



User Instruction & Installation Manual

FH380 1200 Watt Metal Halide Searchlight



Product Reference Number:

A2633 – 240v DECK
A2635 – 240v DECK PEDESTAL

A2634 – 240v CABIN
A2636 – 240v CABIN PEDESTAL

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Manual Part Number: C23769
Issue : 2

CONTENTS

- 1 - Introduction
- 2 - Safety Precautions
- 3 - Technical Information
- 4 - Unpacking and Installation Instructions
- 5 - Electrical Installation
- 6 - Operating Instructions
- 7 - Fault Finding
- 8 - Maintenance and Servicing
- 9 - Wiring Diagram & General Assembly
- 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 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 manufacturers technical data when dealing with lamps.

3 – Technical Information

This product has been designed to operate in accordance with the product specification. The FH380 1200 watt searchlight has the following features:

- All marine grade materials and fixings;
- Parabolic glass reflector;
- Stove enamel painted;
- Full 360° horizontal rotation;
- Vertical movement +45° to -45°;
- Internal self-regulating heater.(Optional);
- Instant lamp re-strike. No cooling down time required;
- Economical 750 hour lamp life;
- Toughened front glass;
- Luminous flux 105000;
- Colour temperature 5400K;
- G.R.P. control gear protected to IP66;

The searchlight also performs to the following optical data:

- Metal Halide light source, GY22 lampholder;
- Lamp Wattage - 1200 Watts;
- Supply voltage - 220/240V;
- Peak Beam Candlepower – 28,500,000 lux;
- Range – 5343 metres;
- Divergence – 2° spot - 18° flood;
- 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. 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, bolt the searchlight firmly down.

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 know more then 5 meters away from the Searchlight.

The following table below indicates the maximum length of cable to be used for the AC supply cable 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 searchlight is as follows:

Standard Models

Referring to wiring diagram C21164, a supply is fed into the Control Gear which in turn provides the relevant supply to the searchlight head.

Cables to be connected by the customer: Mains cable into the Control Gear Enclosure (customer to supply);

4 core 1.5mm² from Control Gear Enclosure into Searchlight Head (3 metres supplied – the customer must provide a suitable junction box if these cables are to be extended).

Remote Focus Option Models

Referring to wiring diagram C21872, a supply is fed into the Control Gear Enclosure which provides a common feed to the RF Control Unit, the control gear and the searchlight head.

Cables to be connected by the customer: Mains cable into the Control Gear Enclosure (customer to supply);

5 core 1.5mm² from the Control Gear enclosure to the RF Unit (1.5 metres supplied – the customer must provide a suitable junction box to extend these cables);

5 core 1.5mm² from the Control Gear Enclosure to the searchlight head (3 metres supplied – the customer must provide a suitable junction box to extend these cables)

All internal wiring in the Control Gear Enclosure, Searchlight head and the RF unit is supplied pre-wired.

When operational, the output from the control gear should be approximately 100 volts at 13.8 amps.

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 beam of the searchlight can be adjusted to give a variety of beam types. Using the lampholder focus wheel, the desired beam can be achieved for any particular application.

If using a remote focus option, the beam can be adjusted by pressing the yellow push button on the RF Unit. The beam will move continuously through 'spot' to 'flood'. In order to fix the beam type simply release the button at the desired position.

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.

When bolting down the searchlight on an uneven surface, 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.

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 manufacturers 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 manufacturers 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

Causes:

- 1) Power not supplied;
- 2) Faulty connections;
- 3) Failed motor/transformer

Remedy:

- 1) Check voltage at supply. If no supply present fault is at customer supply. If power is present see remedy 2;
- 2) Check all wiring connections on motor, transformer and terminal rail, in accordance with the wiring diagram. If found to be correct, see remedy 3;
- 3) Remove focus motor and apply 24v DC directly across terminals. If motor does not rotate the unit has failed. A new focus motor should be fitted to the lampholder assembly. If the motor is working correctly, check output of transformer (mounted to the remote focus control panel). If the output is incorrect fit new transformer.

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).
- 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 Diagram and General Assembly

Drawing Number	Description
C21164	Wiring diagram – Standard
C21872	Wiring diagram – Remote Focus Option
A2633	FH380 Deck
A2634	FH380 Cabin
A2635	FH380 Deck Pedestal
A2636	FH380 Cabin Pedestal
C24584	Control Gear Assembly

FRANCIS SEARCHLIGHTS LIMITED

UNION ROAD . BOLTON . BL2 2HU

DESCRIPTION

1200W RF WIRING DIAGRAM

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PART No./REG No. C21872

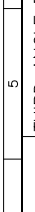
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ISS No	MODIFICATION DETAILS	DATE & UNITS
1	AS FIRST DRAWN	9.01
2	5 CORE CABLE COLOUR CHANGE (EC1084)	12.05 M.T
3	NEW BALLAST (EC1116)	1.06 D.S.
4	10A FUSE WAS 20A (EC1307)	1.09 L.W.

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



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

DESCRIPTION

1200W RF WIRING DIAGRAM

DRAWN	S.U.J.	DATE	9.01	TOLERANCES
CHECKED				General: ±
				Angular: ±

ALL DIMENSIONS IN MILLIMETRES

Material: Sand Casting To ISO 6862 CT10; Die Casting To ISO 6862 C18; Hole centres & posns: ±

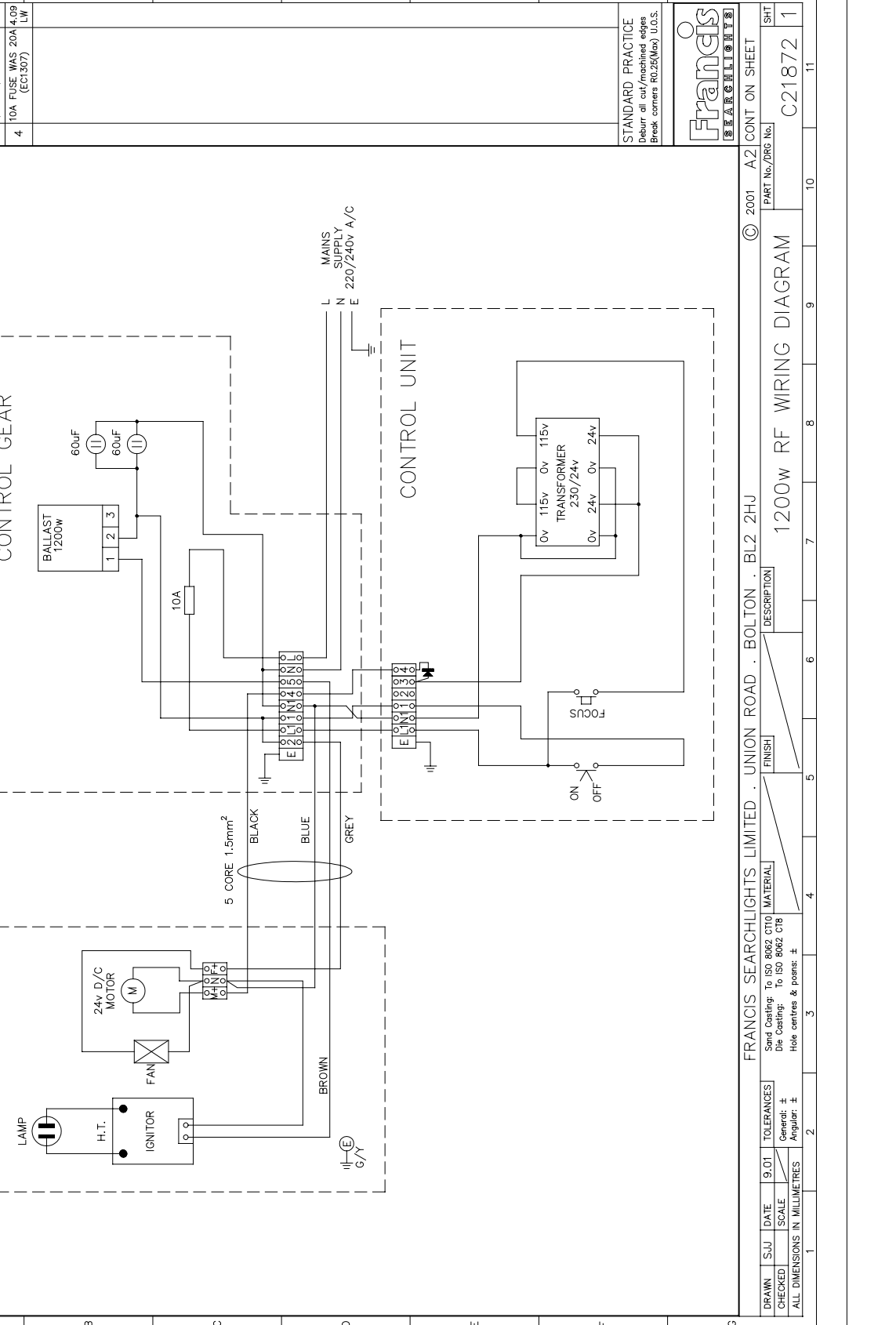
FINISH

SEARCHLIGHT

CONTROL GEAR

CONTROL UNIT

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



FRANCIS SEARCHLIGHTS

© 2001 A2 CONT ON SHEET

PART No./REG No. C21872

SHT 1

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FIRST USED ON
FH380C

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

ISS No 1

MODIFICATION DETAILS

DATE 3.07.07

AS FIRST DRAWN

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C22765	C22765	BARREL ASSY	1
2	C16939	M726	TRAINER MOUNT	1

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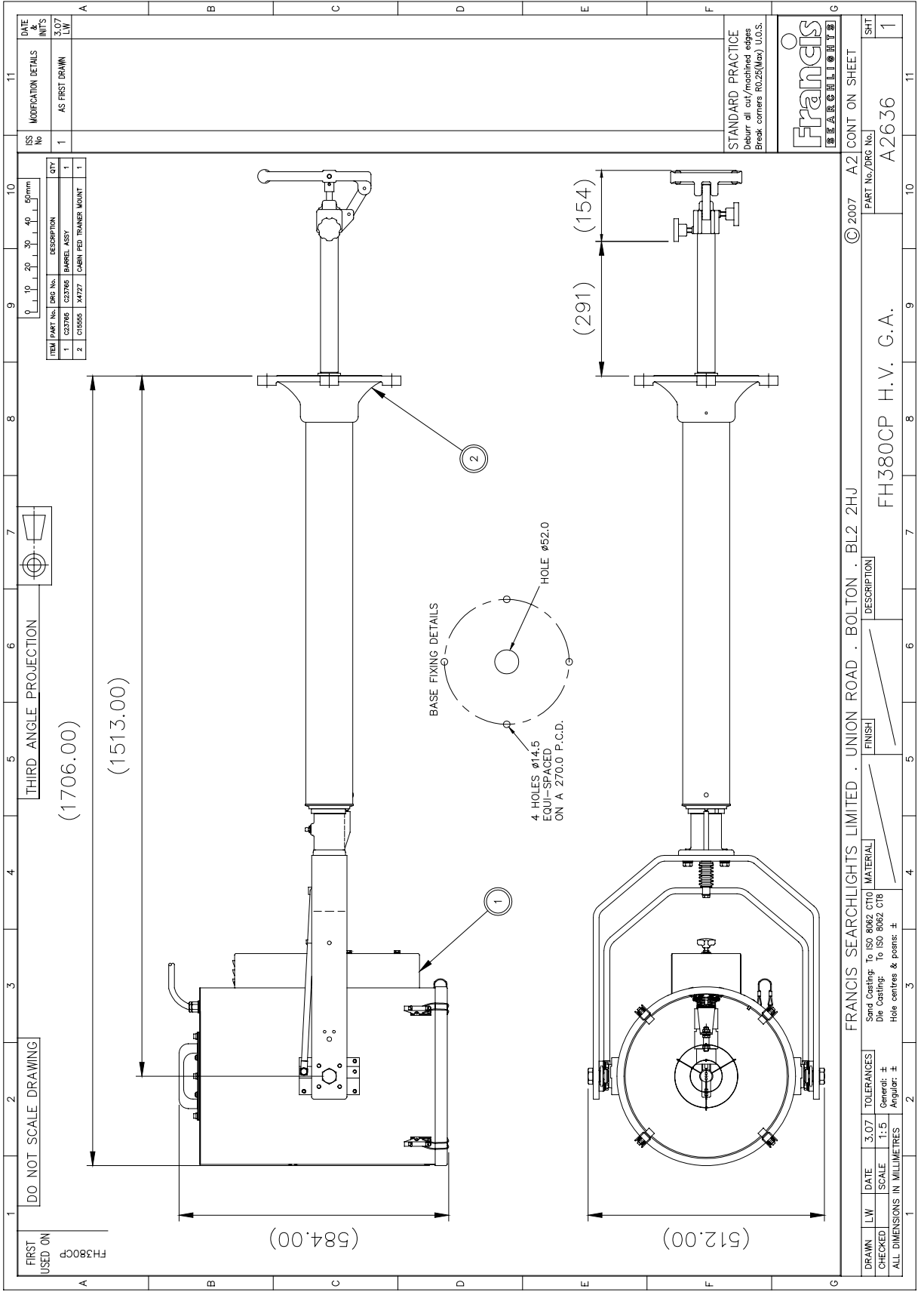
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FRST USED ON FH380CP

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C23766	C23766	BARREL ASSY	1
2	C16555	X4727	CABIN FED TRAINER MOUNT	1

MODIFICATION DETAILS	DATE & INIT'S
AS FIRST DRAWN	3.07 LW

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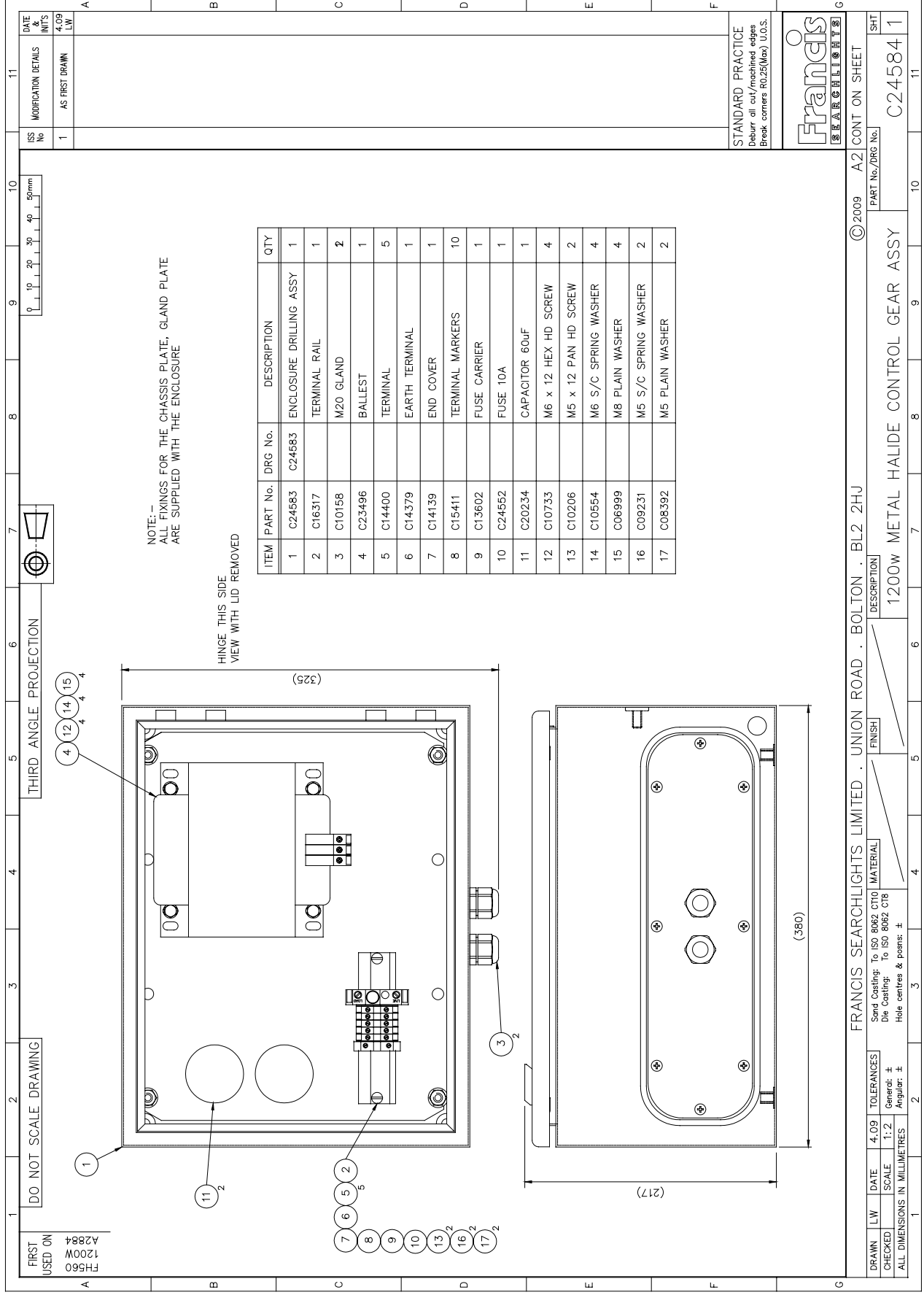
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NOTE:-
ALL FIXINGS FOR THE CHASSIS PLATE, GLAND PLATE
ARE SUPPLIED WITH THE ENCLOSURE

HINGE THIS SIDE
VIEW WITH LID REMOVED

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C24583	C24583	ENCLOSURE DRILLING ASSY	1
2	C16317		TERMINAL RAIL	1
3	C10158		M20 GLAND	2
4	C23496		BALLEST	1
5	C14400		TERMINAL	5
6	C14379		EARTH TERMINAL	1
7	C14139		END COVER	1
8	C15411		TERMINAL MARKERS	10
9	C13602		FUSE CARRIER	1
10	C24552		FUSE 10A	1
11	C20234		CAPACITOR 60uF	1
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

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



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PART No./DRG No. C24584 1
SHT

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU
 Sand Casting: To ISO 8062 CT10 (MATERIAL)
 Die Casting: To ISO 6062 CT16
 Hole centres & posits: ±
 FINISH
 DESCRIPTION
 1200W METAL HALIDE CONTROL GEAR ASSY

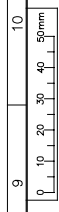
DRAWN	LW	DATE	4.09	TOLERANCES
CHECKED		SCALE	1:2	General: ± Angular: ±

ALL DIMENSIONS IN MILLIMETRES

FIRST USED ON
A2884
FH560
1200W

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



ISS No	MODIFICATION DETAILS	DATE
1	AS FIRST DRAWN	4.09 LW

10 – Spare Parts List

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

Part Number	Description
D23755	1200w Metal Halide Lamp
C23756-00	Lampholder – GY22
C08919-00	Front glass
C22011-00	Front glass gasket
C08885-00	Reflector
C16880-00	Ignitor
C22790-00	Fan
C23496-00	Ballast
C24552-00	Fuse – 10amp
C20234-00	Capacitor - 60 μ F
C14143-00	Switch – On/Off, Heater
C14142-00	Push Button - Focus
C16488-00	Transformer
C16854-00	Diode
C16410-00	Motor – Remote Focus

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.