



User Instruction & Installation Manual

Voyager Remote Control Em Arc Searchlight



Product Reference Number:

A2661 – VM330 WHITE 115v/240v 350w
A2663 – VM330 MIRRORED STN.S (CHROME) 115v/240v 350w

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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 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.

- Prevent rain, snow, condensation and water droplets from contacting the lamp as this may cause bulb failure and possible shattering;
- Quartz halogen bulbs run with a high internal pressure in excess of atmospheric. Whilst the construction is inherently strong, there is a slight risk of the bulb shattering;
- Never look directly into an illuminated searchlight as this may cause severe damage to eyesight. If it is necessary to inspect a lamp whilst in operation, always wear suitable protective goggles;
- 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;
- Never attempt to clean a lamp whilst in use;
- 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 breaking a lamp for disposal, care must be taken to ensure the glass fragments are safely contained. This operation must be performed out of doors in free air. In all circumstances refer to the lamp manufacturers instructions packed with the lamp;
- 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 VM330 RC searchlight has the following features:

- All marine grade materials and fixings;
- Parabolic glass reflector;
- Stove enamel painted or Mirrored 316 Stainless Steel (Chrome);
- Instant lamp re-strike. No cooling down time required;
- Economical 2000 hour lamp life;
- 350° horizontal rotation;
- Vertical movement +20° to -20°;
- Motor speed 2°- 20°/sec (Pan). 10°/sec (Tilt);
- Remote focus facility;
- Self Regulating internal heater;
- Toughened front glass;
- Searchlight & Control Gear to IP66;

The 240v searchlight also performs to the following optical data:

- Em Arc light source;
- Lamp Wattage – 350 Watts;
- Supply voltage – 115/240 volts;
- Peak Beam Candlepower – 18,200,000 lux;
- Range – 4266 metres;
- Divergence – 2.5°;
- 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 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. When in the desired position, fit the base gasket supplied and fasten 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. If no cabling is required to be seen on deck there is the option to wire from underneath the base directly into the deck. See drawing A2645 for details.

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 following table should be used for indication purposes only:

The Junction Box should NOT be positioned no more than 5 metres away from the Searchlight

The following table indicates the maximum length of cable to be used for AC supply cable, from the supply to the Searchlight

Searchlight	240v 350w	115v 350w
Cable Size (mm ²)	Distance Max	Distance Max
1.5	212 MTRS	49 MTRS
2.5	346 MTRS	79 MTRS
4	548 MTRS	126 MTRS
6	854 MTRS	196 MTRS
10	1429 MTRS	329 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:

Note: This equipment must be earthed.

Installation Guidelines

A typical installation and connection routine for the VM330 RC 240v supply searchlight is as follows:

Referring to wiring diagram C24077, a supply is fed to the junction box (control devices), which then provides a common feed to the searchlight and joystick panel.

The searchlight to junction box has been pre-wired with 3 meters of 12core 0.5mm and 3 core 2.5mm cable. The only cables that need to be supplied by the customer are the 12 core 0.5mm cable from the joystick panel to the junction box and the mains cable

Optional Slave Panel Wiring

12 core 0.5mm² cable from the Slave Panel to the Junction Box.

NOTE both panels MUST NOT be operated simultaneously as this may damage the equipment

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.

The pan speed can be adjusted using the potentiometer mounted on the joystick panel. The movement increases from 2° to a maximum of 20°/sec when turned clockwise. The tilt speed runs at 10°/sec and cannot be adjusted.

The beam of the searchlight can be adjusted to give a variety of beam types. Using the yellow remote focus button 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 button at the desired position.

The heaters specified on this equipment are self-regulating and will shut off when they reach the dew point temperature.

The searchlight has the additional feature of a wireless keyfob, which allows the user to operate the light from a maximum distance of up to 30 metres. The keyfob has an 8-way direction control and the facility to switch the light on/off. To activate the keyfob simply hold down the on/off switch for a few seconds, the searchlight can have a maximum of four keyfobs all working independently from each other. When not in use the keyfob will go into a sleep mode.

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

NOTE both panels MUST NOT be operated simultaneously as this may damage the equipment

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 jacket 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;
- 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;
- The lamp must be capable of unimpeded expansion when it warms up to operating temperature. Mechanical forces must not be applied to the fused quartz bulb;
- Before the protective jacket 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);

In all circumstances the lamp manufacturers data should be referred to when dealing with lamps.

When fitting the lamp:

- Always isolate the equipment from the supply when inserting a lamp;
- Ensure the circuit is suitably fused;
- Ensure the lamp is of the correct power rating and type;
- Check the lampholder is in a good dry condition. Never allow water to collect in the lamp fitting or come into contact with the lamp.

To fit the lamp:

- Loosen all the socket screws on the front of the searchlight, remove the bezel and glass and store in a safe place;
- Fit the rear lampholder lead over the thread of the lamp and then screw into the rear PTFE lampholder;
- Fit the front lampholder lead over the thread of the lamp and fasten in place using the nut supplied with the lamp;
- Replace the front bezel and glass, ensuring the socket screws are securely fastened.

Testing

Upon correct installation and connection to an electrical supply, the equipment can be tested in order to ensure its' correct performance. A competent person with some knowledge of electrical equipment must carry out this work.

Equipment required: Multi-meter with leads
 Ammeter

Using the equation $P=VI$, the approximate power output of the equipment can be calculated in the following way:

- Using the multi-meter, take a voltage reading from the terminal block inside the searchlight;
- Using the ammeter, take an amps reading from the live cable to the lamp;
- Multiply these figures together to give an approximate wattage (Power output).

For example:

Using a 240v 350w Em Arc lamp:
Voltage reading = 240v; Amps reading = 1.45 amps

Therefore, Wattage = $240 \times 1.45 = 350$ watts

7- Fault Finding

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

Failure of Lamp to light

Causes:

- 1) Power not supplied;
- 2) Fuse blown;
- 3) Failed lamp

Remedy:

- 1) Check voltage at supply. If supply is not present the fault is at the customer supply. If power is present, see remedy 2;
- 2) Check fuse for visual failure. If none noticeable check fuse for continuity using a multi-meter. If fuse found to be faulty, replace with new part and test equipment again for correct working order. If found to be working correctly see remedy 3;
- 3) Firstly, check supply at lampholder connecting block (within searchlight body). If supply is present, disconnect unit from power supply before removing the lamp. If noticeable damage to lamp is present, the lamp will have failed. Replace lamp ensuring all precautions and instructions previously outlined in this manual are adhered to.

Failure of Remote Focus

Causes:

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

Remedy:

- 1) Check voltage at supply and the output from the control board in the junction box. If no supply present fault is at customer supply. If power is present see remedy 2;
- 2) Check all wiring connections on motor, and terminal block in accordance with the wiring diagram. If found to be correct, see remedy 3;
- 3) Remove the 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.

8 - Maintenance and Servicing

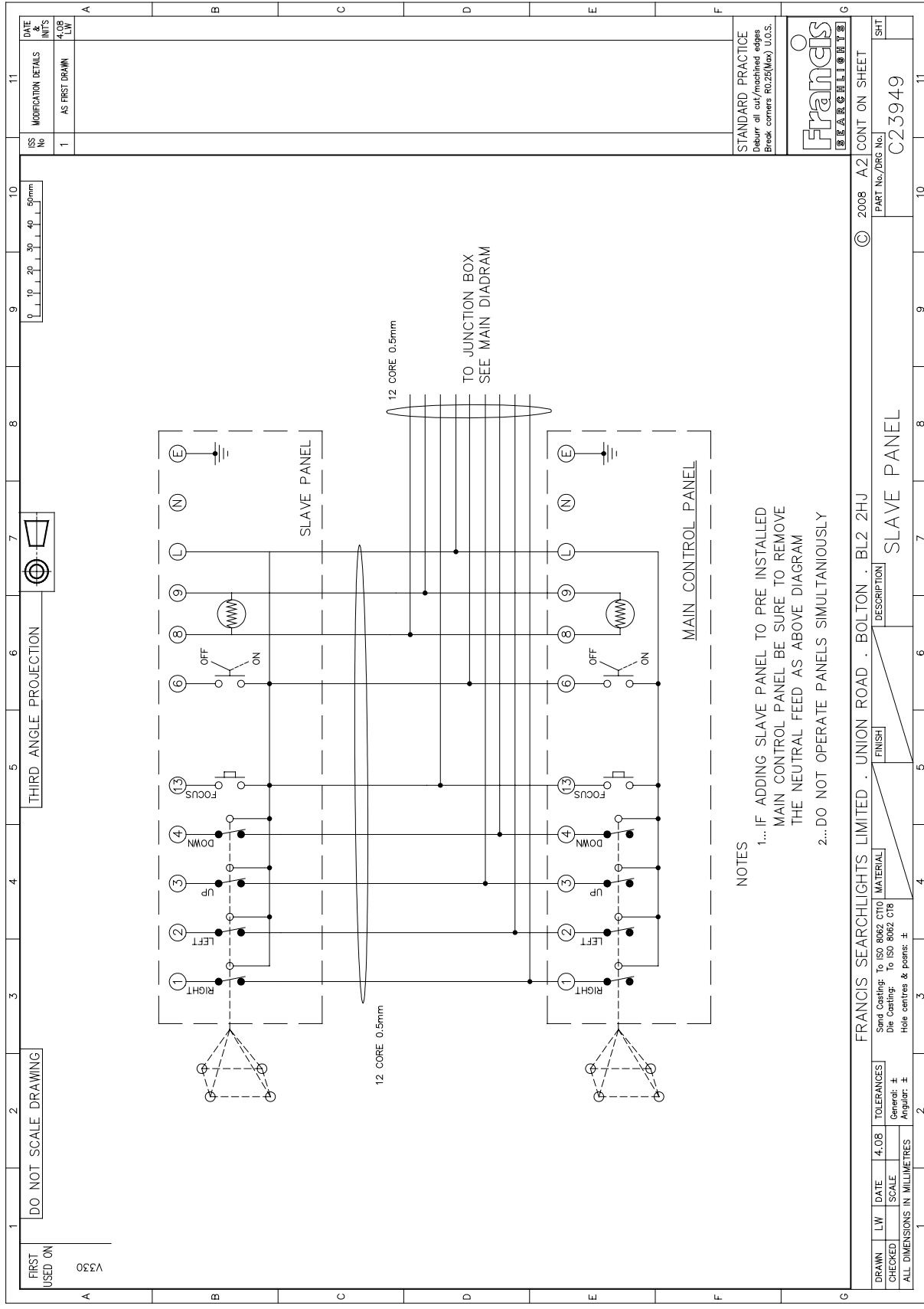
In order to prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- 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 earthing point for conductivity;
- The body of the mirrored stainless steel version can be cleaned to keep its chrome look using a metal polish and a lint free cloth.
- It is advisable to check all seals and gaskets for signs of degradation. Renew if necessary;
- The searchlight is fitted with a breather unit. This ensures a steady airflow in order to prevent any vacuum forming within the barrel.
- 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 Diagrams and General Assembly

Drawing Number	Description
C24077	Wiring Diagram
C23949	Slave Panel Wiring Diagram
A2645	VM330RC General Assembly Drawing
C23991	Joystick Control Panel
C24148	Junction Box



NOTES

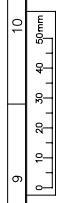
- 1... IF ADDING SLAVE PANEL TO PRE INSTALLED MAIN CONTROL PANEL BE SURE TO REMOVE THE NEUTRAL FEED AS ABOVE DIAGRAM
- 2... DO NOT OPERATE PANELS SIMULTANIOUSLY

ISS No	1	DATE OF INTS	4.08 LW
MODIFICATION DETAILS	AS FIRST DRAWN		

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



CONT. ON SHEET	A2
PART No./DRG No.	C23949
SHT	11

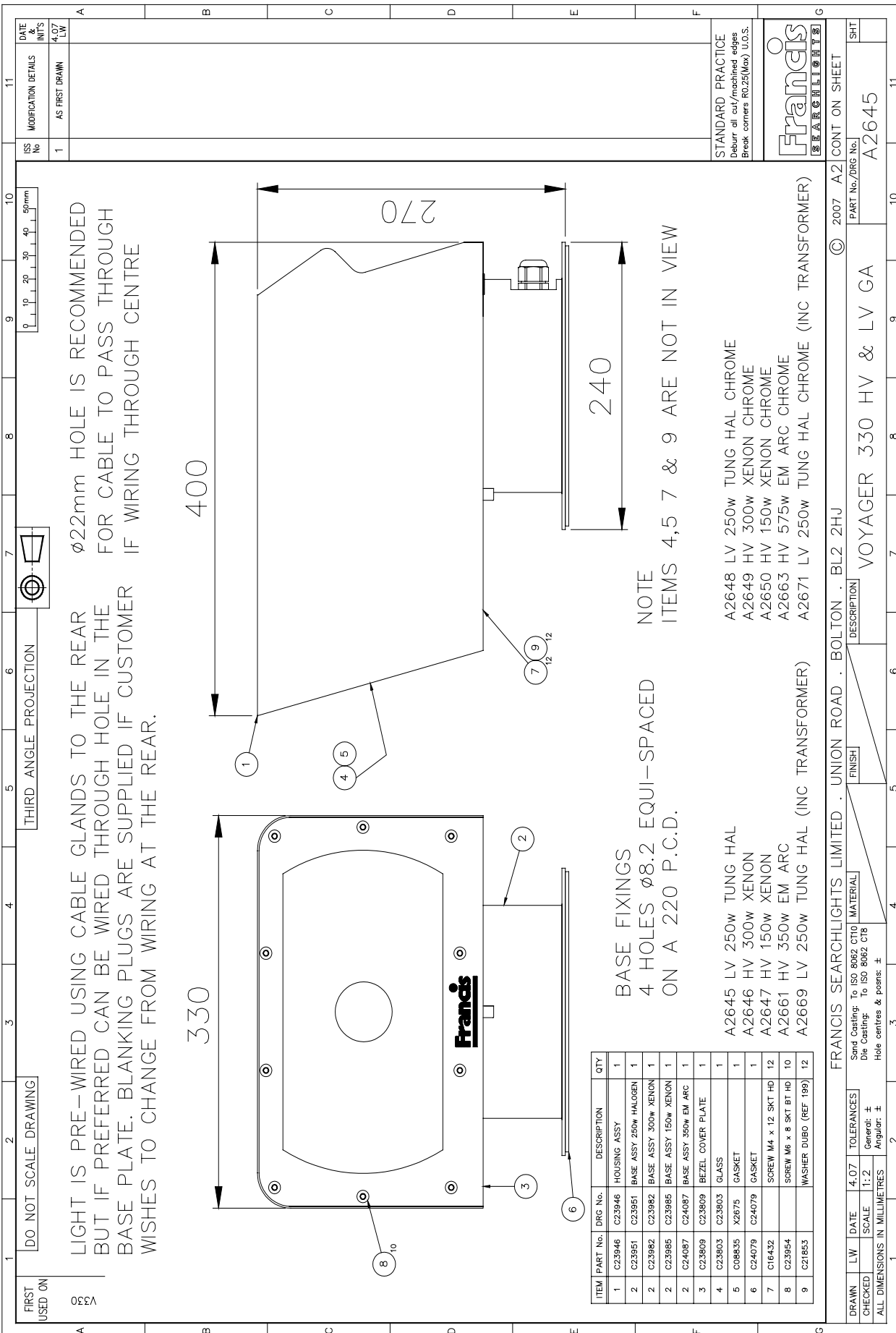


THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

FIRST USED ON
 V330

FRANCIS SEARCHLIGHTS LIMITED	UNION ROAD	BOLTON	BL2 2HU
Material	Finish	Description	Slave Panel
Sand Casting: To ISO 8062 OT10			
Die Casting: To ISO 8062 C18			
Tolerances	General: ±		
	Angular: ±		
ALL DIMENSIONS IN MILLIMETRES			
Drawn	LW	Date	4.08
Checked		Scale	
ALL DIMENSIONS IN MILLIMETRES			



LIGHT IS PRE-WIRED USING CABLE GLANDS TO THE REAR BUT IF PREFERRED CAN BE WIRED THROUGH HOLE IN THE BASE PLATE. BLANKING PLUGS ARE SUPPLIED IF CUSTOMER WISHES TO CHANGE FROM WIRING AT THE REAR.

Ø22mm HOLE IS RECOMMENDED FOR CABLE TO PASS THROUGH IF WIRING THROUGH CENTRE

330

400

270

240

BASE FIXINGS
 4 HOLES Ø8.2 EQUI-SPACED
 ON A 220 P.C.D.

NOTE
 ITEMS 4,5 7 & 9 ARE NOT IN VIEW

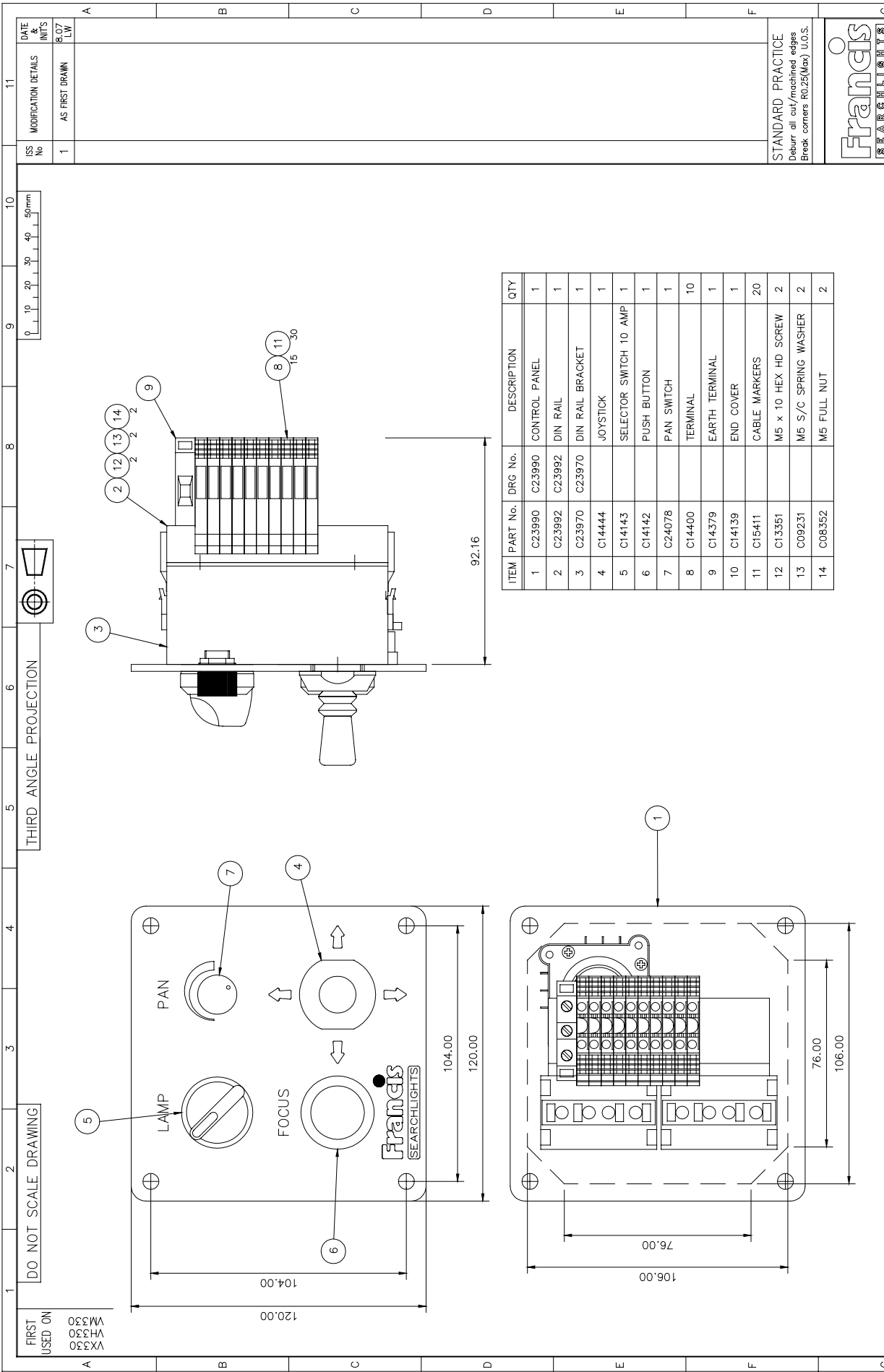
- | | | | |
|-------|---------|----------|--------------------------|
| A2645 | LV 250w | TUNG HAL | CHROME |
| A2646 | HV 300w | XENON | CHROME |
| A2647 | HV 150w | XENON | CHROME |
| A2661 | HV 350w | EM ARC | CHROME |
| A2669 | LV 250w | TUNG HAL | (INC TRANSFORMER) |
| A2648 | LV 250w | TUNG HAL | CHROME |
| A2649 | HV 300w | XENON | CHROME |
| A2650 | HV 150w | XENON | CHROME |
| A2663 | HV 575w | EM ARC | CHROME |
| A2671 | LV 250w | TUNG HAL | CHROME (INC TRANSFORMER) |

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C23946		HOUSING ASSY	1
2	C23951		BASE ASSY 250w HALOGEN	1
2	C23982		BASE ASSY 300w XENON	1
2	C23985		BASE ASSY 150w XENON	1
2	C24087		BASE ASSY 350w EM ARC	1
3	C23909		BEZEL COVER PLATE	1
4	C23903		GLASS	1
5	C08635	X2675	GASKET	1
6	C24079		GASKET	1
7	C16432		SCREW M4 x 12 SKT HD	12
8	C23954		SCREW M6 x 8 SKT BT HD	10
9	C21853		WASHER DUBO (REF 199)	12

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



DRAWN	LW	DATE	4.07	TOLERANCES	General: ±
CHECKED		SCALE	1:2	Angular: ±	
ALL DIMENSIONS IN MILLIMETRES					
FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HU					
Send Casting: To ISO 8062 CT10			MATERIAL		
Die Casting: To ISO 8062 C18			FINISH		
Hole centres & posns: ±			DESCRIPTION		
			VOYAGER 330 HV & LV GA		
			PART No./DRG No.		
			A2645		
			SHT		
			11		



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C23990	C23990	CONTROL PANEL	1
2	C23992	C23992	DIN RAIL	1
3	C23970	C23970	DIN RAIL BRACKET	1
4	C14444		JOYSTICK	1
5	C14143		SELECTOR SWITCH 10 AMP	1
6	C14142		PUSH BUTTON	1
7	C24078		PAN SWITCH	1
8	C14400		TERMINAL	10
9	C14379		EARTH TERMINAL	1
10	C14139		END COVER	1
11	C15411		CABLE MARKERS	20
12	C13351		M5 x 10 HEX HD SCREW	2
13	C09231		M5 S/C SPRING WASHER	2
14	C08352		M5 FULL NUT	2

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



ISS No	MODIFICATION DETAILS	DATE & INT'S
1	AS FIRST DRAWN	B.07 LW

DO NOT SCALE DRAWING
 THIRD ANGLE PROJECTION
 0 10 20 30 40 50mm

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2JH
 © 2007 A2 CONT ON SHEET

DESCRIPTION: CONTROL PANEL ASSEMBLY
 FINISH: MATERIAL: TOLERANCES: Sand Casting: To ISO 8062 CT10 Die Casting: To ISO 8062 C18
 General: ± 0.2 Angular: ± Hole centres & poins: ±

DRAWN LW DATE B.07 SCALE 1:1 ALL DIMENSIONS IN MILLIMETRES
 CHECKED SCALE 1:1 ALL DIMENSIONS IN MILLIMETRES

PART No./DRG No. C23991 1
 SHEET 1

1 2 3 4 5 6 7 8 9 10 11

10 - Spare Parts List

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

Part Number	Description
D24179	350w EM ARC Lamp
C24181-00	Ignitor
C24180-00	350w PSU
C14143-00	Switch 10A - On/Off
C14142-00	Switch – Focus
C14444-00	Joystick
C24078-00	Switch (Controller/Speed)
C23803-00	Front Glass
C08835-00	Front Glass Gasket
C16410-00	24v Motor – Focus and Tilt
C23802-00	Reflector
C22268-01	Breather Assy
C24089-01	Pan Motor S/Assy
C22382-00	Microswitch with lever
C24000-00	Speed Controller
C23960-00	Wireless Control Unit
C24119-00	PSU Converter
C14981-00	Relay (PSU)
C23805-00	Relay (Housing)
C23804-00	Reed Limit Switch
C21567-00	Heater
C24079-00	Mounting Base Gasket
C23961-01	Wireless Key Pad

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.



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