

SLIT LAMPS

INSTRUCTIONS FOR USE

SL9800 / SL9900 / SL9900 ELITE

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1 INTRODUCTION

The device is the result of a long research period, conducted by experts to give the product technical innovation, quality and design.

The device can be easily used thanks to the guided manual capture and the electronic control of all the functions of the device.

1.1 SYMBOLS



Within the instructions for use, on the package or on the device, there can be the following symbols:

Symbol	Meaning
	Caution
	Warning, electricity
	Read the instructions for use
	General mandatory action sign
	Note. Useful information for the user
	General prohibition sign
	Manufacturer
	CE Marking (Directive 93/42/EEC) Identification number of the notified body (IMQ)



Waste disposal in compliance with the Directive 2012/19/EU (WEEE), and 2011/65/EU (RoHS II)

1.1.1 DEVICE SYMBOLS

Symbol	Meaning
	Type B applied part
	Class II equipment

1.2 GENERAL WARNINGS

THIS INSTRUCTIONS FOR USE IS REFERRED TO THE DEVICES SL9800 AND SL9900.

THE DEVICE SL9800 HAS THE ILLUMINATION FROM BELOW. THE DEVICE SL9900 HAS THE ILLUMINATION FROM ABOVE THE OPTION OSCILLATION OF THE LAMP GROUP.

THE MODELS ARE IDENTIFIED WITH THE LETTERS XX DEPENDING ON THE TYPE OF MICROSCOPE INSTALLED ON THE OBSERVATION GROUP.

THE MODELS ARE IDENTIFIED WITH THE LETTERS XX-D IF ON THE OBSERVATION GROUP IS INSTALLED THE DIGITAL VISION HR VIDEO CAMERA AND THE WHITE LED ILLUMINATOR KIT.

THE DEVICES SL9800 AND SL9900 IN THE MODELS XX-D HAVE THE DIGITAL VISION HR VIDEO CAMERA WITHOUT THE FUNCTION BUTTONS.

THE DEVICE SL9900, MODEL ELITE XX-D HAS THE DIGITAL VISION HR VIDEO CAMERA WITH THE FUNCTION BUTTONS AND THE WHITE LED ILLUMINATOR KIT.



Within the instructions for use, the paragraphs dedicated to one or another device are marked with SL9800 or SL9900.

The paragraphs dedicated to one or another model are marked with XX, XX-D or ELITE XX-D.

When not specified the paragraph is valid for all the devices and models.

THE ORIGINAL TEXT IS IN ITALIAN.



Before using the device or if you don't use it since a long time, read these instructions carefully. Read the instructions given in the instructions manual and reported on the device?



Keep this manual close by for future consultation. If you should decide to sell this appliance to other people, remember to also include these instructions, complete and readable



Keep the original box and packaging, as the free-of-charge service does not cover any damage resulting from inadequate packaging of the product when this is sent back to an Authorized Service Center.



Before using the device check that there is no sign of damages due to transport or an incorrect storage, that could compromise the correct functioning of the device.



It is forbidden to reproduce, totally or partially, texts or images contained in these instructions for use without the written authorization of the Manufacturer.



The Manufacturer reserves himself the right to modify the contents of the instructions for use, without notice.

1.3 NORMATIVE REFERENCES

1.3.1 COMMUNITY DIRECTIVES

- Directive 93/42/EEC and subsequent modifications and integrations concerning medical devices
- Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)

1.3.2 TECHNICAL STANDARDS

- IEC 60601-1: 2005 + A1:2012 - Medical electrical equipment - Part 1: General requirements for basic safety and essential performance
- EC 60601-1-2:2014 Edition 4 Collateral Standard: Electromagnetic disturbances - Requirements and tests
- UNI EN ISO 15004-1:2009 Ophthalmic Instruments. Fundamental requirements and test methods - Part 1: General requirements applicable to all ophthalmic instruments
- UNI EN ISO 15004-2:2007 Ophthalmic Instruments. Fundamental requirements and test methods - Part 2: Light hazard protection
- UNI CEI EN ISO 14971:2012 Medical devices. Application of risk management to medical devices.

1.3.3 QUALITY MANAGEMENT SYSTEMS STANDARDS

- UNI CEI EN ISO 13845:2016 Medical devices. Quality management systems - Requirements for regulatory purposes

1.4 WARRANTY

The Manufacturer is responsible for the device conformity to the Community directive 93/42/EEC as amended by the 2007/47/EC for:

- features
- safety and reliability
- CE marking

The Manufacturer refuses any responsibility for:

- installation and activation not activated in conformity to the indications and the precautions reported in the instructions for use
- use not in compliance with the instructions for use and precautions reported in the instructions for use
- use of accessories or spare parts not provided or suggested by the Manufacturer
- repairs and safety controls not effectuated by expert, qualified, trained and personnel authorized by the Manufacturer
- electrical system of the space where the device is installed not in compliance with the technical standards, the laws and regulations in effect in the country of installation of the device
- direct or indirect consequences or damages to objects or persons, originating from the improper use of the device or erroneous clinical analysis originating from its use

The Manufacturer guarantees the device for 24 months after invoicing. The Warranty includes the substitution, at the Manufacturer's or an Authorized Service Center, of components and materials and the relative labor. The shipping and transport fees are to be paid by the client.

The warranty does not cover:

- reparations of faults originating from natural disasters, mechanical shocks (fall, hit, etc), electrical system faults, negligence, improper use, maintenance or reparations carried out with non-original materials
- any other improper use or not intended by the Manufacturer
- damages caused by service lack or inefficiency, originating by causes or circumstances out of the Manufacturers control
- the parts subject to usage and/or deterioration originating from the normal use and those that might be broken because of an improper use or maintenance carried out by personnel non-authorized by the Manufacturer.

To ask maintenance interventions or to have technical information about the device, address to an Authorized Service Center or directly to the device Manufacturer.



The client will not be refunded for damages originating from the device halt.

1.5 MANUFACTURER IDENTIFICATION

CSO S.r.l.

Costruzione Strumenti Oftalmici

Via degli Stagnacci, 12/E

50018 - Scandicci (FI) - ITALY

phone: +39-055-722191 - fax +39-055-721557

cso@csitalia.it

www.csitalia.it

2 SAFETY

2.1 SAFETY WARNINGS

**DANGER**

Electric shock danger. Do not let water fall on the device. Do not immerse the device in water or other liquids.

**DANGER**

Electric shock danger. If the power cables are damaged they must be replaced in an Authorized Service Center to prevent any risk.

**DANGER**

Electric shock danger. Unplug the power cable from the mains socket before disinfecting the device and before any maintenance operation.

**CAUTION**

Do not use the device if visibly damaged. Periodically inspect the device and the connection cables to verify if there are damage signs.

**CAUTION**

Always keep the device out of the reach of children.

**CAUTION**

Danger of device fall. Do not leave free cables which can represent an obstacle or a danger for the patient or the operator.

**CAUTION**

Danger of stumbling and falling. Do not let the power cord or the connection cables free in a place where people could walk.

**CAUTION**

Electric shock risk. Do not touch the power supply cables with wet hands.

**CAUTION**

Electric shock risk. Do not leave the power supply cables in contact with sharp corners or objects. Collect and attach always the power supply cables.

**CAUTION**

If you notice a wired odor or smoke coming out of the device or if it emanates heat, turn it off immediately. Do not keep using a damaged product or a damaged part. Danger of injuries.

**CAUTION**

The electrical net must have a Residual-Current Circuit Breaker ($I_{\Delta n}=30\text{mA}$) Thermal-Magnetic Circuit Breaker ($V_n=230\text{V}$) to protect the device. Place the device in such a way that the power socket is easily accessible.



It is forbidden to carry out any technical operation on the device that is not recalled or described in these instructions for use.



It is forbidden to place the device in humid, dusty places or environments subject to sudden temperature and humidity variations.



It is forbidden to use any extension cable not authorized by the manufacturer.



It is forbidden to use the device outdoors.



The device does not generate and does not receive any electromagnetic interference if it is placed near other electrical appliances. No preventive or corrective actions are required.

2.2 DEVICE IDENTIFICATION

2.2.1 REGISTRATION DATA IN THE MEDICAL DEVICES LIST

CND (national medical devices classification)

Repertoire number (progressive system number attributed to the device)

Market release date

The device registration data can be verified on the Ministero della Salute website on this page:

[Ministero della Salute - Ricerca dispositivi](#)

2.2.2 DEVICE DATA PLATE

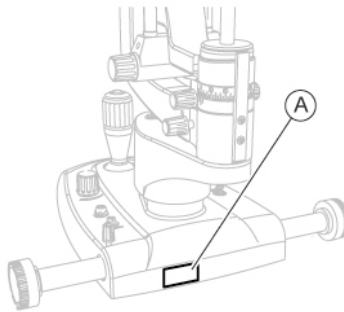


Fig 1 - Plates position

Pos	Description
A	Device data plate

Device SL9800 model XX and XX-D



Fig 2 - Data plate for the model XX



Fig 3 - Data plate for the model XX-D

Device SL9900 model XX and XX-D



Fig 4 - Data plate for the model XX



Fig 5 - Data plate for the model XX-D

Device SL9900 model ELITE XX-D



Fig 6 - Data plate for the model ELITE XX-D

2.2.3 POWER SUPPLY DATA PLATE



Fig 7 - Power supply data plate

2.3 INTENDED USE

The SLIT LAMPS, models SL9800/SL9900/SL9900ELITE, 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 (device SL9800)

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 (device SL9900)

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 gonioscopy and in the eye fundus examination.



CAUTION

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 video camera Digital Vision HR.

Video camera Digital Vision HR



The video camera Digital Vision HR is an optional for the models XX-D and ELITE XX-D.

For the device model ELITE XX-D, the video camera Digital Vision HR has function buttons to allow a rapid access to the operator's personalized functioning settings.

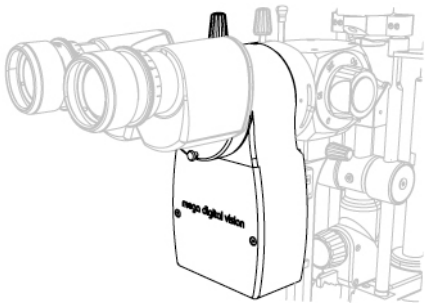


Fig 8 - Video camera Digital Vision HR (XX-D)

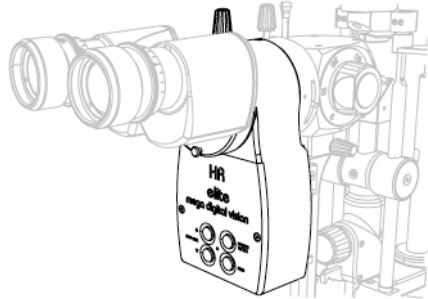


Fig 9 - Video camera Digital Vision HR (ELITE XX-D)

The new digital video camera Digital Vision HR has been designed for ophthalmological purposes. The video 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 Digital Vision HR is perfectly integrated with the new application software Phoenix, 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 video 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 is an optional for the devices model XX. The white LED illuminator kit is standard equipment for the devices models XX-D and model ELITE XX-D.

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 video camera Digital Vision HR is installed, the device must be used in combination with a PC and the application software denominated Phoenix version 3.4.

System minimum requirements (digital HR 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).



Read the instructions for use of the application software.



The PC must be compliant to the norm IEC 60950-1 Information technology equipment - Safety - Part 1: General requirements.

If the PC is installed in the patient area it is necessary to install an isolation electrical supply compliant with the directive IEC 60601-1:2005 + A1:2012- "Medical electrical equipment - Part 1: General requirements for basic safety and essential performance".

It is possible to connect other accessories to the PC (printer, modem, scanner, etc) through the analogical or digital interfaces.

The accessories (printer, modem, scanner, etc) must be installed outside the patient area.



The accessories must be compliant to the norm IEC 60950-1 Information technology equipment - Safety - Part 1: General requirements.

If the accessories are installed in the patient area it is necessary to install an isolation electrical supply compliant with the directive IEC 60601-1:2005 + A1:2102 - "Medical electrical equipment - Part 1: General requirements for basic safety and essential performance".



Patient area: any volume in which intentional or unintentional contact can occur between patient and parts of the system or between patient and other persons touching parts of the system.

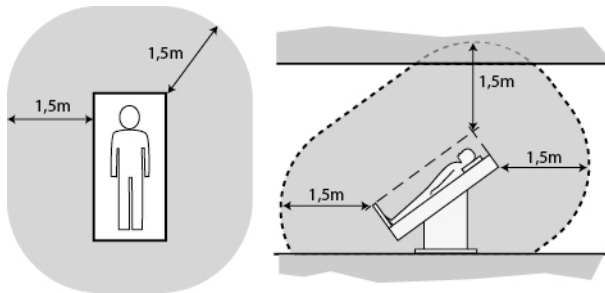


Fig 10 - Patient area

2.4 MEDICAL DEVICES CLASSIFICATION

Technical data	Value
Classification in compliance with the attached IX to the Directive 93/42/EEC and successive modifications	Class I

2.5 MEDICAL ELECTRICAL DEVICES CLASSIFICATION

Classification in compliance with the technical specification EN 60601-1:2005 + A1:2012

Technical data	Value
Type of protection against the direct and indirect contacts	Class II
Applied parts	Type B
Protection degree against humidity	IP20 (no protection against liquid infiltration)
Sterilization or disinfection method	This device can be disinfected
Protection degree in presence of anesthetics or inflammable detergents	No protection
Electrical connection degree between device and patient	Appliances with part applied on the patient
Use conditions	Continuous functioning

2.6 CLASSIFICATION FOR PHOTOBIOLOGICAL SAFETY

Technical data	Value
Device classification in accordance with EN 15004-2	Risk group 2

2.7 ENVIRONMENTAL CONDITIONS

Phase	Technical data	Min	Max
Transport	Temperature	-40°C	+70°C
	Atmospheric pressure	500 hPa	1060 hPa
	Relative humidity	10%	95%
Storage	Temperature	-10°C	+55°C
	Atmospheric pressure	700 hPa	1060 hPa
	Relative humidity	10%	95%
Use	Temperature	+10°C	+35°C
	Atmospheric pressure	800 hPa	1060 hPa
	Relative humidity	30%	90%



CAUTION

Danger of device damages. 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.

2.8 DISPOSAL AT THE END THE USEFUL LIFE



Instruction for disposal of product correctly according to European Directive 2012/19/EU, and 2011/65/EU about the reduction of use of dangerous substances in the electrical and electronic equipments, and waste disposal.

At the end of its useful life, the device must not be disposed of as urban waste. The device can be delivered to the appropriate separate waste collection centers set up by municipal administrations or to retailers that offer this service. Separately disposing an electrical device prevents possible negative consequences for the environment and health caused by its improper disposal, and lets the materials it is made of to be recycled so as to achieve a significant savings of energy and resources. On the label of the device there is the symbol of the of the crossed-out wheeled bin. The graphic symbol of the crossed-out wheeled bin, indicates the obligation to collect and dispose separately the electrical and electronic equipment at the end of their useful life.



The user has to consider the effects potentially dangerous for the environment and the human health originating from an improper disposal of the whole device or its parts.

In case the user wishes to dispose of the device used at the end of its useful life, the Manufacturer facilitates the possibility of its reuse and the recovery and recycling of the materials contained therein. This to prevent the release of hazardous substances into the environment and to promote conservation of natural resources. Before disposing the device, it is necessary to take into consideration the European and national regulations that order what follows:

- not to dispose as urban waste but collect it separately and address to a firm specialized in the disposal of electrical and electronic equipment or to the local administration in charge for waste collection.
- in the event that a new device 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 device, the Distributor or Manufacturer are legally required to collect the old device.

- if the user decides to dispose a used device, put on the market after the 13th August 2005, the Distributor or the Manufacturer have to collect it.
- the Manufacturer takes care, by joining a consortium for the technological devices waste, of the treatment and the recycling of the used device by paying its costs.



The Manufacturer is available to give the user all the information about the dangerous substances contained in the device, and on the recycling modalities of those substances and about the possibility of a reuse of the used device.

Strict sanctions for transgressors are provided for by law.

For specific information about the disposal in other countries than Italy, contact the local Dealer.

2.9 MANUFACTURER DECLARATIONS

2.9.1 ELECTROMAGNETIC EMISSIONS

The device is designed to be used in a room with the following electromagnetic characteristics:

Emission test	Compliance	Electromagnetic environment
Radio frequency emission. CISPR 11	Group 1	The device uses radio frequency energy only for its inner functioning. The radio frequency emissions of the device are very low and should not cause interferences with the near appliances.
Radio frequency emission. CISPR 11	Class B	The device can be used in all the environments, included the domestic environment. The device can be connected directly to a low tension power supply net as there is in the housing units.
Harmonic emissions. IEC 61000-3-2	Class A	The device can be used in all the environments, included the domestic environment. The device can be connected directly to a low tension power supply net as there is in the housing units.

Emission test	Compliance	Electromagnetic environment	
Limitation of voltage changes, voltage fluctuations and flicker. IEC 61000-3-3	Compliant	The device can be used in all the environments, included the domestic environment. The device can be connected directly to a low tension power supply net as there is in the housing units.	
Immunity test	IEC 60601-1-2 test level	Conformity level	Electromagnetic environment
Electrostatic discharge. 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 the 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 input/output lines	±2 kV for power supply lines. Non-applicable	Mains power quality shall 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 shall 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% Un for 0.5 cycles. 40% Un for 5 cycles. 70% Un for 25 cycles. <5% Un for 5 s	<5% Un for 0.5 cycles. 40% Un for 5 cycles. 70% Un for 25 cycles. <5% Un for 5 s	Mains power quality shall be that of a typical commercial or hospital environment. If the user of the device requires continued operation during power mains interruptions, it is recommended that the device is powered from an uninterrupted power supply or battery.
Power frequency (50/60Hz) magnetic fields. IEC 61000-4-8	3 A/m	3 A/m	Power frequency of the magnetic fields should be that of a typical commercial or hospital environment.

Immunity test	IEC 60601-1-2 test level	Conformity level	Electromagnetic environment
RF conducted IEC 61000-4-6	3 Vrms from 150 kHz to 80 MHz	3 Vrms	(1)
RF conducted IEC 61000-4-3	3 V/m from 80 MHz to 2.5 GHz	3 V/m	

(1) Portable and mobile RF communication equipment should be used no closer to any part of the device, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

$$d=1,167*\sqrt{P}$$

$$d=1,167*\sqrt{P} \text{ 80 MHz to 800 MHz}$$

$$d=2,333*\sqrt{P} \text{ 800 MHz to 2,5 GHz}$$

P: is the maximum output power rating of the transmitter in watts (W) according to the transmitter Manufacturer.

d: is the recommended distance in metres (m) at which the portable radio frequency (RF) appliances can be used.

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:



(Un) is the AC mains voltage prior to application of the test level.

At 80 MHz and 800 MHz, the higher frequency range applies. These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

3 DEVICE DESCRIPTION

3.1 PROVISION DESCRIPTION

Device SL9800

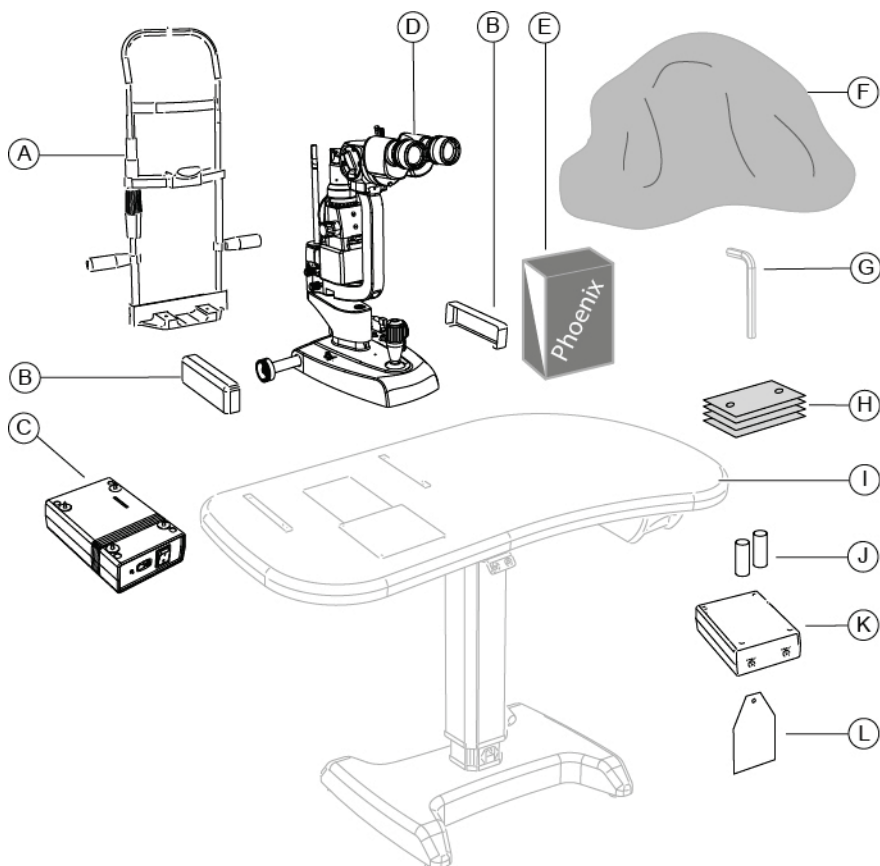


Fig 11 - Provision description

Pos	Denomination	Description
A	Chin rest	Adjustable height Adjustable distance between chin and forehead
B	Protection carter	Protection against accidental hand crushing
C	Power supply	
D	Device	Composed by an observation group with microscope and by a lamp group with LED illumination fixed on the instrument base.
E	Application software	Application software for image capture and device management.
F	Protective cover	optional Place on the device when it is not in use to protect it from dust
G	Set of hex keys with screws	optional
H	Package of paper for chin cup	
I	Electric table	optional Adjustable electric support surface with one or two columns. Drawer and auxiliary sockets with fairlead.
J	2 fuses	
K	Isolation transformer	optional 230V/230V for the use of the non electro-medical appliances in the patient area
L	Protection	

Device SL9900

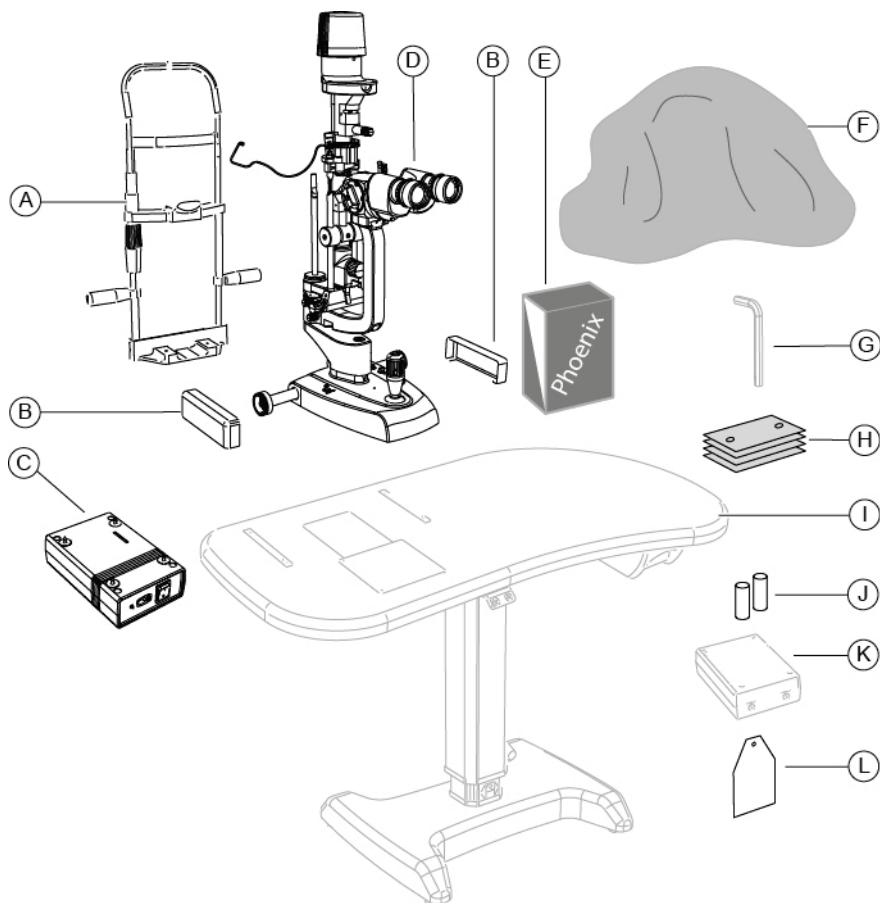


Fig 12 - Provision description

Pos	Denomination		Description
A	Chin rest		Adjustable height Adjustable distance between chin and forehead
B	Protection carter		Protection against accidental hand crushing
C	Power supply		
D	Device		Composed by an observation group with microscope and by a lamp group with LED illumination fixed above. The device has a system of oscillation of the lamp group.
E	Application software		Application software for image capture and device management.
F	Protective cover	optional	Place on the device when it is not in use to protect it from dust
G	Set of hex keys with screws	optional	
H	Package of paper for chin cup		
I	Electric table	optional	Adjustable electric support surface with one or two columns. Drawer and auxiliary sockets with fairlead.
J	2 fuses		
K	Isolation transformer	optional	230V/230V for the use of the non electro-medical appliances in the patient area
L	Protection		



For the list of accessories and available models contact the Manufacturer or the local Distributor.

3.1.1 DEVICE SL9800

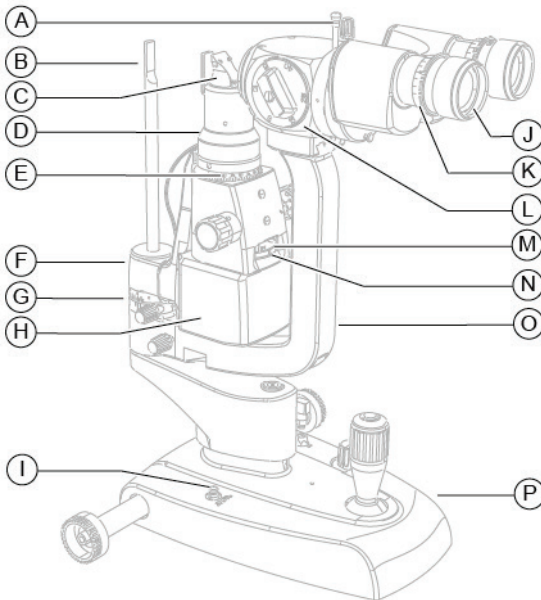


Fig 13 - Device SL9800 - components

Pos	Description
A	Filters insertion rod
B	Calibration rod
C	Light diffuser
D	Prisma holder head
E	Adjustment ferrule for the inclination of the slit with graduated scale
F	Lamp group arm
G	Graduated scale: indicates the position of the lamp group
H	LED illumination unit
I	Connection socket for video camera Digital Vision HR
J	Oculars
K	Ametropia correction graduated scale
L	Microscope
M	Adjustment ferrule for the height of the slit with graduated scale
N	Filters insertion command ferrule
O	Microscope arm
P	Base

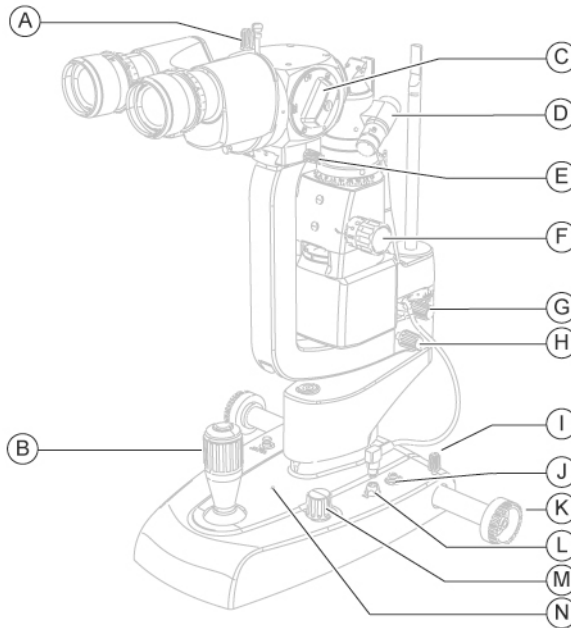


Fig 14 - Device SL9800 - components

Pos	Description
A	Binocular locking/unlocking knob
B	Joystick
C	Microscope magnifications knob
D	Additional LED illuminator (optional)
E	Microscope turning locking/unlocking knob
F	Slit width adjustment knob
G	Lamp group arm turning locking/unlocking knob
H	Observation group with microscope arm turning locking/unlocking knob
I	Device blocking knob
J	Power supply connector
K	Cogged wheels
L	Mains connector for lamp group supply
M	Light intensity adjustment knob
N	Functioning indicator

3.1.2 DEVICE SL9900

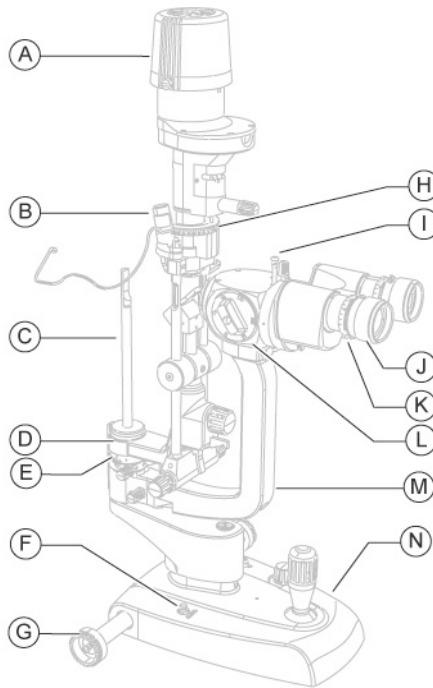


Fig 15 - Device SL9900 - components

Pos	Description
A	Refraction unit
B	Additional LED illuminator (optional)
C	Calibration rod
D	Lamp group arm
E	Graduated scale: indicates the position of the lamp group
F	mains connector for video camera Digital Vision HR
G	Cogged wheels
H	Graduated scale indicating the slit inclination
I	Filters insertion rod
J	Oculars
K	Ametropia correction graduated scale
L	Microscope
M	Microscope arm
N	Base

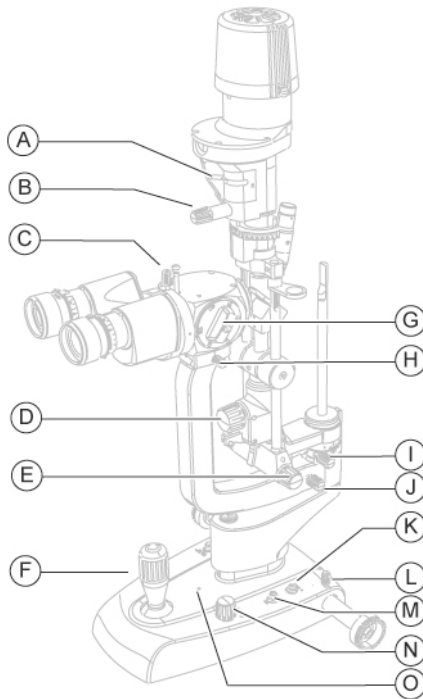


Fig 16 - Device SL9900 - commands

Pos	Description
A	Light filters insertion lever
B	Slit width adjustment knob
C	Binocular locking/unlocking knob
D	Slit inclination adjustment knob
E	Slit width adjustment knob
F	Joystick
G	Microscope magnifications knob
H	Microscope turning locking/unlocking knob
I	Lamp group arm turning locking/unlocking knob
J	Observation group with microscope arm turning locking/unlocking knob
K	Mains connector
L	Device blocking knob
M	Mains connector of the illumination unit
N	Light intensity adjustment knob
O	Functioning indicator

3.1.3 DEVICE SL9900 ELITE

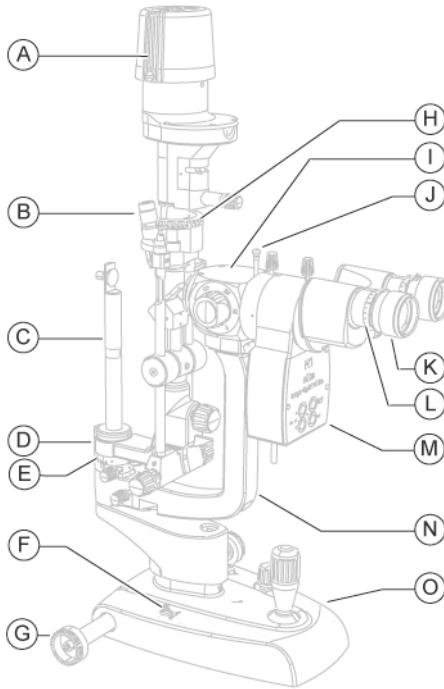


Fig 17 - Device SL9900 ELITE- components

Pos	Description
A	Refraction unit
B	Additional LED illuminator
C	Calibration rod with register
D	Lamp group arm
E	Graduated scale: indicates the position of illumination unit
F	mains connector for video camera Digital Vision HR
G	Cogged wheels
H	Graduated scale indicating the slit inclination
I	Microscope
J	Filters insertion rod
K	Oculars
L	Ametropia correction graduated scale
M	Video camera Digital Vision HR
N	Microscope arm
O	Base

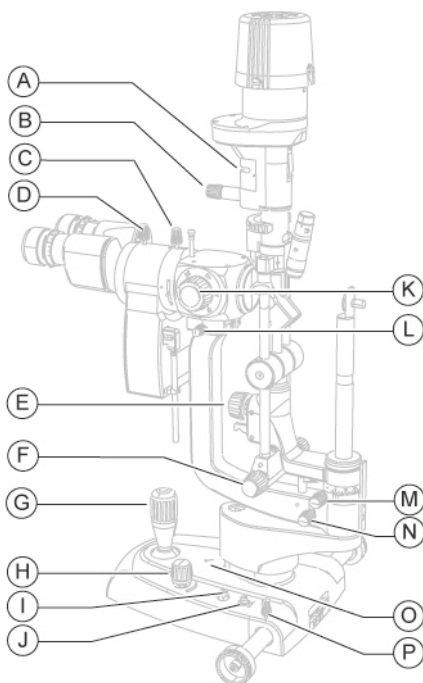


Fig 18 - Device SL9900 ELITE- commands

Pos	Description
A	Light filters insertion lever
B	Slit width adjustment knob
C	Video camera locking/unlocking knob
D	Binocular locking/unlocking knob
E	Slit inclination adjustment knob
F	Slit width adjustment knob
G	Joystick
H	Light intensity adjustment knob
I	Mains connector of the LED illumination unit
J	Mains connector
K	Change magnifications knob
L	Microscope turning locking/unlocking knob
M	Lamp group arm turning locking/unlocking knob
N	Observation group with microscope arm turning locking/unlocking knob
O	Functioning indicator
P	Device blocking knob

3.1.4 POWER SUPPLY

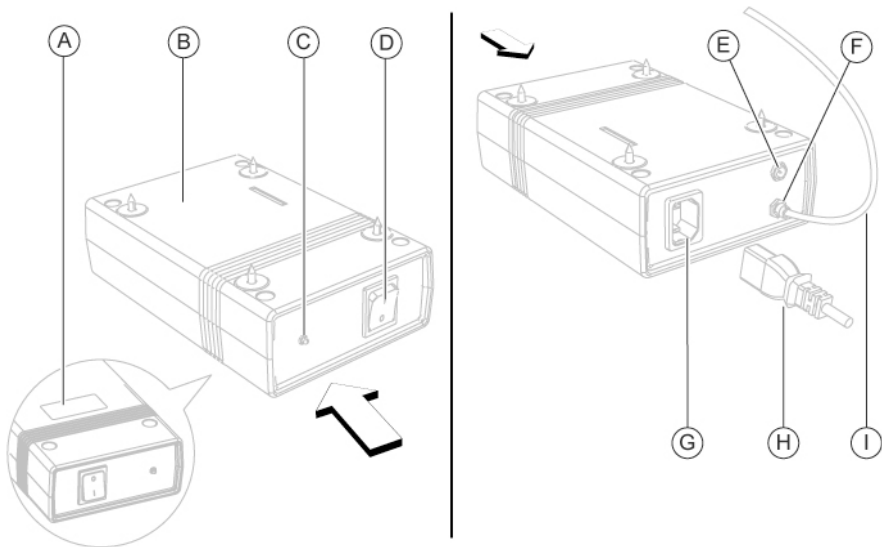


Fig 19 - Power supply

Pos	Description
A	Data plate
B	Power supply
C	Power ON control light
D	ON/OFF switch
E	Mains connector for fixation point
F	Device mains connector
G	Power supply mains connector
H	Power supply cable
I	Device power supply cable

3.1.5 CHIN REST

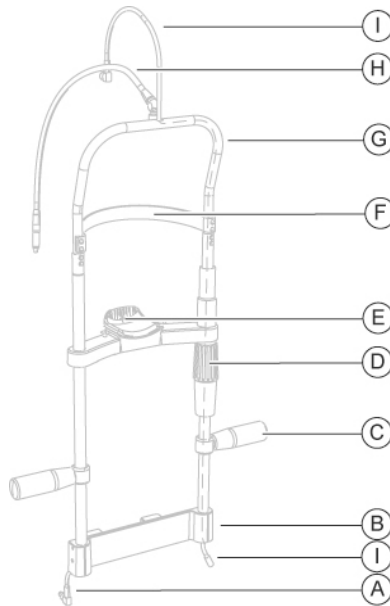


Fig 20 - Chin rest

Pos	Description
A	Connection cable for fixation point
B	Chin rest support
C	Handle
D	Knob
E	Chin cup
F	Forehead rest
G	Chin rest structure
H	Fixation point
I	Lamp connection cable (SL9900)

3.1.6 ELECTRIC TABLE (OPTIONAL)

Different table models are available accordingly to the client's choice. The electric table is composed by a support surface on which are installed the cogged guides for the device housing. The table has one or two telescopic columns, motorized, that allow to adjust the height of the support plane.



Fig 21 - One column table



Fig 22 - Two columns table



Read the instructions for use of the electric table.

3.2 TECHNICAL DATA

3.2.1 DEVICE SL9800

Technical data	Value
Supply voltage	120-230V \pm 10% 50/60 Hz 1A
Size (HxLxP)	440 x 313 x 335 mm
Device weight	7 kg
Base movement (x, y, z)	105 x 110 x 30 mm
Fine movement (x, y)	14 \pm 0,5 mm
Packaging size main unit	40x52x74(H) cm
Packaging size table top	60x65x22(H) cm
Consumables	Package of paper for chin cup

Illumination

Technical data	With prisma holder head	With split head
Protection degree of the slit	1.16X	1.3X
Slit width (continuous setting)	0 – 14 mm	0 - 16 mm
Slit width (continuous setting)	1.8 – 13 mm	2 - 15 mm

Technical data	With prisma holder head	With split head
Slit maximum length	14 mm	16 mm
Aperture diaphragms	14, 9, 5.5, 0.3 mm	16, 10.5, 6.5, 0.4 mm
Filters	Blue, red, green (red free)	Blue, red, green (red free)
Illuminator	LED illuminator	
Slit rotation	$\pm 90^\circ$ continuous on Tabo system	$\pm 90^\circ$ continuous on Tabo system
Incidence angle	0° horizontal	Angular double $\pm 11^\circ$
Rotation interval of the slit projector	$\pm 90^\circ$, angular scale, reference on 0°	$\pm 90^\circ$, angular scale, reference on 0°
Operation distance (prisma outlet/patient's eye distance)	68 mm	80 mm
Device operating voltage	15V DC	15V DC
Luminous source type	LED	LED
Luminosity adjustment	Continuous adjustment	Continuous adjustment
Luminous intensity	284000 Lux	284000 Lux

Chin rest

Technical data	Value
Fixation point	Red light adjustable
Chin rest stroke	70 mm ± 1

3.2.2 DEVICE SL9900

Technical data	Value
Supply voltage	120-230V \pm 10% 50/60 Hz 1A
Size (HxLxP)	675 x 313 x 335 mm
Device weight (XX, XX-D)	8,7 kg
Device weight (ELITE XX-D)	9,4 kg
Base movement (x, y, z)	105 x 110 x 30 mm
Fine movement (x, y)	14 \pm 0,5 mm
Packaging size main unit	40x52x74(H) cm
Packaging size table top	60x65x22(H) cm
Consumables	Package of paper for chin cup

Illumination

Technical data	With prisma holder head
Protection degree of the slit	1x
Slit width (continuous setting)	0 – 12 mm
Slit width (continuous setting)	1 – 12 mm
Maximal length of the slit	12 mm
Aperture diaphragms	12, 9, 5.3, 1, 0.2 mm
Filters	Blue, red, green (red free), gray
Illumination	LED illuminator
Slit rotation	\pm 90° continuous on Tabo system
Incidence angle	variable 0° / 5° / 10° / 15° / 20°
Rotation interval of the slit projector	+/-90°, angular scale, reference on 0° and +/-10°
Operation distance (prisma outlet/patient's eye distance)	80 mm
Device operating voltage	15V DC
Luminous source type	LED
Luminosity adjustment	Continuous adjustment

Technical data	With prisma holder head
Luminous intensity	284000 Lux

Chin rest

Technical data	Value
Fixation point	Red light adjustable
Chin rest stroke	70 mm \pm 1



To order the spare part see the code in the paragraph "**Spare parts list page 72**".

3.2.3 MICROSCOPE

2x microscope characteristics



The 2x microscope does not support the installation of the video camera Digital Vision HR.

Technical data	Value
Type	Convergent - 2 positions
Ocular convergence angle	13°
Oculars	10x
Ametropia compensation	+/- 8 D
Declared magnifications	10x / 16x
Visual field	18,5 mm / 12 mm
Interpupillary distance	from 51,5 mm to 87 mm

3x microscope characteristics

Technical data	Value
Type	Galilean convergent with magnification change system - 3 positions
Ocular convergence angle	6°
Oculars	12,5x
Ametropia compensation	+/- 8 D
Declared magnifications	10x / 16x / 25x / 25x (3 levels)
Real corresponding magnifications	8,5x / 14,8x / 25,6x (3 levels)
Visual field	from 26 mm to 8,5 mm (3 levels)
Interpupillary distance	from 50 mm to 80 mm
Barrier filter	Yellow

5x microscope characteristics

Technical data	Value
Type	Galilean convergent with magnification change system - 5 positions
Ocular convergence angle	6°
Oculars	12,5x
Ametropia compensation	+/- 8 D
Declared magnifications	6x / 10x / 16x / 25x / 25x / 40x (5 levels)
Real corresponding magnifications	5,6x / 8,5x / 14,8x / 25,6x / 39,3x (5 levels)
Visual field	from 41 mm to 5,7 mm
Interpupillary distance	from 50 mm to 80 mm
Barrier filter	Yellow

Zoom microscope characteristics

Technical data	Value
Type	Galilean convergent with magnification variation continuous variable
Ocular convergence angle	6°
Oculars	12,5x
Ametropia compensation	+/- 8 D
Declared magnifications	7x / 30x
Visual field	from 30 mm to 7,4 mm
Interpupillary distance	from 50 mm to 80 mm
Barrier filter	Yellow

4 DEVICE USE

4.1 HOW TO INSTALL THE DEVICE



CAUTION

Danger of device fall. The electric table must be installed on a horizontal and stable surface.

- 1 Place the electric table in the room. The electric table must be lifted by two people.
- 2 If present, block the table wheels. Lower the lever of the brake.
- 3 Place the power supply under the support plane. Screw the screws in the four holes.

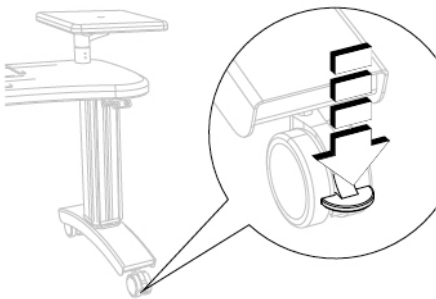


Fig 23 - Table placement

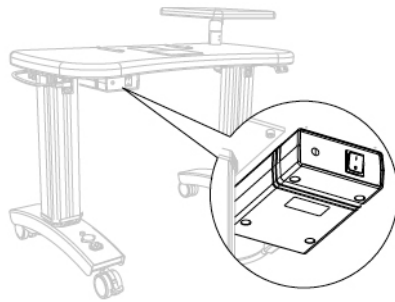


Fig 24 - Power supply placement

- 4 Place the device on the support surface on the cogged guides.
- 5 Block the two protection carters to the cogged wheels on the support plane.

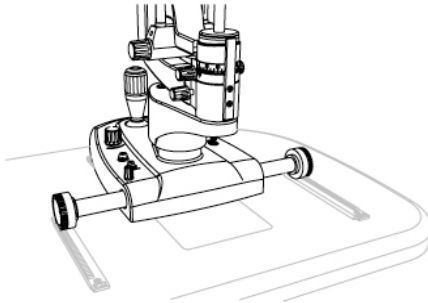


Fig 25 - How to place the device

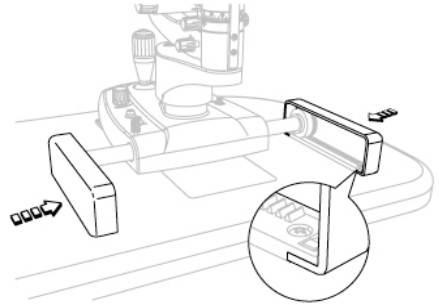


Fig 26 - Protection carters placement

- 6 Install the chin rest. Under the support plane, there are two screws to block the chin rest support to the support plane.
- 7 Electrical connection between the several components.

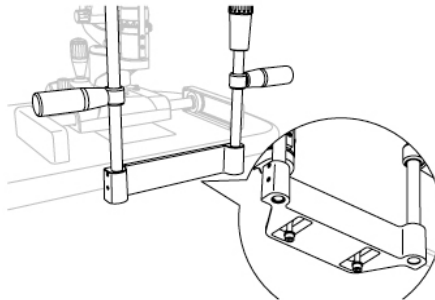


Fig 27 - Chin rest placement

4.2 HOW TO CONNECT THE DEVICE

Device SL9800

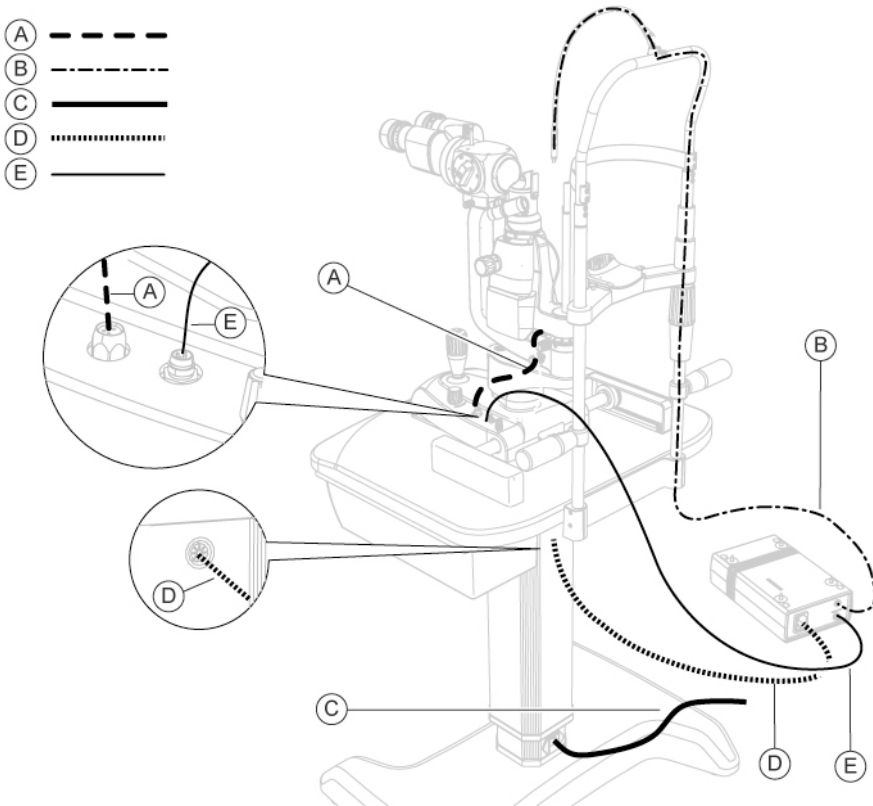


Fig 28 - How to connect the device SL9800

Pos Denomination

- A** Power cable for the connection between the illumination and the device base
- B** Connection cable for fixation point on the chin rest
- C** Power cable for the connection of the electric table with the power supply
- D** Power cable for the connection of the electric table with the power supply
- E** Power cable for the connection between the power supply and the device

SL9900

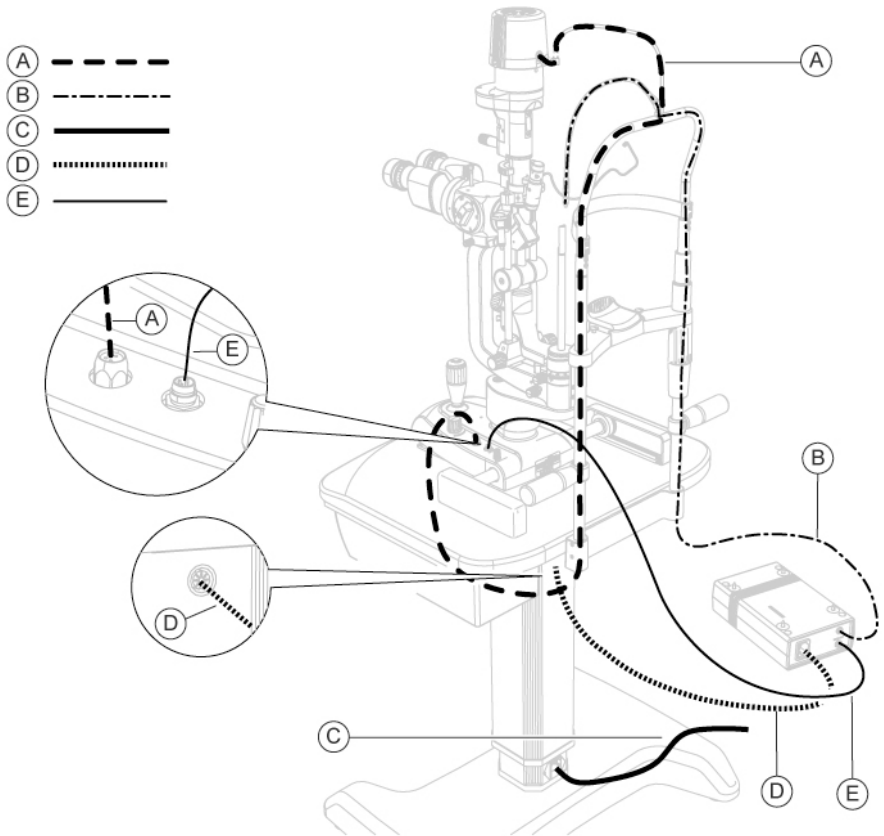


Fig 29 - How to connect the device SL9900

Pos Denomination

- A** Power cable for the connection between the illumination and the device base
- B** Connection cable for fixation point on the chin rest
- C** Power cable for the connection of the electric table with the power supply
- D** Power cable for the connection of the electric table with the power supply
- E** Power cable for the connection between the power supply and the device

SL9900 ELITE

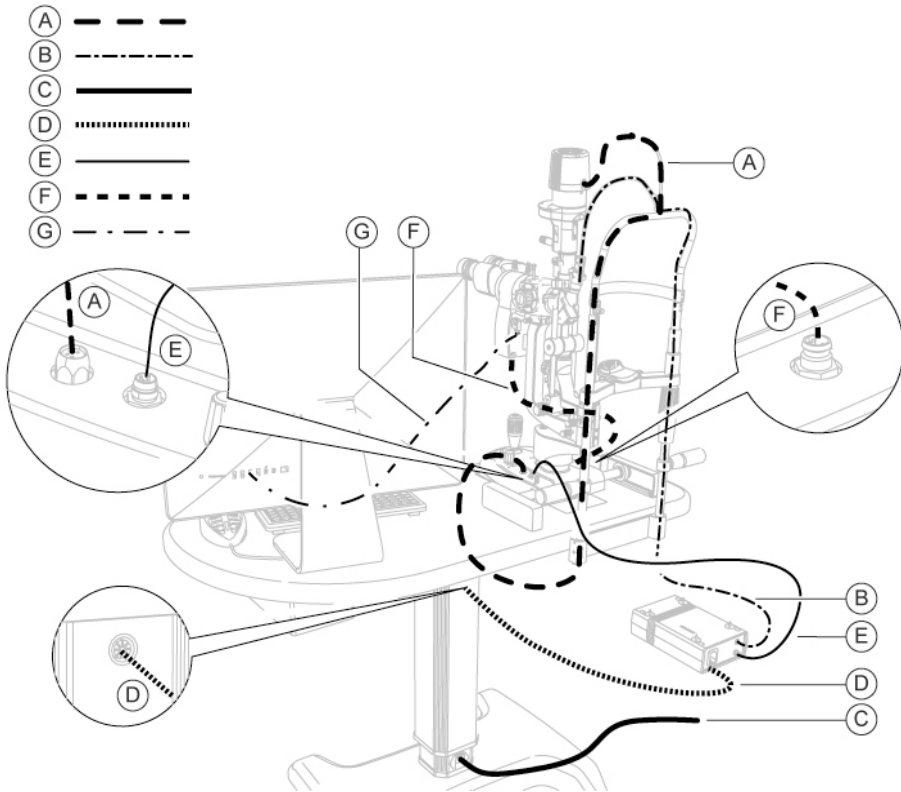


Fig 30 - How to connect the device SL9900 ELITE XX-D

Pos Denomination

- A** Power cable for the connection between the illumination and the device base
- B** Connection cable for fixation point on the chin rest
- C** Power cable for the connection of the electric table with the power supply
- D** Power cable for the connection of the electric table with the power supply
- E** Power cable for the connection between the power supply and the device
- F** Power cable for the connection between the video camera Digital Vision HR and the device base
- G** Connection cable between video camera Digital Vision HR and PC

4.3 HOW TO PLACE THE ELECTRIC CABLES



CAUTION

Danger of device fall. Do not leave free cables which can represent an obstacle or a danger for the patient or the operator.



CAUTION

Danger of stumbling and falling. Do not let the power cord or the connection cables free in a place where people could walk.



CAUTION

Electric shock risk. Do not leave the power supply cables in contact with sharp corners or objects. Collect and attach always the power supply cables.



It is forbidden to use any extension cable not authorized by the manufacturer.

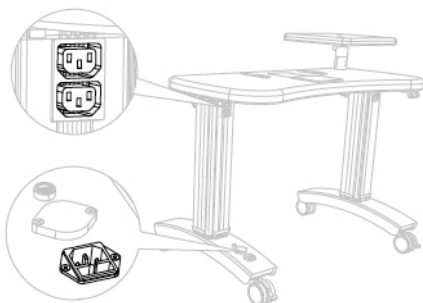


Fig 31 - Power sockets position

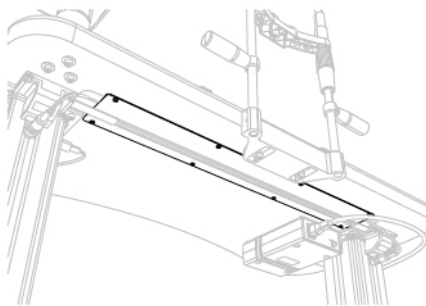


Fig 32 - Wireway



The power socket is on the column of the electric table, below, and it has to be used for the connection with the mains power. One of the power sockets on the column of the electric table, on top, is dedicated to the device power supply. Block the cables under the support surface with the cable rivets. If you have it, place the cables in the wireway under the support plane.

4.4 HOW TO TURN ON THE DEVICE

- 1 Push the activation switch of the power supply on ON. The device control light turns on. The supply control light on the base turns on.
- 2 Now it is possible to go on with the observation.

If the device is equipped with video camera Digital Vision HR (ELITE XX-D):

- 1 Launch the program Phoenix on the PC.
- 2 Wait until the main screen of the application software is shown.
- 3 Click on NEW PATIENT and enter his personal data. If the patient is already present in the database, you can automatically search the surname in the surname command line.
- 4 A new examination will be created automatically.
- 5 Select the tool to use.
- 6 The image capture screen will open. Now it is possible to capture the image.

Creation of a new exam

- Click on the button NEW EXAMINATION.
- Select the tool to use.
- The image capture screen will open. Now it is possible to capture the image.

4.5 ADJUST THE CHIN REST

- 1 Tell the patient to take a seat.
- 2 Ask the patient to put the chin on the chin cup and the forehead against the forehead rest.
- 3 Verify the correct eyes position respectively to the shooting channel.

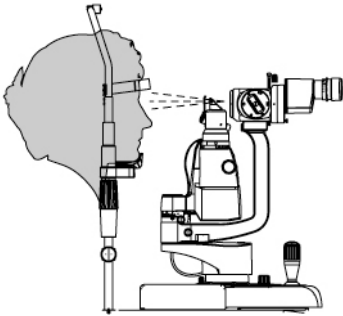


Fig 33 - Patient position on the chin rest
SL9800

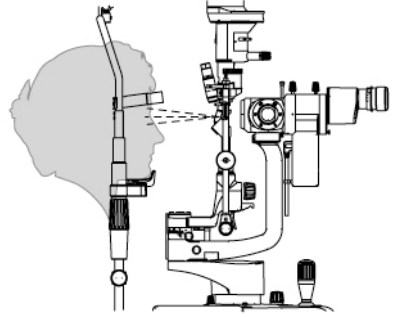


Fig 34 - Patient position on the chin rest
SL9900 - SL9900 ELITE

- 4 Lift or lower the chin cup as needed.

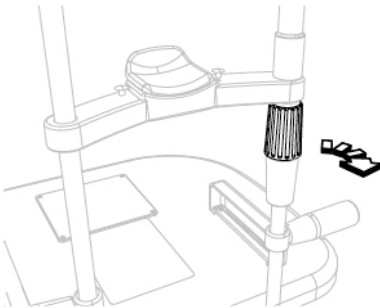


Fig 35 - Knob rotation

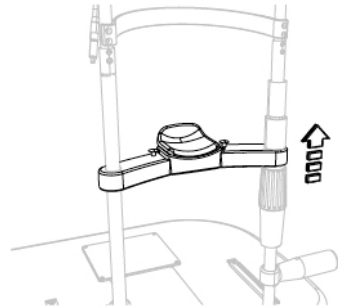


Fig 36 - Chin cup placement

4.6 HOW TO VISUALIZE THE IMAGE (SL9800)

- 1 Move towards the patient's eye with the device.
d=68 mm with prisma holder head
d=80 mm with split head
- 2 Move the joystick and place the device with the shooting channel near the patient's eye.

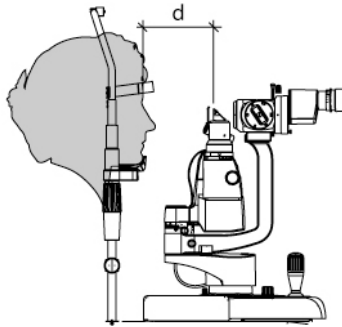


Fig 37 - Distance from the patient SL9800

- 3 Bring the image into focus by rotating the oculars for the ametropia correction if necessary.

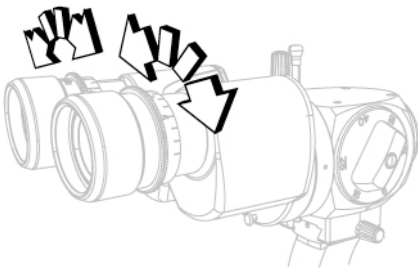


Fig 38 - Ametropia correction

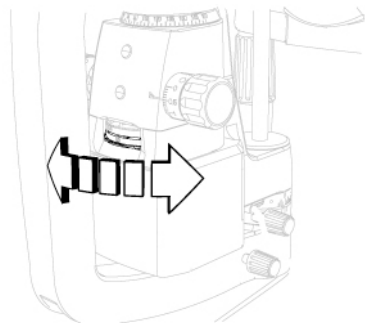


Fig 39 - Diaphragm diameter and filters selection

- 4 Perform some micro movements with the joystick to obtain the best image quality.

- 5 Use the turning locking/unlocking knobs to change the lamp position.

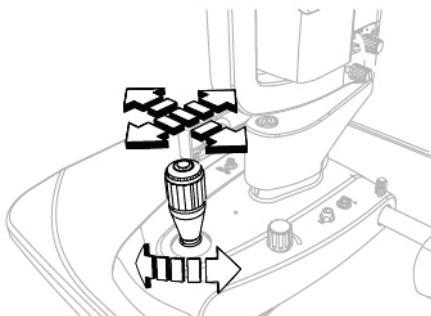


Fig 40 - How to place the instrument

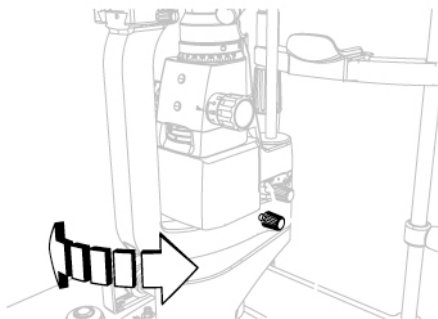


Fig 41 - Microscope position adjustment

- 6 To adjust the intensity of the light turn the knob on the instrument base.
- 7 Use the turning locking/unlocking knob to change the microscope position.

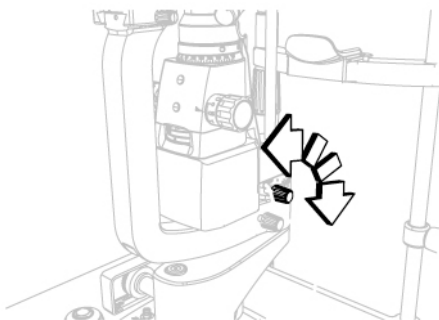


Fig 42 - Illumination source blocking knob

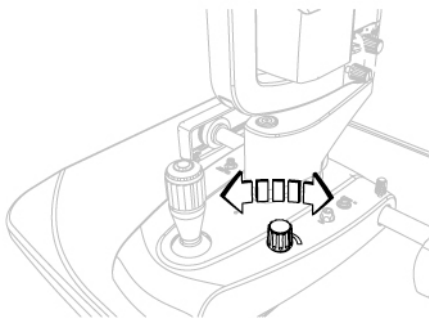


Fig 43 - Light intensity adjustment

- 8 During the exam adjust the slit opening
- 9 During the exam adjust the slit width
- 10 If necessary, change the image enlargement

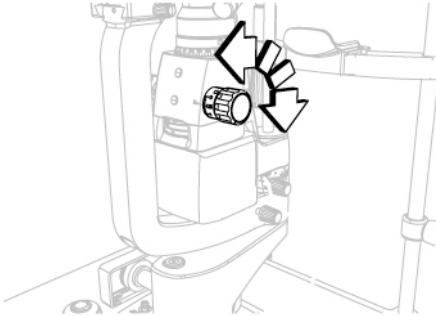


Fig 44 - Slit width adjustment

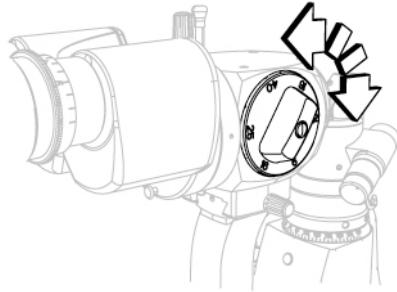


Fig 45 - Image enlargement change

- 11 If necessary, adjust the slit inclination.
- 12 If necessary, change the image enlargement

4.7 HOW TO VISUALIZE THE IMAGE (SL9900)

- 1 Move towards the patient's eye with the device.
- 2 Move the joystick and place the device with the shooting channel near the patient's eye.

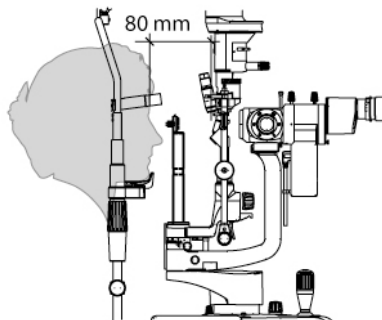


Fig 46 - Distance from the patient SL9900

- 3 Bring the image into focus by rotating the oculars for the ametropia correction if necessary.

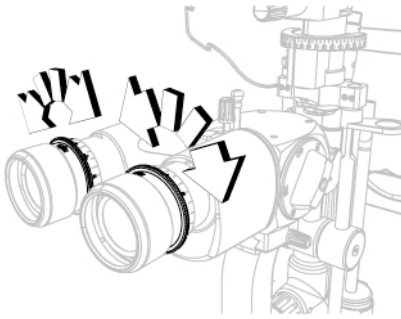


Fig 47 - Ametropia correction

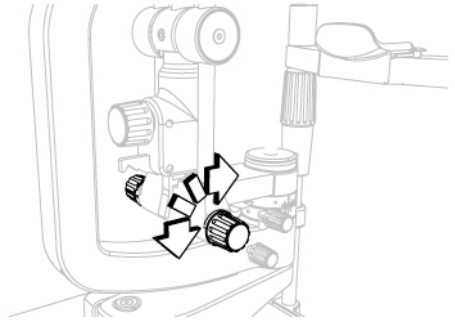


Fig 48 - Slit width adjustment

- 4 Perform some micro movements with the joystick to obtain the best image quality.
- 5 Use the turning locking/unlocking knobs to change the microscope position.

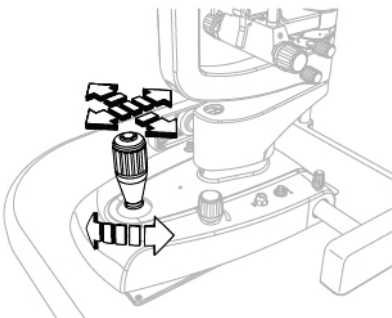


Fig 49 - How to place the device

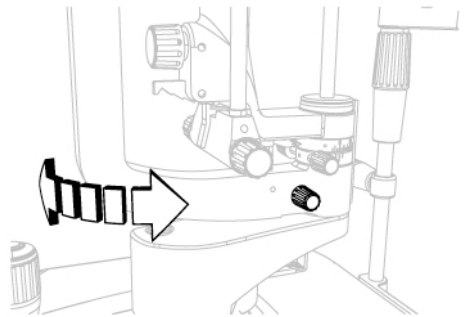


Fig 50 - Microscope position adjustment

- 6 To adjust the intensity of the light turn the knob on the instrument base.
- 7 Use the turning locking/unlocking knob to change the lamp position.

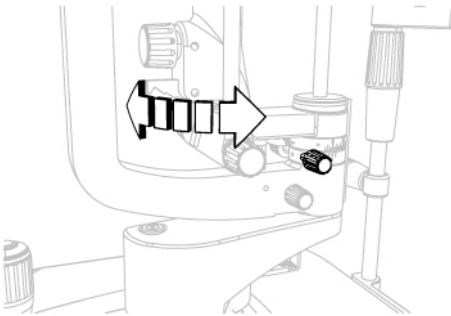


Fig 51 - Illumination source position adjustment

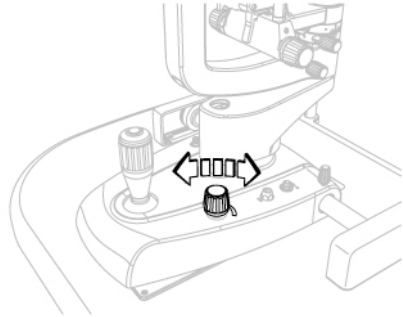


Fig 52 - Light intensity adjustment

- 8 During the exam, adjust the slit width.
- 9 During the exam adjust the slit height.
- 10 If necessary, change the microscope magnification.

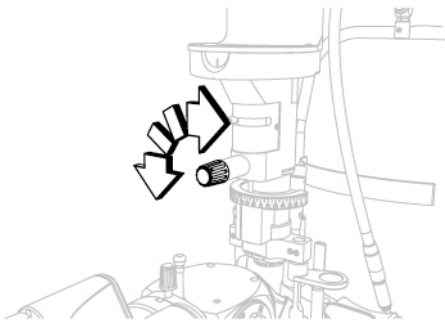


Fig 53 - Diaphragm diameter selection

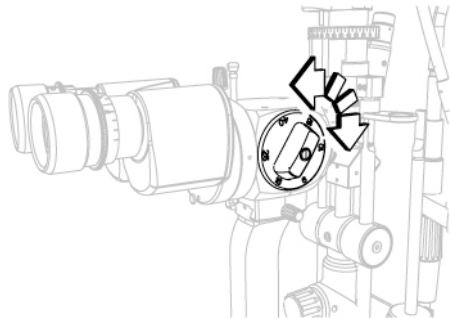


Fig 54 - Microscope magnification change

- 11 To incline the slit turn the knob the illumination unit. Read the angle value on the graduated scale (A).
- 12 To incline the lamp press the blocking lever (B). The lamp can be inclined following the twitches of the blocking lever.

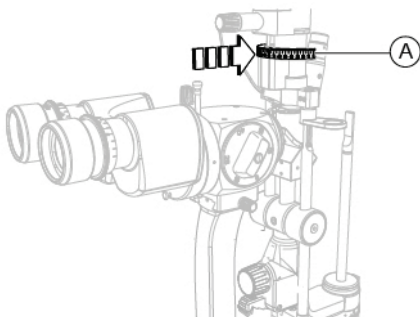


Fig 55 - Slit rotation

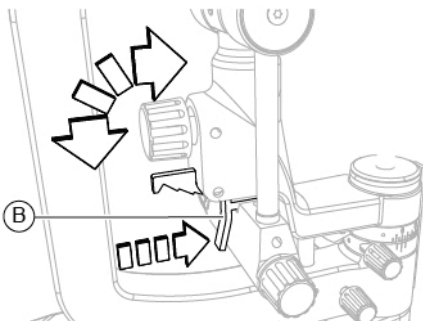


Fig 56 - Lamp inclination (tilting)

4.8 HOW TO CAPTURE THE IMAGE

4.8.1 CAPTURING THE IMAGE WITH VIDEO CAMERA DIGITAL VISION HR

If the device is equipped with video camera Digital Vision HR it is possible to capture the image with the analysis and management software and perform the analysis of the captured images.

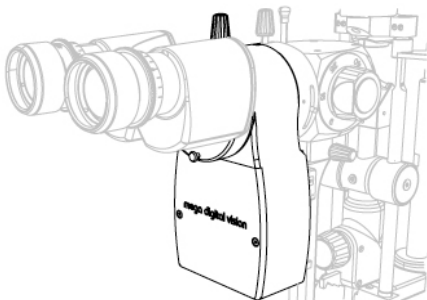


Fig 57 - Video camera Digital Vision HR

- 1 Bring the image into focus.
- 2 Push down the joystick to confirm and capture the image. It is possible to capture multiple images at the same time. The image will be saved in the gallery.

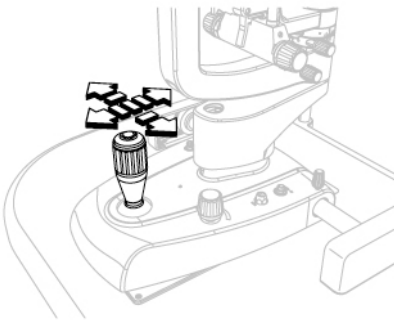


Fig 58 - Image focus

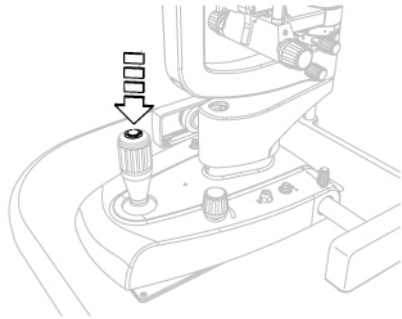


Fig 59 - Image capture

4.8.2 CAPTURING THE IMAGE WITH VIDEO CAMERA DIGITAL VISION HR (ELITE XX-D)

If the device is equipped with video camera Digital Vision HR it is possible to capture the image and send it to the images management and analysis software.

SHUTTER: press the buttons UP/DOWN to obtain the best image condition.

VIDEO/FOTO: button to switch from the PHOTO mode to the VIDEO mode

REG: button for image adjustment. Different settings are available.

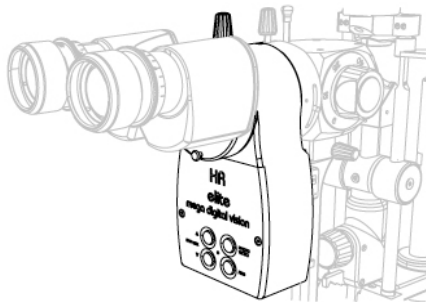


Fig 60 - Video camera Digital Vision HR

- 1 Bring the image into focus. Use the SHUTTER buttons to obtain the best image condition.
- 2 Use the REG buttons to adjust the image quality.
- 3 Push down the joystick to confirm and capture the image. It is possible to capture multiple images at the same time. The image will be saved in the gallery.

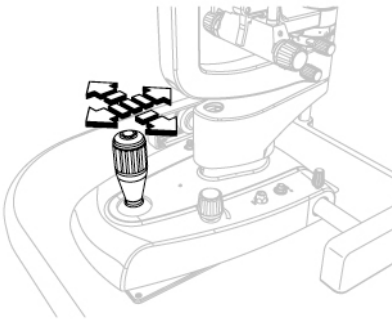


Fig 61 - Image focus

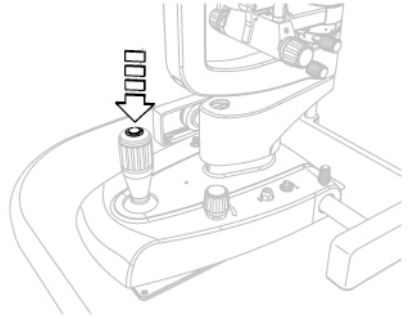


Fig 62 - Image capture



Refer to the application software instructions for the image managing in the database.

4.9 HOW TO CHANGE THE PAPER FOR CHIN CUP



At the end of each exam remove the paper for chin cup in order to always have a new and hygienic one for the next patient.

This device is provided with a package of paper for chin cup. When you use the last paper change the package.

- 1 Extract the two plastic rivets
- 2 Place the new package of paper for chin cup
- 3 Insert the plastic rivets in the holes of the package and in the holes of the chin cup.

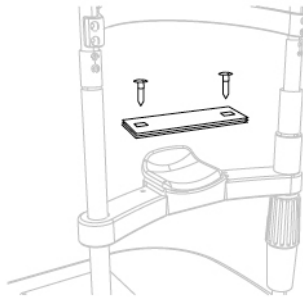


Fig 63 - How to change the papers for chin cup



To order the spare package see the code in the "**Spare parts list page 72**"

4.10 HOW TO TURN OFF THE DEVICE



CAUTION

Do not turn off the computer and do not disconnect the connection cable between the computer and the device when the program is in use.



CAUTION

Do not turn off the computer and do not disconnect the connection cable between the computer and the device when the program is in use (XX-D, ELITE XX-D).

- 1 Immobilize the device. Turn the locking knob.
- 2 Exit the images management systems program. Turn off the computer (XX-D, ELITE XX-D).
- 3 Push the activation switch of the power supply on OFF.
- 4 Place the protective cover on the device to prevent dust to fall on the device.

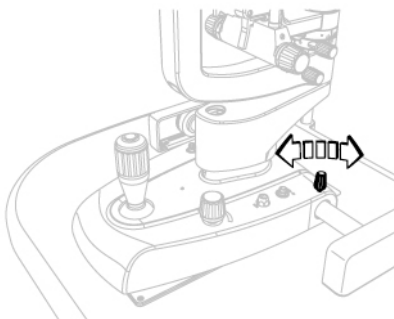


Fig 64 - Device blocking

4.11 HOW TO INSTALL THE ACCESSORIES

4.11.1 HOW TO INSTALL THE VIDEO CAMERA DIGITAL VISION HR



The 2x microscope does not support the installation of the video camera Digital Vision HR.

- 1 Support the binocular (A).
- 2 Lift the locking/unlocking knob on the microscope (B).
- 3 Remove the binocular.
- 4 Connect the USB 3.0 cable to the video camera.
- 5 Place the video camera (C) near the microscope (D).
- 6 Lift the locking/unlocking knob on the microscope.
- 7 Install the video camera.
- 8 Verify that the locking/unlocking knob on the microscope is lowered.

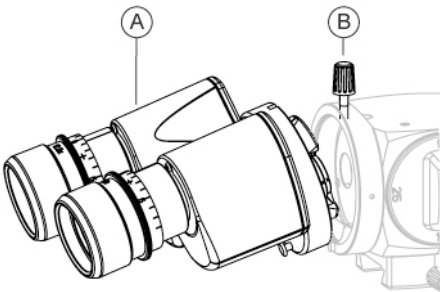


Fig 65 - Binocular removal

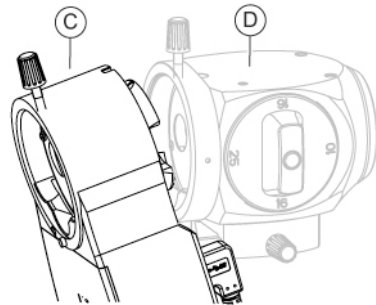


Fig 66 -Video camera Digital Vision HR installation

- 9 Lift the locking/unlocking knob on the video camera.
- 10 Install the binocular.
- 11 Verify that the locking/unlocking knob on the video camera is lowered.
- 12 Connect the power cable of the video camera (E) with the mains connector on the device base.
- 13 Connect the USB 3.0 cable (F) of the video camera with the PC.

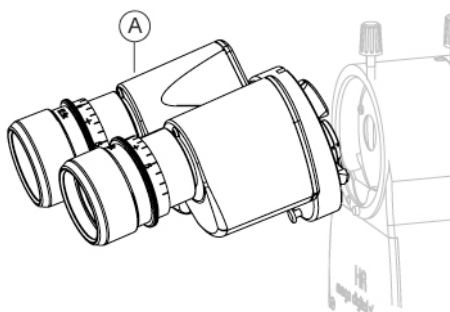


Fig 67 - Binocular installation

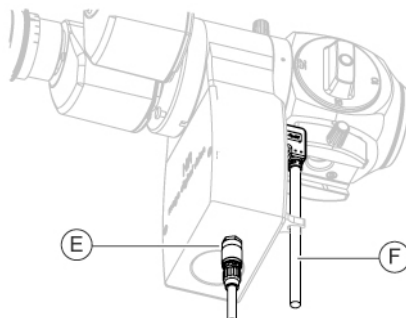


Fig 68 -Video camera Digital Vision HR connection

4.11.2 HOW TO INSTALL THE ADDITIONAL LED ILLUMINATOR (OPTIONAL) (SL9800)

- 1 Place the illuminator (A) next to the illumination unit.
- 2 Screw the screw (B) to block the device.
- 3 Connect the power cable (D) to the mains connector (E) on the illumination device card.
- 4 The led (C) indicates the functioning status of illumination device.

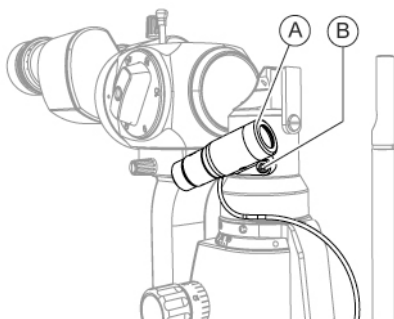


Fig 69 - Illuminator installation

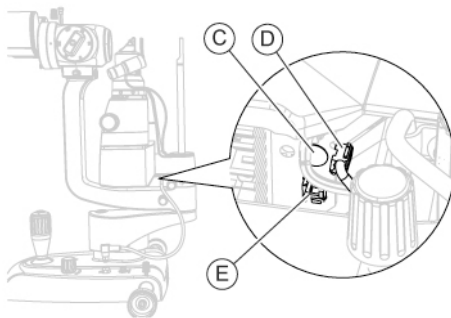


Fig 70 - Illuminator connection

4.11.3 HOW TO INSTALL THE ADDITIONAL LED ILLUMINATOR (SL9900)

- 1 Turn the slit width adjustment knob in order to lower the rod (D).
- 2 Lift the part (C).

- 3 Insert the flat ring (H) on the rod (D). The ring has to lean on the part (I).
- 4 Insert the white LED illuminator kit (B) arm in correspondence to the rod.
- 5 Insert the round ring (G) on the rod.
- 6 Insert the closing ring (E) on the rod.
- 7 Push down the closing ring (E). Screw the grub screw (F).
- 8 Unscrew the screws (L) and remove the protection (J).
- 9 Connect the power cable of the illumination device (K) with the mains connector on the LED illumination device.

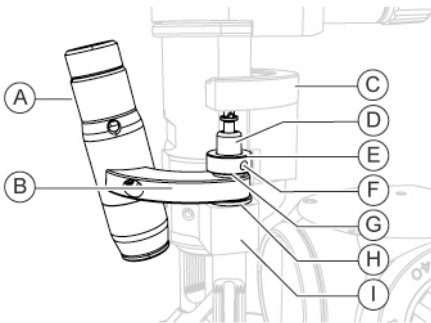


Fig 71 - Additional LED illuminator installation (optional)

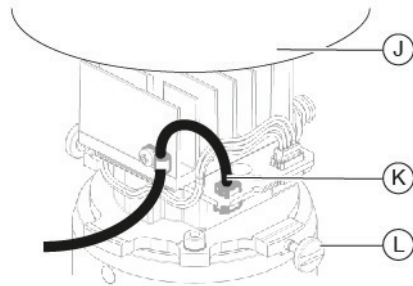


Fig 72 - Illumination device connection

How to install the light diffuser:

- 1 Insert the illuminator (B) on the rod (D). Use the opening (A) on the light diffuser and the profile (C) on the rod.
- 2 Lift the illuminator to block it on the rod.

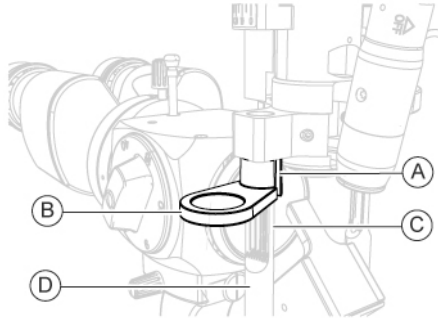


Fig 73 - Light diffuser installation

4.11.4 HOW TO INSTALL THE SEPARATOR, SINGLE AND DOUBLE EXIT

The 2x microscope does not support the installation of the video camera Digital Vision HR.

- 1 Support the binocular (A).
- 2 Lift the locking/unlocking knob on the microscope (B).
- 3 Remove the binocular.
- 4 Place the separator (C) near the microscope (D).
- 5 Lift the locking/unlocking knob on the microscope (B).
- 6 Install the separator.
- 7 Verify that the locking/unlocking knob on the microscope is lowered.

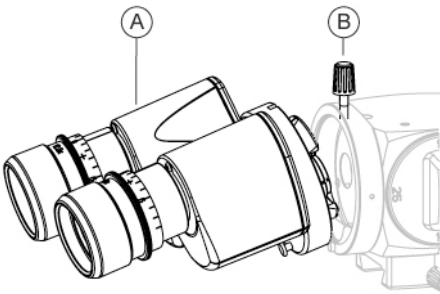


Fig 74 - Binocular removal

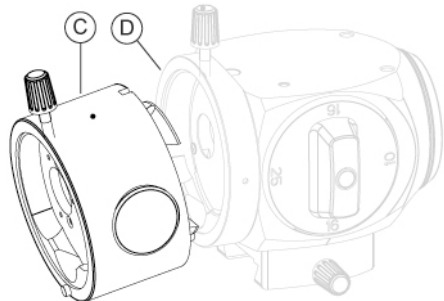


Fig 75 - Separator installation

- 8 Install the ocular.
- 9 Verify that the locking/unlocking knob on the separator is lowered

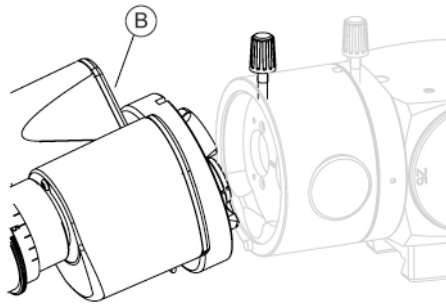


Fig 76 - Binocular installation

4.11.5 HOW TO INSTALL THE VIDEO CAMERA CONNECTOR



Before installing the accessory, install the separator.

- 1 Remove the lid (C) installed on the separator (B).
- 2 Install the video camera connector (A) on its seat on the separator. Align the plug (D) of the video camera connector with the socket (E) on seat of the separator.
- 3 Turn the ferrule (F) of the video camera connector to block the accessory of the separator.

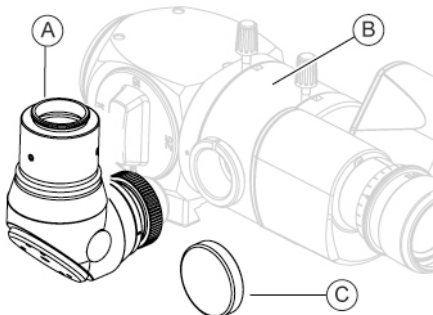


Fig 77 - Video camera connector

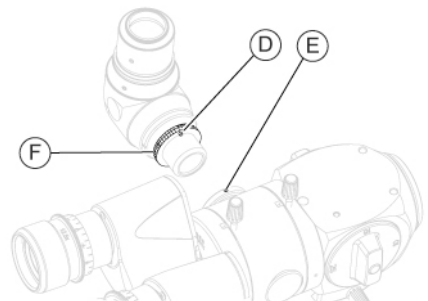


Fig 78 - Video camera connector blokclage

4.11.6 HOW TO INSTALL THE CAMERA CONNECTOR

Before installing the accessory, install the separator.

- 1 Remove the lid (C) installed on the separator (B).
- 2 Install the camera connector (A) on its seat on the separator. Align the plug (D) of the camera connector with the socket (E) on seat of the separator.
- 3 Turn the ferrule (F) of the camera connector to block the accessory of the separator.

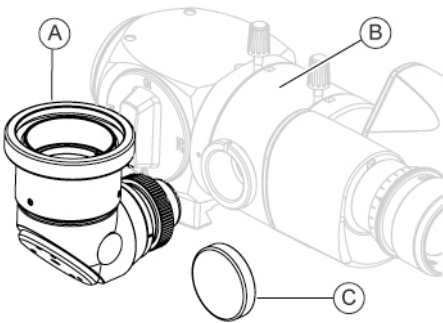


Fig 79 - How to install the camera connector

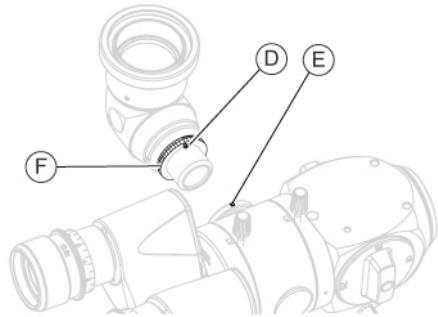


Fig 80 - Camera connector blockage

4.11.7 HOW TO INSTALL THE OCULAR FOR THE SECOND OPERATOR

Before installing the accessory, install the separator.

- 1 Remove the lid (D) installed on the separator (B).
- 2 Lift the locking/unlocking knob on the microscope (C) on the ocular for the second operator (A).
- 3 Install the ocular for the second operator on its seat on the separator. Align the plug (F) of the ocular for the second operator with the socket (G) on seat of the separator.
- 4 Turn the ferrule (E) of the ocular for the second operator to block the accessory of the separator.

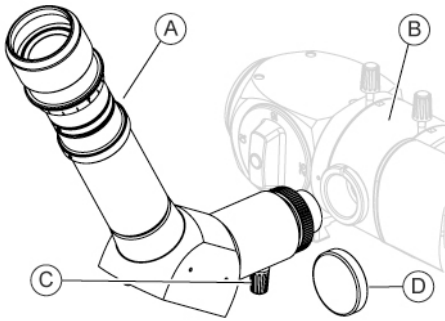


Fig 81 - Ocular for the second operator

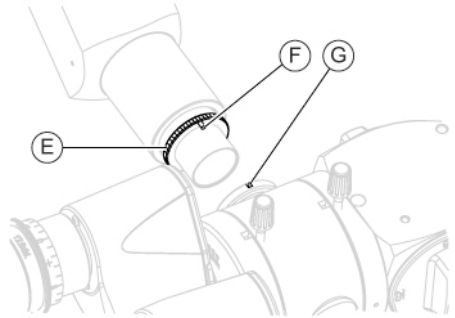


Fig 82 - Ocular for the second operator blockage

4.11.8 HOW TO INSTALL THE OCULARS FOR THE BINOCULAR

- 1 Remove the oculars installed on the binocular.
- 2 Install the new oculars.

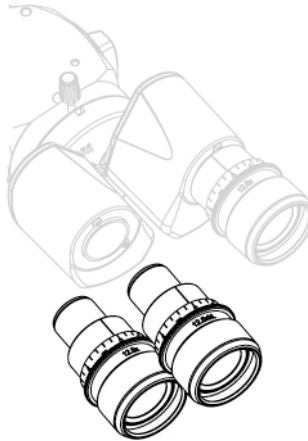


Fig 83 - Oculars

4.12 INDICATIONS GIVEN BY THE FUNCTIONING INDICATORS

For monitoring the device functioning it is necessary to verify the status of the functioning indicator on the device base.

Functioning indicator on the base	Meaning
Indicator on. Continuous. Green.	Powered base. Powered lamp group. White light emission. Correct functioning
Indicator on. Continuous. Red.	Turn off the device. Wait for the functioning indicator on the base to turn off Check the connection cable between the base and the lamp holder. Restore the connection and switch back on. If the problem persists, contact the Assistance Center.
Indicator on. Two pulses and one pause. Green and yellow.	Turn off the device. Contact the Assistance Center.
Indicator on. Fast pulses (2 every second). Red and green.	Turn off the device. Contact the Assistance Center.
Indicator on. Slow pulses (1 every 3 seconds). Red and green.	Turn off the device. Contact the Assistance Center.
Indicator on. Two pulses and one pause. Red and green.	Turn off the device. Contact the Assistance Center.
Indicator on. Continuous. Yellow.	Turn off the device. Contact the Assistance Center.

5 ORDINARY MAINTENANCE

5.1 SAFETY WARNINGS



DANGER

Electric shock danger. Unplug the power cable from the mains socket before disinfecting the device and before any maintenance operation.



CAUTION

The device does not contain any piece that requires the user's intervention. Do not dismantle any part of the device.



it is forbidden to carry out any maintenance operation on the device that is not recalled in instructions for use.



In case of operational faults or malfunctions or for every operation not mentioned in the instructions for use, there is the obligation to address an authorized technical assistance center of the device Manufacturer.

5.2 DEVICE CLEANING

Clean the external parts of the device using a damp non-abrasive cloth to avoid damaging the material.



CAUTION

Danger of material damages. Do not use solvents or diluent to clean the device.

5.3 SPARE PARTS AND ACCESSORIES LIST

Code	Description
100257720	SL9900 LED table top chin rest
100258700	SL9800 LED table top chin rest
103301800	Table top 45x90 cm, with rails and drawer
330259900	Connecting power cable - lamp base, length 80 cm per LED
330259901	Connecting power cable - lamp base, length 5 m per LED
3001007ID3P	Power cord
3001007E13P	Cable isolation transformer - electric table.
330701090	Cable electric table - power supply 50 cm
96027000	Installation kit accessories
4014010	Paper for chin cup
960206C00	Dust cover for SL9900
96010200	Dust cover for SL9800
110206021	SL990/SL9900 projecting mirror
100250250	Light diffuser for SL9900
100270210	External LED illuminator for SL9900
100272210	External LED illuminator for SL9800
100203077	Rubber eyepieces
100257300	Micrometrical eyepiece 12.5x with protection from light
3020804	USB 3.0 Cable 2 m length
330258300	USB 3.0 Cable 5 m length
330257503	Connection cable between table and instrument base

5.4 TROUBLESHOOTING

Inconvenient	Cause	Solution	Note
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 through 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 switch on	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. Spoiled operating system.	It is necessary to replace the Hard Disk. Reinstall the operating system. Replace the PC.	Contact the Technical Assistance Center. Make sure the New PC features are equivalent to those required by the device.
The application software does not start	Hard Disk failure. The anti virus software impedes the starting of the application software Phoenix. Spoiled operating system The application software Phoenix does not work properly.	It is necessary to replace the Hard Disk. Check the settings of the anti virus software. Reinstall the operating system. Reinstall the application software Phoenix.	Contact the Technical Assistance Center. The installation of the application software Phoenix needs the administrator privileges.



Inconvenient	Cause	Solution	Note
The application software does not work properly	The connection cable between device and PC does not work properly. The anti virus software interferes with the drivers of the application software Phoenix. The application software Phoenix is installed as local user.	Unplug and plug in again the connection cable between device and PC. Replace the connection cable between device and PC. Uninstall the anti virus software. Reinstall the application software Phoenix.	The installation of the application software Phoenix 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 installation instructions.	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. Mouse switch in position OFF. The mouse batteries are down (only for wireless mouse)	Check that the mouse connection cable properly fit in USB port. Switch the mouse button in position ON. 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. Keyboard switch in position OFF. The keyboard batteries are down (only for wireless keyboard)	Check that the keyboard connection cable properly fit in USB port. Switch the keyboard button in position ON. Replace keyboard batteries (only for wireless keyboard).	From the control panel of the PC, check that there are no devices conflicts.

Inconvenient	Cause	Solution	Note
The images can't be saved in the database (XX-D).	The database is not connected with the application software Phoenix. Power connection absent. The USB cable does not work	Verify that in the configuration screen of the database is specified the correct path to the "phoenix.mdb" file. Restore the connection to the database file. Check the functioning of the net connection. Replace the USB cable.	Regularly verify the connections with the data net. Use USB3.0 cables only.
Failed image capture (XX-D)	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 or 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. 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. Device blocking knob is fastened	Remove the joystick plastic protection from the base. Loosen the device blocking knob.	Before starting the exam check that the device blocking knob is loosened.

Inconvenient	Cause	Solution	Note
Functioning indicator does not turn on.	The connection cable of device and PC does not work or is disconnected.	Replace the power cable from the power supply to the device.	
The device does not generate any light	The connection cable of device and PC does not work or is disconnected. Light intensity adjustment knob is at minimum. The slit is completely closed. The LED lamp does not work.	Replace the power cable from the power supply to the device. Open the slit. Increase the light intensity. Replace the luminous source.	



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