SL 500
SL 550

ESSILOR INSTRUMENTS

USER MANUAL

www.essilor-instruments.com

Contents

I. Introduction

The latest version of this user manual is available on a web space.

To access other available languages, please scan the QR code available at the end of this user manual > QR Code Chapter *(p.41)*.

For a safer, more effective use, follow the instructions outlined in this manual.

II. Supply package

1. Unpacking and storage

This section is not applicable.

2. List of accessories

While unpacking, check that the following standard accessories are included.

a. Model SL500L

Standard accessories

The device is delivered packaged. When removing the device from the packaging, check that all the following components are present:

1. One table top (the table top is not includedwith the slit lamp for twin or joint tables) on which aremounted:
    - One transformer box with main illuminatedswitch, socket for fixation point,mains socket with voltage switch and built-in fuses
    - One power cable
    - Two orthogonally moving slide guides for the base
    - One sliding plate for the positioning device
    - One drawer
2. One complete base with orthogonal movements
3. One stereoscopic microscope with 2magnifications or one Galilean system with 3, 5 magnifications or with progressive zoom, complete with screw-outeyepieces
4. One slit projector optical unit
5. One chinrest module
6. These instructions for use
7. A series of accessories including:
    - Two guards for the slide guides
    - One calibration rod
    - One protection cover
    - One Allen wrench
    - Two protection fuses
    - One shielding glass

Optional accessory

The following accessories can be supplied upon request:

- DS550
- Photo camera mount (with beam splitter)
- Video camera C mount (with beam splitter)
- Second observer tube (with beam splitter)
- Separator with digital video camera
- Beam splitter /separator
- Hruby lens
- Micrometric eyepiece
- Built-in fluorescein filter microscope
- Brightness regulation rheostat on the base
- Capturing trigger button on the standard joystick

- Z800 tonometer mounting plates
- Volk lens
- External illuminator (standard on D digital systems)

b. Model SL550L

Standard accessories

The device is delivered packaged. When removing the device from the packaging, check that all the following components are present:

1. One table top (the table top is not includedwith the slit lamp for twin or joint tables) on which aremounted:
    - One transformer box with main illuminatedswitch, socket for fixation point, mains socket with voltage switch and built-in fuses
    - One mains cable
    - Two orthogonally moving slide guides for the base
    - One sliding plate for the positioning device
    - One drawer
2. One complete base with orthogonal movements
3. One stereoscopic microscope with 2magnifications or one Galilean system with 3, 5 magnifications or with progressive zoom, complete with screw-outeyepieces
4. One slit projector optical unit
5. One chinrest module
6. These instructions for use
7. A series of accessories including
    - Two guards for the slide guides
    - One calibration rod
    - One protection cover
    - One Allen wrench
    - Two protection fuses
    - One shielding glass

Optional accessory

The following accessories can be supplied upon request:

- DS550
- Photo camera mount (with beam splitter)
- Video camera C mount (with beam splitter)
- Second observer tube (with beam splitter)
- Separator with digital video camera
- Beam splitter /separator
- Hruby lens
- Micrometric eyepiece
- Brightness regulation rheostat on the base
- Capturing trigger button on the standard joystick
- F900 and A900 tonometer mounting plates
- Volk lens
- External illuminator (standard on D digital systems)

III. General description

1. Intended use

The slit lamps are characterized by a modern project of the optical parts which have an anti-reflection treatment system. This system spreads the light in a more effective way and increases the optical resolution and the contrast up to the 20% compared with those typical for this kind of device.

The devices are useful for the ophthalmologist and the optician (in the environment of the respective professional competences) to carry out specific ophthalmic diagnostic investigations (biomicroscopic examination of the eye).

The device is dedicated to:

- Stereo-microscopic observation of the eye exposed to the slit light
- Microscopy of the fundus and the posterior vitreous body (with Hruby lens)
- Eye observation and evaluation of the contact lenses positioning

More features of the device with the application software. The device, with the application software allows:

- Guided manual capture
- Management of the patients' data and possibility to personalize researches and statistics

Illumination source for SL500L

The device is equipped with a professional LED illuminator placed in the lower part of the device. The maximum luminous intensity is 284000 LUX with a life of 50.000 hours circa.

Illumination for SL550L

The device is equipped with a professional LED illuminator placed in the upper part of the device. The LED illumination allows a high quality observation and a perfect comfort for the patient.

The maximum luminous intensity is 284000 LUX with a life of 50.000 hours circa.

The tilting support allows to project the light vertically tilted up to 20°, with gaps of 5°. This is very useful in the horizontal optical observation, in the goniooscopy and in the eye fundus examination.

The light emanated by the device is potentially dangerous.

The risk of eye damages is directly proportional to the exposure time. The exposure to the light emitted by the device while the device is functioning at the maximum intensity exceeds the limit established by the Norm 15004-2.

The maximum time of exposure to the light, when the light has the maximum intensity, doesn't have to exceed 160 seconds.

Microscope

Microscope with convergent optic, with yellow filter (for fluorescein exam). This filter allows a fast exam and a better images quality.

Magnifications from 6x up to 40x. Bright images, clear and contrasted thanks to the multi strata antireflection treatment. Only the microscopes 3x, 5x and zoom can support the digital camera DS550.

Digital camera DS550

The digital camera DS550 is optional for the models SL500L and SL550L.

a. Intended purpose

The new digital camera DS550 has been designed for ophthalmological purposes. The digital camera is based on a 2 high performances CCD sensor, characterized by an excellent color rendering. The increasing in resolution and in speed (doubled in the progressive live mode) make tiny details really sharp and displaying very flowing. The new digital camera is perfectly integrated with the new application software AnaEyes, perfectly suitable for the needs of images capturing and processing (DICOM compatible). The application software allows to capture images and videos of the eye. The digital camera is connected to the pc with a USB3.0 cable.

- Sensor: 1/1.8 “ progressive scan color CCD
- Image resolution: Up to 1624 (h) x 1232 (v)
- Resolution depth: 14 bit
- Connection interface: USB3.0
- Frame rates: 15 fps
- Video modes: 1280x960

White LED illuminator kit

The white LED illuminator kit is standard equipment for the devices models SL500L and SL550L.

During the observation it allows to illuminate, with diffused light, those parts of the eye which, otherwise, would be left dark.

The device must be used only by practitioners, within the limits of the law and the regulations for the exercise of the profession.

When the digital camera is installed, the device must be used in combination with a PC and the application software denominated AnaEyes version 3.7.

b. Indications for use

Light

The light emitted by this device is potentially harmful. The risk of eye damage is directly proportional to the time of exposure. When the device is operating at maximum intensity, exposure to the light emitted by this device exceeds the threshold set by the safety guidelines after (e.g.see above).

- Model SL500L, when operating at maximum intensity, exceeds the threshold set by the safety guidelines after 160 seconds.
- Model SL550L, when operating at maximum intensity, exceeds the threshold set by the safety guidelines after 160 seconds.

c. Expected clinical benefit

This section is not applicable.

d. Intended population

This section is not applicable.

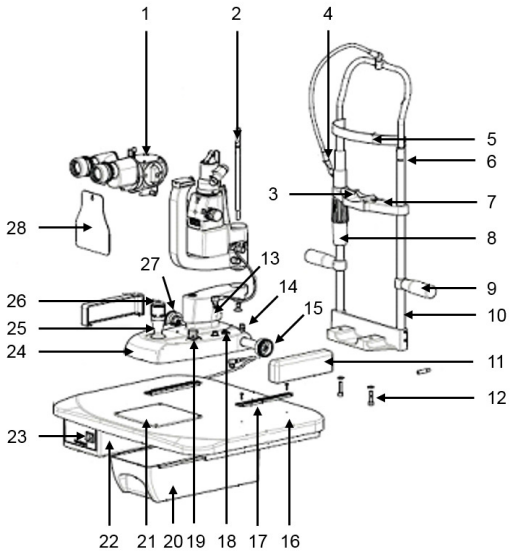
e. Intended users

This device is intended for eye care professionals use only.

2. Device description

a. Model SL500L

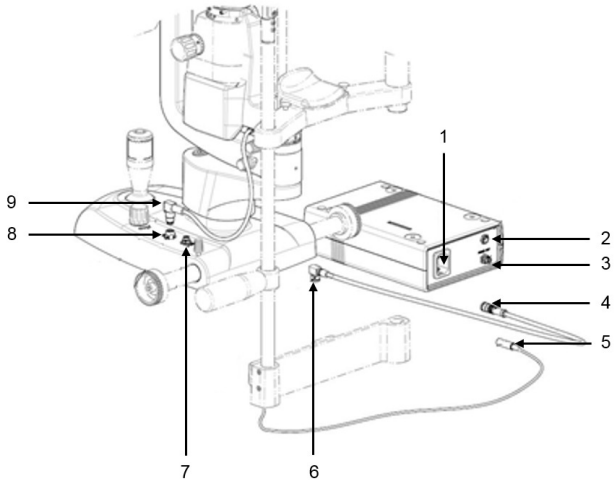
Product



1. Microscope
2. Calibration rod
3. Chinrest
4. Fixation point
5. Headrest
6. Eye positioning reference index
7. Chinrest paper fixation pivots
8. Chinrest height adjusting ring nut
9. Patient's handle
10. Chinrest module
11. Wheel shields
12. Chinrest module fastening screw
13. Lamp holder / LED-holder fastening screw
14. Device base locking knob
15. Geared wheel
16. Shaped table top
17. Geared guides
18. Base-to-transformer connection socket
19. Brightness control knob
20. Accessory drawer with guides
21. Teflon ansliding plate
22. Transformer
23. Main switch with light indicator
24. Orthogonally moving base
25. Joystick for lateral, longitudinal and vertical movements (x,y,z)

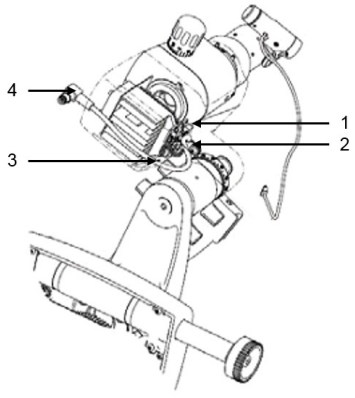
26. Capturing trigger button
27. Shielding glass
28. Video camera connection socket

Connection



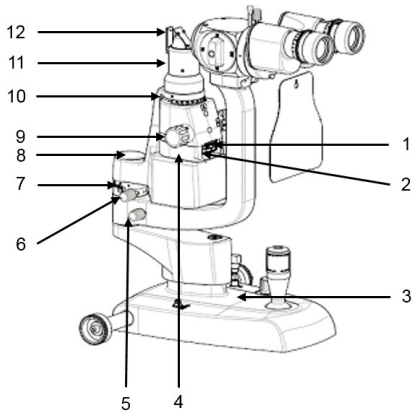
1. Main socket
2. Fixation point power socket
3. Low-voltage transformer output socket
4. Connector for transformer output
5. Fixation point power supply connector
6. Connector for base-to-transformer socket
7. Base-to-transformer connection socket
8. LED light power socket
9. LED light plug

Lighting card



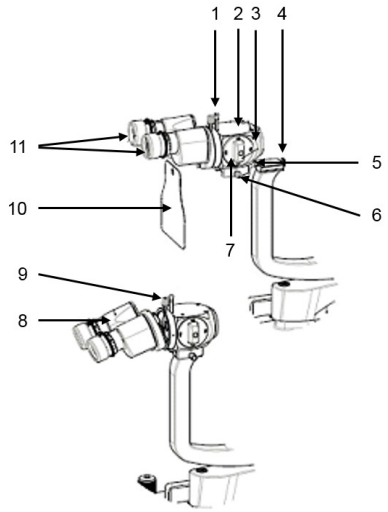
1. Lighting card reset button
2. Lighting card green LED
3. Lighting card red LED
4. LED light plug

Settings



1. Slit height adjuster / Slit height value index
2. Filter insertion control
3. Base LED for diagnostics
4. Slit rotation 90°-0°-90°
5. Projector arm fixation knob
6. Projector arm fixation knob
7. Projector positioning scale
8. Mount plug: calibration rod
9. Slit width adjusting knobs
10. Graduated scale 90°-0°-90° to calculate slit inclination during rotation
11. Slit projector head
12. Light diffuser

Microscope

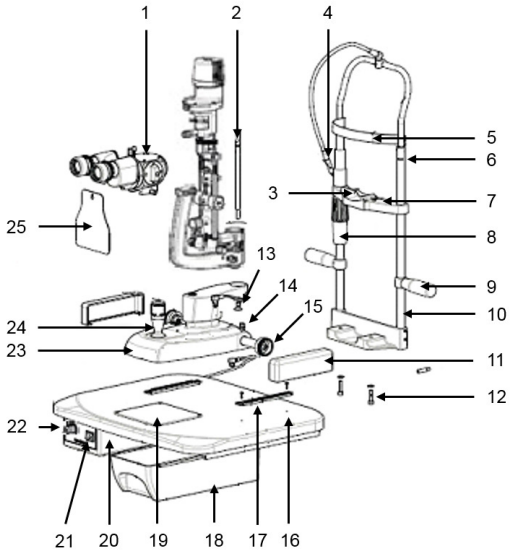


1. Fluorescein filter insertion rod
2. Slit projector head
3. Microscope

4. Microscope positioning lock
5. Microscope positioning locking grub screw
6. Microscope locking knob
7. Magnification tuner
8. Binocular
9. Microscope splitter knob
10. Shielding glass
11. Extractable eyepieces

b. Model SL550L

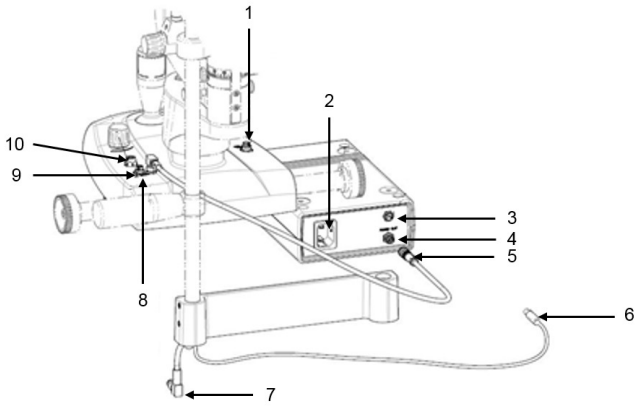
Product



1. Microscope
2. Calibration rod
3. Chinrest
4. Shielding glass
5. Headrest
6. Eye positioning reference index
7. Chinrest paper fixation pivots
8. Chinrest height adjusting ring nut
9. Patient's handle
10. Chinrest module
11. Wheel shields
12. Chinrest module fastening screw
13. Lamp holder / LED-holder fastening screw
14. Device base locking knob
15. Geared wheel
16. Shaped table top
17. Geared guides
18. Accessory drawer with guides
19. Teflon ansliding plate

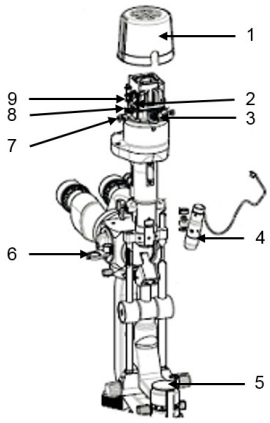
20. Transformer
21. Main switch with light indicator
22. Brightness control knob
23. Orthogonally moving base
24. Joystick for lateral, longitudinal and vertical movements (x,y,z)
25. Shielding glass

Connection



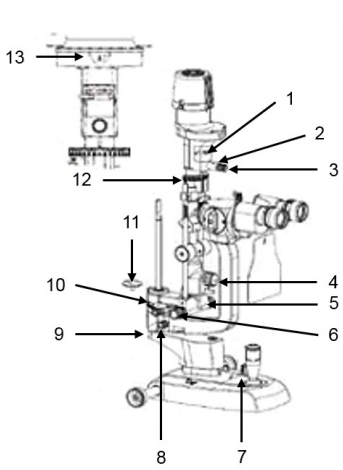
1. Video camera connection socket
2. Main socket
3. Fixation point power socket
4. Low-voltage transformer output socket
5. Connector for transformer output
6. Fixation point power supply connector
7. LED light plug
8. Connector for base-to-transformer socket
9. Base-to-transformer connection socket
10. LED light power socket

Lighting card



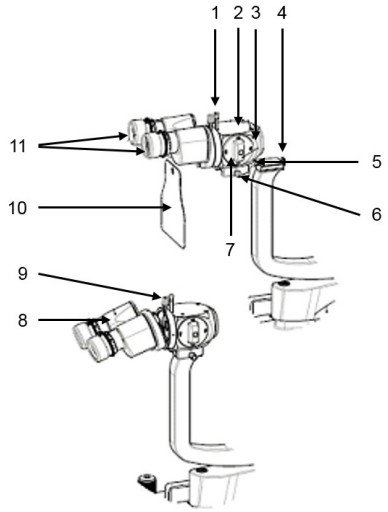
1. Light bulb / LED compartment cover
2. Lighting card red LED
3. Tower power supply outlet
4. External illuminator
5. Slit width adjusting knobs
6. Light diffuser
7. Lighting card reset button
8. Cover locking screw
9. Lighting card green LED

Settings



1. Filter insertion control lever
2. Slit rotation 90°-0°-90° 3
3. Slit height adjuster tuner
4. Horizontal tilting tuner
5. Vertical tilting tuner
6. Projector arm fixation knob
7. Base LED for diagnostics
8. Slit width adjusting knobs
9. Microscope arm fixation knob
10. Projector positioning scale
11. Mount plug: calibration rod. Tonometer plate
12. Graduated scale 90°-0°-90° to calculate slit inclination during rotation
13. Slit height value index

Microscope



1. Fluorescein filter insertion rod
2. Slit projector head
3. Microscope
4. Microscope positioning lock
5. Microscope positioning locking grub screw
6. Microscope locking knob
7. Magnification tuner
8. Binocular
9. Microscope splitter knob
10. Shielding glass
11. Extractable eyepieces

IV. Installation / Connection

1. Installation of the device

a. Model SL500L

1. Plug the lamp power supply cable into the socket on the table.
2. Plug the fixation point supply cable in the socket on the back of the transformer.
3. Make sure the voltage switch on the mains socket is set to the proper voltage for the device to be connected.

   If this is not the case, remove the small drawer and turn the switch until the required voltage value is displayed.

   The table top will be ready for assembly to the table base. In this case, follow the instructions below.

   If the slit lamp is supplied without a transformer box, make sure the mains supply meets the technical requirements described in these user instructions.

4. Plug the mains supply cable into the mains socket.
   - Make sure the electric system power supply voltage matches the voltage indicated on the computer data label. If the voltage does not match, contact the customer service or the manufacturer itself. The whole system must comply with CEI 64-4 stan- dards or with the most recent CEI 64-8 standards sect. 710 (electrical systems for medical practices). Should you have any doubts, please contact the electrical installation and maintenance company in charge of your electrical system.
   - Do not use multiple sockets, adapters or extension cables to connect the device plug to the mains socket.
   - To disconnect the device from the power supply, also in case of emergency, grab the plug of the power cable; do not pull the power cable to unplug the device.

b. Model SL550L

1. Plug the supply cable from the chinrest module, into the socket on the head of the slit lamp.
2. Plug the fixation point supply cable in the socket on the back of the transformer.
3. Make sure the voltage switch on the mains socket is set to the proper voltage for the device to be connected.

   If this is not the case, remove the small drawer and turn the switch until the required voltage value is displayed.

   If the slit lamp is supplied without a transformer box, make sure the mains supply meets the technical requirements described in these user instructions.

4. Plug the mains supply cable into the mains socket.
   - Make sure the electric system power supply voltage matches the voltage indicated on the computer data label. If the voltage does not match, contact the customer service or the manufacturer itself. The whole system must comply with CEI 64-4 standards or with the most recent CEI 64-8 sect. standards. 710 (electrical systems for medical practices). Should you have any doubts, please contact the electrical installation and maintenance company in charge of your electrical system.
   - Do not use multiple sockets, adapters or extension cables to connect the mains plug to the mains socket.
   - To disconnect the device from the power supply, also in case of emergency, grab the plug of the power cable; do not pull the power cable to unplug the device.

c. Tables

Secure the tabletop to a sound base. If the slit lamp was ordered together with a table base, the instrument table will be ready for assembly. In this case follow the instructions below.

For three-legged table bases

1. Place the table shaft in the three-legged base.
2. Lock the two parts together with the two socket head screws using the socket wrench supplied with the three-legged base.
3. Insert the plate under the instrument table onto the pivot coming out of the shaft.
4. Fix the top to the bottom by tightening the two socket head screws.

For self-balanced or electric table base

The table top will be ready for assembly to the table base. In this case, follow the instructions below.

1. Position the table on the base plate and insert the screws supplied.
2. Fix the assembled unit by tightening the 4 socket head screws.
3. Unscrew the two socket head screws under the chinrest.
4. Insert the screws in the chinrest module and align its holes with the holes of the table top.
5. Tighten the screws using the wrench provided with the device
6. Place the base with orthogonal movements on the slides on top of the instrument holder table.

   Make sure the wheels are aligned.

7. Lock the device with the knob on the right side of the base, above the wheel axis.
8. Fix the lamp top by tightening the screw.
9. Fix the guards along the slides by inserting the tags into their slots.
10. Put the microscope in place making sure it is against the lock.

    Then fix it with the knob on the right of the microscope.
11. Fix the shielding glass to the pivot.

2. Turning ON/OFF

This section is not applicable.

3. Connection to other instruments

a. Assembly of manufacturer video camera mounts

1. Remove the slit lamp from packaging.
2. Remove the computer (if present) from packaging.

   Also remove the monitor and keyboard (if present) from the packaging. After proper assembly and connection (see the slit lamp user manual annexed) place the slit lamp on the table top.
3. Install the splitter.
4. Unlock the knob and remove the binocular, then insert the digital camera splitter and fixit by locking the knob.
5. Put the binocular back in place in the camera separator compartment and fix it by locking the knob.
6. Connect the socket under the digital camera to the socket at the base of the device, using the cable supplied.
7. Connect the USB3 cable supplied to the USB3 port under the digital video camera, connect the plug on the other end of the USB3 cable to the port on the back of the computer.
8. Turn ON the PC, the monitor and then the slit lamp.

   The digital camera does not have a switch and it is automatically powered via the USB3 cable.

b. Installing USB 3.0 digital beam splitter

Please be sure that the PC you are using is equipped with an USB 3.0 connection.

If you will connect USB 3.0 digital camera to an USB 2.0 port, the digital camera will not work.

1. Remove the slit lamp from packaging.
2. Remove the computer (if present) from packaging.

   Also remove the monitor and keyboard (if present) from the packaging. After proper assembly and connection (see the slit lamp user manual annexed) place the slit lamp on the table top.
3. Install the splitter as shown in the drawings on the right. Unlock the knob and remove the binocular then insert the USB 3.0 digital camera splitter and fix it by locking the knob.

4. Put the binocular back in place in the camera separator compartment and fix it by locking the knob.
5. Connect the socket under the digital camera to the socket at the base of the device, using the cable supplied.
6. Connect the USB 3.0 cable supplied to the USB 3.0 port on the side of the digital video camera.
7. Connect the plug on the other end of the USB 3.0 cable to the USB 3.0 port on computer.
8. Turn ON the PC, the monitor and then the slit lamp.

   The digital camera does not have a switch and it is automatically powered via the USB 3.0 cable.

c. Model SL500L

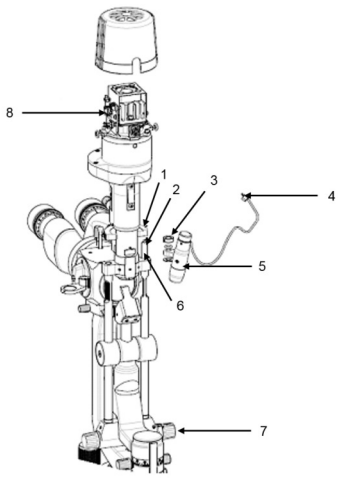
Assembly of the LED lighting system

1. Place the external illuminator support on the prisma holder head.
2. Fix the support with the screw supplied.
3. Connect the plug (and) to the LED card outlet.

If the slit lamp is supplied without a transformer box, make sure the mains supply meets the technical requirements described in these user instructions.

d. Model SL550L

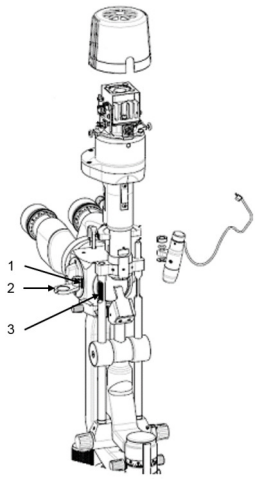
Assembly instructions for the external illuminator



1. Parts to upwards
2. Rod
3. Locking grub screw
4. Cable
5. Illuminator
6. Tube
7. Knob
8. LED card outlet

1. Turn the knob so that the rod is as low as possible.
2. Push the part upwards.
3. Insert the light in the tube.
4. Tighten the locking grub screw.
5. Insert the illuminator cable into the LED card outlet.

Assembly instructions for the diffuser



1. Opening
2. Rod
3. Diffuser

1 Insert the diffuser through the opening on the rod.

V. USE OF THE DEVICE

1. Have the patient comfortably sit down with his/her chin on the chinrest and the forehead against the headrest.
2. Lift and lower the chinrest using the handle to align the patient's eyes with the pre-marked signs on the chinrest.
3. Turn on the instrument using the illuminated switch, the indicator light on the base (SL500/SL550) will switch on.
4. Adjust brightness as desired using the tuner (on the transformer or on the base depending on the model).
5. Use the joystick to aim and focus the eye to be examined.

VI. Error display

This section is not applicable.

VII. SAFETY CONSIDERATION

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

1. Symbols

a. On the document

Symbol	Description
	Caution: a hazardous situation that, if not avoided, could result in minor or moderate injury.
	Warning: a hazardous situation that, if not avoided, could result in death or serious injury.
	Danger: a hazardous situation that, if not avoided, will result in death or serious injury.
	Important and/or useful additional information to learn relating to the text in this manual.

b. On the device and packaging

Symbol	Description
	Obligation to refer to the operating manual
	Applied, type B parts.
	Fuse
	Class II device (in compliance with EN 60601-1 standards) This means that the isolation from the mains supply is highly reliable, therefore no safety earthing connection is necessary
	Manufacturer
	Manufacturing date (year)
	CE Marking (European regulation relating to medical devices).
	Medical device
	Serial number
	Symbol of the waste disposal in compliance with the Directive 2012/19/UE (WEEE)
	ON = Turned-on (power supply connected to the mains)
	OFF = Turned-off (power supply disconnected to the mains)

2. Precautions for use

This section is not applicable.

3. Contraindication

No contraindications.

4. Side effects

No undesirable side-effects.

5. Exclusion of liability clause

- The results and/or technical data resulting from the handling or use of instruments must be analyzed by professionals experienced in various fields of application of the instrument in order to avoid any risk of misreading or incorrect analysis of the data.
- Diagnostics are carried out under the responsibility of the user and Essilor declines any responsibility for the results of these diagnostics.

- Each instrument constructed, marketed and/or put on the market directly and/or indirectly by Essilor is designed according to the provisions and the regulations in force. It contains the necessary information to ensure the intended use and permitting the identification of the manufacturer, taking into account the training, experience and knowledge of the intended user.
- This information, including that contained in the accompanying product manuals and the technical advice provided, whether oral, written or communicated during a demonstration, is provided on the basis of best knowledge. However, it must be considered as information without any binding effect, including third-party industrial property rights. It does not exempt the customer from checking current versions, communicated advice and suggestions, particularly the technical safety data sheets, instructions and technical information, as well as assessing the capacity of the instruments to ensure the intended use during delivery.
- The application, use and handling of these instruments as well as the products developed by the customer on the basis of technical consulting and/or maintenance activities are not under the control of Essilor. They are therefore the sole responsibility of the customer. Essilor declines any responsibility in the matter, as indicated below.
- The sale of products is governed by the general conditions of sale and delivery as modified.

6. Power Source

This section is not applicable.

7. Precautions regarding IT Network

This section is not applicable.

8. Electromagnetic compatibility

a. Electromagnetic emissions

This product is intended for use in the electromagnetic environment specified below. It is up to the customer or the user to verify that the instrument is used in this environment.

Emissions test	Compliance	Electromagnetic environment – Guidelines
Electromagnetic radiation disturbance (Radiated Emissions) (CISPR 11)	Group 1	The product uses RF energy for internal functions. The radio frequency emissions of the device are very low and should not cause interferences with the near appliances.
Disruptive voltage at power stations (Conducted emissions) (CISPR 11)	Class B	The product may be used in all establishments, including domestic sites and those connected directly to the public low-voltage power.
Harmonic current emission (IEC61000-3-2)	Class A Complies	
Voltage variations, voltage fluctuations and flicker (IEC61000-3-3)	Complies	

Electromagnetic immunity

This product is intended for use in the electromagnetic environment specified below. It is up to the customer or the user to verify that the instrument is used in this environment.

Emissions test	IEC 60601 Test level	Compliance	Electromagnetic environment – Guidelines
Electrostatic discharge (ESd) (IEC 61000-4-2)	±6 kv contact ±8 kv air	±6 kv contact ±8 kv air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical Fast Transient/burst (IEC 61000-4-4)	±2 kv for power supply lines ±1 kv for I/O lines	±2 kv for power supply lines Not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Surge (IEC 61000-4-5)	±1 kv differential mode ±2 kv common mode	±1 kv differential mode ±2 kv common mode	
Voltage dips, short interruptions and voltage variations on power supply input lines (IEC 61000-4-11)	<5% U_T for 0,5 cycle 40% U_T for 5 cycles 70% U_T for 25 cycles <5% U_T for 5 sec	<5% U_T for 0,5 cycle 40% U_T for 5 cycles 70% U_T for 25 cycles <5% U_T for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the SL500L - SL550L requires continued operation during power mains interruptions, it is recommended that the SL500L - SL550L be powered from an uninterruptible power Supply or battery.
Power frequency (50/60hz) magnetic field (IEC 61000-4-8)	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

U_T is the AC mains voltage before applying the test level.

Emissions test	IEC 60601 Test level	Compliance	Electromagnetic environment – Guidelines
Conducted RF (IEC 61000-4-6) Radiated RF (IEC 61000-4-3)	3vrms 150khz to 80mhz 3v/m 80 mhz to 2,5 ghz	3 v rms 3 v/m	Portable and mobile RF communication equipment should be used no closer to any part of the SL500L - SL550L, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance. d=1,167*sqrt (P) d=1,167*sqrt (P) 80 MHz to 800 80 MHz to 800 MHz d=2,333*sqrt(P) 800 MHz to 2,5 GHz Where p is the maximum output power rating of the transmitter in watts (W) ac- cording to the transmitter manufacturer and d is the recommended separation distance in metres (m) Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol : .

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

VIII. TROUBLESHOOTING

If a problem is detected, refer to the table below in order to take the appropriate measures.

Symptoms	Causes and measurements

The device does not switch ON	• Power cable not connected with the power supply
	  ◦ Connect the power cable of the device to the power supply
	  ◦ Press the switch on of the device
	
	> If the device is powered trough the auxiliary power supply of the table, check the connection of the table to the power line. Check the functioning of the table fuses.

The PC does not start	• Power cable not connected with the power supply
	  ◦ Connect the power cable to the power supply
	  ◦ Push the button of the power supply on ON
	  ◦ Replace the PC
	
	> Make sure the power outlet of the room works properly

PC operating system does not start	• Hard Disk failure
	  ◦ Replace the Hard Disk
	• Spoiled operating system
	  ◦ Reinstall the operating system
	  ◦ Replace the PC
	
	> Make sure the new PC features are equivalent to those required by the device.

The application software AnaEyes does not start	• Hard Disk failure
	  ◦ Replace the Hard Disk
	• The anti virus software impedes the starting of the application software AnaEyes
	  ◦ Check the settings of the anti virus software
	• Spoiled operating system
	  ◦ Reinstall the operating system
	• The application software AnaEyes does not work properly
	  ◦ Reinstall the application software AnaEyes
	
	> Contact the Technical Assistance Center
	The installation of the application software AnaEyes needs the administrator privileges.

The application software AnaEyes does not work
properly
	• The connection cable between device and PC does not work properly
	  ◦ Unplug and plug in again the connection cable between device and PC
	  ◦ Replace the connection cable between device and PC
	• The anti virus software interferes with the drivers of the application software AnaEyes
	  ◦ Uninstall the anti virus software
	• The application software AnaEyes is installed as local user
	  ◦ Reinstall the application software AnaEyes
	
	> The installation of the application software AnaEyes needs the administrator privileges.

The application software does not install	• The PC does not have the minimum features required for the installation ◦ Follow the application software inst > Make sure the PC features are equivalent to those required by the application software

The mouse of the PC does not work	• Connection cable with the PC disconnected
	  ◦ Check that the mouse connection cable properly fit in USB port
	• Mouse switch in position OFF
	  ◦ Switch the mouse button in position ON
	• The mouse batteries are down (only for wireless mouse)
	  ◦ Replace mouse batteries (only for wireless mouse)
	
	> From the control panel of the PC, check that there are no devices conflicts.

The keyboard of the PC does not work	• Connection cable with the PC disconnected
	  ◦ Check that the keyboard connection cable properly fit in USB port
	• Keyboard switch in position OFF
	  ◦ Switch the keyboard button in position ON
	• The keyboard batteries are down (only for wireless keyboard)
	  ◦ Replace keyboard batteries (only for wireless keyboard)

The images can't be saved in the database	• The database is not connected with the application software AnaEyes
	  ◦ Verify that in the configuration screen of the database is specified the correct path to the “Anaeyes.mdb” file
	• Power connection absent
	  ◦ Restore the connection to the database file
	  ◦ Check the functioning of the net connection
	• The USB cable does not work
	  ◦ Replace the USB cable
	
	> Regularly verify the connections with the data net
	> Use USB3.0 cables only

Failed image capture	• The patient moved or closed the eyes during the capture ◦ Ask the patient to keep the eyes open, look the fixation light and not to move the eyes
Failed image focus	• Presence of dust of grease on the optical parts of the device ◦ Clean the surface of optical parts with a soft cloth > Make sure the patient does not touch the optical parts.
Missing acknowledgment of eye position left / right position by the device	• Missing installation of black sticker below the base of the device or Fault of positioning detector ◦ Install the black sticker below the base of the device > Some colors and material of the table top may not reflect the infrared light. Move a white paper below the base of the device to check the functioning of the positioning detector.

Device movement difficulties (ahead, back, left, right)	• The joystick plastic protection has not been removed from the base during the installation
	  ◦ Remove the joystick plastic protection from the base
	• Device blocking knob is fastened
	  ◦ Loosen the device blocking knob
	
	> Before starting the exam check that the device blocking knob is loosened.

If the problem has not been resolved after taking the measures listed above, contact your local distributor immediately.

Your dealer has been trained by Essilor.

LED lamps operating alarm on slit lamp base

Symptoms	Causes and measurements
• Base LED : Green LED always ON	• Powered base • Powered LED-holder • White light emission > Fault-free operation
• Base LED: Red LED continuously ON • Projector LED: White LED always OFF	White power LED in the LED-holder is not powered or maximum operating temperature was exceeded • Switch OFF, wait for the red LED to turn OFF • Check connection between base and LED-holder • Restore and switch back ON
• Base LED: Red LED emits two equal flashes plus one pause • Projector LED: Intermittent white LED	The +5v of the control card in the LED-holder is missing > • Switch OFF, check connections between the base and the LED-holder, (also inside the LED-holder, green LED OFF) • Restore and switch back ON
• Base LED: Fast intermittent red LED (approx. 2 pulses per second) • Projector LED: Intermittent white LED	Input voltage exceeds maximum voltage > • Switch OFF • Reduce input voltage to below maximum voltage, (12vac + 30%), as measured on the base input connector, namely 15.6vac • Turn back ON
• Base LED: Slow intermittent red LED (approx. 1 pulse every 3 seconds.) • Projector LED: Intermittent white LED	Input voltage is lower than the required voltage > • Switch OFF • Increase input voltage to above minimum voltage, (12vac - 10%), as measured on the base input connector, namely 10.8vac. • Turn back ON
• Base LED: Intermittent orange and green LEDs, 2 pulses plus one pause • Projector LED: White LED with minimum intermittent value	Base or LED-holder output power supply +5v in short-circuit > • Switch OFF, eliminate short-circuit and turn back ON
• Base LED: Steady orange LED • Projector LED: White LED OFF	White LED in short circuit > • Switch off, remove short-circuit and turn back ON

IX. Maintenance

1. Storage and handling condition

Danger of device changes.

During transport and storage, the device can be exposed to the environmental conditions for a maximum period of 15 weeks, only if kept in the original packaging.

	Temperature	Humidity	Atmospheric pressure
Use	[+10°C; +35°C]	[30%; 90%]	[800 hPA; 1060 hPA]
Storage	[- 10°C; + 55°C]	[10%; 95%]	[700 hPA; 1060 hPA]
Transport	[- 40°C; + 70°C]	[10%; 95%]	[500 hPA; 1060 hPA]

2. Cleaning

When the device is not operating, cover it with the plastic cover provided to protect it from dust. Dust accumulating on the eyepiece and on the examination lenses during use must be regularly removed with a soft cloth and rubber bellow. To clean the external surfaces simply use a cloth slightly dampened with water. do not use any thinners or solvents.

Change the chinrest paper each time the examinee changes in order to keep the chinrest clean.

3. Periodical inspection and maintenance

This section is not applicable.

4. Disassembly of the product and transport

All equipment is always delivered packaged in optimal conditions to withstand standard transport and storage conditions. In the event that, when removing the device from its packaging, damages due to transport are detected, please contact the installer company or the manufacturer directly.

5. Disposal

	Instructions for the disposal of the instrument in accordance with Directives 2012/19/EU and 2011/65/EU regarding the limitation of dangerous substances in electrical and electronic equipment and the disposal of electrical and electronic waste. When it reaches the end of its lifetime, the instrument should not be thrown out with the household refuse. It can be disposed of at a waste management center operated by the municipality or the retailers who offer this service. The separate disposal of an electrical device avoids any damage to the environment or health that could result from a non-compliant disposal, and also allows the materials it is composed of to be recycled in order to save energy and resources. The pictogram of the wheeled container appears on the label of the instrument. It indicates the obligation for separate collection and disposal of end-of-life/out-of-use electrical and electronic equipment.

X. SPECIFICATIONS

1. Technical data

The expected life of the device and its components is 10 years.

a. Model SL500L

Slit lamp general specifications	SL500L with prisma-holder head	SL500L with split head
Slit projection index	1.16x	1.3x
Slit width (continuous setting)	0 – 14 continuous variable	0 – 16 continuous variable
Slit lenght (continuous setting)	1.8 – 14 continuous variable	2 – 15 continuous variable
Slit maximum length	14 mm	16 mm
Aperture diameter	14 / 9 / 5.5 / 0.3	16 / 10.5 / 6.5 / 0.4
Filters	Blue, green (red-free), red	Blue, green (red-free), red
Slit rotation angle	± 90° continuous on Tabo system	± 90° continuous on Tabo system
Incidence angle	0° horizontal	Angular double +/-11°
Operation distance (prisma outlet /patient's eye distance)	68 mm	80 mm

Chinrest module specifications

- Fixation mire: Red, luminous, articulating
- Chinrest height adjustment: 76 ± 1 mm

Electrical lamp specification

Device operating voltage: 12v CA: -10%+20%-15v dC ±5%

Transformer specifications

- Table top standard size: 380 x 500L mm
- Power supply voltage:
  100v/120v/230v/240v
  CA ±10%
- Fuses: 5x20 mm:
  100-120v CA --- 1 A
  230-240v CA --- 0.5 A
- Maximum power absorbed: 25 vA

Other features

- Lamp size: 296 x 313 x (433±15) mm
- Lamp weight: 7.4 Kg
- Digital lamp weight: 8.1 Kg

b. Model SL550L

- Minimum slit aperture / Tyndall Scattering: 0.2 mm
- Slit width (continuous setting): 0 - 12 mm
- Slit lenght (continuous setting): 1.0 – 12 mm
- Slit maximum lenght: 12 mm
- Slit projection index: 1x
- Aperture diameter: 0.2 / 1 / 3 / 5 / 9 / 12 mm
- Filters: Blue, green (red-free), grey and red

- Slit rotation: ± 90° continuous with Tabo system
- Tilting slit vertical angles: 0° - 5° - 10° - 15° - 20°
- Patient's eye / mirror surface operation distance: 88 mm
- Fixation point: Articulating light
- Chinrest module (chinrest height adjustment): 66 ± 1 mm

Electrical lamp specification

Device operating voltage: -10% +20% 12v CA: - 15v dC ±5%

Transformer specifications

- Table top standard size: 380 x 500L mm
- Power supply voltage:
  100v / 120v / 230v / 240v
  CA ±10%
- Fuses: 5x20 mm:
  100-120v CA --- 1 A
  230-240v CA --- 0.5 A
- Main frequency: 50 - 60 Hz
- Maximum power absorbed: 25 vA

Other features

- Lamp size: 299 x 313 x (644±15) mm
- Lamp weight: 8.7 Kg
- Digital lamp weight: 9.4 Kg

2. Connectivity to other devices

This section is not applicable.

3. It requirements

System minimum requirements (digital camera version)

- PC: 4 GB RAM - Video Card 1 GB RAM (not shared) resolution 1024 x 768 pixels
- Operating system: Windows XP, Windows 7 and Windows 10 (32/64 bit).

XI. QR Code

The latest version of the user manual in the appropriate language is available on a web space. Upon request, a paper version can be provided for free.

en	The complete user manual is available on a web space. To access it, please scan the QR code below using a dedicated application.
fr	Le manuel utilisateur complet est disponible sur un espace web. Pour y accéder veuillez scanner le QR code ci-dessous à l'aide d'une application dédiée.
ar	لتتمكن من الوصول إليه، يُرجى مسح رمز الاستجابة السريعة أدناه باستخدام تطبيق مخصص لذلك.
be	Поўная інструкцыя карыстальніка даступна ў інтэрнэт-прасторы. Каб атрымаць доступ, адсканіруйце QR-код ніжэй пры дапамозе спецыяльнай праграмы.
bg	Пълното ръководство за потребителя е достъпно на уеб пространство. За достъп, моля, сканирайте QR кода по-долу с помощта на специално предназначено приложение.
cs	Celá uživatelská příručka je k dispozici na webu. Pro přístup k ní oskenujte níže uvedený QR kód pomocí specializované aplikace.
da	Den komplette brugermanual findes på et websted.Du får adgang til den ved at scanne QR-koden nedenfor ved hjælp af en dertil beregnet applikation.
de	Die vollständige Bedienungsanleitung ist auf einem Speicherplatz verfügbar: Für den Zugriff darauf scannen Sie bitte untenstehenden QR-Code mittels einer dafür vorgesehenen Anwendung.
el	Το πλήρες εγχειρίδιο χρήσης διατίθεται σε έναν ιστοχώρο. Για να μεταβείτε σε αυτόν, σαρώστε τον παρακάτω κωδικό QR μέσω μιας ειδικής εφαρμογής.
es	El manual de uso completo está disponible en la web. Para acceder, escanee el código QR que se encuentra a continuación con la ayuda de una aplicación.
et	Täielik kasutusjuhend on saadaval veebis. Juurdepääsuks palun skannige allolevat QR-koodi, kasutades selleks spetsiaalset rakendust.
fi	Täydellinen käyttöohje on käytettävissä verkossa. Avaa käyttöohje skannaamalla QR-koodi asianmukaisella sovelluksella.
hr	Potpuni korisnički priručnik dostupan je na webu. Da biste mu pristupili, skenirajte QR-kod u nastavku namjenskom aplikacijom.
hu	A teljes használati útmutató megtalálható a webes felületen. A hozzáféréshez, kérjük, olvassa le a lenti QR-kódot a megfelelő alkalmazás használatával.
id	Panduan pengguna yang lengkap tersedia di web space. Untuk mengaksesnya, silakan pindai kode QR berikut dengan menggunakan aplikasi khusus.
it	Il manuale utente completo è disponibile su uno spazio Web. Per accedervi, scansionare il codice QR seguente mediante un'applicazione dedicata.
ja	ユーザーマニュアル完全版はウェブサイト内で閲覧いただけます。そちらにアクセスするには、専用アプリケーションを使用して以下のQRコードをスキャンしてください。
ko	완전한 사용자 매뉴얼이 웹사이트에 있습니다. 전용 앱을 사용해 아래의 QR 코드를 스캔하면 접근할 수 있습니다.
lt	Išsamaus naudotojo vadovo ieškokite interneto svetainėje. Kad jį atvertumėte, specialia programėlę nuskaitykite toliau pateiktą QR kodą.
lv	Pilnā lietotāja instrukcija ir pieejama tīmeklī. Lai tai piekļūtu, lūdzu, noskenējiet tālāk redzamo QR kodu, izmantojot tam paredzētu lietojumprogrammu.

ms	Manual pengguna yang lengkap boleh didapati di ruangan web. Untuk akses, sila imbas kod QR di bawah menggunakan aplikasi yang berkenaan.
nl	De volledige gebruikershandleiding is beschikbaar op een website. U kunt de handleiding bereiken door de QR-code hiernaast te scannen met een geschikte applicatie.
no	Den komplette brukerhåndboken er tilgjengelig på et webområde. For å få tilgang, må du skanne QR-koden nedenfor ved hjelp av en dedikert applikasjon.
pl	Kompletna instrukcja użytkownika jest dostępna na stronie internetowej. Aby uzyskać dostęp, zeskanuj poniższy kod QR przy użyciu dedykowanej aplikacji.
pt	O manual do utilizador completo está disponível num espaço web. Para aceder, queira digitalizar o QR code seguinte com a ajuda de uma aplicação dedicada.
pt (brazil)	O manual do usuário completo está disponível na área web do cliente. Para acessar, scanear o código QR abaixo usando a respetiva aplicação.
ro	Versiunea integrală a manualului de utilizare este disponibilă pe un site web. Pentru a-l accesa, scanați codul QR de mai jos cu ajutorul unei aplicații dedicate.
ru	Полное руководство пользователя доступно на сайте. Чтобы получить к нему доступ, сканируйте QR-код ниже с помощью специального приложения.
sk	Celý používateľský manuál je dostupný na internete. Aby ste sa k nemu dostali, naskenujte QR kód nižšie pomocou na to určenej aplikácie.
sl	Celoten uporabniški priročnik je na voljo na spletnem mestu. Za dostop do njega skenirajte spodnjo kodo QR z uporabo namenske aplikacije.
sr	Potpuno korisničko uputstvo je dostupno na vebu. Da biste mu pristupili, skenirajte QR kôd u nastavku pomoću namenske aplikacije.
sv	Den fullständiga handboken finns på en plats på Internet. Skanna QR-koden nedan med en lämplig app för att få åtkomst till den.
th	มีคู่มือผู้ใช้ฉบับสมบูรณ์ให้ที่เว็บไซต์ เพื่อเข้าถึงข้อมูล กรุณาสแกนรหัส QR ด้านล่างนี้โดยใช้แอปพลิเคชั่นเฉพาะงาน.
tr	Kullanma kılavuzunun tamamı internette bulunmaktadır. Kılavuza erişmek için, bu amaca yönelik bir uygulama kullanarak aşağıdaki QR kodunu taratın.
uk	Повний посібник користувача доступний на сайті. Щоб отримати до нього доступ, скануйте QR-код нижче за допомогою спеціального додатку.
vi	Cẩm nang hướng dẫn sử dụng hoàn chỉnh hiện có trên không gian web. Để truy cập, vui lòng quét mã QR bên dưới sử dụng ứng dụng chuyên dụng.
zh	操作手册全文可在一个网络空间内查询。如要访问该空间，请使用一个专门的应用软件扫描QR条码。

Essilor International
147, rue de Paris – 94220 Charenton-le-Pont France
www.essilor.com