



Installation and Operating Instructions

Medical Illumination

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Thank you for purchasing UV24. Before attempting to install or operate the unit, please read this manual thoroughly and retain it for future reference.

Introduction to UV24:

Congratulations for purchasing a Medical Illumination, UV24. UV24 is a UVC, continuous antimicrobial environmental air purifier system. It combines an ultraviolet germicidal irradiation chamber and air circulating fans with an overhead ceiling light. The patented system uses UVC light and filtration to draw in and treat environmental air. It unobtrusively and continuously reduces bacterial and fungal populations in treated air* and reduces the settlement of viable bacteria and fungi from treated air*- 24 hours per day/7 days a week/365 days per year. UV24 can treat a volume of air equivalent to an 8' x 10' x 10' room four times per hour and is believed to be a useful component of facility cleaning protocols. Conveniently installed in ceilings, the UV24 is an unobtrusive space saver. UV24 is designed for use in hospitals, long term care facilities, nursing homes, schools, commercial office buildings, and any other location where cleaner environmental air is desired. UV24 does not substitute for good building air exchange practices or manual cleaning and disinfection practices.

Medical Illumination manufactures three separate types of UV24 systems; a fluorescent or LED tubes model, an LED model and a version with no downlight. In addition, we manufacture European standards and Canadian standards for all models. This manual covers the installation process for all versions.

* Reductions measured as the minimum number of microbial units per surface area or minimum number of microbial units per volume of treated air.



Included Items:

- 1 UV24 Unit
- 1 UVC lamp
- 4 MERV 6 filters
- 2 mounting brackets
- 6 rivets – 3/16” Diameter
- 2 fluorescent lamps and lens (VS01) or LED panel and lens (VS02) or acoustical ceiling tile (VS03)

Features:

Some features are:

- ✓ 24/7/365 air treatment reduces bacterial and fungal populations in treated air* and reduces the settlement of viable bacteria and fungi from treated air;*
- ✓ Light indicates if there is a problem with the UV lamp or ballast
- ✓ Provides energy efficient fluorescent lighting (VS01) or bright, dimmable LED lighting (VS02)

* Reductions measured as the minimum number of microbial units per surface area or minimum number of microbial units per volume of treated air.

Safety Precautions/Warnings:

- To avoid the risk of electric shock, disconnect AC power before installing or maintenance servicing.
- Do not expose this device to water or excessive moisture.
- Installation should be performed by qualified personnel only.
- Consult your local building code for approved wiring & installation.
- Do not use outdoors.
- Do not use equipment for other than intended use.
- The use of accessory equipment is not recommended by the manufacturer & may cause an unsafe condition.
- Light from UV lamp may cause eye or skin injury including burns that are not immediately detectable. Do not operate UV lamp when lamp chamber is not sealed light-tight. If UV light exposure to people is possible, potentially exposed persons should wear UV filtering eye protection, long sleeves and gloves.

Note: This device should not be used in buildings that are under construction. Heavy volumes of large particulates like construction dust and debris will clog up the filter and impact the effectiveness of the UV24. In the event that construction needs to be conducted in an area where UV24 units are already installed, it is recommended that the UV portion of the unit is powered off for the duration of the construction project and new filters are inserted when the UV24 is ready to be started again.

Installation Instructions

Tools Required:

- Rivet Gun
- Screw Gun
- 3/16 Drill Bit
- Phillips Head Bit
- Wire Strippers
- Ladder
- Work gloves and safety glasses

Building Power and Hanging Ceiling Requirements:

- Universal voltage required; 110-277
- Requires 1 constant hot circuit for UVC power and 1 switch circuit for downlight power

- Domestic models are designed to be installed in a standard dimension U.S. drop ceiling. Foreign models are designed to be installed in a standard dimension European drop ceiling.
- The unit should be tethered to a secure anchor point that is capable of supporting the fixture's weight in the ceiling.
- Comply with all local, state and federal laws.

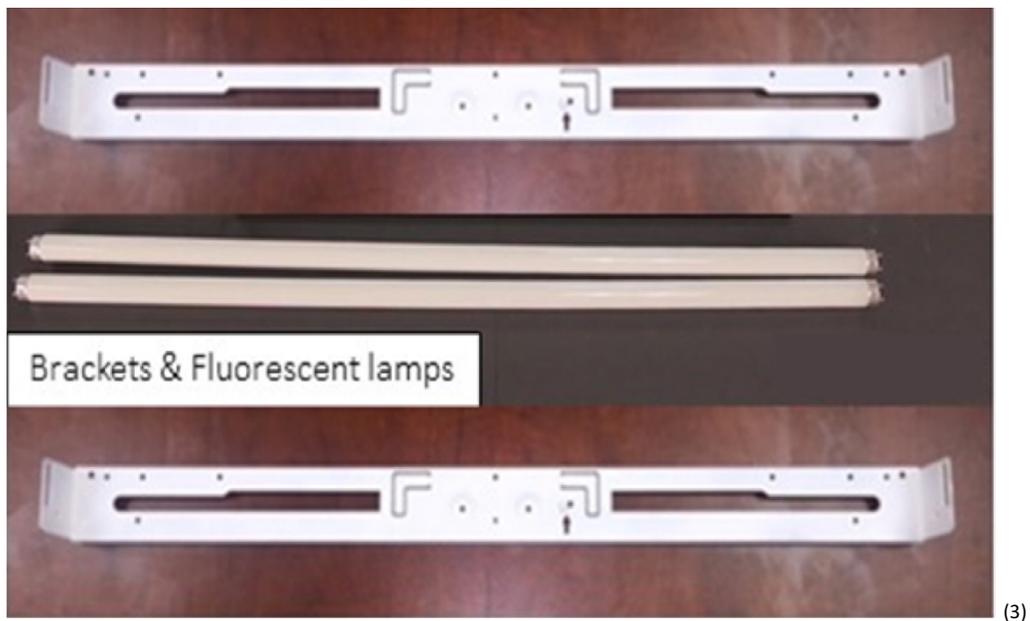
Step 1:

Remove the UV24 from the packaging to locate a completely assembled device. (Image 1, 2)



Step 2:

Each model of the UV24 product will require two mounting brackets that will be located within the packaging. The 071114 product will also be packaged with two fluorescent lamps and an acrylic lens that will be supplied within the installation kit. The 071214 utilizes a LED panel and a polycarbonate lens and the 071014 product does not provide a room light and instead utilizes a standard pattern acoustical ceiling tile. (Image 3)

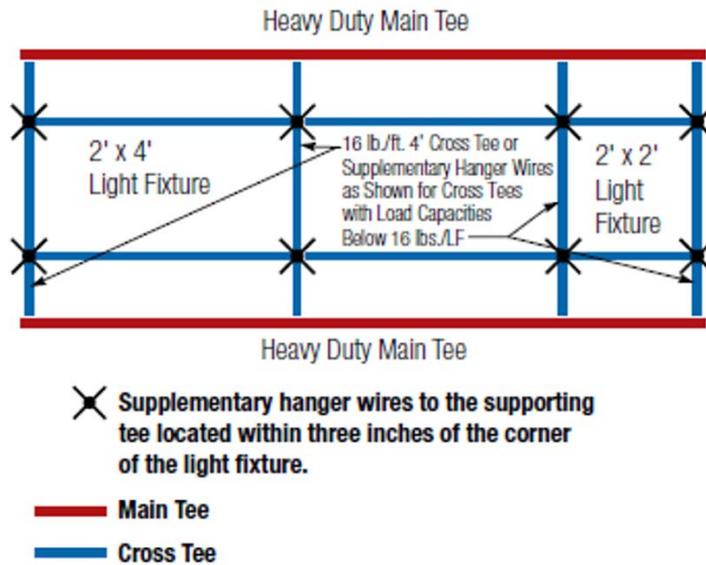
**Step 3:**

Prep the ceiling and remove any existing fixture. A contractor will be needed to run power to the appropriate locations.

- The 071114 (fluorescent) & 071214 (LED) will require two circuits.
 1. Switch circuit that will operate the downlight
 2. Constant hot circuit operating the UVC lamp
- The 071014 (no ceiling light) will require one circuit.
 1. Constant hot circuit operating the UVC lamp

Step 4:

Install 4 separate 12 gauge supplementary hanger wires to the existing supports by following diagram below from each corner of the unit. (60cm by 120cm for the European models) (Image 4)



(4)

Step 5:

The mounting bracket will need to sit flush against the drop ceiling frame. The mounting bracket contains an arrow indicating the direction of installation. (Image 5)



Step 6:

Caution: Do not drill into the support wire while performing this procedure.

If either of the recessed holes line up with the drop ceiling support wire; do not drill/ rivet in that location to avoid damaging the support wire. In this situation, a single rivet in the center bracket is acceptable. If both rivets can be installed without damaging the support wire, this is preferable.

Using the 3/16" drill bit, enlarge the holes in the two recessed locations in the center of the mounting bracket. Be sure to drill through both the mounting bracket and the drop ceiling frame. (Image 6)



(6)

Step 7:

Locate the rivet pack provided with your fixture and install the rivets in the center recessed hole(s). (Image 7)



(7)

Step 8:

To secure the corners of the mounting bracket, locate the pre-drilled hole in each corner. Ensure the hole lines up with the drop ceiling frame. Using the 3/16" drill bit, enlarge the pre-drilled hole. Be sure to drill through both the mounting bracket and the drop ceiling frame.

(Image 8)



(8)

Step 9:

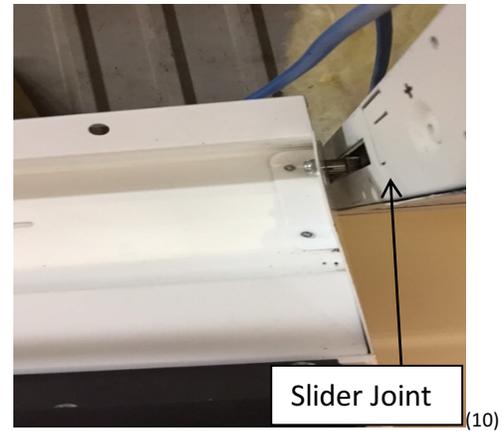
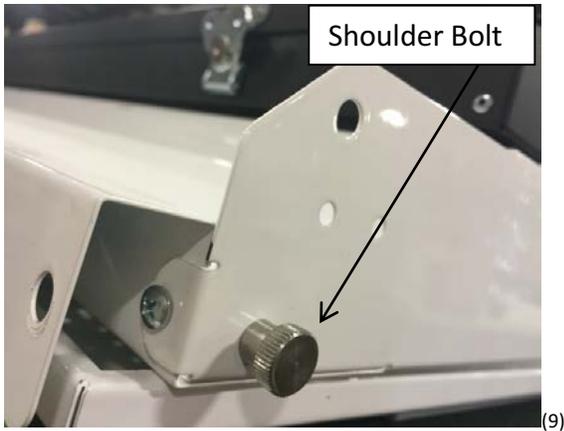
Install a rivet in each of the pre-drilled corner locations.

Step 10:

Medical Illumination recommends utilizing two people to install a single unit since the UV24 models each weigh approximately 45 pounds. The National Institute for Occupational Safety and Health (NIOSH) strongly recommends that no worker should lift anything heavier than 35 pounds without any additional aid.

To install the fixture, insert one shoulder bolt into the slider joint.

Hold the fixture at an angle so the uninstalled shoulder bolt is slightly in front of the installed bolt. Holding the fixture in this position will enable you to easily align the secondary shoulder bolt with the slider joint. Insert the secondary bolt into the slider joint. Now that both shoulder bolts are installed, the fixture will need to be straightened up so that both bolts are parallel and the fixture is no longer at an angle. Now evenly slide the fixture forward until the shoulder bolts reaches the end of the slider joint. (Image 9, 10)



At this point, the fixture should be hanging at the end of the mounting bracket and should be parallel in the drop ceiling frame (not at an angle). With the fixture hanging from the ceiling, you are now ready to install the power connector. (Image 11)



Step 11:

Caution: Ensure all power has been removed to the circuit.

All UV24 models will require one constant hot circuit for the UVC input power. The 071114 & 071214 models will require an additional switched circuit to power the down light.

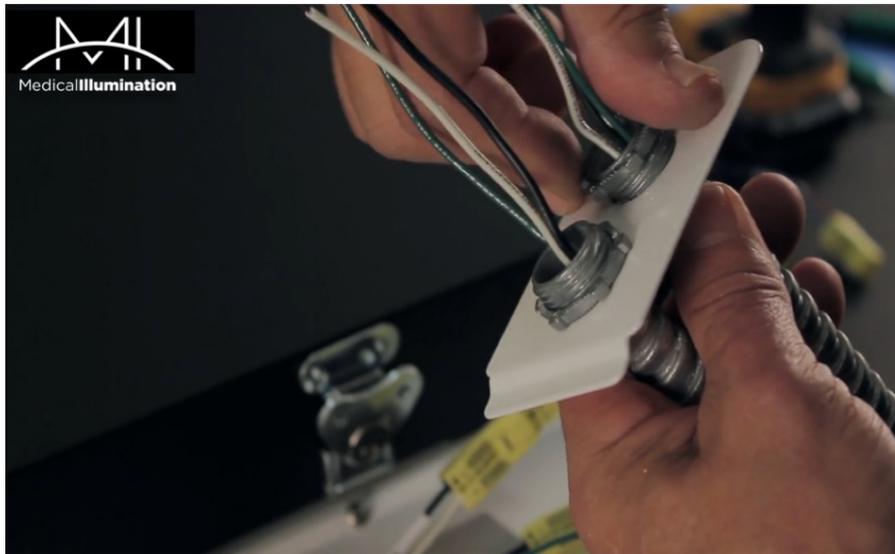
First, remove the access plate & determine if the remaining knock out tab should be removed (for 071114 & 071214 both tabs should be removed). (Image 12)



(12)

Step 12:

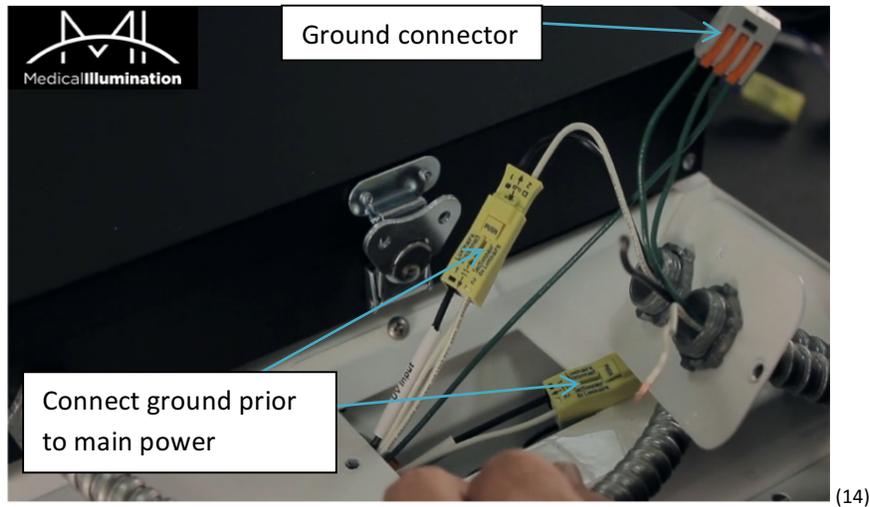
With the proper knock out tabs removed, install the wiring conduit through the access plate and secure with lock ring. Be sure to take note of which circuit is switched and which is constant. (Image 13)



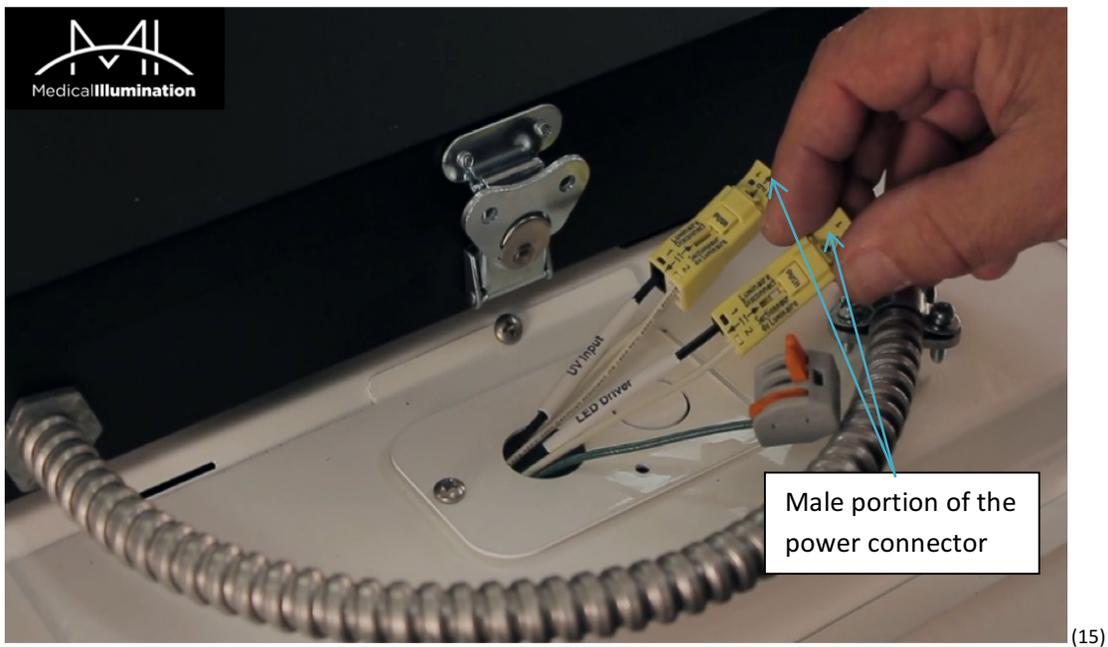
(13)

Step 13:

It is important to connect the ground wires from all power connectors to the ground connector on the fixture before connecting the fixture to any power source. (Image 14)



Remove the male portion of the power connectors and connect one to each of the incoming power circuits. (Image 15)



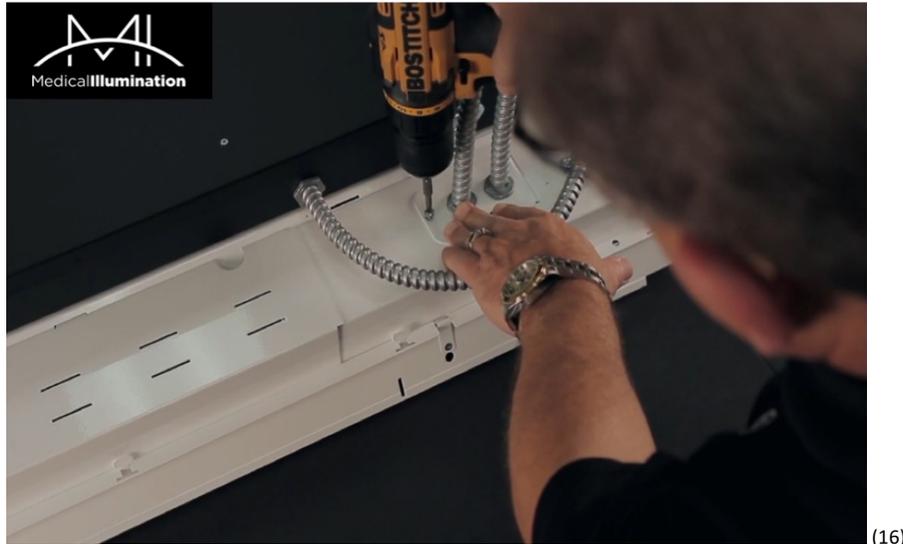
IMPORTANT:

For Domestic & Canadian UV24 Models, the black power wire should always be connected to terminal one of the power connector. The white power wire should always be connected to terminal two.

For European UV24 Models, the brown power wire should always be connected to terminal one of the power connector. The blue power wire should always be connected to terminal two.

Step 14:

Once the power is connected, all the connectors will need to be placed within the housing. The access plate will now be screwed down. (Image 16)



(16)

Step 15:

The fixture is now completely wired and can be installed into the ceiling. The lock bar will need to be held flush against the body of the fixture as it is rotated up into the ceiling. Inspect the rear end of the housing where the door is hinged as it may latch onto the ceiling frame, bracket, and/or rivet when lowering the fixture. This will cause the fixture not to sit flush. Rotate the fixture until the lock bar is just above the drop ceiling frame. Release the lock bar and gently lower the fixture until the lock bar engages the ceiling frame. Ensure that the fixture is placed level into the ceiling as the lock bar is released. If the fixture is not flush, simply compress the lock bar and lower the fixture before releasing the lock bar again. At this point, the lock bar should stop the fixture's rotation and hold it flush in the ceiling.

Step 16:

Installation is complete. (Image 17)



(17)

Operating Instructions

If installed as instructed, the UV24 runs autonomously 24/7 even if the fluorescent or LED lamps in the 071114 or 071214 are turned off at a wall switch. The UV24 is an engineering control system that requires minimal quarterly maintenance and treats the air with no human intervention necessary when the UV lamp and fans are operating. Follow these steps to keep it operating as intended. The UV24 system is to be operated indoors, in a temperature and humidity controlled environment between 68-122 degrees Fahrenheit and 20-80% humidity.

Antimicrobial Performance

UV24 operates at the UV-C wavelength of 253.7 nanometers. It continuously reduces bacterial and fungal populations in the air treated by the units and reduces the settlement of viable bacteria and fungi from treated air.* Unlike terminal cleaning systems which operate for short periods in sealed environments, the UV24 operates continuously in an open environment. Nevertheless, even in rooms where the UV24 is installed, whole room bacterial and fungal particulate air concentrations and composition can be expected to experience wide variations over the course of a day and longer periods. These conditions are normally influenced by a wide variety of independent and changing circumstances that cannot be overcome by the UV24 operating in an open environment. Important independent influences will vary by facility and

* Reductions measured as the minimum number of microbial units per surface area or minimum number of microbial units per volume of treated air.

location but may include, for example, the rate of room air exchanges by building HVAC systems, room air humidity and temperature, the relative quality and microbial/particulate composition of air entering the room through doors and other openings, and other changing or cyclical room and building activities affecting air quality. For these reasons, whole room microbial concentrations will vary between installation locations and over time. It is not possible to predict the extent of microbial unit reductions that will be achieved by the UV24 in whole room air or on surfaces in any particular room or environment. The UV24 is not a substitute for good building air exchange practices or manual cleaning and disinfection practices.

UV Lamp Check Procedure

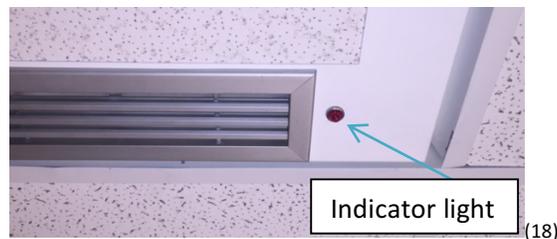
In order to validate if the UV lamp is working properly, you must turn off the power to the UV lamp and observe the indicator light. Since the UV24 unit is typically connected to a hot switch to power the UV ballast and an on/off switch to power the lights, you have to disconnect the hot switch to the UV ballast to power down the UV. If the indicator light illuminates for a short moment and is not continuous, then the UV bulb is working properly. But if the indicator light ever appears to be illuminated in a continuous manner, then the UV bulb will need to be replaced.

NOTE:

071114 – Red exterior indicator light (Image 18)

071214 – Green interior indicator light

071014 – Red interior indicator light



UV Lamp Maintenance:

The UV24 is designed to treat the air 24 hours a day/7 days a week. In order to assure that the UV lamp in each unit works as expected, we recommend that you change it annually. The intensity of UV lamps continuously degrades during use and will start to depreciate to a significant degree after 9000 hours (375 days) of constant use. The UV lamp used in this unit is a special lamp. Please contact your UV24 distributor or the factory for replacement parts.

MERV 6 Filter Maintenance:

We recommend changing the MERV 6 filter every 3 months. Dust and debris gather on the filter as the fans draw air into the system so keeping the filter clean is critical to the operation of the unit. The filter used in this unit is a special filter designed for the UV24. Please contact your UV24 distributor or the factory for replacement parts.

Managing Spent UV Lamps:

In 1999, the US Environmental Protection Agency (EPA) added a provision for mercury-containing lamps to the Universal Waste Rule (UWR, 40 CFR Part 273). The UWR was developed to encourage recycling and proper disposal of these wastes, which meet the Federal criteria for hazardous waste but are widely generated and typically do not pose an immediate and undue risk. Here is a list of lamp recyclers you can contact for services near you.

<http://www.lamprecycle.org/commercial-lighting-lamp-recyclers/>

Trouble Shooting:

1. If the indicator light is on, there is a possible issue with the UV lamp and/or UV ballast.
 - Wearing eye protection appropriate for UVC light protection, remove the lid from the UV chamber. When the UV chamber lid is removed, the safety switch will be automatically disengaged, shutting off the UV lamp. Press the safety switch down to see if the UVC lamp lights.
 - If the lamp does not light, replace it. After a “known good” (new) lamp is installed, press the safety switch to verify the new lamp operates properly and that the warning indicator does not illuminate.
2. If “known good” UVC lamp does not light up:
 - Remove UVC lamp and with the appropriate multi-meter, test lamp socket to see if 24v is reaching the socket. If 24v is not present at the socket, remove the ballast tray cover and locate the UV Ballast. Remove the output wires from the lever nuts they are connected to and test for voltage across the output wires directly from the ballast.
 - If the correct voltage indicated on the ballast case is not measured, replace the ballast.
3. If the fan assembly stops spinning?
 - UV lamp failure is NOT the reason for the warning light. Next, remove the top air baffles from the end of the UV chamber that the power connector is joined to. Once the top air baffles are removed, the fan assembly should be visible. Wearing eye protection suited for UVC light, reengage the safety switch and visually determine if all four fans are running. If any of the fans are not spinning then the fan array must be replaced.

- Remove the bottom air baffle. Disconnect all the red wires running from the fan assembly from the five position lever nut containing all red wires. Remove all the back wires running from the fan assembly from the five position lever nut containing all black wires. Lift the fan assembly out of the unit. Insert the new fan assembly and reconnect all wires back into their original orientation.
- Wearing eye protection suited for UVC light, engage the safety switch to verify all new fans are operational. Once successful, replace the bottom air baffle taking care not to pinch or puncture any of the wires with the baffle or mounting screws. Replace the top air baffles and reinstall the UV chamber lid.

For additional trouble shooting assistance, please contact Medical Illumination at (800) 831-1222.

Replacements:

To order replacement fluorescent lamps, UV lamps, MERV 6 filters, ballasts, & other components, contact us by phone at (800) 831-1222 or online at: www.medillum.com.

Warranty:

Medical Illumination offers a 5-year limited warranty on the UV24.

- Medical Illumination warrants UV24 fixtures to be free from defects in materials and workmanship for the specified period beginning on the date of purchase (or date of manufacture when purchase date is in question).
- Warranted for a full year – UV lamp and fans
- Warranted for 2 years – low voltage converter and fluorescent lamps
- Warranted for 5 years – fixture construction, including ballasts, photo cell and failure indicator lamp

This warranty does not cover:

- Damages to products for reasons beyond Medical Illumination's control, including, but not limited to: power surge, water infiltration, abuse, misuse, accidental damage, vandalism, fire, natural disaster and lightning;
- Incompatibility with products not supplied by Medical Illumination, or other issues not related to materials and manufacture;
- Installations not in accordance with the latest National Electrical Code, Underwriters Laboratory Bulletins, and ANSI Specifications.

See warranty accompanying your unit for full details. If you need to submit a claim for a warranty, contact Medical Illumination's support team at info@medillum.com or call 800-831-1222.