Continuous Antimicrobial Air Cleaner

# VIDASHIELD™ UV24
## UV-C Air Purification

Intertek
4010716

# Installation and Operating Instructions

Manufactured Exclusively By:

MedicalIllumination

19749 Dearborn Street
Chatsworth CA 91311
EPA Est. No: 94728-CA-1

## INSPECTION ON ARRIVAL

1. Inspect the unit upon arrival. In case of damage, report it immediately to the transportation company and your local factory sales representative.
2. Check the rating plate on the unit to verify that the power supply meets available electric power at the point of installation.
3. Inspect the unit received for conformance with a description of the product ordered (including specifications where applicable).

### ⚠ CAUTION

1. Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury or death, and could cause exposure to substances which have been determined by various state agencies to cause cancer, birth defects or other reproductive harm. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

2. 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.

### IMPORTANT

The use of this manual is specifically intended for a qualified installation and service agency. A qualified installation and service agency must perform all installation and service of these appliances.

# VidaShield UV24

## Agency Approvals

With respect to electric shock, fire
And mechanical hazards only
In accordance with IEC60601-1:2006
Classifications:

1. Protection against electrical shock (5.1, 5.2). Class I permanently connected,
2. Protection against harmful ingress of water (5.3). None.
3. Mode of operation (5.6). Continuous

Electromagnetic compatibility for immunity
And emissions in accordance with
IEC/EN 60601-1-2:2007 ed 3.0 (with 1:2008+A2:2009) and
CISPR 11 Class A
FCC 47CFR Part 18 Subpart C:2020
ICES-001 Issue 5, July 2020
UL 507:2017 Ed. 10+R:22Feb2018
CSA C22.2#113:2015 Ed. 10+U1

**Intended use:** For air purification use in Hospitals, Clinics, Veterinary Clinics, Dentist Offices, Schools, Senior Citizen facilities, Convalescent facilities, Assisted Living facilities, Commercial Office Buildings, and any indoor space with high human traffic.

**User interface:** The functional interfaces are the power ON/OFF through a switched circuit and optional dimming circuit, along with failure indicators.

**Misuses:** For any purpose other than stated above.

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## Medical Illumination International, Inc.

## Limited Warranty

This document comprises the general terms of your product's Limited Warranty. This Limited Warranty is applicable to products sold by Medical Illumination International, Inc. or one of its subsidiaries or divisions (collectively, "MI") through on of MI's authorized dealers, distributors or sales representatives (an "Authorized Dealer"). This Limited Warranty is not applicable to any product not purchased from an Authorized Dealer. This Limited Warranty extends only to the first retail purchaser of a product and is not transferable or assignable.

Your product is warranted against defective material and/or workmanship, excluding normal replacement parts, for a period of three (3) years from the date of shipment. Normal replacement parts include, but not limited to, bulbs, sterilizable handles, filters and glass items. This Limited Warranty applies exclusively to the repair or replacement of parts recognized as defective by MI that are in normal use and have not been modified or repaired by unauthorized personnel.

**This LIMITED WARRANTY is in lieu of all other warranties, expressed or implied, including any implied warranty for a particular purpose and all other obligations or liabilities, including liability for incidental, special or consequential damages or labor.**

In the event of a defect or failure covered under this Limited Warranty, please contact MI immediately by phone (818/838-3025), fax (818/838-3725), email (info@medillum.com) or through our website (http://www.medillum.com). Be prepared to give the model number, serial number and full description of the issue. This Limited Warranty will not apply if the MI serial number affixed to the product has been removed, obliterated or defaced.

Our Customer Service department will attempt to solve the problem over the phone. If it becomes necessary, we will determine, in our sole discretion, the best way to address the issue. We may require that the product be sent to our factory for repair. In limited instances, we may dispatch an authorized service technician. No product serviced by other than our authorized service technician will be covered by this Limited Warranty.

In the event we determine that your product needs to be repaired, either onsite or by return to our factory, please do not continue to use the product prior to its authorized repair. MI is not responsible for costs or expenses incurred for loss of use of the product.

If we require the return of the product to our factory, you will be provided with a Return Authorization number. Products sent to the factory without a Return Authorization number will not be accepted. It is your obligation to arrange for return shipment of your product to the factory for warranty service, which shall be at your expense. Your Product must be returned to our factory within thirty (30) days of the date of the Return Authorization. Carefully package the product and return it, freight prepaid and insured, with the Return Authorization number clearly marked on the outside of the box, to Medical Illumination International, Inc, 19749 Dearborn Street, Chatsworth, CA 91311, RA#_____.

Damage resulting from inadequate packing is not covered by this warranty, and shipping insurance does not cover damage due to inadequate packing. MI cannot be held responsible for in-transit loss or damage. In the event that freight-related damage should occur, we will notify you immediately so that you can file a damage claim with the freight carrier.

Within the warranty period, MI will evaluate your returned product, repair as appropriate, and ship the product back to you with freight costs prepaid by MI. In the event that damage or failure is discovered that is not covered by this Limited Warranty, we will contact you for your approval of all costs that may be incurred prior to commencing any repairs.

***This Limited Warranty does <u>not</u> cover the following:***

- Any field labor our outside services, including, but not limited to, electricians, contractors, installation services, routine maintenance or other repair services.
- Damage to the product resulting from tampering, accident, abuse, negligence, alteration or other caused unrelated to problems with material and/or workmanship.
- Damage due to improper installation, use, cleaning or maintenance, as outlined in the Installation and Service Manual.
- Labor costs associated with removing, re-packaging for shipment or reinstalling product.

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

## Introduction to VidaShield UV24:

Congratulations for purchasing VidaShield UV24. VidaShield UV24 is a UVC, continuous antimicrobial environmental air purifier system. It combines an ultraviolet germicidal irradiation chamber and air circulating fans with an optional 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. VidaShield 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 VidaShield UV24 is an unobtrusive space saver. VidaShield 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. VidaShield UV24 does not substitute for good building air exchange practices or manual cleaning and disinfection practices.

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

**Figure 1: VS Models**

* 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 VidaShield UV24 Unit
1 UVC lamp
4 MERV 6 filters
2 mounting brackets
6 rivets – 3/16” Diameter
2 fluorescent or LED 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)

# ⚠ WARNING

### 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 reference page15-20.
- Do not use outdoors.
- Do not use equipment for other than intended use.
- Do not modify the equipment in any way. Use only manufacturer approved replacement parts.
- 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, gloves, and cover any exposed skin.

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

# IMPORTANT

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 VidaShield UV24. In the event that construction needs to be conducted in an area where VidaShield 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 VidaShield UV24 is ready to be started again.

## Drop Ceiling Installation Instructions

### Tools Required

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

**⚠ DANGER**

Equipment must not be installed where it may be exposed to potentially explosive or flammable atmosphere.

### UNIT LOCATION

**Before proceeding with installation steps, ensure the intended installation location meets the following requirements.**

### 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. European models are designed to be installed in a standard dimension European drop ceiling.
- The unit should be tethered to a secure anchor point on the structure above the drop ceiling that is capable of supporting the fixture's weight (see Step 4).
- Comply with all local, state, and federal laws.

**Step 1:**
Remove the VS01, VS02, and/or VS03 from the packaging to locate a completely assembled device.

**Figure 2: Unpacking the VS**

**Step 2:**
Each model of the VidaShield UV24 product (01, 02, & 03) will require two mounting brackets that will be located within the packaging. The VS01 product will also be packaged with two fluorescent lamps and an acrylic lens that will be supplied within the installation kit. The VS02 utilizes an LED panel and a polycarbonate lens and the VS03 product does not provide room light and instead utilizes a standard pattern acoustical ceiling tile.

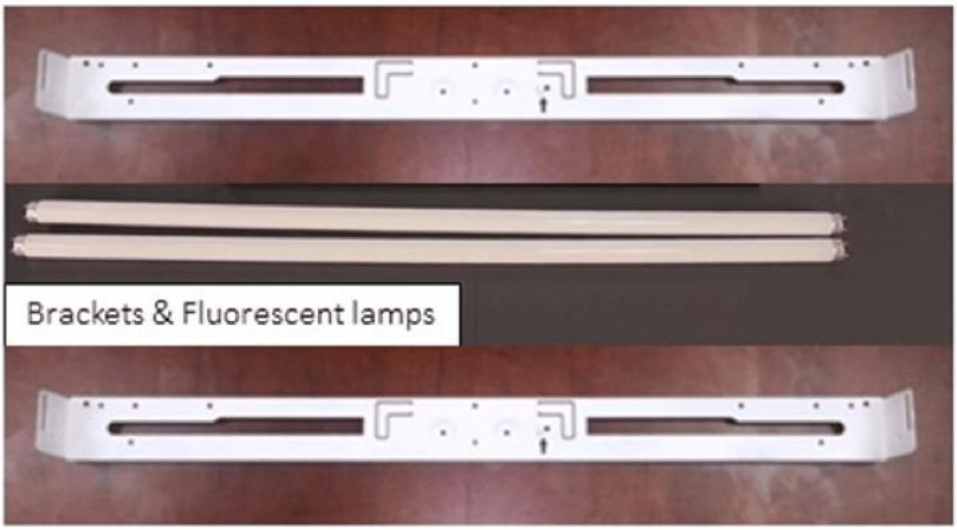



**Figure 3: Mounting Brackets**

**Step 3:**
Prep the ceiling and remove any existing fixture. An electrician will be needed to run power to the appropriate locations.

- The VS01 (fluorescent) & VS02 (LED) will require two circuits.
    1. Switch circuit that will operate the downlight.
    2. Constant hot circuit operating the UVC lamp.
- The VS03 (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)

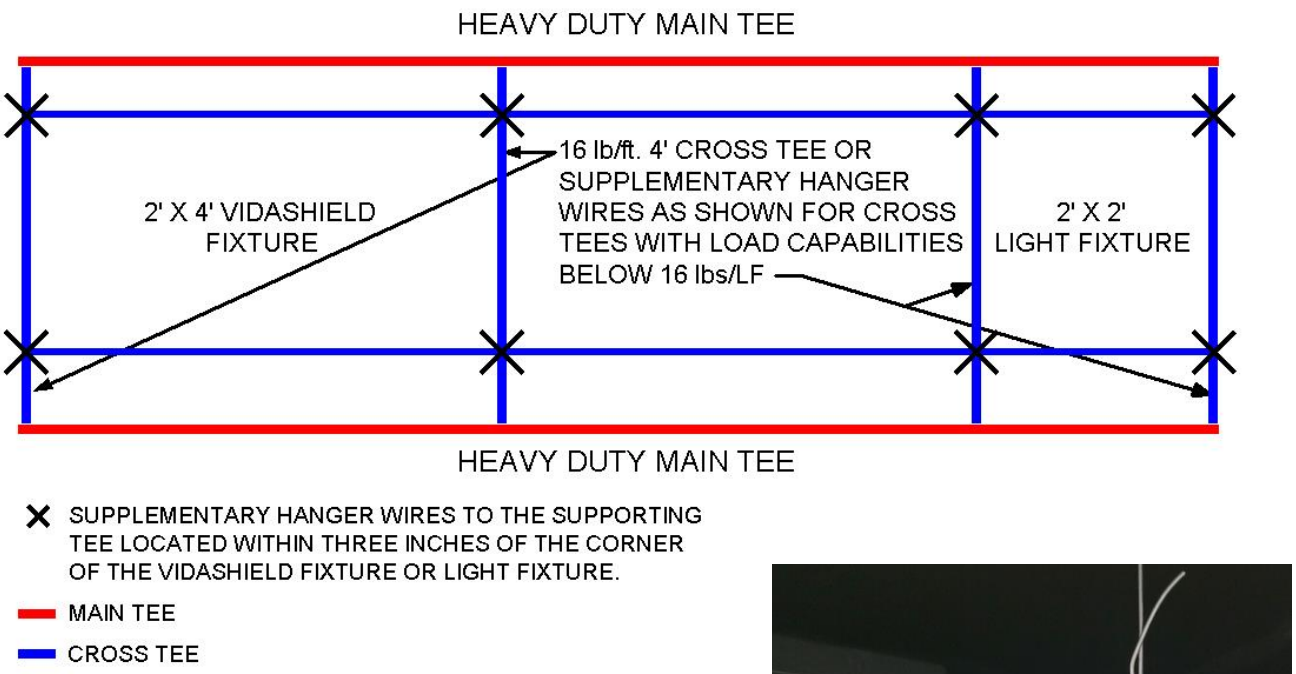


**Figure 4: Hanging Diagram**

**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.

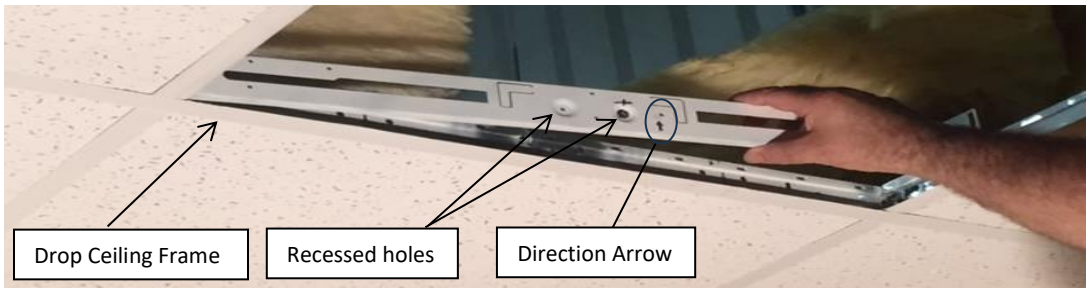



**Figure 5: Mounting Bracket Installation**

**Step 6:**

> **⚠ CAUTION**
>
> Do not drill into the support wire while performing this procedure.

**Before proceeding to the next step of drilling the holes used to secure the bracket, ensure the hole locations do not line up with an existing drop ceiling support wire.** 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, install the rivet on the other hole.

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.

**Figure 6: Drilling the Mounting Bracket**

**Step 7:**Locate the rivet pack provided with your fixture. Install the 3/16 rivets (grip range of .25 to .38 in.) in the center recessed hole(s). Ensure the rivet is seated and secured properly through both metal thickness.

**Figure 7: Riveting the Mounting Bracket**

**Step 8:**
**Before proceeding to the next step of drilling the holes used to secure the bracket, ensure the hole locations do not line up with an existing drop ceiling support wire.**

Secure the corners of the mounting bracket by locating 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.

Install four (4) additional hager wires to the four (4) bracket corner and mount wire to support ceiling.

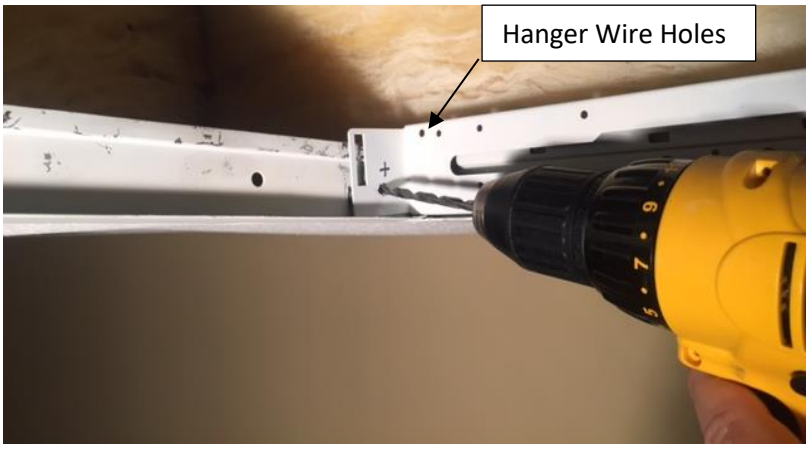



**Figure 8: Securing the Mounting Bracket Corners**

**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. VidaShield UV24 models each weigh approximately 30 pounds.

To install the fixture, insert one shoulder bolt (Figure 9) into the slider joint (Figure10). 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 second shoulder bolt with the slider joint. Insert the second 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 reach the end of the slider joint.

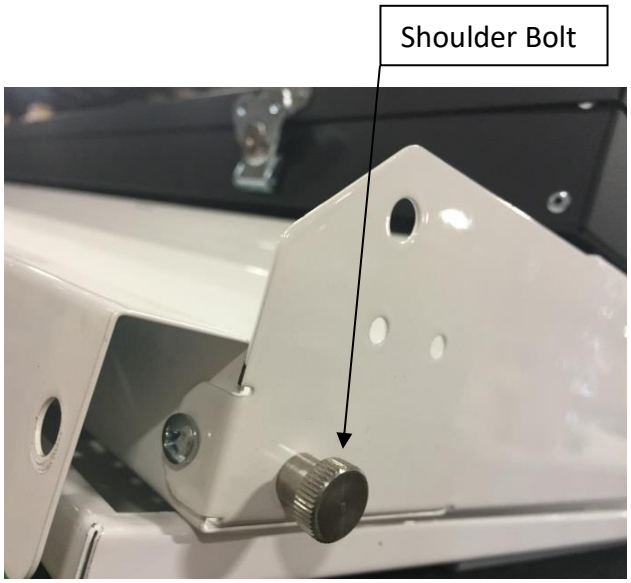



**Figure 9: Installing the Shoulder Bolt into the Slider Joint**

**Figure 10: Fixture Hanging from Ceiling**

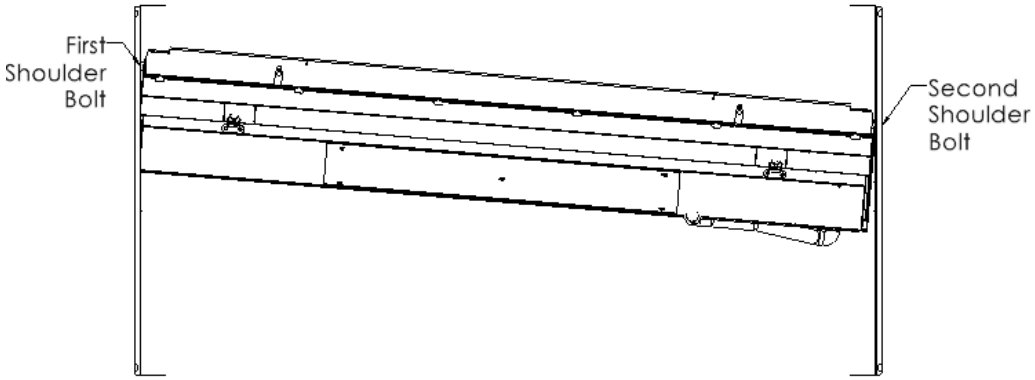



**Figure 11: Top view of unit at an angle for second bolt position**

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 in the next step.

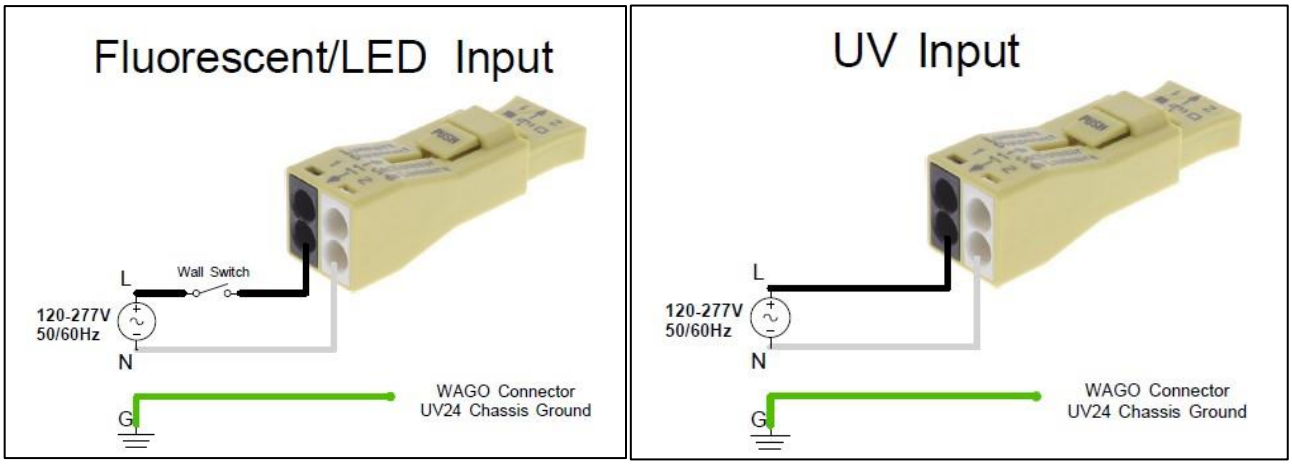
**Figure 12: Preparing to Connect Power**

**Step 11:**

## ⚠ WARNING

Ensure all power has been removed to the circuit.

All VidaShield UV24 models will require one constant hot circuit for the UVC input power. The VS01 & VS02 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 VS01 & VS02 where supply circuits are run on separate conduits, both tabs should be removed.

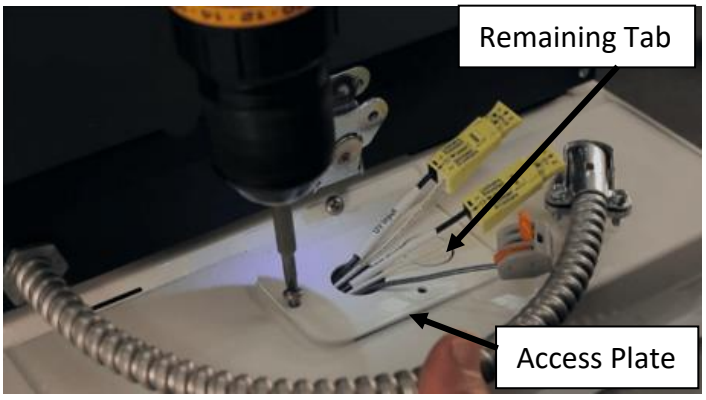



**Figure 13: Removing the Electrical Access Plate**

**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.

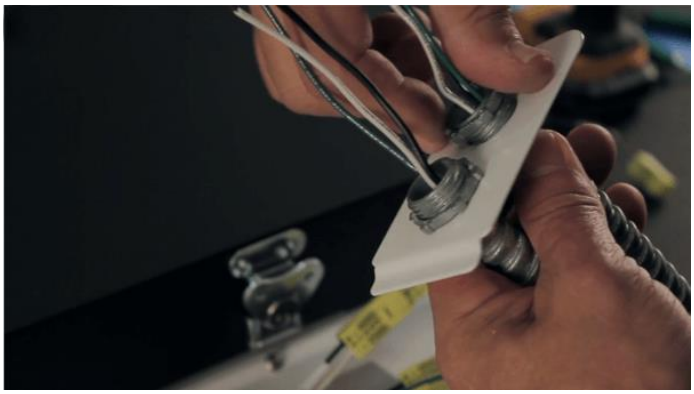


**Figure 14: Installing the Wiring Conduit Access Plate**

**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.

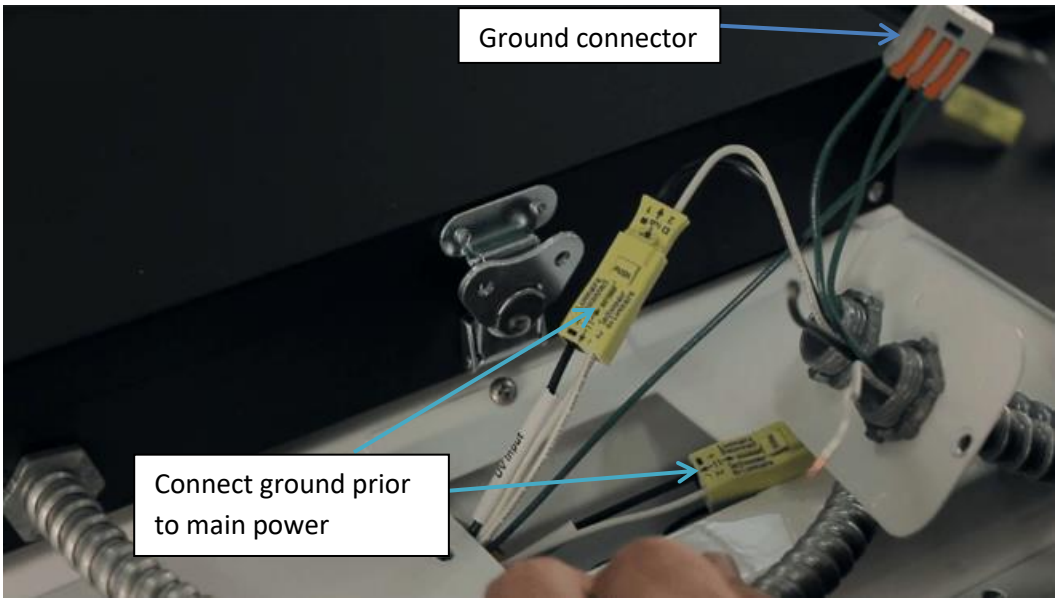



**Figure 15: Grounding the System**

Remove the male portion of the power connectors and connect one to each of the incoming power circuits.

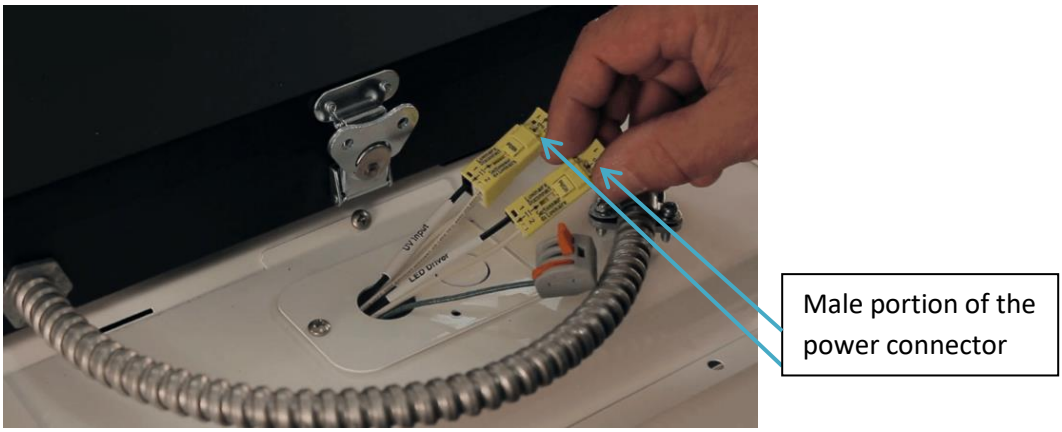



**Figure 16: Connecting to Incoming Power**

## ⚠ CAUTION

For North American VidaShield 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 VidaShield 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.

**Figure 17: Completing the Wiring**

**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 (figure 18). 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 rests on the inside 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.

**Figure 18: Lock bar pressed flush to unit.**

**Figure 19: Lock bar will spring out to rest on ceiling frame.**

**Step 16:**

Drop Ceiling Installation is complete.

**Figure 20: Completed Drop Ceiling Installation**

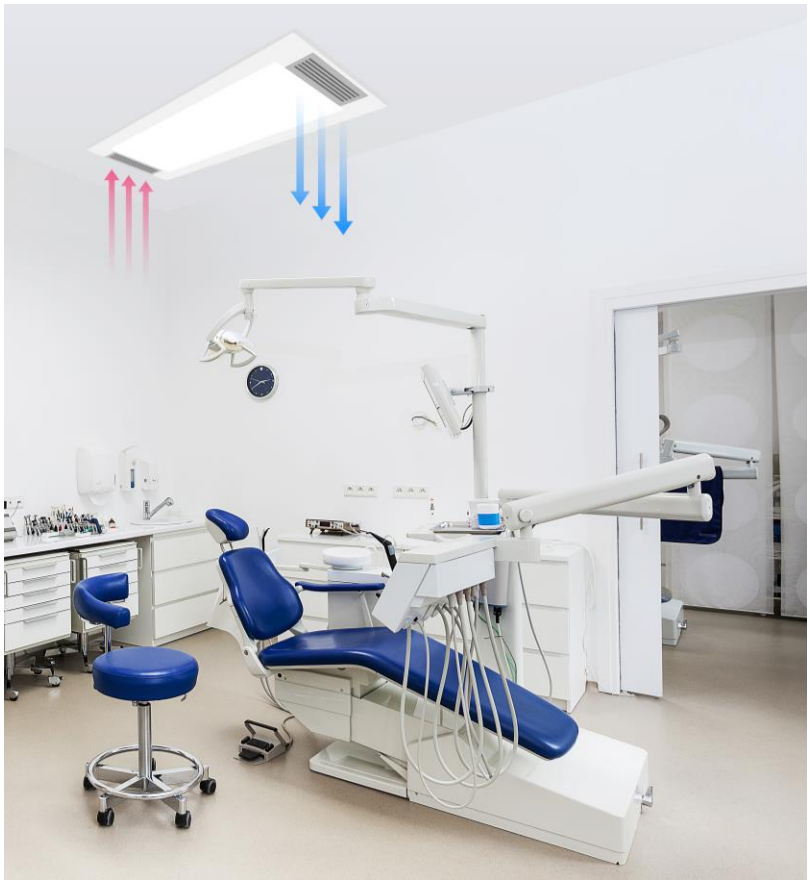


**Figure 21: UV Operating Instructions**

## Operating Instructions

If installed as instructed, the VidaShield UV24 runs autonomously 24/7 even if the fluorescent or LED lamps in the VS01 or VS02 are turned off at a wall switch. The VidaShield 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 VidaShield UV24 system is to be operated indoors, in a temperature and humidity-controlled environment.

### Antimicrobial Performance

VidaShield UV24 operates at a 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 VidaShield UV24 operates continuously in an open environment. Nevertheless, even in rooms where the VidaShield UV24 is installed, whole room bacterial and fungal particulate air concentrations and composition can be expected to

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

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 VidaShield UV24 operating in an open environment. Important independent influences will vary by facility and 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 VidaShield UV24 in whole room air or on surfaces in any particular room or environment. The VidaShield 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 VidaShield 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 turn off power to 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:

VS01 – Red exterior indicator light

VS02 – Green interior indicator light

VS03 – Red interior indicator light (Figure 22)

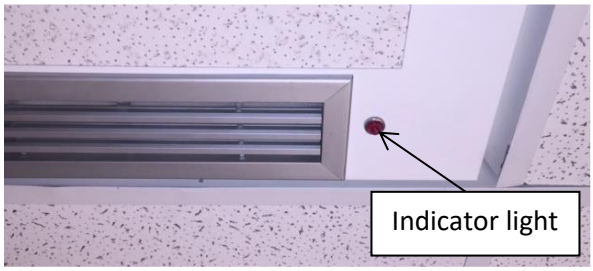



**Figure 22: UV Indicator Light**

**UV Lamp Maintenance:**

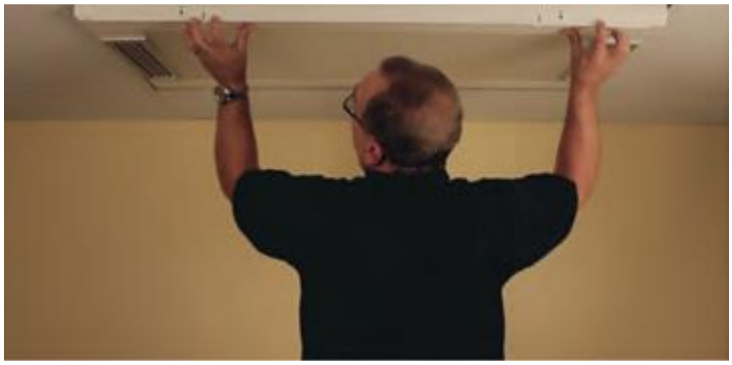
The VidaShield UV24 is designed to treat the air 24 hours a day/7 days a week. In order to ensure that the UV lamp in each unit works as expected, we recommend that you change it annually. The intensity of UV lamps continuously degrades during use and will start to depreciate to a significant degree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

**UV Lamp Replacement:**

**⚠ CAUTION**

Disconnect power from UV24 unit. Always wear eye and skin protection appropriate for UVC light protection.

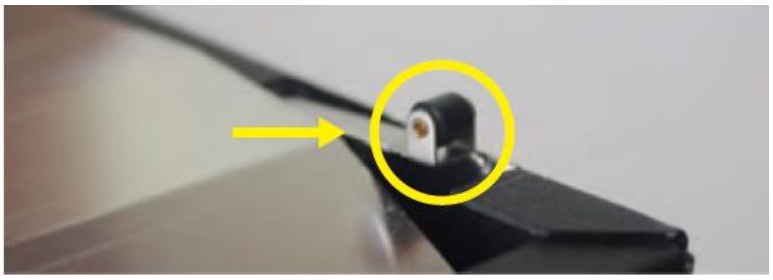
Lift the UV24 fixture slightly above the ceiling frame. Press the lock bar against the fixture and rotate the fixture down to access the UV chamber.



Remove the cover from the UV chamber by pulling and swiveling the four (4) latch tabs on the UV Chamber Lid on each side and both ends. Take care not to touch the reflective surface and leave fingerprints as you lay the cover aside.

The Snap Switch which is located in one of the top right-hand corner of the UV Chamber will be deactivated when the UV Chamber lid is removed.

Deactivating the Snap Switch only shuts off electricity to the UV Light and Fans. The UV Light will be off if you have either disconnected the main power connector or removed the UV Lid to release the Snap Switch. Once the switch is released as you remove the UV chamber cover, the UV lamp will turn off automatically if the unit is still powered on. Do not touch the safety switch with the door open as the UV lamp will turn on.



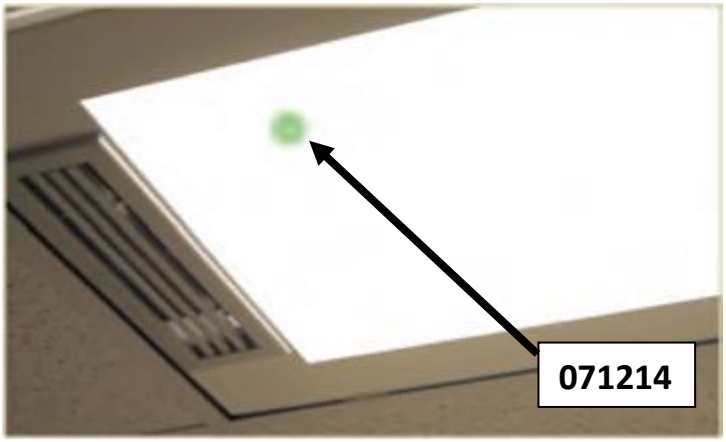
To remove the lamp, place your fingers on the plastic ends and avoid touching the glass. The oil on your fingers can etch into the glass. Pull the lamp away from the clamp on one end and gently pull it out of the socket on the opposite end.

Insert the new UV lamp the same way. Put the 4-prong end into the socket and gently push the opposite end where it snaps into the clamp. Be sure it fits snugly into place.

After the UV lamp has been changed, put the UV chamber lid cover back on taking care to secure the latches back in place. To complete installation, you should rotate the UV24 back into the ceiling and make sure the lock bar is resting on the ceiling frame and secure it fully. This completes the replacement of the UV bulb.

# IMPORTANT

In the event of a UV lamp or UV ballast failure, a light will come on indicating that the UV lamp or ballast needs maintenance. The light is red for the 071114 & 071014, green for the 071214.




**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/

**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 VidaShield UV24. Please contact your VidaShield UV24 distributor or the factory for replacement parts.

**MERV 6 Replacement:**

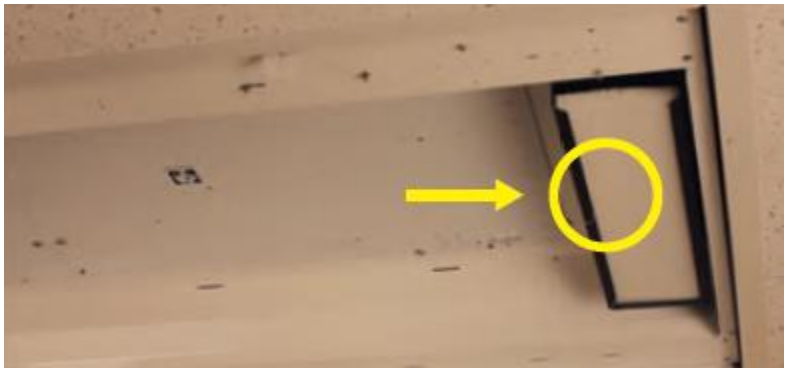
**⚠ CAUTION**

Always wear eye and skin protection appropriate for UVC light protection.

Use gloves while handling the MERV 6 filter. Use proper disposal instructions for hazardous waste materials.

To change the MERV 6 filter, disengage the door latches and lower the door assembly to access the filter.

Slide the MERV 6 filter out of the housing and dispose of it properly. Slide a new, clean filter into the same slot ensuring that it is fitted correctly into the space.



Close the door assembly and reengage the door latches. This completes the MERV 6 replacement.

**Troubleshooting:**

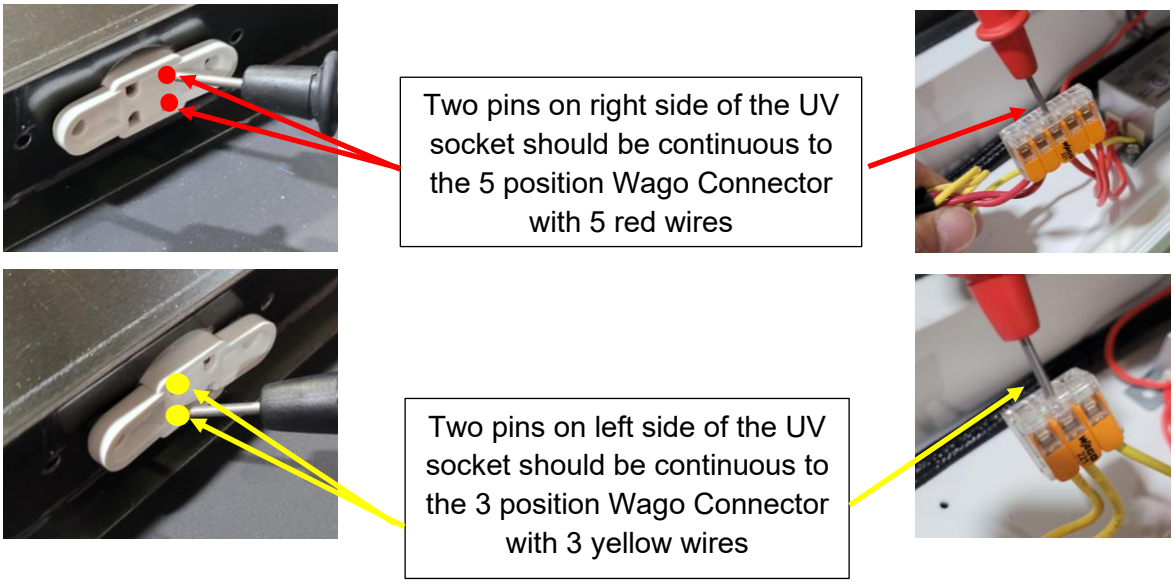
> **⚠ CAUTION**
>
> Always wear eye and skin protection appropriate for UVC light protection.

1. If the indicator light is on, there is a possible issue with the UV lamp and/or UV ballast.

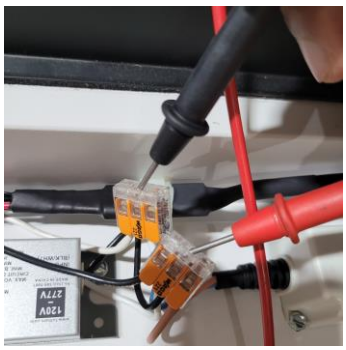
    - Lower the unit according to the lamp replacement instructions and remove the lid from the UV chamber. When the UV chamber lid is removed, the safety switch will be automatically disengaged, shutting off the UV lamp.
    - If the lamp does not light, replace it. After a "known good" (new) lamp is installed, while assuring lamp is covered and no eyes or skin can be exposed to UV light, 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 remove ballast tray cover. With the appropriate multi-meter, check for continuity between the UV lamp socket pins and ballast output wiring.



- If continuity is good, then set the multimeter to AC and check for proper voltage at the ballast input by probing across the two Wago connectors at the input of the ballast. This incoming voltage should match the mains voltage supplied to the unit.



- If the UV-C lamp does not light after incoming voltage and continuity from the ballast to the socket was checked, replace the ballast.

3. If the fan assembly stops spinning?
    - Check fans by removing filter from below. 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 according to following instructions.
    - To remove the fan array, 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 black 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.
    - With the UV bulb removed, 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 or (818) 838-3025.

**Replacement Parts:**

To order replacement fluorescent lamps, UV lamps, MERV 6 filters, ballasts, & other components, contact us by phone at (800) 831-1222 or (818) 838-3025.

**We Want Your Feedback!**

Scan the QR code below to tell us about your product experience (est. 5 min).