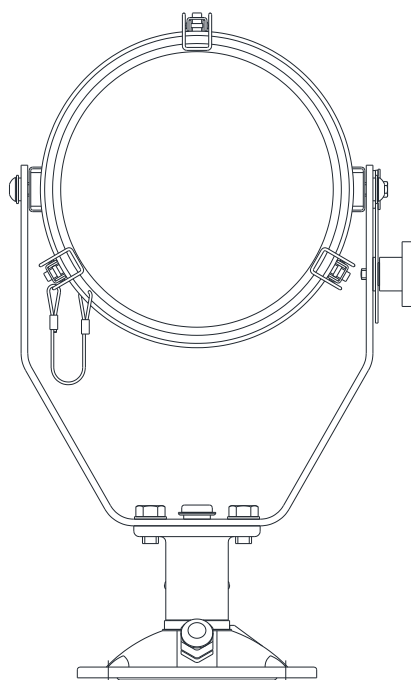




## User Instruction & Installation Manual

### L230 100-Watt LED Searchlight



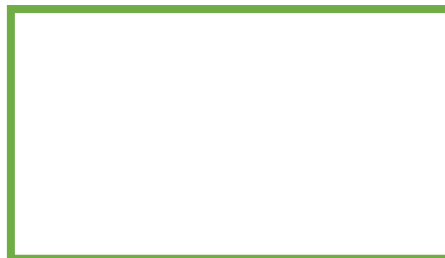
#### Product Reference Number:

A6253 L230 HV 100w LED Deck	A6257 L230 LV 100w LED Deck
A6254 L230 HV 100w LED Cabin	A6258 L230 LV 100w LED Cabin
A6255 L230 HV 100w LED Deck Ped	A6259 L230 LV 100w LED Deck Ped
A6256 L230 HV 100w LED Cabin Ped	A6260 L230 LV 100w LED Cabin Ped

#### Manufacturer's details:

Francis Searchlights Ltd  
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E-mail : [sales@francis.co.uk](mailto:sales@francis.co.uk)

#### Distributor details:



Manual Part Number: C30022

Issue: 1

8.4.25

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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 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.

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 always quote the Product Serial Number.

## 2 - Safety Precautions

The following instructions must be adhered to, 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 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 100w LED searchlight has the following features:

- All marine grade materials and fixings.
- Powder coated finish.
- Pan rotation 450°.
- Tilt movement  $\pm 40^\circ$  (Deck & Deck Pedestal,  $+30^\circ$  to  $-25^\circ$  (Cabin & Cabin Pedestal)).
- Economical 30,000-hour LED life.
- Toughened super clear Optiwhite front glass.
- Fresnel lens.
- 7,047 Lumens.
- Colour temperature 6500K.
- Searchlight Weight 12Kg Deck, Pedestal 4.6Kgs.
- Cabin Control Assembly 2.3Kgs, Cabin Pedestal Assembly 3.3Kgs.
- Driver Box 3Kgs
- Sealing – IP66 Searchlight & Driver Box.

The searchlight also performs to the following optical data:

- Wattage - 100 Watts.
- Supply voltage – 24v DC or 240v/115v AC.
- Luminous Flux – 7,047 lumens.
- Range – 1357 metres @ 1 Lux at beam divergence of  $4^\circ$ .
- LED life – 30,000 hours.
- Fixed focus  $4^\circ$  spot.
- Temperature range:  $-50^\circ\text{C}$

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.

## 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, 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, using the template provided. 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.

In the case of cabin control models, a centre hole is also required to allow the mechanism to pass through. Fit the 'O' ring in position and bolt the searchlight down securely. On an uneven surface it is necessary to use a suitable sealant, such as silicone, to ensure a weatherproofed joint.

For cabin control models it is necessary to remove the Underdeck control assembly prior to installation. Using the Allen key provided, the five grub screws on the Underdeck mechanism should be loosened to allow the Underdeck control assembly to be removed. The outer tube can now be positioned through the centre hole. The searchlight base can now be securely fixed as stated above.

Upon installation, re-assemble the Underdeck control mechanism ensuring the grub screws are secure and the mechanism operates correctly.

## **Fitting Instructions for Cabin Model**

### **Preparing the Mounting Position**

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

### **Mounting the Searchlight**

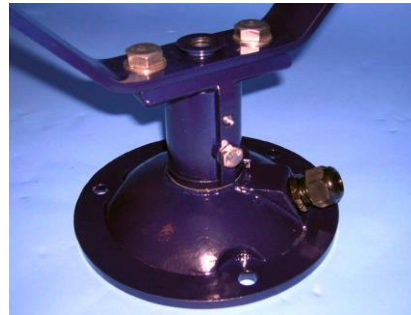
#### **For Deck Models:**

Fit the 'O' ring in position and bolt the searchlight base securely down. On an uneven surface it is necessary to use a suitable sealant, such as silicone, to ensure a weather proofed joint.

#### **For Cabin/Cabin Pedestal Models:**



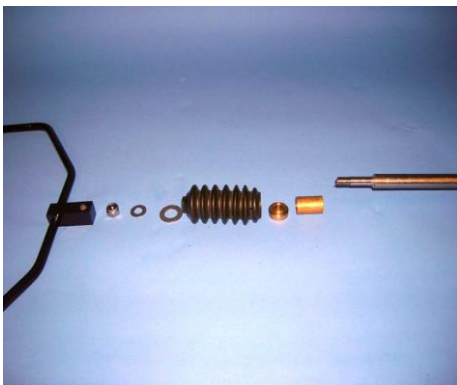
1. Remove the Base Lock Wheel.



2. Replace Lock Wheel with M8 x 10 hexagon screw in the bottom fixing



3. Now remove the following items as these are only required on deck models Barrel Lock Wheel, Elevation Link and fixings



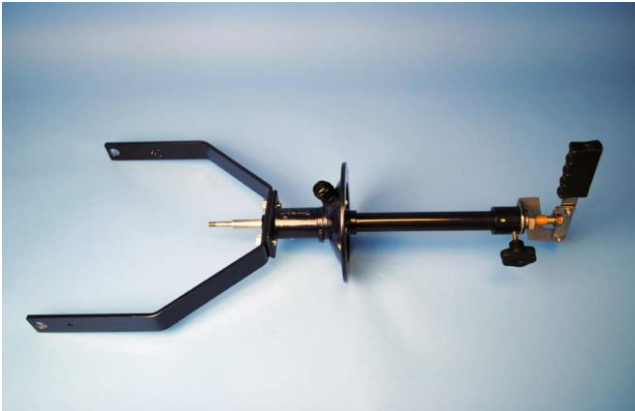
4. When installing the Under Deck mechanism, first separate the following items. U-Piece Assembly, M8 nyloc nut, M8 plain washer, M12 plain washer, Rubber Bellows, Bellows Top Bush, and the Push Rod Top Bush



**5.** Remove the Blanking Plug from the Bellows Bottom Bush.



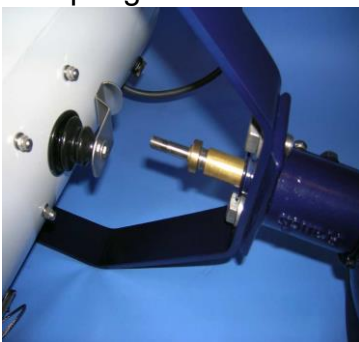
**6.** Insert the Under Deck through the centre hole making sure it is aligned as photos below.



**7.** Fasten the Under Deck mechanism Using the 3 off M6 x 16 screws and spring washers



**8.** Re-Fit the following items:  
Push Rod Top Bush



**9.** Bellows Top Bush.



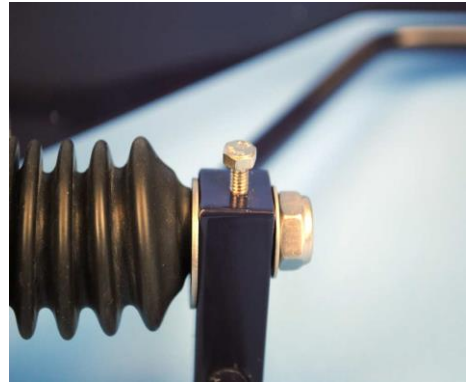
**10.** Bellows.



**11.** M12 plain washer. U-Piece Assy.  
M8 plain washer. M8 nyloc nut.



**12.** Make sure the mechanism is in this position before tightening the M5 x 8 hexagon screw onto the flat of the push rod



**13.** U-Piece fixings.



**14.** Fix the U-Piece Assembly using U-Piece fixings make sure there is a plain washer both sides of the U-Piece Bush.



**15.** Completed.  
Make sure the Searchlight pans and tilts correctly.

**For Pedestal Models:**

Mark out and drill through cabin roof using the template provided.  
Remove the cable gland in the base and replace with the blanking plug supplied.  
Secure the pedestal to the deck using appropriate fixings and then mount the searchlight to the pedestal and secure using the fixings provided. A drilled hole is also required in the deck to allow for the connection to an electrical supply. The searchlight is supplied with 3 metres of supply cable so that the installer can choose a suitable connection point.

## 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.

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 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/ratings 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 Guidelines

#### **A typical installation and connection routine for the L230 24v 100w LED searchlight is as follows:**

Referring to wiring diagram C30101, a 24v supply is fed to the Driver Box.

The searchlight has been pre-wired with 3 meters of cable from the searchlight to driver box provided (3 core 1.5mm cable).

Cables required to be connected by the customer: -  
Supply cable to the driver box.

#### **A typical installation and connection routine for the L230 110/240v 100w LED searchlight is as follows:**

Referring to wiring diagram C29969, a 110v or 240v supply is fed to the driver box.

The searchlight has been pre-wired with 3 meters of cable from the searchlight to driver box provided (3 core 1.5mm cable).

Cables required to be connected by the customer: -  
Supply cable to the driver 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 searchlight can be positioned using the elevation and base plate lock wheels. When in the desired position the lock wheels should be securely fastened to maintain position.

The beam of the searchlight cannot be adjusted.

**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 the LED to light**

In the event of the LED 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.

## 8 - Maintenance and Servicing

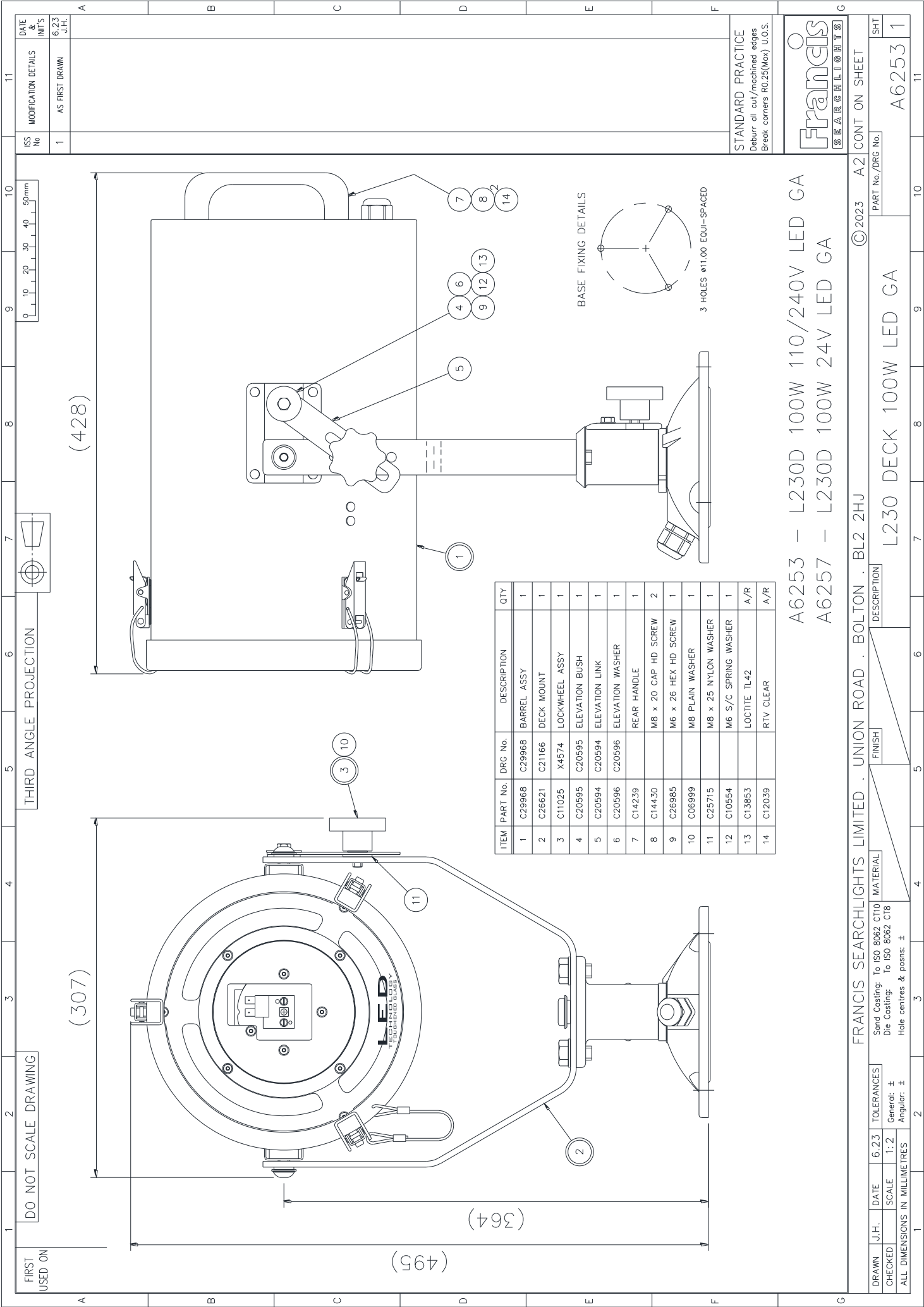
To prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- 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 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 LED lens 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., lock wheels, 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 – General Assembly and Wiring Diagrams

Drawing Number	Description
A6253	L230 100W LED Deck 110/240V General Assembly
A6257	L230 100W LED Deck 24V General Assembly
A6254	L230 100W LED Cabin 110/240V General Assembly
A6258	L230 100W LED Cabin 24V General Assembly
A6255	L230 100W LED Deck Pedestal 110/240V General Assembly
A6259	L230 100W LED Deck Pedestal 24V General Assembly
A6256	L230 100W LED Cabin Pedestal 110/240V General Assembly
A6260	L230 100W LED Cabin Pedestal 24V General Assembly
C29969	Wiring Diagram 110/240V
C30101	Wiring Diagram 24V
C30021	Driver Box Assembly 110/240V
C29416	Driver Box Assembly 24V



1

2

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11

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

DATE & INT'S

6.23 J.H.

MODIFICATION DETAILS

AS FIRST DRAWN

ISS No

1

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CONT ON SHEET

SEARCHLIGHTS

STANDARD PRACTICE

Deburr all cut/machined edges

Break corners R0.25(Max) U.O.S.

DATE

J.H.

SCALE

1:2

TOLERANCES

General: ±

Angular: ±

ALL DIMENSIONS IN MILLIMETRES

FINISH

Material

Die Casting: To ISO 8062 C18

Hole centres & posns: ±

DESCRIPTION

L230 DECK 100W LED GA

PART No./DRG No.

A6253 1

SHT

1

(428)

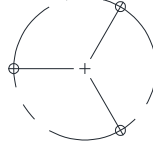
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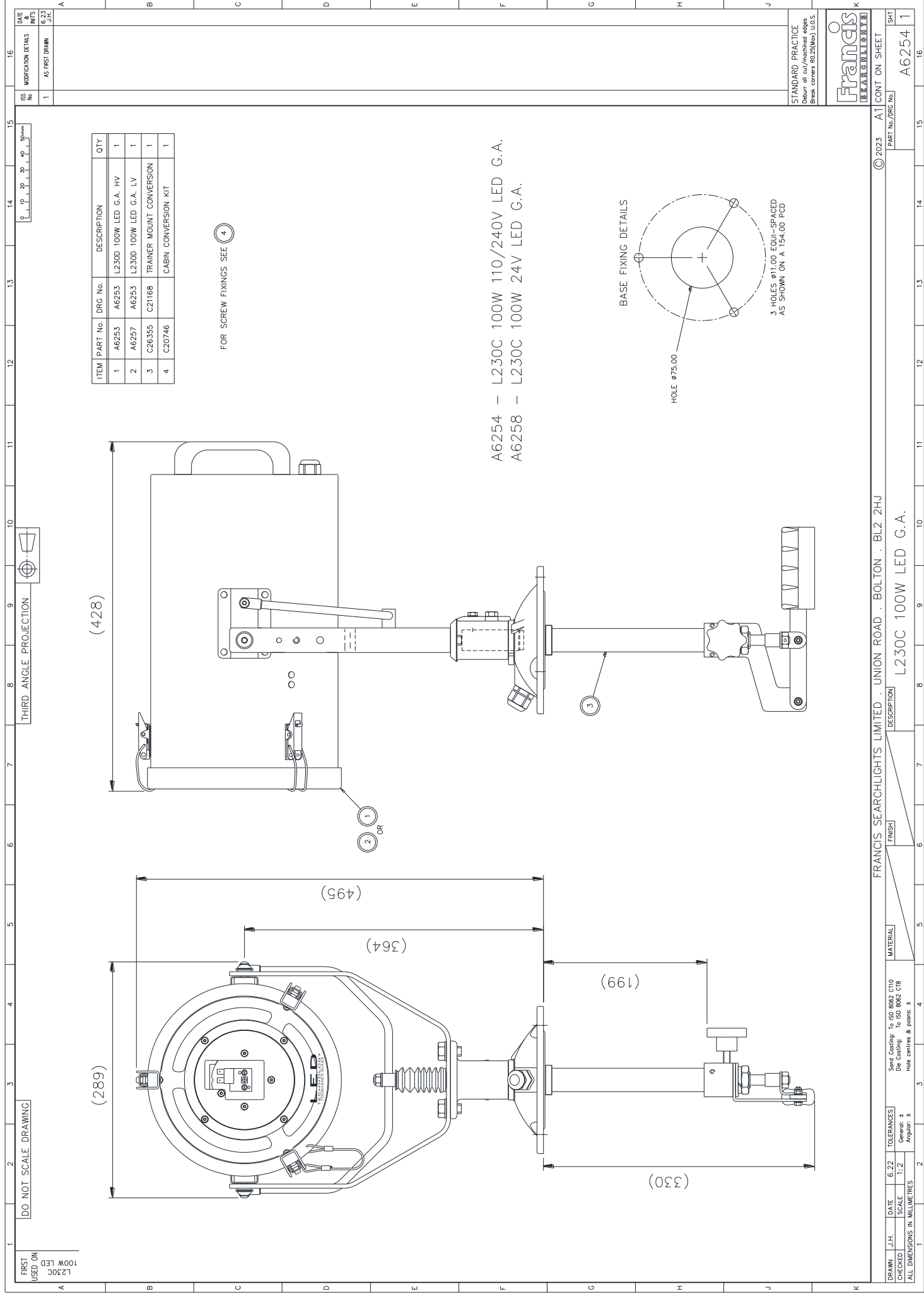
(364)

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C29968	C29968	BARREL ASSY	1
2	C26621	C21166	DECK MOUNT	1
3	C11025	X4574	LOCKWHEEL ASSY	1
4	C20595	C20595	ELEVATION BUSH	1
5	C20594	C20594	ELEVATION LINK	1
6	C20596	C20596	ELEVATION WASHER	1
7	C14239		REAR HANDLE	1
8	C14430		M8 x 20 CAP HD SCREW	2
9	C26985		M6 x 26 HEX HD SCREW	1
10	C06999		M8 PLAIN WASHER	1
11	C25715		M8 x 25 NYLON WASHER	1
12	C10554		M6 S/C SPRING WASHER	1
13	C13853		LOCTITE TL42	A/R
14	C12039		RTV CLEAR	A/R

BASE FIXING DETAILS



3 HOLES Ø11.00 EQUI-SPACED



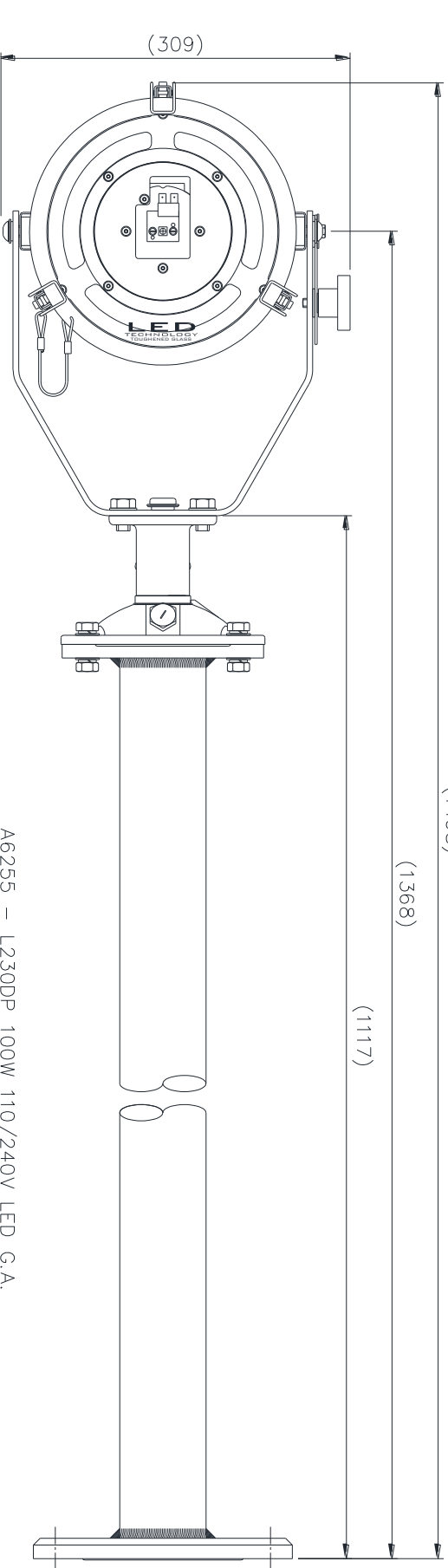
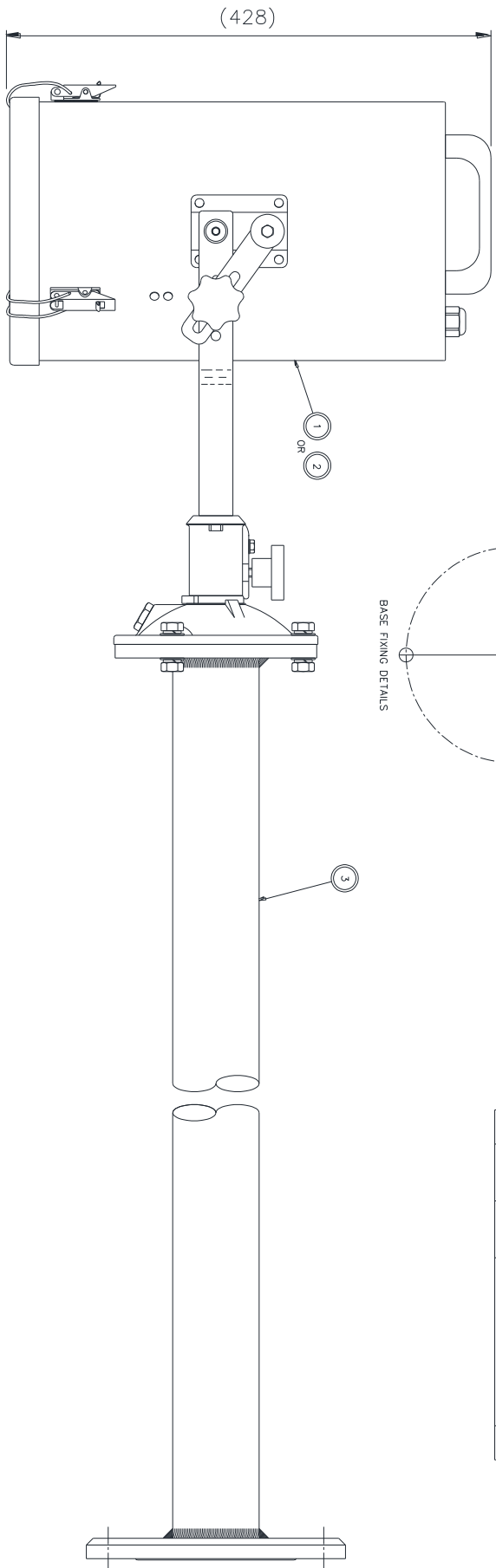


4 HOLES Ø12.50 EQUI-SPACED  
AS SHOWN ON A 190.00 PCD

BASE FIXING DETAILS

FOR SCREW FIXING KIT SEE (4)

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	A6253	A6253	L230D 100W LED G.A. HV	1
2	A6257	A6253	L230D 100W LED G.A. LV	1
3	C20719	C20719	PEDESTAL ASSY	1
4	C20747	C20747	DECK PED CONVERSION KIT	1



A6255 – L230DP 100W 110/240V LED G.A.  
A6259 – L230DP 100W 24V LED G.A.

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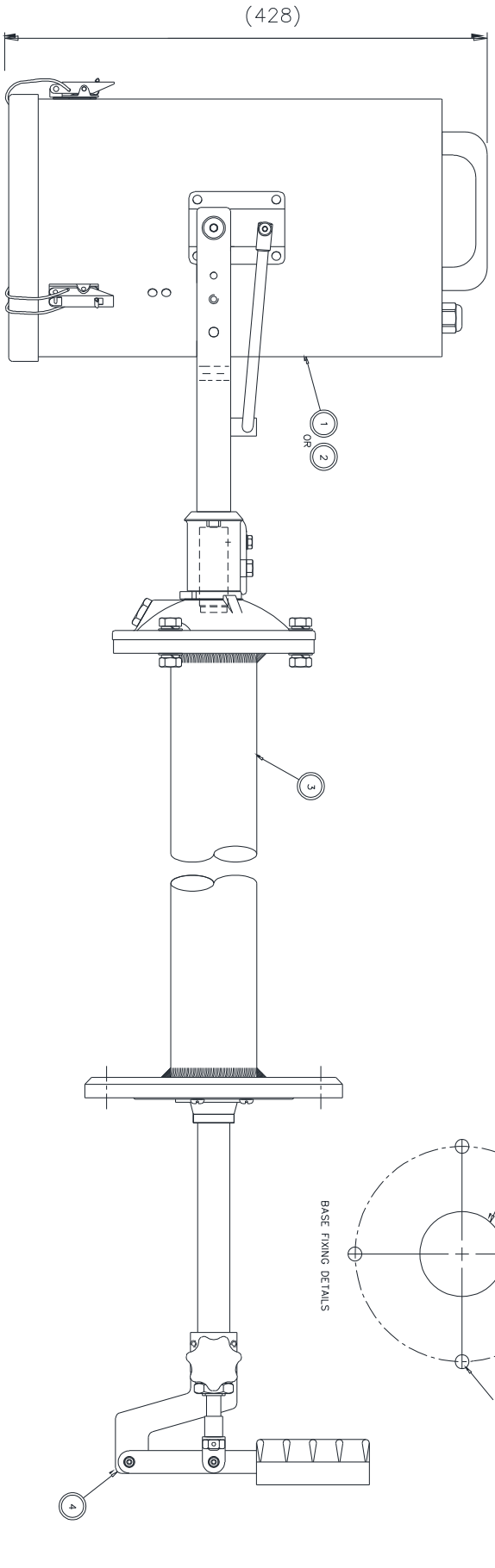
DRAWN	J.H.	DATE	6.23	TOLERANCES	Send Coating to ISO 8002 C10 Die Coating to ISO 8002 C18 Hole centres & points ±	MATERIAL	FINISH	DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CHECKED	J.H.	SCALE	1:2	General: ± Angular: ±																				
ALL DIMENSIONS IN MILLIMETRES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16								

STANDARD PRACTICE:  
Debur all cut / finished edges  
Break corners R0.25(Min) U.O.S.



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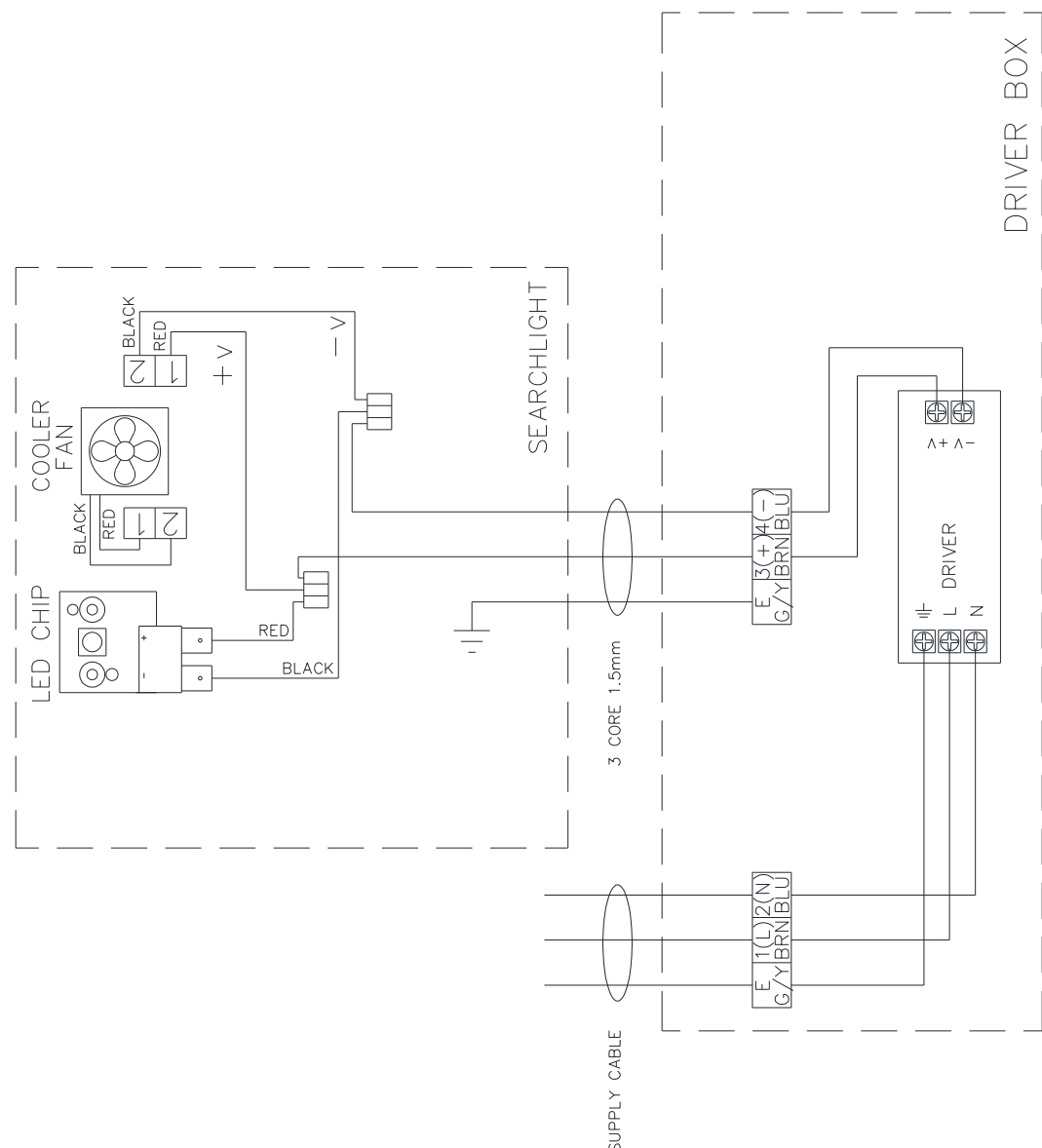
PART No./DRG No.	1
A6255	1

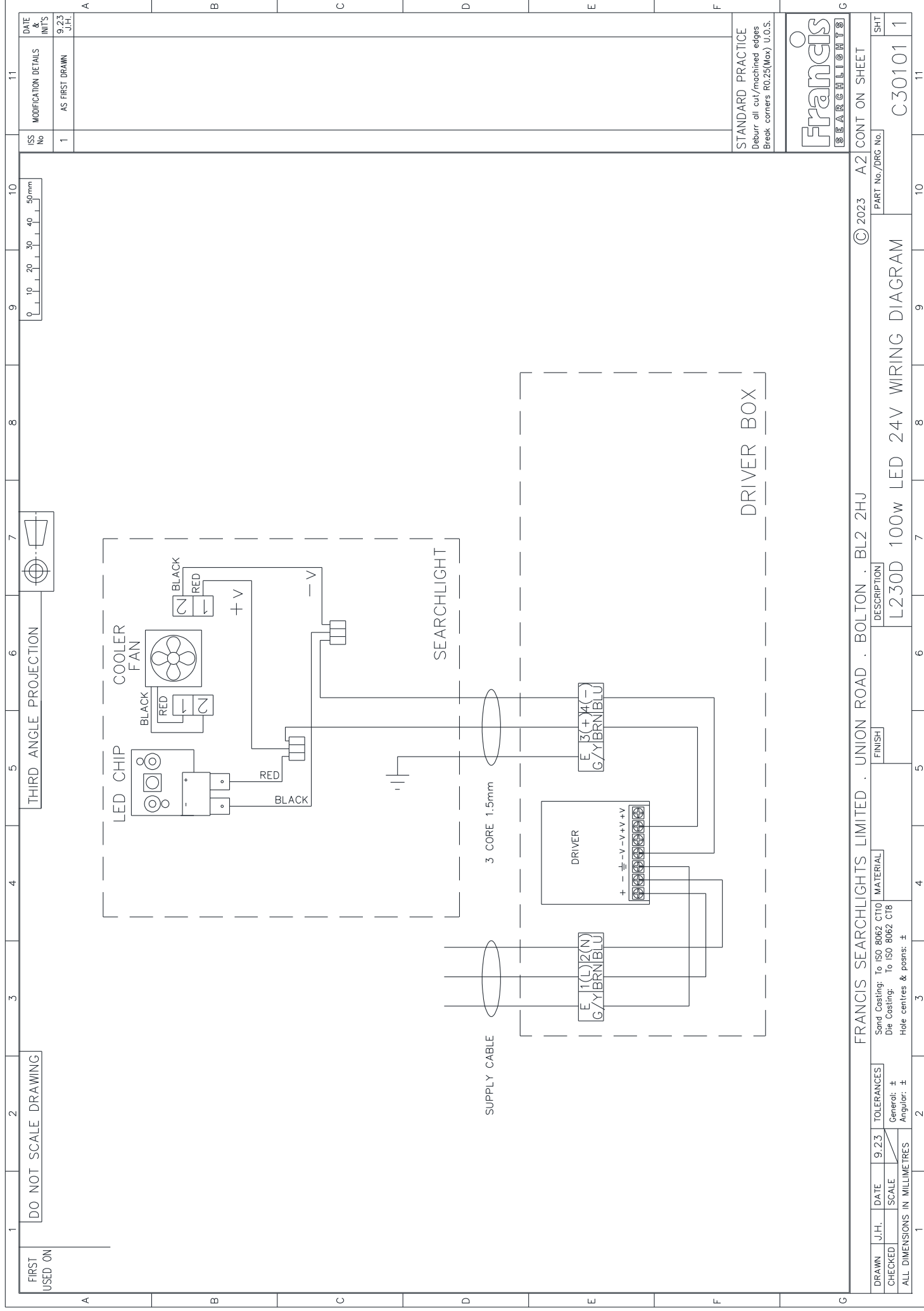


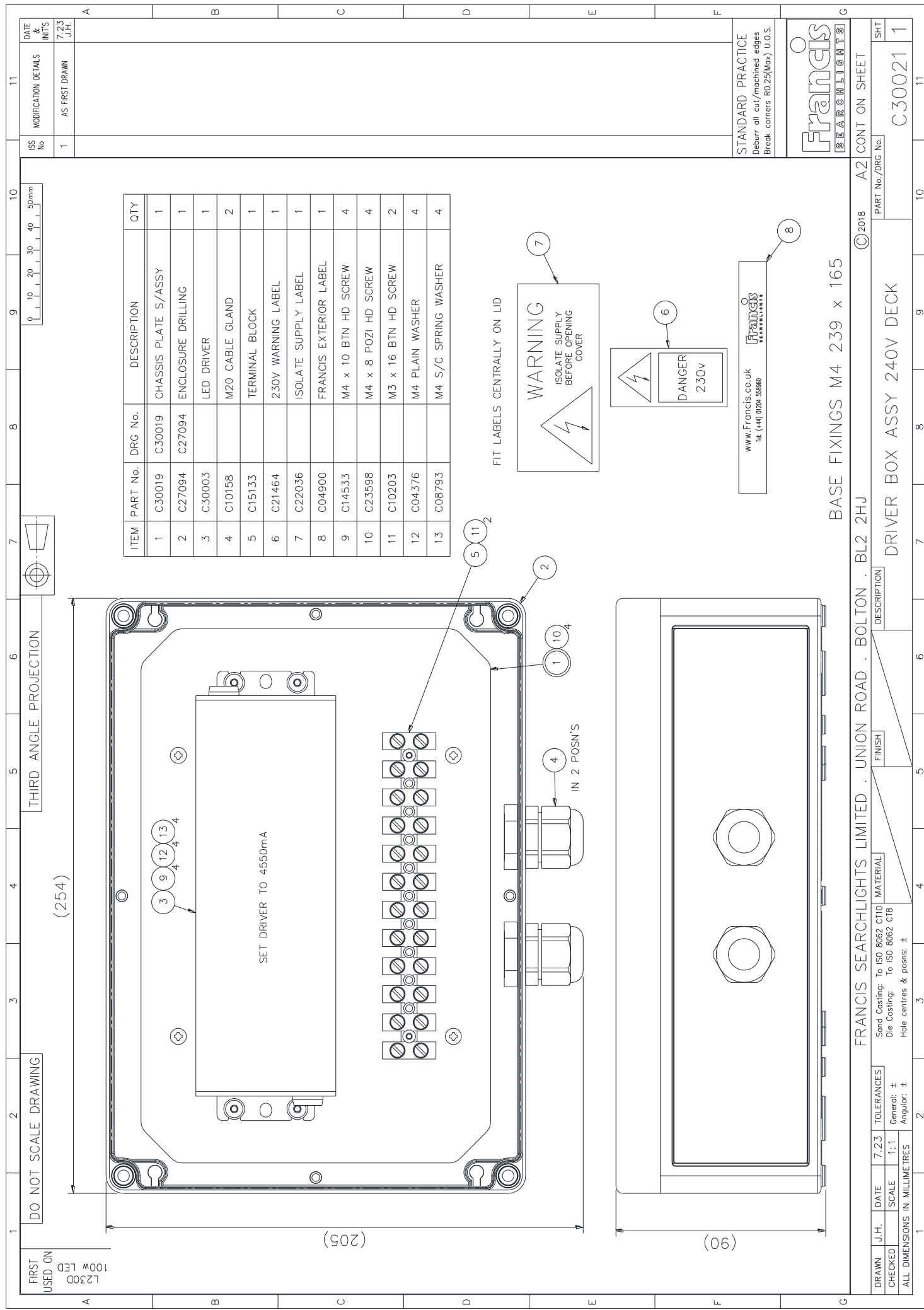
ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	A6253	A6253	L2300 100W LED G.A. HV	1
2	A6257	A6253	L2300 100W LED G.A. LV	1
3	C20719	C20719	PEDESTAL ASSY	1
4	C26356	C21169	CP TRAINER MOUNT CONVERSION	1
5	C20748	C20748	CAB PED CONVERSION KIT	1

FOR SCREW FIXING KIT SEE ⑤

A6256 – L230CP 100W 110/240V LED G.A.  
A6260 – L230CP 100W 24V LED G.A.

1		2		3		4		5		6		7		8		9		10		11																																									
FIRST USED ON		DO NOT SCALE DRAWING		THIRD ANGLE PROJECTION																																																									
 <p>The diagram shows the internal wiring of the L230D 100w LED light. It includes a 3-core 1.5mm supply cable with terminals E 1(L)2(N) G/Y/BRN/BLU. The wiring connects to a DRIVER box with terminals L, N, and a common ground. The LED CHIP and COOLER FAN are also shown with their respective wiring. The SEARCHLIGHT housing is indicated by a dashed line.</p>																																																													
<table border="1"> <tr> <td colspan="2">DRAWN J.H.</td> <td colspan="2">DATE</td> <td colspan="2">TOLERANCES</td> <td colspan="2">SHEET</td> </tr> <tr> <td colspan="2">CHECKED</td> <td colspan="2">SCALE</td> <td colspan="2">General: ±</td> <td colspan="2">Angular: ±</td> </tr> <tr> <td colspan="2">ALL DIMENSIONS IN MILLIMETRES</td> <td colspan="2"></td> <td colspan="2">Hole centres &amp; posns: ±</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">Finish</td> <td colspan="2">Material</td> <td colspan="2">Description</td> <td colspan="2">Part No./DRG No.</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2">L230D 100w LED WIRING DIAGRAM 110/240V</td> <td colspan="2">C29969</td> </tr> </table>																						DRAWN J.H.		DATE		TOLERANCES		SHEET		CHECKED		SCALE		General: ±		Angular: ±		ALL DIMENSIONS IN MILLIMETRES				Hole centres & posns: ±				Finish		Material		Description		Part No./DRG No.						L230D 100w LED WIRING DIAGRAM 110/240V		C29969	
DRAWN J.H.		DATE		TOLERANCES		SHEET																																																							
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				L230D 100w LED WIRING DIAGRAM 110/240V		C29969																																																							
<p>FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HJ</p> <p>© 2023 A2 CONT ON SHEET</p> <p>STANDARD PRACTICE Debur all cut/machined edges Break corners R0.25(Max) U.O.S.</p> <p><b>Francis</b> SEARCHLIGHTS</p>																																																													





DRAWN				J.H.		DATE		7.23		TOLERANCES		MATERIAL		FINISH		DESCRIPTION		PART No./DRG No.		SHT	
CHECKED						SCALE		1:1		General: ±		Sand Coating: To ISO 8062 C10									
ALL DIMENSIONS IN MILLIMETRES						Angular: ±				Hole centres & posns: ±		To ISO 8062 C18									
																DRIVER BOX ASSY 240V DECK				C30021 1	



## 10 – Spare Parts List

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

Part Number	Description
<b>Searchlight Spares</b>	
C29429-01	LED Kit
C29428-00	Fresnel Lens
C26630-00	Front glass
C21141-00	Bezel gasket
C11025-01	Lock Wheel Assembly (Deck & Deck Pedestal)
C10168-00	Base 'O' Ring (Deck & Cabin)
C20634-00	Pedestal Base 'O' Ring (Deck Pedestal & Cabin Pedestal)
C10169-00	Spigot 'O' Ring (Deck & Cabin)
C21967-00	Bellows Bottom Bush 'O' Ring (Deck & Cabin)
C08926-00	Push Rod Seal (Deck & Cabin)
C20281-00	Bellows (Cabin & Cabin Pedestal)
C20745-01	Underdeck Lock Wheel Assembly (Cabin & Cabin Pedestal)

### Driver Spares

C30003-01	Driver (110/240V model)
C27920-01	Driver (24V model)

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 always quote searchlight model and serial number. This will enable a fast response to your spares' requirements.