



## User Instruction & Installation Manual

### L560 2Kw GY16 Tungsten Halogen Searchlight



#### Product Reference Number:

A7090 – DECK  
A7092 – DECK PEDESTAL

A7091 – CABIN  
A7093 – CABIN PEDESTAL

#### *Manufacturers 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](mailto:sales@francis.co.uk)

#### *Distributor details:*

Manual Part Number: **C27997**

Issue: 1      8.11.18

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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 Lite range combines features proven over many years service in the most hazardous conditions in both marine and land installations.

In order to prolong the life and performance of your product, we recommend that you only specify Francis Searchlights spare parts. This will also ensure that any warranties on your equipment will not be invalidated. Information on spares ordering and parts is provided in this manual.

Should you ever need to contact Francis Searchlights Ltd. regarding your equipment, please quote the Product Serial Number at all times.

## 2 - Safety Precautions

The following instructions must be adhered to, in order to ensure a safe working environment and the safety of the user.

**Note: When unpacking or manoeuvring the searchlight into its fixing position, suitable lifting points must be used in order to prevent damage to the equipment or personal injury.**

- Prevent rain, snow, condensation and water droplets from contacting the lamp as this may cause bulb failure and possible shattering;
- Quartz halogen bulbs run with a high internal pressure in excess of atmospheric. Whilst the construction is inherently strong, there is a slight risk of the bulb shattering;
- Never look directly into an illuminated searchlight as this may cause severe damage to eyesight. If it is necessary to inspect a lamp whilst in operation, always wear suitable protective goggles;
- Should it be necessary to examine the lamp with the front bezel removed, always use a protective shield and wear goggles to ensure a safe working environment;
- Never attempt to clean a lamp whilst in use;
- Searchlights get hot. Never touch the unit when lit and always allow 15 to 20 minutes for cooling down after turning the searchlight off;
- Never place anything on or cover the searchlight when in use;
- Ensure the lamp has cooled sufficiently before removal;
- If undue force appears necessary to remove the lamp, the equipment should be inspected by a competent person or contact the manufacturer;
- When breaking a lamp for disposal, care must be taken to ensure the glass fragments are safely contained. This operation must be performed out of doors in free air. In all circumstances refer to the lamp manufacturers instructions packed with the lamp;
- Due to the vast range of lamps available it may appear possible that more powerful lamps can be used in the equipment than for which it was designed. Even when the unit will physically accept a higher wattage or voltage lamp, this substitution is not recommended and is dangerous. This action will also void any warranties on the equipment.

**Always refer to the lamp 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 L560 searchlight has the following features:

- All marine grade materials and fixings;
- Parabolic glass reflector;
- Powder coated;
- External lamp focus adjustment;
- 360° horizontal rotation;
- Vertical movement +30° -25°;
- Effective weather sealing to IP66;
- Toughened front glass;
- Spill rings to prevent unwanted glare & stray light;
- Tungsten Halogen light;

The searchlight also performs to the following optical data:

#### 2000watt T/H

- |                         |                      |
|-------------------------|----------------------|
| ■ Supply voltage        | 220/240v or 110/115v |
| ■ Peak Beam Candlepower | 4,121,000 lux        |
| ■ Range                 | 2030 metres          |
| ■ Divergence            | 4.8°                 |
| ■ Temperature range     | -20°C to +50°C       |

In order that the searchlight operates correctly it is imperative that competent personnel are responsible for the installation, operation and servicing of this equipment. Failure to adhere to this advice may cause premature failure or incorrect operation of the searchlight, which may damage the equipment or cause personal injury.

## 4 - Unpacking and Installation Instructions

The following instructions should be read and fully understood prior to installing the equipment to ensure that the correct procedures are followed, and all safety precautions are observed.

**Note: If the equipment has been in storage for a considerable amount of time, it is advisable to conduct a routine maintenance check on all parts before installation.**

### **Safety Precautions**

This equipment should not be connected to an electrical supply before being installed. Installation procedures should be adhered to in order to ensure a safe working environment and reduce the risk of damage or personal injury.

### **Preparing the Mounting Position**

Mark out and drill the fixing holes through the deck. 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 and bolt 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.

## 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:

Searchlight	120v 2Kw	230v 2Kw
Cable Size (mm <sup>2</sup> )	Distance Max	Distance Max
2.5	15 MTRS	55 MTRS
4	24 MTRS	88 MTRS
6	37 MTRS	137 MTRS
10	62 MTRS	230 MTRS

- 4) Whenever possible cable terminations should be made below deck and with approved terminal devices;
- 5) If a spare auxiliary fuse or circuit breaker is not available, one of the correct type and rating should be fitted and connected to a positive supply. It is advisable to locate a bus bar or main connection and avoid any direct connection to the supply;
- 6) For 110/220v AC products, the following colour coding system should be used for the customer supply cable:

Brown            - Live  
Blue             - Negative  
Green/Yellow   - Earth

**Note: This equipment must be earthed.**

## 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 positioned using the elevation and base lockwheels. When in the desired position the lockwheels must be securely fastened to prevent damage.

The beam of the searchlight can be adjusted to give a variety of 'spreads'. Using the focus knob underneath the searchlight barrel the beam can be moved from 'spot' to 'flood' positions.

The searchlight is fitted with a breather unit; this ensures a steady airflow in order to prevent any vacuum forming within the barrel.

**This product should not be used for any purpose other than for which it was designed. Any modifications to the product should not be undertaken without consulting the manufacturer.**

### Setting to Work

Safe service in use necessitates the strict observance of the following precautions.

- Any article fabricated from quartz or glass is inherently fragile and care should therefore be taken, at all times, when handling lamps;
- Eye protection must be worn when handling lamps that have been removed from their packaging materials. The protective jacket should not be removed from the lamp for safety reasons, as there is a remote possibility of the lamp shattering violently, especially if it is subjected to mechanical shock or vibration;
- Always isolate the equipment from the supply before inserting a lamp;
- Before inserting the lamp ensure that all contacts are clean. Contacts must be renewed at the slightest sign of corrosion. Sanding or filing down corroded areas is not recommended as this will only make the conducting surface between the pin and lampholder smaller, thus causing the lamp to overheat;
- Do not twist or bend the fused quartz bulb when fitting the lamp as mechanical stresses MUST be avoided;
- The lamp must be capable of unimpeded expansion when it warms up to operating temperature. Mechanical forces must not be applied to the fused quartz bulb;
- Before the protective jacket is removed, suitable protection must be worn i.e. face mask and gloves with wrist protection;
- Never touch the quartz bulb with bare hands, as fingerprints will make the glass cloudy and cause a severe loss of light. This may also cause recrystallisation and thus weaken the bulb material. Should the bulb be inadvertently touched, remove fingerprints with methylated spirit and a clean, soft paper towel. The bulb should then be wiped with distilled water. NOTE: ALWAYS WEAR MASK AND GLOVES DURING CLEANING);

In all circumstances the lamp manufacturer's data should be referred to when dealing with lamps.



When fitting the lamp:

- Always isolate the equipment from the supply when inserting a lamp;
- Ensure the circuit is suitably fused;
- Ensure the lamp is of the correct power rating and type;
- Check lampholder is in good condition. If the contacts show any sign of corrosion, replace the lampholder;
- 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:

- Remove the front bezel assembly by operating the safety catch and lifting the latch body;
- Using a cloth to prevent the fingers coming into contact with the lamp, position the two pins above the holes in the lampholder;
- Gently push the lamp into the lampholder;
- Replace the front bezel assembly, ensuring the safety catch is engaged.

## 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;
- 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 = 8.33 amps

Therefore, Wattage =  $240 \times 8.33 = 2000$  watts

## 7 - Fault Finding

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

### **Failure of Lamp to light**

*Causes:*

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

*Remedy:*

- 1) Check voltage at supply. If supply is not present the fault is at the customer supply. If power is present, see remedy 2;
- 2) Check fuse for visual failure. If none noticeable check fuse for continuity using a multi-meter. If fuse found to be faulty, replace with new part and test equipment again for correct working order. If found to be working correctly see remedy 3;
- 3) Firstly, check supply at lampholder connecting block (within searchlight 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.

## 8 - Maintenance and Servicing

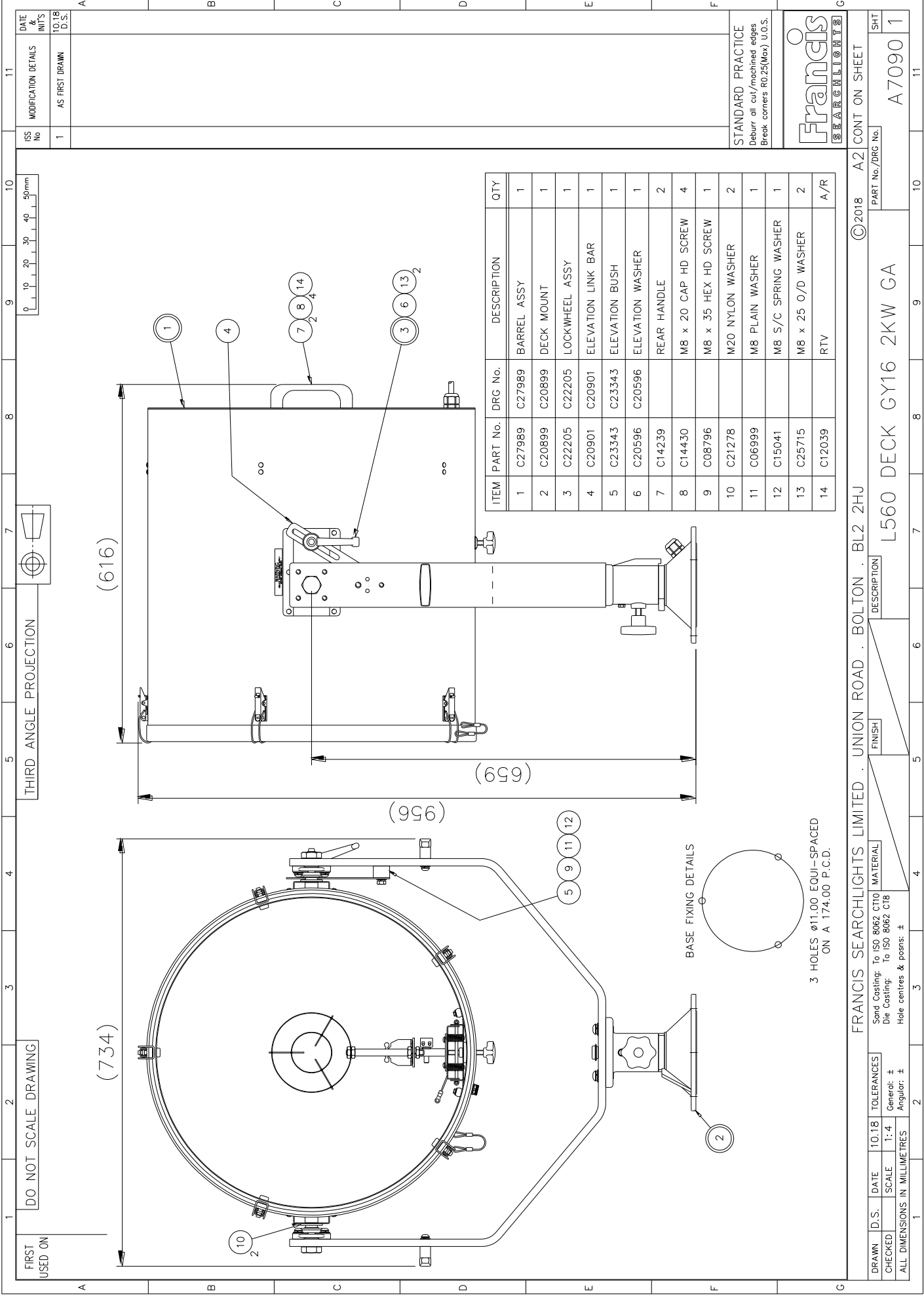
In order to prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- Maintenance checks should be conducted before every voyage or at least every three months;
- Before checking, disconnect the equipment from the supply;
- Visually inspect the condition of the equipment;
- Any major or minor structural damage should be rectified immediately in order to reduce sympathetic wear;
- After inspection it may be necessary to clean the inside of the searchlight. The following procedure should be adhered to:
  - Remove the front bezel;
  - Clean the front glass inside and out using a proprietary glass cleaner;
  - Clean the reflector if required;
  - Ensure that the lampholder is free from corrosion or other damage;
  - Check earth point for conductivity;
- It is advisable to check all seals and gaskets for signs of degradation. Renew if necessary;
- Upon completing all maintenance requirements, the searchlight should be tested for full working order (approximately 20 minutes).

**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 - General Assembly

<b>Drawing Number</b>	<b>Description</b>
A7090	General Assembly drawing L560 Deck GY16 2Kw
A7091	General Assembly drawing L560 Cabin GY16 2Kw
A7092	General Assembly drawing L560 Deck Pedestal GY16 2Kw
A7093	General Assembly drawing L560 Cabin Pedestal GY16 2Kw



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C27989		BARREL ASSY	1
2	C20899		DECK MOUNT	1
3	C22205		LOCKWHEEL ASSY	1
4	C20901		ELEVATION LINK BAR	1
5	C23343		ELEVATION BUSH	1
6	C20596		ELEVATION WASHER	1
7	C14239		REAR HANDLE	2
8	C14430		M8 x 20 CAP HD SCREW	4
9	C08796		M8 x 35 HEX HD SCREW	1
10	C21278		M20 NYLON WASHER	2
11	C06999		M8 PLAIN WASHER	1
12	C15041		M8 S/C SPRING WASHER	1
13	C25715		M8 x 25 O/D WASHER	2
14	C12039		RTV	A/R

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



© 2018 A2 CONT ON SHEET  
 PART No./DRG No. A7090  
 SHT 1

DO NOT SCALE DRAWING

FIRST USED ON

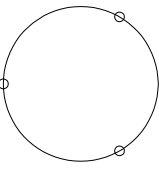
THIRD ANGLE PROJECTION

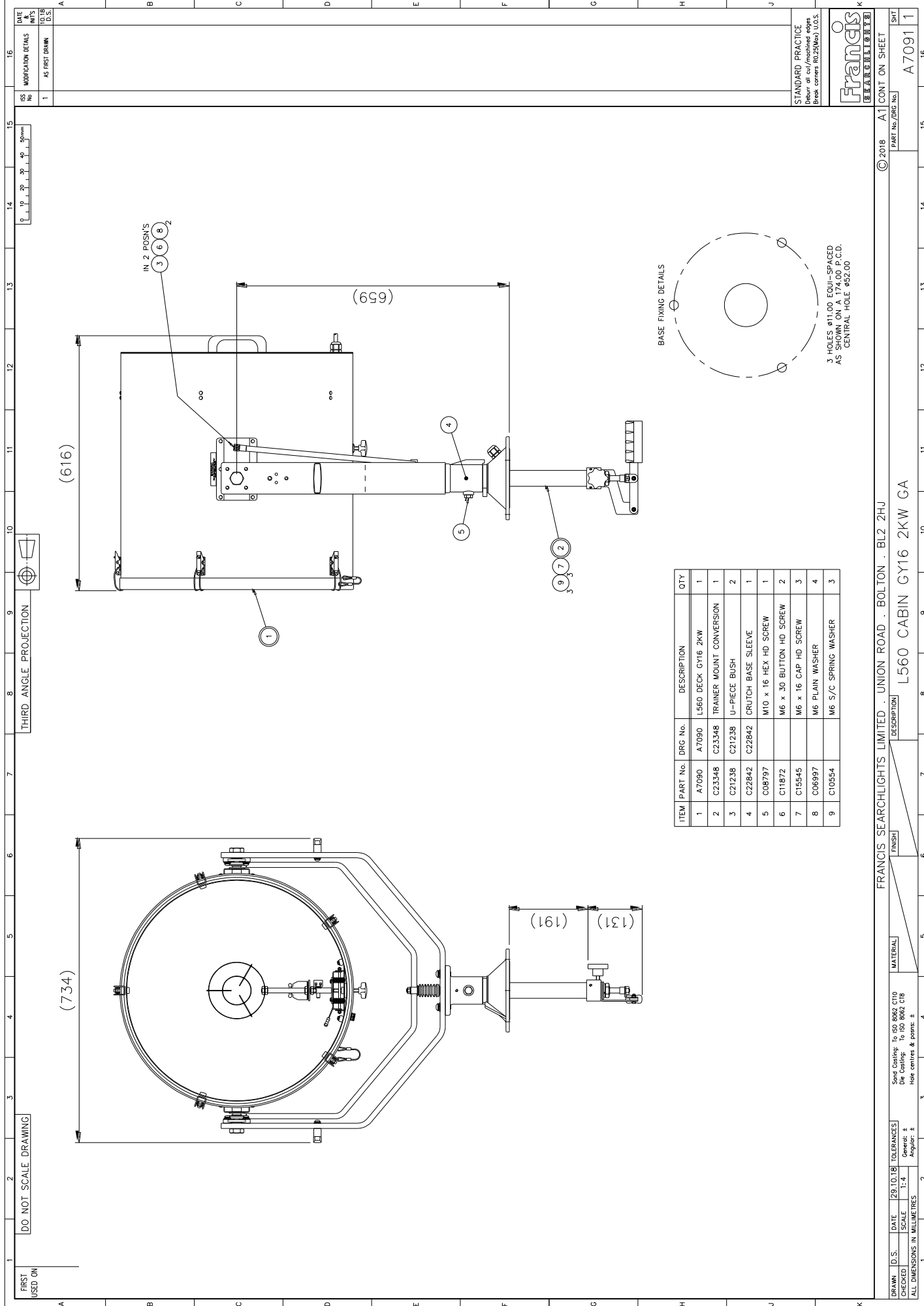
0 10 20 30 40 50mm

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ	DESCRIPTION	FINISH	MATERIAL
L560 DECK GY16 2KW GA			
Send Casting: To ISO 8062 CT10			
Die Casting: To ISO 8062 CT8			
Hole centres & pos: ±			
General: ±			
Angular: ±			
ALL DIMENSIONS IN MILLIMETRES			

3 HOLES Ø11.00 EQUI-SPACED  
 ON A 174.00 P.C.D.

BASE FIXING DETAILS





DATE 10.18	16
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	15
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	14
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	13
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	12
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	11
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	10
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	9
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	8
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	7
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	6
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	5
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	4
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	3
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	2
MODIFICATION DETAILS	
1 AS FIRST DRAWN	
DATE 10.18	1
MODIFICATION DETAILS	
1 AS FIRST DRAWN	

STANDARD PRACTICE Deburr all cut/machined edges Break corners R0.25(Max) U.O.S.	16
FRANCIS FRANCIS SEARCHLIGHTS LIMITED	15
© 2018	14
A1 CONT ON SHEET	13
PART No./DRG No.	12
A7091	11
SHT	10
1	9

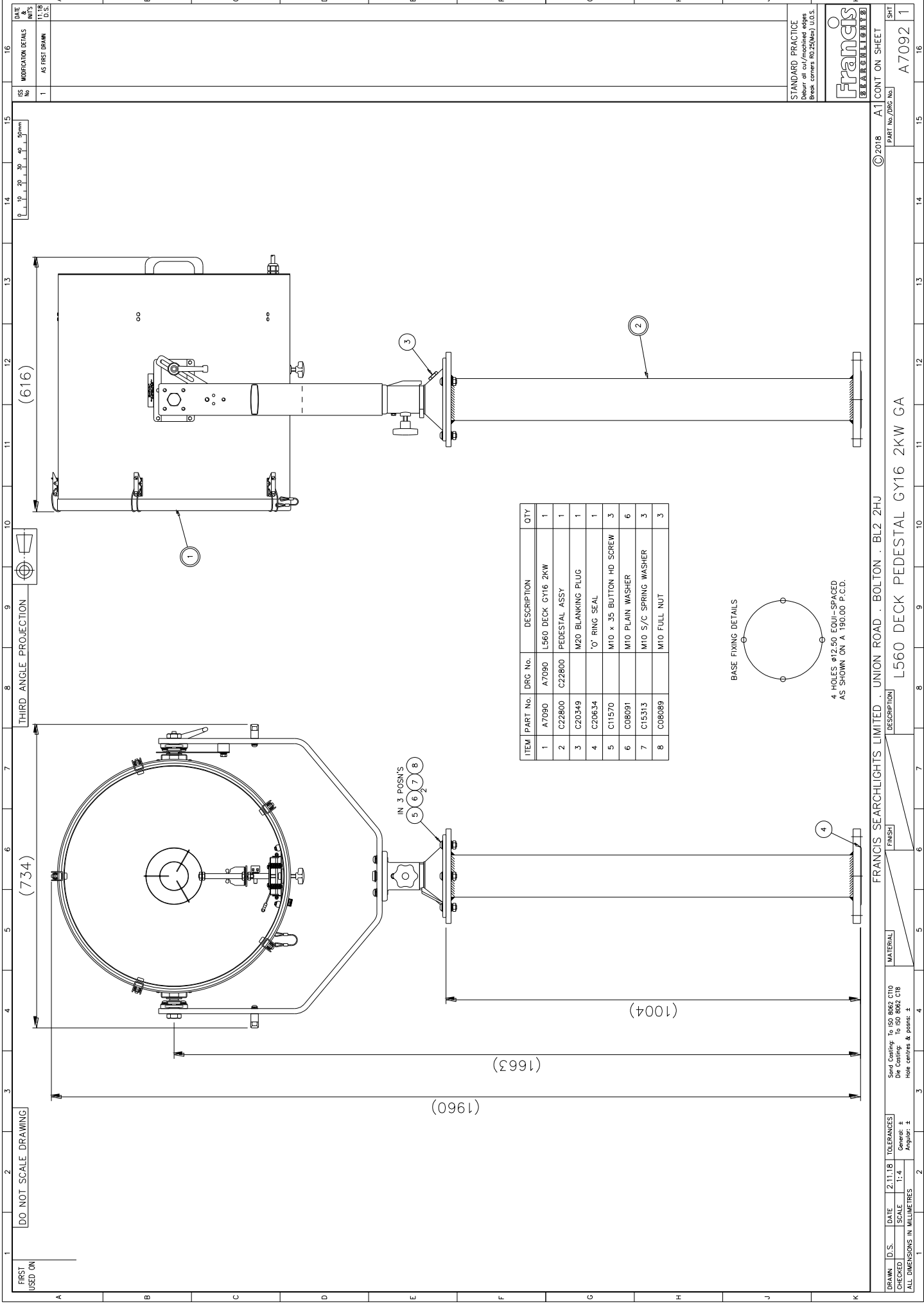
DATE 29.10.18	16
TOLERANCES	
29.10.18	15
SCALE	
1:4	14
General: ±	13
Angular: ±	12
ALL DIMENSIONS IN MILLIMETRES	11
	10
	9
	8
	7
	6
	5
	4
	3
	2
	1

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ  
L560 CABIN GY16 2KW GA

FINISH

MATERIAL

Sound Coating: to ISO 8062 C10  
Die Coating: to ISO 8062 C18  
Hole centres & pitch: ±



FIRST USED ON

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

(616)

(734)

(1960)

(1663)

(1004)

IN 3 POS'NS  
5 6 7 8

BASE FIXING DETAILS

4 HOLES  $\phi$ 12.50 EQUI-SPACED  
AS SHOWN ON A 190.00 P.C.D.

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	A7090	A7090	L560 DECK GY16 2KW	1
2	C22800	C22800	PEDESTAL ASSY	1
3	C20349		M20 BLANKING PLUG	1
4	C20634		'O' RING SEAL	1
5	C11570		M10 x 35 BUTTON HD SCREW	3
6	C08091		M10 PLAIN WASHER	6
7	C15313		M10 S/C SPRING WASHER	3
8	C08089		M10 FULL NUT	3

STANDARD PRACTICE  
Debur all cut/machined edges  
Break corners R0.25(0.010) U.O.S.

**Francis**  
FRANCIS SEARCHLIGHTS LIMITED

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PART No./DRG No. A7092 1

FRANCIS SEARCHLIGHTS LIMITED · UNION ROAD · BOLTON · BL2 2HJ  
L560 DECK PEDESTAL GY16 2KW GA

DRAWN	D.S.	DATE	2.11.18	TOLERANCES
CHECKED		SCALE	1:4	General: $\pm$
		ALL DIMENSIONS IN MILLIMETRES		Angular: $\pm$

Finish: Sand Coating: To ISO 8042 C10  
Die Coating: To ISO 8042 C18  
Hole centres & posns:  $\pm$

16 DATE & UNITS U.O.S.  
15 MODIFICATION DETAILS AS FIRST DRAWN  
14 13 12 11 10 9 8 7 6 5 4 3 2 1  
A B C D E F G H J K

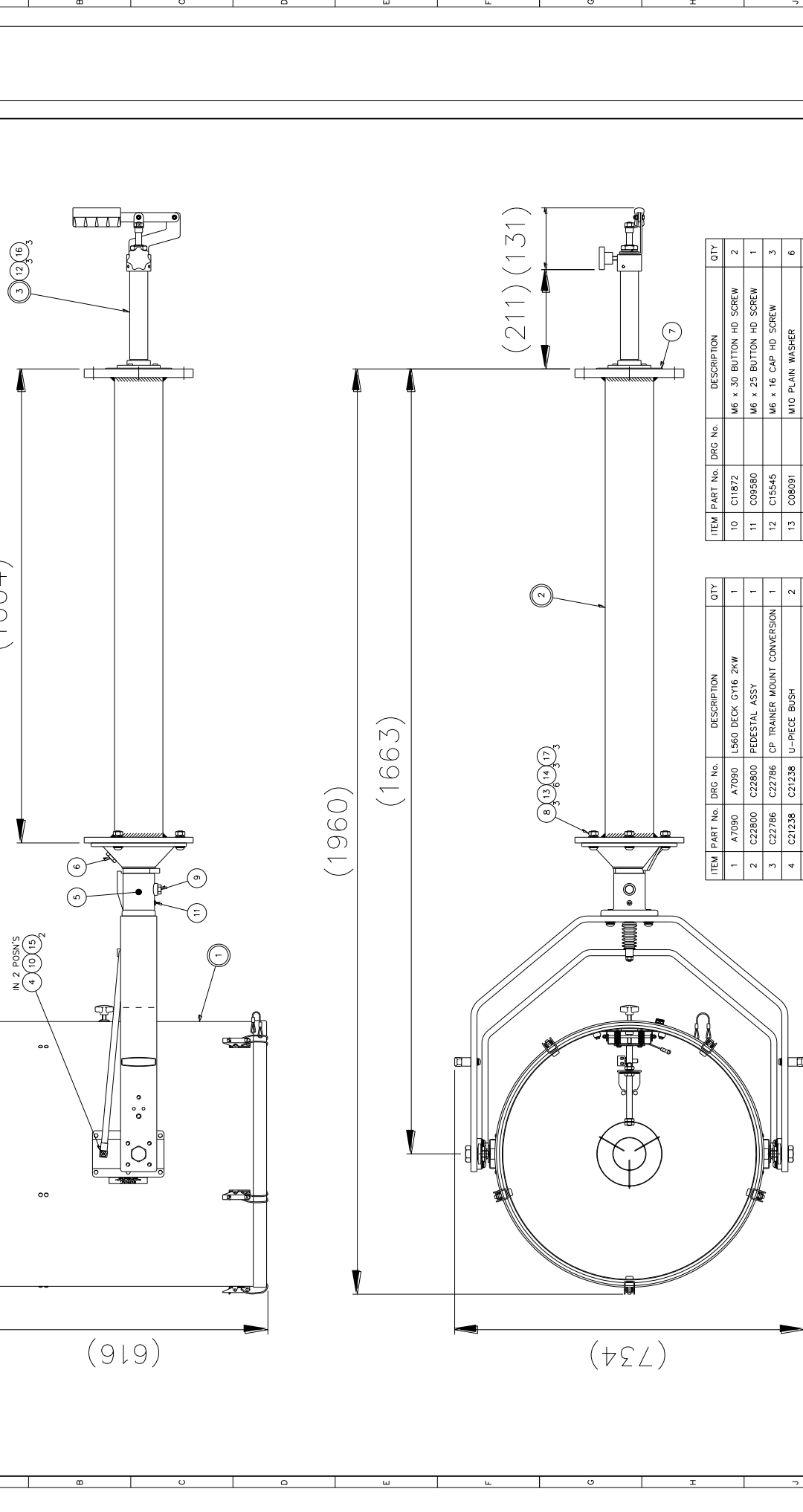
DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

IN 2 POSN'S  
 4 10 15 2

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

L560 CABIN PEDESTAL GY16 2KW GA



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
10	C11872		M6 x 30 BUTTON HD SCREW	2
11	C09580		M6 x 25 BUTTON HD SCREW	1
12	C15545		M6 x 16 CAP HD SCREW	3
13	C08091		M10 PLAIN WASHER	6
14	C15313		M10 S/C SPRING WASHER	3
15	C06997		M6 PLAIN WASHER	4
16	C10554		M6 S/C SPRING WASHER	3
17	C08089		M10 FULL NUT	3

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	A7090		L560 DECK GY16 2KW	1
2	C22800		PEDESTAL ASSY	1
3	C22786		CP TRAINER MOUNT CONVERSION	1
4	C21238		U-PIECE BUSH	2
5	C22842		CRUTCH BASE SLEEVE	1
6	C20349		M20 BLANKING PLUG	1
7	C20634		O' RING SEAL (PEDESTAL BASE)	1
8	C11570		M10 x 35 BUTTON HD SCREW	3
9	C08797		M10 x 16 HEX HD SCREW	1



## 10 - Spare Parts List

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

<b>Part Number</b>	<b>Description</b>
D20390	120v 2Kw GY16 Tungsten Halogen Lamp
D20236	230v 2Kw GY16 Tungsten Halogen Lamp
C22205-01	Tilt Lock Wheel Assembly (Deck & Deck Pedestal)
C20745-01	Tilt Lock Wheel Assembly (Cabin & Cabin Pedestal)
C21502-01	Pan Lock Wheel Assembly (Deck & Deck Pedestal)
C20881-00	Front Glass
C20569-00	Front Glass Gasket
C05396-00	Reflector
C22268-01	Breather unit
C20185-00	Lampholder GY16
C11480-01	Focus Wheel Assembly
C14501-00	Focus Screw Seal
C13302-00	Lampholder Spring
C16761-00	A.V. mount
C20281-00	Bellows
C20634-00	Pedestal Base 'O' Ring (Deck Pedestal & Cabin Pedestal)
C11148-00	Deck Base 'O' Ring
C21967-00	Bellows Bottom Bush 'O' Ring
C22072-00	Push Rod Seal Washer

In order to prolong the life and performance of your product, we recommend that you only specify Francis Searchlights spare parts. This will ensure that any warranties on your equipment will not be invalidated.

When ordering spare parts please contact the Sales Department at Francis Searchlights Limited. Please quote searchlight model and serial number at all times. This will enable a fast response to your spares' requirements.