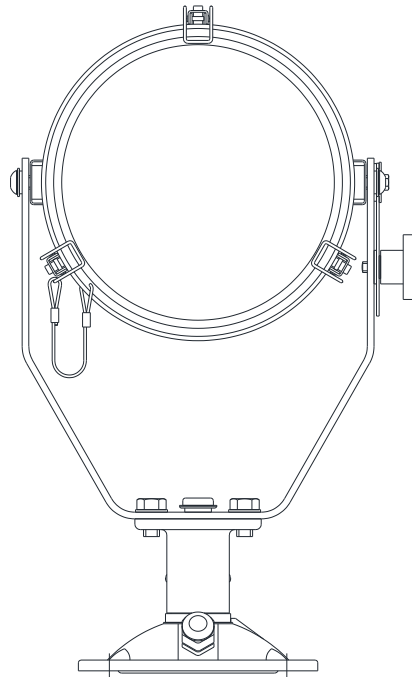




User Instruction & Installation Manual

L230 100-Watt LED Searchlight



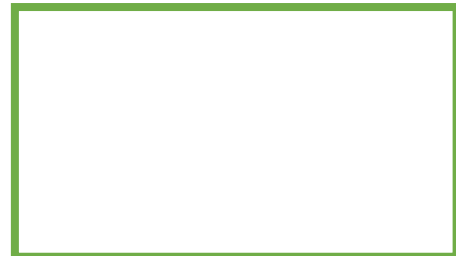
Product Reference Number:

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:

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Tel: +44 (0) 1204 558960
Fax : +44 (0) 1204 558979
<http://www.francis.co.uk>
E-mail : sales@francis.co.uk

Distributor details:



Manual Part Number: C30022

Issue: 2

24.9.25

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- 2 - Safety Precautions
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- 10 - Spare Parts List

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° (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° .
- LED life – 30,000 hours.
- Fixed focus 4° spot.
- 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, 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

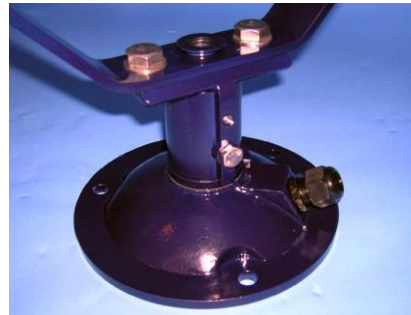
For Deck Models:

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:



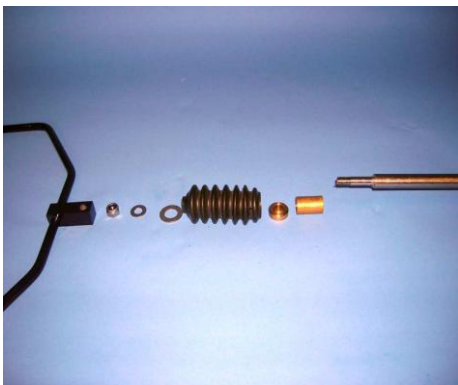
1. Remove the Base Lock Wheel.



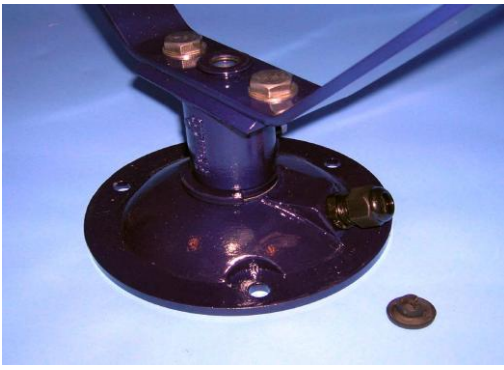
2. Replace Lock Wheel with M8 x 10 hexagon screw in the bottom fixing



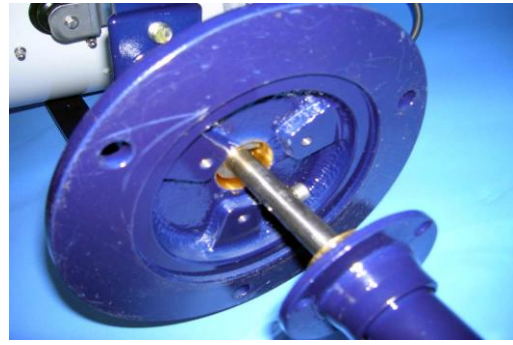
3. Now remove the following items as these are only required on deck models Barrel Lock Wheel, Elevation Link and fixings



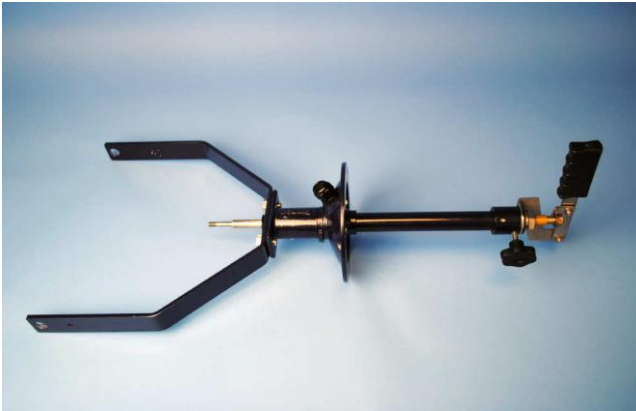
4. When installing the Under Deck mechanism, first separate the following items. U-Piece Assembly, M8 nyloc nut, M8 plain washer, M12 plain washer, Rubber Bellows, Bellows Top Bush, and the Push Rod Top Bush



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



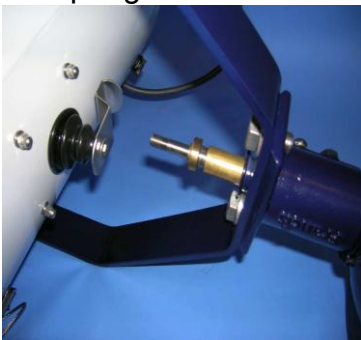
6. Insert the Under Deck through the centre hole making sure it is aligned as photos below.



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.

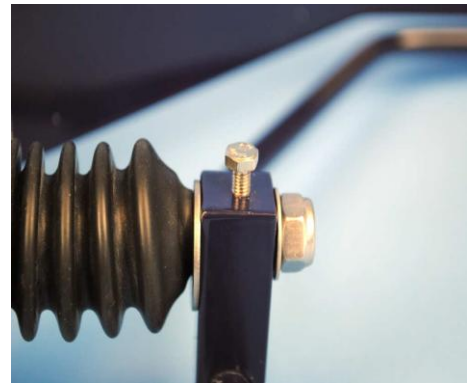


10. Bellows.



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

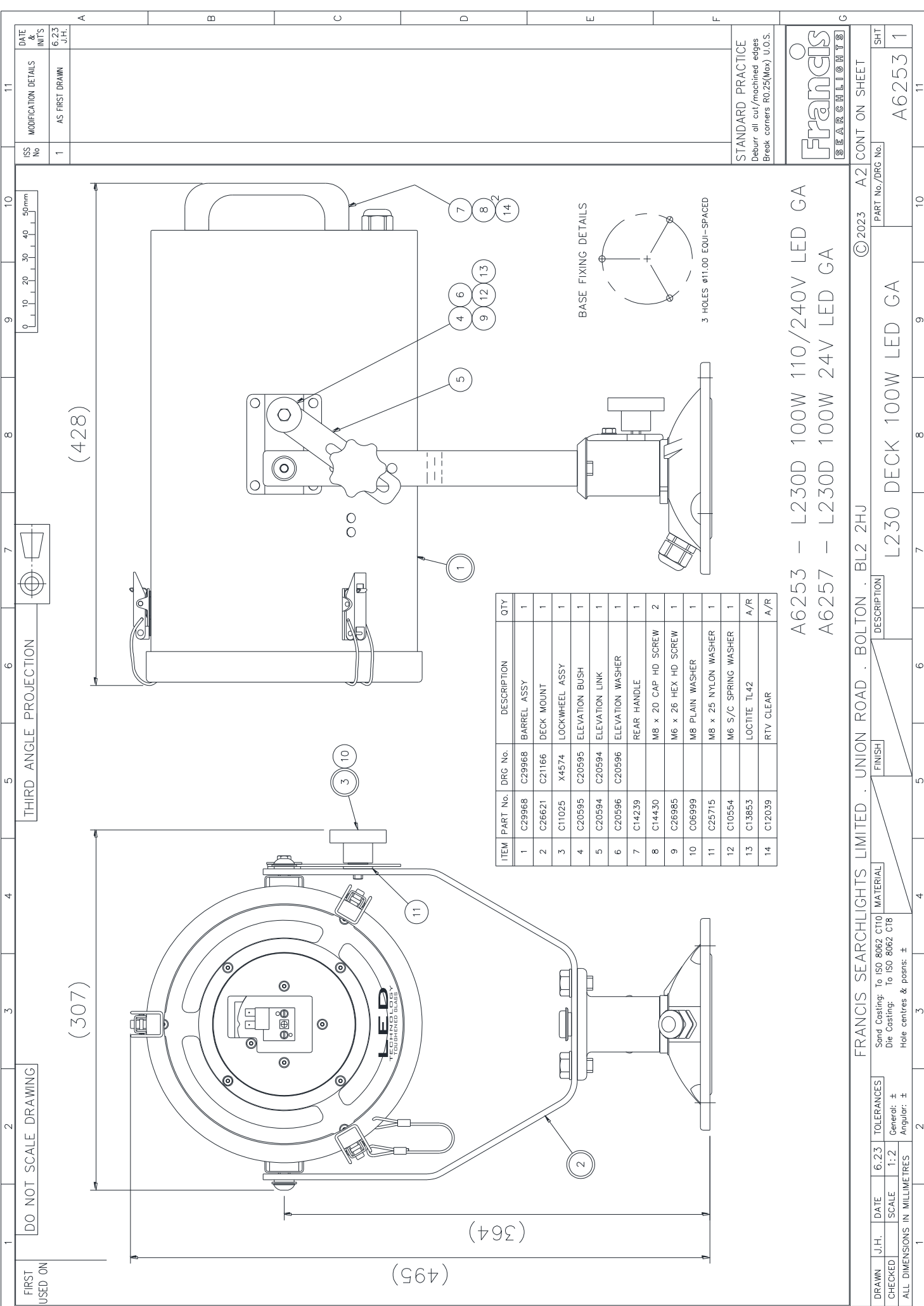
To prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- 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



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		M6 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

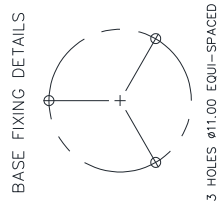
A6253 - L230D 100W 110/240V LED GA
A6257 - L230D 100W 24V LED GA

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

DRAWN	J.H.	DATE	6.23	TOLERANCES	Sond Casting: To ISO 8062 C110 Die Casting: To ISO 8062 C18
CHECKED		SCALE	1:2	General: ± Angular: ±	
ALL DIMENSIONS IN MILLIMETRES				Hole centres & posns: ±	
FINISH					
MATERIAL					
DESCRIPTION					
L230 DECK 100W LED GA					
PART No./DRG No.					
A6253 1					
SHT					
CONT ON SHEET					



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



11 10 9 8 7 6 5 4 3 2 1

11 10 9 8 7 6 5 4 3 2 1

DATE & INIT'S
6.23 J.H.

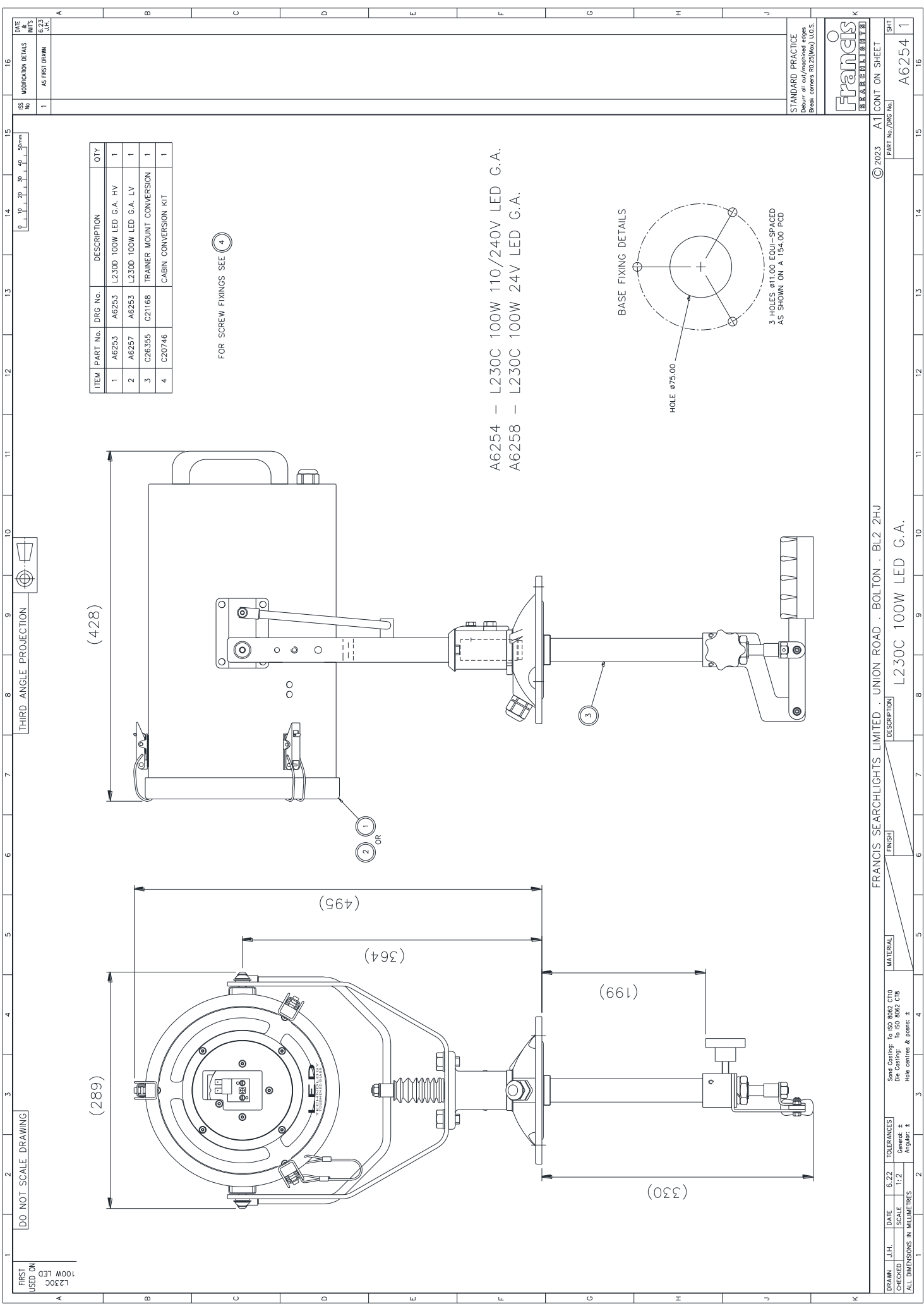
MODIFICATION DETAILS
AS FIRST DRAWN

ESS No
1

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

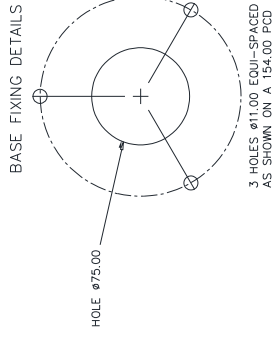
FIRST USED ON



ITEM	PART No.	DRC No.	DESCRIPTION	QTY
1	A6253	A6253	L2300 100W LED G.A. HV	1
2	A6257	A6253	L2300 100W LED G.A. LV	1
3	C26355	C21168	TRAINER MOUNT CONVERSION	1
4	C20746		CABIN CONVERSION KIT	1

FOR SCREW FIXINGS SEE (4)

A6254 - L230C 100W 110/240V LED G.A.
 A6258 - L230C 100W 24V LED G.A.



FIRST USED ON L230DP 100W LED

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

DATE 6.23 J.H.

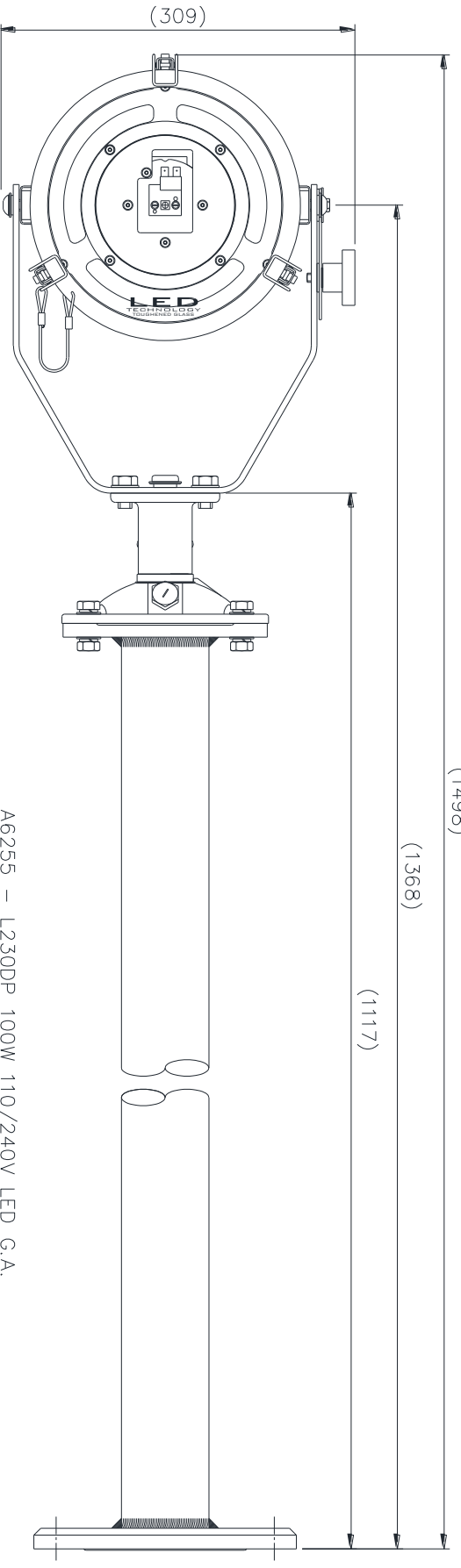
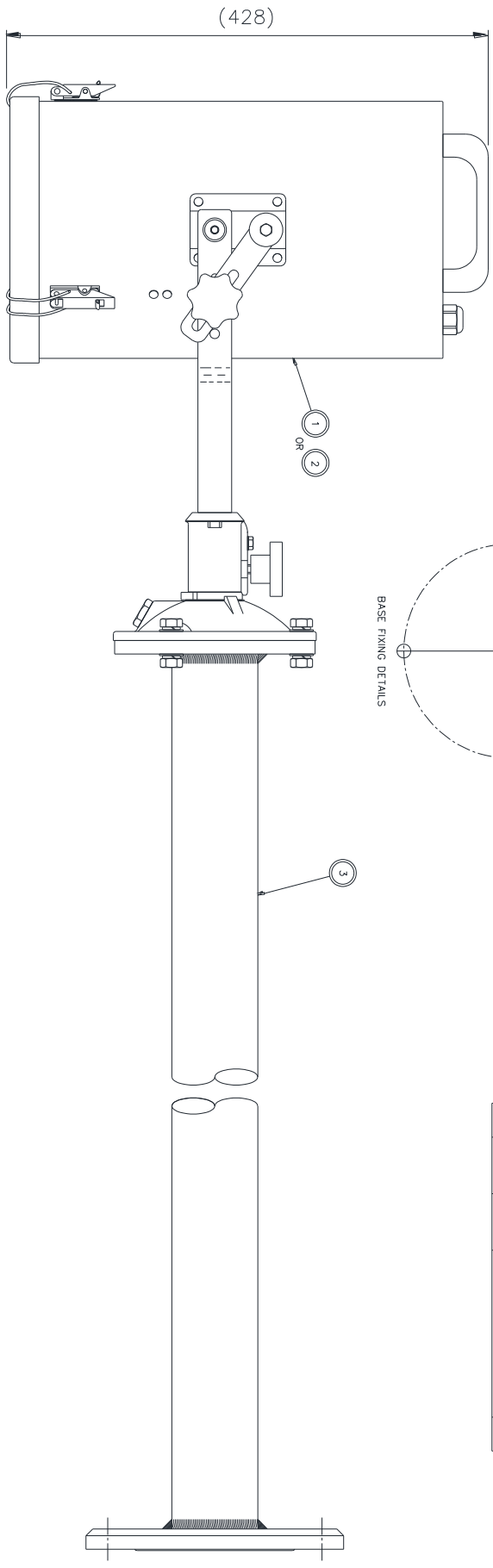
0 10 20 30 40 50mm

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

4 HOLES ø12.50 EQUI-SPACED AS SHOWN ON A 130.00 PCD

BASE FIXING DETAILS

FOR SCREW FIXING KIT SEE (4)



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

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

DRAWN	J.H.	DATE	6.23	TOLERANCES
CHECKED		SCALE	1:2	General: ±
				Angular: ±

Send Castings to ISO 8002 CT10
 Die Castings to ISO 8002 C18
 Hole centres & points: ±

DESCRIPTION L230DP 100W LED G.A.

© 2023 A1 CONT ON SHEET
 PART No./DRG No. A6255 1



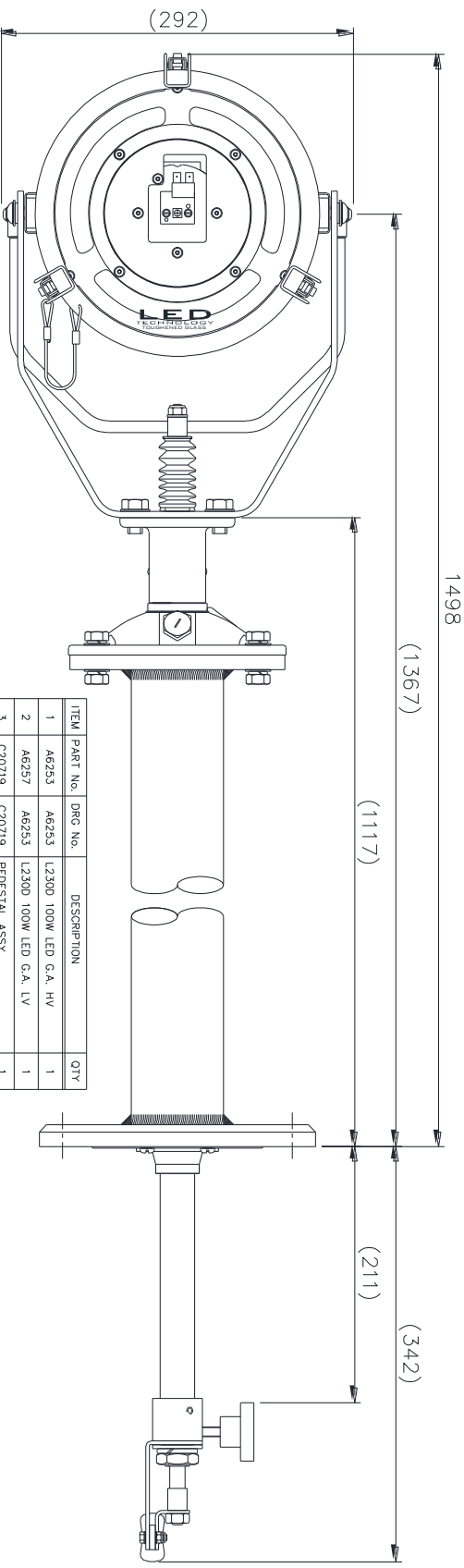
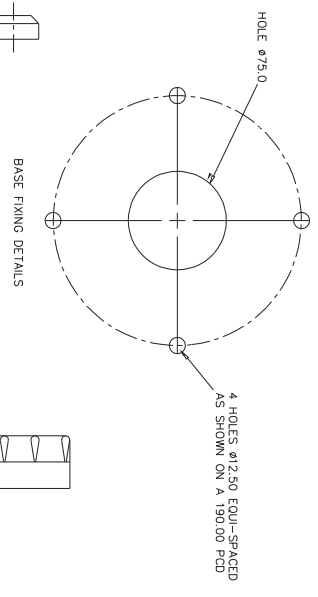
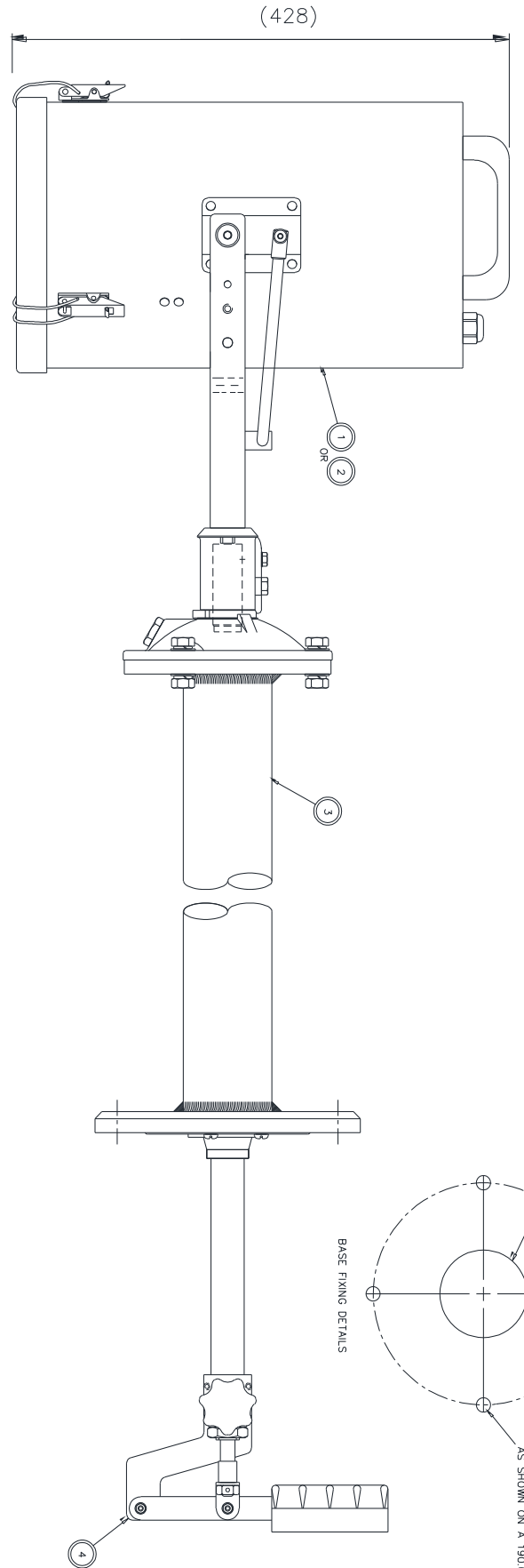
FIRST USED ON L230CP 100W LED

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



ISS No	DATE
1	6.23.17
MODIFICATION DETAILS	BY
AS FIRST DRAWN	



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	C28356	C21169	CP TRAINER MOUNT CONVERSION	1
5	C20748	C20748	CMB PED CONVERSION KIT	1

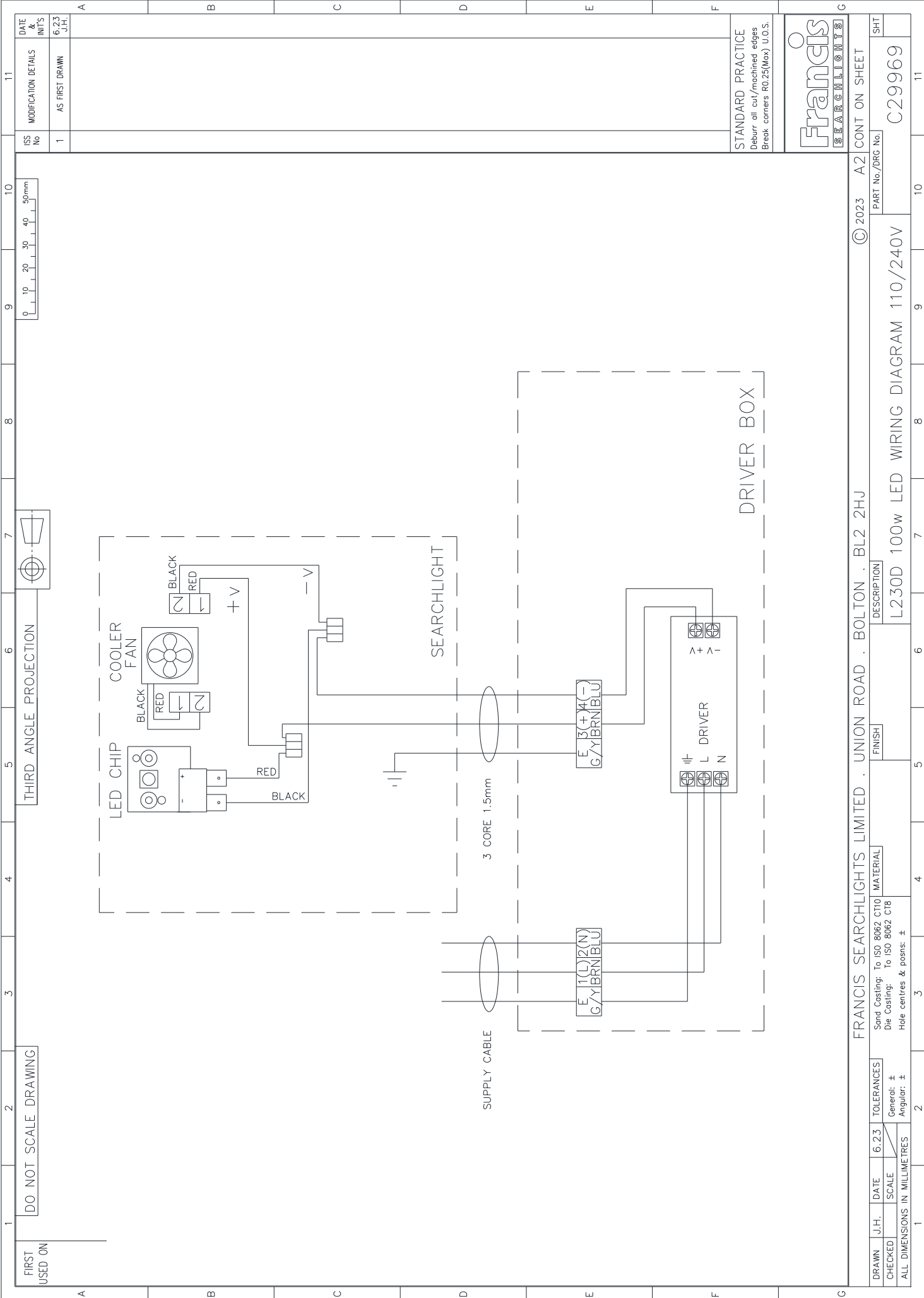
FOR SCREW FIXING KIT SEE ⑤

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

STANDARD PRACTICE
Debur all cut/finished edges
Break corners R0.25(10x) U.S.



DRAWN	J.H.	DATE	6.23	TOLERANCES	General: ±	Surface Finish: 3	Spot Casting: to ISO 8882 C110	MATERIAL		FINISH		DESCRIPTION	L230CP 100W LED G.A.	PART No./DRG No.	A1	CONT ON SHEET	SHT	1
CHECKED		SCALE	1:2	Angular: ±			to ISO 8882 C10											
ALL DIMENSIONS IN MILLIMETRES																		
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU																		
© 2023																		



1	2	3	4	5	6	7	8	9	10	11
DATE & INIT'S 6.23 J.H.										
MODIFICATION DETAILS AS FIRST DRAWN										
ISS No 1										
STANDARD PRACTICE Debur all cut/machined edges Break corners R0.25(Max) U.O.S.										

THIRD ANGLE PROJECTION 0 10 20 30 40 50mm 0 10 20 30 40 50mm										
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FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HJ © 2023 A2 CONT ON SHEET PART No./DRG No. C29969 SHT										
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DESCRIPTION L230D 100w LED WIRING DIAGRAM 110/240V										
---	--	--	--	--	--	--	--	--	--	--

FINISH Sand Coating: To ISO 8062 CT10 Die Coating: To ISO 8062 CT8 Hole centres & posns: ±										
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TOLERANCES General: ± Angular: ±										
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ALL DIMENSIONS IN MILLIMETRES										
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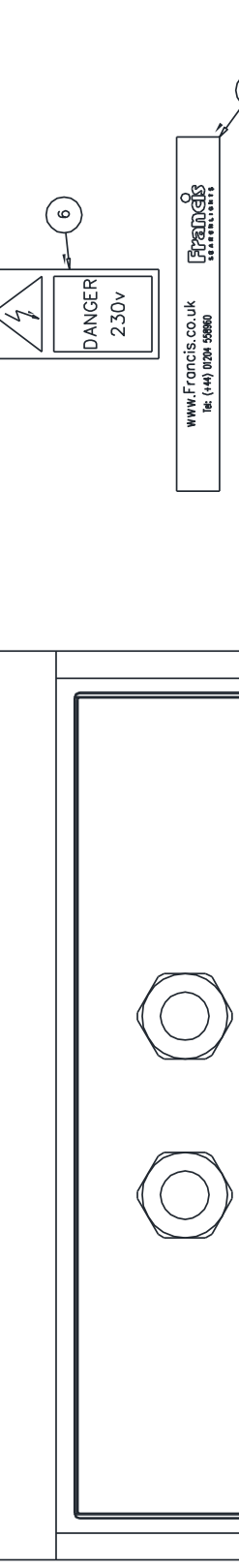
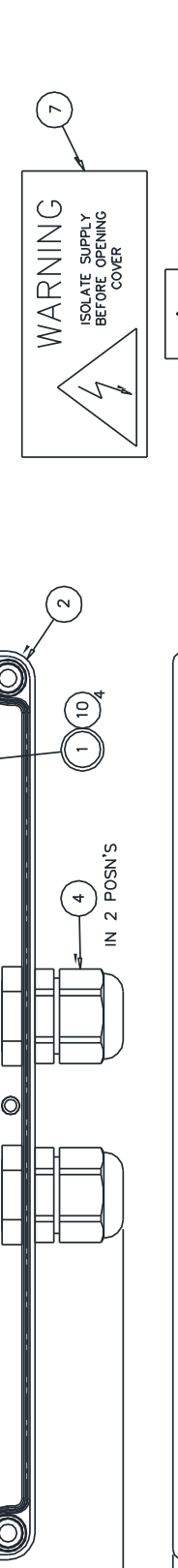
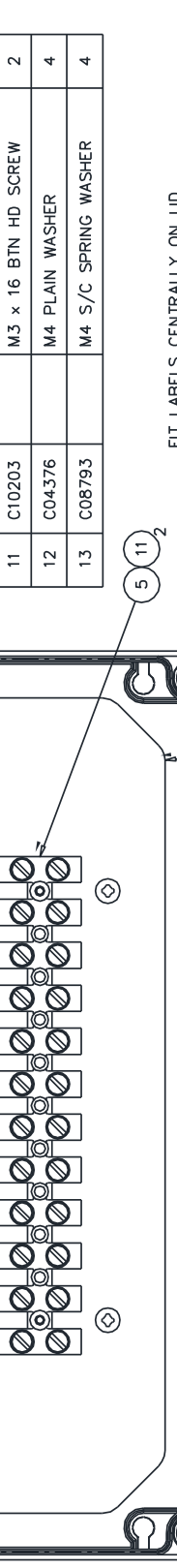
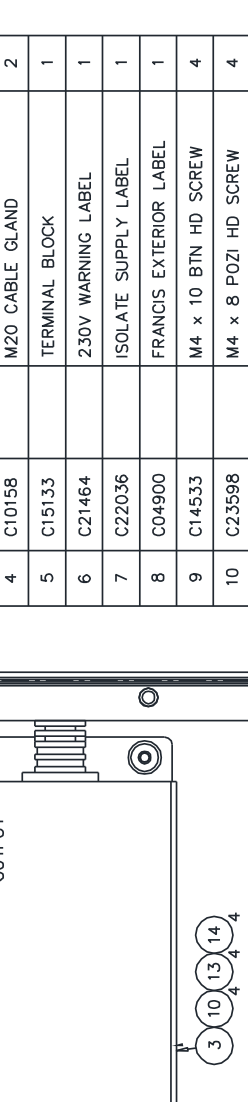
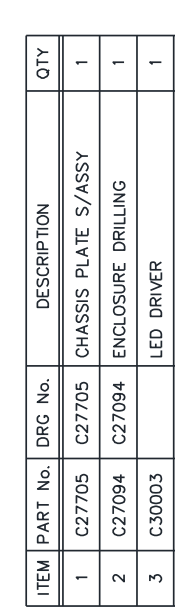
FIRST USED ON DO NOT SCALE DRAWING										
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DATE & INIT'S	MODIFICATION DETAILS	ISS No
7.23 J.H.	AS FIRST DRAWN	1
7.25 H.E.C	C27705 REPLACES 9.25 C30019 (EC2092)	2

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C27705	C27705	CHASSIS PLATE S/ASSY	1
2	C27094	C27094	ENCLOSURE DRILLING	1
3	C30003		LED DRIVER	1
4	C10158		M20 CABLE GLAND	2
5	C15133		TERMINAL BLOCK	1
6	C21464		230V WARNING LABEL	1
7	C22036		ISOLATE SUPPLY LABEL	1
8	C04900		FRANCIS EXTERIOR LABEL	1
9	C14533		M4 x 10 BTN 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

DATE	SCALE	TOLERANCES	FINISH	DESCRIPTION	PART No./DRG No.	SHT
7.23	1:1	General: ± Angular: ±		DRIVER BOX ASSY 240V DECK	C30021	1



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

www.Francis.co.uk
Tel: (+44) 01709 59980

BASE FIXINGS M4 239 x 165

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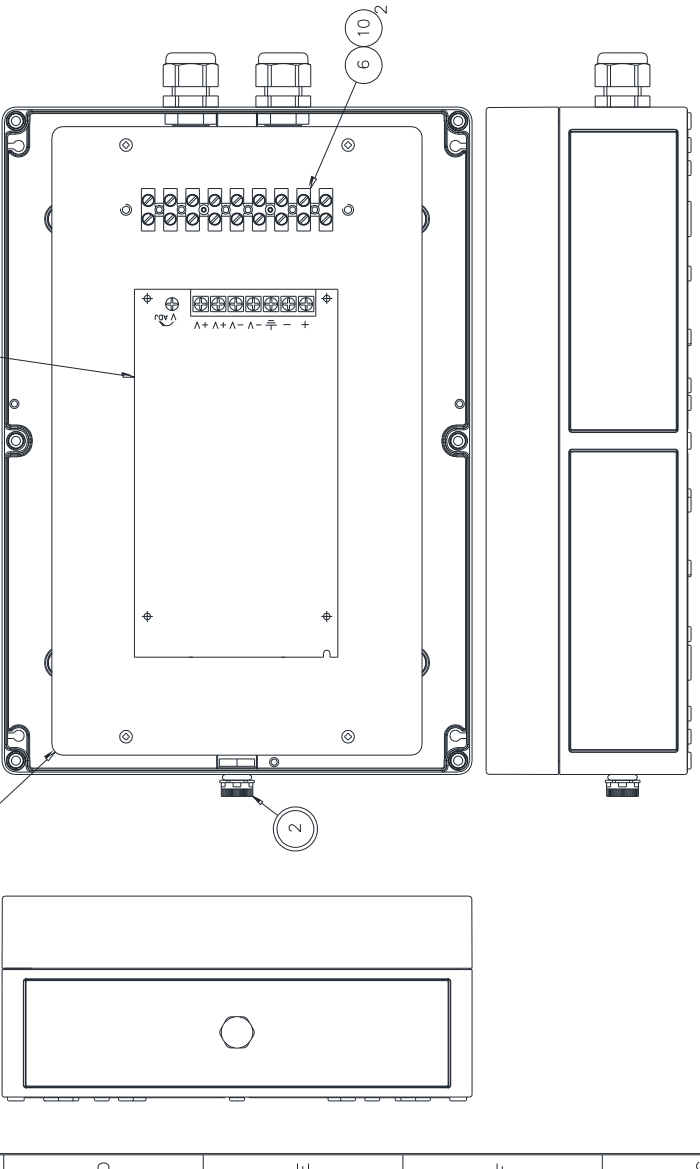
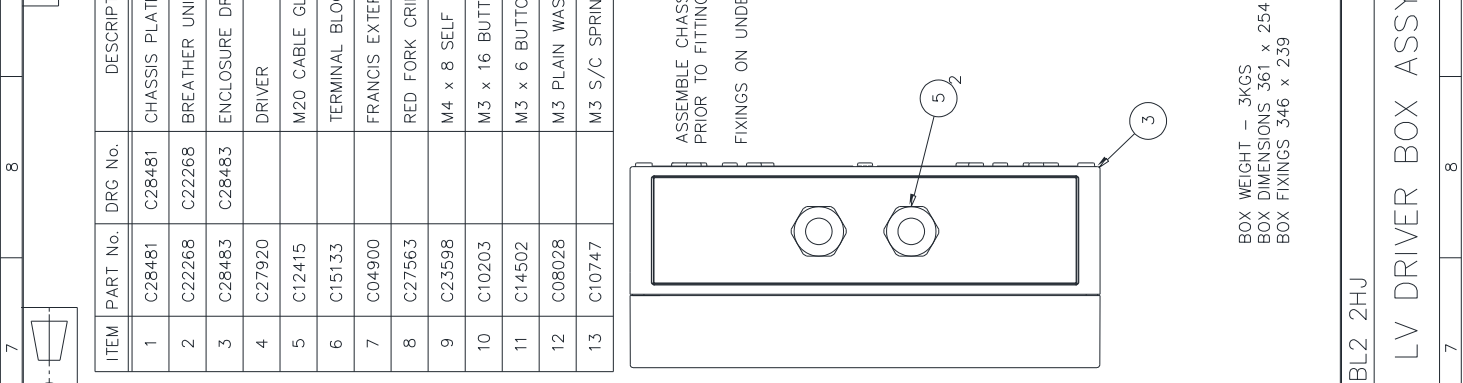
Francis SEARCHLIGHTS

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

Sand Casting: To ISO 8062 CT10 MATERIAL
Die Casting: To ISO 8062 CT8
Hole centres & posns: ±

DATE & INIT'S	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	Deburr all cut/machined edges
	Break corners R0.25(Max) U.O.S.

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

LV DRIVER BOX ASSY

DRAWN	D.S.	DATE	1.22	TOLERANCES	Send Casting: To ISO 8062 CT10
CHECKED		SCALE	1:2	General: ±	Die Casting: To ISO 8062 CT8
ALL DIMENSIONS IN MILLIMETRES				Angular: ±	Hole centres & posns: ±

FINISH	
MATERIAL	
DESCRIPTION	
PART No./DRG No.	C29416
SHT	1

FIRST USED ON L230RC 100W LED A7297

DO NOT SCALE DRAWING

10 – Spare Parts List

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

Part Number	Description
Searchlight Spares	
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.