



## User Instruction & Installation Manual

### L230 LED 78 Watt Searchlight



#### Product Reference Number:

A6138-5K – 240v DECK

A6144-5K – 24v DECK

#### *Manufacturer's details:*

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#### *Distributor details:*

Manual Part Number: C27509

Issue: 1 6.3.17

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## 1 - Introduction

**It is imperative that this manual is read carefully and understood before installing your equipment. For your future reference please keep this manual in a safe place.**

Thank you for specifying a product from the Francis Searchlights range. All Francis products are designed to give complete customer satisfaction and are manufactured to the highest engineering standards in order to ensure optimum performance and service life.

The Francis LED range combines features proven over many years service in the most hazardous conditions in both marine and land installations.

In order to prolong the life and performance of your product, we recommend that you only specify Francis Searchlights spare parts. This will also ensure that any warranties on your equipment will not be invalidated. Information on spares ordering and parts is provided in this manual.

Should you ever need to contact Francis Searchlights Ltd. regarding your equipment, please quote the Product Serial Number at all times.

## 2 - Safety Precautions

The following instructions must be adhered to, in order to ensure a safe working environment and the safety of the user.

**Note: When unpacking or manoeuvring the searchlight into its fixing position, suitable lifting points must be used in order to prevent damage to the equipment or personal injury.**

- The high luminance of the LED can cause severe damage to the eye if viewed directly. ALWAYS wear suitable protective goggles when viewing the LED;
- Searchlights get hot. Never touch the unit when lit and always allow 15 to 20 minutes for cooling down after turning the searchlight off;
- Never place anything on or cover the searchlight when in use;
- Ensure the LED has cooled sufficiently before removal;
- Due to the vast range of LED modules available it may appear possible that more powerful LED's can be used in the equipment than for which it was designed. Even when the unit will physically accept a higher wattage LED, this substitution is not recommended and is dangerous. This action will also void any warranties on the equipment.

## 3 – Technical Information

This product has been designed to operate in accordance with the product specification.

The L230 LED 78w searchlight has the following features:

- All marine grade materials and fixings;
- Powder coated finish;
- Horizontal rotation 450°;
- Vertical movement  $\pm 40^\circ$ ;
- Instant re-strike. No cooling down time required;
- Economical 50,000 hour LED life;
- Toughened front glass;
- Luminous flux 6900;
- Colour temperature 5000K;
- Searchlight Weight 8Kg;
- Junction box (LED Driver) Weight 2.5Kg;
- Control gear protected to IP66;

The searchlight also performs to the following optical data:

- Supply voltage – 100/240v or 24v;
- Range – 690 metres at 1 Lux;
- Divergence – 11°;
- Temperature range: -40 to +50

In order that the searchlight operates correctly it is imperative that competent personnel are responsible for the installation, operation and servicing of this equipment. Failure to adhere to this advice may cause premature failure or incorrect operation of the searchlight, which may damage the equipment or cause personal injury.

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## 4 - Unpacking and Installation Instructions

The following instructions should be read and fully understood prior to installing the equipment to ensure that the correct procedures are followed and all safety precautions are observed.

**Note: If the equipment has been in storage for a considerable amount of time, it is advisable to conduct a routine maintenance check on all parts before installation.**

### **Safety Precautions**

This equipment should not be connected to an electrical supply before being installed. Installation procedures should be adhered to in order to ensure a safe working environment and reduce the risk of damage or personal injury.

### **Preparing the Mounting Position**

Mark out and drill the fixing holes through the deck. If anti-vibration mounts are to be fitted, the fixing holes for the mounts should also be marked out and drilled. Prior to manoeuvring the searchlight into its' fixing position, the AV mounts should be fitted to the base. When in the desired position, bolt the searchlight firmly down.

## 5 - Electrical Installation

For safety purposes, only competent personnel should perform the electrical installation. All equipment should be installed to current Electrical Regulations and Standards.

In order to obtain the maximum light output from the searchlight, it is essential that the full operating voltage of the LED fitted be applied to the LED contacts.

### **Method of Electrical Connection**

- 1) Disconnect the supply before working on the electrical system;
- 2) The searchlight must be connected to a fused electrical supply, using suitably sized cable;
- 3) If the searchlight is located a considerable distance from the supply, provision must be made in the cable size in order to overcome the voltage drop.
- 4) Whenever possible cable terminations should be made below deck and with approved terminal devices;
- 5) If a spare auxiliary fuse or circuit breaker is not available, one of the correct type and rating should be fitted and connected to a positive supply. It is advisable to locate a bus bar or main connection and avoid any direct connection to the supply:
- 6) For 110/220v AC products, the following colour coding system should be used for the customer supply cable:

Brown	- Live
Blue	- Negative
Green/Yellow	- Earth

## **Installation Guideline**

A typical installation and connection routine for the L230 LED 110/240v searchlight is as follows:

Referring to wiring diagram C27105, a supply is fed into the junction box, which then provides a common feed to the searchlight.

Cables required to be connected by the customer: -

Supply cable to the junction box.

A typical installation and connection routine for the L230 LED 24v searchlight is as follows:

Referring to wiring diagram C27106, a supply is fed to the inverter, which then provides a common feed to the searchlight.

Cables required to be connected by the customer: -

Supply cable to the inverter and to the junction box.

## **6 - Operating Instructions**

This equipment is designed for use out of doors, in free air. Never place anything on, or cover the searchlight when in use as this may present a hazard.

The beam of the searchlight cannot be adjusted.

Using the template provided mark out and drill the fixing holes through the deck or cabin roof. In case of cabin control models, a centre hole is also required to allow the mechanism to pass through.

On an uneven surface when bolting down the searchlight it is necessary to use a suitable sealant, such as silicone, in order to ensure weather proofed joint.

**This product should not be used for any purpose other than for which it was designed. Any modifications to the product should not be undertaken without consulting the manufacturer.**

## **7- Fault Finding**

All fault finding must be conducted by a competent person or qualified Electrical Engineer.

### **Failure of LED to light.**

In the event of the L.E.D failing to light the following steps should be taken:

- 1) Check that the mains supply is connected to the input of the LED driver and check all connections as per the wiring diagram. On operation if the LED does not light, switch off mains supply and check all fuses;
- 2) Check output from the LED driver 48 volts no load 36.5 volts with load.

## 8 - Maintenance and Servicing

In order to prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- Maintenance checks should be conducted before every voyage or at least every three months;
- Before checking, disconnect the equipment from the supply;
- Visually inspect the condition of the equipment;
- Any major or minor structural damage should be rectified immediately in order to reduce sympathetic wear;
- After inspection it may be necessary to clean the inside of the searchlight. The following procedure should be adhered to:
  - Remove the front bezel;
  - Clean the front glass inside and out using a proprietary glass cleaner;
  - Clean the reflector if required;
- It is advisable to check all seals and gaskets for signs of degradation. Renew if necessary;
- Upon completing all maintenance requirements the searchlight should be tested for full working order (approximately 20 minutes).
- Every six months the external movement mechanisms i.e. lockwheels, elevation and pan mechanisms, should be lightly lubricated.

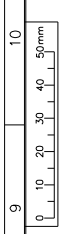
**If in any doubt as to the correct servicing procedures to adopt please contact your distributor/agent or the manufacturer who will be able to advise the best course of action for your product.**

## 9 - Wiring Diagrams & General Assemblies

<b>Drawing Number</b>	<b>Description</b>
A6138/A6144	L230 LED 78w Deck GA
C27105	Wiring Diagram 100-240v
C27106	Wiring Diagram 24v
C27095	Junction Box Assembly

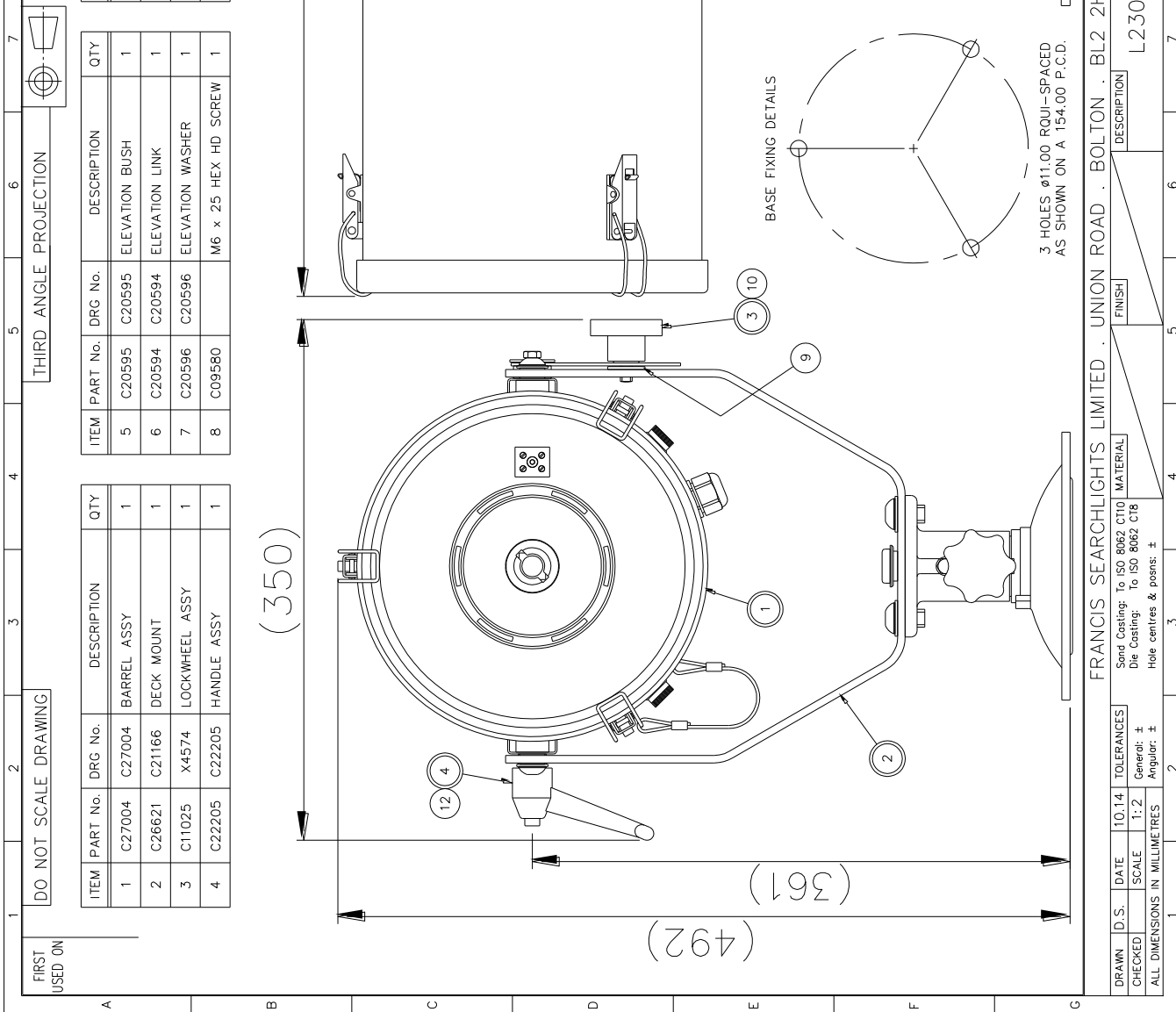
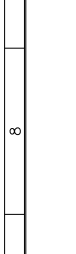


ISS No	1	MODIFICATION DETAILS	DATE 10.14 U.S.
ISS No	2	AS FIRST DRAWN	10.14 U.S.
ISS No	2	HEATSINK MOD	10.14 U.S.



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
5	C20595	C20595	ELEVATION BUSH	1
6	C20594	C20594	ELEVATION LINK	1
7	C20596	C20596	ELEVATION WASHER	1
8	C09580		M6 x 25 HEX HD SCREW	1

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
9	C25715		M8 x 25 NYLON WASHER	1
10	C06999		M8 PLAIN WASHER	1
11	C10554		M8 S/C SPRING WASHER	1
12	C13853		LOCITITE	A/R



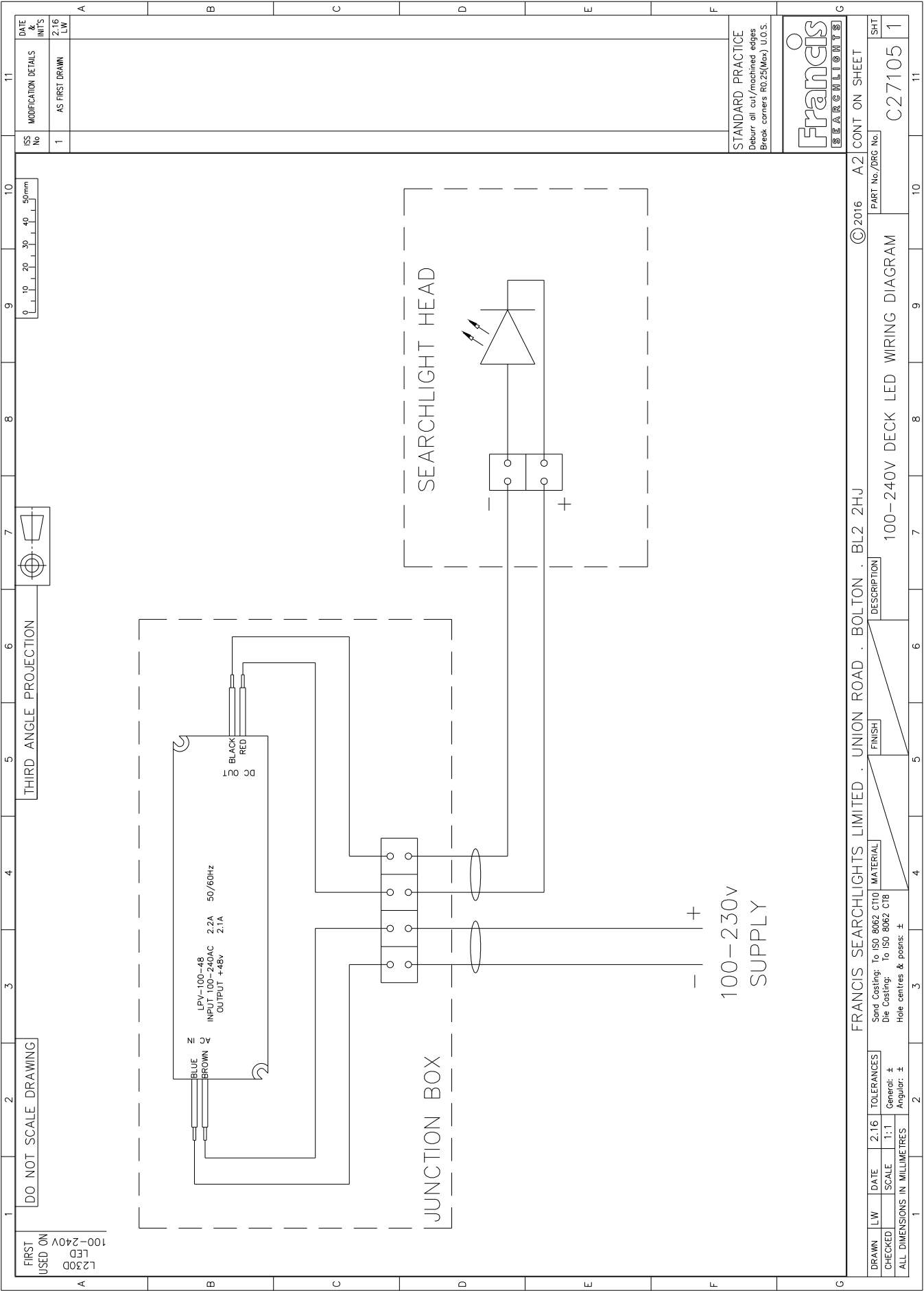
STANDARD PRACTICE  
Deburr all cut/machined edges  
Break corners R0.25(Max) U.O.S.

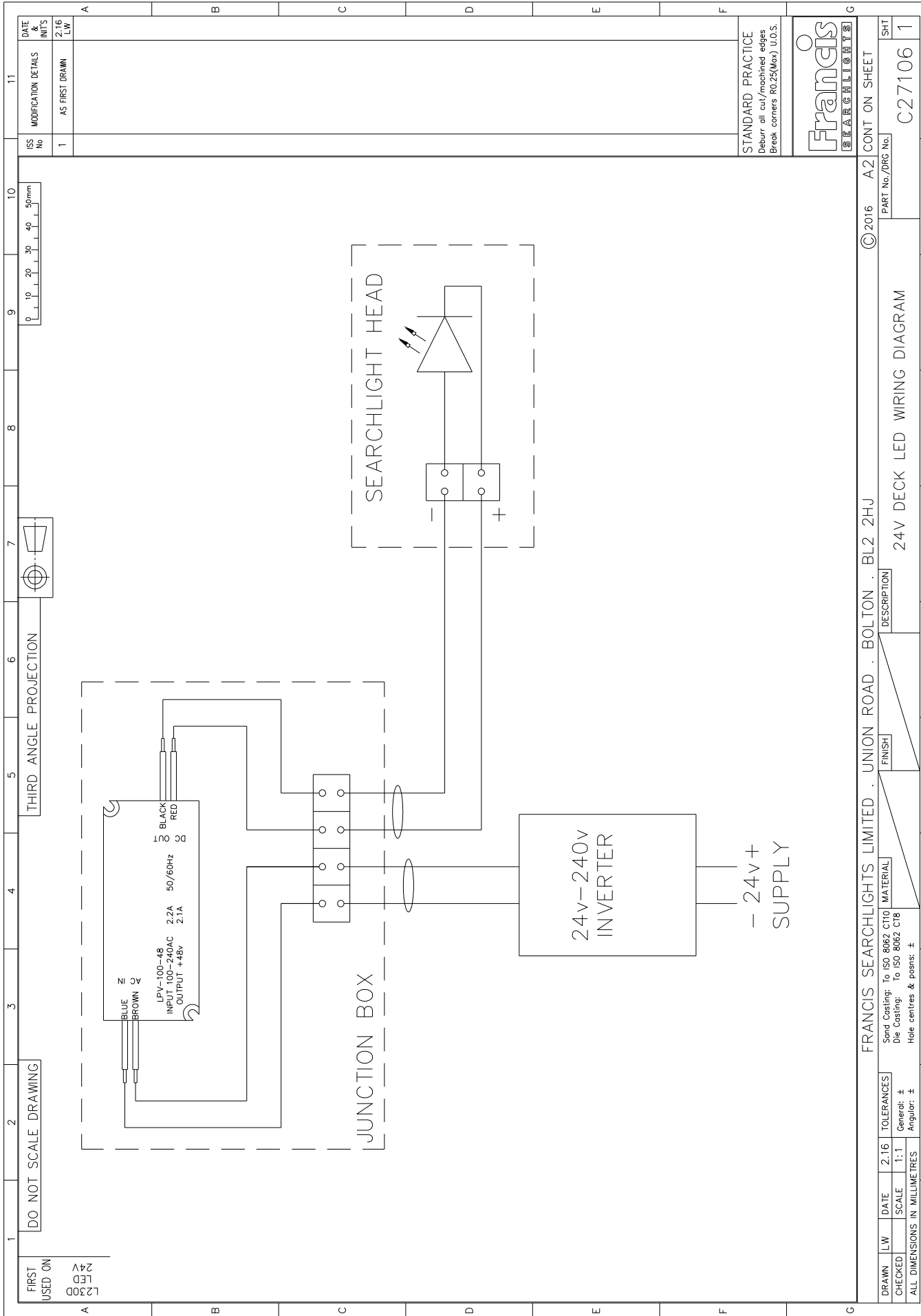


©2014 A2 CONT ON SHEET  
PART No./DRG No. A6138  
SHT 1

FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HU  
DESCRIPTION L230 LED 78W GA (240V & 24V)

DRAWN	D.S.	DATE	10.14	TOLERANCES	Send Casting: To ISO 8062 CT10	MATERIAL	
CHECKED		SCALE	1:2	Generat: ±	Die Casting: To ISO 8062 C18		
ALL DIMENSIONS IN MILLIMETRES		Angular: ±		Hole centres & posits: ±			





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THIRD ANGLE PROJECTION

DATE & INITIALS 2.16 LW

MODIFICATION DETAILS AS FIRST DRAWN

ISS No 1

STANDARD PRACTICE Debur all cut/machined edges Break corners R0.25(Max) U.O.S.

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Francis ELECTRICALS

PART No./DRC No. C27106

SHT 1

24V DECK LED WIRING DIAGRAM

DESCRIPTION

FINISH

FRANCIS SEARCHLIGHTS LIMITED UNION ROAD BOLTON BL2 2HJ

Sand Casting: To ISO 8062 CT10 MATERIAL

Die Casting: To ISO 8062 CT8

Hole centres & posns: ±

ALL DIMENSIONS IN MILLIMETRES

2 3 4 5 6 7 8 9 10 11

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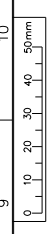
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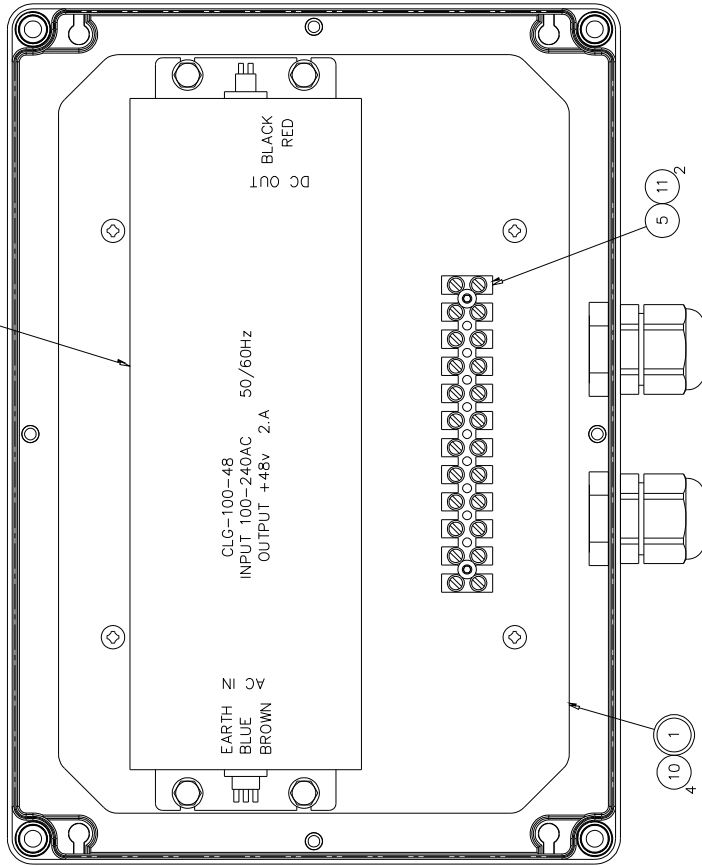
FIRST USED ON  
78W LED  
L230D  
A6138/44

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

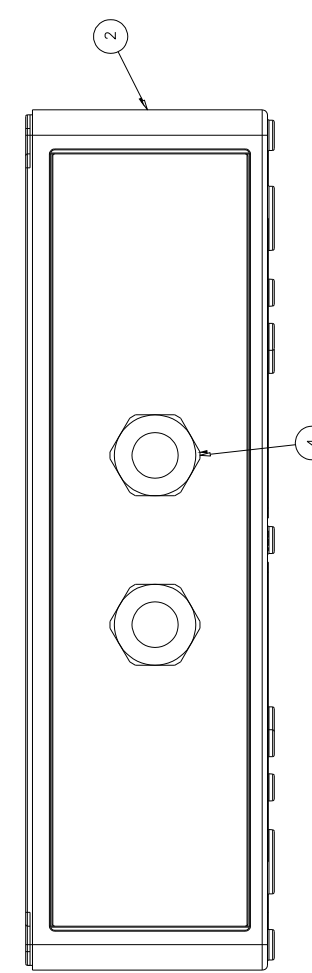
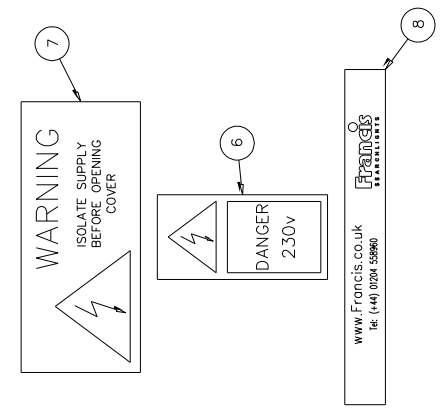


ISS No	MODIFICATION DETAILS	DATE & INITI
1	AS FIRST DRAWN	10.16 LW



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C27093	C27093	CHASSIS PLATE S/ASSY	1
2	C27094	C27094	ENCLOSURE DRILLING	1
3	C27090		LED DRIVER	1
4	C10158		M20 CABLE GLAND	2
5	C15056		TERMINAL BLOCK	1
6	C21464		230V WARNING LABEL	1
7	C22036		ISOLATE SUPPLY LABEL	1
8	C04900		FRANCIS EXTERIOR LABEL	1
9	C26955		M4 x 10 HEX HD SCREW	4
10	C23598		M4 x 8 POZI HD SCREW	4
11	C10203		M3 x 16 BTN HD SCREW	2
12	C04376		M4 PLAIN WASHER	4
13	C08793		M4 S/C SPRING WASHER	4

FIT LABELS CENTRALLY ON LID



FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HU

FINISH	DESCRIPTION
To ISO 8062 CT10	MATERIAL
To ISO 8062 CT8	
Hole centres & posns: ±	

DRAWN	LW	DATE	TOLERANCES
CHECKED <td>SCALE <td>1:1 <td>General: ± Angular: ± </td></td></td>	SCALE <td>1:1 <td>General: ± Angular: ± </td></td>	1:1 <td>General: ± Angular: ± </td>	General: ± Angular: ±
ALL DIMENSIONS IN MILLIMETRES			

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PART No./DRG No.	SHT
C27095	1



STANDARD PRACTICE  
Debur all cut/machined edges  
Break corners R0.25(Max) U.O.S.

## 10 – Spare Parts List

The following spare parts can be ordered directly from the manufacturer:

<b>Part Number</b>	<b>Description</b>
C22205-01	Handle Assembly
C11025-01	Lock wheel Assembly
C10168-00	Base 'O' Ring
C10169-00	Spigot 'O' Ring
C22072-00	Push Rod Seal Washer
C21967-00	Bellows Bottom Bush 'O' Ring
C26630-00	Front Glass
C21141-00	Front Glass Gasket
C22268-01	Breather Assembly
C27012-00	LED
C27013-00	LED Holder
C27014-00	LED Reflector
C27090-00	LED Driver
C27089-00	24v to 240v Inverter

In order to prolong the life and performance of your product, we recommend that you only specify Francis Searchlights spare parts. This will ensure that any warranties on your equipment will not be invalidated.

When ordering spare parts please contact the Sales Department at Francis Searchlights Limited. Please quote searchlight model and serial number at all times. This will enable a fast response to your spares' requirements.