



## User Instruction & Installation Manual

### FL710 Suez Tungsten Halogen Searchlight



**Product Reference Number:**

**A2703 FL710 Suez Tungsten Halogen Searchlight**

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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 FL 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.**

- 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 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 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 manufacturers technical data when dealing with lamps.**

### 3 - Technical Information

This product has been designed to operate in accordance with the product specification. The FL710 Suez searchlight has the following features:

- All marine grade materials and fixings.
- Parabolic split glass reflector.
- Powder coated and stove enamel paint finish.
- 360° horizontal rotation.
- Vertical movement +40° to -35°.
- Toughened super clear Optiwhite front glass.
- Gas proofed for use on tankers.
- Fitted with a pressure relief valve & exhaust cock for connection to a flexible hose.
- Lamp changeover system in event of lamp failure.
- Single beam 5-10° split beam of two 5° sections with 0-10° dark centre.
- Searchlight weight 38.6Kgs.
- Sealing – IP56.
- Lamp life 400 hours.

The searchlight also performs to the following optical data:

<b>Single Beam</b>				<b>Split Beam</b>				
Lamp	Vert.	P.B.C.P.	Range Metres	Hor.	Vert.	Centre Angle	P.B.C.P.	Range Metres
D1823	2.5°	4,945,000	2,212	5°	2.5°	0-10°	2,472,500	1,572
D9843	3°	5,796,000	2,407	5°	3°	0-10°	2,898,000	1,702
D4604	3°	3,719,000	1,928	6°	3°	0-10°	1,859,500	1,364
D22559	4°	4,821,000	2,196	6°	4°	0-10°	2,410,950	1,553

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.**

**Remove the foam transit packing piece on reflector prior to operation.**

### **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 and 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.

## 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 FL	115v 2Kw	115v 3Kw	220v 2Kw	240v 2Kw	240v 3Kw
Cable Size (mm <sup>2</sup> )	Distance Max	Distance Max	Distance Max	Distance Max	Distance Max
1.5	8 MTRS	5 MTRS	31 MTRS	37 MTRS	24 MTRS
2.5	14 MTRS	9 MTRS	51 MTRS	60 MTRS	40 MTRS
4	22 MTRS	14 MTRS	88 MTRS	96 MTRS	64 MTRS
6	34 MTRS	23 MTRS	125 MTRS	150 MTRS	99 MTRS
10	57 MTRS	38 MTRS	210 MTRS	250 MTRS	167 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 beam of the searchlight can be adjusted to give a variety of beam types. Using the external focus wheel situated to the rear of the searchlight, 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 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 manufacturers 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 lamp holder.
- Check the lampholder is in a good dry condition. Never allow water to collect in the lamp fitting or contact with the lamp.

To fit the lamp:

- Unfasten the latches on the front of the searchlight, remove the bezel and glass and store in a safe place.
- For easier access, the light shield/spill ring may be removed by undoing the fasteners.
- Using a cloth to prevent the fingers touching the lamp, position the two pins above the holes in the lamp holder.
- Gently push the lamp into the lamp holder.
- Replace the light shield/spill ring and front bezel assembly, ensuring the latches are securely fastened.

## 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 multimeter, 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 1000w Tungsten halogen lamp:  
Voltage reading = 240v; Amps reading = 4 amps

Therefore, Wattage =  $240 \times 4 = 960$  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 lam.

*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 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 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 very 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).

**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>
A2703	FL710 Suez 2/3Kw T/H G38 General Assembly



## 10 - Spare Parts List

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

<b>Part Number</b>	<b>Description</b>
D1823	115v 2Kw G38 T/H Lamp
D9843	115v 3Kw G38 T/H Lamp
D4604	220v 2Kw G38 T/H Lamp
D22559	220v 3Kw G38 T/H Lamp
C11025-01	Lock Wheel Assembly
C20904-01	Focus handle
C12365-00	Switch
C15394-00	Switch Knob
C14320-00	Breather
C03818-00	Stop cock & handle.
C02067-00	Stop cock hose adaptor male.
C04036-00	Stop cock hose adaptor female.
C14239-00	Rear handle
C01964-00	Reflector
C09868-00	Lamp holder
C21252-00	Front glass
C21253-00	Front glass gasket
C20943-00	Lifting handle
C22003-00	Clamping lever (Base)
C20058-00	32A 220v Switch Socket
C20354-00	16A 220v Switch Socket
C20060-00	32A 115v Switch Socket
C20059-00	32A 220v Interlocking Plug
C20355-00	16A 220v Interlocking Plug
C20061-00	32A 115v Interlocking Plug
C02042-00	Waterproof Cover

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.