



User Instruction & Installation Manual

L230RC Low Profile Searchlight



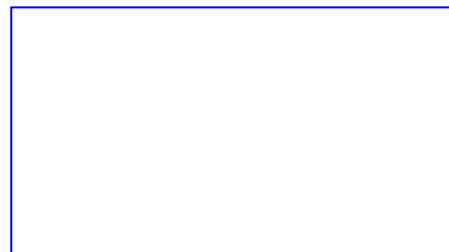
Product Reference Number:

A6247 L230RC 24v 250w Halogen
A6245 L230RC 230v 300w Halogen
A6246 L230RC 115v 300w Halogen

Manufacturer's details:

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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 LITE 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.

- Prevent rain, snow, condensation, and water droplets from contacting the lamp as this may cause bulb failure and possible shattering.
- Quartz halogen bulbs run with a high internal pressure more than atmospheric. Whilst the construction is inherently strong, there is a slight risk of the bulb shattering.
- Never look directly into an illuminated searchlight as this may cause severe damage to eyesight. If it is necessary to inspect a lamp whilst in operation, always wear suitable protective goggles.
- Should it be necessary to examine the lamp with the front bezel removed, always use a protective shield and wear goggles to ensure a safe working environment.
- Never attempt to clean a lamp whilst in use.
- 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 lamp has cooled sufficiently before removal.
- If undue force appears necessary to remove the lamp, the equipment should be inspected by a competent person or contact the manufacturer.
- When breaking a lamp for disposal, care must be taken to ensure the glass fragments are safely contained. This operation must be performed out of doors in free air. In all circumstances refer to the lamp manufacturer's instructions packed with the lamp.
- Due to the vast range of lamps available it may appear possible that more powerful lamps can be used in the equipment than for which it was designed. Even when the unit will physically accept a higher wattage or voltage lamp, this substitution is not recommended and is dangerous. This action will also void any warranties on the equipment.

Always refer to the lamp manufacturer's technical data when dealing with lamps.

3 – Technical Information

This product has been designed to operate in accordance with the product specification. The L230RC searchlight has the following features:

- All marine grade materials and fixings.
- Powder coated finish & stove enamel paint finish.
- 365° horizontal rotation.
- Vertical movement $\pm 20^\circ$.
- Pan rotation speed $24^\circ/\text{sec}$.
- Tilt rotation speed $4^\circ/\text{sec}$.
- Toughened super clear Optiwhite front glass.
- Parabolic formed aluminium reflector.
- Fixed focus.
- Heater fitted in barrel.
- Sealing – IP66 Searchlight – IP65 Joystick.
- Searchlight weight 11Kgs.

The 115/230v searchlight also performs to the following optical data:

	<u>115v 300-Watt T/H</u>	<u>230v 300-Watt T/H</u>
■ Lamp Life	75 Hours Life	75 Hours Life
■ Supply voltage	115v	230v
■ Peak Beam Candlepower	832,000 lux	790,000 lux
■ Range	912 metres	888 metres
■ Divergence	4.8°	4.8°
■ Operational temperature	-50°C	-50°C

The 24v searchlight also performs to the following optical data:

	<u>24v 150-Watt T/H</u>	<u>24v 250-Watt T/H</u>
■ Lamp Life	300 Hours Life	300 Hours Life
■ Supply voltage	24v	24v
■ Peak Beam Candlepower	614,000 lux	1,200,000 lux
■ Range	784 metres	1095 metres
■ Divergence	2.8°	2.3°
■ Operational temperature	-50°C	-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 lamp fitted be applied to the lamp holder 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.

The following table below indicates the maximum length of cable to be used for the supply cable, from the junction box to the searchlight:

Searchlight	24v 150w	24v 250w	115v 300w	230v 300w
Cable Size (mm ²)	Distance Max	Distance Max	Distance Max	Distance Max
1.5	5 MTRS	3 MTRS	13 MTRS	24 MTRS
2.5	8 MTRS	5 MTRS	21 MTRS	39 MTRS
4.0	13 MTRS	8 MTRS	32 MTRS	62 MTRS
6.0	20 MTRS	12 MTRS	50 MTRS	96 MTRS
10.0	34 MTRS	20 MTRS	84 MTRS	161 MTRS

- 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 115/230v AC products, the following colour coding system should be used for the customer supply cable:

Brown	-	Live
Blue	-	Negative
Green/Yellow	-	Earth

Note: This equipment must be earthed.

Installation Guidelines

A typical installation and connection routine for the L230RC 230v 300w searchlight is as follows:

Referring to wiring diagram C29675, a 240v supply is fed to the HV junction box, which then provides a 24v feed to the searchlight and joystick panel.

The searchlight has been pre-wired with 4 meters of cable from the searchlight to junction 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 junction box.

3 core 1.5mm cable from the junction box to the joystick panel.

Supply cable to the junction box.

Installation Guidelines

A typical installation and connection routine for the L230RC 110v 300w searchlight is as follows:

Referring to wiring diagram C29676, a 110v supply is fed to the HV junction box, which then provides a 24v feed to the searchlight and joystick panel.

The searchlight has been pre-wired with 4 meters of cable from the searchlight to junction 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 junction box.

3 core 1.5mm cable from the junction box to the joystick panel.

Supply cable to the junction box.

Installation Guidelines

A typical installation and connection routine for the L230RC 24v 150/250w searchlight is as follows:

Referring to wiring diagram C29674, a 24v supply is fed to the joystick panel.

The searchlight has been pre-wired with 4 meters of cable from the searchlight to junction 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 junction box.

Supply cable 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 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.

The searchlight is also fitted with a breather at the rear of the searchlight which ensures a steady airflow to prevent any vacuum forming within the barrel.

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 Lamp to light

Causes:

- 1) Power not supplied.
- 2) Fuse blown.
- 3) Failed lamp

Remedy:

- 1) Check voltage at supply. If supply is not present the fault is at the customer supply. If power is present, see remedy 2.
- 2) Check fuse for visual failure. If non noticeable check fuse for continuity using a multi-meter. If fuse found to be faulty, replace with new part and test equipment again for correct working order. If found to be working correctly see remedy 3.
- 3) Firstly, check supply at terminals 5 & 6 on the rear terminal block (within searchlight barrel). If supply is present, disconnect unit from power supply before removing the lamp. If noticeable damage to filament is present, the lamp will have failed. The lamp can also be checked for continuity using a multi-meter. Replace lamp ensuring all precautions and instructions previously outlined in this manual are adhered to.

8 - Maintenance and Servicing

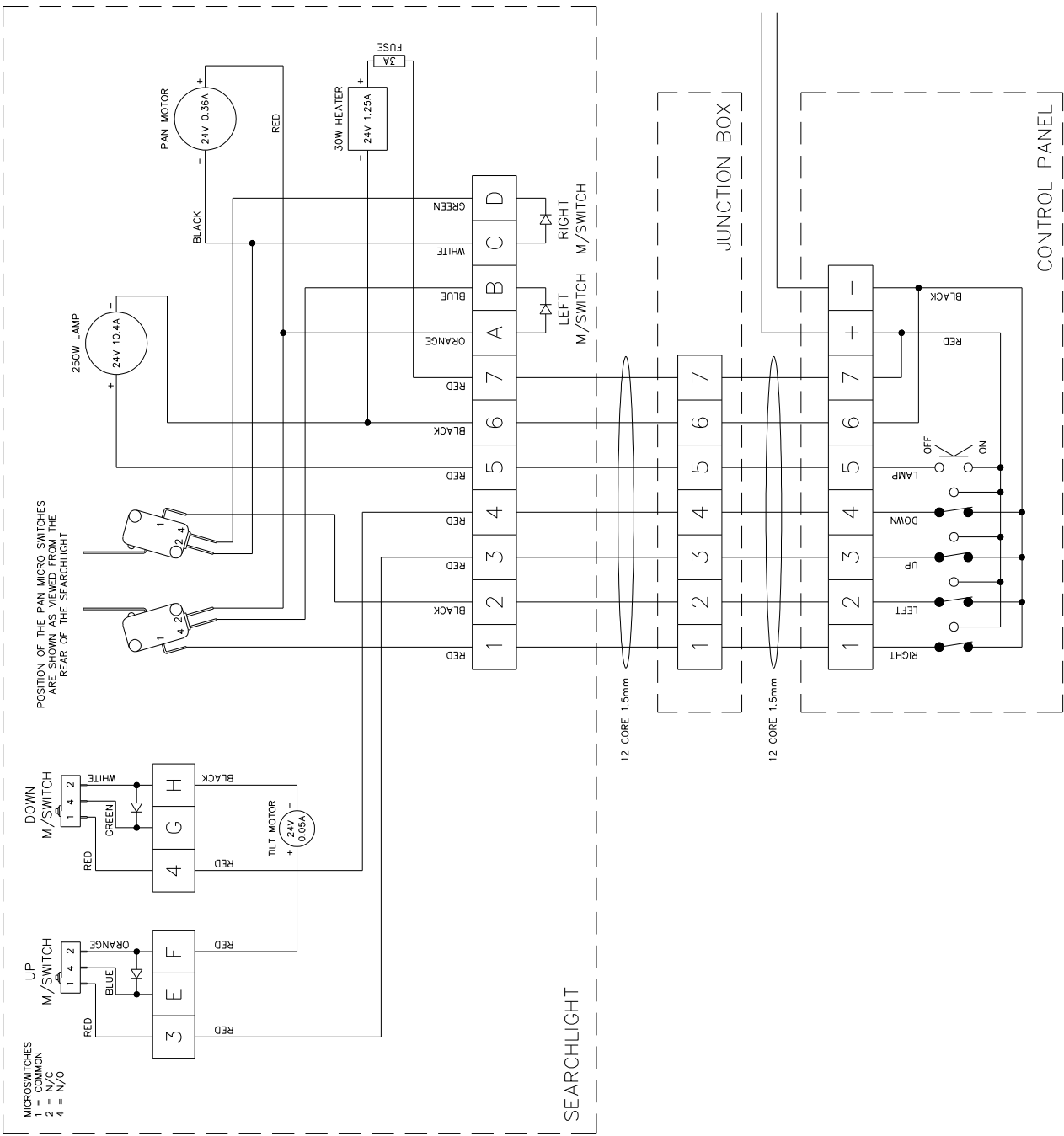
To prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

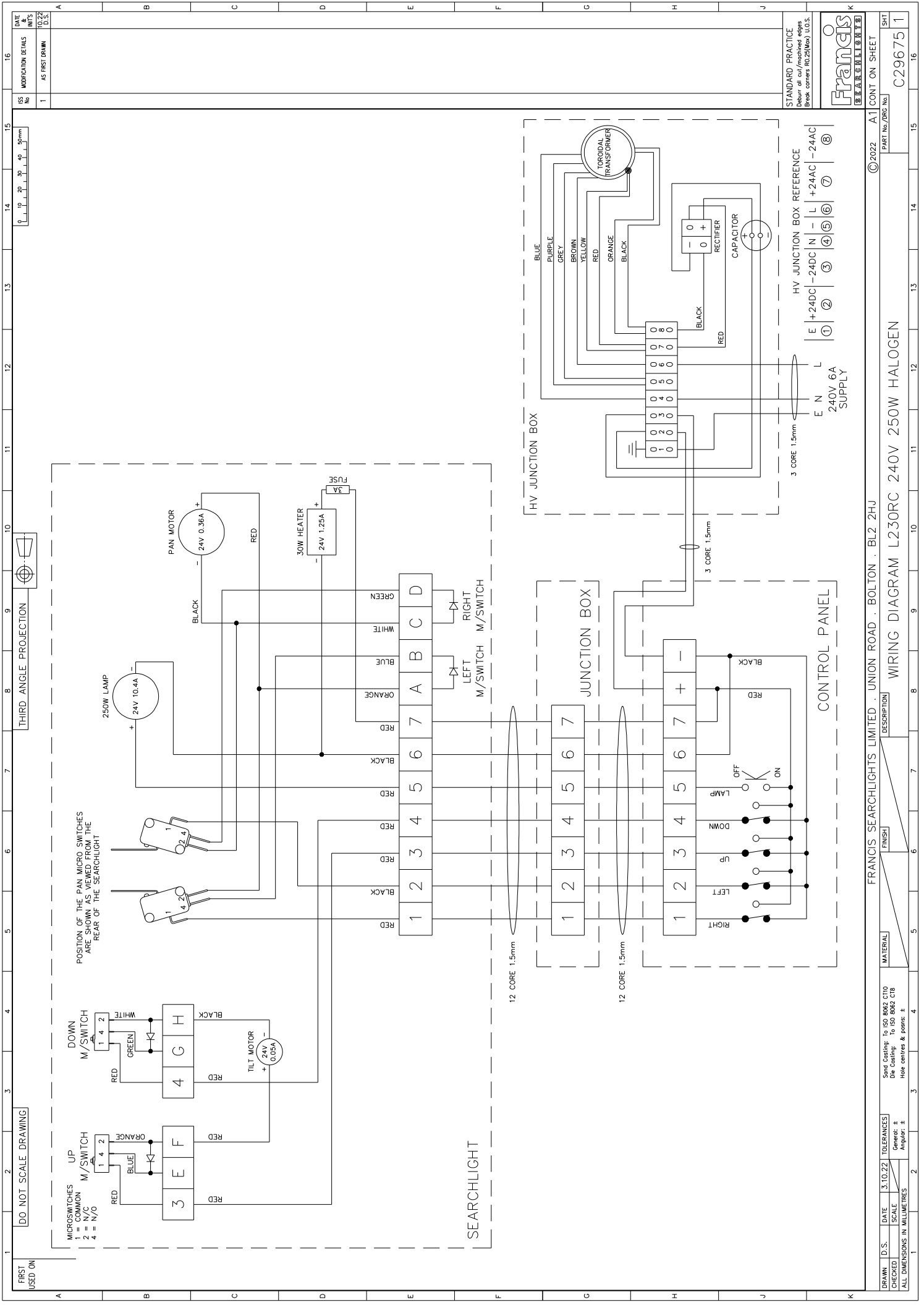
- Maintenance checks should be conducted before every voyage or at least every three months.
- Before checking, disconnect the equipment from the supply.
- Visually inspect the condition of the equipment.
- Any major or minor structural damage should be rectified immediately to reduce sympathetic wear.
- 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 reflector if required.
 - Ensure that the lamp holder is free from corrosion or other damage.
- It is advisable to check all seals and gaskets for signs of degradation. Renew if necessary.
- The searchlight is fitted with a breather unit. This ensures a steady airflow to prevent any vacuum forming within the barrel.
- 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

Drawing Number	Description
A6247	A6247 L230RC 24v 150/250w Halogen General Assembly A6246 L230RC 115v 300w Halogen General Assembly A6245 L230RC 230v 300w Halogen General Assembly
C29674	Wiring Diagram 24v
C29675	Wiring Diagram 240v
C29676	Wiring Diagram 115v
C28321	Control Panel Assembly
C26221	C26221 Junction Box 240v C28516 Junction Box 115v
C26225	Junction Box Assembly





DATE	16
MODIFICATION DETAILS	
REV	
NO	
1	AS FIRST DRAWN

STANDARD PRACTICE
 Detail of cut/mech'd edges
 Break corners R0.25(Min) U.O.S.

Francis

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 PART No./REV No
 C29675 1

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

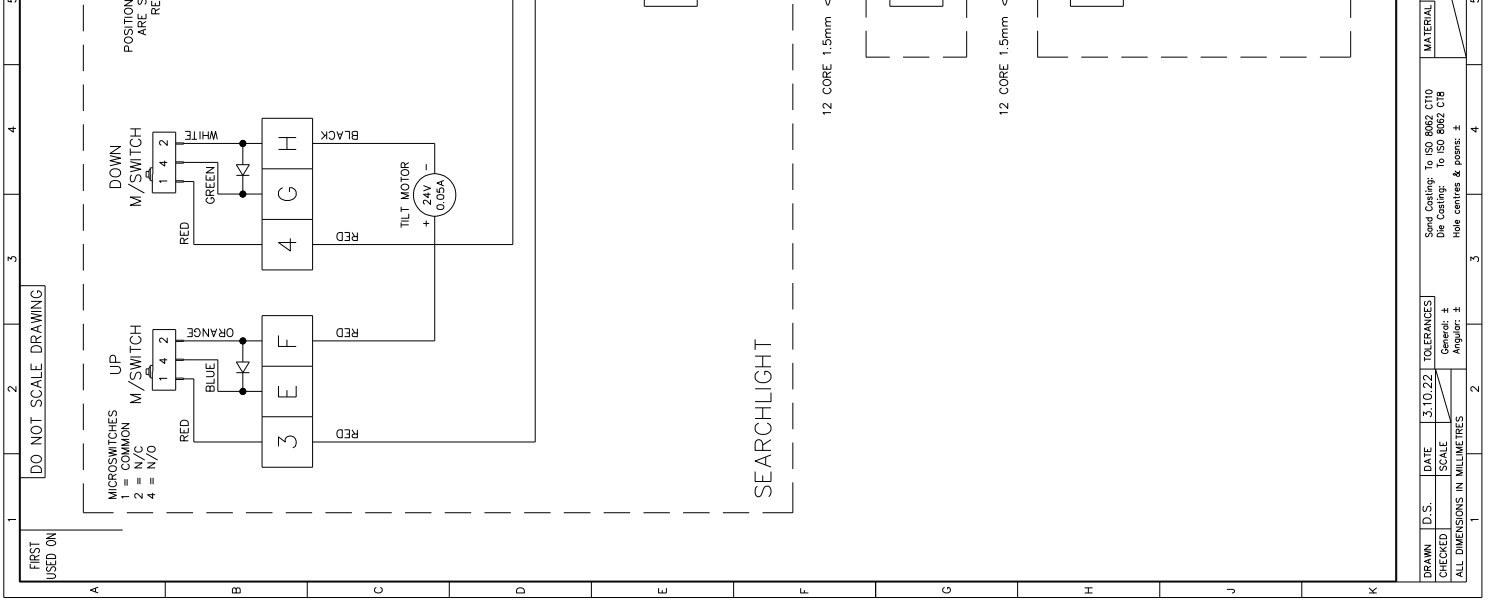
DRAWN	D.S.	DATE	3.10.22	TOLERANCES
CHECKED		SCALE		
ALL DIMENSIONS IN MILLIMETRES		Hole centres & gaps: ±		
Hole centres & gaps: ±		Angle: ±		

See Catalogue: T1 ISO 8829 010
 Bore Catalogue: T1 ISO 8828 C10
 Hole centres & gaps: ±

DESCRIPTION
 WIRING DIAGRAM 240V 250W HALOGEN

FINISH

SHEET	1
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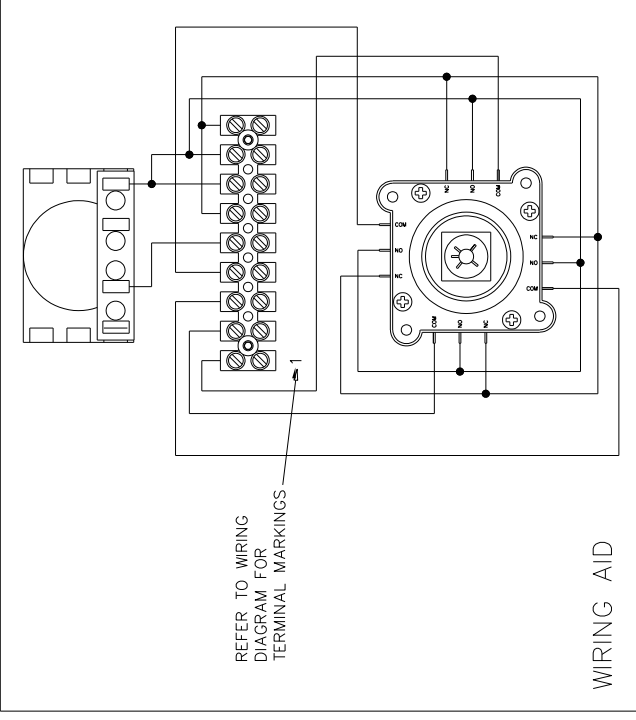
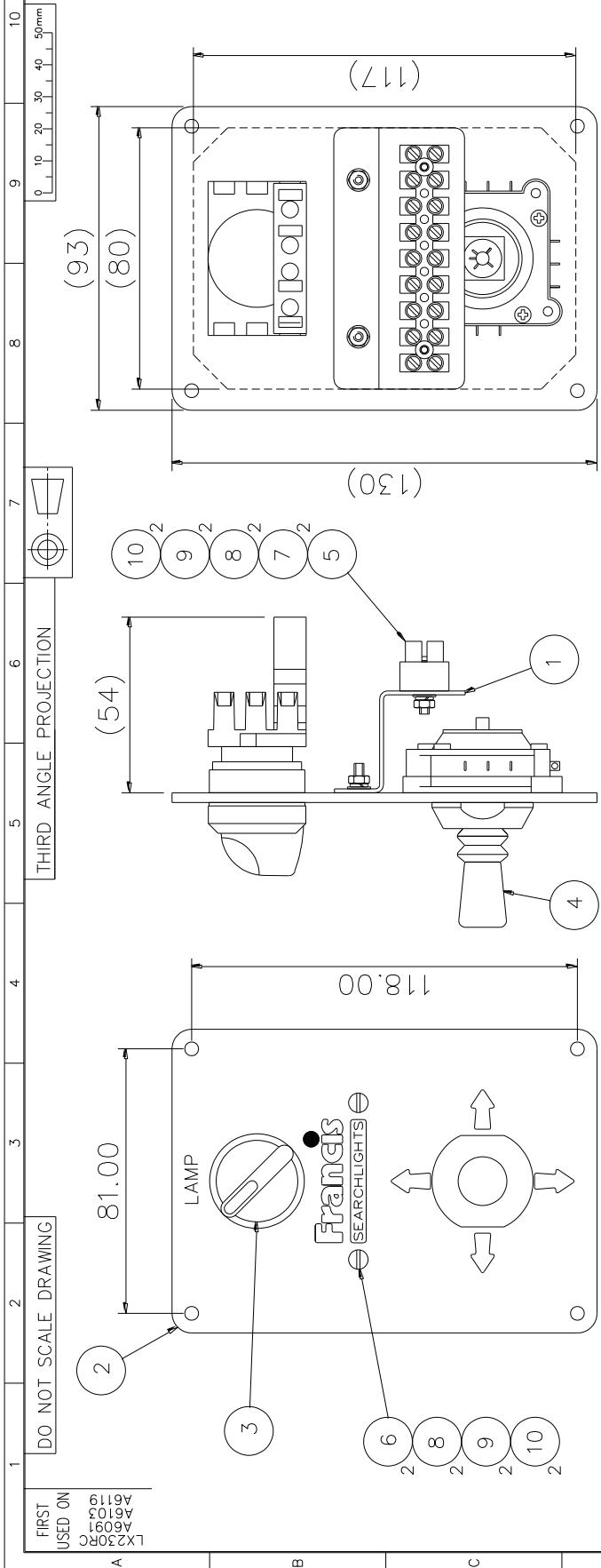


FIRST USED ON
LX230R
A6103
A6104
A6105
A6106
A6107
A6108
A6109

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

ISS No	1
DATE & INITIALS	AS FIRST DRAWN
9.13	
9.15	
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

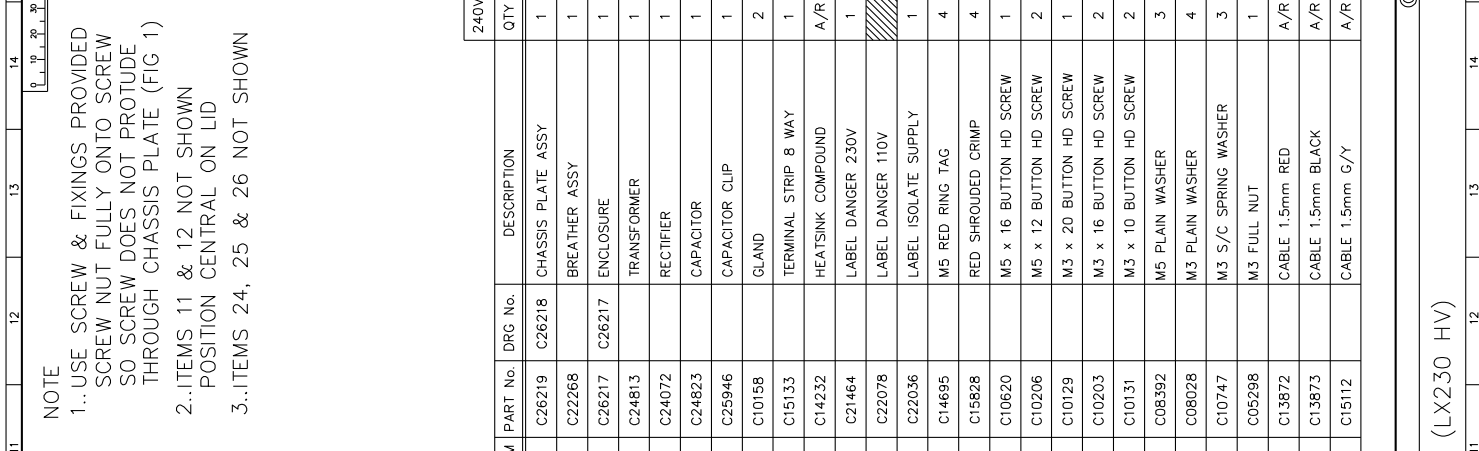
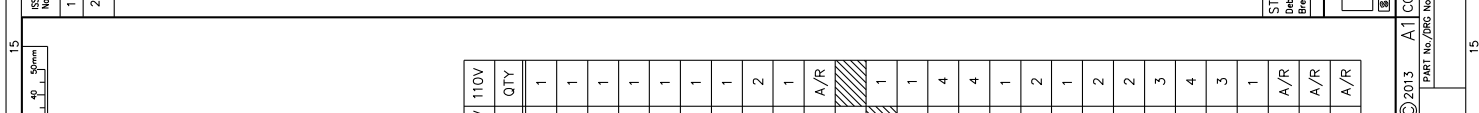
STANDARD PRACTICE
Debur all cut/machined edges
Break corners R0.25(Max) U.O.S.



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PART No./DRG No. C28321
SHT 1

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU
DESCRIPTION CONTROL PANEL ASSY
FINISH
MATERIAL
Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 C18
Hole centres & posns: ±

DRAWN	D.S.	DATE	9.19	TOLERANCES	
CHECKED	SCALE	1:1	General: ±	Angular: ±	
ALL DIMENSIONS IN MILLIMETRES					



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
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		HEATSINK 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

SEE NOTE 1

BOX DIM'N 180 x 180 x 130

THIRD ANGLE PROJECTION

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

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

HV JUNCTION BOX ASSEMBLY (LX230 HV)

FINISH MATERIAL DESCRIPTION

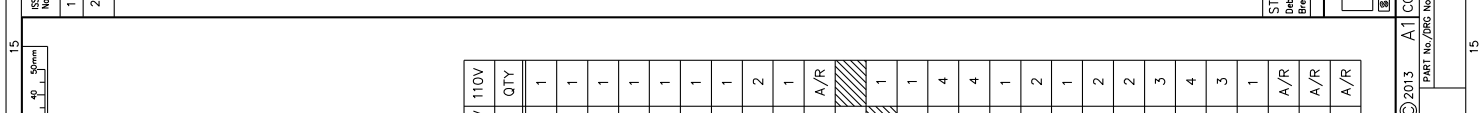
Send Onings: To ISO 8062 C10
 Die Castings: To ISO 8062 C18
 Hole centres & posns: ±

2.1.3 TOLERANCES
 SCALE 1:1
 General: ±
 Angular: ±

ALL DIMENSIONS IN MILLIMETRES

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

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 PART No./DRG No. C26221
 SHT 1

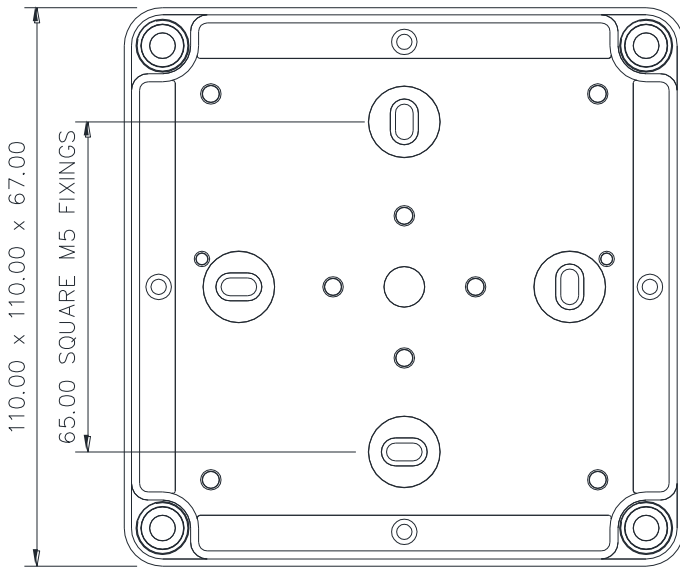
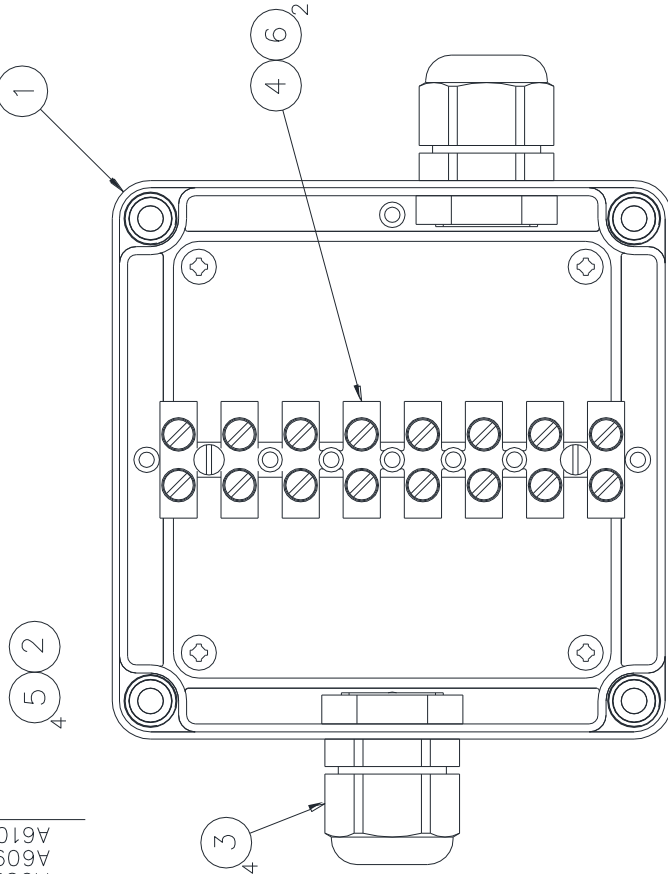


FIRST USED ON
LX230RC
A6091
A6091
A6091
A6103
A6103

DO NOT SCALE DRAWING

THIRD ANGLE PROJ

VIEW WITH LID REMOVED



SEE DO FOR LABEL
WEIGHT 260g
IP66

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C26224	C26224	ENCLOSURE	1
2	C26223	C26223	CHASSIS PLATE S/ASSY	1
3	C10158		M20 CABLE GLAND	2
4	C15133		TERMINAL BLOCK (8WAY)	1
5	C23598		SCREW $\phi 4 \times 8$ PAN POLYMATE	4
6	C10129		SCREW M3 \times 20 BUTTON HD	2

STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.
TOLERANCES U.O.S: -
General: ± 0.25
Angular: \pm
Hole centres & posns: ± 0.125
Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 CT8



ISS No	MODIFICATION DETAILS	DATE & INITS
1	AS FIRST DRAWN	2.13 LW
2	C26223 UPDATED & C26224 UPDATED TO MATCH NEW C23709 BOX EC2095	9.25 H.E.C

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DRAWN	LW	DATE	2.13	MATERIAL	FINISH	DESCRIPTION	PART No./DRG No.	SHT
CHECKED		SCALE	1.1			JUNCTION BOX ASSY (LX230RC 12v)	C26225	1
ALL DIMENSIONS IN MILLIMETRES								

10 – Spare Parts List

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

Part Number	Description
Searchlight Spares	
D14795	24v 150w Lamp
D4695	24v 250w Lamp
D16883	115v 300w Lamp
D16841	230v 300w Lamp
C16878-00	Lamp holder
C21140-00	Front glass
C12888-00	Front Glass Infra-Red (Optional)
C21141-00	Front glass gasket
C22268-01	Breather Assembly
C25988-00	Reflector
C28025-01	Tilt Motor Assembly
C26119-00	Tilt Timing Belt
C27103-01	Pan Motor Assembly
C21211-00	Pan Motor Gear
C10168-00	Base 'O' ring
C26103-00	Bearing Housing Gasket
C21567-00	Searchlight Heater
C24118-00	Fuse
C24021-00	Fuse Holder
C24813-00	Transformer (Model A6103 HV Only)
C24072-00	Rectifier (Model A6103 HV Only)
C24823-00	Capacitor (Model A6103 HV Only)
C28022-00	Micro Switches (Tilt)
C22382-00	Micro Switches (Pan)

Joystick Spares

C14143-00	On / off Switch
C14444-00	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.