



User Instruction & Installation Manual

FSP300 Signalling Projector



Product Reference Number:

A4184 – DECK LV
A4188 – DECK HV 300W
A4187 – DECK PEDESTAL HV

A4185 – DECK HV
A4186 – DECK PEDESTAL LV
A4189 – DECK PEDESTAL HV 300W

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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 FSP range combines features proven over many years service 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 Serial Number.

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.

- Because of the high internal pressure within the lamp, there is a risk of explosion in either a hot or cold state.
- During operation, this lamp emits intense UV radiation which is harmful to the eyes and skin. Suitable protection should be worn.
- The high luminance of the arc can cause severe damage to the eye if viewed directly. ALWAYS wear suitable protective goggles when viewing the lamp.
- Always use protective sleeves supplied with the lamp.
- Should it be necessary to examine the lamp with the rear bezel removed, always use a protective shield and wear goggles to ensure a safe working environment.
- Searchlights get hot. The temperature of the outside of the barrel when the lamp is switched can reach a temperature of around 120°C, never touch the unit when lit and always allow 15 to 20 minutes for cooling down after turning the searchlight off.
- Never place anything on or cover the searchlight when in use.
- Ensure the lamp has cooled sufficiently before removal.
- If undue force appears necessary to remove the lamp, the equipment should be inspected by a competent person or contact the manufacturer.
- When disposing of lamps, return the lamp, via the supplier, to the lamp manufacturer in its complete packaging.
- Due to the vast range of lamps available it may appear possible that more powerful lamps can be used in the equipment than for which it was designed. Even when the unit will physically accept a higher wattage or voltage lamp, this substitution is not recommended and is dangerous. This action will also void any warranties on the equipment.
- Always refer to the lamp manufacturer's technical data when dealing with lamps.

3 – Technical Information

This product has been designed to operate in accordance with the product specification. The FSP300 searchlight has the following features:

- All marine grade materials and fixings.
- Parabolic glass reflector.
- Stove enamel painted.
- Full 360° horizontal rotation.
- Vertical movement +45° to -45°.
- External lamp focus adjustment.
- Toughened front glass.
- Sealing to IP56.
- Tungsten Halogen light source.
- Deck 16 Kgs.
- Deck Pedestal 21 Kgs.

The searchlight also performs to the following optical data:

Volts	Watts	Range @ 1 Lux	P.B.C.P. x 1000	Div.	Lamp Life	Lamp Cap	Part Number
12v	100w	1019M	1038	2°	2000 hrs	GX6.35	D9848
24v	150w	1106M	1224	2°	300 hrs	GX6.35	D14795
24v	250w	1298M	1685	3°	2000 hrs	GX6.35	D4695
24v	250w	1563M	2442	3°	300 hrs	GX6.35	D9851
230v	300w	580M	337	3°	75 hrs	GX6.35	D16841
115v	300w	597M	356	3°	75 hrs	GX6.35	D16883
230v	650w	950M	902	5°	750 hrs	GX9.5	D1813
115v	1000w	1049M	1100	5°	750 hrs	GX9.5	D1809
230v	1000w	1017M	1034	5°	750 hrs	GX9.5	D6715

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, 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.

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.

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 to overcome the voltage drop. The following table should be used for indication purposes only:

Searchlight	12v 100w	24v 150w	24v 250w	230v 300w
Cable Size (mm ²)	Distance Max	Distance Max	Distance Max	Distance Max
1.5	2 MTRS	5 MTRS	3 MTRS	228 MTRS
2.5	3 MTRS	8 MTRS	5 MTRS	372 MTRS
4.0	5 MTRS	13 MTRS	8 MTRS	589 MTRS
6.0	7 MTRS	20 MTRS	12 MTRS	919 MTRS
10.0	12 MTRS	34 MTRS	20 MTRS	1538 MTRS

Searchlight	230v 650w	115v 300w	115v 1000w	230v 1000w
Cable Size (mm ²)	Distance Max	Distance Max	Distance Max	Distance Max
1.5	105 MTRS	57 MTRS	17 MTRS	68 MTRS
2.5	171 MTRS	93 MTRS	28 MTRS	111 MTRS
4.0	271 MTRS	147 MTRS	44 MTRS	176 MTRS
6.0	422 MTRS	229 MTRS	69 MTRS	275 MTRS
10.0	707 MTRS	384 MTRS	115 MTRS	460 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/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:
- 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.

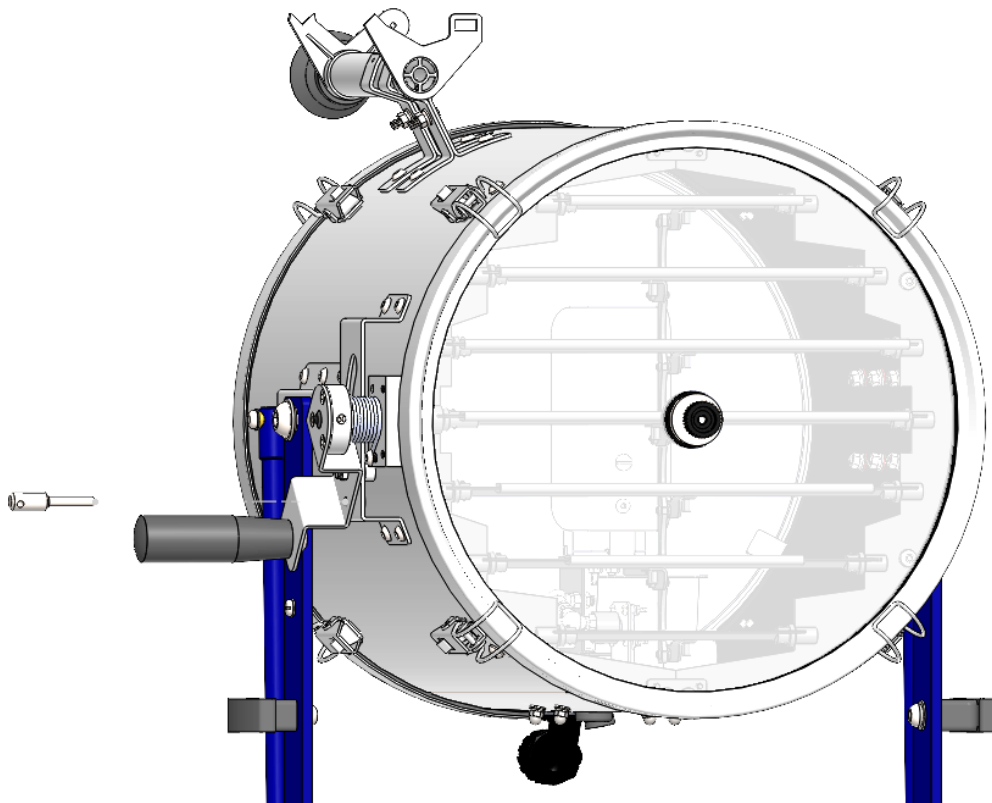
6 - Operating Instructions

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 FSP300 can be used for signalling or as a searchlight.

Searchlight Mode

To use as a searchlight, pull down the signalling lever so that the shutter is in the open position. Remove the shutter stop pin, which is attached to the crutch and insert into the lever guide bracket.

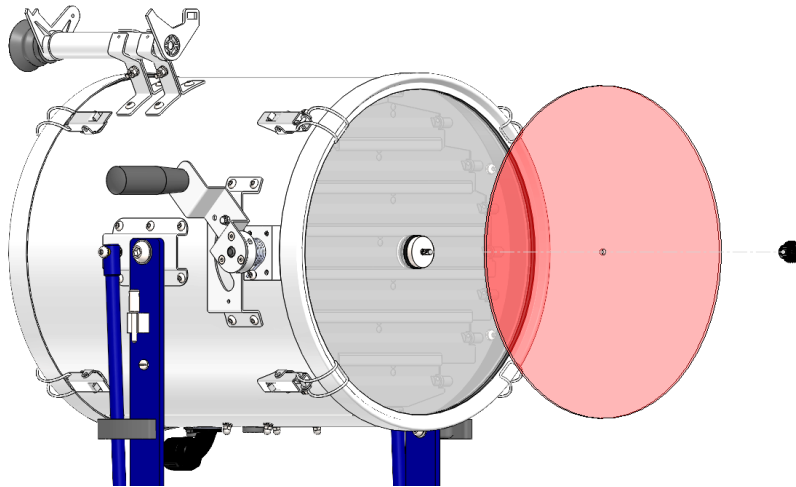


Signalling Mode

To use as a signalling projector, remove the shutter stop pin from the lever guide bracket and clip onto the crutch. All signalling is done manually by operating the signalling handle.

Fitting coloured filters

Unscrew the front glass central plastic thumbwheel, fit the required coloured filter, and re-fit the plastic thumbwheel.



The beam of the searchlight can be adjusted to give a variety of beam types. Using the lampholder focus wheel, the desired beam can be achieved for any application.

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, always, when handling lamps.
- Eye protection must be worn when handling lamps that have been removed from their packaging materials. The protective sleeve should not be removed from the lamp for safety reasons, as there is a remote possibility of the lamp shattering violently, especially if it is subjected to mechanical shock or vibration.
- Ensure that the power rating of the lamp to be fitted is suitable for the lamphouse and power supply equipment.
- Always isolate the equipment from the supply before inserting a lamp.
- Before inserting the lamp ensure that all contacts are clean. Contacts must be renewed at the slightest sign of corrosion. Sanding or filing down corroded areas is not recommended as this will only make the conducting surface between the pin and 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.
- When inserting or removing a lamp, always hold it securely by its' base to prevent breakage between base and bulb.
- The lampholder must not exercise mechanical tensions on the lamp, neither during insertion or operation. Contacts must not discolour during use.
- For safety reasons, the lamp should be replaced once it has reached its' average life, and not later than 1.25 times the stated life. With continuing use, the risk of the lamp exploding increases due to alterations within the quartz.
- Before the protective sleeve is removed, suitable protection must be worn i.e face mask and gloves with wrist protection.
- Never touch the quartz bulb with bare hands, as fingerprints will make the glass cloudy and cause a severe loss of light. This may also cause recrystallisation and thus weaken the bulb material. Should the bulb be inadvertently touched, remove fingerprints with methylated spirit and a clean, soft paper towel. The bulb should then be wiped with distilled water. NOTE: ALWAYS WEAR MASK AND GLOVES DURING CLEANING).
- All packaging and the protective sleeve must be retained for re-use. Whenever removing a lamp, the protective sleeve must always be used for safety reasons.

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

7- Fault Finding

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

Failure of Lamp to ignite.

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 non noticeable check fuse for continuity using a multimeter. If fuse found to be faulty, replace with new part and test equipment again for correctly 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 multimeter. Replace lamp ensuring all precautions and instructions previously outlined in this manual are adhered to.

8 - Maintenance and Servicing

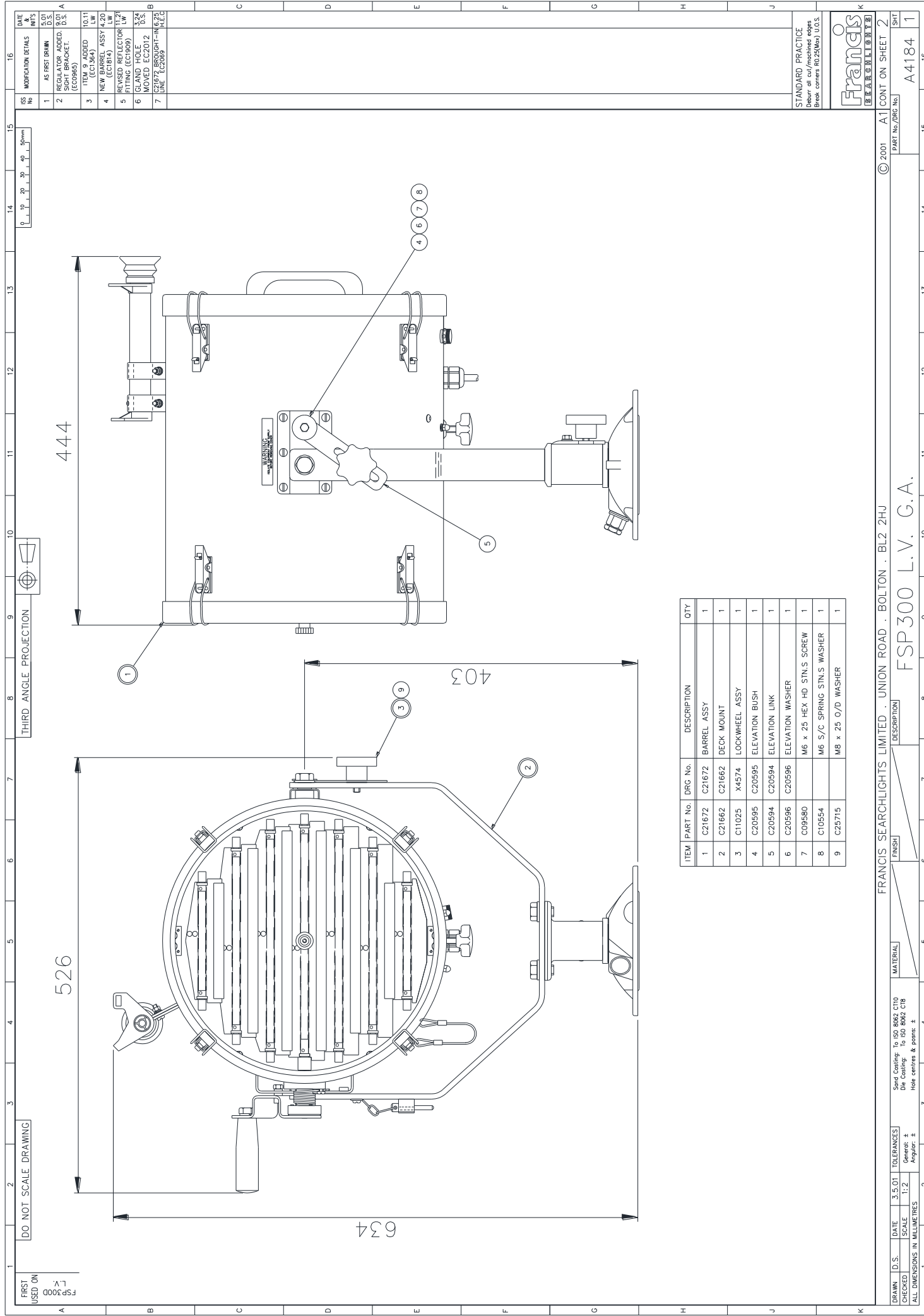
To prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- 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.
 - Check the reflector mounting gaskets. If signs of corrosion or damage are evident, replace, as necessary.
 - Ensure that the lampholder is free from corrosion or other damage.
 - Check the 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).
- Every six months the external movement mechanisms i.e., lockwheels, should be lightly lubricated.

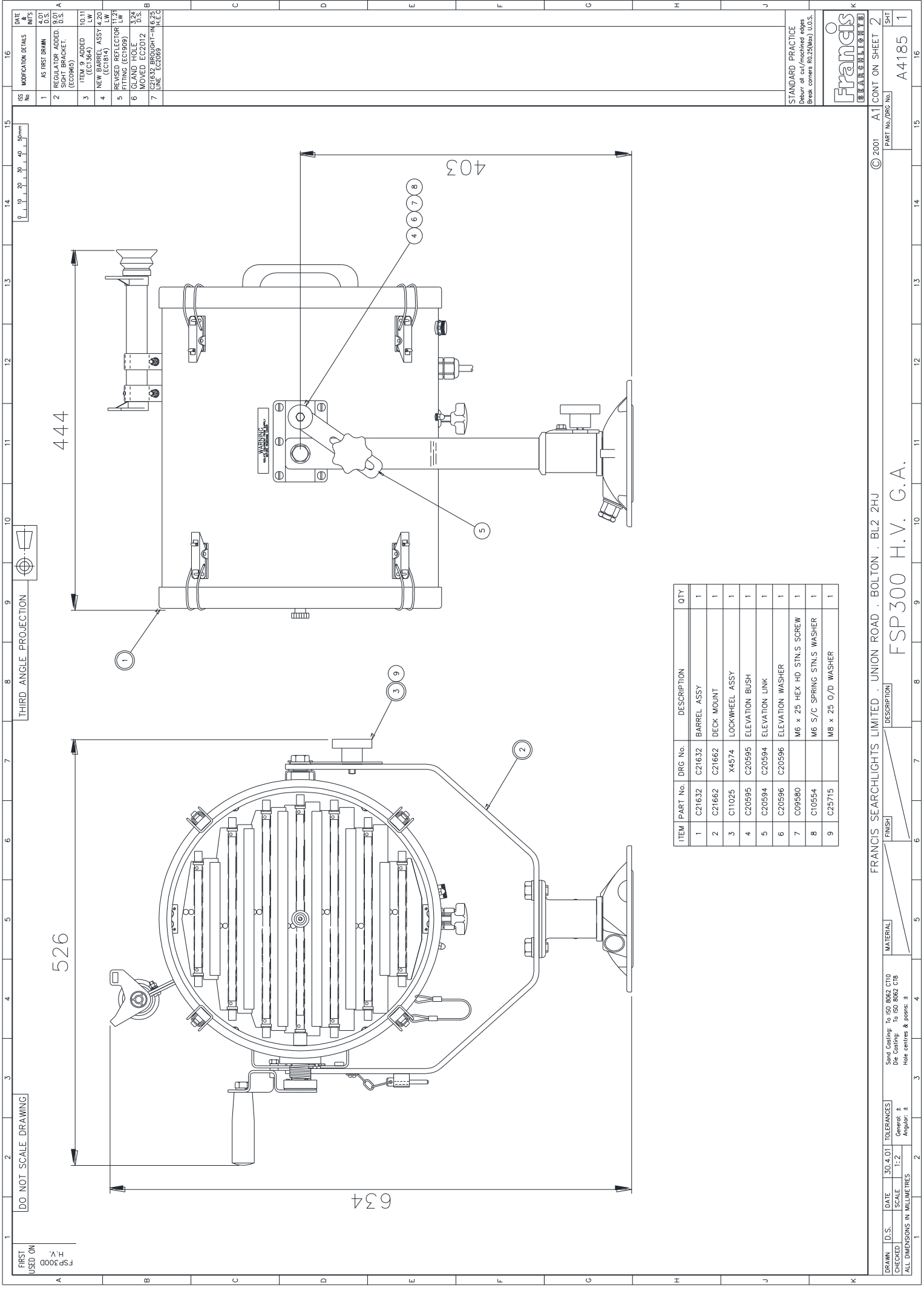
If in any doubt as to the correct servicing procedures to adopt, please contact your distributor/agent or the manufacturer who will be able to advise the best course of action for your product.

9 – General Assemblies

Drawing Number	Description
A4184	FSP300 Deck Low Voltage
A4185	FSP300 Deck High Voltage
A4188	FSP300 Deck High Voltage 300w.
A4186	FSP300 Deck Pedestal Low Voltage
A4187	FSP300 Deck Pedestal High Voltage
A4189	FSP300 Deck Pedestal High Voltage 300w
C28844	Wiring Diagram



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C21672	C21672	BARREL ASSY	1
2	C21662	C21662	DECK MOUNT	1
3	C11025	X4574	LOCKWHEEL ASSY	1
4	C20595	C20595	ELEVATION BUSH	1
5	C20594	C20594	ELEVATION LINK	1
6	C20596	C20596	ELEVATION WASHER	1
7	C09580	M6 x 25 HEX HD STN.S	SCREW	1
8	C10554	M6 S/C SPRING STN.S	WASHER	1
9	C25715	M8 x 25 O/D	WASHER	1



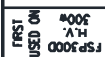
ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C21632	C21632	BARREL ASSY	1
2	C21662	C21662	DECK MOUNT	1
3	C11025	X4574	LOCK WHEEL ASSY	1
4	C20595	C20595	ELEVATION BUSH	1
5	C20594	C20594	ELEVATION LINK	1
6	C20596	C20596	ELEVATION WASHER	1
7	C09580		M6 x 25 HEX HD STNLS SCREW	1
8	C10554		M6 S/C SPRING STNLS WASHER	1
9	C25715		M8 x 25 O/D WASHER	1

ISS No	DATE	MODIFICATION DETAILS
1	AS FIRST DRAWN	
2	REGULATOR ADDED	
3	ITEM 3 ADDED	
4	NEW BARREL ASSY	
5	REVISED REFLECTOR	
6	GLAND HOLE	
7	C21632 BROUGHT IN	

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

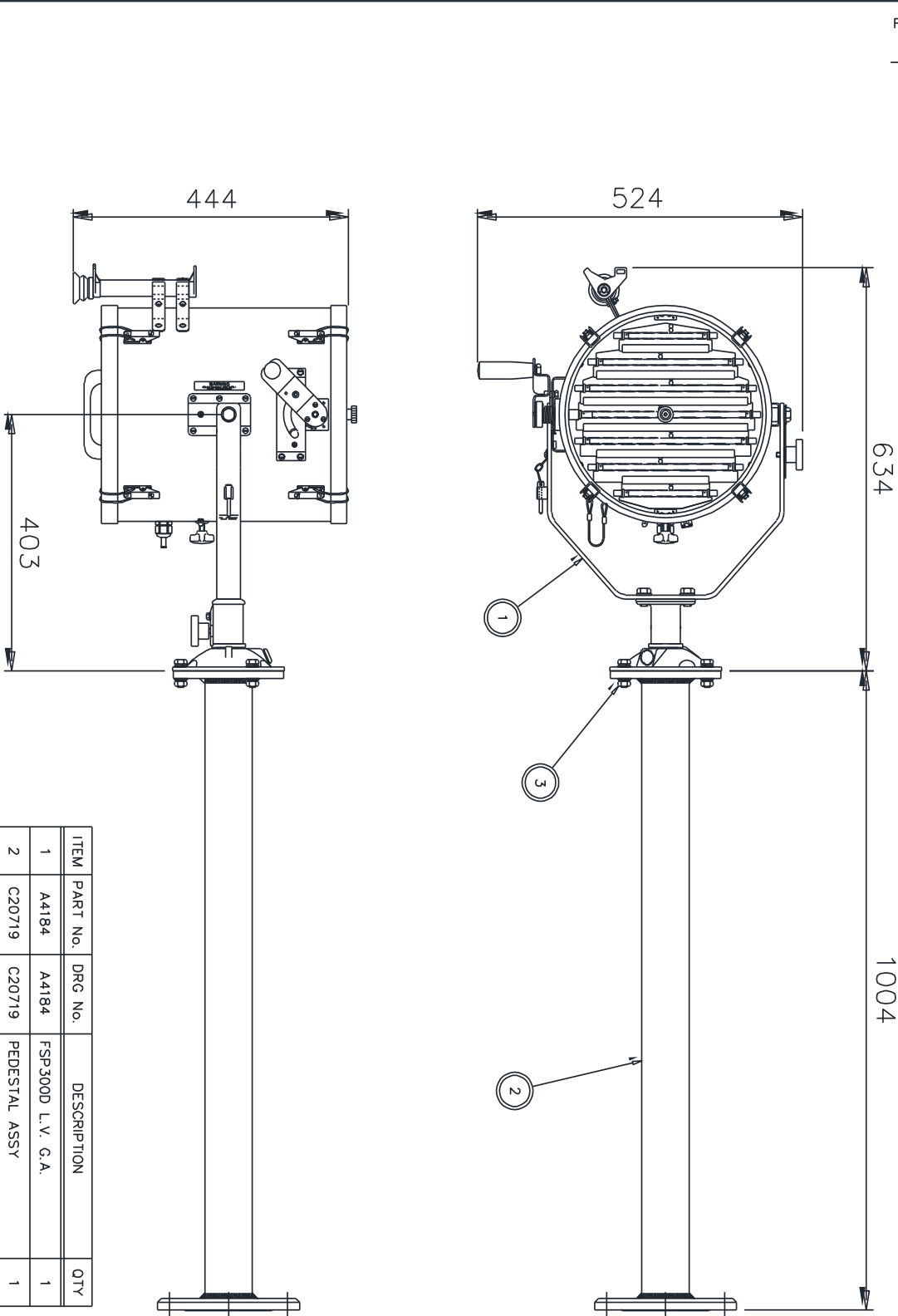
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PART No./DRG No.		
SHT	A4185	1



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C21875	C21875	BARREL ASSY	1
2	C21682	C21682	DECK MOUNT	1
3	C11025	X4574	LOCKWHEEL ASSY	1
4	C20595	C20595	ELEVATION BUSH	1
5	C20594	C20594	ELEVATION LINK	1
6	C20596	C20596	ELEVATION WASHER	1
7	C09580	M6 x 25 HEX HD STAINLESS SCREW		1
8	C10554	M6 S/C SPRING STAINLESS WASHER		1
9	C25715	M8 x 25 O/D WASHER		1

DRAWN		D.S.	DATE	20.9.01	TOLERANCES	Sand Castings to ISO 8002 C110 Die Castings to ISO 8002 C18 Heat treating & surface :		MATERIAL		FINISH		DESCRIPTION		PART No./REV. No.		SHEET
CHECKED			SCALE	1:1.2	General : Angular :											
ALL DIMENSIONS IN MILLIMETRES																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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FSP300 H.V. 300W G.A.																
A4188 1																



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	A4184	A4184	FSP300D L.V. G.A.	1
2	C20719	C20719	PEDESTAL ASSY	1
3	C20747		DECK PED. CONVERSION KIT	1

MODIFICATION DETAILS	DATE & INT'S
1 AS FIRST DRAWN	5.01 D.S.
2 REGULATOR ADDED. SIGHT BRACKET. (EC0985)	9.01 D.S.
3 BROUGHT IN-LINE WITH DETAIL (EC1351)	12.09 LW
4 NEW BARREL ASSY (EC1814)	4.20 LW
5 REUSED REFLECTOR FITTING (EC1909)	11.21 LW
6 GLAND HOLE MOVED EC2012	3.24 D.S.
7 A4184 BROUGHT-IN LINE EC2069	6.25 H.E.C

STANDARD PRACTICE

Deburr all cut/machined edges

Break corners R0.25(Max) U.O.S.

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



ISS No	MODIFICATION DETAILS	DATE & INIT'S
1	AS FIRST DRAWN	4.01 D.S.
2	REGULATOR ADDED. SIGHT BRACKET. (EC0965)	9.01 D.S.
3	BROUGHT IN LINE WITH DETAIL (EC1351)	12.09 LW
4	NEW BARREL ASSY (EC1814)	4.20 LW
5	REVISED REFLECTOR FITTING (EC1909)	11.21 LW
6	GLAND HOLE MOVED EC2012	3.24 D.S.
7	A4185 BROUGHT-IN LINE EC2069	6.25 H.E.C

FIRST USED ON
FSP300DP
H.V.

634

1004

524

444

403

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	A4185	A4185	FSP300D H.V. G.A.	1
2	C20719	C20719	PEDESTAL ASSY	1
3	C20747		DECK PED. CONVERSION KIT	1

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



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DRAWN	D.S.	DATE	4.01	TOLERANCES
CHECKED		SCALE	1:1.5	General: ±
				Angular: ±

Send Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 C18
Hole centres & posits: ±

MATERIAL

FINISH

DESCRIPTION

FSP300DP H.V. G.A.

PART No./DRG No.

A4187

SHT 1

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION



Technical drawing of a traffic light assembly. The drawing shows a top-down view of the light head and a side view of the mounting pole. The light head is circular with a diameter of 524. The mounting pole has a height of 1004. The light head is labeled with a circled '1' pointing to the lens. The mounting pole is labeled with a circled '2' pointing to the pole body and a circled '3' pointing to the mounting bracket. The total height of the assembly is 634.

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	AA188	AA188	FSP 3000 H.V. 300W G.A.	1
2	C20719	C20719	PEDESTAL ASSY	1

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FSP300DP H.V. 300w G.A.

A4189	1
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FIRST USED ON		DO NOT SCALE DRAWING		THIRD ANGLE PROJ						
<div>LAMP</div> <div></div>										
ISS No		MODIFICATION DETAILS							DATE & INITS	
1		AS FIRST DRAWN							1.90 D.S.	
STANDARD PRACTICE Deburr all cut/machined edges Break corners R0.25(Max) U.O.S. TOLERANCES U.O.S: - General: ± 0.25 Angular: ± Hole centres & posns: ± 0.125 Sand Casting: To ISO 8062 CT10 Die Casting: To ISO 8062 C18										
<div>Francis</div> <div>SEARCHLIGHTS</div>										
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DRAWN	D.S.	DATE	28.1.90	MATERIAL	DESCRIPTION		PART No./DRG No.	SHT		
CHECKED		SCALE	1:1			HALOGEN WIRING DIAGRAM		C28844		
ALL DIMENSIONS IN MILLIMETRES				1						

10 – Spare Parts List

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

Part Number	Description
D1813	230v 650w T/H GX9.5 Lamp
D1809	115v 1000w T/H/ GX9.5 Lamp
D6715	230v 1000w T/H GX9.5 Lamp
D16841	230v 300w T/H GX6.35 Lamp
D16883	115v 300w T/H GX6.35 Lamp
D9848	12v 100w T/H GX6.35 Lamp
D14795	24v 150w T/H GX6.35 Lamp
D4695	24v 250w T/H GX6.35 Lamp (Long life)
D9851	24v 250w T/H GX6.35 Lamp
C11025	Lock Wheel Assembly
C02512	Shutter return spring.
C01461	Eyepiece
C28955	Filter Front glass
C20567	Front glass & Rear plate gasket
C05403	Reflector
C21644	Lampholder assembly complete GX9.5
C21671	Lampholder assembly complete GX6.35
C21871	Lampholder assembly complete GX6.35 300w
C08827	Lampholder spring
C09888	Focus wheel Assembly.
C03022	Lampholder GX9.5
C16878	Lampholder GX6.35
C10168	'O' ring seal Deck base
C20634	'O' ring seal Pedestal base
C21535	Infra-red glass
C22268	Breather
C28956	Red Filter
C28957	Green Filter
C28958	Blue Filter
C30154	Orange Filter

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 always quote searchlight model and serial number. This will enable a fast response to your spares' requirements.