# TABLE OF CONTENTS

## INTRODUCTION
- Definitions of Symbols ................................................................. 3
- Equipment Disposal ........................................................................ 3
- IEC Classifications ........................................................................ 3

## TECHNICAL DATA ........................................................................... 4
## TABLE OF PRODUCT SYMBOLS ......................................................... 4

## FAMILIARIZATION
- All Models ...................................................................................... 5-6
- Optional Remote Activation ............................................................. 6
- Track Lights .................................................................................... 7
- Ceiling Lights ................................................................................ 8
- Wall & Cabinet Mounted Lights ..................................................... 9

## OPERATION .................................................................................. 10

## MAINTENANCE & ADJUSTMENTS
- Cleaning Plastic Shield (All Models) ............................................. 11
- Cleaning Reflector (All Models) .................................................... 12
- Focusing Light (All Models) .......................................................... 13
- Spring Tension Adjustment (All Models) ........................................ 14
- Arm Friction Adjustment (All Models) ........................................... 14
- Bushing Lubrication (LFII Unit Mount Light) ............................... 14
- Yoke Pivot Friction Adjustment (All Models) ................................. 15
- Knuckle Elbow Friction Adjustment (Wall & Cabinet Mounted Lights) ........................................................................ 15
- Knuckle Joint Adjustment (LFII Unit Mount Light) ......................... 16
- 3rd-Axis Friction Adjustment (Ceiling & Track Lights) .................. 16
- Single & Dual Track Mounted Light's Trolley Adjustment ............... 17
- Arm Joint Tension (Ceiling & Track Lights) ................................... 17
- Adjustment of Column Stop Position (Ceiling & Track Lights) ....... 17

## PARTS REPLACEMENT ................................................................... 18
INTRODUCTION

Definitions of Symbols
The following symbols may be used throughout this manual:

CAUTION. Failure to carefully follow the described procedure may result in damage to the equipment.

WARNING. Failure to carefully follow the described procedure may result in damage to the equipment and the operator.

Risk of electrical shock present. Make sure power is disconnected before attempting this procedure.

Obtaining Technical Literature: The manufacturer will make available on request circuit diagrams, component parts lists, descriptions, calibration instructions or other information that will assist the user’s technical personnel to carry out repair and replacement of serviceable equipment.

Equipment Disposal: No risks are present concerning the disposal of this type of equipment. Whenever possible, the manufacturer strongly recommends the recycling or reuse of all material used in the manufacture of this product.

IEC Classification

These products comply with the following product regulatory standards:
– UL 2601-1, EN 60601-1
– CAN/CSA C22.2 No. 601-1, M97

The dental light is classified as a Class 1 product under rule 1 of Annex IX of the MDD 93/42/EEC.

Degree of protection against electrical shock
– Type B Equipment
– Class 1
– IPX 4

Degree of protection against ingress of liquid
Ordinary

Mode of Operation
(INT) Intermittent- 30 seconds ON, 3 minutes OFF

WARNING: Only authorized service technicians should attempt to service this equipment. Use of other than authorized technicians will void the warranty.
Safety Notes
This unit is not to be used in rooms where an explosion hazard exists.
The pre-installation must be performed according to the requirements in our ‘Pre-installation Instructions’. As manufacturers of electro-medical products we can assume responsibility for safety-related performance of the equipment only if maintenance, repair and modifications are carried out only by us or agencies we have authorized for this purpose, and if components affecting safe operation of the unit that may be needed are replaced with original parts.
We suggest that you request a certificate showing the nature and extent of the work performed, from those who carry out such work, and specify that the certificate show any changes in rated parameters or working ranges, as well as the date, the name of the firm and a signature.
For reasons of product safety, only original Pelton & Crane accessories approved for this product, or accessories from third parties which have been released by Pelton & Crane may be used. It is the user’s risk when using non-released accessories.

TABLE OF PRODUCT SYMBOLS

- OFF
- ON
- Ground
- Alternating Current
- Intensity control
- HOT SURFACE
- Type B equipment (specifies degree of protection against electric shock)
- Attention: consult accompanying documents
- IPX4 Protected against splashing water

TECHNICAL DATA

Primary Specifications for Transformer

<table>
<thead>
<tr>
<th>Volts</th>
<th>Cycles</th>
<th>Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>117 VAC</td>
<td>60 Hz</td>
<td>1.5 A</td>
</tr>
<tr>
<td>240 VAC</td>
<td>50-60 Hz</td>
<td>.75 A</td>
</tr>
</tbody>
</table>

Secondary Power Supply

<table>
<thead>
<tr>
<th>Volts</th>
<th>Cycles</th>
<th>Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>23/21/19 VAC</td>
<td>50/60 HZ</td>
<td>5.5/5/4.5 A</td>
</tr>
</tbody>
</table>
Light Fantastic® II & III System Overview

**LFII & LFIII Unit & Chair Mount**

- Intensity Control Switch
- ON/OFF Toggle Switch
- Light Handle
- Light Reflector

**LFCBIi, LFWii, LFCBIi & LFWii Cabinet & Wall Mount**

- Intensity Control Switch
- ON/OFF Toggle Switch
- Light Handle
- Light Reflector

**LFCIII, LFCIII-D, LFCII & LFCII-D Ceiling Mount**

- Intensity Control
- ON/OFF Toggle Switch
- Light Handle
- Light Reflector

**LFTIII, LFTII-D, LFTII & LFTII-D Track Mount**

- Intensity Control
- ON/OFF Toggle Switch
- Light Handle
- Light Reflector
FAMILIARIZATION (All Models)

CAUTION: The handle and the light head become very hot during operation. Do not touch these areas while light is functioning.

WARNING: The plastic shields prevent water spray from splashing on the glass reflector and lamp. Do not operate light unless plastic shields are in place. Shields provide protection in case of lamp explosion.

Reflector: The dichroic-coated reflector reflects desired light and allows unwanted heat to pass through the back. The shape of the reflector collects light from a wide angle and produces a high intensity glare free pattern approximately 3” (7.6 cm) to 8” (20.3 cm) wide of distances from 18” (45.7 cm) to 36” (91.4 cm). Each part of the reflector becomes a light source, which contributes to the total pattern. The large size of usable pattern requires less light head repositioning during an operation. The reflector also offers other demonstrative advantages such as greater energy efficiency, cooler light and increased lamp life.

Lamp: The miniature quartz halogen lamp lasts many times the life of conventional lamps. Its self-cleaning process maintains constant light intensity. The lamp may be replaced in seconds and requires no tools. Refer to the “Maintenance and Adjustments” section for lamp replacement.

Optional Remote Activation: (Models: LFC, LFT, LFW & LFCB)

The optional electronic touch pad allows the user to activate the light by depressing the light symbol button. The toggle switch on the light head must be in the ON position for this function to operate. Remote activation is not available for the dual track, dual ceiling or the 240 VAC units.

NOTE: The touch pad will operate only if the power supply has been installed and connected and is only applicable with the Pelton & Crane 1500 and 2005 chairs.
The track lights answer the demand for precise oral cavity lighting required for supine operative procedures. The dual track light is offered for dentists needing two intraoral lights. One light may be placed over the head and the other in front to overcome difficult lighting conditions. Variable length columns are available to accommodate 8’ (2.44 m) to 13’ (3.97 m) ceiling height installations.

**Track Assembly:** The track assembly consists of a plywood pallet, an aluminum track channel, aluminum dress covers, panels and end caps. Proper installation to ceiling substructures will ensure drift-free and vibration-free operation of the light head.

**Transformer Box:** A fuse located on the end of the transformer is provided for circuit protection of the light. The single track light requires a 3AG SLOW BLOW, 2 amp, 125 Volt fuse (little-fuse #313002/S). The dual track light requires a 3AG SLOW BLOW, 4 amp, 125 Volt fuse (little-fuse #313004/S).

**Trolley:** The trolley rolls freely at the touch of the hand and serves as the portable and positive mount for the light column through which the electrical wiring passes.

**Vertical Column:** The column length and associated power cable determine height of light and are the only two variable factors with different ceiling heights. If light is moved to a new office with a different ceiling height, a new column and associated power cable may be purchased to easily modify the light.

**Column Stop:** The entire arm and light may be rotated approximately 322° with respect to the column. Location of the column stop may be varied to provide optimum operating positions. To adjust, refer to the "Maintenance & Adjustments" section of this manual.

**CAUTION:** Do not rotate arm more than 360° with respect to the column or twisting damage to the internal wiring may result.
The ceiling lights answer the demand for precise oral cavity lighting required for supine operative procedures. The dual ceiling light is offered for dentists needing two intraoral lights. One light may be placed over the head and the other in front to overcome difficult lighting conditions. Variable length columns are available to accommodate 8’ (2.44 m) to 13’ (3.97 m) ceiling height installations.

Transformer & Fuse: A fuse located on the end of the transformer is provided for circuit protection of the light. The single ceiling light requires a 3AG SLOW BLOW, 2 amp, 125 Volt fuse (little-fuse #313002/S). The dual ceiling light requires a 3AG SLOW BLOW, 2 amp, 125 Volt fuse (little-fuse #313004/S) in each arm.

Vertical Column: The column length and associated power cable determine height of light and are the only two variable factors with different ceiling heights. If light is moved to a new office with a different ceiling height, a new column and associated power cable may be purchased to easily modify the light.

Column Stop: The entire arm and light may be rotated approximately 322° with respect to the column. Location of the column stop may be varied to provide optimum operating positions.

CAUTION: Do not rotate arm more than 360° with respect to the column or twisting damage to the internal wiring may result.
**FAMILIARIZATION (Wall & Cabinet Mounted Light)**

**LFCB & LFW**
Two models of the wall & cabinet mounted light are available. They come with **two arm** sections plus a down arm section at the front knuckle. It extends 59" (149.9 cm) from the mounting box to the centerline of the light head handle.

**Transformer Box & Fuse:** A fuse located on the end of the transformer is provided for circuit protection of the light. The wall mounted light requires a 3AG SLOW BLOW, 2 amp, 125 Volt fuse (little-fuse #313002/S).

**Column Stop:** The entire arm and light may be rotated approximately 322° with respect to the column. Location of the column stop may be varied to provide optimum operating positions. To adjust, refer to the "Maintenance & Adjustments" section of this manual.

**CAUTION:** Do not rotate arm more than 360° with respect to the column or twisting damage to the internal wiring may result.
OPERATION

CAUTION: Do not force and/or rotate arm more than 360° with respect to the column or the head with respect to the arm. Doing so could cause damage to the mechanical stop(s) and/or the wiring, resulting in potential twisting damage and/or shorting of the internal wiring.

Position light head approximately 18" (45.7 cm) to 36" (91.4 cm) from the oral cavity. Reposition light head as required during the operation procedure.

NOTE: The lamp focus is factory set for an optimum pattern at distances of 18" (45.7 cm) to 36" (91.4 cm). If further focusing is required, refer to the 'Maintenance and Adjustments' section, Focusing Lamp.

Set intensity control for desired intensity.

NOTE: The lamp life may be extended, in addition to conserving energy, when the intensity control is used on the lowest setting.

Activate the light by switching toggle to right to turn light on. Light will remain on until operator switches the toggle to the middle position to turn light off. Turn light off when illumination is not required. The lamp is affected only by operating time and not by turning it on or off. Leave light off when possible for longer lamp life, less power consumption and cooler operation.

Optional Remote Activation: To activate the light, switch the ON/OFF toggle on the light head to the ON position. Depress the remote activation touchpad light symbol button to activate light. Light will remain on until the button is depressed to deactivate the light. The light's ON/OFF toggle must be ON for this function to operate.
Cleaning Plastic Shields (All Models)

The LF has two plastic shields. Both plastic shields may be removed for cleaning. To remove plastic shields, the following procedure should be performed:

- Open rear of light by depressing small pin on side of light frame.
- Gently squeeze one side of plastic shield to be cleaned until edge is inside the frame retaining edge.
- Remove by pushing plastic shield through back side of light.
- Wash the shield in a mild detergent and water, and dry with soft cloth. The plastic shield is unbreakable but may be easily scratched.
- Replace plastic shield by placing one side of plastic shield in position behind the frame retaining edge with edge of shield against retaining bosses. Push other side straight down until shield snaps in place.

**WARNING:** To avoid burning fingers or hand, ensure lamp is off and cool.

**WARNING:** Do not operate light unless plastic shields are in place. Shields provide protection in case of lamp explosion.

**WARNING:** Dispersion plate/reflector should be checked following cleaning to ensure proper placement and fit.
Cleaning Reflector (All Models)

The LF is a precise optical instrument that when properly cared for will provide years of trouble-free operation. The front of the reflector should be cleaned no more than every six months for optimum performance. For normal cleaning, the following procedure should be performed:

- Saturate clean, soft, lint-free cloth with 50% of isopropyl alcohol and 50% of distilled water.
- Wipe reflector in lengthwise direction only (*), never from side to side.
- Use clean, dry cloth and wipe lightly in the same direction to remove all alcohol.

The rear surface of the reflector may be cleaned as necessary using a soft cloth dampened with a mild detergent. Take care not to permit cleaning solution to contact front surface.

CAUTION: Do not use abrasives, chlorine or ammonia when cleaning reflector. Do not rub heavily. Do not clean when reflector is hot. Do not soak in cleaning solution. Do not routinely clean front of reflector at more frequent intervals than specified. Failure to comply with any of the above cautions can result in degradation of the optical coating.
MAINTENANCE & ADJUSTMENT

Focusing Light (All Models)

To focus the lamp, the following procedure should be performed:

NOTE: The light focus is factory set for an optimum pattern 27” (68.6 cm) from the oral cavity. This results in an excellent pattern in an 18” (45.7 cm) to 36” (91.4 cm) range from the oral cavity. The lamp may also be refocused for an optimum pattern at other operating distances.

Turn two screws on front of light clockwise until both screws stop. The patterns will now be partially overlapped as shown in Pattern A.

Turn each screw counterclockwise equally 1-1/2 turns to focus light. The patterns will be superimposed as shown in Pattern B.

Inspect for optimum pattern by blocking out one half of the light. If the pattern appears to shift, further adjustment is required. Otherwise, focusing of the lamp is completed.

If patterns are irregular as shown in Pattern C, turn only one screw until the patterns are superimposed.
There are two adjustments that can be made after the light is installed and all wiring connections are completed.

**Spring Tension Adjustment (All Models)**

Over a period of time and usage, spring tension adjustment to the rear arm may be necessary if the arm drifts downward.

*NOTE: The spring lift force is sensitive to screw rotation. When adjusting, use 1/4 turn increments.*

1. Straighten rear arm and insert a 5/16” handle-hex wrench through hole in rear arm collar.
2. Turn wrench clockwise to increase lift force of arm or counterclockwise to decrease lift force.

**Arm Friction Adjustment (All Models)**

*NOTE: Once spring is counterbalanced, friction adjustment may be necessary. If up-drift or down-drift occurs, tighten set screw (clockwise) with a 9/64” hex wrench through the friction adjustment hole. Do not over tighten.*

**Bushing Lubrication Model: (LFII & LFIII Unit Mount Light Only)**

Apply a thin coat of lubrication to outside of bushing surface every 12 months. Lift light column to apply lubrication.

*CAUTION: Failure to apply lubricant may cause bushing to bind in tube and unscrew itself from the rear arm to light.*

**Structural Inspection**

Periodically, inspect the light to ensure that all structural components are intact and that all fasteners are tight.
**MAINTENANCE & ADJUSTMENT**

**Yoke Pivot Friction Adjustment**  
*(All Models)*

If the light head pivots too freely, friction adjustment can be made using the following procedure:

1. Rotate head position and remove the four screws holding yoke cap in place. Remove yoke cap.
2. Remove the two screws holding glass guard to frame.
3. Push pivot pin in and remove reflector and glass guard assembly. Retain pivot pin.
4. Lift out frame assembly. Loosen set screw on each side of frame.
5. Turn black pivot screw clockwise to increase stiffness. Turn counterclockwise to decrease stiffness.
6. Retighten set screws. Take care not to over tighten. End of screw should slightly rest against flat side of black pivot screw.

Reinstall frame assembly, reflector, glass guard assembly and cap, using care not to pinch any electrical wiring.

**Knuckle/Elbow Friction Adjustment**  
*(LFW & LFCB)*

The light head can be adjusted from side to side or up and down according to the user’s preference. This can be easily accomplished by using the following procedure.

1. Using an 1/8” allen wrench, adjust light head swivel tension by turning screw clockwise to increase tension and counterclockwise to decrease tension.
2. Adjust light head rotation in the axis shown.
MAINTENANCE & ADJUSTMENT

Knuckle Joint Adjustment
(Model: LFII & LFIII Unit Light)
1. Loosen the two set screws.
2. Rotate snubbing pins clockwise to increase knuckle joint tension and counterclockwise to decrease tension.
*NOTE: Flat side of snubbing pins should always be in line with set screws after completing adjustment as shown.
3. Retighten set screws.

3rd-Axis Friction Adjustment
(Model: LFC & LFT)
The light head can be adjusted from side to side or up and down according to the user’s preference. This can be easily accomplished by using the following procedure.
1. Using a 3/32" hex wrench, tighten the elbow’s set screw securely. Turn elbow counterclockwise until it completely stops. Loosen the elbow set screw and turn elbow clockwise (A) until the front right corner of the elbow is aligned with the drop arm’s left front corner (B). Tighten set screw securely.
2. Using a 1/8" hex wrench, turn the 10/32 button screw on elbow assembly clockwise to tighten tension on 3rd axis rotation or counterclockwise to loosen tension.
MAINTENANCE AND ADJUSTMENT

Single & Dual Track Lights - Trolley Adjustments

If factory-adjusted side rollers become misaligned in shipping, adjustment will be necessary before installing the two side panels (A).

1. Loosen the two adjusting plate screws (B) on adjusting plates (C).
2. Position side rollers (D) against channel (E) and tighten adjusting screws.
3. Inspect freedom of trolley (F) movement and repeat necessary adjustments.
4. Loosen cord bracket screws (G) and center cord bracket (H) between dress covers (I). Tighten cord bracket screws.

Arm Joint Stiffness Adjustments - Ceiling Lights & Track Lights

5. Remove set screw (J).
6. Rotate arm counterclockwise (view up) to decrease joint stiffness or clockwise to increase joint stiffness.
   Reinstall set screw.

Adjustment of Column Stop Position - Ceiling Lights & Track Lights

NOTE: Column stop adjustment must be performed before installation of roll pin (K).

   Rotate arm clockwise (view up) until it stops.
7. To move stop position, remove two locking set screws (L) and loosen collar by turning counterclockwise until stop is in desired position.
   Reinstall the two set screws.

WARNING: Set screws must be tightened securely and roll pin installed to prevent column from unscrewing during operation. Failure to install roll pin and tighten set screws securely could result in light falling from ceiling.
Replacing Lamp (All Models)
To replace the lamp, the following procedure should be performed:

NOTE: For optimum performance and extended lamp life, use only Pelton & Crane lamp (part no. 017133) identified by Pelton & Crane on the ceramic ends.

WARNING: To avoid burning fingers or hand, ensure lamp is off and cool.

Open rear of light by depressing small pin on side of light frame. Rotate lamp 90° so edge can be held with fingers.

Hold lamp with left hand and press lever to right side with right hand. Remove lamp by gently pulling out.

CAUTION: Use tissue to hold new lamp while installing. Do not touch new lamp with bare fingers. Contamination may shorten lamp life. If touched, clean with isopropyl alcohol and dry with clean cloth to remove fingerprints.

Install replacement lamp with exhaust tip away from reflector. Close reflector.