Trumpf Medical

Installation manual

TruLight™ 1000 examination light

English
en-GB

Enhancing outcomes for patients and their caregivers: Hill-Rom

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Please read this installation manual very carefully and take into account the safety instructions and the special requirements for installation.

This installation manual apply to:

Device versions

TruLight™ 1000 lighting system:

- Version with light head as ceiling-mounted version.
- Version with light head as wall-mounted version.
- Version with light head as mobile pedestal version.
- Version with a light head on TRUMPF Medizin Systeme GmbH + Co. KG ceiling-mounted supply unit.

Manufacturer and distributor

TRUMPF Medizin Systeme GmbH + Co. KG
Carl-Zeiss-Straße 7–9
07318 Saalfeld
Germany

Telephone: +49 3671 586-0
Fax: +49 3671 586-41165

info@trumpfmedical.com
www.trumpfmedical.com

Trumpf Medical will hereinafter be used as a synonym for TRUMPF Medizin Systeme GmbH + Co. KG to improve readability.

Technical Customer Service

Telephone: +49 (0)3671 586-41911
Fax: +49 (0)3671 586-41175

E-mail

service.wwo@trumpfmedical.com

The contact details for the current sites of the technical customer service in the individual countries are provided on the Internet at www.trumpfmedical.com.

In the following, Technical Customer Service will be used as a synonym for Trumpf Medical Customer Service and for technicians of service operators authorised and trained by Trumpf Medical.

Other applicable documents

Designation	Document number	Material No.
Service Manual TruLight 1000 DE	55000-00022	1867293
Spare Parts List TruLight 1000 DE / EN	55000-00039	1857652
Instruction Manual TruLight 1000 DE	55000-00012	1695232

Copyright and property rights

Copyright

- All rights reserved. This installation manual is protected by copyright.
- Any use not currently regulated by law must be approved in writing by TRUMPF Medizin Systeme GmbH + Co. KG, hereinafter referred to as Trumpf Medical.
- Trumpf Medical will assume no liability whatsoever arising from or connected with the use of unapproved information by any person or company.

Modifications and translations

Modifications to the device

- We constantly work on the further development of our products and reserve the right to make changes to the scope of delivery in terms of form, equipment and technology.

Changes to the installation manual

- The content of the installation manual can be changed at any time without prior notice.
- Please keep up to date on the current version of the instructions, e.g. using the Trumpf Medical Online Information System (OIS) at regular intervals.

Translations

- The German-language version of this Installation Manual shall be binding as regards translations into foreign languages.

Trademarks

- TruLight™ 1000 is a registered trademark of TRUMPF GmbH + Co. KG.
- All other brands listed in the installation manual are the exclusive property of the respective manufacturer.

1.1 Details for identification of the device

This installation manual is intended solely for devices that are shown on the device label with the following information:

Device identification

Descriptor/rating	Type	Material no.
TruLight™ 1000	TruLight™ 1000 pre-assembly set	4058051
TruLight™ 1000	TruLight™ 1000 ceiling	4058110
TruLight™ 1000	TruLight™ 1000 wall	4058120
TruLight™ 1000	TruLight™ 1000 mobile	4058130
TruLight™ 1000	TruLight™ 1000 pendant	4058140

1.2 Details for identification of the installation manual

Up-to-dateness of this installation manual

To indicate the updated status of the installation manual, all pages are marked with a 7-figure identification number and the status:

Marking of the installation manual

- Material no.: 1695231
- Date of publication: 17/10/2018
- Document number: 55000-00019_002_01

This marking is binding for the validity of the installation manual and must not be removed irrespective of the type of publication (in printed or electronic form, in full or excerpted).

1.3 Delivery

Before installation, check the delivery for completeness and for any possible transportation damage. Unpack to check the delivery of all components. The components can be identified by means of the order number of the delivery note and the order-specific dimension sheet. Always store the delivery note with the main components (light head or support arm system).

1.3.1 Transportation damage

Damage claims

Claims for damage cannot be accepted unless Trumpf Medical is notified without delay. In the event of damage during transport or missing components, please send Trumpf Medical a report containing the following information:

Accompanying documents

- Damage report giving details of damage or defects using the: Service Advice Form (F60.M028)
- Main serial number of the lighting system or the serial numbers of the damaged components
- Order number (shown on the delivery note and / or the order-specific dimension sheet)
- Name and address of the customer
- Consignee

Address for returns

In the event of a return, use the original packaging if possible.
Address returns to:
TRUMPF Medizin Systeme GmbH + Co. KG
Carl-Zeiss-Straße 7–9
07318 Saalfeld
Germany

1.3.2 Identifying the components based on serial numbers

Serial numbers

The components of the lighting system are marked by serial numbers:

- The serial numbers specify the components of a specific lighting system uniquely in such a way that they cannot be confused.
- The components of a lighting system are listed in the delivery note of the packaging by serial number.
- An overview of the serial number marking points on the device can be found in Chapter 4.1, P. 20.

1.4 Required installation equipment

The following equipment is required to install the lighting system:

- Two ladders of the required length
- Standard drilling equipment

or

- HILTI DD-EC 1 core drill
  - with the corresponding drill bit
- Drilling templates
  - Ceiling mount: (#1704432)
  - Wall attachment: (#4058120)
- Level
- Torque spanner
- Calibrated lux meter
- Multimeter
- Standard toolkit

Tool List

The tool list (TMS900we, 2009-12-21) contains a list of all the available special tools with material numbers and can be downloaded from the Trumpf Medical Online Information System (OIS).

1.5 Qualification of service staff

Professional qualifications

The device may only be installed, maintained and repaired by the Trumpf Medical Customer Service unit or by authorised Trumpf Medical Service partners.

1.6 Ambient conditions for operation and storage

Various ambient conditions apply to the operation and temporary storage of the device.

1.6.1 Ambient conditions for operation

- Ambient temperature: 10 °C to 40 °C
- Relative humidity: 30% to 75%
- Air pressure: 700 hPa to 1060 hPa
- Operating height: max. 3000 m above sea level

1.6.2 Ambient conditions for storage

- Ambient temperature: -15 °C to +60 +°C
- Relative humidity: 5% to 95%
- Air pressure: 500 hPa to 1060 hPa

1.7 Conformity

1.7.1 Identification

Conformity

The manufacturer declares that this product conforms to the fundamental requirements according to MDD Appendix I and documents the same by means of the CE and UL marking.

CE mark: This device is a Class I medical device as defined by the European Medical Device Directive (MDD).
UL mark: device tested by Underwriter Laboratories Inc. for the USA and Canada with regard to shock and fire hazard and also mechanical endangerment.

CAUTION

Federal law restricts this device to sale by or on the order of a physician.

CLASSIFIED C UL US 22TF

MEDICAL-GENERAL MEDICAL EQUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH ANSI/AAMI ES 60601-1: 2005 / AMD1: 2012; IEC 60601-2-41: 2009 / AMD1: 2013; CAN/CSA-C22.2 No. 60601-1: 2014; UL 60601-1; CAN/CSA-C22.2 No. 601.1

1.7.2 Proper use

Proper use

Lighting unit for the local illumination of the patient's body to support diagnoses or treatments which may be interrupted in case of light failure without hazard to the patient.

Working range

- The working range lies at a distance between 70 and 150 cm to the area being examined.
- The device is suitable for continuous operation.
- Each use beyond the aforementioned conditions is considered to fall outside the scope of proper use. Only the user or operator will be liable for any loss or damage arising as a result.

1.7.3 Special features

High light intensity

To ensure good visibility, the light head has a high light intensity.

Overlap of the light fields

- Visible light also generates heat in the examination area due to physical effects. The light intensity must be reduced when perfusion is reduced or the tissue starts to dry out.

Examinations in the field of vision

- For examinations in the facial area with unprotected and open eyes, high levels of local light intensities may lead to damage to eyesight. The patient's eyes must be closed or protected as necessary (e.g. with safety goggles with an optical density of at least 2 or designed according to protection level 6 EN169).

1.7.4 Improper use

Improper use

The examination light is not intended for use in operating theatres.

- Additional load on the light support is not permitted.
- The device may not be exposed to severe vibration.

Restriction

- The device is not suitable for operation in areas at risk of explosions
- The device is not suitable for use in rooms or areas in which inflammable mixtures of anaesthetics with air or oxygen or laughing gas (N_20) are used.
- The device should not be used in the vicinity of strong magnetic fields.
- Mixtures of combustible anaesthetic vapours with oxygen or laughing gas may arise in the vicinity of the device in such a high concentration that ignition could occur under certain circumstances. The danger area is formed in accordance with EN 11197 in an area between 5 cm and 25 cm from the point of outflow or escape of the gas.

1.8 Exclusion of liability

Exclusion of liability

The Trumpf Medical warranty for the product requires that:

- the device is used exclusively for the proper use and is operated and maintained in accordance with the provisions of this installation manual
- only original spare parts or accessories approved by Trumpf Medical are used
- no modifications are made to the device
- inspections and maintenance work are carried out at the time intervals specified
- an initial commissioning is carried out and the device is released for operation with a handover declaration

1.9 Documentation of the installation

Installation must be performed with the use of an installation report (TK_IS_200). Download the specified report in electronic format via the online information system, complete it and hand it over to the Technical Customer Services unit of TRUMPF Medizin Systeme GmbH & Co. KG.
The installation reports contain all the important test and installation steps and the documentation required for handover of the device.
The following must be observed when documenting the installation reports:

- Documentation about the serial number of the installed components, stating the assembly site.
  The serialisation structure prescribed during delivery must be adhered to during installation. If serial equipment other than that prescribed by the manufacturer is to be installed, this must be noted on the various installation reports.
- The handover of the lighting system for operation must be confirmed by the operator.
  The lighting system must be handed over to the operator following commissioning and testing by the service staff of the installer. The operator must be instructed in the functional check and visual inspection, the adjustment work and in cleaning and caring for the lighting system in accordance with the valid installation manual.

1.10 Disposal

The device must be disposed of in accordance with the requirements of directive WEEE II 2012 / 19 / EU and relevant national regulations at a suitable waste disposal point for the recycling of electrical and electronic devices.

RoHS conformity

- The device meets the requirements of Directive 2011/65/EU RoHS (restriction of the use of certain hazardous substances in electrical and electronic devices).

Care must be taken to ensure that the ceiling and wall anchorage of the lighting system takes into account all the circumstances that apply to each individual case, that the approval of the relevant building authorities has been obtained and that all installation work is carried out in accordance with the regulations and using suitable tools.

2.1 Approval of wall and ceiling anchorage

Declaration of acceptance by the structural engineer

The condition and sustainability of the mounting structure must be inspected by a structural engineer and confirmed in a certificate. This verification of the structural calculation for the load-bearing capacity must be done prior to installation and must be available.

Aborted holes

If drilling of a hole has been aborted, for example, by drilling into the reinforcement, the structural engineer in charge must be involved since adequate structural load distribution may be endangered.

Observe and follow construction provisions

The respectively valid national and regional construction provisions must be complied with.

2.2 Fasteners and mounting methods

Fasteners are not part of the scope of delivery. The selection of fasteners is the responsibility of the structural examination and approval of the responsible building authority.

Ceiling anchoring

Reinforced concrete ceiling, class C20/25

The following fasteners are recommended for well-constructed reinforced concrete ceilings of class C20/25 (or better quality):

- Four ceiling anchors of the type: HILTI
- Approval document: ETA-98/0001 (European Technical Approval)
- Type: HST M10x90

Strength of the slab ceiling

The minimum component thickness of the slab ceiling to use ceiling anchors must be 120 mm. In case of lower slab ceiling thicknesses, different fasteners are usually proposed in the order-specific dimension sheet.

Manufacturer processing regulations

The processing regulations of the fastener manufacturers must be taken into account. The ceiling anchor plate / wall pipe flange plate must lie flush on the fixing substrate for correct load distribution.

Observe and follow construction provisions

The respectively valid national and regional construction provisions must be complied with.

Load data for ceiling anchorage:

Weight force	Bending moment
350 N	70 Nm

Reinforced concrete wall, class C20/25

The following fasteners are recommended for well-constructed reinforced concrete walls of class C20/25 (or better quality):

- Two heavy-duty anchors of the type: HILTI
- Approval certificate no. ETA-98/0001
- Type: HST M10x90

Lightweight construction walls

In case of lightweight construction walls that cannot be subjected to loads, it is necessary to insert a metal construction. The suitability of the metal construction provided by the customer must be confirmed in writing and documented by the customer (operator or representative commissioned and authorised by the operator, e.g. planners, architects, etc.).

Load data for wall anchorage:

Weight force	Bending moment
70 N	70 Nm

2.3 On-site electrical installation

The on-site electrical connections must be made in accordance with the TruLight™ 1000 planning rules by a specialised company appointed by the customer. The following requirements must be complied with:

Execution by a specialised electrical company

- Planning, execution and testing of the electrical installation must be performed on-site by professional and specialised electrical designers and state-licensed electrical specialised companies.

Country-specific regulations

- If it is required by the regulations applicable in the respective country that the device be connected to the power supply by authorised electricians, then this subsequent procedure must be carried out.

All-pin disconnecting device for the power supply

- It must be possible to disconnect all pins of the power supply lines from the mains power supply by a device provided on-site.
- The series terminals must be freely accessible for installation of the device and for carrying out the prescribed electrical safety tests.
- The electrical installations for the room in question must meet the requirements of the nationally applicable regulations.
- For the Federal Republic of Germany, DIN VDE 0100 Part 710 applies.
- For the USA, the requirements of NFPA 70 and NFPA 99 apply

NOTE

Electrical fuses for ME devices

For ME devices with permanent connections, the device used for electrical insulation of the circuits must have a lock that can be set to the off position to disconnect the circuits from the mains supply. A mains supply switch, when used as an electrical insulation device, must meet the requirements of IEC 61058-1.
If ME devices are not permanently installed and do not have a mains switch, a suitable plug device for disconnecting the ME device from the mains will meet the requirements.

3.1 Structure of the safety instructions in this installation manual

In this installation manual, important information is marked by graphic symbols or signal words.

3.1.1 Indicating risk of injury

Signal words such as DANGER, WARNING or CAUTION indicate the severity of the hazard. Various triangle symbols are used to add visual emphasis.

⚠DANGER

DANGER indicates an immediately dangerous situation in which non-compliance can cause death or serious injury.

⚠WARNING

WARNING indicates a potentially dangerous situation in which non-compliance may cause death or serious injuries.

⚠CAUTION

+**CAUTION** indicates a potentially dangerous situation in which non-compliance may cause minor injuries.

3.1.2 Indicating damage to property

ATTENTION

ATTENTION indicates a potentially dangerous situation, which, –unless avoided,– can lead to damage to property.

3.1.3 Indicating additional information

NOTE

NOTE provides you with additional information and helpful tips for safe and efficient use of the device.

3.2 Additional symbols for safety instructions

Gas explosion: warns of explosive ignition of gas mixtures

Electric shock: indicates an electric shock hazard which could cause serious injury or even death

The spring arm may bounce up: warns of the spring arm jumping up while dismantling the light head / flat screen

Lighting system falling down: warns of a sudden downwards movement of the light system when it is exposed to additional loads

Damage to surfaces: warns against damage to surfaces caused by unsuitable cleaning agents and disinfectants

3.3 Symbols on the device

CE conformity mark: certifies the conformity of the device with the European product directive (Medical Device Directive (MDD).

Follow the Instruction Manual: refers to the instruction manual

UL mark: device has been tested by Underwriter Laboratories Inc. for the USA and Canada. UL / cUL classification regarding electric shock, fire hazard and mechanical hazard only in accordance with ANSI / AMI ES60601-1: 2005/AMD1: 2012, IEC 60601-2-41:2009/AMD1:2013, CAN/CSA-C22.2 No. 60601-1: 2014, UL 60601-1, CAN/CSA-C22.2 No. 601.1.

3.4 Overview of the most important safety instructions

Requirements for the installation site

⚠DANGER

Gas explosion

The lighting system is not suitable for use in an environment in which flammable mixtures of anaesthetics with oxygen or laughing gas in a high concentration are used. Mixtures of combustible anaesthetic vapours with oxygen or laughing gas may arise in the vicinity of the device in a sufficiently high concentration that ignition may occur under certain circumstances.
The danger area is formed in accordance with EN 11197 in an area between 5 cm and 25 cm from the point of outflow or escape of the gas.

Strong magnetic fields

The support arm systems of the lighting systems must not be used in the vicinity of strong magnetic fields.

BF / CF Class application components

No BF or CF Class application components in accordance with IEC 60601-1 may be directly connected to the support arm systems of the lighting system.

Risks posed by electric shock

⚠DANGER

Switch off the on-site power supply

Touching a live equipment component may lead to fatal electrical shock:

- **Switch off all pins of the on-site power supply for all installation work and secure them against being switched on again.**
- **Pull out the mains plug of the mobile stand version and secure it against being plugged in again.**

Check the electronic components

Check the state of the electrical components and insulations.

- **Damaged parts or supply lines may not be used for assembly.**

Load restriction

⚠WARNING

Crashing of the lighting system

The loading of the support arm system is restricted to the max. load. of 30 Nm.

- **No additional attachments may be installed on the support arm system, except for the light head.**
- **Do not place any additional weight on the support arm system.**

Swivel movement of the light head

⚠WARNING

Risk of injury due to uncontrolled swivel movement

Uncontrolled movement of the spring arm may result when the spring force of the spring arm is not correctly adjusted.

Risk of jamming

When swivelling the light head, the distance between the quarter bracket and the light head changes:

- **Do not insert your fingers between the quarter bracket and the light head when rotating the light head.**
- **Only grasp the light head with the sterilisable handle.**

Cleaning and disinfection

⚠WARNING

Switch off the power supply

Touching live components may result in an electric shock.

- **Disconnect all phases from the device before cleaning or disinfection.**
- **Do not place any objects in the equipment openings.**

Improperly used cleaning agents or disinfectants can pose a risk for patients or damage products

If the instructions listed below are not observed or fulfilled, this can damage the varnish or coating of the device. Paint particles can come off and fall into open wounds, which can represent a risk of contamination or infection for the patients. Furthermore, it would render any claim for damages void!

- **Only use wipe-over disinfection as a disinfection procedure.**
- **To clean or disinfect the device, the cloth for wiping must be moist and not wet.**
- **Dispense cleaning agents and disinfectants such that no liquid can enter through joints or openings of the examination light or parts of the support arm system.**

- **Use the surface disinfectant only at the concentration specified by the manufacturer.**
- **Only use disinfectants approved by the manufacturer for use with the following materials:**
- **Polycarbonate (PC), polyamide (PA), acrylonitrile butadiene styrene copolymer (ABS), polystyrene (PS), polyurethane (PUR), polyphenylsulfone (PPSU), polyvinyl chloride (PVC), polybutylene terephthalate (PBT) and silicone.**
- **Due to the risk of surface damage:**
  - Do not use sharp, pointed or abrasive objects,
  - Do not use abrasive substances or agents which can remove material,
  - Do not use solvents, benzene, paint thinners, alkaline cleaning agents or cleaning agents containing acids or aldehydes,
  - Do not use agents with glycol derivatives, phenols, phenol derivatives or quaternary compounds,
  - To prevent paint or corrosion damage, only use agents that do not contain chlorides or halides.
- **In the event of an increased layer formation of surface disinfectant, thorough cleaning must be performed.**
- **It is imperative to observe the hygiene instructions of the operator.**

See the TruLight™ 1000 Examination Light instruction manual for detailed information about cleaning and disinfection.

Commissioning

⚠ CAUTION

Initial commissioning prior to use

The lighting system must be handed to the user in a tested state after initial operation before it can be used in routine medical procedures.

- **The initial operation includes functional and safety checks on the entire lighting system.**
- **Handover must be documented by a handover declaration.**

System components

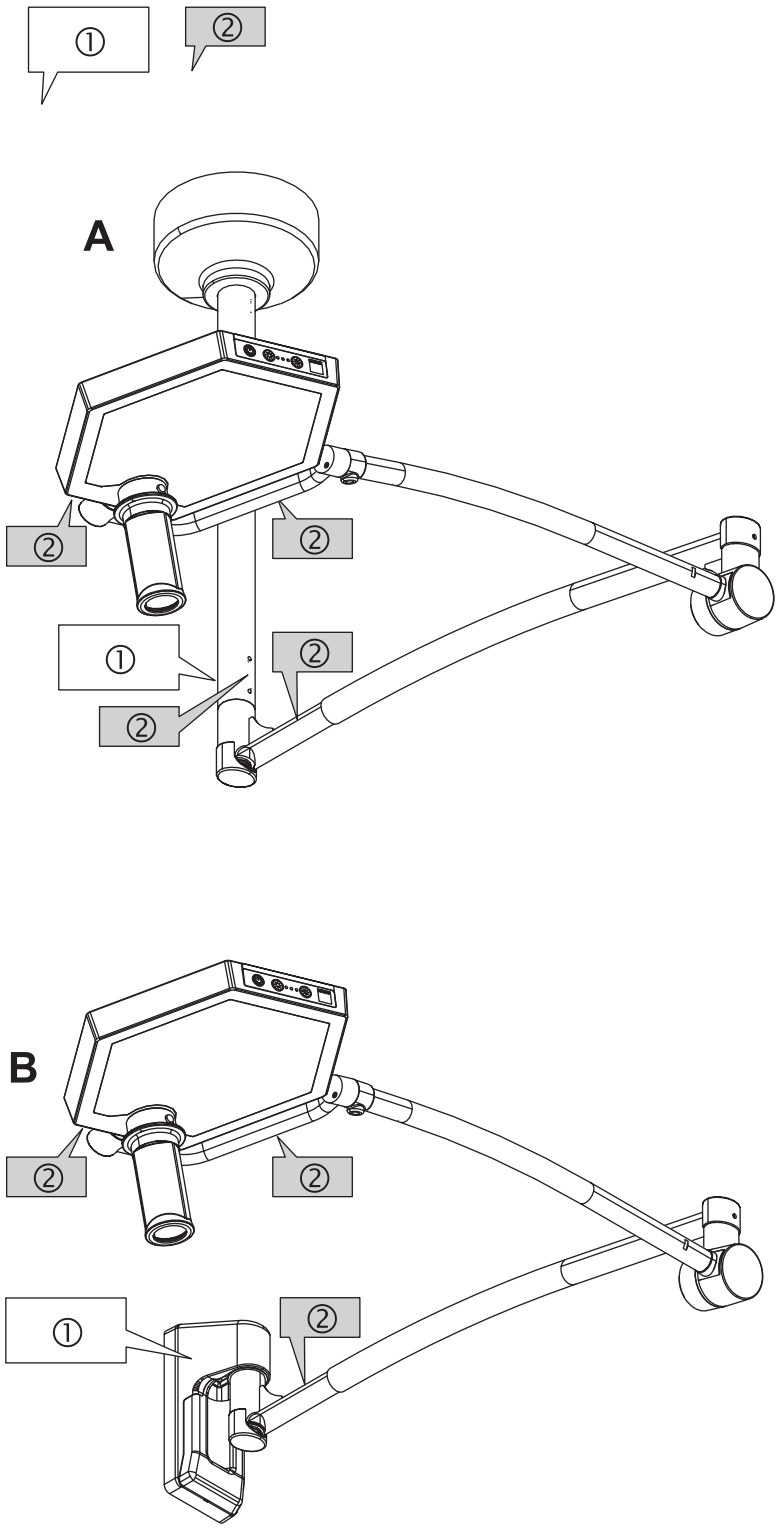
NOTE

Identification of the system units

The components of the lighting system are pre-configured and pre-assembled for a system according to the order-specific dimension sheet.

- **In case of unclear assignment of components, you must consult Trumpf Medical or the appropriate authorised partner of Trumpf Medical.**

Figure 1



4.1 Use of serial numbers and device labels

A lighting system is identified by its device label and serial numbers.

- The device label ① contains the specific device data and also the main serial number.
- The main serial number characterises an entire device in an order-specific manner. The main serial number also enables components which do not have a serial number themselves to be identified by Trumpf Medical Customer Service, permitting the correct spare parts to be supplied.
- The serial numbers ② identify the individual components of a device.

4.1.1 Markings on the ceiling-mounted version

A: Ceiling-mounted version

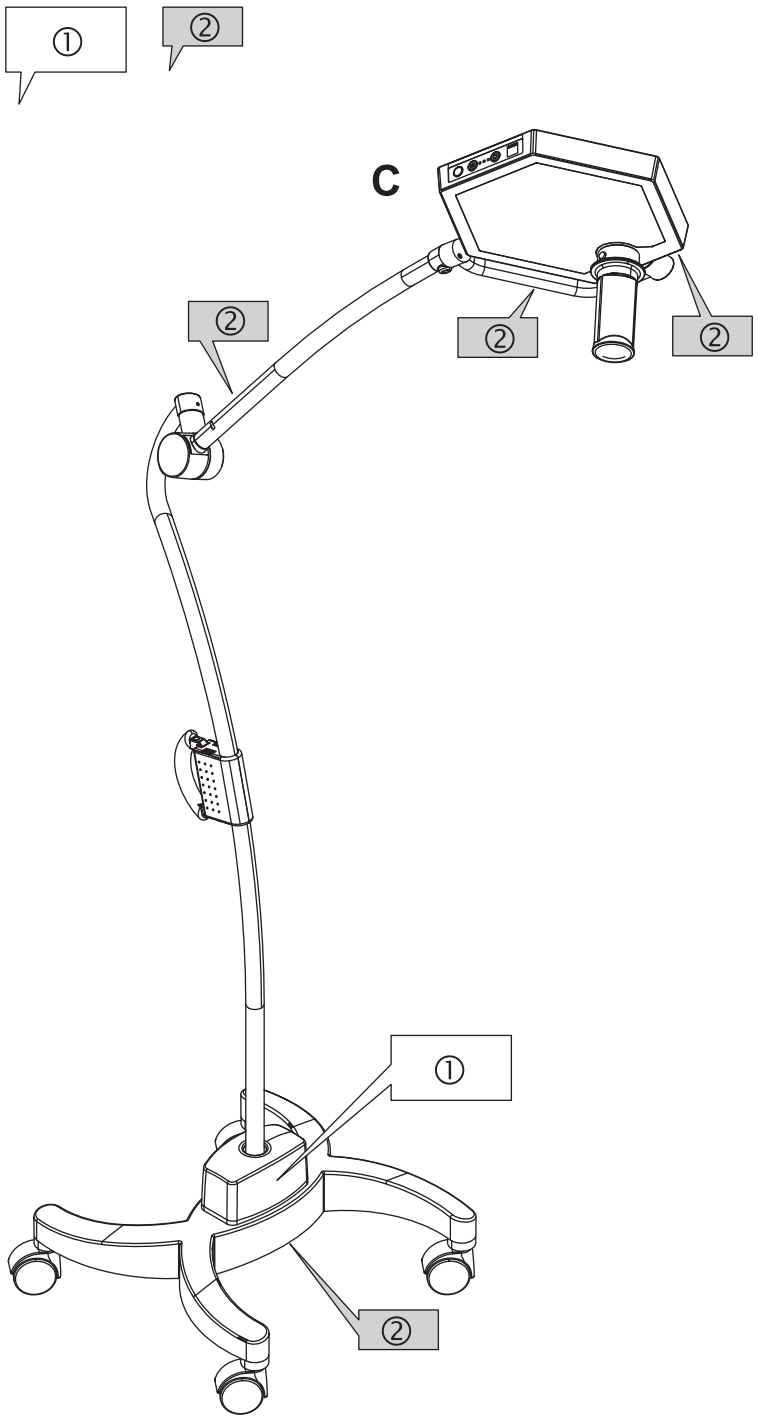
- The device label ① with the main serial number on the ceiling conduit.
- Serial numbers ② of the individual components are provided at:
  - Light head
  - Quarter bracket
  - Ceiling conduit
  - Boom with spring arm

4.1.2 Markings on the wall-mounted version

B: Wall-mounted version

- The device label ① with the main serial number on the cover of the wall support.
- Serial numbers ② of the individual components are provided at:
  - Light head
  - Quarter bracket
  - Boom with spring arm

Figure 2

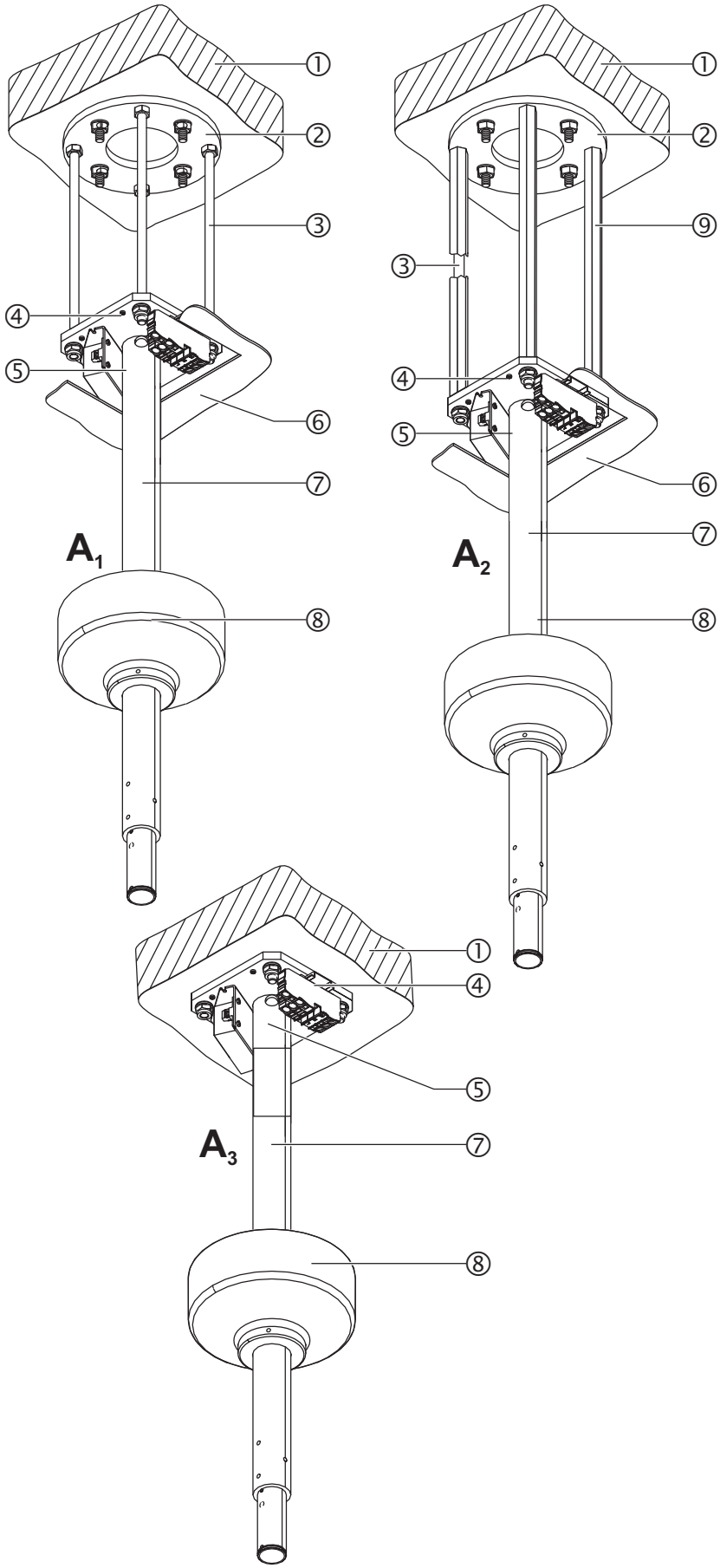


4.1.3 Markings on the mobile stand version

C: Mobile stand version

- The device label ① with the main serial number on the cover of the wall support.
- Serial numbers ② of the individual components are provided at:
  - Light head
  - Quarter bracket
  - Stand rod with spring arm
  - Stand base

Figure 3



5.1 Overview of assemblies for central axis

The ceiling version has been disassembled into three assemblies for installation:

- Central axis assembly;
- Support arm system assembly;
- Light unit assembly.

5.1.1 Central axis assembly

The central axis can be mounted in three variants.

A_1: Installation of the central axis with ceiling anchor plate on the slab ceiling ① and an intermediate ceiling construction ⑥ with a gap between the slab ceiling and the intermediate ceiling of ≤ 300 mm.

- The central axis consists of:
  - Ceiling anchor plate ②,
  - Four threaded rods ③,
  - Ceiling pipe flange plate ④ with power supply unit ⑤,
  - Ceiling conduit ⑦,
  - Canopy ⑧ for encasing the ceiling pipe flange plate.

A_2: Installation of the central axis with ceiling anchor plate on the slab ceiling ① and an intermediate ceiling construction ⑥ with a gap between the slab ceiling and the intermediate ceiling of > 300 mm.

- The central axis consists of:
  - Ceiling anchor plate ②
  - Four threaded rods ③
  - Four hexagonal profiles ⑨ (pushed onto the threaded rods)
  - Ceiling pipe flange plate ④ with power supply unit ⑤
  - Ceiling conduit ⑦
  - Canopy ⑧ for encasing the ceiling pipe flange plate.

A_3: Installation of the central axis on the ceiling pipe flange plate directly on the slab ceiling ①.

NOTE

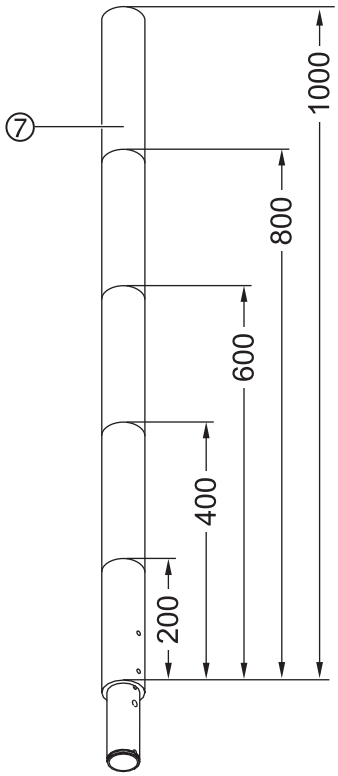
No levelling option

When fastening the ceiling pipe flange plate directly to the slab ceiling, it is not possible to align the support arm system afterwards.

- **In this case, the slab ceiling must be absolutely even and horizontal.**

- The central axis consists of:
  - Ceiling pipe flange plate ④ with power supply unit ⑤,
  - Ceiling conduit ⑦,
  - Canopy ⑧ for encasing the ceiling pipe flange plate.

Figure 4

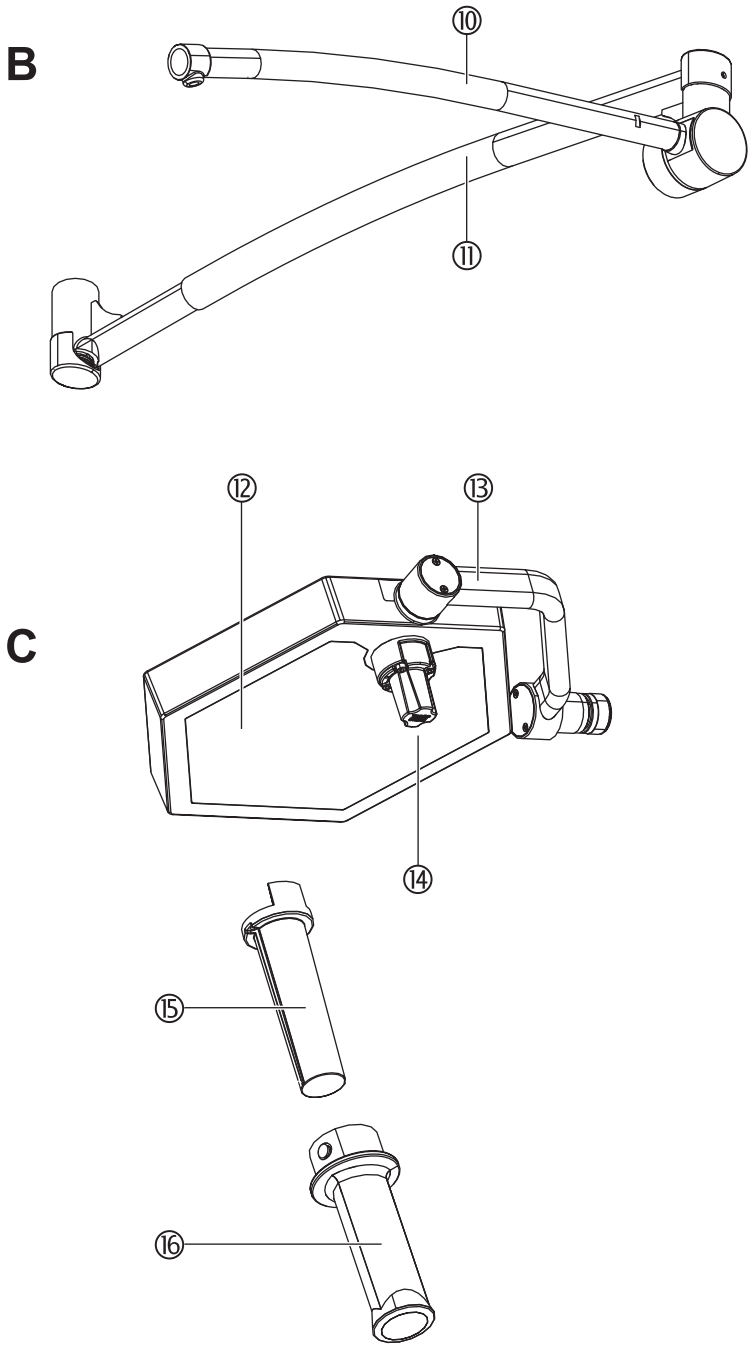


Length of the ceiling pipes

The ceiling pipe ⑦ comes in ready-made sections for the required passage height at the installation site and is available in five lengths:

- 200 mm
- 400 mm
- 600 mm
- +800 mm
- 1000 mm

Figure 5



5.1.2 Support arm system assembly

B: The support arm system is pre-assembled and consists of:

- horizontally rotating boom ⑪,
- and the horizontally and vertically adjustable spring arm ⑩.

5.1.3 Light unit assembly

C: The light unit is partially pre-assembled and consists of:

- Light head ⑫;
- Quarter bracket ⑬.

The components to be installed are:

- +Handle support ⑮;
- Handle ⑯.

The handle support ⑮ for the sterilisable handle ⑯ must be installed on the handle attachment ⑭ of the light head.

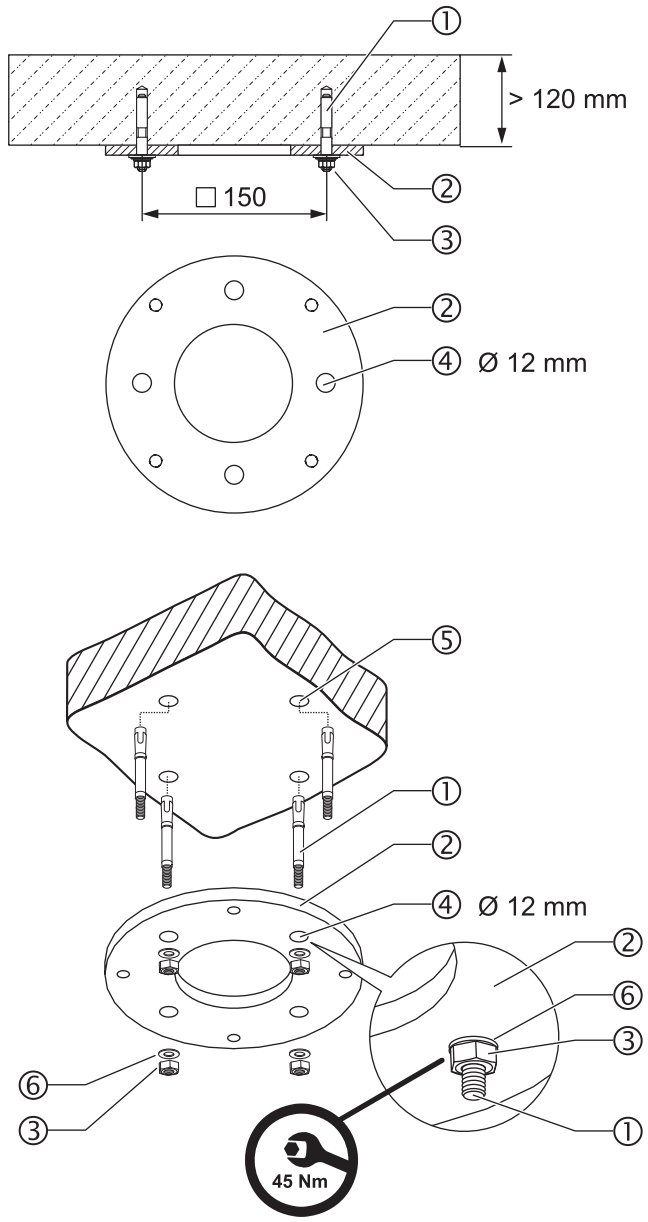
5.2 Power supply to the ceiling version

The on-site power supply to the installation site must be installed by the operator.
Supply voltage:

- The input voltage 100 V - 240 V, 50/60 Hz is transformed into 24 V DC operating voltage on the power supply unit to supply the light head with power.

The internal connecting cables to supply the light head with power have been pre-installed in all three assemblies: the central axis, both support arms and the light unit.

Figure 6



5.3 Attachment of ceiling anchor plate to the slab ceiling

Before starting the installation work:

- Check structural evidence about the condition and load-bearing capacity of the fastening substructure.
- Check the suitability of the fastening means in accordance with the structural specifications.

⚠ CAUTION

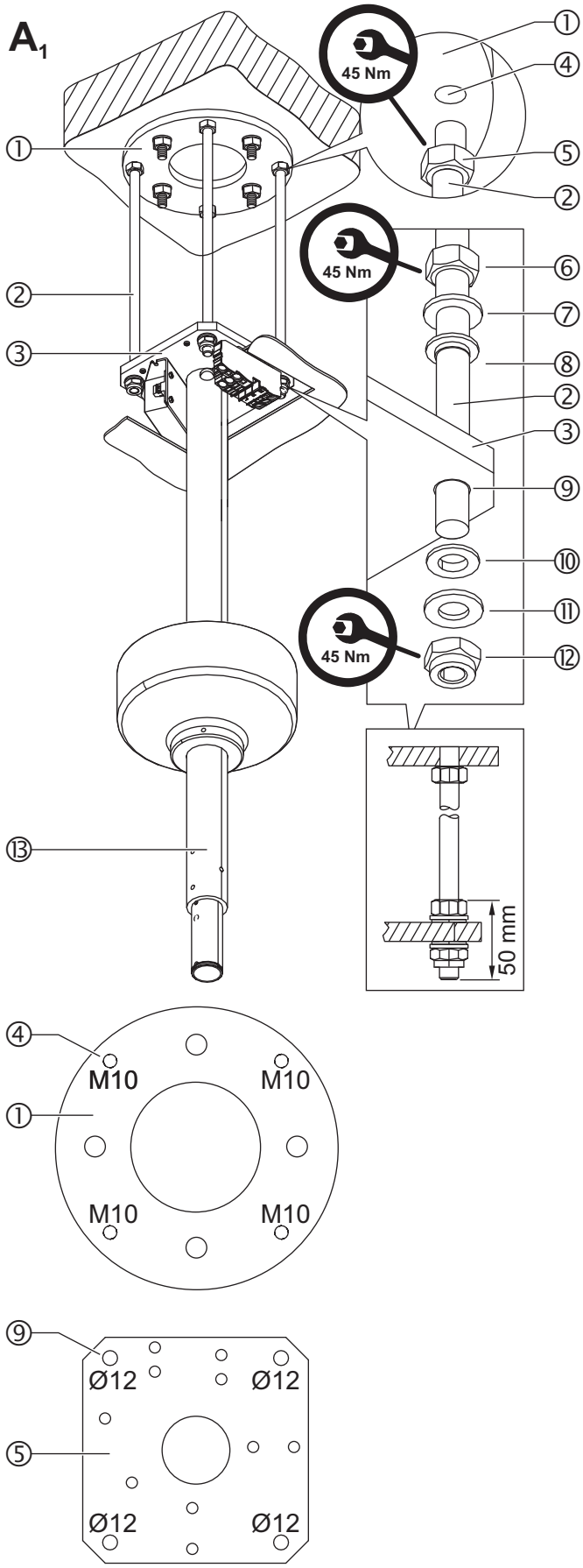
Risk of injury due to falling parts

No persons may remain under the ceiling anchor plate during Installation work. Secure the installation location against unauthorised access.

5.3.1 Attachment of ceiling anchor plate with heavy-duty anchors

1. Mark the position of the four boreholes ⑤ on the slab ceiling using the borehole template (#1704432).
2. Drill the boreholes in accordance with the instructions of the fastener manufacturer and rework if necessary.
3. Hammer one heavy-duty anchor ① into the slab ceiling in accordance with the instructions of the fastener manufacturer.
4. Provisionally fix the ceiling anchor plate ② to this heavy-duty anchor using a washer ⑥ and a hex nut ③ .
5. Now align the passage holes ④ of the ceiling anchor plate with the remaining three boreholes ⑤ in the slab ceiling.
6. Hammer the three remaining heavy-duty anchors ① through the passage holes ④ (Ø 12 mm) of the ceiling anchor plate up to the mark in the slab ceiling.
7. Place the washers ⑥ onto the heavy-duty anchors and add the hex nuts ③.
8. Ensure that the ceiling anchor plate is flush with the slab ceiling. Fasten all four hex nuts.
   Tightening torque: 45 Nm
9. Check for secure fit of the ceiling anchor plate.

Figure 7



5.4 Installation of ceiling pipe flange plate on the ceiling anchor plate

5.4.1 Installation with threaded rods

A_1: Installation of ceiling pipe flange plate ③ of the central axis on the ceiling anchor plate ① of an intermediate ceiling construction with a **slab ceiling / intermediate ceiling gap of ≤300 mm**.
The ceiling pipe flange plate is attached to the ceiling anchor plate using four threaded rods ② (M10).

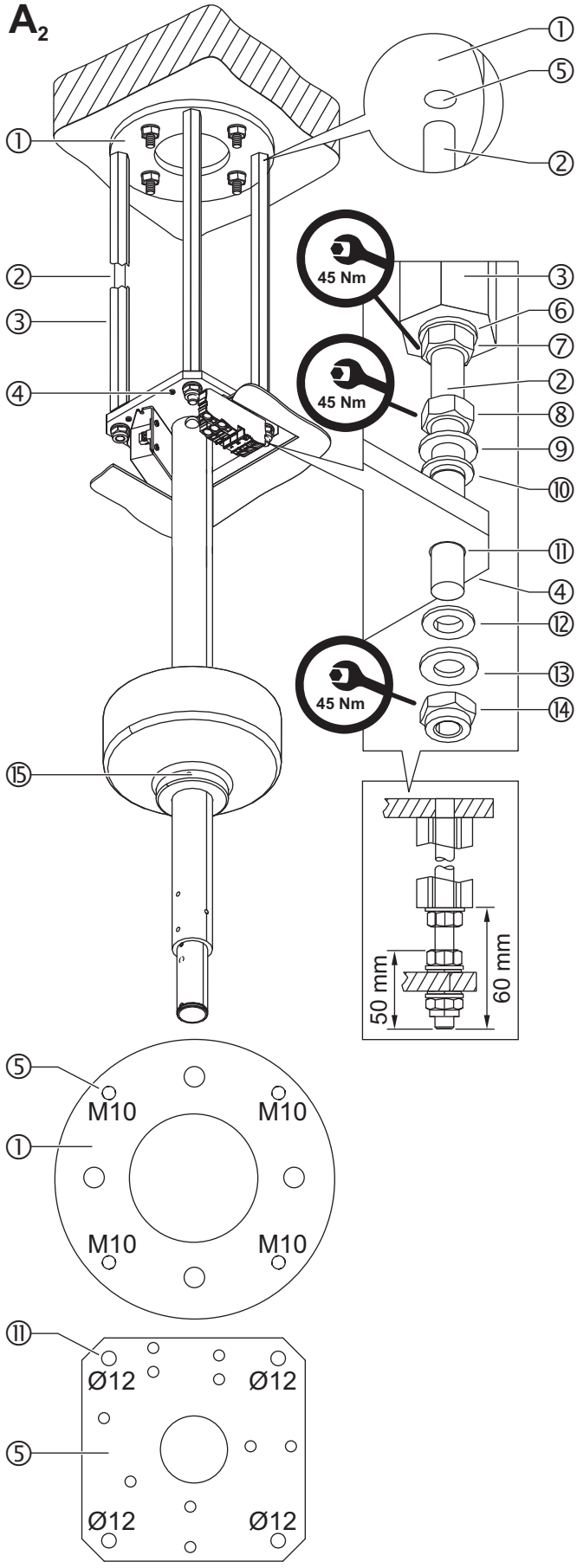
⚠ CAUTION

Risk of injury due to falling parts

No persons may remain under the ceiling anchor plate during installation work. Secure the installation location against unauthorised access.

1. Fit hex nuts ⑤ at a distance of at least 25 mm on the four threaded rods ②.
2. Fully screw the four threaded rods ② into the threaded boreholes ④ of the ceiling anchor plate ① up to the position stop.
3. Evenly tighten the hex nuts ⑤:
   Tightening torque: 45 Nm
4. Check for secure fit of the threaded rods.
5. Prepare the assembly of the central axis: Fit the upper hex nuts ⑥ at a distance of approximately 50 mm on the four threaded rods ②. Use a level for horizontal alignment of the hex nuts.
6. Provisionally fit the upper washers ⑦ and the upper plastic insulation discs ⑧ on the threaded rods and fix them with an O-ring.
7. Push the central axis ⑬ with the ceiling pipe flange plate ③ onto the four threaded rods and provisionally fix them to two threaded rods using hex nuts ⑫.
8. Place the lower plastic insulation disc ⑩ and the lower washer ⑪ onto the remaining two threaded rods, followed by the self-securing hex nut ⑫.
9. Repeat this process with the other two threaded rods.
10. Remove the O-rings that fix the upper discs.
11. Carefully insert the lower four hex nuts ⑫ cross-wise, ensuring that the upper and lower plastic insulation discs fit into the passage holes ⑨ (Ø12) of the ceiling pipe flange plate.
12. Evenly tighten the hex nuts ⑫:
    Tightening torque: 45 Nm
13. Check for secure fit of the ceiling pipe flange plate.

Figure 8



5.4.2 Assembly with hexagonal profiles

A_2: Installation of ceiling pipe flange plate ④ of the central axis on the ceiling anchor plate ① of an intermediate ceiling construction with a **slab ceiling / intermediate ceiling gap of > 300 mm**. Using 4 threaded rods ② (M10) and an additional four hexagonal profiles ③ , attach the ceiling pipe flange plate to the ceiling anchor plate. To do this, push the hexagonal profiles onto the threaded rods and secure with hex nuts.

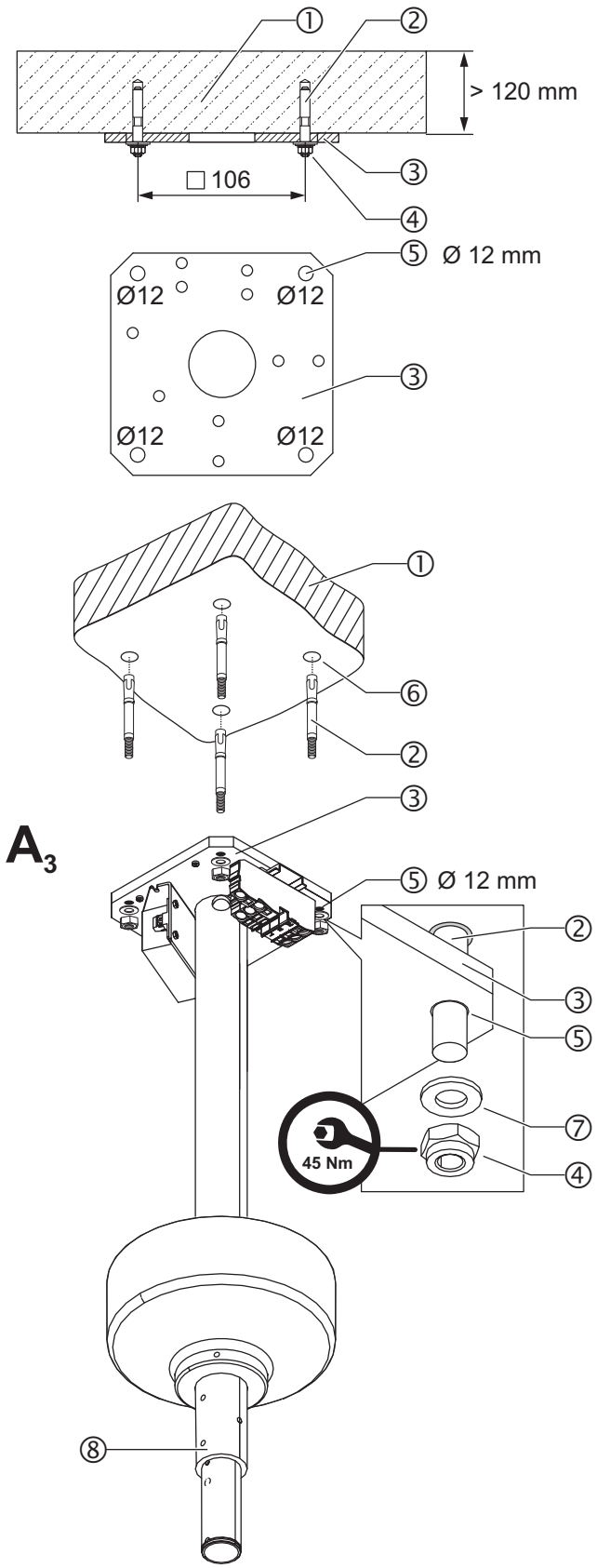
⚠ CAUTION

Risk of injury due to falling parts

No persons may remain under the ceiling anchor plate during installation work. Secure the installation location against unauthorised access.

1. Fully screw the four threaded rods ② into the threaded boreholes ⑤ of the ceiling anchor plate ① up to the position stop.
2. Place one hexagonal profile ③ onto the threaded rod ② and secure using a hex nut ⑦ with a washer ⑥. The distance between the lower edge of the hexagonal profile and the lower edge of the threaded rod must be 60 mm.
3. Now evenly tighten the hex nuts ⑥:
   Tightening torque: 45 Nm
4. Check that the threaded rods are securely fitted onto the hexagonal profiles.
5. Prepare the assembly of the central axis: Fit the upper hex nuts ⑧ at a distance of approximately 50 mm on the four threaded rods ②. Use a level for horizontal alignment of the hex nuts.
6. Provisionally fit the upper washers ⑨ and the upper plastic insulation discs ⑩ on the threaded rods and fix them with an O-ring.
7. Push the central axis ⑮ with the ceiling pipe flange plate ④ onto the four threaded rods and provisionally fix them to two threaded rods using hex nuts ⑭.
8. Place the lower plastic insulation disc ⑫ and the lower washer ⑬ onto each of the remaining two threaded rods, followed by the self-securing hex nut ⑭.
9. Repeat this process with the other two threaded rods.
10. Remove the O-rings that fix the upper discs.
11. Carefully insert the lower four hex nuts ⑭ cross-wise, ensuring that the upper and lower plastic insulation discs fit into the passage holes ⑪ (Ø12) of the ceiling pipe flange plate.
12. Evenly tighten the hex nuts ⑭:
    Tightening torque: 45 Nm
13. Check for secure fit of the ceiling pipe flange plate.

Figure 9



5.5 Installation of ceiling pipe flange plate on the slab ceiling

Installation of the ceiling pipe flange plate of the central axis directly on the slab ceiling. Before starting the installation work:

- Check structural evidence about the condition and load-bearing capacity of the fastening substructure.
- Check the suitability of the fastening means in accordance with the structural specifications. The diameter of the passage holes of the ceiling pipe flange plate is 12 mm.

NOTE

No levelling option

When fastening the ceiling pipe flange plate directly to the slab ceiling, it is not possible to align the support arm system afterwards. Thus the slab ceiling must be absolutely even and horizontal.

⚠ CAUTION

Risk of injury due to falling parts

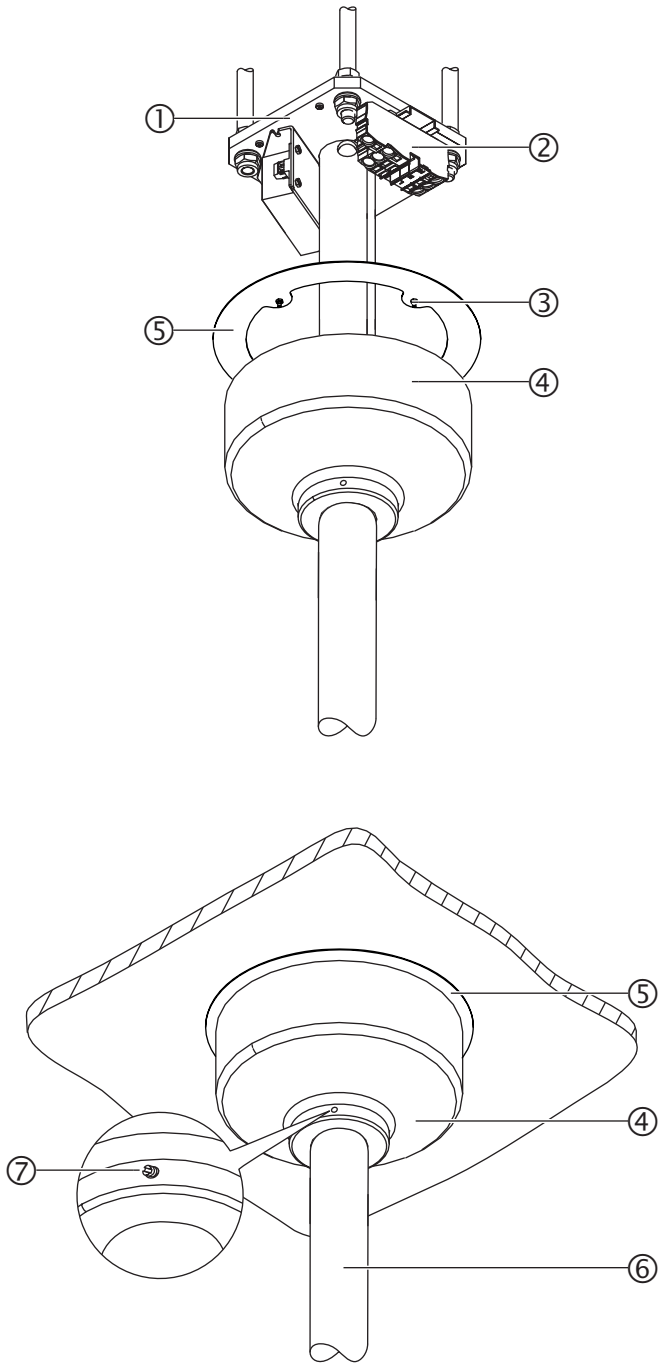
No persons may remain under the ceiling anchor plate during installation work. Secure the installation location against unauthorised access.

5.5.1 Attachment of ceiling pipe flange plate with heavy-duty anchors

A_3: The ceiling pipe flange plate ③ of the central axis ⑧ can be installed directly on the slab ceiling ① with the aid of heavy-duty anchors only if **the slab ceiling is sufficiently thick (> 120 mm)**.

1. Mark the position of the 4 boreholes ⑥ on the slab ceiling using the borehole template (#1704432).
2. Drill the boreholes in accordance with the instructions of the fastener manufacturer and rework if necessary.
3. Hammer the four heavy-duty anchors ② into the boreholes ⑥ in the slab ceiling in accordance with the instructions of the fastener manufacturer.
4. Place the ceiling pipe flange plate ③ onto the heavy-duty anchors at the passage holes ⑤.
5. Attach the ceiling pipe flange plate ③ to the heavy-duty anchors using the hex nuts ④ and washer ⑦.
6. Ensure that the ceiling pipe flange plate ③ is flush with the slab ceiling. Fasten all 4 hex nuts ④.
   Tightening torque: 45 Nm
7. Check the central axis for secure seating.

Figure 10



5.6 Connecting the on-site power supply

Connect the on-site connecting cables to the terminal block ② of the ceiling pipe flange plate ① according to the circuit diagrams attached.

5.6.1 Input voltage 100 V - 240 V

- Input voltage 100 V - 240 V, 50/60 Hz
- Operating voltage 24 V DC
- Circuit diagram: #1699488

5.7 Mount canopy

NOTE

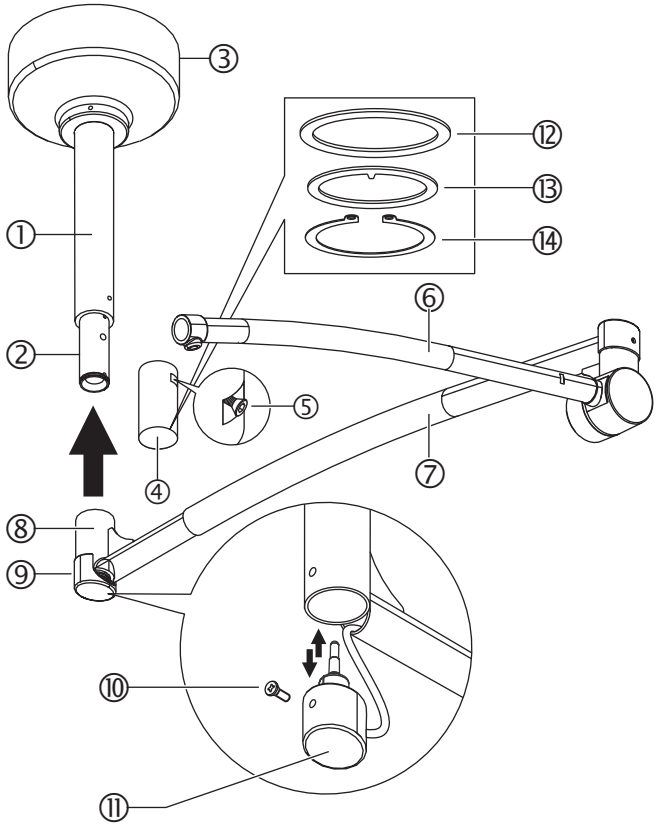
Canopy faceplate for intermediate ceiling version

A canopy faceplate is available to cover any gap between the intermediate ceiling and the canopy. The cut-out in the ceiling may, however, not exceed D = 185 - 240 mm in size.

The canopy ④ is attached with three grub screws ⑦ to the ceiling pipe ⑥ of the central axis.

1. Place the canopy faceplate ⑤ onto the canopy ④ so that all 4 screws ③ project into the canopy ④ and that the canopy faceplate ⑤ is centrally positioned on the canopy ④.
2. Push the canopy ④ and its faceplate ⑤ upwards on the ceiling pipe ⑥ so that the ceiling pipe flange plate with the electrical component is completely covered and the canopy ④ and its faceplate ⑤ are flush with the ceiling.
3. Fasten the three grub screws ⑦ by hand.

Figure 11



5.8 Installation of the support arm system on the central axis

The support arm system has been pre-assembled with:

- the horizontally rotating boom ⑦;
- the horizontally and vertically adjustable spring arm ⑥,
- the internally connected cables for the power supply to the light head in the central axis ① and in both support arms:
  - The connection of the power supply from the central axis to the boom is effected by means of a 3-pin plug.

NOTE

Canopy

Before installing the support arm system, ensure that the canopy ③ is fixed on the central axis ① .

⚠CAUTION

Uncontrolled swivel movement

If a lowered spring arm is relieved of load in an uncontrolled manner, it may bounce up and cause injuries.

Damage to the spring arm

Do not let the spring arm impact onto the upper or lower limit stop. To swivel the spring arm, grip the front end and carefully move it between the upper and lower position stops.

5.8.1 Preparing for the assembly

1. Remove the protective cap ④ from the bearing pivot ② of the central axis ① by removing the threaded pin M3 ⑤.

→ Keep the protective cap ④ for later removal of the circlip ⑭, the washer ⑫ and the lug ring ⑬ .

2. Remove the protective cap ⑨ on the hinge bearing ⑧ of the boom ⑦ . First remove the screw ⑩ and pull out the protective cap ⑨ and the plug ⑪.
3. Lubricate the bearing pivot ② and the hinge bearing ⑧ of the boom ⑦ with a thin film of grease.
   Recommended grease: Optimol-Optipit.

5.8.2 Dismantling the circlip

A) Consequences of a wrongly assembled / disassembled circlip:

⚠WARNING

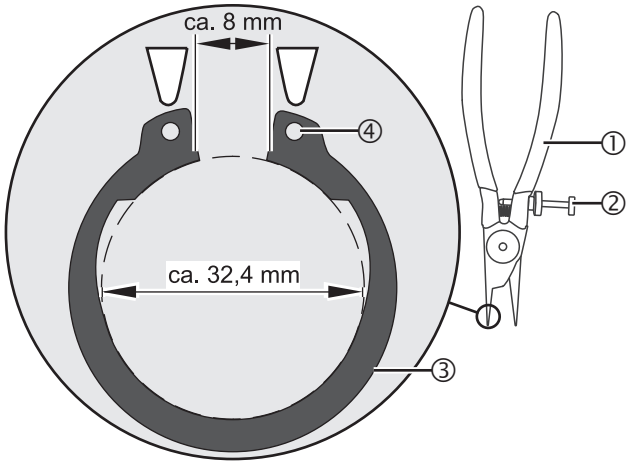
Collapse of the support arm system

The spring arm, quarter bracket and lighting unit are held in position by a circlip in the bearing pivot. If the circlip is overstretched or wrongly fitted

during assembly or disassembly, the circlip will slip out of the groove in the bearing pivot.
As a result, the spring arm, adapter and light unit can crash and the internal electrical supply lines can be torn off. This can result in serious injury:

- **The circlip must be assembled only by trained technical personnel.**
- **Appropriate circlip pliers with expansion-delimiting means must be used.**
- **Comply with installation manual and installation sequence.**
- **During initial assembly, use the disassembled circlip (only once) or use a new, unused circlip.**
- **In case of service or maintenance, a new, unused circlip must always be installed.**

Figure 12



B) Use circlip pliers with expansion-delimiting means

The figure shows exemplary circlip pliers ① with expansion-delimiting means ②. The expansion-delimiting means ② prevent overspreading of the circlip.

→ The circlip must not be dismantled without circlip pliers with expansion-delimiting means.

1. Turn the adjusting ring ② of the circlip pliers ① so far that the expansion of the circlip is limited by about 8 mm, as shown in the figure.

→ This corresponds to a spreading of the circlip inside diameter of 32.4 mm.

C) Dismantling the circlip

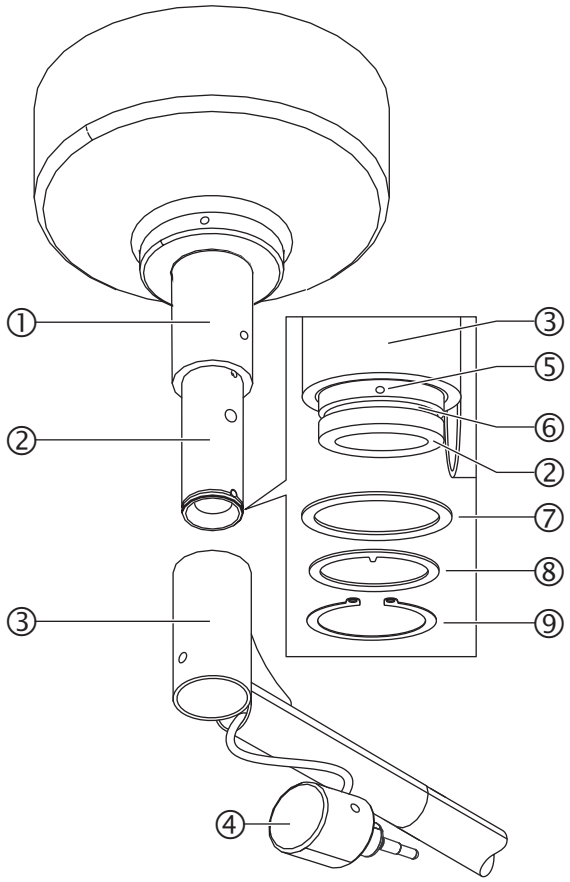
⚠WARNING

Collapse of the support arm system

An overstretched circlip may cause the support arm system to collapse:

- **Open the circlip only so far that it can be precisely guided flat via the pivot pin/ protective cap.**
- **For this purpose, spread the circlip on an inner diameter of 32.4 mm. This corresponds to an inside dimension of about 8 mm between the eyelets.**

Figure 13



1. Insert circlip pliers with expansion-limiting means into the eyelets of the circlip ⑨.
2. Spread circlip ⑨ carefully so far that it can be just pulled off the protective sleeve.
3. Carefully remove the circlip ⑨ upward from the protective sleeve.
4. Remove the washer ⑦ and lug ring ⑧.
5. Mark circlip ⑨ for single use with a permanent marker on the outside diameter and keep it for later assembly.

5.8.3 Mounting the circlip

1. Slide the hinge bearing ③ of the boom onto the bearing pivot ② of the central axis ①.
2. Slide the washer⑦ onto the bearing pivot ② and hold it down.
3. Slide the lug ring ⑧ onto the bearing pivot ② and insert the lug into the borehole ⑤ of the bearing pivot.

⚠WARNING

Using the circlip

Use the circlip disassembled in Chapter 5.8.2 **(can be recognised by the marking on the outer diameter) during the initial assembly or use a new, unused circlip. In case of service or maintenance, a new, unused circlip must always be installed.**

4. Insert circlip pliers with expansion-limiting means into the eyelets of the circlip ⑨.

⚠WARNING

Collapse of the support arm system

An overstretched circlip may cause the support arm system to collapse:

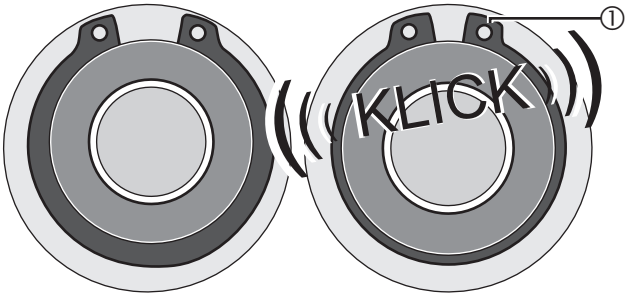
- **Carefully spread the circlip only so far that it can be precisely guided over the bearing pivot.**
- **For this purpose, spread the circlip on an inner diameter of 32.4 mm. This corresponds to an inside dimension of about 8 mm between the eyelets.**

5. Spread circlip ⑨ carefully so far that it can be precisely guided over the bearing pivot ②.
6. Insert the circlip ⑨ into the groove ⑥ of the bearing pivot ②.
7. Check the secure fit of the circlip as per Chapter 5.8.4.

5.8.4 Checking the secure fit of the circlip

The circlip must lie completely and straight inside the groove provided. This is checked with the following steps:

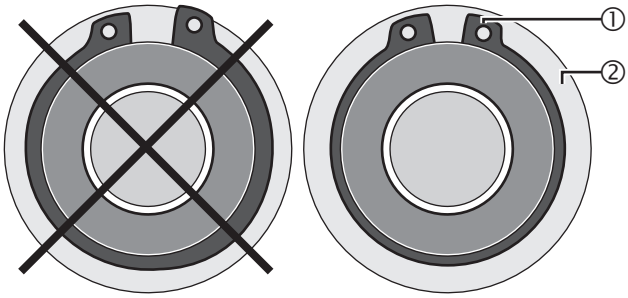
Figure 14



A) Acoustic diagnosis

The circlip① must audibly snap into the groove on the central axle bearing pin.

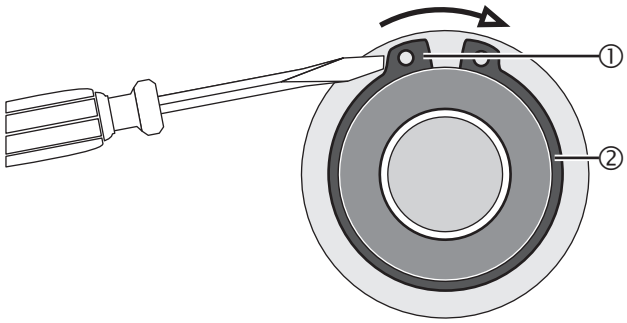
Figure 15



B) Visual inspection

1. The washer ② must be mounted above the circlip ①.
2. The circlip ① must not be uneven.
3. The distance between the two eyelets in the circlip ① must correspond to the distance in the unstressed status. A larger distance indicates an incorrectly mounted circlip ①.

Figure 16



C) Mechanical test

Place a small, suitable screwdriver on the eyelet ① of the circlip ② and turn the circlip ② carefully in direction of the arrow.

- Be careful not to expand the circlip ② or to squeeze out of the groove.

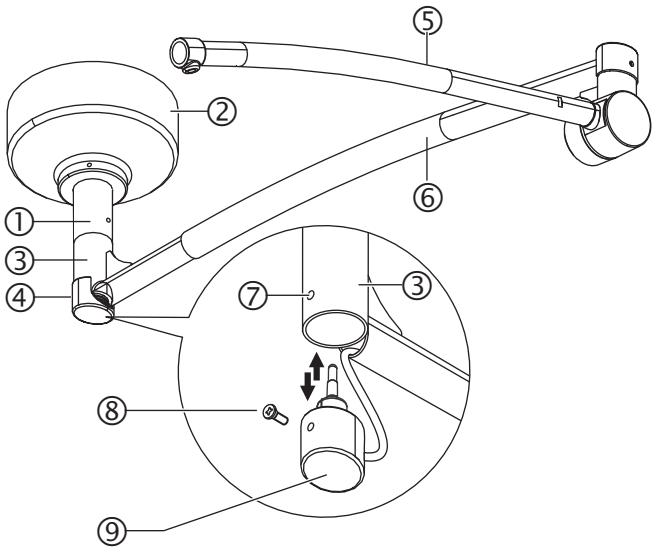
Correct position

→ If the circlip ② can rotate in its groove, then the circlip ② is mounted correctly.

Incorrect position

4. If you cannot rotate the circlip ② then the circlip ② must be dismantled in accordance with Chapter 5.8.2 and a new circlip ② must be mounted in accordance with Chapter 5.8.3.

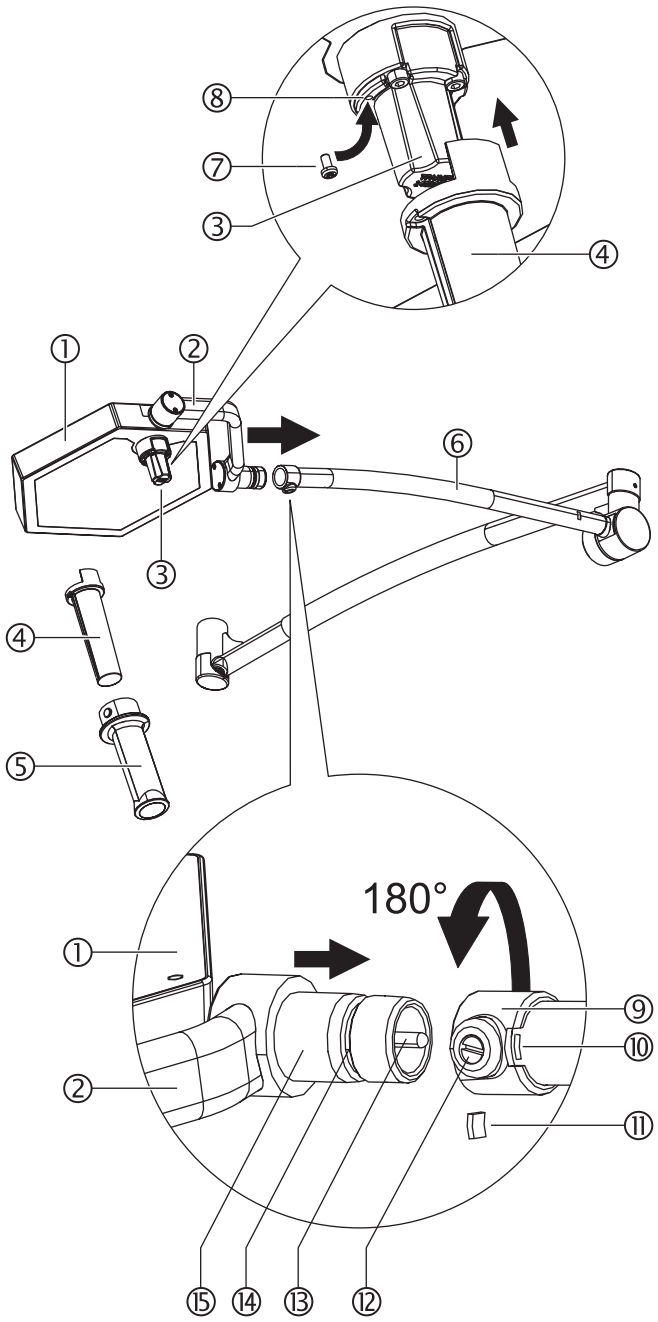
Figure 17



5.8.5 Completing the installation

1. Check the secure fit of the support arms ⑤/⑥ on the central axis ①.
2. Insert the plug ⑨ into the socket in the bearing pivot.
3. Install the protective cap ④ on the hinge bearing ③ of the boom ⑥ by inserting the screw ⑧ through the borehole in the protective cap ④ and into the threaded hole ⑦ of the hinge bearing ③ into the plug ⑨.

Figure 18



5.9 Installation of the light unit on the support arm system

The light unit is partially pre-assembled with:

- the light head ① on the quarter bracket ②,
- the internally connected cables for the power supply to the light head:
  - The connection between the spring arm and the lighting unit is effected by means of a 3-pin plug connection.

The handle holder ④ for the sterilisable handle ⑤ must be installed on the handle attachment ③.

1. Place the handle holder ④ into the handle attachment ③.
2. To fasten, insert the screw ⑦ into the threaded hole ⑧ on the handle attachment.

⚠ CAUTION

Uncontrolled swivel movement

If a lowered spring arm is relieved of load in an uncontrolled manner, it may bounce up and cause injuries.

Damage to the spring arm

Do not let the spring arm impact onto the upper or lower limit stop. To swivel the spring arm, grip the front end and carefully move it between the upper and lower position stops.

Checking the retaining segment

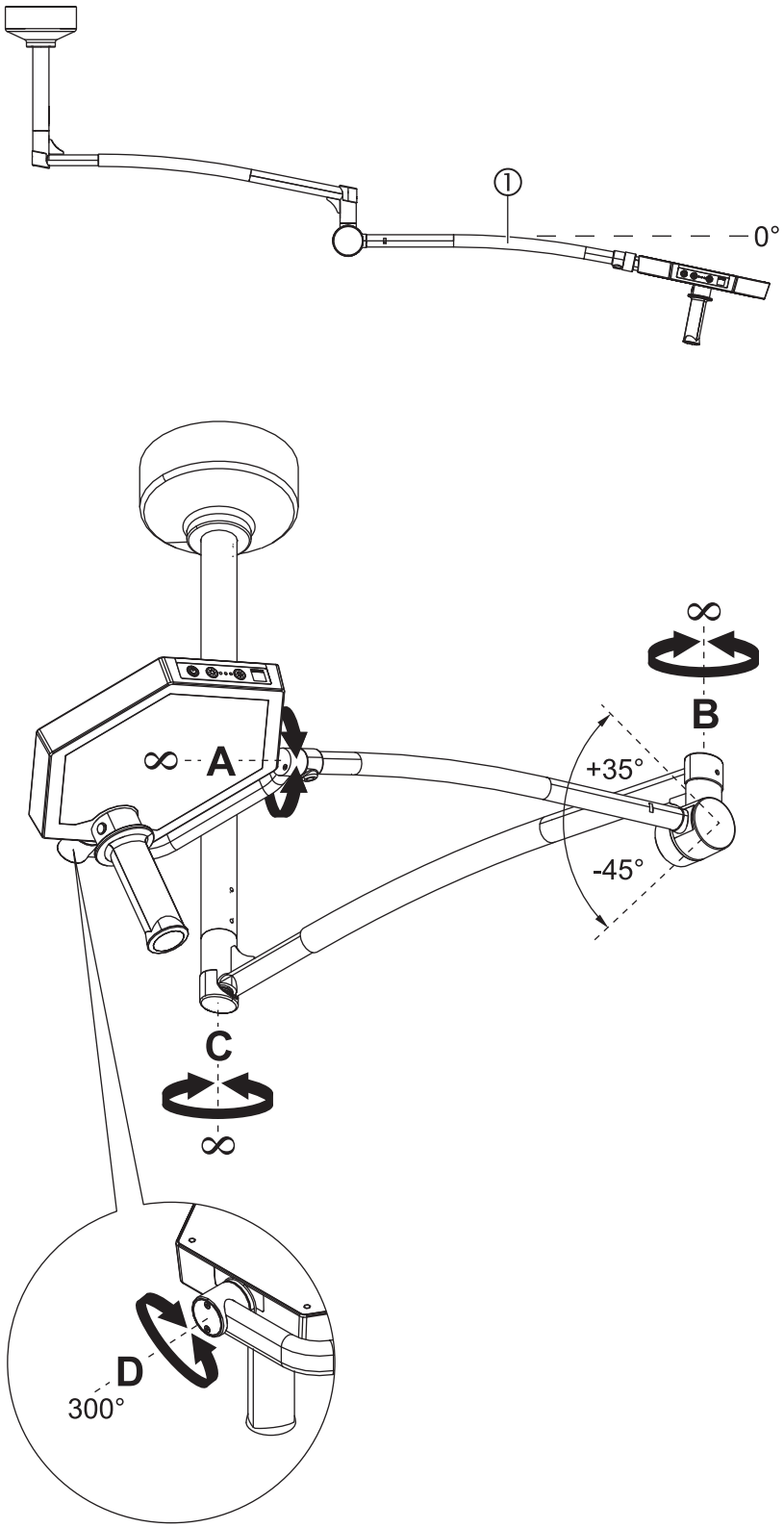
Before installation of the lighting unit, check the retaining segment for damage / wear and replace if necessary.

Installing the light unit

1. Remove the brake screw ⑫ on the spring arm and align the retaining sleeve ⑨ so that the opening and slot ⑩ are aligned.
2. Carefully insert the bearing pivot ⑮ of the quarter bracket ② and the plug ⑬ into the socket on the spring arm.
3. Insert the retaining segment ⑪ into the slot ⑩ so that the retaining segment is guided into the groove ⑭ of the bearing pivot.
4. Turn the retaining sleeve ⑨ by 180°, so that the slot is covered and the retaining segment has been secured.
5. Reinsert the brake screw ⑫ and set the braking force of the quarter bracket on the brake screw (see Chapter 9.2).

6. Adjusting the spring force of the spring arm (see Chapter 9.1, page 65).
7. Check the secure fit of the quarter bracket on the spring arm.

Figure 19



5.10 Controlling driving movements

5.10.1 Check levelling of the lighting system

The horizontal movement of the lighting system must be levelled over the entire rotating range of 360°.

1. Position the spring arm ① in the horizontal position (maximum momentum).
2. Turn the lighting system by 90° in a horizontal plane. If required, correct the alignment of the ceiling flange (see Chapter 5.4.1 or Chapter 5.4.2).

5.10.2 Rotation / swivel ranges of the support arm system

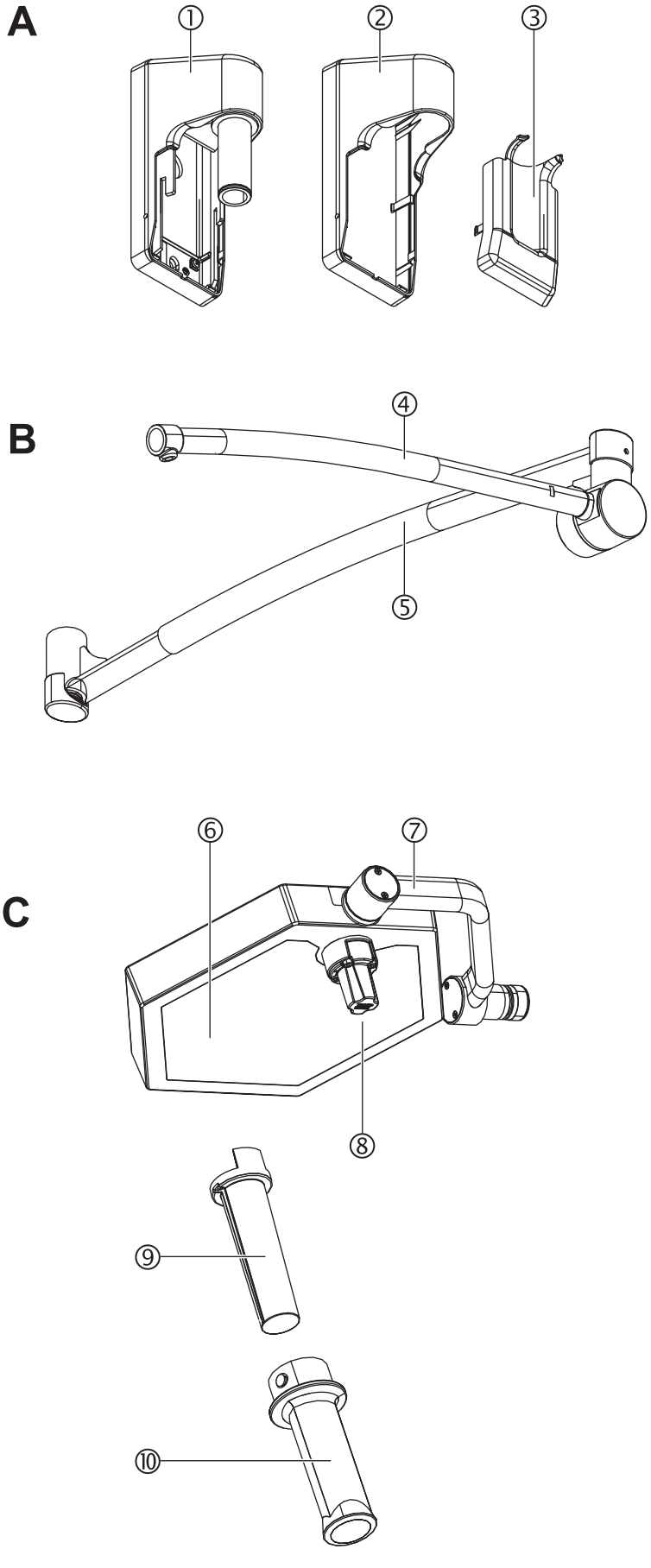
It must be possible to perform the following rotation and swivel movements with the support arms when there is sufficient distance from neighbouring walls and objects:

- Boom at the ceiling pipe, hinge **C**:
- Full horizontal rotation movement (> 360°).
- Spring arm on the boom, hinge **B**:
  Full horizontal rotation movement (> 360°).
  Vertical swivel movement in the range: +35° to -45°.

5.10.3 Rotation / swivel ranges of the light head

- Quarter bracket on spring arm, hinge **A**:
- Full vertical rotation movement (> 360°).
- Light head on axle bearing, hinge **D**:
  Vertical rotation movement 300°.

Figure 20



6.1 Overview of assemblies of wall bearing

The wall version has been disassembled into three assemblies for installation:

- Wall bearing assembly;
- Support arm system assembly;
- Light unit assembly.

6.1.1 Wall bearing assembly

A: The wall bearing consists of three components:

- Wall bearing ①;
- Cover ②;
- Faceplate ③.

6.1.2 Support arm system assembly

B: The support arm system is pre-assembled and consists of:

- the horizontally rotating boom ⑤;
- and the horizontally and vertically adjustable spring arm ④.

6.1.3 Light unit assembly

C: The light unit is partially pre-assembled and consists of:

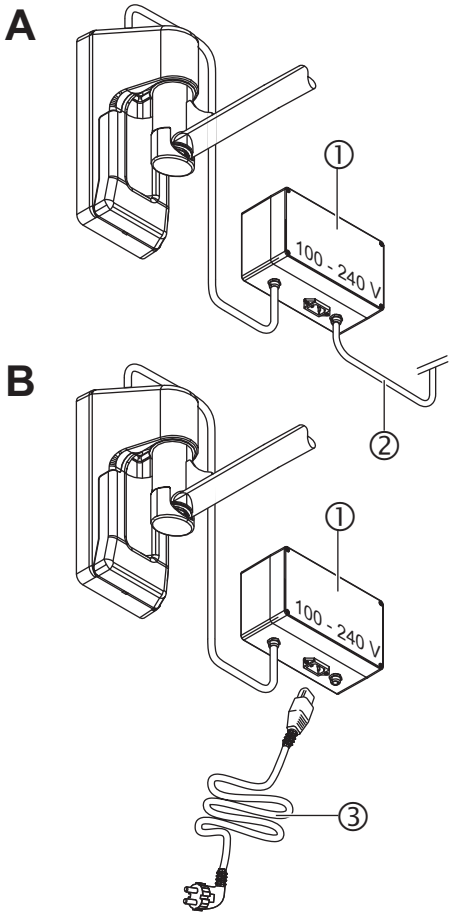
- Light head ⑥;
- Quarter bracket ⑦.

The components to be installed are:

- Handle support ⑨;
- Handle ⑩.

The handle support ⑨ for the sterilisable handle ⑩ must be installed on the handle attachment ⑧ of the light head.

Figure 21



6.2 Power supply to the wall version

The on-site power supply to the installation site must be installed by the operator.
Supply voltage:

- The input voltage 100 V - 240 V, 50/60 Hz is transformed into 24 V DC operating voltage on the power supply unit to supply the light head with power.

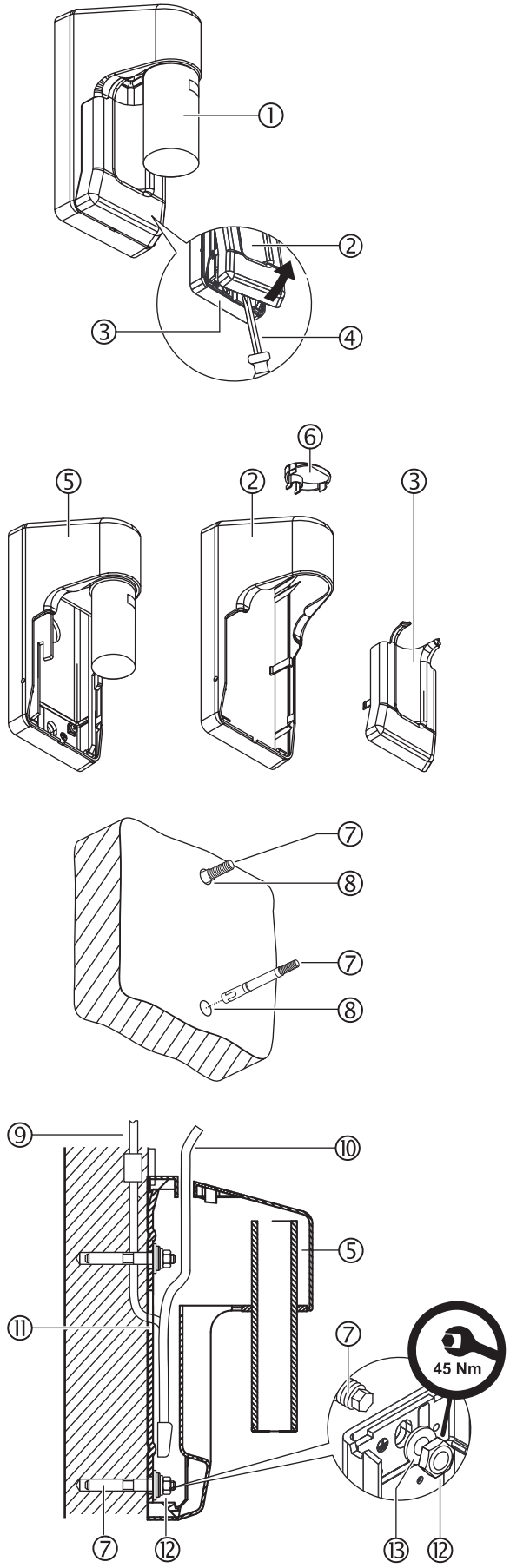
The internal connecting cables to supply the light head with power have been pre-installed in the support arm system and light unit assemblies.

Power supply

The power to the wall-mounted version can be supplied by 2 types of connection:

- **A:** Via the power supply box ① with a fixed connection 100 V - 240 V ②,
- **B:** Via the power supply box ①, supplied via a mains cable with a cold-device installation plug 100 V - 240 V ③.

Figure 22



6.3 Fastening the wall bearing

Before starting the installation work:

- Check structural evidence about the condition and load-bearing capacity of the fastening substructure.
- Check the suitability of the fastening means in accordance with the structural specifications.
- Check fastening surface on existing electricity, gas or water pipes.

NOTE

Wall stability

Especially in the case of stone or lightweight construction walls, it is necessary to insert a metal construction.

- **The design of the construction must be checked by a structural engineer.**

Removing the casing

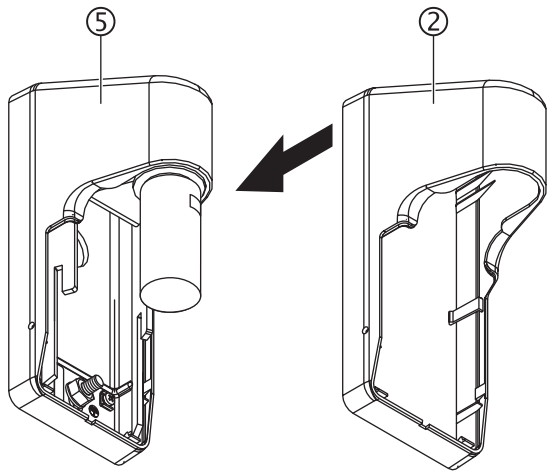
The casing of the wall bearing ⑤ consists of a cover ③ and a faceplate ②. Both parts have only been clipped on. The bearing pivot is protected with a protective cap ①. The protective cap is only removed when installing the support arm system.

1. Insert a suitable slotted screwdriver ④ into the slit between the cover ③ and the faceplate ④ from the top and carefully lever off the faceplate.
2. Remove the cover ③.
3. Remove the lid ⑥ of the mains power cable at the cover.

Attaching the heavy-duty anchors

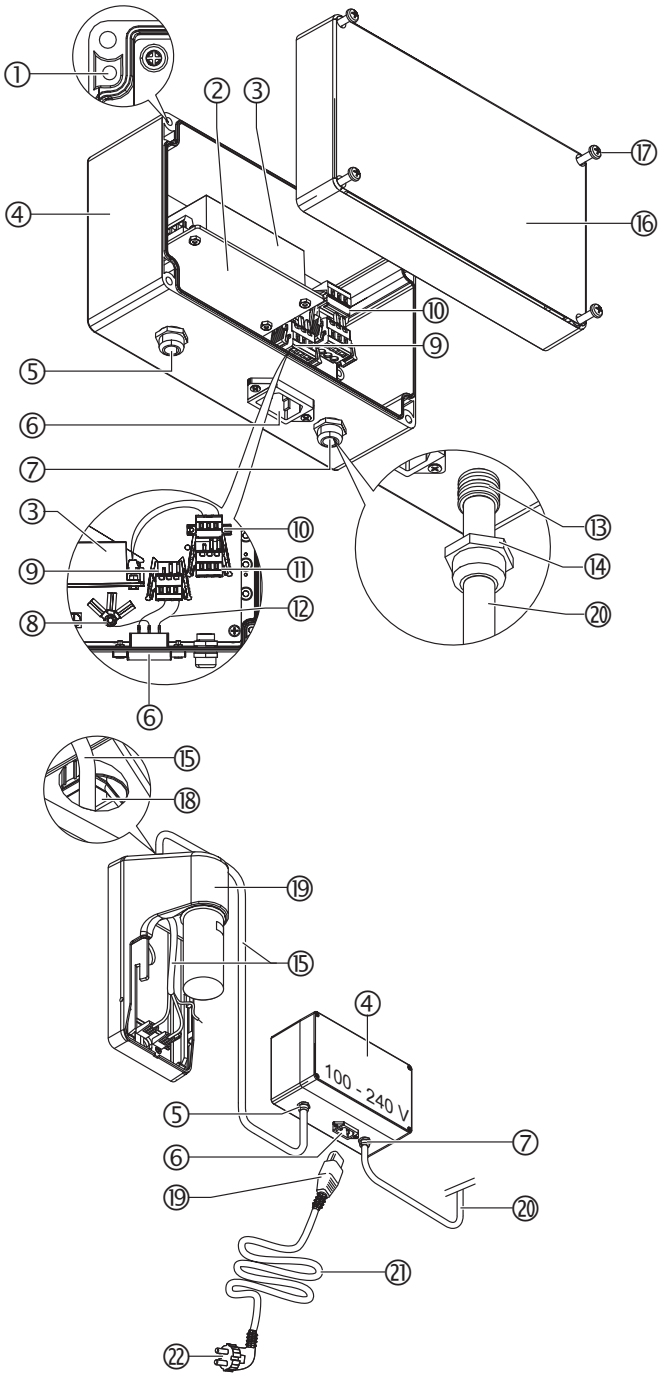
1. Determine the passage height via the offset of the boreholes ⑦ . The distance between the boreholes is 190 mm. For a passage height of at least 2000 mm, the lower hole should be drilled at a height of 2190 mm.
2. Mark the position of both boreholes absolutely vertically with the aid of the borehole template (#4058120). The precise vertical alignment of the wall bearing is crucial for ensuring easy mobility and secure positioning of the lighting system.
3. Drill the boreholes in accordance with the instructions of the fastener manufacturer and rework if necessary.
4. Hammer both heavy-duty anchors ⑧ into the wall in accordance with the instructions of the fastener manufacturer.
5. Place the wall bearing ⑤ onto the two heavy-duty anchors ⑧.
6. Place the washers ⑬ onto the heavy-duty anchors, loosely fasten the self-securing nuts ⑫ and precisely align the wall bearing vertically.
7. Then tighten the two self-securing nuts:
   Tightening torque: 45 Nm

Figure 23



8. Check for secure fit of the wall bearing. The wall bearing must be completely flush to the wall.
9. Place the cover ② against the wall bearing ⑤ and firmly press it against the wall bearing so that the clamps engage.

Figure 24



6.4 Connecting the on-site power supply

Power supply with an input voltage of 100 V - 240 V takes place via the power supply box ④, either via:

- the fixed connection to connecting cable ⑳,

or

- the mains cable ㉑.

Connection to only one supply line

The power supply may either be via a fixed connection or via the mains cable. Never connect the two supply lines at the same time.

Installing the power supply box

The power supply box ④ is mounted against the wall at the height of the wall bearing, using a dowel screw attachment.

1. Remove the four fastening screws ⑰ of the cover ⑯ and remove the cover.
2. Drill four holes and recess the dowels in the wall in accordance with the template for the passage holes ①.
3. Inserting fastening screws ⑰ through the four passage holes in the rear wall of the power supply box and into the dowels.
4. The two cable screw connections ⑤ and ⑦ are used to relieve tension:
   – Unscrew the cap nut ⑭ from the threaded bushing ⑬,
   – Push cable ⑮ or ⑳ through the cap nut ⑭ and the threaded bushing ⑬, then screw the cap nut ⑭ onto the threaded bushing ⑬ and tighten it to relieve tensile stress.
5. Once the power supply has been connected according to Chapter 6.4.1, screw down lid ⑯ using the four fastening screws ⑰ to connect it to the power supply box ④.

6.4.1 Input voltage 100 V - 240 V

Input voltage: 100 V - 240 V, 50/60 Hz
Operating voltage: 24 V DC

Connection between the power supply box and the wall bearing

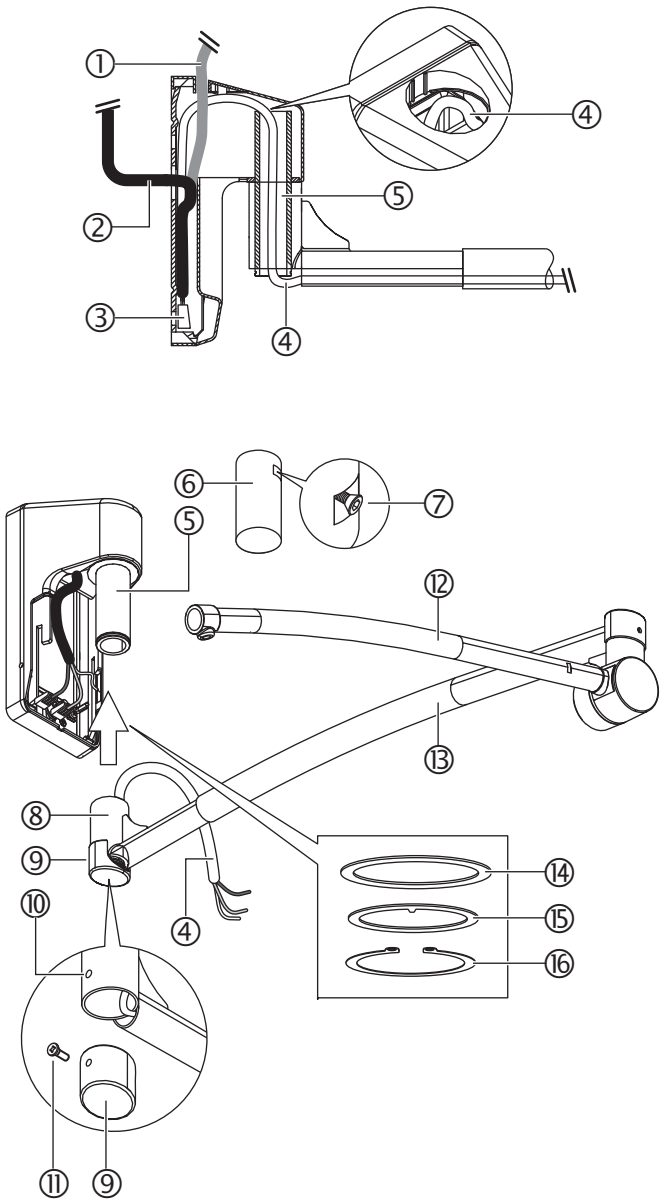
- Push the provided cable ⑮ through the cable screw connection ⑤ and connect it to the power supply unit ③ and the earthing connection ⑧ according to circuit plan #1699647.
- Push cable ⑮ through the opening ⑱ into the wall bearing ⑲ and connect it.
  Fixed connecting cable.

– Guide the on-site connecting cable ⑳ through the cable screw connection ⑦ into the power supply box ④ and secure according to Chapter 6.4 to achieve tension relief.
– Connect the on-site connecting cable ⑳ to the plug ⑪ and the earthing connection ⑧ according to circuit diagram #1699647.

Connection with mains cable

– The cold-device connection ⑥ is connected via a cable ⑫ to the plug ⑨ and the earthing connection with cable shoe M4 ⑧.
– To use the mains cable supply ㉑, pull the plug ⑪ out of the socket ⑩. Instead, insert the plug ⑨ into the socket ⑩, connected to the mains supply ③.
– Insert the safety plug ㉒ of the mains cable ㉑ into a duly earthed socket and insert the cold-device installation plug ⑲ into the cold-device connection ⑥ of the power supply box ④.

Figure 25



6.5 Installation of the support arm system on the wall bearing

The support arm system has been pre-assembled with:

- the horizontally rotating boom ⑬,
- the horizontally and vertically adjustable spring arm ⑫.
- the device-internal, installed cables to supply power to the light head in both support arms:
  - The power cable within the support arms ④ leads through the wall bearing pivot ⑤ to the mains cables ① or ② leading into the wall bearing from the outside. The power supply connection is effected via overhanging clamps ③ (see Chapter 6.6).

⚠ CAUTION

Uncontrolled swivel movement

If a lowered spring arm is relieved of load in an uncontrolled manner, it may bounce up and cause injuries.

Damage to the spring arm

Do not let the spring arm impact onto the upper or lower limit stop. To swivel the spring arm, grip the front end and carefully move it between the upper and lower position stops.

6.5.1 Preparing for the assembly

1. Remove the protective cap ⑥ from the bearing pivot ⑤ of the wall bearing by removing the threaded pin M3 ⑦.

→ Keep the protective cap ⑥ for later removal of the circlip ⑯, the washer ⑭ and the lug ring ⑮.

2. Remove the protective cap ⑨ on the hinge bearing ⑧ . Remove the screw ⑪ and the protective cap ⑨ .
3. Lubricate the bearing pivot ⑤ and the hinge bearing ⑧ with a thin film of grease.
   Recommended grease: Optimol-Optipit.

6.5.2 Dismantling the circlip

A) Consequences of a wrongly assembled / disassembled circlip:

⚠ WARNING

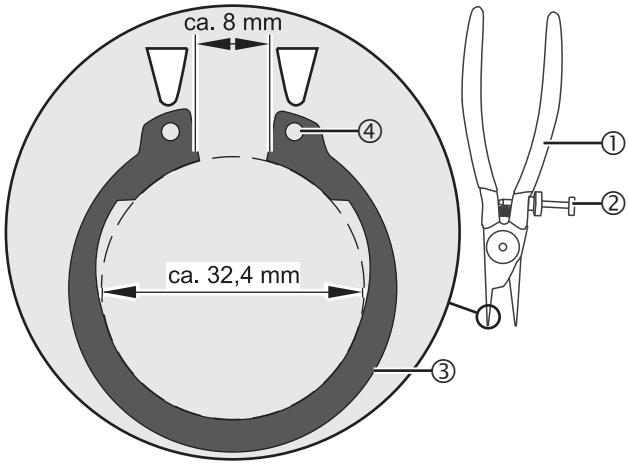
Collapse of the support arm system

The spring arm, quarter bracket and lighting unit are held in position by a circlip in the bearing pivot.
If the circlip is overstretched or wrongly fitted during assembly or disassembly, the circlip will slip out of the groove in the wall bearing. As a result,

the spring arm, adapter and light unit can crash and the internal electrical supply lines can be torn off. This can result in serious injury:

- **The circlip must be assembled only by trained technical personnel.**
- **Appropriate circlip pliers with expansion-delimiting means must be used.**
- **Comply with installation manual and installation sequence.**
- **During initial assembly, use the disassembled circlip (only once) or use a new, unused circlip.**
- **In case of service or maintenance, a new, unused circlip must always be installed.**

Figure 26



B) Use circlip pliers with expansion-delimiting means

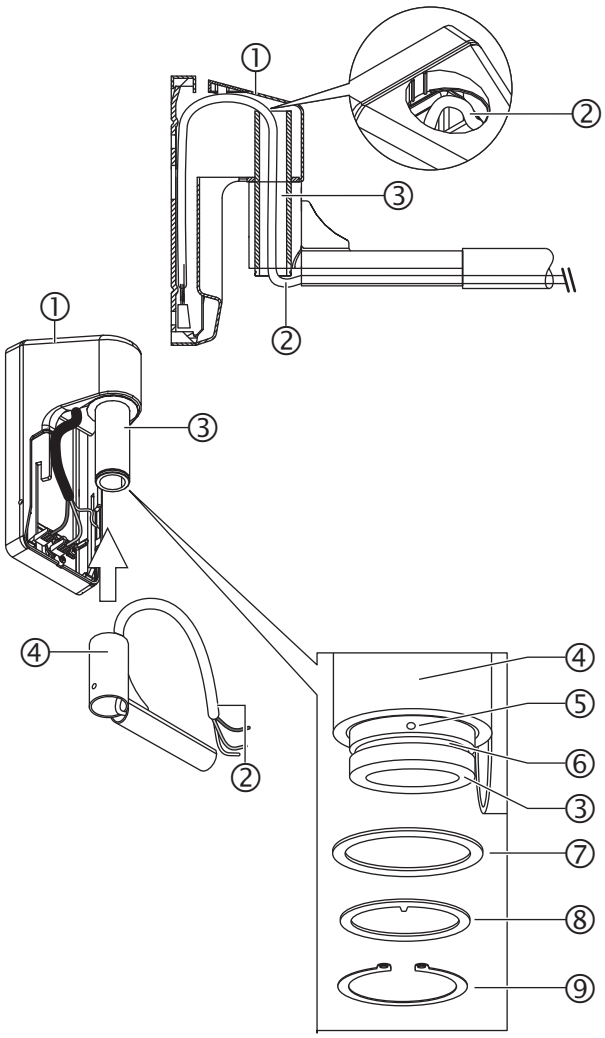
The figure shows exemplary circlip pliers ① with expansion-delimiting means ②. The expansion-delimiting means prevent overspreading of the circlip.

→ The circlip may not be removed without circlip pliers ① with expansion delimiting means ②.

1. Turn the adjustment ring ② of the circlip pliers ① so far that the expansion of the circlip is limited by about 8 mm, as shown in the figure.

→ This corresponds to a spreading of the circlip inside diameter of 32.4 mm.

Figure 27



C) Dismantling the circlip

⚠WARNING

Collapse of the support arm system

An overstretched circlip may cause the support arm system to collapse:

- **Open the circlip only so far that it can be precisely guided flat via the pivot pin/ protective cap.**
- **For this purpose, spread the circlip on an inner diameter of 32.4 mm. This corresponds to an inside dimension of about 8 mm between the eyelets.**

2. Insert circlip pliers with expansion-limiting means into the eyelets of the circlip ⑨.
3. Spread circlip ⑨ carefully so far that it can be just pulled off the protective sleeve.
4. Carefully remove the circlip ⑨ upward from the protective sleeve.
5. Remove the washer ⑦ and lug ring ⑧.
6. Mark circlip ⑨ for single use with a permanent marker on the outside diameter and keep it for later assembly.

6.5.3 Mounting the circlip

1. Place the hinge bearing ④ of the boom under the bearing pivot ③ of the wall bearing ① and guide the internal power cable ② through the bearing pivot to the rear wall of the wall bearing.
2. Slide the hinge bearing ④ of the boom onto the bearing pivot ③ of the wall bearing ①.
3. Slide the washer⑦ onto the bearing pivot ③ and hold it down.
4. Slide the lug ring ⑧ onto the bearing pivot ③ and insert the lug into the borehole ⑤ of the bearing pivot ③.

⚠WARNING

Using the circlip

Use the circlip disassembled in Chapter 6.5.2 **(can be recognised by the marking on the outer diameter) during the initial assembly or use a new, unused circlip. In case of service or maintenance, a new, unused circlip must always be installed.**

5. Insert circlip pliers with expansion-limiting means into the eyelets of the circlip ⑨.

⚠WARNING

Collapse of the support arm system

An overstretched circlip may cause the support arm system to collapse:

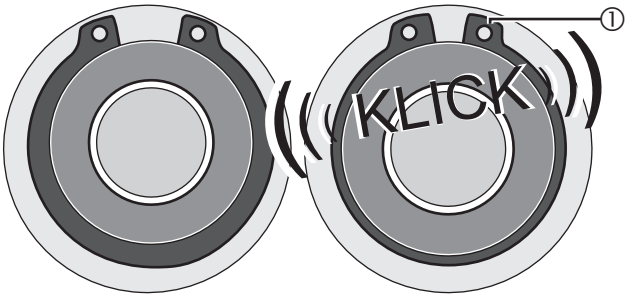
- **Carefully spread the circlip only so far that it can be precisely guided over the bearing pivot.**
- **For this purpose, spread the circlip on an inner diameter of 32.4 mm. This corresponds to an inside dimension of about 8 mm between the eyelets.**

6. Spread circlip ⑨ carefully so far that it can be precisely guided over the bearing pivot ③.
7. Insert the circlip ⑨ into the groove ⑥ on the bearing pivot ③.
8. Check the secure fit of the circlip as per Chapter 6.5.4.

6.5.4 Checking the secure fit of the circlip

The circlip must lie completely and straight inside the groove provided. This is checked with the following steps:

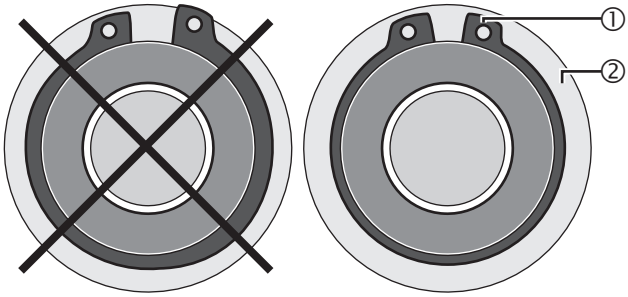
Figure 28



A) Acoustic diagnosis

The circlip① must audibly connect with the groove on the bearing pivot of the wall bearing.

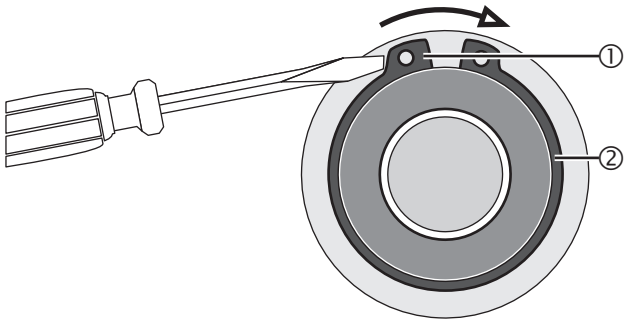
Figure 29



B) Visual inspection

1. The washer ② must be mounted above the circlip ①.
2. The circlip ① must not be uneven.
3. The distance between the two eyelets in the circlip ① must correspond to the distance in the unstressed status. A larger distance indicates an incorrectly mounted circlip ①.

Figure 30



C) Mechanical test

Place a small, suitable screwdriver on the eyelet ① of the circlip ② and turn the circlip ② carefully in direction of the arrow.

- Be careful not to expand the circlip ② or to squeeze out of the groove.

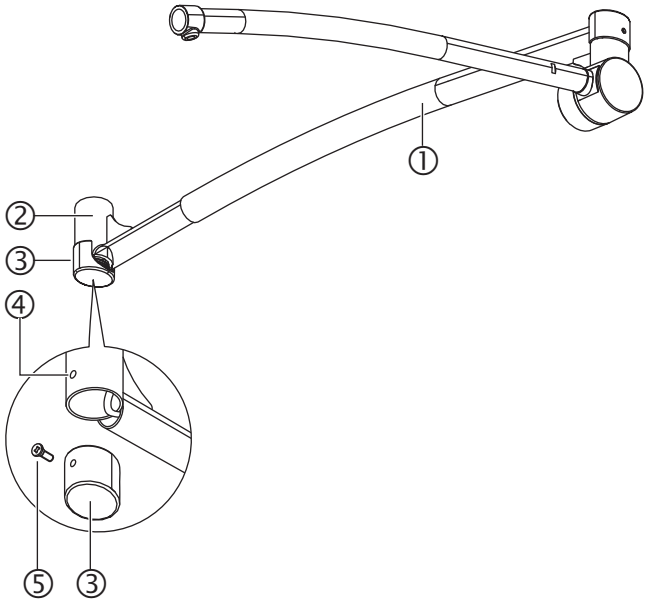
Correct position

→ If the circlip② can rotate in its groove, then the circlip ② is mounted correctly.

Incorrect position

4. If you cannot rotate the circlip ② then the circlip ② must be dismantled in accordance with Chapter 6.5.2 and a new circlip② must be mounted in accordance with Chapter 6.5.3.

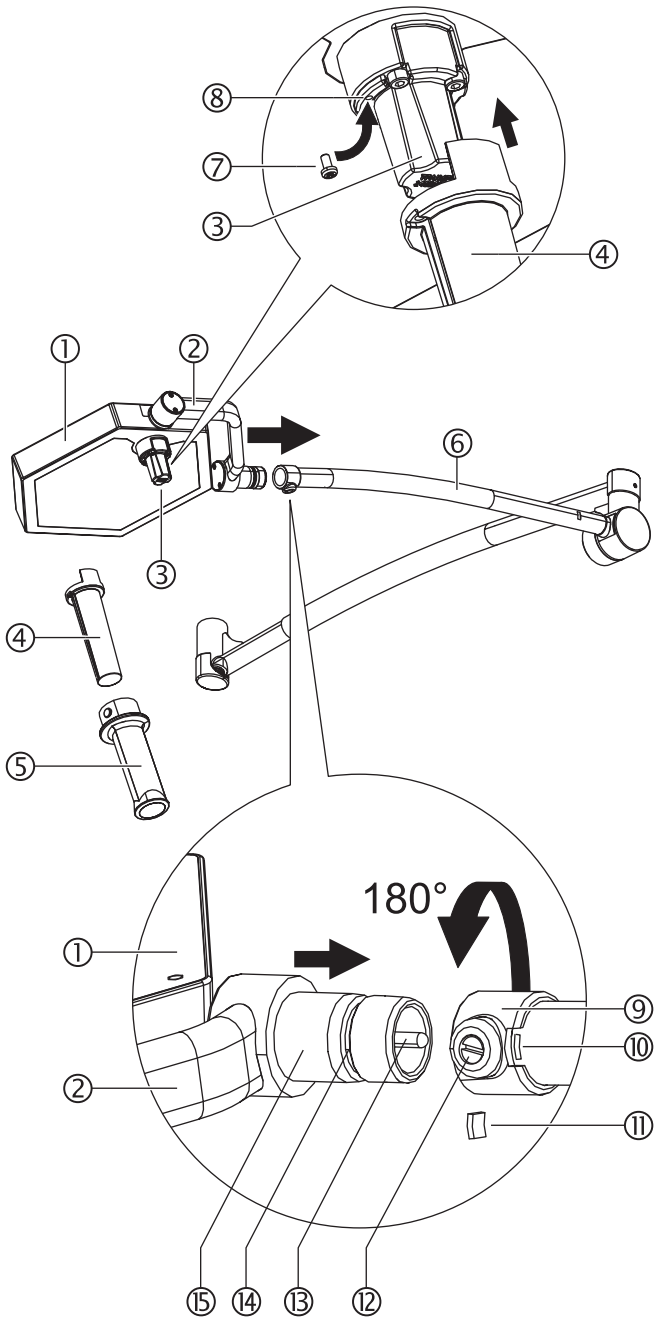
Figure 31



6.5.5 Completing the installation

1. Check the secure fit of the support arms on the wall bearing.
2. Install the protective cap ③ on the hinge bearing ② of the boom ① by inserting the screw ⑤ through the borehole in the protective cap ③ and into the threaded hole ④ in the hinge bearing ②.

Figure 32



6.6 Installation of the light unit on the support arm system

The light unit is partially pre-assembled with:

- the light head ① on the quarter bracket ②,
- the internally connected cables for the power supply to the light head:
  - The connection between the spring arm and the lighting unit is effected by means of a 3-pin plug connection.

The handle holder ④ for the sterilisable handle ⑤ must be installed on the handle attachment ③.

1. Place the handle holder ④ into the handle attachment ③.
2. To fasten, insert the screw ⑦ into the threaded hole ⑧ on the handle attachment.

⚠ CAUTION

Uncontrolled swivel movement

If a lowered spring arm is relieved of load in an uncontrolled manner, it may bounce up and cause injuries.

Damage to the spring arm

Do not let the spring arm impact onto the upper or lower limit stop. To swivel the spring arm, grip the front end and carefully move it between the upper and lower position stops.

Checking the retaining segment

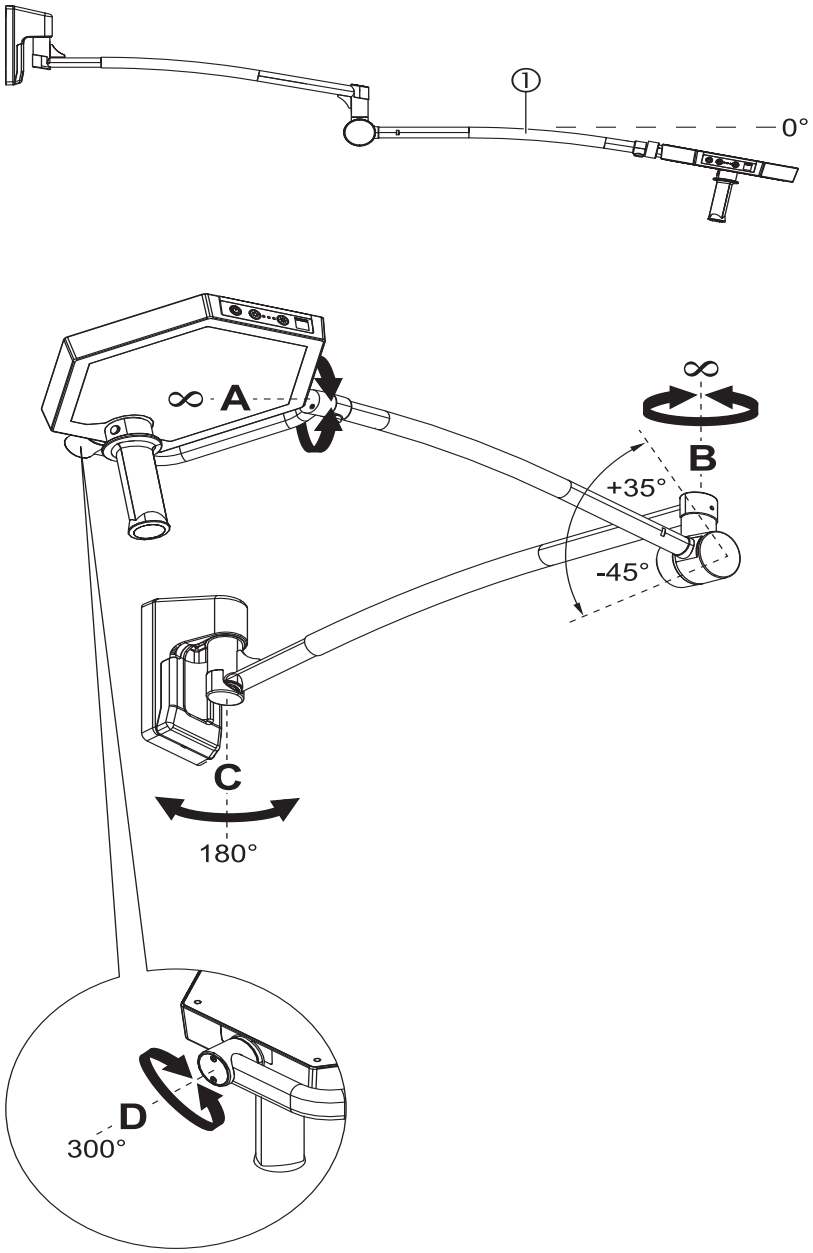
Before installation of the lighting unit, check the retaining segment for damage / wear and replace if necessary.

Installing the light unit

1. Remove the brake screw ⑫ on the spring arm and align the retaining sleeve ⑨ so that the opening and slot ⑩ are aligned.
2. Carefully insert the bearing pivot ⑮ of the quarter bracket ② and the plug ⑬ into the socket on the spring arm.
3. Insert the retaining segment ⑪ into the slot ⑩ so that the retaining segment is guided into the groove ⑭ of the bearing pivot.
4. Turn the retaining sleeve ⑨ by 180°, so that the slot is covered and the retaining segment has been secured.
5. Reinsert the brake screw ⑫ and set the braking force of the quarter bracket on the brake screw (see Chapter 9.2, page 66).

6. Adjusting the spring force of the spring arm (see Chapter 9.1).
7. Check the secure fit of the quarter bracket on the spring arm.

Figure 33



6.7 Controlling the driving movements

6.7.1 Check levelling of the lighting system

The horizontal movement of the lighting system must be levelled over the entire rotating range of 360°.

1. Position the spring arm ① in the horizontal position (0° maximum momentum).
2. Turn the lighting system by 90° in a horizontal plane. If required, correct the alignment of the ceiling flange (see Chapter 6.3).

6.7.2 Rotation / swivel ranges of the support arm system

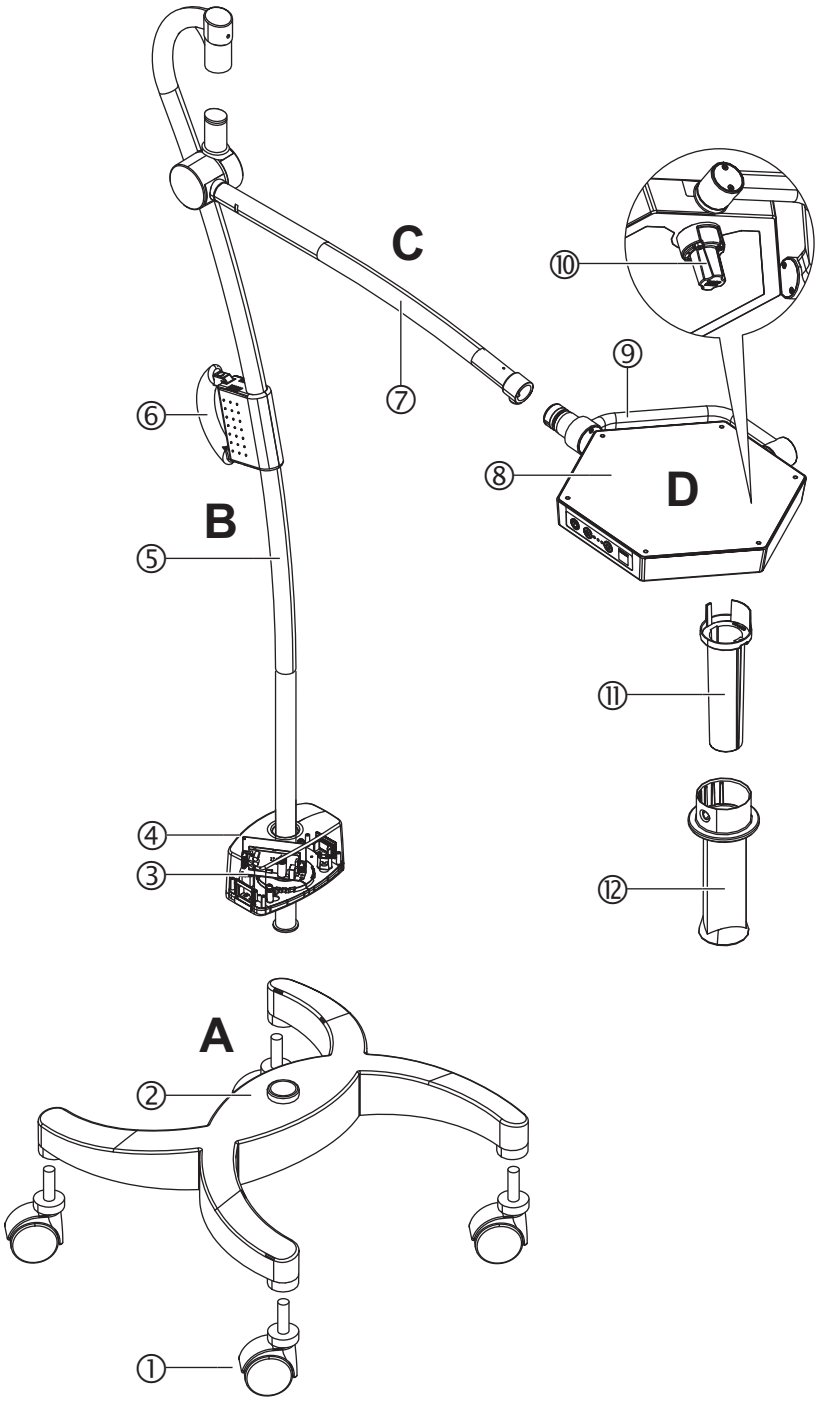
It must be possible to perform the following rotation and swivel movements with the support arms when there is sufficient distance from neighbouring walls and objects:

- Boom on the wall support, hinge **C**: Horizontal rotation movement (180°).
- Spring arm on the boom, hinge **B**: Full horizontal rotation movement (> 360°).
  Vertical swivel movement in the range: +35° to -45°.

6.7.3 Rotation / swivel ranges of the light head

- Quarter bracket on spring arm, hinge **A**: Full vertical rotation movement (> 360°).
- Light head on axle bearing, hinge **D**: Vertical rotation movement 300°.

Figure 34



7.1 Overview of assemblies

The mobile stand version is supplied for installation in four assemblies:

- Stand base assembly;
- Stand pipe assembly;
- Spring arm assembly;
- Light unit assembly.

7.1.1 Stand base assembly

A: The stand base consists of the following components:

– Stand base ②,
– Four castors ① (the front two castors can be locked by a locking device).

7.1.2 Stand pipe assembly

B: The stand pipe unit is pre-assembled and consists of:

– the stand pipe ⑤ with handle ⑥,
– the power supply unit ③,
– the power supply unit cover ④.

7.1.3 Spring arm assembly

C: Horizontally and vertically adjustable spring arm ⑦ for attachment to the stand rod.

7.1.4 Light unit assembly

D: The light unit is partially pre-assembled and consists of:

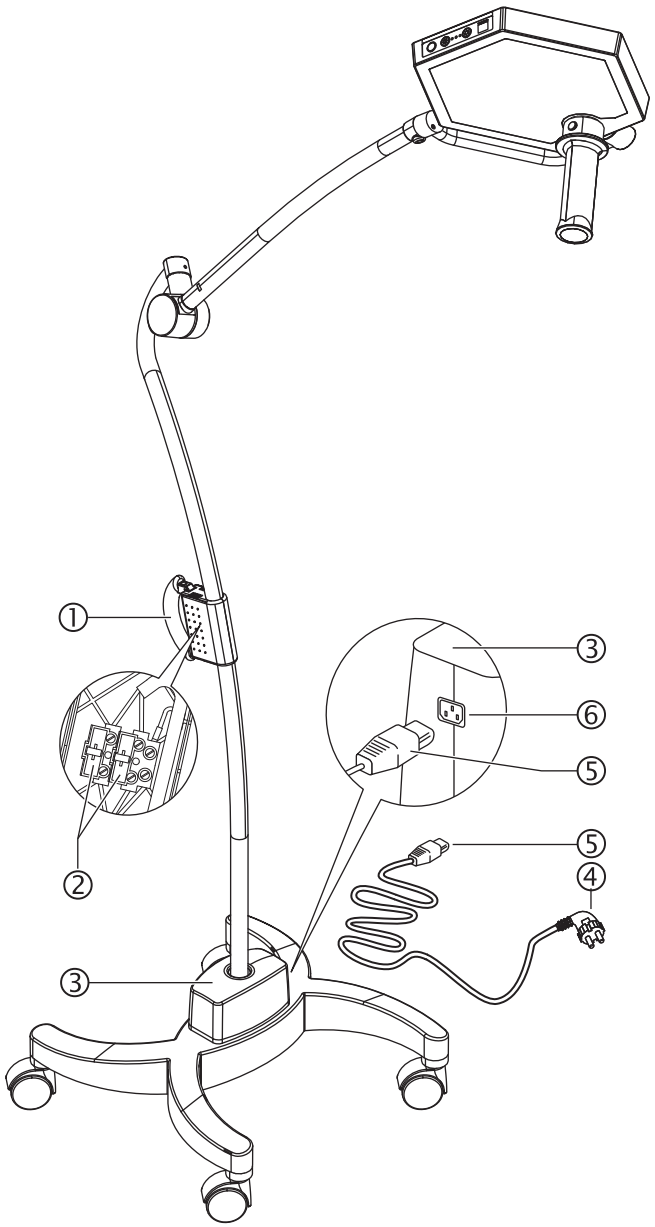
– Light head ⑧;
– Quarter bracket ⑨.

The components to be installed are:

– Handle holder ⑪;
– Handle ⑫.

The handle holder ⑪ for the sterilisable handle ⑫ is mounted onto the handle attachment ⑩ of the light head.

Figure 35



7.2 Power supply of the stand version

Power supply is established through the power supply unit ③ by using:

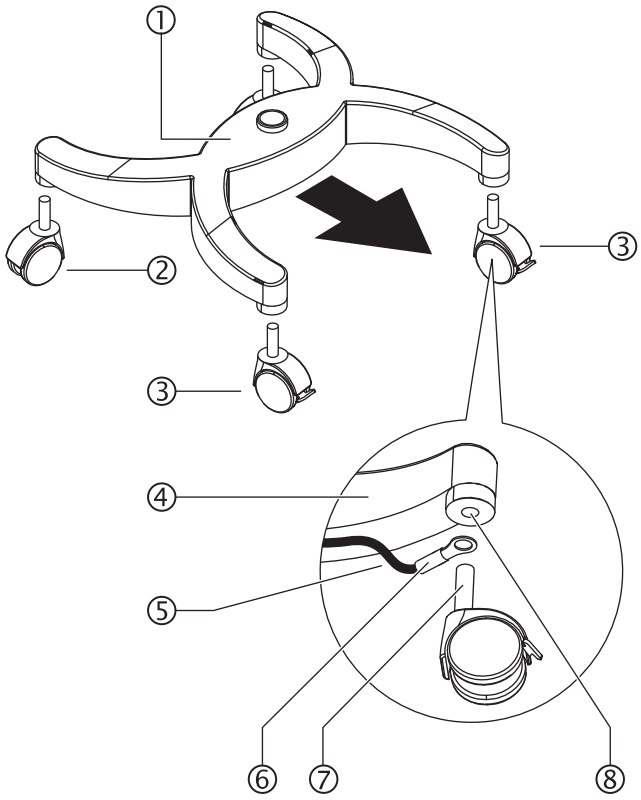
- the mains cable with a cold-device plug ⑤ to connect to the cold-device socket ⑥ of the power supply unit (on the right side) and a safety plug ④ to connect to a mains socket,
- an input voltage of 100 V - 240 V, 50/60 Hz that is transformed to the operating voltage of 24 V DC in the power supply unit of the light head.

Once the mains cable is connected, the power supply is on standby.

The handle ① has two fuse holders ② for device-internal protection installed:

- Fine wire fuse with a medium time lag: M 2.0 A.

Figure 36



7.3 Assembling the stand base

Protection against electrostatic charges is achieved by connecting each of the two lockable front castors ③ with standard brake to a pre-installed earth cable ⑤.
The two castors ③ with standard brake must therefore be mounted at the two stand base stabilisers ④ that have an earth cable ⑤ installed.

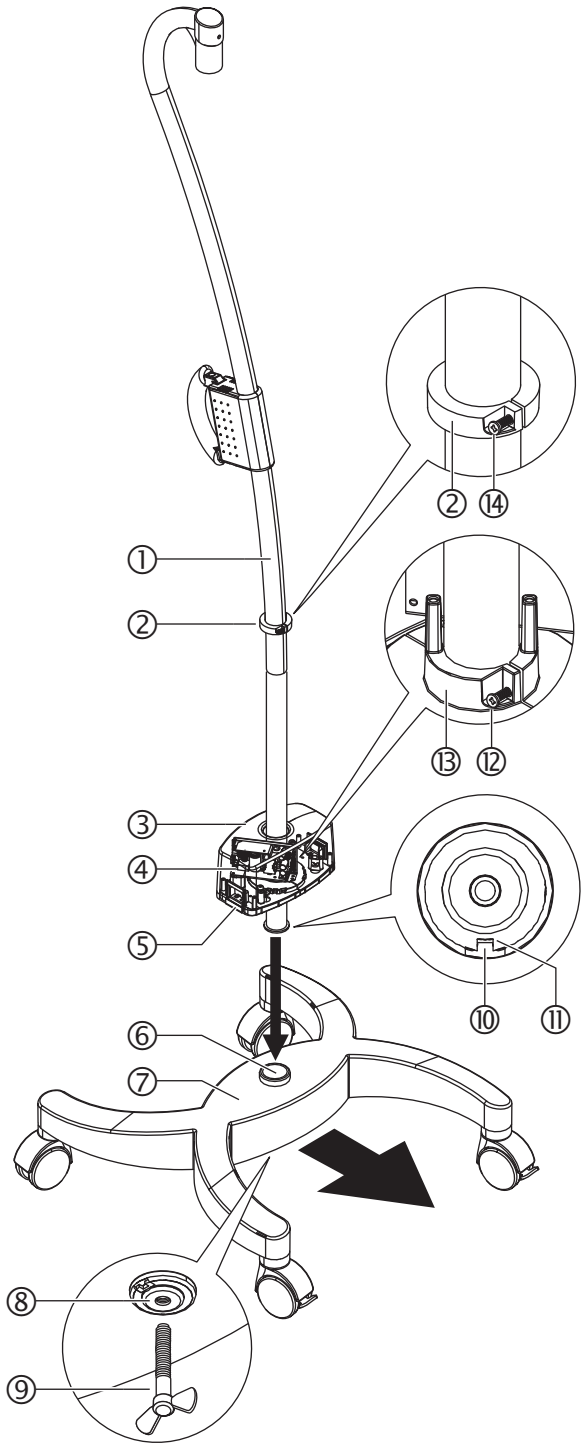
Installing the lockable castors:

1. Slide the ring cable shoe ⑥ of the earth conductor onto the locking pin ⑦ of the lockable castor ③.
2. Insert the locking pins into the hole ⑧ of the stabiliser ④ and push in the castor up to the limit stop.

Installing castors without a locking brake:

3. Installing the other two castors ②: Insert the locking pins into the hole of the stabiliser and push in the castor up to the limit stop.
4. Test the secure fit of the castors.

Figure 37

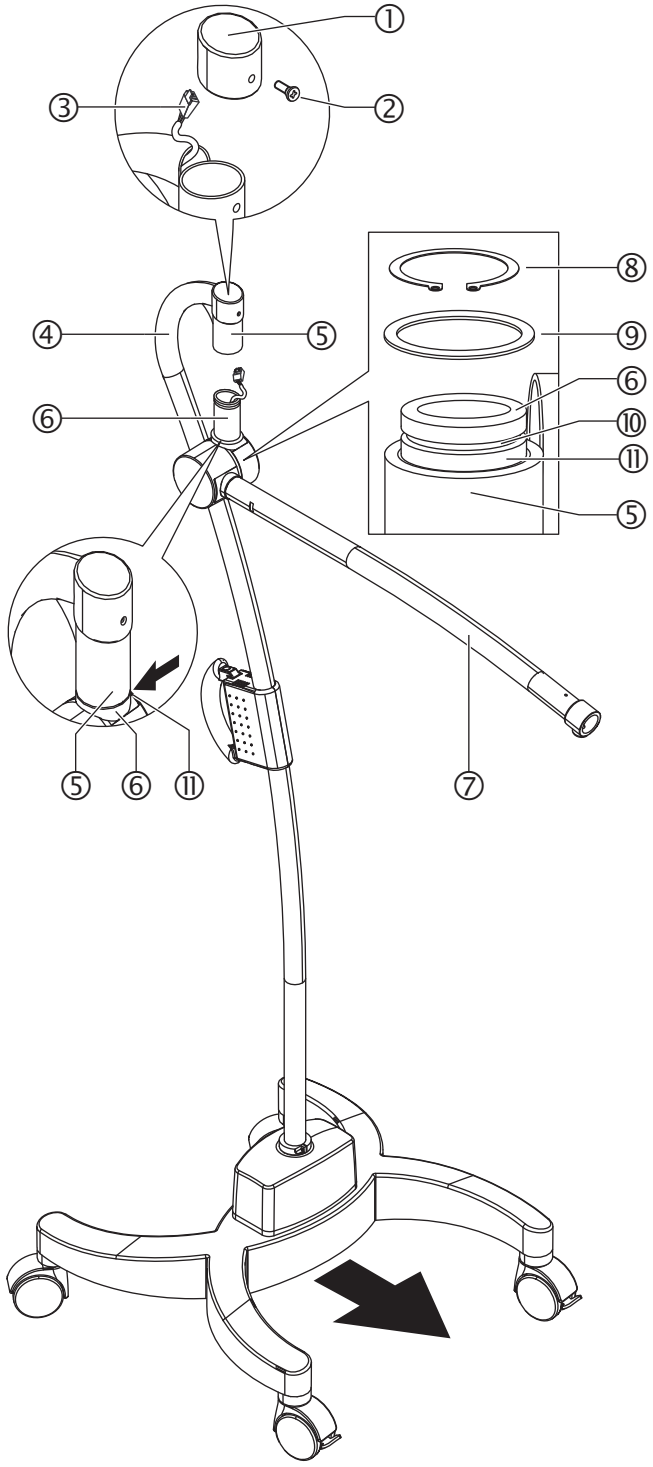


7.4 Assembling the stand rod

The stand rod ① is bolted with a butterfly screw ⑨ to the stand base ⑦. The two-section holder plate ⑤ of the power supply unit ④ is fastened to the stand rod by using the clamping ring ⑬. The cover ③ of the power supply unit is attached to the holder plate by a clamping connection.

1. Align the stand rod ① to ensure that anti-turn locking device - groove ⑪ on the stand rod and spring ⑩ in the mounting shaft ⑥ - are aligned.
2. Push the stand rod into the mounting shaft of the stand base and down to the limit stop.
   Possibly loosen the two screws ⑫ at the clamping ring ⑬ to shift the power supply unit on the stand rod.
3. Turn the butterfly screw ⑨ (M8 × 35 mm) through hole ⑧ into the stand rod and fasten it.
   Tightening torque: 25 - 30 Nm.
4. Slide the holder plate ⑤ of the power supply unit ④ up to the limit stop into the stand base and fasten the clamping ring ⑬ with the two screws ⑫.
5. Place the cover ③ onto the holder plate and press it down until the clamping connection clicks in.
6. Slide the circlip ② up to the limit stop into the cover ③ of the power supply unit and fasten it with screw ⑭ (M3).

Figure 38



7.5 Assembly of the spring arm on the stand rod

NOTE

Compensating for the gap width

The gap ⑪ between the hinge bearing support ⑤ of the stand rod ④ and the hinge bearing ⑥ on the spring arm ⑦ is compensated by washers ⑨. Max. 3 washers ⑨ can be placed on top of each other on the hinge pin of the spring arm.

The following are pre-assembled within the stand rod and the spring arm:

- the device-internal cables to supply power to the light head:
  - The internal power cables installed in the stand rod and the spring arm are connected by a plug connection.

CAUTION

Uncontrolled swivel movement

If a lowered spring arm is relieved of load in an uncontrolled manner, it may bounce up and cause injuries.

Damage to the spring arm

Do not let the spring arm impact onto the upper or lower limit stop. To swivel the spring arm, grip the front end and carefully move it between the upper and lower position stops.

7.5.1 Preparing for the assembly

1. Remove the protective cap ① from the hinge bearing support ⑤ of the stand rod ④ by turning out screw ②.
2. Pull the cable with the plug connection ③ out of the hinge bearing support ⑤ of the stand rod ④ and move it towards the side.
3. Remove the protective sleeve of the hinge bearing ⑥ of the spring arm ⑦.

→ Store the protective sleeve for later removal of the circlip ⑧ and the washer ⑨.

7.5.2 Dismantling the circlip

A) Consequences of an inappropriately installed / removed circlip

⚠WARNING

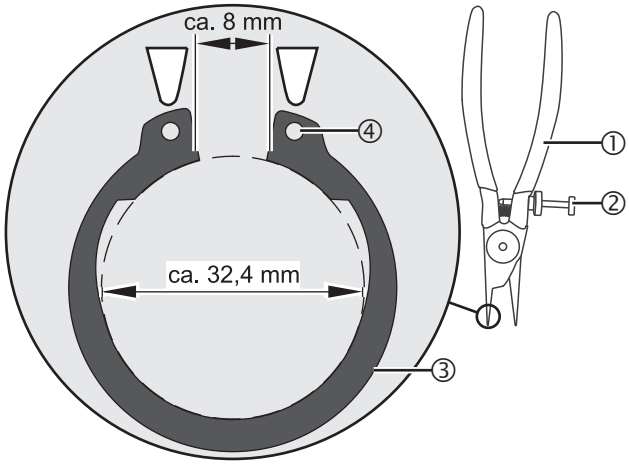
Collapse of the support arm system

The spring arm, the quarter bracket and the light unit are held in position at the hinge bearing support by a circlip.

If the circlip is overextended or wrongly mounted during the installation or removal, the circlips will slide out of the groove in the stand rod. As a result, the spring arm, adapter and light unit can crash and the internal electrical supply lines can be torn off. This can result in serious injury:

- **The circlip must be assembled only by trained technical personnel.**
- **Appropriate circlip pliers with expansion-delimiting means must be used.**
- **Comply with installation manual and installation sequence.**
- **During initial assembly, use the disassembled circlip (only once) or use a new, unused circlip.**
- **In case of service or maintenance, a new, unused circlip must always be installed.**

Figure 39



B) Use circlip pliers with expansion-delimiting means

The figure shows exemplary circlip pliers ① with expansion-delimiting means ②. The expansion-delimiting means ② prevent overspreading of the circlip.

→ The circlip must not be dismantled without circlip pliers with expansion-delimiting means.

1. Turn the adjustment ring ② of the circlip pliers ① so far that the expansion of the circlip is limited by about 8 mm, as shown in the figure.

→ This corresponds to a spreading of the circlip inside diameter of 32.4 mm.

C) Removing the circlip

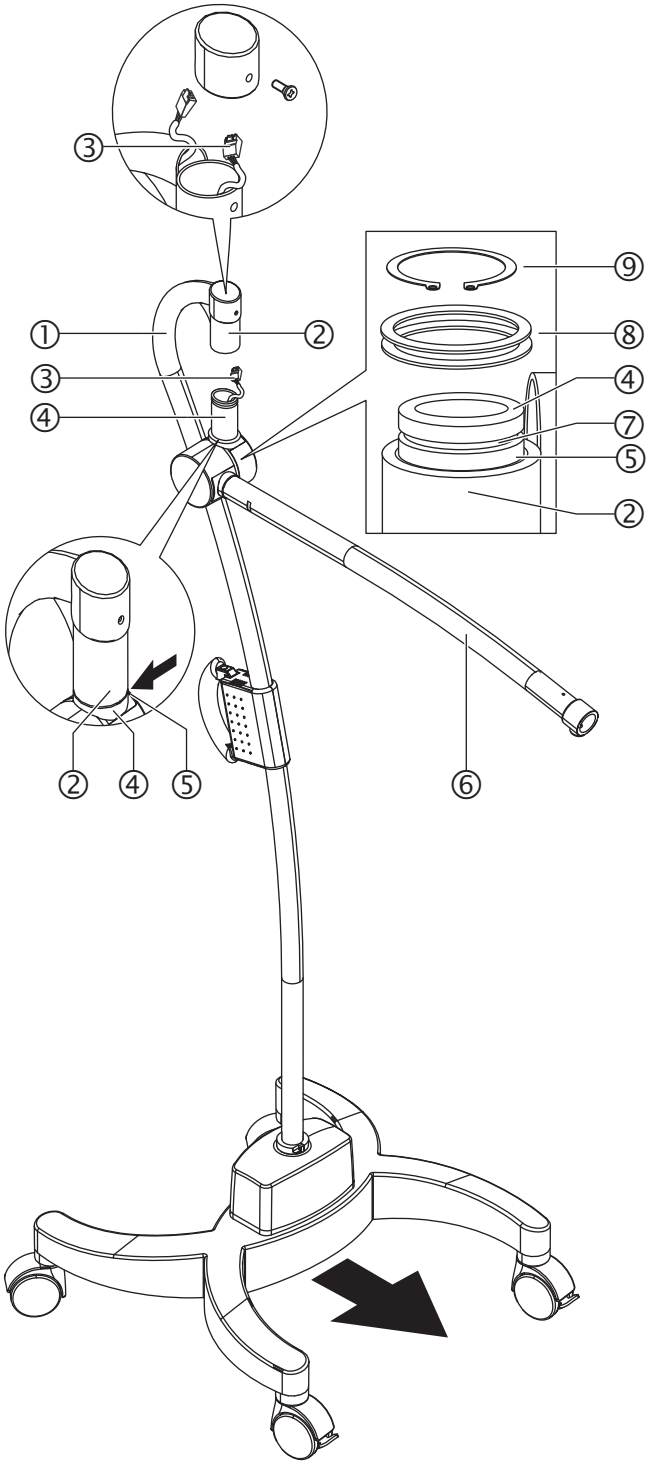
⚠WARNING

Collapse of the support arm system

An overstretched circlip may cause the support arm system to collapse:

- **Open the circlip only so far that it can be precisely guided flat via the pivot pin/ protective cap.**
- **For this purpose, spread the circlip to an inner diameter of 32.4 mm. This corresponds to an inside dimension of about 8 mm between the eyelets.**

Figure 40



1. Insert circlip pliers with expansion-limiting means into the eyelets of the circlip ⑨.
2. Spread circlip ⑨ carefully so far that it can be just pulled off the protective sleeve.
3. Carefully remove the circlip ⑨ upward from the protective sleeve.
4. Remove the washer ⑧.
5. Mark circlip ⑨ for single use with a permanent marker on the outside diameter and keep it for later assembly.

7.5.3 Mounting the circlip

1. Place the hinge bearing ④ of the spring arm ⑥ under the hinge bearing support ② of the stand rod ① and guide the internal power cable ③ of the spring arm upwards through the hinge bearing support ②.
2. Insert the hinge bearing ④ of the spring arm ⑥ into the hinge bearing support ② of the stand rod ①.
3. Hold the spring arm ⑥ firmly and place up to 3 washers ⑧ onto the hinge bearing pivot pin ④ to close the gap ⑤.

⚠WARNING

Using the circlip

Use the circlip disassembled in Chapter 7.5.2 **(can be recognised by the marking on the outer diameter) during the initial assembly or use a new, unused circlip. In case of service or maintenance, a new, unused circlip must always be installed.**

4. Insert circlip pliers with expansion-limiting means into the eyelets of the circlip ⑨.

⚠WARNING

Collapse of the support arm system

An overstretched circlip may cause the support arm system to collapse:

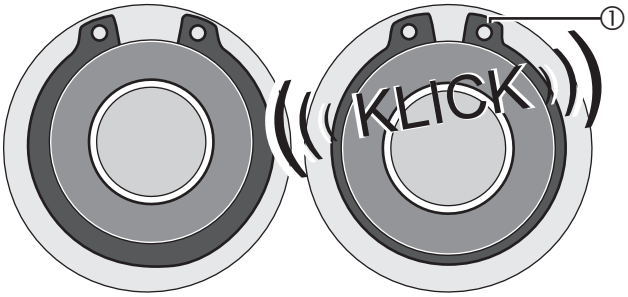
- **Carefully spread the circlip only so far that it can be precisely guided over the bearing pivot.**
- **For this purpose, spread the circlip to an inner diameter of 32.4 mm. This corresponds to an inside dimension of about 8mm between the eyelets.**

5. Spread circlip ⑨ carefully so far that it can be precisely guided over the hinge bearing ④.
6. Insert the circlip ⑨ into the groove ⑦ of the hinge bearing pin ④.
7. Check the secure fit of the circlip as per Chapter 7.5.4.

7.5.4 Checking the secure fit of the circlip

The circlip must lie completely and straight inside the groove provided. This is checked with the following steps:

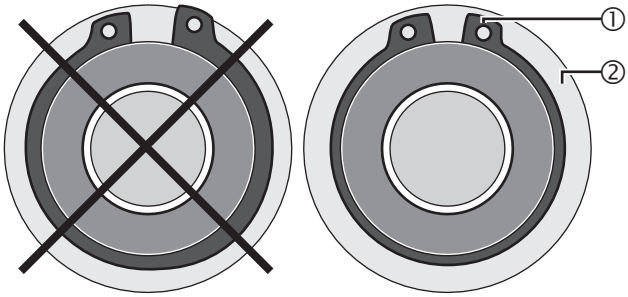
Figure 41



A) Acoustic diagnosis

The circlip① must audibly snap into the groove at the hinge bearing pivot of the stand.

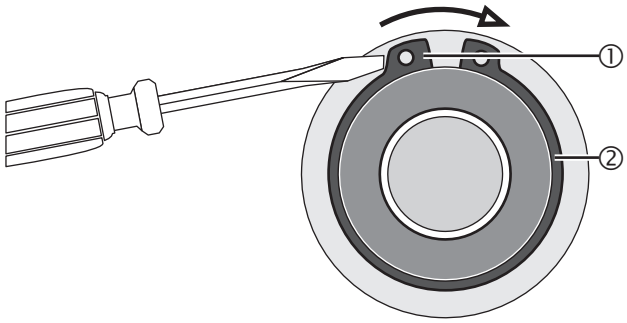
Figure 42



B) Visual inspection

1. The washers ② must be mounted under the circlip①.
2. The circlip ① must not be uneven.
3. The distance between the two eyelets in the circlip ① must correspond to the distance in the unstressed status. A larger distance indicates an incorrectly mounted circlip ①.

Figure 43



C) Mechanical test

Place a small, suitable screwdriver on the eyelet ① of the circlip ② and turn the circlip ② carefully in direction of the arrow.

- Be careful not to expand the circlip ② or to squeeze out of the groove.

Correct position

→ If the circlip ② can rotate in its groove, then the circlip ② is mounted correctly.

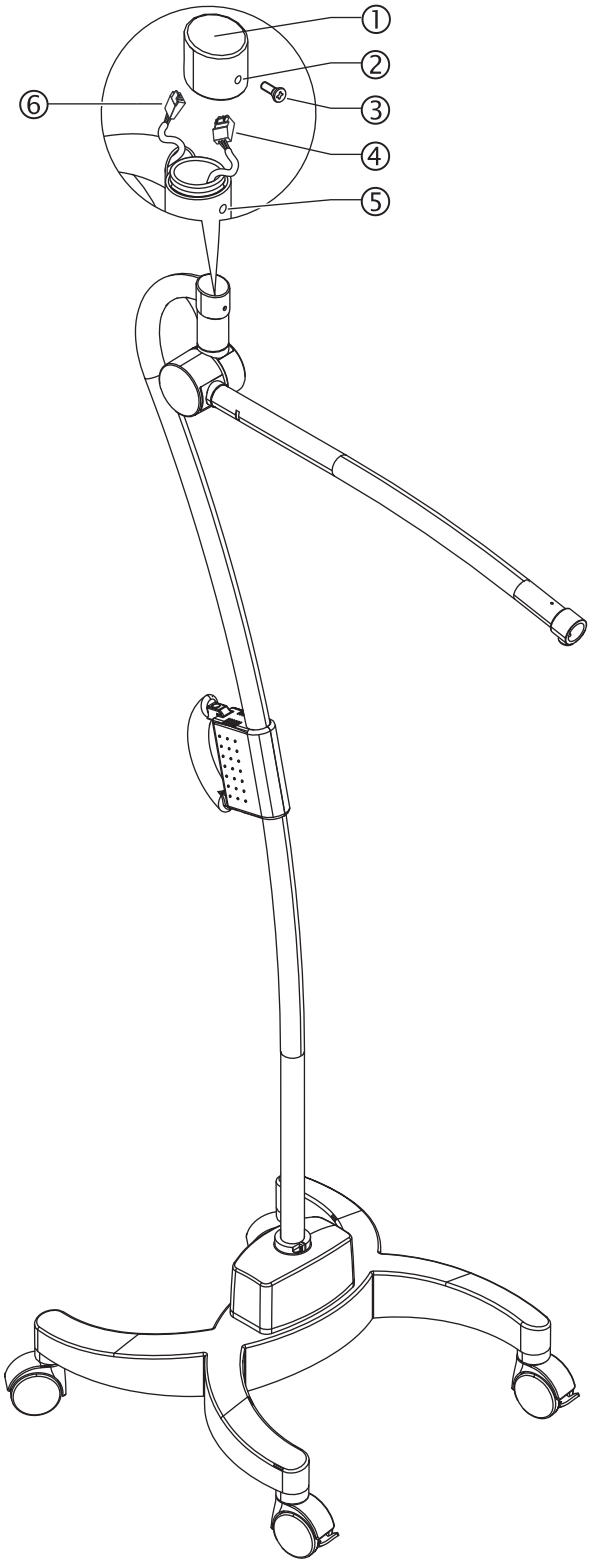
Incorrect position

4. If you cannot rotate the circlip ② then the circlip ② must either be dismantled in accordance with Chapter 7.5.2 and a new circlip ② must be mounted in accordance with Chapter 7.5.3 or the number of washers must be reduced.

7.5.5 Completing the installation

Check the secure fit of the spring arm on the stand!

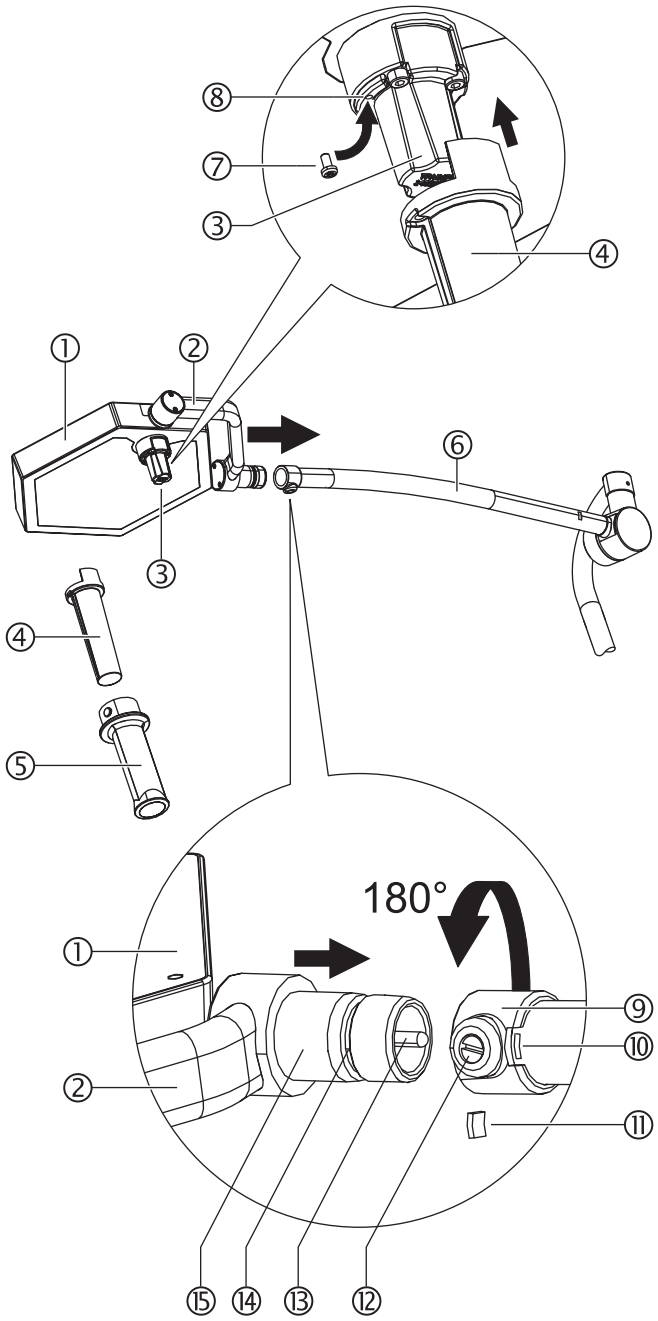
Figure 44



7.6 Connecting the internal power supply

1. Connect the plug ⑥ and the socket ④.
2. Store the cable with the plug connection in the bearing pivot.
3. Mount the protective cap ① to the hinge bearing mount by turning the screw ③ through the hole ② in the protective cap ① into the threaded hole ⑤ of the hinge bearing mount.

Figure 45



7.7 Installation of the light unit on the spring arm

The light unit is partially pre-assembled with:

- the light head ① on the quarter bracket ②,
- the internally connected cables for the power supply to the light head:
  - The connection between the spring arm and the lighting unit is effected by means of a 3-pin plug connection.

The handle holder ④ for the sterilisable handle ⑤ must be installed on the handle attachment ③.

1. Place the handle holder ④ into the handle attachment ③.
2. To fasten, insert the screw ⑦ into the threaded hole ⑧ on the handle attachment.

⚠ CAUTION

Uncontrolled swivel movement

If a lowered spring arm is relieved of load in an uncontrolled manner, it may bounce up and cause injuries.

Damage to the spring arm

Do not let the spring arm impact onto the upper or lower limit stop. To swivel the spring arm, grip the front end and carefully move it between the upper and lower position stops.

Checking the retaining segment

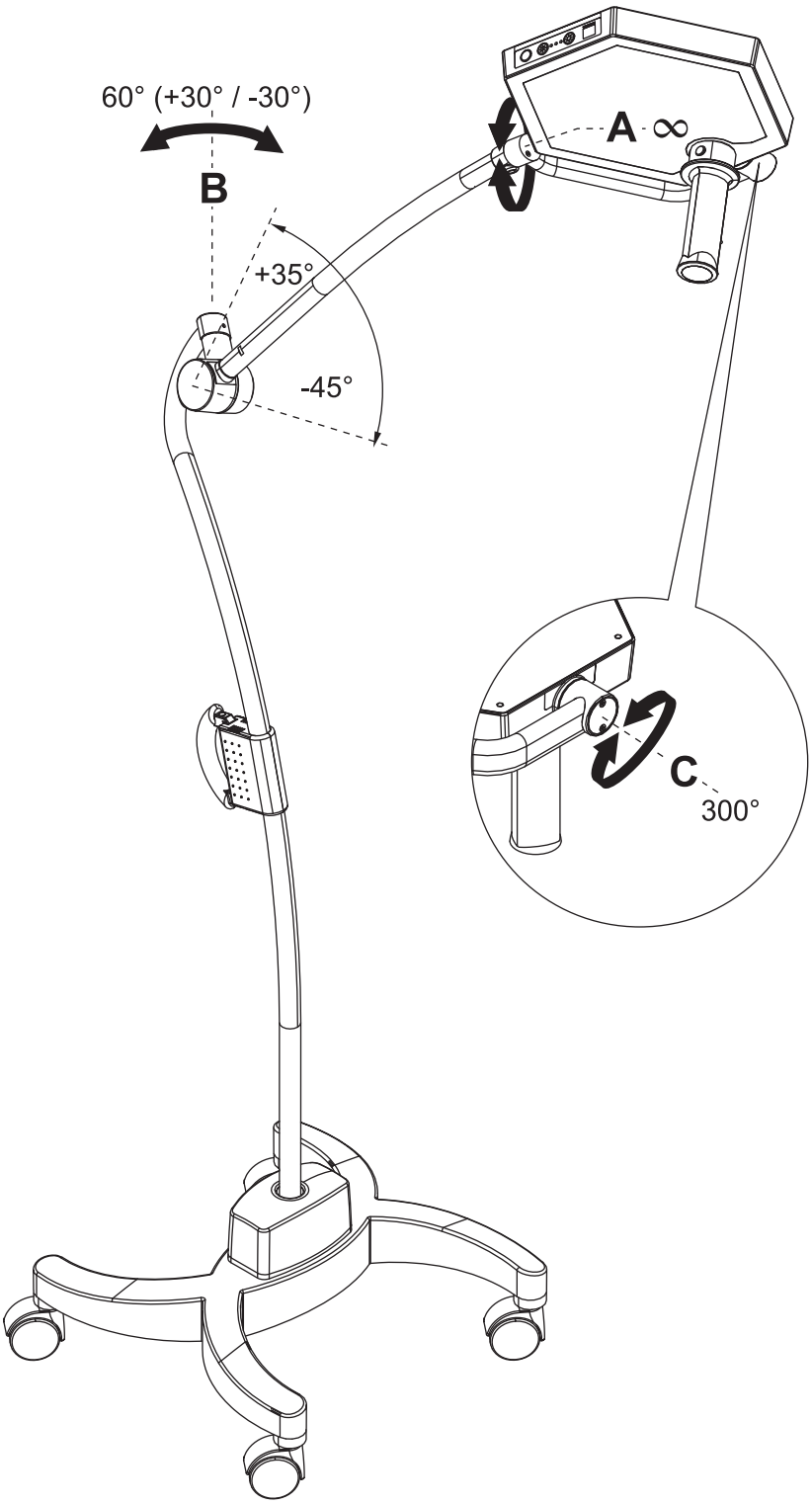
Before installation of the lighting unit, check the retaining segment for damage / wear and replace if necessary.

Installing the light unit

1. Remove the brake screw ⑫ on the spring arm and align the retaining sleeve ⑨ so that the opening and slot ⑩ are aligned.
2. Carefully insert the bearing pivot ⑮ of the quarter bracket ② and the plug ⑬ into the socket on the spring arm.
3. Insert the retaining segment ⑪ into the slot ⑩ so that the retaining segment is guided into the groove ⑭ of the bearing pivot.
4. Turn the retaining sleeve ⑨ by 180°, so that the slot is covered and the retaining segment has been secured.
5. Reinsert the brake screw ⑫ and set the braking force of the quarter bracket on the brake screw (see Chapter 9.2).

6. Adjusting the spring force of the spring arm (see Chapter 9.1).
7. Check the secure fit of the quarter bracket on the spring arm.

Figure 46



7.8 Controlling the driving movements

7.8.1 Rotation / swivel ranges of the spring arm

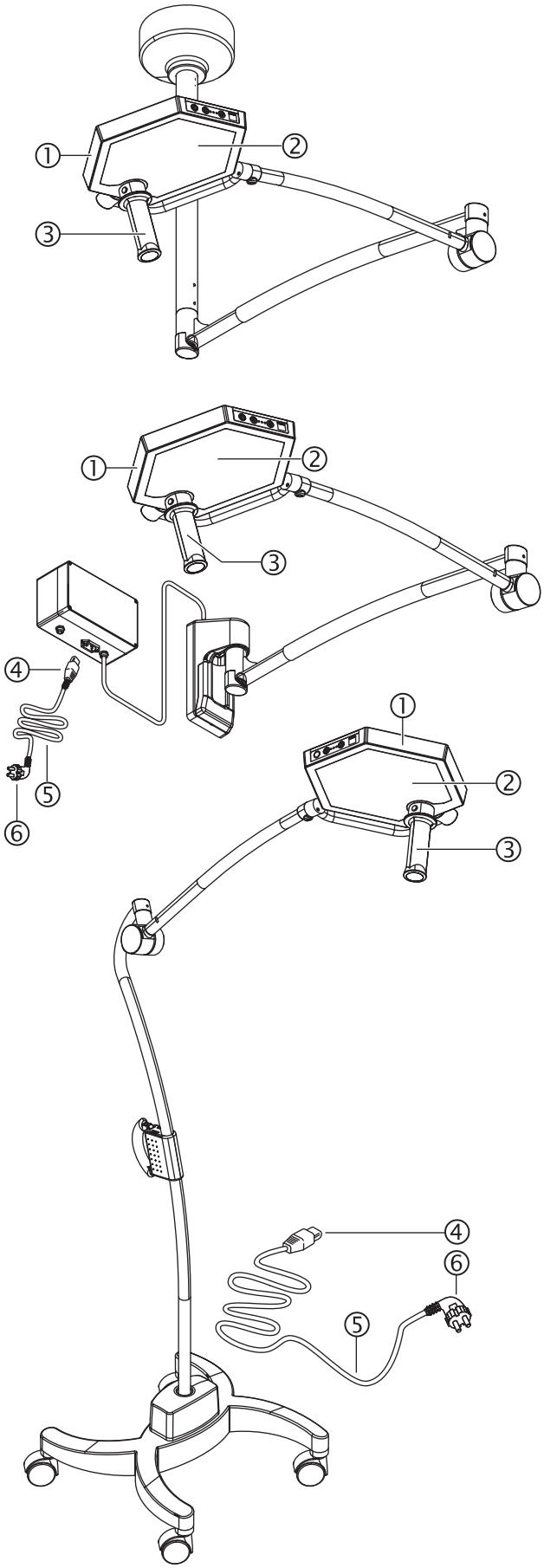
The following movements can be performed with the spring arm when there is sufficient distance from neighbouring walls and objects:

- Spring arm on stand rod, hinge **B**:
  Horizontal rotation movement in the range: +30° to -30°.
  Vertical swivel movement in the range: +35° to -45°.

7.8.2 Rotation / swivel ranges of the light head

- Quarter bracket on spring arm, hinge **A**:
  Full vertical rotation movement (>360°).
- Light head on axle bearing, hinge **C**:
  Vertical rotation movement 300°.

Figure 47



8.1 Functional test of the lighting system

For all versions of the lighting system, a function test and a visual inspection should be carried out before handover for general operation.

ATTENTION

Repeat test

After replacement of the light head (e.g. after failure of a light bulb), a measurement is required (according to DIN EN 62353 Repeat inspection and test after repairs to electrical medical devices).

⚠WARNING

Contamination and infection hazard for patients

Loose or damaged parts may fall into wounds. To ensure the safety of patients, check the components of the lighting system for the following points before each use:

- **Loose parts on light head ①.**
- **Visible damage, in particular on the cover plates ② of the light head and the sterilisable handle ③.**
- **Secure mounting of the sterilisable handle ③.**

Electric shock

There is a risk of electric shock in the event of contact with damaged electrical components of the wall-mounted / mobile stand version:

- **Do not connect the lighting system to the mains in the event of defective plug connectors ④ or ⑥ or damaged mains cables ⑤.**
- **The electricity supply on the customer's side must be checked and approved by qualified staff.**

Decommissioning

The lighting system is no longer safe to use when the damage described above or other damage occurs:

- **Disconnect the lighting system by using the master switch installed in the building, or remove the safety connector.**
- **Secure the master switch / safety connector against accidental switch-on / plugging in.**
- **Label the lighting system as DEFECTIVE!**

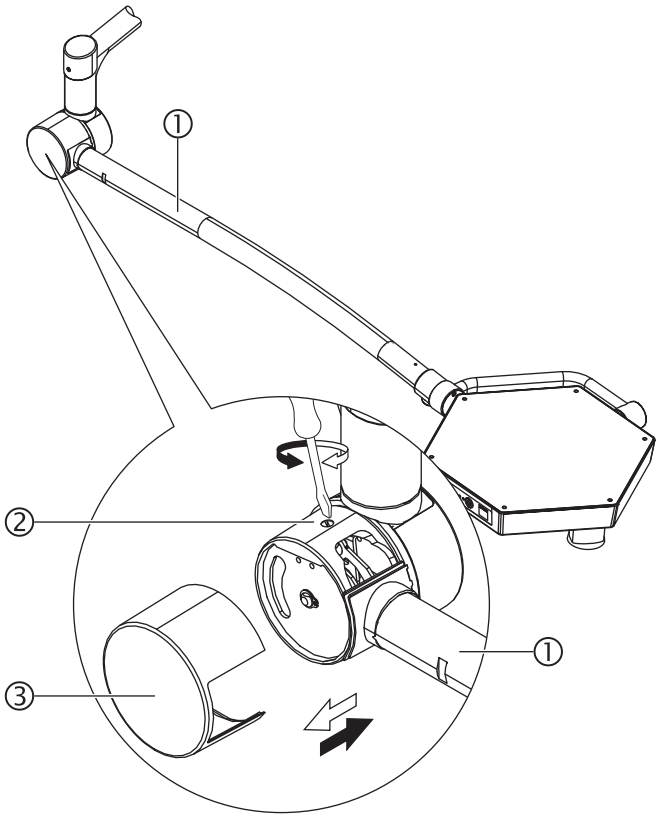
8.2 Handover of the lighting system

Handover protocol

The lighting system must be handed over to the operator in checked state.

- Handover has to be effected in writing with confirmation from the operator. This requires the production of a handover protocol.
- The operator must be instructed during the handover about the function, cleaning and maintenance of the lighting system.
- The operator must be instructed during the handover about the permitted adjustments in accordance with the installation manual.
- A copy of the handover protocol must be sent to the Trumpf Medical customer service team.

Figure 48



9.1 Adjusting the spring force on the spring arm

The weight of the light head is compensated by a spring which is installed in the spring arm ①. The spring force must be readjusted if the spring arm with the light head sinks down of its own accord.
The adjustment screw for setting the spring force is installed:

- In the ceiling and wall mounted version: on the joint between the boom and the spring arm,
- In the mobile stand version: on the joint between the stand rod and the spring arm.

1. Carefully lever off the cover cap ③ from the joint of the spring arm using a thin blade.
2. Swivel the spring arm ① to the top end position (+40°).

⚠ CAUTION

Uncontrolled rotation of the spring arm

Risk of injury due to uncontrolled rotation movement!

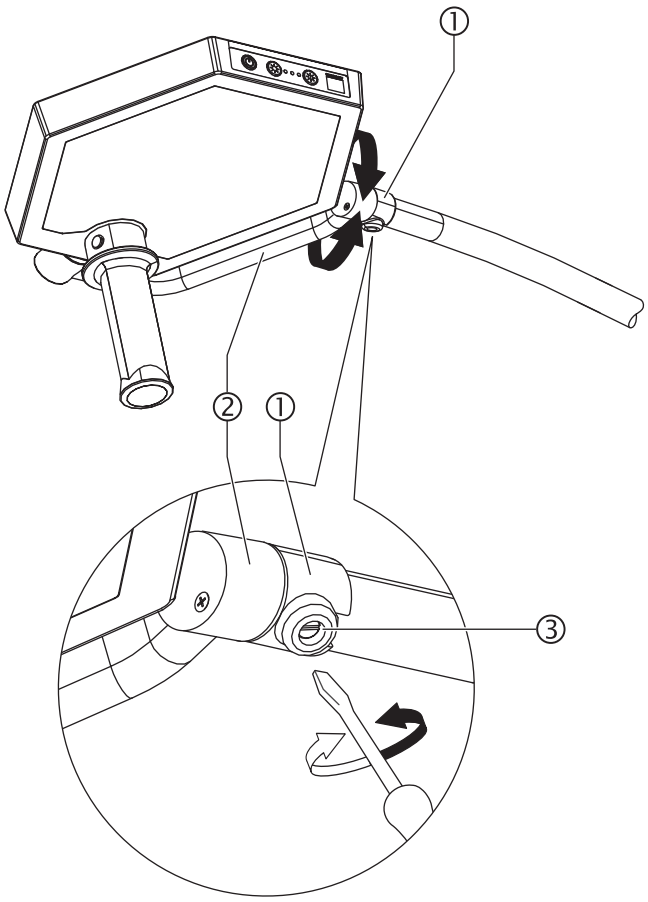
- **The spring arm may jump up if the spring force is set too high.**
- **If the spring force is reduced too far, the spring arm may slip down due to the weight of the light head.**
- **Carefully turn the adjustment screw while continuously monitoring the positional stability of the rotation movement.**

Damage to the adjustment mechanism

The adjustment mechanism can be damaged and the spring arm made unfit for use if the adjustment screw is screwed in too far.

3. Adjust the spring force by turning the slot-head screw ② with a screwdriver:
   – **Increasing the spring force:** Unscrew the slot-head screw ② anticlockwise.
   – **Reducing the spring force:** Screw in the slot-head screw ② clockwise.
4. Place the cover cap ③ on the joint and press it on.

Figure 49

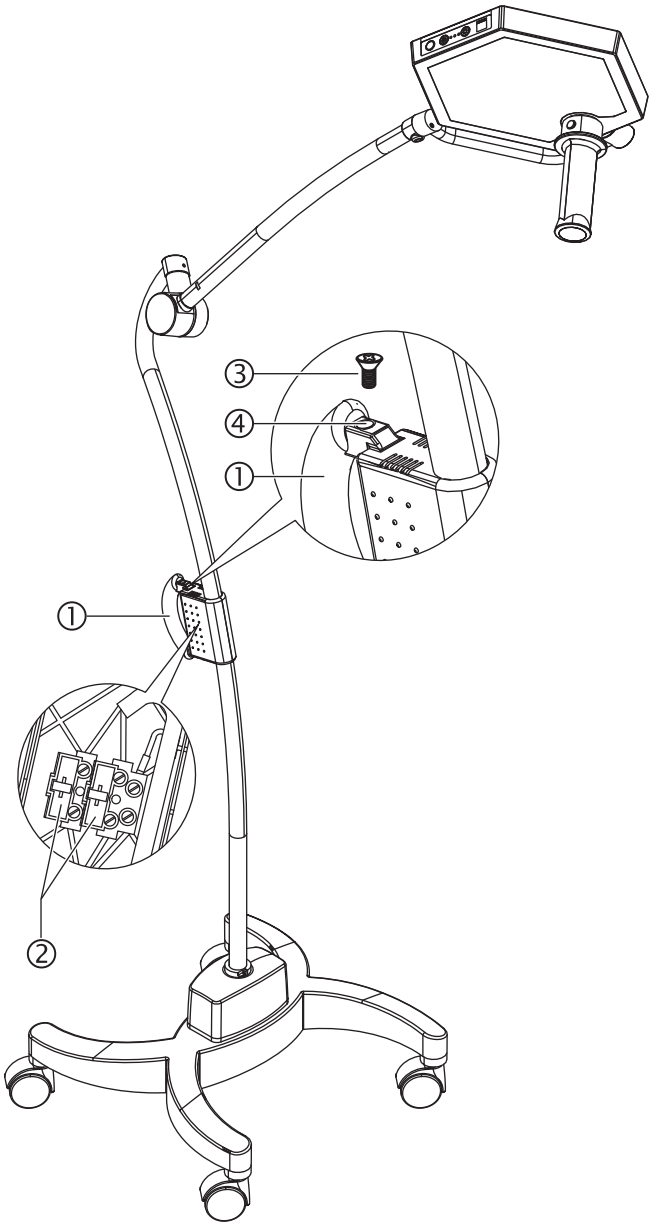


9.2 Adjusting the brake force of the quarter bracket

If the light head does not remain stable in the vertical rotation position, the braking force for the rotation of the light head must be readjusted on the joint between the spring arm ① and the quarter bracket ②. The friction brake of the quarter bracket acts through the friction force of the adjustment screw (slot-head screw ③) on the quarter bracket pin.

1. Adjust the braking force by turning the slot-head screw with a screwdriver:
   - **Increasing the brake force:** Screw in the slot-head screw ③ clockwise.
   - **Reducing the spring force:** Unscrew the slot-head screw ③ anticlockwise.
2. Check the function of the friction brake in several positions of rotation.

Figure 50



9.3 Replacing the internal equipment fuse of the mobile stand version

The two fuse holders ② for internal fuse protection have been installed in the handle ①:

- Fine wire fuse with a medium time lag: M 2.0 A.

Replace fuse

1. Disconnect the device, pull out the plug.
2. Remove the two screws ③ at the top and bottom of the handle.
3. Use a suitable aid (thin blade, screwdriver) to push the two handle shells apart.
4. Open up the fuse holder cover ② and remove the fuse.
5. Align the two shells of the handle and push them together.
6. Insert the two screws ③ in the hole at the top and bottom of the handle.

Handles and brake screws

High-wear part	#
Sterilisable handle for light head; Plastic (pack of 3)	0337642
Brake screw with slot; on the quarter bracket (light head brake); M10 × 1mm with a length of 11 mm (2 units)	4025239

11.1 Device data

Electrical data

Designation	Electrical data
Power unit supply voltage	100 V - 240 V, 50 / 60 Hz
Max. power uptake of whole system	50 VA
Nominal frequency	50 / 60 Hz
Output current with 24 V secondary voltage	< 1.25 A
Internal fuse (mobile stand version only)	M 2.0 A
Max. heat load of the light head	20 W
Average LED life span	>50,000 hrs
Classification according to MPG	Class I
Mode of operation	Suitable for continuous operation

Technical data for the lighting system

Designation	Technical data for the lighting system
Central lighting intensity at a defined distance (1 m)	80,000 Lux
Dimmable from / to	30 - 100%
Focusable light field size d10 at 1 m distance	Approx. 160 mm
d50/d10 ratio	0.57
Colour temperature	4,500 K
Colour rendering index Ra	Ra 95
Colour rendering index R9	90
Total radiant power at a distance of 0.85 m	319 W/m2

Mechanical data

Designation	Mechanical data
Light head diameter	300 mm
Distribution area of the light head	340 cm2
Light-emitting surface area	240 cm^2
Weight of the light head (incl. quarter bracket)	2.4 kg

11.2 EMC information

EMC notes

⚠WARNING

Operate the device only with the stated accessories.

TruLight™1000 may only be operated with the accessories stated in the accompanying documents. Operation with accessories, converters or cables other than those stated in the accompanying documents can lead to increased EMC emissions or reduced interference immunity of the device and with it to improper use.

NOTE

Install or operate the device according to the EMC instructions

Medical electrical devices such as the TruLight™ 1000 are subject to specific precautionary measures regarding EMC and must be installed and operated in accordance with the EMC instructions stated in the accompanying documents.

NOTE

Do not stack the device with or next to other devices

TruLight™ 1000 must not be stacked immediately next to or on top of other devices.

Guidelines and manufacturer's declaration - ELECTROMAGNETIC EMISSIONS		
TruLight™ 1000 is intended for use in the ELECTROMAGNETIC ENVIRONMENT described below. The customer or user should ensure that the TruLight™ 1000 is operated in an environment as described.		
Emission measurements	**Compliance**	**ELECTROMAGNETIC ENVIRONMENT - guidelines**
RF emissions in accordance with CISPR 11	Group 1	TruLight™ 1000 uses RF energy exclusively for its internal FUNCTION. Therefore, its RF emission levels are very low, and it is unlikely that neighbouring electronic devices would be adversely affected.
RF emissions in accordance with CISPR 11	Class B	TruLight™ 1000 is suitable for use in all establishments, including residential areas and facilities that are directly connected to a PUBLIC POWER SUPPLY NETWORK which also supplies buildings that are used for residential purposes.
Harmonic emissions in accordance with EN / IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions in accordance with EN / IEC 61000-3-3	Fulfilled	

Guidelines and manufacturer's declaration - electromagnetic immunity

NOTE

Avoid environments with electromagnetic fields and interference above the given levels

Guidelines and manufacturer's declaration - ELECTROMAGNETIC IMMUNITY			
TruLight™ 1000 is intended for use in the ELECTROMAGNETIC ENVIRONMENT described below. The customer or user should ensure that the TruLight™ 1000 is operated in an environment as described.			
Immunity tests	**EN / IEC 60601-test level**	**Compliance level**	**ELECTROMAGNETIC ENVIRONMENT/guidelines**
Electrostatic discharge (ESD) according to EN / IEC 61000-4-2	±8 kV contact discharge ±15 kV air discharge	±8 kV contact discharge ±15 kV air discharge	Flooring should be made of wood or concrete or have ceramic tiles. If the floor is made out of synthetic material, the relative humidity must amount to at least 30%.
Rapid transient electrical interference variables / bursts according to EN / IEC 61000-4-4	±2 kV for mains power cables 100 kHz repetition rate	±2 kV for mains power cables 100 kHz repetition rate	Mains power quality should be that of a typical commercial or hospital environment.
Surges according to EN / IEC 61000-4-5	±1 kV outer conductor – outer conductor voltage ±2 kV outer conductor – ground wire voltage	±1 kV outer conductor – outer conductor voltage ±2 kV outer conductor – ground wire voltage	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and fluctuations of power supply according to EN / IEC 61000-4-11	0 % UT; 0.5 cycle [a] 0 % UT; 1 cycle [b] 70 % UT; 25/30 cycles [b] 0% UT; 250/300 cycle	0 % UT; 0.5 cycle [a] 0 % UT; 1 cycle [b] 70 % UT; 25/30 cycles [b] 0% UT; 250/300 cycle	Mains power quality should be that of a typical commercial or hospital environment. If the user requires continued functioning even during power supply interruptions, it is recommended that the device be supplied from an uninterruptible power source or battery.
Magnetic field with a supply frequency (50 / 60 Hz) according to EN / IEC 61000-4-8	30 A/m	30 A/m	Magnetic fields in the mains frequency should correspond to the typical values, as is the case for a business or hospital environment.
[a] at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° [b] at 0° Note: UT is the AC mains voltage prior to application of the test level.			

Guidelines and manufacturer's declaration - immunity to electromagnetic interference/portable and mobile radio devices

Portable and mobile RF communication devices should be used no closer to any part of the TruLight™ 1000, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

NOTE

TruLight™ 1000 is not intended for use in the vicinity of HF surgical devices or in RF shielded rooms for MRI. It was only tested for interference immunity against radiated fields in the electromagnetic environment mentioned below, which corresponds to a professional or domestic healthcare environment.

Immunity test	EN / IEC 60601-1 test level	Compliance level
Conducted RF interference variables according to EN / IEC 61000-4-6	3 V 0.15 MHz – 80 MHz 6 V in the ISM band and amateur radio bands between 0.15 MHz and 80 MHz [a])	3 V 0.15 MHz – 80 MHz 6 V in the ISM band and amateur radio bands between 0.15 MHz and 80 MHz [a])
Radiated RF interference variables according to EN / IEC 61000-4-3	10 V/m 80 MHz – 2.7 GHz	10 V/m 80 MHz – 2.7 GHz
[a]) = The ISM bands (ISM = industrial, scientific and medical) between 0.15 MHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz and 40.66 MHz to 40.70 MHz. The amateur radio frequencies between 0.15 MHz and 80 MHz are 1.8 MHz to 2.0 MHz; 3.5 MHz to 4.0 MHz; 5.3 MHz to 5.4 MHz, 7 MHz to 7.3 MHz, 10.1 MHz to 10.15 MHz, 14 MHz to 14.2 MHz, 18.07 MHz to 18.17 MHz, 21.0 MHz to 21.4 MHz, 24.89 MHz to 24.99 MHz, 28.0 MHz to 29.7 MHz and 50.0 MHz to 54.0 MHz.		

Immunity level of RF fields from wireless communication device

Table: Special frequencies

Test Frequency (MHz)	Band (MHz)	Service	Modulation	Max. power (W)	Distance (m)	Immunity level (V/m)
385	380 – 390	TETRA 400	Pulse modulation 18 Hz	1.8	0.3	27
450	430 – 470	GMRS 460 FRS 460	Pulse modulation FM ±5 kHz variation, 1 kHz sine	2	0.3	28
710	704 – 787	LTE band 13, 17	Pulse modulation 217 Hz	0.2	0.3	9
745						
780						
810	800 – 960	GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE band 5	Pulse modulation 18 Hz	2	0.3	28
870						
930						
1720	1700 – 1990	GSM 1800 CDMA 1900 GSM 1900 DECT LTE band 1, 3, 4, 25 UMTS	Pulse modulation 217 Hz	2	0.3	28
1845						
1970						
2450	2400 – 2570	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE band 7	Pulse modulation 217 Hz	2	0.3	28
5240	5100 – 5800	WLAN 802.11 a/n	Pulse modulation 217 Hz	0.2	0.3	9
5500						
5785						

Controlled RF interference variables

Recommended separation distances between portable and mobile RF communication equipment and TruLight™ 1000			
TruLight™ 1000 is intended for use in an ELECTROMAGNETIC ENVIRONMENT where the radiated RF interferences are monitored. The customer or user can help to prevent electromagnetic interference by maintaining the minimum distances between the portable and mobile RF telecommunication equipment (transmitters) and TruLight™ 1000, as is recommended below corresponding to the maximum output power of the communication equipment.			
Nominal power of the transmitter W	**Safe distance according to transmission frequency m**		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01 0.1 1 10 100	0.12 0.38 1.2 3.8 12	0.12 0.38 1.2 3.8 12	0.23 0.73 2.3 7.3 23
For transmitters, whose maximum rated output is not indicated in the table above, the recommended safety distance D in metres (m) can be determined using the equation, which belongs to the respective column, whereby P is the maximum rated output of the transmitter in watts (W) according to the information of the transmitter manufacturer. Note 1: To calculate the recommended safe distance from the transmitter in the frequency range of 80 MHz to 2.5 GHz, an additional factor of 10/3 was used to reduce the probability of interference caused by a mobile/portable communication instrument unintentionally introduced into the patient area. Note 2: These guidelines may not be applicable in all situations. The propagation of electromagnetic waves is affected by absorption and reflection by structures, objects and people. Note 3: At 80 MHz and 800 Hz, the higher frequency range applies.			

⚠WARNING

Distance for portable RF communication devices and their peripherals

Do not use portable RF communication device (including peripherals such as antenna cables and external antenna) at a distance below 30 cm (12 inch) to the TruLight™ 1000 including its cables specified by the manufacturer. This can otherwise lead to a decline in the functionality of the system.

The attachment provides additional information about the installation of the device.

12.1 Contents of attachment

12.1.1 Circuit diagram for ceiling version 100 V - 240 V / #1699488

- Input voltage 100 V - 240 V, 50/60 Hz, operating voltage 24 V, DC
- Circuit diagram: #1699488

12.1.2 Circuit diagram for mobile version 100 V - 240 V cable connection / #1699646

- Input voltage 100 V - 240 V, 50/60 Hz, operating voltage 24 V, DC
- Connection with mains cable, cold-device installation plug, circuit diagram: #1699646

12.1.3 Circuit diagram for wall version 100 V - 240 V fixed connection / #1699647

- Input voltage 100 V - 240 V, 50/60 Hz, operating voltage 24 V, DC
- Fixed connection, circuit diagram: #1699647

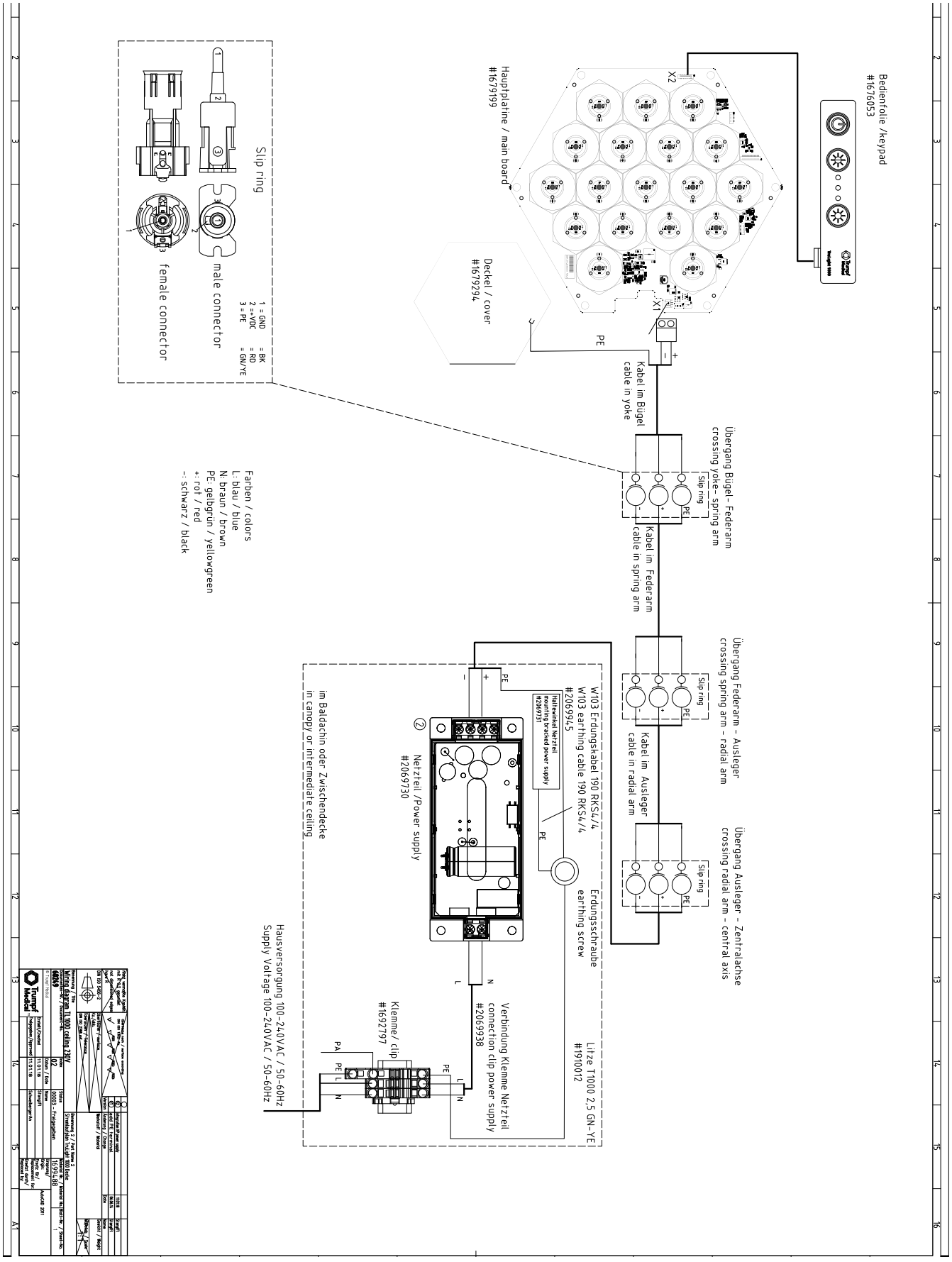
12.1.4 Drawing of switch cabinet TL 1000, 230V / #1698267

12.1.5 Borehole template for ceiling anchor plate, ceiling pipe flange plate / #1690273

12.1.6 Borehole template for wall bearing / #4058120

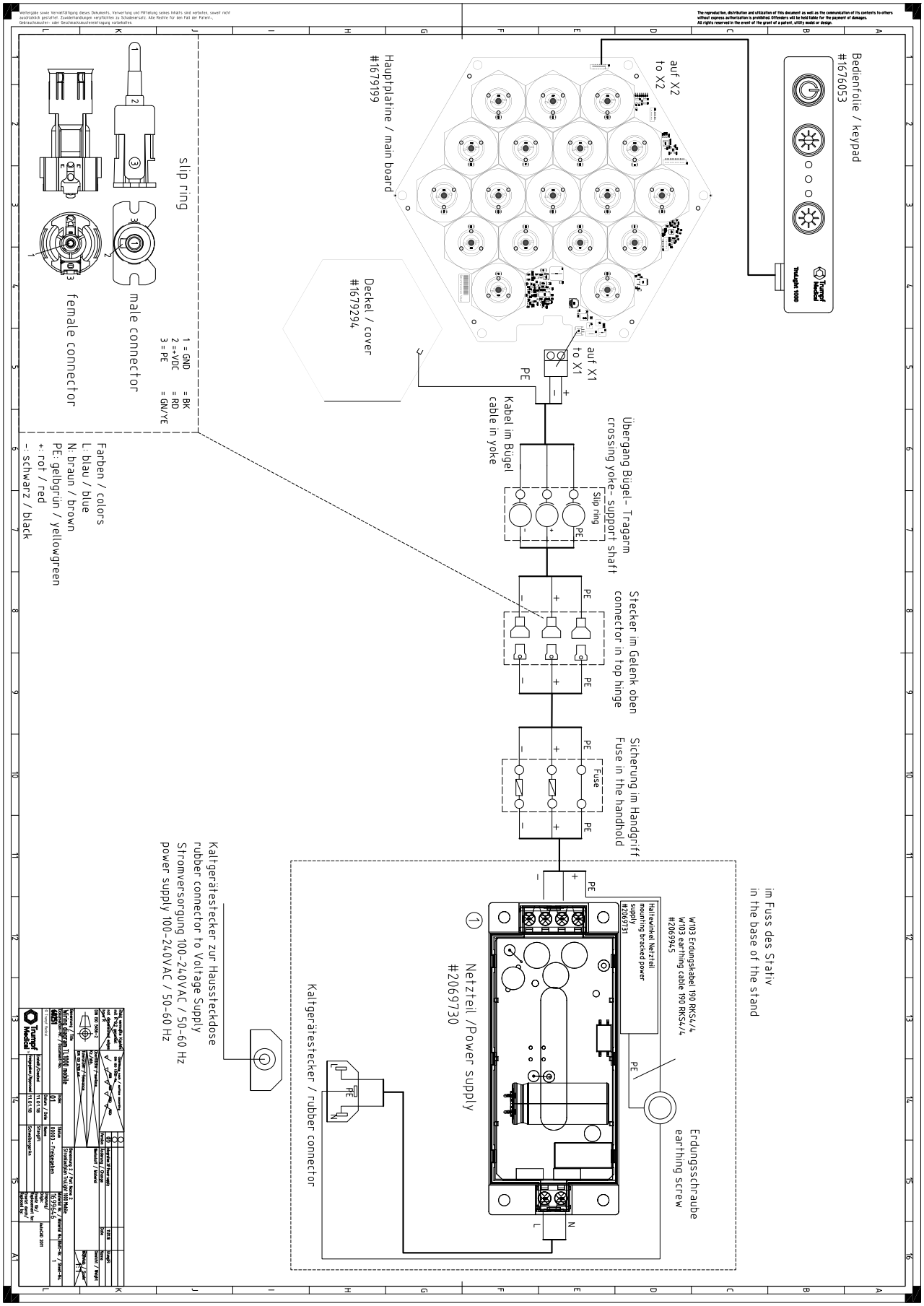
12.1.1 Circuit plan for ceiling version 100 V - 240 V / #1699488

Vollseite 180mmInput voltage 100 V - 240 V, 50/60 Hz, operating voltage 24 V, DC



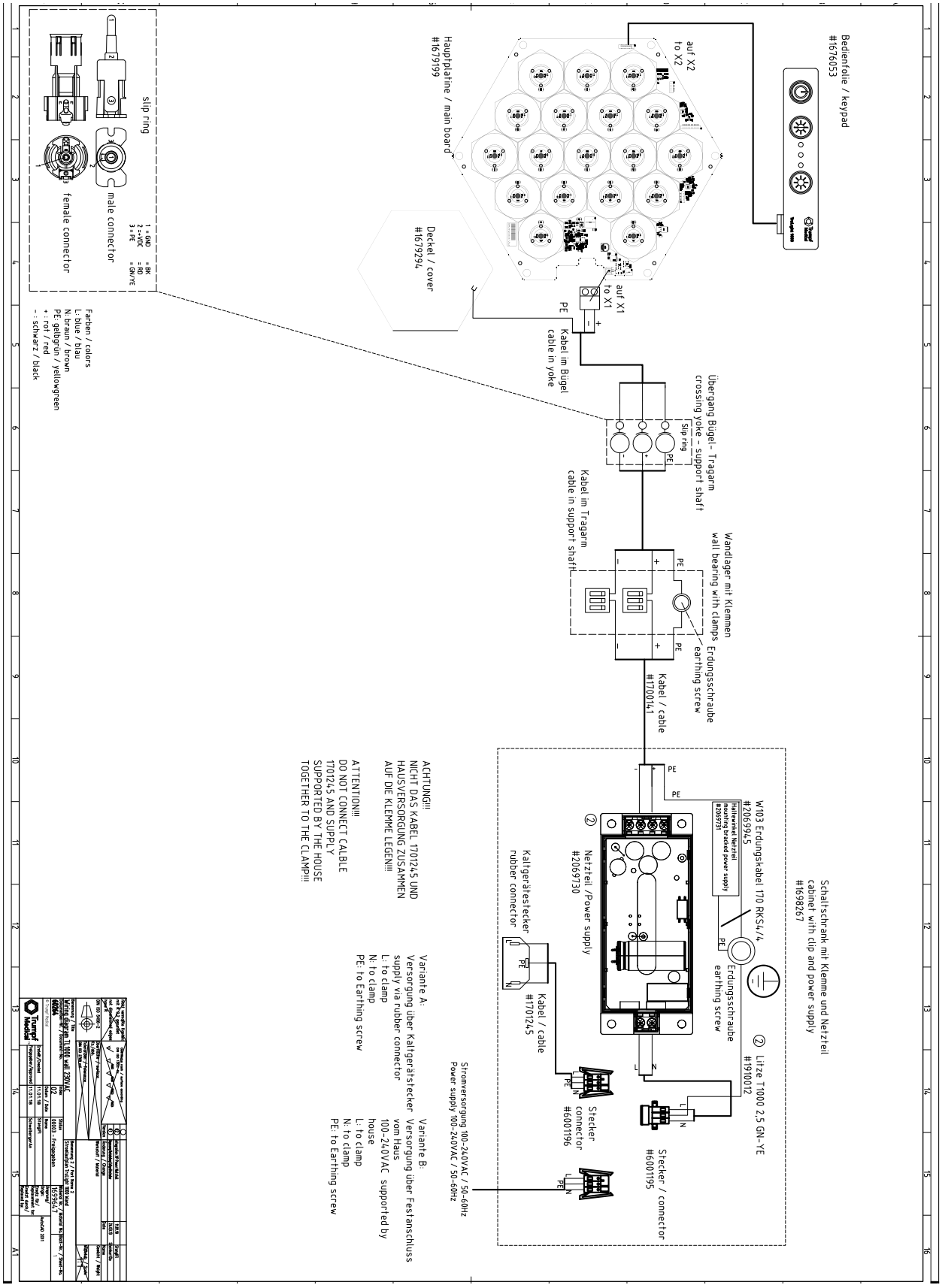
12.1.2 Circuit diagram for mobile version 100 V - 240 V cable connection / #1699646

- Input voltage 100 V - 240 V, 50/60 Hz, operating voltage 24 V, DC
- Connection with mains cable/cold-device installation plug

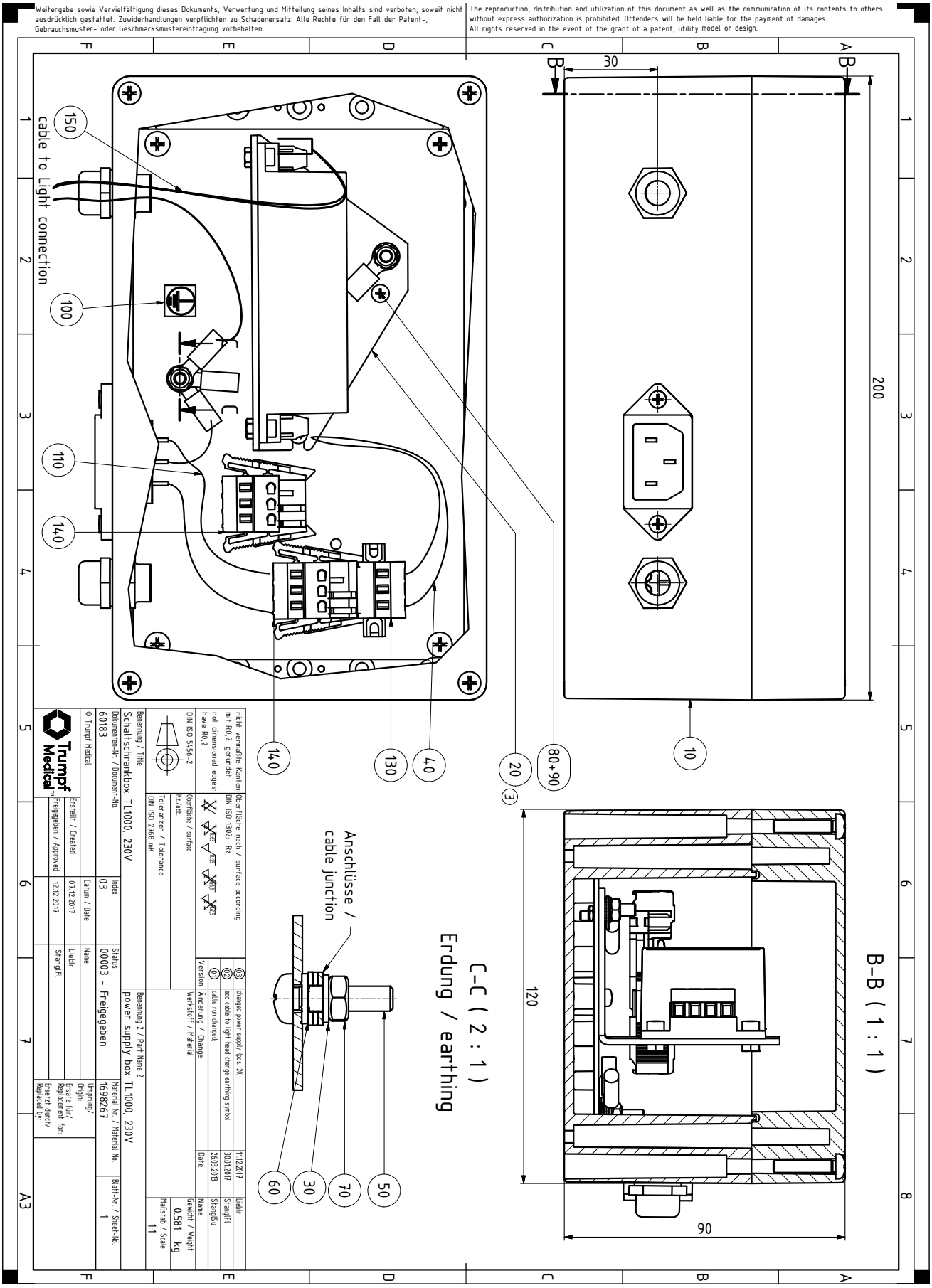

Bedienfolie / keypad
#1676053
Hauptplatine / main board
#1679199
auf X2
to X2
auf X1
to X1
PE
Deckel / cover
#1679294
Slip ring
female connector
male connector
1 = GND
2 = +VDC
3 = PE
= BK
= RD
= GN/YE
Kabel im Bügel
cable in yoke
Übergang Bügel- Tragarm
crossing yoke- support shaft
Slip ring
Stecker im Gelenk oben
connector in top hinge
Sicherung im Handgriff
Fuse in the handhold
Fuse
Farben / colors
L: blau / blue
N: braun / brown
PE: gelbgrün / yellowgreen
+: rot / red
-: schwarz / black
Kaltgerätestecker zur Haussteckdose
rubber connector to Voltage Supply
Stromversorgung 100-240VAC / 50-60 Hz
power supply 100-240VAC / 50-60 Hz
Kaltgerätestecker / rubber connector
PE
N
L
① Netzteil /Power supply
#2069730
Halterwinkel Netzteil
mounting bracked power
supply
#2069731
W103 Erdungskabel 190 RKS4/4
W103 earthing cable 190 RKS4/4
#2069945
Erdungsschraube
earthing screw
im Fuss des Stativ
in the base of the stand

12.1.3 Circuit diagram for wall version 100 V - 240 V fixed connection / #1699647

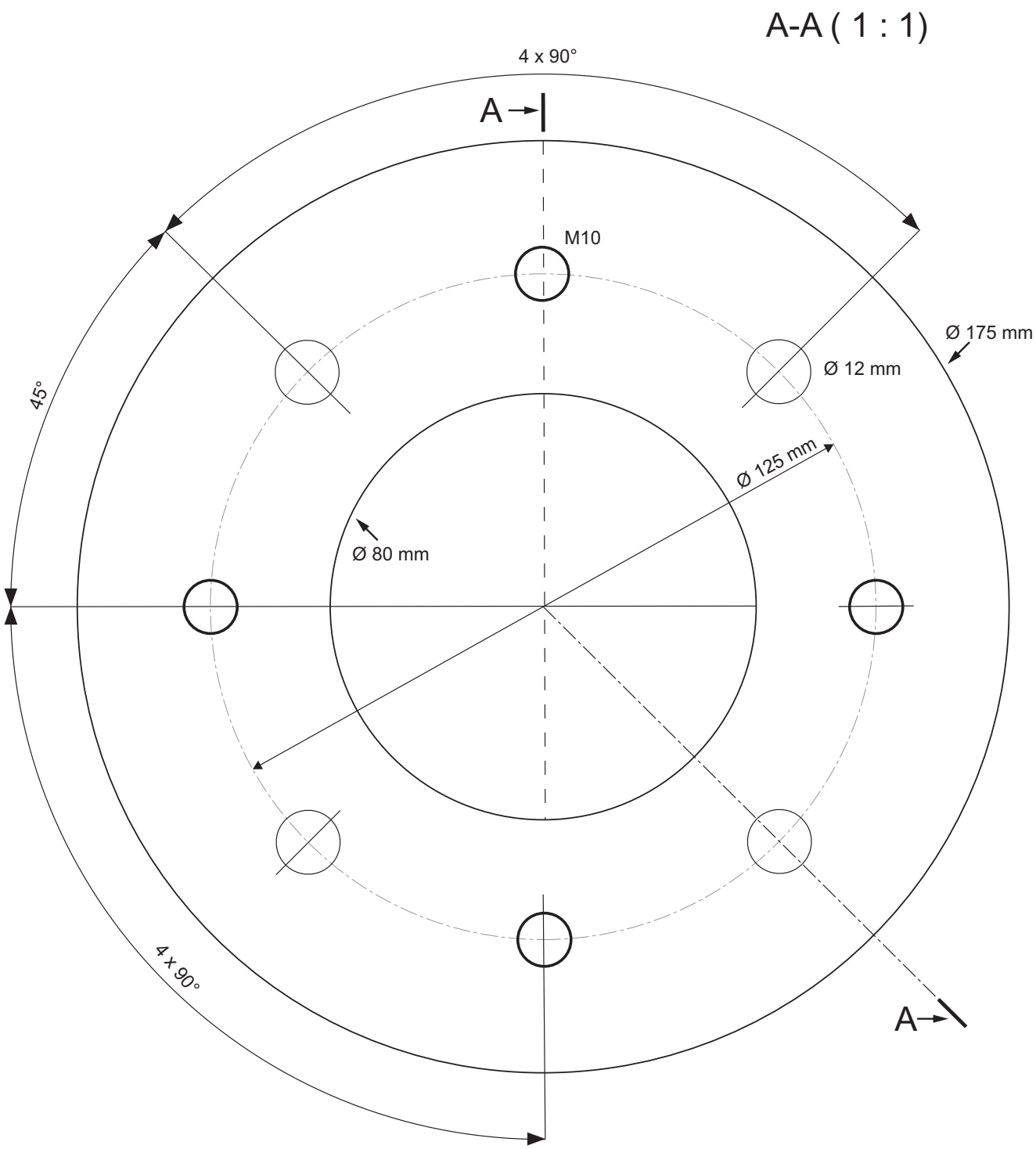
- Input voltage 100 V - 240 V, 50/60 Hz, operating voltage 24 V, DC
- Fixed connection



12.1.4 Drawing of switch cabinet TL 1000, 230V / #1698267



12.1.5 Borehole template for ceiling anchor plate, ceiling pipe flange plate / #1690273

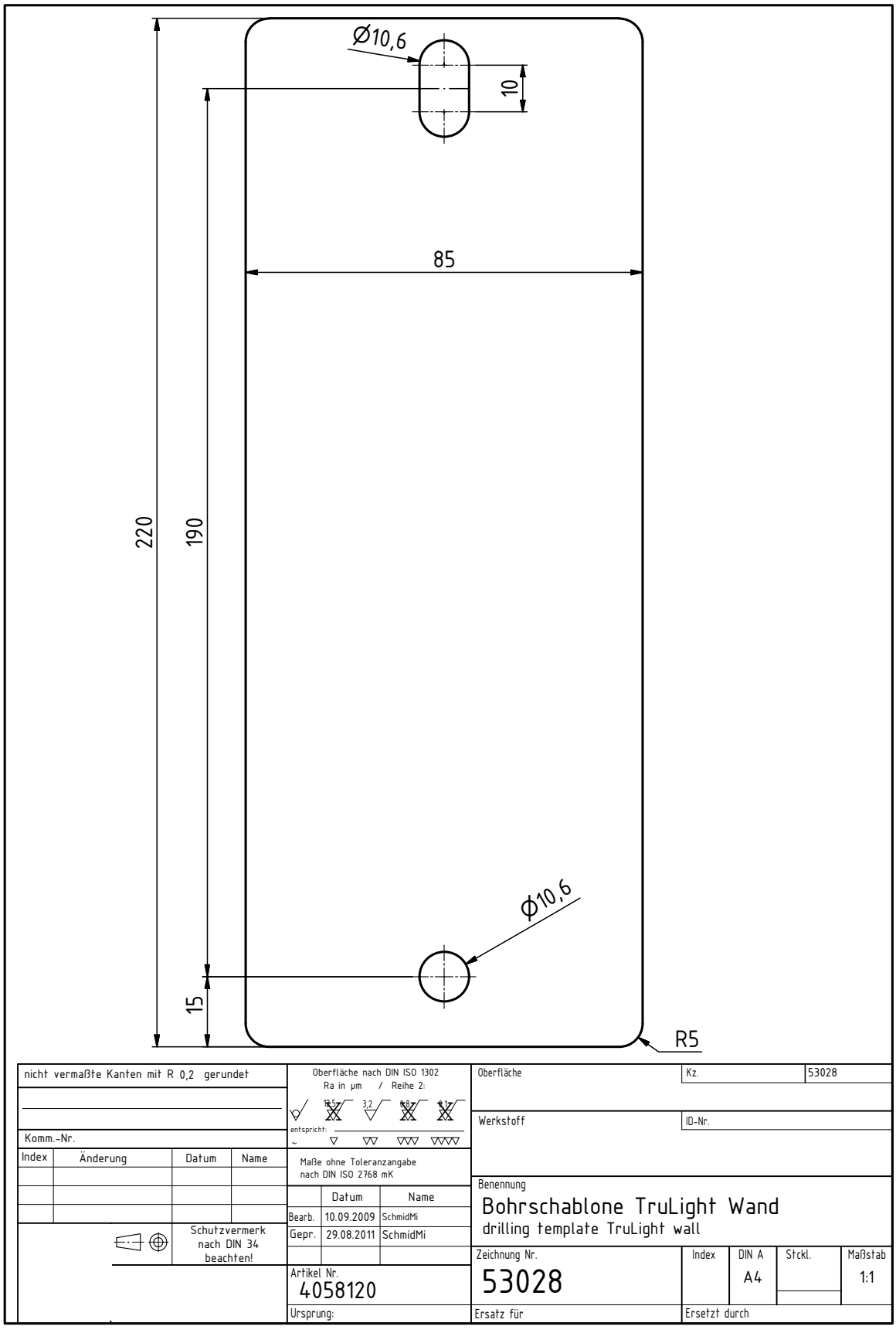


Brennschnitt / flame cut
Gewicht / weight: 1,44 kg

Deckenankerplatte TL1000 rund

Art-Nr. 1690273
Zeichng-Nr. 55595

12.1.6 Borehole template for wall bearing / #4058120



TRUMPF Medizin Systeme GmbH + Co. KG
Carl-Zeiss-Straße 7-9
D-07318 Saalfeld
Telefon: +49 (0)3671 586-0
Telefax: +49 (0)3671 586-41105
E-Mail: service@trumpfmedical.com
www.trumpfmedical.com

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