



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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A large, empty rectangular box with a green border, intended for the distributor'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 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 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, 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

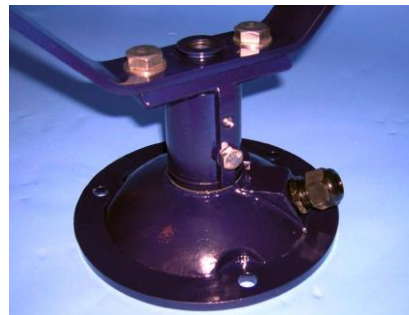
For Deck Models:

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:



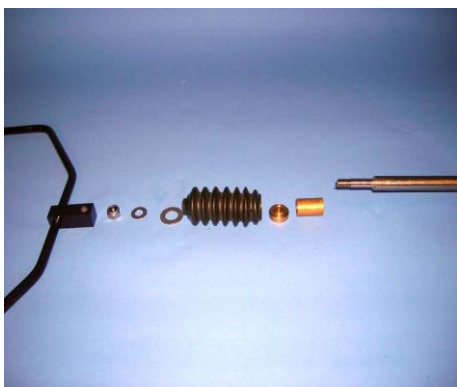
1. Remove the Base Lock Wheel.



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



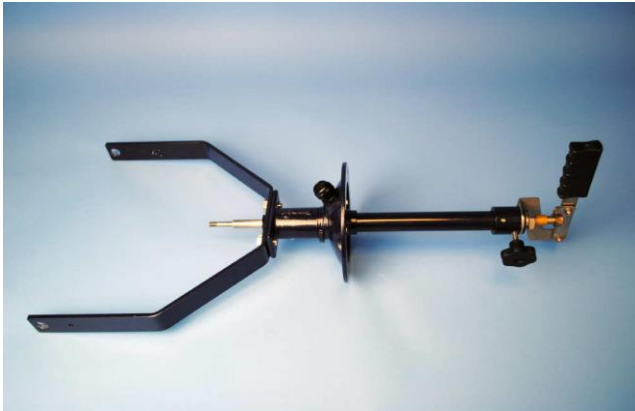
4. When installing the Under Deck mechanism, first separate the following items. U-Piece Assembly, M8 nyloc nut, M8 plain washer, M12 plain washer, Rubber Bellows, Bellows Top Bush and the Push Rod Top Bush



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



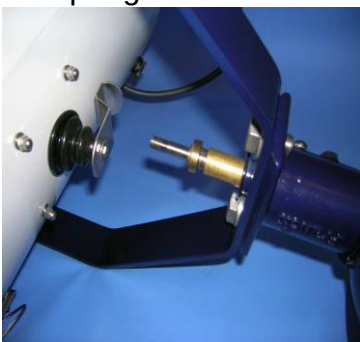
6. Insert the Under Deck through the centre hole making sure it's aligned as photos below



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.

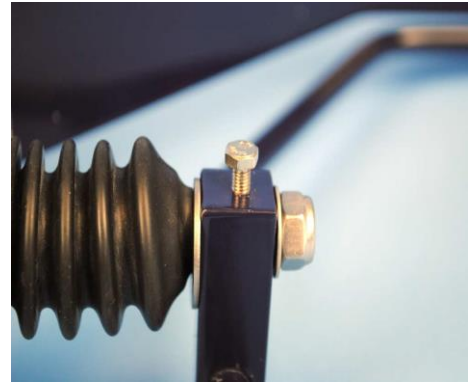


10. Bellows.



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.

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 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, 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

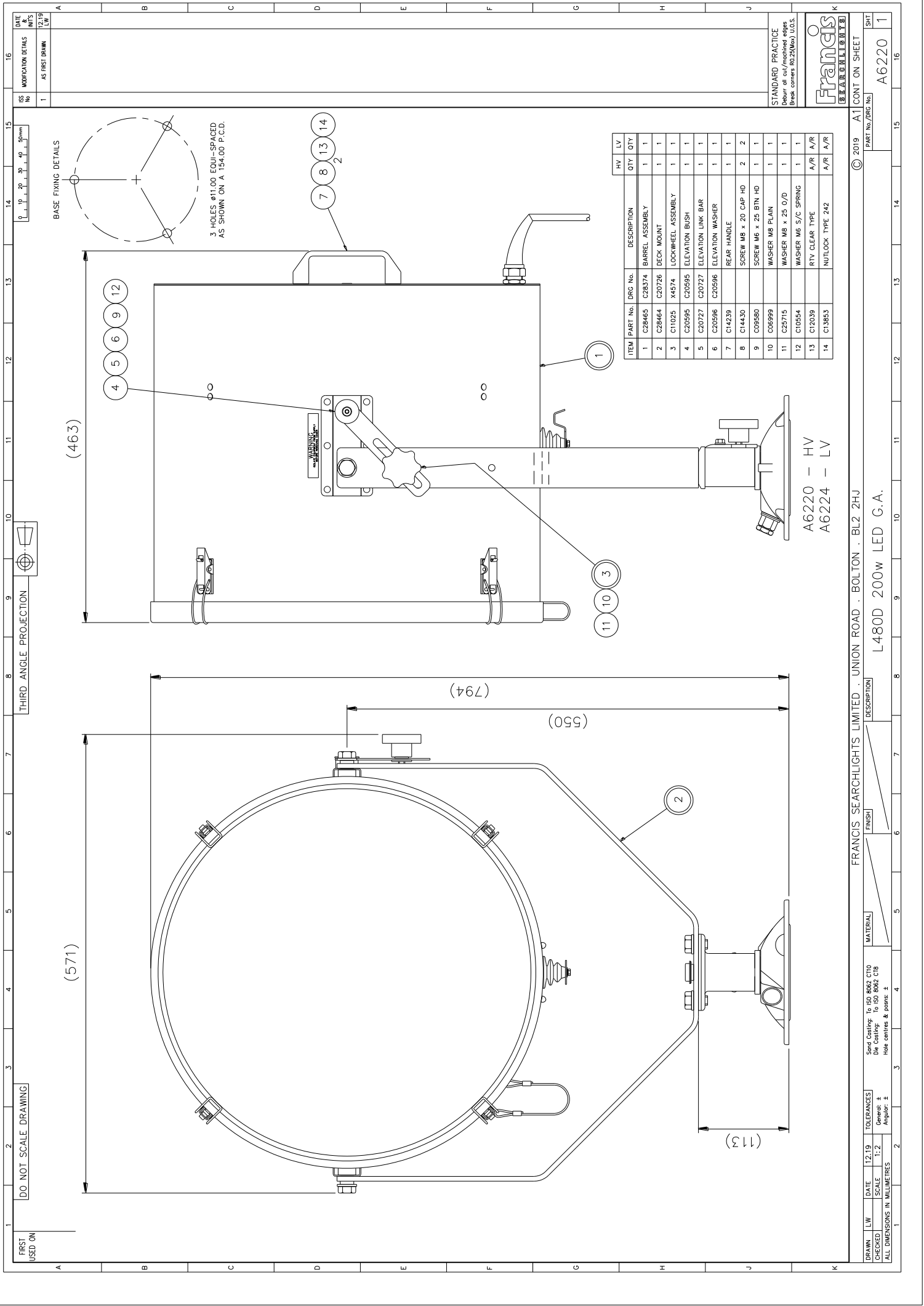
To prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

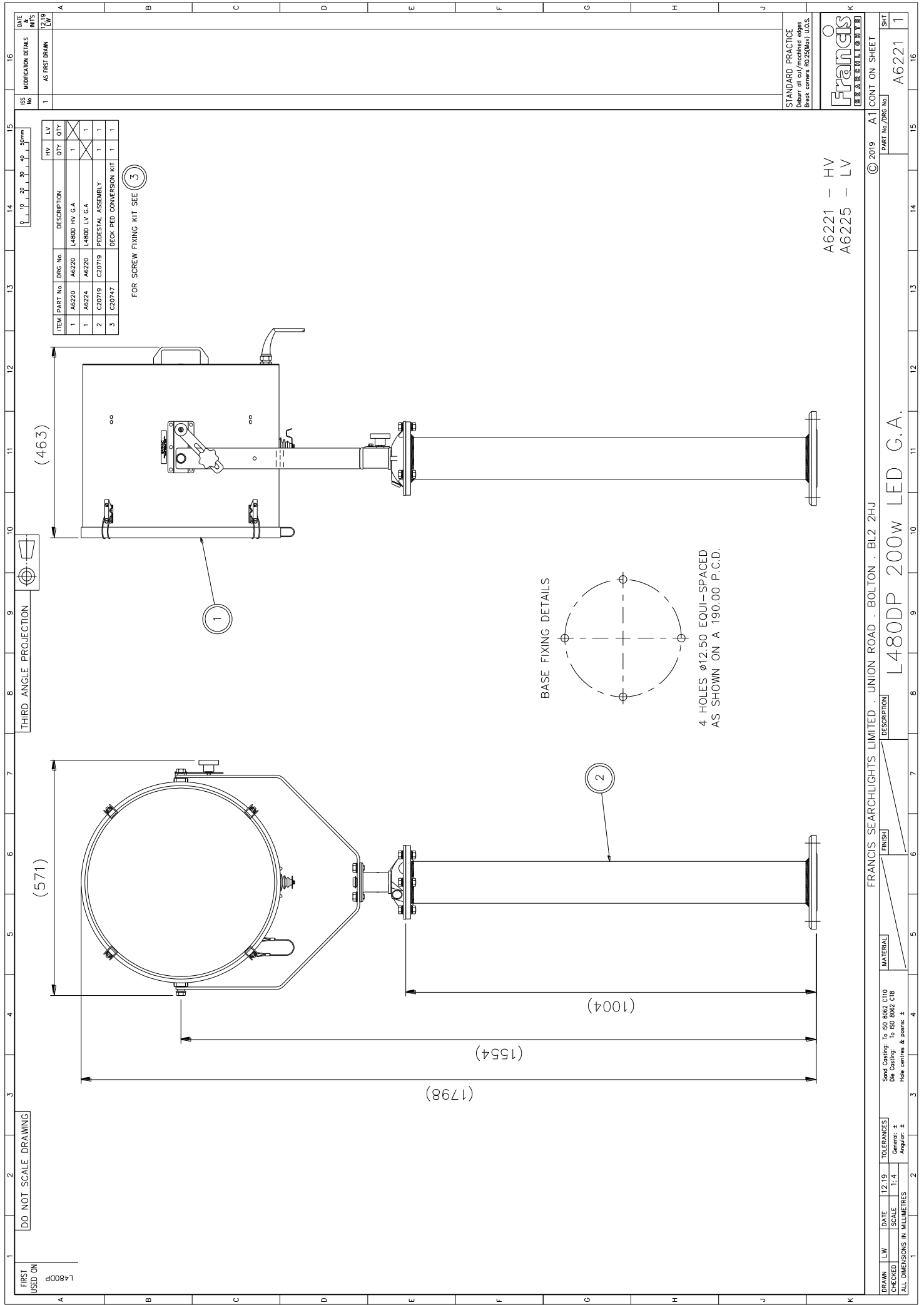
- Maintenance checks should be conducted before every voyage or at least every three months.
- Before checking, disconnect the equipment from the supply.
- Visually inspect the condition of the equipment.
- Any major or minor structural damage should be rectified immediately to reduce sympathetic wear.
- 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.
- 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.

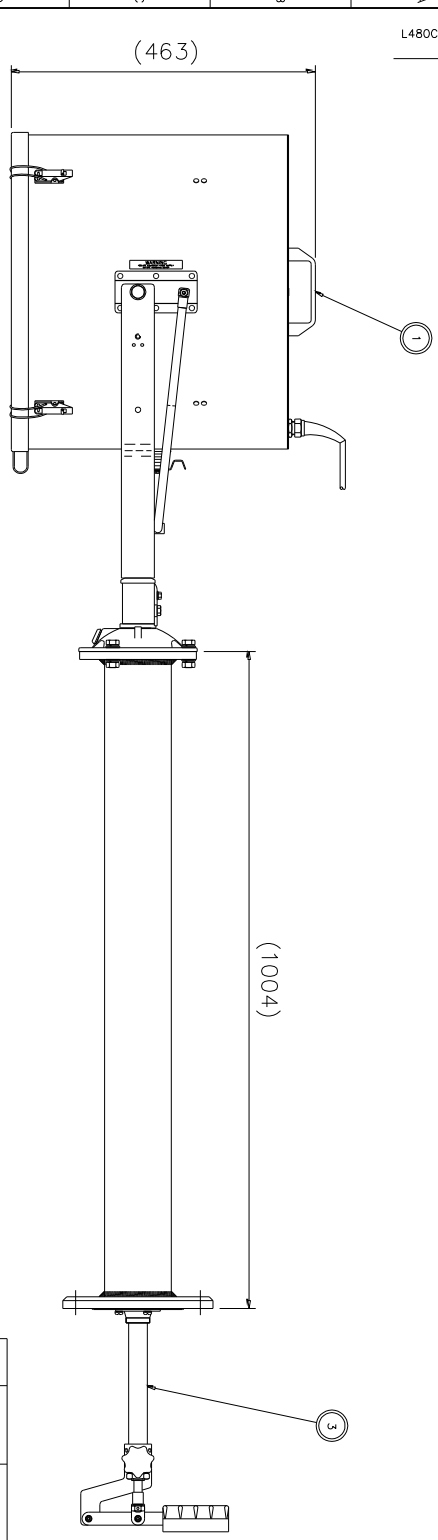
9 - Wiring Diagrams & General Assemblies

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
C28471	LED Replacement Instructions



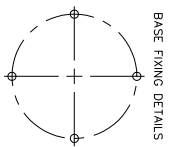
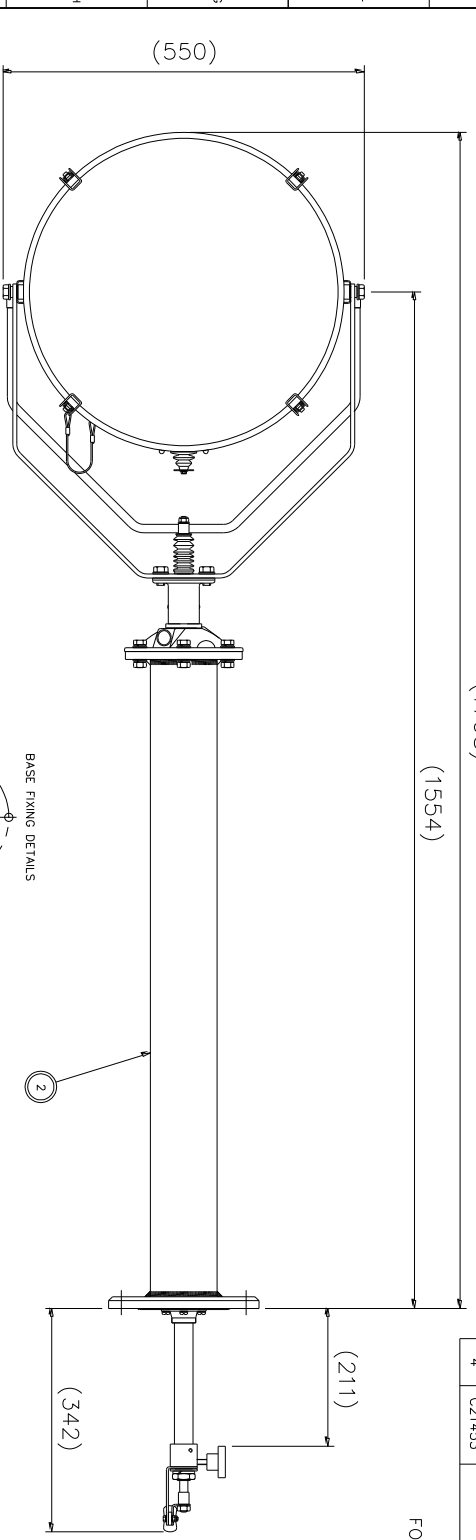


DRAWN	LW	DATE	12.19	TOLERANCES
CHECKED		SCALE	1:4	General: ± Angular: ±
ALL DIMENSIONS IN MILLIMETRES				



ITEM	PART No.	DRG No.	DESCRIPTION	HV	LV
1	A6220	A6220	L480D HV G.A	1	
1	A6224	A6220	L480D LV G.A		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)



4 HOLES Ø12.50 EQUI-SPACED
AS SHOWN ON A 190.00 P.C.D.

A6223 – HV
A6227 – LV

[illegible]

DO NOT SCALE DRAWING
STORE ALL FIXINGS SAFELY FOR RE-ATTACHING

THIRD ANGLE PROJECTION

1...RELEASE THE FOUR LATCHES & REMOVE THE FRONT BEZEL
2...REMOVE THE FOCUS HANDLE (MANUAL SEARCHLIGHTS ONLY)
3...UNDO THE FOUR M4 SCREWS THAT HOLD LED HOLDER ASSY IN THE BARREL
4...REMOVE THE LED HOLDER ASSY FROM THE BARREL
5...THE LED CAN NOW BE REMOVED BY UNDOING THE TWO M3 SCREW
SOMETIMES THE OLD LED MAY HAVE TO BE PRISED OFF THE COOLER
AS THE HEATSINK COMPOUND ACTS AS AN ADHESIVE AFTER SEVERAL YEARS USE
DISCONNECT THE LED WIRES FROM THE TERMINAL BLOCK.
6...BEFORE FITTING THE NEW LED ENSURE THE FIXING AREA ON THE COOLER
HAS BEEN CLEANED & IS TOTALLY FREE OF DEBRIS
7...APPLY A SMALL BEAD OF THE THERMAL COMPOUND TO THE HEATSINK FACE &
CAREFULLY SPREAD EVENLY BEFORE RE ATTACHING THE NEW LED
8...THE LED CAN NOW BE RE-FITTED TO THE COOLER
9...RE-ASSEMBLY BY REVERSING PROCEDURE

LED HOLDER ASSY

LED CHIP
HELD BY TWO M3 SCREWS

COOLER (HEATSINK)

VIEW ON ARROW 'A'

3 IN 4 POS'N
M4 SCREWS

2 FOCUS HANDLE

4

5

ARROW 'A'

1

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

Francis
SEARCHLIGHTS

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

DRAWN	LW	DATE	1:20	TOLERANCES	SHT
CHECKED		SCALE	1:2	General: ± Angular: ±	1
ALL DIMENSIONS IN MILLIMETRES					
Sand Casting: To ISO 8062 CT10 Die Casting: To ISO 8062 CT18 Hole centres & posns: ±					
FINISH					
MATERIAL					
DESCRIPTION					
L480 LED REPLACEMENT INSTRUCTIONS					
PART No./DRG No.					C28471

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
C28389-01	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)
C08926-00	Push Rod Seal (Deck & Cabin)
C20281-00	Bellows (Cabin & Cabin Pedestal)
C20745-01	Lock Wheel Assembly (Cabin & Cabin Pedestal)

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.