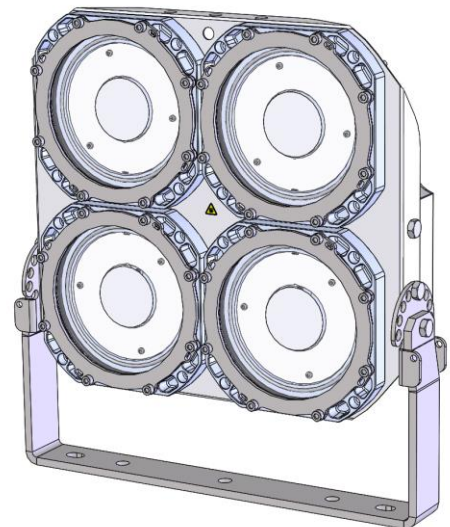
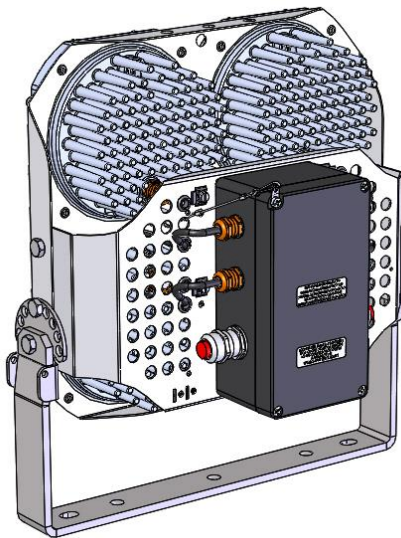


# FX60



**Glamox AS**  
**Birger Hatlebakksveg 15**  
**NO-6415 Molde**  
[www.glamox.com](http://www.glamox.com)

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The operating instructions must be read carefully before using the product.

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**GLAMOX RESERVES THE RIGHT TO MAKE TECHNICAL CHANGES TO THE DESCRIBED PRODUCTS.**

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## Foreword

Dear reader,

These operating instructions will familiarize you with safety compatible operation of the product.

Our product has been designed and constructed according to the state of the art and the recognized rules of safety technology. Nevertheless, hazards can result for persons or objects, as not all hazard points can be avoided if the functionality is to be retained. However, you can prevent accidents on account of these hazards and faults by observing these operating instructions and the notes during familiarization training. You will also be able to utilize the performance of the product to full capacity and avoid unnecessary faults.



**Therefore please read these operating instructions carefully before operating the product. Always observe the notes and information contained in these, especially the safety notes.**

These operating instructions only apply for the products indicated under the order numbers section.

Keep the operating instructions in a safe place after reading through them so that you can consult them again later.

All data, figures and dimensions in these operating instructions are not binding. Claims of any nature cannot be derived from these.

Reprinting and duplication of any type, also in extracts, requires the written approval of the manufacturer.

Conversions or modifications to the product are only permissible after written approval by the manufacturer. Any liability on the part of the manufacturer as well as the warranty shall become null and void in the case of unauthorized conversions.

Only use original spare parts and accessories approved by the manufacturer. Otherwise, design specified properties of the product, functional capacity or safety could be negatively affected. The use of other parts therefore renders the liability for resultant damage null and void.

Contact Customer Service when ordering spare parts or accessories.

Customer Service is also available if service work is necessary.

### Meanings in the operating instructions

The following agreements for the operating instructions are to be made for better understanding:

1.

Two types of special notes are used to emphasize important information.



**This symbol can be found next to all warning notes that are to be indicated in plain text. The text is also printed bold, as here. This type of warning note indicates a hazard for the life and health of persons. Pay particular attention to these notes and proceed with extreme caution in all these cases in order to protect yourself from injuries.**

**Other warning notes are shown framed. These involve the avoidance of material damage. These notes must also be strictly observed.**

2.

Many texts serve a particular purpose. These are marked as follows:

- Lists.
- Instructive text, e.g. a sequence of activities.

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## Safety

### General

Knowledge of the safety notes and the safety regulations is a basic prerequisite for safety-compatible and fault-free operation of the product.

Therefore read through this chapter carefully before operating the product and always observe the notes and warnings listed. The safety notes and warnings found at the corresponding point in the text of the following chapters must also be observed. The manufacturer cannot be made liable if the notes and warnings are not observed.

The operator himself is responsible for compliance with the protection provisions and for the intended use of the product.

To this extent, operation is at the operator's own hazard and risk. The manufacturer is not liable for damage resulting during use of the product, unless this damage is due to grossly negligent or deliberate breach of contract.

The manufacturer cannot foresee every hazard! The warnings contained in these notes and attached to the product might not therefore cover all hazards.

Besides the notes in these operating instructions, the regulations of the legislator must be taken into consideration, in particular safety and accident prevention regulations.

### Intended use

The operational safety of the product is only ensured during proper use. Therefore it may only be used for its intended use. The intended use is only then complied with if the explosion-proof floodlight is mounted on the supplied holder on a freely predefined wall or ceiling.

The assembly must be carried out so it corresponds to the Fire Safety Ordinance. Compliance with all data in these operating instructions is also part of the intended use.



#### **WARNING !**

If the explosion-proof floodlight is used for an application other than that described above, hazardous situations for persons or material damage can occur.

## Improper use

Every use that deviates from that described in the section "Intended use" is deemed to be improper.

Already occurring improper uses are not known to the manufacturer.

## Product observance

Please inform us immediately if malfunctions or problems occur during operation of the explosion-proof floodlight. If applicable, we shall work out a solution to the problem with you and incorporate the insights gained in our further work.

Contact: See chapter on Customer Service.

## Requirements for the personnel



**Unqualified persons are prohibited from working on the explosion-proof floodlight.**

Only employees are permitted to work with the explosion-proof floodlight,

- who have been instructed in working with the explosion-proof floodlight,
- who have been instructed about the associated risks,
- who have been authorized by the operator for this,
- who have read and understood these operating instructions
- who can be expected to reliably perform the tasks assigned to them.

These persons must be carefully chosen by the operator. The area of responsibility and the responsibilities of the relevant persons must be defined precisely by the operator.

## Safety and accident prevention regulations

Besides the safety and accident prevention regulations of the employers' liability insurance associations, the following notes must be observed in order to avoid personal injury and material damage:

- The explosion-proof floodlight must only be operated for its intended use, as otherwise hazardous situations resulting in injuries or death can occur (see section "Intended use").
- The operator is responsible for compliance with the intended use, and in particular for ensuring that only authorized personnel work on the explosion-proof floodlight.
- The national, local and system-specific provisions and requirements must be observed.
- Diverse hazards can result if the working area is not adequately lit. The operator must ensure adequate lighting to prevent these hazards.
- The explosion-proof floodlight may only be used with properly mounted safety and protection devices. These devices may only be removed for maintenance and repair work. After completing this work, the safety and protection devices must be immediately reinstalled. Otherwise there is a major risk of injury.
- Maintenance and repair work may only be carried out by authorized technical personnel after disconnecting the power supply.
- Implementation of the specified maintenance and repair work is part of the intended use of the explosion-proof floodlight, in particular compliance with the maintenance intervals. If you do not carry out this work, fault-free functioning cannot be guaranteed and hazards can result for persons and material objects. We recommend that you keep maintenance logs.
- Before maintenance and repair work, including cleaning work, the power supply must be switched off and, if necessary, disconnected from the power supply network (disconnect from mains). It must also be ensured that nobody else can restore the connection to the power supply. Otherwise there is a risk of injury.
- Observe the safety labels and data on the rating plate, which are located on the explosion-proof floodlight. These may not be removed. If they become unrecognizable or are lost, please contact the Customer Service. Illegible or missing safety labels or rating plates lead to loss of the floodlight's approval,
- The explosion-proof floodlight may not be operated in a defective condition, as considerable risks of injury can result from this. If faults occur, in particular safety-relevant faults, the module must be disconnected from the power supply and repair work initiated.



- Immediately replace cables if crack formations or other damage is visible.
- Only use original spare parts and accessories released by the manufacturer. The liability for the resultant consequences shall expire if other parts are used.

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## Labelling in accordance with Directive 2014/34/EU

Several devices as defined by the Directive 2014/34/EU have been installed in this floodlight. These are the following components or assemblies individually:

- Floodlight module
- Junction box
- Threaded cable gland

These components or assemblies are labeled as defined by the Directive 2014/34/EU. The labeling is attached either directly or in the form of a rating plate and must always be visible and legible. If they become unrecognizable or are lost, please contact Customer Service. Illegible or missing safety labels or rating plates lead to loss of the floodlight's approval.

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## Safety labels

In addition to the safety notes in these operating instructions, labels are attached to the product to warn against certain hazards. The meaning of these safety labels is described in the tables below.



**WARNING – APPROVAL EXPIRES WITHOUT SAFETY LABEL!**  
The removal of the safety labels is prohibited. Safety labels that become detached or are already lost or illegible must be replaced. Please contact Customer Service.



Label	Meaning and position
	<p><b>GENERAL NOTE!</b></p> <p>The operating instructions must be followed for all work on and operation of the module.</p> <p>Position: on the heat sink</p>
	<p><b>OPTICAL RADIATION!</b></p> <p>Looking directly into the LED can entail a hazard for the human eye. According to EN 62471:2008 the floodlight is classified in hazard group 1.</p> <p>Position: on the heat sink</p>

Table 1: Safety labels

## Product description

### General

The explosion-proof floodlight is used for lighting explosive rooms of zones 1 and 2 as per EN 60079.

The development, production and testing is carried out as per EN 29001 (ISO 9001).

The floodlight corresponds to the regulations of the maritime approval authorities as well as the provisions of VDE and IEC / EN.

Furthermore, the standards applicable for this explosion-proof operating equipment for gas explosive areas are fulfilled:

- EN 60079-0:2018 (IEC 60079-0:2017)
- EN 60079-1:2014 (IEC 60079-1:2014)
- EN 60079-7:2015/A1:2018 (IEC 60079 7:2017)
- EN 60079-28:2015 (IEC 60079-28:2015)

This chapter aims to illustrate the structure and function of the explosion-proof floodlight. Individual components are described in the following sections for this.

## Main components

- Holder and supporting components  
Material: Seawater-resistant stainless steel
- Housing LED module  
Material: Seawater-resistant aluminium cast alloy, anodized
- Lamp cover:  
Material: Thermally hardened soda-lime glass
- Lamp:  
LED
- Operating device:  
Own developed operating device
- Threaded cable glands:  
Approved threaded cable glands of ignition protection type Ex e or Ex d
- Connection terminals:  
Approved connection terminals of ignition protection type Ex e
- Junction box:  
Approved junction box of ignition protection type Ex e  
Material: Plastic or Aluminum die cast alloy

## Operation

The input voltage must be disturbance-free within the indicated tolerances for disturbance-free line operation. To eliminate disturbance effects, no other consumers may be connected to the power supply line for the floodlight and operated. We also recommend 3-phase operation.

The floodlight, in particular heat sink and lamp covers of the modules, must always be kept in a clean condition.

Corresponding to the applicable standards, a non-resettable fuse must be used to prevent the maximum permissible surface temperature in the event of a fault. To prevent impermissible heating e.g. in case of direct sunlight, a two-stage temperature control is provided, which reduces the power upon reaching fixed defined temperatures. The switching values in respect to an optimum service life of the LED are defined. The power is increased again if the temperature drops.

Temperature	Power
Rise to 75°C	50%
Rise to 85°C	25%
Drop to 80°C	50%
Drop to 70°C	100%

Table 2: Temperature control

## Installation



### **WARNING – DO NOT OPEN WHEN LIVE!**

Life-threatening electrical voltages are present at the electrical components of the device.



### **WARNING – OPTICAL RADIATION!**

Looking directly into the LED can entail a hazard for the human eye. According to EN 62471:2008 the floodlight is classified in hazard group 1.

## Permissible installation positions

As a rule, the installation of the floodlight is only permissible in locations where the effects of additional heat or cold sources can be excluded. The assembly is only permissible in those positions in which the individual modules are aligned as shown in Figure 1.

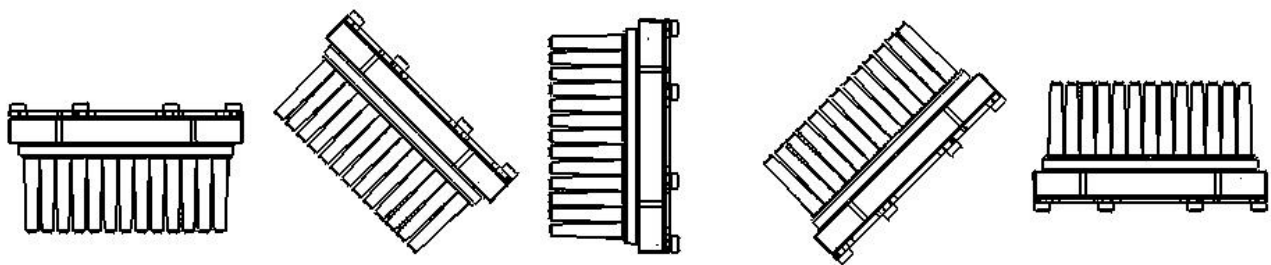


Figure 1: Permissible installation positions

## Mechanical attachment

The vibration-proof attachment has to be done by two bolts M12 with washer acc. to ISO 7093 – 12 under the nut and accordingly screw.

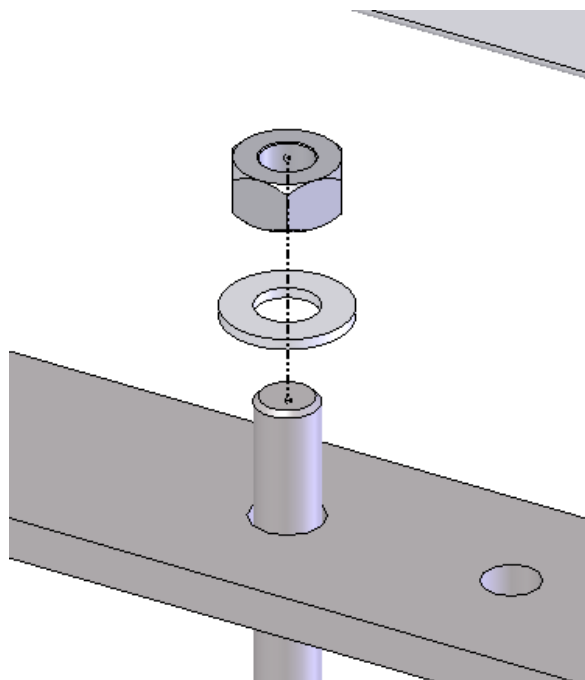
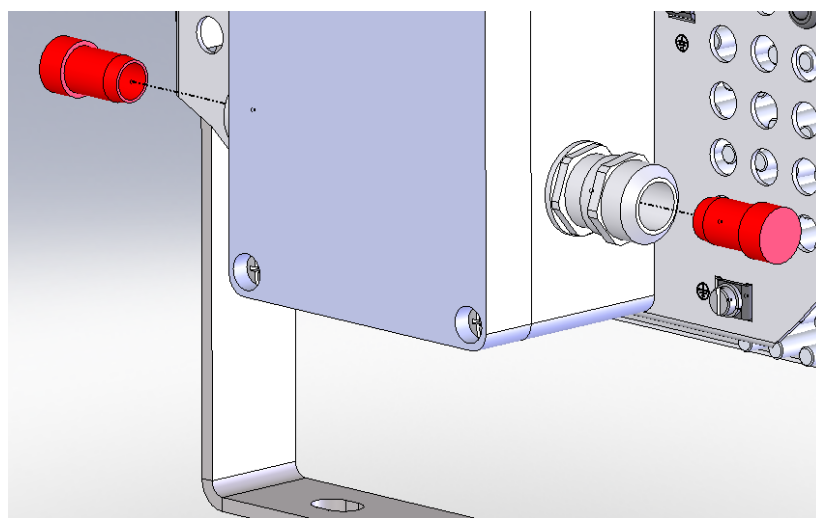


Figure 2: Mechanical attachment

## Threaded cable glands

Every floodlight is equipped with two threaded cable glands to introduce the installation lines. The permissible line diameter has to be conform to the specification of the manufacturer. The operation instructions of the line and cable gland is included in delivery of the floodlight. Each of these threaded cable glands is closed with a blind plug at the factory. Threaded cable glands into which no lines are introduced must be closed with the blind plug provided. At ambient temperatures  $t_a$  greater than  $50^{\circ}\text{C}$ , a connecting cable and cable gland with an application temperature of at least  $85^{\circ}\text{C}$  must be used.



*Figure 3: Threaded cable glands for installation*

The line and cable glands have to be assembled according to the specification of the manufacturer. The operation instructions of the line and cable gland is included in delivery of the floodlight.



The additional use of shrink tubing to seal the cable glands can lead to leaks due to unsuitable heat input (maximum permissible material temperatures are exceeded). A guarantee of protection class IPx6 / IP X7 can no longer be guaranteed. The use of heat shrink tubing is prohibited for Ex products.

## Floodlight connection

Disconnect the power supply line and secure against unauthorized reactivation before beginning the work. The connection terminal is suitable for through-wiring.

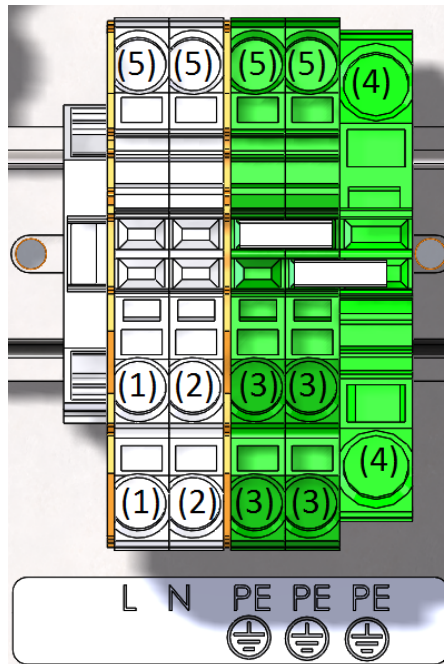


Figure 4: Connection terminal FX601 . . . . .

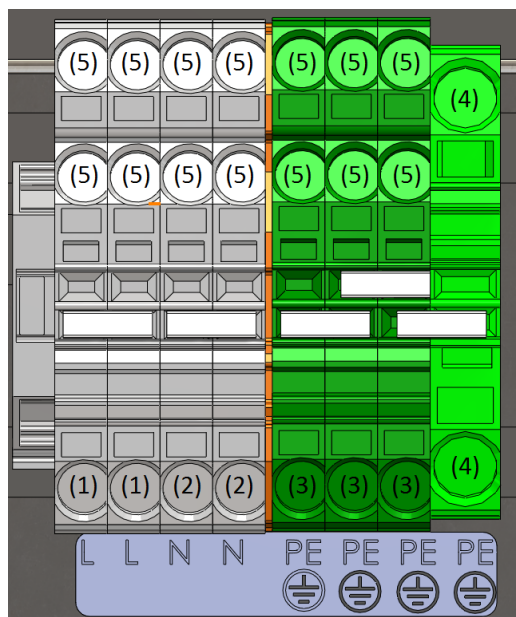


Figure 5: Connection terminal FX602 . . . . . to FX604 . . . . .

In the case of a star network, the floodlight must be connected to the power supply as follows:

- L = Phase - Terminal points (1)
- N = Neutral conductor - Terminal points (2)
- PE = Protective earth conductor - Terminal points (3)

In the case of a delta network, the floodlight must be connected to the power supply as follows:

- L1 = Phase - Terminal points (1)
- L2 = Neutral conductor - Terminal points (2)
- PE = Protective earth conductor - Terminal points (3)

Max. 1 conductor can be connected at the terminal points (1) to (3). The connection terminal is suitable for the following line cross sections:

- Flexible lines without wire end sleeve 0.5 to 6.0mm<sup>2</sup>
- Rigid lines 0.5 to 6.0mm<sup>2</sup>

The following terminal points are also available for use, if required:

- PE = Protective earth conductor - Terminal points (4)

Max. 1 conductor can be connected at the terminal points (4). The connection terminal is suitable for the following line cross sections:

- Flexible lines without wire end sleeve 0.5 to 10.0mm<sup>2</sup>
- Rigid lines 0.5 to 10.0mm<sup>2</sup>

The modules are connected at the terminal points (5) or the terminal points remain free.



## Handling the connection terminal

Single-wire lines can be contacted without using a tool.



*Figure 6: Contacting without using a tool*

Multiple wire lines or lines with small wire cross sections can be contacted using a screwdriver.



*Figure 7: Contacting using a screwdriver*

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## External potential conductor

A connection option for a potential equalization conductor via a screw terminal connection is provided for conducting away an electrical potential difference between the floodlight and supporting element (mount, wall or similar). The cross section of the connected line must at least correspond to the cross section of the phase conductor of the connecting line. Lines with cross section of up to 6mm<sup>2</sup> can be connected at the terminal point.

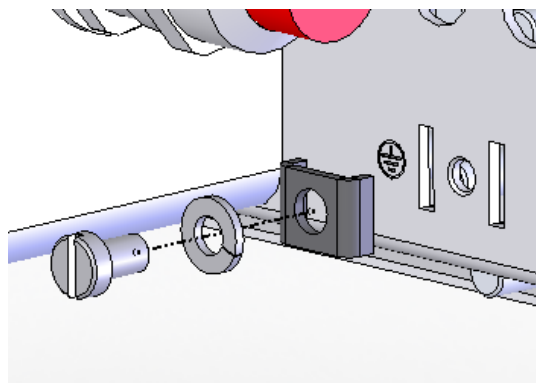


Figure 8: External potential conductor connection

## In-line-installation

This floodlight is configured with two cable entries and connection terminals sufficient for through-wiring. Therefore in-line-installation is possible. Cables and contact resistances cause heat inside the connection box. To hold the temperature within the permissible temperature range the current has to be limited. The value of the current can be taken from the table. Please pay attention to national regulations and to the technical data of the used connection cable. At ambient temperatures  $t_a$  greater than 50°C, a connecting cable and cable gland with an application temperature of at least 85°C must be used.

cross-section of connection cable [mm <sup>2</sup> ]	max. current of connection cable [A]
6,0	25
4,0	20
2,5	16
1,5	10

Table 3: Max. current of connection cable

## Maintenance and Repair

### Special Safety Regulations



Compliance with the maintenance and repair work described in this chapter is part of the intended use of the floodlight.

Maintenance and repair work may only be carried out by trained and qualified persons. This applies in particular for maintenance and repair work on the electrical system.

Before maintenance and repair work (this also includes cleaning work), completely disconnect the floodlight from the power supply and make sure that no third party can restore the power supply.

After maintenance and repair work, immediately mount or close all safety and protection facilities again.

Also read the notes in the Safety chapter before maintenance.

### Cleaning

Special care measures are not necessary as a rule. The housing and lamp cover should occasionally be cleaned with a damp cloth.



#### **WARNING – CLEANING ONLY WITHOUT SOLVENT!**

Risk of explosion. Cleaning agents containing solvents will damage the seals. Cleaning work may only be carried out using water and possibly solvent-free household cleaners.

### Maintenance

This product is low maintenance in design. The tests listed below must be conducted regularly in order to ensure safety permanently. The maintenance intervals depend on the ambient conditions and are to be defined by the system operator.

	<b>Test for</b>	<b>Measure</b>
Lamp cover	Damage and cracks	Replace module
Threaded cable gland	Porosity of the sealing ring at the cable	Replace threaded cable gland
Heat sink of the individual modules	Impurities, foreign bodies	Cleaning
Safety labels, rating plates	Legibility and adhesion	Replace labels
Ex labelling	Legibility	Contact Customer Service

*Table 4: Maintenance work*

## Troubleshooting

Please consult the table below if the product malfunctions. If this does not provide any remedy, contact the Customer Service.

Malfunctions are often caused by a defective connection or maintenance. The data in this section must be strictly observed.

<b>Malfunction</b>	<b>Possible cause</b>	<b>Measures</b>
Floodlight does not light up.	Main power supply (or main fuse) has failed.	Switch on main power supply (or main fuse).
Floodlight or individual modules do not light up.	Temperature fuse in the module has triggered due to impermissibly high heating or power supply unit integrated in the module defective.	Replace floodlight or individual modules.
Brightness of individual or all modules reduced.	Heating through external heat source or direct sunlight.	Remove external heat source or prevent this from becoming effective.

*Table 5: Troubleshooting*

## Customer Service

The Customer Service department of Glamox AS will be pleased to help you when ordering spare parts, for maintenance and repair work as well as in case of problems and questions.

## Technical Data

Lamp:	LED	
Power:	FX601 . . . . .	max. 40 W
	FX602 . . . . .	max. 80 W
	FX603 . . . . .	max. 120 W
	FX604 . . . . .	max. 160 W
Power factor:	> 0.9	
Power consumption:	FX6010 . . . . .	max. 0,18 A
	FX6011 . . . . .	max. 0,35 A
	FX6012 . . . . .	max. 0,16 A
	FX6013 . . . . .	max. 0,35 A
	FX6020 . . . . .	max. 0,36 A
	FX6021 . . . . .	max. 0,70 A
	FX6022 . . . . .	max. 0,32 A
	FX6023 . . . . .	max. 0,70 A
	FX6030 . . . . .	max. 0,54 A
	FX6031 . . . . .	max. 1,00 A
	FX6032 . . . . .	max. 0,48 A
	FX6033 . . . . .	max. 1,00 A
	FX6040 . . . . .	max. 0,72 A
	FX6041 . . . . .	max. 1,35 A
FX6042 . . . . .	max. 0,64 A	
FX6043 . . . . .	max. 1,35 A	

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de	Voltage:	FX60.0 . . . .	230 V ±10%	50/60 Hz
en		FX60.1 . . . .	120 V ±10%	50/60 Hz
fr		FX60.2 . . . .	254 V ±10%	50/60 Hz
tr		FX60.3 . . . .	115 V ±10%	50/60 Hz
el	Protection type:	IP 67 (EN 60529)		
es	Protection class:	I (as per EN 60598)		
pt	UV resistant:	Yes		
da	Seawater resistant:	Yes		
nl	Vibration tested:	Yes		
no	Ambient temperature LED white:	- 50°C ... + 55°C		
sv	Ambient temperature LED colour:	- 50°C ... + 50°C		
pl	Weight:	FX601 . . . . .	6,2 kg	
cs		FX602 . . . . .	12,0 kg	
hu		FX603 . . . . .	15,7 kg	
		FX604 . . . . .	18,5 kg	

## Ex marking

der LED-Module

⊕ Ex II 2 G Ex db op is IIC T4 Gb  
IBExU 13 ATEX 1025

Ex db op is IIC T4 Gb  
IECEX IBE 13.0025

der LED-Floodlight

⊕ Ex II 2 G Ex db eb op is IIC T4 Gb  
IBExU 14 ATEX 1041 X

Ex db eb op is IIC T4 Gb  
IECEX IBE 14.0016X

## Order numbers

Type	Voltage	Beam width		
		narrow	medium	wide
	230 V	FX60100XXX	FX60101XXX	FX60102XXX
	120 V	FX60110XXX	FX60111XXX	FX60112XXX
	254 V	FX60120XXX	FX60121XXX	FX60122XXX
	115 V	FX60130XXX	FX60131XXX	FX60132XXX
	230 V	FX60200XXX	FX60201XXX	FX60202XXX
	120 V	FX60210XXX	FX60211XXX	FX60212XXX
	254 V	FX60220XXX	FX60221XXX	FX60222XXX
	115 V	FX60230XXX	FX60231XXX	FX60232XXX
	230 V	FX60300XXX	FX60301XXX	FX60302XXX
	120 V	FX60310XXX	FX60311XXX	FX60312XXX
	254 V	FX60320XXX	FX60321XXX	FX60322XXX
	115 V	FX60330XXX	FX60331XXX	FX60332XXX
	230 V	FX60400XXX	FX60401XXX	FX60402XXX
	120 V	FX60410XXX	FX60411XXX	FX60412XXX
	254 V	FX60420XXX	FX60421XXX	FX60422XXX
	115 V	FX60430XXX	FX60431XXX	FX60432XXX

Table 6: Order numbers (XXX = current consecutive number)

## Dimensions

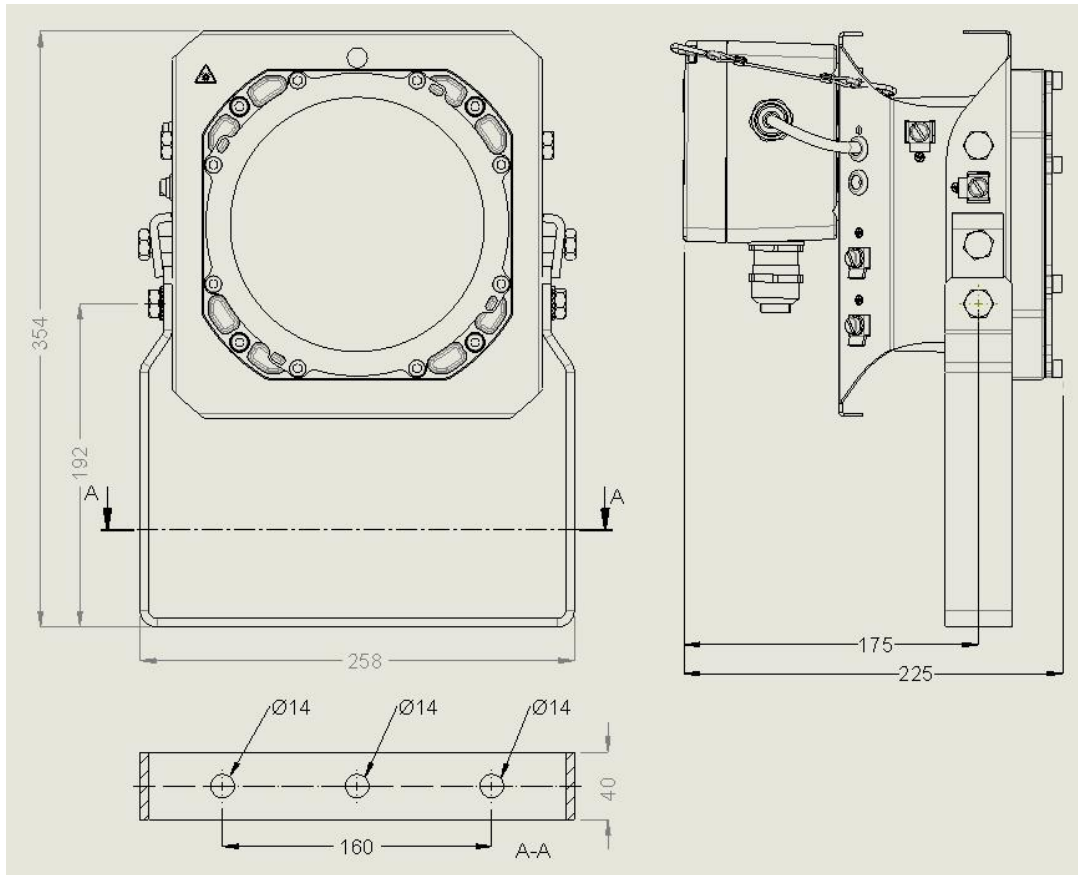


Figure 9: Explosion-proof floodlight type FX601 . . . . .

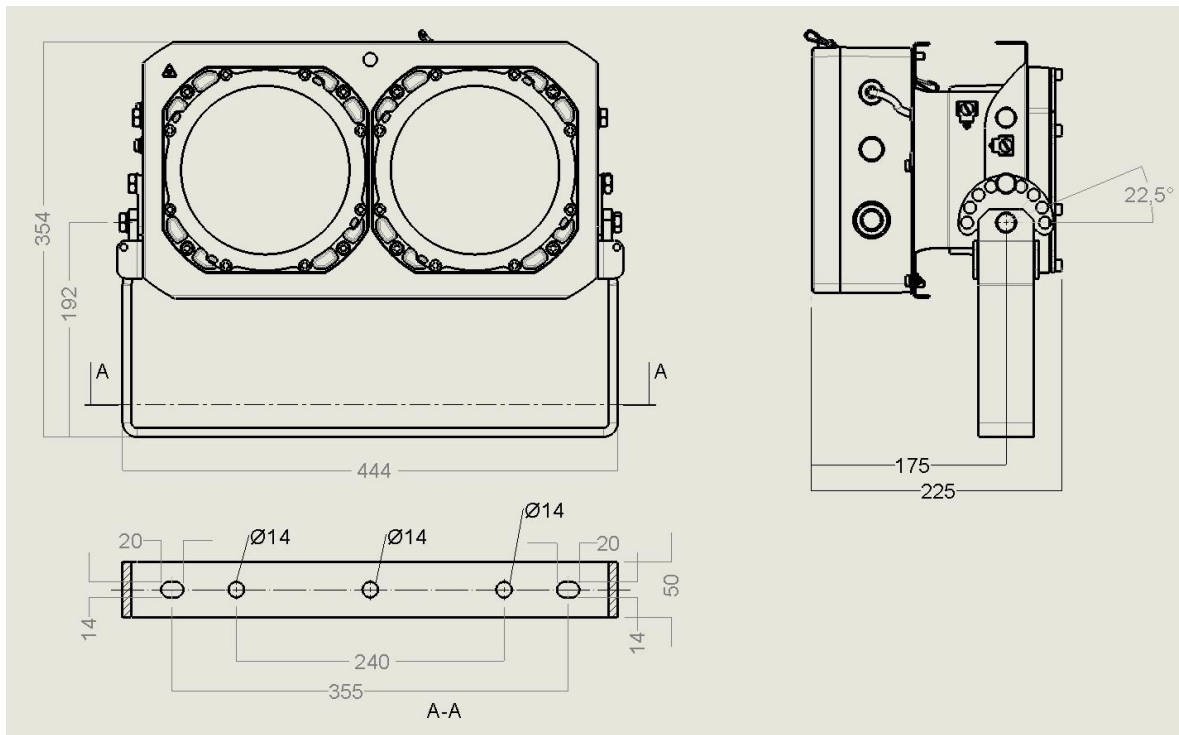


Figure 10: Explosion-proof floodlight type FX602 . . . . .



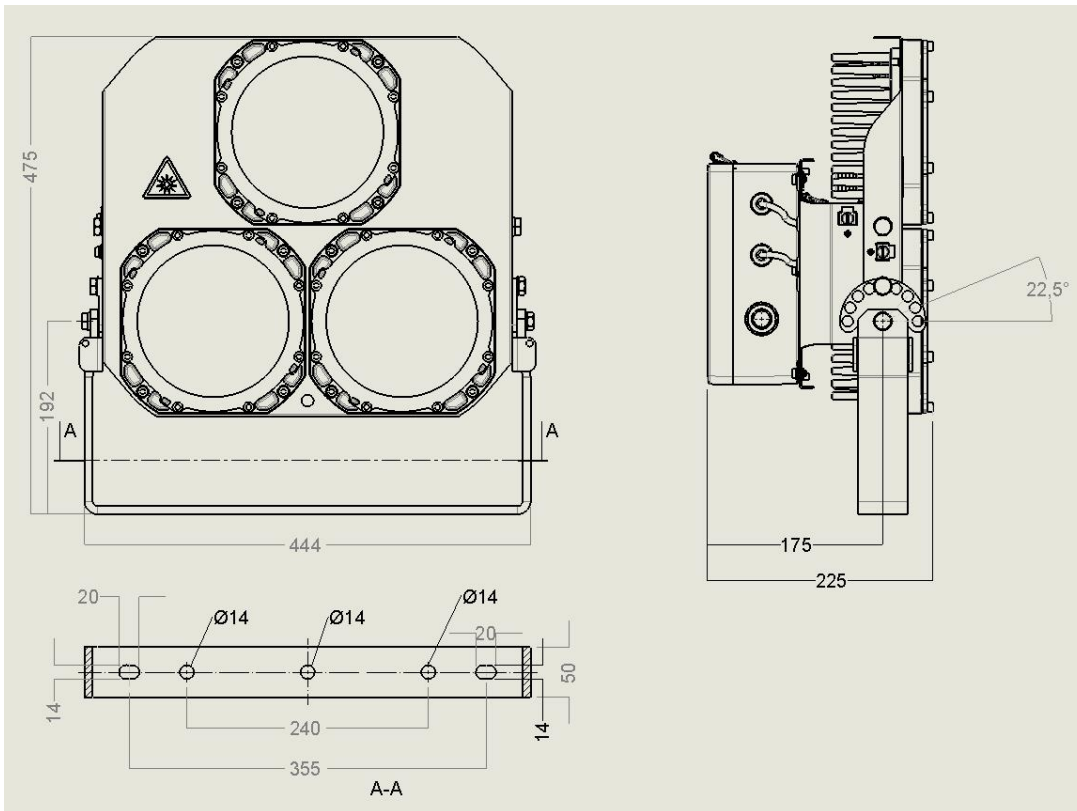


Figure 11: Explosion-proof floodlight type FX603 . . . . .

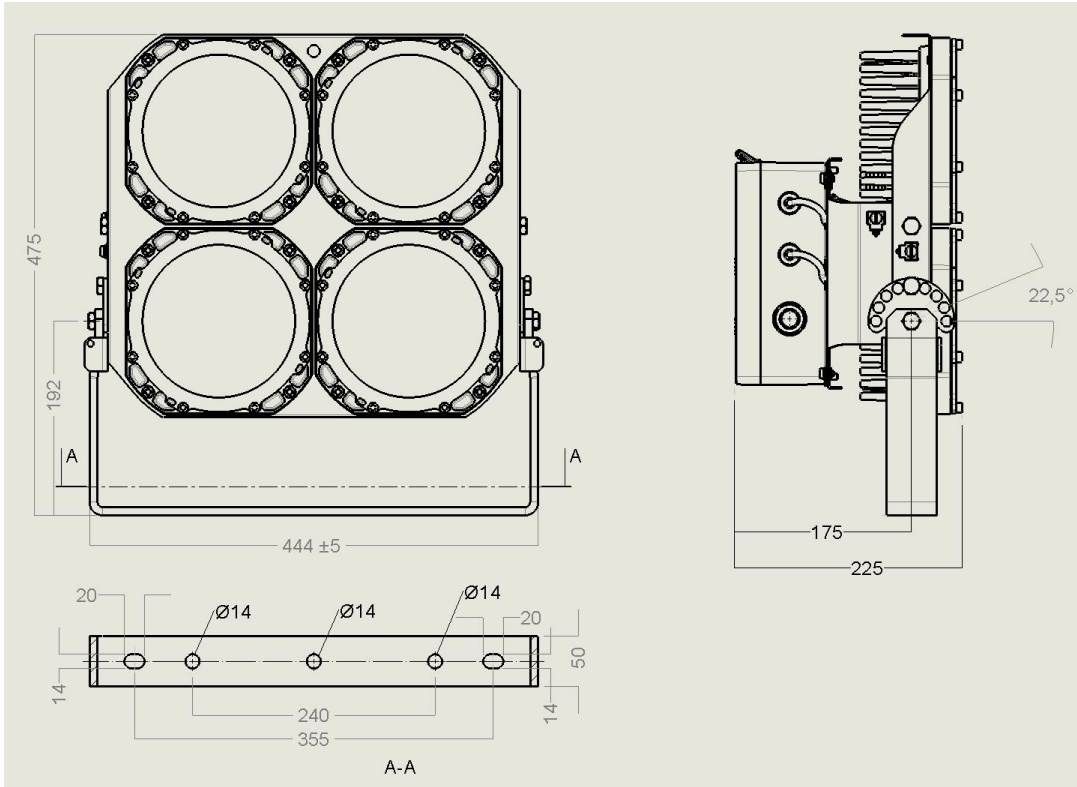


Figure 12: Explosion-proof floodlight type FX604 . . . . .

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## Spare part numbers

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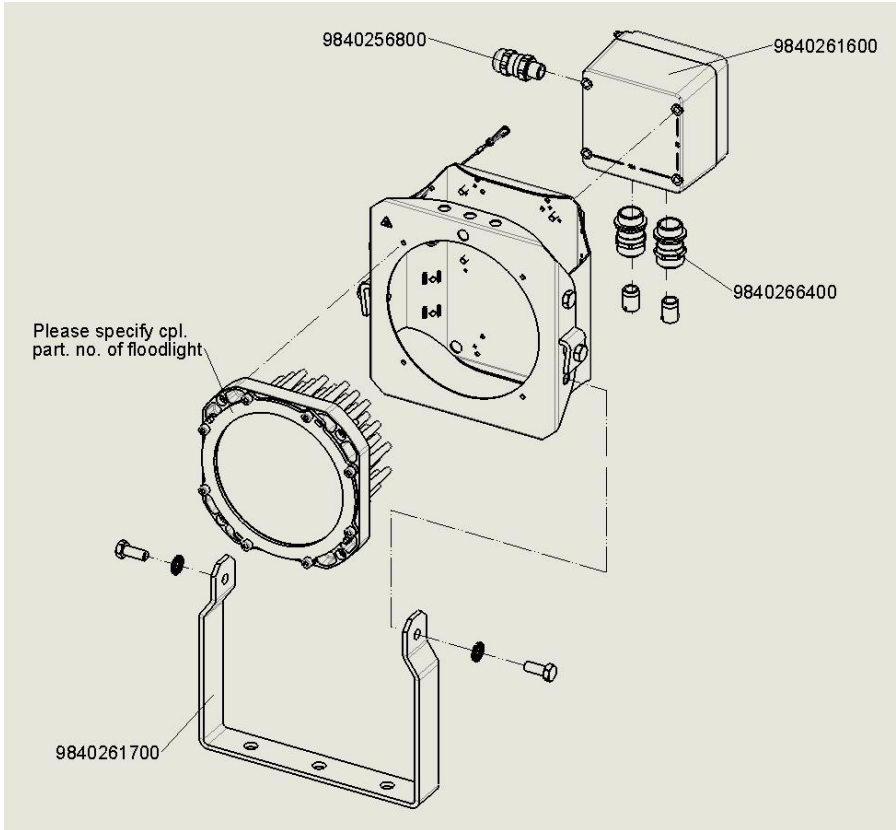


Figure 13: Spare part numbers for floodlight type FX601 . . . . .

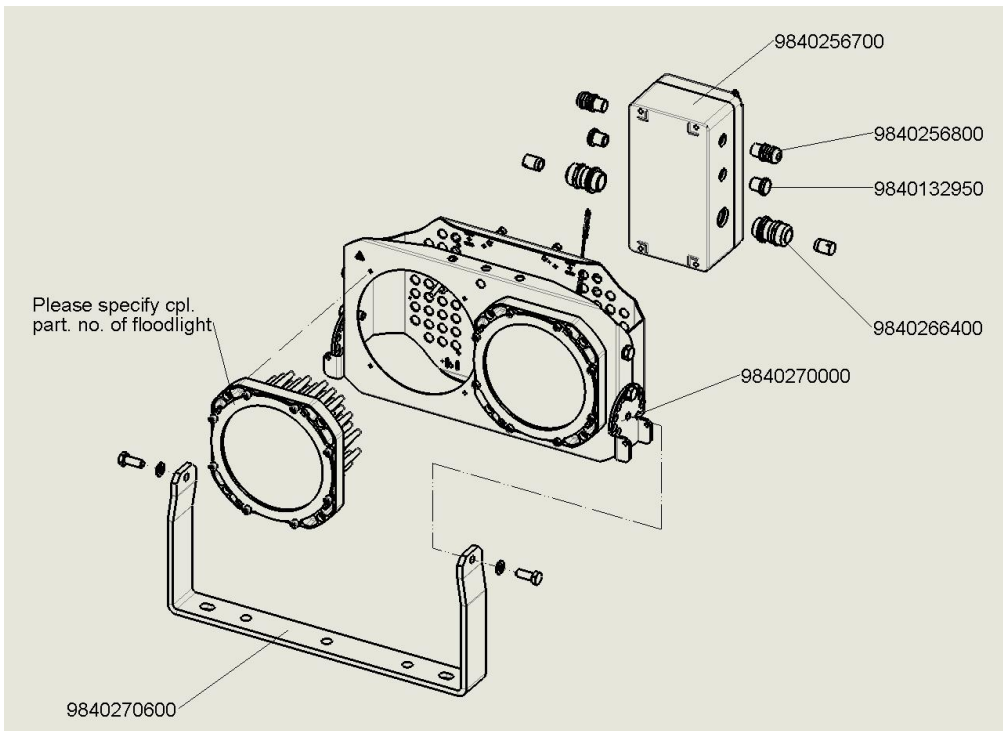


Figure 14: Spare part numbers for floodlight type FX602 . . . . .

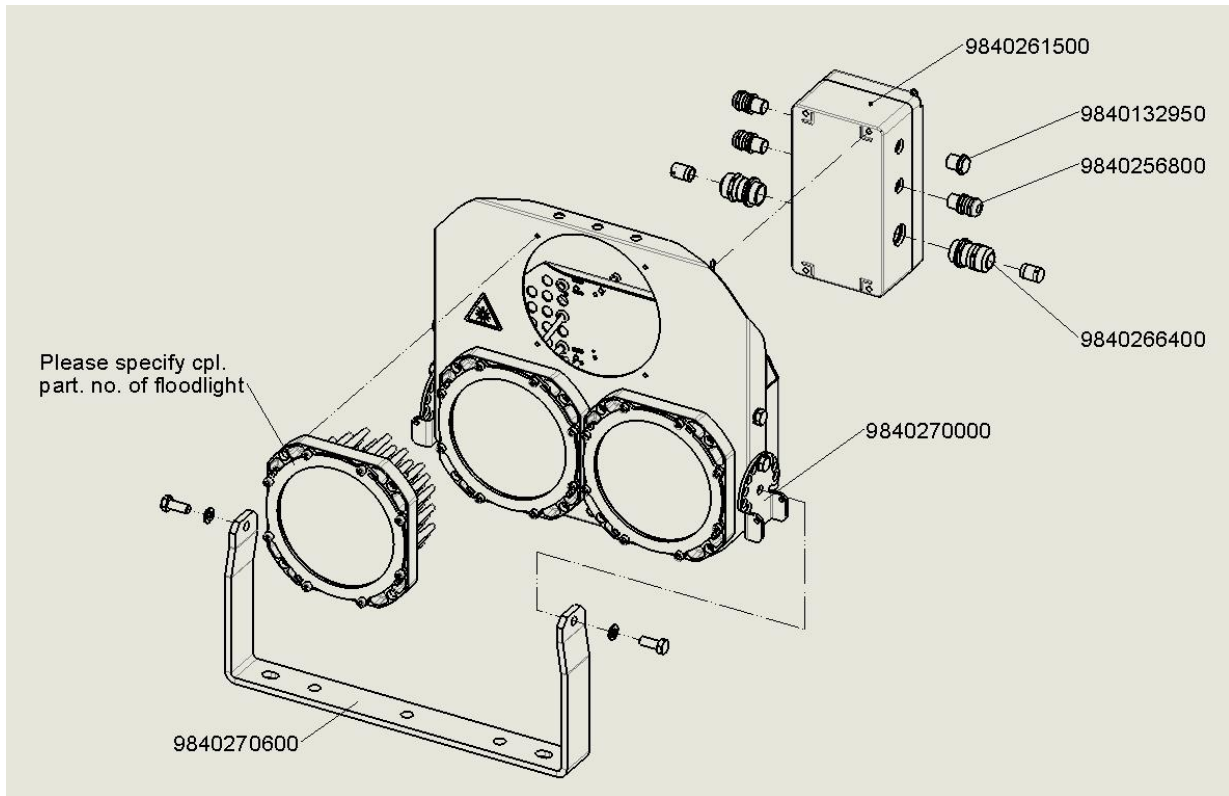


Figure 15: Spare part numbers for floodlight type FX603 . . . . .

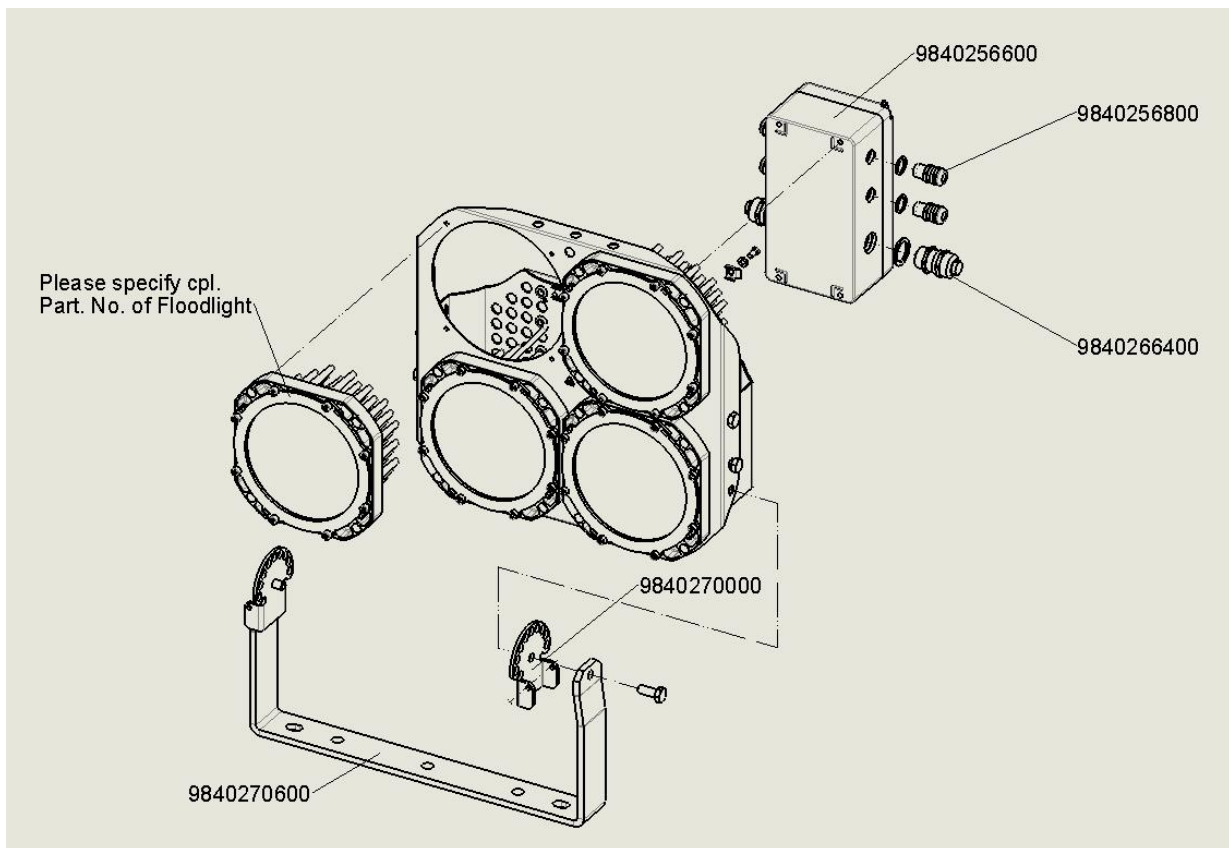


Figure 16: Spare part numbers for floodlight type FX604 . . . . .

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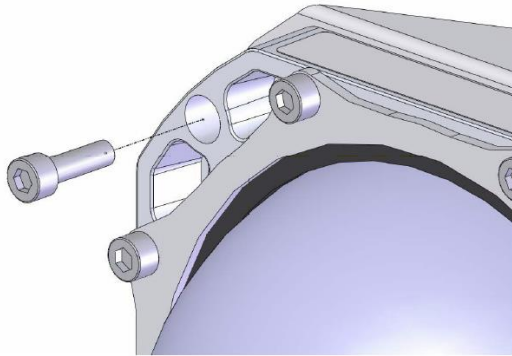
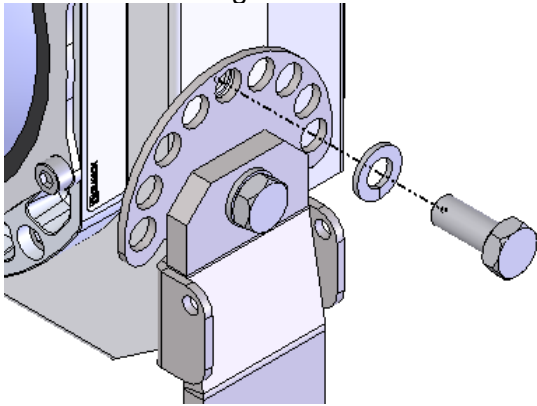
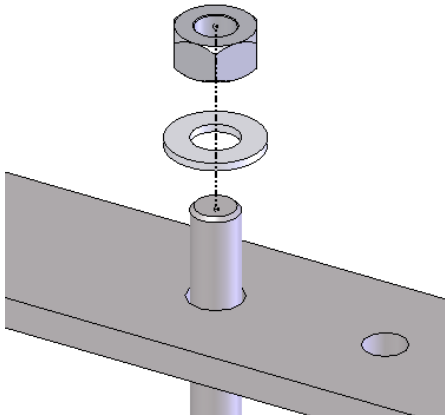
sv

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cs

hu

## Tightening torques

	Size	Tightening torque
<p>Module</p> 	M6	7 Nm
<p>Floodlight on holder</p> 	M10	35 Nm
<p>Floodlight</p> 	M12	60 Nm

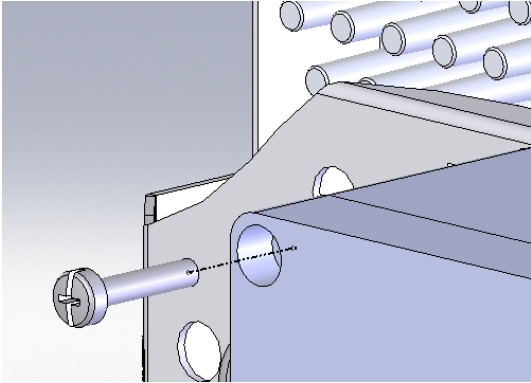
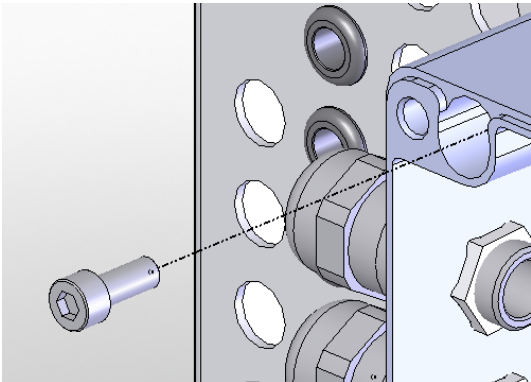
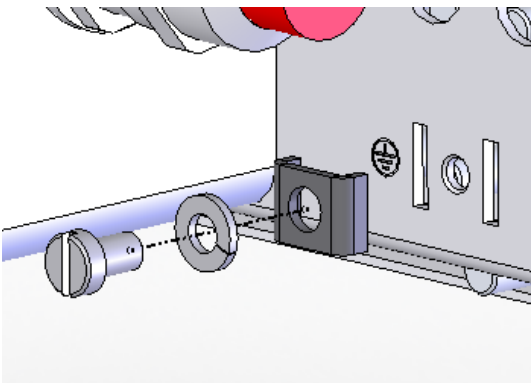
	Size	Tightening torque
<p>Cover for junction box</p> 	M6	2 Nm
<p>Junction box</p> 	M6 M25x1.5	7 Nm Cable Gland: 20Nm Cap Nut: 20Nm
<p>Potential conductor</p> 	M6	2.5 Nm

Table 7: Tightening torques for fastening screws

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