

SL-OCT

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Slitlamp- OCT

Installation Instructions

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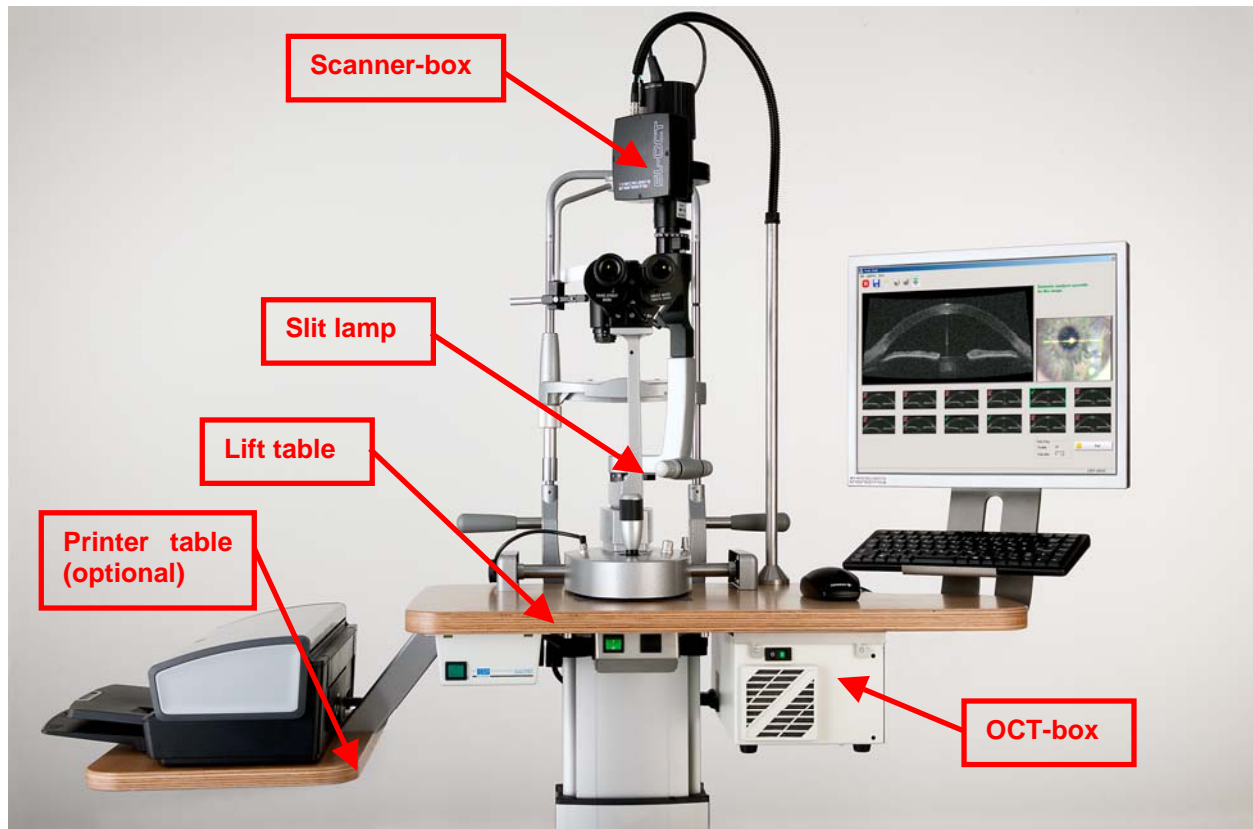
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## 1 Introduction

The SL-OCT is a tomographic device for the viewing and axial, cross sectional imaging of anterior ocular structures. It is used for the in vivo imaging and measurement of the anterior segment structures of the eye.

This document describes the installation of the SL-OCT device. It also contains important safety information.

**NOTE:** To ensure the overall safety of the system, the SL-OCT must be installed by certified staff of your local Heidelberg Engineering distributor.



Pic. 1 SL-OCT with optional printer table

## 1.4 Cautions, Warnings, and Contraindications

- WARNING** Carefully read the operation manual before operating the device. Misuse of the device may lead to incorrect diagnostic results.
- WARNING** Do not open the device component housings. Doing so may result in electrical shock and laser radiation.
- WARNING** Do not use the device outside the scope of its “Intended use”. Doing so may lead to malfunctions or damage of the device.
- WARNING** Do not use PCs, components or accessories that have not been approved by Heidelberg Engineering. Do not install other software as this may interfere with the functionality of the Heidelberg Engineering software or equipment. This could include damage to the system as well as incorrect measurement results.
- WARNING** Do not use a network connection without network isolation in accordance with IEC 60601-1. In the event of a failure in the network, user and patient could be at risk of electrical shock.
- WARNING** Make sure that the environmental requirements are met when the system is operated. Exceeding environmental conditions may damage the system or lead to incorrect measuring results.
- WARNING** Make sure the patient is correctly positioned in front of the device before starting the examination. Wrong positioning may lead to poor images and incorrect diagnostic results.
- WARNING** Artifacts on the images could falsify the measured results. Do not use the measured results for further treatment if there are artefacts in the images.
- WARNING** Do not make a diagnostic decision on the basis of one single examination. The device is not clinically evaluated for the diagnosis of specific pathologies. So always use alternative information; history data etc. to assist in a final diagnostic determination.
- WARNING** Do not use the analysis results from patients with pathological eyes without an inspection of the segmentation. In case of pathological eyes, the segmentation might be incorrect, and lead to wrong calculations of the analysis results.
- WARNING** Prepare safeguards to ensure that only authorized personnel can access the patient data. Data loss impedes follow-up analyses and may result in inappropriate diagnostic decisions.
- WARNING** Be sure to perform periodic data backup procedures. Check the success of the backup to avoid data loss caused by backup errors.
- WARNING** To avoid the risk of electric shock, this equipment must only be connected to a grounded power supply.
- WARNING** To avoid the risk of electric shock, do not touch conductive parts of connectors and the patient simultaneously.
- WARNING** Do not operate the system directly after large temperature changes. Let the device acclimatize itself for a minimum of 2 hours to avoid device damage or incorrect measurement results.
- CAUTION** Never leave the patient alone with the instrument during the examination!
- CAUTION** The instrument must not be used under any circumstances if mechanical, optical or electrical faults occur. Any change or addition to the system must comply with the relevant legal guidelines. Repairs, particularly to the electronic and optical components, must be carried out only by Heidelberg engineering authorized, trained personnel.
- CAUTION** Unusual noises and/or vibrations can indicate a fault. Should this happen, please turn the instrument off immediately and contact the technical support center responsible for your area. Do not attempt to repair the instrument yourself in the event of a fault.
- CAUTION** This instrument contains a diode laser and emits invisible laser light through the slit lamp. The Heidelberg SL-OCT is a Class I laser system. The laser does not pose any safety hazard.
- CAUTION** This equipment was tested in accordance to IEC 60601-1-2, Electromagnetic Compatibility (EMC). Nevertheless, it might be affected by strong electromagnetic fields. Portable high frequency communication devices may affect the device.
- CAUTION** The operator must be sure that the device settings and adjustments are correct before starting an examination and making any diagnostic decision. Wrong settings and adjustments may lead to poor image quality or incorrect examination information.
- CAUTION** The physician must be sure to have the correct patient data before making a diagnostic decision. Mismatched patient data may lead to inappropriate diagnostic decisions.

- CAUTION** Read subsection "Imaging Process" of the Operation Instructions carefully before starting the examination. Incorrect preparation of the patient may lead to poor image quality and incorrect diagnoses.
- CAUTION** Do not start an examination without informing the patient about the examination procedure. Inappropriate patient behavior during the examination may lead to poor image quality and incorrect diagnoses.
- CAUTION** Read subsection "Service Maintenance and Cleaning" of the Operation Instructions carefully. A failure to carry out maintenance or incorrect adjustment of the device may lead to poor image quality and incorrect diagnoses.
- CAUTION** Before starting the system check the regional power supply specifications to verify that they comply with the required tolerances ( $100V < U < 240V$ ;  $50Hz < f < 60Hz$ ). Wrong power supply conditions may lead to malfunctions of the system.
- CAUTION** A computer failure during image acquisition or analysis could lead to incorrect results.
- CAUTION** United States of America:  
Federal law restricts this device to sale by or on the order of a Physician or Practitioner.
- CAUTION** While printing using the optional printer table, it is not possible to take measurements due to the vibrations of the printer

**CONTRAINDICATIONS** No contraindications are known.

**For the United States of America only:**

The laser class label "Laser Class 1" is located on the rear of the OCT housing. The Laser safety class is approved and defined in accordance to IEC 60825 part 1 and part 2 and in accordance to the 21 CFR Part 1040 "Performance Standard for Light emitting Products".

**LASER CLASS 1**

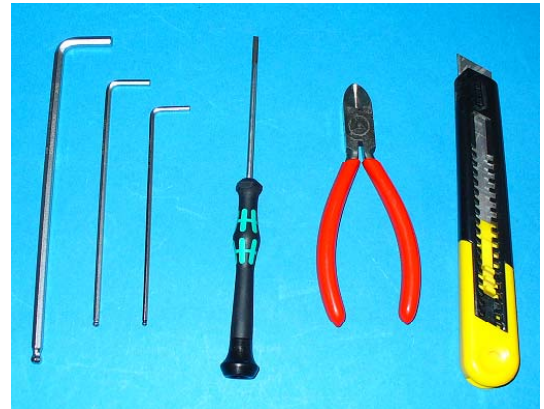
## 2 Scope

This installation instruction is referring to model SL-OCT Ver. B01.

### 3 Tools

The following tools are required:

- Allen wrenches
  - 5 mm
  - 3 mm
  - 2.5 mm
- Screwdriver for slotted head screws 3 mm
- Wire cutter
- Cutter.



Pic. 2 Tools for installation of SL-OCT

For the assembly of the optional printer table, following the tools are required:

- Allen wrench with **ball head** 5 mm
- Screwdriver for recessed head screws
- Wire cutter
- Long nose pliers
- Cutter.



Pic. 3 Tools for the assembly of the printer table

## 4 Unpacking the system

The SL-OCT is delivered in three cardboard boxes – lift table, OCT-box, and slit lamp. The packing lists for each box are listed in section 10 Appendix C.

### 4.1 Lift table

The lift table package contains three layers:

1. Cable conduit, column, keyboard fixation arm, and monitor fixation arm.
2. Cables, wheels, and table top.
3. Foot.



Pic. 4 Cardboard box containing the lift table

### 4.2 OCT-box

The OCT-box package contains two layers:

1. Folder with operating instructions etc., and mouse pad.
2. Cables, mouse, dust cover, protective caps, replacement fuses, OCT-box.



Pic. 5 Cardboard box containing OCT-box

### 4.3 Slit lamp

The slit lamp package contains two layers:

1. Head rest in a separate cardboard box.
2. Monitor, slit lamp with permanently mounted scanner-box, slit lamp accessories in a separate cardboard box, eyepieces for the microscope, and keyboard.



Pic. 6 Cardboard box containing slit lamp



## 5 Installation

The installation of the SL-OCT unit is started with the build up of the lift table. The next part is the assembly of the OCT-box onto the lift table. Afterwards, the slit lamp including the permanently mounted scanner-box is installed onto the lift table. At the end of the installation procedure, test measurements are carried out to ensure correct operation of the device.

### 5.1 Lift table

The first step is the assembly of **foot** and **column**. Take the column out of its package and place it on top onto e.g. a cellular plastic backing (see Pic. 7).

cellular plastic backing



Pic. 7 Column prepared for assembly of foot

Remove the four Allen screws (M6 x 40) and spring washers needed for the assembly of the foot.

**All screws and washers necessary for assembly are provided, slightly screwed into their respective screw holes!**



Pic. 8 Premounted screws for assembly of the foot

Control the cable laying. The mains cable of the column must lay in the slit (see Pic. 9).



Pic. 9 Cable laying of mains cable

Mount the foot onto the column (see Pic. 10). The longer part of the foot *must* be oriented towards the cable outlet of the column. The computer screen will later be mounted onto this side of the table. Therefore, the correct orientation of the foot is essential for the stability of the table.



Pic. 10 Foot onto column mounted

Now clip in the four wheels onto the foot.



Pic. 11a Wheels



Pic. 11 Clip in the wheel

Turn around column and mounted foot (see Pic. 12a). Then, connect mains and lift the column until the stop at end (see Pic. 12).

**Attention: Be very careful not to touch the cables in the open control console as they are alive! As soon as the column is lifted, disconnect the mains!**

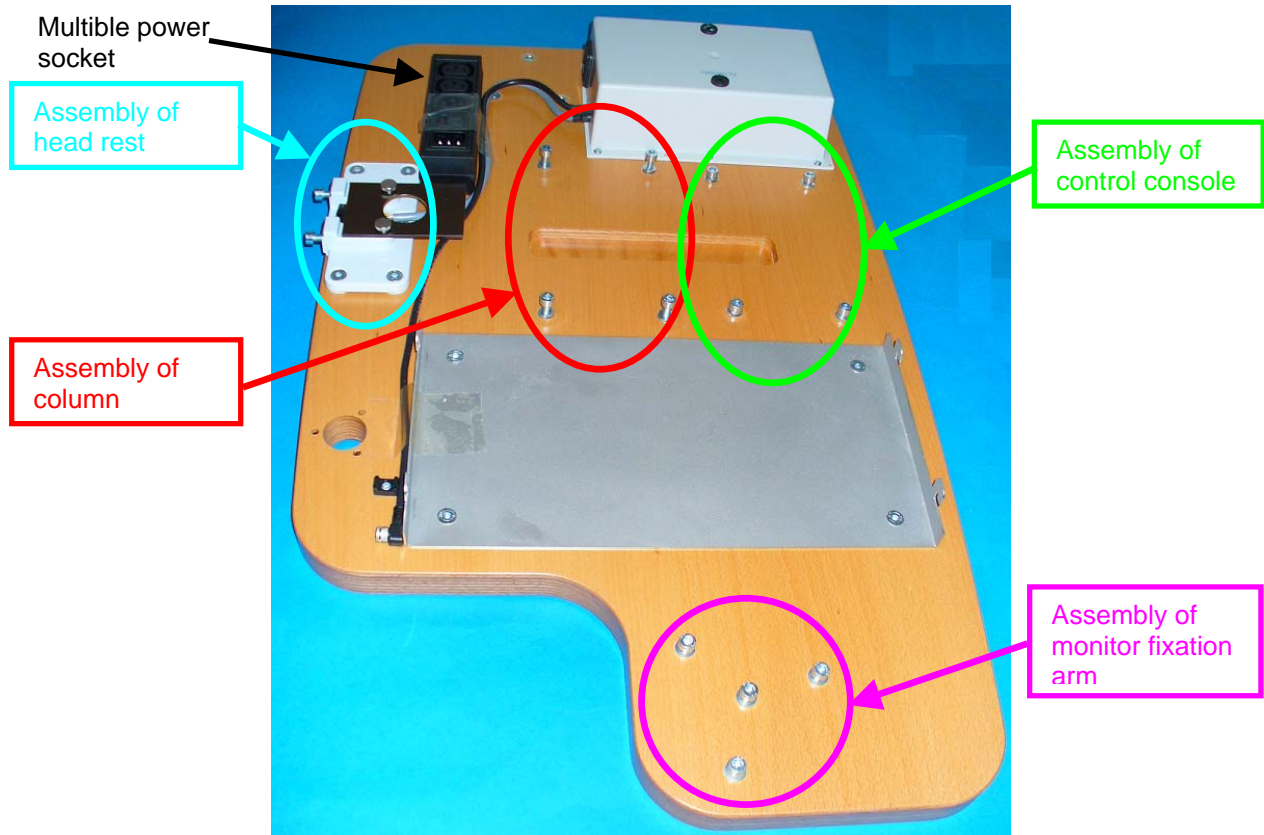


Pic. 12a Column not lifted



Pic. 12 Column lifted till stop at end

After disconnecting mains, the **tabletop** is prepared. Remove the screws and washers from the screw holes for the column (M6 x 25 and spring washers) and control console (M6 x 16 and spring washers) (see Pic. 13 red and green).



Pic. 13 Table top (bottom) with premounted screws and washers

Mount the tabletop onto the column. Use the short Allen screws for the console and the long ones for the column.



Pic. 14 Mounting of table top onto the column

If there is an optional printer arm delivered with the SL-OCT, it can be assembled at this state of the installation or at the end of the assembly procedure. Please refer to section 5.2.



Pic. 15a rear side of mounted monitor unit



Pic. 15 Mounted monitor including keyboard fixation arm

The **computer screen** is mounted together with the keyboard fixation arm on its fixation arm. The other end of the monitor fixation arm is mounted beneath the tabletop (see Pic. 15a and Pic. 15).

There are two possible ways for mounting the monitor unit onto the table:

1. Premounting of monitor arm, keyboard arm, and monitor before assembly of the whole unit onto the lift table.  
This is recommended if several persons are installing the device together.
2. Premounting of monitor arm and lift table before assembly of keyboard arm and monitor.  
This might be more comfortable if there is a single person installing the device. It is easy to adjust the monitor fixation arm with one hand while looking beneath the tabletop and mounting the screws. Handling the whole premounted unit with one hand while adjusting the screws beneath the table needs more strength.

Avoid touching the surface of the screen.



Pic. 16a Monitor arm and keyboard arm



Pic. 16 Rear side computer screen with its screws



### *1. Premounting of monitor unit*

Put the computer screen with the screen facing downwards onto a table parallel to the table's edge (see Pic. 16). Remove the screws (Allen screws M4 x 20). Place the keyboard arm onto the monitor with the angled part hanging down. Now place the monitor arm on top and screw all parts together (see Pic. 17).



Pic. 17 Mounted monitor unit

Remove the screws from the tabletop (see magenta arrow in Pic. 13 and Pic. 18).



Pic. 18 rear side of tabletop in detail

Place the monitor unit so that the keyboard arm is on top of the lift table and the angled part of the monitor arm is beneath the table (see Pic. 15a). Assemble the 4 Allen screws (M6 x 20). Adjust the computer screen into the right position by turning it slightly around the middle screw before fastening the screws.



Pic. 19 Mounted monitor arm

### *2. Premounting of the monitor arm*

Remove the screws from the tabletop (see Pic. 13 magenta and Pic. 18). Assemble the monitor arm (see Pic. 16a) at the lift table (see Pic. 20).

Do not fully fasten the screws (M6 x 20) until the computer screen is mounted and adjusted.

Plug in mains and lower the lift table to a convenient height.



Pic. 20 Mounted monitor arm

Remove the screws from the rear side of the monitor (see Pic. 16). Place the keyboard arm in front of the monitor arm and stick the screws (M4 x 20) through the holes (see Pic. 21) so that it is hanging on the screws.



Pic. 21 Keyboard arm hanging on screws

Now carefully place the monitor in front of the keyboard arm and fasten the screws (M4 x 20). Adjust the computer screen to the right position by turning it slightly around the middle screw before fastening the screws beneath the table.

Now continue with the installation of the **headrest**.

If necessary, plug in mains and lift the table to comfortable height. Remove the two Allen screws (M6 x 20) of the headrest assembly from the edge of tabletop (see turquoise arrow in Pic. 13 and Pic. 22). Loosen one of the knurled screws and remove the second. Swing the protective cover aside (see Pic. 22a).

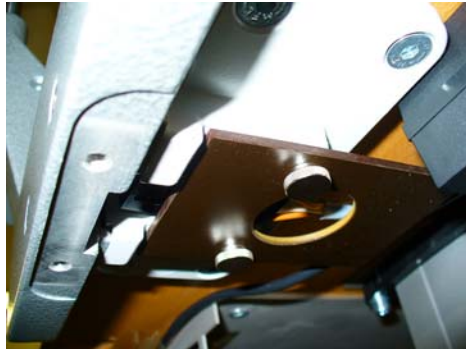


Pic. 22a Protective cover of headrest's electrical plug



Pic. 22 Assembly of headrest beneath table

Connect the electrical plug of the headrest and assemble the headrest onto the lift table.  
Swing back the protective cover (see Pic. 22b) and fasten the knurled screws again.



Pic. 22b Protective cover of the headrest's electrical plug

Grab handles  
and locking  
screws



Pic. 23 Headrest

Loosen the locking screws at the inner side of the headrest a bit, screw in the grab handles, and fasten the locking screws again (see Pic. 23 red).



Pic. 24 Rail covers



Pic. 24a Rail cover on the right side

Fit the rail covers onto the rails (see Pic. 24 and Pic. 24a). The rail cover with the cable bracket is on the left side from operator's view.

**The rail cover at the cable conduit's side (right) must be mounted before the cable conduit is assembled!** (See section 5.3 below)

## 5.2 Optional printer table

Heidelberg Engineering recommends placing the printer on a separate table near the SL-OCT unit.

If this is not possible, the optional printer table can be assembled to the unit with a fixation arm (see Pic. 25).

**Note:** While printing using the optional printer table, it is not possible to take measurements due to the vibrations of the printer.



Pic. 25 Optional printer table with printer

Heidelberg Engineering recommends using the following printer types:

- Hewlett Packard D4200 family
- Hewlett Packard 5900 family.

For both printer series, the software drivers are preinstalled on the SL-OCT built-in computer.

First, the fixation arm is mounted onto the printer tabletop (see Pic. 26 and Pic. 27).



Pic. 26 Printer table fixation arm

The image to the right (Pic. 27) shows the rear side of the printer table with premounted cable brackets for the assembly of the printer's power supply and premounted recessed countersunk flat head wood screws (4 x 16 mm) for the assembly of the arm.

Remove the four recessed head screws and mount the arm onto the table (see Pic. 28).



Pic. 27 Rear side of the printer tabletop





Pic. 28 Rear side of the printer table with fixation arm

The fixation arm is assembled onto the SL-OCT lift table with three Allen screws (M6 x 12). Pic. 29 shows the screw holes beneath the SL-OCT tabletop near the slit lamp power supply.



Pic. 29 Detail of SL-OCT table top with screw holes for the printer fixation arm

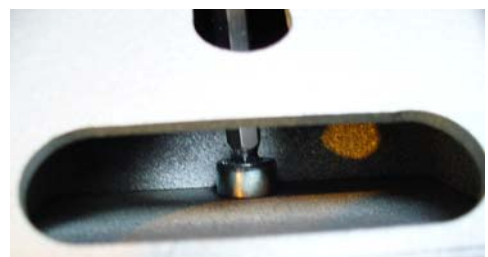
The assembly must start with the single screw near the table's edge. Screw in this screw first without fastening it, then mount the other two screws.

After adjusting the table, fasten at first the single screw (see Pic. 30 and Pic. 31) then the others.



Pic. 30 Assembly of the printer fixation arm

**Note: The single screw near the table's edge can only be fastened with an Allen screwdriver with ball head.**



Pic. 31 Detail of the single screw near the table's edge

Now place the printer on the table as shown in Pic. 25.

Install the printer's power supply beneath the printer table using the premounted cable brackets and the long cable ties (see Pic. 32).



Pic. 32 Power supply printer

Thread the USB cable and the printer's power cord through the printer arm (see Pic. 33a and b) - long nose pliers may be helpful.



Pic. 33a Printer cable at the SL-OCT table



Pic. 33b Cable of the printer

Connect the USB cable to the SL-OCT computer and the power cord to the multiple power socket. Use the short cable ties for a proper cord placing.

If necessary the mains connector of the printer must be replaced by an IEC60 320-2-2 connector. The connector is delivered with the printer table. Only a qualified person is allowed to replace the plug.

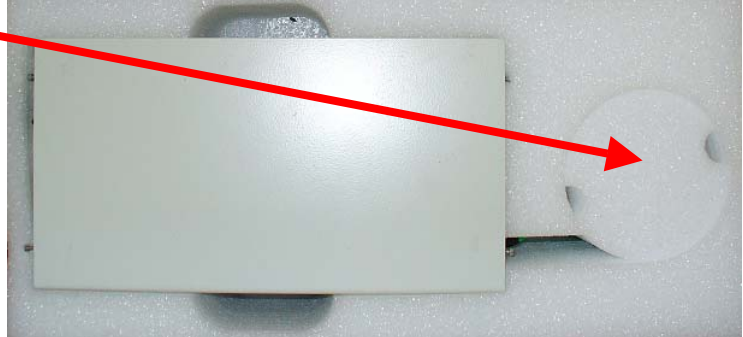


Pic. 34 IEC60 320 power plug

### 5.3 OCT-box

**Attention: A glass fiber is permanently connected to the OCT-box – handle the unit with care!  
Do not buckle the glass fiber!**

Before taking the OCT-box out of the package, remove the cellular plastic stopper from the glass fiber packaging (see Pic. 35).



Pic. 35 OCT-box in the package with stopper in the hole for the glass fiber

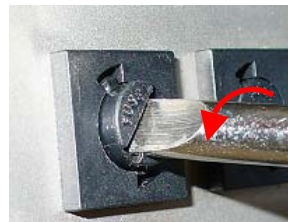
Check if the fuses are correctly dimensioned for the used mains voltage (see Pic. 36). The default built in fuses (T 2.5A /250V) are for 230Vac.

For the use with 110Vac the needed 5A fuses (T 5,0A / 250V) are in the package (see section 10.2 Appendix C Packing lists).



Pic. 36 Fuses of the OCT-box

Replace the fuses (see Pic. 37a and b).  
Unscrew the carriers from the fuse bases and pull out the fuses.  
Stick the 5A fuses into the carriers and screw them into the fuse bases of the OCT-box.



Pic. 37a Removal of a fuse



Pic. 37b Fuse in fuse carrier

The Allen screws in the OCT-box (M3 x 10) should show 6 – 8 mm thread as shown in Pic. 38a.



Pic. 38a OCT-Box with premounted screws



Pic. 38b Hook for hanging the OCT-box  
beneath the table

Hang the OCT-box onto the hooks. The switch must be on the operator's side of the table. Fasten the four Allen screws (M3 x 10) (see Pic. 38 a-d).



Pic. 38c OCT-Box hanging beneath the table

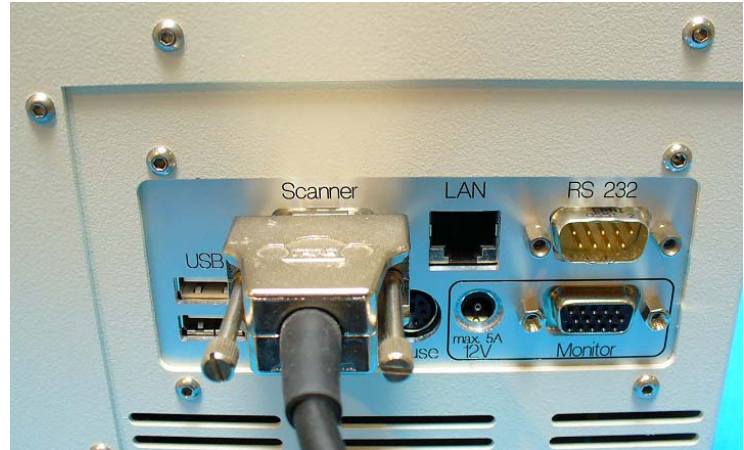


Pic. 38d OCT-Box with fastened screw





Pic. 39a Scanner cable

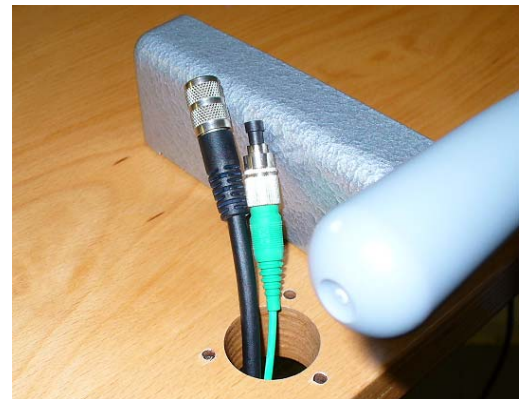


Pic. 39b Scanner cable connected to OCT-box

The next step is the installation of the scanner cable (see Pic. 39a).

When looking from the patients side of the device, the connectors of the OCT-box are located at the left side of the box (see Pic. 60). All connectors are labeled.

The sub-D connector of the cable is connected to the OCT-box (see Pic. 39b). The other end of the cable is pushed through the hole in the tabletop together with the fiber plug (see Pic. 40).



Pic. 40 Scanner cable and glass fiber are pushed through the hole in the tabletop

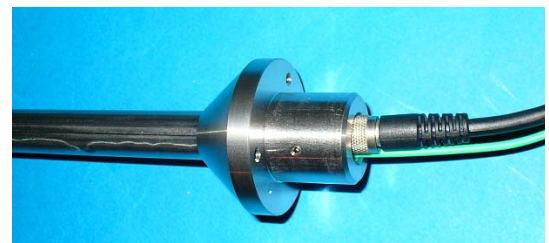
Remove the Allen screws (M4 x 35) and washers from the cable conduit (see Pic. 41a).



Pic. 41a Cable conduit



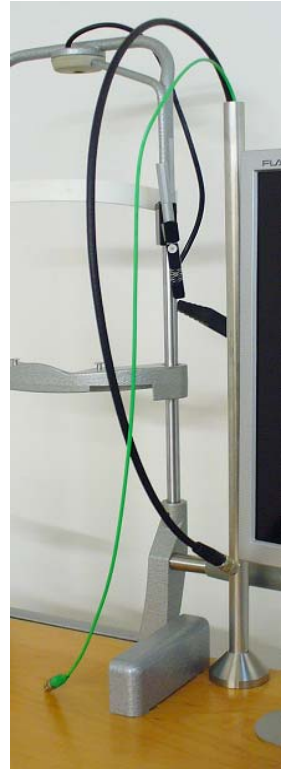
Pic. 41b Fiber and electrical connector



Pic. 41c Put first fiber and second electrical connector into the conduit

Both fiber and scanner cable together are threaded through the cable conduit (see Pic. 41b). The fiber connector must pass the tube first (see Pic. 41b and c). The scanner cable is stiff enough to be pushed through the tube taking the fiber with it.

Stick the cable conduit into the hole in the table (see Pic. 42). Do not screw it at this point of time.



Pic. 42 Cable conduit mounted onto the table

First mount the black plastic flexible tube onto fiber and scanner cable (see Pic. 43a and b).



Pic. 43a Plastic tube and clip



Pic. 43b Two parts of plastic tube

The flexible tube consists of two parts, which are clipped together (see Pic. 43b). Part it and fit in fiber and scanner cable near the connectors into the slit of the inner tube (see Pic. 44). The more flexible, thinner glass fiber must be at the inner side of the tube.



Pic. 44 Fit in glass fiber and scanner cable into the slit of the tube

Now carefully pull the connectors and the tube in the directions indicated in picture 45 in order to slide the cables into the tube (see Pic. 45).



Pic. 45 Glass fiber and scanner cable are sliding into the tube

Clip the outer part of the plastic tube (see Pic. 43) onto the inner part which is assembled on the cables (see Pic. 46).



Pic. 46 Closing the flexible tube

Assemble the clip (see Pic. 43a) at the end of the flexible tube (see Pic. 47).



Pic. 47 Clip at the end of the flexible tube



The clip is screwed into the conduit by turning the conduit around (see Pic. 48a).

**Attention: Do not rotate the clip! If the clip and flexible tube are rotated, the glass fiber will be drilled. This will cause a loss of signal quality!**



Pic. 48a Screwing of the clip into the conduit



Pic. 48b Mounted clip



Pic. 49 Flexible tube and clip assembled

When the flexible tube and the clip are mounted (see Pic. 48b and Pic. 49) the cable conduit must be fixed.

The rail cover must be at its place before assembling the cable conduit!

Lift the basis of the conduit about 2 or 3 mm from the tabletop (see Pic. 50a). Now it is possible to see the screw holes for adjusting and fastening the screws (see Pic. 50b)



Pic. 50a Assembly of cable conduit



Pic. 50b Tightened cable conduit



#### 5.4 Slit lamp

Swing the right rail cover to the side as shown in Pic. 51. Take the slit lamp out of its package and place it on the tabletop so that the wheels fit onto the rails.

Take the two eyepieces out of the package and push them into their holders in the microscope arm.

Cover the rails with the rail covers.



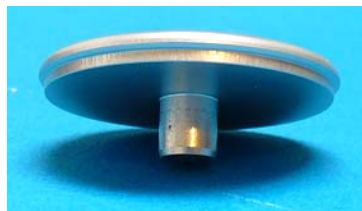
Pic. 51 Slit lamp standing onto the table

Remove the transport dust cover from the slit lamp's mirror (see Pic. 52 red).

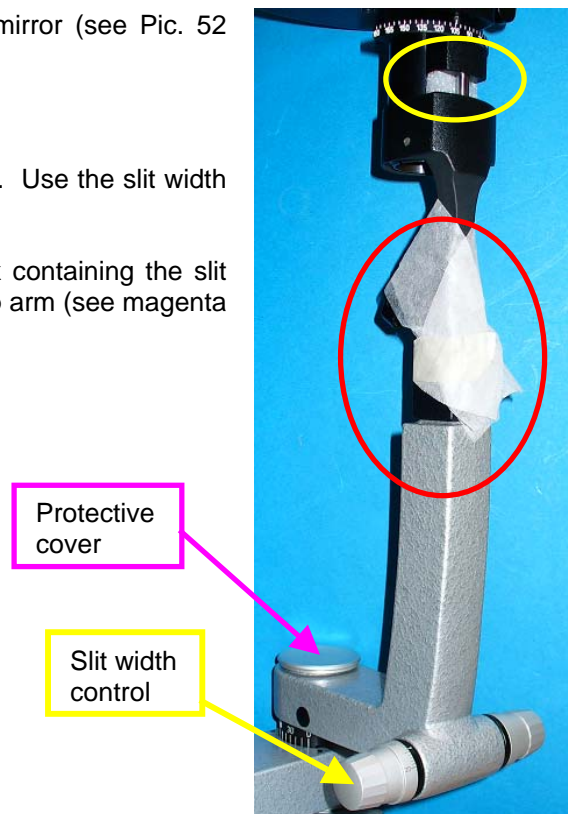
**Attention: Do not touch the mirror!**

Remove the transport protection shown in Pic. 52 yellow. Use the slit width control to loosen the protection piece and remove it.

Take the protective cover (see Pic. 52a) out of the box containing the slit lamp accessories and put it onto the basis of the slit lamp arm (see magenta arrow in Pic. 52).



Pic. 52a Protective cover



Pic. 52 Slit lamp's arm with transport protections

### 5.5 Electrical and fiber connections to the slit lamp

Three connectors are located on the head of the slit lamp (see Pic. 53):

1. The glass fiber is connected to the scanner-box.
2. The scanner cable is also connected to the scanner-box.
3. The lamp cable from the headrest is connected to the illumination unit.

**Attention: Do not touch the head of the fiber!**  
**Handle the fiber with care.**



Pic. 53 connectors of the scanner-box

Remove the protective caps from the connectors on top of the scanner-box (see Pic. 54a and b).

The connector next to the illumination unit of the slit lamp is a fiber socket with a notch (see also Pic. 56). The electrical connector for the scanner cable next to the fiber socket has a nose.



Pic. 54a connector on top of scanner box with protective caps



Pic. 54b Left: electrical socket, right: fiber socket

Remove the protective cap from the glass fiber plug (see Pic. 55a and b).

The fiber plug has a nose (see also



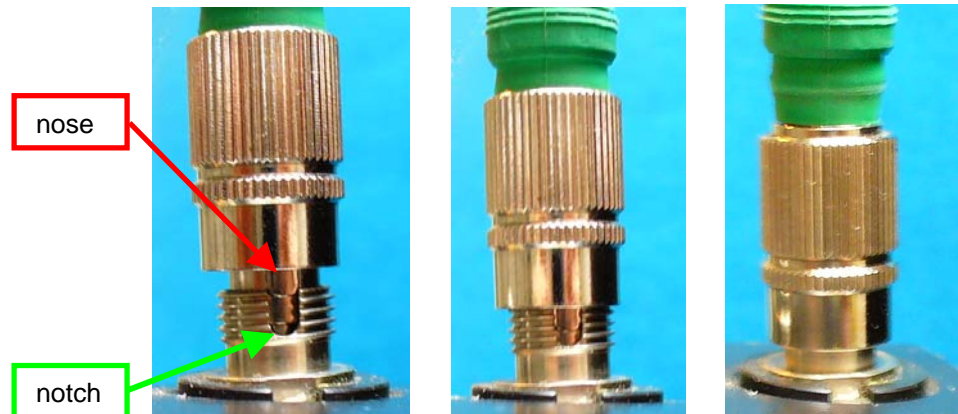
Pic. 55a fiber plug with protective cap



Pic. 55b fiber plug without protective cap

**Attention: Do not touch the head of the fiber!** Dirt on the head of the fiber will cause a loss of signal quality!

Plug in the glass fiber as shown in Pic. 56. Fit the nose of the fiber plug into the notch of the socket. Try to slightly turn the plug in the socket, to check if nose and notch are correctly placed. **Be careful not to twist the glass fiber, as rotating the glass fiber may damage it.** If it is not possible to rotate the plug, fasten the clamping nut.



Pic. 56 Nose and notch of the fiber connection

**Attention: Do not buckle the glass fiber!**

A kink in the glass fiber will lead to a loss of signal quality! A break of the fiber will lead to a breakdown of the device.



Pic. 57a buckled fiber



Pic. 57b Glass fiber well guided

Connect the scanner cable to the scanner-box. The little nose of the socket (see Pic. 54a and b) must fit into the notch of the plug. Fasten the clamping nut of the plug.

Connect the power for the slit lamp illumination to the head of the slit lamp (see Pic. 53).

Connect the power of the slit lamp to the slit lamp basis. Remove the cable bracket from the rail cover with a screwdriver for slotted head screws. Fix the cable with the bracket (see Pic. 58).



Pic. 58 Power supply for the slit lamp

## 5.6 Electrical connections to the OCT-box

Place the keyboard onto the keyboard fixation arm, the mouse pad onto the table, and the mouse onto the mouse pad (see Pic. 59).



Pic. 59 Keyboard and mouse

When looking from the patients side of the device, the connectors of the OCT-box are located at the left side of the box (see Pic. 60). All connectors are labeled.

The scanner is already connected (see Pic. 39).

Connect monitor, keyboard, and mouse.

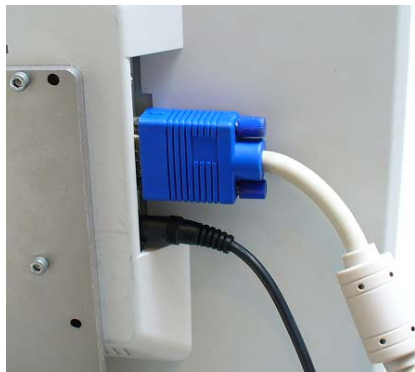
If the monitor needs dc voltage, the 12V connector is used. If the monitor needs ac voltage refer to next section 5.7.



Pic. 60 Connectors of the OCT-box

USB, LAN, and RS232 are optional connectors for computer periphery.

The following images show the connections of the monitor on the rear side. In case of dc power refer to Pic. 61a. In case of ac power supply refer to Pic. 61b.



Pic. 61a Monitor with dc power supply (bottom) and VGA connection (top)



Pic. 61b Monitor with ac power supply (left) and VGA connection (right)



## 5.7 AC connections

The sockets for ac power are located on both sides of the lift table's control console (see Pic. 62).



Pic. 62 AC socket at control console

The following ac cables are needed:

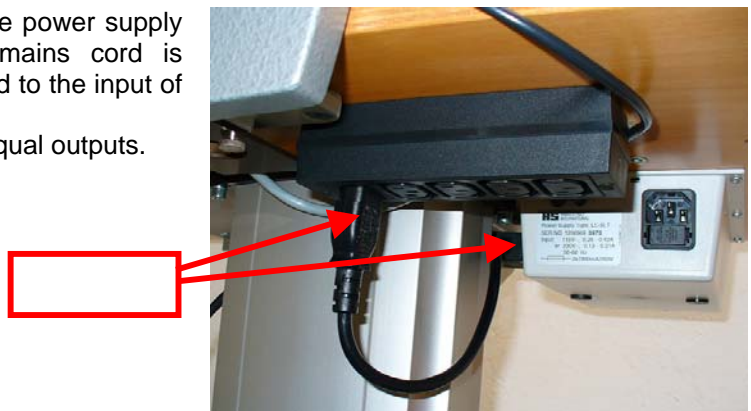
1. Power-in to multiple socket (length 0.35 m)
2. Power to power supply slit lamp (length 0.30 m)
3. Power to OCT-box (length 0.32 m)
4. Power to monitor if monitor needs ac power (length 1.05 m)
5. Optional: power to printer (refer to section 5.2).



Pic. 63 AC cables

The image to the right (Pic. 64) shows the power supply of the multiple power socket. The mains cord is connected to the console (see Pic. 62) and to the input of the multiple socket.

The multiple power socket provides four equal outputs.



Pic. 64 Multiple power socket with power-in connection to control console of column

The image to the right (see Pic. 65) illustrates the power distribution with the multiple power socket. The optional power connection to the printer is not shown.



Pic. 65 Power distribution with multiple socket

Use the protective cover of the headrest and the premounted cable bracket with a cable tie for a proper placement of the cables (see Pic. 66a and b).



Pic. 66a cable bracket



Pic. 66b placement of cables

## 5.8 Cleaning

If necessary, clean the mirror of the slit lamp.

We recommend to remove dust using compressed air, which is commercially available in aerosol cans. Fingerprints can be removed with a small amount of ethanol and lens cleaning tissue. Contact Heidelberg Engineering support for a detailed description for the cleaning of mirror and glass fiber head.

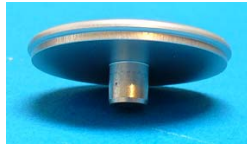
If necessary, clean the computer monitor.

Again, the best way to remove dust is compressed air. In order to remove fingerprints use special cleaners for TFT computer screens, e.g. a special tissue with alcohol free cleaning fluid.

For information on maintenance, please refer to the SL-OCT Operation Instructions.

## 6 Test measurement

Start up the system as described in the *SL-OCT Operating Instructions*. Wait about 10 minutes until the device has warmed up. Start the *Heidelberg Eye Explorer* program and open the acquisition window.

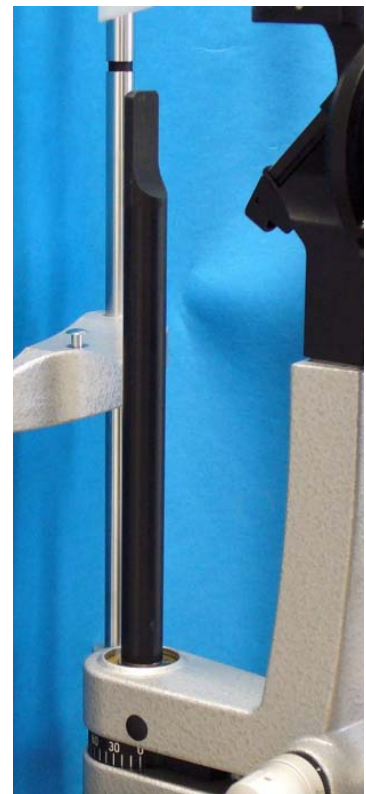
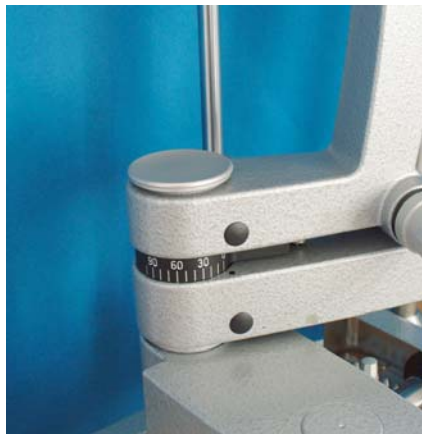


Pic. 67a protective cover



Pic. 67b Slit lamp's rod

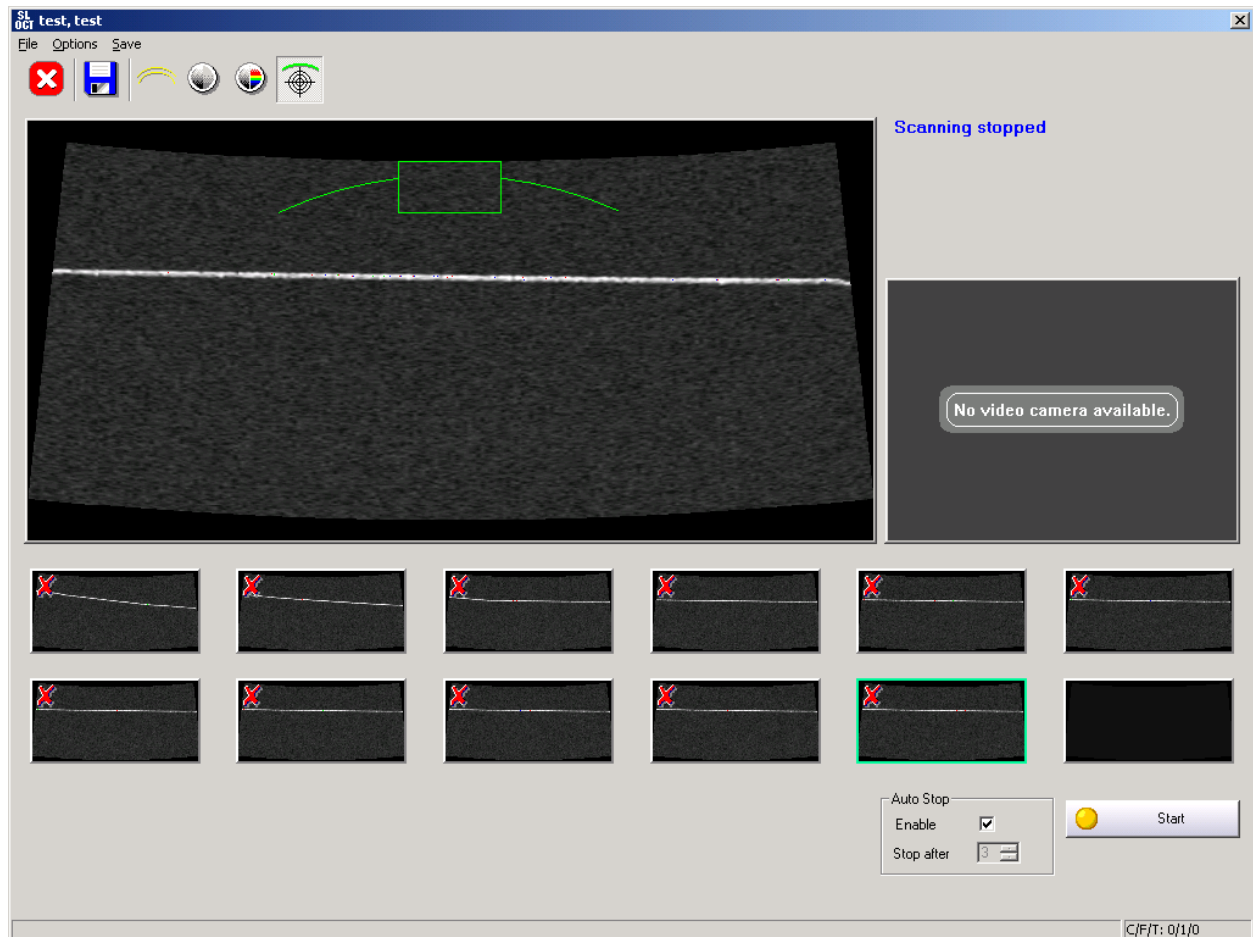
Remove the protective cover from the slit lamp and fit in the test rod of the slit lamp (see Pic. 67 and Pic. 68). The test rod is an accessory of the slit lamp and can be found in the accessories box.



Pic. 68 Installation of the slit lamp's test rod

Start the acquisition. Adjust the rod until a horizontal bright white line is visible in the upper third of the OCT display (see Pic. 69).

If the OCT image of the rod is not shining bright or located at a wrong position in the B-scan, refer to section 8 Appendix A Troubleshoot.



Pic. 69 Measuring the slit lamp's test rod

When the test image of the rod is correct, stop the data acquisition and remove the test rod from the slit lamp. Cover the holding of the rod with the protective cover again.

Now the installation process of the SL-OCT device is finished.



## 7 Disassembly of a SL-OCT unit

This section contains special notes for the disassembly of the SL-OCT unit. Basically the disassembly is the installation procedure in backwards order.

If packages for the unit are lost, contact Heidelberg Engineering for replacement. In any case the original cardboard boxes must be used for transportation of the SL-OCT unit.

Please slightly screw all screws and washers after disassembly in their screw holes again. Loose screws in the cardboard boxes may damage the SL-OCT unit!

### Removing the fiber connection

**Attention:**      **Do not buckle the glass fiber!**  
                     **Do not touch the head of the fiber!**

Before opening the fiber connection on top of the scanner-box, be sure that the protection cap for the fiber plug is ready to hand. As soon as the plug is disconnected, protect the fiber head with the cap (see Pic. 55a).

If necessary there are replacement caps in the package of the OCT-box.

### Packaging the slit lamp into the cardboard box

**Attention:**      **Do not touch the mirror!**

First, remove the eyepieces from the slit lamp's microscope.

Mount the protective caps onto the connectors on top of the scanner-box. If necessary, there are replacement caps in the package of the OCT-box.

Protect the slit lamp's mirror with a lens cleaning tissue as shown in Pic. 52.

Protect the slit lamp against vibrations with the transport protection also shown in Pic. 52.

**Lower the slit lamp as low as possible by turning around the control lever.**

### Opening the plastic clip

Use a screwdriver for slotted head screws for opening the clip as shown in Pic. 70. Block the locking mechanism with the screwdriver and part the slit of the clip.



Pic. 70 Opening the plastic clip

**Removing the flexible plastic tube**

**Attention:**      **Do not buckle the glass fiber! Handle the fiber with care.**

The flexible plastic tube consists of two pieces that are clipped together. First remove the outer part. Then take both cables – glass fiber and scanner cable – in one hand and pull them out of the slit of the inner tube.

**Putting the column into the cardboard box**

After the tabletop is removed from the column, connect mains and lower the column as low as possible.

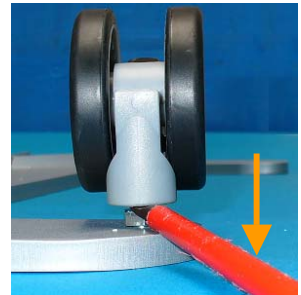
**Attention:**      **Be very careful because cables in the open control console are alive!**

The column must be telescoped to the lowest position before it can be put into the cardboard box.

**Removing the wheels from the foot**

First disassemble the column from the foot.


For removing the wheels from the foot, a solid screwdriver for slotted head screws at least 6 mm is required. Place the foot on a table near the table's edge. Insert the screwdriver between nut and top of the wheel as shown in Pic. 71 and lever the wheel from the pin (see arrow).



Pic. 71 Disassembly of wheel

## 8 Appendix A: Troubleshooting

If parts are missing, contact Heidelberg Engineering. For missing screws, please refer to section 9

Problem	Cause	Measures / Solution
The tube of the cable conduit in the base is loose.	The Allen set screw holding the tube is loose.	Tighten the screw in the base with an Allen key 2 mm.
The lift column is not working.	Mains are not properly connected.	Check the mains connection.
	Mains cord is defect.	Check the mains cord.
	Mains voltage differs from the specified voltage for the column.	Check the column specifications.  Contact Heidelberg Engineering.
Device is switched on and the green power switch is not shining.	Other cause.	Contact Heidelberg Engineering.
	Device not connected or connection with mains is defective.	Check mains connectors. Is the multiple socket connected to the column? Is the main switch at the control console of the column switched on?
Device is switched on and monitor stays dark	Cable connections between monitor and OCT-box are defective.	Check the cable connection.
	Monitor is switched off.	Use the power switch of the monitor to turn on the screen.
	Other cause.	Contact Heidelberg Engineering.

Computer is booted but mouse / keyboard does not work.	Connection of mouse / keyboard is defective.	Check the connection of the mouse / keyboard plug at the OCT-box and reboot the computer.
The test measurement is strange.	SL-OCT is not scanning.  Glass fiber is not properly connected.	Shut down the computer and check scanner cable. Reboot the computer and start measurement.  Check the fiber connection, see section 5.4 Pic. 56.

## 9 Appendix B: List of screws

All screws required are delivered with the system and premounted in their screw holes.




Allen screw metric thread length in mm	Quantity	Washer	Position
M3 x 10	4	-	OCT-box - table
M4 x 20	4	-	Monitor- and keyboard arm - monitor
M4 x 30	3	Flat washer	Cable conduit - table
M6 x 12 optional	4	-	Optional printer arm - table
M6 x 16	4	Spring washer	Control console column - tabletop
M6 x 20	4	-	Monitor arm - table
M6 x 25	2	-	Headrest - table
	4	Spring washer	Column - tabletop
M6 x 40	4	Spring washer	Foot - column
<b>Recessed countersunk flat head wood screws</b> 4 x 16 optional	4	-	Optional printer arm – printer tabletop

All used screws are commercially available.







## 10 Appendix C: Packing lists

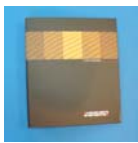


### 10.1 Lift table

Part		Quantity
	Foot	1
	Wheel	4
	Column	1
	Tabletop	1
	Fixation arm for monitor	1
	Fixation arm for keyboard	1
	Cable conduit	1




	Cable 0.30 m power supply slit lamp	1
	Cable 0.32 m power supply OCT-box	1
	Cable 1.05 m power supply monitor	1
	Cable 0.35 m power supply multiple socket	1
	Flexible plastic tube	1
	Plastic clip	1
	Rail cover	2

## 10.2 OCT-box

Part		Quantity
	OCT-box	1
	Protection cap mounted on fiber plug	1
	Mouse	1
	Mouse pad	1
	Scanner cable	1
	Signal cable monitor (VGA)	1

	Folder SL-OCT operating instructions	1
	Dust cover	1
	Replacement protection cap scanner plug-in	1
	Replacement protection cap glass fiber plug	1
	Replacement protection cap fiber plug-in	1
	Replacement fuse 5.0 A	2

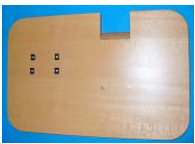



### 10.3 Slit lamp

Part		Quantity
	Slit lamp	1
	Eye piece	2
	Headrest	1



	Headrest handles	2
	Keyboard	1
	Monitor	1
	Dust cover slit lamp	1
	Test rod	1
	Protective cover	1
	Breath-shield	1
	Chinrest papers	1 package

#### 10.4 Optional printer table

Part		Quantity
	Tabletop	1
	Fixation arm	1
	Cable tie 14 mm	2
	Cable tie 37 mm	2
	Screw M5 x 12	3
	Plug IEC60 320	1