

# L560RC Halogen Remote Control Searchlight

## User / Installation Manual

### Product Part Number:

A7196 – L560RC 115/240v 2Kw Variable Speed Remote Control Searchlight

A7197 – L560RC RF 115/240v 2Kw Variable Speed Remote Control Searchlight

### **PLEASE NOTE!**

Please read this manual before installation.



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## General Information:

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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 LITE range combines features proven over many years 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 Number and Serial Number of the product you have, this is located on the name plate, inside the front of the barrel to the right.

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.

## 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.**

- Only suitably qualified personnel may install the products.
- Prevent rain, snow, condensation, and water droplets from contacting the lamp as this may cause bulb failure and possible shattering.
- Halogen bulbs run with a high internal pressure more than 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 manufacturer's 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 manufacturer's technical data when dealing with lamps.**

### 3 – Technical Information

<b>Electrical</b>		
Input voltage:	115VAC	240VAC
Input current:	17.4A Max	8.3A Max
Wattage:	2Kw	2Kw
<b>Dimensions</b>		
Height:	1338mm	
Width:	734mm	
Depth:	606mm	
Weight:	53Kgs	
<b>Searchlight Performance</b>		
Lamp power:	2000w	
Range @ 1 Lux:	2030m	
Lamp life (approx..)	400h	
Divergence:	4.8°	
PBCP (Peak Beam Candle Power) (cd Candela):	4,121,000	
Colour temperature:	3200K	
Luminous flux (Lumens):	52000	
<b>Searchlight movement</b>		
Pan rotation:	385°	
Tilt elevation:	Up 30° & Down 35°	
Pan speed:	Variable Speed 1 to 43°/sec	
Tilt Speed:	Variable Speed 1 to 14°/sec	
<b>Material, colour, IP rating</b>		
Searchlight barrel head:	Aluminium BSEN485 Grade 5251	
Gearbox housing:	Stainless Steel BS1449 304S31	
Crutch:	Aluminium BS1474 6063 T6	
Paint finish powder coated & stove enamel paint:	Ash Grey BS4800 00A01, Steel Blue RAL5011	
IP rating:	Gearbox IP67 & Searchlight IP66	
Operating temperature:	-20°C to +50°C (-50°C on request)	
<b>Certification approval:</b>		
Lloyds TA:	IEC 60945: 2002	
Russian Maritime Register of Shipping:	Parts XI & XVII, Part IV	
ISO9001 2015:	Quality Management System	

## 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.**

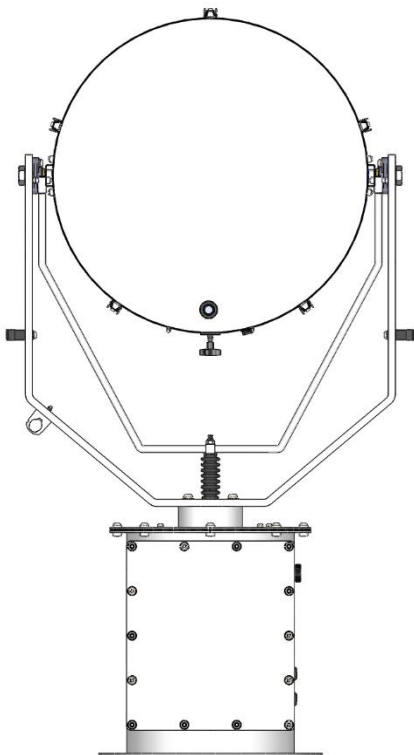
### Safety Precautions

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.

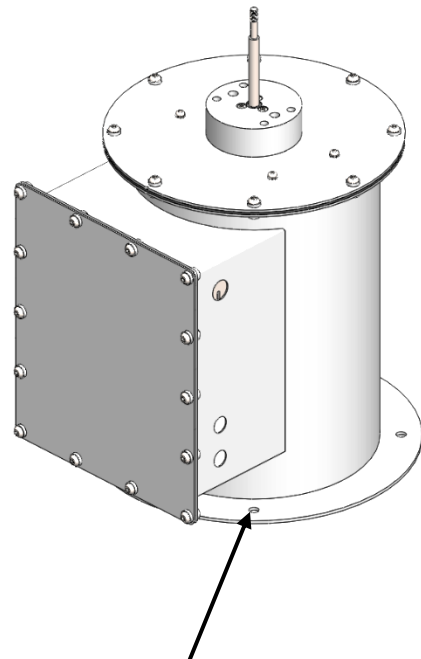
### Preparing the Mounting Position

Mark out and drill the fixing holes through the deck. 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. On an uneven surface it may be necessary to use a suitable sealant such as silicone, to ensure a weatherproofed joint.

Please refer to the drawing C27312 for the Joystick Panel cut out size, which you can find at the back of this manual.



**Rear of Searchlight**



**Base Fixings, 4 Holes Ø12.5  
Equally Spaced on a Ø350.00**

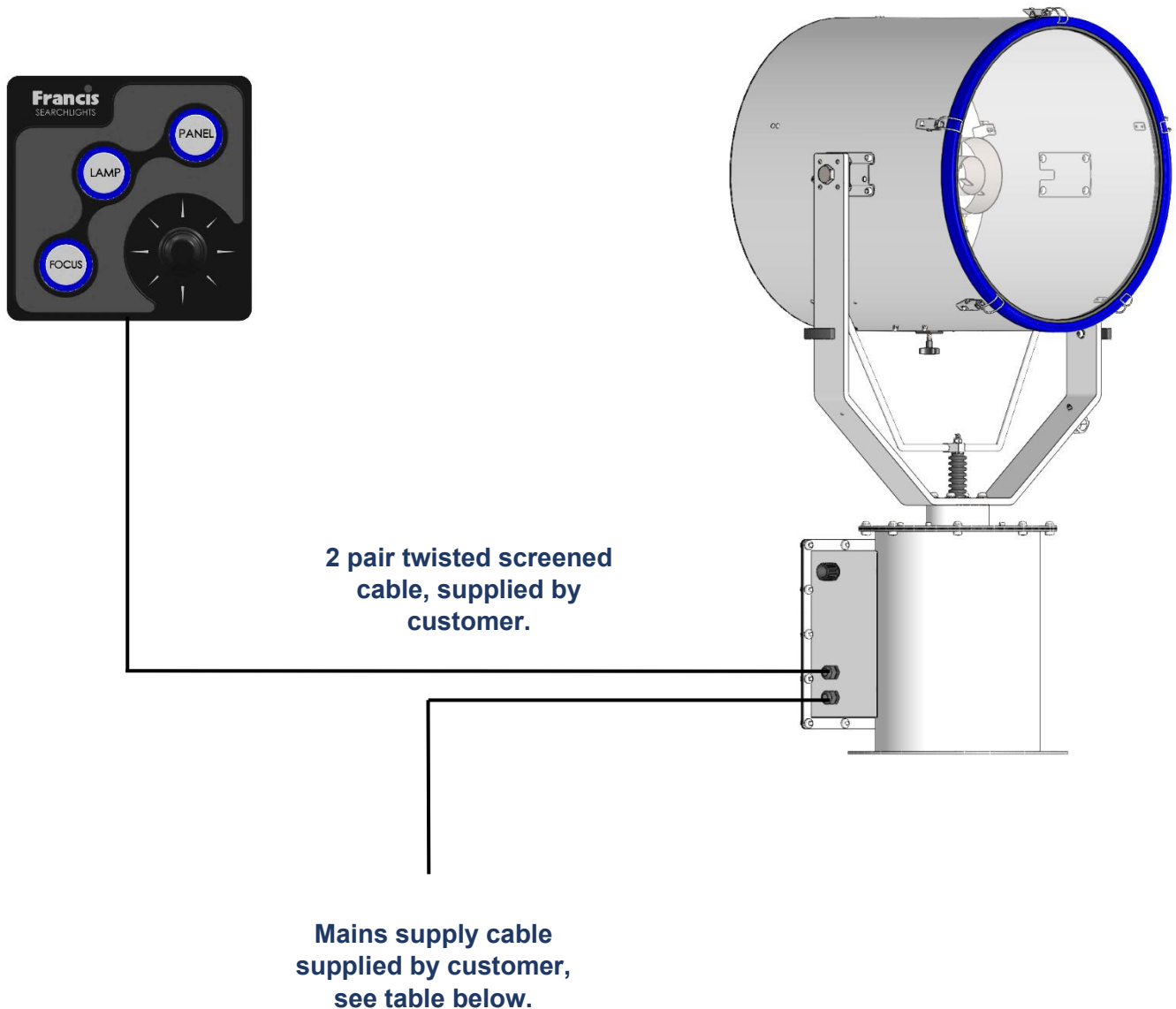
## 5 – Electrical Installation

For safety purposes, only competent personnel should perform the electrical installation. All equipment should be installed to current Electrical Regulations and Standards.

Referring to wiring diagram C27425 (at the back of the manual), a supply is fed to the gearbox housing, which then provides a common feed to the motor gearbox, searchlight, and joystick panel.

Cables required to be connected by the customer: -

- 2 pair twisted 0.22mm 100ohm screened cable from the joystick panel to the gearbox housing.
- Mains supply cable to the gearbox housing.



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 lamp holder contacts.

### Method of Electrical Connection

- Disconnect the supply before working on the electrical system.
- The searchlight must be connected to a fused electrical supply, using suitably sized cable.
- If the searchlight is located a considerable distance from the supply, provision must be made in the cable size to overcome the voltage drop.

The following table below indicates the maximum length of cable to be used for the supply cable, from the mains supply to the gearbox housing.

Searchlight	115v 2000w	240v 2000w
Cable Size (mm <sup>2</sup> )	Distance Max	Distance Max
1.5	10M	42M
2.5	17M	72M
4	27M	115M
6	40M	172M
10	70M	304M

- Whenever possible cable terminations should be made below deck and with approved terminal devices.
- 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.
- For 115/240v 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.**

## 6 – Start-up and Operating

### 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 lamp holder is in good condition. If the contacts show any sign of corrosion, replace the lamp holder.
- Check the lamp holder is in a good dry condition. Never allow water to collect in the lamp fitting or contact with the lamp.

### To fit the lamp

- Remove the front bezel assembly by operating the safety catch and lifting the catch body.
- For easier access, the light shield/spill ring may be removed by undoing the fasteners.
- Cut open one end of the protective sleeve surrounding the lamp.
- Use the sleeve supplied with the lamp to prevent touching the glass envelope, position the two pins above the holes in the lamp holder.
- Gently push the lamp into the lamp holder and remove the protective sleeve.
- Replace the light shield/spill ring and front bezel assembly, ensuring the safety catch is engaged.

### Testing

Upon correct installation and connection to an electrical supply, the equipment can be tested 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.
- Using the ammeter, take an amp reading from the live cable to the lamp.
- Multiply these figures together to give an approximate wattage (Power output).

### For example:

**Using a 240v 2000w Tungsten halogen lamp:**

**Voltage reading = 240v; Amps reading = 8.5 amps**

**Therefore, Wattage =  $240 \times 8.3 = 1992$  watts**

## Start-Up

When the main power is first applied to the searchlight, the searchlight will carry out a self-test, it will Pan to the left limit and Tilt down to the limit, once this is complete, the searchlight will then move to the centre and horizontal, during this please do not try and operate the searchlight while this test is being carried out. Once the searchlight is back at centre the searchlight can then be operated normally, by pressing the Panel button on the control panel.

## Operating

### Switch On

The panel is activated using the PANEL button. This will illuminate brightly when the panel is active. Alternate operations of the PANEL button will switch the panel on and off.

### Lamp Control

When the panel is active pressing the LAMP, button will switch the lamp on or off. If the control panel is switched off with the PANEL button the lamp will switch off.

### Focus Control (Remote focus model only)

The lamp focus can be adjusted using the FOCUS button. Lamp focus will adjust continuously whilst FOCUS is pressed. On manual focus models the focus is controlled via the lock wheel positioned on the underside of the searchlight head.

### Beam Direction

The beam direction can be adjusted using the joystick when the panel is active. Moving the joystick left or right will pan the beam clockwise or anticlockwise. Moving the joystick up or down will move the beam up or down. The speed of movement is proportional to the movement of the joystick. It is possible to move the beam in both directions at once by moving the joystick diagonally.

### Home

The searchlight can be returned to a pre-set home position. By default, this is dead ahead with the beam level although different positions can be programmed as described below. To send the searchlight to the home position switch the panel off then press the LAMP button.

### Set New Home Position

To set a new home position move the searchlight to the new desired home position. Switch the panel off then press the joystick down to its limit and press the lamp button. The current position will now be the new home position.

## Set Motion Limit (only available when Remote Focus is fitted)

The searchlight travel can be limited in either axis or either direction. To set a new limit switch the panel on and move the searchlight to the desired limit position. Switch the panel off then press and hold the focus button whilst moving the joystick full travel in the direction of the desired limit. Hold in this position for 4 seconds. For example, to set a limit to the tilt up motion; -

1. Switch panel on and drive searchlight to desired tilt up limit position.
2. Switch panel off.
3. Press and hold the FOCUS button and hold joystick in the full up position for 4 seconds.
4. Tilt up motion will now be inhibited above the current position.

## Clear Motion Limits

Motion limits as set above can be cleared by switching the panel off then pressing and holding the focus button and lamp buttons together for 10 seconds.

## Adjusting Panel Illumination

The panel illumination and indicators intensity can be adjusted to suit ambient light levels. To adjust the intensity, switch the panel on then switch it off with the PANEL button and keep the PANEL button pressed. To increase intensity, move the joystick to the right. To decrease move to the left. Note that the panel button must be kept depressed whilst the joystick is moved. All indicators will illuminate whilst adjustments are performed. Adjustment is complete when the panel button is released.



## 6.1 - FBUS Data & Panel Addresses

The Francis bus (FBUS) is a custom communication protocol based on RS485 two wire bi-directional communication hardware. The system provides a simple bi-directional link between searchlights and control panels. The system allows given panels to communicate with different searchlights and allows several panels to communicate with the same searchlight.

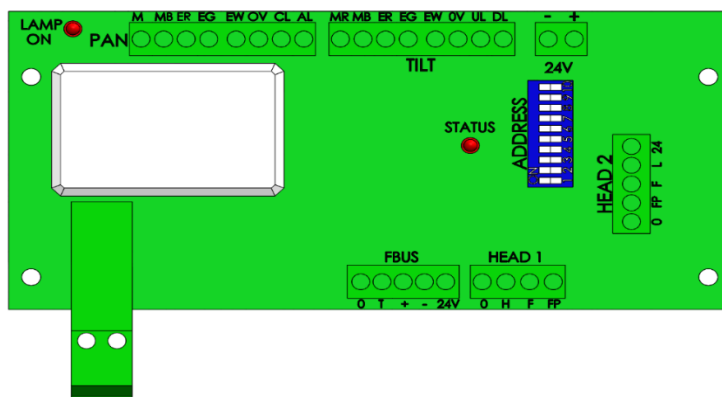
### FBUS Address Switches

#### Setting Searchlight Address Value

The searchlight address is set using the Dip switches on the Speed Controller PCB located inside the Gearbox Assembly (see drawing C30424). With the address switches using simple binary input.

Each switch has a binary value as details below; -

Dip Switch	Searchlight
10	1
9	2
8	4
7	8
6	16



If only 1 Searchlight is used, then all switches will be set to off.

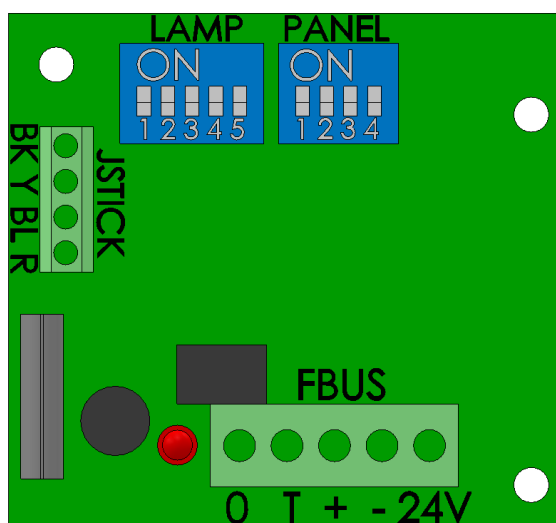
The address value is the sum of the numbers above which are active when the switch is on.

For example, if switches 8 and 10 are on, and all others are off, the address value would be 5.

Note that switches 1-3 are not used for address selection and should be switched off.

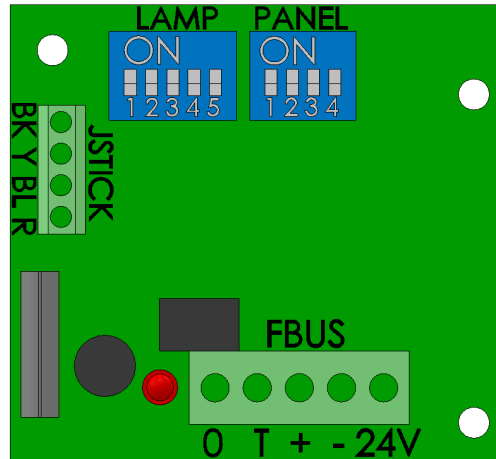
#### Standard Control Panel – Searchlight (Lamp) Address

Dip Switch	Searchlight
1	16
2	8
3	4
4	2
5	1



## Standard Control Panel – Control Panel Address

Dip Switch	Control Panel
1	8
2	4
3	2
4	1



### EXAMPLES

Standard control panel – panel address set to 5

Switch 1 = Off

Switch 2 = On (Value 4 added to address)

Switch 3 = Off

Switch 4 = On (Value 1 added to address)

$$4 + 1 = 5$$

Speed control card - lamp address set to 11

Switch 6 = Off

Switch 7 = On (Value 8 added to address)

Switch 8 = Off

Switch 9 = On (Value 2 added to address)

Switch 10 = On (Value 1 added to address)

$$8 + 2 + 1 = 11$$

### ADDRESSING SYSTEM

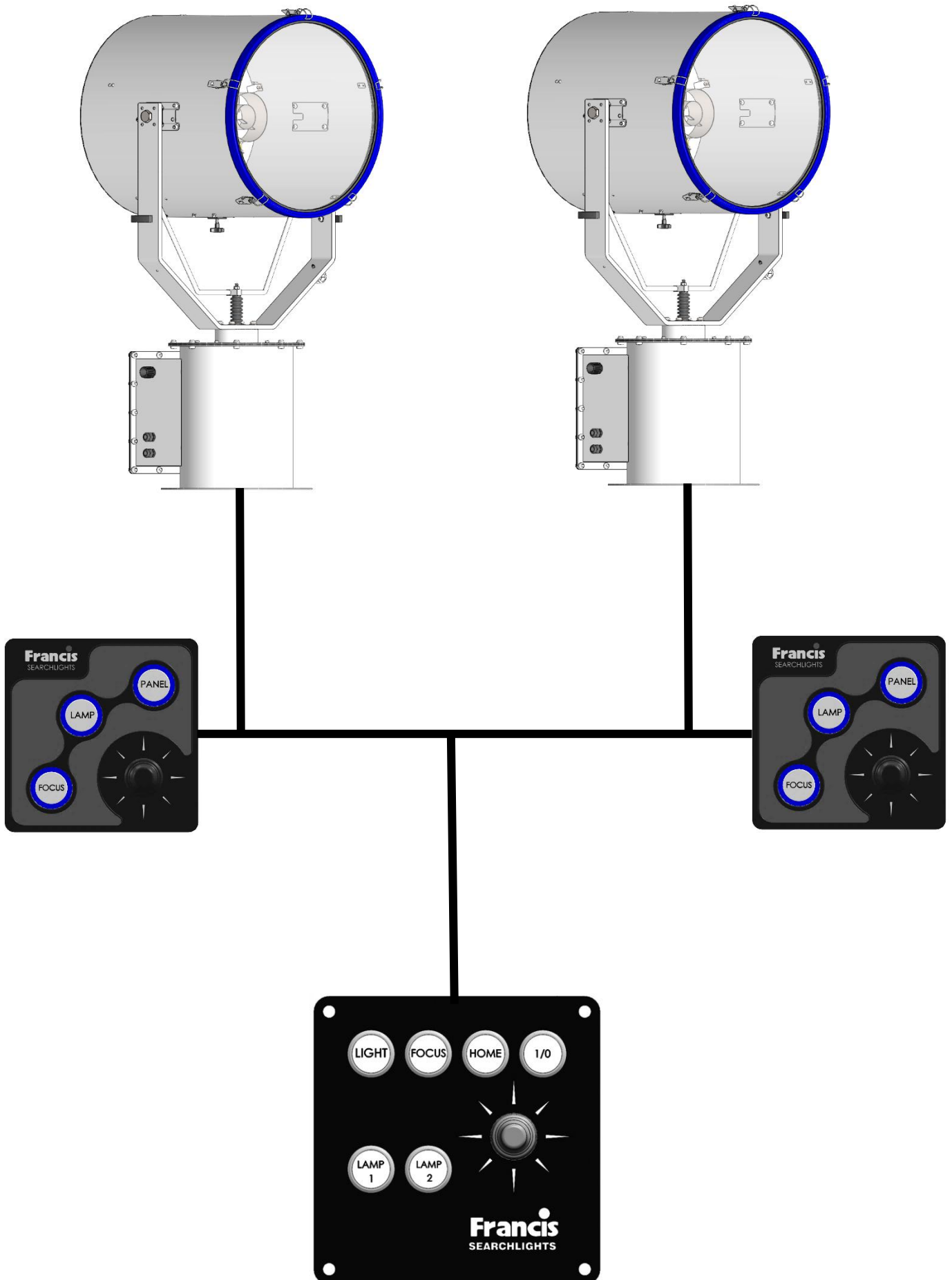
Every searchlight must have a unique address. The addresses should be sequential and should start from zero. If there were three searchlights in a system the addresses should be set to 0, 1 and 2.

Control panel – panel addresses use the same system being sequential and start from zero.

It is essential that all panels have a unique address with no duplication however note that searchlights and panels can be the same address. For example, on a system with two panels and two searchlights, the panel addresses will be 0 and 1 and the lamps addresses will be 0 and 1.

Control panel lamp addresses are defined by the system configuration. If two panels are used to control the same searchlight, they must still have individual panel addresses, but the lamp addresses can be set to the same address value as the searchlight which is to be controlled. Any number of panels can control the same searchlight. See drawing C27425 at the rear of this manual for the wiring for multiple control panels.

# Multiple Searchlights, Control Panels and Master Control Panel



## 7 – Fault Finding

### 7.1 Problems at Installation

- If the searchlight completes the Self-Test, e.g., Pan left, Tilts down then returns to centre and the LEDs on the joystick panel are not illuminate, then please check the 4 data cables connections on the FBUS connector located on the back of the control panel assembly, as these data cables could be swapped around, you can check the voltages on the 4 connections, you should get as shown below:
  - 0 & + = 3.9v DC
  - 0 & - = 0.9v DC
  - 24 & 0 = 18-24v DC
- If the searchlight completes the Self-Test, e.g., Pan left, Tilts down then returns to centre and the LEDs on the joystick panel are illuminated, but you are unable to control the searchlight via the control panel, then please check the data + & - connections on the FBUS connector located on the back of the control panel assembly, as these data cables could be swapped around.
- If you have more than 1 searchlight in the installation and 2 or more searchlights are moving at the same time in the same direction, then please check the dip switch settings on the speed controller PCB, see **Setting Searchlight Address Value**.

### Failure of Lamp to light

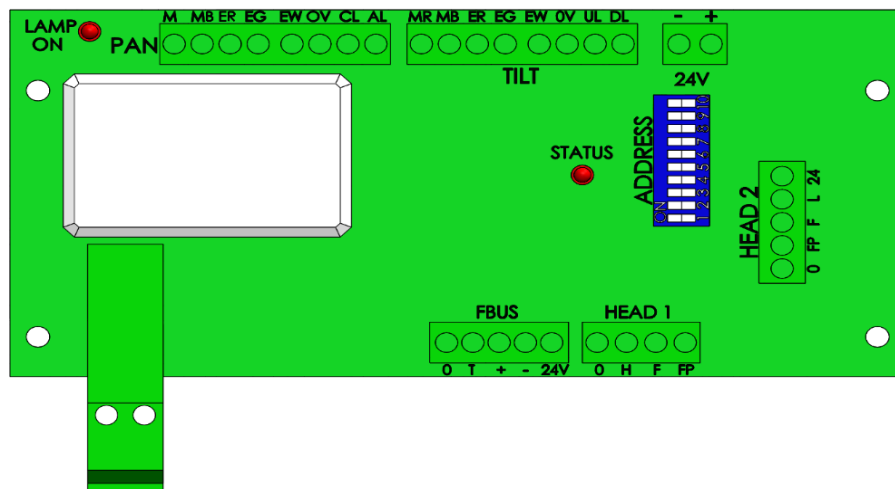
- Firstly, check supply at lamp holder connecting block (within searchlight barrel). If supply is present, disconnect unit from power supply before removing the lamp. If noticeable damage to filament is present, the lamp will have failed. The lamp can also be checked for continuity using a multi-meter. Replace lamp ensuring all precautions and instructions previously outlined in this manual are adhered to.

## 7.2 - Problems After Installation

Please note, if the searchlight does not complete the self-test, you will not be able to operate the searchlight in any direction or switch the lamp on. Please refer to section **7.3 Obtaining Fault Status** below, to confirm the fault.

Once you have confirmed the fault via the control panel, please contact Francis Searchlights for ordering the required parts, [sales@francis.co.uk](mailto:sales@francis.co.uk)

If the control panel is not communicating with the searchlight and none of the LED's on the control panel are lighting up, then you will need to access the speed controller PCB inside the gearbox (see drawing C30424), to access the speed controller PCB you will need to remove the 14 off M8 screws that hold the gearbox access panel in place, the Status LED located near the top of the card (labelled "STATUS") on the speed controller PCB, shown below.



During faults normal status LED operation is overridden. The status LED will flash red several times with the number of flashes corresponding to the specific fault. If there are multiple faults the LED will flash accordingly with a gap between each fault flash sequence. Fault details are provided on the next page, with the number of flashes indicated on the left.

The Status LED has several functions as detailed below.

### Software Version

When power is applied to the speed control card the status LED will flash green. The number of flashes corresponds to the software version.

### FBUS Normal operation

When the system is operating from FBUS the status LED will illuminate static green. If used with later control panels the status LED will be on most of the time but will briefly go off every few seconds.

When a valid FBUS data signal is received the LED will switch off momentarily to indicate data reception. If data is continuous the LED will flash green slowly.

If the Status LED does not light up, then please check the 24v DC supply from the PSU within the gearbox, as shown on drawing C30424 Item 5, if there is no output from the PSU then this will need to be replaced.

## 7.3 - Obtaining Fault Status

Fault codes can be accessed, with the control panel switched off, press the PANEL button and keeping the PANEL button pressed for 10 seconds. Fault codes are indicated by the PANEL button flashing several times related to the fault. Fault codes are detailed below. If more than one fault is present the PANEL button will indicate them in sequence.

1. Pan Limit. – Either of the pan limit switches operated. Note that this may not actually be a fault. The LED will flash when a limit switch is operated under normal circumstances i.e., the lamp is at the limit of travel. This will also indicate when a variable limit is reached.
2. Tilt Limit. – Either of the tilt limit switches operated. Note that this may not actually be a fault. The LED will flash when a limit switch is operated under normal circumstances i.e., the lamp is at the limit of travel. This will also indicate when a variable limit is reached.
3. Pan motor trip. – The pan motor is taking excessive current or has a short circuit. The pan motor will be disabled. To reset, press lamp button.
4. Tilt motor trip. – The tilt motor is taking excessive current or has a short circuit. The tilt motor will be disabled. To reset, press lamp button.
5. Focus motor trip. – The focus motor is taking excessive current. The motor will be disabled for a period when this occurs. Fault indication will remain until power is removed or the fault is corrected.
6. FBUS interface over current. – The speed control card supplies 24VDC to the remote-control panels. The supply is protected by a self-resetting PTC fuse. 6 flashes indicate the fuse has tripped.
7. Anti-condensation heater output over current. – The 24VDC anti condensation heater output is taking excessive current. The heater output will switch off. To restore this output, remove the supply from the speed control card for a period.
8. Limit Switch Error. Some lamp types do not use all or some limit switches. If an invalid limit switch input is detected it is probable the speed control card is set to the wrong product or there is a wiring error.
9. Datum Error. The start-up datum system has not completed correctly.
10. Product type not set or corrupt. The product type has not been set, has been set incorrectly or is corrupt.
11. Supply voltage out of tolerance. The 24V supply is outside the range 18-30V.

## 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.
  - Clean the reflector if required.
  - Ensure that the lamp holder is free from corrosion or other damage.
- 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 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).

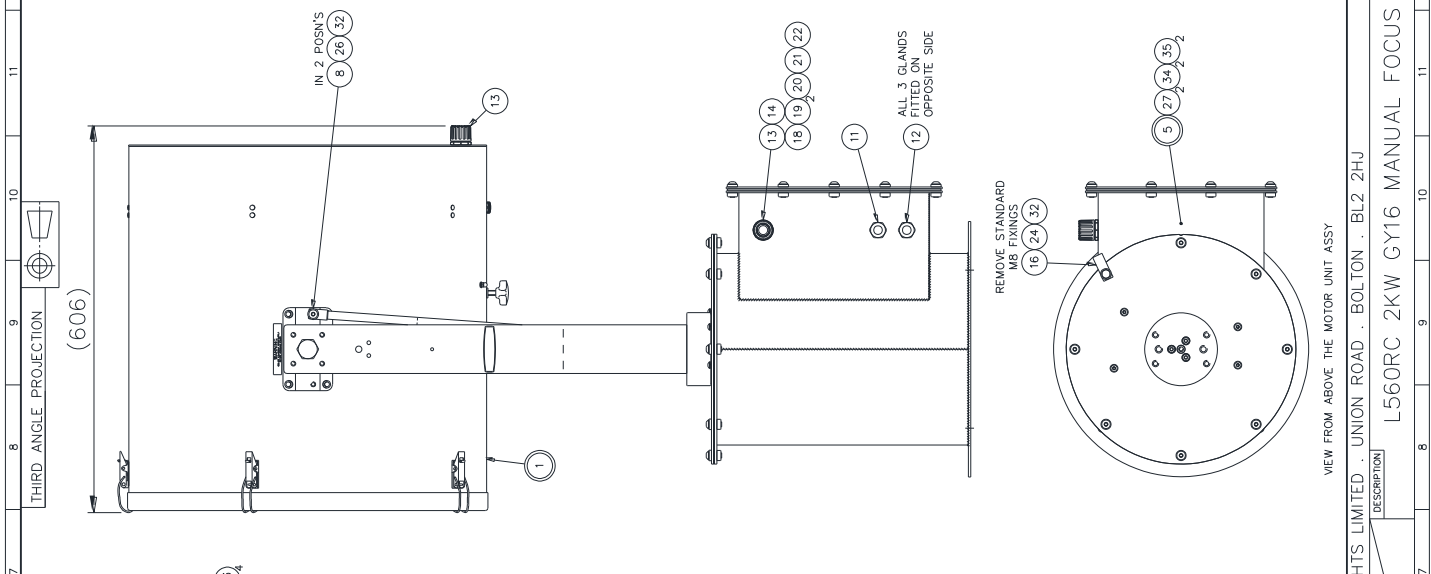
**If in any doubt as to the correct servicing procedures to adopt, please contact your distributor/agent or Francis who will be able to advise the best course of action for your product.**

## 9 - Wiring Diagram & General Assembly

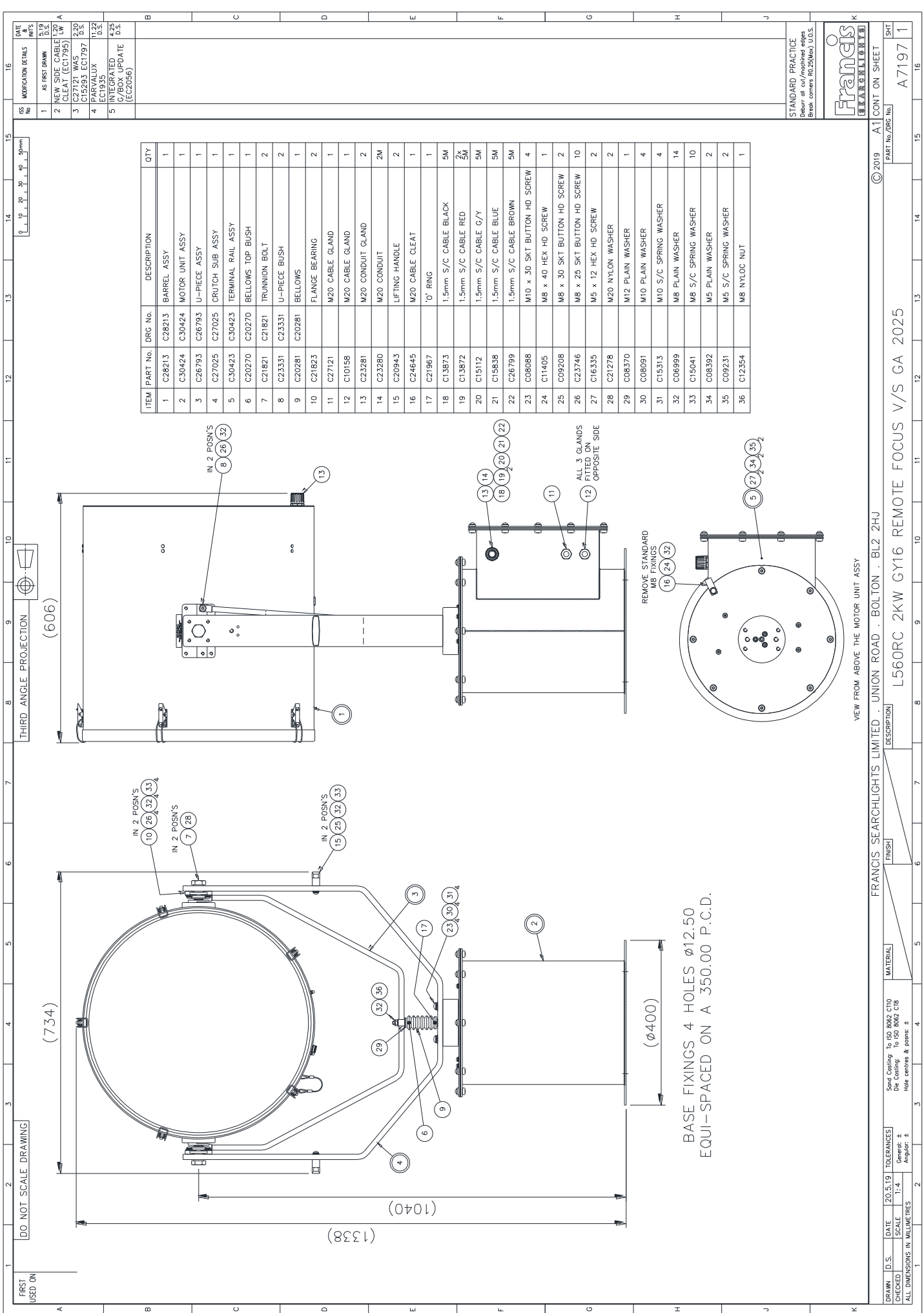
<b>Drawing No:</b>	<b>Description</b>
A7196	L560RC 2Kw General Assembly Manual Focus
A7197	L560RC 2Kw General Assembly Remote Focus
C27425	Wiring diagram.
C27313	Joystick Panel Assembly Manual Focus
C27312	Joystick Panel Assembly Remote Focus
C30423	Terminal Rail Assembly
C27998	Barrel Assembly 2Kw Manual Focus
C28213	Barrel Assembly 2Kw Remote Focus
C30424	Gearbox Assembly

DATE	15	16
NO.	1	2
DESCRIPTION	AS FIRST DRAWN	NEW SIDE CABLE L20 CLEAT (EC1795) L1
REVISION	3	4
DESCRIPTION	PARVALOX (EC1935) TERMS (EC1935)	INTEGRATED C/BOX UPDATE D.S. (EC2056)

ITEM	PART No.	DRC No.	DESCRIPTION	QTY
1	C27998	C27998	BARREL ASSY	1
2	C30424	C30424	MOTOR UNIT ASSY	1
3	C26793	C26793	U-PIECE ASSY	1
4	C27025	C27025	CRUTCH SUB ASSY	1
5	C30423	C30423	TERMINAL RAIL ASSY	1
6	C20270	C20270	BELLOWS TOP BUSH	1
7	C21821	C21821	TRUNNION BOLT	2
8	C23331	C23331	U-PIECE BUSH	2
9	C20281	C20281	BELLOWS	1
10	C21823		FLANGE BEARING	2
11	C27121		M20 CABLE GLAND	1
12	C10158		M20 CABLE GLAND	1
13	C23281		M20 CONDUIT GLAND	2
14	C23280		M20 CONDUIT	2M
15	C20943		LIFTING HANDLE	2
16	C24645		M20 CABLE CLEAT	1
17	C21967		'O' RING	1
18	C13873		1.5mm S/C SILICONE BLACK	5M
19	C13872		1.5mm S/C SILICONE RED	2x 5M
20	C15112		1.5mm S/C SILICONE G/Y	5M
21	C15838		1.5mm S/C SILICONE BLUE	5M
22	C26799		1.5mm S/C SILICONE BROWN	5M
23	C08088		M10 x 30 BUTTON HD SCREW	4
24	C11405		M8 x 40 HEX HD SCREW	1
25	C09208		M8 x 30 BUTTON HD SCREW	2
26	C23746		M8 x 25 BUTTON HD SCREW	10
27	C16335		M5 x 12 HEX HD SCREW	2
28	C21278		M20 NYLON WASHER	2
29	C08370		M12 PLAIN WASHER	1
30	C08091		M10 PLAIN WASHER	4
31	C15313		M10 S/C SPRING WASHER	4
32	C06999		M8 PLAIN WASHER	14
33	C15041		M8 S/C SPRING WASHER	10
34	C08392		M5 PLAIN WASHER	2
35	C09231		M5 S/C SPRING WASHER	2
36	C12354		M8 NYLOC NUT	1



FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HU	DESCRIPTION	L560RC 2KW GY16 MANUAL FOCUS V/S GA 2025
FINISH	MATERIAL	Standard to ISO 8062 C10 Die Casting to ISO 8862 C1B Hole centres & posns: ±
DATE	9.10.23	TOLERANCES
CHECKED	SCALE	1:4
ALL DIMENSIONS IN MILLIMETRES	Angular: ±	



DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

(606)

IN 2 POSNS (10, 26, 32, 33, 34)

IN 2 POSNS (7, 28)

IN 2 POSNS (15, 25, 32, 33)

IN 2 POSNS (8, 26, 32)

(734)

(1338)

(1040)

(400)

REMOVE STANDARD M8 FIXINGS (16, 24, 32)

ALL 3 GLANDS FITTED ON OPPOSITE SIDE (11, 12)

VIEW FROM ABOVE THE MOTOR UNIT ASSY

BASE FIXINGS 4 HOLES  $\phi 12.50$   
EQUI-SPACED ON A 350.00 P.C.D.

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C28213	C28213	BARREL ASSY	1
2	C30424	C30424	MOTOR UNIT ASSY	1
3	C26793	C26793	U-PIECE ASSY	1
4	C27025	C27025	CRUTCH SUB ASSY	1
5	C30423	C30423	TERMINAL RAIL ASSY	1
6	C20270	C20270	BELLOWS TOP BUSH	1
7	C21821	C21821	TRUNNION BOLT	2
8	C23331	C23331	U-PIECE BUSH	2
9	C20281	C20281	BELLOWS	1
10	C21823		FLANGE BEARING	2
11	C27121		M20 CABLE GLAND	1
12	C10158		M20 CABLE GLAND	1
13	C23281		M20 CONDUIT GLAND	2
14	C23280		M20 CONDUIT	2M
15	C20943		LIFTING HANDLE	2
16	C24645		M20 CABLE CLEAT	1
17	C21967		O' RING	1
18	C13873		1.5mm S/C CABLE BLACK	5M
19	C13872		1.5mm S/C CABLE RED	2.5M
20	C15112		1.5mm S/C CABLE G/Y	5M
21	C15838		1.5mm S/C CABLE BLUE	5M
22	C26799		1.5mm S/C CABLE BROWN	5M
23	C08098		M10 x 30 SKT BUTTON HD SCREW	4
24	C11405		M8 x 40 HEX HD SCREW	1
25	C09208		M8 x 30 SKT BUTTON HD SCREW	2
26	C23746		M8 x 25 SKT BUTTON HD SCREW	10
27	C16335		M5 x 12 HEX HD SCREW	2
28	C21278		M20 NYLON WASHER	2
29	C08370		M12 PLAIN WASHER	1
30	C08091		M10 PLAIN WASHER	4
31	C15313		M10 S/C SPRING WASHER	4
32	C06999		M8 PLAIN WASHER	14
33	C15041		M8 S/C SPRING WASHER	10
34	C08392		M5 PLAIN WASHER	2
35	C09231		M5 S/C SPRING WASHER	2
36	C12354		M8 NYLOC NUT	1

DATE: 05.19

AS FIRST DRAWN: 0.5

NEW SIDE CABLE CLEAT (EC1795): 1.0

C27121 WAS: 0.25

C15293 EC1797: 1.0

PHOTOX: 0.5

EC1845: 0.5

INTEGRATED C/BOX UPDATE (EC2056): 4.25

D.S.

STANDARD PRACTICE

Deburr all cut/machined edges

Break corner R0.25(0.010) U.S.

Francis

FRANCIS SEARCHLIGHTS LIMITED

UNION ROAD · BOLTON · BL2 2HU

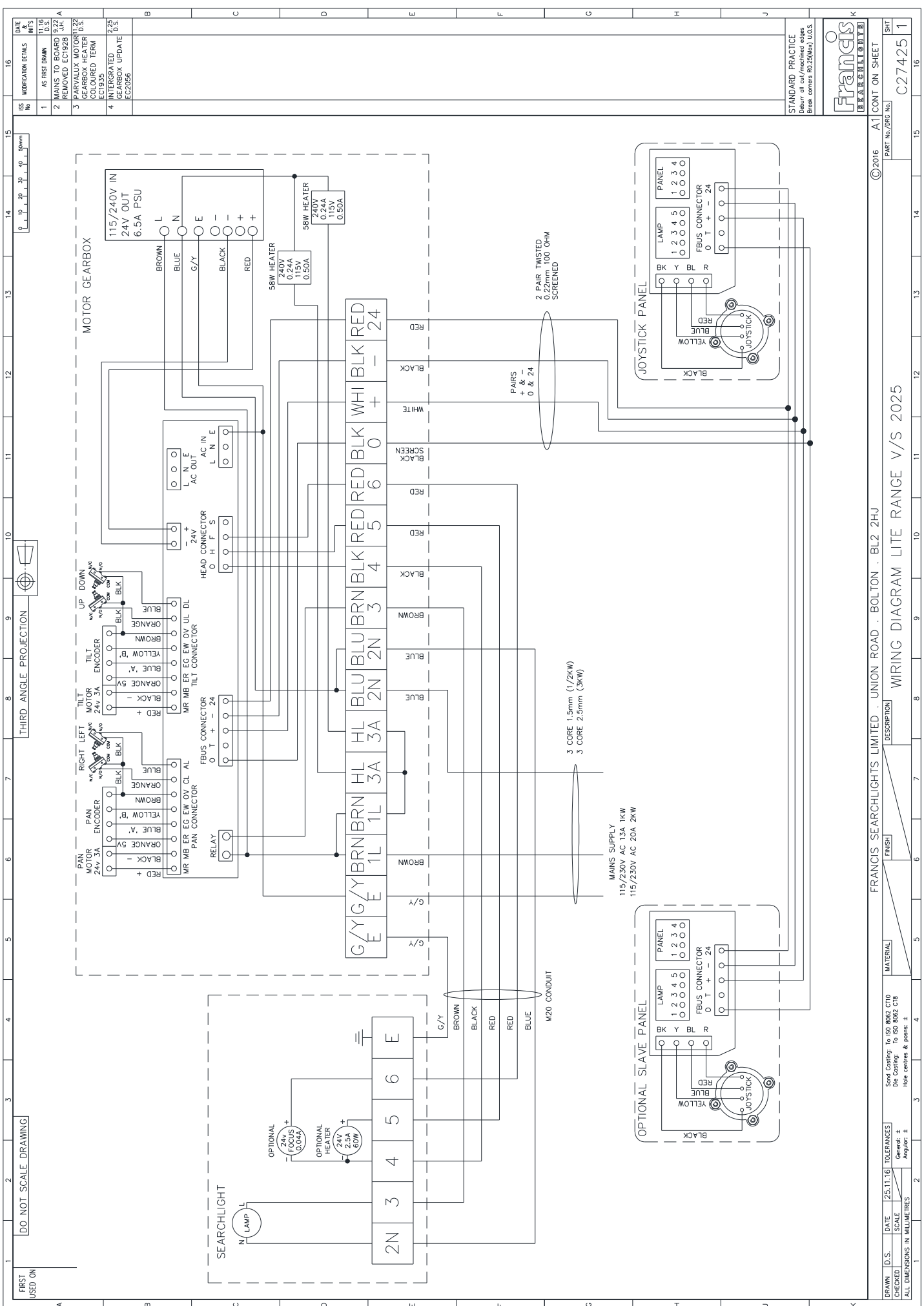
L560RC 2KW GY16 REMOTE FOCUS V/S GA 2025

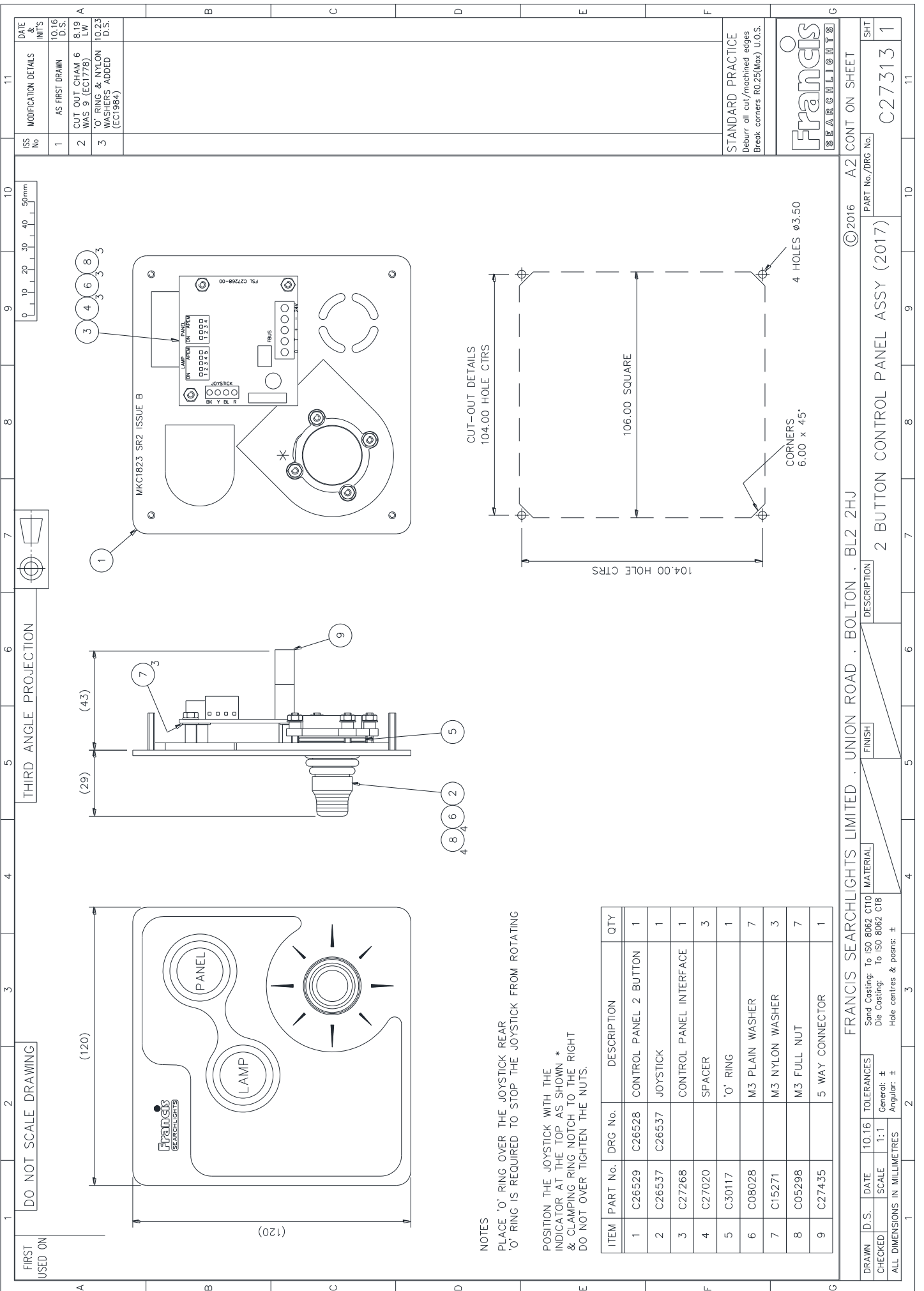
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PART No./DRG No. A7197 1

DRAWN	D.S.	DATE	20.05.19	TOLERANCES
CHECKED		SCALE	1:4	General: ±
		ALL DIMENSIONS IN MILLIMETRES		Angular: ±

Material: Sand Casting: To ISO 8062 CT10  
Die Casting: To ISO 8862 CB  
Hole centres & posns: ±





NOTES

PLACE 'O' RING OVER THE JOYSTICK REAR  
 'O' RING IS REQUIRED TO STOP THE JOYSTICK FROM ROTATING

POSITION THE JOYSTICK WITH THE INDICATOR AT THE TOP AS SHOWN \*  
 & CLAMPING RING NOTCH TO THE RIGHT  
 DO NOT OVER TIGHTEN THE NUTS.

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C26529	C26528	CONTROL PANEL 2 BUTTON	1
2	C26537	C26537	JOYSTICK	1
3	C27268		CONTROL PANEL INTERFACE	1
4	C27020		SPACER	3
5	C30117		'O' RING	1
6	C08028		M3 PLAIN WASHER	7
7	C15271		M3 NYLON WASHER	3
8	C05298		M3 FULL NUT	7
9	C27435		5 WAY CONNECTOR	1

DRAWN		D.S.	DATE	10.16	TOLERANCES	FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HJ		© 2016	A2	CONT ON SHEET
CHECKED		SCALE	1:1	General: ±	Sand Coasting: To ISO 8062 C10		PART No./DRG No.		C27313	SHT
ALL DIMENSIONS IN MILLIMETRES		Angular: ±	Die Coasting: To ISO 8062 C16		Hole centres & posns: ±		DESCRIPTION		2 BUTTON CONTROL PANEL ASSY (2017)	1



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

ISS No	MODIFICATION DETAILS	DATE & INIT'S
1	AS FIRST DRAWN	10.16 D.S.
2	CUT OUT CHAM WAS 9 (EC1778)	8.19 L.W.
3	'O' RING & NYLON WASHERS ADDED (EC1984)	10.23 D.S.

ISS No	1	MODIFICATION DETAILS	AS FIRST DRAWN	DATE & INT'S	10.16 D.S.
2	CUT OUT CHAM WAS 9 (EC1778)	8.19 LW			
3	'O' RING & NYLON WASHERS ADDED (EC1984)	10.23 D.S.			

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

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Francis SEARCHLIGHTS

PART No./DRG No. C27312 1

3 BUTTON CONTROL PANEL ASSY (2017)

DESCRIPTION

FINISH

MATERIAL

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

3 BUTTON CONTROL PANEL ASSY (2017)

ALL DIMENSIONS IN MILLIMETRES

1:1

Generat: ±

Angular: ±

Hole centres & poss: ±

1 2 3 4 5 6 7 8 9 10 11

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

FIRST USED ON

10.16 D.S.

1:1

Generat: ±

Angular: ±

Hole centres & poss: ±

1 2 3 4 5 6 7 8 9 10 11

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

FIRST USED ON

NOTES  
PLACE 'O' RING OVER THE JOYSTICK REAR  
'O' RING IS REQUIRED TO STOP THE JOYSTICK FROM ROTATING

POSITION THE JOYSTICK WITH THE  
INDICATOR AT THE TOP AS SHOWN \*  
& CLAMPING RING NOTCH TO THE RIGHT  
DO NOT OVER TIGHTEN THE NUTS.

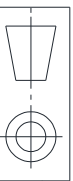
ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C26528	C26528	CONTROL PANEL 3 BUTTON	1
2	C26537	C26537	JOYSTICK	1
3	C27268		CONTROL PANEL INTERFACE	1
4	C27020		SPACER	3
5	C30117		'O' RING	1
6	C08028		M3 PLAIN WASHER	7
7	C15271		M3 NYLON WASHER	3
8	C05298		M3 FULL NUT	7
9	C27435		5 WAY CONNECTOR	1

DRAWN	D.S.	DATE	10.16	TOLERANCES	Send Casting: To ISO 8062 CT10
CHECKED		SCALE	1:1	Generat: ±	Die Casting: To ISO 8062 CT8
ALL DIMENSIONS IN MILLIMETRES				Angular: ±	Hole centres & poss: ±

FIRST USED ON  
L480RC  
2025  
A7118

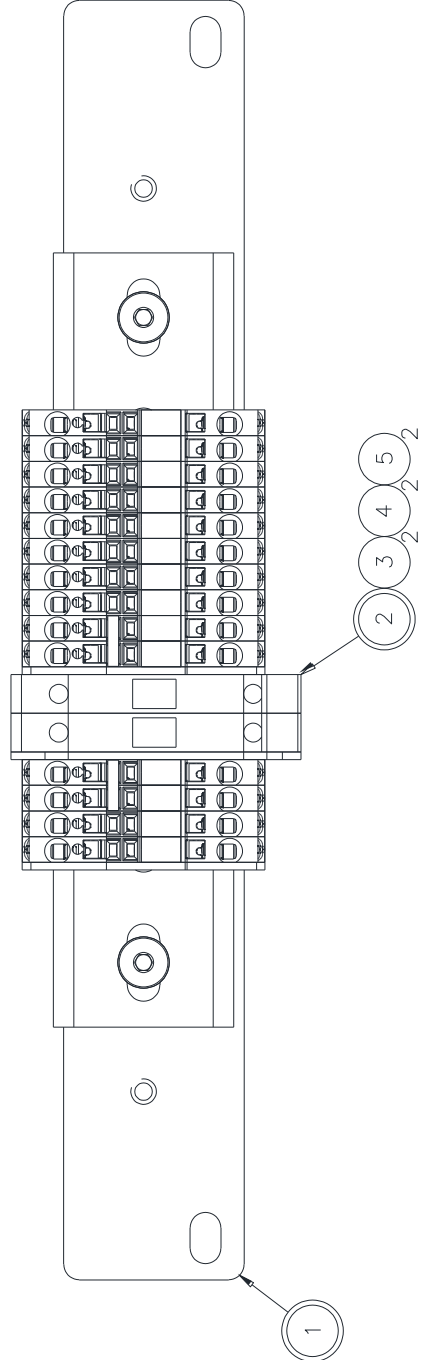
DO NOT SCALE DRAWING

THIRD ANGLE PROJ

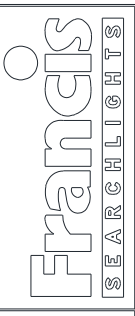


ISS No	MODIFICATION DETAILS	DATE & INIT'S
1	AS FIRST DRAWN	2.25 D.S.
2	RE-DESIGNED	5.25 D.S.

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C30472	C30472	TERMINAL RAIL BKT SUB ASSY	1
2	C30429	C30429	GEARBOX DIN RAIL ASSY	1
3	C09895		M5 x 10 BUTTON HD SCREW	2
4	C08392		M5 PLAIN WASHER	2
5	C09231		M5 S/C SPRING WASHER	2



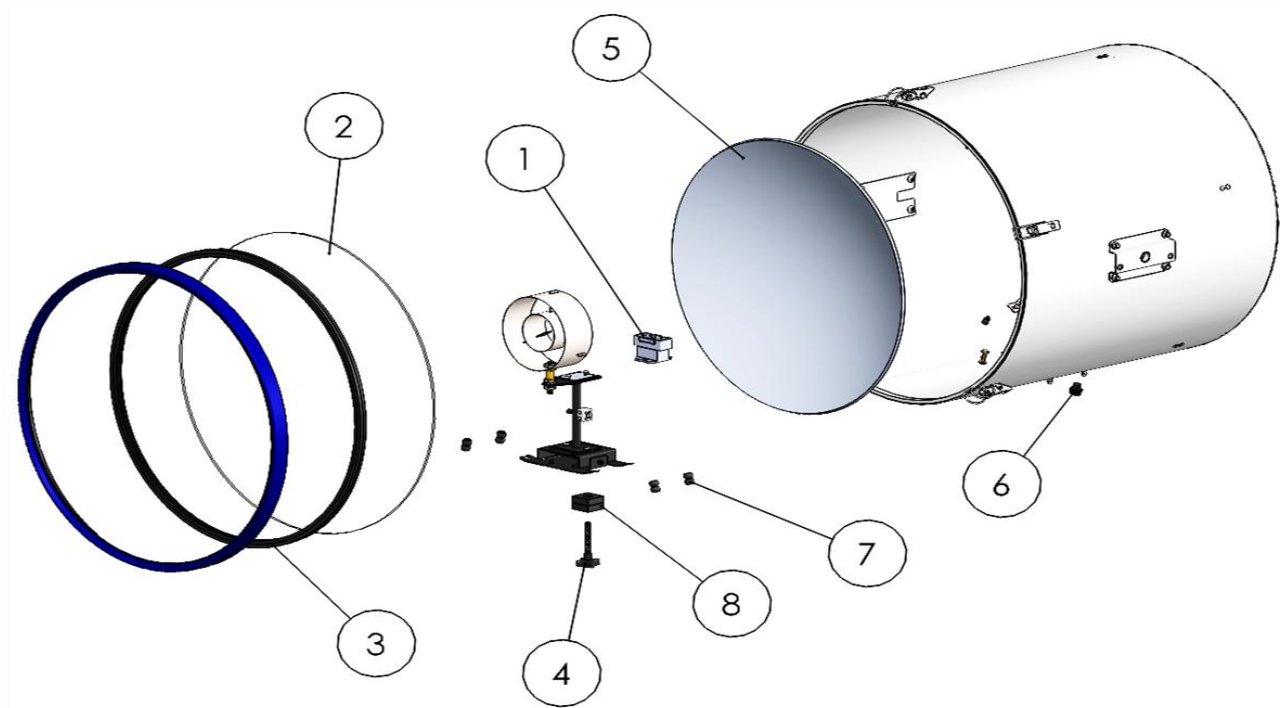
STANDARD PRACTICE  
Deburr all cut/machined edges  
Break corners R0.25(Max) U.O.S.  
TOLERANCES U.O.S: -  
General: ±  
Angular: ±  
Hole centres & posns: ±  
Sand Casting: To ISO 8062 CT10  
Die Casting: To ISO 8062 CT8



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PART No./DRG No. C30423  
SHT 1

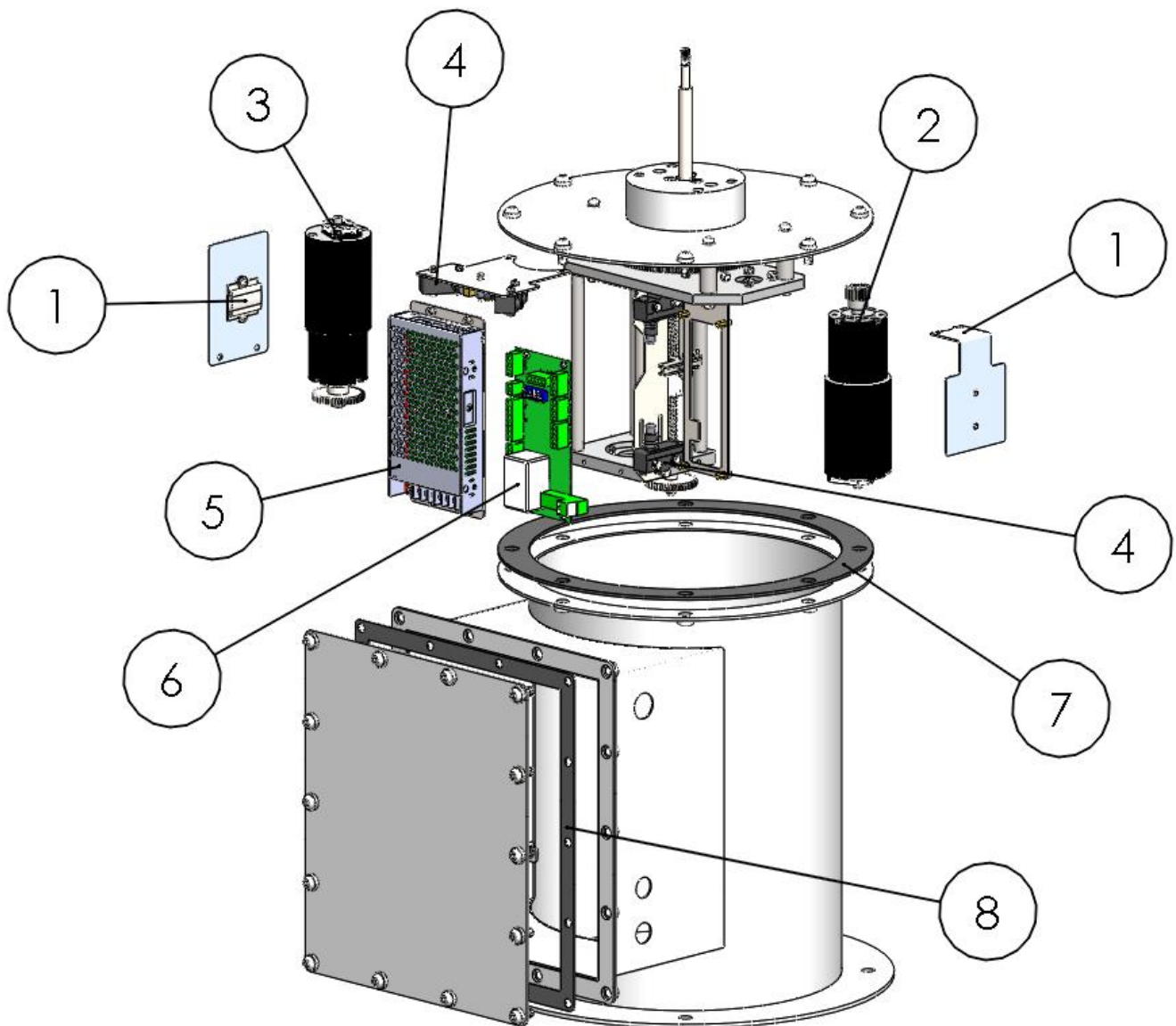
FRANCIS SEARCHLIGHTS LIMITED, UNION ROAD, BOLTON, BL2 2HJ		DESCRIPTION	
DRAWN D.S.	DATE 2.25	MATERIAL	FINISH
CHECKED	SCALE 1:1	TERMINAL RAIL ASSY	
ALL DIMENSIONS IN MILLIMETRES			

**C27998 Barrel Assembly 2Kw Manual Focus**  
**C28213 Barrel Assembly 2Kw Remote Focus**



Item Number	Part Number	Description	Quantity
1	C20185-00	Lamp Holder GY16	1
2	C20881-00	Front Glass	1
3	C20569-00	Front Glass Gasket	1
4	C11480-01	Focus Wheel Assembly	1
4	C28025-01	Focus Motor Assembly (RF Only)	1
5	C05396-00	Reflector	1
6	C22268-01	Breather Assembly	1
7	C16761-00	Lamp Holder AV Mount	4
8	C14501-00	Focus Screw Seal	2

## C30424 Gearbox Assembly



Item Number	Part Number	Description	Quantity
1	C23277-00	Heater	2
2	C29547-01	Pan Motor Assembly	1
3	C29468-01	Tilt Motor	1
4	C29275-00	Micro-switch	4
5	C29162-00	24v PSU	1
6	C29534-01	Speed Controller PCB	1
7	C22381-00	Ped Top Sealing Gasket	1
8	C30291-00	Rear Cover Sealing Gasket	2

## 10 - Spare Parts List

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

<b>Part Number</b>	<b>Description</b>
--------------------	--------------------

### **Searchlight Spares**

D20390	115v 2000w GY16 Tungsten Halogen Lamp
D20236	230v 2000w GY16 Tungsten Halogen Lamp
C20185-00	Lamp holder GY16
C20881-00	Front Glass
C20569-00	Front Glass Gasket
C11480-01	Focus Wheel Assembly
C28025-01	Focus Motor Assembly (RF Only)
C05396-00	Reflector
C22268-01	Breather Assembly
C16761-00	Lamp holder AV Mount
C14501-00	Focus Screw Seal
C20281-00	Bellows

### **Motor Gearbox Spares**

C23277-00	Heater
C29547-01	Pan Motor Assembly
C29468-01	Tilt Motor
C29275-00	Micro switch
C29162-00	24v Power Supply Unit
C29534-01	Speed Controller PCB
C22381-00	Pedestal Top Sealing Gasket
C30291-00	Rear Cover Sealing Gasket

### **Joystick Panel Spares**

C26537-01	Joystick
C27268-00	Joystick Controller PCB

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 [sales@francis.co.uk](mailto:sales@francis.co.uk) . Please always quote the searchlight model and serial number, which you can find within the front of the barrel head to the right, on the name plate. This will enable a fast response to your spares' requirements.