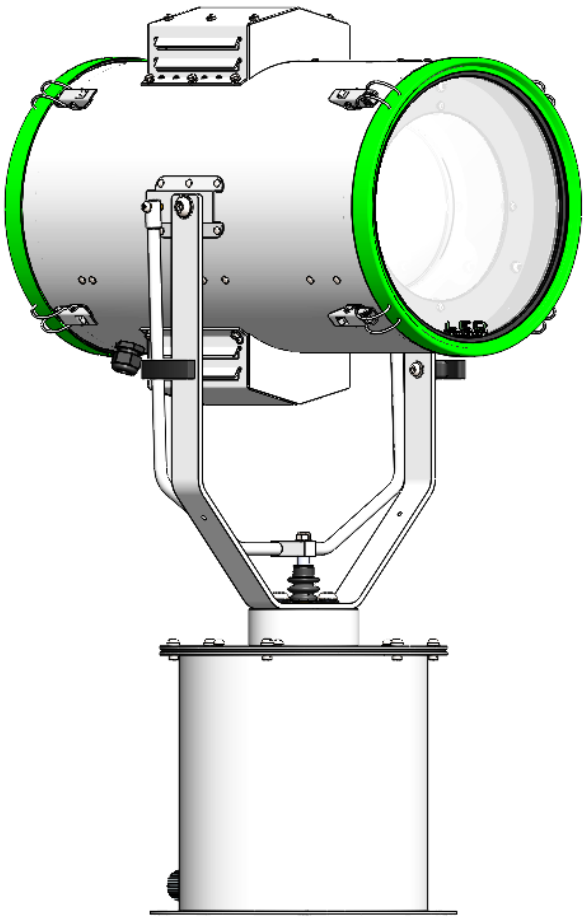

# L300RC 234w LED Remote Control Searchlight

## User / Installation Manual

**Product Part Number:**

A7179 – L300RC 115/240v 234w LED Variable Speed Remote Control Searchlight

A7194 – L300RC 24v 234w LED Variable Speed Remote Control Searchlight

**PLEASE NOTE!**

Please read this manual before installation.

www.francis.co.uk

C27927 Issue 16 22.04.24 EC2017

# CONTENTS



## General Information:


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United Kingdom

T: 00 44 (0)1204 558 960

E: Sales@francis.co.uk

W: www.francis.co.uk

# 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 on the lid of the driver box.

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**.**
- Never look directly into an illuminated searchlight as this may cause severe damage to eyesight. If it is necessary to inspect a searchlight whilst in operation, always wear suitable protective goggles.
- 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.

## 3 – Technical Information

| | | | |
|---|---|---|---|
| **Electrical** | | | |
| Input voltage: | 24 VDC | 110 VAC | 240 VAC. |
| Input current: | 11.5A | 2A | 1A |
| Driver output voltage: | 48v DC Max | | |
| Driver current: | 4.8A Max | | |
| Wattage: | 234w | | |
| **Dimensions** | | | |
| Height: | 945mm | | |
| Width: | 414mm | | |
| Depth: | 546mm | | |
| Weight: Searchlight – Driver Box | 34Kgs – 4Kgs | | |
| **Searchlight Performance** | | | |
| LED power: | 234w | | |
| Range @ 1 Lux: | 3047m | | |
| LED life (approx.) | 20,000h | | |
| Divergence: | 4°-10° | | |
| Colour temperature: | 6000K | | |
| Luminous flux: | 35,537 lumens | | |
| **Searchlight movement** | | | |
| Pan rotation: | 365° | | |
| Tilt elevation: | Up 35° & Down 40° | | |
| Pan speed: | Variable Speed 1 to 19°/sec | | |
| Tilt Speed: | Variable Speed 1 to 6°/sec | | |
| **Material, colour, IP rating** | | | |
| Searchlight barrel head: | Aluminium BSEN485 5251 | | |
| Gearbox housing: | Stainless Steel BS1449 304S31 | | |
| Crutch: | Stainless Steel BS1449 304S11 | | |
| Paint finish powder coated & stove enamel paint: | Ash Grey BS4800 00A01, May Green RAL 6017 | | |
| IP rating: | Searchlight IP56 – PSU IP66 | | |
| Operating temperature: | -50°C to +50°C | | |
| **Certification approval:** | | | |
| 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.**

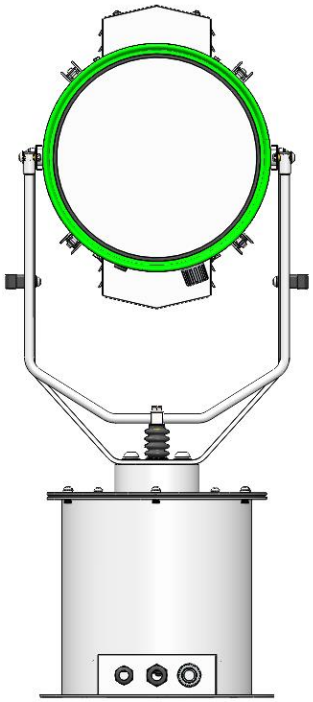
### Safety Precautions

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.

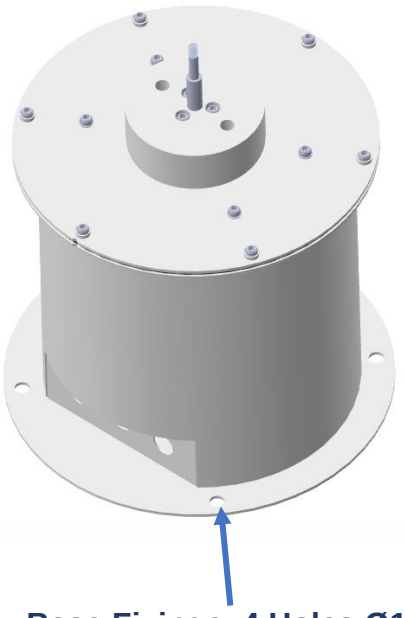
### Preparing the Mounting Position

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 Ø 290.00**

## 5 – Electrical Installation

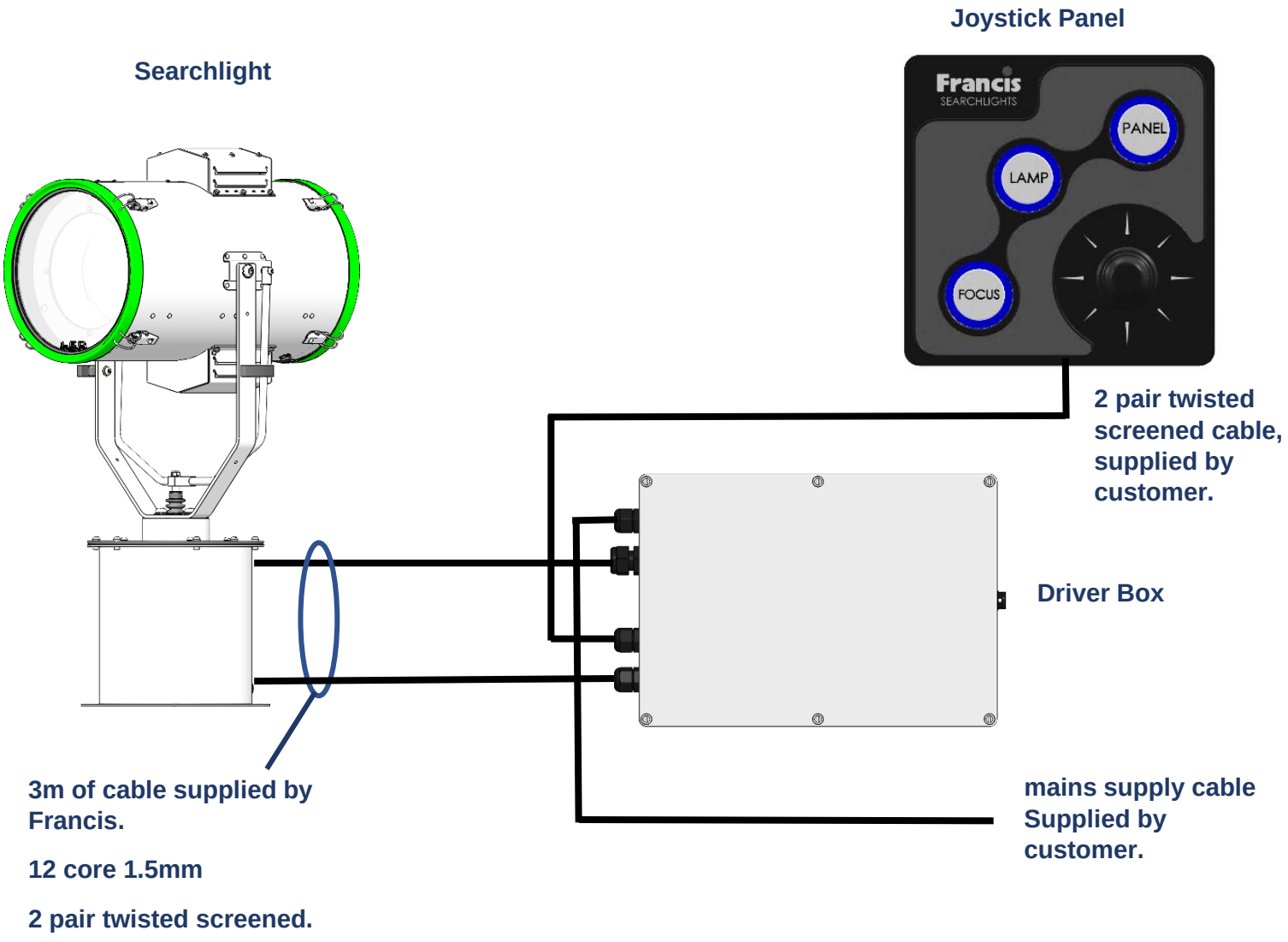
**For safety purposes, only competent personnel should perform the electrical installation. All equipment should be installed to current Electrical Regulations and Standards**.

Referring to wiring diagram C27876 115/240v or C27878 24v (at the back of the manual), a supply is fed to the driver box, which then provides a common feed to the motor gearbox, searchlight, and joystick panel.

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

Cables required to be connected by the customer: -

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



To obtain the maximum light output from the searchlight, it is essential that the full operating voltage of the LED fitted be applied to the LED 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 driver box.

| Searchlight | 24v 234w | 115v 234w | 240v 234w |
|---|---|---|---|
| Cable Size ($mm^2$) | Distance Max | Distance Max | Distance Max |
| 1.5 | 3M | 85M | 355M |
| 2.5 | 5M | 143M | - |
| 4 | 8M | - | - |
| 6 | 12M | - | - |
| 10 | 22M | - | - |

The following table below indicates the maximum length of cable to be used for DC cable, from the searchlight to the driver box.

| Searchlight | LV | HV |
|---|---|---|
| Cable Size ($mm^2$) | Distance Max | Distance Max |
| 12 core 1.5mm doubling up | 8M | 26M |

- 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

## 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 light on or off.
If the joystick panel is switched off with the PANEL button the light will switch off.

### Focus Control

The lamp focus can be adjusted using the FOCUS button. Lamp focus will adjust continuously whilst FOCUS is pressed.

### 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 the 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.

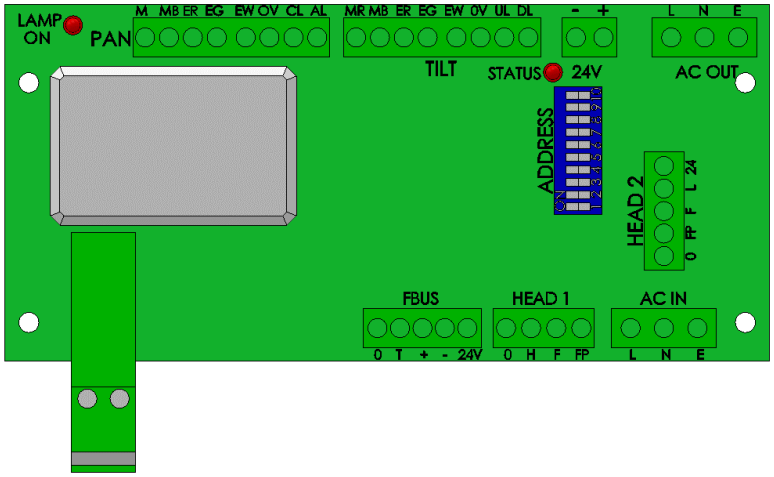
### FBUS Address Switches

### 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 C29488). 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.

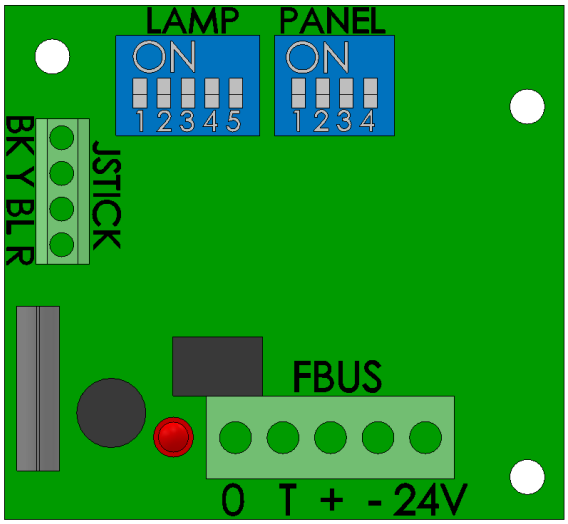
The address value is the sum of the numbers above which are active when the switch is on.

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.

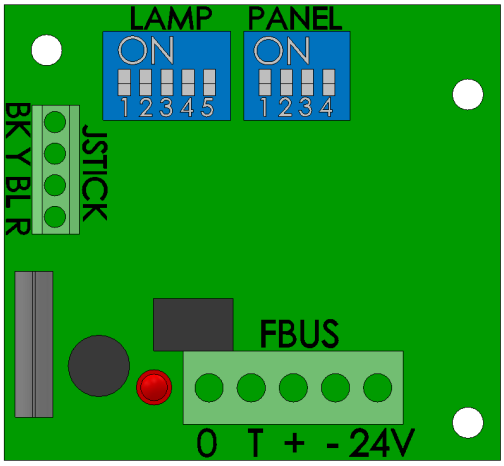
### Standard Control Panel – Searchlight (Lamp) Address

| 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

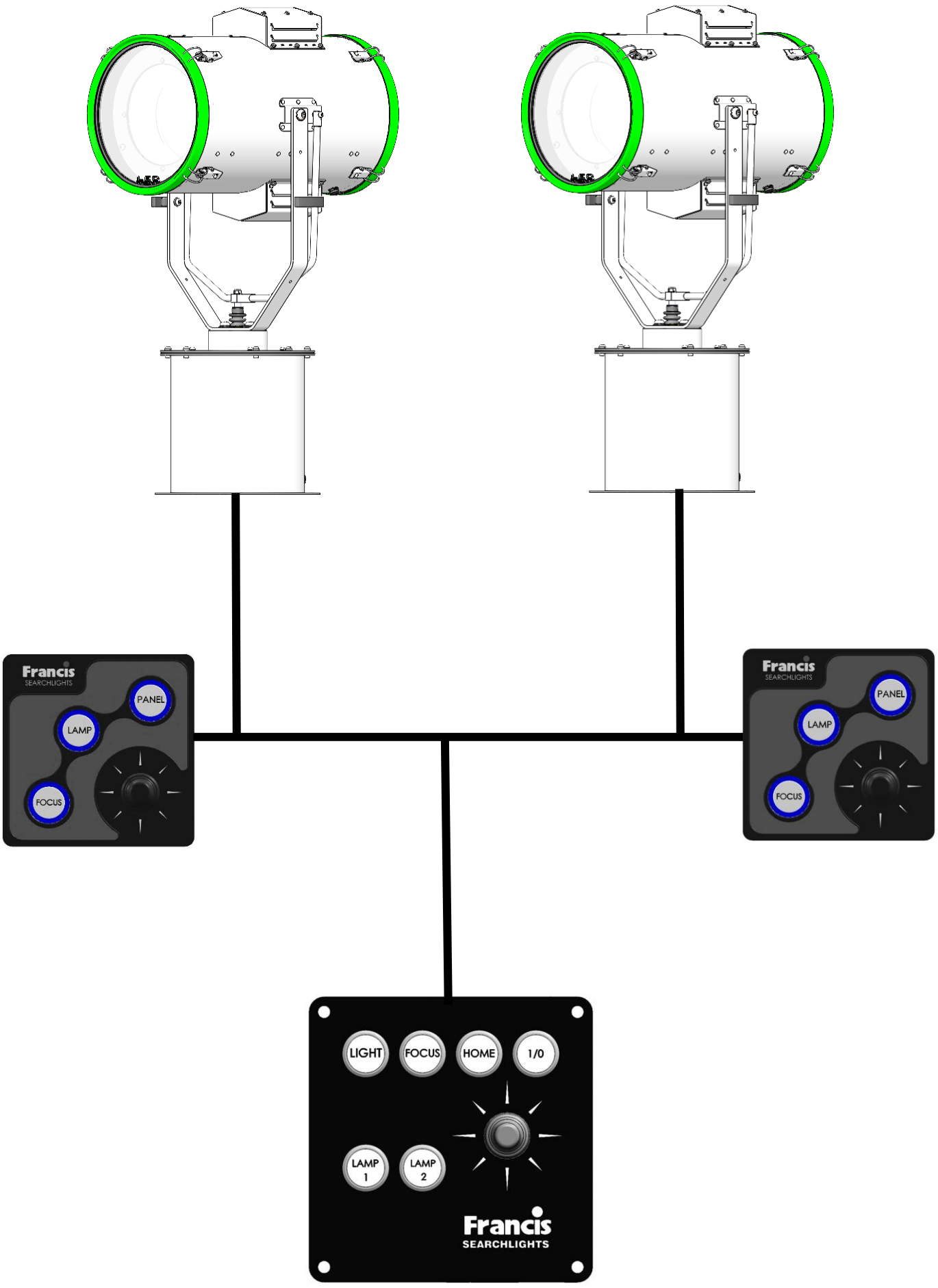
Every searchlight must have a unique address. The addresses should be sequential and should start from zero. If there were three searchlights in a system the addresses should be set to 0, 1 and 2.

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 lamp.

# 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 & + = 2.2v DC
    - 0 & - = 2.2v 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

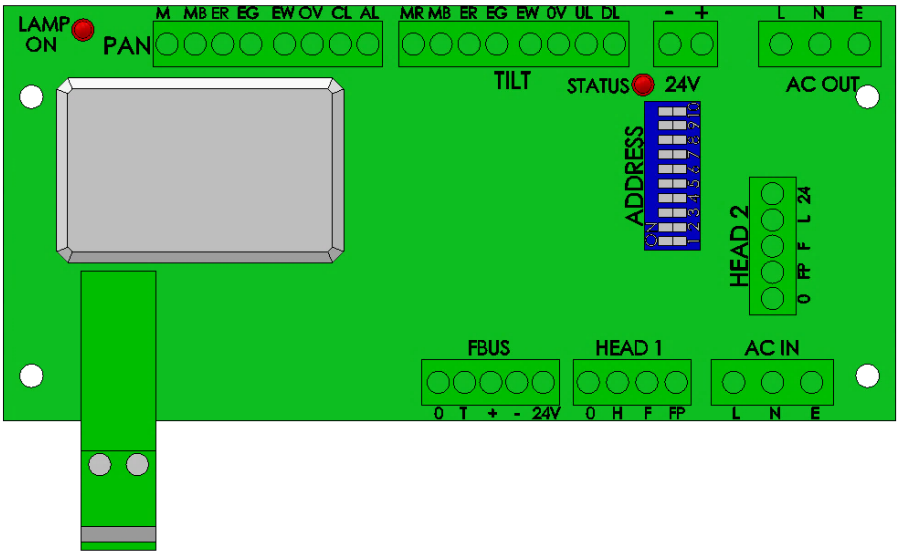
- Check that the supply is connected to the input of the LED driver and check all connections as per the wiring diagram. On operation if the LED does not light, switch off mains supply and check all fuses.

## 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 light 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

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 C29488), to access the speed controller PCB you will need to remove the 6 off M6 screws that hold the motor top to the gearbox housing and then lift the searchlight up out of the gearbox housing, taking care not to damage the assembly, 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. 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 C29488 Item 6, 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 light 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 light is at the limit of travel. This will also indicate when a variable limit is reached.

3. Pan motor over current. – The pan 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.

4. Tilt motor over current. – The tilt 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.

5. Focus motor over current. – 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. This fault indicates the 24VDC output is taking excessive current. The FBUS supply output will switch off. To restore this output, remove the supply from the speed control card for a period.

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 lenses if required.
- 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.**

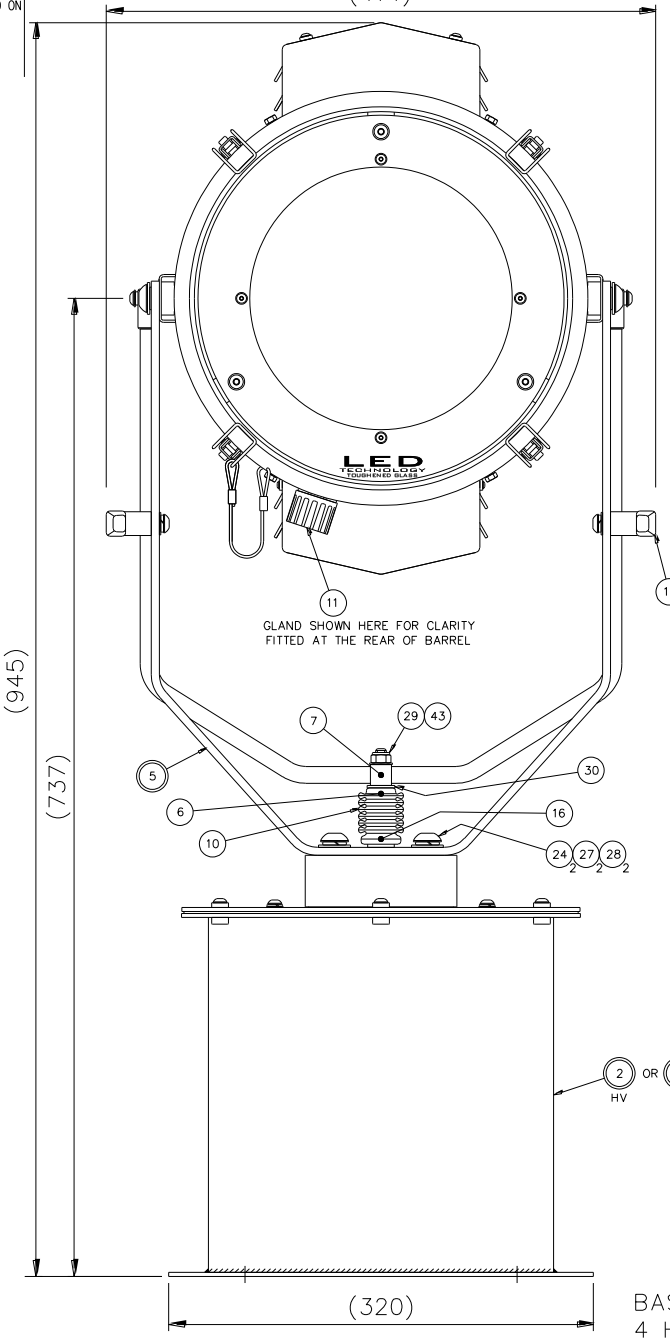
## 9 - Wiring Diagram & General Assembly

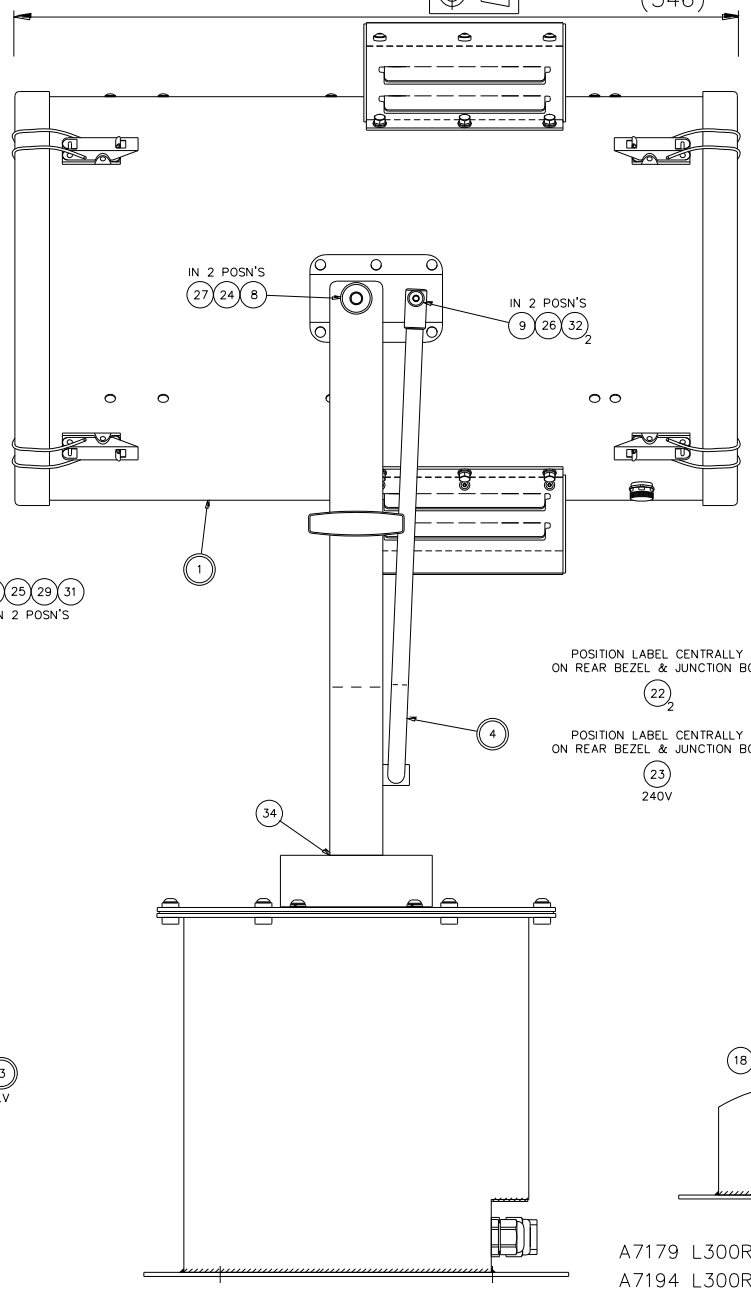
| Drawing No: | Description |
|---|---|
| A7179 | L300RC 234w LED 115/240v Explorer General Assembly |
| A7194 | L300RC 234w LED 24v Explorer General Assembly |
| C27876 | Wiring Diagram 115/240v. |
| C27878 | Wiring Diagram 24v. |
| C27312 | Joystick Panel Assembly Remote Focus |
| C28994 | Driver Box Assembly 115/240v |
| C28996 | Driver Box Assembly 24v |
| C29670 | LED Replacement Instructions |
| C27918 | Barrel Assembly |
| C29488 | Gearbox Assembly 115/240v |
| C29489 | Gearbox Assembly 24v |

FIRST USED ON

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



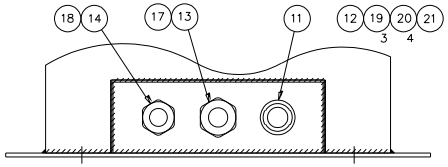




0 10 20 30 40 50mm

| ITEM | PART No. | DRG No. | DESCRIPTION | HV QTY | LV QTY |
|---|---|---|---|---|---|
| 1 | C27918 | C27918 | BARREL ASSY HV | 1 | 1 |
| 2 | C29488 | C29488 | MOTOR UNIT ASSY 3 WAY | 1 | |
| 3 | C29489 | C29488 | MOTOR UNIT ASSY 3 WAY | | 1 |
| 4 | C26691 | C26691 | U-PIECE ASSY | 1 | 1 |
| 5 | C24140 | C24140 | CRUTCH SUB ASSY | 1 | 1 |
| 6 | C20270 | C20270 | BELLOWS TOP BUSH | 1 | 1 |
| 7 | C27546 | C27546 | U-PIECE BLOCK BUSH | 1 | 1 |
| 8 | C22264 | C22264 | TRUNNION SPACER | 2 | 2 |
| 9 | C23329 | C23329 | U-PIECE BUSH | 2 | 2 |
| 10 | C20281 | C20281 | BELLOWS | 1 | 1 |
| 11 | C23281 | | M20 CONDUIT GLAND | 2 | 2 |
| 12 | C23280 | | M20 CONDUIT | 1.1M | 1.1M |
| 13 | C12415 | | M20 CABLE GLAND | 1 | 1 |
| 14 | C27121 | | M20 CABLE GLAND | 1 | 1 |
| 15 | C20943 | | LIFTING HANDLE | 2 | 2 |
| 16 | C21967 | | "O" RING | 1 | 1 |
| 17 | C24618 | | 12 CORE 1.5mm CABLE | 1 4M | 1 4M |
| 18 | C24827 | | 2 PAIR TWISTED CABLE | 4M | 4M |
| 19 | C13873 | | 1.5mm S/C CABLE BLACK | 3x 2.5M | 3x 2.5M |
| 20 | C13872 | | 1.5mm S/C CABLE RED | 4x 2.5M | 4x 2.5M |
| 21 | C15112 | | 1.5mm S/C CABLE G/Y | 2.5M | 2.5M |
| 22 | C22036 | | WARNING LABEL | 2 | 2 |
| 23 | C21464 | | 240V WARNING LABEL | 2 | |
| 24 | C08369 | | M12 x 20 BUTTON HD SCREW | 4 | 4 |
| 25 | C23746 | | M8 x 25 BUTTON HD SCREW | 2 | 2 |
| 26 | C09580 | | M6 x 25 BUTTON HD SCREW | 2 | 2 |
| 27 | C08370 | | M12 PLAIN WASHER | 4 | 4 |
| 28 | C12133 | | M12 S/C SPRING WASHER | 2 | 2 |
| 29 | C06999 | | M8 PLAIN WASHER | 3 | 3 |
| 30 | C26994 | | M8 PLAIN FORM C WASHER | 1 | 1 |
| 31 | C15041 | | M8 S/C SPRING WASHER | 2 | 2 |
| 32 | C06997 | | M6 PLAIN WASHER | 4 | 4 |
| 33 | C12354 | | M8 NYLOC NUT | 1 | 1 |
| 34 | C28426 | C28426 | CRUTCH BASE SEAL | 1 | 1 |

| ISS No | MODIFICATION DETAILS | DATE & INIT'S |
|---|---|---|
| 1 | AS FIRST DRAWN | 8.18 LW |
| 2 | C27121 WAS C15293 EC1797 | 2.20 D.S. |
| 3 | CRUTCH BASE SEAL ADDED (EC1824) | 4.20 LW |
| 4 | LOUVRE COVER ADDED (EC1827) | 5.20 LW |
| 5 | UPDATED C27918 ADDED (EC1927) | 9.22 J.H. |
| 6 | PARVALUX HEATER EC1935 | 11.22 D.S. |
| 7 | 4-WAY CHANGED TO 3-WAY MOTOR UNIT. 5 CORE NOW 12 CORE, GLANDS ADJUSTED. (EC1979) | 4.23 J.H. |
| 8 | C24710 REMOVED. EC2017 | 4.24 J.H. |

C27976 OPTIONAL SHIM IS AVAILABLE TO FIT ONTO THE CAM THIS WILL PUSH THE L.E.D 0.5mm FURTHER (DELETE?)




BASE FIXINGS
4 HOLES ø12.50 ON A 290.00 P.C.D.

A7179 L300RC 234W LED RF HV EXPLORER GA 2023
A7194 L300RC 234W LED RF LV EXPLORER GA 2023
A7221 L300RC 234W LED RF HV EXPLORER GA 2023 AZIMUTH

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

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



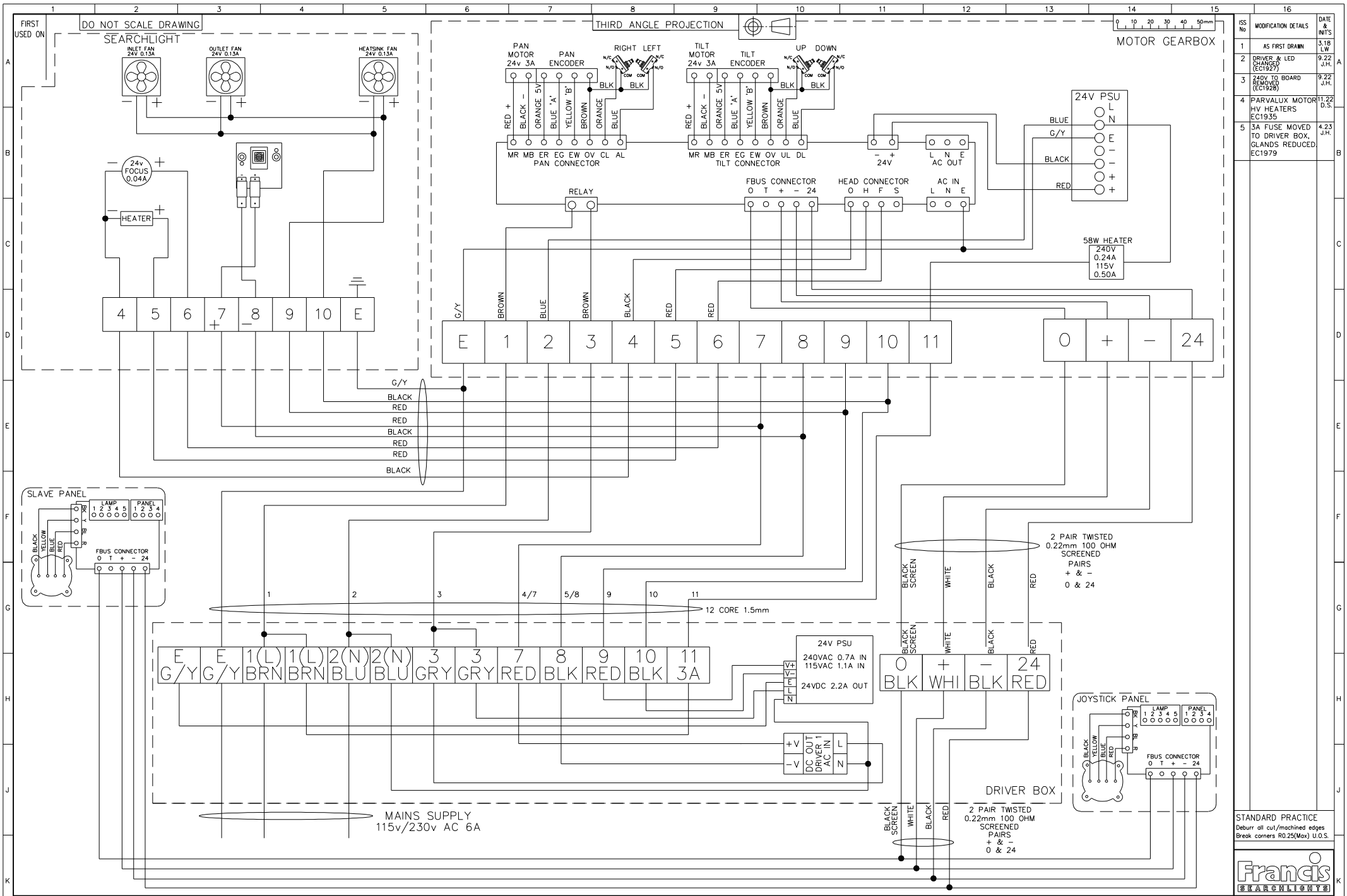
A1 CONT ON SHEET

| | | | | | |
|---|---|---|---|---|---|
| DRAWN | LW | DATE | 8.17 | TOLERANCES | Sand Casting: To ISO 8062 CT10 |
| CHECKED | | SCALE | 1:2 | General: ± | Die Casting: To ISO 8062 CT8 |
| ALL DIMENSIONS IN MILLIMETRES | | | | Angular: ± | Hole centres & posns: ± |

MATERIAL | FINISH | DESCRIPTION

L300RC HV 234W LED EXPLORER GA 2023

PART No./DRG No. A7179 SHT 1




| ISS No | MODIFICATION DETAILS | DATE & INIT'S |
|---|---|---|
| 1 | AS FIRST DRAWN | 3.18 LW |
| 2 | DRIVER & LED CHANGED (EC1927) | 9.22 J.H. |
| 3 | 240V TO BOARD REMOVED (EC1928) | 9.22 J.H. |
| 4 | PARVALUX MOTOR HV HEATERS EC1935 | 11.22 D.S. |
| 5 | 3A FUSE MOVED TO DRIVER BOX, GLANDS REDUCED. EC1979 | 4.23 J.H. |

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

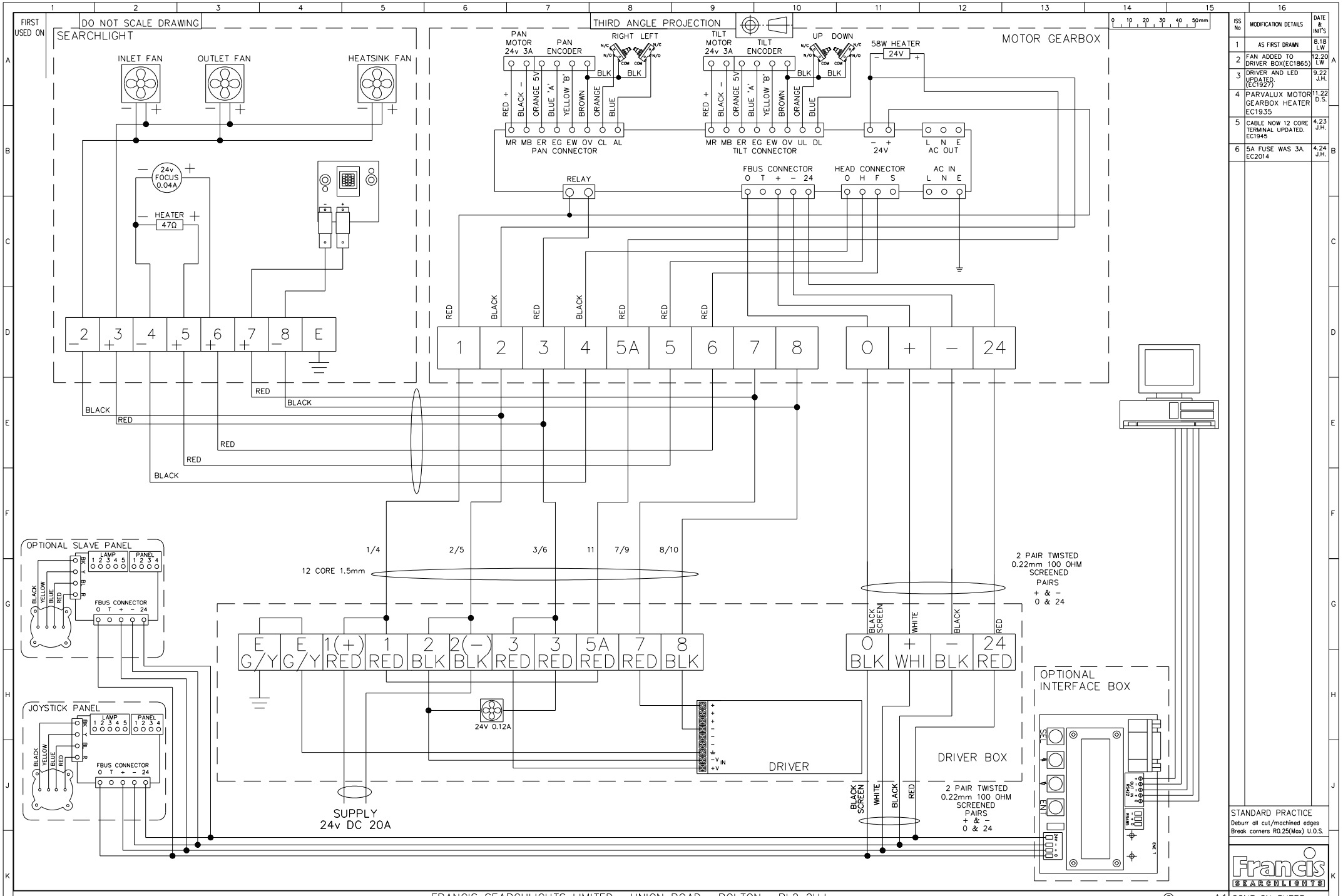
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ



A1 CONT ON SHEET

| DRAWN | LW | DATE | 3.18 | TOLERANCES | MATERIAL | FINISH | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| CHECKED | | SCALE | | General: ± Angular: ± | | | WIRING DIAGRAM L.E.D300 234w HV EXP 2017 |
| ALL DIMENSIONS IN MILLIMETRES | | | | Sand Casting: To ISO 8062 CT10 Die Casting: To ISO 8062 CT8 Hole centres & posns: ± | | | |

PART No./DRG No. C27876 SHT 1




| ISS No | MODIFICATION DETAILS | DATE & INIT'S |
|---|---|---|
| 1 | AS FIRST DRAWN | 8.18 LW |
| 2 | FAN ADDED TO DRIVER BOX(EC1865) | 12.20 LW |
| 3 | DRIVER AND LED UPDATED (EC1927) | 9.22 J.H. |
| 4 | PARVALUX MOTOR GEARBOX HEATER EC1935 | 11.22 D.S. |
| 5 | CABLE NOW 12 CORE TERMINAL UPDATED. EC1945 | 4.23 J.H. |
| 6 | 5A FUSE WAS 3A. EC2014 | 4.24 J.H. |

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

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



A1 CONT ON SHEET

| | | | | | |
|---|---|---|---|---|---|
| DRAWN | LW | DATE | 8.18 | TOLERANCES | |
| CHECKED | | SCALE | | General: ± | |
| ALL DIMENSIONS IN MILLIMETRES | | | | Angular: ± | |

Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 CT8
Hole centres & posns: ±

MATERIAL | FINISH | DESCRIPTION

# WIRING DIAGRAM L300 24V 234W LED EXPLORER 2017

PART No./DRG No. C27878 | SHT 1

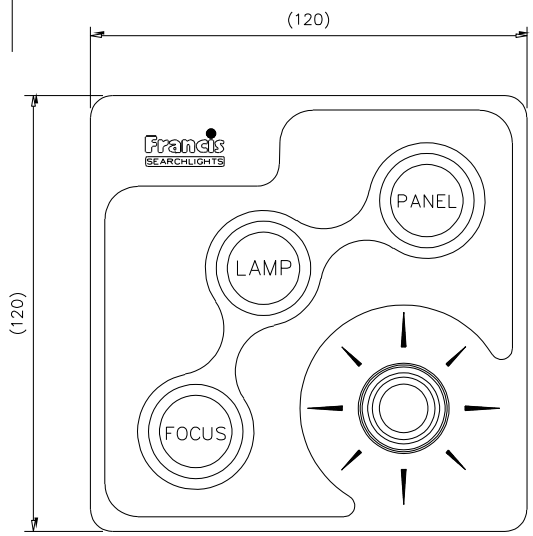
FIRST USED ON

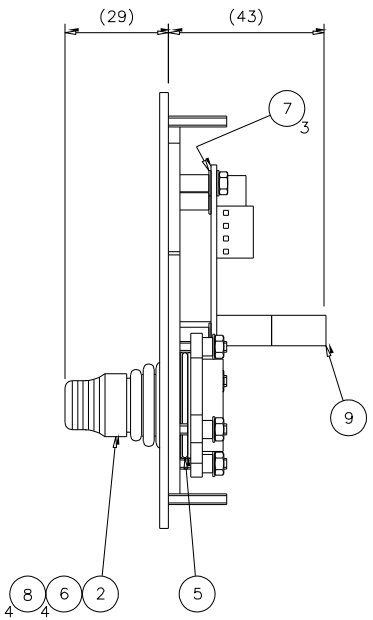
DO NOT SCALE DRAWING

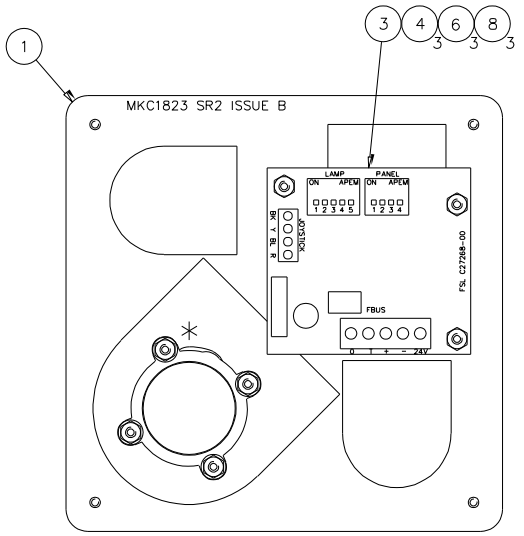
THIRD ANGLE PROJECTION

0 10 20 30 40 50mm

| ISS No | MODIFICATION DETAILS | DATE & INIT'S |
|---|---|---|
| 1 | AS FIRST DRAWN | 10.16 D.S. |
| 2 | CUT OUT CHAM 6 WAS 9 (EC1778) | 8.19 LW |
| 3 | 'O' RING & NYLON WASHERS ADDED (EC1984) | 10.23 D.S. |



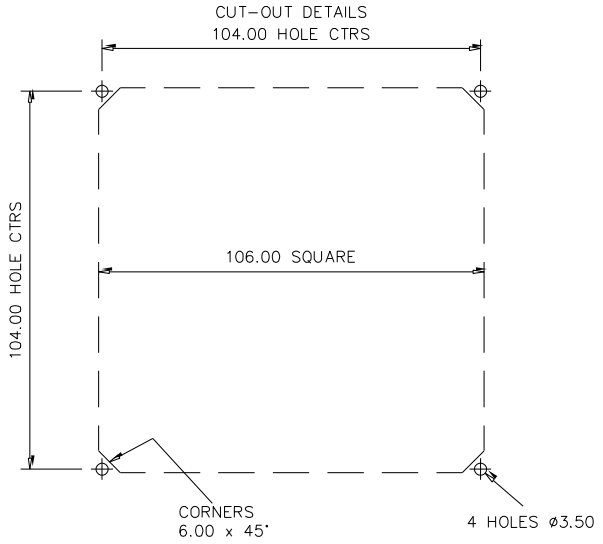




NOTES

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 |




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

Francis SEARCHLIGHTS

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



A2

CONT ON SHEET

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DRAWN | D.S. | DATE | 10.16 | TOLERANCES | Sand Casting: To ISO 8062 CT10 | MATERIAL | FINISH | DESCRIPTION | PART No./DRG No. | SHT |
| CHECKED | | SCALE | 1:1 | General: ± | Die Casting: To ISO 8062 CT8 | | | 3 BUTTON CONTROL PANEL ASSY (2017) | C27312 | 1 |
| ALL DIMENSIONS IN MILLIMETRES | | | | Angular: ± | Hole centres & posns: ± | | | | | |

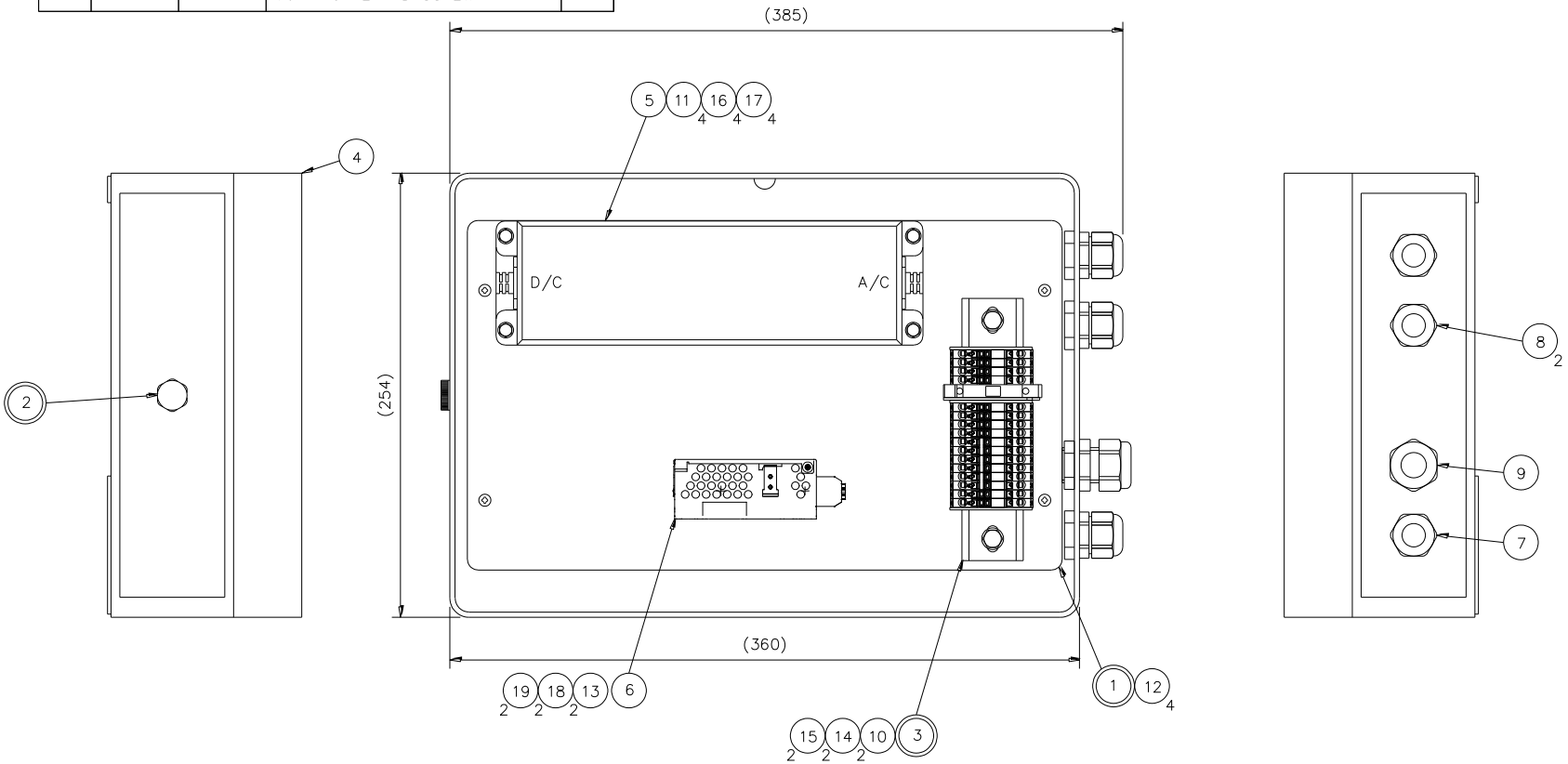
FIRST USED ON
L300RC
234W LED
A7178/9
A7221

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

| ITEM | PART No. | DRG No. | DESCRIPTION | QTY | ITEM | PART No. | DRG No. | DESCRIPTION | QTY |
|---|---|---|---|---|---|---|---|---|---|
| 1 | C27257 | C27257 | CHASSIS PLATE SUB ASSY | 1 | 11 | C26955 | | M4 x 10 HEX HD SCREW | 4 |
| 2 | C22268 | | BREATHER ASSY | 1 | 12 | C23598 | | M4 x 8 SELF TAP POZI HD SCREW | 4 |
| 3 | C28924 | C28924 | DRIVER BOX DIN RAIL ASSY | 1 | 13 | C14502 | | M3 x 6 BTN HD SCREW | 2 |
| 4 | C29904 | C29904 | JUNCTION BOX DRILLING | 1 | 14 | C06997 | | M6 PLAIN WASHER | 2 |
| 5 | C29601 | | LED DRIVER | 1 | 15 | C10554 | | M6 S/C SPRING WASHER | 2 |
| 6 | C29033 | | 24V PSU | 1 | 16 | C04376 | | M4 PLAIN WASHER | 4 |
| 7 | C10158 | | M20 CABLE GLAND | 1 | 17 | C08793 | | M4 S/C SPRING WASHER | 4 |
| 8 | C27121 | | M20 CABLE GLAND | 2 | 18 | C08028 | | M3 PLAIN WASHER | 2 |
| 9 | C12415 | | M20 CABLE GLAND | 1 | 19 | C10747 | | M3 S/C SPRING WASHER | 2 |
| 10 | C08120 | | M6 x 10 HEX HD SCREW | 2 | | | | | |

BASE FIXINGS
254 x 254 x (6MM HOLES)
WEIGHT 4KGS




| ISS No | MODIFICATION DETAILS | DATE & INIT'S |
|---|---|---|
| 1 | AS FIRST DRAWN | 3.21 D.S. |
| 2 | C27257 UPDATED C29601 WAS C27231 (EC1927) | 9.22 J.H. |
| 3 | BROUGHT IN LINE (EC1945) | 3.23 J.H. |
| 4 | GLANDS ALTERED & DRILLING CHANGED. EC1979 | 4.23 J.H. |

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

Francis SEARCHLIGHTS

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



A2

CONT ON SHEET

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DRAWN | D.S. | DATE | 3.21 | TOLERANCES | Sand Casting: To ISO 8062 CT10 | MATERIAL | FINISH |
| CHECKED | | SCALE | 1: 2 | General: ± | Die Casting: To ISO 8062 CT8 | | |
| ALL DIMENSIONS IN MILLIMETRES | | | | Angular: ± | Hole centres & posns: ± | | |

DESCRIPTION: DRIVER BOX ASSY HV EXP

PART No./DRG No.: C28994

SHT: 1

FIRST USED ON L300RC LV 234W LED A7194

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

0 10 20 30 40 50mm

| ITEM | PART No. | DRG No. | DESCRIPTION | QTY |
|---|---|---|---|---|
| 1 | C24686 | C24686 | FAN SPLASH COVER ASSY | 1 |
| 2 | C27921 | C27921 | CHASSIS PLATE SUB ASSY | 1 |
| 3 | C28995 | C28995 | DRIVER BOX DIN RAIL ASSY | 1 |
| 4 | C24147 | C24147 | JUNCTION BOX DRILLING | 1 |
| 5 | C24687 | C24687 | FAN COVER PILLAR | 1 |
| 6 | C29903 | C29903 | PSU BRACKET | 1 |
| 7 | C29600 | | DRIVER | 1 |
| 8 | C22104 | | FAN | 1 |
| 9 | C24366 | | FAN COVER | 2 |

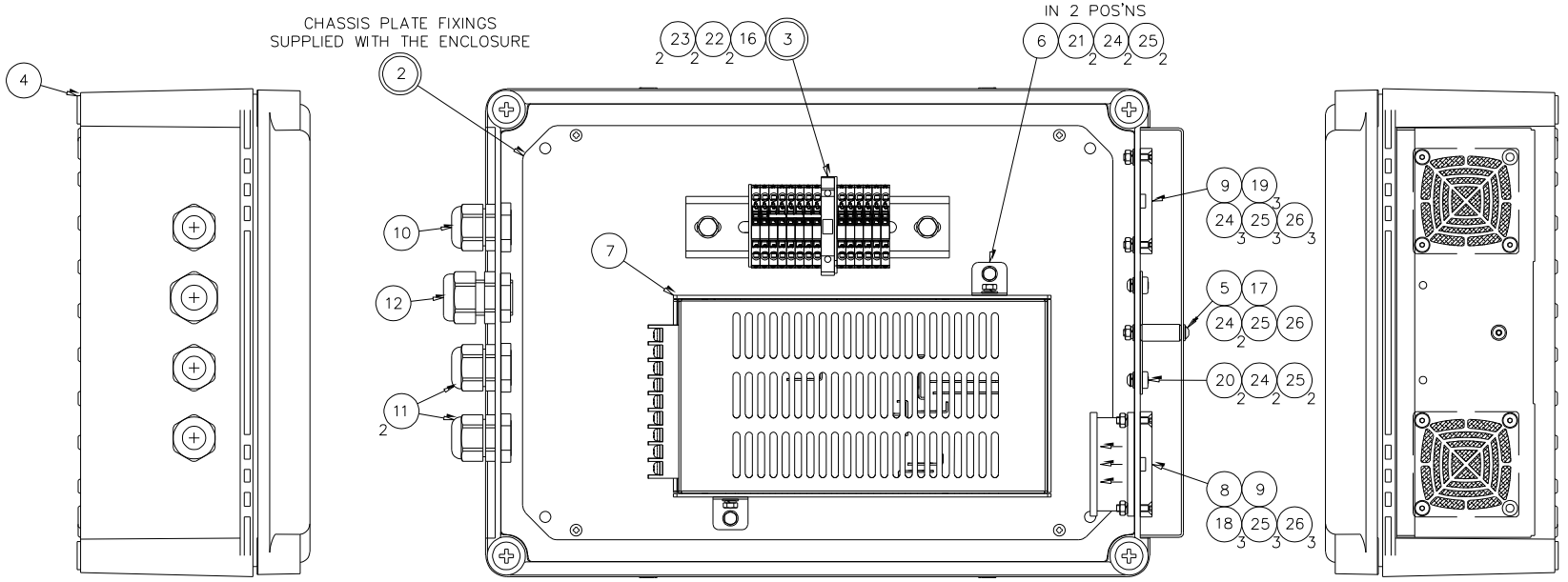
| ITEM | PART No. | DRG No. | DESCRIPTION | QTY |
|---|---|---|---|---|
| 10 | C10158 | | M20 CABLE GLAND | 1 |
| 11 | C27121 | | M20 CABLE GLAND | 2 |
| 12 | C12415 | | M20 CABLE GLAND | 1 |
| 13 | C04900 | | FRANCIS EXTERIOR LABEL | 1 |
| 14 | C22036 | | ISOLATE SUPPLY LABEL | 1 |
| 15 | C24369 | | THIS WAY UP LABEL | 2 |
| 16 | C08120 | | M6 x 10 HEX HD SCREW | 2 |
| 17 | C14468 | | M4 x 35 BUTTON HD SCREW | 1 |
| 18 | C10120 | | M4 x 20 SKT CSK HD SCREW | 3 |

| ITEM | PART No. | DRG No. | DESCRIPTION | QTY |
|---|---|---|---|---|
| 19 | C06981 | | M4 x 16 SKT CSK HD SCREW | 3 |
| 20 | C14533 | | M4 x 10 BUTTON HD SCREW | 2 |
| 21 | C26955 | | M4 x 10 HEX HD SCREW | 4 |
| 22 | C06997 | | M6 PLAIN WASHER | 2 |
| 23 | C10554 | | M6 S/C SPRING WASHER | 2 |
| 24 | C04376 | | M4 PLAIN WASHER | 11 |
| 25 | C08793 | | M4 S/C SPRING WASHER | 13 |
| 26 | C06266 | | M4 FULL NUT | 7 |
| 27 | C12039 | | CLEAR RTV | A/R |

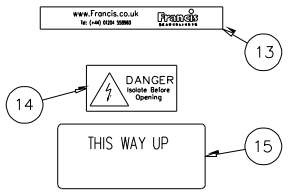
| ISS No | MODIFICATION DETAILS | DATE & INIT'S |
|---|---|---|
| 1 | AS FIRST DRAWN | 3.21 D.S. |
| 2 | UPDATED CHASSIS PLATE, DRIVER AND DIM RAIL. (EC1927) | 9.22 J.H. |

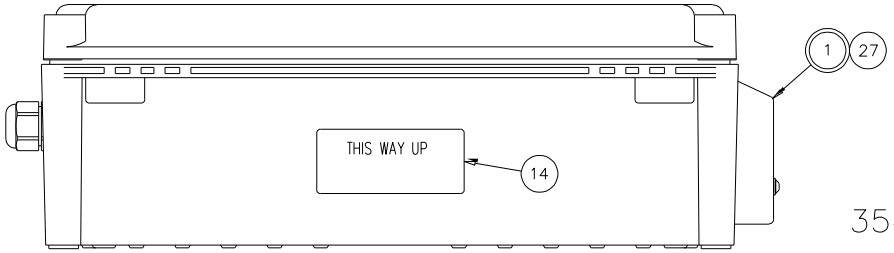
CHASSIS PLATE FIXINGS SUPPLIED WITH THE ENCLOSURE

IN 2 POS'NS




POSITION LABELS CENTRALLY ON THE LID




BOX DIMENSIONS
378 x 278 x 130
BASE FIXINGS
354 x 254 M6 FIXINGS

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

Francis SEARCHLIGHTS

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



A2 CONT ON SHEET

| | | | | | |
|---|---|---|---|---|---|
| DRAWN | D.S. | DATE | 3.21 | TOLERANCES | Sand Casting: To ISO 8062 CT10 |
| CHECKED | | SCALE | 1: 2 | General: ± | Die Casting: To ISO 8062 CT8 |
| ALL DIMENSIONS IN MILLIMETRES | | | | Angular: ± | Hole centres & posns: ± |

MATERIAL | FINISH | DESCRIPTION

DRIVER BOX ASSY LV EXP

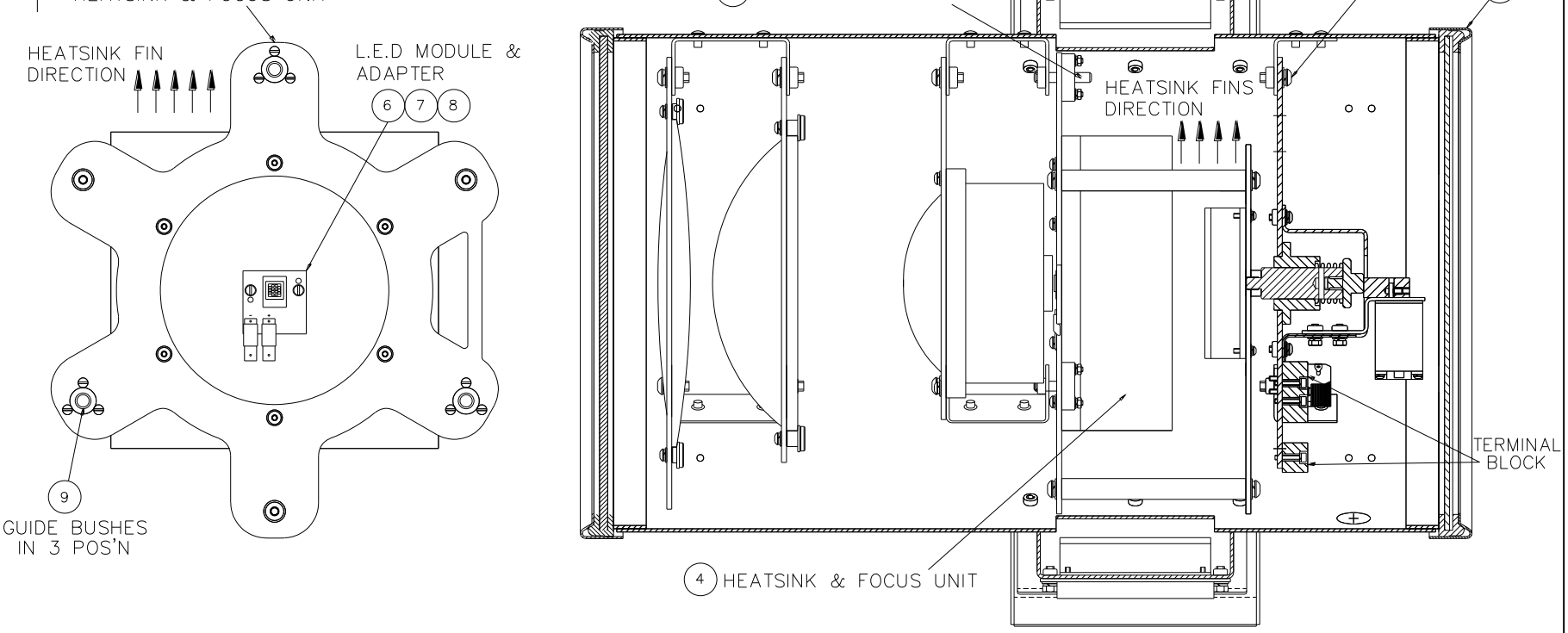
PART No./DRG No. C28996 SHT 1

FIRST USED ON

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

| ISS No | MODIFICATION DETAILS | DATE & INITS |
|---|---|---|
| 1 | AS FIRST DRAWN | 9.22 J.H. |

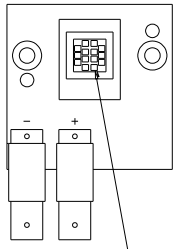



ENSURE ALL FIXINGS ARE SAFELY STORED TO PREVENT LOSS

OPERATION ORDER

1..REMOVE REAR BEZEL BY RELEASING THE FOUR LATCHES
2..DISCONNECT THE SUPPLY & FAN CABLES FROM THE REAR TERMINAL BLOCK NOTING DOWN WHICH CABLES GO WHERE
3..REMOVE THE THREE M6 SCREWS & WASHERS THAT FIX THE HEATSINK & FOCUS UNIT TO THE 3 OFF REAR BRACKETS
4..THE ENTIRE HEATSINK & FOCUS UNIT CAN NOW BE REMOVED FROM THE BARREL
5..REMOVE THE L.E.D WIRES FROM THE TERMINAL BLOCK, THIS NOW ALLOWS THE LED TO BE REMOVED FREELY
6..NOW REMOVE THE TWO M3 SCREWS HOLDING THE L.E.D TO THE HEATSINK, THE L.E.D CAN NOW BE REMOVED
ONCE THE SCREWS ARE REMOVED THE OLD L.E.D MODULE MAY NEED PRISING AWAY FROM THE HEATSINK
AS SOMETIMES THE HEATSINK COMPOUND ACTS AS AN ADHESIVE AFTER SEVERAL YEARS USE
7..ONCE REMOVED, IT IS IMPORTANT THAT YOU MAKE SURE THE AREA WERE THE L.E.D IS LOCATED
IS CLEANED THOROUGHLY ENSURING THE AREA IS VERY CLEAN & FREE OF ANY DEBRIS
8..ADD SOME HEATSINK COMPOUND TO THE BACK OF THE L.E.D AND FIT IT INTO POSITION
NOW INSTALL IT TO THE HEATSINK USING THE TWO M3 SCREWS FROM EARLIER.
9..REVERSE THE ABOVE PROCEDURES TO RE-ASSEMBLY MAKING SURE WHEN PUTTING THE HEATSINK & FOCUS
UNIT BACK IN THE THREE GUIDE PINS FIT INTO THE THREE GUIDE BUSHES
ROTATE THE UNIT TO MANIPULATE THE HEATSINK & FOCUS UNIT INTO POSITION

BLOWN UP VIEW OF L.E.D MODULE




*NEVER TOUCH THE L.E.D CHIPS*

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

Francis SEARCHLIGHTS

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

 A1 CONT ON SHEET

| DRAWN | J.H. | DATE | 9.22 |
|---|---|---|---|
| CHECKED | | SCALE | N.T.S |

ALL DIMENSIONS IN MILLIMETRES

TOLERANCES
General: ±
Angular: ±

Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 CT8
Hole centres & posns: ±

MATERIAL

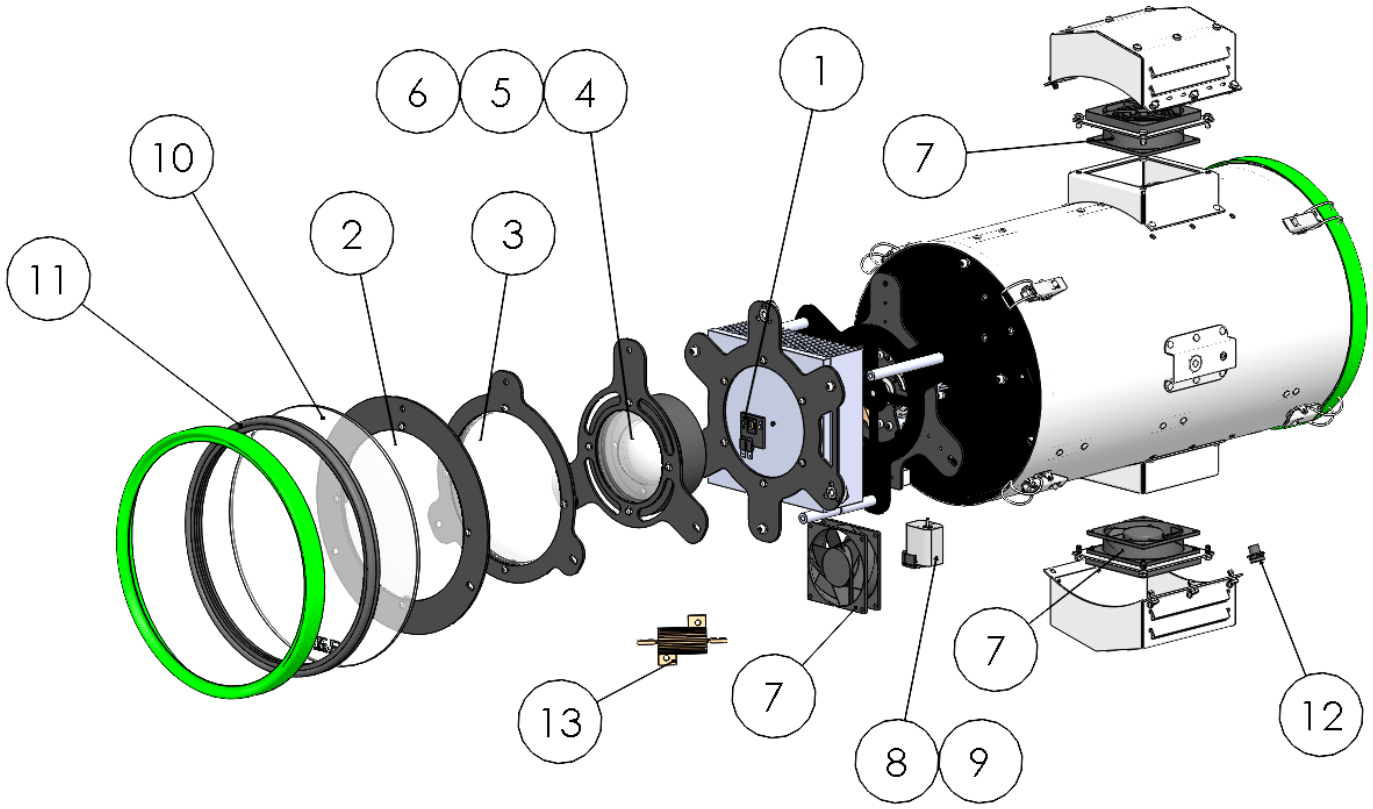
FINISH

DESCRIPTION

# LED REPLACEMENT INSTRUCTIONS

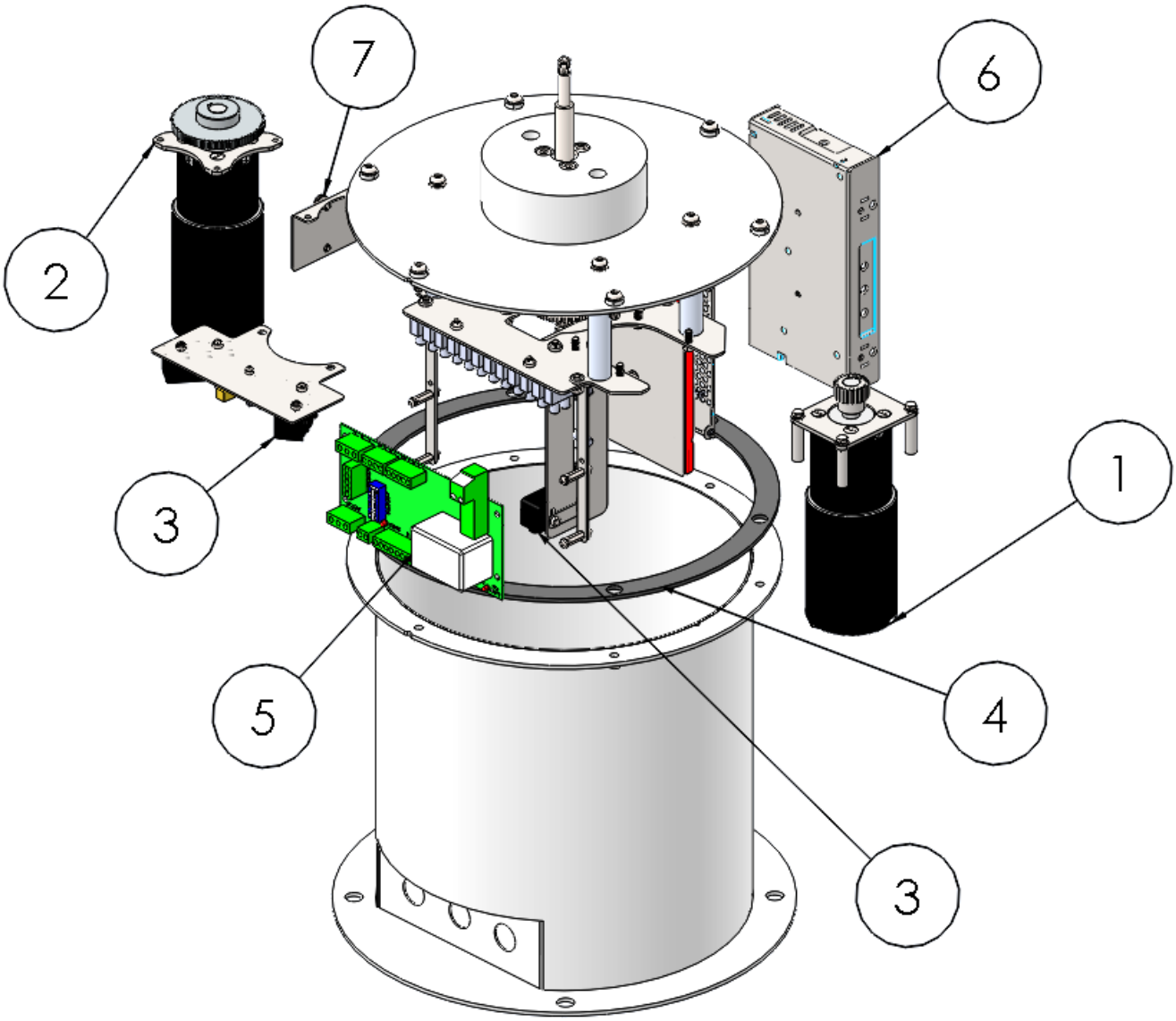
PART No./DRG No. C29670 SHT 1

## C27918 Barrel Assembly




| Item Number | Part Number | Description | Quantity |
|---|---|---|---|
| 1 | C29668-01 | LED Replacement Kit | 1 |
| 2 | C27143-00 | Front Lens | 1 |
| 3 | C27144-00 | Middle Lens | 1 |
| 4 | C27145-00 | Rear Lens (Front) | 1 |
| 5 | C27146-00 | Rear Lens (Middle) | 1 |
| 6 | C27147-00 | Rear Lens (Rear) | 1 |
| 7 | C27820-00 | Fan | 3 |
| 8 | C16410-01 | Focus Motor | 1 |
| 9 | C16534-00 | Focus Motor Cover | 1 |
| 10 | C27224-00 | Front Glass | 1 |
| 11 | C20567-00 | Front Glass Gasket | 1 |
| 12 | C22268-01 | Breather Assembly | 1 |
| 13 | C27288-01 | Heater | 1 |

## C29488 Gearbox Assembly 115/240v
## C29489 Gearbox Assembly 24v




| Item Number | Part Number | Description | Quantity |
|---|---|---|---|
| 1 | C29501-01 | Pan Motor Assembly | 1 |
| 2 | C29500-01 | Tilt Motor Assembly | 1 |
| 3 | C29275-00 | Micro-switch | 4 |
| 4 | C23234-00 | Pedestal Sealing Gasket | 1 |
| 5 | C29535-01 | Speed Controller PCB | 1 |
| 6 | C29162-00 | PSU | 1 |
| 7 | C23277-00 | Heater 115/240v | 1 |
| 7 | C23278-00 | Heater 24v | 1 |

## 10 - Spare Parts List

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

| Part Number | Description |
|---|---|
| **Searchlight Spares** | |
| C29668-01 | LED Replacement Kit |
| C27143-00 | Front Lens |
| C27144-00 | Middle Lens |
| C27145-00 | Rear Lens (Front) |
| C27146-00 | Rear Lens (Middle) |
| C27147-00 | Rear Lens (Rear) |
| C27820-00 | Fan |
| C16410-01 | Focus Motor |
| C16534-00 | Focus Motor Cover |
| C27224-00 | Front Glass |
| C20567-00 | Front & Rear Bezel Gasket |
| C22268-01 | Breather Assembly |
| C27288-01 | Heater |
| C20281-00 | Bellows |
| **Driver Box Spares** | |
| C29601-01 | LED Driver (115/240v Model) |
| C29033-00 | 24v PSU (115/240v Model) |
| C29600-01 | LED Driver (24v Model) |
| C22104-00 | Fan (24v Model) |
| **Motor Gearbox Spares** | |
| C29501-01 | Pan Motor Assembly |
| C29500-01 | Tilt Motor Assembly |
| C29275-00 | Micro switch |
| C23234-00 | Pedestal Sealing Gasket |
| C29535-01 | Speed Controller PCB |
| C29162-00 | PSU |
| C23277-00 | Heater 115/240v |
| C23278-00 | Heater 24v |
| **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 . Please always quote the searchlight model and serial number, which you can find on the nameplate off the driver box. This will enable a fast response to your spares' requirements.