Operation Manual

Fiber Optic Illuminator

FOI-150-UL
FOI-150-REM-UL

Owner's Record

Model Number

_____

Serial Number

_____

Date Purchased

_____

Location Purchased

_____

Contents

Symbols Used in this Manual or on the Device

This symbol is intended to alert the user to the presence of un-insulated “dangerous” voltage within the product s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence ofi mportant operating and servicing (maintenance) instructions.

This symbol is intended to alert the user to the presence of hot surfaces that could result in burns to the user.

Warnings

The FOI-UL is to be operated at 120V 60Hz. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

People who use or service this unit should familiarize themselves with this manual and must ensure that they understand all the important safety requirements.

This unit may generate and transmit and/or radiate electromagnetic energy. Do not place the device next to other sensitive electronic devices. Failure to do so could result in errant operation of the nearby device.

This unit is not suitable for patient contact. This unit should not be used near flammable gases such as anesthetics, oxygen, or certain disinfectants.

The lamp and items in its immediate vicinity can reach high temperatures which could cause burns on contact. Before attempting to open the lamp replacement door, make sure the unit has been turned offand power has been removed for a minimum of 15 minutes. Never attempt to operate the unit with the lamp replacement door removed.

Do not look directly into the fiber optic port when the unit is powered and there is no fiber optic cable installed as the high intensity focused beam ofl ight may cause eye damage.

Unit contains potentially lethal voltages – observe all safety procedures set forth in this manual. Failure to do so could result in serious injury or death.

Do not use unapproved fiber optic light guides (such as any form of plastic fibers) as they may not be suitable for the high temperatures generated by the focused beam of high intensity light and could cause a fire.

Do not block the cooling vents as this could result in fire.

Use only approved parts (lamps, fuses, etc.) as failure to do so could result in fire. Do not make any technical modifications to the unit.

Do not operate iff an is not functioning correctly.

Do not place on or near combustible or flammable materials – including gases such as oxygen and anesthetics.

Do not remove safety labels.

Do not operate ifl iquid spills on unit and immediately remove power to the unit iffl uid is spilled on unit.

Do not attempt servicing the unit beyond the procedures described in this manual.

Allow unit time to cool before attempting to replace a broken lamp – failure to observe this warning could result in burns.

To disconnect the power cord, grasp the plug itself – never pull the cord itself as this can cause internal damage to the cord.

One blade of the power plug is slightly wider than the other and is designed to fit into the power outlet in only one orientation.

Intended Use

The FOI-150-UL and FOI-150-REM-UL are quartz halogen based fiber optic illuminators designed exclusively to transmit light into fiber optic cables made using high temperature borosilicate glass fibers. It is intended primarily to be used by trained professionals to provide various forms ofi llumination to microscopes and other imaging systems.

It is not intended for home or consumer use. It is intended for indoor use only. The unit is not waterproof and should not be used in any location which will expose it to liquids.

Primary Safety Features

The unit is housed in a metal enclosure designed to prevent the user from being able to access any unsafe voltages. The enclosure and cooling system is also designed to maintain the exterior surfaces at a safe temperature.

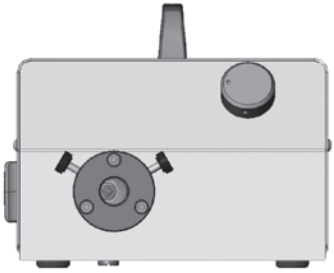
The unit contains an integral filter that blocks a portion of the infrared and ultraviolet energy that is generated by the lamp. This filter may be removed by the user for specific applications, but the user is cautioned that, in doing so, the level of heat generated will increase and the eye hazard associated with inadvertent viewing of the focused beam ofl ight will increase.

The unit contains a bimetallic over-temperature protection device which is designed to shut the unit down in the event internal temperatures exceed a normal level.

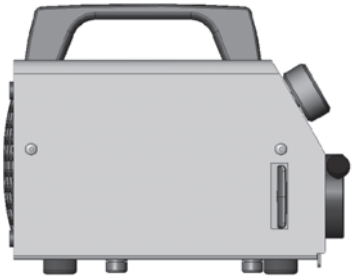
The unit contains a cooling fan whose operation is essential to maintain safe operation.

Input power to the unit is fed through a dual fused input block.

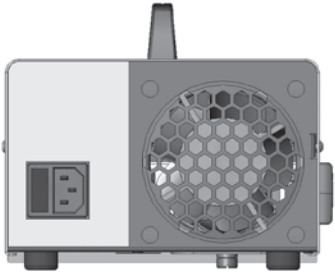
Disconnect power cord if unit is to be left unattended for a long period of time.



Front Panel



Side Panel



Rear Panel

Before You Get Started

Ensure the lamp has not been dislodged from the lamp holder during shipment by opening the lamp replacement door and visually inspecting the lamp. It should fit symmetrically within the lamp holder.

Attach An Approved Fiber Optic Cable

Approved fiber optic cables are designed to be seated into the FOI-NOSEPIECE and locked into place using the two socket head cap screws in the FOI-NOSEPIECE.

Attach to Power

The FOI-150-UL and FOI-150-UL-REM are designed to operate from USA Standard grounded and polarized 120 VAC, 60 Hertz power outlets. Do not operate without a functional grounding pin and polarizing feature. Remove power from unit before performing any servicing procedures.

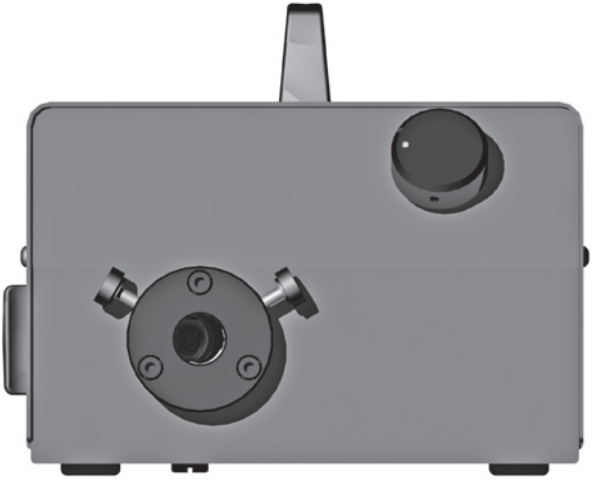
Basic Operation

Turn the unit on by rotating the front panel control knob clockwise. The unit will come up to power slowly to prevent thermal shock to the lamp. Set the intensity control at the desired intensity. Verify proper fan operation.

NOTE: Remove power from unit before performing any servicing procedures.

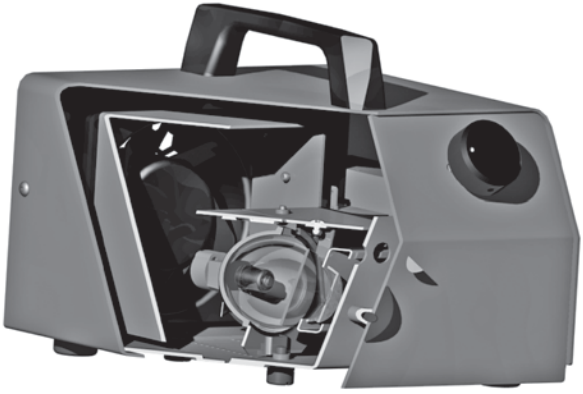
Replacing the Nosepiece

Replacing the nosepiece may become necessary if you want to use a fiber optic cable that has a non-standard ferrule diameter / shape. To replace the nosepiece: (3) socket head cap screws hold the fiber optic port (nosepiece) and the front panel to the main chassis. Remove these screws. Insert screws into the replacement nosepiece and reattach into the fixed pem nuts in the chassis.



Replacing or Changing the Internal IR/UV Filter

During manufacturing an IR/UV filter is installed inside the unit. This helps to reduce normally undesirable energy from entering the light guide. It also serves to reduce the heat load on secondary filters which are likely to crack if the IR/UV filter is not installed. For certain applications it may be desirable to remove the IR/UV filter. This filter can be accessed by removing the lamp (see lamp replacement) and pulling the filter out ofi ts spring clip holder. See the illustration below for the precise location of the IR/UV filter.



Install Secondary Filter Accessories

This unit is set up to receive secondary (color, daylight, neutral density) filters via a port in the forward left-hand panel. Install the filter glass into the filter holder. This filter holder slides into a filter guide rail. If the filter guide rail has not been factory installed it can be simply installed by (a) removing the cover, (b) removing the z-flap that blocks the filter input port and (c) installing the filter guide bracket using the same hardware as was used to hold the z-bracket. Following this, replace the cover. Your unit will now be set up to receive secondary filters.

It is recommended that an approved IR/UV filter be in place when using secondary filters since most secondary filters cannot handle the extreme heat of the focused beam ofl ight without breaking unless the IR/UV filter is present to reduce the heat load.

Replacing a Broken Fan

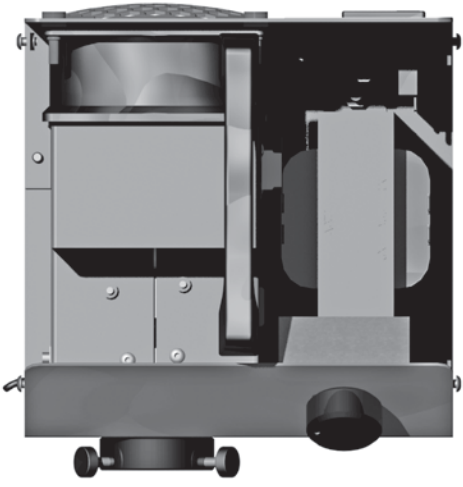
The fan is installed using vibration isolating rubber fan mounts. These mounts have a two step position, one that snaps into the fan itself and one that snaps into the chassis. This ensures that an even space is maintained between the fan and the chassis.

To replace the fan:

1. Remove power to the unit and remove the cover.
2. Cut the wires to the existing fan.
3. Pull out the existing fan (may be necessary to cut the fan mounts with a knife).
4. Install the new fan with new fan mounts.
5. Rewire the new fan to match the previous configuration (refer to the schematic if unsure).
6. Replace the cover.
7. Connect to power and test fan operation.
8. MAKE SURE FAN IS BLOWING OUT.

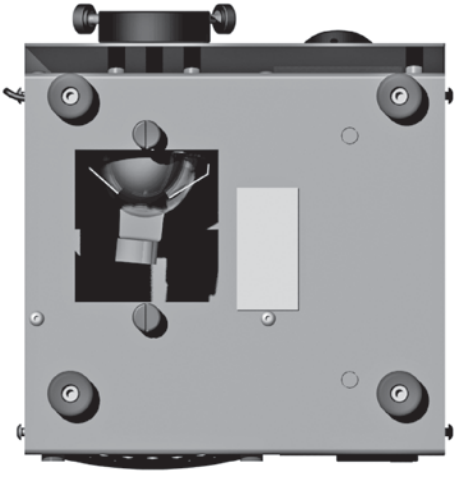
Replacing a Broken Transformer

The transformer is mounted to the inside floor of the chassis using KL nuts. To replace, remove power from the unit and remove the cover. Cut the wires going to the transformer after taking note of their configuration. Install the new transformer and rewire identically. Replace cover, connect to power, and test the unit for proper operation.



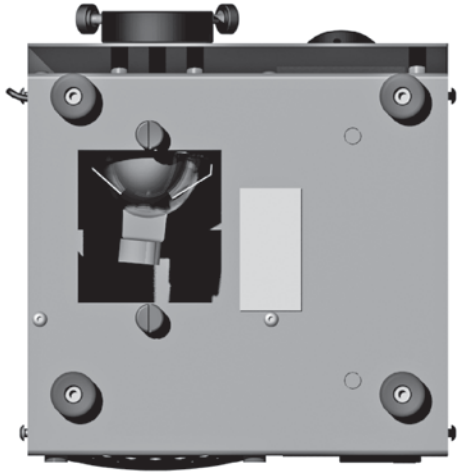
Replacing a Worn Lamp Socket

The lamp socket (into which the lamp plugs) can wear over time and may require replacement. To replace, remove power and the cover. Cut wires to the existing lamp socket and rewire a new lamp socket into the same position. Refer to the schematic if unsure.



Replacing a Worn Lamp Holder

After an extended period of time, it is possible for the spring tension in the lamp holder to relax and the lamps to not be held firmly into position. In such case, replace the lamp socket by removing the lamp (see lamp replacement procedure) and removing the screws holding the existing lamp socket. Using the same hardware install the replacement lamp holder. Replace the lamp and test.

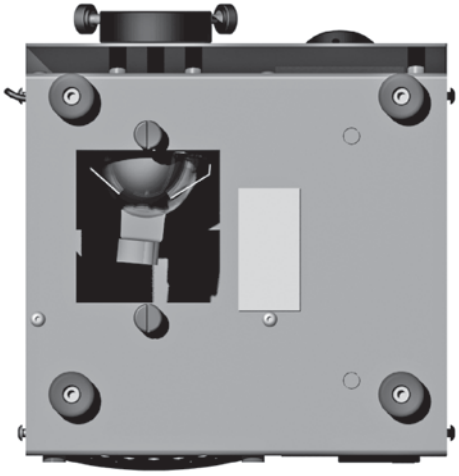


Lamp Replacement

Follow the steps below:

Turn the Unit offand Remove Power

1. Allow Time to Cool
2. Open Door
3. Slide Out Old Lamp
4. Slide In New Lamp
5. Close Door
6. Connect AC Power
7. Turn Unit On



Fuse Replacement

The fuses are located in the inlet module on the rear panel. Ensure you install only approved fuses of the correct rating.

Cleaning

Before cleaning ensure the unit is offand power is removed. Use of a dry cloth and a glass cleaner (Windex) is an acceptable means of removing surface dirt from the unit. If the internal surfaces need cleaning, remove the cover and start by using a portable vacuum. This can be followed up by wiping with a dry cloth. No liquid is recommended for the interior surfaces as it could result in damage to the electronic components and could create an electrocution hazard. Reinstall cover following cleaning.

P/N	Nomenclature	Method of Disposal
FOI-LS	Lamp socket	No special requirements
EKE, EJA, EJV, ELC	Lamp	In accordance with local requirements for halogen based lamps
011-0187	Fuse	No special requirements
FOI-T1-UL	Transformer	In accordance with local requirements for transformers

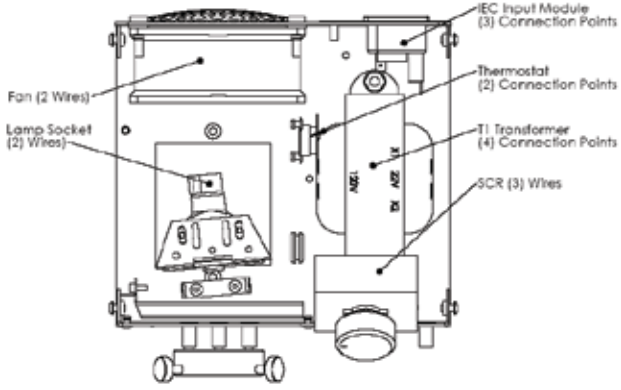
Description of Main Components

SCR: The SCR is an electrical device that is attached to the front panel and performs 2 functions – it turns power to the illuminator on and off and it dims the lamp. This device replaced a rheostat and printed circuit board – those parts are currently obsolete and unsupported. Customers with a failure of those earlier components should order an SCR and rewire accordingly.

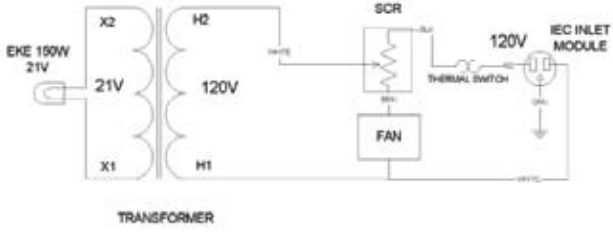
The SCR has (3) wires emanating from it – (1) black, (1) white, and (1) brown). These wires must be attached to the other components as shown in the schematic above.

T1 Transformer: The T1 transformer serves to reduce the voltage coming into the unit to a level that is acceptable for the lamp. The most modern version of the T1 has 4 connection points as shown above – 2 for input power and 2 to provide power to the lamp. Earlier T1 transformers had only 3 connection points – in this case one of the connection points served as neutral for both input and output power.

Location of Components Within the Chassis

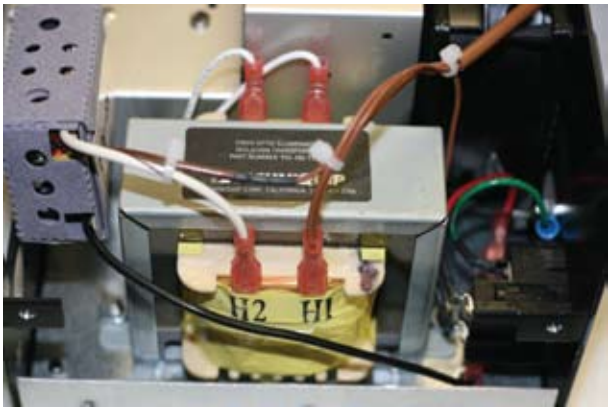


Electrical Schematic

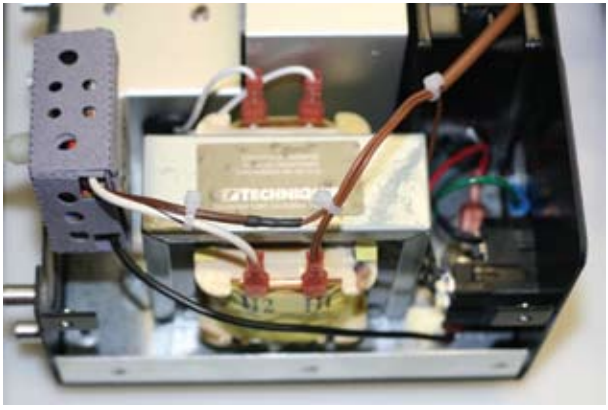


Wire Routing

Note 3 Wires from SCR are tucked to the RH side. Note the fan wires. Note location of thermostat on floor of unit (alternate location).



Note Brown wire from SCR attached to one of the fan wires – other fan wire is attached to H1 on Transformer.



Note 2 wires from transformer used to feed power to the lamp.

Top view

Photo showing the SCR installed (knob not yet installed)

Photo showing the knob installed on the SCR.

Problem	Possible Cause	Diagnosis Method	Possible Solution
No Light	Defective Lamp	No visual or electrical test available – to confirm you may try switching a lamp from a functioning illuminator.	Replace Lamp
No Light	Failed Fuse	Visual inspection off use(s) – You can see a broken fuse element. The fan will also not work when power is applied.	Replace Fuse(s)
No Light	Temperature Sensor Tripped	The fan will also not work when the temperature sensor is tripped – the fuses should be un-effected.	Ensure Fan is Operating – Ensure Vents are Not Blocked – Allow Unit Time to Cool Down then Reapply Power
No Light	Defective Lamp Socket	Lamp contacts are loose within the lamp socket.	Replace Lamp Socket
No Light	Defective On/Off– Intensity Control		Replace FOI-SCR
No Light	Defective Transformer	Fan will also not be working when power is applied.	Replace FOI-T1-UL
No Fan	Defective Fan	Light works but fan will not.	Check wiring – Replace fan.

Models

	Input Power	Lamp(s)	Special Features
FOI-150-UL	115 VAC 60 Hz 3 Amps	EKE EKE-HC EJA EJV	
FOI-150-UL-REM	115 VAC 60 Hz 3 Amps	EKE EKE-HC EJA EJV	Remote Control

Environmental

Operating Temperature Range	Non-Operating Temperature Range	Humidity Range
32 – 104 F (0 – 40 C)	0 – 120 F	0-80% Non Condensing

Fuse Ratings

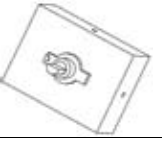
Model	Type	Voltage Rating	Current Rating	Type	Size
FOI-150-UL	X	250 VAC	3 amps	Quick-Bio	X
FOI-150-UL-REM	X	250 VAC	3 amps	Quick-Bio	X

Physical

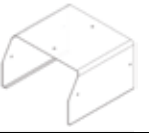
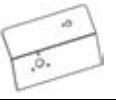
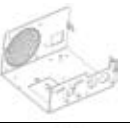
Height	Width	Depth	Weight
6.1 inch	7 inch	7.25 inch	8.2 lbs

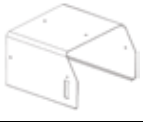
MODEL FOI-150-UL

NOTES: Lamp noted as EKE which is standard for FOI-150-UL.
Substitute correct lamp type for other models.

Part No.	Description	List Price	Description	REV	STD QPA	Re-mote QPA
011-0392	Thermostat	$15.00		1	1	1
002-0983	Power Inlet Module (fuses not included)	$15.00		1	1	1
FOI-LS	Lamp Base (Socket)	$10.00		1	1	1
FOI-LH	Bracket, Lampholder	$10.00		A	1	1
FOI-Fan-UL	Fan 92MM Low Speed	$45.00		A	1	1
FOI-SCR	115 VAC Controller	$30.00		1	1	1
FOI-TI-UL-115	Transformer	$65.00		1	1	1

Part No.	Description	List Price	Description	REV	STD QPA	Re-mote QPA
02610014	3 AMP / 250 VAC Quick Blo 5 x 20 MM Fuse	$2.00			2	2
EKE EJA EJV	Quartz Halogen Lamp	$25.00			2 OPT OPT	2 OPT OPT
CORD-FOI-UL	Power Cord	$4.00		1	1	1
FOI-KNOB	Knob	$18.00		B	1	1
FOI-Nose-Std	Nose Piece	$38.00		2	1	1
010-5189	Filter Holder Bracket	$		3	1	1
011-1089	Hatch Assembly	$		6	1	1

Part No.	Description	List Price	Description	REV	STD QPA	Re-mote QPA
100-601-0002	Cover Stiffener	$		1	1	1
FOI-SM-UL TOP-PUTTY	Top Cover - No Slot 011-1900 no slot	$20.00		1	1	1
011-1904	Front Panel (specifiy printing)	$20.00		6	1	1
011-1910	Base Plate	$35.00		11	1	1
011-1961	Tunnel	$20.00		10	1	1
FM-3	Rivet-Sound Isolator	$3.00			4	4
FOI-GROMMET	Grommet, Rubber	$1.00		A	1	1

Part No.	Description	List Price	Description	REV	STD QPA	Re-mote QPA
FOI- FEET	Recessed Bumper w/Int. washer	$3.00		1	4	4
FOI-HANDLE	Handle	$5.00		B	1	1
FILTER, R150-IR/UV	Filter, Glass I-R	$12.00		A	1	1
011-3402	Filter Guide Bracket REQUIRED ONLY FOR UNITS EQUIPPED TO ACCEPT SIDE INSERT FILTERS	$20.00		3	OPT	OPT
30406609 39664004	Filter Tab Holder (Plastic) REQUIRED ONLY FOR UNITS EQUIPPED TO ACCEPT SIDE INSERT FILTERS Filter Holder, Machined Casting REQUIRED ONLY FOR UNITS EQUIPPED TO ACCEPT SIDE INSERT FILTERS	$10.00 $20.00		1 1	OPT OPT	OPT OPT
FOI-SM-UL-TOP-PUTTY-SLOT	Rivet-Sound Isolator REQUIRED ONLY FOR UNITS EQUIPPED TO ACCEPT SIDE INSERT FILTERS	$25.00		6	OPT	OPT
011-1916	Rear Label - 150-115 (Revised Text)	$		B	1	1

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Warranty

TechniQuip warrants this product to be free from defect in material and workmanship for a period of 12 months following original purchase. This warranty excludes lamps, lamp sockets and any product which may have been misused, neglected, damaged, or altered – including non-factory authorized repairs. TechniQuip s obligations under this warranty are limited to the repair, replacement, or reimbursement of the product only, and in no event is TechniQuip liable for any consequential or special damages, or costs related to the transportation, installation, or any other cost related to a warranted product.

TECHNIQUIP

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Version B
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