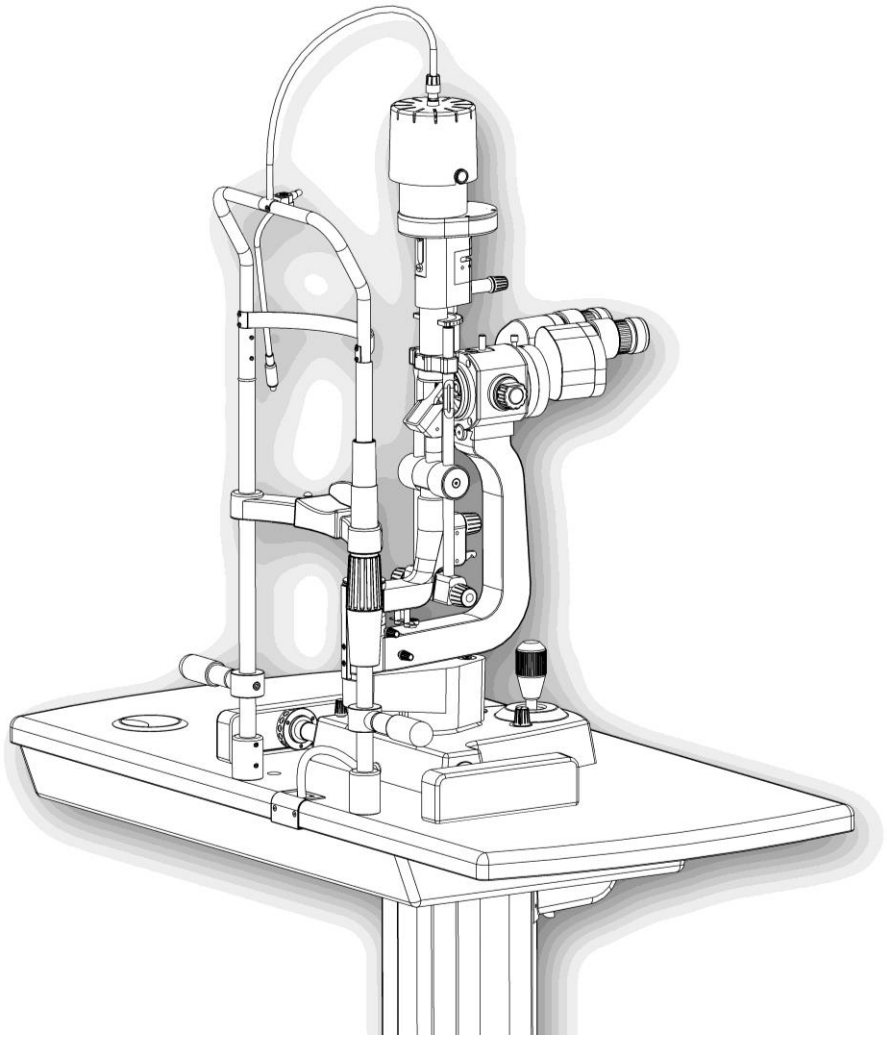
Instruction Manual

PCL5® SHD

Slit lamp



A.R.C. Laser GmbH

CE

Bessemerstr. 14
90411 Nürnberg
Germany

Tel.: +49 911 21779-0
Fax: +49 911 21779-99

info@arclaser.de
www.arclaser.de

Ausgabestand

Datum	20.12.2012
Datei	Bedienungsanleitung PCL5 SH-Diagnose_Englisch.docx
Revisions-Datum	15.03.2013
Autor	Thomas Herberger, Antonia Rzeszotek, Markus Graf
Geprüft	R. Thyzel

Spaltlampe PCL5® SHD

Instruction Manual

Introduction

We would like to thank you for your decision to purchase this PCL5® slit lamp.
If the instructions in this manual are carefully followed we are confident that this product will give you reliable and smooth usage.

Purpose of use

The PCL5® is intended for use in eye examination of the anterior eye segment, from the cornea epithelium to the posterior capsule. With lenses or contact glasses the examination area can be extended right up to the retina. It is used to aid in the diagnosis of diseases or trauma which affects those areas of the eye.

In case service is necessary please contact:

A.R.C. LASER GmbH
Bessemerstr. 14
90411 Nürnberg
Germany

Tel.: +49 911 21779-0
Fax: +49 911 21779-99
service@arclaser.de

Index

1 Safety

Ambient Conditions

- Transportation temperature -40 °C to +70 °C
- Air pressure 500 hPa to 1060 hPa
- Relative humidity 10% to 95%
- Storage temperature -10 °C to +55 °C
- Air pressure 700 hPa to 1060 hPa
- Relative humidity 10% to 95%
- Working temperature +10 °C to +35 °C
- Air pressure 800 hPa to 1060 hPa
- Relative humidity 30% to 75%

Montage

- The rail cover avoids a fall over of the slit lamp
- Please make sure that every connection piece fits tightly, especially after installation of accessories
- Always mount the slit lamp and the headrest on an electric insulated and fire resistant table top

Operation, Surrounding

- Only qualified and trained personnel should operate the equipment
- Use only original A.R.C. Laser accessories
- Use only original light bulbs
- After every use the device has to be switched off
- Before putting on the dust cover, allow the device to cool down
- Never use the ocular to look into the sun
- The slit lamp must not be used in explosion endangered areas
- Do not use combustible gases (alcohol, fuel) or flammable liquids
- Avoid humidity

Changing the Light Bulbs

- Switch off the device and disconnect the main connector
- Allow the bulb to cool down
- Only remove the lamp cover, if you wish to change the light bulb

Electrical Safety

- Use only a hospital grade 3-conductor electrical power supply cable
- Use only UL listed cables while operating the device in the U.S.A. or Canada
- Plug, cable and protective earth connection of the socket must be free of damage and work properly.

Cleaning

- All the slit lamp housing parts should be cleaned only with a slightly water dampened cloth
- Do not use any liquids like alcohol or corrosive agents for cleaning
- Do not clean anything inside the slit lamp
- Use chin rest paper for the chin rest (Order No.: SL01115)
- Clean the forehead band with an alcohol dampened cloth for a reasonable disinfection of the device

General Information

- Expose the patient's eye only as long as necessary to the light of the slit lamp – excessive irradiation of the eye may cause damage
- Only select the maximal brightness necessary for your examination

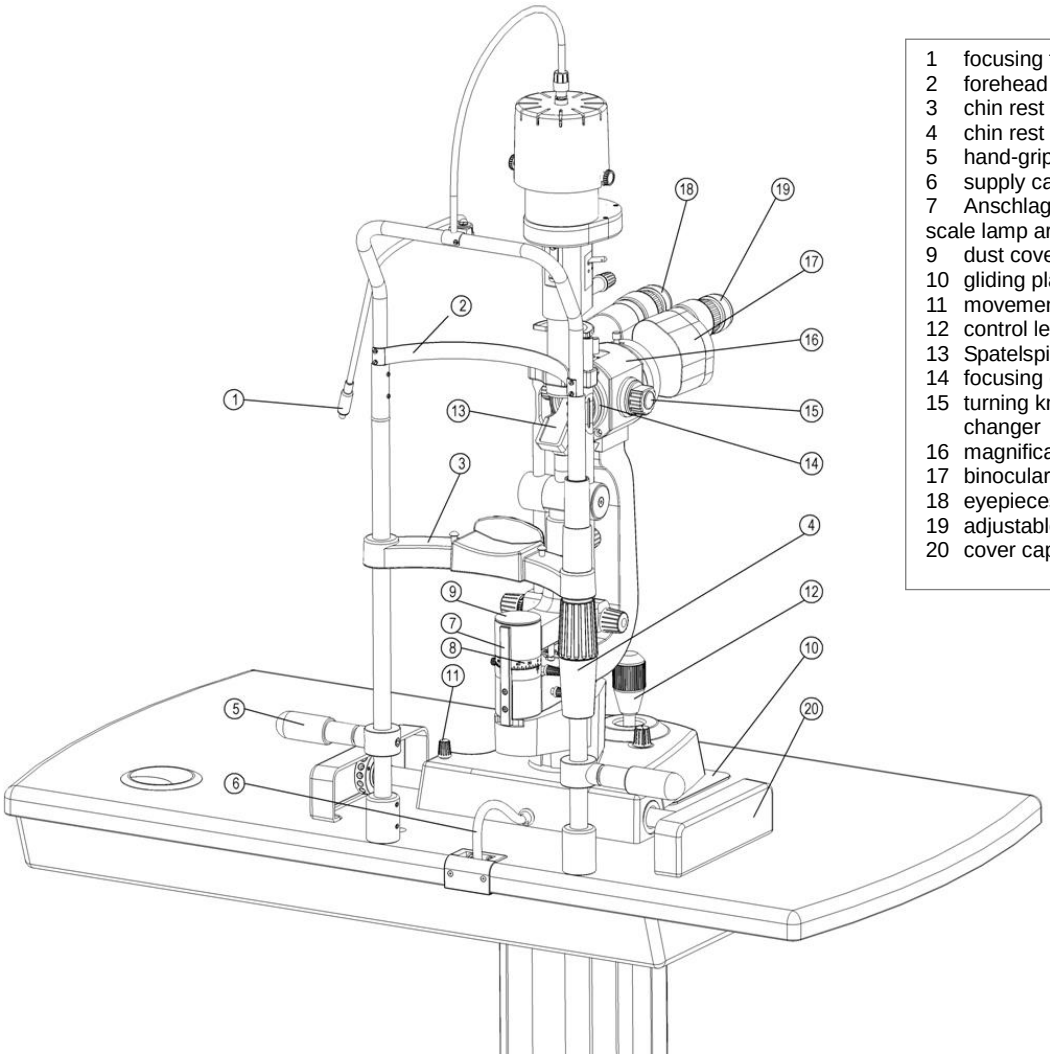
Warranty / Product Liability

- The device should be operated in accordance with the chapter „Safety“
- Incorrect operation can damage the device and thereafter no warranty claims can be accepted
- The manufacturer cannot be held liable by incorrect handling of the device.
- Repairs, maintenance and alterations on this equipment should only be carried out by service technicians

Statutory Requirements

- The device has been designed and constructed in conformance with the IEC/ EN 60601-1-2 and EN ISO 15004-2 Standards
- Manufacturing procedures, testing, commissioning, maintenance and repair are conducted under the observance of valid regulations
- Mind the IEC/ EN 60601-1 Standard, if different electrical devices are combined.
- The compliance of the slit lamp PCL5® with the directive 93/42/EWG is confirmed by the „CE“ marking.
- The device meets the electromagnetic compatibility requirements of IEC / EN 60601-1-2.
- All statutory accident prevention regulations are to be observed.
- Classification IEC / EN 60 601-1 slit lamp PCL5® according to safety class I.
- Application part Type B.
- Operation mode: continuous operation
- CE regulation 93/42 EWG class I
- FDA class II

2 Overview



1 focusing target
2 forehead band
3 chin rest with paper rivets
4 chin rest height adjustment
5 hand-grip patient
6 supply cable
7 Anschlagfahne
scale lamp arm rotation
9 dust cover
10 gliding plate
11 movement stopper
12 control lever
13 Spatelspiegel
14 focusing objective
15 turning knob magnification changer
16 magnification changer
17 binocular tube
18 eyepieces
19 adjustable eyepiece cups
20 cover cap

Abbildung 1: Overview slit lamp 2

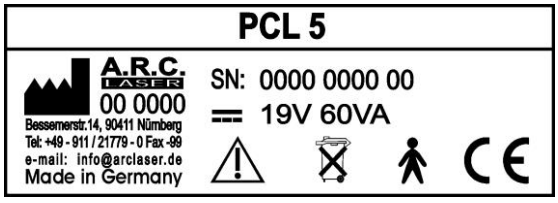
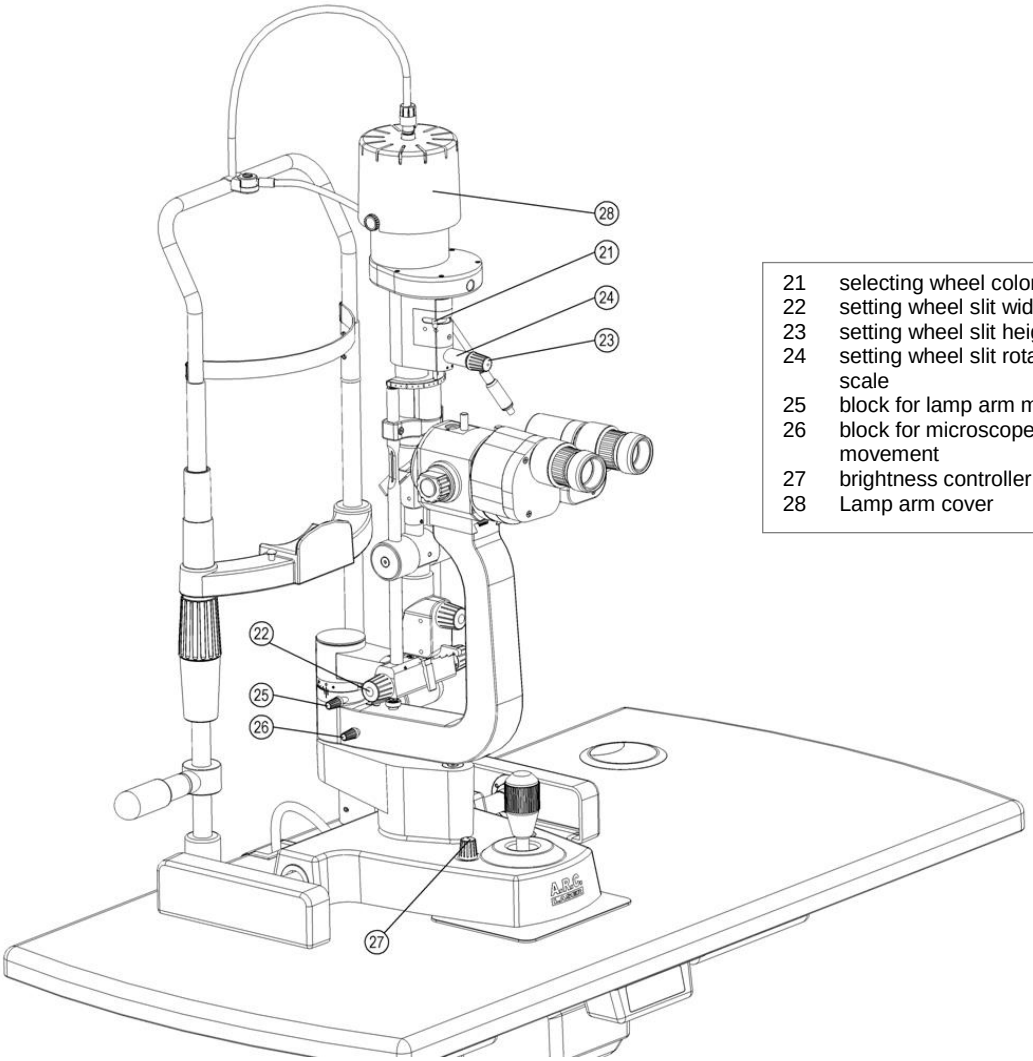


Abbildung 2: Geräteaufkleber



21	selecting wheel color filter
22	setting wheel slit width
23	setting wheel slit height
24	setting wheel slit rotation with scale
25	block for lamp arm movement
26	block for microscope arm movement
27	brightness controller
28	Lamp arm cover

Abbildung 3: Overview 2 slit lamp

NOTICE: If using an already existent slit lamp power supply, the knobs for brightness (27) have to be exchanged through a switch. The immediate usage of a LED module (accessories, Order no. BG06503) is thereof not possible. A modification, however, is anticipated and can be carried out by trained service technicians.

3 Installation

Preparation of slit lamp table – OEM Version

- Take out the chin rest from the package.
- Transfer with the chin rest angle (31) the position of the mounting holes on the table base and drill with a 1.5 mm drill six holes about 15mm deep. Fasten the chin rest, then use the attached screws (30)
- Drill as displayed in picture 3 with a 1,5 mm drill four approx. 15 mm deep holes into the table base and attach it to the power supply (32) using the attached screws. Take care during positioning of the power supply the available cable lengths for in- and output. If a power supply for direct connection of the bulb already exists you can skip this step.

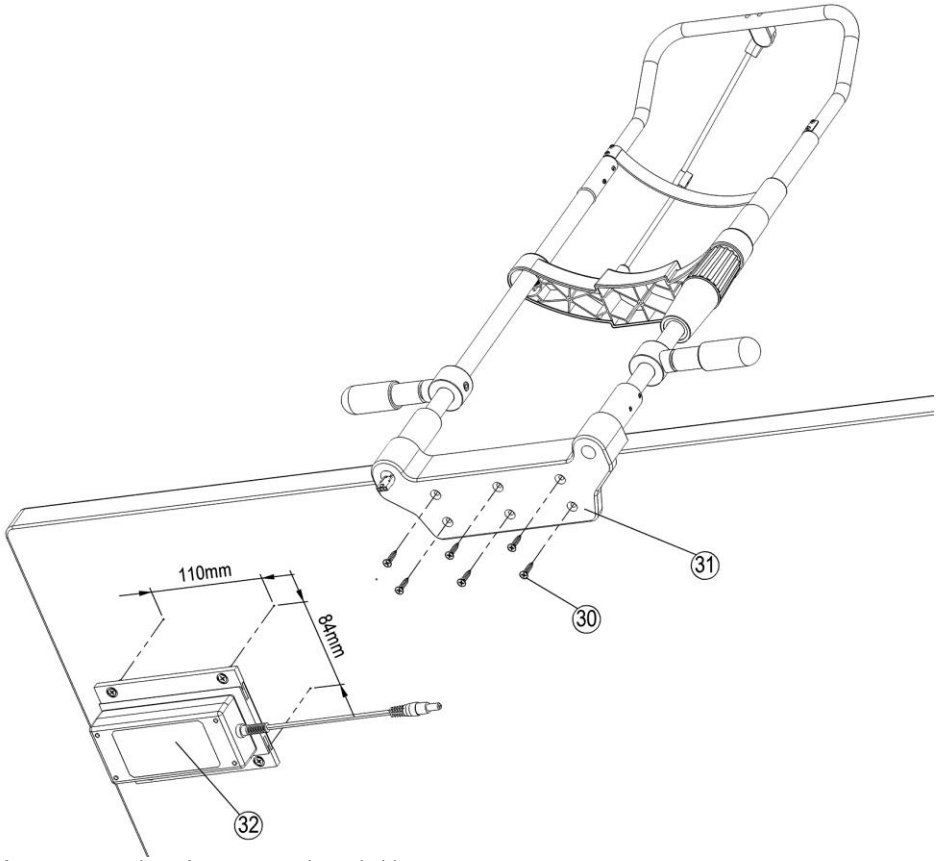


Abbildung 4: Mounting of power supply and chin rest

- Drill with the help of attached mounting template with a 1.5 mm drill four 15 mm deep holes into the table top and fasten the two racks (33). Ensure that the spacers (34) are not forgotten.
- Stick to the gliding plate (10) using the mounting template on the table top. Please make sure that the table top is clean and free of grease.

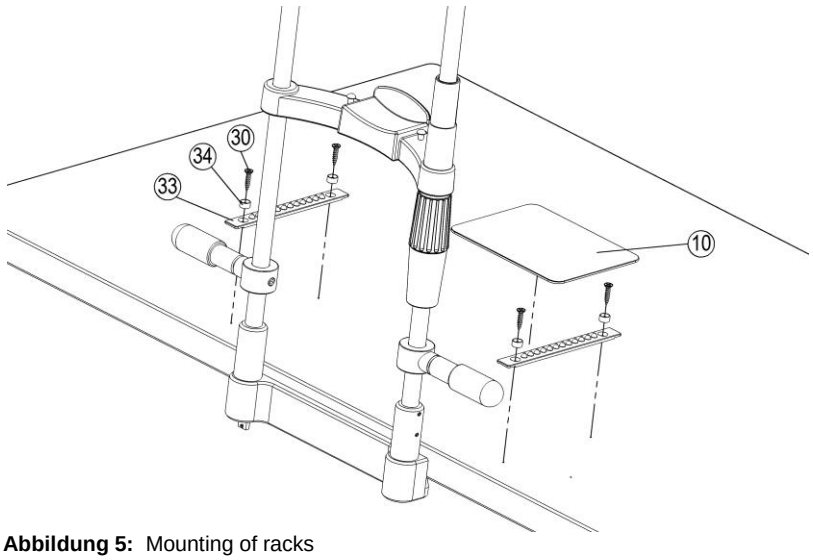


Abbildung 5: Mounting of racks and gliding plate

3.1 Preparing the Slit Lamp Table

- Remove the chin rest from the package
- Fasten the chin rest with the attached discs (35) which are preinstalled at the slit lamp table using the mounting screws (36).
- Ensure, while inserting the chin rest, that the electrical connection cable for the fixation lamp will not be damaged while threading it through the fixation hole (35).

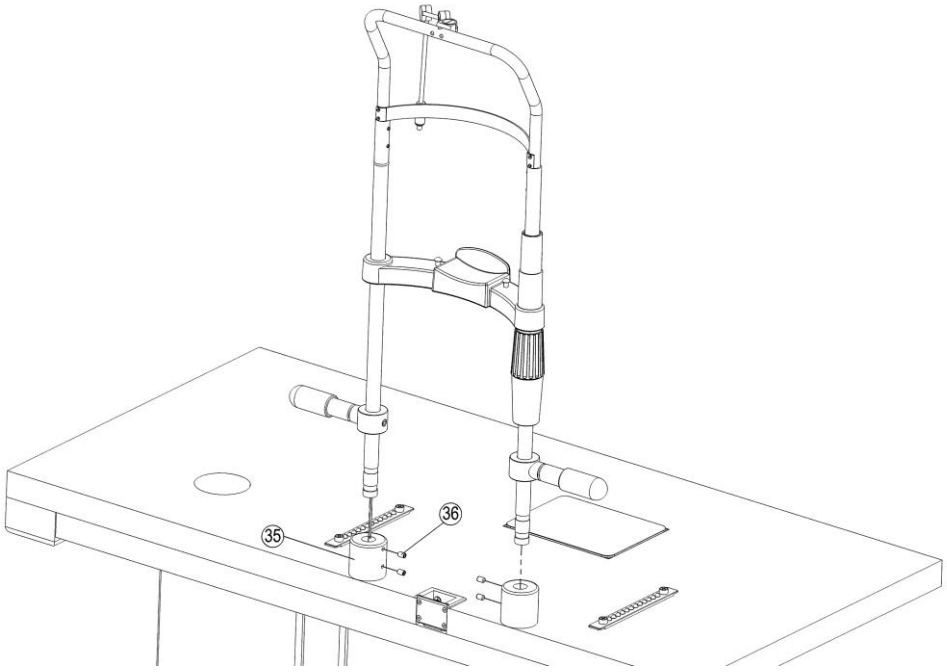


Abbildung 6: Mounting of chin rest on prefabricated slit lamp table

3.2 Installing the Basic Device

- Take out the main device and put it on the rails
- Put the cap (20) onto the left and right rack

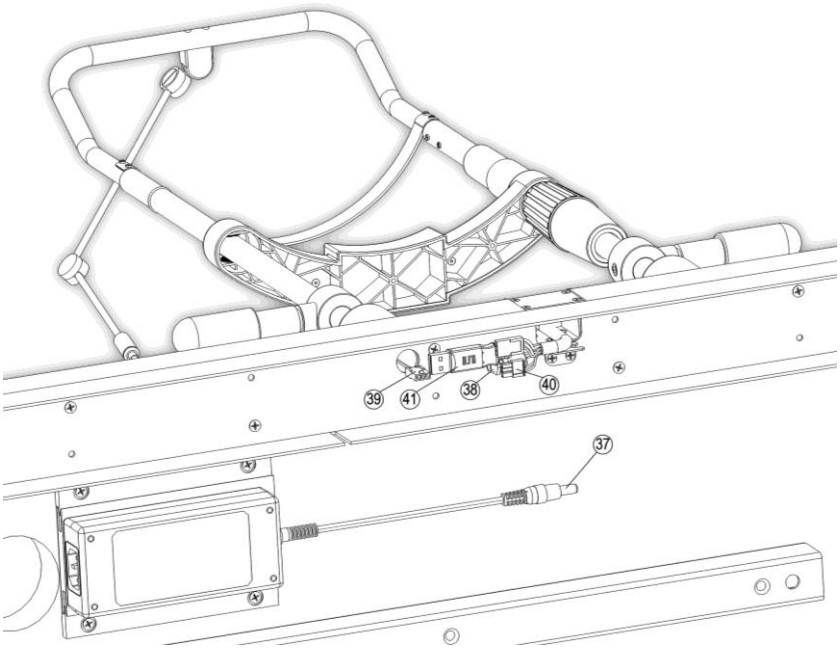


Abbildung 7: Connection of supply cable

- Connect the main plug (37) with the socket (38)
- Connect the plug from the chin rest (39) with the socket (40)
- The plug (41) is only to be used with the Camera adapter (accessory).
- Connect the power supply with the socked using the power connection cable

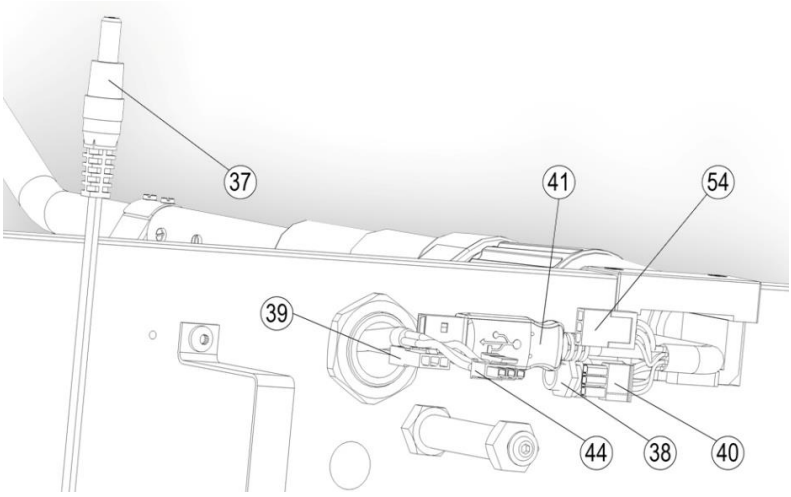


Abbildung 7a: Connection of supply cable

3.3 Installing the Slit Lamp Microscope

- Delivery is made in an already assembled condition.
- To install the slit lamp microscope put the oculars (18) into the binocular tube (17)
- Mount the binocular (17) with the clamping screw (42) on the microscope coupler (16)
- Move the microscope to the stopper screw (28) which is on the dovetail of the microscope arm and fasten it with the clamping screws.

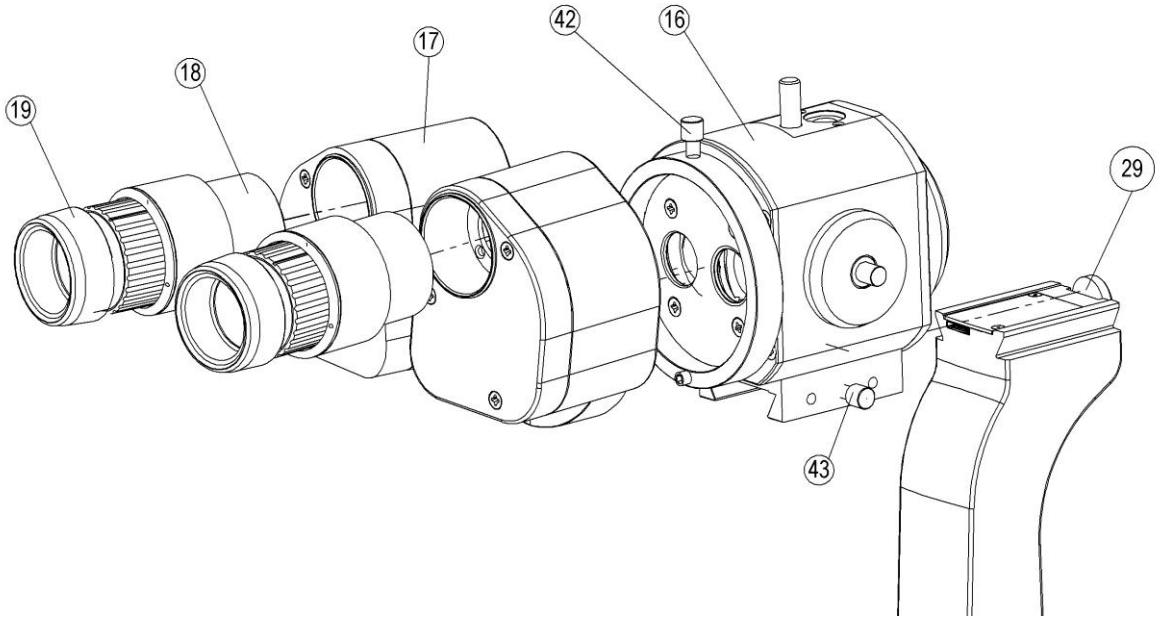


Abbildung 8: Installation of slit lamp microscope

3.4 Adjusting the Eyepieces

- Turn on the slit lamp with the brightness controller (27) and look at the pin (45) through the slit lamp microscope.
- Pull the sliding eyecup (19) out until it stops, if you're not wearing glasses. Eyeglass wearers push it until it stops.
- Adjust each eyepiece separately, by turning the knurled ring with the diopter scale separately, until the projected slit is seen in focus. Adjust from (+) to (-) at low magnification.

4 Operation

4.1 Preparing the Patient

- To obtain a firm rest for forehead and chin, the height of the table has to be adjusted in such way that the patient is seated in a slightly to the front bended position.
- In order to ensure that only that part of the eye is illuminated which is to be examined and to avoid disturbing glare, the height of the light beam must be appropriately adjusted.
- Those parts of the equipment, which have contact with the patient should be cleaned with a dry cloth before each examination.
- Move the chin rest up or down with the adjustment screw (4) until the eyes of the patient are on the same level as the black mark (46) on the headrest column.

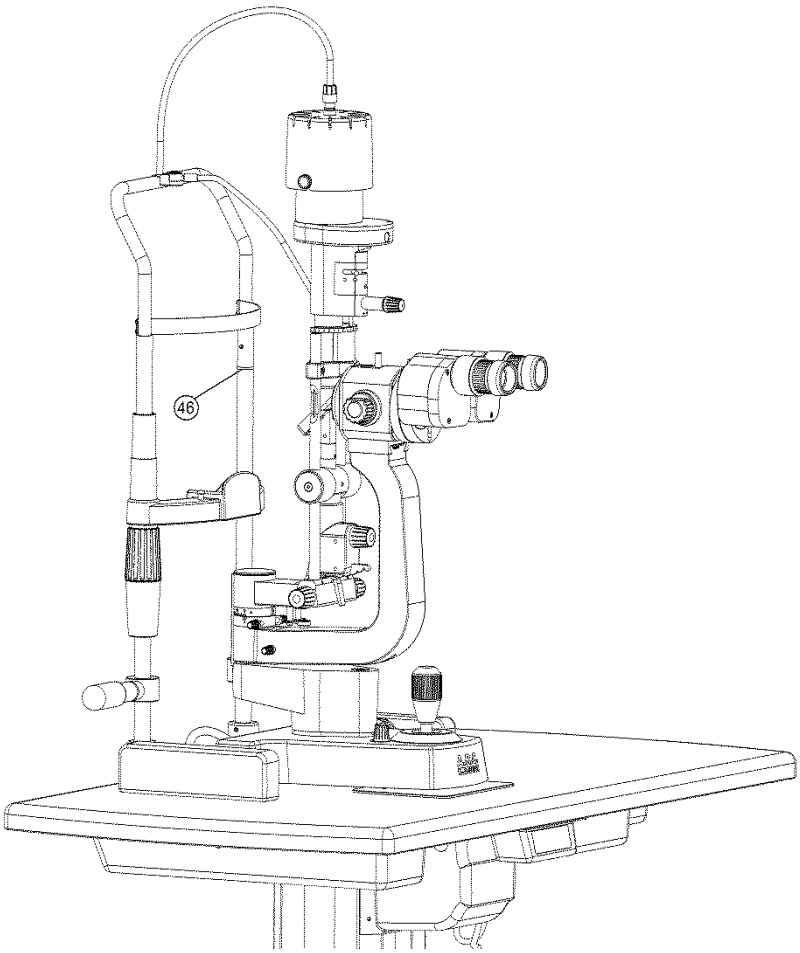


Abbildung 10: Adjustment of the chin rest height

4.2 Operating the Instrument

Turn on the slit lamp with the brightness controller and bring the light beam with the control lever on eye level.

We recommend setting the height position of the light beam first by rotating the control lever. Thereafter move the light beam sideways in order to aim the beam onto the eye which is to be examined. For coarse adjustment the control lever can be used to move the level of the slit lamp base without tilting or rotating.

By means of tilting the control lever a fine adjustment can be done.

Also repeat this procedure for the distance to the patient's eye.

In case, you wish to keep that particular position, turn the movement stopper (11) clockwise.

The magnification of the microscope can be adjusted by the knobs at the side. The slit can be swiveled by ±90° around the vertical axis.

The fixation of that direction of motion is possible through the thumb wheels (25). The slit height and width can be adjusted with the setting wheels 22 and 23. Through the setting wheel (24) the slit can be rotated around the optical axis. If an illumination with reduced brightness but at the same time with constant color temperature of the slit image should be necessary, a grey filter can be swiveled in with the setting wheel (21). Parallel to this, a green respectively a grey filter can be swiveled in. The microscope can be swiveled by ± 30° around the vertical axis. The fixation of that direction of motion is possible through the thumb wheel (26).

As long as the device is idle a dust cover is advisable. Before you use the dust cover, allow the device to cool down for 30 minutes.

The instrument is delivered together with a halogen bulb. A LED module as accessory is alternatively available. The provided power supply can be used for both light bulbs.

4.3 Changing the Light Bulbs

Schalten Sie die Spaltlampe vor dem Auswechseln des Leuchtmittels aus und ziehen Sie das Netzkabel aus der Steckdose. Lassen Sie die Spaltlampe 30 Minuten abkühlen wenn diese vor dem Lampenwechsel nicht schon außer Betrieb war.

Before changing the light bulbs, switch off the slit lamp and disconnect the supply cable from the socket. Allow the slit lamp to cool down for 30 minutes, if it was used before.

- Loose both locking screws (56) by turning them 2-3 times. Remove the connection cable (55) from the lamp cover. Now you can take away the lamp cover (28).
- Remove the lamp socket (48) from the illuminant (47) and pull out the bulb thereafter as well
- Unpack the new bulb and put it into the light arm. Please make sure that the notch of the bulb at the side shows to the left. The bulb has to lock into place at the upper and underside.
- Push the lamp socket (48) back onto the contact up to the stop and fasten the lamp arm again with the two locking screws (56), then put the connection cable back into the jack.

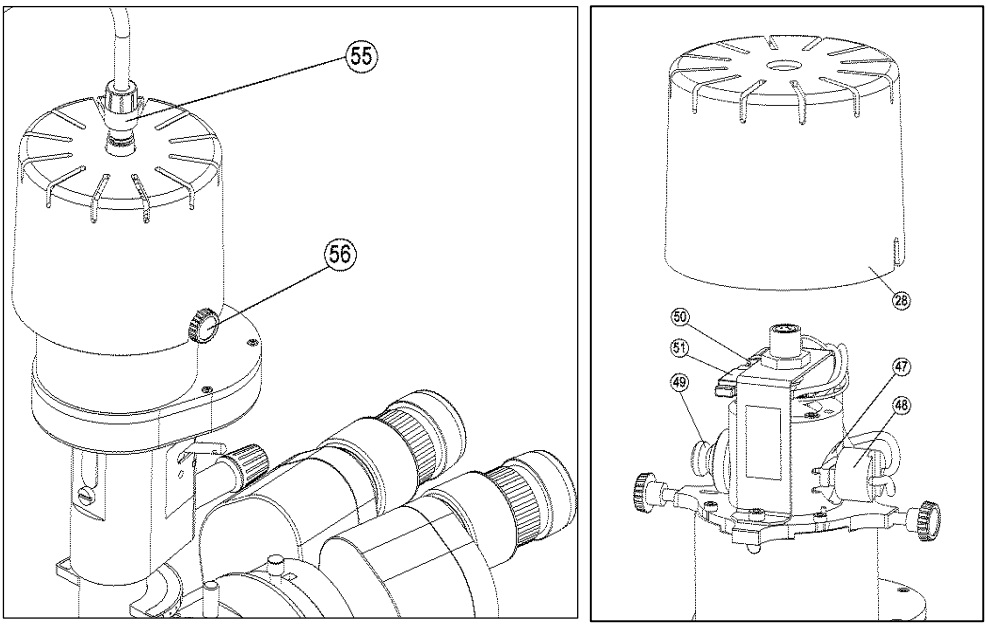


Abbildung 11: Changing of light bulbs

4.4 Changing the Light Bulbs (halogen bulb → LED module)

Before changing the light bulbs switch off the slit lamp and disconnect the supply cable from the socket. Allow the slit lamp to cool down for 30 minutes, if it was used before.

Avoid touching the glass bulb of the illuminant (47) with your fingers!
Only use original illuminants!

- Loose the lamp cover as described in chapter 4.3
- Pull out the dummy plugs (49) from the lamp housing and remove the dongle (51) from the connector (50) . Store both items for possible re-use.
- Remove the lamp socket (48) from the (halogen) illuminant (47) and pull out the bulb thereafter as well. In case that the (halogen) illuminant (47) is still functional store it for possible re-use.
- Push the LED module (52) into the lamp housing (*see page 17 picture 13*) and mind the alignment of the bulb. Make sure that the bulb locks into place at the underside.
- Connect the jack (53) of the LED module with the connector (50)
- Put the alignment for the halogen bulb (48) back into the foreseen place
- Reinsert the lamp cover (28) as described in chapter 4.3.

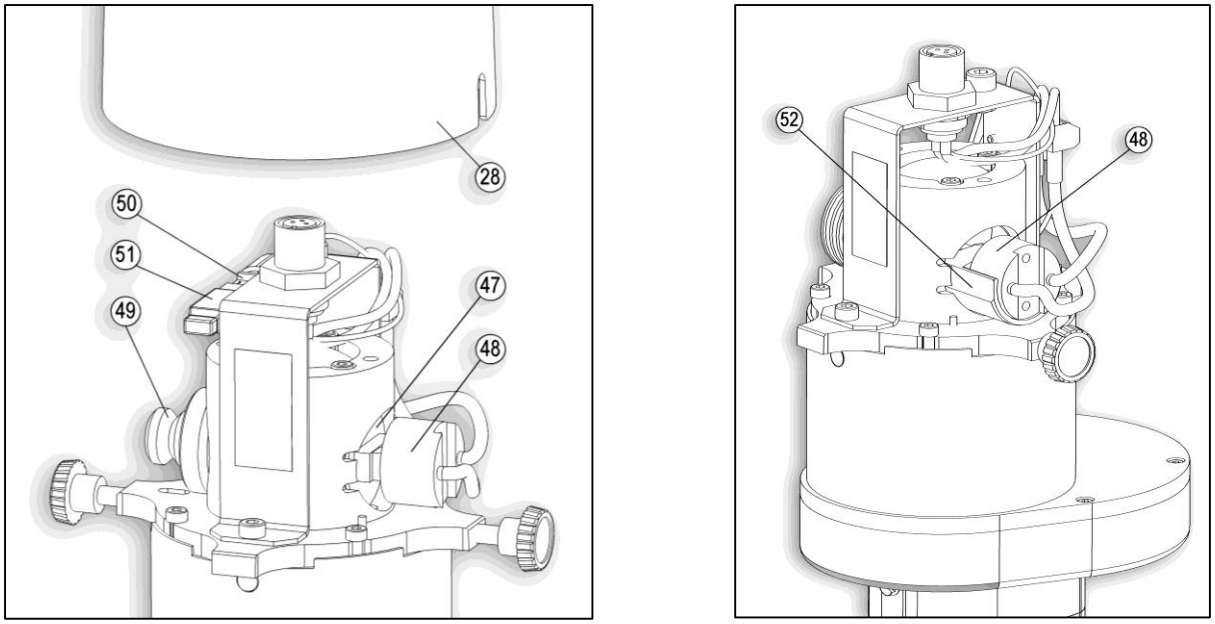


Abbildung 12: Changing of light bulbs

4.5 Changing the Light Bulbs (LED module → halogen bulb)

Before changing the light bulbs switch off the slit lamp and disconnect the supply cable from the socket. Allow the slit lamp to cool down for 30 minutes, if it was used before.

Avoid touching the glass bulb of the illuminant (47) with your fingers!

Only use original illuminants!

- Loose the lamp cover (28) as described in chapter 4.3.
- Pull out the lamp socket (48) from the storage pocket of the LED module
- Remove the jack (52) of the LED module (52) from the connector (50)
- Pull the LED module out of the lamp housing and place the blind dummy instead. Store the LED module for possible re-use.
- Reinsert the lamp cover (13) by pressing vertically
- Insert the (halogen) bulb (47) on the opposite side into the lamp housing. Please make sure that the notch of the bulb at the side shows to the left. The bulb has to lock into place at the upper and underside. Compare picture 11 on the right side of page 15
- Push the socket (48) back onto the contact up to the stop and close the lamp arm with the lamp cover (28), as described in chapter 4.3.

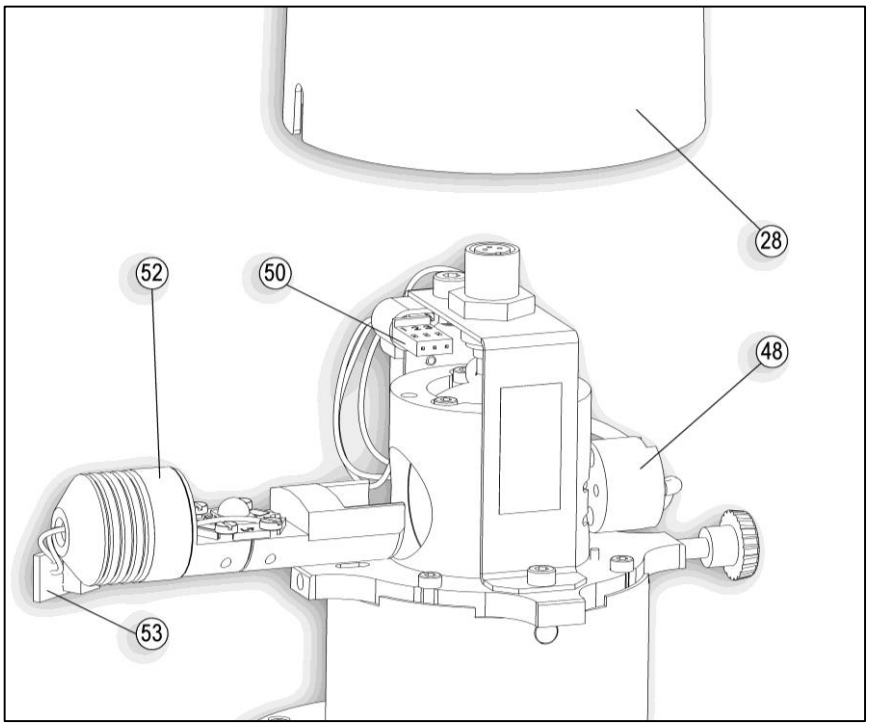


Abbildung 13: Changing of light bulbs

5 Specifications

Slit Illumination

- Slit image width 0 - 8 mm, continuous
- Slit image length 0,5 - 8 mm, continuous
- Illumination fields ø: 0.2; 1; 2; 3; 4; 5; 6; 8 mm
- Slit image radial range ± 90°
- Radial movement of the slit illumination relative to the microscope horizontal ± 90°
- Filters blue, red-free (green), grey (10%)
- The UV filter and the heat absorption filter are permanently mounted.
- Light source halogen bulb 6 V, 20 W alternative LED (accessories)
- 14 V, 5 W
- Illumination intensity 0 lux at position 0, otherwise gradual setting up to 600.000 lux (halogen)

Attention − Please observe the maximum examination times according to ISO 15004-2 and ISO 10939. The light emitted from this instrument is potentially hazardous. The longer the duration of exposure, the greater the risk of eye damage. Exposure to light from this instrument when operated at maximum output will exceed the safety guideline after 5.5 minutes with slit illumination or 3.5 minutes with both slit and peripheral illumination..

Stereomicroscope

- Stereo angle 10°
- Magnification changer 6.3x / 10x / 16x / 25x / 40x
- Eyepiece magnification 12.5x
- Range of adjusting eyepieces + 8 to - 8 diopters
- Interpupillary distance 52 - 78 mm
- Horizontal rotation of microscope axis ± 30°

Instrument Base

- Adjustment of the instrument base 100 mm (side),
- 80 mm (length), 30 mm (height)
- Brightness controller – integrated in instrument base
- Weight 12.7 kg
- Classification against electric shock Class I, type B;
- against water IPX0
- Sterilization and disinfection for the slit lamp is not necessary, use chin paper for the chin rest
- Mode of operation: continuous operation

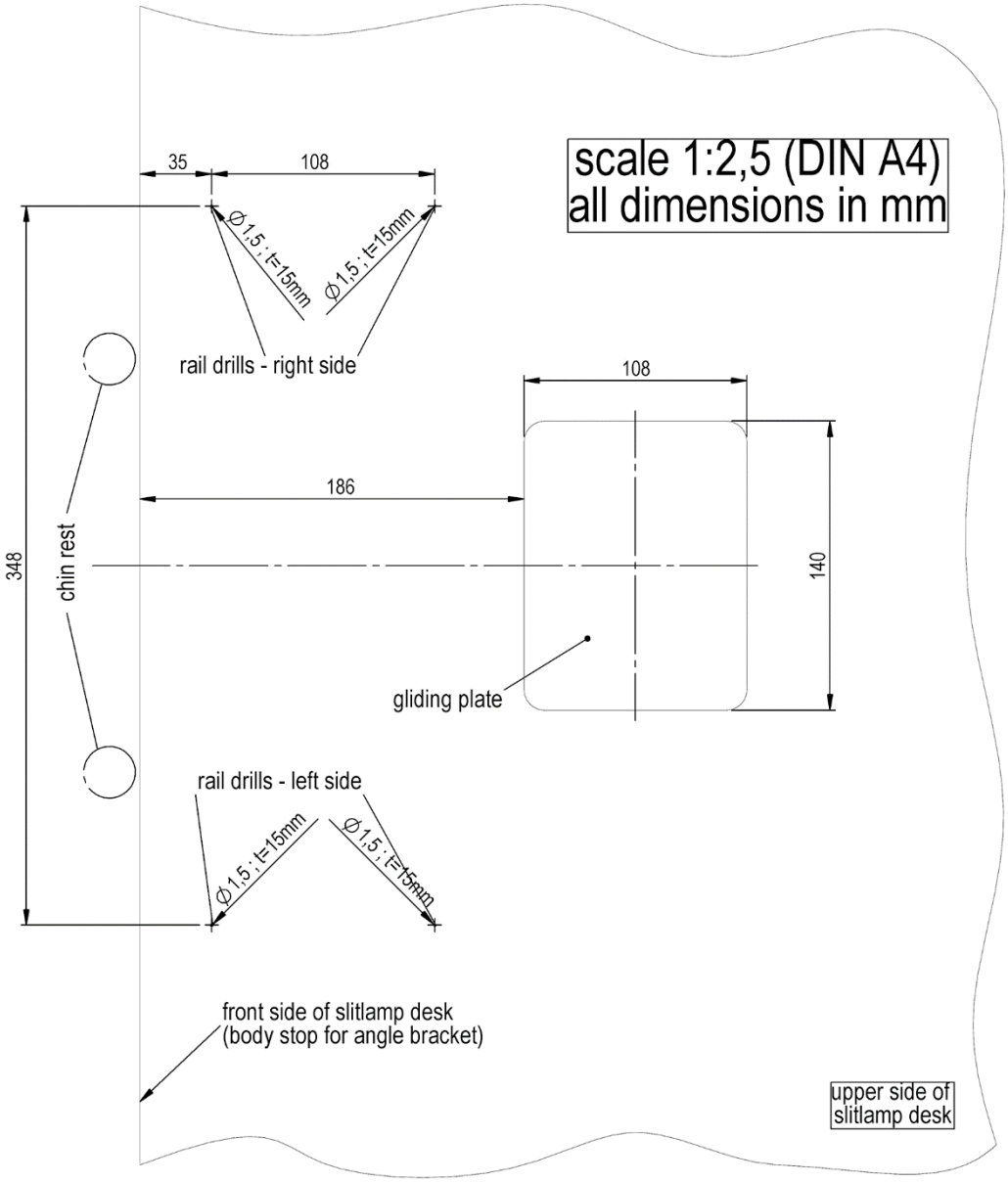
6 Accessories

Following accessories are available:

Halogen bulbs	(Order No.: SL01053)
LED module	(Order No.: BG06565)
Chin rest paper	(Order No.: SL01115)
Yellow filter	(Order No.: BG06575)
Swivel arm tonometer	(Order No.: BG06579)
with adapter plate	(Order No.: BG06576)

7 Appendix

Drilling template PCL 5



Your notes:

A.R.C. Laser GmbH
Bessemerstr. 14
D-90411 Nürnberg

Tel.: +49 911 / 21 779 – 0
Fax.: +49 911 / 21779 – 99
Email: service@arclaser.de