



Leica VT1000S

Vibrating-blade
microtome

Instruction Manual

Leica VT1000S V1.2 English – 12/2000

Always keep this manual near the instrument.
Read carefully prior to operating the instrument.

Leica

Serial no.:

Year of manufacture:

Country of origin: ..Federal Republic of Germany



Issued by :

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For the instrument serial number and year of manufacture, please refer to the name plate at the back of the instrument.

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Table of contents

1.	Important Notes	5
1.1	Symbols used in this manual and their meaning	5
1.2	Designated use / misuse	6
1.3	Selection and qualification of personnel	6
2.	Safety	7
2.1	General information on instrument design and safe handling	7
2.3	Safety instructions for handling the instrument	8
3.	Instrument properties	9
3.1	Technical Data	9
3.2	Overview - VT 1000 S	10
4.	Installation	12
4.1	Standard delivery	12
4.2	Unpacking and installing the instrument	13
5.	Operation	14
5.1	Setting up the instrument	14
5.2	The VT 1000 S controls and their function	15
5.3	Adjusting the amplitude	20
5.4	Working with the VT 1000 S on a daily base	21
5.5	Daily routine maintenance / switching the VT 1000 S off	24
6.	Trouble shooting	25
7.	Cleaning and maintenance	30
7.1	Exchanging the main fuses	30
8.	Warranty and service	31
8.1	Warranty	31
8.2	Technical Service information	32
8.3	Decommissioning and disposal	32
9.	Ordering information: replacement parts, accessories and consumables ..	33
9.1	Additional accessories for standard size specimens (functional description)	34
9.2	Additional accessories for large specimens (functional description)	34
9.3	Foot switch (functional description)	35
9.4	Magnifier, fiber optics, cold light source	36

The individual chapters of the Leica VT1000 S instruction manual:

- Chapter 1 Structure of the manual**
- Table of contents
 - Important information on this manual
- Chapter 2 Safety**
- Make sure to read this chapter before operating the instrument!
- Chapter 3 Instrument properties**
- Technical Data
 - Overview
- Chapter 4 Installation**
- Standard delivery
 - Unpacking and installing the instrument
- Chapter 5 Operation**
- Controls
 - Working with the instrument
- Chapter 6 Trouble shooting**
- Chapter 7 Cleaning, disinfection and maintenance**
- Chapter 8 Warranty and service**
- Chapter 9 Ordering information
CE Declaration of conformity**

1.1 Symbols used in this manual and their meaning



Warnings appear in a grey box and are marked by a warning triangle: 



Useful notes, i.e. important user information appear in a grey box and are marked by an information symbol: 

(5) **Figures in brackets refer to item numbers in drawings or to the drawings themselves.**

Instrument type:

All information given in this instruction manual applies only to the instrument type indicated on the title page.

A name plate, indicating the instrument serial number, is attached to the back of the instrument.

Required information for all inquiries:

For any inquiries please specify:

- Instrument type
- Serial number

1. Important Notes

General

This instruction manual includes important instructions and information related to the operating safety and maintenance of the instrument.

The instruction manual is an important part of the product. It must be read carefully before using the instrument for the first time and must always be kept with the instrument.

If additional requirements, which exceed the scope of this manual, are imposed by regulations and/or laws on accident prevention and environmental protection in the country of operation, appropriate instructions for compliance with such requirements must be added to this manual.

Read this instruction manual carefully before attempting to work on or operate the instrument.



Please pay particular attention to chapter 2 (safety features, safety instructions).

– Please read this information, even if you are already familiar with the operation and use of other Leica products.

1.2 Designated use / misuse

- The VT 1000 S has been designed for sectioning of specimens in medicine, biology and industry, especially for sectioning fixed or fresh tissue immersed in buffer solution.
- The instrument may only be operated according to the instructions contained in this manual.
- Any other use of the instrument is considered contrary to its designated use.

1.3 Selection and qualification of personnel

- The Leica VT1000S may only be operated by trained laboratory personnel.
- Prior to starting work with the instrument, all laboratory personnel designated to operate the instrument must carefully read the present instruction manual and must be familiar with all technical features of the instrument.

2.1 General information on instrument design and safe handling

This instrument has been built and tested in accordance with the following safety regulations on electrical measuring, control, regulating and laboratory devices:

- DIN EN 292
- DIN EN 61010-1
- EN 50082-1
- EN 55011
- IEC 1000-4

as well as according to the international quality standard

- DIN ISO 9001.

In order to maintain this condition and to ensure safe operation, the operator must observe the instructions and warnings contained in this instruction manual.

2. Safety

2.3 Safety instructions for handling the instrument

Potential hazard



Caution: risk of injury when touching the knives and blades as these are extremely sharp.



Warning: risk of infection when working with fresh tissue or with material where an infection cannot be excluded.



Caution: When not in use, cover magnifier with corresponding lid to avoid risk of fire.



Warning: Avoid touching live parts under any circumstances!

Correct behavior

Make sure to handle knives and blades very cautiously!

Never touch the cutting edge of knives and blades!

Do not leave knives, blades and bladed knife holders unprotected.

Take adequate protective measures to eliminate risk of infection!

Protective clothes according to safety regulations "Working with harmful substances" (Safety mask, gloves, protective clothing) must be worn!

The magnifier must be covered while the instrument is not in use, as it may act as a burning glass when not covered!

The instrument cover may only be removed by qualified service personnel!

Before removing the cover, ensure that the instrument is unplugged.

3.1 Technical Data

General:

Sectioning frequency ($\pm 10\%$)	0 - 100 Hz
Amplitude	adjustable in 5 steps: 0.2; 0.4; 0.6; 0.8; 1 mm
Sectioning speed ($\pm 10\%$)	0.025 - 2.5 mm/s
Return stroke speed ($\pm 10\%$)	5 mm/s
Total vertical specimen stroke	15 mm (motorized)
Sectioning range	1 - 40 mm (adjustable)
Specimen retraction	0 - 999 μm (adjustable; can be deactivated)
Maximum specimen size:	
with standard knife holder	33 x 40 mm
with knife holder L	70 x 40 mm
Specimen orientation	330°
Section thickness selection	1 - 999 μm , in 1- μm steps
Magnifier, assy. (Standard accessory)	2 x

Ambiance conditions:

Working temperature range	min. 10 °C to max. 40 °C
Relative humidity of air	max. 60 %
Altitude (site):	max. 2,000 m above sea level

Electrical specifications:

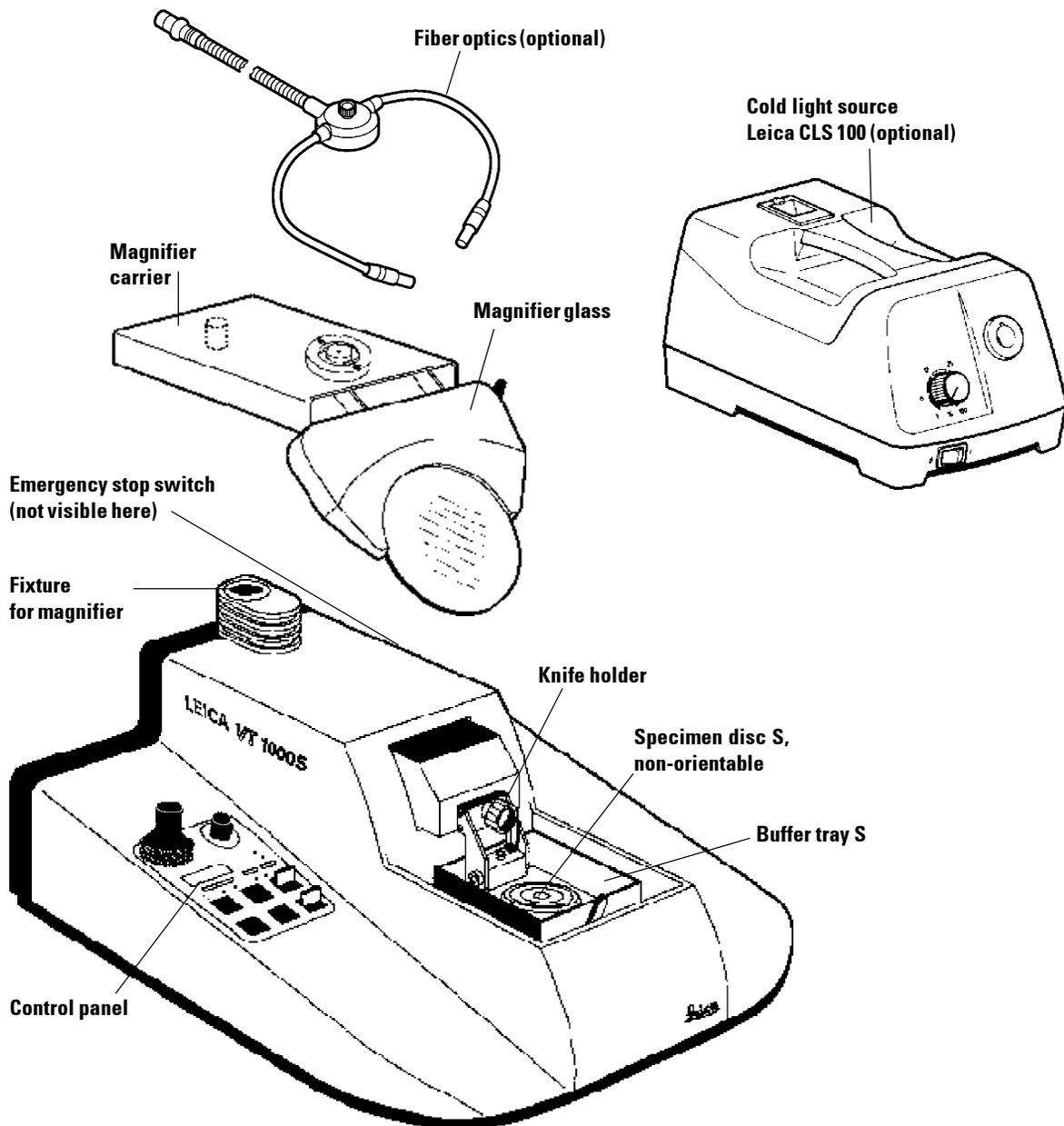
Nominal voltage range ($\pm 10\%$):	100 V - 240 V
Rated frequency ($\pm 10\%$):	50 - 60 Hz
Power draw	35 VA
Mains fuse	T 1.25 A
Pollution degree	2
Overtoltage installation category	II
Overload protection	yes
Internal current limiter of electronics	yes

Dimensions:

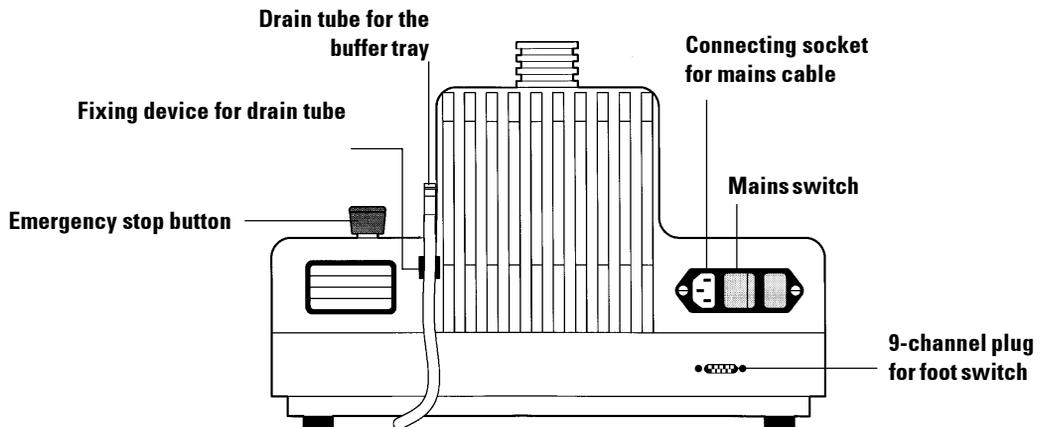
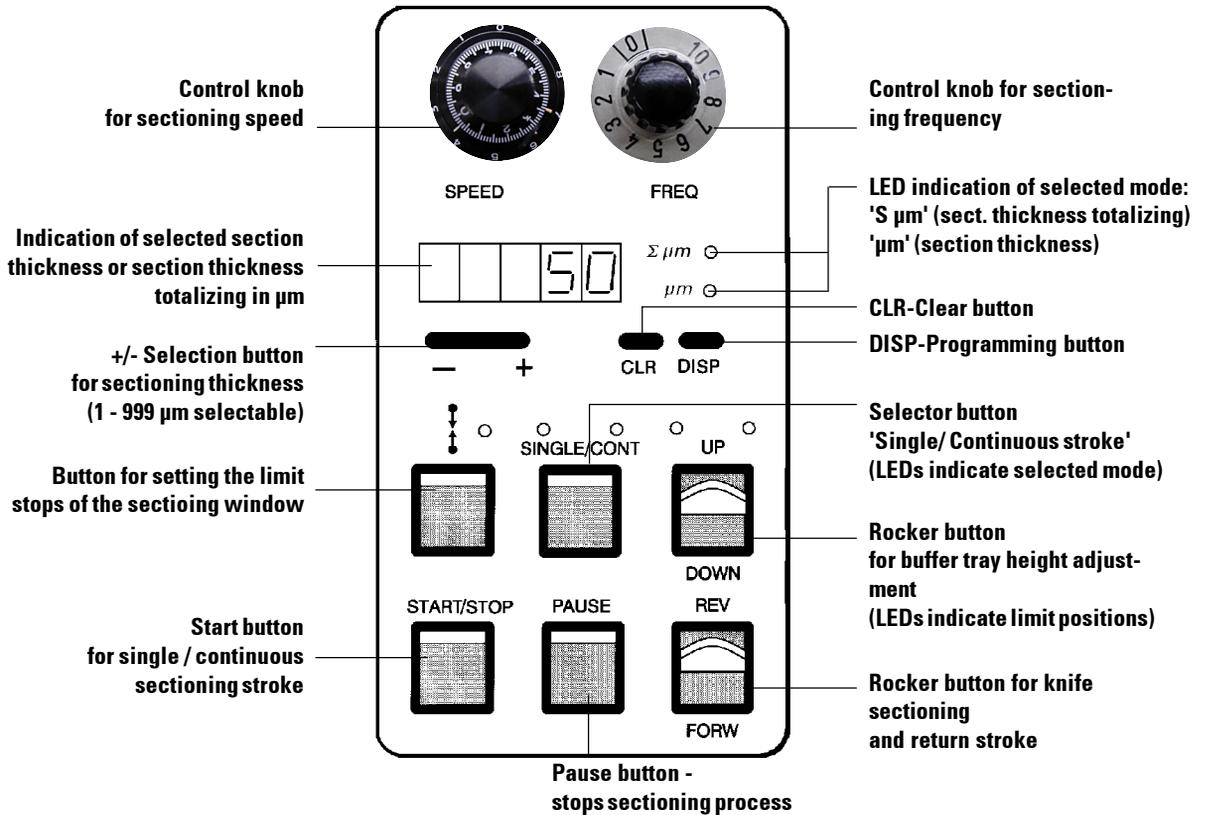
L x W x H	480 mm x 360 mm x 200 mm
Height with magnifier	285 mm
Weight:	
(without magnifier)	17 kg
(magnifier only)	2 kg
(total)	19 kg

3. Instrument properties

3.2 Overview - VT 1000 S



3. Instrument properties



4. Installation

4.1 Standard delivery

VT 1000 S – Basic instrument (0472 35612)

Standard delivery 'basic instrument' includes:

- 1 Silicon tube D-6x1.5 (0462 27513),
- 1 Set of mains cables
 - Mains cable 'Germany' (0411 13558),
 - Mains cable 'USA-CAN-J' (0411 13559),
 - Mains cable 'UK' ST/BU F-5A (0411 27822),
- 1 Set of replacement fuses 2 x T 1.25 A,
- 1 Tool set
 - 1 Hexagon key w/handle, size 2.5 – metric (0194 13195),
 - 1 Manipulator (0462 28930),
- 1 Microtome protective cover, type 104 R – flexible (0212 04091),
- 1 Instruction manual Leica VT 1000 S, in 4 languages (0702 37104).

VT 1000 S complete configuration (0472 35613)

Configuration consists of:

- 1 x VT 1000 S Basic instrument (0472 35612)
- 3 Specimen discs S, Ø 50 mm, non orientable (0463 27404),
- Buffer tray S (0462 30132),
- Knife holder S – for injector and razor blades (0462 30131),
- 1 Hexagon key w/handle, size 3 – metric (0194 04764),
- 1 Bottle of Cyanoacrylate adhesive (0371 27414),
- Magnifier assy. (magnifier glass & carrier) (0462 31191).
- If you ordered further accessories, please compare the delivered parts with your order form. Should there be any discrepancies, please contact your local Leica sales representation immediately.

VT 1000 S complete configuration & sapphire knife (9010 00001),

This configuration consists of:

- 1x VT 1000 S Basic instrument (0472 35612),
- Accessories as for complete configuration above (0472 35613) ,
plus:
- 1x Sapphire knife (0216 35654).

4.2 Unpacking and installing the instrument



If at all possible the instrument should be installed on a low-vibration workbench surface.

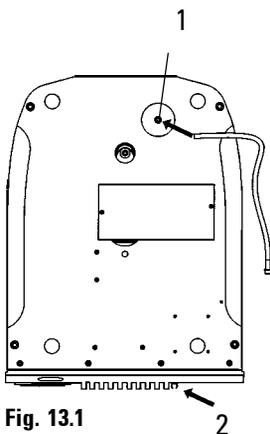


Fig. 13.1

Unpacking the instrument:

- Open the transport box and carefully remove all the parts from the box.
- Compare with the attached pack list to make sure the delivery is complete.
- Connect the drain tube (Fig. 13.1) of the cooling bath at the underside of the instrument (1).
- Ensure that the loose end of the drain tube is closed tightly with the matching stopper.
- Secure the loose end of the drain tube in the holder at the rear of the instrument (2).

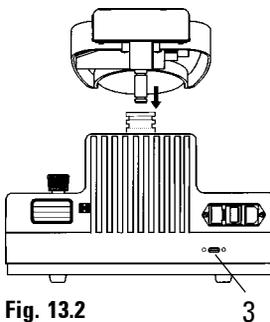


Fig. 13.2

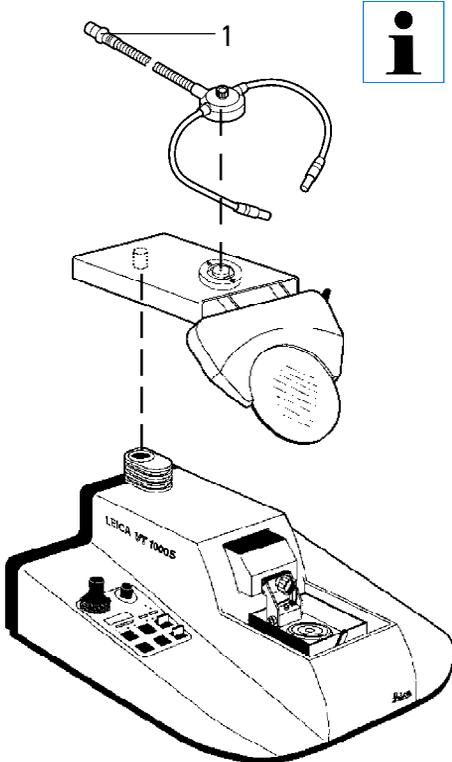
Mounting the magnifier:

- The magnifier carrier is packed separately.
- Attach it to the instrument as shown in Fig. 11.2.
- Connecting the optional foot switch:
- Plug in the foot-switch into the 9-channel plug (3) at the rear of the instrument.

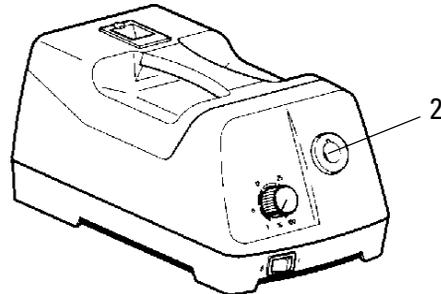
5. Operation

5.1 Setting up the instrument

1. Put the mains switch at the back of the instrument to the **OFF** position.
2. Make sure the mains cable is connected correctly to the instrument.
3. Attach the magnifier carrier.
4. Insert a blade into the knife holder.
5. Insert the buffer tray.
6. Insert the knife holder.
7. Connect magnifier carrier / optional fiber optics light guide to the coldlight source as shown below: insert plug (1) of the fiber optics light guide into socket (2) at the cold light source.
8. Connect the optional foot switch at the rear of the instrument.
9. Plug the mains cable into the mains power wall outlet.
10. Switch the instrument ON (mains switch).



The LEICA VT1000 S is equipped with a wide-range power pack to cover voltages from 100 V to 240 V. Once the mains switch is turned on, the instrument carries out an initialization process: after performing a slight forward movement, the knife moves to the final rear position.



5.2 The VT 1000 S controls and their function



Attention: Practise working with the controls without a knife holder inserted. Only insert the knife holder when you are completely familiar with all control functions.

**SPEED**

Locking lever

SPEED - 10-Speed rotating potentiometer with scale

- **Function:**

Continuous knife feed adjustment from 0.05 - 2.5 mm/s:

Knife return stroke is performed at constant speed of 5 mm/s.

The additional locking lever prevents the speed setting from being accidentally changed while sectioning is in progress.

Scale setting mm/s

0	0.00
0.5	0.025
1	0.05
2	0.10
3	0.15
4	0.20
5	0.25
6	0.50
7	0.75
8	1.00
9	1.75
10	2.50

FREQ - Control knob with scale from 0 to 10

- **Function:**

Continuous adjustment of knife sectioning frequency (vibration) from 8 - 100 Hz.

**FREQ**

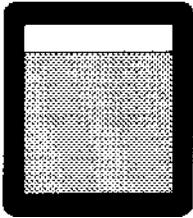
Scale setting Hz

0	0
0.5	8
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80
9	90
10	100

5. Operation

START/STOP - Button

START/STOP

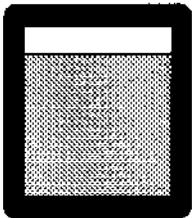


- Function:

- Start single or continuous sectioning stroke – according to whether SINGLE or CONT mode has previously been selected (see description of Single/Cont mode for further details)
- Specimen feed (section thickness) takes place prior to each section.
- Retraction (specimen is lowered) is carried out when the knife reaches the rear inverse point.
- In SINGLE mode, the knife stops automatically in the rear end position.
- In CONT mode, START/STOP has to be pressed again to stop the sectioning movement.
- The knife stops in the rear end position once the current section has been completed.

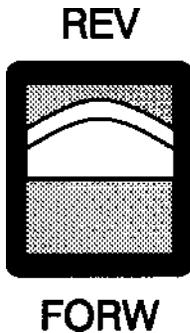
PAUSE - Button

PAUSE

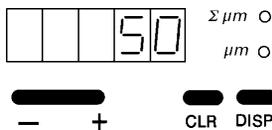


- Function:

- Knife movement is stopped immediately..
- To continue sectioning, press **PAUSE** once again.



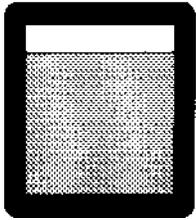
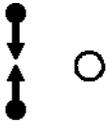
- **Rocker button**
- **Function:**
To move the knife towards the specimen.
Can also be used for manual sectioning.
Because of safety aspects the **FORW**-movement is carried out only while the rocker button is held down;
the **REV**-movement is carried out completely once the key has been locked into place.
- To stop the **REV**-movement before reaching the rear end position, switch the rocker button manually back into its center position.
- The **REV/FORW**-button can also be used to stop a sectioning stroke which has been activated by pressing the **START/STOP** button.



- **LED indication with -/+ adjusting button, DISP and CLR function keys**
- **Function of LED indication:**
Indicates the selected sectioning thickness or section thickness totalizing.
- **Function of the -/+ button:**
Selection of section thickness in 1- μm steps from 0 to 999 μm .
The specimen feed (in the preselected section thickness) takes place at the beginning of each sectioning stroke.
- **Function of the DISP button:**
To select between two modes of operation: ' μm ' = section thickness or
'S μm ' = section thickness totalizing.
- **Function of the CLR button in section thickness totalizing mode:**
Sets the value indicated in the section thickness totalizer mode (S μm) to zero.

5. Operation

Sectioning window - Button with LED indication

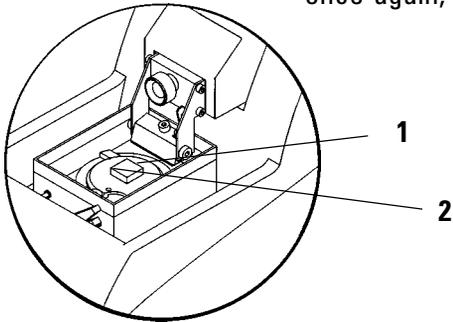


Adjusting the sectioning window:

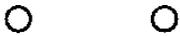


If - by mistake - only one limit stop of the sectioning window is set, the knife moves along the whole sectioning range!

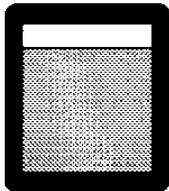
To set the first limit stop of the sectioning window move the knife close to the specimen edge (1) using the REV/FORW rocker button. Touch the sectioning window button - the LED flashes once. To set the second limit stop, press REV/FORW once more until the knife has reached the rear edge of the specimen (2). Touch the sectioning window button again - once again, the LED flashes briefly.



SINGLE/CONT - Button



SINGLE/CONT



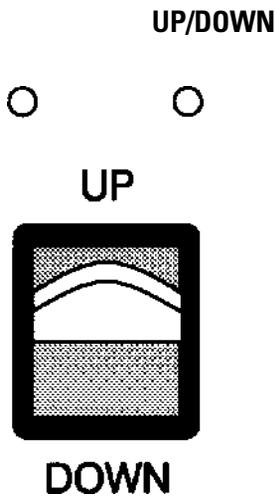
- Function:

Switch between single stroke

(1 sectioning stroke / 1 return stroke) and continuous stroke

(continuous sectioning until the **START/STOP**-button is pressed).

- To stop the knife at the rear end position in **CONT** mode press the **START/STOP** button. The sectioning stroke in progress is completed and the knife then stops at the selected end position of the sectioning range.



UP/DOWN - Rocker button

- Function:

Motorized height adjustment of buffer tray within a total vertical range of 15 mm (= total vertical specimen stroke).

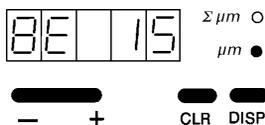
The upper and lower end positions of the buffer tray are indicated each by an audible sound signal and a red LED.

The UP/DOWN button is inoperational while the knife is in motion.

For the **DOWN** motion the rocker button can be locked in the DOWN position; for the **UP** motion, the button must be pressed and held in the UP position.

Upon reaching the lowest position with the rocker button being locked in DOWN, there will be both an audible and a visible signal. Once the button is unlocked, the buffer tray is automatically raised until both signals switch off.

- The retraction thickness or the deactivation of the retraction, as well as the loudness of the sound signal of the VT 1000 S are adjusted with the following function key combinations:



Loudness adjustment:

- If not done yet, select the section thickness mode (' μm ') using the **DISP** button.
- Press the **CLR** and **+** button simultaneously. The indication 'BE 15' will be displayed. The loudness can now be adjusted via the **-/+** button. Setting '0' is equivalent to no sound signal.
- To quit the programming mode, press **CLR**.

5. Operation

LO999 $\Sigma \mu m$ ○
 μm ●

— + CLR DISP

- Adjusting the retraction

- In programming mode, press **DISP** to display the specimen retraction menu.
- The indication 'LO' will be displayed.
- Using the **-/+** button, set a specimen retraction value between 1 and 999 μm ; to turn off the retraction, set to '0'.
- The selected value will be displayed in the FEED window.
- Press CLR to quit the menu function.

5.3 Adjusting the amplitude

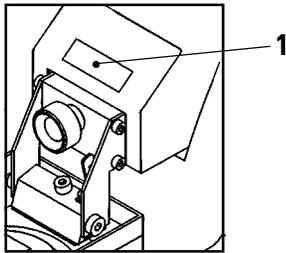


Fig. 20

- To obtain excellent sections, the amplitude requires adjustment according to the specimen type being sectioned.

To this end:

- Loosen the clamping screw (1) for the current amplitude position using a 2.5 mm Allen key and secure the eccentric on the bottom with your finger. The amplitude positions are from left to right: 0.2 mm; 0.4 mm; 0.6 mm; 0.8 mm; 1 mm.
- Slide the screw to the desired amplitude position and retighten.

5.4 Working with the VT 1000 S on a daily base

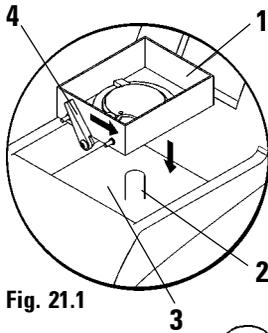


Fig. 21.1

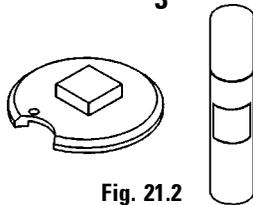


Fig. 21.2

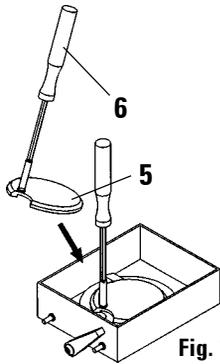


Fig. 21.3

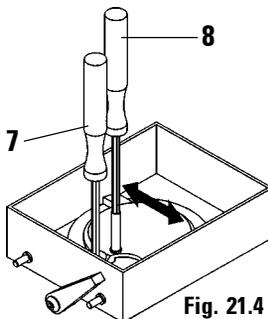
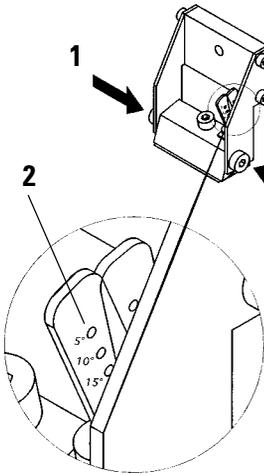


Fig. 21.4

- Mount the buffer tray (1) onto the bolt (2) inside the cooling bath (3).
- Secure the buffer tray by relocating the clamping lever (4) to the right (in the direction of the arrow).
- Via the **UP/DOWN** button lower the buffer tray to its lowest position (indicated by audible signal and red LED).
- Move the button back to the mid-position - the audible signal stops.
- If necessary, fill crushed ice into the cooling bath (3).
- Fill the buffer tray (1) with cooled buffer solution.
- Fix the specimen onto the specimen disc with cyanoacrylate adhesive (21.2).
- Insert the specimen disc (5) with the specimen into the buffer tray using the manipulator (6).
- Use the manipulator (8) to rotate the specimen disc into the desired position. Tighten with a 3 mm Allen key (7).
- The clamping screw or one of the clamping devices may not be placed over the gap in the specimen disc, as in these positions clamping the specimen disc is not possible.
- Remove the manipulator (8).

5. Operation



- Adjust the clearance angle (2) of the knife holder.

To this end:

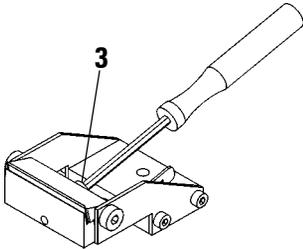
- Loosen the two lateral screws (1) with a 3-mm Allen key.
- Use the adjusting lever (2) to adjust the desired clearance angle.
- 1 - Secure the selected clearance angle by tightening the two screws (1).



The LEICA VT 1000 does not require the readjustment of the clearance angle every time you change the knife. The clearance angle needs to be readjusted only, when required by a different application (e.g. different type of tissue to be sectioned).

Fig. 22.1

- To insert the blade, loosen the clamping screw (3) located on the knife holder.



- Clean the blade.
- Insert the blade into the knife holder (4).
- Secure the blade with clamping screw (5).

Fig. 22.2



The blade must be brought firmly in contact with the inner limit stop of the knife holder over its entire length.

It is imperative that the blade be clamped parallel to the front edge of both clamping jaws of the knife holder.

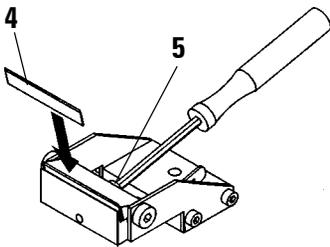


Fig. 22.3

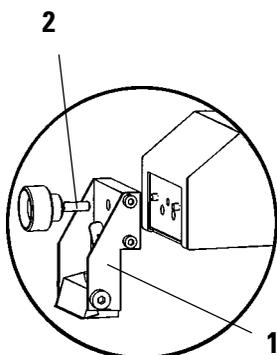


Fig. 23.1

- Fix the knife holder (1) with the knife holder clamping screw (2).
- Use the **REV/FORW**-rocker button to place the knife edge right behind the rear edge (from user's view) of the specimen.
- Pull the **UP/DOWN**-rocker button into the **UP**-direction and keep it in the **UP** position until the specimen surface is shortly below the level of the knife edge (see arrow (3)).

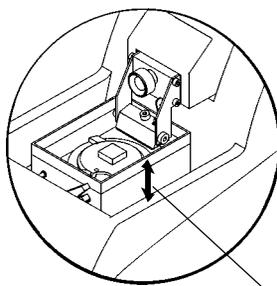


Fig. 23.2

- Select sectioning speed and sectioning frequency with the control knobs **SPEED** and **FREQ.**
- Use the **+/-** button to select a sectioning thickness for trimming.
- Select a sectioning range appropriate to the size of the specimen with the **SECTIONING WINDOW**-button.
- Switch the **SINGLE/CONT**-button to **CONT.**
Push the **START/STOP**-button.

The instrument will now trim the specimen at the selected trimming thickness until you push the **START/STOP** button once more.

- Once you have reached the desired specimen level for sectioning, use the **+/-** button to select the desired thickness for sectioning..

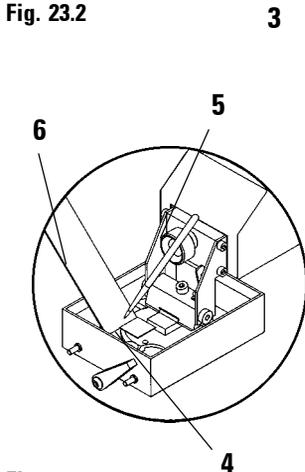


Fig. 23.3

3 For sectioning proceed as follows:

- Select the desired section thickness via the **+/-** button.
- Switch the **SINGLE/CONT**-button to **SINGLE**.
- Push the **START/STOP**-button.

The instrument will now produce a section (4). When the section is finished, the knife will automatically stop at the rear end position behind the specimen (from the user's view).

Pick up the section as shown on the left using a brush (5) to mount it on a glass slide (6).

5. Operation

5.5 Daily routine maintenance / switching the VT 1000 S off

After you finish working, proceed as follows:

- Switch off the mains switch at the back of the instrument.
- Place the lid onto the magnifier
- Remove the knife holder.
- Take the knife out of the knife holder and dispose of it properly.
- Remove the specimen disc.
- Remove the specimen and remains of cyanoacrylate adhesive from the specimen disc.
- Remove the buffer tray and drain it. Make sure to dispose properly of the contents of the buffer tray.
- Drain the cooling bath.
For that purpose, take the drain tube off the fixing device at the rear of the instrument and dispose of the contents of the cooling bath into a suitable recipient.



Caution: the contents of the cooling bath may also be contaminated due to buffer solution spilling over.

6. Trouble shooting

Erro

Error message	Source of error	Corrective action
<ul style="list-style-type: none"> - Collision of knife and specimen holder. 	<ul style="list-style-type: none"> - Clearance angle adjustment: - If a clearance angle wider than 5° is selected, specimen disc and knife edge can potentially collide with each other. 	<ul style="list-style-type: none"> - Lower the specimen disc sufficiently to prevent collision.
	<ul style="list-style-type: none"> - When working with orientable specimen holders, knife edge and specimen holder can collide at any selected clearance angle. 	<ul style="list-style-type: none"> - Lower the specimen disc sufficiently to prevent collision.
<ul style="list-style-type: none"> - Audible sound signal. - Return stroke is not completed. 	<ul style="list-style-type: none"> - Operating error due to locking function of the REV/FORW button: - With the REV/FORW-button locked the instrument is switched off via the main switch at the rear of the instrument and is switched on again without releasing the REV/FORW-button to its center position. 	<ul style="list-style-type: none"> - Unlock the REV/FORW-button by pulling it back to the center position. - To reactivate the return stroke movement, lock the REV/FORW-button again (to REV position).
<ul style="list-style-type: none"> - Audible sound signal. - Return stroke is not completed. 	<ul style="list-style-type: none"> - With the REV/FORW-locked the instrument was switched off via the emergency Stop and after that the emergency stop was released again without releasing the REV/FORW-button to its center position. 	<ul style="list-style-type: none"> - Unlock the REV/FORW-button by pulling it back to the center position. - To reactivate the return stroke movement, lock the REV/FORW-button again (to REV position).

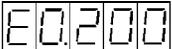
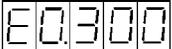
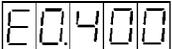
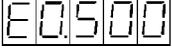
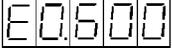


When working with orientable specimen discs, move the buffer tray to its lowest position directly after switching on the instrument!

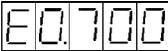
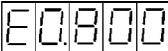
6. Trouble shooting

Error message	Source of error	Corrective action
<ul style="list-style-type: none">- Audible sound signal.- Downward stroke is not completed.	<ul style="list-style-type: none">- Operating error due to locking function of the UP/DOWN-button:- With the UP/DOWN-button locked in the DOWN position the instrument was switched off via the main switch at the rear of the instrument switched on again without releasing the UP/DOWN-button to its center position	<ul style="list-style-type: none">- Release the UP/DOWN-button to its center position.- To reactivate the downward motion, activate the UP/DOWN-button again (DOWN).
<ul style="list-style-type: none">- Audible sound signal.- Downward stroke is not completed.	<ul style="list-style-type: none">- With the UP/DOWN button locked the instrument was switched off via the emergency stop (foot switch or Emergency stop button) and after that the emergency stop was released without unlocking the UP/DOWN-button.	<ul style="list-style-type: none">- Release the UP/DOWN-button to its center position.- To reactivate the downward motion, activate the UP/DOWN-button again (DOWN).
<ul style="list-style-type: none">- The sectioning motor stops.- Any processing step (sectioning stroke etc.) is interrupted immediately.- Any UP/DOWN motion of the buffer tray is interrupted immediately.- Any locked buttons are indicated by an audible sound signal.- When pressing any key, the instrument gives an audible sound signal.- In case the Emergency stop function has been activated, the instrument will remain inoperational when pressing the foot switch.- The indication "SP" is displayed.	<ul style="list-style-type: none">- The Emergency stop function has been activated.	<ul style="list-style-type: none">- Release the Emergency stop button.- Select an operating mode and continue working.

6. Trouble shooting

Error message	Source of error	Corrective action
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.1xx is displayed.  <p>xx - there are several error codes, 00 - there is only one error code.</p>	<ul style="list-style-type: none">- Button(s) jammed or defective.- Locking function /REV of REV/ FORW-button defective.- Locking function /REV of REV/ FORW-button defective.	<ul style="list-style-type: none">- Push the button several times to unlock; have defective button replaced by the Technical Service.
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.200 is displayed. 	<ul style="list-style-type: none">- Feed mechanism defective.	<ul style="list-style-type: none">- Switch the instrument off; call the Technical Service.
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.300 is displayed. 	<ul style="list-style-type: none">- Important electronic component defective.	<ul style="list-style-type: none">- Switch the instrument off; call the Technical Service.
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.400 is displayed. 	<ul style="list-style-type: none">- Feed motor defective.	<ul style="list-style-type: none">- Switch the instrument off; call the Technical Service.
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.5xx is displayed. 	<ul style="list-style-type: none">- Light barrier error (forward feed)	<ul style="list-style-type: none">- Switch the instrument off; call the Technical Service.
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.600 is displayed. 	<ul style="list-style-type: none">- Light barrier error (section thickness feed)	<ul style="list-style-type: none">- Switch the instrument off; call the Technical Service.

6. Trouble shooting

Error message	Source of error	Corrective action
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.700 is displayed for approx. 2 sec. 	<ul style="list-style-type: none">- Software detected severe hardware fault.	<ul style="list-style-type: none">- Switch the instrument off; call the Technical Service.
<ul style="list-style-type: none">- Audible sound signal.- Error code E0.8xx is displayed. 	<ul style="list-style-type: none">- E-EPROM defective.	<ul style="list-style-type: none">- Instrument can still be used, though there will be certain limitations: all values will be set to default values. New values (sectioning window, feed, lowering) cannot be saved.- Call the Technical Service.
<ul style="list-style-type: none">- Audible sound signal.- Optical signal via red LED.	<ul style="list-style-type: none">- The upper limit of the specimen feed has been reached.	<ul style="list-style-type: none">- Leave the upper limit position (Switch the UP/DOWN-button in DOWN direction).- Mount a new specimen onto the specimen holder and start again.
<ul style="list-style-type: none">- Audible sound signal.- Optical signal via red LED.	<ul style="list-style-type: none">- The lower limit of the specimen level has been reached (height adjustment of specimen via buffer tray).	<ul style="list-style-type: none">- After unlocking the DOWN position the buffer tray is automatically raised until the audible and optical signals turn off.
<ul style="list-style-type: none">- Audible sound signal..	<ul style="list-style-type: none">- User has tried to select a specimen thickness via the +/- button, which is below the minimum value (0 µm) or above the maximum (999 µm).	<ul style="list-style-type: none">- Release the +/- button.

6. Trouble shooting

Error message	Source of error	Corrective action
- Audible warning signal. (When operating the instrument for the first time or after the E-EPROM has been exchanged.)		- The warning signal will cease automatically after the initialization phase.
- A clattering sound can be heard.	- The visible clamping screws have become loose during sectioning. 	- Retighten the loose clamping screws. 
	<p>These symptoms may occur from time to time and are unavoidable, as the clamping screws which have to be operated by the user cannot be sealed.</p>	<p>If the clattering sound does not cease once the clamping screws have been retightened, do not hesitate to immediately call the Technical Service. Do not use the instrument when in this condition.</p>

7. Cleaning and maintenance

7.1 Exchanging the main fuses



Warning:
Prior to exchanging the fuses disconnect the mains plug!

- To exchange the fuses carefully open the sealing cover at the rear of the instrument with a small screw driver. Insert the screw driver into the small gap on the extreme left **(1)**.
- Remove the fuses and insert new ones **of the same specification!**

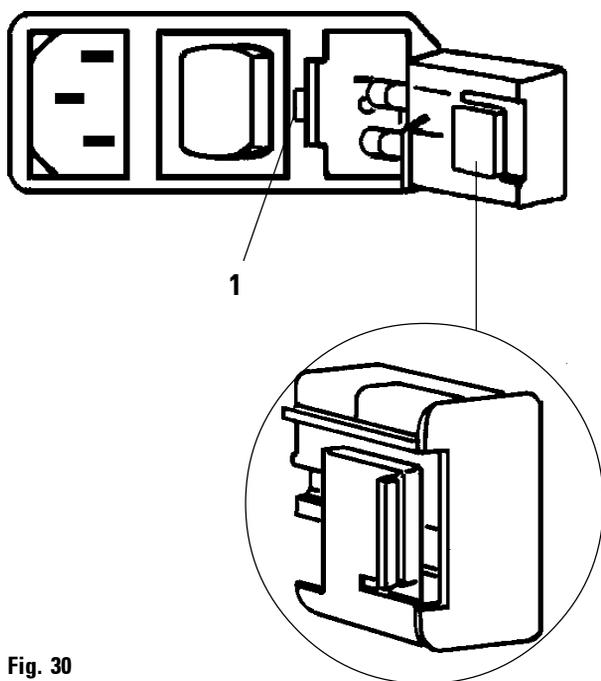


Fig. 30

8.1 Warranty

Leica Microsystems Nussloch GmbH guarantees that the delivered product has been subjected to a comprehensive quality control procedure based on our strict in-house testing standards in order to ensure that the product complies with its technical specification.

The warranty conditions depend on the contents of the individual contract concluded, supplemented by the warranty conditions of your local Leica sales agency.

Any repairs and/or exchange of parts of the product must be carried out by authorized Leica technical service engineers. Otherwise, any warranty becomes invalid and warranty claims can no longer be made.

The local Leica representative or the manufacturer in Nussloch must be consulted prior to any handling of or changes to the instrument beyond the scope of this instruction manual as well as prior to any modifications or any use of the instrument in combination with non-Leica components not expressly authorized by Leica.

Spare parts and accessories not supplied by Leica can under no circumstances be considered as inspected and/or approved by Leica.

Therefore, installation or use of any such parts may impair the technical design features and thus properties of the instrument.



Leica assumes no liability whatsoever for any damage caused by the use of non-original spare parts or non-original accessories.

The warranty is only valid and warranty claims can only be made as long as the instrument has been operated according to its designated use and according to the instructions given in this manual.

Improper use of the product and/or faulty operation invalidate the warranty and any claims based thereon, and likewise Leica will not assume liability for any consequential damage.

8. Warranty and service

8.2 Technical Service information

If you require technical service or need replacement parts, please contact your Leica sales representative or dealer, who sold the product.

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 of the instrument.

8.3 Decommissioning and disposal

The instrument or parts of the instrument must be disposed of in compliance with the local laws.

The Leica VT1000 S vibrating blade microtome contains a large number of recyclable components.

For more information on the recycling program for our instruments, please contact your Leica sales representative or dealer, or Leica Microsystems Nussloch GmbH, Germany.

We will be glad to provide you with details on the recycling concept for our product range, which meets today's environmental requirements.

9. Ordering information: replacement parts, accessories and consumables

Additional accessories:

- Knife holder S for injector and razor blades	0462 30131
- Buffer tray S	0462 30132
- Buffer tray S, double-walled	0463 30365
- Vise S	0463 27409
- Specimen disc S, diameter 50 mm, non orientable*	0463 27404
- Specimen disc S, orientable*	0463 27406
- Magnetic specimen holder, orientable	0462 32060
- Foot switch	0463 27415
- Magnifier, assy. (magnifier glass & carrier)	0462 31191
- Fiber optics	0502 30028
- Cold light source	see page 36
- Foot switch with protective guard and gender changer	0502 29977

Accessories for sectioning large specimens:

- Knife holder S - for specimens 20 mm high	0462 31950
- Knife holder L	0463 27402
- Knife holder L - for specimens 20 mm high	0462 31949
- Buffer tray L**	0463 27408
- Buffer tray L**, double-walled	0463 30364
- Disposable blades, type 819, 75 x 8 mm, low profile, 50 blades in dispenser	0358 13583

Specimen holders which can be used alternatively for large specimens:

- Specimen disc L***, non orientable*	0463 27405
- Specimen disc L***, orientable*	0463 27407
- Vise L***	0463 27410

Consumables:

- Sapphire knife, 1 unit	0216 35654
- Injector blades, 1 dispenser of 20 blades	0358 27411
- Disposable blades, type 819, 75 x 8 mm, low profile, 50 blades in dispenser	0358 13583
- Cyanoacrylate adhesive, 1 bottle, for VT1000 S	0371 27414



) The orientable specimen discs S can be rotated around their center as well as tilted on one axis. The orientable specimen discs L can be tilted on one axis - they can, however, not be rotated. The non orientable specimen discs L are laterally adjustable but not tiltable. For sectioning large specimens, all three accessories marked with two asterisks (**) have to be ordered, as knife holder L can only be used together with buffer tray L and low-profile disposable blades. In addition, at least one of the specimen holding devices marked () is needed for sectioning large specimens.**

9. Ordering information: replacement parts, accessories and consumables

9.1 Additional accessories for standard size specimens (functional description)

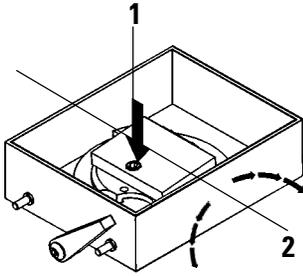


Fig. 34.1

Specimen disc S, orientable

- By turning the screw (1) the specimen holder can be tilted on the x-axis (see arrow 2).

The orientable specimen disc S can be rotated by 330°.

Ref. no. 0463 27406

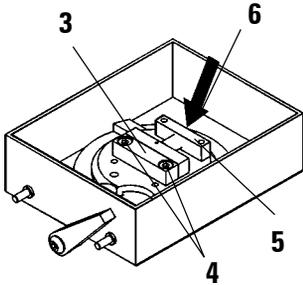


Fig. 34.2

Vise S, orientable

- The vise S can be rotated by 330°. It is used to clamp specimen blocks. The clamping mechanism consists of one fixed and one movable clamping jaw.

The fixed jaw (3) can be fixed in 3 different positions to adjust the vise individually according to the size of the specimen.

In order to relocate the fixed clamping jaw, unscrew the two screws (4) and move the clamping jaw to the desired position. Retighten the screws.

The regular fixed clamping jaw can also be replaced by a fixed clamping jaw with a V cut for round specimens (w/o illustration).

The flexible clamping jaw (5) is used to clamp the specimen via a clamping screw (see arrow 6).

Ref. no. 0463 27409

9.2 Additional accessories for large specimens (functional description)

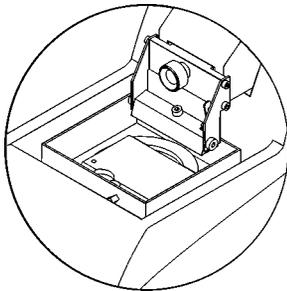


Fig. 34.3

- Fig. (33.3) shows a configuration for large specimens, consisting of knife holder L, buffer tray L and specimen disc L, not orientable.

Ref. no. 0463 27402 (Knife holder L)

Ref. no. 0463 27408 (Buffer tray L)

Ref. no. 0463 27405 (Specimen disc L, non orientable)

9. Ordering information: replacement parts, accessories and consumables

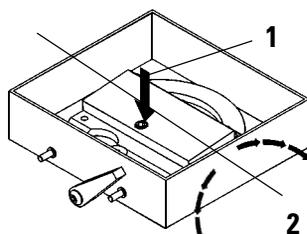


Fig. 35.1

Specimen disc L, orientable

- By rotating the screw (1) the specimen disc can be tilted on the x-axis (see arrow 2).
Since the orientable specimen disc L cannot be rotated.

Ref. no. 0463 27407

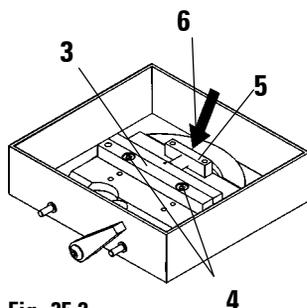


Fig. 35.2

Vise L, orientable

- The vise L is used to clamp specimen blocks.
The clamping mechanism consists of one fixed and one movable clamping jaw.
The fixed jaw (3) can be fixed in 3 different positions to adjust the vise individually according to the size of the specimen.
In order to relocate the fixed clamping jaw, unscrew the two screws (4) move the clamping jaw to the desired position and retighten the screws.
The regular fixed clamping jaw can also be replaced by a fixed clamping jaw with a V cut for round specimens (w/o illustration).
The flexible clamping jaw (5) is used to clamp the specimen via a clamping screw (see arrow 6).

Ref. no. 0463 27410

9.3 Foot switch (functional description)

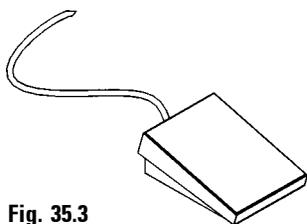


Fig. 35.3

Foot switch

- The foot switch is an optional accessory which can be used instead of the **START/STOP**-button.

Ref. no. 0463 27415

9. Ordering information: replacement parts, accessories and consumables

9.4 Magnifier, fiber optics, cold light source

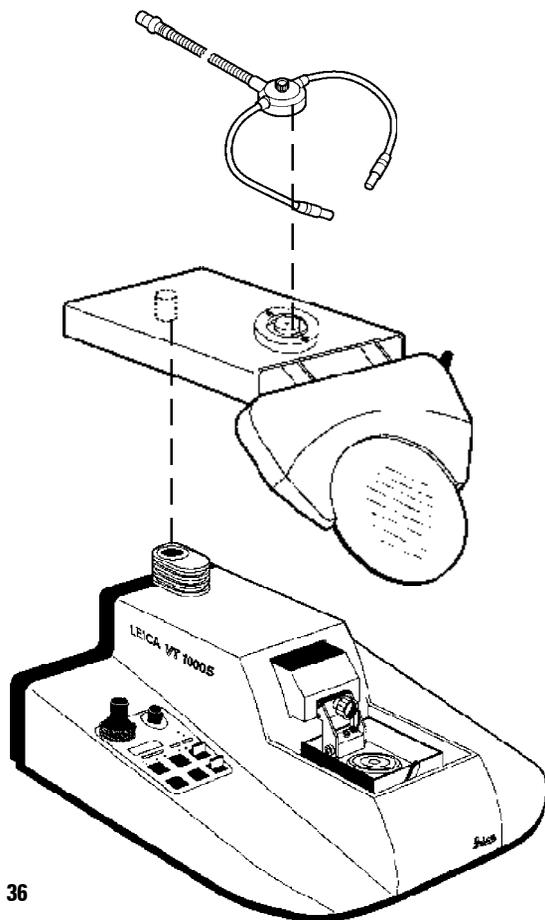


Fig. 36

Fiber optics

- To be mounted onto the magnifier after the magnifier has been mounted into the fixture. Then, connect the fiber optics to the cold light source.

Ref. no. 0502 30028

Magnifier

- To be inserted into the fixture.

Ref. no. 0462 31191

Cold light source Leica CLS 100

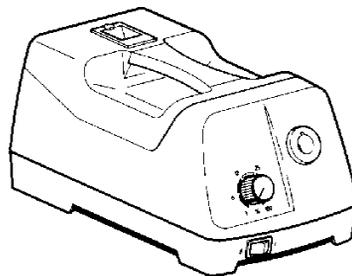
- Light source of the fiber optics.

100 V, 50/60 Hz, Ref. no. 0502 30213

120 V, 50/60 Hz, Ref. no. 0502 30214

230 V, 50/60 Hz, Ref. no. 0502 30215

240 V, 50/60 Hz, Ref. no. 0502 30216



CE Declaration of conformity



We herewith declare, in exclusive responsibility, that the

Vibrating blade microtome – type Leica VT1000S

was developed, designed and manufactured to conform with the Council Directive 89/392/EEC, Appendix II A (Machinery) Council Directive 73/23/EEC (Low Voltage), and Council Directive 89/336/EEC, Appendix I (Electromagnetic Compatibility), including their amendments.

The following harmonized standards were applied:

DIN EN 292,
DIN EN 61010-1,
EN 50081-1,
EN 50082-1,
EN 6100-4.

The following national standards, guidelines and specifications were applied:

DIN 8975
31001 Part 1.

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

EN 29001.

A complete technical documentation is available.

An instruction manual for subject product is available.

Leica Microsystems Nussloch GmbH
Postfach 1120
D-69222 Nussloch

September 13, 1996

A handwritten signature in blue ink, appearing to read 'Dag Graupner', is written over a horizontal dotted line.

Dag Graupner
Managing Director

