



User Instruction & Installation Manual

FH380RC 1200 Watt Metal Halide Searchlight



Product Reference Number:

A7038 – Variable Speed 240v 1200w

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 in order to ensure optimum performance and service life.

The Francis Metal Halide 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.

- Because of the high internal pressure within the lamp, there is a risk of explosion in either a hot or cold state;
- During operation this lamp emits intense UV radiation which is harmful to the eyes and skin. Suitable protection should be worn;
- The high luminance of the arc can cause severe damage to the eye if viewed directly. ALWAYS wear suitable protective goggles when viewing the lamp;
- Always use protective sleeves supplied with the lamp;
- 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;
- 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 disposing of lamps, return the lamp, via the supplier, to the lamp manufacturer in its complete packaging;
- 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 FH380RC 1200 watt searchlight has the following features:

- All marine grade materials and fixings;
- Parabolic glass reflector;
- Powder coated & stove enamel painted;
- 420° horizontal rotation;
- Vertical movement $\pm 40^\circ$
- Variable speed 1-23°/sec (Pan), 1-11°/sec (Tilt);
- RS485 connectivity & auto home positioning;
- Remote focus facility;
- Instant lamp re-strike. No cooling down time required;
- Economical 1000 hour lamp life;
- Toughened front glass;
- Luminous flux 110000;
- Colour temperature 6000K;
- G.R.P. control gear protected to IP66;

The searchlight also performs to the following optical data:

- Metal Halide light source
- Lamp Wattage - 1200 Watts;
- Supply voltage - 220/240V;
- Peak Beam Candlepower – 33,700,000 lux;
- Range – 5805 metres;
- Divergence – 2°;
- Temperature range: -50°C (with heaters fitted)

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 (refer to drawing C21501). 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. When in the desired position, and bolt the searchlight firmly down. On an uneven surface it may be necessary to use a suitable sealant such as silicone, in order 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.

In order 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 lampholder 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.

The Control Gear should NOT be positioned more than 5 meters away from the Searchlight.

The following table below indicates the maximum length of cable to be used for the AC supply cable, from the control panel to the searchlight:

Searchlight	240v 1.2Kw
Cable Size (mm ²)	Distance Max
1.5	62 MTRS
2.5	101 MTRS
4.0	160 MTRS
6.0	249 MTRS
10.0	417 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 and 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

Note: This equipment must be earthed.

Installation Guideline

A typical installation and connection routine for the FH380RC Variable Speed searchlight is as follows:

Referring to wiring diagram C26948, a supply is fed to the junction box, which then provides a common feed to the motor gearbox, control gear, searchlight and joystick panel.

The searchlight has been pre-wired with 3 meters of cable from the motor gearbox to junction box provided. The searchlight head is pre-wired along with the connecting cable to the motor gearbox.

Cables required to be connected by the customer: -

2 pair twisted screened cable from the joystick panel to the junction box.

Supply cable to the junction box.

5 core 1.5mm from the control gear 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. (See Fig 1 below for aid to instructions)

To operate the panel press panel button (1), the button will light up & the joystick (4) is now operational. To switch the lamp on or off press the lamp button (2)

The speed of movement depends on the more pressure applied to the joystick (4) the faster the searchlight moves. When in the desired position the joystick should be released so that it returns to dead centre.

The beam of the searchlight can be adjusted to give a variety of beam types. Using the focus button (3) on the joystick panel, the desired beam can be achieved for any particular application. The beam will move continuously through 'spot' to 'flood'. In order to fix the beam type, simply release the focus button at the desired position.

To return the searchlight to Factory set auto home position (forward and horizontal) simply switch off the joystick panel using the panel button (1) and then press the lamp button (2), the searchlight will then move to the per-programmed home position.

To set a new Home position, move the searchlight to the desired home position, switch off the panel (1), move the joystick to the downward position ↓ and simultaneously press the Lamp button (2), and then the Lamp button (2) will flash, to indicate the new programmed Home position.

There is the option for added slave panels, the slave panel has all the features of the main control panel i.e. joystick, focus and on/off.

Slave Panel control, to take control of a Slave Panel when a Main Panel is on, press the Panel button (1) twice, the panel button will illuminate, allowing you to control the searchlight from the Main Control Panel & vice versa when switching back to the Main Panel.

When the lamp is switched on, this will illuminate the Lamp button (1) on both the Main & Slave Control panel, also when the Focus button (3) is pressed, both Focus buttons will be illuminated.

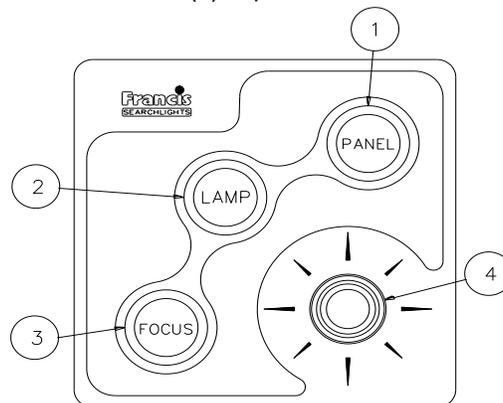


Fig 1

Setting to Work

Safe service in use necessitates the strict observance of the following precautions.

- Any article fabricated from quartz or glass is inherently fragile and care should therefore be taken, at all times, when handling lamps;
- Eye protection must be worn when handling lamps that have been removed from their packaging materials. The protective sleeve should not be removed from the lamp for safety reasons, as there is a remote possibility of the lamp shattering violently, especially if it is subjected to mechanical shock or vibration;
- Ensure that the power rating of the lamp to be fitted is suitable for the lamphouse and power supply equipment;
- Always isolate the equipment from the supply before inserting a lamp;
- Before inserting the lamp ensure that all contacts are clean. Contacts must be renewed at the slightest sign of corrosion. Sanding or filing down corroded areas is not recommended as this will only make the conducting surface between the pin and lampholder smaller, thus causing the lamp to overheat;
- Do not twist or bend the fused quartz bulb when fitting the lamp as mechanical stresses MUST be avoided;
- When inserting or removing a lamp, always hold it securely by its' base in order to prevent breakage between base and bulb;
- The lampholder must not exercise mechanical tensions on the lamp, neither during insertion or operation. Contacts must not discolour during use;
- For safety reasons, the lamp should be replaced once it has reached its' average life, and not later than 1.25 times the stated life. With continuing use the risk of the lamp exploding increases due to alterations within the quartz;
- Before the protective sleeve is removed, suitable protection must be worn i.e face mask and gloves with wrist protection;
- Never touch the quartz bulb with bare hands, as fingerprints will make the glass cloudy and cause a severe loss of light. This may also cause recrystallisation and thus weaken the bulb material. Should the bulb be inadvertently touched, remove fingerprints with methylated spirit and a clean, soft paper towel. The bulb should then be wiped with distilled water. NOTE: ALWAYS WEAR MASK AND GLOVES DURING CLEANING);
- All packaging and the protective sleeve must be retained for re-use. Whenever removing a lamp, the protective sleeve must always be used for safety reasons;

In all circumstances the lamp manufacturer's data should be referred to when dealing with lamps.

7- Fault Finding

All fault finding must be conducted by a competent person or qualified Electrical Engineer.

Failure of Lamp to ignite

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

- 1) Check that the mains supply is connected to the input of the ballast gear and check all connections as per the wiring diagram. On operation if the lamp does not light, switch off mains supply and check all fuses;
- 2) Check the searchlight head. On your command get an operator to switch on the light for approximately 2 seconds. During this time listen for any noise (cracking or hissing) coming from within the barrel. If this arcing is heard switch off the supply at the mains. Remove the Rear Access Panel to expose the two supply leads from the ignitor to the lamp. Using a dry cloth wipe these leads to remove any dust, moisture or condensation that may have formed around the inside of the barrel. Replace rear access panel, and perform the check again, listening for the cracking. If the lamp still fails to ignite, switch off at the mains and replace the lamp in accordance with the safety procedures within the manual and the manufacturer's information.

Any further tests to be carried out with regards to lamp failure must be conducted by a competent electrical engineer and should not be carried out in an explosive atmosphere.

- 3) Before a metal halide lamp will ignite, the electrically insulated gas between the electrodes must be ionised. This is done by the ignitor which produces a high frequency voltage (up to 30,000 volts or higher). Switching the lamp on activates the ignitor. A cracking or hissing noise should be heard. The ignitor is housed on the rear access panel of the searchlight. If found to be faulty a new ignitor must be fitted.

Failure of Remote Focus Facility

The remote focus mechanism is controlled by a small electric motor situated on the lampholder assembly within the searchlight barrel. If the focus of the light fails the following procedure should be adopted:

- 1) Remove the front bezel from the searchlight barrel and examine focus mechanism. If parts have become loose, tighten fasteners. The mechanism operates on a cam action and this should be checked for correct positioning;
- 2) If the mechanism is okay, check the supply to the motor. This can be done by simply placing a multimeter across the motor terminals;
- 3) If supply is present, this indicates that the motor has failed. Replace the focus motor ensuring that the assembly is correct;
- 4) If no supply is present, check the transformer in the control gear enclosure. Using a multimeter check the supply into and from the transformer. If found to be faulty, replace the transformer and check operation of focus mechanism.
- 5) If no supply is present in the control gear, check mains supply. This should be examined and rectified accordingly. **Note: If a fault occurs on the motor gearbox, the unit should be returned to Francis Searchlights Limited for fault evaluation and repair.**

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 or metal polish;
 - Clean the reflector if required;
 - Check the reflector mounting gaskets. If signs of corrosion or damage are evident, replace as necessary;
 - Ensure that the lampholder is free from corrosion or other damage;
 - Check earthing point for conductivity;
- 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.

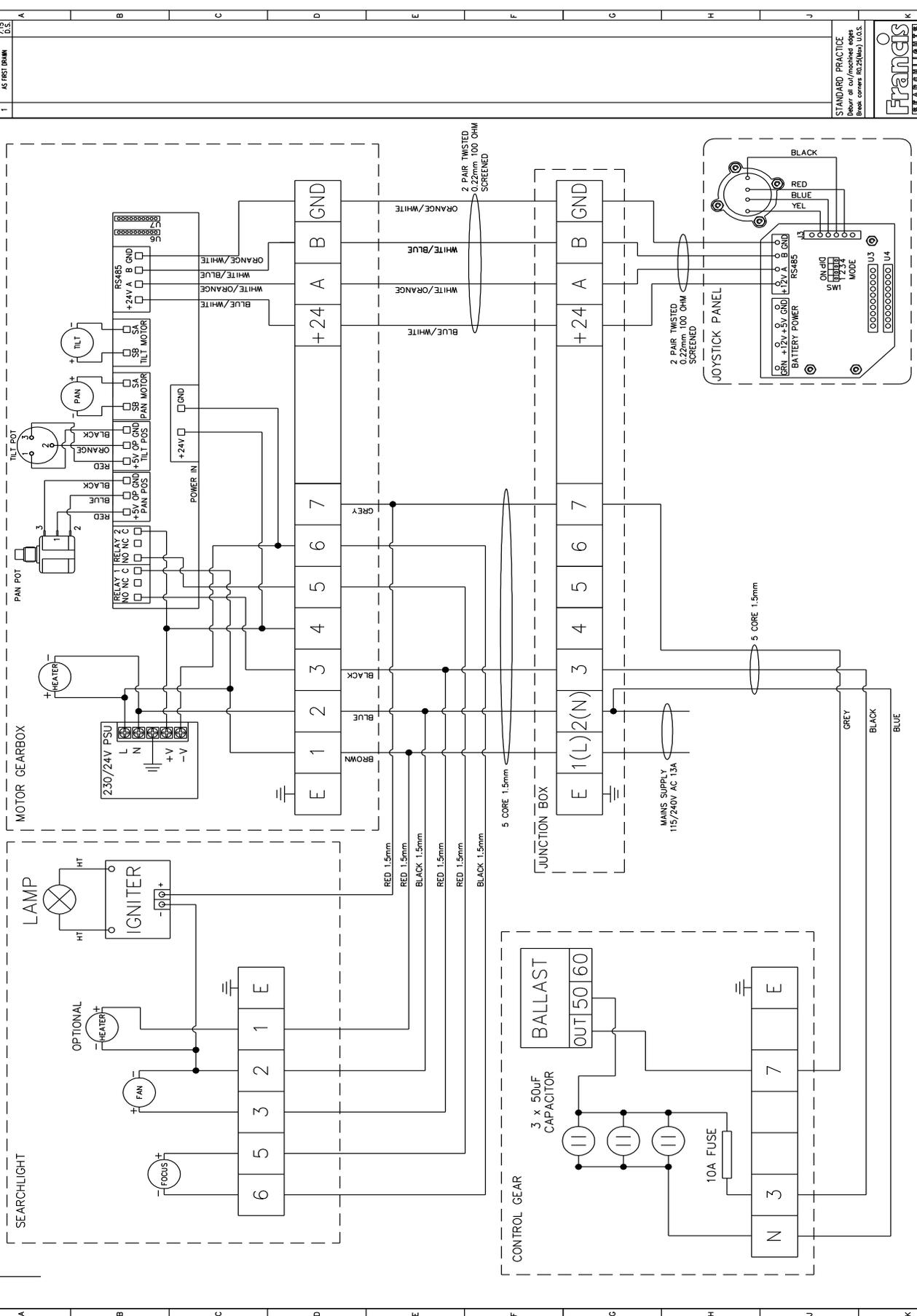
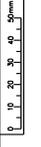
9 - Wiring Diagram & General Assembly

Drawing Number	Description
A7038	FH380RC 1200w 240v Variable Speed G.A
C26948	Wiring Diagram
C26591	Junction Box Assembly
C26961	Control Gear Assembly
C26540	Joystick Panel Assembly

FIRST USED ON

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

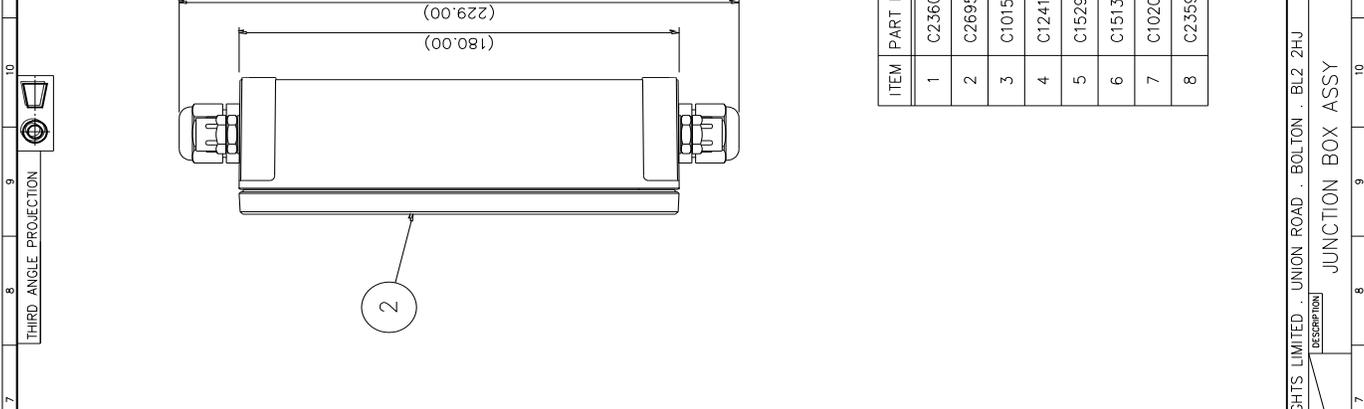
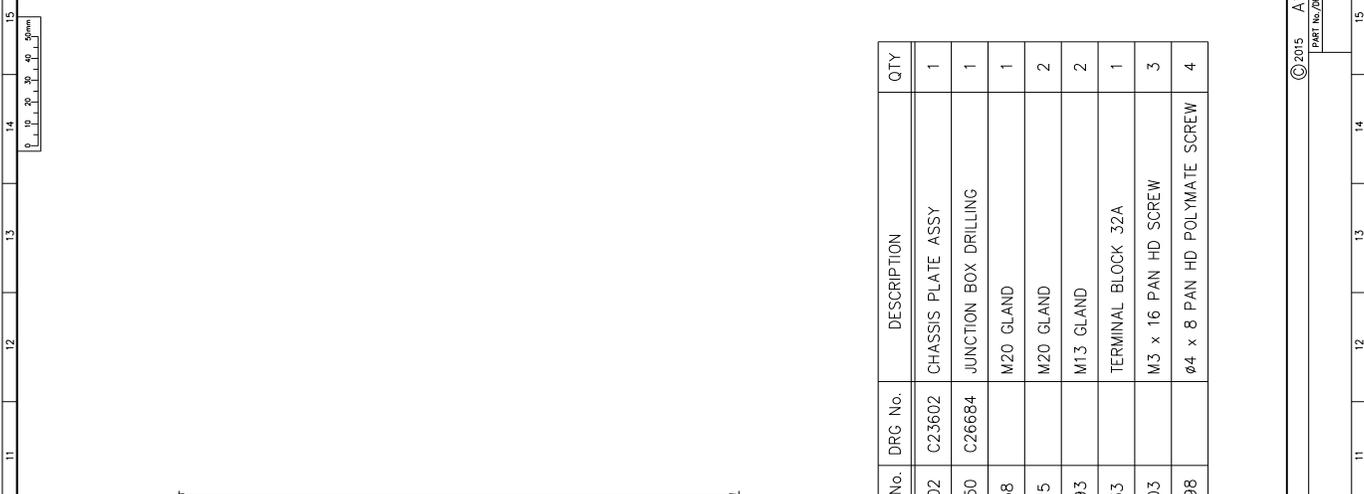


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STANDARD PRACTICE	
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FRANCIS SEARCHLIGHTS	
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PART No./REV No.	
SHT	
C.26948	1

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU	
WIRING DIAGRAM FH380 1200W V/S 2015	
DESCRIPTION	
FINISH	
MATERIAL	
Scale Conforming to ISO 8062 C110	
Scale Conforming to ISO 8062 C18	
Not centre & piece.	
TOLERANCES	
General: ±	
Angular: ±	
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ALL DIMENSIONS IN MILLIMETRES	

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ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C23602	C23602	CHASSIS PLATE ASSY	1
2	C26950	C26684	JUNCTION BOX DRILLING	1
3	C10158		M20 GLAND	1
4	C12415		M20 GLAND	2
5	C15293		M13 GLAND	2
6	C15133		TERMINAL BLOCK 32A	1
7	C10203		M3 x 16 PAN HD SCREW	3
8	C23598		ø4 x 8 PAN HD POLYIMATE SCREW	4

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

JUNCTION BOX ASSY

© 2015 A1 CONT ON SHEET

DRAWN	LW	DATE	7.15	TOLERANCES	Send Details to ISO 9002 C10
CHECKED		SCALE	1:1	Depend 2	Send Details to ISO 9002 C10
FILE DIMENSIONS IN MILLIMETRES		APPURT 2		Hole centres & points 2	

FINISH

MATERIAL

DESCRIPTION

PART No./DRG No

C26951

SHEET

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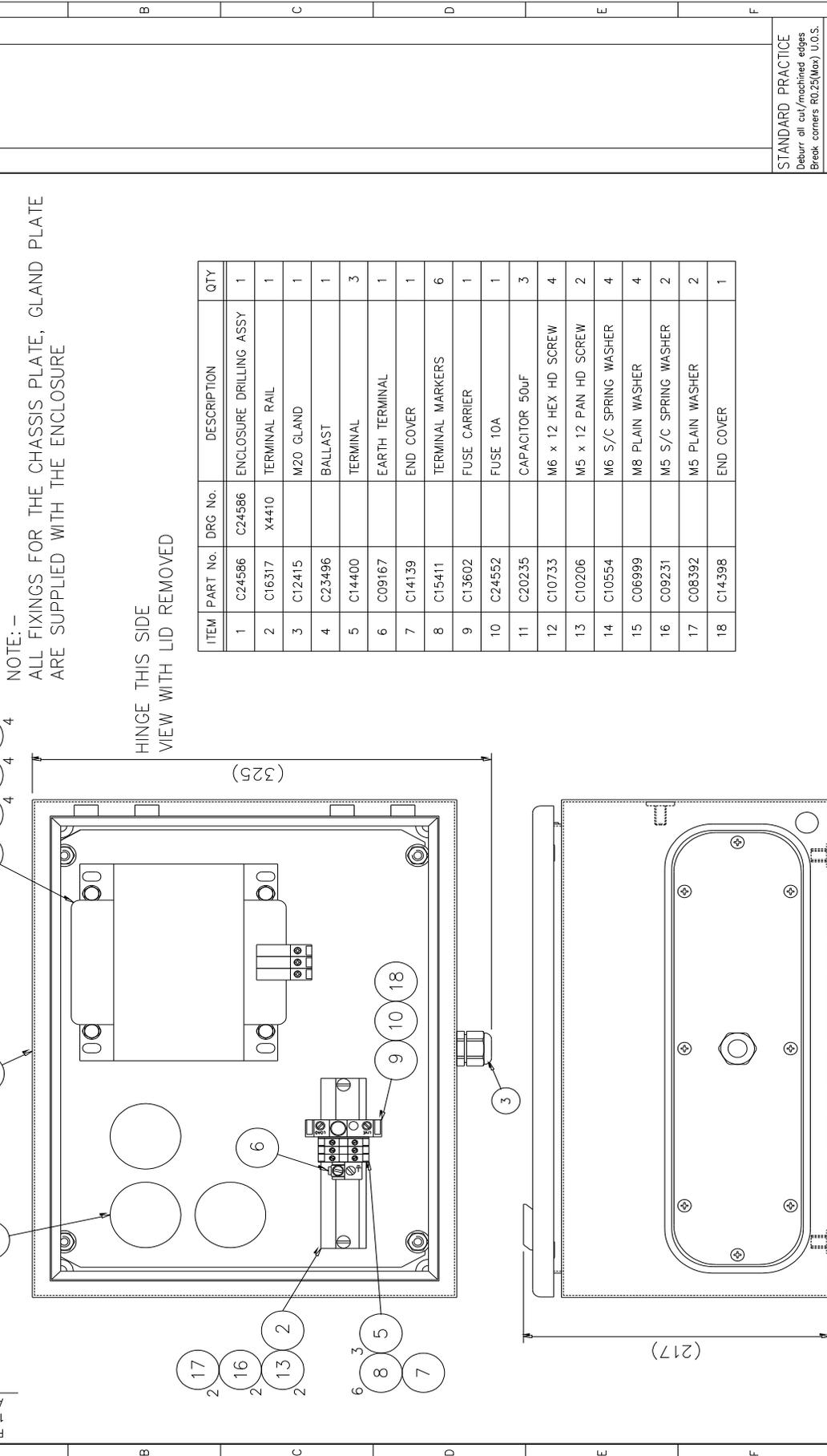
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STANDARD PRACTICE
Debur all cut/machine edges
Break corners R0.25mm D.O.S.

Francis
SEARCHLIGHTS

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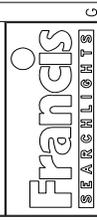


NOTE: -
ALL FIXINGS FOR THE CHASSIS PLATE, GLAND PLATE
ARE SUPPLIED WITH THE ENCLOSURE

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ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C24586	C24586	ENCLOSURE DRILLING ASSY	1
2	C16317	X4410	TERMINAL RAIL	1
3	C12415		M20 GLAND	1
4	C23496		BALLAST	1
5	C14400		TERMINAL	3
6	C09167		EARTH TERMINAL	1
7	C14139		END COVER	1
8	C15411		TERMINAL MARKERS	6
9	C13602		FUSE CARRIER	1
10	C24552		FUSE 10A	1
11	C20235		CAPACITOR 50uF	3
12	C10733		M6 x 12 HEX HD SCREW	4
13	C10206		M5 x 12 PAN HD SCREW	2
14	C10554		M6 S/C SPRING WASHER	4
15	C06999		M8 PLAIN WASHER	4
16	C09231		M5 S/C SPRING WASHER	2
17	C08392		M5 PLAIN WASHER	2
18	C14398		END COVER	1

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



10 – Spare Parts List

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

Part Number	Description
Searchlight Spares	
D15746	1.2Kw Metal Halide Lamp
C09868-00	Lampholder – G38
C08919-00	Front glass
C22011-00	Front glass gasket
C16410-00	Motor - Remote Focus
C08885-00	Reflector
C22790-00	Fan
C16880-00	Ignitor
C23496-00	Ballast
C24552-00	Fuse – 10amp
C20235-00	Capacitor - 50 μ F
Motor Gearbox Spares	
C23277-00	Heater
C22403-01	Pan Motor Sub Assembly
C22287-00	Tilt Motor
C26545-00	24v Power Supply Unit
C26538-00	Speed Controller PCB
C22381-00	Pedestal Top Sealing Gasket
C26441-00	Pedestal Cover Gasket
Joystick Panel Spares	
C26537-01	Joystick
C26539-00	Joystick Controller PCB

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