



**User Instruction & Installation Manual**  
**L230RC 100-Watt LED Searchlight**



**Product Reference Number:**

**A7297 L230RC 24v 100w LED**  
**A7298 L230RC 240v 100w LED**  
**A7299 L230RC 115v 100w LED**

**Manufacturer's details:**

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**Distributor details:**

Manual Part Number: C29433

Issue: 1  
8.2.22

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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.

- 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 L230RC 100w LED searchlight has the following features:

- All marine grade materials and fixings.
- Powder coated and stove enamel paint finish.
- Full 365° horizontal rotation.
- Vertical movement  $\pm 20^\circ$ .
- Pan rotation speed 24°/sec.
- Tilt speed 4°/sec.
- Instant full light output from LED chip.
- Driver box supplied.
- Toughened super clear Optiwhite front glass.
- Parabolic super pure precision lens.
- Heater fitted in barrel.
- Sealing – IP66 Searchlight – IP65 Joystick.
- Searchlight weight 11Kgs.

The searchlight also performs to the following optical data:

- Wattage - 100 Watts.
- Supply voltage – 24v DC or 240v/115v AC.
- Luminous Flux – 7830 lumens.
- Range – 1430 metres @ 1 Lux at beam divergence of 4°.
- LED life – 30,000 hours.
- Fixed focus.
- Temperature range: -50°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. 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.

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.

## 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:

## **Installation Guidelines**

### **A typical installation and connection routine for the L230RC 24v 100w LED searchlight is as follows:**

Referring to wiring diagram C29432, a 24v supply is fed to the joystick panel.  
The searchlight has been pre-wired with 4 meters of cable from the searchlight to diver box provided (12 core 1.5mm cable).

Cables required to be connected by the customer: -  
12 core 1.5mm cable from the joystick panel to the driver box.  
Supply cable to the junction box.

### **A typical installation and connection routine for the L230RC 240v 100w LED searchlight is as follows:**

Referring to wiring diagram C29686, a 240v supply is fed to the HV junction box.  
The searchlight has been pre-wired with 4 meters of cable from the searchlight to diver box provided (12 core 1.5mm cable).

Cables required to be connected by the customer: -  
12 core 1.5mm cable from the joystick panel to the driver box.  
Supply cable to the HV junction box.

### **A typical installation and connection routine for the L230RC 115v 100w LED searchlight is as follows:**

Referring to wiring diagram C29687, a 115v supply is fed to the HV junction box.  
The searchlight has been pre-wired with 4 meters of cable from the searchlight to diver box provided (12 core 1.5mm cable).

Cables required to be connected by the customer: -  
12 core 1.5mm cable from the joystick panel to the driver box.  
Supply cable to the HV 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 searchlight can be remotely positioned via the joystick control panel, with the facility for movement up, down, left, and right. When in the desired position the joystick should be released so that it returns to its' home position, dead centre.

The heaters specified on this equipment are self-regulating and will shut off when they reach the dew point temperature.

**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 ignite**

In the event of the LED failing to light the following steps should be taken:

- 1) Check that the supply is connected to the input of the LED and check all connections as per the wiring diagrams show below. On operation if the LED does not light, switch off supply and check all fuses.

## 8 - Maintenance and Servicing

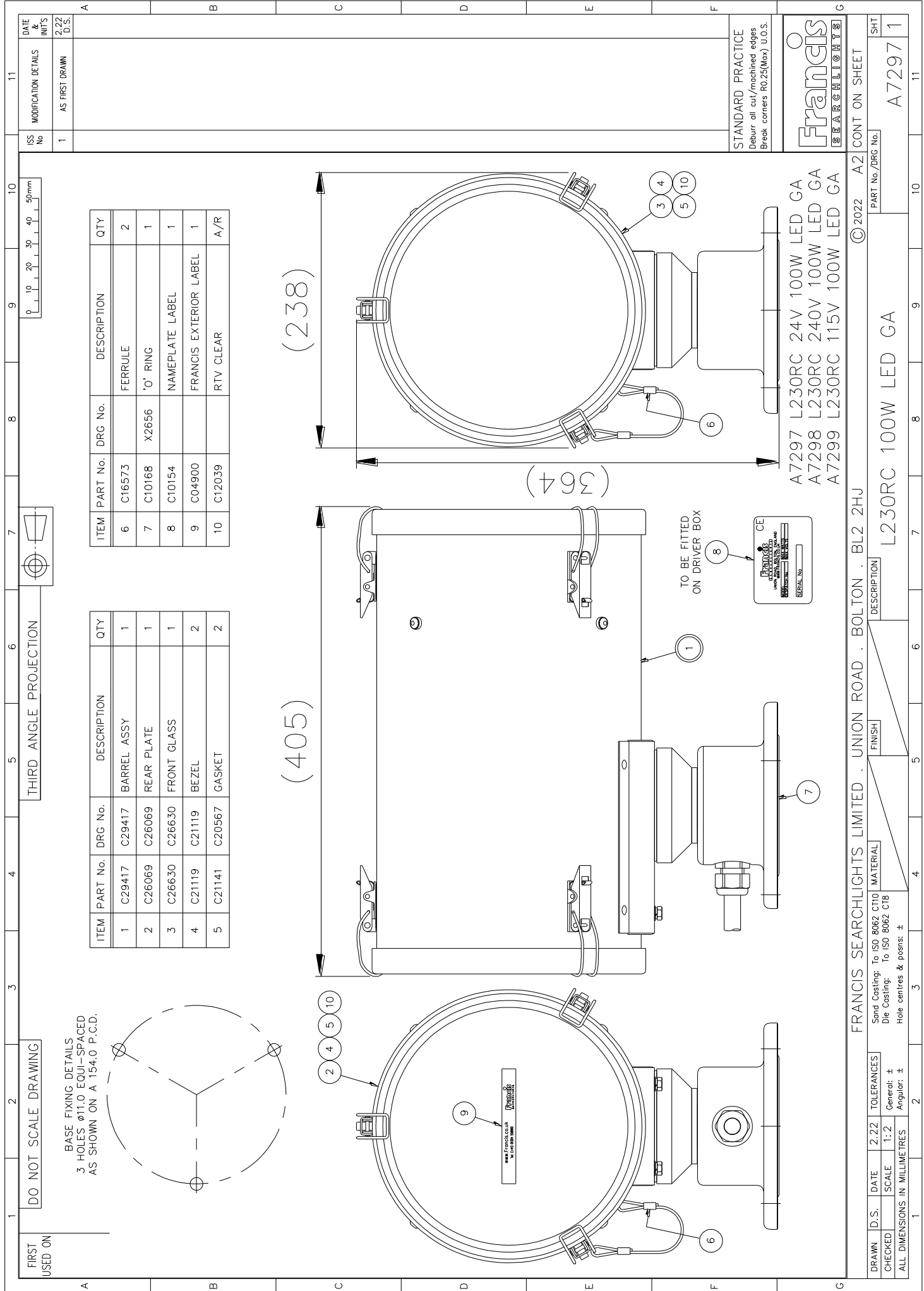
To prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- 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).

**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

<b>Drawing Number</b>	<b>Description</b>
A7297	L230RC 24v 100w LED General Assembly
C29432	Wiring Diagram 24v
C29686	Wiring Diagram 240v
C29687	Wiring Diagram 115v
C28321	Control Panel Assembly
C29416	LV Driver Box Assembly
C26221	240v Junction Box
C28516	115v Junction Box



DO NOT SCALE DRAWING

BASE FIXING DETAILS  
3 HOLES  $\phi$ 11.0 EQUI-SPACED  
AS SHOWN ON A 154.0 P.C.D.

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C29417	C29417	BARREL ASSY	1
2	C26069	C26069	REAR PLATE	1
3	C26630	C26630	FRONT GLASS	1
4	C21119	C21119	BEZEL	2
5	C21141	C20567	GASKET	2

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
6	C16573		FERRULE	2
7	C10168	X2656	'O' RING	1
8	C10154		NAMEPLATE LABEL	1
9	C04900		FRANCIS EXTERIOR LABEL	1
10	C12039		RTV CLEAR	A/R

(405)

(238)

(364)

TO BE FITTED  
ON DRIVER BOX

A7297 L230RC 24V 100W LED GA  
A7298 L230RC 240V 100W LED GA  
A7299 L230RC 115V 100W LED GA

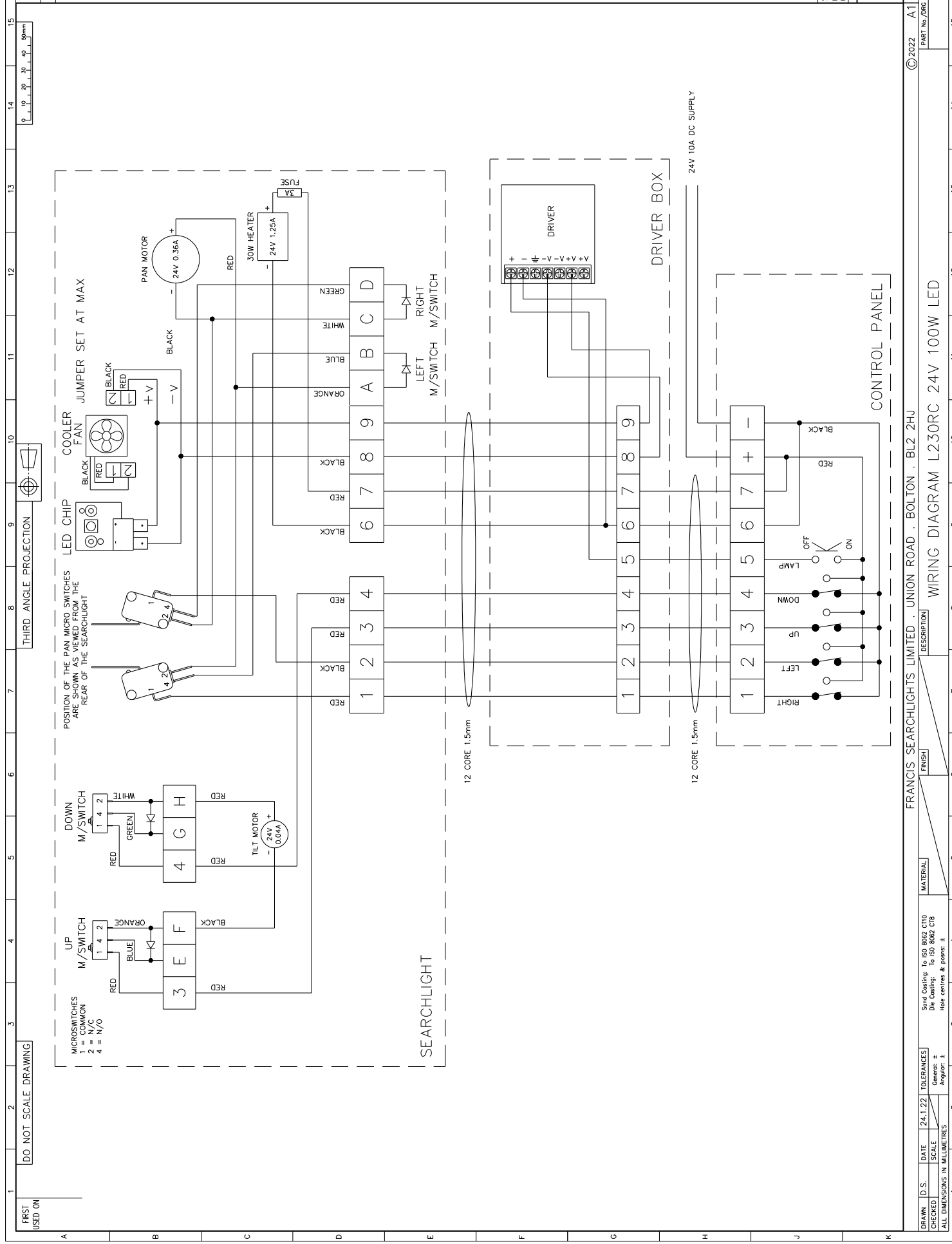
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU

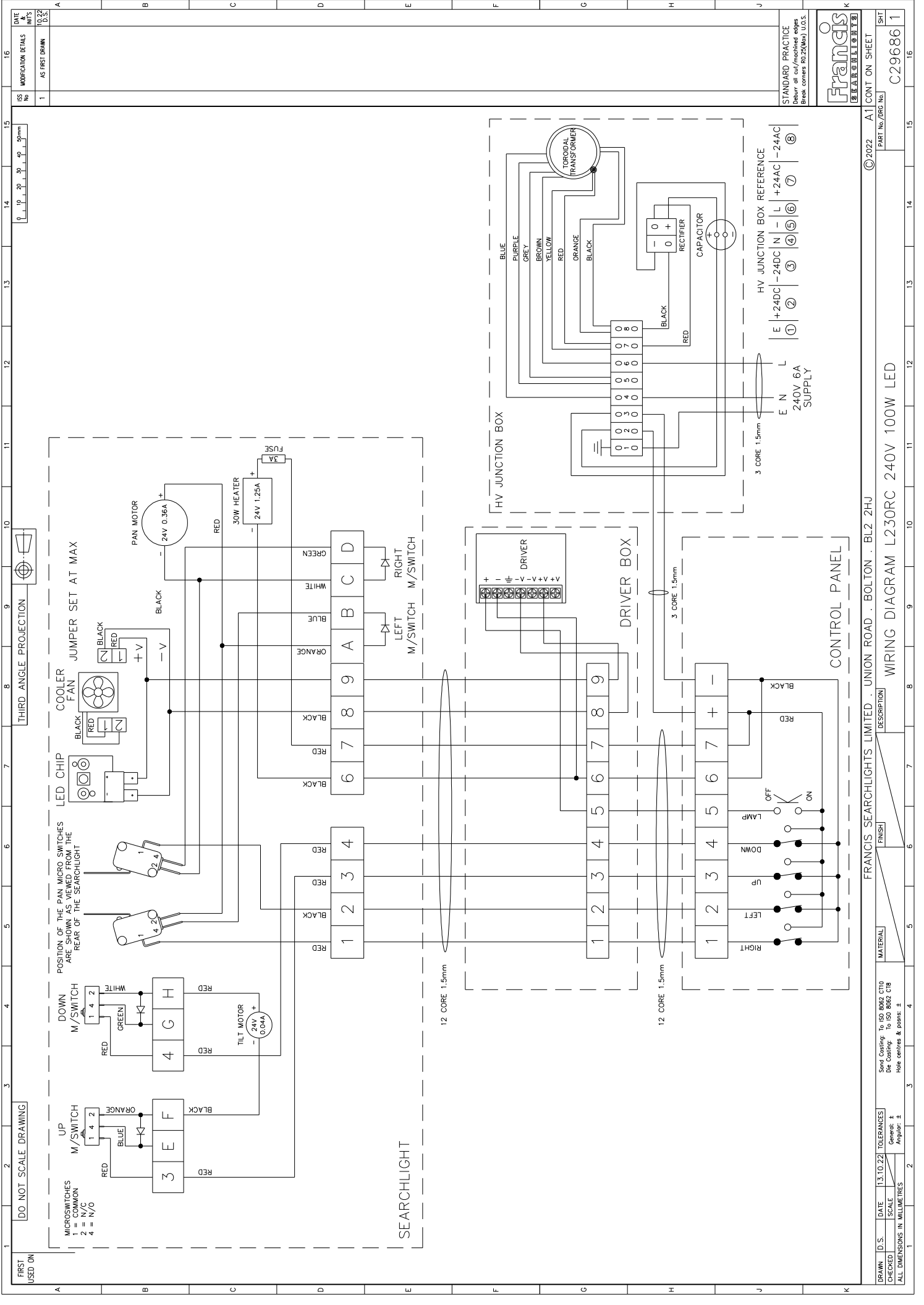
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CHECKED	SCALE	1:2				
ALL DIMENSIONS IN MILLIMETRES						
Sand Casting: To ISO 8062 CT10						
Die Casting: To ISO 8062 CT8						
Hole centres & posits: $\pm$						
FINISH						
MATERIAL						
DESCRIPTION						
L230RC 100W LED GA						
PART No./DRG No.						
A7297 1						
SHT						
A2 CONT ON SHEET						
© 2022						

**Francis**  
SEARCHLIGHTS

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

ISS No	MODIFICATION DETAILS	DATE & INT'S
1	AS FIRST DRAWN	2.22 D.S.





DATE	10.22
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NO	1
AS FIRST DRAWN	
MODIFICATION DETAILS	

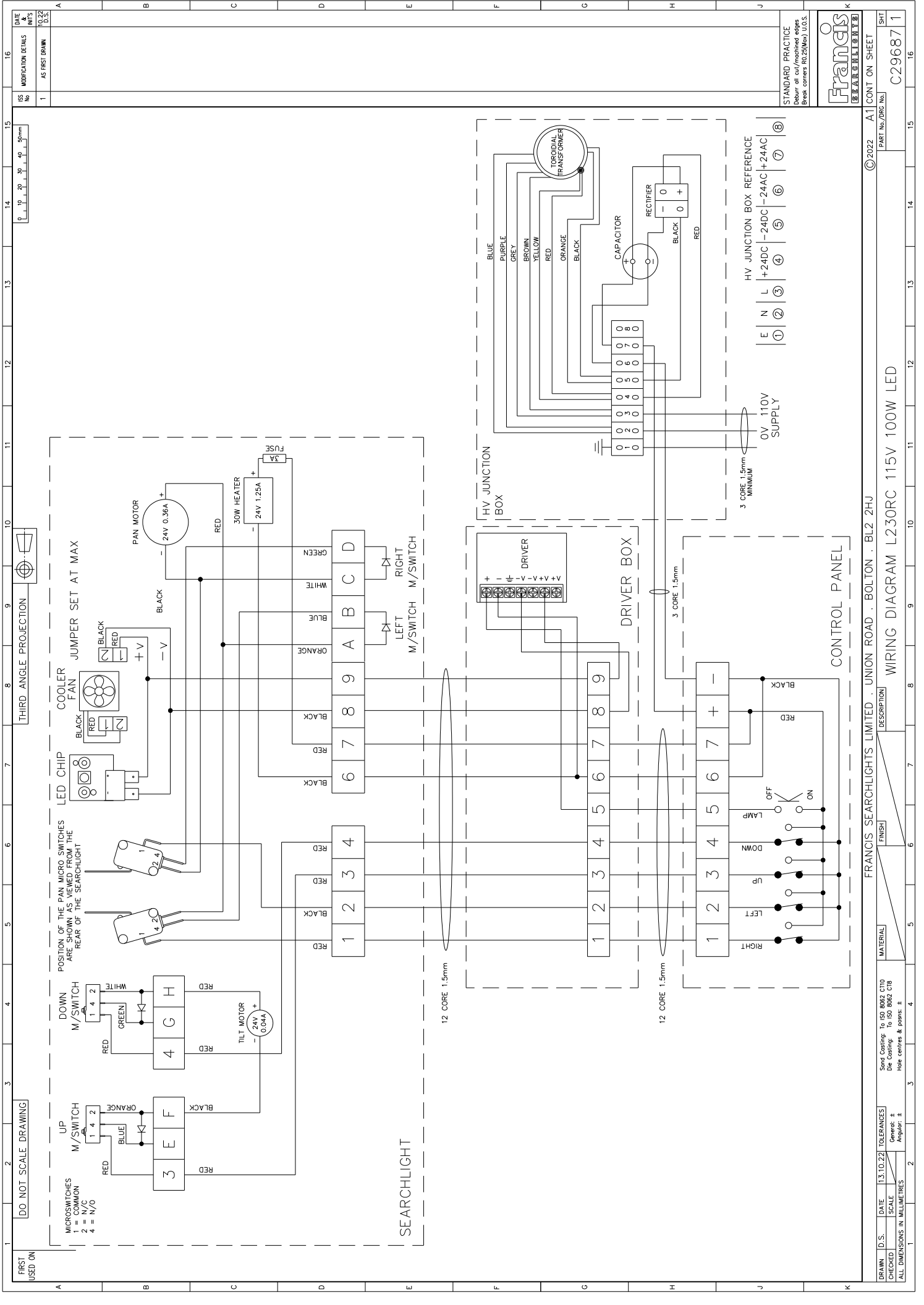
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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DATE	13.10.22
CHECKED	
DRAWN	
SCALE	1:1
TOLERANCES	General: ±
Angular: ±	
ALL DIMENSIONS IN MILLIMETRES	

DESCRIPTION	WIRING DIAGRAM L230RC 240V 100W LED
FINISH	
MATERIAL	
Send Coating: To ISO 8002 C110	
Die Coating: To ISO 8002 C18	
Hole centres & posns: ±	

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PART No./ORC No. C29686
SHT C29686
1





DO NOT SCALE DRAWING

FIRST USED ON

MICROSWITCHES  
1 = COMMON  
2 = N/C  
4 = N/O

UP M/SWITCH  
1 4 2  
RED BLUE ORANGE

DOWN M/SWITCH  
1 4 2  
RED GREEN WHITE

POSITION OF THE PAN MICRO SWITCHES  
ARE SHOWN AS VIEW FROM THE  
REAR OF THE SEARCHLIGHT

JUMPER SET AT MAX  
BLACK RED  
+ + V  
- - V

THIRD ANGLE PROJECTION

0 10 20 30 40 50mm

DATE 16  
NO. 1  
MODIFICATION DETAILS  
AS FIRST DRAWN



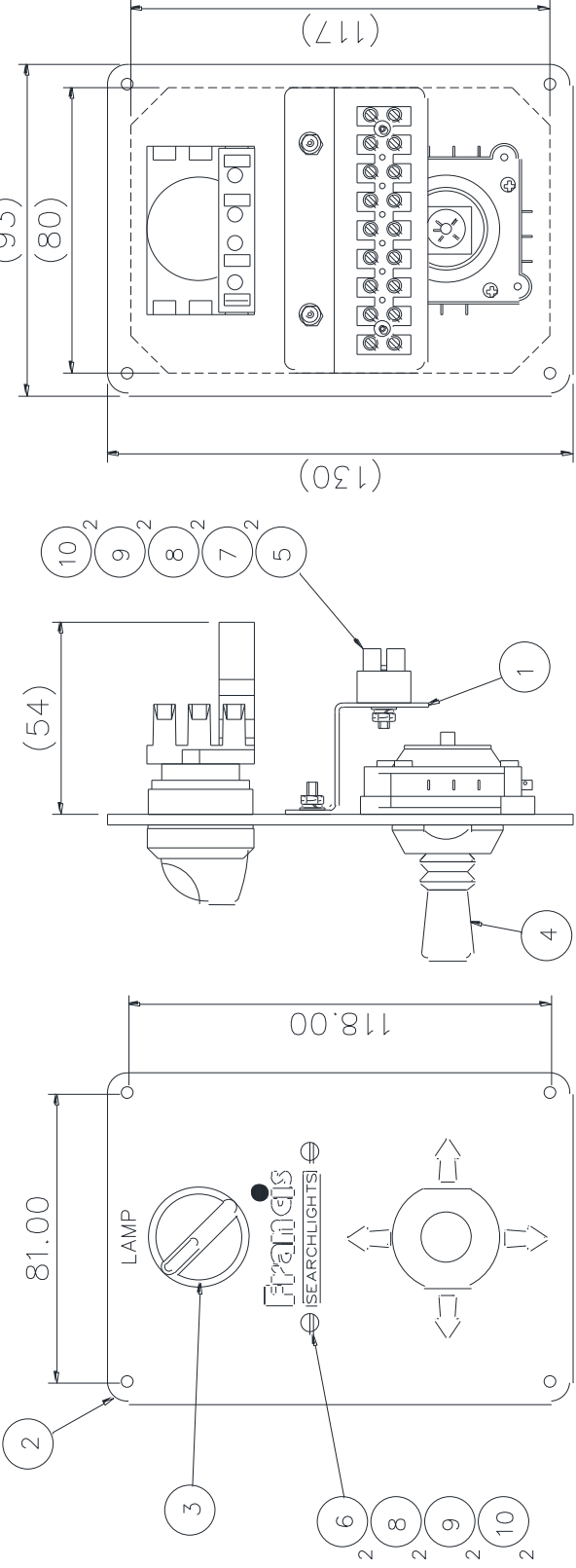
FIRST USED ON  
 LX330R  
 A630R  
 A603R  
 A611R  
 A612R

DO NOT SCALE DRAWING

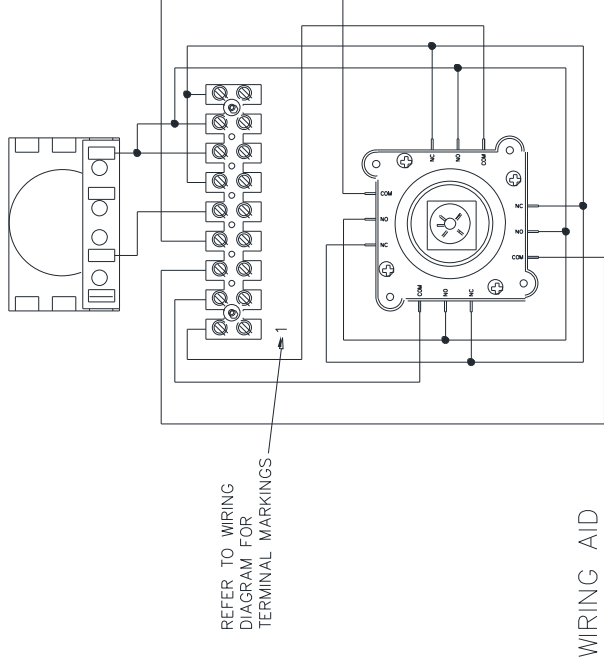
THIRD ANGLE PROJECTION

ISS No 1

DATE & UNITS  
 9.19 D.S.



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C26222	C26222	TERMINAL BRACKET	1
2	C26122	C26122	CONTROL PANEL	1
3	C14143		SELECTOR SWITCH 10A	1
4	C14444		JOYSTICK	1
5	C15056		TERMINAL BLOCK (9 WAY)	1
6	C27070		M3 x 12 CSK HD SCREW	2
7	C10203		M3 x 16 BUTTON HD SCREW	2
8	C08028		M3 PLAIN WASHER	4
9	C10747		M3 S/C SPRING WASHER	4
10	C05298		M3 FULL NUT	4



REFER TO WIRING DIAGRAM FOR TERMINAL MARKINGS

WIRING AID

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



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FINISH MATERIAL

Sand Casting: To ISO 8062 CT10

Die Casting: To ISO 8062 CT8

Hole centres & posns: ±

TOLERANCES  
 General: ±

Angular: ±

SCALE 1:1

DATE 9.19

DRAWN

CHECKED

ALL DIMENSIONS IN MILLIMETRES

DESCRIPTION

CONTROL PANEL ASSY

PART No./DRG No.

SHT C28321 1

DATE & INT'S	1.22 D.S.
MODIFICATION DETAILS	AS FIRST DRAWN
ISS No	1

DATE	1.22 D.S.
MODIFICATION DETAILS	AS FIRST DRAWN
ISS No	1

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C28481	C28481	CHASSIS PLATE ASSY	1
2	C22268	C22268	BREATHER UNIT ASSY	1
3	C28483	C28483	ENCLOSURE DRILLING	1
4	C27920		DRIVER	1
5	C12415		M20 CABLE GLAND	2
6	C15133		TERMINAL BLOCK 9 WAY	1
7	C04900		FRANCIS EXTERIOR LABEL	1
8	C27563		RED FORK CRIMP	4
9	C23598		M4 x 8 SELF TAP POZI HD SCREW	4
10	C10203		M3 x 16 BUTTON HD SCREW	2
11	C14502		M3 x 6 BUTTON HD SCREW	4
12	C08028		M3 PLAIN WASHER	4
13	C10747		M3 S/C SPRING WASHER	4

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

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 PART No./DRG No. C29416  
 SHT 1

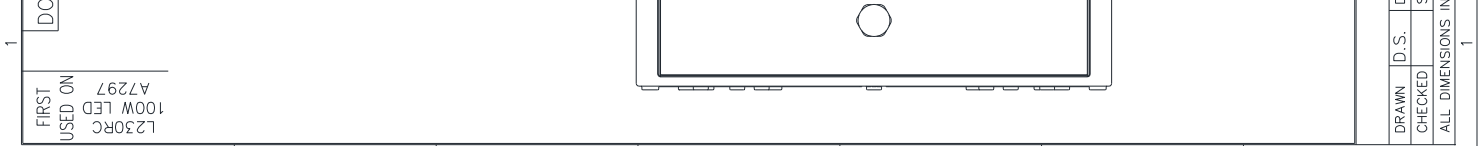
FRANCIS SEARCHLIGHTS  
 BOX WEIGHT - 3KGS  
 BOX DIMENSIONS 361 x 254 x 111  
 BOX FIXINGS 346 x 239

ASSEMBLE CHASSIS PLATE  
 PRIOR TO FITTING TO ENCLOSURE  
 FIXINGS ON UNDERSIDE OF CHASSIS PLATE

FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HU  
 Sand Casting: To ISO 8062 CT10 MATERIAL  
 Die Casting: To ISO 8062 CT8  
 Hole centres & posns: ±

DO NOT SCALE DRAWING  
 THIRD ANGLE PROJECTION  
 TOLERANCES  
 General: ±  
 Angular: ±

www.Francis.co.uk  
 0161 256 2888  
 ISO 9001:2015

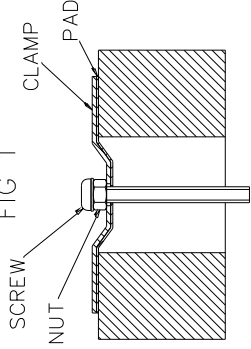


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CHECKED	SCALE	1:2	General: ±	Angular: ±
ALL DIMENSIONS IN MILLIMETRES				

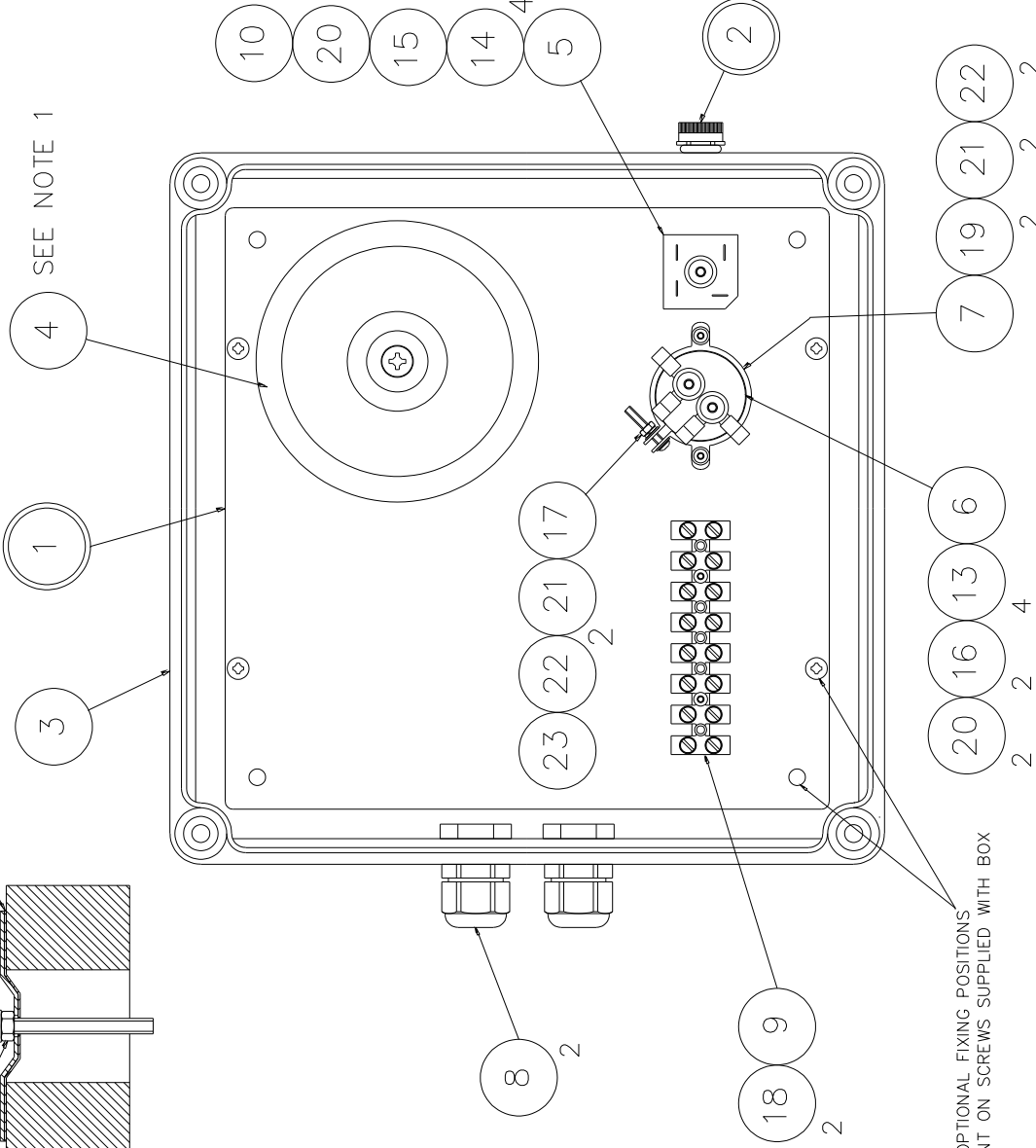
FIRST USED ON

DO NOT SCALE DRAWING

FIG 1



BOX DIM'N 180 x 180 x 130



OPTIONAL FIXING POSITIONS  
DEPENDANT ON SCREWS SUPPLIED WITH BOX

C26221 240V JUNCTION BOX ASSEMBLY  
C28516 110V JUNCTION BOX ASSEMBLY

NOTE

- 1.. USE SCREW & FIXINGS PROVIDED  
SCREW NUT FULLY ONTO SCREW  
SO SCREW DOES NOT PROTRUDE  
THROUGH CHASSIS PLATE (FIG 1)
- 2.. ITEMS 11 & 12 NOT SHOWN  
POSITION CENTRAL ON LID
- 3.. ITEMS 24, 25 & 26 NOT SHOWN

ITEM	PART No.	DRG No.	DESCRIPTION	240V	110V
				QTY	QTY
1	C26219	C26218	CHASSIS PLATE ASSY	1	1
2	C22268		BREATHER ASSY	1	1
3	C26217	C26217	ENCLOSURE	1	1
4	C24813		TRANSFORMER	1	1
5	C24072		RECTIFIER	1	1
6	C24823		CAPACITOR	1	1
7	C25946		CAPACITOR CLIP	1	1
8	C10158		GLAND	2	2
9	C15133		TERMINAL STRIP 8 WAY	1	1
10	C14232		HEAT SINK COMPOUND	A/R	A/R
11	C21464		LABEL DANGER 230V	1	1
11	C22078		LABEL DANGER 110V	1	1
12	C22036		LABEL ISOLATE SUPPLY	1	1
13	C14695		M5 RED RING TAG	4	4
14	C15828		RED SHROUDED CRIMP	4	4
15	C10620		M5 x 16 BUTTON HD SCREW	1	1
16	C10206		M5 x 12 BUTTON HD SCREW	2	2
17	C10129		M3 x 20 BUTTON HD SCREW	1	1
18	C10203		M3 x 16 BUTTON HD SCREW	2	2
19	C10131		M3 x 10 BUTTON HD SCREW	2	2
20	C08392		M5 PLAIN WASHER	3	3
21	C08028		M3 PLAIN WASHER	4	4
22	C10747		M3 S/C SPRING WASHER	3	3
23	C05298		M3 FULL NUT	1	1
24	C13872		CABLE 1.5mm RED	A/R	A/R
25	C13873		CABLE 1.5mm BLACK	A/R	A/R
26	C15112		CABLE 1.5mm G/Y	A/R	A/R

ISS No	MODIFICATION DETAILS	DATE	BY
1	AS FIRST DRAWN	2.13	LW
2	FRANCIS SEARCHLIGHTS MOVED (EG173)	12.09	LN

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



DATE	SCALE	TOLERANCES	MATERIAL
2.13	1:1	General: ± Angular: ±	Send Casting: To ISO 8062 CT10 Die Casting: To ISO 8062 CT8 Hole centres & pins: ±

DATE	SCALE	TOLERANCES	MATERIAL
2.13	1:1	General: ± Angular: ±	Send Casting: To ISO 8062 CT10 Die Casting: To ISO 8062 CT8 Hole centres & pins: ±

## 10 – Spare Parts List

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

<b>Part Number</b>	<b>Description</b>
<b>Searchlight Spares</b>	
C29429-00	LED
C29428-00	Fresnel Lens
C26630-00	Front glass
C21141-00	Bezel gasket
C16410-01	Tilt Motor
C16534-00	Tilt Motor Cover
C27103-01	Pan Motor Assembly
C26094-00	Pan Gear
C23945-01	Tilt Gear Bush Assembly (20 Teeth)
C21212-00	Tilt Gear (60 Teeth)
C22410-00	Diode
C29148-00	Tilt Motor 2 Way Connector
C10168-00	Base 'O' ring
C26103-00	Bearing Housing Gasket
C21567-00	Searchlight Heater
C24118-00	Fuse
C24021-00	Fuse Holder
C24813-00	Transformer (Models A7298 & A7299 HV Only)
C24072-00	Rectifier (Models A7298 & A7299 HV Only)
C24823-00	Capacitor (Models A7298 & A7299 HV Only)
C28022-00	Micro Switches (Tilt)
C22382-00	Micro Switches (Pan)
<b>Driver Spares</b>	
C22268-01	Breather Assembly
C27920-01	Driver
<b>Joystick Spares</b>	
C14143-00	On / off Switch
C14444-01	Joystick

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.