



## Instructions for Use



D<sup>med</sup>® **triango 30**

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# 1 SYMBOLS

The warning symbols indicate all instructions that are important for safety. Failure to comply with them can lead to injury, damage to the luminaire or the equipment. In combination with the following signal words the warning symbols means:



## **DANGER**

Can lead to death or serious injury.

## **WARNING**

Can lead to injury



Comply with operating instructions



CE conformity mark



Protective conductor

**N**

Neutral conductor/return conductor for the electrical current

**L1**

Live conductor



Storage humidity



Storage temperature



Disposal



Manufacturer



Safety Mark

## **Publication Revision**

**1.25.2017**

**Revision Level C**

## 2 SAFETY INSTRUCTIONS

### 2.1 Intended use

The D<sup>med</sup>® triango luminaire is a treatment luminaire. It is an individual luminaire that is used near the patient to support diagnosis or treatment, which poses no risk to the patient in the event of any interruption caused by light failure. It is meant for continuous operation and is not intended to be combined with other medical devices.

### 2.2 User profiles

#### **Medical staff**

All persons with medical training who work in the field for which they were trained.

#### **Cleaning staff**

All persons familiar with national and workplace hygiene requirements.

#### **Electricians**

All persons with training in electronics and electrical technology who are familiar with the relevant standards and regulations.

#### **Certified installers**

Persons qualified by training, experience and knowledge of the regulations to install and remove the equipment.

### 2.3 Safety instructions



- ▶ The instructions are part of the product and must be kept so they are accessible for all subsequent users.
- ▶ All applicable occupational health and safety regulations and the requirements specified by the national regulators for hygiene and disinfection must be observed to reduce the risk of disease transmission as much as possible.
- ▶ All work on the light (including repairs) must be done by qualified electricians only. The light must be installed by a certified installer.
- ▶ The light must not be modified or manipulated. Use in any other manner than with the original parts may result in different specifications and life-threatening dangers.
- ▶ The light must not be used in an explosive environment. The power supply to the light is a potential ignition source.
- ▶ The light must be used in dry rooms only.
- ▶ The light must not be left on unattended.
- ▶ Keep all flammable equipment and objects away from the light head and light cone during use.
- ▶ The protective ground must be connected to the light housing for lights of safety class I.
- ▶ Do not use a damaged light. Defective cables can also be a potential hazard. Do not position cables near heat sources or sharp edges.
- ▶ Eye damage. Never look directly at the light cone.
- ▶ Replace damaged glass before using the light again.
- ▶ The light must be connected to the mains with a protective ground to prevent electric shock.
- ▶ Never apply additional loads to the light head and the spring arm.
- ▶ Do not cover the light with a cloth or similar objects while operating.
- ▶ The ventilation openings (if existing) must always be free of obstructions during use!

### 2.4 Specific fitting instructions

#### *triango 30 C*

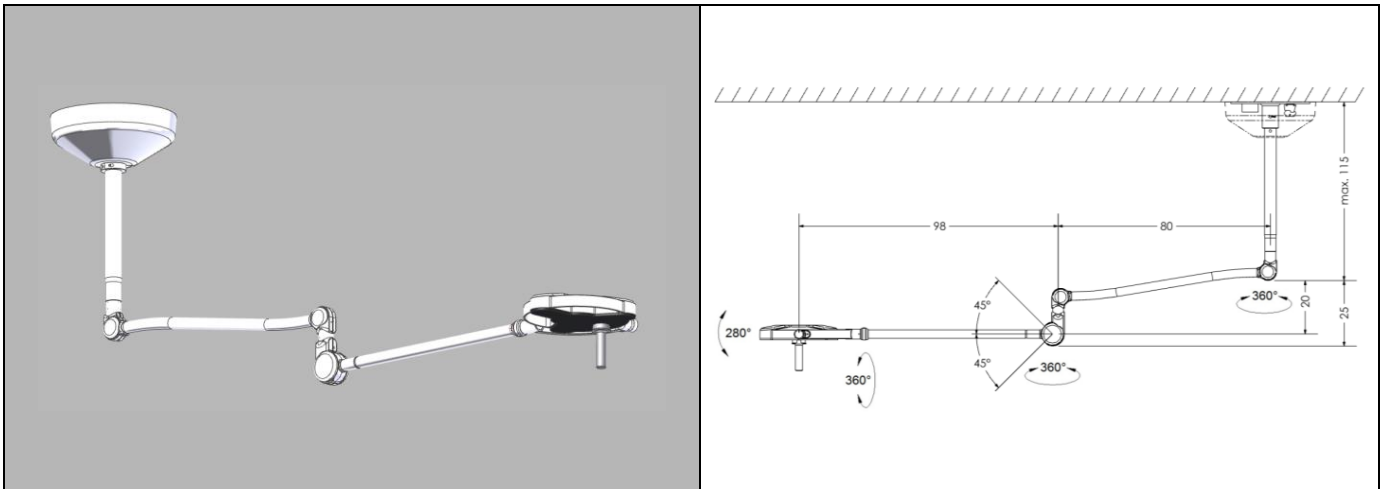
- ▶ **Mounting material not included in delivery.**
- ▶ The ceiling mount may be fitted to ceiling only with a concrete strength of B25 (C20/25) or greater.
- ▶ Contact with reinforcing elements of the solid slab ceiling must be avoided. In case of doubt, a structural engineer should control the mounting on the respective surface.
- ▶ The drill holes should be made by a skilled person in accordance with the drill hole tolerances recommended by the manufacturer of the fastening anchors.
- ▶ The screws must be carefully tightened using a torque wrench in accordance with the recommendations of the manufacturer of the fastening anchors.

### 2.5 Warning levels

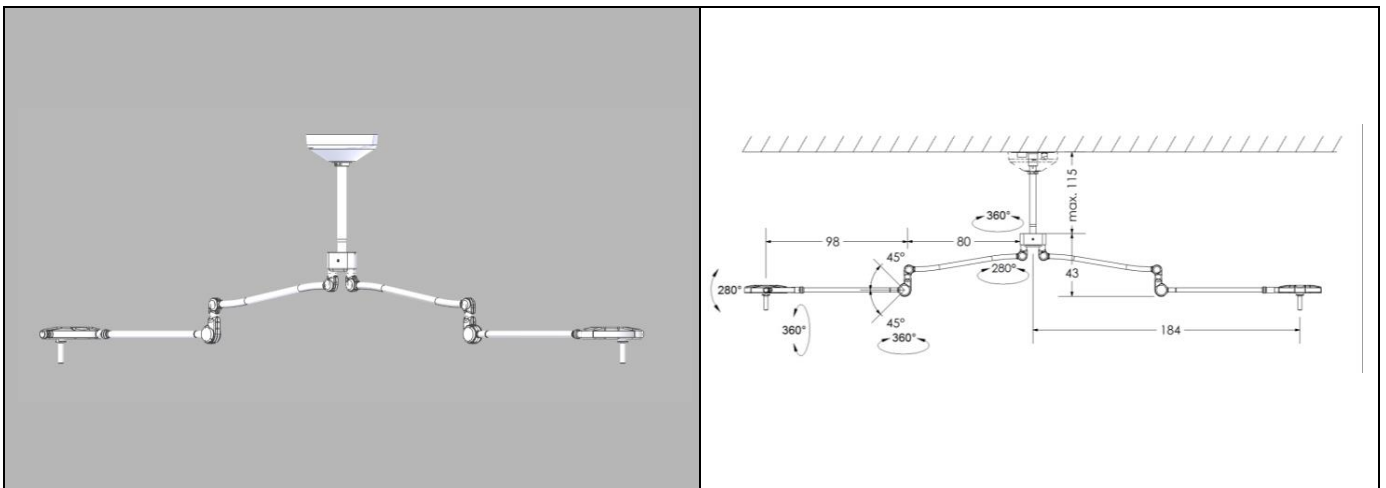
 <b>DANGER</b>
Indication of hazards that can lead to <b>death or serious injury</b> if measures are disregarded.
 <b>WARNING</b>
Indication of hazards that can lead to <b>injury</b> if measures are disregarded.
<b>CAUTION</b>
Indication of hazards that can lead to <b>damage to property</b> if measures are disregarded.

### 3 VARIANTS

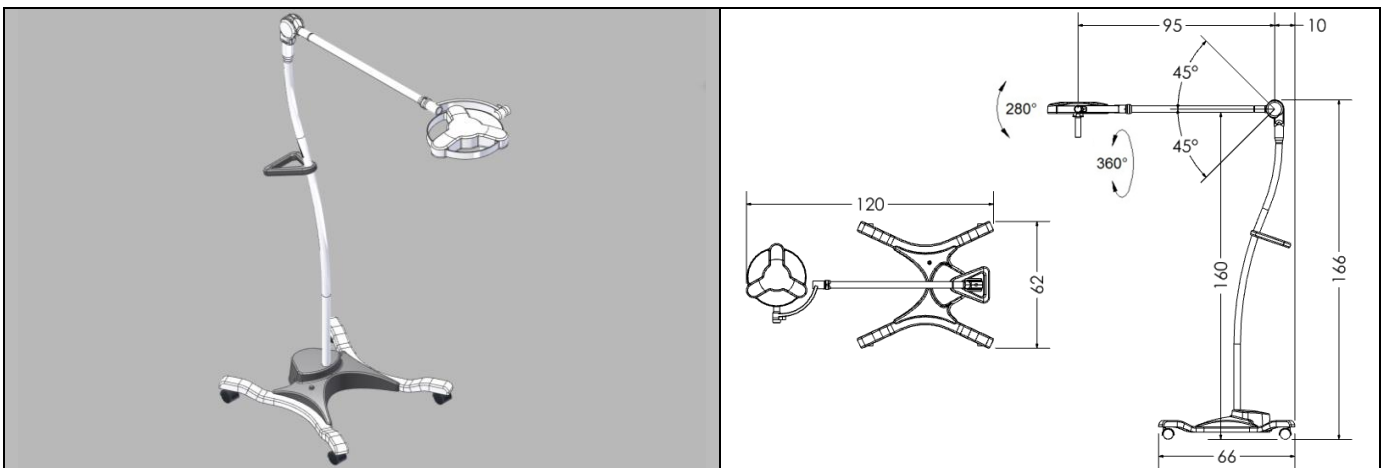
#### 3.1 triango 30 C



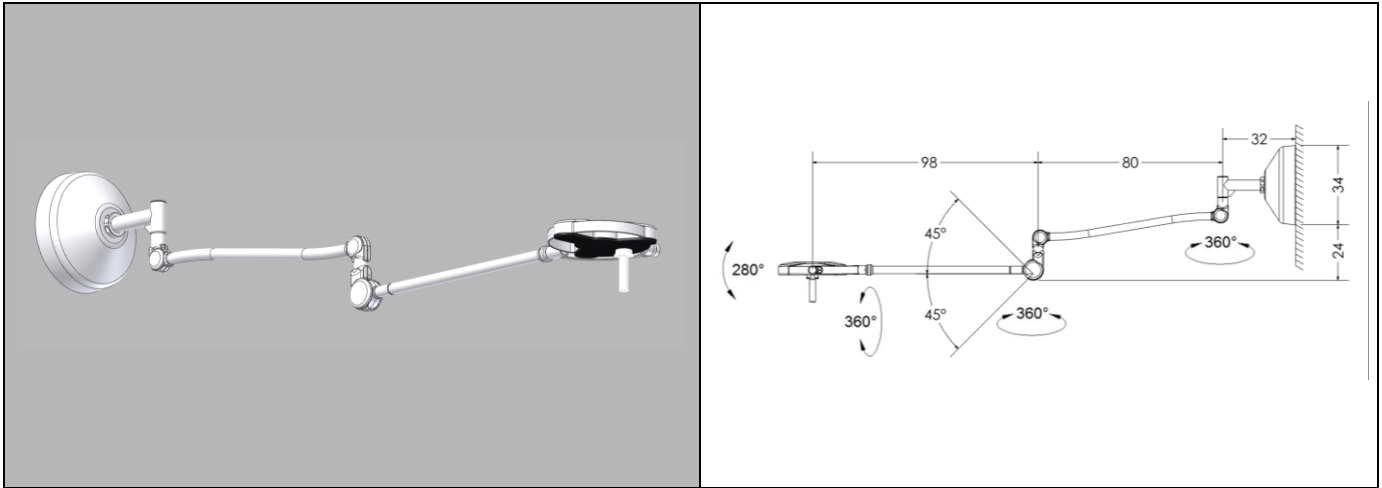
#### 3.2 triango 30 C dual



#### 3.3 triango 30 F



### 3.4 triango 30 W

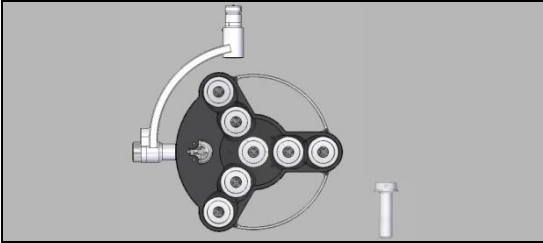


## 4 SCOPE OF DELIVERY

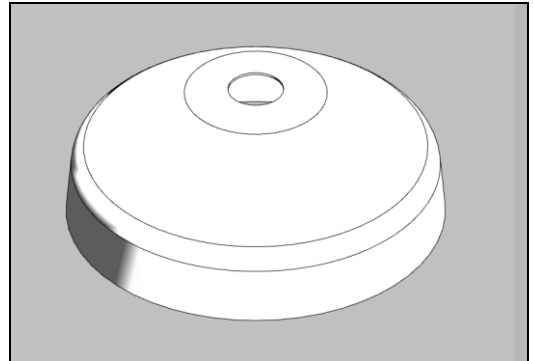
### 4.1 triango 30 C

Included:

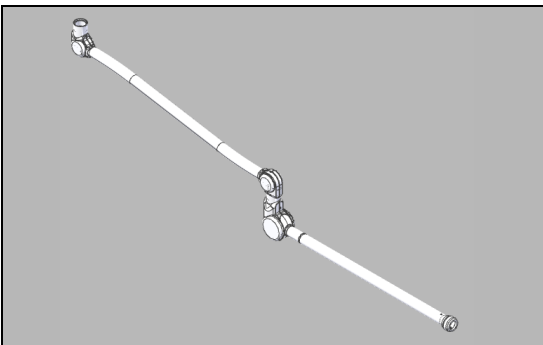
1x Light head with sterilizable handle



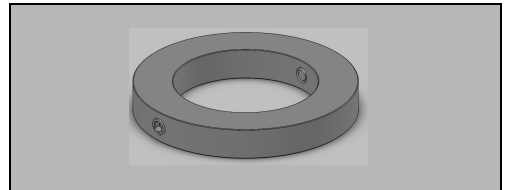
1x dome cover



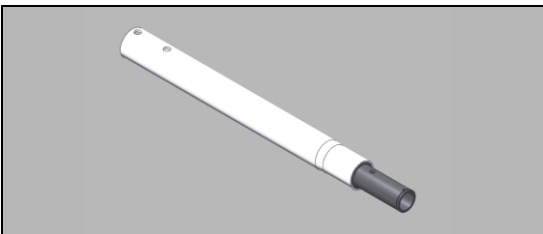
1x ceiling arm



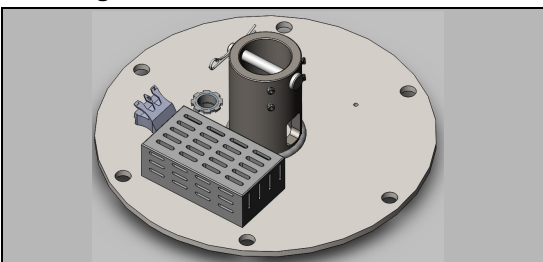
1x ring



1x ceiling tube



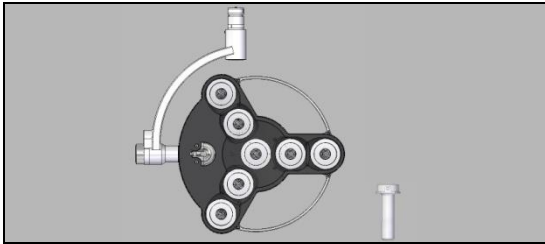
1x ceiling mount



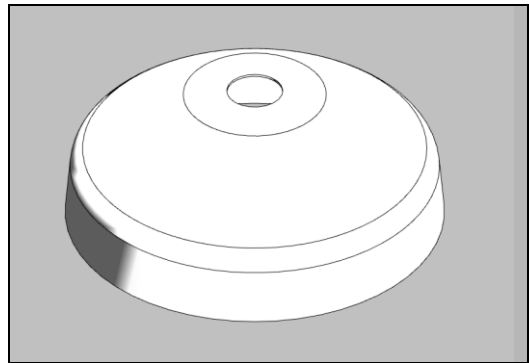
## 4.2 triango 30 C dual

Included:

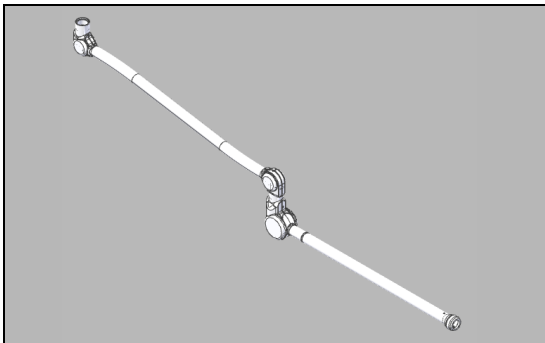
2x Light head with sterilizable handle



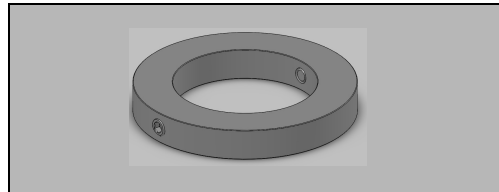
1x dome cover



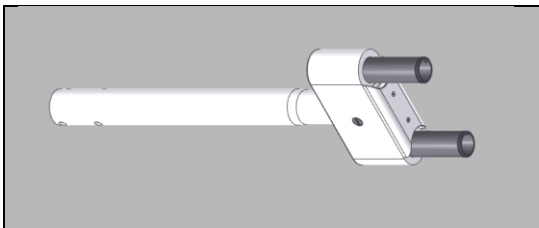
2x ceiling arm



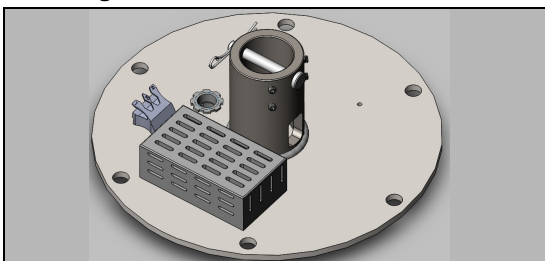
1x ring



1x dual ceiling tube



1x ceiling mount



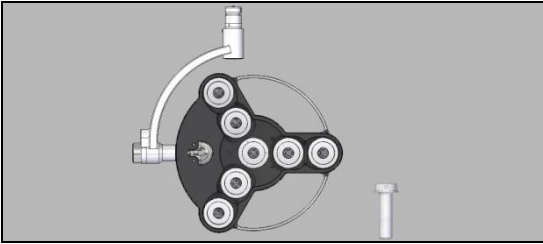
Supplied with two transformers



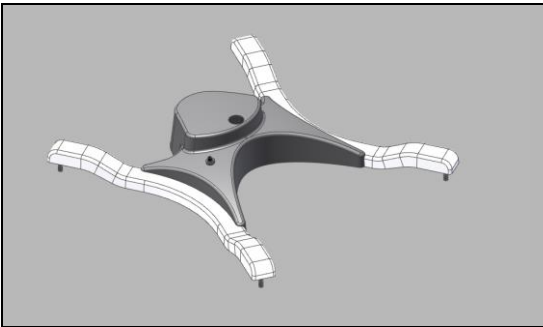
### 4.3 triango 30 F

Included:

1x Light head with sterilizable handle



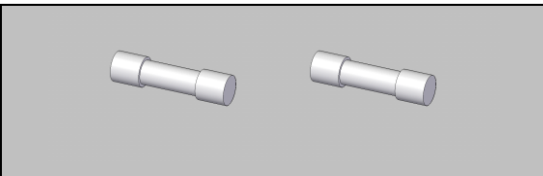
1x roller base



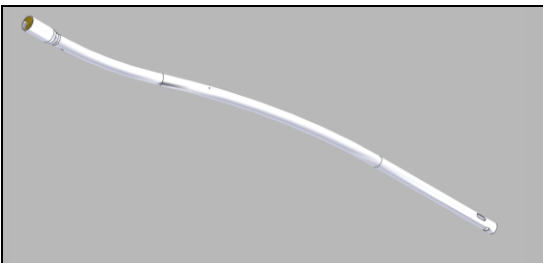
1x power cable



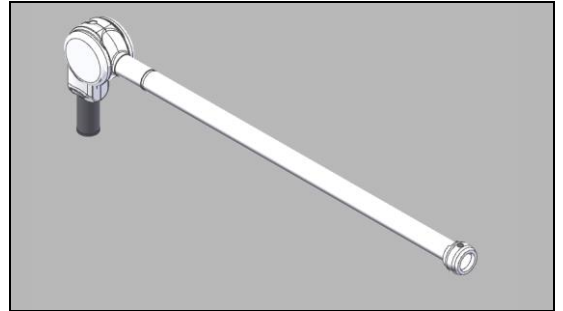
2x fuse



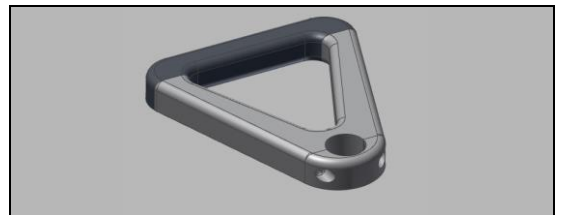
1x post



1x spring arm



1x handle



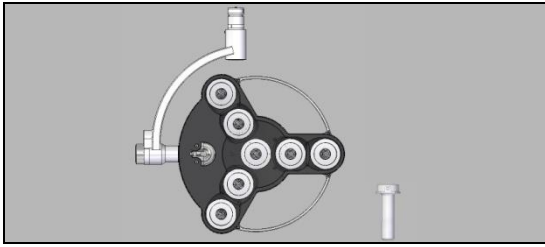
4x casters



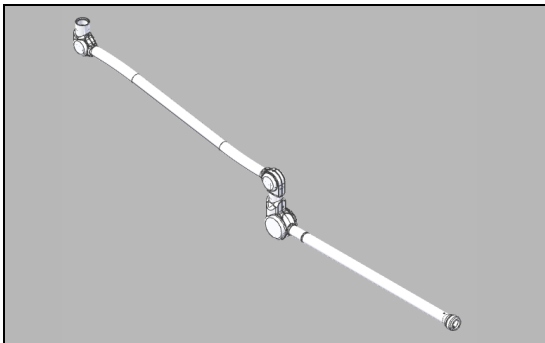
## 4.4 triango 30 W

Included:

1x Light head with sterilizable handle



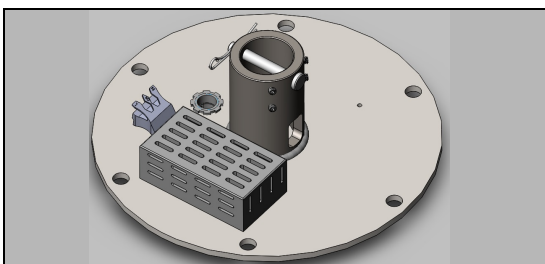
1x wall arm



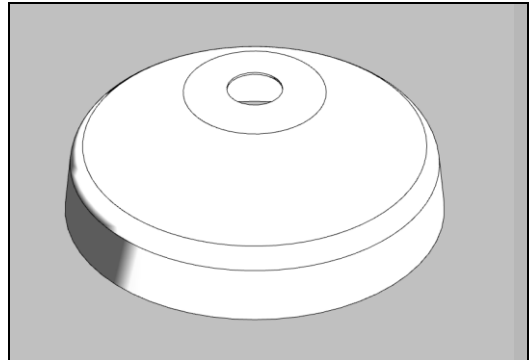
1x wall bracket



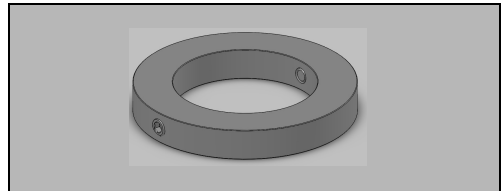
1x wall mount



1x dome cover



1x ring



## 5 INSTALLING triango 30 C / triango 30 C dual

### 5.1 Load data

traingo 30 C

Bending moment $M_B$	210 Nm
Vertical weight forces $F_G$	245 N

traingo 30 C dual

Bending moment $M_B$	420 Nm
Vertical weight forces $F_G$	360 N

### 5.2 Cutting triango 30c ceiling tube

#### DANGER

##### Mounting by qualified personnel

- ▶ Mounting must be done by qualified personnel only. Lack of appropriate knowledge could be life-threatening.

#### DANGER

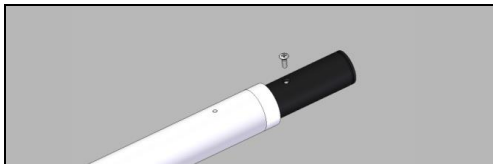
##### Life-threatening danger from falling luminaire.

- ▶ The ceiling must be made of solid concrete to guarantee a secure hold.

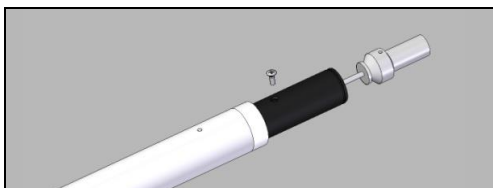
#### DANGER

##### Electric shocks are life-threatening.

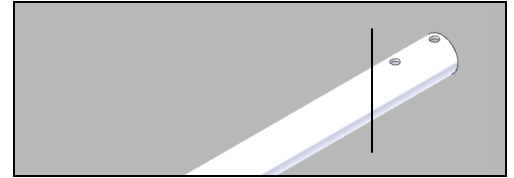
- ▶ The luminaire must be isolated from the mains by an external all-pole switch.



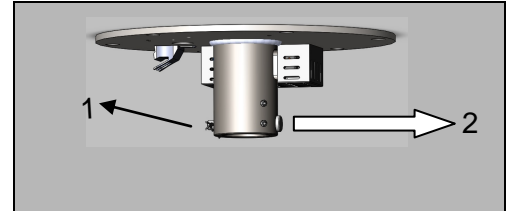
- ▶ Loosen the mounting screw from the receptacle.



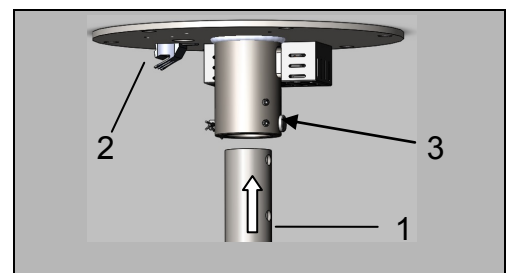
- ▶ Using long-nose pliers, pull the receptacle with cable completely out of the ceiling tube at the inner ring.



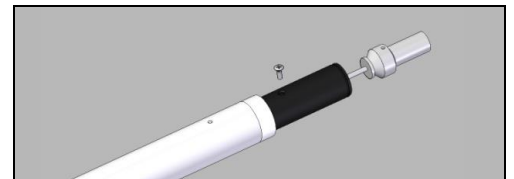
- ▶ Cut the ceiling tube to the required length at the upper end using a metal saw and deburr the cut end.



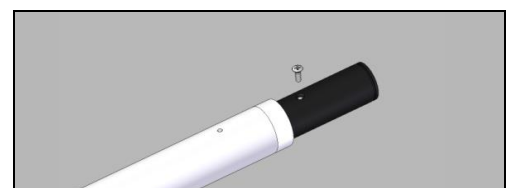
- ▶ Remove the cotter pin 1 and mounting pin 2.



- ▶ Insert the ceiling tube 1 into the ceiling mounting 2 and drill with an  $\varnothing$  10 mm bit 3. Use the existing bore of the ceiling mounting as a guide.

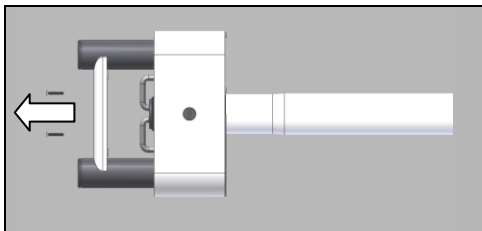


- ▶ Push the cable with receptacle into the ceiling tube again.

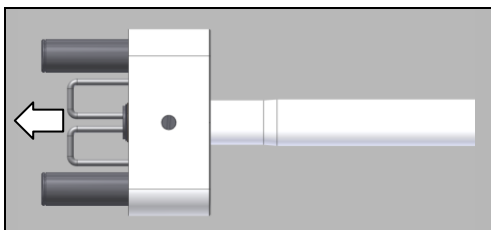


- ▶ Align the threaded bore in the receptacle exactly with the existing bore in the ceiling tube. Fix with the mounting screw.

## 5.2 Cutting triango 30 C dual ceiling tube



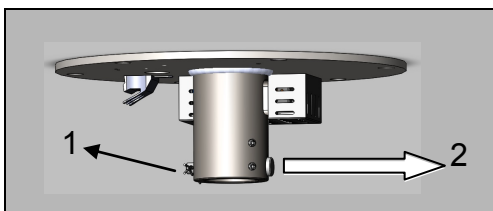
- ▶ Remove the two screws securing the bottom cover. Remove the bottom cover.



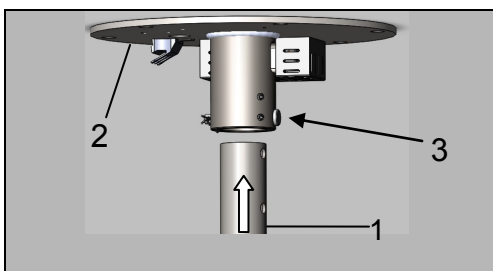
- ▶ Pull the two harnesses completely out of the ceiling tube.



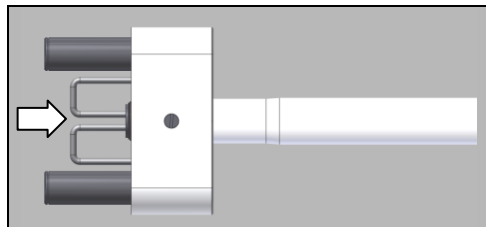
- ▶ Cut the ceiling tube to the required length at the upper end using a metal saw and deburr the cut end.



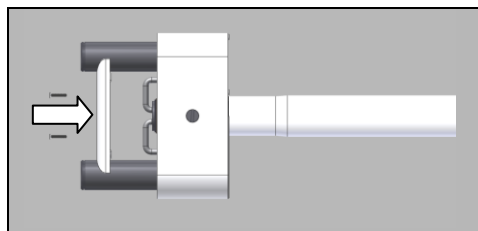
- ▶ Remove the cotter pin 1 and mounting pin 2.



- ▶ Insert the ceiling tube 1 into the ceiling mounting 2 and drill with an  $\text{\O} 10$  mm bit 3. Use the existing bore of the ceiling mounting as a guide.



- ▶ Slide both harnesses back up the ceiling tube



- ▶ Replace the bottom cover, and reinstall the two screws

## 5.2 Installing ceiling mount

### **⚠ DANGER**

**Risk of injury** from falling parts.

- ▶ The ceiling bearing must be secured to the fastening material, that must be suitable for the corresponding ceiling condition.

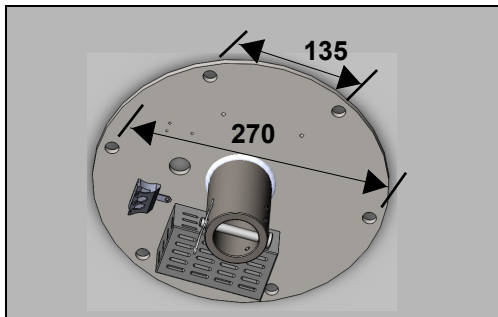
### **⚠ DANGER**

**Risk of injury** from falling parts.

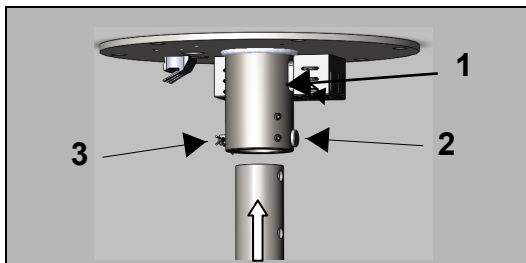
- ▶ Mounting must be performed by two people.

### **CAUTION**

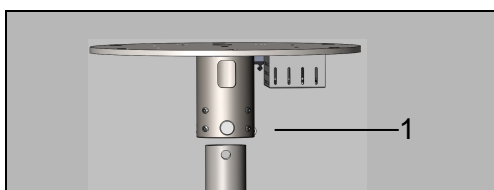
**Use protective equipment in line with tool manufacturer's instructions.**



- ▶ Secure the ceiling mount to the ceiling using the mounting holes provided, and the load data listed in section 5.1.



- ▶ Pull the lamp cable from the ceiling tube through the mounting 1.
- ▶ Insert the ceiling tube into the mounting.
- ▶ Secure with the mounting pin 2 and cotter pin 3.

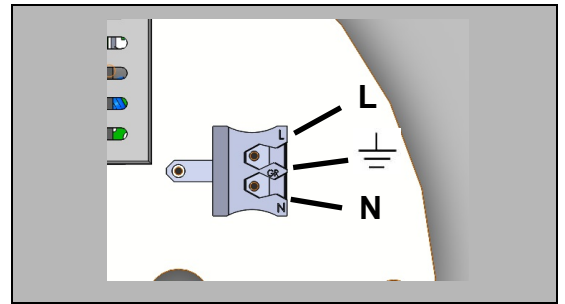


- ▶ Securely tighten the four Allen screws in the mounting 1.

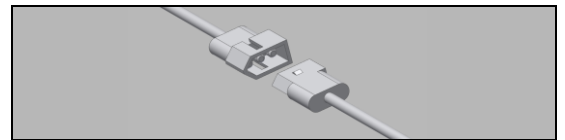
### **⚠ DANGER**

**Mortal danger from electric shock.**

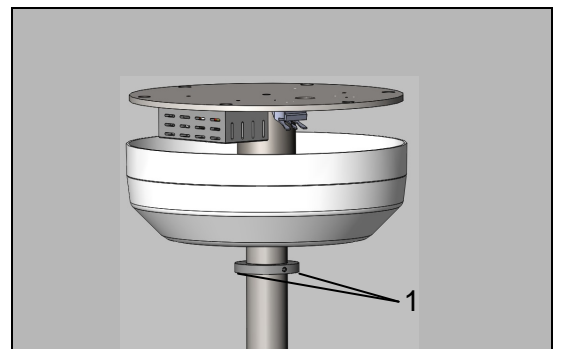
- ▶ Disconnect or remove fuses before carrying out any work on the mains connection



- ▶ Connect to the main power supply.

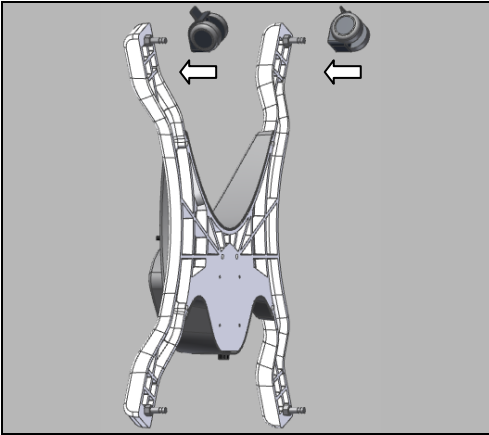


- ▶ Connect the lamp cable.

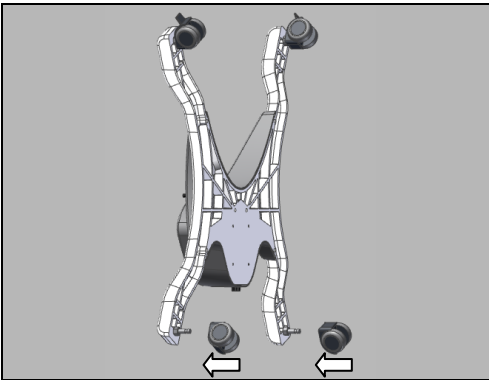


- ▶ Slide cover and ring over ceiling mount and tighten ring screws 1.
- ▶ To continue with installing the ceiling arm(s) see Sec.8

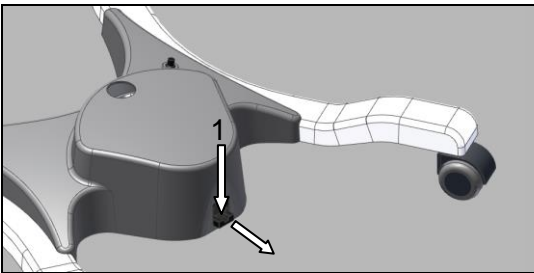
## 6 INSTALLING triango 30 F



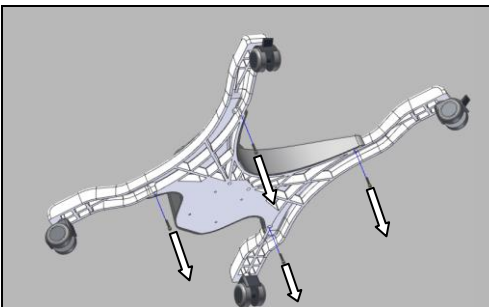
- ▶ Install the brake casters onto the front legs of the base. Press them on firmly until they snap into place.



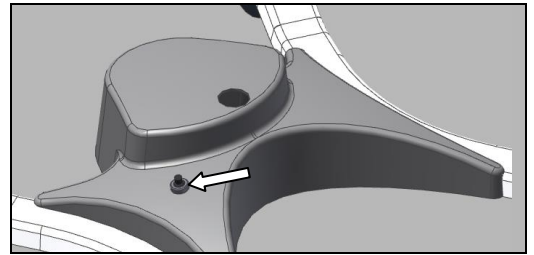
- ▶ Install the remaining casters onto the rear legs of the base. Press them on firmly until they snap into place.



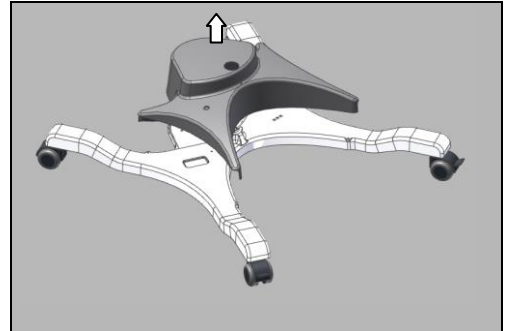
- ▶ Remove the fuse holder by pushing on the tab 1 and pulling outward



- ▶ Remove the four M4 Allen screws shown from the bottom of the base.



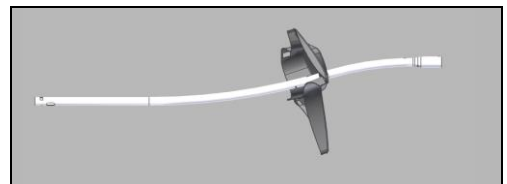
- ▶ Unscrew and remove switch nut.



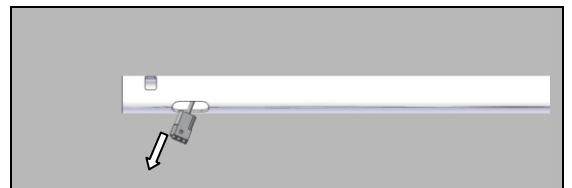
- ▶ Carefully remove the cover and set it aside.



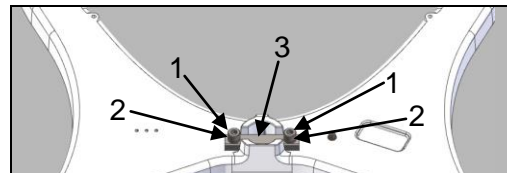
- ▶ Take the post and remove the M3 Allen screw 1



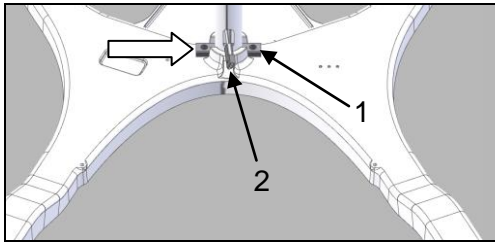
- ▶ Slide the cover onto the post and reinstall the M3 Allen screw.



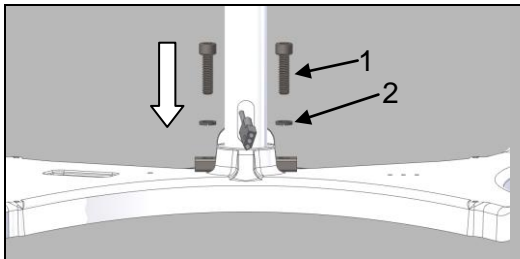
- ▶ Using needle nose pliers, feed the connector and approximately one inch of cable through the oval hole at the bottom of the post.



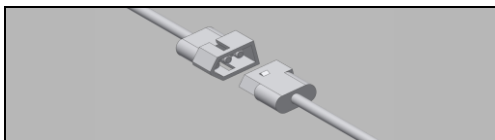
- ▶ Remove the M8 Allen screws 1, lock washers 2, and the attachment bar 3 from the base.



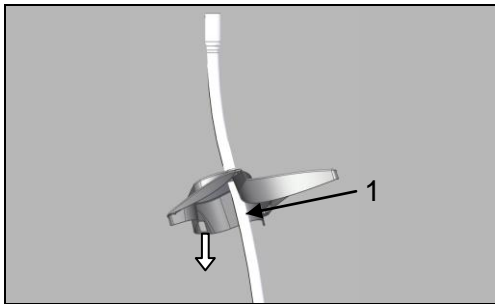
- ▶ Insert the post into the base, then slide the attachment bar 1 into place. Ensure the connector is facing the front of the base as shown 2.



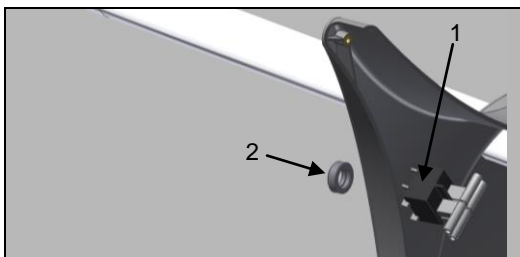
- ▶ Reinstall the two M8 Allen screws 1 and lock washers 2. Ensure they are tightened securely.



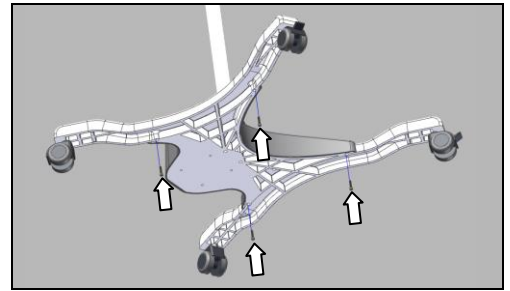
- ▶ Join the post connector to the transformer connector.



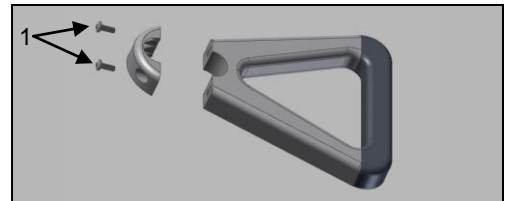
- ▶ Remove the M3 Allen screw 1 and lower the cover onto the base. Reinstall the M3 Allen screw.



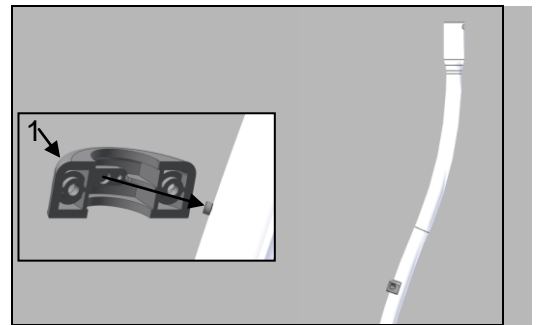
- ▶ Lift the cover slightly, and fit the switch 1 in place. Secure the switch with the switch nut 2.



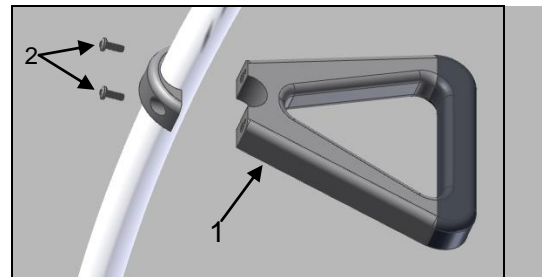
- ▶ Position the cover on the base and reinstall the four M4 Allen screws.



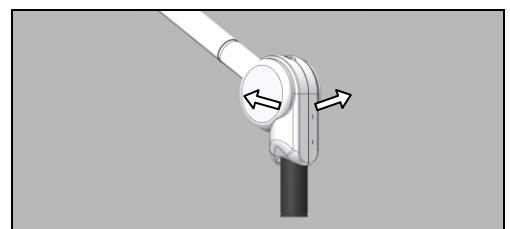
- ▶ Remove the two screws 1 from the handle.



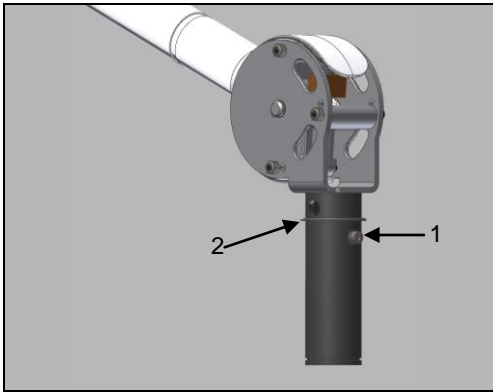
- ▶ Position the small part of the handle on the post. Ensure the curved portion 1 faces up, and the hole is placed over the M3 Allen screw.



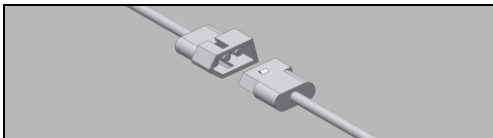
- ▶ Install the large part of the handle 1 using the two screws 2 removed earlier.



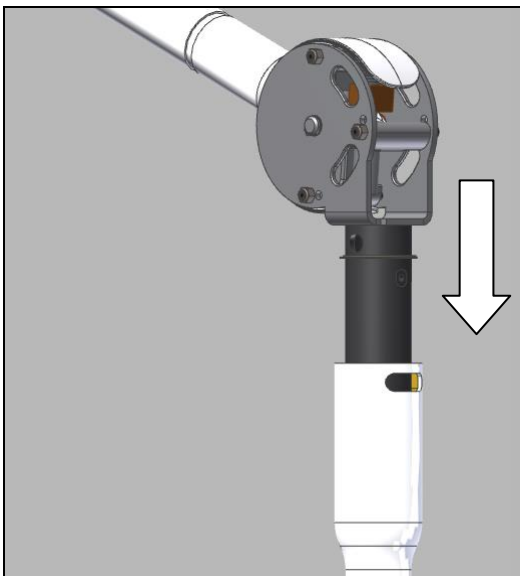
- ▶ Take the spring-balanced arm and gently pry the two halves of the cover apart.



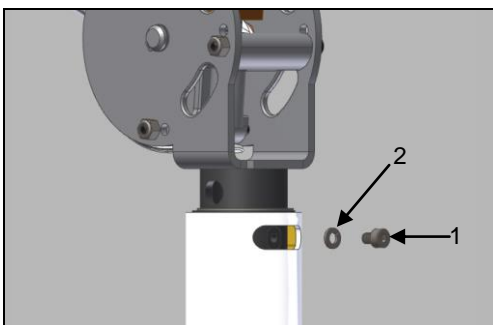
- ▶ Remove the M4 Allen screw and lock washer 1. Ensure the washer 2 stays in position.



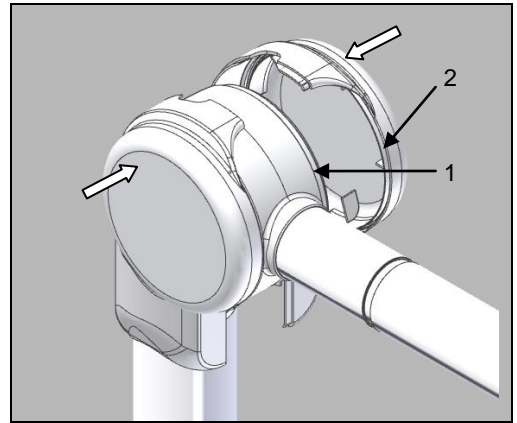
- ▶ Join the arm connector to the connector in the top of the post.



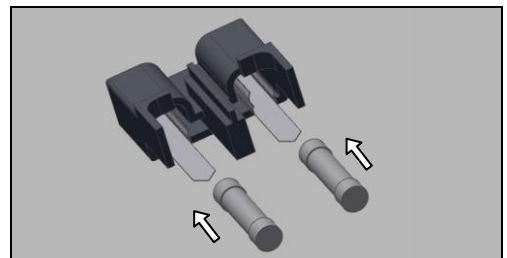
- ▶ Slide the arm into the top of the post.



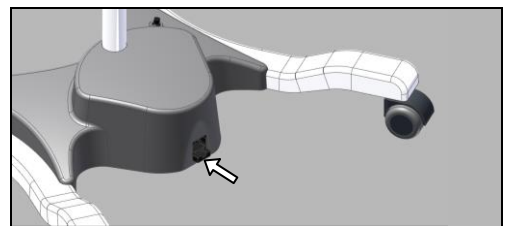
- ▶ Line up the hole in the spring arm with the slot in the post, then install the M4 Allen screw 1 and lock washer 2.



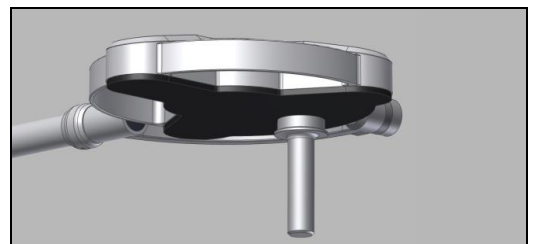
- ▶ Reinstall the covers halves one at a time. Ensure the flap 1 is positioned in the groove of each cover 2.



- ▶ Install the two fuses into the fuse holder.



- ▶ Slide the fuse holder back into the base until it snaps into place.



- ▶ To continue with installing the light head see Sec. 9



## 7 INSTALLING triango 30 W

### 7.1 Load data

Bending moment $M_B$	260 Nm
Vertical weight forces $F_G$	320 N

### 7.2 Installing wall mount

#### **⚠ DANGER**

**Risk of injury** from falling parts.

- ▶ The ceiling bearing must be secured to the fastening material, that must be suitable for the corresponding ceiling condition.

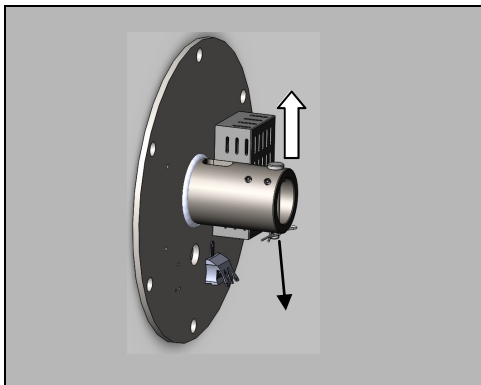
#### **⚠ DANGER**

**Risk of injury** from falling parts.

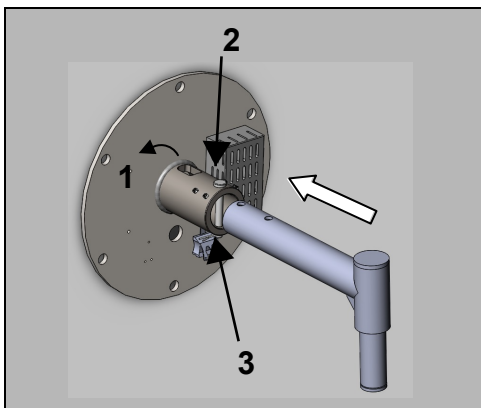
- ▶ Mounting must be performed by two people.

#### **CAUTION**

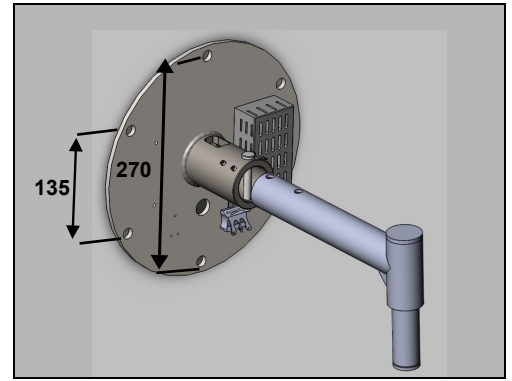
Use protective equipment in line with tool manufacturer's instructions.



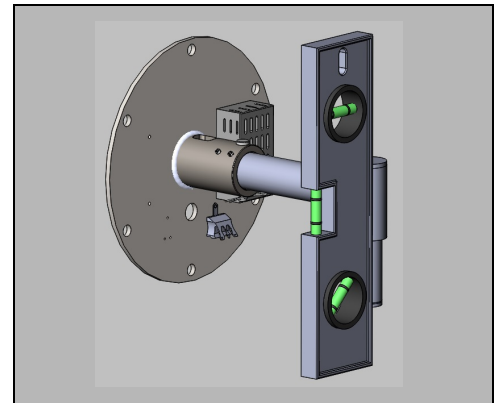
- ▶ Remove the cotter pin 1 and mounting pin 2.



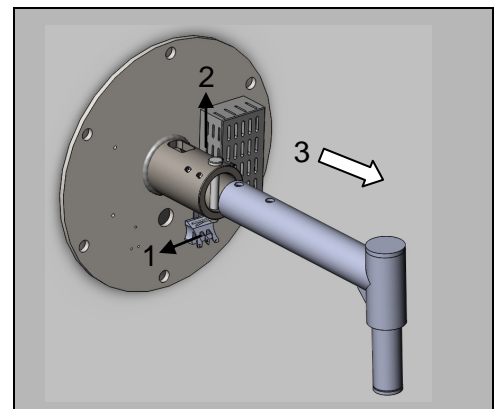
- ▶ Pull the lamp cable from the wall bracket through the mounting 1.
- ▶ Insert the wall bracket.
- ▶ Re-install the mounting pin 2 and cotter pin 3.



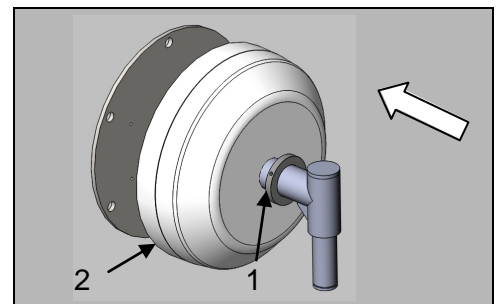
- ▶ Secure the wall mount to the wall using the mounting holes provided, and the load data listed in section 7.1.



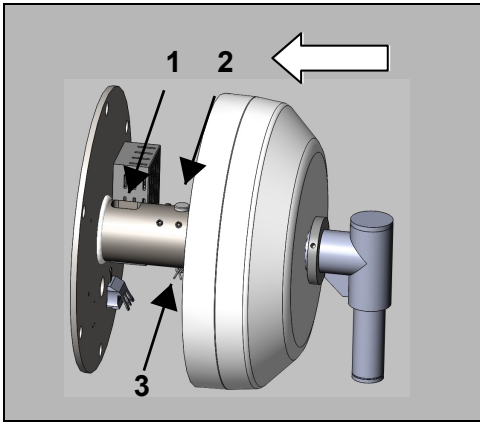
- ▶ Use a bubble level to ensure the wall bracket is level as the wall mount is secured.



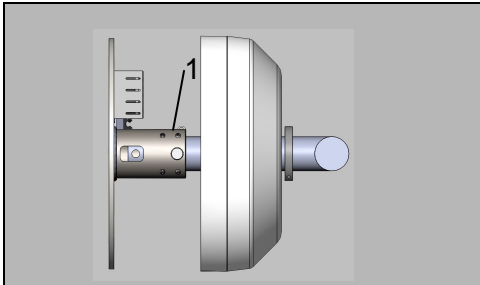
- ▶ Remove the cotter pin 1 and mounting pin 2.
- ▶ Remove the wall bracket 3.



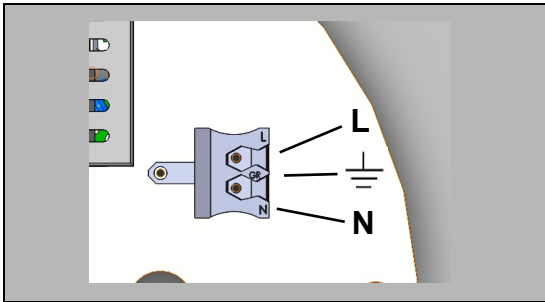
- ▶ Slide the ring 1 and dome cover 2 all the way on to the wall bracket



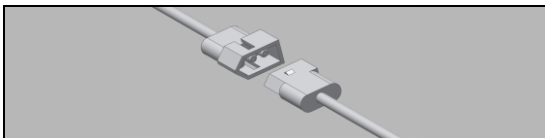
- ▶ Pull the lamp cable from the ceiling tube through the mounting 1.
- ▶ Insert the wall bracket with dome cover and ring.
- ▶ Install the mounting pin 2 and cotter pin 3.



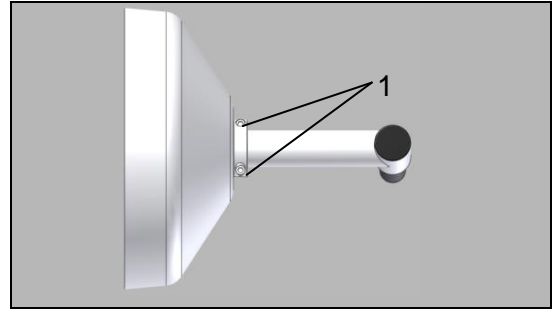
- ▶ Hold the wall bracket level, and securely tighten the four Allen screws in the mounting 1.
- ▶ Ensure the bracket remains level as the screws are tightened.



- ▶ Connect to the main power supply.



- ▶ Connect the lamp cable.

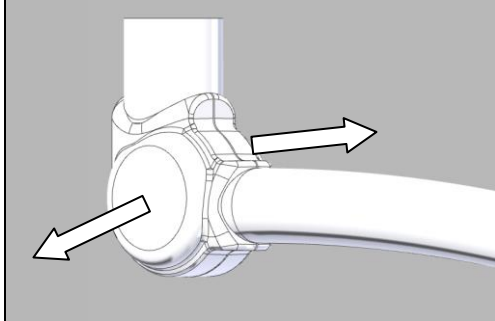


- ▶ Slide cover and ring over ceiling mount and tighten ring screws 1.
- ▶ To continue with installing the wall arm see Sec. 8

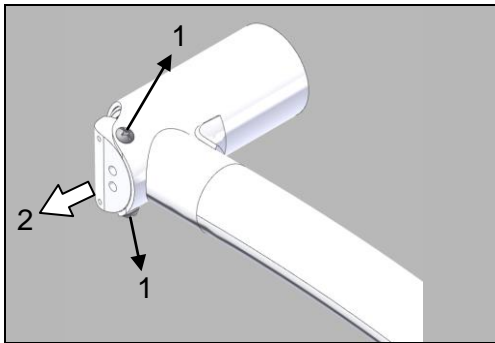
## 8 INSTALLING WALL OR CEILING ARM

### WARNING

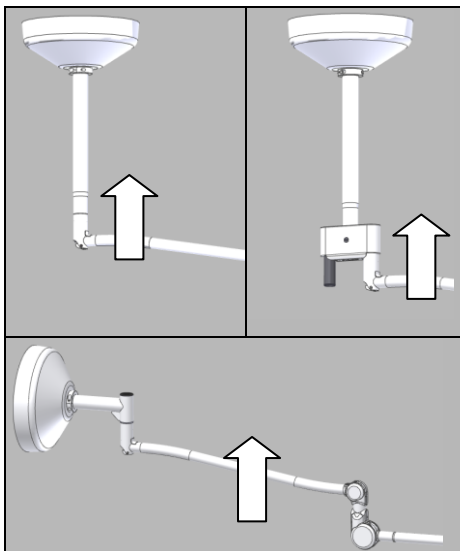
- ▶ **Danger** of injury from unfolding spring arm.



- ▶ Gently pry the two halves of the cover apart and set aside.



- ▶ Remove two screws **1** from receptacle mount.
- ▶ Move receptacle mount **2** to provide access for mounting.

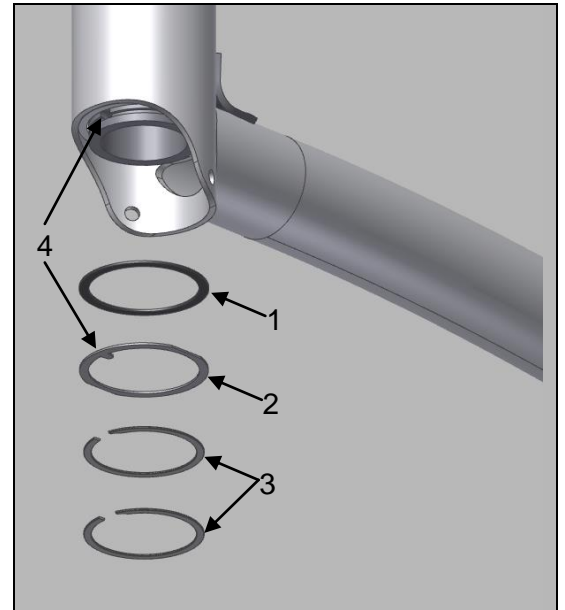


- ▶ Install ceiling arm or wall arm.

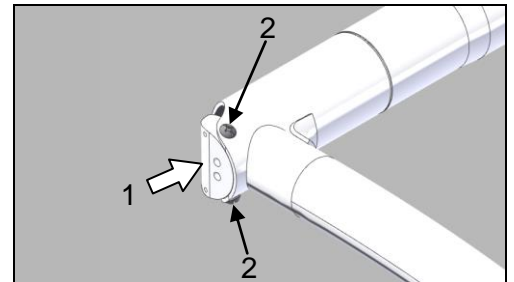
### WARNING

**Light may fall if inaccurately fastened.**

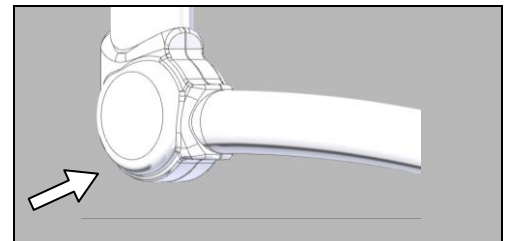
- ▶ Locking rings must click into groove and be evenly positioned all around.



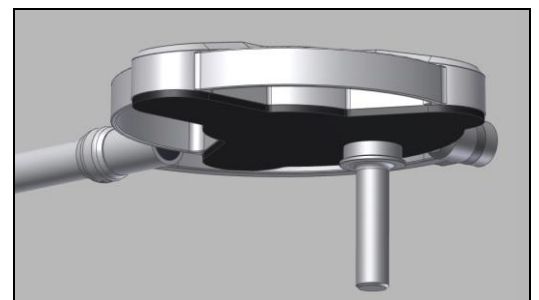
- ▶ First install washer **1**, then safety washer **2**, followed by two locking rings **3**.
- ▶ Ensure tooth on safety washer aligns with the hole in the ceiling tube **4**.



- ▶ Replace the receptacle mount **1**.
- ▶ Reinstall two screws **2**, do not over tighten.

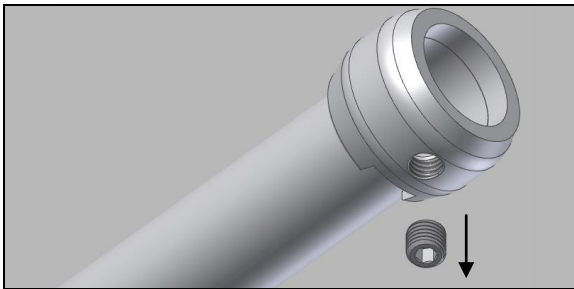


- ▶ Gently replace covers and snap together.
- ▶ Repeat steps with the second ceiling arm for triango 30 C dual.



- ▶ To continue with installing the light head see Sec. 9

## 9 INSTALLING LIGHT HEAD

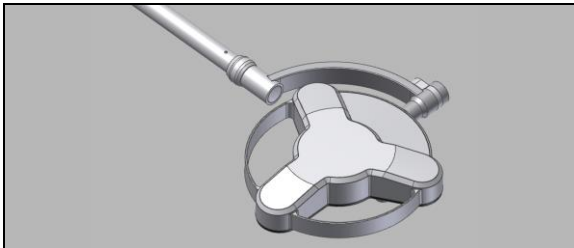


- ▶ Remove screw.

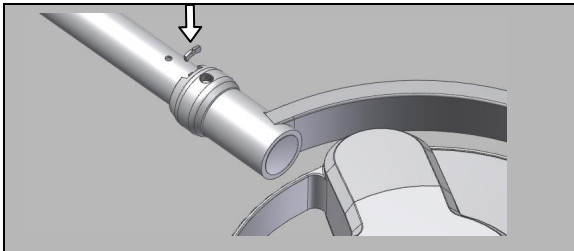
### CAUTION

#### Danger from falling luminaire head.

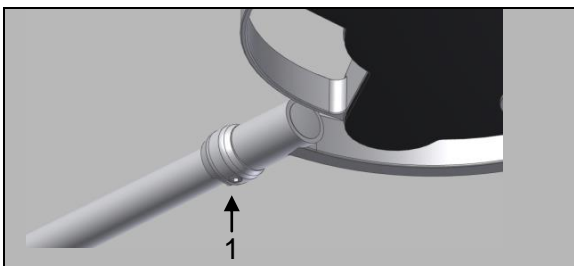
- ▶ Ensure that the safety element has been correctly installed.
- ▶ An incorrectly mounted luminaire head can cause injury.



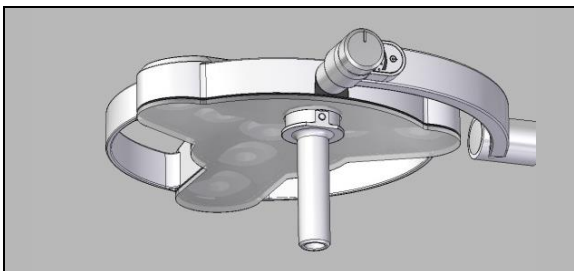
- ▶ Insert light head.



- ▶ Turn sleeve and insert safety key



- ▶ Turn back sleeve and install screw 1.



- ▶ Clip handle on.

## 10 OPERATION

### triango 30 F

#### **⚠ DANGER**

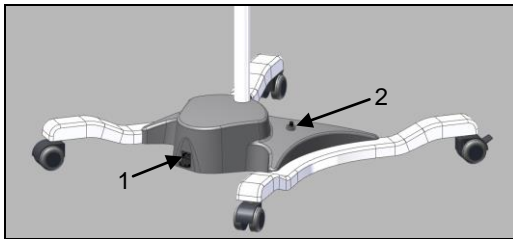
##### **Electric shocks are life-threatening.**

- ▶ Do not insert any power cable that is damaged.
- ▶ If there is any sign of damage to the power cable, replace it immediately with a new one
- ▶ The supply voltage and frequency must match the data on the type plate.
- ▶ Only connect to the mains power supply with a protective conductor

#### **NOTE**

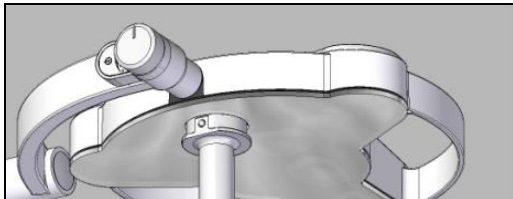
##### **triango 30 F**

- ▶ When the power cable is not in use, reel it onto the cable holder



- ▶ Plug in cable 1.
- ▶ Install the cable to the mains supply.
- ▶ Switch on 2.
- ▶ The switch is preceded by two 1.0 A fuses.

### triango 30 C, W, F



- ▶ Switch on light at rotary knob.

## 11 DISINFECTING, CLEANING AND STERILIZATION

#### **CAUTION**

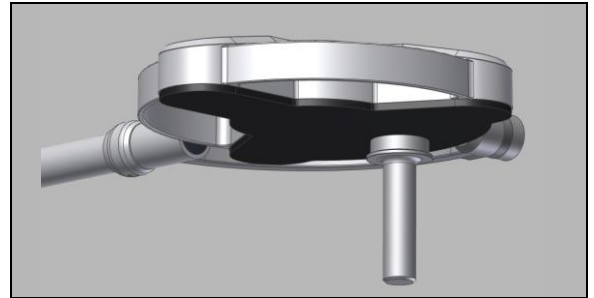
##### **Damage to property caused by incorrect cleaning**

- ▶ No cleaning agents containing alcohol, solvents, chlorine or abrasive products should be used
- ▶ Concentrated disinfectants may damage the cover.
- ▶ Comply with mixing ratios recommended by manufacturers.
- ▶ Unsuitable cloths can cause scratches.

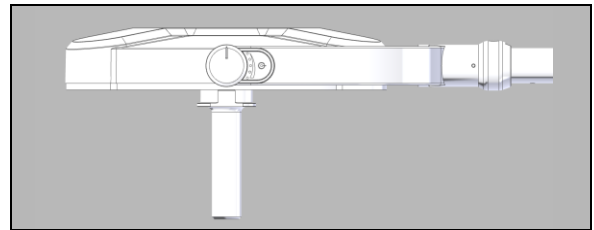
#### **NOTE**

##### **Dirt decreases luminosity**

- ▶ Clean regularly to keep the cover clean.
- ▶ Disinfection by spraying and/or wiping is permitted.



- ▶ Clean the PMMA lens with a soft cloth and mild cleaner.



- ▶ Spray disinfectant only in horizontal position.

#### **NOTE**

Disinfect external luminaire parts using the following prescribed diluted products:

- ▶ Lysoformin®
- ▶ Dismozon®
- ▶ Hexaquart®plus
- ▶ Sagrotan® quick disinfectant cleaner

#### **CAUTION**

To minimize the risk of disease transmission, in addition to complying with this user manual, you must also comply with the applicable occupational health and safety regulations and the requirements of national bodies with responsibilities for hygiene and disinfection.

#### **NOTE**

Sterilize hand grip for 30 minutes at 121°C and 1.05 bar.

## 12 MAINTENANCE

### DANGER

#### Electric shocks are life-threatening.

- ▶ Remove the connector from the power supply and put the switch in the "OFF" position.
- ▶ The connector cable must be checked for damage at least once per year.

### NOTE

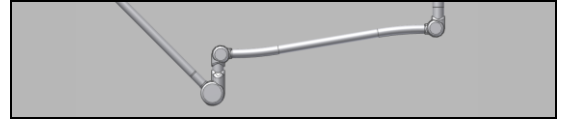
- ▶ Maintenance and repairs must only be carried out by qualified electricians.
- ▶ The corresponding user profile is described in Chapter 2, Safety instructions

## 12.1 Setting spring force

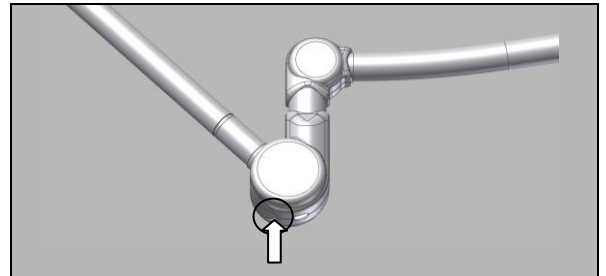
### NOTE

The spring force is set at the optimum setting in the factory

#### triango 30 C



- ▶ Lift the spring arm to its highest position.



- ▶ Insert a 6mm Allen key through window and turn the adjustment screw.

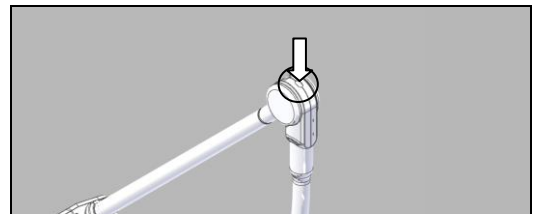
Setting spring force:

- ▶ Turn screw counter clockwise to increase spring force (when spring arm lowers)
- ▶ Turn screw clockwise to decrease spring force (when spring arm rises)

#### triango 30 F



- ▶ Move the spring arm to its lowest position.



- ▶ Insert a 4mm Allen key through window and turn the adjustment screw.

Setting spring force:

- ▶ Turn screw clockwise to increase spring force (when spring arm lowers)
- ▶ Turn screw counter clockwise to decrease spring force (when spring arm rises)

## 13 DISASSEMBLY

### DANGER

#### Electric shocks are life-threatening.

- ▶ Remove connector from the power supply and put the switch in the "OFF" position before disassembling.

### DANGER

#### Never unscrew the upper cable holder - injury hazard.

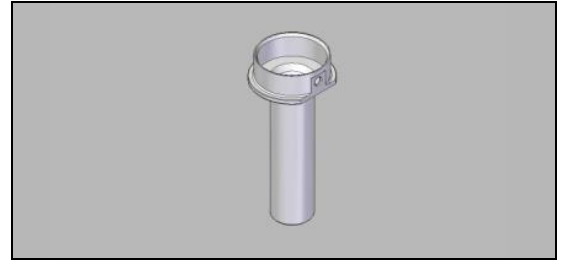
- ▶ When both cable holders are unscrewed, the connecting piece is loose and falls downward, which could cause injury and/or damage to the cable and/or the device.

### 13.1 Disposal



Do not dispose of the luminaire with the normal refuse. Dispose of the light at a recycling center or return it to a dealer with a disposal service depending on local regulations. Cut off the cable flush with the housing.

## 14 SPARE PARTS



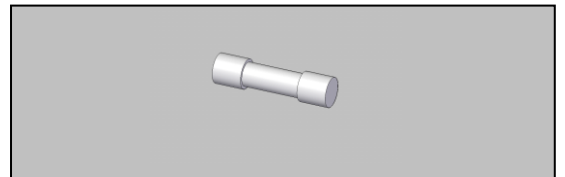
Handle (Art.- Nr. D51-040-000)



Rotary knob (Art.- Nr. D51-050-000)



Cable (Art.- Nr. US0-241-053)



Fast-blow 1.0 A fuse (Art.- Nr. 309-593-M40)  
triango 30 F only. Two required.

## 15 TROUBLESHOOTING

Malfunction	Possible cause	Remedy	User profiles
Light does not come on	Contact fault	Switch on again	All
Light does not come on	Illuminant defective	Contact manufacturer's After-Sales Service	Only by manufacturer's After-Sales Service
Light does not come on	No mains power	Check power supply and all connections	Qualified electrician
Light does not come on	1.0 A fuse defective (triango 30 F only)	Replace fuse	Qualified electrician

## 16 ADDITIONAL INSTRUCTIONS

The luminaire itself is maintenance-free.

You can obtain additional documents about this product from the manufacturer upon request.

These luminaires do not affect any other devices.

To save energy, the luminaire should only be switched on when actually needed.



## 17 TECHNICAL DATA

<b>Electrical:</b>	
Nominal input voltage	100-240V
Frequency range	50 / 60Hz
Power consumption	30W (42-52VA)
Input current	0.42A
Integrated electronic transformer	24V DC output
Approval	ETL/cETL
<b>Illumination:</b>	
Central illuminance at 1.0m	60,000 lux
Light field diameter d10 at 1.0m	Ø = 16 cm (6.3in)
Light field diameter d50 at 1.0m	Ø = 8.5 cm (3.3in)
Total Irradiance Ee at maximum intensity	< 200 W/m <sup>2</sup>
Ratio irradiance Ee to illuminance Ec	< 3.5 mW/m <sup>2</sup> /lx
Remaining illuminance with one mask	< 1lx
Remaining illuminance with two mask	29 - 63%
Remaining illuminance with tube	100%
Remaining illuminance with tube and one mask	< 1lx
Remaining illuminance with tube and two mask	29 – 62%
Depth of illumination L1 + L2	120cm (47.24in)
Color Temperature	4500 K
Color Rendering Index Ra	>95
Color Rendering Index R9	>90
<b>Environmental conditions for transport, storage and operation:</b>	
Ambient temperature (storage and transport)	-20°C to +70°C
Ambient temperature (operation)	10°C to +35°C
Relative humidity (non-condensing)	max. 75%
<b>Weight:</b>	
Light head	3 kg (6.6lbs)
<b>triango</b> 30 C (includes light head)	15 kg (33lbs)
<b>triango</b> 30 C dual(includes light head)	24 kg (53lbs)
<b>triango</b> 30 F (includes light head)	15 kg (33lbs)
<b>Operating mode:</b>	
Operating mode	continuous operation
<b>Classification:</b>	
triango	Class I; FDA Class II
Degree of protection as per IEC 529	IP 20
light head	IP 43 (horizontal position)
Classification under 93/42 EEC – Annex IX (medical device class)	Class I
Electrical safety test and EMC according to:	AAMI ES60601-1 CSA C22.2#60601-1 IEC/EN 60601-1 IEC/EN 60601-2-41 IEC/EN 60601-1-2
<b>Life time of light source:</b>	
Life time	30000h

## 18 NOTES ON THE ARM SYSTEMS

### 18.1 Selection of fastening material

We recommend the use of (not included in the delivery) counter-plates for fastening to drywall.

### 18.2 Cleaning and disinfection

#### **⚠ DANGER**

##### **Electric shocks are life-threatening.**

► The devices can conduct electricity and must be handled with care during cleaning and disinfection.

- If there is a power plug remove it from the socket.
- Do not use spraying methods for cleaning and/or disinfection.
- Do not spray liquid into the openings of electrical power sockets, gas sockets or devices, or allow liquid to enter these.

#### **Recommended cleaning agents**

Use mild soap solutions or standard detergents as cleaning agents. Wipe down the surfaces of the equipment with a dampened cloth. If necessary, use small quantities of mild soap solution as a cleaning agent. Then wipe the outer surfaces with a soft, clean cloth until they are completely dry.

#### **Disinfection procedure**

Disinfection by wiping is intended to be the standard disinfection procedure for the support arm system. Hygiene guidelines and corresponding safety measures must be determined by the operator for the disinfection procedures that are applied.

- After the contamination by any potentially infectious material (such as blood, secretions or excrement), the areas must be disinfected immediately in a targeted way.
- Comply with application concentrations.
- Wipe the area to be disinfected rather than spraying it.
- Do not use areas that have been wiped until the disinfectant is dry.

### 18.3 Testing

#### **⚠ DANGER**

##### **Electric shocks are life-threatening.**

► During all testing work, disconnect the device from the power supply/remove the plug from the power socket and secure the device so that it cannot be switched on again.

#### **Every 6 months check for:**

- Paint damage
- Cracks in plastic parts
- Deformation of the support system

- Loosening of parts

#### **Annually:**

Check the fastening screw on the underside of the stand base, tighten it if necessary.

#### **Every 2 years:**

The securing element of the cantilever arm must be checked and greased by a qualified professional.

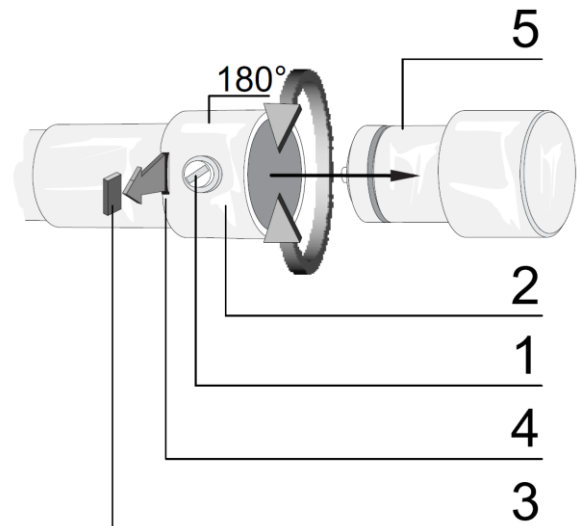
### 18.4 Disassembling for servicing

#### **⚠ DANGER**

##### **Injury hazard**

► The cantilever arm is under a high spring load. If the luminaire head is not moved to the upper cantilever arm position, the cantilever arm will spring up, possibly causing serious injury. Only remove the luminaire head if the cantilever arm is in the upper position.

- Disconnect the device from the power supply/remove the plug from the mains and ensure it cannot be switched on again.
- Place cantilever arm in the upper position.
- Unscrew the brake screw **1** so that the sleeve **2** can be turned.
- Turn the sleeve **2** through 180 degrees until the securing segment **3** appears in the slot **4**.
- Hold the luminaire head **5** firmly and remove the securing segment **3** using a narrow flat-bladed screwdriver.
- Remove luminaire head **5** from the connection.
- Put protective cap in place.




- 1 Brake screw
- 2 Sleeve
- 3 Securing segment
- 4 Slot
- 5 Luminaire head terminal

## 19 ELECTROMAGNETIC COMPATIBILITY (EMC)

Electromagnetic emission guidelines		
The medical device is intended for operation in an electromagnetic environment such as the one specified below. The user must ensure that it is operated in such an environment.		
Emissions	In accordance with	Electromagnetic environment
High-frequency emissions (CISPR 11)	Group 1	The medical device uses HF energy exclusively for its internal function. This means that its HF emissions are very low, and it is unlikely that adjacent electronic devices will receive interference.
High-frequency emissions (CISPR 11)	Class B	The medical device is intended for use in all facilities, including residential buildings and facilities that are directly connected (without a transformer) to the same low voltage network as residential buildings.
Emissions from harmonics (IEC 61000-3-2)	Class A	
Emissions from voltage fluctuations/flicker (IEC 61000-3-3)	Compliance	

Electromagnetic interference resistance guidelines			
The medical device is intended for operation in an electromagnetic environment such as the one specified below. The user must ensure that it is operated in such an environment.			
Interference resistance to	IEC 60601-1-2 testing level	Conformity level of the medical device	Electromagnetic environment
Electrostatic discharge (ESD) (IEC 61000-4-2)	Contact discharge: $\pm 6$ kV Air discharge: $\pm 8$ kV	$\pm 6$ kV $\pm 8$ kV	Floors made of timber, concrete or ceramics tiles are preferred. Where synthetic floor covering is used the relative humidity should be at least 30%.
Fast transients/ electrical disturbance variables/ bursts (IEC 61000-4-4)	Power supply cables: $\pm 2$ kV Longer input and output cables: $\pm 1$ kV	$\pm 2$ kV Not applicable	The quality of the mains power supply should match that of a typical business or hospital environment.
Surge voltages/surges (IEC 61000-4-5)	Common mode voltage: $\pm 2$ kV Differential mode voltage: $\pm 1$ kV	$\pm 2$ kV $\pm 1$ kV	The quality of the mains power supply should match that of a typical business or hospital environment.
Magnetic field in the power supply frequency (50/60 Hz) (IEC 61000-4-8)	3 A/m	3 A/m	In proximity of this medical device, do not operate devices with unusually strong network-frequency magnetic fields (transformer stations etc.) .
Voltage dips and short interruptions to the power voltage (IEC 61000-4-11)	Cut >95 %, 0.5 periods Cut 60 %, 5 periods Cut 30 %, 25 periods Cut >95 %, 5 seconds	Cut >95 %, 0.5 periods Cut 60 %, 5 periods Cut 30 %, 25 periods Cut >95 %, 5 seconds	The supply voltage quality should be that of a typical business or hospital environment. If the user requires continued function during any interruption of the energy supply system, we recommend that the medical device be powered by an uninterrupted power supply or a battery.
Radiated HF disturbance variable (IEC 61000-4-3)	80 MHz to 2.5 GHz: 3 V/m	3 V/m	Recommended minimum distance of portable and mobile radio devices of PEIRP radiated power to the medical device, including its cables: $(1.84 \text{ m} \times \sqrt{\text{PEIRP}})^{1)}$
Conducted HF disturbance values (IEC 61000-4-6)	150 kHz to 80 MHz: 3 V	3 V	Recommended minimum distance of portable and mobile radio devices of PEIRP radiated power to the medical device, including its cables: $(1.84 \text{ m} \times \sqrt{\text{PEIRP}})^{1)}$

1) For PEIRP, use the maximum "equivalent isotropic radiated power" of the adjacent radio device in watts. High-frequency emissions can also occur in the environment of devices with the symbol . The field strength of stationary, portable or mobile radio transmitters at the location of the medical device should be less than 3 V/m in the 150 kHz to 2.5 GHz frequency range, and less than 1 V/m above 2.5 GHz.

**Recommended safe distances from portable and mobile HF communications equipment**

The safe distances listed below correspond to the data in IEC 60601-1-2.

<b>Max. PEIRP (W)</b>	<b>150 kHz to 2.5 GHz</b>	<b>All other frequencies</b>	<b>Examples</b>
0.03	0.32 m (1.05 ft)	0.96 m (3.15 ft)	E.g. WLAN 5250 / 5775 (Europe)
0.10	0.58 m (1.90 ft)	1.75 m (5.74 ft)	E.g. WLAN 2440 (Europe)
0.17	0.76 m (2.49 ft)	2.28 m (7.48 ft)	E.g. Bluetooth, RFID 2.5 GHz
0.20	0.82 m (2.69 ft)	2.47 m (8.10 ft)	e.g. WLAN 5250 (not in Europe)
0.25	0.92 m (3.02 ft)	2.76 m (9.06 ft)	E.g. UMTS mobile phones
0.41	1.18 m (3.87 ft)	3.53 m (11.58 ft)	E.g. cordless DECT telephones
0.82	1.67 m (5.48 ft)	5.00 m (16.40 ft)	e.g. RFID 13.56 MHz
1.00	1.84 m (6.04 ft)	5.52 m (18.11 ft)	e.g. WLAN 5600 (not in Europe)
1.64	2.36 m (7.74 ft)	7.07 m (23.20 ft)	e.g. GSM 1800/GSM 1900
3.28	3.33 m (10.93 ft)	10.00 m (32.81 ft)	E.g. GSM 900 mobile telephones, RFID 868 MHz

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