SLIT LAMPS

MANUAL

SL-9800 | SL-9900 | SL-9900 ELITE

EN

VIEWLIGHT
POWERED BY INNOVATION

Before use this instrument, be sure to read this manual

CONTENTS

INSTALLATION

1. GENERAL WARNINGS

- **These instructions describe how to use the Viewlight slit lamps correctly.**

WAR NING:
Please carefully read this manual before using the device.

All our products have been manufactured with the greatest attention to safety. To use the device effectively and safely please read this user manual carefully before installing and using the device, and follow the warnings reported in the manual and on the outside of device itself. Operators who have used the device previously, should check again the instructions reported in this manual. The manual must be readily available for consultation.

The original text of this manual is in Italian.

1.1. SYMBOLS

Explanation of Symbols:

WARNING!
Symbol to point out attention on further information written in the Instruction for Use of the device.

Type B applied parts, in compliance with EN 60601-1 standards.

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.

."Please refer to the instruction manual." It signifies that, for safety reasons, you need to consult the instruction manual before using the device

Fuse

CE marking", indicates that the product is compliant with the EC Directive 93/42/EEC and subsequent amendments.

Disposal symbol in compliance with Directives 2012/19/UE WEEE and 2011/65/UE RoHS II.

Manufacturer

1.2. INTENDED USE AND OPERATING PROCEDURES

IThe products referred to in this document and its annexes are electromedical devices and are therefore "medical devices". They are part of the "slit lamps" "family".

The function of slit lamps is typical of this kind of device:

- Microscopic examination of the eye under slit light;
- Microscopic examination of the ocular fundus and of the posterior vitreous body (with Hubry's lens);
- Examination of the eye and assessment for the positioning of contact lenses.

These devices are designed for use by ophthalmologists and optometrists (within their respective professions) for specific diagnostic procedures (biomicroscopic examination of the eye).
The devices are powered through the mains supply, with the following possible voltage options (using a voltage switch) 100 Vac /120 Vac/230 Vac /240 Vac - 50/60 Hz - single-phase; consumption approximately 40 VA.

Voltage is transformed and the device receives 6 Vac.

1.2.1. CLASSIFICATION

- MEDICAL DEVICE classification
  device classification in accordance with the rules set out in Annex IX of Directive 93/42/EC and subsequent amendments: Class I..

- ELECTROMEDICAL DEVICES Classification.
  Type of protection against direct and indirect contact: Class II (*)
  Applied Parts: Type B
  Degree of protection against humidity: Common device (no protection against water seepage) IP20
  Sterilization method: Disinfectable devices
  Degree of protection when used with anaesthetics or flammable detergents: No protection
  Conditions of use:
  - » Intermittent operation for SL990 and SL980
  - » Intermittent operation SL9900 and SL9800

- Classification for PHOTOBIOLOGICAL SAFETY.
  Device classification in accordance with EN 15004-2:2007
  - » Risk Group 2.

1.2.2. ENVIRONMENTAL CONDITIONS

As long as the endothelial microscope is kept in its original packaging, it can be exposed to the following environmental conditions without being damaged, and for a maximum period of 15 weeks during shipping and storage:

Operating conditions of use:
Temperature between +10 °C and +35 °C;
Atmospheric pressure 800 hPa to 1060 hPa;
Relative humidity between 30% to 90%.

Storage conditions:
Temperature -10 °C to +55 °C;
Atmospheric pressure 700 hPa to 1060 hPa;
Relative humidity 10% to 95%.

Transport conditions:
Temperature -40 °C to +70 °C;
Atmospheric pressure 500 hPa to 1060 hPa;
Relative humidity 10% to 95%.

1.2.3. REFERENCE STANDARDS

The following reference standards have been applied for product design, production and control:

Community Directives
- DIRECTIVE 93/42/EEC “MEDICAL DEVICES” OF 14/06/1993 AND SUBSEQUENT AMENDMENTS
- DIRECTIVE 2002/96/EC “Waste Electrical and Electronic Equipment”.

Quality Management System Standards
- UNI EN ISO 9001:2008 “Quality management systems - Requirements”
- UNI EN ISO 13485:2012 “Medical devices - Quality Management Systems - Regulatory Requirements”

Technical Standards
- EN 60601:1 STANDARDS - “PART 1: MEDICAL ELECTRICAL EQUIPMENT: GENERAL REQUIREMENTS FOR SAFETY”, third edition;
- EN 60601-1-2 - “Collateral standard: Electromagnetic Compatibility of Medical Electrical Equipment, 2001 edition;
- UNI EN ISO 15004-1: “Ophthalmic Instruments - Fundamental Requirements and Testing Methods, Part 1: General requirements applicable to all Ophthalmic Instruments”, 2009 edition;
- UNI EN ISO 15004-2: “Ophthalmic Instruments - Fundamental Requirements and Testing Methods - Part 2: Protection against light-related hazards”, 2007 edition;
- UNI EN ISO 14971:2012 “Application of risk management to medical devices”

1.2.4. S AFETY MEASURES AS PER ISO 15004-2:2007 STANDARDS (E)

MAXIMUM TIME OF EXPOSURE TO THE LAMP LIGHT.

WARNING!
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.xx.min).

- Model SL 990, when operating at maximum intensity, exceeds the threshold set by the safety guidelines after 130 seconds.
- Model SL 980, when operating at maximum intensity, exceeds the threshold set by the safety guidelines after 120 seconds.
- Model SL 9800, when operating at maximum intensity, exceeds the threshold set by the safety guidelines after 160 seconds.
- Model SL 9900, when operating at maximum intensity, exceeds the threshold set by the safety guidelines after 160 seconds.

1.2.5. WARRANTY

Warrants this product for a period of 24 months as stated by the date of manufacturing. This warranty covers the replacement, at factory premises or at an authorised service centre, of components and materials, as well as the necessary working hours. Shipping and transportation charges shall be born by the customer.

This warranty does not cover consumable parts or parts likely to wear in normal operation or parts damaged due to improper use or to maintenance carried out by personnel not authorised

OUT OF WARRANTY CONDITIONS
- Repairs of faults caused by natural disasters, mechanical shock (fall, impact, etc.), defects of the electrical system, negligence, improper use, maintenance or repairs carried out with non-genuine products and/or by personnel not authorised
- Any use which is improper or other than the intended use foreseen by the manufacturer.

Factory shall not be liable for any service deficiencies or inefficiencies due to causes or circumstances beyond its reasonable control. Under no circumstances, shall the customer be entitled to down time dama-ges.

For maintenance or technical information on the device, please contact one of Technical Service Cen-ter or Viewlight directly at:

VIEWLIGHT LLC
8380 NW 64 St
Miami, Fl, U.S.A
phone: +305-406-3915 · fax: +305-938-5012
customerservice@viewlightusa.com
www.viewlightusa.com

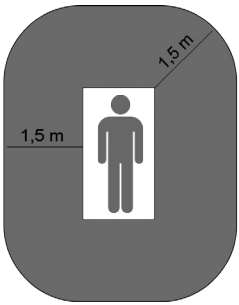
1.3. SAFETY WARNINGS

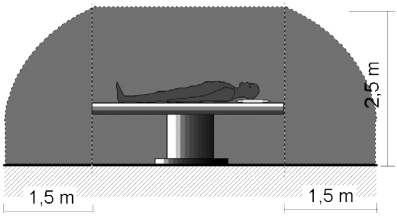
WARNING!

Do not touch the computer mains power cable with wet hands; make sure the mains power cable is not walked on or trapped under weights; do not tie the mains power cable.

- The power source must have a differential circuit breaker (IΔn= 30 mA) and a thermal magnetic circuit breaker(Vn=230V) to protect the device. The power socket must be close and easily accessible.
- A damaged power cable can cause fire or electric shock. It must be checked frequently. If the supplied computer power cable needs to be replaced, please contact the supplier.
- Do not attempt to carry out any technical intervention on the device or on the system unless specified in this manual.
- Do not use the device in the proximity of water and avoid liquid spillage on any surface of the device. Avoid humid or dusty places or places which are subject to rapid fluctuations in temperature and humidity.
- Unplug the device from the power socket before cleaning and/or disinfecting.
- The device does not generate or receive electromagnetic interferences when operated near other devices; no preventive or corrective action is necessary.
- No precautions are necessary in case of any changes affecting the device performance.
- In addition to the image capturing system, the device includes non electromedical appliances (Personal Computer, monitor, etc.). The standard configuration of the system supplied complies with EN 60601:1 standards (3rd edition), especially as per the requirements in chapter 16 of said standards. In addition to its standard configuration, the system can operate with other appliances (electromedical and not),

IL PERSONAL COMPUTER E TUTTE LE UNITA' PERIFERICHE DEVONO ESSERE COLLOCATE AL DI FUORI DELLA ZONA PAZIENTE





standards:
  - » EN: 60950-1 for ITE equipment (safety standards for information technology equipment); or.
  - » EN 60601:1 for medical electrical equipment;
  - » The peripheral devices must be connected outside the patient's area;
- After connecting all the peripheral devices, the user is responsible for regularly verifying compliance of
- the electromedical system with EN 60601:1 standards (the specific requirements are reported in chapter 16 of the standards)
- If leakage current values exceed regulatory limits, further safety measures must be adopted, as indicated in the EN 60601:1 standards (3rd edition). In this case, the overall system must be powered through an adequate separator or isolation transformer.
  - » The transformer is absolutely necessary in case the operators cannot easily keep the computer and other non-electromedical appliances outside of the patients' area.
- If leakage current values exceed regulatory limits, further safety measures must be adopted, as indicated in the EN 60601:1 standards (3rd edition). In this case, the overall system must be powered through an adequate separator or isolation transformer.
  - » The transformer is absolutely necessary in case the operators cannot easily keep the computer and other non-electromedical appliances outside of the patients' area.

For any further information, contact VIEWLIGHT.

1.4. DISPOSAL AT THE END OF LIFE

According to Directives **2012/19/UE** WEEE and **2011/65/UE** RoHS IIon the restriction of hazardous substances in electrical and electronic equipment and on their disposal.
Public authorities adopt adequate measures to make sure that users, distributors and manufacturers contribute to the collection of electrical and electronic equipment, setting legal requirements for reusing, recovering or recycling said equipment.

The device purchased has been manufactured using special materials and substances. The device may contain hazardous substances potentially harmful to the environment or to human health if improperly disposed of into the environment.

WARNING!

The user must take into account the potentially harmful effects to the environment or human health due the improper disposal of the equipment or of parts of it.

To prevent the release of hazardous substances into the environment and to promote conservation of natural resources, the manufacturer, in case the user wishes to dispose of the device used at the end of its useful life, facilitates the possibility of its reuse and the recovery and recycling of the materials contained therein.

The graphic symbol shown in the figure is applied on the equipment's label.

It reminds that all electrical and electronic equipment must be collected and disposed of separately at their end-of-life

In the case of disposal of the device, specific provisions of European and national law apply, and provide that:

- the device shall not be disposed of as urban waste, it shall be collected separately, by contacting a company specializing in the disposal of electrical/electronic equipment or the public authorities responsible for waste management;
- in the event that a new piece of equipment is purchased from the same manufacturer to replace an old one placed on the market before 13 August 2005, equivalent and with the same functions of the new equipment, the distributor or manufacturer is legally required to collect the old piece of equipment;
- if the user wants to get rid of a used piece of equipment, placed on the market after 13 August 2005, the distributor or manufacturer is legally required to collect it
- by joining the specific technological waste disposal consortium, the manufacturer shall take care of the handling, recovery and/or disposal of the old equipment collected, at its own charge;

The manufacturer will provide the users with any information regarding the hazardous substances contained in the device and on the recovery and recycling of said substances, as well as on the possible reuse of the used device.

Violations shall be punished by the current legislation with serious administrative sanctions.

For more specific information concerning regulations on the disposal of equipment for countries other than Italy, please, contact your retailer

SUPPLY PACKAGE

2.3. MODEL SL 9800

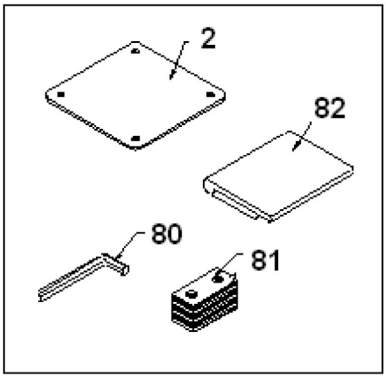
The device is delivered packaged. When removing the device from the packaging, check that all the following components are present:

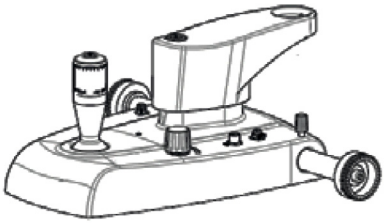
a) One table top (NOTE: the table top is not included with the slit lamp for twin or joint tables) on which are mounted:
- one transformer box (6) with main illuminated switch (7), socket for fixation point (32), mains socket (30) with voltage switch (31) and built-in fuses;
- one mains cable;
- two orthogonally moving slide guides for the base (3);
- one sliding plate for the positioning device(2);
- one drawer (5).

b) One complete base with orthogonal movements (9).
c) One stereoscopic microscope with 2 magnifications, or one Galilean system (15) with 3, 5 magnifications, or with progressive zoom, complete with screw-out eyepieces (38).
d) One slit projector optical unit.
e) One chinrest module (17).
f) These instructions for use.
g) A series of accessories including;
- two guards for the slide guides (4);
- one calibration rod (13);
- one protection cover (82);
- one Allen wrench (80);
- two protection fuses
- one shielding glass (14).

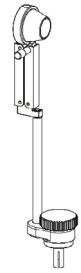
The following accessories can be supplied upon request:

- 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 (36);
- brightness regulation rheostat on the base (8);
- capturing trigger button on the standard Joystick(27);
- Z800 tonometer mounting plates.
- Volk lens.
- External illuminator (54) (standard on D digital systems)





Base with brightness button and adjuster on the base



Hruby lens

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

28b. Connector for base-to-transformer socket

29. Video camera connection socket.
30. Mains socket..
31. Voltage switch and fuse seat.
32. Fixation point power socket.

32b. Fixation point power supply connector

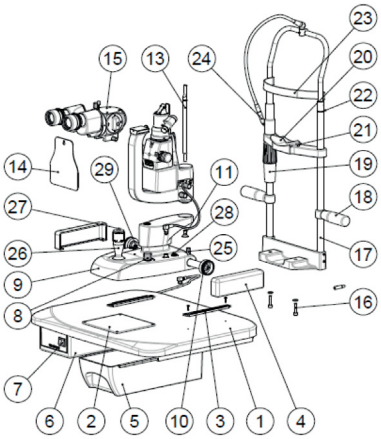
33. Low-voltage transformer output socket.

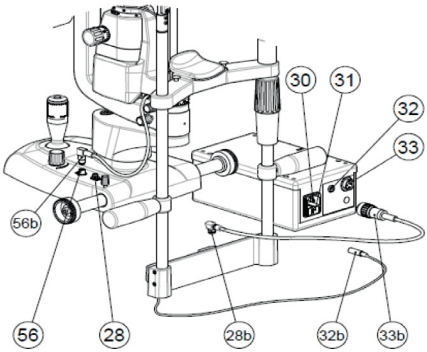
33b. Connector for transformer output.

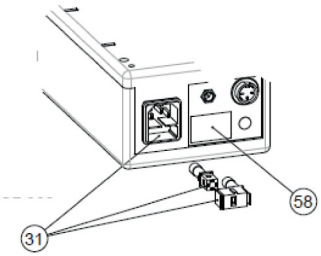
34. Microscope locking knob.
35. Microscope splitter knob..
36. Fluorescein filters insertion rod.
37. Magnification tuner.
38. Extractable eyepieces.
39. Microscope positioning lock..

39b. Microscope positioning locking grub screw.

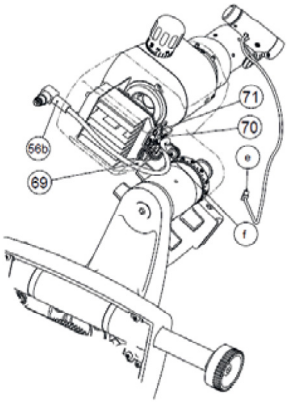
40. Binocular.
41. Projector arm fixing knob.
42. Projector arm fixing knob.
43. Projector positioning scale.
44. Slit width adjusting knobs.
45. raduated scale 90°-0°-90° to calculate slit inclination during rotation
46. Filter insertion control. Nut

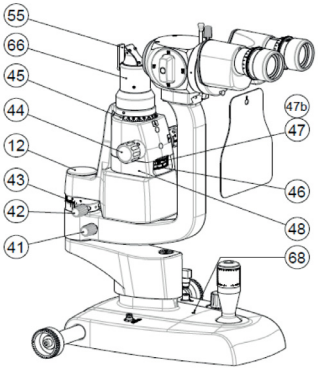


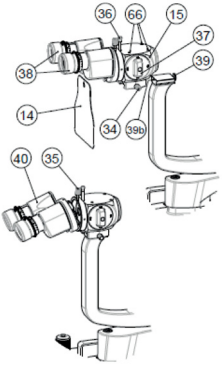




46b.Slit height value index.
47. Slit rotation 90°-0°-90°.
48. light bulb / LED compartment cover
49. Cover locking screw.
50. Light bulb fixing spring.
51. External illuminator.
52. Light diffuser.
53. LED light power socket.
53b.LED light plug.
54. Tower power supply outlet.
54b.Tower power supply cable.
55. Transformer nameplate.
56. Separatore telecamera Digitale
57. Vigital Video camera Splitter.
58. Video camera splitter knob.
59. Video camera-to-base connection socket.
59b.Firewire port for computer connection.
60. Firewire cable for computer connection
61. Horizontal tilting tuner
62. Vertical tilting lever.
63. Slit projector head
64. Fori per fissaggio piastrina R900 o supporto laser
65. Base LED for diagnostics
66. Lighting card red LED reflex.
67. Lighting card green LED
68. Lighting card reset button.
69. Allen wrench.
70. Chinrest paper 100 pc.
71. Dust cover.







2.4. MODEL SL 9900

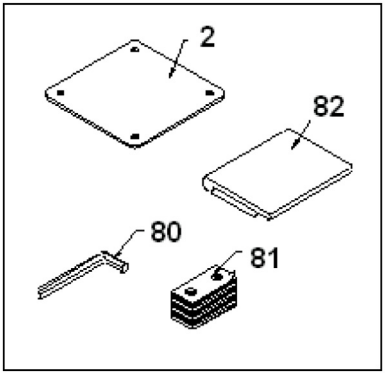
The device is delivered packaged. When removing the device from the packaging, check that all the following components are present:

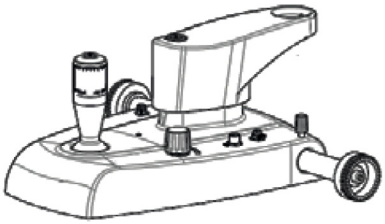
a) One table top (NOTE: the table top is not included with the slit lamp for twin or joint tables) on which are mounted:
- one transformer box (6) with main illuminated switch (7), socket for fixation point (32), mains socket (30) with voltage switch (31) and built-in fuses;
- one mains cable;
- two orthogonally moving slide guides for the base (3);
- one sliding plate for the positioning device(2);
- one drawer (5).

b) One complete base with orthogonal movements (9)
c) One stereoscopic microscope with 2 magnifications, or one Galilean system (15) with 3, 5 magnifications, or with progressive zoom, complete with screw-out eyepieces (38).
d) One slit projector optical unit.
e) One chinrest module (17).
f) These instructions for use.
g) A series of accessories including;
- two guards for the slide guides (4);
- one calibration rod (13);
- one protection cover (82);
- one Allen wrench (80);
- two protection fuses;
- one shielding glass (14).

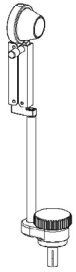
The following accessories can be supplied upon request:

- 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 (36);
- brightness regulation rheostat on the base (8);
- capturing trigger button on the standard Joystick
- F900 and A900 tonometer mounting plates.
- Volk lens.
- External illuminator (54) (standard on D digital systems)





Base con pulsante e regolatore luminosità sulla base



Lente di Hruby

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

28b.Connector for base-to-transformer socket

29. Video camera connection socket..
30. Mains socket.
31. Voltage switch and fuse seat.
32. Fixation point power socket.

32b.Fixation point power supply connector

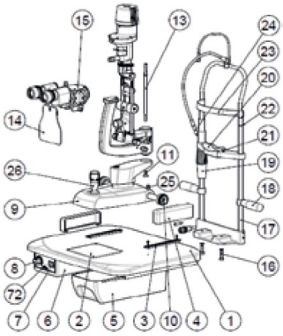
33. Low-voltage transformer output socket.

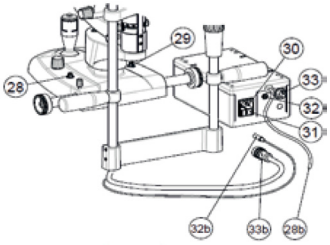
33b.Connector for transformer output.

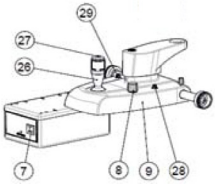
34. Microscope locking knob.
35. Microscope splitter knob.
36. Fluorescein filters insertion rod.
37. Magnification tuner.
38. Extractable eyepieces.
39. Microscope positioning lock.

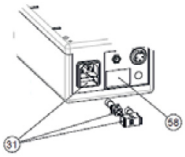
39b.Microscope positioning locking grub screw.

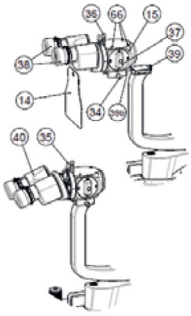
40. Binocular.
41. Microscope arm fixing knob.
42. Projector arm fixing knob.
43. Projector positioning scale..
44. Slit width adjusting knobs.
45. raduated scale 90°-0°-90° to calculate slit inclintion

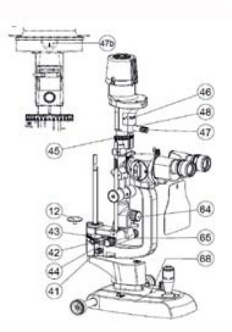




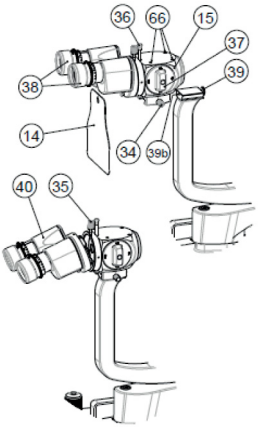


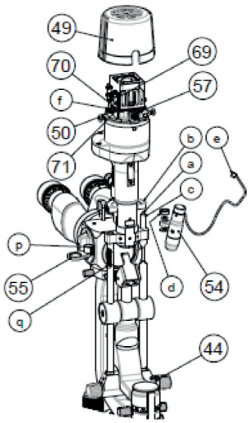


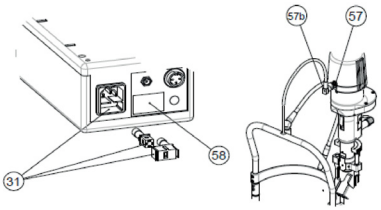




during rotation.
46. Filter insertion control. Lever
47. Slit height adjuster. Tuner
47b. Slit height value index.
48. Slit rotation 90°-0°-90°.
49. light bulb / LED compartment cover
50. Cover locking screw.
51. Light bulb fixing spring.
52. External illuminator.
53. Light diffuser.
54. LED light power socket.
54b. LED light plug.
55. Tower power supply outlet.
55b. Tower power supply cable.
56. Transformer nameplate.
57. Vigital Video camera Splitter
58. Video camera splitter knob.
59. Video camera-to-base connection socket.
60. Firewire port for computer connection.
60b. Firewire cable for computer connection.
61. Standard splitter
62. Horizontal tilting tuner..
63. Vertical tilting lever.
64. Slit projector head
65. Fixing holes for R900 plate or laser support
66. Base LED for diagnostics
67. Lighting card red LED reflex.
68. Lighting card green LED
69. Lighting card reset button.
70. Allen wrench.
71. Chinrest paper 100 pc.
72. Dust cover.

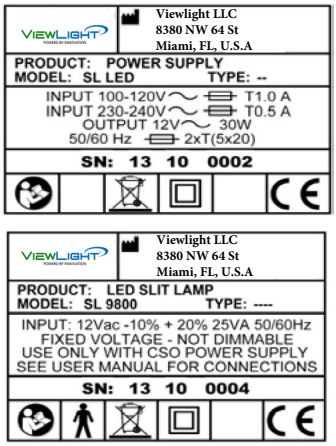






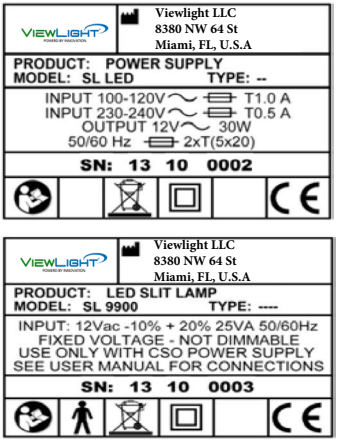
MODEL SL 9800

Data reported on the nameplates:
- Manufacturer's name.
- Device name.
- Nominal voltage.
- Type of current.
- Nominal frequency.
- Maximum power absorbed.
- Serial number.
- Month and year of manufacture.



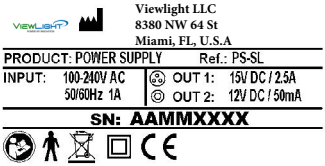
MODEL SL 9900 MODEL SL 9900 ELITE

Data reported on the nameplates:
- Manufacturer's name.
- Device name.
- Nominal voltage.
- Type of current.
- Nominal frequency.
- Maximum power absorbed.
- Serial number.
- Month and year of manufacture.



SWITCHING SL 9800 / SL 9900

Data reported on the nameplates:
- Manufacturer's name.
- Device name.
- Nominal voltage.
- Type of current.
- Nominal frequency.
- Maximum power absorbed.
- Serial number.
- Month and year of manufacture.



3. 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..

4. OPERATING PROCEDURES

a) Have the patient comfortably sit down with his/her chin on the chinrest (20) and the forehead against the headrest (23)..

b) Lift and lower the chinrest (20) using the handle (19) to align the patient's eyes with the pre-marked signs on the chinrest (22).

c) Turn on the instrument using the illuminated switch (7), the indicator light on the transformer (72) and on the base (68) (SL9800/SL9900) will switch on.

d) Adjust brightness as desired using the tuner (8) (on the transformer or on the base depending on the model).

e) Use the Joystick (26) to aim and focus the eye to be examined.

For further information and access to all image elaborations, please refer to the user manual of the Phoenix software code 90000016.

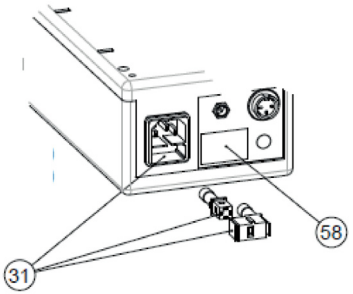
5. MAINTENANCE

All repair operations described below must be performed with the power cable of the unit disconnected from the mains outlet. In the event of faults that cannot be solved with the operations described below, please contact the installer company.

5.1. POWER FUSE REPLACEMENT

To replace power fuses:

* Power fuses are located on the back of the transformer, inside the socket/ voltage switch (31).



Before replacing the fuse, isolate the device from the electrical system by unplugging the mains supply cable from the mains socket.

- Extract the voltage selector and remove unusable fuses.
- Replace faulty fuses with new ones, compatible with the voltage indicated on the transformer nameplate (58);
- Replace the voltage selector;
- Plug the mains supply cable into the mains socket

5.2. FAULT MESSAGES

FAULT	EFFECT	CAUSE	ACTION
1	LED on Lamp OFF	Mains synchronisation failure and/or internal overheating	
2	Slow intermittent LED (1Hz) Lamp ON	PCB (Printed Circuit Board) input voltage is low (below 5.8 V CA) PCB input voltage is too low (below 5.5 V CA	
3	Slow intermittent LED (5Hz) Lamp OFF	PCB input voltage is high (over 15 V CA)	
4	Intermittent LED (double-flashing) Lamp OFF	Output current to the lamp is high (approx. 4 A)	
5	Intermittent LED (triple-flashing) Lamp OFF	**Output voltage adjustment is inconsistent** Analogical fault – ADC saturation (analogue to digital converter); The lamp is operating in transparent modality (unregulated).	

LED LAMPS OPERATING ALARM (68) ON SLIT LAMP BASE

FAULT		EFFECT	CAUSE	ACTION
1	Base LED (68)	Green LED always on	Powered base. Powered LED-holder. White light emission	Fault-free operation.
	Projector LED			
2	Base LED (68)	Red LED continuo-usly ON	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.
	Projector LED	White LED always OFF		
3	Base LED (68)	Red LED emits two equal flashes plus one pause.	The +5V of the control card in the LED-holder is missing.	Switch off, check connections betwe-en the base and the LED-holder, (also inside the LED-holder, green LED off). Restore and switch back on.
	Projector LED	Intermittent white LED		
4	Base LED (68)	Fast intermittent Red LED (approx. 2 pulses per second)	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.
	Projector LED	Intermittent white LED		
5	Base LED (68)	Slow intermittent Red LED (approx. 1 pulse every 3 seconds.)	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.
	Projector LED	Intermittent white LED		
6	Base LED (68)	Intermittent Orange and Green LEDs, 2 pulses plus one pause	Base or LED-holder output power supply +5V in short-circuit.	Switch off, eliminate short-circuit and turn back on.
	Projector LED	White LED with minimum intermit-tent value:		
7	Base LED (68)	Steady Orange LED	White LED in shor-tcircuit	Switch off, remove short-circuit and turn back on
	Projector LED	White LED off		

6.3. TECHNICAL SPECIFICATIONS - MODEL SL 9800

Slit lamp general specifications	SL 9800 with prisma-holder head	SL 9800 with split head
Slit projection index	1,16X	1,3X
Slit width (continuous setting) (mm)	0 – 14 continuous variable	0 – 16 continuous variable
Slit width (continuous setting) (mm)	1,8 – 13 variabile con continuità	2 – 15 variabile con continuità
Slit maximum length (mm)	14	16
Aperture Diameter (mm)	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	0° horizontal
Operation distance (prisma outlet /patient's eye distance)	68 mm	68 mm

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

Electrical lamp specifications

Device operating voltage	12V AC -10%+20%-15V DC ±5%	12V AC -10%+20%-15V DC ±5%

Transformer specifications

Table top standard size	380 x 500 mm	380 x 500 mm
Power supply voltage	100V/120V/230V/240V CA ±10%	100V/120V/230V/240V CA ±10%
FUSES: 5x20 mm	100-120V CA --- 1 A 230-240V CA --- 0,5 A	100-120V CA --- 1 A 230-240V CA --- 0,5 A
Maximum power absorbed	25 VA	25 VA

Transformer Switching

Table Switching	50,8 x 76,2 mm	50,8 x 76,2 mm
Power supply voltage	100V/120V/230V/240V CA ±10%	100V/120V/230V/240V CA ±10%
FUSES: 5x20 mm	1,6 A	1,6 A
Maximum power absorbed	25 VA	25 VA

Other features

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

6.4. TECHNICAL SPECIFICATIONS - MODEL SL 9900

Minimum slit aperture / Tyndall Scattering	0.2 mm
Slit maximum length	12 mm
Continuously adjustable slit length	1.0 – 12 mm
Slit projection index	1X
Aperture diaphragm	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	Luminoso articolato
Chinrest module : chinrest height adjustment	66 ± 1 mm

Tensione operativa dello strumento	-10% +20% 12V AC - 15V DC ±5%

Transformer specifications

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

Caratteristiche Switching

Table Switching	50,8 x 76,2 mm	50,8 x 76,2 mm
Power supply voltage	100V/120V/230V/240V CA ±10%	100V/120V/230V/240V CA ±10%
FUSES: 5x20 mm	1,6 A	1,6 A
Maximum power absorbed	25 VA	25 VA

Other features

Lamp size	299x313x(644±15) mm
Lamp weight	8,7 Kg
Digital lamp weight	9,4 Kg

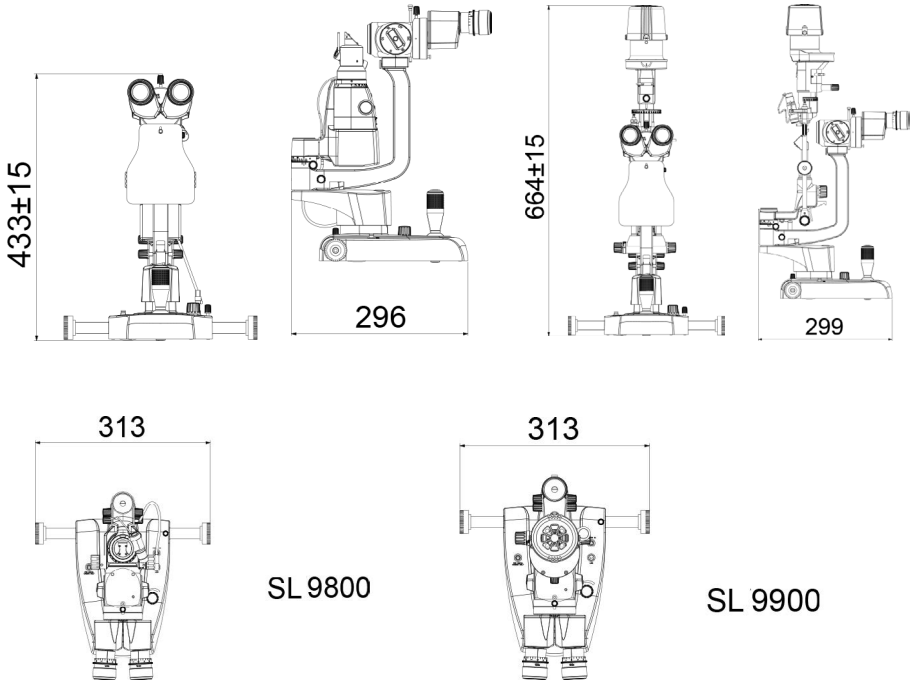
6.5. STEREOSCOPIC MICROSCOPE

Microscope Model	2x				3x				5x				Zoom
Type	Greenough convergent binocular microscope				6° Galileian convergent binocular microscopeInput change system								
	Two-position rotating lens				Three-position rotary drum				Five-position rotary drum				Continuous
Eyepieces	10x st.		16x		12.5x				12.5x				12.5x
Ingrandimenti totali	10x	16x	16x	25x	10x	16x	25x	6x	10x	16x	25x	40x	6x-33x
Actual visual field: (mm)	18.5	12	16	10.5	24	14	8	37	24	14	8	5.2	32 – 6,2
Interpupillary distance	51.5-87 mm				48.5-80 mm								

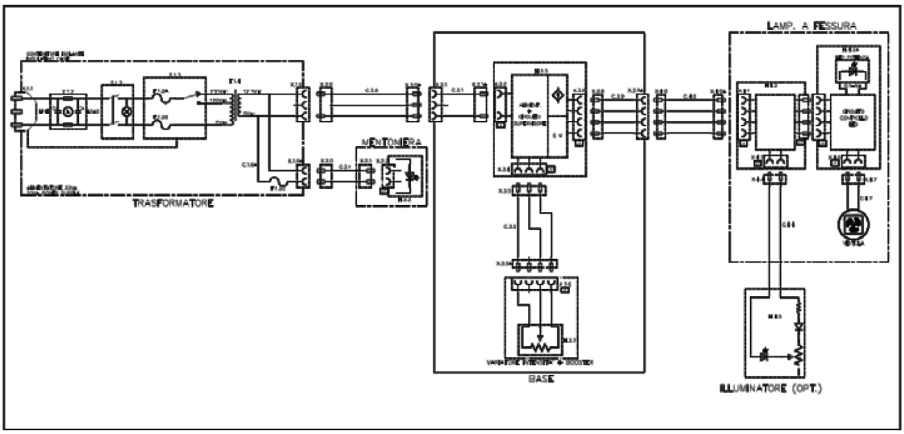
6.6. BASE WITHO RTHO GONALMOVEME NTSCO NTROLLEDB Y SI NGLE JOYSTIC K (X,Y,Z)

Side-to-side or lateral movement (x)	107 ± 1 mm
Forward and backward or longitudinal movement (y)	113 ± 1 mm
Upward and downward or vertical movement (z)	30 ± 1 mm
Fine horizontal movement (x,y)	14 ± 0,5 mm

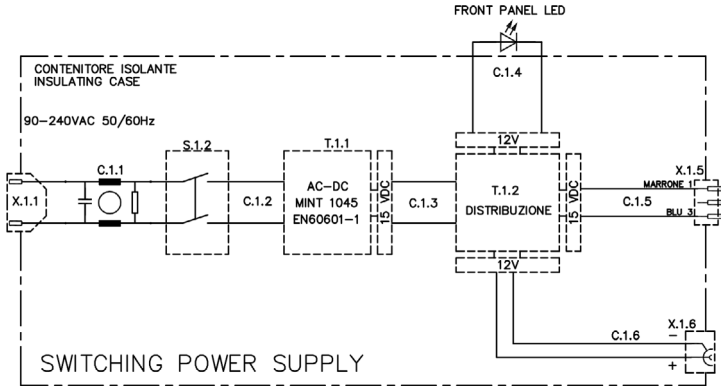
6.7. LAMPS SIZE



6.8.2. FUNCTIONAL BLOCK DIAGRAM MODEL SL 9800 - SL 9900



6.8.3. FUNCTIONAL BLOCK DIAGRAM SWICHING POWER SUPPLY



7. GUIDANCE AND MANUFACTURER'S DECLARATION

7.1. ELECTROMAGNETIC EMISSION

TABLE 1 - Guidance and manufacturer's declaration – electromagnetic emission		
The equipment SL 9800 - SL 9900 is intended for use in the electromagnetic environmentspe-cified below. The customer or the end user of the SL 9800 - SL 9900 should assure that it is used in such an environment.		
Emission test	compliance	Electromagnetic environment - guidance
RF emission – CISPR 11	Group 1	The SL 9800 - SL 9900 uses RF energy only for its internal function. Therefore its emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emission – CISPR 11	Class B	The SL 9800 - SL 9900 is suitable for use in all establishments including domestic establishments and tho-se directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emission IEC 61000-3-2	Class A	The SL 9800 - SL 9900 is suitable for use in all establishments including domestic establishments and tho-se directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
Voltage fluctuation emission flicker IEC 61000-3-3	Complies	The SL 9800 - SL 9900 is suitable for use in all establishments including domestic establishments and tho-se directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.

7.2. ELECTROMAGNETIC IMMUNITY

TABLE 2 - Guidance and manufacturer's declaration – electromagnetic immunity			
The equipment SL 9800 - SL 9900 is intended for use in the electromagnetic environment specified below. The customer or the end user of the SL 9800 - SL 9900 should assure that it is used in such an environment.			
Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment - guidance
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	Mains power quality should be that of a typical commercial or hospital environment
Voltage Dips, Short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% Ut for 0,5 cycle 40% Ut for 5 cycles 70% Ut for 25 cycles <5% Ut for 5 sec	<5% Ut for 0,5 cycle 40% Ut for 5 cycles 70% Ut for 25 cycles <5% Ut for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the SL 9800 - SL 9900 requires con-tinued operation during power mains interruptions, it is recommended that the SL 9800 - SL 9900 be powered from an Uninter-ruptible 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

Note: Ut is the AC mains voltage prior to application of the test level.

TABLE 3 - Guidance and manufacturer's declaration – electromagnetic immunity.

The equipment SL 9800 - SL 9900 is intended for use in the electromagnetic environment specified below. The customer or the end user of the SL 9800 - SL 9900 should assure that it is used in such an environment

Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic environment - guidance
			Portable and mobile RF communication equipment should be used no closer to any part of the SL 9800 - SL 9900 , including cables, than the recommen-ded separation distance calculated from the equation applicable to the frequency of the transmitter.
Conducted RF IEC 61000-4-6	3Vrms 150 kHz to 80 MHz	3 Vrms	Recommended separation distance d = 1.167*sqrt (P)
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2,5 GHz	3 V/m	d = 1.167* P 80 MHz to 800 MHz d = 2.333*sqrt(P) to 800 MHz a 2.5 GHz
			Where P is the maximum output power rating of the transmitter in watts(W) according 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.

B1. INSTALLATION AND COMMISSIONING

B1.1. TRANSPORT AND STORAGE

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.

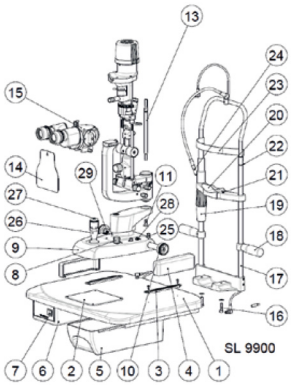
B1.2. ASSEMBLY

1. 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:

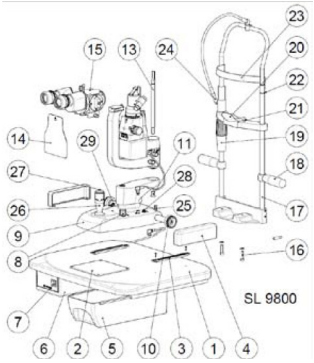
a) Place the table shaft in the three-legged base;
b) Lock the two parts together with the two socket head screws using the socket wrench supplied with the three-legged base;
c) Insert the plate under the instrument table onto the pivot coming out of the shaft;
d) Fix the top to the bottom by tightening the two socket head screws.

For self-balanced or electric table base (see the figure on the right):

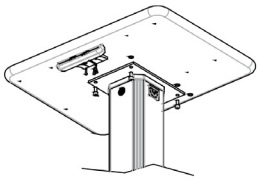


The table top will be ready for assembly to the table base. In this case, follow the instructions below;

a) Position the table on the base plate and insert the screws supplied;
b) Fix the assembled unit by tightening the 4 socket head screws.



2. Unscrew the two socket head screws (16) under the chinrest. Insert the screws in the chinrest module (17) and align its holes with the holes of the table top. Tighten the screws using the wrench provided with the device (80).
3. Place the base with orthogonal movements (9) on the slides (3) on top of the instrument holder table (1); make sure the wheels are aligned (10). Lock the device with the knob (25) on the right side of the base, above the wheel axis.
4. Fix the lamp top by tightening the screw (11).
5. Fix the guards (4) along the slides by inserting the tags into their slots..
6. Put the microscope in place (15) making sure it is abut against the lock (39), then fix it with the knob (34) on the right of the microscope.
7. Fix the shielding glass (14) to the pivot.



B1.3. CONNECTION

MODEL SL9800

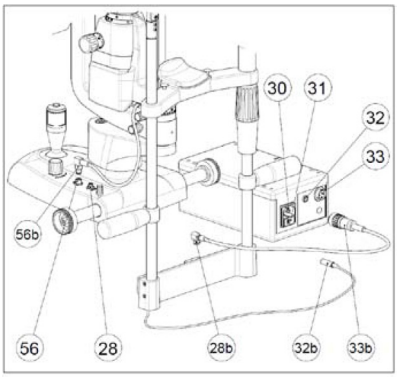
1. Plug the Lamp power supply cable into the socket on the table (see the chapter on MAINTENANCE).

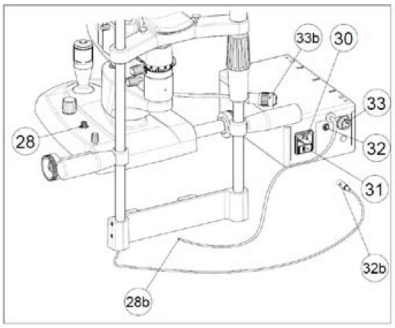
2. Plug the fixation point supply cable (32b) in the socket on the back of the transformer (32).

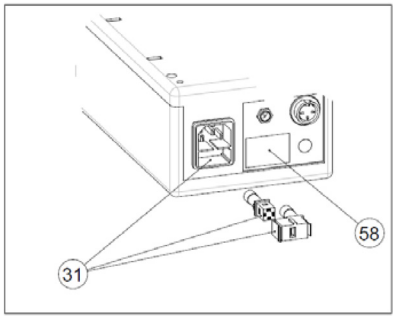
3. Make sure the voltage switch (31) on the mains socket is set to the proper voltage for the device to be connected. If this is not the case, remove the small drawer and turn the switch until the required voltage value is displayed. Warning!! If the Slit lamp is supplied without a transformer box, make 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 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.







MODEL SL9900 AND SL990 ELITE

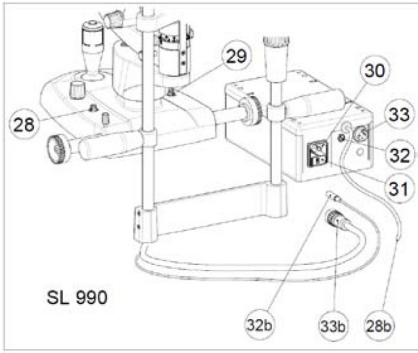
1. Plug the supply cable from the chinrest module, into the socket on the head of the slit lamp (see also the chapter on MAINTENANCE).

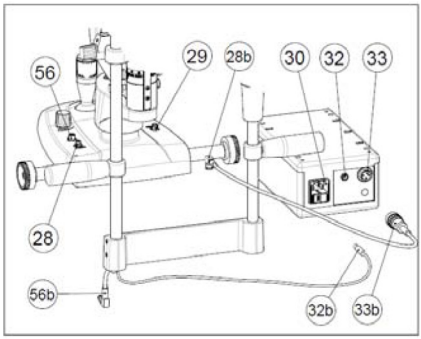
2. Plug the fixation point supply cable (32b) in the socket on the back of the transformer (32).

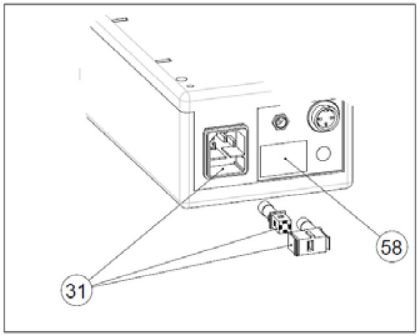
3. Make sure the voltage switch (31) on the mains socket is set to the proper voltage for the device to be connected. If this is not the case, remove the small drawer and turn the switch until the required voltage value is displayed. Warning!! If the Slit lamp is supplied without a transformer box, make 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



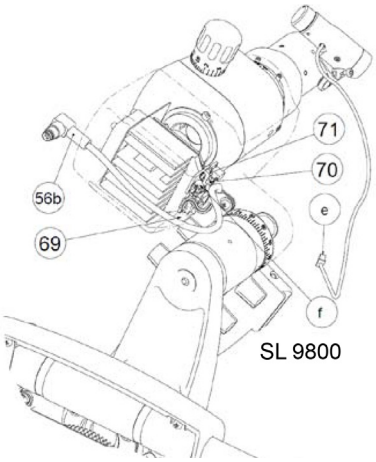




B2. TECHNICAL SPECIFICATIONS

B2.2. ASSEMBLY OF THE LED LIGHTING SYSTEM

MODEL SL 9800



1. Place the external illuminator support on the prismaholder head (66)
2. Fix the support with the screw supplied.
3. Connect the plug (and) to the LED card outlet (f).

B2.3. ASSEMBLY OF VIDEO CAMERA MOUNTS

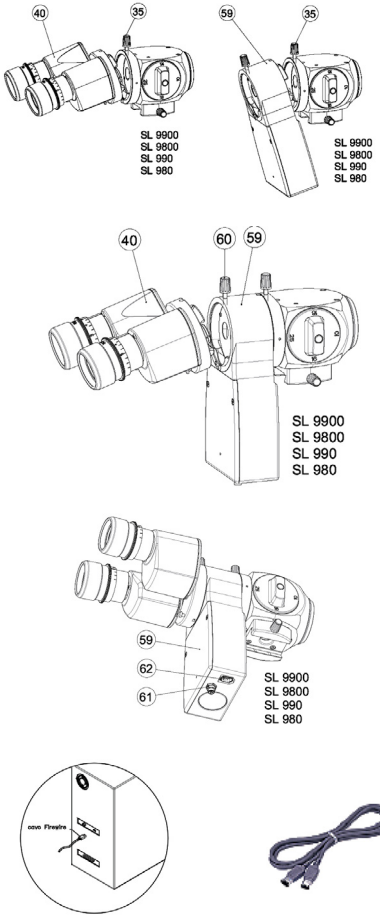
Remove the slit lamp from packaging; Remove the computer (if present) from packaging; Also remove the monitor and keyboard (if present) from the packaging. After proper assembly and connection (see the slit lamp user manual annexed) place the slit lamp on the table top.

Install the splitter as shown in the drawings on the right. Unlock the knob (35) and remove the binocular (40), then insert the digital camera splitter (59) and fix it by locking the knob (35).
Put the binocular back in place (40) in the camera separator compartment (59) and fix it by locking the knob (60).

Connect the socket (61) under the digital camera (59) to the socket at the base of the device (29), using the cable supplied.

Connect the Firewire cable supplied (62b) to the Firewire port (62) under the digital video camera (59), connect the plug on the other end of the Firewire cable to the port on the back of the computer

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 Firewire cable.

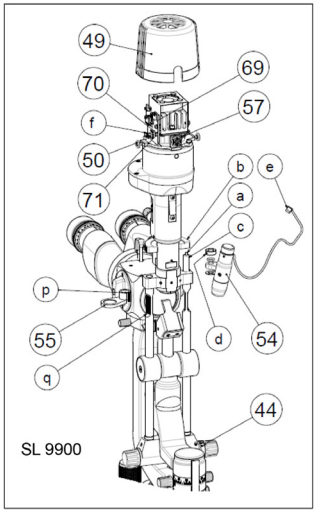


⚠	**WAR NING!** **The software requires a minimum display resolution of 1024 x 768 pixel to run.** **If the software is installed on a laptop, the Firewire digital camera will require an auxiliary 12Vdc power supply unit .**

B2.5. ASSEMBLY OF THE EXTERNAL ILLUMINATOR

MODEL SL 9900

Assembly instructions for the external illuminator:



1. Turn the knob (44) so that the rod (a) is as low as possible.
2. Push the part (b) upwards.
3. Insert the light (54) in the tube (c).
4. Tighten the locking grub screw (d).
5. Insert the illuminator (54) cable (e) into the LED card outlet (f).

Assembly instructions for the diffuser:

1. Insert the diffuser (55) through the opening (p) on the rod (q) as shown in the figure..

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