle of cyanoacrylate adhesive, contents 10 gr.....	14 0371 27414
1 Operating Manual for Leica VT1200/VT1200S	14 0481 80001
 VT1200 S configuration	 14 91200S001
The above scope of delivery, plus:	
Ice bath, complete	14 0481 42010
Buffer tray, (metal) complete	14 0481 42084
VT blades (10x10 Gillette)	14 0205 42056



When ordering additional accessories, compare the parts received with the parts ordered. If the parts received do not match your order, contact the sales company responsible for your order immediately.

4. Installation

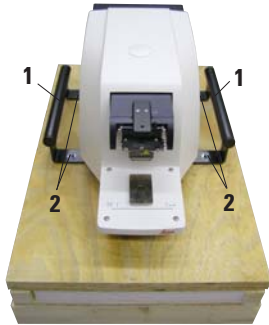
4.2 Packing and Setting up the Instrument



Ensure that the instrument is standing on a work surface that is as free of vibrations as possible.

Before each transport, the handles must be screwed onto the instrument using the provided screws (see p. 17, Fig. 13). Check to ensure that the handles are firmly in place and will hold reliably!

Packing the instrument



1. Have 2 people grab the instrument by the transport handles (1), place it on the wooden pallet and screw it to the pallet using the 4 size 6 hexagon-head screws (2).
2. Pull the transparent protective hood (3) over the instrument. Place the wooden box (4) on the baseplate. Insert the inner carton ring (5).
3. Insert the accessory box (6 – contains accessories) and fill it with packing material (7).
4. Attach the cover (8) and screw it into place using 8 Phillips screws (9).

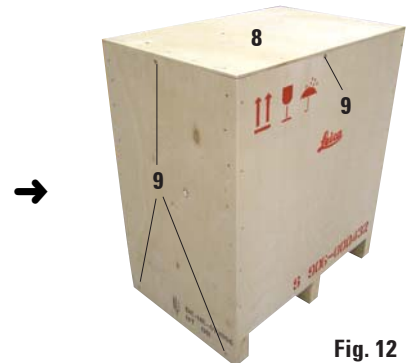
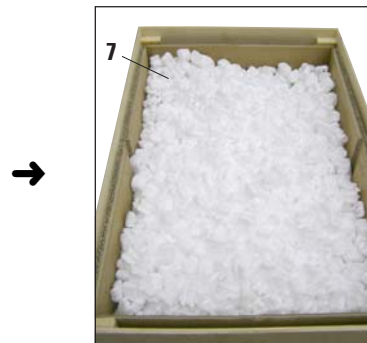
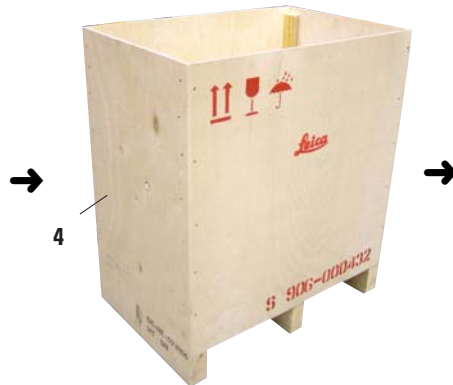


Fig. 12

4.3 Before Commissioning the Instrument



Fig. 13

Once the instrument is in its final location, unscrew the transport handles (1) from the instrument using the size 6 Allen key provided and store them, along with the screws, in a safe place.



Fig. 14

1. Set the power switch (7) on the right side of the instrument to OFF (O).
2. Make sure that the power cable connection in the power socket (2) on the right side of the instrument is correct.
3. Connect the control panel to the socket (3).
4. Install the ice bath (4).
5. Install the buffer tray (5).
6. Install any optional accessories, such as the magnifier, microscope, foot switch, etc. according to p. 49.
7. Use the power switch (7) to switch on the instrument.



To make it easier to insert the specimen, adjust the specimen receptacle to its lowest position, and adjust the blade holder to its rearmost position during the first reference run.

5. Working with the Instrument

5.1 Description of the Typical Application

The Leica VT1200 / VT1200S is a microtome with a vibrating blade and is predominately used for sectioning fixed and unfixed specimens during neurological research.

- To simplify the process of inserting the specimen, you can quickly move the specimen receptacle to the lowest position by pressing the **DOWN** button.
 - To prepare high-quality sections, especially for unfixed tissue, Leica suggests using the optional VibroCheck measuring instrument to determine the height amplitude of the blade after each blade change, and then to minimize it using the setting screw on the blade holder. To perform the aforementioned process, install the VibroCheck instrument (see p. 36 for the VT1200 or p. 38 for the VT1200S), install the blade and adjust the clearance angle to the desired position. Then take the measurement and make the appropriate adjustments to the placement of the blade holder. Remove the VibroCheck according to the instructions, and turn the blade 90° toward the top to ensure that the ice bath and buffer tray can be installed safely.
 - Insert the buffer tray into the ice bath and cover it with the lid. Fill the ice bath with crushed ice.
 - Remove the cover and fill the buffer tray with pre-cooled physiological buffer.
 - Push the ice bath and buffer tray onto the dovetail guide and clamp them down.
 - Use cyanoacrylate adhesive to adhere the specimen to the specimen plate and use a manipulator to place it in the buffer tray.
- Insert the hose for gassing the buffer into the hose clamp.
- Use the **UP** button to lift the specimen to the sectioning level of the blade quickly. Fine-adjusting the blade-to-specimen proximity can be performed using the desired step size 1, 10 or 100 µm.
 - Advance the blade toward the specimen using the "**Blade forward**" key.
 - After sectioning the specimen, use the setting dial to feed to the desired section thickness using the selected step size (1, 10 or 100 µm). This raises the specimen receptacle to the desired value.
 - Start the sectioning process by pressing the **RUN/STOP** key. The process can be stopped again by pressing this key after the cut has been completed. Use the "**Blade back**" key to move the blade in front of the specimen. Select the section thickness for the next cut and start the sectioning process again.
 - After completing the sectioning process, remove the blade, dispose of the specimen receptacle by pushing the **DOWN** key into its lowest position, and unclamp, empty and clean out the ice bath and buffer tray.

5.2 Control Elements on the VT1200 Control Panel



Caution: To practice the key functions, always make sure there are no blades installed! Do not install the blades until you are familiar with all of the key functions.



Switch on the instrument.
1 = on 0 = off

When the instrument is switched on, to make it easier to insert a specimen, the specimen receptacle automatically moves into the lowest position (the LED in the **DOWN** key lights up) and the blade holder moves into the rearmost position (the LED in "Blade away" from the specimen lights up).

The last parameters used before the instrument was switched off are called up again: blade feed rate (**SPEED**), selected amplitude (**AMPL**) and the section thickness that was saved using the **MEMO** key.

The LED illumination is switched on automatically. You can switch it off using the ON/OFF key (lamp symbol).

5.2.1 Moving the Specimen Receptacle Vertically



When the **DOWN** key is pressed, the specimen receptacle automatically moves quickly into the lowest position. (The LED in the **DOWN** key lights up when the lower end position is reached.) The $\Sigma\mu\text{m}$ display is set to "0". If the **DOWN** key is pressed a second time while the specimen receptacle is moving downwards, the specimen receptacle comes to a stop. The current position appears on the $\Sigma\mu\text{m}$ display (lowest position = 0). The $\Sigma\mu\text{m}$ display does not change while the specimen receptacle is in motion.



When the **UP** key is pressed and held, the specimen receptacle moves quickly upwards into the desired position. After the **UP** key has been released, the current position of the specimen receptacle appears on the $\Sigma\mu\text{m}$ display. If the specimen receptacle reaches the upper end position, the LED in the **UP** key lights up (uppermost position = 20,000 μm). The $\Sigma\mu\text{m}$ display does not change while the specimen receptacle is in motion.



You can reset the display for the current position of the specimen holder to zero at any point using the **CLEAR/ $\Sigma\mu\text{m}$** key. The section thicknesses are then added in the $\Sigma\mu\text{m}$ display. Switch to μm by pressing the **$\mu\text{m}/\Sigma\mu\text{m}$** key.

5. Working with the Instrument

5.2.2 Fine-adjusting the Blade-to-Specimen proximity and Feeding to the Section Thickness



The rotary knob 2 for moving the specimen receptacle vertically can be used both for fine-adjusting the blade-to-specimen proximity and for adjusting the desired section thicknesses. The step sizes 1, 10 or 100 µm can be selected by pressing the **STEP SIZE** key.

Turning the setting dial clockwise carries out the desired feed; turning the setting dial counterclockwise lowers the specimen (minus sign). The value appears in the lower display when "µm" is selected. After each sectioning process has been completed, the µm display is set to zero.



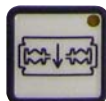
Save a commonly used section thickness by adjusting the setting dial for the section thickness and pressing the **MEMO** key for 3 seconds. An audible signal confirms that the value has been accepted.

Feed to the saved value by quickly pressing the **MEMO** key. Pressing the **MEMO** multiple times feeds to the value multiple times.



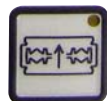
Neither negative values nor a section thickness of over 1000 µm are permitted. If an attempt is made to save impermissible values, an audible warning signal sounds three times and the last (permissible) value is retained.

5.2.3 Blade Method



Blade

forward



back

The "Blade forward" and "Blade back" keys have to be held down until the desired position is reached. The blade feed rate is 2.5 mm/s. When each end point has been reached, the corresponding LED lights up in the key.

5.2.4 Selecting the Sectioning Parameters



SPEED: Blade feed rate – upper display – LED mm/s. The desired blade feed rate can be adjusted from 0.01 – 1.5 mm/s using rotary knob 1:

0.01 – 0.1 in 0.01mm/s increments

0.10 – 0.5 in 0.02mm/s increments

0.50 – 1.5 in 0.10mm/s increments

AMPL: upper display – LED mm: displays the amplitude in mm:
from 0 - 3 mm in 0.05 mm increments

Starts the sectioning process






Starts the sectioning process using the selected amplitude and blade feed rate. You can start the sectioning process by pressing the **RUN/STOP** key a second time, or you can stop the process immediately by pressing the "Blade back" or "Blade forward" key. The μm display is then reset to "0".

To start a new sectioning process, use the "Blade back" key to move the blade to the beginning of the specimen, set the desired section thickness and restart the sectioning process.

5. Working with the Instrument

5.3 Control Element on the Control Panel of the VT1200 S

The Leica VT1200 S is a fully automatic microtome with a vibrating blade that can be operated in semiautomatic or automatic sectioning mode.

Key/setting dial	semiautomatic sectioning mode	automatic sectioning mode
 <p>Switch on the instrument. 1 = on 0 = off</p>	<p>When the instrument is switched on, to make it easier to insert a specimen, the specimen receptacle automatically moves into the lowest position (the LED in the DOWN key lights up) and the blade holder moves into the rearmost position (the LED in "Blade away" from the specimen lights up).</p> <p>If semiautomatic sectioning mode has been selected before the unit is switched off, the following saved parameters are called up again once the unit is switched back on:</p> <ul style="list-style-type: none">• Blade feed rate (SPEED)• Selected amplitude (AMPL)	<p>ditto</p> <ul style="list-style-type: none">• Blade feed rate (SPEED)• Selected amplitude (AMPL)• Saved section thickness (AUTO FEED)
	<p>The LED illumination is switched on automatically. You can switch it off using the ON/OFF key.</p>	<p>ditto</p>
	<p>The LED MAN is active. semiautomatic sectioning mode is enabled.</p>	<p>The LED AUTO is active. The automatic sectioning mode is enabled.</p>

Key/setting dial

semiautomatic sectioning mode

automatic sectioning mode

In semiautomatic sectioning mode, before each cut, a manual feed to the desired section thickness must be carried out using the setting dial for section thickness.

There is no automatic specimen retraction in this mode; however, retraction can be performed manually.

In automatic mode, the selected section thickness feed (**AUTO FEED**) is carried out along the 1st selected cutting window edge automatically before each cut. To prevent the specimen surface and the blade from coming into contact while the blade is being retracted, the specimen is lowered by the desired retraction value along the 2nd cutting window edge after each complete cut.

Toggle from AUTO to MAN



The following key functions are disabled in semiautomatic mode:

- Setting cutting window edges
- Selecting the continuous stroke (**CONT**)
- Selecting the section thickness for the automatic feed (**AUTO FEED**)
- **PAUSE**

Toggle from MAN to AUTO


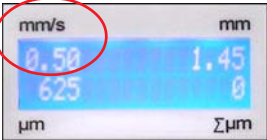

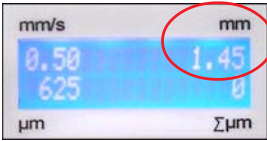

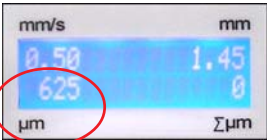

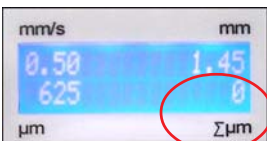


An audible warning signal sounds when these keys are pressed.

The following functions keys become enabled again in automatic mode:

- Cutting window edges that have already been set
- Section thickness (**AUTO FEED**) and continuous stroke (**CONT**)

5. Working with the Instrument

Key/setting dial	semiautomatic sectioning mode	automatic sectioning mode
 	<p>The blade feed rate can be adjusted from 0.01 – 1.5 mm/s: 0.01 – 0.1 in 0.01 mmm/s increments, 0.10 – 0.5 in 0.02 mmm/s increments, 0.50 – 1.5 in 0.10 mmm/s increments.</p>	ditto
 	<p>Adjusting the amplitude from 0 – 3 mm in 0.05 mm increments</p>	ditto
 	Not possible.	Setting the section thickness for automatic mode – max. 1000 μm.
 	<p>Display for the current specimen holder position (lowest position = 0 μm, uppermost position = 20,000 μm.) You can reset the display to zero at any point using the CLEAR/Σμm key. The section thicknesses are then added in the Σμm display.</p>	ditto

Key/setting dial

semiautomatic sectioning mode

automatic sectioning mode



The rotary knob for moving the specimen receptacle vertically can be used for fine-adjusting the blade-to-specimen proximity. Turning the setting dial clockwise moves the specimen up into the desired proximity; turning the setting dial counterclockwise lowers the specimen (minus sign).

The step sizes 1, 10 or 100 μm can be selected by pressing the **STEP SIZE** key.

After the setting dial is turned clockwise or counter clockwise, the specimen receptacle position is updated in the $\Sigma\mu\text{m}$ display.

In semiautomatic mode, the desired section thickness is selected using the setting dial.

The selected section thickness appears in the μm display and the current specimen receptacle position appears in the $\Sigma\mu\text{m}$ display.

After each sectioning process has been completed, the μm display is set to "0".

ditto

Not possible.



When the **DOWN** key is pressed, the specimen receptacle automatically moves quickly into the lowest position. (The LED in the **DOWN** key lights up when the lower end position is reached.) The $\Sigma\mu\text{m}$ display is set to "0".

ditto

5. Working with the Instrument

Key/setting dial	semiautomatic sectioning mode	automatic sectioning mode
------------------	-------------------------------	---------------------------



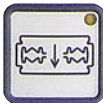
If the **DOWN** key is pressed a second time while the specimen receptacle is moving downwards, the specimen receptacle comes to a stop and the current position appears on the $\Sigma\mu\text{m}$ display (lowest position = 0, uppermost position = 20,000 μm). The $\Sigma\mu\text{m}$ display does not change while the specimen receptacle is in motion.

ditto



When the **UP** key is pressed and held down, the specimen receptacle moves quickly upwards into the desired position. After the **UP** key has been released, the current position of the specimen receptacle appears on the $\Sigma\mu\text{m}$ display. If the specimen receptacle reaches the upper end position, the LED in the **UP** key lights up (uppermost position = 20,000 μm). The $\Sigma\mu\text{m}$ display does not change while the specimen receptacle is in motion.

ditto



Blade forward






Blade back




The "**Blade forward**" and "**Blade back**" keys have to be held down until the desired position is reached. The blade feed rate can be set in the menu: 1 – 5 mm/s in 0.5 mm/s increments. Each time an end point is reached, the corresponding LED lights up in the key.







ditto

5. Working with the Instrument

Key/setting dial	semiautomatic sectioning mode	automatic sectioning mode
General information about the cutting window	Not possible.	The horizontal cutting path can be reduced to the specimen size. The two cutting window edges can be adjusted and changed independently . Holding the key down for a longer duration (audible warning signal) sets the beginning or end (depending on the key) of the cutting window to the maximum value. Smallest possible cutting window: 0.5mm. If a window smaller than 0.5mm is set or the user reverses the beginning and end, the last entered value is accepted and the previous value is set to the maximum value. The cutting window is not saved when the instrument is switched off; however, it is retained when you switch from automatic mode (AUTO) to semiautomatic mode (MAN).
	Activated cutting window edges can be deactivated by pressing the corresponding key for approx. three seconds.	
	Not possible.	Advance the blade toward the specimen using the " Blade forward " key. Press the "1st cutting window edge" key until the LED in the key lights up.
	Not possible.	Advance the blade to the end of the specimen using the " Blade forward " key and press "2nd cutting window edge" until the LED in the key lights up.

5. Working with the Instrument

Key/setting dial	semiautomatic sectioning mode	automatic sectioning mode
	Only single stroke (SINGLE) is possible. If an attempt is made to switch to continuous stroke (CONT), an audible warning signal sounds.	Toggles between single (SINGLE) and continuous stroke (CONT). The corresponding LED lights up to indicate the current selection.
	Starts the sectioning process using the selected amplitude (AMPL) and blade feed rate (SPEED). Pressing the RUN/STOP key a second time stops the sectioning process immediately .	Starts the sectioning process using the selected section thickness (AUTO FEED) amplitude (AMPL) and the blade feed rate (SPEED). If single stroke (SINGLE) is selected, only one sectioning process is carried out. – If continuous stroke (CONT) is selected, a continuous sectioning process takes place. Pressing the RUN/STOP key a second time stops the sectioning process that is in progress. The blade moves to the 1st cutting window edge and stays there.
	The μm display is then reset to "0".	The programmed section thickness (AUTO FEED) appears in the μm display continuously.
	Not possible.	A sectioning process in progress can be interrupted immediately by pressing the PAUSE key and re-started by pressing the PAUSE key again. If PAUSE has been pressed to interrupt a sectioning process, pressing the RUN/STOP key or the "Blade forward" or "Blade back" keys discontinues the sectioning process.

Key/setting dial	semiautomatic sectioning mode	automatic sectioning mode
	Press the MENU key.	
	8 sets of user parameters can be saved; Current user selection – User 1: turn rotary knob 2 clockwise, then press Menu again.	ditto
		
	The blade feed rate (SPEED) can be set to 0 – 1.5 mm/s using rotary knob 1.	ditto
	→ Rotary knob 2 The amplitude (AMPL) can be set to 0 – 3 mm using rotary knob 1.	ditto
	→ Rotary knob 2 The automatic section thickness feed (AUTO FEED) can be adjusted using predefined step sizes (1, 10 or 100 µm) by max. 1000 µm using rotary knob 1.	→ Rotary knob 2 The automatic section thickness feed (AUTO FEED) can be adjusted using predefined step sizes (1, 10 or 100 µm) by max. 1000 µm using rotary knob 1.



The values can be selected; however, automatic feed is not possible in semiautomatic sectioning mode. If the **AUTO FEED** key is pressed, one feed motion takes place according to the value programmed in automatic mode. If the key is pressed more than once, several feed motions take place.

5. Working with the Instrument

Key/setting dial

semiautomatic sectioning mode

automatic sectioning mode



→ Rotary knob 2
Mode: Choice between **AUTO** and **MAN** with rotary knob 1; for semiautomatic sectioning mode, **MAN** must be selected.

→ Rotary knob 2
Mode: Choice between **AUTO** and **MAN** with rotary knob 1; for the automatic sectioning mode, **AUTO** must be selected.



→ Rotary knob 2
Stroke type (**CUT**) – **only** single stroke (**SINGLE**) can be selected with rotary knob 1. If continuous stroke (**CONT**) is selected, an audible warning signal sounds.

→ Rotary knob 2
Stroke type (**CUT**): Choice between single stroke (**SINGLE**) and continuous stroke (**CONT**) with rotary knob 1.



→ Rotary knob 2
Specimen retraction (**RETRACT**) cannot be set.



Value cannot be changed. NO automatic retraction is possible in semiautomatic sectioning mode.

→ Rotary knob 2
The specimen retraction (**RETRACT**) can be set from 0 – 100 μm in 10 μm increments with rotary knob 1.



→ Rotary knob 2
The LED illumination can be adjusted to 5 different levels of brightness using rotary knob 1.

ditto

Key/setting dial

semiautomatic sectioning mode

automatic sectioning mode



→ Rotary knob 2
The feed rate (**FOR/REV**) for the "Blade forward" and the "Blade back" keys can be set between 1 and 5 mm/s in 0.5 mm/s increments with rotary knob 1.

ditto



→ Rotary knob 2
Switches the vibration movement (**FOR/VIB**) of the "Blade forward" key either on or off using rotary knob 1.

ditto



→ Rotary knob 2
Key acknowledgment (**BEEP**) on or off with rotary knob 1.

ditto



Save the parameter and leave by pressing the menu **MENU** key.

ditto



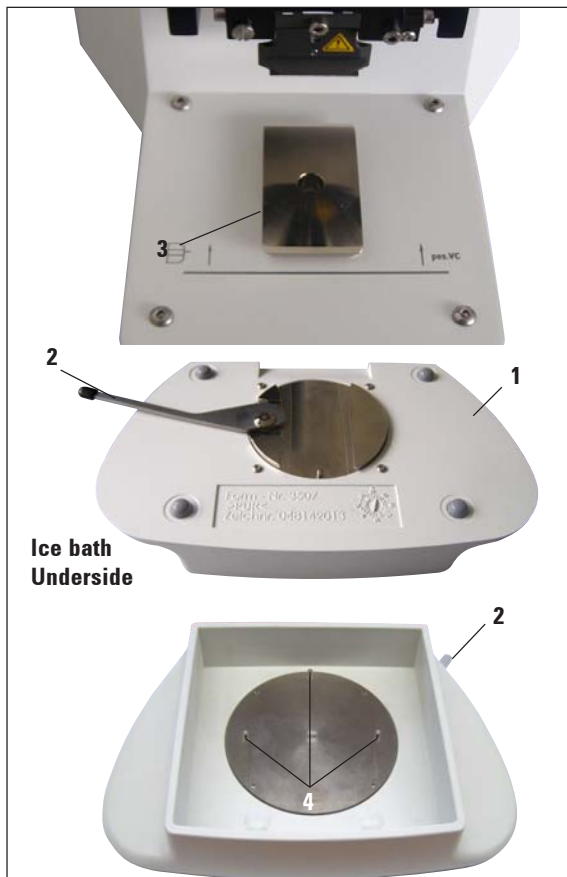
Leaving the menu and saving the parameter is possible at any point in the menu.



If you want to call up the parameters of a certain user (for example, user 3), press the Menu key and select user 3. Then confirm by pressing the Menu key 2x. The parameters stored under user3 are now enabled.

5. Working with the Instrument

5.4 Installing the Accessories



Ice bath
Underside

Fig. 15

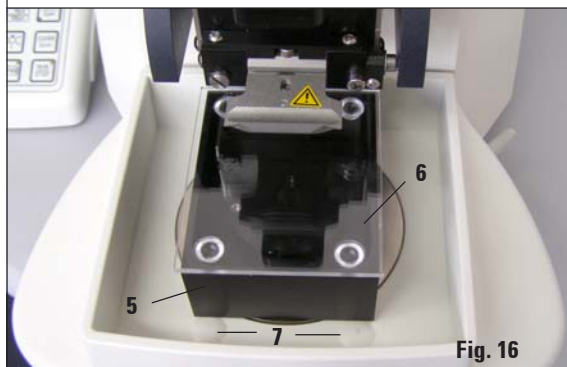


Fig. 16

5.4.1 Installing the Ice Bath and Buffer Tray

- A lever (2), which needs to be pushed forward, is located on the underside of the ice bath (1).
- Now push the tray onto the dovetail holder (3) from the front. Clamp it down by pushing the lever (2, Fig. 28) towards the rear.



The ice bath can be placed on the stage separately for preparation.

- Push the buffer tray (5) in as far as it will go (small pins (4) guide it at the side and front). It is held in place by three strong magnets, which are integrated into the bottom of the buffer tray.

- Cover the buffer tray (5) with a Plexiglas lid (6).
- Now fill the ice bath with crushed ice.
- Cover the buffer tray and fill it with cooled buffer solution.



To remove the buffer tray from the ice bath, pull on the rounded edges carefully (7). They help to remove the tray, as they are not magnetic.

5.4.2 Installing the Double-walled Buffer Tray



Clamps for holding the gassing hose for the buffer in the proper position can be added to the double-walled buffer tray. The specimen can be oriented using the magnetic specimen holder before sectioning.



When using the double-walled buffer tray, the flow cooler must be installed according to the assembly instructions prior to working with specimens.

5.4.3 Preparing a Specimen



- Fix the specimen to the specimen plate using the cyanoacrylate (included in the standard scope of delivery).
- Screw the manipulator (6) onto the specimen plate, place it in the buffer tray and adjust it to the desired position.
- The specimen plate is held in place in the buffer tray magnetically.

5. Working with the Instrument

5.4.4 Installing and Removing the Blade Holder

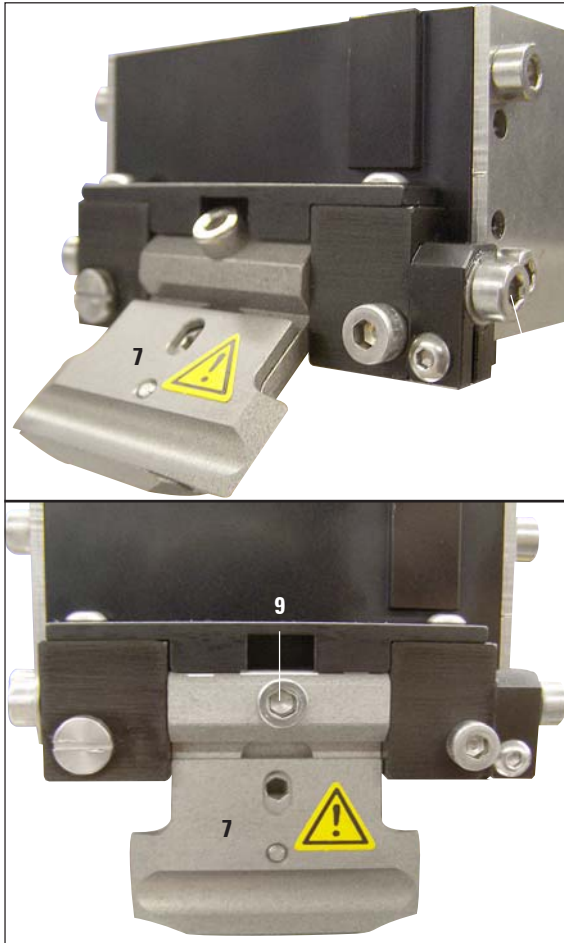


Fig. 19



Always remove the blade BEFORE installing or removing the blade holder!



For quality and service reasons, the blade holder (7) is available as a complete unit only.

- Before the blade holder can be replaced, it must be brought into a 45° inclined position. To do so, insert the size 3 Allen key sideways into the blade holder through the hole (8) and rotate it 45° clockwise.
Turning the screw (9) counterclockwise releases the blade holder, allowing it to be replaced.
- The installation is carried out in reverse order.

Cleaning the blade holder

To clean the blade holder after removal, spray it with alcohol. It can then be wiped down with a piece of cellulose and placed on a cellulose towel to dry completely.

5.4.5 Inserting the Blade

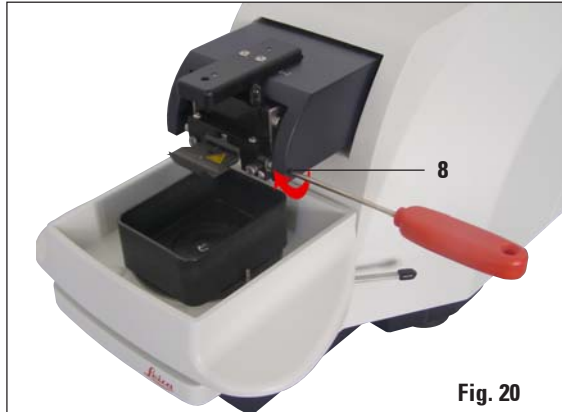


Fig. 20

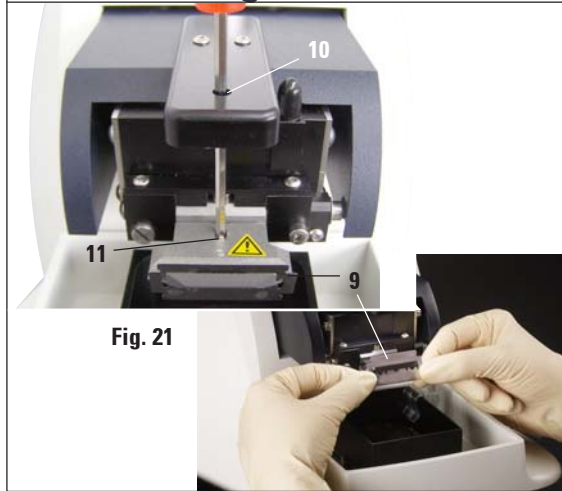


Fig. 21

5.4.6 Adjusting the Clearance Angle

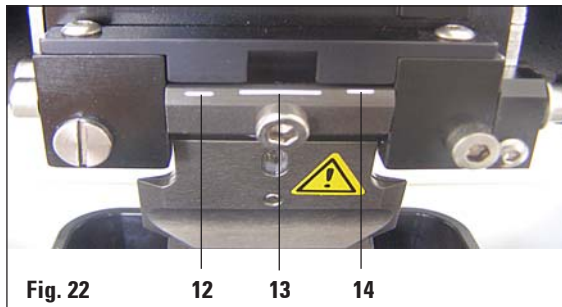


Fig. 22



The blade holder can be used for razor blades, injector blades and sapphire blades (universal blade holder).

- Insert a size 3 Allen key sideways into the blade holder through the hole (8) and rotate it 90° clockwise.

Clamp the blade as follows:

- Insert the provided size 3 Allen key from the top through the opening (10) into the blade holder (11) and open the blade holder (BH).
- Hold the entire razor blade (9) (not separated) on the left and right with both hands and insert it into the blade holder – Hook in the blade over bottom pressure plate (see Fig. 21).
- Clamp down the BH by turning the size 3 Allen key clockwise until hand-tight.



The clamping screw (11) on the blade holder must not be tightened too much!

Now return the blade holder to the cutting position.

- To do so, insert a size 3 Allen key sideways into the blade holder through the hole (8) and rotate approx. 90° counterclockwise.

For more information about adjusting the clearance angle, see Fig. 22.

- Insert a size 3 Allen key sideways into the blade holder through the hole (8) and rotate it to the desired clearance angle mark.

12 – 15° 13 – 18° 14 – 21°



For 15°, the effective clearance angle is "0".

The most commonly used setting is 18° (13).

5. Working with the Instrument

5.5 Routine Daily Maintenance and Switching off the Instrument – VT1200/VT1200S

After all daily procedures have been finished, perform the following:

- Switch off the main switch on the side of the instrument.
- Place the magnifier cover on the magnifier.
- Remove the blade from the blade holder and dispose of it safely.
- Pull the ice bath and buffer tray off of the dovetail guide and place them on the stage.
- Remove and empty out the buffer tray. Dispose of the contents of the buffer tray properly.
- Remove the specimen plate and lay it flat on the stage.
- Remove the specimen using a single-sided blade and remove any cyanoacrylate adhesive residue from the specimen plate.



Caution! The contents of the ice bath can become contaminated if buffer solution is spilled over it.

6.1 Using the VibroCheck with the VT1200



The following instructions must be adhered to exactly. Noncompliance can cause serious damage to the instrument.

We recommend using the VibroCheck after each blade change to check the optimum position of the blade and minimize the vertical vibration.

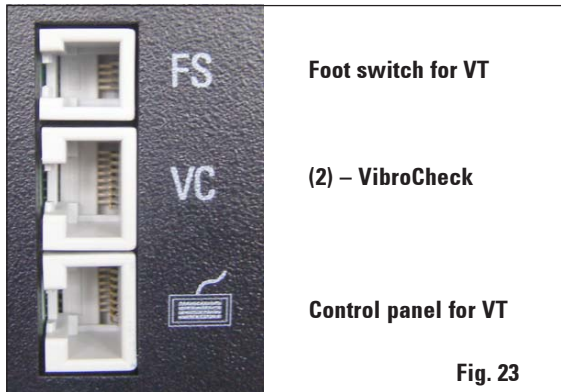


Fig. 23

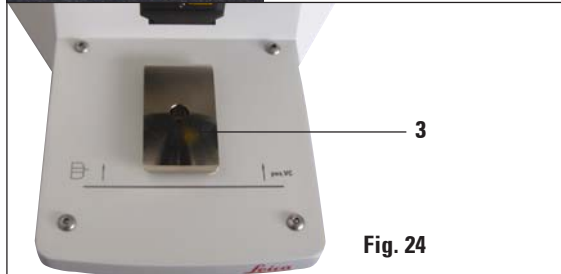


Fig. 24

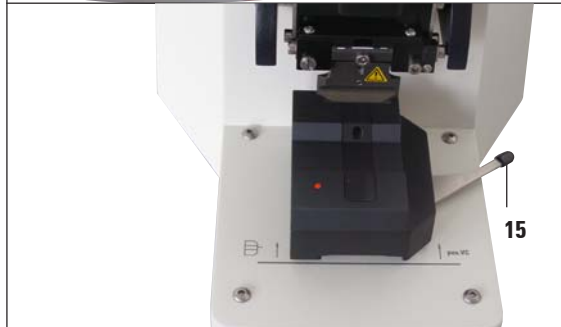


Fig. 25

Prior to assembly, the dovetail guide (**3**) is brought down to the lowest position using the **DOWN** key!

1. The user installs the VibroCheck: the VC is pushed along the dovetail guide (**3**) past the mark on the base plate of the instrument (rear stop) and clamped firmly using the lever (**15**). Insert the blade and clamp tightly. Return the blade to the cutting position (see Fig. 20).
2. Plug the connecting plug of the VibroCheck (VC) into the socket (**2**) on the left side panel. Short red flash of LED on VC --> control panel acknowledges VC. LED then remains red. LED in **DOWN** key flashes green.
3. The user presses the **DOWN** key. The VC moves to the bottom position, after that the blade moves to the rearmost position – the LED in the **RUN/STOP** key flashes. Short red flash of LED on VC --> it then remains red.
4. The user presses the **RUN/STOP** key: the blade first moves towards the front (into the position exactly above the VibroCheck); the VC then moves into a position in which the blade partly covers the light barrier. (If the VC does not receive any signal via the light barrier, the operation is canceled and **DOWN** is enabled.) LED on VC flashes green – **RUN/STOP** flashes yellow.

6. Operating the VibroCheck

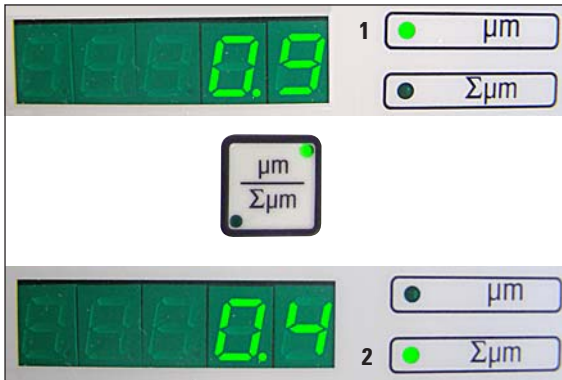


Fig. 26

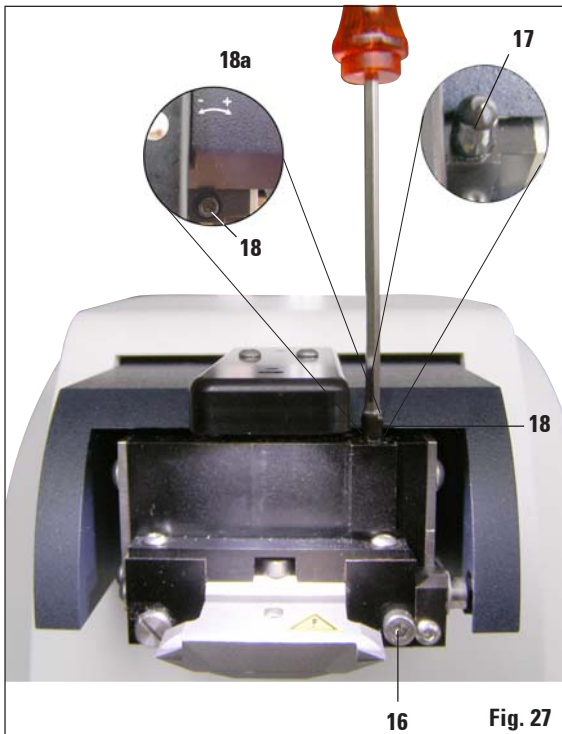


Fig. 27



If the display shows $\Sigma\mu\text{m}$ (2) "0" (optimal) and the value in μm (1) is unacceptably high, the blade must be replaced.

When LED on VC is green and LED in **RUN/STOP** is yellow, the blade starts to vibrate with the amplitude set. Speed = 0, amplitude can be changed at any time.

On the (5-digit) display, the deviation in height amplitude is shown in μm (e.g. $0.9\mu\text{m}$). This value can be either positive or negative. The display can be switched using the key $\mu\text{m}/\Sigma\mu\text{m}$. Then a number appears (e.g. 0.4). This means clockwise rotation by 0.4 turns ("+" see 18a) – (Neg. operational sign means counterclockwise rotation – see 18a). If the value is "0", no improvement of the height amplitude is possible.

5. Press the **STOP** key. Using a size 3 Allen key, unscrew the clamping screw (16) only **slightly**, pull off the cap (17) by pulling it upwards (keep it in a safe place) and turn the adjusting screw (18) by the corresponding value (here, 0.4 turns) clockwise (in the "+" direction, 18a) using a size 3 Allen key. Tighten the clamping screw (16) clockwise.
6. Press the **RUN** key, check the value, repeat steps 5 – 7 if necessary.
7. If the measured value is accepted, press **DOWN** (flashes green). VC moves to lowest position – blade is moved to the rear. LED on VC illuminates red again (LED on **RUN/STOP** is off).
8. **The instrument now expects the VibroCheck to be removed.** To do so, disconnect the USB plug connection of the VC to the basic instrument and pull the VC off of the dovetail guide. LED in **DOWN** key continues to flash – wait until LED in **DOWN** button goes out.

The normal operating status is now restored.

6.2 Using the VibroCheck with the VT1200 S



The following instructions must be adhered to exactly. Noncompliance can cause serious damage to the instrument.

We recommend using the VibroCheck after each blade change for checking the optimum position of the blade and important sectioning parameters.

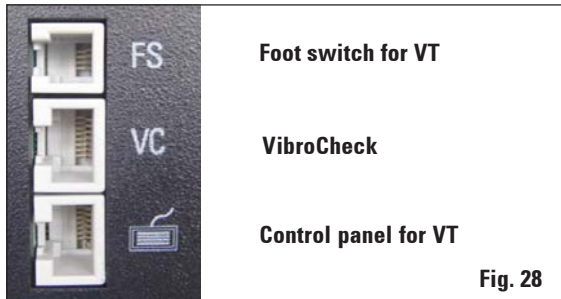


Fig. 28

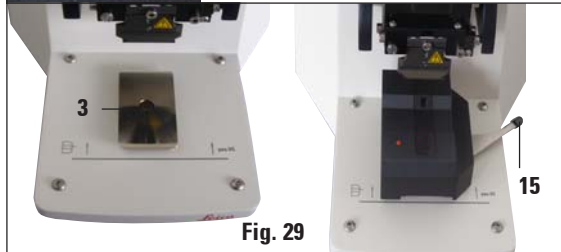


Fig. 29

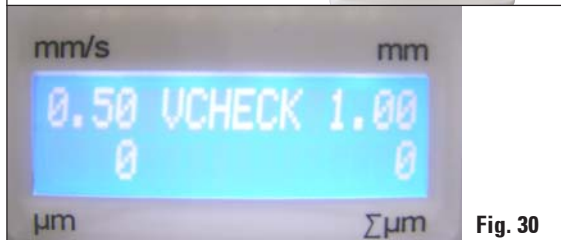


Fig. 30



Fig. 31

Prior to assembly, the dovetail guide (3) is brought down to the lowest position using the **DOWN** key!

1. The user installs the VibroCheck: the VC is pushed along the dovetail guide (3) past the mark on the base plate of the instrument (rear stop) and clamped firmly using the lever (15). Insert the blade and clamp tightly. Return the blade to the cutting position (see Fig. 19).
2. Plug the connecting plug of the VibroCheck (VC) into the corresponding socket on the left side panel. The LED on the VC quickly flashes red --> then it remains red. The control panel detects the VC (see Fig. 30). The LED in the **DOWN** key flashes green.
3. The user presses the **DOWN** key. The VC moves to the bottom position, in addition to that the blade moves to the rearmost position – the LED in the **RUN/STOP** key flashes. Short red flash of LED on VC --> it then remains red.
4. The user presses the **RUN/STOP** key: the blade first moves towards the front (into the position exactly above the VibroCheck); the VC then moves into a position in which the blade partly covers the light barrier. LED on VC flashes green – **RUN/STOP** flashes yellow. The control panel displays: "VIBRO search" (see Fig. 30). A search can last up to 1 minute. When LED on VC is green and LED in **RUN/STOP** is yellow, the blade starts to vibrate.

6. Operating the VibroCheck



Fig. 32

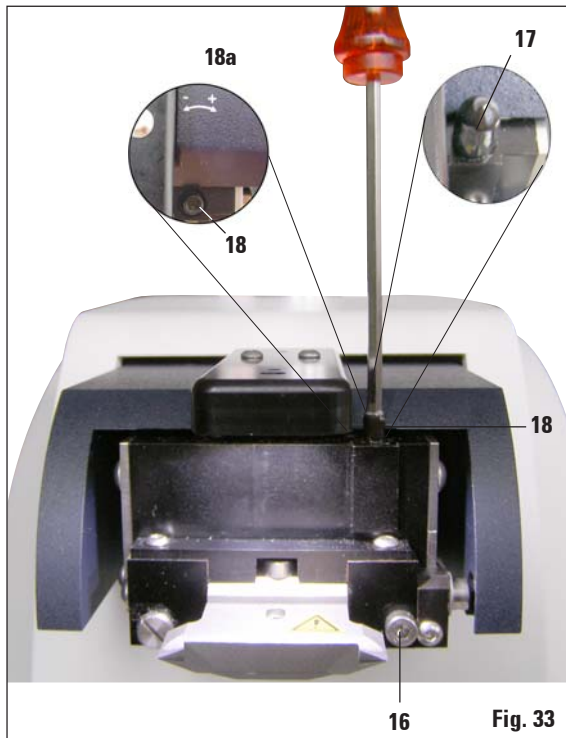


Fig. 33



Fig. 34

The deviation of the height amplitude is shown on the display in μm (1). This value can be either positive or negative. A number (e.g. -0.3) appears in the $\Sigma\mu\text{m}$ display (2). This means a **counterclockwise** rotation of 0.3 (as "-") and reduces the height amplitude to a minimum. (If there is no operation sign, the rotation is in a clockwise direction "+"). If the value is "0", no improvement of the height amplitude is possible.

5. Press the **STOP** key. Unscrew the clamping screw (16) only **slightly** using the size 3 Allen key, pull off the cap (17) by pulling it upwards (keep it in a safe place) and turn the adjusting screw (18) by 0.3 turns **counterclockwise** "-", 18a) using the size 3 Allen key. Tighten the clamping screw (16) clockwise.
6. Press the **RUN** key, check the value, repeat steps 5 – 7 if necessary.



If the display shows $\Sigma\mu\text{m}$ (2) "0" (optimal) and the value in μm (1) is unacceptably high, the blade must be replaced.

7. If the measured value is accepted, press **DOWN** (flashes green). VC moves to lowest position – blade is moved to the rear. Control panel for the VT displays: **"VIBRO END"**. The LED on the VC is again illuminated in red.
8. **The instrument now expects the VibroCheck to be removed.** To do so, disconnect the USB plug connection of the VC to the basic instrument and pull the VC off of the dovetail guide. LED in **DOWN** key continues to flash – wait until LED in **DOWN** button goes out. The normal operating status is now restored.

7. Malfunctions: Meanings and Troubleshooting

7.1 Error Messages and Troubleshooting

Error/INF No.	Error	Troubleshooting	Remark
Error 01	- Wrong control panel (VT1200 or VT1200 S)	- Use the correct control panel for the instrument.	- Using an incorrect control panel does not harm the instrument, but no functions whatsoever are available.
Error 21	- Head does not swing into place.	<ol style="list-style-type: none">1. Check to see if an amplitude value has been selected.2. Try to make the head swing into place by gently striking it with your hand.3. If head does not swing into place, inform service.	
Error 22	- Timeout while initializing the x-axis.	- Inform service!	
Error 23	- DC motor of x-axis does not rotate (during initialization or in normal operation)	- Inform service!	
Error 24	- "X-Start" limit switch is not reached.	- Inform service!	
Error 25	- "X-Start" limit switch cannot be moved away from.	- Inform service!	
Error 26	- "X-Stop" limit switch is not reached.	- Inform service!	



After all error messages, the instrument MUST be switched off, then on again using the main switch.


7. Malfunctions: Meanings and Troubleshooting

Error/INF No.	Error	Troubleshooting	Remark
Error 27	- "Bottom" limit switch of the Z-axis is not reached during initialization or operation.	- Check whether an obstacle is blocking the travel path of the ice bath. Remove the obstacle. If there is no obstacle, and the error message persists after the instrument is switched on again: inform service.	
Error 28	- The "top" limit switch of the Z-axis is not reached.	- Check whether an obstacle is blocking the travel path of the ice bath. Remove the obstacle. If there is no obstacle, and the error message persists after the instrument is switched on again: inform service.	
Error 31	- Both X sensors activated (during initialization or in normal operation)	- Inform service!	
Error 32	- Both Z sensors activated (during initialization or in normal operation)	- Inform service!	





After all error messages, the instrument MUST be switched off, then on again using the main switch.







7. Malfunctions: Meanings and Troubleshooting

Error/INF No.	Error	Troubleshooting	Remark
InF 41	- Control board (C1/back panel) and keyboard (C2) have different software versions.	- It is possible that due to different software versions, some or all functions of the instrument may be partly or entirely unavailable. Inform service and have the software updated to the latest version.	
InF 42	- Control board (C1/back panel) and VibroCheck (C3) have different software versions.	- It is possible that due to different software versions, some or all functions of the instrument may be partly or entirely unavailable.	
<div style="border: 1px solid black; padding: 10px; background-color: #f0f0f0;">  <p>"InF" messages can be removed by pressing the Clear key. The message appears once each time the instrument is switched ON. "InF" messages do not cause the instrument to be locked.</p> <p>After all error messages, the instrument MUST be switched off, then on again using the main switch. – Exceptions are InF 41 and 42.</p> </div>			
Error 51	- Horizontal calibration of VibroCheck is not possible.	- Possible operating error, see Operating Manual. - Great deal of damage or dirt on the blade or blade holder. Use a new blade or blade holder. - Controllers have different software versions. Have the software updated. - VibroCheck is defective. Have it checked by service.	- A calibration is carried out even if the blade is jagged. A great deal of obvious damage or dirt must be present before a blade calibration is canceled automatically.

7. Malfunctions: Meanings and Troubleshooting

Error/INF No.	Error	Troubleshooting	Remark
Error 52	- Basic calibration of light barrier is not possible for VibroCheck.	- Emitter diode or receiver is defective. - VibroCheck is defective. - Inform service!	
Error 53	- VibroCheck blade search not successful.	- No blade and/or blade holder swung out or not installed. - Emitter diode or receiver dirty. Clean - VibroCheck is defective.	- VT1200 drives to the lowest Z position using the stepper motor after an unsuccessful search. (Allows blade installation)
Communication between keyboard – VT1200/S	- Communication error between control unit and VT.	- VT1200S: display lights up, but remains blank. - VT1200: row of dots flashes. - Inform service!	
- The knife/blade collides with the buffer tray	- The buffer tray was not pushed in up to the rear pin or was not clamped down during installation.	Push in the buffer tray as far as it will go and clamp it down with the lever.	
- The VibroCheck collides with the blade	- The VibroCheck was not pushed all the way in or was not clamped down during installation.	- Push in the VibroCheck as far as it will go and clamp it down with the lever.	
	- Switching from SINGL to CONT is not possible.	- In MAN mode, only single cuts are possible.	
	- The cutting window cannot be defined.	- In MAN mode, only single cuts are possible. - If multiple cuts are required, switch to AUTO mode.	

7. Malfunctions: Meanings and Troubleshooting

Error/INF No.	Error	Troubleshooting	Remark
	<ul style="list-style-type: none"> - Not accepted: <ul style="list-style-type: none"> • Negative values • Values of more than 1000 µm 		
	<ul style="list-style-type: none"> - In MAN mode, pressing the AUTO-FEED key feeds the last saved value. 		 Blocked when RUN is active!
	When a key is pressed, a beep sounds.		<ul style="list-style-type: none"> - In MAN mode, if the PAUSE key has not been assigned a function, a short beep sounds.
		<p>If the 1000 hour limit is exceeded while the instrument is in normal operating mode, a flashing "SEr" appears in the upper 3-digit LED for approx. three seconds after the sectioning process has been ended with the RUN/STOP key. This indicates that the vibrating component needs to be serviced.</p>	
The instrument is not working.	<p>The plug connections are loose or the instrument is connected to the power supply improperly or not at all.</p> <p>The power fuses are defective.</p>	<p>VT connection cable: Check the control unit and power plug.</p> <p>Replace the power fuses.</p>	

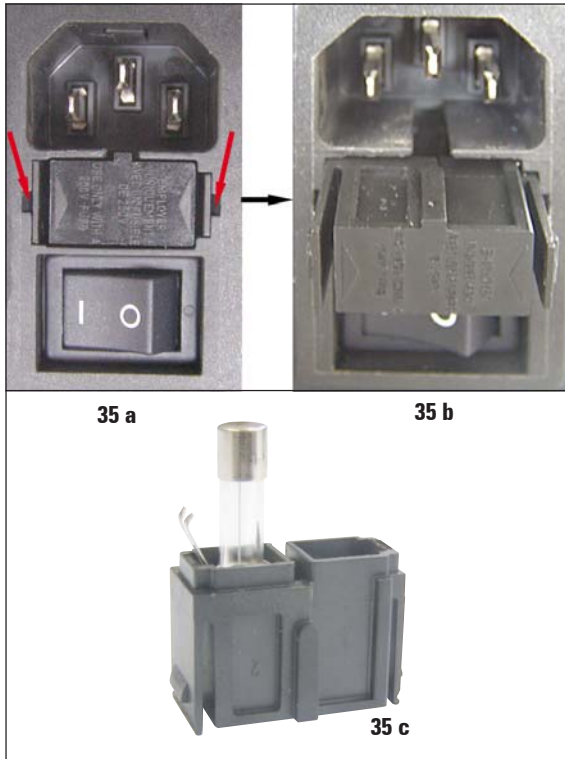
7. Malfunctions: Meanings and Troubleshooting

7.2 Replacing the Main Fuse



Caution:
Always unplug the power supply before replacing the fuses!

- Remove the fuse housing on the right side of the instrument above the power switch. To do so, push an appropriate tool (small screwdriver) into the slots on the right and the left (Fig. 35 a) and carefully pull it out.



- Remove the defective fuse and replace it with the replacement fuse included in the standard scope of delivery (see Fig. 35 c).
- Reinsert the fuse housing into the holder on the instrument according to Figure 35 b and gently push it in until you hear it click into place.

Fig. 35

8.1 Cleaning the Instrument



Always put the blades back into the blade case/dispenser when not in use.

When using cleaners, comply with the safety instructions from the manufacturer and the labor-safety regulations at your laboratory.

When cleaning the outer surfaces of the instrument, do not use xylene or solvents containing acetone or xylene. The finished surfaces are not resistant to xylene or acetone!

Ensure that liquids do not enter the interior of the instrument during cleaning.

Before each cleaning, carry out the following preparatory steps:

- Switch off the main switch on the side of the instrument.
- Place the magnifier cover on the magnifier.
- Remove the blade from the blade holder and dispose of it safely.
- Pull the ice bath and buffer tray off of the dovetail guide and place them on the stage.
- Remove and empty out the buffer tray. Dispose of the contents of the buffer tray properly.
- Remove the specimen plate and lay it flat on the stage.
- Remove the specimen using a single-sided blade and remove any cyanoacrylate adhesive residue from the specimen plate.

Instrument and outside surfaces

If necessary, the varnished outside surfaces of the control panels can be cleaned with a mild commercial household cleaner or soap water and then be wiped with a cloth.

The instrument must be completely dry before it can be used again.

Cleaning the blades



Always wipe the blade from the back of the blade (sapphire blade) to the cutting edge. NEVER wipe in the opposite direction – risk of injury!

Clean using an alcohol-based solution or acetone.

9. Ordering Information for Optional Accessories, Consumables and Spare Parts

Ice bath	14 0481 42010
Buffer tray	
Buffer tray, complete (plastic)	14 0481 42089
Buffer tray, complete (metal)	14 0481 42084
Buffer tray, double-walled, complete	14 0481 42088
Buffer tray lid available in plastic (0481 42089) or metal (0481 42084)	14 0481 42090
Hose clamp	14 0481 41952
Specimen plate	
Specimen plate, non-directional (for 20 mm high specimens)	14 0481 42086
Specimen plate, non-directional (for 10 mm high specimens)	14 0481 43399
Specimen plate, directional, incl. swivel handle	14 0481 42068
Blade	
VT blades (Gillette), 1 package of 10x10 blades	14 0205 42056
Sapphire blade, blade angle of 22°	14 0216 39372
Injector blade, dispenser with 20 blades	14 0358 27411
Blade holder, complete	14 0481 42030
VibroCheck	14 0481 42075
Display	
Microscope, complete	14 0481 42024
Cover for the LED connection	14 0481 43402
Magnifier, complete	14 0481 42035
Cold light sources	
Cold light source CLS 100X 100 – 120 V/50-60 Hz	14 0502 30214
Cold light source CLS 100X 230 – 240 V/50-60 Hz	14 0502 30215
Cold light source CLS 100X 240 V/50-60 Hz	14 0502 30216
Fiber-optic light guide	14 0502 30028
Adhesive	
Cyanoacrylate adhesive containing 10 gr.	14 0371 27414
Refrigeration	
Minichiller (circulating cooler) -20 °C – +40 °C, 115V/60Hz	14 0481 44157
Minichiller (circulating cooler) -20 °C – +40 °C, 230V/50/60Hz	14 0481 44156
Foot switch	14 0481 43397
Protective cover, small	14 0212 43742
Protective cover, large	14 0212 43743
Fuse: T1A, 5*20	14 6943 01000
Cover for the LED connection	14 0481 43402

9. Ordering Information for Optional Accessories, Consumables and Spare Parts

9.1 Extension Accessories for Standard Specimens

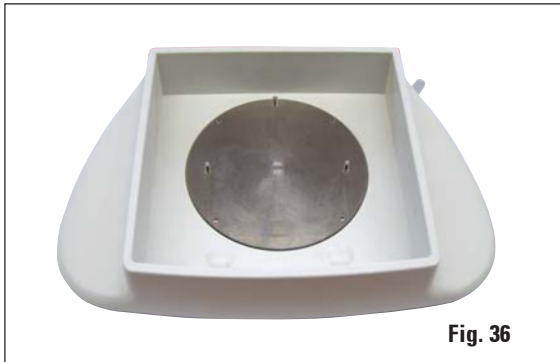


Fig. 36

Ice bath

- Removable
- Drawer design
- Remains stable on the stage when preparing specimen
- Integrated hand rests for use with the Leica VT1200 / VT1200 S.

Order no. 14 0481 42010

9.1.1 Buffer Tray

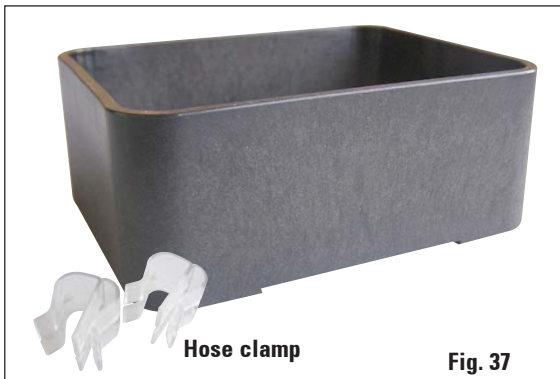


Fig. 37

Buffer tray, complete (plastic)

- Buffer tray and lid
- Magnetic holder for the specimen plate
- Specimen plate, non-directional
- Clamp (2x) for holding the hose in position in the buffer tray
- Volumes: 125 cm³ *
- Autoclavable

Order no. 14 0481 42089

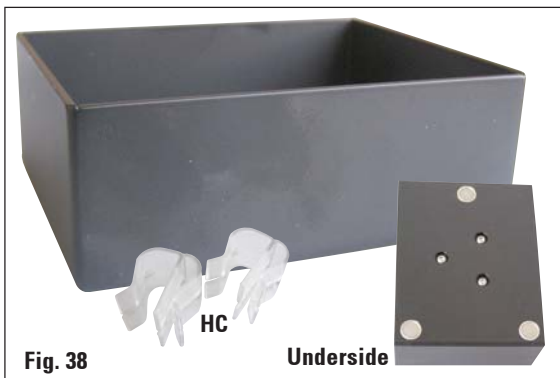


Fig. 38

Underside

Buffer tray, complete (metal)

- Buffer tray and lid
- Magnetic holder for the specimen plate (see the minimized illustration)
- Specimen plate, non-directional
- Clamp (2x) for holding the hose in position in the buffer tray
- Volumes: 125 cm³ *
- Non-autoclavable

Order no. 14 0481 42084

9. Ordering Information for Optional Accessories, Consumables and Spare Parts



Buffer tray, double-walled, incl. integrated hand rest, complete

- Buffer tray, double-walled
- Magnetic holder for the specimen plate
- Specimen plate, non-directional
- Clamp for holding the hose in position in the buffer tray
- Volumes: 400 cm³ *
- Non-autoclavable

Order no. 14 0481 42088

* (Specifications without the blade holder, measured 4 mm below the upper edge of the buffer tray)

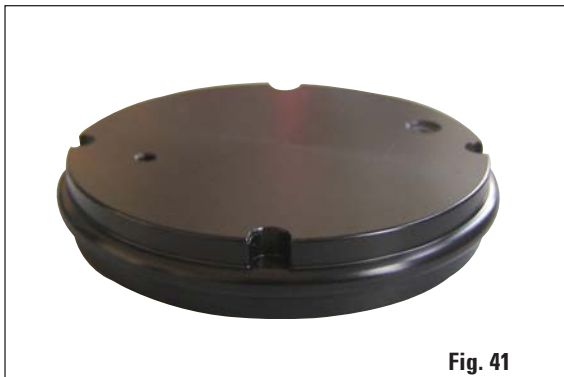


Lid for covering the buffer tray

- The buffer tray is available in plastic (0481 42089) or metal (0481 42084)

Order no. 14 0481 42090

9.1.2 Specimen Plate



Specimen plate, non-directional

- For specimens of 2 cm in height
- Can be rotated 360°
- Attached with magnets in the buffer tray

Order no. 14 0481 42086

9. Ordering Information for Optional Accessories, Consumables and Spare Parts



Specimen plate, non-directional

- For specimens of 1 cm in height
- Can be rotated 360°
- Attached with magnets in the buffer tray

Order no. 14 0481 43399



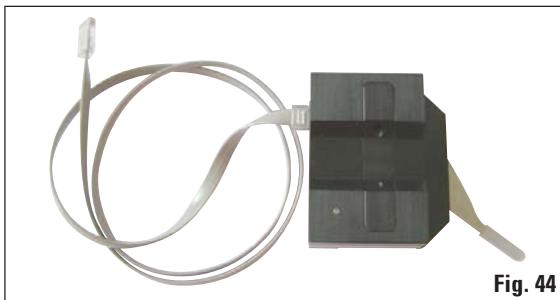
Specimen plate, directional

- Inc. swivel handle
- Inc. marks for angling specimen 5° and 10°

Order no. 14 0481 42068

Fig. 43

9.1.3 VibroCheck



Optional measuring instrument for displaying the vertical deviation of the blade (in μm) and for displaying the direction of rotation of the screws used to minimize the vertical deviation of the blade. Can be adjusted using the adjusting screw on the blade holder.

Order no. 14 0481 42075

9. Ordering Information for Optional Accessories, Consumables and Spare Parts

9.1.4 Blades



Fig. 45

VT blades (Gillette), platinum plated
1 dispenser with 10x10 blades

Order no. 14 0205 42056

Sapphire blade, blade angle of 22°
The blade can be reground.

Order no. 14 0216 39372

Injector blade, dispenser with 20 blades

Order no. 14 0358 27411

9.1.5 Microscope, Complete



Fig. 46

- Microscope support
- S6 Stereozoom microscope
- 2 eyepieces, 10x23 B, adjustable
- Protective objective glass
- Bearing cylinder with 3 screws
- Dust cover, large
- Adapter for the fiber-optic light guide slot
- Cover for the LED connection

Order no. 14 0481 42024

9.1.6 Magnifier, Complete



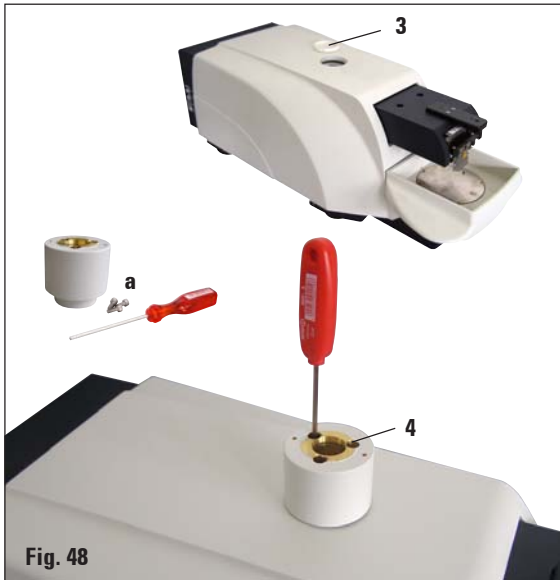
Fig. 47

- Magnifier support
- Lens (2x magnification) with lens cover (a)
- Bearing cylinder with 3 screws
- Dust cover, large
- Adapter for the fiber-optic light guide slot

Order no. 14 0481 42035

9. Ordering Information for Optional Accessories, Consumables and Spare Parts

9.1.7 Installing the Magnifier Support or Microscope Support



- First, remove the cover (3) from the basic instrument and store it in a safe place.
- Insert the provided Allen screws (a) into the hole (4) in the bearing bush. Use the size 3 Allen key to screw the screws into the open slot on the top side of the basic instrument.
- Push the magnifier support or microscope support into the bearing bush as far as it will go.
- Adjust the magnifier to the desired inclination angle and screw in the screw (2, Fig. 49) using the size 3 Allen key or
- Insert the S6 stereozoom microscope into the ring holder and attach it by screwing (5, Fig. 50 b) it down.
- Determine the desired inclination angle of the microscope and lock it in place by tightening the screw (6, Fig. 50 a) clockwise using a No. 3 Allen key.
- The height of the microscope can be adjusted using the height adjustment knobs (7, Fig. 50 a) and adapted to the specific specimen.



9. Ordering Information for Optional Accessories, Consumables and Spare Parts

9.1.8 Fiber-optic Illumination, Cold Light Source



Fig. 51

Fiber-optic illumination

- The fiber-optic illumination is installed after the magnifier has been installed in the magnifier holder and then connected to the cold light source.



Fig. 52

Order no. 14 0502 30028

Leica CLS 100 cold light source

- Serves as a light source for the fiber-optic illumination.

100-120 V, 50/60 Hz Order no. 14 0502 30214

230-240 V, 50/60 Hz Order no. 14 0502 30215

240 V, 50/60 Hz Order no. 14 0502 30216



Fig. 53



Carefully read the separate Operating Manual provided before use!



The cold light source must be operated at the power supply voltage specified on the nameplate (on the underside of the instrument).

9. Ordering Information for Optional Accessories, Consumables and Spare Parts

9.1.9 Cyanoacrylate Adhesive



Single-component adhesive for adhering specimens to the specimen plate – Contains 10gr.

Order no. 14 0371 27414

9.1.10 Minichiller (circulating cooler)



Connect the circulating cooler with air-cooled refrigerator to the double-walled buffer tray according to the Installation Instructions included in separate packaging.

Voltage variant 115V/60 Hz

Order no. 14 0481 44157

Voltage variant 230 V/50/60 Hz

Order no. 14 0481 44156

9.1.11 Foot Switch



Insert the foot switch into the uppermost socket marked "FS" (5) on the left side of the basic instrument.

- The foot switch performs the **START/STOP** function.

Order no. 14 0481 43397

10. EC Declaration of Conformity



EC declaration of Conformity

We herewith declare, in exclusive responsibility, that the instrument

Leica VT1200/VT1200S – Microtome with vibrating blade

was developed, designed and manufactured to conform with the

- Directive 2006/95/EC of the European Parliament and of the Council (Low Voltage) and
 - Directive 2004/108/EC of the European Parliament and of the Council (electromagnetic compatibility)
- including their amendments up to the date mentioned below.

The following harmonized standards were applied:

- **EN 61010-1: 2001**
Safety requirements for electrical equipment for measurement, control and laboratory use -
Part 1: General requirements
- **EN 61326: 2006**
Electrical equipment for measurement, control and laboratory use - EMC requirements -
Part 1: General requirements

In addition, the following in-house standards were applied:

- **DIN EN ISO 9001: 2000**
Quality management systems - Requirements

Leica Biosystems Nussloch GmbH
Heidelberger Str. 17-19
D-69226 Nussloch
October 11, 2007


Anne De Greef-Safft
President Biosystems Division

- Administrative Measures on the Control of Pollution
Caused by Electronic Products -

部件名称 Name of the part	有毒有害物质或元素 Hazardous substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr ⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 printed circuit boards	X	O	O	O	O	O
电子元器件 electronic components	X	O	O	O	O	O
机械部件 mechanical parts	X	O	O	X	O	O
光学元器件 optical components	X	O	X	O	O	O
电缆 cables	O	O	O	O	X	X
光源 light sources	O	X	O	O	O	O

- o : 表示该有毒有害物质在该部件中的含量均在SJ/T 11363-2006 标准规定的限量要求以下。
Indicates that the concentration of the hazardous substance in all materials in the parts is below the relevant threshold of the SJ/T 11363-2006 standard.
- x : 表示该有毒有害物质至少在该部件的某一材料中的含量超出SJ/T 11363-2006 标准规定的限量要求。
Indicates that the concentration of the hazardous substance of at least one of all materials in the parts is above the relevant threshold of the SJ/T 11363-2006 standard.

Note: The actual product may or may not include in all the part types listed above

12. Warranty and Service

Warranty

Leica Biosystems Nussloch GmbH guarantees that the contractual product delivered has been subjected to a comprehensive quality control procedure based on the Leica in-house testing standards, and that the product is faultless and complies with all technical specifications and/or agreed characteristics warranted.

The scope of the warranty is based on the content of the concluded agreement. The warranty terms of your Leica sales organization or the organization from which you have purchased the contractual product shall apply exclusively.

Service information

If you are in need of technical customer support or spare parts, please contact your Leica representative or the Leica dealer where you purchased the instrument.

Please provide the following information:

- Model name and serial number of the instrument
- Location of the instrument and name of the person to contact
- Reason for the service call
- Delivery date

Decommissioning and disposal

The instrument or parts of the instrument must be disposed of according to existing applicable, local regulations.