



User Instruction & Installation Manual

L480 200w Searchlight



Product Reference Number:

- A6220 – 240v Deck
- A6221 – 240v Deck Pedestal
- A6222 – 240v Cabin
- A6223 – 240v Cabin Pedestal

Manufacturer's details:

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Distributor details:

Manual Part Number: C28467
Issue: 1

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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 L480 200W LED searchlight has the following features:

- All marine grade materials and fixings.
- Powder coated finish.
- Pan rotation 450°.
- Vertical movement $\pm 40^\circ$ (Deck & Deck Pedestal).
- Vertical movement $+30^\circ$ to -25° (Cabin & Cabin Pedestal).
- Economical 33,000-hour LED life.
- Toughened super clear Optiwhite front glass.
- Parabolic Glass Reflector.
- Searchlight & Control Gear protected to IP66.
- Deck Searchlight weight 20 Kgs, PSU weight 3 Kgs. Pedestal Weight 5Kgs, Cabin Control Assembly 2.8Kgs & Cabin Pedestal Assembly 3.8Kgs.

The searchlight also performs to the following optical data:

- Supply voltage – 110/240v.
- Luminous flux 27.800.
- Colour temperature 6500K.
- Range – 1546 metres at 7 metres divergence.
- Divergence – 7° spot 20° flood.
- Temperature range: -50 with optional heater

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 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, 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

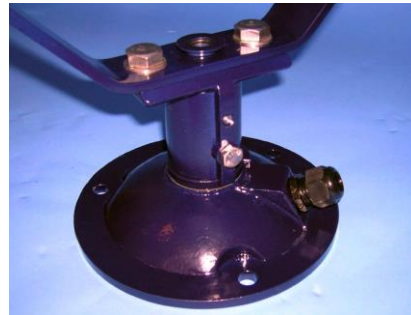
For Deck Models:

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, in order 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



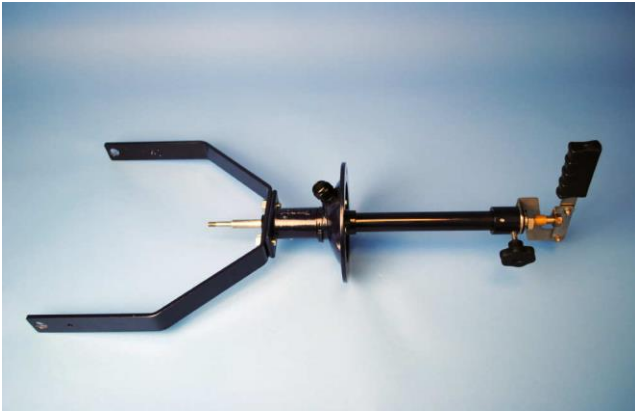
4. When installing the Under Deck mechanism, first separate the following items. U-Piece Assembly, M8 nyloc nut, M8 plain washer, M12 plain washer, Rubber Bellows, Bellows Top Bush and the Push Rod Top Bush



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



6. Insert the Under Deck through the centre hole making sure it's 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.

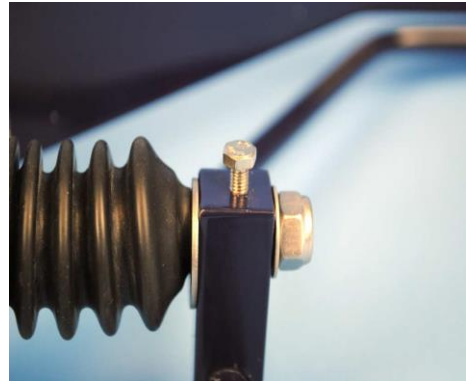


10. Bellows.



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.

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/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 L480 200W LED searchlight is as follows:

Referring to wiring diagram C28468, a supply is fed into the driver box enclosure, which then provides a common feed to the searchlight.

Cables required to be connected by the customer: -

3 cores 1.5mm cable from the Driver box enclosure to the Searchlight,

(Customer may need to provide a suitable junction box to this cable, 3 metres supplied).

The Mains cable to the driver box is to be supplied by the customer.

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 lockwheels. When in the desired position the lockwheels should be securely fastened to maintain position.

The beam of the searchlight can be externally adjusted to give a variety of 'spreads. Using the focussing handle situated underneath the barrel head. The lampholder can be moved into the desired position, towards the front for spot or the rear for flood.

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 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

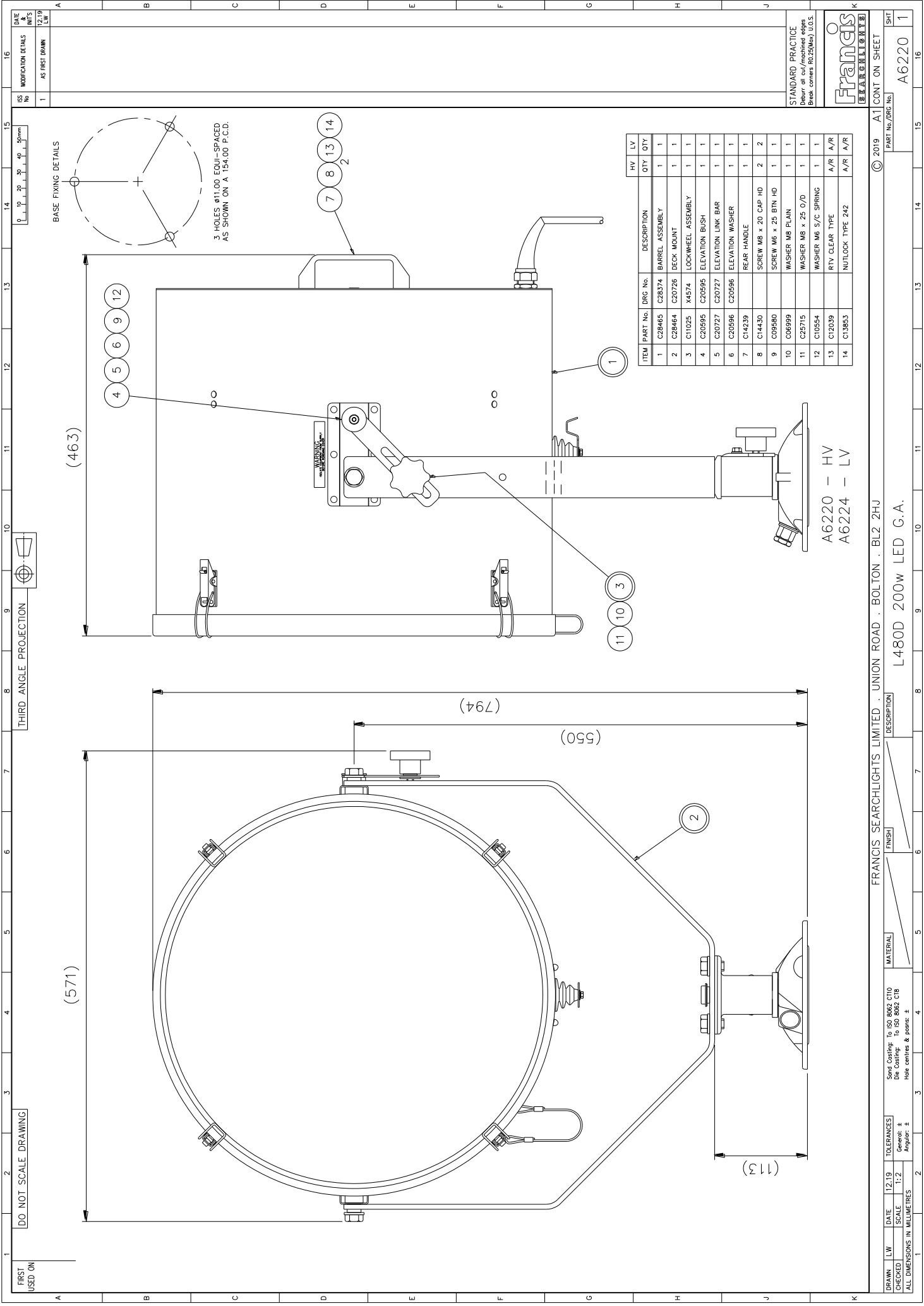
In order to prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- 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 lenses 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

Drawing Number	Description
A6220	L480 200W LED Deck General Assembly
A6221	L480 200W LED Deck Pedestal General Assembly
A6222	L480 200W LED Cabin General Assembly
A6223	L480 200W LED Cabin Pedestal General Assembly
C28468	Wiring Diagram
C28469	Driver Box Assembly



DATE & INIT'S	12.19 LW
MODIFICATION DETAILS	AS FIRST DRAWN
ISS No	1

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



ITEM	PART No.	DRG No.	DESCRIPTION	QTY	LV
1	C28465	C28374	BARREL ASSEMBLY	1	1
2	C28464	C20726	DECK MOUNT	1	1
3	C11025	X4574	LOCKWHEEL ASSEMBLY	1	1
4	C20595	C20595	ELEVATION BUSH	1	1
5	C20727	C20727	ELEVATION LINK BAR	1	1
6	C20596	C20596	ELEVATION WASHER	1	1
7	C14239		REAR HANDLE	1	1
8	C14430		SCREW M8 x 20 CAP HD	2	2
9	C09680		SCREW M6 x 25 BTN HD	1	1
10	C06999		WASHER M8 FLAIN	1	1
11	C25715		WASHER M8 x 25 O/D	1	1
12	C10554		WASHER M6 S/C SPRING	1	1
13	C12039		RTV CLEAR TYPE	A/R	A/R
14	C13653		NUTLOCK TYPE 242	A/R	A/R

A6220 - HV
A6224 - LV

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

DESCRIPTION: L480D 200W LED G.A.

FINISH: []

MATERIAL: []

Scale: 1:2

TOLERANCES: ±

ALL DIMENSIONS IN MILLIMETRES

DATE: 12.19

SCALE: 1:2

TOLERANCES: ±

Apply: ±

Self Check: To ISO 9002 C110
Die Casting: To ISO 9002 C18
Hole centres & posnc: ±

APPROVED: []

DATE: 12.19

SCALE: 1:2

TOLERANCES: ±

Apply: ±

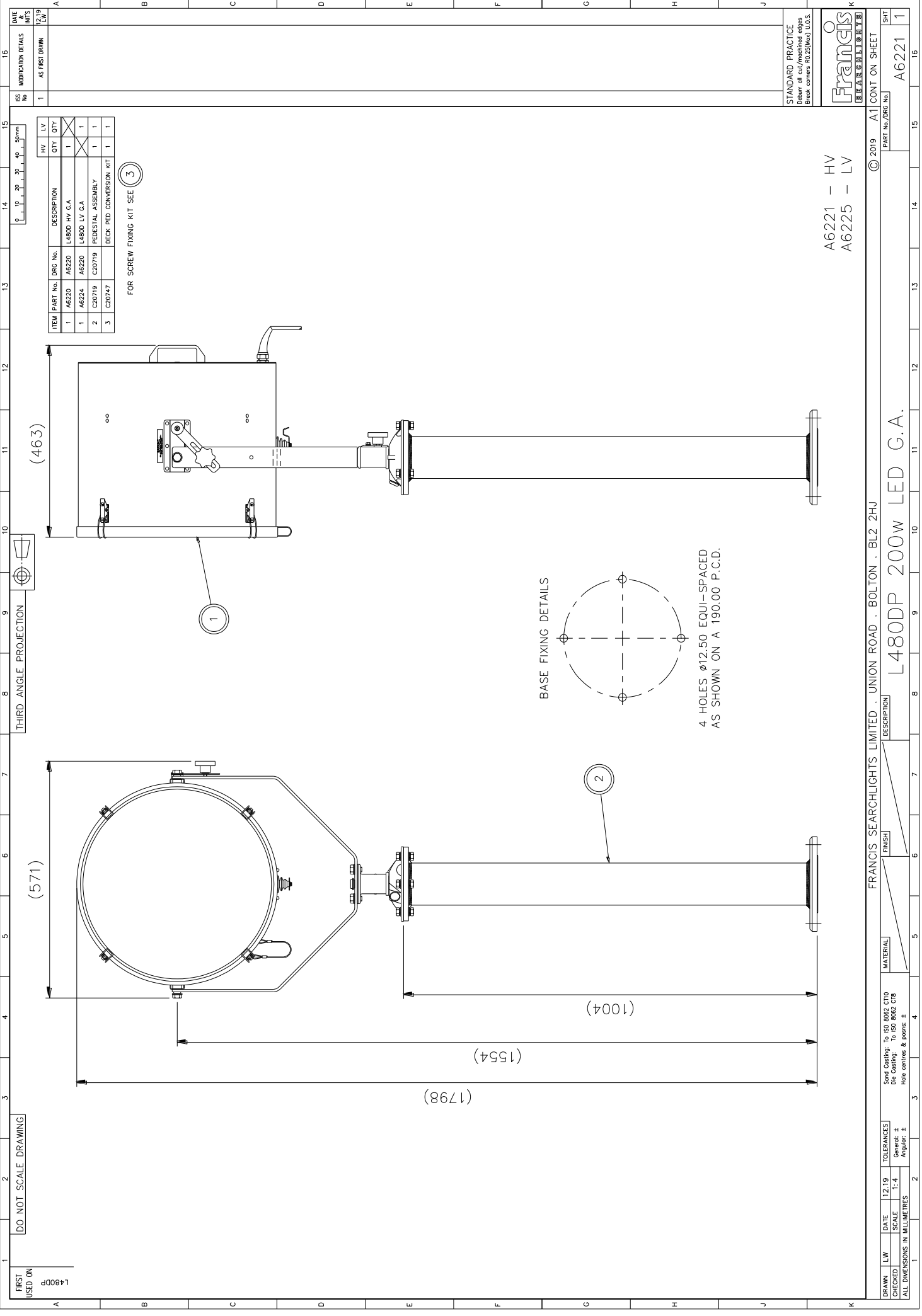
ALL DIMENSIONS IN MILLIMETRES

PART No./DRG No: A6220

SHEET: 1

DO NOT SCALE DRAWING

FIRST USED ON



DO NOT SCALE DRAWING

FIRST USED ON L480DP

THIRD ANGLE PROJECTION

ITEM	PART No.	DRG No.	DESCRIPTION	QTY	LV	DY
1	A6220	A6220	L480D HV G.A.	1	X	X
1	A6224	A6220	L480D LV G.A.	1	X	X
2	C20719	C20719	PEDESTAL ASSEMBLY	1	1	1
3	C20747	C20747	DECK FEED CONVERSION KIT	1	1	1

FOR SCREW FIXING KIT SEE (3)

STANDARD PRACTICE
Debur all cut/machined edges
Break corners R0.2(0.08) U.O.S.

Francis
FRANCIS SEARCHLIGHTS LIMITED

A6221 - HV
A6225 - LV

DATE & DIMS 12/19
MODIFICATION DETAILS
1 AS FIRST DRAWN

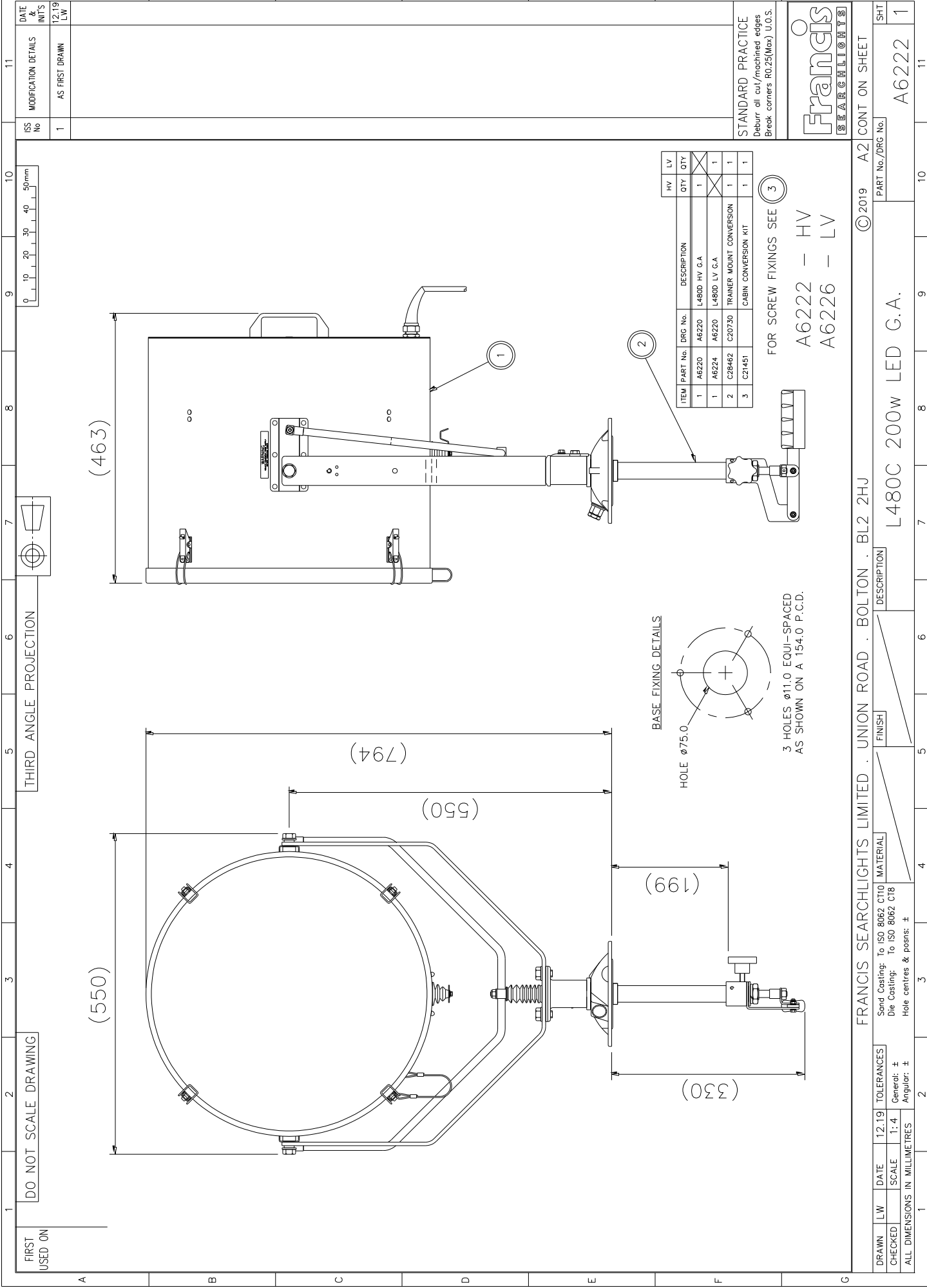
© 2019 A1 CONT ON SHEET

PART No./DRG No. A6221

SHT 1

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU
L480DP 200W LED G.A.

DATE	SCALE	TOLERANCES	FINISH	MATERIAL	DESCRIPTION
12/19	1:4	Send Castings to ISO 8062 C10 Die Castings to ISO 8062 C18 Hole centers & points: ± General: ± Angular: ±			



DO NOT SCALE DRAWING

FIRST USED ON

THIRD ANGLE PROJECTION



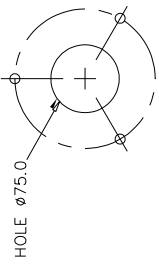
ISS No	1
DATE & INIT'S	12.19 LW
MODIFICATION DETAILS	AS FIRST DRAWN

ITEM	PART No.	DRG No.	DESCRIPTION	HV	LV	QTY	QTY
1	A6220	L480D	HV G.A.			1	1
1	A6224	L480D	LV G.A.			1	1
2	C28462	C20730	TRAINER MOUNT CONVERSION			1	1
3	C21451		CABIN CONVERSION KIT			1	1

FOR SCREW FIXINGS SEE (3)

A6222 - HV
A6226 - LV

BASE FIXING DETAILS



3 HOLES ϕ 11.0 EQUI-SPACED AS SHOWN ON A 154.0 P.C.D.

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

DRAWN	LW	DATE	12.19	TOLERANCES	To ISO 8062 CT10	MATERIAL	
CHECKED	LW	SCALE	1:4	General: \pm	Die Casting: To ISO 8062 C18		
ALL DIMENSIONS IN MILLIMETRES				Hole centres & posits: \pm	FINISH		

DESCRIPTION
L480C 200W LED G.A.

PART No./DRG No.

A6222 1

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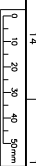


STANDARD PRACTICE
Debur all cut/machined edges
Break corners R0.25(Max) U.O.S.

FIRST USED ON

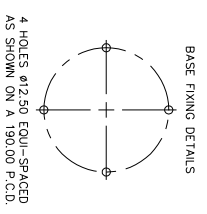
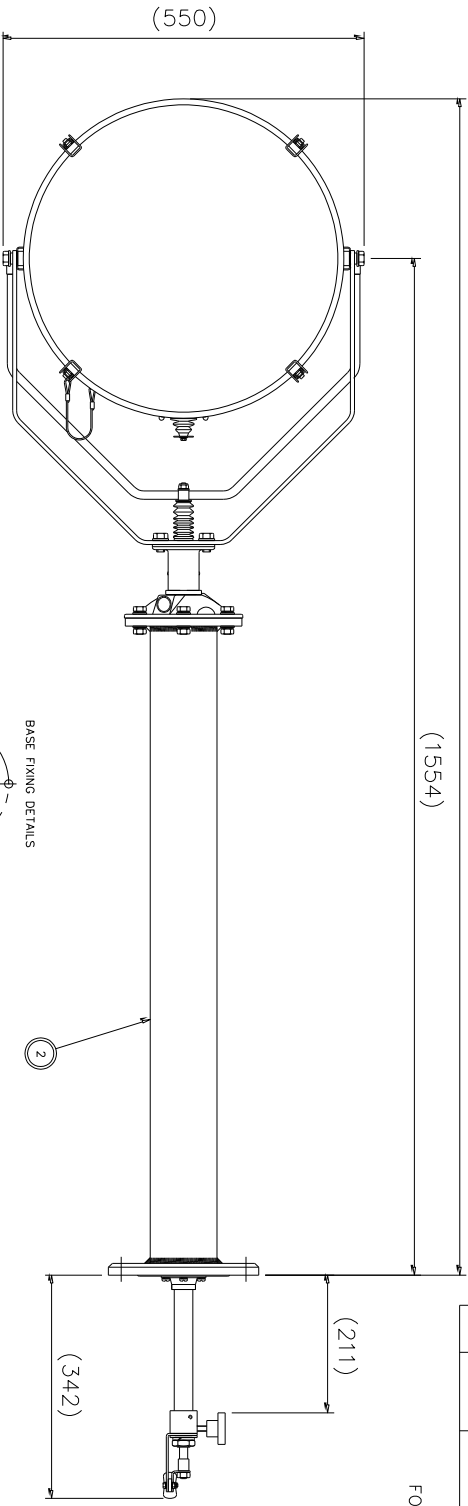
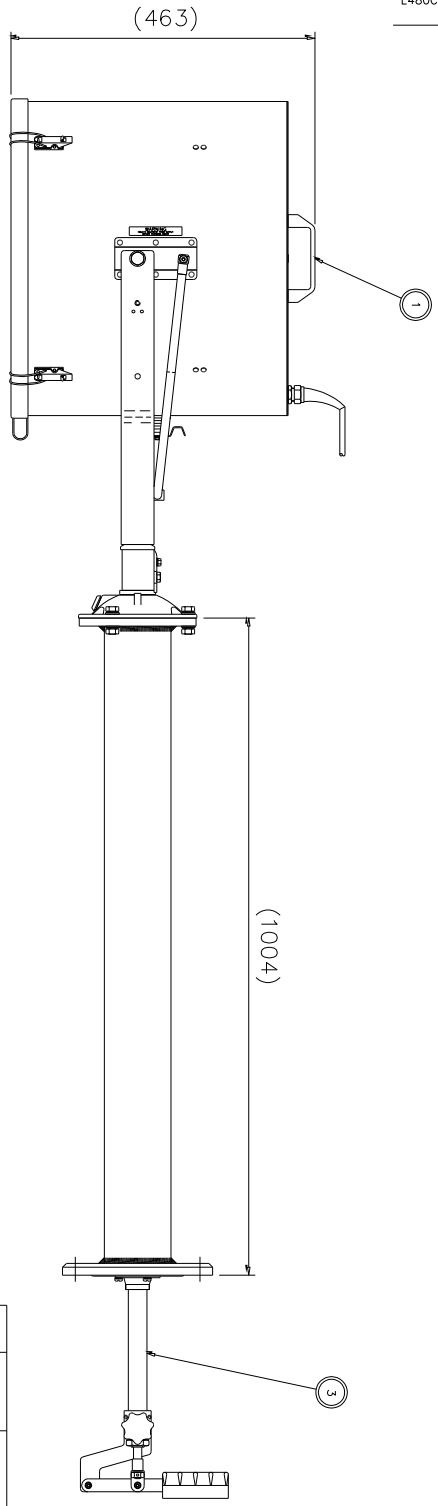
DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



ISS No 1
MODIFICATION DETAILS AS FIRST DRAWN
DATE 12/19
LW

L480CP



ITEM	PART No.	DRG No.	DESCRIPTION	HV QTY	LV QTY
1	A6220	A6220	L480D HV G.A	1	X
1	A6224	A6220	L480D LV G.A	X	1
2	C20719	C20719	PEDESTAL ASSEMBLY	1	1
3	C28463	C20737	C.P TRAINER MOUNT CONV.	1	1
4	C21453		CAB PED CONVERSION KIT	1	1

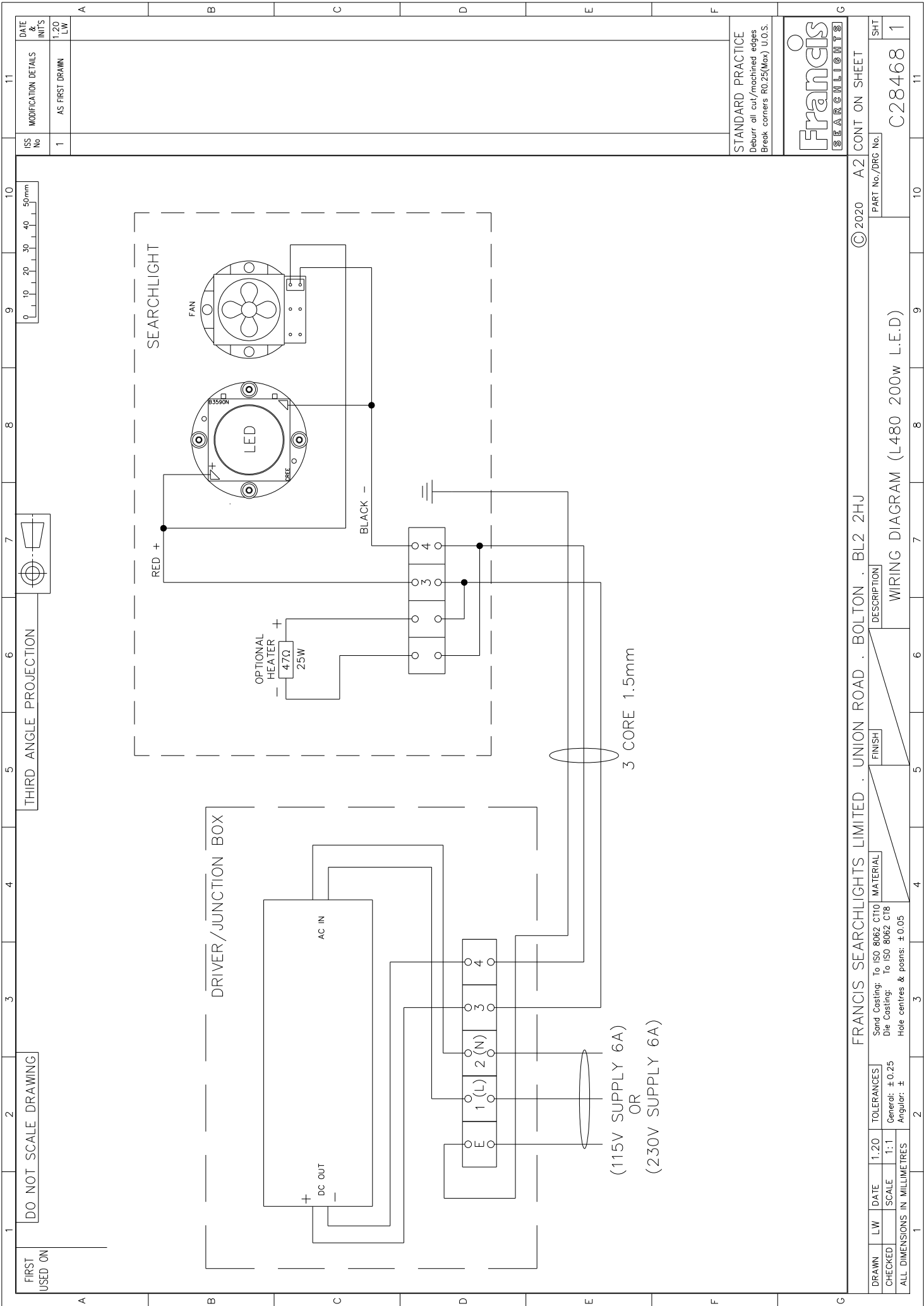
FOR SCREW FIXING KIT SEE (4)

A6223 - HV
A6227 - LV

DRAWN	LW	DATE	12/19	TOLERANCES	General ±
CHECKED		SCALE	1:1	Angular ±	
ALL DIMENSIONS IN MILLIMETRES					
Send Centre to ISO 8802 C10			Die Centre to ISO 8692 C18		
Hide centres & poses ±					
MATERIAL	FINISH		DESCRIPTION		
FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HU					
L480CP 200W LED G.A.					
© 2019 ALL COUNT ON SHEET					
PART No./REV No.					
A6223 1					

Francis

STANDARD PRACTICE
Dedent all cut/finished edges
Break corners to 25% R0.5.

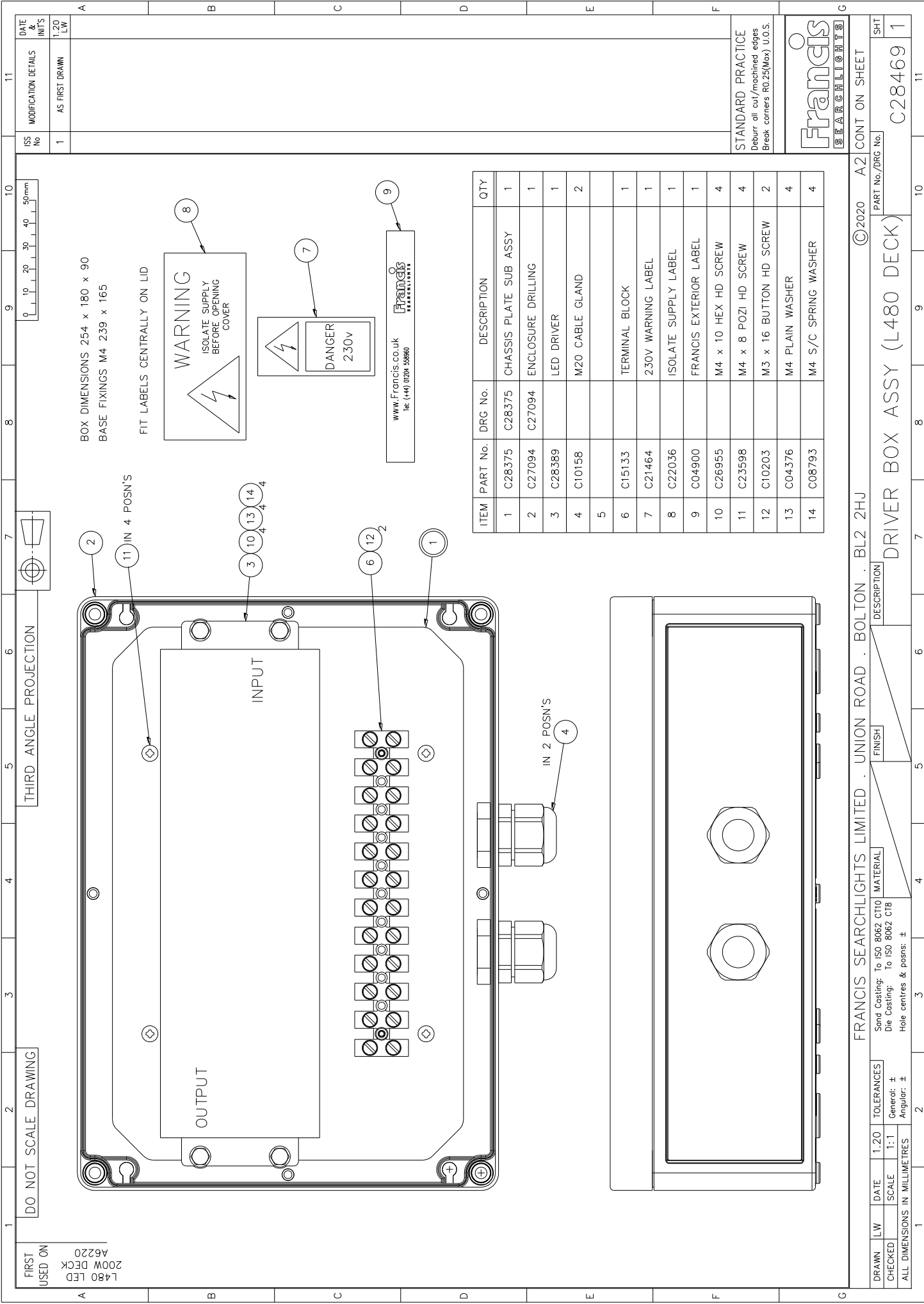


ISS No	1
DATE OF INTS	1.20 LW
MODIFICATION DETAILS	AS FIRST DRAWN

11	10	9	8	7	6	5	4	3	2	1	
A	B	C	D	E	F	G	DO NOT SCALE DRAWING				THIRD ANGLE PROJECTION

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

© 2020	A2	CONT ON SHEET
PART No./DRG No.	C28468	SHT 1
DESCRIPTION		WIRING DIAGRAM (L480 200w L.E.D)
FINISH	MATERIAL	FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU
Sand Casting: To ISO 8062 CT10	Die Casting: To ISO 8062 CT8	Hole centres & posns: ±0.05
TOLERANCES	General: ±0.25	Angular: ±
LW DATE	SCALE	1:1
1.20	1:1	
ALL DIMENSIONS IN MILLIMETRES		



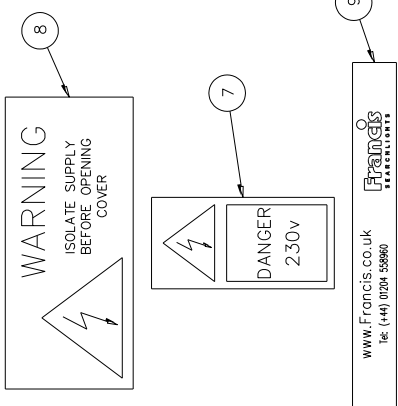
FIRST USED ON
L480 LED
200W DECK
A6220

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

BOX DIMENSIONS 254 x 180 x 90
BASE FIXINGS M4 239 x 165

FIT LABELS CENTRALLY ON LID



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C28375	C28375	CHASSIS PLATE SUB ASSY	1
2	C27094	C27094	ENCLOSURE DRILLING	1
3	C28389		LED DRIVER	1
4	C10158		M20 CABLE GLAND	2
5				
6	C15133		TERMINAL BLOCK	1
7	C21464		230V WARNING LABEL	1
8	C22036		ISOLATE SUPPLY LABEL	1
9	C04900		FRANCIS EXTERIOR LABEL	1
10	C26955		M4 x 10 HEX HD SCREW	4
11	C23598		M4 x 8 POZI HD SCREW	4
12	C10203		M3 x 16 BUTTON HD SCREW	2
13	C04376		M4 PLAIN WASHER	4
14	C08793		M4 S/C SPRING WASHER	4

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



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

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DRAWN	LW	DATE	1.20	TOLERANCES	FINISH	DESCRIPTION	PART No./DRG No.	SHT
CHECKED	SCALE	1:1	General: ± Angular: ±	To ISO 8062 CT10 To ISO 8062 CT8		DRIVER BOX ASSY (L480 DECK)	C28469	1
ALL DIMENSIONS IN MILLIMETRES								

10 – Spare Parts List

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

Part Number	Description
C28470-01	LED Replacement Kit
C28356-01	LED Cooler
C20280-00	Reflector
C28379-00	Front Glass
C20568-00	Front Glass Gasket
C28362-01	LED Driver (HV)
C22268-01	Breather Assembly
C27288-00	Heater (Optional)
C22550-00	Focus Bellows
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)
C22072-00	Push Rod Seal Washer (Deck & Cabin)
C20281-00	Bellows (Cabin & Cabin Pedestal)
C20745-01	Lock Wheel Assembly (Cabin & Cabin Pedestal)

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.