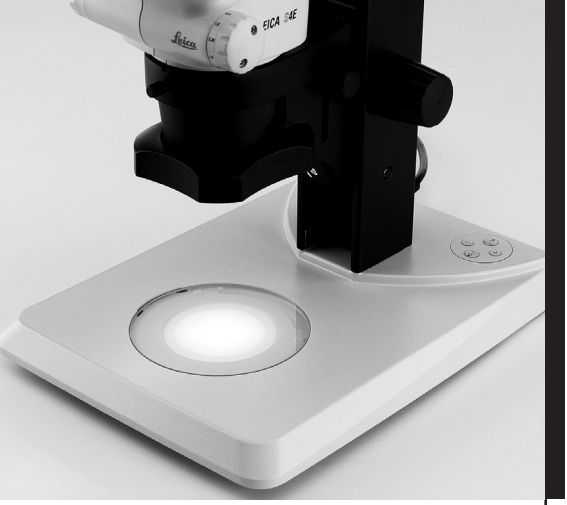


Leica LED2000
LED2500

User manual

Leica
MICROSYSTEMS

Table of contents

Dear User,

Congratulations to your purchase. We would like to wish you pleasure and success in your work with your new Leica LED2000/2500, which was specially designed for the Leica StereoZoom® line (S6 models and Leica S4E).

While developing this instrument, we took the greatest care to ensure that its operation would be simple and self-explanatory. Even so, please take a little time to read the accompanying operating instructions. This is the best way to familiarize yourself with all the features of your new Leica stand and use it to its full advantage.

Should you have any questions that are not answered by this manual, please consult your local Leica representative. To find the representative closest to you, please visit www.leica-microsystems.com.

Leica Microsystems (Switzerland) Ltd.
Stereo & Macroscope Systems

Safety instructions

About this manual

This CD contains the manuals for the Leica LED2000 and Leica LED2500 stands in a variety of languages. They describe the specific functions of the individual stands and contain important information pertaining to operating safety, maintenance and accessories.

Store this CD safely so that users can refer to it at any time.

The manual is also available for download on our website at www.leica-microsystems.com.

Please read this manual before assembling the instrument and using it for the first time. Please pay special attention to the safety regulations.

In order to maintain the instrument in its condition as new and to ensure safe operation, please heed the notes and warnings herein.

Symbols used

Danger warning

This symbol indicates especially important information that must be read and complied with. Failure to follow these instructions may result in personal injury, impair the system's performance, or damage the instrument.

Dangerous electrical voltage

This symbol indicates especially important information that must be read and complied with. Failure to follow these instructions may result in personal injury, impair the system's performance, or damage the instrument.

Hot surface warning

This symbol indicates hot surfaces within reach, such as bulbs.

Important information

This symbol indicates additional information or explanations that intend to provide clarity.

Safety regulations

Proper use
The Leica LED2000/2500 stands are designed for use in Leica S-series stereomicroscopes. The integrated power LED illumination ensures optimal lighting conditions.

Non-intended use
Using the stand, its components or accessories for purposes other than those described in this manual can lead to damage or personal injury. Please observe the following rules:

- The parts of this stand may not be modified, converted or disassembled unless the procedure is explicitly described in this manual.
- The stand and illuminator may only be opened by authorized personnel.
- The LED2000/2500 may not be used for surgery or other medical purposes.

The instruments and accessory components described in this manual have been inspected with regard to safety and potential dangers. Please consult your Leica representative or the factory in Heerbrugg before opening the instrument, modifying it or combining it with non-Leica components in any way not covered in this manual!

Tampering or improper use will void the warranty.

Place of use

- The Leica LED2000/2500 may only be used in closed, dust-free rooms at temperatures from +10 °C to +40 °C. Ensure that the room is free of oily or other chemical vapors, or extreme humidity.

- Electrical components must be set up at a minimum distance of 10 cm from walls or flammable objects.

- Avoid strong temperature fluctuations, direct sunlight and mechanical shocks, as they could adversely affect measurements and microphotography.

- The stand requires special care to prevent the formation of fungus when used in warm, humid climates.

Responsibilities of the person(s) in charge of instrument

Ensure that the Leica LED2000/2500 and its accessories are operated, maintained and repaired only by authorized and trained staff.

Users must read, understand and apply the instructions in this manual, especially the safety regulations.

Repairs, servicing

- Only Leica Microsystems-trained service technicians or authorized technicians of the operator are permitted to carry out repairs.

- Only original Leica Microsystems spare parts may be used.

- Switch the instrument off and disconnect the power cable before opening it.

Touching components under power may result in personal injury.

Transport

- Use the original packaging material for shipping or otherwise transporting the Leica LED2000/2500 and its accessories.

- All movable components that were installed and removed by the customer according to the manual must be packed separately to prevent damage from mechanical shocks.

Integration in third-party products

When installing Leica products into third-party products, note the following: The manufacturer of the complete system or its dealer is responsible for following all applicable safety instructions, laws and guidelines.

Disposal

The products described here must be disposed off in accordance with applicable local laws and regulations.

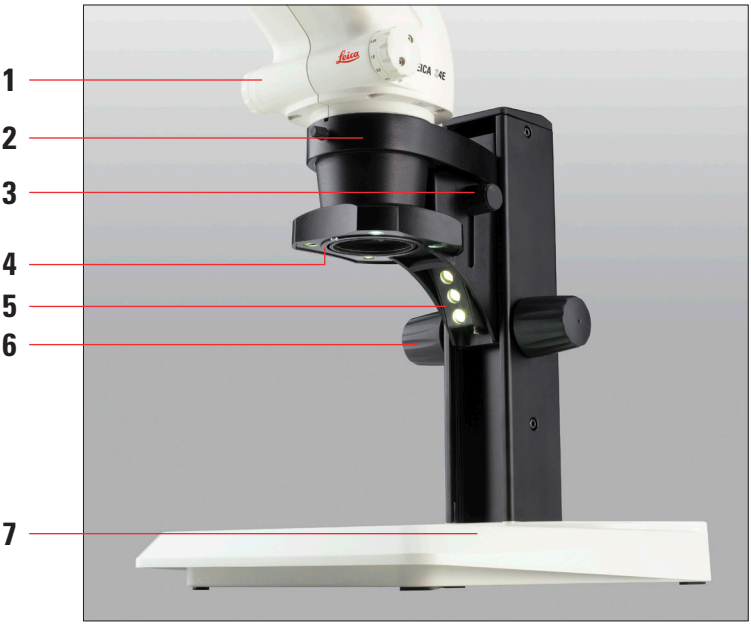
Legal requirements

Adhere to general and local regulations relating to accident prevention and environmental protection.

EC declaration of conformity

Leica LED2000/2500 stands and their accessories have been designed according to the state of the art and are delivered with an EU declaration of conformity.

Control elements



1 Optics carrier

2 Integrated microscope carrier

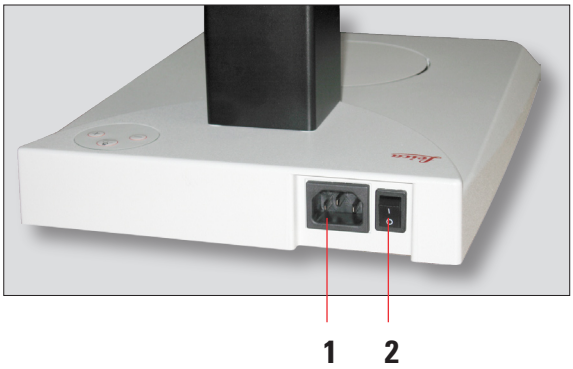
3 Locking screw for the arc illuminator

4 Integrated ring illuminator with 4 power LEDs

5 Movable arc illuminator with 3 power LEDs

6 Focusing drive

7 Base with baseplate (Leica LED2000) or transmitted illumination (Leica LED2500)



Rear side of the base

1 Power socket

2 Power switch

Installation

Unpacking the base
The stand is supplied completely assembled.

Unpack the instruments on a sufficiently large, level, non-slip surface.

Connecting to AC power
1. Ensure that the power switch (4.3) on the base is set to "0".

2. Insert the power cable into its socket (4.2) and connect it to a grounded power outlet.

3. Switch the LED2000/2500 on using the main switch on the rear side of the base.

Inserting the baseplate
(Leica LED2000 only)

The Leica LED2000 is supplied with a two-color baseplate. It may be used with the black or white side facing up, depending on the required contrast.

1. Insert the baseplate by pressing it gently against the tension spring.

2. Remove the baseplate by gently pressing on the rear section.

Setting the resistance of the focusing drive
The focusing drive adjusts the focus by setting the working distance between the stereomicroscope and the specimen. For an overview of the various objectives and their working distances, please see page xxx.

Is the focus movement too loose or too tight? Does the outfit tend to slide downwards? No problem – the resistance can be adjusted to suit the weight of your equipment and personal preferences:

1. Grasp the drive knobs with both hands and turn them towards each other until the desired resistance is reached for focusing.

Safety when focusing

When using the focusing drive, do not insert objects or fingers between the optics carrier and stand. Failure to observe this point can result in damage or injury.

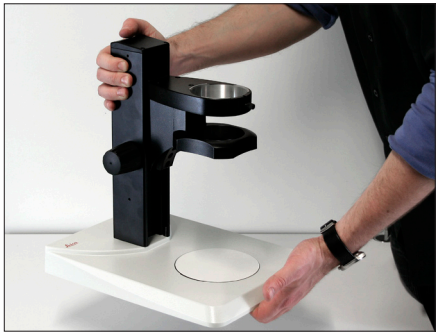
Proper transport
Mobility was a primary consideration for us in developing the Leica LED2000/2500.

To transport the stand safely:

- Remove all cables and ensure that the stereomicroscope and all accessories are attached firmly.

- Use both hands to lift the stand (see photo).

The following methods are unsafe:
- Do not lift the stand by the cover of the column.



- Do not lift the stand by the stereomicroscope.

Controlling the illumination

Via the power LEDs
The Leica LED2000 and LED2500 stands feature power LEDs. The high-performance LEDs guarantee even illumination with a color temperature of 6500 K (daylight). At the same time, they use considerably less power and generate considerably less warmth than conventional illumination systems.

The Leica LED2000 uses power LEDs in the ring and arc illuminators. They also provide transmitted illumination in the base of the Leica LED2500.

Switching the illumination on and selecting the illumination type
1. Turn on the power switch on the rear of the Leica LED2000/2500.

2. Press the button to switch on the illumination.

3. Continue pressing the button to cycle through the various illumination combinations.

4. Press the ⊖ and ⊕ buttons to adjust the illumination intensity in 10 steps. To switch the illumination off completely, press the button or use the power switch.

The Leica LED2000/2500 remembers the last illumination combination, restoring it the next time you switch the instrument on.

Adjusting the arc illuminator
The height of the arc illuminator can be adjusted independently of the focus to ensure the best possible illumination for your requirements.

1. Loosen the screw of the arc illuminator so that the illuminator is free to move.

2. Check the results in the eyepieces of the stereomicroscope.

3. Retighten the screw.

Illumination levels and brightness

The illumination combinations
Each time the button is pressed, the illumination combination changes in this sequence:

- Everything on (ring illuminator & arc illuminator)
  ▼
- Ring illuminator only
  ▼
- The upper two power LEDs of the arc illuminator
  ▼
- The lowest power LED of the arc illuminator
  ▼
- Everything off

Special features of the Leica LED2500
The Leica LED2500 is equipped with a transmitted-light unit that can be turned on and off with the button.

The brightness of the transmitted light cannot be adjusted independently – it can only be set together with the arc illuminator and ring illuminator.

The correct height for the arc illuminator

Depending on the situation, it may be advantageous to change the position of the arc illuminator.

1. Lock the arc illuminator in its lowermost position if you are not using an auxiliary lens.

2. The 2.0× auxiliary lens has a smaller working distance (35 mm). Lock the arc illuminator in its topmost position if you are using an auxiliary lens.

3. The 1.6× auxiliary lens has a working distance of 55 mm. The arc illuminator should therefore be locked approx. 20 mm from the upper stop when using this lens. For the best possible setting, look through the eyepieces while performing the fine adjustment of the arc illuminator.

Illumination types and results

Take advantage of the options!
The combination of ring illuminator, arc illuminator and transmitted-light unit (Leica LED2500 only) offers a wide range of illumination types. Take advantage of this flexibility to provide the best possible illumination for your specimens. You will be surprised at how dramatically you can improve your results.

On the next page, we would like to inspire you to find the best illumination type for your specific requirements with a number of examples. Depending on the application and specimen, each of the four illumination types provides new information. As there is no such thing as an "ideal illumination setting", we recommend cycling through the sequences until you find the setting best suited to your specimen.

Feel free to experiment – it's worth it!

All power LEDs are on
This setting achieves the greatest brightness, while the effects of highlights and shadows are reduced by the dominant ring illuminator. This setting is ideal for observing dark, flat, non-reflective specimens.

Only the upper two power LEDs of the arc illuminator are on
The resulting side light results in images with pronounced light/shadow effects not unlike those of a swan-neck light guide. Scratches and other recesses become easier to identify.

Ring illuminator on
This illumination type results in very bright, homogeneous lighting virtually without shadows. The ring illuminator is often used when observing specimens with strongly fissured or porous surfaces.

Only the lowest power LED of the arc illuminator is on
This illumination results in a pseudo-dark-field effect. The image becomes darker and exhibits extreme contrasts. The 3D effect of flat specimens is enhanced. Dirt and dust particles become very easy to identify.

Care and maintenance

In this section, we will describe the proper care of your valuable instrument and provide a few hints on maintenance and cleaning.

We guarantee the quality of our products
You are working with an extremely high-performance precision instrument. Accordingly, we guarantee the quality of our instruments. This guarantee covers manufacturing and material faults, but not damage that has been caused by negligence or improper handling.

Please treat your valuable Leica instrument with the care it deserves. You will be rewarded with the function of a high-performance instrument which will deliver constant precision for decades. Our products are famous for this.

Your direct line
However, if your instrument should not work perfectly, please contact the approved technician, your Leica representative, or Leica Microsystems (Switzerland) Ltd., CH-9435 Heerbrugg directly.

- Protect the instrument against moisture, dust, acids, bases, and caustic substances. Do not store any chemicals near your instruments.

- Do not attach different plugs, or disassemble optical or mechanical systems unless the procedure is explicitly described in this manual.

- Protect the instrument against oil and grease. Do not grease guide surfaces and mechanical parts. Lubrication is not required.

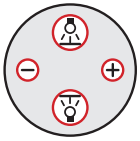
Cleaning

General information
The Leica LED2000/2500 can be cleaned easily with a soap solution and water. Do not use caustic or abrasive cleansers.

Special notes on the Leica LED2000
The base of the Leica LED2000 features openings through which spilled liquids can drain. Simply remove the baseplate and clean the base with soap solution. Wipe it dry with a clean cloth.

Special notes on the Leica LED2500
The transmitted illumination unit of the Leica LED2500 is sealed and thus waterproof. Remove the glass plate and clean the base with soap solution. Wipe it dry with a clean cloth.

The buttons
The buttons of the illumination are waterproof. Clean the membrane switches with soap solution. Wipe then dry with a clean cloth. Do not use abrasive cleansers!



Leica LED2500

Leica LED2000

Assembly diagram

Eyepieces with 22 mm exit pupil

Eyepieces, fixed

	ergonomical
10×/23	10 447 136
16×/15	10 447 138

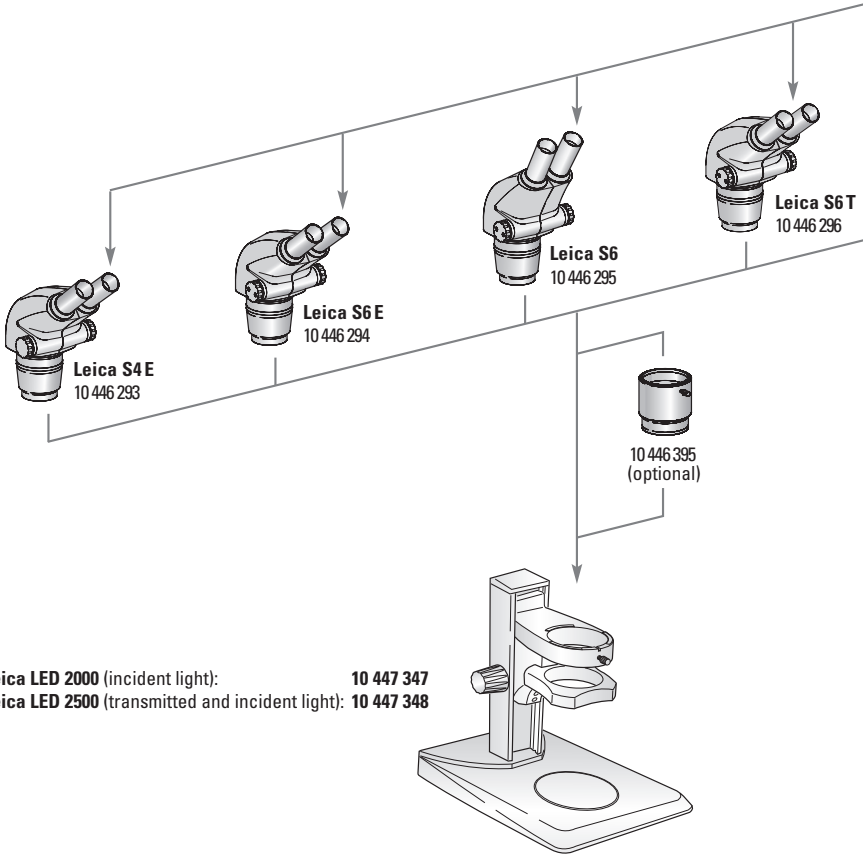
Eyepieces, adjustable*

	ergonomical
10×/23	10 447 137
16×/15	10 447 139
25×/9.5B	10 445 302
40×/6B	10 445 303

* Graticules may be used in the adjustable eyepieces.

10 447 036

Spacer rings are required for the eyepieces 10 445 302 and 10 445 303.



Leica LED 2000 (incident light): **10 447 347**
Leica LED 2500 (transmitted and incident light): **10 447 348**

Eyepieces with 12 mm exit pupil

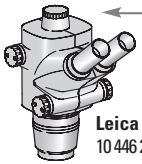
Eyepieces, fixed

	Standard	ergonomical
10×/23		10 447 130
16×/16	10 446 354	10 447 132
20×/12	10 446 356	10 447 134

Eyepieces, adjustable*

	Standard	ergonomical
10×/23		10 447 131
16×/16	10 446 355	10 447 133
20×/12	10 446 357	10 447 135

* Graticules may be used in the adjustable eyepieces.



Leica S6 D
10 446 297

Photo/video documentation
Leica DFC cameras

Objectives
for S4 E, S6 E, S6, S6 T, S6 D

0.32×	10 446 316
0.5×	10 446 318
0.63×	10 446 319
0.75×	10 446 320
1.6×	10 446 321
2.0×	10 446 322

Objective protection glass 10 446 324

Adjustable objective

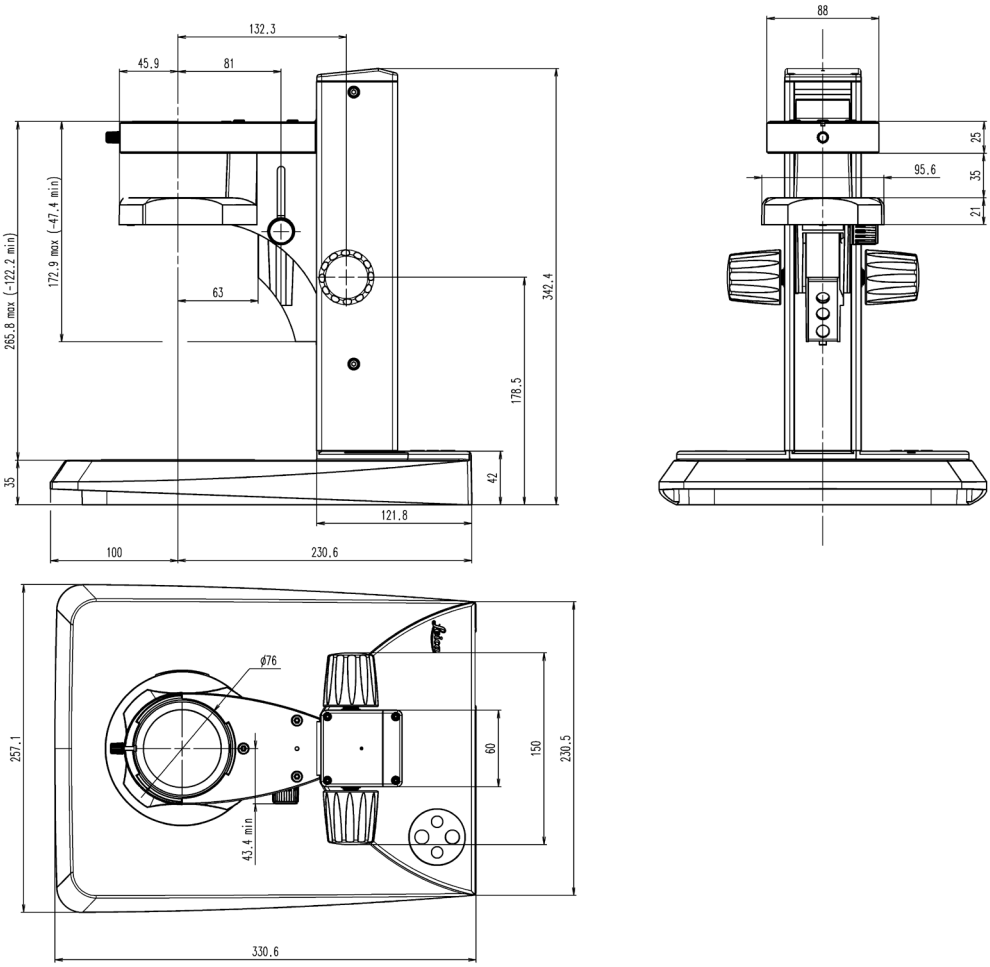
0.3×-0.4× 10 446 325

ErgoObjectives

0.6×-0.75×	10 446 323
0.7×-1.0×	10 446 317

Transmitted-light base dimensions

Dimensions in mm



Specifications

Name	Leica LED2000/LED2500
Light sources	Power LEDs, 1.2 Watt (4 LEDs for the ring illuminator, 3 for the arc illuminator)
Illumination	Incident light (4-point ring illumination and side light) transmitted light (LED2500 only)
Average LED life	approx. 25,000 hours
Color temperature	6500 K (daylight), 5500 K for transmitted light (LED2500 only)
Cooling	Thermo-management for the LEDs, silent and vibration-free
Illumination control	Incident light and transmitted light can be controlled separately
Intensity setting	10 steps
Brightness (lux)	Incident light: 15500 lux Transmitted light: 13700 lux (LED2500 only)
Integrated power supply	100V … 240V ~ 50 / 60 Hz Automatic adjustment to local voltage
Power consumption	max. 30 W
Standards compliance	CE, cUL, UL
ESD design	antistatic

Leica Microsystems – the brand for outstanding products

Leica Microsystems' mission is to be the world's first-choice provider of innovative solutions to our customers' needs for vision, measurement and analysis of microstructures.

Leica, the leading brand for microscopes and scientific instruments, developed from five brand names, all with a long tradition: Wild, Leitz, Reichert, Jung and Cambridge Instruments. Yet Leica symbolizes innovation as well as tradition.

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and representatives of Leica Microsystems in more than 100 countries.

In accordance with the ISO 9001 certificate, Leica Microsystems (Switzerland) Ltd, Business Unit Stereo & Macroscope Systems has at its disposal a management system that meets the requirements of the international standard for quality management. In addition, production meets the requirements of the international standard ISO 14001 for environmental management.

The companies of the Leica Microsystems Group operate internationally in three business segments, where we rank with the market leaders.

• Microscopy Systems

Our expertise in microscopy is the basis for all our solutions for visualization, measurement and analysis of microstructures in life sciences and industry. With confocal laser technology and image analysis systems, we provide three-dimensional viewing facilities and offer new solutions for cytogenetics, pathology and materials sciences.

• Specimen Preparation

We provide comprehensive systems and services for clinical histo- and cytopathology applications, biomedical research and industrial quality assurance. Our product range includes instruments, systems and consumables for tissue infiltration and embedding, microtomes and cryostats as well as automated stainers and coverslippers.

• Medical Equipment

Innovative technologies in our surgical microscopes offer new therapeutic approaches in microsurgery.

Winner 2005

Innovationspreis
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The World's First Innovation Award

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