



User Instruction & Installation Manual

Voyager 2



Product Reference Number:

A6124 VX500 100w 24v Xenon

Manufacturer's details:

Francis Searchlights Ltd
Union Road, Bolton
Lancashire, BL2 2HJ, UK
Tel: +44 (0) 1204 558960
Fax: +44 (0) 1204 558979
<http://www.francis.co.uk>
E-mail: sales@francis.co.uk

Distributor details:

[Empty box for distributor 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 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 whilst handling;
- Should it be necessary to examine the lamp with the lid 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 VX500 RC searchlight has the following features:

- All marine grade materials and fixings with Parabolic glass reflector;
- 350° horizontal rotation with a Vertical movement of +20° to -20°;
- Motor speed 1°- 20°/sec (Pan). 1°-10°/sec (Tilt);
- Remote focus facility;
- Self Regulating internal heater;
- Sealing to IP66;
- Temperature range -50°C

The 100w Xenon searchlight also performs to the following optical data:

- Supply voltage – 9.5v to 30v DC ;
- Peak Beam Candlepower 4.3 million Lux;
- Range – 2081 metres;
- Adjustable lamp focus, 5° spot to 29° flood;
- Lamp Life...3000 hours

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 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 A6093 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 following table below indicates the maximum length of cable to be used for the supply cable to the junction box:

Searchlight	24v 100w
Cable Size (mm ²)	Distance Max
2.5	16 MTRS
4.0	26 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 VX500 RC 100w H.I.D 24v supply searchlight is as follows:

Referring to wiring diagram C26653, a 24v supply is fed to the junction box (control devices), which then provides a common feed to the searchlight and joystick panel.

The junction box to searchlight and joystick panel has been pre-wired with 3 meters of 12 core 0.5mm, 4 core 2.5mm and the two pair twisted screened cables. 3 metres of 3 core 2.5mm cable has been fitted for the supply (Customer may need to increase this length refer to table on previous page).

Basic Operation

When the searchlight is turned on an 24v supply is fed to the PSU. This in turn generates a sufficient voltage to the ignitor in order that the ignition voltage is achieved and the Xenon lamp strikes.

After the lamp has lit, the PSU regulates the voltage through the ignitor so that the lamp operates within its design parameters.

Once the searchlight has been switched off allow approximately 30 seconds for the lamp to cool down before re-striking the lamp.

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-programed 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 programed 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.

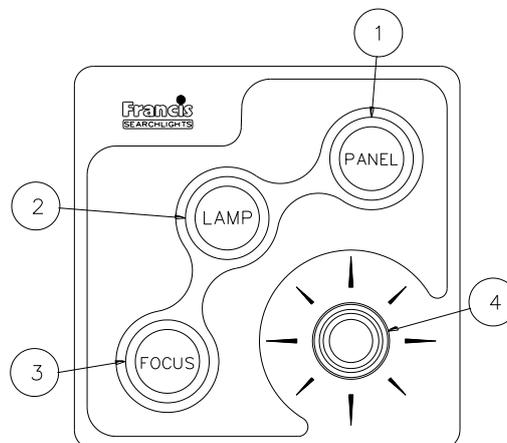


Fig 1

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 lamp house 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 lamp holder 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 lamp holder 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.

Always isolate the equipment from the supply when fitting a lamp

Before fitting all types of lamp:

- Loosen and remove five M8 socket bolts with the dubo washer on the underneath of the searchlight, then remove the upper hood of the searchlight & store along with the bolts and washers in a safe area;

After fitting the lamp,

- Replace the upper hood, ensuring the groove aligns correctly with the glass gasket replace the bolts and washers and make sure they are securely fastened.

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:

- Release the M4 grub screw in the lamp holder;
- Remove the lamp by freeing one cable at a time through the slot in the lamp holder
- Disconnect the two lamp leads
- Insert new lamp into holder & nip up the M4 grub screw
- Reconnect the two leads to the lamp ;

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 100w xenon lamp:

Voltage reading = 24v; Amps reading = 4.16 amps

Therefore, Wattage = $24 \times 4.16 = 100$ watts

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 supply is connected to the input of the Ballast and check all connections as per the wiring diagram C26653. On operation if the lamp does not light, switch off supply and check all fuses;

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.

- 1) Before a xenon 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 25,000 volts or higher). Switching the lamp on activates the ignitor. A cracking or hissing noise should be heard. The ignitor is housed within the rear of the searchlight barrel. If found to be faulty a new ignitor must be fitted.

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 upper casting by removing the five M8 socket bolts with the dubo washer on the underneath of the searchlight,;
 - 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;
 - 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
A6093	A6124 VX500RC 100w L.V GA
C26653	RC Wiring Diagram HV Variable Speed
C26540	Control Panel
C26675	Junction Box

DATE	16
INDICATION DETAILS	
1 AS FIRST DRAWN	6.14
2 NEW MOTOR PIVOT	7.15
BRACKET	EC1549

DO NOT SCALE DRAWING

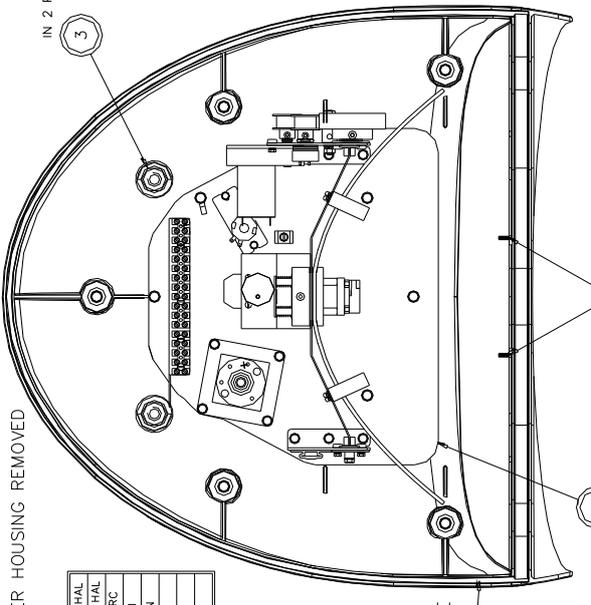
THIRD ANGLE PROJECTION

FIRST USED ON

VIEW WITH UPPER HOUSING REMOVED

IN 2 POSN

WH500	A6093	LV 250w TUNG HAL
WH500	A6084	HV 250w TUNG HAL
WH500	A6095	HV 350w EM-ARC
WX500	A6096	HV 150w XENON
WX500	A6097	HV 300w XENON
WX500	A6123	LV 150w XENON
WX500	A6124	LV 100w XENON
WX500	A6125	HV 100w XENON



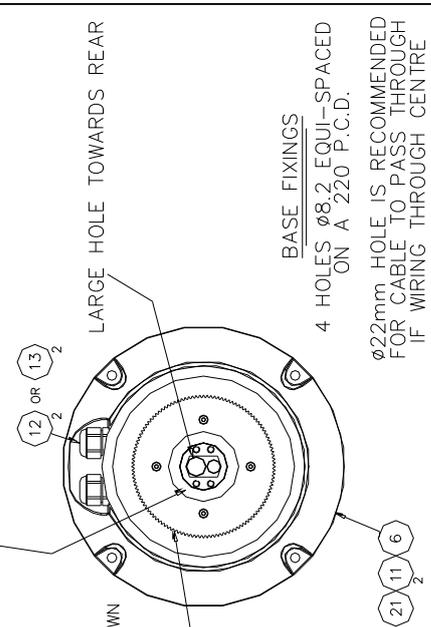
FIT SEALING STRIP AFTER FITTING THE GLASS
TRIM TO SUIT

HALOGEN COMPONENT PLATE
GLASS LOCATION INDICATOR WEBBS
IS SHOWN

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

NOTE

USE SHIMS ITEM 22 OR 23 IF REQUIRED TO OBTAIN DESIRED CLEARANCE OF LOWER HOUSING TO BASE. REPLACE THE SHIM ON THE THRUST BEARING



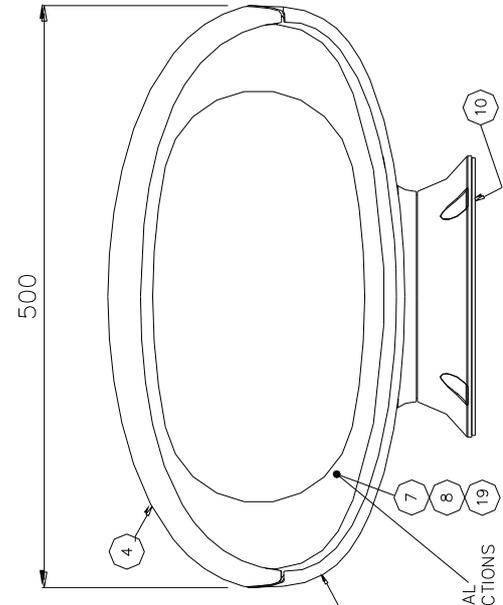
ITEM 11 NOT SHOWN

LARGE HOLE TOWARDS REAR

BASE FIXINGS

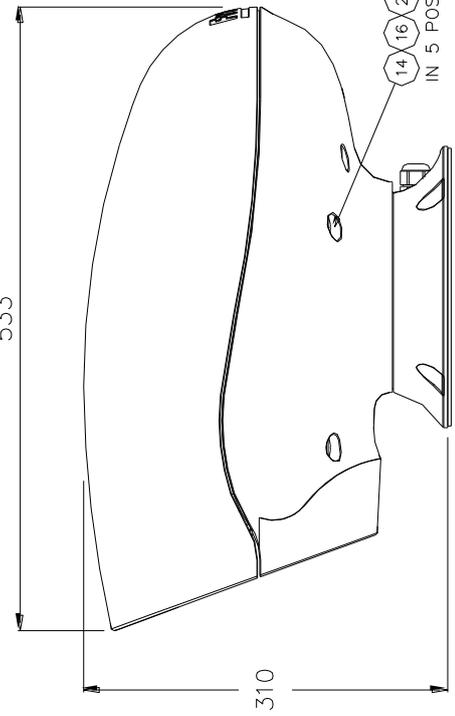
4 HOLES ϕ 8.2 EQUI-SPACED ON A 220 P.C.D.

ϕ 22mm HOLE IS RECOMMENDED FOR CABLE TO PASS THROUGH IF WIRING THROUGH CENTRE



SEE ADDITIONAL WORK INSTRUCTIONS

533



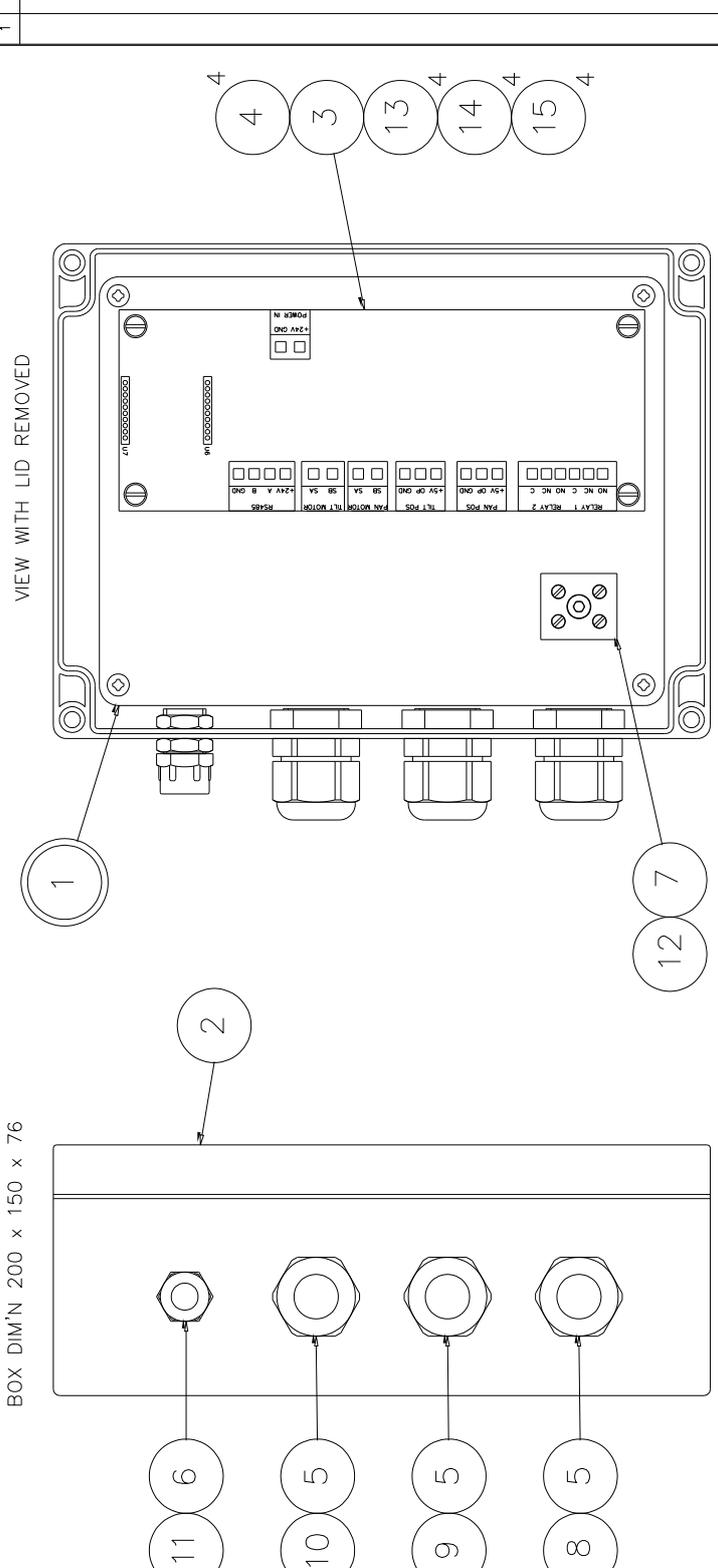
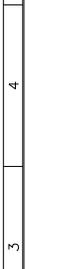
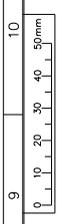
310

DRAWN	LW	DATE	6.14	TOLERANCES	Send Coating: to ISO 8062 CT10 Die Coating: to ISO 8062 C18 Hole centres & points: 2
CHECKED		SCALE	1:2	General: 2 Angular: 2	
ALL DIMENSIONS IN MILLIMETRES				MATERIAL	
				FINISH	
				DESCRIPTION	
				FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ	
				VOYAGER II GA (VH500—VM500—VX500)	
				PART No./REV No.	AG093
				CONT ON SHEET	A1
				SHEET	16



STANDARD PRACTICE
Diburr at cu/machined edges
Break corners R2.5(4mm) U.O.S.

DATE & INT'S	1.15	DATE	11
MODIFICATION DETAILS	AS FIRST DRAWN	ISS No	1
DATE	1.15	DATE	11
INT'S	LW	ISS No	1



BOX DIM'N 200 x 150 x 76

VIEW WITH LID REMOVED

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
8	C16778		CABLE 3 CORE 2.5mm	4M
9	C04633		CABLE 4 CORE 2.5mm	4M
10	C15133		CABLE 12 CORE 0.5mm	4M
11	C24872		CABLE 2 PAIR S.TWIST	4M
12	C20406		SCREW M4 x 16 CAP HD	1
13	C14502		SCREW M3 x 6 PN HD	4
14	C08028		WASHER M3 PLAIN	4
15	C10747		WASHER M3 SPRING	4

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C26672		CHASSI PLATE S/ASSY	1
2	C26674		ENCLOSURE DRILLING	1
3	C28520		PCB SPEED CONTROL	1
4	C16591		PILLAR	4
5	C10158		GLAND (M20)	3
6	C15293		GLAND (M13)	1
7	C2027		TERMINAL BLOCK	1

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



© 2015 A2 CONT ON SHEET
PART No./DRG No. C26675
SHT 1

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

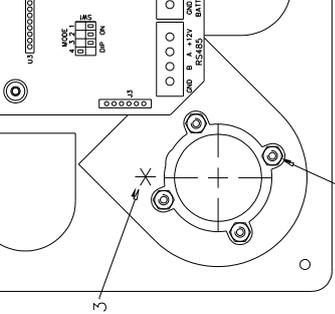
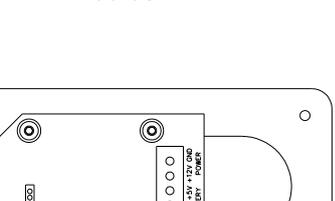
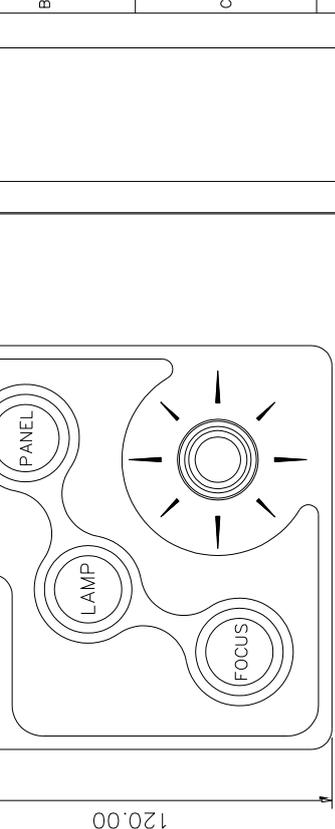
DESCRIPTION: CONTROLLER BOX ASSY

FINISH: MATERIAL: DESCRIPTION:

Stand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 C18
Hole centres & posns: ± 0.125

TOLERANCES: 1.15
General: ± 0.25
Angular: ±

DRAWN LW DATE 1.15
CHECKED SCALE 1:1
ALL DIMENSIONS IN MILLIMETRES



NOTE
 1...IF NOT DONE OPEN HOLES UP TO $\phi 3.40$ ON THE JOYSTICK CLAMPING RING
 2...POSITION THE WASHER UNDER THE JOYSTICK BELLOWS
 3...POSITION THE JOYSTICK WITH INDICATOR AT THE TOP AS SHOWN * & CLAMPING RING NOTCH TO THE RIGHT DO NOT OVER TIGHTEN NUTS



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C26528	C26528	CONTROL PANEL 3 BUTTON	1
2	C27024		JOYSTICK S/ASSY	1
3	C26539		JOYSTICK PCB	1
4	C24710		M20 SEALING WASHER	1
5	C27020		SPACER	3
6	C14502		M3 x 6 SKT BT HD SCREW	3
7	C08082		M3 WASHER	7
8	C10747		M3 SPRING WASHER	3
9	C05298		M3 FULL NUT	4

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

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 PART No./DRG No. C26540
 CONT ON SHEET 1

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

DRAWN	LW	DATE	11.14	TOOLERANCES	FINISH	DESCRIPTION
CHECKED	SCALE	1:1	General: \pm Angular: \pm	Sand Coating: To ISO 8062 CT10 Die Coating: To ISO 8062 CT8		JOYSTICK PANEL ASSY
ALL DIMENSIONS IN MILLIMETRES				Hole centres & posns: \pm		

10 - Spare Parts List

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

Searchlight Head

Part Number	Description
D25858	100w Xenon Lamp
C25857-00	(PSU & Ignitor 100w Xenon)
C26139-00	Front Glass
C26184-00	Front Glass Gasket
C26183-00	Sealing Strip Gasket
C26475-00	Mounting Base Gasket
C16410-00	24v Motor – Focus and Tilt
C25884-00	Reflector
C22268-01	Breather Assy
C24089-01	Pan Motor S/Assy
C21567-00	Heater

Junction Box

C26520-01	Speed Controller PCB
-----------	----------------------

Joystick Panel

C27024-01	Joystick assy
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 Ltd. Please quote searchlight model and serial number at all times. This will enable a fast response to your spares' requirements.